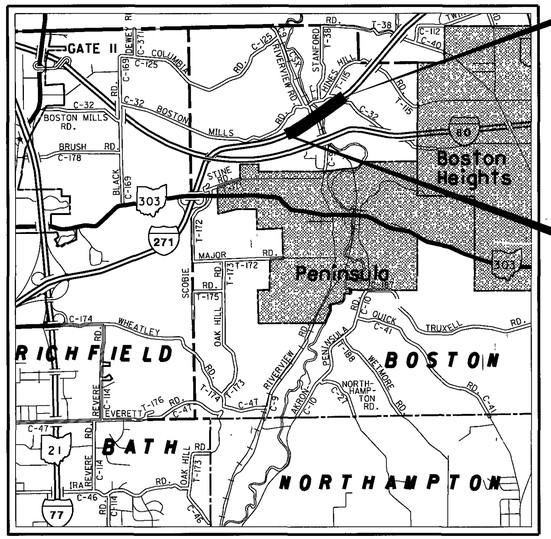


END PROJECT
STA. 451+39.81

BEGIN PROJECT
STA. 408+26.02

LOCATION MAP

LATITUDE: 41°15'40" LONGITUDE: 81°33'25"

SCALE IN MILES
0 1 2 3 4

N

PORTION TO BE IMPROVED
INTERSTATE & DIVIDED HIGHWAY
UNDIVIDED STATE & FEDERAL ROUTES
OTHER ROADS

DESIGN DESIGNATION

CURRENT ADT (2004)	29700
DESIGN YEAR ADT (2024)	39840
DESIGN HOURLY VOLUME (2024)	3984
DIRECTIONAL DISTRIBUTION	55%
TRUCKS (24 HOUR B&C)	23%
DESIGN SPEED	70 MPH
LEGAL SPEED	65 MPH

DESIGN FUNCTIONAL CLASSIFICATION -
RURAL INTERSTATE - INTERSTATE ROUTE 271
RURAL MINOR ARTERIAL - RIVERVIEW ROAD
(SEE SHEET 259-260 FOR DESIGN DESIGNATION)
RURAL LOCAL - BOSTON MILLS ROAD
(SEE SHEET 266 FOR DESIGN DESIGNATION)

DESIGN EXCEPTIONS

DESIGN FEATURES	APPROVAL DATE	SHEET NO.
CROSS SLOPE	9-2-03	12,415,416, 513,514,515

(FOR ALL WORK EXCEPT INDIVIDUALLY SEALED CONCRETE SUPERSTRUCTURE DESIGN)

ENGINEERS SEAL:

STATE OF OHIO
DEAN A. PALMER
E-37475
REGISTERED
PROFESSIONAL ENGINEER

SIGNED: Dean A Palmer
DATE: 9-9-04

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
SUM-271-8.02
BOSTON TOWNSHIP
SUMMIT COUNTY

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PLAN PREPARED BY:

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD OHIO 44902
PHONE: (419) 524-0074 FAX: (419) 524-1812

UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
CALL 1-800-362-2764 (TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

OIL & GAS PRODUCERS
UNDERGROUND PROTECTION SERVICE
P.O. Box 206
Granville, OH 43023-0206
800-925-0988
(Fax) 740-587-0446

PROJECT EARTH DISTURBED AREA	= 55.3 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA	= 6 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA	= 61.3 ACRES

STANDARD CONSTRUCTION DRAWINGS

BP-1.1	7-28-00	LA-1.1	7-28-00	DM-5.1	7-19-02	TC-51.12	4-20-01	802	7-19-02	908	4-18-03
BP-2.3	7-16-04			WQ-1.1	4-16-04	TC-52.10	4-20-01	832	4-17-04	954	9-09-97
BP-3.1	7-16-04	CB-1.1	7-19-02	WQ-1.2	4-16-04	TC-52.20	4-20-01	833	2-12-03		
BP-4.1	7-16-04	CB-1.2	7-19-02			TC-61.10	1-19-01	836	12-06-01		
BP-5.1	7-28-00	CB-2.2	7-19-02	MT-35.10	4-20-01	TC-65.10	10-19-01	837	3-09-99		
BP-9.1	10-17-03	CB-3.1	7-19-02	MT-95.30	7-16-04	TC-65.11	10-19-01	843	4-18-03		
		CB-3.2	7-19-02	MT-95.70	4-19-02	TC-73.10	1-19-01	846	4-19-02		
F-1.1	7-16-04	CB-3.3	7-19-02	MT-95.82	4-19-02			848	2-08-02		
F-2.1	7-28-00	CB-3.4	7-19-02	MT-97.10	4-19-02			864	7-11-00		
F-3.1	7-28-00			MT-99.30	4-16-04			871	7-19-02		
F-3.3	7-28-00	HW-1.1	7-20-01	MT-99.31	4-16-04			873	10-30-03		
F-3.4	7-28-00	HW-2.1	7-19-02	MT-99.60	10-18-02	HL-50.11	7-20-01	894	10-18-02		
		HW-2.2	7-19-02	MT-100.00	4-19-02						
GR-1.1	7-16-04			MT-101.20	10-18-02						
GR-2.1	1-16-04	I-2.1	7-16-04	MT-101.60	10-18-02	AS-1-81	7-19-02				
GR-3.1	4-18-03	MH-1.1	7-19-02	MT-101.70	10-18-02	BR-1	7-19-02				
GR-3.2	4-18-03	MH-1.2	7-19-02	MT-102.10	10-18-02	BS-1-93	7-19-02				
GR-4.2	10-17-03	MH-3.1	7-20-01	MT-102.20	10-18-02	EXJ-2-81	2-14-97				
GR-5.1	4-18-03			MT-105.10	10-18-02	EXJ-4-87	7-19-02				
GR-5.2	1-16-04	DM-1.1	7-18-03	MT-105.11	10-18-02	EXJ-6-95	7-19-02				
GR-5.3	1-16-04	DM-1.2	7-19-02	TC-41.10	1-19-01	GSD-1-96	7-19-02				
GR-6.1	4-18-03	DM-1.4	7-19-02	TC-41.20	1-19-01	PSID-1-99	7-18-03				
RM-1.1	4-18-03	DM-4.1	7-19-02	TC-41.40	7-16-04	RB-1-55	2-02-59				
RM-4.2	4-18-03	DM-4.2	7-19-02	TC-42.10	1-19-01	SBR-1-99	7-19-02				
RM-4.4	4-18-03	DM-4.3	7-19-02	TC-42.20	7-16-04						
RM-4.5	4-18-03	DM-4.4	7-19-02	TC-51.11	4-20-01						

SPECIAL PROVISIONS

OEPA SWIMS ID NO. 042045 DATE: 7-16-04	
REINFORCED EARTH WALL	9-9-04
RETAINED EARTH WALL	9-9-04
ARES RETAINING WALL	9-9-04
MSE PLUS RETAINING WALL	9-9-04
STEEL POT BEARING	9-9-04
POST TENSIONING	9-9-04

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF REPLACEMENT OF TWIN BRIDGES SUM-271-0802 (L/R) ON I.R. 271 OVER RIVERVIEW ROAD, VALLEY RAILWAY AND CUYAHOGA RIVER. THE PROPOSED WORK INCLUDES MINOR REHABILITATION OF TWIN BRIDGES SUM-271-0854 (L/R) ON I.R. 271 OVER BOSTON MILLS ROAD, CONSTRUCTION OF A NEW STORM SEWER, REPAIR OF SLOPE FAILURE ALONG THE SOUTHBOUND LANES OF I.R. 271, AND ALL RELATED DRAINAGE AND ROADWAY WORK INCLUDING TRAFFIC CONTROL AND MAINTENANCE OF TRAFFIC. THE PROJECT LENGTH ON I.R. 271 IS APPROXIMATELY 0.82 MILE.

LIMITED ACCESS

THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 OF THE OHIO REVISED CODE.

2002 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF MAINLINE I.R. 271 AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF THE TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

IMPROVEMENTS MADE AT THE RIVERVIEW ROAD OVERPASS AND BOSTON MILLS ROAD OVERPASS WILL REQUIRE PART-TIME CLOSING TO TRAFFIC OF RIVERVIEW ROAD OR BOSTON MILLS ROAD AS NOTED ON SHEETS 22, AND DETOURS WILL BE PROVIDED AS INDICATED ON THE PLANS.

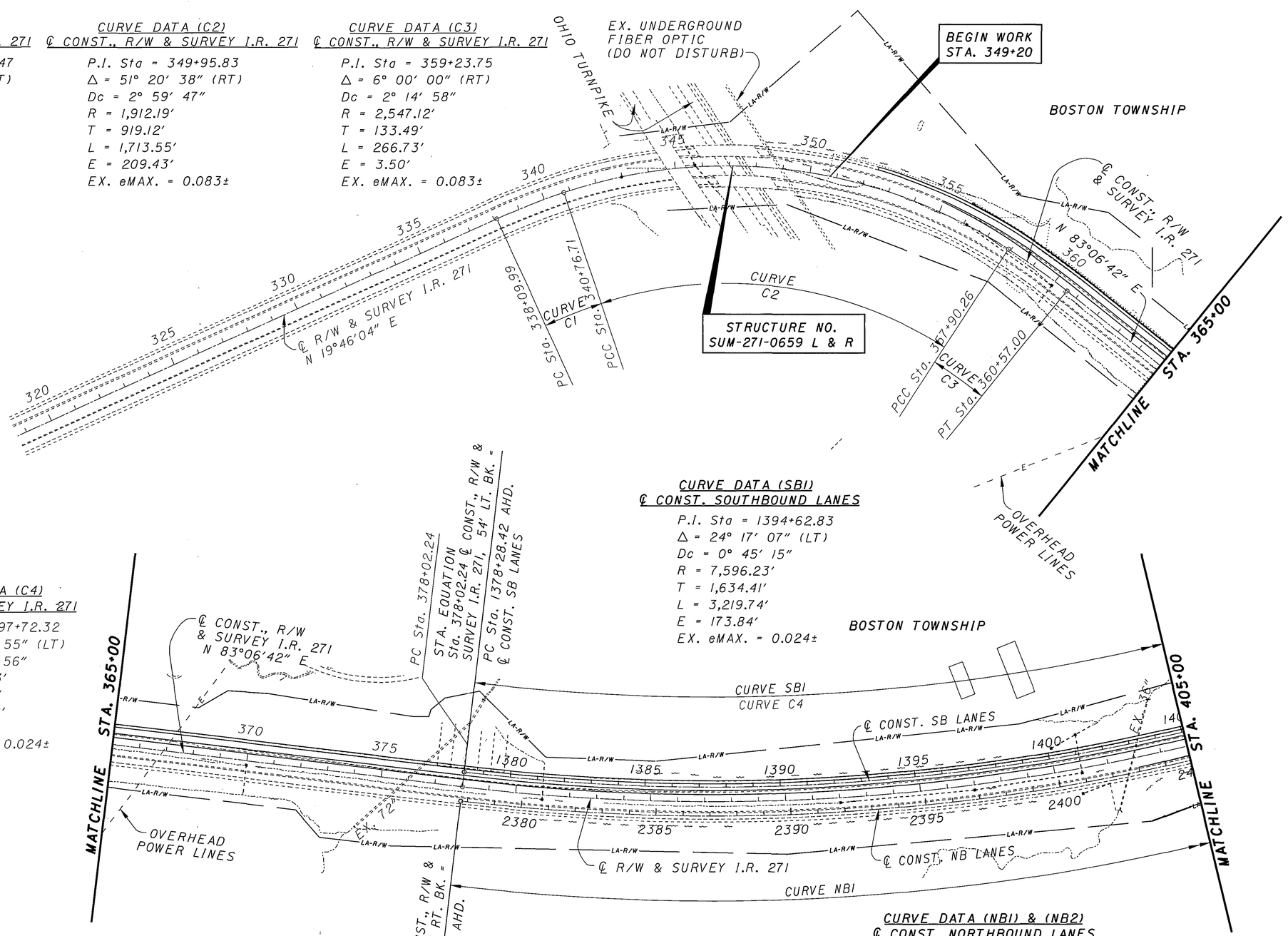
UNDER AUTHORITY OF SECTION 4511.21, DIVISION (H) OF THE OHIO REVISED CODE, THE REVISED PRIMA FACIE SPEED LIMITS AS INDICATED HEREIN ARE DETERMINED TO BE REASONABLE AND SAFE, AND ARE HEREBY ESTABLISHED FOR THE DURATION OF THIS PROJECT. THE PRIMA FACIE SPEED LIMIT OR LIMITS HEREBY ESTABLISHED SHALL BECOME EFFECTIVE WHEN APPROPRIATE SIGNS GIVING NOTICE THEREOF ARE ERECTED.

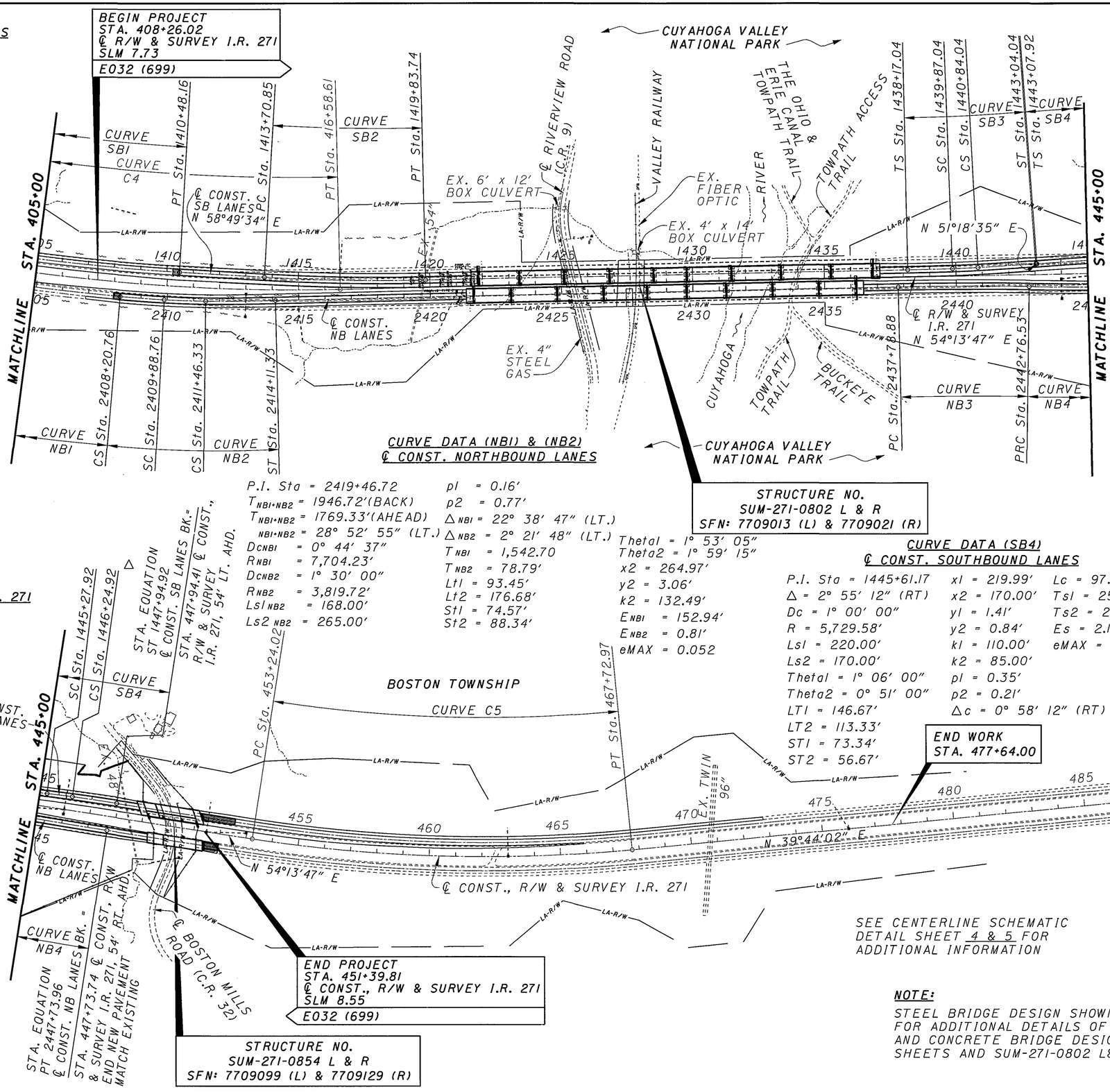
APPROVED _____
DATE 9-15-04 DISTRICT DEPUTY DIRECTOR

APPROVED Gordon Proctor
DATE 11-3-04 DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO. E032 (699)
PID NO. 21450
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT VALLEY RAILWAY
SUM-271-8.02
1
612

SUM - IR 271-8.02
050316 PID - 21450
Dist 4 5/25/2005
21450GT.DGN 9/7/04 JLS.SJK.CEO


CURVE DATA (C1)
℄ R/W & SURVEY I.R. 271
P.I. Sta = 339+43.47
Δ = 6° 00′ 00″ (RT)
Dc = 2° 14′ 58″
R = 2,547.00′
T = 133.48′
L = 266.72′
E = 3.50′
EX. eMAX. = 0.083
CURVE DATA (C2)
℄ CONST., R/W & SURVEY I.R. 271
P.I. Sta = 349+95.83
Δ = 51° 20′ 38″ (RT)
Dc = 2° 59′ 47″
R = 1,912.19′
T = 919.12′
L = 1,713.55′
E = 209.43′
EX. eMAX. = 0.083±
CURVE DATA (C3)
℄ CONST., R/W & SURVEY I.R. 271
P.I. Sta = 359+23.75
Δ = 6° 00′ 00″ (RT)
Dc = 2° 14′ 58″
R = 2,547.12′
T = 133.49′
L = 266.73′
E = 3.50′
EX. eMAX. = 0.083±
OHIO TURNPIKE
EX. UNDERGROUND FIBER OPTIC (DO NOT DISTURB)
BEGIN WORK STA. 349+20
BOSTON TOWNSHIP
℄ CONST. R/W & SURVEY I.R. 271
N 83°06′42″ E
℄ R/W & SURVEY I.R. 271
N 19°46′04″ E
PC Sta. 338+09.99
CURVE C1
PCC Sta. 340+76.71
CURVE C2
STRUCTURE NO. SUM-271-0659 L & R
PCC Sta. 357+90.26
CURVE C3
PT Sta. 360+57.00
MATCHLINE STA. 365+00
OVERHEAD POWER LINES
CURVE DATA (SBI)
℄ CONST. SOUTHBOUND LANES
P.I. Sta = 1394+62.83
Δ = 24° 17′ 07″ (LT)
Dc = 0° 45′ 15″
R = 7,596.23′
T = 1,634.41′
L = 3,219.74′
E = 173.84′
EX. eMAX. = 0.024±
CURVE DATA (C4)
℄ R/W & SURVEY I.R. 271
P.I. Sta = 397+72.32
Δ = 28° 52′ 55″ (LT)
Dc = 0° 44′ 56″
R = 7,650.23′
T = 1,970.08′
L = 3,856.38′
E = 249.60′
EX. eMAX. = 0.024±
MATCHLINE STA. 365+00
℄ CONST., R/W & SURVEY I.R. 271
N 83°06′42″ E
STA. EQUATION
Sta. 378+02.24 ℄ CONST., R/W & SURVEY I.R. 271, 54′ LT. BK. = PC Sta. 378+02.24 AHD.
PC Sta. 1378+28.42 AHD.
℄ CONST. SB LANES
BOSTON TOWNSHIP
CURVE SBI
CURVE C4
℄ CONST. SB LANES
MATCHLINE STA. 405+00
OVERHEAD POWER LINES
STA. EQUATION
Sta. 378+02.24 ℄ CONST., R/W & SURVEY I.R. 271, 54′ RT. BK. = PC Sta. 2377+75.64 AHD.
℄ CONST. NB LANES
℄ R/W & SURVEY I.R. 271
℄ CONST. NB LANES
CURVE NBI
CURVE DATA (NBI) & (NB2)
℄ CONST. NORTHBOUND LANES
P.I. Sta = 2419+46.72
T NBI•NB2 = 1946.72′(BACK)
T NBI•NB2 = 1769.33′(AHEAD)
Δ NBI•NB2 = 28° 52′ 55″ (LT.)
Dc NBI = 0° 44′ 37″
R NBI = 7,704.23′
Dc NB2 = 1° 30′ 00″
R NB2 = 3,819.72′
Ls1 NB2 = 168.00′
Ls2 NB2 = 265.00′
p1 = 0.16′
p2 = 0.77′
Δ NBI = 22° 38′ 47″ (LT.)
Δ NB2 = 2° 21′ 48″ (LT.)
T NBI = 1,542.70
T NB2 = 78.79′
Lt1 = 93.45′
Lt2 = 176.68′
St1 = 74.57′
St2 = 88.34′
Theta1 = 1° 53′ 05″
Theta2 = 1° 59′ 15″
x2 = 264.97′
y2 = 3.06′
k2 = 132.49′
E NBI = 152.94′
E NB2 = 0.81′
eMAX. = 0.052
HORIZONTAL SCALE IN FEET
SCHEMATIC PLAN
STA. 320+00 TO STA. 405+00
SUM-271-8.02
2
612
21450GBI.DGN 3/31/04 SAM,CAR,CEO



CURVE DATA (SB2)
℄ CONST. SOUTHBOUND LANES

P.I. Sta = 1416+77.46
Δ = 4° 35′ 48″ (LT)
Dc = 0° 45′ 00″
R = 7,639.44′
T = 306.61′
L = 612.88′
E = 6.15′
eMAX = 0.028

CURVE DATA (C4)
℄ R/W & SURVEY I.R. 271

P.I. Sta = 397+72.32
Δ = 28° 52′ 55″ (LT)
Dc = 0° 44′ 56″
R = 7,650.23′
T = 1,970.08′
L = 3,856.38′
E = 249.60′
EX. eMAX = 0.024±

CURVE DATA (NB1) & (NB2)
℄ CONST. NORTHBOUND LANES

P.I. Sta = 2419+46.72
$T_{NB1+NB2}$ = 1946.72′(BACK)
$T_{NB1+NB2}$ = 1769.33′(AHEAD)
$_{NB1+NB2}$ = 28° 52′ 55″ (LT.)
D_{CNB1} = 0° 44′ 37″
R_{NB1} = 7,704.23′
D_{CNB2} = 1° 30′ 00″
R_{NB2} = 3,819.72′
$Ls1_{NB2}$ = 168.00′
$Ls2_{NB2}$ = 265.00′
p1 = 0.16′
p2 = 0.77′
$Δ_{NB1}$ = 22° 38′ 47″ (LT.)
$Δ_{NB2}$ = 2° 21′ 48″ (LT.)
T_{NB1} = 1,542.70
T_{NB2} = 78.79′
Lt1 = 93.45′
Lt2 = 176.68′
St1 = 74.57′
St2 = 88.34′
Theta1 = 1° 53′ 05″
Theta2 = 1° 59′ 15″
x2 = 264.97′
y2 = 3.06′
k2 = 132.49′
E_{NB1} = 152.94′
E_{NB2} = 0.81′
eMAX = 0.052

CURVE DATA (C5)
℄ CONST., R/W & SURVEY I.R. 271

P.I. Sta = 460+52.38
Δ = 14° 29′ 45″ (LT)
Dc = 1° 00′ 02″
R = 5,727.14′
T = 728.37′
L = 1,448.96′
E = 46.13′
EX. eMAX. = 0.036±

CURVE DATA (SB4)
℄ CONST. SOUTHBOUND LANES

P.I. Sta = 1445+61.17
Δ = 2° 55′ 12″ (RT)
Dc = 1° 00′ 00″
R = 5,729.58′
Ls1 = 220.00′
Ls2 = 170.00′
Theta1 = 1° 06′ 00″
Theta2 = 0° 51′ 00″
LT1 = 146.67′
LT2 = 113.33′
ST1 = 73.34′
ST2 = 56.67′
x1 = 219.99′
x2 = 170.00′
y1 = 1.41′
y2 = 0.84′
k1 = 110.00′
k2 = 85.00′
p1 = 0.35′
p2 = 0.21′
Δc = 0° 58′ 12″ (RT)
Lc = 97.00′
Ts1 = 253.26′
Ts2 = 233.82′
Es = 2.14′
eMAX = 0.036

CURVE DATA (SB3)
℄ CONST. SOUTHBOUND LANES

P.I. Sta = 1440+50.86
Δ = 2° 55′ 12″ (LT)
Dc = 1° 00′ 00″
R = 5,729.58′
Ls1 = 170.00′
Ls2 = 220.00′
Theta1 = 0° 51′ 00″
Theta2 = 1° 06′ 00″
LT1 = 113.33′
LT2 = 146.67′
ST1 = 56.67′
ST2 = 73.34′
x1 = 170.00′
x2 = 219.99′
y1 = 0.84′
y2 = 1.41′
k1 = 85.00′
k2 = 110.00′
p1 = 0.21′
p2 = 0.35′
Δc = 0° 58′ 12″ (LT)
Lc = 97.00′
Ts1 = 233.82′
Ts2 = 253.26′
Es = 2.14′
eMAX = 0.036

CURVE DATA (NB3)
℄ CONST. NORTHBOUND LANES

P.I. Sta = 2440+27.68
Δ = 2° 04′ 23″ (RT)
Dc = 0° 25′ 00″
R = 13,750.99′
T = 248.80′
L = 497.54′
E = 2.25′
eMAX = NC

CURVE DATA (NB4)
℄ CONST. NORTHBOUND LANES

P.I. Sta = 2445+25.22
Δ = 2° 04′ 23″ (LT)
Dc = 0° 25′ 00″
R = 13,750.99′
T = 248.80′
L = 497.54′
E = 2.25′
eMAX = NC

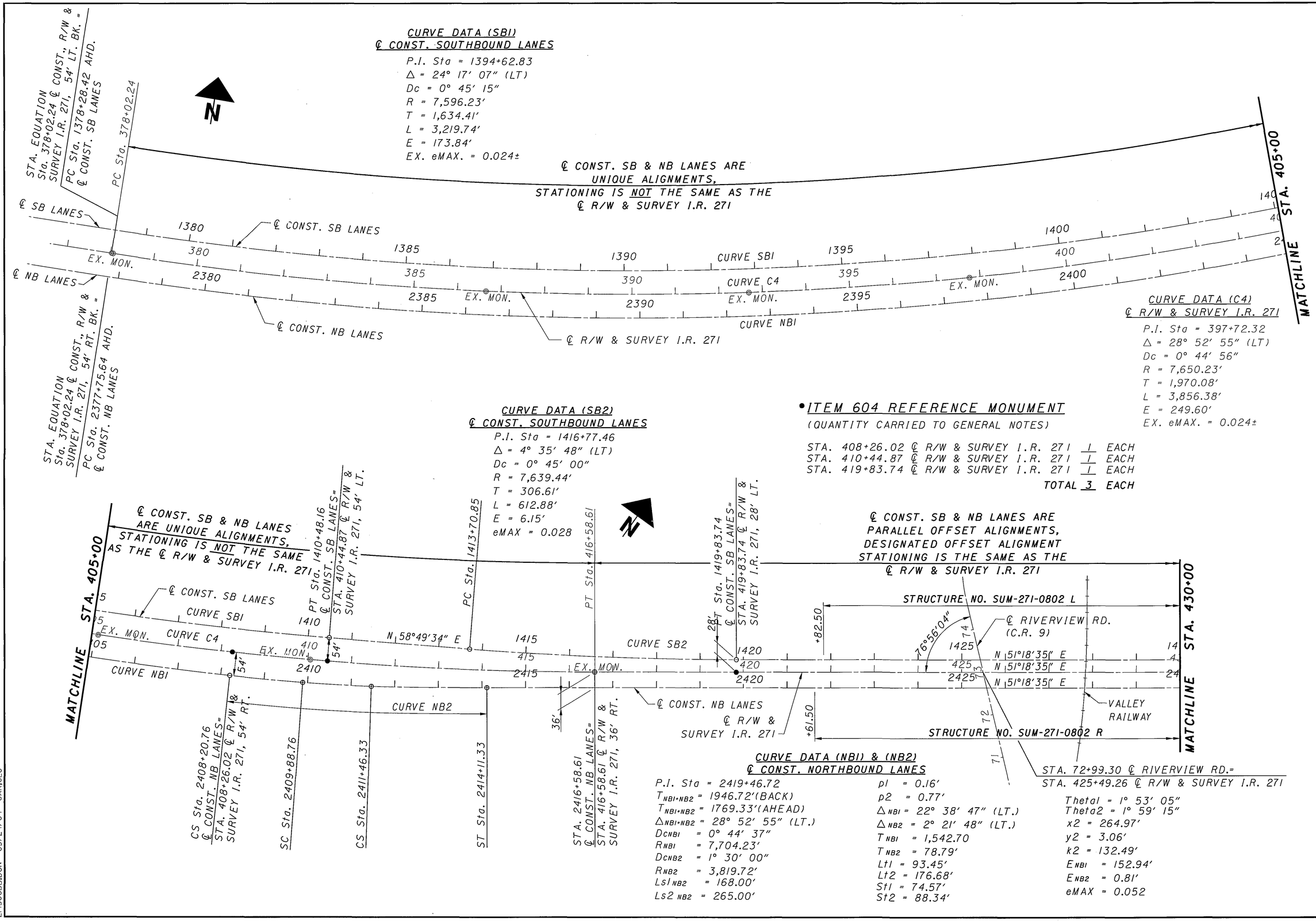
NOTE:
STEEL BRIDGE DESIGN SHOWN FOR VISUAL PURPOSES. FOR ADDITIONAL DETAILS OF STEEL BRIDGE DESIGN AND CONCRETE BRIDGE DESIGN SEE PLAN & PROFILE SHEETS AND SUM-271-0802 L&R STRUCTURE PLANS.

HORIZONTAL SCALE IN FEET
0 100 200 400

SCHEMATIC PLAN
STA. 405+00 TO 485+00

SUM-271-8.02

2145OGB2.DGN 3/29/04 SAM,CEO



• *ITEM 604 REFERENCE MONUMENT*

(QUANTITY CARRIED TO GENERAL NOTES)

STA. 408+26.02 ℄ R/W & SURVEY I.R. 271	1	EACH
STA. 410+44.87 ℄ R/W & SURVEY I.R. 271	1	EACH
STA. 419+83.74 ℄ R/W & SURVEY I.R. 271	1	EACH
TOTAL	3	EACH

CALCULATED TM CHECKED SM

0 50 100 200 HORIZONTAL SCALE IN FEET

CENTERLINE SCHEMATIC DETAIL STA. 377+00 TO STA. 430+00

SUM-271-8.02

4 / 612

24450GBB.DGN 03/24/04 CAR,CEO

CURVE DATA (SB4)
℄ CONST. SOUTHBOUND LANES

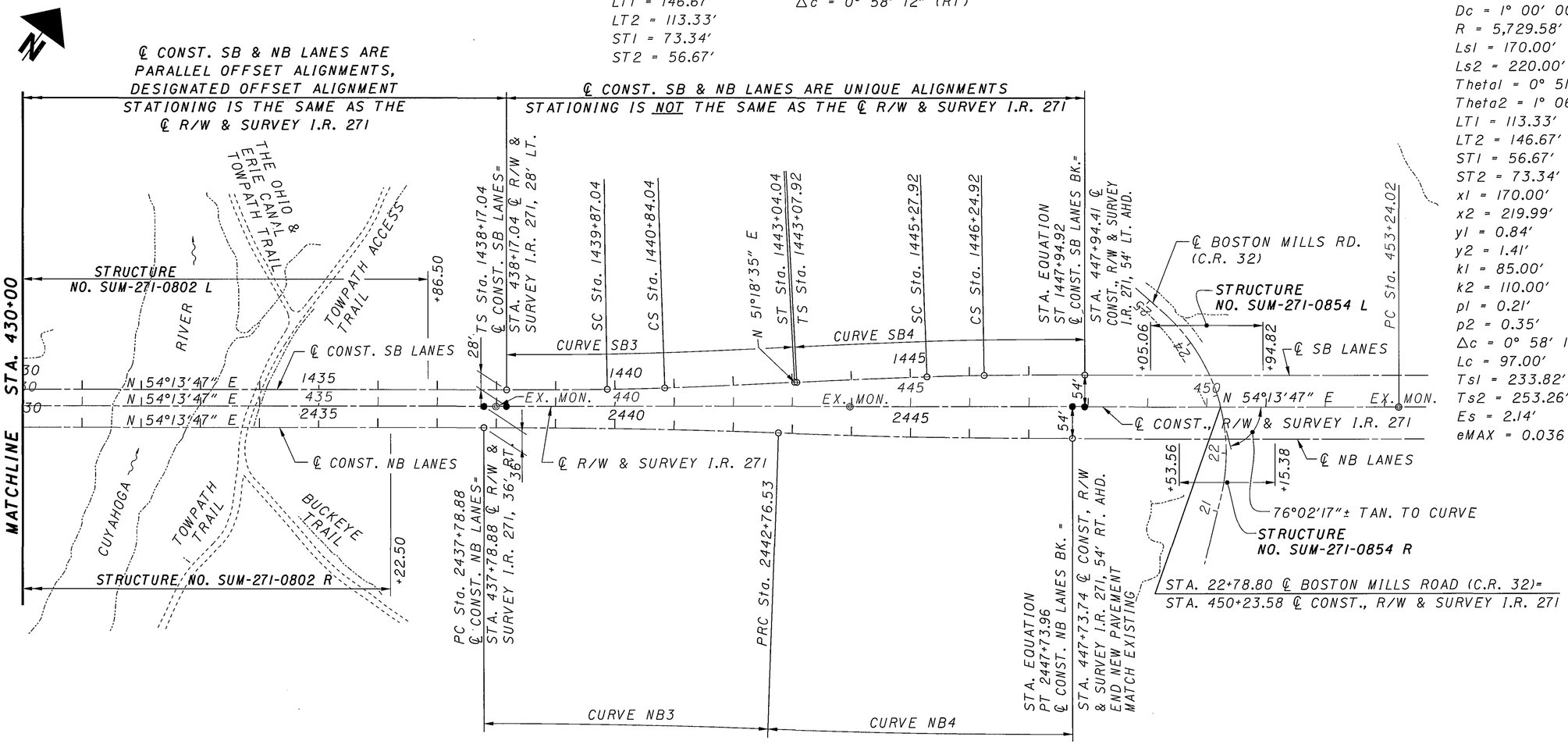
P.I. Sta = 1445+61.17
Δ = 2° 55′ 12″ (RT)
Dc = 1° 00′ 00″
R = 5,729.58′
Ls1 = 220.00′
Ls2 = 170.00′
Theta1 = 1° 06′ 00″
Theta2 = 0° 51′ 00″
LT1 = 146.67′
LT2 = 113.33′
ST1 = 73.34′
ST2 = 56.67′

x1 = 219.99′
x2 = 170.00′
y1 = 1.41′
y2 = 0.84′
k1 = 110.00′
k2 = 85.00′
p1 = 0.35′
p2 = 0.21′
Δc = 0° 58′ 12″ (RT)

Lc = 97.00′
Ts1 = 253.26′
Ts2 = 233.82′
Es = 2.14′
eMAX = 0.036

CURVE DATA (SB3)
℄ CONST. SOUTHBOUND LANES

P.I. Sta = 1440+50.86
Δ = 2° 55′ 12″ (LT)
Dc = 1° 00′ 00″
R = 5,729.58′
Ls1 = 170.00′
Ls2 = 220.00′
Theta1 = 0° 51′ 00″
Theta2 = 1° 06′ 00″
LT1 = 113.33′
LT2 = 146.67′
ST1 = 56.67′
ST2 = 73.34′
x1 = 170.00′
x2 = 219.99′
y1 = 0.84′
y2 = 1.41′
k1 = 85.00′
k2 = 110.00′
p1 = 0.21′
p2 = 0.35′
Δc = 0° 58′ 12″ (LT)
Lc = 97.00′
Ts1 = 233.82′
Ts2 = 253.26′
Es = 2.14′
eMAX = 0.036



CURVE DATA (NB3)
℄ CONST. NORTHBOUND LANES

P.I. Sta = 2440+27.68
Δ = 2° 04′ 23″ (RT)
Dc = 0° 25′ 00″
R = 13,750.99′
T = 248.80′
L = 497.54′
E = 2.25′
eMAX = NC

CURVE DATA (NB4)
℄ CONST. NORTHBOUND LANES

P.I. Sta = 2445+25.22
Δ = 2° 04′ 23″ (LT)
Dc = 0° 25′ 00″
R = 13,750.99′
T = 248.80′
L = 497.54′
E = 2.25′
eMAX = NC

• ITEM 604 REFERENCE MONUMENT

(QUANTITY CARRIED TO GENERAL NOTES)

STA. 437+78.88 ℄ R/W & SURVEY I.R. 271	1	EACH
STA. 438+17.04 ℄ R/W & SURVEY I.R. 271	1	EACH
STA. 447+73.74 ℄ R/W & SURVEY I.R. 271	1	EACH
STA. 447+94.41 ℄ R/W & SURVEY I.R. 271	1	EACH
TOTAL	4	EACH

CALCULATED TM
CHECKED SM

0 100 200
50
HORIZONTAL SCALE IN FEET

CENTERLINE SCHEMATIC DETAIL
STA. 430+00 TO STA. 450+00

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21450GBC.DGN 3/29/04 CAR.CEO

EXISTING CENTERLINE REFERENCE MONUMENTS

ODOT REF.	STATE PLANE GRID COORDINATES (ENGLISH)		GROUND COORDINATES (ENGLISH)		CENTERLINE RIGHT OF WAY I.R. 271 STA.	OFFSET	SIDE	ELEV.	DESCRIPTION
	NORTH	EAST	NORTH	EAST					
318	576665.7248	2218778.5683	576719.3705	2218984.9754	318+63.96	0		1087.99	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 318+63.96)
325	577291.3472	2219003.3905	577345.0511	2219209.8185	325+28.81	0.02	LT.	1076.44	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 325+29.15)
336	578371.4159	2219391.5687	578425.2203	2219598.0328	336+76.63	0		1042.91	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 336+77.38)
340	578742.9480	2219539.5879	578796.7869	2219746.0658	340+76.82	0.32	LT.	1030.72	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 340+77.38)
349	579406.0454	2220067.9722	579459.9460	2220274.4992	349+31.63	0.75	LT.	1006.54	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 349+33.22)
361	579836.9539	2221228.7984	579890.8946	2221435.4334	361+88.89	0		965.28	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 361+89.05)
369	579927.5296	2221978.5003	579981.4787	2222185.2051	369+44.11	0.01	LT.	939.89	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 369+44.24)
386	580181.7817	2223679.6013	580235.7545	2223886.4643	386+65.39	0.24	RT.	888.21	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 386+65.52)
392	580343.9439	2224260.7304	580397.9318	2224467.6475	392+68.91	0.46	RT.	870.74	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 392+69.08)
397	580515.3071	2224737.4889	580569.3109	2224944.4503	397+75.64	0.47	RT.	855.46	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 397+75.00)
405	580821.1898	2225411.0582	580875.2221	2225618.0823	405+15.71	0.67	RT.	833.35	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 405+15.58)
410	581059.2788	2225839.0618	581113.3332	2226046.1257	410+05.58	0.32	RT.	819.71	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 410+05.22)
416	581418.1772	2226384.3402	581472.2650	2226591.4548	416+58.61	0		799.66	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 416+58.27)
438	582669.2626	2228121.2598	582723.4668	2228328.5360	437+99.40	0.021	RT.	736.13	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 438+00.00)
443	583019.08	2228606.4148	583073.3167	2228813.7361	443+97.57	0.03	LT.	725.3	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 448+98.23)
453	583560.5476	2229358.0467	583614.8347	2229565.4380	453+24.02	0		742.14	CONCRETE MONUMENT FND (ORIGINAL PLAN PC STA. 453+24.83)
486	585959.3243	2231589.0047	586013.8345	2231796.6035	486+10.52	0.004	RT.	826.46	CONCRETE MONUMENT FND (ORIGINAL PLAN STA. 486+10.73)
495	586687.9725	2232194.5549	586742.5505	2232402.2100	495+58.04	0.083	LT.		CONCRETE MONUMENT FND
501	587168.5018	2232594.0858	587223.1245	2232801.7781	501+83.02	0		847.17	CONCRETE MONUMENT FND (ORIGINAL PLAN PC STA. 501+82.95)
URS2	579363.0304	2220009.6599	579416.9270	2220216.1815	348+59.39	4.9	LT.		CAPPED PIN FOUND
URS1	579174.6511	2219823.5882	579228.5302	2220030.0925	345+94.87	2.08	LT.		CAPPED PIN FOUND

PROJECT ADJUSTMENT FACTOR (PAF)

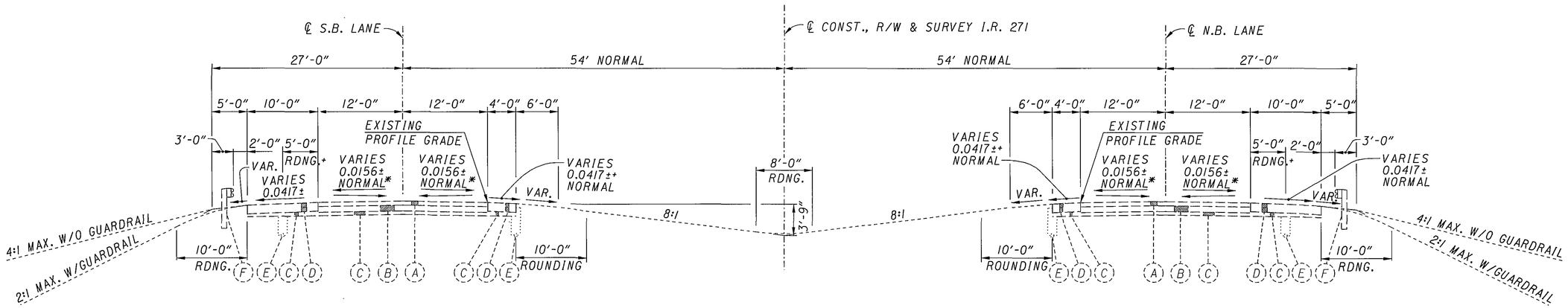
THE EXISTING I.R. 271 BEST FIT ALIGNMENT DATA WAS DETERMINED BASED ON EXISTING MONUMENTATION FOUND WITHIN THE PROJECT. THE GROUND COORDINATES LISTED ARE ENGLISH GROUND COORDINATES REFERENCED TO OHIO STATE PLANE COORDINATE SYSTEM, OHIO NORTH ZONE, NAD 83 (95) DATUM. THE VERTICAL DATUM LISTED IS NGVD29. THE COORDINATES WHERE ACQUIRED BY GPS OBSERVATION. A GRID TO GROUND SCALE FACTOR OF 1.000093027349 WAS USED TO PROJECT THE GRID VALUES TO GROUND. THE RESULTING VALUES WERE THEN CONVERTED TO ENGLISH UNITS. AN ENGLISH GROUND TO METRIC GRID ADJUSTMENT FACTOR OF 0.304772257445 SHOULD BE USED TO PROJECT SUBSEQUENT SURVEY DATA TO STATE PLANE COORDINATES.

CALCULATED JL CHECKED PRS

CENTERLINE REFERENCE MONUMENTS

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+ HIGH SIDE SUPERELEVATED SECTION HAS 7% MAX GRADE BREAK AT EDGE OF PAVEMENT
5'-0" ROUNDING WHERE EXISTING SUPERELEVATION RATE IS GREATER THAN 0.06
MATCH SUPERELEVATION RATE ON LOW SIDE OF SUPERELEVATION IF GREATER

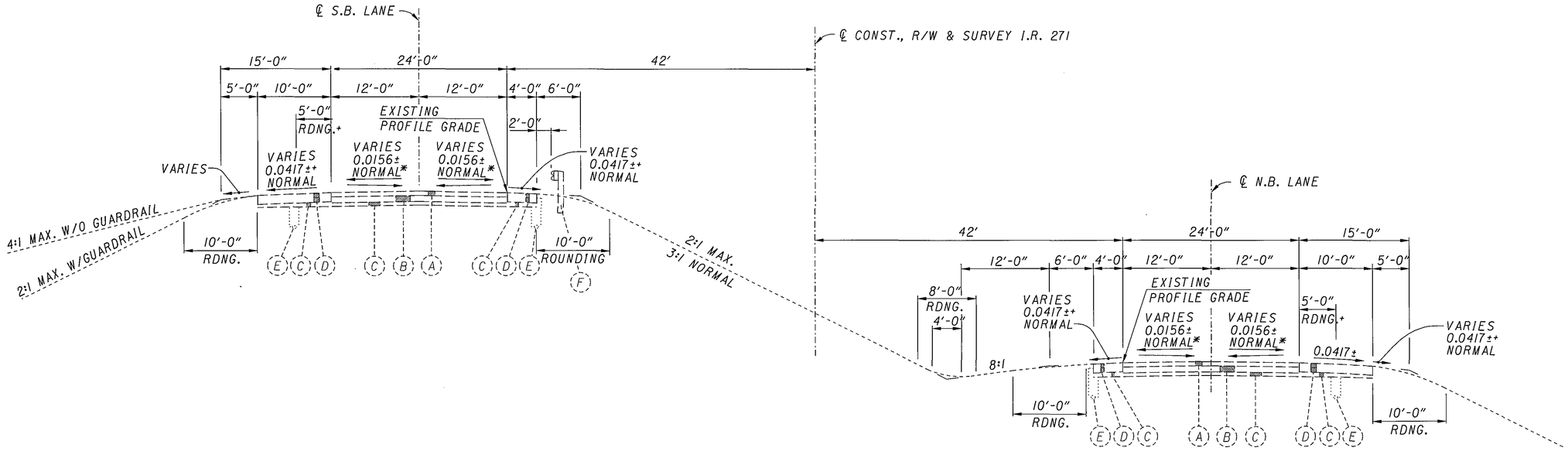
EXISTING NORMAL TYPICAL SECTION

*MAX. EXISTING SUPERELEVATION Dc = 0°45' = 0.024'/FT.±
Dc = 3°00' = 0.083'/FT.±

EXISTING LEGEND

(A) ASPHALT OVERLAY (5 3/4" AVERAGE)
(B) REINFORCED CONCRETE PAVEMENT (10")
(C) AGGREGATE BASE (6" AVERAGE)
(D) ASPHALT PAVED SHOULDERS (10"‡ AVERAGE)
(E) PIPE UNDERDRAIN
(F) GUARDRAIL, TYPE 5

‡CONSISTS OF 3"± BITUMINOUS BASE AND 7"± OF ASPHALT CONCRETE

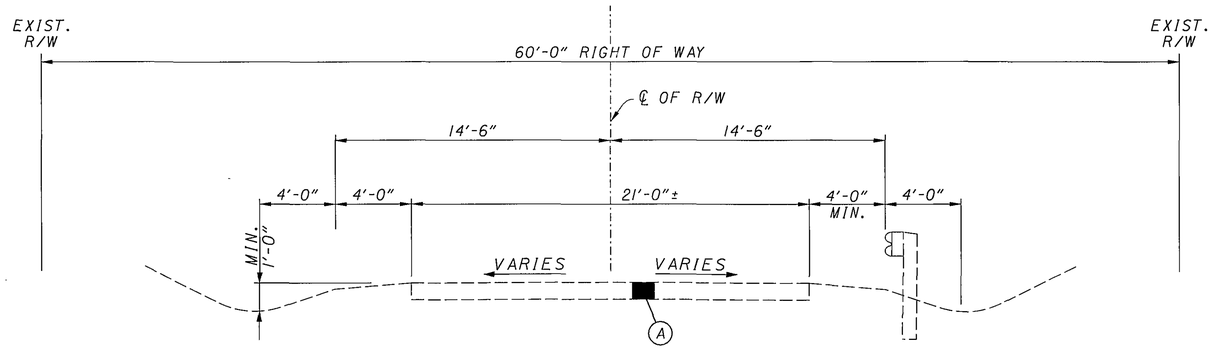


EXISTING INDEPENDENT GRADE TYPICAL SECTION

2I450GYA.DGN 9/7/04 SAM.CAR

EXISTING TYPICAL SECTIONS I.R. 271

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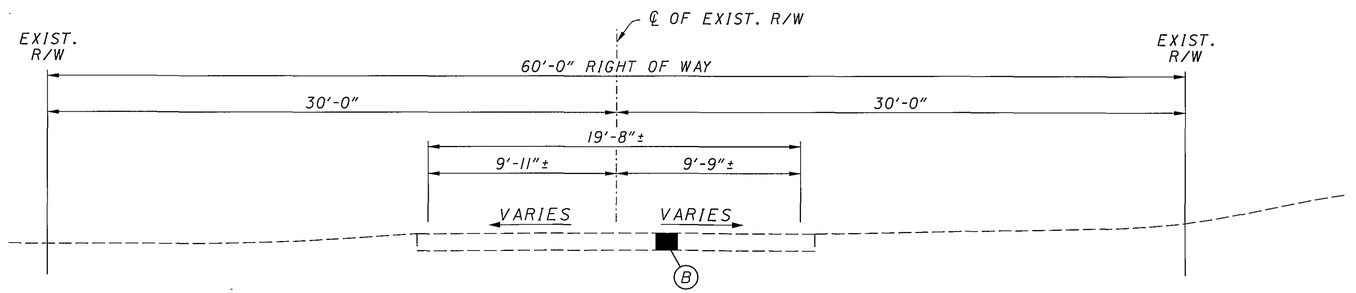


EXISTING TYPICAL SECTION - RIVERVIEW ROAD (C.R. 9)

EXISTING LEGEND

(A) 2" TO 5" ASPHALT CONCRETE OVER 0" TO 6" SLAG

(B) 8" ASPHALT CONCRETE



EXISTING TYPICAL SECTION - BOSTON MILLS ROAD (C.R. 32)

EXISTING TYPICAL SECTIONS - SIDEROADS

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21450GYB.DGN 10/28/03 SAM,CAR

● 10' TO 11' SHOULDER TRANSITION FROM
STA. 352+40.00 ℄ CONST., R/W & SURVEY I.R. 271 TO
STA. 353+05.00 ℄ CONST., R/W & SURVEY I.R. 271

11' TO 12' SHOULDER TRANSITION FROM
STA. 1409+83.16 ℄ CONST. SB LANES TO
STA. 1410+48.16 ℄ CONST. SB LANES

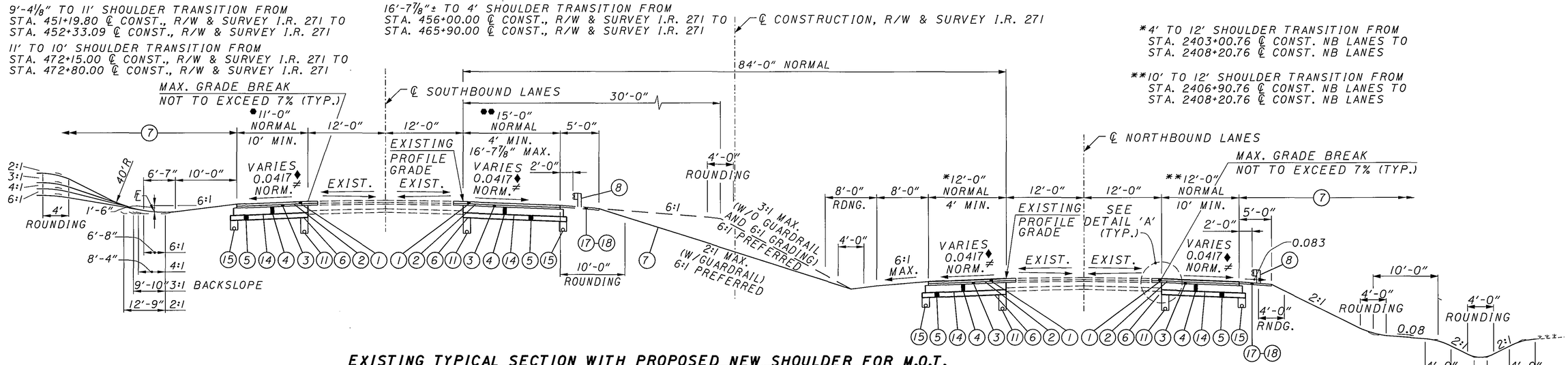
9'-4⅛" TO 11' SHOULDER TRANSITION FROM
STA. 451+19.80 ℄ CONST., R/W & SURVEY I.R. 271 TO
STA. 452+33.09 ℄ CONST., R/W & SURVEY I.R. 271

11' TO 10' SHOULDER TRANSITION FROM
STA. 472+15.00 ℄ CONST., R/W & SURVEY I.R. 271 TO
STA. 472+80.00 ℄ CONST., R/W & SURVEY I.R. 271

●● 4' TO 15' SHOULDER TRANSITION FROM
STA. 355+00.00 ℄ CONST., R/W & SURVEY I.R. 271 TO
STA. 360+00.00 ℄ CONST., R/W & SURVEY I.R. 271

15' TO 18' SHOULDER TRANSITION FROM
STA. 1408+53.16 ℄ CONST. SB LANES TO
STA. 1410+48.16 ℄ CONST. SB LANES

16'-7⅞"± TO 4' SHOULDER TRANSITION FROM
STA. 456+00.00 ℄ CONST., R/W & SURVEY I.R. 271 TO
STA. 465+90.00 ℄ CONST., R/W & SURVEY I.R. 271



*4' TO 12' SHOULDER TRANSITION FROM
STA. 2403+00.76 ℄ CONST. NB LANES TO
STA. 2408+20.76 ℄ CONST. NB LANES

**10' TO 12' SHOULDER TRANSITION FROM
STA. 2406+90.76 ℄ CONST. NB LANES TO
STA. 2408+20.76 ℄ CONST. NB LANES

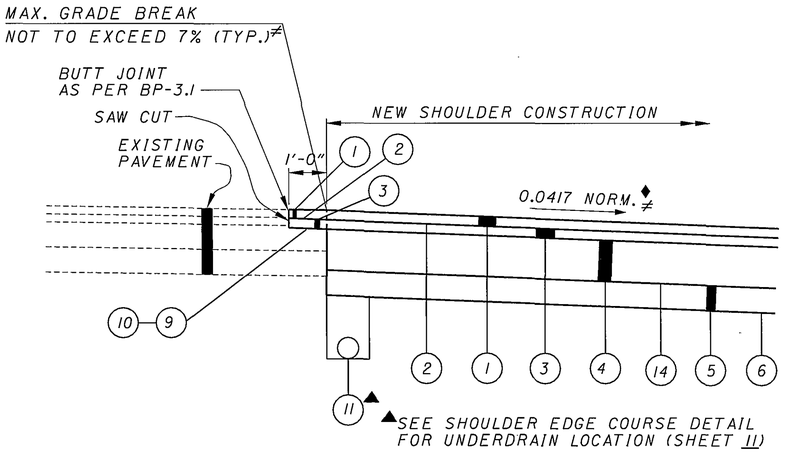
EXISTING TYPICAL SECTION WITH PROPOSED NEW SHOULDER FOR M.O.T.

SOUTHBOUND OUTSIDE	STA. 352+40.00 ℄ CONST., R/W & SURVEY I.R. 271 . TO STA. 378+02.24 BK. ℄ CONST., R/W & SURVEY I.R. 271 .	= 2562.24 LIN. FT.
	STA. 1378+28.42 AHD. ℄ CONST. S.B. LANES TO STA. 1410+48.16 ℄ CONST. S.B. LANES	= 3219.74 LIN. FT.
	STA. 451+19.82 ℄ CONST. S.B. LANES TO STA. 472+80.00 ℄ CONST. S.B. LANES	= 2160.18 LIN. FT.
NORTHBOUND OUTSIDE	STA. 2406+90.76 ℄ CONST. N.B. LANES TO STA. 2408+20.76 ℄ CONST. N.B. LANES	= 130.00 LIN. FT.
		TOTAL = 8072.16 LIN. FT.
SOUTHBOUND INSIDE	STA. 355+00.00 ℄ CONST., R/W & SURVEY I.R. 271 . TO STA. 378+02.24 BK. ℄ CONST., R/W & SURVEY I.R. 271 .	= 2302.24 LIN. FT.
	STA. 1378+28.42 AHD. ℄ CONST. S.B. LANES . TO STA. 1410+48.16 AHD. ℄ CONST. S.B. LANES .	= 3219.74 LIN. FT.
	STA. 451+19.82 ℄ CONST., R/W & SURVEY I.R. 271 . TO STA. 465+90.00 ℄ CONST., R/W & SURVEY I.R. 271 .	= 1470.18 LIN. FT.
NORTHBOUND INSIDE	STA. 2403+00.76 ℄ CONST. N.B. LANES . TO STA. 2408+20.76 ℄ CONST. N.B. LANES .	= 520.00 LIN. FT.
		TOTAL = 7512.16 LIN. FT.

≠ SEE DETAIL B

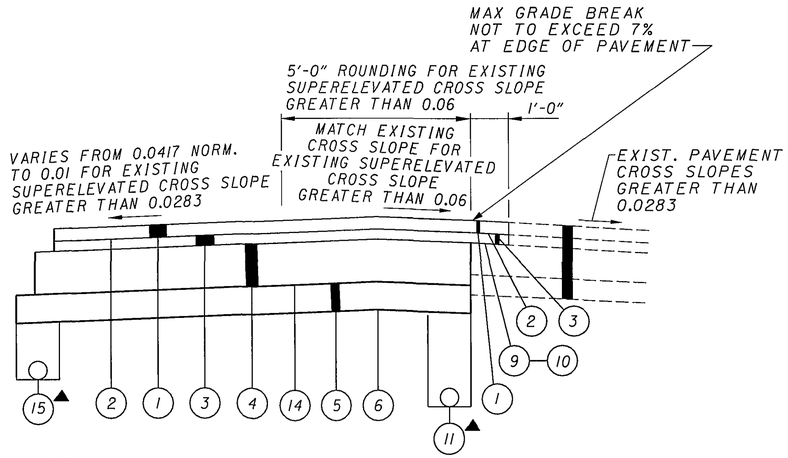
♦ RATE OF SUPERELEVATION IF GREATER ON LOW SIDE OF SUPERELEVATED SECTION

■ SHALLOW PIPE OR UNCLASSIFIED PIPE



DETAIL A

NEW SHOULDER REPLACEMENT/CONSTRUCTION
ADJACENT TO EXISTING PAVEMENT



DETAIL B - ON HIGHSIDE EXISTING SUPERELEVATED SECTIONS

NEW SHOULDER REPLACEMENT/CONSTRUCTION
ADJACENT TO EXISTING PAVEMENT

SEE SHEET 11 FOR PAVEMENT EDGE COURSE DETAILS

NOTES:

ITEM 618 SHOULDER RUMBLE STRIPS SHALL BE PROVIDED THROUGHOUT THE PROJECT LIMITS. SEE STANDARD CONSTRUCTION DRAWING BP-9.1 FOR DETAILS (CONSTRUCTED AFTER TRAFFIC IS PLACED IN THE FINAL LANE CONFIGURATION.)

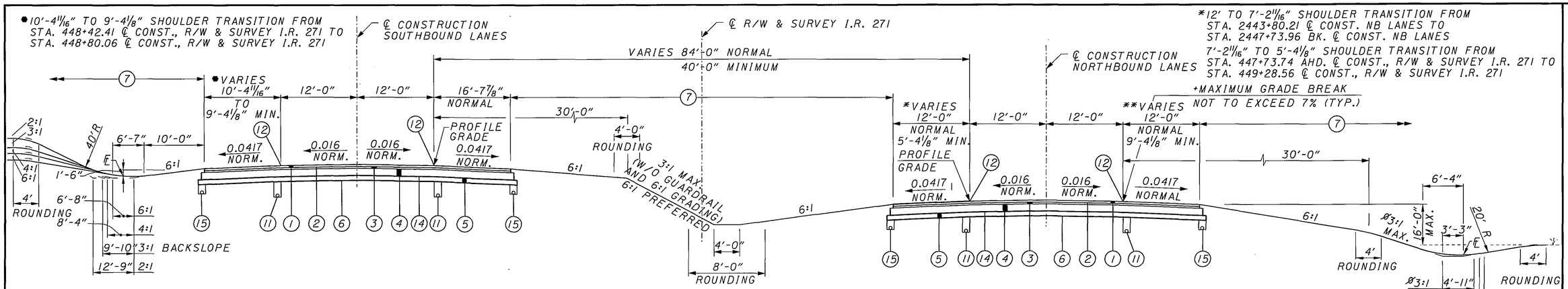
PROPOSED ITEM LEGEND

(1)	446	1 ½" ASPHALT CONCRETE SURFACE COURSE, TYPE 1H
(2)	407	TACK COAT FOR INTERMEDIATE COURSE (SEE GENERAL NOTE)
(3)	446	1 ¾" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-28
(4)	302	10" ASPHALT CONCRETE BASE, PG64-22
(5)	304	6" AGGREGATE BASE
(6)	204	SUBGRADE COMPACTION
(7)	659	SEEDING AND MULCHING (SEE GENERAL NOTE)
(8)	606	GUARDRAIL, TYPE 5 OR GUARDRAIL, TYPE 5, AS PER PLAN (SEE PLAN FOR LOCATIONS)
(9)	407	TACK COAT (SEE GENERAL NOTE)
(10)	254	PAVEMENT PLANING, ASPHALT CONCRETE, 3 ¼" AVERAGE THICKNESS
(11)	605	6" BY TYPE ■ PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41 (30" NORMAL DEPTH, SEE STANDARD EDGE COURSE DETAILS)
(12)		HOT LONGITUDINAL JOINT
(13)	526	REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN (SEE STRUCTURE PLANS)
(14)	408	PRIME COAT (APPLIED AT A RATE OF 0.40 GALLON/SQ. YARD)
(15)	605	4" BY TYPE ■ PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41 (18" NORMAL DEPTH, SEE STANDARD EDGE COURSE DETAILS)
(16)	609	ASPHALT CONCRETE CURB, TYPE 1
(17)	448	3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG. 64-22 AS PER PLAN (PAVING UNDER GUARDRAIL)
(18)	209	LINEAR GRADING, AS PER PLAN B

PROPOSED TYPICAL SECTIONS I.R. 271

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NORMAL TYPICAL SECTION

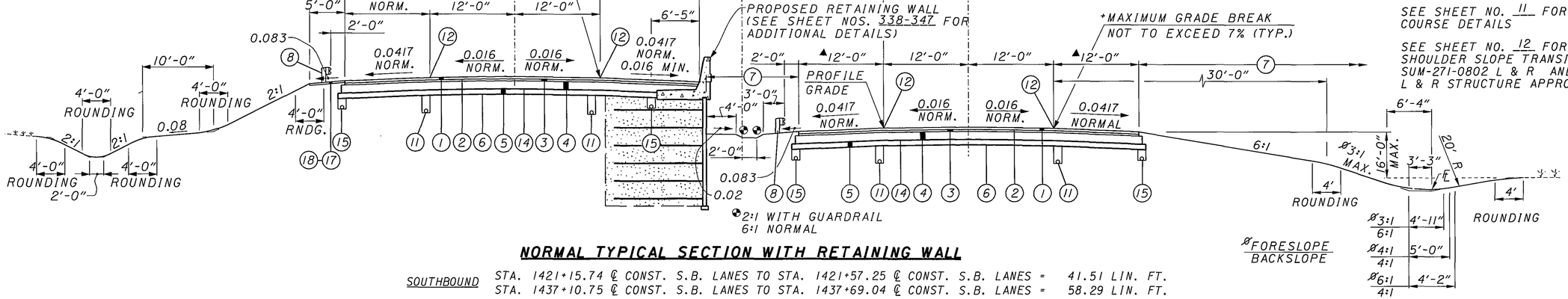
SOUTHBOUND STA. 448+42.41 AHD. ℄ CONST., R/W & SURVEY I.R. 271 TO STA. 448+80.06 ℄ CONST., R/W & SURVEY I.R. 271 = 37.65 LIN. FT.

NORTHBOUND STA. 2443+00.00 ℄ CONST. N.B. LANES TO STA. 2447+73.96 BK. ℄ CONST. N.B. LANES = 473.96 LIN. FT.
STA. 447+73.74 AHD. ℄ CONST., R/W & SURVEY I.R. 271 TO STA. 449+28.56 ℄ CONST., R/W & SURVEY I.R. 271 = 154.82 LIN. FT.
TOTAL = 666.43 LIN. FT.

**12' TO 9'-4 1/8" SHOULDER TRANSITION FROM STA. 447+73.74 AHD. ℄ CONST., R/W & SURVEY I.R. 271 TO STA. 449+28.56 ℄ CONST., R/W & SURVEY I.R. 271

+SEE SUPERELEVATION TABLE AND TYPICAL SECTION

♦RATE OF SUPERELEVATION IF GREATER ON LOW SIDE OF SUPERELEVATED SECTION



NORMAL TYPICAL SECTION WITH RETAINING WALL

SOUTHBOUND STA. 1421+15.74 ℄ CONST. S.B. LANES TO STA. 1421+57.25 ℄ CONST. S.B. LANES = 41.51 LIN. FT.
STA. 1437+10.75 ℄ CONST. S.B. LANES TO STA. 1437+69.04 ℄ CONST. S.B. LANES = 58.29 LIN. FT.

NORTHBOUND STA. 2414+59.33 ℄ CONST. N.B. LANES TO STA. 2421+37.25 ℄ CONST. N.B. LANES = 677.92 LIN. FT.
STA. 2436+47.75 ℄ CONST. N.B. LANES TO STA. 2443+00.00 ℄ CONST. N.B. LANES = 652.25 LIN. FT.
TOTAL = 1429.97 LIN. FT.

▲12' TO 14' SHOULDER TRANSITION FROM STA. 2420+87.25 ℄ CONST. NB LANES TO STA. 2421+37.25 ℄ CONST. NB LANES

SEE SHEET NO. 11 FOR PAVEMENT EDGE COURSE DETAILS

SEE SHEET NO. 12 FOR PAVEMENT AND SHOULDER SLOPE TRANSITION AT SUM-271-0802 L & R AND SUM-271-0854 L & R STRUCTURE APPROACH

NOTES:

ITEM 618 SHOULDER RUMBLE STRIPS SHALL BE PROVIDED THROUGHOUT THE PROJECT LIMITS. SEE STANDARD CONSTRUCTION DRAWING BP-9.1 FOR DETAILS (CONSTRUCTED AFTER TRAFFIC IS PLACED IN THE FINAL LANE CONFIGURATION.)

PROPOSED ITEM LEGEND

(1)	446	1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE 1H
(2)	407	TACK COAT FOR INTERMEDIATE COURSE (SEE GENERAL NOTE)
(3)	446	1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-28
(4)	302	10" ASPHALT CONCRETE BASE, PG64-22
(5)	304	6" AGGREGATE BASE
(6)	204	SUBGRADE COMPACTION
(7)	659	SEEDING AND MULCHING (SEE GENERAL NOTE)
(8)	606	GUARDRAIL, TYPE 5 OR GUARDRAIL TYPE 5, AS PER PLAN (SEE PLAN FOR LOCATIONS)
(9)	407	TACK COAT (SEE GENERAL NOTE)
(10)	254	PAVEMENT PLANING, ASPHALT CONCRETE, 3 1/4" AVERAGE THICKNESS
(11)	605	6" BY TYPE■ PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41 (30" NORMAL DEPTH, SEE STANDARD EDGE COURSE DETAILS)
(12)		HOT LONGITUDINAL JOINT
(13)	526	REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN (SEE STRUCTURE PLANS)
(14)	408	PRIME COAT (APPLIED AT A RATE OF 0.40 GALLON/SQ. YARD)
(15)	605	4" BY TYPE■ PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41 (18" NORMAL DEPTH, SEE STANDARD EDGE COURSE DETAILS)
(16)	609	ASPHALT CONCRETE CURB, TYPE 1
(17)	448	3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG. 64-22 AS PER PLAN (PAVING UNDER GUARDRAIL)
(18)	209	LINEAR GRADING, AS PER PLAN B

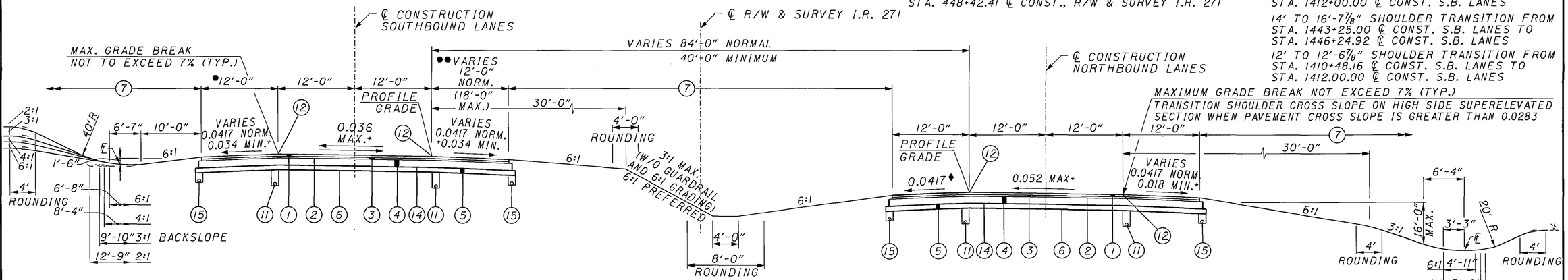
■SHALLOW PIPE OR UNCLASSIFIED PIPE

PROPOSED TYPICAL SECTIONS I.R. 271

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●12' TO 10'-4 1/16" SHOULDER TRANSITION FROM STA. 448+00.00 ℄ CONST., R/W & SURVEY I.R. 271 TO STA. 448+42.41 ℄ CONST., R/W & SURVEY I.R. 271

●●18' TO 16'-4" SHOULDER TRANSITION FROM STA. 1410+48.16 ℄ CONST. S.B. LANES TO STA. 1412+00.00 ℄ CONST. S.B. LANES

14' TO 16'-7 7/8" SHOULDER TRANSITION FROM STA. 1443+25.00 ℄ CONST. S.B. LANES TO STA. 1446+24.92 ℄ CONST. S.B. LANES

12' TO 12'-6 7/8" SHOULDER TRANSITION FROM STA. 1410+48.16 ℄ CONST. S.B. LANES TO STA. 1412.00.00 ℄ CONST. S.B. LANES

SUPERELEVATED TYPICAL SECTION

SOUTHBOUND	STA. 1410+48.16 ℄ CONST. S.B. LANES TO STA. 1412+00.00 ℄ CONST. S.B. LANES	= 151.84 LIN. FT.
	STA. 1443+00.00 ℄ CONST. S.B. LANES TO STA. 1447+94.92 BK. ℄ CONST. S.B. LANES	= 494.92 LIN. FT.
	STA. 447+94.41 AHD. ℄ CONST., R/W & SURVEY I.R. 271 TO STA. 448+42.41 ℄ CONST., R/W & SURVEY I.R. 271	= 48.00 LIN. FT.
NORTHBOUND	STA. 2408+20.76 ℄ CONST. N.B. LANES TO STA. 2412+00.00 ℄ CONST. N.B. LANES	= 379.24 LIN. FT.
		TOTAL = 1074.00 LIN. FT.

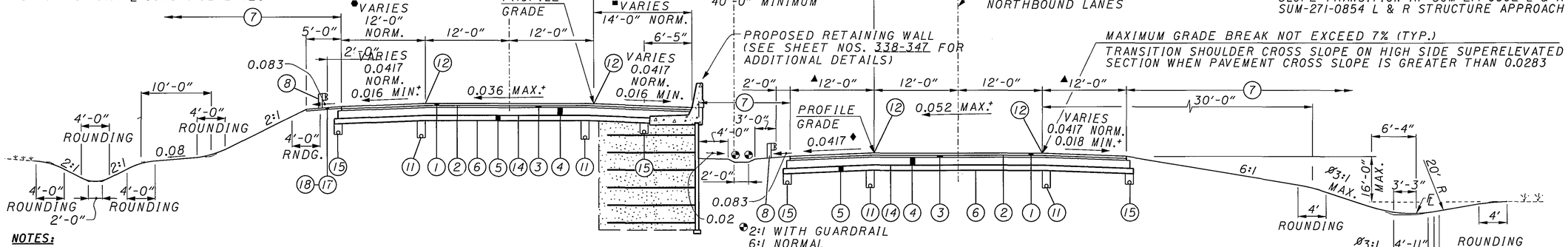
+SEE SUPERELEVATION TABLE AND TYPICAL SECTION

♦RATE OF SUPERELEVATION IF GREATER ON LOW SIDE OF SUPERELEVATED SECTION.

SEE SHEET NO. 12 FOR PAVEMENT AND SHOULDER SLOPE TRANSITION AT SUM-271-0802 L & R AND SUM-271-0854 L & R STRUCTURE APPROACH

■16'-4" TO 14' SHOULDER TRANSITION FROM STA. 1412+00.00 ℄ CONST. SB LANES TO STA. 1414+46.00 ℄ CONST. SB LANES

●12'-6 7/8" TO 14 SHOULDER TRANSITION FROM STA. 1412+00.00 ℄ CONST. SB LANES TO STA. 1415+79.61 ℄ CONST. SB LANES



NOTES:

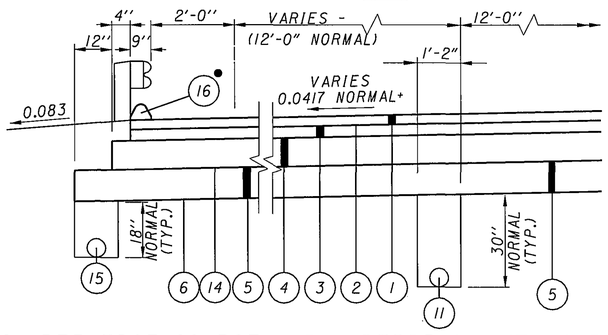
ITEM 618 SHOULDER RUMBLE STRIPS SHALL BE PROVIDED THROUGHOUT THE PROJECT LIMITS. SEE STANDARD CONSTRUCTION DRAWING BP-9.1 FOR DETAILS (CONSTRUCTED AFTER TRAFFIC IS PLACED IN THE FINAL LANE CONFIGURATION.)

SUPERELEVATED TYPICAL SECTION WITH RETAINING WALL

SOUTHBOUND	STA. 1412+00.00 ℄ CONST. S.B. LANES TO STA. 1421+15.74 ℄ CONST. S.B. LANES	= 915.74 LIN. FT.
	STA. 1437+69.04 ℄ CONST. S.B. LANES TO STA. 1443+00.00 ℄ CONST. S.B. LANES	= 530.96 LIN. FT.
NORTHBOUND	STA. 2412+00.00 ℄ CONST. N.B. LANES TO STA. 2414+59.33 ℄ CONST. N.B. LANES	= 259.33 LIN. FT.
		TOTAL = 1706.03 LIN. FT.

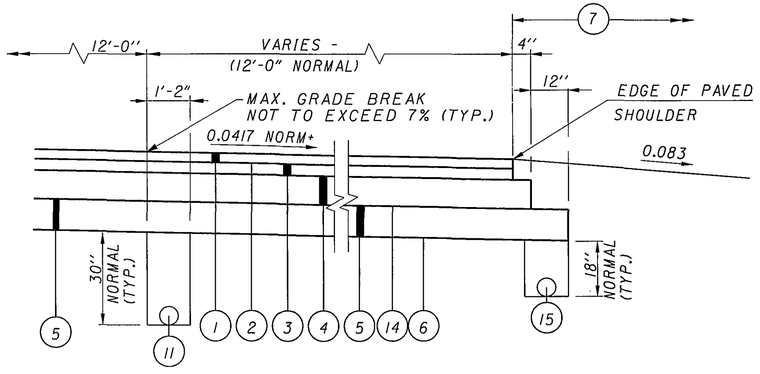
▲12' TO 14' SHOULDER TRANSITION FROM STA. 2420+87.25 ℄ CONST. NB LANES TO STA. 2421+37.25 ℄ CONST. NB LANES

●TRANSITION TYPE I ASPHALT CURB TO MATCH TYPE 6 CURB @ STA. 1421+43.25. SEE NORMAL SHOULDER EDGE COURSE DESIGN TO MATCH INTO AND SHEET 322.



SHOULDER EDGE COURSE AND UNDERDRAIN WITH CURB DETAIL

STA. 1415+79.61 ℄ CONST. S.B. LANES TO STA. 1421+43.25 ℄ CONST. S.B. LANES



NORMAL SHOULDER EDGE COURSE AND UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41 DETAIL

PROPOSED ITEM LEGEND

FOR PROPOSED ITEM LEGEND, SEE SHEET 10.

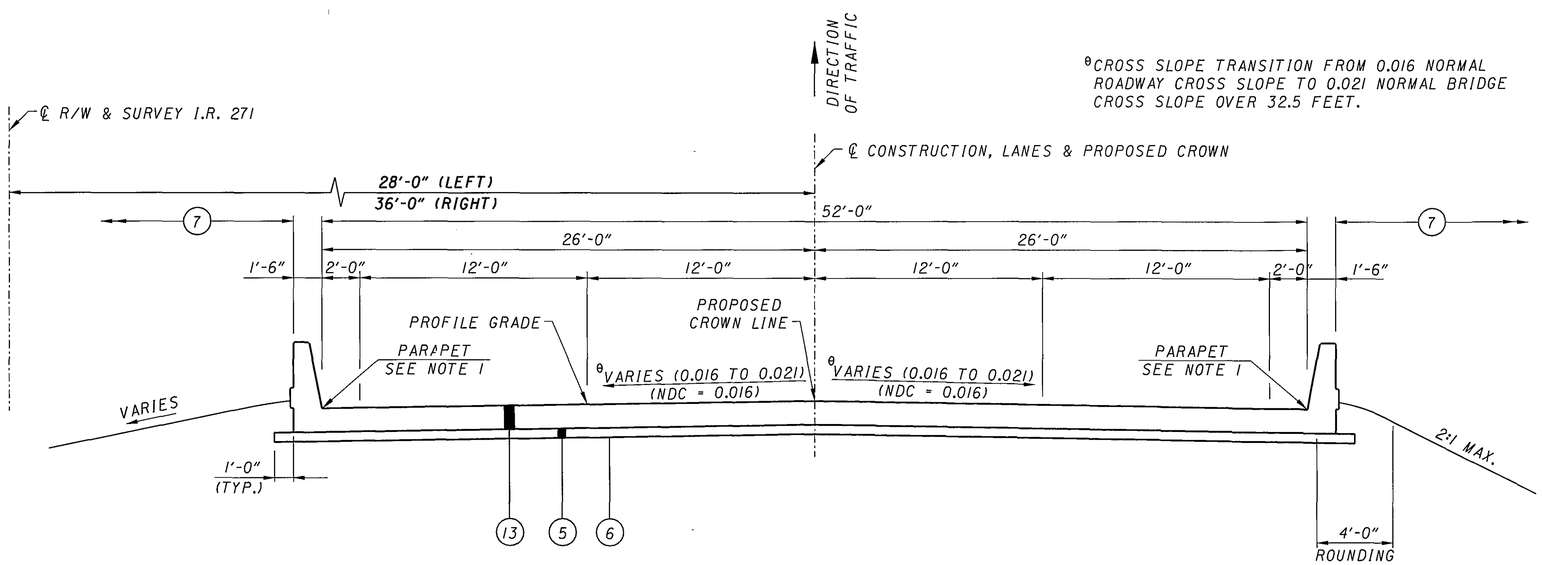
≠SEE DETAIL B SHEET 9.

PROPOSED TYPICAL SECTIONS I.R. 271

SUM-271-8.02

11
612

21450GYE.DGN 3/31/04 SAM,JLS,CAR,KH



θCROSS SLOPE TRANSITION FROM 0.016 NORMAL ROADWAY CROSS SLOPE TO 0.021 NORMAL BRIDGE CROSS SLOPE OVER 32.5 FEET.

APPROACH SLAB TYPICAL SECTION

SOUTHBOUND STA. 1421+57.25 ℄ CONST. S.B. LANES TO STA. 1421+82.25 ℄ CONST. S.B. LANES = 25.00 LIN. FT.
STA. 1436+85.75 ℄ CONST. S.B. LANES TO STA. 1437+10.75 ℄ CONST. S.B. LANES = 25.00 LIN. FT.

NORTHBOUND STA. 2421+37.25 ℄ CONST. N.B. LANES TO STA. 2421+62.25 ℄ CONST. N.B. LANES = 25.00 LIN. FT.
STA. 2436+22.75 ℄ CONST. N.B. LANES TO STA. 2436+47.75 ℄ CONST. N.B. LANES = 25.00 LIN. FT.

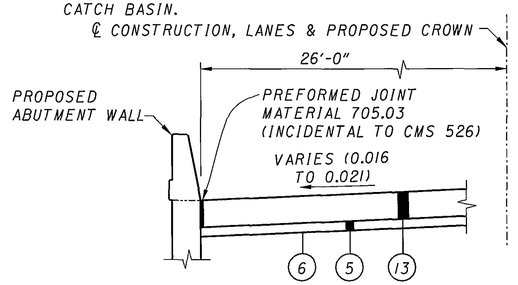
TOTAL = 100.00 LIN. FT.

NOTES:

1. TRANSITION SINGLE SLOPE DEFLECTOR PARAPET ACROSS THE LIMITS OF THE APPROACH SLAB. AT THE LOW PROFILE GRADE END OF THE STRUCTURE WHERE CATCH BASINS ARE REQUIRED (SEE PLAN AND PROFILE SHEETS), TRANSITION THE TYPE 6 CURB TO MATCH THE APPROACH SLAB PARAPET. SEE SHEET 430-431 (STEEL DESIGN), 552-553 (CONCRETE DESIGN) FOR ADDITIONAL DETAILS OF APPROACH SLAB.

2. TRANSITION PAVED AND GRADED SHOULDER CROSS SLOPES TO MEET CROSS SLOPE TRANSITION IN 90' ON HIGH END OF SUM-271-0802 L & R STRUCTURE (77' ON SUM-271-0854 L & R STRUCTURE). SEE DRAINAGE DETAIL SHEET NO. 322 FOR LOW PROFILE GRADE END OF STRUCTURE.

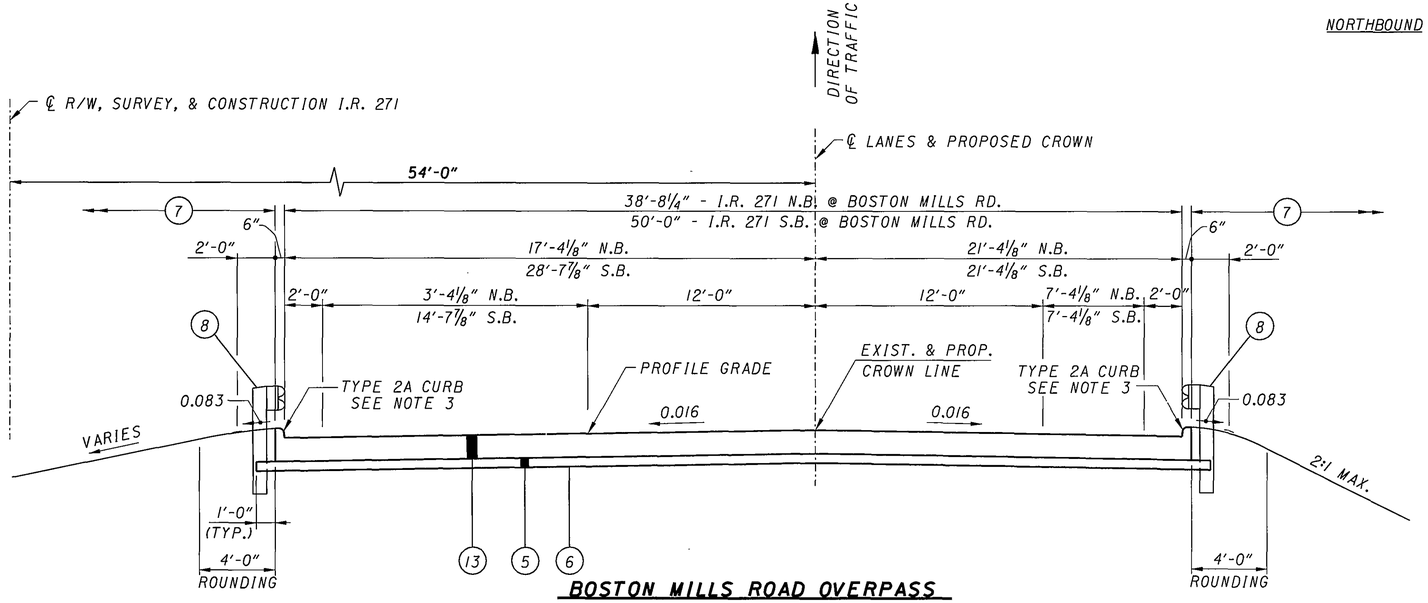
3. TRANSITION TYPE 2A CURB TO MATCH THE PARAPET ON THE BRIDGE ACROSS THE LIMITS OF THE APPROACH SLAB. AT THE LOW PROFILE GRADE END OF THE STRUCTURE WHERE CATCH BASINS ARE REQUIRED (SEE PLAN AND PROFILE SHEETS) TRANSITION THE TYPE 2A CURB TO MATCH PARAPET ON THE BRIDGE AND THE TYPE 6 CURB AT THE CATCH BASIN.



APPROACH SLAB WITH TURNED BACK WINGWALL SECTION DETAIL

SOUTHBOUND STA. 1421+57.25 ℄ CONST. S.B. LANES TO STA. 1421+82.25 ℄ CONST. S.B.LANES (INSIDE SHOULDER)
STA. 1436+85.75 ℄ CONST. S.B. LANES TO STA. 1437+10.75 ℄ CONST. S.B.LANES (INSIDE SHOULDER)

NORTHBOUND STA. 2421+37.25 ℄ CONST. N.B. LANES TO STA. 2421+62.25 ℄ CONST. N.B. LANES (OUTSIDE SHOULDER)



BOSTON MILLS ROAD OVERPASS APPROACH SLAB TYPICAL SECTION

SOUTHBOUND *STA. 448+80.06 ℄ CONST. I.R. 271 TO STA. 449+05.06 ℄ CONST. I.R. 271 = 25.00 LIN. FT.
*STA. 450+94.82 ℄ CONST. I.R. 271 TO STA. 451+19.82 ℄ CONST. I.R. 271 = 25.00 LIN. FT.

NORTHBOUND *STA. 449+28.56 ℄ CONST. I.R. 271 TO STA. 449+53.56 ℄ CONST. I.R. 271 = 25.00 LIN. FT.
*STA. 451+15.38 ℄ CONST. I.R. 271 TO STA. 451+40.38 ℄ CONST. I.R. 271 = 25.00 LIN. FT.

TOTAL = 100.00 LIN. FT.

* STATION LIMITS SHOWN FOR THE APPROACH SLABS ON THE TYPICAL SECTIONS ARE CALCULATED FROM THE CENTERLINE OF LANES TO THE CENTERLINE OF CONST., R/W & SURVEY I.R. 271 FOR A PERPENDICULAR DISTANCE OF 54'.

PROPOSED ITEM LEGEND

1	446	1 ½" ASPHALT CONCRETE SURFACE COURSE, TYPE 1H
2	407	TACK COAT FOR INTERMEDIATE COURSE (SEE GENERAL NOTE)
3	446	1 ¾" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-28
4	302	10" ASPHALT CONCRETE BASE, PG64-22
5	304	6" AGGREGATE BASE
6	204	SUBGRADE COMPACTION
7	659	SEEDING AND MULCHING (SEE GENERAL NOTE)
8	606	GUARDRAIL, TYPE 5 OR GUARDRAIL, TYPE 5, AS PER PLAN (SEE PLAN FOR LOCATIONS)
9	407	TACK COAT (SEE GENERAL NOTE)
10	254	PAVEMENT PLANING, ASPHALT CONCRETE, 3 ¼" AVERAGE THICKNESS
11	605	6" BY TYPE■ PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41 (30" NORMAL DEPTH, SEE STANDARD EDGE COURSE DETAILS)
12		HOT LONGITUDINAL JOINT
13	526	REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN (SEE STRUCTURE PLANS)
14	408	PRIME COAT (APPLIED AT A RATE OF 0.40 GALLON/SQ. YARD)
15	605	4" BY TYPE■ PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41 (18" NORMAL DEPTH SEE STANDARD EDGE COURSE DETAILS)
16	609	ASPHALT CONCRETE CURB, TYPE 1
17	448	3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG. 64-22 AS PER PLAN (PAVING UNDER GUARDRAIL)
18	209	LINEAR GRADING, AS PER PLAN B

■ SHALLOW PIPE OR UNCLASSIFIED PIPE

PROPOSED TYPICAL SECTION I.R. 271

SUM-271-8.02

21450GYF.DGN 3/31/04 JLS,KH

CALCULATED JL CHECKED PRS

GENERAL NOTES

SUM-271-8.02

OPTIONAL BID ITEMS:

THE ESTIMATED QUANTITIES INCLUDE SEVERAL PAY ITEMS LISTED AS OPTIONS FOR BRIDGE NO. SUM-271-0802 L&R AND THE MEDIAN RETAINING WALLS.

THE CONTRACTOR SHALL BID ONLY **ONE** OF THE OPTIONS FOR BRIDGE NO. SUM-271-0802 L&R, RELATED ROADWAY AND DRAINAGE WORK. THE OPTION SHALL BE EITHER THE **STEEL DESIGN** OR THE **CONCRETE DESIGN**.

THE CONTRACTOR SHALL BID ONLY **ONE** OF THE DESIGN OPTIONS FOR MEDIAN RETAINING WALLS NO. 1 AND 2. THE DESIGN OPTION SHALL BE EITHER:

A) REINFORCED EARTH WALL
THE REINFORCED EARTH COMPANY
1444 NORTH FARNSWORTH AVENUE, #505
AURORA, IL. 60505
PHONE: (630) 898-3334

B) RETAINED EARTH WALL
FOSTER GEOTECHNICAL, DIVISION
OF L.B. FOSTER COMPANY
1372 OLD BRIDGE ROAD, SUITE 101
WOODBRIDGE, VIRGINIA 22192
PHONE: (703) 499-9818

C) ARES RETAINING WALL
TENSAR EARTH TECHNOLOGIES, INC.
586 DEFENSE HIGHWAY
CROWNSVILLE, MARYLAND 21032
PHONE: (410) 573-9799

D) MSE PLUS RETAINING WALL
SSL, LLC
209 N. MAIN STREET, SUITE 200
MONTICELLO, IN 47960-2132
PHONE: (574) 583-2222
FAX: (574) 965-4132

ROUNDING

THE ROUNDING AT SLOPE BREAKPOINTS SHOWN ON THE TYPICAL SECTIONS APPLY TO ALL CROSS-SECTIONS EVEN THOUGH OTHERWISE SHOWN.

UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

ELECTRIC: OHIO EDISON
1910 WEST MARKET ST.
BLDG. 1.
AKRON, OH 44313
(330)-384-4714

GAS: DOMINION EAST OHIO GAS
100 WEST WILBETH RD.
AKRON, OH 44314
(330)-798-7104

TELEPHONE: ALLTEL
100 OWEN BROWN RD.
HUDSON, OH 44236
(330)-650-8429

QWEST COMMUNICATIONS
10645 WILLIAMS RD.
WEST SALEM, OH 44287-9207
(330)-948-1884

WORLDCOM
120 RAVINE STREET
AKRON, OHIO 44303
(330)-253-8267

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 O.R.C.

EXISTING PLANS

EXISTING PLANS ENTITLED SUM-271-2.98 [FED. PROJ. I-271-6(29)231], SUM-271-7.65 [FED. PROJ. I-271-6(20)236], SUM-271-8.29 [FED. PROJ. I-271-6(27)237], SUM-271-0.82 [FED. PROJ. I-271-6(65)229], SUM-271-10.51 [FED. PROJ. I-271-6(94)], SUM-271-7.18 [PID 21069] MAY BE INSPECTED IN THE ODOT DISTRICT FOUR OFFICE IN AKRON.

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED FOR SUCH ITEMS SHALL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

ELEVATION DATUM

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM.

CONSTRUCTION LIMITS

CONSTRUCTION LIMITS HAVE BEEN SHOWN ON THE PLANS AS A LINE LABELED C/L. THE CONSTRUCTION LIMITS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE INSTALLATION AND OPERATION OF ALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE CONSTRUCTION LIMITS.

CONVERSION OF STANDARD CONSTRUCTION DRAWINGS

THE METRIC STANDARD DRAWINGS REFERENCED IN THIS PLAN SHALL BE CONVERTED TO ENGLISH UNITS USING THE SI (METRIC) TO ENGLISH CONVERSION FACTORS PROVIDED IN SECTION 109.02 OF THE 2002 CONSTRUCTION AND MATERIALS SPECIFICATIONS. CONVERSIONS SHALL BE APPROPRIATELY PRECISE AND SHALL REFLECT STANDARD INDUSTRY ENGLISH VALUES WHERE SUITABLE.

ITEM 201 - CLEARING AND GRUBBING, AS PER PLAN

THERE ARE TREES OR STUMPS NOT SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT THAT WILL NEED TO BE REMOVED UNLESS SPECIFICALLY MARKED AS "DO NOT DISTURB". A LUMP SUM QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201, CLEARING AND GRUBBING AS PER PLAN.

THE TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS SHALL BE REMOVED UNDER THE LUMP SUM BID FOR ITEM 201, CLEARING AND GRUBBING, AS PER PLAN. THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED. SEE ADDITIONAL REQUIREMENTS ON SHEET 20.

SIZES	NUMBER OF TREES	NUMBER OF STUMPS	TOTAL
12"-24"	96	—	96
24"-36"	4	—	4
36"-60"	2	—	2
OVER 60"			

ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM AND INFORMATION LISTED ABOVE SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING, AS PER PLAN.

PAVING UNDER GUARDRAIL

THIS OPERATION SHALL INCLUDE PREPARATION OF THE GRADED SHOULDER USING 209, LINEAR GRADING, AS PER PLAN AND PAVING UNDER THE GUARDRAIL USING 448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG 64-22, UNDER GUARDRAIL, AS PER PLAN.

ITEM 209, LINEAR GRADING, AS PER PLAN SHALL CONSIST OF EXCAVATING TOPSOIL, PLACING GRANULAR MATERIAL AND APPLYING HERBICIDE AS SPECIFIED IN THE PLANS AND IN ACCORDANCE WITH THE FOLLOWING:

ALL COLLECTED DEBRIS AND TOPSOIL, INCLUDING RHIZOMES, ROOTS AND OTHER VEGETATIVE PLANT MATERIAL SHALL BE REMOVED AND DISPOSED OF AS SPECIFIED IN 105.17.

THE REMOVED MATERIAL SHALL BE REPLACED WITH COMPACTIBLE GRANULAR MATERIAL CONFORMING TO 703.16 PLACED TO GRADE AS DETAILED ON THE TYPICAL SECTION OR AS APPROVED BY THE ENGINEER.

HERBICIDE SHALL BE EPA APPROVED FOR PAVING UNDER GUARDRAIL. IT SHALL BE APPLIED TO THE PREPARED AREA AFTER FINAL LEVELING AND GRADING HAS BEEN COMPLETED. THE APPLICATION SHALL BE JUST PRIOR TO PAVING AND SHALL STRICTLY ADHERE TO THE MANUFACTURER'S INSTRUCTIONS.

EACH SUCCESSFUL BIDDER MUST BE LICENSED BY THE OHIO DEPARTMENT OF AGRICULTURE AS A COMMERCIAL APPLICATOR AND ALL PERSONS INVOLVED IN THE ACTUAL SPRAYING SHALL BE LICENSED AS COMMERCIAL OPERATORS IN THE APPROPRIATE SPRAY CATEGORY.

HERBICIDE LABEL, MATERIAL SAFETY DATA SHEET AND COPY OF APPLICATORS LICENSES SHALL BE SUBMITTED TO THE ENGINEER FOR VERIFICATION PRIOR TO COMMENCING WORK.

ALL EQUIPMENT, MATERIALS AND LABOR REQUIRED TO PERFORM THE WORK OUTLINED ABOVE SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 209, LINEAR GRADING, AS PER PLAN.

PAVING UNDER GUARDRAIL SHALL CONSIST OF PLACING ITEM 448 TO THE DEPTH SPECIFIED USING ONE OF THE FOLLOWING METHODS:

METHOD A:
1. SET GUARDRAIL POSTS
2. PLACE ITEM 448

METHOD B:
1. PLACE ITEM 448
2. BORE ASPHALT AT POST LOCATIONS (MAY BE OMITTED IF STEEL POSTS ARE USED)
3. SET GUARDRAIL POSTS
4. PATCH AROUND POSTS. THE MATERIALS USED FOR PATCHING SHALL BE AN ASPHALT CONCRETE APPROVED BY THE ENGINEER. PATCHED AREAS SHALL BE COMPACTED USING EITHER HAND OR MECHANICAL METHODS. FINISHED SURFACES SHALL BE SMOOTH AND SLOPED TO DRAIN AWAY FROM THE POSTS.

ALL EQUIPMENT, MATERIALS AND LABOR REQUIRED TO PERFORM THE WORK OUTLINED ABOVE, WITH THE EXCEPTION OF SETTING GUARDRAIL POSTS, SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 448, ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 1, PG 64-22, UNDER GUARDRAIL, AS PER PLAN.

ITEM 202 - PAVEMENT REMOVED

THE EXISTING CONCRETE PAVEMENT AREA FOR I.R. 271 SHALL BE REMOVED AND DISPOSED OF PER ITEM 202 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS. THE EXISTING TYPICAL SECTION SHOWS 24 FEET OF 10" REINFORCED CONCRETE PAVEMENT WITH AN AVERAGE OVERLAY OF 5¾" ASPHALT PAVEMENT. THE AVERAGE END AREA OF PAVEMENT REMOVED FOR THE NORMAL I.R. 271 TYPICAL SECTION WILL BE 24' x 15¾". AN AREA OF PAVEMENT REMOVED IS SHOWN ON THE CROSS SECTIONS AND ADJUSTMENTS FOR THE EARTHWORK USING AN AVERAGE PAVEMENT END AREA ARE REFLECTED IN THE CORRESPONDING EARTHWORK NUMBERS. THE EXCAVATION QUANTITIES INCLUDE EXISTING ASPHALT SHOULDER PAVEMENT REMOVAL.

BENCHING OF FOUNDATION SLOPES

ALTHOUGH CROSS-SECTIONS INDICATE SPECIFIC LOCATIONS FOR PROPOSED BENCHING OF THE FOUNDATIONS IN CERTAIN AREAS, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. ALL OTHER SLOPED EMBANKMENT AREAS SHALL BE BENCHED AS SET FORTH IN 203.05. NO ADDITIONAL PAYMENT WILL BE MADE FOR BENCHING REQUIRED UNDER THE PROVISIONS OF 203.05. DURING THE CONSTRUCTION OF THE BENCHES ALONG THE OUTSIDE SHOULDERS EXISTING STORM DRAIN CONDUITS MAY BE ENCOUNTERED WHICH WILL NEED TO BE REMOVED AND REPLACED AT THE COMPLETION OF THE EMBANKMENT. THE REMOVAL OF THE EXISTING CONDUITS SHALL BE PAID FOR UNDER ITEM 202 PIPE REMOVED, 24" AND UNDER. THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED AND CARRIED TO THE GENERAL SUMMARY TO BE USED TO REMOVE AND CONSTRUCT NEW CONNECTIONS TO THE EXISTING STORM DRAINS.

ITEM 202	PIPE REMOVED, 24" AND UNDER	300 FT.
ITEM 601	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	15 CU. YD.
ITEM 602	CONCRETE MASONRY	1 CU. YD.
ITEM 603	15" CONDUIT, TYPE F, 707.05, TYPE C	300 FT.

PROTECTION OF RIGHT-OF-WAY LANDSCAPING

THE CONTRACTOR SHALL CONSTRICT ALL OF HIS/HER ACTIVITIES, EQUIPMENT STORAGE, AND STAGING TO WITHIN THE CONSTRUCTION LIMITS. SHOULD THE CONTRACTOR WISH TO USE ANY AREA OUTSIDE THESE LIMITS, A REQUEST IN WRITING MUST BE SUBMITTED TO THE PROJECT ENGINEER. THE DOCUMENT SUBMITTED MUST CLEARLY IDENTIFY THE AREAS THAT THE CONTRACTOR PLANS TO USE AND EXPLAIN THE PROPOSED USE AND RESTORATION OF THE AREA. THE ENGINEER SHALL APPROVE THE REQUEST IN WRITING BEFORE THE CONTRACTOR HAS PERMISSION TO USE THE AREA. PRIOR TO BEGINNING WORK, THE CONTRACTOR, SUPERINTENDENT OR HIS REPRESENTATIVE, THE PROJECT ENGINEER, AND A REPRESENTATIVE OF THE MAINTAINING AGENCY SHALL REVIEW AND RECORD ALL LANDSCAPING ITEMS WITHIN THE RIGHT OF WAY (BOTH WITHIN AND OUTSIDE THE CONSTRUCTION LIMITS). A RECORD OF THIS REVIEW WILL BE KEPT IN THE PROJECT ENGINEER'S FILES. PRIOR TO FINAL ACCEPTANCE, A FINAL REVIEW OF LANDSCAPING ITEMS WILL BE MADE. ANY ITEMS DAMAGED BEYOND THE CONSTRUCTION LIMITS AS DEFINED ABOVE WILL BE REPLACED IN KIND OR AS DIRECTED BY THE PROJECT ENGINEER.

21450GN.DGN 3/29/04 SAM,CAR 1

CALCULATED JL CHECKED PRS

GENERAL NOTES

ADDITIONAL SOIL INFORMATION

THE SOIL PROFILE AND/OR STRUCTURE FOUNDATION INVESTIGATIONS SHEETS CONTAIN ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN. ADDITIONAL SUBSURFACE INVESTIGATION INFORMATION IS AVAILABLE FROM ODOT DISTRICT FOUR OFFICE IN AKRON.

ITEM 209 - DITCH CLEANOUT, AS PER PLAN

THIS WORK SHALL CONSIST OF REESTABLISHING THE CROSS SECTION ON AN EXISTING DITCH. SURPLUS OR UNSUITABLE MATERIAL, AS DETERMINED BY THE ENGINEER, SHALL BE DISPOSED OF. EMBANKMENT REQUIRED FOR ERODED CONDITIONS SHALL MEET THE REQUIREMENTS OF 203.02R EXCEPT THAT THE COMPACTION REQUIREMENTS ARE WAIVED. ALSO INCLUDED IN THIS ITEM SHALL BE ALL MATERIALS, LABOR AND INCIDENTALS NECESSARY TO SEED AND MULCH THE CLEANED OUT DITCH AS PER CMS ITEM 659 SEEDING AND MULCHING UNLESS OTHER PERMANENT EROSION CONTROL MEASURES HAVE BEEN PROVIDED IN THE PLANS. THE CONTRACTOR SHALL RESTORE, TO THE SATISFACTION OF THE ENGINEER, ANY DISTURBED AREAS CAUSED BY CONSTRUCTION OF THIS ITEM AT NO ADDITIONAL COST TO THE STATE.

MEASUREMENT OF THE DITCH CLEANOUT SHALL BE THE FEET MEASURED ALONG THE CENTERLINE OF THE DITCH.

PAYMENT FOR ALL THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 209, DITCH CLEANOUT, AS PER PLAN. IN ADDITION TO THE ESTIMATED QUANTITIES IN THE DRAINAGE SUBSUMMARY, THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER.

209 DITCH CLEANOUT, AS PER PLAN 500 FT.

ITEM 209 - LINEAR GRADING

GRADED SHOULDERS ALONG THE SIDE ROADS SHALL BE RESHAPED AS SHOWN ON THE PROPOSED TYPICAL SIDE ROAD SECTIONS. EXCESS EXCAVATION RESULTING FROM RESHAPING SHOULDERS SHALL BE DISPOSED OF AS DIRECTED BY THE ENGINEER. AREAS WHERE EMBANKMENT IS TO BE PLACED SHALL BE SCALPED. THE COMPACTION OF EMBANKMENT SHALL BE AS DIRECTED BY THE ENGINEER. ALL THE ABOVE SHALL BE INCLUDED FOR PAYMENT IN ITEM 209, LINEAR GRADING. ALL DISTURBED AREAS SHALL BE SEEDED AS PER 659.

STORM WATER POLLUTION PREVENTION PLAN

THE CONDITIONS OF THE NPDES CONSTRUCTION STORM WATER GENERAL PERMIT (SEE PROPOSAL) SHALL BE MET DURING ALL STAGES OF CONSTRUCTION. THE LOCATION AND TIMING OF ALL EROSION AND SEDIMENT CONTROL ITEMS SHALL BE FIELD ADJUSTED TO PREVENT SIGNIFICANT IMPACTS ON RECEIVING WATERS. IMPLEMENTATION OF THIS STORM WATER POLLUTION PREVENTION PLAN SHALL CONTINUE THROUGHOUT THE DURATION OF THE PROJECT OR UNTIL SUCH TIME THAT THE UPSLOPE DISTURBED AREAS ARE STABILIZED.

INSTALLATION OF SEDIMENT BASINS/DAMS, PERIMETER FILTER FABRIC FENCE, AND DITCH CHECKS SHALL BE AS PER CONSTRUCTION AND MATERIAL SPECIFICATION 832.08.

ALL REASONABLE ATTEMPTS SHOULD BE MADE TO MINIMIZE THE TOTAL AREA OF DISTURBED LAND.

AREAS TO REMAIN DORMANT FOR MORE THAN 45 DAYS SHOULD BE IMMEDIATELY STABILIZED WITH CONSTRUCTION SEEDING AND MULCHING, EROSION CONTROL MATTING OR OTHER APPROPRIATE EROSION CONTROL MEASURES

EROSION CONTROL

ITEMS 601, 660, 670 AND 659 ARE PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE ANY OF THESE ITEMS AND TURF OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE ITEMS 670 AND 659. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES OF THESE ITEMS WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION.

CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL

WHEN IT IS NECESSARY TO SPLICE PROPOSED GUARDRAIL TO EXISTING GUARDRAIL, ONLY THE EXISTING GUARDRAIL SHALL BE CUT, DRILLED, OR PUNCHED. THE CONNECTION SHALL BE MADE USING A "W-BEAM RAIL SPLICE" AS SHOWN IN AASHTO M 180. PAYMENT SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE RESPECTIVE GUARDRAIL ITEMS.

ITEM 606 - GUARDRAIL, TYPE 5, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CMS 606, THIS ITEM SHALL ALSO INCLUDE THE USE OF 9 FOOT GUARDRAIL POST UTILIZING STEEL BEAM POST AS SHOWN ON STANDARD CONSTRUCTION DRAWING GR-1.1 AND GR-2.1. ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS TO CONSTRUCT THIS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 606 - GUARDRAIL, TYPE 5, AS PER PLAN.

ITEM 606 - ANCHOR ASSEMBLY, TYPE B-98

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING EITHER OF THE FOLLOWING GUARDRAIL END TERMINALS.

1. THE SRT-350, GUARDRAIL END TERMINAL AS MANUFACTURED BY TRINITY INDUSTRY, 1170 N. STATE STREET, GIRARD, OHIO 44420 (TELEPHONE: 330-545-4373).

   THE LENGTH OF THE SRT-350 SYSTEM IS CONSIDERED TO BE 37'-6'', INCLUSIVE OF THREE 12'-6'' LONG RAIL ELEMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AS DETAILED ON THE FOLLOWING PRE-APPROVED SHOP DRAWINGS:

DWG. #	DRAWING NAME	DWG./REV. DATE	ODOT APPROVAL DATE
SS444 SS444M	SLOTTED RAIL TERMINAL POST LAYOUT AND ERECTION DETAILS SRT-350 (12.5, 8 POST)	7/12/99 7/12/99	8/27/99
SS425M	SLOTTED RAIL TERMINAL SRT-350 POST LAYOUT AND ERECTION DETAILS (12.5, 9 POST)	6/21/97	3/6/98

2. THE FLEAT-350 MANUFACTURED BY ROAD SYSTEMS, INC., 2516 MALLORY LANE, STOW, OHIO, 44224, (TELEPHONE: 330-346-0721).

   THE LENGTH OF THE FLEAT-350 IS CONSIDERED TO BE 37'-6'', INCLUSIVE OF THREE 12'-6'' LONG RAIL ELEMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AS DETAILED ON THE FOLLOWING PRE-APPROVED SHOP DRAWINGS:

DWG. #	DRAWING NAME	DWG./REV. DATE	ODOT APPROVAL DATE
FLT-M	FLARED ENERGY ABSORBING TERMINAL (FLEAT-350) ASSEMBLY	4/16/98	7/31/98

   REFER TO THE MANUFACTURER'S INSTRUCTION REGARDING THE INSTALLATION OF, AND THE GRADING AROUND, THE FOUNDATION TUBES AND GROUND STRUT. THE TOP OF ANY FOUNDATION TUBE SHOULD BE LESS THAN 4-INCHES ABOVE THE GROUND. THE PLACEMENT OF THE FOUNDATION TUBES SHOULD BE AN APPROPRIATE DEPTH BELOW THE LEVEL LINE IN ORDER TO MAINTAIN THE FINISHED GUARDRAIL HEIGHT OF 27-3/4-INCHES FROM THE EDGE OF THE SHOULDER.

   ON-SITE GRADING IS REQUIRED IF THE TOP OF THE FOUNDATION TUBES OR TOP OF THE GROUND STRUT DOES PROJECT MORE THAN 4 INCHES ABOVE THE GROUND LINE.

   THE FACE OF THE TYPE B-98 IMPACT HEAD SHALL BE COVERED WITH TYPE G REFLECTIVE SHEETING, PER CMS 730.19: APPROXIMATELY 36" W x 12" H FOR THE SRT-350 AND 14" W x 20" H FOR THE FLEAT.

   PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, ANCHOR ASSEMBLY, TYPE B-98, EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING REFLECTIVE SHEETING AND ALL RELATED HARDWARE, GRADING, EMBANKMENT AND EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

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CALCULATED JL CHECKED PRS

GENERAL NOTES

ITEM 605 - 6" CONSTRUCTION UNDERDRAINS

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING 6" CONSTRUCTION UNDERDRAINS. DURING THE PROCESS OF EXCAVATION, THE ROADWAY AREA SHALL BE MAINTAINED IN SUCH CONDITION THAT IT WILL BE WELL DRAINED AT ALL TIMES. PER CMS 203.04(a). HOWEVER; THE DEEPENING OF SIDE DITCHES TO PROVIDE FREE OUTLETS FOR WATER IS NOT ALLOWED.

WHEN RELIEF TRENCHES OR OTHER DRAINAGE METHODS CANNOT BE CONSTRUCTED TO PROVIDE POSITIVE DRAINAGE OF THE ROADWAY AREA, 6" CONSTRUCTION UNDERDRAINS ARE TO BE USED. THE CONTRACTOR SHALL ESTABLISH LINE AND GRADE FOR 4" CONSTRUCTION UNDERDRAINS, AS NECESSARY, TO PROVIDE FREE OUTLETS FOR WATER TO INSURE THE THOROUGH DRAINAGE OF THE SUBGRADE AT ALL TIMES. THIS WORK SHALL BE PERFORMED PER CMS 605, EXCEPT THAT FILTER FABRIC WILL NOT BE REQUIRED.

THE QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY TO BE UTILIZED AS DIRECTED BY THE ENGINEER DURING CONSTRUCTION.

ITEM 605 - 6" CONSTRUCTION UNDERDRAINS 2000 FT.

ITEM 606 - ANCHOR ASSEMBLY, TYPE E-98

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING EITHER OF THE FOLLOWING GUARDRAIL END TERMINALS.

1. THE ET-2000 (1997) MANUFACTURED BY TRINITY INDUSTRY, 1170 N. STATE STREET, GIRARD, OHIO 44420 (TELEPHONE: 330-545-4373).

   THE LENGTH OF THE ET-2000 (1997) SYSTEM IS CONSIDERED TO BE 50'-0", INCLUSIVE OF TWO 25'-0" LONG RAIL ELEMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AS DETAILED ON THE FOLLOWING PRE-APPROVED SHOP DRAWINGS:

DWG. #	DRAWING NAME	DWG./REV. DATE	ODOT APPROVAL DATE
SS265M	ET-2000 (1997) PLAN, ELEVATION & SECTIONS	6/20/97	3/6/98
SS142	ET2000 PLUS 50'-0" PLAN, ELEVATION AND SECTION 25'-0" RAIL, SLEEVE W/PL POSTS 1-4	4/12/00	7/31/00
SS141	ET2000 PLUS PLAN, ELEVATION AND SECTION 25'-0" RAIL, HBA POSTS 1-4	4/29/00	7/31/00
SS158	ET2000 PLUS 50'-0" WITH 12'-6" PANELS AND HBA POSTS 1-4 PLAN, ELEVATION AND SECTION	5/22/00	7/31/00

2. THE SKT-350 MANUFACTURED BY ROAD SYSTEMS, INC., 2516 MALLORY LANE, STOW, OHIO, 44224, (TELEPHONE: 330-346-0721).

   THE LENGTH OF THE SKT-350 SYSTEM IS CONSIDERED TO BE 50'-0", INCLUSIVE OF FOUR 12'-6" LONG RAIL ELEMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AS DETAILED ON THE FOLLOWING PRE-APPROVED SHOP DRAWINGS:

DWG. #	DRAWING NAME	DWG./REV. DATE	ODOT APPROVAL DATE
SKT-4M	SEQUENTIAL KINKING TERMINAL (SKT-350) ASSEMBLY WITH 4 FOUNDATION TUBES	12/11/97	3/6/98

THE FACE OF THE TYPE E-98 IMPACT HEAD SHALL BE COVERED WITH A SHEET OF TYPE G REFLECTIVE SHEETING, PER CMS 730.19, APPROXIMATELY 18" x 18".

REFER TO THE MANUFACTURER'S INSTRUCTION REGARDING THE INSTALLATION OF, AND THE GRADING AROUND, THE FOUNDATION TUBES AND GROUND STRUT. THE TOP OF ANY FOUNDATION TUBE SHOULD BE LESS THAN 4-INCHES ABOVE THE GROUND. THE PLACEMENT OF THE FOUNDATION TUBES SHOULD BE AN APPROPRIATE DEPTH BELOW THE LEVEL LINE IN ORDER TO MAINTAIN THE FINISHED GUARDRAIL HEIGHT OF 27-3/4-INCHES FROM THE EDGE OF THE SHOULDER.

ON-SITE GRADING IS REQUIRED IF THE TOP OF THE FOUNDATION TUBES OR TOP OF THE GROUND STRUT DOES PROJECT MORE THAN 4-INCHES ABOVE THE GROUND LINE.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, ANCHOR ASSEMBLY, TYPE E-98, EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL RELATED TRANSITIONS, REFLECTIVE SHEETING, HARDWARE, GRADING, EMBANKMENT AND EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

A TYPE C DELINEATOR SHOULD BE INSTALLED ON A FLEXIBLE POST AT THE HEAD OF ALL TYPE E-98 UNITS LOCATED ON THE RIGHT SIDE OF THE THROUGH ROADWAY. A TYPE D DELINEATOR SHOULD BE INSTALLED ON A FLEXIBLE POST AT THE HEAD OF ALL TYPE E-98 UNITS LOCATED ON THE LEFT SIDE OF THE THROUGH ROADWAY. DELINEATORS SHALL BE ITEMIZED SEPARATELY AND SHALL COMPLY WITH STANDARD CONSTRUCTION DRAWING TC-61.10 AND CMS 620.

ITEM 606 - GUARDRAIL, TYPE 5

UNDERDRAIN OUTLETS SHALL BE LOCATED ALONG EACH GUARDRAIL RUN BEFORE THE FIRST POST IS SET. POSTS LOCATED OVER AN UNDERDRAIN OUTLET SHALL NOT BE DRIVEN, BUT SHALL BE SET IN DRILLED OR DUG HOLES. POSTS LOCATED WHERE THE AVAILABLE POST EMBEDMENT DEPTH IS LESS THAN 3'-5" AND GREATER THAN 2'-6" SHALL BE ENCASED WITH 4" (MIN.) OF CONCRETE. SEE SCD GR-1.1 AND GR-2.1 FOR ADDITIONAL DETAILS.

ITEM SPECIAL - GEOGRID

A. DESCRIPTION:

THE WORK SHALL CONSIST OF FURNISHING AND INSTALLING A STRUCTURAL GEOGRID FOR SUBGRADE STABILITY IN ACCORDANCE WITH THE LOCATIONS AND DIMENSIONS SHOWN ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

MATERIAL: THE GEOGRID FURNISHED SHALL HAVE THE FOLLOWING PROPERTIES:

PROPERTY	VALUE	PROPERTY
MATERIAL POLYPROPYLENE	98% (MIN.)	ASTMD4101 GROUP 1-CLASS 1-GRADE 2
CARBON BLACK	0.5% (MIN.)	ASTMD4218
FORMAT	SINGLE-LAYER BI-ORIENTED	
APERTURE SIZE	1" X 1.3" (NOMINAL)	
FLEXURAL RIGIDITY	750,000 mg-cm (MIN.)	ASTMD1388-64
TENSILE MODULUS	18,500 LB./FT. (MIN.)	GRI GG1-87
JUNCTIONS STRENGTH	1080 LB./FT. (MIN.)	GRI GG2-87
EFFICIENCY	90% (MIN.)	GRI GG2-87
SECANT APERTURE STABILITY MODULUS @ 20 cm-kg	6.50 cm-kg/DEG °F	GRID APERTURE TEST, UNIVERSITY OF ALASKA, FAIRBANKS

C. CERTIFICATION:

ALL STRUCTURAL GEOGRID PRODUCTS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER PRIOR TO INSTALLATION. MANUFACTURER'S CERTIFICATION SHALL BE REQUIRED.

D. INSTALLATION AND STORAGE:

PLACEMENT SHALL BE AS PER THE RECOMMENDATIONS OF THE MANUFACTURER AND IN ACCORDANCE WITH THE PLANS AND SPECIAL PROVISIONS. STORAGE OF THE MATERIAL ON THE PROJECT SITE SHALL BE AS PER THE RECOMMENDATIONS OF THE MANUFACTURER, OR AS APPROVED BY THE ENGINEER.

E. METHOD OF MEASUREMENT:

THE AREA UNDER THIS ITEM SHALL BE THE ACTUAL NUMBER OF SQUARE YARDS COMPLETE AND ACCEPTED IN PLACE. THE UNIT PRICE BID SHALL INCLUDE ALL LABOR AND MATERIALS INCLUDING INCIDENTALS REQUIRED TO MAKE THIS ITEM COMPLETE.

F. BASIS OF PAYMENT:

ITEM	UNIT	DESCRIPTION
SPECIAL	SQ. YD.	GEOGRID

SPRINGS DRAINS

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR DRAINING ANY SPRINGS SHOWN IN THE PLAN OR ENCOUNTERED DURING CONSTRUCTION. THE FOLLOWING TYPES OF PIPES MAY BE USED: 707.33, 707.41, 707.42 OR 707.45 PERFORATED PER 707.31.

SPRING DRAINS SHALL BE CONSTRUCTED AS SHOWN ON STANDARD CONSTRUCTION DRAWING DM-1.1 AND PAID FOR AT THE CONTRACT PRICE FOR:

605, 6" UNCLASSIFIED PIPE UNDERDRAIN FOR SPRINGS 1000 FT.

605, AGGREGATE DRAIN FOR SPRINGS 200 FT.

CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 603 CONDUIT ITEM.

CALCULATED JL CHECKED PRS

GENERAL NOTES

EXISTING / PROPOSED PIPE CONNECTIONS

THE CONTRACTOR SHALL HAVE THE OPTION OF USING A COUPLING BAND TO JOIN EXISTING CORRUGATED METAL PIPE WITH A PROPOSED SECTION OF CORRUGATED METAL PIPE OR PLACING A CONCRETE COLLAR AS PER STANDARD CONSTRUCTION DRAWING DM-1.1. ALL OTHER PIPE CONNECTIONS SHALL HAVE A CONCRETE COLLAR AS PER STANDARD CONSTRUCTION DRAWING DM-1.1 PLACED AT THE JOINING OF EXISTING AND PROPOSED SECTIONS OF PIPE.

ANY EXPOSED METAL FROM THE PIPE CONNECTIONS OF A CORRUGATED METAL PIPE SHALL BE GALVANIZED COATED AS PER CMS SPECIFICATION 711.02 AND INCLUDED IN THE COST OF ITEM 603.

FARM DRAINS

ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS, WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF ROADWAY DITCHES, SHALL BE OUTLETTED INTO THE ROADWAY DITCH BY 603 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE 12" ABOVE THE FLOWLINE ELEVATION OF THE DITCH.

THE LOCATION, TYPE, SIZE AND GRADE OF REPLACEMENTS SHALL BE DETERMINED BY THE ENGINEER AND PAYMENT SHALL BE MADE ON FINAL MEASUREMENTS.

EROSION CONTROL PADS AND ANIMAL GUARDS SHALL BE PROVIDED AT THE OUTLET END OF ALL FARM DRAINS AS PER STANDARD CONSTRUCTION DRAWING DM-1.1, EXCEPT WHEN THEY OUTLET INTO A DRAINAGE STRUCTURE. PAYMENT FOR THE EROSION CONTROL PADS AND ANIMAL GUARDS AND ANY NECESSARY BENDS OR BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEMS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

603, 8" CONDUIT, TYPE F	200	FT.
601 ROCK CHANNEL PROTECTION TYPE C WITH FILTER	20	CU. YD.

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE AND THE CONTRACTOR, ALONG WITH LOCAL REPRESENTATIVES, SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCES SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION SHALL BE KEPT IN WRITING BY THE STATE. ALL NEW CONDUITS, INLETS, CATCH BASINS, AND MANHOLES CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE STATE.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 603 CONDUIT ITEMS.

ITEM SPECIAL - PIPE CLEANOUT

THIS WORK SHALL CONSIST OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING DRAINAGE CONDUITS SPECIFIED IN THE PLANS. ALL MATERIALS REMOVED SHALL BE DISPOSED OF AS PER 105.16 OR 105.17. ALL PIPES SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER.

CLEANOUT OF THE PIPE SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM SPECIAL-PIPE CLEANOUT. THIS PRICE SHALL INCLUDE THE COST FOR MATERIAL, EQUIPMENT, LABOR, AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CLEANOUT.

IN ADDITION TO THE ESTIMATED QUANTITIES IN THE DRAINAGE SUBSUMMARY THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER.

SPECIAL, PIPE CLEANOUT	200	FT.

EXISTING UNDERDRAINS

APPROXIMATE LOCATIONS OF EXISTING UNDERDRAINS HAVE BEEN SHOWN ON THE PLAN SHEETS. ALL EXISTING UNDERDRAINS NOT REMOVED DURING PROPOSED CONSTRUCTION SHALL BE PROVIDED WITH A POSITIVE OUTLET. ALL MATERIALS, LABOR AND INCIDENTALS NECESSARY TO PROVIDE AN OUTLET FOR THE EXISTING UNDERDRAIN SHALL BE INCLUDED IN ITEM 605, 6'' CONDUIT, TYPE F, 707.33 OR 707.41, TO THE SATISFACTION OF THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY TO BE USED FOR OUTLETTING OF THE EXISTING UNDERDRAINS.

603 6" CONDUIT, TYPE F, 707.33 OR 707.41	500	FT.

ADDITIONALLY THE FOLLOWING BENDS AND BRANCHES INCIDENTAL TO ITEM 603 HAVE BEEN ANTICIPATED FOR USE IN CONNECTING THE EXISTING UNDERDRAINS.

6" x 6" x 6" TEE	10	EACH
6" x 6" x 6" WYE	10	EACH

PART-WIDTH CONSTRUCTION

BECAUSE OF THE NECESSITY TO BUILD PORTIONS OF THIS PROJECT UNDER TRAFFIC AND TO CONSTRUCT THE FULL PAVEMENT WIDTH IN STAGES, EXTREME CARE SHALL BE TAKEN TO PREVENT THE CONSTRUCTION OF A BUTT JOINT IN THE BASE COURSES. LONGITUDINAL JOINTS SHALL BE LAPPED AS SHOWN ON STANDARD CONSTRUCTION DRAWING BP-3.1, AND AS SHOWN ON THE MAINTENANCE OF TRAFFIC TYPICAL SECTIONS.

ITEM 604 - CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CMS 604 THE OLD CONCRETE APRON SHALL BE REMOVED AND A NEW CONCRETE APRON SHALL BE CONSTRUCTED AS PER THE CATCH BASIN STANDARD CONSTRUCTION DRAWING. ALL LABOR, MATERIALS AND INCIDENTALS TO CONSTRUCT THIS ITEM SHALL BE INCLUDED WITH THIS IN THE UNIT PRICE BID FOR ITEM 604 - CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN.

ITEM 407, TACK COAT AND ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE

THE RATE OF APPLICATION OF THE 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. FOR ESTIMATING PURPOSES ONLY, THE PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF:

407, TACK COAT	0.075	GAL. PER SQ. YD.
407, TACK COAT FOR INTERMEDIATE COURSE	0.04	GAL. PER SQ. YD.

ITEM 601 - RIPRAP USING 6" REINFORCED CONCRETE SLAB, AS PER PLAN

THE RIPRAP SHALL BE CONSTRUCTED AS DETAILED ON SHEET 319 . INCLUDED IN THE COST OF THE 601 - RIPRAP USING 6" REINFORCED CONCRETE SLAB, AS PER PLAN SHALL BE ALL LABOR, MATERIALS, AND INCIDENTALS NECESSARY TO CONSTRUCT THIS ITEM AS SHOWN ON THE DETAIL AND AS PER CMS 601.

RELATIONSHIP BAR CHART SCHEDULE

THE RELATIONSHIP BAR CHART SCHEDULE SHALL BE COMPUTER GENERATED ONLY. HAND DRAWN SCHEDULES ARE NOT ACCEPTABLE. SEE THE PROPOSAL NOTE FOR ADDITIONAL REQUIREMENTS.

ITEM 202 - PIPE REMOVED, 24" AND UNDER, AS PER PLAN

IN ADDITION TO CMS 202, ALSO INCLUDED WITH THIS ITEM SHALL BE THE REMOVAL OF PORTIONS OF THE CONDUIT BORED AND JACKED TO PROVIDE AN OUTLET DURING PHASE I CONSTRUCTION. ALL LABOR MATERIALS AND INCIDENTALS TO REMOVE THIS PIPE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM.

ITEM 603 - 15", 18", 54" CONDUIT, TYPE B OR C, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CMS 603 THE CONDUIT MATERIAL UTILIZED FOR THE STORM SEWERS AT THE SLOPE REPAIR ONLY (STA. 418+00 LT. TO STA. 423+00 LT.) SHALL COMPLY WITH ODOT CMS **707.01, ALUMINIZED** WITH A MINIMUM WALL THICKNESS OF 0.138". ANTI-SEEP CONCRETE COLLARS (MINIMUM 2 PER PIPE LENGTH) AS DETAILED ON SHEET 309-314 SHALL BE PROVIDED FOR THE CONDUITS. ALL LABOR, MATERIAL, AND INCIDENTALS NECESSARY TO CONSTRUCT THESE ITEMS SHALL BE INCLUDED IN ITEM 603 - 15" CONDUIT, TYPE B, AS PER PLAN, ITEM 603 - 15" CONDUIT, TYPE C, AS PER PLAN, ITEM 603 - 18" CONDUIT, TYPE C, AS PER PLAN, OR ITEM 603 - 54" CONDUIT, TYPE C, AS PER PLAN.

ITEM 604 - CATCH BASIN NO. 5A, AS PER PLAN

IN ADDITION TO THE REQUIREMENT OF CMS 604, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE HORIZONTAL AND VERTICAL REINFORCEMENT AS DELINEATED IN STANDARD CONSTRUCTION DRAWING CB-3.4 ALONG WITH STRUCTURAL BACKFILL TO GRADE ACCORDING TO CMS 603.08 FOR TYPE A OR B CONDUIT. ALL LABOR, MATERIALS, AND INCIDENTALS NECESSARY TO CONSTRUCT THIS ITEM SHALL BE INCLUDED IN ITEM 604, CATCH BASIN NO. 5A, AS PER PLAN.

ITEM 604 - MANHOLE, NO. 3, AS PER PLAN

IN ADDITION TO THE REQUIREMENT OF ITEM 604, THE CONTRACTOR SHALL BE REQUIRED TO BACKFILL TO GRADE THE PROPOSED MANHOLE WITH STRUCTURAL BACKFILL ACCORDING TO CMS 603.08 FOR TYPE A OR B CONDUIT. ALL LABOR, MATERIALS, AND INCIDENTALS NECESSARY TO CONSTRUCT THIS ITEM SHALL BE INCLUDED IN ITEM 604, MANHOLE, NO. 3, AS PER PLAN.

POST CONSTRUCTION STORM WATER TREATMENT

THIS PLAN UTILIZES STRUCTURAL BEST MANAGEMENT PRACTICES (BMP'S) FOR POST CONSTRUCTION STORM WATER TREATMENT. THE FOLLOWING BMP'S HAVE BEEN DESIGNED INTO THE PLANS: DETENTION BASINS FOR BRIDGE DRAINAGE AND BELOW BRIDGE DRAINAGE. (SEE SHEET 309-310 STEEL BRIDGE DESIGN, 311-312 CONCRETE BRIDGE DESIGN.)

ITEM 661 - PLANTING MISC.: DETENTION BASIN PLANTING

THE AREA DESIGNATED IN THE DETENTION BASIN PLAN (SEE SHEET 309-310 STEEL BRIDGE DESIGN, 311-312 CONCRETE BRIDGE DESIGN) FOR THE SPECIAL PLANTING SHALL BE PROVIDED WITH A SEED MIXTURE IN ACCORDANCE WITH CMS TABLE 659.09-1 UTILIZING CLASS 4A - NATIVE GRASS MIXTURE. THE CONTRACTOR SHALL BE REQUIRED TO PERMIT THE VEGETATION IN THE DETENTION BASIN TO BECOME ESTABLISHED BEFORE THE POST CONSTRUCTION STORM WATER SYSTEM IS USED. TEMPORARY OUTLETS INCLUDING APPROPRIATE EROSION CONTROL MAY BE REQUIRED FOR THE DRAINAGE CONDUITS THAT WILL OUTLET INTO THE DETENTION BASINS TO ENABLE THE VEGETATION TO BECOME ESTABLISHED AS APPROVED BY THE ENGINEER. ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS TO CONSTRUCT, NECESSARY MEASURES TO ESTABLISH THE PLANTING INCLUDING MAINTENANCE DURING CONSTRUCTION SHALL BE INCLUDED IN ITEM 661 - PLANTING MISC.: DETENTION BASIN PLANTING.

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ITEM 603, CONDUIT BORED OR JACKED, AS PER PLAN

WHERE IT IS SPECIFIED THAT A CONDUIT BE INSTALLED BY THE METHOD OF BORING AND JACKING, NO TRENCH EXCAVATION SHALL BE CLOSER THAN 20 FEET TO THE NEAREST RAIL OR 30 FEET TO THE NEAREST TRAVEL LANE AS APPROVED BY THE ENGINEER. TRENCHES SHALL BE ADEQUATELY SUPPORTED AND THE SPECIFICATION REQUIREMENTS FOR CLASS B BEDDING SHALL BE DISREGARDED. IF A CASING PIPE WILL BE USED IN THE BORING AND JACKING OPERATION, THE VOID BETWEEN IT AND THE INTERIOR CARRIER PIPE SHALL BE COMPLETELY FILLED WITH ITEM 613 SAND, GROUT OR OTHER MATERIAL APPROVED BY THE ENGINEER. A CASING PIPE IS REQUIRED FOR CONDUIT CROSSING BENEATH THE RAILROAD AND WHICH SHALL BE A MINIMUM OF 50 FEET OF STEEL PIPE (0.469" MINIMUM WALL THICKNESS) AND INSTALLATION COORDINATED WITH THE VALLEY RAILWAY.

IN ADDITION TO THE REQUIREMENTS OF THIS ITEM, THE PROPOSED CONDUIT SHALL BE PROVIDED WITH A POSITIVE OUTLET TO A DRAINAGE STRUCTURE OR A DITCH FLOWLINE UNTIL THE PERMANENT OUTLET CAN BE CONSTRUCTED IN A FUTURE CONSTRUCTION PHASE AS APPROVED BY THE ENGINEER. TEMPORARY CONDUIT OUTLETS SHALL BE CONSTRUCTED WITH A BROKEN BACK CONFIGURATION INCLUDING ALL APPURTENANCES WITHIN AREAS OF HIGH, STEEP EMBANKMENTS. THE BROKEN BACK CONDUITS SHALL BE CONSTRUCTED WITH A 2' MINIMUM COVER TO THE TOE OF THE SLOPE INCLUDING ROCK CHANNEL OUTLET. ALL MATERIAL, LABOR, AND INCIDENTALS NECESSARY TO CONSTRUCT THIS ITEM, PROVIDE THESE TEMPORARY OUTLETS UNTIL THE PLAN DELINEATED OUTLET CAN BE CONSTRUCTED AND SUBSEQUENT REMOVAL OF TEMPORARY OUTLET CONDUITS INCLUDING GROUND RESTORATION SHALL BE INCLUDED IN ITEM 603, CONDUIT BORED OR JACKED BY SIZE" AND TYPE, AS PER PLAN TO THE SATISFACTION OF THE ENGINEER.

EXISTING AND PROPOSED DRAINAGE FOR CONSTRUCTION PHASES

DRAINAGE ITEMS MAY EXTEND THROUGH MULTIPLE CONSTRUCTION PHASES. ALL EXISTING AND PROPOSED DRAINAGE ITEMS SHALL BE PROVIDED WITH A POSITIVE OUTLET AT ALL TIMES AS APPROVED BY THE ENGINEER. ALL MATERIALS, LABOR AND INCIDENTALS NECESSARY TO PROVIDE THESE TEMPORARY OUTLETS UNTIL THE PLAN DELINEATED OUTLET CAN BE CONSTRUCTION SHALL BE INCLUDED WITH ITEM 603, BY SIZE" CONDUIT TO THE SATISFACTION OF THE ENGINEER.

ITEM 604 REFERENCE MONUMENT

PROPOSED REFERENCE MONUMENT LOCATIONS LISTED ON SHEET NO. 4 & 5 ARE APPROXIMATE FOR STATIONING (± 5') FOR THE PURPOSE OF DEFINING A QUANTITY. THE ACTUAL LOCATIONS WILL BE STAKED BY THE DISTRICT SURVEY DEPARTMENT PRIOR TO CONSTRUCTION. THE MONUMENTS WILL BE CONSTRUCTED AS ITEM 604 REFERENCE MONUMENT PER THE STANDARD DRAWING RM-1.1.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR THE CONSTRUCTION OF THE REFERENCE MONUMENTS:

ITEM 604 REFERENCE MONUMENT __7__ EACH

ITEM 604, CATCH BASIN, NO. 2-2B, AS PER PLAN A

CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 604 AND AS DETAILED ON SHEET 319. ALL LABOR, MATERIALS, AND INCIDENTALS NECESSARY TO CONSTRUCT THIS ITEM SHALL BE INCLUDED IN ITEM 604, CATCH BASIN, NO. 2-2B, AS PER PLAN A.

ITEM 604, CATCH BASIN, NO. 2-2B, AS PER PLAN B

CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 604 AND AS DETAILED ON SHEET 320. ALL LABOR, MATERIALS, AND INCIDENTALS NECESSARY TO CONSTRUCT THIS ITEM SHALL BE INCLUDED IN ITEM 604, CATCH BASIN, NO. 2-2B, AS PER PLAN B.

ITEM 603 - SIZE" CONDUIT, TYPE F, AS PER PLAN

IN ADDITION TO REQUIREMENTS OF CMS 603, THE CONDUITS SHALL COMPLY WITH CMS 707.05, TYPE C AND BE PROVIDED WITH A MINIMUM WALL THICKNESS OF 0.079 INCHES, HEAVY DUTY COUPLING BANDS NOT THINNER THAN 0.064 INCHES, AND ANTI-SLIP CONCRETE MASONRY ANCHOR COLLARS AS DETAILED ON SHEET NO. 320 TO PREVENT PIPING ALONG THE OUTSIDE OF THE CONDUIT AND TO PREVENT THE CONDUIT FROM MOVING ON THE SLOPES. ALL MATERIAL, LABOR, AND INCIDENTALS TO PERFORM THIS ITEM OF WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 603 - BY SIZE" CONDUIT, TYPE F, AS PER PLAN.

FENCE LENGTHS

THE LENGTHS OF FENCE SHOWN IN THE PLANS ^RE HORIZONTAL DIMENSIONS. MEASUREMENTS OF THE FINAL QUANTITIES SHALL BE MADE IN ACCORDANCE WITH ITEM 607.

ITEM 607 FENCE, TYPE 47, AS PER PLAN

THIS ITEM SHALL INCLUDE CLEARING OF THE NEW FENCE ALIGNMENT OF TREES AND BRUSH, FURNISHING AND APPLYING CUT STUMP HERBICIDE AND FURNISHING AND ERECTING NEW FENCE AND ASSOCIATED HARDWARE IN ACCORDANCE WITH THE PLAN AND CURRENT STANDARDS. THE CONTRACTOR IS ADVISED TO VISIT THE SITE TO DETERMINE THE CORRECT NUMBERS OF INDIVIDUAL FENCE COMPONENTS REQUIRED TO CONSTRUCT THE NEW FENCE IN ACCORDANCE WITH CURRENT STANDARDS.

THE INTENT OF THE PLAN IS TO CONSTRUCT THE NEW FENCE IN THE SAME TYPE AND LOCATION AS THE EXISTING FENCE, EXCEPT WHERE NECESSARY TO COMPLY WITH CURRENT STANDARDS AND WHERE NEW LIMITED ACCESS RIGHT OF WAY HAS BEEN ACQUIRED. THE NEW FENCE SHALL BE LOCATED FROM THE RIGHT OF WAY LINE IN ACCORDANCE WITH CURRENT STANDARDS. IN ALL CASES, CURRENT STANDARD CONSTRUCTION DRAWINGS SHALL BE USED TO ESTABLISH THE CORRECT CONFIGURATION AND LOCATION OF THE NEW FENCE.

ALL TREES AND BRUSH WITHIN THE AREA 2 FEET EITHER SIDE OF THE FENCE AND A SUFFICIENT DISTANCE INSIDE THE FENCE ALIGNMENT TO PERMIT ITS CONSTRUCTION SHALL BE REMOVED IN ACCORDANCE WITH ITEM 201, EXCEPT THAT NO STUMP MAY EXCEED A HEIGHT OF 2" ABOVE THE EXISTING GROUND SURFACE. THE STUMPS OF ALL TREES AND BRUSH SHALL BE TREATED WITH AN EPA REGISTERED HERBICIDE LABELED FOR CUT STUMP TREATMENT. HERBICIDE LABEL, MATERIAL SAFETY DATA SHEET AND COPY OF APPLICATORS LICENSES SHALL BE SUBMITTED TO THE ENGINEER FOR VERIFICATION PRIOR TO COMMENCING WORK. THE HERBICIDE SHALL BE APPLIED ACCORDING TO LABEL INSTRUCTIONS. THE HERBICIDE USED FOR THIS PROJECT SHALL BE SHIPPED IN NEW SEALED CONTAINERS BEARING THE MANUFACTURER'S LABEL. THE CONTRACTOR SHALL BE LICENSED BY THE OHIO DEPARTMENT OF AGRICULTURE AS A COMMERCIAL OR LIMITED COMMERCIAL APPLICATORS OR UNDER THE DIRECT SUPERVISION OF THE SAME.

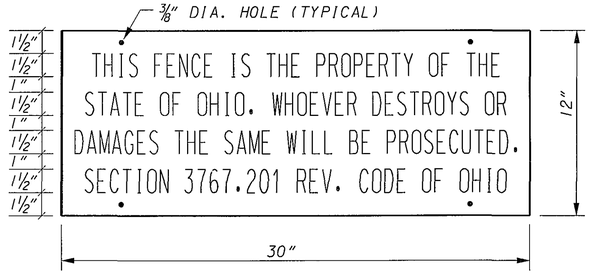
OHIO LAW REGULATES THE DISPOSAL OF LANDSCAPE WASTE THAT RESULT FROM ROADWAY CLEARING AND GRUBBING OPERATIONS. THE REGULATED WASTES INCLUDES BRUSH, TREES, STUMPS, TREE TRIMMINGS, BRANCHES, WEEDS, LEAVES, GRASS, SHRUBBERY, YARD TRIMMINGS, CROP RESIDUE, AND OTHER PLANT MATTER, EXCLUDING SOIL AND GARBAGE. THIS MATERIAL SHALL NOT BE BURIED OFF THE RIGHT-OF-WAY. THIS MATERIAL MAY BE BURIED IN NONSTRUCTURAL AREAS ON THE PROJECT SITE OR RIGHT-OF-WAY, WHERE PERMITTED BY THE ENGINEER.

ALL DISTURBED SOIL AREAS OUTSIDE THE NORMAL CONSTRUCTION LIMITS RESULTING FROM THE CONSTRUCTION OF THE FENCE SHALL BE RESTORED TO A CONTOUR MATCHING THE SURROUNDING TERRAIN AND REPAIRED AND SEEDED ACCORDING TO ITEM 659. THESE 659 ITEMS SHALL BE CONSIDERED INCIDENTAL TO THE ITEM BID FOR THE ITEM 607, FENCE, TYPE 47 AS PER PLAN.

THE FOLLOWING FLAT SHEET SIGN (OLD SIGN CODE N-53-30) SHALL BE ATTACHED TO THE TOP STRAND OF THE PROPOSED LA R/W FENCE WITH GALVANIZED TIES AS PER CMS 607.07 AT THE FOLLOWING LOCATIONS: I.R. 271 STA. 424+00 LT. & RT.; STA. 435+00 RT.; STA. 437+00 LT.; STA. 449+50 LT. & RT.; STA. 451+00 LT. & RT.

SIGNS SHALL BE ALUMINUM AND HAVE A NON-REFLECTIVE WHITE SHEETING BACKGROUND. LETTERS SHALL BE BLACK, 1½" HEIGHT, SERIES C STROKE WIDTH, AND SILK SCREENED AS PER 730.22 OF CMS.

COST OF FURNISHING INCLUDING ALL INCIDENTALS NECESSARY TO PLACE THESE SIGNS SHALL BE INCLUDED WITH ITEM 607 - FENCE TYPE 47, AS PER PLAN.



BLACK TEXT ON WHITE BACKGROUND

FENCE GROUNDING REQUIRED FOR OVERHEAD ELECTRIC LINES, IS TO BE IN ACCORDANCE WITH STD. CONSTRUCTION DRAWING HL-50.11.

FENCE GROUNDS WILL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM 625 GROUND ROD.

THE LENGTHS OF FENCE SHOWN IN THE PLANS ARE HORIZONTAL DIMENSIONS. MEASUREMENTS OF THE FINAL QUANTITIES SHALL BE MADE IN ACCORDANCE WITH ITEM 607.09.

THE COST OF ALL THE ABOVE EXCEPT ITEM 625 GROUND ROD, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 607, FENCE, TYPE 47, AS PER PLAN.

THE FOLLOWING LEGEND IS USED THROUGHOUT THE PLANS TO DESIGNATE THE APPLICABLE FENCE ITEMS REQUIRED TO CONSTRUCT THE FENCE.

FENCE LEGEND

EPA - END POST ASSEMBLY
CPA - CORNER POST ASSEMBLY
IAPA - INTERMEDIATE ANCHOR POST ASSEMBLY
FG - FENCE GROUNDING
AC - ABUTMENT CONNECTION

ITEM 607 - FENCE, MISC.: WETLAND PROTECTION FENCE

PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL ERECT AND MAINTAIN THROUGHOUT THE DURATION OF THE PROJECT WETLAND PROTECTION FENCE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING DM-4.4 SUPPLEMENTED WITH A WOOD SNOW FENCE OR PLASTIC/NYLON CONSTRUCTION FENCE AT LOCATIONS SHOWN ON SHEET NOS. 283-285 TO PROTECT THE WETLANDS. THE SNOW FENCE SHALL BE NOMINALLY 42 INCHES HIGH, AND SECURELY SUPPORTED BY WOOD OR STEEL POSTS AT 6 FOOT MAXIMUM SPACING. PLASTIC/NYLON CONSTRUCTION FENCE SHALL BE BRIGHT ORANGE AND SHALL BE SECURELY FASTENED TO WOOD OR METAL POSTS AT NO MORE THAN 6 FOOT SPACING. THE CONSTRUCTION FENCE SHALL BE NOMINALLY 3 FEET HIGH AT THE TOP EDGE AND SHALL NOT SAG BELOW 24 INCHES (12 INCH SAG). THE WETLAND PROTECTION FENCE SHALL BE MAINTAINED IN GOOD CONDITION AS APPROVED BY THE ENGINEER EXCEPT REPAIR AND MAINTENANCE WILL BE AT NO ADDITIONAL PROJECT COST. SECTIONS OF THE SUPPLEMENTAL SNOW/CONSTRUCTION FENCE WITH EXTENSIVE BROKEN SLATS OR HOLES GREATER THAN 12"X12" SHALL BE REPAIRED OR REPLACED AS APPROVED BY THE ENGINEER. THE CONTRACTOR'S EMPLOYEES AND EQUIPMENT WILL NOT BE PERMITTED WITHIN THE FENCED AREA. AT THE CONCLUSION OF THE CONSTRUCTION PROJECT THE CONTRACTOR SHALL REMOVE THE FENCE AND POSTS. SEE THE ENVIRONMENTAL COMMITMENT NOTES FOR ADDITIONAL NOTES AND DETAILS. ALL MATERIAL, LABOR, EQUIPMENT, COORDINATION AND INCIDENTALS TO PERFORM THIS ITEM OF WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 607-FENCE, MISC.: WETLAND PROTECTION FENCE.

GENERAL NOTES

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CALCULATED JL CHECKED PRS

ITEM 614 - MAINTAINING TRAFFIC MISC: RAILROAD FLAGGER AND COORDINATION

UNDER THIS ITEM THE CONTRACTOR SHALL PERFORM CONSTRUCTION COORDINATION WITH THE RAILROAD FOR WORK INVOLVEMENT REQUIRED FOR THE PROJECT. THIS INCLUDES, BUT NOT LIMITED TO, COORDINATION WITH THE VALLEY RAILWAY, COMPENSATION FOR A RAILROAD FLAGGER FURNISHED BY THE VALLEY RAILWAY AND ALL INCIDENTALS TO COMPLY WITH THE VALLEY RAILWAY REQUIREMENTS/SPECIFICATIONS TO PROVIDE A SAFE CONSTRUCTION CROSSING WITH THE RAILROAD AS APPROVED BY THE ENGINEER AND THE VALLEY RAILWAY (SEE MAINTENANCE OF TRAFFIC NOTES FOR ADDITIONAL DETAIL AND REQUIREMENTS).

ITEM 204 - PROOF ROLLING

AN ESTIMATED QUANTITY FOR THIS ITEM HAS BEEN PROVIDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

TOPSOIL

TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE EXCAVATED OR FILLED. ADDITIONAL SUITABLE MATERIAL REQUIRED TO FILL THE TOPSOIL STRIP AREA IN EMBANKMENT AREAS, TOPSOIL STRIPPING AND ANY STOCKPILING INCLUDING ALL LABOR, EQUIPMENT, AND MATERIAL SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT BID ITEM 203 - EXCAVATION OR ITEM 203 - EMBANKMENT. NO ADDITIONAL COMPENSATION WILL BE PROVIDED.

ITEM 659, SEEDING AND MULCHING

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT OF WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR ITEM 659, SEEDING AND MULCHING, ARE BASED ON THESE LIMITS AND QUANTITIES ARE CARRIED ON THE CROSS SECTIONS.

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS.

659, SOIL ANALYSIS TEST	2	EACH
659, TOPSOIL	10624	CU. YD.
659, COMMERCIAL FERTILIZER	13	TON
659, LIME	20	ACRE
659, WATER	517	M. GAL.
659, MOWING	862	M. SQ. FT.
659, INTER-SEEDING	4786	SQ. YD.
659, REPAIR SEEDING AND MULCHING	4786	SQ. YD.

CALCULATIONS FOR THE ABOVE QUANTITIES SHOWN ON SHEET NO. 106

EARTHWORK AND SEEDING SUMMARY

	SHEET NO.	EXCAVATION		EMBANKMENT		SEEDING	
		STEEL	CONCRETE	STEEL	CONCRETE	STEEL	CONCRETE
		CU. YD.	CU. YD.	CU. YD.	CU. YD.	CU. YD.	CU. YD.
IR 271 CROSS SECTIONS	258	37782	37582	23574	23202	78175	78175
SLOPE REPAIR CROSS SECTIONS	299	6867	6867	8711	8711	9268	9268
RIVERVIEW ROAD	265	170	170			1426	1426
CONTINGENCY QUANTITIES FOR GRADING UNDER BRIDGE (TO BE USED AS DIRECTED BY THE ENGINEER)		500	500	500	500	3000	3000
DEDUCTION FOR ITEM 202 - PAVEMENT REMOVED (75% OF TOTAL)		-4400	-4400				
QUANTITY TO BE USED AS DIRECTED BY THE ENGINEER FOR EXC. AND EMB. OF EXISTING ASPHALT PAVEMENT BEYOND PROPOSED PAVEMENT LIMITS		1500	1500	1500	1500		
DITCH EROSION PROTECTION AND REINFORCED SODDING DEDUCTION						-7197	-6960
TOTALS CARRIED TO GENERAL SUMMARY	74-78	42419	42219	34285	33913	84672	84909

UNSUITABLE MATERIAL EXCAVATION

THE SOIL PROFILES SHOW SEVERAL AREAS WHERE UNSUITABLE SUBGRADE MATERIALS MAY BE ENCOUNTERED. SOILS CLASSIFIED AS A-4B, SILT (FROST SUSCEPTIBLE) AND A-6A, SILTY CLAY (SOFT SUBGRADE) HAVE BEEN IDENTIFIED AND SHOWN IN THE UNSUITABLE MATERIAL EARTHWORK TABLE ALONG WITH ASSOCIATED QUANTITIES OF EXCAVATION TO REMOVE THE MATERIAL AND EMBANKMENT MATERIALS TO REPLACE THE EXCAVATED MATERIAL. APPROXIMATE UNDERCUT DEPTHS HAVE BEEN SHOWN FOR EACH SOIL CLASSIFICATION. EARTHWORK QUANTITIES CALCULATED BELOW HAVE BEEN BASED ON THESE DEPTHS AND THE LATERAL LIMITS AS DEFINED IN 204.03.

UNSUITABLE MATERIAL EARTHWORK - ITEM 204

EARTHWORK	STATION	LOCATION	UNDERCUT DEPTH	END AREA		VOLUME		204			
				CUT	FILL	CUT	FILL	EXCAVATION OF SUBGRADE	EMBANKMENT	GRANULAR MATERIAL, TYPE B	GEOTEXTILE FABRIC 712.09, TYPE D
				SQ FT	SQ FT	CU YD	CU YD	CU YD	CU YD	CU YD	SQ YD
A - 4B MATERIAL - UNDERCUT 3 FT.											
BEGIN UNSUITABLE EARTHWORK	2403+50.00	N.B.		84	84						
UNSUITABLE EARTHWORK BK.	2408+20.76	N.B.		84	84	1464.59	1464.59	1464.59	1464.59		
UNSUITABLE EARTHWORK AHD.	2408+20.76	N.B.		162	162						
END UNSUITABLE EARTHWORK	2412+50.00	N.B.		162	162	2575.44	2575.44	2575.44	2575.44		
BEGIN UNSUITABLE EARTHWORK	1408+00.00	S.B.		84	84						
UNSUITABLE EARTHWORK BK.	1410+48.16	S.B.		84	84	772.05	772.05	772.05	772.05		
UNSUITABLE EARTHWORK AHD.	1410+48.16	S.B.		162	162						
END UNSUITABLE EARTHWORK	1412+00.00	S.B.		162	162	911.04	911.04	911.04	911.04		
SOFT SUBGRADE - VARIABLE UNDERCUT DEPTH											
BEGIN UNSUITABLE EARTHWORK	352+40.00	S.B.	0.5 FT.	6.25	6.25						
UNSUITABLE EARTHWORK BK.	355+00.00	S.B.	0.5 FT.	6.25	6.25	60.19	60.19	60.19		60.19	273.5
UNSUITABLE EARTHWORK AHD.	355+00.00	S.B.	0.5 FT.	14.5	14.5						
END UNSUITABLE EARTHWORK	358+00.00	S.B.	0.5 FT.	14.5	14.5	161.11	161.11	161.11		161.11	330
BEGIN UNSUITABLE EARTHWORK	363+80.00	S.B.	0.5 FT.	14.5	14.5						
END UNSUITABLE EARTHWORK	367+80.00	S.B.	0.5 FT.	14.5	14.5	214.81	214.81	214.81		214.81	430
BEGIN UNSUITABLE EARTHWORK	371+80.00	S.B.	1 FT.	29	29						
END UNSUITABLE EARTHWORK	375+80.00	S.B.	1 FT.	29	29	429.63	429.63	429.63		429.63	431
BEGIN UNSUITABLE EARTHWORK	375+80.00	S.B.	0.5 FT.	14.5	14.5						
END UNSUITABLE EARTHWORK	1379+80.00	S.B.	0.5 FT.	14.5	14.5	214.81	214.81	214.81		214.81	430
BEGIN UNSUITABLE EARTHWORK	1379+80.00	S.B.	1 FT.	29	29						
END UNSUITABLE EARTHWORK	1383+80.00	S.B.	1 FT.	29	29	429.63	429.63	429.63		429.63	431
BEGIN UNSUITABLE EARTHWORK	1387+80.00	S.B.	1 FT.	29	29						
END UNSUITABLE EARTHWORK	1391+90.00	S.B.	1 FT.	29	29	440.37	440.37	440.37		440.37	441
BEGIN UNSUITABLE EARTHWORK	1391+90.00	S.B.	1 FT.	29	29						
END UNSUITABLE EARTHWORK	1395+90.00	S.B.	1 FT.	29	29	429.63	429.63	429.63		429.63	431
BEGIN UNSUITABLE EARTHWORK	1395+90.00	S.B.	0.5 FT.	14.5	14.5						
END UNSUITABLE EARTHWORK	1400+00.00	S.B.	0.5 FT.	14.5	14.5	220.19	220.19	220.19		220.19	440
BEGIN UNSUITABLE EARTHWORK	1403+90.00	S.B.	1 FT.	29	29						
END UNSUITABLE EARTHWORK	1408+00.00	S.B.	1 FT.	29	29	440.37	440.37	440.37		440.37	441
SUBTOTAL								8763.86	5723.12	3040.74	4078.5
TOTALS CARRIED TO GENERAL SUMMARY								8764	5724	3041	4079

GENERAL NOTES

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ENVIRONMENTAL COMMITMENTS

THE VALLEY RAILWAY

THE CONTRACTOR SHALL SCHEDULE WORK OVER THE VALLEY RAILWAY WHEN THERE IS NO TRAIN TRAFFIC. THE CONTRACTOR WILL BE REQUIRED TO CLOSELY COORDINATE HIS SCHEDULE WITH ODOT AND THE NATIONAL PARK SERVICE. THE CONTRACTOR WILL CONSTRUCT A TEMPORARY CROSSING OVER THE RAILROAD FOR CONSTRUCTION AND MAINTENANCE ACCESS. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE A FLAGGER ON DAYS WHEN THE RAILROAD IS OPERATING. THE CONTRACTOR SHALL ALSO CONSTRUCT A PERMANENT CROSSING OF THE RAILROAD FOR ACCESS TO THE DETENTION BASIN. THE PERMANENT RAILROAD CROSSING SHALL NOT BE USED FOR CONSTRUCTION ACCESS.

THE OHIO AND ERIE CANAL TOWPATH TRAIL

THE OHIO AND ERIE CANAL TOWPATH TRAIL WILL BE CLOSED FOR SHORT PERIODS OF TIME WHILE WORK IS PERFORMED OVER THE TRAIL. CLOSURES WILL BE LIMITED TO DURATION OF APPROXIMATELY **3-5** DAYS IN LENGTH, DURING WEEKDAYS FROM **7:00 A.M. TO 6:00 P.M.** APPROXIMATELY **11-12** CLOSURES ARE ANTICIPATED DURING THE TOTAL CONSTRUCTION PERIOD. ADVANCE NOTICE OF CLOSURE WILL BE PROVIDED AND SIGNS WILL BE POSTED AT APPROPRIATE LOCATIONS ON THE TRAIL. THE NATIONAL PARK SERVICE WILL ADVISE ODOT REGARDING THE SPECIFIC LOCATIONS TO BE POSTED. NOTIFICATION WILL ALSO BE MADE TO THE NATIONAL PARK SERVICE, LOCAL GOVERNMENT AGENCIES, AND LOCAL RESIDENTS PRIOR TO CLOSING.

IT WILL BE NECESSARY TO CONSTRUCT A TEMPORARY ACCESS ROAD CROSSING OVER THE OHIO AND ERIE CANAL TOWPATH TRAIL. DURING CONSTRUCTION ACTIVITIES, THE CONTRACTOR WILL BE REQUIRED TO FURNISH A FLAGGER AT THE TRAIL CROSSING ON DAYS WHEN THE TRAIL IS OPEN. THE TOWPATH TRAIL WILL BE TEMPORARILY FENCED TO PROTECT AGAINST THE CONTRACTOR WORKING ON OR STORING MATERIAL ON THE TRAIL.

CUYAHOGA RIVER CANOE TRAFFIC

FOR THE CUYAHOGA RIVER, PERSONS CANOEING THE RIVER WILL BE ADVISED THAT USING THE RIVER UNDER THE BRIDGES WOULD NOT BE SAFE DURING ACTIVE CONSTRUCTION. WARNING SIGNS WILL BE POSTED, DIRECTING CANOEISTS TO USE THE TOWPATH TRAIL AS A PORTAGE. CANOEISTS WILL BE REQUIRED TO PORTAGE OVER THE TEMPORARY RIVER CONSTRUCTION CROSSING WHEN THE TOWPATH TRAIL IS CLOSED.

CUYAHOGA VALLEY NATIONAL PARK RESTORATION

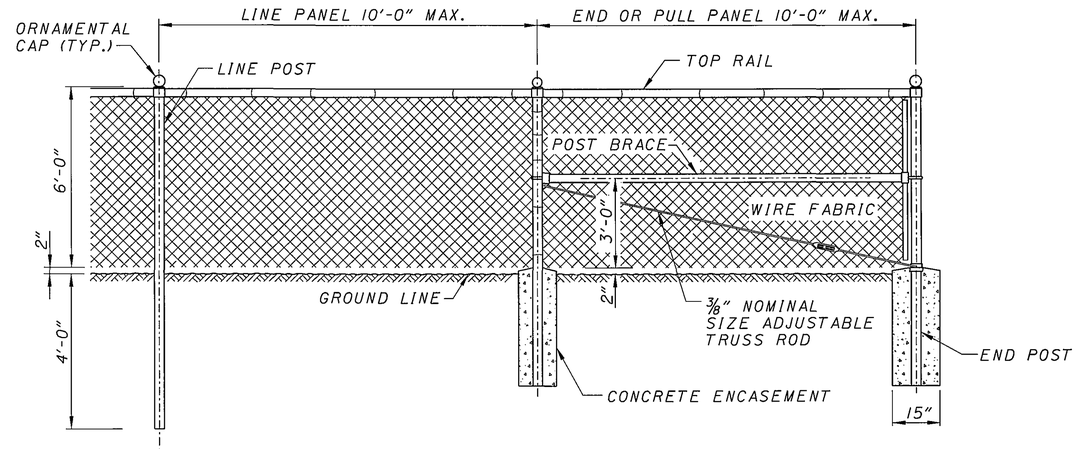
ALL LAND WITHIN CUYAHOGA VALLEY NATIONAL PARK SHALL BE FULLY RESTORED. THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT DETAILED SITE RESTORATION PLANS INCLUDING PROJECT WETLAND RESTORATION AS NOTED ON SHEET 20 TO ODOT PRIOR TO INITIATING CONSTRUCTION. ODOT SHALL BE RESPONSIBLE FOR REVIEWING THE PLANS AND ENSURING THAT THE PROPOSED RESTORATION IS CONSISTENT WITH ALL APPLICABLE COMMITMENTS IDENTIFIED IN THE APPROVED ENVIRONMENTAL DOCUMENT. THE DETAILED SITE RESTORATION PLANS INCLUDING PROJECT WETLAND RESTORATION AS NOTED ON SHEET 20 SHALL ALSO BE CONCURRENTLY FORWARDED TO CUYAHOGA VALLEY NATIONAL PARK FOR REVIEW, COMMENT, AND ACCEPTANCE. PRIOR TO ANY FILLING OR GRADING, THE CONTRACTOR SHALL REMOVE AND STORE ALL TOPSOIL, AND INVENTORY ALL TREES AND UNDERSTORY VEGETATION TO BE REMOVED. THE TOPSOIL WILL SUBSEQUENTLY BE REAPPLIED TO DISTURBED AREAS TO AID IN RESEEDING. THE VEGETATIVE COMMUNITY INFORMATION INVENTORIED PRIOR TO CONSTRUCTION WILL BE USED TO PREPARE THE SITE PLAN REVEGETATION AND PROVIDE MATERIALS TO REESTABLISH THE PRE-EXISTING VEGETATION AS APPROPRIATE AS DETERMINED BY THE CONTRACTOR AND APPROVED BY ODOT AND THE NATIONAL PARK SERVICE. THE CONTRACTOR SHALL USE NATIVE PLANT SPECIES AND SEEDS FOR ALL RESTORATION ACTIVITIES. THE RESTORATION PLAN SHALL ADDRESS REMOVAL OF EXISTING INVASIVE, NON-NATIVE VEGETATION (E.G., PHRAGMITES) FROM AREAS WITHIN THE ACTIVE CONSTRUCTION LIMITS. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL REFUSE FROM THE LAND USED BY THE CONTRACT.

A GRADING PLAN HAS BEEN INCLUDED IN THE PLANS TO PROVIDE QUANTITIES OF ITEM 203 EXCAVATION, ITEM 203 EMBANKMENT, AND ITEM 659 SEEDING AND MULCHING. A QUANTITY FOR ITEM 659 SEEDING AND MULCHING IN THE CUYAHOGA VALLEY RESTORATION AREAS HAS BEEN CALCULATED AND CARRIED TO GENERAL SUMMARY. ANY ADDITIONAL COSTS FOR NATIVE PLANTS AND SEEDING MIX, AS DETERMINED AND PROVIDED BY THE CONTRACTOR, ABOVE THE COST OF THE SEEDING & MULCHING QUANTITIES PROVIDED IN THESE PLANS SHALL BE CONSIDERED INCIDENTAL TO ITEM 203 - ROADWAY MISC.: CUYAHOGA VALLEY RESTORATION PLANS.
IT IS THE INTENT OF THE DETAILED SITE PLAN TO BE SIMILAR TO THE GRADING PLAN TO UTILIZE THE PLAN QUANTITIES AND ENSURE THE IMPLEMENTATION OF THE POST CONSTRUCTION STORM WATER TREATMENT AS SHOWN IN THE PLANS AND AS APPROVED BY THE ENGINEER. THE DETAILED SITE RESTORATION PLAN SHALL ALSO COVER ANY AREAS DISTURBED BEYOND THE GRADING LIMITS AS PERMITTED IN THE PLANS AND SPECIFICATIONS INCLUDING PROJECT WETLAND RESTORATION.

ALL LABOR, MATERIAL, COORDINATION AND INCIDENTALS TO PROVIDE A DETAILED SITE RESTORATION PLAN INCLUDING WETLAND RESTORATION PLAN AS NOTED ON SHEET 20 FOR REVIEW, REVISIONS AND ACCEPTANCE INCLUDING ADDITIONAL COST TO PERFORM/PROVIDE ITEMS LISTED ABOVE SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 203 - ROADWAY MISC.: CUYAHOGA VALLEY RESTORATION PLANS.

ITEM 607 - FENCE, TYPE CL , AS PER PLAN

ACCESS TO THE NATIONAL PARK SERVICE PROPERTY FROM THE CONSTRUCTION SITE SHALL BE RESTRICTED BY A CHAIN LINK FENCE, 6 FOOT IN HEIGHT, ERECTED AT LOCATIONS SHOWN IN THE PLANS. THE FENCE SHALL BE ERECTED AS PER STANDARD CONSTRUCTION DRAWING F-1.1 EXCEPT THAT THE FENCE SHALL BE 72" IN HEIGHT. GATES SHALL BE PROVIDED AND PLACED AT ALL CROSSING LOCATIONS IDENTIFIED IN THE MAINTENANCE OF TRAFFIC PLANS OR AS APPROVED BY THE ENGINEER. THE GATES SHALL BE CLOSED AT ALL TIMES WHEN WORK IS NOT OCCURRING OR A FLAGGER IS NOT PRESENT TO SAFELY PERMIT CONSTRUCTION ACCESS/CROSSING, AND TO RESTRICT ACCESS TO AND FROM THE CONSTRUCTION SITE. SEE THE MAINTENANCE OF TRAFFIC PLANS FOR ADDITIONAL NOTES AND DETAILS. UPON COMPLETION OF THE PROJECT THE FENCE INCLUDING ALL INCIDENTALS AND CONCRETE ENCASEMENTS SHALL BE REMOVED AND THE SITE RESTORED TO THE AT LEAST THE CONDITION PRIOR TO CONSTRUCTION INCLUDING ANY RESTORATION, GRADING, SEEDING AND MULCHING, AND/OR PLACEMENT OF ADDITIONAL EROSION CONTROL MEASURES. ALL MATERIAL, LABOR, EQUIPMENT, COORDINATION AND INCIDENTALS TO CONSTRUCT THE FENCE PRIOR TO THE BEGINNING OF CONSTRUCTION, MAINTENANCE DURING CONSTRUCTION (AS APPROVED BY THE ENGINEER) AND SUBSEQUENT REMOVAL OF THE FENCE UPON COMPLETION OF THE PROJECT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 607, FENCE, TYPE CL, AS PER PLAN.



ITEM 607 - FENCE, TYPE CL, AS PER PLAN

FOR MORE INFORMATION SEE
STANDARD CONSTRUCTION DRAWING F-1.1

CALCULATED JL CHECKED PRS

GENERAL NOTES - ENVIRONMENTAL COMMITMENTS

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ENVIRONMENTAL COMMITMENTS (CONTINUED)

BEST MANAGEMENT PRACTICES

ALL WORK PERFORMED WILL COMPLY WITH THE 2002 CONSTRUCTION AND MATERIALS SPECIFICATIONS OF THE OHIO DEPARTMENT OF TRANSPORTATION. CONSTRUCTION PLANS WILL INCLUDE PROVISIONS FOR CONTROL OF DEMOLITION DEBRIS AND EROSION AND SEDIMENTATION DURING CONSTRUCTION.

ALL MATERIALS REMOVED FROM DITCHES, CAPTURED STREAMS OR WETLANDS MUST BE IMMEDIATELY REMOVED TO AN UPLAND SITE AND STABILIZED (I.E., SEEDED) TO PREVENT REDISTRIBUTION INTO ANY WATERS OF THE UNITED STATES. PLACEMENT OF REMOVED MATERIALS INTO A WETLAND OR ON THE BANKS OF A STREAM EVEN TEMPORARILY IS CONSIDERED A FILL AND REQUIRES A PERMIT ACTION. ANY AREA DISTURBED BY EQUIPMENT ACTIVITIES MUST BE SEEDED TO PREVENT EROSION OF SEDIMENTS INTO THE WATER OF THE UNITED STATES.

ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS SPECIFIED IN THE STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN PLACE PRIOR TO ANY EXCAVATION, GRADING OR FILLING OPERATIONS AND INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES. THEY SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETED AND THE AREA IS STABILIZED AS ACCEPTED BY THE ENGINEER.

THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PRESERVE WETLANDS BY LIMITING THE USE OF MECHANICAL EQUIPMENT WITHIN WETLAND AREAS WHERE PRACTICABLE.

THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PRESERVE THE WATER QUALITY OF THE CUYAHOGA RIVER BY LIMITING THE USE OF MECHANICAL EQUIPMENT BELOW THE ORDINARY HIGH WATER MARK WITHIN THE RIVER WHERE PRACTICABLE. ONLY CLEAN, NON-ERODIBLE MATERIAL WILL BE USED FOR STREAM CROSSINGS, COFFERDAMS, AND EQUIPMENT ACCESS PADS. THE TEMPORARILY PLACED MATERIAL WILL BE REMOVED AND THE STREAM BOTTOM AND BANKS RETURNED TO NEAR NATURAL CONDITIONS WHEN WORK IS COMPLETED.

THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT ANY INCIDENTAL DISCHARGES OF OIL, GREASE, OR OTHER FLUIDS AND/OR EPOXY-URETHANE SEALER, PAINT, OR OTHER MATERIALS USED TO REPAIR, CLEAN, SEAL, OR TREAT ANY BRIDGE STRUCTURE FROM ENTERING THE CUYAHOGA RIVER, TRIBUTARIES OF THE CUYAHOGA RIVER AND/OR WETLANDS OR OTHER WATERS OF THE UNITED STATES AND TAKE THE APPROPRIATE ACTIONS IN THE EVENT OF A RELEASE.

THE CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID AND/OR LIMIT DEMOLITION DEBRIS FROM ENTERING THE CUYAHOGA RIVER, STREAMS AND/OR WETLANDS. ANY MATERIAL THAT DOES FALL INTO THE CUYAHOGA RIVER, STREAMS OR WETLANDS SHALL BE REMOVED AS SOON AS POSSIBLE.

IN EACH CASE WHERE THERE IS AN INCIDENT OF HAZARDOUS MATERIAL THAT FALLS OR MIGRATES INTO THE CUYAHOGA RIVER, TRIBUTARIES OF THE CUYAHOGA RIVER AND/OR WETLANDS, THE CONTRACTOR SHALL AS SOON AS POSSIBLE NOTIFY THE ENGINEER/SUPERVISOR AND THE FOLLOWING AGENCIES:

24-HOUR NATIONAL PARK SERVICE DISPATCH
CALL: 330-440-546-5962

DALE E. SILVIS
LAW ENFORCEMENT SPECIALIST (ACTING)
COMMUNICATIONS CENTER SUPERVISOR
RANGER ACTIVITIES DIVISION
CUYAHOGA VALLEY NATIONAL PARK
330-657-2793 EXT. 311

OHIO EPA SPILL REPORTING
24 HOUR EMERGENCY SERVICE
CALL: 1-800-282-9378

AND PROVIDE AS MUCH OF THE FOLLOWING INFORMATION AS POSSIBLE:

1. TIME OBSERVED
2. LOCATION
3. MATERIAL RELEASED
4. PROBABLE SOURCE
5. VOLUME & DURATION
6. PRESENT & ANTICIPATED MOVEMENT OF CONTAMINANT
7. PERSONNEL ON SCENE
8. ACTIONS ALREADY INITIATED

TREE REMOVAL

ANY UNAVOIDABLE CUTTING OF TREES WILL BE PERFORMED ONLY BEFORE APRIL 15 OR AFTER SEPTEMBER 15 WHEN THE FEDERALLY ENDANGERED INDIANA BAT (MYOTIS SODALIS) WOULD NOT BE USING SUCH HABITATS.

TREE AVOIDANCE

AS REQUESTED BY THE U.S. FISH AND WILDLIFE SERVICE ON JANUARY 13, 2004, THE LARGE TREES ON THE SLOPES OF THE WOODED HILLSIDE NEAR THE SLIDE REPAIR IN THE NORTHWEST QUADRANT OF THE SUM-271-0802 L&R BRIDGE PROJECT AREA WILL BE RETAINED TO PREVENT EROSION. THE TREES TO BE RETAINED HAVE BEEN IDENTIFIED ON SHEET 131 OF 612 (STEEL DESIGN) AND SHEET 137 OF 612 (CONCRETE DESIGN) WITH AN AVOIDANCE NOTE (DO NOT DISTURB).

WETLAND IMPACTS/AVOIDANCE

THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PRESERVE WETLANDS BY LIMITING THE USE OF MECHANICAL EQUIPMENT WITHIN WETLAND AREAS WHERE PRACTICABLE. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR IMPACT THE REMAINING ADJACENT AREAS OF THE WETLANDS AS INDICATED ON THE PLAN. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR STORE EQUIPMENT AND/OR MATERIALS WITHIN WETLAND AREAS. TO PROTECT AND DELINEATE THE BOUNDARY OF THE EXISTING REMAINING ADJACENT WETLANDS, A QUANTITY OF ITEM 207 PERIMETER FILTER FABRIC FENCE, AS PER PLAN, WILL BE USED. THE FILTER FABRIC FENCE WILL BE INSTALLED AROUND THE WETLAND PERIMETER AND/OR THE CONSTRUCTION LIMITS WITHIN THE RIGHT-OF-WAY. THE FENCE SHALL BE PLACED TO MAINTAIN A ONE-FOOT BUFFER BETWEEN THE FENCE AND THE WETLAND BOUNDARY AND/OR CONSTRUCTION LIMIT. THE FENCE IS TO BE INSTALLED BY THE CONTRACTOR PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES WITHIN THESE LIMITS AND ADJACENT AREA, INCLUDING ANY NECESSARY CLEARING AND GRUBBING ACTIVITIES. THE FENCE SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE DURATION OF THE PROJECT CONSTRUCTION. A CONTINGENCY QUANTITY OF 500 FT. OF 207 - PERIMETER FILTER FABRIC FENCE, AS PER PLAN HAS BEEN PROVIDED TO BE USED AS DIRECTED BY THE ENGINEER.

OEPA GENERAL ISOLATED WETLAND PERMIT (LEVEL 1)

THE OHIO ENVIRONMENTAL PROTECTION AGENCY HAS ISSUED A GENERAL ISOLATED WETLAND PERMIT (LEVEL 1) FOR THE PROJECT, EFFECTIVE JULY 16, 2004. THE GENERAL ISOLATED WETLAND PERMIT APPLIES SPECIFICALLY TO THE FOLLOWING ISOLATED WETLANDS:

WETLAND P (STA. 2421+20 RT. TO 2422+35 RT.)
WETLAND Q (STA. 2422+65 RT. TO 2422+95 RT.)
WETLAND R (STA. 2421+50 RT. TO 2422+90 RT.)

TOTAL COMBINED IMPACT TO WETLAND P, WETLAND Q AND WETLAND R SHALL NOT EXCEED 0.076 ACRE AS SHOWN ON THE PLANS.

404/401 PERMIT COMPLIANCE NOTE

THE 404/401 WATERWAY PERMITS FOR THIS PROJECT HAVE YET TO BE AUTHORIZED BY THE US ARMY CORPS OF ENGINEERS AND/OR THE OHIO ENVIRONMENTAL PROTECTION AGENCY. THE CONTRACTOR SHALL NOT PERFORM ANY WORK IN AND/OR PLACE ANY FILL IN JURISDICTIONAL STREAMS OR WETLANDS UNTIL THE FINAL 404/401 PERMITS ARE AUTHORIZED BY THE US ARMY CORPS OF ENGINEERS AND/OR THE OHIO ENVIRONMENTAL PROTECTION AGENCY. THE COMPLETE/AUTHORIZED 404/401 PERMITS WILL BE PROVIDED TO THE CONTRACTOR BY ODOT PERSONNEL ON OR BEFORE JULY 1, 2005.

INSTREAM BLASTING

NO INSTREAM BLASTING WILL BE PERMITTED WITHOUT PRIOR WRITTEN PERMISSION OF THE CHIEF OF THE DIVISION OF WILDLIFE, OHIO DEPARTMENT OF NATURAL RESOURCES, IN ACCORDANCE WITH OHIO REVISED CODE SECTION 1533.58.

DISCOVERY OF POTENTIAL ARCHAEOLOGICAL RESOURCES

IN ACCORDANCE WITH 36 CFR 800.13(b), SHOULD AN UNANTICIPATED DISCOVERY OF ARCHAEOLOGICAL RESOURCES OCCUR WITHIN THE PROJECT AREA, CONSTRUCTION RELATED ACTIVITY WILL BE TEMPORARILY DISCONTINUED AND THE OHIO STATE HISTORIC PRESERVATION OFFICE (OSHPO) CONTACTED BY ODOT WITHIN 48 HOURS. ODOT SHALL ENTER INTO CONSULTATION WITH THE OSHPO TO EVALUATE THE SIGNIFICANCE OF THE HISTORIC RESOURCE, ASSESS POTENTIAL EFFECTS, AND DEVELOP MITIGATION STRATEGIES AS NECESSARY, ALL ACTIVITIES WILL BE IN ACCORDANCE WITH THE SECRETARY OF THE INTERIOR'S STANDARDS AND GUIDELINES FOR ARCHAEOLOGICAL DOCUMENTATION AND DATA RECOVERY (48 CFR 44716-44740); TAKE INTO ACCOUNT THE ADVISORY COUNCIL ON HISTORIC PRESERVATION'S PUBLICATION TREATMENT OF ARCHAEOLOGICAL PROPERTIES, A HANDBOOK (1980), AND WILL BE APPROVED BY THE OSHPO PRIOR TO IMPLEMENTATION. ALL ARCHAEOLOGICAL WORK WILL BE CARRIED OUT BY OR UNDER THE DIRECT SUPERVISION OF INDIVIDUALS MEETING, AT A MINIMUM, THE APPROPRIATE FEDERAL QUALIFICATIONS AND PRE-QUALIFIED BY ODOT FOR SUCH WORK. [36 CFR PART 61, APPENDIX A; THE OSHPO ARCHAEOLOGY GUIDELINES (1994)]

WETLAND RESTORATION

TEMPORARILY IMPACTED WETLANDS SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS AS DETAILED IN THE SITE RESTORATION PLAN INCLUDING PROJECT WETLAND RESTORATION DESCRIBED ON SHEET 19, WHICH SHALL INCLUDE THE FOLLOWING ACTIONS:

1. ANY TEMPORARY FILLS PLACED IN THE WETLAND SHALL BE REMOVED FOLLOWING THE COMPLETION OF THE AUTHORIZED ACTIVITY AND THE DISTURBED WETLAND SHALL BE REGRADED TO PRE-CONSTRUCTION CONTOURS.
2. THE STOCKPILED TOPSOIL REMOVED FROM THE WETLAND AREA PRIOR TO FILLING AND GRADING OPERATIONS SHALL BE PLACED BACK AND APPROPRIATELY SPREAD THROUGHOUT THE WETLAND AFTER REGRADING TO THE PRE-CONSTRUCTION CONTOURS HAS BEEN COMPLETED.
3. ALL AREAS SHALL BE STABILIZED (I.E., RESEEDED WITH NATIVE PLANTS AND NATIVE WETLAND SEED MIX AS DETERMINED/PROVIDED BY THE CONTRACTOR AND PRESENTED IN THE DETAILED SITE RESTORATION PLAN INCLUDING WETLAND RESTORATION PLAN DESCRIBED ON SHEET 19).

THE FOLLOWING WETLAND AREAS SHALL BE CONSIDERED FOR RESTORATION:

WETLAND K (STA. 1446+00 LT. TO 1447+80 LT.)
WETLAND J (STA. 1449+00 RT. TO 1449+95 RT.)
WETLAND E (STA. 2427+90 RT. TO 2429+20 RT.)
WETLAND P (STA. 2421+20 RT. TO 2422+35 RT.)
WETLAND Q (STA. 2422+65 RT. TO 2422+95 RT.)

PAYMENT FOR THE ABOVE INCLUDING ALL LABOR, MATERIALS, EQUIPMENT, COORDINATE AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 203 - ROADWAY MISC.: WETLAND RESTORATION.

CALCULATED JL CHECKED PRS

GENERAL NOTES - ENVIRONMENTAL COMMITMENTS

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614 MAINTAINING TRAFFIC

A. I.R. 271

TWO LANES OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED ON I.R. 271, EXCEPT FOR PERIODS NOTED BELOW WHEN ONE LANE OF TRAFFIC IN EACH DIRECTION WILL BE PERMITTED. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. ALL ONE LANE ZONES SHALL MEET THE APPROVAL OF THE ENGINEER.

I.R. 271 RECONSTRUCTION BY THIS PROJECT WILL BE BY THREE (3) SEPARATE PHASES. THE SEQUENCE FOR CONSTRUCTION SHALL BE PHASE I, PHASE II, PHASE III.

THE CONTRACTOR WILL BE PERMITTED TO PLACE THE ITEM 446 SURFACE COURSE DURING THE SPRING OF THE NEXT YEAR. IF THE CONTRACTOR DOES NOT PLACE THE FINAL SURFACE COURSE BY OCTOBER 31, HE SHALL PLACE FULL-DIMENSIONAL PAVEMENT MARKINGS ON THE INTERMEDIATE COURSE ALONG WITH ASPHALT WEDGE AS NOTED ON SHEET 73 TO PROVIDE TWO LANES OF TRAFFIC IN EACH DIRECTION OVER THE WINTER SEASON, AT HIS EXPENSE.

IF THE CONTRACTOR DOES PLACE THE ITEM 446 SURFACE COURSE IN THE SPRING, THE FINAL SURFACE AND PAVEMENT MARKINGS SHALL BE COMPLETED BY MAY 31. THE CONTRACTOR MUST ALSO COORDINATE THE PLACEMENT WITH THE CONSTRUCTION ACTIVITIES OF THE NEXT PHASE. THE CONTRACTOR SHALL SUBMIT A PLAN TO THE DISTRICT CONSTRUCTION ENGINEER FOR APPROVAL PRIOR TO BEGINNING HIS SPRING WORK ACTIVITIES. THE MAY 31 DATE SHALL ALSO BE CONSIDERED TO CONSTITUTE AN INTERIM COMPLETION DATE AND LIQUIDATED DAMAGES WILL BE ASSESSED IN ACCORDANCE WITH CMS 108.07 FOR EACH CALENDAR DAY BEYOND MAY 31 THAT THIS WORK IS NOT COMPLETED.

TWO LANE TRAFFIC WIDTH REQUIREMENTS:

UNLESS SPECIFICALLY STATED OR SHOWN IN THE PLANS, TWO LANES OF TRAFFIC SHALL CONSIST OF A MINIMUM OF TWO 11'-0" (10'-0" AT EXISTING BOSTON MILLS STRUCTURE) WIDE LANES PLUS 12" MINIMUM BUFFER ON EACH SIDE TO GUARDRAIL, PARAPETS, DRUMS, BARRIER OR EDGES OF PAVED SURFACES. THUS THE MINIMUM TWO LANE TRAFFIC WIDTH SHALL BE LIMITED TO 24'-0" CLEAR WIDTH (22'-0" AT EXISTING BOSTON MILLS STRUCTURE).

SEQUENCE OF CONSTRUCTION:

PHASE I CONSTRUCT - CONSTRUCT INSIDE MEDIAN PORTION OF NEW SOUTHBOUND STRUCTURES (SHEET NOS. 38 TO 43)

PHASE IA

1. RECONSTRUCT SOUTHBOUND OUTSIDE PAVED SHOULDER. CONSTRUCTION SHALL BE DURING NIGHT TIME HOURS ONLY AS PER REQUIREMENTS ON SHEET 24. THE OUTSIDE LANE SHALL BE CLOSED TO TRAFFIC DURING CONSTRUCTION AS PER MT-95.30 SEE TYPICAL SECTION ON SHEET NOS. 34 & 35. CONSTRUCT EMERGENCY PARKING AREAS ON SHOULDERS - SEE SHEET 72
2. PLACE PORTABLE CONCRETE BARRIER AND WORK ZONE PAVEMENT MARKINGS ON SOUTHBOUND LANES FOR PHASE I M.O.T. - SEE SHEETS 38-40.

PHASE I

1. CONSTRUCT INSIDE PORTION OF SOUTHBOUND NEW PAVEMENT THRU INTERMEDIATE COURSE AND BRIDGES, CONSTRUCT SOUTHBOUND INSIDE SHOULDER WIDENING INCLUDING A PORTION OF THE PROPOSED CROSSOVERS. MAINTAIN TWO LANES OF SOUTHBOUND TRAFFIC ON EXISTING SOUTHBOUND PAVEMENT AND RECONSTRUCTED OUTSIDE SHOULDER. CONSTRUCT EMERGENCY PARKING AREAS ON SHOULDERS - SEE SHEET 72.
2. MAINTAIN NORTHBOUND TRAFFIC IN NORMAL LANES ON EXISTING PAVEMENT EXCEPT DURING CONSTRUCTION OF MEDIAN CROSSOVERS ADJACENT TO INSIDE EDGE OF NORTHBOUND LANES. CLOSE INSIDE TRAFFIC LANE WITH DRUMS DURING NIGHT TIME HOURS AS PER REQUIREMENTS ON SHEET 24. SEE MAINTENANCE OF TRAFFIC TYPICAL, SHEET NOS. 34 & 35.

PHASE II CONSTRUCT - CONSTRUCT OUTSIDE PORTION OF NEW SOUTHBOUND STRUCTURES

1. SHIFT PORTABLE CONCRETE BARRIERS AND WORK ZONE MARKINGS FROM PHASE I TO PHASE II M.O.T. - SEE SHEETS 44-46.
2. CONSTRUCT OUTSIDE PORTION OF SOUTHBOUND NEW PAVEMENT THRU INTERMEDIATE COURSE. MAINTAIN TWO LANES OF TRAFFIC ON EXISTING PAVEMENT AND RECONSTRUCTED INSIDE SHOULDER AND NEW PAVEMENT. MAINTAIN NORTHBOUND TRAFFIC IN NORMAL LANES ON EXISTING PAVEMENT.
3. REMOVE PORTABLE CONCRETE BARRIER AND APPLY ASPHALT WEDGE AT APPROACH SLABS (SEE SHEET 73) AND PAVEMENT MARKINGS FOR SOUTHBOUND TRAFFIC ON NORMAL TRAFFIC LANES.

PHASE III CONSTRUCT - CONSTRUCT NEW NORTHBOUND STRUCTURES AND PAVEMENT (SHEET NOS. 50-55)

1. PLACE PORTABLE CONCRETE BARRIER AND WORK ZONE PAVEMENT MARKINGS FOR 2 WAY TRAFFIC ON SOUTH BOUND LANES.
2. CONSTRUCT NORTHBOUND NEW PAVEMENT THRU SURFACE COURSE AND BRIDGES MAINTAIN TWO LANES OF TRAFFIC NORTHBOUND AND SOUTHBOUND ON NEW AND EXISTING SOUTHBOUND PAVEMENT AND BRIDGES.
3. PLACE FINAL PAVEMENT MARKINGS AND SIGNING ON NORTHBOUND LANES, PRIOR TO REOPENING NORTHBOUND LANES TO TRAFFIC.
4. REMOVE PORTABLE CONCRETE BARRIER ON SOUTHBOUND LANES.

PHASE IV CONSTRUCT - FINAL SURFACE COURSE ON SOUTHBOUND LANES

1. PLACE FINAL SURFACE COURSE AND FINAL PAVEMENT MARKINGS ON SOUTHBOUND LANES, MAINTAINING ONE (1) LANE OF TRAFFIC, BETWEEN THE HOURS OF 9:00 P.M. AND 6:00 A.M. SEE PERMITTED LANE CLOSURE NOTE ON SHEET 24. SEE STANDARD DRAWING MT-95.30 FOR M.O.T. REQUIREMENTS.

DUE TO THE RURAL NATURE OF THE PROJECT THE EXISTING/PROPOSED SIGNAGE IS SPARSE THROUGHOUT THE PROJECT LIMITS. THE STATE ROUTE 303 INTERCHANGE IS SOUTH OF THE PROPOSED PROJECT AND APPROPRIATE MEASURES SHALL BE TAKEN TO ENSURE PROPER PLACEMENT/IMPLEMENTATION OF THE TRAFFIC CONTROL ITEMS.

VARIOUS CONSTRUCTION PHASES HAVE USED STANDARD CONSTRUCTION DRAWING MT-102.10 AS A BASE, UNLESS SPECIFICALLY SHOWN OTHERWISE, ALL REQUIREMENTS OF THIS STANDARD CONSTRUCTION DRAWING SHALL BE INCORPORATED IN THE APPLICABLE CONSTRUCTION PHASES AS DETAILED IN THESE PLANS EXCEPT FOR THE FOLLOWING ITEMS:

1. LIGHTING IS REQUIRED AT TRANSITIONS
2. LIGHTING IS REQUIRED AT CROSSOVERS.
3. W1-H8a (DIAGONAL ARROW) SIGNS ARE REQUIRED.

2. WORK ZONE MARKINGS

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE M.O.T. SUBSUMMARY FOR USE AT LOCATIONS IDENTIFIED BY THE ENGINEER FOR WORK ZONE PAVEMENT MARKINGS AS PER THE REQUIREMENTS OF 614.11:

614, WORK ZONE LANE LINE, CLASS II 1.68 MILE

ALL WORK ZONE MARKINGS ON THE FINAL SURFACE COURSE SHALL BE PLACED AT THE LOCATION OF THE PERMANENT PAVEMENT MARKINGS.

CALCULATED PS CHECKED PG

MAINTENANCE OF TRAFFIC GENERAL NOTES

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B. COUNTY ROADS (RIVERVIEW ROAD AND BOSTON MILLS ROAD)

THE CONTRACTOR WILL NOT BE PERMITTED TO UTILIZE LOCAL ROADS FOR ACCESS TO THE VALLEY WITH CONSTRUCTION EQUIPMENT, MATERIALS, ETC. A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES, EXCEPT FOR PERIODS NOT TO EXCEED THE COMBINED CALENDAR DAY AS LISTED IN THE TABLE AT THE RIGHT WHEN THROUGH TRAFFIC MAY BE DETOURED. THE COMBINED DETOUR PERIODS WILL BE NECESSARY FOR PHASE I, PHASE II AND PHASE III OF CONSTRUCTION AS NOTED.

THE ROADWAY MAY BE CLOSED TO TRAFFIC UP TO FOUR (4) TIMES FOR EACH CONSTRUCTION PHASE FOR THE REMOVAL OR MODIFICATION OF THE EXISTING STRUCTURE, FOR PLACEMENT OF ALL NEW STEEL BEAMS AND/OR PRECAST CONCRETE STRUCTURE MATERIALS, AND FOR PLACING AND REMOVAL OF DECK FORMS.

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE TIME REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED SEPARATE LIQUIDATED DAMAGES IN ACCORDANCE WITH 108.07 OF THE ODOT CMS.

THE CONTRACTOR SHALL PROVIDE, ERECT, MAINTAIN, COVER OR REMOVE, UNCOVER OR REERECT AND SUBSEQUENTLY REMOVE THE DETOUR SIGNING AS DETAILED ON SHEET NOS. 67-68. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING THE GATES AND BARRICADES AT THE APPROXIMATE WORK LIMITS AND THE ADVANCE WARNING SIGNS AS SHOWN ON THE STANDARD DRAWING MT-101.60.

THE CONTRACTOR SHALL NOTIFY THE SUMMIT COUNTY ENGINEER IN WRITING A MINIMUM OF EIGHTEEN (18) CALENDAR DAYS IN ADVANCE OF THE ANTICIPATED DATE FOR ANY COUNTY OR TOWNSHIP ROAD CLOSING. ANY LOCAL ROAD USED AS A DETOUR SHALL BE VIDEO TAPED BY THE CONTRACTOR PRIOR TO THE INITIATION OF THE DETOUR. THE VIDEO TAPE SHALL BE RETAINED BY THE CONTRACTOR AND A COPY MADE AVAILABLE TO THE COUNTY ENGINEER IF SO REQUESTED. ALL WORK ZONE DEVICES REQUIRED SHALL BE FURNISHED, ERECTED, MAINTAINED, AND SUBSEQUENTLY REMOVED BY THE CONTRACTOR.

THE CONTRACTOR SHALL ALSO NOTIFY IN WRITING THE FOLLOWING AGENCIES AT LEAST TEN (10) DAYS PRIOR TO THE TIME A DETOUR WILL BE IMPLEMENTED:

NATIONAL PARK SERVICE ATTN: DAVID HUMPHREY	BOSTON MILLS SKI AREA (IN SEASON)
LOCAL FIRE DEPARTMENT(S)	VILLAGE OF BOSTON HEIGHTS
LOCAL SCHOOL DISTRICT(S) (WHEN IN SESSION)	VILLAGE OF PENINSULA
SUMMIT COUNTY SHERIFF	BOSTON TOWNSHIP

RIVERVIEW ROAD AND BOSTON MILLS ROAD SHALL NOT BE CLOSED TO TRAFFIC AT THE SAME TIME.

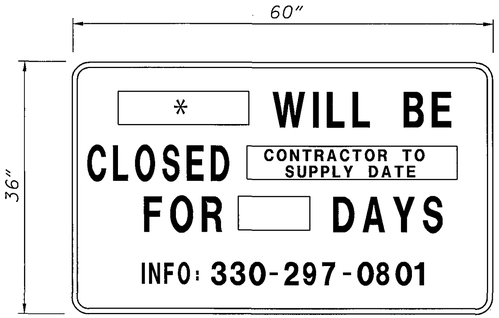
THE OFFICIAL SIGNED DETOUR FOR EACH ROAD IS ALSO CONSIDERED THE DESIGNATED LOCAL DETOUR. DURING THE TIME THAT TRAFFIC IS DETOURED, THE CONTRACTOR SHALL MAINTAIN THESE ROUTES IN A CONDITION WHICH IS REASONABLY SMOOTH AND FREE FROM HOLES, RUTS, RIDGES, BUMPS, DUST AND STANDING WATER. ONCE THE DETOUR IS REMOVED AND TRAFFIC RETURNED TO ITS NORMAL PATTERN, THE DESIGNATED LOCAL DETOUR ROUTE SHALL BE RESTORED TO A CONDITION THAT IS EQUIVALENT TO THAT WHICH EXISTED PRIOR TO ITS USE FOR THIS PURPOSE. ALL SUCH WORK SHALL BE PERFORMED WHEN AND AS DIRECTED BY THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITIES ARE PROVIDED FOR USE AS DIRECTED BY THE ENGINEER TO MAINTAIN AND SUBSEQUENTLY RESTORE THE DESIGNATED LOCAL DETOUR ROUTE.

253, PAVEMENT REPAIR	160 CU.YD.
254, PAVEMENT PLANING, ASPHALT CONCRETE	49300 SQ.YD.
407, TACK COAT.	5000 GAL.
448, ASPHALT CONCRETE, SURFACE COURSE, TYPE I, PG64-22	1700 CU. YD.
614, ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	100 CU. YD.
616, WATER	10 M. GAL.
617, COMPACTED AGGREGATE, TYPE A	3000 CU. YD.
617, WATER	118 M. GAL.
642, CENTER LINE, TYPE I	7.5 MILE

NOTICE OF CLOSURE SIGNS, AS DETAILED BELOW, SHALL BE ERECTED BY THE CONTRACTOR ON THE ROAD TO BE CLOSED AT LEAST ONE WEEK IN ADVANCE OF THE SCHEDULED ROAD CLOSURE. THESE SIGNS SHALL BE ERECTED ON THE RIGHT HAND SIDE OF THE ROAD FACING TRAFFIC. THE SIGNS SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF ANY OTHER TRAFFIC CONTROL SIGN. THEY SHALL BE ERECTED AT THE POINT OF CLOSURE.

SIGN SUPPORTS FOR "ROAD CLOSED" SIGNS SHALL BE AS DETAILED IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR PROVIDING, ERECTING, MAINTAINING, AND REMOVING SIGNS, AND SIGN SUPPORTS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC.



W20-H13

*RIVERVIEW RD.
BOSTON MILLS RD.

SIDE ROAD CLOSURES

PHASE AND YEAR	TOTAL CLOSURE IN DAYS ‡ RIVERVIEW	BOSTON MILLS
PHASE I	15 DAYS	20 DAYS
PHASE II	20 DAYS	N/A
PHASE III	20 DAYS	N/A

‡ CLOSURE TIMES SHOWN ARE THE TOTAL TIMES PERMITTED FOR THE FOLLOWING ACTIVITIES WHICH MAY REQUIRE ROAD CLOSURES:

1. REMOVAL OF EXISTING STRUCTURE
2. SETTING NEW SUPERSTRUCTURE MEMBERS
3. PLACING OF DECK FORMS
4. REMOVAL OF DECK FORMS

THE CONTRACTOR SHALL SCHEDULE HIS WORK TO COMPLETE ALL REQUIRED WORK WITHIN THE TOTAL CLOSURE TIMES LISTED. THE CLOSURE TIMES ARE NOT FOR CONSECUTIVE DAYS.

CALCULATED PS CHECKED PG

MAINTENANCE OF TRAFFIC
GENERAL NOTES

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C. NATIONAL PARK SERVICE COORDINATION

THE PROPOSED PROJECT CROSSES THE CUYAHOGA VALLEY NATIONAL PARK. THE CONTRACTOR SHALL SCHEDULE HIS CONSTRUCTION ACTIVITIES TO LIMIT THE IMPACT TO THE NORMAL OPERATIONS OF THE NATIONAL PARK SERVICE WHICH INCLUDES, BUT IS NOT LIMITED TO, THE USE OF THE VALLEY RAILWAY, CUYAHOGA RIVER RECREATIONAL USE, AND THE OHIO & ERIE CANAL TOWPATH TRAIL, ALL WHICH CROSS THROUGH THE PROJECT LIMITS. THE FOLLOWING SHALL BE ADHERED TO WHEN WORKING IN OR NEAR THE NATIONAL PARK SERVICE FACILITIES. ADDITIONAL MEASURES TO ENSURE SAFETY TO THE NATIONAL PARK SYSTEM USERS MAY BE DEEMED NECESSARY BY THE CONTRACTOR, ENGINEER OR THE NATIONAL PARK SERVICE AS CONSTRUCTION PROGRESSES. ALL LABOR, MATERIALS, COORDINATION AND INCIDENTALS TO LIMIT IMPACT TO THE NORMAL OPERATION OF THE NATIONAL PARK SERVICE SHALL BE INCLUDED IN ITEM 614 - MAINTAINING TRAFFIC UNLESS SEPARATELY ITEMIZED IN THE PLANS. FAILURE TO COMPLY WITH THE REQUIREMENTS FOR WORKING IN THE NATIONAL PARK AS APPROVED BY THE ENGINEER SHALL RESULT IN PROGRESS PAYMENT BEING WITHHELD UNTIL APPROPRIATE MEASURES HAVE BEEN INSTITUTED TO ENSURE SAFETY TO THE SATISFACTION OF THE ENGINEER.

1. THE OHIO & ERIE CANAL TOWPATH TRAIL

DURING THE CONSTRUCTION OF THE NEW BRIDGE AND DEMOLITION OF THE EXISTING BRIDGE THERE WILL BE TIMES THAT THE TOWPATH TRAIL WILL NEED TO BE CLOSED FOR THE SAFETY OF THE TOWPATH TRAIL USERS AS WELL AS THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE A COMPLETE CLOSURE OF THE TOWPATH TRAIL ONLY DURING THE DEMOLITION OF THE EXISTING BRIDGE OVER THE TOWPATH TRAIL, ACTUAL ATTACHMENT, LIFTING, AND HANDLING OF NEW BEAMS AND DECK FORMING/FORM STRIPPING OVER THE TOWPATH TRAIL. LENGTH AND DURATION OF CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. SEE SHEET 69-70 FOR REQUIRED TOWPATH SIGNING DETAILS. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. CLOSURES OR RESTRICTIONS OVER THIS SEGMENT OF THE PROJECT IN WHICH NO WORK IS ANTICIPATED WITHIN A REASONABLE TIME FRAME, AS DETERMINED BY THE ENGINEER, SHALL NOT BE PERMITTED. THE LEVEL OF UTILIZATION OF MAINTENANCE OF TRAFFIC DEVICES SHALL BE COMMENSURATE WITH THE WORK IN PROGRESS. TOWPATH TRAIL CLOSURES SHALL BE KEPT TO A MINIMUM AND AT NO TIME SHALL THE TOWPATH TRAIL BE CLOSED ON THE WEEKENDS. WEEK DAY CLOSURES SHALL BE LIMITED TO **7:00 A.M.** TO **6:00 P.M.** THE MAXIMUM CONSECUTIVE CLOSURE DAYS SHALL BE 5 DAYS FOR EACH CLOSURE AND A MAXIMUM OF 20 DAYS WILL BE PERMITTED FOR EACH CONSTRUCTION PHASE. THE 5 CONSECUTIVE CALENDAR DAYS AND HOUR LIMITATIONS SHALL BE CONSIDERED AN INTERIM COMPLETION DATE AND LIQUIDATED DAMAGES SHALL BE ASSESSED IN ACCORDANCE WITH 108.07 FOR EACH CALENDAR DAY/HOUR THE TOWPATH TRAIL REMAINS CLOSED TO TRAFFIC BEYOND THE SPECIFIED LIMIT. THE TOWPATH TRAIL SHALL ALSO BE KEPT OPEN ON LEGAL HOLIDAYS. DURING ANY CONSTRUCTION PHASE WHERE THE CONTRACTORS NEED FOR ACCESS BENEATH THE EXISTING OR NEW BRIDGE IS MINIMAL AND OVERHEAD CONSTRUCTION OR DEMOLITION IS NOT WITHIN 50 FEET (MEASURED HORIZONTALLY) OF THE NEAREST EDGE OF PAVEMENT ON THE TOWPATH TRAIL, AND DEEMED SAFE FROM ANY HAZARDS, THE TOWPATH TRAIL SHALL REMAIN OPEN.

DURING THE CONSTRUCTION OF THE PROJECT THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A CHAIN LINK FENCE 6 FOOT IN HEIGHT AS SHOWN ON THE TOWPATH TRAIL M.O.T. DRAWING SHEET NO. 69 . SEE FENCE NOTE ON SHEET 19 FOR ADDITIONAL REQUIREMENTS.

WHEN THE TOWPATH TRAIL IS OPEN IT SHALL BE KEPT FREE OF ANY OBSTRUCTIONS OR HAZARDS INCLUDING HOLES, DEBRIS AND MUD. OTHER AREAS OF THE TOWPATH TRAIL DAMAGED OR MADE HAZARDOUS BY THE CONTRACTOR SHALL BE IMMEDIATELY REPAIRED OR CLEANED. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING AND REMOVING WHEN NOT IN USE, BARRICADES AND SIGNING APPROPRIATE FOR THE CLOSURE. ALL ADVANCE WARNING SIGNS ERECTED FOR THE CLOSURE OF THE TOWPATH TRAIL SHALL BE COVERED WHEN THE TOWPATH TRAIL IS OPEN.

DURING THE CONSTRUCTION OF THE PROJECT WHEN IT IS DEEMED NECESSARY BY THE CONTRACTOR WITH THE APPROVAL OF THE ENGINEER AND THE NATIONAL PARK SERVICE TO CLOSE THE TOWPATH TRAIL; THE GATES AND BARRICADES, AS DETAILED ON MT-101.60 SHALL BE ERECTED AT THE LOCATIONS SHOWN ON THE TOWPATH TRAIL M.O.T. DRAWING, SHEET NO. 69 , AND THE ADVANCE WARNING SIGNS FOR THE CLOSURE SHALL BE ERECTED/UNCOVERED.

THE DESIGN OF THE SIGNAGE SHALL BE COORDINATED WITH:

KIM NORLEY
NATIONAL PARK SERVICE SIGN COORDINATOR
(440) 546-5974.

THE CLOSING OF THE TOWPATH TRAIL SHALL BE COORDINATED BETWEEN THE CONTRACTOR, ENGINEER AND THE NATIONAL PARK SERVICE SO THAT ALL PARTIES SHALL HAVE A MINIMUM OF 10 DAYS ADVANCE NOTICE OF ANY TOWPATH TRAIL CLOSURE. DURING THE CLOSURE TIMES TWO (2) LAW ENFORCEMENT OFFICERS (NATIONAL PARK SERVICE RANGERS) SHALL BE EMPLOYED TO DETER ACCESS TO THE CONSTRUCTION AREA.

NOTICE OF CLOSURE SIGNS, AS DETAILED IN THESE PLANS, SHALL BE ERECTED BY THE CONTRACTOR AT LEAST ONE WEEK IN ADVANCE OF THE SCHEDULED CLOSURE. THE SIGNS SHALL BE ERECTED ON THE RIGHT HAND SIDE OF THE TOWPATH TRAIL FACING TRAFFIC. THEY SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF ANY OTHER TRAFFIC CONTROL SIGNS. THE SIGNS SHALL BE ERECTED AT THE POINT OF CLOSURE.

THE PURPOSE OF THE TRAFFIC CONTROL DEVICES PROVIDED HEREIN IS TO DIVERT AND GUIDE TOWPATH TRAIL USERS WHOSE PATH WOULD OTHERWISE ENTER THE WORK AREA. THE CONTRACTOR MUST TAKE ADDITIONAL PRECAUTIONS AS APPROPRIATE TO PROTECT OTHER TOWPATH TRAIL USERS (INCLUDING CHILDREN) FROM EXPOSURE TO HAZARDS RESULTING FROM CONSTRUCTION OPERATIONS.

THE CONTRACTOR SHALL LIMIT HIS USE OF THE TOWPATH TRAIL. THE CONSTRUCTOR'S ACCESS ACROSS THE TOWPATH TRAIL SHALL BE LIMITED TO ONE SINGLE LOCATION WHICH CAN BE READILY CLOSED-OFF WITH A GATE AND BARRICADES WHEN THE CONTRACTOR IS NOT WORKING. A FLAGGER AND ADVANCE WARNING SIGNS AS SHOWN ON SHEET NO. 30 WILL BE REQUIRED WHEN THE TOWPATH TRAIL CROSSING IS UTILIZED BY THE CONTRACTOR. AT NO TIME SHALL THE CONTRACTOR USE THE TOWPATH TRAIL FOR THE PARKING, STAGING OR STORAGE OF EQUIPMENT AND MATERIALS.

AT THE COMPLETION OF THE PROJECT WHEN THE CONTRACTOR NO LONGER NEEDS ACCESS TO THE AREA UNDER THE NEW OR EXISTING BRIDGE, THE TOWPATH TRAIL SHALL BE CLEANED, THE DISTURBED AREA RESTORED TO AT LEAST THE CONDITION PRIOR TO CONSTRUCTION AS APPROVED BY THE ENGINEER. A 2" THICK WEARING SURFACE OF ITEM 411 - STABILIZED CRUSHED AGGREGATE, AS PER PLAN SHALL BE APPLIED WITHIN THE WORK LIMITS. AN ESTIMATED QUANTITY OF 50 CU.YD. ITEM 411 - STABILIZED CRUSHED AGGREGATE, AD 150 CU.YD. ITEM 304 - 6" AGGREGATE BASE HAS BEEN CARRIED TO THE MAINTENANCE OF TRAFFIC SUB-SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER.

2. CUYAHOGA RIVER RECREATIONAL USE

CANOE TRAFFIC SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION OF THIS PROJECT EITHER THROUGH THE EXISTING RIVER CHANNEL OR THROUGH PORTAGE TRAIL AS APPROVED BY THE ENGINEER.

PERSONS CANOEING ON THE CUYAHOGA RIVER WILL BE ADVISED THAT DURING CERTAIN CONSTRUCTION ACTIVITIES IT WILL BE UNSAFE TO CROSS UNDER THE BRIDGE. THIS ADVISORY WILL BE REQUIRED WHILE NEW BRIDGE BEAMS ARE BEING PLACED OVER THE RIVER, EXISTING STRUCTURES ARE BEING REMOVED, AND FOR PLACING AND REMOVING DECK FORMS. SINCE THE BRIDGE IS BEING CONSTRUCTED IN THREE PHASES, AND THERE ARE TWO STRUCTURES TO DEMOLISH, THERE MAY BE UP TO TWELVE (12) DIFFERENT ADVISORY TIMES ANTICIPATED TO COORDINATE IN ADDITION TO THE TIME FRAME WHEN A TEMPORARY CONSTRUCTION CROSSING IS MAINTAINED IN THE CUYAHOGA RIVER CHANNEL. THE PLACEMENT AND DURATION FOR USE OF ANY TEMPORARY RIVER CROSSING SHALL MEET THE REQUIREMENTS OF THE APPROVED NATIONWIDE WATERWAY PERMIT BY THE U.S. ARMY CORPS OF ENGINEERS.

WARNING SIGNS WILL BE POSTED UPSTREAM OF THE PROJECT BY THE CONTRACTOR TO ADVISE CANOEIST TO PORTAGE AROUND THE WORK SITE USING THE TOWPATH TRAIL SEE SHEETS NO. 69 & 70 . SIGNS WILL ALSO BE POSTED AT RECOMMENDED LOCATIONS AS DIRECTED BY THE ENGINEER FOR CANOEIST TO LEAVE THE RIVER, AND TO DIRECT CANOEIST TO AND FROM THE TOWPATH TRAIL. THE DESIGN OF THE SIGNAGE SHALL BE COORDINATED WITH KIM NORLEY - NATIONAL PARK SERVICE SIGN COORDINATOR (440) 546-5974. THE DURATION OF THE PORTAGE WILL BE LIMITED TO THE ACTUAL TIME REQUIRED TO MAINTAIN A TEMPORARY CONSTRUCTION CROSSING OF THE RIVER AND DURING THE CONSTRUCTION ACTIVITIES OVER THE RIVER CHANNEL NOTED ABOVE. THE TOWPATH TRAIL SHALL NOT BE CLOSED DURING ANY PERIOD WHEN THE CANOEIST ARE REQUIRED TO PORTAGE.

THE ABOVE SIGNING SHALL BE MOUNTED IN SUCH A WAY AS TO BE A MINIMUM OF 4 FEET ABOVE THE NORMAL WATER LEVEL, UNOBSTRUCTED BY TREE BRANCHES, AND PROPERLY ANGLED FOR MAXIMUM VISIBILITY FROM THE MAIN CLEAR CHANNEL. THE METHOD OF SUPPORTING THE SIGNS SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. UPON COMPLETION OF THE PROJECT, THE SIGNS AND SUPPORT SYSTEMS SHALL BE COMPLETELY REMOVED FROM THE RIVER CHANNEL. THE CONTRACTOR SHALL NOTIFY LOCAL CANOE LIVERIES USING THIS PORTION OF THE RIVER AT LEAST 10 DAYS PRIOR TO ANY CHANGES AFFECTING CANOE TRAFFIC.

PORTAGE TRAILS IF USED SHALL BE CONSTRUCTED AND MAINTAINED BY THE CONTRACTOR WITH THE LEAST POSSIBLE DISTURBANCE TO THE SURROUNDING AREA. THE TRAIL SHALL BE ADEQUATELY MARKED IN BOTH DIRECTIONS.

IN THE EVENT PIPES ARE USED TO DIVERT OR CARRY RIVER WATER. BOTH THE INLET AND OUTLET ENDS SHALL BE ADEQUATELY PROTECTED BY GRATES OR FENCE SO THAT PEOPLE OR CANOES ARE NOT DRAWN THROUGH OR HELD BY THEM.

3. VALLEY RAILWAY

THE VALLEY RAILWAY OPERATES ALTERNATIVE TRANSPORTATION AND PASSENGER EXCURSION RAIL SERVICE IN THE CUYAHOGA VALLEY NATIONAL PARK AND OPERATES ON A SCHEDULE THAT VARIES FROM SEASON TO SEASON THROUGHOUT THE YEAR. THE POINT OF CONTACT FOR THE RAILROAD COORDINATION AND SCHEDULE IS:

BRIAN ALLAN
VALLEY RAILWAY DIRECTOR OF OPERATIONS
(440) 526-7128

THE CONTRACTOR IS TO SCHEDULE THE WORK WHEN NEW BRIDGE BEAMS ARE BEING PLACED OVER THE RAILWAY, EXISTING STRUCTURES ARE BEING REMOVED, AND DECK FORMS PLACED AND REMOVED AT TIMES WHEN THE RAILEAY IS NOT OPERATING. THE CONTRACTOR WILL BE REQUIRED TO CLOSELY COORDINATE THIS SCHEDULE WITH ODOT AND THE NATIONAL PARK SERVICE. SINCE THE BRIDGE IS BEING CONSTRUCTED IN THREE PHASES, AND THERE ARE TWO STRUCTURES TO DEMOLISH, THERE MAY BE UP TO TWELVE (12) DIFFERENT COORDINATION TIMES ANTICIPATED. THE COORDINATED SCHEDULE THAT SPECIFIES RAILWAY OPERATION SHALL BE CONSIDERED AN INTERIM COMPLETION AND LIQUIDATED DAMAGES SHALL BE ASSESSED IN ACCORDANCE WITH 108.07 FOR EACH CALENDAR DAY THE RAILROAD CANNOT OPERATE AS SCHEDULED.

IT WILL ALSO BE NECESSARY FOR THE CONTRACTOR TO CONSTRUCT A TEMPORARY CROSSING OF THE RAILWAY IN ACCORDANCE WITH DETAIL ON SHEET NO. 63,64 INCLUDING THE NECESSARY DRAINAGE ITEMS TO PROVIDE/MAINTAIN POSITIVE DRAINAGE AT ALL TIMES AS APPROVED BY THE ENGINEER, FOR MOVEMENT AND DELIVERY OF EQUIPMENT AND MATERIALS TO THE AREA BETWEEN THE RAILWAY AND THE RIVER (SEE SHEET NO. 59 FOR ACCESS ROAD).

THE CONTRACTOR SHALL ALSO CONSTRUCT A PERMANENT CROSSING OF THE RAILROAD IN ACCORDANCE WITH THE DETAILS ON SHEET NO. 63,64. FOR ACCESS TO THE DETENTION BASIN, SEE SHEET NO. 315,316. THE PERMANENT RAILROAD CROSSING SHALL NOT BE USED FOR CONSTRUCTION ACCESS.

THE CONTRACTOR SHALL LIMIT HIS USE OF THE RAILWAY RIGHT OF WAY. ACCESS ACROSS THE RAILWAY RIGHT OF WAY SHALL BE LIMITED TO ONE SINGLE LOCATION WHICH CAN BE READILY CLOSED-OFF WITH A GATE AND BARRICADES WHEN THE CONTRACTOR IS NOT WORKING. AT NO TIME SHALL THE CONTRACTOR USE THE RAILWAY RIGHT OF WAY FOR THE PARKING, STAGING OR STORAGE OF EQUIPMENT AND MATERIALS. THE CONTRACTOR WILL BE REQUIRED TO UTILIZE A FLAGGER AT THE RAILWAY CROSSING ON DAYS THAT THE RAILWAY IS OPERATING, AND THE CONTRACTOR IS WORKING, TO CONTROL THE CONTRACTOR ACTIVITIES AROUND AND ACROSS THE TRACKS. THE FLAGGER SHALL BE FURNISHED BY THE VALLEY RAILWAY AND PAID FOR BY THE CONTRACTOR UNDER 614 - MAINTAINING TRAFFIC, MISC.: RAILROAD FLAGGER AND COORDINATION.

IN ADDITION TO MAINTAINING THE TEMPORARY RAILWAY CROSSING WITHIN THE PROJECT LIMITS, THE RAILWAY SHALL BE KEPT FREE OF ANY OBSTRUCTIONS OR HAZARDS INCLUDING HOLES, DEBRIS AND MUD. OTHER AREAS OF THE RAILWAY DAMAGED OR MADE HAZARDOUS BY THE CONTRACTOR SHALL BE IMMEDIATELY REPAIRED OR CLEANED. THE CONTRACTOR SHALL BE REQUIRED TO COMPLY WITH ALL VALLEY RAILWAY REQUIREMENTS FOR TEMPORARY CROSSING OF THE RAILROAD FACILITY. DURING THE CONSTRUCTION OF THE PROJECT THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A CHAIN LINK FENCE 6 FOOT IN HEIGHT ALONG THE RAILWAY RIGHT OF WAY. SEE FENCE TYPE CL, AS PER PLAN NOTE ON SHEET 18 FOR ADDITIONAL REQUIREMENTS AND PROPOSED FENCE LAYOUT ON SHEET 284.

AT THE COMPLETION OF THE PROJECT WHEN THE CONTRACTOR NO LONGER NEEDS ACCESS TO THE AREA UNDER THE NEW OR EXISTING BRIDGE, THE RAILWAY AND SURROUNDING AREA SHALL BE RETURNED TO AT LEAST THE CONDITION PRIOR TO CONSTRUCTION, IN ACCORDANCE WITH THE SITE RESTORATION PLAN, AS APPROVED BY THE ENGINEER AND VALLEY RAILWAY, AND ALL DISTURBED AREAS SEEDED AS PER CMS 659 AND AS PER THE SITE RESTORATION PLAN.

CALCULATED PS CHECKED PG

MAINTENANCE OF TRAFFIC GENERAL NOTES

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D. WORKING HOURS RESTRICTION - I.R. 271

LANE CLOSURES OR OTHER WORK, INCLUDING INSTALLATION OF MAINTENANCE OF TRAFFIC DEVICES, WHICH OCCUPIES ANY PORTION OF THE PRESENT TRAVEL IS RESTRICTED IN ACCORDANCE WITH THE PERMITTED LANE CLOSURE CHART AND THE TIME FRAMES LISTED BELOW.

NO WORK SHALL BE PERFORMED ON OR NEAR PAVEMENT AND TWO LANES IN EACH DIRECTION SHALL BE OPEN TO TRAFFIC BETWEEN NOVEMBER 15 TO APRIL 1 IN ADDITION TO THE FOLLOWING DESIGNATED HOLIDAYS OR EVENTS:

MEMORIAL DAY	EASTER	CHRISTMAS
LABOR DAY	MOTHER'S DAY	NEW YEARS
FOURTH OF JULY	THANKSGIVING	

THE PERIOD OF TIME THAT THE LANES ARE TO BE OPEN DEPENDS ON THE DAY OF THE WEEK ON WHICH THE HOLIDAY OR EVENT FALLS. THE FOLLOWING SCHEDULE SHALL BE USED TO DETERMINE THIS PERIOD:

DAY OF THE WEEK	TIME ALL LANES MUST BE OPEN TO TRAFFIC
SUNDAY	12:00 (NOON) FRIDAY THROUGH 12:00 (NOON) MONDAY
MONDAY	12:00 (NOON) FRIDAY THROUGH 12:00 (NOON) TUESDAY
TUESDAY	12:00 (NOON) MONDAY THROUGH 12:00 (NOON) WEDNESDAY
WEDNESDAY	12:00 (NOON) TUESDAY THROUGH 12:00 (NOON) THURSDAY
THURSDAY	12:00 (NOON) WEDNESDAY THROUGH 12:00 (NOON) MONDAY
FRIDAY	12:00 (NOON) THURSDAY THROUGH 12:00 (NOON) MONDAY
SATURDAY	12:00 (NOON) FRIDAY THROUGH 12:00 (NOON) MONDAY

NO WORK WITHIN ACTIVE TRAVEL LANES OR WHICH SHALL SLOW TRAFFIC IS PERMITTED. ALL MAINTENANCE OF TRAFFIC WORK, INCLUDING INSTALLATION OF SIGNING AND LANE CLOSURES SHALL OCCUR WITHIN THE PERMITTED CLOSURE TIME FRAMES. NO OTHER EXCEPTIONS ARE PERMITTED.
NO EXTENSIONS OF TIME SHALL BE GRANTED FOR DELAYS IN MATERIAL DELIVERIES, UNLESS SUCH DELAYS ARE INDUSTRY WIDE, OR FOR LABOR STRIKES, UNLESS SUCH STRIKES ARE AREA WIDE.
SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED LIQUIDATED DAMAGES PER CMS 108.07.

E. PERMITTED LANE CLOSURES

DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AS PER THE PERMITTED LANE CLOSURE CHART. THE PERMITTED LANE CLOSURE CHART USED FOR THIS PROJECT SHALL BE THE MOST CURRENT AVAILABLE ON THE DATE THIS PROJECT SELLS.

THE CHART CAN BE FOUND AT:
HTTPS://DOTAWIOO.DOT.STATE.OH.US/PLCM/PLCM_WEB.JSP

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THE REQUIREMENTS IN THE CHART, THE CONTRACTOR SHALL BE ASSESSED LIQUIDATED DAMAGES IN THE AMOUNT OF **$10,000.00** PER HOUR OR PORTION THEREOF THAT THE LANE REDUCTION REMAINS BEYOND THE SPECIFIED LIMIT.

F. CONTINGENCY QUANTITIES

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE M.O.T. SUBSUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR THE MAINTENANCE OF TRAFFIC AND REPLACEMENT OF DAMAGED GUARDRAIL:

ITEM 202 - GUARDRAIL REMOVED	750	FT.
ITEM 410 - TRAFFIC COMPACTED SURFACE, TYPE A OR B	400	CU. YD.
ITEM 606 - GUARDRAIL, TYPE 5	750	FT.
ITEM 606 - ANCHOR ASSEMBLY, REBUILT TYPE E, AS PER PLAN	10	EACH
ITEM 614 - ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	500	CU. YD.
ITEM 616 - WATER	50	M. GAL.

G. SUSPENSION OF WORK

IF THE CONTRACTOR FAILS TO COMPLY WITH THE PROVISIONS FOR MAINTENANCE OF TRAFFIC AS SET FORTH IN THESE PLANS OR WITH PROVISIONS OF THE MANUAL, THE ENGINEER MAY SUSPEND WORK UNTIL THE CONTRACTOR COMPLIES WITH THE NECESSARY REQUIREMENTS. NO COMPENSATION WILL BE PAID FOR SUSPENSION OF WORK.

H. ALTERNATE MAINTENANCE OF TRAFFIC PLANS

IF THE CONTRACTOR SO ELECTS, HE MAY SUBMIT ALTERNATIVE METHODS FOR THE MAINTENANCE OF TRAFFIC, PROVIDED THE INTENT OF THE ABOVE PROVISIONS IF FOLLOWED AND NO ADDITIONAL INCONVENIENCE TO THE TRAVELING PUBLIC RESULTS THEREFORM. NO ALTERNATIVE PLAN SHALL BE PLACED INTO EFFECT UNTIL APPROVAL HAS BEEN GRANTED IN WRITING BY THE ODOT DISTRICT CONSTRUCTION ENGINEER.

I. METHOD OF PAYMENT

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH ITEM 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614 MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

ITEM 614 - WORK ZONE IMPACT ATTENUATOR, UNIDIRECTIONAL

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING EITHER OF THE FOLLOWING IMPACT ATTENUATORS:

1) THE QUADGUARD CZ, (24" WIDE 6-BAY) WORK ZONE IMPACT ATTENUATOR MANUFACTURED BY ENERGY ABSORPTION SYSTEMS, INC., ONE EAST WACKER DRIVE, CHICAGO, IL 60601 (TELEPHONE: 312-467-6750).

THE LENGTH OF THE 6-BAY QUADGUARD CZ IS 20'-9". INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AS DETAILED ON THE FOLLOWING PRE-APPROVED SHOP DRAWINGS:

DWG.#	DRAWING NAME	DWG./REV. DATE	ODOT APPROVAL DATE
QSCZCVR-T4	QUADGUARD CZ SYSTEM FOR CONSTRUCTION ZONES	5/13/99 Rev. J	8/27/99
35-40-10	QUADGUARD SYSTEM CONCRETE PAD, CZ, QG	11/19/97 Rev. D	8/27/99
35-40-16	QUADGUARD SYSTEM BACKUP ASSEMBLY, CZ, QG	7/30/99 Rev. F	8/27/99
354051Z	QUADGUARD CZ SYSTEM NOSE ASSEMBLY, CZ, QG, 24,30,36	5/17/99	8/27/99
35-40-18	TRANSITION ASSEMBLY, 4 OFFSET, QG	6/25/99 Rev. F	8/27/99
35400260	QUADGUARD SYSTEM PCMB ANCHOR ASSEMBLY	11/19/97 Rev. C	8/27/99

2) THE TRACC (TRINITY ATTENUATING CRASH CUSHION) MANUFACTURED BY TRINITY INDUSTRY., 1170 N. STATE STREET, GIRARD, OHIO 44420 (TELEPHONE: 330-545-4373).

THE TRACC IS 21'-0" LONG AND 2'-7" WIDE. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AS DETAILED ON THE FOLLOWING PRE-APPROVED SHOP DRAWINGS:

DWG.#	DRAWING NAME	DWG./REV. DATE	ODOT APPROVAL DATE
SS450	CRASH-CUSHION ATTENUATING TERMINAL PLAN, ELEVATION & SECTIONS	3/12/99 Rev. 1	8/27/99
SS455	TRACC TRANSITION TO W-BEAM MEDIAN BARRIER PLAN, ELEVATION & SECTIONS	2/18/99	8/27/99
SS461	TRACC TRANSITION TO CONCRETE SAFETY SHAPE BARRIER PLAN, ELEVATION & SECTIONS	6/30/99 Rev. 1	8/27/99
SS462	TRACC TRANSITION TO CONCRETE BARRIER SINGLE SLOPE PLAN, ELEVATION & SECTIONS	6/30/99	8/27/99

3) THE GREAT CZ IMPACT ATTENUATOR MANUFACTURED BY ENERGY ABSORPTION SYSTEMS INC. THIS ATTENUATOR MAY BE USED UNTIL JANUARY 1, 2007 IF THE ITEM WAS PURCHASED BEFORE OCTOBER 1, 1998 AND IS IN THE CONTRACTOR'S INVENTORY.

THE CONTRACTOR SHALL PROVIDE A REPLACEMENT UNIT WHEN AN IMPACT IS SEVERE ENOUGH TO REQUIRE COMPLETE REPLACEMENT OF THE ATTENUATOR. THE CONTRACTOR SHALL HAVE A SPARE PARTS PACKAGE AVAILABLE ON THE PROJECT SITE AT ALL TIMES WHEN AN ATTENUATOR IS IN PLACE. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF ONE COMPLETE SPARE PARTS PACKAGE FOR EVERY 1 TO 6 UNITS INSTALLED ON THE PROJECT SITE. FOR EXAMPLE, 5 INSTALLED UNITS REQUIRE 1 SPARE PARTS PACKAGE AND 7 INSTALLED UNITS REQUIRE 2 SPARE PARTS PACKAGES.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 614, WORK ZONE IMPACT ATTENUATOR, UNIDIRECTIONAL, EACH, AND SHALL INCLUDE ALL ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT, MAINTAIN, REPAIR, REPLACE, RELOCATE AND SUBSEQUENTLY REMOVE A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR SYSTEM, INCLUDING ALL RELATED BACKUPS, TRANSITIONS, LEVELING PADS, HARDWARE AND GRADING, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

DUST CONTROL

THE CONTRACTOR SHALL FURNISH AND APPLY WATER FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. THE FOLLOWING CONTINGENCY QUANTITIES HAVE BEEN INCLUDED FOR DUST CONTROL PURPOSES ON THE M.O.T. SUBSUMMARY, SHEET NO. 31-33 :

ITEM 616 - WATER	300	M. GAL.

ITEM 614 - ASPHALT CONCRETE FOR MAINTAINING TRAFFIC

BUTT JOINTS:

MILLED AREAS FOR BUTT JOINTS SHALL NOT BE LEFT OPEN TO TRAFFIC. BEFORE OPENING TO TRAFFIC, A TEMPORARY ASPHALT CONCRETE WEDGE OF SUFFICIENT LENGTH IN ACCORDANCE WITH BP-3.1 AND/OR DROPOFFS IN WORK ZONES DETAIL SHALL BE CONSTRUCTED AT THE DROPOFF AS DIRECTED BY THE ENGINEER. AN ESTIMATED QUANTITY OF ITEM 614 ASPHALT CONCRETE FOR MAINTAINING TRAFFIC HAS BEEN PROVIDED FOR THE WEDGE CONSTRUCTION. WHILE TRAFFIC IS PROHIBITED AND BEFORE THE NEW PAVEMENT IS PLACED, THE WEDGE SHALL BE REMOVED AND THE COSTS SHALL BE CONSIDERED INCIDENTAL TO ITEM 614 ASPHALT CONCRETE FOR MAINTAINING TRAFFIC.

CONSTRUCTION JOINTS AT STRUCTURES:

AFTER PHASE II CONSTRUCTION IS COMPLETED TRAFFIC WILL BE MAINTAINED ON THE PROPOSED SOUTHBOUND INTERMEDIATE ASPHALT COURSE AND THE PROPOSED APPROACH SLAB. TO PROVIDE A SMOOTH TRANSITION FROM THE FINAL APPROACH SLAB ELEVATION TO THE INTERMEDIATE ASPHALT COURSE ELEVATION THE FOLLOWING QUANTITY OF ITEM 614 ASPHALT CONCRETE FOR MAINTAINING TRAFFIC HAS BEEN INCLUDED TO BE USED TO CONSTRUCT A TAPERED EDGE TYPE JOINT AS SHOWN ON STANDARD CONSTRUCTION DRAWING BP-3.1. PRIOR TO PLACING THE FINAL SURFACE COURSE THE TAPERED EDGE SHALL BE REMOVED AND THE COST OF REMOVAL SHALL BE CONSIDERED INCIDENTAL TO ITEM 614 ASPHALT CONCRETE FOR MAINTAINING TRAFFIC.

ITEM 614 - ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	150	CU. YD.

"BUMP" (W8-1) AND "ADVISORY" (W13-1) SIGNS AND SUPPORTS SHALL BE ERECTED AND MAINTAINED AT THE BUTT JOINT UNTIL THE SURFACE COURSE IS COMPLETED. THE COSTS FOR PROVIDING, ERECTING, MAINTAINING AND SUBSEQUENTLY REMOVING THESE SIGNS AND SUPPORTS SHALL BE INCLUDED IN THE LUMP SUM BID OF ITEM 614 MAINTAINING TRAFFIC.

CALCULATED PRS
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MAINTENANCE OF TRAFFIC GENERAL NOTES

SUM-271-8.02

ITEM 614 - LAW ENFORCEMENT OFFICER

IN ADDITION TO THE REQUIREMENTS OF CMS 614 AND THE LATEST EDITION OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD), A UNIFORMED LAW ENFORCEMENT OFFICER SHALL BE PROVIDED FOR CONTROLLING TRAFFIC FOR THE FOLLOWING TASKS:

- FOR TOWPATH TRAIL CLOSURES

LAW ENFORCEMENT OFFICERS (L.E.O.'S) SHOULD NOT BE USED WHERE THE OMUTCD INTENDS THAT FLAGGERS BE USED. THE LEO'S ARE CONSIDERED TO BE EMPLOYED BY THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR ACTIONS. ALTHOUGH THEY ARE EMPLOYED BY THE CONTRACTOR, THE PROJECT ENGINEER SHALL HAVE CONTROL OVER THEIR PLACEMENT.

THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THESE SERVICES WITH:

NATIONAL PARK SERVICE
15610 VAUGHN ROAD
BRECKSVILLE, OHIO 44131-3018
PHONE: (330) 650-4636

SUMMIT COUNTY SHERIFF
53 EAST CENTER STREET
AKRON, OHIO
PHONE: (330) 379-2111

IF AFTER CONTACTING THE NATIONAL PARK SERVICE, IT IS DETERMINED THAT THEY CANNOT SUPPLY THE LEO, THEN AN AUTHORIZED MUNICIPAL OR COUNTY POLICE OFFICER SHALL BE PROVIDED.

LAW ENFORCEMENT OFFICERS REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE HOURLY BASIS UNDER ITEM 614 LAW ENFORCEMENT OFFICER. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE M.O.T. SUBSUMMARY, SHEET NOS. 31-32.

ITEM 614 - LAW ENFORCEMENT CFFICER 480 HOUR

THE HOURS PAID SHALL INCLUDE MINIMUM SHOW-UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED.

IF THE CONTRACTOR WISHES TO UTILIZE LEO'S FOR FLAGGING AND TRAFFIC CONTROL OTHER THAN FOR THAT REQUIRED IN THESE PLANS, HE MAY DO SO AT HIS OWN EXPENSE. PAYMENT FOR THE EXCESS ABOVE THE CONTRACT REQUIREMENTS WILL BE INCLUDED UNDER ITEM 614 MAINTAINING TRAFFIC.

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR

IN ADDITION TO THE REQUIREMENTS OF CMS 614 AND THE LATEST EDITION OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD), A UNIFORMED LAW ENFORCEMENT OFFICER AND OFFICIAL PATROL CAR WITH WORKING TOP MOUNTED EMERGENCY FLASHING LIGHTS SHALL BE PROVIDED FOR CONTROLLING TRAFFIC FOR THE FOLLOWING TASKS:

- FOR LANE CLOSURES: DURING INITIAL SET-UP PERIODS, TEAR DOWN PERIODS, SUBSTANTIAL SHIFTS OF A CLOSURE POINT OR WHEN NEW LANE CLOSURE ARRANGEMENTS ARE INITIATED.

LAW ENFORCEMENT OFFICERS (L.E.O.'S) SHOULD NOT BE USED WHERE THE OMUTCD INTENDS THAT FLAGGERS BE USED. THE LEO'S ARE CONSIDERED TO BE EMPLOYED BY THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR ACTIONS. ALTHOUGH THEY ARE EMPLOYED BY THE CONTRACTOR, THE PROJECT ENGINEER SHALL HAVE CONTROL OVER THEIR PLACEMENT. THE OFFICIAL PATROL CAR SHALL BE A PUBLIC SAFETY VEHICLE AS REQUIRED BY THE OHIO REVISED CODE.

THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THESE SERVICES WITH:

STATE HIGHWAY PATROL - CANTON POST
4710 SHUFFEL ROAD
NORTH CANTON, OHIO 44720
PHONE: (330) 433-6200

SUMMIT COUNTY SHERIFF
53 EAST CENTER STREET
AKRON, OH
PHONE: (330) 379-2111

IF AFTER CONTACTING THE OHIO HIGHWAY PATROL, IT IS DETERMINED THAT THEY CANNOT SUPPLY THE LEO, THEN AN AUTHORIZED MUNICIPAL OR COUNTY POLICE OFFICER WITH A MARKED AND FLASHER-LIGHT EQUIPPED OFFICIAL POLICE OR PATROL CAR SHALL BE PROVIDED.

LAW ENFORCEMENT OFFICERS WITH PATROL CAR REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE HOURLY BASIS UNDER ITEM 614 LAW ENFORCEMENT OFFICER WITH PATROL CAR. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE M.O.T. SUBSUMMARY, SHEET NOS. 31-32:

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR 130 HOUR

THE HOURS PAID SHALL INCLUDE MINIMUM SHOW-UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED.

IF THE CONTRACTOR WISHES TO UTILIZE LEO'S FOR FLAGGING AND TRAFFIC CONTROL OTHER THAN FOR THAT REQUIRED IN THESE PLANS, HE MAY DO SO AT HIS OWN EXPENSE. PAYMENT FOR THE EXCESS ABOVE THE CONTRACT REQUIREMENTS WILL BE INCLUDED UNDER ITEM 614 MAINTAINING TRAFFIC.

CONSTRUCTION ACCESS POINTS

CONSTRUCTION ACCESS POINTS IN THE PORTABLE CONCRETE BARRIER ARE REQUIRED IN ORDER TO ACCESS THE WORK ZONE IN CERTAIN AREAS OF THE PROJECT. SEE SHEET NO. 71 FOR CONSTRUCTION ACCESS POINTS NOTES AND DETAILS.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD). PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLANS.

ITEM 614 - WORK ZONE SPEED LIMIT SIGN

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN, COVER DURING SUSPENSION OF WORK, AND SUBSEQUENTLY REMOVE WORK ZONE SPEED LIMIT SIGNS (55 MPH) (R2-1) AND SUPPORTS WITHIN THE WORK LIMITS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

THE CONTRACTOR SHALL COVER OR REMOVE ANY EXISTING SPEED LIMIT OR MINIMUM SPEED SIGNS (R2-4) WITHIN THE REDUCED SPEED ZONE. THESE SIGNS SHALL BE RESTORED DURING SUSPENSION OR TERMINATION OF THE REDUCED SPEED LIMIT. THE EXPENSE OF COVERING OR REMOVAL AND RESTORATION OF EXISTING SPEED LIMIT OR MINIMUM SPEED SIGNS SHALL BE INCLUDED IN THE PAY ITEM FOR THE WORK ZONE SPEED LIMIT SIGNS.

THE WORK ZONE SPEED LIMIT SIGNS MAY BE ERECTED OR UNCOVERED NO MORE THAN FOUR HOURS BEFORE THE ACTUAL START OF WORK. THE SIGNS SHALL BE REMOVED OR COVERED NO LATER THAN FOUR HOURS FOLLOWING RESTORATION OF ALL LANES TO TRAFFIC WITH NO RESTRICTIONS, OR SOONER AS DIRECTED BY THE ENGINEER.

TEMPORARY SIGN COVERING AND UNCOVERING DUE TO TEMPORARY LANE RESTORATIONS SHALL BE GUIDED BY THE FOUR-HOUR LIMITATIONS STATED ABOVE. SUCH LANE RESTORATIONS SHOULD BE EXPECTED TO REMAIN IN EFFECT FOR 30 OR MORE DAYS, SUCH AS DURING WINTER SHUTDOWNS.

THE CONTRACTOR SHALL ERECT A WORK ZONE SPEED LIMIT SIGN IN ADVANCE OF ANY LANE RESTRICTION EXPECTED TO LAST AT LEAST 30 CONSECUTIVE CALENDER DAYS. THE SIGN SHALL BE MOUNTED ON BOTH SIDES OF DIVIDED HIGHWAYS. THE FIRST WORK ZONE SPEED LIMIT SIGN SHALL BE PLACED 500 FEET IN ADVANCE OF THE LANE REDUCTION TAPER OR AT A POINT WHEREVER CONSTRUCTION BEGINS, WHICHEVER COMES FIRST. THE SIGN SHALL BE MOUNTED ON THE RIGHT SIDE, 250 FEET IN ADVANCE OF THE LANE REDUCTION TAPER ON UNDIVIDED HIGHWAYS.

THE SIGN SHALL BE REPEATED, ON THE SIDE NEAREST TRAFFIC, EVERY ONE MILE FOR 55 MPH ZONES. A SIGN TO INDICATE THE RESUMPTION OF THE STATUTORY SPEED LIMIT SHALL BE ERECTED AT THE END OF ANY REDUCED SPEED ZONE. R2-1 (SPEED LIMIT) AND R2-H2A SIGNS (SPEED LIMIT) SHALL BE USED ON DIVIDED ROADWAYS. WHEN USED THE R2-1 AND R2-H2A SIGNS SHALL BE MOUNTED SIDE-BY-SIDE ON SEPARATE SUPPORTS.

THE CONTRACTOR MAY USE SIGNS AND SUPPORTS IN USED BUT GOOD CONDITION PROVIDED THE SIGNS MEET CURRENT ODOT SPECIFICATIONS. SIGN FACES SHALL BE REFLECTORIZED WITH TYPE G SHEETING COMPLYING WITH THE REQUIREMENTS OF 614.03. WORK ZONE SPEED LIMIT SIGNS SHALL BE MOUNTED ON TWO (2) ITEM 630 GROUND MOUNTED SUPPORTS, NO. 3 POSTS.

WORK ZONE SPEED LIMIT SIGNS AND SUPPORTS WILL BE MEASURED AS THE NUMBER OF SIGN INSTALLATIONS, INCLUDING THE SIGNS AND NECESSARY SUPPORTS. IF A SIGN AND SUPPORT COMBINATION IS REMOVED AND REERECTED AT ANOTHER LOCATION WITHIN THE PROJECT DUE TO CHANGES IN THE SPEED ZONE DIRECTED BY THE ENGINEER, IT SHALL BE CONSIDERED ANOTHER UNIT.

PAYMENT FOR ACCEPTED QUANTITIES, COMPLETE IN PLACE, WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR FURNISHING, ERECTING, MAINTAINING, COVERING DURING SUSPENSION OF WORK, AND REMOVING THE SIGNS AND SUPPORTS.

ITEM 614 - WORK ZONE SPEED LIMIT SIGN 14 EACH

QUANTITY CARRIED TO THE M.O.T. SUBSUMMARY, SHEET NOS. 31-33.

CONTRACTOR'S EQUIPMENT - OPERATION AND STORAGE

A QUALIFIED FLAGGER SHALL BE EMPLOYED WHERE THE CONTRACTOR'S EQUIPMENT MUST MERGE WITH THE TRAFFIC STREAM. COST FOR THE FLAGGER SHALL BE INCLUDED UNDER ITEM 614 MAINTAINING TRAFFIC. THE CONTRACTOR'S EQUIPMENT SHALL BE EQUIPPED WITH AT LEAST ONE AMBER FLASHING LIGHT. PAVERS, ROLLERS AND OTHER EQUIPMENT MAY BE PARKED IN AREAS ALONG THE HIGHWAY WHEN PAVING OPERATIONS ARE SCHEDULED TO CONTINUE WITHIN THE NEXT WORKDAY. OTHERWISE THE EQUIPMENT SHALL BE STORED AT A STORAGE AREA OUTSIDE THE R/W, THE LOCATION OF WHICH SHALL HAVE PRIOR APPROVAL OF THE ENGINEER. WHEN PARKING ALONG THE HIGHWAY THE EQUIPMENT SHALL BE PLACED AND DELINEATED AS PER 614.03. NO EQUIPMENT SHALL BE PARKED IN THE MEDIAN OF THE HIGHWAY. ADEQUATE BARRICADES AND LIGHTS SHALL BE PLACED ON THE PAVEMENT SIDE OF THE EQUIPMENT TO IDENTIFY THE LIMITS OF THE EQUIPMENT. ALL OTHER EQUIPMENT, INCLUDING PRIVATE VEHICLES, SHALL BE STORED AT THE APPROVED CONTRACTOR'S STORAGE AREA. NO EQUIPMENT SHALL BE PARKED ON PRIVATE PROPERTY UNLESS PRIOR APPROVAL OF THE OWNER AND THE PROJECT ENGINEER/SUPERVISOR HAS BEEN GRANTED.

CALCULATED PS CHECKED PG

MAINTENANCE OF TRAFFIC GENERAL NOTES

SUM-271-8.02

ITEM 614 - BARRIER REFLECTORS AND OBJECT MARKERS

BARRIER REFLECTORS AND OBJECT MARKERS SHALL BE INSTALLED ON ALL PORTABLE CONCRETE BARRIER USED FOR MAINTENANCE OF TRAFFIC. BARRIER REFLECTORS, OBJECT MARKERS AND THEIR INSTALLATION SHALL CONFORM TO THE APPROPRIATE STANDARD CONSTRUCTION DRAWING AND ITEM 626 EXCEPT THAT DUE TO THE INTERSTATE TRAFFIC VOLUMES AND UNIQUE TRAFFIC MAINTENANCE THE SPACING SHALL BE 25 FEET. SEE M.O.T. SUBSUMMARY FOR ESTIMATED QUANTITIES.

ITEM 622 - PORTABLE CONCRETE BARRIER BETWEEN WORK PHASES I AND II

TEMPORARY FILLING IN THE VOID BETWEEN EXISTING PAVEMENT AND NEW PAVEMENT IS NOT ALLOWED. THE MATERIAL PLACED WILL BECOME CONTAMINATED AND THE STEP CONSTRUCTION WILL BE LOST, WHICH IS NOT ACCEPTABLE. THE CONTRACTOR HAS ONLY TWO OPTIONS OF SETTING UP THE PORTABLE CONCRETE BARRIER BETWEEN PHASES.

THE FIRST OPTION IS TO RETAIN THE PORTABLE CONCRETE BARRIER SETUP WHEN TRAFFIC IS ON THE EXISTING PAVEMENT AND PROVIDE ADDITIONAL PORTABLE CONCRETE BARRIER ON THE NEW SECTION OF PAVEMENT PRIOR TO SHIFTING TRAFFIC OVER ONTO THE NEW SECTION.

THE SECOND OPTION IS TO MOVE THE EXISTING PORTABLE CONCRETE BARRIER SETUP OVER TO THE NEW SECTION, BUT WITH RESTRICTIONS. MOVEMENT OF THE PORTABLE CONCRETE BARRIER BETWEEN PHASES SHALL BE ACCOMPLISHED IN ONE WORKING DAY AND ONLY AT NIGHT PER THE "WORK HOUR RESTRICTION" NOTE IN THE PLANS. A LANE CLOSURE OF THE LANE ADJACENT TO THE PORTABLE CONCRETE BARRIER (MT-95.30) IS NECESSARY TO PERFORM THIS WORK.

THE CONTRACTOR SHALL SUBMIT A PLAN TO THE ENGINEER FOR APPROVAL SEVEN (7) DAYS IN ADVANCE. WORK SHALL NOT BEGIN UNTIL APPROVAL HAS BEEN GRANTED.

ALL COSTS INVOLVED IN REMOVING AND REINSTALLING THE PORTABLE CONCRETE BARRIER SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR ITEM 622 PORTABLE CONCRETE BARRIER.

TRENCH FOR WORK ZONE PAVEMENTS

TRENCH EXCAVATION FOR WORK ZONE PAVEMENTS OR BASE WIDENING NOT PROTECTED BY PORTABLE CONCRETE BARRIER SHALL BE ADEQUATELY MAINTAINED AND PROTECTED WITH DRUMS OR BARRICADES AT ALL TIMES. PLACEMENT OF PROPOSED BASE MATERIAL SHALL FOLLOW AS CLOSELY AS POSSIBLE BEHIND EXCAVATION OPERATIONS. THE LENGTH OF WIDENING TRENCH WHICH IS OPEN AT ANY ONE TIME SHALL BE HELD TO A MINIMUM AND SHALL AT ALL TIMES BE SUBJECT TO APPROVAL OF THE ENGINEER.

SEE SHEET NO. 73 FOR ADDITIONAL NOTES/DETAILS.

OVERNIGHT TRENCH CLOSING

WORK ZONE PAVEMENTS SHALL BE COMPLETED TO A DEPTH OF NO MORE THAN 1 ½" BELOW THE EXISTING PAVEMENT BY THE END OF EACH WORK DAY. NO TRENCH SHALL BE LEFT OPEN OVERNIGHT. IN CASE WORK MUST BE SUSPENDED BECAUSE OF INCLEMENT WEATHER OR OTHER REASONS, THE TRENCH FOR THE UNCOMPLETED BASE WIDENING SHALL BE BACKFILLED AT THE DIRECTION OF THE ENGINEER.

WORKSITE TRAFFIC SUPERVISOR

THE CONTRACTOR SHALL EMPLOY (OTHER THAN THE SUPERINTENDENT) AND SUBJECT TO THE APPROVAL OF THE ENGINEER, A CERTIFIED WORKSITE TRAFFIC SUPERVISOR (WTS). THE WTS MAY BE CERTIFIED FROM ONE OF THE FOLLOWING ORGANIZATIONS.

1. AMERICAN TRAFFIC SAFETY SERVICE ASSOCIATION A.T.S.S.A., PHONE NUMBER 1-800-272-8772, CERTIFIED WORKSITE TRAFFIC SUPERVISOR (WTS).
2. THE NATIONAL SAFETY COUNCIL, TRAFFIC CONTROL ZONES SUPERVISORS COURSE, PHONE NUMBER 1-800-441-5103.
3. NATIONAL HIGHWAY INSTITUTE, DESIGN AND OPERATION OF WORK ZONE TRAFFIC CONTROL, PHONE NUMBER 1-703-235-0528.

A CERTIFIED WTS SHALL BE PRESENT WHEN THE CONTRACTOR OR SUBCONTRACTOR INSTALLS A TRAFFIC RESTRICTION, LANE CLOSURE, ETC. THE CONTRACTOR OR SUBCONTRACTOR MUST PRESENT A COPY OF CERTIFICATES FOR ALL WTS TO THE ENGINEER. A WTS MUST BE PRESENT WHEN THE WORK ZONE IS BEING SET UP OR REMOVED.

THE WTS POSITION IS ESTABLISHED FOR THE PURPOSE OF MONITORING THE TRAFFIC CONTROL PLAN (TCP) AND CORRECTING ANY TRAFFIC CONTROL DEFICIENCIES IN THE WORK ZONE. THE WTS MUST ALSO COORDINATE WITH ALL LAW ENFORCING AGENCIES RESPONSIBLE FOR THE ROADWAY UNDER CONSTRUCTION AND RETRIEVE ALL CRASH REPORTS (OH-1) THAT OCCUR WHEN TEMPORARY TRAFFIC CONTROL DEVICES ARE IN PLACE. THE WTS SHALL OVERSEE ALL OPERATIONS THAT AFFECT THE MOVEMENT OF VEHICULAR AND PEDESTRIAN TRAFFIC THROUGH THE WORK ZONE. TRAFFIC CONTROL AND CRASH DATA EVALUATION WILL BE THE WTS MAIN RESPONSIBILITY WHEN A WORK ZONE IS IN PLACE.

DAILY, INCLUDING WEEKENDS AND HOLIDAYS, THE WTS SHALL SPEND A MINIMUM OF ONE HOUR REVIEWING THE WORK ZONE AND/OR CRASH DATA FOR DEFICIENCIES AND MAINTAINING THE WORK ZONE.

WEEKLY, THE WTS MUST RETRIEVE/COLLECT ALL CRASH REPORTS (OH-1) FROM ALL LAW ENFORCING AGENCIES, EVALUATE THE CRASHES, AND RECOMMEND SOLUTIONS TO ADDRESS ANY ISSUES WITH THE TCP THAT ARE POTENTIALLY CREATING CRASHES WITHIN THE WORK ZONE. THE WTS MUST PRESENT THESE SOLUTIONS TO THE ENGINEER FOR APPROVAL WEEKLY. UPON APPROVAL BY THE ENGINEER AND THE DISTRICT WORK ZONE TRAFFIC MANAGER (DWZTM), THE CONTRACTOR MUST IMPLEMENT THE RECOMMENDED SOLUTIONS TO THE WORK ZONE WITHIN ONE WEEK - ADDITIONAL COST TO BE PAID UNDER CONSTRUCTION AND MATERIALS SPECIFICATIONS - 109. THE WTS MUST INSPECT THE WORK ZONE AT THE BEGINNING AND THE END OF EACH WORK DAY AND ONE TIME PER WEEK DURING THE HOURS OF DARKNESS. THE FOLLOWING ITEMS SHALL BE INCLUDED, BUT NOT RESTRICTION TO, IN EACH REVIEW: TRAFFIC CONTROL DEVICE CONDITION; PLACEMENT; VISIBILITY; TRAFFIC FLOW CONDITIONS; INCIDENTS; CONGESTION POINTS; DELAYS; ADEQUACY OF ADVANCED INFORMATIONAL SIGNS BEYOND PROJECT LIMITS; INTERACTION OF WORK VEHICLES AND TRAFFIC; ACCIDENTS; PROPER STORAGE OF MATERIALS AND EQUIPMENT; CONFORMANCE WITH TCP; ADEQUACY OF TCP; CONFLICTING OR NON-CONFORMING PAVEMENT MARKINGS. THE WTS SHALL HAVE THE NECESSARY AUTHORITY TO IMMEDIATELY PERFORM ANY CORRECTIVE WORK. A RECORD OF EACH DAYS REVIEW SHALL BE GIVEN TO THE ENGINEER THE FOLLOWING WORKDAY IN WRITING AND SHALL INCLUDE ALL DEFICIENCIES AND RESOLUTIONS TO THE DEFICIENCIES. THE INSPECTION WILL BE DOCUMENTED ON THE LONG/SHORT TERM WORK ZONE REVIEW FORM PROVIDED BY ODOT. WEEKLY, THE INSPECTION FORM MUST BE ACCOMPANIED BY ALL OF THE OH-1 CRASH REPORTS AND THE PROPOSED SOLUTIONS TO ANY IDENTIFIED CRASH PROBLEMS.

IF THE RESTRICTIONS ARE SHORT TERM, THE WTS SHALL MONITOR THE ZONE FOR COMPLIANCE, DURING LANE CLOSURES; HE SHALL MAKE SURE ALL TRAFFIC CONTROL ITEMS ARE FUNCTIONING PROPERLY. TRAFFIC CONTROL AND CRASH DATA EVALUATION WILL BE THE WTS MAIN RESPONSIBILITY DURING IMPLEMENTATION OF ZONES OR SHORT TERM ZONES. THE WTS SHALL PROVIDE THE DWZTM A SKETCH OF THE TRAFFIC CONTROL PLAN (TCP) EVERYDAY THERE IS TO BE A SHORT TERM TRAFFIC RESTRICTIONS, LANE CLOSURE, ETC. THIS TCP SHALL SHOW HOW THE WORK ZONES ARE TO BE IMPLEMENTED.

THE WTS SHALL BE ON STANDBY 24-HOUR BASIS TO REPAIR AND/OR REPLACE DAMAGED OR MISSING TRAFFIC CONTROL DEVICES. A 24-HOUR CONTACT NUMBER(S) SHALL BE MADE AVAILABLE TO THE ENGINEER TO CONTRACT THE WTS. THE WTS SHALL HAVE A VEHICLE AND BE EQUIPPED WITH A CELLULAR PHONE. THE WTS SHALL ALSO BE PROVIDED WITH AN ELECTRONIC PAGER. THE PHONE AND PAGER NUMBERS SHALL BE PROVIDED TO THE PROJECT ENGINEER, LAW ENFORCEMENT PERSONNEL, AND THE ODOT CONSTRUCTION PROJECT COORDINATOR.

FAILURE OF THE CONTRACTOR TO COMPLY WITH ANY OF THE ABOVE, SHALL CONSTITUTE CAUSE FOR THE PROJECT ENGINEER TO DEDUCT $500.00 PER DAY FROM MONEY DUE TO THE CONTRACTOR NOT AS A PENALTY, BUT AS A LIQUIDATED DAMAGE.

PAYMENT FOR THE WTS SHALL BE INCLUDED UNDER THE ITEM "614 - WORKSITE TRAFFIC SUPERVISOR" BY MONTH.

ITEM 614 WORKSITE TRAFFIC SUPERVISOR 54 MONTH.

CALCULATED PS CHECKED PG

MAINTENANCE OF TRAFFIC
GENERAL NOTES

SUM-271-8.02

21450MN.DGN 03/31/04 CAR 6

ITEM 614, PORTABLE CHANGEABLE MESSAGE SIGNS, AS PER PLAN

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND REMOVE, WHEN NO LONGER NEEDED, A CHANGEABLE MESSAGE SIGN, ON SITE, FOR THE DURATION OF THE PROJECT. THE SIGN SHALL BE OF A TYPE SHOWN ON A LIST OF APPROVED PCMS UNITS MAINTAINED BY THE DIRECTOR (OFFICE OF MATERIALS MANAGEMENT). THIS LIST IS AVAILABLE ON THE ODOT WEBSITE AT HHTP://WWW.DOT.STATE.OH.US/TESTLAB/APPLISTS/MISC/PCMS.HTM. THIS LIST CURRENTLY CONTAINS CLASS I, II, AND III UNITS WITH MINIMUM LEGIBILITY DISTANCES OF 1250 FT., 850 FT. AND 650 FT., RESPECTIVELY. THS PROJECT WILL REQUIRE THE USE OF CLASS I UNITS UNLESS OTHERWISE APPROVED BY THE ENGINEER.

EACH SIGN SHALL BE TRAILER-MOUNTED AND EQUIPPED WITH A FUNCTIONAL DIMMING MECHANISM, TO DIM THE SIGN DURING DARKNESS, AND A TAMPER AND VANDAL PROOF ENCLOSURE. EACH SIGN SHALL BE PROVIDED WITH APPROPRIATE TRAINING AND OPERATION INSTRUCTIONS TO ENABLE ON-SITE PERSONNEL TO OPERATE AND TROUBLESHOOT THE UNIT. THE SIGN SHALL ALSO BE CAPABLE OF BEING POWERED BY A ELECTRICAL SERVICE DROP FROM A LOCAL UTILITY COMPANY. THE PCMS TRAILERS SHOULD BE DELINEATED ON A PERMANENT BASIS BY AFFIXING RETROREFLECTIVE MATERIAL, IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER AS SEEN BY ONCOMING ROADUSERS.

THE PROBABLE PCMS LOCATIONS AND WORK LIMITS FOR THOSE LOCATIONS ARE PRIOR TO THE BEGINNING OF THE PROJECT, PLACEMENT, OPERATION, MAINTENANCE AND ALL ACTIVATION OF THE SIGNS BY THE CONTRACTOR SHALL BE AS DIRECTED BY THE ENGINEER. THE PCMS SHALL BE LOCATED IN A HIGHLY VISIBLE POSITION YET PROTECTED FROM TRAFFIC. THE CONTRACTOR SHALL, AT THE DIRECTION OF THE ENGINEER, RELOCATE THE PCMS TO IMPROVE VISIBILITY OR ACCOMMODATE CHANGED CONDITIONS. WHEN NOT IN USE, THE PCMS SHALL BE TURNED OFF. ADDITIONALLY, WHEN NOT IN USE FOR EXTENDED PERIODS OF TIME, THE PCMS SHALL BE TURNED, FACING AWAY FROM ALL TRAFFIC, AND SHALL DISPLAY ONE OR MORE HIGH-INTENSITY YELLOW REFLECTIVE SHEETING SURFACES OF 9-INCH BY 15-INCH MINIMUM SIZE FACING TRAFFIC.

THE ENGINEER SHALL BE PROVIDED ACCESS TO EACH SIGN UNIT AND SHALL BE PROVIDED WITH APPROPRIATE TRAINING AND OPERATION INSTRUCTIONS TO ENABLE ODOT PERSONNEL TO OPERATE AND TROUBLESHOOT THE UNIT, AND TO REVISE SIGN MESSAGES, IF NECESSARY.

(THE CONTRACTOR SHALL IMPLEMENT A SYSTEM WHEREBY CHANGEABLE MESSAGES WILL BE IMPLEMENTED WITHIN 1 HOUR FOLLOWING TELEPHONE NOTIFICATION FROM THE PROJECT ENGINEER TO A DESIGNATED PHONE.)

ALL MESSAGES TO BE DISPLAYED ON THE SIGN WILL BE PROVIDED BY THE ENGINEER. A LIST OF ALL REQUIRED PREPROGRAMMED MESSAGES WILL BE GIVEN TO THE CONTRACTOR AT THE PROJECT PRECONSTRUCTION CONFERENCE. THE SIGN SHALL HAVE THE CAPABILITY TO STORE UP TO 99 MESSAGES. MESSAGE MEMORY OR PREPROGRAMMED DISPLAYS SHALL NOT BE LOST AS A RESULT OF POWER FAILURES TO THE ON-BOARD COMPUTER. THE SIGN LEGEND SHALL BE CAPABLE OF BEING CHANGED IN THE FIELD. THREE-LINE PRESENTATION FORMATS WITH UP TO SIX MESSAGE PHASES SHALL BE SUPPORTED. PCMS FORMAT SHALL PERMIT THE COMPLETE MESSAGE FOR EACH PHASE TO BE READ AT LEAST ONCE.

THE PCMS SHALL CONTAIN AN ACCURATE CLOCK AND PROGRAMMING LOGIC WHICH WILL ALLOW THE SIGN TO BE ACTIVATED, DEACTIVATED OR MESSAGES CHANGED AUTOMATICALLY AT DIFFERENT TIMES OF THE DAY FOR DIFFERENT DAYS OF THE WEEK.

(THE PCMS SHALL CONTAIN A CELLULAR TELEPHONE DATA LINK WHICH WILL (IN ACTIVE CELLULAR PHONE AREAS) ALLOW REMOTE SIGN ACTIVATION, MESSAGE CHANGES, MESSAGE ADDITIONS, AND REVISIONS TO TIME OF DAY PROGRAMS. THE SYSTEM SHALL ALSO PERMIT VERIFICATION OF CURRENT AND PROGRAMMED MESSAGES. ONE REMOTE DATE INPUT DEVICE (LAPTOP COMPUTER PLUS MODEM OR EQUIVALENT) SHALL BE FURNISHED FOR USE BY THE DISTRICT TRAFFIC ENGINEER, OR EQUIVALENT, AND SHALL BE ISSUED AGAINST THEFT.)

THE PCMS UNIT SHALL BE MAINTAINED IN GOOD WORKING ORDER BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF CMS 614.07. THE CONTRACTOR SHALL, PRIOR TO ACTIVATING THE UNIT, MAKE ARRANGEMENTS, WITH AN AUTHORIZED SERVICE AGENT FOR THE PCMS, TO ASSURE PROMPT SERVICE IN THE EVENT OF FAILURE. ANY FAILURE SHALL NOT RESULT IN THE SIGN BEING OUT OF SERVICE FOR MORE THAN 12 HOURS, INCLUDING WEEKENDS. FAILURE TO COMPLY MAY RESULT IN AN ORDER TO STOP WORK AND OPEN ALL TRAFFIC LANES AND/OR IN THE DEPARTMENT TAKING APPROPRIATE ACTION TO SAFELY CONTROL TRAFFIC. THE ENTIRE COST TO CONTROL TRAFFIC, ACCRUED BY THE DEPARTMENT DUE TO THE CONTRACTOR'S NONCOMPLIANCE, WILL BE DEDUCTED FROM MONEYS DUE, OR TO BECOME DUE THE CONTRACTOR ON HIS CONTRACT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR 24-HOUR-PER-DAY OPERATION AND MAINTENANCE OF THESE SIGNS ON THE PROJECT FOR THE DURATION OF THE PHASES WHEN THE PLAN REQUIRES THEIR USE.

PAYMENT FOR THE ABOVE DESCRIBED ITEM SHALL BE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, FUELS, LUBRICATING OILS, SOFTWARE, HARDWARE AND INCIDENTALS TO PERFORM THE ABOVE DESCRIBED WORK.

ESTIMATED 54 SIGN MNTH. X 2 CLASS I PCMS ON I.R. 271 108 SIGN MNTH.
ITEM 614 PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN 108 SIGN MNTH.

ITEM 615 PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 615, THIS ITEM REPLACES THE 7 INCHES OF ITEM 302 ASPHALT CONCRETE BASE WITH 9 INCHES OF ITEM 302 ASPHALT CONCRETE BASE.

THE ALIGNMENT AND PAVEMENT TYPICAL SECTION SHALL BE AS DETAILED ON SHEETS 56 & 57 . THE EXISTING PAVEMENT/SHOULDER SHALL BE SAWCUT AS PER 203.04(E).

WHEN NO LONGER NEEDED FOR M.O.T. OPERATIONS, THE CONTRACTOR SHALL REMOVE THE M.O.T. PAVEMENT INCLUDING ANY TEMPORARY DRAINAGE FACILITIES. THE AFFECTED EXISTING EARTH MEDIAN AND PAVED SHOULDERS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AS DIRECTED BY THE ENGINEER AND AS PER 615.08.

M.O.T. PAVEMENTS SHALL NOT BE OPENED TO TRAFFIC UNTIL ALL TEMPORARY TRAFFIC CONTROL DEVICES, SIGNS, PAVEMENT MARKINGS AND PORTABLE CONCRETE BARRIERS HAVE BEEN ERECTED AND APPROVED BY THE ENGINEER.

ALTHOUGH ESTIMATES FOR TEMPORARY ROAD EXCAVATION, EMBANKMENT AND TEMPORARY DRAINAGE FACILITIES MAY BE SHOWN ON THE PLAN DETAILS, THESE ITEMS SHALL BE CONSIDERED INCIDENTAL TO, AND INCLUDED WITH PAYMENT FOR ITEM 615 ROADS FOR MAINTAINING TRAFFIC.

ITEM 606 - ANCHOR ASSEMBLY, REBUILT, TYPE E, AS PER PLAN

THE ITEM SHALL INCLUDE ALL COSTS TO REMOVE ANY TYPE E ANCHOR ASSEMBLY DAMAGED BY TRAFFIC AND COMPLETELY REPAIR/REPLACE THE ANCHOR ASSEMBLY.

COVERING OF SIGNS

WHERE THE PLANS CALL FOR A PERMANENT SIGN TO BE COVERED, THE CONTRACTOR SHALL DO SO IN ACCORDANCE WITH CMS 614.07.

WORK ZONE MARKINGS AND SIGNS

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE M.O.T. SUBSUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR WORK ZONE PAVEMENT MARKINGS AND SIGNS PER THE REQUIREMENTS OF CMS ITEMS 614.04 AND 614.11.

ITEM 614, WORK ZONE MARKING SIGN	5 EACH
ITEM 614, WORK ZONE LANE LINE, CLASS II	3.5 MILE
ITEM 614, WORK ZONE EDGE LINE, CLASS I	7 MILE

ITEM 622 PORTABLE CONCRETE BARRIER, 32", AS PER PLAN

AN 18 INCH MINIMUM HEIGHT GLARE SCREEN SHALL BE FASTENED TO THE TOP OF THE 32" PORTABLE CONCRETE BARRIER. THE GLARE SCREEN SHALL BE CONSTRUCTED USING ONE OF THE FOLLOWING SYSTEMS OR AN APPROVED EQUAL:

TRINITY GLAREFOIL
TRINITY INDUSTRY
1170 NORTH STATE STREET
GIRARD, OHIO 44420 330-545-4373

CARSONITE MODULAR GLARE SCREEN
CARSONITE INTERNATIONAL
605 BOB GIFFORD BLVD.
EARLY BRANCH, SOUTH CAROLINA, 29916
(702) 883-5104 OR 800-648-7974

PADDLE OR INTERMITTENT TYPE GLARE SCREENS SHALL BE DESIGNED USING A 20 DEGREE CUT-OFF ANGLE BASED ON TANGENT ALIGNMENT. THAT SPACING SHALL BE USED THROUGHOUT THE BARRIER LENGTH WITHOUT REGARD TO BARRIER CURVATURE.

THE GLARE SCREEN SYSTEM SHALL BE SECURELY FASTENED ON THE TOP OF 32 INCH PORTABLE CONCRETE BARRIER USING THE HARDWARE AND PROCEDURES SPECIFIED BY THE MANUFACTURER.

PORTABLE CONCRETE BARRIER AND/OR GLARE SCREEN WHICH HAS BECOME DAMAGED BEYOND REPAIR BY TRAFFIC OR CONTRACTOR EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR WITHIN TWENTY-FOUR (24) HOURS OF THE INCIDENT WHICH CAUSED THE DAMAGE. REPLACEMENT BARRIER SHALL BE AS PER SECTION 622.04 OF THE SPECIFICATIONS.

PAYMENT SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO PERFORM THE WORK AND SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT FOR ITEM 622, PORTABLE CONCRETE BARRIER , 32 INCH, AS PER PLAN.

CALCULATED PS CHECKED PG

MAINTENANCE OF TRAFFIC GENERAL NOTES

SUM-271-8.02

2450MN.DGN 4/3/03 CAR 7

ITEM 614 WORK ZONE CROSSOVER LIGHTING SYSTEM

THIS WORK SHALL CONSIST OF FURNISHING, ERECTING, OPERATING, MAINTAINING AND REMOVING A WORK ZONE LIGHTING SYSTEM FOR A SINGLE CROSSOVER OR OVERLAPPING A PAIR OF CROSSOVERS ON A TWO-LANE, TWO-WAY OPERATION. THE SYSTEM SHALL BE AS SHOWN ON STANDARD CONSTRUCTION DRAWING MT-100.00. THE CONTRACTOR SHALL ARRANGE FOR AND PAY FOR POWER. ALL MATERIALS AND CONSTRUCTION SHALL COMPLY WITH APPLICABLE PORTIONS OF 625 AND 725 EXCEPT: THE PERFORMANCE TEST OF 625.19(F), AND CERTIFIED DRAWING REQUIREMENT OF 625.04, ARE WAIVED AND USED MATERIALS IN GOOD CONDITION ARE ACCEPTABLE.

POLES MAY BE LESS THAN 30'-0" FROM THE EDGE OF PAVEMENT WHEN BEHIND GUARDRAIL. ADDITIONAL POLE LINES, CABLES AND APPURTENANCES NECESSARY TO FURNISH POWER TO THE LIGHTING SYSTEM SHALL BE INCLUDED IN THIS ITEM. SERVICE POLES SHALL BE POSITIONED WITH THE SAME CONSTRAINTS AS THE LIGHTING POLES AS A MINIMUM.

PAYMENT WILL BE MADE AT THE UNIT PRICE PER EACH FOR ITEM 614 - WORK ZONE CROSSOVER LIGHTING SYSTEM THROUGHOUT ALL PHASES OF WORK WHEN THE CROSSOVER ROADWAYS ARE USED.

ITEM 614 WORK ZONE LIGHTING SYSTEM FOR SHOULDER TRANSITION

THIS WORK SHALL CONSIST OF FURNISHING, ERECTING, OPERATING, MAINTAINING AND REMOVING A WORK ZONE LIGHTING SYSTEM FOR AN AREA INVOLVING USE OF THE SHOULDER FOR THROUGH TRAFFIC, AS WELL AS THE AREAS LEADING INTO AND OUT OF THIS SECTION. THE SYSTEM SHALL BE AS SHOWN ON STANDARD CONSTRUCTION DRAWING MT-102.10 THE CONTRACTOR SHALL ARRANGE FOR AND PAY FOR POWER AND ANY COSTS OF PROVIDING SERVICE. ALL MATERIALS AND CONSTRUCTION SHALL COMPLY WITH APPLICABLE PORTIONS OF CMS 625 AND 725 EXCEPT: THE PERFORMANCE TEST OF CMS 625.19F, AND CERTIFIED DRAWING REQUIREMENT OF CMS 625.04 ARE WAIVED AND USED MATERIALS IN GOOD CONDITION ARE ACCEPTABLE. A PHOTOCELL SHALL TURN ON THE LIGHTING WHEN AMBIENT LIGHT IS BELOW 3 FOOT CANDLES. ALL OVERHEAD WIRING SHALL BE #4 AWG MINIMUM. DOWN GUY ANCHORS SHALL BE PROVIDED AT BOTH ENDS OF OVERHEAD SPANS. ALL WIRES CROSSING THE ROADWAY SHALL HAVE A MINIMUM HEIGHT OF 20 FEET.

PAYMENT WILL BE MADE AT THE UNIT PRICE PER EACH ITEM 614 - WORK ZONE LIGHTING SYSTEM WHICH WILL INCLUDE ERECTION, OPERATION, MAINTENANCE, REMOVAL AND POWER FOR ALL LIGHTING REQUIRED BY DRAWING MT-102.10.

CONSTRUCTION ZONE/FINES DOUBLED SIGNS

RII-145-48 SIGNS SHALL BE FURNISHED, ERECTED, AND MAINTAINED IN GOOD CONDITION AND/OR REPLACED AS NECESSARY AND SUBSEQUENTLY REMOVED BY THE CONTRACTOR. SIGNS SHALL BE MOUNTED AT THE APPROPRIATE OFFSETS AND ELEVATIONS AS PRESCRIBED BY THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. THEY SHALL BE MAINTAINED ON SUPPORTS MEETING CURRENT SAFETY CRITERIA.

THE SIGNS MAY BE ERECTED OR UNCOVERED NO MORE THAN FOUR HOURS BEFORE THE ACTUAL START OF WORK. THE SIGNS SHALL BE REMOVED OR COVERED NO LATER THAN FOUR HOURS FOLLOWING RESTORATION OF ALL LANES TO TRAFFIC WITH NO RESTRICTIONS, OR SOONER AS DIRECTED BY THE ENGINEER. TEMPORARY SIGN COVERING AND UNCOVERING DUE TO TEMPORARY LANE RESTORATIONS SHALL BE GUIDED BY THE FOUR-HOUR LIMITATIONS STATED ABOVE. SUCH LANE RESTORATIONS SHOULD BE EXPECTED TO REMAIN IN EFFECT FOR 30 OR MORE CONSECUTIVE CALENDAR DAYS, SUCH AS DURING WINTER SHUT-DOWNS.

THE SIGNS SHALL BE DUAL MOUNTED. THE FIRST SIGN SHALL BE PLACED BETWEEN THE "ROAD WORK AHEAD" (W20-1) SIGN AND THE NEXT SIGN IN THE SEQUENCE. SIGNS SHALL BE ERECTED ON EACH ENTRANCE RAMP AND EVERY 2 MILES THROUGH THE CONSTRUCTION WORK LIMITS.

THE CONTRACTOR MAY USE SIGNS AND SUPPORTS IN USED, BUT GOOD, CONDITION PROVIDED THE SIGNS MEET CURRENT ODOT SPECIFICATIONS. SIGN FACES SHALL BE REFLECTORIZED WITH TYPE G SHEETING COMPLYING WITH THE REQUIREMENTS OF CMS 614.03. CONSTRUCTION ZONE/FINES DOUBLED SIGNS AND SUPPORTS WILL BE MEASURED AS THE NUMBER OF SIGN INSTALLATIONS, INCLUDING THE SIGN AND NECESSARY SUPPORTS. IF A SIGN AND SUPPORT COMBINATION IS REMOVED AND REERECTED AT ANOTHER LOCATION AS DIRECTED BY THE ENGINEER, IT SHALL BE CONSIDERED ANOTHER UNIT.

PAYMENT FOR ACCEPTED QUANTITIES, COMPLETE, IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR FURNISHING, ERECTING, MAINTAINING, COVERING DURING SUSPENSION OF WORK AND REMOVAL OF THE SIGN AND SUPPORT.

ITEM 614 - CONSTRUCTION ZONE/FINES DOUBLED SIGN 6 EACH

QUANTITY CARRIED TO THE M.O.T. SUBSUMMARY, SHEET NOS. 31-33

FLOODLIGHTING

FLOODLIGHTING OF THE WORK SITE FOR OPERATIONS CONDUCTED DURING NIGHT TIME PERIODS SHALL BE ACCOMPLISHED SO THAT THE LIGHTS DO NOT CAUSE GLARE TO THE DRIVERS ON THE ROADWAY. TO ENSURE THE ADEQUACY OF THE FLOODLIGHT PLACEMENT, THE CONTRACTOR AND THE ENGINEER SHALL DRIVE THROUGH THE WORK SITE EACH NIGHT WHEN THE LIGHTING IS IN PLACE AND OPERATIVE PRIOR TO COMMENCING ANY WORK. IF GLARE IS DETECTED THE LIGHT PLACEMENT AND SHIELDING SHALL BE ADJUSTED TO THE SATISFACTION OF THEENGINEER BEFORE WORK PROCEEDS.

PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614 MAINTAINING TRAFFIC.

ITEM 614 - MAINTAINING TRAFFIC, MISC.: CONTRACTOR'S ACCESS:

THIS ITEM SHALL INCLUDE CONSTRUCTION OF THE CONTRACTOR'S CONSTRUCTION ACCESS ROADS AND THE SUBSEQUENT RESTORATION OF ALL DISTURBED AREAS AFTER CONSTRUCTION IS COMPLETED.

THE CONTRACTOR SHALL CONSTRUCT ACCESS ROADS FROM THE EXISTING LANES OF I.R. 271 TO THE ADJACENT CUYAHOGA VALLEY. CONCEPTUAL ALIGNMENTS AND GRADES AND ACCESS ROADS ARE SHOWN ON SHEETS 58-66. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING THE ACCESS ROAD FOR REQUIREMENTS AND ACTIVITIES, AND TO AVOID CONSTRUCTED FACILITIES. THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE DESIGN FOR THE ACCESS ROADS SUBJECT TO THE APPROVAL OF THE ENGINEER. ALL GRADING SHOWN SHALL REMAIN INSIDE THE TEMPORARY R/W EASEMENTS GRANTED AND NOT IMPACT ADDITIONAL ENVIRONMENTAL CONSTRAINTS. THE WIDTH AND SURFACE TYPE OF THIS ACCESS ROAD SHALL BE AS DETERMINED BY THE CONTRACTOR SUBJECT TO APPROVAL BY THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STABILITY OF THE SLOPES CUT FOR CONSTRUCTION OF THE ACCESS ROADS. SURFACE DRAINAGE SYSTEMS SHALL BE INSTALLED ALONG THE ACCESS ROADS FOR PROPER DISCHARGE TO PROTECT THE SLOPE SOIL FROM WEAKENING DURING AND AFTER PRECIPITATION. GUARDRAIL, DRAINAGE STRUCTURES OR DRAINAGE CROSSINGS MAY REQUIRE CONSTRUCTION, EXTENSION, AND MODIFICATION IN ORDER TO CONSTRUCT THE ACCESS ROAD AS APPROVED BY THE ENGINEER. THE ACCESS PROPOSED DRAINAGE SHALL BE PROPERLY DESIGNED FOR THE DRAINAGE FLOW. POSITIVE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES AS APPROVED BY THE ENGINEER. TARPOULINS OR PLASTIC SHEETING SHALL BE USED TO COVER THE SURFACE OF THE SLOPES DURING PRECIPITATION WHERE VEGETATION IS ABSENT. THE SLOPES SHALL BE MONITORED AND INSPECTED PERIODICALLY DURING CONSTRUCTION. IF ANY INDICATION OF POTENTIAL FAILURE OF THE SLOPES IS OBSERVED, THE CONTRACTOR SHALL REINFORCE OR REGRADE THE SLOPES AT HIS OWN EXPENSE.

THE CUYAHOGA VALLEY AREA WITHIN THE PROPOSED TEMPORARY EASEMENTS MAY BE USED AS THE CONTRACTOR'S STAGING AREA FOR BRIDGE CONSTRUCTION ACTIVITIES WITH SPECIAL CONDITIONS AS NOTED IN THESE PLANS.

AT THE COMPLETION OF BRIDGE CONSTRUCTION, ALL DISTURBED AREAS FOR THE ACCESS ROADS AND CONTRACTOR'S STAGING AREA SHALL BE REGRADED AS NECESSARY TO DRAIN AND ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED IN ACCORDANCE WITH ITEM 659, THE DETAILED SITE RESTORATION PLAN INCLUDING PROJECT WETLAND RESTORATION AND ANY ADDITIONAL EROSION CONTROL MEASURES AS REQUIRED BY THE ENGINEER.

THE CONTRACTOR'S ACCESS ROAD CROSSING AT THE VALLEY RAILWAY SHALL BE PAVED AS PER DETAILS ON SHEET NO. 63-64. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE PROJECT'S ENVIRONMENTAL COMMITMENTS GENERAL NOTES ON SHEET NO. 19-20.

ALL THE ABOVE WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 - MAINTAINING TRAFFIC, MISC.: CONTRACTOR'S ACCESS.

CALCULATED PS CHECKED PG

MAINTENANCE OF TRAFFIC
GENERAL NOTES

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ITEM 410 TRAFFIC COMPACTED SURFACE, TYPE A OR B, AS PER PLAN

IN ADDITION TO REQUIREMENTS OF CMS 410, THE CONTRACTOR SHALL PERFORM THE NECESSARY EARTHWORK IN ACCORDANCE WITH CMS 615.03 TO CONSTRUCT THE EMERGENCY PARKING AREA AS SHOWN ON SHEET NO. 72 TO THE SATISFACTION OF THE ENGINEER. ALL MATERIAL, LABOR, AND INCIDENTALS TO PERFORM THIS ITEM OF WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 410 - TRAFFIC COMPACTED SURFACE, TYPE A OR B, AS PER PLAN.

ITEM 614 EXTRA ADVANCE WARNING SIGNS

AN EXTRA ADVANCE WARNING SIGN GROUP CONSISTS OF TWO W20-1 (ROAD WORK AHEAD) SIGNS, TWO W20-5L & W20-5R (RIGHT/LEFT LANE CLOSURE AHEAD) SIGNS WITH W16-3A DISTANCE PLATES, AND TWO W3-H7 (WATCH FOR STOPPED TRAFFIC) SIGNS AND REQUIRED WARNING LIGHTS.

THE CONTRACTOR SHALL HAVE AN ADDITIONAL EXTRA ADVANCE WARNING SIGN GROUP (6 SIGNS AND 2 DISTANCE PLATES) AVAILABLE FOR USE WHEN DIRECTED BY THE ENGINEER. THE DISTANCE PLATES FOR THIS GROUP SHALL BE ABLE TO BE MODIFIED IN THE FIELD TO SHOW APPROPRIATE WHOLE MILES TO THE LANE TAPER.

PAYMENT FOR PROVIDING, ERECTING, MAINTAINING AND REMOVING EXTRA ADVANCE WARNING SIGN GROUPS SHALL BE INCLUDED IN THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC.

ITEM 615 TEMPORARY ROAD EARTHWORK

EARTHWORK REQUIRED FOR THE CONSTRUCTION OF 615 M.O.T. PAVEMENT ALONG THE SOUTHBOUND OUTSIDE SHOULDER OF I.R. 271 (PHASE 1A STA. 1410+48.16 TO STA. 1420+00 AND STA. 1438+95 TO STA. 1445+00) HAS BEEN ESTIMATED FROM THE CROSS SECTIONS, SHEETS NO. 148-258, AND INCLUDED HERE FOR INFORMATIONAL PURPOSES ONLY. THIS PAVEMENT WILL REMAIN IN PLACE AT THE COMPLETION OF THE PROJECT. THE EARTHWORK HAS BEEN CARRIED TO THE TABULATION.

EARTHWORK REQUIRED FOR THE CONSTRUCTION OF THE TWO TEMPORARY MEDIAN CROSSOVER HAS BEEN SHOWN ON THE CROSS SECTIONS SHEETS NO. 148-258. THE EARTHWORK HAS BEEN CARRIED TO THE TABULATION.

THIS PAVEMENT WILL BE REMOVED WHEN NO LONGER NEEDED FOR M.O.T. OPERATIONS. THE AFFECTED AREAS SHALL BE RETURNED TO ORIGINAL CONDITIONS.

ALL M.O.T. PAVEMENT EXCAVATION AND EMBANKMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 615.03 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS UNLESS OTHERWISE NOTED. QUANTITIES IN THE TABULATION ALONG WITH A SUM OF THE TOTAL EARTHWORK REQUIRED FOR THE PROJECT ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY.

ITEM 614 - TRANSITION AREA DELINEATION

IN TRANSITION AREAS FOR LANE SHIFTS EQUAL TO OR GREATER THAN 4 FEET (1.2 M) AND CROSSOVERS, THE CONTRACTOR SHALL PROVIDE DELINEATION BY ONE OF THE FOLLOWING METHODS:

1. FULL PAVEMENT MARKINGS USING 873 WET REFLECTIVE REMOVABLE TAPE (METHOD A ON MT-99.30 AND MT-99.31); OR

2. FULL PAVEMENT MARKINGS USING 740.06 TYPE I WORK ZONE PAVEMENT MARKING MATERIAL SUPPLEMENTED WITH WORK ZONE RAISED PAVEMENT MARKERS (METHOD B ON MT-99.30 AND 99.31).

ALL MATERIAL FURNISHED SHALL BE LISTED ON THE DEPARTMENT'S PREQUALIFIED LISTS. THE INSTALLATION OF ALL MATERIALS SHALL MEET OR EXCEED THE MANUFACTURER'S RECOMMENDATIONS.

REMOVABLE PAVEMENT MARKINGS SHALL BE INSTALLED IN 10 FOOT (3.0 METER) OR LESS SEGMENTS.

PAYMENT FOR ITEM 614 TRANSITION AREA DELINEATION SHALL BE MADE AT THE CONTRACT BID PRICE PER FOOT (METER) OF TRANSITION AREA AND SHALL INCLUDE THE COST OF FURNISHING, INSTALLING, MAINTAINING AND REMOVING, IF NECESSARY, ONE OF THE DELINEATION SCHEMES SPECIFIED ABOVE.

PAYMENT SHALL ALSO INCLUDE REPLACEMENT, AS PER 614.11.A (CONSTRUCTION AND MATERIALS SPECIFICATIONS) OR 614.115.D (PROPOSAL NOTE 101-2002), OF ANY OF THE DELINEATION SYSTEM WHICH, IN THE JUDGEMENT OF THE ENGINEER, FAILS. LANE CLOSURES REQUIRED TO REPAIR OR REPLACE MISSING TAPE OR WORK ZONE RAISED PAVEMENT MARKERS WILL BE AT THE ENGINEER'S APPROVAL AND AT THE CONTRACTOR'S COST.

THE TRANSITION AREA FOR SHIFT TAPERS IS GENERALLY CONSIDERED TO BEGIN 300 FT (90 M) IN ADVANCE OF THE BEGINNING OF THE SHIFT TAPER AND TO END 300 FT (90 M) BEYOND TERMINATION OF THE SHIFT TAPER. THE TRANSITION AREA FOR CROSSOVERS IS GENERALLY CONSIDERED TO BEGIN 300 FT (90 M) IN ADVANCE OF THE BEGINNING OF THE CROSSOVER GEOMETRICS AND TO END 300 FT (90 M) BEYOND THE TERMINATION OF THE CROSSOVER GEOMETRICS.

EARTHWORK FOR MAINTAINING TRAFFIC

DESCRIPTION	SHEET	EXC. CU. YD.	EMB. CU. YD.
M.O.T. PAVEMENT SOUTHBOUND			
OUTSIDE SHOULDER - PHASE 1A			
	182-200	535	50
	234-246	544	60
SUBTOTAL		1079	110
REAR MEDIAN CROSSOVER M.O.T.			
PHASE 1	150	52.19	1.81
	151	99.84	489.11
	152	3.73	709.54
	153	0	510.55
	154	0	82.64
SUBTOTAL		156	1794
FORWARD MEDIAN CROSSOVER M.O.T.			
PHASE 1	249	0	5.09
	250	0	116.32
	251	0	436.25
	252	0	310.43
	253	169.31	254.06
	254	86.86	3.74
SUBTOTAL		256	1126
TOTAL		1491	3030

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED IN THE PLAN FOR INFORMATION ONLY

EXCAVATION FOR MAINTAINING TRAFFIC 1491 CU. YD.

EMBANKMENT FOR MAINTAINING TRAFFIC 3030 CU. YD.

CALCULATED PS CHECKED PG

MAINTENANCE OF TRAFFIC GENERAL NOTES

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STOPPAGE OF MAINLINE TRAFFIC:

ANY TIME TRAFFIC MUST BE COMPLETELY STOPPED ON INTERSTATE 271, IT SHALL BE DONE IN THE FOLLOWING MANNER: THE COMPLETE TRAFFIC STOPPAGE ON ALL LANES OF ANY DIRECTIONAL ROADWAY SHALL BE NO MORE THAN 10 MINUTES IN ANY ONE CONSECUTIVE 30 MINUTE PERIOD IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING MT-99.60.

A CONTRACTOR SUPPLIED PORTABLE CHANGEABLE MESSAGE SIGN, TYPE TO BE ON ODOT'S PRE APPROVED LIST, SHALL BE PLACED 1.5 TO 2 MILES IN ADVANCE OF THE CLOSURE OR AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER/ PERMIT OFFICE AND THE ODOT PUBLIC INFORMATION OFFICE, 330-297-0801 EXT-211, THREE (3) DAYS PRIOR TO ANY MAINLINE TRAFFIC STOPPAGE.

PAYMENT FOR THE STOPPAGE OF THE MAINLINE TRAFFIC PATTERN SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 - MAINTAINING TRAFFIC. THE COST FOR LAW ENFORCEMENT OFFICER WITH PATROL CAR IS LISTED SEPERATELY.

ITEM SPECIAL - STRUCTURE, MISC.: PATCHING BRIDGE DECKS WITH ASPHALT

PORTIONS OF THE EXISTING BRIDGE DECKS OF STRUCTURE SUM-271-0802 L&R AND SUM-271-0854 L&R SHALL BE PATCHED WITH ASPHALT AS DIRECTED BY THE ENGINEER.

THE PROJECT ENGINEER/SUPERVISOR SHALL SPRAY PAINT AREAS WHICH HE OR SHE DETERMINES SHOULD BE PATCHED. THE PERIMETER OF THE PATCH SHALL BE SAW CUT APPROXIMATELY 2½ INCHES DEEP. THE LOOSE AND VISUALLY UNSOUND MATERIAL (BOTH ASPHALT AND CONCRETE) SHALL BE REMOVED WITH CHIPPING HAMMERS NOT HEAVIER THAN THE NOMINAL 35 POUND CLASS WITHOUT DISPLACING UNDERMINING, OR OTHERWISE DAMAGING THE REMAINING BRIDGE DECK. THE CHIPPING HAMMERS SHALL BE OPERATED AT AN ANGLE NOT LESS THAN 45 DEGREES WITH RESPECT TO THE DECK SURFACE. DISPOSE OF REMOVED MATERIAL ACCORDING TO 203.01. SMALL MILLING MACHINES MAY BE PERMITTED TO REMOVE LARGE PATCH AREAS AS APPROVED BY THE ENGINEER. ANY LOOSE REINFORCING STEEL SHALL BE TIED TO THE EXISTING REINFORCING STEEL MAT AS APPROVED BY THE ENGINEER.

THE PATCH AREA SHALL BE CLEANED OUT WITH COMPRESSED AIR SO ALL DEBRIS IS REMOVED. TACK ALL EXPOSED SURFACES (BOTH VERTICAL AND HORIZONTAL) WITH ITEM 407 TACK COAT AT A RATE OF 0.10 GAL./S.Y. AS APPROVED BY THE ENGINEER. THE PATCH AREA SHALL BE FILLED WITH ITEM 448 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22. PLACE THE REPLACEMENT MATERIAL IN LIFTS AS APPROVED BY THE ENGINEER. THOROUGHLY AND UNIFORMLY COMPACT EACH LIFT USING SUITABLE COMPACTION EQUIPMENT AS THE ENGINEER DIRECTS IN ACCORDANCE WITH 401. FINISH THE FINAL LIFT FLUSH WITH THE EXISTING PAVEMENT SURFACE.

TRAFFIC SHALL BE MAINTAINED DURING THE PATCHING OPERATION UTILIZING MT-95.30 IN ACCORDANCE WITH THE PERMITTED LANE CLOSURE NOTE ON SHEET 24.

THE ENGINEER WILL MEASURE THE QUANTITY OF PAVEMENT REPAIR BY THE NUMBER OF SQUARE YARDS OF PAVEMENT REPAIR IN THE COMPLETE AND ACCEPTED WORK, CALCULATED USING THE DIMENSIONS ESTABLISHED BY THE ENGINEER. THE ENGINEER WILL NOT MEASURE REMOVAL AND REPLACEMENT PAVEMENT BEYOND THE DESIGNATED LIMITS.

PAYMENT FOR THE PATCHING WILL BE MADE AT THE UNIT PRICE BID PER SQUARE YARD AND WILL INCLUDE ALL MATERIALS, LABOR, EQUIPMENT, AND INCIDENTALS TO SAW CUT THE PATCHES, REMOVE UNSOUND MATERIALS, TACK, AND PATCH WITH ASPHALT. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE MOT SUBSUMMARY ON SHEET 31:

SUM-271-0802 L&R

SEASON /YEAR	QUANTITY LEFT BRIDGE	QUANTITY RIGHT BRIDGE
SPRING 2005	1,500 SQ. YD.	700 SQ. YD.
FALL 2005	300 SQ. YD.	300 SQ. YD.
SPRING 2006	300 SQ. YD.	300 SQ. YD.
FALL 2006	---	300 SQ. YD.
SPRING 2007	---	300 SQ. YD.
SUBTOTAL ESTIMATED QUANTITY - 4,000 SQ. YD.		

SUM-271-0854 L&R

SEASON /YEAR	QUANTITY LEFT BRIDGE	QUANTITY RIGHT BRIDGE
SPRING 2005	100 SQ. YD.	140 SQ. YD.
FALL 2005	25 SQ. YD.	35 SQ. YD.
SPRING 2006	25 SQ. YD.	35 SQ. YD.
FALL 2006	---	35 SQ. YD.
SPRING 2007	---	35 SQ. YD.
SUBTOTAL ESTIMATED QUANTITY - 430 SQ. YD.		

TOTAL ESTIMATED QUANTITY CARRIED TO THE MOT SUBSUMMARY 4,430 SQ. YD.

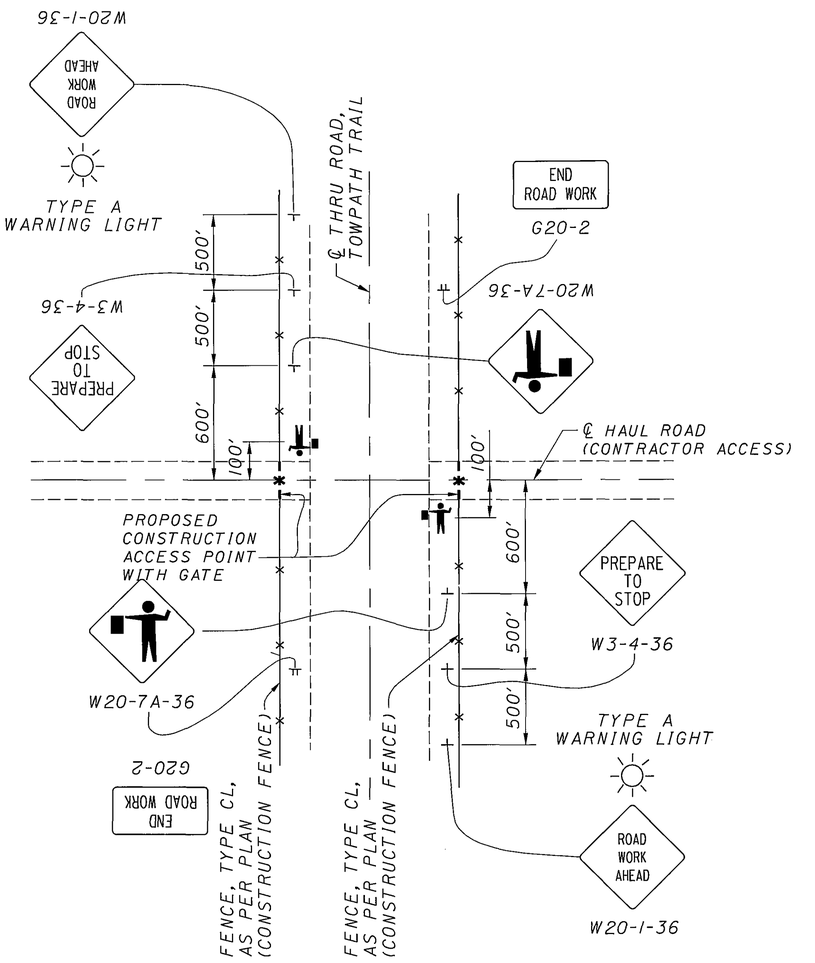
CONSTRUCTION EQUIPMENT RESTRICTIONS

SHOULD IT BE NECESSARY FOR THE CONTRACTOR TO CREATE HAUL ROADS (CONTRACTOR ACCESS) FOR EQUIPMENT THAT CROSS EXISTING LOCAL ROADS, OR THE TOWPATH TRAIL AT-GRADE, THE CONTRACTOR SHALL FURNISH FLAGGERS AT EACH SUCH CROSSING TO ASSURE THE SAFETY OF THE TRAVELING PUBLIC. THE FLAGGERS SHALL BE PRESENT DURING SUCH TIME THAT THE HAUL ROAD IS BEING USED. SEE THIS SHEET FOR DETAIL OF TYPICAL EQUIPMENT CROSSING. FOR ADDITIONAL DETAILS SEE STD MT-97.10

NO OFF ROAD EQUIPMENT SHALL BE PERMITTED TO CROSS OPEN LANES ON I.R. 271.

SIGN LOCATIONS MAY BE ADJUSTED TO FIT EXISTING CONDITIONS AS APPROVED BY THE ENGINEER.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS. AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614 MAINTAINING TRAFFIC.



FLAGGER OPERATION DETAIL FOR CROSSING OF CONSTRUCTION EQUIPMENT

SEE RESTRICTIONS UNDER GENERAL REQUIREMENTS NOTE ON THIS SHEET

FLAGGER OPERATIONS DETAIL

NOT TO SCALE

CALCULATED PS
CHECKED PG

MAINTENANCE OF TRAFFIC GENERAL NOTES

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612

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SUMMARY OF TRAFFIC SUBSUMMARY MAINTENANCE OF TRAFFIC

CALCULATED PS CHECKED PG

SHEET NO.	PHASE	STATION TO STATION		TRAFFIC DIRECTION	202	253	254	304	407	410		411		448	SPECIAL	606		614										
		STATION EXTENDS THROUGH STATION EQUATIONS FOR ESTIMATING PURPOSES			GUARDRAIL REMOVED	PAVEMENT REPAIR	PAVEMENT PLANING, ASPHALT CONCRETE	6" AGGREGATE BASE	TACK COAT	TRAFFIC COMPACTED SURFACE, TYPE A OR B	TRAFFIC COMPACTED SURFACE, TYPE A OR B, AS PER PLAN	STABILIZED CRUSHED AGGREGATE	STABILIZED CRUSHED AGGREGATE, AS PER PLAN	ASPHALT CONCRETE, SURFACE COURSE, TYPE I, PG 64-22	STRUCTURE, MISC: PATCHING BRIDGE DECK WITH ASPHALT	GUARDRAIL, TYPE 5	ANCHOR ASSEMBLY, REBUILT, TYPE E, AS PER PLAN	LAW ENFORCEMENT OFFICER	LAW ENFORCEMENT OFFICER WITH PATROL CAR	TRANSITION AREA DELINEATION	WORKSITE TRAFFIC SUPERVISOR	WORK ZONE IMPACT ATTENUATOR, UNIDIRECTIONAL	DETOUR SIGNING	WORK ZONE MARKING SIGN	WORK ZONE SPEED LIMIT SIGN	CONSTRUCTION ZONE/ FINES DOUBLED SIGN		
					FT.	CU.YD.	SQ.YD.	CU.YD.	GAL.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	FT.	EACH	HOUR	HOUR	FT.	MONTH	EACH		EACH	EACH	EACH		
35	IA	350+90.00	1421+75.00	SB								132																
35	IA	1437+00.00	475+00.00	SB								71																
38-40	1	349+40.00	1424+75.00	SB								227								3320								
38-40	1	355+00.00	1421+90.00																									
38-40	1	1421+90.00	1436+90.00																									
38-40	IA	1410+48.16	1420+00.00	SB																								
38-40	1	1436+90.00	467+30.00																									
38-40	1	467+30.00	467+51.00																			1						
38-40	1	1435+30.00	475+80.00	SB								85								3715								
38-40	IA	1438+95.00	1445+00.00	SB																								
38-40	1	2410+00.00	2420+50.00	NB																		1						
38-40	1	2436+10.00	2444+00.00	NB																								
44-46	2	396+60.00	472+10.00	SB																4070								
44-46	2	1410+00.00	456+70.00	SB																								
44-46	2	456+70.00	456+91.00	SB																		1						
50-52	3	351+20.00	369+00.00	NB																1767								
50-52	3	349+20.00	363+00.00	SB																1380								
50-52	3	363+00.00	452+40.00	SB								100+																
50-52	3	452+40.00	469+30.00	SB								100+								1690								
50-52	3	369+00.00	449+50.00	NB																								
50-52	3	449+50.00	467+70.00	NB																1825								
+ CONTINGENCY TO BE USED AS DIRECTED BY ENGINEER																												
50-52	3	360+00.00	457+60.00	SB																								
50-52	3	457+60.00	457+81.00	SB																		1						
21	4	1410+48.16	451+39.81	SB																								
EMERGENCY PARKING AREAS																												
72	1	408+00.00	LT.	SB							112																	
72	2	408+00.00	RT.	SB							134																	
72	3	408+00.00	LT.	SB							112*																	
72	3	408+00.00	RT.	SB							134*																	
SOUTH MEDIAN CROSSOVER, SHEET 56																												
NORTH MEDIAN CROSSOVER, SHEET 57																												
CONTRACTOR ACCESS REAR APPROACH, SHEET 58-64																												
CONTRACTOR ACCESS FORWARD APPROACH, SHEET 65-66																												
RIVERVIEW ROAD DETOUR SIGNING, SHEET 67																							LUMP					
BOSTON MILLS ROAD DETOUR SIGNING, SHEET 68																							LUMP					
* CONTINGENCY TO SUPPLEMENT PARKING AREAS AS DIRECTED BY ENGINEER																												
ITEMS CARRIED FROM MAINTENANCE OF TRAFFIC NOTES					750	160	49300	150	5000	400			50	1700	4430	750	10	480	130		54			5	14	6		
SUBTOTAL					750	160	49300	150	5000	400	492	715	50	1700	4430	750	10	480	130	17767	54	4	LUMP	5	14	6		
APPROPRIATE ITEMS CONVERTED TO MILES																												
TOTALS CARRIED TO GENERAL SUMMARY					750	160	49300	150	5000	400	492	715	50	1700	4430	750	10	480	130	17767	54	4	LUMP	5	14	6		

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SHEET NO.	PHASE	STATION TO STATION		TRAFFIC DIRECTION	614																											
		STATION EXTENDS THROUGH STATION EQUATIONS FOR ESTIMATING PURPOSES				WORK ZONE LIGHTING SYSTEM	WORK ZONE CROSSOVER LIGHTING SYSTEM	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	BARRIER REFLECTOR, TYPE A (USE 25' SPACING)		BARRIER REFLECTOR, TYPE B (USE 25' SPACING)		OBJECT MARKER, ONE WAY (USE 25' SPACING)	OBJECT MARKER, TWO WAY (USE 25' SPACING)	PORTABLE CHANGABLE MESSAGE SIGN, AS PER PLAN	WORK ZONE LANE LINE, CLASS I, 642 PAINT		WORK ZONE LANE LINE, CLASS I, 740.06, TYPE I													
						WHITE	YELLOW	WHITE	YELLOW							SOLID	DASHED	SOLID	DASHED													
						EACH	EACH	CU. YD.	EACH	EACH	EACH	EACH	EACH	EACH	SIGN MONTH	MILE	MILE	MILE	MILE													
35	1A	350+90.00	1421+75.00	SB																												
35	1A	1437+00.00	475+00.00	SB																												
38-40	1	349+40.00	1424+75.00	SB		1			172								4215															
38-40	1	355+00.00	1421+90.00									269	269																			
38-40	1	1421+90.00	1436+90.00								61	61	122																			
38-40	1A	1410+48.16	1420+00.00	SB																												
38-40	1	1436+90.00	467+30.00									123	123																			
38-40	1	467+30.00	467+51.00																													
38-40	1	1435+30.00	475+80.00	SB		1			104								335															
38-40	1A	1438+95.00	1445+00.00	SB																												
38-40	1	2410+00.00	2420+50.00	NB								43	43																			
38-40	1	2436+10.00	2444+00.00	NB								33	33																			
44-46	2	396+60.00	472+10.00	SB		2				48							1820		1700													
44-46	2	1410+00.00	456+70.00	SB							188	133	320																			
44-46	2	456+70.00	456+91.00	SB																												
50-52	3	351+20.00	369+00.00	NB			1												8940													
50-52	3	349+20.00	363+00.00	SB					13										8050													
50-52	3	363+00.00	452+40.00	SB																												
50-52	3	452+40.00	469+30.00	SB																												
50-52	3	369+00.00	449+50.00	NB																												
50-52	3	449+50.00	467+70.00	NB																												
+CONTINGENCY TO BE USED AS DIRECTED BY ENGINEER																																
50-52	3	360+00.00	457+60.00	SB		1			236		201	784	201	392																		
50-52	3	457+60.00	457+81.00	SB		1	1																									
21	4	204+20.76	452+50.00	NB/SB																												
EMERGENCY PARKING AREAS																																
72	1	408+00.00	LT.	SB																												
72	2	408+00.00	RT.	SB																												
72	3	408+00.00	LT.	SB																												
72	3	408+00.00	RT.	SB																												
SOUTH MEDIAN CROSSOVER, SHEET 56																																
NORTH MEDIAN CROSSOVER, SHEET 57																																
CONTRACTOR ACCESS REAR APPROACH, SHEET 58-64																																
CONTRACTOR ACCESS FORWARD APPROACH, SHEET 65-66																																
RIVERVIEW ROAD DETOUR SIGNING, SHEET 67																																
BOSTON MILLS ROAD DETOUR SIGNING, SHEET 68																																
* CONTINGENCY TO SUPPLEMENT PARKING AREAS AS DIRECTED BY ENGINEER																																
ITEMS CARRIED FROM MAINTENANCE OF TRAFFIC NOTES								750							108																	
SUBTOTAL						6	2	750	525	48	450	1446	1111	392	108	0	6370	0	18690													
APPROPRIATE ITEMS CONVERTED TO MILES																1.21			3.54													
TOTALS CARRIED TO GENERAL SUMMARY						6	2	750	573		1896		1111	392	108	1.3		3.6														

CALCULATED PS
CHECKED PG

MAINTENANCE OF TRAFFIC SUBSUMMARY

SUM-271-8.02

2I450MS.DGN 9/8/04 CAR,SJK

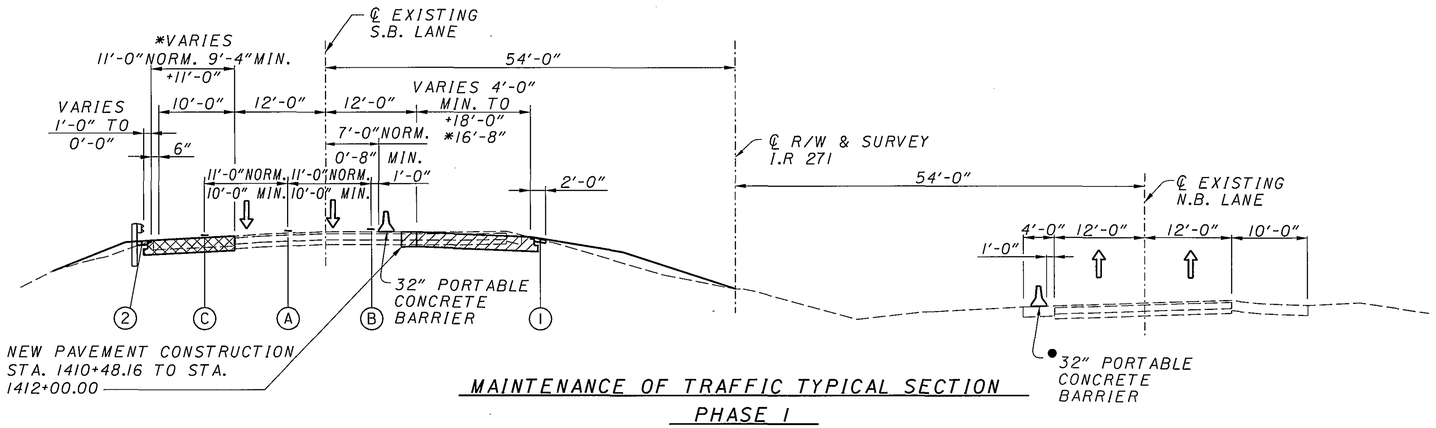
SHEET NO.	PHASE	STATION TO STATION		TRAFFIC DIRECTION	614							615		616	617		620	622			642								
		STATION EXTENDS THROUGH STATION EQUATIONS FOR ESTIMATING PURPOSES			WORK ZONE LANE LINE, CLASS II	WORK ZONE EDGE LINE, CLASS I	WORK ZONE EDGE LINE, CLASS I, 642 PAINT		WORK ZONE EDGE LINE, CLASS I, 704.06, TYPE I		MAINTAINING TRAFFIC MISC.: CONTRACTOR'S ACCESS	ROADS FOR MAINTAINING TRAFFIC	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN	WATER	COMPACTED AGGREGATE, TYPE A	WATER	DELINEATOR, TYPE C, POST MOUNTED	PORTABLE CONCRETE BARRIER, 32"	PORTABLE CONCRETE BARRIER, 32", AS PER PLAN	PORTABLE CONCRETE BARRIER, 32", BRIDGE MOUNTED	CENTERLINE, TYPE I							
							WHITE	YELLOW	WHITE	YELLOW																			
					MILE	MILE	MILE	MILE	MILE	MILE	LUMP	LUMP	SQ.YD.	M.GAL.	CU.YD.	M.GAL.	EACH	FT.	FT.	FT.	MILE								
35	1A	350+90.00	1421+75.00	SB								LUMP	1204															
35	1A	1437+00.00	475+00.00	SB								LUMP	1223															
38-40	1	349+40.00	1424+75.00	SB			4215	4215																				
38-40	1	355+00.00	1421+90.00															6690										
38-40	1	1421+90.00	1436+90.00																									
38-40	1A	1410+48.16	1420+00.00	SB																								
38-40	1	1436+90.00	467+30.00															2840		200								
38-40	1	467+30.00	467+51.00																									
38-40	1	1435+30.00	475+80.00	SB			335	335																				
38-40	1A	1438+95.00	1445+00.00	SB																								
38-40	1	2410+00.00	2420+50.00	NB														1050										
38-40	1	2436+10.00	2444+00.00	NB														790										
44-46	2	396+60.00	472+10.00	SB			1820	1820	1700	1700																		
44-46	2	1410+00.00	456+70.00	SB														3150		1520								
44-46	2	456+70.00	456+91.00	SB																								
50-52	3	351+20.00	369+00.00	NB																								
50-52	3	349+20.00	363+00.00	SB																								
50-52	3	363+00.00	452+40.00	SB					8940	8940																		
50-52	3	452+40.00	469+30.00	SB																								
50-52	3	369+00.00	449+50.00	NB					8050	8050																		
50-52	3	449+50.00	467+70.00	NB																								
+ CONTINGENCY TO BE USED AS DIRECTED BY ENGINEER																												
50-52	3	360+00.00	457+60.00	SB													25		9760									
50-52	3	457+60.00	457+81.00	SB																								
21	4	2408+20.76	452+50.00	NB/SB	8859																							
EMERGENCY PARKING AREAS																												
72	1	408+00.00	LT.	SB																								
72	2	408+00.00	RT.	SB																								
72	3	408+00.00	LT.	SB																								
72	3	408+00.00	RT.	SB																								
SOUTH MEDIAN CROSSOVER, SHEET 56												LUMP	1951.8															
NORTH MEDIAN CROSSOVER, SHEET 57												LUMP	2232.1															
CONTRACTOR ACCESS REAR APPROACH, SHEET 58-64											LUMP																	
CONTRACTOR ACCESS FORWARD APPROACH, SHEET 65-66											LUMP																	
RIVERVIEW ROAD DETOUR SIGNING, SHEET 67																												
BOSTON MILLS ROAD DETOUR SIGNING, SHEET 68																												
* CONTINGENCY TO SUPPLEMENT PARKING AREAS AS DIRECTED BY ENGINEER																												
ITEMS CARRIED FROM MAINTENANCE OF TRAFFIC NOTES					18480	36960								360	3000	118					7.5							
SUBTOTAL					27339	36960	6370	6370	18690	18690	LUMP	LUMP	6610.9	360	3000	118	25	14520	9760	1720	7.5							
APPROPRIATE ITEMS CONVERTED TO MILES					5.18	7	2.41		7.07																			
TOTALS CARRIED TO GENERAL SUMMARY					5.2	7	2.5		7.1		LUMP	LUMP	6611	360	3000	118	25	14520	9760	1720	7.5							

CALCULATED PS CHECKED PG

MAINTENANCE OF TRAFFIC SUBSUMMARY

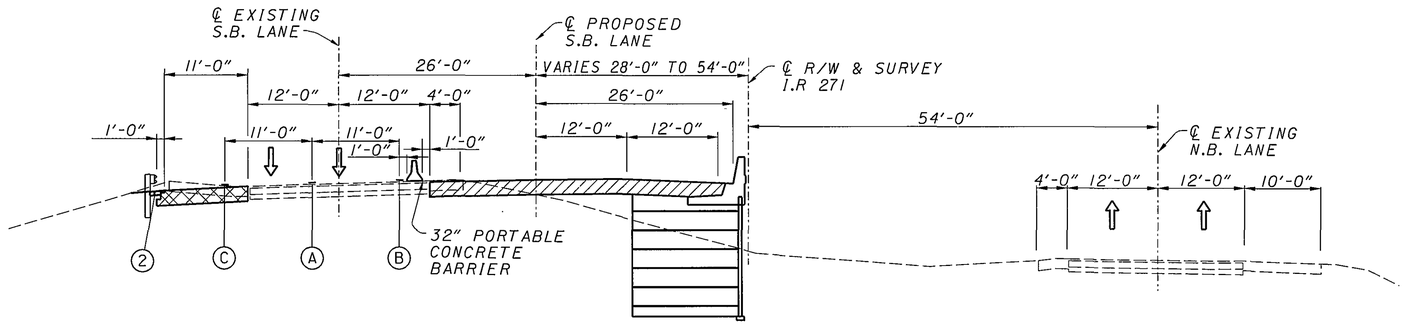
SUM-271-8.02

21450MS.DGN 3/31/04 CAR,SJK



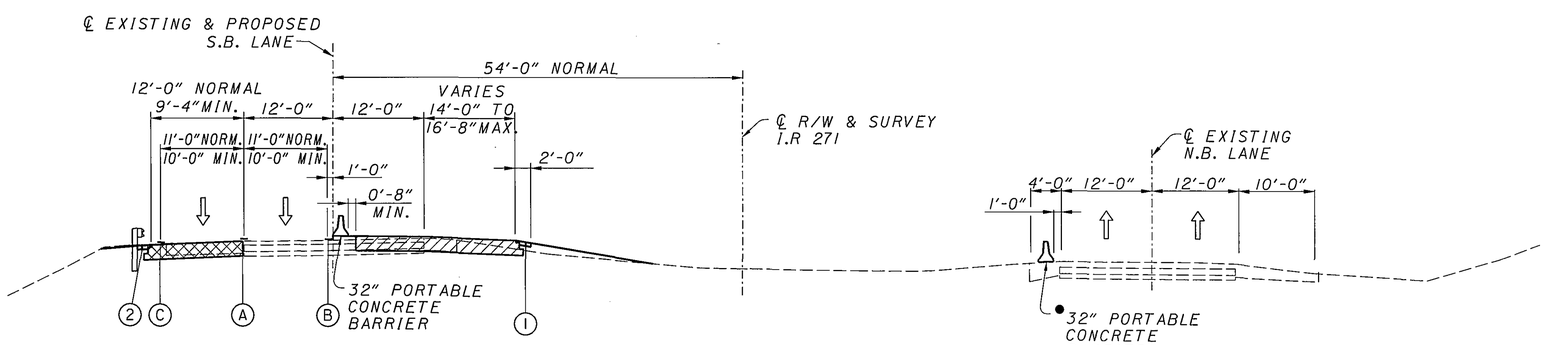
MAINTENANCE OF TRAFFIC TYPICAL SECTION
PHASE I

+ STA. 352+40 TO STA. 1412+00.00 S.B. LANES
* STA. 447+94.41 TO STA. 465+90 S.B. LANES
● STA. 2410+00.00 TO STA. 2420+50.00 N.B. LANES



MAINTENANCE OF TRAFFIC TYPICAL SECTION
PHASE I

STA. 1412+00.00 TO STA. 1443+00.00 S.B. LANES



MAINTENANCE OF TRAFFIC TYPICAL SECTION
PHASE I

STA. 1443+00 TO STA. 447+94.41 S.B. LANES
● STA. 2436+10.00 TO STA. 2445+00.00 N. B. LANES

LEGEND

- PHASE IA SHOULDER CONSTRUCTION
- PHASE I CONSTRUCTION
- TRAFFIC DIRECTION
- (1) ITEM 411 - 6" STABILIZED CRUSHED AGGREGATE
- (2) CONSTRUCTION BY PHASE IA
- (A) 614 WORK ZONE LANE LINE, CLASS I (TRANSITION AREA DELINEATION IN TRANSITION AREAS)
- (B) 614 WORK ZONE EDGE LINE, YELLOW, CLASS I (TRANSITION AREA DELINEATION IN TRANSITION AREAS)
- (C) 614 WORK ZONE EDGE LINE, WHITE, CLASS I (TRANSITION AREA DELINEATION IN TRANSITION AREAS)

NOTES:

STATIONS EXTEND THROUGH STATION EQUATIONS FOR ESTIMATION AND DELINEATION. SEE PLAN SHEETS AND TYPICAL SECTIONS FOR ADDITIONAL INFORMATION.

1. ALL WORK ZONE PAVEMENT MARKINGS SHALL BE 642 PAINT UNLESS OTHERWISE NOTED.
2. PAVEMENT CROSS SLOPE VARIES THROUGH LIMITS OF SUPERELEVATION SECTIONS. SEE TYPICAL SECTIONS AND SUPERELEVATION TABLE FOR LIMITS.
3. ALL STATION LIMITS SHOWN INCLUDE THE EXISTING BRIDGES WHICH ARE TO BE RECONSTRUCTED.
4. MAINTAIN TWO LANE OF TRAFFIC, AS SHOWN, AS PER MT-102.10. SEE SHEET 24 AND THE 614 NOTE FOR ADDITIONAL RESTRICTIONS.

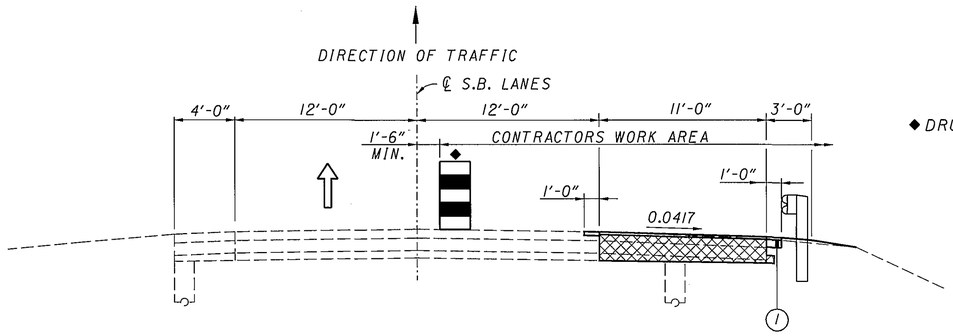
CALCULATED PG CHECKED JL

MAINTENANCE OF TRAFFIC - PHASE I TYPICAL SECTIONS

SUM-271-8.02

34
612

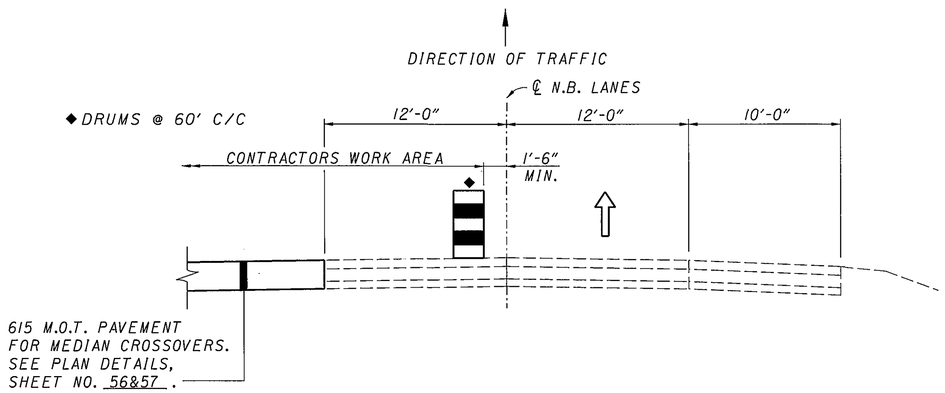
21450MYI.DGN 03/31/04 SAM,CAR



OUTSIDE SHOULDER REPLACEMENT M.O.T. TYPICAL SECTION PHASE IA

FULL DEPTH SHOULDER PAVEMENT (SEE TYPICAL SECTIONS)
STA. 352+40 TO STA. 1410+48.16 S.B. LANES = 5781.98± FT.
STA. 451+00± TO STA. 472+80 S.B. LANES = 2180.00± FT.

ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC
STA. 1410+48.16 TO STA. 1420+00 S.B. LANES = 951.84 FT.
STA. 1438+95 TO STA. 449+00± S.B. LANES = 1050.00± FT.



MEDIAN CROSSOVER PAVEMENT CONSTRUCTION ALONG INSIDE SHOULDER NORTHBOUND LANES CONSTRUCTED DURING PHASE I OR II FOR PHASE III

CLOSE INSIDE LANE USING STANDARD DRAWING MT-95.30 DURING PERMITTED HOURS ONLY. SEE SHEET 24 FOR ADDITIONAL REQUIREMENTS.

NOTES PHASE IA:

1. CONSTRUCTION OF THE OUTSIDE SHOULDER PAVEMENT SHALL BE COMPLETED DURING PERMITTED LANE CLOSURE HOURS ONLY AS PER SHEET NO. 24 REQUIREMENTS. CLOSE THE OUTSIDE TRAVEL LANE AS DETAILED USING MT-95.30.
2. PAVEMENT CROSS SLOPE VARIES THROUGH LIMITS OF SUPERELEVATION SECTIONS. SEE TYPICAL SECTIONS AND SUPERELEVATION TABLE FOR LIMITS.
3. ALL STATION LIMITS SHOWN INCLUDE THE EXISTING BRIDGES WHICH ARE TO BE RECONSTRUCTED.
4. SEE TRENCH EXCAVATION NOTES, SHEET NO, 26 .

LEGEND

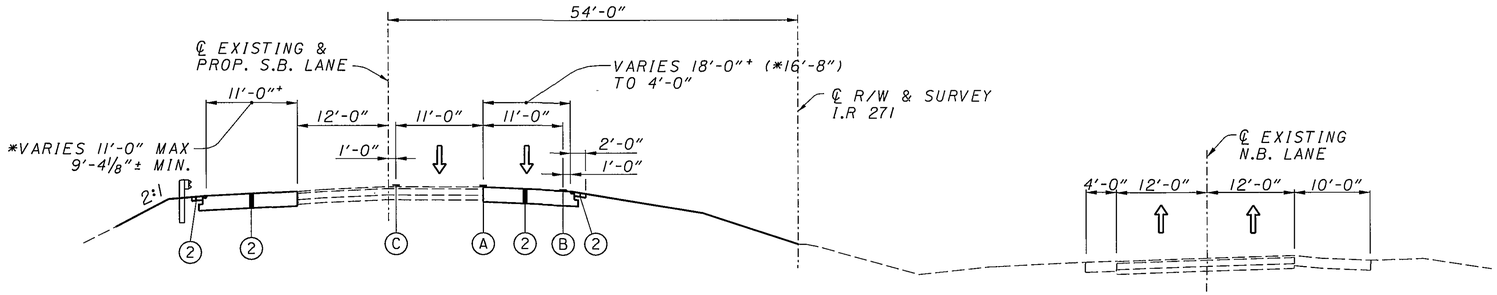
- PHASE IA FULL DEPTH SHOULDER CONSTRUCTION AND PAVEMENT FOR MAINTAINING TRAFFIC
- PHASE I CONSTRUCTION
- TRAFFIC DIRECTION
- (I) ITEM 411 - 6" STABILIZED CRUSHED AGGREGATE (WIDTH AS SHOWN)

CALCULATED PG CHECKED JL

MAINTENANCE OF TRAFFIC - PHASE IA & PHASE I TYPICAL SECTIONS

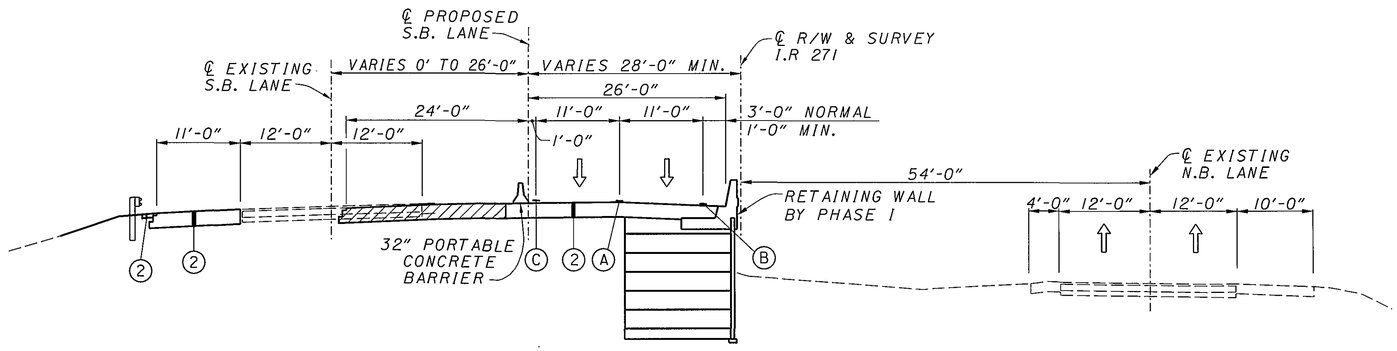
SUM-271-8.02

21450MY1a.DGN 9/8/04 SAM.CAR



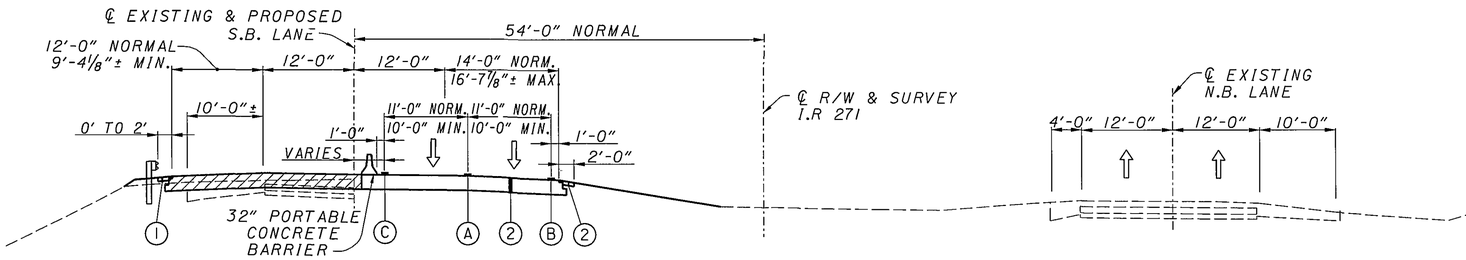
MAINTENANCE OF TRAFFIC TYPICAL SECTION PHASE II

\+ STA. 1401+55 TO STA. 1410+48.16 S.B. LANES
* STA. 448+80.06 TO STA. 465+90 S.B. LANES



MAINTENANCE OF TRAFFIC TYPICAL SECTION PHASE II

STA. 1412+00.00 TO STA. 1443+00.00 S.B. LANES



MAINTENANCE OF TRAFFIC TYPICAL SECTION PHASE II

STA. 1410+48.16 TO STA. 1412+00.00 S.B. LANES
STA. 1443+00.00 TO STA. 448+80.06 S.B. LANES

LEGEND

- PHASE II CONSTRUCTION
- TRAFFIC DIRECTION
- (1) ITEM 411 - 6" STABILIZED CRUSHED AGGREGATE (WIDTH AS SHOWN)
- (2) CONSTRUCTED BY PHASE I & IA
- (A) 614 WORK ZONE LANE LINE, CLASS I (TRANSITION AREA DELINEATION IN TRANSITION AREAS)
- (B) 614 WORK ZONE EDGE LINE, YELLOW, CLASS I (TRANSITION AREA DELINEATION IN TRANSITION AREAS)
- (C) 614 WORK ZONE EDGE LINE, WHITE, CLASS I (TRANSITION AREA DELINEATION IN TRANSITION AREAS)

NOTE:

1. ALL WORK ZONE PAVEMENT MARKINGS SHALL BE 642 PAINT UNLESS OTHERWISE NOTED.
2. PAVEMENT CROSS SLOPE VARIES THROUGH LIMITS OF SUPERELEVATION SECTIONS. SEE TYPICAL SECTIONS AND SUPERELEVATION TABLE FOR LIMITS.
3. ALL STATION LIMITS SHOWN INCLUDE THE EXISTING BRIDGES WHICH ARE TO BE RECONSTRUCTED.
4. MAINTAIN TWO LANE OF TRAFFIC, AS SHOWN, AS PER MT-102.10. SEE 614 NOTE FOR ADDITIONAL RESTRICTIONS.

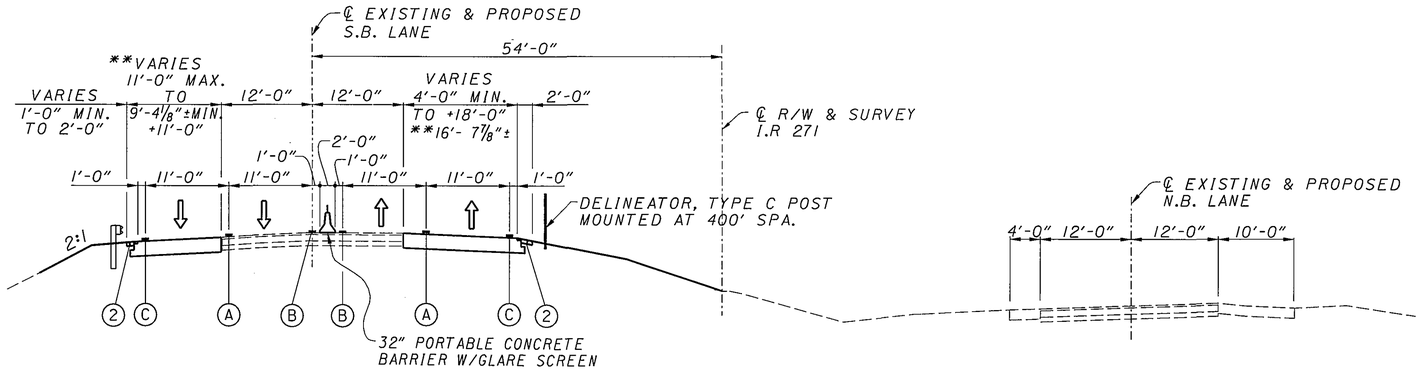
STATIONS EXTEND THROUGH STATION EQUATIONS FOR ESTIMATION AND DELINEATION. SEE PLAN SHEETS AND TYPICAL SECTIONS FOR ADDITIONAL INFORMATION.

CALCULATED PG CHECKED JL

MAINTENANCE OF TRAFFIC - PHASE II TYPICAL SECTIONS

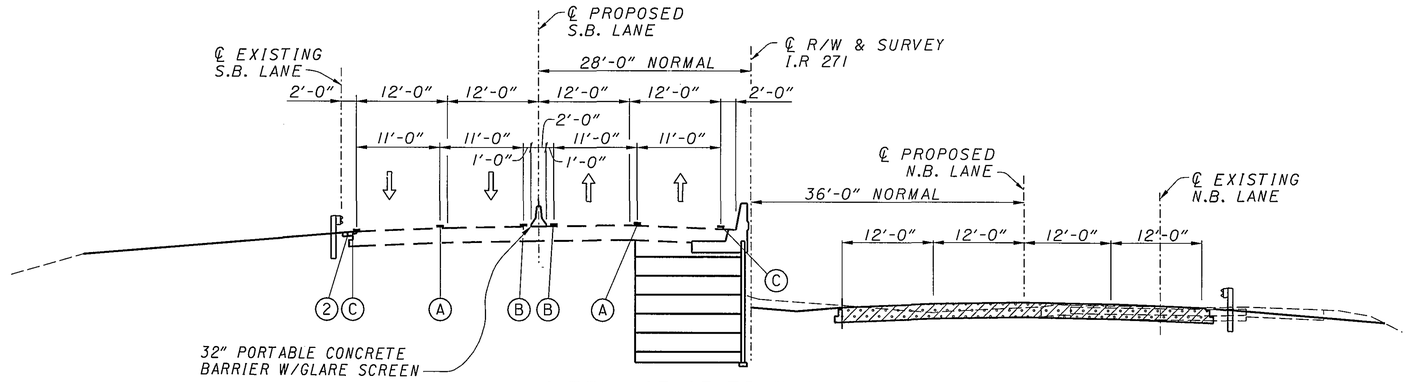
SUM-271-8.02

21450MY2.DGN 03/31/04 SAM.CEO.CAR



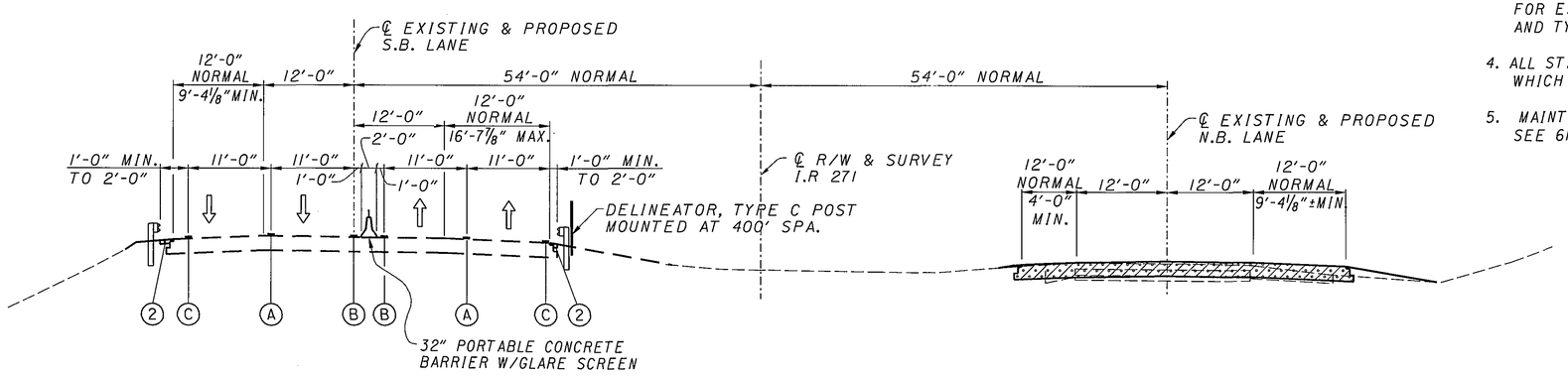
MAINTENANCE OF TRAFFIC TYPICAL SECTION
PHASE III

*STA. 352+75 TO STA. 1412+00.00 S.B. LANES
**STA. 451+19.82 TO STA. 465+90 S.B. LANES



MAINTENANCE OF TRAFFIC TYPICAL SECTION
PHASE III

STA. 1412+00.00 I.R. 271 S.B.TO STA. 1443+00 S.B. LANES
STA. 2408+20.76 ℄ I.R. 271 N.B. TO STA. 2443+00 N.B. LANES



MAINTENANCE OF TRAFFIC TYPICAL SECTION
PHASE III

STA. 1443+00 I.R. 271 S.B.TO STA. 451+19.82 S.B. LANES
STA. 2443+00 ℄ I.R. 271 N.B. TO STA. 451+40.38 N.B. LANES

LEGEND

- PHASE III CONSTRUCTION
- ⇦ TRAFFIC DIRECTION
- (1) ITEM 411 - 6" STABILIZED CRUSHED AGGREGATE (WIDTH AS SHOWN)
- (2) CONSTRUCTED WITH PHASE I, IA AND II
- (A) WORK ZONE LANE LINE, CLASS I
- (B) WORK ZONE EDGE LINE, YELLOW, CLASS I
- (C) WORK ZONE EDGE LINE, WHITE, CLASS I

NOTE:

1. ALL WORK ZONE PAVEMENT MARKINGS FOR THIS PHASE SHALL BE 740.06, TYPE I UNLESS OTHERWISE NOTED.
2. PAVEMENT CROSS SLOPE VARIES THROUGH LIMITS OF SUPERELEVATION SECTIONS. SEE TYPICAL SECTIONS AND SUPERELEVATION TABLE FOR LIMITS.
3. STATIONS EXTEND THROUGH STATION EQUATIONS FOR ESTIMATION AND DELINEATION. SEE PLAN SHEETS AND TYPICAL SECTIONS FOR ADDITIONAL INFORMATION.
4. ALL STATION LIMITS SHOWN INCLUDE THE BRIDGES WHICH ARE TO BE RECONSTRUCTED.
5. MAINTAIN TWO LANE OF TRAFFIC, AS SHOWN, AS PER MT-102.10. SEE 614 NOTE FOR ADDITIONAL RESTRICTIONS.

CALCULATED PG CHECKED JL

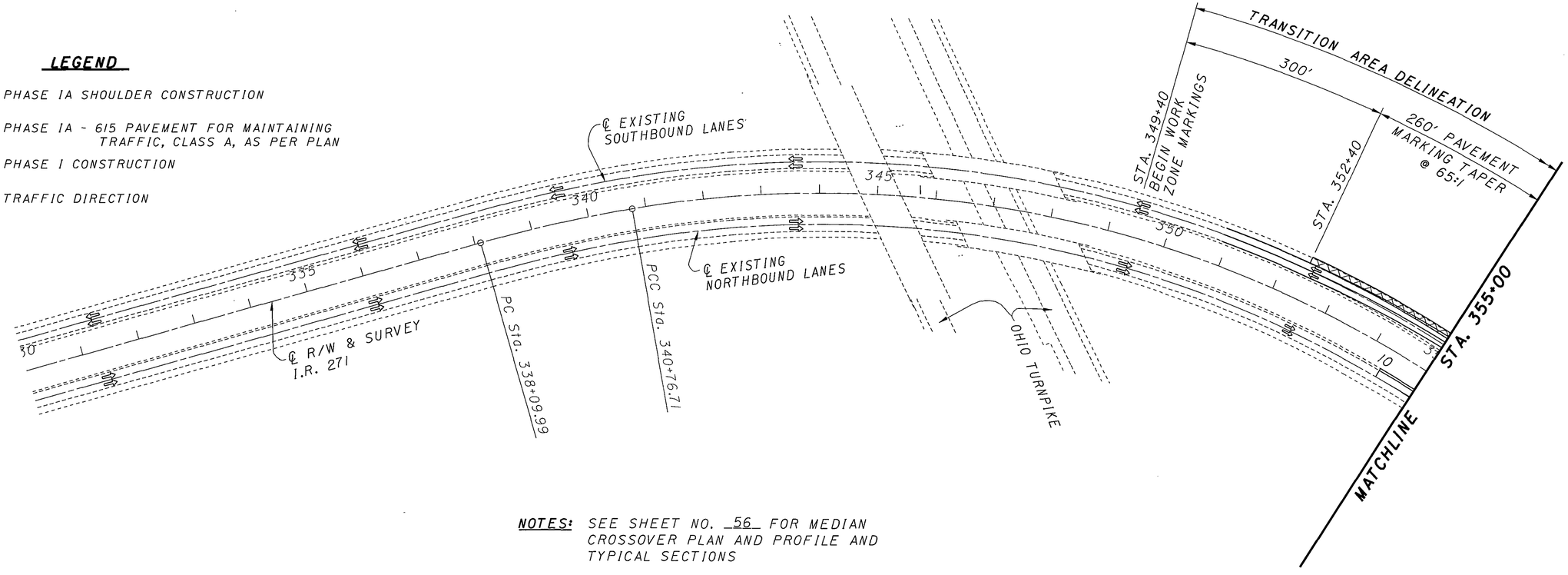
MAINTENANCE OF TRAFFIC - PHASE III
TYPICAL SECTIONS

SUM-271-8.02

2450MY3.DGN 03/31/04 SAM.CAR

LEGEND

- PHASE IA SHOULDER CONSTRUCTION
- PHASE IA - 615 PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN
- PHASE I CONSTRUCTION
- TRAFFIC DIRECTION



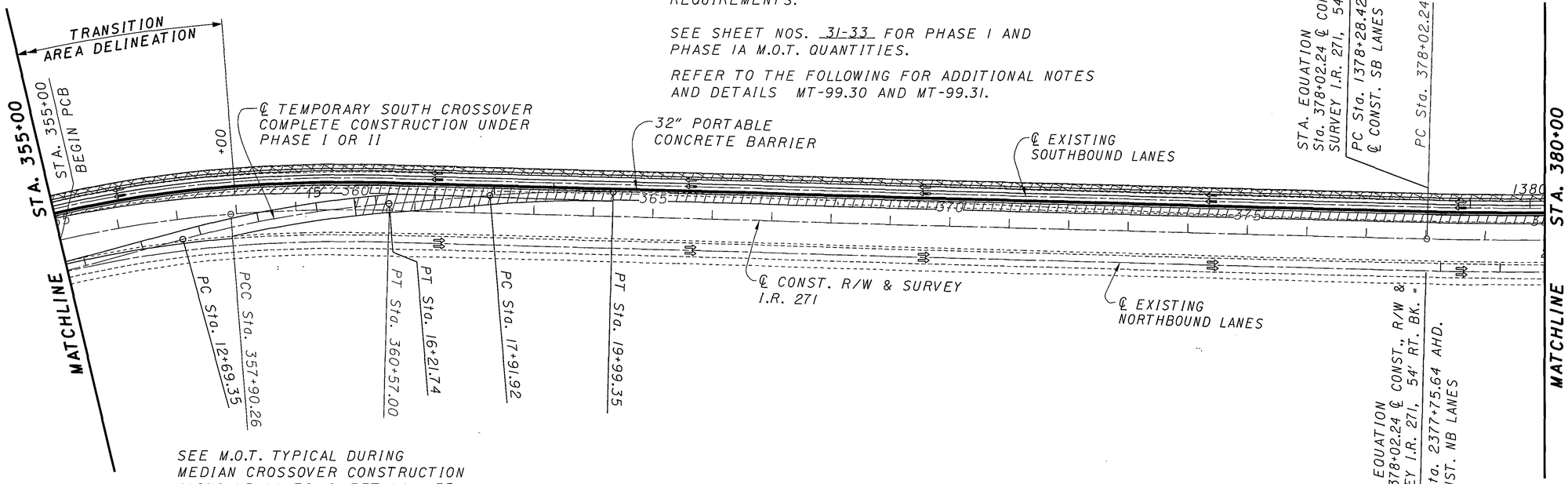
NOTES: SEE SHEET NO. 56 FOR MEDIAN CROSSOVER PLAN AND PROFILE AND TYPICAL SECTIONS

SEE SEQUENCE OF CONSTRUCTION FOR PHASE I M.O.T., SHEET NO. 21

SEE STANDARD DRAWING MT-102.10 FOR ADDITIONAL NOTES AND SIGNING REQUIREMENTS.

SEE SHEET NOS. 31-33 FOR PHASE I AND PHASE IA M.O.T. QUANTITIES.

REFER TO THE FOLLOWING FOR ADDITIONAL NOTES AND DETAILS MT-99.30 AND MT-99.31.



SEE M.O.T. TYPICAL DURING MEDIAN CROSSOVER CONSTRUCTION ALONG NB LANES, SHEET NO. 35

21450MPI.DGN 03/31/04 SAM,CAR,HN

N

HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED PG
CHECKED JL

MAINTENANCE OF TRAFFIC - PHASE I
STA. 330+00 TO STA. 380+00

SUM-271-8.02

38
612

NOTES:

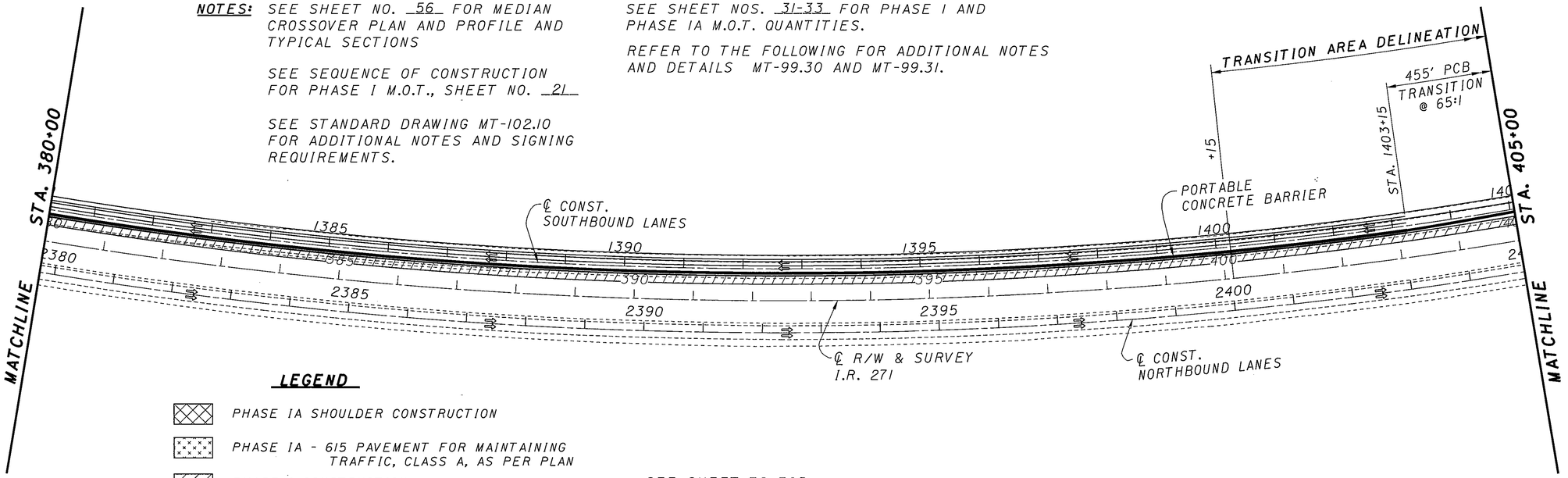
SEE SHEET NO. 56 FOR MEDIAN CROSSOVER PLAN AND PROFILE AND TYPICAL SECTIONS

SEE SEQUENCE OF CONSTRUCTION FOR PHASE I M.O.T., SHEET NO. 21

SEE STANDARD DRAWING MT-102.10 FOR ADDITIONAL NOTES AND SIGNING REQUIREMENTS.

SEE SHEET NOS. 31-33 FOR PHASE I AND PHASE IA M.O.T. QUANTITIES.

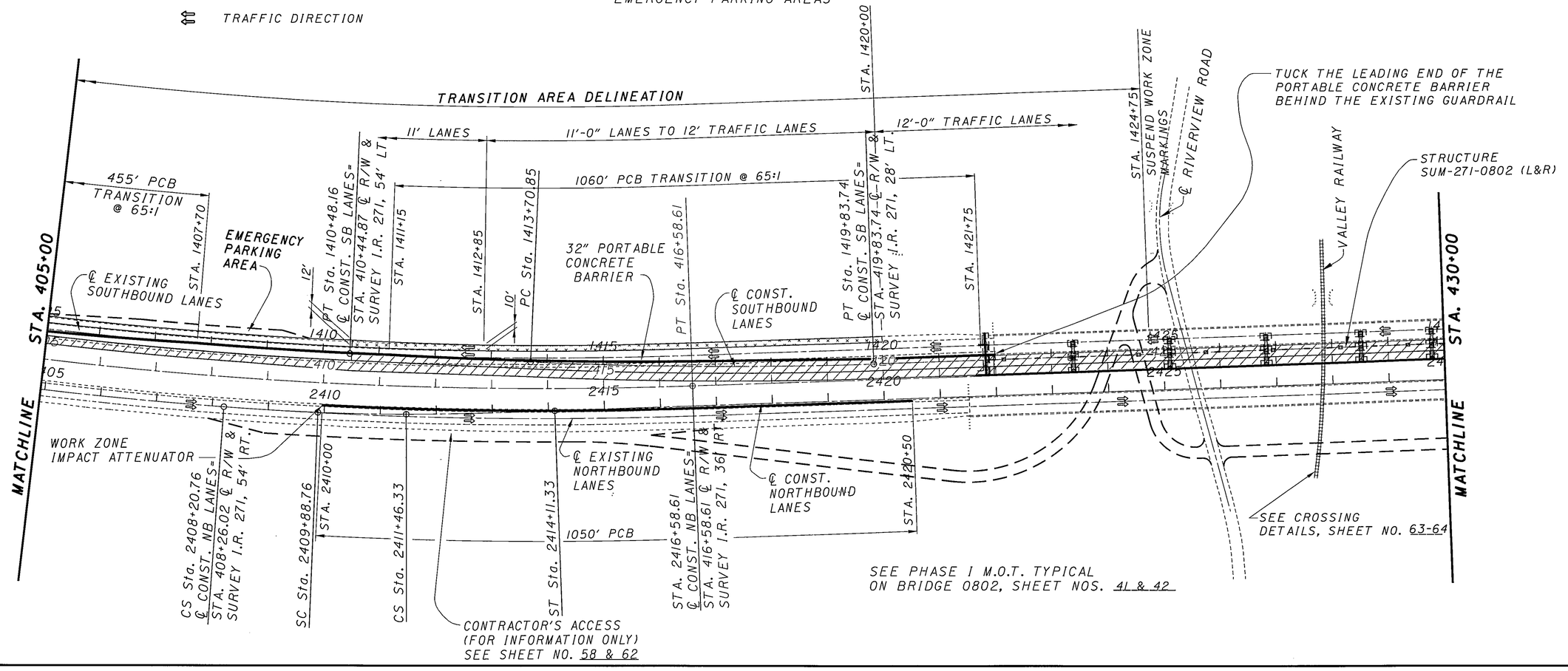
REFER TO THE FOLLOWING FOR ADDITIONAL NOTES AND DETAILS MT-99.30 AND MT-99.31.



LEGEND

- PHASE IA SHOULDER CONSTRUCTION
- PHASE IA - 615 PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN
- PHASE I CONSTRUCTION
- TRAFFIC DIRECTION

SEE SHEET 72 FOR EMERGENCY PARKING AREAS



SEE PHASE I M.O.T. TYPICAL ON BRIDGE 0802, SHEET NOS. 41 & 42

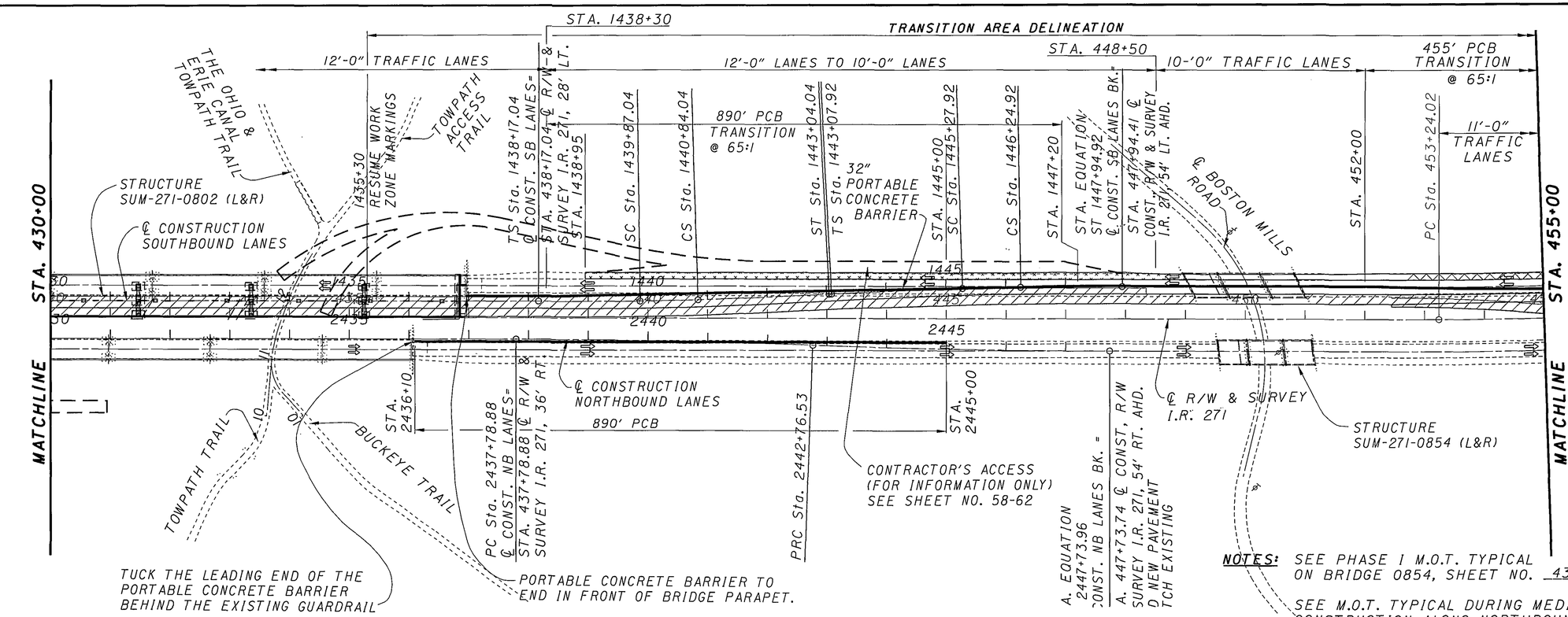
21450MP2.DGN 03/31/04 SAM,CAR,HN

HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED PG
CHECKED JL

MAINTENANCE OF TRAFFIC - PHASE I
STA. 380+00 TO STA. 430+00

SUM-271-8.02



NOTES:

SEE PHASE I M.O.T. TYPICAL ON BRIDGE 0854, SHEET NO. 43 .

SEE M.O.T. TYPICAL DURING MEDIAN CROSSOVER CONSTRUCTION ALONG NORTHBOUND LANES, SHEET NO. 35 .

SEE SHEET NO. 57 FOR CROSSOVER PLAN & PROFILE, TYPICAL SECTION.

SEE SHEET NO. 56 FOR MEDIAN CROSSOVER PLAN AND PROFILE AND TYPICAL SECTIONS

SEE SEQUENCE OF CONSTRUCTION FOR PHASE I M.O.T., SHEET NO. 21

SEE STANDARD DRAWING MT-102.10 FOR ADDITIONAL NOTES AND SIGNING REQUIREMENTS.

SEE SHEET NOS. 31-33 FOR PHASE I AND PHASE IA M.O.T. QUANTITIES.

REFER TO THE FOLLOWING FOR ADDITIONAL NOTES AND DETAILS MT-99.30 AND MT-99.31.

LEGEND

- PHASE IA SHOULDER CONSTRUCTION
- PHASE IA - 615 PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN
- PHASE I CONSTRUCTION
- TRAFFIC DIRECTION

HORIZONTAL SCALE IN FEET: 0, 50, 100, 200

CALCULATED PG

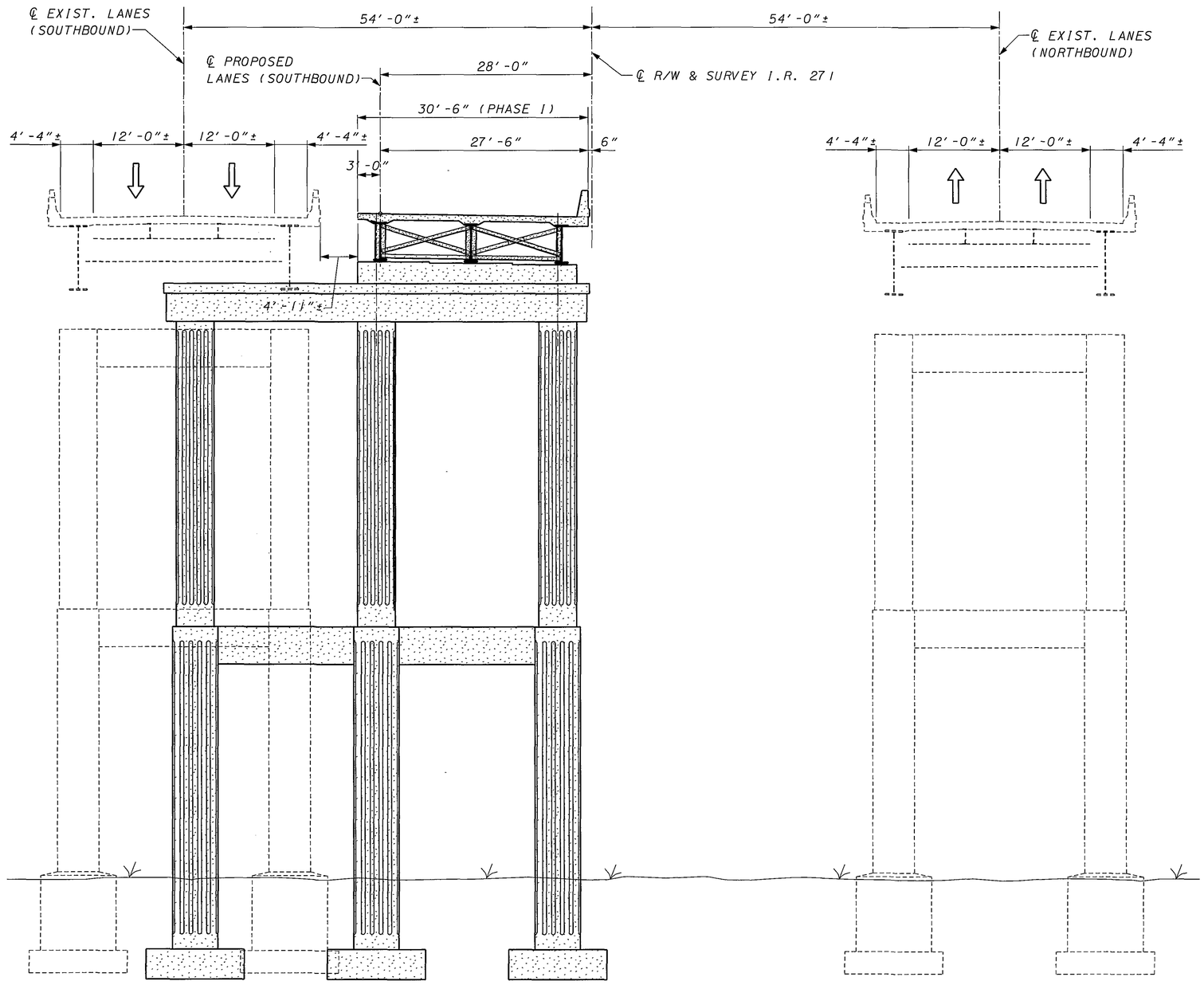
CHECKED JL

MAINTENANCE OF TRAFFIC - PHASE I
STA. 430+00 TO STA. 480+00

SUM-271-8.02

40
612

21450MP3.DGN 03/31/04 SAM,CEO,CAR,HN



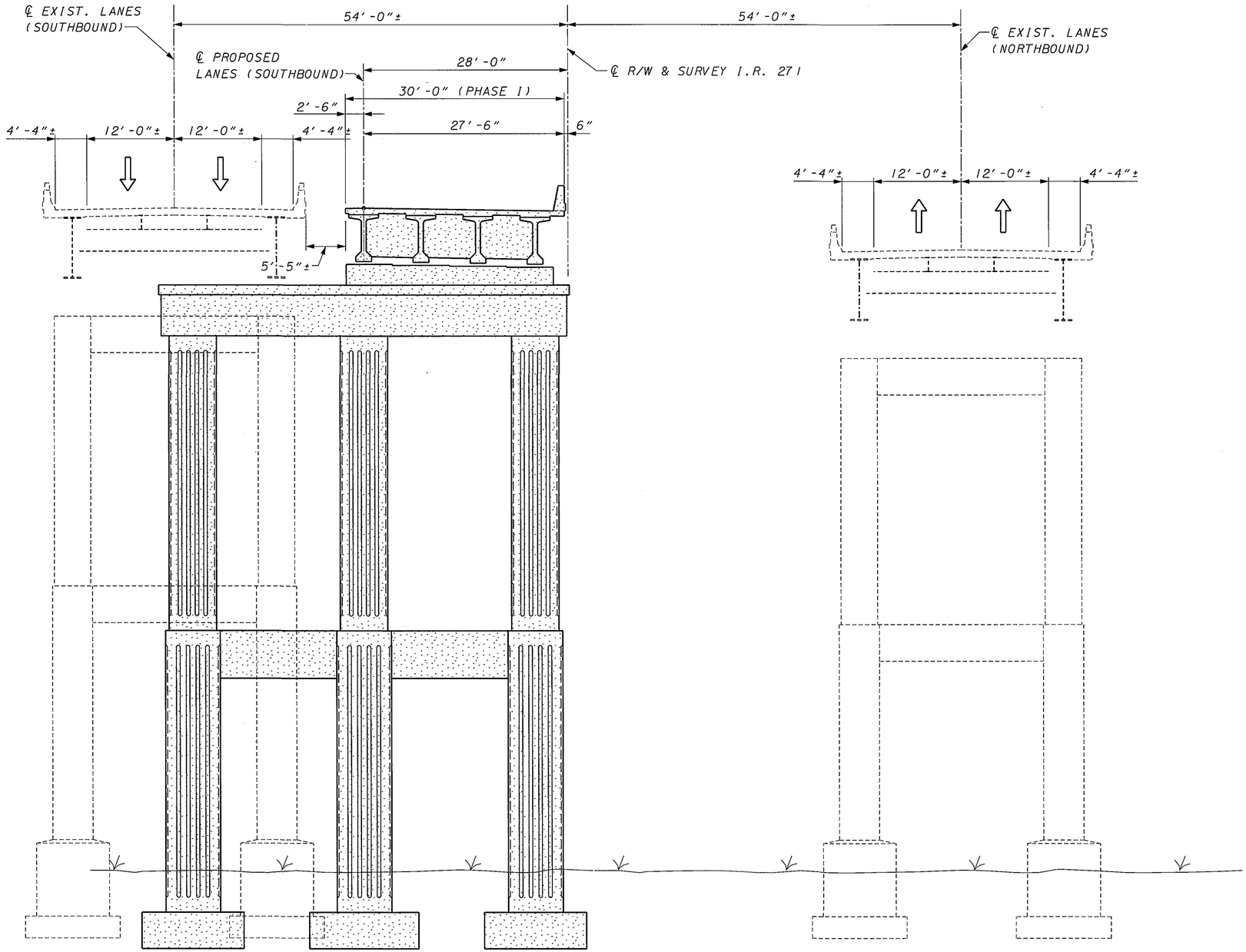
INDICATES NEW CONSTRUCTION

BRIDGE NO. SUM-271-0802 L&R PHASE I CONSTRUCTION (STEEL)

SUM-271-8.02

41
612

SU27IPCA.DGN 3/26/04 HN,JLS

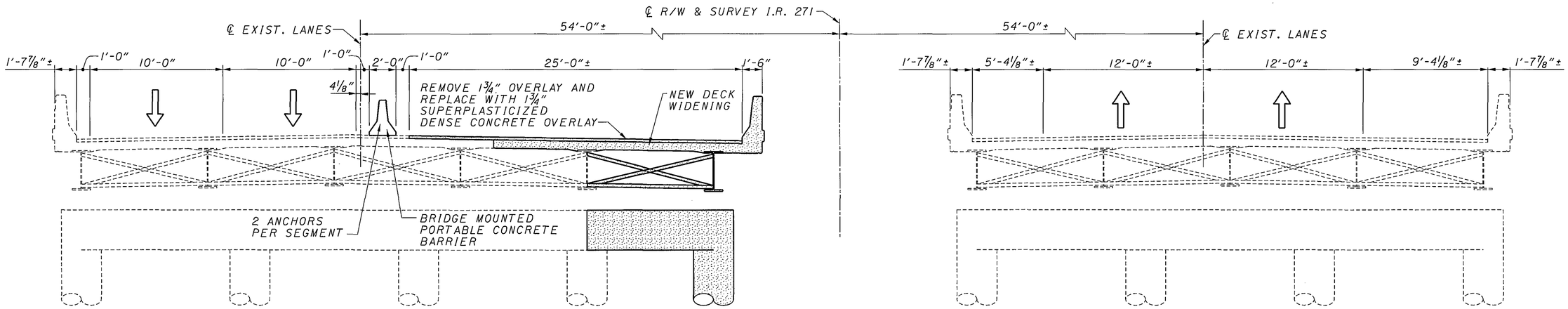


INDICATES NEW CONSTRUCTION

SU271PCO.DGN 3/26/04 TWH,HN,JLS

BRIDGE NO. SUM-271-0802 L&R PHASE I CONSTRUCTION (CONCRETE)

SUM-271-8.02



PHASE I

LEGEND

▨ - INDICATES NEW CONSTRUCTION

NOTES

BARRIER DETAILS: SEE STANDARD DRAWING PCB-91.

BRIDGE NO. SUM-271-0854 L&R PHASE I CONSTRUCTION

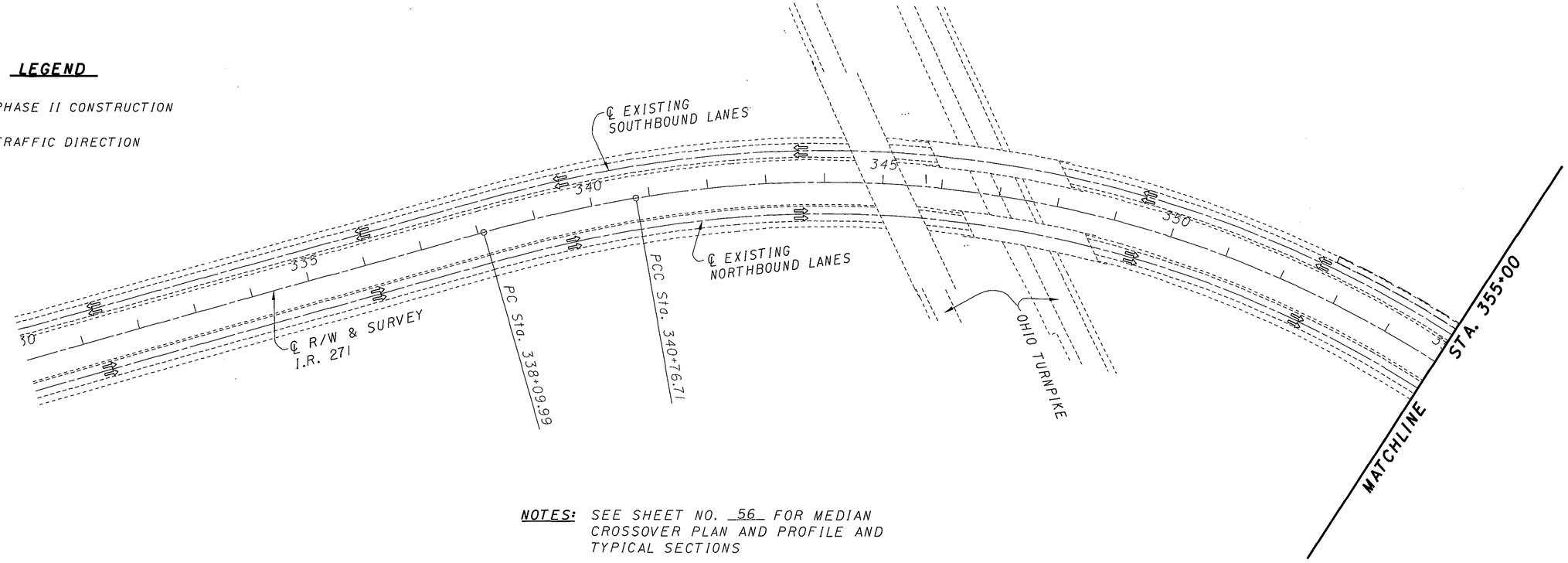
SUM-271-8.02

SU271PC1.DGN 10/30/03 JLS,HN

LEGEND

PHASE II CONSTRUCTION

TRAFFIC DIRECTION



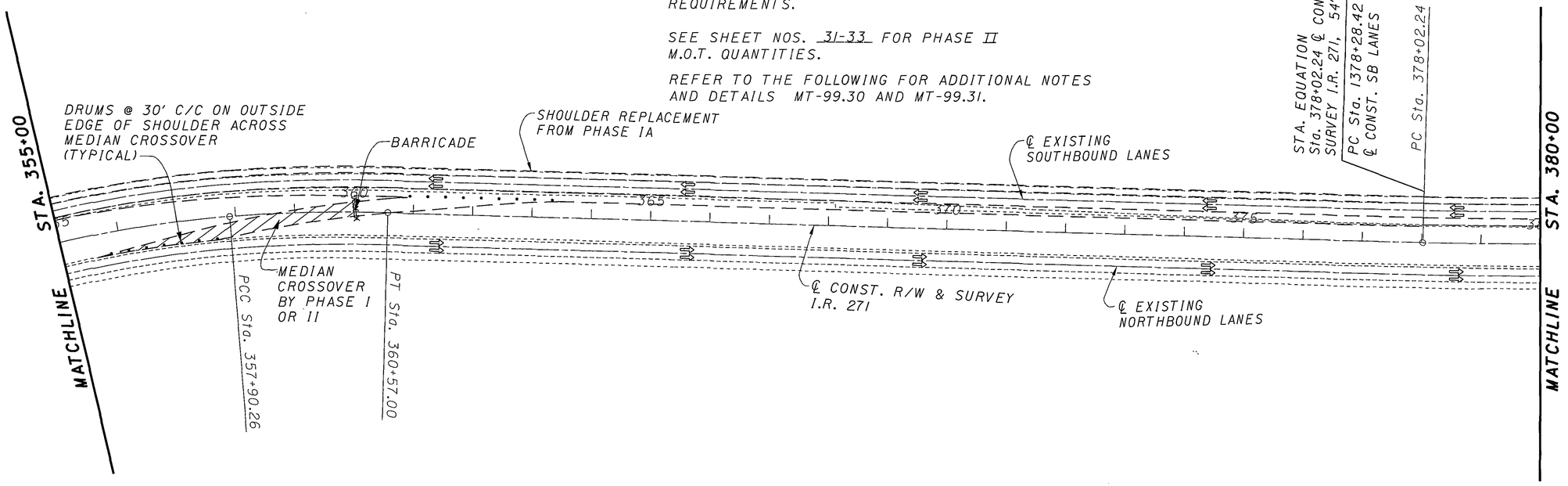
NOTES: SEE SHEET NO. 56 FOR MEDIAN CROSSOVER PLAN AND PROFILE AND TYPICAL SECTIONS

SEE SEQUENCE OF CONSTRUCTION FOR PHASE II M.O.T., SHEET NO. 21

SEE STANDARD DRAWING MT-102.10 FOR ADDITIONAL NOTES AND SIGNING REQUIREMENTS.

SEE SHEET NOS. 31-33 FOR PHASE II M.O.T. QUANTITIES.

REFER TO THE FOLLOWING FOR ADDITIONAL NOTES AND DETAILS MT-99.30 AND MT-99.31.



HORIZONTAL SCALE IN FEET
0 50 100 200

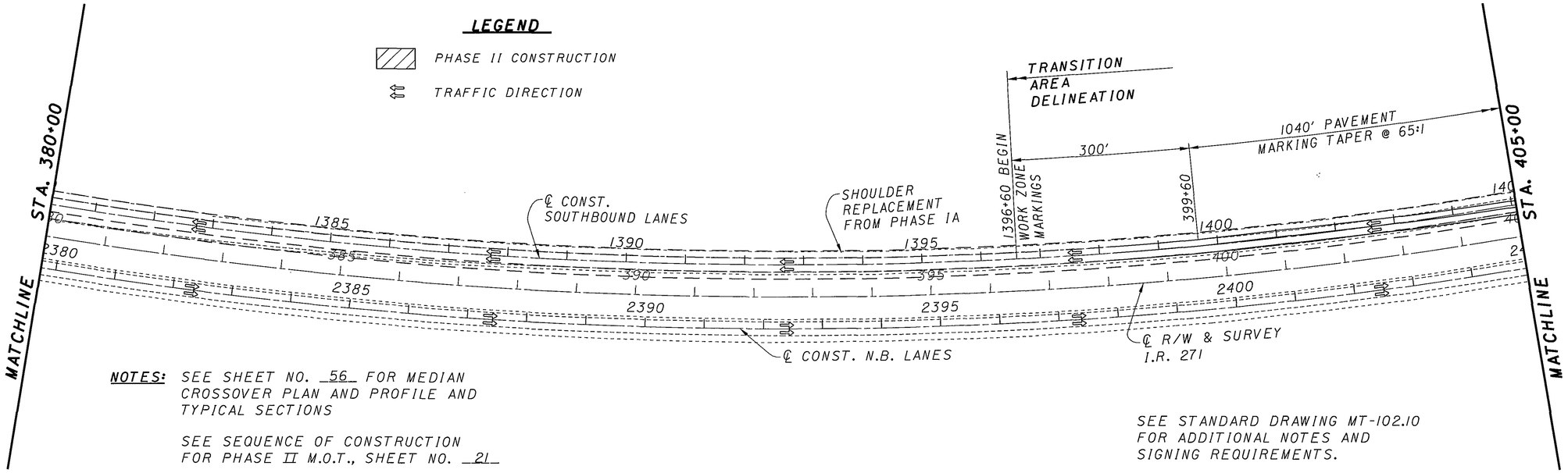
CALCULATED PG
CHECKED JL

MAINTENANCE OF TRAFFIC - PHASE II
STA. 330+00 TO STA. 380+00

SUM-271-8.02

44
612

2145OMP4.DGN 3/31/04 SAM, CAR, HN



NOTES: SEE SHEET NO. 56 FOR MEDIAN CROSSOVER PLAN AND PROFILE AND TYPICAL SECTIONS

SEE SEQUENCE OF CONSTRUCTION FOR PHASE II M.O.T., SHEET NO. 21

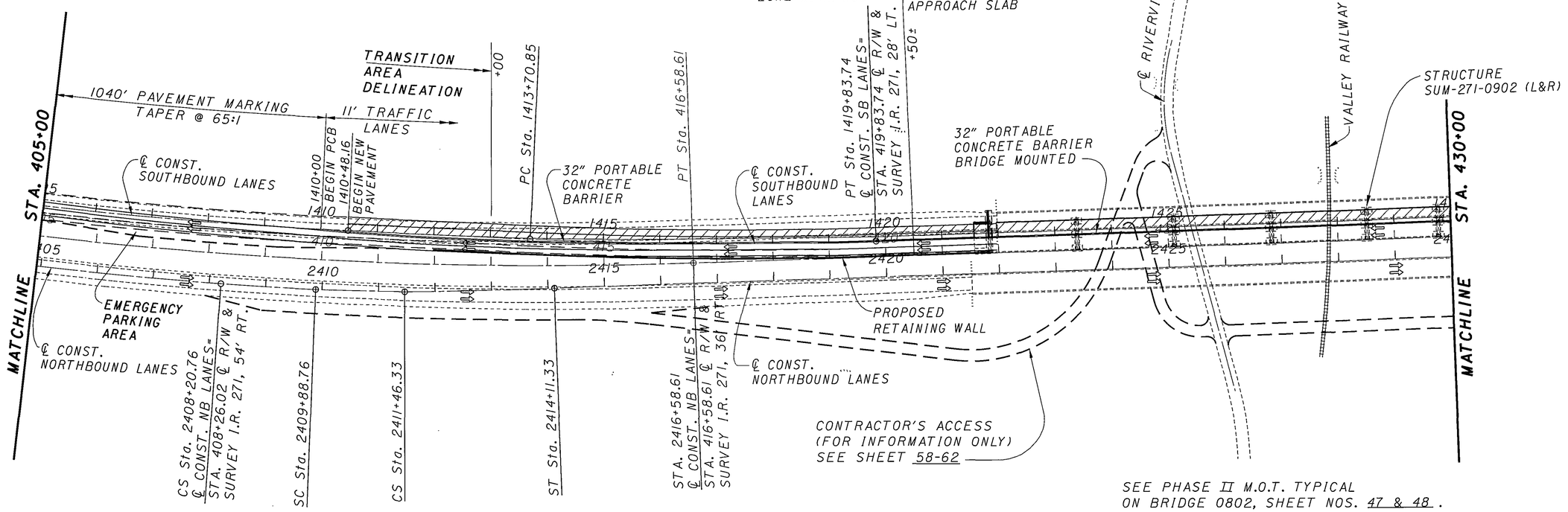
SEE STANDARD DRAWING MT-102.10 FOR ADDITIONAL NOTES AND SIGNING REQUIREMENTS.

SEE SHEET NOS. 31-33 FOR PHASE II M.O.T. QUANTITIES.

REFER TO THE FOLLOWING FOR ADDITIONAL NOTES AND DETAILS MT-99.30.

SEE STANDARD DRAWING MT-102.10 FOR ADDITIONAL NOTES AND SIGNING REQUIREMENTS.

SEE SHEET 72 FOR EMERGENCY PARKING AREAS



SEE PHASE II M.O.T. TYPICAL ON BRIDGE 0802, SHEET NOS. 47 & 48 .

HORIZONTAL SCALE IN FEET
0 50 100 200

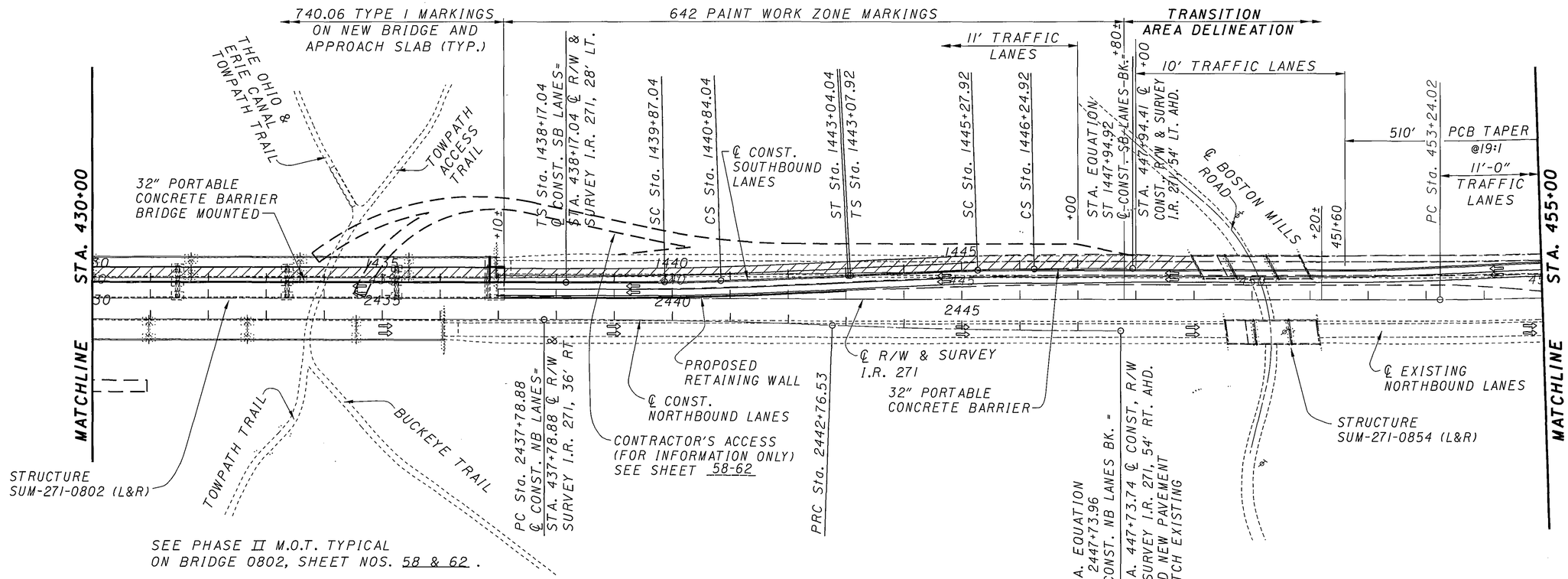
CALCULATED PG
CHECKED JL

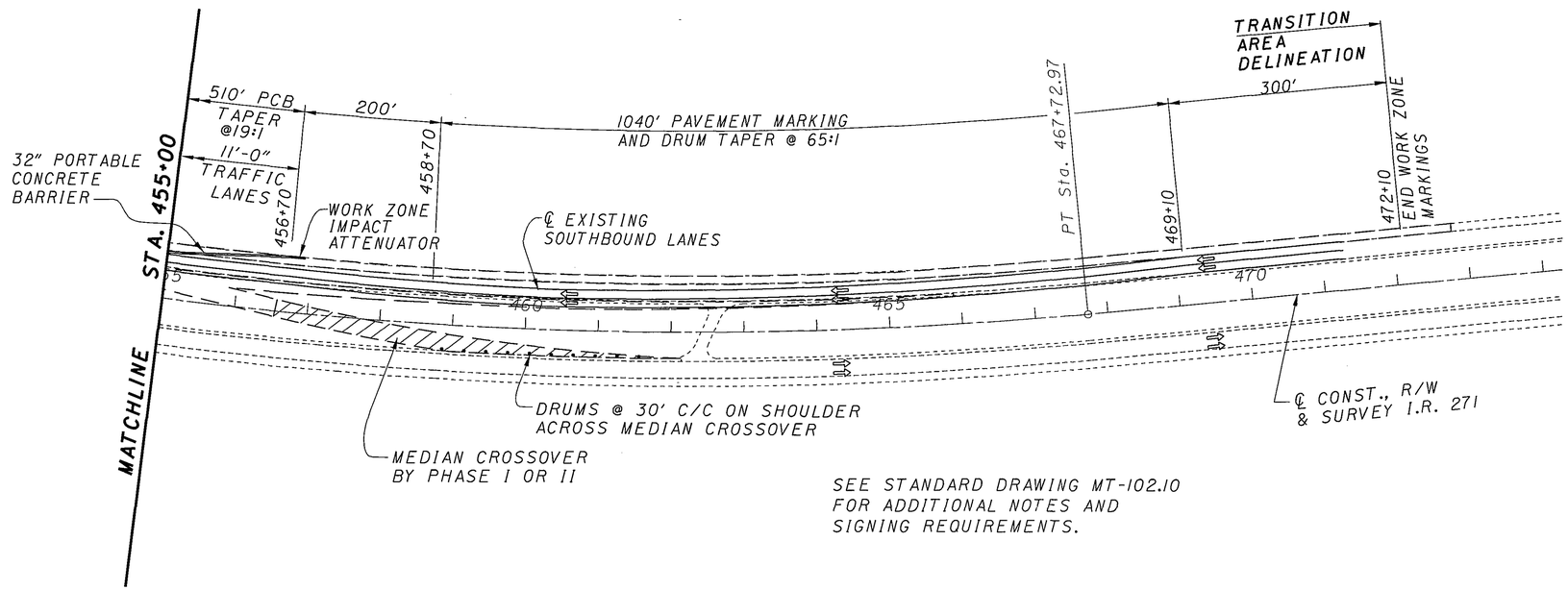
MAINTENANCE OF TRAFFIC - PHASE II
STA. 380+00 TO STA. 430+00

SUM-271-8.02

45
612

2145OMP5.DGN 3/31/04 SAM.CAR





SEE STANDARD DRAWING MT-102.10 FOR ADDITIONAL NOTES AND SIGNING REQUIREMENTS.

NOTES:

SEE PHASE II M.O.T. TYPICAL ON BRIDGE 0854, SHEET NO. 49 .

SEE M.O.T. TYPICAL DURING MEDIAN CROSSOVER CONSTRUCTION ALONG NORTHBOUND LANES, SHEET NO. 35 .

SEE SHEET NO. 57 FOR CROSSOVER PLAN & PROFILE, TYPICAL SECTION.

SEE SHEET NO. 56 FOR MEDIAN CROSSOVER PLAN AND PROFILE AND TYPICAL SECTIONS

SEE SEQUENCE OF CONSTRUCTION FOR PHASE II M.O.T., SHEET NO. 21

SEE STANDARD DRAWING MT-102.10 FOR ADDITIONAL NOTES AND SIGNING REQUIREMENTS.

SEE SHEET NOS. 31-33 FOR PHASE II M.O.T. QUANTITIES.

REFER TO THE FOLLOWING FOR ADDITIONAL NOTES AND DETAILS MT-99.30 AND MT-99.31.

LEGEND

PHASE II CONSTRUCTION

TRAFFIC DIRECTION

HORIZONTAL SCALE IN FEET
0 50 100 200

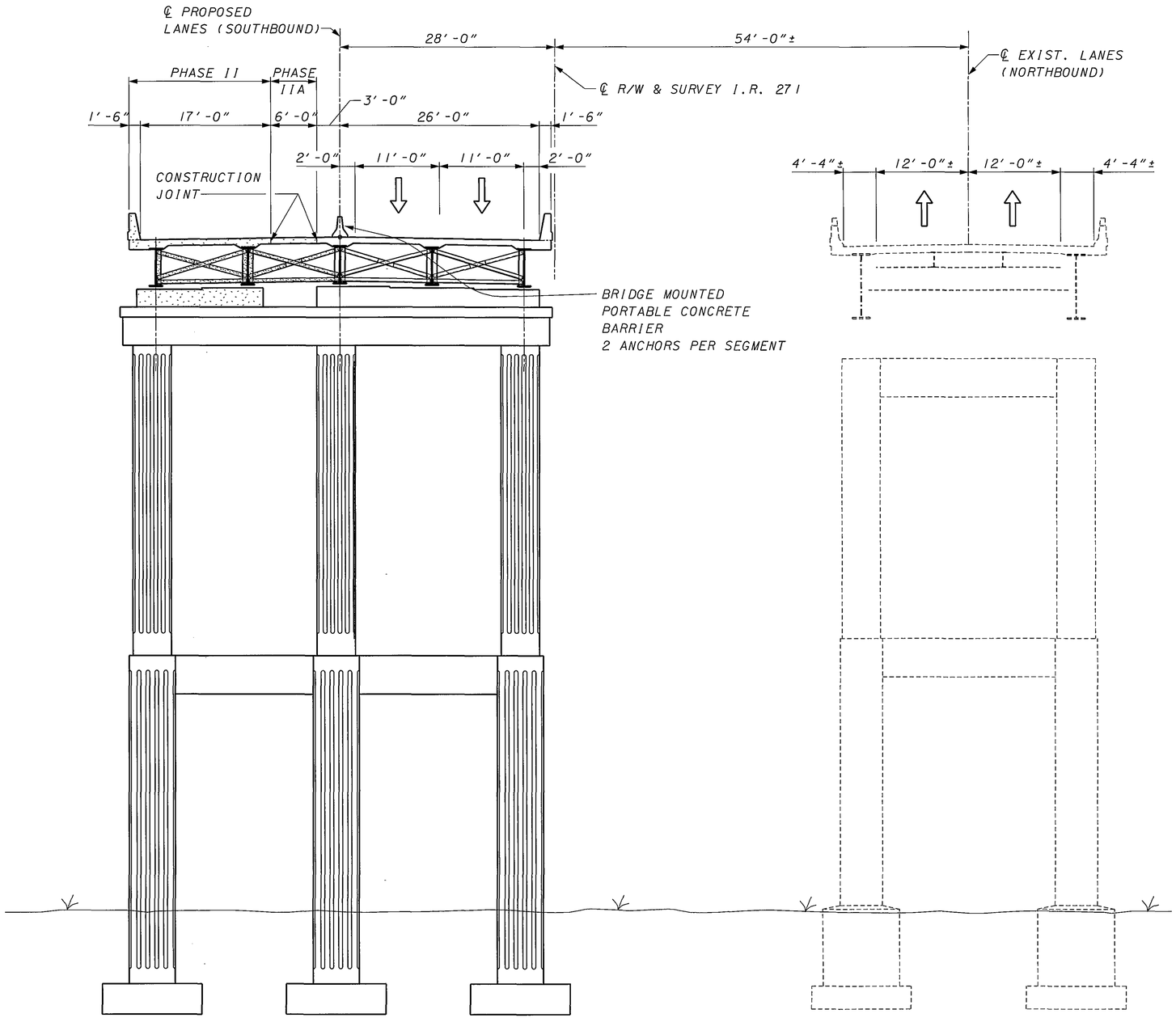
CALCULATED PG
CHECKED JL

MAINTENANCE OF TRAFFIC - PHASE II
STA. 430+00 TO STA. 480+00

SUM-271-8.02

46
612

21450MP6.DGN 3/31/04 SAM.CAR.HN



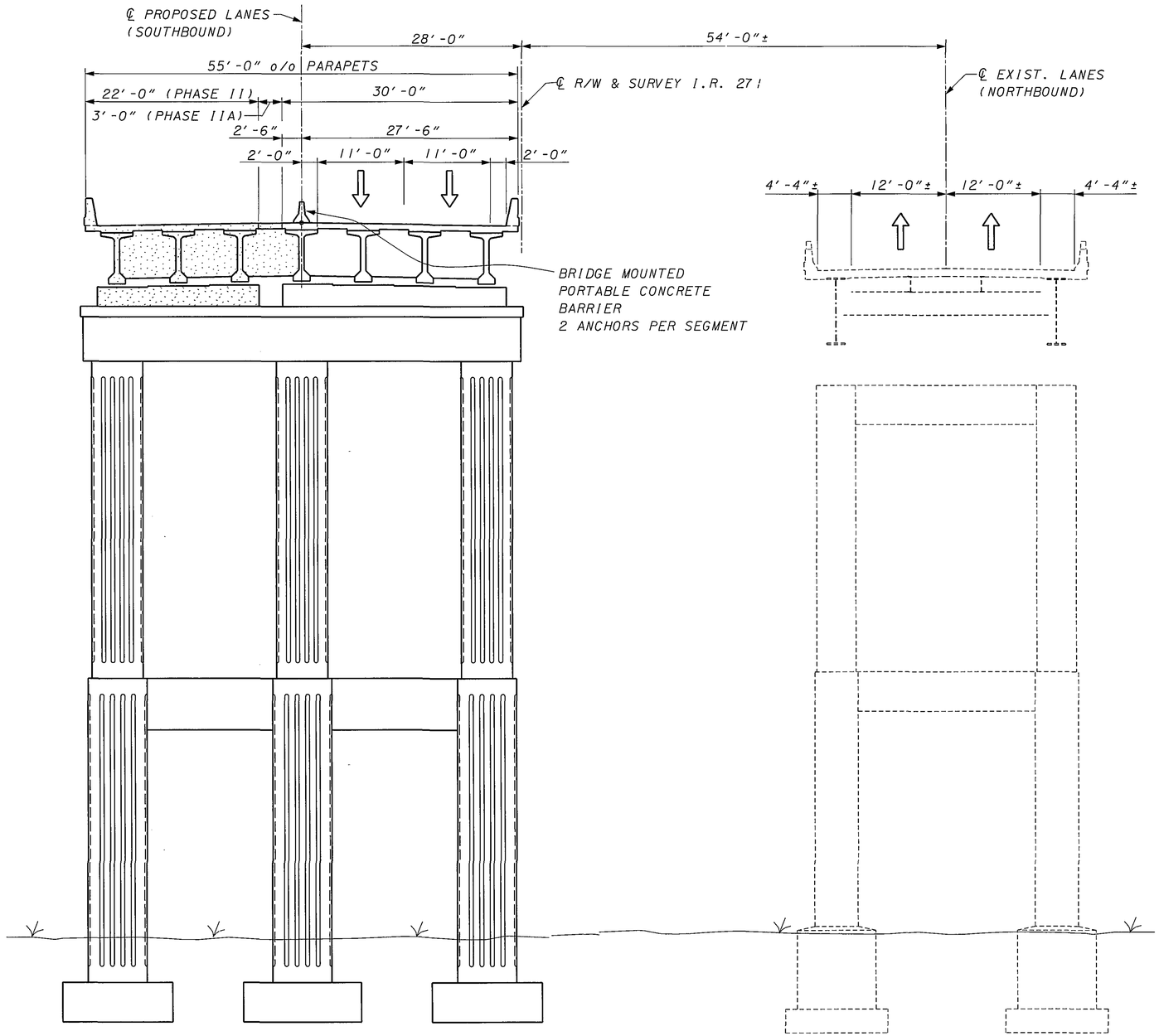
INDICATES NEW CONSTRUCTION

SEE SHEET 41 FOR PHASE I CONSTRUCTION

SU27IPCA.DGN 3/26/04 HN,JLS

BRIDGE NO. SUM-271-0802 L&R PHASE II CONSTRUCTION (STEEL)

SUM-271-8.02



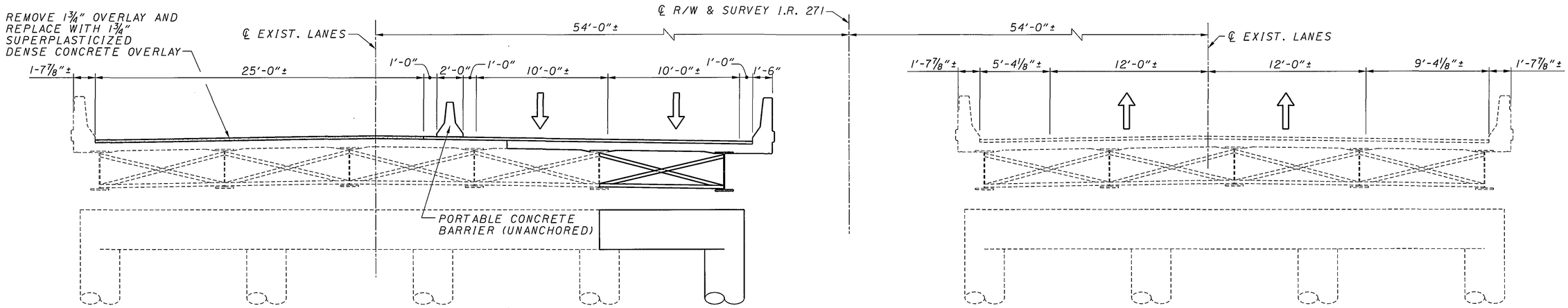
INDICATES NEW CONSTRUCTION

SEE SHEET 42 FOR PHASE I CONSTRUCTION

SU271PCO.DGN 3/31/04 TWH,HN,JLS

BRIDGE NO. SUM-271-0802 L&R PHASE II CONSTRUCTION (CONCRETE)

SUM-271-8.02



PHASE II

LEGEND

▒ - INDICATES NEW CONSTRUCTION

NOTES:

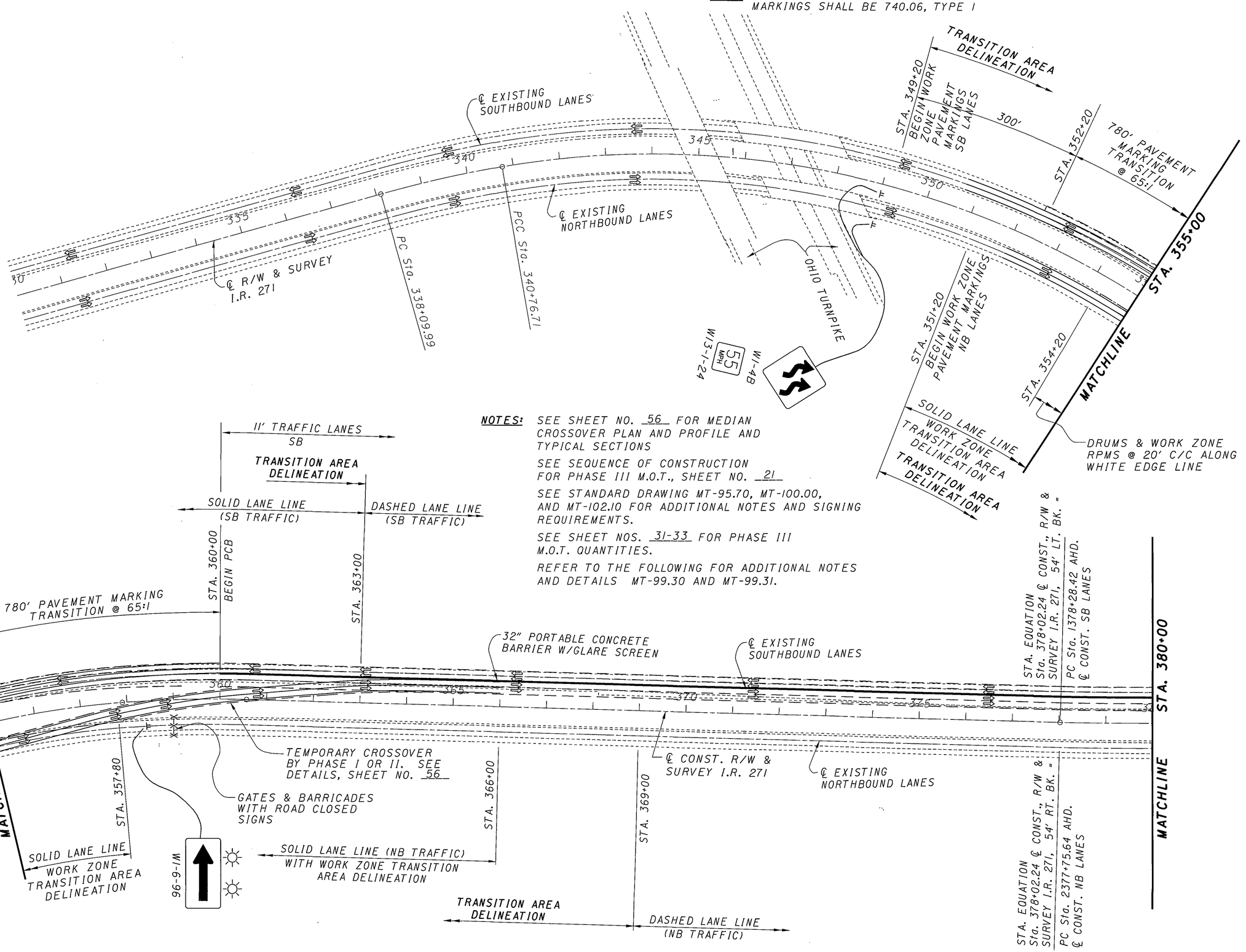
SEE SHEET 43 FOR PHASE I CONSTRUCTION

BRIDGE NO. SUM-271-0854 L&R PHASE II CONSTRUCTION

SUM-271-8.02

SU271PC1.DGN 10/30/03 JLS,HN

NOTE: ALL PHASE III WORK ZONE MARKINGS SHALL BE 740.06, TYPE I



NOTES:

SEE SHEET NO. 56 FOR MEDIAN CROSSOVER PLAN AND PROFILE AND TYPICAL SECTIONS

SEE SEQUENCE OF CONSTRUCTION FOR PHASE III M.O.T., SHEET NO. 21

SEE STANDARD DRAWING MT-95.70, MT-100.00, AND MT-102.10 FOR ADDITIONAL NOTES AND SIGNING REQUIREMENTS.

SEE SHEET NOS. 31-33 FOR PHASE III M.O.T. QUANTITIES.

REFER TO THE FOLLOWING FOR ADDITIONAL NOTES AND DETAILS MT-99.30 AND MT-99.31.

HORIZONTAL SCALE IN FEET
0 50 100 200

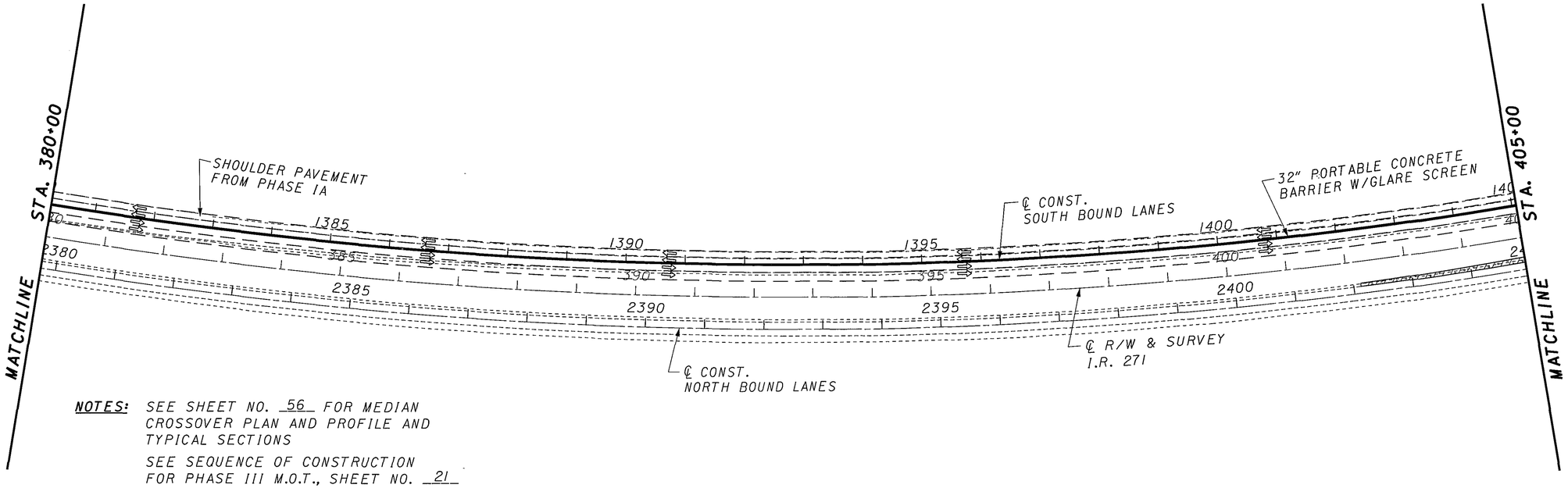
CALCULATED PG
CHECKED JL

MAINTENANCE OF TRAFFIC - PHASE III
STA. 330+00 TO STA. 380+00

SUM-271-8.02

50
612

2I450MP7.DGN 03/31/04 SAM,CAR,HN



NOTES:

SEE SHEET NO. 56 FOR MEDIAN CROSSOVER PLAN AND PROFILE AND TYPICAL SECTIONS

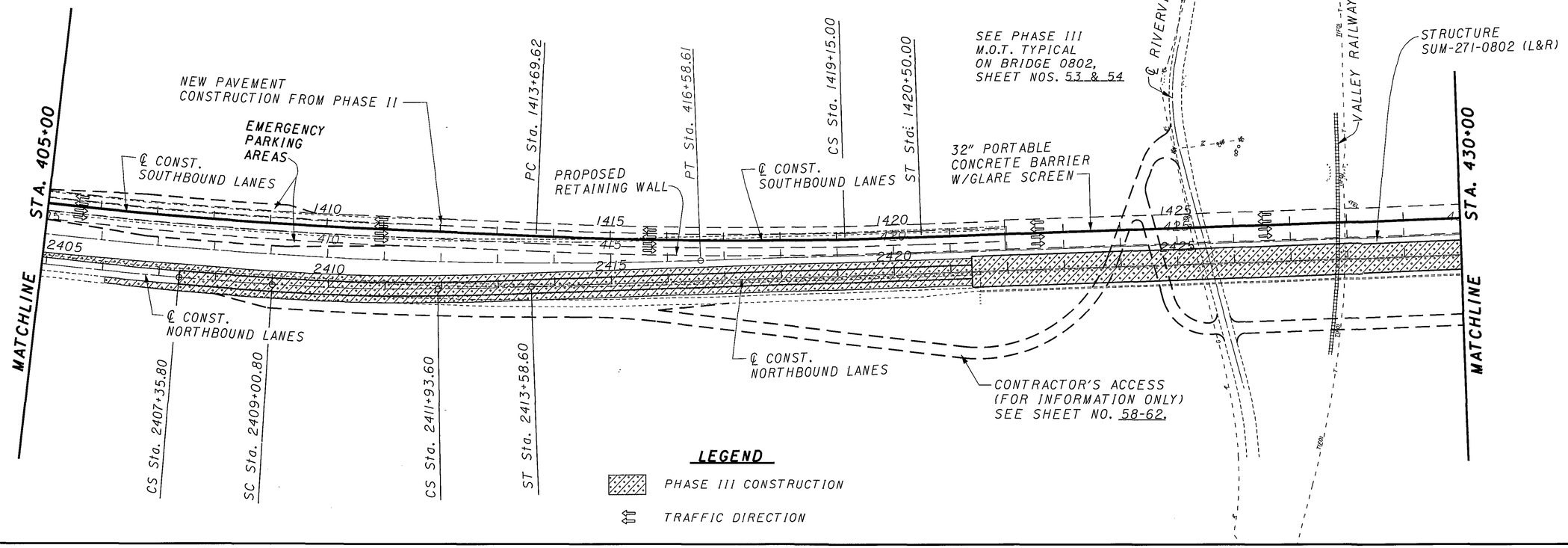
SEE SEQUENCE OF CONSTRUCTION FOR PHASE III M.O.T., SHEET NO. 21

SEE STANDARD DRAWING MT-95.70, MT-100.00, AND MT-102.10 FOR ADDITIONAL NOTES AND SIGNING REQUIREMENTS.

SEE SHEET NOS. 31-33 FOR PHASE III M.O.T. QUANTITIES.

REFER TO THE FOLLOWING FOR ADDITIONAL NOTES AND DETAILS MT-99.30 AND MT-99.31.

SEE SHEET 72 FOR EMERGENCY PARKING AREAS



LEGEND

PHASE III CONSTRUCTION

TRAFFIC DIRECTION

21450MP8.DGN 03/31/04 SAM.CAR.HN

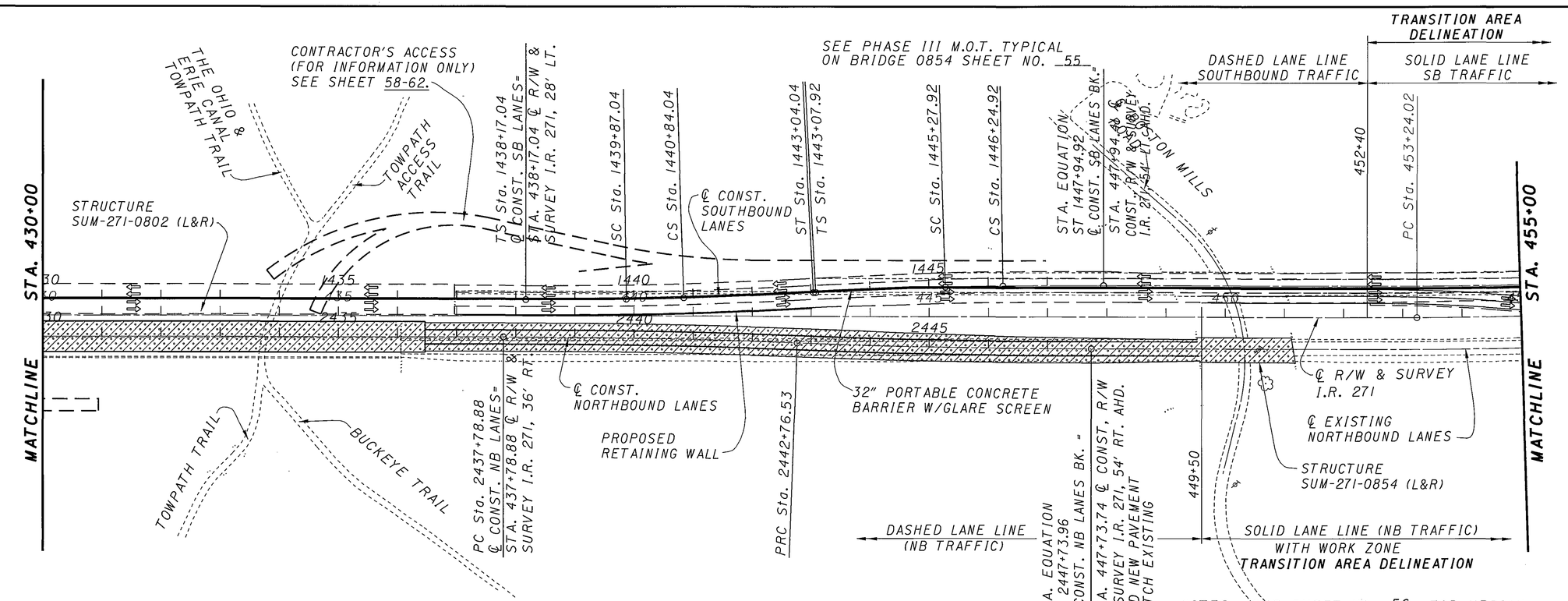
HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED PG
CHECKED JL

MAINTENANCE OF TRAFFIC - PHASE III
STA. 380+00 TO STA. 430+00

SUM-271-8.02

51
612



NOTES:

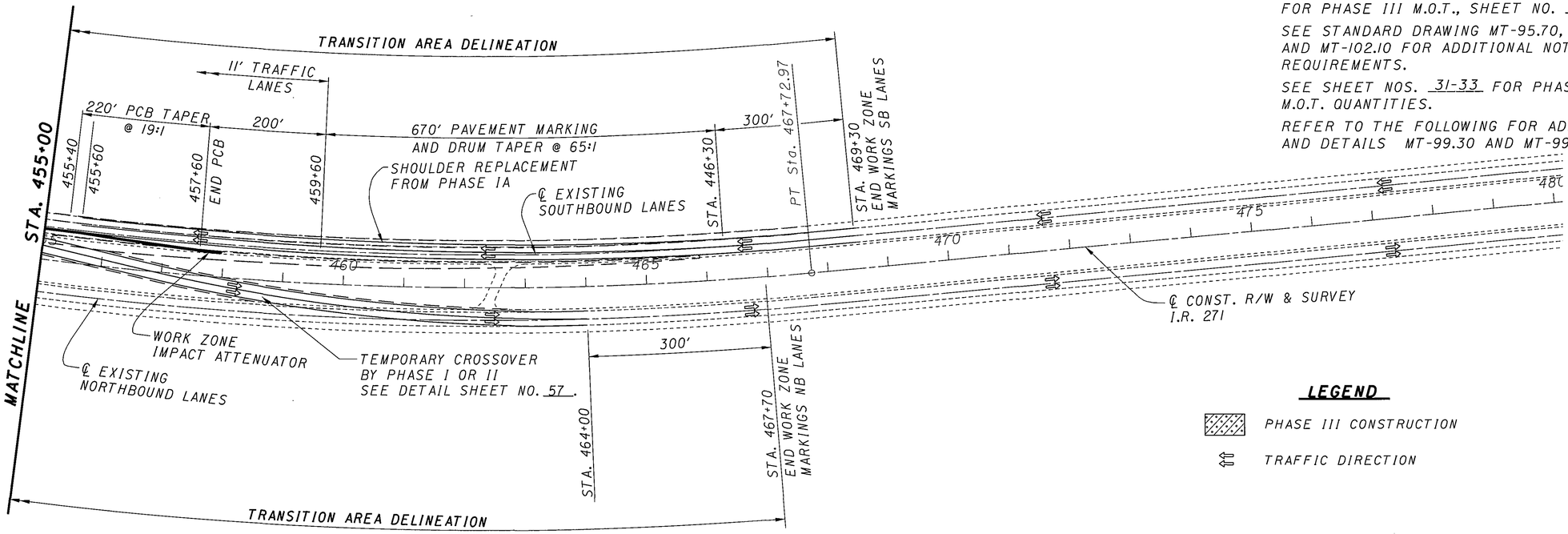
SEE SHEET NO. 56 FOR MEDIAN CROSSOVER PLAN AND PROFILE AND TYPICAL SECTIONS

SEE SEQUENCE OF CONSTRUCTION FOR PHASE III M.O.T., SHEET NO. 21

SEE STANDARD DRAWING MT-95.70, MT-100.00, AND MT-102.10 FOR ADDITIONAL NOTES AND SIGNING REQUIREMENTS.

SEE SHEET NOS. 31-33 FOR PHASE III M.O.T. QUANTITIES.

REFER TO THE FOLLOWING FOR ADDITIONAL NOTES AND DETAILS MT-99.30 AND MT-99.31.



LEGEND

PHASE III CONSTRUCTION

TRAFFIC DIRECTION

HORIZONTAL SCALE IN FEET: 0, 50, 100, 200

CALCULATED PG

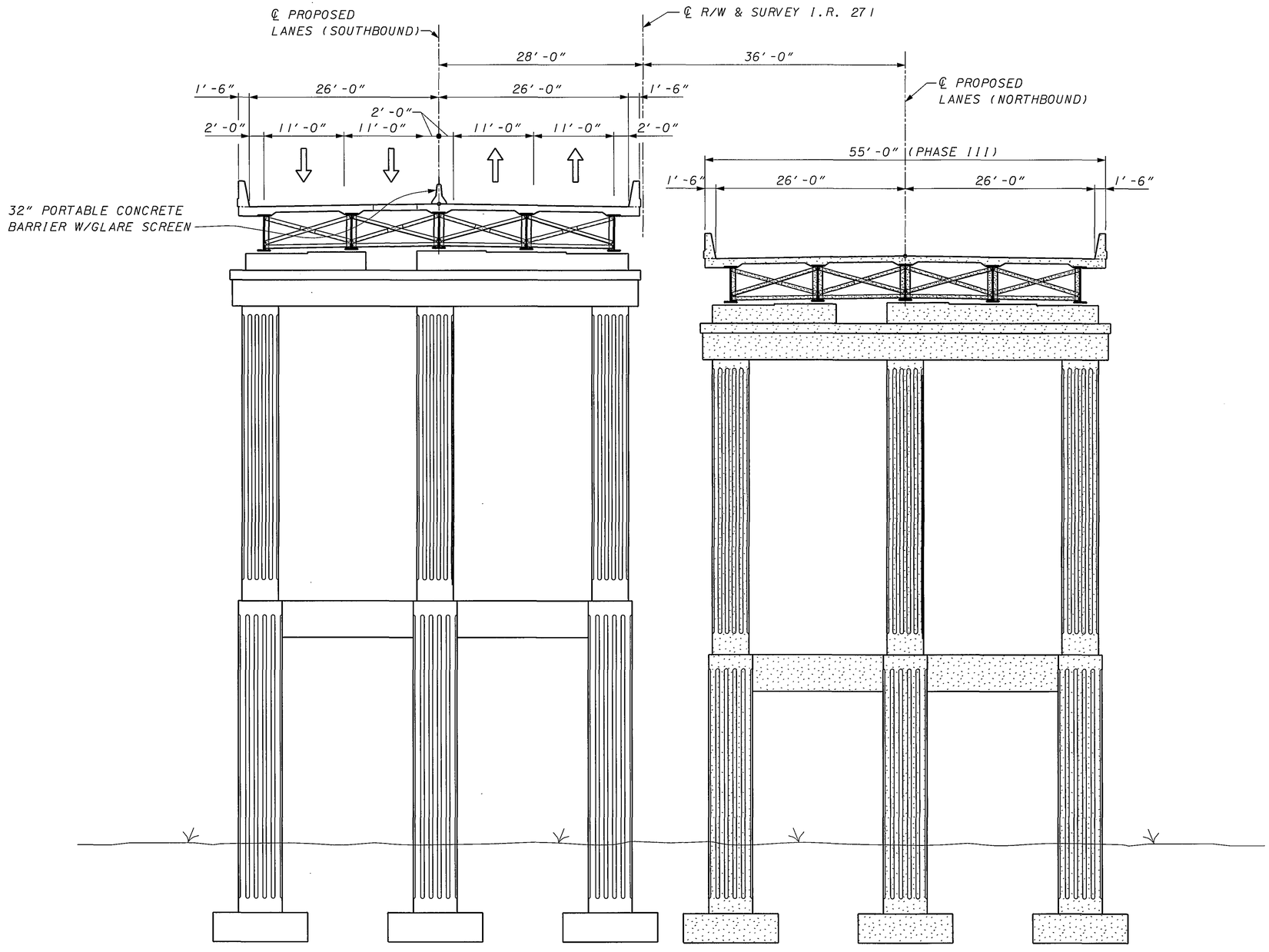
CHECKED JL

MAINTENANCE OF TRAFFIC - PHASE III
STA. 430+00 TO STA. 480+00

SUM-271-8.02

52
612

2145OMP9.DGN 3/31/04 SAM.CAR



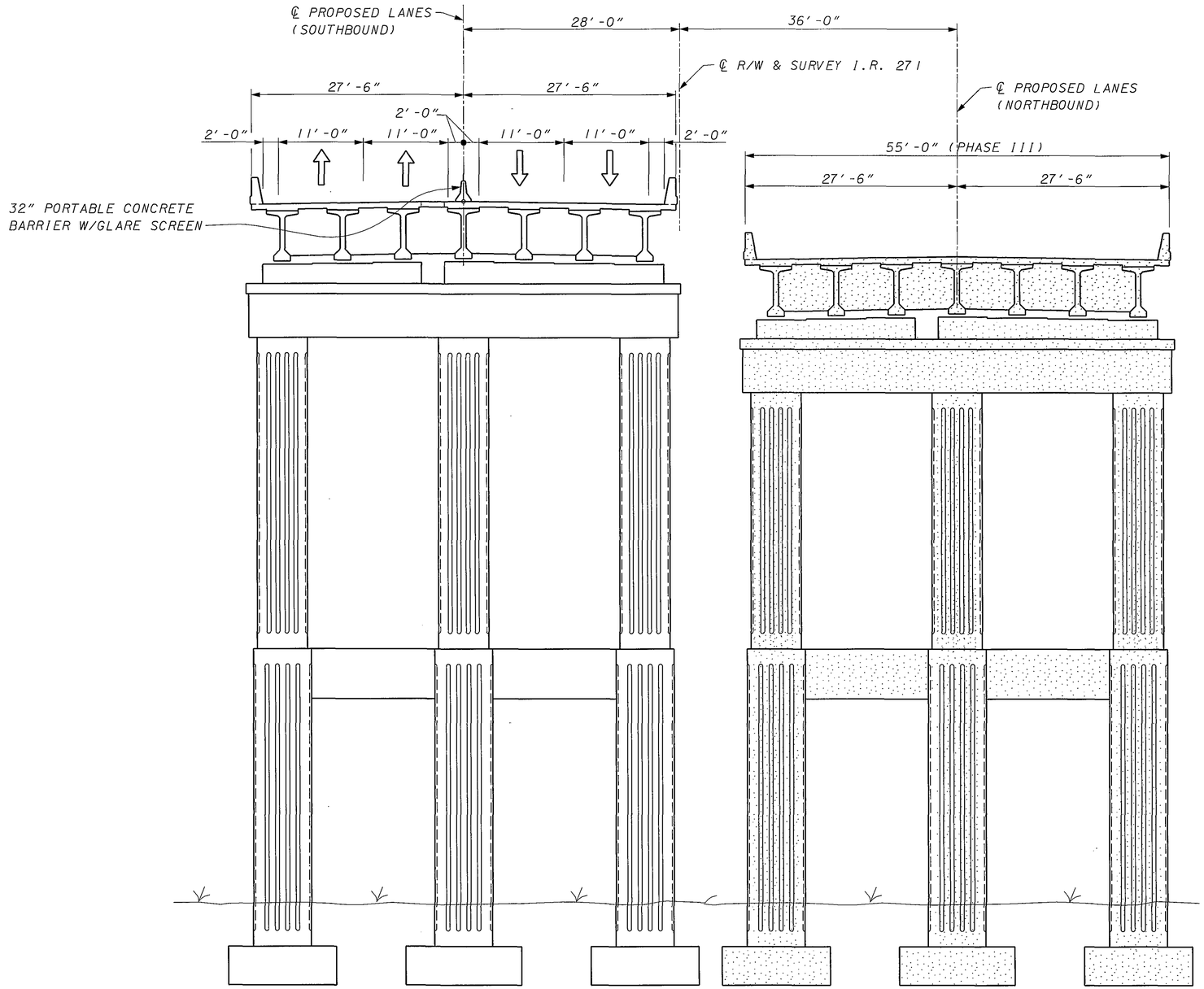
SEE SHEET 47 FOR
PHASE II CONSTRUCTION

INDICATES NEW CONSTRUCTION

SU271PCA.DGN 3/31/04 HN,JLS

BRIDGE NO. SUM-271-0802 L&R PHASE III CONSTRUCTION (STEEL)

SUM-271-8.02



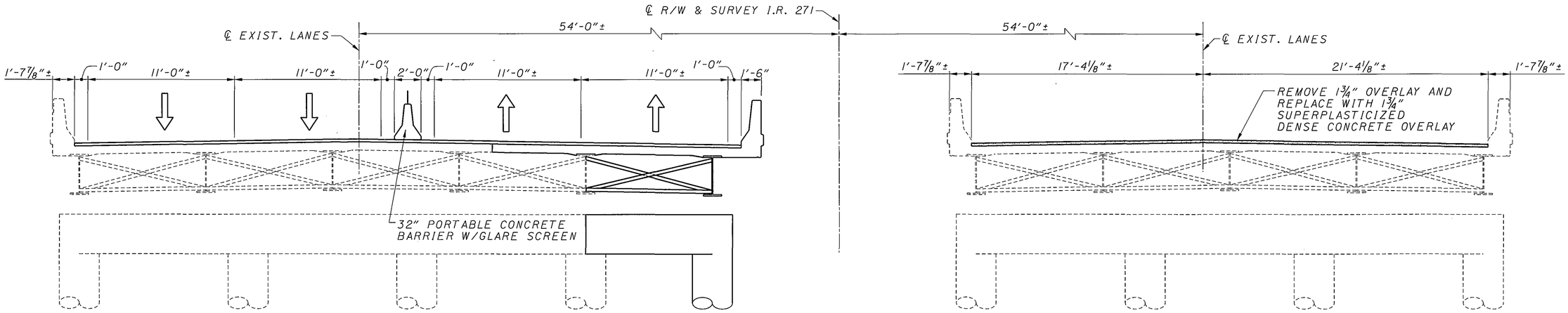
SEE SHEET 48 FOR
PHASE II CONSTRUCTION

INDICATES NEW CONSTRUCTION

BRIDGE NO. SUM-271-0802 L&R PHASE III CONSTRUCTION (CONCRETE)

SUM-271-8.02

SU271PCO.DGN 3/31/04 TWH,HN,JLS



PHASE III

LEGEND

▨ - INDICATES NEW CONSTRUCTION

NOTES: SEE SHEET 21 FOR PHASING.

SEE SHEET 49 FOR PHASE II CONSTRUCTION

SU27IPC1.DGN 3/31/04 JLS,HN

BRIDGE NO. SUM-271-0854 L&R PHASE III CONSTRUCTION

SUM-271-8.02

CROSS REFERENCES	
119-147	I.R. 271 PLAN & PROFILE
148-258	CROSS SECTIONS
317-324	DRAINAGE DETAILS

NOTE: M.O.T. DURING CONSTRUCTION OF MEDIAN CROSSOVER ADJACENT TO NORTHBOUND LANES SHALL BE AS PER TYPICAL ON SHEET NO. 35. CONSTRUCTION SHALL BE COMPLETED DURING NIGHT-TIME HOURS AS PER REQUIREMENTS ON SHEET NO. 24

NOTE:
CATCH BASIN NO. 2-2B TO BE UTILIZED DURING CONSTRUCTION. WHEN THE CROSSOVER IS NO LONGER NEEDED FOR MAINTENANCE OF TRAFFIC THIS CATCH BASIN SHALL BE ABANDONED AND CONNECTED THROUGH AS APPROVED BY THE ENGINEER. ALL MATERIALS, LABOR AND INCIDENTALS TO CONSTRUCT AND SUBSEQUENTLY ABANDON THIS CATCH BASIN WILL BE INCLUDED IN ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN.

LEGEND

TRAFFIC DIRECTION

LA-R/W

(1-DR)

(1-D)

(2-D)

PROP. 15" TYPE C

EX. 15" CPP

(REMOVE)

PORTABLE CONCRETE BARRIER (PHASE III M.O.T.)

℄ SOUTHBOUND LANES

℄ NORTHBOUND LANES

℄ R/W & SURVEY I.R. 271

PT Sta. 19+99.10
℄ TEMPORARY FORWARD CROSSOVER =
STA. 364+32.59, 38.50' LT.
℄ R/W & SURVEY I.R. 271

PT Sta. 10+00.00
℄ TEMPORARY FORWARD CROSSOVER =
STA. 354+30.00, 54' RT.
℄ R/W & SURVEY I.R. 271

℄ TEMPORARY REAR CROSSOVER

PC Sta. 12+69.35

PCC Sta. 357+90.26

PT Sta. 360+57.00

PC Sta. 16+49.67

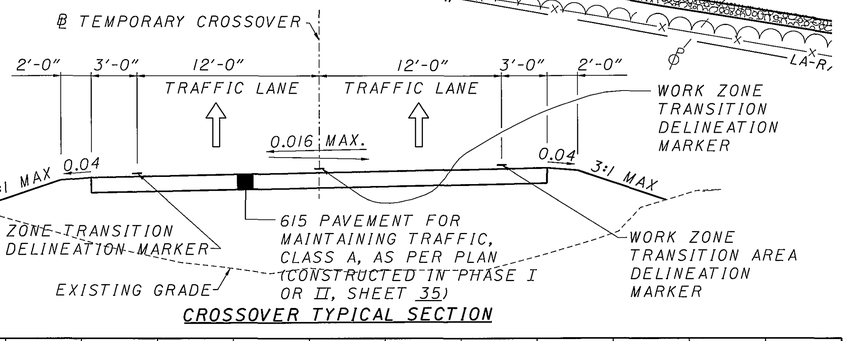
PT Sta. 18+19.66

PT Sta. 19+99.10

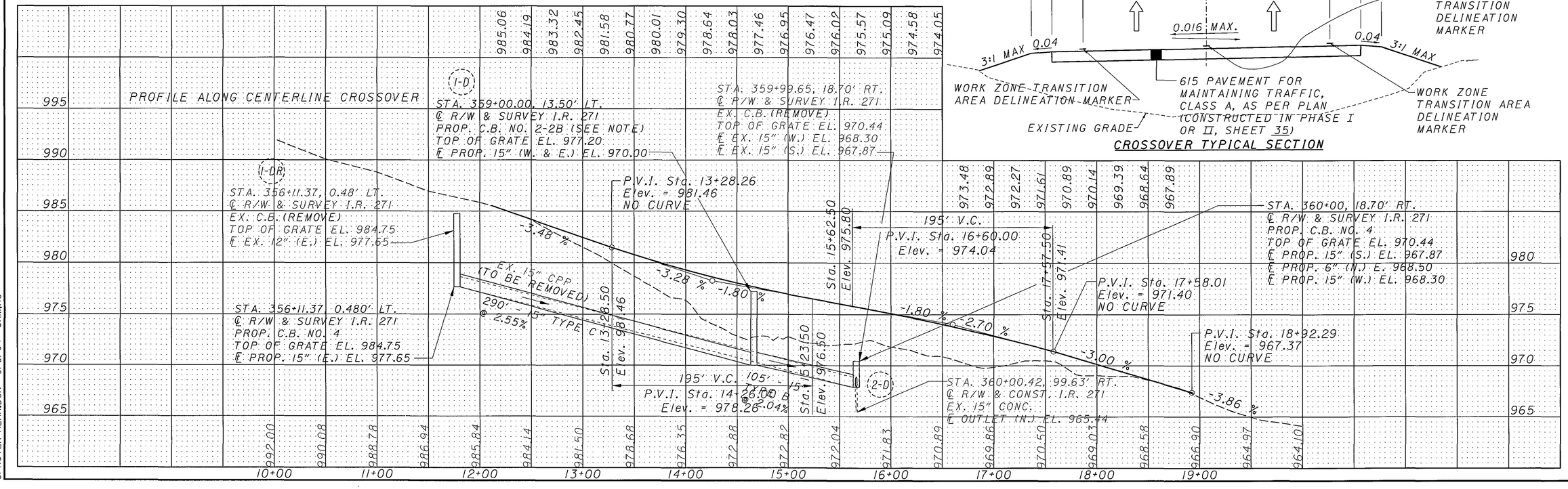
℄ TEMPORARY REAR CROSSOVER CURVE DATA
P.I. Sta = 14+60.14
Δ = 11° 24' 35" (RT)
Dc = 3° 00' 00"
R = 1,909.86'
T = 190.79'
L = 380.32'
E = 9.51'

℄ TEMPORARY REAR CROSSOVER CURVE DATA
P.I. Sta = 19+09.42
Δ = 5° 23' 06" (RT)
Dc = 3° 00' 00"
R = 1,909.86'
T = 89.82'
L = 179.50'

615 PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN 1951.8 SQ. YD.



CROSSOVER TYPICAL SECTION



CALCULATED	CHECKED
PG	JL

HORIZONTAL SCALE IN FEET (0, 25, 50, 100)

MAINTENANCE OF TRAFFIC - PHASE III
PLAN & PROFILE - REAR CROSSOVER

SUM-271-8.02

56
612

GPXOVER-REAR.DGN 9/8/04 SAM,RC

NOTE: M.O.T. DURING CONSTRUCTION OF MEDIAN CROSSOVER ADJACENT TO NORTHBOUND LANES SHALL BE AS PER TYPICAL ON SHEET NO. 35. CONSTRUCTION SHALL BE COMPLETED DURING PERMITTED HOURS AS PER REQUIREMENTS ON SHEET NO. 24.

℄ TEMPORARY FORWARD CROSSOVER CURVE DATA

P.I. Sta = 18+28.11
Δ = 15° 57′ 02″″ (LT)
Dc = 2° 00′ 00″
R = 2,864.79′
T = 401.36′
L = 797.53′
E = 27.98′

PT Sta. 22+24.28
℄ TEMPORARY FORWARD CROSSOVER = STA. 464+61.24, 54′ RT.
℄ R/W & SURVEY I.R. 271

PC Sta. 453+24.02
PC Sta. 14+26.75
PT Sta. 12+28.68
PC Sta. 10+00.00
℄ TEMPORARY FORWARD CROSSOVER = STA. 452+45.00, 37.34′ RT.
℄ R/W & SURVEY I.R. 271

PORTABLE CONCRETE BARRIER (PHASE III M.O.T.)
IMPACT ATTENUATOR
℄ SOUTHBOUND LANES
℄ NORTHBOUND LANES
℄ CONST., R/W & SURVEY I.R. 271
℄ TEMPORARY FORWARD CROSSOVER
LA-R/W

℄ TEMPORARY FORWARD CROSSOVER CURVE DATA

P.I. Sta = 11+14.40
Δ = 4° 34′ 25″ (RT)
Dc = 2° 00′ 00″
R = 2,864.79′
T = 114.40′
L = 228.68′
E = 2.28′

NOTE:
CATCH BASIN NO. 2-2B TO BE UTILIZED DURING CONSTRUCTION. WHEN THE CROSSOVER IS NO LONGER NEEDED FOR MAINTENANCE OF TRAFFIC THIS CATCH BASIN SHALL BE ABANDONED AND CONNECTED THROUGH AS APPROVED BY THE ENGINEER. ALL MATERIALS, LABOR AND INCIDENTALS TO CONSTRUCT AND SUBSEQUENTLY ABANDON THIS CATCH BASIN WILL BE INCLUDED IN ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN.

SEE SHEET NO. 56 FOR CROSSOVER TYPICAL SECTION AND NOTES.

LEGEND

TRAFFIC DIRECTION

615 PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN 2232.1 SQ. YD.

CROSS REFERENCES	
119-147	I.R. 271 PLAN & PROFILE
148-258	CROSS SECTIONS
317-324	DRAINAGE DETAILS

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PG
CHECKED JL

MAINTENANCE OF TRAFFIC - PHASE III
PLAN & PROFILE - FORWARD CROSSOVER

SUM-271-8.02

GPXOVER-FORWARD.DGN 10/28/03 SAM

PROFILE ALONG CENTERLINE CROSSOVER

STA. 453+00.00, 5.00′ RT.
℄ R/W & SURVEY I.R. 271 32-D
PROP. C.B. NO. 4
TOP OF GRATE EL. 739.81
℄ PROP. 15″ (E. & S.W.) EL. 734.25
℄ PROP. 6″ (N.) EL. 736.49

P.V.I. Sta. 11+54.64
Elev. = 744.46
NO CURVE

P.V.I. Sta. 12+54.58
Elev. = 747.20
NO CURVE

STA. 455+00.00, 5.00′ RT.
℄ R/W & SURVEY I.R. 271 32A-D
PROP. C.B. NO. 4
TOP OF GRATE EL. 743.46
℄ PROP. 15″ (E. & W.) EL. 739.00

P.V.I. Sta. 16+58.31
Elev. = 758.00
NO CURVE

P.V.I. Sta. 17+58.68
Elev. = 760.72
NO CURVE

P.V.I. Sta. 18+59.63
Elev. = 763.71
NO CURVE

P.V.I. Sta. 20+61.52
Elev. = 769.60
NO CURVE

STA. 459+00, 2.00′ LT.
℄ R/W & SURVEY I.R. 271 33-D
PROP. C.B. NO. 4
TOP OF GRATE EL. 753.00
℄ PROP. 15″ (W.) EL. 749.00

STA. 457+00, 19.00′ LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B (SEE NOTE)
TOP OF GRATE EL. 750.50
℄ PROP. 15″ (E. & W.) EL. 746.00
℄ PROP. 6″ (N.) EL. 748.00

STA. 452+98.02, 18.41′ LT.
℄ R/W & SURVEY I.R. 271
EX. C.B.
TOP OF GRATE EL. 739.81
℄ EX. 12″ (W.) EL. 736.36

EX. 12″ CONC.
153′ - 15″ TYPE C @ 2.52%
200′ - 15″ TYPE C @ 2.38%
200′ - 15″ TYPE B @ 3.50%
200′ - 15″ TYPE C @ 1.50%

+2.74 % +2.68 % +2.68 % +2.71 % +2.96 % +2.92 % +2.80 %

740.08 741.51 742.92 744.33 745.70 747.07 748.42 749.75 751.09 752.43 753.77 755.10 756.44 757.78 759.13 760.48 761.94 763.42 764.89 766.35 767.81 769.26 770.68 772.09 773.50

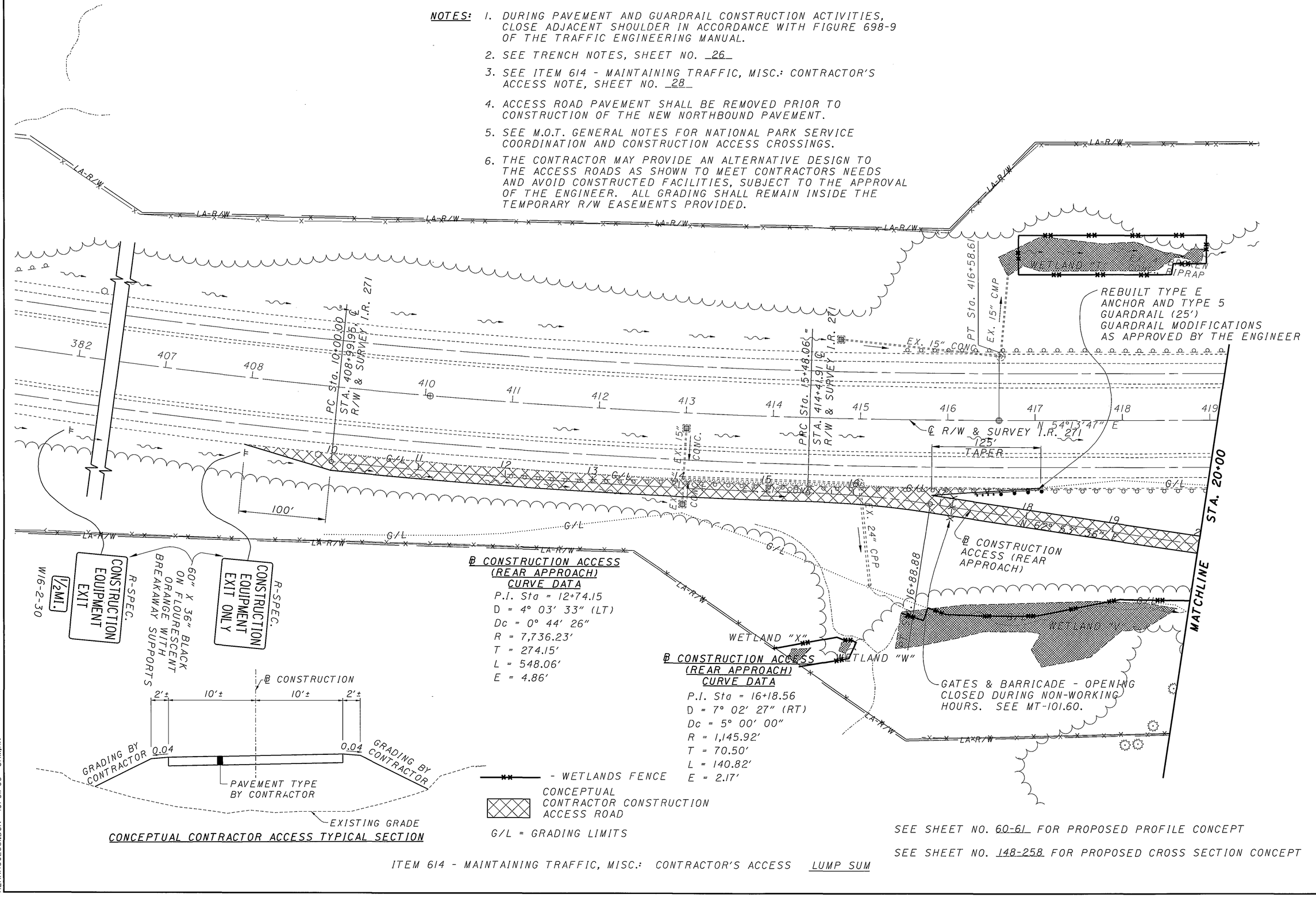
740.08 741.47 742.86 742.97 744.21 744.13 744.25 744.89 746.69 748.14 749.96 751.94 753.47

760 755 750 745 740 735 730

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00

NOTES:

1. DURING PAVEMENT AND GUARDRAIL CONSTRUCTION ACTIVITIES, CLOSE ADJACENT SHOULDER IN ACCORDANCE WITH FIGURE 698-9 OF THE TRAFFIC ENGINEERING MANUAL.
2. SEE TRENCH NOTES, SHEET NO. 26
3. SEE ITEM 614 - MAINTAINING TRAFFIC, MISC.: CONTRACTOR'S ACCESS NOTE, SHEET NO. 28
4. ACCESS ROAD PAVEMENT SHALL BE REMOVED PRIOR TO CONSTRUCTION OF THE NEW NORTHBOUND PAVEMENT.
5. SEE M.O.T. GENERAL NOTES FOR NATIONAL PARK SERVICE COORDINATION AND CONSTRUCTION ACCESS CROSSINGS.
6. THE CONTRACTOR MAY PROVIDE AN ALTERNATIVE DESIGN TO THE ACCESS ROADS AS SHOWN TO MEET CONTRACTORS NEEDS AND AVOID CONSTRUCTED FACILITIES, SUBJECT TO THE APPROVAL OF THE ENGINEER. ALL GRADING SHALL REMAIN INSIDE THE TEMPORARY R/W EASEMENTS PROVIDED.



℄ CONSTRUCTION ACCESS (REAR APPROACH) CURVE DATA

P.I. Sta = 12+74.15
D = 4° 03' 33" (LT)
Dc = 0° 44' 26"
R = 7,736.23'
T = 274.15'
L = 548.06'
E = 4.86'

℄ CONSTRUCTION ACCESS (REAR APPROACH) CURVE DATA

P.I. Sta = 16+18.56
D = 7° 02' 27" (RT)
Dc = 5° 00' 00"
R = 1,145.92'
T = 70.50'
L = 140.82'
E = 2.17'

CONCEPTUAL CONTRACTOR ACCESS TYPICAL SECTION

- WETLANDS FENCE
CONCEPTUAL CONTRACTOR CONSTRUCTION ACCESS ROAD
G/L = GRADING LIMITS

SEE SHEET NO. 60-61 FOR PROPOSED PROFILE CONCEPT
SEE SHEET NO. 148-258 FOR PROPOSED CROSS SECTION CONCEPT

ITEM 614 - MAINTAINING TRAFFIC, MISC.: CONTRACTOR'S ACCESS LUMP SUM

HORIZONTAL SCALE IN FEET
0 25 50 100
CALCULATED PG
CHECKED PS

CONSTRUCTION ACCESS REAR APPROACH

SUM-271-8.02

1 / 2

58 / 612

REARACCESS1.DGN 10/31/03 SAM,HN

℄ CONSTRUCTION ACCESS (REAR APPROACH) CURVE DATA

P.I. Sta = 27+88.04
D = 54° 26′ 39″ (RT)
Dc = 76° 23′ 40″
R = 75.00′
T = 38.58′
L = 71.27′
E = 9.[illegible]

STA. EQUATION:
STA. 27+01.53 ℄ CONST. ACCESS (REAR APPROACH) =
STA. 10+00.00 ℄ CONST. ACCESS (REAR APPROACH EXTENSION)

NOTE: SEE M.O.T. GENERAL NOTES FOR NATIONAL PARK SERVICE COORDINATION AND CONSTRUCTION ACCESS CROSSINGS

WETLAND "I"
LA-R/W
T ESMT
EX. 4′ ROCK SHELVES
EX. 54″ CMP
WETLAND "S"
G/L
EX. 6′x12′ BOX CULVERT
℄ RIVERVIEW ROAD
RISER
RISER
(3) GAS TANKS
PT Sta. 28+20.13
PC Sta. 27+49.46
25R
S10°
T(FO)
VALLEY RAILWAY
EX. 4′x14′ BOX CULVERT
FENCE, TYPE CL, AS PER PLAN (CHAIN LINK)
RIVER
WETLAND
WETLAND "F"
T ESMT
LA-R/W
420 421 422 423 424 425 426 427 428 429 430 431 432
N 54°13′47″ E
℄ R/W & SURVEY ∆R. 27
STA. 20+00
MATCHLINE
+30.96
PC Sta. 22+30.96
WETLAND "R"
WETLAND
WETLAND "A"
24″ CMP
15″ CONC.
EX. BROKEN CONC.
20′
21 22 23
PC Sta. 12+00.82
PT Sta. 13+01.53
PC Sta. 13+56.77
PT Sta. 13+74.18
PC Sta. 14+71.82
PT Sta. 14+89.22
14 15 16 17 18
N 54°13′47″ E
+45
+31.25′
T ESMT
℄ CONSTRUCTION ACCESS (REAR APPROACH)
FENCE, TYPE CL, AS PER PLAN (CHAIN LINK)
℄ CONSTRUCTION ACCESS (REAR APPROACH EXTENSION)
SEE SHEET 63 FOR PAVING DETAIL AT RR CROSSING. (MAINTAIN POSITIVE DRAINAGE)
CUYAHOGA
WETLAND "E"

℄ CONSTRUCTION ACCESS (REAR APPROACH) CURVE DATA

P.I. Sta = 24+28.69
D = 76° 40′ 49″ (LT)
Dc = 22° 55′ 06″
R = 250.00′
T = 197.72′
L = 334.58′
E = 68.74′

℄ CONSTRUCTION ACCESS (REAR APPROACH EXTENSION) CURVE DATA

P.I. Sta = 12+60.41
D = 76° 56′ 04″ (LT)
Dc = 76° 23′ 40″
R = 75.00′
T = 59.59′
L = 100.71′
E = 20.79′

WETLAND "P"

PROVIDE TEMPORARY DRAINAGE EXTENSIONS AS REQUIRED FOR CONTRACTOR ACCESS

SEE SHEET NO. 148-258 FOR PROPOSED CROSS SECTION CONCEPT

PROVIDE NECESSARY GUARDRAIL MODIFICATIONS, AS APPROVED BY THE ENGINEER. INCLUDING REQUIRED ANCHOR ASSEMBLIES. MAINTAIN POSITVIE DRAINAGE.

ITEM 614 - MAINTAINING TRAFFIC, MISC.: CONTRACTOR'S ACCESS LUMP SUM

—X—X— - GATE AND BARRICADES DURING NON-WORKING HOURS

CONCEPTUAL CONTRACTOR CONSTRUCTION ACCESS ROAD

G/L = GRADING LIMITS

—**— - WETLANDS FENCE

WETLAND "D"

NOTE:
STEEL BRIDGE DESIGN SHOWN FOR VISUAL PURPOSES. FOR ADDITIONAL DETAILS OF STEEL BRIDGE DESIGN AND CONCRETE BRIDGE DESIGN SEE PLAN & PROFILE SHEETS AND SUM-271-0802 L&R STRUCTURE PLANS. THE FINAL ALIGNMENT SHALL BE ADJUSTED TO MEET CONTRACTOR NEEDS AND TO AVOID CONSTRUCTED FACILITIES.

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PG
CHECKED PS

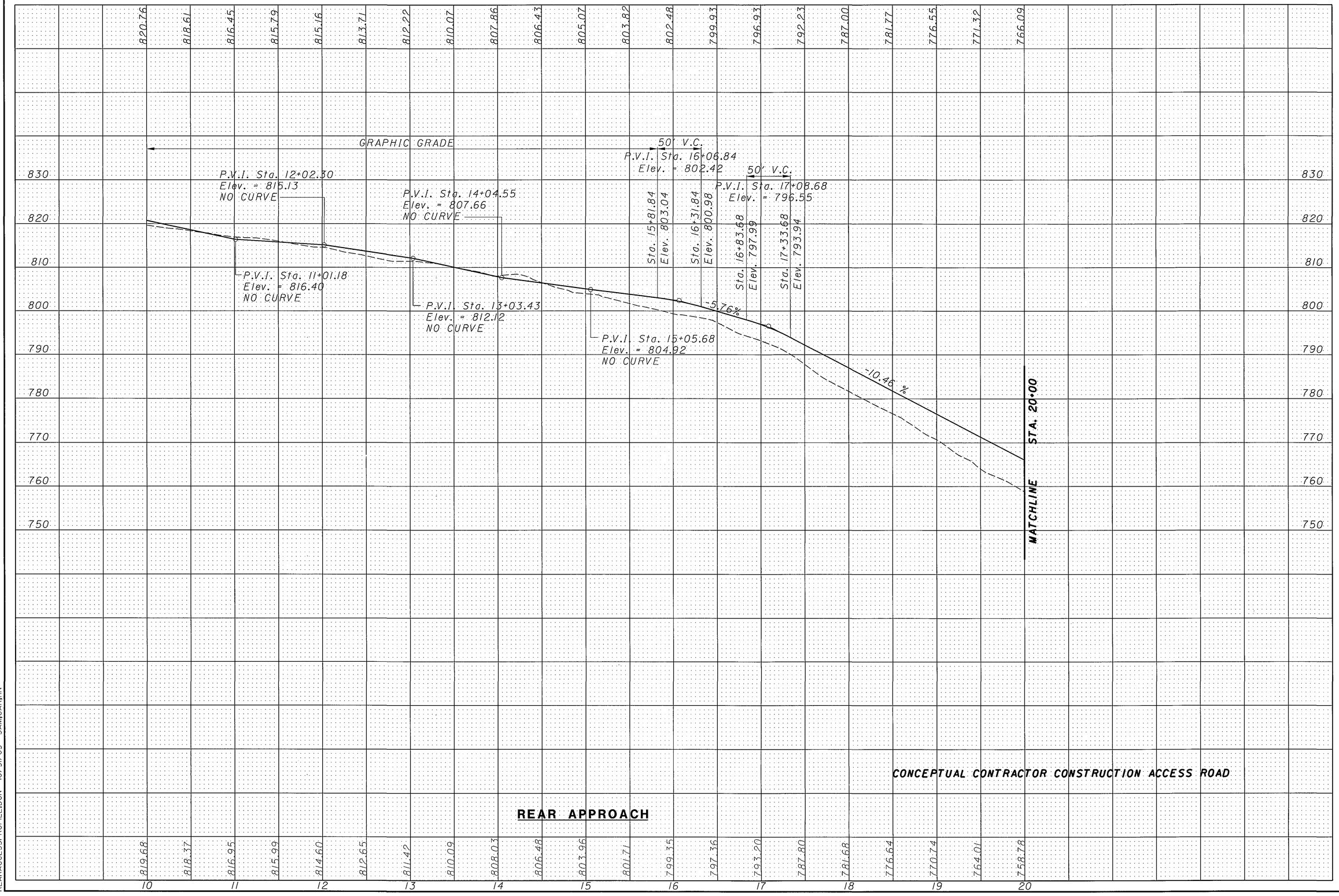
CONSTRUCTION ACCESS
REAR APPROACH

SUM-271-8.02

2 / 2

59 / 612

REARACCESS2.DGN 3/30/04 SAM,HN



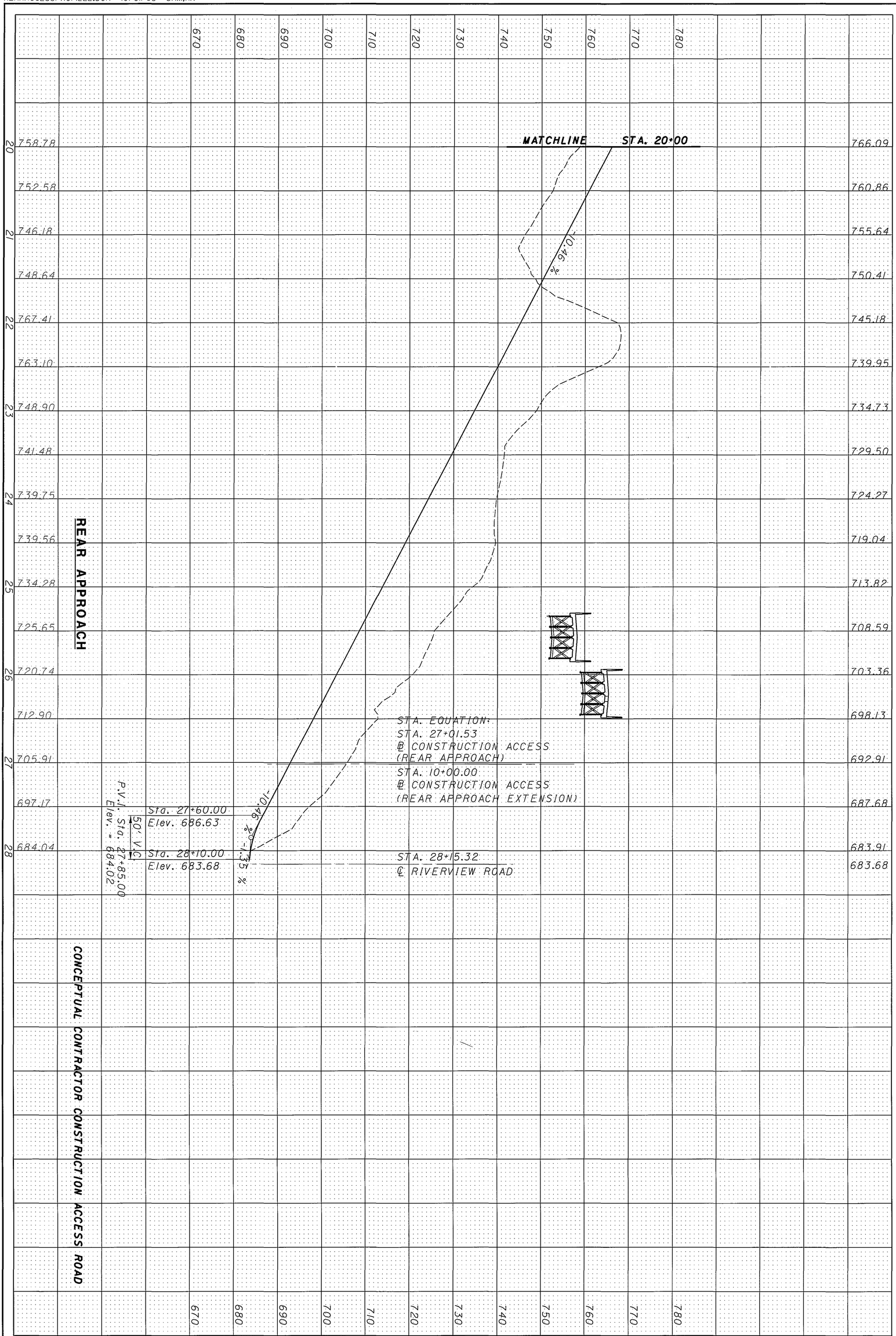
REARACCESSPROFILE.DGN 10/31/03 SAM,CAR,HN

CONSTRUCTION ACCESS PROFILE
REAR APPROACH

CALCULATED PG
CHECKED PS

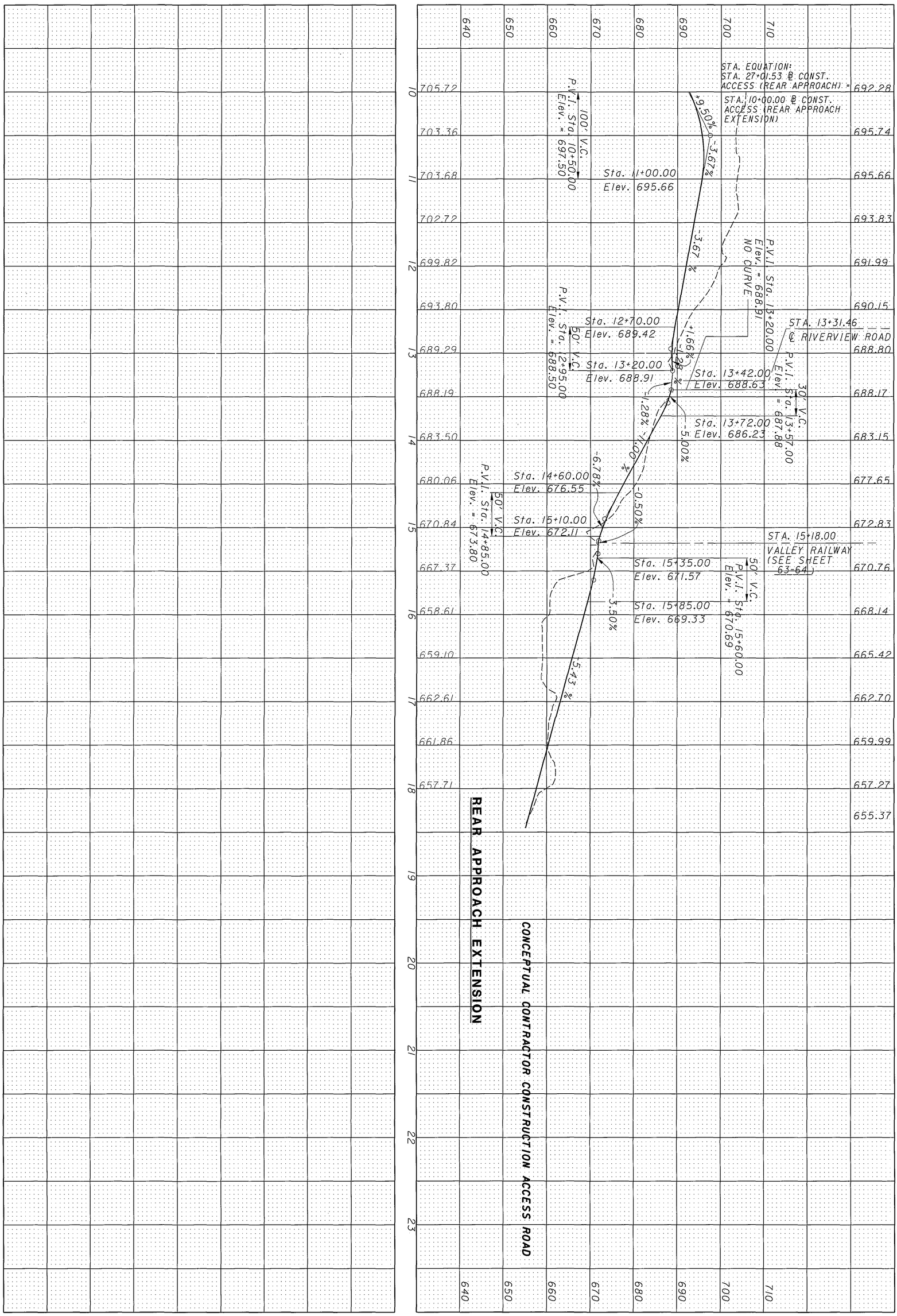
SUM-271-8.02

REARACCESSPROFILE2.DGN 10/31/03 SAM,HN



19 / 612	SUM-271-8.02	CONSTRUCTION ACCESS PROFILE REAR APPROACH	CALCULATED PG CHECKED PS

REARACCESSEXTENPROFILE.DGN 10/31/03 SAM

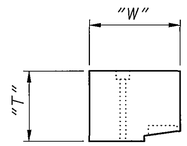


62
612

SUM-271-8.02

CONSTRUCTION ACCESS PROFILE
REAR APPROACH EXTENSION

CALCULATED PG
CHECKED PS



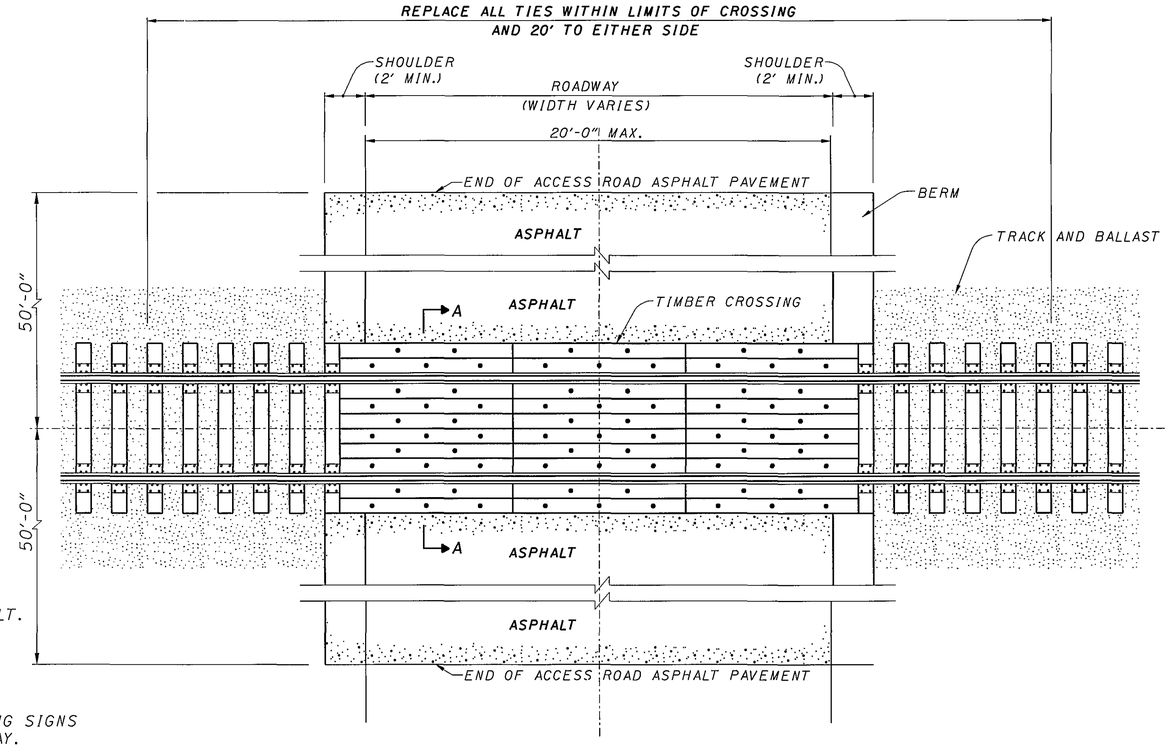
END VIEW OF TIMBER

	75#	80#	85#	90#	100#	110#	112# 115#	132#
THICKNESS "T" OF TIMBERS FOR VARIOUS WEIGHTS OF RAIL	5¾"	5¾"	5¾"	6⅛"	6½"	7"	7½"	8"
WIDTH "W" OF TIMBERS FOR VARIOUS WEIGHTS OF RAIL	8"	8"	8"	8"	8"	10"	10"	10"
LENGTH OF SPIKES REQUIRED	10"	10"	10"	10"	12"	12"	12"	12"

SPIKING PATTERN

ALL SPIKES FOR 110# THRU 132# TIMBERS SHALL BE DRIVEN IN HOLES AS SHOWN IN ORDER TO MATCH THE PREFRAMED TIMBER.

FOR 75# THRU 100# TIMBERS, DRIVE 4 RAIL SPIKES PER TIE PLATE.



PLAN OF RIGHT ANGLE CROSSING

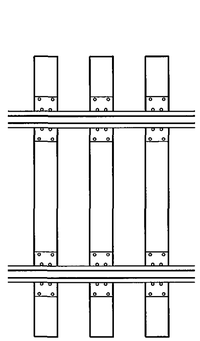
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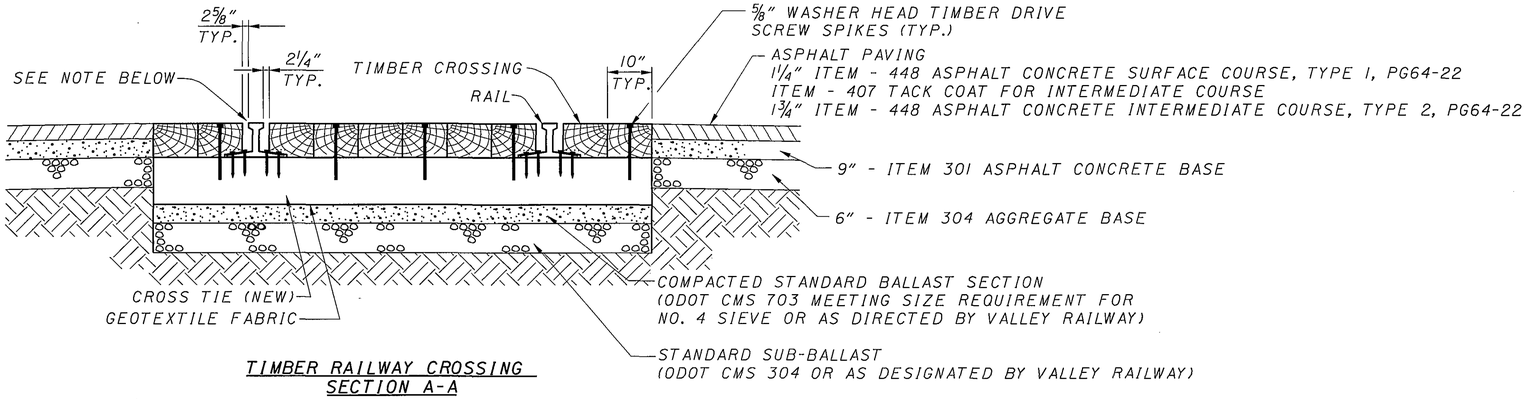
TIMBERS TO BE SHAPED AND BORED PRIOR TO CREOSOTE TREATMENT. PAVEMENT TO BE FULL DEPTH ASPHALT. WHEN NECESSARY PROVIDE DRAINAGE BETWEEN TRACKS. TO ALLOW FOR COMPACTION OF PAVING UNDER VEHICULAR TRAFFIC, THE SURFACE OF THE ASPHALT PAVING SHALL BE RAISED ⅜" ABOVE THE TOP OF THE CROSSING TIMBERS FOR THE WIDTH OF THE ROADWAY.TO INCREASE WIDTH OF CROSSING USE ADDITIONAL "M" TIMBERS. SEE SHEET 64 FOR TIMBER DETAILS.

THE CROSSINGS (TEMPORARY AND PERMANENT) SHALL HAVE SAFETY MARKING AND RAILROAD CROSSING WARNING SIGNS AS REQUIRED BY THE VALLEY RAILWAY AND THE OMUTCD AS APPROVED BY THE ENGINEER AND VALLEY RAILWAY.

PAYMENT FOR THE TEMPORARY RAILROAD GRADE CROSSING AS DETAILED TO BE UTILIZED AND MAINTAINED FOR CONSTRUCTION ACCESS IN THE CUYAHOGA RIVER VALLEY SHALL BE INCLUDED IN ITEM 614 - MAINTAINING TRAFFIC, MISC.: CONTRACTOR'S ACCESS.

PAYMENT FOR THE PERMANENT RAILROAD GRADE CROSSING AS DETAILED WHERE IT WILL BE UTILIZED AT THE DETENTION BASIN ACCESS DRIVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM - 900 RAIL ITEM, MISC.: RAILROAD GRADE CROSSING AND SHALL INCLUDE ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS TO CONSTRUCT THE RAILROAD GRADE CROSSING COMPLETE.





TIMBER RAILWAY CROSSING SECTION A-A

ALL DIMENSIONS TO BE MEASURED IN FIELD AND SUBMITTED TO TIMBER CROSSING MANUFACTURER FOR EXACT FIT.

COORDINATE INSTALLATION OF CROSSING WITH THE VALLEY RAILWAY PRIOR TO CONSTRUCTION.

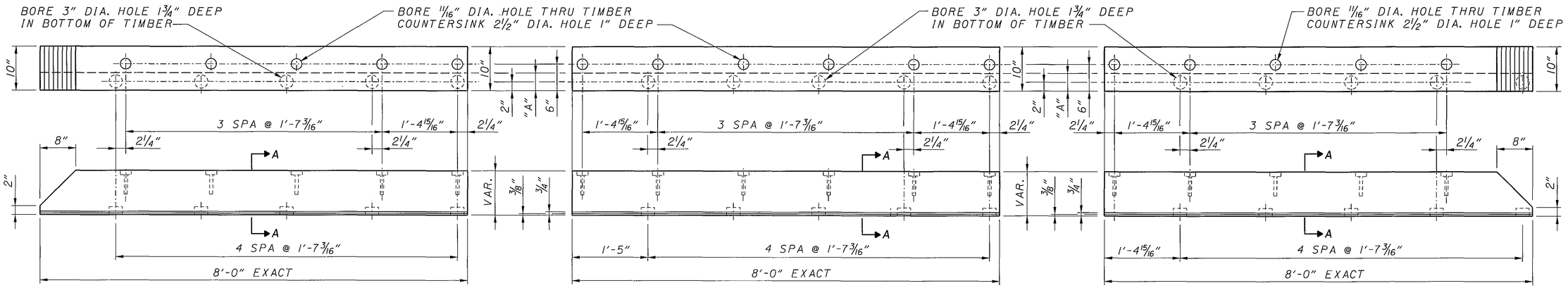
THE TEMPORARY RAILROAD CROSSING SHALL BE MAINTAINED IN GOOD CONDITION AS APPROVED BY THE ENGINEER FOR THE LENGTH OF CONSTRUCTION AND KEPT FREE OF ANY OBSTRUCTIONS OR HAZARDS INCLUDING HOLES, DEBRIS AND MUD. OTHER AREAS OF THE RAILWAY DAMAGED OR MADE HAZARDOUS BY THE CONTRACTOR SHALL BE IMMEDIATELY REPAIRED OR CLEANED. SEE SHEET NO. 64 FOR ADDITIONAL DETAILS.

CALCULATED PS CHECKED PG

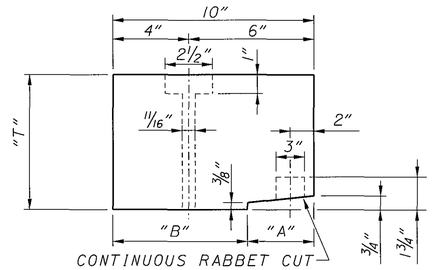
RAILROAD GRADE CROSSING DETAILS VALLEY RAILWAY

SUM-271-8.02

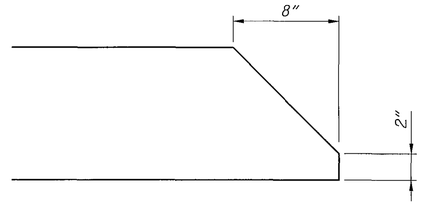
2450MN.DGN 9/8/04 SCB,HN



110# THRU 132# TIMBER

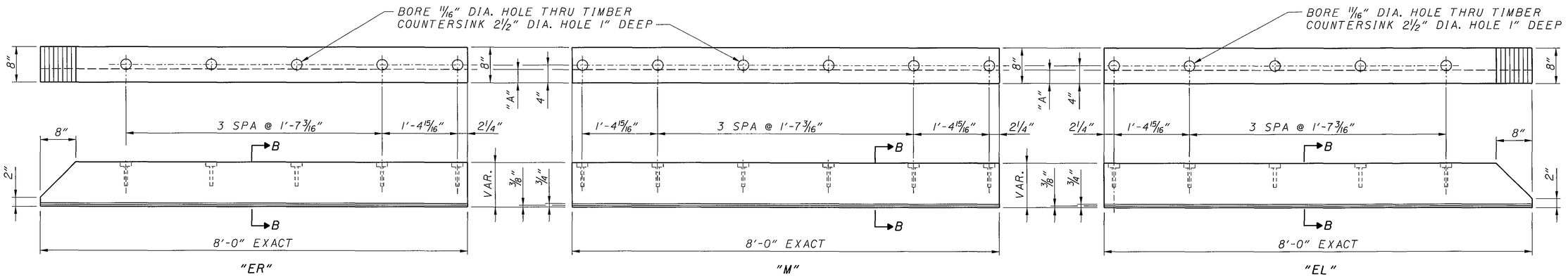


SECTION A-A

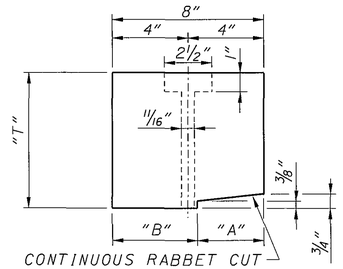


BEVEL CUT OF END TIMBERS

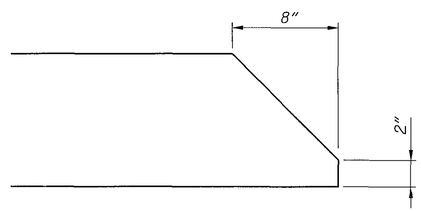
WEIGHT OF RAIL	75#	80#	85#	90#	100#	110#	112# 115#	132#
THICKNESS "T" OF TIMBERS FOR VARIOUS WEIGHTS OF RAIL	5¾"	5¾"	5¾"	6⅛"	6½"	7"	7½"	8"
WIDTH "W" OF TIMBERS FOR VARIOUS WEIGHTS OF RAIL	8"	8"	8"	8"	8"	10"	10"	10"
DAP "A" OF TIMBERS FOR VARIOUS WEIGHTS OF RAIL	3"	3"	3"	3"	3"	3"	3"	4"
BASE "B" OF TIMBERS FOR VARIOUS WEIGHTS OF RAIL	5"	5"	5"	5"	5"	7"	7"	6"
LENGTH OF SPIKES REQUIRED	10"	10"	10"	10"	12"	12"	12"	12"



75# THRU 100# TIMBER



SECTION B-B



BEVEL CUT OF END TIMBERS

NOTES:

TIMBERS TO BE SHAPED AND BORED PRIOR TO CREOSOTE TREATMENT.
ALL DAPS WILL BE CUT INTO THE BOTTOM OF THE TIMBER WHICH IS THE WIDE SURFACE CLOSEST TO THE HEART.
TOLERANCES: ±1/8" OVERALL THICKNESS, WIDTH AND LENGTH.
±1/4" ON HOLE SPACING AND COUNTERSINK DEPTH.
±1/4" AND -0" DAP WIDTH.
±1/8" AND -0" DAP THICKNESS.

HIGHWAY GRADE CROSSING TREATED TIMBER DETAILS

CALCULATED PS CHECKED PG

RAILROAD GRADE CROSSING DETAILS VALLEY RAILWAY

SUM-271-8.02

64
612

2450MN.DGN 10/31/03 SCB,HN 12/61

℄ CONSTRUCTION ACCESS (FORWARD APPROACH EXTENSION) CURVE DATA

P.I. Sta = 12+12.09
D = 50° 28′ 14″ (RT)
Dc = 12° 43′ 57″
R = 450.00′
T = 212.09′
L = 396.40′
E = 47.48′

℄ CONSTRUCTION ACCESS (FORWARD APPROACH) CURVE DATA

P.I. Sta = 12+12.84
D = 80° 49′ 13″ (RT)
Dc = 22° 55′ 06″
R = 250.00′
T = 212.84′
L = 352.65′
E = 78.33′

℄ CONSTRUCTION ACCESS (FORWARD APPROACH) CURVE DATA

P.I. Sta = 16+96.29
D = 12° 14′ 42″ (LT)
Dc = 5° 00′ 00″
R = 1,145.92′
T = 122.92′
L = 244.90′
E = 6.57′

THE OHIO & ERIE CANAL TOWPATH TRAIL
TOWPATH ACCESS TRAIL
℄ CONSTRUCTION ACCESS (FORWARD APPROACH EXTENSION)
FENCE, TYPE CL, AS PER PLAN (CHAIN LINK)
T ESMT
LA-R/W
G/L
℄ CONSTRUCTION ACCESS (FORWARD APPROACH)
PC Sta. 15+73.37
PT Sta. 13+96.40
PC Sta. 10+00.00
N 66° 26′ 33″ E
REBUILT TYPE E ANCHOR AND TYPE 5 GUARDRAIL (25′) GUARDRAIL MODIFICATIONS AS APPROVED BY THE ENGINEER.
PT Sta. 18+18.27 = STA. 442+05.60 ℄ R/W & SURVEY I.R. 271
PROVIDE TEMPORARY DRAINAGE EXTENSIONS AS REQUIRED FOR CONTRACTOR ACCESS
R-SPEC.* CONSTRUCTION EQUIPMENT EXIT ONLY
STA. 23+10.00 = STA. 446+97.32 ℄ R/W & SURVEY I.R. 271
100′
125′
48″ CMP
EX. 24″ CMP
N 54°13′47″ E
℄ R/W & SURVEY I.R. 271
EX. 24″ CONC.
EX. 12″ CONC.
℄ CONSTRUCTION ACCESS (FORWARD APPROACH)
GATES & BARRICADE - OPENING CLOSED DURING NON-WORKING HOURS. SEE MT-801.60.
STA. EQUATION:
STA. 13+64.95 ℄ CONST. ACCESS (FORWARD APPROACH) =
STA. 13+96.40 ℄ CONST. ACCESS (FORWARD APPROACH EXTENSION)
BUCKEYE TRAIL
TOWPATH TRAIL
R-SPEC.* CONSTRUCTION EQUIPMENT EXIT
1/2 MI.
W16-2-30
*SIGNS BLACK ON ORANGE 60″ X 36″ - ON BREAKAWAY SUPPORTS IF NOT BEHIND GUARDRAIL

FOR CONCEPTUAL ACCESS ROAD TYPICAL SECTION AND NOTES SEE SHEET NO. 58

FOR ADDITIONAL DETAILS AT TOWPATH, SEE SHEET NO. 69

SEE SHEET NO. 66 FOR PROFILE CONCEPT
SEE SHEET NOS. 139-249 FOR CROSS SECTIONS CONCEPT

—X—X— - GATE AND BARRICADES DURING NON-WORKING HOURS
CONCEPTUAL CONTRACTORS CONSTRUCTION ACCESS ROAD
—**—**— - WETLANDS FENCE
G/L = GRADING LIMITS

ITEM 614 - MAINTAINING TRAFFIC, MISC.: CONTRACTOR'S ACCESS LUMP SUM

NOTES:

1. DURING PAVEMENT AND GUARDRAIL CONSTRUCTION ACTIVITIES, CLOSE ADJACENT SHOULDER IN ACCORDANCE WITH FIGURE 698-9 OF THE TRAFFIC ENGINEERING MANUAL.
2. SEE TRENCH NOTES, SHEET NO. 26
3. SEE ITEM 614 - MAINTAINING TRAFFIC, MISC.: CONTRACTOR'S ACCESSS NOTE, SHEET NO. 28
4. ACCESS ROAD PAVEMENT SHALL BE REMOVED PRIOR TO CONSTRUCTION OF THE NEW FINAL SURFACE COURSE (PHASE IV).
5. SEE M.O.T. GENERAL NOTES FOR NATIONAL PARK SERVICE COORDINATION AND CONSTRUCTION ACCESS CROSSINGS.
6. THE CONTRACTOR MAY PROVIDE AN ALTERNATIVE DESIGN TO THE ACCESS ROADS AS SHOWN TO MEET CONTRACTORS NEEDS AND AVOID CONSTRUCTED FACILITIES, SUBJECT TO THE APPROVAL OF THE ENGINEER. ALL GRADING SHALL REMAIN INSIDE THE TEMPORARY R/W EASEMENTS PROVIDED.

NOTE:

STEEL BRIDGE DESIGN SHOWN FOR VISUAL PURPOSES. FOR ADDITIONAL DETAILS OF STEEL BRIDGE DESIGN AND CONCRETE BRIDGE DESIGN SEE PLAN & PROFILE SHEETS AND SUM-271-0802 L&R STRUCTURE PLANS. THE FINAL ALIGNMENT SHALL BE ADJUSTED TO MEET CONTRACTOR NEEDS AND TO AVOID CONSTRUCTED FACILITIES

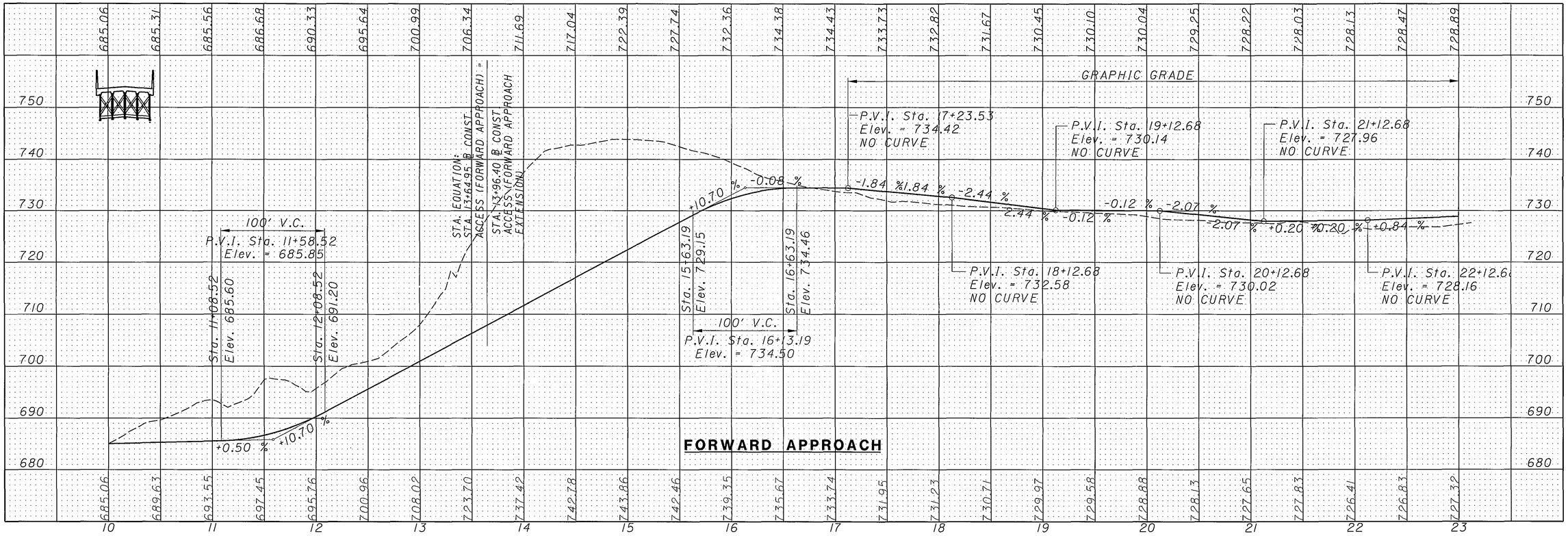
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CHECKED PS

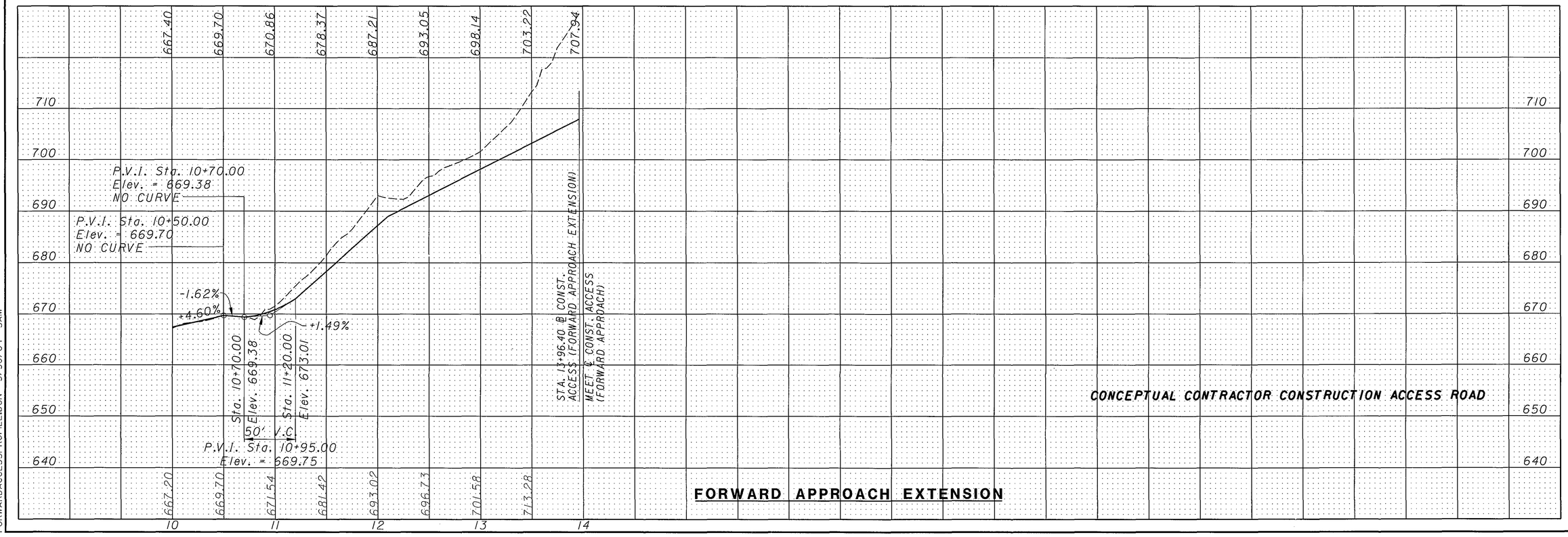
CONSTRUCTION ACCESS FORWARD APPROACH

SUM-271-8.02

65
612

FORWARDACCESS.DGN 3/30/04 SAM.CAR.HN





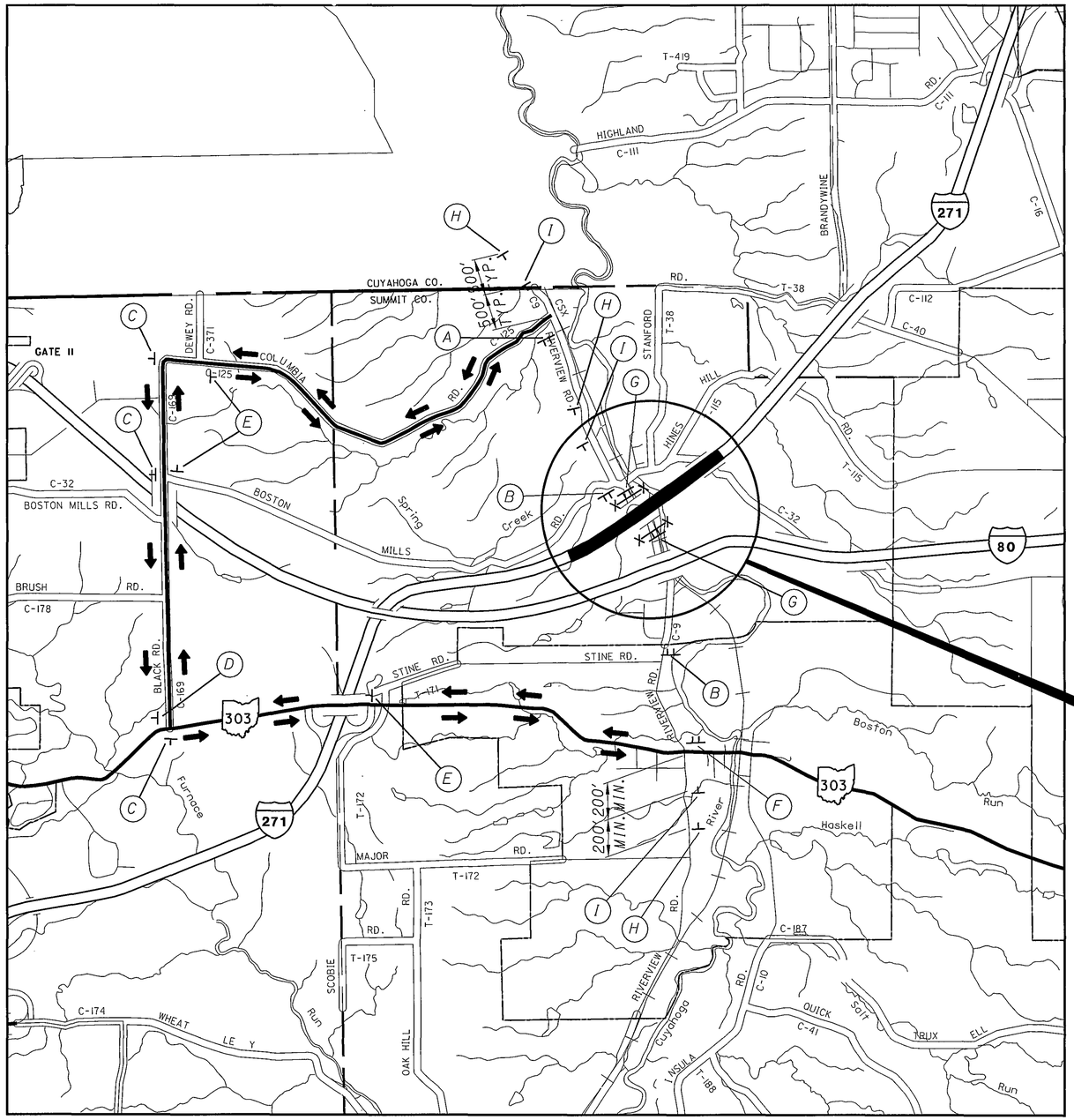
CONSTRUCTION ACCESS PROFILE
FORWARD APPROACH AND FORWARD APPROACH EXTENSION

CALCULATED PG
CHECKED PS

SUM-271-8.02

66
612

FORWARDACCESSPROFILE.DGN 3/30/04 SAM



RIVERVIEW ROAD DETOUR ROUTE

NOTE: DETOUR SIGNING BY THE CONTRACTOR.

OFFICAL RIVERVIEW ROAD DETOUR

R11-3A-60

(A) ROAD CLOSED 1½ MILES AHEAD LOCAL TRAFFIC ONLY / DETOUR

M4-10R-48

MOUNTED ON TYPE III PORTABLE BARRICADE

(B) ROAD CLOSED TO THRU TRAFFIC

R11-4-60

MOUNTED ON TYPE III PORTABLE BARRICADE

D-3 RIVERVIEW RD.

(C) DETOUR

M4-9L

D-3 RIVERVIEW RD.

(D) DETOUR

M4-9R

D-3 RIVERVIEW RD.

(E) DETOUR

M4-9

R11-3A-60

(F) ROAD CLOSED 1½ MILES AHEAD LOCAL TRAFFIC ONLY / DETOUR

M4-10L-48

MOUNTED ON TYPE III PORTABLE BARRICADE

(G) ROAD CLOSED

R11-2

MOUNTED ON GATES AND BARRICADES

(H) ROAD CLOSED AHEAD

W20-3-36

(I) DETOUR AHEAD

W20-2-36

ITEM 614 DETOUR SIGNING

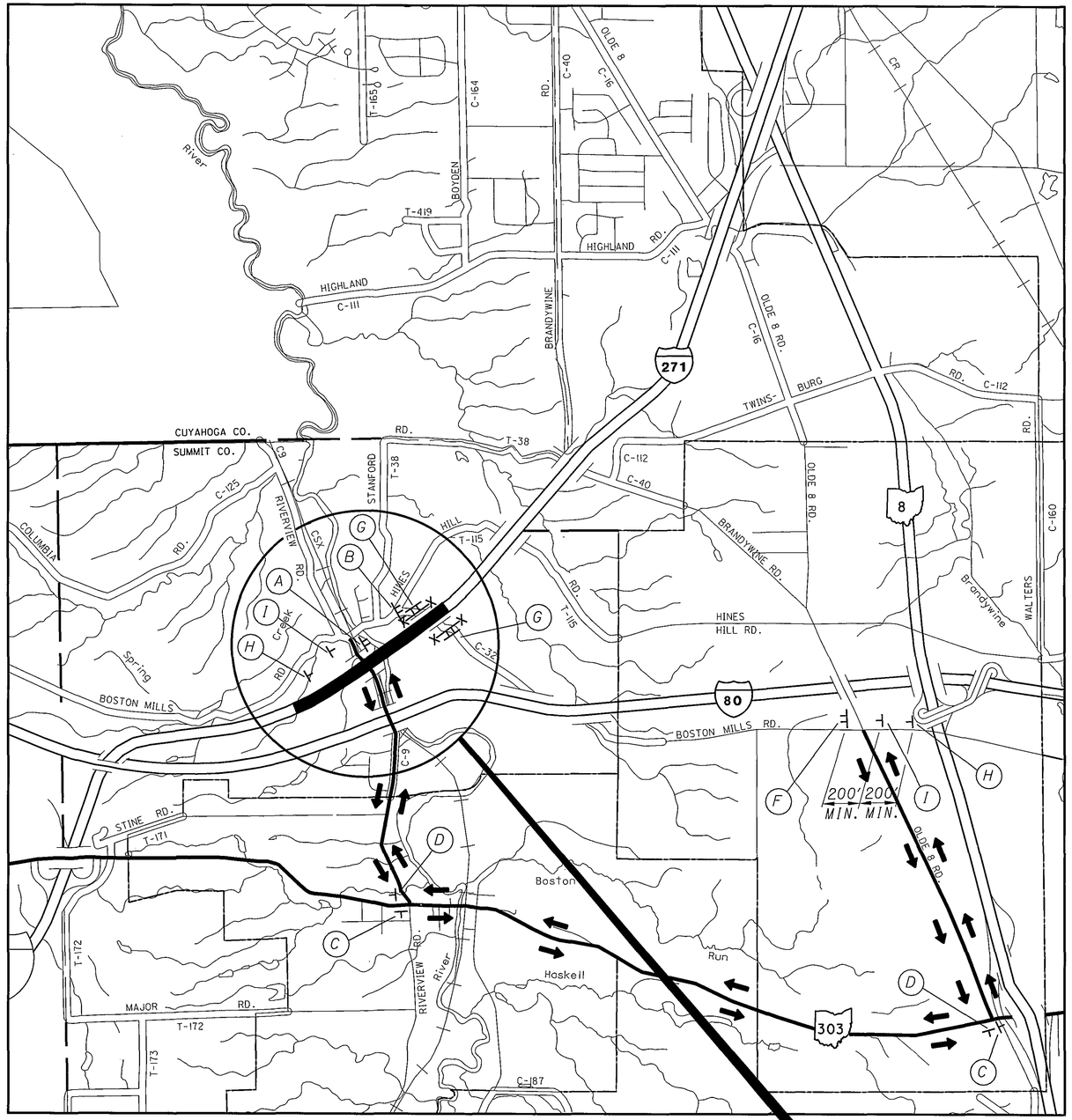
PHASE I	LUMP SUM
PHASE II	LUMP SUM
PHASE III	LUMP SUM
TO GENERAL SUMMARY	LUMP SUM

SEE SHEET NO. 22 FOR ADDITIONAL REQUIREMENTS FOR CLOSING RIVERVIEW ROAD TO TRAFFIC FLOW

MAINTENANCE OF TRAFFIC
RIVERVIEW RD. DETOUR MAP

SUM-271-8.02

21450MD.DGN 3/29/04 SAM,CEO



PROJECT LOCATION

BOSTON MILLS ROAD DETOUR ROUTE

NOTE: DETOUR SIGNING BY THE CONTRACTOR.

OFFICAL BOSTON MILLS ROAD DETOUR

R11-3A-60

(A) ROAD CLOSED ½ MILES AHEAD LOCAL TRAFFIC ONLY
DETOUR

M4-10R-48
MOUNTED ON TYPE III PORTABLE BARRICADE

(B) ROAD CLOSED TO THRU TRAFFIC

R11-4-60
MOUNTED ON TYPE III PORTABLE BARRICADE

D-3
BOSTON MILLS RD.
(C) DETOUR

M4-9L

D-3
BOSTON MILLS RD.
(D) DETOUR

M4-9R

(E) NOT USED

R11-3A-60

(F) ROAD CLOSED 2 MILES AHEAD LOCAL TRAFFIC ONLY
DETOUR

M4-10L-48
MOUNTED ON TYPE III PORTABLE BARRICADE

(G) ROAD CLOSED

R11-2
MOUNTED ON GATES AND BARRICADES

(H) ROAD CLOSED AHEAD

W20-3-36

(I) DETOUR AHEAD

W20-2-36

ITEM 614 DETOUR SIGNING

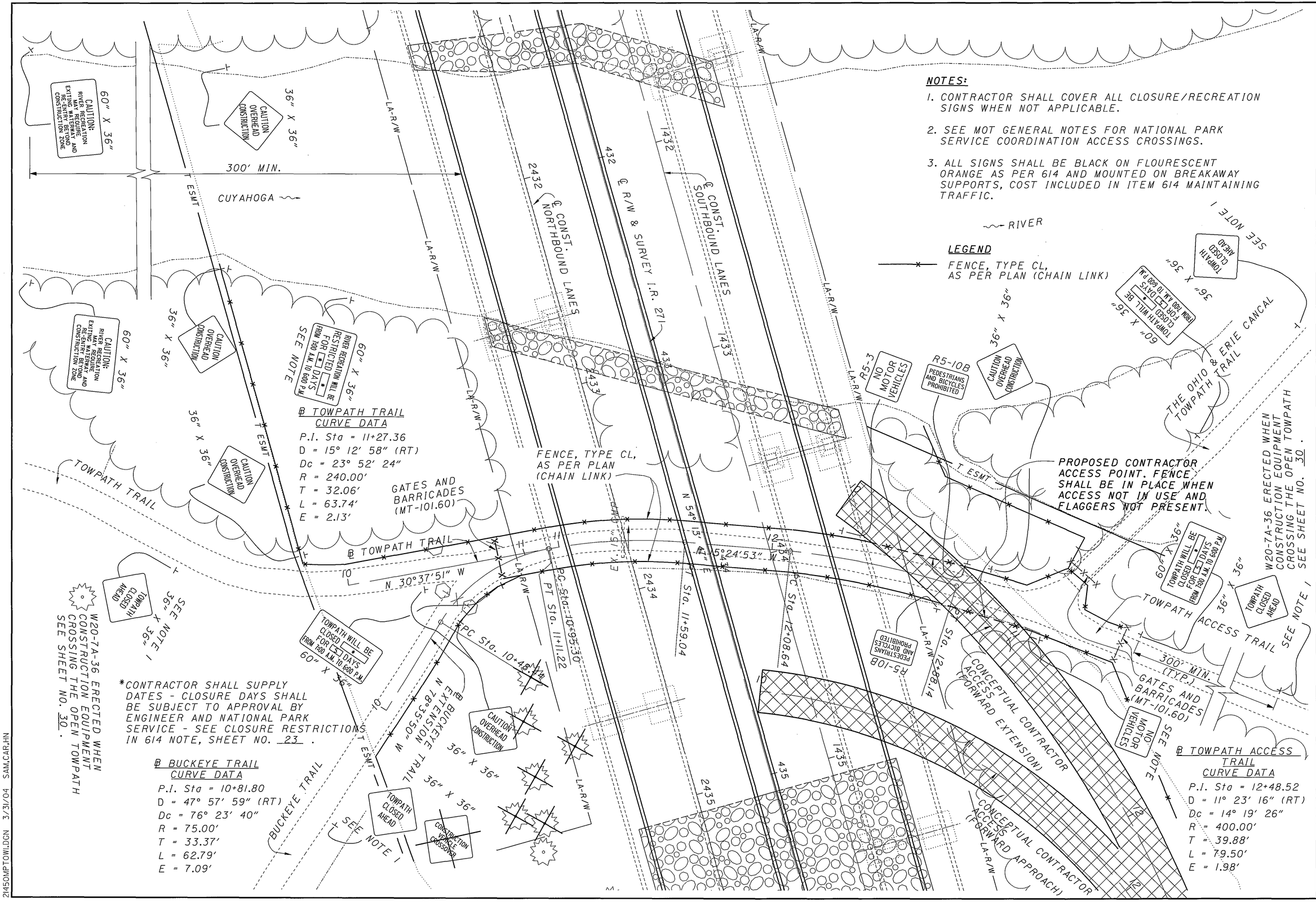
PHASE I	LUMP SUM
PHASE II	N/A
PHASE III	N/A
TO GENERAL SUMMARY	LUMP SUM

SEE SHEET NO. 22 FOR ADDITIONAL REQUIREMENTS FOR CLOSING BOSTON MILLS ROAD TO TRAFFIC.

MAINTENANCE OF TRAFFIC
BOSTON MILLS RD. DETOUR MAP

SUM-271-8.02

21450MDLDGN 3/29/04 SAM,CEO



2145OMPTOWI.DGN 3/31/04 SAM,CAR,HN

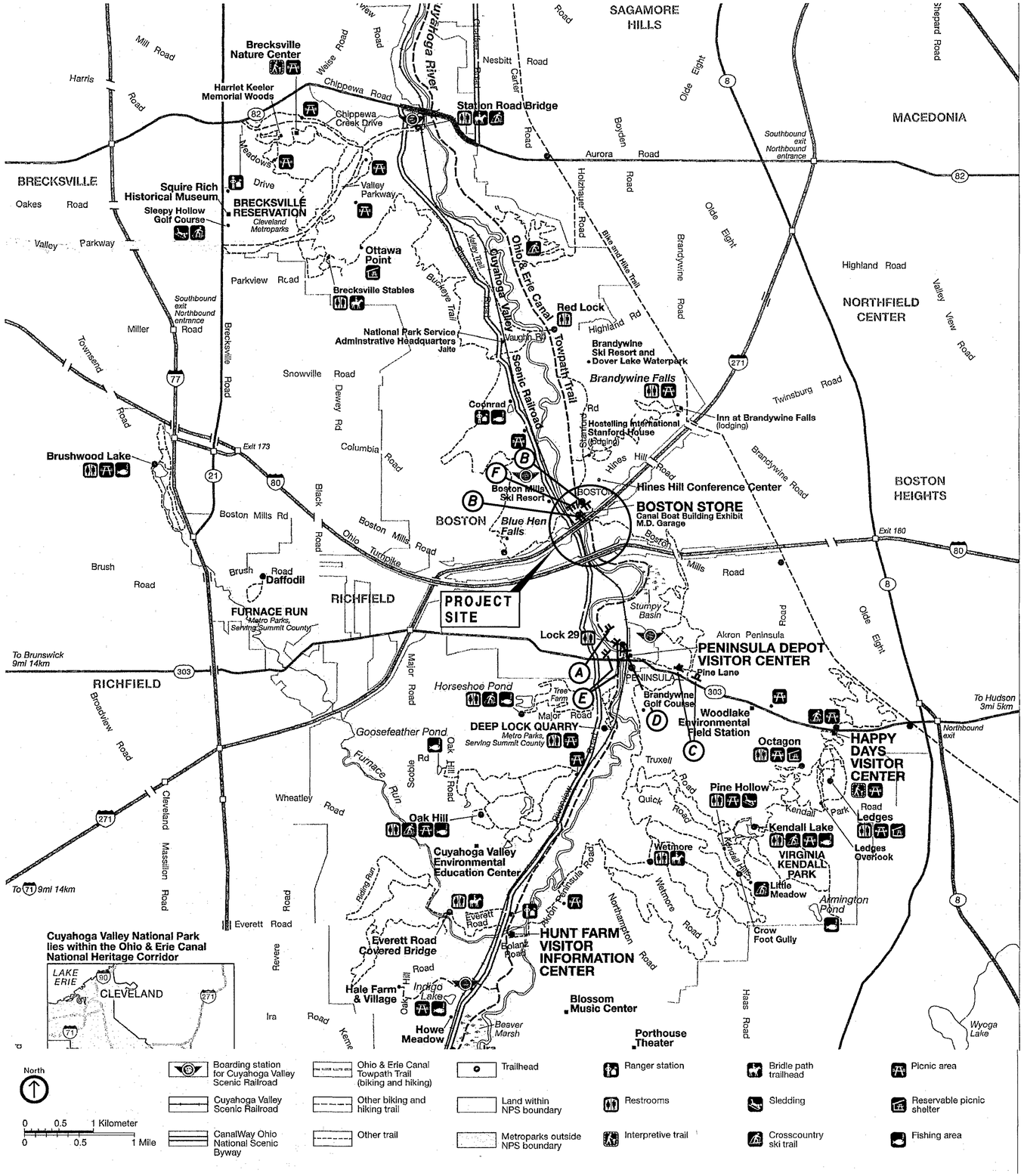
HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED PG
CHECKED PS

MAINTENANCE OF TRAFFIC PLAN - THE OHIO & ERIE CANAL TOWPATH TRAIL & CUYAHOGA RIVER RECREATION

SUM-271-8.02

69
612



60" (TYP.)

36" (TYP.)

(A)

TOWPATH WILL BE CLOSED
DATE* TO DATE*
2¼ MILES AHEAD
UNDER I.R. 271
7:00 A.M. TO 6:00 P.M.

PLACE ADJACENT TO TOWPATH AT LOCK 29 FACILITIES

BLACK TEXT ON FLOURESCENT ORANGE BACKGROUND AS PER CMS 614

60" (TYP.)

36" (TYP.)

(B)

TOWPATH WILL BE CLOSED
DATE* TO DATE*
1/10 MILE AHEAD
UNDER I.R. 271
7:00 A.M. TO 6:00 P.M.

PLACE ADJACENT TO TOWPATH/CONNECTOR AT BOSTON STORE STAGING AREAS (2 - SIGNS REQUIRED)

BLACK TEXT ON FLOURESCENT ORANGE BACKGROUND AS PER CMS 614

60" (TYP.)

36" (TYP.)

(C)

TRAIL WILL BE CLOSED
DATE* TO DATE*
UNDER I.R. 271
7:00 A.M. TO 6:00 P.M.

PLACE ADJACENT TO TRAIL AT PINE LANE TRAILHEAD AND AT S.R. 303 CROSSING (2 - SIGNS REQUIRED)

BLACK TEXT ON FLOURESCENT ORANGE BACKGROUND AS PER CMS 614

60" (TYP.)

36" (TYP.)

(D)

RIVER RECREATION WILL BE RESTRICTED
DATE* TO DATE*
2¼ MILES AHEAD
UNDER I.R. 271
7:00 A.M. TO 6:00 P.M.

PLACE ADJACENT TO RIVER AT LOCK 29 FACILITIES

BLACK TEXT ON FLOURESCENT ORANGE BACKGROUND AS PER CMS 614

60" (TYP.)

36" (TYP.)

(E)

CAUTION:
RIVER RECREATION MAY REQUIRE EXITING WATERWAY AND RE-ENTRY BEYOND I.R. 271 CONSTRUCTION ZONE

PLACE ON BOTH SIDES OF RIVER AT LOCK 29 FACILITIES

BLACK TEXT ON FLOURESCENT ORANGE BACKGROUND AS PER CMS 614

60" (TYP.)

36" (TYP.)

(F)

RIVER RECREATION WILL BE RESTRICTED
DATE* TO DATE*
1/10 MILE AHEAD
UNDER I.R. 271
7:00 A.M. TO 6:00 P.M.

PLACE ADJACENT TO RIVER AT BOSTON STORE STAGING AREA

BLACK TEXT ON FLOURESCENT ORANGE BACKGROUND AS PER CMS 614

*CONTRACTOR TO SUPPLY DATES

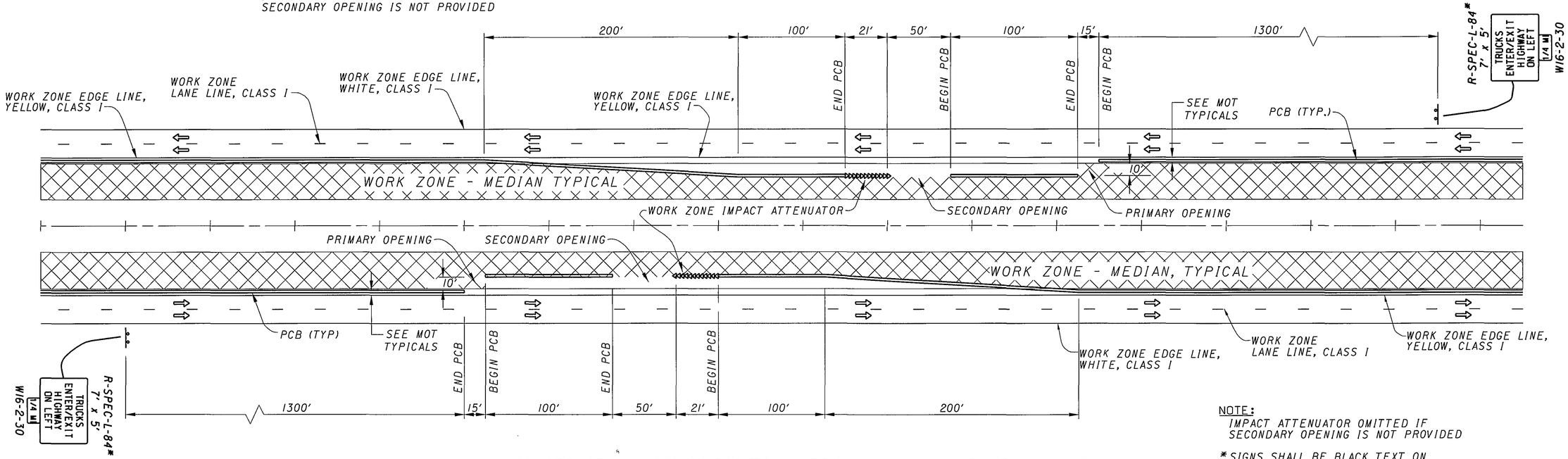
MAINTENANCE OF TRAFFIC PLAN - THE OHIO AND ERIE CANAL TOWPATH TRAIL & CUYAHOGA RIVER RECREATION - ADVANCE CLOSURE SIGNING

SUM-271-8.02

70
612

MAP.DGN 3/30/04 RB.CAR

NOTE:
IMPACT ATTENUATOR OMITTED IF
SECONDARY OPENING IS NOT PROVIDED

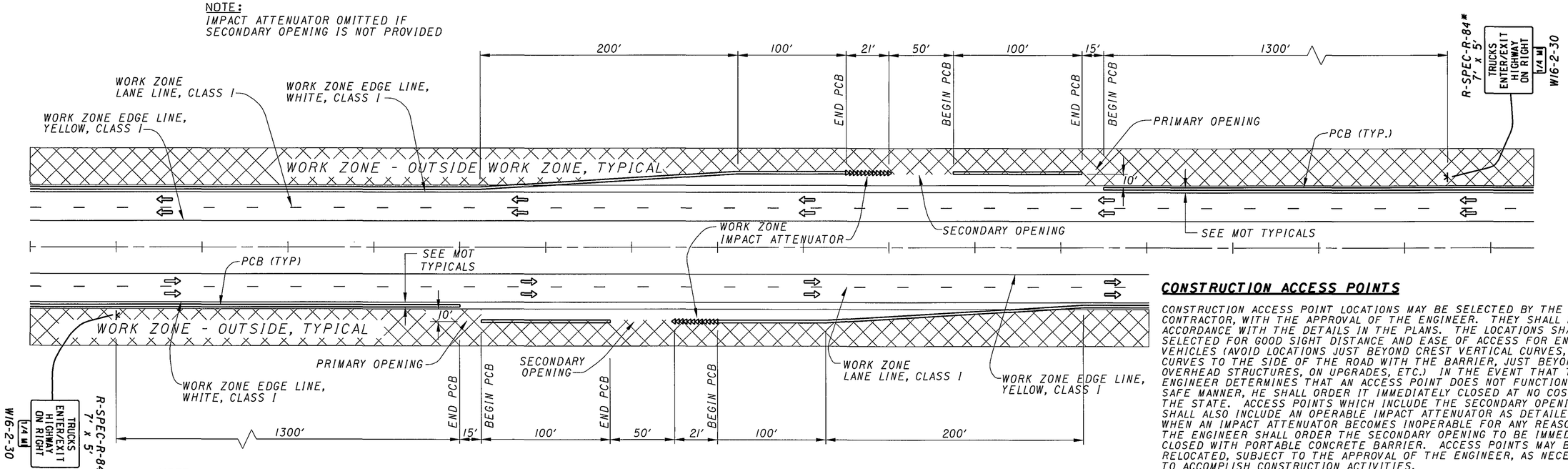


CONSTRUCTION ACCESS POINTS - MEDIAN ROADWAY WORK ZONE TYPICAL

NOTE:
IMPACT ATTENUATOR OMITTED IF
SECONDARY OPENING IS NOT PROVIDED

*SIGNS SHALL BE BLACK TEXT ON FLORESCENT ORANGE BACKGROUND AS PER CMS 614.

NOTE:
IMPACT ATTENUATOR OMITTED IF
SECONDARY OPENING IS NOT PROVIDED



NOTE:
IMPACT ATTENUATOR OMITTED IF
SECONDARY OPENING IS NOT PROVIDED

CONSTRUCTION ACCESS POINTS - OUTSIDE ROADWAY WORK ZONE, TYPICAL

CONSTRUCTION ACCESS POINTS

CONSTRUCTION ACCESS POINT LOCATIONS MAY BE SELECTED BY THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER. THEY SHALL BE IN ACCORDANCE WITH THE DETAILS IN THE PLANS. THE LOCATIONS SHALL BE SELECTED FOR GOOD SIGHT DISTANCE AND EASE OF ACCESS FOR ENTERING VEHICLES (AVOID LOCATIONS JUST BEYOND CREST VERTICAL CURVES, ON CURVES TO THE SIDE OF THE ROAD WITH THE BARRIER, JUST BEYOND OVERHEAD STRUCTURES, ON UPGRADES, ETC.) IN THE EVENT THAT THE ENGINEER DETERMINES THAT AN ACCESS POINT DOES NOT FUNCTION IN A SAFE MANNER, HE SHALL ORDER IT IMMEDIATELY CLOSED AT NO COST TO THE STATE. ACCESS POINTS WHICH INCLUDE THE SECONDARY OPENING SHALL ALSO INCLUDE AN OPERABLE IMPACT ATTENUATOR AS DETAILED. WHEN AN IMPACT ATTENUATOR BECOMES INOPERABLE FOR ANY REASON, THE ENGINEER SHALL ORDER THE SECONDARY OPENING TO BE IMMEDIATELY CLOSED WITH PORTABLE CONCRETE BARRIER. ACCESS POINTS MAY BE RELOCATED, SUBJECT TO THE APPROVAL OF THE ENGINEER, AS NECESSARY TO ACCOMPLISH CONSTRUCTION ACTIVITIES.

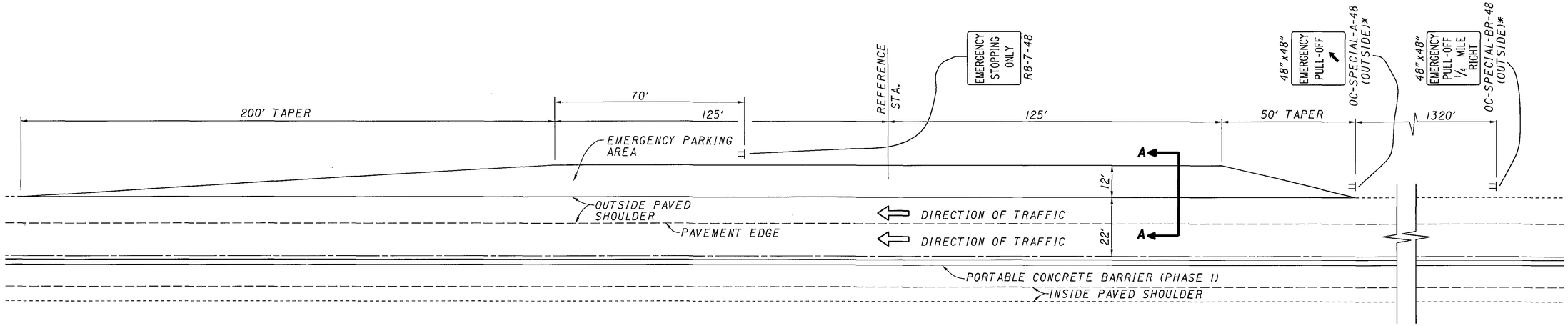
ALL COSTS FOR RELOCATION OF PORTABLE CONCRETE BARRIER, INSTALLATION, REPAIR, REPLACEMENT, AND REMOVAL OF IMPACT ATTENUATORS, GRADING FOR ACCESS DRIVES AND RELATED COSTS SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 MAINTAINING TRAFFIC.

CALCULATED PG
CHECKED JL

MAINTENANCE OF TRAFFIC
CONSTRUCTION ACCESS POINTS, TYPICAL

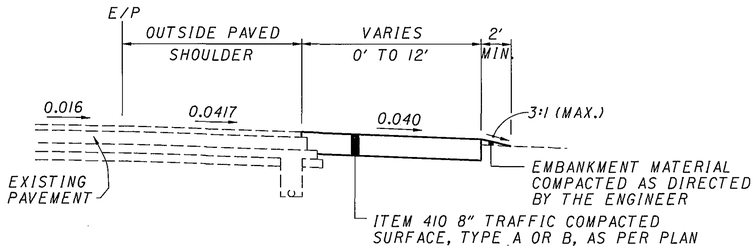
SUM-271-8.02

BLANKCONSTACCESS.DGN 3/30/04

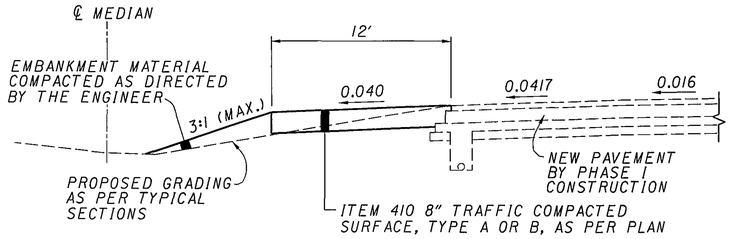


NOTE: CONSTRUCTION OF THIS PARKING AREA SHALL BE COMPLETED DURING PHASE IA, SEE MAINTENANCE OF TRAFFIC GENERAL NOTES SHEET NO. 21 FOR ADDITIONAL RESTRICTIONS.

PLAN
EMERGENCY PARKING AREAS ON OUTSIDE SHOULDER
DURING PHASE I & III CONSTRUCTION
(ACTUAL LOCATION MAY REQUIRE FIELD ADJUSTMENT AS APPROVED BY THE ENGINEER)
PHASE I - STA. 408+00 ℄ R/W & SURVEY I.R. 271
PHASE III - STA. 408+00 ℄ R/W & SURVEY I.R. 271

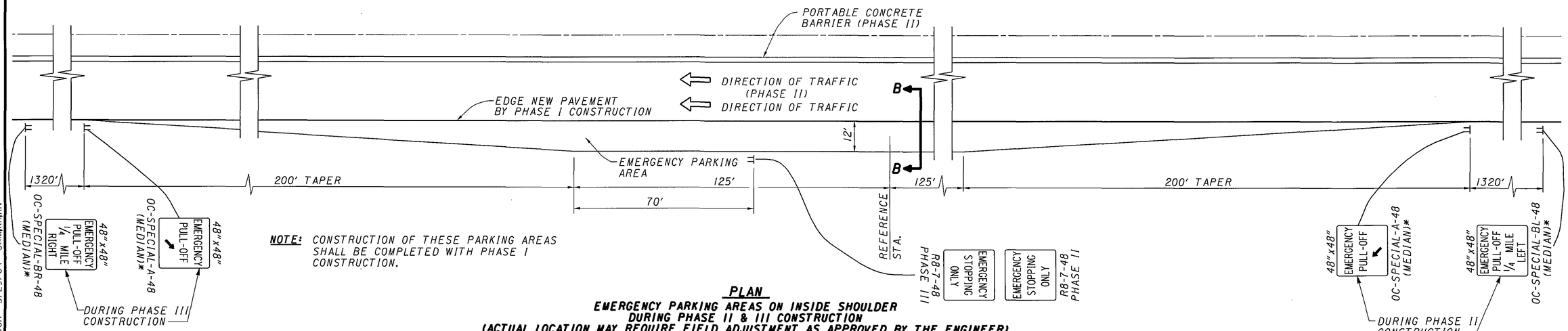


TYPICAL SECTION A-A
NOT TO SCALE



TYPICAL SECTION B-B
NOT TO SCALE

* SIGNS SHALL BE BLACK TEXT ON FLOURESCENT ORANGE BACKGROUND AS PER CMS 614



NOTE: CONSTRUCTION OF THESE PARKING AREAS SHALL BE COMPLETED WITH PHASE I CONSTRUCTION.

PLAN
EMERGENCY PARKING AREAS ON INSIDE SHOULDER
DURING PHASE II & III CONSTRUCTION
(ACTUAL LOCATION MAY REQUIRE FIELD ADJUSTMENT AS APPROVED BY THE ENGINEER)
PHASE II - STA. 408+00 ℄ R/W & SURVEY I.R. 271
PHASE III - STA. 408+00 ℄ R/W & SURVEY I.R. 271

HORIZONTAL SCALE IN FEET
0 10 20 40
CALCULATED PG
CHECKED JL

MAINTENANCE OF TRAFFIC
EMERGENCY PARKING AREAS

SUM-271-8.02

2450MDD.DGN 3/29/04 SAM,KH,HN

GENERAL NOTES

1. It is intended that this drawing be used for treatment of drop-offs that develop during construction operations, and that are not otherwise provided for in the construction plans. Where the plans do not provide specific items for labor, equipment, or materials to implement the drop-off treatments specified herein, they shall be included for payment in the lump sum bid for Item 614 - Maintaining Traffic.

2. While the need for certain advisory signing is noted herein, it is not intended that this be indicative of all signing that may be required to advise or warn motorist, and all requirements of the Ohio Manual of Uniform Traffic Control Devices (OMUTCD) must be fulfilled.

3. In urban or otherwise heavily developed areas where pedestrians and/or bicyclists may be present in significant numbers, additional signing and protective measures other than those shown herein may be required.

4. The drop-off treatment selected for use at any given location shall be appropriate for the prevailing conditions at the site.

5. Where concrete barrier is specified, it shall be in accordance with Standard Construction Drawing PCB - 9.1, RM-4.2 and Item 622.

6. When drums are specified for a drop-off condition, a minimum number of four drums shall be used. Spacing shall be as indicated in the plans or as specified in the OMUTCD.

7. When OW-15I (Low Shoulder) signs or OW-17I (Uneven Lanes symbol), OWP-17I (uneven lane plaque), and OC-53 (Maintain Present Lane) signs are required, they shall be placed 750' in advance of the condition, on all intersecting entrance ramps within the limits of the condition and immediately beyond all intersecting roadways within the limits of the condition. When the drop-off condition extends more than one-half mile, additional signs shall be erected at intervals of a maximum of one mile.

8. For locations, such as at ramps, lane shifts, lane closures, etc., where traffic is required to negotiate any difference in elevation between pavements, the Optional Wedge Treatment shall be provided.

9. Portable concrete barrier shall be placed on the same level as the traffic surface and shall not encroach on lane width(s) designated as the minimum required for traffic use. Where drums are used, and their presence would reduce traveled lane widths to less than 10', drums may be placed on the opposite level from that of traffic provided the drop-off depth does not exceed 5" and approval is granted by the Project Engineer.

10. Pavement Repairs (or similar work):

a. Lengths greater than 60 feet - utilize appropriate treatment from Condition I.

b. Lengths of 60 feet or less - repairs shall be affected in accordance with Item 255.08. Drums may be used as a separator adjacent to the traveled lane.

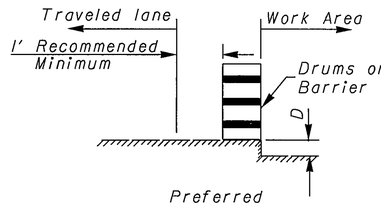
DROPOFF.DGN 3/29/04

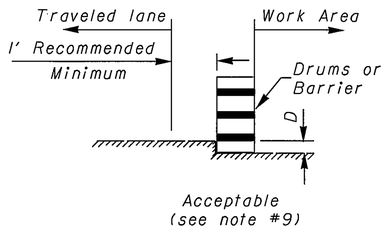
CONDITION I

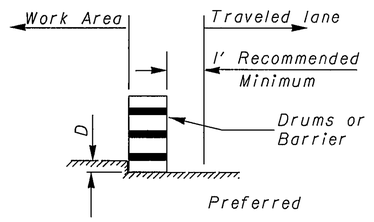
1. These treatments are to be used for resurfacing, pavement planing excavation, etc., between, beside or within traveled lanes.

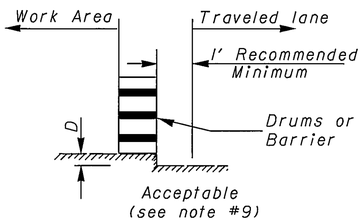
Distance From Traveled Lane	D (in)	Treatment
1FT-12FT	≤ 1½	Erect OW-17I, AND OWP-17I.
1FT-12FT	1½-3	1. Lane closure utilizing drums* as shown below. (use only on 3 or more lanes) - or - 2. Optional Wedge Treatment.
1FT-12FT	3 - 5	Lane closure utilizing drums as shown below
1FT-12FT	5 - 12	Lane closure utilizing portable concrete barrier as shown below.
>12FT-20FT	12 - 24	Lane closure utilizing drums as shown below
>12FT-20FT	>24	Lane closure utilizing portable concrete barrier as shown below.

*Cones may be used for daytime only conditions.







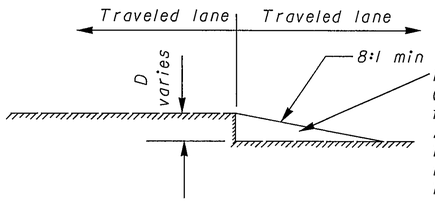


OPTIONAL WEDGE TREATMENT

(MILLING OR RESURFACING)

1. This treatment may be used when permitted for Condition I only.

2. OW-17I, OWP-17I, and OC-53 signs required.



Firm and unyielding material (to be removed prior to placing the abutting pavement course) All labor, equipment, materials, and incidentals to provide and subsequently remove the pavement wedge shall be included and paid under the lump sum bid for Item 614- Maintaining Traffic

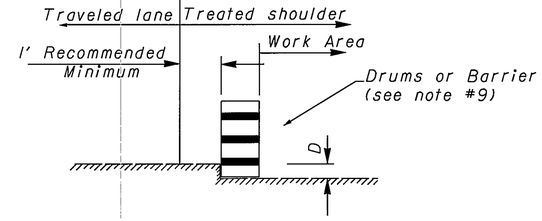
CONDITION II

DROPOFFS WITHIN GRADED SHOULDER AREA
[except for linear grading areas]

The treatments indicated below are for use in conjunction with resurfacing, planing, or excavation within the graded shoulder area.

Distance From Traveled Lane	D (in)	Treatment
1FT-12FT	≤ 1½	1.) If edgelines are present, no treatment necessary. or 2.) Erect OW-17I, OWP-17I, and OC-53 signs
1FT-12FT	1½- 5	1) If min. lane widths* requirements can be met, maintain lanes utilizing drums as shown below. - or - 2) If min. lane width* requirements cannot be met, close adjacent lane utilizing drums. (use only on 3 or more lanes) - or - 3) Optional shoulder treatment
>12FT-30FT	<= 24	Shoulder closure utilizing drums as shown below
>12FT-30FT	>24	Shoulder closure utilizing portable concrete barrier as shown below.

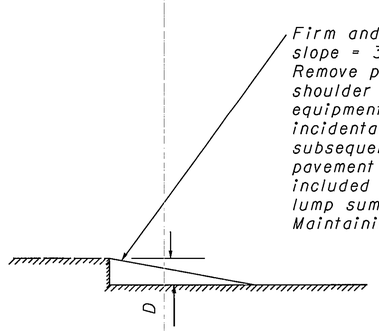
*Minimum lane widths shall be 10' unless otherwise specified in the plans.



OPTIONAL SHOULDER TREATMENT

1. This treatment shall not be used within a bituminous shoulder where a hot longitudinal joint per 401.17 is required.

2. OW-15I signs required.



Firm and unyielding material slope = 3:1 or flatter. Remove prior to placing the shoulder course. All labor, equipment, materials and incidentals to provide and subsequently remove the pavement wedge shall be included and paid under the lump sum bid for item 614 - Maintaining Traffic.

DROPOFFS IN WORK ZONES

SUM-271-8.02

SHEET NUMBER												ITEM	ITEM EXTENSION	PROJECT TOTAL	UNIT	DESCRIPTION	AS PER PLAN SHEET NO.
13-20	21-73	79-81	82	83-91	92-98	99-106	315-324	348	349-351	335-337							
																ROADWAY	
LUMP												201	11001	LUMP		CLEARING AND GRUBBING, AS PER PLAN	13
				6						1		202	20010	7	EACH	HEADWALL REMOVED	
						534						202	22900	534	SQ YD	APPROACH SLAB REMOVED	
						13314						202	23000	13314	SQ YD	PAVEMENT REMOVED	
300				1379								202	35100	1679	FT	PIPE REMOVED, 24" AND UNDER	
				132								202	35101	132	FT	PIPE REMOVED, 24" AND UNDER, AS PER PLAN	16
										18		202	35200	18	FT	PIPE REMOVED, OVER 24"	
									204			202	54000	204	EACH	RAISED PAVEMENT MARKER REMOVED AND DISPOSED	
				2								202	58000	2	EACH	MANHOLE REMOVED	
				14								202	58100	14	EACH	CATCH BASIN REMOVED	
200												SPECIAL	202 70100	200	FT	PIPE CLEANOUT	16
			8127									202	75000	8127	FT	FENCE REMOVED	
												203	98500	LUMP		ROADWAY, MISC: CUYAHOGA VALLEY RESTORATION PLANS	
												203	98500	LUMP		ROADWAY, MISC: WETLAND RESTORATION	
8764												204	13000	8764	CU YD	EXCAVATION OF SUBGRADE	
5724												204	20000	5724	CU YD	EMBANKMENT	
3041												204	30010	3041	CU YD	GRANULAR MATERIAL, TYPE B	
						16						204	45000	16	HOUR	PROOF ROLLING	
4079												204	50000	4079	SQ YD	GEOTEXTILE FABRIC	18
500				2247								209	10001	2747	FT	DITCH CLEANOUT, AS PER PLAN	14
		103										209	60201	103	STATION	LINEAR GRADING, AS PER PLAN	13
7												604	40500	7	EACH	REFERENCE MONUMENT	
		4837.5										606	13001	4837.5	FT	GUARDRAIL, TYPE 5, AS PER PLAN	14
		8										606	22010	8	EACH	ANCHOR ASSEMBLY, TYPE E-98	
		9										606	26500	9	EACH	ANCHOR ASSEMBLY, TYPE T	
		10										606	35000	10	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 1	
		5										606	35100	5	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 2	
			8243									607	15001	8243	FT	FENCE, TYPE 47, AS PER PLAN	17
			5508									607	20001	5508	FT	FENCE, TYPE CL, AS PER PLAN	18
			10									625	32000	10	EACH	GROUND ROD	
		114										626	00100	114	EACH	BARRIER REFLECTOR, TYPE A	
		88										626	00200	88	EACH	BARRIER REFLECTOR, TYPE B	
																ROADWAY (STEEL DESIGN)	
	750	10819										202	38000	11569	FT	GUARDRAIL REMOVED	
42419												203	10000	42419	CU YD	EXCAVATION	
34285												203	20000	34285	CU YD	EMBANKMENT	
						47191	579					204	10000	47770	SQ YD	SUBGRADE COMPACTION	
		6										209	60200	6	STATION	LINEAR GRADING	14
		4900										606	13000	4900	FT	GUARDRAIL, TYPE 5	
		375										606	13050	375	FT	GUARDRAIL, TYPE 5A	
		6										606	22000	6	EACH	ANCHOR ASSEMBLY, TYPE B-98	
							1					607	50900	1	EACH	GATE, TYPE CL	
		6										626	00300	6	EACH	BARRIER REFLECTOR, TYPE A2	
							579					SPECIAL	69012020	579	SQ YD	GEOGRID	15
																ROADWAY (CONCRETE DESIGN)	
	750	10819										202	38000	11569	FT	GUARDRAIL REMOVED	
42219												203	10000	42219	CU YD	EXCAVATION	
33913												203	20000	33913	CU YD	EMBANKMENT	
						47191	528					204	10000	47719	SQ YD	SUBGRADE COMPACTION	
		7										209	60200	7	STATION	LINEAR GRADING	14
		5437.5										606	13000	5437.5	FT	GUARDRAIL, TYPE 5	
		8										606	22000	8	EACH	ANCHOR ASSEMBLY, TYPE B-98	
							1					607	50900	1	EACH	GATE, TYPE CL	
		11										626	00300	11	EACH	BARRIER REFLECTOR, TYPE A2	
							528					SPECIAL	69012020	528	SQ YD	GEOGRID	15

CALCULATED JDL
CHECKED PRS

GENERAL SUMMARY

SUM-271-8.02

214500GA.DGN 10/8/04 CAR,CEO 1

SHEET NUMBER												ITEM	ITEM EXTENSION	PROJECT TOTAL	UNIT	DESCRIPTION	AS PER PLAN SHEET NO.
13-20	21-73	79-81	82	83-91	92-98	99-106	315-324	348	349-351	335-337							
																EROSION CONTROL	
							6453					601	20000	6453	SQ YD	CRUSHED AGGREGATE SLOPE PROTECTION	
				381								601	32104	381	CU YD	ROCK CHANNEL PROTECTION, TYPE B WITH FABRIC FILTER	
				288								601	32204	288	CU YD	ROCK CHANNEL PROTECTION, TYPE C WITH FABRIC FILTER	
500			1622									607	98000	2122	FT	FENCE, MISC.: WETLAND PROTECTION FENCE	17
2												659	00100	2	EACH	SOIL ANALYSIS TEST	
10624												659	00300	10624	CU YD	TOPSOIL	
4786												659	14000	4786	SQ YD	REPAIR SEEDING AND MULCHING	
4786												659	15000	4786	SQ YD	INTER-SEEDING	
13												659	20000	13	TON	COMMERCIAL FERTILIZER	
20												659	31000	20	ACRE	LIME	
517												659	35000	517	M GAL	WATER	
862												659	40000	862	M SQ FT	MOWING	
				6739			3139					670	00500	3139	SQ YD	SLOPE EROSION PROTECTION	
												832	10000	1	EACH	STORM WATER POLLUTION PREVENTION PLAN	
												832	30000	100000	EACH	EROSION CONTROL	
																EROSION CONTROL (STEEL DESIGN)	
				22			3			8		601	11000	33	SQ YD	RIPRAP USING 6" REINFORCED CONCRETE SLAB	
							51					601	11001	51	SQ YD	RIPRAP USING 6" REINFORCED CONCRETE SLAB, AS PER PLAN	16
							797			105		601	32004	902	CU YD	ROCK CHANNEL PROTECTION, TYPE A WITH FABRIC FILTER	
35				432			159					601	32200	626	CU YD	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	
84672												659	10000	84672	SQ YD	SEEDING AND MULCHING	
				65			95					660	20000	160	SQ YD	SODDING REINFORCED	
				697								661	99930	697	SQ YD	PLANTING MISC.: DETENTION BASIN PLANTING	315
				7037								670	00700	7037	SQ YD	DITCH EROSION PROTECTION	
																EROSION CONTROL (CONCRETE DESIGN)	
				22			3			8		601	11000	33	SQ YD	RIPRAP USING 6" REINFORCED CONCRETE SLAB	
							58					601	11001	58	SQ YD	RIPRAP USING 6" REINFORCED CONCRETE SLAB, AS PER PLAN	16
							797			105		601	32004	902	CU YD	ROCK CHANNEL PROTECTION, TYPE A WITH FABRIC FILTER	
35				421			160					601	32200	616	CU YD	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	
84909												659	10000	84909	SQ YD	SEEDING AND MULCHING	
				115			106					660	20000	221	SQ YD	SODDING REINFORCED	
				697								661	99930	697	SQ YD	PLANTING MISC.: DETENTION BASIN PLANTING	316
				6739								670	00700	6739	SQ YD	DITCH EROSION PROTECTION	
																DRAINAGE	
					1							602	20001	1	CU YD	CONCRETE MASONRY, AS PER PLAN	334
					93							603	00100	93	FT	4" CONDUIT, TYPE B, 707.33 OR 707.41	
					155							603	00406	155	FT	4" CONDUIT, TYPE F, 707.33 OR 707.41	
					1015							603	00900	1015	FT	6" CONDUIT, TYPE B, 707.33 OR 707.41	
500					793	30						603	01500	1323	FT	6" CONDUIT, TYPE F, 707.33 OR 707.41	
200												603	02600	200	FT	8" CONDUIT, TYPE F	
300				387								603	06700	687	FT	15" CONDUIT, TYPE F, 707.05, TYPE C	
				10								603	07600	10	FT	18" CONDUIT, TYPE C	
				88								603	07601	88	FT	18" CONDUIT, TYPE C, AS PER PLAN	16
				201								603	09100	201	FT	21" CONDUIT, TYPE C	
				112								603	09700	112	FT	21" CONDUIT, TYPE F, 707.05, TYPE C	
				25								603	10600	25	FT	24" CONDUIT, TYPE C	
										201		603	22601	201	FT	54" CONDUIT, TYPE C, AS PER PLAN	16
				359								603	96601	359	FT	CONDUIT, BORED OR JACKED, 15", TYPE B, AS PER PLAN	17
				11								604	00800	11	EACH	CATCH BASIN, NO. 3A	
				17								604	01200	17	EACH	CATCH BASIN, NO. 4	
				5								604	01600	5	EACH	CATCH BASIN, NO. 5	
										3		604	01801	3	EACH	CATCH BASIN, NO. 5A, AS PER PLAN	16
				7								604	02800	7	EACH	CATCH BASIN, NO. 8	
				7								604	08600	7	EACH	CATCH BASIN, MISC.:RETAINING WALL CATCH BASIN	323 & 324
				1								604	09001	1	EACH	CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN	16

CALCULATED JDL
CHECKED PRS

GENERAL SUMMARY

SUM-271-8.02

75
612

2145OGGA.DGN 10/8/04 CAR,CEO 2

SHEET NUMBER												ITEM	ITEM EXTENSION	PROJECT TOTAL	UNIT	DESCRIPTION	AS PER PLAN SHEET NO.
13-20	21-73	79-81	82	83-91	92-98	99-106	315-324	348	349-351	335-337							
																DRAINAGE (CONTINUED)	
										1		604	31501	1	EACH	MANHOLE, NO. 3, AS PER PLAN	11
				2								604	35500	2	EACH	MANHOLE RECONSTRUCTED TO GRADE	
					10	1						604	36600	11	EACH	PRECAST REINFORCED CONCRETE OUTLET	
					23889							605	05110	23889	FT	4" SHALLOW PIPE UNDERDRAINS WITH FABRIC WRAP, 707.31 OR 707.41	
					24337	55						605	11110	24392	FT	6" SHALLOW PIPE UNDERDRAINS WITH FABRIC WRAP, 707.31 OR 707.41	
1000												605	13402	1000	FT	6" UNCLASSIFIED PIPE UNDERDRAINS FOR SPRINGS	
					950							605	13410	950	FT	6" UNCLASSIFIED PIPE UNDERDRAINS WITH FABRIC WRAP, 707.31 OR 707.41	
200												605	32200	200	FT	AGGREGATE DRAINS FOR SPRINGS	
										440		837	10000	440	FT	LINER PIPE, 48", 707.12	
										110		837	20000	110	CU YD	BACKFILL FOR LINER PIPE	
																DRAINAGE (STEEL DESIGN)	
1				2.8			0.5			10.5		602	20000	14.8	CU YD	CONCRETE MASONRY	
							42					603	05700	42	FT	15" CONDUIT, TYPE A, 706.02	
				1194								603	05900	1194	FT	15" CONDUIT, TYPE B	
				60								603	05901	60	FT	15" CONDUIT, TYPE B, AS PER PLAN	314
				4816								603	06100	4816	FT	15" CONDUIT, TYPE C	
				126								603	06101	126	FT	15" CONDUIT, TYPE C, AS PER PLAN	315
				404								603	06701	404	FT	15" CONDUIT, TYPE F, AS PER PLAN	17
				238								603	07400	238	FT	18" CONDUIT, TYPE B, 706.02	
				50								603	96600	50	FT	CONDUIT, BORED OR JACKED, 18", TYPE B, 706.02, AS PER PLAN	17
				12								604	01700	12	EACH	CATCH BASIN, NO. 5 WITH B GRATE	
				8								604	04501	8	EACH	CATCH BASIN, NO. 2-2B, AS PER PLAN A	17
				4								604	04501	4	EACH	CATCH BASIN, NO. 2-2B, AS PER PLAN B	17
				2								604	08600	2	EACH	CATCH BASIN, MISC.: WATER QUALITY BASIN	315
				20								604	31500	20	EACH	MANHOLE, NO. 3	
																DRAINAGE (CONCRETE DESIGN)	
1				2.8			0.5			10.5		602	20000	14.8	CU YD	CONCRETE MASONRY	
							42					603	05700	42	FT	15" CONDUIT, TYPE A, 706.02	
				1241								603	05900	1241	FT	15" CONDUIT, TYPE B	
				60								603	05901	60	FT	15" CONDUIT, TYPE B, AS PER PLAN	314
				4970								603	06100	4970	FT	15" CONDUIT, TYPE C	
				156								603	06101	156	FT	15" CONDUIT, TYPE C, AS PER PLAN	316
				449								603	06701	449	FT	15" CONDUIT, TYPE F, AS PER PLAN	17
				207								603	07400	207	FT	18" CONDUIT, TYPE B, 706.02	
				50								603	96600	50	FT	CONDUIT, BORED OR JACKED, 18", TYPE B, 706.02, AS PER PLAN	17
				11								604	01700	11	EACH	CATCH BASIN, NO. 5 WITH B GRATE	
				15								604	04501	15	EACH	CATCH BASIN, NO. 2-2B, AS PER PLAN A	17
				3								604	04501	3	EACH	CATCH BASIN, NO. 2-2B, AS PER PLAN B	17
				2								604	08600	2	EACH	CATCH BASIN, MISC.: WATER QUALITY BASIN	316
				24								604	31500	24	EACH	MANHOLE, NO. 3	
																PAVEMENT	
	49300					2464						254	01000	51764	SQ YD	PAVEMENT PLANING, ASPHALT CONCRETE	
							3					301	46000	3	CU YD	ASPHALT CONCRETE BASE, PG64-22	
						13556						302	46000	13556	CU YD	ASPHALT CONCRETE BASE, PG64-22	
	5000					265						407	10000	5265	GALLON	TACK COAT	
						1996	1					407	14000	1997	GALLON	TACK COAT FOR INTERMEDIATE COURSE	
						19167	4					408	10000	19171	GALLON	PRIME COAT	
	50						1					411	10001	51	CU YD	STABILIZED CRUSHED AGGREGATE, AS PER PLAN	321
						2425						446	46040	2425	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-28	
						2109						446	50000	2109	CU YD	ASPHALT CONCRETE SURFACE COURSE, TYPE IH	
							1					448	46020	1	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG64-22	

CALCULATED JDL
CHECKED PRS

GENERAL SUMMARY

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245OGGA.DGN 9/8/04 CAR,CEO 3

SHEET NUMBER												ITEM	ITEM EXTENSION	PROJECT TOTAL	UNIT	DESCRIPTION	AS PER PLAN SHEET NO.
13-20	21-73	79-81	82	83-91	92-98	99-106	315-324	348	349-351	335-337							
																PAVEMENT CONTINUED	
		476										448	46061	476	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I, PG64-22, UNDER GURADRAIL, AS PER PLAN (THK. = 3", 5' AVG WIDTH)	13
	1700						1					448	47020	1701	CU YD	ASPHALT CONCRETE SURFACE COURSE, TYPE I, PG64-22	
						55						SPECIAL	45130000	55	FT	PRESSURE RELIEF JOINT, TYPE A	
						564						609	10000	564	FT	ASPHALT CONCRETE CURB, TYPE I	
						157						609	26000	157	FT	CURB, TYPE 6	
						25338						618	40100	25338	FT	RUMBLE STRIPS, TYPE 2 (ASPHALT CONCRETE)	
																PAVEMENT (STEEL DESIGN)	
	150					8618	165					304	20000	8933	CU YD	AGGREGATE BASE	
							1					SPECIAL	900 11000	1	EACH	RAIL ITEM, MISC.: RAILROAD GRADE CROSSING	315
																PAVEMENT (CONCRETE DESIGN)	
	150					8618	151					304	20000	8919	CU YD	AGGREGATE BASE	
							1					SPECIAL	900 11000	1	EACH	RAIL ITEM, MISC.: RAILROAD GRADE CROSSING	316
																RETAINING WALLS (SEE SHEET NO. 342)	
																STRUCTURES (OVER 20')	
																BRIDGE NO. SUM-271-0802 L & R OVER RIVERVIEW ROAD AND THE VALLEY RAILWAY	
																STEEL DESIGN (SEE SHEET NO. 375)	
																STRUCTURES (OVER 20')	
																BRIDGE NO. SUM-271-0802 L & R OVER RIVERVIEW ROAD AND THE VALLEY RAILWAY	
																CONCRETE DESIGN (SEE SHEET NO. 452)	
																STRUCTURES (OVER 20')	
																BRIDGE NO. SUM-271-0854 L & R OVER BOSTON MILLS ROAD (SEE SHEET NO. 567)	
																TRAFFIC CONTROL	
	25	7						52				620	10300	84	EACH	DELINEATOR, TYPE C, POST MOUNTED	
		2						6				620	15300	8	EACH	DELINEATOR, TYPE D, POST MOUNTED	
									4			620	40300	4	EACH	REFLECTOR, TYPE D	
									204			621	00100	204	EACH	RPM	
									157			630	02100	157	FT	GROUND MOUNTED SUPPORT, NO. 2 POST	
									204			630	03100	204	FT	GROUND MOUNTED SUPPORT, NO. 3 POST	
									69			630	06500	69	FT	GROUND MOUNTED SUPPORT, W6X9 BEAM	
									48			630	07000	48	FT	GROUND MOUNTED SUPPORT, W8X18 BEAM	
									58			630	08000	58	FT	GROUND MOUNTED SUPPORT, W12X30 BEAM	
									8			630	09000	8	EACH	BREAKAWAY BEAM CONNECTION	
									1			630	79600	1	EACH	SIGN SUPPORT ASSEMBLY, BRIDGE MOUNTED, TYPE I	
									151			630	80100	151	SQ FT	SIGN, FLAT SHEET	
									349			630	80200	349	SQ FT	SIGN, GROUND MOUNTED, EXTRUSHEET	
									8			630	84500	8	EACH	GROUND MOUNTED BEAM SUPPORT FOUNDATION	
									27			630	84900	27	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	
									2			630	85100	2	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
									4			630	85400	4	EACH	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND DISPOSAL	
									28			630	86002	28	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
									8			630	86102	8	EACH	REMOVAL OF GROUND MOUNTED BEAM SUPPORT AND DISPOSAL	
								9.28				646	10000	9.28	MILE	EDGE LINE	
								4.64				646	10100	4.64	MILE	LANE LINE	

CALCULATED JDL CHECKED PRS

GENERAL SUMMARY

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21450GGA.DGN 9/8/04 CAR,CEO 4

SHEET NUMBER												ITEM	ITEM EXTENSION	PROJECT TOTAL	UNIT	DESCRIPTION	AS PER PLAN SHEET NO.
13-20	21-73	79-81	82	83-91	92-98	99-106	315-324	348	349-351	335-337							
																MAINTENANCE OF TRAFFIC	
	160											253	01000	160	SQ YD	PAVEMENT REPAIR	
	400											410	12000	400	CU YD	TRAFFIC COMPACTED SURFACE, TYPE A OR B	
	492											410	12001	492	CU YD	TRAFFIC COMPACTED SURFACE, TYPE A OR B, AS PER PLAN	29
	715											411	10000	715	CU YD	STABILIZED CRUSHED AGGREGATE	
	4430											SPECIAL	530 00800	4430	SQ YD	STRUCTURE, MISC: PATCHING BRIDGE DECKS WITH ASPHALT	
2000												605	11000	2000	FT	6" CONSTRUCTION UNDERDRAINS	
	750											606	13000	750	FT	GUARDRAIL, TYPE 5	
	10											606	27851	10	EACH	ANCHOR ASSEMBLY REBUILT, TYPE E, AS PER PLAN	27
	130											614	11100	130	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR	
	480											614	11200	480	HOUR	LAW ENFORCEMENT OFFICER	
	54											614	11500	54	MNTH	WORKSITE TRAFFIC SUPERVISOR	
	17767											614	11600	17767	FT	TRANSITION AREA DELINEATION	
	4											614	12336	4	EACH	WORK ZONE IMPACT ATTENUATOR (UNIDIRECTIONAL)	
	LUMP											614	12420	LUMP		DETOUR SIGNING	
	5											614	12460	5	EACH	WORK ZONE MARKING SIGN	
	14											614	12470	14	EACH	WORK ZONE SPEED LIMIT SIGN	
	6											614	12480	6	EACH	CONSTRUCTION ZONE/FINES DOUBLED SIGN	
	6											614	12750	6	EACH	WORK ZONE LIGHTING SYSTEM	
	2											614	12756	2	EACH	WORK ZONE CROSSOVER LIGHTING SYSTEM	
	750											614	13000	750	CU YD	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	
	573											614	13200	573	EACH	BARRIER REFLECTOR, TYPE A	
	1896											614	13300	1896	EACH	BARRIER REFLECTOR, TYPE B	
	1111											614	13350	1111	EACH	OBJECT MARKER, ONE WAY	
	392											614	13360	392	EACH	OBJECT MARKER, TWO WAY	
	LUMP											614	18002	LUMP		MAINTAINING TRAFFIC MISC: CONTRACTOR'S ACCESS	28
	108											614	18601	108	SIGN MONTH	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	27
	1.3											614	20100	1.3	MILE	WORK ZONE LANE LINE, CLASS I, 642 PAINT	
	3.6											614	20200	3.6	MILE	WORK ZONE LANE LINE, CLASS I, 740.06, TYPE I	
	5.2											614	20400	5.2	MILE	WORK ZONE LANE LINE, CLASS II	
	7											614	22000	7	MILE	WORK ZONE EDGE LINE, CLASS I	
	2.5											614	22100	2.5	MILE	WORK ZONE EDGE LINE, CLASS I, 642 PAINT	
	7.1											614	22200	7.1	MILE	WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE I	
	LUMP											615	10000	LUMP		ROADS FOR MAINTAINING TRAFFIC	
	6611											615	20001	6611	SQ YD	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN	27
	360											616	10000	360	M GAL	WATER	
	3000											617	10100	3000	CU YD	COMPACTED AGGREGATE, TYPE A	
	118											617	25000	118	M GAL	WATER	
	14520											622	40020	14520	FT	PORTABLE CONCRETE BARRIER, 32"	
	9760											622	40021	9760	FT	PORTABLE CONCRETE BARRIER, 32", AS PER PLAN	27
	1720											622	40040	1720	FT	PORTABLE CONCRETE BARRIER, 32", BRIDGE MOUNTED	
	7.5											642	00300	7.5	MILE	CENTER LINE, TYPE I	
												614	11000	LUMP		MAINTAINING TRAFFIC	
	LUMP											614	18002	LUMP		MAINTAINING TRAFFIC MISC.: RAILROAD FLAGGER AND COORDINATION	23
												619	16020	54	MONTH	FIELD OFFICE, TYPE C	
												623	10000	LUMP		CONSTRUCTION LAYOUT STAKES	
												624	10000	LUMP		MOBILIZATION	

CALCULATED JDL
CHECKED PRS

GENERAL SUMMARY

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2145OGA.DGN 9/8/04 CAR.CED 5

SHEET NO.	REFERENCE NO.	STATION (I.R. 271 UNLESS OTHERWISE SHOWN)	OFFSET (FT.)	SIDE	202 GUARDRAIL REMOVED STEEL FT.	202 GUARDRAIL REMOVED CONC. FT.	209 LINEAR GRADING STEEL STA.	209 LINEAR GRADING CONC. STA.	209 LINEAR GRADING, AS PER PLAN STA.	448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I, PG64-22, UNDER GUARDRAIL, AS PER PLAN (THK. = 3", 5' AVG. WIDTH) C.Y.	606 GUARDRAIL, TYPE 5 STEEL FT.	606 GUARDRAIL, TYPE 5 CONC. FT.	606 GUARDRAIL, TYPE 5, AS PER PLAN FT.	606 GUARDRAIL, TYPE 5A STEEL FT.	606 GUARDRAIL, TYPE 5A CONC. FT.	606 ANCHOR ASSEMBLY, TYPE B-98 STEEL EACH	606 ANCHOR ASSEMBLY, TYPE B-98 CONC. EACH	606 ANCHOR ASSEMBLY, TYPE E-98 EACH	606 ANCHOR ASSEMBLY, TYPE T EACH	606 BRIDGE TERMINAL ASSEMBLY, TYPE 1 EACH	606 BRIDGE TERMINAL ASSEMBLY, TYPE 2 EACH	620 DELINEATOR, TYPE C, POST MOUNTED EACH	620 DELINEATOR, TYPE D, POST MOUNTED EACH	626 BARRIER REFLECTOR, TYPE A WHITE EACH	626 BARRIER REFLECTOR, TYPE A YELLOW EACH	626 BARRIER REFLECTOR, TYPE B WHITE EACH	626 BARRIER REFLECTOR, TYPE B YELLOW EACH	626 BARRIER REFLECTOR, TYPE A2 STEEL EACH	626 BARRIER REFLECTOR, TYPE A2 CONC. EACH		
PAY ITEMS ARE SHOWN SEPARATELY FOR STEEL BEAM DESIGN AND CONCRETE BEAM DESIGN WHERE A QUANTITY IS DIFFERENT BETWEEN DESIGNS																																
I.R. 271																																
121-125	1-GR	355+96.08	80	LT.																												
		356+08.58	80	LT.					0.13	0.58									1													
		357+97.00	80	LT.					1.90	8.79			189.86																			
		360+57.00	80	LT.					2.60	12.04			260														30					
		378+02.24 BK	80	LT.					17.46	80.80			1745.24																			
		1378+28.42 AH	26	LT.																												
		1384+70.82	26	LT.					6.43	29.74			642.4																			
		1385+08.32	26	LT.	2887.5	2887.5			0.38	1.74						1	1															
123,125	2-GR	374+28.90	26	LT.																												
		378+02.24 BK	26	LT.																												
		1378+28.42 AH	28	RT.																												
		1390+62.37	29	RT.	1612.50	1612.50																										
127,129	3-GR	1400+46.72	26	LT.																												
		1400+59.26	26	LT.					0.13	0.58									1													
		1405+48.37	26	LT.					4.88	22.57			487.50														6					
		1405+85.99	26	LT.	512.50	512.50			0.38	1.74						1	1															
129	4-GR	1408+95.85	31.5	RT.					0.50	2.31																						
		1412+02.10	28	RT.					2.57	11.86	256.25	256.25							1		1		1			3						
129-143	1-BR	1412+02.10 TO 1442+97.90		RT.																										32		
129-137	5-GR	2410+76.85	26	RT.					0.50	2.31																						
		2411+93.60	26	RT.					0.67	3.09	66.75	66.75							1		1											
		2421+45.60	26	RT.					9.52	44.07	952.00	952.00									1						12					
131-140	2-BR	2421+45.60 TO 2436+44.02		RT.																									15			
129-137	6-GR	2410+95.80	31	RT.																												
		2421+52.05	35	RT.	1056.25	1056.25																										
129-137	7-GR	1415+40.50	26	LT.																												
		1415+53.00	26	LT.					0.13	0.58										1												
		1419+15.00	26	LT.					3.62	16.76	362.00	362.00															7					
		1421+65.50	26						2.51	11.60	250.50	250.50										1										
131-140	3-BR	1421+65.50 TO 1437+08.65		LT.																									16			
129-137	8-GR	1415+48.60	38.8	LT.																												
		1421+98.60	44.2	LT.	650.00	650.00																										
129-137	9-GR	2415+01.85	26	LT.					0.50	2.31																						
		2421+45.60	26	LT.					5.94	27.49	593.75	593.75							1		1			1		7						
131-140	4-BR	2421+45.60 TO 2436+44.02		LT.																									16			
131,137	10-GR	2419+00.00		LT.																												
		2421+00.00		LT.	206.25	206.25																										
131,137	11-GR	1420+70.00 +/-		LT.																												
		1421+95.00 +/-		LT.	125.00	125.00																										
134,140	12-GR	2435+99.00 +/-		RT.																												
		2437+99.00 +/-		RT.	200.00	200.00																										
TOTAL CARRIED TO SHEET NO. 81					7250.00	7250.00	—	—	60.75	280.96	2481.25	2481.25	3325	—	—	2	2	3	3	3	1	2	1	55	10	31	48	—	—		

CALCULATED JL CHECKED PRS

GUARDRAIL SUBSUMMARY

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79/612

21450GSA.DGN 9/8/04 CAR,CEO,HN 1

GUARDRAIL SUBSUMMARY

CALCULATED JL CHECKED PRS

SHEET NO.	REFERENCE NO.	STATION (I.R. 271 UNLESS OTHERWISE SHOWN)	OFFSET	SIDE	202 GUARDRAIL REMOVED STEEL FT.	202 GUARDRAIL REMOVED CONC. FT.	209 LINEAR GRADING STEEL STA.	209 LINEAR GRADING CONC. STA.	209 LINEAR GRADING, AS PER PLAN STA.	448 ASPHALT CONCRETE, INTERMEDIATE COURSE TYPE I PG64-22, UNDER GUARDRAIL, AS PER PLAN (THK. = 3", 5' AVG. WIDTH) C.Y.	606 GUARDRAIL, TYPE 5 STEEL FT.	606 GUARDRAIL, TYPE 5 CONC. FT.	606 GUARDRAIL, TYPE 5, AS PER PLAN FT.	606 GUARDRAIL, TYPE 5A STEEL FT.	606 GUARDRAIL, TYPE 5A CONC. FT.	606 ANCHOR ASSEMBLY, TYPE B-98 STEEL EACH	606 ANCHOR ASSEMBLY, TYPE B-98 CONC. EACH	606 ANCHOR ASSEMBLY, TYPE E-98 EACH	606 ANCHOR ASSEMBLY, TYPE T EACH	606 BRIDGE TERMINAL ASSEMBLY, TYPE 1 EACH	606 BRIDGE TERMINAL ASSEMBLY, TYPE 2 EACH	620 DELINEATOR, TYPE C, POST MOUNTED EACH	620 DELINEATOR, TYPE D, POST MOUNTED EACH	626 BARRIER REFLECTOR, TYPE A WHITE EACH	626 BARRIER REFLECTOR, TYPE A YELLOW EACH	626 BARRIER REFLECTOR, TYPE B WHITE EACH	626 BARRIER REFLECTOR, TYPE B YELLOW EACH	626 BARRIER REFLECTOR, TYPE A2 STEEL EACH	626 BARRIER REFLECTOR, TYPE A2 CONC. EACH		
PAY ITEMS ARE SHOWN SEPARATELY FOR STEEL BEAM DESIGN AND CONCRETE BEAM DESIGN WHERE A QUANTITY IS DIFFERENT BETWEEN DESIGNS																																	
I.R. 271																																	
134,140	13-GR	2436+44.02	26	RT.					0.13	0.58											1												
		2438+06.52	26	RT.					1.50	6.94	150.00	150.00							1					3								
134,140	14-GR	2436+44.02	26	RT.					0.13	0.58																						
		2441+20.75	26	RT.					4.63	21.41	462.50	462.50							1		1				6							
134,140	15-GR	1436+95.00 +/-		LT.																												
		1439+70.00 +/-		LT.	275.00	275.00																										
134,140	16-GR	1436+95.00 +/-		LT.																												
		1438+95.00 +/-		LT.	200.00	200.00																										
134,140	17-GR	1437+08.65	26	LT.					0.50	2.31											1											
		1439+02.40	26	LT.					1.44	6.66	143.75	143.75							1				1		2							
143	18-GR	1445+46.58	26	LT.					0.13	0.58																						
		1447+74.40 BK		LT.					2.16	9.97	215.32	215.32							1													
		447+73.87 AH		LT.																												
		448+96.18	21.4	LT.	350.00	350.00			1.23	5.66	122.18	122.18									1			5								
143	5-BR	448+96.18 TO 450+81.94		LT.																												
143	19-GR	446+86.00 +/-		LT.																												
		449+53.36 +/-		RT.	268.75	268.75																										
143	20-GR	447+36.39	33.7	LT.					0.38	1.74						1	1															
		449+53.36	17.4	LT.					2.19	10.13	218.75	218.75									1				3							
143	6-BR	449+53.36 TO 451+15.38		LT.																												
143	21-GR	446+02.20	80	RT.					0.50	2.31								1					1									
		449+58.45	75.4	RT.	231.25	231.25			3.07	14.18	306.25	306.25									1			3								
143	7-BR	449+58.45 TO 451+16.19		RT.																												
143	22-GR	451+16.19	75.4	RT.					0.13	0.58											1											
		451+91.19	80	RT.	75.00	75.00			0.63	2.89	62.50	62.50								1				1								
143	23-GR	451+07.00 +/-		LT.																												
		453+70.00 +/-		RT.	275.00	275.00																										
143	24-GR	451+07.34	25.3	LT.					0.38	1.74																						
		453+25.48	8.6	LT.					1.82	8.39	181.25	181.25				1	1				1				3							
143,145	25-GR	450+81.94	75.4	LT.					0.50	2.31											1											
		454+75.69	80	LT.	318.75	318.75			3.44	15.91	343.75	343.75						1					1		4							
143	26-GR	448+15.74	23.33	LT.					0.50	2.31																						
		449+21.74	25.3	LT.					0.57	2.60	56.25	56.25						1			1				2							
143	8-BR	449+21.74 TO 451+07.34		LT.																												
143	27-GR	1442+97.90	26	RT.					0.50	2.31																						
		1445+04.15	29.56	RT.					1.57	7.23	156.25	156.25						1			1			1		2						
TOTAL CARRIED TO SHEET NO. 81					1993.75	1993.75	—	—	28.03	129.32	2418.75	2418.75	—	—	—	2	2	5	4	7	4	4	1	18	16	5	4	—	—				

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21450GSA.DGN 3/30/04 CAR,CEO,HN 2

SHEET NO.	REFERENCE NO.	STATION (I.R. 271 UNLESS OTHERWISE SHOWN)	OFFSET	SIDE	202 GUARDRAIL REMOVED STEEL FT.	202 GUARDRAIL REMOVED CONC. FT.	209 LINEAR GRADING STEEL STA.	209 LINEAR GRADING CONC. STA.	LINEAR GRADING, AS PER PLAN STA.	448 ASPHALT CONCRETE, INTERMEDIATE COURSE TYPE I PG64-22, UNDER GUARDRAIL, AS PER PLAN (THK. = 3", 5' AVG. WIDTH) C.Y.	606 GUARDRAIL, TYPE 5 STEEL FT.	606 GUARDRAIL, TYPE 5 CONC. FT.	GUARDRAIL, TYPE 5, AS PER PLAN FT.	606 GUARDRAIL, TYPE 5A STEEL FT.	606 GUARDRAIL, TYPE 5A CONC. FT.	606 ANCHOR ASSEMBLY, TYPE B-98 STEEL EACH	606 ANCHOR ASSEMBLY, TYPE B-98 CONC. EACH	606 ANCHOR ASSEMBLY, TYPE E-98 EACH	606 ANCHOR ASSEMBLY, TYPE T EACH	606 BRIDGE TERMINAL ASSEMBLY, TYPE 1 EACH	606 BRIDGE TERMINAL ASSEMBLY, TYPE 2 EACH	620 DELINEATOR, TYPE C, POST MOUNTED EACH	620 DELINEATOR, TYPE D, POST MOUNTED EACH	626 BARRIER REFLECTOR, TYPE A WHITE EACH	626 BARRIER REFLECTOR, TYPE A YELLOW EACH	626 BARRIER REFLECTOR, TYPE B WHITE EACH	626 BARRIER REFLECTOR, TYPE B YELLOW EACH	626 BARRIER REFLECTOR, TYPE A2 STEEL EACH	626 BARRIER REFLECTOR, TYPE A2 CONC. EACH
PAY ITEMS ARE SHOWN SEPARATELY FOR STEEL BEAM DESIGN AND CONCRETE BEAM DESIGN WHERE A QUANTITY IS DIFFERENT BETWEEN DESIGNS																													
I.R. 271																													
145,147	28-GR	462+00.00	78	LT.					0.63	2.89																			
		476+00.00	78	LT.	1400	1400			13.38	61.93			1512.5			1	1					1		15					
RIVERVIEW RD.																													
STEEL BEAM DESIGN																													
259	29-GR	71+25.00±		RT.	162.50		1.80																						
		73+00.00±		RT.																									
259	30-GR	71+55.00		LT.	12.50		4.00							375		1												6	
		75+55.00		LT.																									
RIVERVIEW RD.																													
CONCRETE BEAM DESIGN																													
260	29-GR	71+25.00±		RT.		162.50		3.00				162.5					2		2										5
		74+25.00±		RT.																									
260	30-GR	71+55.00		LT.		12.50		4.00				375					1												6
		75+55.00		LT.																									
TOTAL THIS SHEET					1575.00	1575.00	5.8	7.0	14.01	64.82	—	537.50	1512.5	375	—	2	4	—	2	—	—	1	—	15	—	—	—	6	11
TOTAL FROM SHEET NO. 79					7250.00	7250.00	—	—	60.75	280.96	2481.25	2481.25	3325	—	—	2	2	3	3	3	1	2	1	55	10	31	48	—	—
TOTAL FROM SHEET NO. 80					1993.75	1993.75	—	—	28.03	129.32	2418.75	2418.75	—	—	—	2	2	5	4	7	4	4	1	18	16	5	4	—	—
TOTALS					10818.75	10818.75	5.8	7.0	102.79	475.10	4900	5437.50	4837.5	375	—	6	8	8	9	10	5	7	2	88	26	36	52	6	11
TOTAL CARRIED TO GENERAL SUMMARY					10819	10819	6	7	103	476	4900	5437.50	4837.5	375	0	6	8	8	9	10	5	7	2	114		88		6	11

CALCULATED JL CHECKED PRS

GUARDRAIL SUBSUMMARY

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81/612

PERMANENT FENCE

SHEET NO.	REFERENCE NO.	STATION FROM	STATION TO	SIDE	202 FENCE REMOVED FT.	607 FENCE, TYPE 47, AS PER PLAN FT.	625 GROUND ROD (FENCE GROUNDING) EACH	FOR INFORMATION ONLY: END POST ASSEMBLY EACH	CORNER POST ASSEMBLY EACH	INTERMEDIATE ANCHOR POST ASSEMBLY EACH	ABUTMENT CONNECTION EACH
283-284	1-F	406+47.40	424+97.00	LT.	1962	2263	2	2	5	1	1
283-284	2-F	403+17.50	421+63.50	RT.	2090	2140	1		6	1	1
284	3-F	421+99.23	425+35.90	RT.	317	337	1	2			
284	4-F	422+46.86	423+82.24	RT. & LT.	232						
284	5-F	436+23.25	436+84.50	RT. & LT.	105	70					2
284-285	6-F	436+21.50	449+58.22	RT	1656	1674	1		5	1	2
284-285	7-F	436+84.50	445+18.63	LT.	954	988	1		3		1
285	8-F	447+60.39	448+91.20	LT.	240	232	1		2		1
285	9-F	449+26.50	449+51.00	LT. & RT.	60	47					2
285	10-F	448+89.61	450+77.77	LT.	246	246	1		1		1
285	11-F	450+28.22	451+17.34	RT.	207	207	1		1		1
285	12-F	451+14.73	451+10.38	RT. & LT.	58	39	1				2
TOTALS					8127	8243	10	4	23	3	14
TOTAL CARRIED TO GENERAL SUMMARY					8127	8243	10				

CONSTRUCTION FENCING

SHEET NO.	REFERENCE NO.	STATION FROM	STATION TO	SIDE	607 FENCE TYPE CL, AS PER PLAN FT.
284	1-CF	420+36.58	425+70.93	RT.	661
284	2-CF	423+48.00	424+93.45	LT.	258
284	3-CF	425+03.36	425+63.45	LT. & RT.	277
284	4-CF	425+94.76	427+67.04	LT. & RT.	676
284	5-CF	426+02.29	427+63.96	RT.	184
284	6-CF	427+73.60	431+03.07	RT.	347
284	7-CF	427+77.75	431+83.19	LT. & RT.	612
284	8-CF	432+00.50	434+78.02	LT. & RT.	1725
284	9-CF	434+94.65	437+93.35	LT. & RT.	768
TOTALS					5508
TOTAL CARRIED TO GENERAL SUMMARY					5508

WETLAND PROTECTION FENCING

SHEET NO.	REFERENCE NO.	STATION FROM	STATION TO	SIDE	WETLAND REFERENCE	607 FENCE, MISC.: WETLAND PROTECTION FENCE FT.
283	1-WP	414+08.12	415+05.33	RT.	X,W	194
283	2-WP	415+18.56	419+18.28	RT.	V	415.34
283	3-WP	416+54.90	418+96.05	LT.	T	570.14
284	4-WP	418+19.30	438+88.02	RT.	Y	180.57
285	5-WP	446+31.62	448+15.40	LT.	K	261
TOTALS						1621.05
TOTAL CARRIED TO GENERAL SUMMARY						1622

CALCULATED JL
CHECKED PRS

FENCE SUBSUMMARY

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21450SSB.DGN 10/8/04 CAR

SHEET NO.	REFERENCE NO.	STATION	OFFSET (FEET)	SIDE	STATION	OFFSET (FEET)	SIDE	202					209	601					602		603										
								PIPE REMOVED, 24" AND UNDER	PIPE REMOVED 24" AND UNDER, AS PER PLAN	MANHOLE REMOVED	CATCH BASIN REMOVED	HEADWALL REMOVED	DITCH CLEAN OUT, AS PER PLAN	RIPRAP USING 6" REINFORCED CONCRETE SLAB	ROCK CHANNEL PROTECTION, TYPE B WITH FABRIC FILTER	STEEL	CONC.	ROCK CHANNEL PROTECTION, TYPE C WITH FABRIC FILTER	STEEL	CONC.	15" CONDUIT, TYPE B		15" CONDUIT, TYPE B, AS PER PLAN		15" CONDUIT, TYPE C		15" CONDUIT, TYPE C, AS PER PLAN			
																ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER		CONCRETE MASONRY	CONCRETE MASONRY											
								FEET	FEET	EACH	EACH	EACH	FEET	SQ YD	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET		
121, 286	1-DR	356+11.37	0.48	LT	359+99.65	18.7	RT	387			1														290	290				
121, 286	2-DR	358+67.23	94.7	RT	359+09.14	96.6	RT	40																						
121, 286	1-D	359+00.00	13.5	LT	360+00.00	18.7	RT														105	105								
121, 286	1-E	357+67.77		LT	358+54.78		LT						115			42	42													
121, 286	2-D	360+00.00	18.7	RT				5			1														5	5				
121, 286	2-E	365+00.00		RT	370+70.00		RT						571			270	270													
121, 123, 287	3-D	369+99.64	17.06	RT	370+00.61	114.92	RT	43			1	1				2	2		0.27	0.27					5	5				
123, 287	3-E	371+75.00		RT	373+97.00		RT						267		160															
123, 125, 287	4-D	380+98.85	17.93	RT	380+97.87	112.3	LT	5			1														5	5				
125, 287	4-E	388+00.00		RT	390+00.00		RT						200																	
125, 127, 287	4A-E	383+00.00	18	RT	392+00.00	18	RT																							
127, 288	4B-E	395+50.00	24	RT	397+00.00	18	RT																							
127, 288	5-E	397+00.00	90	LT	400+00.00	92.17	LT																							
127, 288	6-E	399+40.00	90	RT	400+90.00	92.56	RT																							
127, 288	5-D	401+00.33	17.73	RT				10			1																			
127, 288	6-D	401+00.78	126.07	LT																										
127, 288	7-E	399+80.00		LT	401+85.00		LT						205					74												
127, 288	8-E	400+90.00	93.56	RT	403+00.00	140	RT						226					107												
127, 288	7-D	401+95.01	74.78	RT	401+95.55	176.85	RT	112				1		22					0.39	0.39										
129, 288	8-D	407+00.00	17	RT	410+00.00	17	RT																		300	300				
129, 288	8A-D	410+00.00	17	RT	413+00.00	8	RT																		301	301				
129, 288	9-D	413+00.00	8	RT	413+00.00	80	RT	56			1										72	72								
129, 288	10-D	413+00.00	108	RT	413+00.00	80	RT	31			1														28	28				
129, 288	11-D	413+00.00	80	RT	415+00.17	73.7	RT	201		1																				
129, 288	9-E	413+60.00	120	RT	415+25.00	265	RT						227					107												
129, 288	12-D	415+00.17	73.7	RT	415+14.30	191.34	RT					1	72			17	17		0.46	0.46										
129, 288	12A-D	415+50.00	0.4	RT	418+00.00	4	RT																		250	250				
129, 288	13-D	414+75.00	17.9	LT	414+75.43	91.21	LT														23	23								
129, 288	35-D	414+75.43	91.21	LT	416+60.43	74.06		5			1														5	5				
129, 288	36-D	416+60.00	61.0	LT	416+60.43	74.06	LT																		13	13				
129, 288	14-D	416+60.43	74.06	LT	416+70.35	185	LT	121				1				3	3		0.27	0.27										
131, 137, 289	37-D	418+00.00	4.0	RT	419+30.00	5.0	RT																		130	130				
131, 137, 289	15-D	419+30.00	5.0	RT	421+25.00	5.0	RT																		195	195				
131, 137, 289	17-D	421+25.00	5.0	RT	420+90.00	72	RT	170			1	1									76	76								
131, 137, 289	50-D	420+90.00	72	RT	420+00.00	200	RT						45			11	11		0.27	0.27	28	28								
131, 137, 289	16-D	419+50.00	3.27	LT	419+50.00	54	LT														38	38								
131, 137, 289	38-D	419+50.00	54	LT	419+50.00	60	LT		41																6	6				
131, 137, 289	39-D	419+50.00	60	LT	419+50.00	200	LT																		28	28				
131, 137, 289	47-D	420+60.00	3.27	LT	420+60.00	54	LT														38	38								
131, 137, 289	48-D	420+60.00	54	LT	420+60.00	60	LT		41																6	6				
131, 137, 289	49-D	419+50.00	60	LT	420+60.00	60	LT																		110	110				
TOTAL CARRIED TO SHEET NO. 89								1186	82	1	9	5	1928	22	160	345	345	288	1.66	1.66	380	380			1677	1677				

CALCULATED TM
CHECKED JDL

DRAINAGE SUBSUMMARY

SUM-271-8.02

214500S.DGN 9/8/04 CAR,HN,SJK

DRAINAGE SUBSUMMARY

CALCULATED T M
CHECKED JDL

SHEET NO.	REFERENCE NO.	STATION	OFFSET (FEET)	SIDE	STATION	OFFSET (FEET)	SIDE	603												604									
								15" CONDUIT, TYPE F, 707.05, TYPE C	STEEL 15" CONDUIT, TYPE F, AS PER PLAN	CONC. 15" CONDUIT, TYPE F, AS PER PLAN	STEEL 18" CONDUIT, TYPE B, 706.02	CONC. 18" CONDUIT, TYPE B, 706.02	18" CONDUIT, TYPE C	18" CONDUIT, TYPE C, AS PER PLAN	21" CONDUIT, TYPE C	21" CONDUIT, TYPE F, 707.05, TYPE C	24" CONDUIT, TYPE C	CONDUIT BORED OR JACKED, 15", TYPE B, AS PER PLAN	STEEL CONDUIT BORED OR JACKED, 18", TYPE B, 706.02, AS PER PLAN	CONC. CONDUIT BORED OR JACKED, 18", TYPE B, 706.02, AS PER PLAN	CATCH BASIN NO. 3A	CATCH BASIN NO. 4	CATCH BASIN NO. 5	STEEL CATCH BASIN, NO. 5 WITH B GRATE	CONC. CATCH BASIN, NO. 5 WITH B GRATE	CATCH BASIN NO. 8				
								FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	EACH	EACH	EACH	EACH	EACH	EACH				
121, 286	1-DR	356+11.37	0.48	LT	359+99.65	18.7	RT															1							
121, 286	2-DR	358+67.23	94.7	RT	359+09.14	96.6	RT																						
121, 286	1-D	359+00.00	13.5	LT	360+00.00	18.7	RT																						
121, 286	1-E	357+67.77		LT	358+54.78		LT																						
121, 286	2-D	360+00.00	18.7	RT																		1							
121, 286	2-E	365+00.00		RT	370+70.00		RT																						
121, 123, 287	3-D	369+99.64	17.06	RT	370+00.61	114.92	RT	40														1							
123, 287	3-E	371+75.00		RT	373+97.00		RT																						
123, 125, 287	4-D	380+98.85	17.93	RT	380+97.87	112.3	LT															1							
125, 287	4-E	388+00.00		RT	390+00.00		RT																						
125, 127, 287	4A-E	383+00.00	18	RT	392+00.00	18	RT																						
127, 288	4B-E	395+50.00	24	RT	397+00.00	18	RT																						
127, 288	5-E	397+00.00	90	LT	400+00.00	92.17	LT																						
127, 288	6-E	399+40.00	90	RT	400+90.00	92.56	RT																						
127, 288	5-D	401+00.33	17.73	RT									10									1							
127, 288	6-D	401+00.78	126.07	LT																									
127, 288	7-E	399+80.00		LT	401+85.00		LT																						
127, 288	8-E	400+90.00	93.56	RT	403+00.00	140	RT																						
127, 288	7-D	401+95.01	74.78	RT	401+95.55	176.85	RT									112													
129, 288	8-D	407+00.00	17	RT	410+00.00	17	RT															1							
129, 288	8A-D	410+00.00	17	RT	413+00.00	8	RT															1							
129, 288	9-D	413+00.00	8	RT	413+00.00	80	RT															1							
129, 288	10-D	413+00.00	108	RT	413+00.00	80	RT																1						
129, 288	11-D	413+00.00	80	RT	415+00.17	73.7	RT								201														
129, 288	9-E	413+60.00	120	RT	415+25.00	265	RT																						
129, 288	12-D	415+00.17	73.7	RT	415+14.30	191.34	RT																						
129, 288	12A-D	415+50.00	0.4	RT	418+00.00	4	RT																				1		
129, 288	13-D	414+75.00	17.9	LT	414+75.43	91.21	LT										50												
129, 288	35-D	414+75.43	91.21	LT	416+60.43	74.06																	1						
129, 288	36-D	416+60.00	61.0	LT	416+60.43	74.06	LT														1								
129, 288	14-D	416+60.43	74.06	LT	416+70.35	185	LT	121																					
131, 137, 289	37-D	418+00.00	4.0	RT	419+30.00	5.0	RT																				1		
131, 137, 289	15-D	419+30.00	5.0	RT	421+25.00	5.0	RT																				1		
131, 137, 289	17-D	421+25.00	5.0	RT	420+90.00	72	RT																				1		
131, 137, 289	50-D	420+90.00	72	RT	420+00.00	200	RT	104																					
131, 137, 289	16-D	419+50.00	3.27	LT	419+50.00	54	LT										53												
131, 137, 289	38-D	419+50.00	54	LT	419+50.00	60	LT														1								
131, 137, 289	39-D	419+50.00	60	LT	419+50.00	200	LT	122																					
131, 137, 289	47-D	420+60.00	3.27	LT	420+60.00	54	LT										53												
131, 137, 289	48-D	420+60.00	54	LT	420+60.00	60	LT														1								
131, 137, 289	49-D	419+50.00	60	LT	420+60.00	60	LT																						
TOTAL CARRIED TO SHEET NO. 90								387					10		201	112		156			3	8	2			4			

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612

2145ODS.DGN 9/8/04 CAR,HN,SJK

DRAINAGE SUBSUMMARY

CALCULATED TM CHECKED JDL

SHEET NO.	REFERENCE NO.	STATION	OFFSET (FEET)	SIDE	STATION	OFFSET (FEET)	SIDE	604											660		661		670		BENDS					
								STEEL	CONC.	STEEL	CONC.	STEEL	CONC.			STEEL	CONC.		STEEL	CONC.	STEEL	CONC.	STEEL	CONC.	STEEL	CONC.		STEEL	CONC.	
								CATCH BASIN NO. 2-2B, AS PER PLAN A	CATCH BASIN NO. 2-2B, AS PER PLAN A	CATCH BASIN NO. 2-2B, AS PER PLAN B	CATCH BASIN NO. 2-2B, AS PER PLAN B	CATCH BASIN MISC.: WATER QUALITY BASIN	CATCH BASIN MISC.: WATER QUALITY BASIN	CATCH BASIN MISC: RETAINING WALL CATCH BASIN	CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN	MANHOLE NO. 3	MANHOLE NO. 3	MANHOLE RECONSTRUCTED TO GRADE	SODDING REINFORCED	SODDING REINFORCED	PLANTING MISC.: DETENTION POND PLANTING	PLANTING MISC.: DETENTION POND PLANTING	DITCH EROSION PROTECTION	DITCH EROSION PROTECTION	15" - 22.5° BEND	15" - 22.5° BEND	21" - 22.5° BEND	CONCRETE COLLAR	CONCRETE COLLAR	
								EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	SQ YD	SQ YD	SQ YD	SQ YD	SQ YD	SQ YD	EACH	EACH	EACH	EACH	EACH	
121, 286	1-DR	356+11.37	0.48	LT	359+99.65	18.7	RT																125	125						
121, 286	2-DR	358+67.23	94.7	RT	359+09.14	96.6	RT																							
121, 286	1-D	359+00.00	13.5	LT	360+00.00	18.7	RT																							
121, 286	1-E	357+67.77		LT	358+54.78		LT																							
121, 286	2-D	360+00.00	18.7	RT																			125	125				1	1	
121, 286	2-E	365+00.00		RT	370+70.00		RT																							
121, 123, 287	3-D	369+99.64	17.06	RT	370+00.61	114.92	RT																667	667	1	1		2	2	
123, 287	3-E	371+75.00		RT	373+97.00		RT																							
123, 125, 287	4-D	380+98.85	17.93	RT	380+97.87	112.3	LT																584	584				1	1	
125, 287	4-E	388+00.00		RT	390+00.00		RT																167	167						
125, 127, 287	4A-E	383+00.00	18	RT	392+00.00	18	RT																750	750						
127, 288	4B-E	395+50.00	24	RT	397+00.00	18	RT																125	125						
127, 288	5-E	397+00.00	90	LT	400+00.00	92.17	LT																250	250						
127, 288	6-E	399+40.00	90	RT	400+90.00	92.56	RT																125	125						
127, 288	5-D	401+00.33	17.73	RT																			125	125				2	2	
127, 288	6-D	401+00.78	126.07	LT											1								84	84						
127, 288	7-E	399+80.00		LT	401+85.00		LT																							
127, 288	8-E	400+90.00	93.56	RT	403+00.00	140	RT																							
127, 288	7-D	401+95.01	74.78	RT	401+95.55	176.85	RT																				2			
129, 288	8-D	407+00.00	17	RT	410+00.00	17	RT																334	334						
129, 288	8A-D	410+00.00	17	RT	413+00.00	8	RT																125	125						
129, 288	9-D	413+00.00	8	RT	413+00.00	80	RT																125	125						
129, 288	10-D	413+00.00	108	RT	413+00.00	80	RT																125	125						
129, 288	11-D	413+00.00	80	RT	415+00.17	73.7	RT									1	1													
129, 288	9-E	413+60.00	120	RT	415+25.00	265	RT																							
129, 288	12-D	415+00.17	73.7	RT	415+14.30	191.34	RT											1												
129, 288	12A-D	415+50.00	0.4	RT	418+00.00	4	RT																125	125						
129, 288	13-D	414+75.00	17.9	LT	414+75.43	91.21	LT							1																
129, 288	35-D	414+75.43	91.21	LT	416+60.43	74.06	LT																125	125				1	1	
129, 288	36-D	416+60.00	61	LT	416+60.43	74.06	LT																							
129, 288	14-D	416+60.43	74.06	LT	416+70.35	185	LT											1							2	2				
131, 137, 289	37-D	418+00.00	4.0	RT	419+30.00	5.0	RT																125	125						
131, 137, 289	15-D	419+30.00	5.0	RT	421+25.00	5.0	RT																109	109						
131, 137, 289	17-D	421+25.00	5.0	RT	420+90.00	72	RT																125	125						
131, 137, 289	50-D	420+90.00	72	RT	420+00.00	200	RT									1	1								2	2				
131, 137, 289	16-D	419+50.00	3.27	LT	419+50.00	54	LT							1																
131, 137, 289	38-D	419+50.00	54	LT	419+50.00	60	LT																							
131, 137, 289	39-D	419+50.00	60	LT	419+50.00	200	LT									1	1								2	2		1	1	
131, 137, 289	47-D	420+60.00	3.27	LT	420+60.00	54	LT							1																
131, 137, 289	48-D	420+60.00	54	LT	420+60.00	60	LT																							
131, 137, 289	49-D	419+50.00	60	LT	420+60.00	60	LT									1	1													
TOTAL CARRIED TO SHEET NO. 91														3	1	4	4	2					4445	4445	7	7	2	8	8	

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21450DS.DGN 03/31/04 CAR,HN,SJK

SHEET NO.	REFERENCE NO.	STATION	OFFSET (FEET)	SIDE	STATION	OFFSET (FEET)	SIDE	202					209	601					602		603									
								PIPE REMOVED, 24" AND UNDER	PIPE REMOVED 24" AND UNDER, AS PER PLAN	MANHOLE REMOVED	CATCH BASIN REMOVED	HEADWALL REMOVED	DITCH CLEAN OUT, AS PER PLAN	RIPRAP USING 6" REINFORCED CONCRETE SLAB	ROCK CHANNEL PROTECTION, TYPE B WITH FABRIC FILTER	STEEL	CONC.		STEEL	CONC.	STEEL	CONC.	STEEL	CONC.	STEEL	CONC.	STEEL	CONC.		
																ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	ROCK CHANNEL PROTECTION, TYPE C WITH FABRIC FILTER	CONCRETE MASONRY	CONCRETE MASONRY	15" CONDUIT, TYPE B	15" CONDUIT, TYPE B	15" CONDUIT, TYPE B, AS PER PLAN	15" CONDUIT, TYPE B, AS PER PLAN	15" CONDUIT, TYPE C	15" CONDUIT, TYPE C	15" CONDUIT, TYPE C, AS PER PLAN	15" CONDUIT, TYPE C, AS PER PLAN		
								FEET	FEET	EACH	EACH	EACH	FEET	SQ YD	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET		
131, 137, 289	18-D	421+48.00	3.27	LT	421+48.00	54	LT														38	38								
131, 137, 289	51-D	421+48.00	54	LT	421+48.00	60	LT		40																6	6				
131, 137, 289	52-D	420+60.00	60	LT	421+48.00	60	LT																		88	88				
131, 137, 289	40-D	419+05.00	190	LT	419+50.00	200	LT																				46	46		
131, 137, 289	41-D	419+50.00	200	LT	420+00.00	215.5	LT																							
131, 137, 289	42-D	420+00.00	215.5	LT	420+32.94	225	LT																							
289, 336	43-D*	420+32.94	225	LT	420+75.00	240	LT																							
289, 336	44-D*	420+75.00	240	LT	421+18.00	262.5	LT																							
289, 336	45-D*	421+18.00	262.5	LT	421+75.00	286	LT																							
289, 336	46-D*	421+75.00	286	LT	422+00.00	285	LT																							
134, 140, 289	19-D	436+62.00	62	RT	436+62.00	10	RT														52	52								
134, 140, 289	20-D	436+62.00	10	RT	437+05.00	5	RT																		44	44				
134, 140, 289	21-D	437+05.00	5	RT	439+00.00	5	RT																		195	195				
134, 140, 289	23-D	437+27.00	3.27	LT	437+35.30	54	LT														30	30								
134, 140, 289	22-D	437+35.30	54	LT	437+40.00	82	LT		10												10	10								
134, 140, 289	53-D	437+40.00	82	LT	441+00.00	80	LT																		360	360				
134, 140, 289	54-D	439+00.00	5	RT	440+90.00	5	RT																		190	190				
134, 140, 289	21A-D	440+90.00	5	RT	444+00.00	16	RT																		310	310				
134, 140, 289	24-D	441+00.00	7	LT	441+00.00	80	RT														23	23								
134, 140, 289	55-D	441+00.00	80	LT	442+90.00	80	LT																		190	190				
143, 291	25-D	442+90.00	16.5	LT	442+90.00	80	LT														14	14								
143, 291	56-D	442+90.00	80	LT	445+00.00	100	LT																		211	211				
143, 291	28-D	444+00.00	92	RT				5			1																			
143, 291	27-D	444+00.00	16	RT				10			1																			
143, 291	26-D	445+00.00	100	LT	446+00.00	122	LT												0.27	0.27					103	103				
143, 291	29-D	446+04.30	117.47	LT	446+04.93	138	LT	15		1						6	6								5	5				
143, 291	29A-D	444+50.00	18	RT	447+50.00	18	RT																							
143, 291	29B-D	446+00.71	0.35	RT	447+00.00	15	LT																		101	101				
143, 291	57-D	447+00.00	15	LT	448+85.00	0																			185	185				
143, 291	30-D	448+85.54	25.34	LT	448+85.00	0																			25	25				
143, 291	58-D	448+58.53	75.34	RT	448+85.54	25.34	LT														57	57								
143, 291	59-D	448+85.00	0		449+16.26	36.66	RT																		49	49				
143, 291	60-D	449+16.26	36.66	RT	449+21.39	75.34	RT														39	39								
143, 291	10-E	450+60.00	116	RT	460+40.00	110	RT						158		124															
143, 291	31-D	451+47.30	114.21	LT	451+48.20	0.79	RT	5			1	1	161		97				0.27	0.27					5	5				
143, 291	32-D	451+48.20	0.79	RT	453+00.00	5	RT	153			1														153	153				
145, 291	32A-D	453+00.00	5	RT	455+00.00	5	RT																		200	200				
145, 291	33-D	455+00.00	5	RT	459+00.00	2	LT														200	200			200	200				
145, 291	34-D	463+00.00	0.63	LT				5			1					4	4								5	5				

* ALL QUANTITIES EXCEPT ITEM 670 CARRIED ON CULVERT DETAIL SHEET 336

TOTAL CARRIED TO SHEET NO. 89								193	50	1	5	1	319		221	10	10		0.54	0.54	463	463			2625	2625	46	46		

CALCULATED TM CHECKED JDL

DRAINAGE SUBSUMMARY

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21450DS.DGN 03/31/04 CAR,HN,SJK

SHEET NO.	REFERENCE NO.	STATION	OFFSET (FEET)	SIDE	STATION	OFFSET (FEET)	SIDE	603													604									
								15" CONDUIT, TYPE F, 707.05, TYPE C	STEEL	CONC.	STEEL	CONC.	18" CONDUIT, TYPE C	18" CONDUIT, TYPE C, AS PER PLAN	21" CONDUIT, TYPE C	21" CONDUIT, TYPE F, 707.05, TYPE C	24" CONDUIT, TYPE C	CONDUIT BORED OR JACKED, 15", TYPE B, AS PER PLAN	STEEL	CONC.	CATCH BASIN NO. 3A	CATCH BASIN NO. 4	CATCH BASIN NO. 5	STEEL	CONC.	CATCH BASIN NO. 8				
									15" CONDUIT, TYPE F, AS PER PLAN	15" CONDUIT, TYPE F, AS PER PLAN	18" CONDUIT, TYPE B, 706.02	18" CONDUIT, TYPE B, 706.02		18" CONDUIT, TYPE C, AS PER PLAN	21" CONDUIT, TYPE C	21" CONDUIT, TYPE F, 707.05, TYPE C			CONDUIT BORED OR JACKED, 18", TYPE B, 706.02, AS PER PLAN	CONDUIT BORED OR JACKED, 18", TYPE B, 706.02, AS PER PLAN				CATCH BASIN, NO. 5 WITH B GRATE	CATCH BASIN, NO. 5 WITH B GRATE						
								FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	EACH	EACH	EACH	EACH	EACH	EACH				
131, 137, 289	18-D	421+48.00	3.27	LT	421+48.00	54	LT											52												
131, 137, 289	51-D	421+48.00	54	LT	421+48.00	60	LT														1									
131, 137, 289	52-D	420+60.00	60	LT	421+48.00	60	LT																							
131, 137, 289	40-D	419+05.00	190	LT	419+50.00	200	LT															1								
131, 137, 289	41-D	419+50.00	200	LT	420+00.00	215.5	LT							53									1							
131, 137, 289	42-D	420+00.00	215.5	LT	420+32.94	225	LT							35									1							
289, 336	43-D*	420+32.94	225	LT	420+75.00	240	LT																							
289, 336	44-D*	420+75.00	240	LT	421+18.00	262.5	LT																							
289, 336	45-D*	421+18.00	262.5	LT	421+75.00	286	LT																							
289, 336	46-D*	421+75.00	286	LT	422+00.00	285	LT																							
134, 140, 289	19-D	436+62.00	62	RT	436+62.00	10	RT														1									
134, 140, 289	20-D	436+62.00	10	RT	437+05.00	5	RT														1									
134, 140, 289	21-D	437+05.00	5	RT	439+00.00	5	RT																				1			
134, 140, 289	23-D	437+27.00	3.27	LT	437+35.30	54	LT											51												
134, 140, 289	22-D	437+35.30	54	LT	437+40.00	82	LT														1									
134, 140, 289	53-D	437+40.00	82	LT	441+00.00	80	LT																							
134, 140, 289	54-D	439+00.00	5	RT	440+90.00	5	RT																				1			
134, 140, 289	21A-D	440+90.00	5	RT	444+00.00	16	RT																				1			
134, 140, 289	24-D	441+00.00	7	LT	441+00.00	80	RT											50												
134, 140, 289	55-D	441+00.00	80	LT	442+90.00	80	LT																							
143, 291	25-D	442+90.00	16.5	LT	442+90.00	80	LT											50												
143, 291	56-D	442+90.00	80	LT	445+00.00	100	LT																							
143, 291	28-D	444+00.00	92	RT													5				1								
143, 291	27-D	444+00.00	16	RT													10				1								
143, 291	26-D	445+00.00	100	LT	446+00.00	122	LT																1							
143, 291	29-D	446+04.30	117.47	LT	446+04.93	138	LT										10													
143, 291	29A-D	444+50.00	18	RT	447+50.00	18	RT																							
143, 291	29B-D	446+00.71	0.35	RT	447+00.00	15	LT																							
143, 291	57-D	447+00.00	15	LT	448+85.00	0																1								
143, 291	30-D	448+85.54	25.34	LT	448+85.00	0															1									
143, 291	58-D	448+58.53	75.34	RT	448+85.54	25.34	LT														1									
143, 291	59-D	448+85.00	0		449+16.26	36.66	RT														1									
143, 291	60-D	449+16.26	36.66	RT	449+21.39	75.34	RT														1									
143, 291	10-E	450+60.00	116	RT	460+40.00	110	RT																							
143, 291	31-D	451+47.30	114.21	LT	451+48.20	0.79	RT															1								
143, 291	32-D	451+48.20	0.79	RT	453+00.00	5	RT															1								
145, 291	32A-D	453+00.00	5	RT	455+00.00	5	RT															1								
145, 291	33-D	455+00.00	5	RT	459+00.00	2	LT															1								
145, 291	34-D	463+00.00	0.63	LT																		1								
* ALL QUANTITIES EXCEPT ITEM 670 CARRIED ON CULVERT DETAIL SHEET 336																														
TOTAL CARRIED TO SHEET NO. 90														88			25	203			8	9	3			3				

CALCULATED TM CHECKED JDL

DRAINAGE SUBSUMMARY

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2145DS.DGN 9/8/04 CAR,HN,SJK

DRAINAGE SUBSUMMARY

CALCULATED T.M. CHECKED JDL

SHEET NO.	REFERENCE NO.	STATION	OFFSET (FEET)	SIDE	STATION	OFFSET (FEET)	SIDE	604											660		661		670		BENDS					
								STEEL	CONC.	STEEL	CONC.	STEEL	CONC.			STEEL	CONC.		STEEL	CONC.	STEEL	CONC.	STEEL	CONC.	STEEL	CONC.		STEEL	CONC.	
								CATCH BASIN NO. 2-2B, AS PER PLAN A	CATCH BASIN NO. 2-2B, AS PER PLAN A	CATCH BASIN NO. 2-2B, AS PER PLAN B	CATCH BASIN NO. 2-2B, AS PER PLAN B	CATCH BASIN MISC.: WATER QUALITY BASIN	CATCH BASIN MISC.: WATER QUALITY BASIN	CATCH BASIN MISC: RETAINING WALL CATCH BASIN	CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN	MANHOLE NO. 3	MANHOLE NO. 3	MANHOLE RECONSTRUCTED TO GRADE	SODDING REINFORCED	SODDING REINFORCED	PLANTING MISC.: DETENTION POND PLANTING	PLANTING MISC.: DETENTION POND PLANTING	DITCH EROSION PROTECTION	DITCH EROSION PROTECTION	15" - 22.5° BEND	15" - 22.5° BEND	21" - 22.5° BEND	CONCRETE COLLAR	CONCRETE COLLAR	
								EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	SQ YD	SQ YD	SQ YD	SQ YD	SQ YD	SQ YD	EACH	EACH	EACH	EACH	EACH	
131, 137, 289	18-D	421+48.00	3.27	LT	421+48.00	54	LT																							
131, 137, 289	51-D	421+48.00	54	LT	421+48.00	60	LT							1																
131, 137, 289	52-D	420+60.00	60	LT	421+48.00	60	LT									1	1													
131, 137, 289	40-D	419+05.00	190	LT	419+50.00	200	LT																							
131, 137, 289	41-D	419+50.00	200	LT	420+00.00	215.5	LT																38	38						
131, 137, 289	42-D	420+00.00	215.5	LT	420+32.94	225	LT																40	40						
289, 336	43-D*	420+32.94	225	LT	420+75.00	240	LT																30	30						
289, 336	44-D*	420+75.00	240	LT	421+18.00	262.5	LT																38	38						
289, 336	45-D*	421+18.00	262.5	LT	421+75.00	286	LT																42	42						
289, 336	46-D*	421+75.00	286	LT	422+00.00	285	LT																50	50						
134, 140, 289	19-D	436+62.00	62	RT	436+62.00	10	RT																							
134, 140, 289	20-D	436+62.00	10	RT	437+05.00	5	RT																							
134, 140, 289	21-D	437+05.00	5	RT	439+00.00	5	RT																							
134, 140, 289	23-D	437+27.00	3.27	LT	437+35.30	54	LT							1																
134, 140, 289	22-D	437+35.30	54	LT	437+40.00	82	LT																							
134, 140, 289	53-D	437+40.00	82	LT	441+00.00	80	LT									2	2													
134, 140, 289	54-D	439+00.00	5	RT	440+90.00	5	RT																125	125						
134, 140, 289	21A-D	440+90.00	5	RT	444+00.00	16	RT																125	125						
134, 140, 289	24-D	441+00.00	7	LT	441+00.00	80	RT							1																
134, 140, 289	55-D	441+00.00	80	LT	442+90.00	80	LT									1	1													
143, 291	25-D	442+90.00	16.5	LT	442+90.00	80	LT							1																
143, 291	56-D	442+90.00	80	LT	445+00.00	100	LT									1	1													
143, 291	28-D	444+00.00	92	RT																			125	125				1	1	
143, 291	27-D	444+00.00	16	RT																			125	125				2	2	
143, 291	26-D	445+00.00	100	LT	446+00.00	122	LT																125	125						
143, 291	29-D	446+04.30	117.47	LT	446+04.93	138	LT									1	1												3	3
143, 291	29A-D	444+50.00	18	RT	447+50.00	18	RT																250	250						
143, 291	29B-D	446+00.71	0.35	RT	447+00.00	15	LT									1	1													
143, 291	57-D	447+00.00	15	LT	448+85.00	0																	125	125						
143, 291	30-D	448+85.54	25.34	LT	448+85.00	0																								
143, 291	58-D	448+58.53	75.34	RT	448+85.54	25.34	LT																							
143, 291	59-D	448+85.00	0		449+16.26	36.66	RT																							
143, 291	60-D	449+16.26	36.66	RT	449+21.39	75.34	RT																							
143, 291	10-E	450+60.00	116	RT	460+40.00	110	RT																							
143, 291	31-D	451+47.30	114.21	LT	451+48.20	0.79	RT																125	125				1	1	
143, 291	32-D	451+48.20	0.79	RT	453+00.00	5	RT																125	125						
145, 291	32A-D	453+00.00	5	RT	455+00.00	5	RT																125	125						
145, 291	33-D	455+00.00	5	RT	459+00.00	2	LT																125	125						
145, 291	34-D	463+00.00	0.63	LT																			125	125				1	1	

* ALL QUANTITIES EXCEPT ITEM 670 CARRIED ON CULVERT DETAIL SHEET 336

TOTAL CARRIED TO SHEET NO. 91														4		7	7						1863	1863				8	8	

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2145ODS.DGN 03/31/04 CAR,HN,SJK

SHEET NO.	REFERENCE NO.	STATION	OFFSET (FEET)	SIDE	STATION	OFFSET (FEET)	SIDE	202 PIPE REMOVED, 24" AND UNDER	202 PIPE REMOVED 24" AND UNDER, AS PER PLAN	202 MANHOLE REMOVED	202 CATCH BASIN REMOVED	202 HEADWALL REMOVED	209 DITCH CLEAN OUT, AS PER PLAN	601 RIPRAP USING 6" REINFORCED CONCRETE SLAB	601 ROCK CHANNEL PROTECTION, TYPE B WITH FABRIC FILTER	601 STEEL ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	601 CONC. ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	601 ROCK CHANNEL PROTECTION, TYPE C WITH FABRIC FILTER	602 STEEL CONCRETE MASONRY	602 CONC. CONCRETE MASONRY	603 STEEL 15" CONDUIT, TYPE B	603 CONC. 15" CONDUIT, TYPE B	603 STEEL 15" CONDUIT, TYPE B, AS PER PLAN	603 CONC. 15" CONDUIT, TYPE B, AS PER PLAN	603 STEEL 15" CONDUIT, TYPE C	603 CONC. 15" CONDUIT, TYPE C	603 STEEL 15" CONDUIT, TYPE C, AS PER PLAN	603 CONC. 15" CONDUIT, TYPE C, AS PER PLAN			
								FEET	FEET	EACH	EACH	EACH	FEET	SQ YD	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET			
DRAINAGE UNDER CUYAHOGA RIVER VALLEY BRIDGE (STEEL DESIGN)																															
300	1-DT	422+75.00	2	LT	423+19.25	16	LT																								
300	2-DT	423+19.25	16	LT	423+51.25	16	LT																				78				
300	3-DT	423+51.25	16	LT	424+00.00	16	LT																				52				
300	4-DT	424+00.00	16	LT	424+88.92	16	LT																				52				
300	5-DT	424+88.92	16	LT	425+05.08	16	LT																				78				
300	6-DT	425+05.08	16	LT	427+30.00	16	LT															225					59				
300	7-DT	427+30.00	16	LT	429+60.00	16	LT															63									
300	8-DT	429+60.00	16	LT	430+18.00	16	LT															63									
309	1-SDB															63			0.27								58				
310	2-SDB															14			0.27								22				
300	9-DT	433+69.00	0	LT	434+25.00	20	RT																	60			65				
300	10-DT	434+25.00	20	RT	434+83.42	16	LT																				78				
300	11-DT	434+83.42	16	LT	435+30.42	16	LT																				52				
300	12-DT	435+30.42	16	LT	435+78.00	40	LT																								
DRAINAGE UNDER CUYAHOGA RIVER VALLEY BRIDGE (CONCRETE DESIGN)																															
304	1-DC	422+50.00	47.75	RT	422+94.75	47.75	RT																								
304	2-DC	422+84.08	16.25	LT	423+20.00	16.25	LT																				51				
304	3-DC	422+94.75	47.75	RT	423+20.00	16.25	LT																				88				
304	4-DC	423+20.00	16.25	LT	423+44.00	16.25	LT																								
304	5-DC	423+44.00	16.25	LT	424+05.92	16.25	LT																				51				
304	6-DC	424+05.92	16.25	LT	424+26.08	16.25	LT																				78				
304	7-DC	424+26.08	16.25	LT	425+11.58	16.25	LT																				51				
304	8-DC	425+00.00	4.00	RT	425+11.58	16.25	LT																				24				
304	9-DC	425+11.58	16.25	LT	425+81.42	16.25	LT															70					78				
304	10-DC	425+81.42	16.25	LT	427+30.00	16.25	LT															200									
304	11-DC	427+30.00	16.25	LT	429+45.00	16.25	LT															64									
304	12-DC	429+45.00	16.25	LT	429+87.00	16.25	LT															64									
311	1-CDB																52			0.27								88		
312	2-CDB																14			0.27								22		
304	13-DC	433+69.00	0	CL	434+25.00	20	RT																	60			65				
304	14-DC	434+25.00	20	RT	434+96.92	16.25	LT																				78				
304	15-DC	434+24.92	16.25	LT	435+24.92	16.25	LT																				51				
304	16-DC	435+24.92	16.25	LT	435+88.75	16.25	LT																				53				
TOTALS THIS SHEET																77	66		0.54	0.54	351	398	60	60	514	668	80	110			
TOTALS FROM SHEET NO. 83								1186	82	1	9	5	1928	22	160	345	345	288	1.66	1.66	380	380			1677	1677					
TOTALS FROM SHEET NO. 86								193	50	1	5	1	319		221	10	10		0.54	0.54	463	463			2625	2625	46	46			
SUBTOTAL								1379	132	2	14	6	2247	22	381	432	421	288	2.74	2.74	1194	1241	60	60	4816	4970	126	156			
TOTALS CARRIED TO GENERAL SUMMARY								1379	132	2	14	6	2247	22	381	432	421	288	2.8	2.8	1194	1241	60	60	4816	4970	126	156			

CALCULATED TM
CHECKED JDL

DRAINAGE SUBSUMMARY

SUM-271-8.02

21450DS.DGN 9/8/04 CAR,HN,SJK

SHEET NO.	REFERENCE NO.	STATION	OFFSET (FEET)	SIDE	STATION	OFFSET (FEET)	SIDE	603												604										
								15" CONDUIT, TYPE F, 707.05, TYPE C	STEEL 15" CONDUIT, TYPE F, AS PER PLAN	CONC. 15" CONDUIT, TYPE F, AS PER PLAN	STEEL 18" CONDUIT, TYPE B, 706.02	CONC. 18" CONDUIT, TYPE B, 706.02	18" CONDUIT, TYPE C	18" CONDUIT, TYPE C, AS PER PLAN	21" CONDUIT, TYPE C	21" CONDUIT, TYPE F, 707.05, TYPE C	24" CONDUIT, TYPE C	CONDUIT, BORED OR JACKED, 15", TYPE B, AS PER PLAN	STEEL CONDUIT BORED OR JACKED, 18", TYPE B, 706.02, AS PER PLAN	CONC. CONDUIT BORED OR JACKED, 18", TYPE B, 706.02, AS PER PLAN	CATCH BASIN NO. 3A	CATCH BASIN NO. 4	CATCH BASIN NO. 5	STEEL CATCH BASIN, NO. 5 WITH B GRATE	CONC. CATCH BASIN, NO. 5 WITH B GRATE	CATCH BASIN NO. 8						
								FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	EACH	EACH	EACH	EACH	EACH	EACH					
DRAINAGE UNDER CUYAHOGA RIVER VALLEY BRIDGE (STEEL DESIGN)																														
300	1-DT	422+75.00	2	LT	423+19.25	16	LT		47															1						
300	2-DT	423+19.25	16	LT	423+51.25	16	LT		32																					
300	3-DT	423+51.25	16	LT	424+00.00	16	LT		49																					
300	4-DT	424+00.00	16	LT	424+88.92	16	LT		89															2						
300	5-DT	424+88.92	16	LT	425+05.08	16	LT		17																					
300	6-DT	425+05.08	16	LT	427+30.00	16	LT																	1						
300	7-DT	427+30.00	16	LT	429+60.00	16	LT				180								50					2						
300	8-DT	429+60.00	16	LT	430+18.00	16	LT				58													2						
309	1-SDB																													
310	2-SDB																													
300	9-DT	433+69.00	0	LT	434+25.00	20	RT																	2						
300	10-DT	434+25.00	20	RT	434+83.42	16	LT		69																					
300	11-DT	434+83.42	16	LT	435+30.42	16	LT		47															1						
300	12-DT	435+30.42	16	LT	435+78.00	40	LT		54															1						
DRAINAGE UNDER CUYAHOGA RIVER VALLEY BRIDGE (CONCRETE DESIGN)																														
304	1-DC	422+50.00	47.75	RT	422+94.75	47.75	RT			46														1						
304	2-DC	422+84.08	16.25	LT	423+20.00	16.25	LT			37																				
304	3-DC	422+94.75	47.75	RT	423+20.00	16.25	LT																							
304	4-DC	423+20.00	16.25	LT	423+44.00	16.25	LT			24																				
304	5-DC	423+44.00	16.25	LT	424+05.92	16.25	LT			63														2						
304	6-DC	424+05.92	16.25	LT	424+26.08	16.25	LT			20																				
304	7-DC	424+26.08	16.25	LT	425+11.58	16.25	LT			86																				
304	8-DC	425+00.00	4.00	RT	425+11.58	16.25	LT																	1						
304	9-DC	425+11.58	16.25	LT	425+81.42	16.25	LT																							
304	10-DC	425+81.42	16.25	LT	427+30.00	16.25	LT																							
304	11-DC	427+30.00	16.25	LT	429+45.00	16.25	LT					165								50				2						
304	12-DC	429+45.00	16.25	LT	429+87.00	16.25	LT					42												2						
311	1-CDB																													
312	2-CDB																													
304	13-DC	433+69.00	0	CL	434+25.00	20	RT																	2						
304	14-DC	434+25.00	20	RT	434+96.92	16.25	LT			81																				
304	15-DC	434+24.92	16.25	LT	435+24.92	16.25	LT			28														1						
304	16-DC	435+24.92	16.25	LT	435+88.75	16.25	LT			64																				
TOTALS THIS SHEET									404	449	238	207							50	50				12	11					
TOTALS FROM SHEET NO. 84								387					10		201	112		156			3	8	2			4				
TOTALS FROM SHEET NO. 87														88			25	203			8	9	3			3				
SUBTOTAL								387	404	449	238	207	10	88	201	112	25	359	50	50	11	17	5	12	11	7				
TOTALS CARRIED TO GENERAL SUMMARY								387	404	449	238	207	10	88	201	112	25	359	50	50	11	17	5	12	11	7				

CALCULATED TM
CHECKED JDL

DRAINAGE SUBSUMMARY

SUM-271-8.02

9/8/04 CAR.HN.SJK
2I450DS.DGN

DRAINAGE SUBSUMMARY

CALCULATED TM
CHECKED JDL

SHEET NO.	REFERENCE NO.	STATION	OFFSET (FEET)	SIDE	STATION	OFFSET (FEET)	SIDE	604 STEEL EACH: CATCH BASIN NO. 2-2B, AS PER PLAN A	604 CONC. EACH: CATCH BASIN NO. 2-2B, AS PER PLAN A	604 STEEL EACH: CATCH BASIN NO. 2-2B, AS PER PLAN B	604 CONC. EACH: CATCH BASIN NO. 2-2B, AS PER PLAN B	604 STEEL EACH: CATCH BASIN MISC.: WATER QUALITY BASIN	604 CONC. EACH: CATCH BASIN MISC.: WATER QUALITY BASIN	604 STEEL EACH: CATCH BASIN MISC: RETAINING WALL CATCH BASIN	604 CONC. EACH: CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN	604 STEEL EACH: MANHOLE NO. 3	604 CONC. EACH: MANHOLE NO. 3	604 EACH: MANHOLE RECONSTRUCTED TO GRADE	660 STEEL SQ YD: SODDING REINFORCED	660 CONC. SQ YD: SODDING REINFORCED	661 STEEL SQ YD: PLANTING MISC.: DETENTION BASIN PLANTING	661 CONC. SQ YD: PLANTING MISC.: DETENTION BASIN PLANTING	670 STEEL SQ YD: DITCH EROSION PROTECTION	670 CONC. SQ YD: DITCH EROSION PROTECTION	BENDS STEEL EACH: 15" - 22.5° BEND	BENDS CONC. EACH: 15" - 22.5° BEND	BENDS EACH: 21" - 22.5° BEND	BENDS STEEL EACH: CONCRETE COLLAR	BENDS CONC. EACH: CONCRETE COLLAR
DRAINAGE UNDER CUYAHOGA RIVER VALLEY BRIDGE (STEEL DESIGN)																														
300	1-DT	422+75.00	2	LT	423+19.25	16	LT																			2				
300	2-DT	423+19.25	16	LT	423+51.25	16	LT			2						1										2				
300	3-DT	423+51.25	16	LT	424+00.00	16	LT			2						1										2				
300	4-DT	424+00.00	16	LT	424+88.92	16	LT									1								101		2				
300	5-DT	424+88.92	16	LT	425+05.08	16	LT	2								1										2				
300	6-DT	425+05.08	16	LT	427+30.00	16	LT	2								1								210						
300	7-DT	427+30.00	16	LT	429+60.00	16	LT									1								372						
300	8-DT	429+60.00	16	LT	430+18.00	16	LT									1														
309	1-SDB											1							34		427									
310	2-SDB											1							31		270									
300	9-DT	433+69.00	0	LT	434+25.00	20	RT									1								46						
300	10-DT	434+25.00	20	RT	434+83.42	16	LT	2								1										2				
300	11-DT	434+83.42	16	LT	435+30.42	16	LT	2																		2				
300	12-DT	435+30.42	16	LT	435+78.00	40	LT																			2				
DRAINAGE UNDER CUYAHOGA RIVER VALLEY BRIDGE (CONCRETE DESIGN)																														
304	1-DC	422+50.00	47.75	RT	422+94.75	47.75	RT																				2				
304	2-DC	422+84.08	16.25	LT	423+20.00	16.25	LT		2									1									2				
304	3-DC	422+94.75	47.75	RT	423+20.00	16.25	LT				2							1													
304	4-DC	423+20.00	16.25	LT	423+44.00	16.25	LT											1									2				
304	5-DC	423+44.00	16.25	LT	424+05.92	16.25	LT											1									2				
304	6-DC	424+05.92	16.25	LT	424+26.08	16.25	LT		2									1									2				
304	7-DC	424+26.08	16.25	LT	425+11.58	16.25	LT		2									1									2				
304	8-DC	425+00.00	4.00	RT	425+11.58	16.25	LT																		42					
304	9-DC	425+11.58	16.25	LT	425+81.42	16.25	LT		2									1													
304	10-DC	425+81.42	16.25	LT	427+30.00	16.25	LT		2									1													
304	11-DC	427+30.00	16.25	LT	429+45.00	16.25	LT											1							372						
304	12-DC	429+45.00	16.25	LT	429+87.00	16.25	LT											1													
311	1-CDB												1							84		427								
312	2-CDB												1							31		270								
304	13-DC	433+69.00	0	CL	434+25.00	20	RT											1							17						
304	14-DC	434+25.00	20	RT	434+96.92	16.25	LT		2									1									2				
304	15-DC	434+24.92	16.25	LT	435+24.92	16.25	LT		2																		2				
304	16-DC	435+24.92	16.25	LT	435+88.75	16.25	LT		1		1							1									2				
TOTALS THIS SHEET								8	15	4	3	2	2			9	13		65	115	697	697	729	431	16	18				
TOTALS FROM SHEET NO. 85														3	1	4	4	2					4445	4445	7	7	2	8	8	
TOTALS FROM SHEET NO. 88														4		7	7						1863	1863				8	8	
SUBTOTAL								8	15	4	3	2	2	7		20	24	2	65	115	697	697	7037	6739	23	25	2	16	16	
TOTALS CARRIED TO GENERAL SUMMARY								8	15	4	3	2	2	7	1	20	24	2	65	115	697	697	7037	6739						

SUM-271-8.02

9/8/04 CAR,HN,SJK
21450DS.DGN

REFERENCE NO.	SHEET NO.	STATION FROM	DEPTH	STATION TO	DEPTH		602	603				604	605			OUTLET DETAIL	BENDS & BRANCHES INFORMATION ONLY											
							CONCRETE MASONRY, AS PER PLAN	4" CONDUIT, TYPE B, 707.33 OR 707.41	4" CONDUIT, TYPE F, 707.33 OR 707.41	6" CONDUIT, TYPE B, 707.33 OR 707.41	6" CONDUIT, TYPE F, 707.33 OR 707.41	PRECAST REINFORCED CONCRETE OUTLET	4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	6" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	6" UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41		4" x 4" x 4" TEE	6" x 4" x 6" TEE	6" x 4" x 4" TEE	6" x 6" x 6" TEE	6" x 6" x 6" x 6" CROSS	4" - 45° BEND	4" - 90° BEND	6" - 45° BEND	6" - 90° BEND	6" x 6" x 4" 45° WYE	6" x 6" x 6" 45° WYE	4" PLUG	6" PLUG
							CU.YD.	FT.	FT.	FT.	FT.	EACH	FT.	FT.	FT.		EACH												
1 - NM	127-129	2403+00.76	18"	2406+96.00	18"				4				396			B						1	1					1	
2 - NM	129	2407+00.00	18"	2413+00.00	18"				4				600			B						1	1					1	
3 - NM	129-131	2413+04.00	18"	2419+30.00	18"				4				626			D						1	1					1	
4 - NM	131	2419+34.00	18"	2421+25.00	18"				4				191			H						1	1					1	
5 - NM	131	2421+25.00	30"	2421+37.00	12"										12	H				1									1
6 - NM	134	2436+47.75	30"	2437+05.00	30"						4			58		B				1									1
7 - NM	134-143	2437+09.00	18"	2444+00.00	18"				4				691			A						1						1	
8 - NM	143	2444+00.00	18"	2445+96.00	18"				4				196			A												1	
9 - NM	143	2446+00.00	30"	449+12.00	30"					5	15			312		I									1				1
1-NM THRU 10-NM TOTALS CARRIED TO SHEET 98									24	5	19		2700	370	12					2		5	4		1			6	3
1 - NI	129	2405+60.00	30"	2406+96.00	30"					15	10			136		B									1	1			1
2 - NI	129	2407+00.00	30"	2413+00.00	30"					15	10			600		B									1	1			1
3 - NI	129-131	2413+04.00	30"	2419+30.00	30"					15	5			626		D				1						1			1
4 - NI	131	2419+34.00	30"	2421+25.00	30"					15	5			191		H				1	1					1			1
5 - NI	134	2436+61.00	30"	2437+05.00	30"					15	8			44		B									1				1
6 - NI	134-143	2437+09.00	30"	2444+00.00	30"					15	5			691		A									1	1			1
7 - NI	143	2444+00.00	30"	2445+96.00	30"									196		A									1	1			1
1-NI THRU 7-NI TOTALS CARRIED TO SHEET 98										90	43			2484						2	1				5	6			7

UNDERDRAIN SUBSUMMARY
NORTHBOUND INSIDE SHOULDER, INSIDE PAVEMENT

CALCULATED TM
CHECKED PG

SUM-271-8.02

92
612

2I450D00.DGN 3/29/04 SAM

REFERENCE NO.	SHEET NO.	STATION FROM	DEPTH	STATION TO	DEPTH		602	603		603		604	605		605		OUTLET DETAIL	BENDS & BRANCHES INFORMATION ONLY											
							CONCRETE MASONRY, AS PER PLAN	4" CONDUIT, TYPE B, 707.33 OR 707.41	4" CONDUIT, TYPE F, 707.33 OR 707.41	6" CONDUIT, TYPE B, 707.33 OR 707.41	6" CONDUIT, TYPE F, 707.33 OR 707.41	PRECAST REINFORCED CONCRETE OUTLET	4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	6" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	6" UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41			4" x 4" x 4" TEE	6" x 4" x 6" TEE	6" x 6" x 4" TEE	6" x 6" x 6" TEE	6" x 6" x 6" x 6" CROSS	4" - 45° BEND	4" - 90° BEND	6" - 45° BEND	6" - 90° BEND	6" x 6" x 4" 45° WYE	6" x 6" x 6" 45° WYE	4" PLUG	6" PLUG
							CU.YD.	FT.	FT.	FT.	FT.	EACH	FT.	FT.	FT.			EACH											
1 - NO	129	2406+90.76	30"	2413+00.00	30"					15	5			610		B									1	1		1
2 - NO	129-131	2413+04.00	30"	2419+30.00	30"					24				626		D			1									1
3 - NO	131	2419+34.00	30"	2421+25.00	30"					24				191		H				1								1
4 - NO	134	2436+66.00	30"	2444+00.00	30"					15	20			734		A									1	1		1
5 - NO	143	2444+00.00	30"	2449+31.00	30"					15	20			531		A									1	1		1
1-NO THRU 5-NO TOTALS CARRIED TO SHEET 98										93	45			2692					1	1					3	3		5
1 - NS	129	2406+90.76	18"	2413+00.00	18"				4				610			B						1	1				1	
2 - NS	129-131	2413+04.00	18"	2419+30.00	18"			13					626			D							1				1	
3 - NS	131	2419+34.00	30"	2421+25.00	18"								191			H				1							1	
4 - NS	131	2421+25.00	30"	2421+37.00	12"					13					12	H				1								1
5 - NS	134	2436+47.75	30"	2436+62.00	30"					10			15			I								1				1
6 - NS	134-143	2436+66.00	18"	2444+00.00	18"				4				734			A						1	1				1	
7 - NS	143	2444+00.00	30"	449+30.00	18"										530	A				1								1
1-NS THRU 8-NS TOTALS CARRIED TO SHEET 98								13	8	23			2176		542					3		2	3	1			4	3

CALCULATED TM
CHECKED PG

UNDERDRAIN SUBSUMMARY
OUTSIDE PAVEMENT, OUTSIDE SHOULDER
NORTHBOUND

SUM-271-8.02

21450D02.DGN 3/29/04 SAM

REFERENCE NO.	SHEET NO.	STATION FROM	STATION DEPTH	STATION TO	STATION DEPTH		602 CONCRETE MASONRY, AS PER PLAN	603 4" CONDUIT, TYPE B, 707.33 OR 707.41	603 4" CONDUIT, TYPE F, 707.33 OR 707.41	603 6" CONDUIT, TYPE B, 707.33 OR 707.41	603 6" CONDUIT, TYPE F, 707.33 OR 707.41	604 PRECAST REINFORCED CONCRETE OUTLET	605 4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	605 6" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	605 6" UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	OUTLET DETAIL	BENDS & BRANCHES INFORMATION ONLY 4" x 4" TEE	6" x 4" x 6" TEE	6" x 6" x 4" TEE	6" x 6" x 6" TEE	6" x 6" x 6" x 6" CROSS	4" - 45° BEND	4" - 90° BEND	6" - 45° BEND	6" - 90° BEND	6" x 6" x 4" 45° WYE	6" x 6" x 6" 45° WYE	4" PLUG	6" PLUG
							CU.YD.	FT.	FT.	FT.	FT.	EACH	FT.	FT.	FT.		EACH										
1 - SS	119-121	352+40.00	18"	358+00.00	18"				4				560			C						1	1					1	
2 - SS	121	358+04.00	18"	363+00.00	18"				4				496			C						1	1					1	
3 - SS	121-123	363+04.00	18"	368+00.00	18"				4				496			C						1	1					1	
4 - SS	123	368+04.00	18"	373+00.00	18"				4				496			C						1	1					1	
5 - SS	123-125	373+04.00	18"	380+94.00	18"				4				790			C						1	1					1	
6 - SS	125-127	380+98.00	18"	398+00.00	18"				4				1702			C						1	1					1	
7 - SS		NOT USED																										
8 - SS		NOT USED																										
9 - SS	127	398+04.00	18"	400+00.00	18"				4				196			C						1	1					1	
10 - SS	127-129	400+04.00	18"	405+00.00	18"				4				496			C						1	1					1	
11 - SS	129	405+04.00	18"	1414+75.00	18"				4				971			B						1	1					1	
11A - SS	129	1414+79.00	18"	1416+55.00	18"					10			176			G						1						1	
12 - SS	129-131	1416+59.00	18"	1419+50.00	18"					10			291			G						1						1	
12A - SS	131	1419+54.00	18"	1420+60.00	18"					10			106			G						1						1	
12B - SS	131	1420+64.00	18"	1421+48.00	18"					10			84			F						1						1	
13 - SS	131	1421+48.00	30"	1421+57.00	18"					10					9	F								1					1
14 - SS	134	1437+10.00	30"	1437+35.00	30"					10				25		F						1							1
15 - SS	134	1437+39.00	18"	1441+00.00	18"				4				361			E							1					1	
16 - SS	134-143	1441+04.00	18"	1445+96.00	18"				4				492			E						1	1					1	
17 - SS	143	1446+00.00	30"	448+68.00	18"										268	A													1
18 - SS	143	451+11.00	30"	451+48.00	18"										37	A		1							1	1			1
19 - SS	143-145	451+48.00	18"	462+96.00	18"								1148			A						1	1					1	
20 - SS		NOT USED																										
21 - SS	145-147	463+00.00	18"	472+80.00	18"				4				980			C						1	1					1	
1-SS THRU 21-SS TOTALS CARRIED TO SHEET 98									48	60			9841	25	314			1				17	13	1	1	1		17	4

CALCULATED TM
CHECKED PG

UNDERDRAIN SUBSUMMARY
SOUTHBOUND OUTSIDE SHOULDER

SUM-271-8.02

94
612

21450D03.DGN 3/29/04 SAM

SHEET NO.	REFERENCE NO.	STATION FROM	DEPTH	STATION TO	DEPTH		602 CONCRETE MASONRY, AS PER PLAN	603 4" CONDUIT, TYPE B, 707.33 OR 707.41	603 4" CONDUIT, TYPE F, 707.33 OR 707.41	603 6" CONDUIT, TYPE B, 707.33 OR 707.41	603 6" CONDUIT, TYPE F, 707.33 OR 707.41	604 PRECAST REINFORCED CONCRETE OUTLET	605 4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	605 6" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	605 6" UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	OUTLET DETAIL	BENDS & BRANCHES INFORMATION ONLY: 4" x 4" x 4" TEE	6" x 4" x 6" TEE	6" x 6" x 4" TEE	6" x 6" x 6" TEE	6" x 6" x 6" x 6" CROSS	4" - 45° BEND	4" - 90° BEND	6" - 45° BEND	6" - 90° BEND	6" x 6" x 4" 45° WYE	6" x 6" x 6" 45° WYE	4" PLUG	6" PLUG
							CU.YD.	FT.	FT.	FT.	FT.	EACH	FT.	FT.	FT.		EACH										
I.R. 271																										
1 - SO	119-121	352+40.00	30"	358+00.00	30"					14	8	1		560		C								1	1			1
2 - SO	121	358+04.00	30"	363+00.00	30"					14	8	1		496		C								1	1			1
3 - SO	121-123	363+04.00	30"	368+00.00	30"					14	12	1		496		C								1	1			1
4 - SO	123	368+04.00	30"	373+00.00	30"					14	12	1		496		C								1	1			1
5 - SO	123-125	373+04.00	30"	380+94.00	30"		0.24			14	12			790		C								1	1			1
6 - SO	125-127	380+98.00	30"	398+00.00	30"					14	11	1		1702		C								1	1			1
7 - SO		NOT USED																										
8 - SO		NOT USED																										
9 - SO	127	398+04.00	30"	400+00.00	30"					14	11			196		C								1	1			1
10 - SO	127-129	400+04.00	24"	405+00.00	30"					14	15	1		496		C								1	1			1
11 - SO	129	405+04.00	30"	1414+75.00	30"					15	20			971		B								1	1			1
11A - SO	129	1414+79.00	30"	1416+55.00	30"					12				176		G								1				1
12 - SO	129-131	1416+59.00	30"	1419+50.00	30"					12	20			291		G								1	1			1
12A - SO	131	1419+54.00	30"	1420+60.00	30"					12				106		G								1				1
12B - SO	131	1420+64.00	30"	1421+48.00	30"					12				84		F								1				1
13 - SO	134	1437+39.00	30"	1441+00.00	30"					15	25			361		E								1				1
14 - SO	134-143	1441+04.00	30"	1446+00.00	30"		0.24			15				496		E				1				1	1			1
15 - SO	143	1446+00.00	30"	448+74.00	30"									274		A												1
16 - SO	143	451+13.00	15"	451+48.00	30"		0.24			15	39				35	A				1						1		1
17 - SO	143-145	451+48.00	30"	462+96.00	30"									1148		A												1
18 - SO		NOT USED																										1
19 - SO	145-147	463+00.00	30"	472+80.00	30"		0.24			11	35			980		C								1	1			1
1-SO THRU 19-SO TOTALS CARRIED TO SHEET 98							0.96			231	228	6		10119	35					2				16	12	1		20

CALCULATED TM CHECKED PG

UNDERDRAIN SUBSUMMARY
SOUTHBOUND OUTSIDE PAVEMENT

SUM-271-8.02

95/612

21450D04.DGN 3/30/04 SAM

REFERENCE NO.	SHEET NO.	STATION FROM	DEPTH	STATION TO	DEPTH		602 CONCRETE MASONRY, AS PER PLAN	603 4" CONDUIT, TYPE B, 707.33 OR 707.41	603 4" CONDUIT, TYPE F, 707.33 OR 707.41	603 6" CONDUIT, TYPE B, 707.33 OR 707.41	603 6" CONDUIT, TYPE F, 707.33 OR 707.41	604 PRECAST REINFORCED CONCRETE OUTLET	605 4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	605 6" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	605 6" UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	OUTLET DETAIL	BENDS & BRANCHES INFORMATION ONLY 4" x 4" TEE	6" x 4" x 6" TEE	6" x 6" x 4" TEE	6" x 6" x 6" TEE	6" x 6" x 6" CROSS	4" - 45° BEND	4" - 90° BEND	6" - 45° BEND	6" - 90° BEND	6" x 6" x 4" 45° WYE	6" x 6" x 6" 45° WYE	4" PLUG	6" PLUG
							CU.YD.	FT.	FT.	FT.	FT.	EACH	FT.	FT.	FT.		EACH												
1 - SI	121	357+50.00	30"	360+00.00	30"					18	45			250		B								1	1			1
2 - SI	121	360+04.00	30"	365+00.00	30"					18	20	1		496		B								1	1			1
3 - SI	121-123	365+04.00	30"	370+00.00	30"					18	45			496		B								1	1			1
4 - SI	123	370+04.00	30"	375+00.00	30"					18	18	1		496		B								1	1			1
5 - SI	123-125	375+04.00	30"	381+00.00	30"					18	45			596		B								1	1			1
6 - SI	125	381+04.00	30"	386+00.00	30"					18	18	1		496		B								1	1			1
7 - SI	125	386+04.00	30"	392+00.00	30"					18	46			596		B								1	1			1
8 - SI	127	392+04.00	30"	397+00.00	30"					18	47			496		B								1	1			1
9 - SI	127	397+04.00	30"	400+90.00	30"					18	45			386		B								1	1			1
10 - SI	127-129	400+94.00	30"	407+00.00	30"					18	43			606		B								1	1			1
11 - SI	129	407+04.00	30"	1414+75.00	30"					15				771		G								1				1
12 - SI	129-131	1414+79.00	30"	1419+50.00	30"					15				471		G								1				1
13 - SI	131	1419+54.00	30"	1420+60.00	30"					15				106		G								1				1
13A - SI	131	1420+64.00	30"	1421+48.00	30"					15				84		F								1				1
14 - SI	134	1437+31.00	30"	1441+00.00	30"					15				369		G								1				1
15 - SI	134-143	1441+04.00	30"	1442+90.00	30"					15				186		G								1				1
16 - SI	143	1442+94.00	30"	1446+00.00	30"					15	42			306		A					1				1			1
17 - SI	143	1446+00.00	30"	448+81.00	30"									281		A												1
18 - SI	143	451+25.00	18"	451+48.20	30"					15	27				23	A				1	1					1		1
19 - SI	143	451+48.20	30"	452+96.00	30"									148		A												1
20 - SI	143-145	453+00.00	30"	462+96.00	30"					13	17			996		B				1					1	1		1
1-SI THRU 20-SI TOTALS CARRIED TO SHEET 98										313	458	3		8632	23					2	2			17	13			21

CALCULATED TM CHECKED PG

UNDERDRAIN SUBSUMMARY SOUTHBOUND INSIDE PAVEMENT

SUM-271-8.02

96/612

21450005.DGN 3/30/04 SAM

REFERENCE NO.	SHEET NO.	STATION FROM	DEPTH	STATION TO	DEPTH		602 CONCRETE MASONRY, AS PER PLAN CU.YD.	603 4" CONDUIT, TYPE B, 707.33 OR 707.41 FT.	603 4" CONDUIT, TYPE F, 707.33 OR 707.41 FT.	603 6" CONDUIT, TYPE B, 707.33 OR 707.41 FT.	603 6" CONDUIT, TYPE F, 707.33 OR 707.41 FT.	604 PRECAST REINFORCED CONCRETE OUTLET EACH	605 4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41 FT.	605 6" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41 FT.	605 6" UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41 FT.	OUTLET DETAIL	BENDS & BRANCHES INFORMATION ONLY 4" x 4" x 4" TEE EACH	6" x 4" x 6" TEE EACH	6" x 6" x 4" TEE EACH	6" x 6" x 6" TEE EACH	6" x 6" x 6" x 6" CROSS EACH	4" - 45° BEND EACH	4" - 90° BEND EACH	6" - 45° BEND EACH	6" - 90° BEND EACH	6" x 6" x 4" 45° WYE EACH	6" x 6" x 6" 45° WYE EACH	4" PLUG EACH	6" PLUG EACH
1 - SM	121	355+00.00	18"	360+00.00	18"				4				500			B						1	1					1	
2 - SM	121	360+04.00	18"	365+00.00	18"				4				496			B						1	1					1	
3 - SM	121-123	365+04.00	18"	370+00.00	18"				4				496			B						1	1					1	
4 - SM	123	370+04.00	18"	375+00.00	18"				4				496			B						1	1					1	
5 - SM	123-125	375+04.00	18"	381+00.00	18"				4				596			B						1	1					1	
6 - SM	125	381+04.00	18"	386+00.00	18"				4				496			B						1	1					1	
7 - SM	125	386+04.00	18"	392+00.00	18"				4				596			B						1	1					1	
8 - SM	127	392+04.00	18"	397+00.00	18"				4				496			B						1	1					1	
9 - SM	127	397+04.00	18"	400+90.00	18"				4				386			B						1	1					1	
10 - SM	127-129	400+94.00	18"	407+00.00	18"				4				606			B						1	1					1	
11 - SM	129	407+04.00	18"	1414+75.00	18"			10					771			G							1					1	
12 - SM	129-131	1414+79.00	18"	1419+50.00	18"			10					471			G							1					1	
13 - SM	131	1419+54.00	18"	1420+60.00	18"			10					106			G							1					1	
13A - SM	131	1420+64.00	18"	1421+48.00	18"			10					84			F							1					1	
14 - SM	131	1421+48.00	30"	1421+57.00	12"										9	F													1
15 - SM	134	1437+02.00	30"	1437+27.00	30"			10						15		F													1
16 - SM	134	1437+31.00	18"	1441+00.00	18"			10					369			G												1	
17 - SM	134-143	1441+04.00	18"	1442+90.00	18"			10					186			G												1	
18 - SM	143	1442+94.00	18"	1446+00.00	18"				4				306			A	1					1						1	
19 - SM	143	1446+00.00	18"	448+81.00	18"								281			A												1	
20 - SM	143	448+85.54	30"	448+95.54	30"					10						B													1
21 - SM	143	451+33.00	18"	451+48.20	30"										15	A													1
22 - SM	143	451+48.20	18"	452+96.00	18"				4				148			A						1	1					1	
23 - SM	143-145	453+00.00	18"	462+96.00	18"				4				996			B						1	1					1	
24 - SM	145	463+00.00	18"	465+90.00	18"			10	23				290			I							1					1	
1-SM THRU 24-SM TOTALS CARRIED TO SHEET 98								80	75	10			9172	15	24		1					13	17					21	4

CALCULATED TM CHECKED PG

UNDERDRAIN SUBSUMMARY SOUTHBOUND INSIDE SHOULDER

SUM-271-8.02

97
612

2145D06.DGN 3/29/04 SAM,CAR

		602	603				604	605			BENDS & BRANCHES INFORMATION ONLY													
		COWCRETE MASONRY, AS PER PLAN	4" CONDUIT, TYPE B, 707.33 OR 707.41	4" CONDUIT, TYPE F, 707.33 OR 707.41	6" CONDUIT, TYPE B, 707.33 OR 707.41	6" CONDUIT, TYPE F, 707.33 OR 707.41	PRECAST REINFORCED CONCRETE OUTLET	4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	6" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	6" UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31 OR 707.41	4" x 4" x 4" TEE	6" x 4" x 6" TEE	6" x 6" x 4" TEE	6" x 6" x 6" TEE	6" x 6" x 6" x 6" CROSS	4" - 45° BEND	4" - 90° BEND	6" - 45° BEND	6" - 90° BEND	6" x 6" x 4" 45° WYE	6" x 6" x 6" 45° WYE	4" PLUG	6" PLUG	
		CU.YD.	FT.	FT.	FT.	FT.	EACH	FT.	FT.	FT.	EACH													
TOTALS I-NM THRU 10-NM CARRIED FROM SHEET 92				24	5	19		2700	370	12				2		5	4		1			6	3	
TOTALS I-NI THRU 7-NI CARRIED FROM SHEET 92					90	43			2484					2	1				5	6			7	
TOTALS I-NO THRU 5-NO CARRIED FROM SHEET 93					93	45			2692				1	1					3	3			5	
TOTALS I-NS THRU 8-NS CARRIED FROM SHEET 93			13	8	23			2176		542				3		2	3	1				4	3	
TOTALS I-SS THRU 21-SS CARRIED FROM SHEET 94				48	60			9841	25	314		1				17	13	1	1	1		17	4	
TOTALS I-SO THRU 19-SO CARRIED FROM SHEET 95		0.96			231	228	6		10119	35				2					16	12	1		20	
TOTALS I-SI THRU 20-SI CARRIED FROM SHEET 96					313	458	3		8632	23				2	2				17	13			21	
TOTALS I-SM THRU 24-SM CARRIED FROM SHEET 97			80	75	10			9172	15	24	1					13	17					21	4	
RETAINING WALL UNDER DRAIN OUTLETS																								
1-RWO STA. 413+82.00					20		1																	
2-RWO STA. 415+50.00					13																			
3-RWO STA. 418+00.00					9																			
4-RWO STA. 419+30.00					8																			
5-RWO STA. 421+25.00					7																			
6-RWO STA. 439+00.00					8																			
7-RWO STA. 440+90.00					10																			
8-RWO STA. 443+00.00					115																			
TOTALS ALL UNDERDRAINS		0.96	93	155	1015	793	10	23889	24337	950	1	1	1	12	3	37	37	2	43	35	1	48	67	
TOTALS CARRIED TO GENERAL SUMMARY		1.00	93	155	1015	793	10	23889	24337	950														

CALCULATED TM CHECKED PG

UNDERDRAIN SUBSUMMARY

SUM-271-8.02

21450D07.DGN 3/29/04 SAM,CAR

LINE	CALCULATIONS	QUANTITIES
	PAVEMENT QUANTITIES	
	254 - PAVEMENT PLANING ASPHALT CONCRETE	
1	STA. 1410+23.16 TO STA. 1410+48.16 SB = 25 FT. x 24 FT. WIDE =	600 SQ. FT.
2	STA. 2407+95.76 TO STA. 2408+20.76 NB = 25 FT. x 24 FT. WIDE =	600 SQ. FT.
3	STA. 451+19.82 TO STA. 452+50.00 LT. SB = 130.18 FT. x 24 FT. WIDE =	3124.32 SQ. FT.
4	STA. 451+40.38 TO STA. 452+00.00 RT. NB = 59.62 FT. x 38 FT. WIDE =	2265.56 SQ. FT.
4A	SB O/S SHOULDER 352+40.00 TO STA. 378+02.24 BK. , STA. 1378+28.42 AH TO STA. 1410+48.16 , STA. 451+19.82 TO STA. 472+80.00 = 7942.16 FT. x 1 FT. =	7942.16 SQ. FT.
4B	SB I/S SHOULDER 355+00.00 TO STA. 378+02.24 BK. , STA. 1378+28.42 AH TO STA. 1410+48.16 , STA. 451+19.82 TO STA. 465+90.00 = 6992.16 FT. x 1 FT. =	6992.16 SQ. FT.
4C	NB O/S SHOULDER 2406+90.76 TO STA. 2408+20.76 = 130 FT. x 1 FT. =	130 SQ. FT.
4D	NB I/S SHOULDER 2403+00.76 TO STA. 2408+20.76 = 520 FT. x 1 FT. =	520 SQ. FT.
5	TOTAL LINES 1 TO 4D =	22174.2 SQ. FT.
6	LINE 5 , (22174.2 SQ FT. / 9) =	2463.8 SQ. YD.
	TOTAL CARRIED TO GENERAL SUMMARY =	**2464 SQ. YD.**
	407 - TACK COAT	
7	LINE 5 , (22174.2 SQ FT. / 9 x 0.075 GAL. / SQ. YD.) =	184.79 GAL.
	ADDITIONAL TACK COAT BETWEEN 302 AND RETAINING WALL — WIDTH — LENGTH	
8	STA. 1412+00.00 (6.2 FT.) = 6.2 FT.	
9	STA. 1413+69.62 (6.2 FT.) = (6.2 FT. + 6.2 FT.) / 2 x169.62 FT. =	1051.64 SQ. FT.
10	STA. 1421+57.25 (6.2 FT.) = (6.2 FT. + 6.2 FT.) / 2 x787.63 FT. =	4883.31 SQ. FT.
11	STA. 1437+10.75 (6.2 FT.) = 6.2 FT.	
12	STA. 1443+00.00 (6.2 FT.) = (6.2 FT. + 6.2 FT.) / 2 x589.25 FT. =	3653.35 SQ. FT.
13	TOTAL LINES 8 TO 12 =	9588.3 SQ. FT.
14	LINE 13 , (9588.3 SQ FT. / 9 x 0.075 GAL. / SQ. YD.) =	79.9 GAL.
15	TOTAL LINES 7 AND 14 TOTAL (407) =	264.69 GAL.
	TOTAL CARRIED TO GENERAL SUMMARY =	**265 GAL.**
	446 - 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE 1H	
	SOUTHBOUND I.R. 271 — LEFT SHOULDER WIDTH — MAINLINE PAVEMENT WIDTH — RIGHT SHOULDER WIDTH — TOTAL PAV'T WIDTH	
16	STA. 352+40.00 (11 FT. + 0 FT. + 0 FT.) = 11 FT.	
17	STA. 353+05.00 (12 FT. + 0 FT. + 0 FT.) = (12 FT. + 11 FT.) / 2 x 65 FT. =	747.5 SQ. FT.
18	STA. 355+00.00 BK (12 FT. + 0 FT. + 0 FT.) = 12 FT. + 12 FT.) / 2 x 195 FT. =	2340 SQ. FT.
19	STA. 355+00.00 AH (12 FT. + 0 FT. + 5 FT.) = 17 FT.	
20	STA. 360+00.00 (12 FT. + 0 FT. + 16 FT.) = (28 FT. + 17 FT.) / 2 x 500 FT. =	11250 SQ. FT.
21	STA. 378+02.24 BK= (12 FT. + 0 FT. + 16 FT) = 28 FT. + 28 FT.) / 2 x 1802.24 FT. =	50462.72 SQ. FT.
22	STA. 1378+28.42 AH (12 FT. + 0 FT. + 16 FT.) = 28 FT.	
23	STA. 1408+53.16 (12 FT. + 0 FT. + 16 FT.) = (28 FT. + 28 FT.) / 2 x 3024.74 FT. =	84692.72 SQ. FT.
24	STA. 1409+83.16 (12 FT. + 0 FT. + 18 FT.) = (30 FT. + 28 FT.) / 2 x 130 FT. =	3770 SQ. FT.
25	STA. 1410+48.16 BK (13 FT. + 0 FT. + 19 FT.) = (32 FT. + 30 FT.) / 2 x 65 FT. =	2015 SQ. FT.
26	STA. 1410+48.16 AH (12 FT. + 24 FT. + 18 FT.) = 54 FT.	
27	STA. 1412+00.00 (12.79 FT. + 24 FT. + 16.33 FT.) = (53.12 FT. + 54 FT.) / 2 x 151.84 FT. =	8132.55 SQ. FT.
28	STA. 1412+00.00 (12.79 FT. + 24 FT. + 16.33 FT.) = 53.12 FT.	
29	STA. 1413+70.85 (13.67 FT. + 24 FT. + 14.46 FT.) = (52.13 FT. + 53.12 FT.) / 2 x 170.85 FT. =	8990.98 SQ. FT.
30	STA. 1414+50.00 (14.08 FT. + 24 FT. + 14 FT.) = (52.08 FT. + 52.13 FT.) / 2 x 79.15 FT. =	4124.11 SQ. FT.
31	STA. 1415+79.61 (14.75 FT. + 24 FT. + 14 FT.) = (52.75 FT. + 52.08 FT.) / 2 x 129.61 FT. =	6793.51 SQ. FT.
32	STA. 1421+43.25 BK (14.75 FT. + 24 FT. + 14 FT.) = (52.75 FT. + 52.75 FT.) / 2 x 563.64 FT. =	29732.01 SQ. FT.
33	STA. 1421+43.25 AH (14 FT. + 24 FT. + 14 FT.) = 52 FT.	
34	STA. 1421+57.25 (14 FT. + 24 FT. + 14 FT.) = (52 FT. + 52 FT.) / 2 x 14 FT. =	728 SQ. FT.
35	STA. 1437+10.75 (12 FT. + 24 FT. + 14 FT.) = 50 FT.	
36	STA. 1438+25.00 (12 FT. + 24 FT. + 14 FT.) = (50 FT. + 50 FT.) / 2 x 114.25 FT. =	5712.5 SQ. FT.
37	STA. 1441+25.00 (12 FT. + 24 FT. + 14.32 FT.) = (50.32 FT. + 50 FT.) / 2 x 300 FT. =	15048 SQ. FT.
38	STA. 1442+75.00 (12 FT. + 24 FT. + 14 FT.) = (50 FT. + 50.32 FT.) / 2 x 150 FT. =	7524 SQ. FT.
39	STA. 1443+00.00 (12 FT. + 24 FT. + 14 FT.) = (50 FT. + 50 FT.) / 2 x 25 FT. =	1250 SQ. FT.
40	STA. 1443+00.00 (12 FT. + 24 FT. + 14 FT.) = 50 FT.	
41	STA. 1443+25.00 (12 FT. + 24 FT. + 14 FT.) = (50 FT. + 50 FT.) / 2 x 25 FT. =	1250 SQ. FT.
42	STA. 1446+24.92 (12 FT. + 24 FT. + 16.67 FT.) = (52.67 FT. + 50 FT.) / 2 x 299.92 FT. =	15396.39 SQ. FT.
43	STA. 1447+94.92 BK= (12 FT. + 24 FT. + 16.67 FT.) = (52.67 FT. + 52.67 FT.) / 2 x 170 FT. =	8953.9 SQ. FT.
44	STA. 447+94.41 AH (12 FT. + 24 FT. + 16.67 FT.) = 52.67 FT.	
45	STA. 448+00.00 (12 FT. + 24 FT. + 16.67 FT.) = (52.67 FT. + 52.67 FT.) / 2 x 5.59 FT. =	294.43 SQ. FT.
45A	STA. 448+65.06 BK (9.84 FT. + 24 FT. + 16.67 FT.) = (50.51 FT. + 52.67 FT.) / 2 x 65.06 FT. =	3356.45 SQ. FT.
45B	STA. 448+65.06 AH (9.84 FT. + 24 FT. + 16.67 FT.) = 50.51 FT.	
46	STA. 448+80.06 (9.34 FT. + 24 FT. + 16.67 FT.) = (50.01 FT. + 50.51 FT.) / 2 x 15 FT. =	753.9 SQ. FT.
47	STA. 451+19.82 (10.34 FT. + 0 FT. + 17.67 FT.) = 28.01 FT.	
48	STA. 452+33.09 (12 FT. + 0 FT. + 17.67 FT.) = (29.67 FT. + 28.01 FT.) / 2 x 113.27 FT. =	3266.71 SQ. FT.

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LINE	CALCULATIONS	QUANTITIES
49	STA. 456+00.00 (12 FT.+ 0 FT.+ 17.67 FT.) = (29.67 FT. + 29.67 FT.) / 2 x 366.91 FT.	= 10886.22 SQ. FT.
50	STA. 460+70.00 (12 FT.+ 0 FT.+ 13 FT.) = (25 FT. + 29.67 FT.) / 2 x 470 FT.	= 12847.45 SQ. FT.
51	STA. 465+90.00 BK (12 FT.+ 0 FT.+ 5 FT.) = (17 FT. + 25 FT.) / 2 x 520 FT.	= 10920 SQ. FT.
52	STA. 465+90.00 AH (12 FT.+ 0 FT.+ 0 FT.) = 12 FT.	
53	STA. 472+15.00 (12 FT.+ 0 FT.+ 0 FT.) = (12 FT. + 12 FT.) / 2 x 625 FT.	= 7500 SQ. FT.
54	STA. 472+80.00 (11 FT.+ 0 FT.+ 0 FT.) = (11 FT. + 12 FT.) / 2 x 65 FT.	= 747.5 SQ. FT.
55	TOTAL LINES 16 TO 54	= 319486.55 SQ. FT.
	NORTHBOUND I.R. 271 — LEFT SHOULDER WIDTH / MAINLINE PAVEMENT WIDTH / RIGHT SHOULDER WIDTH / TOTAL PAV'T WIDTH	
56	STA. 2403+00.76 (5 FT.+ 0 FT.+ 0 FT.) = 5 FT.	
57	STA. 2406+90.76 BK (11 FT.+ 0 FT.+ 0 FT.) = (11 FT. + 5 FT.) / 2 x 390 FT.	= 3120 SQ. FT.
58	STA. 2406+90.76 AH (11 FT.+ 0 FT.+ 11 FT.) = 22 FT.	
59	STA. 2408+20.76 BK (13 FT.+ 0 FT.+ 13 FT.) = (26 FT. + 22 FT.) / 2 x 130 FT.	= 3120 SQ. FT.
60	STA. 2408+20.76 AH (12 FT.+ 24 FT.+ 12 FT.) = 48 FT.	
61	STA. 2412+00.00 (12 FT.+ 24 FT.+ 12 FT.) = (48 FT. + 48 FT.) / 2 x 379.24 FT.	= 18203.52 SQ. FT.
62	STA. 2420+87.25 (12 FT.+ 24 FT.+ 12 FT.) = (48 FT. + 48 FT.) / 2 x 887.25 FT.	= 42588 SQ. FT.
63	STA. 2421+37.25 (14 FT.+ 24 FT.+ 14 FT.) = (52 FT. + 48 FT.) / 2 x 50 FT.	= 2500 SQ. FT.
64	STA. 2436+47.75 (12 FT.+ 24 FT.+ 12 FT.) = 48 FT.	
65	STA. 2443+00.00 (12 FT.+ 24 FT.+ 12 FT.) = (48 FT. + 48 FT.) / 2 x 652.25 FT.	= 31308 SQ. FT.
66	STA. 2443+80.16 (12 FT.+ 24 FT.+ 12 FT.) = (48 FT. + 48 FT.) / 2 x 80.16 FT.	= 3847.68 SQ. FT.
67	STA. 2447+73.96 BK= (7.22 FT.+ 24 FT.+ 12 FT.) = (43.22 FT. + 48 FT.) / 2 x 393.8 FT.	= 17961.22 SQ. FT.
68	STA. 447+73.74 AH (7.22 FT.+ 24 FT.+ 12 FT.) = 43.22 FT.	
68A	STA. 449+13.56 BK= (5.52 FT.+ 24 FT.+ 9.6 FT.) = (39.12 FT. + 43.22 FT.) / 2 x 139.82 FT.	= 5756.39 SQ. FT.
68B	STA. 449+13.56 AH (5.52 FT.+ 24 FT.+ 9.6 FT.) = 39.12 FT.	
69	STA. 449+28.56 (5.34 FT.+ 24 FT.+ 9.34 FT.) = (38.68 FT. + 39.12 FT.) / 2 x 15 FT.	= 583.5 SQ. FT.
70	TOTAL LINES 56 TO 69	= 128988.31 SQ. FT.
71	(TOTAL LINES 1 TO 4 , (6589.88 SQ FT. x 1.5 " / 12 / 27)	= 30.51 CU. YD.
72	LINE 55 , (319486.55 SQ FT. x 1.5 " / 12 / 27)	= 1479.1 CU. YD.
73	LINE 70 , (128988.31 SQ FT. x 1.5 " / 12 / 27)	= 597.17 CU. YD.
74	TOTAL CARRIED FROM DRAINAGE DETAILS, SHEET 322	= 1.46 CU. YD.
75	TOTAL LINES 71 TO 74 TOTAL (446)	= 2108.24 CU. YD.
	TOTAL CARRIED TO GENERAL SUMMARY	= **2109 CU. YD.**
	446 - 1¾" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-28	
76	LINE 55 , (319486.55 SQ FT. x 1.75 " / 12 / 27)	= 1725.62 CU. YD.
77	LINE 70 , (128988.31 SQ FT. x 1.75 " / 12 / 27)	= 696.7 CU. YD.
78	TOTAL CARRIED FROM DRAINAGE DETAILS, SHEET 322	= 1.69 CU. YD.
79	TOTAL LINES 76 TO 78 TOTAL (446)	= 2424.01 CU. YD.
	TOTAL CARRIED TO GENERAL SUMMARY	= **2425 CU. YD.**
	407 - TACK COAT FOR INTERMEDIATE COURSE	
80	LINE 55 , (319486.55 SQ FT. / 9 x 0.04 GAL. / SQ. YD.)	= 1419.94 GAL.
81	LINE 70 , (128988.31 SQ FT. / 9 x 0.04 GAL. / SQ. YD.)	= 573.28 GAL.
82	TOTAL CARRIED FROM DRAINAGE DETAILS, SHEET 322	= 2.63 GAL.
83	TOTAL LINES 80 TO 82 TOTAL (407)	= 1995.85 GAL.
	TOTAL CARRIED TO GENERAL SUMMARY	= **1996 GAL.**
	302 - 10" ASPHALT CONCRETE BASE, PG64-22	
	SOUTHBOUND I.R. 271 — LEFT SHOULDER WIDTH / MAINLINE PAVEMENT WIDTH / RIGHT SHOULDER WIDTH / TOTAL PAV'T WIDTH	
84	STA. 352+40.00 (10.33 FT.+ 0 FT.+ 0 FT.) = 10.33 FT.	
85	STA. 353+05.00 (11.33 FT.+ 0 FT.+ 0 FT.) = (11.33 FT. + 10.33 FT.) / 2 x 65 FT.	= 703.95 SQ. FT.
86	STA. 355+00.00 BK (11.33 FT.+ 0 FT.+ 0 FT.) = 11.33 FT. + 11.33 FT.) / 2 x 195 FT.	= 2209.35 SQ. FT.
87	STA. 355+00.00 AH (11.33 FT.+ 0 FT.+ 4.33 FT.) = 15.66 FT.	
88	STA. 360+00.00 (11.33 FT.+ 0 FT.+ 15.33 FT.) = (26.66 FT. + 15.66 FT.) / 2 x 500 FT.	= 10580 SQ. FT.
89	STA. 378+02.24 BK= (11.33 FT.+ 0 FT.+ 15.33 FT.) = 26.66 FT. + 26.66 FT.) / 2 x 1802.24 FT.	= 48047.72 SQ. FT.
90	STA. 1378+28.42 AH (11.33 FT.+ 0 FT.+ 15.33 FT.) = 26.66 FT.	
91	STA. 1408+53.16 (11.33 FT.+ 0 FT.+ 15.33 FT.) = (26.66 FT. + 26.66 FT.) / 2 x 3024.74 FT.	= 80639.57 SQ. FT.
92	STA. 1409+83.16 (11.33 FT.+ 0 FT.+ 17.33 FT.) = (28.66 FT. + 26.66 FT.) / 2 x 130 FT.	= 3595.8 SQ. FT.
93	STA. 1410+48.16 BK (12.33 FT.+ 0 FT.+ 18.33 FT.) = (30.66 FT. + 28.66 FT.) / 2 x 65 FT.	= 1927.9 SQ. FT.
94	STA. 1410+48.16 AH (12.33 FT.+ 24 FT.+ 18.33 FT.) = 54.66 FT.	
95	STA. 1412+00.00 (13.12 FT.+ 24 FT.+ 16.66 FT.) = (53.78 FT. + 54.66 FT.) / 2 x 151.84 FT.	= 8232.76 SQ. FT.
96	STA. 1412+00.00 (13.12 FT.+ 24 FT.+ 16.08 FT.) = 53.2 FT.	
97	STA. 1413+70.85 (14 FT.+ 24 FT.+ 14.35 FT.) = (52.35 FT. + 53.2 FT.) / 2 x 170.85 FT.	= 9016.61 SQ. FT.
98	STA. 1414+50.00 (14.41 FT.+ 24 FT.+ 13.89 FT.) = (52.3 FT. + 52.35 FT.) / 2 x 79.15 FT.	= 4141.52 SQ. FT.
99	STA. 1415+79.61 (15.08 FT.+ 24 FT.+ 13.89 FT.) = (52.97 FT. + 52.3 FT.) / 2 x 129.61 FT.	= 6822.02 SQ. FT.
100	STA. 1421+43.25 BK (15.08 FT.+ 24 FT.+ 13.89 FT.) = (52.97 FT. + 52.97 FT.) / 2 x 563.64 FT.	= 29856.01 SQ. FT.

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LINE	CALCULATIONS	QUANTITIES
101	STA. 1421+43.25 AH (14.33 FT. + 24 FT. + 13.89 FT.) = 52.22 FT.	
102	STA. 1421+57.25 (14.33 FT. + 24 FT. + 13.89 FT.) = (52.22 FT. + 52.22 FT.) / 2 x 14 FT. =	731.08 SQ. FT.
103	STA. 1437+10.75 (12.33 FT. + 24 FT. + 13.89 FT.) = 50.22 FT.	
104	STA. 1438+25.00 (12.33 FT. + 24 FT. + 13.89 FT.) = (50.22 FT. + 50.22 FT.) / 2 x 114.25 FT. =	5737.64 SQ. FT.
105	STA. 1441+25.00 (12.33 FT. + 24 FT. + 14.21 FT.) = (50.54 FT. + 50.22 FT.) / 2 x 300 FT. =	15114 SQ. FT.
106	STA. 1442+75.00 (12.33 FT. + 24 FT. + 13.89 FT.) = (50.22 FT. + 50.54 FT.) / 2 x 150 FT. =	7557 SQ. FT.
107	STA. 1443+00.00 (12.33 FT. + 24 FT. + 13.89 FT.) = (50.22 FT. + 50.22 FT.) / 2 x 25 FT. =	1255.5 SQ. FT.
108	STA. 1443+00.00 (12.33 FT. + 24 FT. + 14.33 FT.) = 50.66 FT.	
109	STA. 1443+25.00 (12.33 FT. + 24 FT. + 14.33 FT.) = (50.66 FT. + 50.66 FT.) / 2 x 25 FT. =	1266.5 SQ. FT.
110	STA. 1446+24.92 (12.33 FT. + 24 FT. + 17 FT.) = (53.33 FT. + 50.66 FT.) / 2 x 299.92 FT. =	15594.34 SQ. FT.
111	STA. 1447+94.92 BK= (12.33 FT. + 24 FT. + 17 FT.) = (53.33 FT. + 53.33 FT.) / 2 x 170 FT. =	9066.1 SQ. FT.
112	STA. 447+94.41 AH (12.33 FT. + 24 FT. + 17 FT.) = 53.33 FT.	
113	STA. 448+00.00 (12.33 FT. + 24 FT. + 17 FT.) = (53.33 FT. + 53.33 FT.) / 2 x 5.59 FT. =	298.11 SQ. FT.
113A	STA. 448+65.06 BK= (10.17 FT. + 24 FT. + 17 FT.) = (51.17 FT. + 53.33 FT.) / 2 x 65.06 FT. =	3399.39 SQ. FT.
113B	STA. 448+65.06 AH (9.84 FT. + 24 FT. + 16.67 FT.) = 50.51 FT.	
114	STA. 448+80.06 (9.34 FT. + 24 FT. + 16.67 FT.) = (50.01 FT. + 50.51 FT.) / 2 x 15 FT. =	753.9 SQ. FT.
115	STA. 451+19.82 (9.67 FT. + 0 FT. + 17 FT.) = 26.67 FT.	
116	STA. 452+33.09 (11.33 FT. + 0 FT. + 17 FT.) = (28.33 FT. + 26.67 FT.) / 2 x 113.27 FT. =	3114.93 SQ. FT.
117	STA. 456+00.00 (11.33 FT. + 0 FT. + 17 FT.) = (28.33 FT. + 28.33 FT.) / 2 x 366.91 FT. =	10394.56 SQ. FT.
118	STA. 460+70.00 (11.33 FT. + 0 FT. + 12.33 FT.) = (23.66 FT. + 28.33 FT.) / 2 x 470 FT. =	12217.65 SQ. FT.
119	STA. 465+90.00 BK (11.33 FT. + 0 FT. + 4.33 FT.) = (15.66 FT. + 23.66 FT.) / 2 x 520 FT. =	10223.2 SQ. FT.
120	STA. 465+90.00 AH (11.33 FT. + 0 FT. + 0 FT.) = 11.33 FT.	
121	STA. 472+15.00 (11.33 FT. + 0 FT. + 0 FT.) = (11.33 FT. + 11.33 FT.) / 2 x 625 FT. =	7081.25 SQ. FT.
122	STA. 472+80.00 (10.33 FT. + 0 FT. + 0 FT.) = (10.33 FT. + 11.33 FT.) / 2 x 65 FT. =	703.95 SQ. FT.
123	TOTAL LINES 84 TO 122 =	310282.31 SQ. FT.
	NORTHBOUND I.R. 271 — LEFT SHOULDER WIDTH / MAINLINE PAVEMENT WIDTH / RIGHT SHOULDER WIDTH / TOTAL PAV'T WIDTH	
124	STA. 2403+00.76 (4.33 FT. + 0 FT. + 0 FT.) = 4.33 FT.	
125	STA. 2406+90.76 BK (10.33 FT. + 0 FT. + 0 FT.) = (10.33 FT. + 4.33 FT.) / 2 x 390 FT. =	2858.7 SQ. FT.
126	STA. 2406+90.76 AH (10.33 FT. + 0 FT. + 10.33 FT.) = 20.66 FT.	
127	STA. 2408+20.76 BK (12.33 FT. + 0 FT. + 12.33 FT.) = (24.66 FT. + 20.66 FT.) / 2 x 130 FT. =	2945.8 SQ. FT.
128	STA. 2408+20.76 AH (12.33 FT. + 24 FT. + 12.33 FT.) = 48.66 FT.	
129	STA. 2412+00.00 (12.33 FT. + 24 FT. + 12.33 FT.) = (48.66 FT. + 48.66 FT.) / 2 x 379.24 FT. =	18453.82 SQ. FT.
130	STA. 2420+87.25 (12.33 FT. + 24 FT. + 12.33 FT.) = (48.66 FT. + 48.66 FT.) / 2 x 887.25 FT. =	43173.59 SQ. FT.
131	STA. 2421+37.25 (14.33 FT. + 24 FT. + 14.33 FT.) = (52.66 FT. + 48.66 FT.) / 2 x 50 FT. =	2533 SQ. FT.
132	STA. 2436+47.75 (12.33 FT. + 24 FT. + 12.33 FT.) = 48.66 FT.	
133	STA. 2443+00.00 (12.33 FT. + 24 FT. + 12.33 FT.) = (48.66 FT. + 48.66 FT.) / 2 x 652.25 FT. =	31738.49 SQ. FT.
134	STA. 2443+80.16 (12.33 FT. + 24 FT. + 12.33 FT.) = (48.66 FT. + 48.66 FT.) / 2 x 80.16 FT. =	3900.59 SQ. FT.
135	STA. 2447+73.96 BK= (7.55 FT. + 24 FT. + 12.33 FT.) = (43.88 FT. + 48.66 FT.) / 2 x 393.8 FT. =	18221.13 SQ. FT.
136	STA. 447+73.74 AH (7.55 FT. + 24 FT. + 12.33 FT.) = 43.88 FT.	
136A	STA. 449+13.56 BK= (5.85 FT. + 24 FT. + 9.93 FT.) = (39.78 FT. + 43.88 FT.) / 2 x 139.82 FT. =	5848.67 SQ. FT.
136B	STA. 449+13.56 AH (5.52 FT. + 24 FT. + 9.6 FT.) = 39.12 FT.	
137	STA. 449+28.56 (5.34 FT. + 24 FT. + 9.34 FT.) = (38.68 FT. + 39.12 FT.) / 2 x 15 FT. =	583.5 SQ. FT.
138	TOTAL LINES 124 TO 137 =	130257.29 SQ. FT.
	302 DEDUCT AT RETAINING WALL — LENGTH — CROSS SECTION AREA TO DEDUCT	
139	STA. 141200	
140	STA. 141370.85 170.85 FT. -0.884 SQ. FT. =	-5.59 CU. YD.
141	STA. 142157.25 786.4 FT. -0.884 SQ. FT. =	-25.75 CU. YD.
142	STA. 143710.75	
143	STA. 144300 589.25 FT. -0.884 SQ. FT. =	-19.29 CU. YD.
144	TOTAL LINES 139 AND 143 =	-50.63 CU. YD.
145	LINE 123 , (310282.31 SQ FT. x 10 " / 12 / 27) =	9576.61 CU. YD.
146	LINE 138 , (130257.29 SQ FT. x 10 " / 12 / 27) =	4020.29 CU. YD.
147	TOTAL CARRIED FROM DRAINAGE DETAILS, SHEET 322 =	8.89 CU. YD.
148	TOTAL LINES 144 AND 145 TO 147 TOTAL (302) =	13555.16 CU. YD.
	TOTAL CARRIED TO GENERAL SUMMARY =	**13556 CU. YD.**
	408 - PRIME COAT	
149	LINE 13, DEDUCT TACK COAT AREA BETWEEN 302 AND RETAINING WALL =	-9588.3 SQ. FT.
150	TOTAL LINES 123 AND 138 AND 149 =	430951.3 SQ. FT.
151	LINE 66 , (430951.3 SQ FT. / 9 x 0.4 GAL. / SQ. YD.) =	19153.39 GAL.
152	TOTAL CARRIED FROM DRAINAGE DETAILS, SHEET 322 =	12.8 GAL.
153	TOTAL LINES 151 AND 152 =	19166.19 GAL.
	TOTAL CARRIED TO GENERAL SUMMARY =	**19167 GAL.**

CALCULATED JDL
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LINE	CALCULATIONS	QUANTITIES
	526 - REINFORCED CONCRETE APPROACH SLAB (T-15), AS PER PLAN WIDTH LEFT WIDTH RIGHT	
	N.B. APPROACH SLABS	
154	STA. 2421+37.25 TO STA. 2421+62.25 = 25 FT. x (27.5 FT. + 26 FT.) =	1337.5 SQ. FT.
155	NOT USED	
156	NOT USED	
157	STA. 2436+22.75 TO STA. 2436+47.75 = 25 FT. x (27.5 FT. + 27.5 FT.) =	1375 SQ. FT.
157A	STA. 449+28.56 TO STA. 449+53.56 = 25 FT. x (39.7 FT.) =	992.5 SQ. FT.
157B	STA. 451+15.38 TO STA. 451+40.38 = 25 FT. x (39.7 FT.) =	992.5 SQ. FT.
	S.B. APPROACH SLABS	
158	STA. 1421+57.25 TO STA. 1421+82.25 = 25 FT. x (27.5 FT. + 26 FT.) =	1337.5 SQ. FT.
159	STA. 1436+85.75 TO STA. 1437+10.75 = 25 FT. x (27.5 FT. + 26 FT.) =	1337.5 SQ. FT.
159A	STA. 448+80.06 TO STA. 449+05.06 = 25 FT. x (51 FT.) =	1275 SQ. FT.
159B	STA. 450+94.82 TO STA. 451+19.82 = 25 FT. x (51 FT.) =	1275 SQ. FT.
160	TOTAL LINES 154 TO 159B =	9922.5 SQ. FT.
161	LINE 160 , (9922.5 SQ FT. / 9) TOTAL (526) =	1102.5 SQ. YD.
	TOTAL CARRIED TO STRUCTURE QUANTITIES =	**1104 SQ. YD.**
	304 - 6" AGGREGATE BASE	
	SOUTHBOUND I.R. 271 LEFT SHOULDER WIDTH / MAINLINE PAVEMENT WIDTH / RIGHT SHOULDER WIDTH / TOTAL PAV'T WIDTH	
162	STA. 352+40.00 (11.33 FT. + 0 FT. + 0 FT.) = 11.33 FT.	
163	STA. 353+05.00 (12.33 FT. + 0 FT. + 0 FT.) = (12.33 FT. + 11.33 FT.) / 2 x 65 FT. =	768.95 SQ. FT.
164	STA. 355+00.00 BK (12.33 FT. + 0 FT. + 0 FT.) = 12.33 FT. + 12.33 FT.) / 2 x 195 FT. =	2404.35 SQ. FT.
165	STA. 355+00.00 AH (12.33 FT. + 0 FT. + 5.33 FT.) = 17.66 FT.	
166	STA. 360+00.00 (12.33 FT. + 0 FT. + 16.33 FT.) = (28.66 FT. + 17.66 FT.) / 2 x 500 FT. =	11580 SQ. FT.
167	STA. 378+02.24 BK= (12.33 FT. + 0 FT. + 16.33 FT.) = 28.66 FT. + 28.66 FT.) / 2 x 1802.24 FT. =	51,652.2 SQ. FT.
168	STA. 1378+28.42 AH (12.33 FT. + 0 FT. + 16.33 FT.) = 28.66 FT.	
169	STA. 1408+53.16 (12.33 FT. + 0 FT. + 16.33 FT.) = (28.66 FT. + 28.66 FT.) / 2 x 3024.74 FT. =	86,689.05 SQ. FT.
170	STA. 1409+83.16 (12.33 FT. + 0 FT. + 18.33 FT.) = (30.66 FT. + 28.66 FT.) / 2 x 130 FT. =	3855.8 SQ. FT.
171	STA. 1410+48.16 BK (13.33 FT. + 0 FT. + 19.33 FT.) = (32.66 FT. + 30.66 FT.) / 2 x 65 FT. =	2057.9 SQ. FT.
172	STA. 1410+48.16 AH (13.33 FT. + 24 FT. + 19.33 FT.) = 56.66 FT.	
173	STA. 1412+00.00 (14.12 FT. + 24 FT. + 17.66 FT.) = (55.78 FT. + 56.66 FT.) / 2 x 151.84 FT. =	8536.44 SQ. FT.
174	STA. 1412+00.00 (14.12 FT. + 24 FT. + 10.33 FT.) = 48.45 FT.	
175	STA. 1413+70.85 (15 FT. + 24 FT. + 8.46 FT.) = (47.46 FT. + 48.45 FT.) / 2 x 170.85 FT. =	8193.11 SQ. FT.
176	STA. 1414+50.00 (11.66 FT. + 24 FT. + 8 FT.) = (43.66 FT. + 47.46 FT.) / 2 x 79.15 FT. =	3606.07 SQ. FT.
177	STA. 1415+79.61 (16.08 FT. + 24 FT. + 8 FT.) = (48.08 FT. + 43.66 FT.) / 2 x 129.61 FT. =	5945.21 SQ. FT.
178	STA. 1421+43.25 BK (16.08 FT. + 24 FT. + 8 FT.) = (48.08 FT. + 48.08 FT.) / 2 x 563.64 FT. =	27,099.81 SQ. FT.
179	STA. 1421+43.25 AH (15.33 FT. + 24 FT. + 8 FT.) = 47.33 FT.	
180	STA. 1421+57.25 (15.33 FT. + 24 FT. + 8 FT.) = (47.33 FT. + 47.33 FT.) / 2 x 14 FT. =	662.62 SQ. FT.
181	STA. 1437+10.75 (13.33 FT. + 24 FT. + 8 FT.) = 45.33 FT.	
182	STA. 1438+25.00 (13.33 FT. + 24 FT. + 8 FT.) = (45.33 FT. + 45.33 FT.) / 2 x 114.25 FT. =	5178.95 SQ. FT.
183	STA. 1441+25.00 (13.33 FT. + 24 FT. + 8.32 FT.) = (45.65 FT. + 45.33 FT.) / 2 x 300 FT. =	13647 SQ. FT.
184	STA. 1442+75.00 (13.33 FT. + 24 FT. + 8 FT.) = (45.33 FT. + 45.65 FT.) / 2 x 150 FT. =	6823.5 SQ. FT.
185	STA. 1443+00.00 (13.33 FT. + 24 FT. + 8 FT.) = (45.33 FT. + 45.33 FT.) / 2 x 25 FT. =	1133.25 SQ. FT.
186	STA. 1443+00.00 (13.33 FT. + 24 FT. + 15.33 FT.) = 52.66 FT.	
187	STA. 1443+25.00 (13.33 FT. + 24 FT. + 15.33 FT.) = (52.66 FT. + 52.66 FT.) / 2 x 25 FT. =	1316.5 SQ. FT.
188	STA. 1446+24.92 (13.33 FT. + 24 FT. + 18 FT.) = (55.33 FT. + 52.66 FT.) / 2 x 299.92 FT. =	16,194.18 SQ. FT.
189	STA. 1447+94.92 BK= (13.33 FT. + 24 FT. + 18 FT.) = (55.33 FT. + 55.33 FT.) / 2 x 170 FT. =	9406.1 SQ. FT.
190	STA. 447+94.41 AH (13.33 FT. + 24 FT. + 18 FT.) = 55.33 FT.	
191	STA. 448+00.00 (13.33 FT. + 24 FT. + 18 FT.) = (55.33 FT. + 55.33 FT.) / 2 x 5.59 FT. =	309.29 SQ. FT.
191A	STA. 448+65.06 BK= (11.17 FT. + 24 FT. + 18 FT.) = (53.17 FT. + 55.33 FT.) / 2 x 65.06 FT. =	3529.51 SQ. FT.
191B	STA. 448+65.06 AH (11.34 FT. + 24 FT. + 18.17 FT.) = 53.51 FT.	
192	STA. 448+80.06 (10.84 FT. + 24 FT. + 18.17 FT.) = (53.01 FT. + 53.51 FT.) / 2 x 15 FT. =	798.9 SQ. FT.
193	STA. 451+19.82 (10.67 FT. + 0 FT. + 18 FT.) = 28.67 FT.	
194	STA. 452+33.09 (12.33 FT. + 0 FT. + 18 FT.) = (30.33 FT. + 28.67 FT.) / 2 x 113.27 FT. =	3341.47 SQ. FT.
195	STA. 456+00.00 (12.33 FT. + 0 FT. + 18 FT.) = (30.33 FT. + 30.33 FT.) / 2 x 366.91 FT. =	11,128.38 SQ. FT.
196	STA. 460+70.00 (12.33 FT. + 0 FT. + 13.33 FT.) = (25.66 FT. + 30.33 FT.) / 2 x 470 FT. =	13,157.65 SQ. FT.
197	STA. 465+90.00 BK (12.33 FT. + 0 FT. + 5.33 FT.) = (17.66 FT. + 25.66 FT.) / 2 x 520 FT. =	11,263.2 SQ. FT.
198	STA. 465+90.00 AH (12.33 FT. + 0 FT. + 0 FT.) = 12.33 FT.	
199	STA. 472+15.00 (12.33 FT. + 0 FT. + 0 FT.) = (12.33 FT. + 12.33 FT.) / 2 x 625 FT. =	7706.25 SQ. FT.
200	STA. 472+80.00 (11.33 FT. + 0 FT. + 0 FT.) = (11.33 FT. + 12.33 FT.) / 2 x 65 FT. =	768.95 SQ. FT.
201	TOTAL LINES 162 TO 200 =	318,754.59 SQ. FT.

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LINE	CALCULATIONS	QUANTITIES
	NORTHBOUND I.R. 271 — LEFT SHOULDER WIDTH / MAINLINE PAVEMENT WIDTH / RIGHT SHOULDER WIDTH / TOTAL PAV'T WIDTH	
202	STA. 2403+00.76 (5.33 FT. + 0 FT. + 0 FT.) = 5.33 FT.	
203	STA. 2406+90.76 BK (11.33 FT. + 0 FT. + 0 FT.) = (11.33 FT. + 5.33 FT.) / 2 x 390 FT. =	3248.7 SQ. FT.
204	STA. 2406+90.76 AH (11.33 FT. + 0 FT. + 11.33 FT.) = 22.66 FT.	
205	STA. 2408+20.76 BK (13.33 FT. + 0 FT. + 13.33 FT.) = (26.66 FT. + 22.66 FT.) / 2 x 130 FT. =	3205.8 SQ. FT.
206	STA. 2408+20.76 AH (13.33 FT. + 24 FT. + 13.33 FT.) = 50.66 FT.	
207	STA. 2412+00.00 (13.33 FT. + 24 FT. + 13.33 FT.) = (50.66 FT. + 50.66 FT.) / 2 x 379.24 FT. =	19,212.3 SQ. FT.
208	STA. 2420+87.25 (13.33 FT. + 24 FT. + 13.33 FT.) = (50.66 FT. + 50.66 FT.) / 2 x 887.25 FT. =	44,948.09 SQ. FT.
209	STA. 2421+37.25 (15.33 FT. + 24 FT. + 15.33 FT.) = (54.66 FT. + 50.66 FT.) / 2 x 50 FT. =	2633 SQ. FT.
210	STA. 2436+47.75 (13.33 FT. + 24 FT. + 13.33 FT.) = 50.66 FT.	
211	STA. 2443+00.00 (13.33 FT. + 24 FT. + 13.33 FT.) = (50.66 FT. + 50.66 FT.) / 2 x 652.25 FT. =	33,042.99 SQ. FT.
212	STA. 2443+80.16 (13.33 FT. + 24 FT. + 13.33 FT.) = (50.66 FT. + 50.66 FT.) / 2 x 80.16 FT. =	4060.91 SQ. FT.
213	STA. 2447+73.96 BK= (8.55 FT. + 24 FT. + 13.33 FT.) = (45.88 FT. + 50.66 FT.) / 2 x 393.8 FT. =	19,008.73 SQ. FT.
214	STA. 447+73.74 AH (8.55 FT. + 24 FT. + 13.33 FT.) = 45.88 FT.	
214A	STA. 449+13.56 BK= (6.85 FT. + 24 FT. + 10.93 FT.) = (41.78 FT. + 45.88 FT.) / 2 x 139.82 FT. =	6128.31 SQ. FT.
214B	STA. 449+13.56 AH (7.02 FT. + 24 FT. + 11.1 FT.) = 42.12 FT.	
215	STA. 449+28.56 (6.84 FT. + 24 FT. + 10.84 FT.) = (41.68 FT. + 42.12 FT.) / 2 x 15 FT. =	628.5 SQ. FT.
216	TOTAL LINES 202 TO 215 =	136,117.33 SQ. FT.
	N.B. APPROACH SLABS	
217	STA. 2421+37.25 TO STA. 2421+62.25 = 25 FT. x (28.5 FT. + 26 FT.) =	1362.5 SQ. FT.
218	NOT USED	
219	NOT USED	
220	STA. 2436+22.75 TO STA. 2436+47.75 = 25 FT. x (28.5 FT. + 28.5 FT.) =	1425 SQ. FT.
220A	STA. 449+28.56 TO STA. 449+53.56 = 25 FT. x (41.7 FT.) =	1042.5 SQ. FT.
220B	STA. 451+15.38 TO STA. 451+40.38 = 25 FT. x (41.7 FT.) =	1042.5 SQ. FT.
	S.B. APPROACH SLABS	
221	STA. 1421+57.25 TO STA. 1421+82.25 = 25 FT. x (28.5 FT. + 26 FT.) =	1362.5 SQ. FT.
222	STA. 1436+85.75 TO STA. 1437+10.75 = 25 FT. x (28.5 FT. + 26 FT.) =	1362.5 SQ. FT.
222A	STA. 448+80.06 TO STA. 449+05.06 = 25 FT. x (53 FT.) =	1325 SQ. FT.
222B	STA. 450+94.82 TO STA. 451+19.82 = 25 FT. x (53 FT.) =	1325 SQ. FT.
223	TOTAL LINES 217 TO 222B =	10,247.5 SQ. FT.
224	LINE , 201 (318754.59 SQ FT. x 6 " / 12 / 27) =	5902.86 CU. YD.
225	LINE , 216 (136117.33 SQ FT. x 6 " / 12 / 27) =	2520.69 CU. YD.
226	LINE , 223 (10247.5 SQ FT. x 6 " / 12 / 27) =	189.77 CU. YD.
227	TOTAL CARRIED FROM DRAINAGE DETAILS, SHEET 322 =	4.56 CU. YD.
228	TOTAL LINES 224 TO 227 TOTAL (304) =	8617.88 CU. YD.
	TOTAL CARRIED TO GENERAL SUMMARY =	8618 CU. YD.
	204 - SUBGRADE COMPACTION	
	SOUTHBOUND I.R. 271 — LEFT SHOULDER WIDTH / MAINLINE PAVEMENT WIDTH / RIGHT SHOULDER WIDTH / TOTAL PAV'T WIDTH	
229	STA. 352+40.00 (11.5 FT. + 0 FT. + 0 FT.) = 11.5 FT.	
230	STA. 353+05.00 (12.5 FT. + 0 FT. + 0 FT.) = (12.5 FT. + 11.5 FT.) / 2 x 65 FT. =	780 SQ. FT.
231	STA. 355+00.00 BK (12.5 FT. + 0 FT. + 0 FT.) = 12.5 FT. + 12.5 FT.) / 2 x 195 FT. =	2437.5 SQ. FT.
232	STA. 355+00.00 AH (12.5 FT. + 0 FT. + 5.5 FT.) = 18 FT.	
233	STA. 360+00.00 (12.5 FT. + 0 FT. + 16.5 FT.) = (29 FT. + 18 FT.) / 2 x 500 FT. =	11750 SQ. FT.
234	STA. 378+02.24 BK= (12.5 FT. + 0 FT. + 16.5 FT.) = 29 FT. + 29 FT.) / 2 x 1802.24 FT. =	52,264.96 SQ. FT.
235	STA. 1378+28.42 AH (12.5 FT. + 0 FT. + 16.5 FT.) = 29 FT.	
236	STA. 1408+53.16 (12.5 FT. + 0 FT. + 16.5 FT.) = (29 FT. + 29 FT.) / 2 x 3024.74 FT. =	87717.46 SQ. FT.
237	STA. 1409+83.16 (12.5 FT. + 0 FT. + 18.5 FT.) = (31 FT. + 29 FT.) / 2 x 130 FT. =	3900 SQ. FT.
238	STA. 1410+48.16 BK (13.5 FT. + 0 FT. + 19.5 FT.) = (33 FT. + 31 FT.) / 2 x 65 FT. =	2080 SQ. FT.
239	STA. 1410+48.16 AH (13.5 FT. + 24 FT. + 19.5 FT.) = 57 FT.	
240	STA. 1412+00.00 (14.29 FT. + 24 FT. + 17.83 FT.) = (56.12 FT. + 57 FT.) / 2 x 151.84 FT. =	8588.07 SQ. FT.
241	STA. 1412+00.00 (14.29 FT. + 24 FT. + 10.33 FT.) = 48.62 FT.	
242	STA. 1413+70.85 (15.17 FT. + 24 FT. + 8.46 FT.) = (47.63 FT. + 48.62 FT.) / 2 x 170.85 FT. =	8222.16 SQ. FT.
243	STA. 1414+50.00 (15.33 FT. + 24 FT. + 8 FT.) = (47.33 FT. + 47.63 FT.) / 2 x 79.15 FT. =	3758.04 SQ. FT.
244	STA. 1415+79.61 (16.25 FT. + 24 FT. + 8 FT.) = (48.25 FT. + 47.33 FT.) / 2 x 129.61 FT. =	6194.06 SQ. FT.
245	STA. 1421+43.25 BK (16.25 FT. + 24 FT. + 8 FT.) = (48.25 FT. + 48.25 FT.) / 2 x 563.64 FT. =	27,195.63 SQ. FT.
246	STA. 1421+43.25 AH (15.5 FT. + 24 FT. + 8 FT.) = 47.5 FT.	
247	STA. 1421+57.25 (15.5 FT. + 24 FT. + 8 FT.) = (47.5 FT. + 47.5 FT.) / 2 x 14 FT. =	665 SQ. FT.
248	STA. 1437+10.75 (13.5 FT. + 24 FT. + 8 FT.) = 45.5 FT.	
249	STA. 1438+25.00 (13.5 FT. + 24 FT. + 8 FT.) = (45.5 FT. + 45.5 FT.) / 2 x 114.25 FT. =	5198.38 SQ. FT.
250	STA. 1441+25.00 (13.5 FT. + 24 FT. + 8.32 FT.) = (45.82 FT. + 45.5 FT.) / 2 x 300 FT. =	13698 SQ. FT.
251	STA. 1442+75.00 (13.5 FT. + 24 FT. + 8 FT.) = (45.5 FT. + 45.82 FT.) / 2 x 150 FT. =	6849 SQ. FT.

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LINE	CALCULATIONS	QUANTITIES
252	STA. 1443+00.00 (13.5 FT. + 24 FT. + 8 FT.) = (45.5 FT. + 45.5 FT.) / 2 x 25 FT.	= 1137.5 SQ. FT.
253	STA. 1443+00.00 (13.5 FT. + 24 FT. + 15.5 FT.) = 53 FT.	
254	STA. 1443+25.00 (13.5 FT. + 24 FT. + 15.5 FT.) = (53 FT. + 53 FT.) / 2 x 25 FT.	= 1325 SQ. FT.
255	STA. 1446+24.92 (13.5 FT. + 24 FT. + 18.17 FT.) = (55.67 FT. + 53 FT.) / 2 x 299.92 FT.	= 16,296.15 SQ. FT.
256	STA. 1447+94.92 BK= (13.5 FT. + 24 FT. + 18.17 FT.) = (55.67 FT. + 55.67 FT.) / 2 x 170 FT.	= 9463.9 SQ. FT.
257	STA. 447+94.41 AH (13.5 FT. + 24 FT. + 18.17 FT.) = 55.67 FT.	
258	STA. 448+00.00 (13.5 FT. + 24 FT. + 18.17 FT.) = (55.67 FT. + 55.67 FT.) / 2 x 5.59 FT.	= 311.2 SQ. FT.
258A	STA. 448+65.06 BK= (11.34 FT. + 24 FT. + 18.17 FT.) = (53.51 FT. + 55.67 FT.) / 2 x 65.06 FT.	= 3551.63 SQ. FT.
258B	STA. 448+65.06 AH (11.34 FT. + 24 FT. + 18.17 FT.) = 53.51 FT.	
259	STA. 448+80.06 (10.84 FT. + 24 FT. + 18.17 FT.) = (53.01 FT. + 53.51 FT.) / 2 x 15 FT.	= 798.9 SQ. FT.
260	STA. 451+19.82 (10.84 FT. + 0 FT. + 18.17 FT.) = 29.01 FT.	
261	STA. 452+33.09 (12.5 FT. + 0 FT. + 18.17 FT.) = (30.67 FT. + 29.01 FT.) / 2 x 113.27 FT.	= 3379.98 SQ. FT.
262	STA. 456+00.00 (12.5 FT. + 0 FT. + 18.17 FT.) = (30.67 FT. + 30.67 FT.) / 2 x 366.91 FT.	= 11,253.13 SQ. FT.
263	STA. 460+70.00 (12.5 FT. + 0 FT. + 13.5 FT.) = (26 FT. + 30.67 FT.) / 2 x 470 FT.	= 13,317.45 SQ. FT.
264	STA. 465+90.00 BK (12.5 FT. + 0 FT. + 5.5 FT.) = (18 FT. + 26 FT.) / 2 x 520 FT.	= 11440 SQ. FT.
265	STA. 465+90.00 AH (12.5 FT. + 0 FT. + 0 FT.) = 12.5 FT.	
266	STA. 472+15.00 (12.5 FT. + 0 FT. + 0 FT.) = (12.5 FT. + 12.5 FT.) / 2 x 625 FT.	= 7812.5 SQ. FT.
267	STA. 472+80.00 (11.5 FT. + 0 FT. + 0 FT.) = (11.5 FT. + 12.5 FT.) / 2 x 65 FT.	= 780 SQ. FT.
268	TOTAL LINES 229 TO 267	= 322,165.6 SQ. FT.
	NORTHBOUND I.R. 271 — LEFT SHOULDER WIDTH / MAINLINE PAVEMENT WIDTH / RIGHT SHOULDER WIDTH / TOTAL PAV'T WIDTH	
269	STA. 2403+00.76 (5.5 FT. + 0 FT. + 0 FT.) = 5.5 FT.	
270	STA. 2406+90.76 BK (11.5 FT. + 0 FT. + 0 FT.) = (11.5 FT. + 5.5 FT.) / 2 x 390 FT.	= 3315 SQ. FT.
271	STA. 2406+90.76 AH (11.5 FT. + 0 FT. + 11.5 FT.) = 23 FT.	
272	STA. 2408+20.76 BK (13.5 FT. + 0 FT. + 13.5 FT.) = (27 FT. + 23 FT.) / 2 x 130 FT.	= 3250 SQ. FT.
273	STA. 2408+20.76 AH (13.5 FT. + 24 FT. + 13.5 FT.) = 51 FT.	
274	STA. 2412+00.00 (13.5 FT. + 24 FT. + 13.5 FT.) = (51 FT. + 51 FT.) / 2 x 379.24 FT.	= 19,341.24 SQ. FT.
275	STA. 2420+87.25 (13.5 FT. + 24 FT. + 13.5 FT.) = (51 FT. + 51 FT.) / 2 x 887.25 FT.	
276	STA. 2421+37.25 (15.5 FT. + 24 FT. + 15.5 FT.) = (55 FT. + 51 FT.) / 2 x 50 FT.	= 2650 SQ. FT.
277	STA. 2436+47.75 (13.5 FT. + 24 FT. + 13.5 FT.) = 51 FT.	
278	STA. 2443+00.00 (13.5 FT. + 24 FT. + 13.5 FT.) = (51 FT. + 51 FT.) / 2 x 652.25 FT.	= 33,264.75 SQ. FT.
279	STA. 2443+80.16 (13.5 FT. + 24 FT. + 13.5 FT.) = (51 FT. + 51 FT.) / 2 x 80.16 FT.	= 4088.16 SQ. FT.
280	STA. 2447+73.96 BK= (8.72 FT. + 24 FT. + 13.5 FT.) = (46.22 FT. + 51 FT.) / 2 x 393.8 FT.	= 19,142.62 SQ. FT.
281	STA. 447+73.74 AH (8.72 FT. + 24 FT. + 13.5 FT.) = 46.22 FT.	
281A	STA. 449+13.56 BK= (7.02 FT. + 24 FT. + 11.1 FT.) = (42.12 FT. + 46.22 FT.) / 2 x 139.82 FT.	= 6175.85 SQ. FT.
281B	STA. 449+13.56 AH (7.02 FT. + 24 FT. + 11.1 FT.) = 42.12 FT.	
282	STA. 449+28.56 (6.84 FT. + 24 FT. + 10.84 FT.) = (41.68 FT. + 42.12 FT.) / 2 x 15 FT.	= 628.5 SQ. FT.
283	TOTAL LINES 269 TO 282	= 91,856.12 SQ. FT.
	N.B. APPROACH SLABS	
284	STA. 2421+37.25 TO STA. 2421+62.25 = 25 FT. x (29 FT. + 26 FT.)	= 1375 SQ. FT.
285	NOT USED	
286	NOT USED	
287	STA. 2436+22.75 TO STA. 2436+47.75 = 25 FT. x (29 FT. + 29 FT.)	= 1450 SQ. FT.
287A	STA. 449+28.56 TO STA. 449+53.56 = 25 FT. x (42.7 FT.)	= 1067.5 SQ. FT.
287B	STA. 451+15.38 TO STA. 451+40.38 = 25 FT. x (42.7 FT.)	= 1067.5 SQ. FT.
	S.B. APPROACH SLABS	
288	STA. 1421+57.25 TO STA. 1421+82.25 = 25 FT. x (29 FT. + 26 FT.)	= 1375 SQ. FT.
289	STA. 1436+85.75 TO STA. 1437+10.75 = 25 FT. x (29 FT. + 26 FT.)	= 1375 SQ. FT.
289A	STA. 448+80.06 TO STA. 449+05.06 = 25 FT. x (54 FT.)	= 1350 SQ. FT.
289B	STA. 450+94.82 TO STA. 451+19.82 = 25 FT. x (54 FT.)	= 1350 SQ. FT.
290	TOTAL LINES 284 TO 289B	= 10410 SQ. FT.
291	TOTAL LINES 268 AND 283 AND 290	= 424,431.72 SQ. FT.
292	LINE 291, (424431.72 SQ. FT. / 9)	= 47,159.08 SQ. YD.
293	TOTAL CARRIED FROM DRAINAGE DETAILS, SHEET 322	= 31.82 SQ. YD.
294	TOTAL LINES 292 AND 293 — TOTAL (204)	= 47,190.9 SQ. YD.
	TOTAL CARRIED TO GENERAL SUMMARY	**= 47191 SQ. YD.**
	204 - PROOF ROLLING	
295	LINE 294 ,(47190.9 SQ. YD. / 3000 SQ. YD. PER LOT) x (1 HR. / LOT) — TOTAL (204)	= 15.73 HR.
	TOTAL CARRIED TO GENERAL SUMMARY	**= 16 HR.**

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LINE	CALCULATIONS	QUANTITIES
	618 - RUMBLE STRIPS, TYPE 2 (ASPHALT CONCRETE)	
	S.B. LANES LEFT SHOULDER	
296	STA. 352+40.00 TO STA. 378+02.24 BK	= 2562.24 FT.
294	STA. 1378+28.42 AHD TO STA. 1421+57.25	= 4328.83 FT.
298	STA. 1437+10.75 TO STA. 1447+94.92 BK	= 1084.17 FT.
299	STA. 447+94.41 AHD TO STA. 472+80.00 = 2485.59 MINUS 239.76 (BOSTON MILLES ROAD BRIDGE)	= 2245.83 FT.
	S.B. LANES RIGHT SHOULDER	
300	STA. 355+00.00 TO STA. 378+02.24 BK	= 2302.24 FT.
301	STA. 1378+28.42 AHD TO STA. 1421+57.25	= 4328.83 FT.
302	STA. 1437+10.75 TO STA. 1447+94.92 BK	= 1084.17 FT.
303	STA. 447+94.41 AHD TO STA. 465+90.00 = 1795.59 MINUS 239.76 (BOSTON MILLES ROAD BRIDGE)	= 1555.83 FT.
	N.B. LANES LEFT SHOULDER	
304	STA. 2403+00.76 TO STA. 2421+37.25	= 1836.49 FT.
305	STA. 2436+47.75 TO STA. 2447+73.96 BK	= 1126.21 FT.
306	STA. 447+73.74 AHD TO STA. 449+28.56	= 154.82 FT.
	N.B. LANES RIGHT SHOULDER	
307	STA. 2406+90.76 TO STA. 2421+37.25	= 1446.49 FT.
308	STA. 2436+47.75 TO STA. 2447+73.96 BK	= 1126.21 FT.
309	STA. 447+73.74 AHD TO STA. 449+28.56	= 154.82 FT.
310	TOTAL LINES 296 TO 309 TOTAL (618)	= 25,337.18 FT.
	TOTAL CARRIED TO GENERAL SUMMARY	= **25,338 FT.**
	609 - CURB, TYPE 6	
311	TOTAL CARRIED FROM DRAINAGE DETAILS, SHEET 322 TOTAL (609)	= 156.25 FT.
	TOTAL CARRIED TO GENERAL SUMMARY	= **157 FT.**
	609 - ASPHALT CURB, TYPE 1	
312	STA. 1415+79.61 TO STA. 1421+43.25 TOTAL (609)	= 563.64 FT.
	TOTAL CARRIED TO GENERAL SUMMARY	= **564 FT.**
	202 - APPROACH SLAB REMOVED	
	N.B. LANES	
313	STA. 2421+26.33 TO STA. 2421+51.33 = 25 FT. x 24	= 600 SQ. FT.
314	STA. 2436+05.89 TO STA. 2436+30.89 = 25 FT. x 24	= 600 SQ. FT.
315	STA. 449+28.56 TO STA. 449+53.56 = 25 FT. x 24	= 600 SQ. FT.
316	STA. 451+15.38 TO STA. 451+40.38 = 25 FT. x 24	= 600 SQ. FT.
	S.B. LANES	
317	STA. 1421+74.22 TO STA. 1421+99.22 = 25 FT. x 24	= 600 SQ. FT.
318	STA. 1436+96.75 TO STA. 1437+21.75 = 25 FT. x 24	= 600 SQ. FT.
319	STA. 448+80.06 TO STA. 449+05.06 = 25 FT. x 24	= 600 SQ. FT.
320	STA. 450+94.82 TO STA. 451+19.82 = 25 FT. x 24	= 600 SQ. FT.
321	TOTAL LINES 313 TO 320 4800 SQ. FT. /9 = TOTAL (202)	= 533.33 SQ YD.
	TOTAL CARRIED TO GENERAL SUMMARY	= **534 SQ. YD.**
	202 - PAVEMENT REMOVED (CONCRETE PAVEMENT AREA ONLY - EXCAVATION QUANTITIES INCLUDE EXISTING ASPHALT SHOULDER PAVEMENT REMOVAL)	
	N.B. LANES	
322	STA. 2408+20.76 TO STA. 2421+26.33 = 1305.57 FT. x 24	= 31,333.68 SQ. FT.
323	STA. 2436+30.89 TO STA. 2447+73.96 = 1143.07 FT. x 24	= 27,433.68 SQ. FT.
324	STA. 447+73.74 TO STA. 449+28.56 = 154.82 FT. x 24	= 3715.68 SQ. FT.
	S.B. LANES	
325	STA. 377+00.00 TO STA. 379+50.00 = 250.00 FT. x 10	= 2,500.00 SQ. FT.
325A	STA. 1410+48.16 TO STA. 1421+74.22 = 1126.06 FT. x 24	= 27,025.44 SQ. FT.
326	STA. 1437+21.75 TO STA. 1447+94.92 = 1073.17 FT. x 24	= 25,756.08 SQ. FT.
327	STA. 447+94.41 TO STA. 448+80.06 = 85.65 FT. x 24 /9 =	= 2055.60 SQ. FT.
328	TOTAL LINES 322 TO 327 = 119820.16 SQ. FT. TOTAL (202)	= 13,313.35 SQ YD.
	TOTAL CARRIED TO GENERAL SUMMARY	= **13314 SQ. YD.**
	SPECIAL - PRESSURE RELIEF JOINT, TYPE A	
329	STA. 451+19.82 SB LANES = 30 LIN. FT.	
330	STA. 451+40.38 NB LANES = 25 LIN. FT.	
	TOTAL LINES 329 TO 330 = 55 LIN. FT.	
	TOTAL CARRIED TO GENERAL SUMMARY	= **55 FT.**
	603 - 6" CONDUIT, TYPE F (PRESSURE RELIEF JOINT)	
331	STA. 451+40.38 NB LANES = 30 LIN. FT.	
	TOTAL CARRIED TO GENERAL SUMMARY	= **30 FT.**
	604 - PRECAST REINFORCED CONCRETE OUTLET (PRESSURE RELIEF JOINT)	
332	STA. 451+40.38 NB LANES = 1 EACH	
	TOTAL CARRIED TO GENERAL SUMMARY	= **1 EACH**
	605 - 6" SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP, 707.31 OR 707.41 (PRESSURE RELIEF JOINT)	
333	STA. 451+19.82 SB LANES = 30 LIN. FT.	
334	STA. 451+40.38 NB LANES = 25 LIN. FT.	
	TOTAL LINES 333 TO 334 = 55 LIN. FT.	
	TOTAL CARRIED TO GENERAL SUMMARY	= **55 FT.**

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LINE	CALCULATIONS			QUANTITIES	
	659 - SEEDING AND MULCHING (STEEL)				
1	TOTAL SEEDING QUANTITY CARRIED FROM GENERAL NOTES		=	84672	SQ. YD.
2	ADDITIONAL AREA FOR DITCH AND SLOPE EROSION PROTECTION, SODDING REINFORCED, AND PLANTING MISC.		=	11033	SQ. YD.
3	TOTAL LINES 1 AND 2		=	95705	SQ. YD.
	659 - SEEDING AND MULCHING (CONCRETE)				
4	TOTAL SEEDING QUANTITY CARRIED FROM GENERAL NOTES		=	84909	SQ. YD.
5	ADDITIONAL AREA FOR DITCH AND SLOPE EROSION PROTECTION, SODDING REINFORCED, AND PLANTING MISC.		=	10796	SQ. YD.
6	TOTAL LINES 4 AND 5		=	95705	SQ. YD.
7	TOTAL SEEDING AND MULCHING QUANTITY USED FOR CALCULATIONS		=	95705	SQ. YD.
	659 - SOIL ANALYSIS TEST				
8	LINE 9 , (10605.05 SQ. YD. / 1 TEST / 10000 CU. YD.) (MINIMUM 2 TESTS)	TOTAL (659)	=	1.06	EACH
		TOTAL CARRIED TO GENERAL NOTES	=	**2**	**EACH**
	659 - TOPSOIL				
9	LINE 7 , (95705 SQ. YD. x 111 CU YD. / 1000 SQ. YD.)	TOTAL (659)	=	10623.26	CU. YD.
		TOTAL CARRIED TO GENERAL NOTES	=	**10624**	**CU. YD.**
	659 - COMMERCIAL FERTILIZER				
10	LINE 7 , (95705 SQ. YD. X 1 TON / 7410 SQ. YD.)	TOTAL (659)	=	12.92	TON
		TOTAL CARRIED TO GENERAL NOTES	=	**13**	**TON**
	659 - LIME				
11	LINE 7 , (95705 SQ. YD. / 4840 SQ. YD. PER ACRE)	TOTAL (659)	=	19.77	ACRE
		TOTAL CARRIED TO GENERAL NOTES	=	**20**	**ACRE**
	659 - INTERSEEDING				
12	LINE 7 , (95705 SQ. YD. X 0.05)	TOTAL (659)	=	4785.25	SQ. YD.
		TOTAL CARRIED TO GENERAL NOTES	=	**4786**	**SQ. YD.**
	659 - WATER				
13	LINE 7 , (95705 SQ. YD. X 0.0027 M. GAL. / SQ. YD. x 2 APPLICATIONS)	TOTAL (659)	=	516.81	M. GAL.
		TOTAL CARRIED TO GENERAL NOTES	=	**517**	**M. GAL.**
	659 - MOWING				
14	LINE 7 , (95705 SQ. YD. X 9 X 25%) / 1000 X 4 SEASONS	TOTAL (659)	=	861.35	M. SQ. FT.
		TOTAL CARRIED TO GENERAL NOTES	=	**862**	**M. SQ. FT.**
15	**659 - REPAIR SEEDING AND MULCHING**				
	LINE 7 , (95705 SQ. YD. X 0.05)	TOTAL (659)	=	4785.25	SQ. YD.
		TOTAL CARRIED TO GENERAL NOTES	=	**4786**	**SQ. YD.**

CALCULATED JDL
CHECKED PRS

CALCULATIONS

SUM-271-8.02

21450GCB.DGN 9/8/04 CAR.CE0

I.R. 271 SOUTHBOUND SUPERELEVATION TABLE

DESCRIPTION		℄ CONST. STATION	OUTSIDE PAVED SHOULDER			PAVEMENT						PROFILE GRADE	INSIDE PAVED SHOULDER			MEDIAN
			OUTSIDE E.O.S. ELEVATION	X-SLOPE	WIDTH	OUTSIDE E.O.P. ELEVATION	X-SLOPE	WIDTH	CROWN S.B. LANES ELEVATION	WIDTH	X-SLOPE	MEDIAN E.O.P. ELEVATION	X-SLOPE	WIDTH	MEDIAN E.O.S. ELEVATION	
EXISTING FULL SUPERELEVATION		1410+25.00	825.74	-0.0417	11.64	826.23	-0.0280	12.00	826.56	12.00	-0.0280	826.90	-0.0417	17.23	826.18	
BEGIN FULL SUPER TRANSITION	PT	1410+48.16	825.05	-0.0417	12.00	825.55	-0.0280	12.00	825.88	12.00	-0.0280	826.22	-0.0417	18.00	825.47	
		1410+50.00	825.00	-0.0417	12.01	825.50	-0.0277	12.00	825.83	12.00	-0.0277	826.16	-0.0417	17.98	825.41	
		1410+75.00	824.33	-0.0417	12.10	824.84	-0.0235	12.00	825.12	12.00	-0.0235	825.40	-0.0417	17.71	824.66	
		1411+00.00	823.67	-0.0417	12.20	824.17	-0.0194	12.00	824.41	12.00	-0.0194	824.64	-0.0417	17.43	823.91	
END FULL SUPER TRANSITION		1411+20.16	823.13	-0.0417	12.27	823.65	-0.0160	12.00	823.84	12.00	-0.0160	824.03	-0.0417	17.21	823.31	
		1411+25.00	822.98	-0.0417	12.29	823.50	-0.0160	12.00	823.69	12.00	-0.0160	823.88	-0.0417	17.16	823.16	
		1411+50.00	822.22	-0.0417	12.38	822.74	-0.0160	12.00	822.93	12.00	-0.0160	823.12	-0.0417	16.88	822.42	
		1411+75.00	821.46	-0.0417	12.48	821.98	-0.0160	12.00	822.17	12.00	-0.0160	822.36	-0.0417	16.61	821.67	
BEGIN BARRIER WALL RT. SIDE		1412+00.00	820.69	-0.0417	12.57	821.22	-0.0160	12.00	821.41	12.00	-0.0160	821.60	-0.0417	16.33	820.92	
		1412+25.00	819.93	-0.0417	12.67	820.46	-0.0160	12.00	820.65	12.00	-0.0160	820.84	-0.0417	16.06	820.17	
		1412+50.00	819.16	-0.0417	12.76	819.70	-0.0160	12.00	819.89	12.00	-0.0160	820.08	-0.0417	15.79	819.42	
		1412+75.00	818.39	-0.0417	12.85	818.93	-0.0160	12.00	819.12	12.00	-0.0160	819.31	-0.0417	15.51	818.66	
		1413+00.00	817.63	-0.0417	12.95	818.17	-0.0160	12.00	818.36	12.00	-0.0160	818.55	-0.0417	15.24	817.91	
BEGIN FULL SUPER TRANSITION		1413+22.85	816.93	-0.0417	13.03	817.48	-0.0160	12.00	817.67	12.00	-0.0160	817.86	-0.0417	14.99	817.24	
		1413+25.00	816.85	-0.0417	13.04	817.39	-0.0165	12.00	817.59	12.00	-0.0165	817.79	-0.0417	14.96	817.17	
		1413+50.00	815.93	-0.0417	13.14	816.48	-0.0228	12.00	816.76	12.00	-0.0228	817.03	-0.0417	14.69	816.42	
END FULL SUPER TRANSITION	PC	1413+70.85	815.18	-0.0417	13.21	815.73	-0.0280	12.00	816.06	12.00	-0.0280	816.40	-0.0417	14.46	815.80	
		1413+75.00	815.05	-0.0417	13.23	815.60	-0.0280	12.00	815.93	12.00	-0.0280	816.27	-0.0417	14.42	815.67	
		1414+00.00	814.28	-0.0417	13.32	814.84	-0.0280	12.00	815.17	12.00	-0.0280	815.51	-0.0417	14.20	814.92	
		1414+25.00	813.52	-0.0417	13.42	814.08	-0.0280	12.00	814.41	12.00	-0.0280	814.75	-0.0417	14.06	814.16	
		1414+50.00	812.76	-0.0417	13.51	813.32	-0.0280	12.00	813.65	12.00	-0.0280	813.99	-0.0417	14.00	813.41	
		1414+75.00	811.99	-0.0417	13.61	812.56	-0.0280	12.00	812.89	12.00	-0.0280	813.23	-0.0417	14.00	812.65	
		1415+00.00	811.23	-0.0417	13.70	811.80	-0.0280	12.00	812.13	12.00	-0.0280	812.47	-0.0417	14.00	811.89	
		1415+25.00	810.45	-0.0417	13.79	811.03	-0.0280	12.00	811.36	12.00	-0.0280	811.70	-0.0417	14.00	811.12	
		1415+50.00	809.69	-0.0417	13.89	810.27	-0.0280	12.00	810.60	12.00	-0.0280	810.94	-0.0417	14.00	810.36	
		1415+75.00	808.93	-0.0417	13.98	809.51	-0.0280	12.00	809.84	12.00	-0.0280	810.18	-0.0417	14.00	809.60	
		1415+79.61	808.78	-0.0417	14.00	809.37	-0.0280	12.00	809.70	12.00	-0.0280	810.04	-0.0417	14.00	809.46	
		1416+00.00	808.16	-0.0417	14.00	808.75	-0.0280	12.00	809.08	12.00	-0.0280	809.42	-0.0417	14.00	808.84	
		1416+25.00	807.40	-0.0417	14.00	807.99	-0.0280	12.00	808.32	12.00	-0.0280	808.66	-0.0417	14.00	808.08	
		1416+50.00	806.64	-0.0417	14.00	807.23	-0.0280	12.00	807.56	12.00	-0.0280	807.90	-0.0417	14.00	807.32	
		1416+75.00	805.88	-0.0417	14.00	806.47	-0.0280	12.00	806.80	12.00	-0.0280	807.14	-0.0417	14.00	806.56	
		1417+00.00	805.12	-0.0417	14.00	805.71	-0.0280	12.00	806.04	12.00	-0.0280	806.38	-0.0417	14.00	805.80	
		1417+25.00	804.36	-0.0417	14.00	804.95	-0.0280	12.00	805.28	12.00	-0.0280	805.62	-0.0417	14.00	805.04	
		1417+50.00	803.60	-0.0417	14.00	804.19	-0.0280	12.00	804.52	12.00	-0.0280	804.86	-0.0417	14.00	804.28	
		1417+75.00	802.83	-0.0417	14.00	803.42	-0.0280	12.00	803.75	12.00	-0.0280	804.09	-0.0417	14.00	803.51	
		1418+00.00	802.07	-0.0417	14.00	802.66	-0.0280	12.00	802.99	12.00	-0.0280	803.33	-0.0417	14.00	802.75	
		1418+25.00	801.31	-0.0417	14.00	801.90	-0.0280	12.00	802.23	12.00	-0.0280	802.57	-0.0417	14.00	801.99	
		1418+50.00	800.55	-0.0417	14.00	801.14	-0.0280	12.00	801.47	12.00	-0.0280	801.81	-0.0417	14.00	801.23	
		1418+75.00	799.79	-0.0417	14.00	800.38	-0.0280	12.00	800.71	12.00	-0.0280	801.05	-0.0417	14.00	800.47	
		1419+00.00	799.03	-0.0417	14.00	799.62	-0.0280	12.00	799.95	12.00	-0.0280	800.29	-0.0417	14.00	799.71	
		1419+25.00	798.27	-0.0417	14.00	798.86	-0.0280	12.00	799.19	12.00	-0.0280	799.53	-0.0417	14.00	798.95	
BEGIN SUPER TRANSITION	PT-36'	1419+47.74	797.58	-0.0417	14.00	798.17	-0.0280	12.00	798.50	12.00	-0.0280	798.84	-0.0417	14.00	798.26	
		1419+50.00	797.52	-0.0417	14.00	798.11	-0.0276	12.00	798.44	12.00	-0.0276	798.77	-0.0417	14.00	798.19	
		1419+75.00	796.86	-0.0417	14.00	797.45	-0.0235	12.00	797.73	12.00	-0.0235	798.01	-0.0417	14.00	797.43	
	PT	1419+83.74	796.63	-0.0417	14.00	797.21	-0.0220	12.00	797.48	12.00	-0.0220	797.74	-0.0417	14.00	797.16	
		1420+00.00	796.20	-0.0417	14.00	796.79	-0.0193	12.00	797.02	12.00	-0.0193	797.25	-0.0417	14.00	796.67	
END FULL SUPER TRANSITION	PT+36'	1420+19.74	795.68	-0.0417	14.00	796.27	-0.0160	12.00	796.46	12.00	-0.0160	796.65	-0.0417	14.00	796.07	
		1420+25.00	795.53	-0.0417	14.00	796.12	-0.0160	12.00	796.31	12.00	-0.0142	796.48	-0.0417	14.00	795.90	
		1420+50.00	794.87	-0.0417	14.00	795.46	-0.0160	12.00	795.65	12.00	-0.0059	795.72	-0.0417	14.00	795.14	
BEGIN SHOULDER SLOPE TRANSITION		1420+59.75	794.62	-0.0417	14.00	795.20	-0.0160	12.00	795.39	12.00	-0.0030	795.43	-0.0417	14.00	794.85	
BEGIN TANGENT RUNOUT	TS/ST	1420+67.74	794.43	-0.0396	14.00	794.99	-0.0160	12.00	795.18	12.00	0.0000	795.18	-0.0396	14.00	794.63	
		1420+75.00	794.26	-0.0381	14.00	794.80	-0.0160	12.00	794.99	12.00	0.0024	794.96	-0.0381	14.00	794.43	
		1421+00.00	793.68	-0.0329	14.00	794.14	-0.0160	12.00	794.33	12.00	0.0108	794.20	-0.0329	14.00	793.74	
END TANGENT RUNOUT		1421+15.74	793.31	-0.0296	14.00	793.72	-0.0160	12.00	793.91	12.00	0.0160	793.72	-0.0296	14.00	793.31	
		1421+25.00	793.08	-0.0259	14.00	793.44	-0.0160	12.00	793.63	12.00	0.0160	793.44	-0.0259	14.00	793.08	
BEGIN CROSS SLOPE TRANSITION		1421+49.75	792.47	-0.0160	14.00	792.69	-0.0160	12.00	792.88	12.00	0.0160	792.69	-0.0160	14.00	792.47	
		1421+50.00	792.46	-0.0160	14.00	792.68	-0.0160	12.00	792.87	12.00	0.0160	792.68	-0.0160	14.00	792.46	

CALCULATED JL
CHECKED PRS

I.R. 271 SUPERELEVATION TABLE

SUM-271-8.02

107
612

2H50CE_DGN 3/29/04 CAR

I.R. 271 SOUTHBOUND SUPERELEVATION TABLE

DESCRIPTION	℄ CONST. STATION	OUTSIDE PAVED SHOULDER			PAVEMENT						PROFILE GRADE	INSIDE PAVED SHOULDER			MEDIAN
		OUTSIDE E.O.S. ELEVATION	X-SLOPE	WIDTH	OUTSIDE E.O.P. ELEVATION	X-SLOPE	WIDTH	CROWN S.B. LANES ELEVATION	WIDTH	X-SLOPE	MEDIAN E.O.P. ELEVATION	X-SLOPE	WIDTH	MEDIAN E.O.S. ELEVATION	
BEGIN APPROACH SLAB	1421+57.25	792.22	-0.0172	14.00	792.46	-0.0172	12.00	792.67	12.00	0.0172	792.46	-0.0172	14.00	792.22	
	1421+75.00	791.65	-0.0199	14.00	791.93	-0.0199	12.00	792.17	12.00	0.0199	791.93	-0.0199	14.00	791.65	
END APPROACH & CROSS SLOPE TRANSITION	1421+82.25	791.43	-0.0210	14.00	791.72	-0.0210	12.00	791.97	12.00	0.0210	791.72	-0.0210	14.00	791.43	
BRIDGE - SUM-271-0802 (L)															
BEGIN APPROACH & CROSS SLOPE TRANSITION	1436+85.75	746.47	-0.0210	14.00	746.76	-0.0210	12.00	747.01	12.00	0.0210	746.76	-0.0210	14.00	746.47	
	1437+00.00	746.08	-0.0188	14.00	746.34	-0.0188	12.00	746.57	12.00	0.0188	746.34	-0.0188	14.00	746.08	
END APPROACH SLAB	1437+10.75	745.77	-0.0172	14.00	746.01	-0.0172	12.00	746.22	12.00	0.0172	746.01	-0.0172	14.00	745.77	
END CROSS SLOPE TRANSITION BEGIN SHOULDER TRANSITION	1437+18.25	745.57	-0.0160	14.00	745.79	-0.0160	12.00	745.98	12.00	0.0160	745.79	-0.0160	14.00	745.57	
	1437+25.00	745.34	-0.0179	14.00	745.59	-0.0160	12.00	745.78	12.00	0.0160	745.59	-0.0179	14.00	745.34	
	1437+41.79	744.76	-0.0227	14.00	745.08	-0.0160	12.00	745.27	12.00	0.0160	745.08	-0.0227	14.00	744.76	
	1437+50.00	744.49	-0.0251	13.67	744.83	-0.0160	12.00	745.02	12.00	0.0160	744.83	-0.0251	14.00	744.48	
BEGIN TANGENT RUNOUT	1437+69.04	743.87	-0.0305	12.91	744.26	-0.0160	12.00	744.45	12.00	0.0160	744.26	-0.0305	14.00	743.83	
	1437+75.00	743.65	-0.0322	12.67	744.06	-0.0160	12.00	744.25	12.00	0.0140	744.08	-0.0322	14.00	743.63	
	1437+91.79	743.05	-0.0370	12.00	743.49	-0.0160	12.00	743.68	12.00	0.0085	743.58	-0.0370	14.00	743.06	
	1438+00.00	742.73	-0.0393	12.00	743.21	-0.0160	12.00	743.40	12.00	0.0057	743.33	-0.0393	14.00	742.78	
END SHOULDER TRANSITION	1438+08.25	742.42	-0.0417	12.00	742.92	-0.0160	12.00	743.12	12.00	0.0030	743.08	-0.0417	14.00	742.50	
	TS 1438+17.04	742.13	-0.0417	12.00	742.63	-0.0160	12.00	742.82	12.00	0.0000	742.82	-0.0417	14.00	742.24	
	1438+25.00	741.86	-0.0417	12.00	742.36	-0.0160	12.00	742.55	12.00	-0.0027	742.58	-0.0417	14.00	742.00	
	1438+50.00	741.01	-0.0417	12.00	741.51	-0.0160	12.00	741.70	12.00	-0.0110	741.83	-0.0417	14.01	741.25	
	1438+65.04	740.50	-0.0417	12.00	741.00	-0.0160	12.00	741.19	12.00	-0.0160	741.38	-0.0417	14.02	740.80	
	1438+75.00	740.16	-0.0417	12.00	740.66	-0.0176	12.00	740.87	12.00	-0.0176	741.08	-0.0417	14.03	740.50	
	1439+00.00	739.31	-0.0417	12.00	739.81	-0.0217	12.00	740.07	12.00	-0.0217	740.33	-0.0417	14.10	739.74	
	1439+25.00	738.46	-0.0417	12.00	738.96	-0.0258	12.00	739.27	12.00	-0.0258	739.58	-0.0417	14.18	738.99	
SHOULDER BREAK	1439+40.07	737.94	-0.0417	12.00	738.44	-0.0283	12.00	738.78	12.00	-0.0283	739.12	-0.0417	14.21	738.53	
	1439+50.00	737.60	-0.0417	12.00	738.10	-0.0299	12.00	738.46	12.00	-0.0299	738.82	-0.0401	14.23	738.25	
	1439+75.00	736.75	-0.0417	12.00	737.25	-0.0340	12.00	737.66	12.00	-0.0340	738.07	-0.0360	14.25	737.56	
	SC 1439+87.04	736.36	-0.0417	12.00	736.86	-0.0360	12.00	737.29	12.00	-0.0360	737.72	-0.0340	14.26	737.24	
	1440+00.00	735.98	-0.0417	12.00	736.48	-0.0360	12.00	736.91	12.00	-0.0360	737.34	-0.0340	14.26	736.86	
	1440+25.00	735.28	-0.0417	12.00	735.78	-0.0360	12.00	736.21	12.00	-0.0360	736.64	-0.0340	14.28	736.15	
	1440+50.00	734.62	-0.0417	12.00	735.12	-0.0360	12.00	735.55	12.00	-0.0360	735.98	-0.0340	14.29	735.49	
	1440+75.00	733.98	-0.0417	12.00	734.48	-0.0360	12.00	734.91	12.00	-0.0360	735.34	-0.0340	14.30	734.85	
	CS 1440+84.04	733.76	-0.0417	12.00	734.26	-0.0360	12.00	734.69	12.00	-0.0360	735.12	-0.0340	14.31	734.63	
	1441+00.00	733.44	-0.0417	12.00	733.94	-0.0334	12.00	734.34	12.00	-0.0334	734.74	-0.0366	14.31	734.22	
	1441+25.00	732.96	-0.0417	12.00	733.46	-0.0293	12.00	733.81	12.00	-0.0293	734.16	-0.0406	14.32	733.58	
SHOULDER BREAK	1441+31.51	732.84	-0.0417	12.00	733.34	-0.0282	12.00	733.68	12.00	-0.0282	734.02	-0.0417	14.31	733.42	
	1441+50.00	732.52	-0.0417	12.00	733.02	-0.0252	12.00	733.32	12.00	-0.0252	733.62	-0.0417	14.30	733.02	
	1441+75.00	732.10	-0.0417	12.00	732.60	-0.0211	12.00	732.86	12.00	-0.0211	733.11	-0.0417	14.24	732.52	
	1442+00.00	731.72	-0.0417	12.00	732.22	-0.0170	12.00	732.43	12.00	-0.0170	732.63	-0.0417	14.15	732.04	
	1442+25.00	731.37	-0.0417	12.00	731.87	-0.0129	12.00	732.03	12.00	-0.0129	732.18	-0.0417	14.07	731.59	
	1442+50.00	731.05	-0.0417	12.00	731.55	-0.0088	12.00	731.65	12.00	-0.0088	731.76	-0.0417	14.02	731.18	
	1442+75.00	730.75	-0.0417	12.00	731.25	-0.0048	12.00	731.31	12.00	-0.0048	731.37	-0.0417	14.00	730.79	
END BARRIER WALL RT. SIDE	1443+00.00	730.49	-0.0417	12.00	730.99	-0.0007	12.00	731.00	12.00	-0.0007	731.01	-0.0417	14.00	730.43	
	ST 1443+04.04	730.46	-0.0417	12.00	730.96	0.0000	12.00	730.96	12.00	0.0000	730.96	-0.0417	14.00	730.38	
	TS 1443+07.92	730.42	-0.0417	12.00	730.92	0.0006	12.00	730.92	12.00	0.0006	730.91	-0.0417	14.00	730.33	
	1443+25.00	730.27	-0.0417	12.00	730.77	0.0034	12.00	730.73	12.00	0.0034	730.69	-0.0417	14.00	730.11	
	1443+50.00	730.08	-0.0417	12.00	730.58	0.0074	12.00	730.49	12.00	0.0074	730.40	-0.0417	14.22	729.81	
	1443+75.00	729.90	-0.0417	12.00	730.40	0.0114	12.00	730.27	12.00	0.0114	730.13	-0.0417	14.45	729.53	
	1444+00.00	729.77	-0.0417	12.00	730.27	0.0154	12.00	730.09	12.00	0.0154	729.90	-0.0417	14.67	729.29	
	1444+25.00	729.67	-0.0417	12.00	730.17	0.0195	12.00	729.93	12.00	0.0195	729.70	-0.0417	14.89	729.08	
	1444+50.00	729.59	-0.0417	12.00	730.09	0.0235	12.00	729.81	12.00	0.0235	729.53	-0.0417	15.11	728.90	
	1444+75.00	729.55	-0.0417	12.00	730.05	0.0275	12.00	729.72	12.00	0.0275	729.39	-0.0417	15.34	728.75	
SHOULDER BREAK	1444+78.51	729.54	-0.0417	12.00	730.04	0.0281	12.00	729.71	12.00	0.0281	729.37	-0.0417	15.37	728.73	
	1445+00.00	729.58	-0.0384	12.00	730.04	0.0315	12.00	729.66	12.00	0.0315	729.28	-0.0417	15.56	728.63	
	1445+25.00	729.65	-0.0345	12.00	730.06	0.0355	12.00	729.64	12.00	0.0355	729.21	-0.0417	15.78	728.55	

CALCULATED JL CHECKED PRS

I.R. 271 SUPERELEVATION TABLE

SUM-271-8.02

21450GE.DGN 02/04/04 CAR

I.R. 271 SOUTHBOUND SUPERELEVATION TABLE

DESCRIPTION	@ CONST. STATION	OUTSIDE PAVED SHOULDER			PAVEMENT						PROFILE GRADE	INSIDE PAVED SHOULDER			MEDIAN
		OUTSIDE E.O.S. ELEVATION	X-SLOPE	WIDTH	OUTSIDE E.O.P. ELEVATION	X-SLOPE	WIDTH	CROWN S.B. LANES ELEVATION	WIDTH	X-SLOPE	MEDIAN E.O.P. ELEVATION	X-SLOPE	WIDTH	MEDIAN E.O.S. ELEVATION	
	SC 1445+27.92	729.66	-0.0340	12.00	730.06	0.0360	12.00	729.63	12.00	0.0360	729.20	-0.0417	15.81	728.54	
	1445+50.00	729.62	-0.0340	12.00	730.02	0.0360	12.00	729.59	12.00	0.0360	729.16	-0.0417	16.00	728.49	
	1445+75.00	729.61	-0.0340	12.00	730.01	0.0360	12.00	729.58	12.00	0.0360	729.15	-0.0417	16.23	728.47	
	1446+00.00	729.63	-0.0340	12.00	730.03	0.0360	12.00	729.60	12.00	0.0360	729.17	-0.0417	16.45	728.48	
	CS 1446+24.92	729.67	-0.0340	12.00	730.07	0.0360	12.00	729.64	12.00	0.0360	729.21	-0.0417	16.67	728.52	
	1446+25.00	729.67	-0.0340	12.00	730.07	0.0360	12.00	729.64	12.00	0.0360	729.21	-0.0417	16.67	728.52	
	1446+50.00	729.60	-0.0381	12.00	730.06	0.0319	12.00	729.67	12.00	0.0319	729.29	-0.0417	16.67	728.60	
SHOULDER BREAK	1446+71.89	729.57	-0.0417	12.00	730.07	0.0283	12.00	729.73	12.00	0.0283	729.39	-0.0417	16.67	728.70	
	1446+75.00	729.57	-0.0417	12.00	730.07	0.0278	12.00	729.73	12.00	0.0278	729.40	-0.0417	16.67	728.71	
	1447+00.00	729.61	-0.0417	12.00	730.11	0.0237	12.00	729.82	12.00	0.0237	729.54	-0.0417	16.67	728.85	
	1447+25.00	729.69	-0.0417	12.00	730.19	0.0196	12.00	729.96	12.00	0.0196	729.72	-0.0417	16.67	729.03	
	ST 1447+46.92	729.77	-0.0417	12.00	730.27	0.0160	12.00	730.08	12.00	0.0160	729.89	-0.0417	16.67	729.20	
	1447+50.00	729.79	-0.0417	12.00	730.29	0.0150	12.00	730.11	12.00	0.0160	729.92	-0.0417	16.67	729.23	
	1447+75.00	729.93	-0.0417	12.00	730.43	0.0066	12.00	730.35	12.00	0.0160	730.16	-0.0417	16.67	729.47	
STA EQN BACK	TS/ST 1447+94.92	730.06	-0.0417	12.00	730.56	0.0000	12.00	730.56	12.00	0.0160	730.37	-0.0417	16.67	729.68	
STA EQN AHEAD	447+94.41	730.06	-0.0417	12.00	730.56	0.0000	12.00	730.56	12.00	0.0160	730.37	-0.0417	16.67	729.68	
	448+00.00	730.10	-0.0417	12.00	730.60	-0.0019	12.00	730.62	12.00	0.0160	730.43	-0.0417	16.67	729.74	
	448+25.00	730.34	-0.0417	11.05	730.80	-0.0102	12.00	730.92	12.00	0.0160	730.73	-0.0417	16.67	730.04	
NORMAL CROWN	448+42.41	730.52	-0.0417	10.39	730.95	-0.0160	12.00	731.14	12.00	0.0160	730.95	-0.0417	16.67	730.26	
	448+50.00	730.63	-0.0417	10.10	731.05	-0.0160	12.00	731.24	12.00	0.0160	731.05	-0.0417	16.67	730.36	

CALCULATED JL
CHECKED PRS

I.R. 271 SUPERELEVATION TABLE

SUM-271-8.02

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21450GE.DGN 3/29/04 CAR

I.R. 271 NORTHBOUND SUPERELEVATION TABLE

MEDIAN	INSIDE PAVED SHOULDER			PROFILE GRADE	PAVEMENT					OUTSIDE PAVED SHOULDER				℄ CONST. STATION	DESCRIPTION
	MEDIAN E.O.S. ELEVATION	X-SLOPE	WIDTH	MEDIAN E.O.P. ELEVATION	X-SLOPE	WIDTH	CROWN N.B. LANES ELEVATION	WIDTH	X-SLOPE	OUTSIDE E.O.P. ELEVATION	WIDTH	X-SLOPE	OUTSIDE E.O.S. ELEVATION		
	822.97	-0.0417	12.00	823.47	0.0240	12.00	823.76	12.00	0.0240	824.05	12.00	-0.0417	823.55	2408+00.00	
	822.34	-0.0417	12.00	822.84	0.0240	12.00	823.13	12.00	0.0240	823.42	12.00	-0.0417	822.92	2408+20.76	CS MATCH EXISTING CURVE
	822.21	-0.0417	12.00	822.71	0.0247	12.00	823.01	12.00	0.0247	823.31	12.00	-0.0417	822.81	2408+25.00	
	821.56	-0.0417	12.00	822.06	0.0283	12.00	822.40	12.00	0.0283	822.74	12.00	-0.0417	822.24	2408+46.56	BEGIN O.S. SHOULDER BREAK
	821.45	-0.0417	12.00	821.95	0.0289	12.00	822.30	12.00	0.0289	822.65	12.00	-0.0411	822.16	2408+50.00	
	820.69	-0.0417	12.00	821.19	0.0330	12.00	821.59	12.00	0.0330	821.99	12.00	-0.0370	821.55	2408+75.00	
	819.94	-0.0417	12.00	820.44	0.0372	12.00	820.89	12.00	0.0372	821.34	12.00	-0.0328	820.95	2409+00.00	
	819.18	-0.0417	12.00	819.68	0.0414	12.00	820.18	12.00	0.0414	820.68	12.00	-0.0286	820.34	2409+25.00	
	819.12	-0.0417	12.00	819.62	0.0417	12.00	820.12	12.00	0.0417	820.62	12.00	-0.0283	820.28	2409+26.96	BEGIN I.S. SHOULDER BREAK
	818.37	-0.0455	12.00	818.92	0.0455	12.00	819.47	12.00	0.0455	820.02	12.00	-0.0245	819.73	2409+50.00	
	817.56	-0.0497	12.00	818.16	0.0497	12.00	818.76	12.00	0.0497	819.36	12.00	-0.0203	819.12	2409+75.00	
	817.12	-0.0520	12.00	817.74	0.0520	12.00	818.36	12.00	0.0520	818.98	12.00	-0.0180	818.76	2409+88.76	SC
	816.78	-0.0520	12.00	817.40	0.0520	12.00	818.02	12.00	0.0520	818.64	12.00	-0.0180	818.42	2410+00.00	
	816.02	-0.0520	12.00	816.64	0.0520	12.00	817.26	12.00	0.0520	817.88	12.00	-0.0180	817.66	2410+25.00	
	815.26	-0.0520	12.00	815.88	0.0520	12.00	816.50	12.00	0.0520	817.12	12.00	-0.0180	816.9	2410+50.00	
	814.50	-0.0520	12.00	815.12	0.0520	12.00	815.74	12.00	0.0520	816.36	12.00	-0.0180	816.14	2410+75.00	
	813.75	-0.0520	12.00	814.37	0.0520	12.00	814.99	12.00	0.0520	815.61	12.00	-0.0180	815.39	2411+00.00	
	812.99	-0.0520	12.00	813.61	0.0520	12.00	814.23	12.00	0.0520	814.85	12.00	-0.0180	814.63	2411+25.00	
	812.34	-0.0520	12.00	812.96	0.0520	12.00	813.58	12.00	0.0520	814.20	12.00	-0.0180	813.98	2411+46.33	CS END FULL SUPER
	812.23	-0.0514	12.00	812.85	0.0514	12.00	813.47	12.00	0.0514	814.09	12.00	-0.0186	813.87	2411+50.00	
	811.52	-0.0472	12.00	812.09	0.0472	12.00	812.66	12.00	0.0472	813.23	12.00	-0.0228	812.96	2411+75.00	
	810.81	-0.0431	12.00	811.33	0.0431	12.00	811.85	12.00	0.0431	812.37	12.00	-0.0269	812.05	2412+00.00	
	810.58	-0.0417	12.00	811.08	0.0417	12.00	811.58	12.00	0.0417	812.08	12.00	-0.0283	811.74	2412+08.13	BEGIN I.S. SHOULDER BREAK
	810.07	-0.0417	12.00	810.57	0.0389	12.00	811.04	12.00	0.0389	811.51	12.00	-0.0311	811.14	2412+25.00	
	809.31	-0.0417	12.00	809.81	0.0347	12.00	810.23	12.00	0.0347	810.65	12.00	-0.0353	810.23	2412+50.00	
	808.55	-0.0417	12.00	809.05	0.0306	12.00	809.42	12.00	0.0306	809.79	12.00	-0.0394	809.32	2412+75.00	
	808.14	-0.0417	12.00	808.64	0.0283	12.00	808.98	12.00	0.0283	809.32	12.00	-0.0417	808.82	2412+88.53	BEGIN O.S. SHOULDER BREAK
	807.80	-0.0417	12.00	808.30	0.0264	12.00	808.62	12.00	0.0264	808.94	12.00	-0.0417	808.44	2413+00.00	
	807.04	-0.0417	12.00	807.54	0.0222	12.00	807.81	12.00	0.0222	808.08	12.00	-0.0417	807.58	2413+25.00	
	806.28	-0.0417	12.00	806.78	0.0181	12.00	807.00	12.00	0.0181	807.22	12.00	-0.0417	806.72	2413+50.00	
	805.90	-0.0417	12.00	806.40	0.0160	12.00	806.59	12.00	0.0160	806.78	12.00	-0.0417	806.28	2413+62.33	
	805.52	-0.0417	12.00	806.02	0.0160	12.00	806.21	12.00	0.0119	806.35	12.00	-0.0417	805.85	2413+75.00	
	804.76	-0.0417	12.00	805.26	0.0160	12.00	805.45	12.00	0.0037	805.49	12.00	-0.0417	804.99	2414+00.00	
	804.42	-0.0417	12.00	804.92	0.0160	12.00	805.11	12.00	0.0000	805.11	12.00	-0.0417	804.61	2414+11.33	ST
	804.00	-0.0417	12.00	804.50	0.0160	12.00	804.69	12.00	-0.0046	804.63	12.00	-0.0417	804.13	2414+25.00	
	803.24	-0.0417	12.00	803.74	0.0160	12.00	803.93	12.00	-0.0129	803.78	12.00	-0.0417	803.28	2414+50.00	
	802.96	-0.0417	12.00	803.46	0.0160	12.00	803.65	12.00	-0.0160	803.46	12.00	-0.0417	802.96	2414+59.33	TANGENT RUNOUT
	802.49	-0.0417	12.00	802.99	0.0160	12.00	803.18	12.00	-0.0160	802.99	12.00	-0.0417	802.49	2414+75.00	
	801.73	-0.0417	12.00	802.23	0.0160	12.00	802.42	12.00	-0.0160	802.23	12.00	-0.0417	801.73	2415+00.00	
	800.97	-0.0417	12.00	801.47	0.0160	12.00	801.66	12.00	-0.0160	801.47	12.00	-0.0417	800.97	2415+25.00	
	800.21	-0.0417	12.00	800.71	0.0160	12.00	800.90	12.00	-0.0160	800.71	12.00	-0.0417	800.21	2415+50.00	
	799.45	-0.0417	12.00	799.95	0.0160	12.00	800.14	12.00	-0.0160	799.95	12.00	-0.0417	799.45	2415+75.00	
	798.69	-0.0417	12.00	799.19	0.0160	12.00	799.38	12.00	-0.0160	799.19	12.00	-0.0417	798.69	2416+00.00	
	797.93	-0.0417	12.00	798.43	0.0160	12.00	798.62	12.00	-0.0160	798.43	12.00	-0.0417	797.93	2416+25.00	
	797.17	-0.0417	12.00	797.67	0.0160	12.00	797.86	12.00	-0.0160	797.67	12.00	-0.0417	797.17	2416+50.00	
	796.42	-0.0417	12.00	796.92	0.0160	12.00	797.11	12.00	-0.0160	796.92	12.00	-0.0417	796.42	2416+75.00	
	795.66	-0.0417	12.00	796.16	0.0160	12.00	796.35	12.00	-0.0160	796.16	12.00	-0.0417	795.66	2417+00.00	
	794.90	-0.0417	12.00	795.40	0.0160	12.00	795.59	12.00	-0.0160	795.40	12.00	-0.0417	794.9	2417+25.00	
	794.14	-0.0417	12.00	794.64	0.0160	12.00	794.83	12.00	-0.0160	794.64	12.00	-0.0417	794.14	2417+50.00	
	793.38	-0.0417	12.00	793.88	0.0160	12.00	794.07	12.00	-0.0160	793.88	12.00	-0.0417	793.38	2417+75.00	
	792.62	-0.0417	12.00	793.12	0.0160	12.00	793.31	12.00	-0.0160	793.12	12.00	-0.0417	792.62	2418+00.00	
	791.86	-0.0417	12.00	792.36	0.0160	12.00	792.55	12.00	-0.0160	792.36	12.00	-0.0417	791.86	2418+25.00	
	791.10	-0.0417	12.00	791.60	0.0160	12.00	791.79	12.00	-0.0160	791.60	12.00	-0.0417	791.1	2418+50.00	
	790.35	-0.0417	12.00	790.85	0.0160	12.00	791.04	12.00	-0.0160	790.85	12.00	-0.0417	790.35	2418+75.00	
	789.59	-0.0417	12.00	790.09	0.0160	12.00	790.28	12.00	-0.0160	790.09	12.00	-0.0417	789.59	2419+00.00	
	788.83	-0.0417	12.00	789.33	0.0160	12.00	789.52	12.00	-0.0160	789.33	12.00	-0.0417	788.83	2419+25.00	

CALCULATED JL
CHECKED PRS

I.R. 271 SUPERELEVATION TABLE

SUM-271-8.02

21450GE.DGN 3/31/04 SAM,RC

I.R. 271 NORTHBOUND SUPERELEVATION TABLE

MEDIAN	INSIDE PAVED SHOULDER			PROFILE GRADE	PAVEMENT					OUTSIDE PAVED SHOULDER				℄ CONST. STATION	DESCRIPTION
	MEDIAN E.O.S. ELEVATION	X-SLOPE	WIDTH	MEDIAN E.O.P. ELEVATION	X-SLOPE	WIDTH	CROWN N.B. LANES ELEVATION	WIDTH	X-SLOPE	OUTSIDE E.O.P. ELEVATION	WIDTH	X-SLOPE	OUTSIDE E.O.S. ELEVATION		
	788.07	-0.0417	12.00	788.57	0.0160	12.00	788.76	12.00	-0.0160	788.57	12.00	-0.0417	788.07	2419+50.00	
	787.31	-0.0417	12.00	787.81	0.0160	12.00	788.00	12.00	-0.0160	787.81	12.00	-0.0417	787.31	2419+75.00	
	786.55	-0.0417	12.00	787.05	0.0160	12.00	787.24	12.00	-0.0160	787.05	12.00	-0.0417	786.55	2420+00.00	
	785.79	-0.0417	12.00	786.29	0.0160	12.00	786.48	12.00	-0.0160	786.29	12.00	-0.0417	785.79	2420+25.00	
	785.35	-0.0417	12.00	785.85	0.0160	12.00	786.04	12.00	-0.0160	785.85	12.00	-0.0417	785.35	2420+39.75	BEGIN CROSS SLOPE TRANSITION
	785.06	-0.0388	12.00	785.53	0.0160	12.00	785.72	12.00	-0.0160	785.53	12.00	-0.0388	785.06	2420+50.00	
	784.40	-0.0316	12.00	784.78	0.0160	12.00	784.97	12.00	-0.0160	784.78	12.00	-0.0316	784.4	2420+75.00	
	784.06	-0.0281	12.00	784.40	0.0160	12.00	784.59	12.00	-0.0160	784.40	12.00	-0.0281	784.06	2420+87.25	
	783.71	-0.0245	12.51	784.02	0.0160	12.00	784.21	12.00	-0.0160	784.02	12.51	-0.0245	783.71	2421+00.00	
	783.02	-0.0174	13.51	783.26	0.0160	12.00	783.45	12.00	-0.0160	783.26	13.51	-0.0174	783.02	2421+25.00	
	782.89	-0.0160	13.70	783.11	0.0160	12.00	783.30	12.00	-0.0160	783.11	13.70	-0.0160	782.89	2421+29.75	
	782.65	-0.0172	14.00	782.89	0.0172	12.00	783.10	12.00	-0.0172	782.89	14.00	-0.0172	782.65	2421+37.25	BEGIN APPROACH SLAB
	782.23	-0.0191	14.00	782.50	0.0191	12.00	782.73	12.00	-0.0191	782.50	14.00	-0.0191	782.23	2421+50.00	
	781.84	-0.0210	14.00	782.13	0.0210	12.00	782.38	12.00	-0.0210	782.13	14.00	-0.0210	781.84	2421+62.25	END APPROACH SLAB & CROSS SLOPE TRANSITION
															BRIDGE - SUM-271-0802 (R)
	738.17	-0.0210	14.00	738.46	0.0210	12.00	738.71	12.00	-0.0210	738.46	14.00	-0.0210	738.17	2436+22.75	BEGIN APPROACH SLAB AND CROSS SLOPE TRANSITION
	738.11	-0.0207	14.00	738.40	0.0207	12.00	738.65	12.00	-0.0207	738.40	14.00	-0.0207	738.11	2436+25.00	
	737.48	-0.0172	14.00	737.72	0.0172	12.00	737.93	12.00	-0.0172	737.72	14.00	-0.0172	737.48	2436+47.75	END APPROACH SLAB & CROSS SLOPE TRANSITION
	737.41	-0.0168	14.00	737.65	0.0168	12.00	737.85	12.00	-0.0168	737.65	14.00	-0.0168	737.41	2436+50.00	
	737.27	-0.0160	14.00	737.49	0.0160	12.00	737.68	12.00	-0.0160	737.49	14.00	-0.0160	737.27	2436+55.25	END CROSS SLOPE TRANSITION BEGIN SHOULDER TRANSITION
	736.82	-0.0198	14.00	737.10	0.0160	12.00	737.29	12.00	-0.0160	737.10	14.00	-0.0198	736.82	2436+68.50	
	736.60	-0.0216	13.74	736.90	0.0160	12.00	737.09	12.00	-0.0160	736.90	13.74	-0.0216	736.6	2436+75.00	
	735.78	-0.0288	12.74	736.15	0.0160	12.00	736.34	12.00	-0.0160	736.15	12.74	-0.0288	735.78	2437+00.00	
	735.19	-0.0341	12.00	735.60	0.0160	12.00	735.79	12.00	-0.0160	735.60	12.00	-0.0341	735.19	2437+18.50	
	734.98	-0.0359	12.00	735.41	0.0160	12.00	735.60	12.00	-0.0160	735.41	12.00	-0.0359	734.98	2437+25.00	
	734.30	-0.0417	12.00	734.80	0.0160	12.00	734.99	12.00	-0.0160	734.80	12.00	-0.0417	734.3	2437+45.25	END SHOULDER TRANSITION BEGIN NORMAL CROWN
	734.16	-0.0417	12.00	734.66	0.0160	12.00	734.85	12.00	-0.0160	734.66	12.00	-0.0417	734.16	2437+50.00	

CALCULATED JL
CHECKED PRS

I.R. 271 SUPERELEVATION TABLE

SUM-271-8.02

111
612

2145OGE.DGN 3/31/04 SAM.RC

CALCULATED TM CHECKED PRS

PROJECT SITE PLAN NOTES

GENERAL NOTES

THE PROJECT CONSISTS OF REPLACEMENT OF TWIN BRIDGES SUM-271-0802 (L/R) ON I.R. 271 OVER RIVERVIEW ROAD, VALLEY RAILWAY AND CUYAHOGA RIVER. THE PROPOSED WORK INCLUDES MINOR REHABILITATION OF SUM-271-0854 (L/R) ON I.R. 271 OVER BOSTON MILLS ROAD, CONSTRUCTION OF A NEW STORM SEWER, REPAIR OF SLOPE FAILURE ALONG THE SOUTHBOUND LANES OF I.R. 271, AND ALL RELATED DRAINAGE AND ROADWAY WORK INCLUDING TRAFFIC CONTROL AND MAINTENANCE OF TRAFFIC. THE PROJECT LENGTH ON I.R. 271 IS APPROXIMATELY 0.82 MILE.

THE EXISTING SITE CAN BE DESCRIBED AS RURAL.

DRAINAGE AREA VALUES AND RUNOFF COEFFICIENTS SHOWN ON THE PLANS REPRESENT POSTCONSTRUCTION SITE CONDITIONS. DUE TO THE NATURE OF THIS PROJECT, THE PRECONSTRUCTION VALUES FOR EACH AREA ARE APPROXIMATELY THE SAME. EXISTING DRAINAGE FEATURES HAVE BEEN REPLACED IN-KIND. PROPOSED DRAINAGE ITEMS HAVE BEEN PLACED TO COLLECT THE EXISTING DRAINAGE INFRASTRUCTURE.

CATCH BASIN, INLET OR MANHOLE INLET PROTECTION, DITCH CHECKS AND BALE FILTER DIKES, ETC. SHALL BE CONSTRUCTED AS PER STANDARD CONSTRUCTION DRAWINGS DM-4.3 AND DM-4.4.

USGS QUADRANT NO. N4115 - W8130/7.5
NO. N41081-B5-TF-024

*LATITUDE 41°15'40" N
*LONGITUDE 81°33'27" W

*LONGITUDE AND LATITUDE TO APPROXIMATE CENTER OF PROJECT.

INTERMEDIATE RECEIVING WATERS - CUYAHOGA RIVER

SUBSEQUENT RECEIVING WATERS - LAKE ERIE

SOIL DATA - SEE SOIL PROFILES.

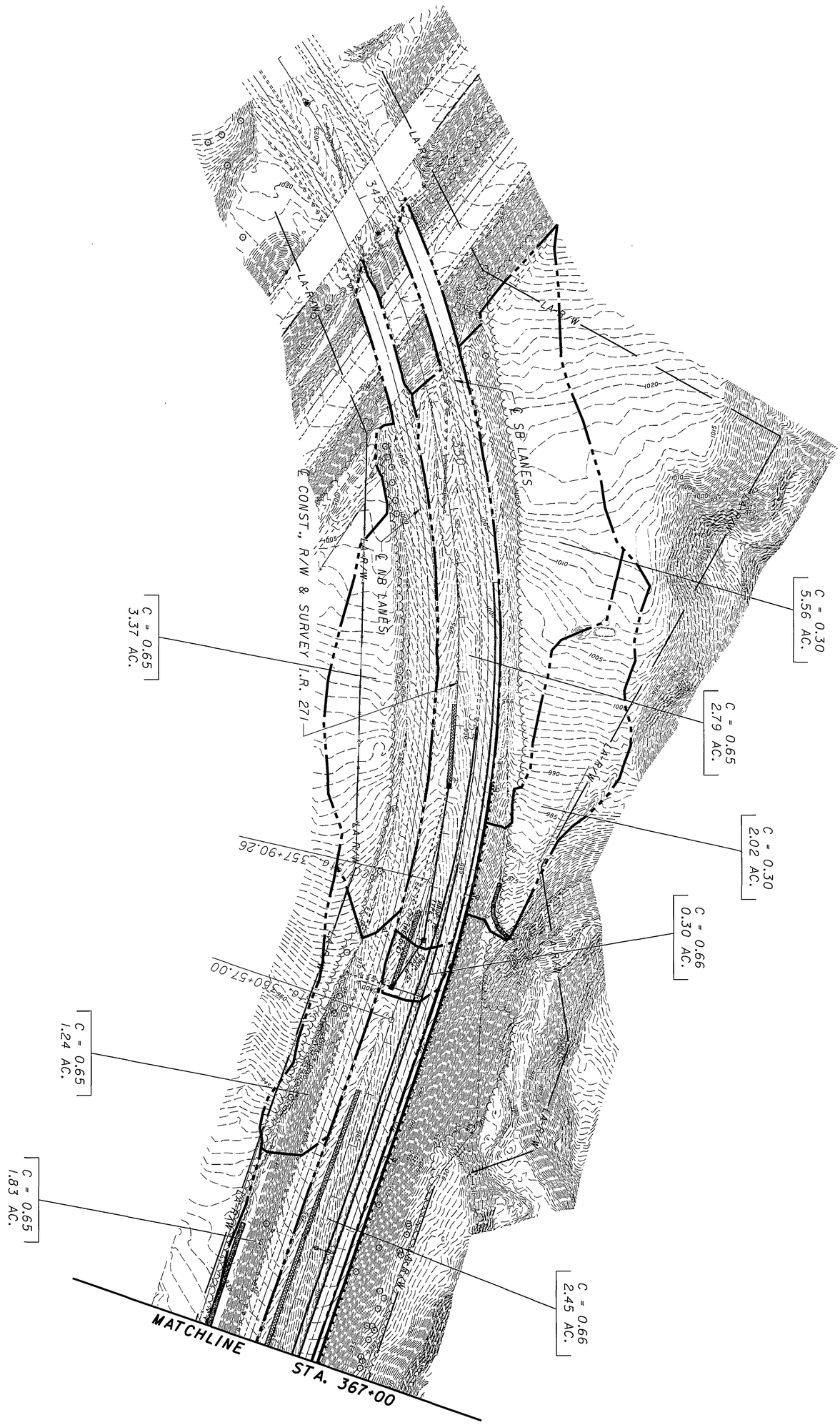
PROJECT DATA

TOTAL AREA (RIGHT-OF-WAY):	144 ACRES	RUNOFF COEFFICIENT FOR PRE-CONSTRUCTION SITE:	MEDIAN	OUTSIDE
PROJECT EARTH DISTURB AREA:	55.3 ACRES		SEE PROJECT SITE PLAN	
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	6 ACRES	RUNOFF COEFFICIENT FOR POST CONSTRUCTION SITE:		
NOTICE OF INTENT EARTH DISTURBED AREA:	61.3 ACRES	SEE ALSO SOIL SURVEY OF SUMMIT CO.		
IMPERVIOUS (PAVED) AREA FOR PRE-CONSTRUCTION SITE:	7 ACRES			
IMPERVIOUS (PAVED) AREA FOR POST CONSTRUCTION SITE:	11 ACRES			

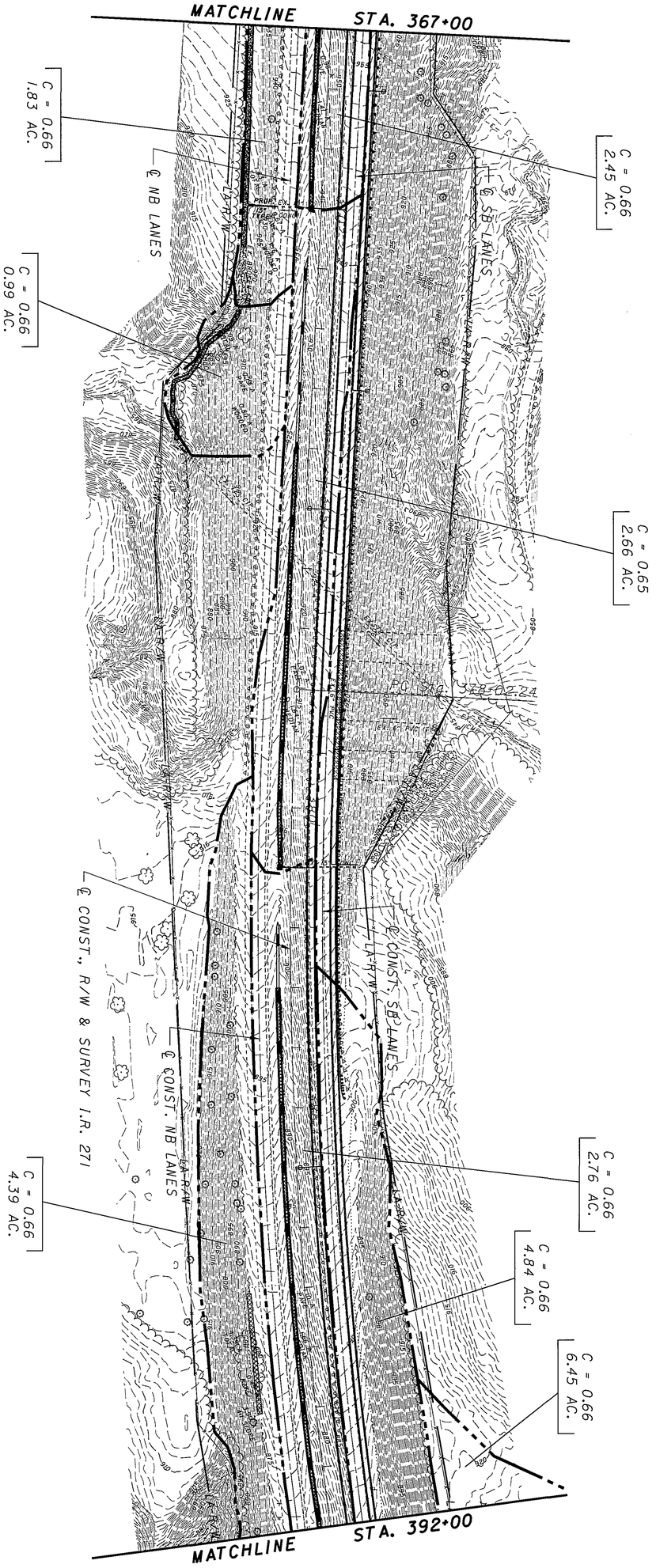
SUM-271-8.02

21450DEA.DGN 3/29/04 SAM,HN,CAR

21450DE6.DGN 3/29/04 SAM



612 / 113	SUM-271-8.02	PROJECT SITE PLAN STA. 342+00 TO STA. 367+00	CALCULATED TM CHECKED SM	0 100 50 200 HORIZONTAL SCALE IN FEET



114 / 612	SUM-271-8.02	PROJECT SITE PLAN STA. 367+00 TO STA. 392+00	CALCULATED TM CHECKED SM	0 100 50 200 HORIZONTAL SCALE IN FEET

C = 0.66
2.76 AC.

C = 0.66
1.20 AC.

C = 0.66
4.84 AC.

C = 0.66
0.99 AC.

C = 0.66
6.45 AC.

C = 0.70
1.40 AC.

C = 0.70
1.07 AC.

C = 0.70
0.72 AC.

C = 0.70
0.79 AC.

C = 0.70
1.43 AC.

C = 0.90
0.13 AC.

C = 0.40
3.62 AC.

C = 0.70
0.36 AC.

C = 0.40
1.78 AC.

STA. 392+00

STA. 417+00

MATCHLINE

MATCHLINE

℄ CONST. SB LANES

℄ CONST. NB LANES

℄ R/W & SURVEY I.R. 271

C = 0.66
4.39 AC.

53±

C = 0.66
2.03 AC.

HORIZONTAL SCALE IN FEET
0 50 100 200

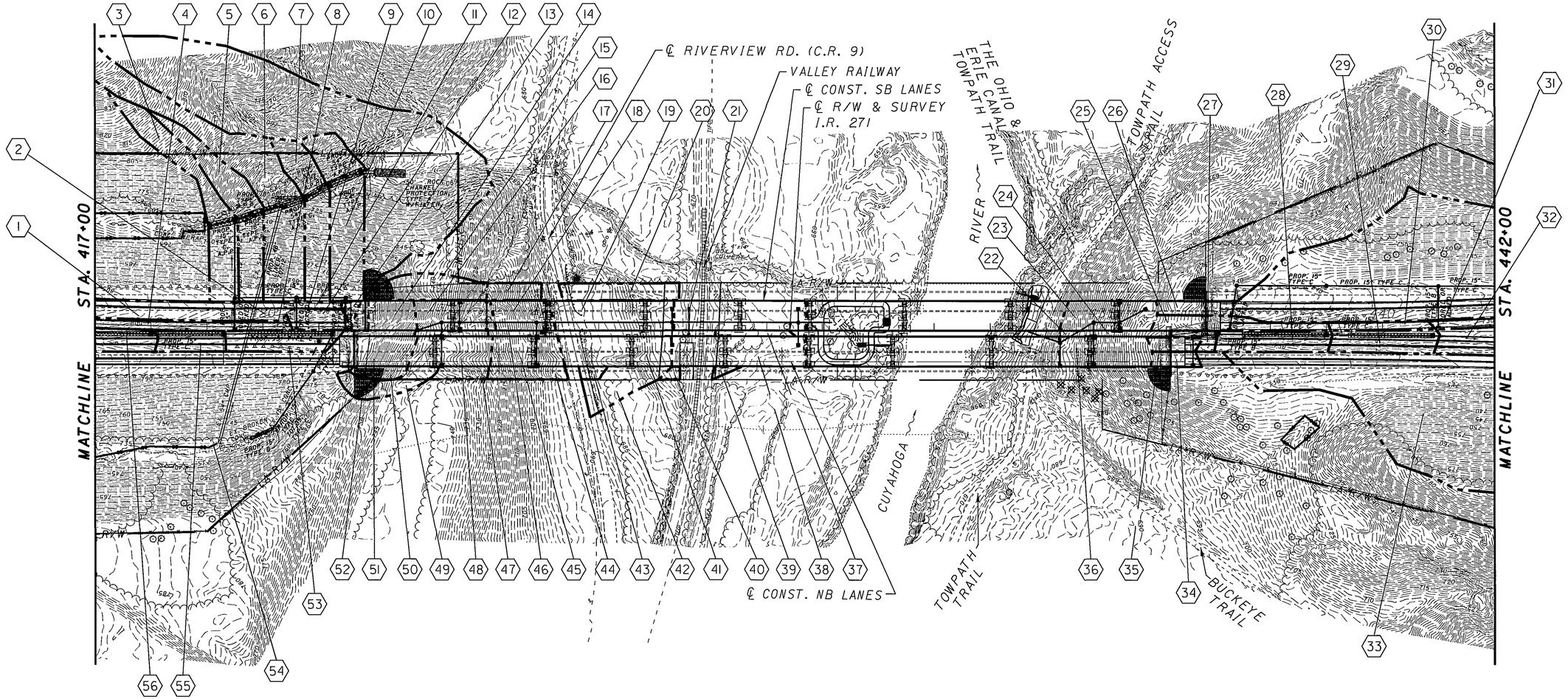
CALCULATED TM
CHECKED SM

PROJECT SITE PLAN
STA. 392+00 TO STA. 417+00

SUM-271-8.02

115
612

2145DE8.DGN 3/29/04 SAM



1. C = 0.90, 0.25 AC.
2. C = 0.90, 0.08 AC.
3. C = 0.40, 0.40 AC.
4. C = 0.90, 0.15 AC.
5. C = 0.40, 0.36 AC.
6. C = 0.40, 0.84 AC.
7. C = 0.40, 0.33 AC.
8. C = 0.90, 0.05 AC.
9. C = 0.90, 0.05 AC.
10. C = 0.40, 0.45 AC.
11. C = 0.90, 0.03 AC.
12. C = 0.90, 0.08 AC.
13. C = 0.90, 0.02 AC.
14. C = 0.90, 0.11 AC.
15. C = 0.50, 0.19 AC.
16. C = 0.90, 0.17 AC.
17. C = 0.50, 0.06 AC.
18. C = 0.90, 0.13 AC.
19. C = 0.90, 0.26 AC.
20. C = 0.50, 0.09 AC.
21. C = 0.90, 0.28 AC.
22. C = 0.50, 0.03 AC.
23. C = 0.90, 0.19 AC.
24. C = 0.50, 0.02 AC.
25. C = 0.90, 0.09 AC.
26. C = 0.90, 0.08 AC.
27. C = 0.80, 0.06 AC.
28. C = 0.80, 0.24 AC.
29. C = 0.74, 0.24 AC.
30. C = 0.90, 0.13 AC.
31. C = 0.90, 0.07 AC.
32. C = 0.74, 0.73 AC.
33. C = 0.40, 4.46 AC.
34. C = 0.90, 0.05 AC.
35. C = 0.90, 0.05 AC.
36. C = 0.90, 0.19 AC.
37. C = 0.50, 0.03 AC.
38. C = 0.90, 0.28 AC.
39. C = 0.50, 0.01 AC.
40. C = 0.50, 0.02 AC.
41. C = 0.90, 0.24 AC.
42. C = 0.50, 0.14 AC.
43. C = 0.50, 0.03 AC.
44. C = 0.50, 0.08 AC.
45. C = 0.90, 0.15 AC.
46. C = 0.50, 0.03 AC.
47. C = 0.50, 0.04 AC.
48. C = 0.90, 0.17 AC.
49. C = 0.50, 0.14 AC.
50. C = 0.50, 0.04 AC.
51. C = 0.90, 0.13 AC.
52. C = 0.50, 0.02 AC.
53. C = 0.76, 0.17 AC.
54. 264± AC.
55. C = 0.70, 0.10 AC.
56. C = 0.70, 0.28 AC.

HORIZONTAL SCALE IN FEET
0 50 100 200

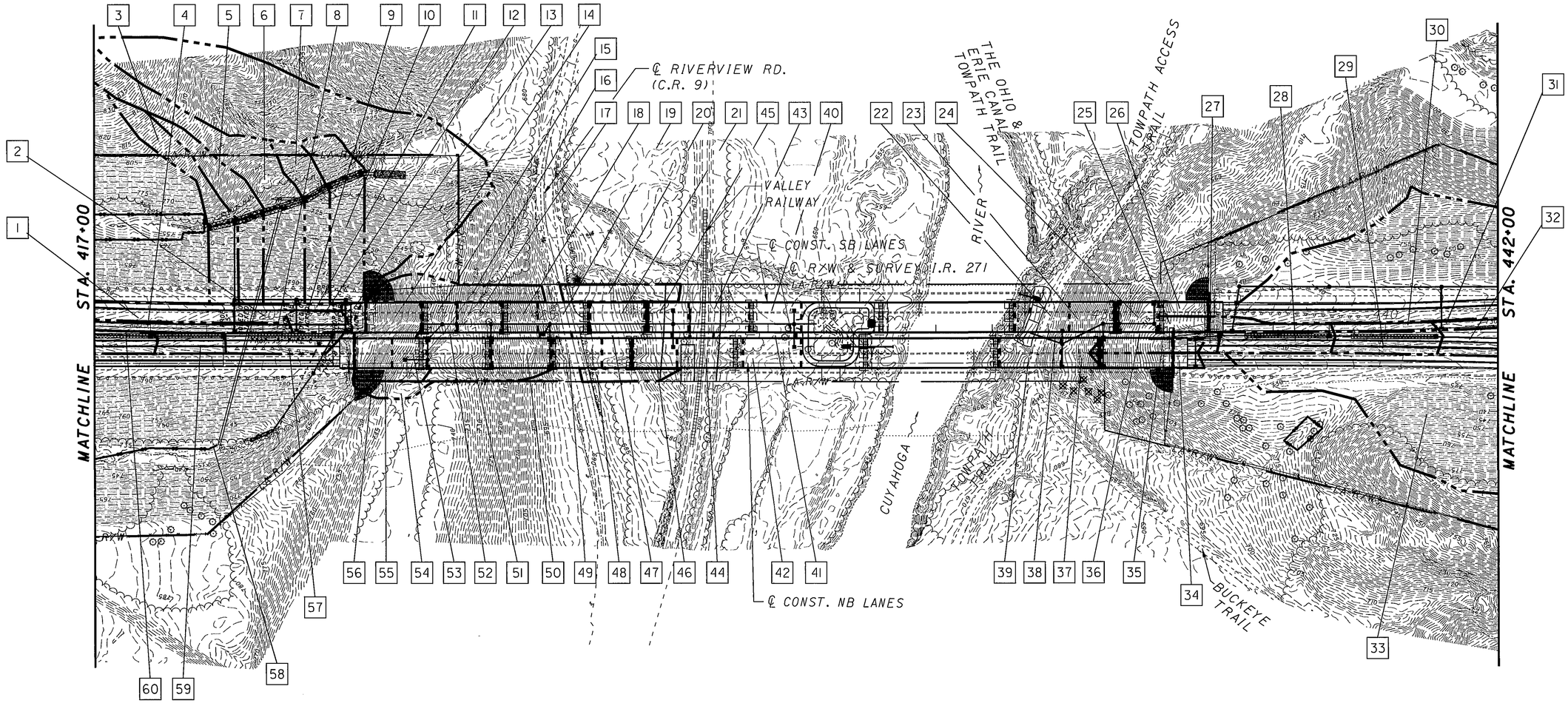
CALCULATED TM
CHECKED SM

PROJECT SITE PLAN - STEEL
STA. 417+00 TO STA. 442+00

SUM-271-8.02

116
612

21450DE9.DGN 3/29/04 SAM



1 C = 0.90, 0.25 AC.	12 C = 0.90, 0.08 AC.	23 C = 0.90, 0.11 AC.	34 C = 0.90, 0.12 AC.	45 C = 0.90, 0.09 AC.	56 C = 0.90, 0.08 AC.
2 C = 0.90, 0.08 AC.	13 C = 0.90, 0.02 AC.	24 C = 0.90, 0.09 AC.	35 C = 0.90, 0.05 AC.	46 C = 0.90, 0.16 AC.	57 C = 0.76, 0.17 AC.
3 C = 0.40, 0.40 AC.	14 C = 0.90, 0.12 AC.	25 C = 0.90, 0.16 AC.	36 C = 0.50, 0.02 AC.	47 C = 0.50, 0.04 AC.	58 264± AC.
4 C = 0.90, 0.15 AC.	15 C = 0.90, 0.08 AC.	26 C = 0.90, 0.12 AC.	37 C = 0.50, 0.08 AC.	48 C = 0.50, 0.08 AC.	59 C = 0.70, 0.10 AC.
5 C = 0.40, 0.36 AC.	16 C = 0.50, 0.20 AC.	27 C = 0.80, 0.06 AC.	38 C = 0.90, 0.02 AC.	49 C = 0.90, 0.11 AC.	60 C = 0.70, 0.28 AC.
6 C = 0.40, 0.84 AC.	17 C = 0.90, 0.10 AC.	28 C = 0.80, 0.24 AC.	39 C = 0.90, 0.14 AC.	50 C = 0.90, 0.13 AC.	
7 C = 0.40, 0.33 AC.	18 C = 0.90, 0.08 AC.	29 C = 0.74, 0.24 AC.	40 C = 0.90, 0.11 AC.	51 C = 0.90, 0.14 AC.	
8 C = 0.90, 0.05 AC.	19 C = 0.90, 0.11 AC.	30 C = 0.90, 0.13 AC.	41 C = 0.50, 0.03 AC.	52 C = 0.50, 0.04 AC.	
9 C = 0.90, 0.05 AC.	20 C = 0.50, 0.11 AC.	31 C = 0.90, 0.07 AC.	42 C = 0.90, 0.12 AC.	53 C = 0.90, 0.08 AC.	
10 C = 0.40, 0.45 AC.	21 C = 0.90, 0.12 AC.	32 C = 0.74, 0.73 AC.	43 C = 0.90, 0.13 AC.	54 C = 0.50, 0.18 AC.	
11 C = 0.90, 0.03 AC.	22 C = 0.90, 0.12 AC.	33 C = 0.40, 4.46 AC.	44 C = 0.90, 0.14 AC.	55 C = 0.50, 0.04 AC.	

HORIZONTAL SCALE IN FEET
0 50 100 200

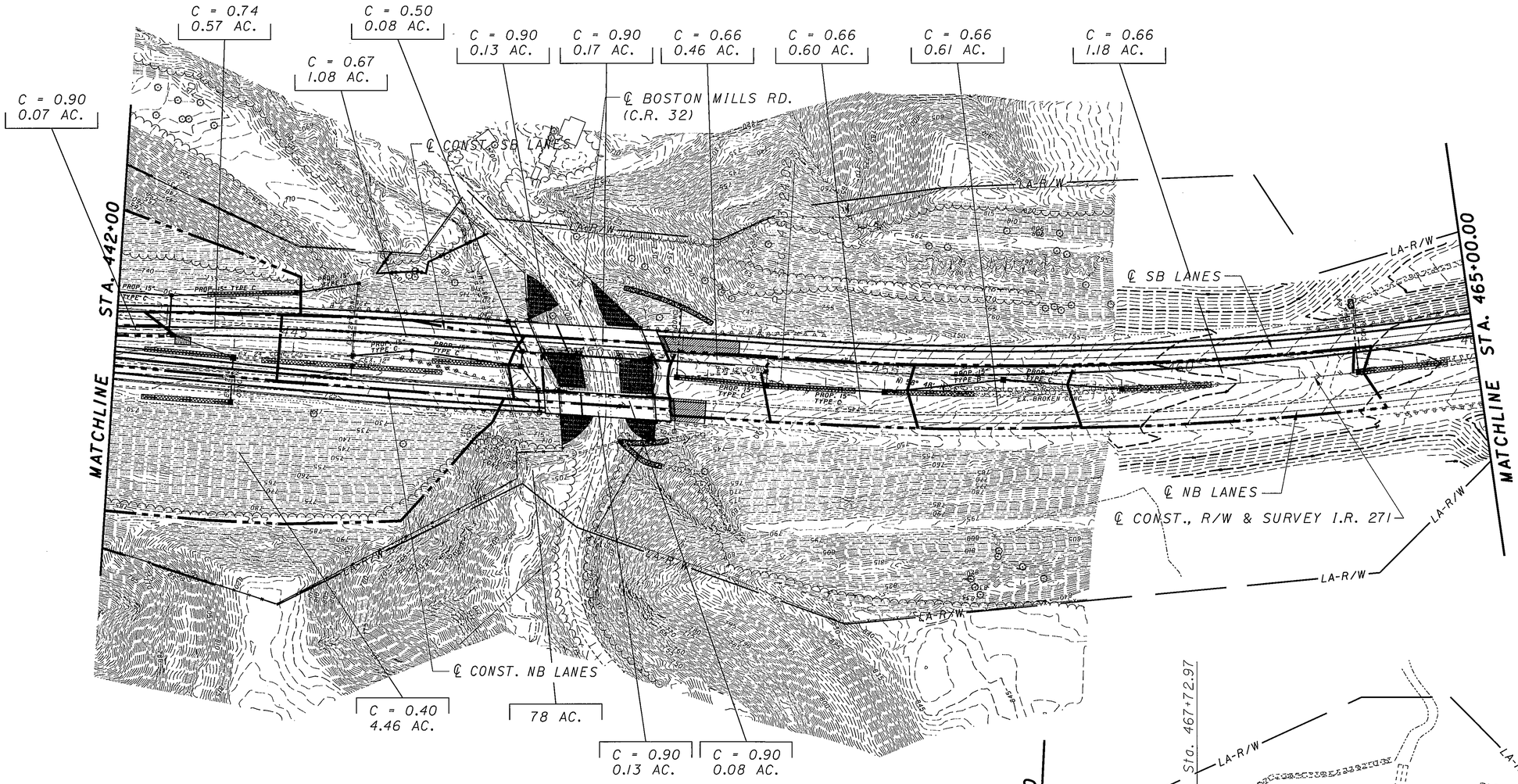
CALCULATED TM
CHECKED SM

PROJECT SITE PLAN - CONCRETE
STA. 417+00 TO STA. 442+00

SUM-271-8.02

117
612

21450DE9-CONCRETE.DGN 3/29/04 SAM,CAR



HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED TM
CHECKED SM

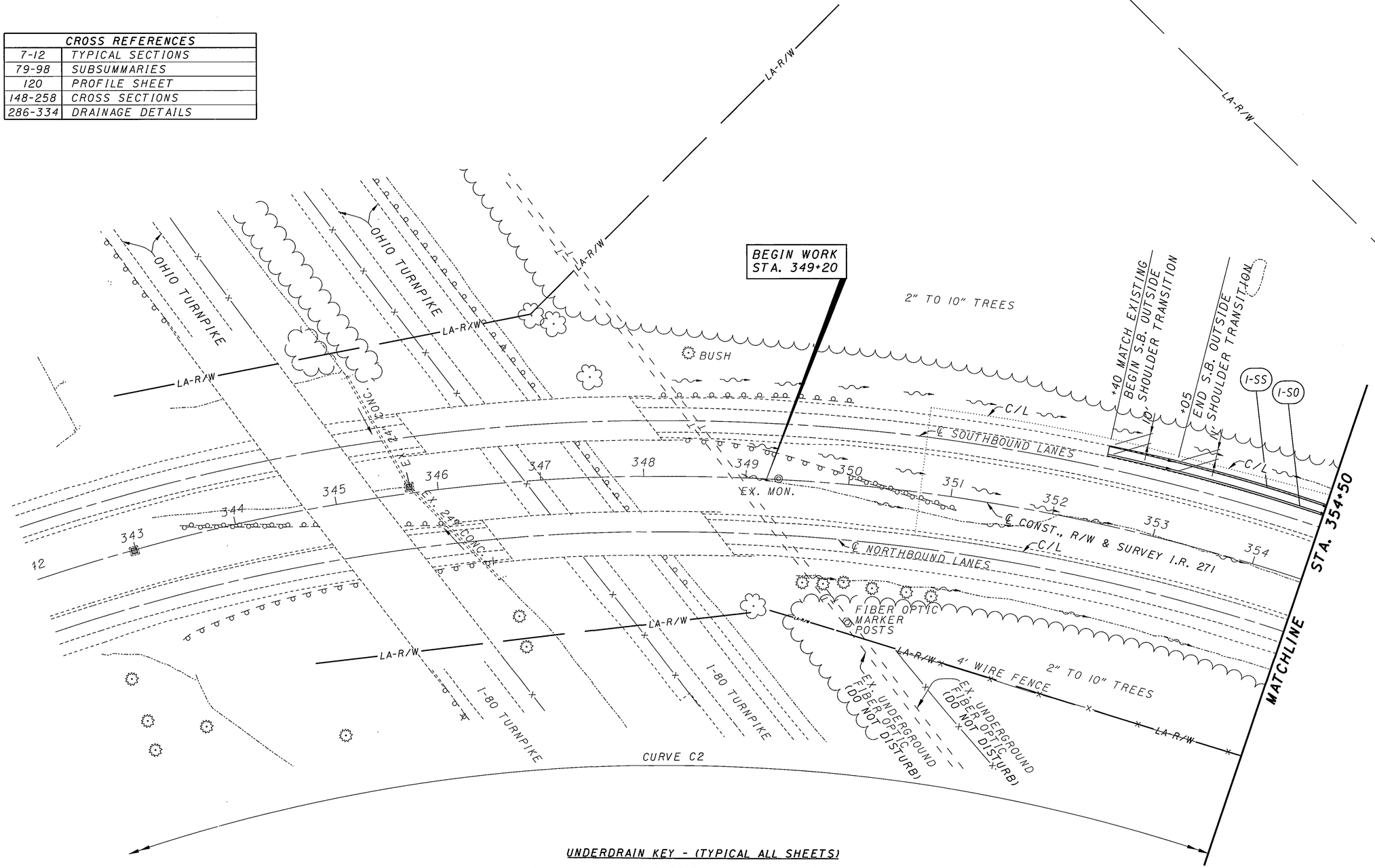
PROJECT SITE PLAN
STA. 442+00 TO STA. 467+00

SUM-271-8.02

118
612

21450DEIO.DGN 3/29/04 SAM,CAR

CROSS REFERENCES	
7-12	TYPICAL SECTIONS
79-98	SUBSUMMARIES
120	PROFILE SHEET
148-258	CROSS SECTIONS
286-334	DRAINAGE DETAILS



UNDERDRAIN KEY - (TYPICAL ALL SHEETS)

SS - SOUTHBOUND OUTSIDE SHOULDER UNDERDRAIN
SO - SOUTHBOUND OUTSIDE PAVEMENT UNDERDRAIN
SI - SOUTHBOUND INSIDE PAVEMENT UNDERDRAIN
SM - SOUTHBOUND INSIDE SHOULDER UNDERDRAIN
NM - NORTHBOUND INSIDE SHOULDER UNDERDRAIN
NI - NORTHBOUND INSIDE PAVEMENT UNDERDRAIN
NO - NORTHBOUND OUTSIDE PAVEMENT UNDERDRAIN
NS - NORTHBOUND OUTSIDE SHOULDER UNDERDRAIN

CURVE DATA (C2)
℄ CONST., R/W & SURVEY I.R. 271

P.I. Sta = 349+95.83
Δ = 51° 20' 38" (RT)
Dc = 2° 59' 47"
R = 1,912.19'
T = 919.12'
L = 1,713.55'
E = 209.43'
EX. eMAX. = 0.083±

HORIZONTAL SCALE IN FEET
0 25 50 100

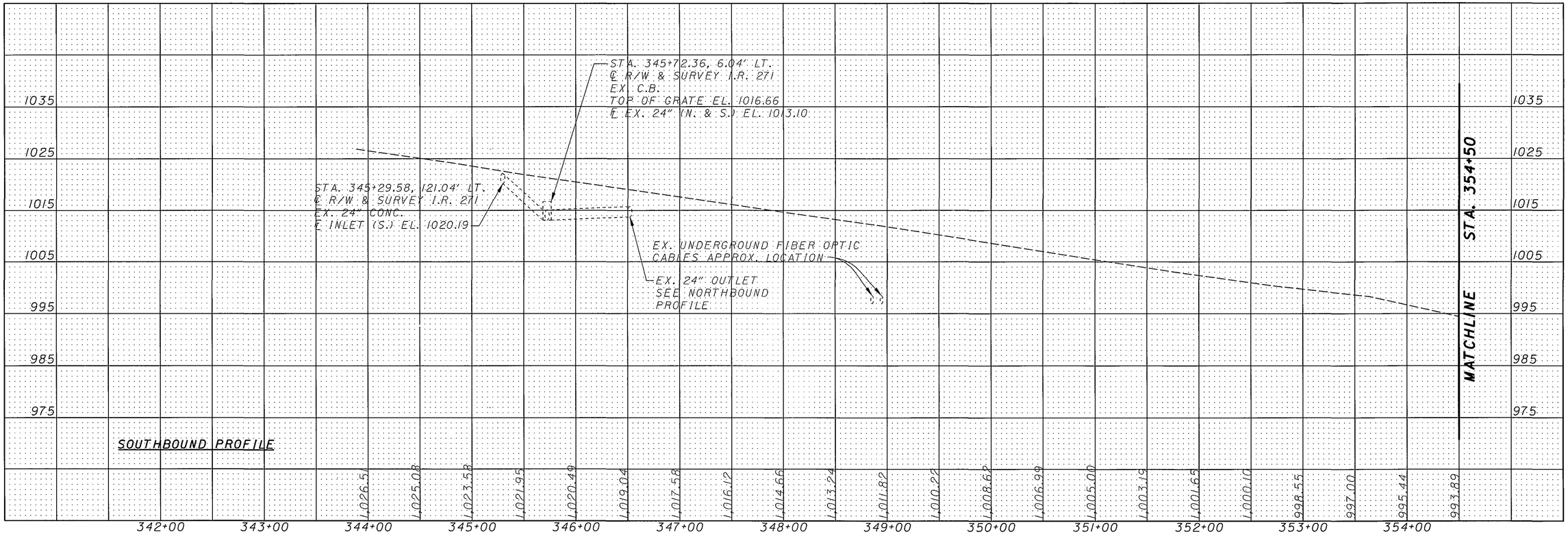
CALCULATED PS
CHECKED JL

PLAN
STA. 342+00 TO STA. 354+50

SUM-271-8.02

119
612

21450PLAN1.DGN 03/31/04 SAM.CAR



HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PROFILE
STA. 342+00 TO STA. 354+50

SUM-271-8.02

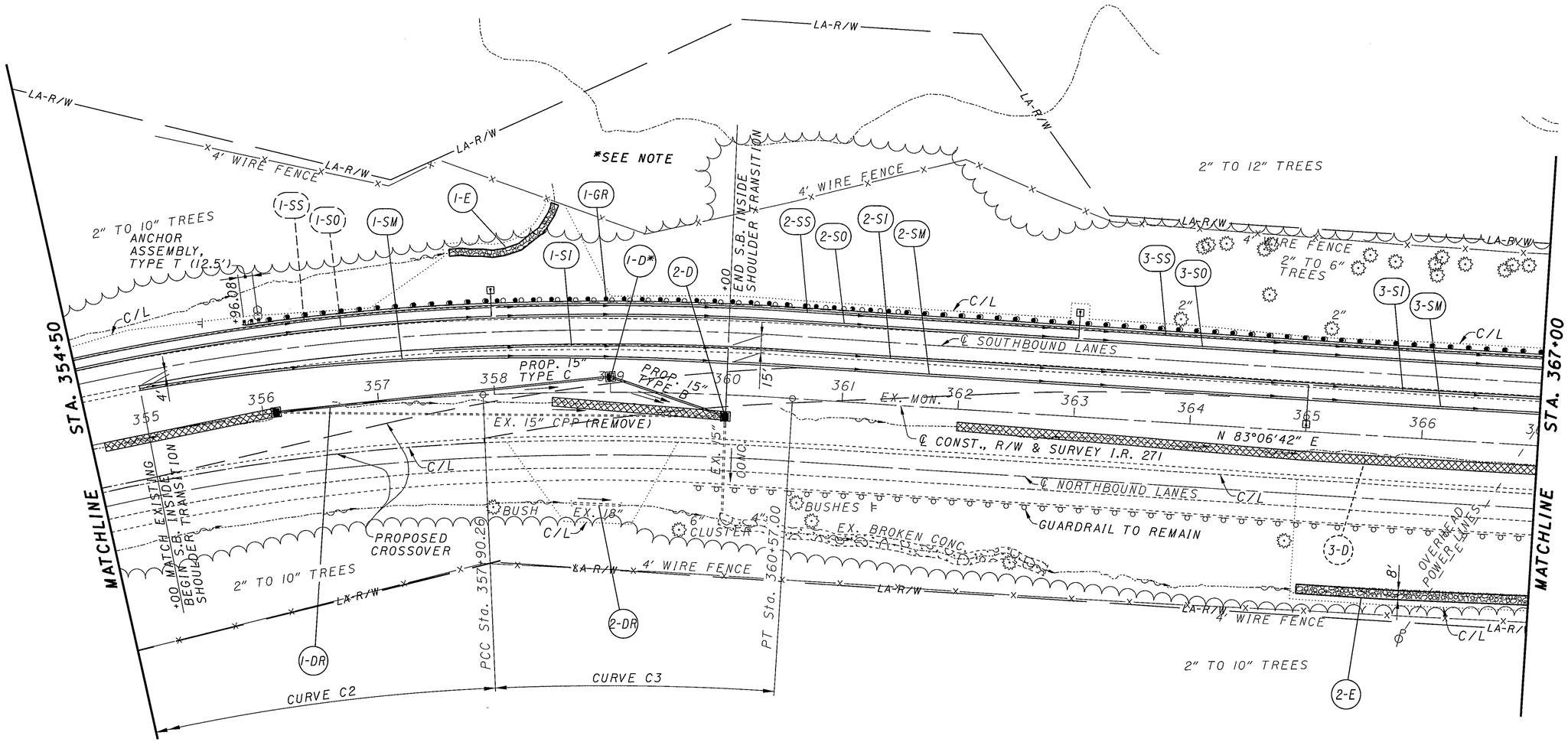
120
612

21450PROFILDGN 03/31/04 SAM,CAR

CROSS REFERENCES	
7-12	TYPICAL SECTIONS
79-98	SUBSUMMARIES
119	UNDERDRAIN KEY
122	PROFILE SHEET
148-258	CROSS SECTIONS
286-334	DRAINAGE DETAILS

NOTE:

CATCH BASIN NO. 2-2B TO BE UTILIZED DURING CONSTRUCTION. WHEN THE CROSSOVER IS NO LONGER NEEDED FOR MAINTENANCE OF TRAFFIC THIS CATCH BASIN SHALL BE ABANDONED AND CONNECTED THROUGH AS APPROVED BY THE ENGINEER. ALL MATERIALS, LABOR AND INCIDENTALS TO CONSTRUCT AND SUBSEQUENTLY ABANDON THIS CATCH BASIN WILL BE INCLUDED IN ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN.



CURVE DATA (C2)
℄ CONST., R/W & SURVEY I.R. 271

P.I. Sta = 349+95.83
Δ = 51° 20' 38" (RT)
Dc = 2° 59' 47"
R = 1,912.19'
T = 919.12'
L = 1,713.55'
E = 209.43'
EX. eMAX. = 0.083±

CURVE DATA (C3)
℄ CONST., R/W & SURVEY I.R. 271

P.I. Sta = 359+23.75
Δ = 6° 00' 00" (RT)
Dc = 2° 14' 58"
R = 2,547.12'
T = 133.49'
L = 266.73'
E = 3.50'
EX. eMAX. = 0.083±

LEGEND

- DITCH EROSION PROTECTION (7.5' WIDE TYP.) (SEE SHEET 318)
- ROCK CHANNEL PROTECTION (SEE SHEET 317-318)
- EX. BROKEN CONCRETE DITCH PROTECTION

N

HORIZONTAL SCALE IN FEET
0 25 50 100

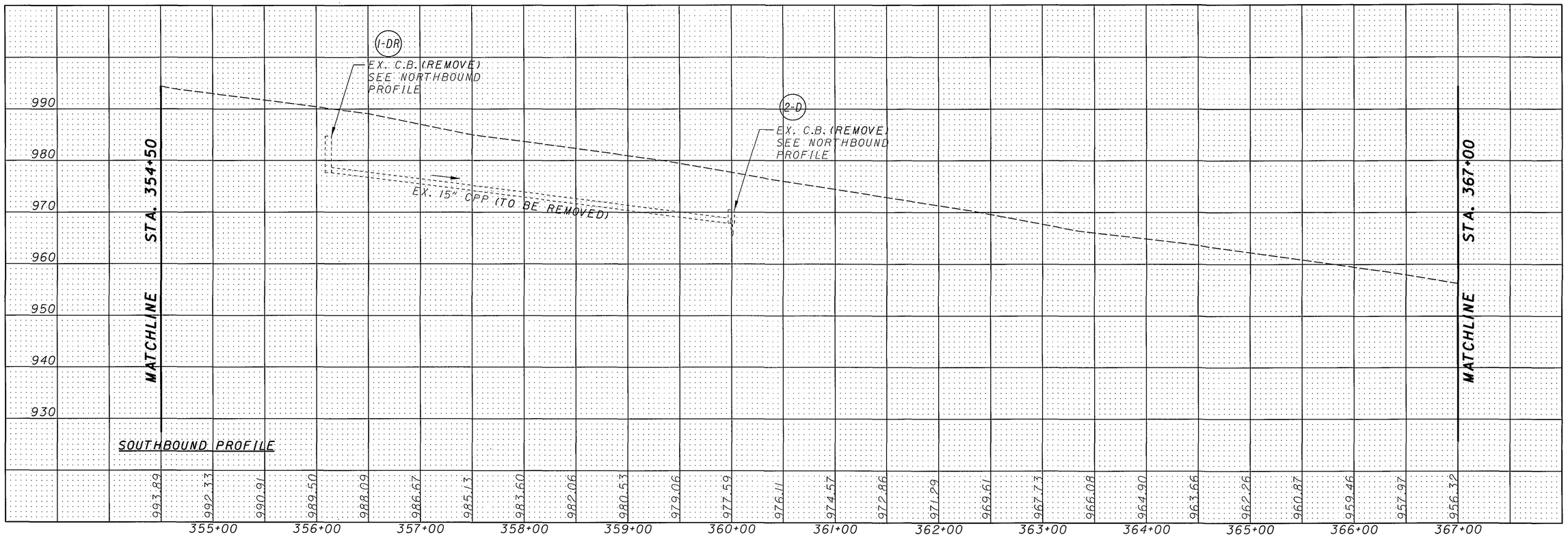
CALCULATED PS
CHECKED JL

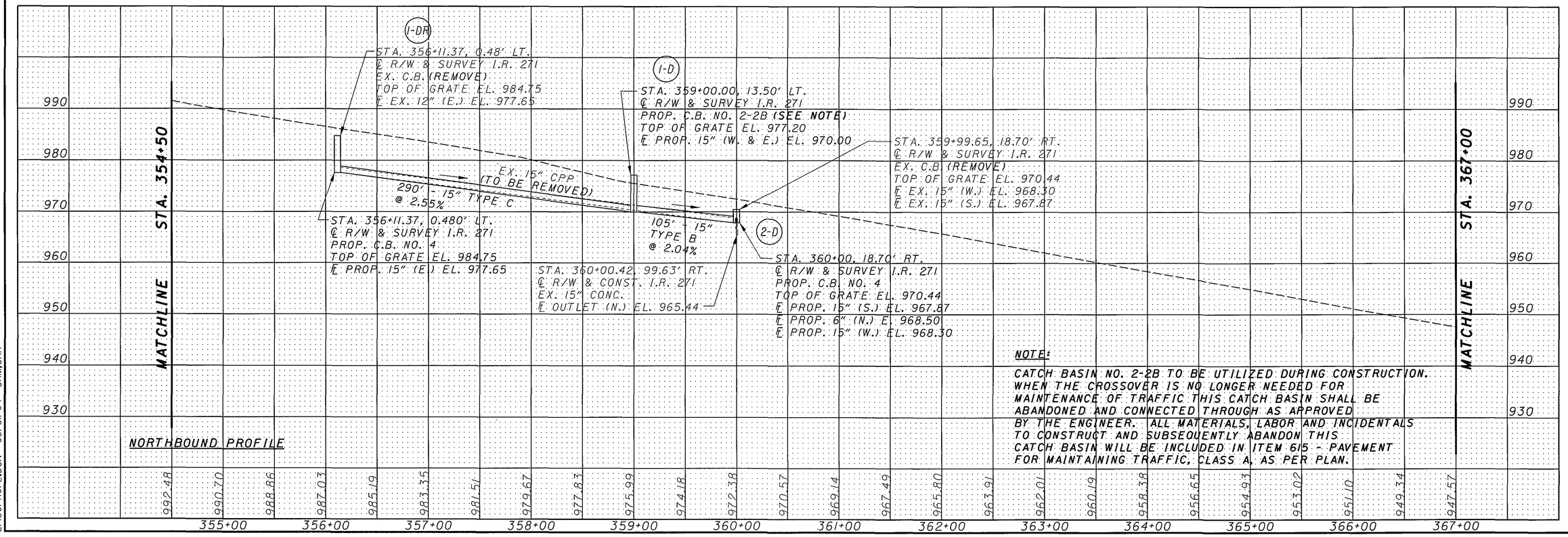
PLAN
STA. 354+50 TO STA. 367+00

SUM-271-8.02

121
612

21450PLAN2.DGN 03/31/04 SAM,CAR





NOTE:
CATCH BASIN NO. 2-2B TO BE UTILIZED DURING CONSTRUCTION. WHEN THE CROSSOVER IS NO LONGER NEEDED FOR MAINTENANCE OF TRAFFIC THIS CATCH BASIN SHALL BE ABANDONED AND CONNECTED THROUGH AS APPROVED BY THE ENGINEER. ALL MATERIALS, LABOR AND INCIDENTALS TO CONSTRUCT AND SUBSEQUENTLY ABANDON THIS CATCH BASIN WILL BE INCLUDED IN ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN.

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PROFILE
STA. 354+50 TO STA. 367+00

SUM-271-8.02

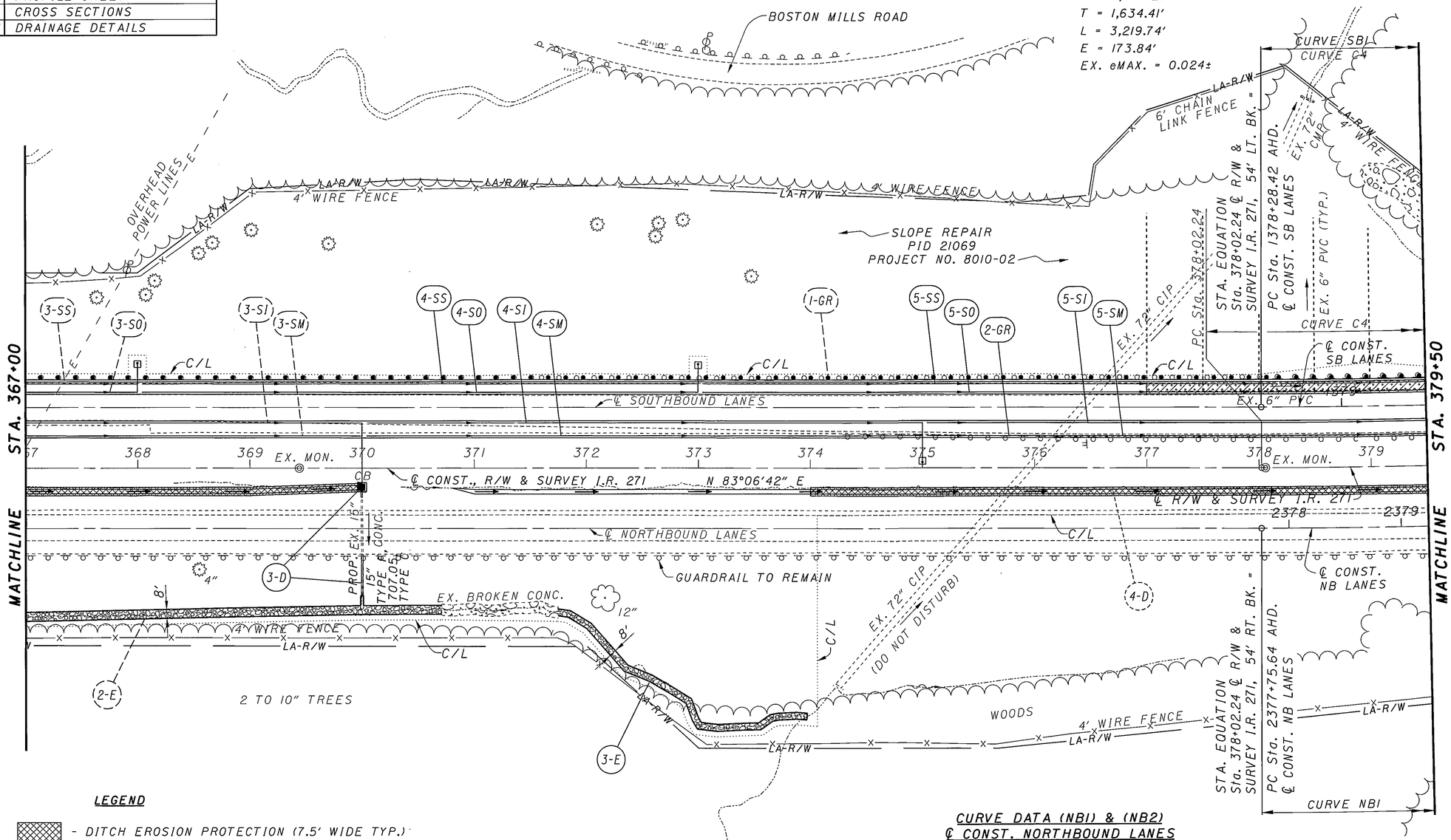
122
612

21450PROF2.DGN 03/31/04 SAM.CAR

CROSS REFERENCES	
7-12	TYPICAL SECTIONS
79-98	SUBSUMMARIES
119	UNDERDRAIN KEY
124	PROFILE SHEET
148-258	CROSS SECTIONS
286-334	DRAINAGE DETAILS

CURVE DATA (SBI)
℄ CONST. SOUTHBOUND LANES

P.I. Sta = 1394+62.83
△ = 24° 17′ 07″ (LT)
Dc = 0° 45′ 15″
R = 7,596.23′
T = 1,634.41′
L = 3,219.74′
E = 173.84′
EX. eMAX. = 0.024±



LEGEND

- DITCH EROSION PROTECTION (7.5′ WIDE TYP.) (SEE SHEET 318)
- ROCK CHANNEL PROTECTION (SEE SHEET 317-318)
- EX. CONCRETE PAVEMENT
- EX. BROKEN CONCRETE DITCH PROTECTION

CURVE DATA (C4)
℄ R/W & SURVEY I.R. 271

P.I. Sta = 397+72.32
△ = 28° 52′ 55″ (LT)
Dc = 0° 44′ 56″
R = 7,650.23′
T = 1,970.08′
L = 3,856.38′
E = 249.60′
EX. eMAX. = 0.024±

CURVE DATA (NBI) & (NB2)
℄ CONST. NORTHBOUND LANES

P.I. Sta = 2419+46.72
$T_{NBI+NB2}$ = 1946.72′(BACK)
$T_{NBI+NB2}$ = 1769.33′(AHEAD)
$\triangle_{NBI+NB2}$ = 28° 52′ 55″ (LT.)
D_{CNBI} = 0° 44′ 37″
R_{NBI} = 7,704.23′
D_{CNB2} = 1° 30′ 00″
R_{NB2} = 3,819.72′
$Ls1_{NB2}$ = 168.00′
$Ls2_{NB2}$ = 265.00′
p1 = 0.16′
p2 = 0.77′
$\triangle_{NBI}$ = 22° 38′ 47″ (LT.)
$\triangle_{NB2}$ = 2° 21′ 48″ (LT.)
T_{NBI} = 1,542.70
T_{NB2} = 78.79′
Lt1 = 93.45′
Lt2 = 176.68′
St1 = 74.57′
St2 = 88.34′
Theta1 = 1° 53′ 05″
Theta2 = 1° 59′ 15″
x2 = 264.97′
y2 = 3.06′
k2 = 132.49′
E_{NBI} = 152.94′
E_{NB2} = 0.81′
eMAX. = 0.052

N

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PLAN
STA. 367+00 TO STA. 379+50

SUM-271-8.02

123
612

21450PLAN3.DGN 03/31/04 SAM.CAR

MATCHLINE STA. 367+00

950 940 930 920 910 900

SOUTHBOUND PROFILE

956.32 954.74 953.32 951.98 950.76 949.41 947.82 946.14 944.33 942.69 941.39 940.01 938.50 936.99 935.49 933.99 932.50 931.01 929.58 928.02 926.53 925.01 923.54 922.90 921.40 919.82

367+00 368+00 369+00 370+00 371+00 372+00 373+00 374+00 375+00 376+00 377+00 378+00 1379+00

STA. 374+95.03, 94.89' LT.
℄ R/W & SURVEY I.R. 271
EX. 6" CMP
℄ INLET (E.) EL. 924.58

EX. 72" CIP
SEE NORTHBOUND PROFILE

STA. 377+91.12, 96.50' LT.
℄ R/W & SURVEY I.R. 271
EX. 72" CIP
℄ OUTLET (S.) EL. 840.66

EX. 72" CIP

STA. 377+91.12, 96.50' LT.
℄ R/W & SURVEY I.R. 271
EX. 6" CMP
℄ OUTLET (W.) EL. 915.02

EX. 6" CMP

STA. 378+46, 330.36' LT.
℄ R/W & SURVEY I.R. 271
EX. 72" CMP
℄ OUTLET (S.) EL. 839.04

STATION EQUATION
STA. 378+02.24 ℄ R/W & SURVEY I.R. 271, 54' LT. BK. =
PC STA. 1378+28.42 AHD.
℄ CONST. SB LANES

STA. 1379+50

MATCHLINE

STA. 367+00

950 940 930 920 910 900 890

NORTHBOUND PROFILE

947.57 945.95 944.32 942.50 940.66 939.50 938.38 936.42 934.41 932.95 931.52 930.02 928.51 926.97 925.43 923.92 922.40 920.93 919.40 918.00 916.53 915.07 913.60 912.89 911.42 909.95 908.46

367+00 368+00 369+00 370+00 371+00 372+00 373+00 374+00 375+00 376+00 377+00 378+00 2379+00

STA. 369+99.64 17.06' RT.
℄ R/W & SURVEY I.R. 271
EX. C.B. (REMOVE)
TOP OF GRATE EL. 935.09
℄ EX. 15" (S.) EL. 932.62

(3-D) STA. 370+00.00, 115.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. HW-2.1
℄ PROP. 15" (N.) EL. 920.18

STA. 370+00.61, 114.92' RT.
℄ R/W & SURVEY I.R. 271
EX. 15" CMP
℄ OUTLET (N.) EL. 920.19

EX. 15"

PROP. 15" TYPE F, T07.05, TYPE C

(3-D) STA. 370+00.00, 17.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 935.09
℄ PROP. 15" (S.) EL. 932.62
℄ PROP. 6" (N.) EL. 932.62

STA. 374+24.71, 194.39' RT
℄ R/W & SURVEY I.R. 271
EX. 72" CIP
℄ INLET (N.) EL. 857.82

EX. 72" CIP
SEE SOUTHBOUND PROFILE

EX. 72" CIP

STA. EQUATION
STA. 378+02.24 ℄ R/W & SURVEY I.R. 271, 54' RT. BK. =
PC STA. 2377+75.57 AHD.
℄ CONST. NB LANES

STA. 2379+50

MATCHLINE

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PROFILE - STA. 367+00 TO STA. 1379+50 NORTHBOUND
STA. 367+00 TO STA. 2379+50 SOUTHBOUND

SUM-271-8.02

124
612

21450PROF3.DGN 03/31/04 SAM.CAR

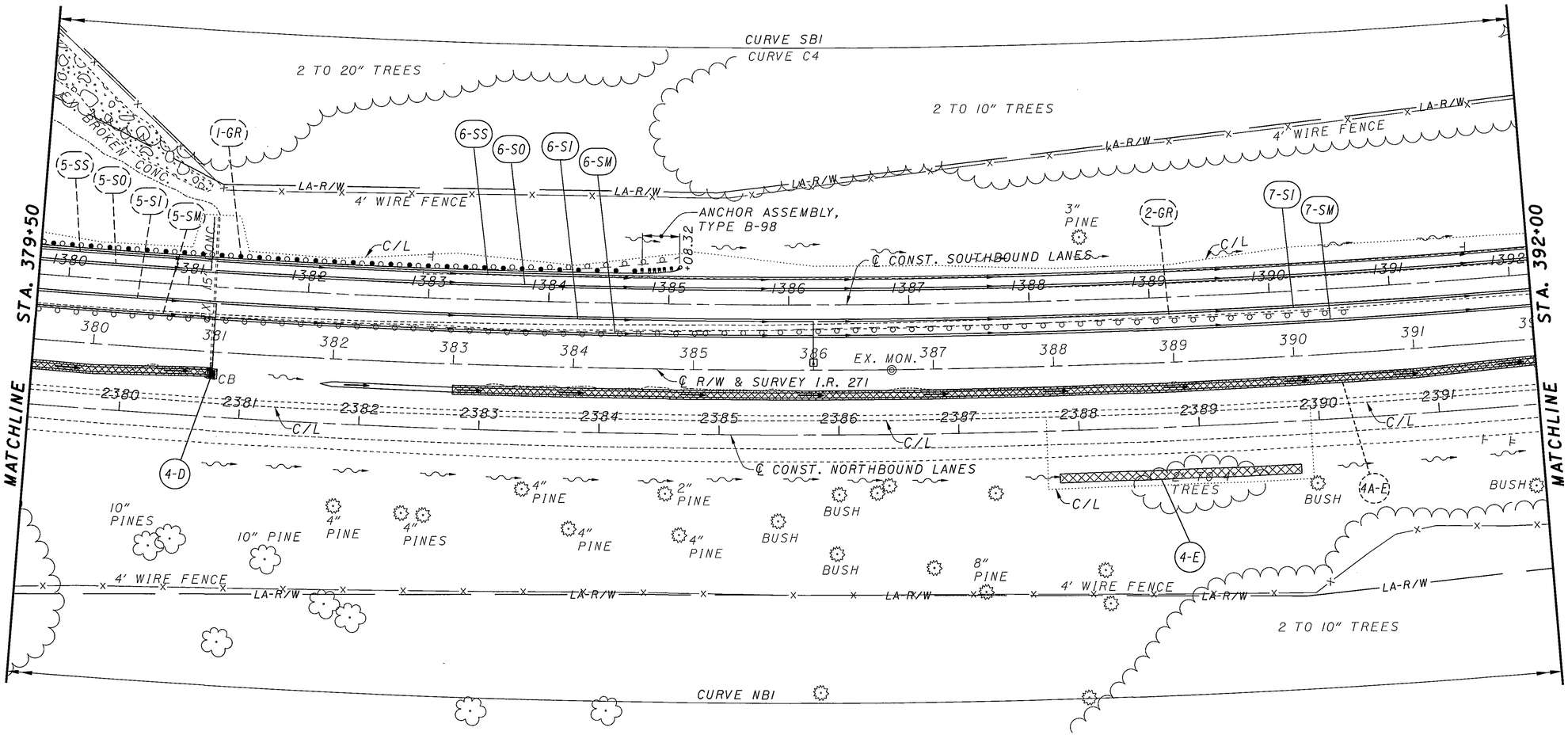
CROSS REFERENCES	
7-12	TYPICAL SECTIONS
79-98	SUBSUMMARIES
119	UNDERDRAIN KEY
126	PROFILE SHEET
148-258	CROSS SECTIONS
286-334	DRAINAGE DETAILS

CURVE DATA (C4)
℄ R/W & SURVEY I.R. 271

P.I. Sta = 397+72.32
D = 28° 52′ 55″ (LT)
Dc = 0° 44′ 56″
R = 7,650.23′
T = 1,970.08′
L = 3,856.38′
E = 249.60′
EX. eMAX. = 0.024±

CURVE DATA (SBI)
℄ CONST. SOUTHBOUND I.R. 271

P.I. Sta = 1394+62.83
D = 24° 17′ 07″ (LT)
Dc = 0° 45′ 15″
R = 7,596.23′
T = 1,634.41′
L = 3,219.74′
E = 173.84′
EX. eMAX. = 0.024±



CURVE DATA (NB1) & (NB2)
℄ CONST. NORTHBOUND LANES

P.I. Sta = 2419+46.72
$T_{NB1+NB2}$ = 1946.72′(BACK)
$T_{NB1+NB2}$ = 1769.33′(AHEAD)
$\Delta_{NB1+NB2}$ = 28° 52′ 55″ (LT.)
D_{cNB1} = 0° 44′ 37″
R_{NB1} = 7,704.23′
D_{cNB2} = 1° 30′ 00″
R_{NB2} = 3,819.72′
$Ls1_{NB2}$ = 168.00′
$Ls2_{NB2}$ = 265.00′

p1 = 0.16′
p2 = 0.77′
Δ_{NB1} = 22° 38′ 47″ (LT.)
Δ_{NB2} = 2° 21′ 48″ (LT.)
T_{NB1} = 1,542.70
T_{NB2} = 78.79′
Lt1 = 93.45′
Lt2 = 176.68′
St1 = 74.57′
St2 = 88.34′

Theta1 = 1° 53′ 05″
Theta2 = 1° 59′ 15″
x2 = 264.97′
y2 = 3.06′
k2 = 132.49′
E_{NB1} = 152.94′
E_{NB2} = 0.81′
eMAX. = 0.052

LEGEND

- DITCH EROSION PROTECTION (7.5′ WIDE TYP.) (SEE SHEET 318)
- ROCK CHANNEL PROTECTION
- EX. BROKEN CONCRETE DITCH PROTECTION

N

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

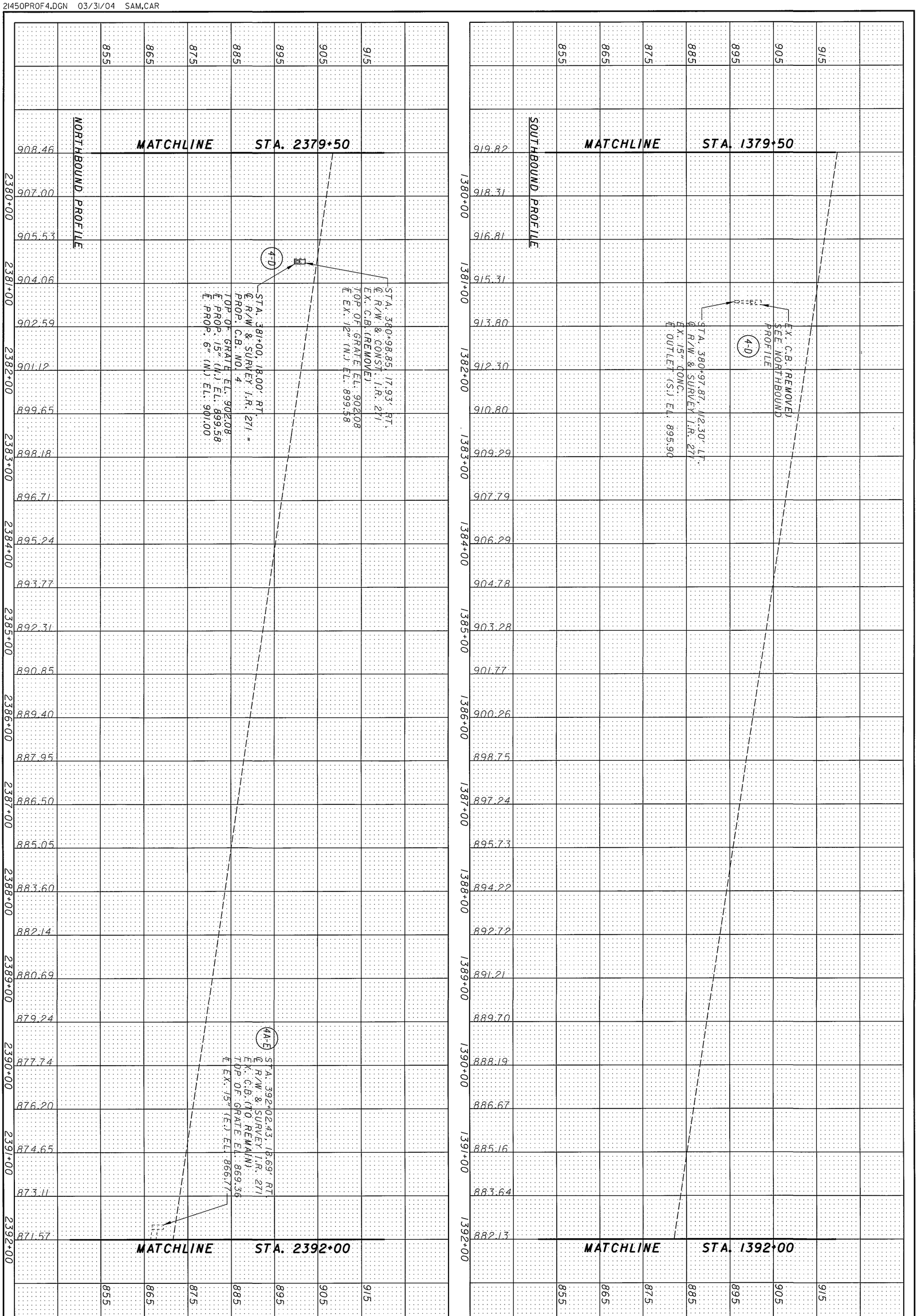
PLAN
STA. 379+50 TO STA. 392+00

SUM-271-8.02

125
612

21450PLAN4.DGN 3/31/04

21450PROF4.DGN 03/31/04 SAM.CAR



126 / 612	SUM-271-8.02	PROFILE - STA. 1379+50 TO STA. 1392+00 NORTHBOUND STA. 2379+50 TO STA. 2392+00 SOUTHBOUND	CALCULATED PS CHECKED JL	0 50 25 100 HORIZONTAL SCALE IN FEET

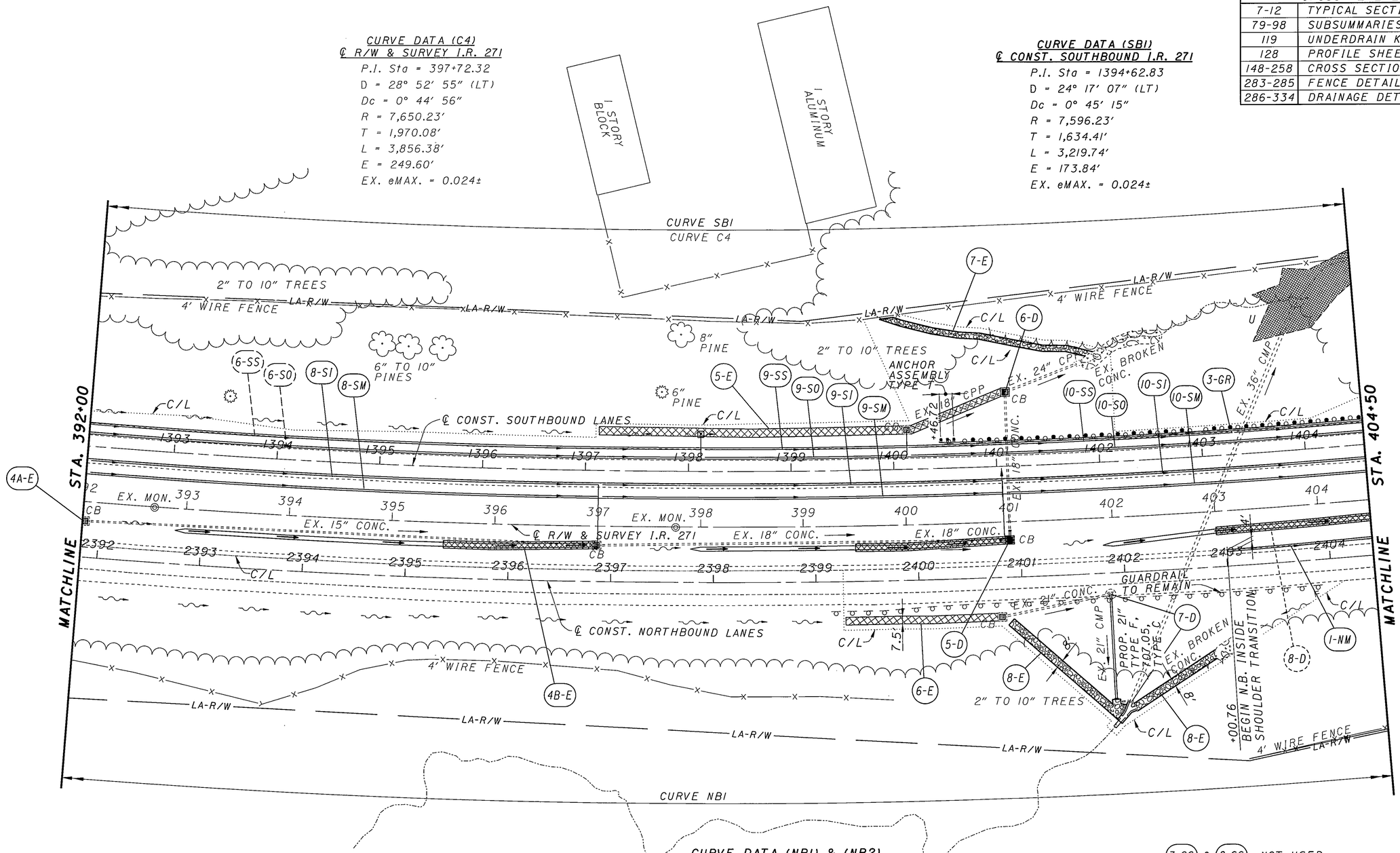
CROSS REFERENCES	
7-12	TYPICAL SECTIONS
79-98	SUBSUMMARIES
119	UNDERDRAIN KEY
128	PROFILE SHEET
148-258	CROSS SECTIONS
283-285	FENCE DETAILS
286-334	DRAINAGE DETAILS

CURVE DATA (C4)
℄ R/W & SURVEY I.R. 271

P.I. Sta = 397+72.32
D = 28° 52′ 55″ (LT)
Dc = 0° 44′ 56″
R = 7,650.23′
T = 1,970.08′
L = 3,856.38′
E = 249.60′
EX. eMAX. = 0.024±

CURVE DATA (SBI)
℄ CONST. SOUTHBOUND I.R. 271

P.I. Sta = 1394+62.83
D = 24° 17′ 07″ (LT)
Dc = 0° 45′ 15″
R = 7,596.23′
T = 1,634.41′
L = 3,219.74′
E = 173.84′
EX. eMAX. = 0.024±



CURVE DATA (NB1) & (NB2)
℄ CONST. NORTHBOUND LANES

P.I. Sta = 2419+46.72
$T_{NB1+NB2}$ = 1946.72′(BACK)
$T_{NB1+NB2}$ = 1769.33′(AHEAD)
$\Delta_{NB1+NB2}$ = 28° 52′ 55″ (LT.)
D_{CNB1} = 0° 44′ 37″
R_{NB1} = 7,704.23′
D_{CNB2} = 1° 30′ 00″
R_{NB2} = 3,819.72′
$Ls1_{NB2}$ = 168.00′
$Ls2_{NB2}$ = 265.00′

p1 = 0.16′
p2 = 0.77′
Δ_{NB1} = 22° 38′ 47″ (LT.)
Δ_{NB2} = 2° 21′ 48″ (LT.)
T_{NB1} = 1,542.70
T_{NB2} = 78.79′
Lt1 = 93.45′
Lt2 = 176.68′
St1 = 74.57′
St2 = 88.34′

Theta1 = 1° 53′ 05″
Theta2 = 1° 59′ 15″
x2 = 264.97′
y2 = 3.06′
k2 = 132.49′
E_{NB1} = 152.94′
E_{NB2} = 0.81′
eMAX. = 0.052

7-SS & 8-SS NOT USED
7-SO & 8-SO NOT USED

LEGEND

- DITCH EROSION PROTECTION (7.5′ WIDE TYP.) (SEE SHEET 318)
- ROCK CHANNEL PROTECTION
- WETLANDS
- EX. BROKEN CONCRETE DITCH PROTECTION

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS CHECKED JL

PLAN
STA. 392+00 TO STA. 404+50

SUM-271-8.02

127/612

21450PLAN5.DGN 03/31/04 SAM.CAR

875 865 855 845 835 825 815

MATCHLINE STA. 1392+00

SOUTHBOUND PROFILE

882.13 880.61 879.10 877.58 876.07 874.55 873.02 871.48 869.94 868.41 866.87 865.33 863.79 862.25 860.71 859.18 857.64 856.11 854.57 853.04 851.50 849.97 848.43 846.90 845.36 843.83

1392+00 1393+00 1394+00 1395+00 1396+00 1397+00 1398+00 1399+00 1400+00 1401+00 1402+00 1403+00 1404+00

STA. 400+02.61, 92.17' LT.
℄ R/W & SURVEY I.R. 271
EX. C.B.(TO REMAIN)
TOP OF GRATE EL. 853.3
℄ EX. 18" (E.) EL. 848.17

EX. 18" CPP

6-D
STA. 401+00.78, 126.07' LT.
℄ R/W & SURVEY I.R. 271
EX. C.B. ADJUST TO GRADE, AS PER PLAN
TOP OF GRATE EL. 839.47
℄ EX. 18" (S.) EL. 836.12
℄ EX. 18" (W.) EL. 836.11
℄ EX. 24" (E.) EL. 817.29

EX. 24" CPP

STA. 401+72.36, 150.58' LT.
℄ R/W & SURVEY I.R. 271
EX. 24" CPP
℄ OUTLET (W.) EL. 814.39

MATCHLINE STA. 1404+50

875 865 855 845 835 825 815

MATCHLINE STA. 2392+00

NORTHBOUND PROFILE

871.57 870.03 868.48 866.94 865.40 863.85 862.36 860.91 859.46 858.01 856.55 855.10 853.65 852.20 850.74 849.29 847.81 846.32 844.83 843.33 841.84 840.35 838.85 837.36 835.87 834.37

2392+00 2393+00 2394+00 2395+00 2396+00 2397+00 2398+00 2399+00 2400+00 2401+00 2402+00 2403+00 2404+00

STA. 396+99.05, 18.71' RT.
℄ R/W & SURVEY I.R. 271
EX. C.B.(TO REMAIN)
TOP OF GRATE EL. 854.26
℄ EX. 15" (W.) EL. 851.97
℄ EX. 18" (E.) EL. 851.42
℄ PROP. 6" (N.) EL. 853.26

EX. 15" CONC. (TO REMAIN)

EX. 18" CONC. (TO REMAIN)

5' - 18" TYPE C W/CONCRETE MASONRY COLLAR AS PER DM-1.1
STA. 400+90.20, 92.56' RT.
℄ R/W & CONST. I.R. 271
EX. C.B.(TO REMAIN)
TOP OF GRATE EL. 843.01
℄ EX. 21" (E.) EL. 838.88

7-D
STA. 401+95.55, 176.85' RT.
EX. 21" CMP
℄ OUTLET (N.) EL. 794.15
PROP. HW-2.1
℄ PROP. 21" (N.) EL. 794.15

5-D
STA. 401+00.00, 17.70' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 841.82
℄ PROP. 18" (N.) EL. 838.96
℄ PROP. 18" (W.) EL. 839.30
℄ EX. 18" (N.) EL. 838.96
℄ EX. 18" (W.) EL. 839.32
℄ PROP. 6" (N.) EL. 840.36

5-D
STA. 401+00.33, 17.73' RT.
℄ R/W & CONST. I.R. 271
EX. C.B.(REMOVE)
TOP OF GRATE EL. 841.82
℄ EX. 18" (N.) EL. 838.96
℄ EX. 18" (W.) EL. 839.32

EX. 21" CONC. (TO REMAIN)

7-D
EX. 21" CMP PROP. 21" TYPE F 707.05 TYPE C (REMOVE)

STA. 401+95.01, 74.78' RT.
℄ R/W & CONST. I.R. 271
EX. M.H.(TO REMAIN)
TOP OF COVER EL. 842.08
℄ EX. 21" (W.) EL. 835.32
℄ PROP. 21" (S.) EL. 835.32

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PROFILE - STA. 1392+00 TO STA. 1404+50 NORTHBOUND
STA. 2392+00 TO STA. 2404+50 SOUTHBOUND

SUM-271-8.02

128
612

2I450PROF5.DGN 03/31/04 SAM.CAR

CROSS REFERENCES	
7-12	TYPICAL SECTIONS
58-66	TEMP. CONSTRUCTION ACCESS
79-98	SUBSUMMARIES
119	UNDERDRAIN KEY
130	PROFILE SHEET
148-258	CROSS SECTIONS
283-285	FENCE DETAILS
286-334	DRAINAGE DETAILS
338-347	RETAINING WALL PLANS

HORIZONTAL SCALE IN FEET: 0, 25, 50, 100

CALCULATED PS | CHECKED JL

PLAN
STA. 404+50 TO STA. 417+00

SUM-271-8.02

129
612

CURVE DATA (SB1)
℄ CONST. SOUTHBOUND LANES

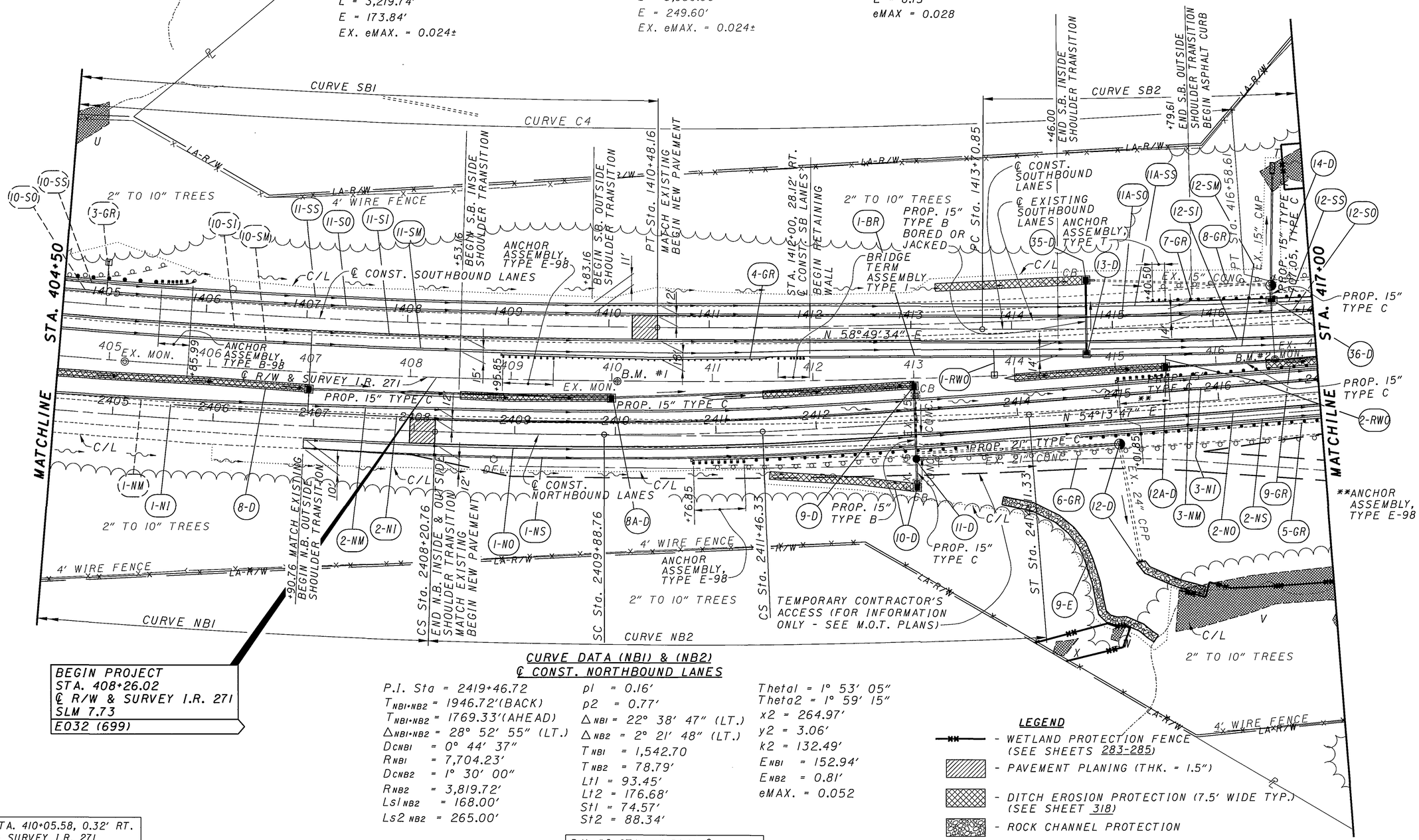
P.I. Sta = 1394+62.83
△ = 24° 17′ 07″ (LT)
Dc = 0° 45′ 15″
R = 7,596.23′
T = 1,634.41′
L = 3,219.74′
E = 173.84′
EX. eMAX. = 0.024±

CURVE DATA (C4)
℄ R/W & SURVEY I.R. 271

P.I. Sta = 397+72.32
△ = 28° 52′ 55″ (LT)
Dc = 0° 44′ 56″
R = 7,650.23′
T = 1,970.08′
L = 3,856.38′
E = 249.60′
EX. eMAX. = 0.024±

CURVE DATA (SB2)
℄ CONST. SOUTHBOUND LANES

P.I. Sta = 1416+77.46
△ = 4° 35′ 48″ (LT)
Dc = 0° 45′ 00″
R = 7,639.44′
T = 306.61′
L = 612.88′
E = 6.15′
eMAX = 0.028



CURVE DATA (NB1) & (NB2)
℄ CONST. NORTHBOUND LANES

P.I. Sta = 2419+46.72
$T_{NB1+NB2}$ = 1946.72′(BACK)
$T_{NB1+NB2}$ = 1769.33′(AHEAD)
$\Delta_{NB1+NB2}$ = 28° 52′ 55″ (LT.)
D_{cNB1} = 0° 44′ 37″
R_{NB1} = 7,704.23′
D_{cNB2} = 1° 30′ 00″
R_{NB2} = 3,819.72′
$Ls1_{NB2}$ = 168.00′
$Ls2_{NB2}$ = 265.00′

p1 = 0.16′
p2 = 0.77′
Δ_{NB1} = 22° 38′ 47″ (LT.)
Δ_{NB2} = 2° 21′ 48″ (LT.)
T_{NB1} = 1,542.70
T_{NB2} = 78.79′
Lt1 = 93.45′
Lt2 = 176.68′
St1 = 74.57′
St2 = 88.34′

Theta1 = 1° 53′ 05″
Theta2 = 1° 59′ 15″
x2 = 264.97′
y2 = 3.06′
k2 = 132.49′
E_{NB1} = 152.94′
E_{NB2} = 0.81′
eMAX. = 0.052

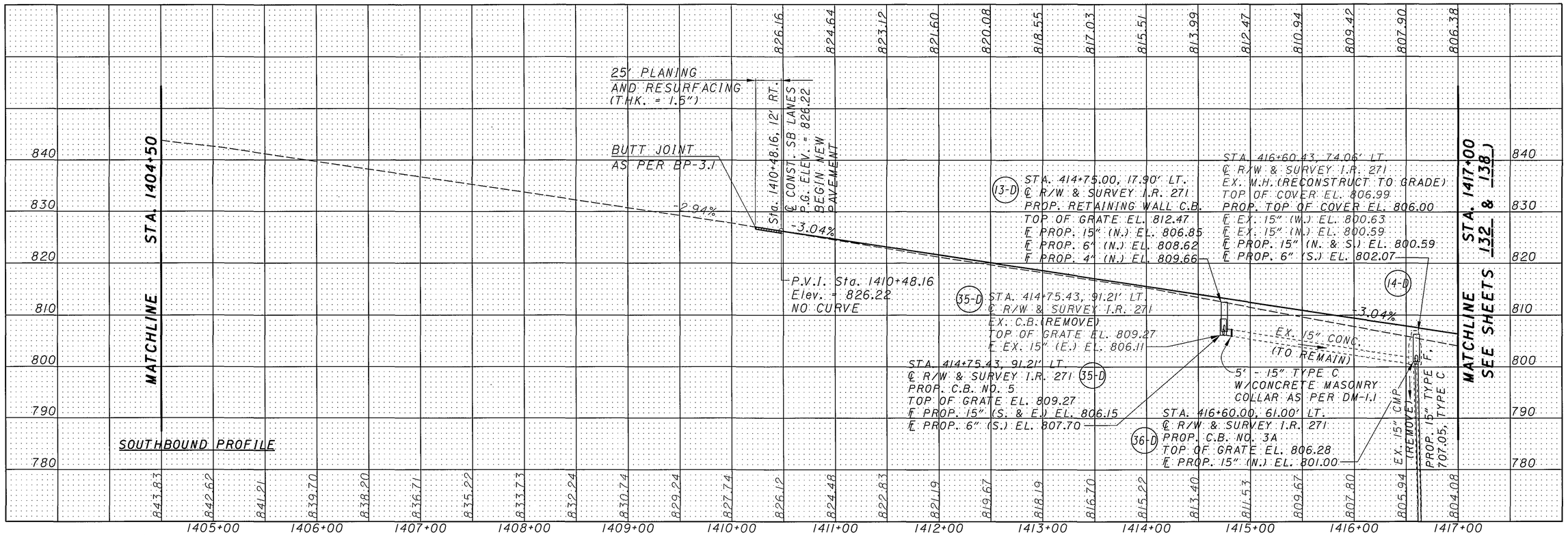
B.M. #1 STA. 410+05.58, 0.32′ RT.
℄ R/W & SURVEY I.R. 271
CONC. MON.
ELEV. = 819.73

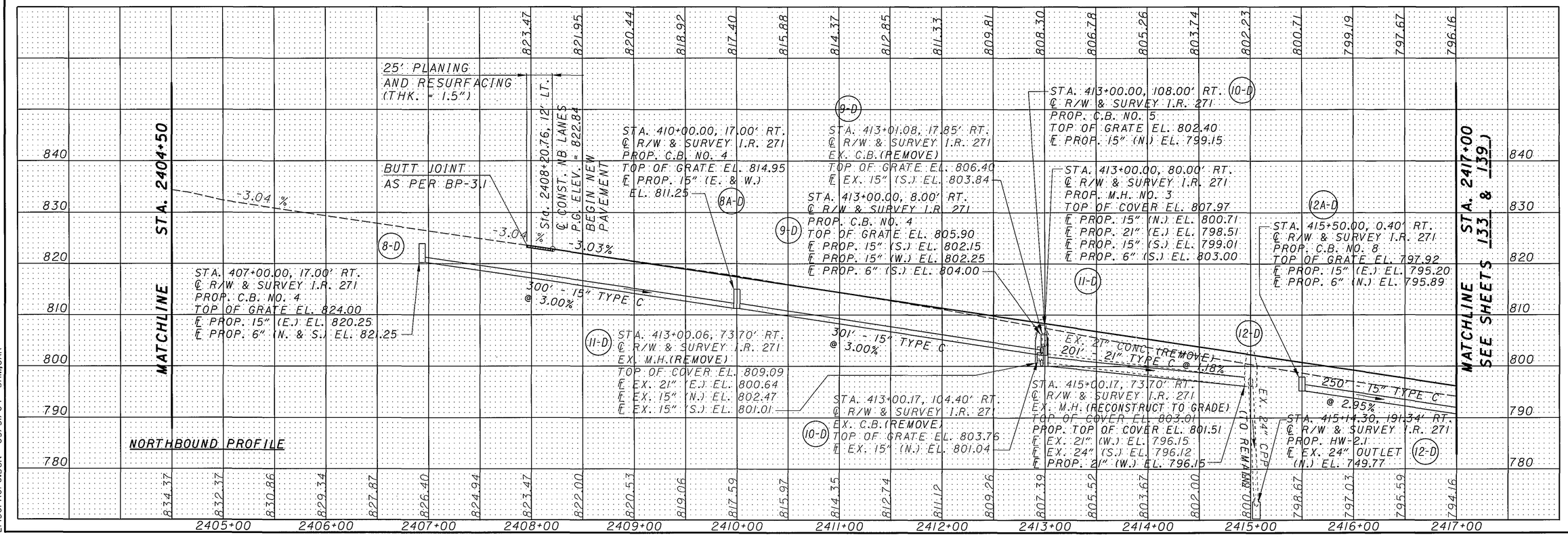
B.M. #2 STA. 416+58.61, ℄
℄ R/W & SURVEY I.R. 271
CONC. MON.
ELEV. = 799.74

LEGEND

- WETLAND PROTECTION FENCE (SEE SHEETS 283-285)
- PAVEMENT PLANING (THK. = 1.5″)
- DITCH EROSION PROTECTION (7.5′ WIDE TYP.) (SEE SHEET 318)
- ROCK CHANNEL PROTECTION
- WETLANDS
- EX. BROKEN CONCRETE DITCH PROTECTION

21450PLAN6.DGN 03/31/04 SAM.CAR





HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PROFILE - STA. 1404+50 TO STA. 1417+00 NORTHBOUND
STA. 2404+50 TO STA. 2417+00 SOUTHBOUND

SUM-271-8.02

130
612

21450PROF6.DGN 03/31/04 SAM.CAR

CURVE DATA (SB2)
℄ CONST. SOUTHBOUND LANES

P.I. Sta = 1416+77.46
Δ = 4° 35' 48" (LT)
Dc = 0° 45' 00"
R = 7,639.44'
T = 306.61'
L = 612.88'
E = 6.15'
eMAX = 0.028

B.M. #3 STA. 424+89.09, 299.09' LT.
℄ R/W & SURVEY I.R. 271
CHISELED '□' ON W. HEADWALL
NW COR. 200'± N. OF I.R. 271
BRIDGE ELEV. = 682.71

B.M. #4 STA. 427+74.15, 125.45' LT.
℄ R/W & SURVEY I.R. 271
CHISELED '□' ON W. HEADWALL
NW COR. CULVERT UNDER RR TRKS
BRIDGE ELEV. = 669.63

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PLAN - STEEL DESIGN
STA. 417+00 TO STA. 429+50

SUM-271-8.02

131
612

CURVE SB2
STA. 1419+83.74
STA. 1421+82.25
END APPROACH SLAB
STA. 2421+62.25
END APPROACH SLAB
STA. 417+00
STA. 429+50
MATCHLINE
MATCHLINE
℄ CONST. SOUTHBOUND LANES
℄ CONST. NORTHBOUND LANES
℄ R/W & SURVEY I.R. 271
LA-R/W
R/W
T ESMT
A ESMT
C/L
4' WIRE FENCE
2" TO 10" TREES
DO NOT DISTURB
EX. 6'x12' BOX CULVERT
EX. 4'x14' BOX CULVERT
EX. 48" CMP
EX. 54" CMP
EX. BROKEN CONC. DITCH PROTECTION
PROP. 18" TYPE C, A.P.P.
PROP. 15" TYPE C, A.P.P.
PROP. 15" TYPE F, A.P.P.
PROP. 54" TYPE C, A.P.P.
PROP. 48" LINER, 707.12'
PROP. 15" TYPE C
PROP. 15" TYPE B
PROP. 15" TYPE C
EX. 4' WIRE FENCE
EX. ROCK SHELVES
RIP-RAP
BRIDGE TERMINAL ASSEMBLY, TYPE 2
BRIDGE TERMINAL ASSEMBLY, TYPE 1 (TYP.)
VALLEY RAILWAY
RIVERVIEW ROAD (C.R. 9)
EX. UNDERGROUND GAS
EX. UNDERGROUND FIBER OPTIC CABLE (DO NOT DISTURB)
(3) GAS TANKS
RISER
PROPOSED DETENTION BASIN ACCESS DRIVE
TEMPORARY CONTRACTOR'S ACCESS (FOR INFORMATION ONLY - SEE M.O.T. PLANS)
N 54°13'47" E

CROSS REFERENCES	
7-12	TYPICAL SECTIONS
79-98	SUBSUMMARIES
58-66	TEMP. CONSTRUCTION ACCESS
119	UNDERDRAIN KEY
132-133	PROFILE SHEETS
148-258	CROSS SECTIONS
259-265	RIVERVIEW ROAD PLAN
283-285	FENCE DETAILS
286-334	DRAINAGE DETAILS
309	DETENTION BASIN PLAN
338-347	RETAINING WALL PLANS
361-437	STRUCTURE PLANS
315	DETENTION BASIN ACCESS DRIVE

LEGEND
- PROP. 15" TYPE B BORED OR JACKED
- PROP. 15" TYPE B
- PROP. 15" TYPE C
- WETLAND PROTECTION FENCE (SEE SHEETS 283-285)
- DITCH EROSION PROTECTION (7.5' WIDE TYP.) (SEE SHEET 318)
- ROCK CHANNEL PROTECTION
- WETLANDS
- SLOPE EROSION PROTECTION
- EX. BROKEN CONCRETE DITCH PROTECTION

2145OPLAN7.DGN 3/3/04 SAM.CAR

EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED STEEL PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 120'-0"±; 5 @ 170'-0"±; 2 @ 188'-0"±; 150'-0"± (LEFT) 105'-0"±; 2 @ 165'-0"±; 4 @ 170'-0"±; 188'-0"±; 150'-0"± (RIGHT)

ROADWAY: 32'-8"± F/F PARAPETS

APPROACH SLABS: AS-1-54 (25' LONG)

LOADING: CF-2000 ADEQUATE FOR AASHO ALTERNATE LOADING

SKEW: 0°±

ALIGNMENT: TANGENT

CONDITION: FAIR

YEAR BUILT: 1968

STRUCTURE FILE NO.: 7709005 (LEFT) 7709064 (RIGHT)

DISPOSITION: COMPLETE REMOVAL

PROPOSED STRUCTURE

TYPE: CONTINUOUS STEEL HYBRID A709 GRADE 50W/HPS 70W GIRDER COMPOSITE WITH REINFORCED CONCRETE DECK ON REINFORCED CONCRETE PIERS AND ABUTMENTS.

SPANS: 153'-0"; 2 @ 172'-0"; 169'-0"; 126'-0"; 169'-0"; 2 @ 189'-0"; 158'-0" (LEFT) 141'-0"; 2 @ 176'-0"; 168'-0"; 2 @ 150'-0"; 2 @ 176'-0"; 141'-0" (RIGHT)

ROADWAY: 52'-0" TOE TO TOE PARAPETS

LOADING: HS 25-44 (CASE 1) AND THE ALTERNATE MILITARY LOADING FUTURE WEARING SURFACE = 60 P.S.F.

SKEW: 0°00'00"

WEARING SURFACE: MONOLITHIC CONCRETE

APPROACH SLABS: AS-1-81 (25'-0" LONG)

LATITUDE: 41°15'35"N

LONGITUDE: 81°33'40"W

CROWN RATE: 0.016

DESIGN AVERAGE DAILY TRAFFIC: 39,840 (2024)

DESIGN AVERAGE DAILY TRUCK TRAFFIC: 8,970 (2024)

MATCHLINE STA. 1417+00 SEE SHEET 130

STA. 420+60.00, 3.27' LT.
℄ R/W & SURVEY I.R. 271
PROP. RETAINING WALL C.B.
TOP OF GRATE EL. 794.74
℄ PROP. 15" (N.) EL. 788.26
℄ PROP. 6" (N.) EL. 790.94
℄ PROP. 4" (N.) EL. 791.94

P.V.I. Sta. 1421+50.00
Elev. = 792.68
NO CURVE

BRIDGE LIMITS = 1503.50'

-3.04%

-82.25

-2.99%

-3.04%

-2.99 %

STA. 419+50.00, 3.27' LT.
℄ R/W & SURVEY I.R. 271
PROP. RETAINING WALL C.B.
TOP OF GRATE EL. 798.06
℄ PROP. 15" (N.) EL. 791.58
℄ PROP. 4" (N.) EL. 795.86
℄ PROP. 6" (N.) EL. 794.86

(16-D)

(47-D)

(51-D)

STA. 421+48.00, 54.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 792.31
℄ PROP. 15" (N. & S.) EL. 785.67
℄ PROP. 6" (S.) EL. 788.50
℄ PROP. 4" (W.) EL. 789.50
℄ PROP. 6" (E.) EL. 787.16

(52-D)

STA. 421+48.00, 60.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 791.75
℄ PROP. 15" (E. & S.) EL. 785.57

110'-15" TYPE C @ 1.50%

88'-15" TYPE C @ 1.50%

(38-D) (39-D) (48-D) (49-D)

(SEE BELOW) (SEE BELOW)

PROP. 15" TYPE F, 707.05, TYPE C

(18-D)

STA. 421+48.00, 3.27' LT.
℄ R/W & SURVEY I.R. 271
PROP. RETAINING WALL C.B.
TOP OF GRATE EL. 792.31
℄ PROP. 15" (N.) EL. 786.44
℄ PROP. 6" (N.) EL. 788.50
℄ PROP. 4" (N.) EL. 789.50

(40-D) (41-D) (42-D) (43-D)

20'-54" TYPE C, A.P.P.

EX. 54" CMP PROP. 48" LINER, 707.12

45'-54" TYPE C, A.P.P. @ 3.00%

EX. 54" CMP SEE NORTHBOUND PROFILE

49'-54" TYPE C, A.P.P. @ 5.00%

62'-54" TYPE C, A.P.P. @ 2.00%

25'-54" TYPE C, A.P.P. @ 1.20%

STA. 420+32.29, 222.87' LT.
℄ R/W & SURVEY I.R. 271
EX. 54" CMP
℄ OUTLET (S.) EL. 722.06

(44-D) (45-D) (46-D)

50'-ROCK CHANNEL PROTECTION, TYPE A W/FILTER

STA. 425+42.76 ℄ RIVERVIEW ROAD

STA. 427+85.10 ℄ VALLEY RAILWAY

MATCHLINE STA. 1429+50 SEE SHEET 135

EX. UNDERGROUND FIBER OPTIC (DO NOT DISTURB)

EX. 4" GAS

SEE SHEET 292-299 FOR ADDITIONAL STORM SEWER SYSTEM DETAILS

(38-D) STA. 419+50.00, 54.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 798.00
℄ PROP. 15" (N. & S.) EL. 790.82
℄ PROP. 6" (S.) EL. 794.00
℄ PROP. 4" (W.) EL. 795.00

(48-D) STA. 420+60.00, 54.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 794.60
℄ PROP. 15" (N. & S.) EL. 787.49
℄ PROP. 6" (S.) EL. 791.10
℄ PROP. 4" (N.) EL. 792.10

(39-D) STA. 419+50.00, 60.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 796.38
℄ PROP. 15" (S.) EL. 790.70
℄ PROP. 15" (N. & E.) EL. 782.59

(49-D) STA. 420+60.00, 60.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 794.20
℄ PROP. 15" (S.) EL. 787.37
℄ PROP. 15" (E. & W.) EL. 784.24

FOR DRAINAGE SYSTEM UNDER PROPOSED STRUCTURE SEE SHEET NO. 300-303

STA. 427+73.48, 118.75' LT.
℄ R/W & SURVEY I.R. 271
EX. 4' x 14' BOX CULVERT
℄ INLET (E.) EL. 663.96

STA. 428+00.30, 116.17' LT.
℄ R/W & SURVEY I.R. 271
EX. 4' x 14' BOX CULVERT
℄ OUTLET (W.) EL. 663.56

SOUTHBOUND PROFILE

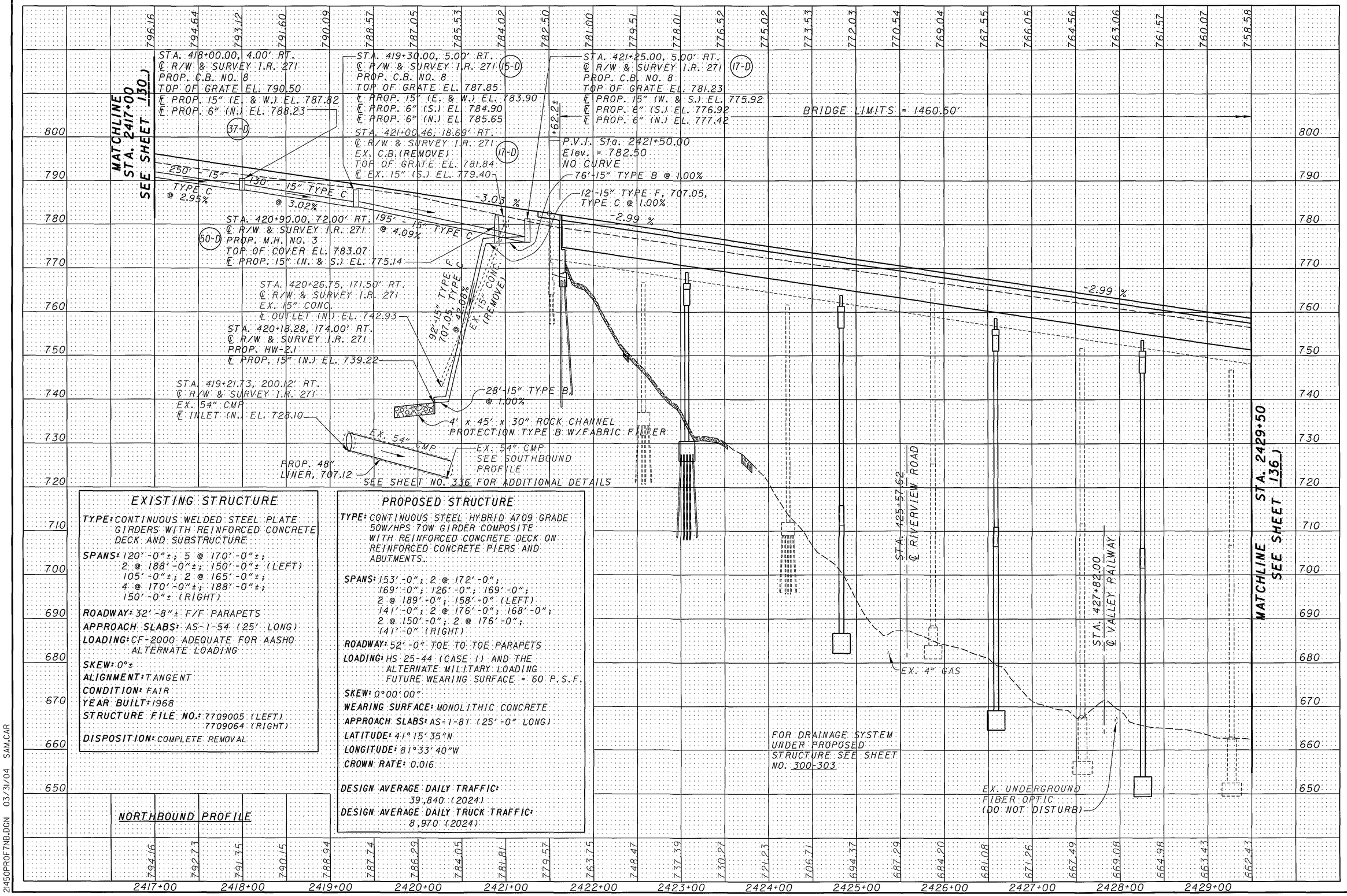
HORIZONTAL SCALE IN FEET: 0, 25, 50, 100

CALCULATED PS CHECKED JL

PROFILE - STEEL DESIGN
STA. 1417+00 TO STA. 1429+50

SUM-271-8.02

21450PROFTSB.DGN 03/31/04 SAM.CAR



EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED STEEL PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 120'-0"±; 5 @ 170'-0"±; 2 @ 188'-0"±; 150'-0"± (LEFT) 105'-0"±; 2 @ 165'-0"±; 4 @ 170'-0"±; 188'-0"±; 150'-0"± (RIGHT)

ROADWAY: 32'-8"± F/F PARAPETS

APPROACH SLABS: AS-1-54 (25' LONG)

LOADING: CF-2000 ADEQUATE FOR AASHO ALTERNATE LOADING

SKEW: 0°±

ALIGNMENT: TANGENT

CONDITION: FAIR

YEAR BUILT: 1968

STRUCTURE FILE NO.: 7709005 (LEFT) 7709064 (RIGHT)

DISPOSITION: COMPLETE REMOVAL

PROPOSED STRUCTURE

TYPE: CONTINUOUS STEEL HYBRID A709 GRADE 50W/HPS 70W GIRDER COMPOSITE WITH REINFORCED CONCRETE DECK ON REINFORCED CONCRETE PIERS AND ABUTMENTS.

SPANS: 153'-0"; 2 @ 172'-0"; 169'-0"; 126'-0"; 169'-0"; 2 @ 189'-0"; 158'-0" (LEFT) 141'-0"; 2 @ 176'-0"; 168'-0"; 2 @ 150'-0"; 2 @ 176'-0"; 141'-0" (RIGHT)

ROADWAY: 52'-0" TOE TO TOE PARAPETS

LOADING: HS 25-44 (CASE I) AND THE ALTERNATE MILITARY LOADING FUTURE WEARING SURFACE = 60 P.S.F.

SKEW: 0°00'00"

WEARING SURFACE: MONOLITHIC CONCRETE

APPROACH SLABS: AS-1-81 (25'-0" LONG)

LATITUDE: 41°15'35"N

LONGITUDE: 81°33'40"W

CROWN RATE: 0.016

DESIGN AVERAGE DAILY TRAFFIC: 39,840 (2024)

DESIGN AVERAGE DAILY TRUCK TRAFFIC: 8,970 (2024)

NORTHBOUND PROFILE

HORIZONTAL SCALE IN FEET: 0, 25, 50, 100

CALCULATED PS

CHECKED JL

PROFILE - STEEL DESIGN

STA. 2417+00 TO STA. 2429+50

SUM-271-8.02

133/612

2145OPROF7NB.DGN 03/31/04 SAM.CAR

CROSS REFERENCES	
7-12	TYPICAL SECTIONS
58-66	TEMP. CONSTRUCTION ACCESS
79-98	SUBSUMMARIES
119	UNDERDRAIN KEY
135-136	PROFILE SHEETS
148-258	CROSS SECTIONS
283-285	FENCE DETAILS
286-334	DRAINAGE DETAILS
309-310	DETENTION BASIN PLAN
338-347	RETAINING WALL PLANS
361-437	STRUCTURE PLANS

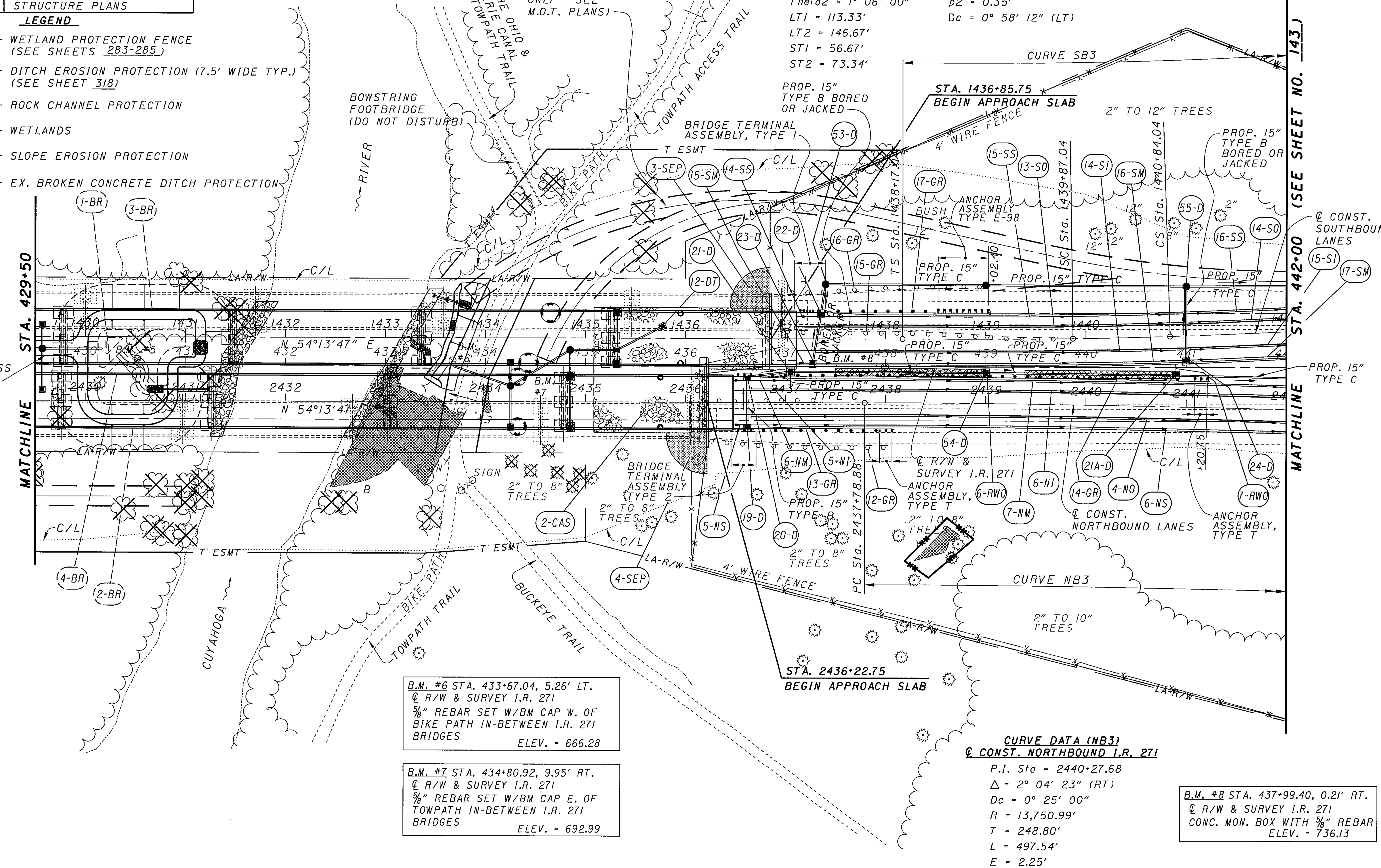
LEGEND

- WETLAND PROTECTION FENCE (SEE SHEETS 283-285)
- DITCH EROSION PROTECTION (7.5' WIDE TYP.) (SEE SHEET 318)
- ROCK CHANNEL PROTECTION
- WETLANDS
- SLOPE EROSION PROTECTION
- EX. BROKEN CONCRETE DITCH PROTECTION

B.M. #5 STA. 430+52.43, 5.72' LT.
℄ R/W & SURVEY I.R. 271
5/8" REBAR SET W/BM CAP BETWEEN I.R. 271 BRIDGES 100± WEST OF TOP BANK OF W. SIDE CUYAHOGA RIVER
ELEV. = 658.08

CURVE DATA (SB3)
℄ CONST. SOUTHBOUND LANES

P.I. Sta = 1440+50.86	x1 = 170.00'	Lc = 97.00'
Δ = 2° 55' 12" (LT)	x2 = 219.99'	Ts1 = 233.82'
Dc = 1° 00' 00"	y1 = 0.84'	Ts2 = 253.26'
R = 5,729.58'	y2 = 1.41'	Es = 2.14'
Ls1 = 170.00'	k1 = 85.00'	eMAX = 0.036
Ls2 = 220.00'	k2 = 110.00'	
Theta1 = 0° 51' 00"	p1 = 0.21'	
Theta2 = 1° 06' 00"	p2 = 0.35'	
LT1 = 113.33'	Dc = 0° 58' 12" (LT)	
LT2 = 146.67'		
ST1 = 56.67'		
ST2 = 73.34'		



B.M. #6 STA. 433+67.04, 5.26' LT.
℄ R/W & SURVEY I.R. 271
5/8" REBAR SET W/BM CAP W. OF BIKE PATH IN-BETWEEN I.R. 271 BRIDGES
ELEV. = 666.28

B.M. #7 STA. 434+80.92, 9.95' RT.
℄ R/W & SURVEY I.R. 271
5/8" REBAR SET W/BM CAP E. OF TOWPATH IN-BETWEEN I.R. 271 BRIDGES
ELEV. = 692.99

CURVE DATA (NB3)
℄ CONST. NORTHBOUND I.R. 271

P.I. Sta = 2440+27.68
Δ = 2° 04' 23" (RT)
Dc = 0° 25' 00"
R = 13,750.99'
T = 248.80'
L = 497.54'
E = 2.25'
eMAX = NC

B.M. #8 STA. 437+99.40, 0.21' RT.
℄ R/W & SURVEY I.R. 271
CONC. MON. BOX WITH 5/8" REBAR
ELEV. = 736.13

HORIZONTAL SCALE IN FEET: 0 25 50 100

CALCULATED PS
CHECKED JL

PLAN - STEEL DESIGN
STA. 429+50 TO STA. 442+00

SUM-271-8.02

2145OPLAN8.DGN 3/31/04 SAM,CAR

BRIDGE LIMITS = 1503.50'

-2.99 %

+85.75

-2.99 %

-3.01%

P.V.I. Sta. 1437+17.98
Elev. = 745.80
NO CURVE
STA. 437+35.30, 54.00' LT. (22-D)
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 744.92
℄ PROP. 15" (N. & S.) EL. 738.49
℄ PROP. 6" (W.) EL. 740.94

160' - 15" TYPE C @ 3.00%

STA. 437+40.00, 82.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3 (53-D)
TOP OF COVER EL. 744.00
℄ PROP. 15" (E.) EL. 737.61
℄ PROP. 15" (S.) EL. 738.20

STA. 437+27.00, 3.27' LT.
℄ R/W & SURVEY I.R. 271
(23-D) PROP. RETAINING WALL C.B.
TOP OF GRATE EL. 745.17
℄ PROP. 15" (N.) EL. 738.99
℄ PROP. 6" (W.) EL. 740.94

STA. 441+00.00, 80.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3 (55-D)
TOP OF COVER EL. 733.50
℄ PROP. 15" (N. & E.) EL. 726.35
℄ PROP. 15" (W.) EL. 726.81

(53-D)

STA. 439+00.00, 81.11' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 739.13
℄ PROP. 15" (E. & W.) EL. 732.81

STA. 441+00.00, 7.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. RETAINING WALL C.B. (24-D)
TOP OF GRATE EL. 734.11
℄ PROP. 15" (N.) EL. 728.75
℄ PROP. 6" (N.) EL. 729.65
℄ PROP. 4" (N.) EL. 730.65

Sta. 1439+70.00
Elev. 738.22

200' - 15" TYPE C @ 3.00%

190' - 15" TYPE C @ 3.00%

1,170' V.C.
P.V.I. Sta. 1445+55.00
Elev. = 720.64

MATCHLINE STA. 1429+50
SEE SHEET 132

MATCHLINE STA. 1442+00
SEE SHEET 144 SOUTHBOUND

STA. 433+98.33
℄ OHIO & ERIE CANAL
TOWPATH TRAIL

100 YEAR H.W.
EL. 660.5±

NORMAL WATER
EL. 648.0±

ROCK CHANNEL PROTECTION,
TYPE A W/FABRIC FILTER
36" THICK

FOR DRAINAGE UNDER PROPOSED
STRUCTURE SEE SHEET NO. 300-303

SOUTHBOUND PROFILE

768.76 767.27 765.77 764.28 762.78 761.29 759.79 758.30 756.80 755.31 753.81 752.32 750.82 749.33 747.83 746.34 744.83 743.33 741.83 740.33 738.82 738.07 737.34 736.64 735.98 735.34 734.74 734.16 733.62 733.11 732.63

662.79 661.17 658.29 655.60 651.24 638.51 638.51 645.86 662.36 668.37 681.84 697.28 710.70 717.28 725.69 737.00 740.02 738.23 736.47 734.66 733.51 732.72 731.97 731.18 730.75 730.54

780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630 620

1430+00 1431+00 1432+00 1433+00 1434+00 1435+00 1436+00 1437+00 1438+00 1439+00 1440+00 1441+00 1442+00

HORIZONTAL SCALE IN FEET
0 25 50 100

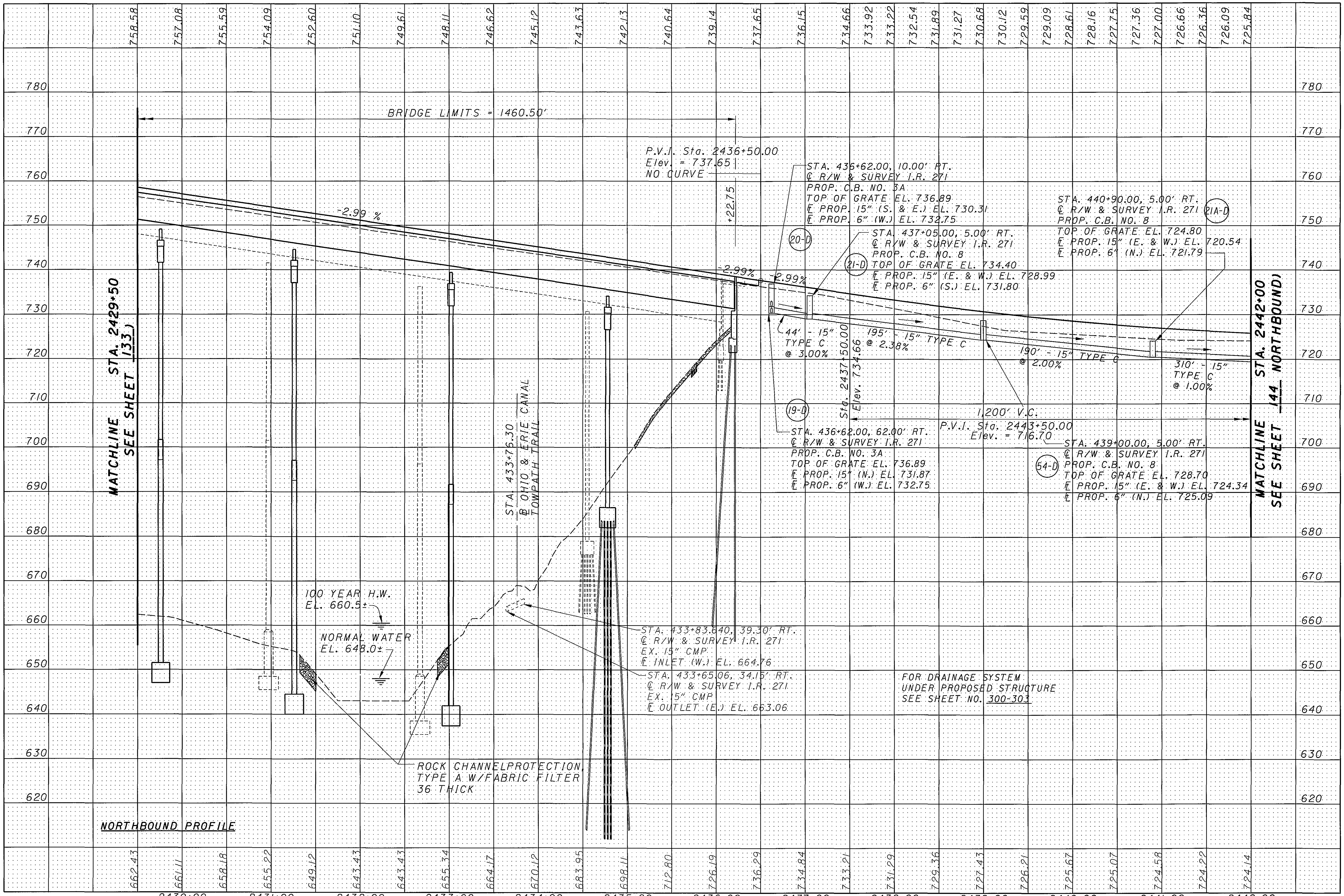
CALCULATED PS
CHECKED JL

PROFILE - STEEL DESIGN
STA. 1429+50 TO STA. 1442+00 SOUTHBOUND

SUM-271-8.02

135
612

21450PROF8SB.DGN 03/31/04 SAM.CAR



0 25 50 100
HORIZONTAL
SCALE IN FEET

CALCULATED PS
CHECKED JL

PROFILE - STEEL DESIGN
STA. 2429+50 TO STA. 2442+00 NORTHBOUND

SUM-271-8.02

2I450PROF8NB.DGN 03/31/04 SAM,CAR

CURVE DATA (SB2)
℄ CONST. SOUTHBOUND LANES

P.I. Sta = 1416+77.46
Δ = 4° 35' 48" (LT)
Dc = 0° 45' 00"
R = 7,639.44'
T = 306.61'
L = 612.88'
E = 6.15'
eMAX = 0.028

PROP. AC
STA. 421+83.50, 75.67' LT.

B.M. #3 STA. 424+89.09, 299.09' LT.
℄ R/W & SURVEY I.R. 271
CHISELED 'D' ON W. HEADWALL
NW COR. 200'± N. OF I.R. 271
BRIDGE ELEV. = 682.71

B.M. #4 STA. 427+74.15, 125.45' LT.
℄ R/W & SURVEY I.R. 271
CHISELED 'D' ON W. HEADWALL
NW COR. CULVERT UNDER RR TRKS
BRIDGE ELEV. = 669.63

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PLAN - CONCRETE DESIGN
STA. 417+00 TO STA. 429+50

SUM-271-8.02

137
612

CURVE SB2
STA. 1419+83.74
STA. 1421+82.25
END APPROACH SLAB
STA. 2421+62.25
END APPROACH SLAB
STA. 417+00
STA. 429+50
MATCHLINE
MATCHLINE
℄ CONST. SOUTHBOUND LANES
℄ CONST. NORTHBOUND LANES
℄ R/W & SURVEY I.R. 271
℄ RIVERVIEW ROAD (C.R. 9)
EX. UNDERGROUND GAS
VALLEY RAILWAY
EX. UNDERGROUND FIBER OPTIC CABLE (DO NOT DISTURB)
EX. 6'x12' BOX CULVERT
EX. 4'x14' BOX CULVERT
EX. 48" CMP
EX. 54" CMP
PROP. 54" TYPE C, A.P.P.
PROP. 18" TYPE C, A.P.P.
PROP. 15" TYPE C, A.P.P.
PROP. 15" TYPE F, 707.05', TYPE C
PROP. 18" TYPE C LINER, 707.12'
PROP. 15" TYPE C
PROP. 15" TYPE B
PROP. 15" TYPE C
EX. BROKEN CONC. DITCH PROTECTION
PROP. 15" CONC. FLUME, 70.05' TYPE C
4' WIRE FENCE
DO NOT DISTURB
T ESMT
A ESMT
G ESMT
2" TO 10" TREES
RISER
(3) GAS TANKS
BRIDGE TERMINAL ASSEMBLY, TYPE 2
BRIDGE TERMINAL ASSEMBLY, TYPE 1 (TYP.)
PROPOSED DETENTION BASIN ACCESS DRIVE
TEMPORARY CONTRACTOR'S ACCESS (FOR INFORMATION ONLY - SEE M.O.T. PLANS)

CROSS REFERENCES	
7-12	TYPICAL SECTIONS
79-98	SUBSUMMARIES
58-66	TEMP. CONSTRUCTION ACCESS
119	UNDERDRAIN KEY
138-139	PROFILE SHEETS
148-258	CROSS SECTIONS
259-265	RIVERVIEW ROAD PLAN
283-285	FENCE DETAILS
286-334	DRAINAGE DETAILS
311	DETENTION BASIN PLAN
338-347	RETAINING WALL PLANS
438-560	STRUCTURE PLANS
316	DETENTION BASIN ACCESS DRIVE

LEGEND
- PROP. 15" TYPE B BORED OR JACKED
- PROP. 15" TYPE B
- PROP. 15" TYPE C
- WETLAND PROTECTION FENCE (SEE SHEETS 283-285)
- DITCH EROSION PROTECTION (7.5' WIDE TYP.) (SEE SHEET 318)
- ROCK CHANNEL PROTECTION
- WETLANDS
- SLOPE EROSION PROTECTION
- EX. BROKEN CONCRETE DITCH PROTECTION

21450PLAN7-CONCRETE.DGN 3/29/04 JLS,CAR

EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED STEEL PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 120'-0"±; 5 @ 170'-0"±; 2 @ 188'-0"±; 150'-0"± (LEFT) 105'-0"±; 2 @ 165'-0"±; 4 @ 170'-0"±; 188'-0"±; 150'-0"± (RIGHT)

ROADWAY: 32'-8"± F/F PARAPETS

APPROACH SLABS: AS-1-54 (25' LONG)

LOADING: CF-2000 ADEQUATE FOR AASHO ALTERNATE LOADING

SKEW: 0°±

ALIGNMENT: TANGENT

CONDITION: FAIR

YEAR BUILT: 1968

STRUCTURE FILE NO.: 7709005 (LEFT) 7709064 (RIGHT)

DISPOSITION: COMPLETE REMOVAL

PROPOSED STRUCTURE

TYPE: CONTINUOUS STEEL HYBRID A709 GRADE 50W/HPS 70W GIRDER COMPOSITE WITH REINFORCED CONCRETE DECK ON REINFORCED CONCRETE PIERS AND ABUTMENTS.

SPANS: 153'-0"; 2 @ 172'-0"; 169'-0"; 126'-0"; 169'-0"; 2 @ 189'-0"; 158'-0" (LEFT) 141'-0"; 2 @ 176'-0"; 168'-0"; 2 @ 150'-0"; 2 @ 176'-0"; 141'-0" (RIGHT)

ROADWAY: 52'-0" TOE TO TOE PARAPETS

LOADING: HS 25-44 (CASE I) AND THE ALTERNATE MILITARY LOADING FUTURE WEARING SURFACE = 60 P.S.F.

SKEW: 0°00'00"

WEARING SURFACE: MONOLITHIC CONCRETE

APPROACH SLABS: AS-1-81 (25'-0" LONG)

LATITUDE: 41°15'35"N

LONGITUDE: 81°33'40"W

CROWN RATE: 0.016

DESIGN AVERAGE DAILY TRAFFIC: 39,840 (2024)

DESIGN AVERAGE DAILY TRUCK TRAFFIC: 8,970 (2024)

MATCHLINE STA. 1417+00 SEE SHEET 130

STA. 420+60.00, 3.27' LT. ℄ R/W & SURVEY I.R. 271 PROP. RETAINING WALL C.B. TOP OF GRATE EL. 794.74 ℄ PROP. 15" (N.) EL. 788.26 ℄ PROP. 6" (N.) EL. 790.94 ℄ PROP. 4" (N.) EL. 791.94

P.V.I. Sta. 1421+50.00 Elev. = 792.68 NO CURVE

BRIDGE LIMITS = 1503.50'

STA. 421+48.00, 54.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. C.B. NO. 3A TOP OF GRATE EL. 792.31 ℄ PROP. 15" (N. & S.) EL. 785.67 ℄ PROP. 6" (S.) EL. 788.50 ℄ PROP. 4" (W.) EL. 789.50 ℄ PROP. 6" (E.) EL. 787.16

STA. 421+48.00, 60.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. M.H. NO. 3 TOP OF COVER EL. 791.75 ℄ PROP. 15" (E. & S.) EL. 785.57

STA. 419+50.00, 3.27' LT. ℄ R/W & SURVEY I.R. 271 PROP. RETAINING WALL C.B. TOP OF GRATE EL. 798.06 ℄ PROP. 15" (N.) EL. 791.58 ℄ PROP. 4" (N.) EL. 795.86 ℄ PROP. 6" (N.) EL. 794.86

STA. 421+48.00, 3.27' LT. ℄ R/W & SURVEY I.R. 271 PROP. RETAINING WALL C.B. TOP OF GRATE EL. 792.31 ℄ PROP. 15" (N.) EL. 786.44 ℄ PROP. 6" (N.) EL. 788.50 ℄ PROP. 4" (N.) EL. 789.50

PROP. 15" TYPE F, T07.06, TYPE C

110'-15" TYPE C @ 1.50%

88'-15" TYPE C @ 1.50%

-3.04% -3.04% +82.25 -2.99% -2.99 %

(SEE BELOW) (SEE BELOW)

20'-54" TYPE C, A.P.P.

EX. 54" CMP PROP. 48" LINER T07.12

45'-54" TYPE C, A.P.P. @ 3.00%

EX. 54" CMP SEE NORTHBOUND PROFILE

49'-54" TYPE C, A.P.P. @ 5.00%

62'-54" TYPE C, A.P.P. @ 2.00%

25'-54" TYPE C, A.P.P. @ 1.20%

STA. 420+32.29, 222.87' LT. ℄ R/W & SURVEY I.R. 271 EX. 54" CMP ℄ OUTLET (S.) EL. 722.06

50'-ROCK CHANNEL PROTECTION, TYPE A W/FILTER

48"

SEE SHEET 292-299 FOR ADDITIONAL DETAILS OF STORM SEWER SYSTEM

STA. 425+42.76 ℄ RIVERVIEW ROAD

STA. 427+85.10 ℄ VALLEY RAILWAY

MATCHLINE STA. 1429+50 SEE SHEET 141

EX. UNDERGROUND FIBER OPTIC (DO NOT DISTURB)

EX. 4" GAS

FOR DRAINAGE SYSTEM UNDER PROPOSED STRUCTURE SEE SHEET NO. 304-308

STA. 419+50.00, 54.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. C.B. NO. 3A TOP OF GRATE EL. 798.00 ℄ PROP. 15" (N. & S.) EL. 790.82 ℄ PROP. 6" (S.) EL. 794.00 ℄ PROP. 4" (W.) EL. 795.00

STA. 420+60.00, 54.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. C.B. NO. 3A TOP OF GRATE EL. 794.60 ℄ PROP. 15" (N. & S.) EL. 787.49 ℄ PROP. 6" (S.) EL. 791.10 ℄ PROP. 4" (N.) EL. 792.10

STA. 419+50.00, 60.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. M.H. NO. 3 TOP OF COVER EL. 796.38 ℄ PROP. 15" (S.) EL. 790.70 ℄ PROP. 15" (N. & E.) EL. 782.59

STA. 420+60.00, 60.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. M.H. NO. 3 TOP OF COVER EL. 794.20 ℄ PROP. 15" (S.) EL. 787.37 ℄ PROP. 15" (E. & W.) EL. 784.24

STA. 427+73.48, 118.75' LT. ℄ R/W & SURVEY I.R. 271 EX. 4' x 14' BOX CULVERT ℄ INLET (E.) EL. 663.96

STA. 428+00.30, 116.17' LT. ℄ R/W & SURVEY I.R. 271 EX. 4' x 14' BOX CULVERT ℄ OUTLET (W.) EL. 663.56

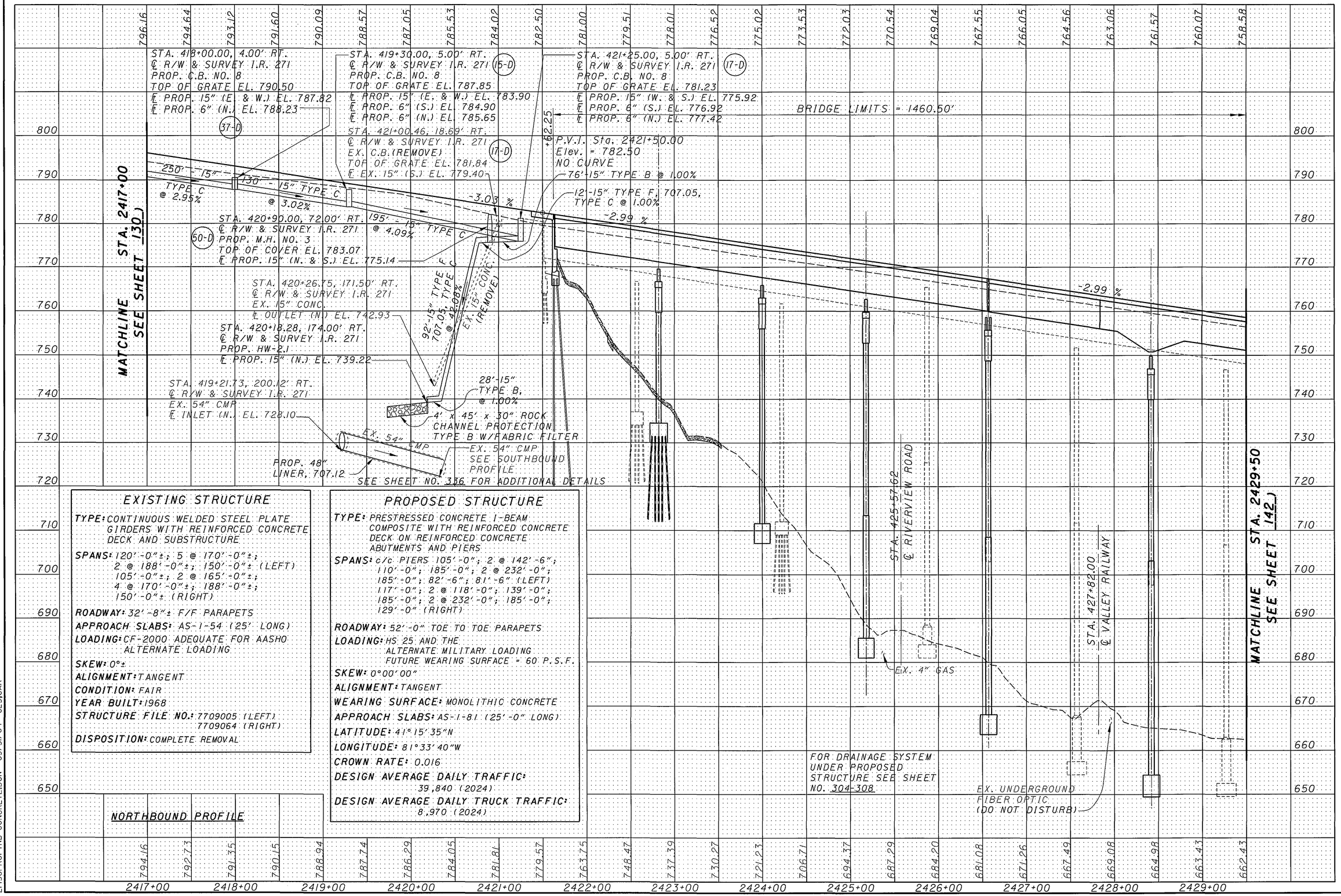
HORIZONTAL SCALE IN FEET 0 25 50 100

CALCULATED PS CHECKED JL

PROFILE - CONCRETE DESIGN
STA. 1417+00 TO STA. 1429+50
SUM-271-8.02

138/612

2145PROF7SB-CONCRETE.DGN 03/31/04 JLS.CAR



EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED STEEL PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 120'-0"±; 5 @ 170'-0"±; 2 @ 188'-0"±; 150'-0"± (LEFT) 105'-0"±, 2 @ 165'-0"±; 4 @ 170'-0"±; 188'-0"±; 150'-0"± (RIGHT)

ROADWAY: 32'-8"± F/F PARAPETS

APPROACH SLABS: AS-1-54 (25' LONG)

LOADING: CF-2000 ADEQUATE FOR AASHO ALTERNATE LOADING

SKEW: 0°±

ALIGNMENT: TANGENT

CONDITION: FAIR

YEAR BUILT: 1968

STRUCTURE FILE NO.: 7709005 (LEFT) 7709064 (RIGHT)

DISPOSITION: COMPLETE REMOVAL

PROPOSED STRUCTURE

TYPE: PRESTRESSED CONCRETE I-BEAM COMPOSITE WITH REINFORCED CONCRETE DECK ON REINFORCED CONCRETE ABUTMENTS AND PIERS

SPANS: c/c PIERS 105'-0"; 2 @ 142'-6"; 110'-0"; 185'-0"; 2 @ 232'-0"; 185'-0"; 82'-6"; 81'-6" (LEFT) 117'-0"; 2 @ 118'-0"; 139'-0"; 185'-0"; 2 @ 232'-0"; 185'-0"; 129'-0" (RIGHT)

ROADWAY: 52'-0" TOE TO TOE PARAPETS

LOADING: HS 25 AND THE ALTERNATE MILITARY LOADING FUTURE WEARING SURFACE = 60 P.S.F.

SKEW: 0°00'00"

ALIGNMENT: TANGENT

WEARING SURFACE: MONOLITHIC CONCRETE

APPROACH SLABS: AS-1-81 (25'-0" LONG)

LATITUDE: 41°15'35"N

LONGITUDE: 81°33'40"W

CROWN RATE: 0.016

DESIGN AVERAGE DAILY TRAFFIC: 39,840 (2024)

DESIGN AVERAGE DAILY TRUCK TRAFFIC: 8,970 (2024)

NORTHBOUND PROFILE

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PROFILE - CONCRETE DESIGN
STA. 2417+00 TO STA. 2429+50 NORTHBOUND

SUM-271-8.02

139
612

2145PROF7NB-CONCRETE.DGN 03/31/04 JLS,CAR

CROSS REFERENCES	
7-12	TYPICAL SECTIONS
58-66	TEMP. CONSTRUCTION ACCESS
79-98	SUBSUMMARIES
119	UNDERDRAIN KEY
141-142	PROFILE SHEETS
148-258	CROSS SECTIONS
283-285	FENCE DETAILS
286-334	DRAINAGE DETAILS
311-312	DETENSION BASIN PLAN
338-347	RETAINING WALL PLANS
438-560	STRUCTURE PLANS

LEGEND

- WETLAND PROTECTION FENCE (SEE SHEETS 283-285)
- DITCH EROSION PROTECTION (7.5' WIDE TYP.) (SEE SHEET 318)
- ROCK CHANNEL PROTECTION
- WETLANDS
- SLOPE EROSION PROTECTION
- EX. BROKEN CONCRETE DITCH PROTECTION

B.M. #5 STA. 430+52.43, 5.72' LT.
℄ R/W & SURVEY I.R. 271
⅝" REBAR SET W/BM CAP BETWEEN I.R. 271 BRIDGES 100± WEST OF TOP BANK OF W. SIDE CUYAHOGA RIVER
ELEV. = 658.08

CURVE DATA (SB3)
℄ CONST. SOUTHBOUND LANES

P.I. Sta = 1440+50.86
△ = 2° 55' 12" (LT)
Dc = 1° 00' 00"
R = 5,729.58'
Ls1 = 170.00'
Ls2 = 220.00'
Theta1 = 0° 51' 00"
Theta2 = 1° 06' 00"
LT1 = 113.33'
LT2 = 146.67'
ST1 = 56.67'
ST2 = 73.34'
x1 = 170.00'
x2 = 219.99'
y1 = 0.84'
y2 = 1.41'
k1 = 85.00'
k2 = 110.00'
p1 = 0.21'
p2 = 0.35'
Dc = 0° 58' 12" (LT)
Lc = 97.00'
Ts1 = 233.82'
Ts2 = 253.26'
Es = 2.14'
eMAX = 0.036

STA. 429+50
STA. 442+00 (SEE SHEET NO. 143)
MATCHLINE
MATCHLINE
PROPOSED DETENTION BASIN ACCESS DRIVE
THE OHIO & ERIE CANAL TOWPATH TRAIL
TEMPORARY CONTRACTOR'S ACCESS (FOR INFORMATION ONLY - SEE M.O.T. PLANS)
TOWPATH ACCESS TRAIL
BOWSTRING FOOTBRIDGE (DO NOT DISTURB)
RIVER
BRIDGE TERMINAL ASSEMBLY, TYPE 1
BRIDGE TERMINAL ASSEMBLY TYPE 2
PROP. 15" TYPE B BORED OR JACKED
CURVE SB3
STA. 1436+85.75
BEGIN APPROACH SLAB
2" TO 12" TREES
4' WIRE FENCE
ANCHOR ASSEMBLY TYPE E-98
BUSH
TS Sta. 1438+17.87
SC Sta. 1439+87.04
CS Sta. 1440+84.04
PC Sta. 2437+78.88
PROP. 15" TYPE C
PROP. 15" TYPE B
℄ CONST. SOUTHBOUND LANES
℄ CONST. NORTHBOUND LANES
℄ R/W & SURVEY I.R. 271
ANCHOR ASSEMBLY, TYPE T
2" TO 8" TREES
2" TO 10" TREES
SIGN
CURVE NB3
STA. 2436+22.75
BEGIN APPROACH SLAB
BIKE PATH
CUYAHOGA
TOWPATH TRAIL
BUCKEYE TRAIL
T ESMT
LA-R/W
C/L
B.M. #6 STA. 433+67.04, 5.26' LT.
℄ R/W & SURVEY I.R. 271
⅝" REBAR SET W/BM CAP W. OF BIKE PATH IN-BETWEEN I.R. 271 BRIDGES
ELEV. = 666.28
B.M. #7 STA. 434+80.92, 9.95' RT.
℄ R/W & SURVEY I.R. 271
⅝" REBAR SET W/BM CAP E. OF TOWPATH IN-BETWEEN I.R. 271 BRIDGES
ELEV. = 692.99
B.M. #8 STA. 437+99.40, 0.21' RT.
℄ R/W & SURVEY I.R. 271
CONC. MON. BOX WITH ⅝" REBAR
ELEV. = 736.13

CURVE DATA (NB3)
℄ CONST. NORTHBOUND I.R. 271

P.I. Sta = 2440+27.68
△ = 2° 04' 23" (RT)
Dc = 0° 25' 00"
R = 13,750.99'
T = 248.80'
L = 497.54'
E = 2.25'
eMAX = NC

1-BR, 3-BR, 4-BR, 2-BR, 2-CAS, 4-SEP, 3-SEP, 15-SM, 14-SS, 53-D, 23-D, 22-D, 21-D, 16-GR, 15-GR, 17-GR, 15-SS, 13-SO, 14-SI, 16-SM, 55-D, 16-SS, 14-SO, 15-SI, 17-SM, 5-NS, 19-D, 20-D, 12-GR, 54-D, 6-NM, 5-NI, 13-GR, 6-RWO, 7-NM, 6-NI, 21A-D, 14-GR, 4-NO, 6-NS, 24-D, 7-RWO

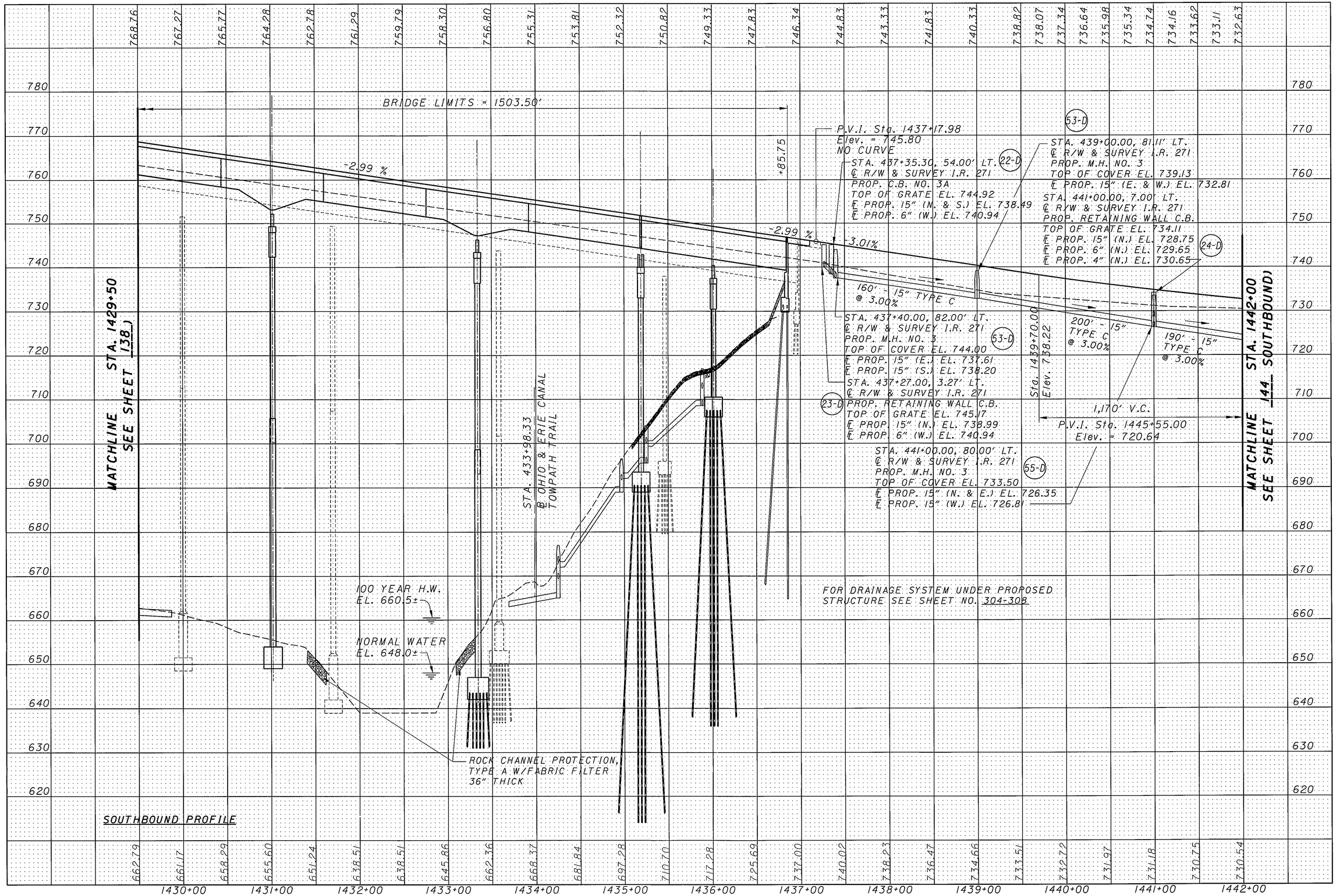
2145OPLAN8-CONCRETE.DGN 9/8/04 JLS,CAR

HORIZONTAL SCALE IN FEET
0 25 50 100
CALCULATED PS
CHECKED JL

PLAN - CONCRETE DESIGN
STA. 429+50 TO STA. 442+00

SUM-271-8.02

140
612



0 25 50 100 HORIZONTAL SCALE IN FEET

CALCULATED PS CHECKED JL

PROFILE - CONCRETE DESIGN
STA. 1429+50 TO STA. 1442+00 SOUTHBOUND

SUM-271-8.02

141
612

2145OPROF8SB-CONCRETE.DGN 9/8/04 JLS.CAR

BRIDGE LIMITS = 1460.50'

P.V.I. Sta. 2436+50.00
Elev. = 737.65
NO CURVE

-2.99 %

+22.75

-2.99%

-2.99%

STA. 436+62.00, 10.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 736.89
℄ PROP. 15" (S. & E.) EL. 730.31
℄ PROP. 6" (W.) EL. 732.75

STA. 437+05.00, 5.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 8
TOP OF GRATE EL. 734.40
℄ PROP. 15" (E. & W.) EL. 728.99
℄ PROP. 6" (S.) EL. 731.80

STA. 440+90.00, 5.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 8
TOP OF GRATE EL. 724.80
℄ PROP. 15" (E. & W.) EL. 720.54
℄ PROP. 6" (N.) EL. 721.79

20-D
21-D
21A-D
19-D
54-D

44' - 15" TYPE C @ 3.00%

195' - 15" TYPE C @ 2.38%

190' - 15" TYPE C @ 2.00%

310' - 15" TYPE C @ 1.00%

Sta. 2437+50.00
Elev. 734.66

1200' V.C.
P.V.I. Sta. 2443+50.00
Elev. = 716.70

STA. 436+62.00, 62.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 736.89
℄ PROP. 15" (N.) EL. 731.87
℄ PROP. 6" (W.) EL. 732.75

STA. 439+00.00, 5.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 8
TOP OF GRATE EL. 728.70
℄ PROP. 15" (E. & W.) EL. 724.34
℄ PROP. 6" (N.) EL. 725.09

STA. 433+76.30
℄ OHIO & ERIE CANAL TOWPATH TRAIL

100 YEAR H.W.
EL. 660.5±

NORMAL WATER
EL. 648.0±

STA. 433+83.640, 39.30' RT.
℄ R/W & SURVEY I.R. 271
EX. 15" CMP
℄ INLET (W.) EL. 664.76

STA. 433+65.06, 34.15' RT.
℄ R/W & SURVEY I.R. 271
EX. 15" CMP
℄ OUTLET (E.) EL. 663.06

ROCK CHANNEL PROTECTION, TYPE A W/FABRIC FILTER 36" THICK

MATCHLINE STA. 2429+50
SEE SHEET 139

MATCHLINE STA. 2442+00
SEE SHEET 144

NORTHBOUND PROFILE

758.58 757.08 755.59 754.09 752.60 751.10 749.61 748.11 746.62 745.12 743.63 742.13 740.64 739.14 737.65 736.15 734.66 733.92 733.22 732.54 731.89 731.27 730.68 730.12 729.59 729.09 728.61 728.16 727.75 727.36 727.00 726.66 726.36 726.09 725.84

780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630 620

662.43 661.11 658.18 655.22 649.12 643.43 643.43 655.34 664.17 670.12 683.95 698.11 712.80 726.19 736.29 734.84 733.21 731.29 729.36 727.43 726.21 725.67 725.07 724.58 724.22 724.14

2430+00 2431+00 2432+00 2433+00 2434+00 2435+00 2436+00 2437+00 2438+00 2439+00 2440+00 2441+00 2442+00

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PROFILE - CONCRETE DESIGN
STA. 2429+50 TO STA. 2442+00 NORTHBOUND

SUM-271-8.02

142
612

21450PROF8NB-CONCRETE.DGN 03/31/04 JLS.CAR

CROSS REFERENCES	
7-12	TYPICAL SECTIONS
79-98	SUBSUMMARIES
119	UNDERDRAIN KEY
144	PROFILE SHEET
148-258	CROSS SECTIONS
266-272	BOSTON MILLS RD. PLAN
283-285	FENCE DETAILS
286-334	DRAINAGE DETAILS
338-347	RETAINING WALL PLANS
561-608	STRUCTURE PLANS

CURVE DATA (SB4)
℄ CONST. SOUTHBOUND LANES

P.I. Sta = 1445+61.17
Δ = 2° 55' 12" (RT)
Dc = 1° 00' 00"
R = 5,729.58'
Ls1 = 220.00'
Ls2 = 170.00'
Theta1 = 1° 06' 00"
Theta2 = 0° 51' 00"
LT1 = 146.67'
LT2 = 113.33'
ST1 = 73.34'
ST2 = 56.67'

x1 = 219.99'
x2 = 170.00'
y1 = 1.41'
y2 = 0.84'
k1 = 110.00'
k2 = 85.00'
p1 = 0.35'
p2 = 0.21'
Dc = 0° 58' 12" (RT)

Lc = 97.00'
Ts1 = 253.26'
Ts2 = 233.82'
Es = 2.14'
eMAX = 0.036

LEGEND

- WETLAND PROTECTION FENCE (SEE SHEETS 283-285)
- PAVEMENT PLANING (THK. = 1.5")
- DITCH EROSION PROTECTION (7.5' WIDE TYP.) (SEE SHEET 318)
- ROCK CHANNEL PROTECTION
- WETLANDS
- SODDING REINFORCED
- EX. BROKEN CONCRETE DITCH PROTECTION
- PRESSURE RELIEF JOINT

CURVE DATA (C5)
℄ CONST., R/W & SURVEY I.R. 271

P.I. Sta = 460+52.38
Δ = 14° 29' 45" (LT)
Dc = 1° 00' 02"
R = 5,727.14'
T = 728.37'
L = 1,448.96'
E = 46.13'
EX. eMAX. = 0.036±

**TEMPORARY CONTRACTOR'S ACCESS (FOR INFORMATION ONLY - SEE M.O.T. PLANS)

STA. EQUATION ST 1447+94.92 ℄ CONST. SB LANES BK. = STA. 447+94.41 ℄ CONST., R/W & SURVEY I.R. 271, 54' LT. AHD.

BEGIN S.B. OUTSIDE SHOULDER TRANSITION +00

2 STY. FRAME #1391

SHED

BARN

CURVE SB3

CURVE SB4

BEGIN S.B. INSIDE SHOULDER TRANSITION +25

+00 END RETAINING WALL Sta. 1443+04.04

TS Sta. 1443+07.92

SC Sta. 1445+27.92

END S.B. INSIDE SHOULDER TRANSITION Sta. 1446+27.92

4" WIRE FENCE

LA-R/W

2" TO 8" PINES

ANCHOR ASSEMBLY TYPE T

PROP. 15" TYPE B BORED OR JACKED

PROP. 15" TYPE C

℄ CONST. SOUTHBOUND LANES

BRIDGE TERMINAL ASSEMBLY, TYPE 2

PROP. 15" TYPE B

48" CMP

9'-4"±

16'-7⅞"

ANCHOR ASSEMBLY TYPE E-98

0.4:1.5

EX. 24" CONC.

EX. 15" CONC.

N 51°18'35" E

EX. MON. 444

B.M. #9

N 54°13'41" E

PROP. 15" TYPE C 448

449

450

℄ COMST., R/W & SURVEY I.R. 271

6" TWIN 45° CB

452

12" CONC.

EX. MON. 454

℄ SOUTHBOUND LANES

PROP. 15" TYPE C

℄ NORTHBOUND LANES C/L

STA. 442+00 (SEE SHEET 134)

STA. 454+50

MATCHLINE

MATCHLINE

STA. 449+05.06
END APPROACH SLAB

STA. 450+94.82
BEGIN APPROACH SLAB

+50 END PLANING AND RESURFACING

+33.09

PC Sta. 453+24.02

4" TO 8" PINES

11'

+00 END PLANING AND RESURFACING MATCH EXISTING

PRC Sta. 2442+76.53

+80.16 BEGIN N.B. INSIDE SHOULDER TRANSITION

℄ CONST. NORTHBOUND LANES

ANCHOR ASSEMBLY TYPE E-98

+02.20

EX. BROKEN CONC.

ANCHOR ASSEMBLY TYPE B-98

BRIDGE TERMINAL ASSEMBLY, TYPE 1

STA. EQUATION PT 2447+73.96 ℄ CONST., NB LANES BK. =

STA. 447+73.74 ℄ CONST., R/W & SURVEY I.R. 271, 54' RT. AHD.

BEGIN N.B. OUTSIDE SHOULDER TRANSITION

N 22°04'15" W 21

CURVE NB3

CURVE NB4

2" TO 10" TREES

STA. 449+53.56
END APPROACH SLAB

ANCHOR ASSEMBLY, TYPE T

ANCHOR ASSEMBLY, TYPE B-98

END PROJECT
STA. 451+39.81
℄ CONST., R/W & SURVEY I.R. 271
SLM 8.55
E032 (699)

STA. 451+15.38
BEGIN APPROACH SLAB

CURVE DATA (NB3)
℄ CONST. NORTHBOUND I.R. 271

P.I. Sta = 2440+27.68
Δ = 2° 04' 23" (RT)
Dc = 0° 25' 00"
R = 13,750.99'
T = 248.80'
L = 497.54'
E = 2.25'
eMAX = NC

CURVE DATA (NB4)
℄ CONST. NORTHBOUND I.R. 271

P.I. Sta = 2445+25.22
Δ = 2° 04' 23" (LT)
Dc = 0° 25' 00"
R = 13,750.99'
T = 248.80'
L = 497.54'
E = 2.25'
eMAX = NC

B.M. #9 STA. 443+97.57, 0.03' LT.
℄ R/W & SURVEY I.R. 271
CONC. MON.
ELEV. = 725.29

B.M. #10 STA. 449+05.02, 155.33' RT.
CHISELED '□' ON TOP OF HEADWALL S.W. OF I.R. 271 NB. BRIDGE OVER BOSTON MILLS RD. ELEV. = 699.89

HORIZONTAL SCALE IN FEET
0 25 50 100

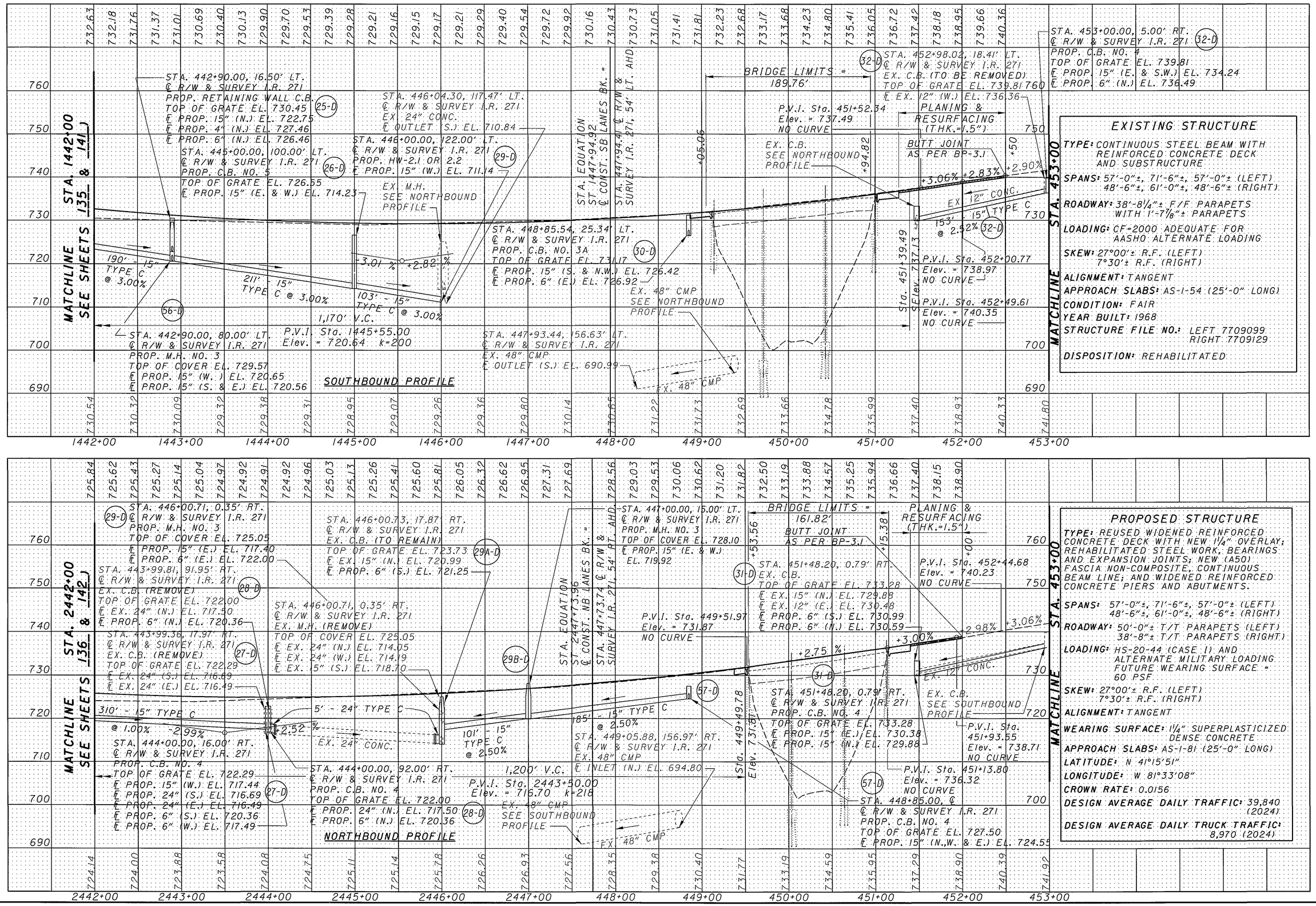
CALCULATED PS
CHECKED JL

PLAN
STA. 442+00 TO STA. 454+50

SUM-271-8.02

143
612

214SOPLAN9.DGN 03/29/04 SAM.CAR


STA. 442+90.00, 16.50' LT.
℄ R/W & SURVEY I.R. 271
PROP. RETAINING WALL C.B.
TOP OF GRATE EL. 730.45
℄ PROP. 15" (N.) EL. 722.75
℄ PROP. 4" (N.) EL. 727.46
℄ PROP. 6" (N.) EL. 726.46
STA. 445+00.00, 100.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5
TOP OF GRATE EL. 726.55
℄ PROP. 15" (E. & W.) EL. 714.23
STA. 446+04.30, 117.47' LT.
℄ R/W & SURVEY I.R. 271
EX. 24" CONC.
℄ OUTLET S.) EL. 710.84
STA. 446+00.00, 122.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. HW-2.1 OR 2.2
℄ PROP. 15" (W.) EL. 711.14
EX. M.H.
SEE NORTHBOUND
PROFILE
STA. EQUATION
ST. 447+94.92
℄ CONST. SB LANES BK. =
STA. 441+94.4' ℄ R/W &
SURVEY I.R. 271, 54' LT. AHD.
STA. 442+00
135 & 141
MATCHLINE
SEE SHEETS
190' - 15"
TYPE C
@ 3.00%
211' - 15"
TYPE C @ 3.00%
103' - 15"
TYPE C @ 3.00%
1,170' V.C.
-3.01 %
+2.82 %
STA. 442+90.00, 80.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 729.57
℄ PROP. 15" (W.) EL. 720.65
℄ PROP. 15" (S. & E.) EL. 720.56
P.V.I Sta. 1445+55.00
Elev. = 720.64 k=200
SOUTHBOUND PROFILE
STA. 448+85.54, 25.34' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 731.17
℄ PROP. 15" (S. & N.W.) EL. 726.42
℄ PROP. 6" (E.) EL. 726.92
STA. 447+93.44, 156.63' LT.
℄ R/W & SURVEY I.R. 271
EX. 48" CMP
℄ OUTLET (S.) EL. 690.99
EX. 48" CMP
EX. 48" CMP
SEE NORTHBOUND
PROFILE
BRIDGE LIMITS =
189.76'
STA. 452+98.02, 18.41' LT.
℄ R/W & SURVEY I.R. 271
EX. C.B. (TO BE REMOVED)
TOP OF GRATE EL. 739.81
℄ EX. 12" (W.) EL. 736.36
P.V.I. Sta. 451+52.34
Elev. = 737.49
NO CURVE
EX. C.B.
SEE NORTHBOUND
PROFILE
+05.06
+94.82
PLANING &
RESURFACING
(THK.=1.5")
BUTT JOINT
AS PER BP-3.1
+3.06%
+2.83%
+2.90%
EX. 12" CONC.
153' - 15" TYPE C
@ 2.52%
Sta. 451+39.49
Elev. = 737.13
P.V.I. Sta. 452+00.77
Elev. = 738.97
NO CURVE
P.V.I. Sta. 452+49.61
Elev. = 740.35
NO CURVE
STA. 453+00.00, 5.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 739.81
℄ PROP. 15" (E. & S.W.) EL. 734.24
℄ PROP. 6" (N.) EL. 736.49
STA. 453+00
MATCHLINE
EXISTING STRUCTURE
TYPE: CONTINUOUS STEEL BEAM WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 57'-0"±, 71'-6"±, 57'-0"± (LEFT) 48'-6"±, 61'-0"±, 48'-6"± (RIGHT)
ROADWAY: 38'-8 1/4"± F/F PARAPETS WITH 1'-7 7/8"± PARAPETS
LOADING: CF-2000 ADEQUATE FOR AASHO ALTERNATE LOADING
SKEW: 27°00'± R.F. (LEFT) 7°30'± R.F. (RIGHT)
ALIGNMENT: TANGENT
APPROACH SLABS: AS-I-54 (25'-0" LONG)
CONDITION: FAIR
YEAR BUILT: 1968
STRUCTURE FILE NO.: LEFT 7709099 RIGHT 7709129
DISPOSITION: REHABILITATED
STA. 446+00.71, 0.35' RT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 725.05
℄ PROP. 15" (E.) EL. 717.40
℄ PROP. 6" (E.) EL. 722.00
STA. 443+99.81, 91.95' RT.
℄ R/W & SURVEY I.R. 271
EX. C.B. (REMOVE)
TOP OF GRATE EL. 722.00
℄ EX. 24" (N.) EL. 717.50
℄ PROP. 6" (N.) EL. 720.36
STA. 443+99.36, 17.97' RT.
℄ R/W & SURVEY I.R. 271
EX. C.B. (REMOVE)
TOP OF GRATE EL. 722.29
℄ EX. 24" (S.) EL. 716.69
℄ EX. 24" (E.) EL. 716.49
STA. 446+00.73, 17.87' RT.
℄ R/W & SURVEY I.R. 271
EX. C.B. (TO REMAIN)
TOP OF GRATE EL. 723.73
℄ EX. 15" (N.) EL. 720.99
℄ PROP. 6" (S.) EL. 721.25
STA. 446+00.71, 0.35' RT.
℄ R/W & SURVEY I.R. 271
EX. M.H. (REMOVE)
TOP OF COVER EL. 725.05
℄ EX. 24" (N.) EL. 714.05
℄ EX. 24" (W.) EL. 714.19
℄ EX. 15" (S.) EL. 718.70
STA. EQUATION
ST. 2447+73.96
℄ CONST. NB LANES BK. =
STA. 447+73.74 ℄ R/W &
SURVEY I.R. 271, 54' RT. AHD.
STA. 2442+00
136 & 142
MATCHLINE
SEE SHEETS
310' - 15" TYPE C
@ 1.00%
-2.99%
-2.52 %
5' - 24" TYPE C
EX. 24" CONC.
101' - 15"
TYPE C
@ 2.50%
185' - 15" TYPE C
@ 2.50%
1,200' V.C.
P.V.I. Sta. 2443+50.00
Elev. = 716.70 k=218
STA. 444+00.00, 16.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 722.29
℄ PROP. 15" (W.) EL. 717.44
℄ PROP. 24" (S.) EL. 716.69
℄ PROP. 24" (E.) EL. 716.49
℄ PROP. 6" (S.) EL. 720.36
℄ PROP. 6" (W.) EL. 717.49
STA. 444+00.00, 92.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 722.00
℄ PROP. 24" (N.) EL. 717.50
℄ PROP. 6" (N.) EL. 720.36
NORTHBOUND PROFILE
STA. 449+05.88, 156.97' RT.
℄ R/W & SURVEY I.R. 271
EX. 48" CMP
℄ INLET (N.) EL. 694.80
EX. 48" CMP
SEE SOUTHBOUND
PROFILE
EX. 48" CMP
Sta. 449+49.78
Elev. 731.31
STA. 447+00.00, 15.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 728.10
℄ PROP. 15" (E. & W.)
EL. 719.92
P.V.I. Sta. 449+51.97
Elev. = 731.87
NO CURVE
BRIDGE LIMITS =
161.82'
BUTT JOINT
AS PER BP-3.1
+53.56
+15.38
PLANING &
RESURFACING
(THK.=1.5")
+00
STA. 451+48.20, 0.79' RT.
EX. C.B.
TOP OF GRATE EL. 733.28
℄ EX. 15" (N.) EL. 729.88
℄ EX. 12" (E.) EL. 730.48
℄ PROP. 6" (S.) EL. 730.99
℄ PROP. 6" (N.) EL. 730.59
P.V.I. Sta. 452+44.68
Elev. = 740.23
NO CURVE
+2.75 %
+3.00%
2.98%
+3.06%
EX. 12" CONC.
STA. 451+48.20, 0.79' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 733.28
℄ PROP. 15" (E.) EL. 730.38
℄ PROP. 15" (N.) EL. 729.88
EX. C.B.
SEE SOUTHBOUND
PROFILE
P.V.I. Sta.
451+93.55
Elev. = 738.71
NO CURVE
P.V.I. Sta. 451+13.80
Elev. = 736.32
NO CURVE
STA. 448+85.00, ℄
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 727.50
℄ PROP. 15" (N.,W. & E.) EL. 724.55
STA. 453+00
MATCHLINE
PROPOSED STRUCTURE
TYPE: REUSED WIDENED REINFORCED CONCRETE DECK WITH NEW 1 1/4" OVERLAY; REHABILITATED STEEL WORK, BEARINGS AND EXPANSION JOINTS; NEW (A50) FASCIA NON-COMPOSITE, CONTINUOUS BEAM LINE; AND WIDENED REINFORCED CONCRETE PIERS AND ABUTMENTS.
SPANS: 57'-0"±, 71'-6"±, 57'-0"± (LEFT) 48'-6"±, 61'-0"±, 48'-6"± (RIGHT)
ROADWAY: 50'-0"± T/T PARAPETS (LEFT) 38'-8"± T/T PARAPETS (RIGHT)
LOADING: HS-20-44 (CASE I) AND ALTERNATE MILITARY LOADING FUTURE WEARING SURFACE = 60 PSF
SKEW: 27°00'± R.F. (LEFT) 7°30'± R.F. (RIGHT)
ALIGNMENT: TANGENT
WEARING SURFACE: 1 1/4" SUPERPLASTICIZED DENSE CONCRETE
APPROACH SLABS: AS-I-81 (25'-0" LONG)
LATITUDE: N 41°15'51"
LONGITUDE: W 81°33'08"
CROWN RATE: 0.0156
DESIGN AVERAGE DAILY TRAFFIC: 39,840 (2024)
DESIGN AVERAGE DAILY TRUCK TRAFFIC: 8,970 (2024)
1442+00
1443+00
1444+00
1445+00
1446+00
1447+00
448+00
449+00
450+00
451+00
452+00
453+00
2442+00
2443+00
2444+00
2445+00
2446+00
2447+00
448+00
449+00
450+00
451+00
452+00
453+00
0
25
50
100
HORIZONTAL
SCALE IN FEET
CALCULATED PS
CHECKED JL
PROFILE - STA. 2442+00 TO STA. 453+00 NORTHBOUND
STA. 1442+00 TO STA. 453+00 SOUTHBOUND
SUM-271-8.02
144
612
2I450PROF9.DGN 3/3I/04 SAM.CAR

CROSS REFERENCES	
7-12	TYPICAL SECTIONS
79-98	SUBSUMMARIES
119	UNDERDRAIN KEY
146	PROFILE SHEET
148-258	CROSS SECTIONS
286-334	DRAINAGE DETAILS

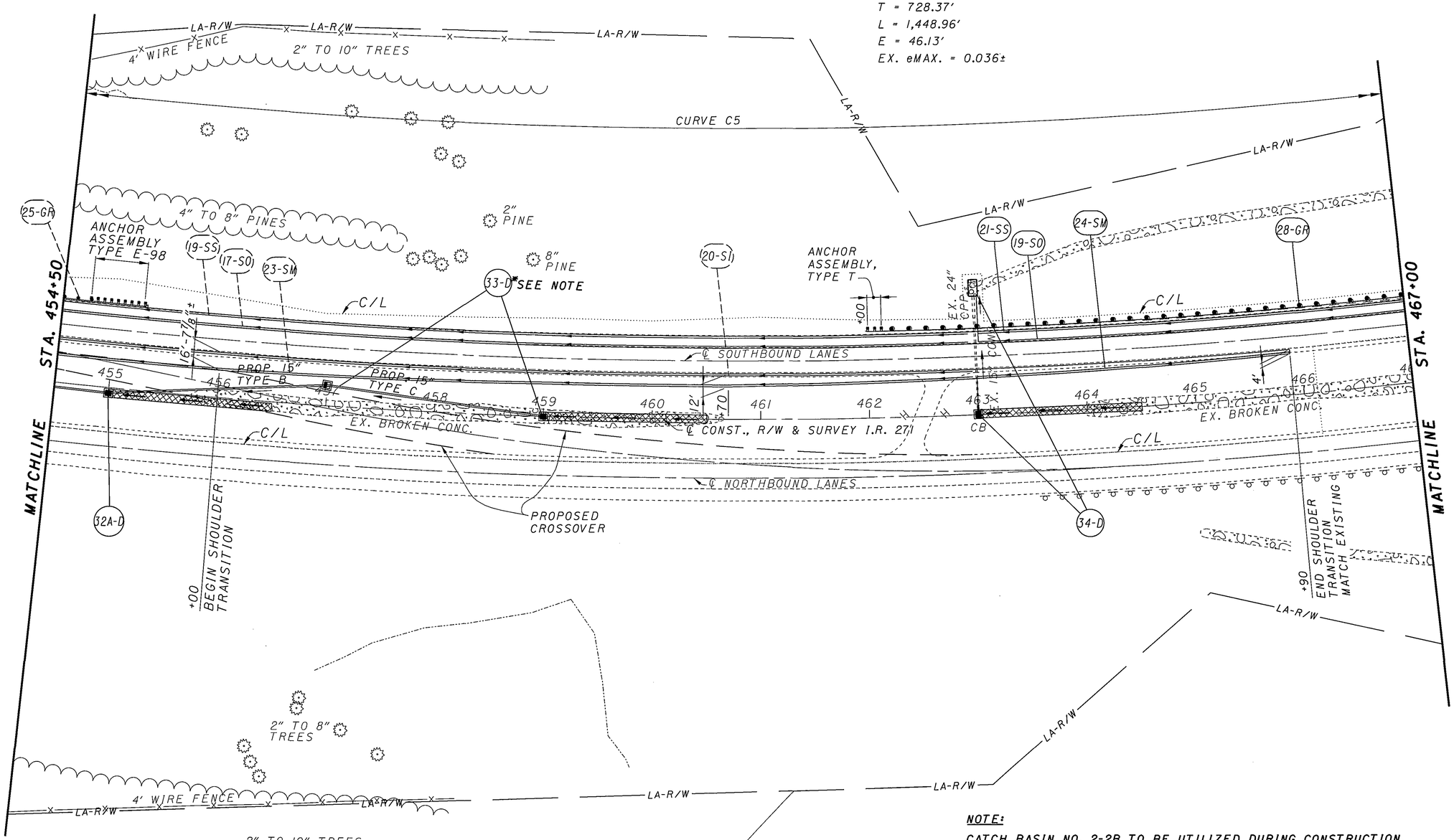
LEGEND

- DITCH EROSION PROTECTION (7.5' WIDE TYP.) (SEE SHEET 318)
- ROCK CHANNEL PROTECTION
- EX. BROKEN CONCRETE DITCH PROTECTION

CURVE DATA (C5)
℄ CONST., R/W & SURVEY I.R. 271

P.I. Sta = 460+52.38
△ = 14° 29' 45" (LT)
Dc = 1° 00' 02"
R = 5,727.14'
T = 728.37'
L = 1,448.96'
E = 46.13'
EX. eMAX. = 0.036±

20-SS NOT USED
18-SO NOT USED



NOTE:

CATCH BASIN NO. 2-2B TO BE UTILIZED DURING CONSTRUCTION. WHEN THE CROSSOVER IS NO LONGER NEEDED FOR MAINTENANCE OF TRAFFIC THIS CATCH BASIN SHALL BE ABANDONED AND CONNECTED THROUGH AS APPROVED BY THE ENGINEER. ALL MATERIALS, LABOR AND INCIDENTALS TO CONSTRUCT AND SUBSEQUENTLY ABANDON THIS CATCH BASIN WILL BE INCLUDED IN ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN.

HORIZONTAL SCALE IN FEET
0 25 50 100

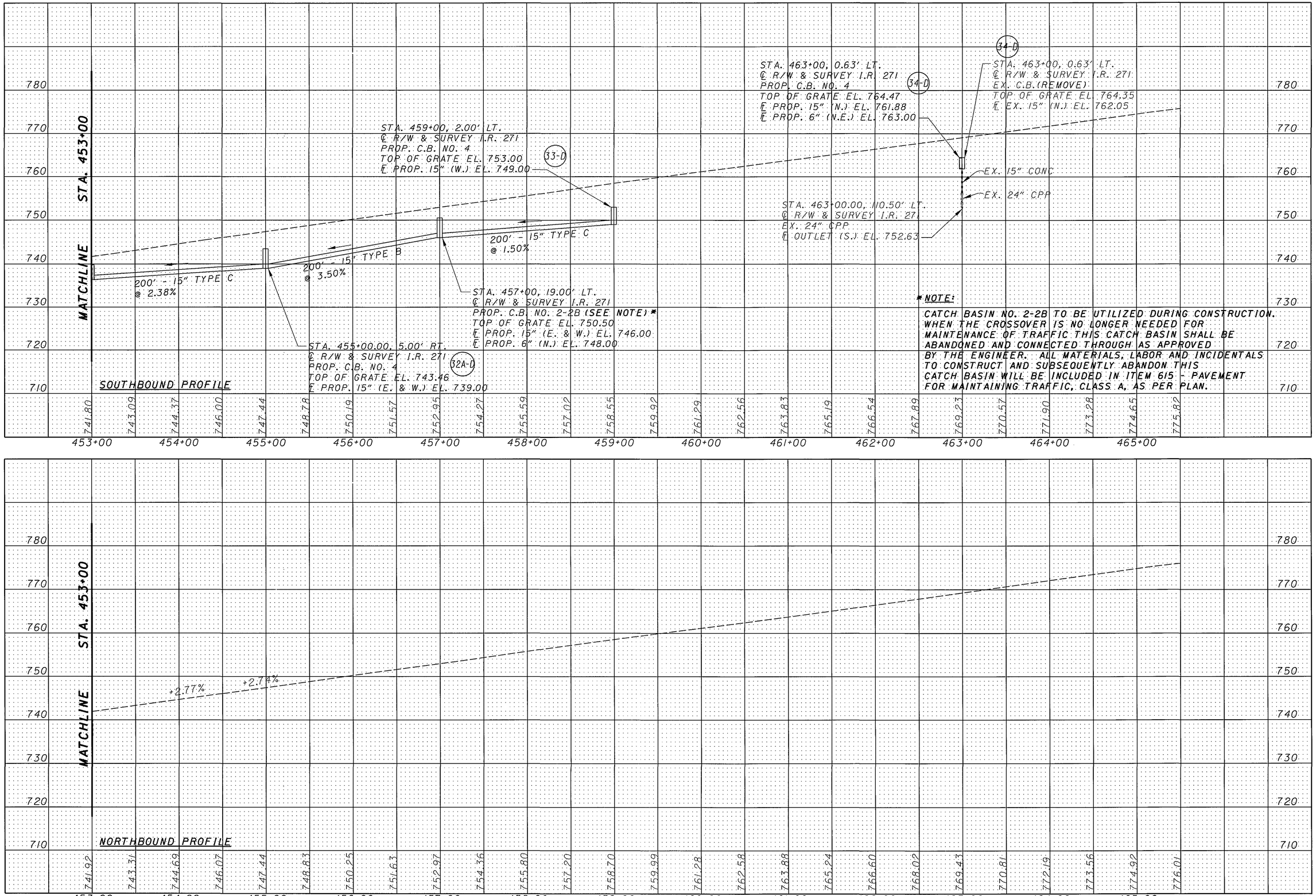
CALCULATED PS CHECKED JL

PLAN
STA. 454+50 TO STA. 467+00

SUM-271-8.02

145
612

21450PLAN10.DGN 3/31/04 SAM



HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PROFILE
STA. 453+00 TO STA. 465+50

SUM-271-8.02

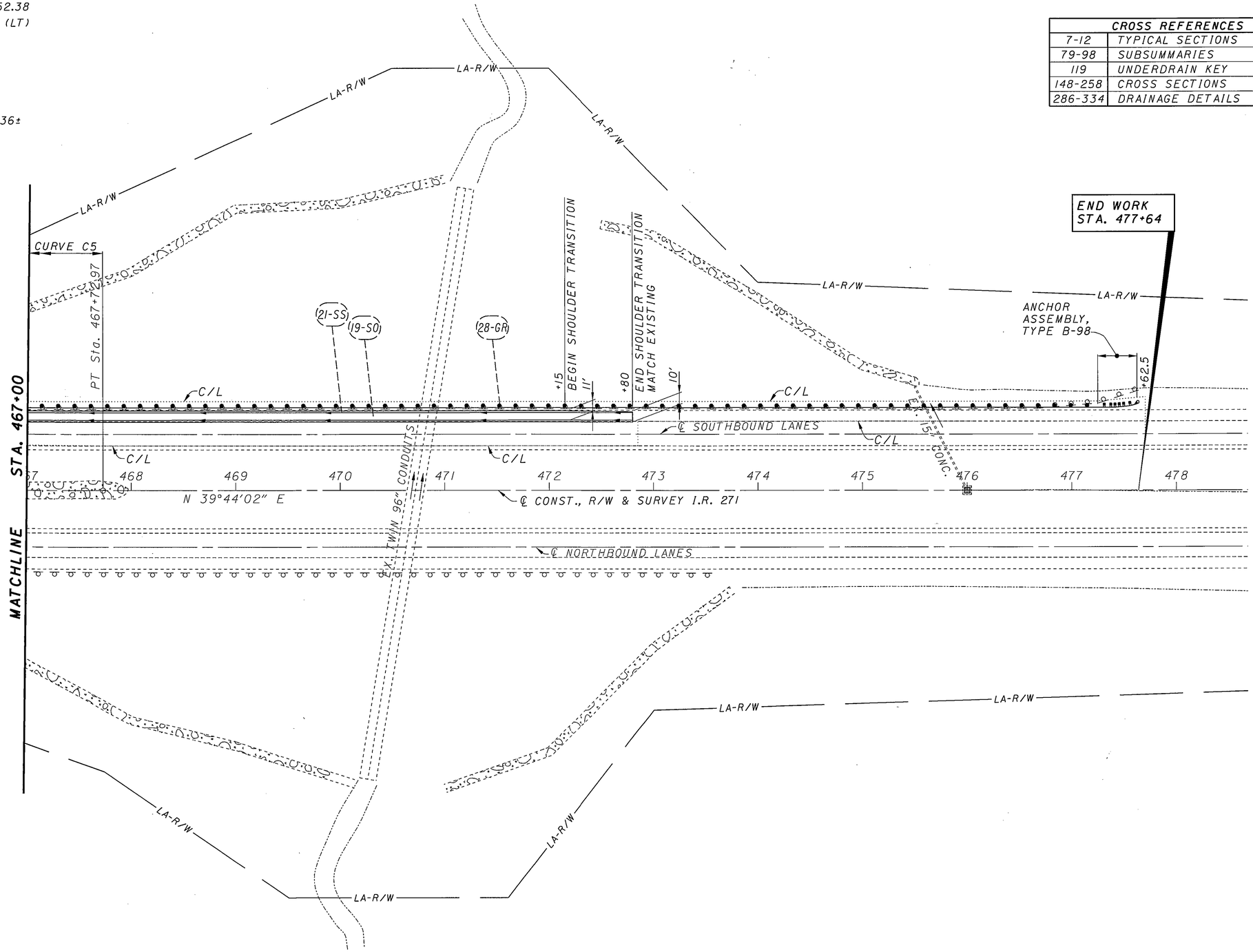
146
612

2145PROFIO.DGN 3/31/04 SAM

CURVE DATA (C5)
℄ CONST., R/W & SURVEY I.R. 271

P.I. Sta = 460+52.38
△ = 14° 29' 45" (LT)
Dc = 1° 00' 02"
R = 5,727.14'
T = 728.37'
L = 1,448.96'
E = 46.13'
EX. eMAX. = 0.036±

CROSS REFERENCES	
7-12	TYPICAL SECTIONS
79-98	SUBSUMMARIES
119	UNDERDRAIN KEY
148-258	CROSS SECTIONS
286-334	DRAINAGE DETAILS



CALCULATED PS
CHECKED JL

HORIZONTAL SCALE IN FEET
0 25 50 100

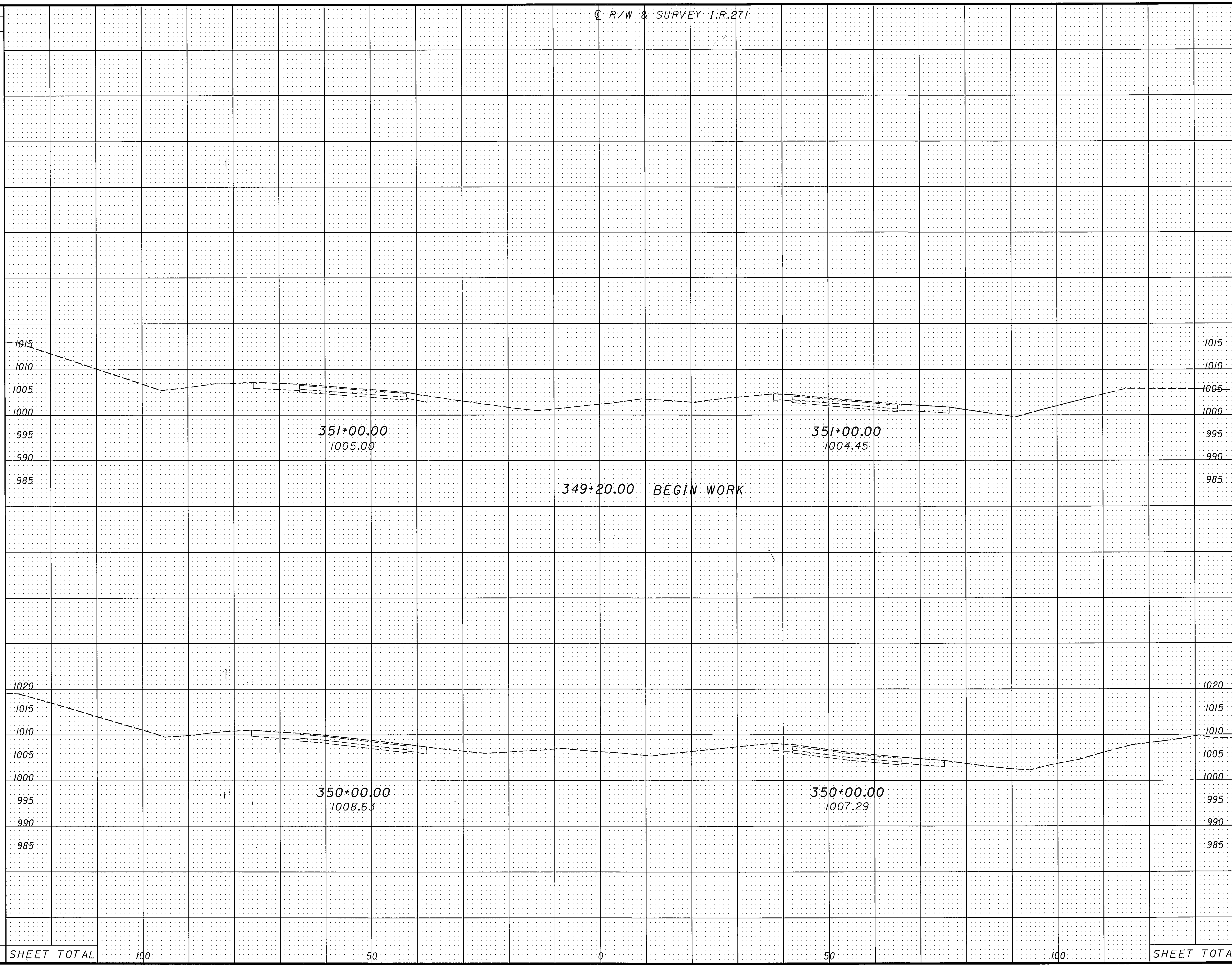
PLAN
STA. 467+00 TO STA. 478+00

SUM-271-8.02

147
612

21450PLAN1.DGN 10/30/03 SAM

SEEDING	
END WIDTH	SQ. YDS.



END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 350+00 TO STA. 351+00

SUM-271-8.02

STAGE3SHEETS.DGN 10/27/03

SEEDING			END AREA		VOLUME	
END WIDTH	SQ. YDS.		CUT	FILL	CUT	FILL
8	78	354+00.00 995.44	24	0	87	0
6	33	353+00.00 998.55	23	0	43	0
0		STA. 352+00.00 BEGIN SEEDING & MULCHING	0	0		
III	SHEET TOTAL				130	0

℄ R/W & SURVEY I.R.271

NOTE:
EXCAVATION QUANTITIES INCLUDE EXISTING ASPHALT SHOULDER PAVEMENT REMOVAL

1000 995 990 985

354+00.00
994.25

1005 1000 995 990 985

353+00.00
997.80

1010 1005 1000 995 990

STA. 352+00.00
BEGIN SEEDING & MULCHING

352+00.00
1001.14

100 50 0 50 100

CALCULATED SAM CHECKED PS

CROSS SECTIONS
STA. 352+00 TO STA. 354+00

SUM-271-8.02

149
612

STAGE3SHEETS.DGN 10/27/03

SEEDING END WIDTH	SEEDING SQ. YDS.	STA.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
28	256	356+00	42	2	132	11
18	145	355+00	29	4	98	7
8	401	STA. 354+00.00 SHEET TOTAL	24	0	230	18

℄ R/W & SURVEY I.R.271

LEGEND

ITEM 615 EARTHWORK

STA. 356+11.37, 0.48' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 984.75
℄ PROP. 15" (E.) EL. 977.65

I-DR

STA. 356+11.37, 0.48' LT.
℄ R/W & SURVEY I.R. 271
EX. C.B. (REMOVE)
TOP OF GRATE EL. 984.75
℄ EX. 15" (E.) EL. 977.65

℄ CROSSOVER

1015 1010 1005 1000 995 990 985 980

3:1

356+00.00
989.50

356+00.00
987.03

6:1

℄ CROSSOVER

1000 995 990 985 980

355+00.00
992.33

355+00.00
990.70

100 50 0 50 100

CALCULATED SAM CHECKED PS

CROSS SECTIONS STA. 355+00 TO STA. 356+00

SUM-271-8.02

150
612

STAGE3SHEETS.DGN 10/27/03

SEEDING END WIDTH	SEEDING SQ. YDS.
30	317
27	272
22	278
28	
	867

SHEET TOTAL

STA. 356+00.00

℄ R/W & SURVEY I.R.271

℄ CROSSOVER

359+00.00
980.53

STA. 359+00.00, 13.50' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B (SEE NOTE)
TOP OF GRATE EL. 977.20
℄ PROP. 15" (W. & E.) EL. 970.00

I-D

359+00.00
975.99

EX. 15" CPP

6:1
3:1
3:1

LEGEND

ITEM 615 EARTHWORK

NOTE:

CATCH BASIN NO. 2-2B TO BE UTILIZED DURING CONSTRUCTION. WHEN THE CROSSOVER IS NO LONGER NEEDED FOR MAINTENANCE OF TRAFFIC THIS CATCH BASIN SHALL BE ABANDONED AND CONNECTED THROUGH AS APPROVED BY THE ENGINEER. ALL MATERIALS, LABOR AND INCIDENTALS TO CONSTRUCT AND SUBSEQUENTLY REMOVE THIS CATCH BASIN WILL BE INCLUDED IN ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN.

I-SO STA. 358+00.00, 88.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. 6" TYPE F
OUTLET EL. 981.78

℄ CROSSOVER

358+00.00
983.60

PROP. 15"

EX. 15" CPP

358+00.00
979.67

6:1
3:1
3:1

℄ CROSSOVER

357+00.00
986.67

PROP. 15"

EX. 15" CPP
(REMOVE)

357+00.00
983.35

6:1
3:1

STA. 356+00.00

SHEET TOTAL

100 50 0 50 100

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
37	23	148	84
43	22	156	53
41	6	154	15
42	2	458	152

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 357+00 TO STA. 359+00

SUM-271-8.02

151
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
28	325
30	337
30	
	662

℄ R/W & SURVEY I.R.271

℄ CROSSOVER

361+00.00
974.57

361+00.00
969.14

℄ CROSSOVER

360+00.00
977.59

STA. 359+99.65, 18.70' RT.
℄ R/W & SURVEY I.R. 271
EX. C.B. (REMOVE)
TOP OF GRATE EL. 970.44
℄ EX. 15" (W.) EL. 968.30
℄ EX. 15" (S.) EL. 967.87

5' - PROP.
15" TYPE C
W/CONCRETE
MASONRY COLLAR
AS PER DM-1.1

360+00.00
972.38

EX. 15" CONC.

STA. 360+00.00, 18.70' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 970.44
℄ PROP. 15" (S.) EL. 967.87
℄ PROP. 6" (N.) EL. 968.50
℄ PROP. 15" (W.) EL. 968.30

2-D

STA. 360+00.42, 99.63' RT.
EX. 15" CONC.
℄ OUTLET (N.) EL. 965.44

6:1 3:1

STA. 359+00.00

SHEET TOTAL

100 50 0 50 100

END AREA		VOLUME	
CUT	FILL	CUT	FILL
43	21		
		168	84
48	24		
37	23		
		157	87
		325	171

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 360+00 TO STA. 361+00

SUM-271-8.02

152
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
29	358
36	355
28	713

℄ R/W & SURVEY I.R.271

LEGEND

ITEM 615 EARTHWORK

2-SO STA. 363+00.00, 86.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. 6" TYPE F
OUTLET EL. 964.02

℄ CROSSOVER

6:1

3:1

363+00.00
967.73

363+00.00
962.01

℄ CROSSOVER

6:1

3:1

362+00.00
971.29

362+00.00
965.80

980 975 970 965 960 955 950 945 940 935 930 925 920 915

END AREA		VOLUME	
CUT	FILL	CUT	FILL
45	17	163	94
43	34	160	102
43	21	323	196

STA. 361+00.00

SHEET TOTAL

100 50 0 50 100

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 362+00 TO STA. 363+00

SUM-271-8.02

153
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
36	
	359
29	
	359

℄ R/W & SURVEY I.R.271

LEGEND

ITEM 615 EARTHWORK

℄ CROSSOVER

6:1

3:1

364+00.00
964.90

364+00.00
958.38

970
965
960
955
950
945
940
935
930
925

STA. 363+00.00

SHEET TOTAL

100 50 0 50 100

END AREA		VOLUME	
CUT	FILL	CUT	FILL
51	20		
		177	68
45	17		
		177	68

CALCULATED SAM

CHECKED PS

CROSS SECTIONS
STA. 364+00

SUM-271-8.02

154
612

STAGE3SHEETS.DGN 10/27/03

SEEDING			END AREA		VOLUME	
END WIDTH	SQ. YDS.		CUT	FILL	CUT	FILL
42	422	366+00.00 959.46	36	66	150	198
34	389	365+00.00 962.26	45	41	178	113
36		STA. 364+00.00	51	20		
	811	SHEET TOTAL			328	311

℄ R/W & SURVEY I.R.271

6:1

3:1

366+00.00
951.10

(2-S1)

STA. 365+00.00, 7.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. 6" TYPE F
OUTLET EL. 957.80

365+00.00
954.93

965 960 955 950 945 940 935 930 925 920 915

980 975 970 965 960 955 950 945 940 935 930 925 920

100 50 0 50 100

STA. 365+00.00 TO STA. 366+00

CROSS SECTIONS

SUM-271-8.02

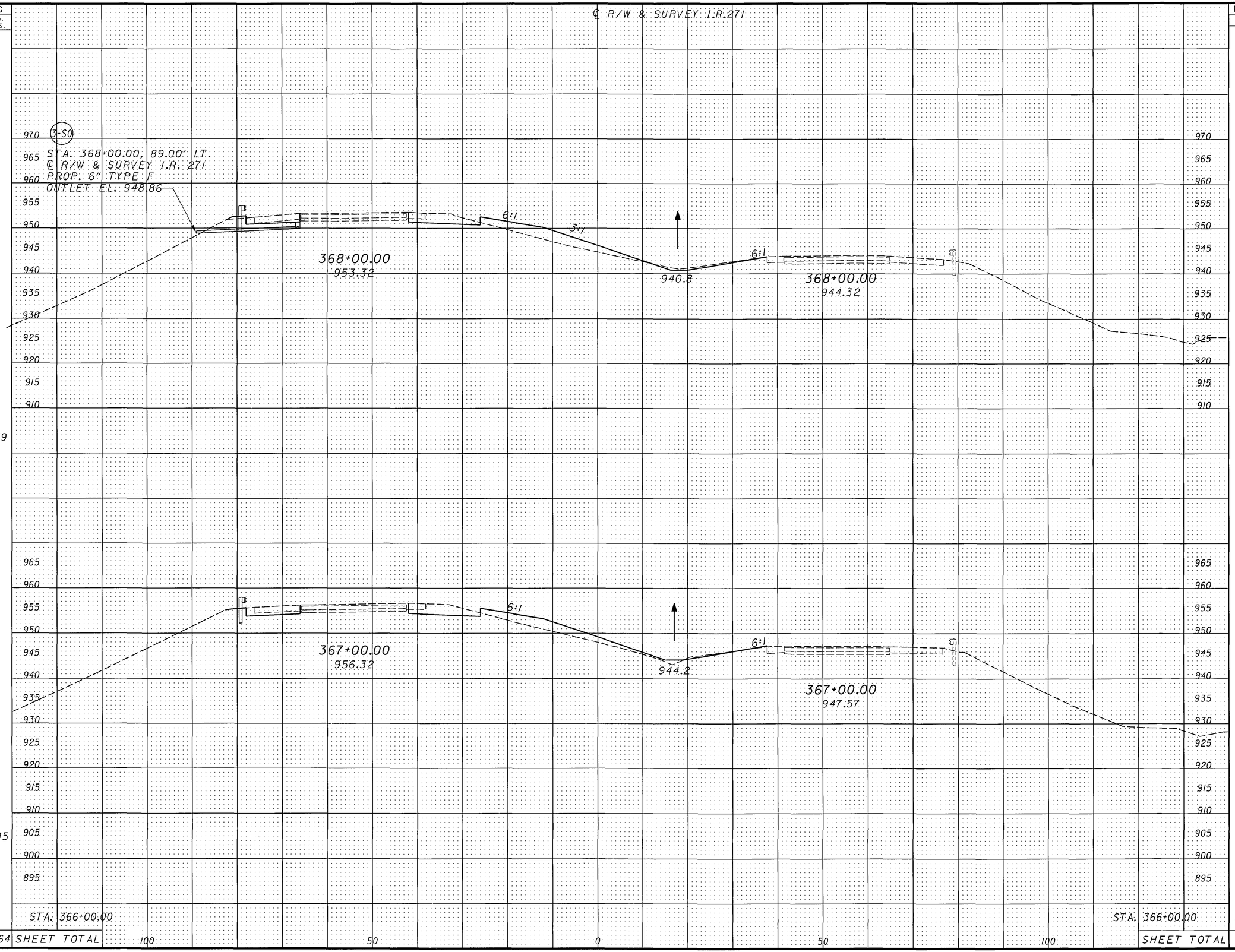
CALCULATED SAM

CHECKED PS

155
612

STAGE3SHEETS.DGN 10/27/03

SEEDING END WIDTH	SEEDING SQ. YDS.
74	819
74	645
42	
	1464



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
49	80		
		185	308
51	86		
		162	282
36	66		
		347	590

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 367+00 TO STA. 368+00

SUM-271-8.02

156
612

STAGE3SHEETS.DGN 10/27/03

SEEDING END WIDTH	SEEDING SQ. YDS.
73	813
74	819
74	1632

SHEET TOTAL

STA. 368+00.00

STA. 369+00.00

STA. 370+00.00

$\Q$ R/W & SURVEY I.R.271

370+00.00
947.82

6:1

3:1

935.6

STA. 370+00.00, 17.00' RT.
$\Q$ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 935.09
$\E$ PROP. 15" (S.) EL. 932.62
$\E$ PROP. 6" (N.) EL. 932.62

3-D

STA. 369+99.64, 17.06' RT.
$\Q$ R/W & SURVEY I.R. 271
EX. C.B. (REMOVE)
TOP OF GRATE EL. 935.09
$\E$ EX. 15" (S.) EL. 932.62

5' - PROP. 15" TYPE C W/CONCRETE MASONRY COLLAR AS PER DM-1.1

EX. 15" CMP

370+00.00
938.38

CONCRETE MASONRY COLLAR AS PER DM-1.1

3-D

STA. 370+00.00, 115.00' RT.
$\Q$ R/W & SURVEY I.R. 271
PROP. HW-2.1
$\E$ PROP. 15" (N.) EL. 920.18

10' - 15" TYPE F, 707.05, TYPE C @ 1.50%

30' - 15" TYPE F, 707.05, TYPE C @ 38.20%

STA. 370+00.61, 114.92' RT.
$\Q$ R/W & SURVEY I.R. 271
EX. 15" CMP
$\E$ OUTLET (N.) EL. 920.19

4' x 9' x 18" THK. ROCK CHANNEL PROTECTION, TYPE C WITH FILTER

369+00.00
950.76

6:1

3:1

938.0

369+00.00
940.66

6:1

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
51	80		
54	79		
49	80		
		195	293
		190	294
		385	587

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 369+00 TO STA. 370+00

SUM-271-8.02

157
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
74	
	813
72	
	804
73	
	1617

℄ R/W & SURVEY I.R.271

372+00.00
941.39

6:1
3:1
928.6
6:1
372+00.00
931.52

371+00.00
944.33

6:1
3:1
931.7
6:1
371+00.00
934.41

STA. 370+00.00

100 50 0 50 100

STA. 370+00.00

SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
54	90		
		210	339
59	93		
		205	320
51	80		
		415	659

CALCULATED SAM
CHECKED PS

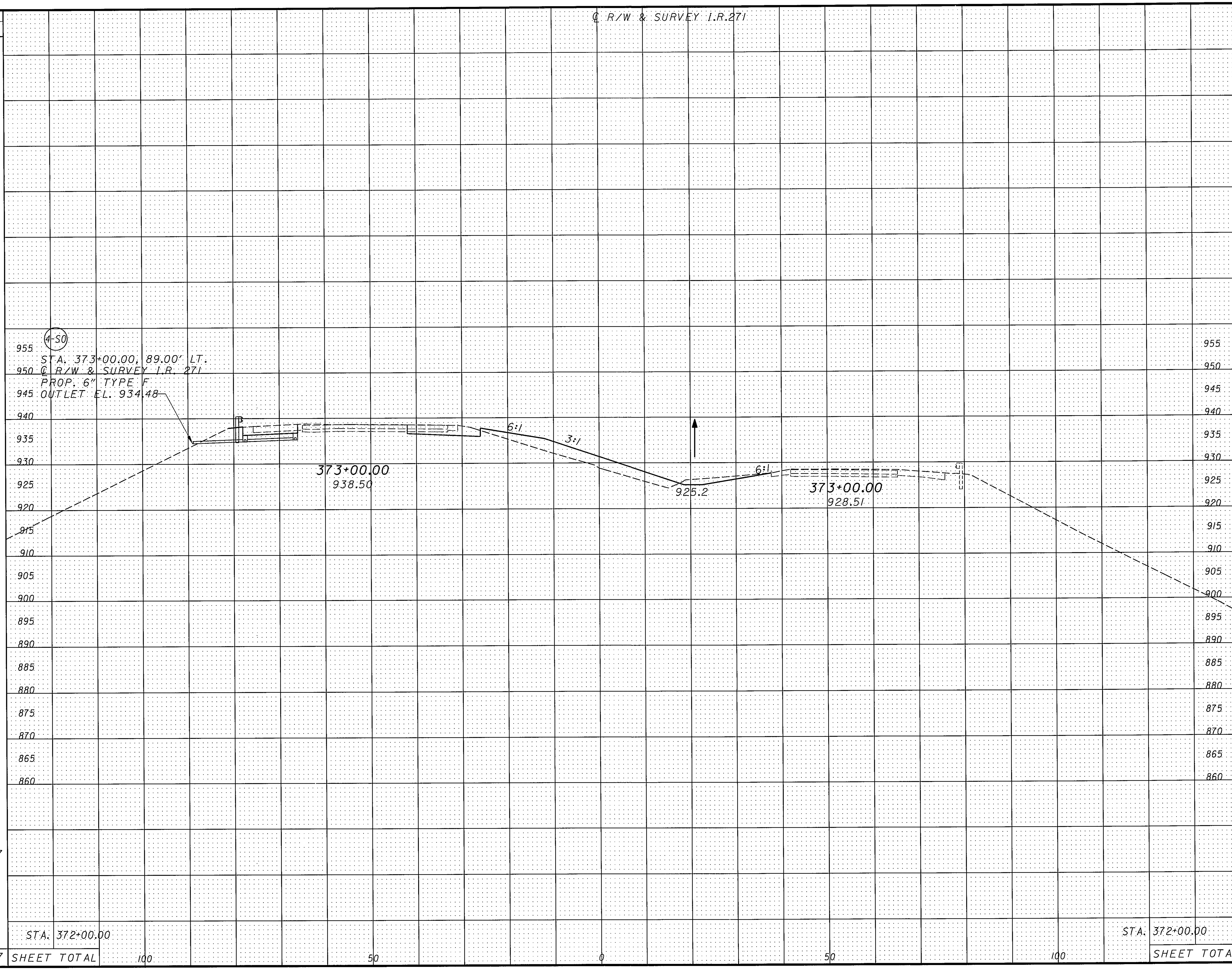
CROSS SECTIONS
STA. 371+00 TO STA. 372+00

SUM-271-8.02

158
612

STAGE3SHEETS.DGN 10/27/03

CROSS SECTIONS
STA. 373+00



SEEDING	
END WIDTH	SQ. YDS.
73	
	817
74	
	817

SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
69	90		
		228	333
54	90		
		228	333

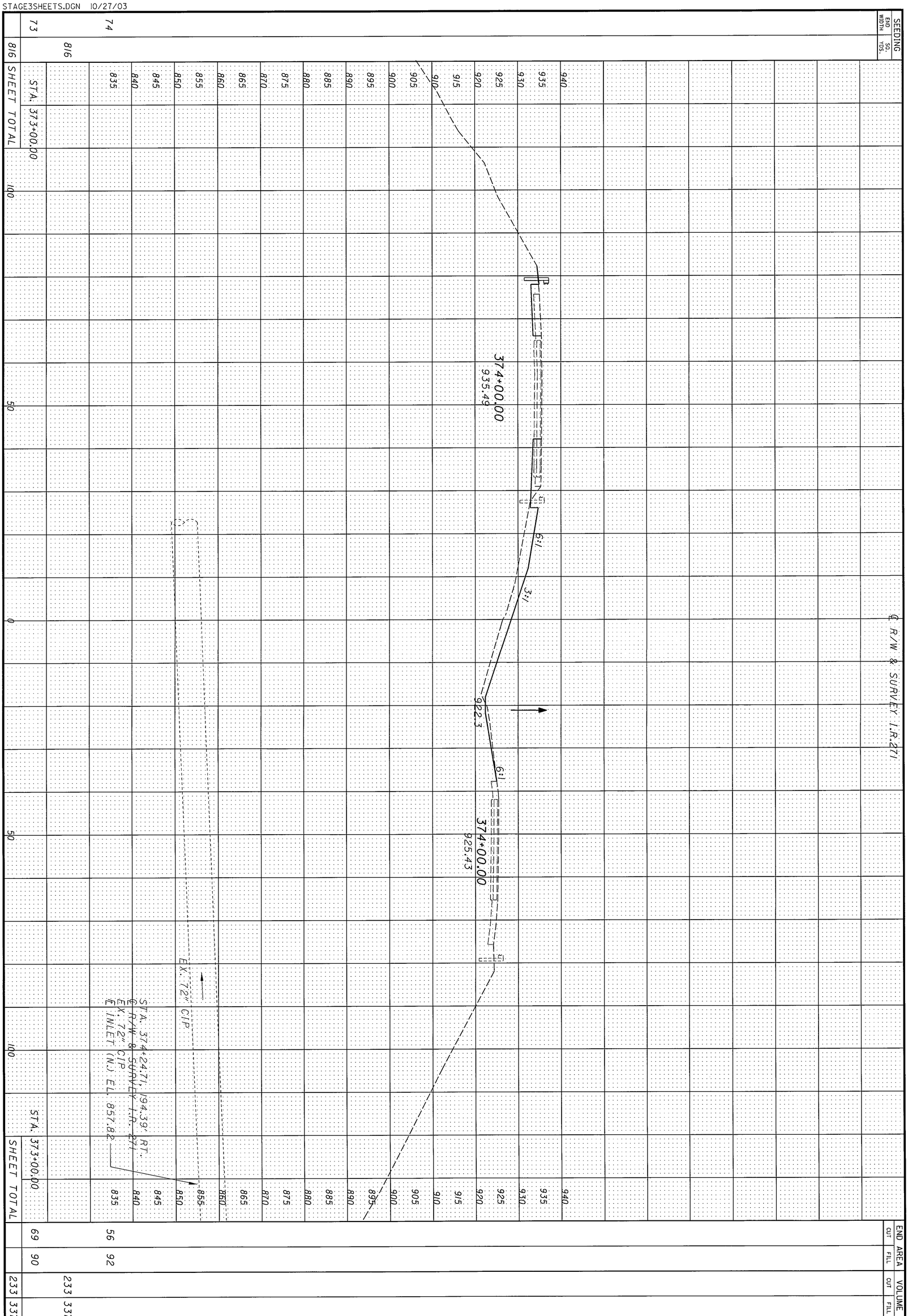
SHEET TOTAL

CALCULATED SAM
CHECKED PS

SUM-271-8.02

STAGE3SHEETS.DGN 10/27/03

STAGE3SHEETS.DGN 10/27/03



160/612

SUM-271-8.02

CROSS SECTIONS
STA. 374+00

CALCULATED SAM

CHECKED PS

SEEDING			END AREA		VOLUME	
END WIDTH	SQ. YDS.		CUT	FILL	CUT	FILL
		STA. 374+00.00				
73			64	90		
	819				222	338
74		STA. 374+00.00	56	92		
	819	SHEET TOTAL			222	338

CALCULATED SAM CHECKED PS

CROSS SECTIONS STA. 375+00

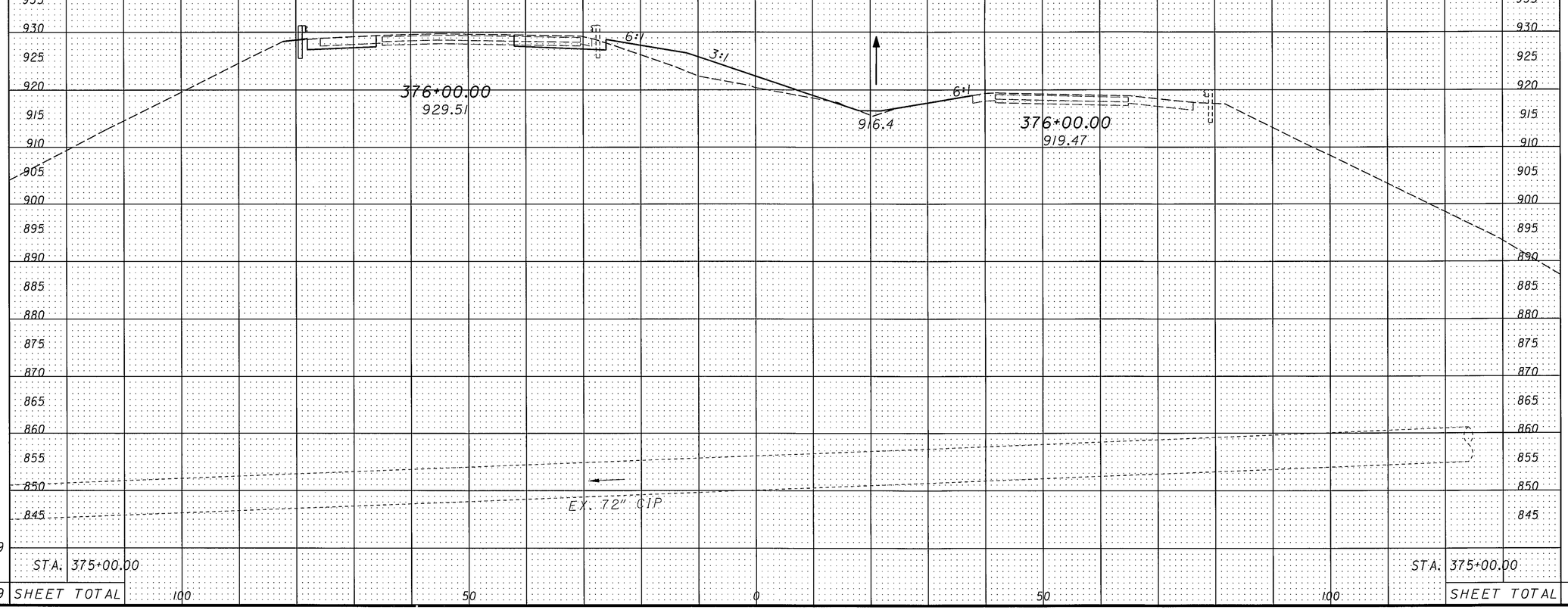
SUM-271-8.02

161/612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
74	
73	819
	819

℄ R/W & SURVEY I.R.271



END AREA		VOLUME	
CUT	FILL	CUT	FILL
55	83		
64	90	220	320
		220	320

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 376+00

SUM-271-8.02

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
72	
	812
74	
	812

℄ R/W & SURVEY I.R.271

935
930
925
920
915
910
905
900
895
890
885
880
875
870
865
860
855
850
845

6:1
3:1
6:1
6:1

377+00.00
926.53

913.4

377+00.00
916.53

EX. 6" PVC

EX. 72" CIP

STA. 376+00.00

STA. 376+00.00

SHEET TOTAL

SHEET TOTAL

100 50 0 50 100

END AREA		VOLUME	
CUT	FILL	CUT	FILL
60	68		
		212	280
55	83		
		212	280

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 377+00

SUM-271-8.02

163
612

STAGE3SHEETS.DGN 10/27/03

SEEDING END WIDTH	SEEDING SQ. YDS.
85	878
73	806
72	1684

℄ R/W & SURVEY I.R.271

℄ CONST. SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

1379+25.49
920.44

6:1

3:1

6:1

907.6

2378+74.09
910.69

379+00.00

EX. 6" PVC

STA. EQN. STA. 378+02.24 BK. =
STA. 1378+28.42 ℄ CONST. SB AHD.
STA. 2377+75.64 ℄ CONST. NB AHD.

CROSS SECTIONS DEVELOPED ABOUT ℄ R/W & SURVEY I.R. 271

6:1

3:1

6:1

910.5

378+00.00
923.54

378+00.00
913.60

EX. 6" PVC

EX. 72" CIP

STA. 378+01.41, 236.76' LT.
℄ R/W & SURVEY I.R. 271
EX. 72" CIP
℄ OUTLET (S.) EL. 840.66

STA. 377+00.00

STA. 377+00.00

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
73	52	240	289
56	104	215	320
60	68	455	609
		SHEET TOTAL	

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 378+00 TO STA. 379+00

SUM-271-8.02

164
612

STAGE3SHEETS.DGN 10/27/03

SEEDING END WIDTH	SEEDING SQ. YDS.
76	836
74	886
85	1722

SHEET TOTAL

STA. 379+00.00

STA. 379+00.00

SHEET TOTAL

100 50 0 50 100

℄ R/W & SURVEY I.R.271

℄ CONST. SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

℄ CONST. SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

6:1 3:1 6:1

6:1 3:1 6:1

930 925 920 915 910 905 900 895 890 885 880 875 870

935 930 925 920 915 910 905 900 895 890 885 880

EX. 15" CONC.

5 - PROP. 15" TYPE C W/CONCRETE COLLAR AS PER DM-1.1

902.6

1381+24.08
914.51

381+00.00

2380+75.50
904.77

1380+24.78
917.48

904.8

2379+74.79
907.74

380+00.00

4-D STA. 380+98.85, 17.93' RT.
℄ R/W & SURVEY I.R. 271
EX. C.B. (REMOVE)
TOP OF GRATE EL. 902.08
℄ EX. 15" (N.) EL. 899.58

STA. 380+97.87, 112.30' LT.
℄ R/W & SURVEY I.R. 271
EX. 15" CONC.
℄ OUTLET (S.) EL. 895.90

4-D STA. 381+00.00, 18.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 902.08
℄ PROP. 15" (N.) EL. 899.58
℄ PROP. 6" (N.) EL. 901.00

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
60	46	258	153
79	36	281	163
73	62	539	316

CALCULATED SAM

CHECKED PS

CROSS SECTIONS STA. 380+00 TO STA. 381+00

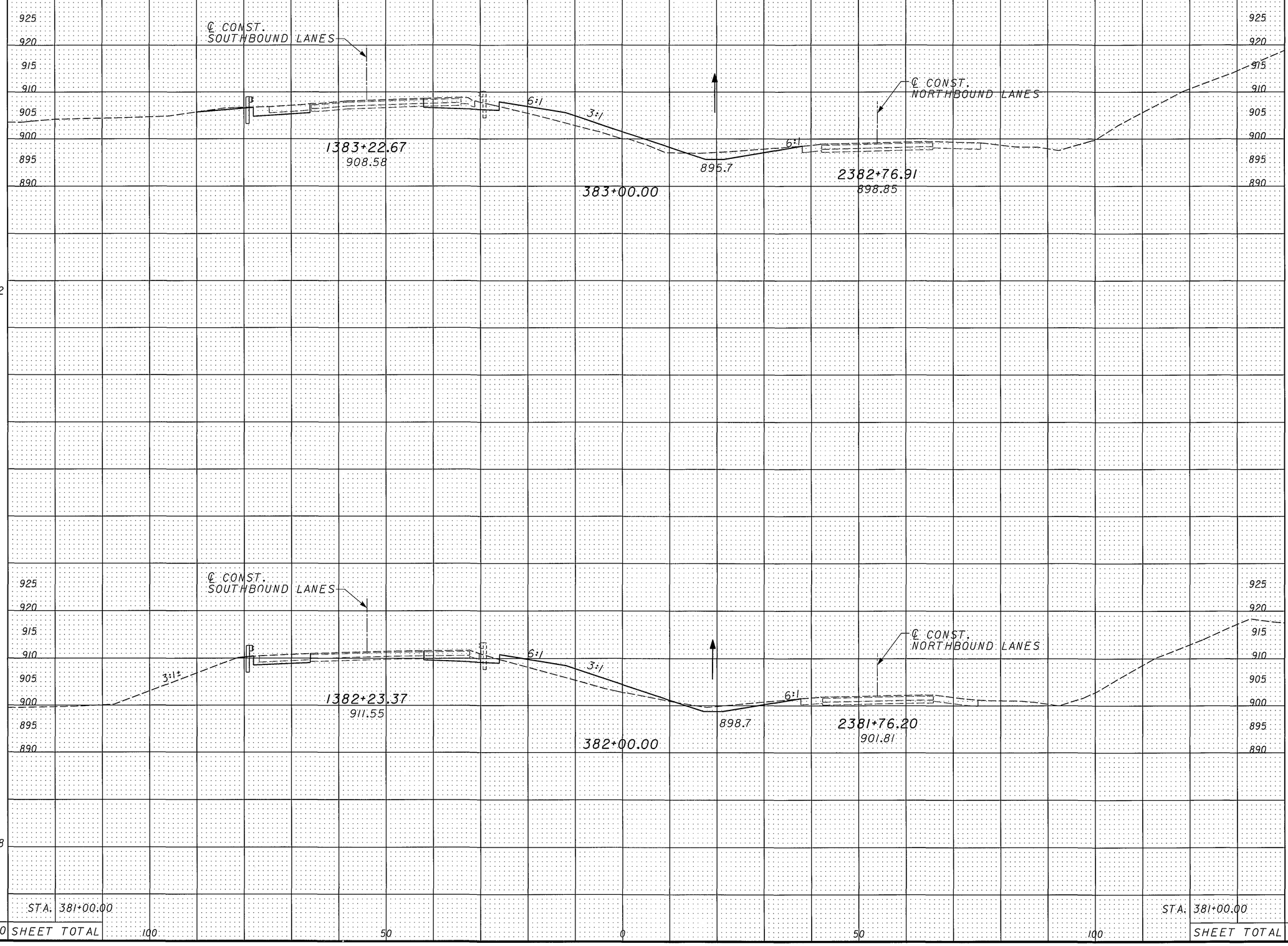
SUM-271-8.02

165
612

STAGE3SHEETS.DGN 10/27/03

SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
82	862	72	68	257	256
73	828	66	70	234	216
76		60	46	491	472
	1690 SHEET TOTAL				SHEET TOTAL

℄ R/W & SURVEY I.R.271



STA. 381+00.00 STA. 381+00.00

CALCULATED SAM CHECKED PS

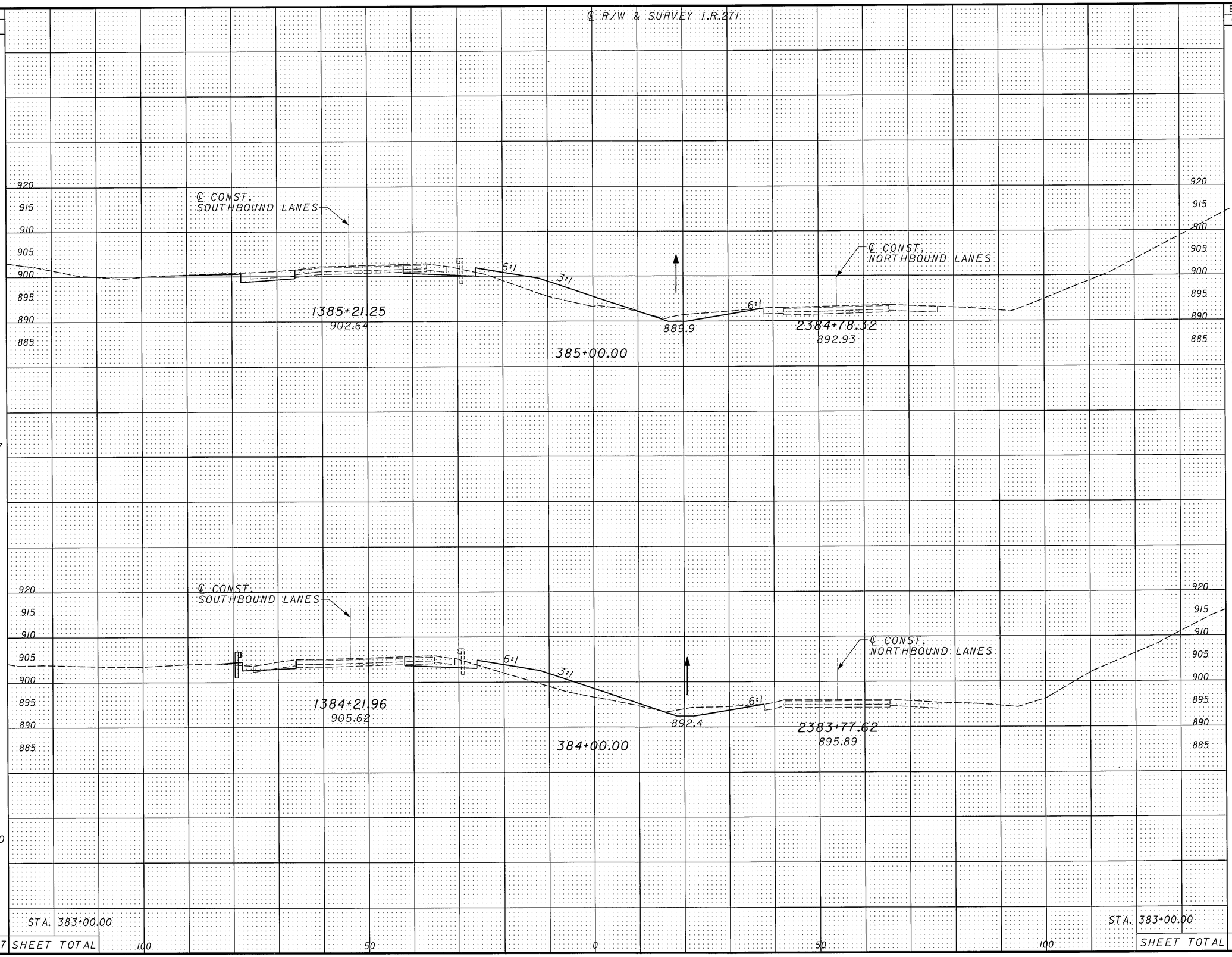
CROSS SECTIONS STA. 382+00 TO STA. 383+00

SUM-271-8.02

166
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
87	897
74	870
82	
	1767



END AREA		VOLUME	
CUT	FILL	CUT	FILL
70	87	256	305
72	68	260	270
		516	575
	SHEET TOTAL		

CALCULATED SAM
CHECKED PS

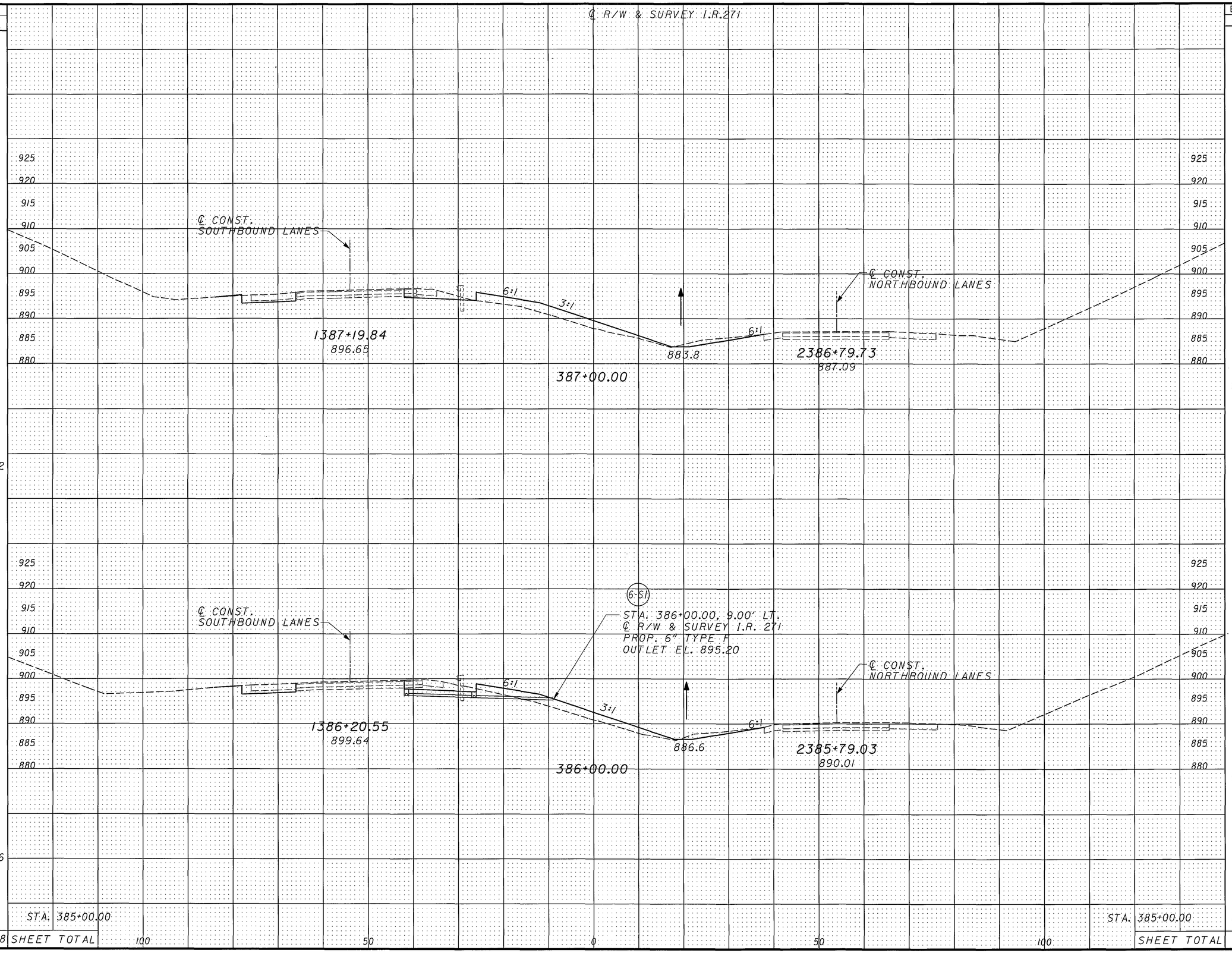
CROSS SECTIONS
STA. 384+00 TO STA. 385+00

SUM-271-8.02

167
612

STAGE3SHEETS.DGN 10/27/03

SEEDING END WIDTH	SEEDING SQ. YDS.	STA.
76	842	STA. 385+00.00
76	906	SHEET TOTAL
87	1748	



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL	STA.
53	76			STA. 385+00.00
		210	277	
60	74			
		241	298	
70	87			STA. 385+00.00
		451	575	SHEET TOTAL

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 386+00 TO STA. 387+00

SUM-271-8.02

168
612

STAGE3SHEETS.DGN 10/27/03

SEEDING END WIDTH	SEEDING SQ. YDS.
71	784
71	812
76	
	1596

℄ R/W & SURVEY I.R.271

℄ CONST. SOUTHBOUND LANES

1389+18.43
890.65

1.5:1

6:1

3:1

389+00.00

877.9

6:1

℄ CONST. NORTHBOUND LANES

2388+81.15
881.24

℄ CONST. SOUTHBOUND LANES

1388+19.14
893.65

1.5:1

6:1

3:1

388+00.00

880.7

6:1

℄ CONST. NORTHBOUND LANES

2387+80.44
884.17

925 920 915 910 905 900 895 890 885 880 875 870

STA. 387+00.00 — SHEET TOTAL — 100 50 0 50 100 — STA. 387+00.00 — SHEET TOTAL

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
62	78	213	280
53	74	196	277
53	76	409	557

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 388+00 TO STA. 389+00

SUM-271-8.02

169
612

STAGE3SHEETS.DGN 10/27/03

SEEDING			END AREA		VOLUME		
END WIDTH	SQ. YDS.		CUT	FILL	CUT	FILL	CALCULATED SAM / CHECKED PS
80	886		52	74	213	271	
80	835		63	72	231	278	
71	1721	SHEET TOTAL	62	78	444	549	

℄ R/W & SURVEY I.R.271

℄ CONST. SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

1391+17.02
884.64

391+00.00
871.9

2390+82.56
875.19

1390+17.72
887.65

390+00.00
874.8

2389+81.85
878.30

6:1 3:1 6:1

925 920 915 910 905 900 895 890 885 880 875 870 865 930

STA. 389+00.00 100 50 0 50 100 STA. 389+00.00

CROSS SECTIONS
STA. 390+00 TO STA. 391+00

SUM-271-8.02

170
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
78	
80	
	875

END AREA		VOLUME	
CUT	FILL	CUT	FILL
58	70		
52	74		
		204	266

℄ R/W & SURVEY I.R.271

℄ CONST.
SOUTHBOUND LANES

℄ CONST.
NORTHBOUND LANES

1392+16.31
881.63

392+00.00

869.4

2391+83.26
872.09

6:1

3:1

10:1

4A-E

STA. 392+02.43, 18.69' RT.
℄ R/W & SURVEY I.R. 271
EX. C.B. (TO REMAIN)
TOP OF GRATE EL. 869.36
E EX. 15" (E.) EL. 866.77

STA. 391+00.00

STA. 391+00.00

SHEET TOTAL

SHEET TOTAL

925 920 915 910 905 900 895 890 885 880 875 870 865 860 855 850 845

100 50 0 50 100

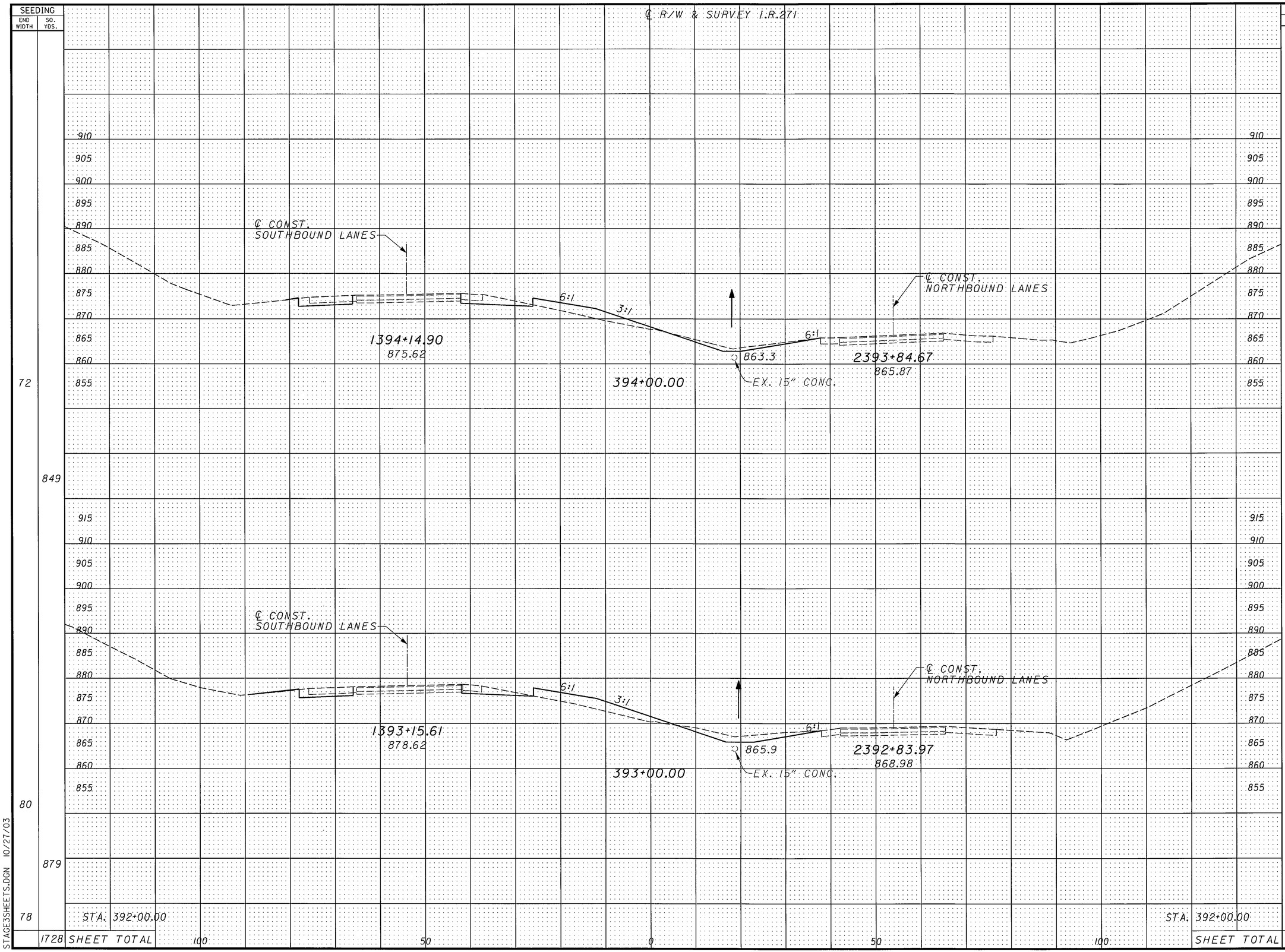
CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 392+00

SUM-271-8.02

171
612

STAGE3SHEETS.DGN 10/27/03



SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
72	849	STA. 392+00.00	54	56	221	212
80	879	STA. 393+00.00	65	58	228	238
78	1728	SHEET TOTAL	58	70	449	450

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 393+00 TO STA. 394+00

SUM-271-8.02

172
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
77	854
77	829
72	
	1683

℄ R/W & SURVEY I.R.271

℄ CONST. SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

6:1

3:1

6:1

1396+13.49
869.53

856.4

396+00.00

EX. 15" CONC.

2395+86.09
859.87

1395+14.20
872.59

6:1

3:1

6:1

859.5

395+00.00

EX. 15" CONC.

2394+85.38
862.79

910 905 900 895 890 885 880 875 870 865 860 855 850 845 840 835 830

100 50 0 50 100

STA. 394+00.00

SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
51	78		
		186	284
49	76		
		191	244
54	56		
		377	528

CALCULATED SAM
CHECKED PS

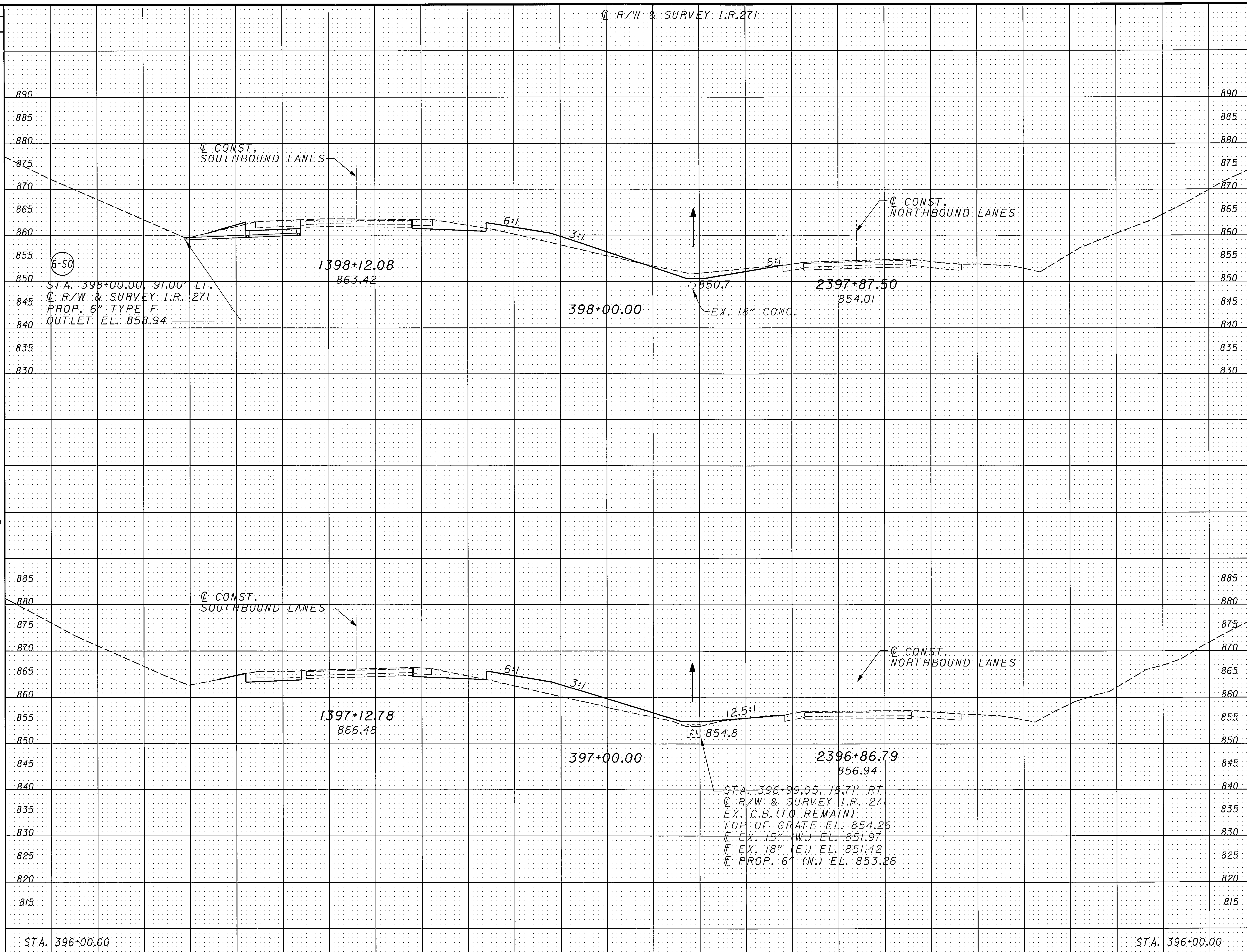
CROSS SECTIONS
STA. 395+00 TO STA. 396+00

SUM-271-8.02

173
612

STAGE3SHEETS.DGN 10/27/03

SEEDING END WIDTH	SEEDING SQ. YDS.	Station	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
78		398+00.00	60	54		
	859				190	256
76		397+00.00	43	84		
	851				175	299
77		STA. 396+00.00	51	78		
	1710	SHEET TOTAL			365	555



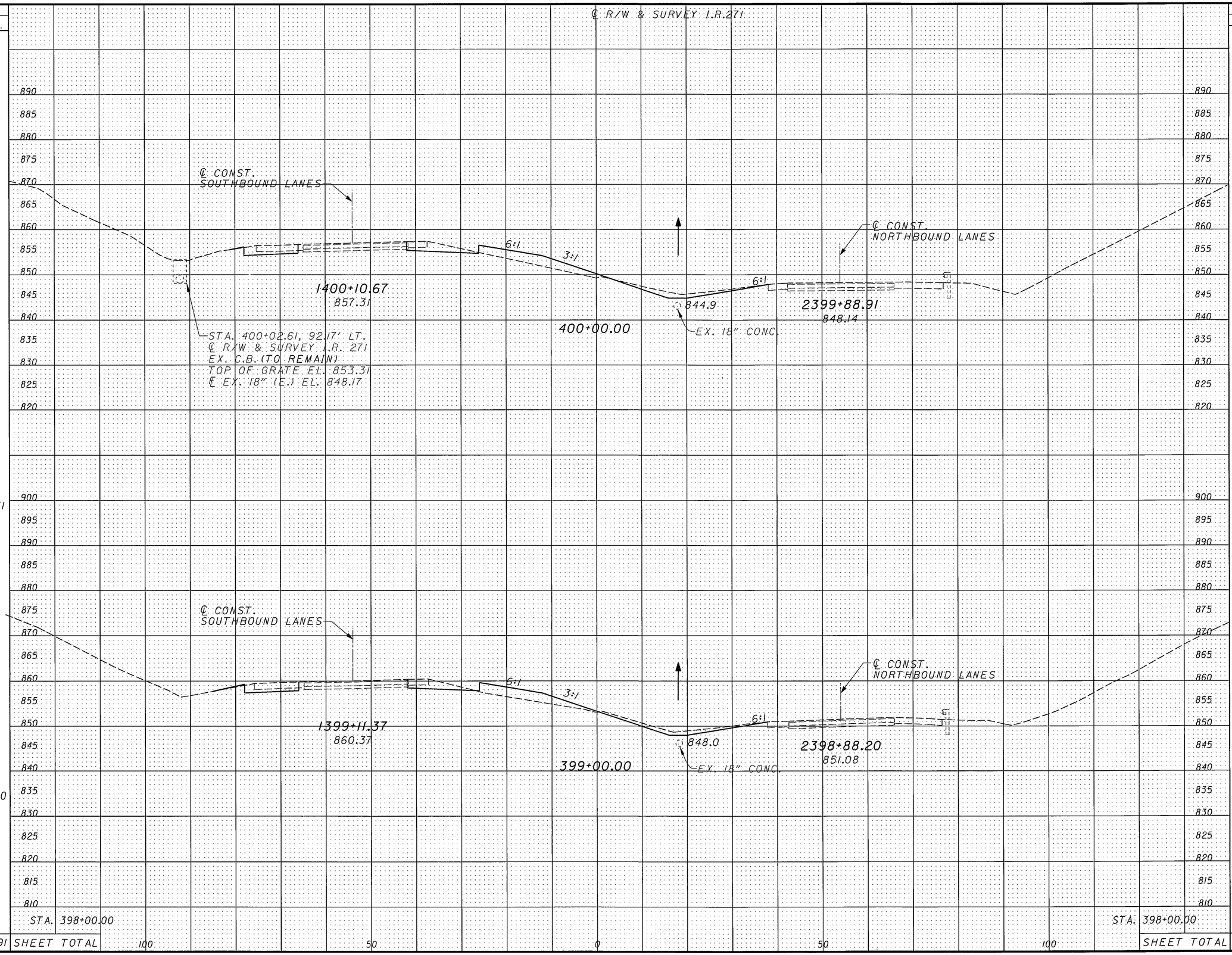
CALCULATED SAM CHECKED PS

CROSS SECTIONS
STA. 397+00 TO STA. 398+00

SUM-271-8.02

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
73	
	831
76	
	860
78	
	1691



END AREA		VOLUME	
CUT	FILL	CUT	FILL
54	62		
		198	213
53	53		
		209	198
60	54		
		407	411
SHEET TOTAL			

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 399+00 TO STA. 400+00

SUM-271-8.02

175
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
76	
73	
826	826

END AREA		VOLUME	
CUT	FILL	CUT	FILL
53	70		
54	62		
		199	245
		199	245

CALCULATED SAM

CHECKED PS

℄ R/W & SURVEY I.R.271

875 870 865 860 855 850 845 840 835 830 825 820 815 810 805 800

℄ CONST. SOUTHBOUND LANES

2:1

6:1

3:1

8:1

1401+09.96
854.26

EX. 18" CONC.

EX. 24" CPP

STA. 401+00.78, 126.07' LT.
℄ R/W & SURVEY I.R. 271
6-D EX. C.B.(ADJUSTED TO GRADE AS PER PLAN)
TOP OF GRATE EL. 839.47
℄ EX. 18" (S.) EL. 836.12
℄ EX. 18" (W.) EL. 836.11
℄ EX. 24" (E.) EL. 817.29

5-D 5' - PROP. 18" TYPE C W/CONCRETE COLLAR AS PER DM-1.1

842.3

401+00.00

5-D STA. 401+00.00, 17.70' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 841.82
℄ PROP. 18" (W.) EL. 839.30
℄ PROP. 18" (N.) EL. 838.96
℄ PROP. 6" (N.) EL. 840.36

5-D STA. 401+00.33, 17.73'
℄ R/W & SURVEY I.R. 271
EX. C.B.(REMOVE)
TOP OF GRATE EL. 841.82
℄ EX. 18" (W.) EL. 839.32
℄ EX. 18" (N.) EL. 838.96

℄ CONST. NORTHBOUND LANES

2400+89.62
845.14

STA. 400+90.20, 92.56' RT.
℄ R/W & SURVEY I.R. 271
EX. C.B.(TO REMAIN)
TOP OF GRATE EL. 843.01
℄ EX. 21" (E.) EL. 838.88

STA. 401+00.00 STA. 401+00.00

826 SHEET TOTAL 100 50 0 50 100 SHEET TOTAL 199 245

CROSS SECTIONS STA. 401+00

SUM-271-8.02

176
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
73	
	825
76	
	825

℄ R/W & SURVEY I.R.271

MATCHLINE (20' RT. (SEE BELOW)

92' - 21" TYPE F, 707.05, TYPE C @ 49.96%

EX. 21" CONC.

21" - 22.5° BEND 166' RT., EL. 794.25

10' - 21' TYPE F, 707.05, TYPE C @ 1.00%

(7-D) STA. 401+95.55, 176.85' RT.
℄ R/W & SURVEY I.R. 271
EX. 21" CMP
PROP. HW-2.1
℄ OUTLET (N.) EL. 794.15
℄ PROP. 6" (N.) EL. 794.15

℄ CONST. SOUTHBOUND LANES

6:1

3:1

1402+09.25
851.22

838.2

402+00.00

℄ CONST. NORTHBOUND LANES

2401+90.32
842.13

(7-D) STA. 401+95.01, 74.78' RT.
℄ R/W & SURVEY I.R. 271
EX. M.H. (TO REMAIN)
TOP OF COVER EL. 842.08
℄ EX. 21" (W.) EL. 835.32
℄ PROP. 21" (S.) EL. 835.32

10' - 21' TYPE F, 707.05, TYPE C @ 1.00%

21" - 22.5° BEND 84' RT., EL. 835.22

92' - 21" TYPE F, 707.05, TYPE C @ 49.96%

EX. 21" CONC.

MATCHLINE (20' RT. (SEE ABOVE)

STA. 401+00.00

SHEET TOTAL

100 50 0 50 100 150 200

END AREA		VOLUME	
CUT	FILL	CUT	FILL
71	57		
53	70		
		229	236
SHEET TOTAL		229	236

CALCULATED SAM
CHECKED PS

CROSS SECTIONS STA. 402+00

SUM-271-8.02

177
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
71	
	801
73	
	801

℄ R/W & SURVEY I.R.271

℄ CONST. SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

1403+08.55
848.17

6:1

3:1

835.8

403+00.00

2402+91.03
839.12

EX. 36" CMP (TO REMAIN)

STA. 402+09.12, 180.63' RT.
℄ R/W & SURVEY I.R. 271
EX. 36" CMP
℄ INLET (N.J. EL. 789.92

865 860 855 850 845 840 835 830 825 820 815 810 805 800 795 790 785 780 775

STA. 402+00.00

STA. 402+00.00

100 50 0 50 100

SHEET TOTAL

SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
71	65		
71	57		
		262	226
		262	226

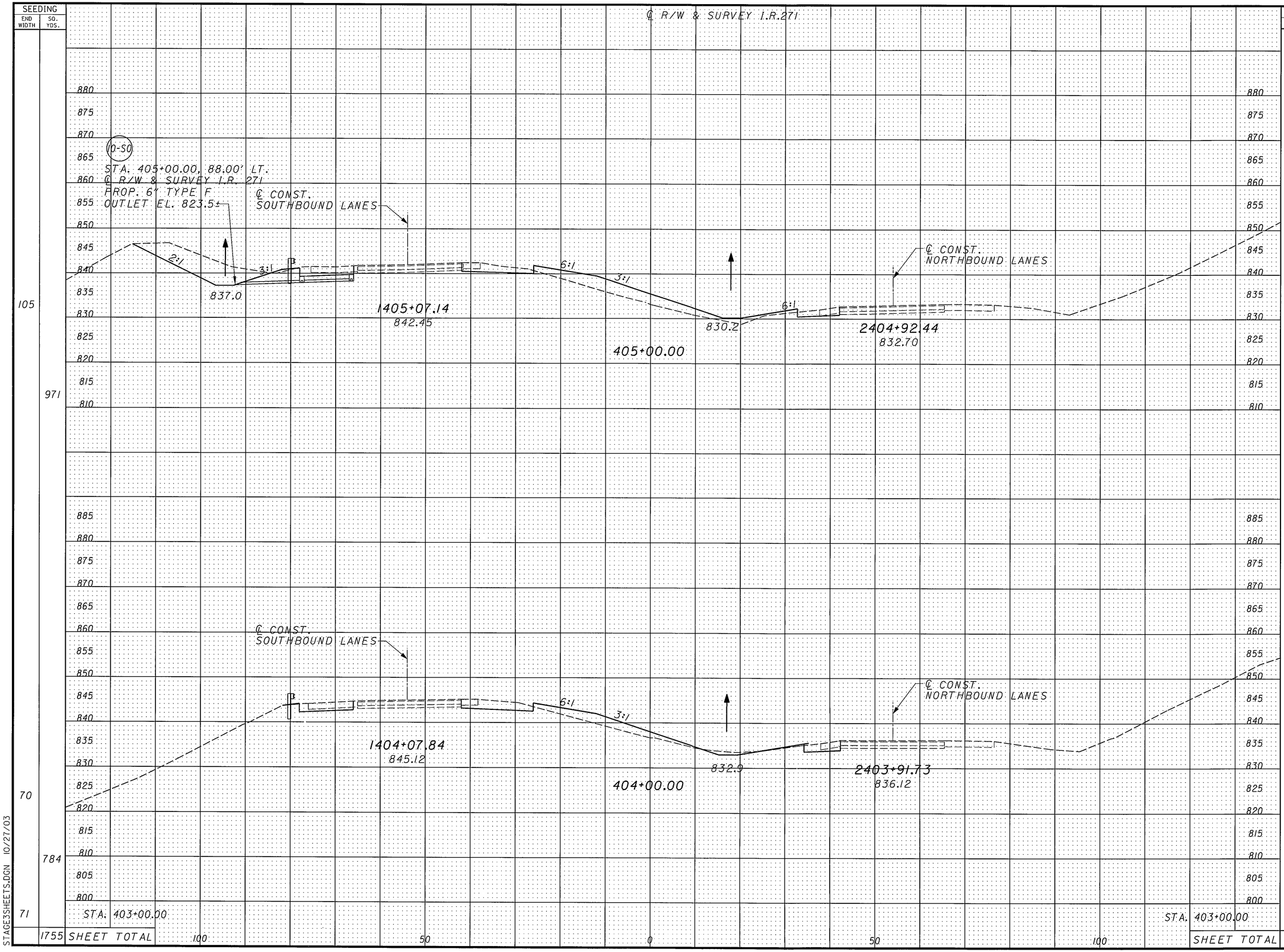
CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 403+00

SUM-271-8.02

178
612

STAGE3SHEETS.DGN 10/27/03



SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
105	971	166	84	447	276
70	784	75	65	271	241
71		71	65		
	1755 SHEET TOTAL			718	517

CALCULATED SAM
CHECKED PS

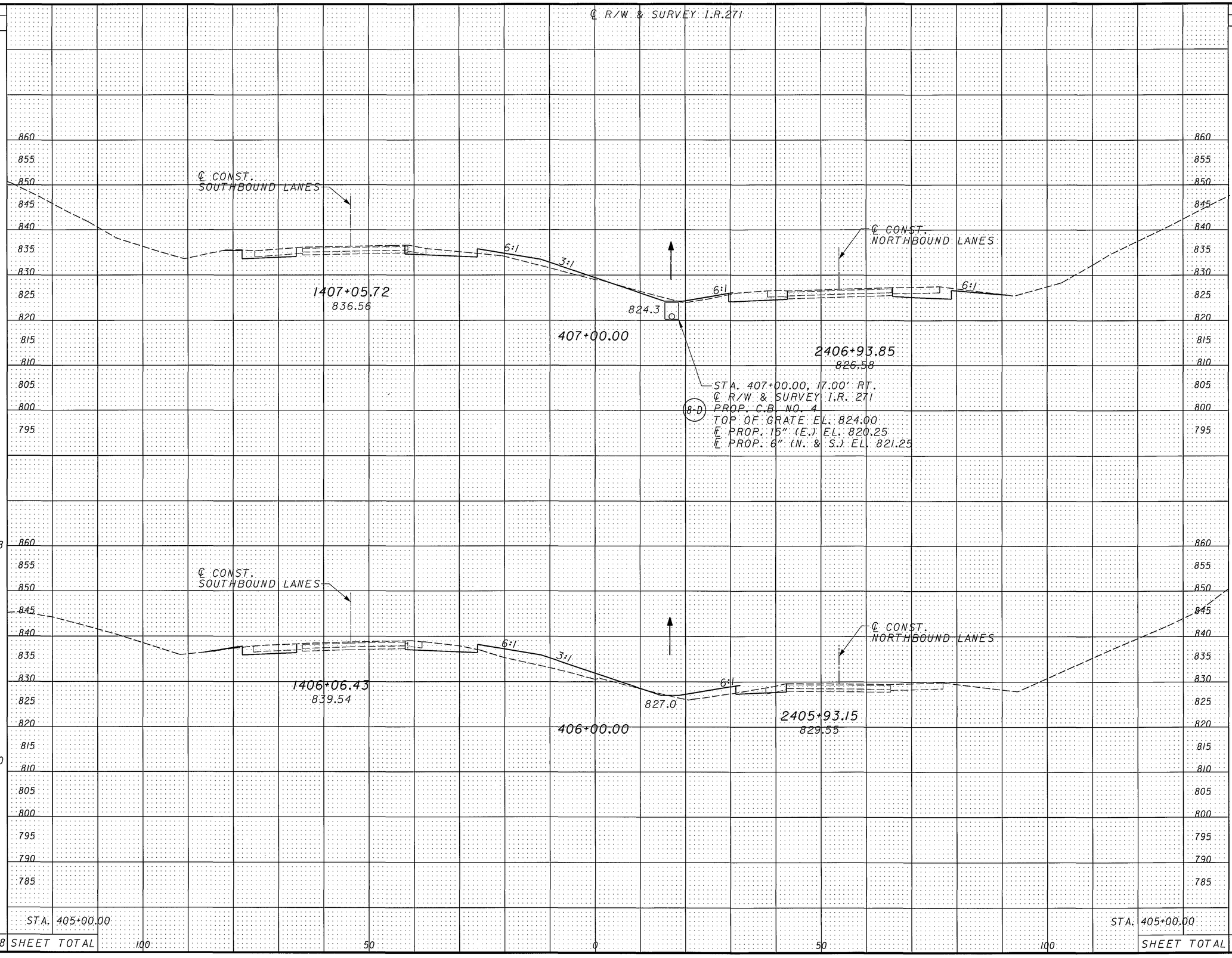
CROSS SECTIONS
STA. 404+00 TO STA. 405+00

SUM-271-8.02

179
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
108	
	998
72	
	980
105	
1978	SHEET TOTAL



END AREA		VOLUME	
CUT	FILL	CUT	FILL
110	24		
		329	164
67	64		
		432	274
166	84		
		761	438

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 406+00 TO STA. 407+00

SUM-271-8.02

180
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
75	485
75	424
108	
	909

℄ R/W & SURVEY I.R.271

℄ CONST. SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

1408+05.02
833.58

408+00.00

821.3

PROP. 15" TYPE C

2407+94.56
823.61

6:1

3:1

6:1

6:1

860 855 850 845 840 835 830 825 820 815 810

STA. 407+00.00

SHEET TOTAL

100 50 0 50 100

℄ CONST SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

1407+41.15
835.50

407+41.72

823.7

PROP. 15" TYPE C

2407+35.87
825.34

6:1

3:1

6:1

6:1

855 850 845 840 835 830 825 820 815 810 805 800 795

STA. 407+00.00

SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
95	48		
		226	75
114	21		
		174	35
110	24		
		400	110

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 407+41.72 TO STA. 408+00

SUM-271-8.02

181
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
71	
	842
80	
	863
75	
	1705

END AREA		VOLUME	
CUT	FILL	CUT	FILL
133	42		
		536	109
AHEAD	156	17	
BACK	113	17	
		385	121
	95	48	
SHEET TOTAL		921	230

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 409+00 TO STA. 410+00

SUM-271-8.02

182
612

℄ R/W & SURVEY I.R.271

LEGEND
CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED

℄ CONST. SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

℄ ACCESS

MATCHLINE 120' RT. (SEE SHEET NO. 183)

1410+03.61
827.64

410+00.00

815.3

817.52
2409+95.97
817.68

818.00
11+01.18
816.79

816.3

STA. 410+00.00, 17.00' RT.
℄ R/W & SURVEY I.R. 271
BA-D PROP. C.B. NO. 4
TOP OF GRATE EL. 814.95
E PROP. 15" (E. & W.) EL. 811.25

CONTRACTOR ACCESS SHOWN FOR INFORMATION

1409+04.31
830.61

409+00.00

818.2

820.58
2408+95.26
820.64

820.76
10+00.06
819.66

819.1

PROP. 15" TYPE C

2408+20.76 MATCH EXISTING BEGIN NEW PAVEMENT

408+26.02 BEGIN PROJECT

STA. 408+00.00

STA. 408+00.00

SHEET TOTAL

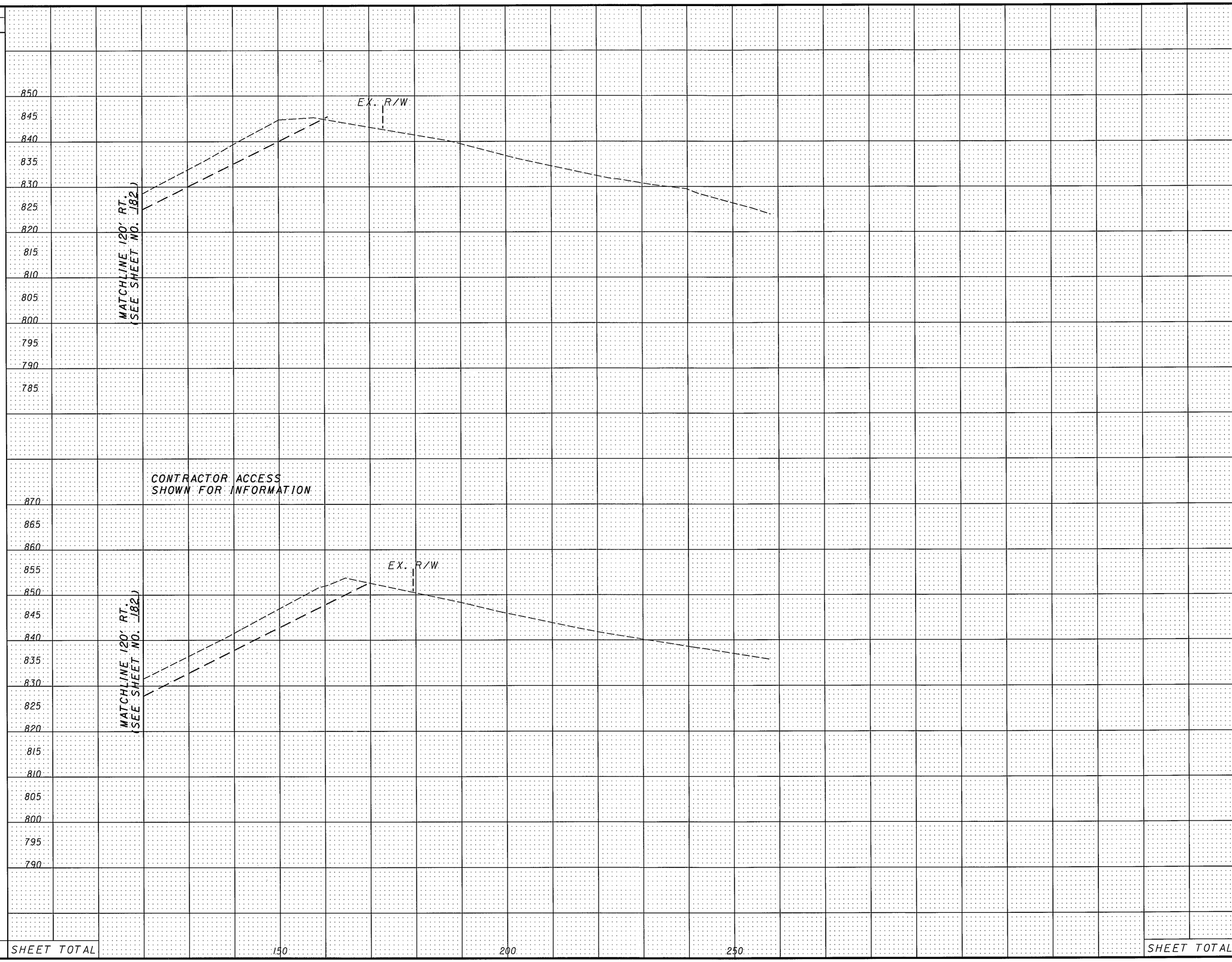
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STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS



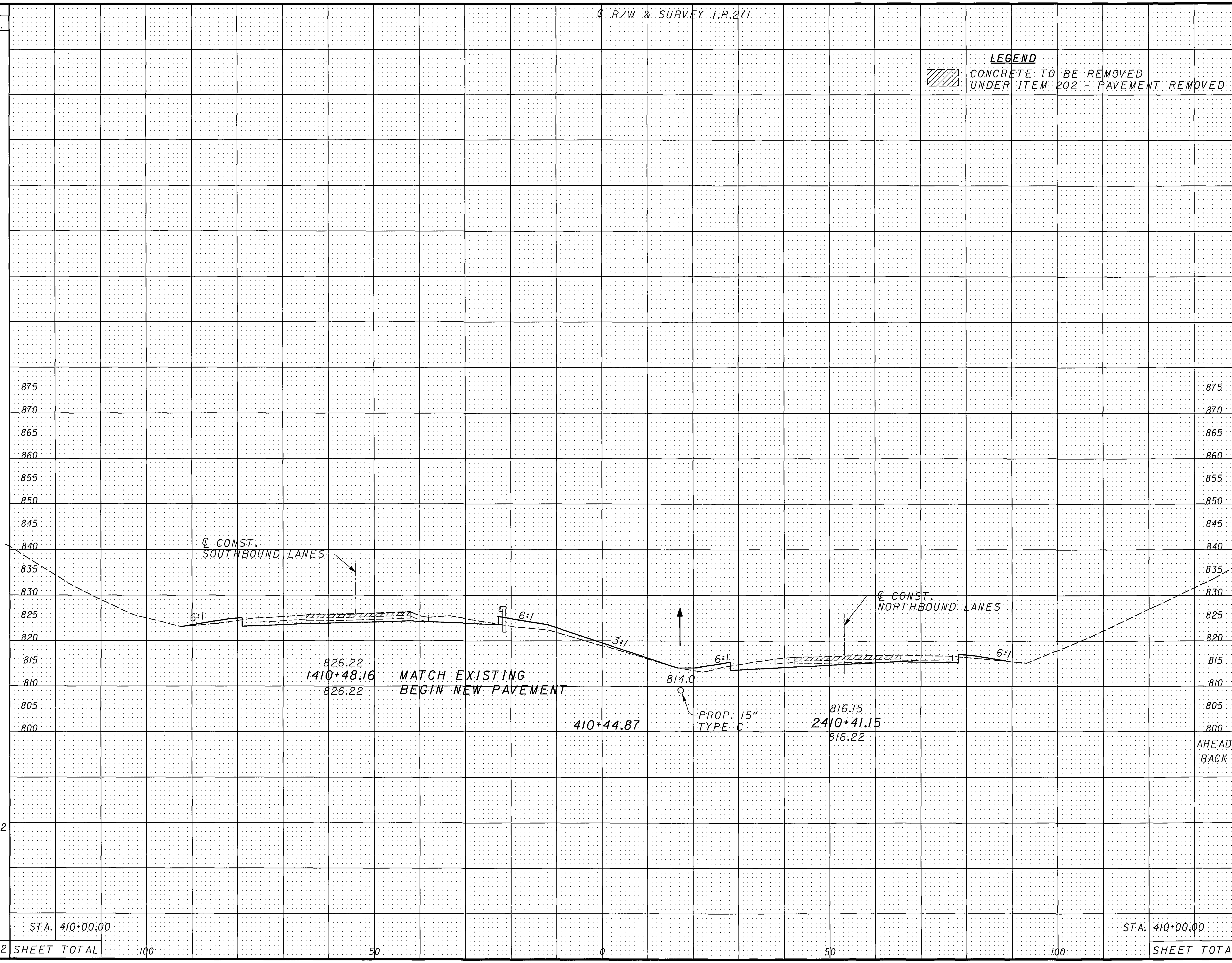
CROSS SECTIONS

STA. 409+00 RT. TO STA. 410+00 RT.

SUM-271-8.02

183
612

STAGE3SHEETS-PART2.DGN 10/30/03



SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
82		AHEAD	173	48		
		BACK	128	48		
	392				217	77
75		STA. 410+00.00	133	42		
	392	SHEET TOTAL			217	77

CALCULATED SAM
CHECKED PS

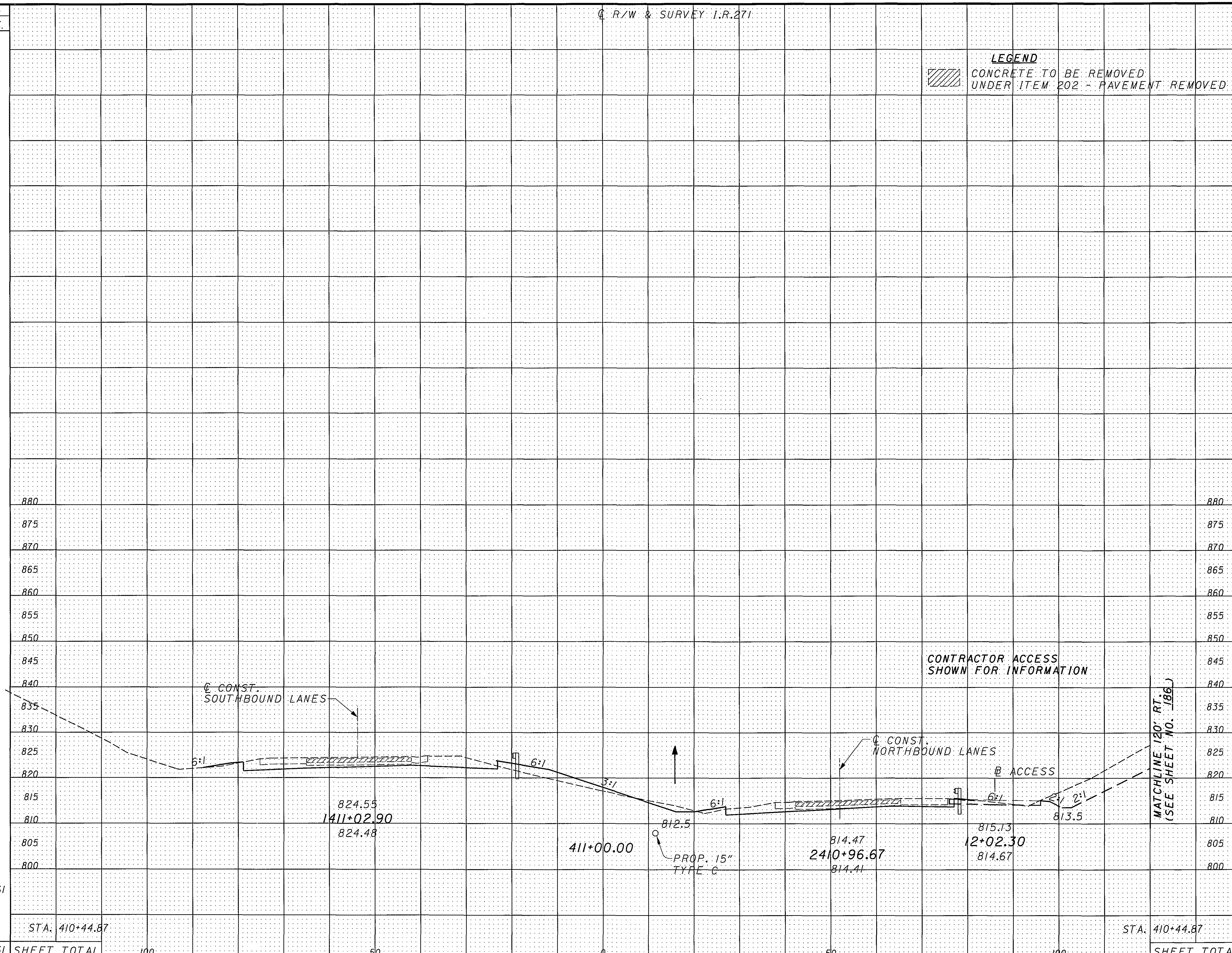
CROSS SECTIONS
STA. 410+44.87

SUM-271-8.02

STAGE3SHEETS.DGN 10/30/03

CROSS SECTIONS
STA. 411+00

CALCULATED	CHECKED
SAM	PS



SEEDING

END WIDTH	SQ. YDS.
71	
	461
82	
	461

STA. 410+44.87

SHEET TOTAL

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
223	39		
		397	87
173	48		
SHEET TOTAL		397	87

STA. 410+44.87

SUM-271-8.02

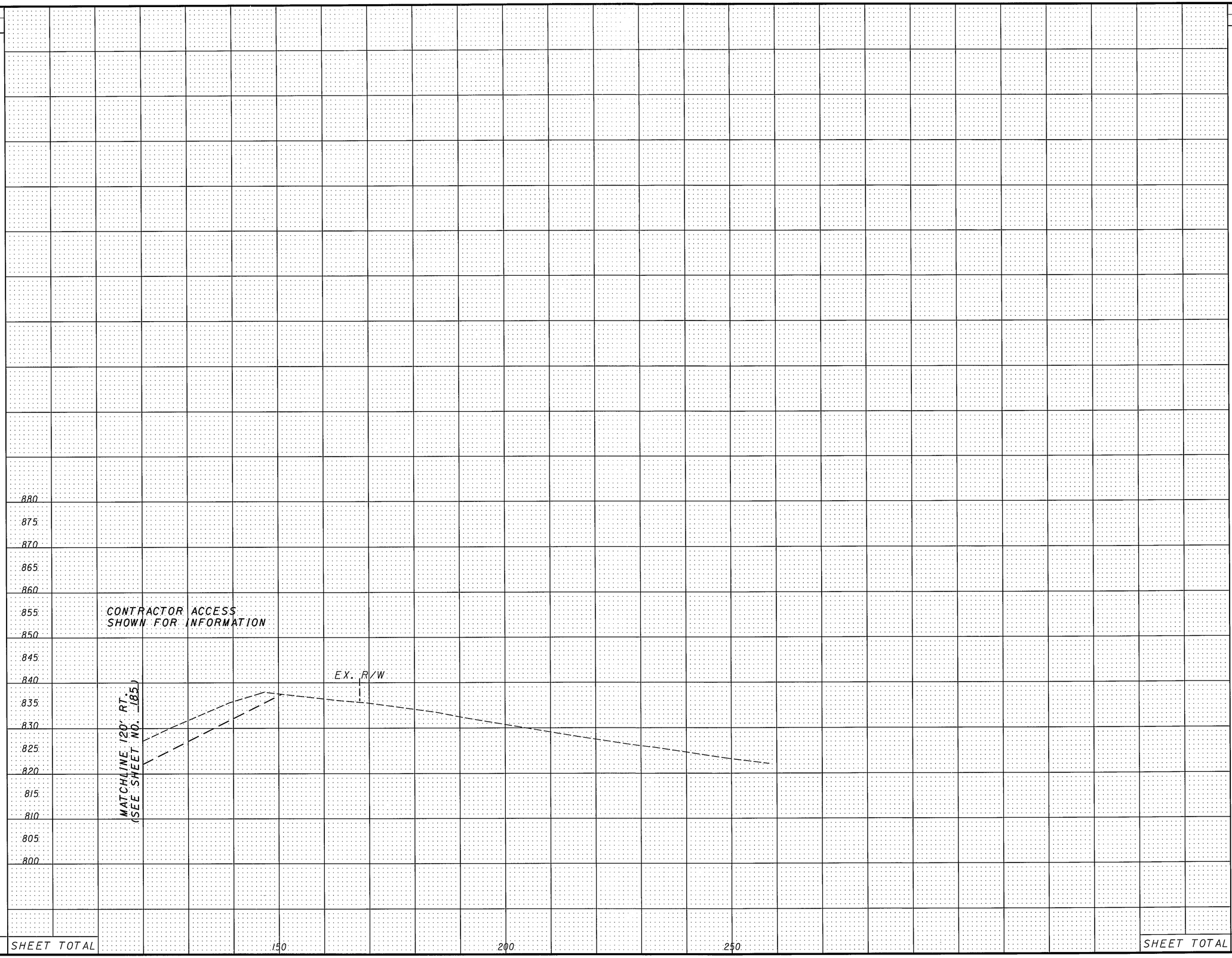
STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM

CHECKED PS



CROSS SECTIONS
STA. 411+00 RT.

SUM-271-8.02

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
62	
730	
70	AHEAD
75	BACK
811	
71	STA. 411+00.00
	1541 SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
196	10		
		708	28
		722	98
AHEAD	187	5	
BACK	167	14	
		223	39
SHEET TOTAL		1430	126

CALCULATED SAM
CHECKED PS

CROSS SECTIONS STA. 412+00 TO STA. 413+00

SUM-271-8.02

187
612

℄ R/W & SURVEY I.R.271

LEGEND
CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED

℄ CONST. SOUTHBOUND LANES
PROPOSED RETAINING WALL
6:1
818.51
1413+01.58
818.29
9'-9"
3:1
806.0
413+00.00
9-D
STA. 413+00.00, 8.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 805.90
℄ PROP. 15" (S.) EL. 802.15
℄ PROP. 15" (W.) EL. 802.25
℄ PROP. 6" (S.) EL. 804.00
9-D
STA. 413+01.08, 17.85' RT.
℄ R/W & SURVEY I.R. 271
EX. C.B.(REMOVE)
TOP OF GRATE EL. 806.40
℄ EX. 15" (S.) EL. 803.84
℄ CONST. NORTHBOUND LANES
72' - 15" TYPE B
@ 2.00%
808.35
2412+98.06
807.44
11-D
STA. 413+00.00, 80.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 807.97
℄ PROP. 15" (N.) EL. 800.71
℄ PROP. 21" (E.) EL. 798.51
℄ PROP. 15" (S.) EL. 799.01
℄ PROP. 6" (S.) EL. 803.00
11-D
STA. 413+00.06, 73.70' RT.
℄ R/W & SURVEY I.R. 271
EX. M.H.(REMOVE)
TOP OF COVER EL. 809.09
℄ EX. 21" (E.) EL. 800.64
℄ EX. 15" (N.) EL. 802.47
℄ EX. 15" (S.) EL. 801.01
℄ ACCESS
EX. 15" CONC.(REMOVE)
EX. 15" CONC.
2:1
802.9
28' - 15" TYPE C
@ 0.50%
807.64
14+04.55
807.46
CONTRACTOR ACCESS SHOWN FOR INFORMATION
10-D
STA. 413+00.00, 108.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5
TOP OF GRATE EL 802.40
℄ PROP. 15" (N.) EL. 799.15
10-D
STA. 413+00.17, 104.40' RT.
℄ R/W & SURVEY I.R. 271
EX. C.B.(REMOVE)
TOP OF GRATE EL. 803.76
℄ EX. 15" (N.) EL. 801.04

℄ CONST. SOUTHBOUND LANES
PROPOSED RETAINING WALL +00 AHEAD
821.53
1412+02.22
821.32
9'-9"
3:1
6:1
809.4
PROP 15" TYPE C
412+00.00 BEGIN PROPOSED RETAINING WALL
811.41
2411+97.37
811.14
℄ CONST. NORTHBOUND LANES
CONTRACTOR ACCESS SHOWN FOR INFORMATION
℄ ACCESS
2:1
810.5
812.12
13+03.43
811.41
STA. 411+00.00

100 50 0 50 100

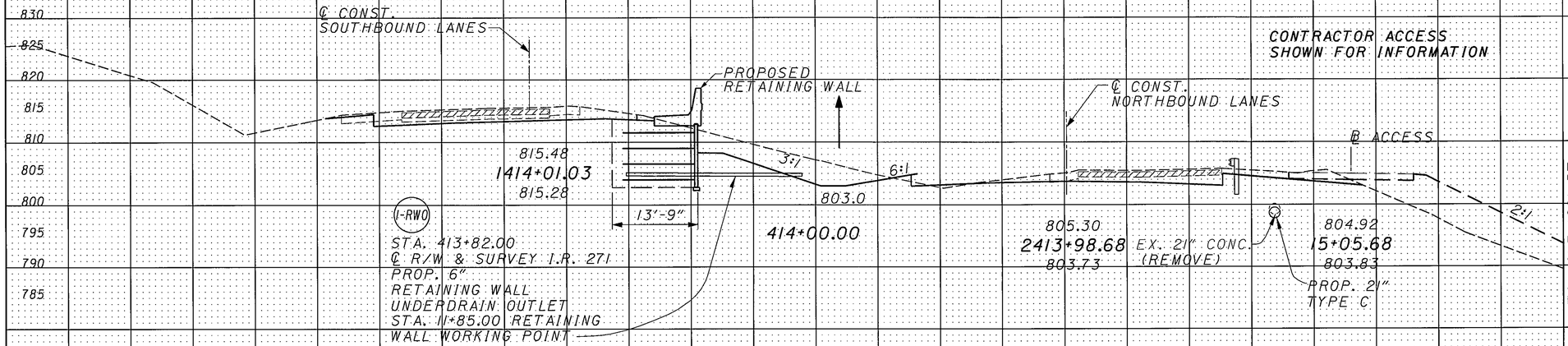
STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
72	
	741
62	
	741

℄ R/W & SURVEY I.R.271

LEGEND

CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED



SHEET TOTAL			
741			

END AREA		VOLUME	
CUT	FILL	CUT	FILL
232	3		
196	10	791	24
SHEET TOTAL		791	24

CALCULATED SAM
CHECKED PS

CROSS SECTIONS STA. 414+00

SUM-271-8.02

188
612

STAGE3SHEETS.DGN 10/30/03

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING
END AREA
SQ. YDS.
WIDTH

SHEET TOTAL

785 790 795 800 805 810 815 820 825 830

MATCHLINE 120' RT.
(SEE SHEET NO. 188)

2:1
786.8
2:1

CONTRACTOR ACCESS
SHOWN FOR INFORMATION

150

200

250

EX. R/W

SHEET TOTAL

END AREA
CUT
FILL

VOLUME
CUT
FILL

189
212

SUM-271-8.02

CROSS SECTIONS
STA. 414+00 RT.

CALCULATED
SAM
CHECKED
PS

CROSS SECTIONS
STA. 415+00

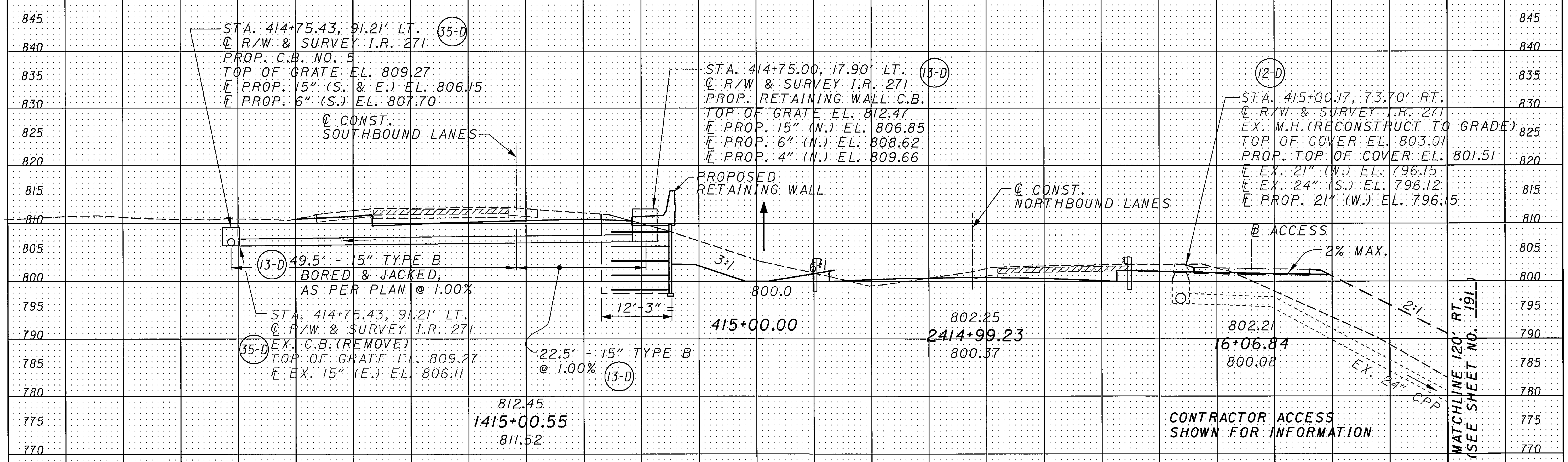
SUM-271-8.02

CALCULATED SAM · CHECKED PS

℄ R/W & SURVEY I.R.271

LEGEND

CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED



SEEDING END WIDTH	SEEDING SQ. YDS.			END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
73				253	9		
	805					898	24
72		STA. 414+00.00	STA. 414+00.00	232	3		
	805	SHEET TOTAL	SHEET TOTAL			898	24

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS

805
800
795
790
785
780
775
770
765
760
755
750
745
740
735

CONTRACTOR ACCESS
SHOWN FOR INFORMATION

MATCHLINE 120' RT.
(SEE SHEET NO. 190)

2:1

EX. 24" CPP

(12-D) STA. 415+14.30, 191.34' RT.
℄ R/W & SURVEY I.R. 271
EX. 24" CPP
EX. HEADWALL REMOVED
PROP. HW-2.1
℄ OUTLET (N.) EL. 749.77

4' x 72' x 18" THK.
ROCK CHANNEL
PROTECTION, TYPE C
WITH FILTER

24" CONDUIT
FOR CONTRACTOR ACCESS
COST INCLUDED UNDER ITEM
SPECIAL MISC.: CONTRACTOR ACCESS

150 200 250

SHEET TOTAL SHEET TOTAL

CROSS SECTIONS
STA. 415+00 RT.

SUM-271-8.02

191
612

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
88	
894	
73	
894	SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
251	4		
253	9		
		934	24
		934	24

CALCULATED SAM
CHECKED PS

℄ R/W & SURVEY I.R.271

LEGEND
CONCRETE TO BE REMOVED
UNDER ITEM 202 - PAVEMENT REMOVED

℄ CONST. SOUTHBOUND LANES

PROPOSED RETAINING WALL

℄ CONST. NORTHBOUND LANES

℄ ACCESS

EX. 15" CONC.

809.42
1416+00.13
807.71

3:1
6:1
797.5

12'-3"

PROP. 6" RETAINING WALL UNDERDRAIN OUTLET (2-RW0)

799.20
2415+99.72
797.04

796.26
17+08.68
792.27

MATCHLINE 120' RT. (SEE SHEET NO. 193)

416+00.00

STA. 415+50.00, 0.40' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 8
TOP OF GRATE EL. 797.92
E PROP. 15" (E.) EL. 795.20
E PROP. 6" (N.) EL. 795.89
(2A-D)

CONTRACTOR ACCESS SHOWN FOR INFORMATION

STA. 415+00.00

STA. 415+00.00

100 50 0 50 100

825 820 815 810 805 800 795 790 785 780 775 770 765 760 755 750 745 740

CROSS SECTIONS
STA. 416+00

SUM-271-8.02

192
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM

CHECKED PS

825
820
815
810
805
800
795
790
785
780
775
770
765
760
755
750
745
740

MATCHLINE 120' RT.
(SEE SHEET NO. 192)

2:1

CONTRACTOR ACCESS
SHOWN FOR INFORMATION

SHEET TOTAL

150 200 250

SHEET TOTAL

CROSS SECTIONS
STA. 416+00 RT.

SUM-271-8.02

193
612

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
88	
	941
SHEET TOTAL	

℄ R/W & SURVEY I.R.271

LEGEND
CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED

MATCHLINE 110' LT. (SEE BELOW)

24' - 15' TYPE F, 707.05, TYPE C @ 3.00%

4.5' x 10' x 18" THK. ROCK CHANNEL PROTECTION TYPE C WITH FILTER

EX. 15" CMP

84' - 15" TYPE F, 707.05, TYPE C @ 52.02%

15" - 22.5° BEND 161' LT., EL. 761.50

STA. 416+70.35, 185.00' LT.
℄ R/W & SURVEY I.R. 271
EX. 15" CMP
F OUTLET (S.) EL. 760.78
PROP. HW-2.1
F PROP. 15" (S.) EL. 760.78

(14-D)

STA. 416+60.00, 61.00' LT. (36-D)
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 806.28
F PROP. 15" (N.) EL. 801.00

13' - 15' TYPE F, 707.05, TYPE C @ 3.00%

2% MAX.

15" - 22.5° BEND 87' LT., EL. 800.20

℄ CONST. SOUTHBOUND LANES

PROPOSED RETAINING WALL

℄ CONST. NORTHBOUND LANES

MATCHLINE 110' LT. (SEE ABOVE)

84' - 15" TYPE F, 707.05, TYPE C @ 52.02%

13' - 15" TYPE C @ 3.15% (36-D)

806.38
1416+99.93
804.03

3:1 3:1
794.1

14'-0"

STA. 416+60.43, 74.06' LT.
℄ R/W & SURVEY I.R. 271
(14-D) EX. M.H. (RECONSTRUCT TO GRADE)
TOP OF COVER EL. 806.99
PROP. TOP OF COVER EL. 806.00
F EX. 15" (W.) EL. 800.63
F EX. 15" (N.) EL. 800.59
F PROP. 15" (N. & S.) EL. 800.59
F PROP. 6" (S.) EL. 802.07

417+00.00

796.16
2417+00.00
794.16

℄ ACCESS

784.7

785.89
18+10.60
779.84

MATCHLINE 120' RT. (SEE SHEET NO. 195)

CONTRACTOR ACCESS SHOWN FOR INFORMATION

STA. 416+00.00

END AREA		VOLUME	
CUT	FILL	CUT	FILL
226	3		
251	4		
SHEET TOTAL		883	12
		883	12

CALCULATED SAM
CHECKED PS

CROSS SECTIONS STA. 417+00

SUM-271-8.02

194
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
SHEET TOTAL	

END AREA		VOLUME	
CUT	FILL	CUT	FILL
SHEET TOTAL			

835
830
825
820
815
810
805
800
795
790
785
780
775
770
765
760
755
750
745
740
735

MATCHLINE 120' RT. (SEE SHEET NO. 194)

CONTRACTOR ACCESS SHOWN FOR INFORMATION

2:1

150 200 250

CALCULATED SAM

CHECKED PS

CROSS SECTIONS STA. 417+00 RT.

SUM-271-8.02

195
612

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
75	
	869
82	
	869

℄ R/W & SURVEY I.R.271

LEGEND

CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED

℄ CONST. SOUTHBOUND LANES

PROPOSED RETAINING WALL

℄ CONST. NORTHBOUND LANES

803.33
1417+99.98
800.36

5'-0"

791.2

14'-0"

793.12
2418+00.00
791.31

1.5:1

2:1

774.1

MATCHLINE 120' RT. (SEE SHEET NO. 197)

3-RW0
STA. 418+00.00
℄ R/W & SURVEY I.R. 271
PROP. 6" RETAINING WALL UNDERDRAIN OUTLET
STA. 16+02.08 RETAINING WALL WORKING POINT

418+00.00

37-D
STA. 418+00.00, 4.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 8
TOP OF GRATE EL. 790.95
℄ PROP. 15" (E. & W.) EL. 788.23
℄ PROP. 6" (N.) EL. 787.82

CONTRACTOR ACCESS SHOWN FOR INFORMATION

820 815 810 805 800 795 790 785 780 775 770 765 760 755 750 745 740 735

STA. 417+00.00 — STA. 417+00.00

100 50 0 50 100

END AREA		VOLUME	
CUT	FILL	CUT	FILL
207	9		
226	3		
		802	21
SHEET TOTAL		802	21

CALCULATED SAM
CHECKED PS

CROSS SECTIONS STA. 418+00

SUM-271-8.02

196
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS

820
815
810
805
800
795
790
785
780
775
770
765
760
755
750
745
740
735

MATCHLINE 120' RT. (SEE SHEET NO. 196)

℄ ACCESS

775.32
19+11.75
768.91

2:1

CONTRACTOR ACCESS SHOWN FOR INFORMATION

SHEET TOTAL

150 200 250

SHEET TOTAL

CROSS SECTIONS STA. 418+00 RT.

SUM-271-8.02

197
612

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
	73
	819
	75
	819

END AREA		VOLUME	
CUT	FILL	CUT	FILL
		169	26
		697	64
		207	9
		697	64

CALCULATED SAM

CHECKED PS

CROSS SECTIONS STA. 419+00

SUM-271-8.02

198
612

℄ R/W & SURVEY I.R.271

LEGEND

CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED

MATCHLINE 110' LT. (SEE BELOW)

STA. 419+05.00, 190.00' LT.
℄ R/W & SURVEY I.R. 271
40-D PROP. C.B. NO. 4
TOP OF GRATE EL. 745.50
℄ PROP. 15" (N.E.) EL. 740.75

200 150

℄ CONST. SOUTHBOUND LANES

PROPOSED RETAINING WALL

℄ CONST. NORTHBOUND LANES

MATCHLINE 110' LT. (SEE ABOVE)

MATCH LINE

SEE SLOPE REPAIR CROSS SECTIONS

800.29
1419+00.00
4-RW0 796.47

STA. 419+30.00
℄ R/W & SURVEY I.R. 271
PROP. 6" RETAINING WALL
UNDERDRAIN OUTLET
STA. 17+32.10 RETAINING WALL WORKING POINT

2:1

788.6

14'-0"

419+00.00

790.09
2419+00.00
15-D 788.91

STA. 419+30.00, 5.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 8
TOP OF GRATE EL. 787.85
℄ PROP. 15" (E. & W.) EL. 783.90
℄ PROP. 6" (S.) EL. 784.90
℄ PROP. 6" (N.) EL. 785.65

1.8:1

MATCHLINE 120' RT. (SEE SHEET NO. 199)

SLOPE REPAIR GRADING SEE SHEET 292-299

CONTRACTOR ACCESS SHOWN FOR INFORMATION

800 795 790 785 780 775 770 765 760 755 750 745 740 735 730 725 720

STA. 418+00.00

SHEET TOTAL

100 50 0 50 100

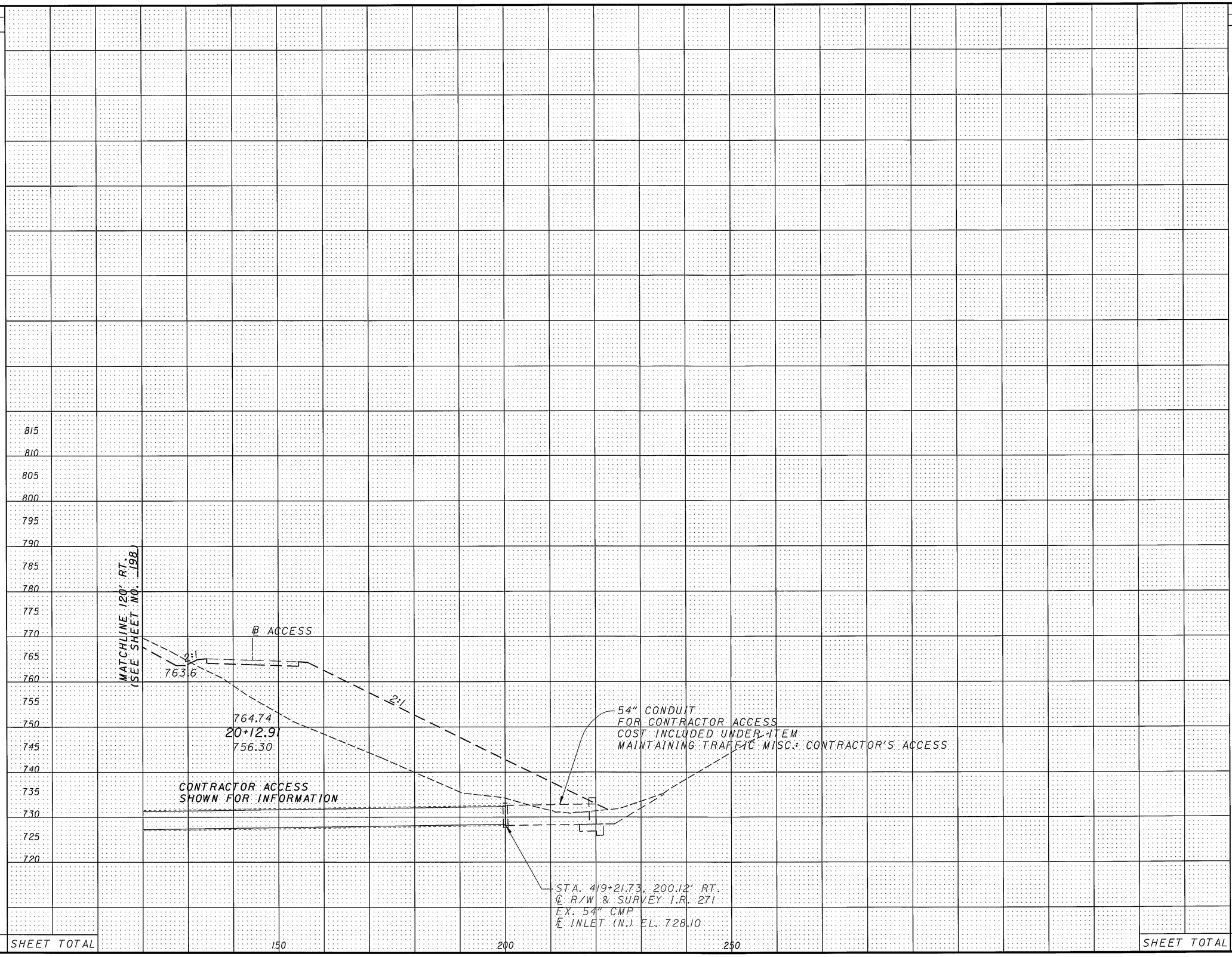
STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS

CROSS SECTIONS STA. 419+00 RT.



SHEET TOTAL

SHEET TOTAL

STAGE3SHEETS-PART2.DGN 10/30/03

SUM-271-8.02

199
612

SEEDING	
END WIDTH	SQ. YDS.
75	
821	
	821

END AREA		VOLUME	
CUT	FILL	CUT	FILL
198	21		
		680	88
169	26		
		680	88

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 420+00

SUM-271-8.02

200
612

LEGEND
CONCRETE TO BE REMOVED
UNDER ITEM 202 - PAVEMENT REMOVED

℄ R/W & SURVEY I.R.271

MATCHLINE 110' LT. (SEE BELOW)

2' COVER MINIMUM

102' - 15" TYPE F, 707.05, TYPE C @ 47.14%

10' - 15" @ 1.50%

15" - 22.5° BEND
190' LT., EL. 738.65

SLOPE REPAIR GRADING
SEE SHEET 292-299

STA. 419+50.00, 200.00' LT.
℄ R/W & SURVEY I.R. 271
(41-D) PROP. C.B. NO. 5
TOP OF GRATE EL. 744.50
℄ PROP. 15" (S.) EL. 738.50
℄ PROP. 15" (W.) EL. 737.99
℄ PROP. 18" (E.) EL. 737.74

STA. 419+50.00, 60.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 796.38 (39-D)
℄ PROP. 15" (S.) EL. 790.70
℄ PROP. 15" (N. & E.) EL. 782.59

℄ CONST. SOUTHBOUND LANES

41' - PIPE REMOVED, 24" AND UNDER, AS PER PLAN

SEE GENERAL NOTES FOR OUTLETING OF CONDUIT BORED & JACKED, AS PER PLAN

MATCHLINE 110' LT. (SEE ABOVE)

53' - 15" BORED & JACKED @ 1.50%

28' - 15" TYPE C @ 1.50%

10' - 15' TYPE F, 707.05, TYPE C @ 1.50%

CONCRETE MASONRY COLLAR AS PER DM-1.1

15" - 22.5° BEND
98' LT., EL. 782.02

MATCH LINE SEE SLOPE REPAIR CROSS SECTIONS

6 - 15' TYPE C @ 2.00%

STA. 419+50.00, 54.00' LT.
℄ R/W & SURVEY I.R. 271
(38-D) PROP. C.B. NO. 3A
TOP OF GRATE EL. 798.00
℄ PROP. 15" (N. & S.) EL. 790.82
℄ PROP. 6" (S.) EL. 794.00
℄ PROP. 4" (W.) EL. 795.00

797.25
1420+00.00
792.58

420+00.00

787.05
2420+00.00
785.98

(16-D)
STA. 419+50.00, 3.27' LT.
℄ R/W & SURVEY I.R. 271
PROP. RETAINING WALL C.B.
TOP OF GRATE EL. 798.06
℄ PROP. 15" (N.) EL. 791.58
℄ PROP. 6" (N.) EL. 794.86
℄ PROP. 4" (N.) EL. 795.86

PROPOSED RETAINING WALL

℄ CONST. NORTHBOUND LANES

2.7%

785.8

14'-0"

PROP. 15" TYPE C

37.5' - 15" TYPE B @ 1.50%

1.8%

CONTRACTOR ACCESS SHOWN FOR INFORMATION

(50-D) CONTINUED FROM SHEET 202

MATCHLINE 120' RT. (SEE SHEET NO. 201)

EX. 54" CMP

PROP. 48" LINER, 707.12

STA. 419+00.00

STA. 419+00.00

SHEET TOTAL

SHEET TOTAL

100 50 0 50 100

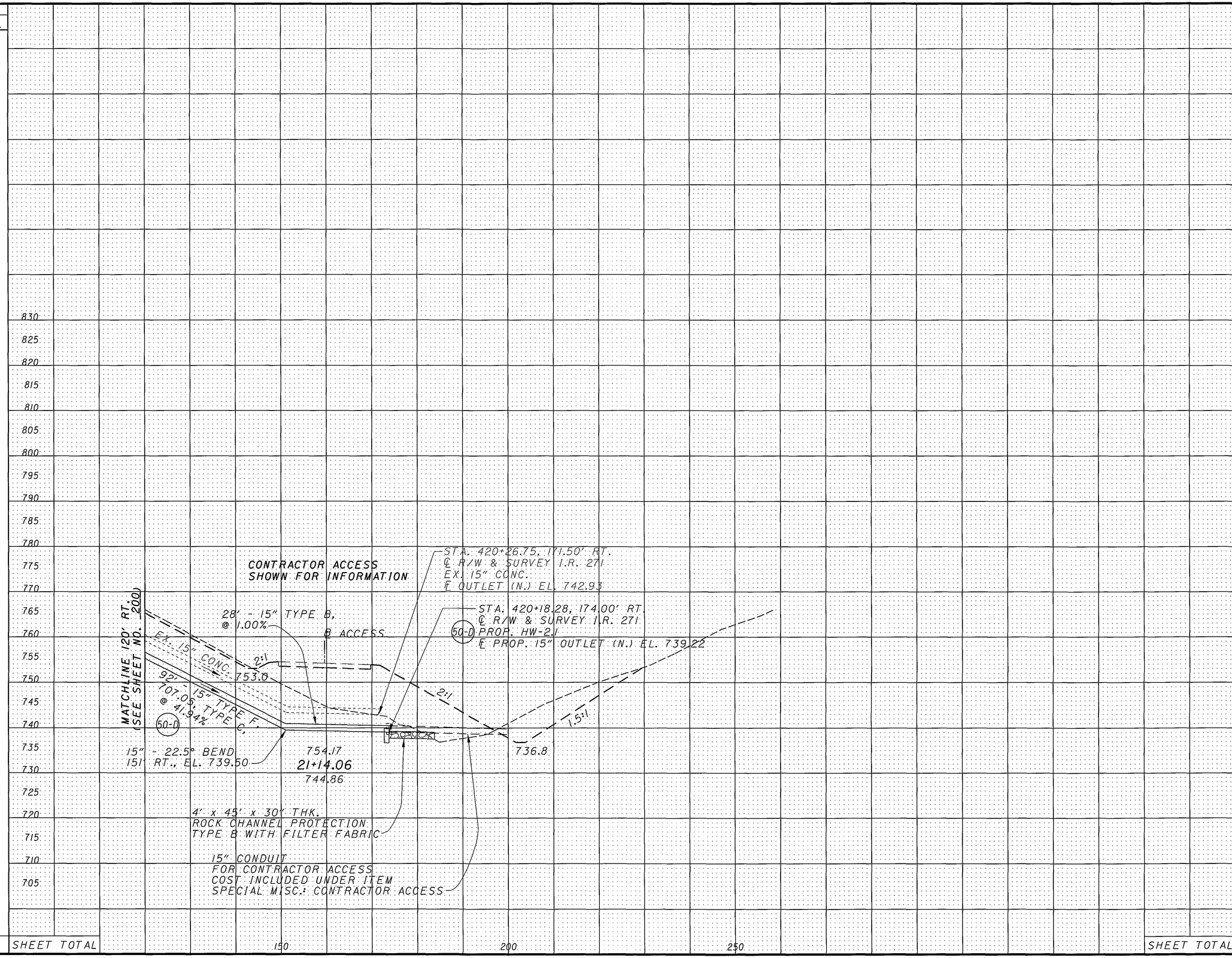
STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS

CROSS SECTIONS STA. 420+00 RT.



SUM-271-8.02

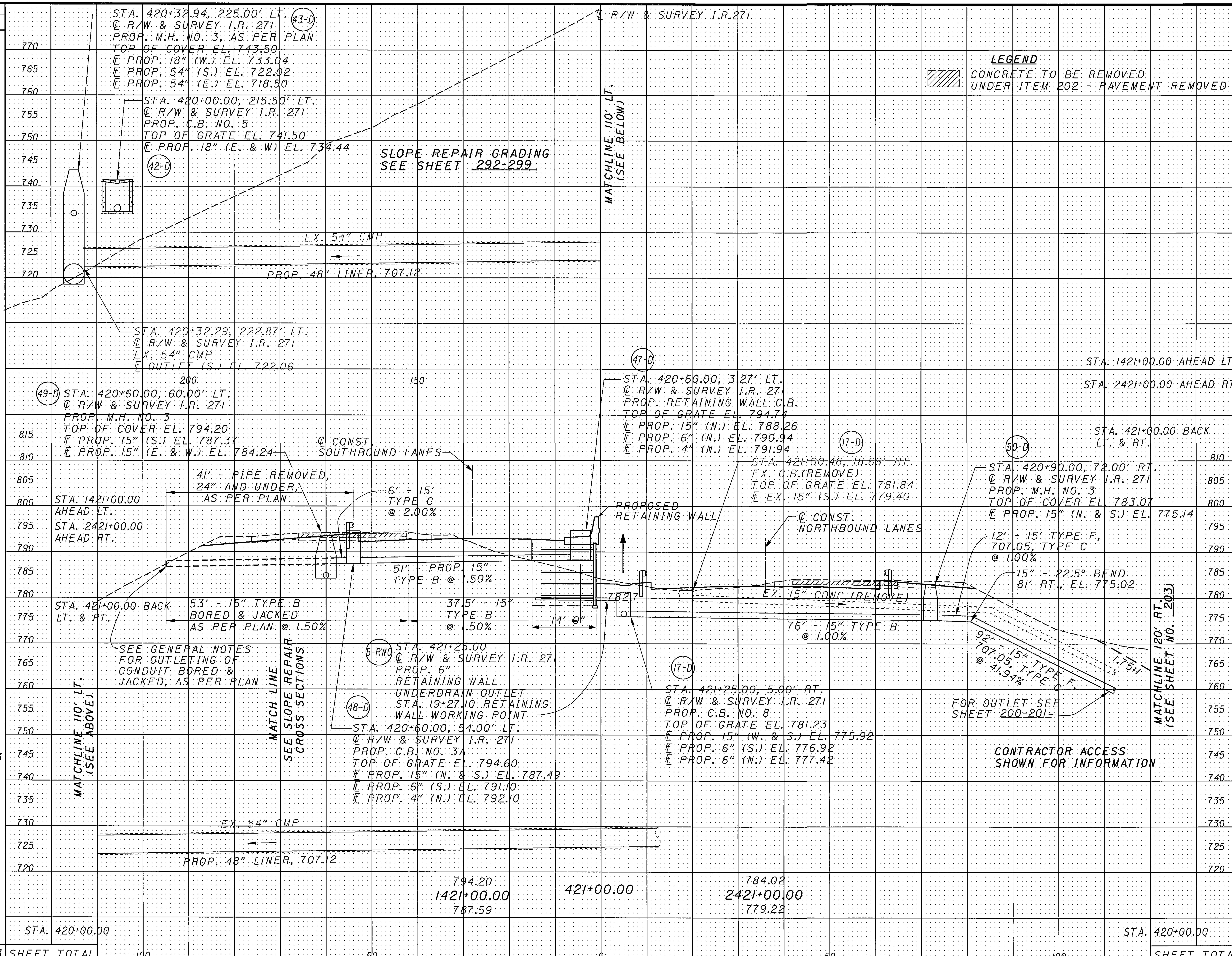
201
612

STAGE3SHEETS-PART2.DGN 10/30/03

CROSS SECTIONS
STA. 421+00

SUM-271-8.02

CALCULATED SAM | CHECKED PS



SEEDING

END WIDTH	SQ. YDS.	
39		STA. 1421+00.00 AHEAD LT.
34		STA. 2421+00.00 AHEAD RT.
73		STA. 421+00.00 BACK LT. & RT.
	823	
75		STA. 420+00.00
	823	SHEET TOTAL

	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
STA. 1421+00.00 AHEAD LT.	66	27		
STA. 2421+00.00 AHEAD RT.	56	23		
STA. 421+00.00 BACK LT. & RT.	121	50		
			590	133
STA. 420+00.00	198	21		
SHEET TOTAL			590	133

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS

MATCHLINE 120' RT. (SEE SHEET NO. 202)

EX. R/W

1.75:1

2:1

℄ ACCESS

2:1

2:1

742.4

741.8

743.59
22+15.22
768.19

CONTRACTOR ACCESS
SHOWN FOR INFORMATION

SHEET TOTAL

150

200

250

SHEET TOTAL

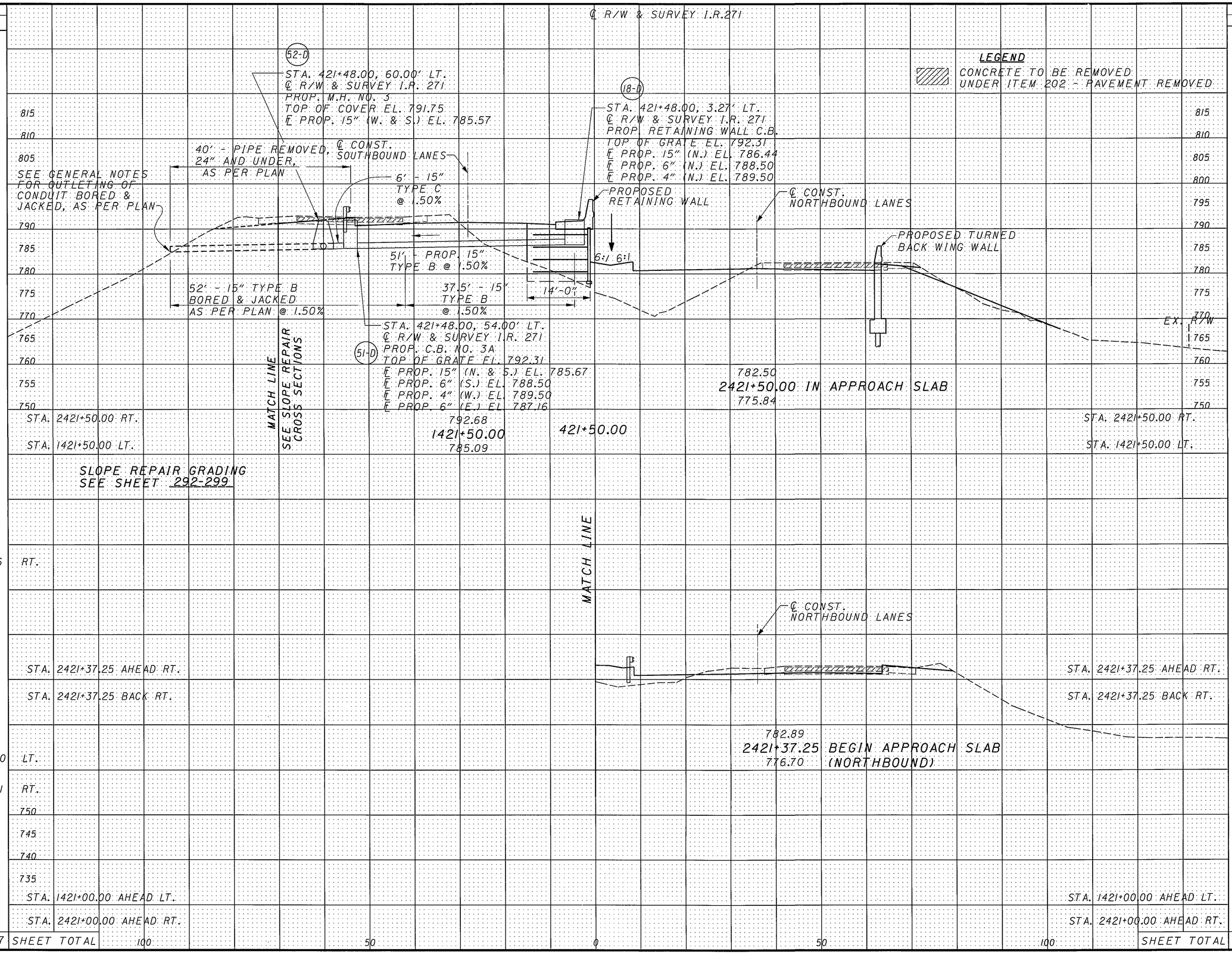
CROSS SECTIONS
STA. 421+00 RT.

SUM-271-8.02

203
612

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
55		STA. 2421+50.00 RT.	51	294		
40		STA. 1421+50.00 LT.	72	76		
					26 RT.	87 RT.
	56	RT.			128 LT.	95 LT.
24		STA. 2421+37.25 AHEAD RT.	58	72		
34		STA. 2421+37.25 BACK RT.	56	23		
	220	LT.				
	141	RT.			77 RT.	32 RT.
39		STA. 1421+00.00 AHEAD LT.	66	27		
34		STA. 2421+00.00 AHEAD RT.	56	23		
	417	SHEET TOTAL			231	214



LEGEND

CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED

CALCULATED SAM

CHECKED PS

CROSS SECTIONS STA. 421+50.93

SUM-271-8.02

204
612

STAGE3SHEETS.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.	
60		STA. 2421+62.25 AHEAD RT.
74		STA. 2421+62.25 BACK RT.
	88	RT.
29		STA. 1421+57.25 AHEAD LT.
40		STA. 1421+57.25 BACK LT.
	33	LT.
55		STA. 2421+50.00 RT.
40		STA. 1421+50.00 LT.
	121	SHEET TOTAL

℄ R/W & SURVEY I.R.271

LEGEND

CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED

LEGEND

GRADING LIMITS (CONCRETE)

GRADING LIMITS (STEEL)

MATCH LINE

PROPOSED TURNED BACK WING WALL

6:1 6:1

BACK

AHEAD (CONC.)

AHEAD (STEEL)

PROPOSED TURNED BACK WING WALL

EX. R/W

782.13
2421+62.25 END APPROACH SLAB
775.44 (NORTHBOUND)

℄ CONST SOUTHBOUND LANES

MATCH LINE

PROPOSED TURNED BACK WING WALL

MATCH LINE

SEE SLOPE REPAIR CROSS SECTIONS

792.46
1421+57.25 BEGIN APPROACH SLAB
784.73 (SOUTHBOUND)

SLOPE REPAIR GRADING
SEE SHEET 292-299

100 50 0 50 100

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL	
				STA. 2421+62.25 AHEAD RT.
(10)	(219)			STEEL
5	288			CONC.
0	711			STA. 2421+62.25 BACK RT.
		0	288	RT.
0	711			STA. 2421+51.33 AHEAD RT. END EXIST. ABUTMENT
38	277			BACK RT.
		3	15	RT.
75	215			STA. 1421+57.25 AHEAD LT.
72	76			STA. 1421+57.25 BACK LT.
		20	21	LT.
51	294			STA. 2421+50.00 RT.
72	76			STA. 1421+50.00 LT.
		23	324	SHEET TOTAL

CALCULATED SAM CHECKED PS

CROSS SECTIONS
SB LANES TO STA. 2421+62.25 NB LANES
STA. 1421+57.25 SB

SUM-271-8.02

205
612

STAGE3SHEETS.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.
32	
16	
26	
19 LT.	175 RT.
4	
46 LT.	
60	
29	
	240 SHEET TOTAL

℄ R/W & SURVEY I.R.271

GRADING LAYOUT

422+00.00							
STEEL	72.00L	22.00L	10.00L	5.29L	0	6.46R	22.88R
	777.5	777.5	776	775	772.75	770	763.8
CONCRETE	72.00L	22.00L	10.00L	5.29L	0	6.46R	22.88R
	777.5	777.5	776	775	772.75	770	763.8

795 790 785 780 775 770 765 760 755 750 745 740 735 730

STA. 422+00 AHEAD

STA. 1421+98.75 BACK LT.

STA. 2421+98.75 BACK RT.

MATCH LINE

SEE SLOPE REPAIR CROSS SECTIONS

MATCH LINE

422+00.00

EX. R/W

MATCHLINE 120' RT. (SEE SHEET NO. 207)

SLOPE REPAIR GRADING
SEE SHEET 292-299

LEGEND

CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED

820 815 810 805 800 795 790 785 780 775 770 765 760 755

LEGEND

GRADING LIMITS (CONCRETE)

GRADING LIMITS (STEEL)

MATCH LINE

PROPOSED TURNED BACK WING WALL

BACK

AHEAD (CONC.)

AHEAD (STEEL)

MATCH LINE

SEE SLOPE REPAIR CROSS SECTIONS

791.72
1421+82.25 END APPROACH SLAB (SOUTHBOUND)
783.48

STA. 1421+82.25 LT.

STA. 2421+62.25 AHEAD RT.

STA. 1421+57.25 AHEAD LT.

STA. 1421+98.75 AHEAD LT.
END EXIST. ABUTMENT

STA. 1421+82.25 AHEAD LT.

STA. 1421+82.25 BACK LT.

STA. 2421+62.25 AHEAD RT.

STA. 1421+57.25 AHEAD LT.

END AREA				VOLUME	
		CUT	FILL	CUT	FILL
AHEAD	STEEL	(147)	(45)		
AHEAD	CONC.	147	45		
BACK RT.	CONC.	8	44		
BACK LT.	CONC.	139	1		
STA. 2422+00 BACK RT.	STEEL	(8)	(44)		
STA. 2422+00 BACK LT.	STEEL	(139)	(1)		
				7 LT.	1 LT.
	STEEL			(13)	(184)
				10 RT.	233 RT.
STA. 1421+98.75 AHEAD LT. END EXIST. ABUTMENT	STEEL	(139)	(1)		
	CONC.	139	1		
BACK LT.	STEEL	(279)	(60)		
	CONC.	248	73		
LT.	STEEL			(171)	(37)
	CONC.			152	45
STA. 1421+82.25 AHEAD LT.	STEEL	(279)	(60)		
	CONC.	248	73		
STA. 1421+82.25 BACK LT.		30	262		
	STEEL			49 LT.	221 LT.
STA. 2421+62.25 AHEAD RT.	STEEL	(10)	(219)		
	CONC.	5	288		
STA. 1421+57.25 AHEAD LT.		75	215		
SHEET TOTAL	STEEL	(240)	(443)		
	CONC.	218	500		

CALCULATED SAM
CHECKED PS

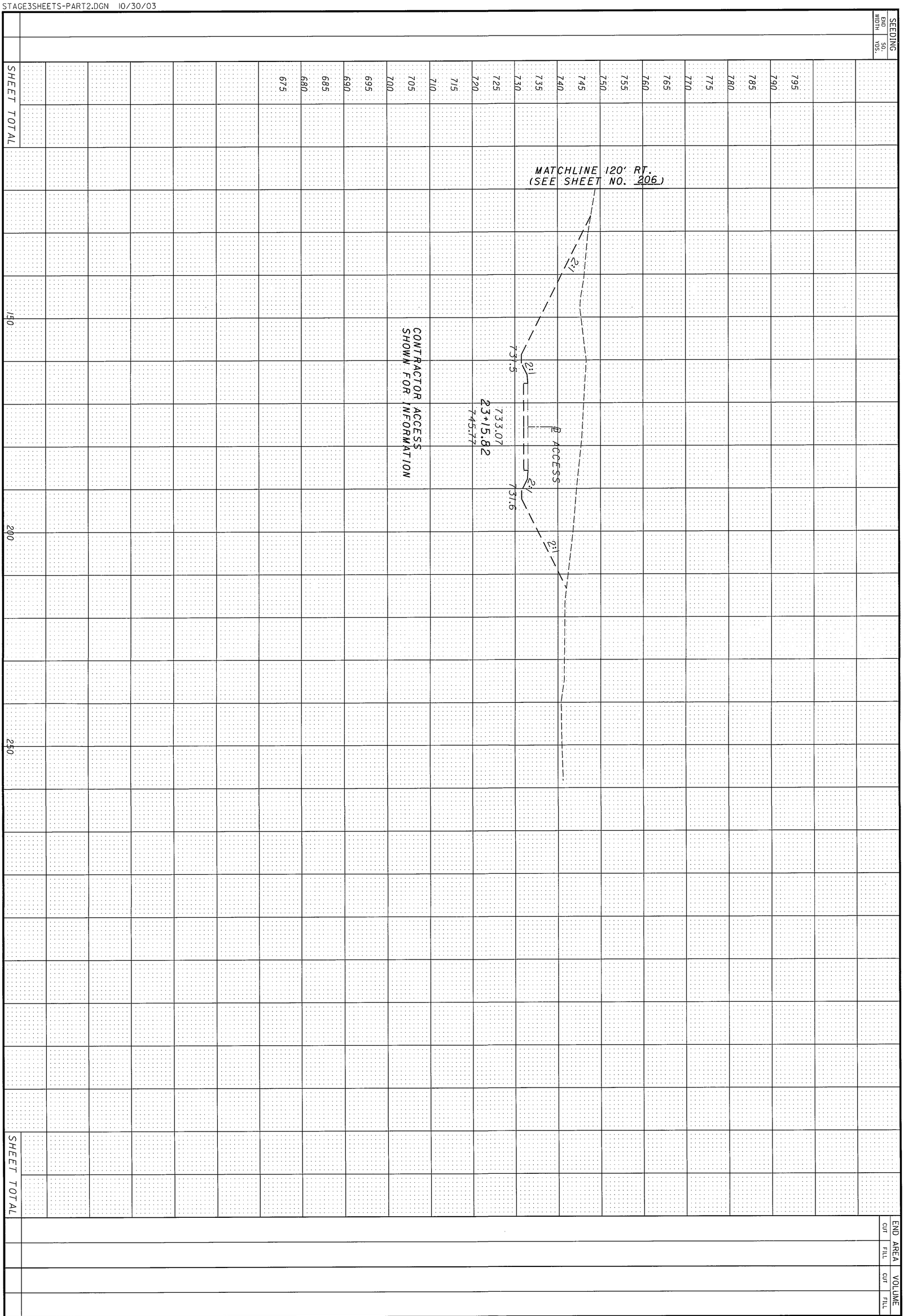
CROSS SECTIONS
STA. 1421+82.25 SB LANES TO STA. 422+00

SUM-271-8.02

206
612

STAGE3SHEETS.DGN 10/30/03

STAGE3SHEETS-PART2.DGN 10/30/03



END AREA: CUT | FILL
VOLUME: CUT | FILL

207
612

SUM-271-8.02

CROSS SECTIONS
STA. 422+00 RT.

CALCULATED SAM
CHECKED PS

SEEDING	
END WIDTH	SQ. YDS.
126	
	242
55	
32	
484	SHEET TOTAL

℄ R/W & SURVEY I.R.271

STEEL STRUCTURE
℄ PIER IL
STA. 423+39.00

STEEL STRUCTURE
℄ PIER IR
STA. 423+07.00

(2-DT) STA. 423+19.25, 61.44' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
FOR DETAILS SEE
SHEET NO. 301

EX. R/W

735.5

2:1

719.5

MATCHLINE 120' RT.
(SEE SHEET NO. 209)

(2-DT) STA. 423+19.25, 10.56' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
FOR DETAILS SEE
SHEET NO. 301

(2-DT) STA. 423+19.25, 16.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
FOR DETAILS SEE
SHEET NO. 301

STA. 423+00.00

423+00.00 STEEL
738.95

LEGEND
GRADING LIMITS (CONCRETE)
GRADING LIMITS (STEEL)

(4-DC) STA. 423+20.00, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
FOR DETAILS SEE
SHEET NO. 305

(3-DC) STA. 422+94.75, 10.67' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
FOR DETAILS SEE
SHEET NO. 305

CONCRETE STRUCTURE
℄ PIER IL
STA. 422+90.00

(3-DC) STA. 422+94.75, 47.75' RT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
FOR DETAILS SEE
SHEET NO. 305

(3-DC) STA. 422+94.75, 61.33' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
FOR DETAILS SEE
SHEET NO. 305

EX. R/W

2:1

719.5

MATCHLINE 120' RT.
(SEE SHEET NO. 209)

423+00.00 CONCRETE
738.95

GRADING LAYOUT

422+50.00	STEEL	89.00L	54.00L	11.63L	4.50L	0	21.57R	52.12R	61.45R	83.10R		
		759.91	758.85	755.25	754	752.96	748	743.5	744	742		
	CONCRETE	89.00L	54.00L	38.83L	23.83L	15.40L	5.06L	0	14.60R	21.58R	51.94R	68.88R	83.10R
		759.91	761	760	758	756	754	752.87	749.59	748	742.7	744	742
423+00.00	STEEL	163.17L	149.44L										
		740	746.31										
	CONCRETE	163.17L	149.44L	72.18L	35.38L	8.13L	0	16.83R	37.00R				
		740	746.31	744	742	740	739.35	738	736.2				

MATCH LINE
SEE SLOPE REPAIR CROSS SECTIONS

(2-DC) STA. 422+84.08, 53.33' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 305

(2-DC) STA. 422+84.08, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
FOR DETAILS SEE
SHEET NO. 305

(2-DC) STA. 422+84.08, 2.67' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 305

CONCRETE STRUCTURE
℄ PIER IR
STA. 422+82.00

EX. R/W

743.5
742.7

MATCHLINE 120' RT.
(SEE SHEET NO. 209)

SLOPE REPAIR GRADING
SEE SHEET 292-299

STA. 422+00.00

422+50.00
751.06

STA. 422+00.00

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
(56)	(371)		
8	474		
		(176)	(413)
		61	528
(134)	(75)		
57	96		
		(261)	(112)
		189	131
(147)	(45)		
147	45		
(437)	(525)		
250	659		

CALCULATED SAM
CHECKED PS

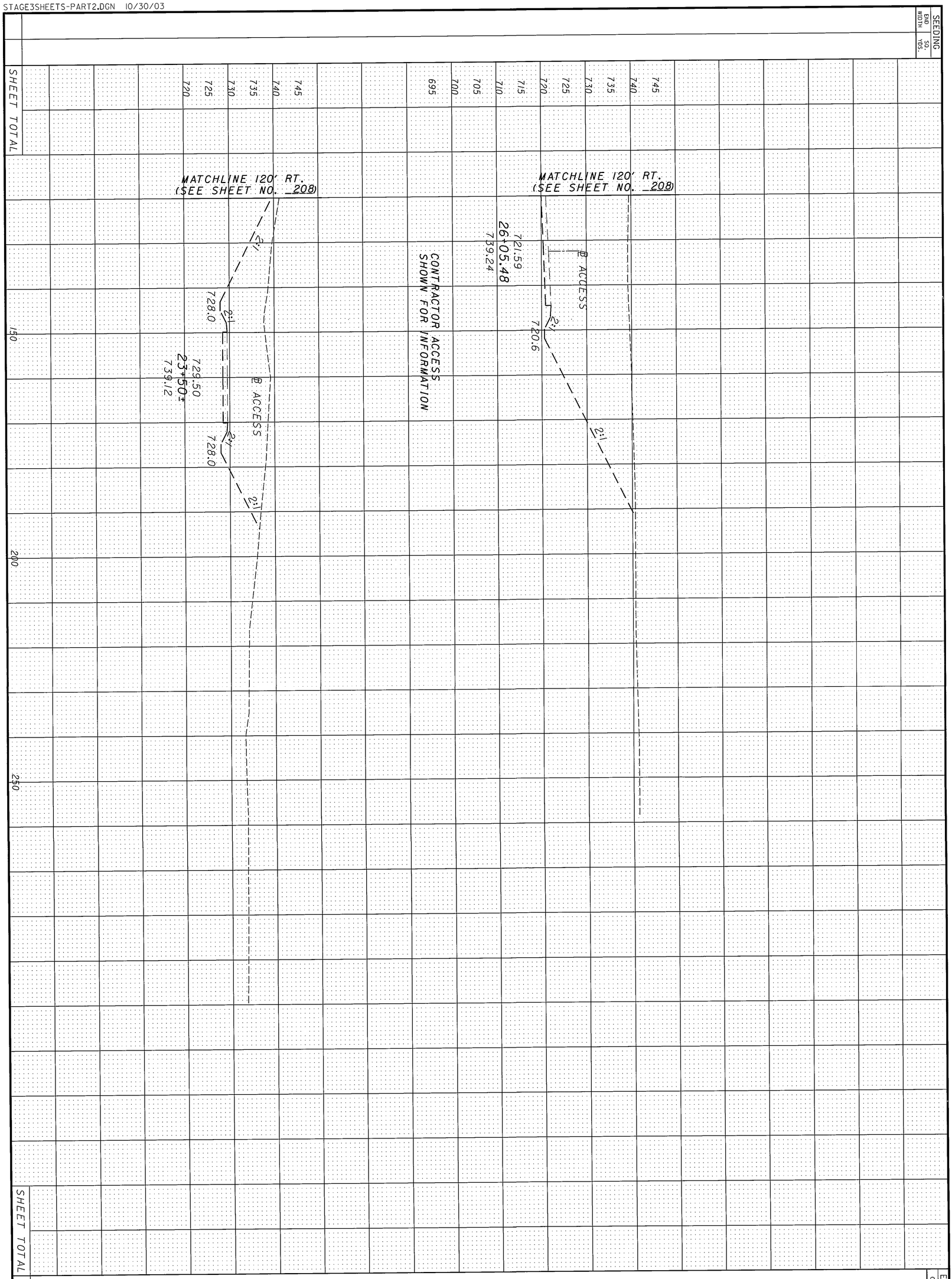
CROSS SECTIONS
STA. 422+50 TO STA. 423+00

SUM-271-8.02

208
612

STAGE3SHEETS.DGN 10/30/03

STAGE3SHEETS-PART2.DGN 10/30/03



209
612

SUM-271-8.02

CROSS SECTIONS
STA. 422+50 TO STA. 423+00 RT.

CALCULATED SAM
CHECKED PS

SEEDING END WIDTH	SEEDING SQ. YDS.	
159	254	STA. 424+00.00
175		AHEAD
50		STA. 423+84 BACK
		END CRUSHED AGGREGATE
		SLOPE PROTECTION
50	23	STA. 423+50.00
126	489	STA. 423+00.00
	766	SHEET TOTAL

STA. 424+00.00, 16.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
FOR DETAILS SEE
SHEET NO. 301

℄ R/W & SURVEY I.R.271

EX. R/W

4-DT

STA. 424+00.00, 53.44' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
FOR DETAILS SEE
SHEET NO. 301

L 7.5:1

2:1

699.0

℄ ACCESS

2:1

703.6

STA. 424+00.00, 2.56' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
FOR DETAILS SEE
SHEET NO. 301

702.79
26+05.48
719.33

424+00.00 STEEL
720.29

STA. 424+05.92, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
FOR DETAILS SEE
SHEET NO. 305

6-DC

STA. 424+05.92, 10.67' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 305

STA. 424+05.92, 61.33' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 305

CONCRETE STRUCTURE
℄ PIER 2L
STA. 424+32.50

CONCRETE STRUCTURE
℄ PIER 2R
STA. 424+00.00

EX. R/W

℄ ACCESS

2:1

703.6

702.79
26+05.48
719.33

424+00.00 CONCRETE
720.29

LEGEND

GRADING LIMITS (CONCRETE)

GRADING LIMITS (STEEL)

GRADING LAYOUT

423+50.00	STEEL	15.00L	5.73L	0	0.61R	15.44R	24.00R	30.00R	36.00R	60.00R	85.00R			
		726.5	728	728	728	728	727.5	728	729	730	735.55			
	CONCRETE	84.56L	70.00L	56.61L	50.27L	36.00L	17.00L	15.00L	0	24.12R	36.00R	60.00R	85.00R	
		731.46	728.8	730	730	725.8	726.5	726.5	727.08	728	729	730	735.73	

424+00.00	STEEL	73.20L	56.61L	50.27L	37.44L	25.44L	16.00L	7.00L	5.73L	0	0.61R	38.00R	63.00R	80.83R
		714.12	712.5	712.5	714	715	718	720	719	719	719	720	722	724.1
	CONCRETE	73.49L	59.76L	35.15L	13.40L	0	42.26R	64.89R	80.83R					
		714.15	714	716	718	718.48	720	722	724.1					

EX. R/W

3-DT

STA. 423+51.25, 53.44' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
FOR DETAILS SEE
SHEET NO. 301

728.8

STA. 423+51.25, 16.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
FOR DETAILS SEE
SHEET NO. 301

727.5

STA. 423+51.25, 2.56' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
FOR DETAILS SEE
SHEET NO. 301

℄ ACCESS

2:1

711.8

713.82
25+00±
736.05

712.8

MATCHLINE 120' RT.
(SEE SHEET NO. 212)

423+50.00 STEEL
729.02

5-DC

STA. 423+44.00, 53.33' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5/W B GRATE
FOR DETAILS SEE
SHEET NO. 305

STA. 423+44.00, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
FOR DETAILS SEE
SHEET NO. 305

STA. 423+44.00, 2.67' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
FOR DETAILS SEE
SHEET NO. 305

423+50.00 CONCRETE
729.02

STA. 423+00.00

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL	
				STEEL
(277)	(14)			STEEL
				CONC.
227	11			CONC.
		(435)	(29)	STEEL
		398	23	CONC.
(192)	(17)			STEEL
202	13			CONC.
(56)	(371)			STEEL
8	474			CONC.
(665)	(389)			STEEL
593	474			CONC.

SHEET TOTAL

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 423+50 TO STA. 424+00

SUM-271-8.02

210
612

STAGE3SHEETS.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.
168	
	94
168	
	1052
	917
171	
159	
	2063

STA. 425+10.85 SKEW 13°03'56" R.F.
SUSPEND SEEDING

℄ R/W & SURVEY I.R.271

STA. 425+10.85 SKEW 13°03'56" R.F.
SUSPEND EARTHWORK

6-DT STA. 425+05.08, 16.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
FOR DETAILS SEE
SHEET NO. 302

STEEL STRUCTURE
℄ PIER 2L
STA. 425+11.00

6-DT STA. 425+00.00, 4.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
FOR DETAILS SEE
SHEET NO. 302

TOP OF DIKE

2:1 2:1

689.0

MATCHLINE 120' RT. (SEE SHEET NO. 212)

6-DT STA. 425+05.08, 53.44' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 302

6-DT STA. 425+05.08, 2.56' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 302

CUT 256 S.F. x COS. 13°03'56" = 249 BK.

FILL 32 S.F. x COS. 13°03'56" = 31 BK.

STA. 425+05.85
172 x COS. 13°03'56" R.F. = 168

425+05.85 STEEL
691.37 SKEW 13° 03' 56" R.F.

9-DC STA. 425+11.58, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
FOR DETAILS SEE
SHEET NO. 306

9-DC STA. 425+11.58, 10.67' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 306

9-DC STA. 425+11.58, 61.33' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 306

MATCHLINE 120' RT. (SEE SHEET NO. 212)

425+05.85 CONCRETE
691.37 SKEW 13° 03' 56" R.F.

LEGEND
GRADING LIMITS (CONCRETE)
GRADING LIMITS (STEEL)

GRADING LAYOUT

424+50.00													
	STEEL	87.00L	84.47L	81.44L	78.79L	63.24L	39.12L	11.57L	0	3.36R	11.69R	31.34R	60.52R	77.77R
		702.7	702	700	699	700	702	704	705.16	705.5	704.5	706	708	709.16
	CONCRETE	81.40L	63.20L											
		700	700											
425+05.85	STEEL	83.50L	73.52L	0	2.35R	30.85R	67.73R	84.21R						
		690.2	689	688.03	688	690	689	690						

STA. 424+88.92, 10.56' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 302

5-DT

EX. R/W

STEEL STRUCTURE
℄ PIER 2R
STA. 424+83.00

704.5

EX. R/W

5-DT STA. 424+88.92, 61.44' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 302

5-DT STA. 424+88.92, 16.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
FOR DETAILS SEE
SHEET NO. 302

424+50.00 STEEL
706.11

STA. 424+50.00

7-DC STA. 424+26.08, 53.33' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 306

7-DC STA. 424+26.08, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
FOR DETAILS SEE
SHEET NO. 306

7-DC STA. 424+26.08, 2.57' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 306

EX. R/W

EX. R/W

STA. 424+00.00

424+50.00 CONCRETE
706.11

SHEET TOTAL

100 50 0 50 100

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL	
0	0			
		24	3	STEEL
(249)	(31)			
249	31			CONC.
		(485)	(36)	STEEL
		475	38	CONC.
(219)	(3)			STEEL
210	5			CONC.
		(460)	(16)	STEEL
		405	15	CONC.
(277)	(14)			STEEL
227	11			CONC.
STEEL		(969)	(55)	
CONC.		904	56	

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 424+50 TO STA. 425+05.85

SUM-271-8.02

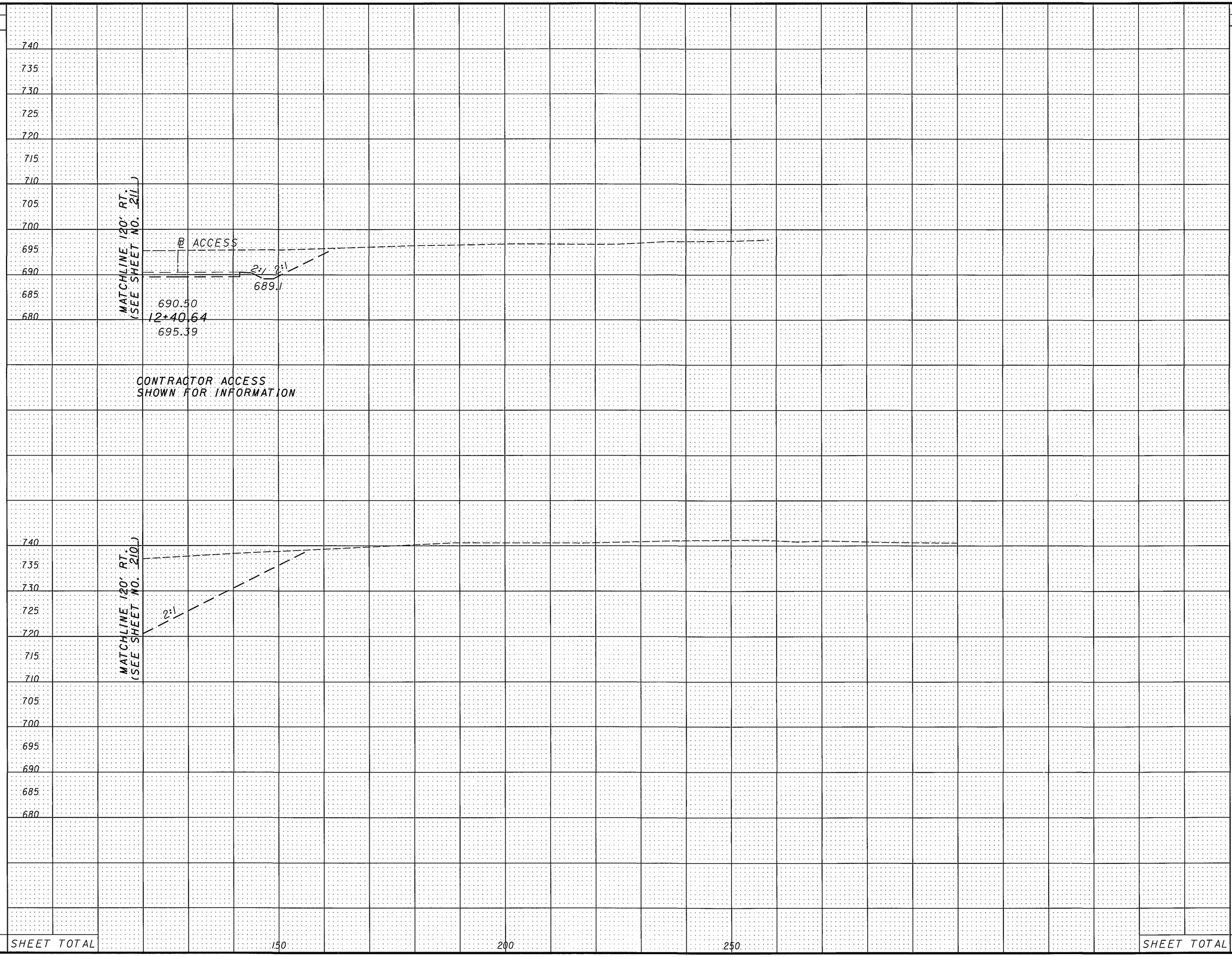
211
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS



SHEET TOTAL

SHEET TOTAL

CROSS SECTIONS
STA. 423+50.00 TO STA. 425+05.85 RT.

SUM-271-8.02

212
612

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
119	
311	
4	
311	SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
206	0		
		202	0
34	0		
		202	0

℄ R/W & SURVEY I.R. 271

735 730 725 720 715 710 705 700 695 690 685 680 675 670

(10-DC)
STA. 425+81.42, 53.33' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 306

(10-DC)
STA. 425+81.42, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H.
FOR DETAILS SEE
SHEET NO. 306

(10-DC)
STA. 425+81.42, 2.67' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 306

16.25'
℄ CONST.
DETENTION BASIN ACCESS DRIVE

EX. R/W

EX. R/W

681.0

682.63

681.0

0+54.51 ℄ DETENTION BASIN ACCESS DRIVE

683.50

426+00.00

683.84

MATCHLINE 120' PT.
(SEE SHEET NO. 214)

STA. 425+54.58 SKEW 13°03'56" R.F.
RESUME SEEDING

STA. 425+54.585 SKEW 13°03'56" R.F.
RESUME EARTHWORK
BEGIN DETENTION BASIN ACCESS DR.

LEGEND

——— GRADING LIMITS (CONCRETE)

– – – – GRADING LIMITS (STEEL)

GRADING LAYOUT

426+00.00	BOTH	65.00L	40.00L	25.75L	23.75L	23.75L	8.75L	8.75L	6.75L	0	24.00R	64.00R
		683.43	681	682.69	682.77	681.94	682.49	681.65	682.41	682.1	681	684.22

100 50 0 50 100

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 426+00

SUM-271-8.02

213
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS

750
745
740
735
730
725
720
715
710
705
700
695
690
685
680
675
670

MATCHLINE 120' RT.
(SEE SHEET NO. 2/3)

B ACCESS

2:1 2:1

686.7

688.35
13+47.12
688.46

CONTRACTOR ACCESS
SHOWN FOR INFORMATION

SHEET TOTAL

150 200 250

SHEET TOTAL

CROSS SECTIONS
STA. 426+00 RT.

SUM-271-8.02

214
612

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
146	
	792
139	
	717
119	
	1509

END AREA		VOLUME	
CUT	FILL	CUT	FILL
1	243		
		272	260
292	37		
		462	35
206	0		
		734	295

CALCULATED SAM

CHECKED PS

CROSS SECTIONS STA. 426+50 TO STA. 427+00

SUM-271-8.02

215/612

℄ R/W & SURVEY I.R.271

16.25'

℄ CONST. DETENTION BASIN ACCESS DRIVE

EX. R/W

2:1

MATCHLINE 120' RT. (SEE SHEET NO. 216)

671.0 674.19 671.0 672.0

1+54.51 ℄ DETENTION BASIN ACCESS DRIVE

670.65

427+00.00

670.85

GRADING LAYOUT

426+50.00	BOTH	80.00L	66.00L	56.00L	40.00L	25.75L	23.75L	23.75L	8.75L	8.75L	6.75L	0	24.00R	48.10R	52.00R	54.00R	69.16R	
		675.6	678	678	676	678.47	678.55	677.72	678.27	677.43	678.19	677.71	676	678.19	677.8	678	683.05	
427+00.00	BOTH	85.95L	78.00L	70.00L	60.00L	50.00L	40.00L	26.00L	24.00L	24.00L	9.00L	9.00L	7.00L	0	24.00R	40.00R	45.00R	70.00R
		669.35	672	673	673	672	671	674.25	674.33	673.5	674.05	673.21	673.97	673.3	671	672.33	672	673.77

STEEL STRUCTURE ℄ PIER 3L STA. 426+83.00

STEEL STRUCTURE ℄ PIER 3R STA. 426+59.00

676.0 676.0 677.8

678.41

1+04.51 ℄ DETENTION BASIN ACCESS DRIVE

678.74

426+50.00 STEEL

679.66

STA. 426+50.00

CONCRETE STRUCTURE ℄ PIER 4L STA. 426+85.00

CONCRETE STRUCTURE ℄ PIER 4R STA. 426+57.00

676.0 676.0 677.8

678.41

1+04.51 ℄ DETENTION BASIN ACCESS DRIVE

678.74

426+50.00 CONCRETE

679.66

STA. 426+00.00

LEGEND

GRADING LIMITS (CONCRETE)

GRADING LIMITS (STEEL)

100 50 0 50 100

SHEET TOTAL

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS

705
700
695
690
685
680
675
670
665

MATCHLINE 120' RT. (SEE SHEET NO. 2/1)

℄ ACCESS

2:1

672.83
14+98.55
671.42

CONTRACTOR ACCESS SHOWN FOR INFORMATION

MATCHLINE 120' RT. (SEE SHEET NO. 2/5)

℄ ACCESS

2:1 2:1 2:1 2:1

676.3 676.6

677.84
14+48.32
680.69

MATCHLINE 120' RT. (SEE SHEET NO. 2/5)

℄ ACCESS

2:1 2:1 2:1 2:1

681.3 682.3

683.15
14+00±
684.15

SHEET TOTAL

150 200 250

SHEET TOTAL

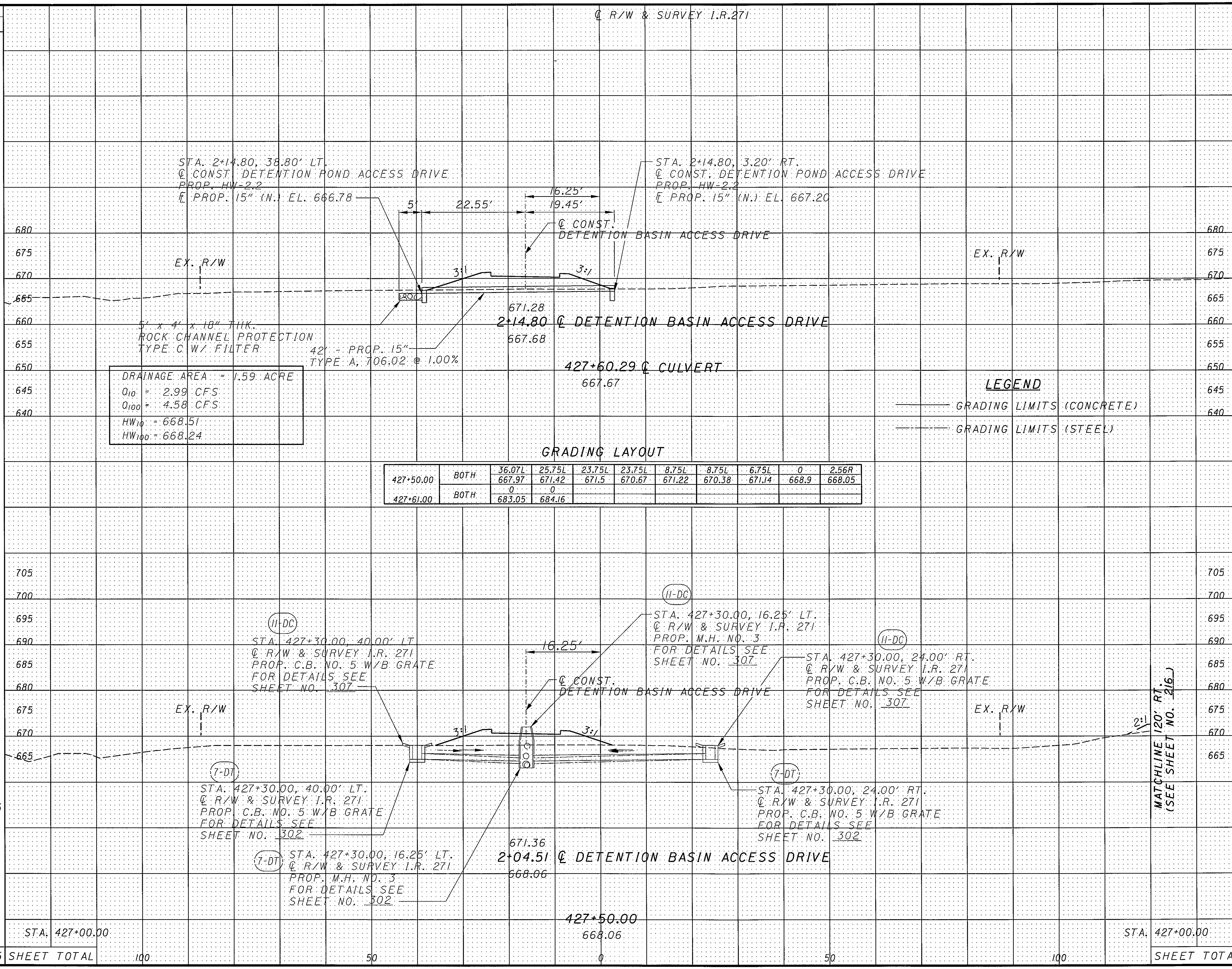
CROSS SECTIONS
STA. 426+50 TO STA. 427+50 RT.

SUM-271-8.02

216
612

STAGE3SHEETS-PART2.DGN 10/30/03

CROSS SECTIONS
STA. 427+50 TO STA. 427+61



GRADING LAYOUT

427+50.00	BOTH	36.07L / 667.97	25.75L / 671.42	23.75L / 671.5	23.75L / 670.67	8.75L / 671.22	8.75L / 670.38	6.75L / 671.14	0 / 668.9	2.56R / 668.05
427+61.00	BOTH	0 / 683.05	0 / 684.16							

SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
25		427+61	0	83		
	475				1	302
146		STA. 427+00.00	1	243		
	475	SHEET TOTAL			1	302

CALCULATED SAM
CHECKED PS

SUM-271-8.02

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
121	
	392
	20
	125
25	
	517

℄ R/W & SURVEY I.R.271

STEEL STRUCTURE
℄ PIER 4L
STA. 428+52.00

℄ CONST.
DETENTION BASIN ACCESS DRIVE

16.25'

EX. R/W

3:1

665.7

665.5

666.0

4:1

EX. R/W

2:1

MATCHLINE 120' RT.
(SEE SHEET NO. 219)

670.30
3+04.51 ℄ DETENTION BASIN ACCESS DRIVE
668.93

428+50.00 STEEL
665.62

STA. 427+50.00

STA. 427+50.00

GRADING LAYOUT

428+00.00	BOTH	31.58L	25.75L	23.75L	23.75L	8.75L	8.75L	6.75L	1.38L									
		669.39	671.34	671.42	670.59	671.14	670.3	671.06	669.28									
428+50.00	BOTH	66.12L	61.00L	51.13L	41.20L	40.00L	25.75L	23.75L	23.75L	8.75L	8.75L	6.75L	0	24.00R	47.00R	51.00R	56.00R	69.50R
		664.29	666	666.4	666	665.7	670.36	670.44	669.61	670.16	669.32	670.08	669.07	665.5	666.71	666	666.71	663.34

℄ CONST.
DETENTION BASIN ACCESS DRIVE

CONCRETE STRUCTURE
℄ PIER 5L
STA. 428+70.00

16.25'

CONCRETE STRUCTURE
℄ PIER 5R
STA. 428+42.00

EX. R/W

3:1

665.7

665.5

666.0

4:1

EX. R/W

2:1

MATCHLINE 120' RT.
(SEE SHEET NO. 219)

670.30
3+04.51 ℄ DETENTION BASIN ACCESS DRIVE
668.93

428+50.00 CONCRETE
665.62

VALLEY RAILWAY

STEEL STRUCTURE
℄ PIER 4R
STA. 428+26.00

16.25'

℄ CONST.
DETENTION BASIN ACCESS DRIVE

EX. R/W

3:1

3:1

8:1

EX. R/W

MATCHLINE 120' RT.
(SEE SHEET NO. 219)

671.28
2+54.51 ℄ DETENTION BASIN ACCESS DRIVE
669.32

428+00.00
669.27

STA. 428+00.30, 116.17' LT.
EX. 4' x 14' BOX CULVERT
℄ OUTLET (W.) EL. 663.56

STA. 427+73.48, 118.75' LT.
EX. 4' x 14' BOX CULVERT
℄ INLET (E.) EL. 663.96

STA. 427+50.00

STA. 427+50.00

LEGEND

GRADING LIMITS (CONCRETE)

GRADING LIMITS (STEEL)

END AREA		VOLUME	
CUT	FILL	CUT	FILL
0	278		
		0	291
0	36		
		0	111
0	83		
		0	402

SHEET TOTAL

100 50 0 50 100

CALCULATED SAM
CHECKED PS

CROSS SECTIONS STA. 428+00 TO STA. 428+50

SUM-271-8.02

218
612

STAGE3SHEETS.DGN 10/30/03

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING
END WIDTH
SQ. YDS.

SHEET TOTAL

655 660 665 670 675 680 685 690 695 700 705 710

MATCHLINE 120' RT.
(SEE SHEET NO. 218)

671.05
15+48.77
670.03

℄ ACCESS

2:1

CONTRACTOR ACCESS SHOWN FOR INFORMATION

MATCHLINE 120' RT.
(SEE SHEET NO. 218)

668.14
15+98.77
660.77

℄ ACCESS

2:1

150

200

250

SHEET TOTAL

END AREA
CUT
FILL

VOLUME
CUT
FILL

219
612

SUM-271-8.02

CROSS SECTIONS
STA. 428+00 TO STA. 428+50 RT.

CALCULATED SAM
CHECKED PS

SEEDING	
END WIDTH	SQ. YDS.
125	
121	
	684

℄ R/W & SURVEY I.R.271

GRADING LAYOUT

		68.76L	54.00L	44.00L	40.00L	25.75L	23.75L	23.75L	8.75L	8.75L	6.75L	0	24.00R	34.00R	39.00R	57.00R	70.14R
429+00.00	BOTH	663.29	665.5	665.5	664.5	667.41	667.49	666.66	667.21	666.37	667.13	666.55	664.5	665	664.2	664.5	661.21

715 / 710 / 705 / 700 / 695 / 690 / 685 / 680 / 675 / 670 / 665 / 660 / 655 / 650

16.25'

℄ CONST. DETENTION BASIN ACCESS DRIVE

EX. R/W

664.5

667.35

3+54.51 ℄ DETENTION BASIN ACCESS DRIVE

664.27

429+00.00

664.50

664.5

664.2

4:1

2:1

EX. R/W

MATCHLINE 120' RT. (SEE SHEET NO. 22)

100 50 0 50 100

STA. 428+50.00

SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
0	259		
		0	498
0	278		
		0	498

CALCULATED SAM
CHECKED PS

CROSS SECTIONS STA. 429+00

SUM-271-8.02

220
612

STAGE3SHEETS.DGN 10/30/03

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING
END WIDTH
SQ. YDS.

SHEET TOTAL

650 655 660 665 670 675 680 685 690 695

MATCHLINE 120' RT.
(SEE SHEET NO. 220)

665.87
16+48.77
659.06

2:1

℄ ACCESS

150

CONTRACTOR ACCESS
SHOWN FOR INFORMATION

200

MATCHLINE 120' RT.
(SEE SHEET NO. 222)

662.70
16+98.77
662.13

2:1

661.4

℄ ACCESS

250

SHEET TOTAL

END AREA
CUT
FILL

VOLUME
CUT
FILL

221
612

SUM-271-8.02

CROSS SECTIONS
STA. 429+00 TO STA. 429+50 RT.

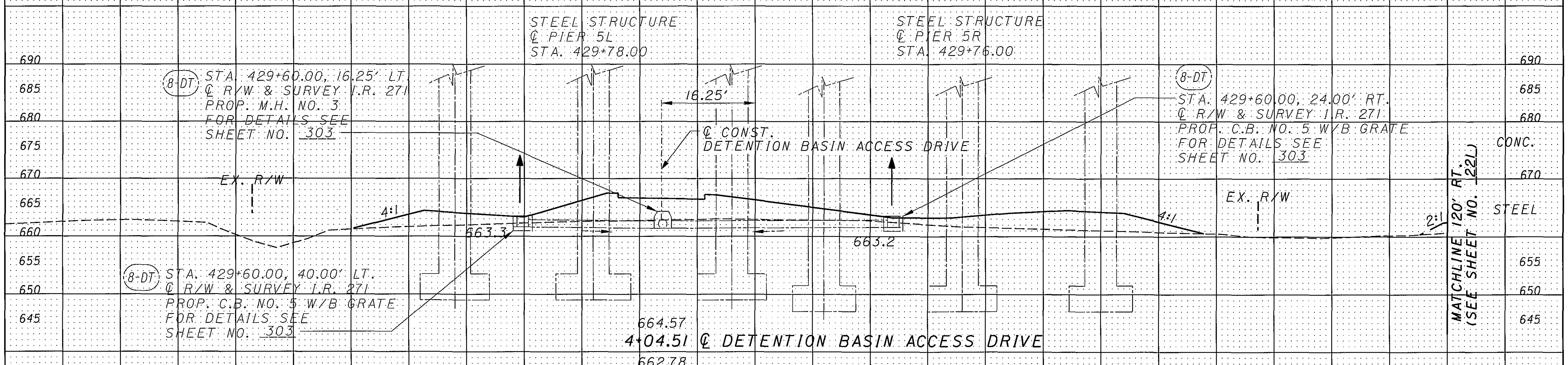
CALCULATED SAM
CHECKED PS

CALCULATED	CHECKED
SAM	PS

CROSS SECTIONS STA. 429+50

SUM-271-8.02

℄ R/W & SURVEY I.R.271



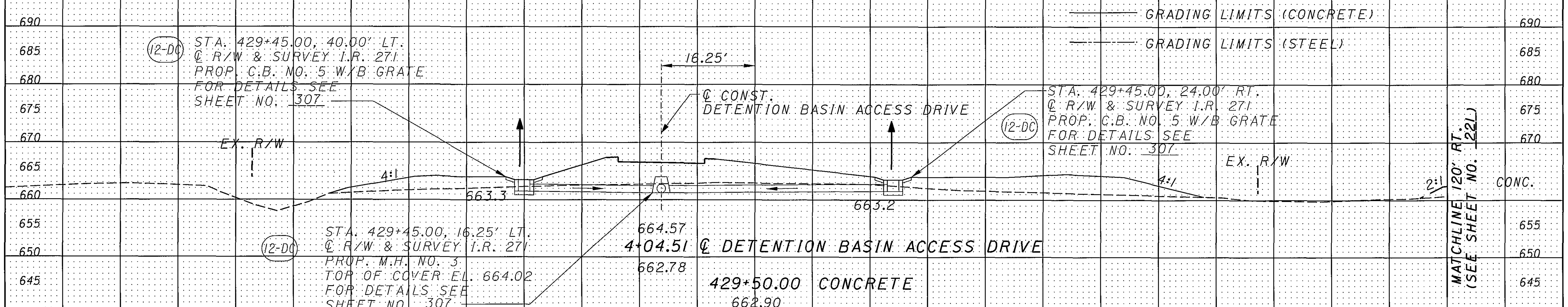
GRADING LAYOUT

Station	Type																								
429+50.00	STEEL	70.20L	57.38L	40.00L	25.75L	23.75L	23.75L	8.75L	8.75L	6.75L	0	24.00R	34.00R	44.00R	54.00R	64.00R	77.82R								
		661.2	664.41	663.3	667.41	667.49	666.66	667.21	666.37	667.13	666.27	663.2	663.2	664	664.5	664	660.54								
	CONCRETE	73.88L	70.61L	59.08L	55.09L	51.11L	43.17L	41.67L	38.33L	36.83L	25.75L	23.75L	23.75L	8.75L	8.75L	6.75L	0	20.83R	22.33R	25.67R	27.17R	44.00R	54.00R	64.00R	77.82R
		661.01	662	664	664.2	664	664	663.5	663.5	664	667.41	667.49	666.66	667.21	666.37	667.13	666.36	664	663.5	663.5	664	664	664.5	664	660.54

LEGEND

GRADING LIMITS (CONCRETE)

GRADING LIMITS (STEEL)



100 50 0 50 100

SEEDING

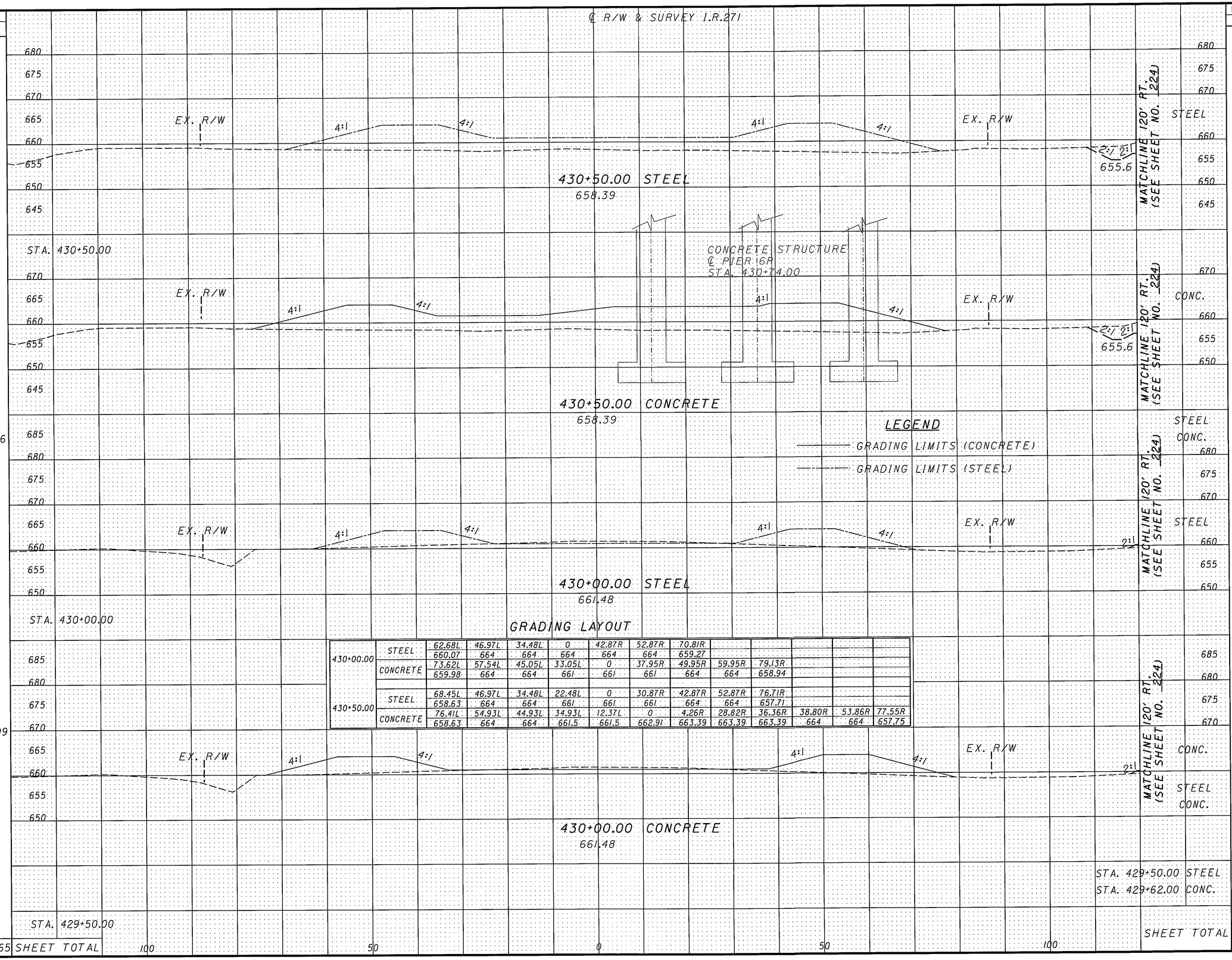
Station	END WIDTH	SQ. YDS.
STA. 429+50.00	138	
		731
STA. 429+00.00	125	
SHEET TOTAL		731

EARTHWORK

Station / Item	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
STA. 429+62.00 CONC.	0	256		
CONC.			0	140
STA. 429+50.00 STEEL	(0)	(350)		
STA. 429+50.00 CONC.	0	374		
STEEL			(0)	(564)
CONC.			0	587
STA. 429+00.00	0	259		
SHEET TOTAL STEEL			(0)	(564)
SHEET TOTAL CONC.			0	727

STAGE3SHEETS.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.
155	856
153	809
138	1665



430+00.00	STEEL	62.68L	46.97L	34.48L	0	42.87R	52.87R	70.81R				
		660.07	664	664	664	664	664	659.27				
	CONCRETE	73.62L	57.54L	45.05L	33.05L	0	37.95R	49.95R	59.95R	79.13R		
		659.98	664	664	661	661	661	664	664	658.94		
430+50.00	STEEL	68.45L	46.97L	34.48L	22.48L	0	30.87R	42.87R	52.87R	76.71R		
		658.63	664	664	661	661	661	664	664	657.71		
	CONCRETE	76.41L	54.93L	44.93L	34.93L	12.37L	0	4.26R	28.82R	36.36R	38.80R	53.86R	77.55R
		658.63	664	664	661.5	661.5	662.91	663.39	663.39	663.39	664	664	657.75

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
(0)	(527)		
0	657		
		(0)	(828)
		15	803
(0)	(367)		
16	210		
		(0)	(664)
		12	328
(0)	(350)		
0	256		
(0)	(1492)		
27	1131		

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 430+00 TO STA. 430+50

SUM-271-8.02

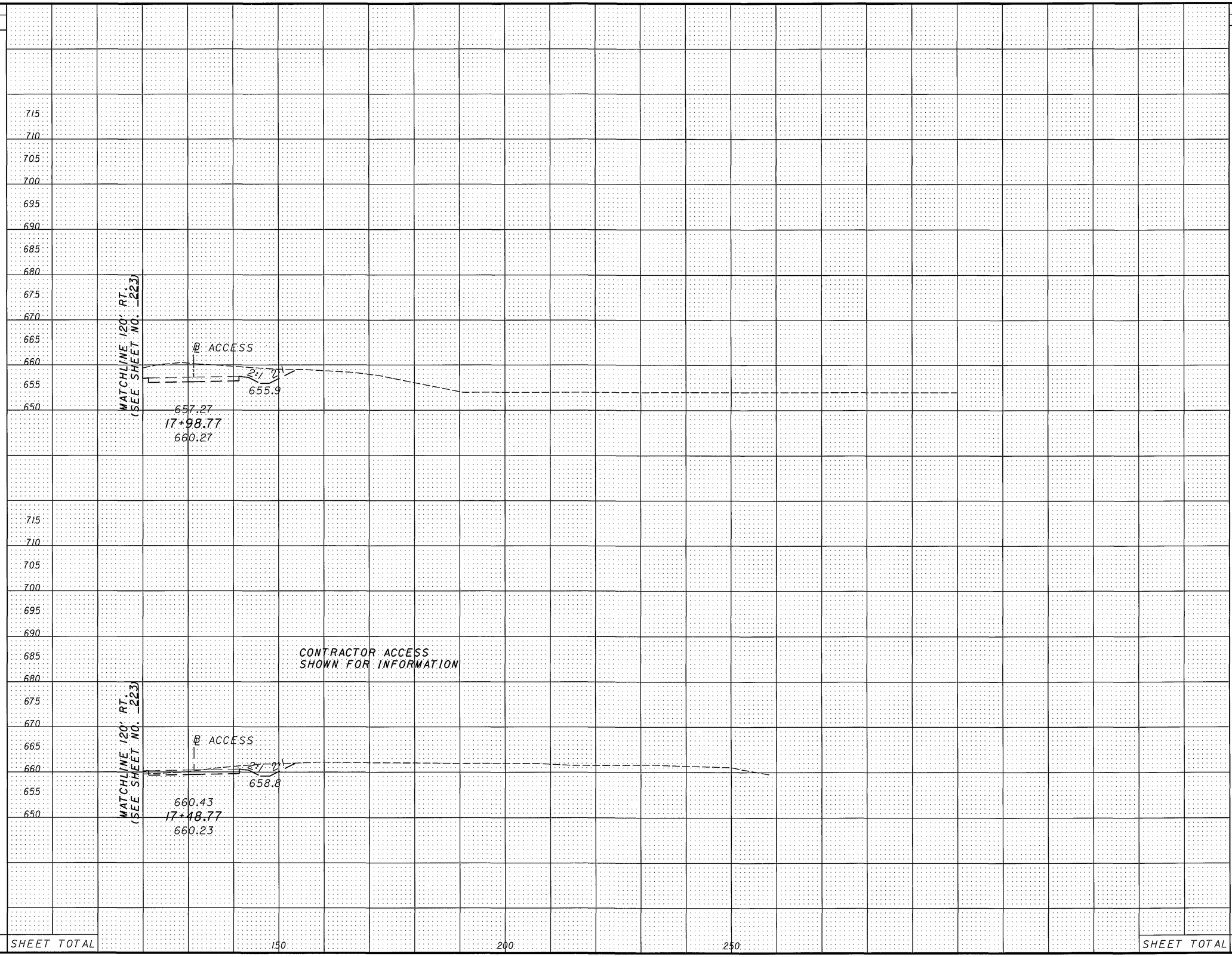
223
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS



CROSS SECTIONS
STA. 430+00 TO STA. 430+50 RT.

SUM-271-8.02

224
612

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
0	
	273
98	
	703
155	
	976

℄ R/W & SURVEY I.R.271

STA. 431+50.00
SUSPEND SEEDING

STA. 431+50.00
SUSPEND EARTHWORK

STEEL STRUCTURE
℄ PIER 6R
STA. 431+26.00

EX. R/W

4:1

4:1

4:1

4:1

EX. R/W

MATCHLINE 120' RT.
(SEE SHEET NO. 226)

431+00.00 STEEL
655.03

GRADING LAYOUT

431+00.00		73.67L	46.97L	34.48L	22.48L	0	30.87R	42.87R	52.87R	85.10R
	STEEL	657.32	664	664	661	661	661	664	664	655.5
	CONCRETE	71.20L	39.93L	9.71L	0	20.05R				
		657.25	663.51	663.51	660.73	654.99				

CONCRETE STRUCTURE
℄ PIER 6R
STA. 430+74.00

EX. R/W

EX. R/W

MATCHLINE 120' RT.
(SEE SHEET NO. 226)

431+00.00 CONCRETE
655.03

STA. 430+50.00

STA. 430+00.00

STA. 430+50.00

LEGEND

GRADING LIMITS (CONCRETE)

GRADING LIMITS (STEEL)

END AREA		VOLUME	
CUT	FILL	CUT	FILL
(0)	(0)		
0	0		
		(0)	(827)
		0	435
		(0)	(893)
0	469		
		(0)	(1315)
		0	1043
(0)	(527)		
0	657		
STEEL		(0)	(2142)
CONC.		0	1478

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 431+00

SUM-271-8.02

225
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CONTRACTOR ACCESS
SHOWN FOR INFORMATION

695
690
685
680
675
670
665
660
655
650
645

MATCHLINE 120' RT.
(SEE SHEET NO. 225)

℄ ACCESS

655.37
18+50.00
655.39

SHEET TOTAL

150 200 250

SHEET TOTAL

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 431+00 RT.

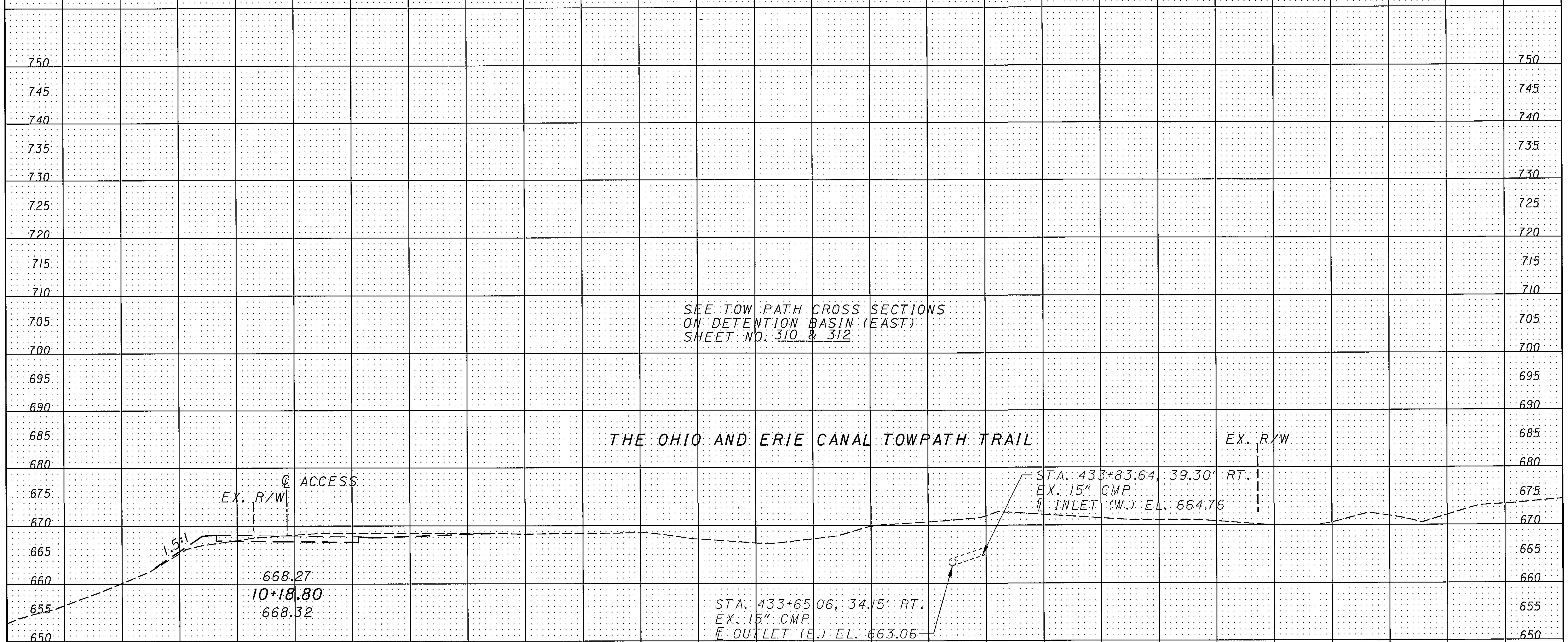
SUM-271-8.02

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING		END AREA		VOLUME	
END WIDTH	SQ. YDS.	CUT	FILL	CUT	FILL
	534			139	22
	534 SHEET TOTAL			139	22

CALCULATED SAM CHECKED PS

℄ R/W & SURVEY I.R.271

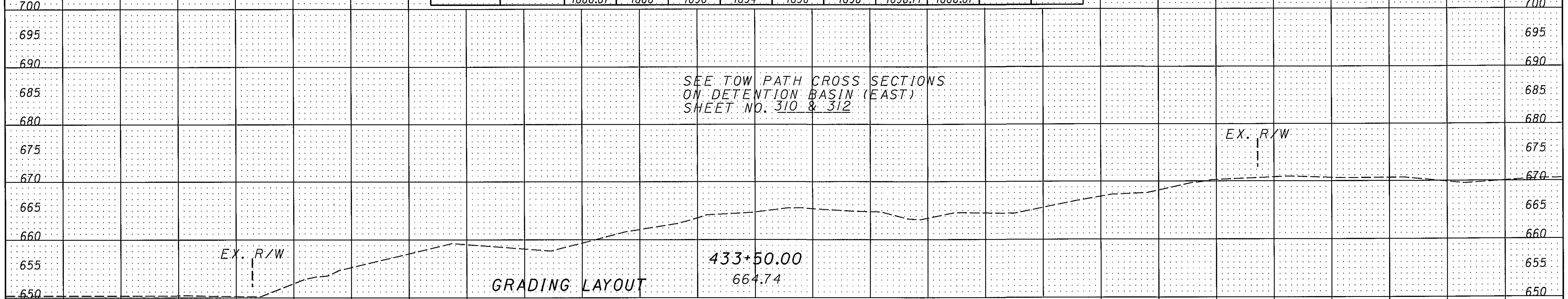


QUANTITIES FROM TOW PATH CROSS SECTIONS SHEET NO. 310 & 312

QUANTITIES FROM TOW PATH CROSS SECTIONS SHEET NO. 310 & 312

GRADING LAYOUT

434+00.00	STEEL	89.77L	74.60L	63.55L	37.41L	23.30L	15.47L	0	11.81R	28.74R	66.54R
		1684	1686	1688	1692	1694	1696	1698	1700	1701.02	1704.02
	CONCRETE	74.23L	64.14L	56.59L	23.93L	15.17L	6.44L	0	0		
		1686.07	1688	1690	1694	1696	1698	1698.71	1688.01		



GRADING LAYOUT

432+00.00	STEEL	73.67L	46.97L	34.48L	22.48L	0	30.87R	42.87R	52.87R	85.10R
		157.32	164	164	161	161	161	164	164	155.5
	CONCRETE	71.20L	39.93L	9.71L	0	20.05R				
		157.25	163.51	163.51	160.73	154.99				

100 50 0 50 100

CROSS SECTIONS
STA. 433+50 TO STA. 434+00

SUM-271-8.02

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM

CHECKED PS

705
700
695
690
685
680
675
670
665
660
655

B ACCESS

2:1

674.70
672.9

11+32.96
677.85

MATCHLINE 110' LT. 229
(SEE SHEET NO.)

CONTRACTOR ACCESS
SHOWN FOR INFORMATION

SHEET TOTAL

300 250 200 150

SHEET TOTAL

CROSS SECTIONS
STA. 435+00 LT.

SUM-271-8.02

228
612

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

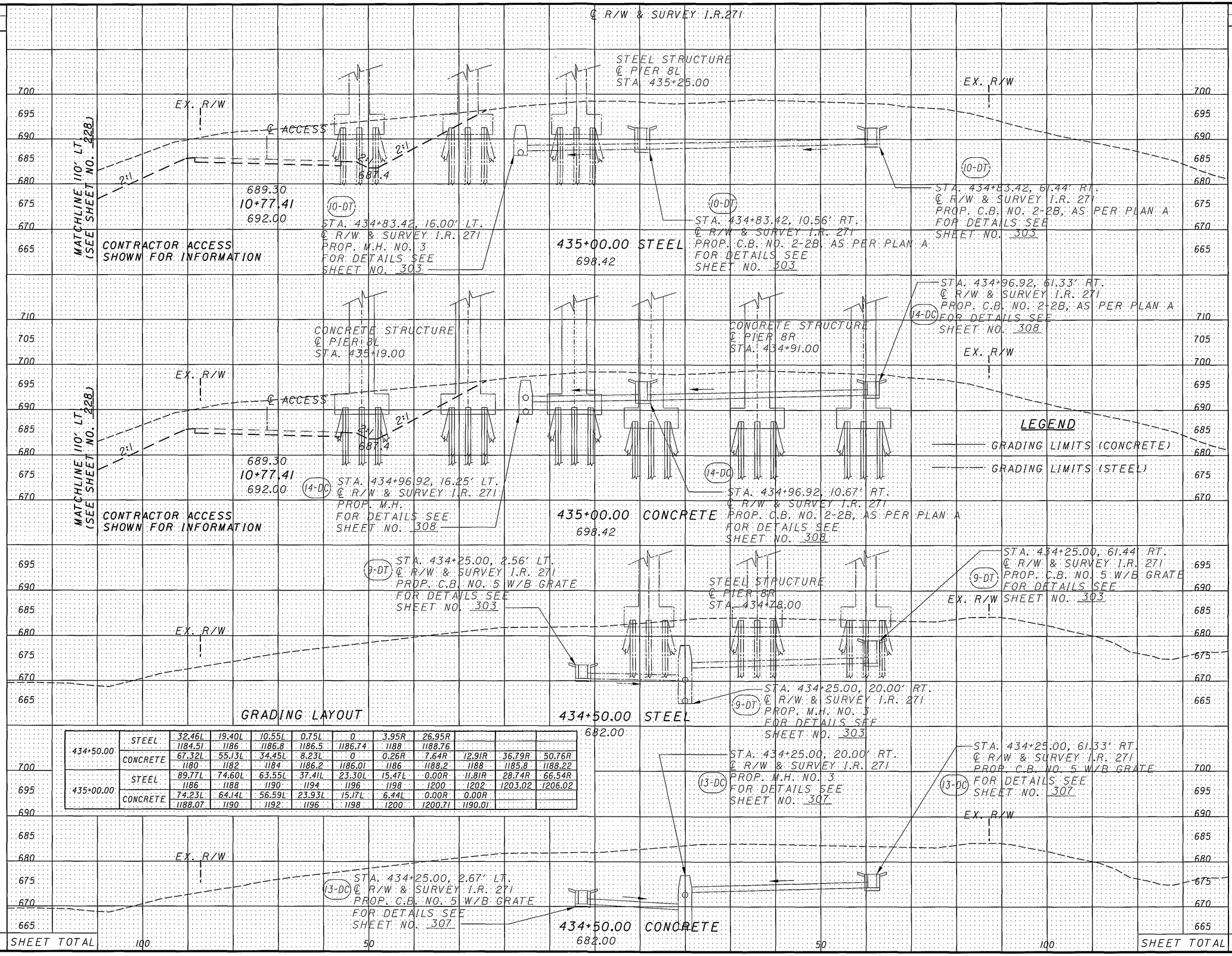
END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM

CHECKED PS

CROSS SECTIONS STA. 434+50 TO STA. 435+00

SUM-271-8.02



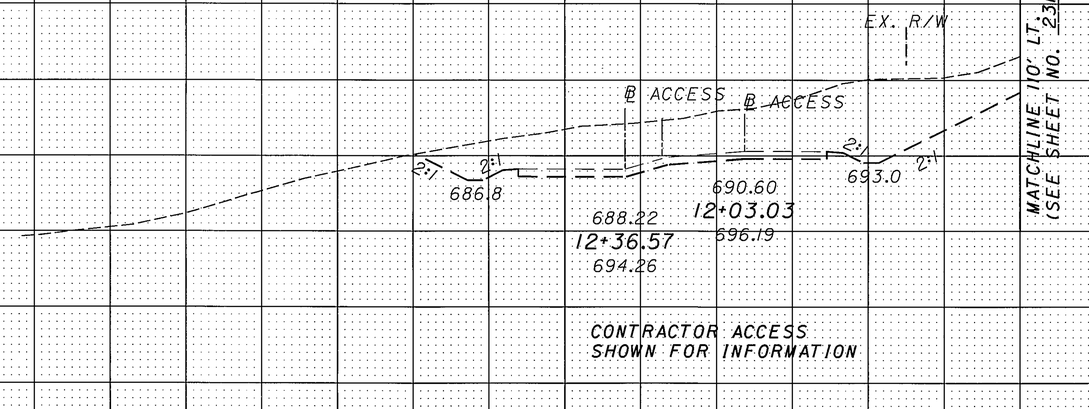
434+50.00	STEEL	32.46L	19.40L	10.55L	0.75L	0	3.95R	26.95R			
		1184.51	1186	1186.8	1186.5	1186.74	1188	1188.76			
	CONCRETE	67.32L	55.13L	34.45L	8.23L	0	0.26R	7.64R	12.91R	36.79R	50.76R
		1180	1182	1184	1186.2	1186.01	1186	1188.2	1188	1185.8	1188.22
435+00.00	STEEL	89.77L	74.60L	63.55L	37.41L	23.30L	15.47L	0.00R	11.81R	28.74R	66.54R
		1186	1188	1190	1194	1196	1198	1200	1202	1203.02	1206.02
	CONCRETE	74.23L	64.14L	56.59L	23.93L	15.17L	6.44L	0.00R	0.00R		
		1188.07	1190	1192	1196	1198	1200	1200.71	1190.01		

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS



SHEET TOTAL

SHEET TOTAL

CROSS SECTIONS
STA. 436+00 LT.

SUM-271-8.02

230
612

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.
0	
18	
	78
10	
20	
0	
	98

SHEET TOTAL

STA. 435+50.00
RT.
LT.

STA. 435+15.00
RESUME SEEDING

STA. 435+08.00 BEGIN CRUSHED AGGREGATE SLOPE PROTECTION

MATCHLINE 110' LT. (SEE SHEET NO. 230)

MATCHLINE 110' LT. (SEE SHEET NO. 230)

℄ R/W & SURVEY I.R.271

EX. R/W

EX. R/W

EX. R/W

CONTRACTOR ACCESS SHOWN FOR INFORMATION

CONTRACTOR ACCESS SHOWN FOR INFORMATION

436+00.00 STEEL
720.34

CONCRETE 436+00.00
720.34

435+50.00 STEEL
712.52

435+50.00 CONCRETE
712.52

(16-DC) STA. 435+88.75, 53.33' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
FOR DETAILS SEE
SHEET NO. 308

CONCRETE STRUCTURE
℄ PIER 9L
STA. 436+01.50

(16-DC) STA. 435+88.75, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H.
FOR DETAILS SEE
SHEET NO. 308

STA. 435+95.08, 2.67' LT.
℄ R/W & SURVEY I.R. 271
(16-DC) PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 308

(11-DT) STA. 435+30.42, 16.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
FOR DETAILS SEE
SHEET NO. 303

(11-DT) STA. 435+30.42, 53.44' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 303

(11-DT) STA. 435+30.42, 2.56' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 303

(15-DC) STA. 435+24.92, 53.33' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 308

(15-DC) STA. 435+24.92, 2.67' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
FOR DETAILS SEE
SHEET NO. 308

(15-DC) STA. 435+24.92, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
FOR DETAILS SEE
SHEET NO. 308

STA. 435+15.00
RESUME GRADING

GRADING LAYOUT

435+50.00	STEEL	32.46L	19.40L	10.55L	0.75L	0	3.95R	26.95R			
		708.51	710	710.8	710.5	710.74	712	712.76			
	CONCRETE	67.32L	55.13L	34.45L	8.23L	0	0.26R	7.64R	12.91R	36.79R	50.76R
		704	706	708	710.2	710.01	710	712.2	712	709.8	712.22
436+00.00	STEEL	89.77L	74.60L	63.55L	37.41L	23.30L	15.47L	0	11.81R	28.74R	66.54R
		708	710	712	716	718	720	722	724	725.02	728.02
	CONCRETE	74.23L	64.14L	56.59L	23.93L	15.17L	6.44L	0	0		
		710.07	712	714	718	720	722	722.71	712.01		

LEGEND

GRADING LIMITS (CONCRETE)

GRADING LIMITS (STEEL)

END AREA	CUT	FILL	VOLUME	CUT	FILL
STA. 436+05.86 AHEAD RT.	STEEL	(747)	(22)		
	CONC.	639	37		
STA. 436+05.86 BACK RT. END EXIST. ABUTMENT	STEEL	(130)	(24)		
	CONC.	174	24		
	STEEL			(29)	(5)
	CONC.			38	6
AHEAD RT.	STEEL	(130)	(20)		
AHEAD LT.	STEEL	(0)	(70)		
BACK	STEEL	(130)	(88)		
AHEAD RT.	CONC.	174	24		
AHEAD LT.	CONC.	0	94		
BACK	CONC.	174	118		
	STEEL			(152)	(82)
	CONC.			274	114
	STEEL	(34)	(0)		
	CONC.	121	5		
	STEEL			(23)	(0)
	CONC.			79	4
STA. 435+15.00 RESUME GRADING	STEEL	(0)	(0)		
	CONC.	0	0		
SHEET TOTAL	STEEL	(204)	(87)		
	CONC.	391	124		

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 435+50 TO STA. 436+00

SUM-271-8.02

231
612

STAGE3SHEETS.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.
27	
73	
0	
139	
	139

STA. 2436+47.75 RT.

STA. 2436+47.75 AHEAD RT.

STA. 2436+47.75 BACK RT.

STA. 2436+22.75 AHEAD RT.

STA. 2436+22.75 BACK RT.

SHEET TOTAL

℄ R/W & SURVEY I.R.271

MATCH LINE

1436+47.75 ON STRUCTURE
738.01 (SOUTHBOUND)

436+47.75

2436+47.75 END APPROACH SLAB
737.72 732.53 (NORTHBOUND)

2:1 (SEE GRADING PLAN)

1436+22.75 ON STRUCTURE
738.78 (SOUTHBOUND)

436+22.75

2436+22.75 BEGIN APPROACH SLAB
738.46 731.90 (NORTHBOUND)

AHEAD

BACK

750 745 740 735 730 725 720 715 710 705

0 50 100

GRADING LAYOUT

436+22.75	STEEL	0	81.23R	107.27R
		727.3	727.3	726.21
	CONCRETE	0	81.23R	107.27R
		728.6	728.6	726.21
436+47.75	STEEL	0	81.23R	107.27R
		232.3	232.3	231.21
	CONCRETE	0	81.23R	107.27R
		233.6	233.6	231.21

LEGEND

CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED

LEGEND

GRADING LIMITS (CONCRETE)

GRADING LIMITS (STEEL)

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
48	37		
54	138		
48	220		
(747)	(22)		
639	37		
(468)	(14)		
400	24		
(747)	(22)		
639	37		
48	166		
(516)	(180)		
448	190		

CALCULATED SAM

CHECKED PS

CROSS SECTIONS STA. 436+22.75 TO STA. 436+47.75

SUM-271-8.02

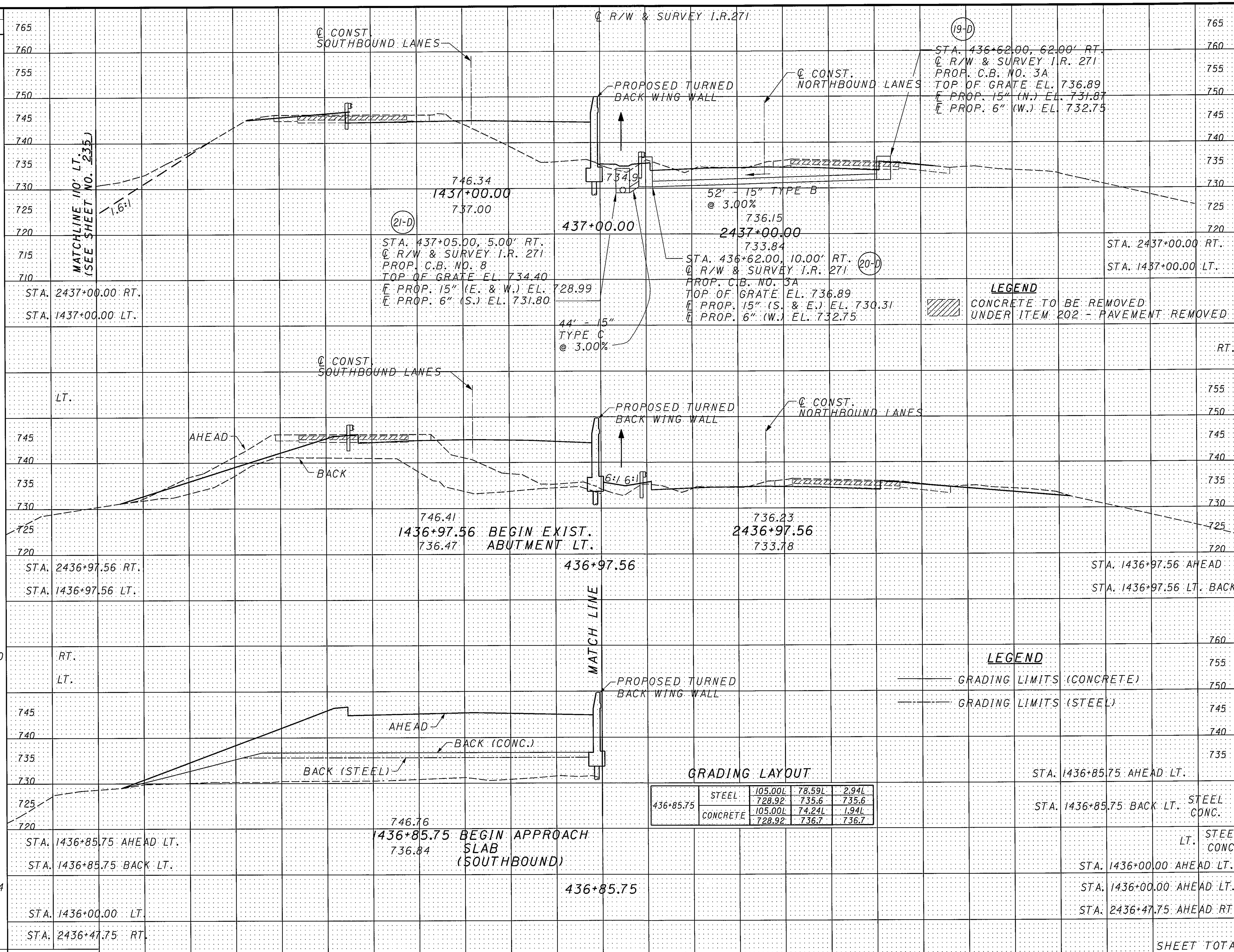
232
612

STAGE3SHEETS.DGN 10/30/03

CROSS SECTIONS STA. 436+85.75 TO STA. 437+00

SUM-271-8.02

CALCULATED SAM | CHECKED PS



GRADING LAYOUT

436+85.75	STEEL	105.00L 728.92	78.59L 735.6	2.94L 735.6
	CONCRETE	105.00L 728.92	74.24L 736.7	1.94L 736.7

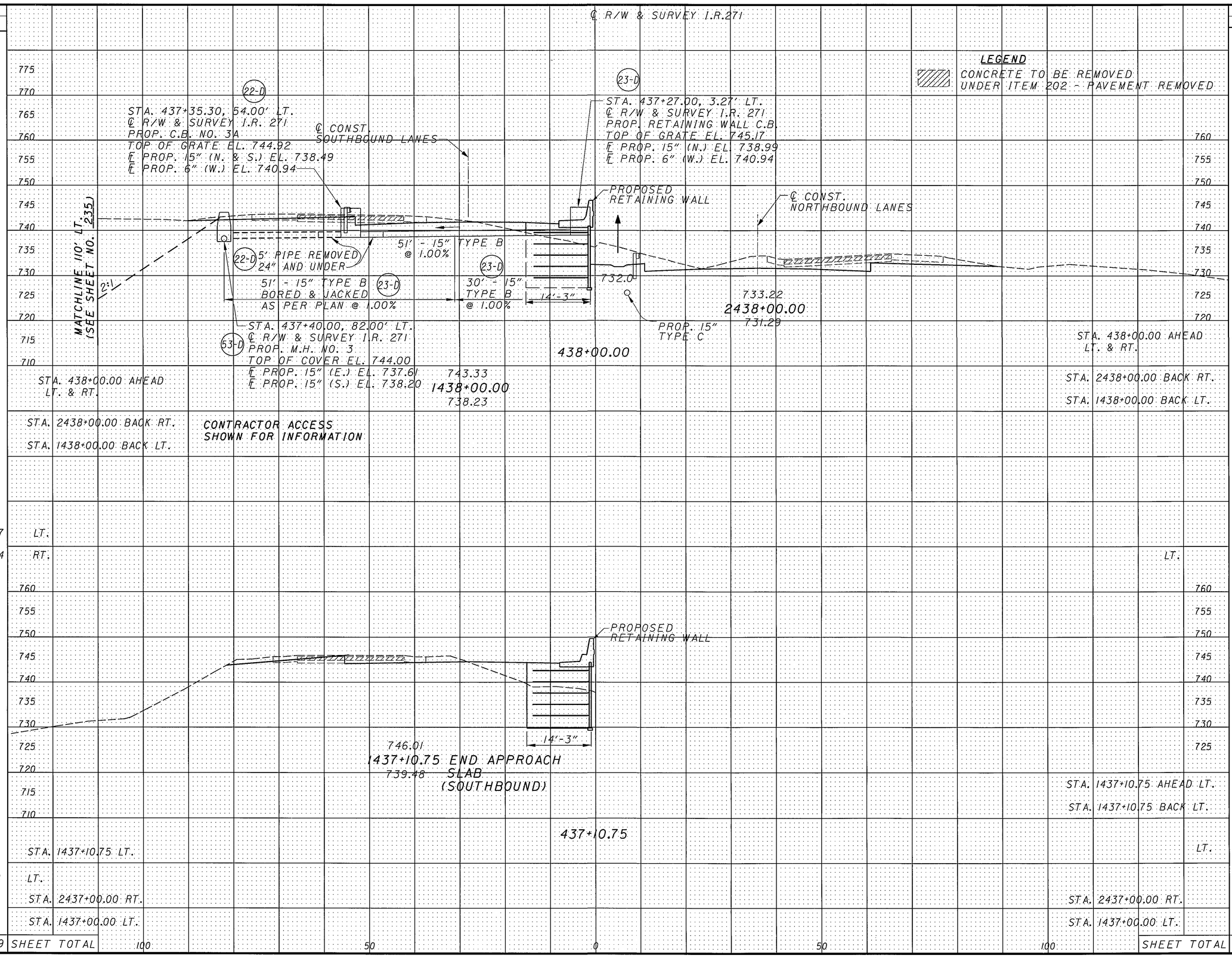
SEEDING

END WIDTH	SQ. YDS.	Station
28		STA. 2437+00.00 RT.
24		STA. 1437+00.00 LT.
	11	LT.
56		STA. 2436+97.56 RT.
56		STA. 1436+97.56 LT.
	230	RT.
	70	LT.
50		STA. 1436+85.75 AHEAD LT.
50		STA. 1436+85.75 BACK LT.
	324	
18		STA. 1436+00.00 LT.
27		STA. 2436+47.75 RT.
	635	SHEET TOTAL

END AREA / VOLUME

Station	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
STA. 2437+00.00 RT.	54	10		
STA. 1437+00.00 LT.	41	176		
			12	20
RT.			99	46
STA. 1436+97.56 AHEAD	170	247		
STA. 1436+97.56 LT. BACK	0	565		
			0	376
STA. 1436+85.75 AHEAD LT.	0	1152		
STA. 1436+85.75 BACK LT. STEEL	(0)	(427)		
CONC.	0	508		
LT. STEEL			(0)	(790)
CONC.			0	956
STA. 1436+00.00 AHEAD LT.	(0)	(70)		
STA. 1436+00.00 AHEAD LT.	0	94		
STA. 2436+47.75 AHEAD RT.	48	37		
SHEET TOTAL STEEL			(111)	(1232)
CONC.			111	1398

STAGE3SHEETS.DGN 10/30/03



SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
85		STA. 438+00.00 AHEAD LT. & RT.	262	14		
41		STA. 2438+00.00 BACK RT.	199	0		
44		STA. 1438+00.00 BACK LT.	63	14		
	357	LT.				
	384	RT.			209	47
		LT.			469	19
		STA. 1437+10.75 AHEAD LT.	63	14		
		STA. 1437+10.75 BACK LT.	57	45		
28		STA. 1437+10.75 LT.			20	44
	48	LT.				
28		STA. 2437+00.00 RT.	54	10		
24		STA. 1437+00.00 LT.	41	176		
	789	SHEET TOTAL			698	110

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 437+10.75 TO STA. 438+00

SUM-271-8.02

234
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 437+10.75 TO STA. 438+00 LT.

SUM-271-8.02

235
612

EX. R/W
2:1
2:1
2:1
2:1
℄ ACCESS
711.4
712.5
712.44
14+07.03
739.31
MATCHLINE 110' LT.
(SEE SHEET NO. 234)
CONTRACTOR ACCESS
SHOWN FOR INFORMATION

760 755 750 745 740 735 730 725 720 715 710 705 700

EX. R/W
1.6:1
2:1
2:1
℄ ACCESS
700.7
701.1
701.57
13+05.39
709.50
MATCHLINE 110' LT.
(SEE SHEET NO. 233)
CONTRACTOR ACCESS
SHOWN FOR INFORMATION

760 755 750 745 740 735 730 725 720 715 710 705 700 695 690

SHEET TOTAL 300 250 200 150 SHEET TOTAL

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
79	
	913
85	
	913

℄ R/W & SURVEY I.R.271

LEGEND

CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED

53-D

STA. 439+00.00, 8.11' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 739.13
℄ PROP. 15" (E. & W.) EL. 732.81

℄ CONST.
SOUTHBOUND LANES

PROPOSED
RETAINING WALL

℄ CONST.
NORTHBOUND LANES

MATCHLINE 110' LT.
(SEE SHEET NO. 237)

1.7:1

723.4

740.33
1439+00.00
734.66

729.2

14'-3"

730.68
2439+00.00
727.43

6-RW0

STA. 439+00.00
℄ R/W & SURVEY I.R. 271
PROP. 6"
RETAINING WALL
UNDERDRAIN OUTLET
STA. 22+00.00 RETAINING
WALL WORKING POINT

439+00.00

54-D

STA. 439+00.00, 5.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 8
TOP OF GRATE EL. 728.70
℄ PROP. 15" (E. & W.) EL. 725.09
℄ PROP. 6" (N.) EL. 724.34

CONTRACTOR ACCESS
SHOWN FOR INFORMATION

755 750 745 740 735 730 725 720 715 710 705 700

100 50 0 50 100

STA. 438+00.00 STA. 438+00.00

SHEET TOTAL SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
173	36		
262	14		
		806	93
		806	93

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 439+00

SUM-271-8.02

236
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM

CHECKED PS

CROSS SECTIONS STA. 439+00 LT.

SUM-271-8.02

755
750
745
740
735
730
725
720
715
710
705
700

2:1
2:1
2:1
722.4
℄ ACCESS
723.39
15+09.36
743.98
MATCHLINE 110' LT. (SEE SHEET NO. 236)

CONTRACTOR ACCESS SHOWN FOR INFORMATION

SHEET TOTAL

300 250 200 150

SHEET TOTAL

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.
	74
	761
	63
	756
	73
	847
	79
	2364

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
263	5		
		853	41
198	17		
		757	86
211	29		
		710	120
173	36		
		2320	247

CALCULATED SAM
CHECKED PS

CROSS SECTIONS STA. 440+00 TO STA. 442+00

SUM-271-8.02

238
612

CONTRACTOR ACCESS SHOWN FOR INFORMATION

℄ CONST. SOUTHBOUND LANES

℄ ACCESS

730.9 729.5

PROP. 15" TYPE C
732.58
18+12.68
731.11

℄ R/W & SURVEY I.R.271

PROPOSED RETAINING WALL

℄ CONST. NORTHBOUND LANES

732.62
1442+00.13
730.54

13'-3"

723.3

PROP. 15" TYPE C
442+00.00

725.84
2442+00.07
724.14

55-D
STA. 441+00.00, 80.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 733.50
℄ PROP. 15" (S. & E.) EL. 726.35
℄ PROP. 15" (W.) EL. 726.81

24-D
STA. 441+00.00, 7.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. RETAINING WALL C.B.
TOP OF GRATE EL. 734.11
℄ PROP. 15" (N.) EL. 728.75
℄ PROP. 6" (N.) EL. 729.65
℄ PROP. 4" (N.) EL. 730.65

LEGEND
CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED

℄ ACCESS

732.8 732.5

734.43
17+12.53
733.53

73' - 15" TYPE B @ 3.29%

734.74
1441+00.01
731.18

13'-3"

725.3

727.00
2441+00.03
724.58

24-D
50' - 15" TYPE B BORED & JACKED AS PER PLAN @ 3.29%

23' - 15" TYPE B @ 3.29%

24-D
441+00.00

21A-D
STA. 440+90.00, 5.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 8
TOP OF GRATE EL. 724.80
℄ PROP. 15" (E. & W.) EL. 720.54
℄ PROP. 6" (N.) EL. 721.79

7-RW0
STA. 440+90.00
℄ R/W & SURVEY I.R. 271
PROP. 6" RETAINING WALL
UNDERDRAIN OUTLET
STA. 23+00.01 RETAINING WALL WORKING POINT

CONTRACTOR ACCESS SHOWN FOR INFORMATION

℄ CONST. SOUTHBOUND LANES

MATCHLINE 110' LT. (SEE SHEET NO. 239)

℄ ACCESS

734.4 733.2

PROP. 15" TYPE C
733.06
16+11.56
738.41

PROPOSED RETAINING WALL

℄ CONST. NORTHBOUND LANES

737.34
1440+00.00
732.72

13'-3"

726.6

728.61
2440+00.00
725.67

440+00.00

PROP. 15" TYPE C

CONTRACTOR ACCESS SHOWN FOR INFORMATION

STA. 439+00.00

2364 SHEET TOTAL

100 50 0 50 100

STA. 439+00.00

SHEET TOTAL

2320 247

STAGE3SHEETS.DGN 10/30/03

STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING: END WIDTH | SQ. YDS.

SHEET TOTAL

300

250

200

150

CONTRACTOR ACCESS SHOWN FOR INFORMATION

2:1

2:1

732.1

MATCHLINE 110' LT.
(SEE SHEET NO. 238)

SHEET TOTAL

695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770

END AREA: CUT | FILL

VOLUME: CUT | FILL

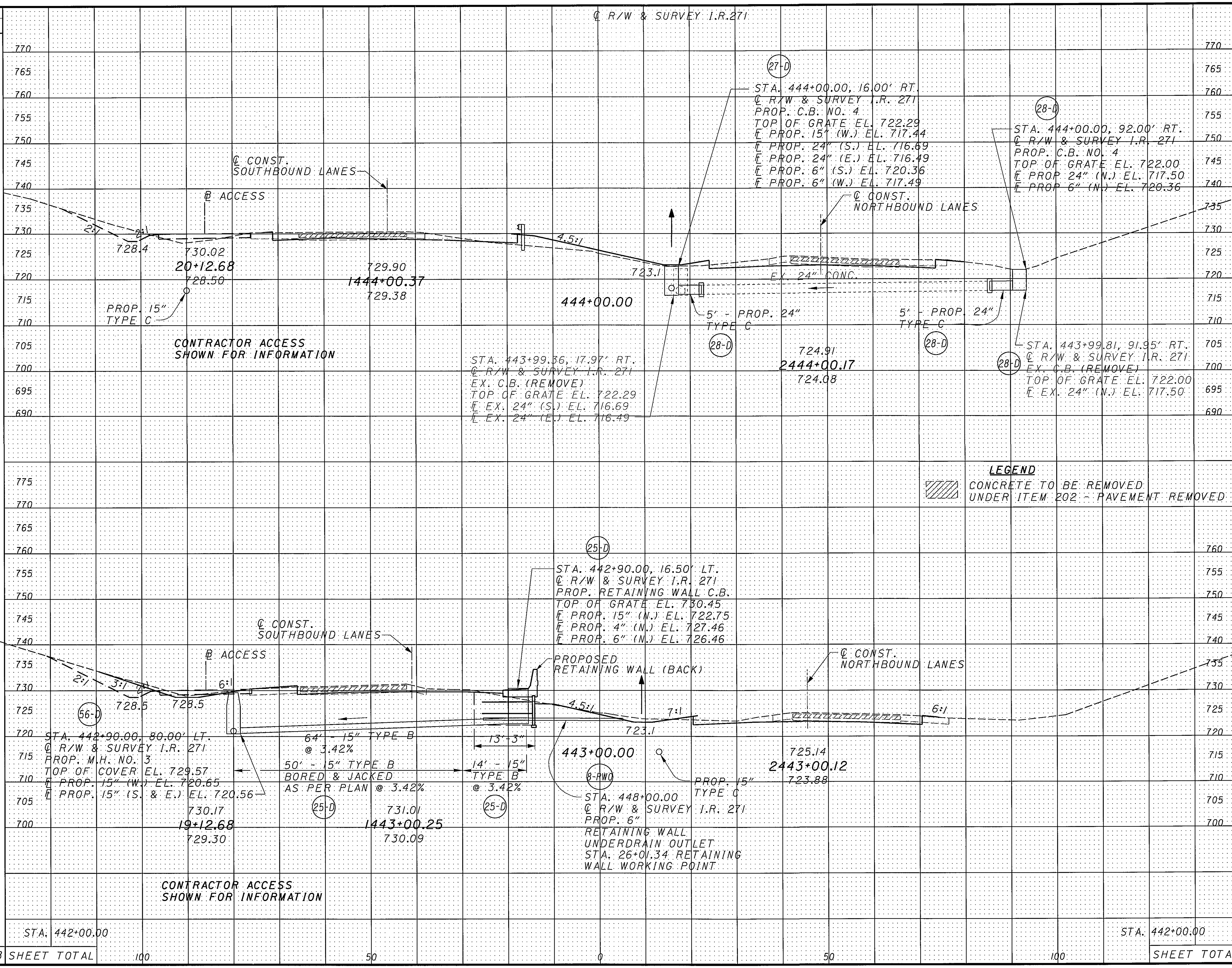
239
612

SUM-271-8.02

CROSS SECTIONS
STA. 440+00 LT. TO STA. 441+00 LT.

CALCULATED: SAM

CHECKED: PS



SEEDING END WIDTH	SEEDING SQ. YDS.
55	
	607
54	
	711
74	
	1318 SHEET TOTAL

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
136	31		
		495	69
131	6		
		730	20
263	5		
SHEET TOTAL		1225	89

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 443+00 TO STA. 444+00

SUM-271-8.02

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
111	
	923
55	
	923

END AREA		VOLUME	
CUT	FILL	CUT	FILL
221	47		
136	31		
		661	145
		661	145

CALCULATED SAM
CHECKED PS

℄ R/W & SURVEY I.R.271

LEGEND

CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED

℄ CONST. SOUTHBOUND LANES

℄ ACCESS

℄ CONST. NORTHBOUND LANES

3:1 2:1 2:1 6:1 6:1 6:1 6:1

726.3 726.8 727.96 21+12.68 727.48 729.28 1445+00.46 728.95 722.98 445+00.00 725.13 2445+00.20 725.11

EX. 24" CONC.

STA. 445+00.00, 100.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5
26-D TOP OF GRATE EL. 726.55
℄ PROP. 15" (E. & W.) EL. 714.23

CONTRACTOR ACCESS SHOWN FOR INFORMATION

780 775 770 765 760 755 750 745 740 735 730 725 720 715 710 705 700 695

100 50 0 50 100

STA. 444+00.00 STA. 444+00.00

SHEET TOTAL SHEET TOTAL

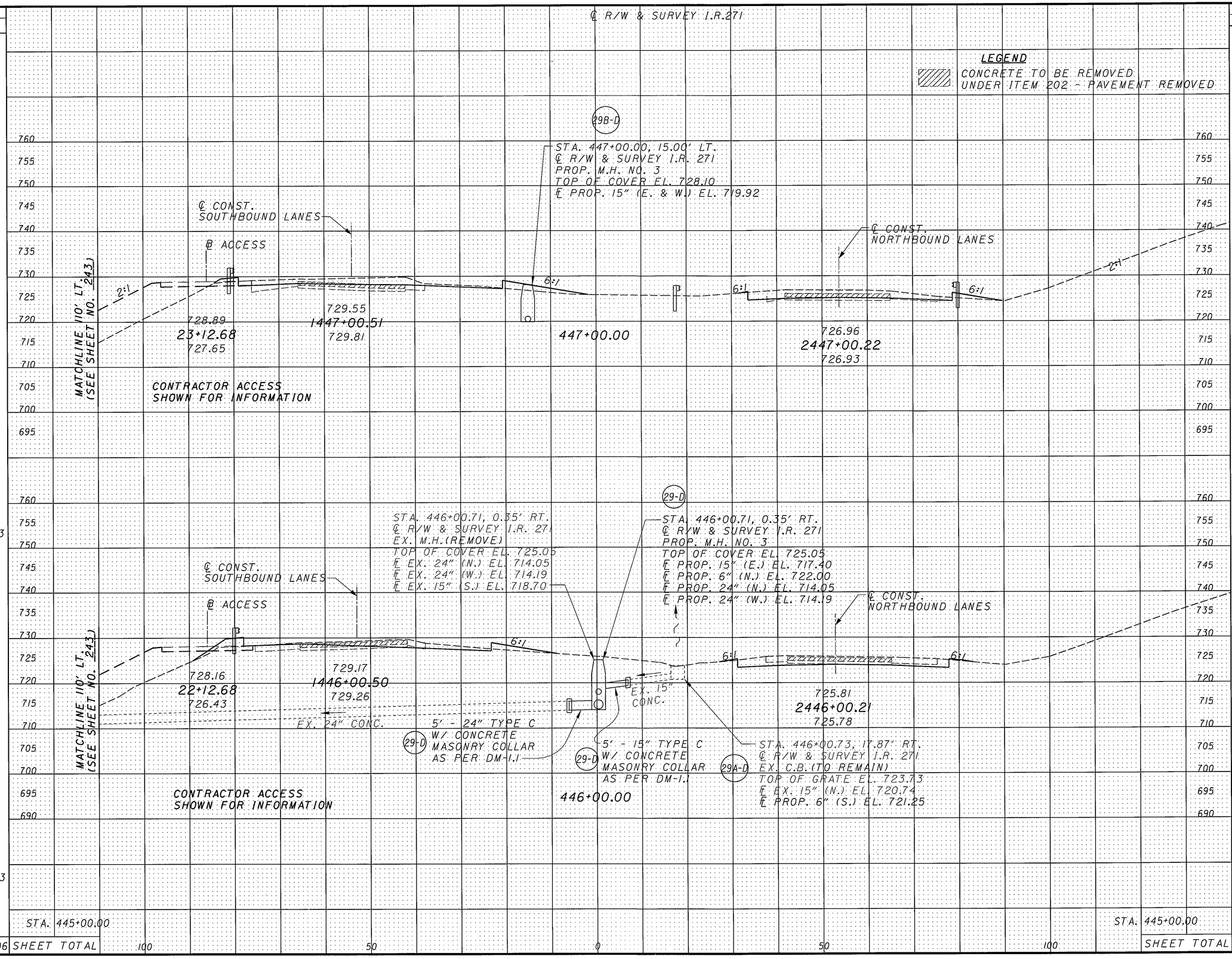
CROSS SECTIONS STA. 445+00

SUM-271-8.02

241
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
	42
	463
	41
	843
	111
	1306



MATCHLINE 110' LT. (SEE SHEET NO. 243)

END AREA		VOLUME	
CUT	FILL	CUT	FILL
124	28		
129	24		
221	47		
		468	97
		648	131
		1116	228

STA. 445+00.00 — SHEET TOTAL — STA. 445+00.00 — SHEET TOTAL

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 446+00 TO STA. 447+00

SUM-271-8.02

242
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 446+00 LT. TO STA. 447+00 LT.

765 760 755 750 745 740 735 730 725 720 715 710 705 700 695

EX. R/W

MATCHLINE 110' LT. (SEE SHEET NO. 242)

21'

CONTRACTOR ACCESS SHOWN FOR INFORMATION

760 755 750 745 740 735 730 725 720 715 710 705 700 695 690

CONTRACTOR ACCESS SHOWN FOR INFORMATION

(26-D) STA. 446+00.00, 122.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. HW-2.1
℄ PROP. 15" (W.) OUTLET EL. 711.14

EX. R/W

MATCHLINE 110' LT. (SEE SHEET NO. 242)

21'

24" CONDUIT
FOR CONTRACTOR ACCESS
COST INCLUDED UNDER ITEM
MAINTAINING TRAFFIC MISC.: CONTRACTOR'S ACCESS

10' x 10' x 18" THK.
ROCK CHANNEL PROTECTION
TYPE C WITH FILTER

(29-D) STA. 446+04.30, 117.47' LT.
℄ R/W & SURVEY I.R. 271
EX. 24" CONC.
℄ OUTLET (S.) EL. 710.84

SHEET TOTAL 300 250 200 150 SHEET TOTAL

SUM-271-8.02

243
612

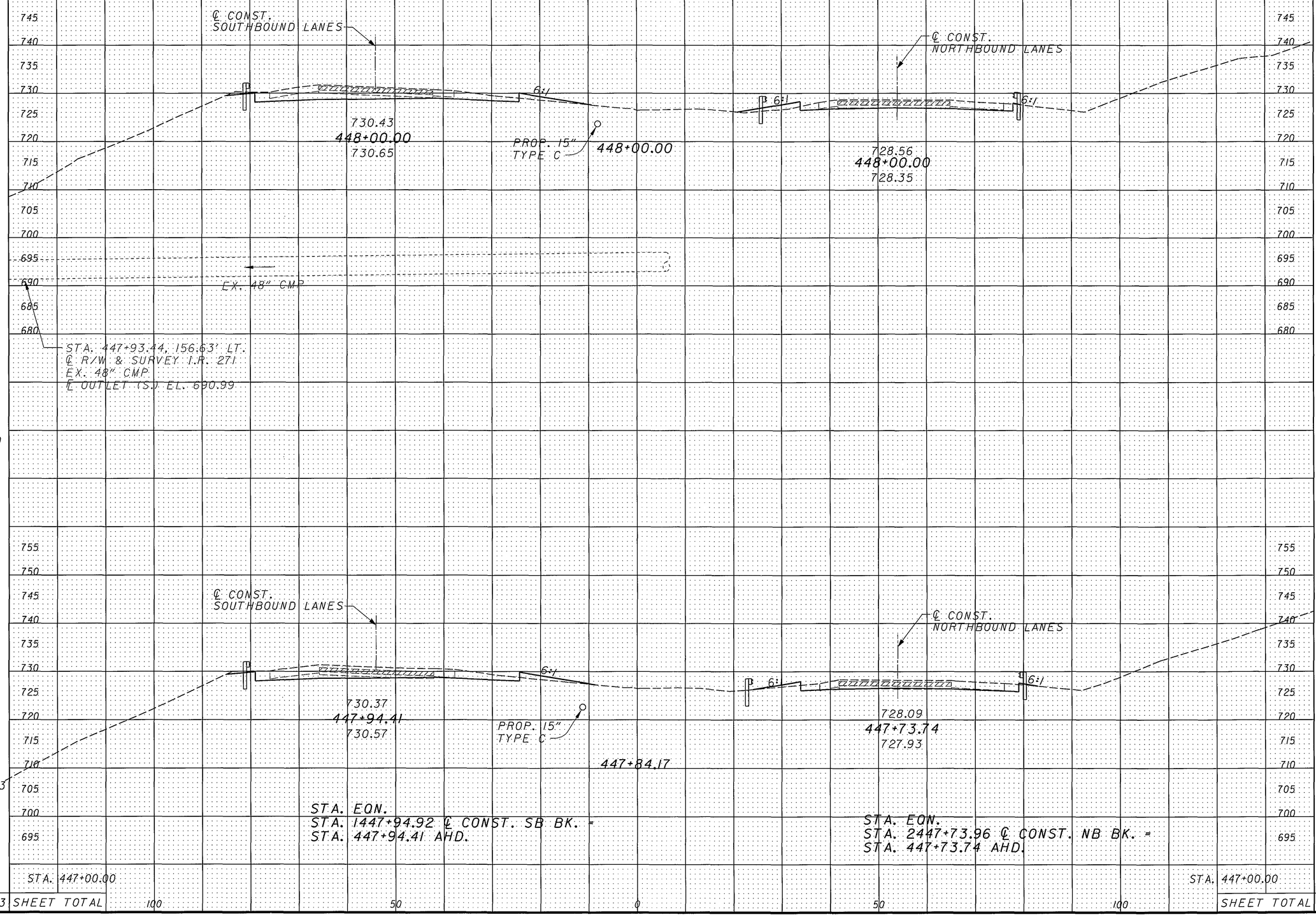
STAGE3SHEETS-PART2.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
40	
70	
40	
383	
42	
	453

℄ R/W & SURVEY I.R.271

LEGEND

CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED



END AREA		VOLUME	
CUT	FILL	CUT	FILL
		109	9
188	18		
185	13		
		481	64
124	28		
		590	73

SHEET TOTAL

CALCULATED SAM
CHECKED PS

CROSS SECTIONS

STA. 447+84.17 TO STA. 448+00

SUM-271-8.02

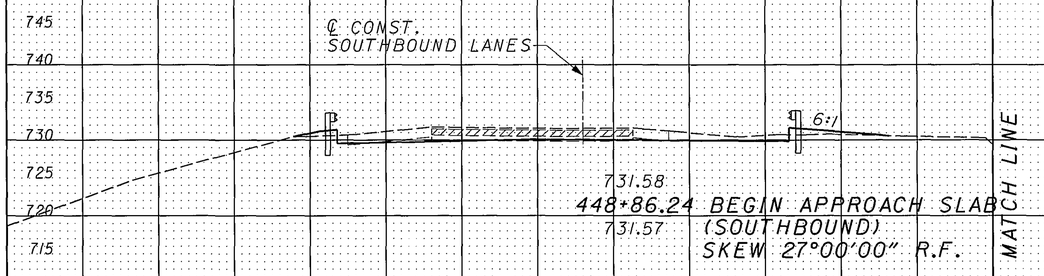
244
612

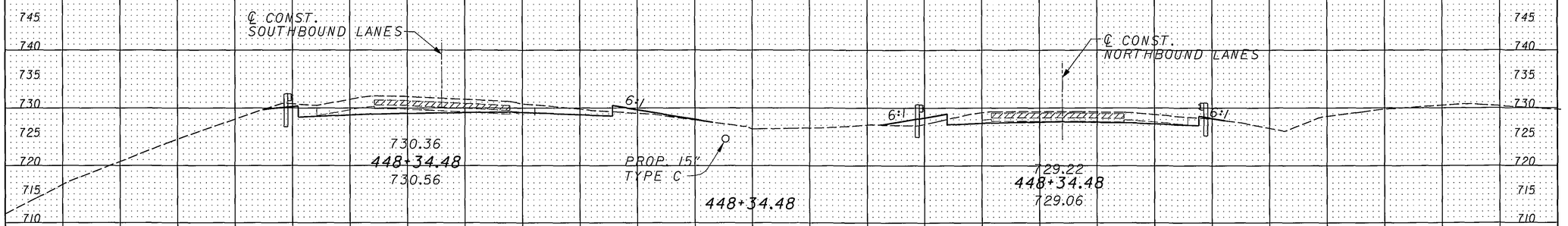
STAGE3SHEETS.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
19		STA. 448+86.24 AHEAD LT.	83	8		
26		STA. 448+86.24 BACK LT.	114	6		
149					219	12
18		STA. 448+34.48 AHEAD RT.	75	10		
26		STA. 448+34.48 AHEAD LT.	114	6		
44		STA. 448+34.48 BACK LT. & RT.	189	16		
161					241	22
40		STA. 448+00.00	188	18		
310		SHEET TOTAL			460	34

℄ R/W & SURVEY I.R.271

LEGEND
CONCRETE TO BE REMOVED UNDER ITEM 202 - PAVEMENT REMOVED





CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 448+34.48 TO STA. 448+86.24 SB LANES

SUM-271-8.02

STA. 448+34.48

245
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
12	
31	
	147
19	
18	
	147

SHEET TOTAL

STA. 449+00.00 RT.

STA. 449+00.00 LT.

STA. 448+86.24 AHEAD LT.

STA. 448+34.48 AHEAD RT.

℄ CONST., R/W & SURVEY I.R 271

LEGEND

CONCRETE TO BE REMOVED
UNDER ITEM 202 - PAVEMENT REMOVED

57-D
STA. 448+85.00, ℄
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 727.50
℄ PROP 15" (N., W. & E.) EL. 724.55

58-D
STA. 448+58.53, 75.34' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 730.88
℄ PROP. 15" (S.E.) EL. 727.28

59-D
STA. 449+16.26, 36.66' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 730.78
℄ PROP. 15" (S.E. & W.) EL. 725.28

60-D
STA. 449+21.39, 75.34' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 730.84
℄ PROP. 15" (N.W) EL. 725.87

30-D
STA. 448+85.54, 25.34' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 731.17
℄ PROP. 15" (S. & N.W.) EL. 726.42
℄ PROP. 6" (E.) EL. 726.92

℄ CONST.
SOUTHBOUND LANES

℄ CONST.
NORTHBOUND LANES

0:1

6:1

6:1

57' - 15" TYPE B
@ 1.50%

25' - 15" TYPE C
@ 7.48%

49' - 15" TYPE B
@ 1.50%

39' - 15" TYPE B
@ 1.50%

731.80
449+00.00
731.73

730.62
449+00.00
730.40

EX. 48" CMP

STA. 449+05.88, 156.97' RT.
℄ R/W & SURVEY I.R. 271
EX. 48" CMP
℄ INLET (N.S.) EL. 694.80

755
750
745
740
735
730
725
720
715
710
705
700
695
690
685
680

100 50 0 50 100

END AREA		VOLUME	
CUT	FILL	CUT	FILL
75	0		
97	12		
		181	13
		46	5
83	8		
75	10		
		227	18

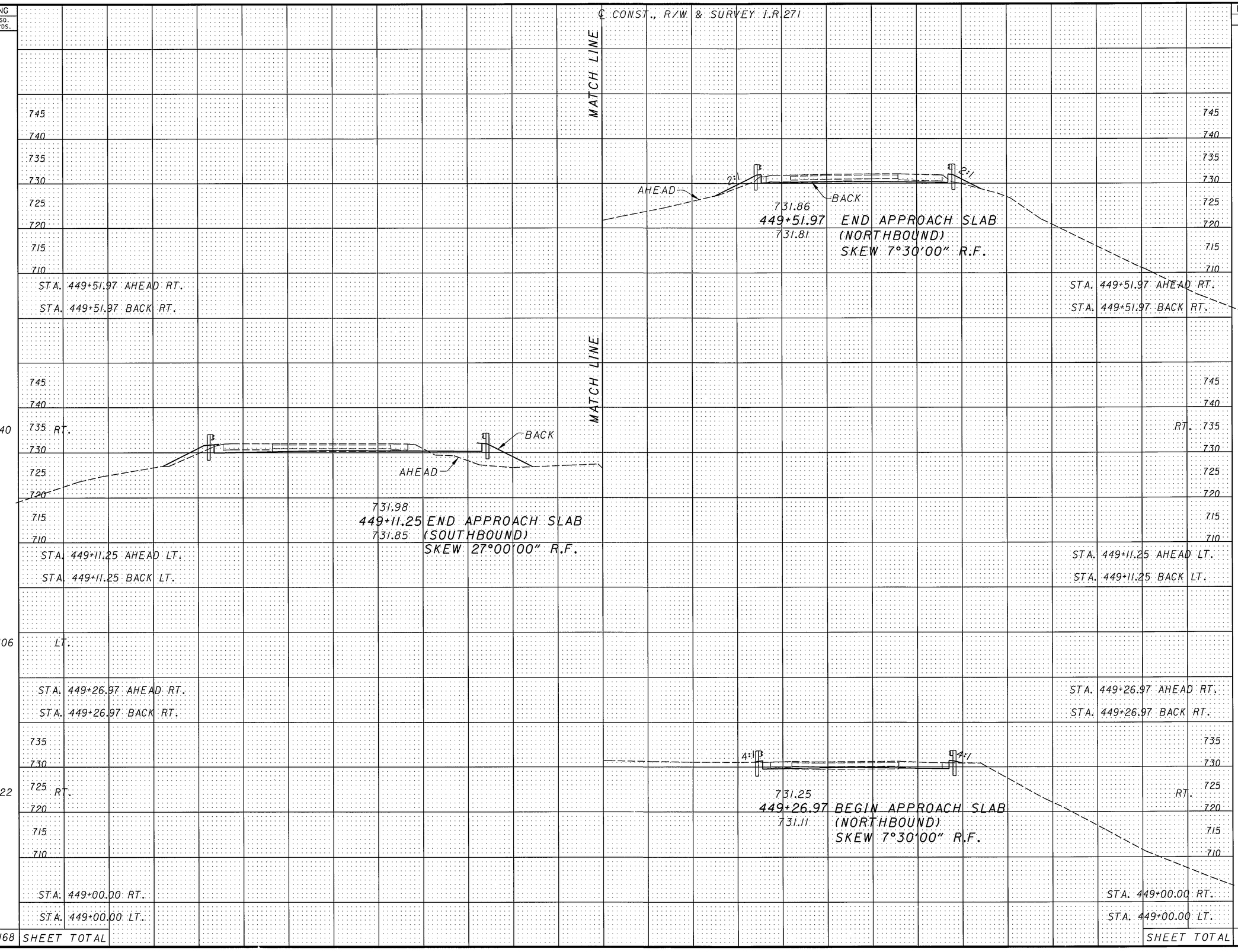
CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 449+00

SUM-271-8.02

246
612

STAGE3SHEETS.DGN 10/30/03



SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0		STA. 449+51.97 AHEAD RT.	0	0		
22		STA. 449+51.97 BACK RT.	67	13		
	40	RT.			66	7
0		STA. 449+11.25 AHEAD LT.	0	0		
27		STA. 449+11.25 BACK LT.	76	58		
	106	LT.			36	15
7		STA. 449+26.97 AHEAD RT.	75	0		
7		STA. 449+26.97 BACK RT.				
	22	RT.			75	0
12		STA. 449+00.00 RT.	75	0		
31		STA. 449+00.00 LT.	97	12		
	168	SHEET TOTAL			177	22

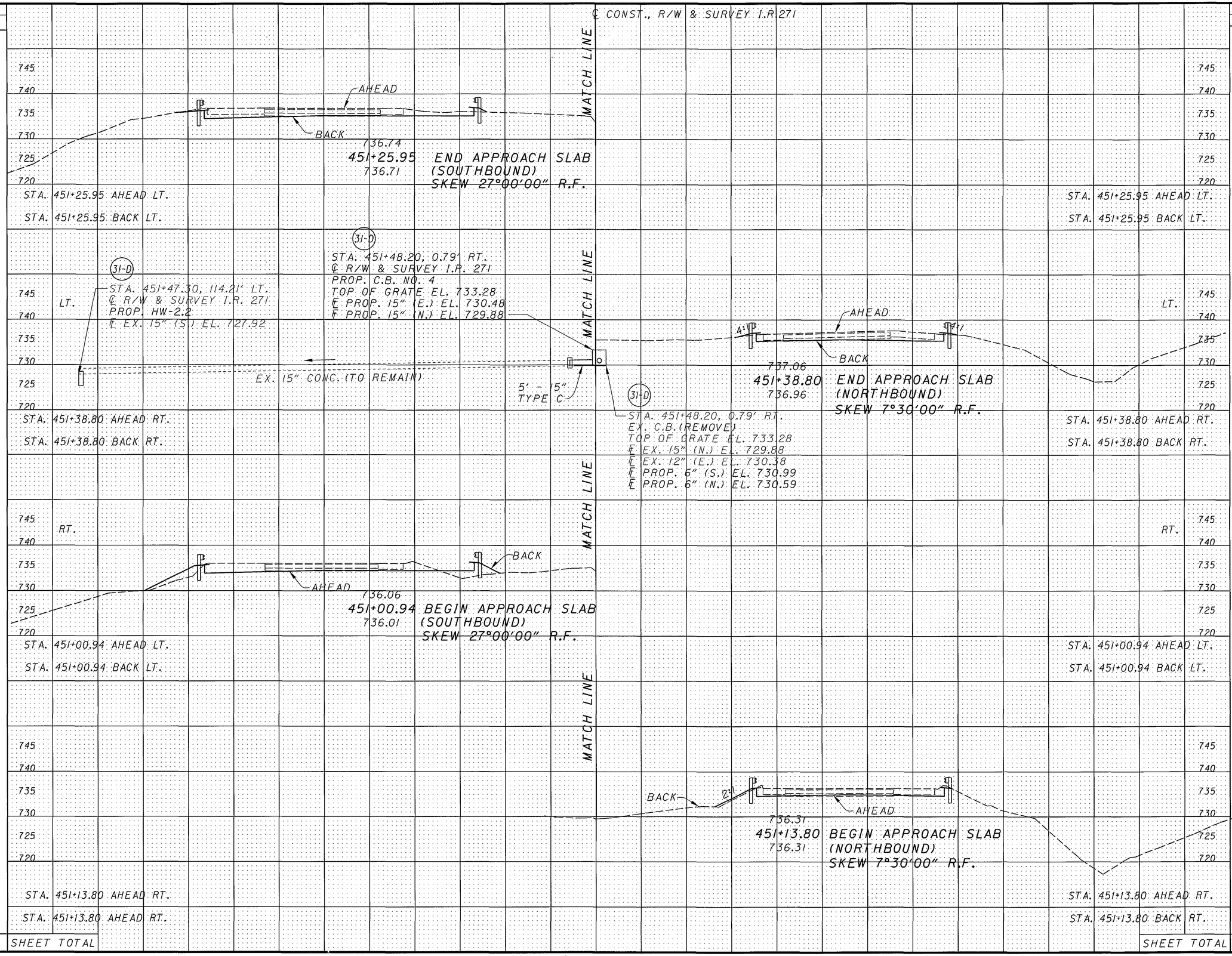
CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 449+26.97 NB LANES TO STA. 449+51.97 NB LANES
SUM-271-8.02

247
612

STAGE3SHEETS.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
11		STA. 451+25.95 AHEAD LT.	64	2		
11		STA. 451+25.95 BACK LT.	96	2		
	46	LT.			84	16
9		STA. 451+38.80 AHEAD RT.	0	2		
12		STA. 451+38.80 BACK RT.	72	2		
	33	RT.			63	2
23		STA. 451+00.94 AHEAD LT.	86	32		
0		STA. 451+00.94 BACK LT.	0	0		
12		STA. 451+13.80 AHEAD RT.	64	3		
0		STA. 451+13.80 AHEAD RT.	0	0		
	79	SHEET TOTAL			147	18



CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 451+13.80 NB LANES TO STA. 451+25.95 SB LANES

SUM-271-8.02

248
612

STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
18	205
19	123
	95
11	
9	
	423

℄ CONST., R/W & SURVEY I.R 271

LEGEND

ITEM 615 EARTHWORK

℄ CROSSOVER

(32-D)
STA. 452+98.02, 18.41' LT.
℄ R/W & SURVEY I.R. 271
EX. C.B.(REMOVE)
TOP OF GRATE EL. 739.81
℄ EX. 12" (W.) EL. 736.36

453+00.00
741.80

(32-D)
STA. 453+00.00, 5.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 1
TOP OF GRATE EL. 739.81
℄ PROP. 15" (E. & S.W.) EL. 734.24
℄ PROP. 6" (N.) EL. 736.49

453+00.00
741.92

452+00.00
738.93

EX. 12" CONC. (REMOVE)

PROP. 15" TYPE C

452+00.00
738.90

451+39.81 END PROJECT

END AREA		VOLUME	
CUT	FILL	CUT	FILL
56	2		
64	1		
		222	5
		176	4
		0	3
STA. 451+25.95 AHEAD LT.		64	2
STA. 451+38.80 AHEAD RT.		0	2
SHEET TOTAL		398	12

CALCULATED SAM
CHECKED PS

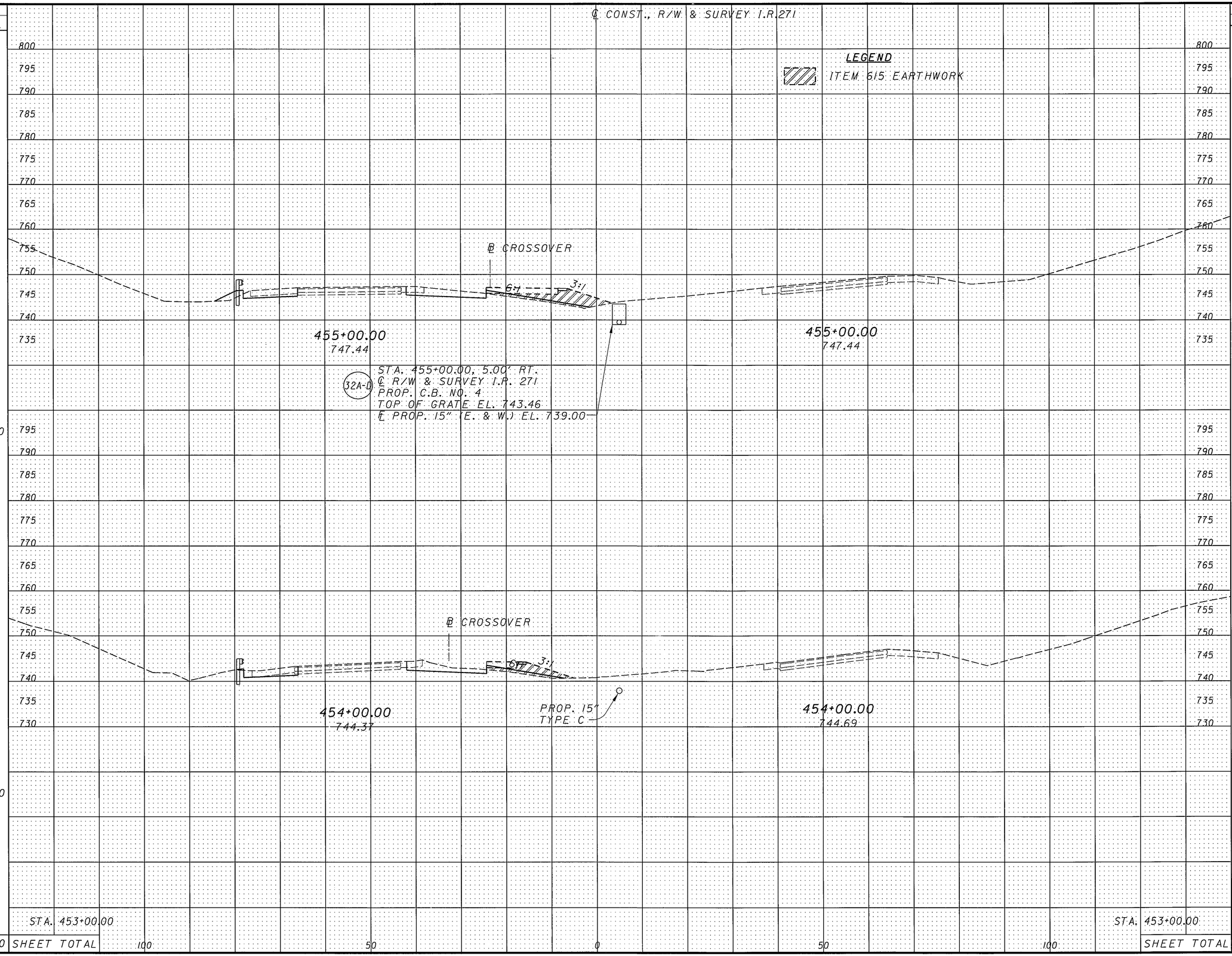
CROSS SECTIONS
STA. 452+00 TO STA. 453+00

SUM-271-8.02

249
612

STAGE3SHEETS.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.
34	
	320
23	
	230
18	
	550



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
53	32		
		181	78
45	10		
		187	22
56	2		
		368	100

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 454+00 TO STA. 455+00

SUM-271-8.02

250
612

STAGE3SHEETS.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.
26	346
37	393
34	739

℄ CONST., R/W & SURVEY I.R.271

LEGEND

ITEM 615 EARTHWORK

℄ CROSSOVER

6:1 3:1 3:1

457+00.00
752.95

457+00.00
752.97

STA. 457+00.00, 19.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B (SEE NOTE)
TOP OF GRATE EL. 750.50
℄ PROP. 15" (E. & W.) EL. 746.00
℄ PROP. 6" (N.) EL. 748.00

NOTE:

CATCH BASIN NO. 2-2B TO BE UTILIZED DURING CONSTRUCTION. WHEN THE CROSSOVER IS NO LONGER NEEDED FOR MAINTENANCE OF TRAFFIC THIS CATCH BASIN SHALL BE ABANDONED AND CONNECTED THROUGH AS APPROVED BY THE ENGINEER. ALL MATERIALS, LABOR AND INCIDENTALS TO CONSTRUCT AND SUBSEQUENTLY ABANDON THIS CATCH BASIN WILL BE INCLUDED IN ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN.

℄ CROSSOVER

6:1 3:1

456+00.00
750.19

PROP. 15" TYPE B

456+00.00
750.25

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
56	13		
		192	99
48	40		
		187	134
53	32		
		379	233

STA. 455+00.00

SHEET TOTAL

STA. 455+00.00

SHEET TOTAL

100 50 0 50 100

CALCULATED SAM CHECKED PS

CROSS SECTIONS STA. 456+00 TO STA. 457+00

SUM-271-8.02

251
612

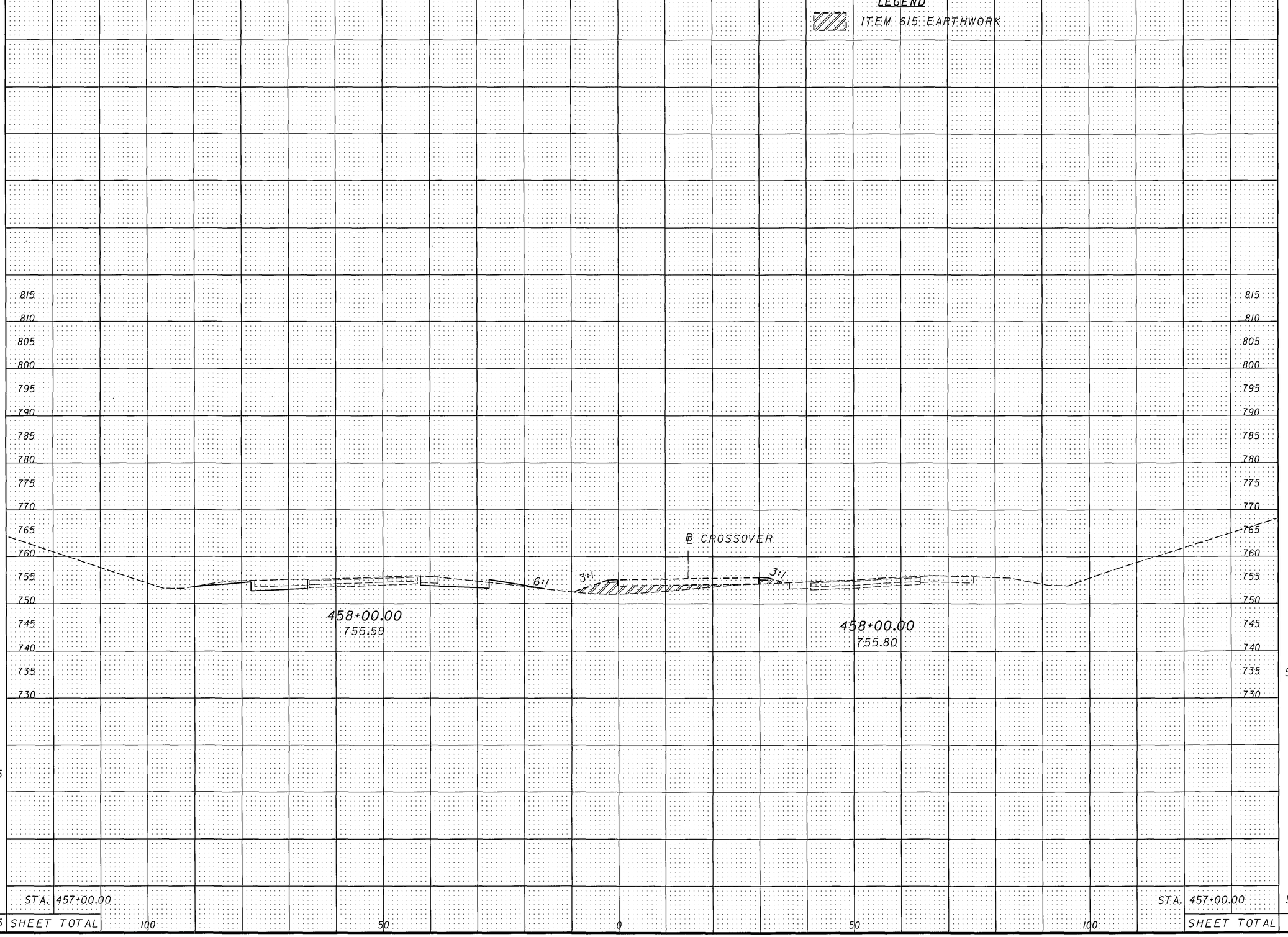
STAGE3SHEETS.DGN 10/30/03

SEEDING	
END WIDTH	SQ. YDS.
42	
26	
	375
	375

℄ CONST., R/W & SURVEY I.R.271

LEGEND

ITEM 615 EARTHWORK



END AREA		VOLUME	
CUT	FILL	CUT	FILL
53	7		
56	13		
		206	38
		206	38

CALCULATED SAM

CHECKED PS

CROSS SECTIONS STA. 458+00

SUM-271-8.02

STAGE3SHEETS.DGN 10/30/03

SEEDING END WIDTH	SEEDING SQ. YDS.
44	460
39	442
41	457
42	
	1359

SHEET TOTAL

STA. 458+00.00

STA. 459+00, 2.00' LT.
(33-D) ℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 753.00
℄ PROP. 15" (W.) EL. 749.00

℄ CONST., R/W & SURVEY I.R.271

LEGEND
ITEM 615 EARTHWORK

℄ CROSSOVER

461+00.00
763.83

461+00.00
763.88

℄ CROSSOVER

460+00.00
761.29

460+00.00
761.28

℄ CROSSOVER

459+00.00
758.55

459+00.00
758.70

6:1
3:1

790 785 780 775 770 765 760 755 750 795 800 745

100 50 0 50 100

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
56	2	209	7
57	2	200	7
51	2	192	18
53	7	601	32

SHEET TOTAL

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 459+00 TO STA. 461+00

SUM-271-8.02

253
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
40	444
40	342
22	365
44	1151

C CONST., R/W & SURVEY I.R 271

B CROSSOVER

464+00.00
771.90

464+00.00
772.19

LEGEND
ITEM 615 EARTHWORK

34-D
STA. 463+00, 0.63' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 764.47
E PROP. 15" (N.) EL. 761.88
E PROP. 6" (N.E.) EL. 763.00

4' x 15' x 18" THK.
ROCK CHANNEL
PROTECTION TYPE C
W/FILTER

2:1

EX. 15" CONC.

463+00.00
769.23

5' - PROP. 15" TYPE C
W/CONC. MASONRY
COLLAR AS PER DM-1.1

34-D
STA. 463+00, 0.63' LT.
℄ R/W & SURVEY I.R. 271
EX. C.B. (REMOVE)
TOP OF GRATE EL. 764.35
E EX. 15" (N.) EL. 762.05

463+00.00
769.43

EX. 24" CPP

STA. 463+00.00, 110.50' LT.
℄ R/W & SURVEY I.R. 271
EX. 24" CPP
E OUTLET (S.) EL 752.63

6:1

462+00.00
766.54

462+00.00
766.60

STA. 461+00.00

SHEET TOTAL

100 50 0 50 100

END AREA		VOLUME	
CUT	FILL	CUT	FILL
46	0		
		180	0
51	0		
		189	4
51	2		
		198	7
56	2		
		567	11

CALCULATED SAM
CHECKED PS

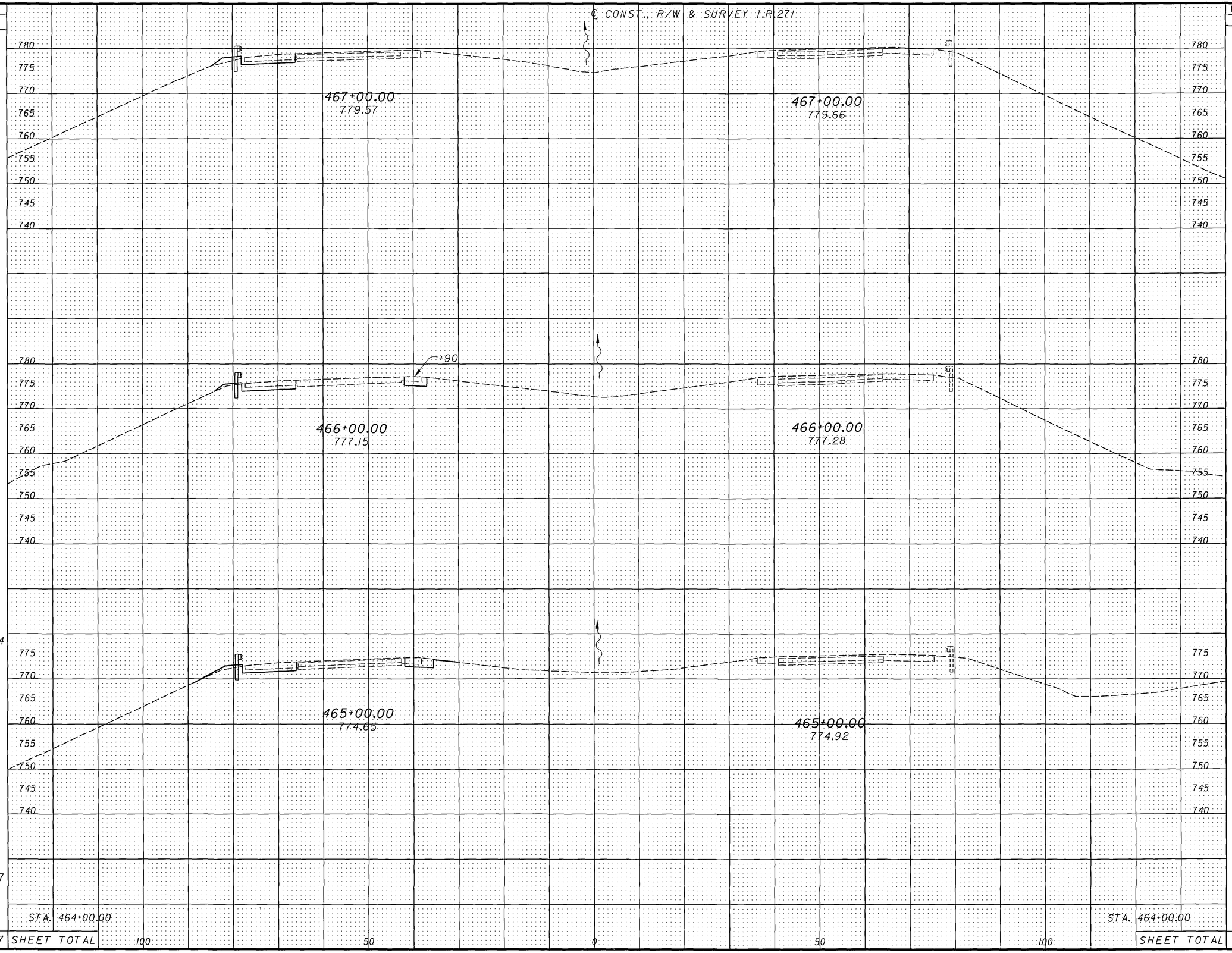
CROSS SECTIONS
STA. 462+00 TO STA. 464+00

SUM-271-8.02

254
612

STAGE3SHEETS.DGN 10/27/03

SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
8	86	24	0	106	0
7	204	33	0	139	0
29	387	42	0	163	0
40		46	0		
	677 SHEET TOTAL			408	0



CALCULATED SAM
CHECKED PS

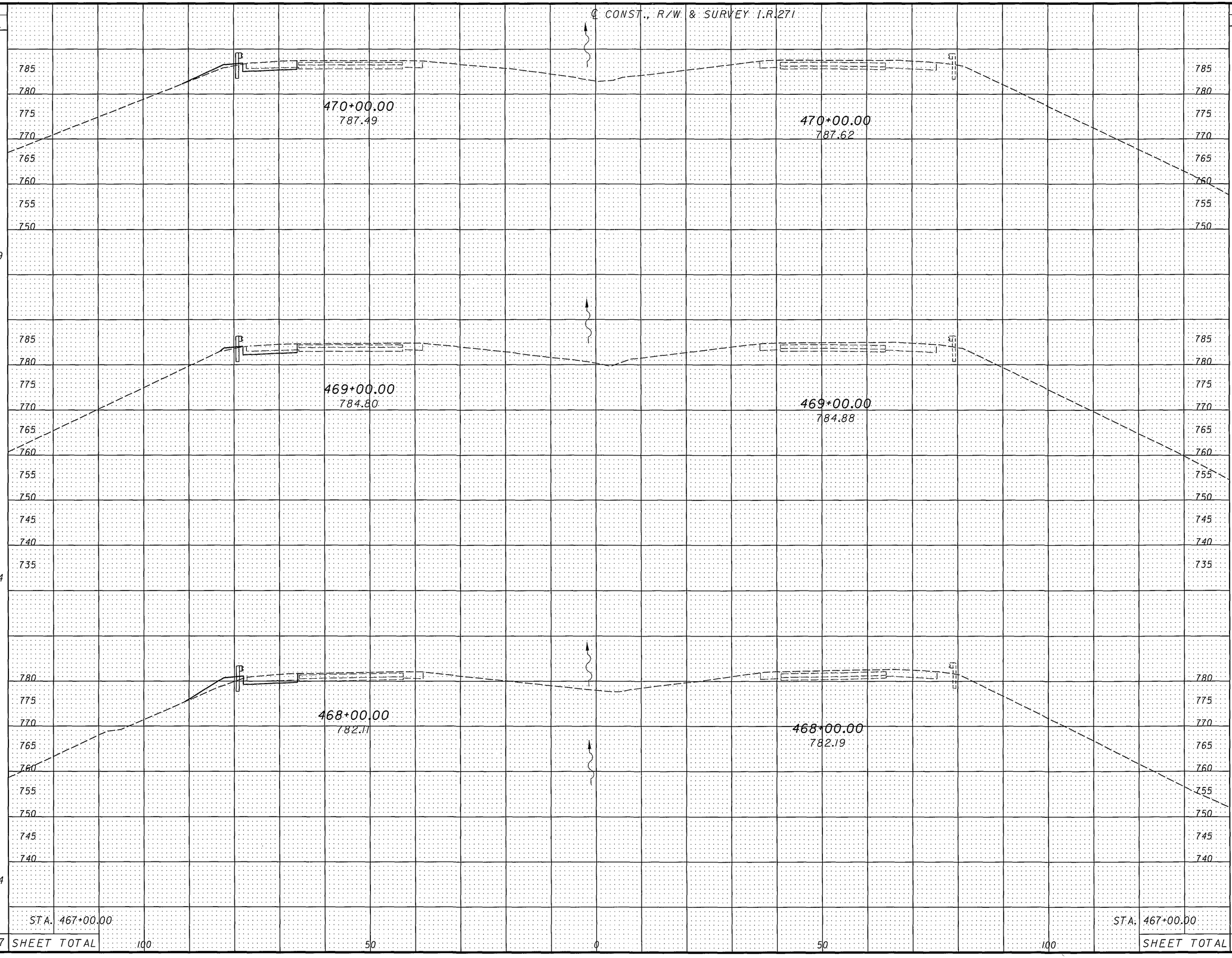
CROSS SECTIONS
STA. 465+00 TO STA. 467+00

SUM-271-8.02

255
612

STAGE3SHEETS.DGN 10/27/03

SEEDING END WIDTH	SEEDING SQ. YDS.
17	139
8	134
16	134
8	407



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
26	0	95	0
26	0	95	0
25	0	92	0
24	0	282	0

CALCULATED SAM
CHECKED PS

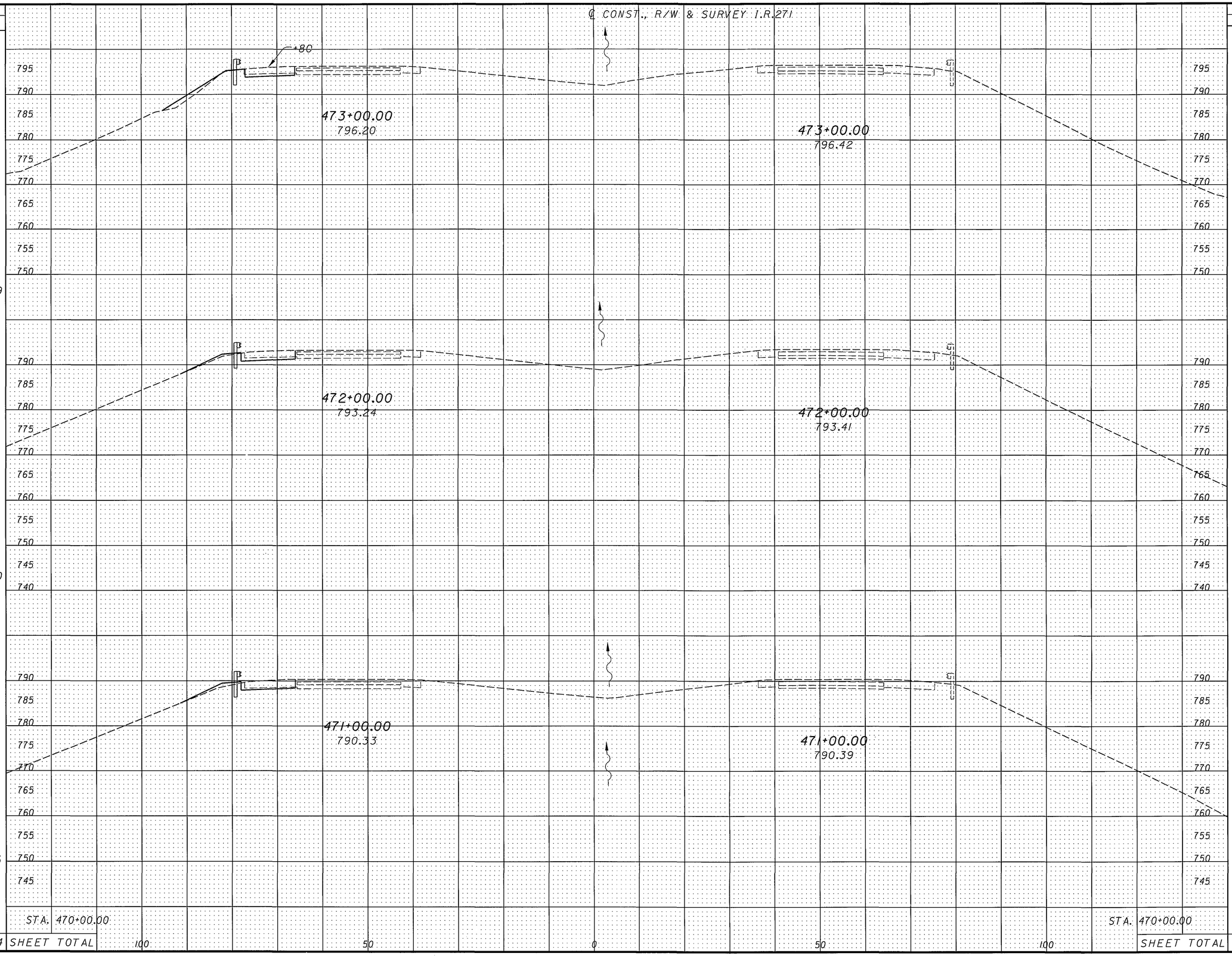
CROSS SECTIONS
STA. 468+00 TO STA. 470+00

SUM-271-8.02

256
612

STAGE3SHEETS.DGN 10/27/03

SEEDING	
END WIDTH	SQ. YDS.
25	239
18	200
18	195
17	
	634



END AREA		VOLUME	
CUT	FILL	CUT	FILL
26	0		
		95	0
26	0		
		95	0
26	0		
		95	0
26	0		
SHEET TOTAL		285	0

CALCULATED SAM
CHECKED PS

CROSS SECTIONS
STA. 471+00 TO STA. 473+00

SUM-271-8.02

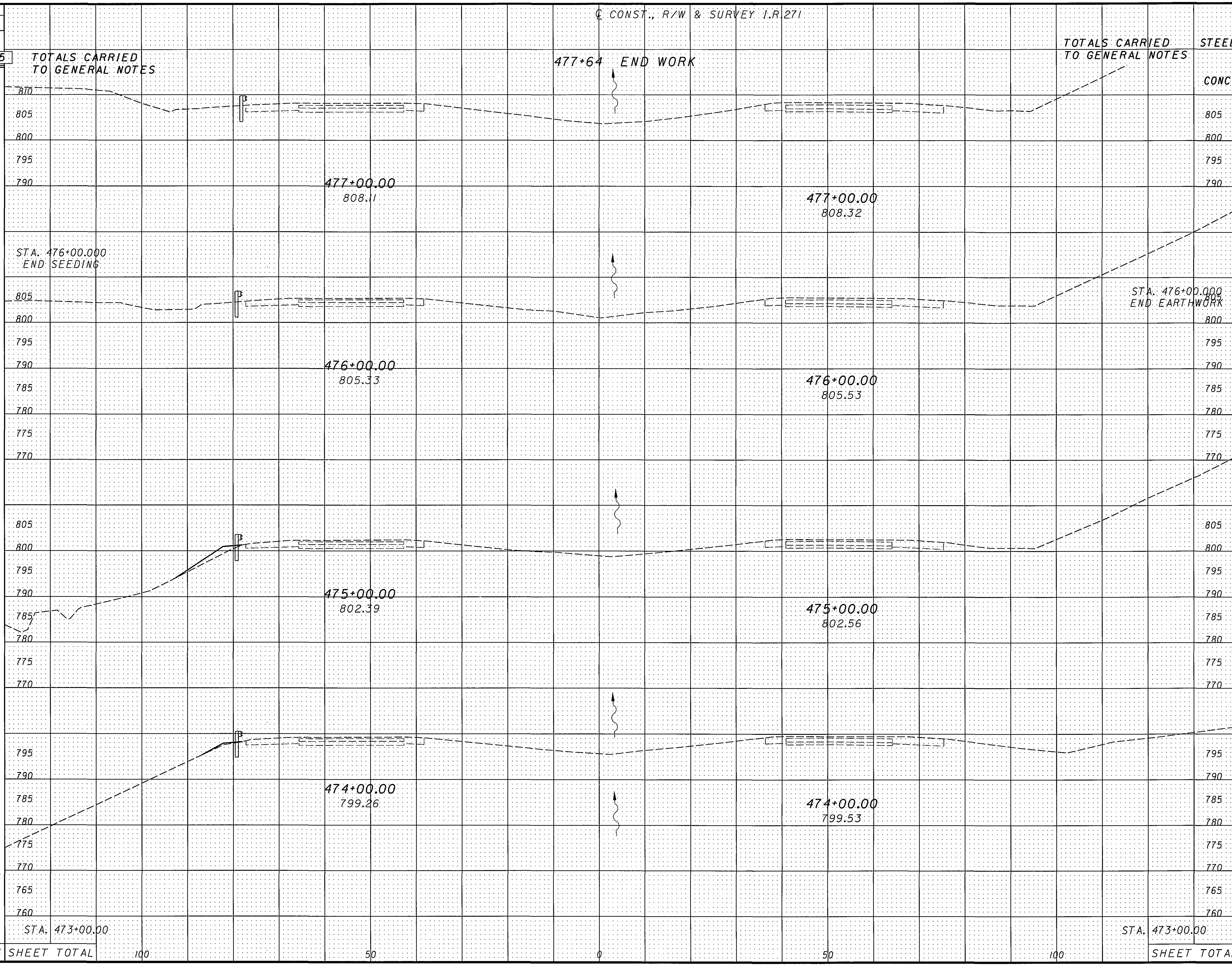
257
612

STAGE3SHEETS.DGN 10/27/03

CROSS SECTIONS STA. 474+00 TO STA. 477+00

SUM-271-8.02

CALCULATED: SAM | CHECKED: PS



SEEDING END WIDTH	SEEDING SQ. YDS.	Station
	78175	TOTALS CARRIED TO GENERAL NOTES
0		STA. 476+00.000 END SEEDING
	106	
19		475+00.00
	172	
12		474+00.00
	206	
25		STA. 473+00.00
	484	SHEET TOTAL

Station	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
TOTALS CARRIED TO GENERAL NOTES – STEEL			(37782)	23574
TOTALS CARRIED TO GENERAL NOTES – CONC			(37582)	23202
STA. 476+00.000 END EARTHWORK	0	0		
			48	0
475+00.00	26	0		
			96	0
474+00.00	26	0		
			96	0
STA. 473+00.00	26	0		
SHEET TOTAL			240	0

STAGE3SHEETS.DGN 10/27/03

CROSS REFERENCES	
58-62	TEMPORARY CONSTRUCTION ACCESS
81	GUARDRAIL SUBSUMMARY
131	I.R. 271 PLAN - STEEL
132-133	I.R. 271 PROFILE - STEEL
148-258	CROSS SECTIONS
275-278	GRADING PLAN
300-303	STORM SEWER PROFILES
315	DETENSION BASIN ACCESS DRIVE PLAN & PROFILE (STEEL)
286-334	DRAINAGE DETAILS
361-437	STRUCTURE PLANS (STEEL)

CURRENT ADT (1997)_____2,300
DESIGN YEAR ADT (2017)_____3,400
DESIGN HOURLY VOLUME (2017)_____350
DIRECTIONAL DISTRIBUTION_____50%
TRUCKS (24 HOUR B&C)_____2.0%
DESIGN SPEED_____40 MPH
LEGAL SPEED_____40 MPH
DESIGN FUNCTIONAL CLASSIFICATION_____RURAL MINOR ARTERIAL

(FROM SUMMIT COUNTY RIVERVIEW RD. IMPROVEMENTS FEBRUARY, 2000)

B.M. #3 STA. 424+89.09, 299.09' LT.
CHISELED '□' ON W. HEADWALL
NW COR. 200'± N. OF I.R. 271
BRIDGE ELEV. = 682.71

B.M. #4 STA. 427+74.15, 125.45' LT.
CHISELED '□' ON W. HEADWALL
NW COR. CULVERT UNDER RR TRKS
BRIDGE ELEV. = 669.63

TEMPORARY CONTRACTOR'S ACCESS (FOR INFORMATION ONLY - SEE M.O.T. PLANS)

STA. 0+00.00 ℄ CONST. DETENTION BASIN ACCESS DRIVE = STA. 73+15.98 RIVERVIEW RD.

STA. 72+99.30 ℄ RIVERVIEW ROAD = STA. 425+49.26 ℄ R/W & SURVEY I.R. 271

℄ RIVERVIEW ROAD (C.R. 9)

N 48°50'10" W

76°56'04"±

℄ CONST. NORTHBOUND LANES

℄ CONST. SOUTHBOUND LANES

CONNECT TO EXISTING GUARDRAIL, +55±

B.M. #4

B.M. #3

TEST HOLE #TH 3
TEST HOLE #TH 2
TEST HOLE #TH 1
TEST HOLE #TH 4

EX. 6'x12' BOX CULVERT

EX. 4'x14' BOX CULVERT

PC Sta. 74+67.48

PT Sta. 76+75.60

2" TO 10" TREES

EX. ROCK SHELVES

EX. 54" CMP

EX. CONC.

EX. STEEL GATE

EX. UNDERGROUND FIBER OPTIC CABLE (DO NOT DISTURB)

VALLEY RAILWAY

DETENTION BASIN ACCESS DRIVE

29-GR

30-GR

T ESMT

T(EO)

T(FO)

LA R/W

R/W

SO-DEEP LOCATION INFORMATION FOR GAS LINE

TEST HOLE #	CENTERLINE RIVERVIEW RD. STATION	SURVEYED ELEV. TOP OF UTILITY
TH 1	72+84.69	684.27
TH 2	73+21.45	683.48
TH 3	73+66.4	682.59

SO-DEEP LOCATION INFORMATION FOR FIBER OPTIC

TEST HOLE #	℄ R/W & SURVEY I.R. 271 STATION, OFFSET	SURVEYED ELEV. TOP OF UTILITY
TH 4	427+98.4±, 15.5' LT.	666.18

LEGEND

- CONSTRUCTION FENCE
- DITCH EROSION PROTECTION (7.5' WIDE TYP.)
- ROCK CHANNEL PROTECTION
- WETLANDS
- SLOPE EROSION PROTECTION

PROPOSED GUARDRAIL LEGEND

(A) - ANCHOR ASSEMBLY, TYPE B-98
(B) - ANCHOR ASSEMBLY, TYPE T

NOTE: SEE PROPOSED SHOULDER GRADING TYPICAL ON SHEET NO. 260

CURVE DATA
℄ RIVERVIEW ROAD (C.R. 9)

P.I. Sta = 75+74.19
Δ = 31° 12' 05" (RT)
Dc = 14° 59' 32"
R = 382.17'
T = 106.71'
L = 208.12'
E = 14.62'

NOTE: EXISTING SPEED LIMIT IS 40 MPH ON RIVERVIEW ROAD

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PLAN RIVERVIEW ROAD - STEEL DESIGN

SUM-271-8.02

259
612

2145OPLANRIVERVIEW-STEEL.DGN 3/31/04 SAM,CAR,CEO

CROSS REFERENCES	
58-62	TEMPORARY CONSTRUCTION ACCESS
81	GUARDRAIL SUBSUMMARY
137	I.R. 271 PLAN - CONCRETE
138-139	I.R. 271 PROFILE - CONCRETE
148-258	CROSS SECTIONS
279-282	GRADING PLAN
304-308	STORM SEWER PROFILES
316	DETENSION BASIN ACCESS DRIVE PLAN & PROFILE (CONCRETE)
286-334	DRAINAGE DETAILS
438-560	STRUCTURE PLANS (CONCRETE)

CURRENT ADT (1997)..... 2,300
DESIGN YEAR ADT (2017)..... 3,400
DESIGN HOURLY VOLUME (2017)..... 350
DIRECTIONAL DISTRIBUTION..... 50%
TRUCKS (24 HOUR B&C)..... 2.0%
DESIGN SPEED..... 40 MPH
LEGAL SPEED..... 40 MPH
DESIGN FUNCTIONAL CLASSIFICATION..... RURAL MINOR ARTERIAL

(FROM SUMMIT COUNTY RIVERVIEW RD. IMPROVEMENTS FEBRUARY, 2000)

B.M. #3 STA. 424+89.09, 299.09' LT.
CHISELED '□' ON W. HEADWALL
NW COR. 200'± N. OF I.R. 271 BRIDGE
ELEV. = 682.71

B.M. #4 STA. 427+74.15, 125.45' LT.
CHISELED '□' ON W. HEADWALL
NW COR. CULVERT UNDER RR TRKS BRIDGE
ELEV. = 669.63

TEMPORARY CONTRACTOR'S ACCESS (FOR INFORMATION ONLY - SEE M.O.T. PLANS)

TEST HOLE #TH 2
TEST HOLE #TH 1

STA. 0+00.00 ℄ CONST. DETENTION BASIN ACCESS DRIVE = STA. 73+15.98 RIVERVIEW RD.

STA. 72+99.30 ℄ RIVERVIEW ROAD = STA. 425+49.26 ℄ R/W & SURVEY I.R. 271

℄ RIVERVIEW ROAD (C.R. 9)

N 48°50'10" W

76°56'04"±

29-GR

30-GR

CONNECT TO EXISTING GUARDRAIL, +55±

TEST HOLE #TH 3

TEST HOLE #TH 4

PC Sta. 74+67.48

PT Sta. 76+75.60

EX. 6'x12' BOX CULVERT

EX. 4'x14' BOX CULVERT

EX. UNDERGROUND FIBER OPTIC CABLE (DO NOT DISTURB)

VALLEY RAILWAY

B.M. #3

B.M. #4

DETENSION BASIN ACCESS DRIVE

EX. 54" CMP

EX. 4' ROCK SPILLWAYS

EX. TOP OF TREES

2" TO 10" TREES

4" STEEL

CMP

℄ CONST. NORTHBOUND LANES

℄ CONST. SOUTHBOUND LANES

℄ R/W & SURVEY I.R. 271

LA-R/W

T ESMT

I ESMT

A ESMT

2 ESMT

T(EO)

T(FO)

I(FO)

R/W

SO-DEEP LOCATION INFORMATION FOR GAS LINE

TEST HOLE #	CENTERLINE RIVERVIEW RD. STATION	SURVEYED ELEV. TOP OF UTILITY
TH 1	72+84.69	684.27
TH 2	73+21.45	683.48
TH 3	73+66.4	682.59

SO-DEEP LOCATION INFORMATION FOR FIBER OPTIC

TEST HOLE #	℄ R/W & SURVEY I.R. 271 STATION, OFFSET	SURVEYED ELEV. TOP OF UTILITY
TH 4	427+98.4±, 15.5' LT.	666.18

LEGEND

- CONSTRUCTION FENCE
- DITCH EROSION PROTECTION (7.5' WIDE TYP.)
- ROCK CHANNEL PROTECTION
- WETLANDS
- SLOPE EROSION PROTECTION

PROPOSED GUARDRAIL LEGEND

(A) - ANCHOR ASSEMBLY, TYPE B-98
(B) - ANCHOR ASSEMBLY, TYPE T

CURVE DATA
℄ RIVERVIEW ROAD (C.R. 9)

P.I. Sta = 75+74.19
Δ = 31° 12' 05" (RT)
Dc = 14° 59' 32"
R = 382.17'
T = 106.71'
L = 208.12'
E = 14.62'

NOTE: EXISTING SPEED LIMIT IS 40 MPH ON RIVERVIEW ROAD

SHOULDER GRADING TYPICAL

ITEM 659 - SEEDING & MULCHING
ITEM 209 - LINEAR GRADING UNLESS OTHERWISE SHOWN ON CROSS SECTIONS
℄ PAVEMENT
8'-0"* 2'-0" MIN.
TYPE 5 GUARDRAIL (SEE PLAN FOR LOCATIONS)
0.083
VAR.
EXISTING PAVEMENT
ITEM 209 - LINEAR GRADING

NOTE: GRADING ON LT. AND/OR RT. SHOULDER DEPENDING ON BRIDGE ALTERNATIVE CONSTRUCTED

* MATCHES SUMMIT COUNTY RIVERVIEW RD. IMPROVEMENTS FROM FEBRUARY, 2000

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS CHECKED JL

ROAD - CONCRETE DESIGN

PLAN RIVERVIEW RO

SUM-271-8.02

260
612

2145OPLANRIVERVIEW-CONC.DGN 3/31/04 SAM.CAR.CEO

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED PRS

CHECKED JDL

℄

725 720 715 710 705 700 695 690 685 680 675 670

EX. R/W

EX. R/W

EX. 4" GAS (APPROXIMATE LOCATION)

71+00.00
689.24

725 720 715 710 705 700 695 690 685 680 675 670

720 715 710 705 700 695 690 685 680 675 670

EX. R/W

EX. R/W

EX. 4" GAS (APPROXIMATE LOCATION)

70+50.00
690.71

720 715 710 705 700 695 690 685 680 675 670

SHEET TOTAL 100 50 0 50 100 SHEET TOTAL

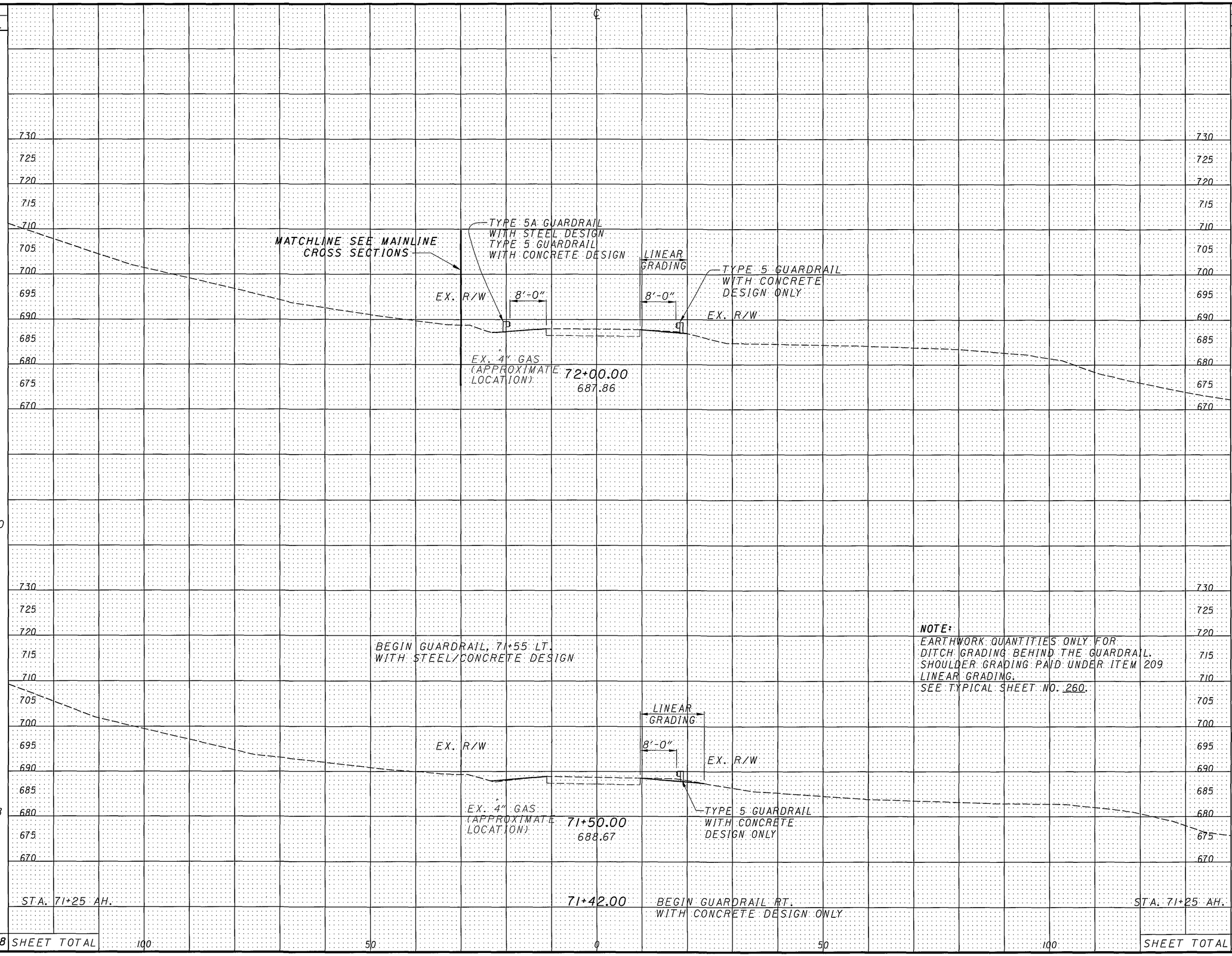
CROSS SECTIONS - RIVERVIEW ROAD
STA. 70+50.00 TO STA. 71+00.00

SUM-271-8.02

261
612

SIDEROADSHEET.DGN 3/30/04 SAM.CAR

SEEDING END WIDTH	SEEDING SQ. YDS.
26	
	150
28	
	58
14	
	208



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0	0		
		0	0
0	0		
		0	0
0	0		
SHEET TOTAL		0	0

CALCULATED: PRS
CHECKED: JDL

CROSS SECTIONS - RIVERVIEW ROAD
STA. 71+50.00 TO STA. 72+00.00

SUM-271-8.02

262
612

SIDEROADSHEET.DGN 3/30/04 SAM,CAR

SEEDING	
END WIDTH	SQ. YDS.
31	169
30	156
26	325

WITH STEEL DESIGN ONLY

WITH CONCRETE DESIGN ONLY

MATCHLINE SEE MAINLINE CROSS SECTIONS

79' - PROP. 15" TYPE F @ 26.40%

5' - PROP. 15" TYPE F @ 1%

TYPE 5A GUARDRAIL WITH STEEL DESIGN
TYPE 5 GUARDRAIL WITH CONCRETE DESIGN

TYPE 5 GUARDRAIL WITH CONCRETE DESIGN ONLY

PROPOSED DETENTION BASIN ACCESS DRIVE (SEE DETENTION BASIN ACCESS DRIVE PLAN & PROFILE, SHEET NO. 315)

EX. R/W

8'-0"

8'-0"

2%

-2:1

685.3

208' - PROP. 15" TYPE B @ 7.12%

7' - PROP. 15" TYPE F @ 30.86%

EX. 4" GAS (LOCATON VERIFIED BY SO-DEEP)

73+00.00
686.76

(STEEL DESIGN STORM SEWER SHOWN)

5-DT

STA. 424+88.92, 16.00' LT.
℄ R/W & SURVEY I.R. 271 =
STA. 73+28.53, 55.16' LT.
℄ RIVERVIEW RD.
PROP. M.H. NO. 3
TOP OF COVER EL. 691.50
℄ PROP. 15" (E., W. & S.) EL. 687.50

6-DT

STA. 425+05.08, 16.00' LT.
℄ R/W & SURVEY I.R. 271 =
73+24.87, 39.42' LT.
℄ RIVERVIEW RD.
PROP. M.H. NO. 3
TOP OF COVER EL. 690.00
℄ PROP. 15" (N.) EL. 683.26
℄ PROP. 15" (S.) EL. 686.97
℄ PROP. 15" (W.) EL. 685.24
℄ PROP. 15" (E.) EL. 683.26

7-DT

STA. 427+30.00, 16.25' LT.
℄ R/W & SURVEY I.R. 271 =
STA. 72+73.81, 180.62' RT.
℄ RIVERVIEW RD.
PROP. M.H. NO. 3
TOP OF COVER EL. 672.01
℄ PROP. 15" (W.) EL. 667.21
℄ PROP. 15" (N. & S.) EL. 664.03
℄ PROP. 18" (E.) EL. 663.10

WITH STEEL DESIGN ONLY

WITH CONCRETE DESIGN ONLY

TYPE 5A GUARDRAIL WITH STEEL DESIGN
TYPE 5 GUARDRAIL WITH CONCRETE DESIGN

LINEAR GRADING

TYPE 5 GUARDRAIL WITH CONCRETE DESIGN ONLY

EX. R/W

8'-0"

8'-0"

2%

-2:1

685.7

EX. 4" GAS (LOCATON VERIFIED BY SO-DEEP)

72+50.00
687.43

MATCHLINE SEE MAINLINE CROSS SECTIONS

STA. 72+00.00

SHEET TOTAL

NOTE:
EARTHWORK QUANTITIES ONLY FOR DITCH GRADING BEHIND THE GUARDRAIL. SHOULDER GRADING PAID UNDER ITEM 209 LINEAR GRADING.
SEE TYPICAL SHEET NO. 260.

END AREA		VOLUME	
CUT	FILL	CUT	FILL
6	0		
		12	0
7	0		
		7	0
0	0		
		19	0

CALCULATED PRS
CHECKED JDL

CROSS SECTIONS - RIVERVIEW ROAD STA. 72+50.00 TO STA. 73+00.00

SUM-271-8.02

263
612

SIDEROADSHEET.DGN 3/30/04 SAM.CAR.CEO

SEEDING END WIDTH	SEEDING SQ. YDS.
20	
34	
	113
34	
	186
	178
33	
31	
	477

AHEAD STA. 74+30
BACK

℄

74+25 END GUARDRAIL RT.
WITH CONCRETE DESIGN ONLY

NOTE:
EARTHWORK QUANTITIES ONLY FOR DITCH GRADING BEHIND THE GUARDRAIL. SHOULDER GRADING PAID UNDER ITEM 209 LINEAR GRADING.
SEE TYPICAL SHEET NO. 260.

MATCHLINE SEE MAINLINE CROSS SECTIONS

TYPE 5A GUARDRAIL WITH STEEL DESIGN
TYPE 5 GUARDRAIL WITH CONCRETE DESIGN

EX. R/W

8'-0"

LINEAR GRADING 8'-0"

EX. R/W

2:1

683.9

EX. 4" GAS (APPROXIMATE LOCATION)

74+00.00
684.82

TYPE 5 GUARDRAIL WITH CONCRETE DESIGN ONLY

6-DT

STA. 425+05.08, 16.00' LT.
℄ R/W & SURVEY I.R. 271 =
73+24.87, 39.42' LT.
℄ RIVERVIEW RD.
PROP. M.H. NO. 3
TOP OF COVER EL. 690.00
℄ PROP. 15" (N.) EL. 683.26
℄ PROP. 15" (S.) EL. 686.97
℄ PROP. 15" (W.) EL. 685.24
℄ PROP. 15" (E.) EL. 683.26

MATCHLINE SEE MAINLINE CROSS SECTIONS

WITH STEEL DESIGN ONLY

WITH CONCRETE DESIGN ONLY

PROPOSED DETENTION BASIN ACCESS DRIVE
(SEE DETENTION BASIN ACCESS DRIVE PLAN & PROFILE SHEET NO. 316.)

79' - PROP. 15" TYPE F @ 26.40%

5' - PROP. 15" TYPE F @ 1%

TYPE 5A GUARDRAIL WITH STEEL DESIGN
TYPE 5 GUARDRAIL WITH CONCRETE DESIGN

LINEAR GRADING 8'-0"

EX. R/W

8'-0"

EX. R/W

2:1

685.0

684.3

5-DT

STA. 424+88.92, 16.00' LT.
℄ R/W & SURVEY I.R. 271 =
STA. 73+28.53, 55.16' LT.
℄ RIVERVIEW RD.
PROP. M.H. NO. 3
TOP OF COVER EL. 691.50
℄ PROP. 15" (E., W. & S.) EL. 687.50

7' - PROP. 15" TYPE F @ 30.86%

EX. 4" GAS (LOCATON VERIFIED BY SO-DEEP)

73+50.00
686.02

TYPE 5 GUARDRAIL WITH CONCRETE DESIGN ONLY

208' - PROP. 15" TYPE B @ 7.12%

7-DT

STA. 427+30.00, 16.25' LT.
℄ R/W & SURVEY I.R. 271 =
STA. 72+73.81, 180.62' RT.
℄ RIVERVIEW RD.
PROP. M.H. NO. 3
TOP OF COVER EL. 672.0
℄ PROP. 15" (W.) EL. 667.21
℄ PROP. 15" (N. & S.) EL. 664.03
℄ PROP. 18" (E.) EL. 663.10

(CONCRETE DESIGN STORM SEWER SHOWN)

STA. 73+00.00

STA. 73+00

	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	15	0		
			16	0
	2	0		
			7	0
	6	0		
SHEET TOTAL			23	0

CALCULATED PRS
CHECKED JDL

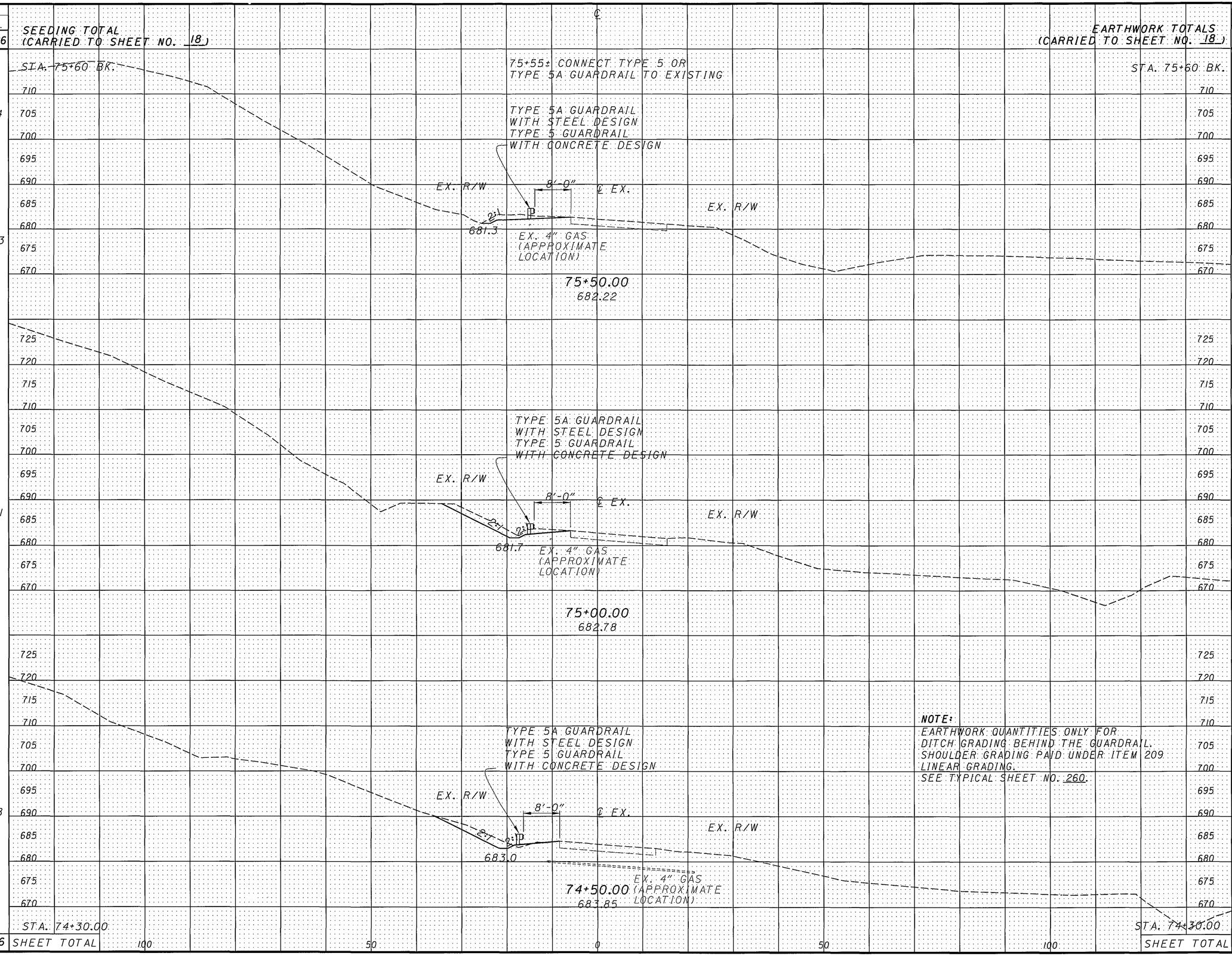
CROSS SECTIONS - RIVERVIEW ROAD
STA. 73+50.00 TO STA. 74+00.00

SUM-271-8.02

264
612

SIDEROADSHEET.DGN 3/31/04 SAM,CAR,CEO

SEEDING END WIDTH	SEEDING SQ. YDS.	
	1426	SEEDING TOTAL (CARRIED TO SHEET NO. 18)
22		STA. 75+60 BK.
	24	
22		
	153	
33		
	181	
32		
	58	
20		STA. 74+30.00
	416	SHEET TOTAL



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
		170	0
0	0		
		3	0
14	0		
		41	0
30	0		
		49	0
23	0		
		35	0
15	0		
		128	0
		SHEET TOTAL	

EARTHWORK TOTALS (CARRIED TO SHEET NO. 18)

CALCULATED PRS
CHECKED JDL

CROSS SECTIONS - RIVERVIEW ROAD
STA. 74+50.00 TO STA. 75+50.00

SUM-271-8.02

265
612

SIDEROADSHEET.DGN 3/30/04 SAM,CAR,CEO

CURRENT ADT (1997)_____1,800
DESIGN YEAR ADT (2017)_____2,100
DESIGN HOURLY VOLUME (2017)_____252
DIRECTIONAL DISTRIBUTION_____61%
TRUCKS (24 HOUR B&C)_____2.0%
DESIGN SPEED_____35 MPH
LEGAL SPEED_____35 MPH
DESIGN FUNCTIONAL
CLASSIFICATION_____RURAL LOCAL

(FROM SUMMIT COUNTY RIVERVIEW RD. IMPROVEMENTS FEBRUARY, 2000)

CROSS REFERENCES	
143	I.R. 271 PLAN
144	I.R. 271 PROFILE
148-258	I.R. 271 CROSS SECTIONS
286-334	DRAINAGE DETAILS
283-285	FENCE DETAILS
561-608	STRUCTURE PLANS

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PS
CHECKED JL

PLAN
BOSTON MILLS ROAD

SUM-271-8.02

266
612

℄ BOSTON MILLS ROAD
CURVE DATA
P.I. Sta = 23+18.26
Δ = 62° 29' 20" (LT)
Dc = 18° 00' 00"
R = 318.31'
T = 193.11'
L = 347.16'
E = 54.00'

B.M. #10 STA. 449+05.02, 155.33' RT.
CHISELED '□' ON TOP OF HEADWALL
S.W. OF I.R. 271 NB. BRIDGE OVER
BOSTON MILLS RD. ELEV. = 699.89

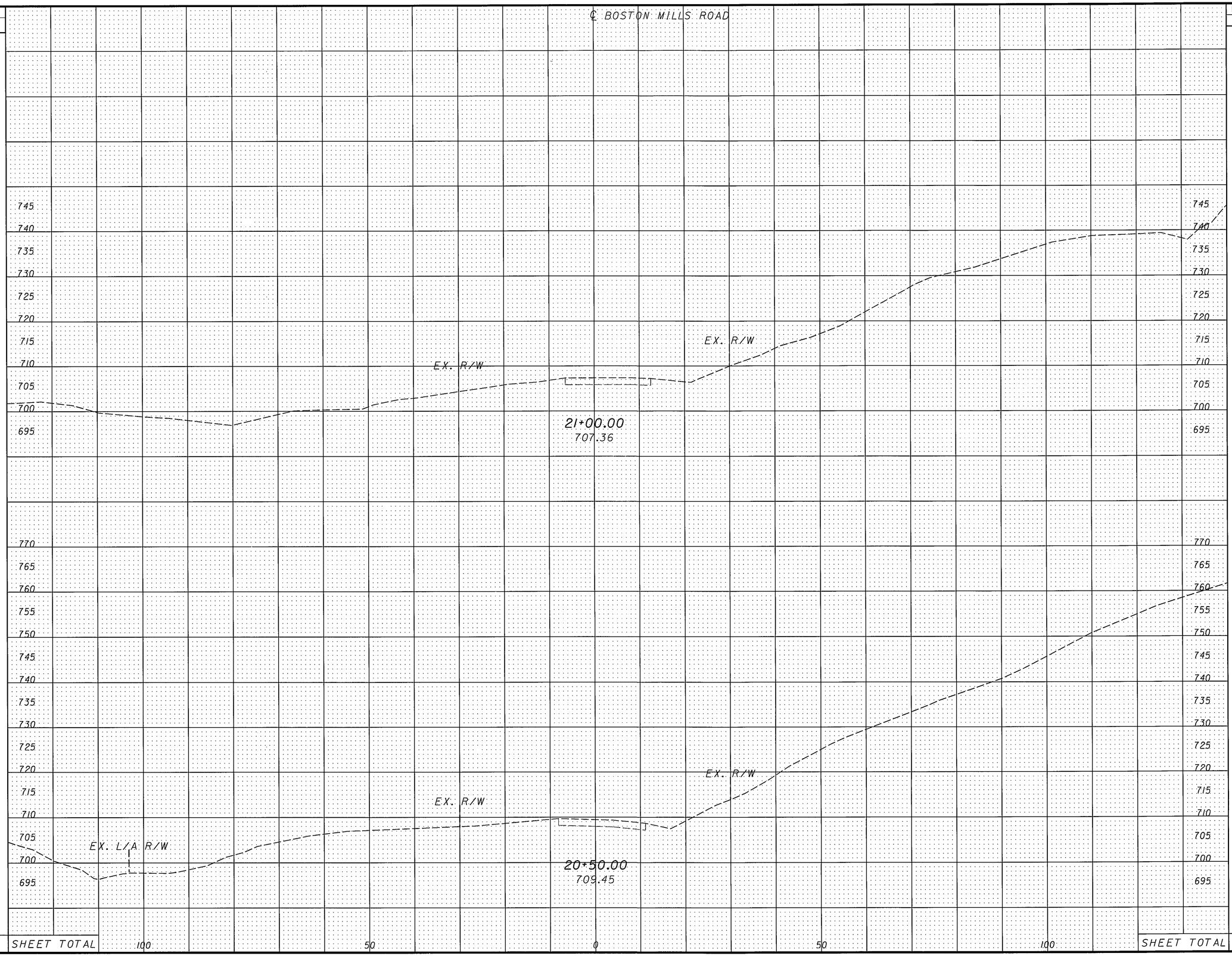
STA. 22+78.80 ℄ BOSTON MILLS RD. =
STA. 450+23.58 ℄ R/W & SURVEY I.R. 271

LEGEND
- WETLAND PROTECTION FENCE
- DITCH EROSION PROTECTION (7.5' WIDE TYP.)
- ROCK CHANNEL PROTECTION
- WETLANDS
- SLOPE EROSION PROTECTION

NOTE: EXISTING SPEED LIMIT IS 35 MPH ON BOSTON MILLS ROAD

21450PLANBOSTONMILLS.DGN 9/8/04 SAM.CEO

SEEDING	
END WIDTH	SQ. YDS.



END AREA		VOLUME	
CUT	FILL	CUT	FILL

SHEET TOTAL

SHEET TOTAL

CALCULATED PRS
CHECKED JDL

CROSS SECTIONS - BOSTON MILLS ROAD STA. 20+50.00 TO STA. 21+00.00

SUM-271-8.02

267
612

SIDEROADSHEET.DGN 3/30/04 SAM.CEO

SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED PRS
CHECKED JDL

℄ BOSTON MILLS ROAD

STRUCTURE SUM-271-0854 (R)

EX. BRIDGE PIER (TYP.)

EX. BRIDGE PIER (TYP.)

ACTUAL VERTICAL CLEARANCE 24.82±

22+00.00
704.45

EX. R/W

EX. R/W

EX. 30"

21+50.00
705.61

STA. 21+12.39, 62.98' LT.
EX. 30"
E OUTLET (S.) EL. 695.52

STA. 21+66.18, 28.42' RT.
EX. C.B.
TOP OF GRATE EL. 703.97
E EX. 30" (N.) EL. 696.87

740 735 730 725 720 715 710 705 700 695 690

755 750 745 740 735 730 725 720 715 710 705 700 695

100 50 0 50 100

SHEET TOTAL

SHEET TOTAL

CROSS SECTIONS - BOSTON MILLS ROAD STA. 12+50.00 TO STA. 22+00.00

SUM-271-8.02

SIDEROADSHEET.DGN 3/26/04 SAM.CEO

SEEDING	
END WIDTH	SQ. YDS.

℄ BOSTON MILLS ROAD

STRUCTURE SUM-271-0854 (L)

EX. BRIDGE PIER (TYP.)

ACTUAL VERTICAL CLEARANCE 26.67±

735 730 725 720 715 710 705 700 695 690

23+00.00
702.75

EX. BRIDGE PIER (TYP.)

735 730 725 720 715 710 705 700 695 690

22+50.00
703.23

END AREA		VOLUME	
CUT	FILL	CUT	FILL

SHEET TOTAL 100 50 0 50 100 SHEET TOTAL

CALCULATED PRS
CHECKED JDL

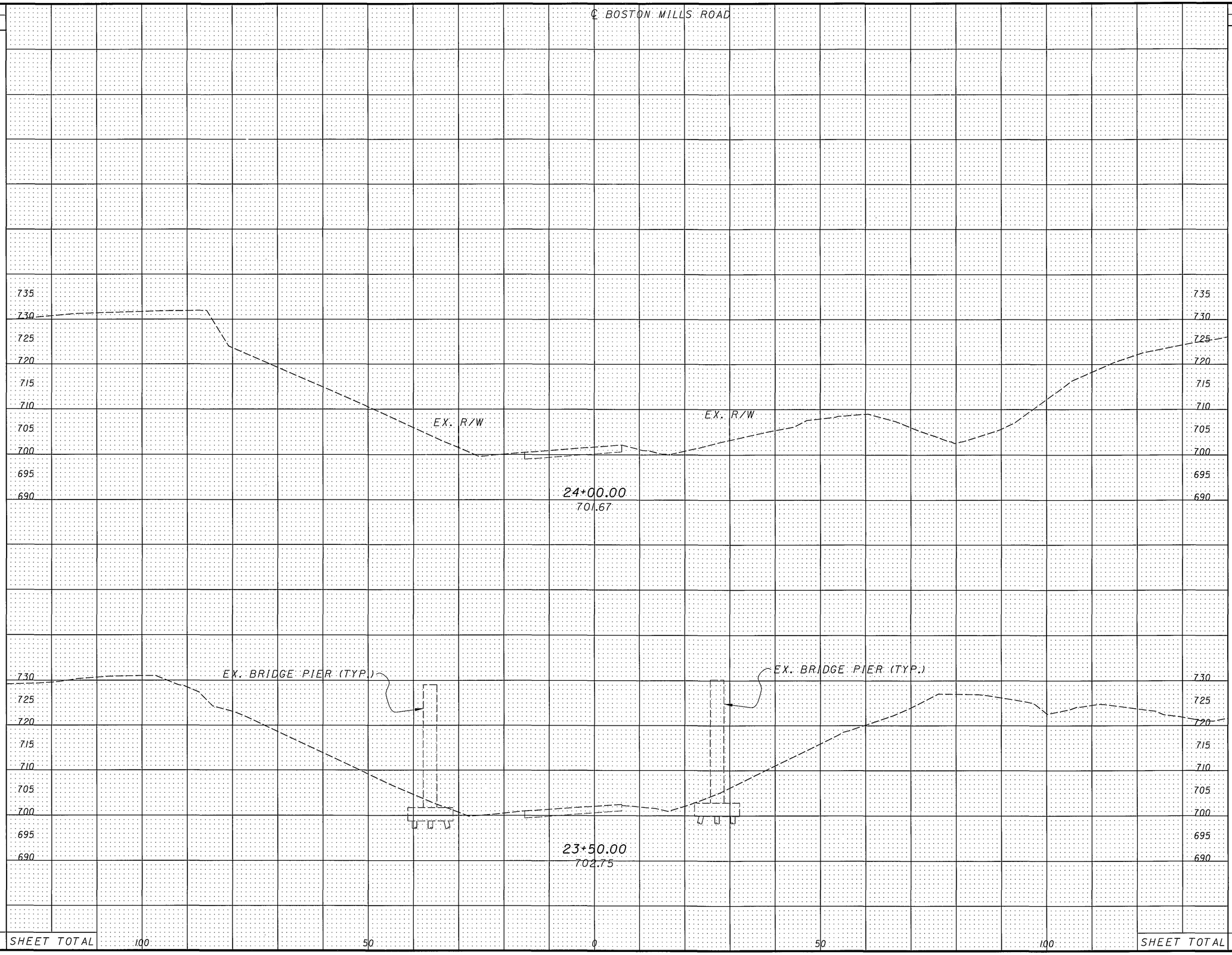
CROSS SECTIONS - BOSTON MILLS ROAD STA. 22+50.00 TO STA. 23+00.00

SUM-271-8.02

269
612

SIDEROADSHEET.DGN 3/30/04 SAM

SEEDING	
END WIDTH	SQ. YDS.
SHEET TOTAL	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
SHEET TOTAL			

CALCULATED PRS
CHECKED JDL

CROSS SECTIONS - BOSTON MILLS ROAD
STA. 23+50.00 TO STA. 24+00.00

SUM-271-8.02

270
612

SIDEROADSHEET.DGN 3/30/04 SAM

SEEDING	
END WIDTH	SQ. YDS.

℄ BOSTON MILLS ROAD

EX. R/W

EX. R/W

25+00.00
698.59

EX. R/W

EX. R/W

24+50.00
700.32

735 730 725 720 715 710 705 700 695 690 685

740 735 730 725 720 715 710 705 700 695 690

SHEET TOTAL 100 50 0 50 100 SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED PRS
CHECKED JDL

CROSS SECTIONS - BOSTON MILLS ROAD
STA. 24+50.00 TO STA. 25+00.00

SUM-271-8.02

271
612

SIDEROADSHEET.DGN 3/30/04 SAM

SEEDING	
END WIDTH	SQ. YDS.

℄ BOSTON MILLS ROAD

EX. R/W

EX. R/W

26+50.00
695.25

EX. R/W

EX. R/W

26+00.00
695.97

EX. R/W

EX. R/W

25+50.00
697.12

705 700 695 690 685 720 715 710 730 725

SHEET TOTAL

100 50 0 50 100

SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED PRS
CHECKED JDL

CROSS SECTIONS - BOSTON MILLS ROAD STA. 25+50.00 TO STA. 26+50.00

SUM-271-8.02

272
612

SIDEROADSHEET.DGN 3/30/04 SAM

SEE SUM-271-0802 L & R STRUCTURE
PLANS FOR ADDITIONAL DETAILS

SEE SHEET 430 (STEEL DESIGN) & 552 (CONCRETE DESIGN)
FOR ADDITIONAL SOUTHBOUND SLAB DETAILS

STANDARD GUARDRAIL TYPE 5

25'-0"
4 SPACES @ 6'-5"
BRIDGE TERMINAL ASSEMBLY, TYPE 2

PROP. 15" TYPE C

2'-0"

POT Sta. 1420+75.00

PAVED SHOULDER

14'-0"

12'-0"

12'-0"

14'-0"

PROP. 15" TYPE B

BORED OR JACKED

1421

℄ CONST. SB LANES

PROP. 15" BORED & JACKED TYPE B

26'-0"

26'-0"

APPROACH SLAB

1422

1423

SUM-271-0802 (L) STRUCTURE

PAVED SHOULDER

PROPOSED RETAINING WALL

421

422

423

PROP. 15" TYPE C

50' - SHOULDER TAPER 12' TO 14'

POT Sta. 2420+75.00

PAVED SHOULDER

12'-0"

12'-0"

12'-0"

12'-0"

CB

2'-11¼"

STANDARD GUARDRAIL

31.25'
BRIDGE TERMINAL ASSEMBLY. TYPE 1

2421

PROP. 15" TYPE B

APPROACH SLAB

26'-0"

26'-0"

2422

℄ CONST. NB LANES

2423

SUM-271-0802 (R) STRUCTURE

PAVED SHOULDER

2'-6"

1'-6"

10'-0"

14'-0" (TYP.)
TRANSITION

2'-11¼"

25'-0" (TYP.)

SEE SHEET 431 (STEEL DESIGN) & 553 (CONCRETE DESIGN)
FOR ADDITIONAL NORTHBOUND SLAB DETAILS

EX. 15" CONC.

PROP. 15" TYPE F 707.05, TYPE C

STANDARD GUARDRAIL TYPE 5

31.25'
BRIDGE TERMINAL ASSEMBLY. TYPE 1

HORIZONTAL SCALE IN FEET
0 5 10 20

CALCULATED PS
CHECKED JL

REAR APPROACH DETAIL

SUM-271-8.02

273
612

21450SMA.DGN 3/30/04 SAM.CEO

SEE SUM-271-0802 L & R STRUCTURE
PLANS FOR ADDITIONAL DETAILS

SEE SHEET 430 (STEEL DESIGN) & 552 (CONCRETE DESIGN)
FOR ADDITIONAL SOUTHBOUND SLAB DETAILS

31.25'
BRIDGE TERMINAL
ASSEMBLY. TYPE 1

STANDARD
GUARDRAIL,
TYPE 5

PROP. 15" TYPE C

25'-0" (TYP.)

2'-11¼"

14'-0" (TYP.)
TRANSITION
10'-0"

1'-6"

2'-6"

PROP. 15" TYPE B
BORED OR JACKED

PROP. 15" TYPE B
BORED OR JACKED

TS Sta. 1438+17.04

PAVED SHOULDER

SUM-271-0802 (L) STRUCTURE

1436

1437

1438

℄ CONST. SB LANES

STANDARD
GUARDRAIL,
TYPE 5

APPROACH
SLAB

25'-0"
BRIDGE
TERMINAL
ASSEMBLY,
TYPE 2

2'-0"

26'-0"

26'-0"

PAVED SHOULDER

PROPOSED RETAINING WALL

436

437

438

PROP. 15"
TYPE C

PROP. 15" TYPE C

N 54°13'47" E

12'-0"

12'-0"

12'-0"

12'-0"

PAVED SHOULDER

2436

2437

2438

℄ CONST. NB LANES

APPROACH
SLAB

SUM-271-0802 (R)
STRUCTURE

PROP. 15" TYPE B

26'-0"

26'-0"

PAVED SHOULDER

2'-0"

25'-0"
BRIDGE
TERMINAL
ASSEMBLY,
TYPE 2

STANDARD
GUARDRAIL, TYPE 5

PC Sta. 2437+78.88

NOTE:
SEE SHEET 322 FOR SHOULDER
TRANSITION DETAILS AT LOW PROFILE
GRADE END OF STRUCTURE

SEE SHEET 431 (STEEL DESIGN) & 553 (CONCRETE DESIGN)
FOR ADDITIONAL NORTHBOUND SLAB DETAILS

HORIZONTAL
SCALE IN FEET
0 5 10 20

CALCULATED PS
CHECKED JL

APPROACH DETAIL
FORWARD APP.

SUM-271-8.02

274
612

21450SMB.DGN 3/30/04 SAM,CEO

CROSS REFERENCES	
79-98	SUBSUMMARIES
58-66	TEMP. CONSTRUCTION ACCESS
131-133	PLAN & PROFILE SHEETS
148-258	CROSS SECTIONS
286-334	DRAINAGE DETAILS
361-437	STRUCTURE PLANS

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED PS
CHECKED JL

GRADING PLAN - STEEL
STA. 421+00 TO STA. 425+00

SUM-271-8.02

275
612

LEGEND

- PROPOSED SWALE FLOW LINE
- EXISTING CONTOUR
- 740 PROPOSED CONTOUR
- WETLANDS
- ROCK CHANNEL PROTECTION
- DITCH EROSION PROTECTION
- SLOPE EROSION PROTECTION

NOTE

FOR DRAINAGE ADDITIONAL DETAILS UNDER BRIDGE SEE SHEET 300-303

WETLAND 'S'
WETLAND 'O'
WETLAND 'H'
PROP. 15" TYPE C
PROP. 15" TYPE B
BORED OR JACKED
℄ CONSTRUCTION SOUTHBOUND LANES
℄ CONSTRUCTION NORTHBOUND LANES
℄ R/W & SURVEY I.R. 271
EX. 15" CONC.
PROP. 15" TYPE F
LA-R/W
T ESMT
LIMITS OF CRUSHED AGGREGATE SLOPE PROTECTION
6" NON-PERFORATED, CORRUGATED PLASTIC PIPE FROM ABUTMENTS
MATCHLINE STA. 425+00
421
422
423
424
2421
2422
2423
2424
6:1
4:1
2.5:1
2:1
1.5:1

2145OGM2.DGN 3/31/04 SAM,KH,RB,TWH

CROSS REFERENCES	
79-98	SUBSUMMARIES
58-66	TEMP. CONSTRUCTION ACCESS
131-133	PAN & PROFILE SHEETS
148-258	CROSS SECTIONS
259-268	RIVERVIEW ROAD PLAN
286-334	DRAINAGE DETAILS
315	DETENTION BASIN ACCESS DR.
309	DETENTION BASIN DETAILS
361-437	STRUCTURE PLANS

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED PS
CHECKED JL

GRADING PLAN - STEEL
STA. 425+00 TO STA. 430+00

SUM-271-8.02

276
612

STA. 425+00
STA. 430+00
MATCHLINE
MATCHLINE

LA-R/W
T ESMT
A ESMT
WETLAND 'H'
WETLAND 'F'
WETLAND 'G'
WETLAND 'E'
DETENTION BASIN ACCESS DRIVE
DETENTION BASIN ACCESS DRIVE
GATE
PAVED R.R. CROSSING
℄ CONSTRUCTION SOUTHBOUND LANES
℄ CONSTRUCTION NORTHBOUND LANES
℄ R/W & SURVEY I.R. 27
8' X 4' x 14' BOX CULVERT
1426
1427
1428
1429
2426
2427
2428
2429
670
680
660

LEGEND

- PROPOSED SWALE FLOW LINE
- EXISTING CONTOUR
- 740 PROPOSED CONTOUR
- WETLANDS
- ROCK CHANNEL PROTECTION
- DITCH EROSION PROTECTION

NOTE

FOR DRAINAGE ADDITIONAL DETAILS UNDER BRIDGE SEE SHEET 300-303

21450GM3.DGN 3/30/04 SAM,KH,RB,TWH

CROSS REFERENCES	
58-66	TEMP. CONSTRUCTION ACCESS
79-98	SUBSUMMARIES
134-136	PLAN & PROFILE SHEETS
148-258	CROSS SECTIONS
286-334	DRAINAGE DETAILS
309-310	DETENTION BASIN PLAN
361-437	STRUCTURE PLANS

STA. 430+00

MATCHLINE

STA. 435+00

MATCHLINE

RIVER

CUYAHOGA

DETENTION BASIN

DETENTION BASIN

LA-R/W

℄ CONSTRUCTION SOUTHBOUND LANES

℄ CONSTRUCTION NORTHBOUND LANES

℄ R/W & SURVEY I.R. 271

1432

1433

2432

2433

2434

431

660

680

4:1

WETLAND 'B'

WETLAND 'C'

T ESMT

I ESMT

℄ TOWPATH TRAIL

℄ BUCKEYE TRAIL EXTENSION

PC Sta. 10+95.30

PT Sta. 11+11.22

PC Sta. 10+48.14

PT Sta. 12+58.14

N 30°37'55" W

N 78°35'50" W

Sta. 11+50.04

Δ 45°24'53" Rt

Δ 51°13'47" Lt

Δ 5°40'10" Rt

R=1200.64

T=500.00

L=951.72

L=106.16

LEGEND

- PROPOSED SWALE FLOW LINE
- EXISTING CONTOUR
- 740 PROPOSED CONTOUR
- WETLANDS
- ROCK CHANNEL PROTECTION
- DITCH EROSION PROTECTION

NOTE

FOR DRAINAGE ADDITIONAL DETAILS UNDER BRIDGE SEE SHEET 300-303

HORIZONTAL SCALE IN FEET

0 10 20 40

CALCULATED PS

CHECKED JL

GRADING PLAN - STEEL
STA. 430+00 TO STA. 435+00

SUM-271-8.02

277
612

21450GM4.DGN 3/30/04 SAM,KH,RB,TWH

CROSS REFERENCES	
58-66	TEMP. CONSTRUCTION ACCESS
79-98	SUBSUMMARIES
134-136	PAN & PROFILE SHEETS
148-258	CROSS SECTIONS
286-334	DRAINAGE DETAILS
361-437	STRUCTURE PLANS

MATCHLINE STA. 435+00

LIMITS OF CRUSHED AGGREGATE SLOPE PROTECTION

LA-R/W

VARIES

1438+17.04 TS Sta.

℄ CONSTRUCTION SOUTHBOUND LANES

℄ R/W & SURVEY I.R. 271

℄ CONSTRUCTION NORTHBOUND LANES

2437+78.88 PC Sta.

WETLANDS 'Y'

1.5:1

1.7:1

6:1

4:1

2:1

LEGEND

- PROPOSED SWALE FLOW LINE
- EXISTING CONTOUR
- 740 PROPOSED CONTOUR
- WETLANDS
- ROCK CHANNEL PROTECTION
- DITCH EROSION PROTECTION
- SLOPE EROSION PROTECTION

NOTE

FOR DRAINAGE ADDITIONAL DETAILS UNDER BRIDGE SEE SHEET 300-303

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED PS
CHECKED JL

GRADING PLAN - STEEL
STA. 435+00 TO STA. 439+00

SUM-271-8.02

278
612

21450GM5.DGN 3/4/04 SAM,KH,RB

CROSS REFERENCES	
79-98	SUBSUMMARIES
58-66	TEMP. CONSTRUCTION ACCESS
137-139	PLAN & PROFILE SHEETS
148-258	CROSS SECTIONS
286-334	DRAINAGE DETAILS
438-560	STRUCTURE PLANS

STA. 425+00

MATCHLINE

PROP. 48" LINER POT.

PROP. 15" TYPE C

PROP. 15" TYPE B

BORED OR JACKED

℄ CONSTRUCTION SOUTHBOUND LANES

℄ CONSTRUCTION NORTHBOUND LANES

℄ R/W & SURVEY I.R. 271

EX. 15" CONC.

WETLAND 'S'

WETLAND 'O'

WETLAND 'P'

WET AND PERENNIAL

LIMITS OF CRUSHED AGGREGATE SLOPE PROTECTION

LA-R/W

T ESMT

LEGEND

- PROPOSED SWALE FLOW LINE
- EXISTING CONTOUR
- 740 PROPOSED CONTOUR
- WETLANDS
- ROCK CHANNEL PROTECTION
- DITCH EROSION PROTECTION
- SLOPE EROSION PROTECTION

NOTE

FOR DRAINAGE ADDITIONAL DETAILS UNDER BRIDGE SEE SHEET 304-308

HORIZONTAL SCALE IN FEET

0 10 20 40

CALCULATED PS

CHECKED JL

GRADING PLAN - CONCRETE
STA. 421+00 TO STA. 425+00

SUM-271-8.02

279
612

21450GM2-CONC.DGN 3/30/04 SAM,KH,RB,TWH

CROSS REFERENCES	
79-98	SUBSUMMARIES
58-66	TEMP. CONSTRUCTION ACCESS
137-139	PAN & PROFILE SHEETS
148-258	CROSS SECTIONS
259-268	RIVERVIEW ROAD PLAN
286-334	DRAINAGE DETAILS
316	DETENTION BASIN ACCESS DR.
311	DETENTION BASIN DETAILS
438-560	STRUCTURE PLANS

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED PS
CHECKED JL

GRADING PLAN - CONCRETE
STA. 425+00 TO STA. 430+00

SUM-271-8.02

280
612

STA. 425+00
STA. 430+00
MATCHLINE
MATCHLINE
WETLAND 'H'
WETLAND 'F'
WETLAND 'G'
WETLAND 'E'
EX. 14'X14' BOX CULVERT
PAVED R.R. CROSSING
DETENTION BASIN ACCESS DRIVE
DETENTION BASIN ACCESS DRIVE
℄ CONSTRUCTION SOUTHBOUND LANES
℄ CONSTRUCTION NORTHBOUND LANES
℄ R/W & SURVEY I.R. 2'
GATE
LA-R/W
A ESMT
T ESMT
4:1
680
670
660
690

LEGEND

- PROPOSED SWALE FLOW LINE
- EXISTING CONTOUR
- 740 PROPOSED CONTOUR
- WETLANDS
- ROCK CHANNEL PROTECTION
- DITCH EROSION PROTECTION

NOTE

FOR DRAINAGE ADDITIONAL DETAILS UNDER BRIDGE SEE SHEET 304-308

21450GM3-CONC.DGN 3/30/04 SAM,KH,RB,TWH

CROSS REFERENCES	
58-66	TEMP. CONSTRUCTION ACCESS
79-98	SUBSUMMARIES
140-142	PLAN & PROFILE SHEETS
148-258	CROSS SECTIONS
286-334	DRAINAGE DETAILS
311-312	DETENTION BASIN PLAN
438-560	STRUCTURE PLANS

RIVER

DETENTION BASIN

DETENTION BASIN

MATCHLINE STA. 430+00

MATCHLINE STA. 435+00

LA-R/W

660

4:1

1431

1432

1433

1434

℄ CONSTRUCTION SOUTHBOUND LANES

℄ R/W & SURVEY I.R. 271

2431

2432

2433

2434

℄ CONSTRUCTION NORTHBOUND LANES

WETLAND 'B'

WETLAND 'C'

CUYAHOGA

T ESMT

PC Sta. 10+95.30

PT Sta. 11+11.22

PC Sta. 10+46.16

PC Sta. 10+08.64

N 30°37'51" W

N 78°35'50" W

B BUCKEYE TRAIL EXTENSION

B TOWPATH TRAIL

N 54° 53' 41" E

Δ=15°24'53"

R=1146.28

T=155.30

L=308.14

Sta. 10+98.14

680

690

670

10

20

40

0

HORIZONTAL SCALE IN FEET

CALCULATED PS

CHECKED JL

LEGEND

- PROPOSED SWALE FLOW LINE
- EXISTING CONTOUR
- 740 PROPOSED CONTOUR
- WETLANDS
- ROCK CHANNEL PROTECTION
- DITCH EROSION PROTECTION

NOTE

FOR DRAINAGE ADDITIONAL DETAILS UNDER BRIDGE SEE SHEET 304-308

GRADING PLAN - CONCRETE
STA. 430+00 TO STA. 435+00

SUM-271-8.02

281
612

21450GM4-CONC.DGN 3/30/04 SAM,KH,RB,TWH

CROSS REFERENCES	
58-66	TEMP. CONSTRUCTION ACCESS
79-98	SUBSUMMARIES
140-142	PAN & PROFILE SHEETS
148-258	CROSS SECTIONS
286-334	DRAINAGE DETAILS
438-560	STRUCTURE PLANS

STA. 435+00

MATCHLINE

VARIES

LA-R/W

℄ CONSTRUCTION SOUTHBOUND LANES

℄ R/W & SURVEY I.R. 271

℄ CONSTRUCTION NORTHBOUND LANES

LIMITS OF CRUSHED AGGREGATE SLOPE PROTECTION

WETLANDS 'Y'

1.5:1

1.7:1

6:1

2:1

4:1

LEGEND

- PROPOSED SWALE FLOW LINE
- EXISTING CONTOUR
- 740 PROPOSED CONTOUR
- WETLANDS
- ROCK CHANNEL PROTECTION
- DITCH EROSION PROTECTION
- SLOPE EROSION PROTECTION

NOTE

FOR DRAINAGE ADDITIONAL DETAILS UNDER BRIDGE SEE SHEET 304-308

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED PS
CHECKED JL

GRADING PLAN - CONCRETE
STA. 435+00 TO STA. 439+00

SUM-271-8.02

282
612

2145GM5-CONC.DGN 3/30/04 SAM,KH,RB,TWH

STATION AND OFFSETS FOR WETLANDS PROTECTION FENCE

1-WP

1-X	STA. 414+08.12, 266.84' RT.
2-X	STA. 414+78.65, 251.24' RT.
3-X	STA. 414+86.63, 254.37' RT.
4-X	STA. 414+95.13, 254.41' RT.
5-X	STA. 415+00.29, 257.08' RT.
6-X	STA. 414+92.44, 275.51' RT.
7-X	STA. 414+37.24, 286.38' RT.

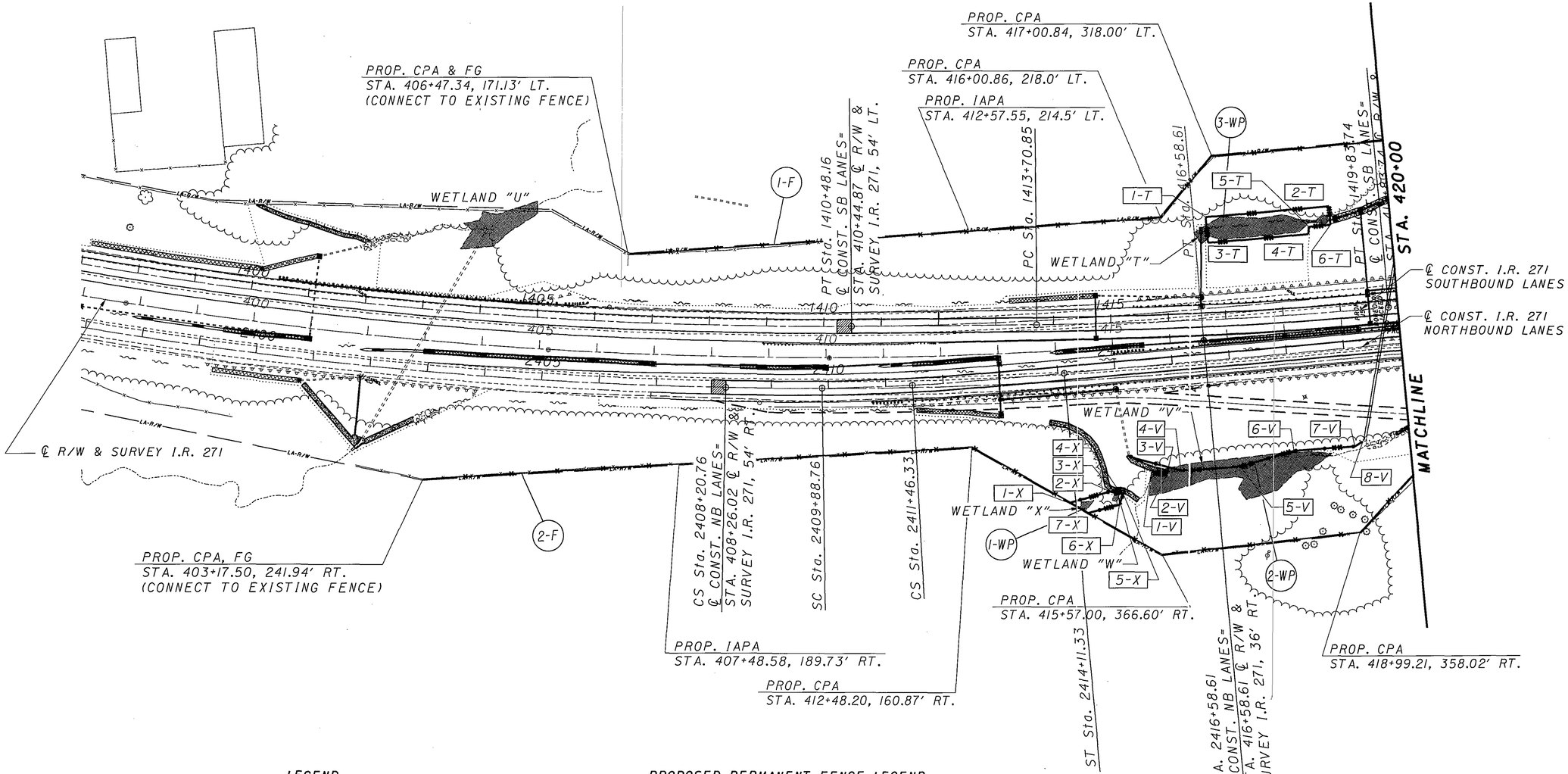
2-WP

1-V	STA. 415+49.65, 222.26' RT.
2-V	STA. 415+74.60, 230.48' RT.
3-V	STA. 415+79.18, 215.85' RT.
4-V	STA. 415+99.66, 223.34' RT.
5-V	STA. 417+01.83, 224.55' RT.
6-V	STA. 417+97.43, 205.78' RT.
7-V	STA. 419+03.85, 207.59' RT.
8-V	STA. 419+18.28, 200.37' RT.

3-WP

1-T	STA. 416+80.86, 212.5' RT.
2-T	STA. 418+96.05, 212.5' RT.
3-T	STA. 416+80.86, 167.5' RT.
4-T	STA. 418+56.16, 167.5' RT.
5-T	STA. 418+58.32, 180' RT.
6-T	STA. 418+96.05, 180' RT.

CROSS REFERENCES	
127-131	PLAN & PROFILE SHEETS
82	FENCE SUBSUMMARY
21-73	M.O.T. PLANS & DETAILS



LEGEND

- EXISTING FENCE
- FENCE, TYPE CL, AS PER PLAN
- WETLAND PROTECTION FENCE
- WETLANDS

PROPOSED PERMANENT FENCE LEGEND

- PROPOSED FENCE, TYPE 47, AS PER PLAN
- EPA - END POST ASSEMBLY
- CPA - CORNER POST ASSEMBLY
- AC - ABUTMENT CONNECTION
- IAPA - INTERMEDIATE ANCHOR ASSEMBLY
- FG - FENCE GROUNDING

HORIZONTAL SCALE IN FEET: 0, 50, 100, 200

CALCULATED PG
CHECKED JL

FENCE DETAIL - PERMANENT, CONSTRUCTION AND WETLAND PROTECTION FENCE

SUM-271-8.02

283
612

2145OFENCE.DGN 03/29/04 SAM.CAR.HN

STATION AND OFFSETS FOR CONSTRUCTION FENCE

2-CF

1-A	STA. 423+48.00, 184.09' LT.
2-A	STA. 424+42.78, 200.52' LT.
3-A	STA. 424+68.09, 272.17' LT.
4-A	STA. 424+91.96, 272.17' LT.
5-A	STA. 424+93.45, 210.41' LT.

3-CF

1-B	STA. 425+03.36, 142.86' LT.
2-B	STA. 425+63.45, 127.76' RT.

4-CF

1-C	STA. 425+94.76, 135.66' RT.
2-C	STA. 425+44.35, 82.17' LT.
3-C	STA. 427+16.73, 82.17' LT.
4-C	STA. 427+11.88, 19.55' RT.
5-C	STA. 427+70.81, 19.55' RT.
6-C	STA. 427+70.69, 89.17' RT.
7-C	STA. 427+67.04, 139.33' RT.

7-CF

1-G	STA. 427+77.75, 139.16' RT.
2-G	STA. 427+83.65, 89.17' RT.
3-G	STA. 428+08.49, 89.17' RT.
4-G	STA. 428+18.70, 82.17' LT.
5-G	STA. 431+83.19, 82.17' LT.

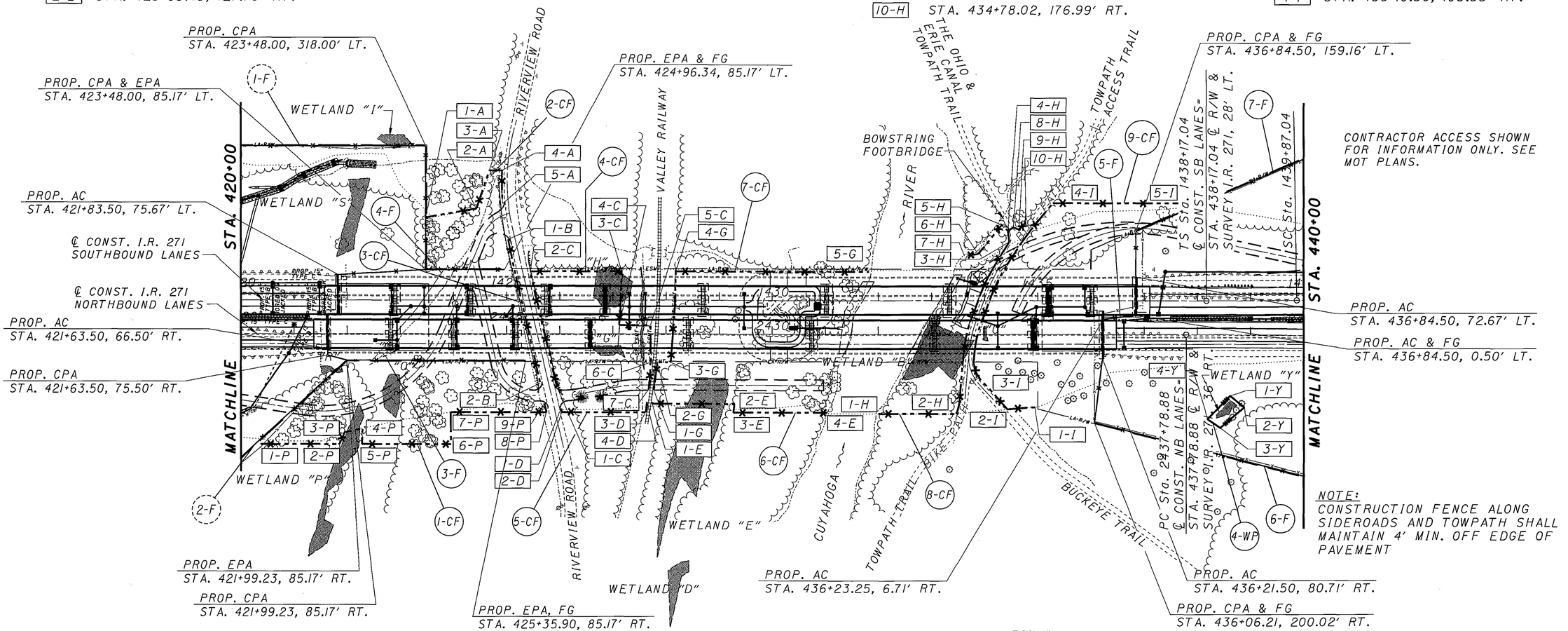
8-CF

1-H	STA. 432+00.50, 184.01' RT.
2-H	STA. 433+46.51, 184.22' RT.
3-H	STA. 434+46.84, 139.22' LT.
4-H	STA. 434+44.40, 159.88' LT.
5-H	STA. 434+32.59, 171.25' LT.
6-H	STA. 433+87.49, 116.15' LT.
7-H	STA. 433+61.73, 112.7' RT.
8-H	STA. 434+54.62, 166.53' RT.
9-H	STA. 434+65.21, 162.13' RT.
10-H	STA. 434+78.02, 176.99' RT.

CROSS REFERENCES	
131-140	PLAN & PROFILE SHEETS
82	FENCE SUBSUMMARY
21-73	M.O.T. PLANS & DETAILS

STATION AND OFFSETS FOR WETLAND PROTECTION FENCE

1-Y	STA. 438+61.46, 150.79' RT.
2-Y	STA. 438+88.02, 171.59' RT.
3-Y	STA. 438+42.98, 210.3' RT.
4-Y	STA. 438+19.30, 193.55' RT.



CONTRACTOR ACCESS SHOWN FOR INFORMATION ONLY. SEE MOT PLANS.

NOTE:
CONSTRUCTION FENCE ALONG SIDEROADS AND TOWPATH SHALL MAINTAIN 4' MIN. OFF EDGE OF PAVEMENT

STATION AND OFFSETS FOR CONSTRUCTION FENCE

1-CF

1-P	STA. 420+36.58, 242.17' RT.
2-P	STA. 421+85.30, 242.17' RT.
3-P	STA. 421+95.36, 220' RT.
4-P	STA. 422+28.80, 212.89' RT.
5-P	STA. 422+27.62, 242.17' RT.
6-P	STA. 423+95.00, 242.17' RT.
7-P	STA. 423+95.00, 182.17' RT.
8-P	STA. 425+74.77, 182.17' RT.
9-P	STA. 425+70.93, 165.72' RT.

5-CF

1-D	STA. 426+02.29, 175.44' RT.
2-D	STA. 426+03.86, 182.17' RT.
3-D	STA. 427+61.47, 182.17' RT.
4-D	STA. 427+63.96, 163.05' RT.

6-CF

1-E	STA. 427+73.60, 166.49' RT.
2-E	STA. 429+28.08, 166.79' RT.
3-E	STA. 429+26.29, 182.17' RT.
4-E	STA. 431+03.07, 182.17' RT.

9-CF

1-I	STA. 434+94.65, 171.8' RT.
2-I	STA. 434+42.53, 175.77' RT.
3-I	STA. 433+92.33, 120.81' RT.
4-I	STA. 435+28.59, 212.17' RT.
5-I	STA. 437+93.35, 212.17' RT.

NOTE:
CONCRETE BRIDGE IS SHOWN FOR VISUAL PURPOSES. FOR ADDITIONAL DETAILS OF STEEL BRIDGE DESIGN AND CONCRETE BRIDGE DESIGN SEE PLAN & PROFILE SHEETS AND SUM-271-0802 L&R STRUCTURE PLANS.

LEGEND

- EXISTING FENCE
- FENCE, TYPE CL, AS PER PLAN
- WETLAND PROTECTION FENCE
- WETLANDS

PROPOSED PERMANENT FENCE LEGEND

- PROPOSED FENCE, TYPE 47, AS PER PLAN
- EPA - END POST ASSEMBLY
- CPA - CORNER POST ASSEMBLY
- AC - ABUTMENT CONNECTION
- IAPA - INTERMEDIATE ANCHOR ASSEMBLY
- FG - FENCE GROUNDING

HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED PG
CHECKED JL

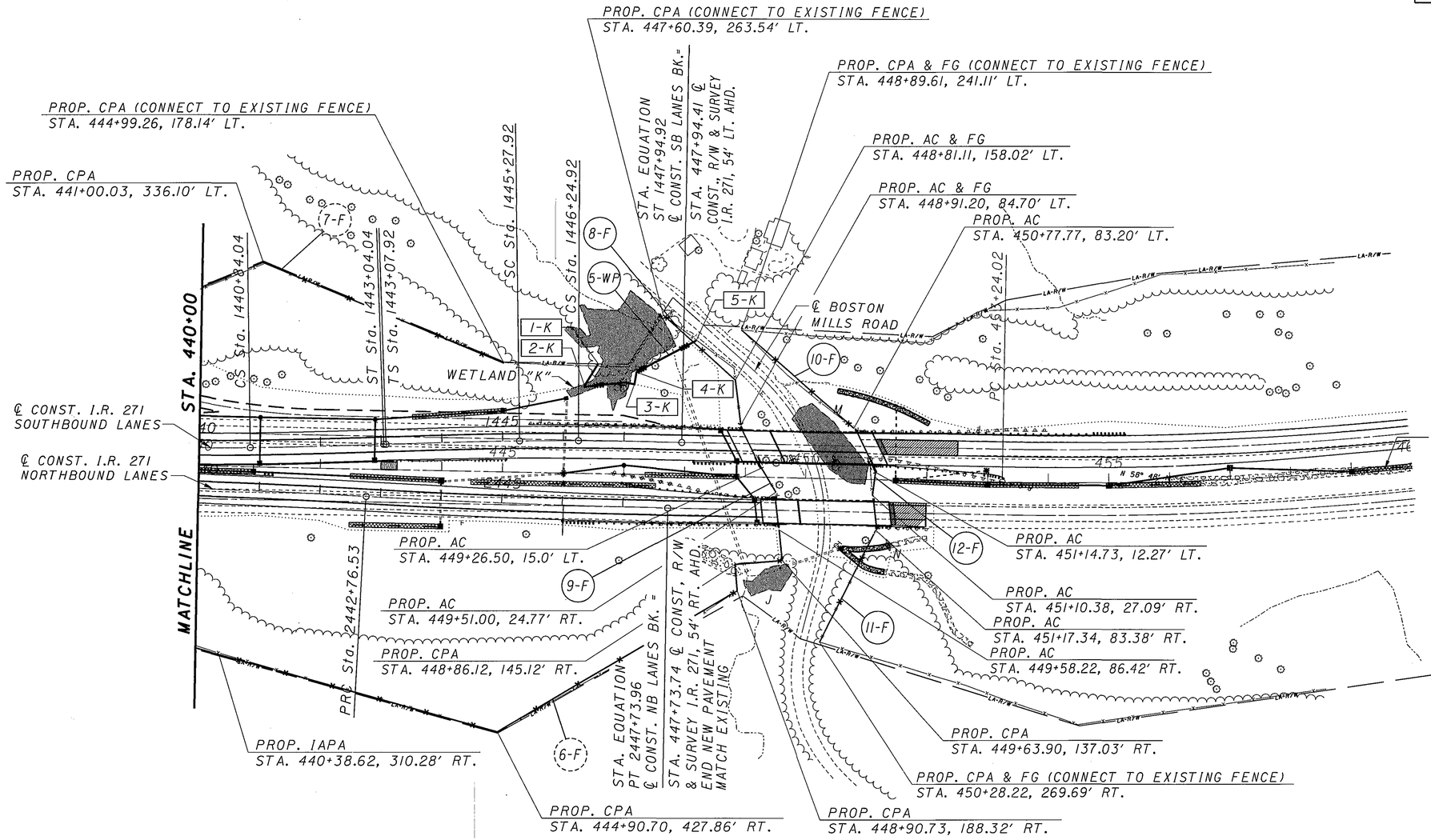
FENCE DETAIL - PERMANENT, CONSTRUCTION AND WETLAND PROTECTION FENCE

SUM-271-8.02

284
612

21450FENCE2.DGN 03/31/04 SAM,CAR,HN,RC

CROSS REFERENCES	
134-145	PLAN & PROFILE SHEETS
82	FENCE SUBSUMMARY
21-73	M.O.T. PLANS & DETAILS



STATION AND OFFSETS FOR WETLANDS PROTECTION FENCE

(5-WP)

1-K	STA. 446+54.60, 180.36' RT.
2-K	STA. 446+31.62, 141.92' RT.
3-K	STA. 447+14.85, 147.58' RT.
4-K	STA. 447+17.86, 167.55' RT.
5-K	STA. 448+15.40, 222.56' RT.

LEGEND

- EXISTING FENCE
- FENCE, TYPE CL, AS PER PLAN
- WETLAND PROTECTION FENCE
- WETLANDS

PROPOSED PERMANENT FENCE LEGEND

- PROPOSED FENCE, TYPE 47, AS PER PLAN
- EPA - END POST ASSEMBLY
- CPA - CORNER POST ASSEMBLY
- AC - ABUTMENT CONNECTION
- IAPA - INTERMEDIATE ANCHOR ASSEMBLY
- FG - FENCE GROUNDING

HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED PG
CHECKED JL

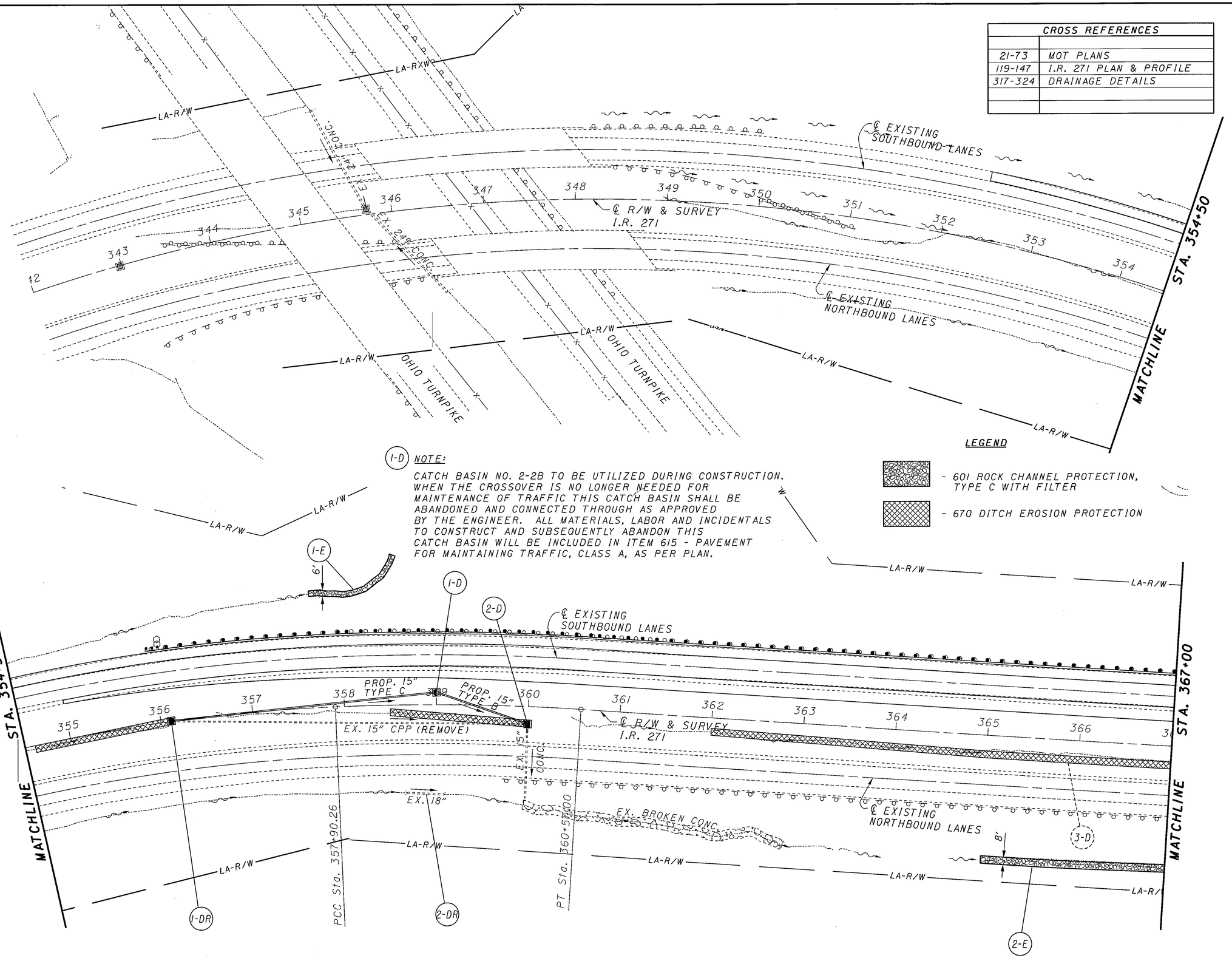
FENCE DETAIL - PERMANENT, CONSTRUCTION AND WETLAND PROTECTION FENCE

SUM-271-8.02

285
612

21450FENCE3.DGN 03/29/04 CAR,HN

CROSS REFERENCES	
21-73	MOT PLANS
119-147	I.R. 271 PLAN & PROFILE
317-324	DRAINAGE DETAILS



DRAINAGE PLAN
STA. 342+00 TO STA. 367+00

SUM-271-8.02

286
612

CALCULATED TM
CHECKED PRS

HORIZONTAL SCALE IN FEET
0 25 50 100

21450SLIDE-DPI.DGN 3/29/04 SAM,CEO,KH

CROSS REFERENCES	
119-147	I.R. 271 PLAN & PROFILE
317-324	DRAINAGE DETAILS

STA. 367+00

MATCHLINE

℄ EXISTING SOUTHBOUND LANES

℄ R/W & SURVEY I.R. 271

℄ EXISTING NORTHBOUND LANES

PROP. EX. 15" 15" TYPE F CONC.

EX. BROKEN CONC.

8'

6'

3-D

2-E

3-E

4-D

EX. 72" CMP

EX. 72" CIP

PC Sta. 378+02.24

EX. 6" PVC (TYP.)

EX. 6" PVC

LA-R/W

367 368 369 370 371 372 373 374 375 376 377 378 379

STA. 379+50

MATCHLINE

LEGEND

- 601 ROCK CHANNEL PROTECTION

- 670 DITCH EROSION PROTECTION

EX. BROKEN CONC.

EX. 15" CONC.

380 381 382 383 384 385 386 387 388 389 390 391

STA. 392+00

MATCHLINE

℄ EXISTING SOUTHBOUND LANES

℄ R/W & SURVEY I.R. 271

℄ EXISTING NORTHBOUND LANES

4A-E

4-D

4-E

7.5'

DRAINAGE PLAN STA. 367+00 TO STA. 392+00

SUM-271-8.02

CALCULATED TM

CHECKED PRS

HORIZONTAL SCALE IN FEET

0 25 50 100

287
612

2I450SLIDE-DP2.DGN 3/29/04 SAM,CEO,KH

LEGEND

- 601 ROCK CHANNEL PROTECTION
- 670 DITCH EROSION PROTECTION
- WETLANDS

CROSS REFERENCES	
119-147	I.R. 271 PLAN & PROFILE
317-324	DRAINAGE DETAILS

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED TM
CHECKED PRS

DRAINAGE PLAN
STA. 392+00 TO STA. 417+00

SUM-271-8.02

288
612

2145OSLIDE-DP3.DGN 3/29/04 SAM.CEO.KH

CROSS REFERENCES	
300-303	STORM SEWER PROFILE-STEEL
119-147	I.R. 271 PLAN & PROFILE
309-310	DETENTION BASIN PLAN
292-299	SLOPE REPAIR DETAILS
336	CULVERT DETAIL
259-265	RIVERVIEW ROAD PLANS
317-324	DRAINAGE DETAILS

MATCHLINE STA. 417+00

MATCHLINE STA. 429+50

MATCHLINE STA. 429+50

MATCHLINE STA. 442+00

LEGEND

- 601 ROCK CHANNEL PROTECTION
- 670 DITCH EROSION PROTECTION, 7.5 WIDE
- WETLANDS

NOTE:

1. FOR STORM SEWER LABELS UNDER BRIDGE, SEE STORM SEWER PROFILES, SHEET 300-303
2. 1-RT AND 2-RT NOT USED.

HORIZONTAL SCALE IN FEET

CALCULATED TM

CHECKED PRS

DRAINAGE PLAN - STEEL DESIGN
STA. 417+00 TO STA. 442+00

SUM-271-8.02

289
612

2145OSLIDE-DP4_STEEL.DGN 3/30/04 SAM,CEO,KH

CROSS REFERENCES	
119-147	I.R. 271 PLAN & PROFILE
304-308	STORM SEWER PROFILE-CONCRETE
311-312	DETENTION BASIN PLAN
292-299	SLOPE REPAIR DETAILS
336	CULVERT DETAIL
259-265	RIVERVIEW ROAD PLAN
317-324	DRAINAGE DETAILS

LEGEND

- 601 ROCK CHANNEL PROTECTION
- 670 DITCH EROSION PROTECTION, 7.5' WIDE
- WETLANDS

NOTE:

1. FOR STORM SEWER LABELS UNDER THE BRIDGE, SEE STORM SEWER PROFILE, SHEET 304-308

HORIZONTAL SCALE IN FEET: 0, 25, 50, 100

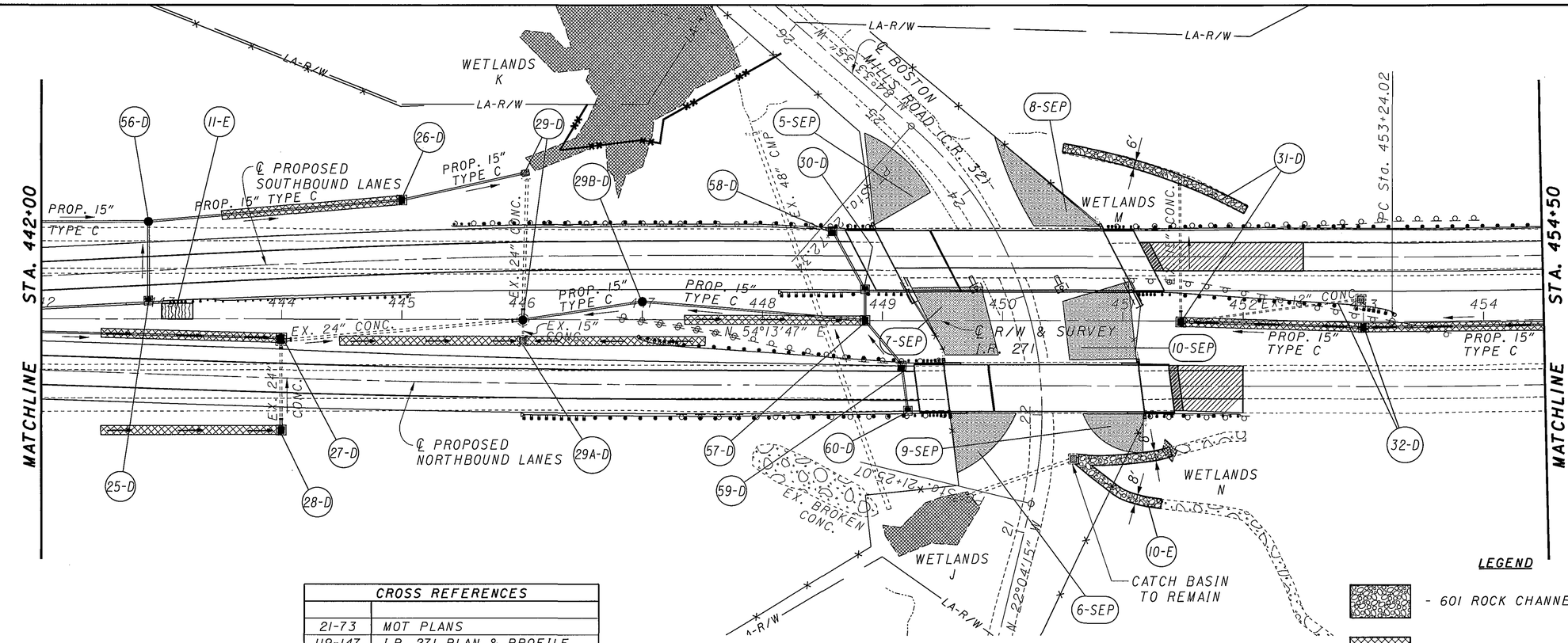
CALCULATED TM
CHECKED PRS

DRAINAGE PLAN - CONCRETE DESIGN
STA. 417+00 TO STA. 442+00

SUM-271-8.02

290
612

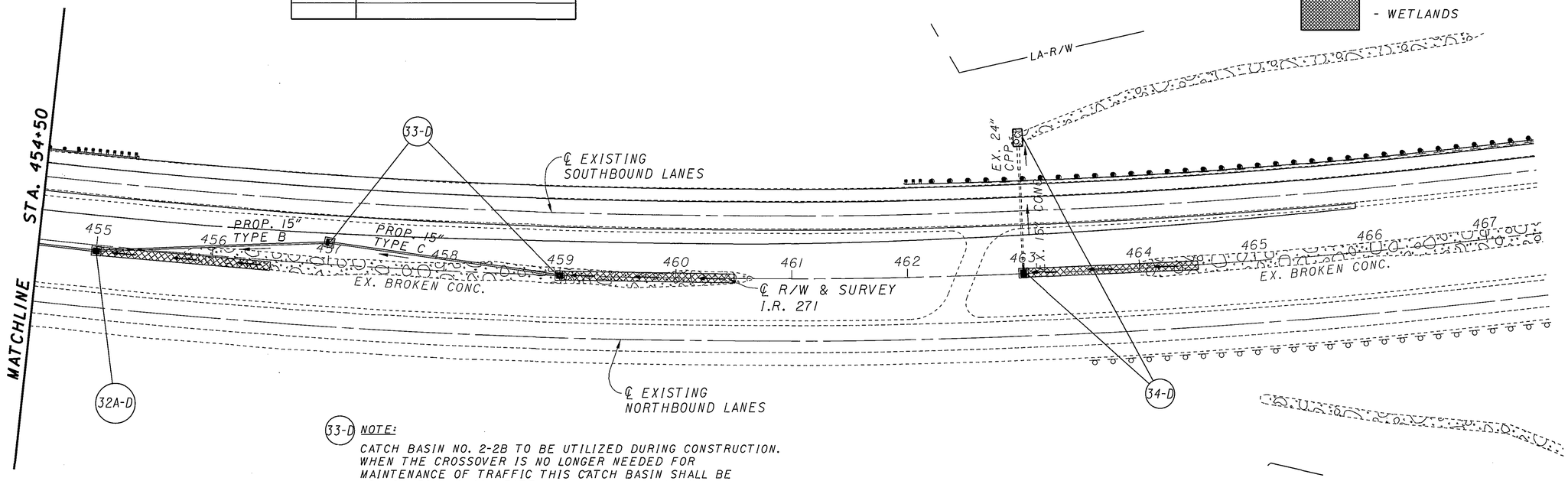
2145OSLIDE-DP4_CONCRETE.DGN 3/30/04 SAM,CEO,KH



CROSS REFERENCES	
21-73	MOT PLANS
119-147	I.R. 271 PLAN & PROFILE
266-272	BOSTON MILLS ROAD PLANS
317-324	DRAINAGE DETAILS

LEGEND

- 601 ROCK CHANNEL PROTECTION
- 670 DITCH EROSION PROTECTION
- WETLANDS



33-D **NOTE:**

CATCH BASIN NO. 2-2B TO BE UTILIZED DURING CONSTRUCTION. WHEN THE CROSSOVER IS NO LONGER NEEDED FOR MAINTENANCE OF TRAFFIC THIS CATCH BASIN SHALL BE ABANDONED AND CONNECTED THROUGH AS APPROVED BY THE ENGINEER. ALL MATERIALS, LABOR AND INCIDENTALS TO CONSTRUCT AND SUBSEQUENTLY ABANDON THIS CATCH BASIN WILL BE INCLUDED IN ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN.

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED TM
CHECKED PRS

DRAINAGE PLAN
STA. 442+00 TO STA. 467+00

SUM-271-8.02

291
612

2145OSLIDE-DP5.DGN 9/8/04 SAM,CEO

CROSS REFERENCES	
7-12	TYPICAL SECTIONS
119-147	PLAN & PROFILE SHEETS
148-258	CROSS SECTIONS
317-324	DRAINAGE DETAILS
336	CULVERT DETAILS

EX. 4' BROKEN STONE RIPRAP

PROP. 15" TYPE C, AS PER PLAN

PROP. 18" TYPE C AS PER PLAN

PROP. 18" TYPE C, AS PER PLAN

EX. 4' ROCK SHELVES

PROP. 54" TYPE C, AS PER PLAN

20' - PROP. 54" TYPE C, AS PER PLAN

PROP. 54" TYPE C, AS PER PLAN

PROP. 54" TYPE C, AS PER PLAN

PROP. 54" TYPE C, AS PER PLAN

12' x 50' x 48" ROCK CHANNEL PROTECTION, TYPE A W/FILTER

PROP. 15" TYPE F, 707.05, TYPE C

EX. 54" CMP

PROP. 48" LINER, 707.12

SEE SHEET 336 FOR ADDITIONAL DETAILS

PT Sta. 1419+83.74

PROP. 15" TYPE C

PROP. 15" TYPE C

PROP. 15" TYPE B BORED OR JACKED

PROP. 15" TYPE B BORED OR JACKED

PROP. 15" TYPE B BORED OR JACKED

℄ R/W & SURVEY I.R. 271

1419 1420 1421 1422

419 420 421 422

FINAL LOCATION - CONSTRUCTION STAGING REQUIRES TEMPORARY PIPE OUTLET UNTIL THE STORM SEWER CAN BE CONSTRUCTED

39-D 40-D 41-D 42-D 43-D 44-D 45-D 46-D 38-D 48-D 51-D 52-D 16-D 47-D 18-D 49-D

STA. 419+50.00, 60.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 796.38
℄ PROP. 15" (S.) EL. 791.70
℄ PROP. 15" (N. & E.) EL. 782.59

STA. 421+48.00, 60.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 791.75
℄ PROP. 15" (W. & S.) EL. 785.57

110' - 15" TYPE C @ 1.50%

88' - 15" TYPE C @ 1.50%

STA. 420+60.00, 60.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 794.20
℄ PROP. 15" (S.) EL. 787.37
℄ PROP. 15" (E. & W.) EL. 784.24

800 790 780 770

6" DIKE 6" DIKE 6" DIKE

STA. 419+05.00, 190.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 745.50
℄ PROP. 15" (E.) EL. 740.75

46' - 15" TYPE C, AS PER PLAN @ 6.00%

53' - 18" TYPE C, AS PER PLAN @ 6.23%

35' - 18" TYPE C, AS PER PLAN @ 4.00%

STA. 420+00.00, 215.50' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5
TOP OF GRATE EL. 741.50
℄ PROP. 18" (E. & W.) EL. 734.44

STA. 419+50.00, 200.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5
TOP OF GRATE EL. 744.50
℄ PROP. 15" (S.) EL. 738.50
℄ PROP. 15" (W.) EL. 737.99
℄ PROP. 18" (E.) EL. 737.74

STA. 420+32.94, 225.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3, AS PER PLAN
TOP OF COVER EL. 743.50
℄ PROP. 18" (W.) EL. 733.04
℄ PROP. 54" (S.) EL. 722.02
℄ PROP. 54" (E.) EL. 718.50

45' - 54" TYPE C, AS PER PLAN @ 3.00%

49' - 54" TYPE C, AS PER PLAN @ 5.00%

62' - 54" TYPE C, AS PER PLAN @ 2.00%

STA. 420+75.00 240.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5A, AS PER PLAN
TOP OF GRATE EL. 726.70
℄ PROP. 54" (E.) EL. 707.60
℄ PROP. 54" (W.) EL. 717.15

STA. 421+18.00 262.50' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5A, AS PER PLAN
TOP OF GRATE EL. 715.00
℄ PROP. 54" (E.) EL. 697.80
℄ PROP. 54" (W.) EL. 705.15

STA. 421+75.00 286.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5A (PLACE GRATE FLAT)
TOP OF GRATE EL. 705.50
℄ PROP. 54" (E.) EL. 693.30
℄ PROP. 54" (W.) EL. 696.56

STA. 422+00.00, 285.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. H.W.-I.I
℄ PROP. 54" (W.) EL. 693.00

25' - 54" TYPE C, AS PER PLAN @ 1.20%

12' x 50' x 48" ROCK CHANNEL PROTECTION, TYPE A W/FILTER

2:1 NORM.

740 730 720 710 700 690

HORIZONTAL SCALE IN FEET 0 10 20 40

CALCULATED PS CHECKED JL

SLOPE REPAIR
STORM SEWER PROFILES

SUM-271-8.02

292
612

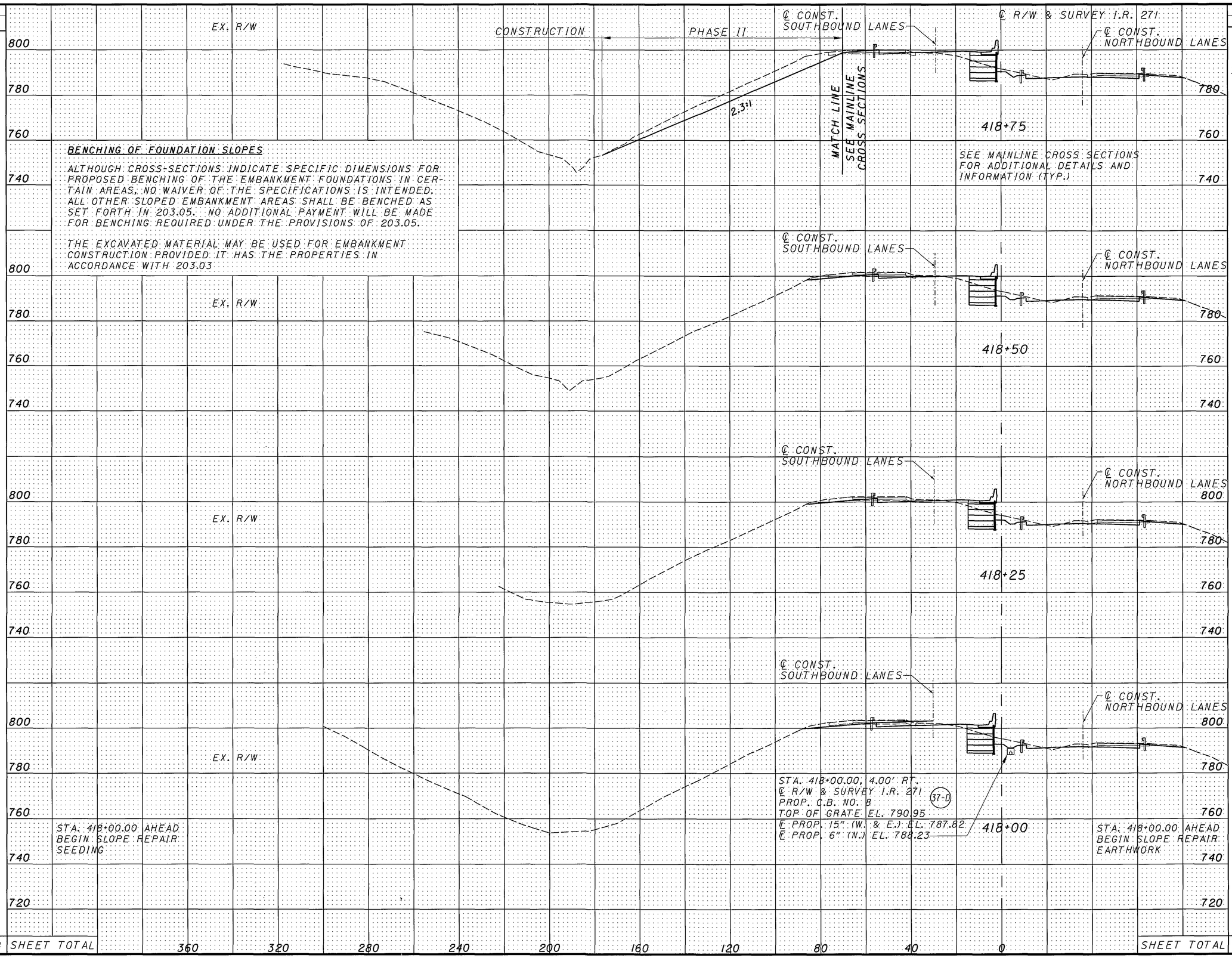
2145OSLIDE-DP.DGN 10/30/03 SAM

SEEDING END WIDTH	SEEDING SQ. YDS.
118	
	164
0	
0	
0	
0	
	164

BENCHING OF FOUNDATION SLOPES

ALTHOUGH CROSS-SECTIONS INDICATE SPECIFIC DIMENSIONS FOR PROPOSED BENCHING OF THE EMBANKMENT FOUNDATIONS IN CERTAIN AREAS, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. ALL OTHER SLOPED EMBANKMENT AREAS SHALL BE BENCHED AS SET FORTH IN 203.05. NO ADDITIONAL PAYMENT WILL BE MADE FOR BENCHING REQUIRED UNDER THE PROVISIONS OF 203.05.

THE EXCAVATED MATERIAL MAY BE USED FOR EMBANKMENT CONSTRUCTION PROVIDED IT HAS THE PROPERTIES IN ACCORDANCE WITH 203.03



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
375	0		
		174	0
0	0		
		0	0
0	0		
		0	0
0	0		
164	SHEET TOTAL	174	0

CALCULATED PS
CHECKED JL

SLOPE REPAIR CROSS SECTIONS STA. 418+00 TO STA. 418+75

SUM-271-8.02

293
612

PAT2145SLIDE-XSECTS.DGN 10/30/03 RB

SEEDING END WIDTH	SEEDING SQ. YDS.
186	482
161	418
140	358
118	328
118	
	1586

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
293	420	275	286
301	198	279	143
301	110	301	51
350	0	336	0
375	0	1191	480

CALCULATED PS
CHECKED JL

SLOPE REPAIR CROSS SECTIONS STA. 419+00 TO STA. 419+75

SUM-271-8.02

294
612

PAT21450SLIDE-XSECTS.DGN 10/30/03 RB

EX. R/W

PHASE I

PHASE II

CONSTRUCTION

℄ CONST. SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

℄ R/W & SURVEY I.R. 271

MATCH LINE

SEE MAINLINE CROSS SECTIONS

ELEV. 744.00

PROP. EL. 744.00

12:1 (TYP.)

2:1 (TYP.)

2.5:1

2.3:1

8'-0" (TYP.)

10'-0" (TYP.)

PROP. 15" STORM

12:1

PROP. 15" STORM

419+75

STA. 419+50.00, 54.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 3A
TOP OF GRATE EL. 798.00
℄ PROP. 15" (N. & S.) EL. 790.82

38-D

STA. 419+50.00, 3.27' LT.
℄ R/W & SURVEY I.R. 271
PROP. RETAINING WALL C.B.
TOP OF GRATE EL. 798.06
℄ PROP. 15" (N.) EL. 791.58
℄ PROP. 6" (N.) EL. 794.86
℄ PROP. 4" (N.) EL. 795.86

16-D

15" - 22.5° BEND EL. 782.02

38' - 15" @ 1.50%

51' - 15" TYPE B @ 1.43%

6' - 15" TYPE B @ 2.00%

2' COVER MINIMUM

102' - 15" TYPE F, 70' - 05 TYPE C @ 47.14%

PROP. EL. 745.00

419+50

STA. 419+30.00, 5.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 8
TOP OF GRATE EL. 787.85
℄ PROP. 15" (E. & W.) EL. 783.90
℄ PROP. 6" (S.) EL. 784.90

15-D

STA. 419+50.00, 200.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 744.50
℄ PROP. 15" (S.) EL. 738.50
℄ PROP. 15" (W.) EL. 737.99
℄ PROP. 18" (E.) EL. 737.74

41-D

15" - 22.5° BEND EL. 738.65

10' - 15" @ 1.50%

STA. 419+50.00, 60' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 1
TOP OF COVER EL. 796.38
℄ PROP. 15" (S.) EL. 790.70
℄ PROP. 15" (N. & E.) EL. 782.59

39-D

E4

E5

E6

PROP. EL. 746.00

PROP. 15" STORM

TOP OF ROCK EL. 724.6

TOP OF ROCK EL. 725.0

TOP OF ROCK EL. 714.6

419+25

419+00

STA. 419+05.00, 190.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 4
TOP OF GRATE EL. 745.50
℄ PROP. 15" (E.) EL. 740.75

40-D

SEE MAINLINE CROSS SECTIONS FOR ADDITIONAL DETAILS AND INFORMATION (TYP.)

STA. 418+75.00

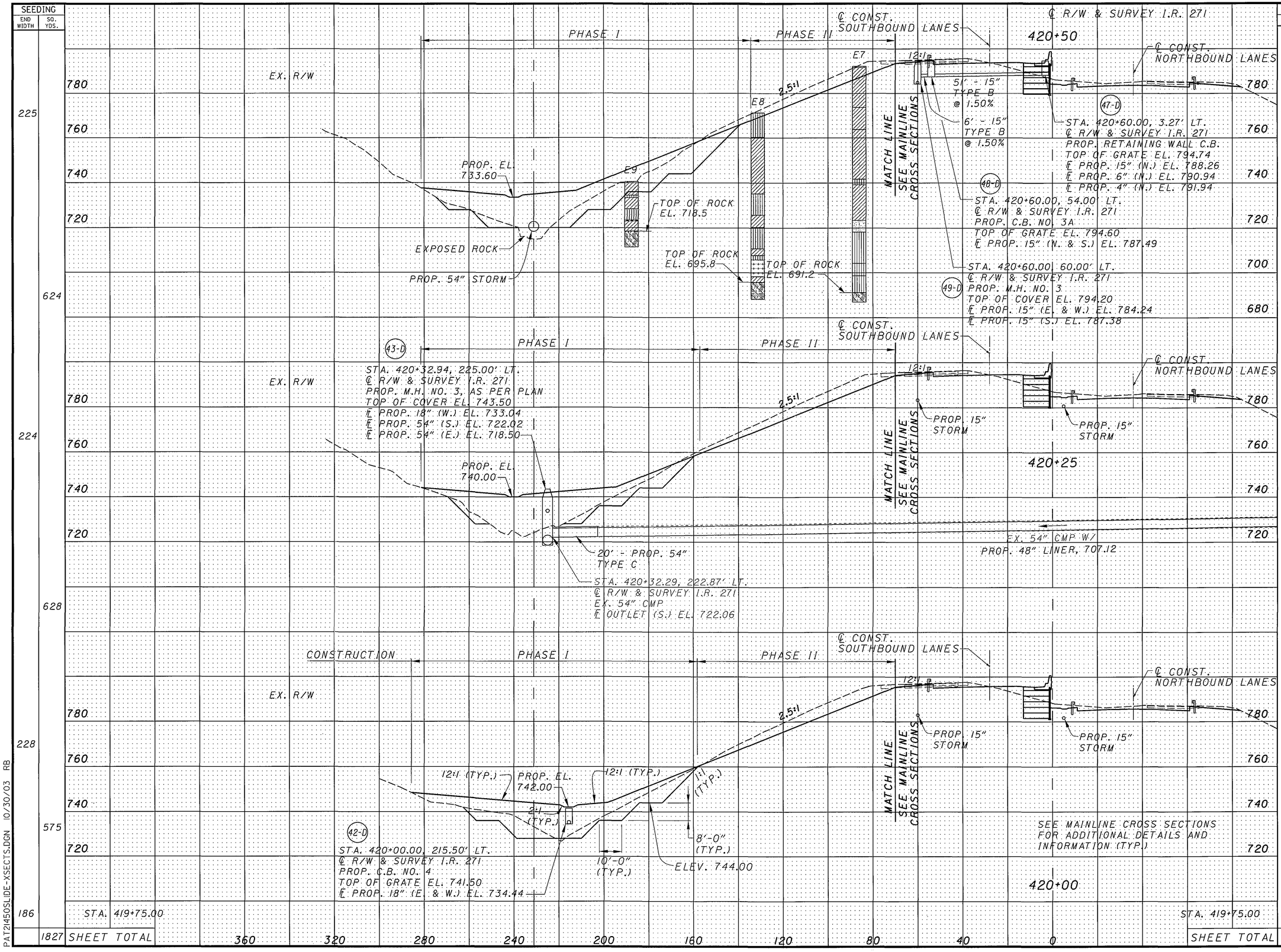
STA. 418+75.00

1586 SHEET TOTAL

SHEET TOTAL

360 320 280 240 200 160 120 80 40 0

SEEDING	
END WIDTH	SQ. YDS.
225	
	624
224	
	628
228	
	575
186	
1827	SHEET TOTAL



END AREA		VOLUME	
CUT	FILL	CUT	FILL
317	980	301	906
333	976	300	797
315	745	281	539
293	420	882	2242

CALCULATED PS
CHECKED JL

SLOPE REPAIR CROSS SECTIONS STA. 420+00 TO STA. 420+50

SUM-271-8.02

295
612

PAT21450SLIDE-XSECTS.DGN 10/30/03 RB

SEEDING END WIDTH	SEEDING SQ. YDS.
227	626
224	626
227	628
225	
	1880

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
190	1181		
		187	984
214	944		
225	835		
271	860		
		272	852
317	980		
		684	2671

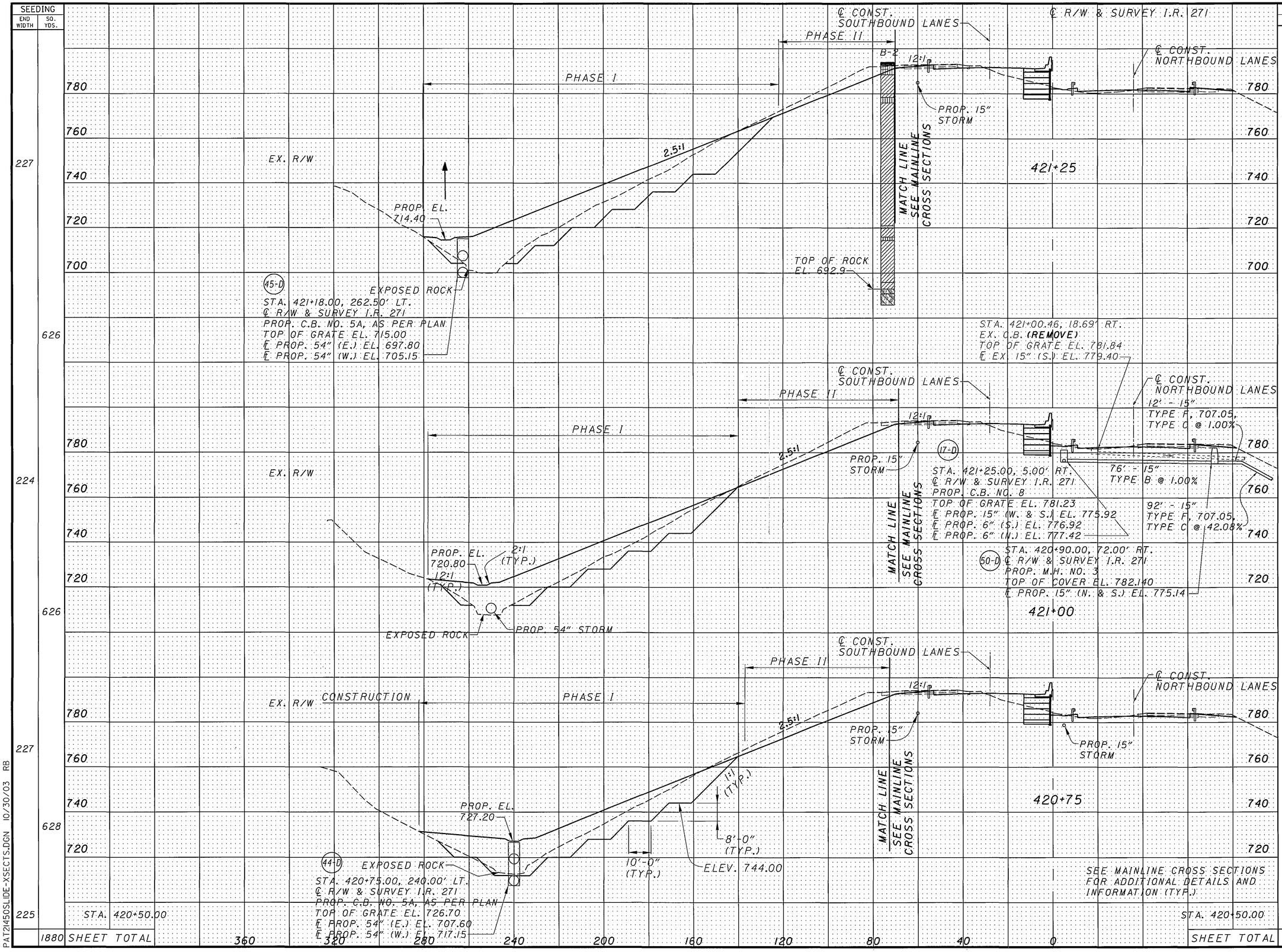
CALCULATED PS
CHECKED JL

SLOPE REPAIR CROSS SECTIONS STA. 420+75 TO STA. 421+25

SUM-271-8.02

296/612

PAT12450SLIDE-XSECTS.DGN 10/30/03 RB



SEEDING	
END WIDTH	SQ. YDS.
	255
	484
	236
	191
	238
	646
	227
	1321

END AREA		VOLUME	
CUT	FILL	CUT	FILL
271	1318	129	907
122	1440	35	387
140	1445	153	1216
190	1181	317	2510

CALCULATED PS
CHECKED JL

SLOPE REPAIR CROSS SECTIONS STA. 421+50 TO STA. 421+75

SUM-271-8.02

297/612

PHASE II
℄ CONST. SOUTHBOUND LANES
PHASE I
℄ R/W & SURVEY I.R. 271
MATCH LINE
SEE MAINLINE CROSS SECTIONS
421+75
EX. R/W
PROP. EL. 706.00
(16-D)
STA. 421+75.00, 286.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5A (PLACE GRATE FLAT).
AS PER PLAN
TOP OF GRATE EL. 705.50
℄ PROP. 54" (E.) EL. 693.30
℄ PROP. 54" (W.) EL. 696.56
2.5:1
12:1
PROP. EL. 708.00
PROP. 54" STORM
(51-D)
STA. 421+48.00, 54.00' LT.
℄ R/W & SURVEY I.R. 27
PROP. C.B. NO. 3A
TOP OF GRATE EL. 792.31
℄ PROP. 15" (N. & S.) EL. 785.67
℄ PROP. 6" (S.) EL. 788.50
℄ PROP. 4" (W.) EL. 789.50
℄ PROP. 6" (E.) EL. 787.16
1421+57.25 BEGIN APPROACH SLAB (SOUTHBOUND)
(18-D)
STA. 421+48.00, 3.27' LT.
℄ R/W & SURVEY I.R. 271
PROP. RETAINING WALL C.B.
TOP OF GRATE EL. 792.31
℄ PROP. 15" (N.) EL. 786.44
℄ PROP. 6" (N.) EL. 788.50
℄ PROP. 4" (N.) EL. 789.50
℄ CONST. NORTHBOUND LANES
5'-15" TYPE B @ 1.50%
6'-15" TYPE B @ 1.50%
CONSTRUCTION
(52-D)
STA. 421+48.00, 60' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 791.75
℄ PROP. 15" (W. & S.) EL. 785.57
1:1 (TYP.)
8'-0" (TYP.)
10'-0" (TYP.)
ELEV. 744.00
2:1 (TYP.)
PROP. EL. 712.00
12:1 (TYP.)
PROP. 54" STORM
421+50
SEE MAINLINE CROSS SECTIONS FOR ADDITIONAL DETAILS AND INFORMATION (TYP.)
STA. 421+25.00
SHEET TOTAL
360 320 280 240 200 160 120 80 40 0

PAT21450SLIDE-XSECTS.DGN 10/30/03 RB

SEEDING END WIDTH	SEEDING SQ. YDS.
196	615
247	505
265	209
255	
	1329

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
1355	0	1099	71
1018	153	482	412
448	1100	97	325
271	1318	1678	808

CALCULATED PS
CHECKED JL

SLOPE REPAIR CROSS SECTIONS
STA. 421+82.25 TO STA. 422+25

SUM-271-8.02

298
612

PAT2145OSLIDE-XSECTS.DGN 10/30/03 RB

℄ R/W & SURVEY I.R. 271

PHASE II

℄ CONST. SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

2.5:1

EX. R/W

MATCH LINE
SEE MAINLINE CROSS SECTIONS

422+25

12' x 50' x 48" ROCK CHANNEL PROTECTION, TYPE A W/FILTER

776.16±

422+00

EX. R/W

STA. 422+00.00, 285.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. H.W.=I.I
E PROP. 54" (W.) EL. 693.00

CONSTRUCTION

PHASE I

1:1 (TYP.)

8'-0" (TYP.)

10'-0" (TYP.)

ELEV. 744.00

1421+82.25 END APPROACH SLAB (SOUTHBOUND)

SEE MAINLINE CROSS SECTIONS FOR ADDITIONAL DETAILS AND INFORMATION (TYP.)

PROP. EL. 704.00

PROP. 54" STORM

PROP. 15" STORM

STA. 421+75.00

SHEET TOTAL

780 760 740 720 700

360 320 280 240 200 160 120 80 40 0

SEEDING END WIDTH	SEEDING SQ. YDS.
	9268
0	
	185
133	
	444
187	
	532
196	
	1161

TOTAL SLOPE REPAIR SEEDING CARRIED TO GENERAL NOTES

STA. 423+00.00 BACK END SLOPE REPAIR SEEDING

STA. 422+25.00

SHEET TOTAL

℄ R/W & SURVEY I.R. 271

℄ CONST. SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

TOTALS SLOPE REPAIR EARTHWORK CARRIED TO GENERAL NOTES

EX. R/W

423+00

STA. 423+00.00 BACK END SLOPE REPAIR EARTHWORK

PHASE II

2.5:1

MATCH LINE SEE MAINLINE CROSS SECTIONS

422+75

CONSTRUCTION

422+50

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
		6867	8711
0	0		
		243	0
525	0		
		657	0
894	0		
		1041	0
1355	0		
		1941	0

CALCULATED PS CHECKED JL

SLOPE REPAIR CROSS SECTIONS STA. 422+25 TO STA. 423+00

SUM-271-8.02

299
612

PAT2I450SLIDE-XSECTS.DGN 9/8/04 RB

STORM SEWER PROFILES
STEEL BRIDGE DESIGN

HORIZONTAL SCALE IN FEET: 0, 25, 50, 100

CALCULATED TM
CHECKED PS

SUM-271-8.02

1 / 4

300 / 612

CROSS REFERENCES	
361-437	STRUCTURE PLANS
119-147	PLAN & PROFILE SHEETS
148-258	CROSS SECTIONS
317-324	DRAINAGE DETAILS
315	DETENTION BASIN ACCESS DRIVE
275-278	GRADING PLANS

1-RT & 2-RT NOT USED

RISER
RISER
(3) GAS TANKS

EX. 12 CMP

LA-R/W

SEE PAVEMENT TRENCH REPAIR DETAIL

VALLEY RAILWAY

EX. 4'x14' BOX CULVERT

50' - PROP. 18" BORED & JACKED

PROP. 18" TYPE B, 706.02

℄ CONST. SOUTBOUND LANES

PROPOSED DETENTION BASIN. SEE SHEET NO. 310 FOR ADDITIONAL DETAILS

RIVER

THE OHIO ERIE CANAL & TOWPATH TRAIL

TOWPATH ACCESS TRAIL

PROP. 15" TYPE F, AS PER PLAN

PROP. 15" TYPE C

PROP. 15" TYPE B

PROP. 15" TYPE A, 706.02

℄ RIVERVIEW ROAD

EX. UNDERGROUND FIBER OPTIC CABLE (DO NOT DISTURB)

℄ R/W & SURVEY I.R. 271 N 54°13'47" E

PROPOSED DETENTION BASIN. SEE SHEET NO. 309 FOR ADDITIONAL DETAILS

℄ CONST. NORTBOUND LANES

CUYAHOGA

TOWPATH TRAIL

BUCKEYE TRAIL

1-DT: STA. 422+75.00, 2.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. C.B. NO. 5 W/B GRATE TOP OF GRATE EL. 743.00 ℄ PROP. 15" (E.) EL. 740.00

5' @ 1.00%, 22.5° BEND, 37' @ 30.86%, 22.5% BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

2-DT: STA. 423+19.25, 16.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. M.H. NO. 3 TOP OF COVER EL. 734.20 ℄ PROP. 15" (S., S. & W.) EL. 728.48

5' @ 1.00%, 22.5° BEND, 22' @ 26.36%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

3-DT: STA. 423+51.25, 16.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. M.H. NO. 3 TOP OF COVER EL. 726.50 ℄ PROP. 15" (S.) EL. 723.75 ℄ PROP. 15" (N.) EL. 723.55 ℄ PROP. 15" (E. & W.) EL. 722.58

5' @ 1.00%, 22.5° BEND, 39' @ 32.00%, 22.5% BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

4-DT: STA. 424+00.00, 16.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. M.H. NO. 3 TOP OF COVER EL. 718.00 ℄ PROP. 15" (S.) EL. 712.50 ℄ PROP. 15" (N.) EL. 710.46 ℄ PROP. 15" (E.) EL. 708.46 ℄ PROP. 15" (W.) EL. 710.00

APPROX. LIMITS OF MED. HARD ROCK

5-DT: STA. 424+88.92, 16.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. M.H. NO. 3 TOP OF COVER EL. 691.50 ℄ PROP. 15" (E., W. & S.) EL. 687.50

6-DT: STA. 425+05.08, 16.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. M.H. NO. 3 TOP OF COVER EL. 690.00 ℄ PROP. 15" (N.) EL. 683.26 ℄ PROP. 15" (S.) EL. 686.97 ℄ PROP. 15" (W.) EL. 685.24 ℄ PROP. 15" (E.) EL. 683.26

STA. 425+45.55 ℄ RIVERVIEW ROAD

2' MIN. COVER (TYP.)

5' @ 1.00%, 22.5° BEND, 79' @ 26.40%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

5' @ 1.00%, 22.5° BEND, 7' @ 30.86%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

225' - PROP. 15" TYPE B @ 7.12%

28' - PROP. 18" TYPE B, 706.02 @ 0.75%

PROP. 15" CULVERT TYPE A, 706.02

EX. 4" STEEL GAS CASING PIPE

*50' - PROP. 35" CASING PIPE UNDER RAILWAY

EX. UNDERGROUND FIBER OPTIC (DO NOT DISTURB)

+58 +08

*CONDUIT BORED AND JACKED 18" TYPE B, 706.02, AS PER PLAN

PROPOSED DETENTION BASIN. SEE SHEET NO. 309 FOR ADDITIONAL DETAILS

7-DT: STA. 427+30.00, 16.25' LT. ℄ R/W & SURVEY I.R. 271 PROP. M.H. NO. 3 TOP OF COVER EL. 672.01 ℄ PROP. 15" (W.) EL. 667.21 ℄ PROP. 15" (N. & S.) EL. 664.03 ℄ PROP. 18" (E.) EL. 663.10

VALLEY RAILWAY TOP OF RAIL EL. 671.28

8-DT: STA. 429+60.00, 16.25' LT. ℄ R/W & SURVEY I.R. 271 PROP. M.H. NO. 3 TOP OF COVER EL. 664.26 ℄ PROP. 15" (N. & S.) EL. 661.38 ℄ PROP. 18" (E. & W.) EL. 661.38

152' - PROP. 18" TYPE B, 706.02 @ 0.75%

58' - PROP. 18" TYPE B, 706.02 @ 1.10%

STA. 430+18.00, 16.00' LT. ℄ R/W & SURVEY I.R. 271 ℄ 18" (W.) EL. 660.75

11-DT: STA. 435+30.42, 16.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. C.B. NO. 5 W/B GRADE TOP OF GRATE EL. 705.50 ℄ PROP. 15" (S.) EL. 702.12 ℄ PROP. 15" (N.E.) EL. 701.50 ℄ PROP. 15" (N. & W.) EL. 697.10

12-DT: STA. 435+78.00, 40.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. C.B. NO. 5 W/B GRATE TOP OF GRATE EL. 709.00 ℄ PROP. 15" (S.W.) EL. 706.00

5' @ 1.00%, 22.5° BEND, 37' @ 28.97%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

10-DT: STA. 434+83.42, 16.00' LT. ℄ R/W & SURVEY I.R. 271 PROP. M.H. NO. 3 TOP OF COVER EL. 693.00 ℄ PROP. 15" (S.) EL. 687.23 ℄ PROP. 15" (E. & S.W.) EL. 686.29

9-DT: STA. 434+25.00, 20.00' RT. ℄ R/W & SURVEY I.R. 271 PROP. M.H. NO. 3 TOP OF COVER EL. 678.00 ℄ PROP. 15" (N.) EL. 670.16 ℄ PROP. 15" (S.) EL. 672.95 ℄ PROP. 15" (N.E.) EL. 669.66 ℄ PROP. 15" (W.) EL. 665.00

PROPOSED DETENTION BASIN. SEE SHEET NO. 310 FOR ADDITIONAL DETAILS

ROCK CHANNEL PROTECTION, TYPE A W/FABRIC FILTER (THK. = 36")

NORMAL WATER EL. 648.0

STA. 433+93.87 ℄ OHIO & ERIE CANAL TOWPATH TRAIL

2' MIN. COVER (TYP.)

5' @ 1.00%, 22.5° BEND, 44' @ 10.00%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

5' @ 1.00%, 22.5° BEND, 59' @ 28.00%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

60' - PROP. 15" TYPE B, AS PER PLAN @ 3.33%

STA. 433+69.00, ℄ R/W & SURVEY I.R. 271 ℄ 15" (E.) EL. 663.00

740 730 720 710 700 690 680 670 660 650 640

423 424 425 426 427 428 429 430 431 432 433 434 435 436

21450DPA.DGN 3/31/04 SAM.CEO.KH

℄ R/W & SURVEY I.R. 271

4-DT
STA. 424+00.00, 16.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 718.00
℄ PROP. 15" (S.) EL. 712.50
℄ PROP. 15" (N.) EL. 708.46
℄ PROP. 15" (E.) EL. 708.46
℄ PROP. 15" (w.) EL. 710.00

℄ EX.

4-DT
STA. 424+00.00, 53.44' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
TOP OF GRATE EL. 712.00
℄ PROP. 15" (S.) EL. 709.00

38' - PROP. 15"
TYPE C @ 1.50%

14' - PROP. 15"
TYPE C @ 20.00%

4-DT
STA. 424+00.00, 2.56' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
TOP OF GRATE EL. 718.50
℄ PROP. 15" (N.) EL. 715.50

740 735 730 725 720 715 710 705

3-DT
STA. 423+51.25, 16.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 726.50
℄ PROP. 15" (S.) EL. 723.75
℄ PROP. 15" (N.) EL. 723.55
℄ PROP. 15" (E. & W.) EL. 722.58

PIER 1

EX. R/W

℄ EX.

721.00

3-DT
STA. 423+51.25, 53.44' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
TOP OF GRATE EL. 729.50
℄ PROP. 15" (S.) EL. 724.50

38' - PROP. 15"
TYPE C @ 2.50%

14' - PROP. 15"
TYPE C @ 2.50%

3-DT
STA. 423+51.25, 2.56' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
TOP OF GRATE EL. 727.50
℄ PROP. 15" (N.) EL. 724.10

740 735 730 725

745 740 735 730 725 720 715 710

℄ EX.

PIER 1

EX. R/W

726.00

2-DT
STA. 423+19.25, 16.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 734.20
℄ PROP. 15" (S. & E.) EL. 728.48

27' - PROP. 15"
TYPE C @ 1.5%

51' - PROP. 15"
TYPE C @ 2.20%

2-DT
STA. 423+19.25, 10.56' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
TOP OF GRATE EL. 732.70
℄ PROP. 15" (N. & S.) EL. 728.88

2-DT
STA. 423+19.25, 61.44' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
TOP OF GRATE EL. 733.50
℄ PROP. 15" (N.) EL. 730.00

745 740 735 730 725 720 715 710

100 50 0 50 100

CALCULATED PS
CHECKED TM

STORM SEWER PROFILES
STEEL BRIDGE DESIGN

SUM-271-8.02

2 / 4

301
612

STORMPROFILESHEET.DGN 3/19/04 SAM.CEO

℄ R/W & SURVEY I.R. 271

7-DT
STA. 427+30.00, 16.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 672.01
℄ PROP. 15" (N. & S.) EL. 664.03
℄ PROP. 15" (W.) EL. 667.21
℄ PROP. 18" (E.) EL. 663.10

7-DT
STA. 427+30.00, 40.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
TOP OF GRATE EL. 668.00
℄ PROP. 15" (S.) EL. 665.00

7-DT
STA. 427+30.00, 24.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
TOP OF GRATE EL. 668.00
℄ PROP. 15" (N.) EL. 665.00

℄ EX.

24' - PROP. 15"
TYPE B @ 4.04%

39' - PROP. 15"
TYPE B @ 2.50%

685 680 675 670 665 660 655

6-DT
STA. 425+05.08, 16.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 690.00
℄ PROP. 15" (N.) EL. 683.26
℄ PROP. 15" (S.) EL. 685.68
℄ PROP. 15" (W.) EL. 685.24
℄ PROP. 15" (E.) EL. 683.26

PIER 2

℄ EX.

6-DT
STA. 425+00.00, 4.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
TOP OF GRATE EL. 688.00
℄ PROP. 15" (N.) EL. 686.00

EX. R/W

EX. R/W

715 710 705 700 695 690 685 680 675 670 665 660

6-DT
STA. 425+05.08, 53.44' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B AS PER PLAN A
TOP OF GRATE EL. 687.00
℄ PROP. 15" (S.) EL. 683.80

678.20

38' - PROP. 15"
TYPE C @ 1.50%

14' - PROP. 15"
TYPE C @ 1.50%

7' - PROP. 15"
TYPE C @ 1.50%

6-DT
STA. 425+05.08, 2.56' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
TOP OF GRATE EL. 689.50
℄ PROP. 15" (N. & S.) EL. 685.90

705 700 695 690 685 680 675 670

℄ EX.

PIER 2

EX. R/W

EX. R/W

5-DT
STA. 424+88.92, 16.00' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 691.50
℄ PROP. 15" (E.,W. & S.) EL. 687.50

27' - PROP. 15"
TYPE C @ 1.85%

682.20

5-DT
STA. 424+88.92, 10.56' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B AS PER PLAN A
TOP OF GRATE EL. 691.00
℄ PROP. 15" (N. & S.) EL. 688.00

51' - PROP. 15"
TYPE C @ 10.78%

5-DT
STA. 424+88.92, 61.44' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B AS PER PLAN A
TOP OF GRATE EL. 697.50
℄ PROP. 15" (N.) EL. 693.50

100 50 0 50 100

STORM SEWER PROFILES
STEEL BRIDGE DESIGN

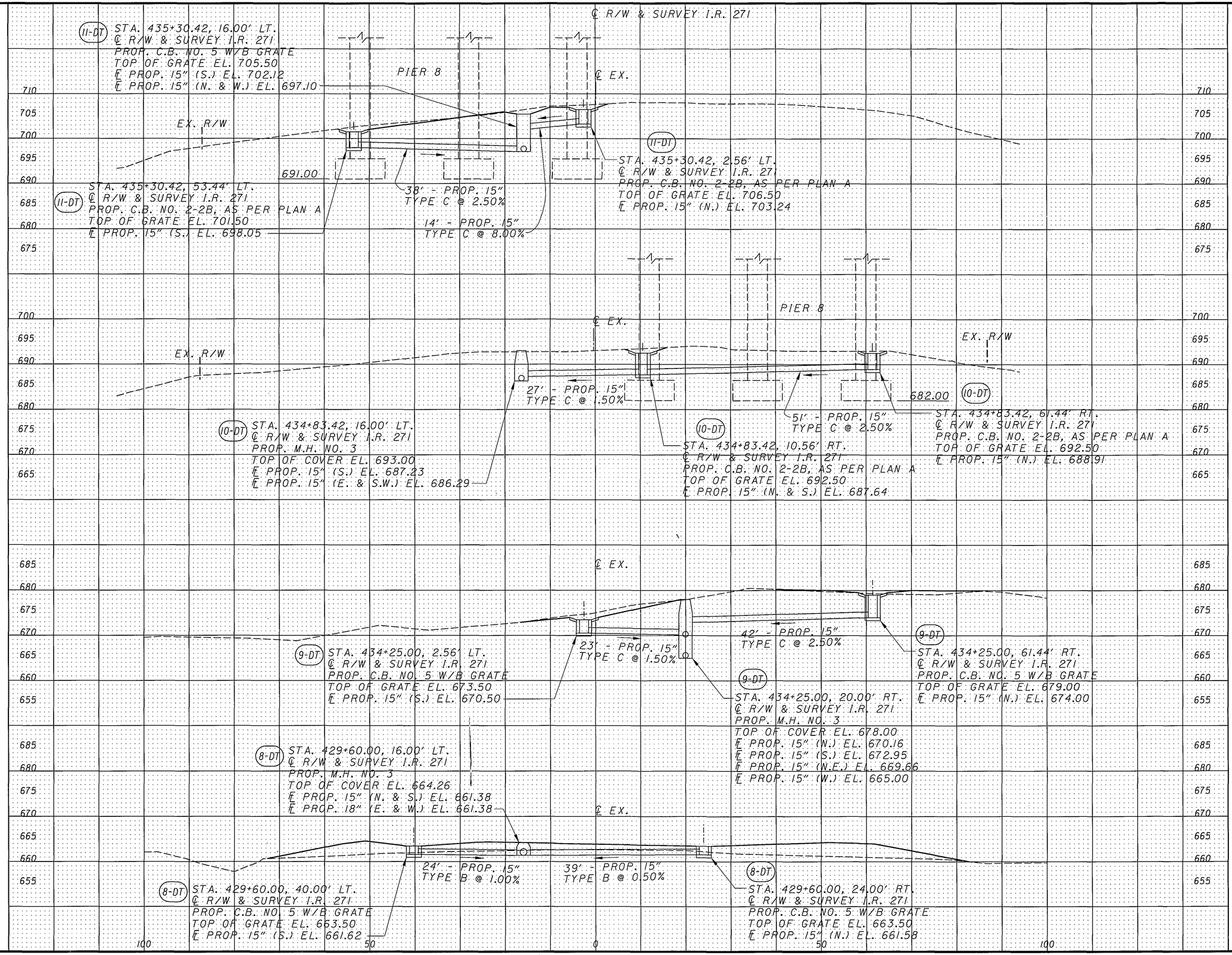
CALCULATED PS
CHECKED TM

SUM-271-8.02

3/4

302
612

STORMPROFILESHEET.DGN 3/19/04 SAM.CEO



CALCULATED PS
CHECKED TM

STORM SEWER PROFILES
STEEL BRIDGE DESIGN

SUM-271-8.02

4 / 4

303
612

STORMPROFILESHEET.DGN 3/19/04 SAM.CEO

STORM SEWER PROFILES
CONCRETE BRIDGE DESIGN

SUM-271-8.02

1 / 5

304 / 612

CALCULATED TM
CHECKED PS

HORIZONTAL SCALE IN FEET
0 25 50 100

CROSS REFERENCES	
438-560	STRUCTURE PLANS
119-147	PLAN & PROFILE SHEETS
148-258	CROSS SECTIONS
317-324	DRAINAGE DETAILS
316	DETENTION BASIN ACCESS DRIVE
279-282	GRADING PLANS

PROPOSED DETENTION BASIN. SEE SHEET NO. 312 FOR ADDITIONAL DETAILS

PROPOSED DETENTION BASIN. SEE SHEET NO. 311 FOR ADDITIONAL DETAILS

℄ CONST. SOUTHBOUND LANES

℄ CONST. NORTHBOUND LANES

℄ R/W & SURVEY I.R. 271 N 54°13'47" E

EX. 12" CMP

EX. 4'x14' BOX CULVERT

50' - PROP. 18" BORED & JACKED

PROP. 18" TYPE B, 706.02

PROP. 15" TYPE A, 706.02

PROP. 15" TYPE F AS PER PLAN

PROP. 15" TYPE C

PROP. 15" TYPE B

(3) GAS TANKS

RISER

VALLEY RAILWAY

EX. UNDERGROUND FIBER OPTIC CABLE (DO NOT DISTURB)

℄ RIVERVIEW ROAD

SEE PAVEMENT TRENCH REPAIR DETAIL

LA-R/W

A ESMT

SF ESMT

TFD

CUYAHOGA RIVER

THE OHIO & ERIE CANAL & TOWPATH TRAIL

TOWPATH ACCESS TRAIL

TOWPATH TRAIL

BUCKEYE TRAIL

5' @ 1.00%, 22.5° BEND, 36' @ 18.70%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

STA. 422+94.75, 47.75' RT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 737.50
℄ PROP. 15" (W, N. & S.) EL. 732.64

5' @ 1.00%, 22.5° BEND, 27' @ 26.52%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

5' @ 1.00%, 22.5° BEND, 14' @ 25.00%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

37'-15" TYPE C @ 1.50%

5' @ 1.00%, 22.5° BEND, 53' @ 18.60%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

5' @ 1.00%, 22.5° BEND, 76' @ 28.00%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

24' - PROP. 15" TYPE C @ 1.50%

70' - PROP. 15" TYPE B @ 3.00%

149' - PROP. 15" TYPE B @ 9.74%

*50' - PROP. 36" CASING PIPE UNDER RAILWAY

5' @ 1.00%, 22.5° BEND, 10' @ 29.00%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

2' MIN. COVER (TYP.)

28' - PROP. 18" TYPE B 706.02 @ 0.88%

PROP. 15" CULVERT TYPE A, 706.02

137'-18" TYPE B, 706.02 @ 0.88%

42' - PROP. 18" TYPE B, 706.02 @ 1.07%

*CONDUIT BORED AND JACKED 18" TYPE B, 706.02, AS PER PLAN

5' @ 1.00%, 22.5° BEND, 54' @ 17.00%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

5' @ 1.00%, 22.5° BEND, 18' @ 19.28%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

5' @ 1.00%, 22.5° BEND, 71' @ 23.80%, 22.5° BEND, 5' @ 1.00% PROP 15" TYPE F, AS PER PLAN

60' - PROP. 15" TYPE B, AS PER PLAN @ 3.33%

NORMAL WATER EL. 648.0

ROCK CHANNEL PROTECTION, TYPE A W/FABRIC FILTER (THK. = 36")

APPROX. LIMITS OF MED. HARD ROCK

(1-DC) STA. 422+50.00, 47.75' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
TOP OF COVER EL. 742.50
℄ PROP. 15" (E.) EL. 739.50

(2-DC) STA. 422+84.08, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 744.50
℄ PROP. 15" (N.) EL. 740.38
℄ PROP. 15" (S. & E.) EL. 738.38

(3-DC) STA. 423+44.00, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 728.00
℄ PROP. 15" (N. & S.) EL. 723.58
℄ PROP. 15" (W.) EL. 725.40
℄ PROP. 15" (E.) EL. 722.00

(4-DC) STA. 423+20.00, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 734.70
℄ PROP. 15" (W. & S.) EL. 731.12
℄ PROP. 15" (E.) EL. 729.00

(5-DC) STA. 435+24.92, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
TOP OF GRATE EL. 704.00
℄ PROP. 15" (E.) EL. 699.29
℄ PROP. 15" (S.) EL. 700.10
℄ PROP. 15" (N. & W.) EL. 695.58

(6-DC) STA. 424+05.92, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 715.50
℄ PROP. 15" (S.) EL. 712.43
℄ PROP. 15" (W.) EL. 712.04
℄ PROP. 15" (E.) EL. 710.00

(7-DC) STA. 424+26.08, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 710.00
℄ PROP. 15" (N. & E.) EL. 703.88
℄ PROP. 15" (S.) EL. 706.15
℄ PROP. 15" (W.) EL. 707.00

(8-DC) STA. 425+00.00, 4.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5/W B GRATE
TOP OF GRATE EL. 689.00
℄ PROP. 15" (N.E.) EL. 686.00

(9-DC) STA. 425+11.58, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 689.00
℄ PROP. 15" (S.) EL. 685.89
℄ PROP. 15" (W.) EL. 682.50
℄ PROP. 15" (E.) EL. 682.00
℄ PROP. 15" (S.W.) EL. 685.64

(10-DC) STA. 425+81.42, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 684.20
℄ PROP. 15" (N.,S. & E.) EL. 679.58
℄ PROP. 15" (W.) EL. 679.90

(11-DC) STA. 427+30.00, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 672.01
℄ PROP. 15" (N. & S.) EL. 664.60
℄ PROP. 15" (W.) EL. 665.06
℄ PROP. 18" (E.) EL. 663.10

(12-DC) STA. 429+45.00, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 664.02
℄ PROP. 15" (N. & S.) EL. 661.20
℄ PROP. 18" (E. & W.) EL. 661.20

(13-DC) STA. 434+25.00, 20.00' RT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 677.00
℄ PROP. 15" (N.) EL. 669.35
℄ PROP. 15" (S.) EL. 673.25
℄ PROP. 15" (E.) EL. 672.00
℄ PROP. 15" (W.) EL. 665.00

(14-DC) STA. 434+96.92, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H.
TOP OF COVER EL. 696.50
℄ PROP. 15" (S.) EL. 691.66
℄ PROP. 15" (E.) EL. 692.01
℄ PROP. 15" (W.) EL. 689.00

(15-DC) STA. 433+69.00,
℄ R/W & SURVEY I.R. 271
℄ PROP. 15" (E.) EL. 663.00

(16-DC) STA. 435+88.75, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 717.00
℄ PROP. 15" (N. & W.) EL. 708.57
℄ PROP. 15" (S.) EL. 712.50

STA. 425+45.49 ℄ RIVERVIEW ROAD

STA. 433+93.97 ℄ THE OHIO & ERIE CANAL TOWPATH TRAIL

+58 +08

423 424 425 426 427 428 429 430 431 432 433 434 435 436

740 730 720 710 700 690 680 670 660 650 640

2145ODPC.DGN 3/31/04 SAM.CEO

℄ R/W & SURVEY I.R. 271

6-DC STA. 424+05.92, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 717.50
℄ PROP. 15" (S.) EL. 712.43
℄ PROP. 15" (W.) EL. 712.04
℄ PROP. 15" (E.) EL. 710.00

EX. R/W

℄ EX.

PIER 2

27' - PROP. 15" TYPE C @ 1.00%

6-DC STA. 424+05.92, 10.67' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
TOP OF GRATE EL. 716.50
℄ PROP. 15" (N.) EL. 713.44
℄ PROP. 15" (S.) EL. 712.70

51' - PROP. 15" TYPE C @ 6.00%

EX. R/W

6-DC STA. 424+05.92, 61.33' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
TOP OF GRATE EL. 719.50
℄ PROP. 15" (N.) EL. 716.50

5-DC STA. 423+44.00, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 728.00
℄ PROP. 15" (N. & S.) EL. 723.58
℄ PROP. 15" (W.) EL. 725.40
℄ PROP. 15" (E.) EL. 722.00

5-DC STA. 423+44.00, 2.67' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5 W/B GRATE
TOP OF GRATE EL. 727.50
℄ PROP. 15" (N.) EL. 724.50

EX. R/W

℄ EX.

5-DC STA. 423+44.00, 53.33' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5/W B GRATE
TOP OF GRATE EL. 727.50
℄ PROP. 15" (S.) EL. 724.50

37' - PROP. 15" TYPE C @ 2.50%

14' - PROP. 15" TYPE C @ 6.60%

PIER 1

℄ EX.

3-DC STA. 422+94.75, 47.75' RT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 737.50
℄ PROP. 15" (W., N. & S.) EL. 732.64

14' - PROP. 15" TYPE C @ 2.60%

4-DC STA. 423+20.00, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 735.00
℄ PROP. 15" (W. & S.) EL. 731.12
℄ PROP. 15" (E.) EL. 729.00

37' - PROP. 15" TYPE C @ 1.50%

37' - PROP. 15" TYPE C @ 2.60%

3-DC STA. 422+94.75, 10.67' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
TOP OF GRATE EL. 738.50
℄ PROP. 15" (N. & S.) EL. 731.68

3-DC STA. 422+94.75, 61.33' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN B
TOP OF GRATE EL. 737.50
℄ PROP. 15" (N.) EL. 733.00

℄ EX.

2-DC STA. 422+84.08, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 744.50
℄ PROP. 15" (N.) EL. 740.38
℄ PROP. 15" (S. & E.) EL. 738.38

PIER 1

37' - PROP. 15" TYPE C @ 2.00%

EX. R/W

2-DC STA. 422+84.08, 53.33' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
TOP OF GRATE EL. 747.50
℄ PROP. 15" (S.) EL. 741.12

14' - PROP. 15" TYPE C @ 2.00%

2-DC STA. 422+84.08, 2.67' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
TOP OF GRATE EL. 741.50
℄ PROP. 15" (N.) EL. 738.66

740 735 730 725 720 715 710 705 700 695 690 750 745 740 735 730 725 720 750 745 740 735 730 725 720 770 765 760 755 750 745 740 735 730 725 720 715

100 50 0 50 100

CALCULATED PS CHECKED TM

STORM SEWER PROFILES CONCRETE BRIDGE DESIGN

SUM-271-8.02

2 / 5

305 / 612

STORMPROFILESHEET.DGN 3/19/04 SAM.CEO

℄ R/W & SURVEY I.R. 271

10-DC
STA. 425+81.42, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H.
TOP OF COVER EL. 684.20
℄ PROP. 15" (N., S. & E.) EL. 679.58
℄ PROP. 15" (W.) EL. 679.90

37' - PROP. 15"
TYPE B @ 2.50%

PIER 3

EX. R/W

℄ EX.

EX. R/W

10-DC
STA. 425+81.42, 53.33' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
TOP OF GRATE EL. 683.50
℄ PROP. 15" (S.) EL. 680.50

14' - PROP. 15"
TYPE B @ 3.00%

10-DC
STA. 425+81.42, 2.67' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
TOP OF GRATE EL. 683.00
℄ PROP. 15" (N.) EL. 680.00

9-DC
STA. 425+11.58, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 689.00
℄ PROP. 15' (S.) EL. 685.89
℄ PROP. 15' (W.) EL. 682.50
℄ PROP. 15' (E.) EL. 682.00
℄ PROP. 15' (S.W.) EL. 685.64

PIER 3

℄ EX.

EX. R/W

EX. R/W

27' - PROP. 15"
TYPE C @ 1.00%

51' - PROP. 15"
TYPE C @ 2.00%

9-DC
STA. 425+11.58, 10.67' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
TOP OF GRATE EL. 689.50
℄ PROP. 15" (N. & S.) EL. 686.16

9-DC
STA. 425+11.58, 61.33' RT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
TOP OF GRATE EL. 689.50
℄ PROP. 15" (N.) EL. 687.18

7-DC
STA. 424+26.08, 16.25' LT.
℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3
TOP OF COVER EL. 710.00
℄ PROP. 15" (N. & E.) EL. 703.88
℄ PROP. 15" (S.) EL. 706.15
℄ PROP. 15" (W.) EL. 707.00

PIER 2

℄ EX.

EX. R/W

EX. R/W

37' - PROP. 15"
TYPE C @ 2.50%

7-DC
STA. 424+26.08, 53.33' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
TOP OF GRATE EL. 707.50
℄ PROP. 15" (S.) EL. 704.80

14' - PROP. 15"
TYPE C @ 2.50%

7-DC
STA. 424+26.08, 2.67' LT.
℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 2-2B, AS PER PLAN A
TOP OF GRATE EL. 709.50
℄ PROP. 15" (N.) EL. 706.50

710 705 700 695 690 685 680 675 670 665 660 655 650 730 725 720 715

100 50 0 50 100

CALCULATED PS CHECKED TM

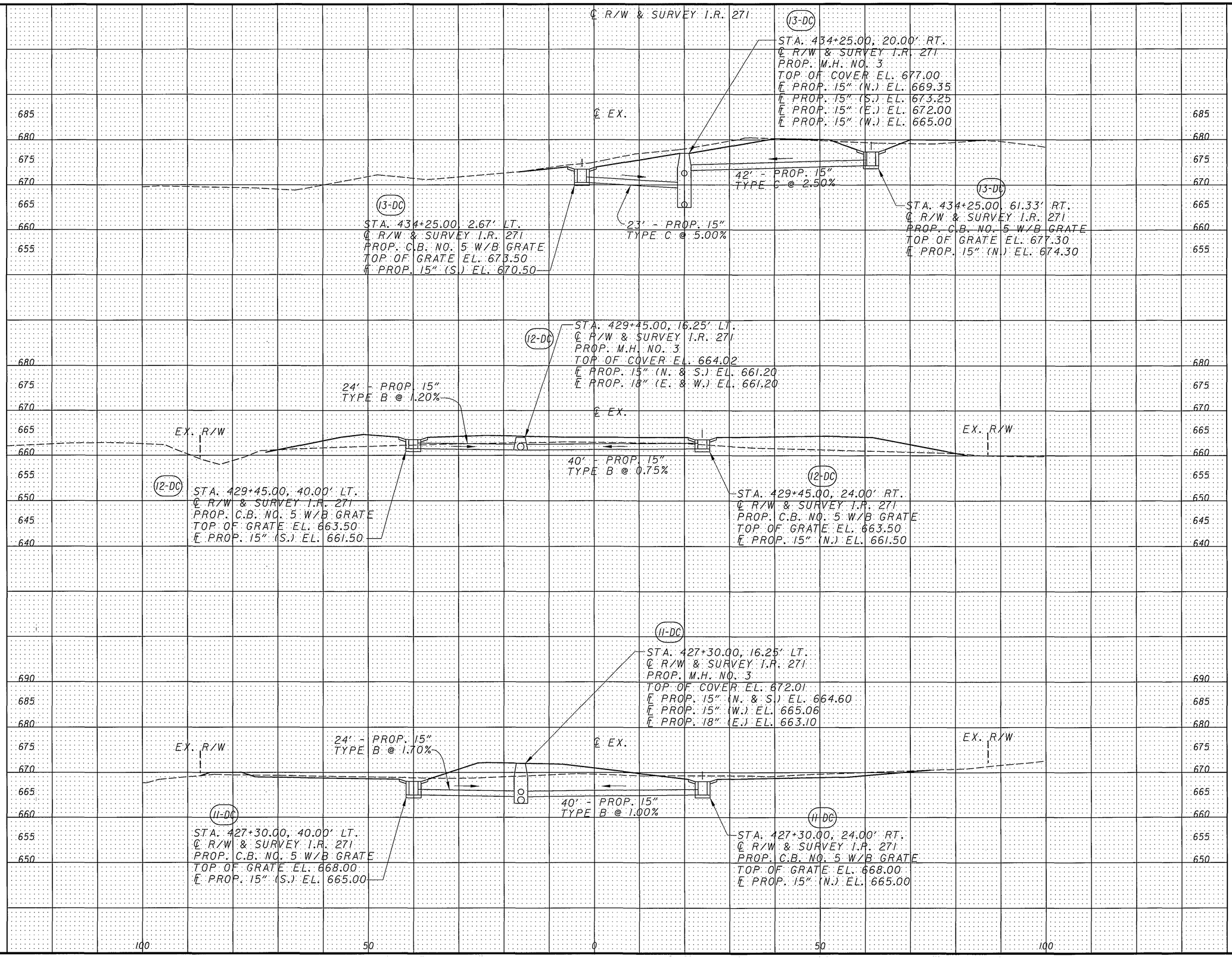
STORM SEWER PROFILES CONCRETE BRIDGE DESIGN

SUM-271-8.02

3 / 5

306 612

STORMPROFILESHEET.DGN 3/19/04 SAM,CEO



CALCULATED PS
CHECKED TM

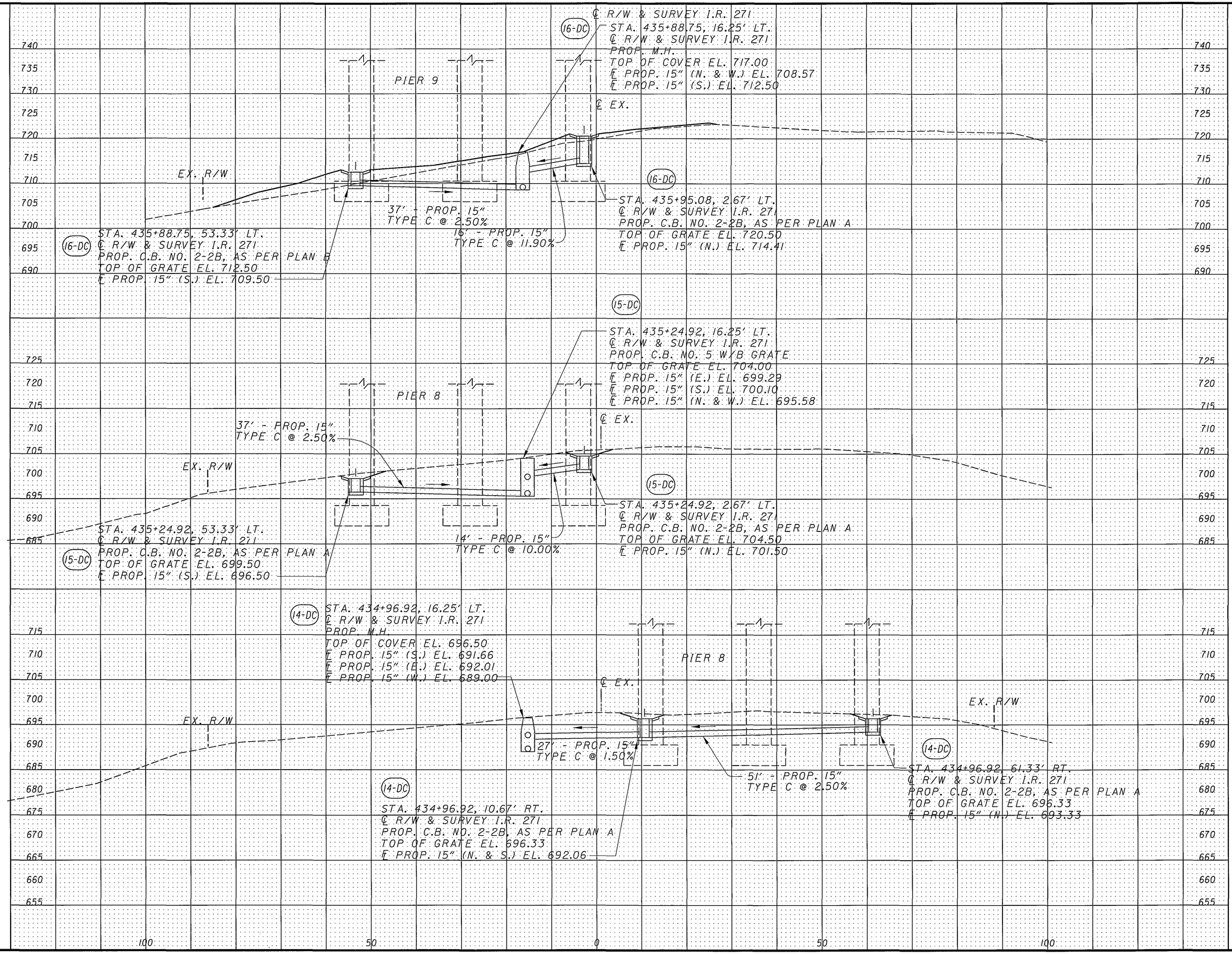
STORM SEWER PROFILES
CONCRETE BRIDGE DESIGN

SUM-271-8.02

4 / 5

307
612

STORMPROFILESHEET.DGN 3/9/04 SAM,CEO



CALCULATED PS
CHECKED TM

STORM SEWER PROFILES
CONCRETE BRIDGE DESIGN

SUM-271-8.02

5 / 5

308
612

STORMPROFILESHEET.DGN 3/19/04 SAM.CEO

ROCK CHANNEL PROTECTION CALCULATION - SPILLWAY

10 x 11 = 110 SQ. FT.
10 x 2.06 x 2 = 41.20 SQ. FT.
15 x 2.06 x 2 = 51.80 SQ. FT.
TOTAL 213 SQ. FT. x 1.5 = 314.5 CU. FT. / 27 = 11.83 CU.YD.

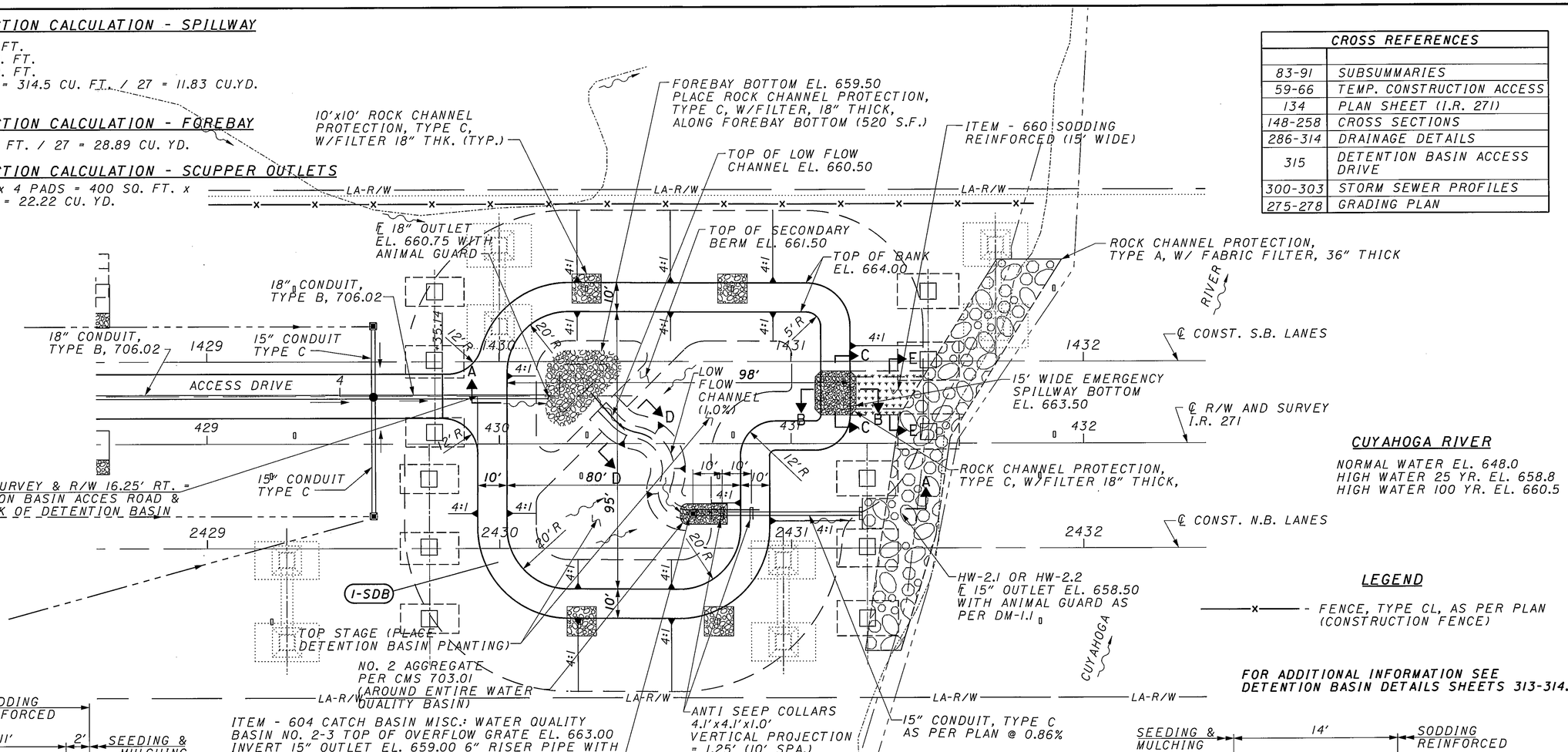
ROCK CHANNEL PROTECTION CALCULATION - FOREBAY

520 S.F. x 1.5 = 780 CU. FT. / 27 = 28.89 CU. YD.

ROCK CHANNEL PROTECTION CALCULATION - SCUPPER OUTLETS

10' x 10' = 100 SQ. FT. x 4 PADS = 400 SQ. FT. x 1.5' = 600 CU. FT. / 27 = 22.22 CU. YD.

CROSS REFERENCES	
83-91	SUBSUMMARIES
59-66	TEMP. CONSTRUCTION ACCESS
134	PLAN SHEET (I.R. 271)
148-258	CROSS SECTIONS
286-314	DRAINAGE DETAILS
315	DETENTION BASIN ACCESS DRIVE
300-303	STORM SEWER PROFILES
275-278	GRADING PLAN



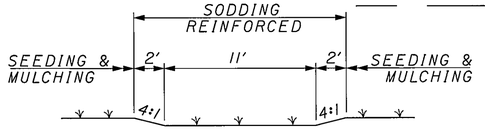
CUYAHOGA RIVER

NORMAL WATER EL. 648.0
HIGH WATER 25 YR. EL. 658.8
HIGH WATER 100 YR. EL. 660.5

LEGEND

——x—— - FENCE, TYPE CL, AS PER PLAN (CONSTRUCTION FENCE)

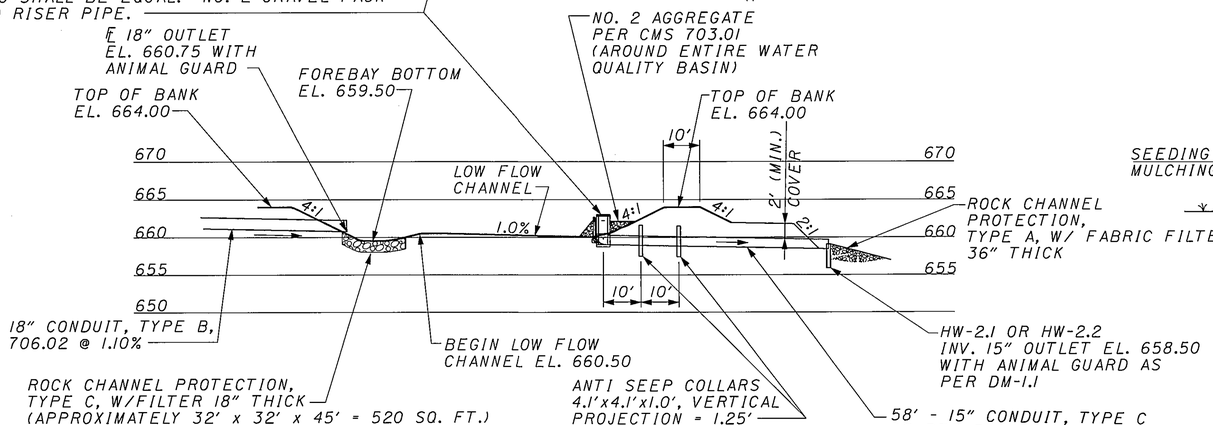
FOR ADDITIONAL INFORMATION SEE DETENTION BASIN DETAILS SHEETS 313-314.



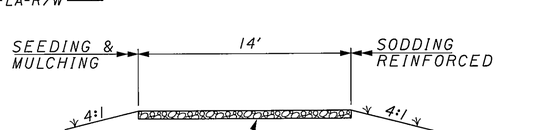
SECTION E-E

ITEM - 660 SODDING REINFORCED

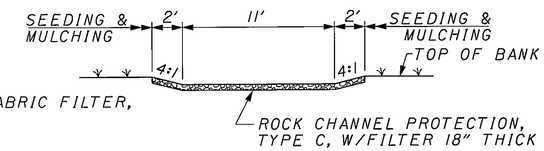
20' x (11'+2.06'+2.06') = 302.4 SQ.FT / 9 = 33.6 SQ. YD.



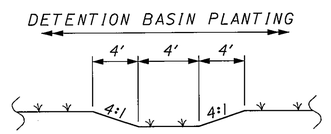
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

LOW FLOW CHANNEL

I-SDB ESTIMATED QUANTITIES

601 - ROCK CHANNEL PROTECTION, TYPE C, WITH FILTER	63	CU.YD.
602 - CONCRETE MASONRY	0.27	CU YD.
603 - 15" CONDUIT, TYPE C, AS PER PLAN	58	FT.
604 - CATCH BASIN MISC.: WATER QUALITY BASIN NO. 2-3	1	EACH
660 - SODDING REINFORCED	34	SQ.YD.
661 - PLANTING MISC.: DETENTION BASIN PLANTING	427	SQ. YD.

QUANTITIES CARRIED TO DRAINAGE SUB-SUMMARY.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED PRS
CHECKED DAW

DETENTION BASIN PLAN (WEST) - STEEL

SUM-271-8.02

309
612

2450GM-DET-STEEL.DGN 3/31/04 RB,TWH

ROCK CHANNEL PROTECTION CALCULATION - SPILLWAY

5 x 6 = 30 SQ. FT.
5 x 2.06 x 2 = 20.60 SQ. FT.
9 x 2.06 x 2 = 37.08 SQ. FT.
TOTAL 87.68 SQ. FT. x 1.5 = 131.52 CU. FT. / 27 = 4.87 CU.YD.

ROCK CHANNEL PROTECTION CALCULATION - FORE BAY

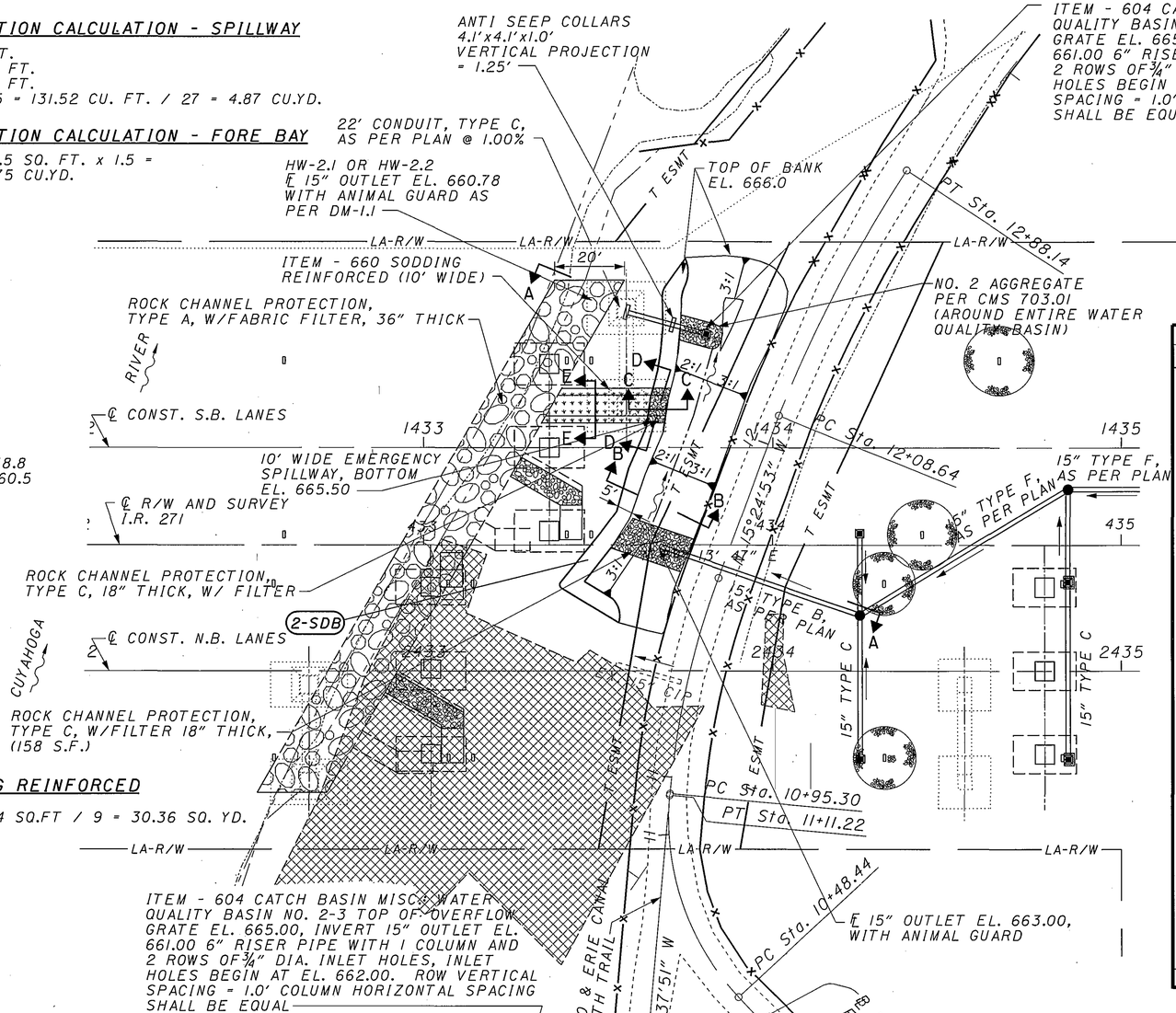
2 x (7.5 x1.05) x 10 - 157.5 SQ. FT. x 1.5 = 236.25 CU. FT. / 27 = 8.75 CU.YD.

CUYAHOGA RIVER

NORMAL WATER EL. 648.0
HIGH WATER 25 YR. EL. 658.8
HIGH WATER 100 YR. EL. 660.5

ITEM - 660 SODDING REINFORCED

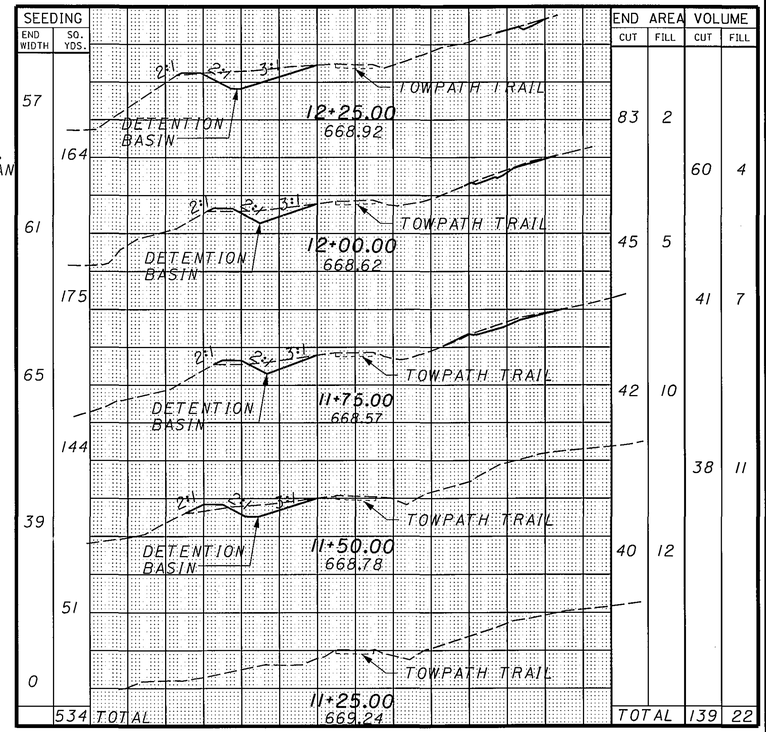
27' x (6'+2.06'+2.06') = 273.24 SQ.FT / 9 = 30.36 SQ. YD.



CROSS REFERENCES	
83-91	SUBSUMMARIES
59-66	TEMP. CONSTRUCTION ACCESS
134	PLAN SHEETS (I.R. 271)
148-258	CROSS SECTIONS
286-314	DRAINAGE DETAILS
300-303	STORM SEWER PROFILES
275-278	GRADING PLAN

LEGEND

- FENCE, TYPE CL, AS PER PLAN (CONSTRUCTION FENCE)
- WETLAND

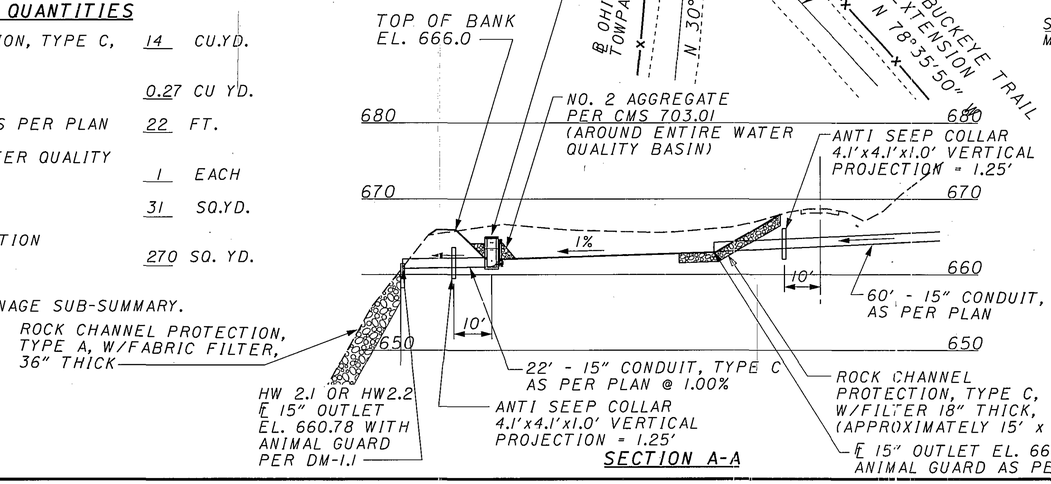


TOTALS CARRIED TO SHEET 227

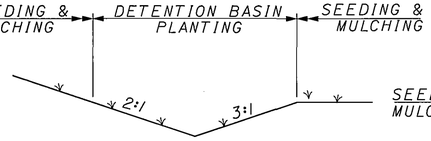
2-SDB ESTIMATED QUANTITIES

601 - ROCK CHANNEL PROTECTION, TYPE C, WITH FILTER	14	CU.YD.
602 - CONCRETE MASONRY	0.27	CU YD.
603 - 15" CONDUIT, TYPE C, AS PER PLAN	22	FT.
604 - CATCH BASIN MISC.: WATER QUALITY BASIN NO. 2-3	1	EACH
660 - SODDING REINFORCED	31	SQ.YD.
661 - PLANTING MISC.: DETENTION BASIN PLANTING	270	SQ. YD.

QUANTITIES CARRIED TO DRAINAGE SUB-SUMMARY.

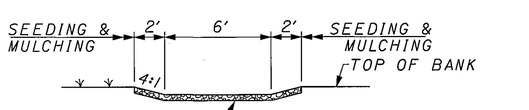


SECTION A-A

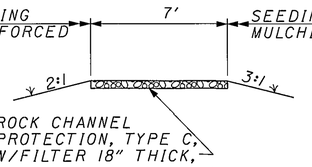


SECTION B-B

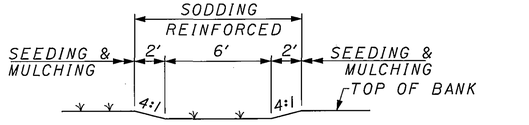
FOR ADDITIONAL INFORMATION SEE DETENTION BASIN DETAILS SHEETS 313-314.



SECTION D-D



SECTION C-C



SECTION E-E

DETENTION BASIN PLAN (EAST) - STEEL

SUM-271-8.02

310
612

CALCULATED PAS CHECKED DAW

HORIZONTAL SCALE IN FEET 0 10 20 40

2145OGM-DET-STEEL-2.DGN 3/31/04 RB,RC

ROCK CHANNEL PROTECTION CALCULATION - SPILLWAY

10 x 11 = 110 SQ. FT.
10 x 2.06 x 2 = 41.20 SQ. FT.
15 x 2.06 x 2 = 51.80 SQ. FT.
TOTAL 213 SQ. FT. x 1.5 = 314.5 CU. FT. / 27 = 11.83 CU.YD.

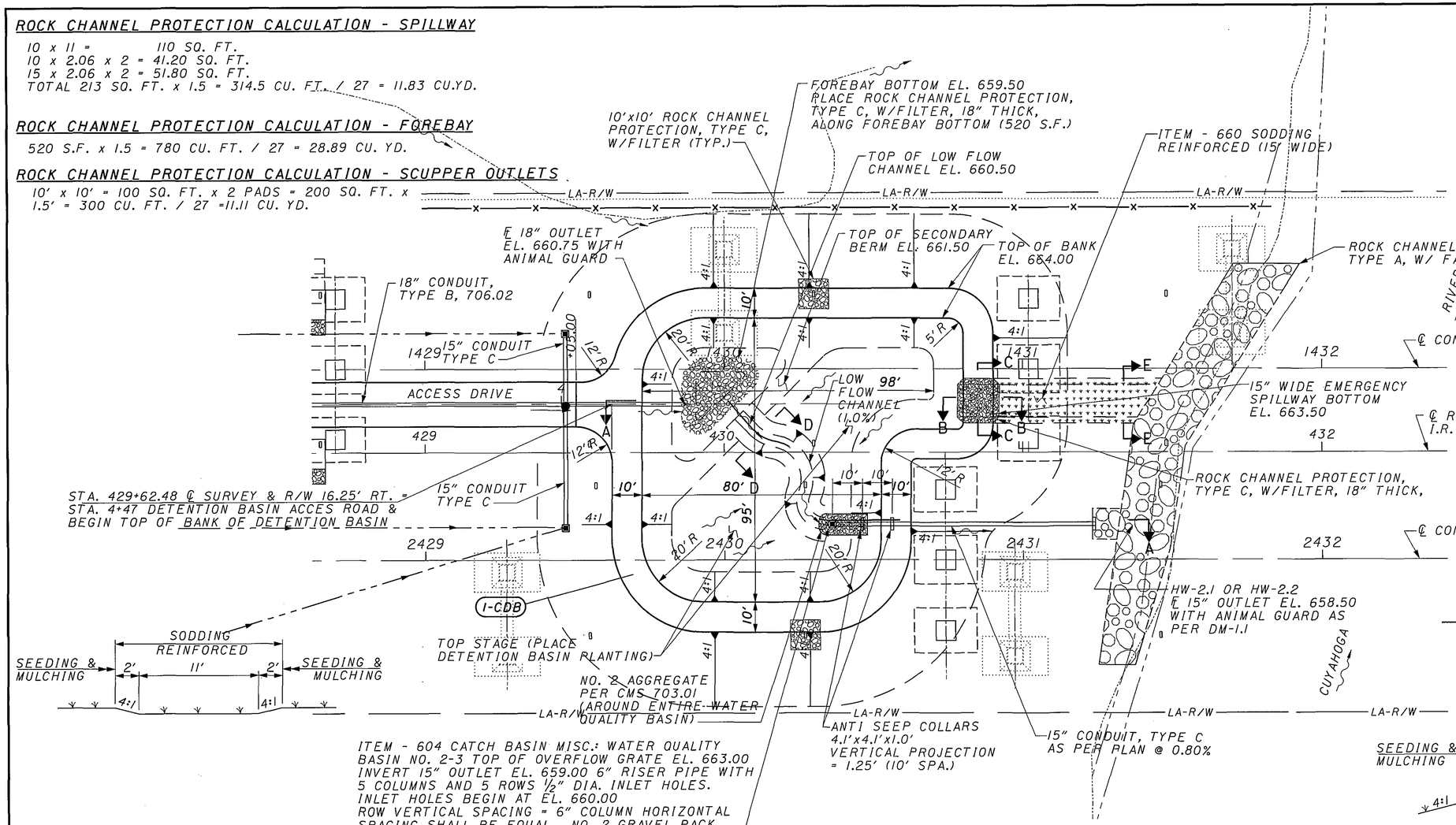
ROCK CHANNEL PROTECTION CALCULATION - FOREBAY

520 S.F. x 1.5 = 780 CU. FT. / 27 = 28.89 CU. YD.

ROCK CHANNEL PROTECTION CALCULATION - SCUPPER OUTLETS

10' x 10' = 100 SQ. FT. x 2 PADS = 200 SQ. FT. x 1.5' = 300 CU. FT. / 27 = 11.11 CU. YD.

CROSS REFERENCES	
83-91	SUBSUMMARIES
59-66	TEMP. CONSTRUCTION ACCESS
140	PLAN SHEET (I.R. 271)
148-258	CROSS SECTIONS
286-314	DRAINAGE DETAILS
316	DETENTION BASIN ACCESS DRIVE
304-308	STORM SEWER PROFILES
279-282	GRADING PLAN



SECTION E-E

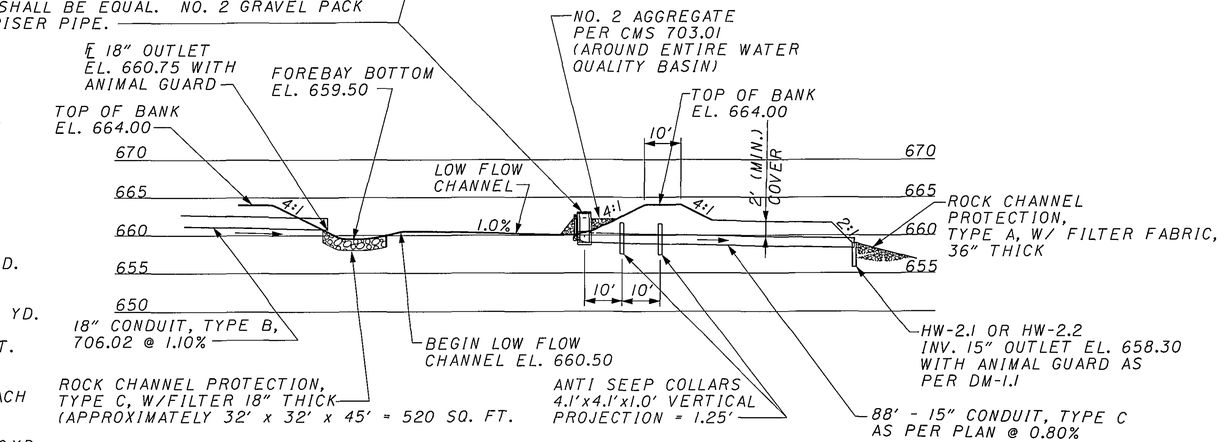
ITEM - 660 SODDING REINFORCED

50' x (11'+2.06'+2.06') = 756 SQ.FT / 9 = 84 SQ. YD.

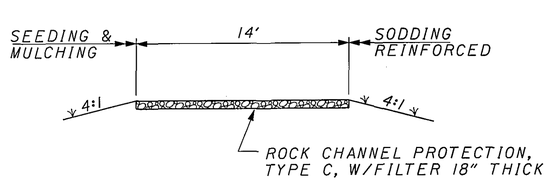
I-CDB ESTIMATED QUANTITIES

601 - ROCK CHANNEL PROTECTION, TYPE C, WITH FILTER	52	CU.YD.
602 - CONCRETE MASONRY	0.27	CU YD.
603 - 15" CONDUIT, TYPE C, AS PER PLAN	88	FT.
604 - CATCH BASIN MISC.: WATER QUALITY BASIN NO. 2-3	1	EACH
660 - SODDING REINFORCED	84	SQ.YD.
661 - PLANTING MISC.: DETENTION BASIN PLANTING	427	SQ. YD.

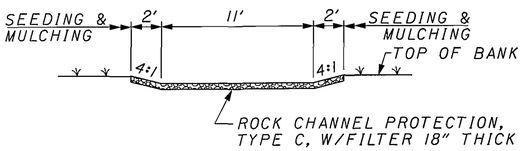
QUANTITIES CARRIED TO DRAINAGE SUB-SUMMARY.



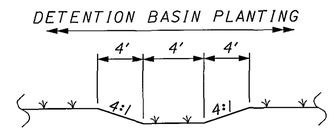
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

LOW FLOW CHANNEL

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED PRS
CHECKED DAW

DETENTION BASIN PLAN (WEST) - CONCRETE

SUM-271-8.02

311
612

2145GM-DET-CONC.DGN 3/17/04 RB

ROCK CHANNEL PROTECTION CALCULATION - SPILLWAY

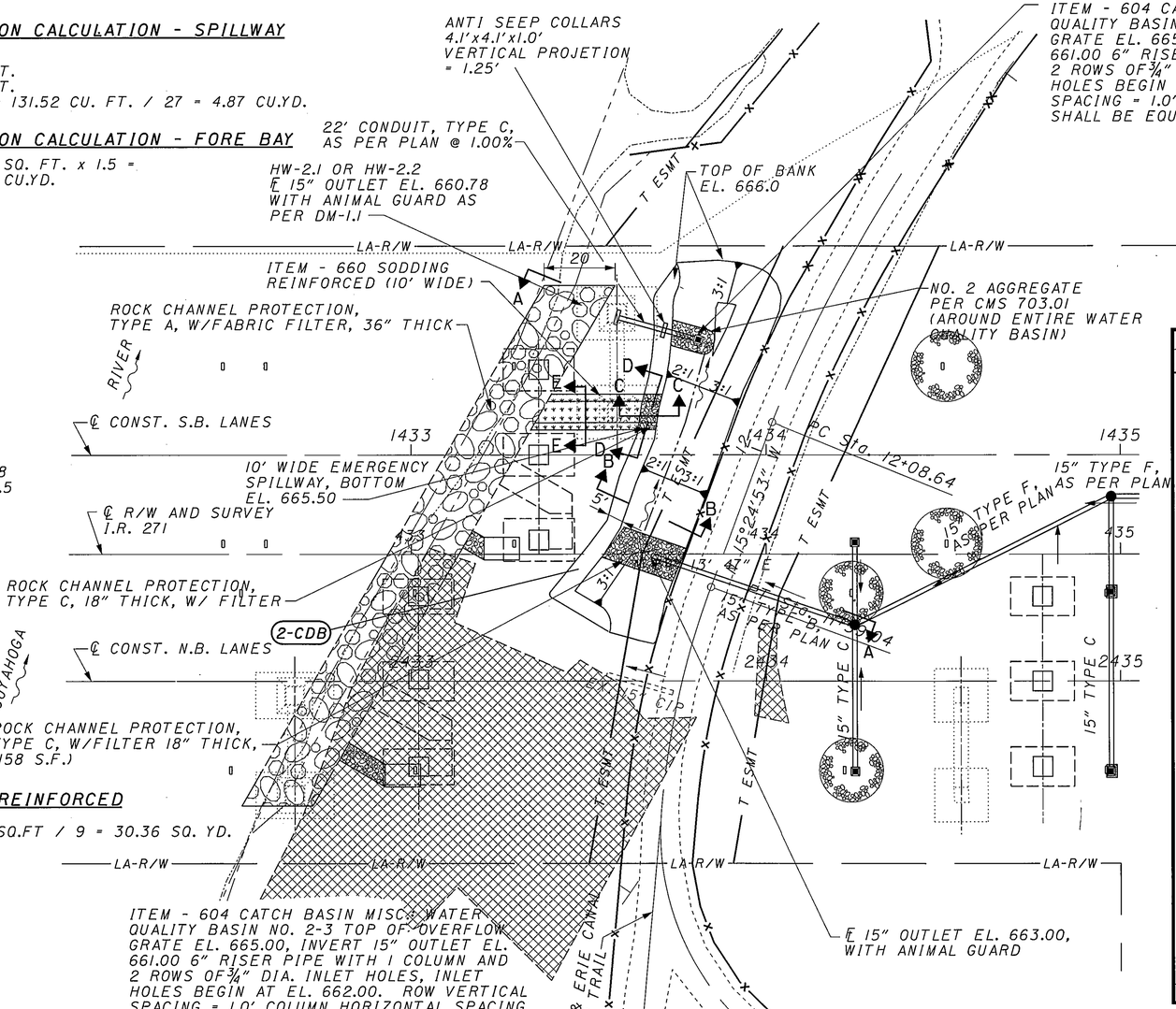
5 x 6 = 30 SQ. FT.
5 x 2.06 x 2 = 20.60 SQ. FT.
9 x 2.06 x 2 = 37.08 SQ. FT.
TOTAL 87.68 SQ. FT. x 1.5 = 131.52 CU. FT. / 27 = 4.87 CU.YD.

ROCK CHANNEL PROTECTION CALCULATION - FORE BAY

2 x (7.5 x1.05) x 10 - 157.5 SQ. FT. x 1.5 = 236.25 CU. FT. / 27 = 8.75 CU.YD.

CUYAHOGA RIVER

NORMAL WATER EL. 648.0
HIGH WATER 25 YR. EL. 658.8
HIGH WATER 100 YR. EL. 660.5



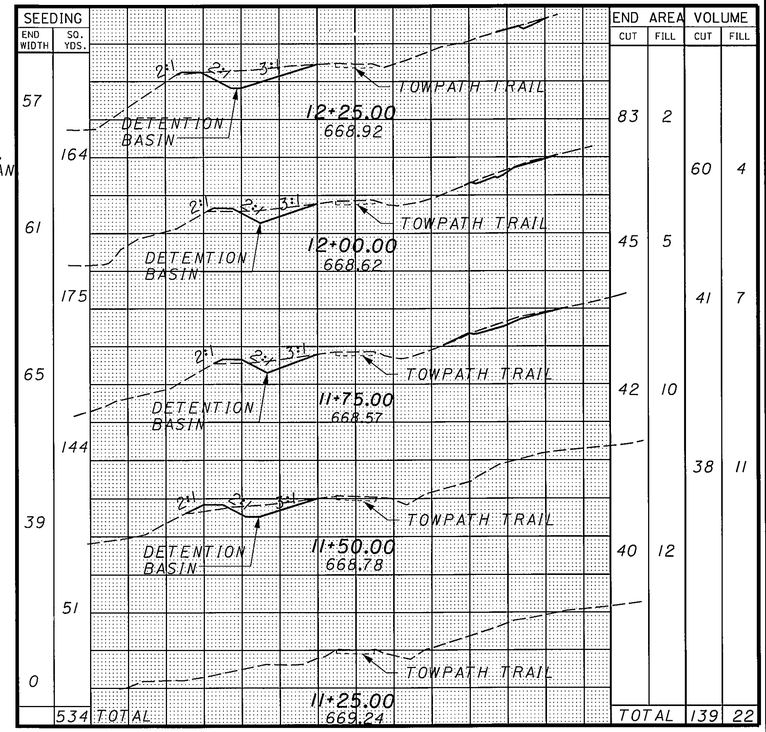
ITEM - 660 SODDING REINFORCED

27' x (6'+2.06'+2.06') = 273.24 SQ.FT / 9 = 30.36 SQ. YD.

CROSS REFERENCES	
83-91	SUBSUMMARIES
59-66	TEMP. CONSTRUCTION ACCESS
140	PLAN SHEETS (I.R. 271)
148-258	CROSS SECTIONS
286-314	DRAINAGE DETAILS
300-303	STORM SEWER PROFILES
279-282	GRADING PLAN

LEGEND

- FENCE, TYPE CL, AS PER PLAN (CONSTRUCTION FENCE)
- WETLAND

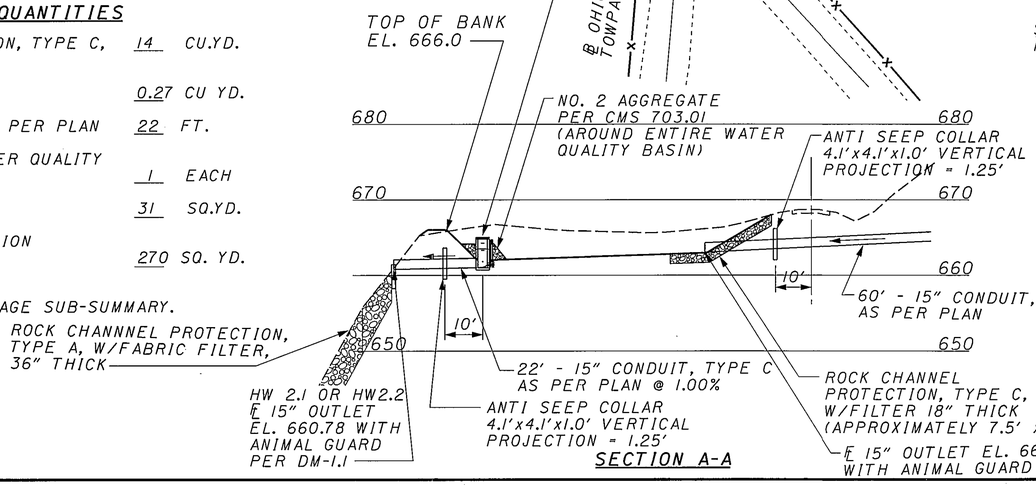


TOTALS CARRIED TO SHEET 227

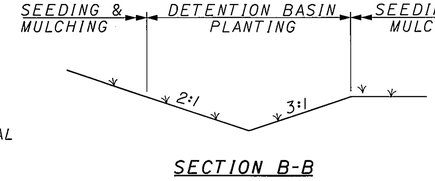
2-CDB ESTIMATED QUANTITIES

601 - ROCK CHANNEL PROTECTION, TYPE C, WITH FILTER	14	CU.YD.
602 - CONCRETE MASONRY	0.27	CU YD.
603 - 15" CONDUIT, TYPE C, AS PER PLAN	22	FT.
604 - CATCH BASIN MISC.: WATER QUALITY BASIN NO. 2-3	1	EACH
660 - SODDING REINFORCED	31	SQ.YD.
661 - PLANTING MISC.: DETENTION BASIN PLANTING	270	SQ. YD.

QUANTITIES CARRIED TO DRAINAGE SUB-SUMMARY.

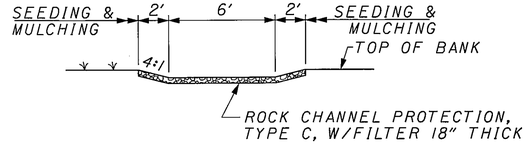


SECTION A-A

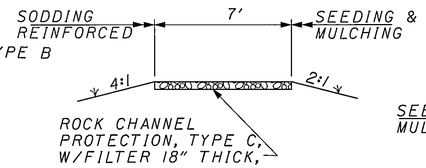


SECTION B-B

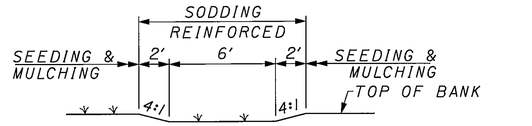
FOR ADDITIONAL INFORMATION SEE DETENTION BASIN DETAILS SHEETS 313-314.



SECTION D-D



SECTION C-C



SECTION E-E

DETENTION BASIN PLAN (EAST) - CONCRETE

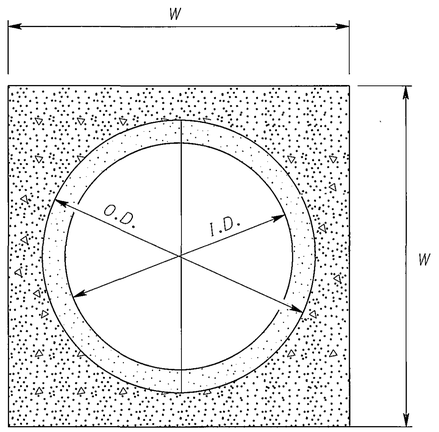
SUM-271-8.02

312
612

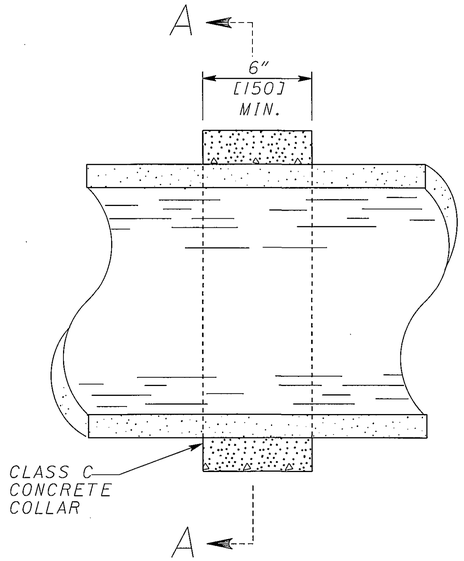
CALCULATED PRS
CHECKED DAW

HORIZONTAL SCALE IN FEET
0 10 20 40

2145OGM-DET-CONC-2.DGN 3/30/04 RB



SECTION A-A
(NTS)



ANTI-SEEP COLLAR
(NTS)

DIAMETER (I.D.) (FT.)	CY-DIMENSION OF COLLAR W X W								
	3X3	4X4	5X5	6X6	7X7	8X8	9X9	10X10	11X11
1	0.15	0.28	0.45	0.65	0.90	1.17	1.49	1.84	2.22
2	0.11	0.24	0.40	0.61	0.85	1.13	1.44	1.80	2.19
3	N/A	0.33	0.33	0.54	0.78	1.06	1.37	1.72	2.11
4	N/A	N/A	N/A	0.44	0.68	0.96	1.27	1.62	2.01
5	N/A	N/A	N/A	N/A	0.55	0.82	1.14	1.49	1.88
6	N/A	N/A	N/A	N/A	N/A	0.66	0.98	1.33	1.72

NOTES

ANTI-SEEP COLLARS:

AN ANTI-SEEP COLLAR SHALL BE PROVIDED AS SHOWN OR DESCRIBED IN THE PLANS. PAYMENT FOR THE COLLAR SHALL BE INCLUDED IN THE COST OF:

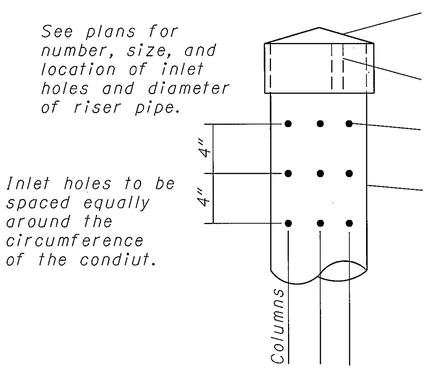
ITEM 603 - 15" CONDUIT, TYPE C, AS PER PLAN,
ITEM 603 - 15" CONDUIT, TYPE B, AS PER PLAN,
ITEM 603 - 18" CONDUIT, TYPE C, AS PER PLAN, OR
ITEM 603 - 54" CONDUIT, TYPE C, AS PER PLAN

FOR ADDITIONAL INFORMATION SEE STANDARD CONSTRUCTION DRAWING: WQ-1.2

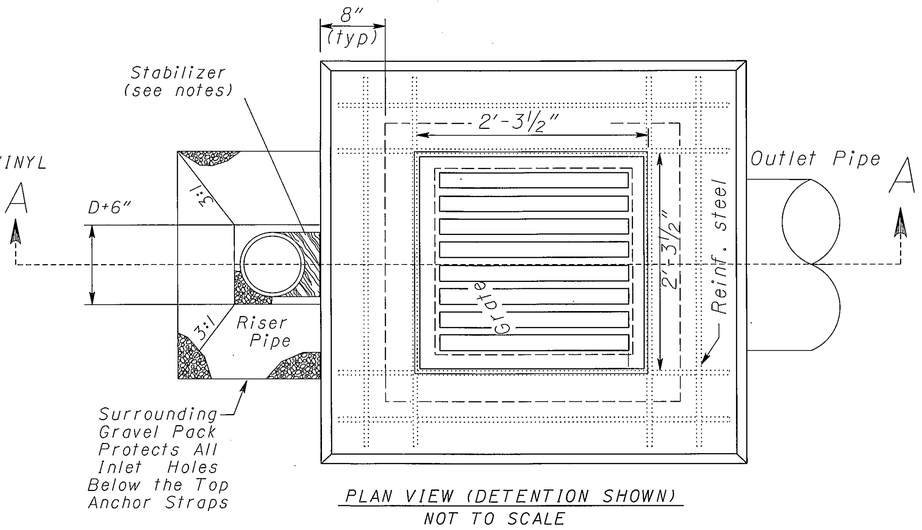
DETENTION BASIN DETAILS

SUM-271-8.02

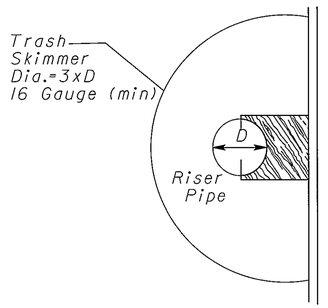
2145ODDI.DGN 9/8/04 CEO



PERFORATED RISER
NOT TO SCALE



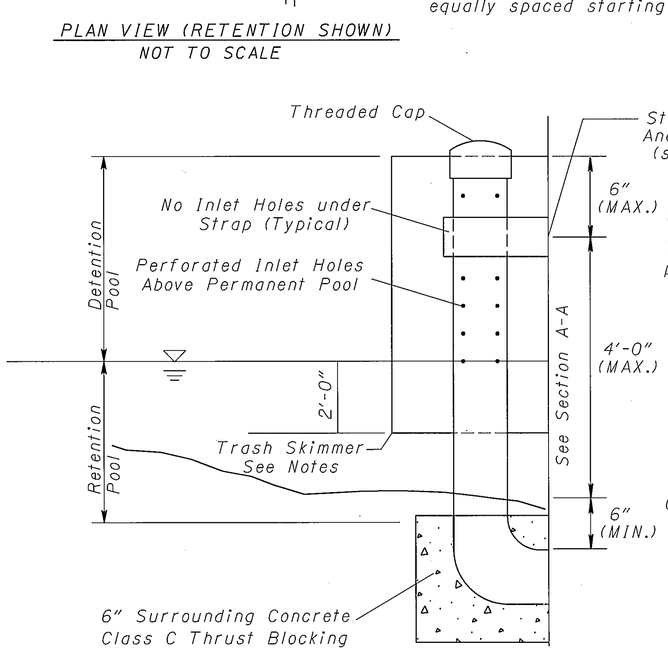
PLAN VIEW (DETENTION SHOWN)
NOT TO SCALE



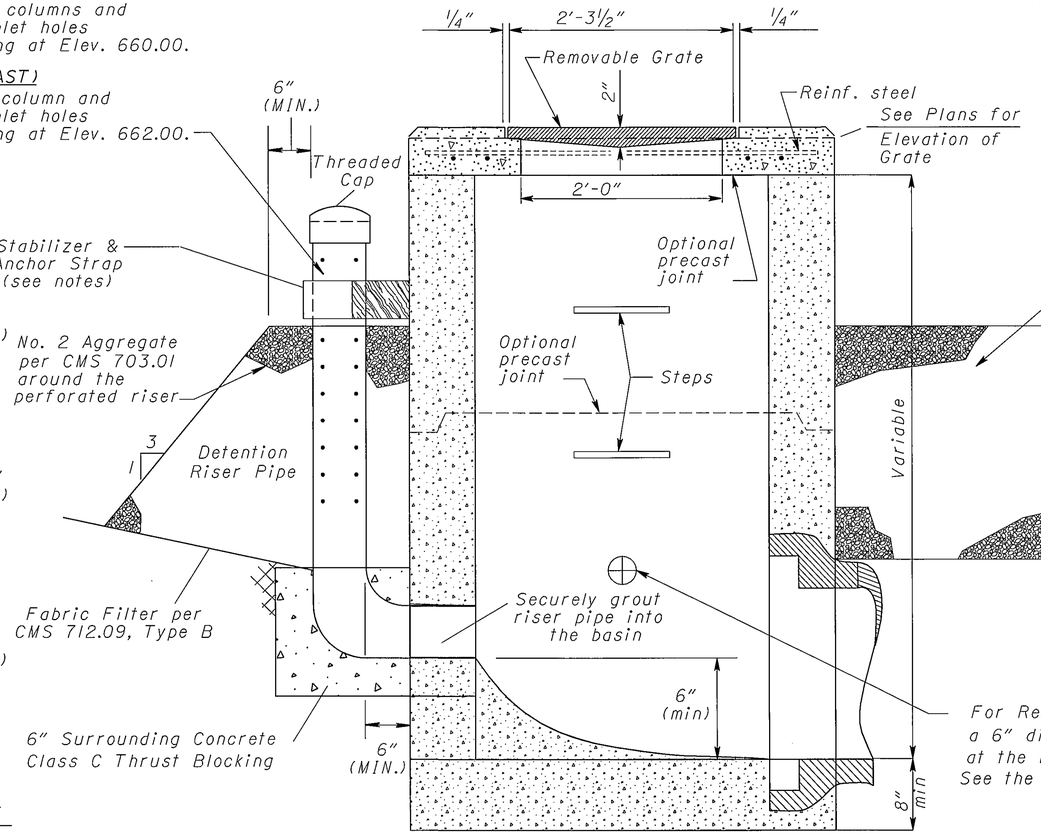
PLAN VIEW (RETENTION SHOWN)
NOT TO SCALE

DETENTION POND (WEST)
6" Riser pipe with 5 columns and 5 rows of ½" Dia. inlet holes equally spaced starting at Elev. 660.00.

DETENTION POND (EAST)
6" Riser pipe with 1 column and 2 rows of ¾" Dia. inlet holes equally spaced starting at Elev. 662.00.



RETENTION RISER PIPE
NOT TO SCALE



SECTION A-A (Retention shown)
NOT TO SCALE

NOTES

BASIN MATERIALS The basin dimensions, materials, and grate to be per CB-1.2 except as detailed herein.

LOCATION AND ELEVATION: When given on the plans, the location and the elevation are at the top center of the grate. The orifice holes should be placed at the elevations as shown on the plans.

TRASH SKIMMER: Use trash skimmer screens to protect the perforated riser. It must extend from the top of the riser to 2' below the permanent pool level and be open at the top and bottom. The radius of the trash skimmer shall be 3 times the diameter of the riser pipe. Trash skimmer shall be stainless steel or galvanized steel per CMS 711.02. Maximum perforation size shall be 2 inches. Securely fasten trash skimmer to the basin using hardware galvanized per 711.02.

GRAVEL PACK: No. 2 Aggregate per CMS 703.01 and Fabric Filter per CMS 712.09, Type B shall be placed around the riser pipe and around the entire basin to the same depth as shown in the detail.

All aggregate shown shall meet CMS 203.02.H, NATURAL GRANULAR MATERIALS and specified gradations.

STABILIZER AND ANCHOR STRAP: Securely fasten the riser pipe to the basin in the vertical position using a stabilizer and anchor strap that consists of a universal clamp or a strap and a block. All metal components shall be galvanized or stainless steel. All other materials shall be rot resistant.

PAYMENT: All materials labor and incidentals to construct this item as per CMS 604, and as detailed herein, including excavation and backfill, shall be paid for under

Item 604 - Catch Basin, Misc.: Water Quality Basin, No. 2-3

FOR ADDITIONAL DETAILS SEE STANDARD CONSTRUCTION DRAWING WQ-1.1

DETENTION BASIN DETAILS

SUM-271-8.02

2 / 2

314
612

21450DD2.DGN 9/8/04 CEO

RAILROAD CROSSING AS PER DETAIL ON SHEET 63-64

STA. 0+00.00 ℄ CONST. DETENTION BASIN ACCESS DRIVE = STA. 73+15.98 RIVERVIEW RD. = STA. 425+45.49 ℄ R/W & SURVEY I.R. 271, 16.5' LT.

B.M. #3 STA. 424+89.09, 299.09' LT.
CHISELED "□" ON W. HEADWALL
NW COR. 200'± N. OF I.R. 271 BRIDGE
ELEV. = 682.71

B.M. #4 STA. 427+74.15, 125.45' LT.
CHISELED "□" ON W. HEADWALL
NW COR. CULVERT UNDER RR TRKS BRIDGE
ELEV. = 669.63

TEST HOLE #	℄ R/W & SURVEY I.R. 271	SURVEYED ELEV. TOP OF UTILITY
TH 4	427+98.42±, 15.5'± LT.	666.18

CROSS REFERENCES	
259	RIVERVIEW ROAD PLAN
261-265	RIVERVIEW ROAD CROSS SECTIONS
63-64	RAILROAD GRADE CROSSING DETAIL
79-98	SUBSUMMARIES
59-64	TEMP. CONSTRUCTION ACCESS
131-136	I.R. 271 PLAN & PROFILE SHEETS
148-258	I.R. 271 CROSS SECTIONS
286-324	DRAINAGE DETAILS
309	DETENTION BASIN PLAN
300-303	STORM SEWER PROFILES

HORIZONTAL SCALE IN FEET 0 10 20 40

CALCULATED PRS CHECKED DAW

DETENTION BASIN ACCESS DRIVE PLAN & PROFILE STEEL - STA. 0+00 TO STA 4+25

SUM-271-8.02

315/612

LA-R/W, WETLANDS F, WETLANDS H, WETLANDS G, A ESMT, SH ESMT, T, TIFOI, VALLEY RAILWAY, EX. 4'x14' BOX CULVERT, EX. UNDERGROUND FIBER OPTIC CABLE (DO NOT DISTURB), ℄ RIVERVIEW ROAD (C.R. 9), STA. 0+35.00 GATE, TYPE CL, (18'-0" MIN. OPENING FACE TO FACE OF END POST), ℄ CONST. DETENTION BASIN ACCESS DRIVE, ℄ CONST. S.B. LANES, ℄ CONST. N.B. LANES, 15" CONDUIT, TYPE A, 706.02, RIPRAP, TEST HOLE TH-4, BRIDGE SCUPPER OUTLET (TYP.), 30-GR, +35.41 END DRIVE, B.M. #5, ℄ R/W AND SURVEY I.R. 271, DETENTION BASIN, +90, +00, 1426, 1427, 1428, 1429, 1430, 1431, 426, 427, 428, 429, 430, 431, 2426, 2427, 2428, 2429, 2430, 2431

LEGEND

- WETLAND
- DITCH EROSION PROTECTION
- FENCE, TYPE CL, AS PER PLAN (CONSTRUCTION FENCE)
- SODDING REINFORCED

DETENTION BASIN ACCESS DRIVE QUANTITIES

(QUANTITIES CARRIED TO GENERAL SUMMARY)

STA. 0+09.06 TO STA. 1+90.00 = 180.94 FT.
STA. 2+90.00 TO STA. 4+35.41 = 145.41 FT.
= 326.35 FT.

ITEM 304 - AGGREGATE BASE

326.35 FT. x 15 x 10"/ 12 = 4079.38 CU. FT.
½ x (15 x 15) x 10" / 12 = 93.75 CU. FT.
½ x (20 x 20) x 10" / 12 = 166.67 CU. FT.
4339.80 / 27 = 160.73 CU. YD.
USE = 161 CU. YD.

ITEM 204 - SUBGRADE COMPACTION

326.35 FT. x 15 / 9 = 543.92 SQ. YD.
½ x (15 x 15) / 9 = 12.50 SQ. YD.
½ x (20 x 20) / 9 = 22.22 SQ. YD.
578.64 SQ. YD.
USE = 579 SQ. YD.

ITEM SPECIAL - GEOGRID

326.35 FT. x 15 / 9 = 543.92 SQ. YD.
½ x (15 x 15) / 9 = 12.50 SQ. YD.
½ x (20 x 20) / 9 = 22.22 SQ. YD.
578.64 SQ. YD.
USE = 579 SQ. YD.

ITEM 660 - SODDING REINFORCED

10' x 10' x 4 = 400 SQ. FT. / 9 = 44.44 USE 45 SQ. YD.

ITEM 607 - GATE, TYPE CL (18' MINIMUM OPENING F/F OF END POST

STA. 0+35 1 EACH

ITEM 603 - 15" CONDUIT, TYPE A, 706.02

STA. 2+15.51 42 FT.

ITEM 602 - CONCRETE MASONRY

STA. 2+15.51 0.50 CU YD.

ITEM 601 - ROCK CHANNEL PROTECTION, TYPE C WITH FILTER

STA. 2I+15.5I 5 x (2 + 1.12 + 1.12) = 21.2 SQ. FT. x 1.5 = 31.8 CU. FT. / 27 = 1.18 CU. YD
USE 2 CU YD.

ITEM 601 - RIPRAP USING 6" REINFORCED CONCRETE SLAB (PROVIDE CUTOFF WALLS, AS PER DM-1.1 ON ALL SIDES)

5 x (2 + 1.12 + 1.12) = 21.2 SQ. FT. / 9 = 2.36 SQ. YD. USE 3 SQ. YD.

ITEM SPECIAL - RAIL ITEM MISC.: RAILROAD GRADE CROSSING

STA. 1+90 TO STA. 2+90 1 EACH

FOR ADDITIONAL INFORMATION FOR STORM DRAINAGE UNDER BRIDGE, SEE SHEETS 300-303

℄ RIVERVIEW ROAD, MEET RIVERVIEW ROAD, -8.33%, -8.44%, +0.09, 10' V.C., P.V.I. Sta. 0+22.00, Elev. = 685.38, RAILROAD CROSSING SEE DETAIL ON SHEET 63-64., 50' V.C., P.V.I. Sta. 1+89.00, Elev. = 671.28, ℄ VALLEY RAILWAY, TOP OF RAIL EL. 671.28, +0.00%, -6.00%, +85.41, P.V.I. Sta. 4+10.41, Elev. = 664.00, DETENTION BASIN, EX. UNDERGROUND FIBER OPTIC CABLE (DO NOT DISTURB), P.V.I. Sta. 2+89.00, Elev. = 671.28, PROP. 15" CONDUIT TYPE A, 706.02 STA. 2+15.51, 21' LT. OUTLET EL. 666.75 STA. 2+15.51, 21' RT. INLET EL. 667.20

686.46, 685.12, 683.01, 680.90, 678.79, 676.68, 674.57, 672.56, 671.45, 671.28, 671.28, 671.21, 670.50, 669.12, 667.62, 666.12, 664.75, 664.06, 686.67, 683.75, 679.58, 670.98, 668.81, 669.80, 666.10, 664.35, 662.91

685, 680, 675, 670, 665, 660, 655, 650

0, 1, 2, 3, 4

DETENTION BASIN ACCESS DRIVE TYPICAL SECTION

℄ CONST. DETENTION BASIN ACCESS DRIVE
2'-0" 7'-6" 7'-6" 2'-0"
0.04% 0.02% 0.04%
3:1 MAX. 3:1 MAX.
ITEM SPECIAL - GEOGRID
ITEM 304 10" AGGREGATE BASE
ITEM 204 SUBGRADE COMPACTION

21450GP-ACCESS2.DGN 9/8/04 RB,SCB,KH

RAILROAD CROSSING AS PER DETAIL ON SHEET 63-64

STA. 0+00.00 ℄ CONST. DETENTION BASIN ACCESS DRIVE =
STA. 73+15.98 RIVERVIEW RD. =
STA. 425+45.49 ℄ R/W & SURVEY I.R. 271, 16.5' LT.

B.M. #3 STA. 424+89.09, 299.09' LT.
CHISELED '□' ON W. HEADWALL
NW COR. 200'± N. OF I.R. 271
BRIDGE ELEV. = 682.71

B.M. #4 STA. 427+74.15, 125.45' LT.
CHISELED '□' ON W. HEADWALL
NW COR. CULVERT UNDER RR TRKS
BRIDGE ELEV. = 669.63

TEST HOLE #	℄ R/W & SURVEY I.R. 271	SURVEYED ELEV. TOP OF UTILITY
TH 4	427+98.42±, 15.5'± LT.	666.18

CROSS REFERENCES	
260	RIVERVIEW ROAD PLAN
261-265	RIVERVIEW ROAD CROSS SECTIONS
63-64	RAILROAD GRADE CROSSING DETAIL
79-98	SUBSUMMARIES
59-68	TEMP. CONSTRUCTION ACCESS
137-142	I.R. 271 PLAN & PROFILE SHEETS
148-258	I.R. 271 CROSS SECTIONS
286-324	DRAINAGE DETAILS
311	DETENTION BASIN PLAN
304-308	STORM SEWER PROFILES

HORIZONTAL SCALE IN FEET: 0, 10, 20, 40

CALCULATED PRS
CHECKED DAW

DETENTION BASIN ACCESS DRIVE PLAN & PROFILE
STA. 0+00 TO STA. 4+25
CONCRETE - STA. 0+00 TO STA 4+25

SUM-271-8.02

316
612

29-GR, 30-GR, 74, 75, RIVERVIEW ROAD (C.R. 9), LA-R/W, WETLANDS F, WETLANDS G, WETLANDS H, A ESMT, SH ESMT, VALLEY RAILWAY, EX. 4'x14' BOX CULVERT (T(FO)), EX. UNDERGROUND FIBER OPTIC CABLE (DO NOT DISTURB), STA. 0+40.00 GATE, TYPE CL, (18'-0" MIN. OPENING FACE TO FACE OF END POST), ℄ CONST. S.B. LANES, ℄ CONST. N.B. LANES, 15" CONDUIT, TYPE A, 706.02, RIP-RAP, BRIDGE SCUPPER OUTLET (TYP.), TEST HOLE TH-4, ℄ CONST. DETENTION BASIN ACCESS DRIVE, +05.00 END DRIVE, ℄ R/W AND SURVEY I.R.271, DETENTION BASIN, B.M. #5, 1426, 1427, 1428, 1429, 1430, 1431, 426, 427, 428, 429, 430, 431, 2426, 2427, 2428, 2429, 2430, 2431, 15'-0", +90

LEGEND
- WETLAND
- DITCH EROSION PROTECTION
- FENCE, TYPE CL, AS PER PLAN (CONSTRUCTION FENCE)
- SODDING REINFORCED

686.46, 685.12, 683.01, 680.90, 678.79, 676.68, 674.57, 672.56, 671.45, 671.28, 671.28, 671.18, 670.24, 668.40, 666.40, 664.72, 664.02

℄ RIVERVIEW ROAD
-8.33%, -8.44%, +0.00%, -8.00%
685, 680, 675, 670, 665, 660, 655, 650
RAILROAD CROSSING SEE DETAIL ON SHEET 63-64.
50' V.C.
P.V.I. Sta. 1+89.00
Elev. = 671.28
10' V.C.
P.V.I. Sta. 0+22.00
Elev. = 685.38
50' V.C.
P.V.I. Sta. 2+89.00
Elev. = 671.28
50 V.C.
P.V.I. Sta. 3+80.00
Elev. = 664.00
℄ VALLEY RAILWAY
TOP OF RAIL EL. 671.28
MEET RIVERVIEW ROAD
EX. UNDERGROUND FIBER OPTIC CABLE (DO NOT DISTURB)
PROP. 15" CONDUIT TYPE A, 706.02
STA. 2+15.51, 21' LT. OUTLET EL. 666.75
STA. 2+15.51, 21' RT. INLET EL. 667.20
686.67, 683.75, 679.58, 670.98, 668.81, 669.80, 666.10, 664.35, 662.91
0, 1, 2, 3, 4

DETENTION BASIN ACCESS DRIVE TYPICAL SECTION

℄ CONST. DETENTION BASIN ACCESS DRIVE
2'-0" 7'-6" 7'-6" 2'-0"
0.04% 0.02% 0.04%
3:1 MAX. 3:1 MAX.
ITEM SPECIAL - GEOGRID
ITEM 304 10" AGGREGATE BASE
ITEM 204 SUBGRADE COMPACTION

FOR ADDITIONAL INFORMATION FOR STORM DRAINAGE UNDER BRIDGE, SEE SHEETS 304-308

DETENTION BASIN ACCESS DRIVE QUANTITIES

(QUANTITIES CARRIED TO GENERAL SUMMARY)

STA. 0+09.06 TO STA. 1+90.00 = 180.94 FT.
STA. 2+90.00 TO STA. 4+05.00 = 115.00 FT.
= 295.94 FT.

ITEM 304 - AGGREGATE BASE
295.94 FT. x 15 x 10" / 12 = 3699.25 CU. FT.
½ x (15 x 15) x 10" / 12 = 93.75 CU. FT.
½ x (20 x 20) x 10" / 12 = 166.67 CU. FT.
3959.67 / 27 = 146.65 CU. YD.
USE = 147 CU. YD.

ITEM SPECIAL - GEOGRID
295.94 FT. x 15 / 9 = 493.23 SQ. YD.
½ x (15 x 15) / 9 = 12.50 SQ. YD.
½ x (20 x 20) / 9 = 22.22 SQ. YD.
527.95 SQ. YD.
USE = 528 SQ. YD.

ITEM 204 - SUBGRADE COMPACTION
295.94 FT. x 15 / 9 = 493.23 SQ. YD.
½ x (15 x 15) / 9 = 12.50 SQ. YD.
½ x (20 x 20) / 9 = 22.22 SQ. YD.
527.95 SQ. YD.
USE = 528 SQ. YD.

ITEM 660 - SODDING REINFORCED
10' x 10' x 5 = 500 SQ. FT. / 9 =
55.5 USE 56 SQ. YD.

ITEM 607 - GATE, TYPE CL (18' MINIMUM OPENING F/F OF END POST
STA. 0+40 1 EACH

ITEM 603 - 15" CONDUIT, TYPE A, 706.02
STA. 2+15.51 42 FT.

ITEM 602 - CONCRETE MASONRY
STA. 2+15.51 0.50 CU YD.

ITEM 601 - ROCK CHANNEL PROTECTION, TYPE C WITH FILTER
STA. 2+15.51 5 x (2 + 1.12 + 1.12) =
21.2 SQ.FT. X 1.5 = 31.8 CU.FT. / 27 =
1.18 CU YD.
USE 2 CU YD.

ITEM 601 - RIPRAP USING 6" REINFORCED CONCRETE SLAB (PROVIDE CUTOFF WALLS, AS PER DM-1.1 ON ALL SIDES)
5 x (2 + 1.12 + 1.12) = 21.2 SQ. FT. / 9 =
2.36 SQ. YD. USE 3 SQ. YD.

ITEM SPECIAL - RAIL ITEM MISC.: RAILROAD GRADE CROSSING
STA. 1+90 TO STA. 2+90 1 EACH

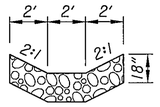
2450GP-ACCESSLDGN 9/8/04 RB,SCB,KH

(1-E) SEE PLAN SHEET NO. 121, 286

ROCK CHANNEL PROTECTION CALCULATION

STA. 357+80.00 LT. TO STA. 358+50.00 LT.

RCP TYPE C, WITH FILTER



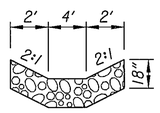
115 x 2 = 230 SQ. FEET
2 x 115 x 2.24 = 515.2 SQ. FEET
745.2 SQ. FEET
x 1.5
/ 27
41.4 CU. YARDS **USE 42 CU. YDS.**

(2-E) SEE PLAN SHEET NO. 121, 123, 286

ROCK CHANNEL PROTECTION CALCULATION

STA. 365+00.00 RT. TO STA. 370+70.00 RT.

RCP TYPE C, WITH FILTER



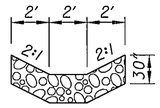
571.06 x 4 = 2284.24 SQ. FEET
2 x 571.06 x 2.24 = 2558.35 SQ. FEET
4842.59 SQ. FEET
x 1.5
/ 27
269.03 CU. YARDS **USE 270 CU. YDS.**

(3-E) SEE PLAN SHEET NO. 123, 287

ROCK CHANNEL PROTECTION CALCULATION

STA. 371+70.00 RT. TO STA. 374+00.00 RT.

RCP TYPE B, WITH FABRIC FILTER



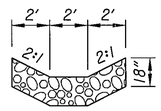
266.5 x 2 = 533 SQ. FEET
2 x 266.5 x 2.24 = 1193.92 SQ. FEET
1726.92 SQ. FEET
x 2.5
/ 27
159.9 CU. YARDS **USE 160 CU. YDS.**

(7-E) SEE PLAN SHEET NO. 127, 288

DITCH EROSION PROTECTION CALCULATION

STA. 399+80.00 LT. TO STA. 401+85.00 LT.

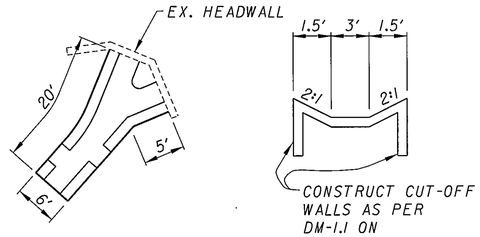
RCP TYPE C, WITH FABRIC FILTER



205 x 2 = 410 SQ. FEET
2 x 205 x 2.24 = 918.4 SQ. FEET
1328.4 SQ. FEET
x 1.5
/ 27
73.8 CU. YARDS **USE 74 CU. YDS.**

(7-D) SEE PLAN SHEET NO. 127, 288

RIPRAP USING 6" REINFORCED CONCRETE SLAB



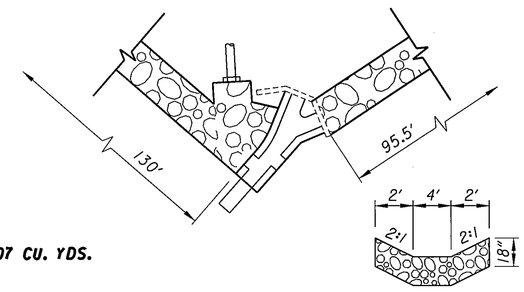
20 x 3 = 60 SQ. FEET
2 x 20 x 1.12 x 1.5 SIDE = 67.2 SQ. FEET
5 x 3 = 15 SQ. FEET
2 x 5 x 1.12 x 1.5 SIDE = 16.8 SQ. FEET
5 x 3 = 15 SQ. FEET
2 x 5 x 1.12 x 1.5 SIDE = 16.8 SQ. FEET
190.8 SQ. FEET
/ 9
21.2 SQ. YARDS **USE 22 SQ. YDS.**

(8-E) SEE PLAN SHEET NO. 127, 288

ROCK CHANNEL PROTECTION CALCULATION

STA. 400+90.00 RT. TO STA. 403+00.00 RT.

RCP TYPE C, WITH FABRIC FILTER



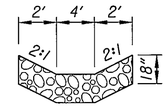
130 x 4 = 520 SQ. FEET
2 x 130 x 2.24 = 582.4 SQ. FEET
95.5 x 4 = 382 SQ. FEET
2 x 95.5 x 2.24 = 427.84 SQ. FEET
1912.24 SQ. FEET
x 1.5
/ 27
106.24 CU. YARDS **USE 107 CU. YDS.**

(9-E) SEE PLAN SHEET NO. 129, 288

ROCK CHANNEL PROTECTION CALCULATION

STA. 413+60.00 RT. TO STA. 415+25.00 RT.

RCP TYPE C, WITH FABRIC FILTER



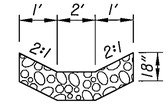
226.5 x 4 = 906 SQ. FEET
2 x 226.5 x 2.24 = 1014.72 SQ. FEET
1920.72 SQ. FEET
x 1.5
/ 27
106.71 CU. YARDS **USE 107 CU. YDS.**

(12-D) SEE PLAN SHEET NO. 129, 288

ROCK CHANNEL PROTECTION CALCULATION

STA. 415+00.17 RT. TO STA. 415+14.30 RT.

RCP TYPE C, WITH FILTER



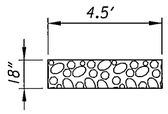
71.18 x 2 = 142.36 SQ. FEET
2 x 71.18 x 1.12 = 159.44 SQ. FEET
301.80 SQ. FEET
x 1.5
/ 27
16.77 CU. YARDS **USE 17 CU. YDS.**

(14-D) SEE PLAN SHEET NO. 129, 288

ROCK CHANNEL PROTECTION CALCULATION

STA. 416+60.43 LT. TO STA. 416+70.35 LT.

RCP TYPE C, WITH FILTER



10 x 4.5 = 45 SQ. FEET
45 SQ. FEET
x 1.5
/ 27
2.5 CU. YARDS **USE 3 CU. YDS.**

CALCULATED JDL
CHECKED PRS

DRAINAGE DETAILS & CALCULATIONS

SUM-271-8.02

317
612

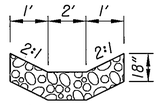
2145ODMA.DGN 3/30/04 SAM,RC,JDY,CAR

(50-D) SEE PLAN SHEET NO. 131, 137, 289

ROCK CHANNEL PROTECTION CALCULATION

STA. 419+25.00 RT. TO STA. 420+00.00 RT.

RCP TYPE C, WITH FILTER



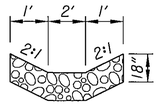
44.82 x 2 = 89.64 SQ. FEET
2 x 44.82 x 1.12 = 100.40 SQ. FEET
190.04 SQ. FEET
x 1.5
/ 27
10.56 CU. YARDS **USE 11 CU. YDS.**

(34-D) SEE PLAN SHEET NO. 145, 291

ROCK CHANNEL PROTECTION CALCULATION

STA. 463+00.00 LT.

RCP TYPE C, WITH FILTER



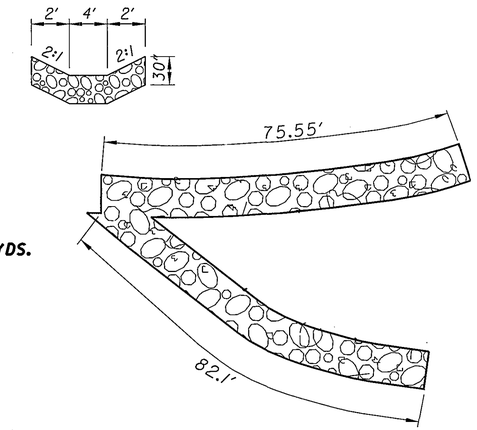
15 x 2 = 30 SQ. FEET
2 x 15 x 1.12 = 33.6 SQ. FEET
63.6 SQ. FEET
x 1.5
/ 27
3.53 CU. YARDS **USE 4 CU. YDS.**

(10-E) SEE PLAN SHEET NO. 143, 291

ROCK CHANNEL PROTECTION CALCULATION

STA. 450+60.00 RT. TO STA. 460+40.00 RT.

RCP TYPE B, WITH FABRIC FILTER



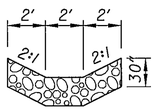
75.55 x 4 = 302.2 SQ. FEET
2 x 75.55 x 2.24 = 338.46 SQ. FEET
82.1 x 4 = 328.4 SQ. FEET
2 x 82.1 x 2.24 = 367.81 SQ. FEET
1336.87 SQ. FEET
x 2.5
/ 27
123.78 CU. YARDS **USE 124 CU. YDS.**

(31-D) SEE PLAN SHEET NO. 143, 291

ROCK CHANNEL PROTECTION CALCULATION

STA. 451+47.30 LT.

RCP TYPE B, WITH FABRIC FILTER



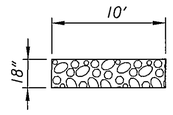
161 x 2 = 322 SQ. FEET
2 x 161 x 2.24 = 721.28 SQ. FEET
1043.28 SQ. FEET
x 2.5
/ 27
96.6 CU. YARDS **USE 97 CU. YDS.**

(29-D) SEE PLAN SHEET NO. 143, 291

ROCK CHANNEL PROTECTION CALCULATION

STA. 446+04.30 LT. TO 446+04.93 LT.

RCP TYPE C, WITH FILTER



10 x 10 = 100 SQ. FEET
100 SQ. FEET
x 1.5
/ 27
5.56 CU. YARDS **USE 6 CU. YDS.**

DITCH EROSION PROTECTION CALCULATIONS

SHEET NO.	REFERENCE NO.	670 DITCH EROSION PROTECTION
121, 286	1-DR	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
121, 286	2-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
121,123, 287	3-D	800 X 7.5 FEET = 6000 / 9 = 667 SQ. YD.
123, 125, 287	4-D	700 X 7.5 FEET = 5250 / 9 = 584 SQ. YD.
125, 287	4-E	200 X 7.5 FEET = 1500 / 9 = 167 SQ. YD.
125, 127, 287	4A-E	900 X 7.5 FEET = 6750 / 9 = 750 SQ. YD.
127, 288	4B-E	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
127, 288	5-E	300 X 7.5 FEET = 2250 / 9 = 250 SQ. YD.
127, 288	5-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
127, 288	6-D	100 X 7.5 FEET = 750 / 9 = 84 SQ. YD.
127, 288	6-E	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
129, 288	8-D	400 X 7.5 FEET = 3000 / 9 = 334 SQ. YD.
129, 288	8A-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
129, 288	9-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
129, 288	10-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
129, 288	12A-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
131,137, 289	15-D	130 X 7.5 FEET = 975 / 9 = 109 SQ. YD.
131,137, 289	17-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
134,140, 289	21A-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
143, 291	26-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
143, 291	27-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
143, 291	28-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
143, 291	29A-D	300 X 7.5 FEET = 2250 / 9 = 250 SQ. YD.
143, 291	31-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
145, 291	32-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
145, 291	32A-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
145, 291	33-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
145, 291	34-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
129, 288	35-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
131, 137, 289	37-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
131, 137, 289	41-D	45 X 7.5 FEET = 338 / 9 = 38 SQ. YD.
131, 137, 289	42-D	48 X 7.5 FEET = 360 / 9 = 40 SQ. YD.
289, 336	43-D	35 X 7.5 FEET = 262.5 / 9 = 30 SQ. YD.
289, 336	44-D	45 X 7.5 FEET = 337.5 / 9 = 38 SQ. YD.
289, 336	45-D	50 X 7.5 FEET = 375 / 9 = 42 SQ. YD.
289, 336	46-D	60 X 7.5 FEET = 450 / 9 = 50 SQ. YD.
134, 140, 289	54-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
143, 291	57-D	150 X 7.5 FEET = 1125 / 9 = 125 SQ. YD.
		STEEL BRIDGE DESIGN
300	4-DT	55 X 7.5 FEET = 412.5 / 9 = 46 SQ. YD.
		65 X 7.5 FEET = 487.5 / 9 = 55 SQ. YD.
300	6-DT	100 X 7.5 FEET = 750.0 / 9 = 84 SQ. YD.
		75 X 7.5 FEET = 562.5 / 9 = 63 SQ. YD.
		75 X 7.5 FEET = 562.5 / 9 = 63 SQ. YD.
300	7-DT	150 X 7.5 FEET = 1125.0 / 9 = 125 SQ. YD.
		150 X 7.5 FEET = 1125.0 / 9 = 125 SQ. YD.
		110 X 7.5 FEET = 825.0 / 9 = 92 SQ. YD.
		35 X 7.5 FEET = 262.5 / 9 = 30 SQ. YD.
300	9-DT	55 X 7.5 FEET = 412.5 / 9 = 46 SQ. YD.
		CONCRETE BRIDGE DESIGN
304	8-DC	50 X 7.5 FEET = 375.0 / 9 = 42 SQ. YD.
304	11-DC	150 X 7.5 FEET = 1125.0 / 9 = 125 SQ. YD.
		150 X 7.5 FEET = 1125.0 / 9 = 125 SQ. YD.
		110 X 7.5 FEET = 825.0 / 9 = 92 SQ. YD.
		35 X 7.5 FEET = 262.5 / 9 = 30 SQ. YD.
304	13-DC	20 X 7.5 FEET = 150.0 / 9 = 17 SQ. YD.

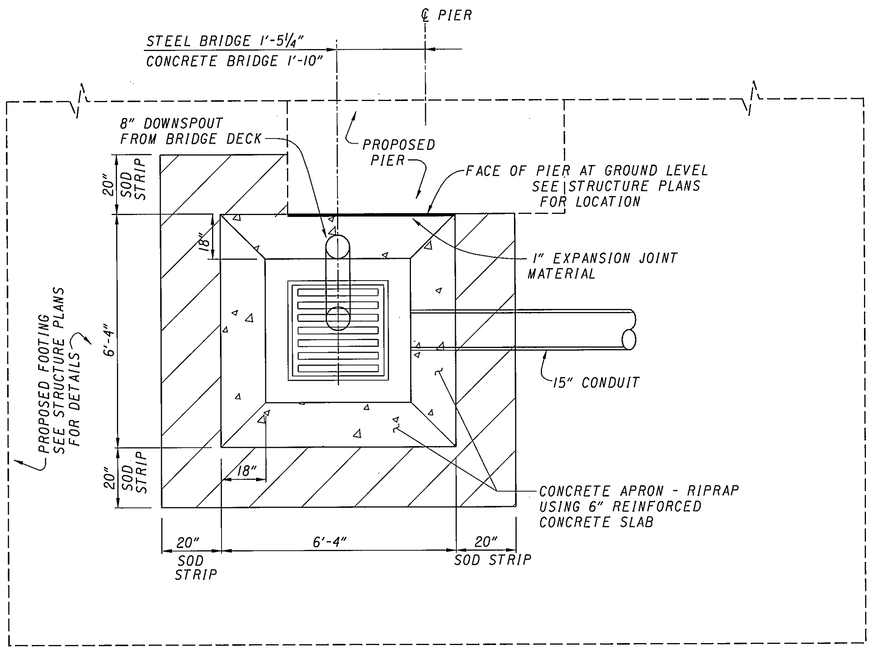
QUANTITIES CARRIED WITH DRAINAGE ITEM TO DRAINAGE SUBSUMMARY SHEETS 83-91

CALCULATED JDL CHECKED PRS

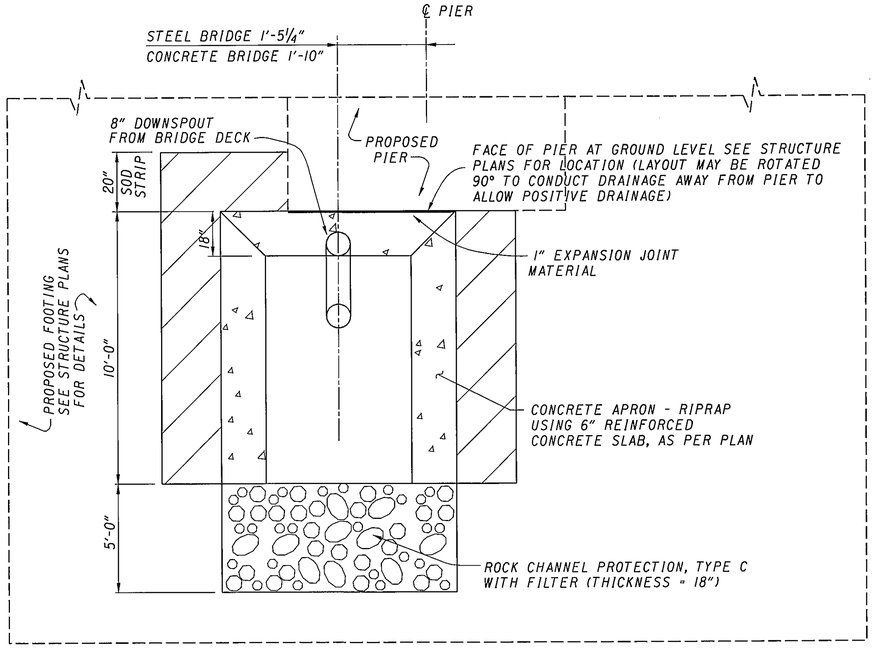
DRAINAGE DETAILS & CALCULATIONS

SUM-271-8.02

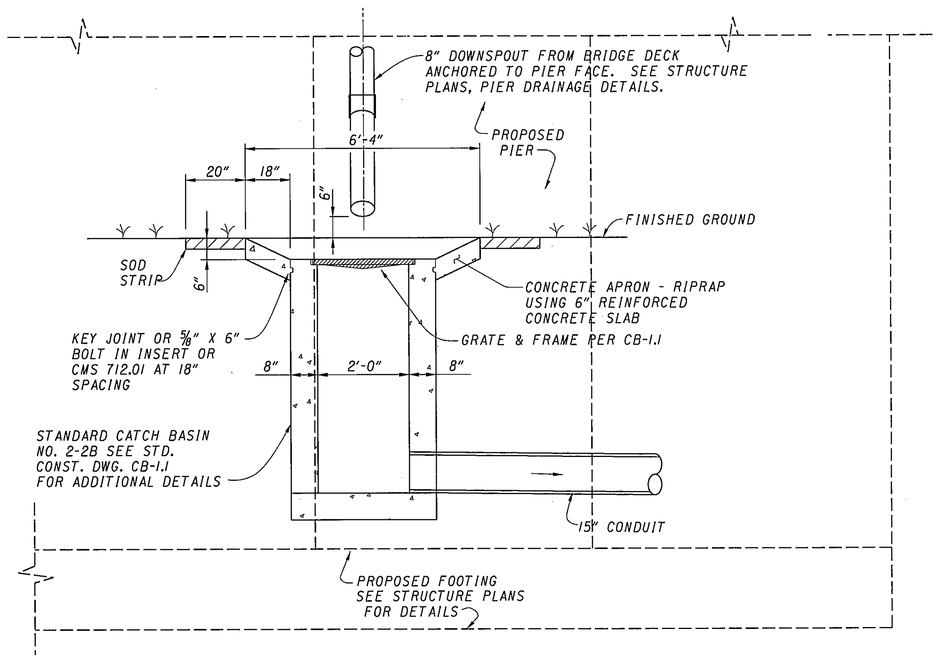
21450DMA.DGN 9/8/04 SAM,RC,JDY,CAR



PLAN



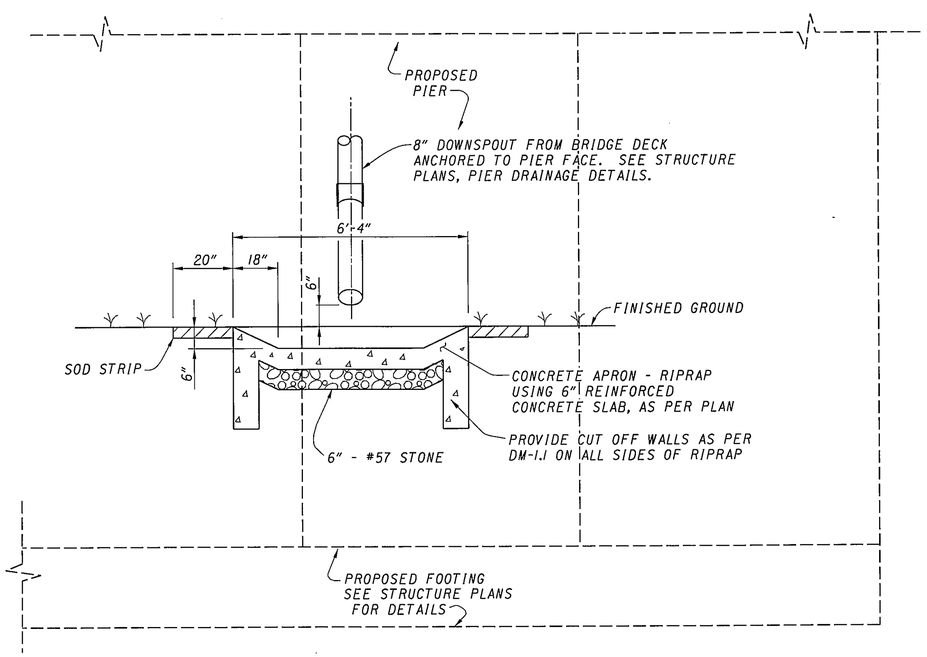
PLAN



SECTION

CATCH BASIN, NO. 2-2B, AS PER PLAN A

THE CATCH BASIN, CONCRETE APRON, EXPANSION JOINT MATERIAL AND 20" SOD STRIP SHALL BE INCLUDED FOR PAYMENT IN ITEM 604 - CATCH BASIN, NO. 2-2B, AS PER PLAN A.



SECTION

SCUPPER OUTLET TO RIPRAP

THE CONCRETE APRON, EXPANSION JOINT MATERIAL, 6" #57 - STONE, AND 20" SOD STRIP SHALL BE INCLUDED FOR PAYMENT IN ITEM 601 - RIPRAP USING 6" REINFORCED CONCRETE SLAB, AS PER PLAN

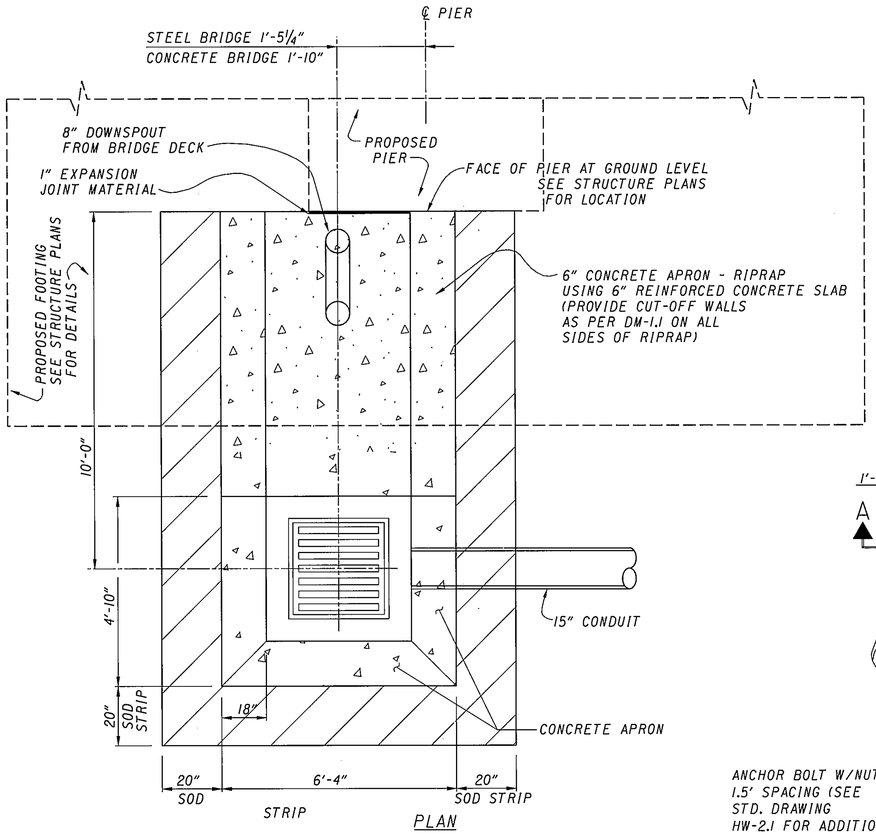
CALCULATED PS
CHECKED TM

DRAINAGE DETAILS

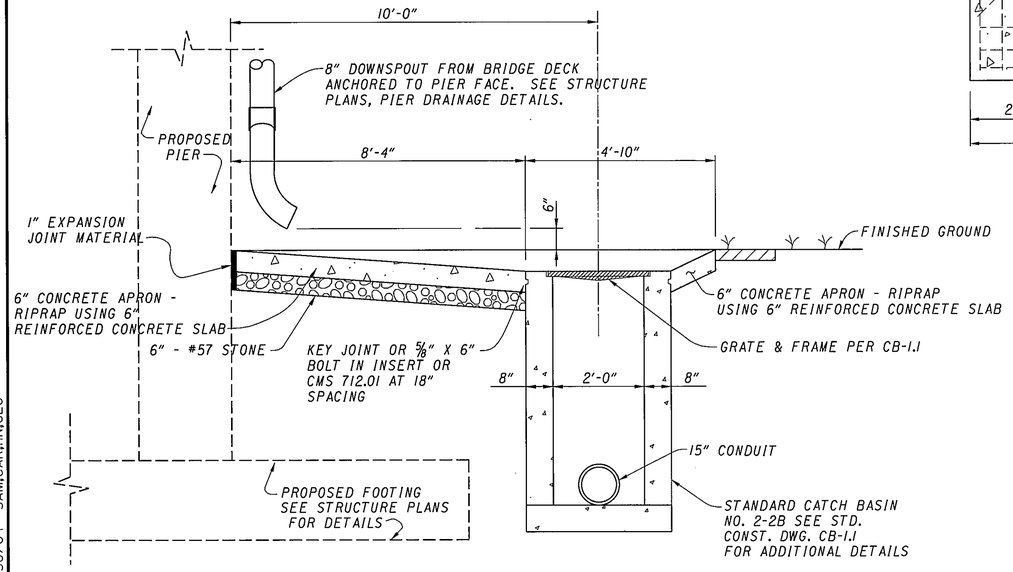
SUM-271-8.02

319
612

21450DDY.DGN 3/29/04 SAM.CEO



PLAN



SECTION

SCUPPER OUTLET TO OFFSET CATCH BASIN, NO. 2-2B, AS PER PLAN B

THE CATCH BASIN, CONCRETE APRON, EXPANSION JOINT MATERIAL, 6" - #57 STONE, AND 20" SOD STRIP SHALL BE INCLUDED FOR PAYMENT IN ITEM 604 - CATCH BASIN, NO. 2-2B, AS PER PLAN B.

ROCK CHANNEL PROTECTION, TYPE A WITH FABRIC FILTER

STEEL BRIDGE DESIGN

1-RRP 150 X 20 X 1.12 = 3360 SQ. FT.

2-RRP 170 X 20 X 1.12 = 3808 SQ. FT.

7168 SQ. FT. X 36"/12/27

TOTAL: = 796.44 CU. YD.

TOTAL CARRIED TO GENERAL SUMMARY = 797 CU. YD.

CONCRETE BRIDGE DESIGN

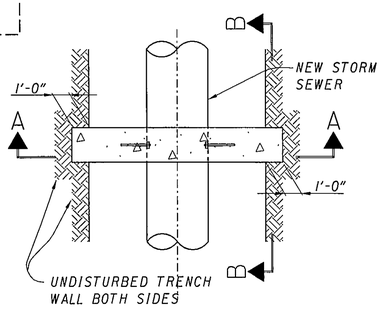
1-CRP 150 X 20 X 1.12 = 3360 SQ. FT.

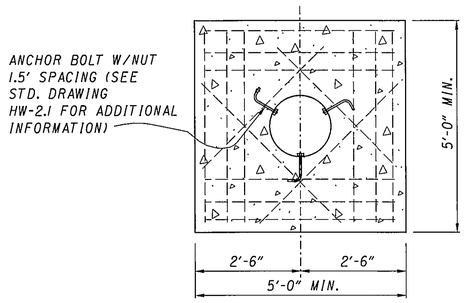
2-CRP 170 X 20 X 1.12 = 3808 SQ. FT.

7168 SQ. FT. X 36"/12/27

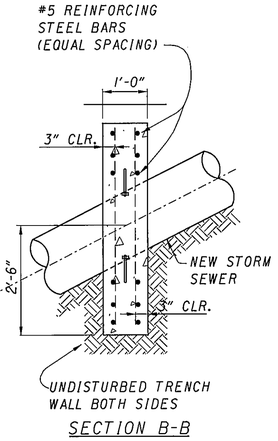
TOTAL: = 796.44 CU. YD.

TOTAL CARRIED TO GENERAL SUMMARY = 797 CU. YD.





SECTION A-A



SECTION B-B

CONCRETE MASONRY ANCHOR DETAIL

THE MASONRY ANCHOR SHALL BE CONSTRUCTED AS SHOWN ABOVE ON THE PROPOSED DRAINAGE CONDUITS UNDER THE PROPOSED SUM-271-0802 STRUCTURE. A MASONRY COLLAR SHALL BE CONSTRUCTED AT A 20' MAX. SPACING (MIN. 2 ANCHOR COLLARS) ALONG THE LENGTH OF THE CONDUIT TO PREVENT PIPING AND ANCHOR THE PROPOSED PIPE INTO THE SLOPE. ALL LABOR, MATERIAL, AND INCIDENTALS TO CONSTRUCT THIS CONCRETE MASONRY COLLAR SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 603, SIZE" CONDUIT TYPE F, AS PER PLAN. SEE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.

SCUPPER OUTLET TO RIPRAP PAD - STEEL BRIDGE DESIGN

RIPRAP USING 6" REINFORCED CONCRETE SLAB, AS PER PLAN

SINGLE PAD RIPRAP CALCULATION

	LENGTH		WIDTH				
	8.5	X	3.33			=	28.31 SQ. FT.
2 X	8.5	X	1.05	X 1.5	FT. SIDE	=	26.78 SQ. FT.
	6.33	X	1.05	X 1.5	FT. SIDE	=	9.97 SQ. FT.
					RIPRAP PER PAD	=	65.06 SQ. FT. / 9
						=	7.23 SQ. YD.

1-RT (NOT USED)	=	
2-RT (NOT USED)	=	
3-RT	=	7.23 SQ. YD.
4-RT	=	7.23 SQ. YD.
5-RT	=	7.23 SQ. YD.
6-RT	=	7.23 SQ. YD.
7-RT	=	7.23 SQ. YD.
8-RT	=	7.23 SQ. YD.
9-RT	=	7.23 SQ. YD.
TOTAL (601) RIPRAP USING 6" REINFORCED CONCRETE SLAB, AS PER PLAN	=	50.61 SQ. YD.
TOTAL CARRIED TO GENERAL SUMMARY	=	**51 SQ. YD.**

ROCK CHANNEL PROTECTION, TYPE C WITH FILTER

	LENGTH		WIDTH		
1-RT	(NOT USED)			=	
2-RT	(NOT USED)			=	
3-RT	5	X	6.33	=	31.65 SQ. FT.
4-RT	5	X	6.33	=	31.65 SQ. FT.
5-RT	5	X	6.33	=	31.65 SQ. FT.
6-RT	5	X	6.33	=	31.65 SQ. FT.
7-RT	20	X	6.33	=	126.60 SQ. FT.
8-RT	(NOT USED)			=	
9-RT	23.3	X	6.33	=	147.49 SQ. FT.
			TOTAL 1-RT TO 9-RT	=	400.69 SQ. FT.
CONVERSION TO CU. YD. = 400.69 SQ. FT. X 1.5 FT. DEEP / 27				=	22.26 CU. YD.
TOTAL (601) ROCK CHANNEL PROTECTION, TYPE C, WITH FILTER				=	22.26 CU. YD.
TOTAL CARRIED TO GENERAL SUMMARY				=	**23 CU. YD.**

SCUPPER OUTLET TO RIPRAP PAD - CONCRETE BRIDGE DESIGN

RIPRAP USING 6" REINFORCED CONCRETE SLAB, AS PER PLAN

SINGLE PAD RIPRAP CALCULATION

	LENGTH		WIDTH				
	8.5	X	3.33			=	28.31 SQ. FT.
2 X	8.5	X	1.05	X 1.5	FT. SIDE	=	26.78 SQ. FT.
	6.33	X	1.05	X 1.5	FT. SIDE	=	9.97 SQ. FT.
					RIPRAP PER PAD	=	65.06 SQ. FT. / 9
						=	7.23 SQ. YD.

1-RC	=	7.23 SQ. YD.
2-RC	=	7.23 SQ. YD.
3-RC	=	7.23 SQ. YD.
4-RC	=	7.23 SQ. YD.
5-RC	=	7.23 SQ. YD.
6-RC	=	7.23 SQ. YD.
7-RC	=	7.23 SQ. YD.
8-RC	=	7.23 SQ. YD.
TOTAL (601) RIPRAP USING 6" REINFORCED CONCRETE SLAB, AS PER PLAN	=	57.84 SQ. YD.
TOTAL CARRIED TO GENERAL SUMMARY	=	**58 SQ. YD.**

ROCK CHANNEL PROTECTION, TYPE C WITH FILTER

	LENGTH		WIDTH		
1-RC	5	X	6.33	=	31.65 SQ. FT.
2-RC	5	X	6.33	=	31.65 SQ. FT.
3-RC	5	X	6.33	=	31.65 SQ. FT.
4-RC	5	X	6.33	=	31.65 SQ. FT.
5-RC	5	X	6.33	=	31.65 SQ. FT.
6-RC	5	X	6.33	=	31.65 SQ. FT.
7-RC	5.45	X	6.33	=	34.50 SQ. FT.
8-RC	13.42	X	6.33	=	84.95 SQ. FT.
			TOTAL 1-RC TO 8-RC	=	309.35 SQ. FT.
CONVERSION TO CU. YD. = 309.35 SQ. FT. X 1.5 FT. DEEP / 27				=	17.19 CU. YD.
TOTAL (601) ROCK CHANNEL PROTECTION, TYPE C, WITH FILTER				=	17.19 CU. YD.
TOTAL CARRIED TO GENERAL SUMMARY				=	**18 CU. YD.**

CALCULATED JL CHECKED PRS

DRAINAGE DETAILS

SUM-271-8.02

320
612

21450DDY.DGN 3/30/04 SAM,CAR,HN,CEO

SCUPPER, ROCK PROTECTION, TYPE C, WITH FILTER - STEEL BRIDGE (SEE SHEET 300)

1-SRT	3.14 x	6	FT. RADIUS SQRD.	/ 9	=	12.56	SQ. YD.
	6	FT.	x 12 FT.	/ 9	=	8	SQ. YD.
2-SRT	3.14 x	6	FT. RADIUS SQRD.	/ 9	=	12.56	SQ. YD.
	6	FT.	x 12 FT.	/ 9	=	8	SQ. YD.
3-SRT	3.14 x	3	FT. RADIUS SQRD.	/ 9	=	3.14	SQ. YD.
4-SRT	3.14 x	3	FT. RADIUS SQRD.	/ 9	=	3.14	SQ. YD.
5-SRT	3.14 x	9	FT. RADIUS SQRD.	/ 9	=	28.26	SQ. YD.
6-SRT	3.14 x	9	FT. RADIUS SQRD.	/ 9	=	28.26	SQ. YD.
7-SRT	3.14 x	6	FT. RADIUS SQRD.	/ 9	=	12.56	SQ. YD.
8-SRT	3.14 x	6	FT. RADIUS SQRD.	/ 9	=	12.56	SQ. YD.
9-SRT	3.14 x	9	FT. RADIUS SQRD.	/ 9	=	28.26	SQ. YD.
10-SRT	3.14 x	9	FT. RADIUS SQRD.	/ 9	=	28.26	SQ. YD.
11-SRT	3.14 x	10	FT. RADIUS SQRD.	/ 9	=	34.89	SQ. YD.
12-SRT	3.14 x	10	FT. RADIUS SQRD.	/ 9	=	34.89	SQ. YD.
13-SRT	3.14 x	3	FT. RADIUS SQRD.	/ 9	=	3.14	SQ. YD.
14-SRT	3.14 x	3	FT. RADIUS SQRD.	/ 9	=	3.14	SQ. YD.
15-SRT	3.14 x	3	FT. RADIUS SQRD.	/ 9	=	3.14	SQ. YD.
16-SRT	3.14 x	3	FT. RADIUS SQRD.	/ 9	=	3.14	SQ. YD.

TOTAL 1-SRT TO 16-SRT = 267.90 SQ. YD.
CONVERT TO CU. YD. = 267.90 SQ. YD. X 1.5 FT. THICK / 3 = 133.95 CU. YD.
TOTAL (601) ROCK CHANNEL PROTECTION, TYPE C, WITH FILTER = 134.00 CU. YD.
TOTAL CARRIED TO GENERAL SUMMARY = 134 CU. YD.

SCUPPER, ROCK PROTECTION, TYPE C, WITH FILTER - CONCRETE BRIDGE (SEE SHEET 304)

1-SRC	3.14 x	3	FT. RADIUS SQRD.	/ 9	=	3.14	SQ. YD.
2-SRC	3.14 x	3	FT. RADIUS SQRD.	/ 9	=	3.14	SQ. YD.
3-SRC	3.14 x	7.5	FT. RADIUS SQRD.	/ 9	=	19.62	SQ. YD.
4-SRC	3.14 x	7.5	FT. RADIUS SQRD.	/ 9	=	19.62	SQ. YD.
5-SRC	3.14 x	12	FT. RADIUS SQRD.	/ 9	=	50.24	SQ. YD.
6-SRC	3.14 x	12	FT. RADIUS SQRD.	/ 9	=	50.24	SQ. YD.
7-SRC	3.14 x	9	FT. RADIUS SQRD.	/ 9	=	28.26	SQ. YD.
8-SRC	3.14 x	9	FT. RADIUS SQRD.	/ 9	=	28.26	SQ. YD.
9-SRC	3.14 x	10	FT. RADIUS SQRD.	/ 9	=	34.89	SQ. YD.
10-SRC	3.14 x	10	FT. RADIUS SQRD.	/ 9	=	34.89	SQ. YD.
11-SRC	3.14 x	3	FT. RADIUS SQRD.	/ 9	=	3.14	SQ. YD.
12-SRC	3.14 x	3	FT. RADIUS SQRD.	/ 9	=	3.14	SQ. YD.

TOTAL 1-SRC TO 12-SRC = 278.6 SQ. YD.
CONVERT TO CU. YD. = 278.6 SQ. YD. X 1.5 FT. THICK / 3 = 139.30 CU. YD.
TOTAL (601) ROCK CHANNEL PROTECTION, TYPE C, WITH FILTER = 139.30 CU. YD.
TOTAL CARRIED TO GENERAL SUMMARY = 140 CU. YD.

ITEM 660 SODDING REINFORCED

(11-E) 30 X 15 = 450 SQ. FT. / 9 = 50 SQ. YD.

TOTAL CARRIED TO GENERAL SUMMARY = 50 SQ. YD.

601 CRUSHED AGGREGATE SLOPE PROTECTION

CUYAHOGA RIVER VALLEY BRIDGE (SEE SHEET 131,134,137,140)

(1-CAS) 177 x 67 = 11859 SQ. FT.
193 x 58 = 11194 SQ. FT.
TOTAL = 23053 SQ. FT. / 9 = 2561.4 SQ. YD.

(2-CAS) 114 x 67 = 7638 SQ. FT.
193 x 58 = 11194 SQ. FT.
TOTAL = 18832 SQ. FT. / 9 = 2092.4 SQ. YD.

BOSTON MILLS BRIDGE (MAY BE NON PERFORMED TO EXTENT OF GRADING) (SEE SHEET 143)

(3-CAS) 67 x 65 = 4355 SQ. FT.
67 x 35 / 2 = 1172.5 SQ. FT.
TOTAL = 5527.5 SQ. FT. / 9 = 614.17 SQ. YD.

(4-CAS) 53 x 53 = 2809 SQ. FT. / 9 = 312.11 SQ. YD.

(5-CAS) 64 x 65 = 4160 SQ. FT.
64 x 27 / 2 = 864 SQ. FT.
TOTAL = 5024 SQ. FT. / 9 = 558.22 SQ. YD.

(6-CAS) 59 x 48 = 2832 SQ. FT. / 9 = 314.67 SQ. YD.

TOTAL (601) CRUSHED AGGREGATE = 6452.97 SQ. YD.
TOTAL CARRIED TO GENERAL SUMMARY = 6453 SQ. YD.

PAVEMENT TRENCH REPAIR QUANTITIES

RIVERVIEW ROAD (SEE SHEET 300, 304)

301 - ASPHALT CONCRETE BASE
1 21 FT. X 3.75 FT. X 10"/12/27 = 2.43 CU. YD.
TOTAL CARRIED TO GENERAL SUMMARY = 3 CU. YD.

304 - 6" AGGREGATE BASE
2 21 FT. X 3.75 FT. X 6"/12/27 = 1.46 CU. YD.
TOTAL CARRIED TO GENERAL SUMMARY = 2 CU. YD.

407 - TACK COAT FOR INTERMEDIATE COURSE
3 21 FT. X 3.75 FT. / 9 X (0.075 GAL./SQ. YD.) = 0.66 GAL.
TOTAL CARRIED TO GENERAL SUMMARY = 1 GAL.

408 - PRIME COAT
4 21 FT. X 3.75 FT. / 9 X (0.400 GAL./SQ. YD.) = 3.50 GAL.
TOTAL CARRIED TO GENERAL SUMMARY = 4 GAL.

448 - 1¼" ASPHALT CONCRETE
5 21 FT. X 3.75 FT. X 1.25" / 12/27 = 0.30 CU. YD.
TOTAL CARRIED TO GENERAL SUMMARY = 1 CU. YD.

448 - 1¾" ASPHALT CONCRETE
6 21 FT. X 3.75 FT. X 1.75" / 12/27 = 0.43 CU. YD.
TOTAL CARRIED TO GENERAL SUMMARY = 1 CU. YD.

TOWPATH TRAIL (SEE SHEET 300, 304)

304 - 6" AGGREGATE BASE
7 21 FT. X 3.75 FT. X 6"/12/27 = 1.46 CU. YD.
TOTAL CARRIED TO GENERAL SUMMARY = 2 CU. YD.

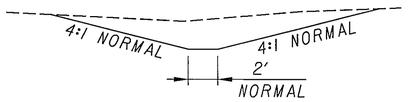
411 - STABALIZED CRUSHED AGGREGATE, AS PER PLAN
8 21 FT. X 3.75 FT. X 2"/12/27 = 0.49 CU. YD.
TOTAL CARRIED TO GENERAL SUMMARY = 1 CU. YD.

ITEM 411 STABILIZED CRUSHED AGGREGATE, AS PER PLAN

IN LIEU OF CMS 411.02 THE CONTRACTOR SHALL FURNISH IN ACCORDANCE WITH THE MATERIAL CMS 703.10 TO BE PLACED ON THE OHIO & ERIE CANAL TOWPATH TRAIL WEARING SURFACE

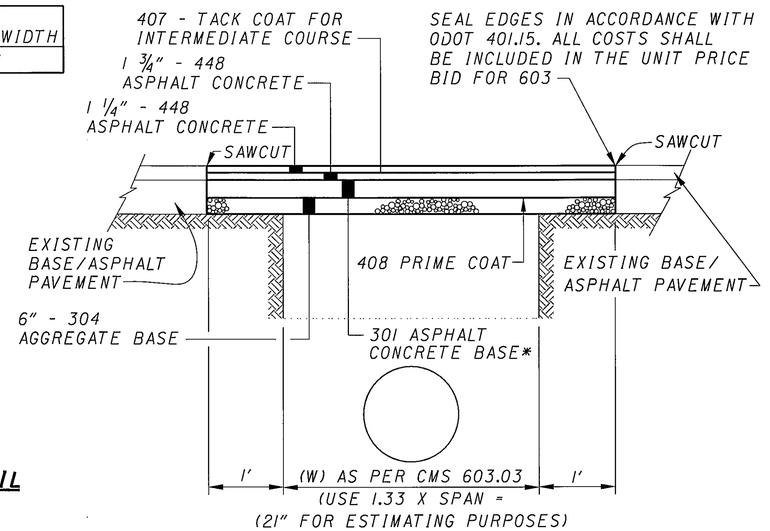
PIPE SIZE	W TRENCH WIDTH
15"	21"

* THICKNESS OF 301 TO MATCH WITH BOTTOM OF EXISTING ASPHALT OR CONCRETE BASE (UTILIZE 6" - 304 AGGREGATE BASE AND 2" SCREENING WEARING SURFACE AS PER CMS 703.10 FOR TOWPATH TRAIL, 301-NOT REQUIRED FOR TOWPATH TRAIL BUILDUP)



ITEM 209 - DITCH CLEANOUT, AS PER PLAN DETAIL

THE PROPOSED DITCH CLEANOUT SHALL BE GRADED TO PROVIDE A POSITIVE OUTLET AND CONSTRUCTED AS DIRECTED BY THE ENGINEER. SEE GENERAL NOTES.



RIVERVIEW ROAD/THE OHIO & ERIE CANAL TOWPATH TRAIL PAVEMENT TRENCH REPAIR DETAIL

NOT TO SCALE

670 SLOPE EROSION PROTECTION CALCULATIONS

CUYAHOGA RIVER VALLEY BRIDGE

1 - SEP (1/4	x	3.14 x	50	^2)	/ 9 =	218.06	SQ. YD.
2 - SEP (1/4	x	3.14 x	50	^2)	/ 9 =	218.06	SQ. YD.
3 - SEP (1/4	x	3.14 x	50	^2)	/ 9 =	218.06	SQ. YD.
4 - SEP (1/4	x	3.14 x	50	^2)	/ 9 =	218.06	SQ. YD.

BOSTON MILLS BRIDGE (MAY BE NON PERFORMED TO EXTENT OF GRADING)

5 - SEP (1/4	x	3.14 x	(84 + 67) / 2	^2)	/ 9 =	497.19	SQ. YD.
6 - SEP (1/4	x	3.14 x	53	^2)	/ 9 =	245.01	SQ. YD.
7 - SEP ((67 + 53) / 2)		x	((56 + 52)	/ 2)	/ 9 =	360	SQ. YD.
8 - SEP (1/8	x	3.14 x	(101 + 64) / 2	^2)	/ 9 =	296.83	SQ. YD.
9 - SEP (1/4	x	3.14 x	(59 + 32) / 2	^2)	/ 9 =	593.66	SQ. YD.
10 - SEP ((64 + 59) / 2)		x	((52 + 28)	/ 2)	/ 9 =	273.33	SQ. YD.

TOTAL (670) SLOPE EROSION PROTECTION = 3138.26 SQ. YD.
TOTAL CARRIED TO GENERAL SUMMARY = 3139 SQ. YD.

CALCULATED PS CHECKED PG

DRAINAGE DETAILS

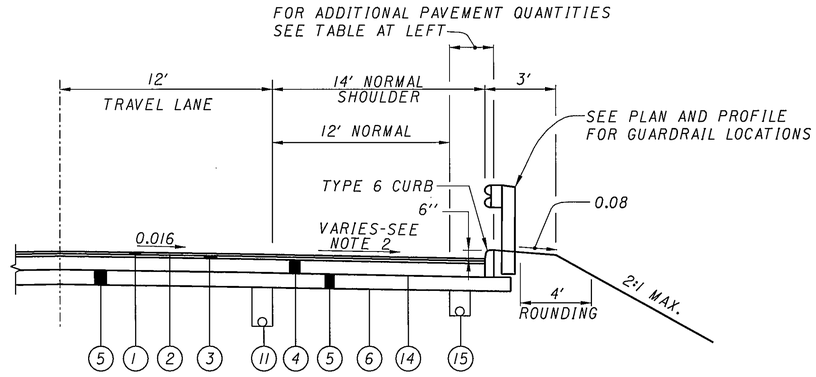
SUM-271-8.02

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214500DH2.DGN 9/8/04 CAR,CEO,RC

SHEET NO.	REF.	STATION	302 ASPHALT CONCRETE BASE PG64-22	304 AGGREGATE BASE	407 TACK COAT FOR INTERMEDIATE COURSE	408 PRIME COAT	446 ASPHALT CONCRETE SURFACE COURSE, TYPE IH	446 ASPHALT CONCRETE INTERMEDIATE COURSE TYPE 2, PG64-28	609 CURB, TYPE 6	204 SUBGRADE COMPACTION
			CU. YD.	CU. YD.	GAL.	GAL.	CU. YD.	CU. YD.	FT.	SQ. YD.
131, 137	52-D	1421+48.00							14	
134, 140	19-D	2436+62.00 RT.	2.32	1.25	0.67	3.34	0.37	0.43	15	9.72
134, 140	20-D	2436+62.00 LT.*	4.25	2.06	1.29	6.12	0.72	0.83	52.25	12.38
134, 140	22-D	1437+35.30	2.32	1.25	0.67	3.34	0.37	0.43	15	9.72
143	30-D	448+85.54 LT.							15	
143	58-D	448+58.53 LT.							15	
143	59-D	449+16.26 RT.							15	
143	60-D	449+21.39 RT.							15	
TOTALS CARRIED TO PAVEMENT CALCULATIONS			8.89	4.56	2.63	12.8	1.46	1.69	156.25	31.82

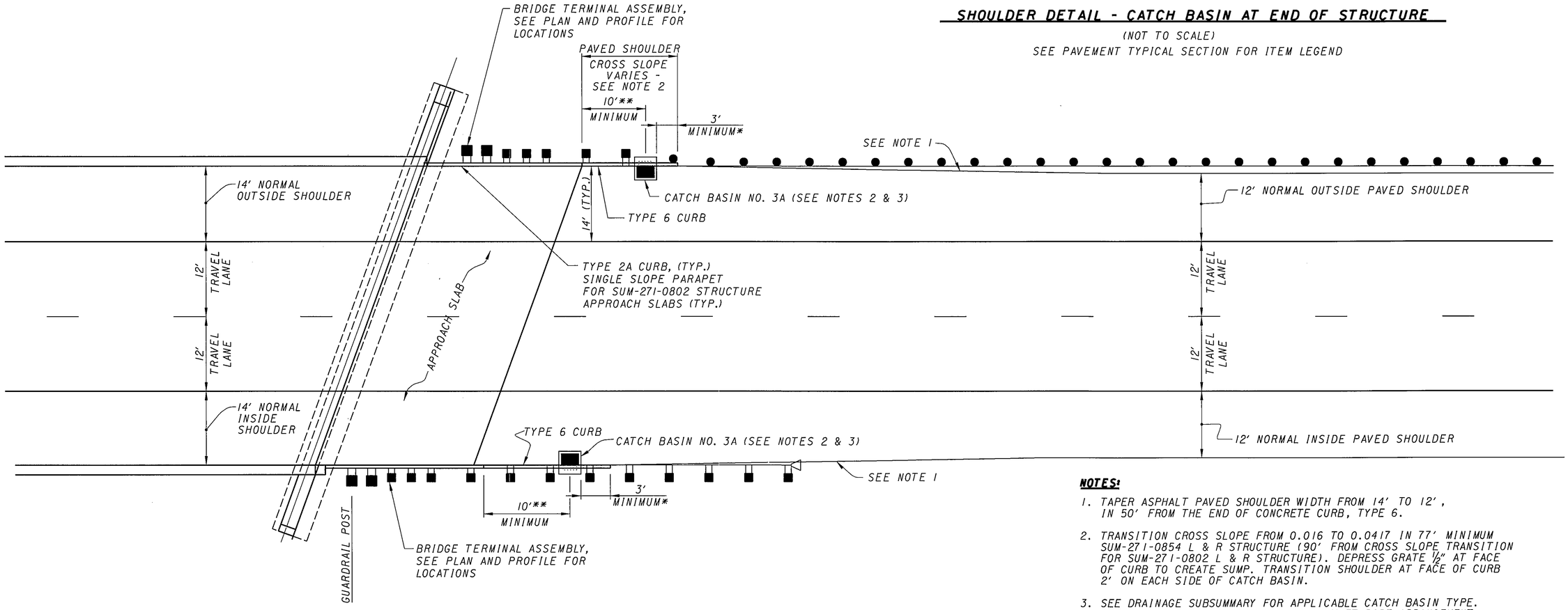
* EXTEND TYPE 6 CURB LENGTH BEYOND SB STRUCTURE ABUTMENT



SHOULDER DETAIL - CATCH BASIN AT END OF STRUCTURE

(NOT TO SCALE)

SEE PAVEMENT TYPICAL SECTION FOR ITEM LEGEND



DRAINAGE DETAIL - CATCH BASIN AT END OF STRUCTURE

(SEE PLAN FOR LOCATIONS ALONG PROPOSED RETAINING WALL)

NOTES:

1. TAPER ASPHALT PAVED SHOULDER WIDTH FROM 14' TO 12', IN 50' FROM THE END OF CONCRETE CURB, TYPE 6.
2. TRANSITION CROSS SLOPE FROM 0.016 TO 0.0417 IN 77' MINIMUM SUM-271-0854 L & R STRUCTURE (90' FROM CROSS SLOPE TRANSITION FOR SUM-271-0802 L & R STRUCTURE). DEPRESS GRATE ½" AT FACE OF CURB TO CREATE SUMP. TRANSITION SHOULDER AT FACE OF CURB 2' ON EACH SIDE OF CATCH BASIN.
3. SEE DRAINAGE SUBSUMMARY FOR APPLICABLE CATCH BASIN TYPE. SEE PLAN AND PROFILE SHEETS FOR OUTLET PIPE ARRANGEMENT.

** PLACE CATCH BASIN BETWEEN GUARDRAIL POSTS BEYOND 10' WHERE PROPOSED GUARDRAIL IS TO BE ERECTED.

* EXTEND CURB ADDITIONAL 2' PAST GUARDRAIL POST IF 3' BEYOND CATCH BASIN DOES NOT EXTEND 2' BEYOND CLOSEST GUARDRAIL POST.

0 25 50 100 HORIZONTAL SCALE IN FEET

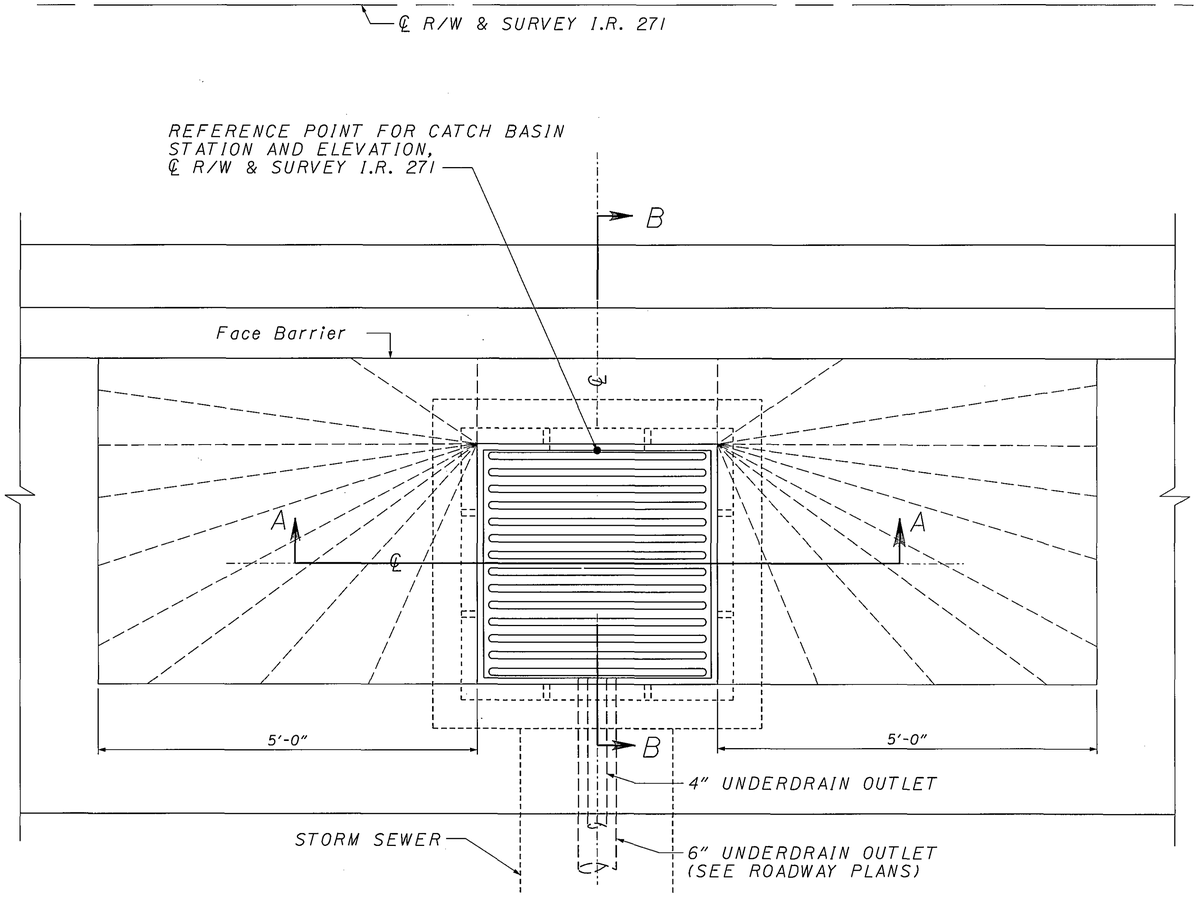
CALCULATED PS CHECKED PG

DRAINAGE DETAILS

SUM-271-8.02

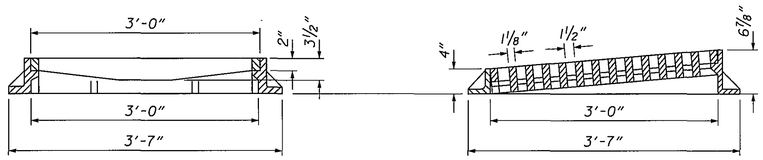
322 612

21450DDX.DGN 3/31/04 SAM.CEO



PLAN OF CATCH BASIN

SEE SHEET 324 FOR
SECTION A-A & SECTION B-B



CASTING DETAILS

NOTES

GRATE: Minimum weight of frame and grate shall be 650 lbs.

Walls: Brick or cast-in-place walls shall have a nominal thickness of 10 in.. Precast walls shall have a minimum thickness of 8 in. and be reinforced sufficiently to permit shipping and handling without damage. The walls shall be finished to grade prior to the concrete slab construction.

STEPS: Steps shall be provided where the depth exceeds 6.0 ft. and shall meet the requirements of MH-1.1.

BEARING AREAS: The frame and grate shall be so fitted and finished as to provide a firm and even seat. No projections shall exist on bearing areas and the grate shall seat in its frame without rocking.

REINFORCING STEEL: Reinforcing steel shall be epoxy coated in accordance with CMS 509.09.

CONCRETE: Cast-in-place concrete is to be Class C. All precast concrete shall meet the requirements of CMS 706.13 with a minimum of 4% entrained air in the hardened concrete and be marked with the catch basin number.

INLETS OVER 12 Ft. IN DEPTH: Shall be precast or cast-in-place concrete; reinforced with #4 bars on 12 in. centers both vertically and horizontally with 2 in. clearance from the inside wall face.

PRECAST BASE: If a precast base is used, it shall be set deep enough so that the top can be placed on the base to provide the grate elevation specified in the plans, Layers of brick shall not be used to adjust the top elevation.

LOCATION AND ELEVATION: When given on the plans, the location and the elevation are at the top center (low side) of the grate. The elevation is located 1'-2" from the face of barrier and 24'-10" (normal) from centerline of construction.

GENERAL: For additional details see SCD RM-4.5 and 1-2.1.

PAYMENT: Payment will be made at the unit price bid per Each for Item 604 - Catch Basin Misc., Retaining Wall Catch Basin and shall include all materials, reinforcing steel, castings, and labor required to construct the inlet as shown.

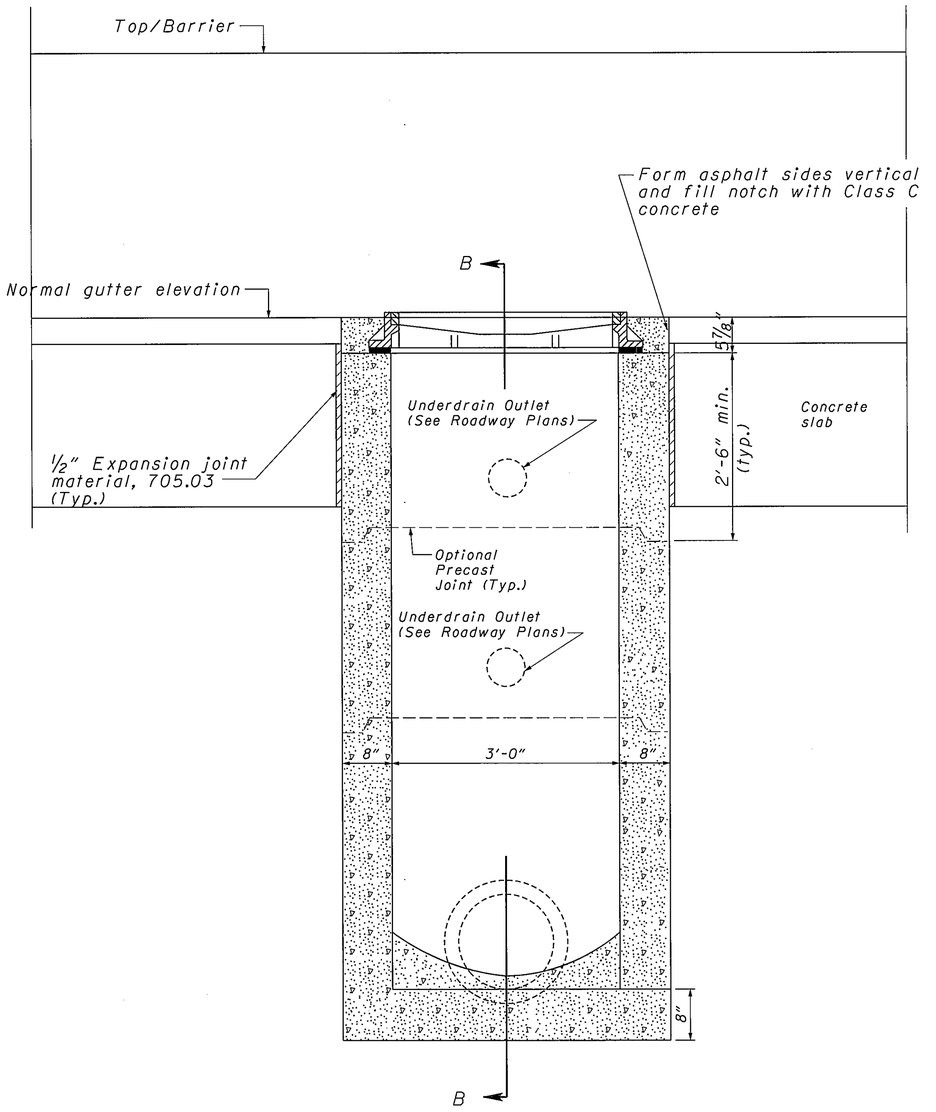
REFER TO PLAN/PROFILE SHEETS & GENERAL SUMMARY FOR CATCH BASIN LOCATIONS AND QUANTITIES.

CATCH BASIN MISC.: RETAINING WALL CATCH BASIN

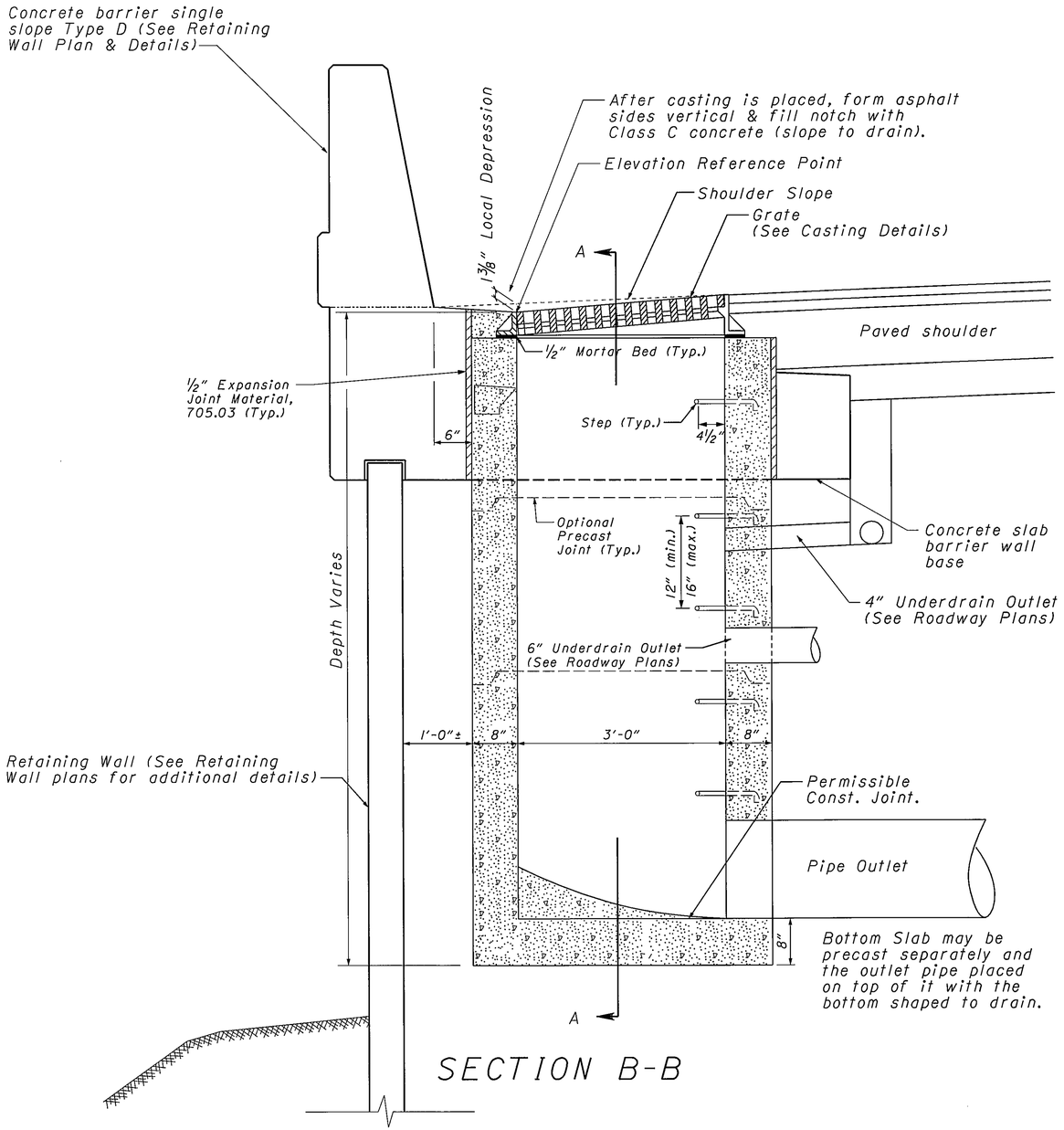
DRAINAGE DETAILS - RETAINING WALL CATCH BASIN

SUM-271-8.02

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SECTION A-A



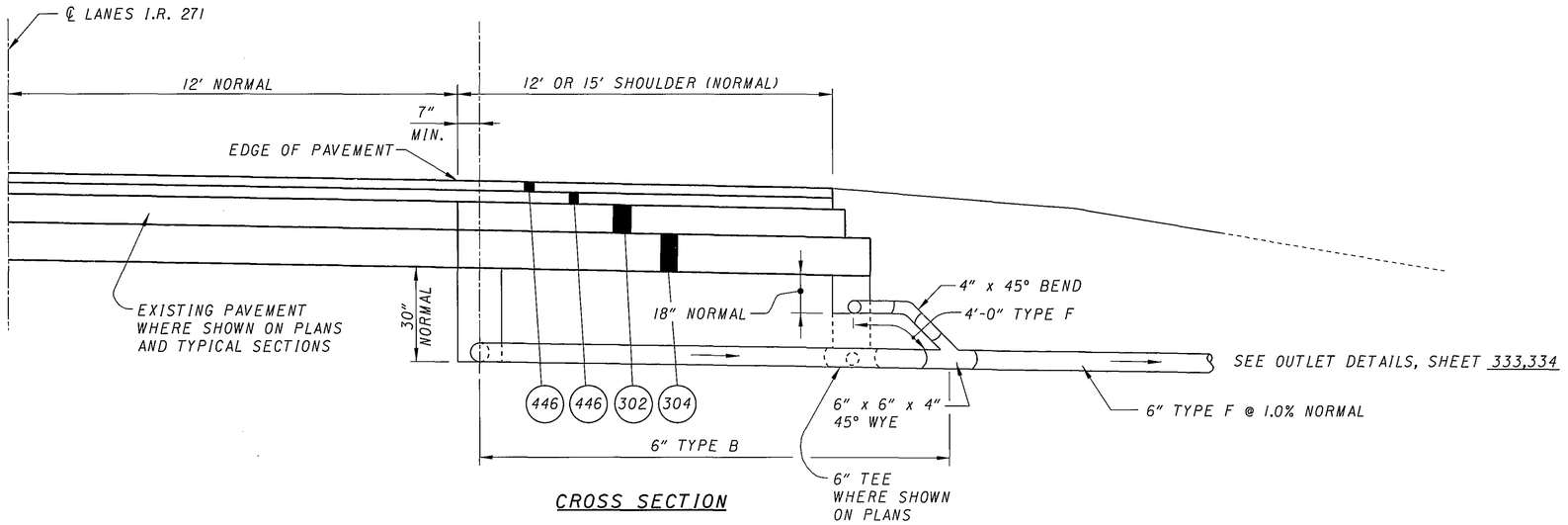
SECTION B-B

CATCH BASIN MISC.: RETAINING WALL CATCH BASIN

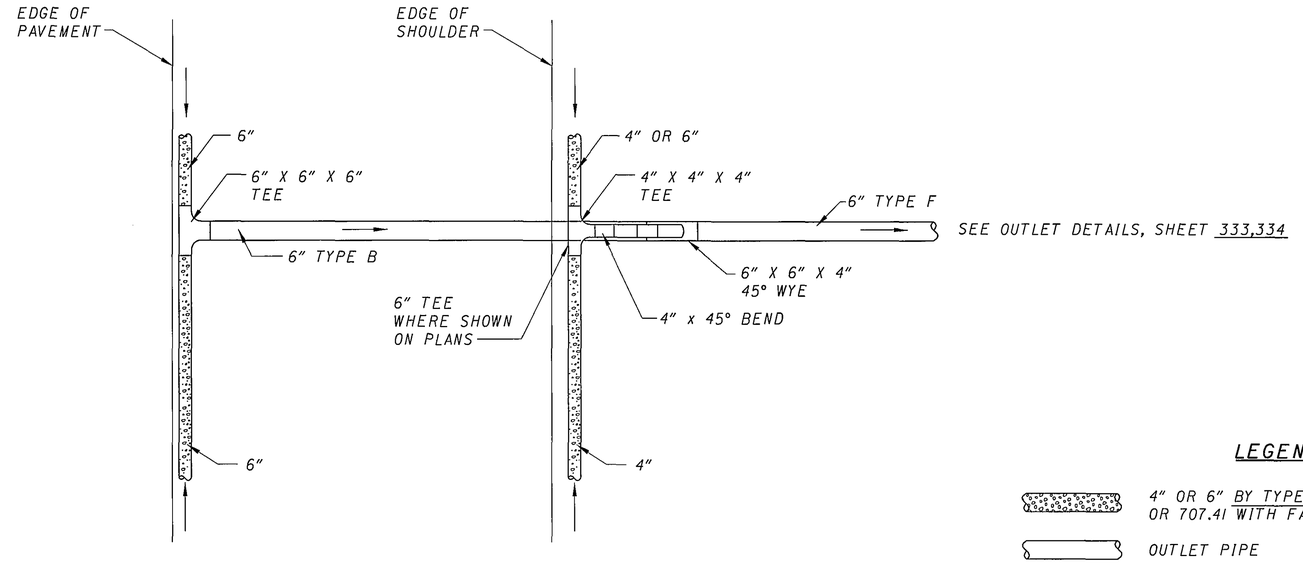
DRAINAGE DETAILS - RETAINING WALL CATCH BASIN

SUM-271-8.02

21450DDA1.DGN 3/26/04 SAM,CEO



CROSS SECTION



PLAN

UNDERDRAIN DETAIL A

LEGEND

4" OR 6" BY TYPE ♦ UNDERDRAIN 707.31 OR 707.41 WITH FABRIC WRAP

OUTLET PIPE

♦ SHALLOW OR UNCLASSIFIED PIPE

NOTES:

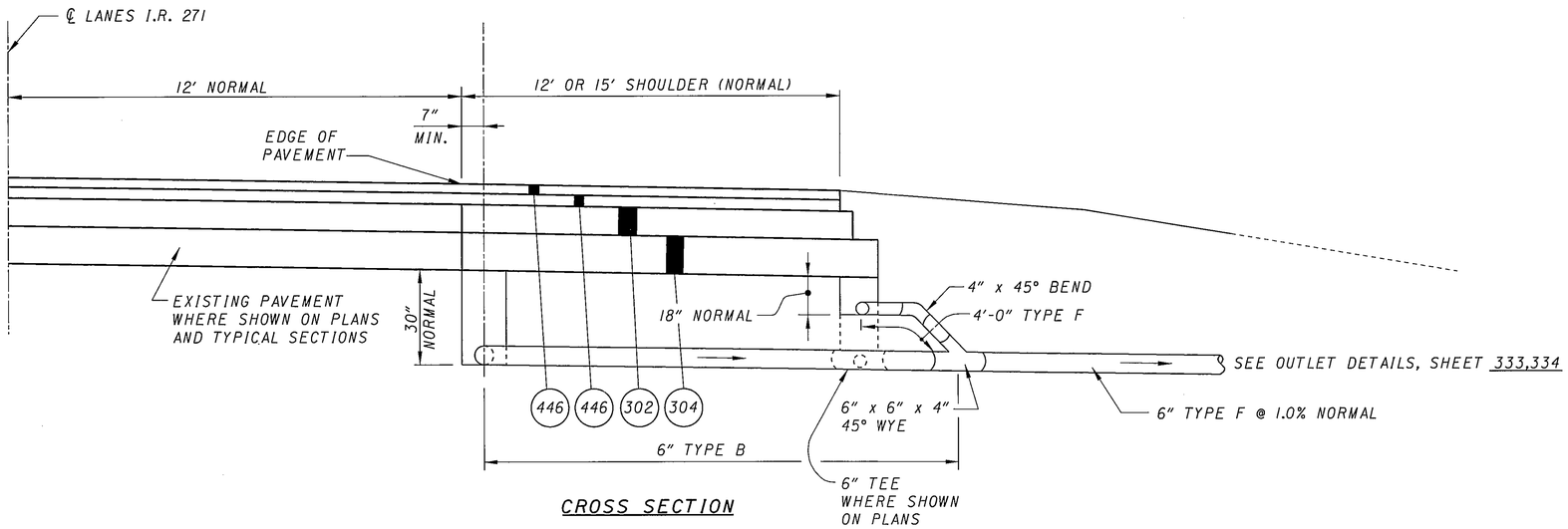
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3. SEE TYPICAL SECTIONS FOR PAVEMENT BUILD-UP.

CALCULATED TM CHECKED PS

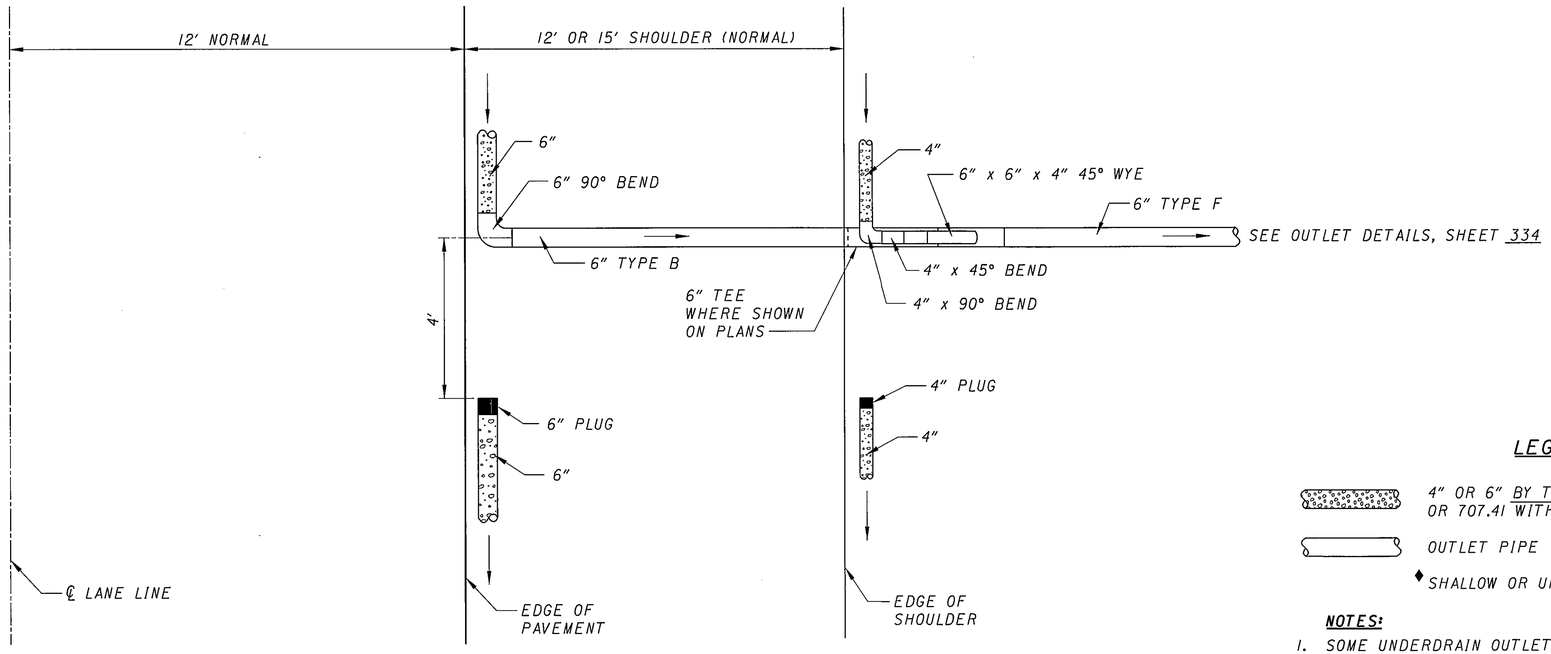
UNDERDRAIN DETAILS

SUM-271-8.02

2145ODDB.DGN 3/30/04 SAM.CEO



CROSS SECTION



PLAN

UNDERDRAIN DETAIL B

LEGEND

4" OR 6" BY TYPE ♦ UNDERDRAIN 707.31 OR 707.41 WITH FABRIC WRAP

OUTLET PIPE

♦ SHALLOW OR UNCLASSIFIED PIPE

NOTES:

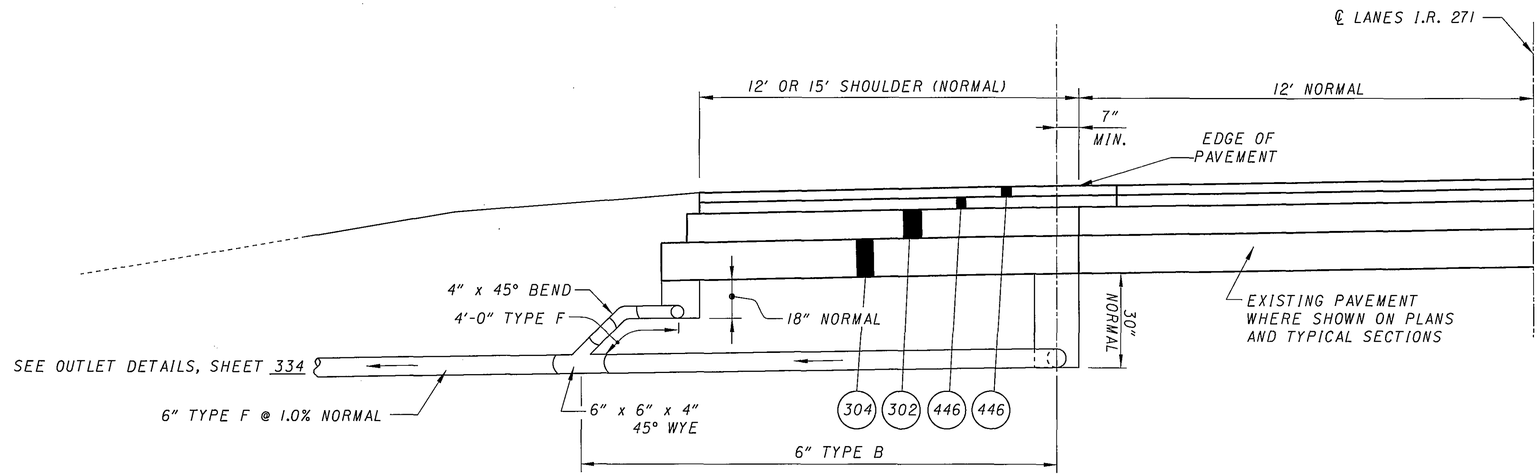
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3. SEE TYPICAL SECTIONS FOR PAVEMENT BUILD-UP.

CALCULATED TM CHECKED PS

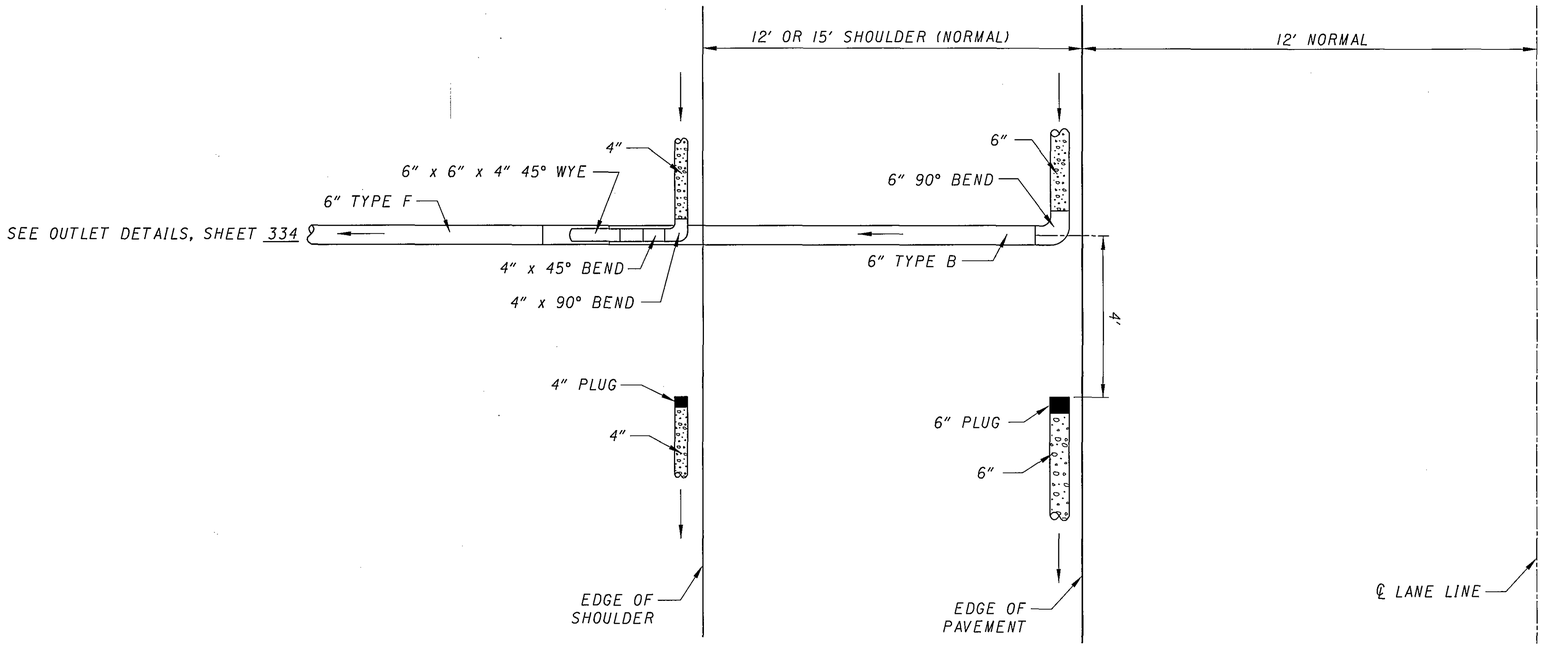
UNDERDRAIN DETAILS

SUM-271-8.02

2M50DDC.DGN 3/30/04 SAM,CEO,TWH



CROSS SECTION



PLAN

UNDERDRAIN DETAIL C

LEGEND

4" OR 6" BY TYPE ♦ UNDERDRAIN 707.31 OR 707.41 WITH FABRIC WRAP

OUTLET PIPE

♦ SHALLOW OR UNCLASSIFIED PIPE

NOTES:

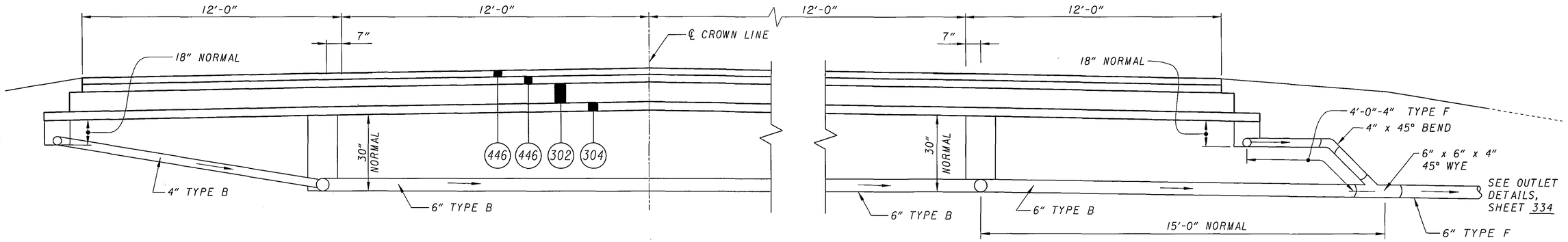
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3. SEE TYPICAL SECTIONS FOR PAVEMENT BUILD-UP.

CALCULATED TM CHECKED PS

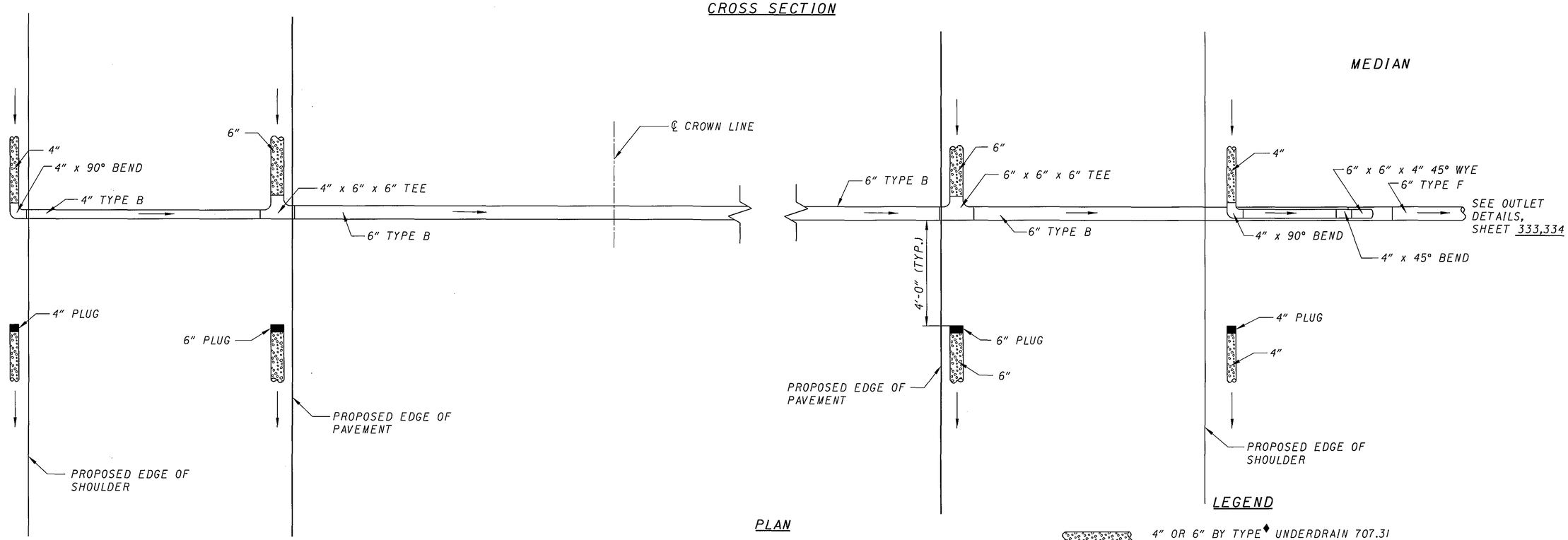
UNDERDRAIN DETAILS

SUM-271-8.02

21450DDF.DGN 3/26/04 SAM,CEO



CROSS SECTION



PLAN

LEGEND

- 4" OR 6" BY TYPE♦ UNDERDRAIN 707.31 OR 707.41 WITH FABRIC WRAP
- OUTLET PIPE
- ♦ SHALLOW OR UNCLASSIFIED PIPE

NOTES:

1. SOME UNDERDRAIN OUTLET LOCATIONS WILL HAVE AN EXISTING HEADWALL NEARBY. DO NOT DISTURB THESE HEADWALLS. THE OUTLET SHALL BE PLACED SO THERE IS POSITIVE DRAINAGE FLOW AND SHALL NOT OUTLET BEHIND THE HEADWALL OR BE PLACED IN A MANNER THAT WILL ERODE THE GROUND AROUND THE HEADWALLS AS DIRECTED BY THE ENGINEER.
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3. SEE TYPICAL SECTIONS FOR PAVEMENT BUILD-UP.

UNDERDRAIN DETAILS D

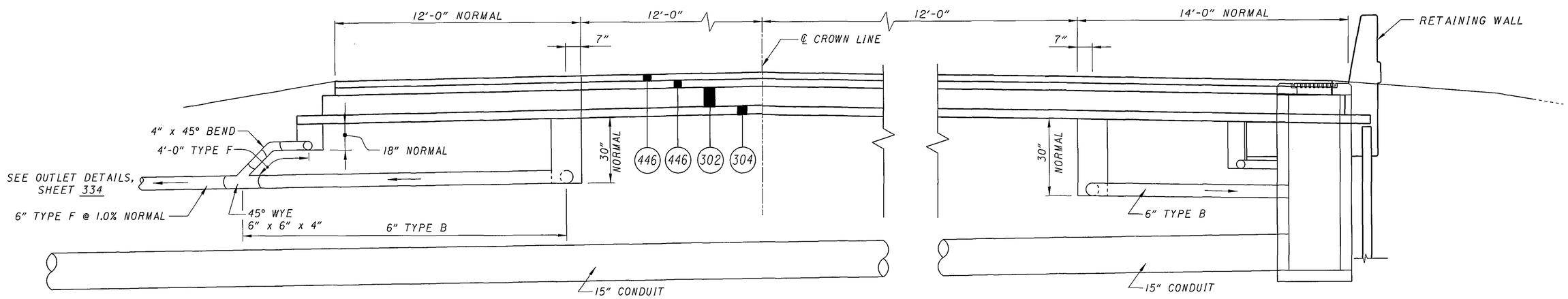
CALCULATED TM CHECKED PS

UNDERDRAIN DETAILS

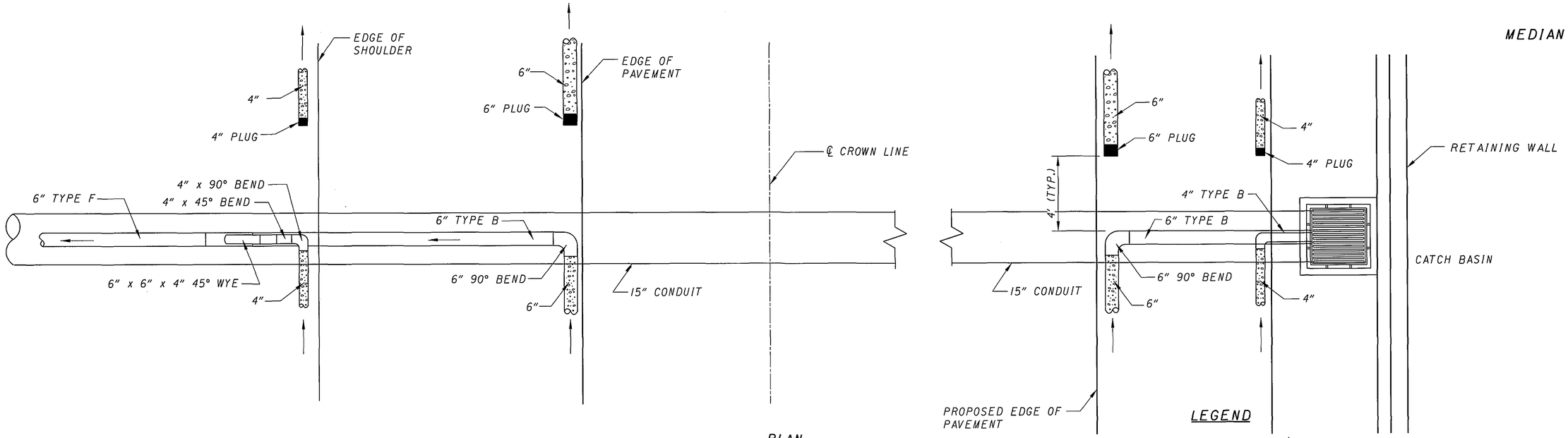
SUM-271-8.02

328
612

2145ODDH.DGN 3/30/04 SAM,HN,CEO,TWH



CROSS SECTION



PLAN

LEGEND

4" OR 6" BY TYPE ♦ UNDERDRAIN 707.31 OR 707.41 WITH FABRIC WRAP

OUTLET PIPE

♦ SHALLOW OR UNCLASSIFIED PIPE

NOTES:

1. SOME UNDERDRAIN OUTLET LOCATIONS WILL HAVE AN EXISTING HEADWALL NEARBY, DO NOT DISTURB THESE HEADWALLS. THE OUTLET SHALL BE PLACED SO THERE IS POSITIVE DRAINAGE FLOW AND SHALL NOT OUTLET BEHIND THE HEADWALL OR BE PLACED IN A MANNER THAT WILL ERODE THE GROUND AROUND THE HEADWALLS AS DIRECTED BY THE ENGINEER.
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3. SEE TYPICAL SECTIONS FOR PAVEMENT BUILD-UP.

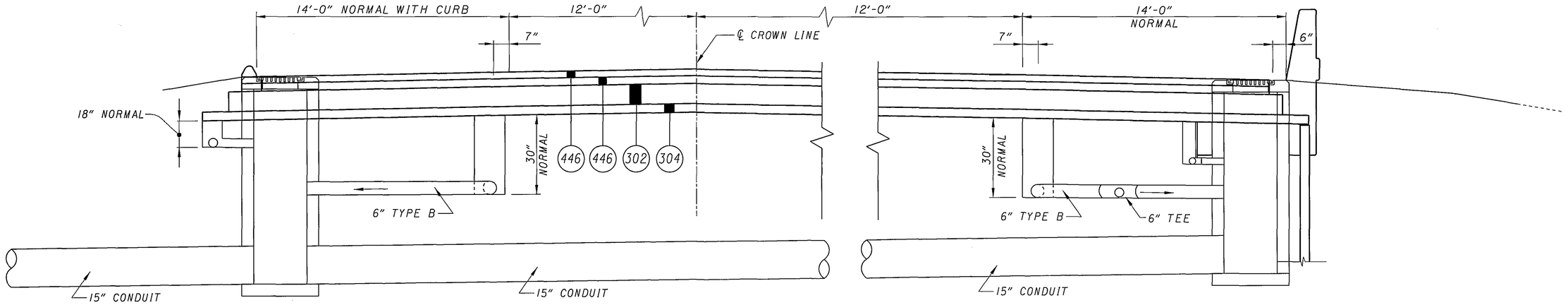
UNDERDRAIN DETAILS E

CALCULATED TM CHECKED PS

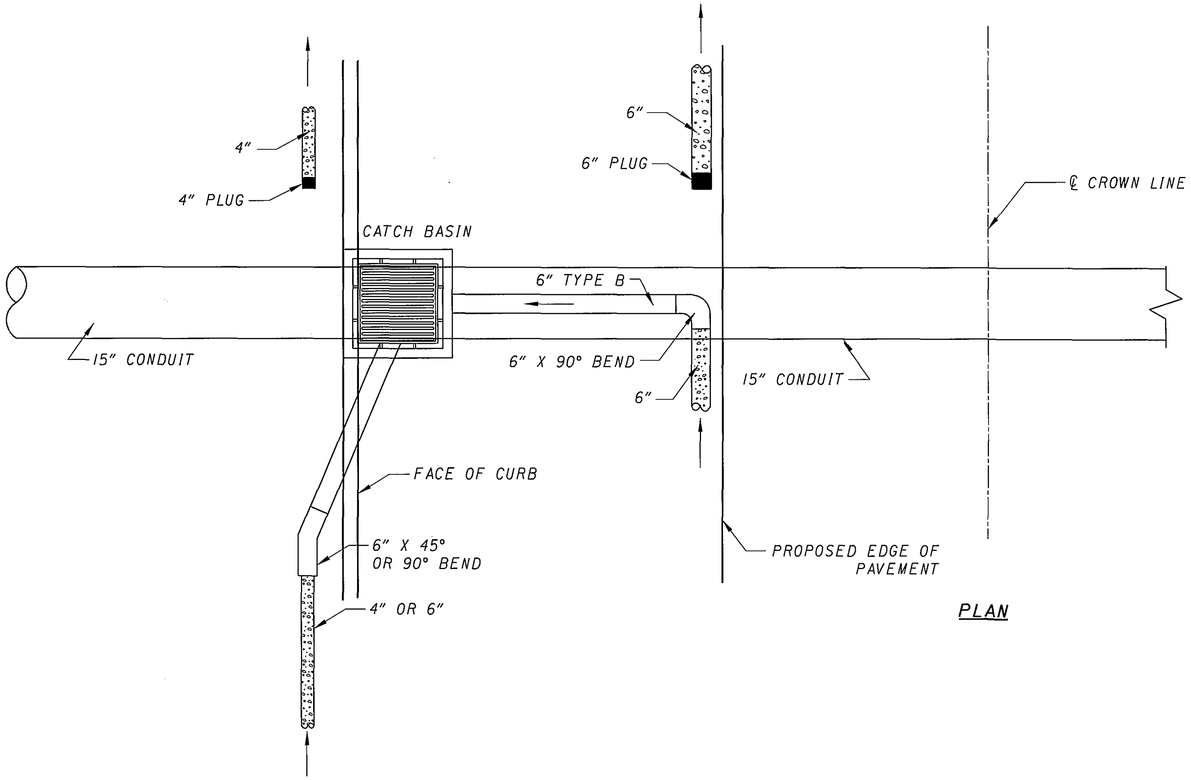
UNDERDRAIN DETAILS

SUM-271-8.02

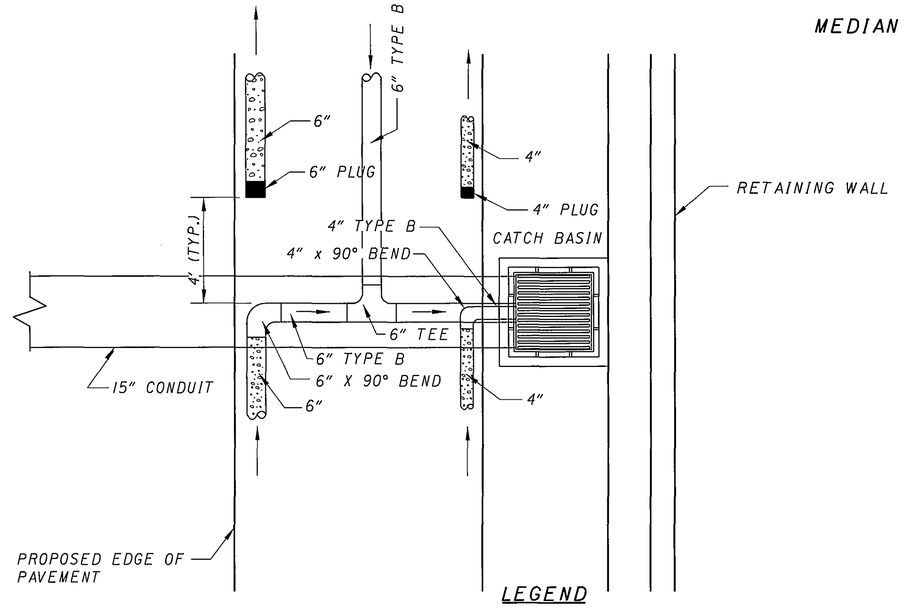
21450DDHI.DGN 3/29/04 SAM.HN.CEO.TWH



CROSS SECTION



PLAN



LEGEND

4" OR 6" BY TYPE♦ UNDERDRAIN 707.31 OR 707.41 WITH FABRIC WRAP

OUTLET PIPE

♦ SHALLOW OR UNCLASSIFIED PIPE

NOTES:

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3. SEE TYPICAL SECTIONS FOR PAVEMENT BUILD-UP.

UNDERDRAIN DETAIL F

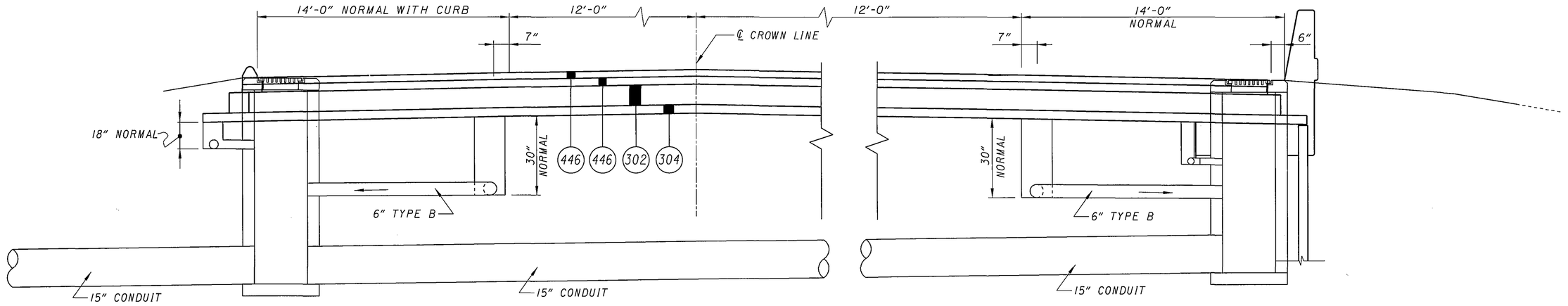
CALCULATED TM
CHECKED PS

UNDERDRAIN DETAILS

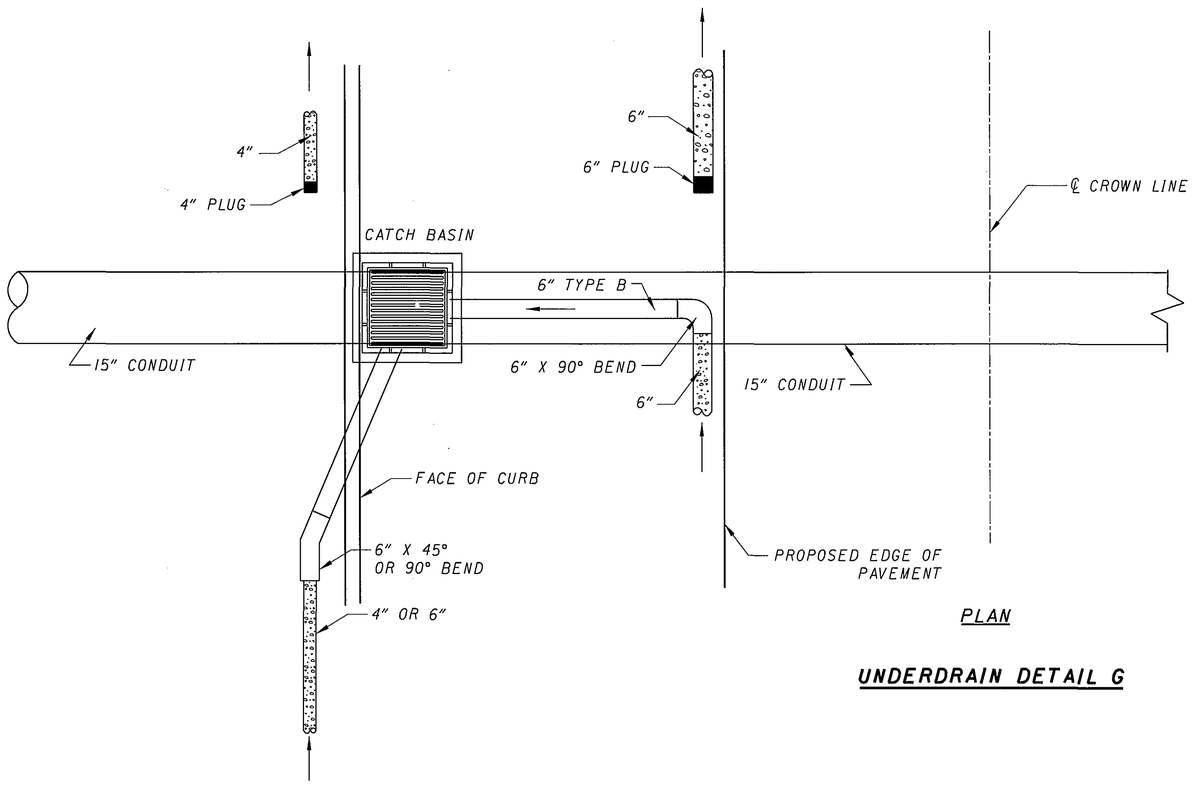
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330
612

21450DDJ.DGN 3/31/04 SAM,HN,CEO,TWH

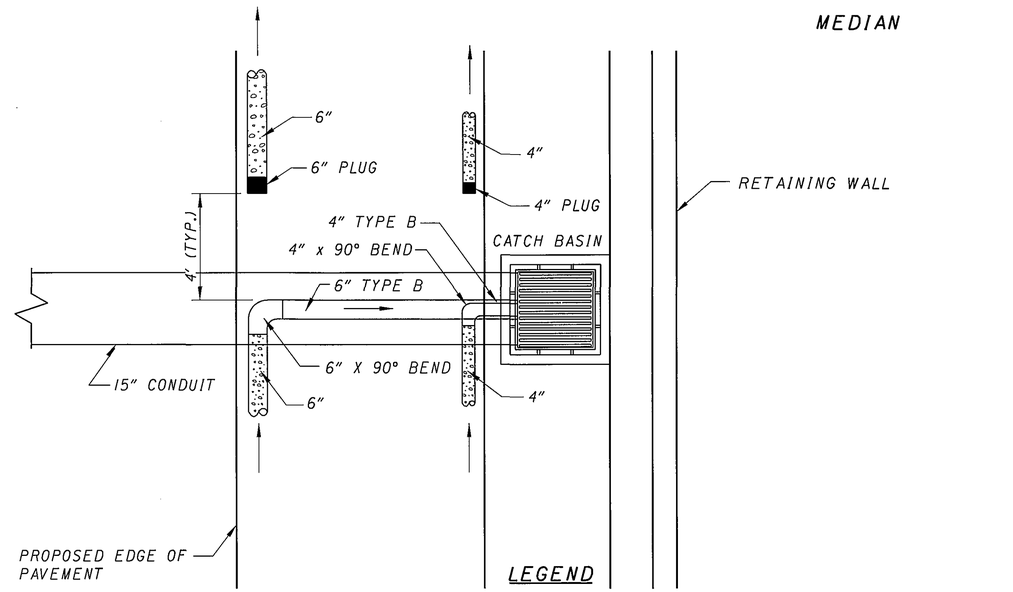


CROSS SECTION



PLAN

UNDERDRAIN DETAIL G



LEGEND

4" OR 6" BY TYPE♦ UNDERDRAIN 707.31 OR 707.41 WITH FABRIC WRAP

OUTLET PIPE

♦ SHALLOW OR UNCLASSIFIED PIPE

NOTES:

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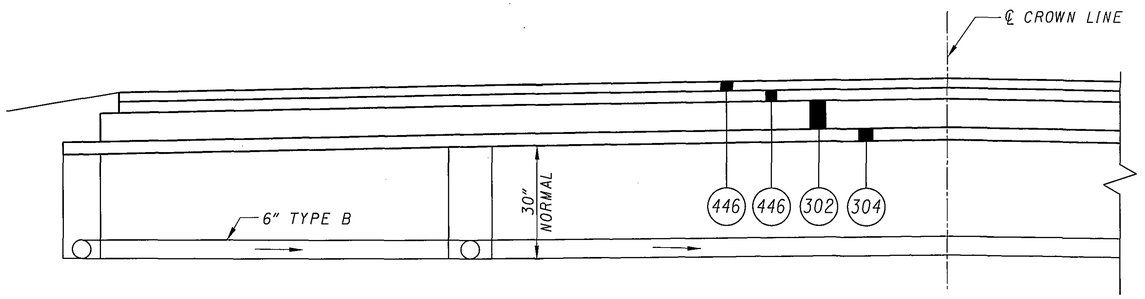
CALCULATED TM
CHECKED PS

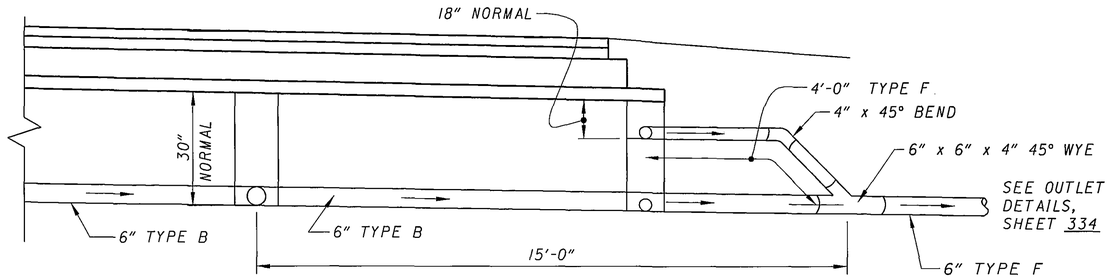
UNDERDRAIN DETAILS

SUM-271-8.02

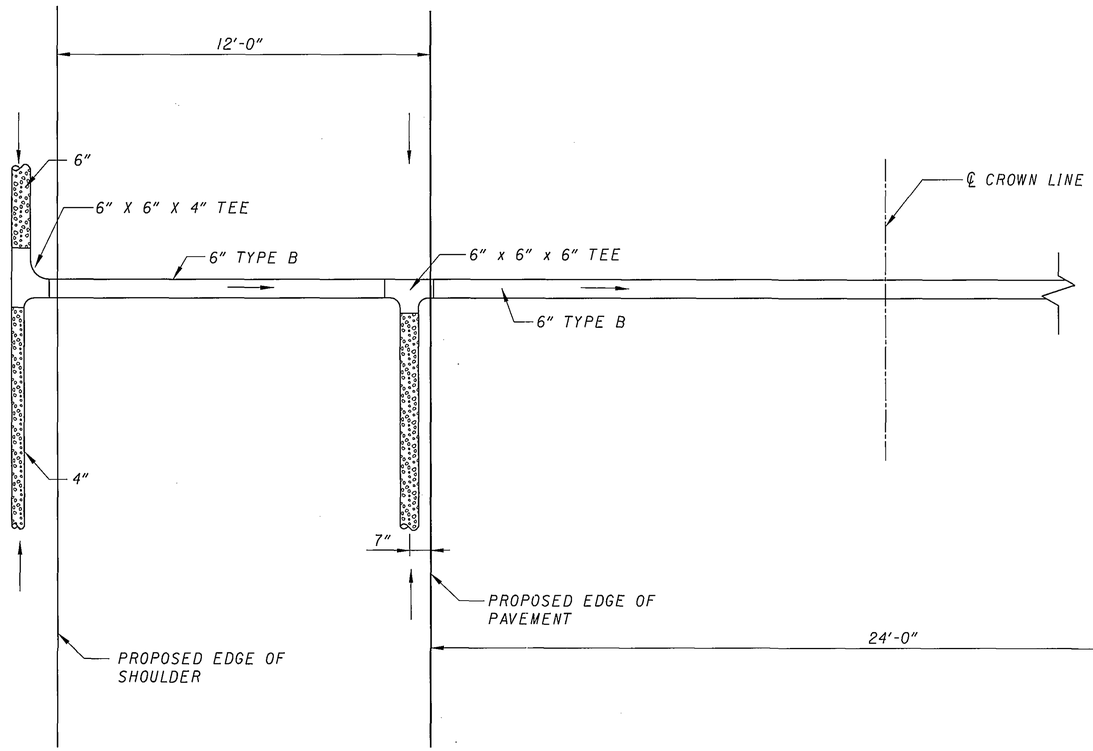
331
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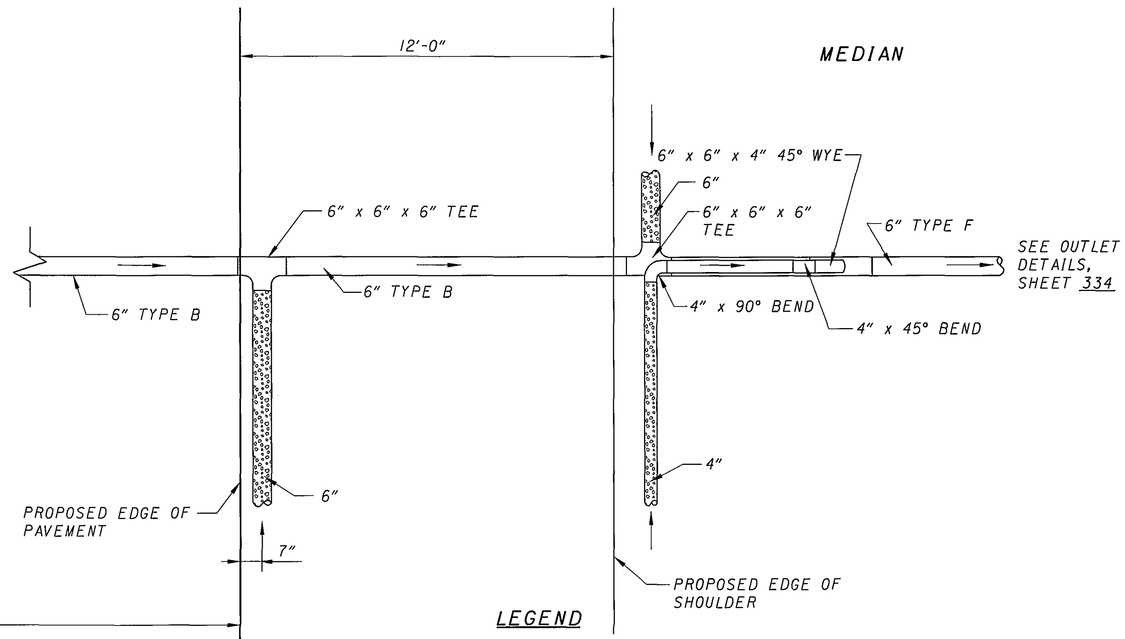
21450DDK1.DGN 3/31/04 SAM,HN,CEO,TWH





CROSS SECTION





PLAN

LEGEND

4" OR 6" BY TYPE ♦ UNDERDRAIN 707.31 OR 707.41 WITH FABRIC WRAP

OUTLET PIPE

♦ SHALLOW OR UNCLASSIFIED PIPE

NOTES:

1. SOME UNDERDRAIN OUTLET LOCATIONS WILL HAVE AN EXISTING HEADWALL NEARBY, DO NOT DISTURB THESE HEADWALLS. THE OUTLET SHALL BE PLACED SO THERE IS POSITIVE DRAINAGE FLOW AND SHALL NOT OUTLET BEHIND THE HEADWALL OR BE PLACED IN A MANNER THAT WILL ERODE THE GROUND AROUND THE HEADWALLS AS DIRECTED BY THE ENGINEER.
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3. SEE TYPICAL SECTIONS FOR PAVEMENT BUILD-UP.

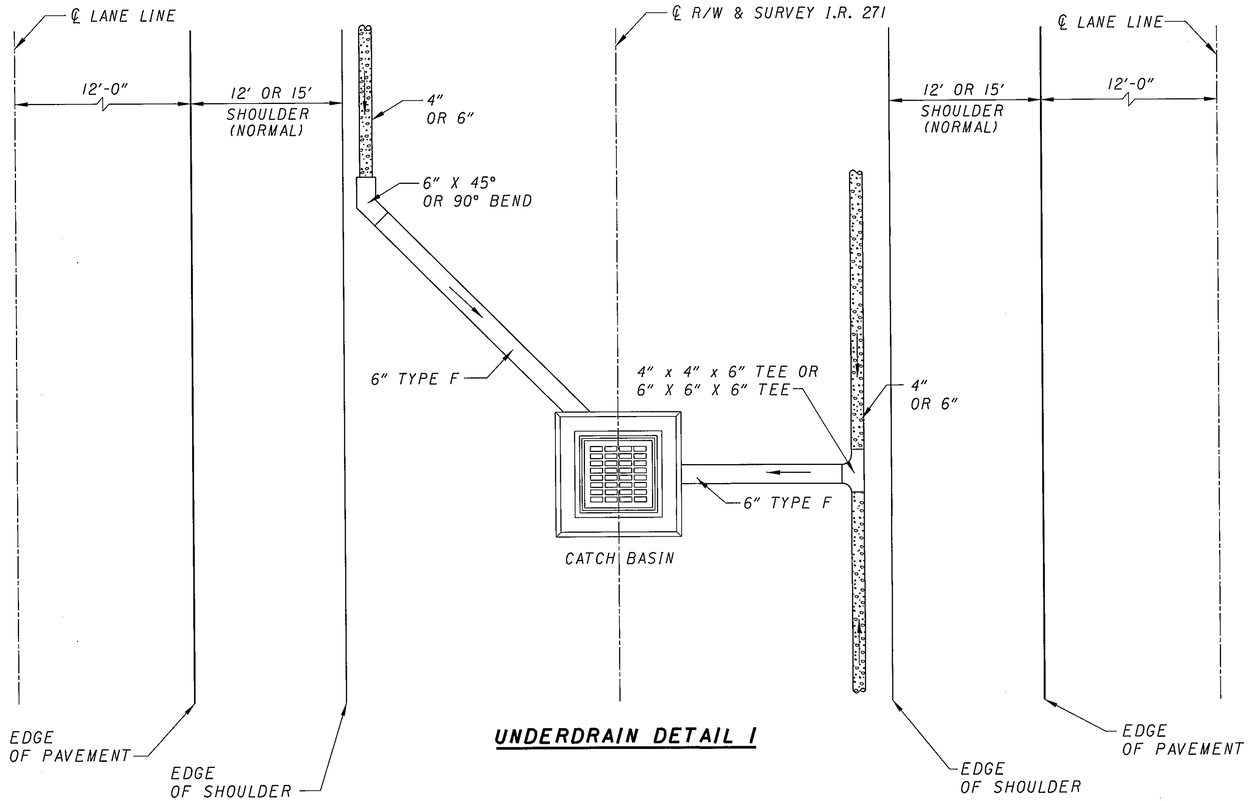
UNDERDRAIN DETAIL H

UNDERDRAIN DETAILS

CALCULATED TM
CHECKED PS

SUM-271-8.02

2145ODDL.DGN 3/26/04 SAM,HN,CEO



UNDERDRAIN DETAIL I

LEGEND

4" OR 6" BY TYPE♦ UNDERDRAIN 707.31 OR 707.41 WITH FABRIC WRAP

OUTLET PIPE

♦ SHALLOW OR UNCLASSIFIED PIPE

NOTES:

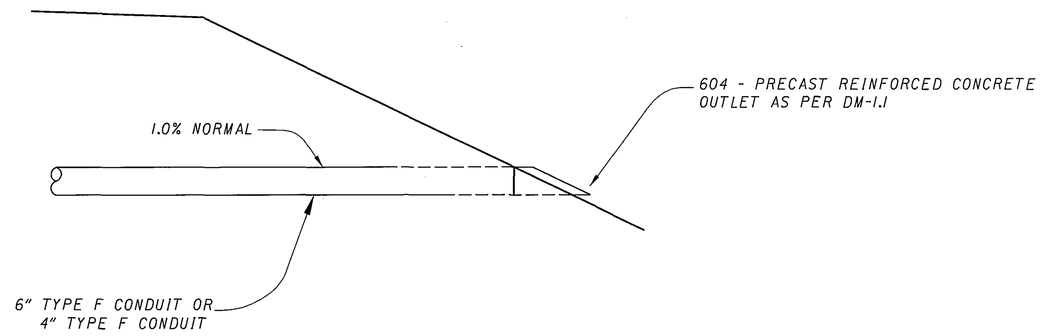
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3. SEE TYPICAL SECTIONS FOR PAVEMENT BUILD-UP.

CALCULATED TM
CHECKED PS

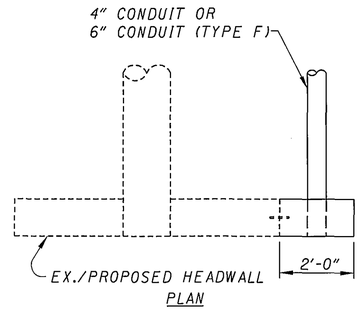
UNDERDRAIN DETAILS

SUM-271-8.02

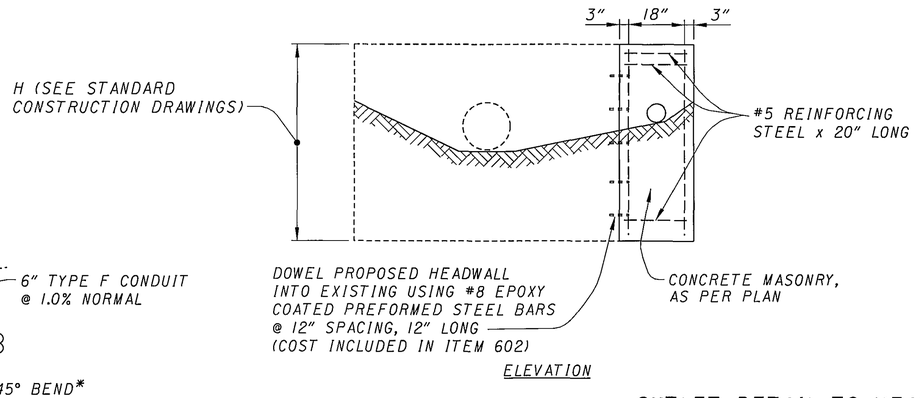
21450DDC.DGN 3/26/04 SAM,HN,CEO



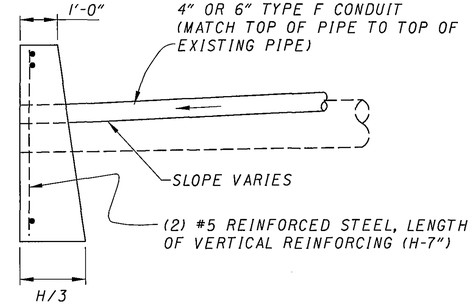
OUTLET DETAIL TO SLOPE



PLAN



ELEVATION

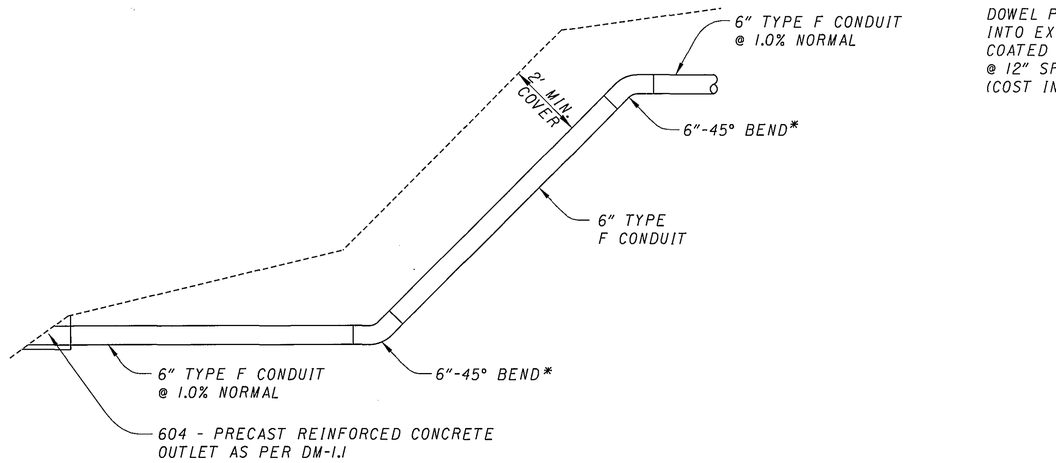


END VIEW

OUTLET DETAIL TO HEADWALL

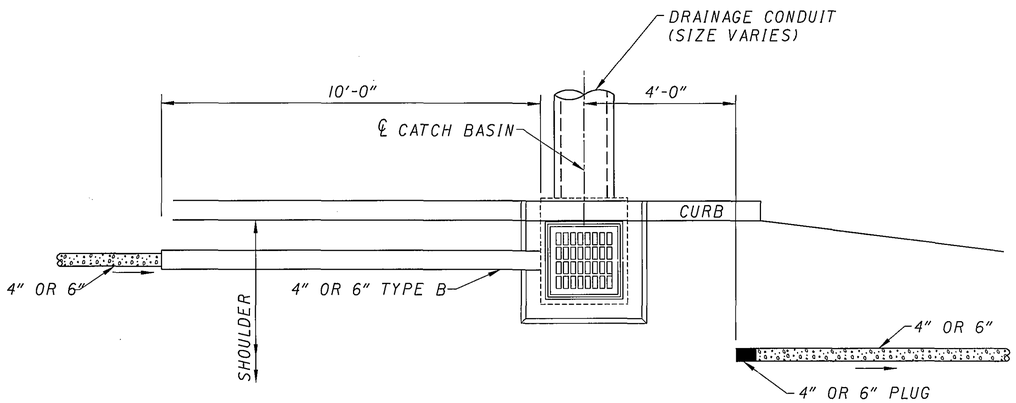
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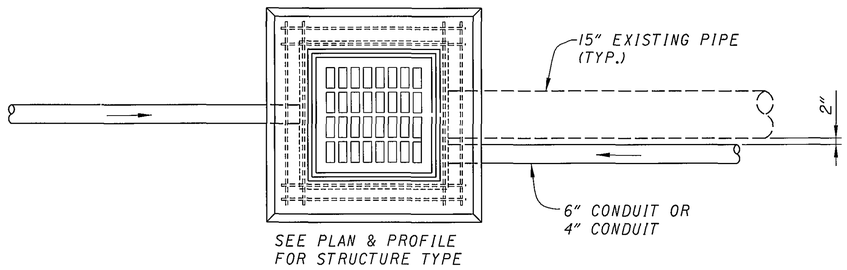
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3. SEE TYPICAL SECTIONS FOR PAVEMENT BUILD-UP.
4. ALL REINFORCING STEEL BARS SHALL BE EPOXY COATED, COST INCLUDED IN ITEM 602.



BROKEN BACK OUTLET DETAIL TO BOTTOM OF SLOPE

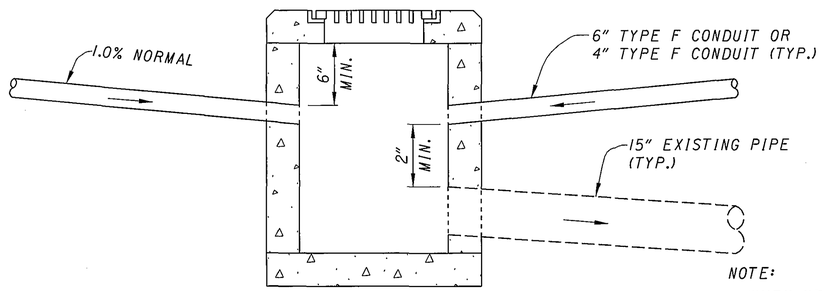
*PROVIDE APPROPRIATE BEND WHEN UTILIZING A BROKEN BACK UNDERDRAIN OUTLET





SEE PLAN & PROFILE FOR STRUCTURE TYPE

TOP VIEW



CROSS-SECTION

OUTLET DETAIL TO CATCH BASIN OR MANHOLE

NOTE:
WHEN NECESSARY TO AVOID EXISTING PIPES, CONNECT THE TYPE F CONDUIT TO THE SIDE OF THE CATCH BASIN OR MANHOLE WITH APPROPRIATE BEND

CALCULATED TM
CHECKED PS

UNDERDRAIN OUTLET DETAILS

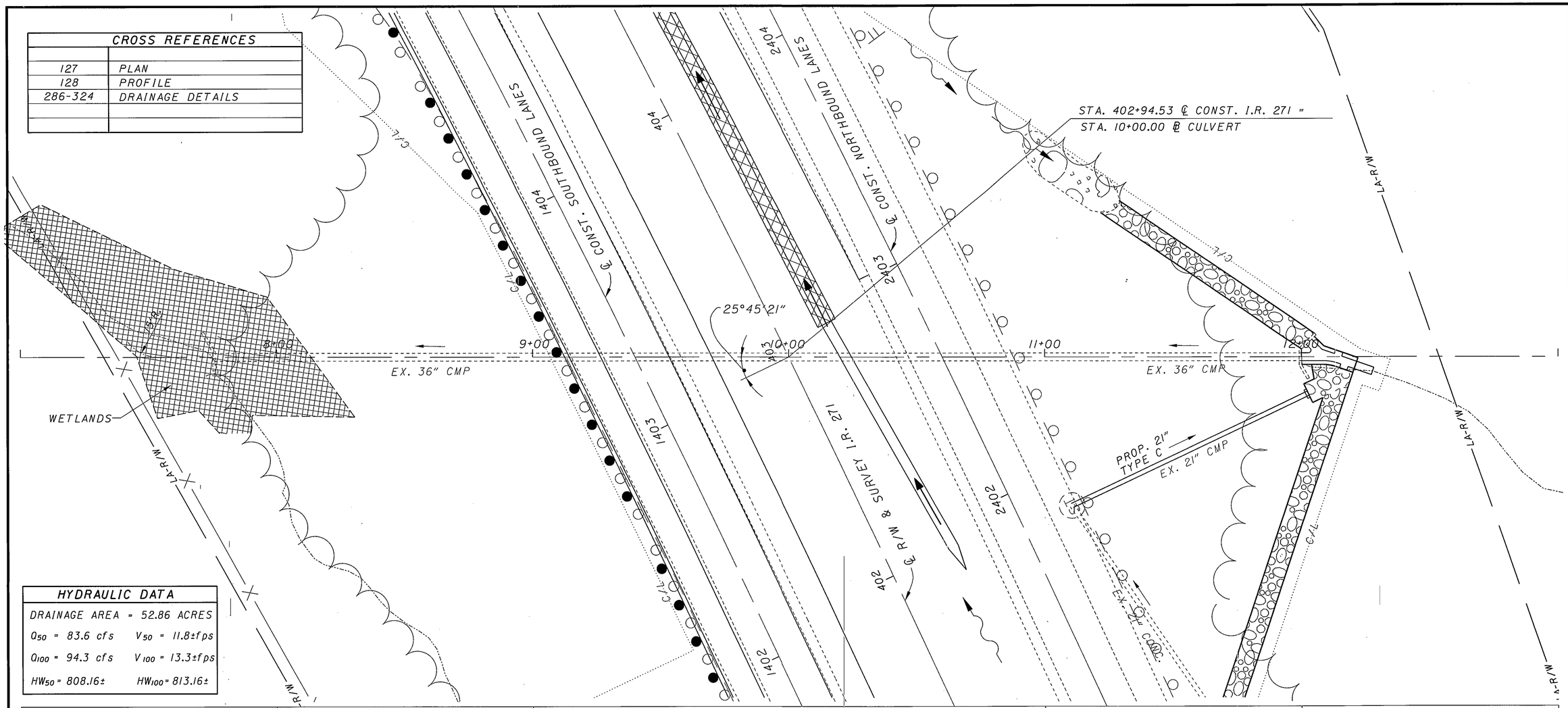
SUM-271-8.02

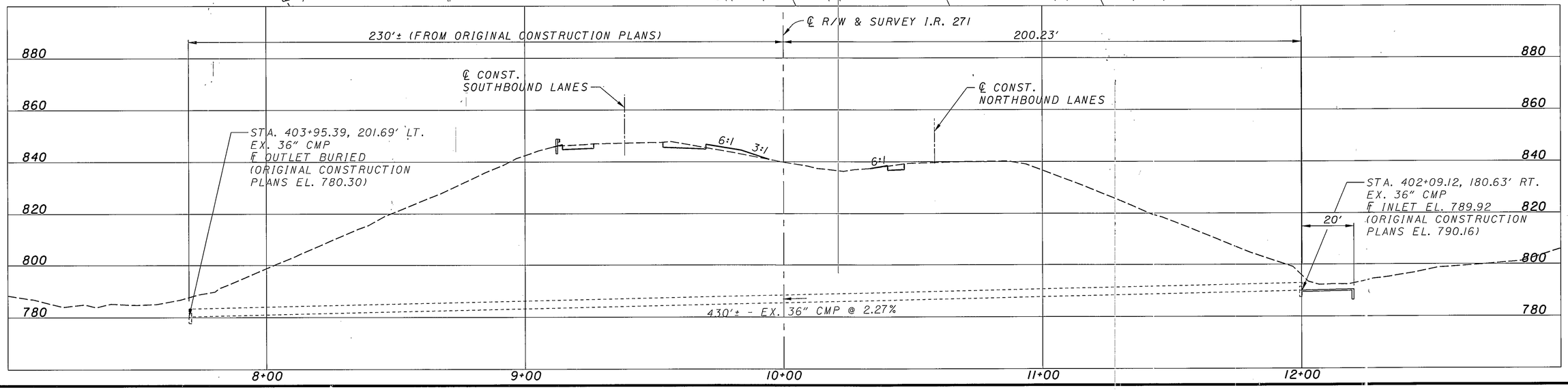
334
612

21450DDA2.DGN 3/26/04 CE0.HN

CROSS REFERENCES	
127	PLAN
128	PROFILE
286-324	DRAINAGE DETAILS

HYDRAULIC DATA	
DRAINAGE AREA = 52.86 ACRES	
Q_{50} = 83.6 cfs	V_{50} = 11.8±fps
Q_{100} = 94.3 cfs	V_{100} = 13.3±fps
HW_{50} = 808.16±	HW_{100} = 813.16±





CULVERT DETAIL-NO CULVERT WORK
STA. 402+94.53

SUM-271-8.02

CALCULATED JL
CHECKED PRS

HORIZONTAL SCALE IN FEET
0 10 20 40

335
612

2145SLIDE-DDI.DGN 3/31/04 SAM,TWH

ESTIMATED QUANTITIES

REF. NO.	ITEM	QUANTITY	UNIT	DESCRIPTION
43-D	202	1	EACH	HEADWALL REMOVED
63-D	202	18	FT.	PIPE REMOVED, OVER 24"
46-D	601	105	CU. YD.	ROCK CHANNEL PROTECTION, TYPE A, W/FILTER
46-D	601	8	SQ. YD.	RIPRAP USING 6" REINFORCED CONCRETE SLAB
46-D	602	10.5	CU. YD.	CONCRETE MASONRY
43-46-D	603	201	FT.	54" CONDUIT, TYPE C, AS PER PLAN
44-46-D	604	3	EACH	CATCH BASIN NO. 5A, AS PER PLAN
43-D	604	1	EACH	MANHOLE NO. 3, AS PER PLAN
	837	440	FT.	LINER PIPE, 48" 707.12
	837	110	CU. YD.	BACKFILL FOR LINER PIPE

QUANTITIES CARRIED TO GENERAL SUMMARY

HORIZONTAL SCALE IN FEET (0, 10, 20, 40)

CALCULATED TM
CHECKED PS

WETLAND S

QUANTITY CALCULATION

ITEM 601 ROCK CHANNEL PROTECTION, TYPE A, WITH FILTER

LENGTH x WIDTH
50' x 6' BOTTOM = 300 SQ.FT.
2 x 50' x 4.09 ADJUST FOR SLOPE = 409 SQ.FT
SUM = 709 SQ.FT.
x 4 FT. THICK
/ 27 = 105 CU.YD.

3.65' 6' 3.65' 2:1 2:1

ROCK CHANNEL PROTECTION, TYPE A, WITH FABRIC FILTER, 48" THICK

24°47'00" 6°07'37" 10°13'53" 56°59'26" 14°38'53"

PROP. 54" TYPE C PLAN AS PER PROP. C.P. 54" PLAN

PROP. 54" TYPE C PLAN AS PER PROP. C.P. 54" PLAN

PROP. 18" C. PLAN TYPE AS PER

PROP. C.P. TYPE AS PER PLAN

PROP. 15" TYPE B BORED OR JACKED

PROP. 15" TYPE B BORED OR JACKED

PROP. 15" BORED OR JACKED

PROP. 15" TYPE F, 707.05 TYPE C

EX. 15" CONC.

EX. 54" CMP

LA-R/W

45-D 46-D 44-D 43-D 42-D 41-D

CROSS REFERENCES	
119-147	PLAN & PROFILE
292-299	SLOPE REPAIR DETAILS
317-324	DRAINAGE DETAILS

HYDRAULIC DATA	
DRAINAGE AREA = 263.6 ACRES	
Q_{50} = 206.4 cfs	EX.V_{50} = 13.9 ft/s
Q_{100} = 232.8 cfs	PROP.V_{50} = 9.6 ft/s
HW_{50} = 742.15	EX.V_{100} = 15.6 ft/s
HW_{100} = 749.85	PROP.V_{100} = 10.0 ft/s

STA. 5+87.85, ℄ CULVERT = STA. 422+00.00, 285.00' LT. ℄ R/W & SURVEY I.R. 271
PROP. H.W.-I.I
℄ PROP. 54" (W.) EL. 693.00

STA. 6+12.59, ℄ CULVERT = STA. 421+75.00, 286.00' LT. ℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5A, AS PER PLAN (PLACE GRATE FLAT)
TOP OF GRATE EL. 705.50
℄ PROP. 54" (E.) EL. 693.30
℄ PROP. 54" (W.) EL. 696.52

50' - ROCK CHANNEL PROTECTION, TYPE A WITH FILTER
5' 62' - 54" TYPE C, A.P.P. @ 2.00%
MATCHLINE STA. 6+50
25' - 54" TYPE C, A.P.P. @ 1.50%
PROVIDE STEP & 6" HEADWALL EXTENSION ALONG SIDE SLOPE
PROVIDE CUTOFF WALL AS PER DM-1.1 ON 3 SIDES OF RIPRAP PAD

740 720 680

6+00

STA. 5+00.00 ℄ CULVERT

STA. 419+74.04 ℄ CONST. I.R. 271 = STA. 10+00.00 ℄ CULVERT

QUANTITY CALCULATIONS

ITEM 602 CONCRETE MASONRY

6" EXTENSION 10.30 x 1 = 10.30 CU. YD.
2 x (1/2 x 5.17 x 1.83 x 0.5) / 27 = 0.18 CU. YD.
TOTAL 10.48 CU.YD.
USE 10.5 CU.YD.

ITEM 837 BACKFILL FOR LINER PIPE

PI / 4 X (4.5^2 - 4.0^2) X 440 = 1467.94 CU.FT.
1467.94 CU.FT. / 27 = 54.37 CU.YD.
USE 55 x 2 = 110 CU.YD.

8+00 PROP. 48" LINER, 707.12 9+00 10+00 11+00 12+00

20' - PROP. 54" TYPE C, AS PER PLAN

REMOVE 18' OF EXISTING EXISTING HEADWALL (TO BE REMOVED)

PT STA. 1419+83.74

1421 1420 2421 420 2420

℄ CONST. SOUTHBOUND LANES ℄ CONST. NORTHBOUND LANES ℄ R/W & SURVEY I.R. 271

5' 3.65' 6' 3.65' 2:1 2:1 9"

RIPRAP USING 6" REINFORCED CONCRETE SLAB

QUANTITY CALCULATION

ITEM 601 RIPRAP USING 6" REINFORCED CONCRETE SLAB

LENGTH x WIDTH
5' x 6' BOTTOM = 30 SQ. FT.
5' x 3.65' SIDE x 1.12 = 20.44 SQ. FT.
5' x 3.65' SIDE x 1.12 = 20.44 SQ. FT.
SUM = 70.9 SQ.FT.
70.9 SQ.FT. / 9 = 7.9 SQ. YD.
USE 8 SQ.YD.

STA. 6+72.75, ℄ CULVERT = STA. 421+18.00, 262.50' LT. ℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5A, AS PER PLAN
TOP OF GRATE EL. 715.00
℄ PROP. 54" (E.) EL. 697.80
℄ PROP. 54" (W.) EL. 705.30

STA. 7+23.14, ℄ CULVERT = STA. 420+75.00, 240.00' LT. ℄ R/W & SURVEY I.R. 271
PROP. C.B. NO. 5A, AS PER PLAN
TOP OF GRATE EL. 726.70
℄ PROP. 54" (E.) EL. 707.60
℄ PROP. 54" (W.) EL. 717.15

STA. 7+69.69 ℄ CULVERT = STA. 420+32.29, 222.87' LT. ℄ R/W & SURVEY I.R. 271
EX. HEADWALL (TO BE REMOVED)
℄ 54" CMP EL. 722.06

℄ CONST. SOUTHBOUND LANES ℄ R/W & SURVEY I.R. 271 ℄ CONST. NORTHBOUND LANES

STA. 12+06.89, ℄ CULVERT = STA. 419+21.73, 200.12' RT. ℄ R/W & SURVEY I.R. 271
EX. 54" CMP
℄ INLET EL. 728.10
℄ PROP. 48" LINER EL. 728.35

780 760 740 720 700 680

2.5:1 NORMAL

230.36' 206.84'

EX. 54" (TO REMAIN)

18' - EX. 54" (TO BE REMOVED)

EXISTING HW TO REMAIN

EX. 54" CMP

440' - 48" LINER, 707.12 @ 1.38%

MATCHLINE STA. 6+50

45-D 44-D 43-D

62' - 54" TYPE C, AS PER PLAN @ 2.00%

49' - 54" TYPE C, AS PER PLAN @ 5.00%

45' - 54" TYPE C, AS PER PLAN @ 3.00%

20' - 54" TYPE C, AS PER PLAN

STA. 7+67.44, ℄ CULVERT = STA. 420+32.94, 225.00' LT. ℄ R/W & SURVEY I.R. 271
PROP. M.H. NO. 3, AS PER PLAN
TOP OF COVER EL. 743.50
℄ PROP. 18" (W.) EL. 733.04
℄ PROP. 48" (S.) EL. 722.28
℄ PROP. 54" (E.) EL. 718.50

HYDRAULIC DATA	
DRAINAGE AREA = 263.6 ACRES	
Q_{50} = 206.4 cfs	EX.V_{50} = 13.9 ft/s
Q_{100} = 232.8 cfs	PROP.V_{50} = 9.6 ft/s
HW_{50} = 742.15	EX.V_{100} = 15.6 ft/s
HW_{100} = 749.85	PROP.V_{100} = 10.0 ft/s

7+00 8+00 9+00 10+00 11+00 12+00

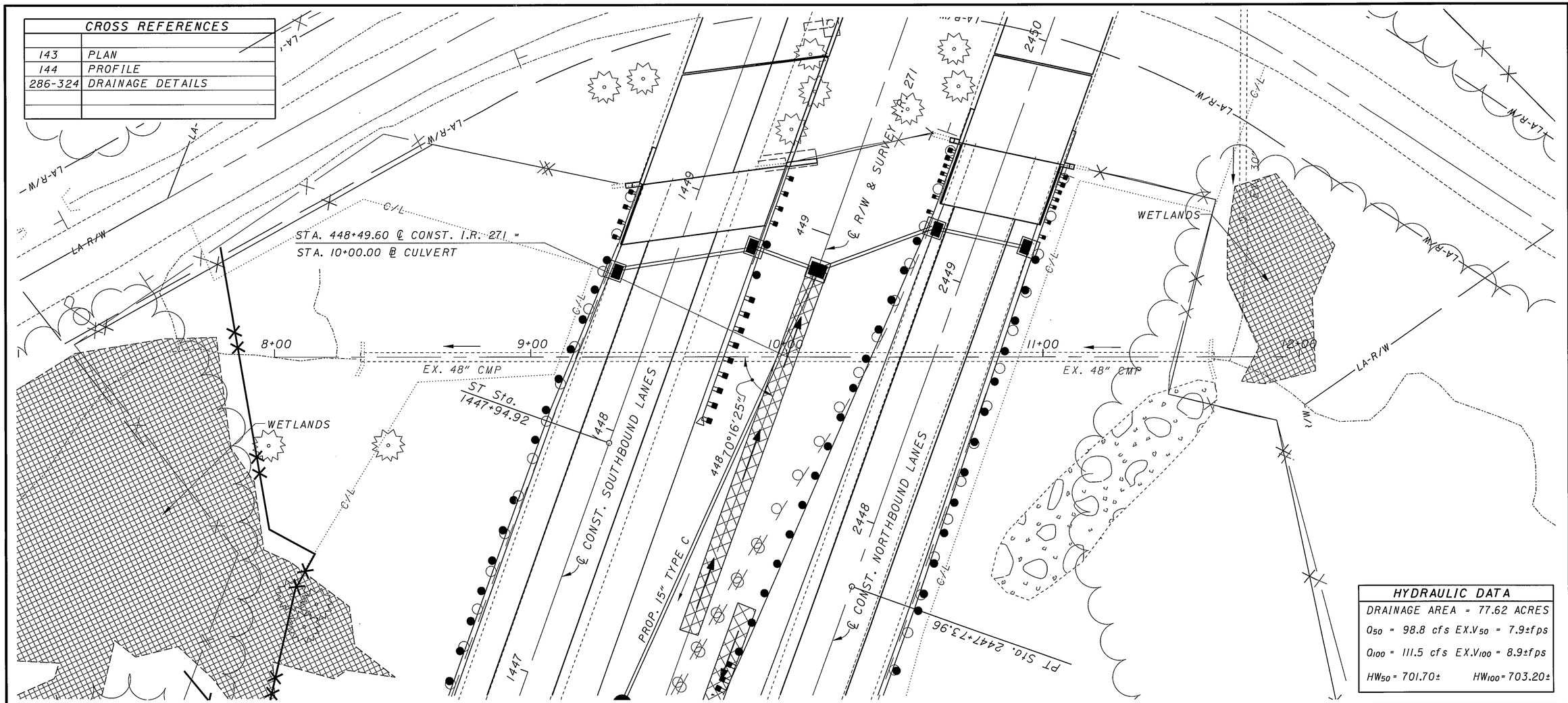
CULVERT DETAIL STA. 419+74.04

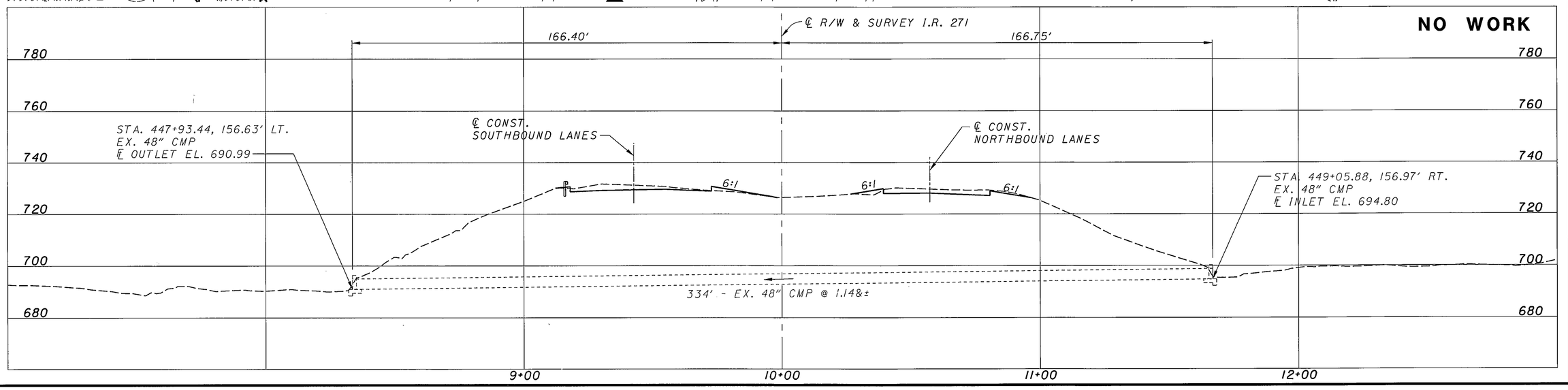
SUM-271-8.02

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2145SLIDE-DD2.DGN 8/26/03 SAM

CROSS REFERENCES	
143	PLAN
144	PROFILE
286-324	DRAINAGE DETAILS





HYDRAULIC DATA
DRAINAGE AREA = 77.62 ACRES
Q_{50} = 98.8 cfs EX.V_{50} = 7.9±fps
Q_{100} = 111.5 cfs EX.V_{100} = 8.9±fps
HW_{50} = 701.70± HW_{100} = 703.20±

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED JL
CHECKED PRS

CULVERT DETAIL - NO CULVERT WORK STA. 448+49.60

SUM-271-8.02

337
612

21450DD3.DGN 3/31/04 SAM,TWH,RC

BEGIN RETAINING WALL I
STA. 10+00.00 WORKING POINT LINE =
STA. 1412+00, 28.33' RT.
℄ CONSTRUCTION SOUTHBOUND LANES

PC Sta. 1413+40.85

R-18

EX. 15" CONC. (TO REMAIN)

PROP. 15" TYPE B

STA. 12+11.85

STA. 14+07.85

1412 | 1413 | 1414 | 1415 | 1416

N 58°49'34" E

12'-0" | 12'-0"

91'-9"** | 13'-9"**

℄ CONSTRUCTION SOUTHBOUND LANES

BRIDGE TERMINAL ASSEMBLY, TYPE I

W-01

* VARIES

SLEEPER SLAB

WORKING POINT LINE

N 58° 11' 52" E

412 ℄ R/W & SURVEY I.R. 271

1'-6" TRAFFIC BARRIER

413

414 BEGIN RADIUS
STA. 12+54.93 WORKING POINT LINE, RETAINING WALL I =
STA. 1414+54.63, 26.00' RT.
℄ CONSTRUCTION SOUTHBOUND LANES

EXPANSION JOINT (TYP.)

PROP. 15" TYPE C

EX. 13" CONC. (TO BE REMOVED)

W-02

2412 | 2414 | 2415 | 2416

N 54° 13' 47" E

℄ CONSTRUCTION NORTHBOUND LANES

PROP. 21" TYPE C

EX. 21" CONC.

ST Sta. 1414+11.33

PT STA. 416+58.61

STA. 417+00

MATCH LINE

R-19

B.M. #1 STA. 410+05.58, 0.32' RT.
℄ R/W & SURVEY I.R. 271
CONC. MON.
ELEV. = 819.73

* VARIES FROM 16'-4" AT STA. 10+00.00 TO 14'-0" AT STA. 12+54.93

** DIMENSION SHOWN IS FROM OUTSIDE FACE OF PRECAST CONCRETE FACING PANEL TO END OF RETAINING WALL EMBANKMENT.

RETAINING WALL I PLAN

B.M. #2 STA. 416+58.61, ℄
℄ R/W & SURVEY I.R. 271
CONC. MON.
ELEV. = 799.74

END APPROACH SLAB
STA. 421+82.25

LIMITS OF TEMPORARY SHEETING, CANTILEVERED
MINIMUM Sx = 65 in³/ft

B-02

PROP. 15" TYPE B

PROP. 15" TYPE C

ST Sta. 1419+83.74

℄ CONSTRUCTION SOUTHBOUND LANES

STA. 417+00

W-03

14'-0"

12'-0" | 14'-0"

1418 | 1419 | 1420 | 1421 | 1422

WORKING POINT LINE

SLEEPER SLAB

EXPANSION JOINT (TYP.)

PROP. 15" TYPE C

W-04

1'-6" TRAFFIC BARRIER

℄ R/W & SURVEY I.R. 271

N 54° 13' 47" E

2418 | 2419 | 2420 | 2421 | 2422

B-01

MATCH LINE

END RADIUS
STA. 17+85.84 WORKING POINT LINE, RETAINING WALL I =
STA. 1419+83.74, 26.00' RT.
℄ CONSTRUCTION SOUTHBOUND LANES

PROP. 48" LINER
CMP (TO REMAIN)

℄ CONSTRUCTION NORTHBOUND LANES

EX. 15" CONC. (TO BE REMOVED)

PROP. 15" TYPE B

END RETAINING WALL I
STA. 19+59.35
WORKING POINT LINE =
STA. 1421+57.25, 26.00' RT.
℄ CONSTRUCTION SOUTHBOUND LANES

B.M. #3 STA. 424+89.09, 299.09' LT.
℄ R/W & SURVEY I.R. 271
CHISELED '□' ON W. HEADWALL
NW COR. 200'± N. OF I.R. 271
BRIDGE
ELEV. = 682.71

END APPROACH SLAB
STA. 421+62.25

RETAINING WALL I PLAN

CURVE DATA
RETAINING WALL I

P.I. STA. = 15+20.49
D = 3° 58' 06" (LT)
Dc = 0° 44' 51"
R = 7,665.44'
T = 265.56'
L = 530.91'
E = 4.60'

NOTES

ELEVATION VIEW: SEE SHEET 3/10.

TRANSVERSE SECTION: SEE SHEET 6/10.

LEGEND

- INDICATES BORING LOCATION
- INDICATES RETAINING WALL EMBANKMENT (LENGTH OF RETAINING WALL EMBANKMENT IS FOR ESTIMATING PURPOSES ONLY. THE LENGTH WILL VARY PER MANUFACTURER DESIGN).

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED BLN | REVISED

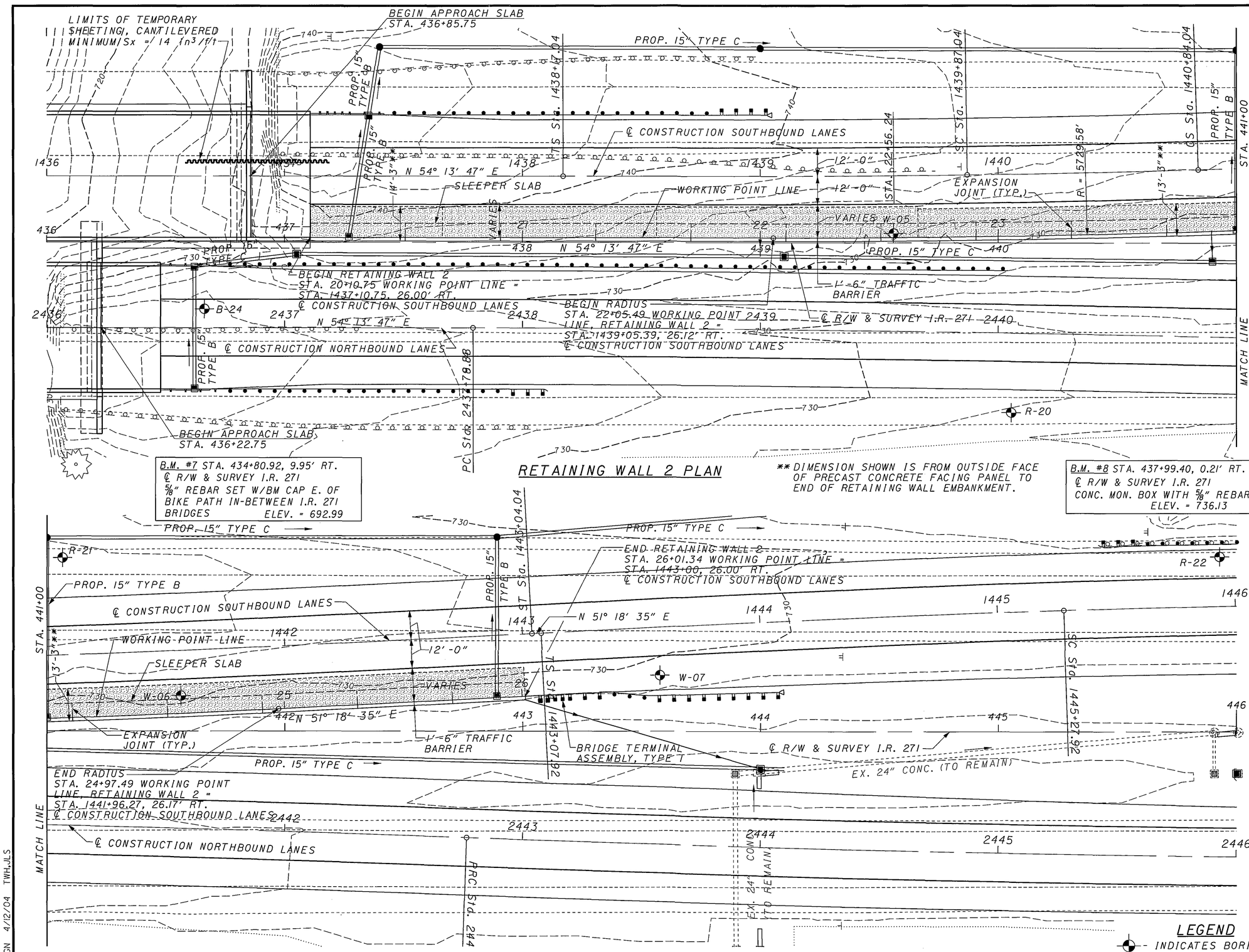
RETAINING WALL 1 SITE PLAN
STA. 10+00.00 TO STA. 19+59.35

SUM-271-8.02

1 / 10

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SU271RWA.DGN 4/12/04 TWH,JLS



RETAINING WALL 2 PLAN

** DIMENSION SHOWN IS FROM OUTSIDE FACE OF PRECAST CONCRETE FACING PANEL TO END OF RETAINING WALL EMBANKMENT.

RETAINING WALL 2 PLAN

CURVE DATA
RETAINING WALL 2

P.I. STA. = 23+51.52
D = 2° 55' 12" (LT)
Dc = 1° 00' 00"
R = 5,729.58'
T = 146.03'
L = 292.00'
E = 1.86'

NOTES

ELEVATION VIEW: SEE SHEET 4/10.

TRANSVERSE SECTION: SEE SHEET 6/10.

LEGEND

- INDICATES BORING LOCATION
- INDICATES RETAINING WALL EMBANKMENT (LENGTH OF RETAINING WALL EMBANKMENT IS FOR ESTIMATING PURPOSES ONLY. THE LENGTH WILL VARY PER MANUFACTURER DESIGN).

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED BLN | REVISED

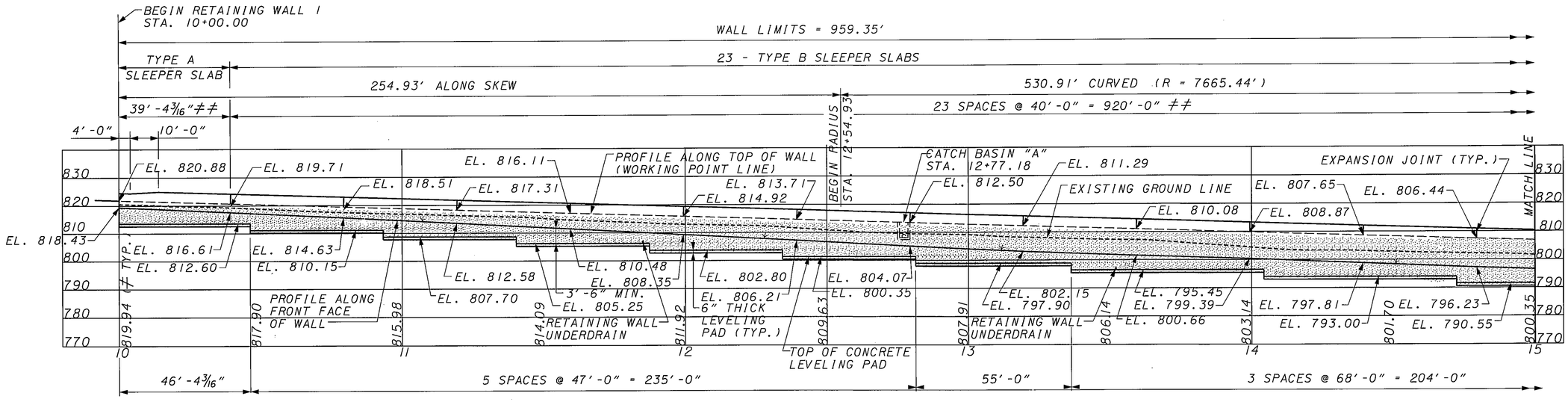
RETAINING WALL 2 SITE PLAN
STA. 20+10.75 TO STA. 26+01.34

SUM-271-8.02

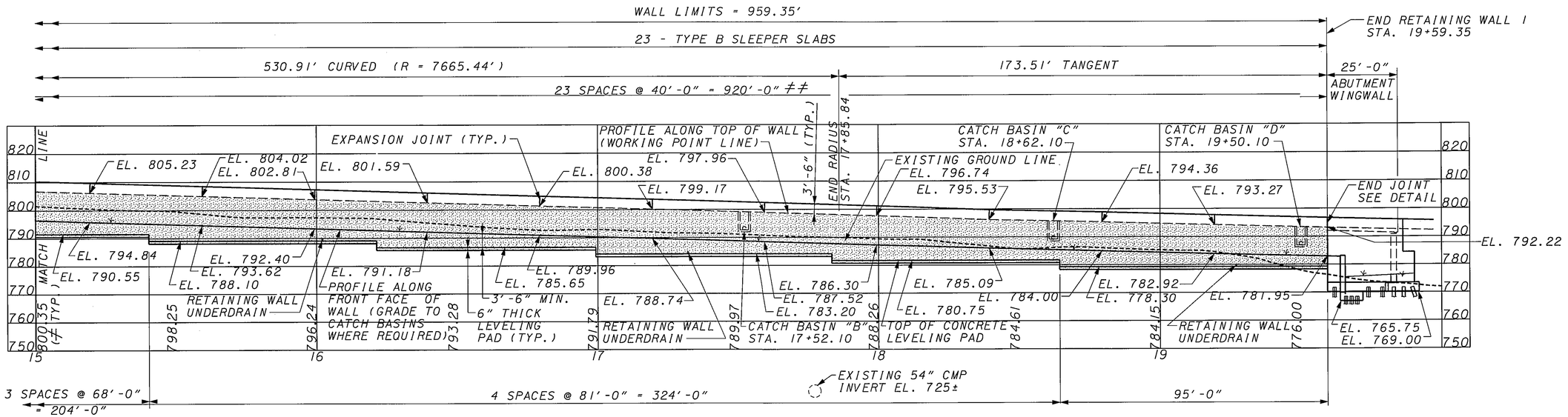
2 / 10

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612

SU271RWB.DGN 4/12/04 TWH,JLS



PROFILE ALONG FACE OF RETAINING WALL 1



PROFILE ALONG FACE OF RETAINING WALL 1

≠ EXISTING ELEVATIONS ALONG THE FRONT FACE OF THE WALL.

≠≠ DIMENSIONS INDICATE LOCATION OF PROPOSED ELEVATIONS ALONG FRONT FACE OF WALL AND PROPOSED ELEVATIONS ALONG BACK OF WALL (WORKING POINT LINE).

LEGEND

- INDICATES RETAINING WALL EMBANKMENT (LENGTH OF RETAINING WALL EMBANKMENT IS FOR ESTIMATING PURPOSES ONLY. THE LENGTH WILL VARY PER MANUFACTURER DESIGN).

NOTES

TRANSVERSE SECTION: SEE SHEET 6/10.

TYPE A AND B SLEEPER SLABS: SEE SHEET 7/10.

JOINT DETAIL AT ABUTMENTS: SEE SHEET 6/10.

DRAINAGE DETAILS: SEE SHEET 9/10.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | REVIEWED DAP | DATE 3/18/04 | CHECKED BLN | REVISED

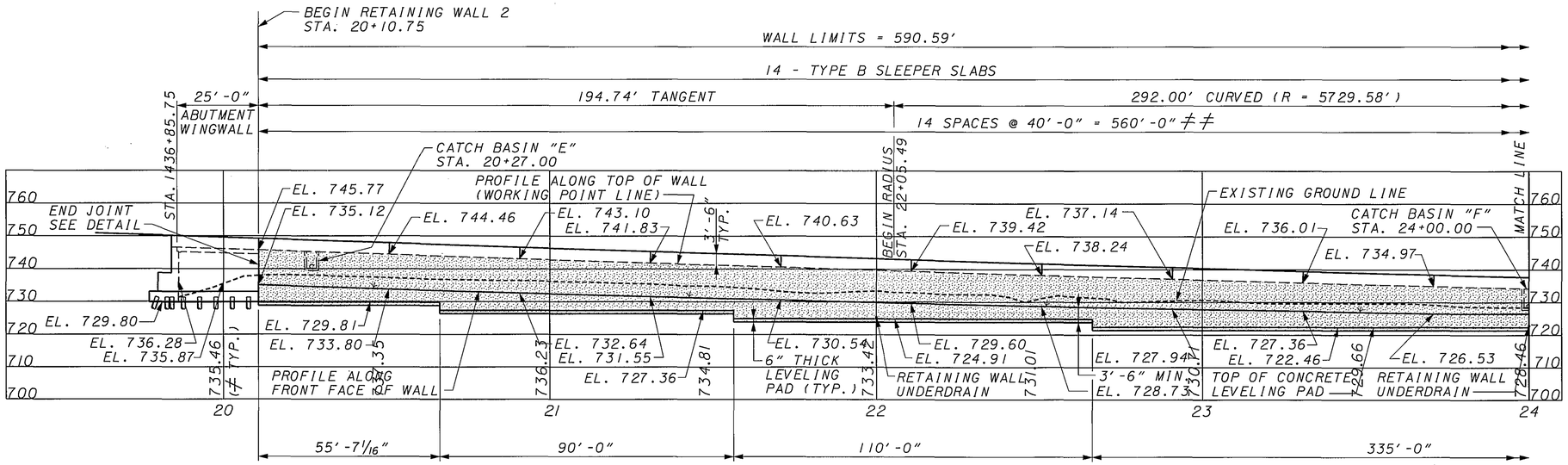
RETAINING WALL 1 PROFILE
STA. 10+00 TO STA. 19+59.35

SUM-271-8.02

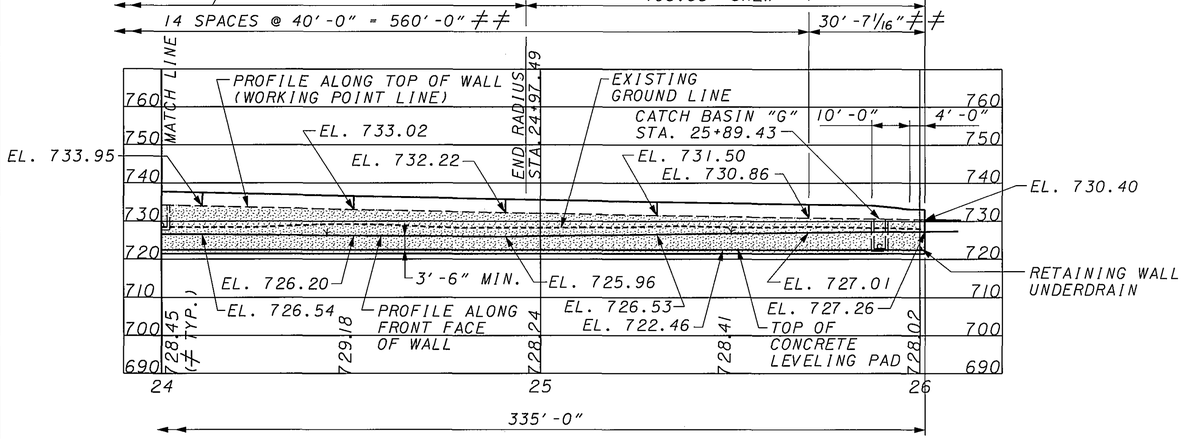
3/10

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SU271RWC.DGN 08/03/04 TWH.JLS



PROFILE ALONG FACE OF RETAINING WALL 2



PROFILE ALONG FACE OF RETAINING WALL 2

VERTICAL CURVE INFORMATION
℄ SOUTHBOUND LANES

P.V.I. STA. 1445+55.00
P.V.I. EL. 720.64
LVC = 1,168.00'
GRADE IN = -3.01%
GRADE OUT = +2.81%

≠ EXISTING ELEVATIONS ALONG THE FRONT FACE OF THE WALL.

≠≠ DIMENSIONS INDICATE LOCATION OF PROPOSED ELEVATIONS ALONG FRONT FACE OF WALL AND PROPOSED ELEVATIONS ALONG BACK OF WALL (WORKING POINT LINE).

LEGEND

▒ - INDICATES RETAINING WALL EMBANKMENT (LENGTH OF RETAINING WALL EMBANKMENT IS FOR ESTIMATING PURPOSES ONLY. THE LENGTH WILL VARY PER MANUFACTURER DESIGN).

NOTES

TRANSVERSE SECTION: SEE SHEET 6/10.

TYPE B AND C SLEEPER SLABS: SEE SHEET 7/10.

JOINT DETAIL AT ABUTMENTS: SEE SHEET 6/10.

DRAINAGE DETAILS: SEE SHEET 9/10.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED BLN | REVISED

RETAINING WALL 2 PROFILE
STA. 20+10.75 TO STA. 26+01.34

SUM-271-8.02

4/10

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SU271RWL.DGN 4/12/04 TWH,JLS

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS

REFER TO THE FOLLOWING STANDARD DRAWINGS:

SBR-1-99 REVISED 07-19-2002

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

864 DATED 07-11-2000

DESIGN DATA

CONCRETE CLASS S - COMPRESSIVE STRENGTH 4500 PSI (SLEEPER SLAB AND PARAPETS)
REINFORCING STEEL - ASTM A615, A616, OR A617
- GRADE 60 WITH MINIMUM YIELD STRESS OF 60 KSI
- ALL REINFORCING SHALL BE EPOXY COATED PER MATERIAL SPECIFICATION 709.00
- SPLICES INDICATED ARE FOR GRADE 60 STEEL

RETAINING WALL DESIGN REQUIREMENTS

THE DESIGN OF THE WALL SHALL BE IN STRICT CONFORMANCE WITH THE AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", 17TH EDITION, THE 2003 "ODOT BRIDGE DESIGN MANUAL", AND THE REQUIREMENTS LISTED BELOW:

1. THE DESIGN SHALL MEET ALL PLAN REQUIREMENTS.
2. THE HEIGHT OF THE WALL FOR DESIGN PURPOSES SHALL BE MEASURED FROM THE TOP OF THE LEVELING PAD TO THE WORKING POINT.
3. THE WALL SYSTEM SHALL ACCOMMODATE UP TO 1 PERCENT DIFFERENTIAL SETTLEMENT IN THE LONGITUDINAL DIRECTION.
4. THE MINIMUM SURCHARGE TO BE APPLIED IS TWO FEET OF SOIL.
5. THE ALLOWABLE BEARING CAPACITY IS 2500 PSF FOR THE RETAINING WALLS. THE SAFETY FACTOR HAS BEEN APPLIED TO THESE VALUES.

RETAINING WALL EXCAVATION:

EXCAVATION FOR THE CONSTRUCTION OF THE RETAINING WALL BELOW THE SOUTHBOUND TRAFFIC LANES MAY INCLUDE SLOPES STEEPER THAN 2 HORIZONTAL TO 1 VERTICAL, BUT NOT STEEPER THAN 1 TO 1. SURFACE RUNOFF FROM THE SOUTHBOUND LANES SHALL BE DIRECTED AWAY FROM THE EXCAVATION AND THE EXCAVATED SLOPE SHALL BE PROTECTED FROM RAINY WEATHER BY COVERING WITH PLASTIC SHEETS. ALL REQUIREMENTS FOR ITEM 503 EXCAVATION FOR STRUCTURES SHALL APPLY TO THE RETAINING WALL EXCAVATION.

PAYMENT FOR PROTECTION OF THE EXCAVATION SHALL BE INCLUDED WITH ITEM SPECIAL - REINFORCED EARTH WALL, DESIGN A; RETAINED EARTH WALL, DESIGN B; ARES RETAINING WALL, DESIGN C; OR MSE PLUS RETAINING WALL, DESIGN D.

ESTIMATED QUANTITIES (RETAINING WALLS)

CALCULATED ALP DATED 10/03
CHECKED TWH DATED 02/04

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	RETAINING WALL 1	RETAINING WALL 2
509	10000	126,243	POUND	EPOXY COATED REINFORCING STEEL	72,118	44,508
511	34450	244	CU YD	CLASS S CONCRETE, MISC.: TRAFFIC BARRIER	151	93
511	34450	735	CU YD	CLASS S CONCRETE, MISC.: SLEEPER SLAB	347	214
SPECIAL	61013600	LUMP		REINFORCED EARTH WALL, DESIGN A (SEE SPECIAL PROVISIONS)	LUMP	LUMP
SPECIAL	61013800	LUMP		RETAINED EARTH WALL, DESIGN B (SEE SPECIAL PROVISIONS)	LUMP	LUMP
SPECIAL	61014000	LUMP		ARES RETAINING WALL, DESIGN C (SEE SPECIAL PROVISIONS))	LUMP	LUMP
SPECIAL	61014200	LUMP		MSE PLUS RETAINING WALL, DESIGN D (SEE SPECIAL PROVISIONS)	LUMP	LUMP
864	10100	2061	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	1129	695

RETAINING WALL ESTIMATED QUANTITIES FOR INFORMATIONAL PURPOSES ONLY:

FACE AREA OF WALL (TOP OF LEVELING PAD TO BOTTOM OF SLEEPER SLAB)	11,093 SQ. FT.	6516 SQ. FT.
VOLUME OF RETAINING WALL (TOP OF LEVELING PAD TO SUBGRADE AND RETAINING WALL EMBANKMENT WIDTH)	5585 CU. YD.	3376 CU. YD.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DATE 3/18/04
REVIEWED DAP
DRAWN JLS
REVISED
DESIGNED ALP
CHECKED BLN

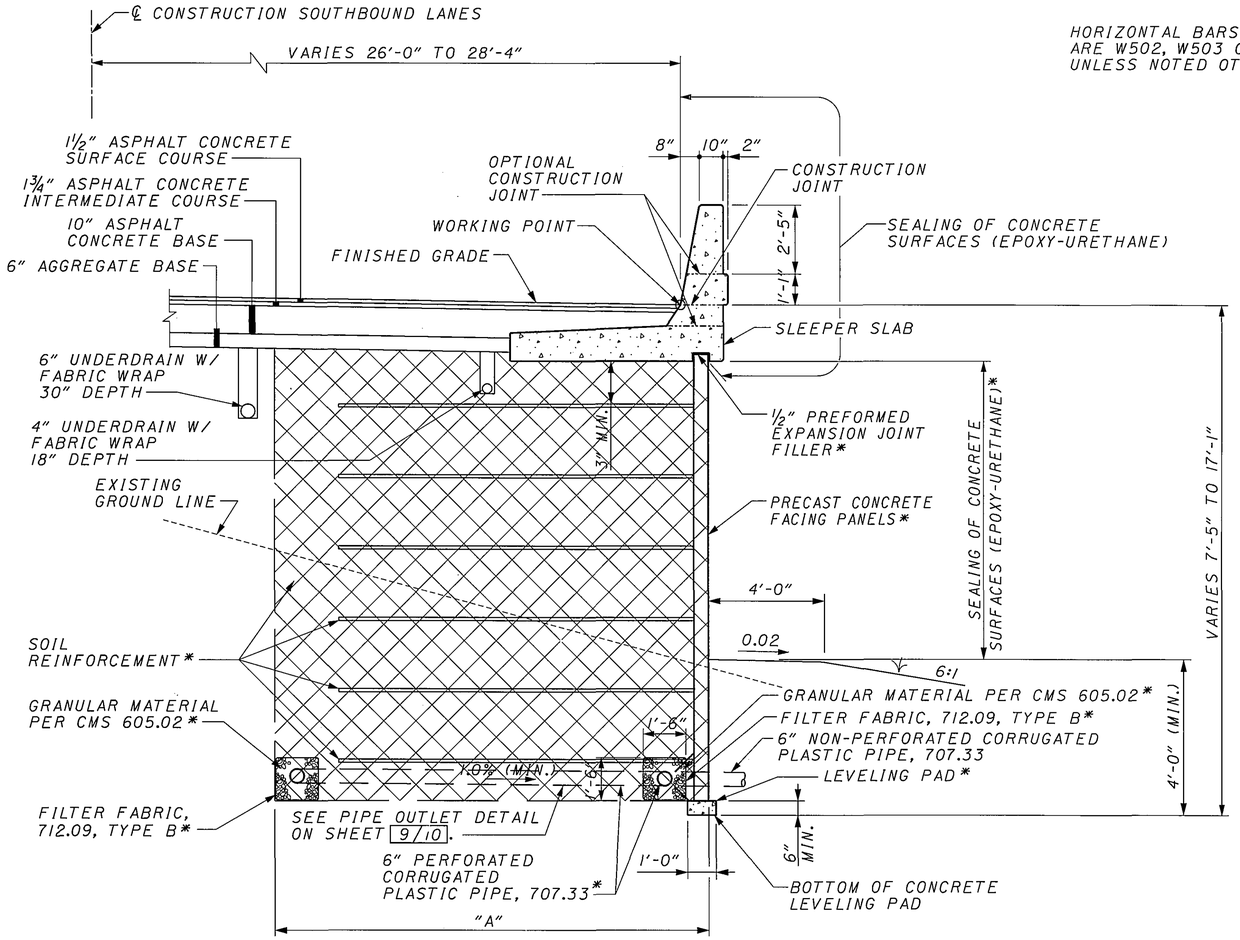
RETAINING WALLS - GENERAL NOTES & ESTIMATED QUANTITIES

SUM-271-8.02

5 / 10

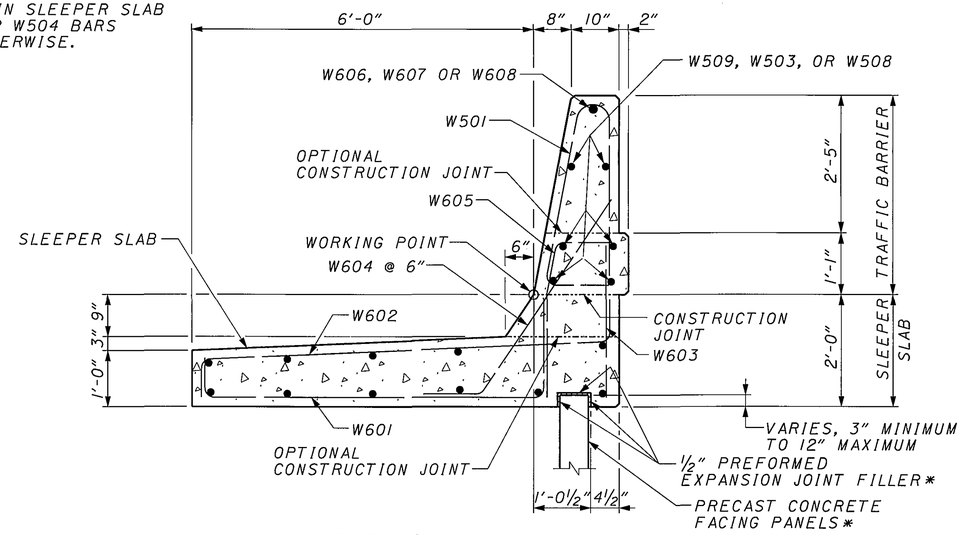
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SU271RWN.DGN 11/01/04 CAR,KH,TWH,JLS,HN

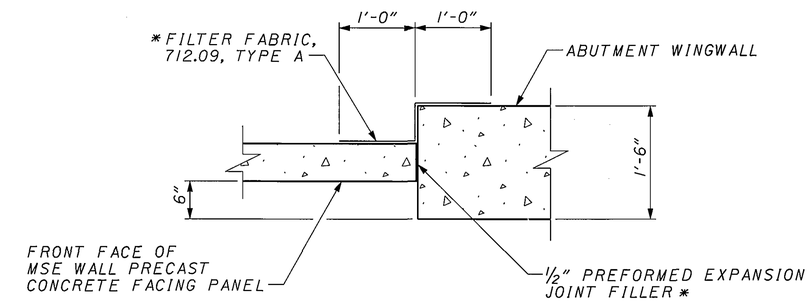


TRANSVERSE SECTION RETAINING WALL

HORIZONTAL BARS IN SLEEPER SLAB ARE W502, W503 OR W504 BARS UNLESS NOTED OTHERWISE.



SECTION X-X



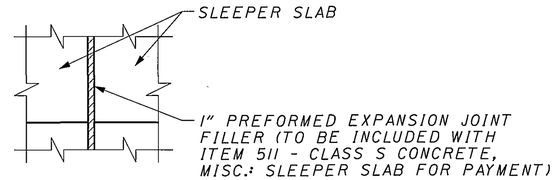
JOINT DETAIL AT ABUTMENTS

RETAINING WALL EMBANKMENT WIDTH			
	FROM STATION	TO STATION	DIMENSION "A"
WALL 1	10+00.00	11+87.35	9'-9"
	11+87.35	15+40.35	13'-9"
	15+40.35	19+59.35	14'-0"
WALL 2	20+10.75	22+66.34	14'-3"
	22+66.34	26+01.34	13'-3"

LEGEND

- INDICATES LIMITS OF RETAINING WALL EMBANKMENT.* (LENGTH OF RETAINING WALL EMBANKMENT IS FOR ESTIMATING PURPOSES ONLY. THE LENGTH WILL VARY PER MANUFACTURER DESIGN).

* INCLUDED WITH ITEM SPECIAL - REINFORCED EARTH WALL, DESIGN A; RETAINED EARTH WALL, DESIGN B; ARES RETAINING WALL, DESIGN C; OR MSE PLUS RETAINING WALL, DESIGN D, FOR PAYMENT.



EXPANSION JOINT DETAIL

NOTES

SECTION X-X: FOR LOCATION SEE SHEET 7/10.

SLEEPER SLAB DETAILS: SEE SHEET 7/10.

DRAINAGE DETAILS: SEE SHEET 9/10.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | CHECKED BLN | REVISED | REVISED DAP | DATE 3/18/04

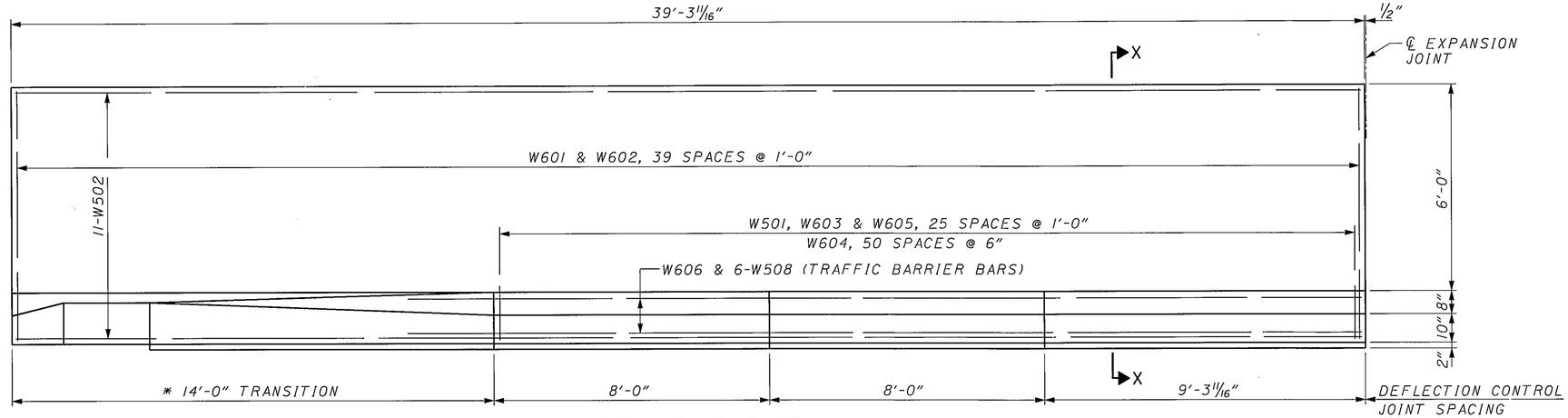
RETAINING WALL DETAILS

SUM-271-8.02

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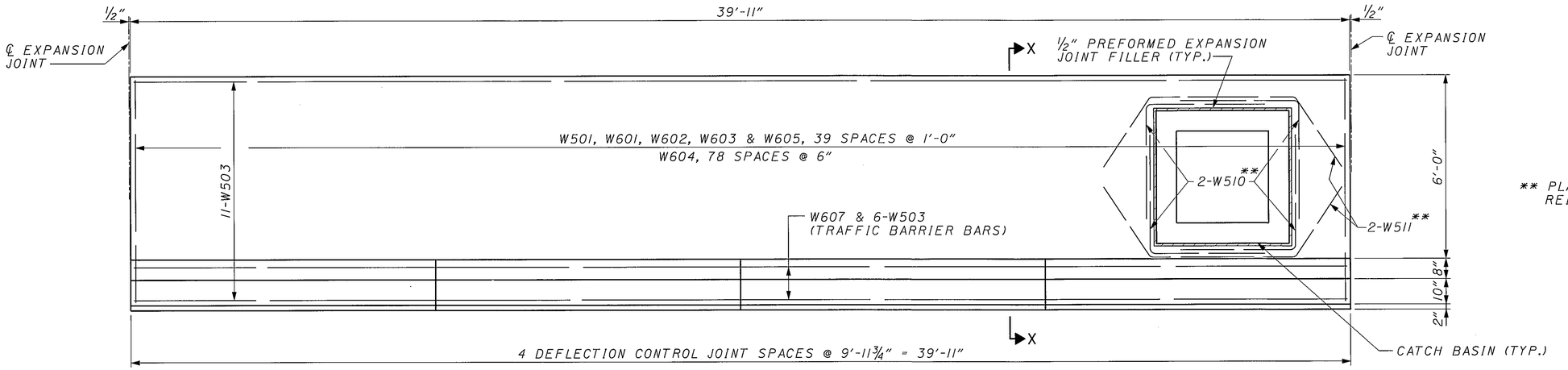
343 / 612

SU271RWD.DGN 4/12/04 CAR,KH,TWH,JLS



SLEEPER SLAB TYPE A

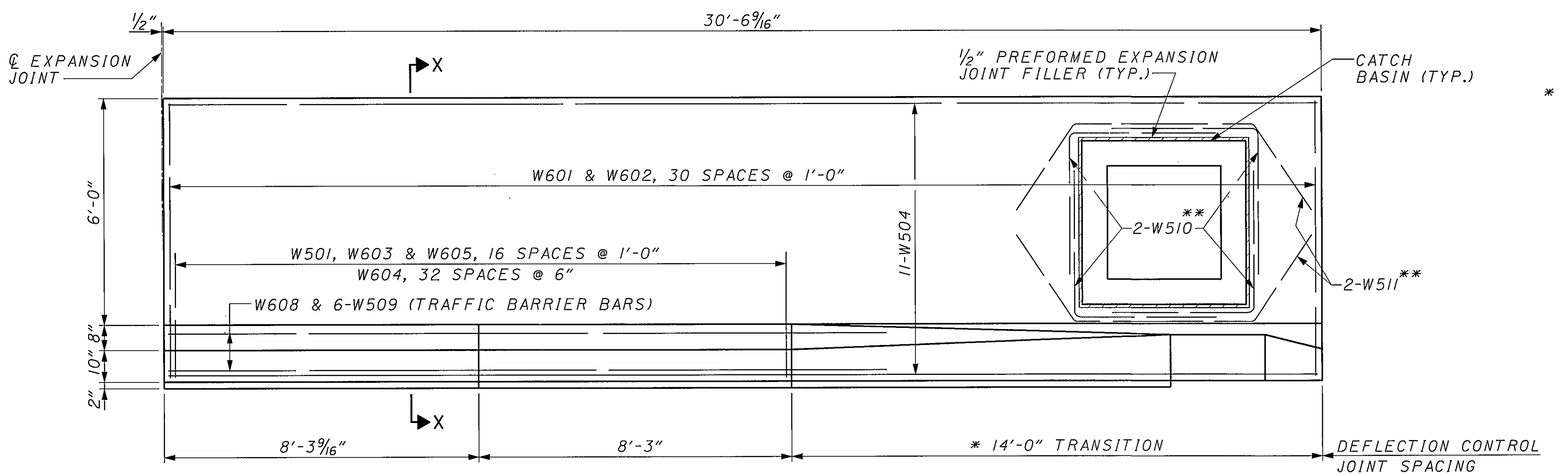
(1 REQUIRED - RETAINING WALL 1)



** PLACE ON TOP AND BOTTOM REINFORCING MATS

SLEEPER SLAB TYPE B

(23 REQUIRED - RETAINING WALL 1)
(14 REQUIRED - RETAINING WALL 2)



SLEEPER SLAB TYPE C

(1 REQUIRED - RETAINING WALL 2)

* FOR TRANSITION DETAILS AND REINFORCING FOR THE TRAFFIC BARRIER SEE SHEET 8/10.

NOTES

REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-9" FOR HORIZONTAL #5 BARS.

CONTRACTOR IS TO FIELD CUT REINFORCING BARS AT CATCH BASINS. ADDITONAL REINFORCING BARS WILL BE PROVIDED AROUND CATCH BASINS TO ENSURE REINFORCED CONCRETE STRENGTH.

DEFLECTION CONTROL JOINT: SEE SHEET 8/10.

SECTION X-X: SEE SHEET 6/10.

EXPANSION JOINT DETAIL: SEE SHEET 6/10.

DRAINAGE DETAILS: SEE SHEET 9/10.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP
DRAWN JLS
CHECKED BLN
REVISED
REVIEWED DAP
DATE 3/18/04

DETAILS

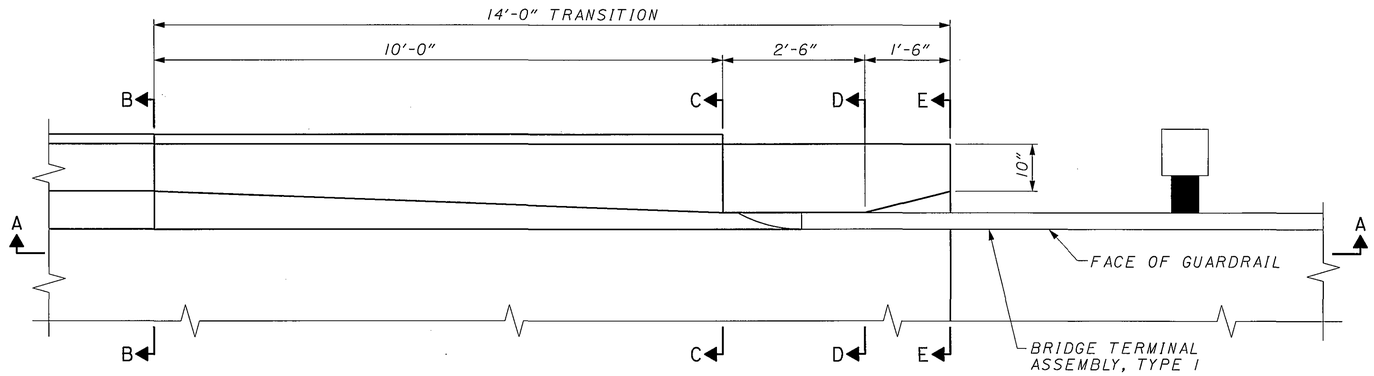
SLEEPER SLAB DETAILS

SUM-271-8.02

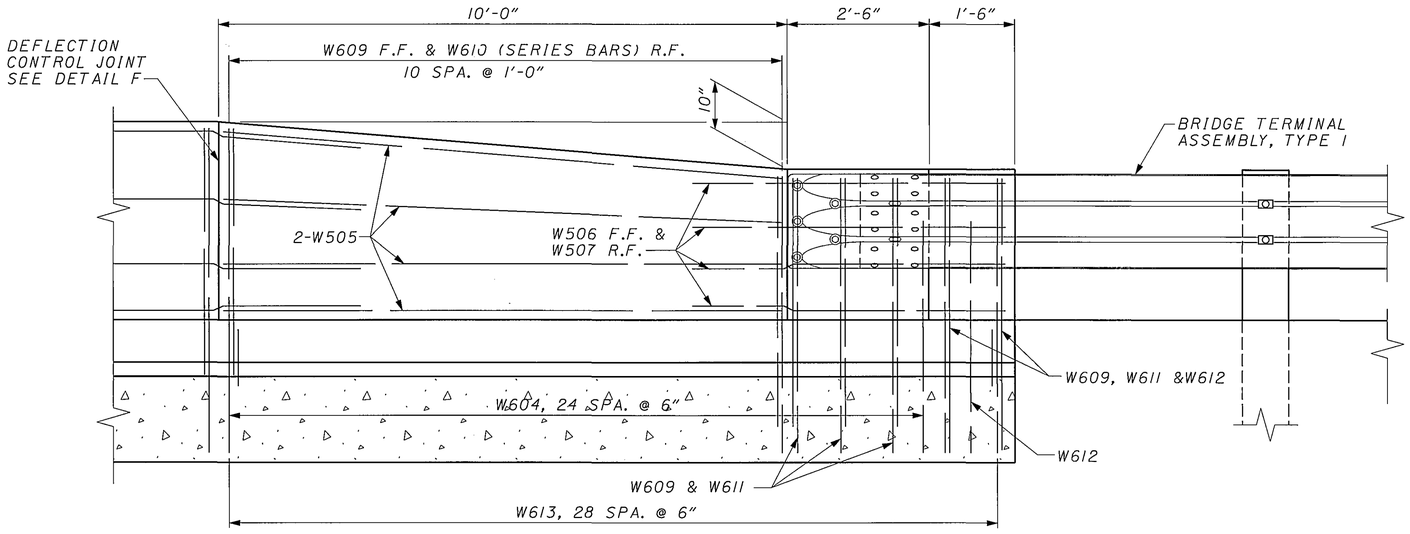
7/10

344
612

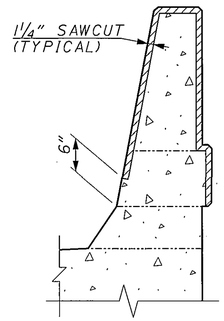
SU271RWJ.DGN 3/27/04 TWH,JLS



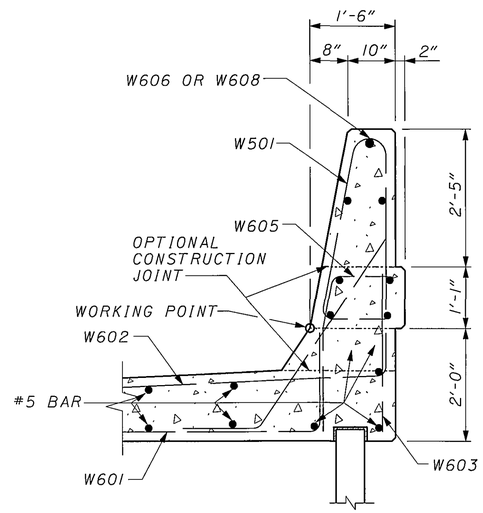
PLAN



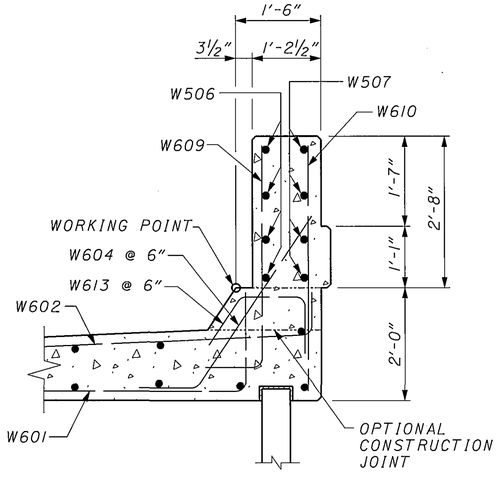
SECTION A-A



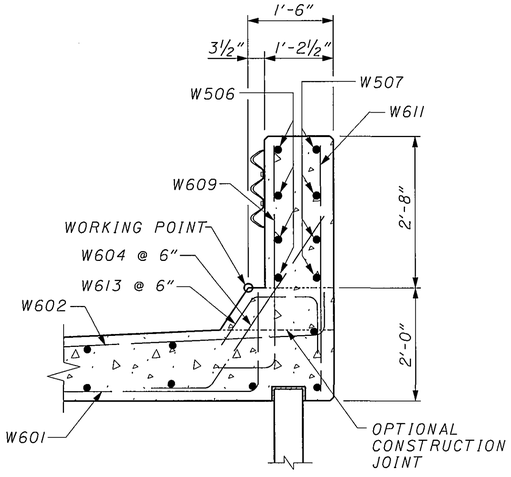
DETAIL F
DEFLECTION CONTROL JOINT



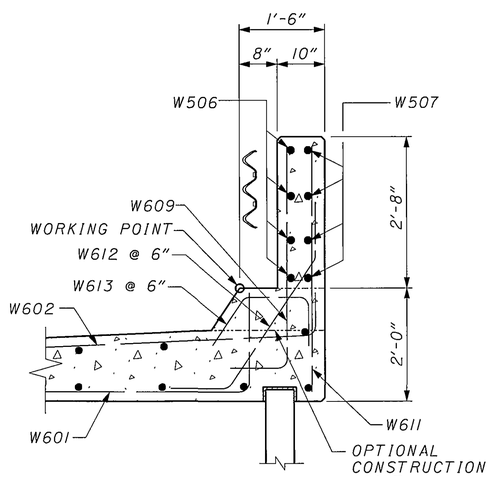
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

NOTES

SLEEPER SLAB DETAILS AND REINFORCING: SEE SHEET 7/10.

CONCRETE TRAFFIC BARRIERS:
AS SOON AS A CONCRETE SAW CAN BE OPERATED WITHOUT DAMAGING THE FRESHLY PLACED CONCRETE, SAW CUT 1¼" DEEP CONTROL JOINTS INTO THE PERIMETER OF THE CONCRETE TRAFFIC BARRIER STARTING 6" ABOVE THE ELEVATION OF THE WORKING POINT LINE ON THE INSIDE FACE OF THE TRAFFIC BARRIER AND ENDING AT THE ELEVATION OF THE WORKING POINT LINE ON THE OUTSIDE FACE OF THE TRAFFIC BARRIER. PLACE THE SAWCUTS AT A MINIMUM OF 6 FEET AND A MAXIMUM OF 10 FEET CENTERS. USE AN EDGE GUIDE, FENCE, OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE, AND ALIGNED ON ALL FACES OF THE TRAFFIC BARRIER. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF ¼ INCH. SEAL THE PERIMETER OF THE DEFLECTION CONTROL JOINT TO A MINIMUM DEPTH OF 1 INCH WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO ASTM C920, TYPE S. LEAVE THE BOTTOM ½ INCH OF THE INSIDE AND OUTSIDE FACE UNSEALED TO ALLOW WATER TO ESCAPE.

QUANTITIES OF CONCRETE, DEFLECTION JOINT SAWCUT AND CAULKING MATERIAL FOR TRAFFIC BARRIER ARE INCLUDED WITH ITEM 511 - CLASS S CONCRETE, MISC.: TRAFFIC BARRIER FOR PAYMENT. QUANTITIES OF CONCRETE FOR SLEEPER SLAB AND 1" PREFORMED EXPANSION JOINT FILLER FOR THE EXPANSION JOINTS ARE INCLUDED WITH ITEM 511 - CLASS S CONCRETE, MISC.: SLEEPER SLAB FOR PAYMENT.

NOTATION: F.F. - FRONT FACE; R.F. - REAR FACE.

BRIDGE TERMINAL ASSEMBLIES: SEE STANDARD CONSTRUCTION DRAWINGS GR-3.1 AND GR-3.2.

ADDITIONAL TRAFFIC BARRIER DETAILS: SEE STANDARD DRAWING SBR-1-99.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | CHECKED BLN | REVIEWED DAP 3/18/04 | DATE | REVISED

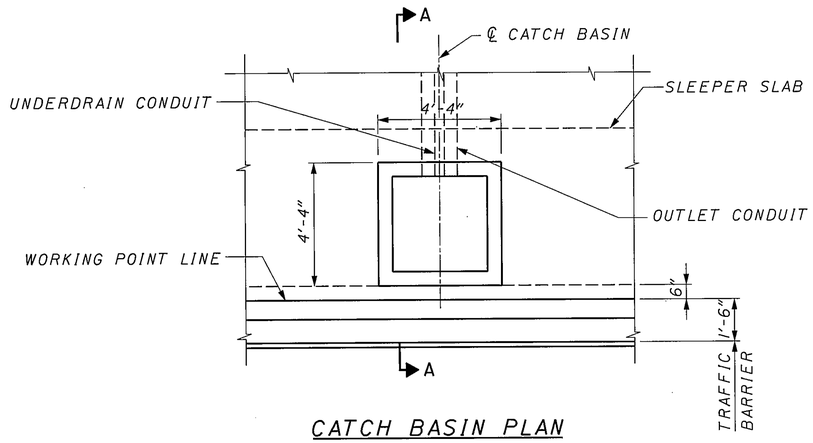
TRAFFIC BARRIER DETAILS - RETAINING WALL

SUM-271-8.02

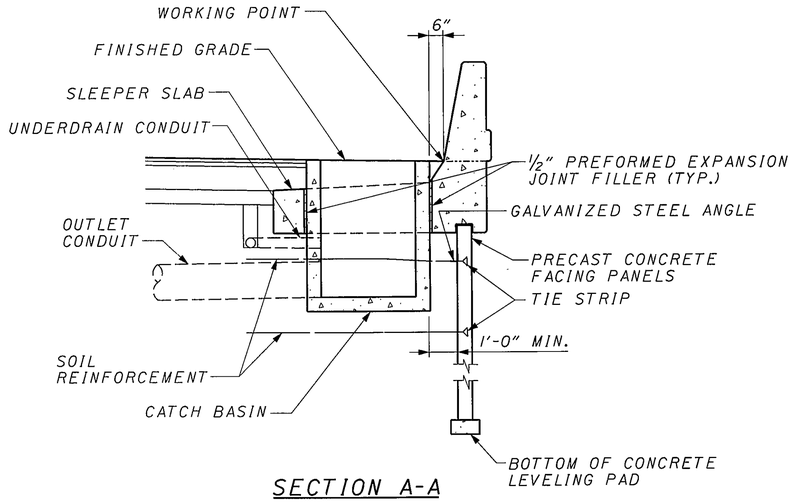
8/10

345/612

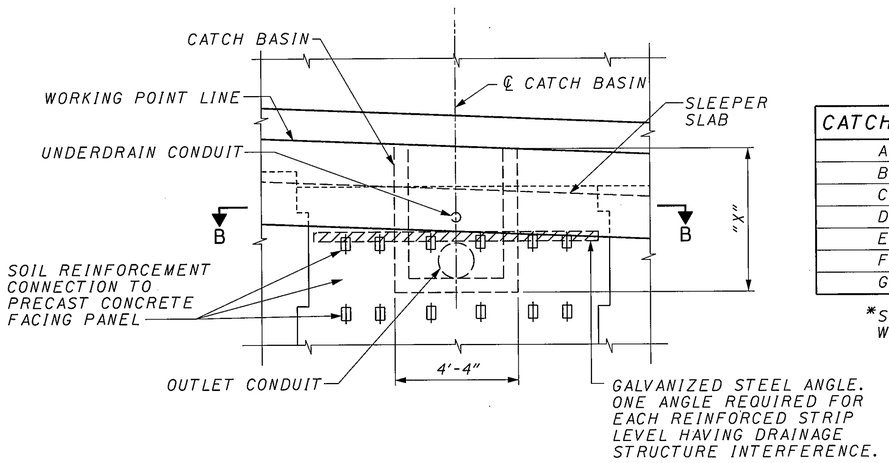
SU271RWK.DGN 3/27/04 TWH,JLS



CATCH BASIN PLAN



SECTION A-A

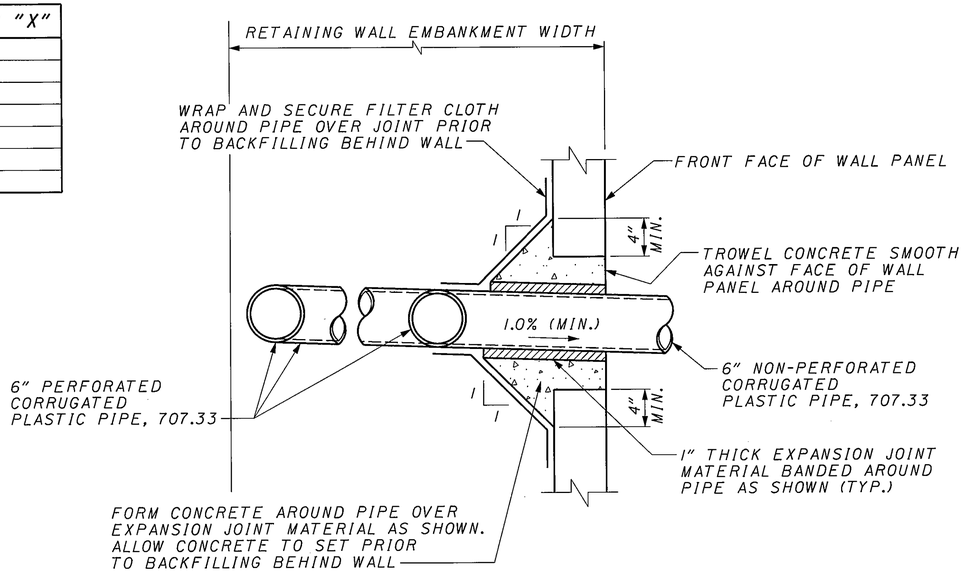


CATCH BASIN ELEVATION

CATCH BASIN	STATION*	DIMENSION "X"
A	12+77.18	6'-3 7/16"
B	17+52.10	7'-2"
C	18+62.10	7'-2"
D	19+50.10	7'-4"
E	20+27.00	6'-10 1/8"
F	24+00.00	6'-0 3/8"
G	25+89.43	8'-4 3/8"

*STATIONS REFER TO THE RETAINING WALL WORKING POINT LINE

SECTION B-B



ELEVATION

PIPE OUTLET DETAIL AT WALL FACE

PIPE OUTLETS LOCATED AT STATIONS 11+85.00, 13+52.06, 16+02.08, 17+32.10, 19+27.10, 22+00.00, 24+00.04 AND 26+00.26 ALONG THE RETAINING WALL

NOTES

CATCH BASINS A THRU G: FOR LOCATIONS SEE SHEETS 3/10 AND 4/10.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED BLN | REVISED

RETAINING WALL DRAINAGE DETAILS

SUM-271-8.02

9/10

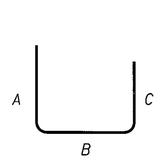
346/612

SU271RWH.DGN 3/27/04 RC,TWH,JLS

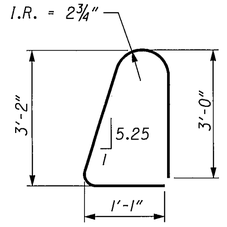
RETAINING WALLS

CALCULATED JLS DATE 10/03
CHECKED ALP DATE 10/03

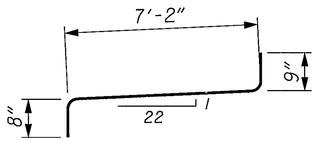
MARK	WALL 1	WALL 2	TOTAL	LENGTH	TYPE	A	B	C	INC.	WALL 1 WEIGHT (LBS.)	WALL 2 WEIGHT (LBS.)
W501	946	577	1523	7'-5"	2					7318	4463
W502	11		11	38'-11"	STR.					446	
W503	391	238	629	39'-7"	STR.					16,143	9826
W504		11	11	30'-2"	STR.						346
W505	8	8	16	10'-0"	STR.					83	83
W506	4	4	8	5'-6"	7					23	23
W507	4	4	8	5'-6"	STR.					23	23
W508	6		6	27'-11"	STR.					175	
W509		6	6	19'-1"	STR.						119
W510	32	24	56	7'-5"	1	3'-9"	3'-9½"	0		248	186
W511	16	12	28	10'-2"	4	2'-9"	4'-9"	0.67		170	127
W601	960	591	1551	8'-2"	1	0'-8"	6'-1"	1'-9"		11,776	7249
W602	960	591	1551	8'-3"	3					11,896	7323
W603	946	577	1523	2'-9"	STR.					3907	2383
W604	1893	1164	3057	4'-7"	6	1'-0"	3'-8"	0		13,032	8013
W605	946	577	1523	3'-7"	5					5092	3106
W606	1		1	27'-11"	STR.					42	
W607	23	14	37	39'-7"	STR.					1367	832
W608		1	1	19'-1"	STR.						29
W609	16	16	32	4'-9"	1	3'-11"	1'-0"	0		114	114
W610	1 SER.OF 11	1 SER.OF 11	2 SER.OF 11	4'-4" TO 5'-2"	STR.				1"	78	78
W611	5	5	10	4'-4"	STR.					33	33
W612	3	3	6	4'-7"	4	1'-0"	2'-9"	1.5		21	21
W613	29	29	58	3'-0"	6	1'-0"	1'-3"	1'-0"		131	131
								TOTAL WEIGHT		72,118	44,508



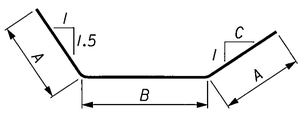
TYPE 1



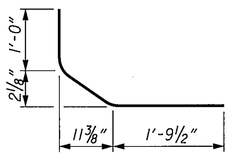
TYPE 2



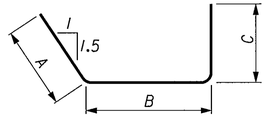
TYPE 3



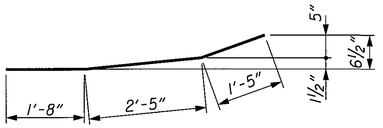
TYPE 4



TYPE 5



TYPE 6



TYPE 7

NOTES:

BAR SIZE *IS INDICATED IN THE BAR MARK. THE FIRST LETTER IDENTIFIES BAR LOCATION, THE NEXT DIGIT INDICATES THE BAR SIZE DESIGNATION, THE REMAINING DIGITS STATE THE SEQUENCE NUMBER.*

EXAMPLE: W509
W = LOCATION OF THE BAR IN STRUCTURE (WALL)
5 = BAR SIZE DESIGNATION
09 = SEQUENCE NUMBER

BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED. R INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED.

ALL REINFORCING STEEL TO BE EPOXY COATED.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DATE 3/18/04
REVISED DAP
DRAWN JLS
REVISED
DESIGNED ALP
CHECKED BLN

STEEL LIST

RETAINING WALLS - REINFORCING STEEL

SUM-271-8.02

10 / 10

347
612

SU27RWE.DGN 3/27/04 KH,TWH,JLS

GENERAL

ALL TRAFFIC CONTROL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, SPECIAL PROVISIONS AND APPLICABLE SECTIONS OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION (O.D.O.T.) CONSTRUCTION AND MATERIALS SPECIFICATIONS INCLUDING STANDARD CONSTRUCTION DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS LISTED.

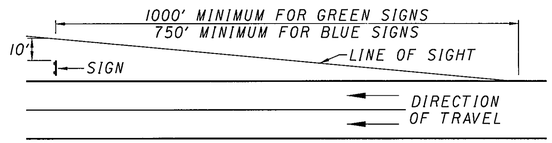
MILE MARKER LOCATION

THE LOCATION OF MILE MARKERS ON THESE PLANS ARE APPROXIMATE AND A MORE PRECISE LOCATION WILL BE PROVIDED BY THE DEPARTMENT. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST THIRTY (30) DAYS IN ADVANCE OF THE PLANNED DATE OF MILE MARKER INSTALLATION. THE ENGINEER WILL CONTACT THE OFFICE OF TECHNICAL SERVICES (614)466-4224 WHICH WILL LOCATE THE LONGITUDINAL POSITION OF MILE MARKER, BY MEANS OF A PAINT MARK ON THE PAVEMENT EDGE. ALTERNATE MARKS WILL NOT BE PROVIDED ON DIVIDED HIGHWAYS AND THE CONTRACTOR SHALL SET MARKS FOR THE OPPOSITE ROADWAY ACROSS FROM THE PROVIDED MARK. ANY EXISTING DELINEATORS FALLING WITHIN 50' OF A MILE MARKER SHALL BE REMOVED. REMOVAL OF ANY DELINEATORS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201 - CLEARING AND GRUBBING, AS PER PLAN.

ITEM 201 - CLEARING AND GRUBBING, AS PER PLAN

CLEARING AND GRUBBING SHALL BE PERFORMED IN AREAS AS DIRECTED BY THE ENGINEER TO PROVIDE ADEQUATE CLEAR SIGHT DISTANCE TO SIGNS ERECTED AS PART OF THIS PLAN. SEE DETAIL BELOW FOR GUIDE FOR CLEARING AND GRUBBING.

IN ADDITION TO THE REQUIREMENTS OF ITEM 201, ALL VEGETATION MECHANICALLY REMOVED BY CUTTING OR MOWING SHALL HAVE A CUT STUMP HERBICIDE TREATMENT APPLIED TO EACH INDIVIDUAL REMAINING STUMP WITHIN TWO (2) HOURS OF CUTTING. CARE SHALL BE EXERCISED TO APPLY TREATMENT ONLY TO INDIVIDUAL STUMPS SO AS NOT TO HARM OTHER VEGETATION. THE CUT STUMP TREATMENT SHALL BE GARLON 4 OR PATHFINDER II RTU APPLIED IN ACCORDANCE WITH LABEL DIRECTIONS. APPLICATORS OF THE CUT STUMP TREATMENT SHALL BE CURRENTLY LICENSED OHIO COMMERCIAL APPLICATORS IN THE APPROPRIATE CATEGORY. EVIDENCE OF VALID LICENSES SHALL BE PROVIDED TO THE ENGINEER FOR VERIFICATION.



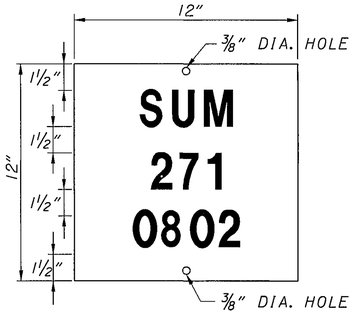
GUIDE FOR CLEARING AND GRUBBING

ITEM 620 - DELINEATOR INSTALLED, BY TYPE, BY SUPPORT

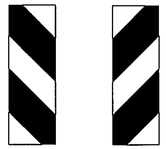
FLEXIBLE POSTS SHALL BE INSTALLED SO THAT THE FACE OF THE REFLECTOR, OTHER THAN RED IS 90 DEGREES TO THE CENTERLINE FACING APPROACHING TRAFFIC AND TO SUCH A DEPTH THAT THE TOPS OF THE INSTALLED REFLECTORS SHALL BE 4 FEET PLUS OR MINUS ABOVE THE ELEVATION OF THE ADJACENT EDGE OF PAVEMENT. SEE STANDARD CONSTRUCTION DRAWING TC-61.10 FOR ADDITIONAL DETAILS.

BRIDGE LOCATION MARKER SIGN

THE BRIDGE LOCATION MARKER SIGN INDICATES THE COUNTY, THE ROUTE, AND THE STRAIGHT LINE MILEAGE OF THE STRUCTURE. THE BRIDGE PLAQUES SHALL BE PLACED ON THE SAME POST AS AN OBJECT MARKER. SIGNS SHALL BE DIMENSIONED AS PER THE EXAMPLE BELOW. OBJECT MARKERS WILL BE PLACED ON THE MAINLINE, OFF THE RIGHT AND LEFT SHOULDER, FACING TRAFFIC, AND BEHIND THE GUARDRAIL IF APPLICABLE. BRIDGE IDENTIFICATION SIGNS WILL BE PLACED OFF THE RIGHT SHOULDER. SIGNS SHALL BE ALUMINUM AND HAVE A NON-REFLECTIVE WHITE SHEETING BACKGROUND. LETTERS SHALL BE BLACK, 2" HEIGHT, SERIES C STROKE WIDTH, AND SILK SCREENED AS PER 730.22 OF CMS. SIGNS SHALL BE BOLTED USING TWO 5/16" ALUMINUM BOLTS 2½" IN LENGTH, AND TWO 5/16" NUTS. INSTALL NEW NO. 2 POSTS AS PER STANDARD CONSTRUCTION DRAWING TC-41.20 MOST CURRENT REVISION. EACH POST SHALL BE 11 LIN. FT. IN LENGTH. THE OBJECT MARKERS INSTALLED SHALL BE TYPE 3, OM-3L AND OM-3R. THE CONTRACTOR SHALL REFER TO THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR OBJECT MARKER DETAILS. ANY QUESTIONS ON THE LOCATION PLEASE CONTACT THE DISTRICT BRIDGE ENGINEER.



STRUCTURE IDENTIFICATION SIGN



OBJECT MARKERS

STATION FROM	STATION TO	SIDE	620 DELINEATOR, TYPE C POST MOUNTED	620 DELINEATOR, TYPE D POST MOUNTED
			EACH	EACH
352+00	420+00	SB O/S	18	
352+00	420+00	NB O/S	18	
438+00	446+00	SB O/S	3	
452+00	468+00	SB O/S	5	
438+00	446+00	NB O/S	3	
452+00	468+00	NB O/S	5	
462+50		NB I/S		3
462+50		NB O/S		3
TOTALS CARRIED TO GENERAL SUMMARY			52	6

SHEET NO.	REFERENCE	STATION FROM	STATION TO	SIDE	646 EDGE LINE (WHITE) FEET	646 EDGE LINE (YELLOW) FEET	646 LANE LINE FEET
352	A	350+70	367+00	SB I/S		1630	
	B	350+70	367+00	SB O/S	1630		
	C	350+70	367+00	SB ℄			1630
	A	350+70	367+00	NB I/S		1630	
	B	350+70	367+00	NB O/S	1630		
	C	350+70	367+00	NB ℄			1630
353	A	367+00	392+00	SB I/S		2500	
	B	367+00	392+00	SB O/S	2500		
	C	367+00	392+00	SB ℄			2500
	A	367+00	392+00	NB I/S		2500	
	B	367+00	392+00	NB O/S	2500		
	C	367+00	392+00	NB ℄			2500
354	A	392+00	417+00	SB I/S		2500	
	B	392+00	417+00	SB O/S	2500		
	C	392+00	417+00	SB ℄			2500
	A	392+00	417+00	NB I/S		2500	
	B	392+00	417+00	NB O/S	2500		
	C	392+00	417+00	NB ℄			2500
355	A	417+00	442+00	SB I/S		2500	
	B	417+00	442+00	SB O/S	2500		
	C	417+00	442+00	SB ℄			2500
	A	417+00	442+00	NB I/S		2500	
	B	417+00	442+00	NB O/S	2500		
	C	417+00	442+00	NB ℄			2500
356	A	442+00	467+00	SB I/S		2500	
	B	442+00	467+00	SB O/S	2500		
	C	442+00	467+00	SB ℄			2500
	A	442+00	467+00	NB I/S		2500	
	B	442+00	467+00	NB O/S	2500		
	C	442+00	467+00	NB ℄			2500
357	A	467+00	473+00	NB I/S		600	
	B	467+00	473+00	NB O/S	600		
	C	467+00	473+00	NB ℄			600
	A	467+00	473+00	SB I/S		600	
	B	467+00	473+00	SB O/S	600		
	C	467+00	473+00	SB ℄			600
SUBTOTALS					24460	24460	24460
CONVERT APPLICABLE QUANTITIES TO MILES					4.64	4.64	4.64
TOTALS CARRIED TO GENERAL SUMMARY					9.28		4.64

CALCULATED PDG CHECKED PRS

TRAFFIC CONTROL GENERAL NOTES & DELINEATOR & PAVEMENT MARKING QUANTITES

SUM-271-8.02

21450TN.DGN 3/29/04 SAM,CEO,CAR,TWH

REF. NO.	SHEET NO.	STATION	LOCATION	SIDE	OFFSET FROM EOP	GUARDRAIL	NO. OF SUPPORTS	SIGN SIZE	SIGN SQ. FT.	OLD SIGN CODE NO.	NEW SIGN CODE NO.	620	630											
												REFLECTOR, TYPE D	GROUND MOUNTED SUPPORT, NO. 2 POST	GROUND MOUNTED SUPPORT, NO. 3 POST	GROUND MOUNTED SUPPORT W6 x 9 BEAM	GROUND MOUNTED SUPPORT W8 x 18 BEAM	GROUND MOUNTED SUPPORT W12 x 30 BEAM	BREAKAWAY BEAM CONNECTION	SIGN SUPPORT ASSEMBLY, BRIDGE MOUNTED, TYPE 1					
								INCHES				EACH	FT.	FT.	FT.	FT.	FT.	EACH	EACH					
I.R. 271																								
1-S	352	355+60±	SB	O/S	17		2	48 x 36	12.0	N-89-48	I-H14-48			13.5/14.5										
2-S	352	361+31±	NB	O/S	16	X	2	156 x 84	91.0	GJ	E7					22.5/25.5		2						
3-S	353	382+80±	SB	O/S	17	X	2	156 x 144	156.0	GB	E1-1						28.5/29.5	2						
								84 x 24	14.0	GEP-84	E1-H5													
4-S		361+51±	SB	O/S	16		1	12 x 36	3.0	N-41-12	D10-2-12		11.0											
5-S		391+48±	NB	O/S	16		1	12 x 36	3.0	N-41-12	D10-2-12		11.0											
6-S	353	391+74±	NB	O/S	16		2	12 x 36	12.0	N-89-48	I-H14-48			14.5/15.0										
7-S	354	403+91±	NB	O/S	16	X	2	48 x 36	12.0	R-70-48	R8-7-48			13.5/14.0										
8-S	354	413-22±	NB	O/S	18	X	2	48 x 48	16.0	W-68-48	W8-H22			15.0/15.0										
9-S	355	420+91±	NB	O/S	18	X	2	132 x 48	44.0	GQ	E8-H4				17.0/17.5			2						
10-S		421+50±	NB	O/S	16	X	1	12 x 36	3.0	X-6R-12	OM-3(R)-12		11.0											
								12 x 12	1.0	R-SPECIAL	STRUCTURE ID													
10A-S		421+50±	NB	I/S	16	X	1	12 x 36	3.0	X-6L-12	OM-3(L)-12		11.0											
11-S		437+02±	SB	O/S	16	X	1	12 x 36	3.0	X-6R-12	OM-3(R)-12		11.0											
								12 x 12	1.0	R-SPECIAL	STRUCTURE ID													
11A-S		437+02±	SB	I/S	16	X	1	12 x 36	3.0	X-6L-12	OM-3(L)-12								1					
12-S		437+20±	SB	O/S	18	X	2	132 x 48	44.0	GQ	E8-H4				17.0/17.5			2						
13-S	356	444+36±	SB	O/S	18		1	12 x 36	3.0	N-41-12	D10-2-12		11.0											
13A-S		443+00±	SB	I/S	16	X	1	12 x 36	3.0	X-6L-12	OM-3(L)-12		11.0											
14-S		444+34±	NB	O/S	18		1	12 x 36	3.0	N-41-12	D10-2-12		11.0											
15-S		445+63±	SB	O/S	18	X	2	48 x 48	16.0	W-68-48	W8-H22			15.5/16.0										
16-S		449+53±	NB	O/S	16	X	1	12 x 36	3.0	X-6R-12	OM-3(R)-12		11.0											
								12 x 12	1.0	R-SPECIAL	STRUCTURE ID													
16A-S		449+53±	NB	I/S	16	X	1	12 x 36	3.0	X-6L-12	OM-3(L)-12		11.0											
17-S		450+85±	SB	O/S	16	X	1	12 x 36	3.0	X-6R-12	OM-3(R)-12		11.0											
								12 x 12	1.0	R-SPECIAL	STRUCTURE ID													
17A-S		451+10±	SB	I/S	16	X	1	12 x 36	3.0	X-6L-12	OM-3(L)-12		11.0											
18-S		452+75±	SB	O/S	17	X	2	48 x 36	12.0	R-70-48	R8-7-48			14.0/14.0										
19-S		462+32±		MED.			1	36 x 36	9.0	R-123-36	R3-4-36			14.5										
								24 x 30	5.0	R-19-24	R3-4Ha-24	2												
20-S		462+70±		MED.			1	36 x 34	9.0	R-123-36	R3-4-36			14.5										
								24 x 30	5.0	R-19-36	R3-4Ha-24	2												
RIVERVIEW ROAD																								
21-S	355	71+69±		RT.	10	X	1	24 x 30	5.0	R-10-24	R2-1-24		13.0											
22-S	355	73+90±		LT.	10	X	1	12 x 18	1.5	W-33-12	W1-8L-12		11.5											
TOTALS												4	156.5	203.5	69.0	48.0	58.0	8	1					
TOTALS CARRIED TO GENERAL SUMMARY												**4**	**157**	**204**	**69**	**48**	**58**	**8**	**1**					

CALCULATED PDG
CHECKED PRS

SIGNING SUBSUMMARY

SUM-271-8.02

21450TGB.DGN 3/26/04 SAM,HN,CAR,CEO

REF. NO.	SHEET NO.	STATION	LOCATION	SIDE	OFFSET FROM EOP	GUARDRAIL	NO. OF SUPPORTS	SIGN SIZE	SIGN SQ. FT.	OLD SIGN CODE NO.	NEW SIGN CODE NO.	630													
												SIGN, FLAT SHEET	SIGN, GROUND MOUNTED EXTRUSHEET	GROUND MOUNTED BEAM SUPPORT FOUNDATION	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	REMOVAL OF GROUND MOUNTED BEAM SUPPORT AND DISPOSAL						
								INCHES				SQ. FT.	SQ. FT.	EACH	EACH	EACH	EACH	EACH	EACH						
I.R. 271																									
1-S	352	355+60±	SB	O/S	17		2	48 x 36	12.0	N-89-48	I-H14-48	12.0			1			2							
2-S	352	361+31±	NB	O/S	16	X	2	156 x 84	91.0	GJ	E7		91.0	2			1		2						
3-S	353	382+80±	SB	O/S	17	X	2	156 x 144	156.0	GB	E1-1		156.0	2			1		2						
								84 x 24	14.0	GEP-84	E1-H5		14.0		1										
4-S		361+51±	SB	O/S	16		1	12 x 36	3.0	N-41-12	D10-2-12	3.0			1			1							
5-S		391+48±	NB	O/S	16		1	12 x 36	3.0	N-41-12	D10-2-12	3.0			1			1							
6-S	353	391+74±	NB	O/S	16		2	12 x 36	12.0	N-89-48	I-H14-48	12.0			1			2							
7-S	354	403+91±	NB	O/S	16	X	2	48 x 36	12.0	R-70-48	R8-7-48	12.0			1			2							
8-S	354	413-22±	NB	O/S	18	X	2	48 x 48	16.0	W-68-48	W8-H22	16.0			1			2							
9-S	355	420+91±	NB	O/S	18	X	2	132 x 48	44.0	GQ	E8-H4		44.0	2			1		2						
10-S		421+50±	NB	O/S	16	X	1	12 x 36	3.0	X-6R-12	OM-3(R)-12	3.0			1			1							
								12 x 12	1.0	R-SPECIAL	STRUCTURE ID	1.0			1										
10A-S		421+50±	NB	I/S	16	X	1	12 x 36	3.0	X-6L-12	OM-3(L)-12	3.0			1			1							
11-S		437+02±	SB	O/S	16	X	1	12 x 36	3.0	X-6R-12	OM-3(R)-12	3.0			1			1							
								12 x 12	1.0	R-SPECIAL	STRUCTURE ID	1.0			1										
11A-S		437+02±	SB	I/S	16	X	1	12 x 36	3.0	X-6L-12	OM-3(L)-12	3.0			1			1							
12-S	355	437+20±	SB	O/S	18	X	2	132 x 48	44.0	GQ	E8-H4		44.0	2			1		2						
13-S	356	444+36±	SB	O/S	18		1	12 x 36	3.0	N-41-12	D10-2-12	3.0			1			1							
13A-S		443+00±	SB	I/S	16	X	1	12 x 36	3.0	X-6L-12	OM-3(L)-12	3.0													
14-S		444+34±	NB	O/S	18		1	12 x 36	3.0	N-41-12	D10-2-12	3.0			1			1							
15-S		445+63±	SB	O/S	18	X	2	48 x 48	16.0	W-68-48	W8-H22	16.0			1			2							
16-S		449+53±	NB	O/S	16	X	1	12 x 36	3.0	X-6R-12	OM-3(R)-12	3.0			1			1							
								12 x 12	1.0	R-SPECIAL	STRUCTURE ID	1.0			1										
16A-S		449+53±	NB	I/S	16	X	1	12 x 36	3.0	X-6L-12	OM-3(L)-12	3.0			1			1							
17-S		450+85±	SB	O/S	16	X	1	12 x 36	3.0	X-6R-12	OM-3(R)-12	3.0			1			1							
								12 x 12	1.0	R-SPECIAL	STRUCTURE ID	1.0			1										
17A-S		451+10±	SB	I/S	16	X	1	12 x 36	3.0	X-6L-12	OM-3(L)-12	3.0			1			1							
18-S		452+75±	SB	O/S	17	X	2	48 x 36	12.0	R-70-48	R8-7-48	12.0			1			2							
19-S		462+32±		MED.			1	36 x 36	9.0	R-123-36	R3-4-36	9.0			1			1							
								24 x 30	5.0	R-19-24	R3-4Ha-24	5.0			1										
20-S		462+70±		MED.			1	36 x 34	9.0	R-123-36	R3-4-36	9.0			1			1							
								24 x 30	5.0	R-19-24	R3-4Ha-24	5.0			1										
RIVERVIEW ROAD																									
21-S	355	71+69±		RT.	10	X	1	24 x 30	5.0	R-10-24	R2-1-24					1		1							
22-S	355	73+90±		LT.	10	X	1	12 x 18	1.5	W-33-12	W1-8L-12					1		1							
SUBTOTALS												151.0	349.0	8	27	2	4	28	8						
TOTALS CARRIED TO GENERAL SUMMARY												151	349	8	27	2	4	28	8						

CALCULATED PDG
CHECKED PRS

SIGNING SUBSUMMARY

SUM-271-8.02

21450TGB.DGN 3/26/04 SAM,HN,CAR,CEO

CALCULATED JL CHECKED PRS

RAISED PAVEMENT MARKER SUB-SUMMARY

NOTE:
RAISED PAVEMENT MARKERS SUPPLIED BY THE DEPARTMENT SHALL BE THE LOW PROFILE TYPE.

RPM REPLACEMENT / REMOVAL

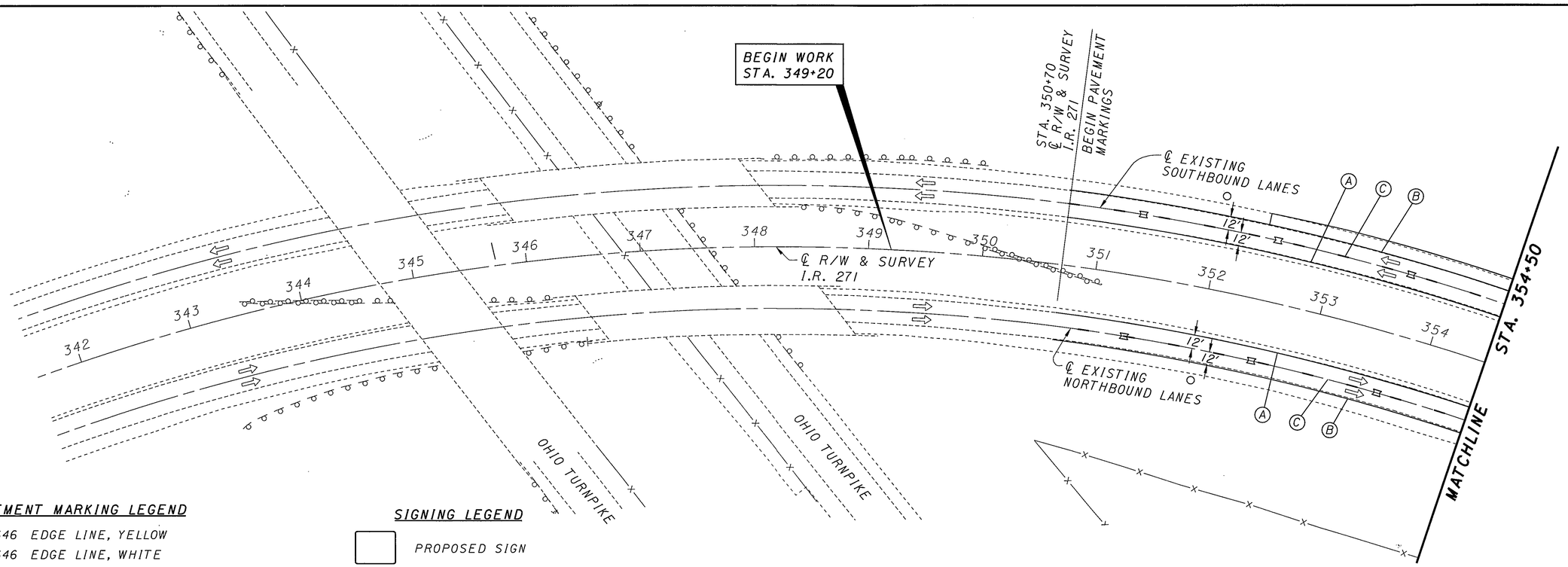
STANDARD CONSTRUCTION DWG.	
TC-65.10 10-19-01	
TC-65.11 10-19-01	

STATION FROM	STATION TO	LOCATION	ITEM 202 RPM REMOVED EACH	ITEM 621 RAISED PAVEMENT MARKER, ONE WAY WHITE REFLECTOR EACH	REMARKS
350+70.00	367+00.00	SB CL		14	
350+70.00	367+00.00	NB CL		13	
367+00.00	392+00.00	SB CL		21	
367+00.00	392+00.00	NB CL		21	
392+00.00	417+00.00	SB CL		20	
392+00.00	417+00.00	NB CL		21	
417+00.00	442+00.00	SB CL		21	
417+00.00	442+00.00	NB CL		21	
442+00.00	467+00.00	SB CL		21	
442+00.00	467+00.00	NB CL		21	
467+00.00	473+00.00	NB CL		5	
467+00.00	473+00.00	SB CL		5	
	TOTAL			204	
TOTALS CARRIED TO GENERAL SUMMARY			204	204	

SUM-271-8.02

351
612

2145ORPM.DGN 10/8/04 CEO,CAR,TWH



PAVEMENT MARKING LEGEND

- (A) 646 EDGE LINE, YELLOW
- (B) 646 EDGE LINE, WHITE
- (C) 646 LANE LINE
- ⇦ TRAFFIC DIRECTION

RAISED PAVEMENT MARKER (RPM) LEGEND

- I WAY (WHITE) @ 120' C/C

SIGNING LEGEND

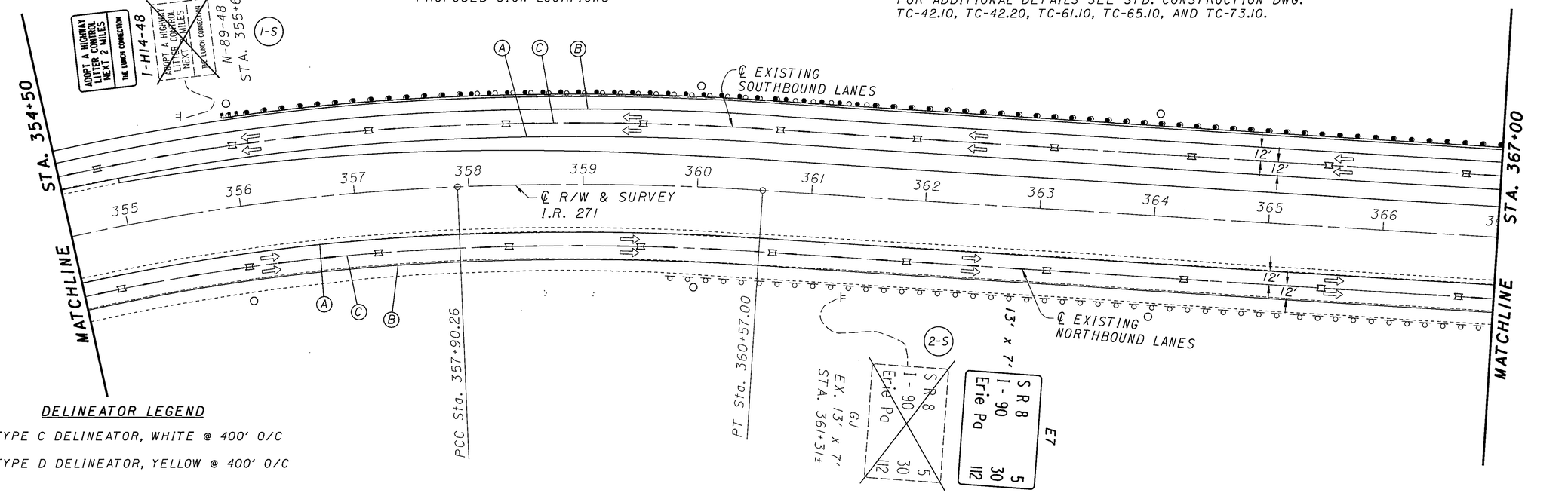
- PROPOSED SIGN
- EXISTING SIGN TO BE REERECTED
- EXISTING SIGN TO BE REMOVED
- EXISTING SIGN LOCATIONS
- PROPOSED SIGN LOCATIONS

NOTES: SIGNING STATIONS ARE IN REFERENCE TO THE ℄ R/W & SURVEY I.R. 271.

THE CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING AND PROPOSED UTILITIES PRIOR TO CONSTRUCTING TRAFFIC CONTROL ITEMS.

SEE SHEETS 349-350 FOR SIGNING QUANTITIES.
SEE SHEET 348 FOR PAVEMENT MARKING QUANTITIES

FOR ADDITIONAL DETAILS SEE STD. CONSTRUCTION DWG. TC-42.10, TC-42.20, TC-61.10, TC-65.10, AND TC-73.10.



DELINEATOR LEGEND

- ○ TYPE C DELINEATOR, WHITE @ 400' O/C
- ● TYPE D DELINEATOR, YELLOW @ 400' O/C

21450TC1.DGN 3/31/04 SAM,HN,CEO,CAR,RC

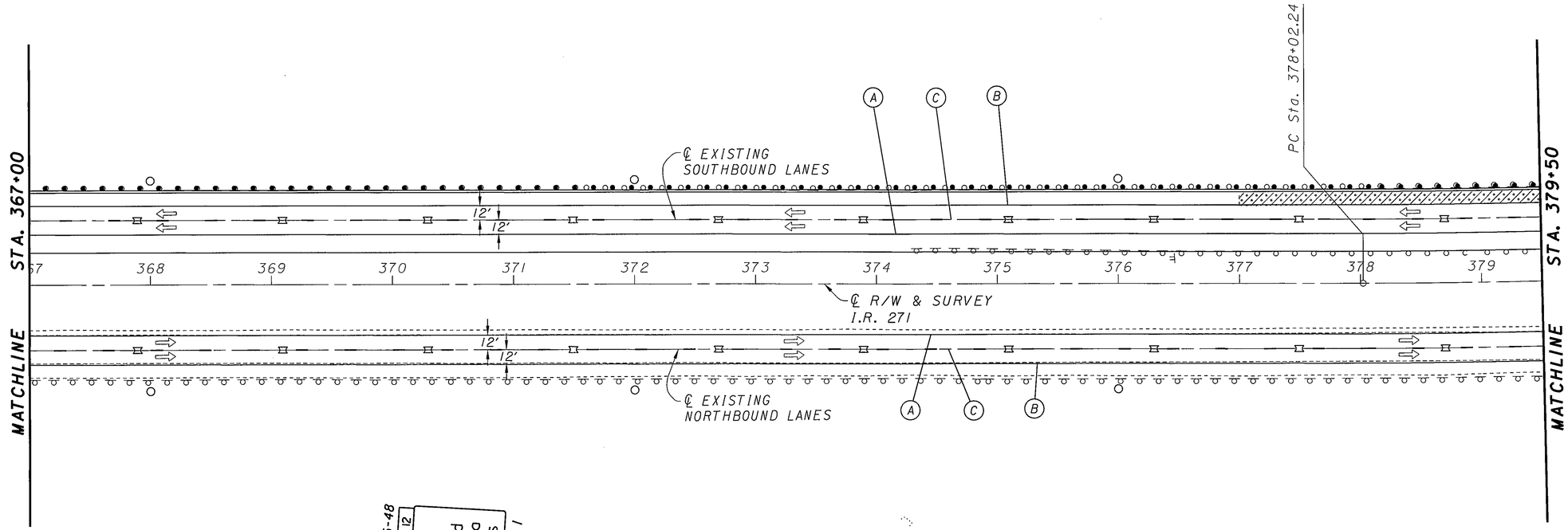
HORIZONTAL SCALE IN FEET
0 25 50 100

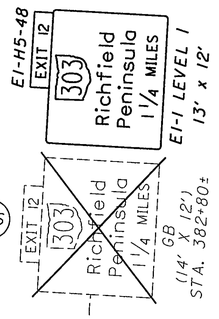
CALCULATED PDG
CHECKED PRS

SIGNING AND PAVEMENT MARKING PLAN
STA. 342+00 TO STA. 367+00

SUM-271-8.02

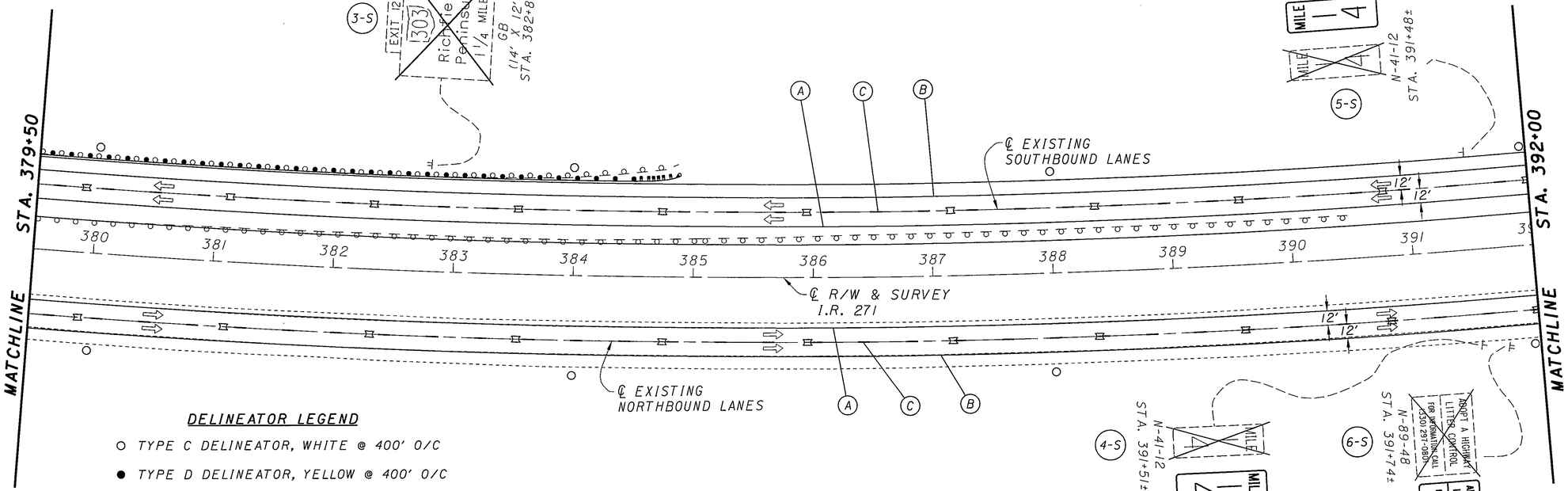
352
612





NOTE: SEE SHEET NO. 352 FOR SIGNING, PAVEMENT MARKING, AND RAISED PAVEMENT MARKER (RPM) LEGEND.

SEE SHEET NO. 348 FOR NOTES.



DELINEATOR LEGEND

○ TYPE C DELINEATOR, WHITE @ 400' O/C

● TYPE D DELINEATOR, YELLOW @ 400' O/C

SIGNING AND PAVEMENT MARKING PLAN
STA. 367+00 TO STA. 392+00

SUM-271-8.02

353
612

CALCULATED PDG
CHECKED PRS

HORIZONTAL SCALE IN FEET
0 25 50 100

21450TC2.DGN 3/26/04 SAM,HN,CEO,CAR

NOTE: SEE SHEET NO. 352 FOR SIGNING, PAVEMENT MARKING, AND RAISED PAVEMENT MARKER (RPM) LEGEND.

SEE SHEET NO. 348 FOR NOTES.

DELINEATOR LEGEND

- ○ TYPE C DELINEATOR, WHITE @ 400' O/C
- ● TYPE D DELINEATOR, YELLOW @ 400' O/C

21450TC3.DGN 3/26/04 SAM,HN,CEO,CAR

HORIZONTAL SCALE IN FEET
0 25 50 100

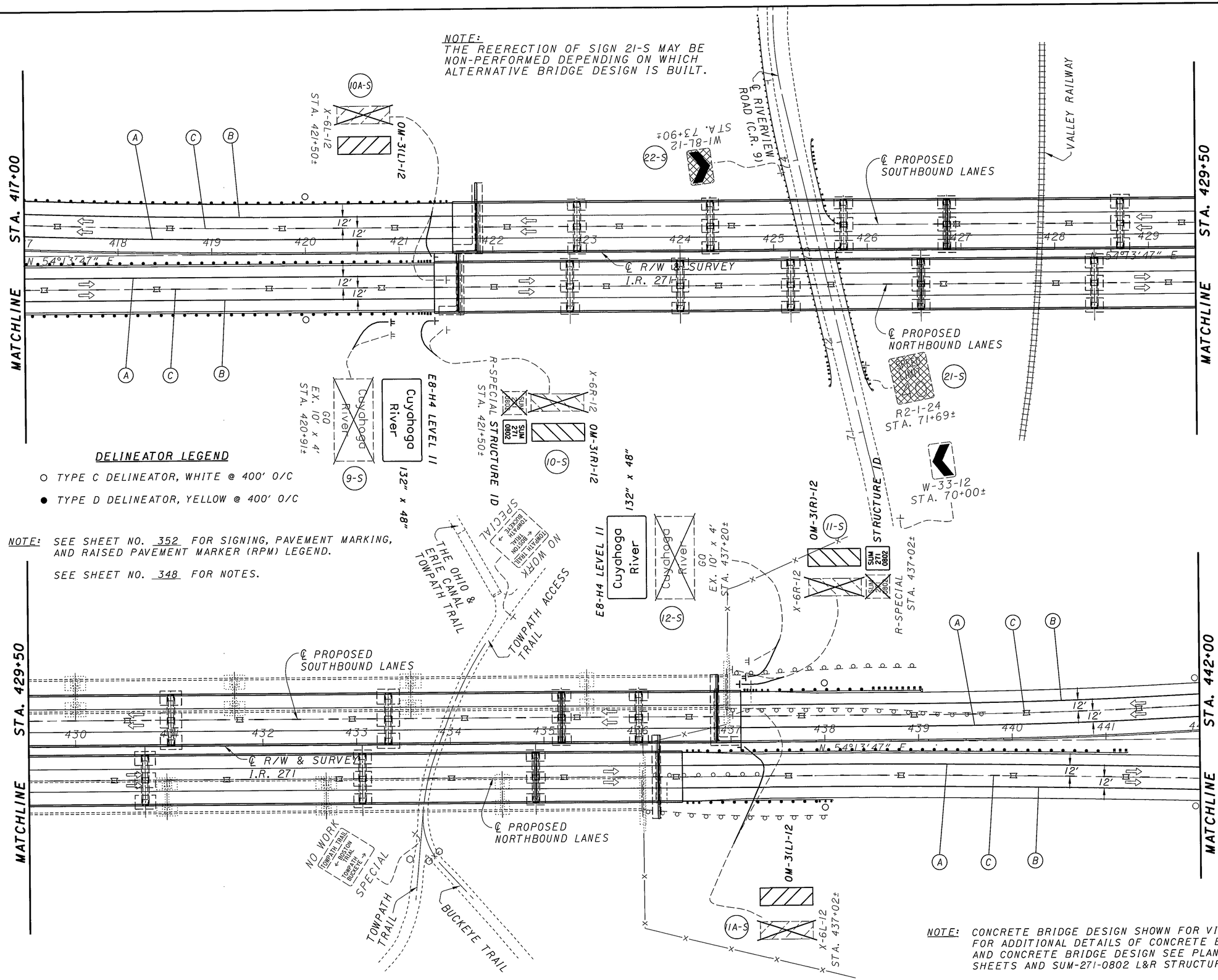
CALCULATED PDG
CHECKED PRS

SIGNING AND PAVEMENT MARKING PLAN
STA. 392+00 TO STA. 417+00

SUM-271-8.02

354
612

NOTE:
THE REERECTION OF SIGN 21-S MAY BE NON-PERFORMED DEPENDING ON WHICH ALTERNATIVE BRIDGE DESIGN IS BUILT.



DELINEATOR LEGEND

- ○ TYPE C DELINEATOR, WHITE @ 400' O/C
- ● TYPE D DELINEATOR, YELLOW @ 400' O/C

NOTE: SEE SHEET NO. 352 FOR SIGNING, PAVEMENT MARKING, AND RAISED PAVEMENT MARKER (RPM) LEGEND.

SEE SHEET NO. 348 FOR NOTES.

NOTE: CONCRETE BRIDGE DESIGN SHOWN FOR VISUAL PURPOSES. FOR ADDITIONAL DETAILS OF CONCRETE BRIDGE DESIGN AND CONCRETE BRIDGE DESIGN SEE PLAN & PROFILE SHEETS AND SUM-271-0802 L&R STRUCTURE PLANS.

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED PDG
CHECKED PRS

SIGNING AND PAVEMENT MARKING PLAN
STA. 417+00 TO STA. 442+00

SUM-271-8.02

355
612

21450TC4.DGN 3/26/04 SAM,CAR,HN,CEO

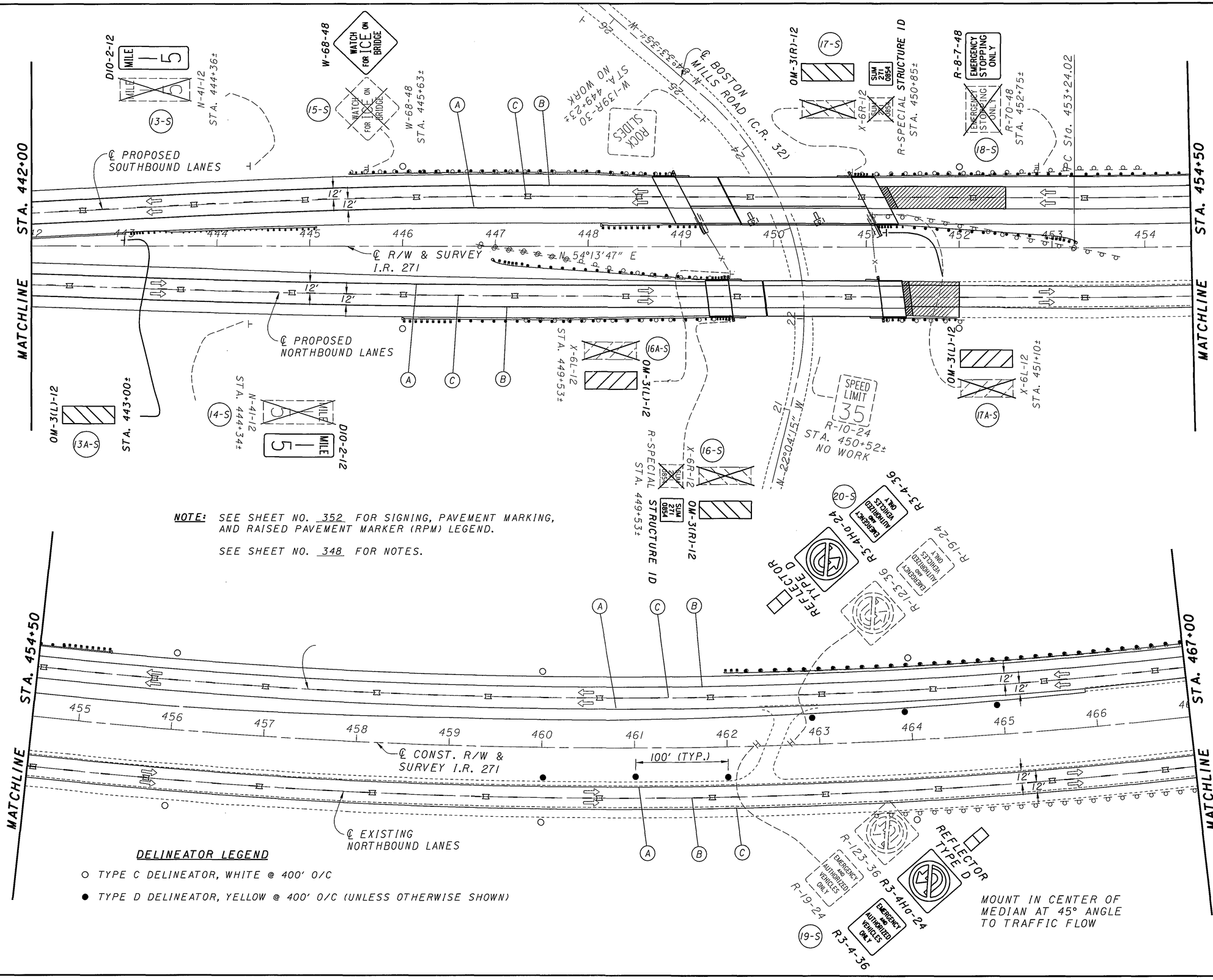
SIGNING AND PAVEMENT MARKING PLAN
STA. 442+00 TO STA. 467+00

CALCULATED PDG
CHECKED PRS

0 25 50 100 HORIZONTAL SCALE IN FEET

SUM-271-8.02

356
612



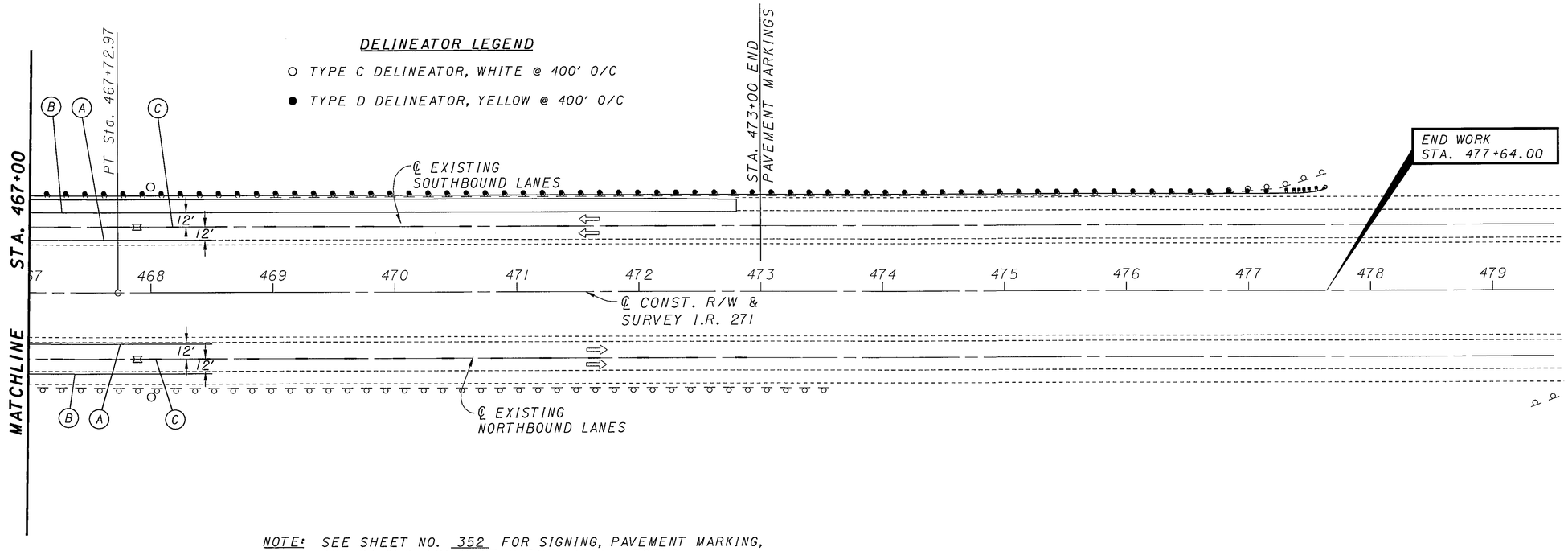
NOTE: SEE SHEET NO. 352 FOR SIGNING, PAVEMENT MARKING, AND RAISED PAVEMENT MARKER (RPM) LEGEND.

SEE SHEET NO. 348 FOR NOTES.

DELINEATOR LEGEND

- ○ TYPE C DELINEATOR, WHITE @ 400' O/C
- ● TYPE D DELINEATOR, YELLOW @ 400' O/C (UNLESS OTHERWISE SHOWN)

21450TC5.DGN 3/25/04 SAM,CAR,HN,CEO



NOTE: SEE SHEET NO. 352 FOR SIGNING, PAVEMENT MARKING, AND RAISED PAVEMENT MARKER (RPM) LEGEND.

SEE SHEET NO. 348 FOR NOTES.

HORIZONTAL SCALE IN FEET
0 25 50 100

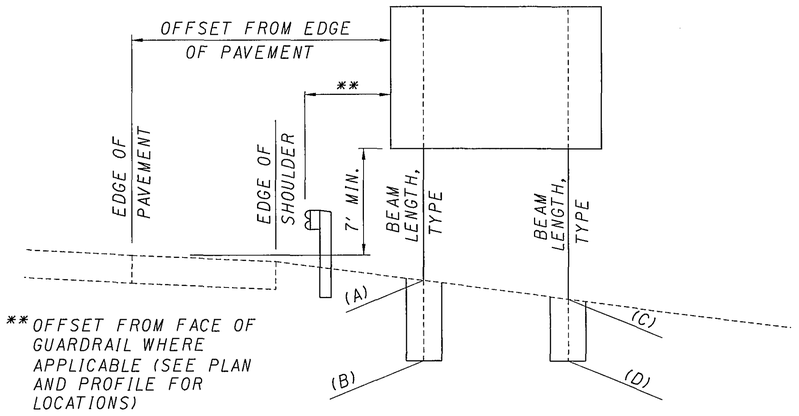
CALCULATED PDG
CHECKED PRS

SIGNING AND PAVEMENT MARKING PLAN
STA. 467+00 TO STA. 479+50

SUM-271-8.02

357
612

2145OTC6.DGN 3/29/04 SAM,HN,CEO,TWH



GROUND MOUNTED SIGN ON BEAM DETAIL

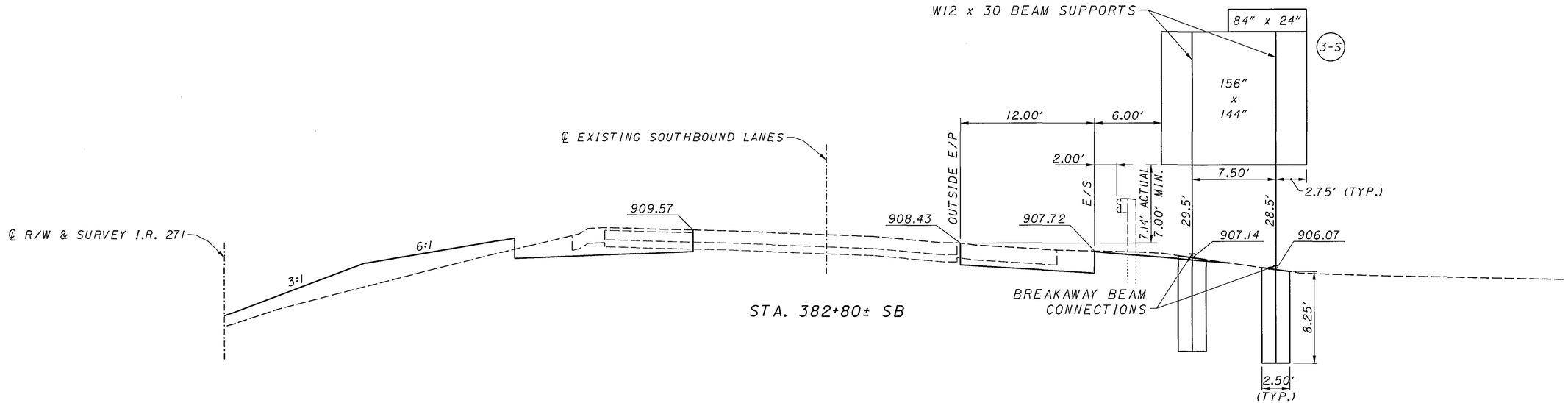
REF NO.	SHEET NO.	STATION	LOCATION	SIDE	OFFSET FROM EOP	GUARDRAIL	OFFSET BEHIND GUARDRIL	NO. OF SUPPORTS	SIGN SIZE	SIGN CODE NO.	SEE DETAIL FOR REFERENCE LOCATIONS						
											ELEV. 1st BEAM FOUNDATION		ELEV. 2nd BEAM FOUNDATION		BEAM TYPE	BEAM LENGTH	BREAKAWAY CONNECTION
					FEET		FEET		INCHES		A	B	C	D			
2-S	352	361+31±	NB	O/S	18	X	4	2	156 x 84	E7	964.16	958.16	961.16	955.16	W8 x 18	22.5/25.5	2
3-S	353	382+80±	SB	O/S	18	X	4	2	156 x 144	E1-1	907.14	898.89	906.07	897.82	W12 x 30	28.5/29.5	2
9-S	355	420+91±	NB	O/S	18	X	4	2	132 x 48	E8-H4	783.33	778.33	782.70	777.70	W6 x 9	17.0/17.5	2
12-S	355	437+20±	SB	O/S	20	X	6	2	132 x 48	E8-H4	744.87	739.87	744.24	739.24	W6 x 9	17.0/17.5	2

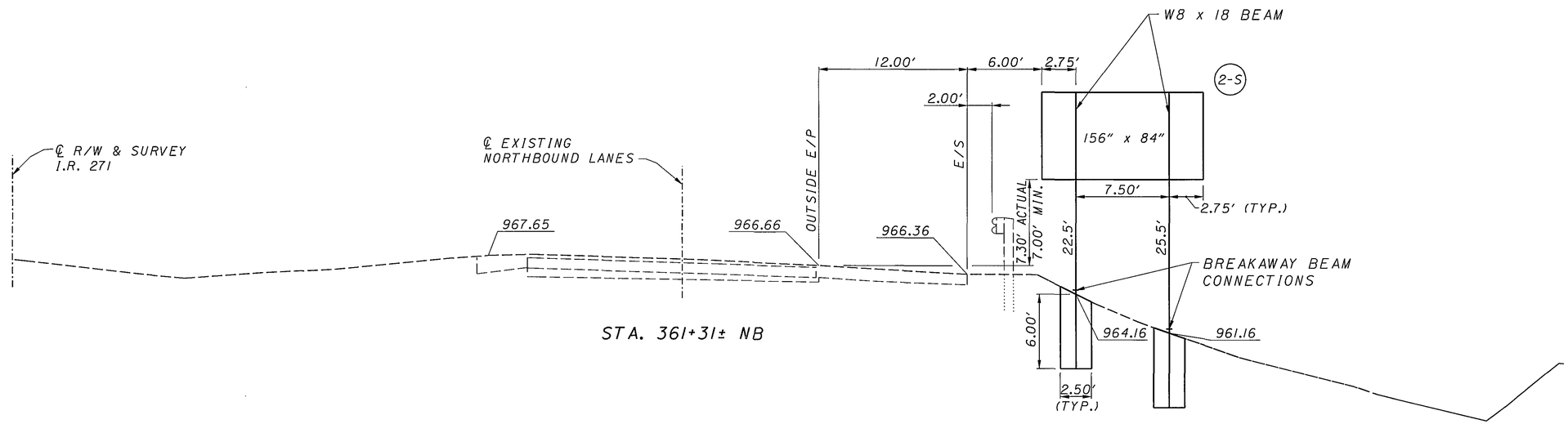
CALCULATED PDG
CHECKED PRS

SIGNING - MISCELLANEOUS DETAILS

SUM-271-8.02

21450TDA.DGN 3/26/04 SAM.HIN.CEO





FOR ADDITIONAL DETAILS SEE SCD TC-42.10 (1-19-01)

GROUND MOUNTED SIGN SUPPORT ELEVATIONS

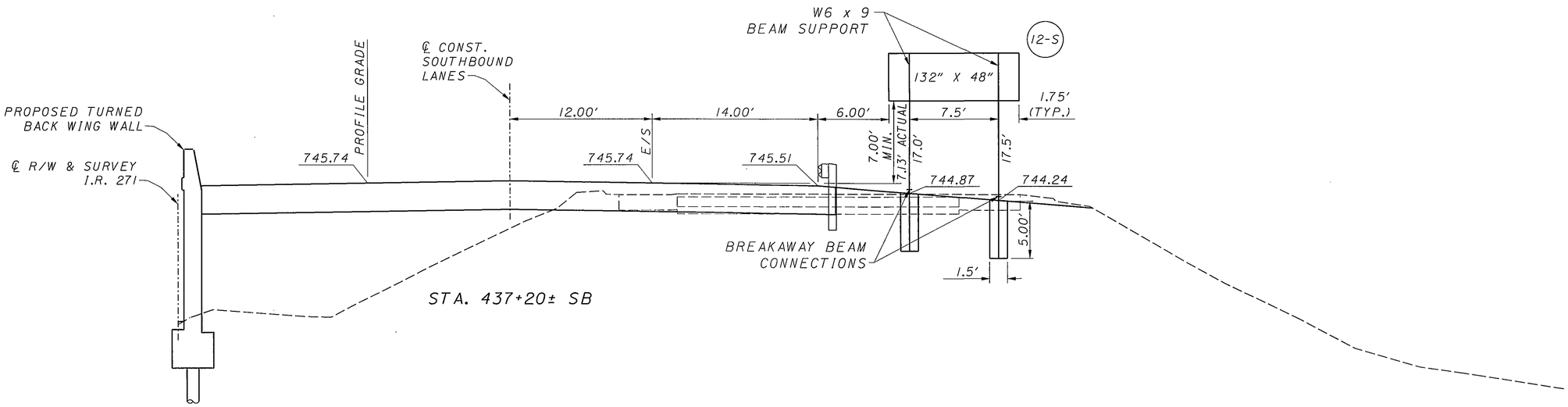
HORIZONTAL SCALE IN FEET
0 2.5 5 10

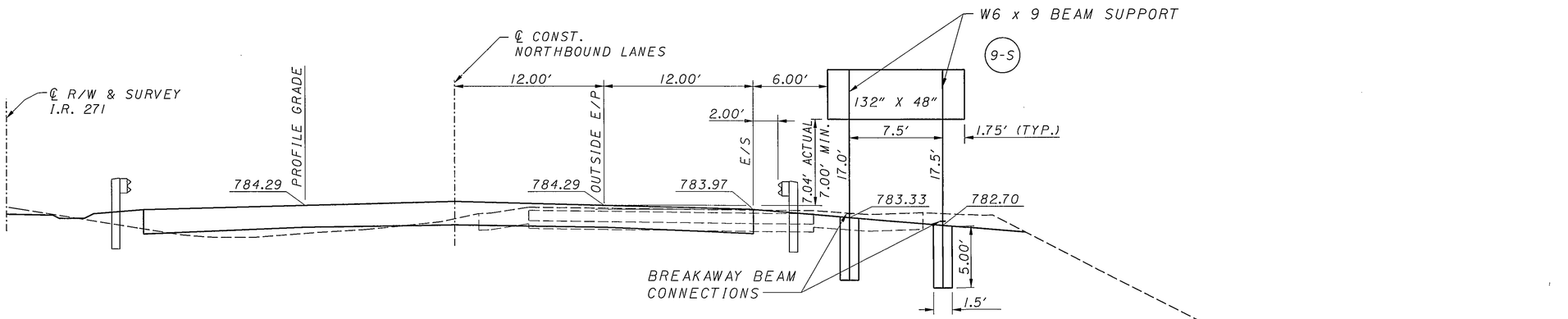
CALCULATED PDG
CHECKED PRS

SUM-271-8.02

359
612

21450TDB.DGN 3/29/04 CEO.TWH





FOR ADDITIONAL DETAILS SEE
SCD TC-42.10 (1-19-01)

0 2.5 5 10
HORIZONTAL SCALE IN FEET

CALCULATED PDG
CHECKED PRS

GROUND MOUNTED SIGN SUPPORT ELEVATIONS

SUM-271-8.02

360
612

21450TDB.DGN 3/29/04 CEO,TWH

B.M. #3 - CHISELED SQUARE ON N.W. CORNER OF WEST HEADWALL OF CULVERT
STA. 424+89.10, 299.10' LT.
EL. 682.71

CONSTRUCTION LIMITS

EXISTING CRUSHED AGGREGATE SLOPE PROTECTION

LIMITS OF TEMPORARY SHEETING, CANTILEVERED MINIMUM Sx = 65 in³/FT

LIMITS OF CRUSHED AGGREGATE SLOPE PROTECTION

END APPROACH SLAB
STA. 421+82.25
BRIDGE TERMINAL ASSEMBLY, TYPE 2

B-02

PROP. 15" TYPE C

6'R (TYP.)

TYPE C ROCK CHANNEL PROTECTION, 2' THICK (TYP.)

℄ CONSTRUCTION SOUTHBOUND LANES
℄ REAR ABUTMENT BEARINGS
STA. 421+86.25

PROP. 15"

PROFILE GRADE LINE

RETAINING WALL

6' DIA. TYPE C ROCK CHANNEL PROTECTION

℄ REAR ABUTMENT BEARINGS
STA. 421+66.25

℄ PIER 1
STA. 423+07.00

B-03

B-01

GUARDRAIL
STA. 421+39.35
TYPE II

BRIDGE TERMINAL ASSEMBLY, TYPE II

END APPROACH SLAB
STA. 421+62.25

SCUPPER (TYP.)

B-04

B-05

12' DIA. TYPE C ROCK CHANNEL PROTECTION

℄ PIER 2
STA. 424+83.00

PROFILE GRADE LINE

℄ CONSTRUCTION NORTHBOUND LANES

EXISTING STRUCTURE TO BE REMOVED

B-06

18' DIA. TYPE C ROCK CHANNEL PROTECTION

℄ PIER 3
STA. 425+11.00

B-07

B-08

PARAPETS

℄ R/W & SURVEY
I.R. 271

N 54° 13' 47" E

LA-R/W

G (TO BE RELOCATED)

RISER

PHASE II

PHASE I

CONSTRUCTION LIMITS

LEGEND

+ DENOTES WETLANDS

SEE STORM SEWER PROFILES SHEETS 300 TO 303 FOR ADDITIONAL DRAINAGE DETAILS.

T ESMT

RIVERVIEW ROAD (60' R/W)

MATCH LINE

STA. 426+00

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED STEEL PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: C/C BEARINGS 120'-0"±; 5 @ 170'-0"±; 2 @ 188'-0"±; 150'-0" ± (LEFT) 105'-0"±; 2 @ 165'-0"±; 4 @ 170'-0"±; 188'-0"±; 150'-0"± (RIGHT)

ROADWAY: 32'-8"± F/F PARAPETS

APPROACH SLABS: AS-1-54 (25' LONG)

LOADING: CF-2000 ADEQUATE FOR AASHO ALTERNATE LOADING

SKEW: 0°±

ALIGNMENT: TANGENT

WEARING SURFACE: 1¼" LATEX MODIFIED CONCRETE OVERLAY

CONDITION: FAIR

YEAR BUILT: 1968

STRUCTURE FILE NO.: 7709005 (LEFT)
7709064 (RIGHT)

DISPOSITION: REMOVED

PROPOSED STRUCTURE

TYPE: CONTINUOUS STEEL HYBRID A709 GRADE 50W/HPS 70W GIRDER COMPOSITE WITH REINFORCED CONCRETE DECK ON REINFORCED CONCRETE PIERS AND ABUTMENTS.

SPANS: C/C BEARINGS 152'-9"; 2 @ 172'-0"; 169'-0"; 126'-0"; 169'-0"; 2 @ 189'-0"; 156'-9" (LEFT) 140'-9"; 2 @ 176'-0"; 167'-0"; 2 @ 150'-0"; 2 @ 176'-0"; 140'-9" (RIGHT)

ROADWAY: 52'-0" TOE TO TOE PARAPETS

LOADING: HS 25 (CASE 1) AND THE ALTERNATE MILITARY LOADING
FUTURE WEARING SURFACE = 60 P.S.F.

SKEW: 0°00'00"

ALIGNMENT: TANGENT

WEARING SURFACE: MONOLITHIC CONCRETE

APPROACH SLABS: AS-1-81 (25'-0" LONG)

LATITUDE: 41°15'35"N

LONGITUDE: 81°33'40"W

CROWN RATE: 0.021

AVERAGE DAILY TRAFFIC:
29,700 (2004)

DESIGN AVERAGE DAILY TRAFFIC:
39,840 (2024)

DESIGN AVERAGE DAILY TRUCK TRAFFIC:
8,970 (2024)

FOUNDATION INVESTIGATION LEGEND

⌖ - INDICATES BORING LOCATION

SU271SPA.DGN 6/23/04 TWH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013(L) 7709021(R)	

SUMMIT COUNTY
STA. 421+62.25
STA. 436+85.75

SITE PLAN 1 - STEEL

BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

B.M. #4 - CHISELED SQUARE ON N.W. CORNER OF WEST HEADWALL OF CULVERT
STA. 427+74.15, 125.45' LT.
EL. 669.63

B.M. #5 - 5/8" REBAR WITH BENCH MARK CAP
STA. 430+52.43, 5.72' LT.
EL. 658.08

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

STA. 426+00

STA. 432+00

(3) GAS TANKS

B.M. #4

CONSTRUCTION LIMITS

VALLEY RAILWAY

T (TFO)

DO NOT DISTURB)

EXISTING STRUCTURE TO BE REMOVED

A ESMT
MINIMUM REQUIRED HORIZONTAL CLEARANCE = 25.00'
MINIMUM PROPOSED HORIZONTAL CLEARANCE = 39.5'

LA-R/W

ROCK CHANNEL PROTECTION, TYPE A, 3'-0" THICK WITH FABRIC FILTER

ACCESS ROAD

℄ PIER 3
STA. 426+83.00

℄ PIER 4
STA. 428+52.00

℄ PIER 5
STA. 429+78.00

℄ PIER 6
STA. 431+47.00

℄ CONSTRUCTION SOUTHBOUND LANES

℄ CONSTRUCTION NORTHBOUND LANES

PROFILE GRADE LINE

SCUPPER (TYP.)

PROP. 15"

PROP. 18"

℄ R/W & SURVEY N. R. 271

N 54° 13' 47" E

427 36' -7"

428

429

430

431

44' -7"

PHASE I

PHASE IIA

PHASE III

26' -0" PARAPETS

55' -0" o/o PARAPETS

B-09 B-10 B-11 B-12 B-13 B-14 B-15 B-16 B-17 B-18

T ESMT

A ESMT

SH ESMT

MINIMUM EXISTING HORIZONTAL CLEARANCE = 16.7' ±

FIBER OPTIC CABLE (DO NOT DISTURB)

SEE STORM SEWER PROFILES SHEETS 300 TO 303 FOR ADDITIONAL DRAINAGE DETAILS.

CONSTRUCTION LIMITS

CUYAHOGA RIVER

MATCH LINE

MATCH LINE

LEGEND

- DENOTES WETLANDS
- DENOTES 36" CASING PIPE UNDER RAILWAY

FOUNDATION INVESTIGATION LEGEND

- INDICATES BORING LOCATION

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

REVIEWED DAP 3/18/04
DATE
STRUCTURE FILE NUMBER
7709013(L)
7709021(R)

DRAWN JLS
DESIGNED KAK
CHECKED DLR
REVISED

SUMMIT COUNTY
STA. 421+62.25
STA. 436+85.75

SITE PLAN 2 - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

2 / 77

362
612

SU271SPB.DGN 6/23/04 TWH,JLS,RC

B.M. #6 - 5/8" REBAR WITH BENCH MARK CAP
STA. 433+67.04, 5.26' LT.
EL. 666.28

B.M. #7 - 5/8" REBAR WITH BENCH MARK CAP
STA. 434+80.92, 9.95' RT.
EL. 692.99

LEGEND

- DENOTES WETLANDS

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

CUYAHOGA RIVER

STA. 432+00

THE OHIO & ERIE CANAL TOWPATH TRAIL

TOWPATH ACCESS TRAIL

BOW STRING BRIDGE (TO BE DISTURBED)

BIKE PATH

EXISTING STRUCTURE TO BE REMOVED

CONSTRUCTION LIMITS

LA-R/W

ROCK CHANNEL PROTECTION, TYPE A, 3'-0" THICK WITH FABRIC FILTER

CONCRETE APRON AND ROCK CHANNEL PROTECTION, 5'-0" TYPE C, 2'-0" THICK

℄ PIER 7
STA. 433+36.00

PHASE I

PHASE IIA

PHASE III

55'-0" o/o PARAPETS

PROFILE GRADE LINE

℄ PIER 7
STA. 433+02.00

℄ CONSTRUCTION NORTHBOUND LANES

℄ CONSTRUCTION SOUTHBOUND LANES

℄ R/W & SURVEY I.R. #27

B.M. #6

B.M. #7

20' DIA. TYPE C ROCK CHANNEL PROTECTION

18' DIA. TYPE C ROCK CHANNEL PROTECTION

℄ PIER 8
STA. 434+78.00

℄ PIER 8
STA. 435+25.00

PROFILE GRADE LINE

6' DIA. TYPE C ROCK CHANNEL PROTECTION 2' THICK (TYP.)

LIMITS OF CRUSHED AGGREGATE SLOPE PROTECTION

LIMITS OF TEMPORARY SHEETING, CANTILEVERED MINIMUM Sx = 14 in³/FT

GUARDRAIL STA. 437+14.90

℄ FORWARD ABUTMENT BEARINGS
STA. 436+81.75

BEGIN APPROACH SLAB
STA. 436+85.75

PROP. 15" TYPE C

BRIDGE TERMINAL ASSEMBLY, TYPE I

RETAINING WALL

PROP. 15" TYPE B

BRIDGE TERMINAL ASSEMBLY, TYPE 2

BEGIN APPROACH SLAB
STA. 436+22.75

℄ FORWARD ABUTMENT BEARINGS
STA. 436+18.75

CONSTRUCTION LIMITS

GUARDRAIL STA. 436+52.00

EXISTING STRUCTURE TO BE REMOVED

BUCKEYE TRAIL

THE OHIO & ERIE CANAL TOWPATH TRAIL

T ESMT

MATCH LINE

SEE STORM SEWER PROFILES SHEETS 300 TO 303 FOR ADDITIONAL DRAINAGE DETAILS.

FOUNDATION INVESTIGATION LEGEND

- INDICATES BORING LOCATION

B-19 B-20 B-21 B-22 B-23 B-24 B-25 A-3

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DATE 3/18/04
REVIEWED DAP
STRUCTURE FILE NUMBER 7709013(1) 7709021(R)
DRAWN JLS
REVISED
DESIGNED KAK
CHECKED DLR

SUMMIT COUNTY
STA. 421+62.25
STA. 436+85.75

SITE PLAN 3 - STEEL

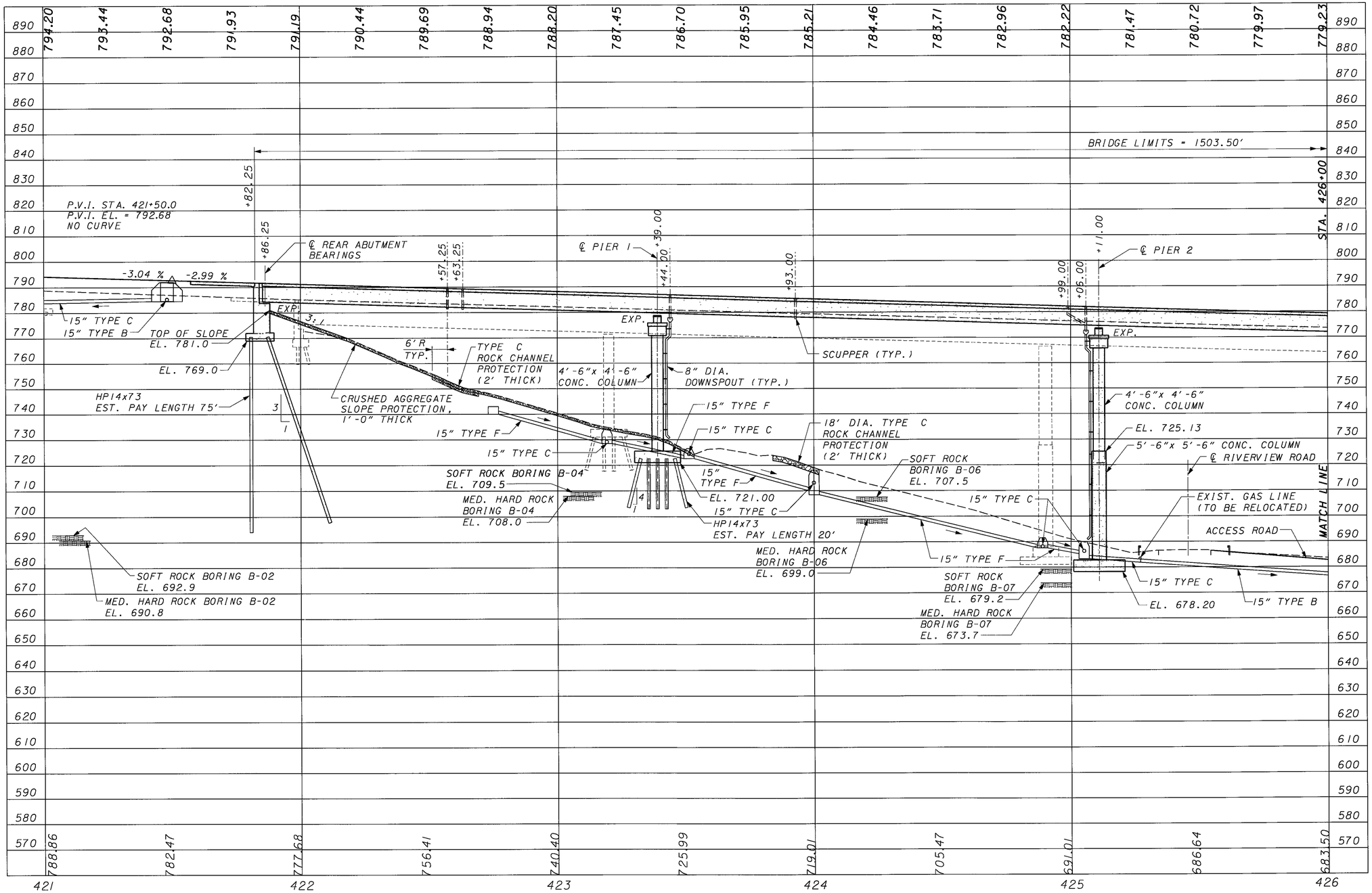
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

3/77

363/612

SU271SPC.DGN 6/23/04 TWH,JLS,RC



PROFILE ALONG INSIDE EDGE OF PAVEMENT (LEFT BRIDGE)

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013

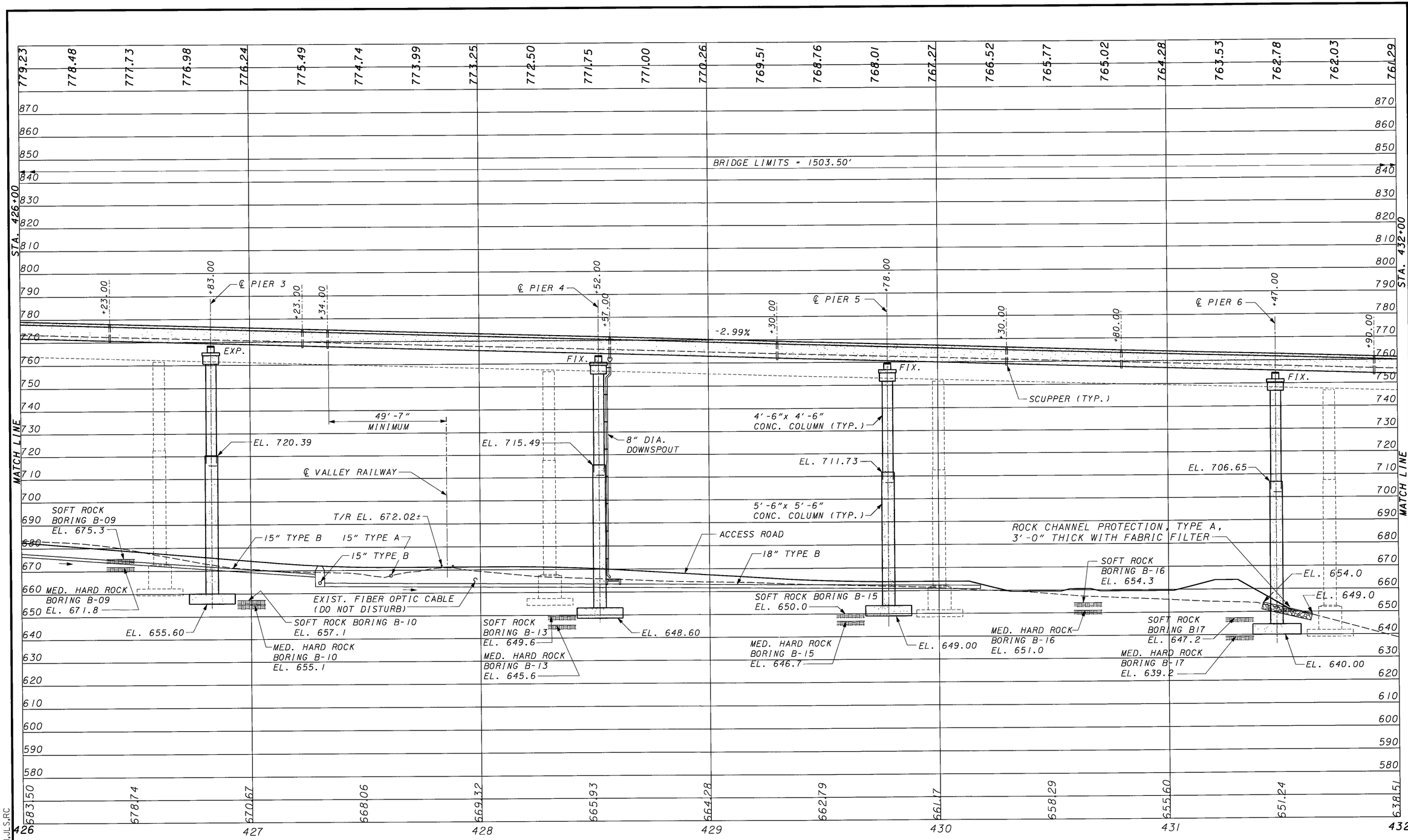
SITE PLAN 4 - STEEL
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

4 / 77

364
612

SU271SPD.DGN 6/23/04 JLS,RC



PROFILE ALONG INSIDE EDGE OF PAVEMENT (LEFT BRIDGE)

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JLS | CHECKED DLR | REVISED
REVIEWED DAP | DATE 3/18/04
STRUCTURE FILE NUMBER 77090/3

SITE PLAN 5 - STEEL
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

5 / 77

365 / 612

SU27ISPE.DGN 6/23/04 TWH,JLS,RC

761.29 760.54 759.79 759.04 758.30 757.55 756.80 756.05 755.31 754.56 753.81 753.06 752.32 751.57 750.82 750.07 749.33 748.58 747.83 747.08 746.34 745.59 744.83 744.08 743.33

STA. 432+00

BRIDGE LIMITS = 1503.50'

+85.75

P.V.I. STA. 437+17.9
P.V.I. EL. = 745.80
NO CURVE

℄ PIER 7 +36.00

+60.00

+41.00

+48.00

+43.00 RIGHT

+65.00 LEFT

℄ PIER 8 +25.00

+30.00

+95.00

℄ FORWARD ABUTMENT BEARINGS +81.75

-2.99 % -3.00 %

EXP.

EXP.

EXP.

SCUPPER (TYP.)

50'-7" MINIMUM

49'-11" MINIMUM

4'-6"x4'-6" CONC. COLUMN

4'-6"x4'-6" CONC. COLUMN

6' DIA. TYPE C ROCK CHANNEL PROTECTION (2' THICK)

15" TYPE B

TOP OF SLOPE EL. 735.6

15" TYPE C

2:1

EL. 729.8

8" DIA. DOWNSPOUT (TYP.)

EL. 700.84

5'-6"x5'-6" CONC. COLUMN

℄ OHIO & ERIE CANAL TOWPATH TRAIL

15" TYPE F

20' DIA. TYPE C ROCK CHANNEL PROTECTION (2' THICK)

15" TYPE F

CRUSHED AGGREGATE SLOPE PROTECTION, 1'-0" THICK

3

1

14" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILES, EST. PAY LENGTH 65'

ROCK CHANNEL PROTECTION, TYPE C, 1'-6" THICK WITH FABRIC FILTER

15" TYPE C

EL. 691.0

4

1

HP14x73 EST. PAY LENGTH 75'

MATCH LINE

CUYAHOGA RIVER

EL. 654.0

EL. 649.0

100 YR. H.W. EL. 660.5±

25 YR. H.W. EL. 658.8±

NORMAL WATER EL. 648.0

15" TYPE B

15" TYPE C

EL. 643.00

SOFT ROCK BORING B-21 EL. 623.1

SOFT ROCK BORING B-20 EL. 634.2

HP14x73 EST. PAY LENGTH 15'

FLOW LINE EL. 639.0±

MED. HARD ROCK BORING B-20 EL. 630.0

ROCK CHANNEL PROTECTION, TYPE A, 3'-0" THICK WITH FABRIC FILTER

MED. HARD ROCK BORING B-21 EL. 618.1

870 860 850 840 830 820 810 800 790 780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630 620 610 600 590 580

638.51 638.51 645.86 662.36 668.37 681.84 697.28 710.70 717.28 725.69 737.27 740.48 739.43

432 433 434 435 436 437 438

PROFILE ALONG INSIDE EDGE OF PAVEMENT (LEFT BRIDGE)

HYDRAULICS INFORMATION

DRAINAGE AREA = 525 SQ.MI.

EST. Q 25 = 15786 cfs; V 25 = 10.6 fps
EST. Q 100 = 20305 cfs; V 100 = 11.2 fps

STRUCTURE CLEARS EST. 25 YEAR H.W. BY 71.8'; AND EST. 100 YEAR H.W. BY 70.1'

* THE HYDRAULIC FLOWS AND VELOCITIES WERE TAKEN FROM THE BOSTON MILLS RD. BRIDGE OVER THE CUYAHOGA RIVER BRIDGE REPLACEMENT SITE PLAN. THE BOSTON MILLS RD. BRIDGE IS APPROXIMATELY 1000 FT. DOWNSTREAM FROM THE I-271 BRIDGE. HIGH WATER ELEVATIONS WERE DETERMINED BY PROJECTING THE HIGH WATER ELEVATIONS AT BOSTON MILLS RD. BRIDGE BACK TO THE I-271 BRIDGE.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013

SITE PLAN 6 - STEEL

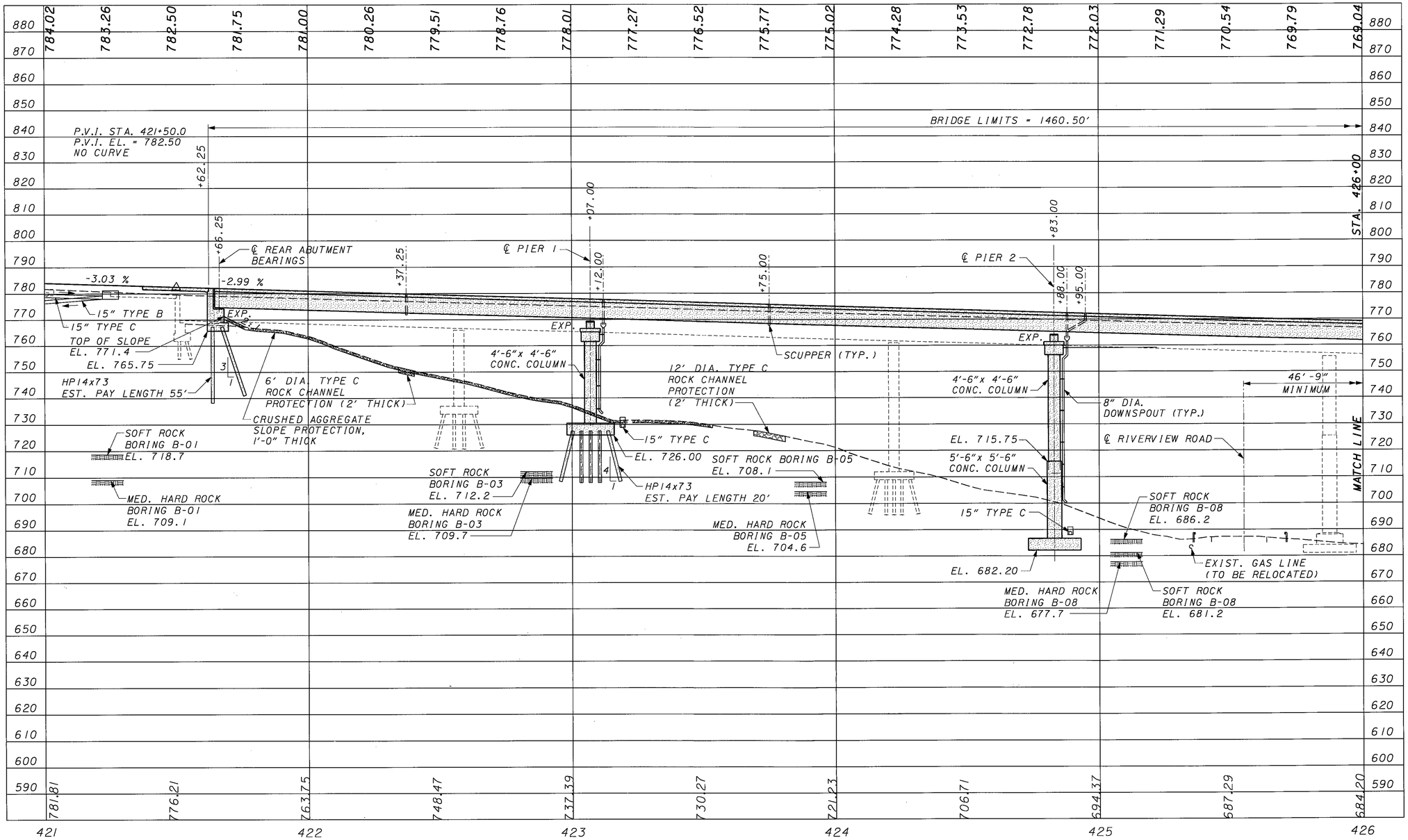
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

6 / 77

366
612

SU271SPF.DGN 6/23/04 JLS,RC



PROFILE ALONG INSIDE EDGE OF PAVEMENT (RIGHT BRIDGE)

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7409021

SITE PLAN 7 - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

7 / 77

367
612

SU271SPG.DGN 6/23/04 TWH,JLS,RC

STA. 426+00

MATCH LINE

769.04 768.30 767.55 766.80 766.05 765.31 764.56 763.81 763.06 762.32 761.57 760.82 760.07 759.33 758.58 757.83 757.08 756.34 755.59 754.84 754.09 753.35 752.60 751.85 751.10

860 850 840 830 820 810 800 790 780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630 620 610 600

BRIDGE LIMITS = 1460.50'

STA. 432+00

MATCH LINE

+12.00 +22.00 +59.00 ℄ PIER 3 +20.00 +31.00 ℄ PIER 4 +26.00 +31.00 +22.00 +76.00 ℄ PIER 5 +28.00 +75.00 +26.00 ℄ PIER 6 +85.00

-2.99%

EXP. FIX. FIX. FIX.

46'-9" MINIMUM

SCUPPER (TYP.)

48'-5" MINIMUM

8" DIA. DOWNSPOUT

4'-6"x 4'-6" CONC. COLUMN (TYP.)

EL. 710.94

EL. 706.05

EL. 701.65

EL. 697.07

CUYAHOGA RIVER

℄ VALLEY RAILWAY

5'-6"x 5'-6" CONC. COLUMN (TYP.)

EL. 649.0 EL. 654.0

100 YR. H.W. EL. 660.5±

SOFT ROCK BORING B-11 EL. 666.1

T/R EL. 672.02±

SOFT ROCK BORING B-12 EL. 650.4

15" TYPE C

SOFT ROCK BORING B-18 EL. 648.1

25 YR. H.W. EL. 658.8±

NORMAL WATER EL. 648.0

EL. 664.60

MED. HARD ROCK BORING B-11 EL. 663.1

15" TYPE C

EXIST. FIBER OPTIC CABLE (DO NOT DISTURB)

EL. 649.40

MED. HARD ROCK BORING B-12 EL. 643.9

SOFT ROCK BORING B-14 EL. 649.5

MED. HARD ROCK BORING B-14 EL. 646.5

EL. 647.00

15" TYPE C

MED. HARD ROCK BORING B-18 EL. 645.1

MED. HARD ROCK BORING B-18 EL. 640.1

EL. 640.00

FLOW LINE EL. 643.0±

ROCK CHANNEL PROTECTION, TYPE A, 3'-0" THICK WITH FABRIC FILTER

684.20 681.08 677.26 673.49 669.08 664.98 663.43 662.43 659.17 658.18 655.22 649.12 643.43

426 427 428 429 430 431 432

PROFILE ALONG INSIDE EDGE OF PAVEMENT (RIGHT BRIDGE)

SU271SPH.DGN 6/25/04 TWH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

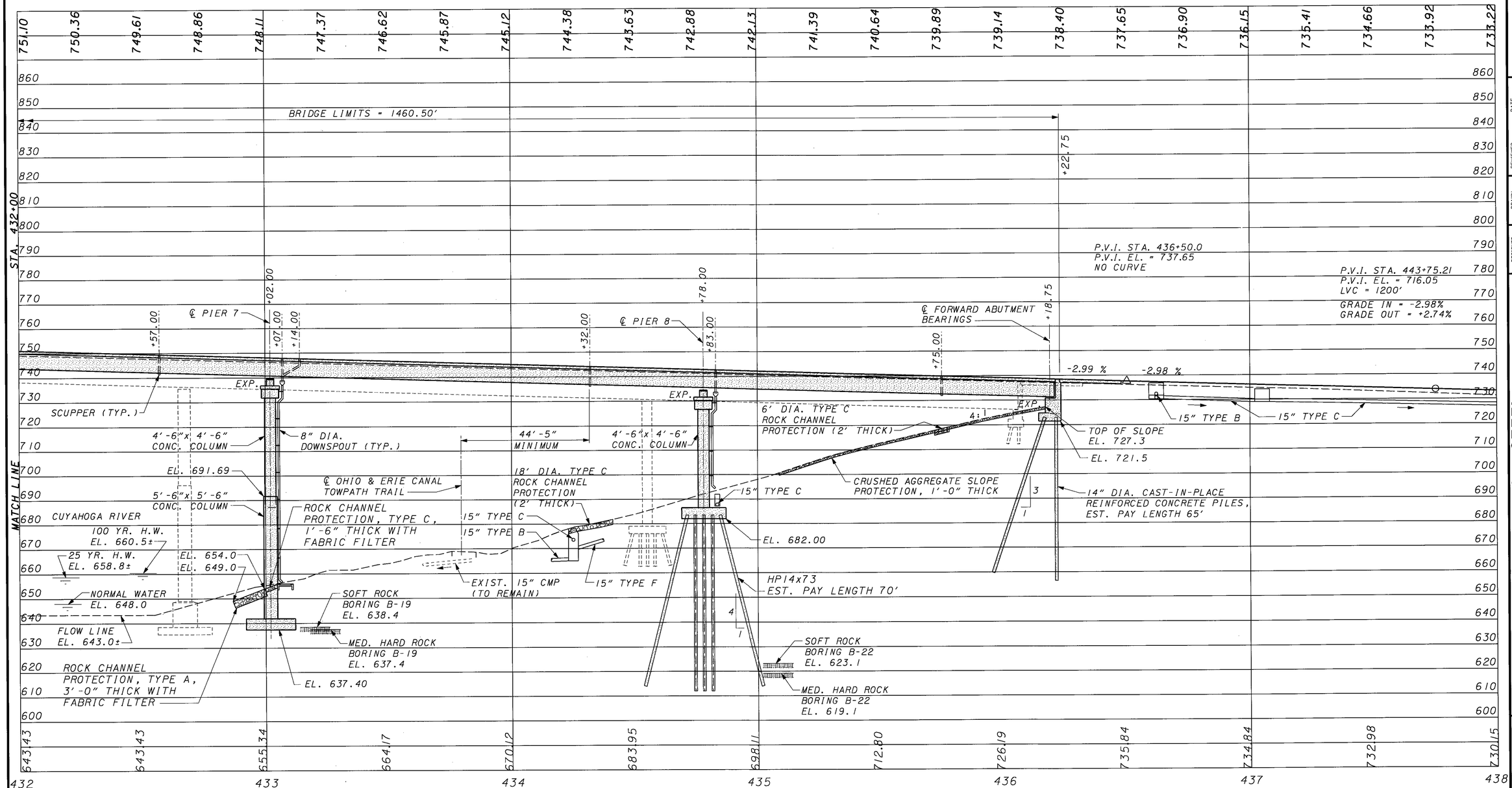
DESIGNED KAK | DRAWN JLS | CHECKED DLR | REVIEWED DAP | DATE 3/18/04 | REVISED | STRUCTURE FILE NUMBER 7709021

SITE PLAN 8 - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

8 / 77

368 / 612



PROFILE ALONG INSIDE EDGE OF PAVEMENT (RIGHT BRIDGE)

HYDRAULICS INFORMATION

DRAINAGE AREA = 525 SQ.MI.

EST. Q 25 = 15786 cfs; V 25 = 10.6 fps
EST. Q 100 = 20305 cfs; V 100 = 11.2 fps

STRUCTURE CLEARS EST. 25 YEAR H.W. BY 71.8'; AND EST. 100 YEAR H.W. BY 70.1'

* THE HYDRAULIC FLOWS AND VELOCITIES WERE TAKEN FROM THE BOSTON MILLS RD. BRIDGE OVER THE CUYAHOGA RIVER BRIDGE REPLACEMENT SITE PLAN. THE BOSTON MILLS RD. BRIDGE IS APPROXIMATELY 1000 FT. DOWNSTREAM FROM THE I-271 BRIDGE. HIGH WATER ELEVATIONS WERE DETERMINED BY PROJECTING THE HIGH WATER ELEVATIONS AT BOSTON MILLS RD. BRIDGE BACK TO THE I-271 BRIDGE.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JLS | CHECKED DLR | REVISED | REVIEWED DAP | DATE 3/18/04 | STRUCTURE FILE NUMBER 770902/

SITE PLAN 9 - STEEL

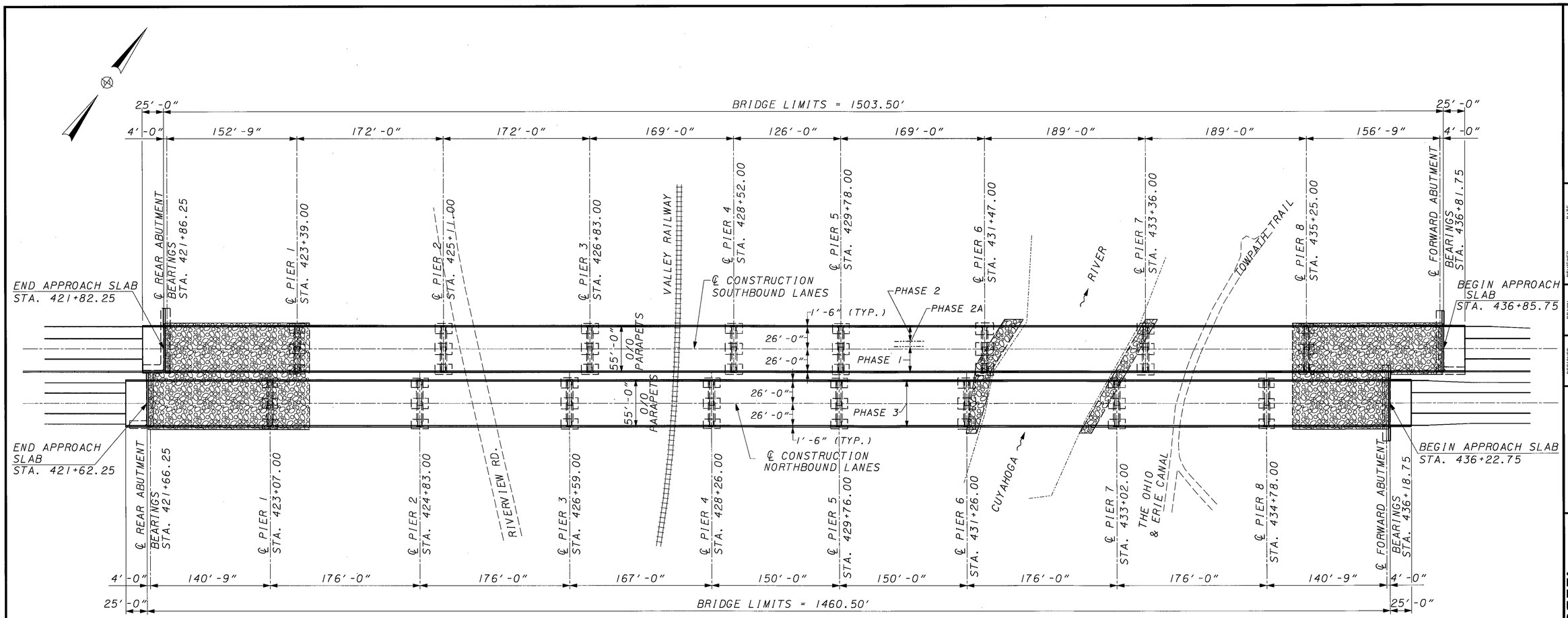
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, CUYAHOGA RIVER
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9 / 77

369
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SU271SP1.DGN 6/23/04 JLS,RC



PLAN

SU271GPA.DGN 6/23/04 TWH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN TWH | REVIEWED DAP 3/18/04 | DATE
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

SUMMIT COUNTY
STA. 421+62.25
STA. 436+85.75

GENERAL PLAN - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

10/77

370
612

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWINGS:

AS-1-81	REVISED 7-19-2002
SBR-1-99	REVISED 7-19-2002

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS

864	DATED 7-11-2000
894	DATED 10-18-2002
954	DATED 9-9-1997

DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 17TH EDITION (2002), AND THE ODOT BRIDGE DESIGN MANUAL, EXCEPT AS NOTED BELOW.

SPECIAL DESIGN SPECIFICATIONS: THIS BRIDGE REQUIRED THE USE OF A TWO-DIMENSIONAL MODEL USING THE GRILLAGE DESIGN METHOD TO ANALYZE THE STRUCTURE. THE COMPUTER PROGRAM USED FOR STRUCTURAL ANALYSIS WAS MDX. THE BRIDGE COMPONENTS DESIGNED BY THIS METHOD AND THE LIVE LOAD DISTRIBUTION FACTORS USED WERE:

COMPONENTS: BEAMS, CROSS-FRAMES.
DEAD LOAD DISTRIBUTION: THE INITIAL DEAD LOAD (BEAM SELF-WEIGHT, WEIGHT OF STIFFENERS AND CROSS-FRAMES, AND WEIGHT OF CONCRETE DECK AND HAUNCHES) WAS DISTRIBUTED TO THE BEAMS USING SIMPLE DISTRIBUTION. THE COMPOSITE DEAD LOAD (WEIGHT OF PARAPETS AND FUTURE WEARING SURFACE ALLOWANCE) WAS APPLIED EQUALLY TO EACH BEAM.

LIVE LOAD DISTRIBUTION FACTORS: THE DESIGN PROGRAM DISTRIBUTED THE LIVE LOADS BASED ON BOTH LONGITUDINAL AND LATERAL STIFFNESSES. THE LIVE LOAD DISTRIBUTION VARIES ALONG THE LENGTH AND WIDTH OF THE STRUCTURE.

DESIGN LOADING

HS 25, CASE I, AND THE ALTERNATE MILITARY LOADING.
FUTURE WEARING SURFACE (FWS) OF 60 PSF.
STAY-IN-PLACE FORM ALLOWANCE OF 15 PSF BETWEEN FLANGES
FUTURE VANDAL PROTECTION FENCE ALLOWANCE OF 0.6 PSF

DESIGN STRESSES (LOAD FACTOR DESIGN)

CONCRETE CLASS HP - COMPRESSIVE STRENGTH 4500 PSI
(SUPERSTRUCTURE)
CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 PSI (SUBSTRUCTURE)
REINFORCING STEEL - ASTM A615 OR A996 GRADE 60 MINIMUM YIELD
STRENGTH 60,000 PSI
SPIRAL REINFORCEMENT MAY BE PLAIN BARS, ASTM A82 OR A615
STRUCTURAL STEEL -
ASTM A709 GRADE HPS 70W - YIELD STRENGTH 70,000 PSI (BEAM FLANGES OVER PIERS)
ASTM A709 GRADE 50W - YIELD STRENGTH 50,000 PSI (ALL OTHER STRUCTURAL STEEL)

DECK PROTECTION METHOD

- EPOXY COATED REINFORCING STEEL
- 2½" CONCRETE COVER

MONOLITHIC WEARING SURFACE

IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATION AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK, BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05 105.02, AND 513.04.

BASE CONTRACT BID PRICES UPON RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS WHICH HAVE BEEN VERIFIED IN THE FIELD.

EXISTING BRIDGE PLANS

MAY BE INSPECTED AT THE ODOT DISTRICT FOUR OFFICE IN AKRON, OHIO.

CONSTRUCTION SEQUENCE

ALSO SEE MAINTENANCE OF TRAFFIC PLAN SHEETS 21 THROUGH 57 OF 612 . THE FOLLOWING SEQUENCE OF CONSTRUCTION IS REQUIRED:

PHASE I CONSTRUCTION:
A. WITH TWO LANES OF TRAFFIC MAINTAINED ON EACH OF THE EXISTING STRUCTURES, INSTALL THE PHASE-LINE SHEETING AT THE FORWARD AND REAR ABUTMENTS OF THE EXISTING LEFT BRIDGE.
B. REMOVE THE EXISTING MEDIAN-SIDE WINGWALLS ON THE REAR AND FORWARD ABUTMENTS OF THE LEFT BRIDGE, AS DETAILED IN THE REMOVAL DETAILS ON SHEETS 16/77 AND 17/77.
C. DRIVE PILES AND CONSTRUCT THE MEDIAN-SIDE PORTIONS OF THE LEFT BRIDGE ABUTMENTS, INCLUDING AT LEAST THREE PILES AT THE RIGHT FORWARD ABUTMENT, AND THE LEFT BRIDGE PIERS.
D. ERECT THE NEW STEEL BEAMS AND CROSSFRAMES ON THE NEW BEARINGS.
E. CONSTRUCT THE NEW BRIDGE DECK, PARAPET, AND APPROACH SLABS FOR THE MEDIAN-SIDE PART OF THE LEFT BRIDGE.
F. SWITCH SOUTHBOUND TRAFFIC TO THE NEW BRIDGE.

PHASE 2 CONSTRUCTION:
A. WITH TWO LANES OF SOUTHBOUND TRAFFIC MAINTAINED ON THE MEDIAN-SIDE PORTION OF THE LEFT BRIDGE, REMOVE THE EXISTING SOUTHBOUND BRIDGE.
B. DRIVE PILES AND CONSTRUCT THE REMAINDER OF THE LEFT BRIDGE ABUTMENTS AND PIERS.
C. ERECT THE NEW STEEL BEAMS AND CROSSFRAMES ON THE NEW BEARINGS.
D. CONSTRUCT THE NEW BRIDGE DECK, PARAPET, AND APPROACH SLABS FOR THE OUTSIDE PART OF THE LEFT BRIDGE.

PHASE 2A CONSTRUCTION:
A. WITH TWO LANES OF SOUTHBOUND TRAFFIC MAINTAINED ON THE MEDIAN-SIDE PORTION OF THE LEFT BRIDGE, ERECT CROSSFRAMES BETWEEN THE PHASE I AND PHASE II CONSTRUCTION AND CONSTRUCT THE CLOSURE PORTION OF THE DECK.
B. APPLY THE HMWM RESIN TO THE CONCRETE DECK AND SEAL OTHER CONCRETE SURFACES.
C. SWITCH SOUTHBOUND TRAFFIC TO THE OUTSIDE PORTION OF THE BRIDGE, AND SWITCH NORTHBOUND TRAFFIC TO THE MEDIAN-SIDE PORTION OF THE BRIDGE.

PHASE 3 CONSTRUCTION:
A. WITH TWO LANES OF TRAFFIC MAINTAINED IN EACH DIRECTION ON THE NEW LEFT BRIDGE, REMOVE THE EXISTING RIGHT BRIDGE.
B. DRIVE PILES AND CONSTRUCT THE ABUTMENTS AND PIERS FOR THE NEW RIGHT BRIDGE.
C. ERECT THE NEW STEEL BEAMS AND CROSSFRAMES ON THE NEW BEARINGS.
D. CONSTRUCT THE NEW BRIDGE DECK, PARAPET, AND APPROACH SLABS FOR THE NEW RIGHT BRIDGE.
E. APPLY THE HMWM RESIN TO THE CONCRETE DECK (AS NEEDED) AND SEAL OTHER CONCRETE SURFACES.
F. SWITCH NORTHBOUND TRAFFIC TO THE NEW RIGHT BRIDGE.
G. SWITCH SOUTHBOUND TRAFFIC TO THE FINAL POSITION ON THE LEFT BRIDGE.

NATIONAL PARK SERVICE COORDINATION:

THE PROPOSED PROJECT INVOLVES THE CUYAHOGA VALLEY NATIONAL PARK. THE CONTRACTOR SHALL SCHEDULE HIS CONSTRUCTION ACTIVITIES TO LIMIT THE IMPACT TO THE NORMAL OPERATIONS OF THE NATIONAL PARK SERVICE WHICH INCLUDES, BUT IS NOT LIMITED TO THE VALLEY RAILWAY, CUYAHOGA RIVER RECREATION USE, AND THE OHIO & ERIE CANAL TOWPATH TRAIL. THE PERMITTED CLOSURES, ACTIVITIES, AND RESTRICTIONS ARE DESCRIBED IN THE NATIONAL PARK SERVICE COORDINATION GENERAL NOTE SHEET NO. 23 .

THE PERMITTED TOWPATH TRAIL CLOSURE TIMES ARE LIMITED. NO WORK SHALL BE PERFORMED OVER THE TOWPATH TRAIL WHILE IT IS OPEN TO USERS.

THE CONTRACTOR IS NOT PERMITTED TO WORK WITHIN THE EXISTING RIGHT OF WAY OF THE VALLEY RAILWAY EXCEPT IN AREAS PROVIDED BY TEMPORARY RIGHT OF WAY. THE CONTRACTOR IS TO SCHEDULE WORK OVER THE VALLEY RAILWAY WHEN THE RAILROAD IS NOT OPERATING.

ENVIRONMENTAL COMMITMENTS:

SEE GENERAL NOTE SHEET NO. 19 AND 20 FOR ENVIRONMENTAL COMMITMENTS AND RESTRICTIONS.

ITEM 202 - STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN

WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC, THE REQUIRED PORTIONS OF THE EXISTING STRUCTURES SHALL BE REMOVED UPON RECEIVING PERMISSION FROM THE ENGINEER.

REMOVE ABUTMENTS PER 202, EXCEPT THAT BACKWALLS AND WINGWALLS SHALL BE REMOVED AT LEAST TO THE TOP OF THE BEAM SEATS, AND IN PHASES AS NOTED IN THE REMOVAL DETAILS ON SHEETS 16/77 AND 17/77. REMOVE PIERS PER ITEM 202.

PROTECTION OF TRAFFIC: PRIOR TO DEMOLITION OF ANY PORTIONS OF THE EXISTING SUPERSTRUCTURE, SUBMIT PLANS FOR THE PROTECTION OF TRAFFIC (VEHICULAR, PEDESTRIAN, BOAT, ETC.) ADJACENT TO AND/OR UNDER THE STRUCTURE, TO THE DIRECTOR AT LEAST 30 DAYS BEFORE CONSTRUCTION BEGINS. THESE PLANS SHALL INCLUDE PROVISIONS FOR ANY DEVICES AND STRUCTURES THAT MAY BE NECESSARY TO ENSURE SUCH PROTECTION. MAINTAIN THE TEMPORARY VERTICAL CLEARANCES SPECIFIED ON THE PLANS OR IN THE PROPOSAL AT ALL TIMES EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR. ALL COSTS ASSOCIATED WITH THIS TRAFFIC PROTECTION WILL BE INCLUDED WITH ITEM 202 FOR PAYMENT.

LOADING LIMITATIONS: NO PART OF THE STRUCTURE SHALL BE SUBJECTED TO UNIT STRESSES THAT EXCEED 136.5% OF ALLOWABLE UNIT STRESSES AS DEFINED IN THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DUE EITHER TO DEMOLITION, ERECTION OR CONSTRUCTION METHODS, OR TO THE USE OR MOVEMENT OF DEMOLITION OR ERECTION EQUIPMENT ON OR ACROSS THE STRUCTURE. SUBMIT STRUCTURAL ANALYSIS COMPUTATIONS, BY AN OHIO REGISTERED PROFESSIONAL ENGINEER, SHOWING THE ALLOWABLE STRESSES AND THE MAXIMUM STRESSES PRODUCED BY THE REMOVAL METHODS OR EQUIPMENT TO THE DIRECTOR AT LEAST 20 DAYS BEFORE CONSTRUCTION BEGINS.

MEASUREMENT & PAYMENT: THE DEPARTMENT WILL MEASURE THE QUANTITY OF REMOVALS ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES OF REMOVALS AT THE CONTRACT PRICE FOR ITEM 202, STRUCTURE REMOVED, OVER 20-FOOT SPAN, AS PER PLAN.

ASBESTOS NOTIFICATION

AN ASBESTOS SURVEY OF THE I.R. 271 BRIDGE STRUCTURES OVER THE CUYAHOGA VALLEY (SFN: SUM-271-0802 L&R) SCHEDULED FOR REPLACEMENT WAS CONDUCTED BY A CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALIST. THE SURVEY DETERMINED THAT NO ASBESTOS IS PRESENT ON ANY OF THE BRIDGE STRUCTURES.

A COPY OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA) NOTIFICATION OF DEMOLITION AND RENOVATION FORMS, PARTIALLY COMPLETED AND SIGNED BY THE BRIDGE OWNER, WILL BE PROVIDED TO THE SUCCESSFUL BIDDER. THE CONTRACTOR SHALL COMPLETE THE FORM AND SUBMIT IT TO:

AKRON REGIONAL AIR QUALITY MANAGEMENT DISTRICT
146 S. HIGH ST. SUITE 904
AKRON, OHIO 44308
LYNN M. MALCOLM, ADMIN.
(330) 375-2480
FAX: (330) 375-2402

AT LEAST TEN (10) WORKING DAYS PRIOR TO THE START OF DEMOLITION AND/OR REHABILITATION, THE CONTRACTOR SHALL PROVIDE A COPY OF THE COMPLETED FORM TO THE ENGINEER.

INFORMATION REQUIRED ON THE FORM WILL INCLUDE: 1.) THE CONTRACTORS NAME AND ADDRESS, 2.) THE SCHEDULED DATES FOR THE START AND COMPLETION OF THE BRIDGE REMOVAL AND 3.) A DESCRIPTION OF THE PLANNED DEMOLITION WORK AND THE METHOD(S) TO BE USED. A COPY OF THE OEPA FORM IS AVAILABLE FOR INSPECTION AT THE ODOT DISTRICT 4 OFFICE, 2088 S. ARLINGTON ROAD, AKRON, OHIO, 44306.

BASIS FOR PAYMENT - THE CONTRACTOR SHALL FURNISH ALL FEES, LABOR, AND MATERIAL NECESSARY TO COMPLETE AND SUBMIT THE OEPA NOTIFICATION FORM. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN ITEM 202 - STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

GENERAL NOTES CONTINUED: SEE SHEET 12/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN JLS | CHECKED BLN | REVIEWED DAP | DATE 3/8/04 | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

GENERAL NOTES 1 - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

SU271GNA.DGN 6/23/04 TWH,JLS,RC

ITEM 202 - REMOVAL, MISC.: EXISTING PILE

THE PROPOSED PILING HAS BEEN ARRANGED TO AVOID THE EXISTING PILES SUPPORTING THE EXISTING ABUTMENTS AND SOME PIERS. THE LOCATION OF THE EXISTING PILES WAS DERIVED FROM THE EXISTING PLANS. SHOULD EXISTING PILES INTERFERE WITH THE PILE DRIVING OPERATIONS, THE INTERFERING EXISTING PILES SHALL BE REMOVED.

A QUANTITY OF 11 PILES AT THE REAR ABUTMENTS; 13 PILES AT THE FORWARD ABUTMENTS; AND 36 PILES AT THE PIERS TO BE REMOVED HAS BEEN INCLUDED IN THE PLANS TO BE USED BY THE ENGINEER IN CASE OF PILE DRIVING CONFLICT.

WORK UNDER THIS ITEM SHOULD INCLUDE ALL LABOR, TOOLS, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETELY REMOVE THE PILE. MOST EXISTING FOOTINGS ARE TO BE LEFT IN PLACE AS DIRECTED IN THE "STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN" NOTE. THE BID PRICE OF THE PILE REMOVAL SHOULD ALSO INCLUDE ALL COSTS ASSOCIATED WITH THE REMOVAL OF ADDITIONAL PORTIONS OF REINFORCED CONCRETE SUBSTRUCTURE TO ACCESS THE EXISTING PILES FOR REMOVAL.

THE FOLLOWING EXISTING PILES WERE INDICATED ON THE ORIGINAL CONSTRUCTION PLANS:

REAR ABUTMENTS: 12" DIA. CAST-IN PLACE PILES - ESTIMATED PAY LENGTH = 30 FEET
PIER 1 (LEFT): 12 BP 53 PILES - ESTIMATED PAY LENGTH = 34 FEET
PIER 1 (RIGHT): 12 BP 53 PILES - ESTIMATED PAY LENGTH = 27 FEET
PIER 2 (LEFT): 12 BP 53 PILES - ESTIMATED PAY LENGTH = 20 OR 17 FEET
PIER 7 (LEFT): 12 BP 53 PILES - ESTIMATED PAY LENGTH = 22 FEET
PIER 8 (LEFT): 12" DIA. CAST-IN-PLACE PILES - ESTIMATED PAY LENGTH = 40 FEET
PIER 8 (RIGHT): 12" DIA. CAST-IN-PLACE PILES - ESTIMATED PAY LENGTH = 30 FEET
FORWARD ABUTMENTS: 12" DIA. CAST-IN-PLACE PILES - ESTIMATED PAY LENGTH = 60 FEET

PAYMENT FOR THE REMOVAL OF INDIVIDUAL PILES AND SUBSTRUCTURE CONCRETE FOR ACCESS WILL BE MADE PER EACH UNDER ITEM 202 - REMOVAL, MISC.: EXISTING PILE.

ITEM 503 - COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN

TEMPORARY SHEET PILING SHALL BE PERFORMED IN ACCORDANCE WITH ITEM 504 AND DRIVEN TO SUPPORT THE ROADWAY EMBANKMENT DURING PHASED CONSTRUCTION EXCAVATION. SHEET PILING BEHIND THE EXISTING REAR ABUTMENT SHALL EXTEND APPROXIMATELY 20 FEET FROM THE BACK FACE OF THE EXISTING ABUTMENT. IT SHALL BE DRIVEN TO A MINIMUM DEPTH OF 30 FEET BELOW THE ELEVATION OF THE PROPOSED ABUTMENT AND HAVE A MINIMUM SECTION MODULUS OF 65 IN^3 PER FOOT OF WALL. SHEET PILING IN FRONT OF THE NEW FORWARD ABUTMENT SHALL EXTEND ABOUT 30 FEET FROM THE BACK FACE OF THE EXISTING ABUTMENT AND SHALL HAVE A MINIMUM SECTION MODULUS OF ABOUT 14 IN^3 PER FOOT OF WALL AND EMBEDMENT OF 20 FEET. THE SHEET PILING BEHIND THE EXISTING FORWARD ABUTMENT SHALL BE ABOUT 20 FEET FROM THE BACK FACE AND SHALL HAVE A MINIMUM SECTION MODULUS OF 14 IN^3 PER FOOT OF WALL AND EMBEDMENT OF 20 FEET. PORTIONS OF SHEET PILING SHALL BE REMOVED AS NECESSARY TO PLACE PROPOSED ABUTMENT CONCRETE. ALL SHEET PILING SHALL BE REMOVED WHEN PHASE 2 BACKFILLING IS COMPLETE. THIS WORK SHALL BE INCLUDED WITH ITEM 503 - COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN, FOR PAYMENT.

UTILITY LINES

THE UTILITY(IES) SHALL BEAR ALL EXPENSE INVOLVED IN RELOCATING THE AFFECTED UTILITY LINES. THE CONTRACTOR AND UTILITY(IES) ARE TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

ITEM 503, UNCLASSIFIED EXCAVATION, AS PER PLAN

FILL THE VOID CREATED BY EXCAVATING FOR THE ABUTMENT FOOTINGS WITH TYPE B GRANULAR MATERIAL, 703.16.C. AFTER THE FOOTING AND THE BREASTWALL HAVE BEEN CONSTRUCTED, FILL THE VOID BEHIND EACH ABUTMENT UP TO THE BEAM SEAT ELEVATION AND FROM THE BEAM SEAT UP ON A 1:1 SLOPE TO THE SUBGRADE ELEVATION PRIOR TO CONSTRUCTING THE BACKWALL AND SETTING THE BEAMS ON THE ABUTMENT. THE BACKFILL MATERIAL BEHIND THE ABUTMENTS SHALL BE PLACED AND COMPACTED IN 6 INCH LIFTS.

PILES TO BEDROCK (HP14x73 STEEL PILES)

DRIVE PILES TO REFUSAL ON BEDROCK. THE DEPARTMENT WILL CONSIDER REFUSAL TO BE OBTAINED BY PENETRATING SOFT BEDROCK FOR SEVERAL INCHES TO A MINIMUM RESISTANCE OF 20 BLOWS PER INCH OR BY CONTACTING HARD BEDROCK AND THE PILE RECEIVING AT LEAST 20 BLOWS. SELECT THE HAMMER SIZE TO ACHIEVE THE REQUIRED DEPTH TO BEDROCK AND REFUSAL.

UNIT	ULTIMATE BEARING VALUE (TONS/PILE)
ABUTMENT	
LEFT REAR	190
RIGHT REAR	170
PIER	
1 LEFT	142
7 LEFT	184
8 LEFT	146
1 RIGHT	154
8 RIGHT	158

ABUTMENT PILES:
LEFT REAR ABUTMENT: 44 PILES 80 FEET LONG, ORDER LENGTH
RIGHT REAR ABUTMENT: 25 PILES 60 FEET LONG, ORDER LENGTH

PIER PILES:
PIER 1 LEFT: 41 PILES 25 FEET LONG, ORDER LENGTH
PIER 7 LEFT: 41 PILES 20 FEET LONG, ORDER LENGTH
PIER 8 LEFT: 41 PILES 80 FEET LONG, ORDER LENGTH
PIER 1 RIGHT: 41 PILES 25 FEET LONG, ORDER LENGTH
PIER 8 RIGHT: 41 PILES 75 FEET LONG, ORDER LENGTH

PILE DESIGN LOADS (ULTIMATE BEARING VALUE) (14 INCH DIAMETER CAST-IN-PLACE REINFORCED CONCRETE PILES)

THE ULTIMATE BEARING VALUE IS 136 TONS PER PILE FOR THE LEFT FORWARD ABUTMENT PILES. THE ULTIMATE BEARING VALUE IS 134 TONS PER PILE FOR THE RIGHT FORWARD ABUTMENT PILES.

ABUTMENT PILES (14-INCH DIAMETER):
LEFT FORWARD ABUTMENT: 40 PILES 70 FEET LONG, ORDER LENGTH
2 DYNAMIC LOAD TESTING ITEMS
RIGHT FORWARD ABUTMENT: 38 PILES 70 FEET LONG, ORDER LENGTH
1 DYNAMIC LOAD TESTING ITEMS

BATTERED FRICTION PILES

THE BLOW COUNT FOR BATTERED PILES SHALL BE THE BLOW COUNT DETERMINED FOR VERTICAL PILES OF THE SAME ULTIMATE BEARING VALUE DIVIDED BY AN EFFICIENCY FACTOR (D). COMPUTE THE EFFICIENCY FACTOR (D) AS FOLLOWS:

$D = (1 - U \times G)/(1+G^2)^{1/2}$

U = COEFFICIENT OF FRICTION, WHICH IS ESTIMATED AT 0.05 FOR DOUBLE-ACTING AIR OPERATED OR DIESEL HAMMERS; 0.1 FOR SINGLE-ACTING AIR OPERATED OR DIESEL HAMMERS; AND 0.2 FOR DROP HAMMERS.
G = RATE OF BATTER (1/3, 1/4, ETC.)

FOUNDATION BEARING PRESSURE

FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE AS TABULATED BELOW. THE ALLOWABLE BEARING PRESSURE IS ALSO TABULATED BELOW.

UNIT	BEARING PRESSURE, TSF	
	MAXIMUM	ALLOWABLE
PIER 2 LEFT	4.9	5.0
PIER 3 LEFT	5.9	6.0
PIER 4 LEFT	5.5	6.0
PIER 5 LEFT	5.3	6.0
PIER 6 LEFT	4.9	5.0
PIER 2 RIGHT	5.0	5.0
PIER 3 RIGHT	5.0	5.0
PIER 4 RIGHT	5.9	6.0
PIER 5 RIGHT	5.5	6.0
PIER 6 RIGHT	5.0	5.0
PIER 7 RIGHT	6.0	6.0

FOOTINGS

SHALL EXTEND A MINIMUM OF 3 INCHES INTO COMPETENT BEDROCK. IF NECESSARY DUE TO POOR BEDROCK MATERIAL, THE FOOTINGS SHOULD BE LOWERED. IF THE LOW POINT OF THE COMPETENT BEDROCK SURFACE OCCURS 2 FEET OR MORE ABOVE PLAN ELEVATION, THE FINAL FOOTING ELEVATIONS MAY BE RAISED, UPON THE RECOMMENDATION OF A GEOTECHNICAL ENGINEER AND APPROVAL BY THE DIRECTOR, BUT TO AN ELEVATION NOT HIGHER THAN WILL PROVIDE AT LEAST ONE FOOT OF COVER. THE FOOTINGS FOR PIER 6 LEFT, PIER 6 RIGHT, AND PIER 7 RIGHT MUST BE FOUNDED IN COMPETENT BEDROCK BELOW THE FLOW LINE ELEVATION OF THE CUYAHOGA RIVER. STEPPING OF INDIVIDUAL FOOTINGS WILL NOT BE PERMITTED UNLESS SHOWN ON THE PLANS.

ITEM 513, STRUCTURAL STEEL MEMBERS, HYBRID GIRDER, LEVEL SIX FABRICATION, AS PER PLAN

1. DESCRIPTION

1.01 THIS WORK CONSISTS OF FURNISHING ALL NECESSARY LABOR, MATERIALS, AND EQUIPMENT TO FURNISH AND ERECT STRUCTURAL STEEL MEMBERS, DESIGNED AS A HYBRID/MIX OF STEEL MATERIALS CONSISTING OF: ASTM A709, HIGH PERFORMANCE GRADE HSP70W IN COMBINATION WITH GRADE 50W STEEL.

1.02 THIS WORK SHALL BE PERFORMED PER ITEM 513 STRUCTURAL STEEL MEMBERS, LEVEL SIX (6) EXCEPT AS MODIFIED BY THE SEPTEMBER, 2000 EDITION OF THE "GUIDE FOR HIGHWAY BRIDGE FABRICATION WITH HPS70W STEEL, A SUPPLEMENT TO ANSI/AASHTO AWS D1.5-95" AND AS MODIFIED BY THESE PLAN NOTES.

2. MATERIALS

2.01 STEEL FOR GIRDER WEBS AND FLANGES SHALL BE A COMBINATION OF ASTM A709-00 GRADE HPS70W MANUFACTURED BY THE THERMO-MECHANICAL CONTROLLED PROCESSING (TMCP) OR QUENCHED AND TEMPERED HEAT TREATMENT PROCESSING ALONG WITH ASTM A588/709 GRADE 50W. ALL OTHER STEEL SHALL BE ASTM A709-00 GRADE 50W.

2.02 STEEL DESIGNATED CVN SHALL BE IMPACT TESTED TO EXCEED THE TEST VALUES OF ASTM A709-00 TABLE S1.2 "NON-FRACTURE CRITICAL IMPACT TEST REQUIREMENTS" FOR ZONE 2, TEMPERATURE RANGE.

3. ADDITIONAL FABRICATION RESTRICTIONS/WARNINGS:

3.01 APPLICATION OF HEAT FOR CURVING AND STRAIGHTENING APPLICATIONS, CAMBER AND SWEEP ADJUSTMENT, OR OTHER REASON IS LIMITED TO 1100° F/590° C MAXIMUM, AND MUST BE DONE BY PROCEDURES APPROVED BY THE DIRECTOR OR HIS AUTHORIZED REPRESENTATIVE.

3.02 THE MATCHING SUBMERGED ARC WELDING CONSUMABLES ESAB EN14 ELECTRODE IN COMBINATION WITH LINCOLN MIL800H, RECOMMENDED IN APPENDIX A OF THE AASHTO GUIDE FOR HIGHWAY BRIDGE FABRICATION WITH HPS70W STEEL, HAS PRODUCED WELDMENT CONTAINING UNACCEPTABLE DISCONTINUITIES IN A SUBSTANTIAL NUMBER OF COMPLETE PENETRATION GROOVE WELDS IN ONE STRUCTURE, BASED ON THE PARAMETERS USED AND EXPERIENCE OF ONE FABRICATOR. EXTREME CAUTION SHOULD BE EXERCISED WHEN USING THIS ELECTRODE/FLUX COMBINATION.

3.03 CONSIDERATION WILL BE GIVEN TO OTHER WELDING PROCESSES IF A WRITTEN REQUEST IS SUBMITTED TO THE OFFICE OF MATERIALS MANAGEMENT IN ACCORDANCE WITH CMS 108.05. OTHER WELDING PROCESSES MUST BE QUALIFIED AND TESTED AS REQUIRED BY THE REFERENCED SPECIFICATIONS AND THESE NOTES.

3.04 IN ADDITION TO THE REQUIREMENTS OF ANSI/AASHTO/AWS D1.5 SECTION 5.17, ALL PROCEDURE QUALIFICATION TESTS MUST BE ULTRASONICALLY TESTED IN COMFORMANCE WITH THE REQUIREMENTS OF AWS D1.5-95, SECTION 6, PART C. EVALUATION MUST BE IN ACCORDANCE WITH AWS D1.5-95, TABLE 9.1, ULTRASONIC ACCEPTANCE - REJECTION CRITERIA - TENSILE STRESS. INDICATIONS FOUND AT THE INTERFACE OF THE BACKING BAR MAY BE DISREGARDED, REGARDLESS OF THE DEFECT RATING.

3.05 WHENEVER MAGNETIC PARTICLE TESTING IS DONE, ONLY THE YOKE TECHNIQUE WILL BE ALLOWED, AS DESCRIBED IN SECTION 6.7.6.2 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE, MODIFIED TO TEST USING ALTERNATING CURRENT ONLY. THE PROD TECHNIQUE WILL NOT BE ALLOWED.

4. BASIS OF PAYMENT

PAYMENT FOR THE ABOVE COMPLETED AND ACCEPTED QUANTITIES WILL BE MADE AT THE CONTRACT BID PRICE FOR:

ITEM	EXT.	UNITS	DESCRIPTION
513	10401	POUND	STRUCTURAL STEEL MEMBERS, HYBRID GIRDER, LEVEL SIX FABRICATION, AS PER PLAN

GENERAL NOTES CONTINUED: SEE SHEET 13/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

REVIEWED DAP DATE 3/18/04
STRUCTURE FILE NUMBER 7709073(L) 7709082(R)
DESIGNED DLR DRAWN JLS CHECKED BLN REVISED

GENERAL NOTES 2 - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

12/77

372/612

SU271GNA.DGN 6/23/04 TWH,JLS,RC

ITEM 514, FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT, AS PER PLAN
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN

THE STEEL TO BE PAINTED SHALL INCLUDE THE LAST 10 FEET OF EACH GIRDER END ADJACENT TO THE ABUTMENTS INCLUDING ALL CROSS FRAMES AND OTHER STEEL WITHIN THESE LIMITS. ALSO TO BE PAINTED ARE ALL OUTSIDE SURFACES OF THE SCUPPERS BELOW THE BRIDGE DECK, DOWNSPOUTS, THEIR SUPPORT BRACKETS AND ALL MISCELLANEOUS ATTACHMENT HARDWARE SUCH AS CLAMPS, NUTS, BOLTS AND WASHERS.

THE STEEL WITHIN THE 10 FOOT LIMITS AT THE ENDS OF THE GIRDERS, AS WELL AS THE SCUPPERS AND ATTACHMENTS TO THE GIRDERS, SHALL HAVE A TOP COAT COLOR CLOSELY MATCHING FEDERAL STANDARD NO. 595B-20045 OR 20059 (THE COLOR OF WEATHERED STEEL).

ALL DRAINAGE DOWNSPOUTS AND COLLECTION BOXES ATTACHED TO THE PIERS SHALL HAVE A TOP COAT COLOR CLOSELY MATCHING THE COLOR OF THE EPOXY-URETHANE SEALER APPLIED TO THE PIERS (FEDERAL STANDARD NO. 595B-17778 - "LIGHT NEUTRAL").

THE PAINT MAY BE FIELD APPLIED OR SHOP APPLIED. IF THE PAINT IS SHOP APPLIED, THE TWO SHOP COATS (EPOXY/URETHANE PER 514) SHALL BE APPLIED IN A STRUCTURAL STEEL FABRICATION SHOP HAVING PERMANENT BUILDINGS PER 513.04 AND PRE-QUALIFIED AT THE 513 LEVEL UF. THE PAINTER IS UNDER SUPERVISION OF A QUALITY CONTROL PAINT SPECIALIST AND IS A 513 FABRICATOR, THE FIELD PAINTING SUBCONTRACTOR PERFORMING TOUCH UP WORK IN THE FIELD AND/OR SHOP PAINTING AT THE 513 FABRICATOR'S FACILITY OR AN INDEPENDENT PAINTER THAT IS CERTIFIED BY SSPC-QP3 WITH FACILITIES EVALUATION AND ACCEPTANCE BY THE DEPARTMENT.

ALL GALVANIZED STEEL TO BE PAINTED SHALL BE PREPARED PRIOR TO PAINTING PER THE ITEM 514, FIELD PAINTING, MISC.: SURFACE PREPARATION OF GALVANIZED STEEL NOTE. THE EPOXY COATING SHALL BE APPLIED WITHIN 24 HOURS OF THE BRUSH-OFF BLASTING.

FIELD REPAIRS AND TOUCH UPS SHALL FOLLOW WORK LIMITATIONS SPECIFIED PER 514 AND BE AS DIRECTED BY THE ENGINEER. BOLTS SHALL BE PAINTED IN THE FIELD.

PAYMENT FOR THE INTERMEDIATE COAT AND FINISH COAT PAINTING SHALL BE MADE PER LUMP SUM UNDER ITEM 514, FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT, AS PER PLAN, AND ITEM 514, FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN.

ITEM 514, FIELD PAINTING, MISC.: SURFACE PREPARATION OF GALVANIZED STEEL

THE GALVANIZED STEEL DRAINAGE SYSTEM SHALL BE PAINTED WITH AN EPOXY INTERMEDIATE COAT AND URETHANE FINISH COAT. PRIOR TO PAINTING, THE GALVANIZED SURFACES TO BE PAINTED SHALL RECEIVE THE PREPARATION DETAILED BELOW.

PRIOR TO GALVANIZING ALL CORNERS OF THERMALLY CUT OR SHEARED EDGES SHALL HAVE A 1/16 INCH RADIUS OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE. SURFACE PREPARATION MAY BE PERFORMED IN THE SHOP OR IN THE FIELD.

STEEL TO BE PAINTED SHALL NOT BE POST-TREATED WITH WATER QUENCHING NOR CHROMATE CONVERSION COATED, SINCE THEY WILL ADVERSELY AFFECT THE BOND BETWEEN THE GALVANIZED STEEL AND THE PAINT. THE CONTRACTOR SHALL VERIFY THEY HAVE NOT BEEN PERFORMED, AND SHALL PERFORM A SPOT TEST PER ASTM B 201 FOR CHECKING THE PRESENCE OF A CHROMATE CONVERSION COATING.

AFTER GALVANIZATION, ZINC HIGH SPOTS SUCH AS METAL DRIP LINE AND OTHERS THAT WOULD DETRACT FROM THE PAINT APPEARANCE WILL BE MADE FLUSH WITH THE SURROUNDING SURFACE BY SSPC SP2 OR SP3. CARE SHALL BE TAKEN THAT THE BASE GALVANIZED COATING IS NOT REMOVED. REPAIRED AREAS SHALL BE CHECKED FOR REQUIRED COATING THICKNESS.

GALVANIZED COATINGS DAMAGED IN THE SHOP SHALL BE REPAIRED PER ASTM A780 METHOD A3. GALVANIZED COATINGS DAMAGED IN THE FIELD SHALL BE REPAIRED PER ASTM A780 METHOD A1.

AFTER REMOVING HIGH SPOTS, THE GALVANIZED COATING SHALL BE CLEANED PER SSPC SP-1. THE CLEANING SOLUTION SHALL BE AN ALKALINE SOLUTION WITH A PH RANGING FROM A MINIMUM OF 11 TO A MAXIMUM OF 12. THIS SOLUTION CAN BE APPLIED BY IMMERSION OR SPRAY OR SOFT NYLON BRUSH. IF IMMERSING OR SPRAYING, MAINTAIN A SOLUTION TEMPERATURE OF 140°F TO 180°F. FOLLOW CLEANING WITH A HOT WATER OR HIGH PRESSURE WASHER RINSE NOT EXCEEDING 1450 PSI. INDIVIDUAL PIECES SHALL BE SEPARATED AND POSITIONED TO FACILITATE DRAINAGE AND DRYING. THE PIECES SHALL BE COMPLETELY DRY BEFORE PROCEEDING.

AFTER CLEANING, THE PIECES SHALL BE ABRASIVE BLASTED PER SSPC-SP7 BRUSH-OFF BLAST CLEANING. THE BLASTING OPERATION SHALL ROUGHEN THE GALVANIZED SURFACE TO AN ANGULAR SURFACE PROFILE OF 0.25 TO 0.50 MILS. THE BLASTING EQUIPMENT, TECHNIQUE AND ABRASIVE MATERIAL SHALL BE SELECTED TO PROVIDE FOR THE SPECIFIED SURFACE PROFILE WITHOUT REMOVAL OF ZINC LAYERS. THE FINAL ZINC MILLAGE SHALL NOT BE LESS THAN 3.0 MILS AND SHALL BE MEASURED PRIOR TO EPOXY COAT APPLICATION. ALL ABRASIVE RESIDUE SHALL BE REMOVED WITH CLEAN COMPRESSED AIR OR OTHER METHODS ACCEPTABLE TO THE DEPARTMENT.

AFTER OBTAINING THE SURFACE PROFILE, APPLY THE TWO COAT PAINT SYSTEM. THE EPOXY COATING SHALL BE APPLIED WITHIN 24 HOURS OF THE BRUSH-OFF BLASTING.

PAYMENT FOR THE SURFACE PREPARATION OF THE GALVANIZED STEEL FOR PAINTING, AS DESCRIBED ABOVE, SHALL BE MADE PER LUMP SUM UNDER ITEM 514, FIELD PAINTING, MISC.: SURFACE PREPARATION OF GALVANIZED STEEL.

ITEM 864 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)

EPOXY-URETHANE SHALL BE THE NEUTRAL COLOR (FS 17778). ALL ABUTMENT SURFACES SHALL BE COMPLETELY SEALED DOWN TO GROUND LINE WITH EPOXY-URETHANE. ALL PIER SURFACES, EXCEPT THE BOTTOM FACE OF THE CAP (BETWEEN THE COLUMNS) AND THE STRUT, SHALL BE COMPLETELY SEALED DOWN TO GROUND LINE WITH EPOXY-URETHANE. THE SUPERSTRUCTURES SHALL BE SEALED AS PER PLAN DETAILS.

ITEM 894 - HIGH PERFORMANCE CONCRETE FOR BRIDGE DECK WITH WARRANTY

THE DESIGN MIX SHALL BE CLASS HP4. (SEE CMS TABLE 499.03-4.) CURING SHALL BE PER METHOD (A) WATER CURE ONLY.

CONCRETE PARAPETS: AS SOON AS A CONCRETE SAW CAN BE OPERATED WITHOUT DAMAGING THE FRESHLY PLACED CONCRETE, SAWCUT 1¼" DEEP CONTROL JOINTS INTO THE PERIMETER OF THE CONCRETE PARAPET STARTING AND ENDING AT THE ELEVATION OF THE CONCRETE DECK. PLACE THE SAWCUTS AT A MINIMUM OF 6 FOOT AND A MAXIMUM OF 10 FOOT CENTERS. USE AN EDGE GUIDE, FENCE, OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE, AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF ¼ INCH. SEAL THE PERIMETER OF THE DEFLECTION CONTROL JOINT TO A MINIMUM DEPTH OF 1 INCH WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO ASTM C920, TYPE S.

LEAVE THE BOTTOM ½ INCH OF THE INSIDE AND OUTSIDE FACE UNSEALED TO ALLOW WATER TO ESCAPE.

THE QUANTITY OF CONCRETE, DEFLECTION JOINT SAWCUT, CAULKING MATERIAL AND ½" PREFORMED EXPANSION JOINT FILLER FOR PARAPET ALONG THE LENGTH OF THE TURNED BACK WINGWALLS SHALL BE INCLUDED IN THIS ITEM FOR PAYMENT.

GENERAL NOTES CONTINUED: SEE SHEET 14/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
DLR	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709073(1) 7709021(R)	

GENERAL NOTES 3 - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

13/77

373
612

SU271GNA.DGN 6/23/04 TWH,JLS,RC

ITEM SPECIAL - MODULAR EXPANSION JOINT

A. DESCRIPTION

THIS ITEM SHALL CONSIST OF FURNISHING ALL MATERIALS, SERVICES, LABOR, TOOLS, EQUIPMENT, AND INCIDENTALS NECESSARY TO DESIGN, FABRICATE, INSPECT, TEST, AND INSTALL MODULAR EXPANSION JOINTS IN ACCORDANCE WITH THE PLANS AND THESE NOTES. ALL REQUIREMENTS OF CMS 513, STRUCTURAL STEEL MEMBERS, LEVEL UF APPLY, UNLESS MODIFIED BY THESE NOTES.

B. DESIGN

1. MODULAR JOINTS AND THEIR SUPPORTS SHALL BE DESIGNED FOR AASHTO HS25 LOADING WITH 100% IMPACT. MODULAR DEVICES MAIN LOAD BEARING BEAMS, SUPPORT BEAMS, AND WELDS SHALL BE DESIGNED FOR FATIGUE. THE MANUFACTURER OF THE EXPANSION JOINT MUST SUBMIT DESIGN CALCULATIONS SHOWING THAT THE DEVICE CAN MEET THE IMPACT AND FATIGUE DESIGN REQUIREMENTS. THE FATIGUE CYCLES SHOULD BE 2,000,000 + TRUCK LOAD CYCLES.

2. THE DESIGN SHALL BE PREPARED BY AND CHECKED UNDER THE AUTHORITY OF AN OHIO-REGISTERED PROFESSIONAL ENGINEER AND BEAR HIS OR HER PROFESSIONAL ENGINEER SEAL. THE DESIGN CALCULATIONS SHALL BE INCLUDED WITH THE CONTRACTOR'S SUBMISSION OF SHOP DRAWINGS PER CMS 513.06.

3. THE SHOP DRAWINGS SHALL CONTAIN A DETAILED INSTALLATION PROCEDURE AND INCLUDE ANY SPECIFIC MANUFACTURER'S NOTES NECESSARY FOR COMPLETION OF THE WORK AND CONSTRUCTION PHASING.

4. THE MODULAR JOINT COMPONENTS, JOINT ARMOR AND ANCHORAGES SHALL BE DESIGNED AND TESTED ACCORDING TO THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT # 402 APPENDIX A AND B.

5. TEMPORARY AND FIELD CONNECTIONS TO THE BRIDGE SHALL BE DESIGNED TO ACCOMMODATE ADJUSTMENTS FOR ROADWAY GEOMETRY AND VARYING TEMPERATURE.

6. THE MODULAR JOINT SHALL ACCOMMODATE THE PLAN SPECIFIED MOVEMENT FOR A COLD CLIMATE AS SPECIFIED BY 2002 AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES SECTION 3.16.

7. SPACING OF SUPPORT BEAMS SHALL BE LIMITED TO 3'-0" CENTERS UNDER MAIN LOAD BEARING BEAMS UNLESS FATIGUE TESTING OF THE ACTUAL WELDING CONNECTION DETAILS HAS BEEN PERFORMED TO SHOW THAT A GREATER SPACING IS ACCEPTABLE.

8. SUPPORT BAR BEARINGS WILL BE SUPPLIED TO TRANSFER THE LOAD FROM THE SUPPORT BARS TO THE JOINT ARMOR.

9. EQUALIZATION SPRINGS WHICH WORK COUNTER TO THE COMPRESSION FORCES OF THE SEALING ELEMENTS SHALL BE USED TO MAINTAIN EQUALIZATION EXPANSION PROPERTIES FOR EACH ELEMENT ACROSS THE JOINT.

10. CONTROL SPRINGS WHICH WORK LONGITUDINALLY SHALL BE USED TO MAINTAIN EQUIDISTANT SPACING BETWEEN TRANSVERSE SEPARATION BEAMS.

11. SEPARATION BEAMS/ TRANSVERSE DIVIDERS SHALL BE SUPPLIED AS NEEDED.

12. THE SEAL SHALL BE A STRIP SEAL TYPE CONNECTED TO MATCHING RETAINERS CONNECTED TO THE JOINT ARMOR AND MACHINED GROOVES IN THE CENTER BEAM. EACH INDIVIDUAL STRIP SEAL SHALL NOT EXCEED 3.15 INCHES OF TOTAL HORIZONTAL MOVEMENT.

13. THE NEOPRENE SEALS, SUPPORT BAR BEARINGS, AND EQUALIZATION SPRINGS SHALL BE REMOVABLE AND REPLACEABLE.

14. THE SEALS AND RETAINERS SHALL BE SET 1/8" LOWER THAN THE ROADWAY SURFACE.

15. THE MODULAR EXPANSION JOINT SHALL BE DESIGNED AND FABRICATED AS A CONTINUOUS FULL LENGTH JOINT WITHOUT FIELD SPLICES, EXCEPT AS REQUIRED FOR PHASED CONSTRUCTION.

C. MATERIALS

1. STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 50. CENTER BEAMS, EDGE BEAMS, AND JOINT ARMOR SHALL BE CHARPY V NOTCH IMPACT TESTED PER ASTM A709 TABLE S1.2 ZONE 2 TEMPERATURE RANGE. TUBE SECTIONS SHALL BE ASTM A501 OR A500 GRADE B.

2. STAINLESS STEEL SHALL BE ASTM A240 TYPE 304, NO. 8 FINISH WITH A MINIMUM THICKNESS OF 13 GAGE.

3. ELASTOMERIC, PTFE, URETHANE AND PREFORMED FABRIC MATERIALS USED IN SUPPORT BAR BEARINGS SHALL BE TESTED AND REPORTED BY THE MANUFACTURER OR AN INDEPENDENT TESTING LABORATORY FOR EACH BEARING AND SPRING TYPE. THE SUBMISSION OF MATERIAL CERTIFICATION AND TESTING DATA SHALL BE PER 501.06. THESE MATERIALS SHALL BE TESTED ACCORDING TO THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT # 402 APPENDIX A "GUIDELINE FOR DURABILITY TESTING OF SPRINGS AND BEARINGS FOR MBEJ".

4. STRIP SEALS SHALL BE EXTRUDED POLYCHLOROPRENE CONFORMING TO ASTM D2628. THE RECOVERY TEST IS NOT APPLICABLE, DUE TO CONFIGURATION OF THE SEAL. PHYSICAL PROPERTIES OF THE STRIP SEAL SHALL CONFORM TO TABLE "A". THE MANUFACTURER OR AN ACCREDITED LABORATORY SHALL TEST EACH LOT AS SPECIFIED AND SUBMIT CERTIFIED TEST DATA PER 501.06. THE SEAL AND RETAINER ARE IN INTEGRAL SYSTEM SUPPLIED BY ONE MANUFACTURER.

TABLE A
(PHYSICAL PROPERTIES OF SEAL ELEMENT)

PROPERTY	REQUIREMENT	ASTM METHOD
TENSILE STRENGTH, MIN. PSI	2000	D412
ELONGATION @ BREAK, MIN.(PERCENT)	250	D412
HARDNESS, TYPE A DUROMETER, POINTS	60±5	D2240 (MODIFIED)
OVEN AGING, 70 HR @ 212° F, TENSILE STRENGTH LOSS, MAX. ELONGATION, LOSS, MAX. HARDNESS, TYPE A DUROMETER, POINTS CHANGE	 20% 20% 0 TO +10	D573 D2240 (MODIFIED)
OIL SWELL, ASTM OIL 3, 70 HR @ 212° F, WEIGHT CHANGE MAX.	45%	D471
OZONE RESISTANCE 20% STRAIN, 300 PPHM IN AIR, 70 HR @ 104° F (WIPED WITH TOLUENE TO REMOVE SURFACE CONTAMINATION)	NO CRACKS	D1149
LOW TEMPERATURE STIFFENING 7 DAYS@ 14° F HARDNESS, TYPE A DUROMETER, POINTS CHANGE COMPRESSION SET, 70 HR @ 212° F. MAX.	 0 TO +15 40%	D2240 D2240 (MODIFIED) D395 METHOD B

5. SEAL RETAINERS: EXTRUDE, HOT ROLL OR MACHINE, STEEL RETAINERS INTO A SOLID SHAPE. RETAINERS MANUFACTURED FROM BENT PLATE OR BUILT UP PIECES ARE NOT ACCEPTABLE. THE INTERNAL DIMENSIONS OF THE RETAINER SHALL BE SPECIFIED BY THE MANUFACTURER TO ACHIEVE POSITIVE SEAL AND ANCHORAGE.

6. CENTER BEAMS SHALL BE SOLID, NON-WELDED, MACHINED OR EXTRUDED STEEL SECTION.

7. LUBRICANT - ADHESIVE. ONE PART MOISTURE CURING POLYURETHANE COMPOUND MEETING THE REQUIREMENTS OF ASTM D4070 AND AS SPECIFIED BY THE SEAL MANUFACTURER.

8. HARDWARE SHALL BE ASTM A325 TYPE ONE, GALVANIZED OR A449 GALVANIZED.

D. FABRICATION

1. THE STRUCTURAL STEEL COMPONENTS OF THE MODULAR JOINTS SHALL BE FABRICATED ACCORDING TO CMS 513.

2. THE MODULAR JOINT SHALL BE SHOP ASSEMBLED WITH ALL COMPONENTS EXCEPT NEOPRENE SEALS, PER CMS 513.24, EXCEPT THAT FULL ASSEMBLY IS REQUIRED WITH PHASED CONSTRUCTION.

3. JOINTS IN STRIP SEALS: NO JOINTS ARE ALLOWED, UNLESS APPROVED BY THE DIRECTOR.

4. JOINTS IN RETAINERS: WELDS SHALL BE WATER TIGHT, PARTIAL PENETRATION WELDS AROUND THE OUTER PERIPHERY OF THE ABUTTING SURFACES. SPLICES SHALL ONLY BE MADE IN THE COMPRESSION ZONE OF THE JOINT ARMOR. GRIND FLUSH ALL WELDS IN CONTACT WITH THE SEAL AND JOINT ARMOR. DO NOT USE SHORT PIECES OF RETAINERS LESS THAN 6'-0" LONG, UNLESS REQUIRED AT PARAPETS. DO NOT PROVIDE ADDITIONAL SPLICES IN RETAINERS AT PARAPET SECTIONS OTHER THAN REQUIRED FOR GEOMETRY.

5. SHOP OR FIELD WELDS OF CENTER BEAMS AND JOINT ARMOR SHALL BE COMPLETE PENETRATION WELDS, GROUND TO PROVIDE SMOOTH TRANSITIONS, AND SHALL BE 100 % ULTRASONICALLY TESTED PER AASHTO/AWS D1.5M/D1.5:2002 BRIDGE WELDING CODE, WITH ACCEPTANCE CRITERIA PER TABLE 6.3, WITNESSED BY THE DEPARTMENT.

6. THE CENTER BEAM TO SUPPORT BAR CONNECTIONS SHALL BE COMPLETE PENETRATION WELDS, GROUND TO PROVIDE SMOOTH TRANSITIONS, AND SHALL BE 100% ULTRASONICALLY TESTED PER AASHTO/AWS D1.5M/D1.5:2002 BRIDGE WELDING CODE, WITH ACCEPTANCE CRITERIA PER TABLE 6.3, WITNESSED BY THE DEPARTMENT.

7. TEMPORARY SUPPORTS: FABRICATOR-DESIGNED AND INSTALLED SUPPORTS ARE REQUIRED TO SUPPORT SHIPPING, ERECTION, AND CONSTRUCTION FORCES WITHOUT DAMAGE TO THE STEEL ARMOR OR COATINGS. THESE SUPPORTS SHALL BE ADJUSTABLE FOR FIELD TEMPERATURE SETTING.

E. COATING

1. ALL STEEL SURFACES AND COMPONENTS, EXCEPT AT STAINLESS STEEL AND PTFE SLIDING SURFACES, SHALL BE COATED PER CMS 516.03. DAMAGED COATINGS SHALL BE REPAIRED PER CMS 516.03. METALIZED COATINGS SHALL NOT BE FIELD PAINTED.

2. PRIOR TO SHIPPING, RETAINER GROOVES SHALL BE PROTECTED FROM CONSTRUCTION DEBRIS BY THE INSTALLATION OF BACKER RODS OR OTHER EFFECTIVE MASKING TECHNIQUES.

F. INSTALLATION

1. THE JOINT MANUFACTURER'S TECHNICAL REPRESENTATIVE SHALL PHYSICALLY OVERSEE THE FABRICATION, INSTALLATION, ADJUSTMENT AND TESTING DURING ALL OPERATIONS. WHERE SPECIAL INSTRUCTIONS ARE NOT CONTAINED HEREIN OR ELSEWHERE IN THESE NOTES, DIRECTION FOR THE INSTALLATION SHALL BE ACCORDING TO THE RECOMMENDATIONS OF THE TECHNICAL REPRESENTATIVE. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE THE TECHNICAL REPRESENTATIVE.

2. THE SUPERSTRUCTURE DECK ADJCENT TO THE ABUTMENT SHALL BE IN PLACE WITH AN APPROPRIATE BLOCKOUT BEFORE INSTALLING THE MODULAR JOINT. THE JOINT SHALL BE POSITIONED TO MATCH ROADWAY GEOMETRY, SUPERSTRUCTURE CONNECTIONS AND TEMPERATURE OPENING. CARE SHALL BE TAKEN TO MAINTAIN EXACT ALIGNMENT OF ADJACENT ENDS OF THE ARMOR AND CENTER BEAMS FOR FIELD-WELDED UNITS. TEMPORARY SUPPORTS SHALL BE PROVIDED AS DIRECTED BY THE MANUFACTURER TO MAINTAIN THE PROPER POSITIONING FOR PHASED CONSTRUCTION, THE CONTRACTOR'S METHODS FOR INSTALLATION AND TEMPORARY SUPPORTS SHALL ACHIEVE SEPERATION OF THE PHASES AND UNRESTRICTED TEMPERATURE MOVEMENT.

3. THE CONTRACTOR'S METHODS OF CONCRETE PLACEMENT SHALL INCLUDE VIBRATION AND HAND WORK AS NECESSARY TO ACHIEVE CONSOLIDATION AND ELIMINATE AIR VOIDS, PARTICULARLY IN AND AROUND THE JOINT BLOCKOUTS.

4. PLACE CONCRETE IN THE DECK BLOCKOUT FIRST AND ALLOW IT TO CURE. CHECK THE THE ABUTMENT OR ADJACENT SPAN SIDE OF THE MODULAR JOINT FOR ALIGNMENT AND TEMPERATURE ADJUSTMENT. TEMPERATURE SHALL BE MEASURED AT THE UNDERSIDE OF THE CONCRETE DECK AT EACH END AND MID-SPAN TO ACHIEVE THE AVERAGE SUPERSTRUCTURE TEMPERATURE. PLACE CONCRETE IN THE BACKWALL BLOCKOUT SECOND. THE MANUFACTURER'S REPRESENTATIVE SHALL CHECK THAT TEMPERATURE MOVEMENT HAS NOT CAUSED ANY DAMAGE TO THE BOND BETWEEN THE JOINT AND THE CONCRETE.

5. EXAMINE SEAL RETAINERS FOR SOIL OR DEFECTS THAT CAN DAMAGE THE SEAL. REPAIR ANY DEFECTS AS DIRECTED BY THE MANUFACTURER'S REPRESENTATIVE.

6. THE NEOPRENE SEAL ELEMENTS AND THE RETAINER GROOVES SHALL BE SOLVENT CLEANED TO REMOVE OIL, GREASE, OR OTHER SOIL IMMEDIATELY PRIOR TO INSTALLING THE SEALS. THE SEALS SHALL BE INSTALLED WITH THE RECOMMENDED ADHESIVE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE BONDING SURFACES SHALL BE CLEAN, DRY, AND WARMER THAN 45° F.

7. THE COMPLETE, INSTALLED EXPANSION DEVICE SHALL BE TESTED FOR WATERTIGHTNESS, BY FLOODING THE TOTAL EXPANSION JOINT LENGTH WITH WATER FOR A PERIOD OF NOT LESS THAN ONE HOUR. THE ENTIRE JOINT SYSTEM SHALL BE COVERED EITHER BY PONDED OR FLOWING WATER. SHOULD THE JOINT SYSTEM EXHIBIT ANY EVIDENCE OF WATER LEAKAGE, THE CONTRACTOR SHALL LOCATE THE POINTS OF LEAKAGE AND SHALL TAKE ANY AND ALL MEASURES NECESSARY TO STOP THE LEAKAGE. THIS WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE. AFTER ALL REPAIRS HAVE BEEN MADE, AN ADDITIONAL TEST FOR WATERTIGHTNESS SHALL BE PERFORMED.

G. METHOD OF MEASUREMENT

THE DEPARTMENT WILL MEASURE THE MODULAR JOINTS BY THE NUMBER OF FEET HORIZONTALLY ALONG THE JOINT CENTERLINE AND BETWEEN THE OUTER LIMITS OF THE FABRICATED JOINT.

H. BASIS OF PAYMENT

PAYMENT WILL BE MADE AT CONTRACT PRICES FOR:

ITEM	UNIT	DESCRIPTION
SPECIAL	FOOT	MODULAR EXPANSION JOINT

SU271EXC.DGN 6/23/04 SJK,KH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
DLR	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709031(L) 7709021(LR)	

GENERAL NOTES 4 - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

ESTIMATED QUANTITIES (STEEL)

CALCULATED BPB DATED 10/03
CHECKED ALP DATED 11/03

ITEM	ITEM EXT.	TOTAL LEFT STRUCTURE	TOTAL RIGHT STRUCTURE	UNIT	DESCRIPTION	LEFT STRUCTURE (SOUTHBOUND) SUPER	ABUTS.	PIERS	GEN'L	RIGHT STRUCTURE (NORTHBOUND) SUPER	ABUTS.	PIERS	GEN'L	SEE SHEET
202	11003	LUMP	LUMP		STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				LUMP				LUMP	11/77
202	98100	42	18	EACH	REMOVAL, MISC.: EXISTING PILE				42				18	12/77
503	11101	LUMP	LUMP		COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN				LUMP				LUMP	12/77
503	21101	4098	3487	CU YD	UNCLASSIFIED EXCAVATION, AS PER PLAN		810	3288			526	2961		12/77
503	31120	570	664	CU YD	SHALE EXCAVATION			570				664		
505	11100	LUMP	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION				LUMP				LUMP	
507	00300	8645	5600	FT	STEEL PILES HP14x73, FURNISHED		3520	5125			1500	4100		
507	00350	7810	5065	FT	STEEL PILES HP14x73, DRIVEN		3300	4510			1375	3690		
507	00600	2600	2470	FT	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN		2600				2470			
507	00650	2800	2660	FT	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED		2800				2660			
509	10000	1,690,622	1,562,633	POUND	EPOXY COATED REINFORCING STEEL	945,760	55,176	689,686		917,377	40,041	605,215		
511	41001	2635	2405	CU YD	CLASS C CONCRETE, PIER ABOVE FOOTINGS, AS PER PLAN			2635				2405		41/77
511	43500	613	456	CU YD	CLASS C CONCRETE, ABUTMENT INCLUDING FOOTING		613				456			
511	46500	972	905	CU YD	CLASS C CONCRETE, FOOTING			972				905		
511	52000	LUMP	LUMP		CLASS HP CONCRETE, TEST SLAB	LUMP				LUMP				
512	33001	11	5	SQ YD	TYPE 2 WATERPROOFING, AS PER PLAN		11				5			19/77
513	10401	2,530,000	2,400,000	POUND	STRUCTURAL STEEL MEMBERS, HYBRID GIRDER, LEVEL SIX FABRICATION, AS PER PLAN	2,530,000				2,400,000				12/77
513	20000	17,955	17,670	EACH	WELDED STUD SHEAR CONNECTORS	17,955					17,670			
514	00301	LUMP	LUMP		FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT, AS PER PLAN *	LUMP				LUMP				13/77
514	00401	LUMP	LUMP		FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN *	LUMP				LUMP				13/77
514	27800	LUMP	LUMP		FIELD PAINTING MISC.: SURFACE PREPARATION OF GALVANIZED STEEL	LUMP				LUMP				13/77
514	10000	7	6	EACH	FINAL INSPECTION REPAIR *	7				6				
SPECIAL	516 12400	54	54	FT	MODULAR EXPANSION JOINT, 3 SEAL	54				54				14/77
SPECIAL	516 12400	54	54	FT	MODULAR EXPANSION JOINT, 4 SEAL	54				54				14/77
516	44200		5	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (13"x29"x3.573" WITH 14"x40" BEVELED LOAD PLATE)							5		
516	44300	5		EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (15"x29"x4.113" WITH 16"x40" BEVELED LOAD PLATE)			5						
516	44300		10	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (14"x29"x4.493" WITH 15"x40" BEVELED LOAD PLATE)							10		
516	44300	10		EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (14"x29"x4.503" WITH 15"x40" BEVELED LOAD PLATE)			10						
516	44400	10	10	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (18"x29"x6.012" WITH 19"x30" BEVELED LOAD PLATE)			10				10		
516	45000	10	10	EACH	STEEL POT BEARING (300 k) (SEE SPECIAL PROVISION)		10				10			
516	45000	5		EACH	STEEL POT BEARING (700 k) (SEE SPECIAL PROVISION)			5						
516	45000	5	15	EACH	STEEL POT BEARING (750 k) (SEE SPECIAL PROVISION)			5				15		
516	45000	5		EACH	STEEL POT BEARING (800 k) (SEE SPECIAL PROVISION)			5						
518	12300	40	40	EACH	SCUPPER, INCLUDING SUPPORTS	40				40				
518	21200	213	178	CU YD	POROUS BACKFILL WITH FILTER FABRIC		213				178			
518	40000	190	170	FT	6" PERFORATED CORRUGATED PLASTIC PIPE		190				170			
518	40010	80	113	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS		80				113			
518	51100	691	601	FT	8" PIPE DOWNSPOUT, INCLUDING SPECIALS			691				601		
523	20000	2	1	EACH	DYNAMIC LOAD TESTING				2				1	
526	25001	297	302	SQ YD	REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN		297				302			72/77
864	10100	9709	8853	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	3597	301	5811		3471	230	5152		
894	10001	3191	3099	CU YD	HIGH PERFORMANCE CONCRETE, FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN	3191				3099				13/77

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* SEE PROPOSAL NOTE

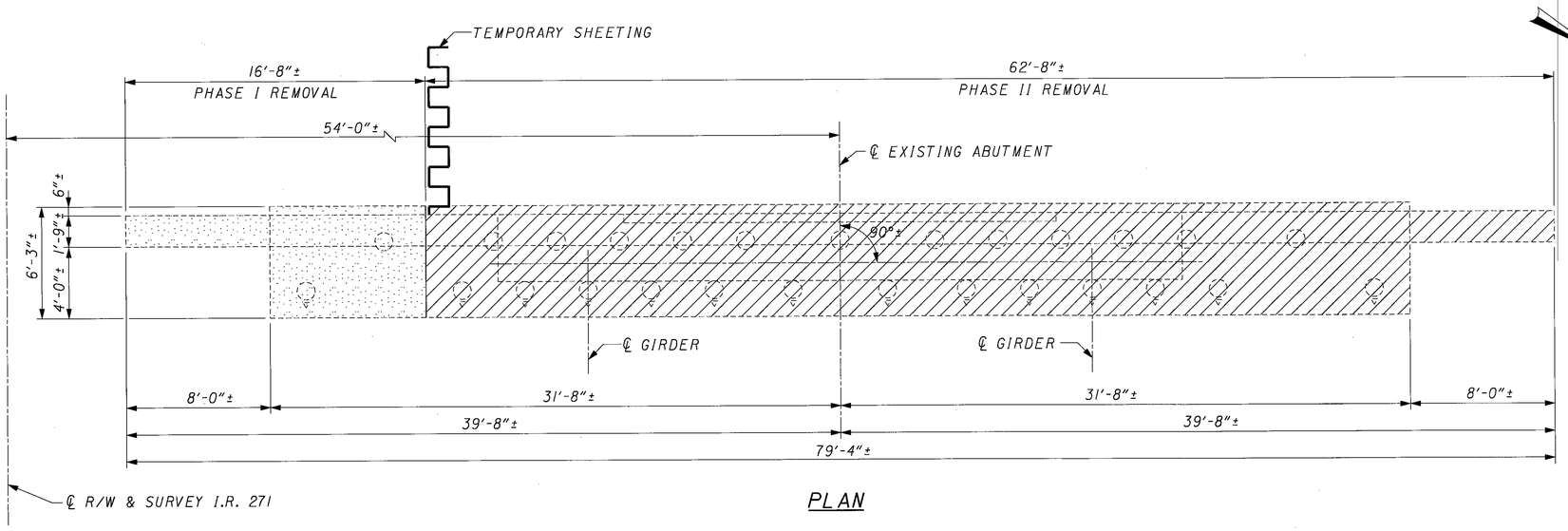
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

REVIEWED DAP 3/18/04
STRUCTURE FILE NUMBER 770901 3 (L) 770902 1 (R)
DRAWN SJK
REVISED
DESIGNED DLR
CHECKED BLN

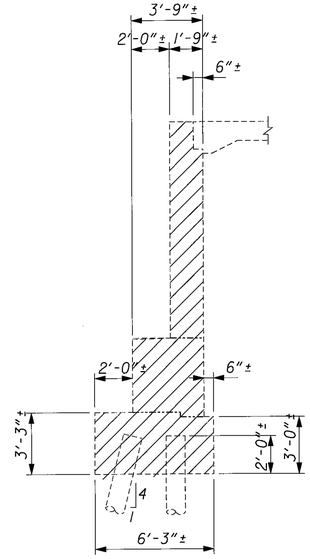
ESTIMATED QUANTITIES - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

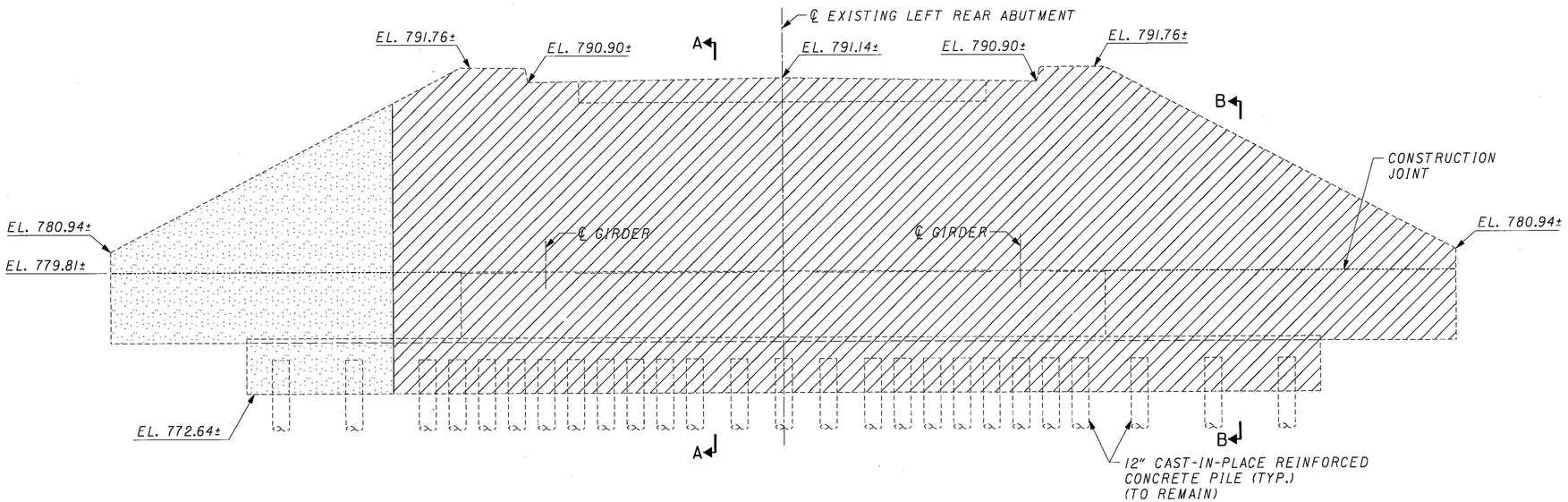
SU271SDM.DGN 11/02/04 JLS,SJK,TWH,RC,HN



PLAN

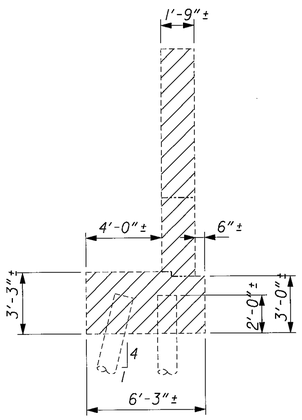


SECTION A-A



ELEVATION

EXISTING LEFT REAR ABUTMENT



SECTION B-B

NOTE

EXISTING RIGHT REAR ABUTMENT WILL BE REMOVED IN ACCORDANCE WITH CMS 202 DURING PHASE III.

LEGEND

INDICATES MATERIALS TO BE REMOVED DURING PHASE I REMOVAL

INDICATES MATERIALS TO BE REMOVED DURING PHASE II REMOVAL

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

REVIEWED DAP
DATE 3/18/04
STRUCTURE FILE NUMBER 7709013(L) 7709021(R)
DRAWN KH
REVISED
DESIGNED DLR
CHECKED KAK

REAR ABUTMENT REMOVAL - STEEL

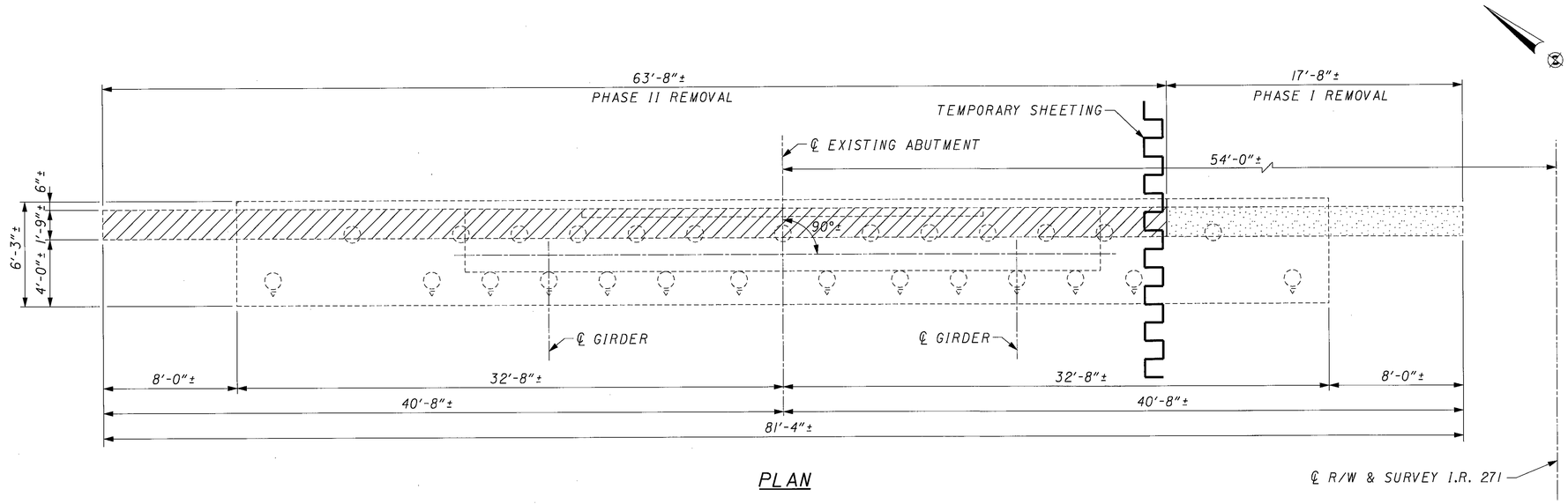
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

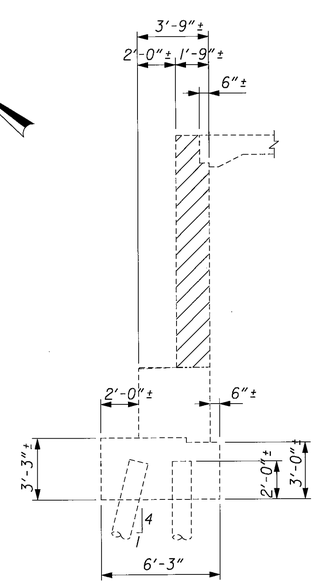
16 / 77

376 / 612

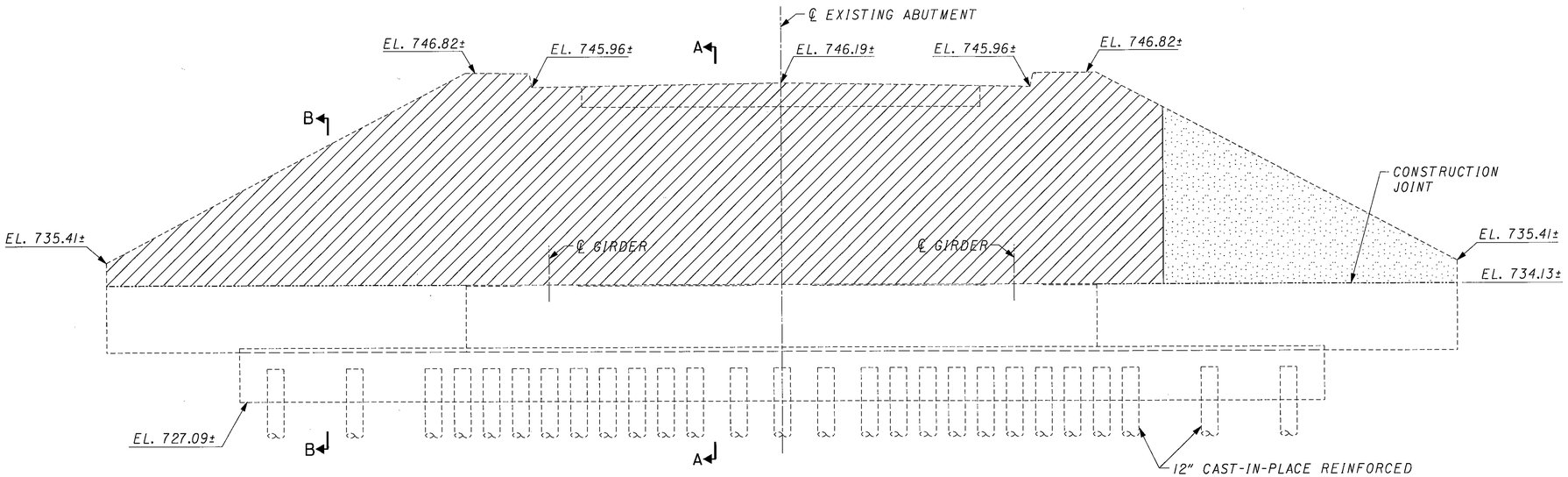
SU271MDA.DGN 6/23/04 TWH,JLS,KH,RC



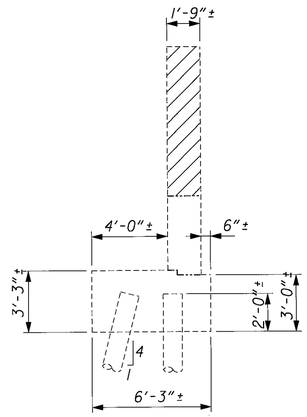
PLAN



SECTION A-A



ELEVATION



SECTION B-B

EXISTING LEFT FORWARD ABUTMENT

NOTE

EXISTING RIGHT FORWARD ABUTMENT WILL BE REMOVED IN ACCORDANCE WITH CMS 202 DURING PHASE III.

LEGEND

INDICATES MATERIALS TO BE REMOVED DURING PHASE I REMOVAL

INDICATES MATERIALS TO BE REMOVED DURING PHASE II REMOVAL

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

REVIEWED DAP 3/18/04
STRUCTURE FILE NUMBER 7709073(L) 7709082(R)
DRAWN KH
REVISED
DESIGNED DLR
CHECKED KAK

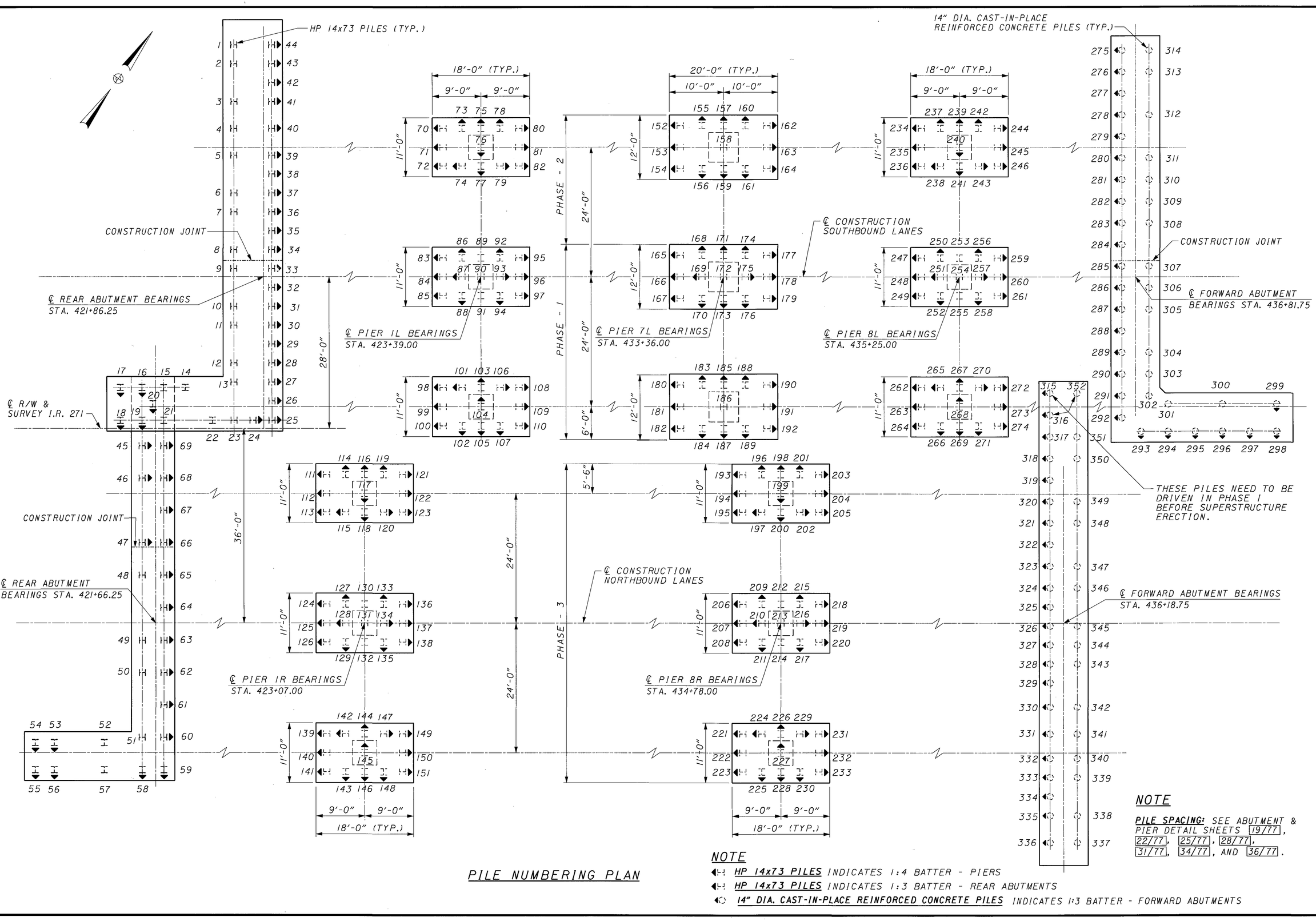
FORWARD ABUTMENT REMOVAL - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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SU271MDB.DGN 6/23/04 TWH,JLS,KH,RC



PILE NUMBERING PLAN

NOTE

HP 14x73 PILES INDICATES 1:4 BATTER - PIERS

HP 14x73 PILES INDICATES 1:3 BATTER - REAR ABUTMENTS

14" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILES INDICATES 1:3 BATTER - FORWARD ABUTMENTS

NOTE

PILE SPACING: SEE ABUTMENT & PIER DETAIL SHEETS 19/77, 22/77, 25/77, 28/77, 31/77, 34/77, AND 36/77.

SU27IP2.DGN 6/23/04 TWH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

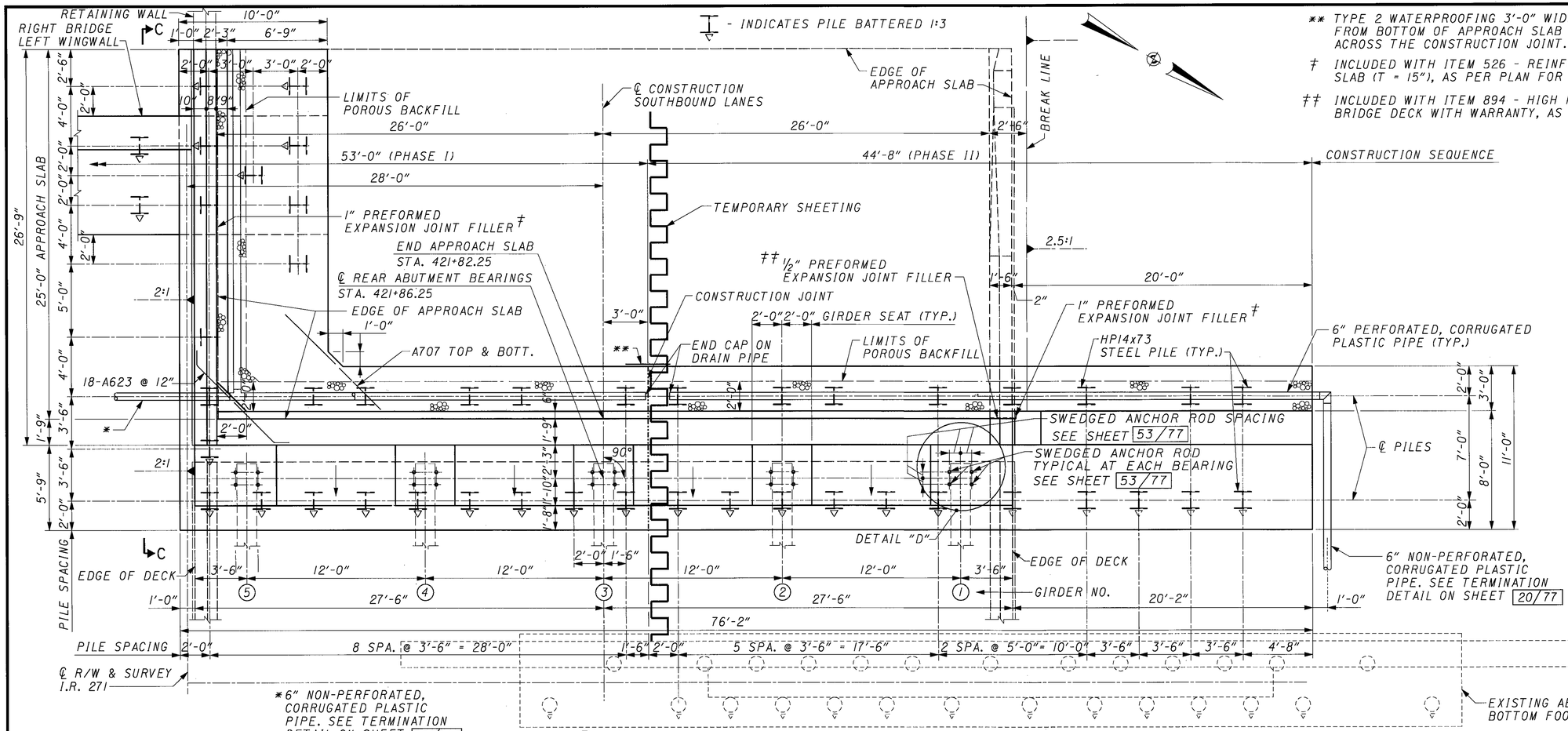
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BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		770901(3(L) 770902(R)	

PILE NUMBERING - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLELY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

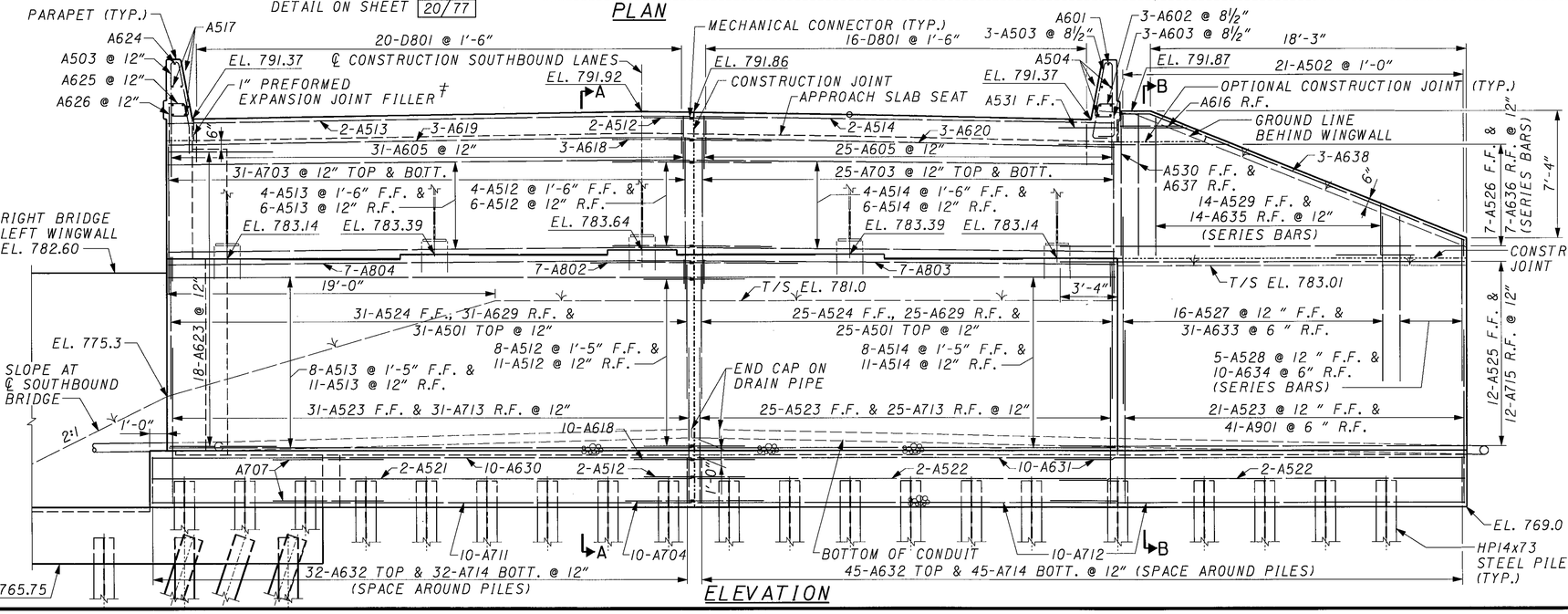
SUM-271-8.02

18/77

378/612



PLAN



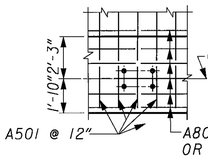
ELEVATION

** TYPE 2 WATERPROOFING 3'-0" WIDE SHOULD EXTEND FROM BOTTOM OF APPROACH SLAB TO TOP OF FOOTING ACROSS THE CONSTRUCTION JOINT.

‡ INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T = 15"), AS PER PLAN FOR PAYMENT

‡‡ INCLUDED WITH ITEM 894 - HIGH PERFORMANCE CONCRETE FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN FOR PAYMENT

CONSTRUCTION SEQUENCE



DETAIL "D"

NOTES

REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-0" FOR #5 VERTICAL BARS, 2'-9" FOR #5 HORIZONTAL BARS, 2'-6" FOR #6 VERTICAL BARS, 3'-4" FOR #6 HORIZONTAL BARS, 3'-10" FOR #7 VERTICAL AND HORIZONTAL BARS AND 5'-10" FOR #8 BARS.

POROUS BACKFILL WITH FILTER FABRIC, 2'-0" THICK, SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE, TO ONE FOOT BELOW THE EMBANKMENT SURFACE, AND LATERALLY TO THE ENDS OF THE WINGWALLS. GEOTEXTILE FABRIC SHALL CONFORM WITH 712.09, TYPE A. THE BOTTOM OF THE POROUS BACKFILL SHALL BE SLOPED LATERALLY TO DRAIN. GEOTEXTILE FABRIC IS INCLUDED WITH POROUS BACKFILL FOR PAYMENT.

SECTIONS A-A & B-B: SEE SHEET 20/77

VIEW C-C: SEE SHEET 21/77

MECHANICAL CONNECTOR DETAIL: SEE SHEET 26/77

NOTATION: F.F. - FRONT FACE, R.F. - REAR FACE, E.F. - EACH FACE, SPA. - SPACES, BOTT. - BOTTOM, CONSTR. - CONSTRUCTION, (TYP.) - TYPICAL

PILE NUMBERS: SEE SHEET 18/77

BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES.

GRADING PLAN: SEE SHEET 275 AND 278.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN KH | REVIEWED DAP | DATE 3/18/04 | STRUCTURE FILE NUMBER 7709013 | CHECKED KAK | REVISED

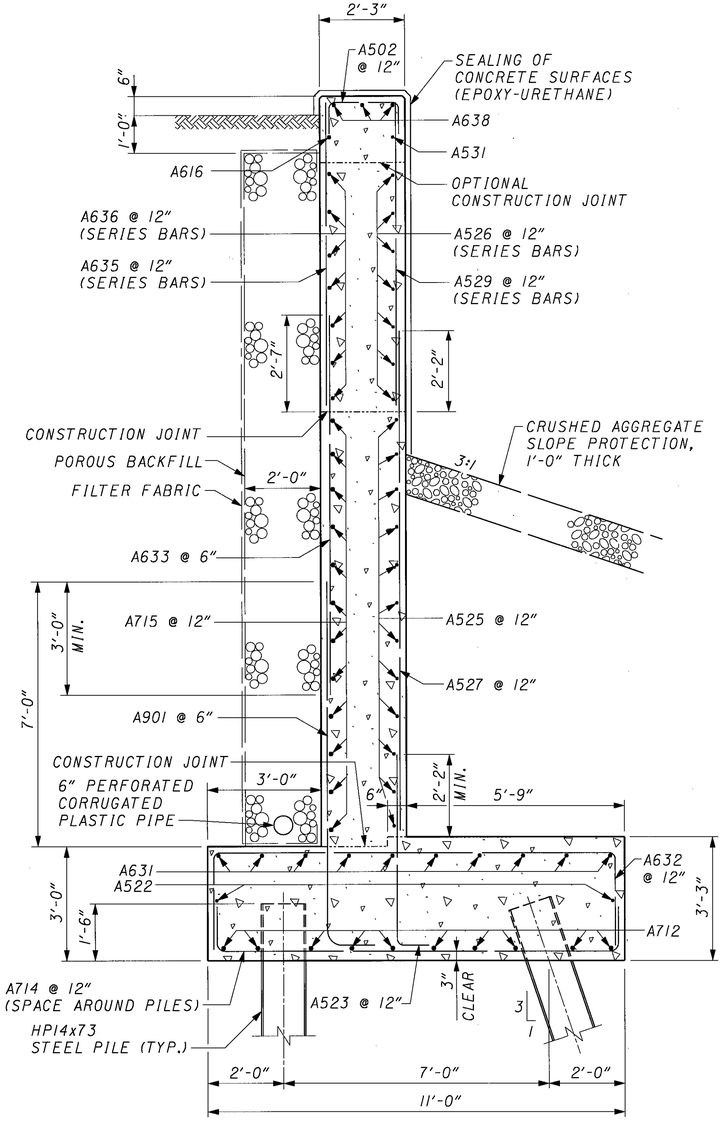
LEFT REAR ABUTMENT - STEEL
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

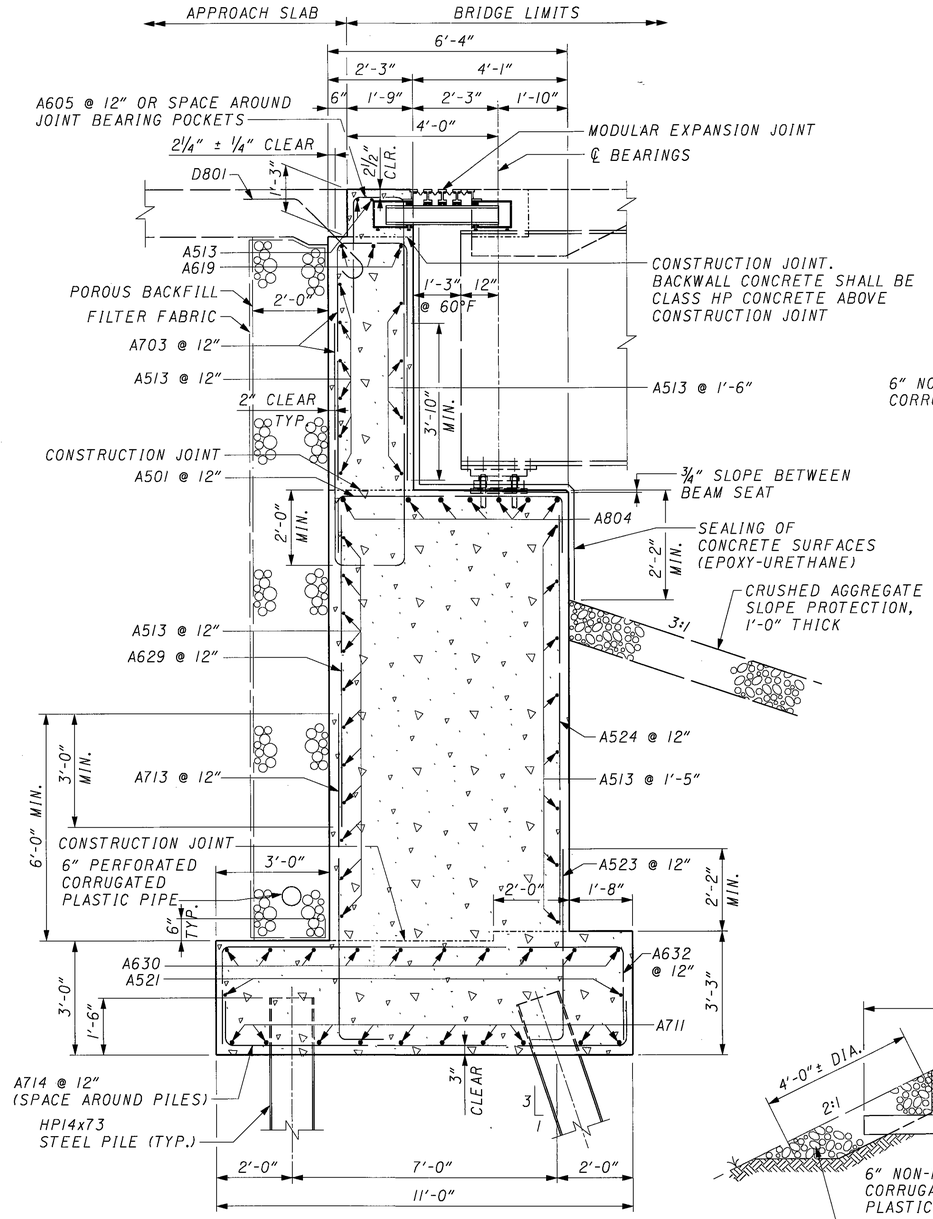
19/77

379/612

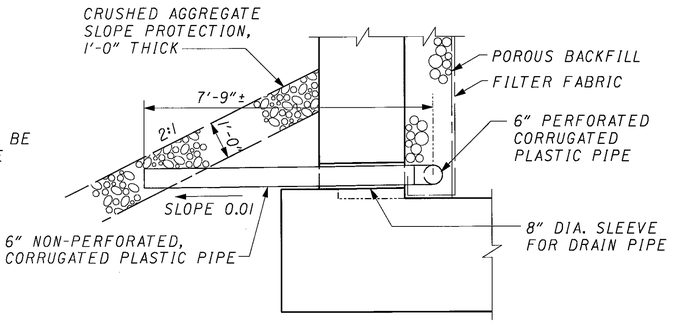
SU271RAB.DGN 6/23/04 JL.S.TWH.KH.S.JK.RC



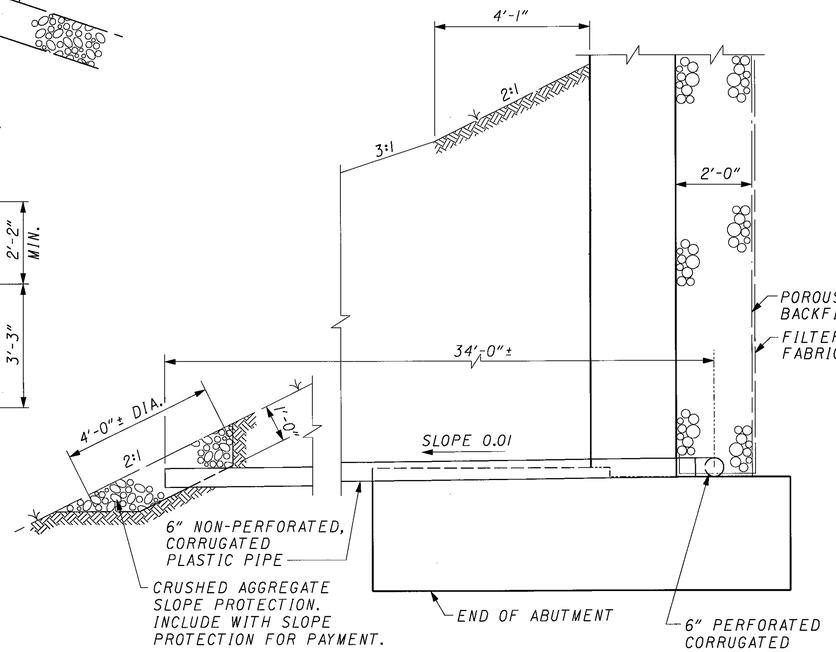
SECTION B-B



SECTION A-A



TERMINATION OF 6" NON-PERFORATED CONDUIT (RIGHT)



TERMINATION OF 6" NON-PERFORATED CONDUIT (LEFT)

NOTES

ADDITIONAL NOTES: SEE SHEET 19/77

SU271ADB.DGN 6/24/04 JLS,TWH,KH,SJK,RC

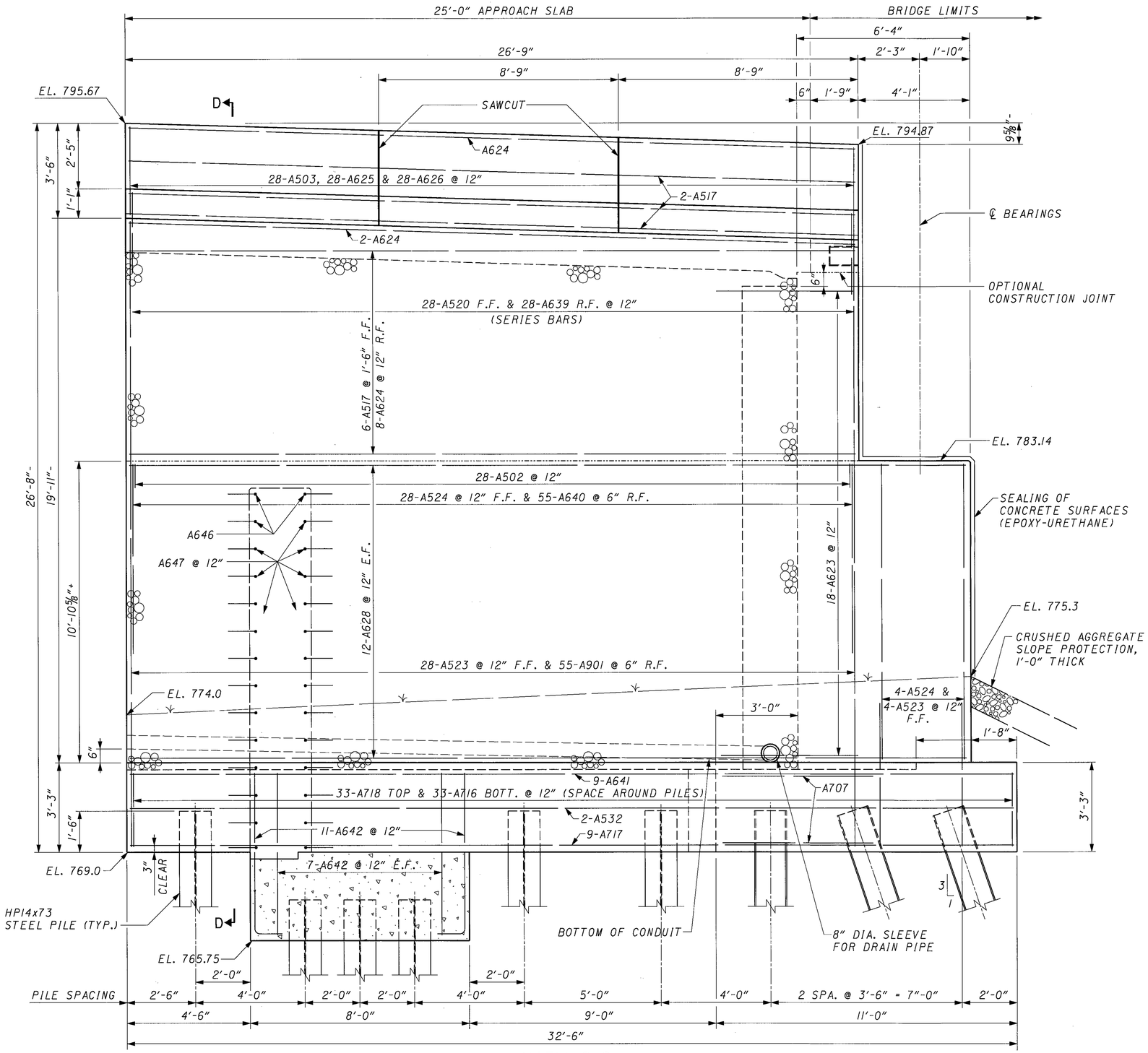
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		77090/3	

LEFT REAR ABUTMENT DETAILS - STEEL

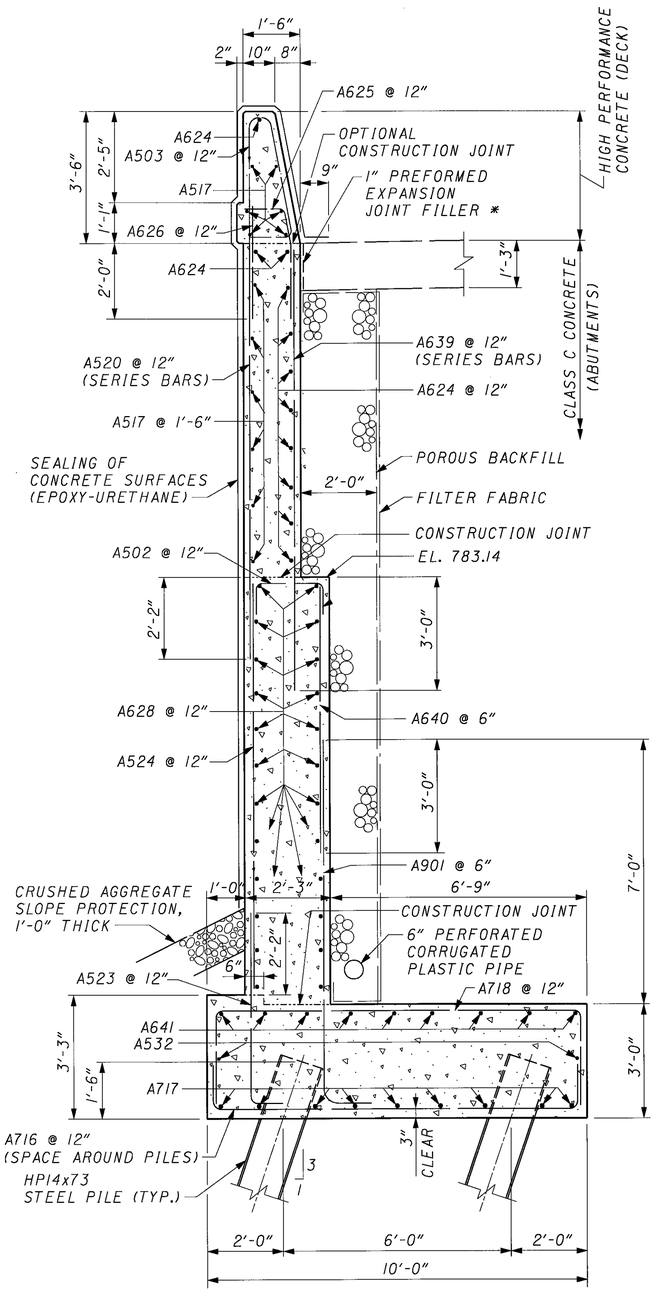
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, CUYAHOGA RIVER TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02



VIEW C-C

* INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN FOR PAYMENT.



SECTION D-D

NOTES

ADDITIONAL NOTES: SEE SHEET 19/77

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
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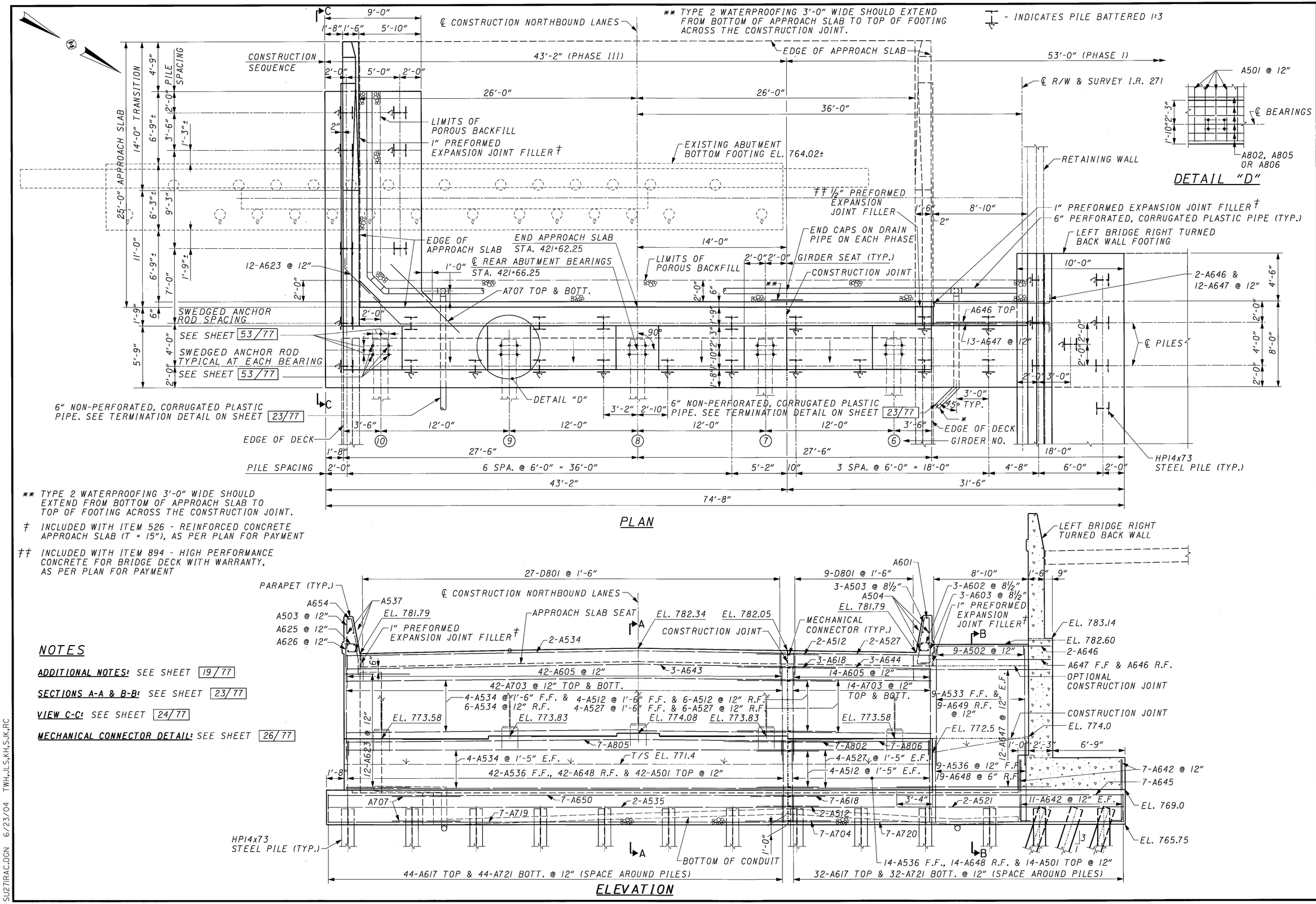
LEFT REAR ABUTMENT DETAILS - STEEL
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

21/77

381/612

SU271ADB.DGN 6/23/04 JL.S,KH,S,JK,RC



RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
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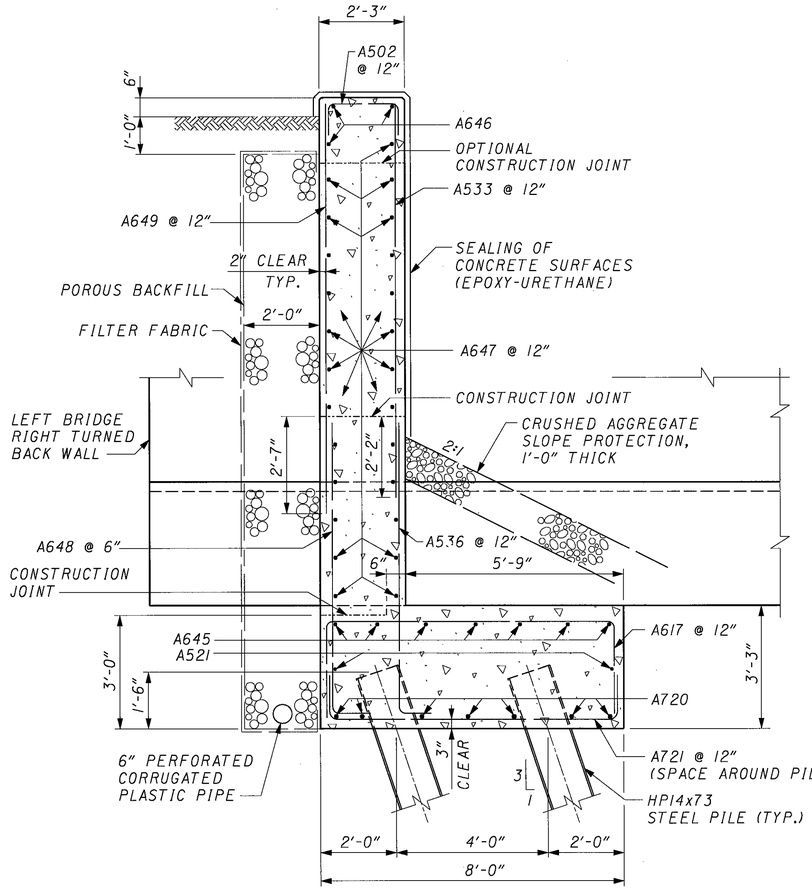
RIGHT REAB ABUTMENT - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

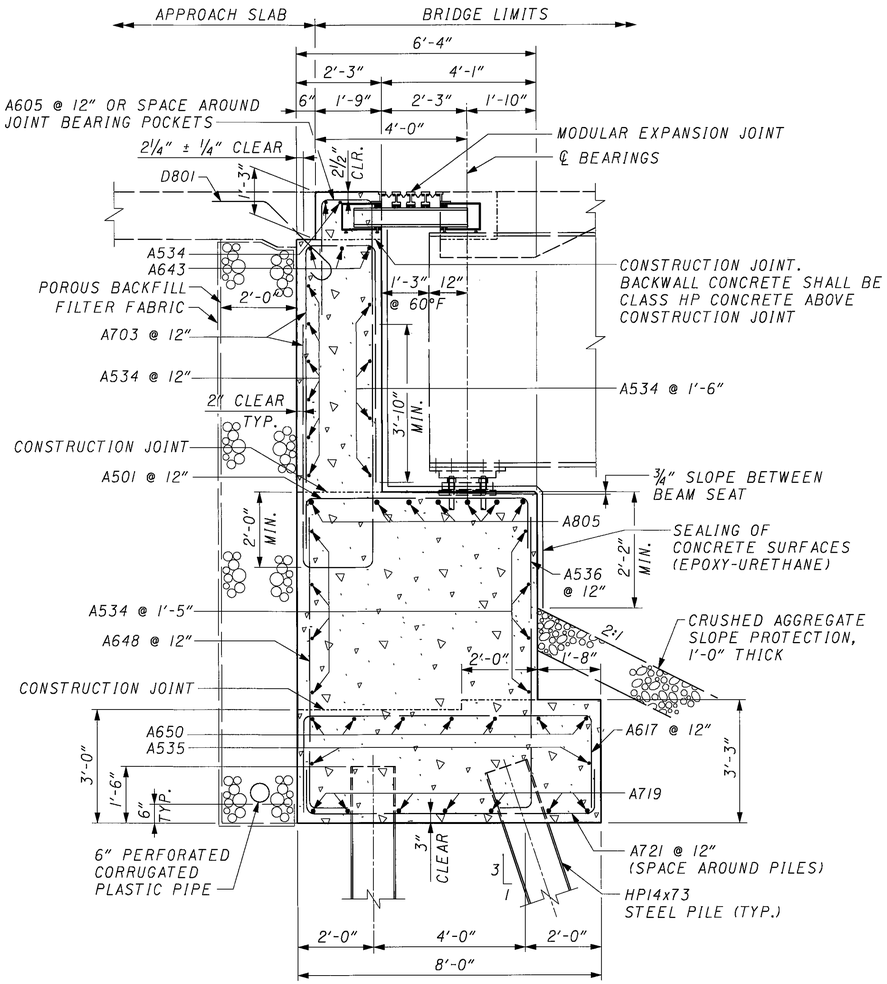
22/77

382/612

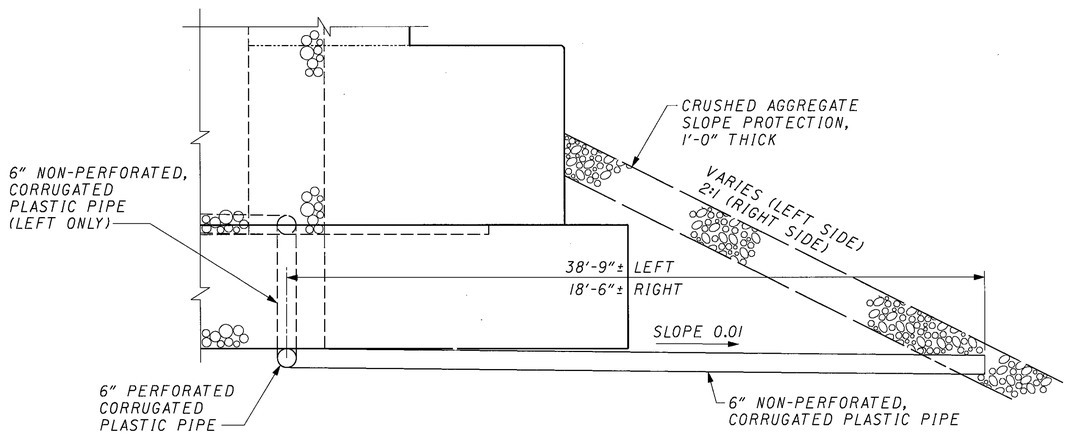
SU271RAC.DGN 6/23/04 TWH,JLS,KH,SJK,RC



SECTION B-B



SECTION A-A



TERMINATION OF 6" NON-PERFORATED CONDUIT

NOTES

ADDITIONAL NOTES: SEE SHEET 19/77

SU271ADC.DGN 6/23/04 JLS,TWH,KH,SJK,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN KH | REVIEWED DAP | DATE 3/18/04
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709021

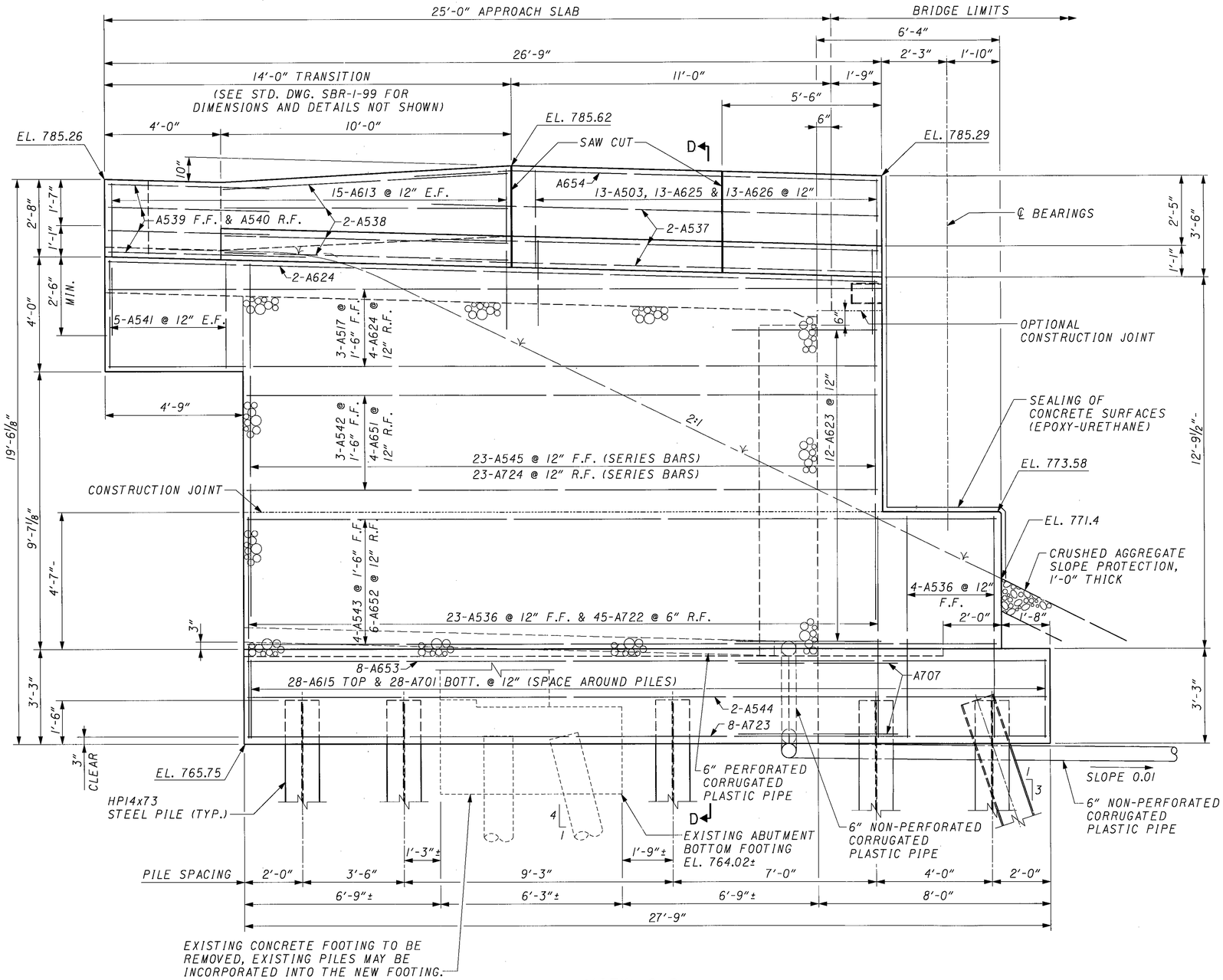
RIGHT REAR ABUTMENT DETAILS - STEEL

BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

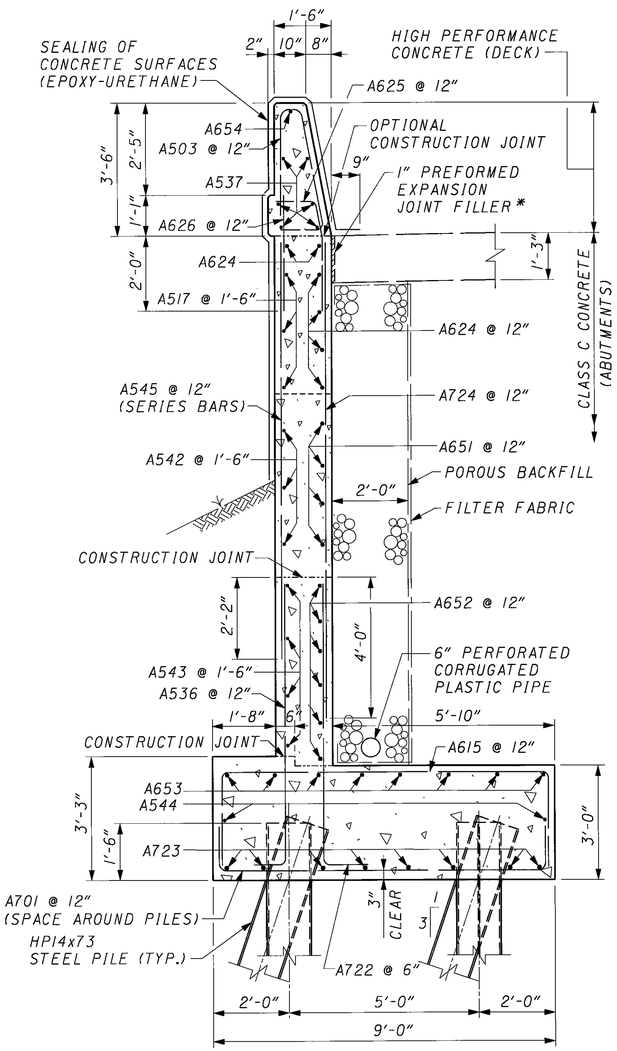
23/77

383/612



VIEW C-C

* INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN FOR PAYMENT.



SECTION D-D

NOTES

ADDITIONAL NOTES: SEE SHEET 19/77

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN KH | REVIEWED DAP | DATE 3/18/04
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709021

RIGHT REAR ABUTMENT DETAILS - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

24/77

384/612

SU271ADC.DGN 6/23/04 JLS,KH,S,JK,RC

- INDICATES PILE BATTERED 1:3

** TYPE 2 WATERPROOFING 3'-0" WIDE SHOULD EXTEND FROM BOTTOM OF APPROACH SLAB TO TOP OF FOOTING ACROSS THE CONSTRUCTION JOINT.

RETAINING WALL

BREAK LINE

EDGE OF APPROACH SLAB

TEMPORARY SHEETING

℄ CONSTRUCTION SOUTHBOUND LANES

LIMITS OF POROUS BACKFILL

CONSTRUCTION SEQUENCE

41'-8" (PHASE II)

33'-6" (PHASE I)

EXISTING ABUTMENT BOTTOM FOOTING EL. 727.09±

SEE GRADING PLAN SHEET 278 OF 612

END CAP ON CONDUIT

‡ 1" PREFORMED EXPANSION JOINT FILLER

BEGIN APPROACH SLAB STA. 436+85.75

℄ FORWARD ABUTMENT BEARINGS STA. 436+81.75

6" PERFORATED, CORRUGATED PLASTIC PIPE (TYP.)

14" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILE (TYP.)

CONSTRUCTION JOINT

‡ 1" PREFORMED EXPANSION JOINT FILLER

½" PREFORMED EXPANSION JOINT FILLER (PARAPET) ‡‡

GIRDER SEAT (TYP.)

A707 TOP & BOTT.

13-A623 @ 12"

5 PILE SPACING @ 5'-0" = 25'-0" APPROACH SLAB

SWEDGED ANCHOR ROD SPACING SEE SHEET 53/77

℄ PILES

90°

DETAIL "D"

6" NON-PERFORATED, CORRUGATED PLASTIC PIPE. SEE TERMINATION DETAIL ON SHEET 26/77

EDGE OF DECK

GIRDER NO. 1 2 3 4 5

PILE SPACING 2'-8" | 9 SPA. @ 4'-0" = 36'-0" | 3'-0" 1'-0" | 7 SPA. @ 4'-0" = 28'-0" | 4'-6"

75'-2"

SWEDGED ANCHOR ROD TYPICAL AT EACH BEARING SEE SHEET 53/77

PLAN

6" NON-PERFORATED, CORRUGATED PLASTIC PIPE. SEE TERMINATION DETAIL ON SHEET 26/77

℄ R/W & SURVEY I.R. 271

SHOULDER

‡ INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T = 15"), AS PER PLAN FOR PAYMENT

‡‡ INCLUDED WITH ITEM 894 - HIGH PERFORMANCE CONCRETE FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN FOR PAYMENT

PARAPET (TYP.)

3-A602 @ 8½"

3-A603 @ 8½"

EL. 747.02

A601

3-A503 @ 8½"

A504

EL. 746.52

16-D801 @ 1'-6"

MECHANICAL CONNECTOR (TYP.)

EL. 747.00

20-D801 @ 1'-6"

℄ CONSTRUCTION SOUTHBOUND LANES

A517

EL. 746.52

EL. 747.06

‡ 1" PREFORMED EXPANSION JOINT FILLER (TYP.)

A624

A503 @ 12"

A625 @ 12"

A626 @ 12"

15'-4½"

18-A502 @ 12"

OPTIONAL CONSTRUCTION JOINT (TYP.)

A608 R.F.

APPROACH SLAB SEAT CONSTRUCTION JOINT

GROUND LINE BEHIND WINGWALL

3-A607

A511 F.F. & A609 R.F.

5-A510 @ 1'-6" F.F. & 7-A610 @ 12" R.F. (SERIES BARS)

7'-8¼"

3-A620 2-A514

25-A605 @ 12"

2-A512 3-A619

3-A618 2-A513

31-A605 @ 12"

25-A703 @ 12" TOP & BOTT.

31-A703 @ 12" TOP & BOTT.

4-A514 @ 1'-6" F.F. & 6-A514 @ 12" R.F.

EL. 738.42 EL. 738.67

END CAP ON CONDUIT

4-A512 @ 1'-6" F.F. & 6-A512 @ 12" R.F.

EL. 738.93

4-A513 @ 1'-6" F.F. & 6-A513 @ 12" R.F.

EL. 738.67 EL. 738.42

7-A803

7-A802

7-A804

CONSTRUCTION JOINT

T/S EL. 737.60

16-A509 F.F. & 16-A611 R.F. @ 12" SERIES BARS

3'-4" TYP.

4-A514 @ 1'-5" E.F.

T/S EL. 735.6

4-A512 @ 1'-5" E.F.

4-A513 @ 1'-5" E.F.

4-A508 @ 1'-6" F.F. & 6-A612 @ 12" R.F.

25-A507 F.F., 25-A606 R.F. & 25-A501 TOP @ 12"

31-A507 F.F., 31-A606 R.F. & 31-A501 TOP @ 12"

8-A618

18-A507 @ 12" F.F. & 35-A606 @ 6" R.F.

8-A621 2-A516

2-A512 2-A515 8-A622

A707

EL. 729.8

14" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILE (TYP.)

8-A705

BOTTOM OF CONDUIT

8-A704

8-A706

42-A615 TOP & 42-A701 BOTT. @ 12" (SPACE AROUND PILES)

34-A615 TOP & 34-A701 BOTT. @ 12" (SPACE AROUND PILES)

ELEVATION

A501 @ 12"

℄ BEARINGS

A802, A803 OR A804

DETAIL "D"

NOTES

ADDITIONAL NOTES: SEE SHEET 19/77

SECTIONS A-A & B-B: SEE SHEET 26/77

VIEW C-C: SEE SHEET 27/77

MECHANICAL CONNECTOR DETAL: SEE SHEET 26/77

NOTATION: F.F. - FRONT FACE
R.F. - REAR FACE
E.F. - EACH FACE

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN KH | CHECKED KAK | REVISED | REVIEWED DAP | DATE 3/18/04 | STRUCTURE FILE NUMBER 77090/3

LEFT FORWARD ABUTMENT - STEEL

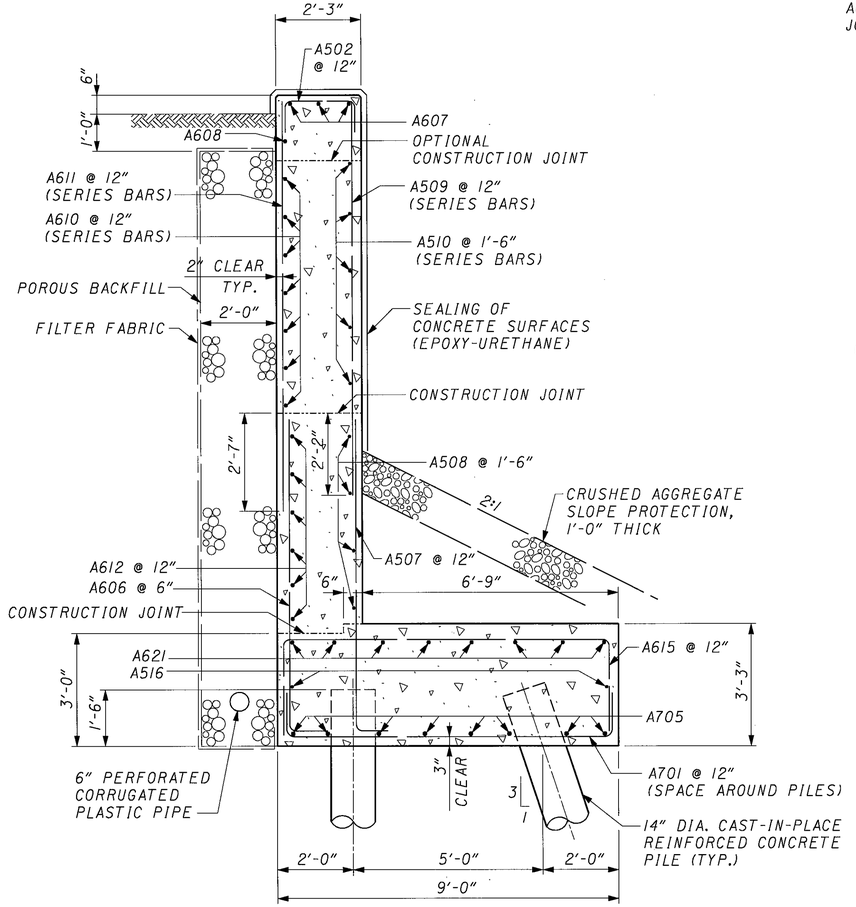
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

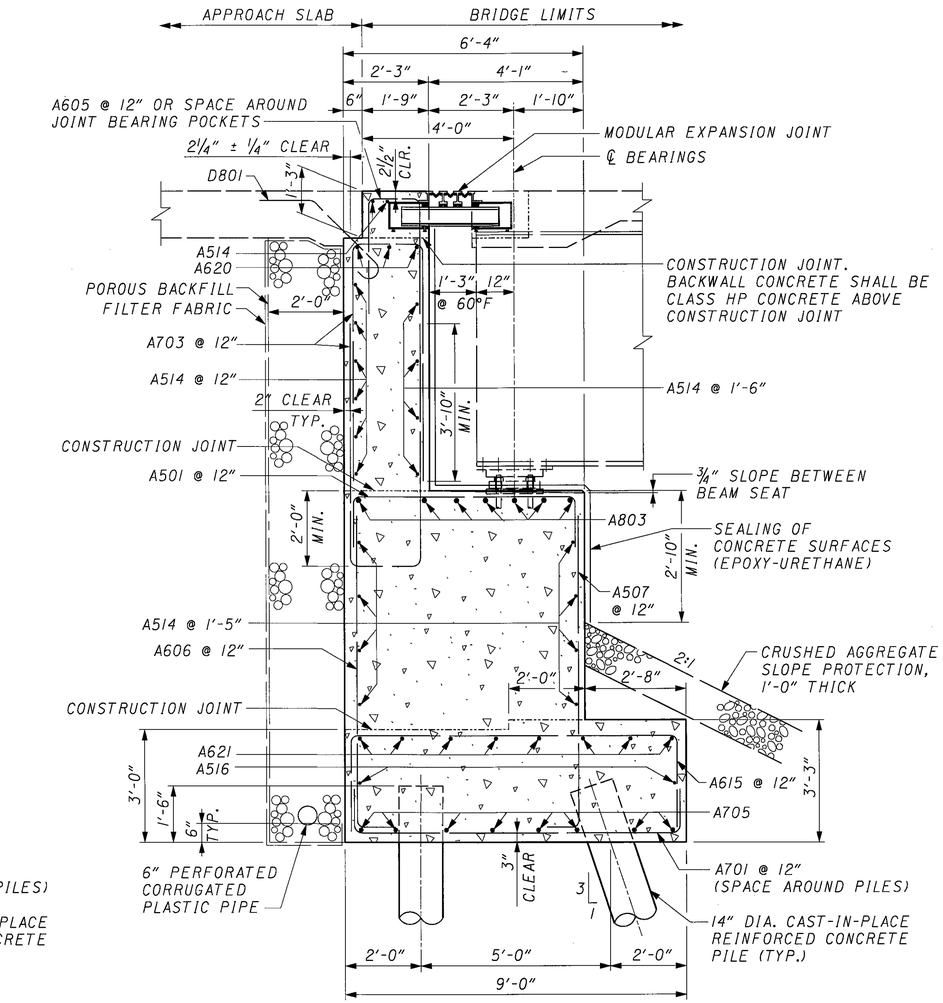
25/77

385/612

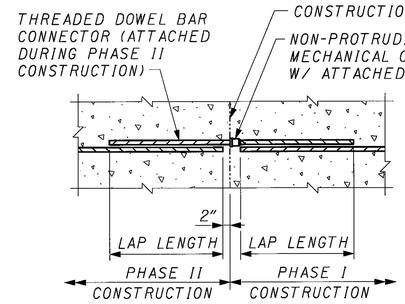
SU271FAB.DGN 6/23/04 KH,SJK,JLS,RC



SECTION B-B

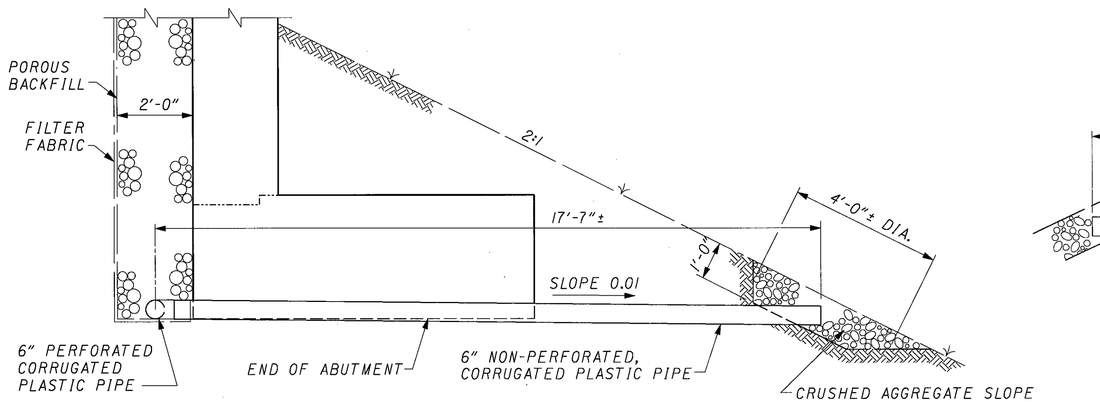


SECTION A-A

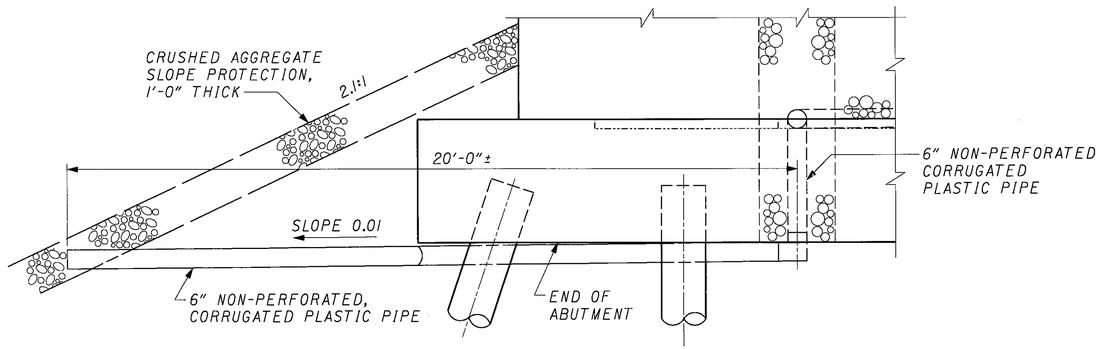


MECHANICAL CONNECTOR DETAIL

BAR SIZE	LAP LENGTH (HORIZONTAL)
#5	2'-9"
#6	3'-4"
#7	3'-10"
#8	5'-10"



TERMINATION OF 6" NON-PERFORATED CONDUIT (LEFT)



TERMINATION OF 6" NON-PERFORATED CONDUIT (RIGHT)

NOTES

ADDITIONAL NOTES: SEE SHEET 19/77

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN KH | REVIEWED DAP | DATE 3/18/04
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7909013

LEFT FORWARD ABUTMENT DETAILS - STEEL

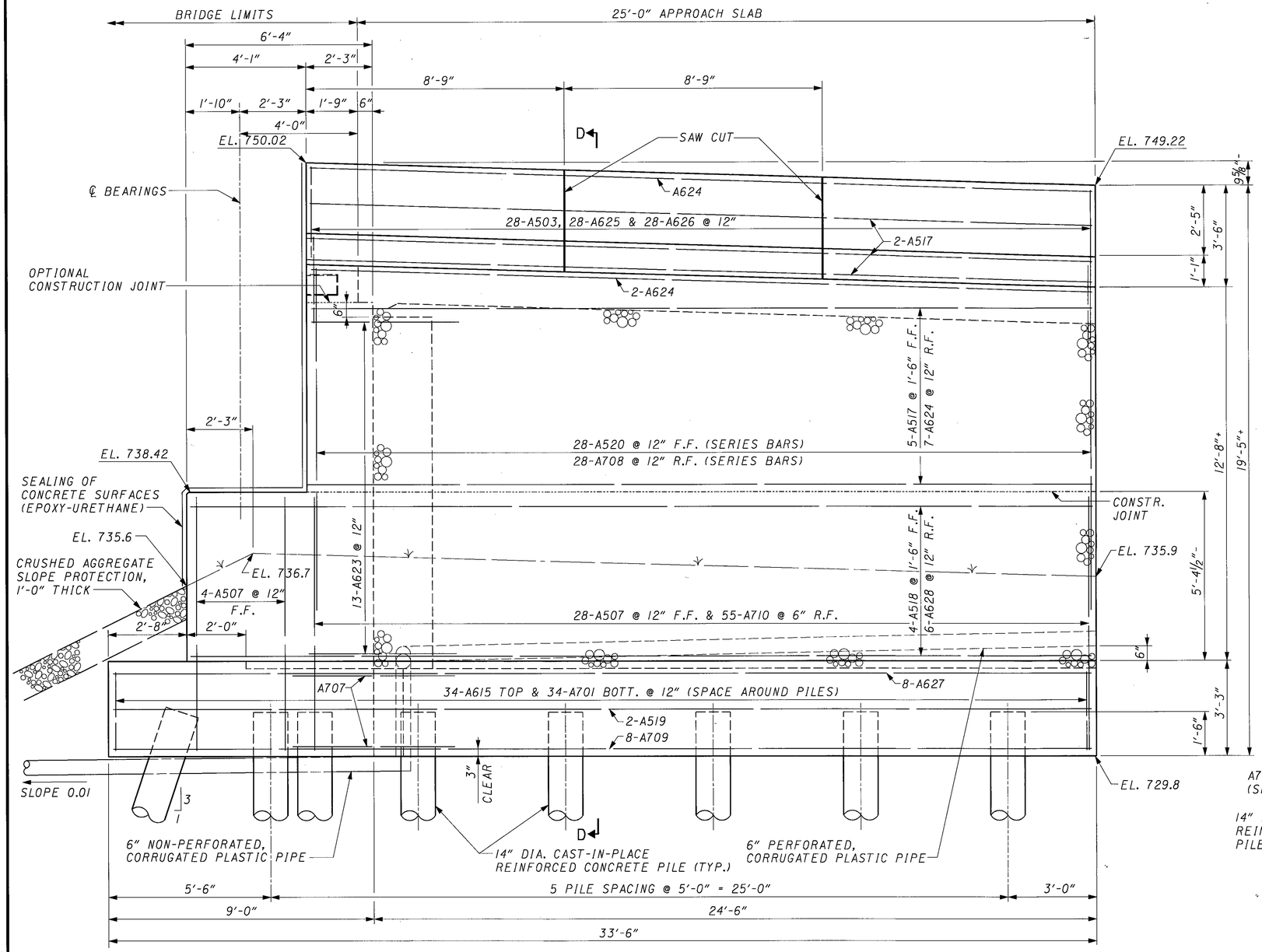
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

26/77

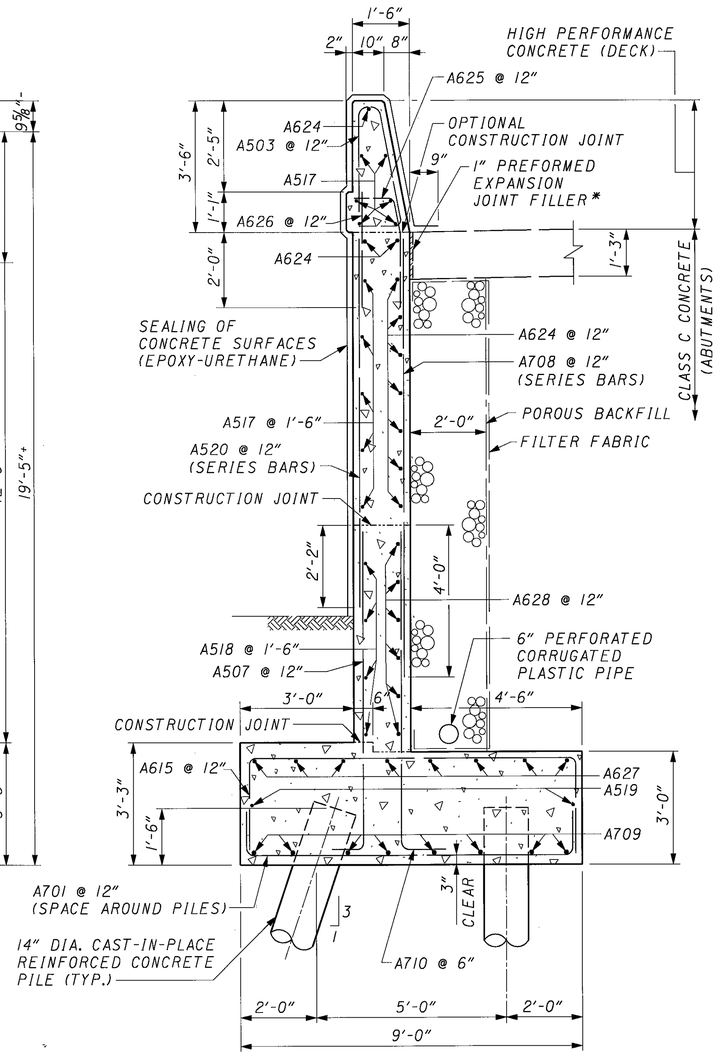
386/612

SU271ADD.DGN 6/23/04 JLS,TWH,KH,SJK,RC



VIEW C-C

* INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN FOR PAYMENT.



SECTION D-D

NOTES

ADDITIONAL NOTES: SEE SHEET 19/77

SU271ADD.DGN 6/23/04 TWH,JLS,KH,SJK,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		79090 13	

LEFT FORWARD ABUTMENT DETAILS - STEEL

BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

27/77

387/612

℄ R/W SURVEY I.R. 271

2'-6" SHOULDER

BREAK LINE

℄ CONSTRUCTION NORTHBOUND LANES

EDGE OF APPROACH SLAB

2'-6" SHOULDER

BREAK LINE

℄ - INDICATES PILE BATTERED 1:3

* 6" NON-PERFORATED, CORRUGATED PLASTIC PIPE. SEE TERMINATION DETAIL ON SHEET 29/77

‡ INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T = 15"), AS PER PLAN FOR PAYMENT

‡‡ INCLUDED WITH ITEM 894 - HIGH PERFORMANCE CONCRETE FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN FOR PAYMENT

36'-0"

26'-0"

26'-0"

89'-5" (PHASE III)

CONSTRUCTION SEQUENCE

2:1

2:1

BEGIN APPROACH SLAB
STA. 436+22.75

℄ FORWARD ABUTMENT BEARINGS
STA. 436+18.75

SWEDGED ANCHOR ROD SPACING
SEE SHEET 53/77

‡‡ ½" PREFORMED EXPANSION JOINT FILLER (TYP.) (PARAPET)

‡ 1" PREFORMED EXPANSION JOINT FILLER (TYP.)

17'-0½"

1'-6"

2"

2:1

GIRDER SEAT (TYP.) 2'-0" 2'-0"

EDGE OF APPROACH SLAB

6"

LIMITS OF POROUS BACKFILL

1'-6"

2"

2:1

17'-0½"

6" PERFORATED, CORRUGATED PLASTIC PIPE (TYP.)

14" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILE (TYP.)

DETAIL "D"

2'-0"

6"

1'-9"

1'-10"

2'-3"

2'-8"

90°

SWEDGED ANCHOR ROD TYPICAL AT EACH BEARING SEE SHEET 53/77

℄ PILES

2'-0"

5'-0"

2'-0"

9'-0"

A501 @ 12"

℄ BEARINGS

1'-10"

2'-3"

A801

DETAIL "D"

*

3'-6"

12'-0"

12'-0"

12'-0"

12'-0"

3'-6"

EDGE OF DECK

EDGE OF DECK

GIRDER NO.

6

7

8

9

10

1'-0" TYP.

6" NON-PERFORATED, CORRUGATED PLASTIC PIPE. SEE TERMINATION DETAIL ON SHEET 29/77

17'-2½"

27'-6"

27'-6"

17'-2½"

89'-5"

2'-2½"

9 SPA. @ 4'-0" = 36'-0"

5 SPA. @ 3'-6" = 17'-6"

4'-6"

5'-0"

4'-6"

3 SPA. @ 3'-6" = 10'-6"

5'-0"

4'-2½"

PILE SPACING

THESE PILES NEED TO BE DRIVEN IN PHASE I BEFORE SUPERSTRUCTURE ERECTION.

EXISTING ABUTMENT BOTTOM FOOTING EL. 719.74±

PLAN

PHASE I

9'-0"

PARAPET (TYP.)

3-A602 @ 8½"

3-A603 @ 8½"

EL. 738.72

A601

3-A503 @ 8½"

A504

EL. 738.22

15'-5"

18-A502 @ 12"

A608 R.F.

1" PREFORMED EXPANSION JOINT FILLER (TYP.) ‡

APPROACH SLAB SEAT

36-D801 @ 1'-6"

℄ CONSTRUCTION NORTHBOUND LANES

EL. 738.77

A

B

3-A607

A511 F.F. & A609 R.F.

5-A510 @ 1'-6" F.F. & 7-A610 @ 12" R.F. (SERIES BARS)

2-A505

3-A604

56-A605 @ 12"

56-A703 @ 12" TOP & BOTT.

4-A505 @ 1'-6" F.F. & 6-A505 @ 12" R.F.

EL. 730.15

EL. 730.40

EL. 730.65

EL. 730.40

EL. 730.15

7'-8½"

7-A801

56-A501 @ 12"

16-A509 F.F. & 16-A611 R.F. @ 12" SERIES BARS

4-A508 @ 1'-6" F.F. & 6-A612 @ 12" R.F.

T/S EL. 729.3

4-A505 @ 1'-5" E.F.

56-A507 F.F. & 56-A606 R.F. @ 12"

T/S EL. 727.3

3'-4" TYP.

T/S EL. 729.3

18-A507 @ 12" F.F. & 35-A606 @ 6" R.F.

2-A506

8-A614

1'-0"

8-A702

BOTTOM OF CONDUIT

2-A506

8-A614

18-A507 @ 12" F.F. & 35-A606 @ 6" R.F.

8-A702

EL. 721.5

14" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILE (TYP.)

90-A615 TOP & 90-A701 BOTT. @ 12" (SPACE AROUND PILES)

ELEVATION

3-A602 @ 8½"

3-A603 @ 8½"

EL. 738.72

A601

3-A503 @ 8½"

A504

EL. 738.22

15'-5"

18-A502 @ 12"

OPTIONAL CONSTRUCTION JOINT (TYP.)

A608 R.F.

3-A607

GROUND LINE BEHIND WINGWALL (TYP.)

A511 F.F. & A609 R.F.

5-A510 @ 1'-6" F.F. & 7-A610 @ 12" R.F. (SERIES BARS)

6" TYP.

2'-0" TYP.

7'-8½"

6" TYP.

CONSTR. JOINT (TYP.)

16-A509 F.F. & 16-A611 R.F. @ 12" SERIES BARS

4-A508 @ 1'-6" F.F. & 6-A612 @ 12" R.F.

NOTES

ADDITIONAL NOTES: SEE SHEET 19/77

SECTIONS A-A & B-B: SEE SHEET 29/77

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

REVIEWED DAP DATE 3/18/04
STRUCTURE FILE NUMBER 7709021
DRAWN KH REVISED
DESIGNED BLN CHECKED KAK

RIGHT FORWARD ABUTMENT - STEEL

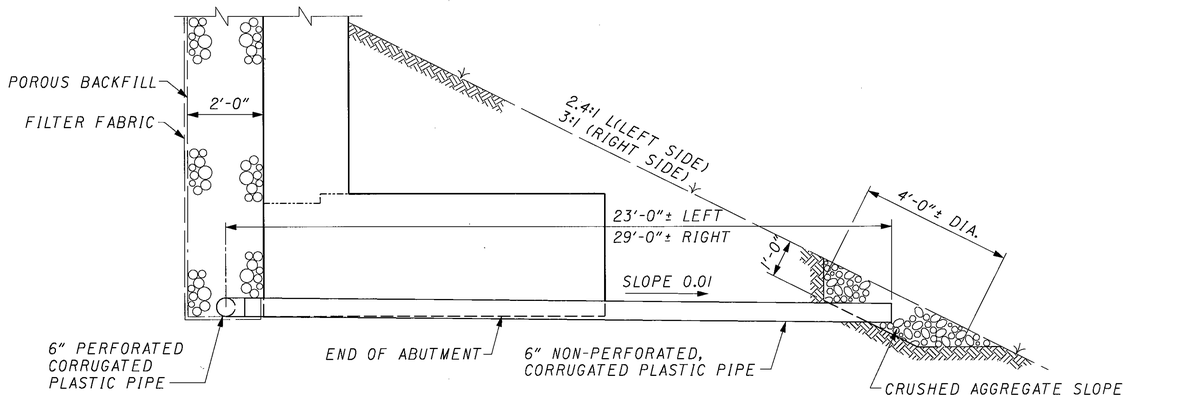
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

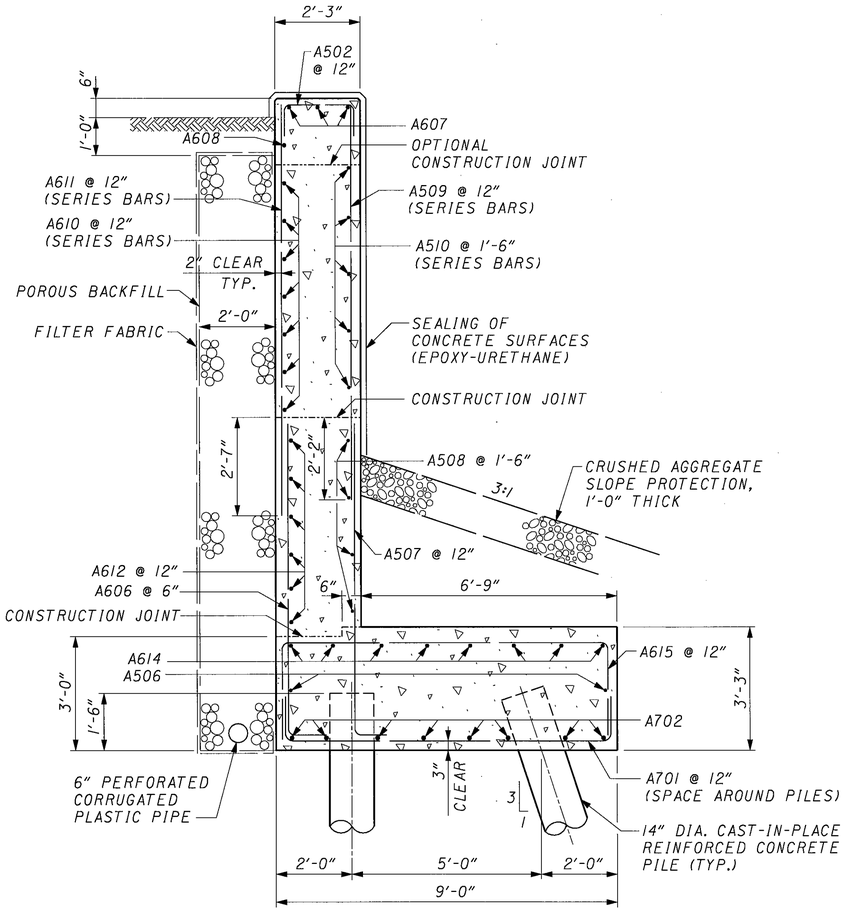
28/77

388/612

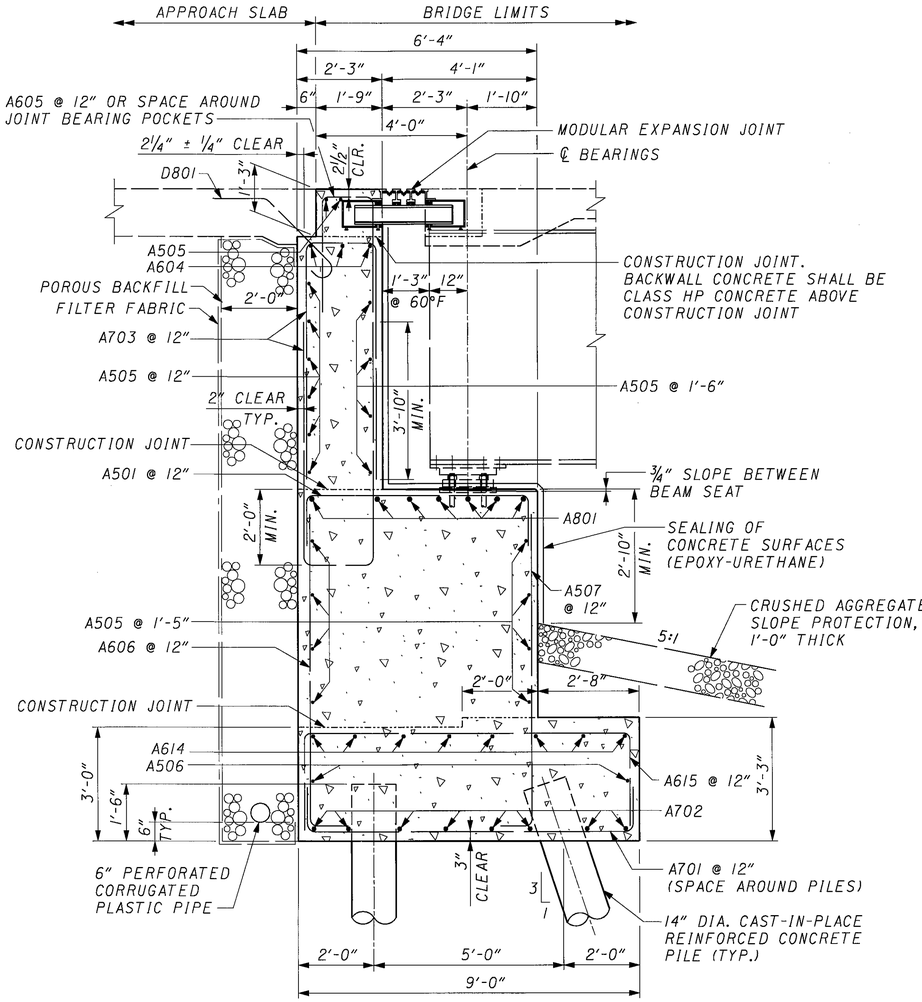
SU271FAC.DGN 6/23/04 JLS,TWH,KH,SJK,RC



TERMINATION OF 6" NON-PERFORATED CONDUIT



SECTION B-B



SECTION A-A

NOTES

ADDITIONAL NOTES: SEE SHEET 19/77

SU271ADE.DGN 6/23/04 JLS,TWH,KH,SJK,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

REVIEWED	DATE
DAP	3/18/04
STRUCTURE FILE NUMBER	
7709021	

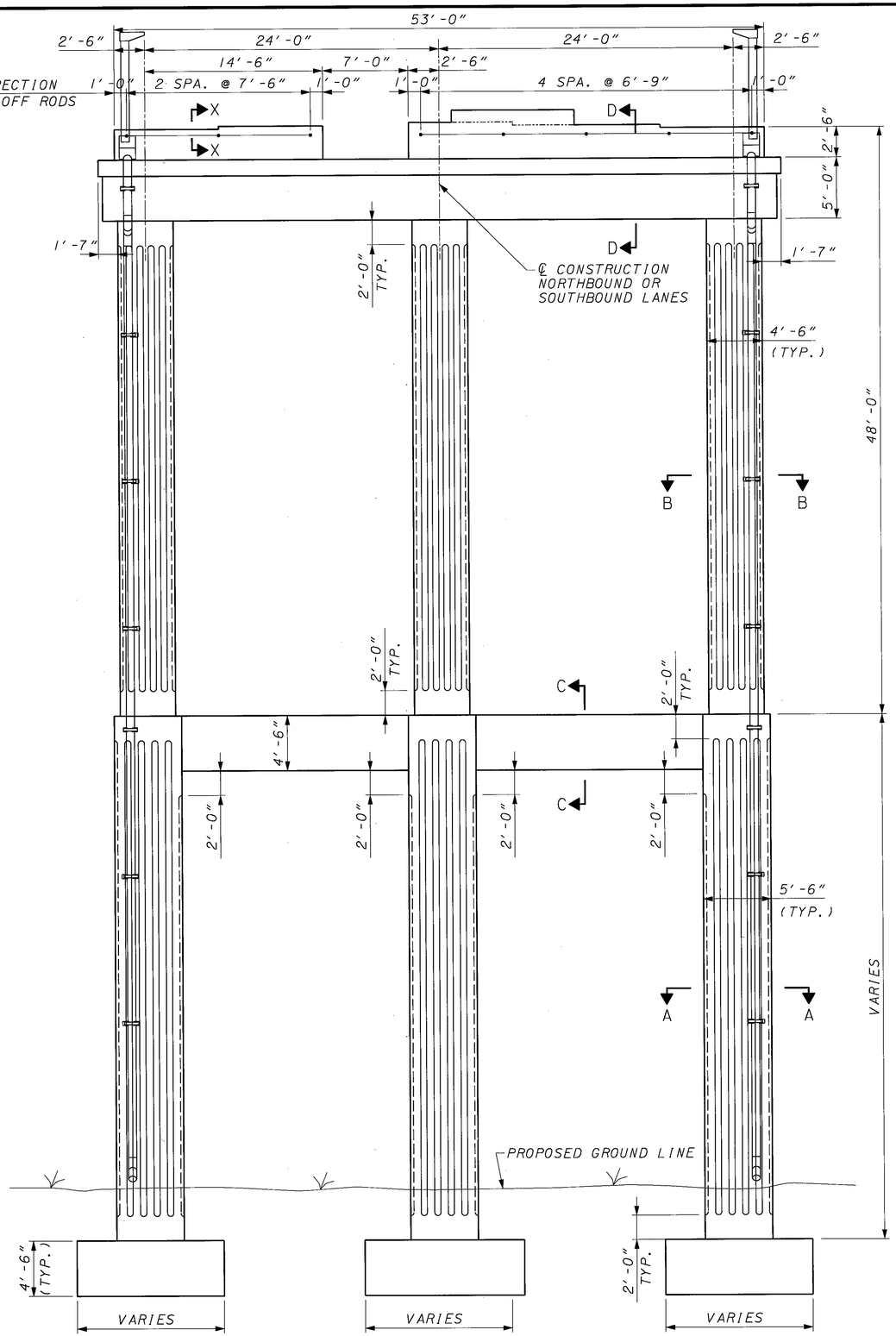
DRAWN	REVISED
KH	

DESIGNED	CHECKED
BLN	KAK

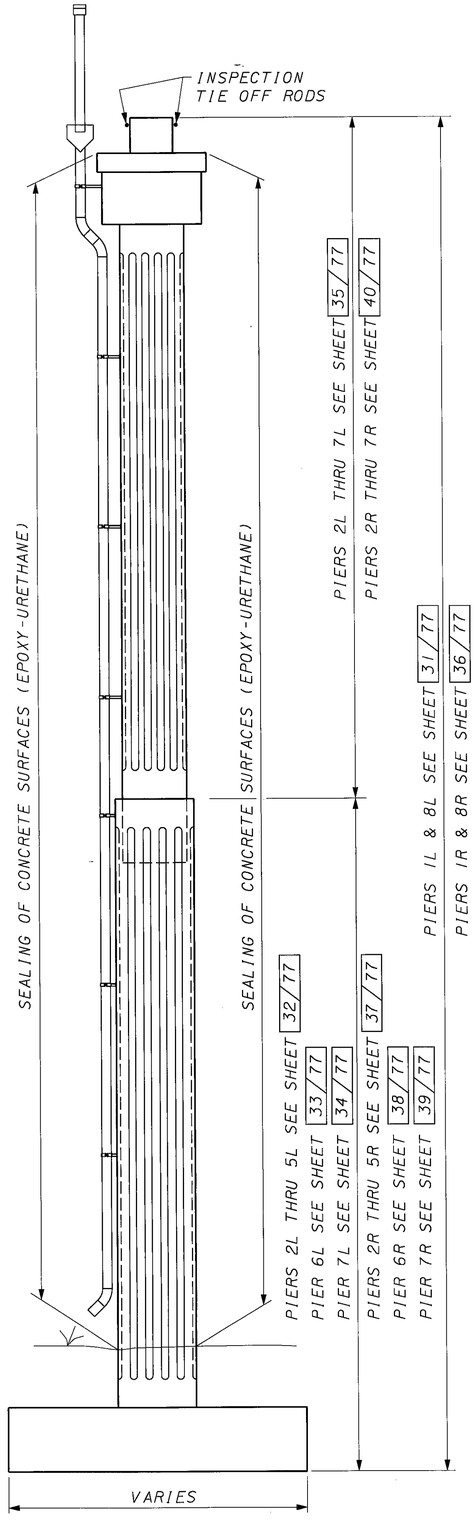
RIGHT FORWARD ABUTMENT DETAILS - STEEL

BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

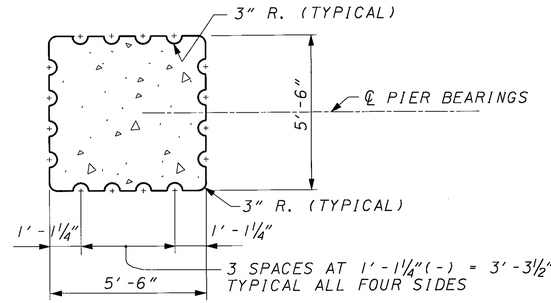
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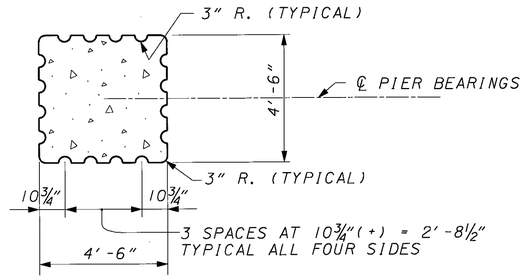
ELEVATION



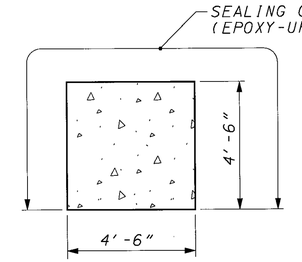
END VIEW



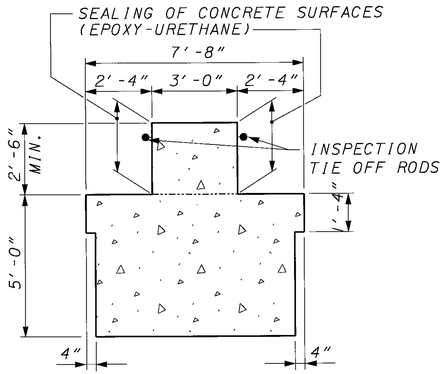
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

NOTES

SECTION X-X: SEE SHEET 41/77 .

PIER DETAILS: SEE SHEET 31/77 TO 41/77 .

PIER DRAINAGE DETAILS: SEE SHEET 67/77 .

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		770901311(L) 770902111(R)	

PIER AESTHETIC DETAILS - STEEL

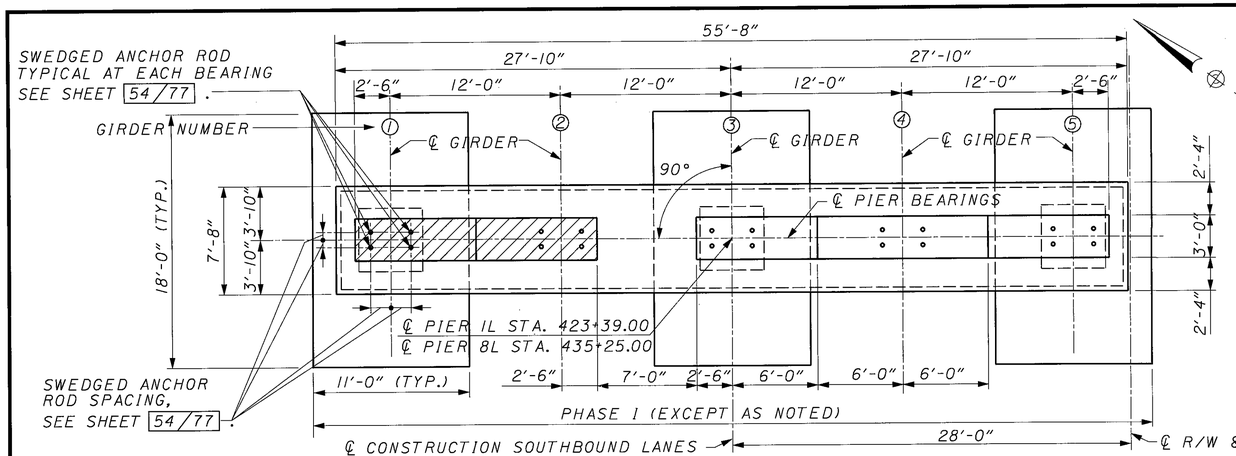
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

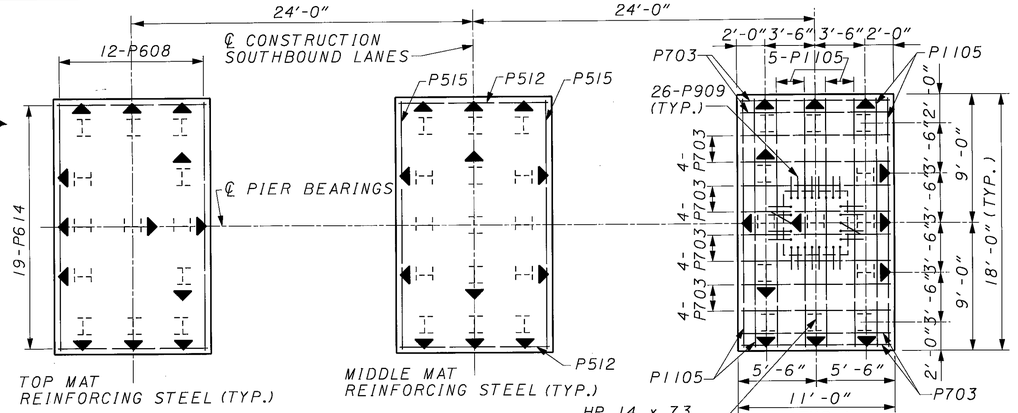
30/77

390/612

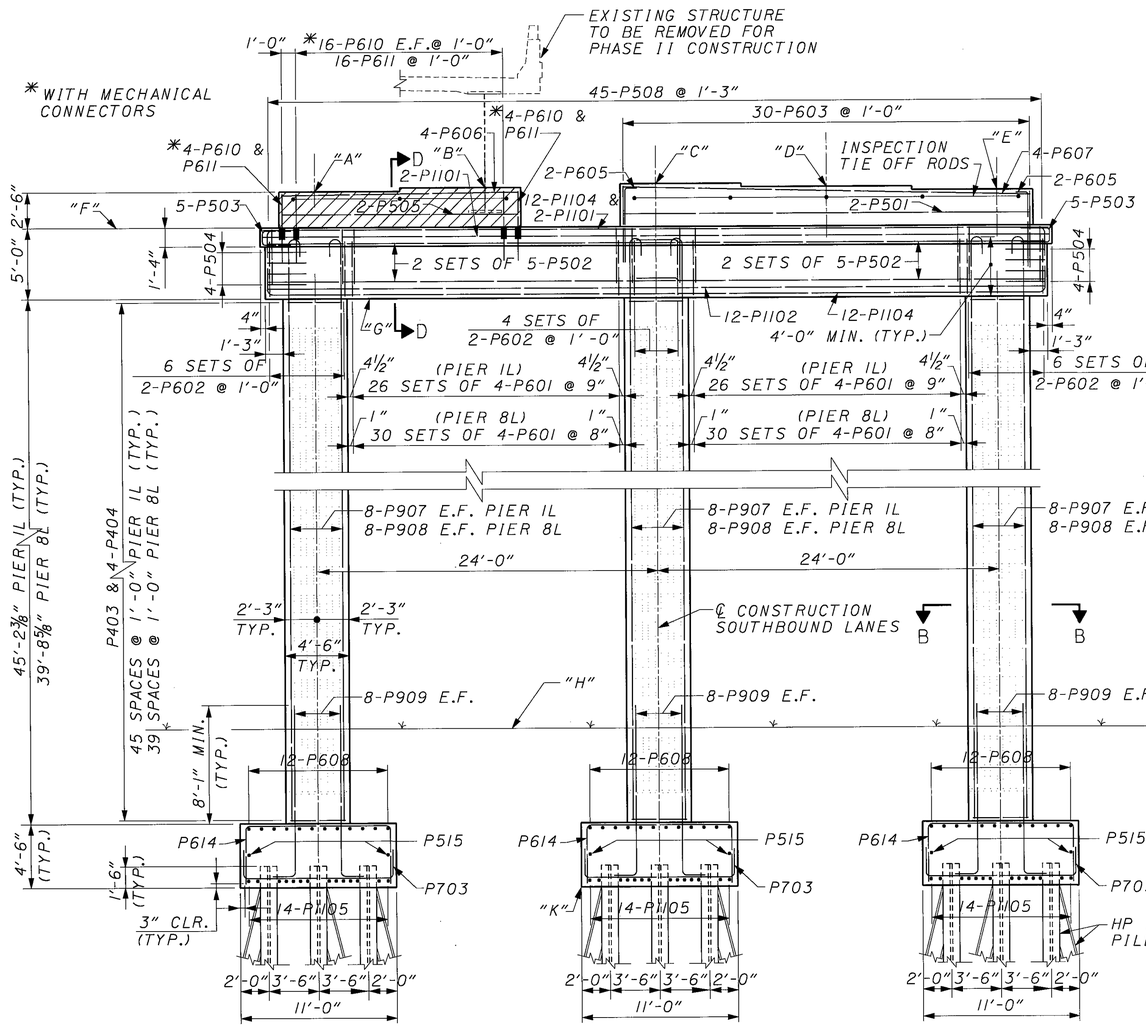
SU271PILDGN 6/23/04 TWH,JLS,SJK,RC



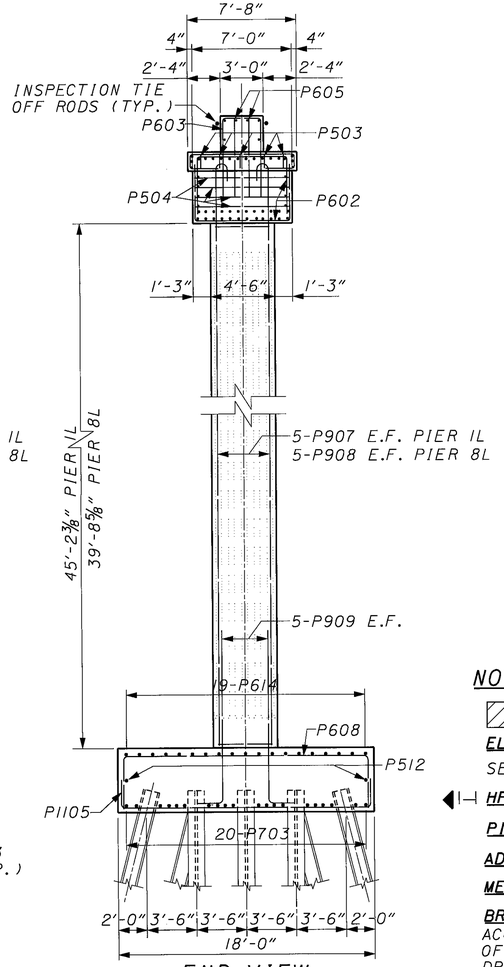
PLAN



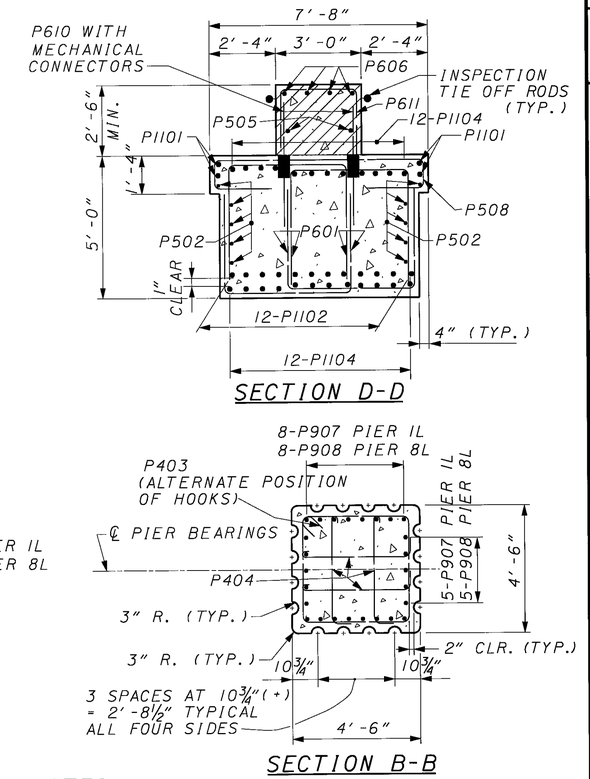
FOOTING PLAN



ELEVATION



END VIEW



SECTION D-D

SECTION B-B

NOTES

- ▨ - INDICATES PHASE II CONSTRUCTION
- **ELEVATION "A","B","C","D","E","F","G","H" & "K":** SEE SHEET 41/77.
- **HP 14 x 73 PILES** INDICATES 1:4 BATTER
- **PILE NUMBERING:** SEE SHEET 18/77.
- **ADDITIONAL NOTES:** SEE SHEET 32/77.
- **MECHANICAL CONNECTOR DETAIL:** SEE SHEET 26/77.
- **BRIDGE SEAT REINFORCING, SETTING ANCHORS:** ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | CHECKED DLR | REVISED DAP 3/18/04 | DATE | STRUCTURE FILE NUMBER 7709013 | REVISED

PIERS 1L & 8L - STEEL

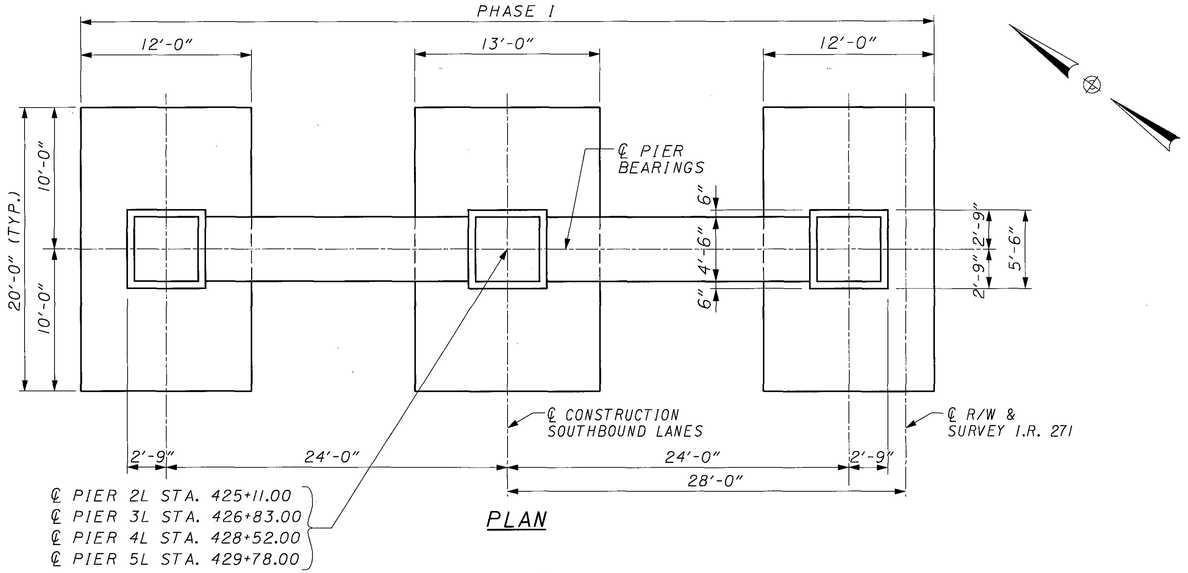
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

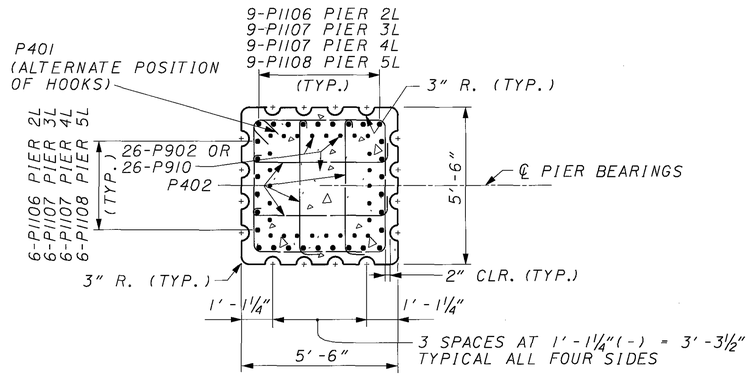
31/77

391/612

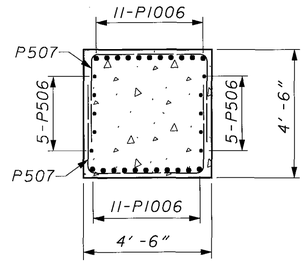
SU271P3L.DGN 6/23/04 TWH,JLS,SJK,HN,KH,RC



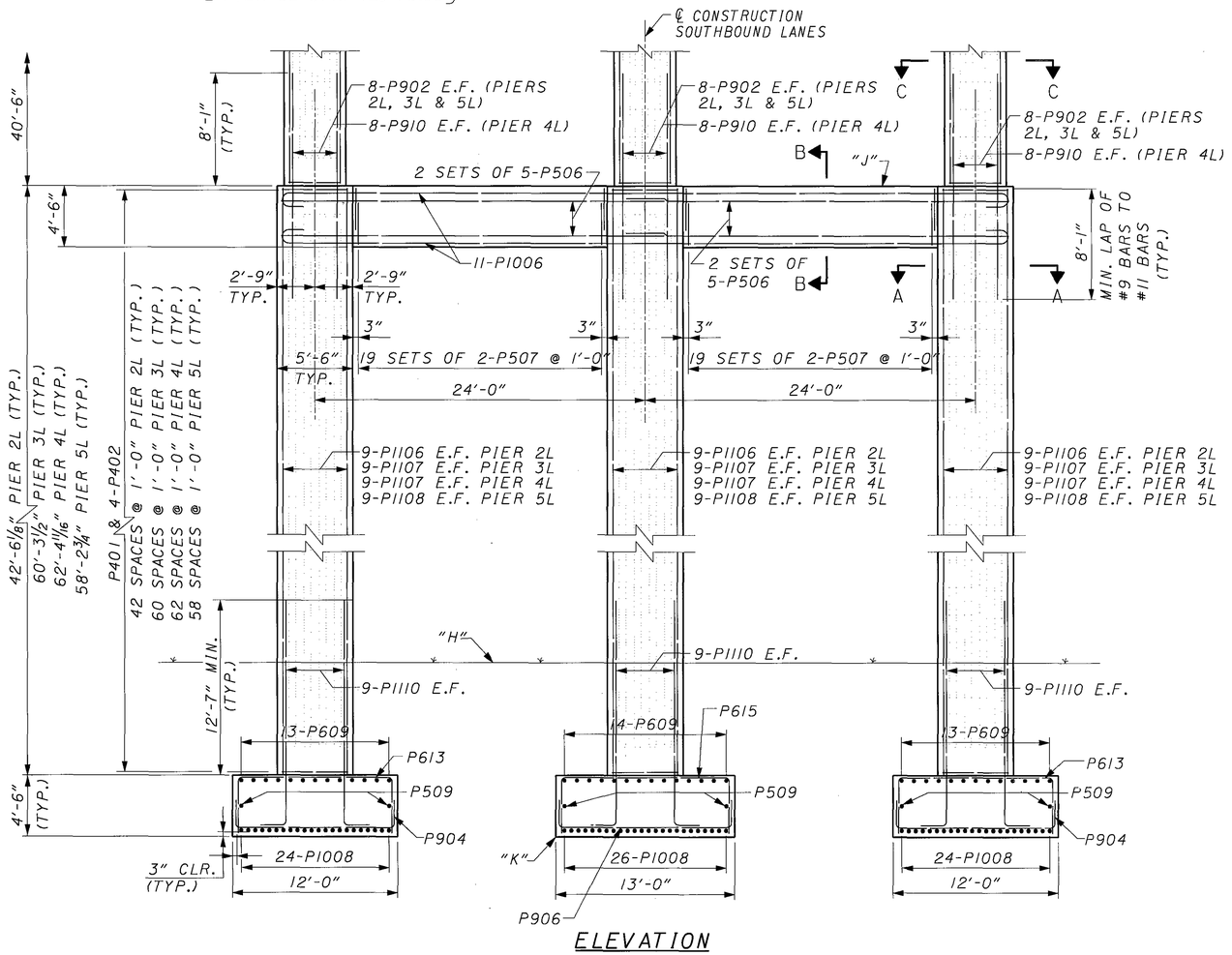
PLAN



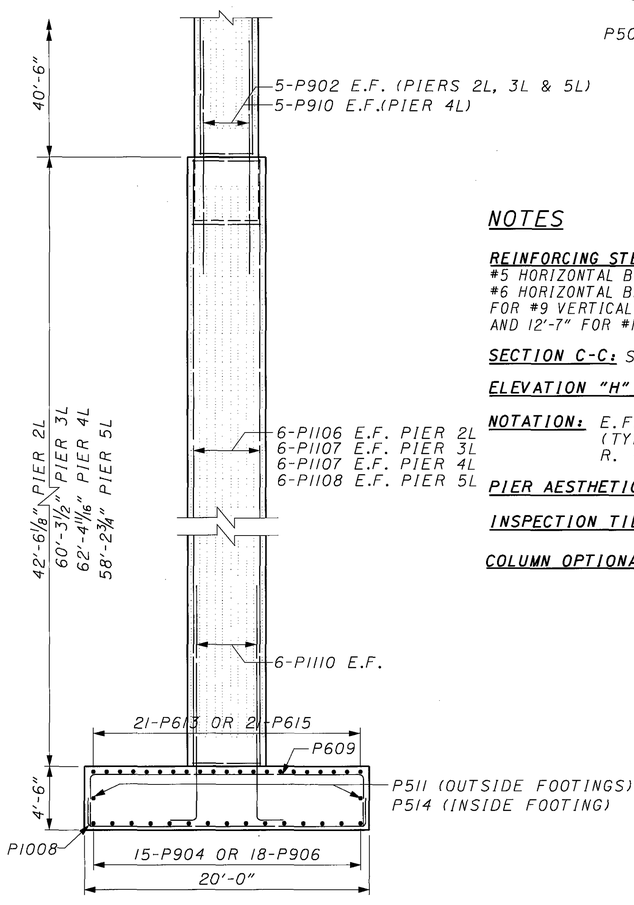
SECTION A-A



SECTION B-B



ELEVATION



END VIEW

NOTES

REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-9" FOR #5 HORIZONTAL BARS, 3'-0" FOR #6 VERTICAL BARS, 2'-5" FOR #6 HORIZONTAL BARS, 3'-11" FOR #7 HORIZONTAL BARS, 8'-1" FOR #9 VERTICAL BARS, 10'-3" FOR #10 VERTICAL BARS, AND 12'-7" FOR #11 VERTICAL BARS.

SECTION C-C: SEE SHEET 35/77.

ELEVATION "H", "J" & "K": SEE SHEET 41/77.

NOTATION: E.F. - EACH FACE
(TYP.) - TYPICAL
R. - RADIUS

PIER AESTHETIC DETAILS: SEE SHEET 30/77.

INSPECTION TIE OFF RODS: SEE SHEET 41/77.

COLUMN OPTIONAL RE-BAR SPLICES: SEE SHEET 33/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013

PIER DETAILS - 2L THRU 5L - STEEL

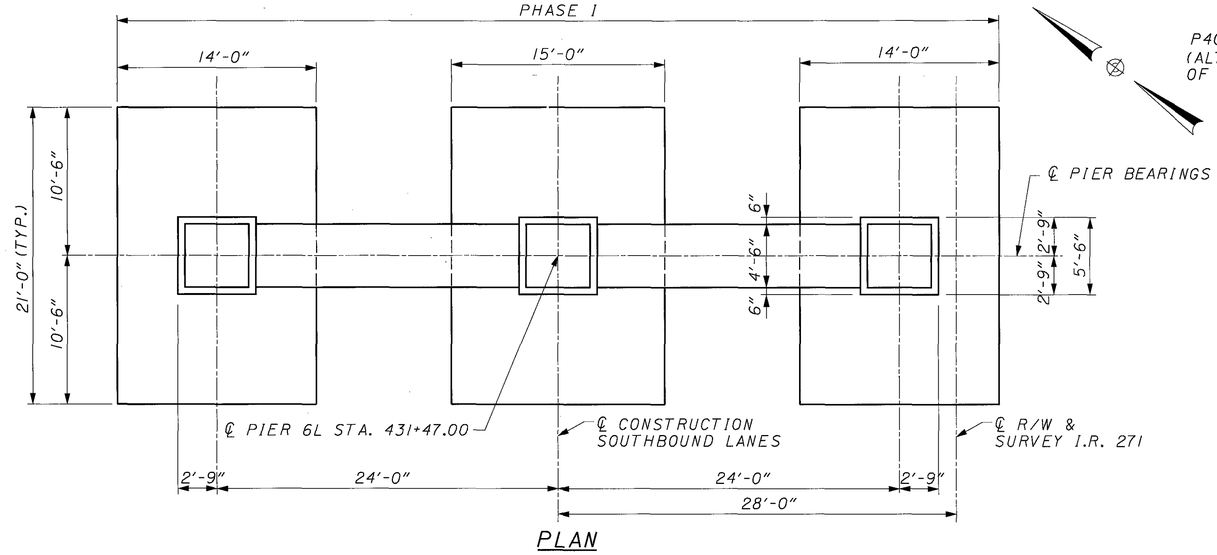
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

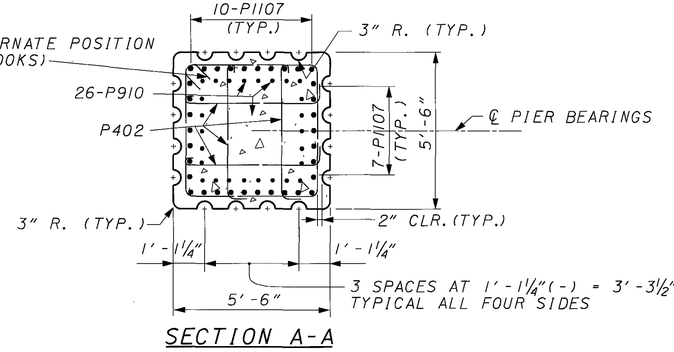
32/77

392/612

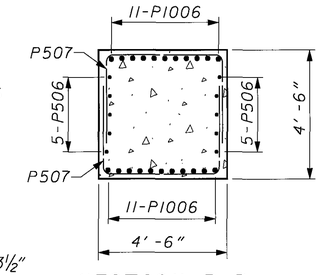
SU271P4L.DGN 6/23/04 TWH,JLS,SJK,HN,RC



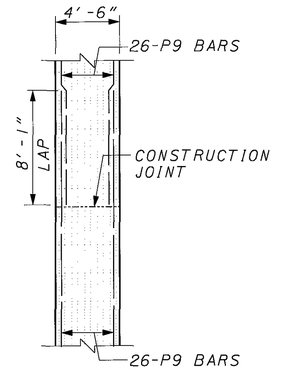
PLAN



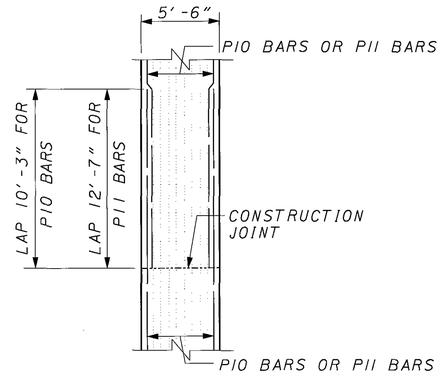
SECTION A-A



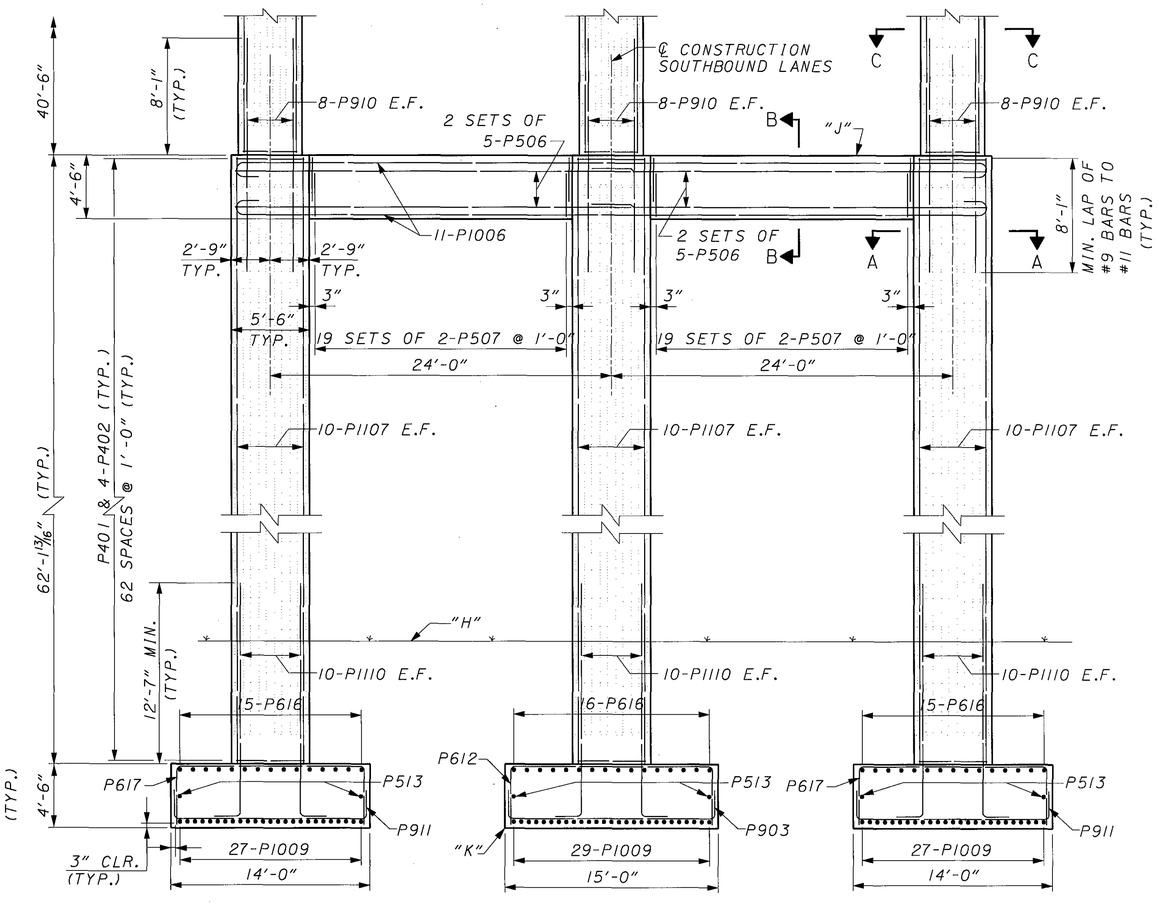
SECTION B-B



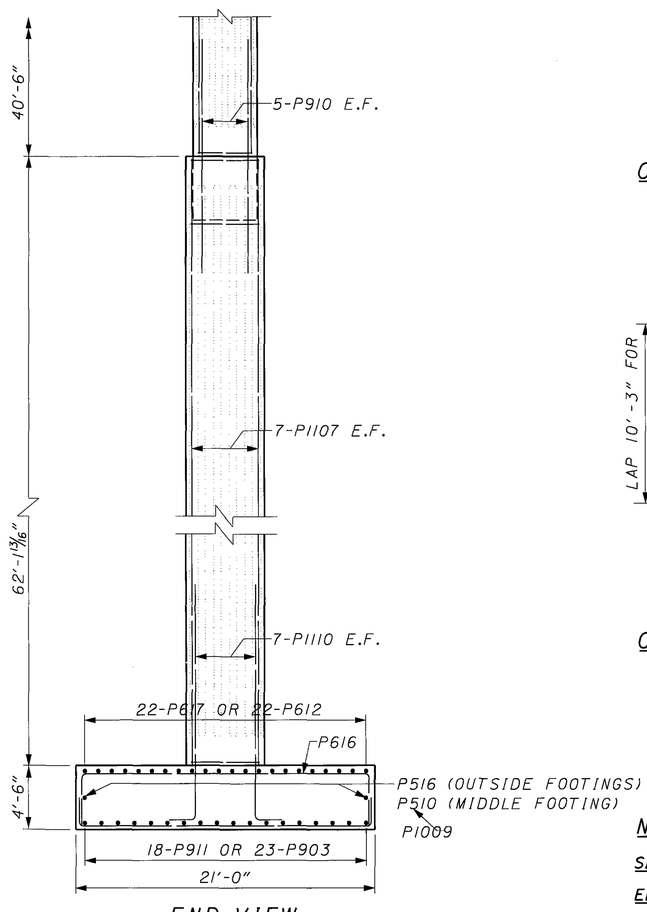
OPTIONAL RE-BAR SPLICE
TYPICAL 4'-6" COLUMN



OPTIONAL RE-BAR SPLICE
TYPICAL 5'-6" COLUMN



ELEVATION



END VIEW

NOTE

SECTION C-C: SEE SHEET 35/77.

ELEVATION "H", "J" & "K": SEE SHEET 41/77.

ADDITIONAL NOTES: SEE SHEET 32/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
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DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013	

PIER 6L DETAILS - STEEL

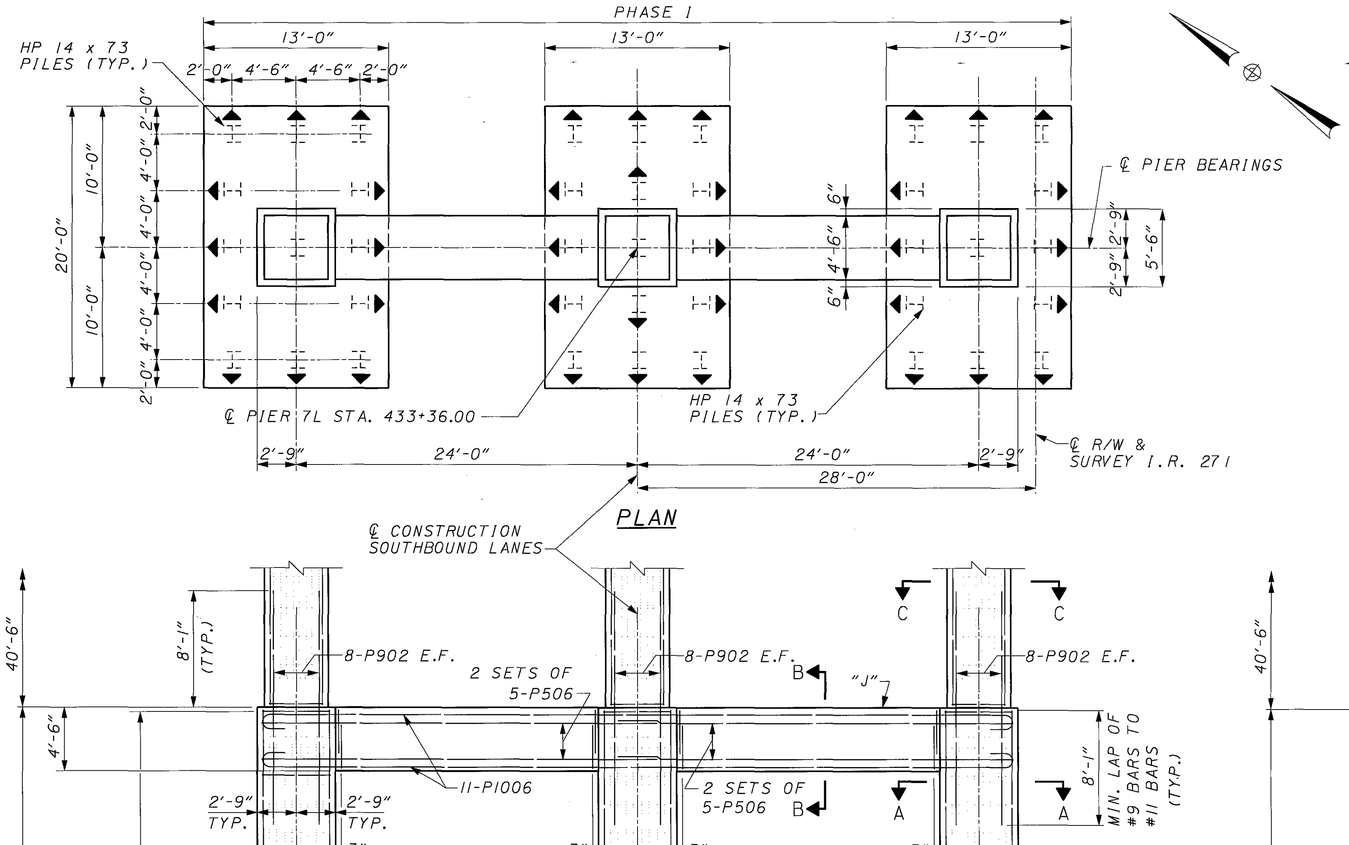
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

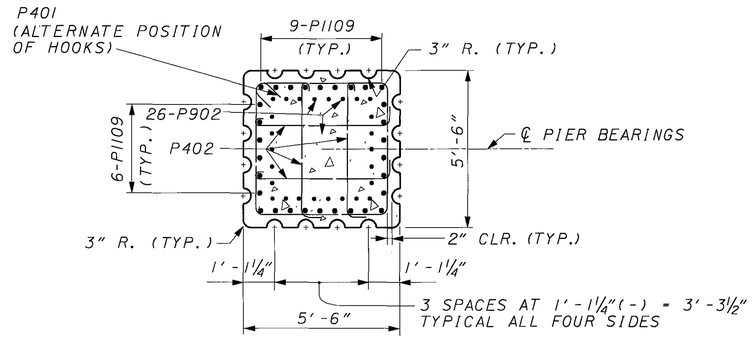
33/77

393/612

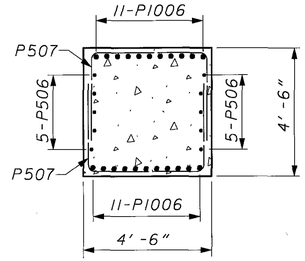
SU271P5L.DGN 6/23/04 TWH,JLS,SJK,HN,RC



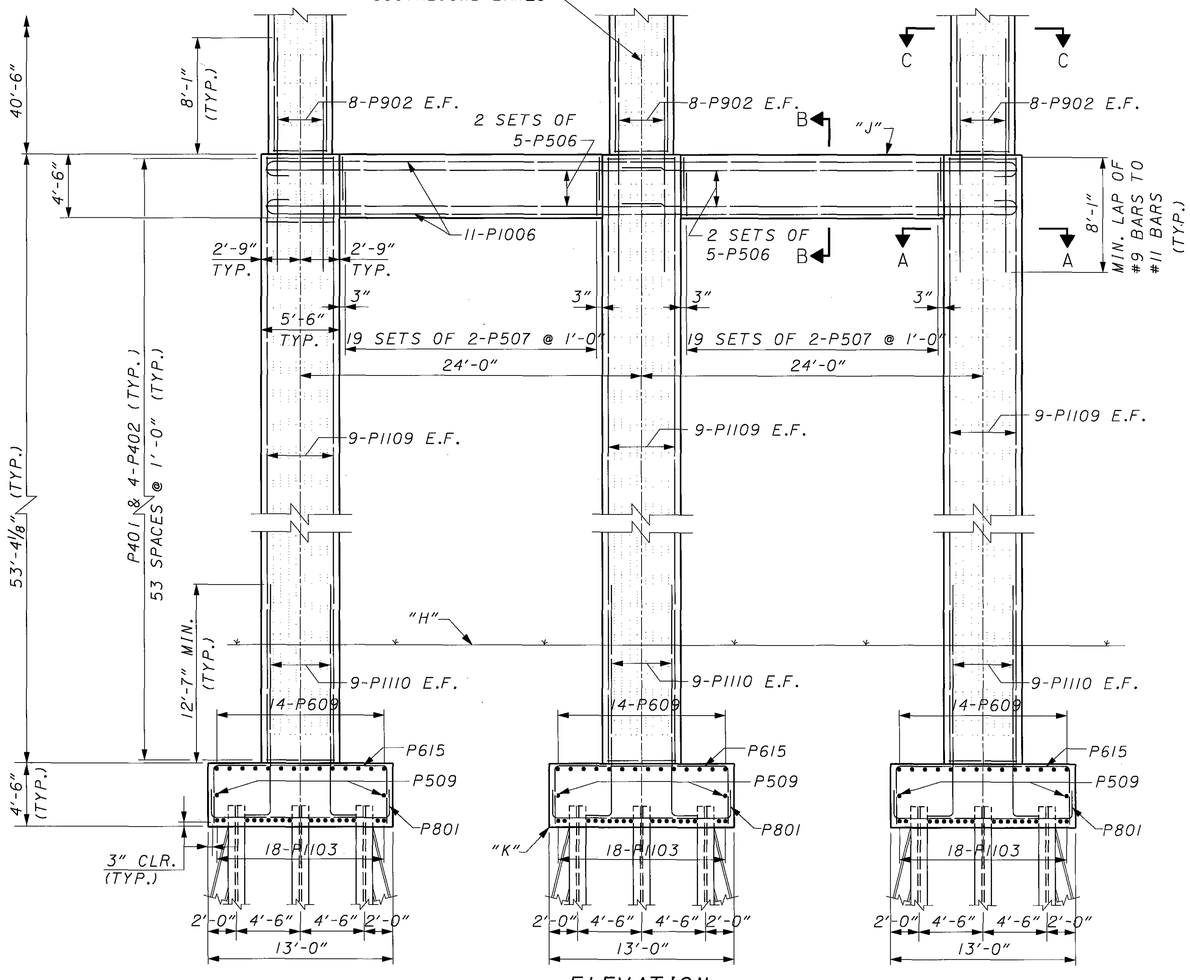
PLAN



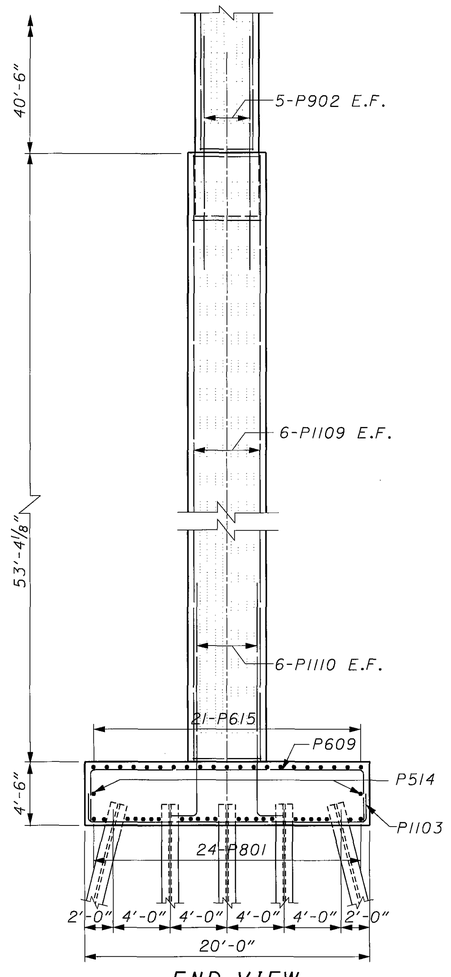
SECTION A-A



SECTION B-B



ELEVATION



END VIEW

NOTE

SECTION C-C: SEE SHEET 35/77.

ELEVATION "H", "J" & "K": SEE SHEET 41/77.

◀|⊣ **HP 14 x 73 PILES** INDICATES 1:4 BATTER

PILE NUMBERING: SEE SHEET 18/77.

ADDITIONAL NOTES: SEE SHEET 32/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013	

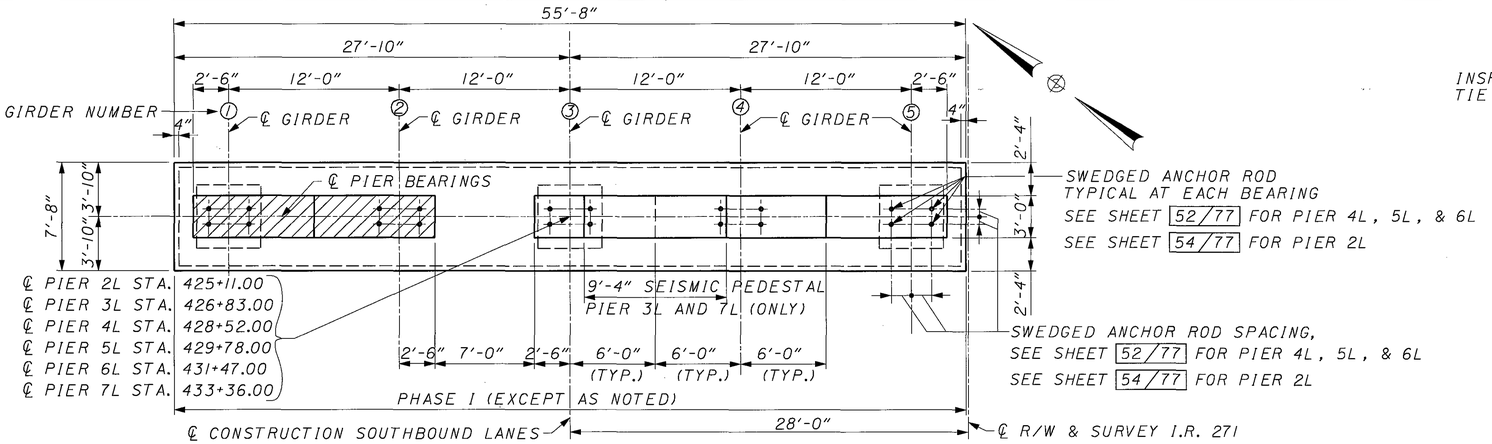
PIER 7L DETAILS - STEEL
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

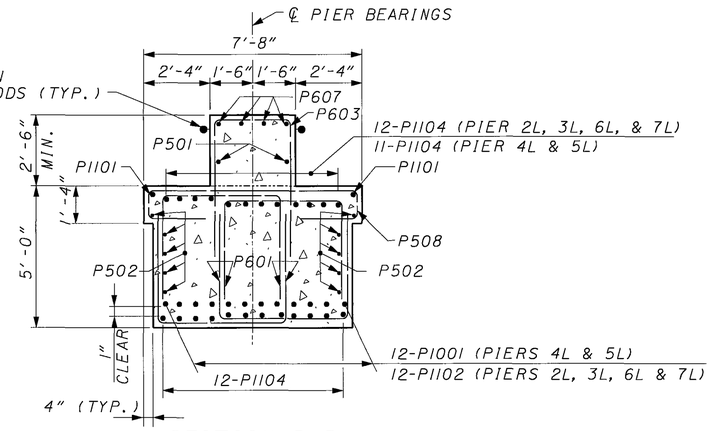
34/77

394/612

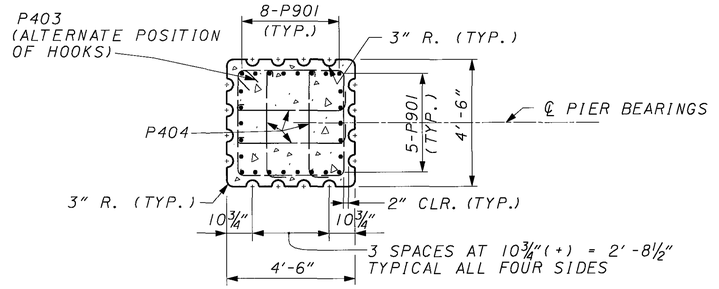
SU271P6L.DGN 6/23/04 TWH,JLS,SJK,HN,RC



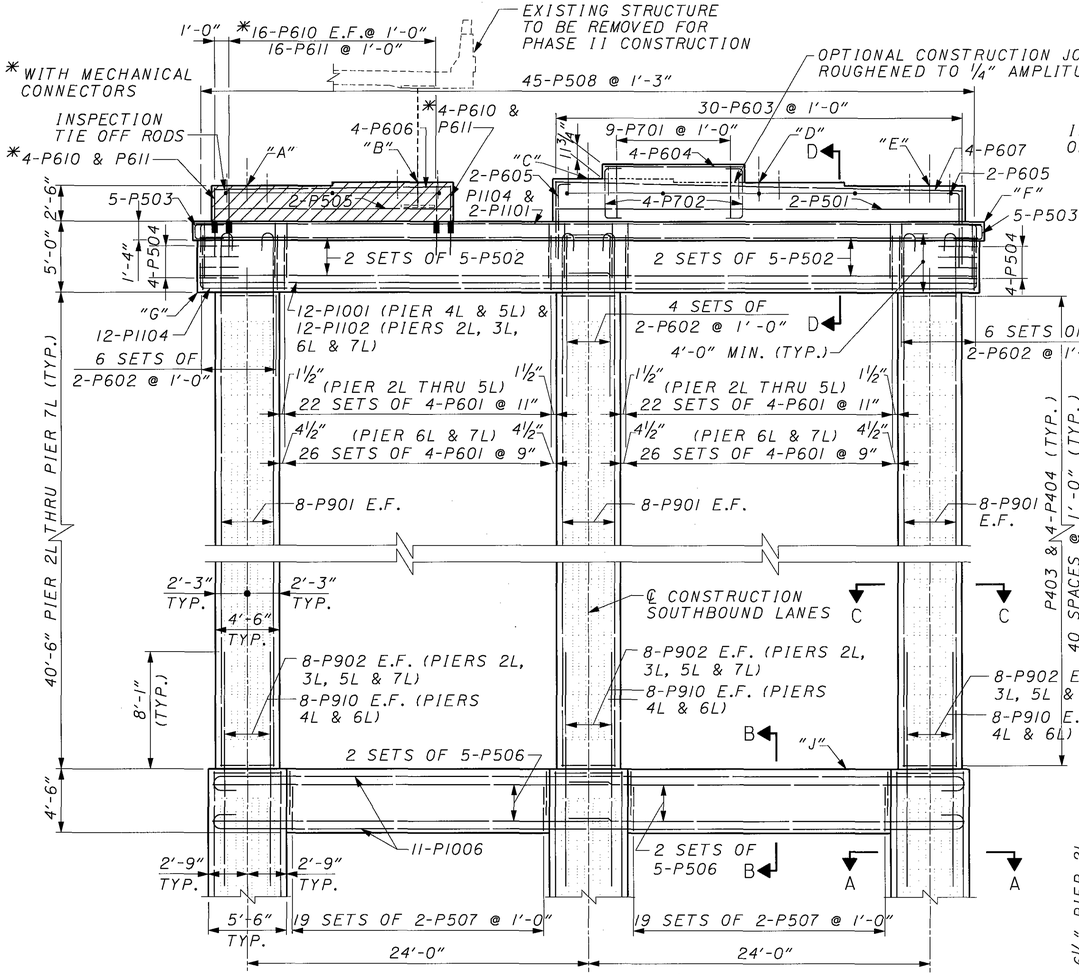
PLAN



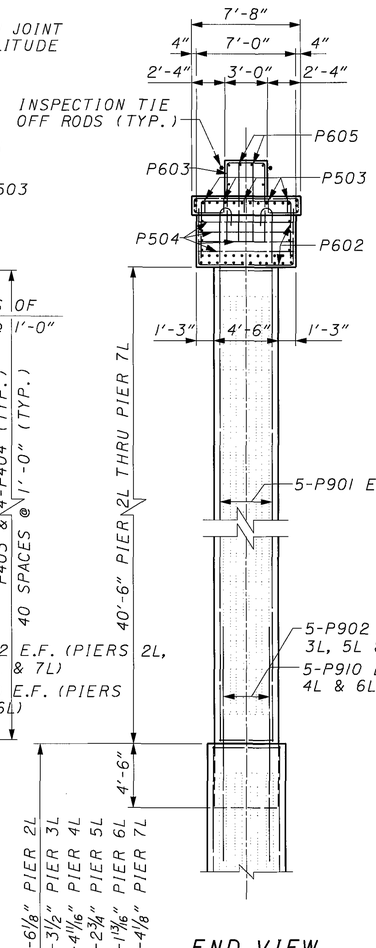
SECTION D-D



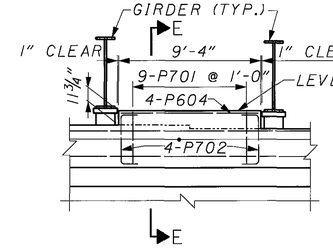
SECTION C-C



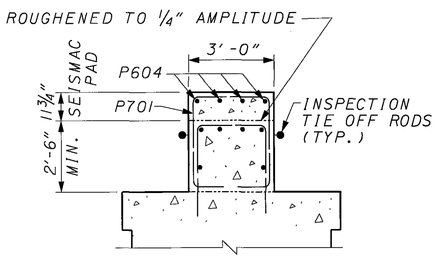
ELEVATION
PIER 2L THRU 7L (STEEL)



END VIEW



SEISMIC PEDESTAL DETAIL
PIER 3L AND 7L



SECTION E-E

NOTES

INDICATES PHASE II CONSTRUCTION

SECTION A-A & B-B: SEE SHEETS 32/77, 33/77 & 34/77.

ELEVATION "A","B","C","D","E","F","G", & "J":
SEE SHEET 41/77.

ADDITIONAL NOTES: SEE SHEET 32/77.

BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD AT PIERS 3L, 4L, 5L, 6L & 7L TO COMPENSATE FOR THE VERTICAL DEFORMATION OF THE BEARINGS, SEE TABLE.

BRIDGE SEAT ADJUSTMENT TABLE				
PIER 3L	PIER 4L	PIER 5L	PIER 6L	PIER 7L
¼"	3/16"	3/16"	3/16"	¼"

BRIDGE SEAT REINFORCING, SETTING ANCHORS:
ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN JLS | CHECKED DLR | REVISED | REVIEWED DAP 3/18/04 | DATE | STRUCTURE FILE NUMBER 7709013

PIER DETAILS - 2L THRU 7L - STEEL

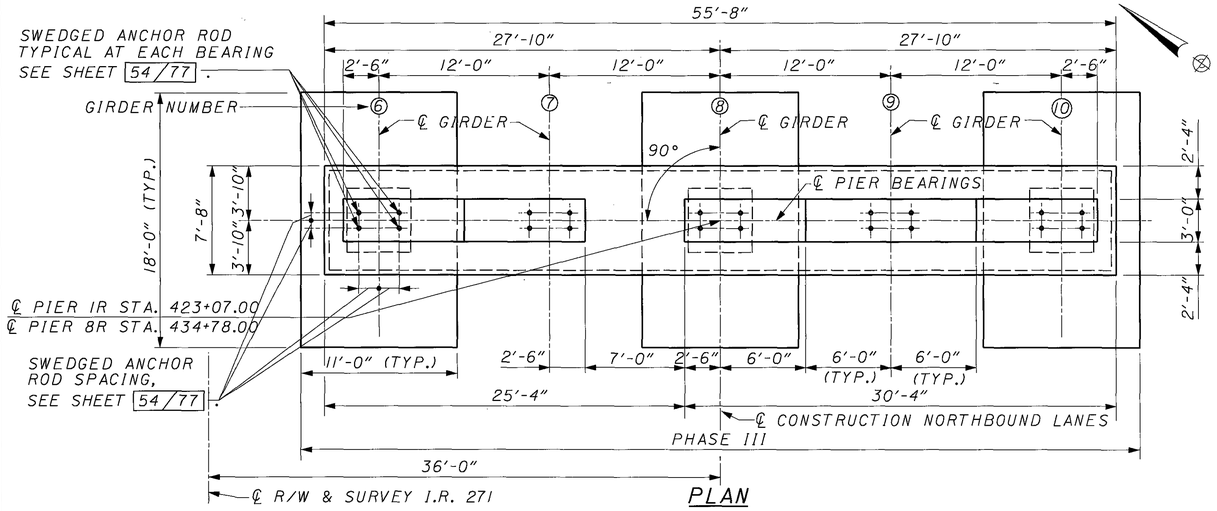
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

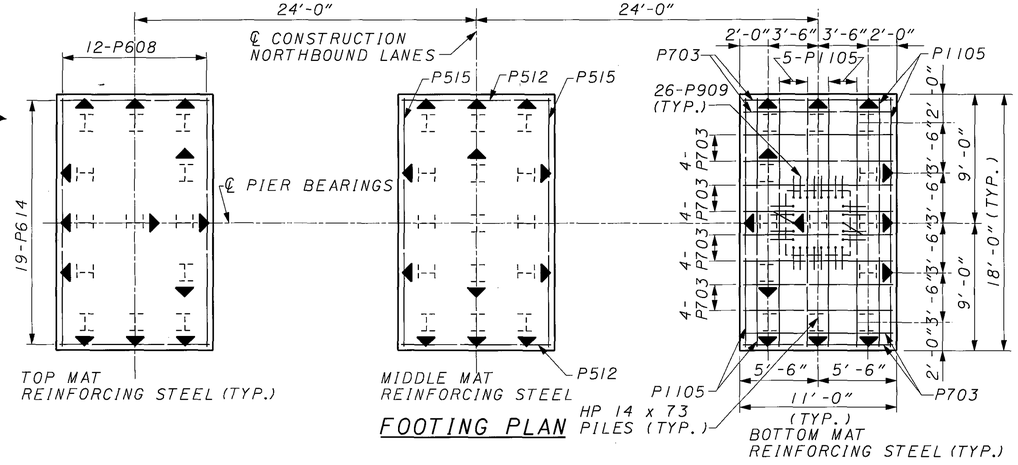
35/77

395/612

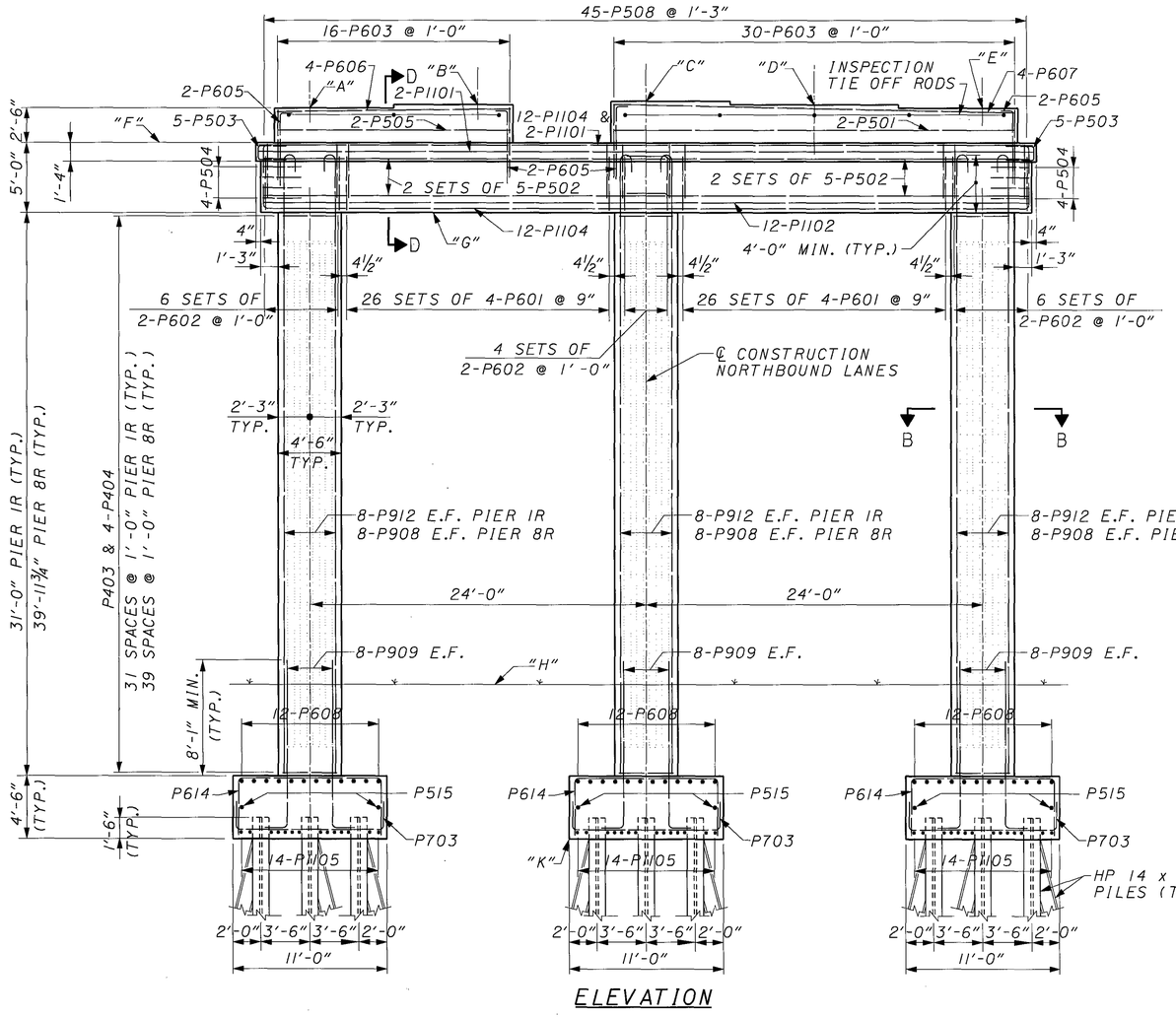
SU27IP7L.DGN 6/23/04 TWH,JLS,SJK,HN,KH,RC



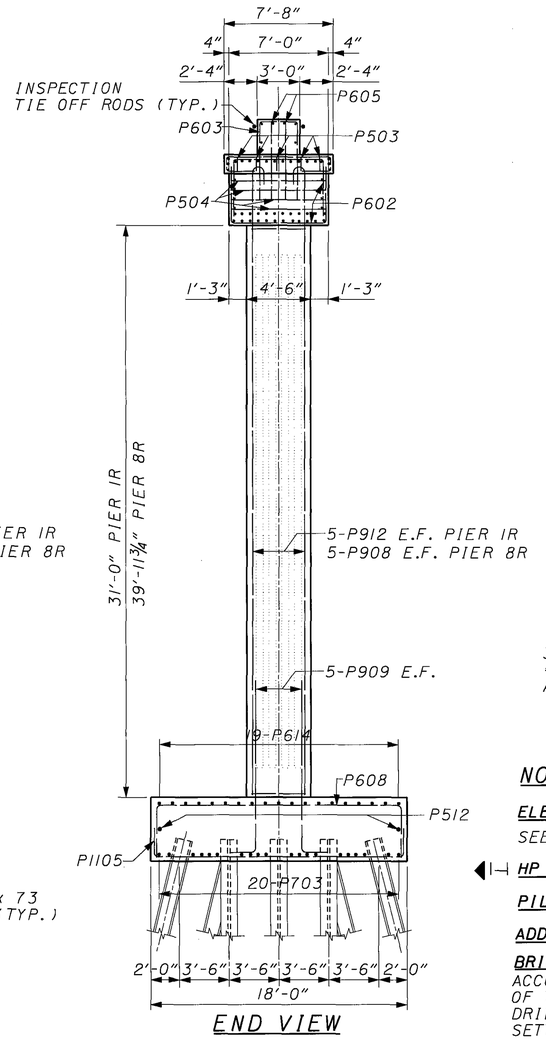
PLAN



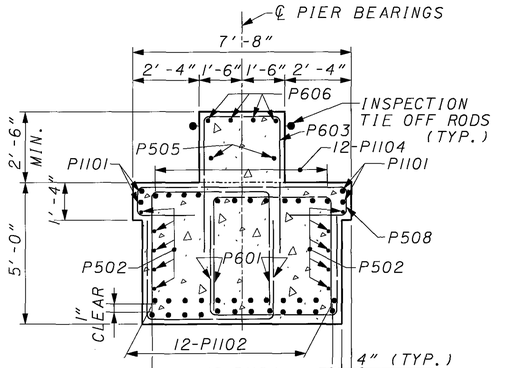
FOOTING PLAN



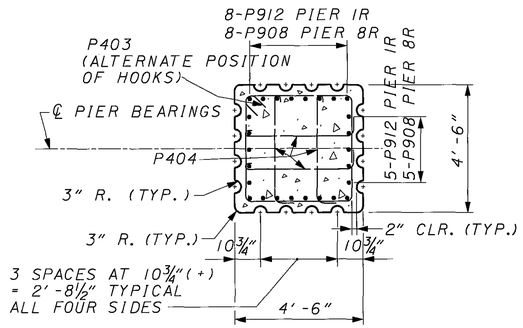
ELEVATION



END VIEW



SECTION D-D



SECTION B-B

NOTES

ELEVATION "A","B","C","D","E","F","G","H" & "K": SEE SHEET 41/77.

HP 14 x 73 PILES INDICATES 1:4 BATTER

PILE NUMBERING: SEE SHEET 18/77.

ADDITIONAL NOTES: SEE SHEET 32/77.

BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709021	

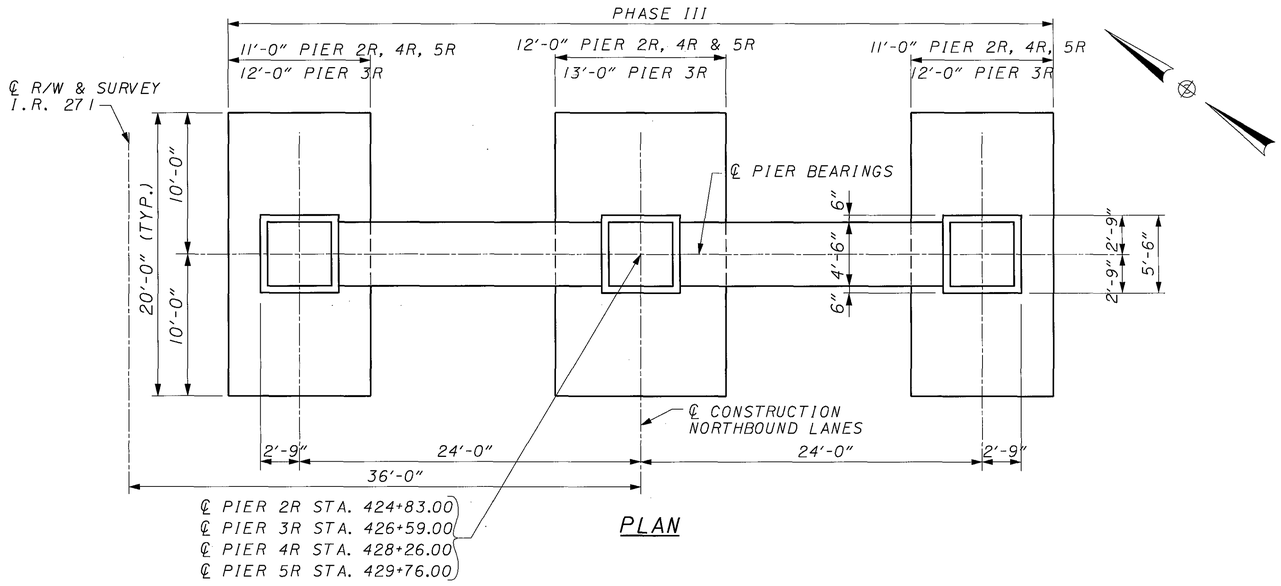
PIERS 1R & 8R - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, CUYAHOGA RIVER
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

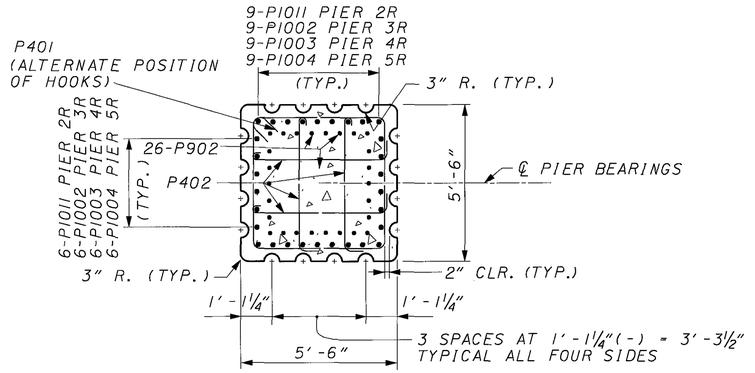
36/77

396/612

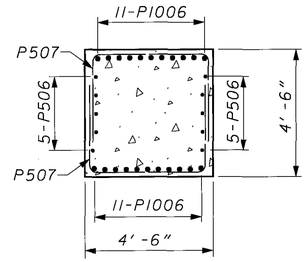
SU27IP3R.DGN 6/23/04 TWH,JLS,SJK,HN,KH,RC



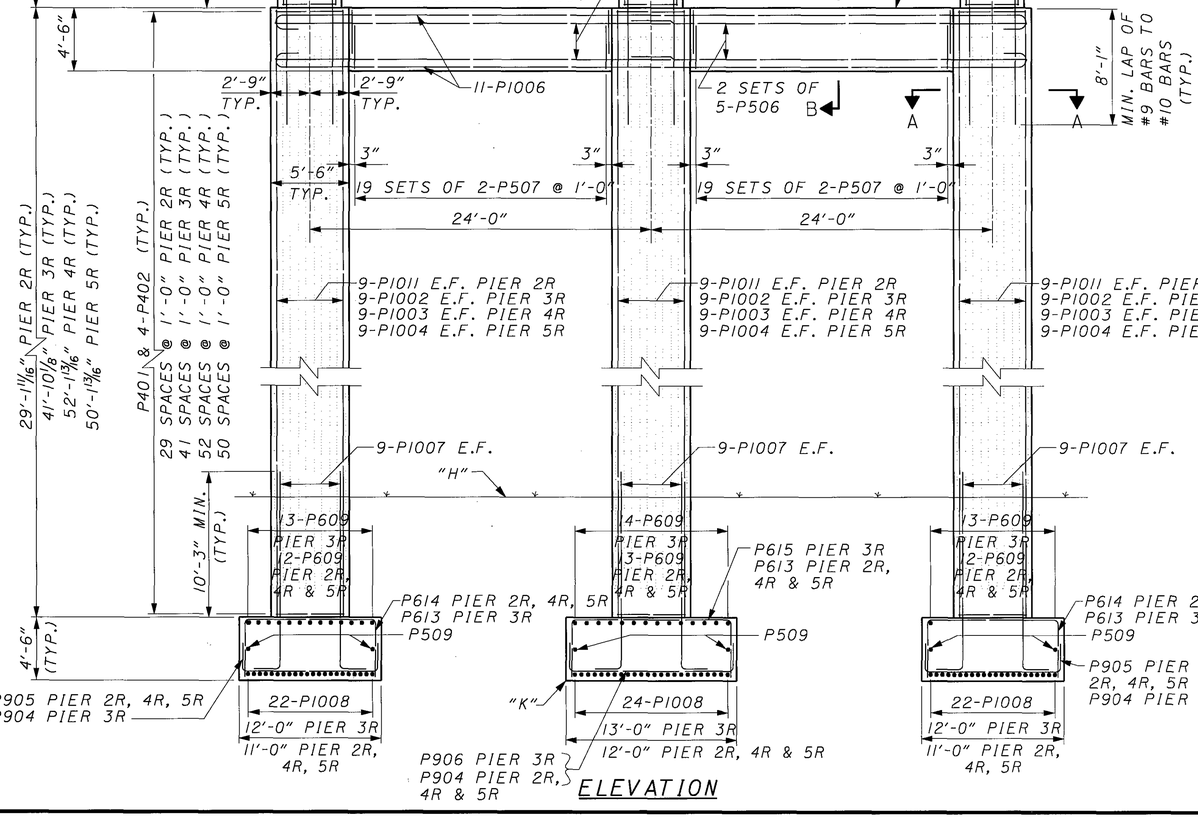
PLAN



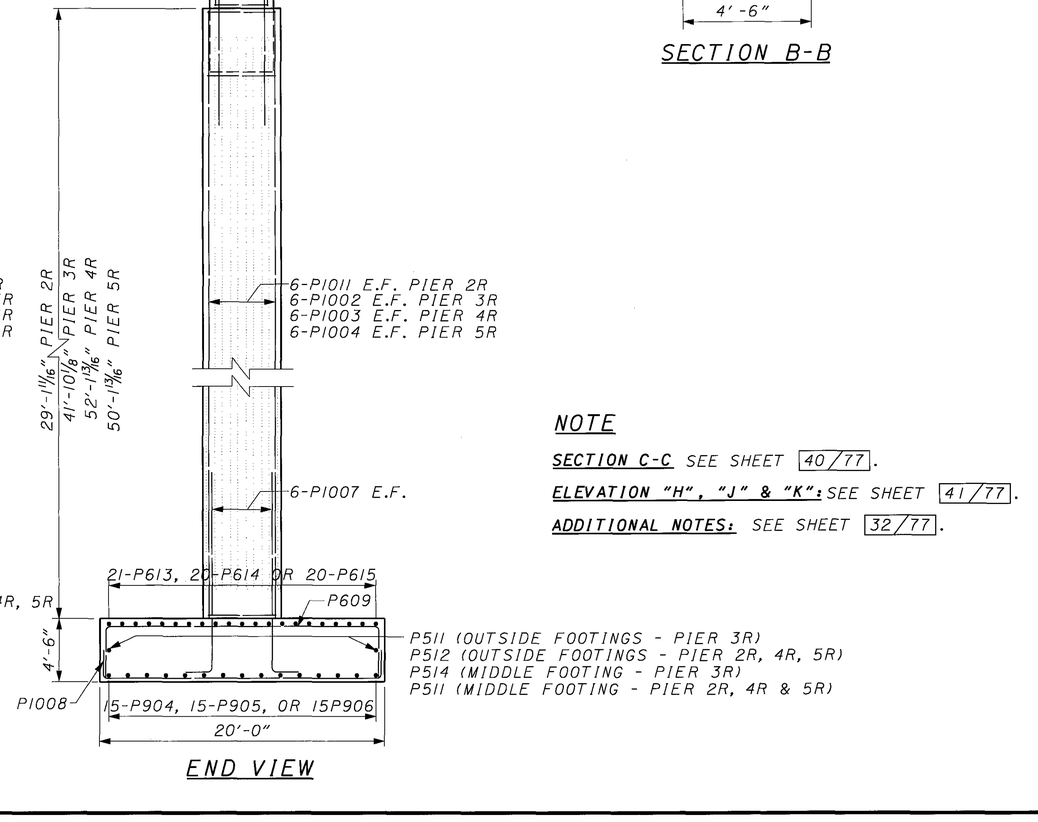
SECTION A-A



SECTION B-B



ELEVATION



END VIEW

NOTE

SECTION C-C SEE SHEET 40/77.

ELEVATION "H", "J" & "K": SEE SHEET 41/77.

ADDITIONAL NOTES: SEE SHEET 32/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709021

PIER DETAILS - 2R THRU 5R - STEEL

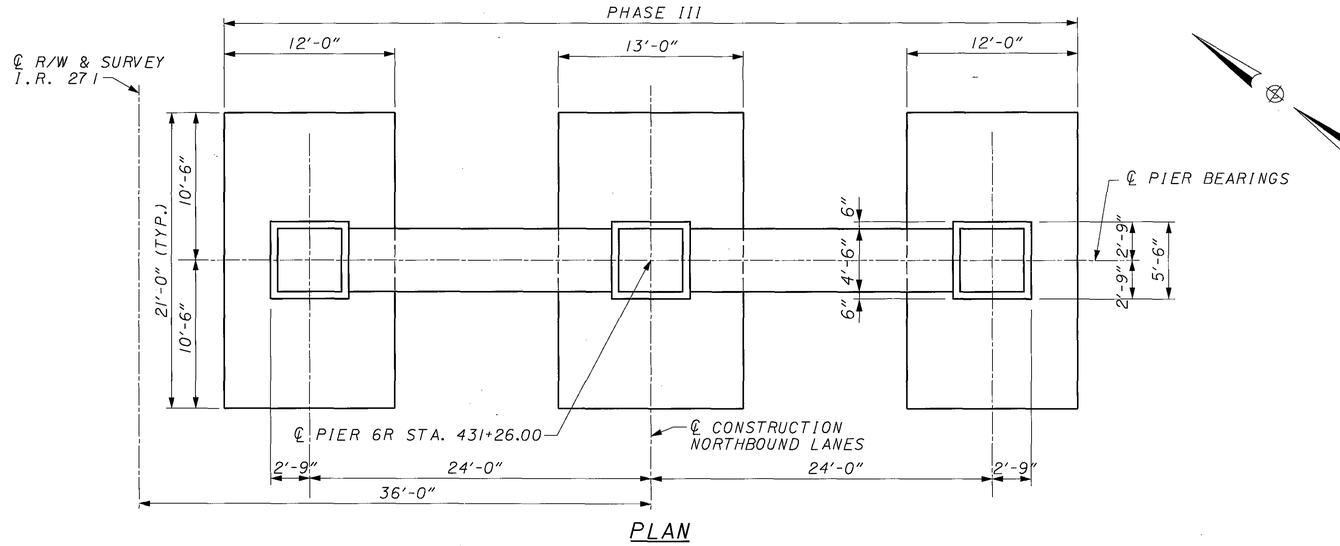
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

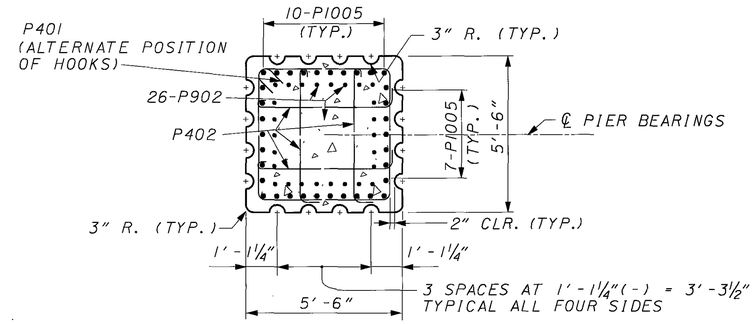
37/77

397/612

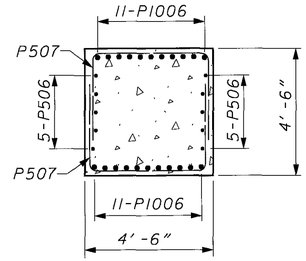
SU271P4R.DGN 6/23/04 JLS,SJK,HN,RC



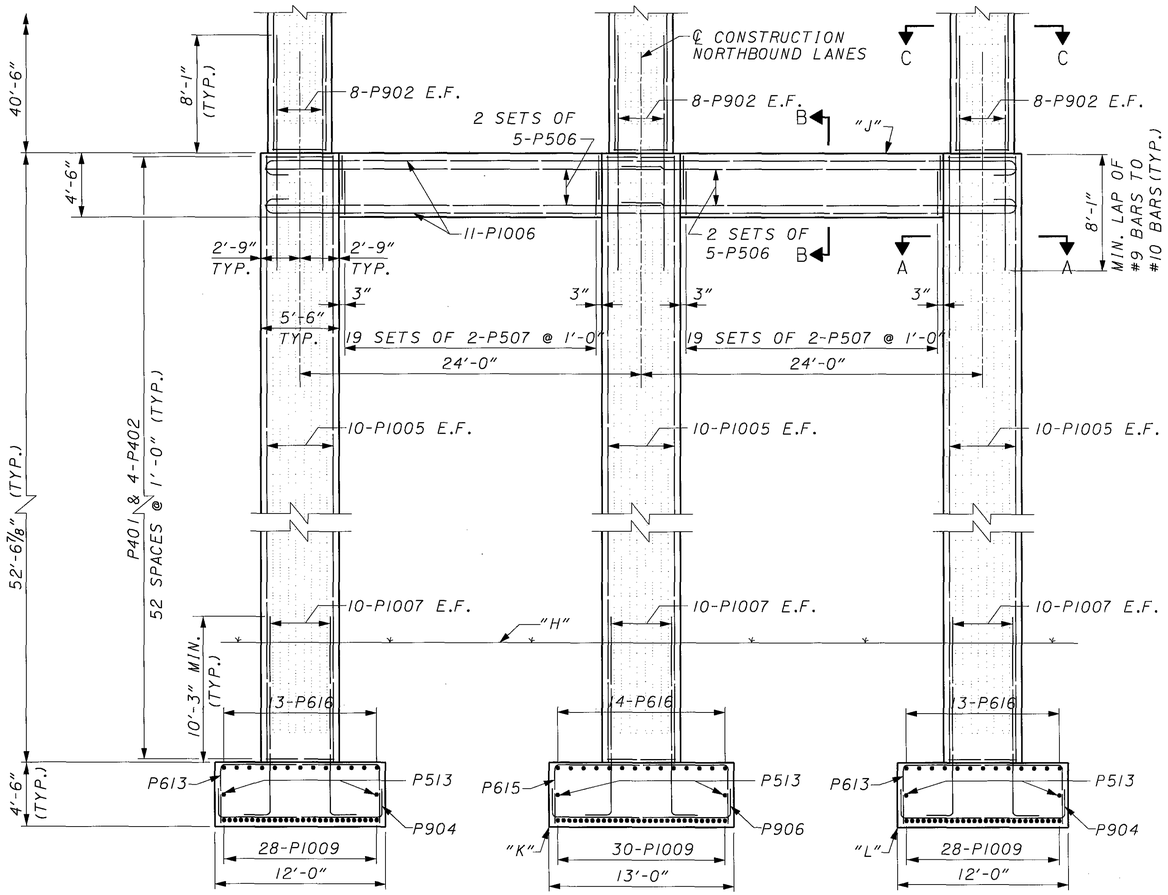
PLAN



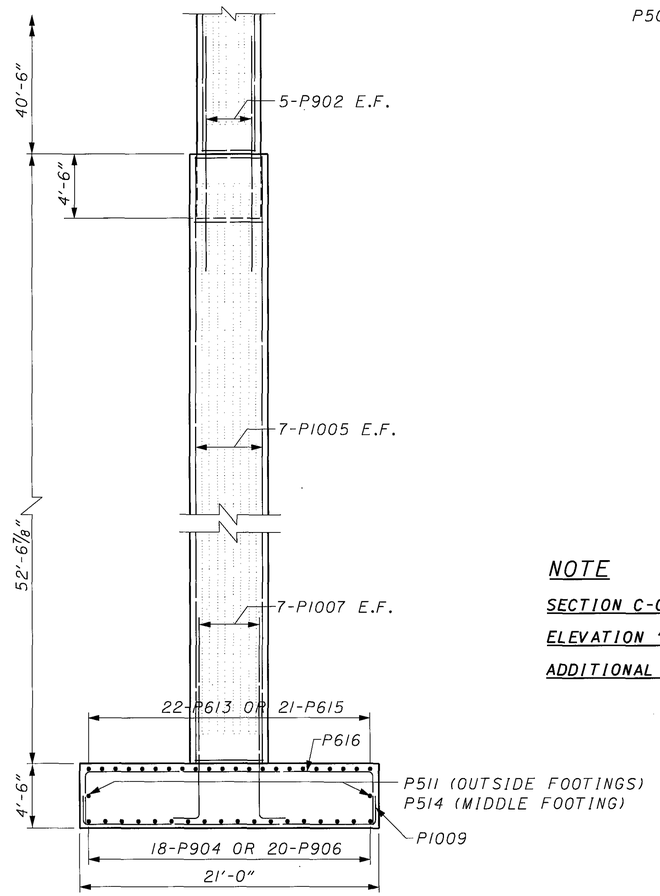
SECTION A-A



SECTION B-B



ELEVATION



END VIEW

NOTE

SECTION C-C SEE SHEET 40/77.

ELEVATION "H", "J" & "K": SEE SHEET 41/77.

ADDITIONAL NOTES: SEE SHEET 32/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709021

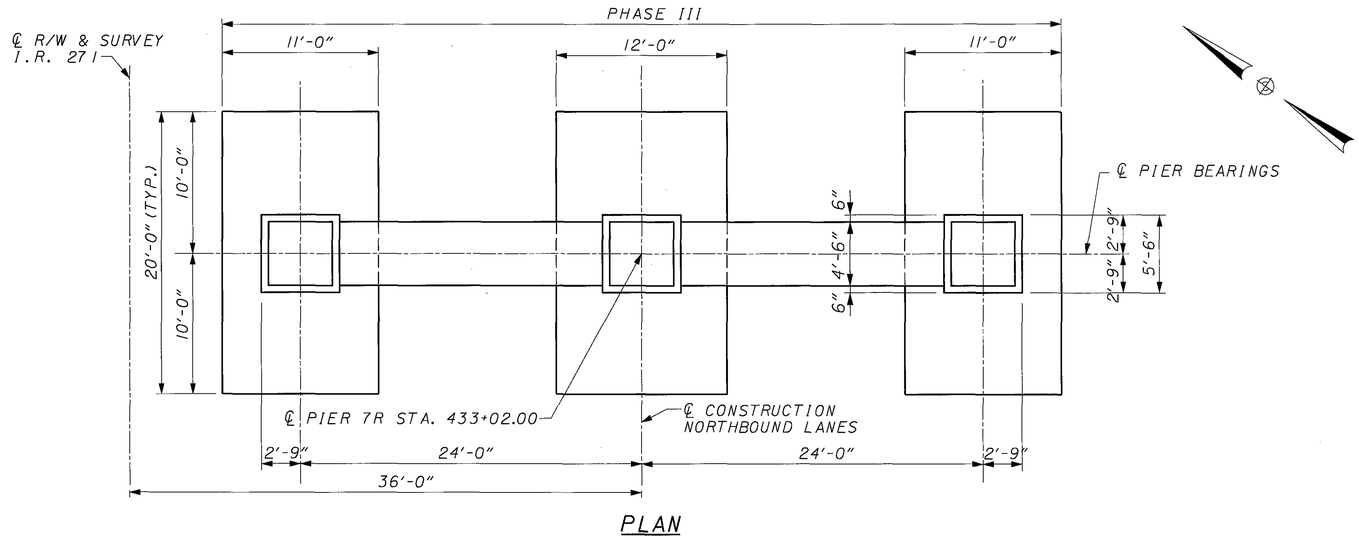
PIER 6R DETAILS - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

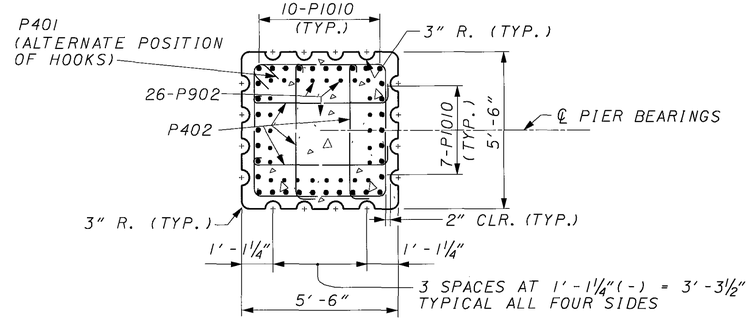
38/77

398/612

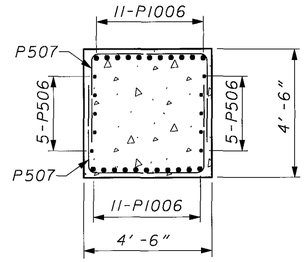
SU271P5R.DGN 6/23/04 TWH,JLS,SJK,HN,RC



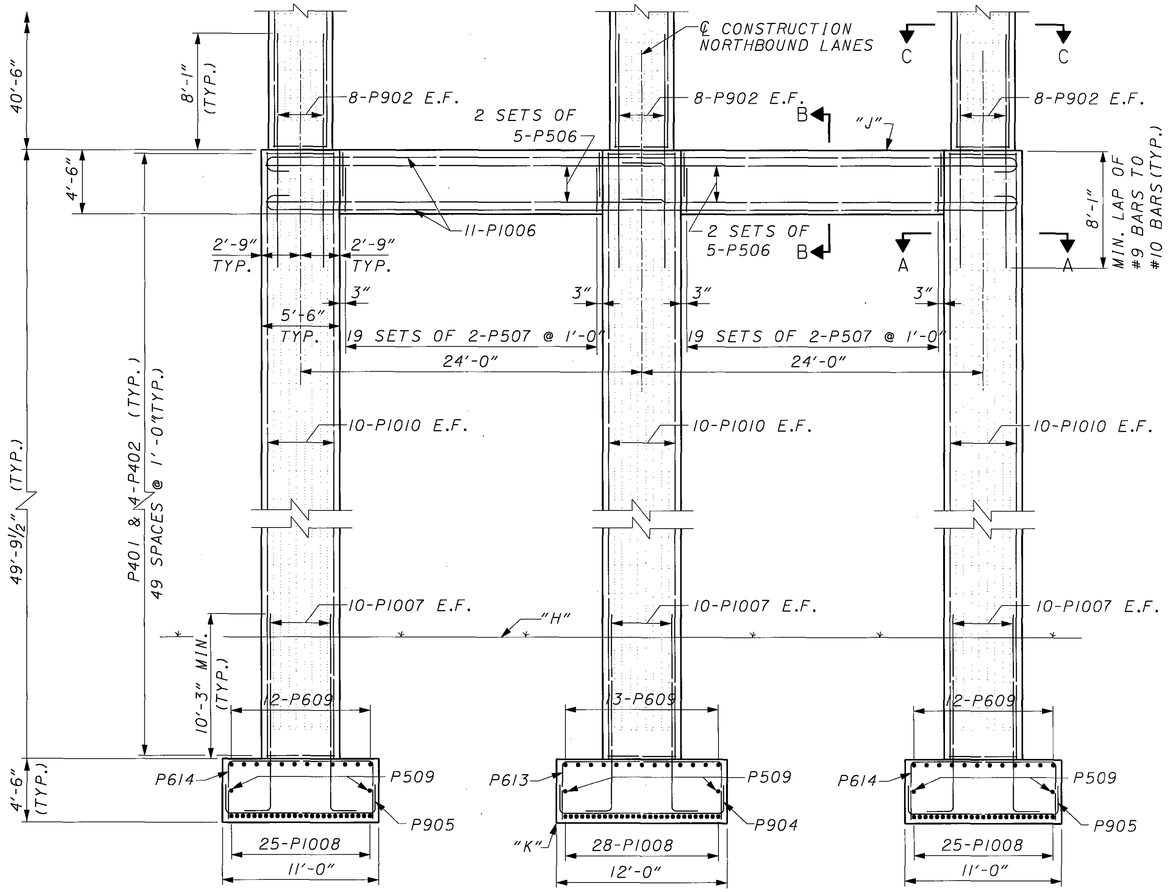
PLAN



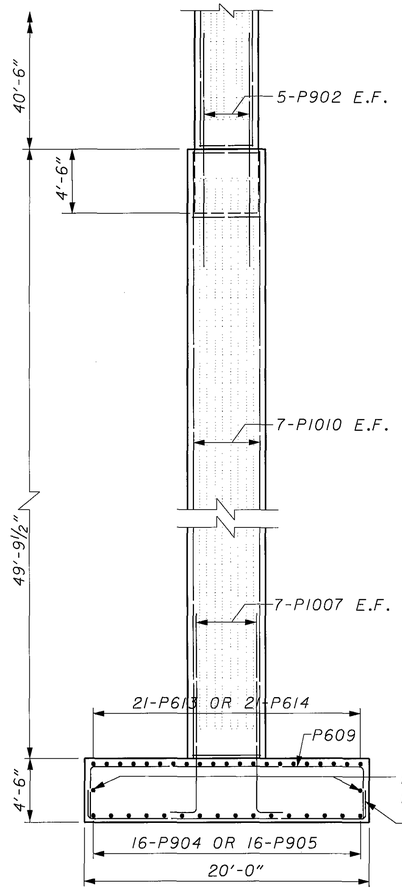
SECTION A-A



SECTION B-B



ELEVATION



END VIEW

NOTE

SECTION C-C SEE SHEET 40/77.

ELEVATION "H", "J" & "K": SEE SHEET 41/77.

ADDITIONAL NOTES: SEE SHEET 32/77.

SU27IP6R.DGN 6/23/04 TWH,JLS,SJK,HN,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709021

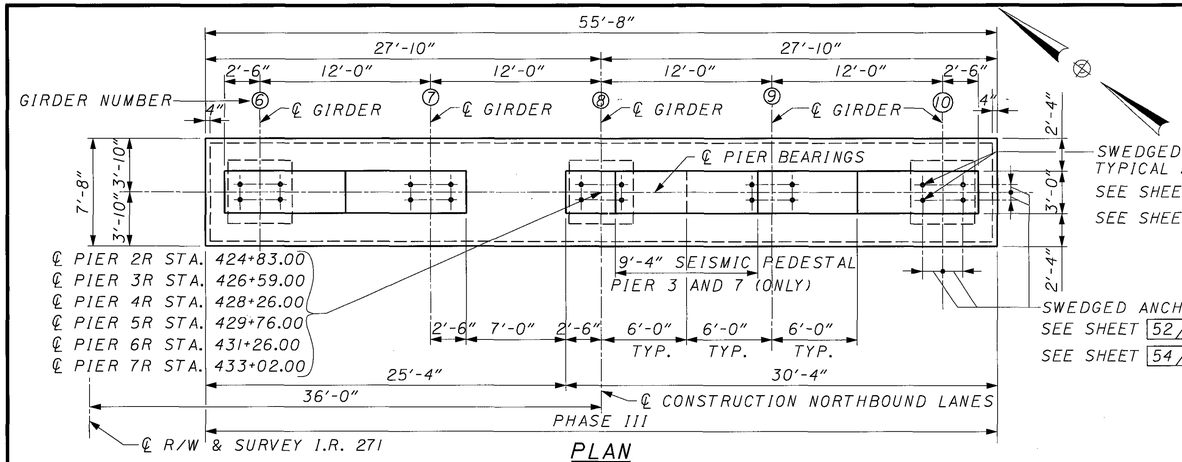
PIER 7R DETAILS - STEEL

BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

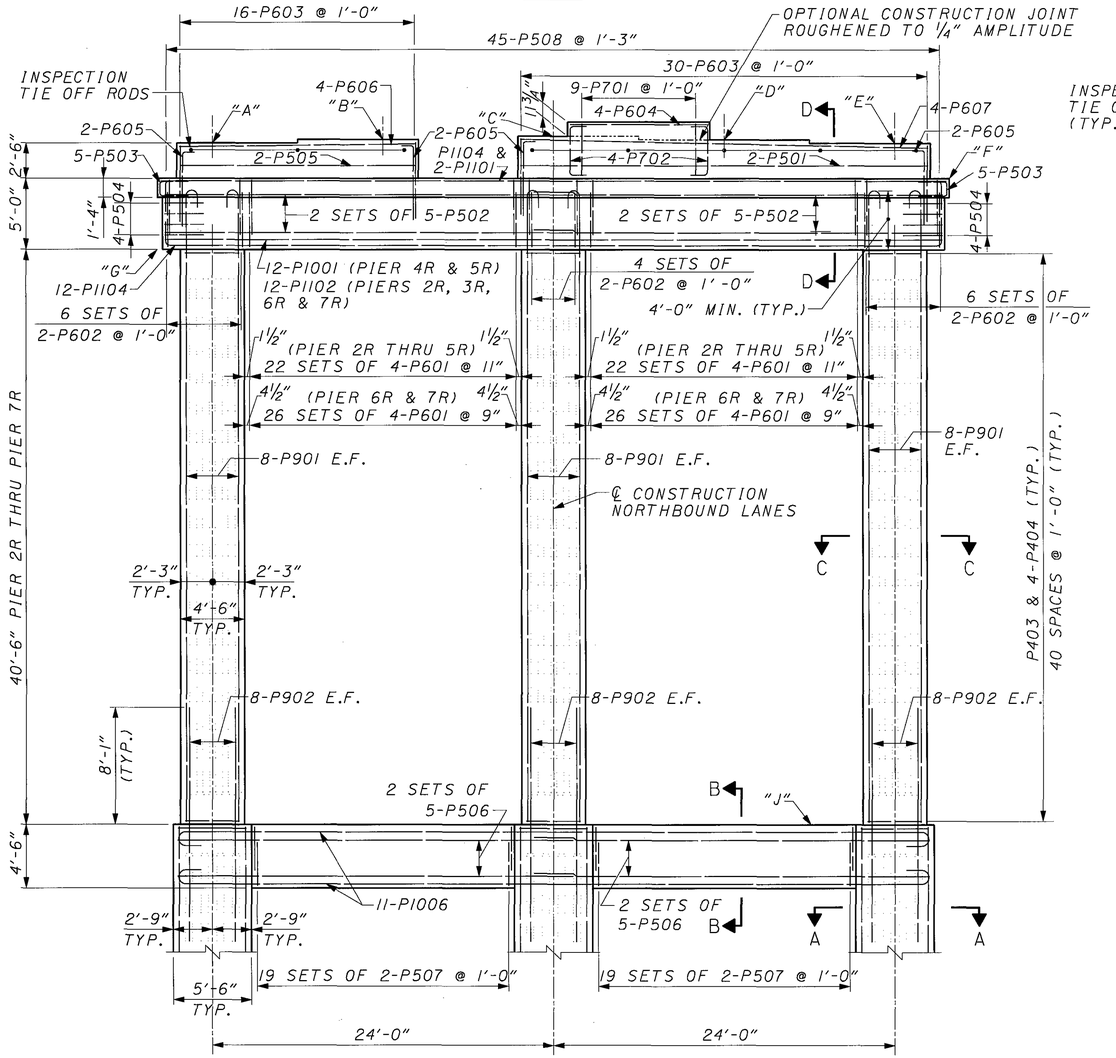
SUM-271-8.02

39/77

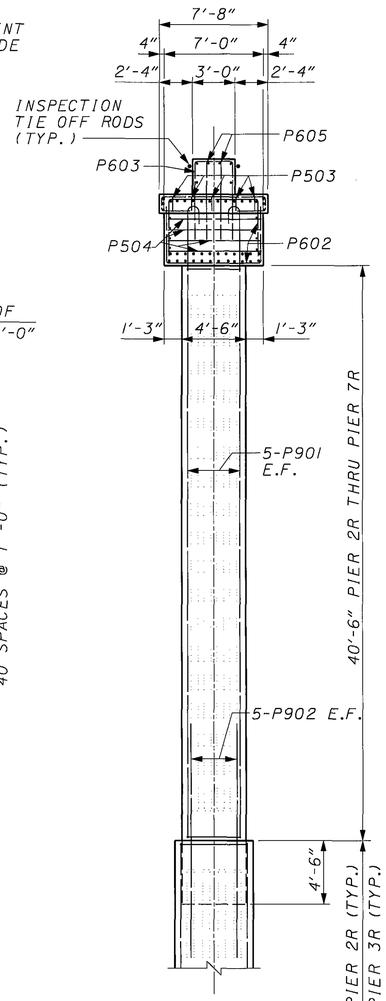
399/612



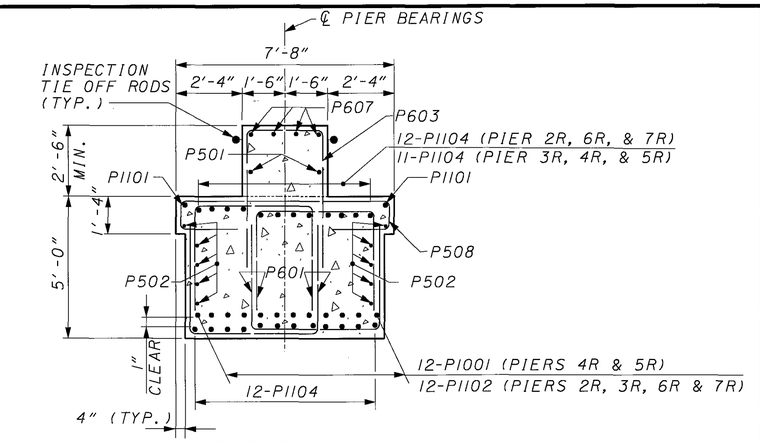
PLAN



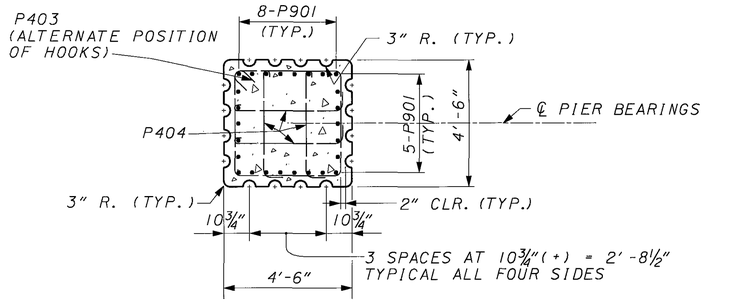
ELEVATION
PIER 2R THRU 7R (STEEL)



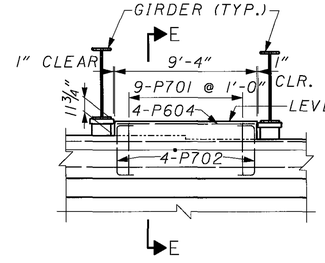
END VIEW



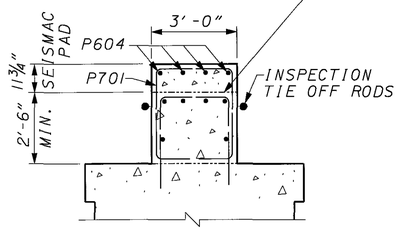
SECTION D-D



SECTION C-C



SEISMIC PEDESTAL DETAIL
PIER 3R AND 7R



SECTION E-E

NOTES

SECTION A-A & B-B SEE SHEETS 37/77, 38/77 & 39/77.

ELEVATION "A","B","C","D","E","F","G", & "J": SEE SHEET 41/77.

ADDITIONAL NOTES: SEE SHEET 32/77.

BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD AT PIERS 3R, 4R, 5R, 6R & 7R TO COMPENSATE FOR THE VERTICAL DEFORMATION OF THE BEARINGS, SEE TABLE.

BRIDGE SEAT ADJUSTMENT TABLE				
PIER 3R	PIER 4R	PIER 5R	PIER 6R	PIER 7L
1/4"	3/16"	1/8"	3/16"	1/4"

BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | CHECKED DLR | REVISED | REVIEWED DAP 3/18/04 | DATE | STRUCTURE FILE NUMBER 7709021

PIER DETAILS - 2R THRU 7R - STEEL

BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

40/77

400/612

SU271P7R.DGN 6/23/04 SJK,HN,JLS,KH,RC

ELEVATION TABLE

SOUTHBOUND BRIDGE

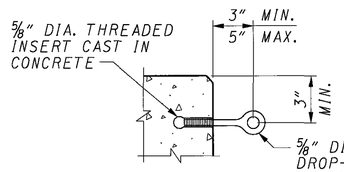
LOCATION	PIER 1L	PIER 2L	PIER 3L	PIER 4L	PIER 5L	PIER 6L	PIER 7L	PIER 8L
"A" GIRDER 1 SEAT	EL. 778.20	EL. 773.13	EL. 768.39	EL. 763.49	EL. 759.73	EL. 754.65	EL. 748.84	EL. 742.72
"B" GIRDER 2 SEAT	EL. 778.45	EL. 773.38	EL. 768.65	EL. 763.74	EL. 759.98	EL. 754.90	EL. 749.09	EL. 742.97
"C" GIRDER 3 SEAT	EL. 778.70	EL. 773.63	EL. 768.90	EL. 763.99	EL. 760.23	EL. 755.15	EL. 749.34	EL. 743.22
"D" GIRDER 4 SEAT	EL. 778.45	EL. 773.38	EL. 768.65	EL. 763.74	EL. 759.98	EL. 754.90	EL. 749.09	EL. 742.97
"E" GIRDER 5 SEAT	EL. 778.20	EL. 773.13	EL. 768.39	EL. 763.49	EL. 759.73	EL. 754.65	EL. 748.84	EL. 742.72
"F" TOP CAP	EL. 775.70	EL. 770.63	EL. 765.89	EL. 760.99	EL. 757.23	EL. 752.15	EL. 746.34	EL. 740.22
"G" BOTTOM CAP	EL. 770.70	EL. 765.63	EL. 760.89	EL. 755.99	EL. 752.23	EL. 747.15	EL. 741.34	EL. 735.22
"H" GROUND LINE	EL. 732.50	EL. 687.00	EL. 672.85	EL. 665.00	EL. 661.80	EL. 652.80	EL. 656.50	EL. 702.75
"J" BOTTOM COLUMN (TOP SEGMENT)	———	EL. 725.13	EL. 720.39	EL. 715.49	EL. 711.73	EL. 706.65	EL. 700.84	———
"K" BOTTOM FOOTING	EL. 721.00	EL. 678.20	EL. 655.60	EL. 648.60	EL. 649.00	EL. 640.00	EL. 643.00	EL. 691.00

ELEVATION TABLE

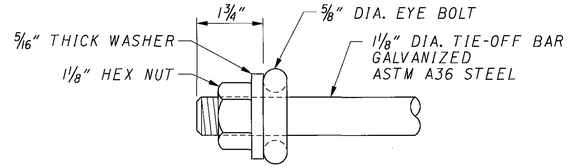
NORTHBOUND BRIDGE

LOCATION	PIER 1R	PIER 2R	PIER 3R	PIER 4R	PIER 5R	PIER 6R	PIER 7R	PIER 8R
"A" GIRDER 6 SEAT	EL. 769.00	EL. 763.75	EL. 758.94	EL. 754.05	EL. 749.65	EL. 745.07	EL. 739.69	EL. 733.98
"B" GIRDER 7 SEAT	EL. 769.25	EL. 764.00	EL. 759.19	EL. 754.31	EL. 749.91	EL. 745.33	EL. 739.95	EL. 734.24
"C" GIRDER 8 SEAT	EL. 769.50	EL. 764.25	EL. 759.45	EL. 754.56	EL. 750.16	EL. 745.58	EL. 740.20	EL. 734.49
"D" GIRDER 9 SEAT	EL. 769.25	EL. 764.00	EL. 759.19	EL. 754.31	EL. 749.91	EL. 745.33	EL. 739.95	EL. 734.24
"E" GIRDER 10 SEAT	EL. 769.00	EL. 763.75	EL. 758.94	EL. 754.05	EL. 749.65	EL. 745.07	EL. 739.69	EL. 733.98
"F" TOP CAP	EL. 766.50	EL. 761.25	EL. 756.44	EL. 751.55	EL. 747.15	EL. 742.57	EL. 737.19	EL. 731.48
"G" BOTTOM CAP	EL. 761.50	EL. 756.25	EL. 751.44	EL. 746.55	EL. 742.15	EL. 737.57	EL. 732.19	EL. 726.48
"H" GROUND LINE	EL. 735.60	EL. 699.10	EL. 679.55	EL. 665.00	EL. 661.25	EL. 653.00	EL. 657.00	EL. 693.00
"J" BOTTOM COLUMN (TOP SEGMENT)	———	EL. 715.75	EL. 710.94	EL. 706.05	EL. 701.65	EL. 697.07	EL. 691.69	———
"K" BOTTOM FOOTING	EL. 726.00	EL. 682.20	EL. 664.60	EL. 649.40	EL. 647.00	EL. 640.00	EL. 637.40	EL. 682.00

INSERTS ARE TO DEVELOP A SAFE LOAD IN TENSION OF 3.5 K WITH A SAFETY FACTOR OF 5.



SECTION X-X

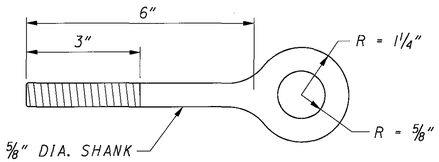


END DETAIL

NOTES: THREAD ONLY THAT PORTION OF THE TIE-OFF BAR REQUIRED FOR NUT PLACEMENT. GALVANIZE AFTER CUTTING AND THREADING.

BURR THREADS AFTER FINGER TIGHTENING NUT.

THREADED INSERTS MAY BE MOVED SLIGHTLY IN ORDER TO AVOID REINFORCING STEEL.



EYE BOLT DETAIL

INSPECTION ACCESS TIE-OFF ROD DETAILS

NOTES:

SECTION X-X: FOR SPACING SEE SHEET 30/77 .

INSPECTION LANYARD TIEOFF:

MATERIALS AND INSTALLATION FOR CONCRETE INSERTS, EYE BOLTS, BARS, AND HARDWARE SHALL BE INCLUDED FOR PAYMENT AS INCIDENTAL TO ITEM 511, CLASS C CONCRETE, PIER ABOVE FOOTING, AS PER PLAN.

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29 NORTH PARK STREET
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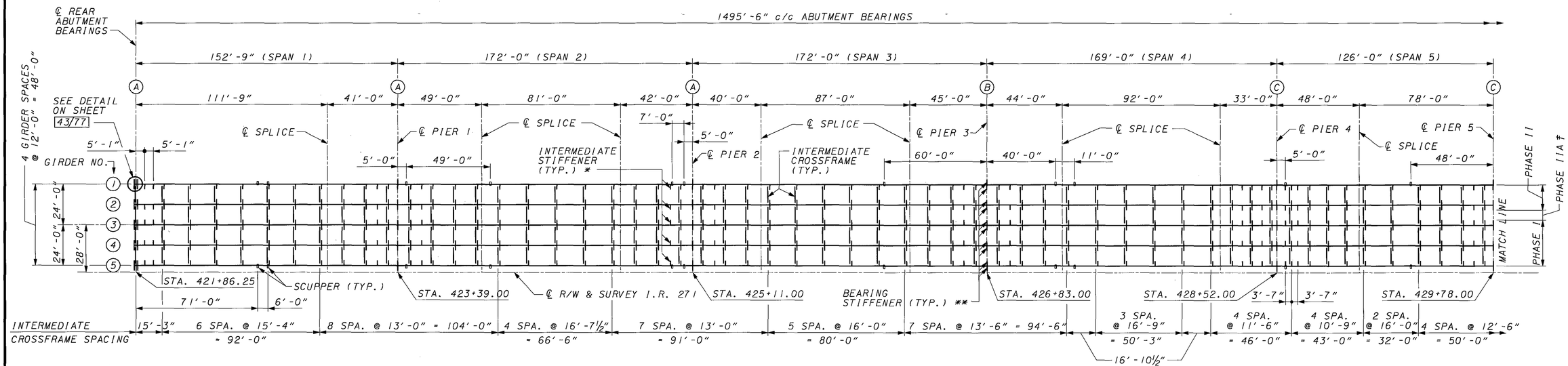
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BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
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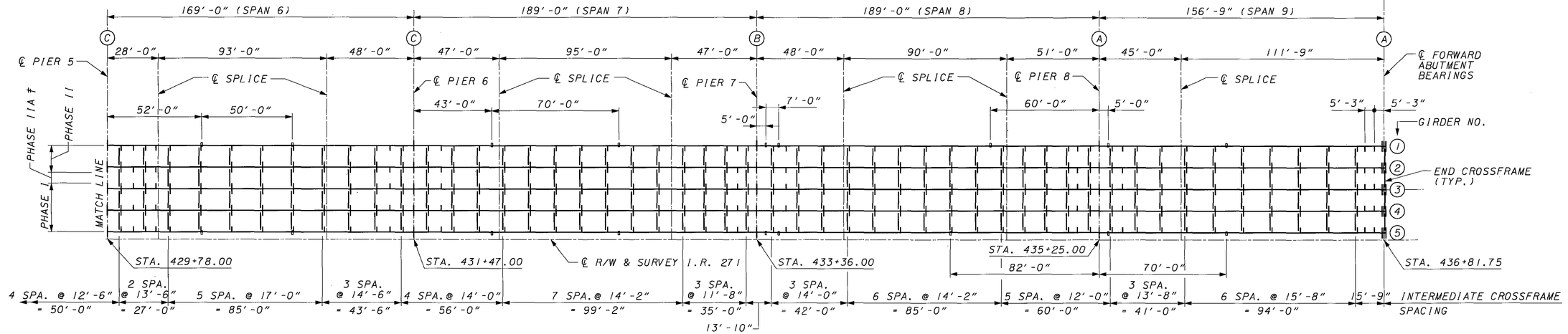
PIER ELEVATION TABLES & DETAILS - STEEL

BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

SU271PE.DGN 6/23/04 TWH,JLS,SJK,KH,RC





FRAMING PLAN - LEFT BRIDGE

* INTERMEDIATE STIFFENER PL ½"x7½" (TYP.), CENTERED BETWEEN CROSSFRAMES UNLESS NOTED OTHERWISE

** BEARING STIFFENER SIZES VARY - SEE GIRDER ELEVATION SHEET 44/77 FOR SIZES

† INTERMEDIATE CROSSFRAMES SHALL NOT BE PERMANENTLY ATTACHED IN THE CLOSURE POUR REGION OF PHASE IIA UNTIL THE CONCRETE POURS ON BOTH SIDES (PHASE I & PHASE II) HAVE BEEN COMPLETED.

LEGEND

- (A) POT BEARING
- (B) EXPANSION ELASTOMERIC BEARING
- (C) FIXED ELASTOMERIC BEARING

NOTES

PARTIAL PAINTING OF A709 GRADE 50W STEEL: PAINT THE LAST 10 FEET OF EACH GIRDER END ADJACENT TO THE ABUTMENTS INCLUDING ALL CROSS FRAMES AND OTHER STEEL WITHIN THESE LIMITS. THE PRIME COAT SHALL BE 708.01. THE TOP COAT COLOR SHALL CLOSELY APPROACH FEDERAL STANDARD NO. 595B-20045 OR 20059 (THE COLOR OF WEATHERING STEEL).

FRAMING PLAN RIGHT BRIDGE: SEE SHEET 43/77.

TRANSVERSE SECTION: SEE SHEET 55/77.

GIRDER ELEVATION: SEE SHEET 44/77.

SPLICE DETAILS: SEE SHEET 46/77.

STIFFENER DETAILS: SEE SHEET 47/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
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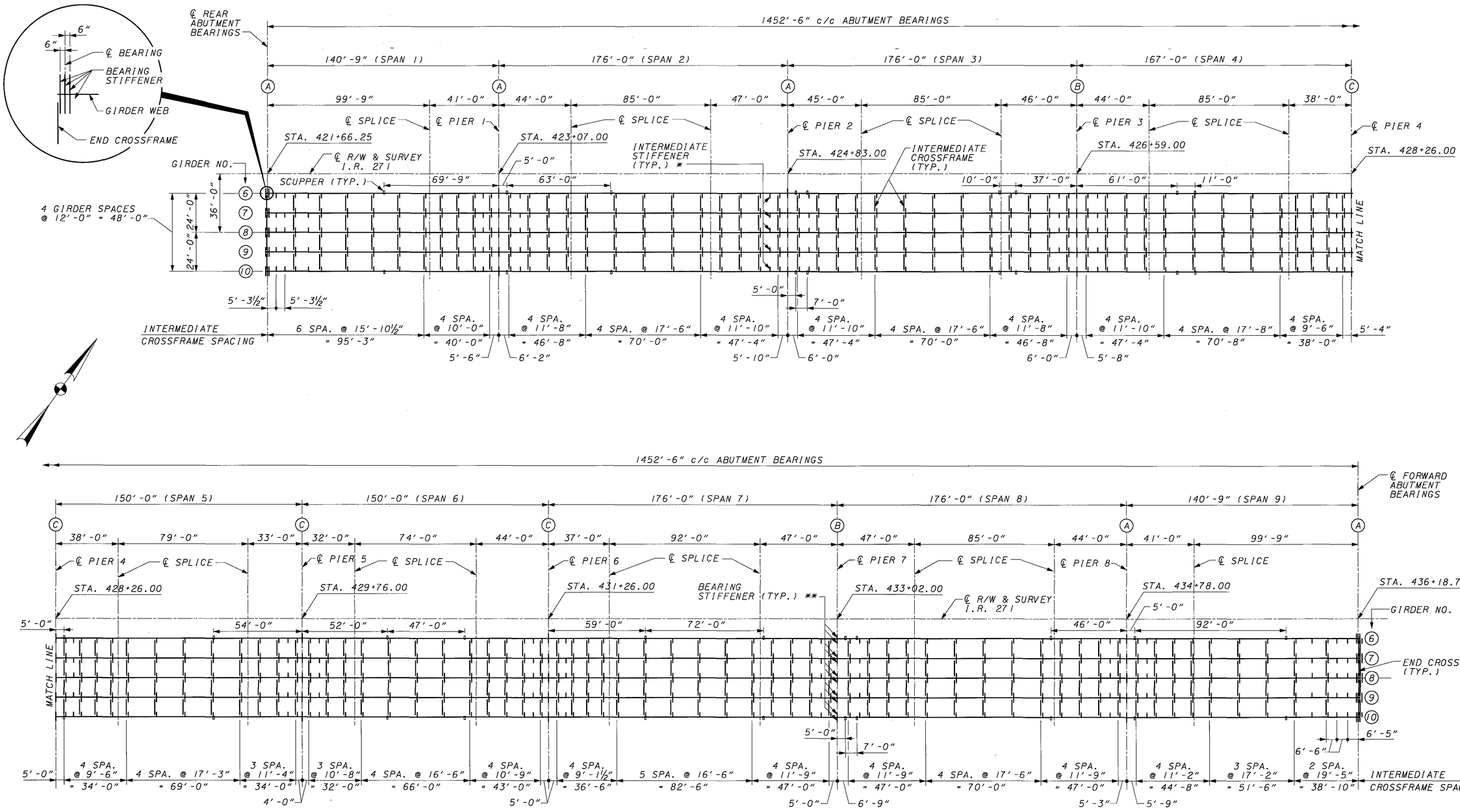
FRAMING PLAN - LEFT BRIDGE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

42/77

402/612

SU271SDA.DGN 6/24/04 SJK,JLS,TWH,KH,RC



FRAMING PLAN - RIGHT BRIDGE
(PHASE III)

* INTERMEDIATE STIFFENER PL ½"x7½" (TYP.), CENTERED BETWEEN CROSSFRAMES UNLESS NOTED OTHERWISE

** BEARING STIFFENER SIZES VARY - SEE GIRDER ELEVATION SHEET 45/77 FOR SIZES

LEGEND

- (A) POT BEARING
- (B) EXPANSION ELASTOMERIC BEARING
- (C) FIXED ELASTOMERIC BEARING

NOTES

TRANSVERSE SECTION: SEE SHEET 56/77.

ADDITIONAL NOTES: SEE SHEET 42/77.

GIRDER ELEVATION: SEE SHEET 45/77.

SPLICE DETAILS: SEE SHEET 46/77.

STIFFENER DETAILS: SEE SHEET 47/77.

SU271SDA.DGN 6/23/04 JLS,KH,RC

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

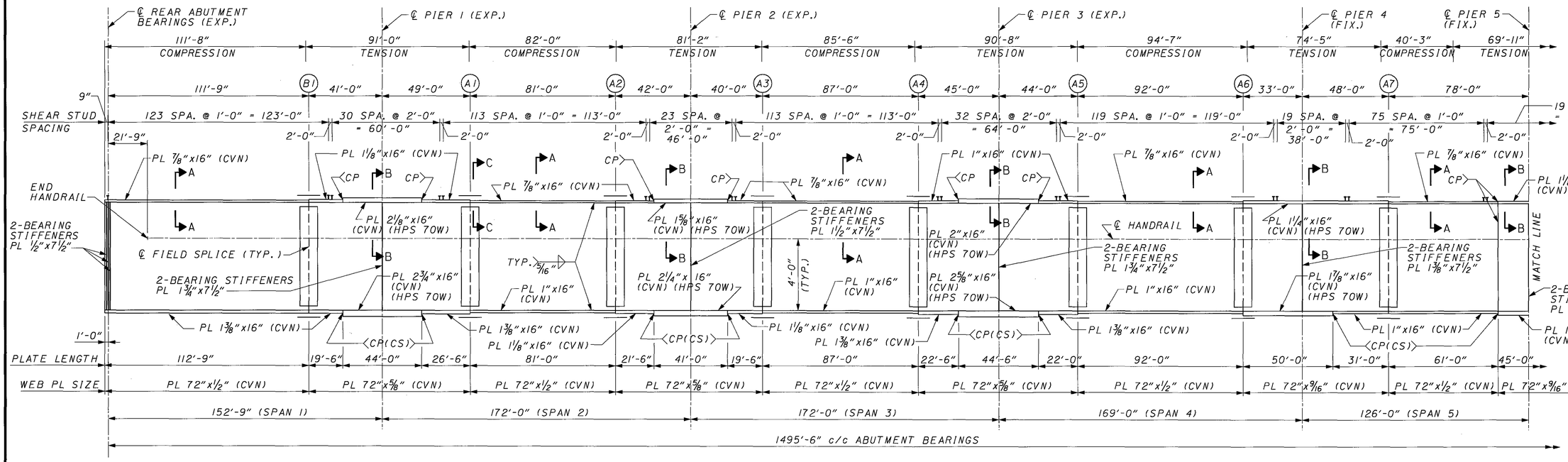
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CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709021

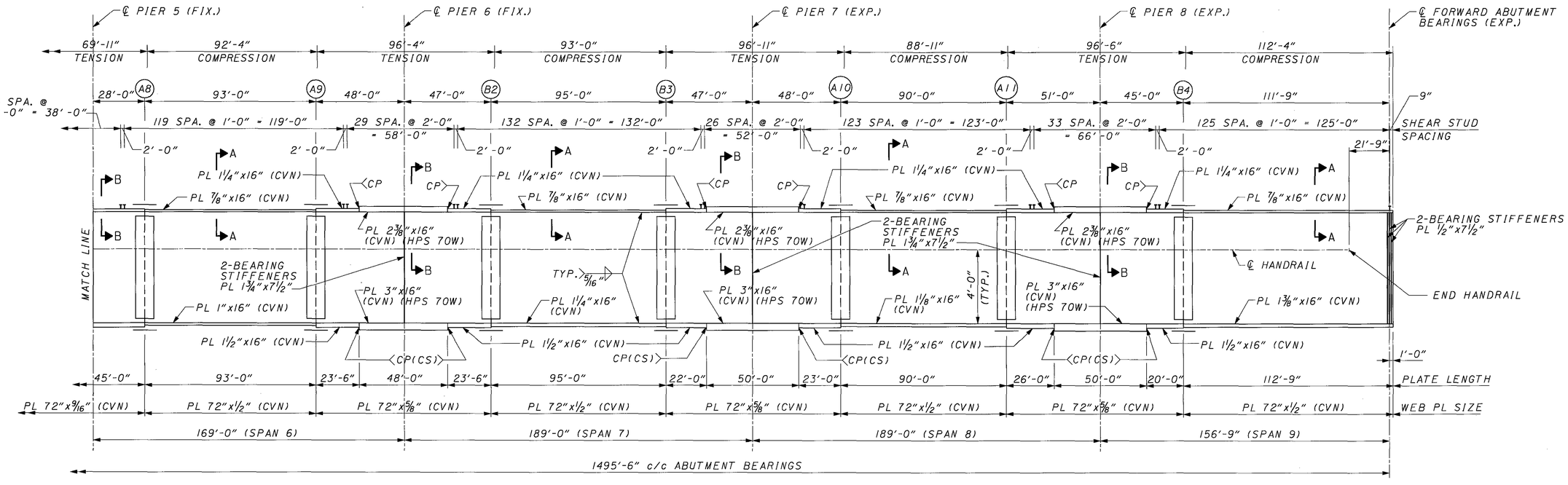
FRAMING PLAN - RIGHT BRIDGE - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

43/77

403/612





LEGEND

(A1) - THE LETTER "A" OR "B" REPRESENTS THE SPLICE TYPE
- THE NUMBER REPRESENTS THE LOCATION OF THE SPLICE

GIRDER ELEVATION (LEFT BRIDGE)

NOTES

SECTIONS A-A, B-B & C-C: SEE SHEET 46/77.

SPLICE DETAILS: SEE SHEET 46/77.

ADDITIONAL NOTES: SEE SHEET 45/77 & 46/77.

RICHLAND ENGINEERING LIMITED
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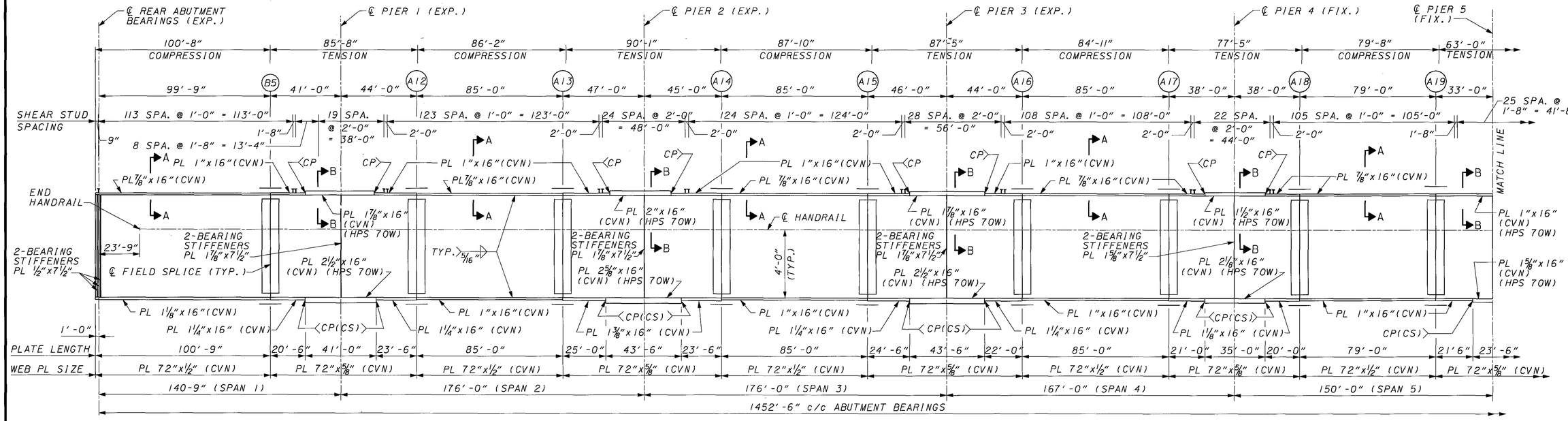
GIRDER ELEVATION - LEFT BRIDGE -
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

44/77

404/612

SU271SDB.DGN 07/29/04 KH,JLS,RC,HN



GIRDER ELEVATION (RIGHT BRIDGE)

LEGEND

(B5) - THE LETTER "A" OR "B" REPRESENTS THE SPLICE TYPE
- THE NUMBER REPRESENTS THE LOCATION OF THE SPLICE

NOTES

STEEL SHALL BE ASTM A709 50W OR ASTM A709 HPS 70W. STEEL SHOWN IN ELEVATION IS A709 50W UNLESS NOTED OTHERWISE. WHERE HPS 70W STEEL IS INDICATED FOR THE FLANGES, UNDERMATCHED WELDS ARE PERMITTED FOR THE FLANGE-TO-WEB AND STIFFENER-TO-FLANGE FILLET WELDS.

CS INDICATES BUTT WELD SPLICES SUBJECT TO COMPRESSION ONLY.

CVN: WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), THE MATERIAL SHALL MEET REQUIREMENTS AS SPECIFIED IN THE GENERAL NOTES ON SHEET 12/77.

INTERMEDIATE CROSSFRAME STIFFENERS NOT SHOWN.

SECTIONS A-A, B-B & C-C: SEE SHEET 46/77.

HANDRAIL DETAILS: SEE SHEET 47/77.

SU271SDB.DGN 07/29/04 KH,JLS,SJK,RC,HN

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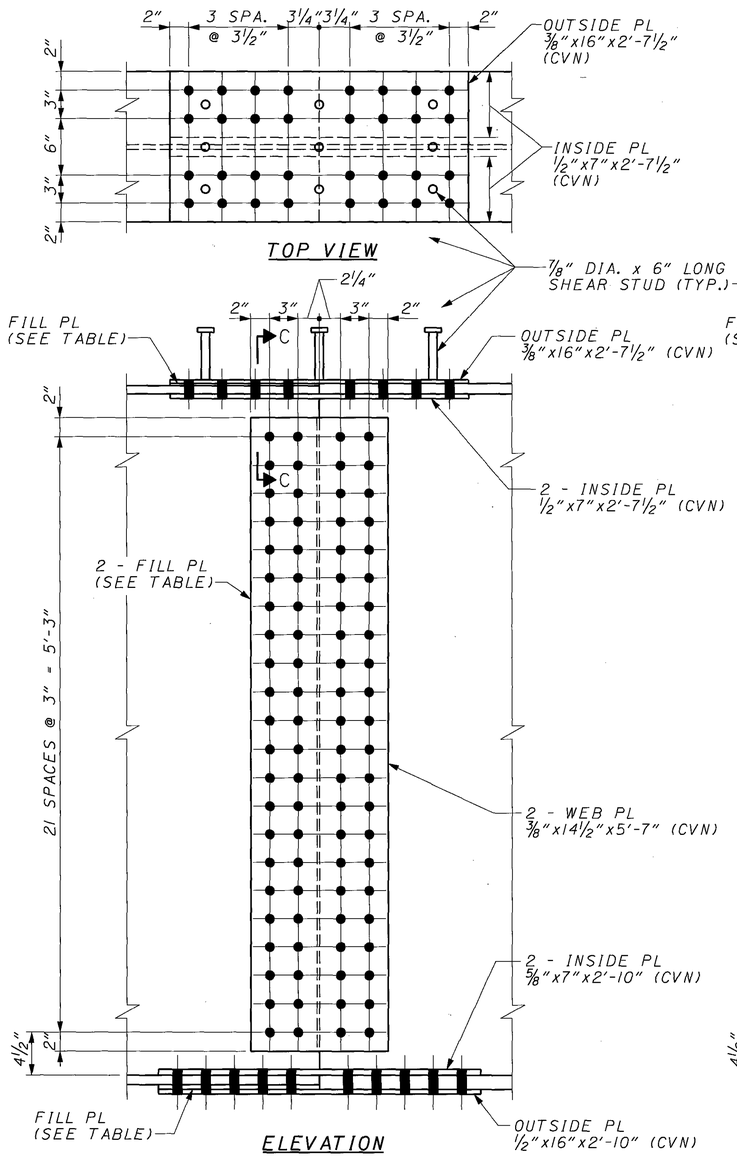
GIRDER ELEVATION - RIGHT BRIDGE - STEEL

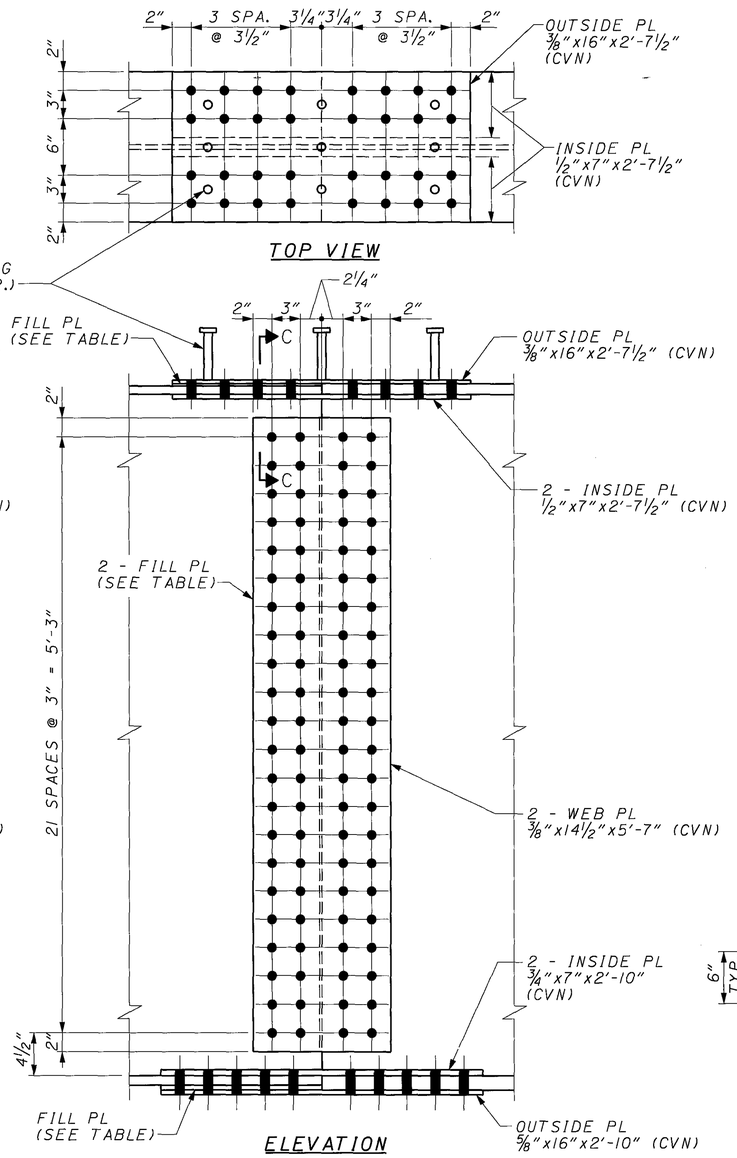
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

45/77

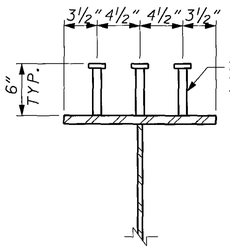
405/612



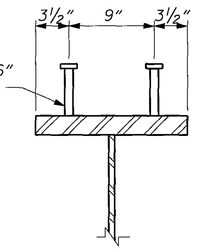


	LOCATION *	FILL PLATE SIZE		
		TOP FLANGE	BOTTOM FLANGE	WEB
LEFT BRIDGE	B1	¼"x16"x1'-3¾"	-	1/16"x7"x5'-7"
	A1	¼"x16"x1'-3¾"	⅜"x16"x1'-5"	1/16"x7"x5'-7"
	A2	-	⅛"x16"x1'-5"	1/16"x7"x5'-7"
	A3	-	⅛"x16"x1'-5"	1/16"x7"x5'-7"
	A4	⅛"x16"x1'-3¾"	⅜"x16"x1'-5"	1/16"x7"x5'-7"
	A5	⅛"x16"x1'-3¾"	⅜"x16"x1'-5"	1/16"x7"x5'-7"
	A6	⅜"x16"x1'-3¾"	⅞"x16"x1'-5"	-
	A7	⅜"x16"x1'-3¾"	-	-
	A8	¼"x16"x1'-3¾"	¾"x16"x1'-5"	-
	A9	⅜"x16"x1'-3¾"	½"x16"x1'-5"	1/16"x7"x5'-7"
	B2	⅜"x16"x1'-3¾"	¼"x16"x1'-5"	1/16"x7"x5'-7"
	B3	⅜"x16"x1'-3¾"	¼"x16"x1'-5"	1/16"x7"x5'-7"
	A10	⅜"x16"x1'-3¾"	⅜"x16"x1'-5"	1/16"x7"x5'-7"
	A11	⅜"x16"x1'-3¾"	⅜"x16"x1'-5"	1/16"x7"x5'-7"
	B4	⅜"x16"x1'-3¾"	⅛"x16"x1'-5"	1/16"x7"x5'-7"
RIGHT BRIDGE	B5	⅛"x16"x1'-3¾"	⅛"x16"x1'-5"	1/16"x7"x5'-7"
	A12	⅛"x16"x1'-3¾"	¼"x16"x1'-5"	1/16"x7"x5'-7"
	A13	⅛"x16"x1'-3¾"	⅜"x16"x1'-5"	1/16"x7"x5'-7"
	A14	⅛"x16"x1'-3¾"	⅜"x16"x1'-5"	1/16"x7"x5'-7"
	A15	⅛"x16"x1'-3¾"	¼"x16"x1'-5"	1/16"x7"x5'-7"
	A16	⅛"x16"x1'-3¾"	¼"x16"x1'-5"	1/16"x7"x5'-7"
	A17	-	⅛"x16"x1'-5"	1/16"x7"x5'-7"
	A18	-	⅛"x16"x1'-5"	1/16"x7"x5'-7"
	A19	⅛"x16"x1'-3¾"	-	1/16"x7"x5'-7"
	A20	⅛"x16"x1'-3¾"	-	1/16"x7"x5'-7"
	A21	-	⅛"x16"x1'-5"	1/16"x7"x5'-7"
	B6	-	-	1/16"x7"x5'-7"
	B7	¼"x16"x1'-3¾"	⅜"x16"x1'-5"	1/16"x7"x5'-7"
	A22	¼"x16"x1'-3¾"	½"x16"x1'-5"	1/16"x7"x5'-7"
	A23	¼"x16"x1'-3¾"	¼"x16"x1'-5"	1/16"x7"x5'-7"
	B8	¼"x16"x1'-3¾"	⅛"x16"x1'-5"	1/16"x7"x5'-7"

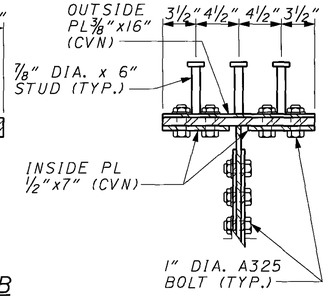
*THE LETTER "A" OR "B" REPRESENTS THE SPLICE TYPE.
THE NUMBER REPRESENTS THE SPLICE LOCATION.



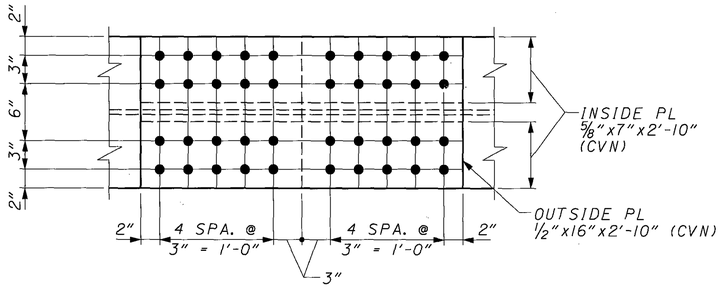
SECTION A-A



SECTION B-B

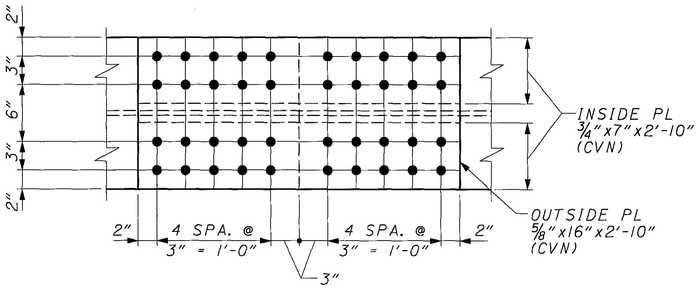


SECTION C-C



BOTTOM VIEW

TYPE A SPLICE



BOTTOM VIEW

TYPE B SPLICE

NOTES

SPLICE PLATES SHALL BE ASTM A709 GRADE 50W STEEL.

HIGH STRENGTH BOLTS SHALL BE 1" DIAMETER A325, TYPE 3, UNLESS OTHERWISE NOTED.

CVN: WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), THE MATERIAL SHALL MEET REQUIREMENTS AS SPECIFIED IN THE GENERAL NOTES ON SHEET 12/77.

SPLICE LOCATIONS: SEE GIRDER ELEVATION SHEETS 44/77 AND 45/77.

FRAMING PLANS: SEE SHEETS 42/77 AND 43/77.

SECTIONS A-A & B-B: FOR LOCATIONS SEE SHEETS 44/77 AND 45/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN JLS | CHECKED KAK | REVIEWED DAP | DATE 3/8/04 | REVISED | STRUCTURE FILE NUMBER 770901 3(L) 770902(R)

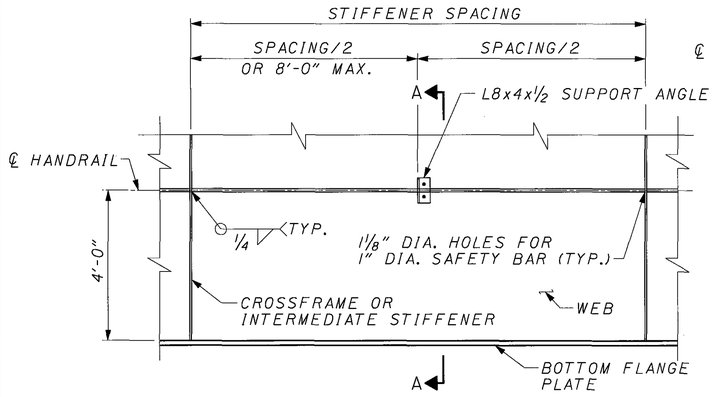
GIRDER SPLICE DETAILS - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

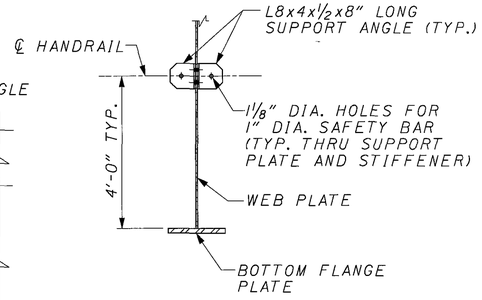
46/77

406/612

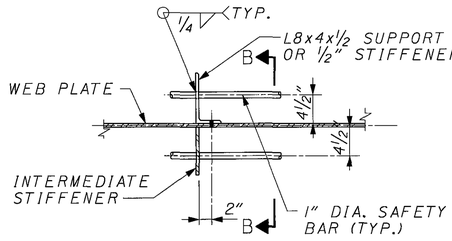
SU271SDE.DGN 6/23/04 KH,JLS,SJK,RC



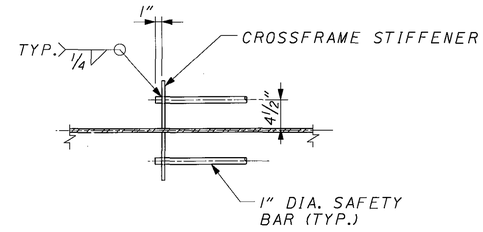
GIRDER ELEVATION



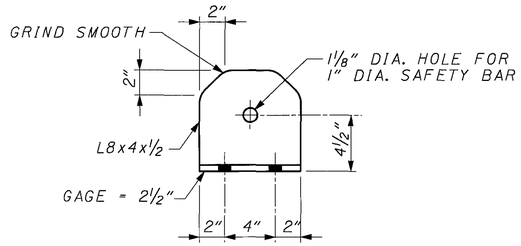
SECTION A-A



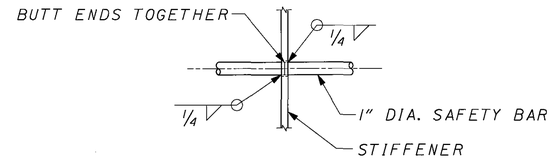
DETAIL AT
INTERMEDIATE STIFFENER



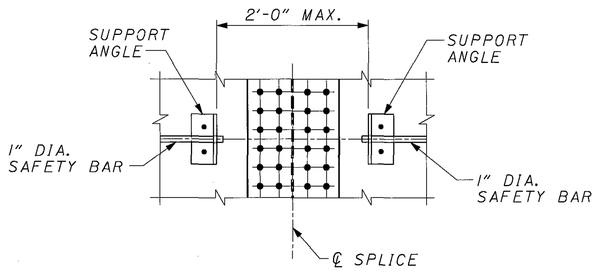
END DETAIL



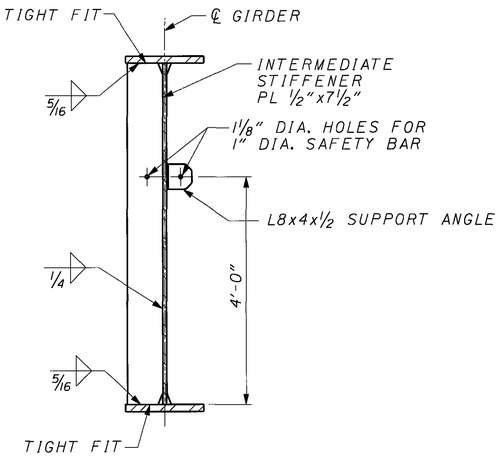
SUPPORT ANGLE DETAIL



SPLICE DETAIL



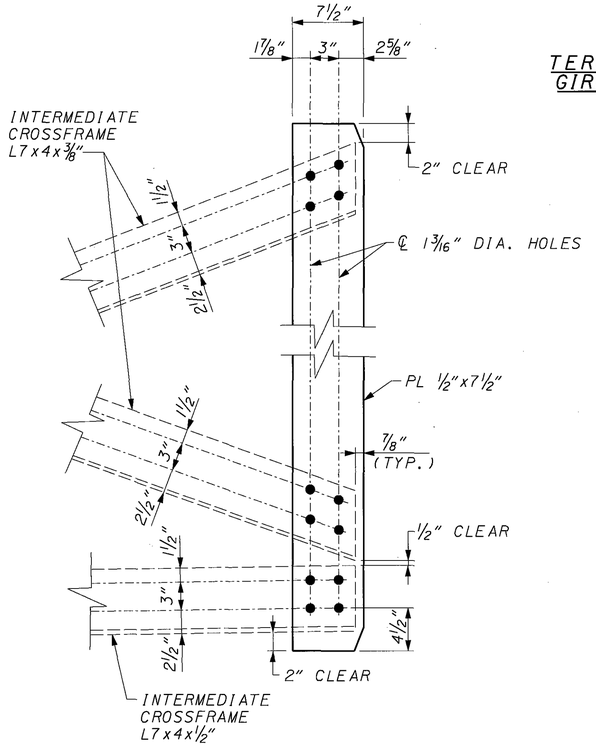
TERMINATION DETAIL AT
GIRDER FIELD SPLICES



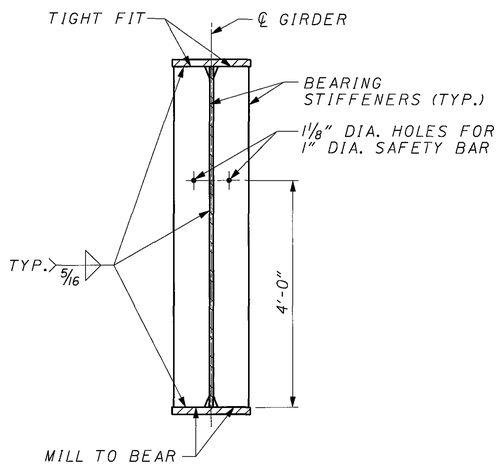
SECTION B-B

HANDRAIL AND SUPPORT DETAILS

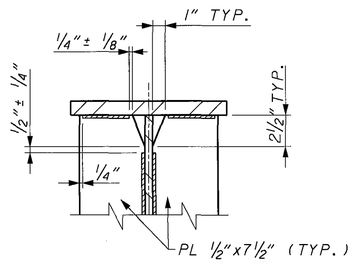
NOTE: THERE ARE NO HANDRAILS ON
THE OUTSIDE OF THE FASCIA GIRDERS.



TYPICAL CROSSFRAME
STIFFENER DETAIL



TYPICAL BEARING
STIFFENER DETAIL



TYPICAL WELD AND
CORNER CLIP DETAIL

NOTES

ALL ANGLES, RODS, AND STIFFENERS SHALL BE ASTM A709 GRADE 50W STEEL.

TRANSVERSE SECTIONS: SEE SHEETS 55/77 AND 56/77.

FRAMING PLANS: SEE SHEETS 42/77 AND 43/77.

GIRDER ELEVATIONS: SEE SHEETS 44/77 AND 45/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

HANDRAIL AND STIFFENER DETAILS - STEEL

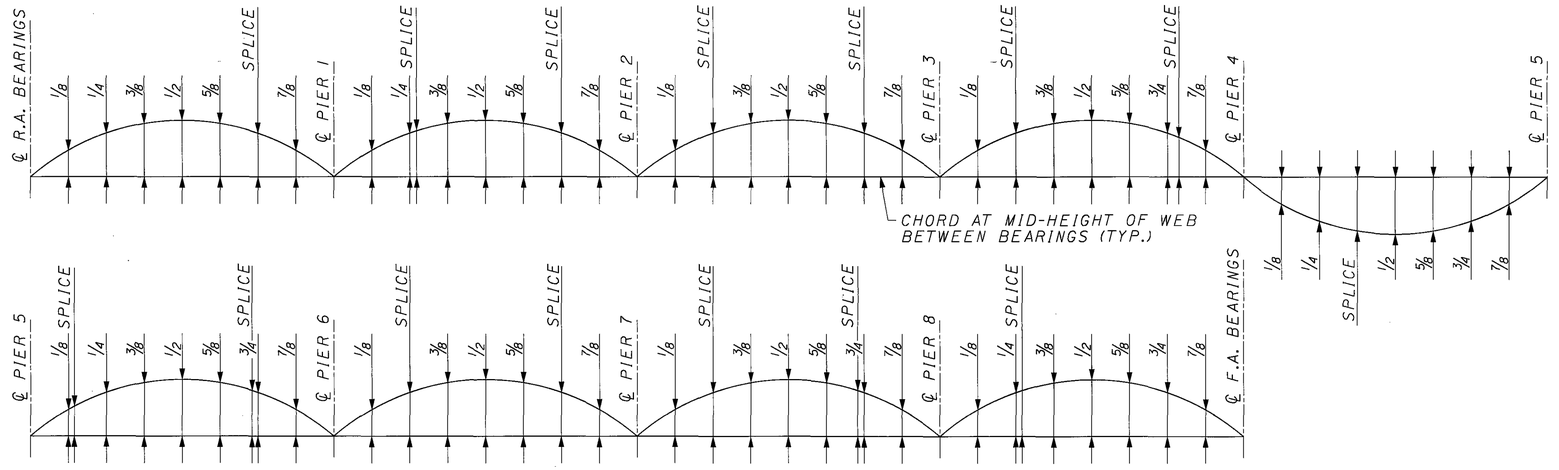
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

47/77

407
612

SU271SMA.DGN 6/23/04 JLS,SJK,TWH,KH,RC



CAMBER DIAGRAM

DEFLECTION AND CAMBER TABLE - BEAMS 1 & 5

	BEARING POINT	SPAN 1							BEARING POINT	SPAN 2								BEARING POINT	SPAN 3							BEARING POINT
		1/8	1/4	3/8	1/2	5/8	SPLICE	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	SPLICE	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	5/16	9/16	11/16	11/16	1/2	3/8	1/8	0	0	1/8	3/16	1/4	5/16	5/16	3/16	1/16	0	1/16	3/16	3/8	7/16	5/16	3/16	1/16	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	2	3 9/16	4 5/16	4 3/16	3 1/4	2 1/8	1 1/16	0	3/16	15/16	1 3/16	1 13/16	2 5/16	2 1/16	1 3/16	3/8	0	1/2	1 5/16	2 3/8	2 11/16	2 3/16	1 5/16	1/4	0
REQUIRED SHOP CAMBER	0	2 5/16	4 1/8	5	4 7/8	3 3/4	2 1/2	1 3/16	0	3/16	1 1/16	1 3/8	2 1/16	2 5/8	2 3/8	1 3/8	7/16	0	9/16	1 1/2	2 3/4	3 1/8	2 1/2	1 1/2	5/16	0

DEFLECTION AND CAMBER TABLE - BEAMS 1 & 5

	BEARING POINT	SPAN 4							BEARING POINT	SPAN 5							BEARING POINT	SPAN 6							BEARING POINT
		1/8	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8		1/8	1/4	SPLICE	1/2	5/8	3/4	7/8		1/8	SPLICE	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/8	5/16	7/16	9/16	1/2	3/8	1/4	3/16	0	-1/16	-1/16	0	0	0	-1/16	-1/16	0	1/8	3/16	5/16	7/16	7/16	3/8	1/4	3/16	1/16	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	11/16	2 1/16	3 3/16	3 7/8	3 5/8	2 5/8	2	1 3/16	0	-3/8	-7/16	-3/8	-5/16	-5/16	-3/8	-5/16	0	1 1/8	1 9/16	2 7/16	3 5/16	3 7/16	2 11/16	1 13/16	1 1/2	7/16	0
REQUIRED SHOP CAMBER	0	1 3/16	2 3/8	3 5/8	4 7/16	4 1/8	3	2 1/4	1 3/8	0	-7/16	-1/2	-3/8	-5/16	-5/16	-7/16	-3/8	0	1 1/4	1 3/4	2 3/4	3 3/4	3 7/8	3 1/16	2 1/16	1 11/16	1/2	0

DEFLECTION AND CAMBER TABLE - BEAMS 1 & 5

	BEARING POINT	SPAN 7							BEARING POINT	SPAN 8								BEARING POINT	SPAN 9							BEARING POINT
		1/8	SPLICE	3/8	1/2	5/8	SPLICE	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/8	5/16	9/16	5/8	9/16	5/16	1/8	0	1/16	1/4	7/16	1/2	7/16	1/4	1/4	1/16	0	1/8	5/16	3/8	1/2	5/8	11/16	9/16	5/16	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	5/8	1 7/8	3 1/8	3 5/8	3 1/8	1 7/8	5/8	0	1/2	1 11/16	2 3/4	3 1/4	2 11/16	1 11/16	1 1/2	3/8	0	5/8	1 13/16	2 1/4	3 3/16	4 3/16	4 7/16	3 11/16	2 1/8	0
REQUIRED SHOP CAMBER	0	3/4	2 3/16	3 11/16	4 1/4	3 11/16	2 3/16	3/4	0	9/16	1 15/16	3 3/16	3 3/4	3 1/8	1 15/16	1 3/4	7/16	0	3/4	2 1/8	2 5/8	3 11/16	4 13/16	5 1/8	4 1/4	2 7/16	0

NOTES

POSITIVE CAMBER VALUES INDICATE CAMBER ABOVE THE CHORD BETWEEN ADJACENT BEARINGS.

NOTATION: R.A. - REAR ABUTMENT
F.A. - FORWARD ABUTMENT

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN SJK | REVIEWED DAP | DATE 3/18/04
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709013

CAMBER DIAGRAM 1 - STEEL
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

48/77

408/612

SU271SDH.DGN 6/23/04 SJK,JLS,KH,RC

DEFLECTION AND CAMBER TABLE - BEAMS 2 & 3

	BEARING POINT	SPAN 1							BEARING POINT	SPAN 2								BEARING POINT	SPAN 3							BEARING POINT
		1/8	1/4	3/8	1/2	5/8	SPLICE	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	SPLICE	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	5/16	9/16	11/16	11/16	1/2	3/8	1/8	0	0	1/8	3/16	1/4	5/16	5/16	3/16	1/16	0	1/16	3/16	3/8	7/16	3/8	3/16	1/16	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	1 13/16	3 3/16	3 13/16	3 11/16	2 7/8	1 15/16	5/8	0	1/8	13/16	1 1/16	1 5/8	2 1/16	1 13/16	1 1/16	3/8	0	7/16	1 3/16	2 1/8	2 3/8	1 15/16	1 3/16	1/4	0
REQUIRED SHOP CAMBER	0	2 1/8	3 3/4	4 1/2	4 3/8	3 3/8	2 5/16	3/4	0	1/8	15/16	1 1/4	1 7/8	2 3/8	2 1/8	1 1/4	7/16	0	1/2	1 3/8	2 1/2	2 13/16	2 5/16	1 3/8	5/16	0

DEFLECTION AND CAMBER TABLE - BEAMS 2 & 3

	BEARING POINT	SPAN 4								BEARING POINT	SPAN 5							BEARING POINT	SPAN 6								BEARING POINT
		1/8	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8		1/8	1/4	SPLICE	1/2	5/8	3/4	7/8		1/8	SPLICE	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/8	5/16	7/16	9/16	1/2	3/8	5/16	3/16	0	-1/16	-1/16	0	0	0	-1/16	-1/16	0	1/8	3/16	5/16	7/16	7/16	3/8	1/4	3/16	1/16	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	5/8	1 13/16	2 13/16	3 7/16	3 1/4	2 5/16	1 13/16	1 1/16	0	-5/16	-3/8	-5/16	-1/4	-5/16	-3/8	-5/16	0	1	1 3/8	2 3/16	2 15/16	3 1/16	2 3/8	1 5/8	1 5/16	3/8	0
REQUIRED SHOP CAMBER	0	3/4	2 1/8	3 1/4	4	3 3/4	2 1/16	2 1/8	1 1/4	0	-3/8	-7/16	-5/16	-1/4	-5/16	-7/16	-3/8	0	1 1/8	1 9/16	2 1/2	3 3/8	3 1/2	2 3/4	1 7/8	1 1/2	7/16	0

DEFLECTION AND CAMBER TABLE - BEAMS 2 & 3

	BEARING POINT	SPAN 7							BEARING POINT	SPAN 8								BEARING POINT	SPAN 9								BEARING POINT
		1/8	SPLICE	3/8	1/2	5/8	SPLICE	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/8	5/16	9/16	5/8	9/16	5/16	1/8	0	1/16	1/4	7/16	1/2	7/16	1/4	1/4	1/16	0	1/8	5/16	3/8	1/2	11/16	11/16	9/16	5/16	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	9/16	1 5/8	2 3/4	3 1/4	2 13/16	1 11/16	9/16	0	7/16	1 1/2	2 7/16	2 7/8	2 3/8	1 1/2	1 3/8	3/8	0	9/16	1 5/8	2	2 13/16	3 3/4	3 15/16	3 5/16	1 7/8	0
REQUIRED SHOP CAMBER	0	1 1/16	1 15/16	3 5/16	3 7/8	3 3/8	2	1 1/16	0	1/2	1 3/4	2 7/8	3 3/8	2 13/16	1 3/4	1 5/8	7/16	0	1 1/16	1 15/16	2 3/8	3 5/16	4 7/16	4 5/8	3 7/8	2 3/16	0

DEFLECTION AND CAMBER TABLE - BEAM 4

	BEARING POINT	SPAN 1							BEARING POINT	SPAN 2								BEARING POINT	SPAN 3							BEARING POINT
		1/8	1/4	3/8	1/2	5/8	SPLICE	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	SPLICE	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	5/16	9/16	11/16	11/16	1/2	3/8	1/8	0	0	1/8	3/16	1/4	5/16	5/16	3/16	1/16	0	1/16	3/16	3/8	7/16	3/8	3/16	1/16	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	1 15/16	3 3/8	4 1/16	3 15/16	3 1/16	2 1/16	1 1/16	0	1/8	7/8	1 1/8	1 1/16	2 3/16	1 15/16	1 3/16	3/8	0	1/2	1 1/4	2 1/4	2 9/16	2 1/16	1 1/4	1/4	0
REQUIRED SHOP CAMBER	0	2 1/4	3 15/16	4 3/4	4 5/8	3 9/16	2 7/16	1 3/16	0	1/8	1	1 5/16	1 15/16	2 1/2	2 1/4	1 3/8	7/16	0	9/16	1 7/16	2 5/8	3	2 7/16	1 7/16	5/16	0

DEFLECTION AND CAMBER TABLE - BEAM 4

	BEARING POINT	SPAN 4								BEARING POINT	SPAN 5							BEARING POINT	SPAN 6								BEARING POINT
		1/8	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8		1/8	1/4	SPLICE	1/2	5/8	3/4	7/8		1/8	SPLICE	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/8	5/16	7/16	9/16	1/2	3/8	5/16	3/16	0	-1/16	-1/16	0	0	0	-1/16	-1/16	0	1/8	3/16	5/16	7/16	7/16	3/8	1/4	3/16	1/16	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	5/8	1 15/16	3	3 11/16	3 7/16	2 7/16	1 7/8	1 1/8	0	-3/8	-3/8	-5/16	-1/4	-5/16	-3/8	-5/16	0	1 1/16	1 1/2	2 5/16	3 1/8	3 1/4	2 9/16	1 3/4	1 7/16	7/16	0
REQUIRED SHOP CAMBER	0	3/4	2 1/4	3 7/16	4 1/4	3 15/16	2 13/16	2 3/16	1 5/16	0	-7/16	-7/16	-5/16	-1/4	-5/16	-7/16	-3/8	0	1 3/16	1 11/16	2 5/8	3 9/16	3 11/16	2 15/16	2	1 5/8	1/2	0

DEFLECTION AND CAMBER TABLE - BEAM 4

	BEARING POINT	SPAN 7							BEARING POINT	SPAN 8								BEARING POINT	SPAN 9								BEARING POINT
		1/8	SPLICE	3/8	1/2	5/8	SPLICE	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/8	5/16	9/16	5/8	9/16	5/16	1/8	0	1/16	1/4	7/16	1/2	7/16	1/4	1/4	1/16	0	1/8	5/16	3/8	1/2	11/16	11/16	9/16	5/16	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	9/16	1 3/4	2 15/16	3 7/16	3	1 3/4	5/8	0	7/16	1 5/8	2 5/8	3 1/16	2 9/16	1 5/8	1 7/16	3/8	0	9/16	1 1/16	2 1/8	3	4	4 3/16	3 1/2	2	0
REQUIRED SHOP CAMBER	0	1 1/16	2 1/16	3 1/2	4 1/16	3 9/16	2 1/16	3/4	0	1/2	1 7/8	3 1/16	3 9/16	3	1 7/8	1 1/16	7/16	0	1 1/16	2	2 1/2	3 1/2	4 11/16	4 7/8	4 1/16	2 5/16	0

NOTES

CAMBER DIAGRAM: SEE SHEET 48/77.

ADDITIONAL NOTES: SEE SHEET 48/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN SJK | REVIEWED DAP | DATE 3/18/04
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709013

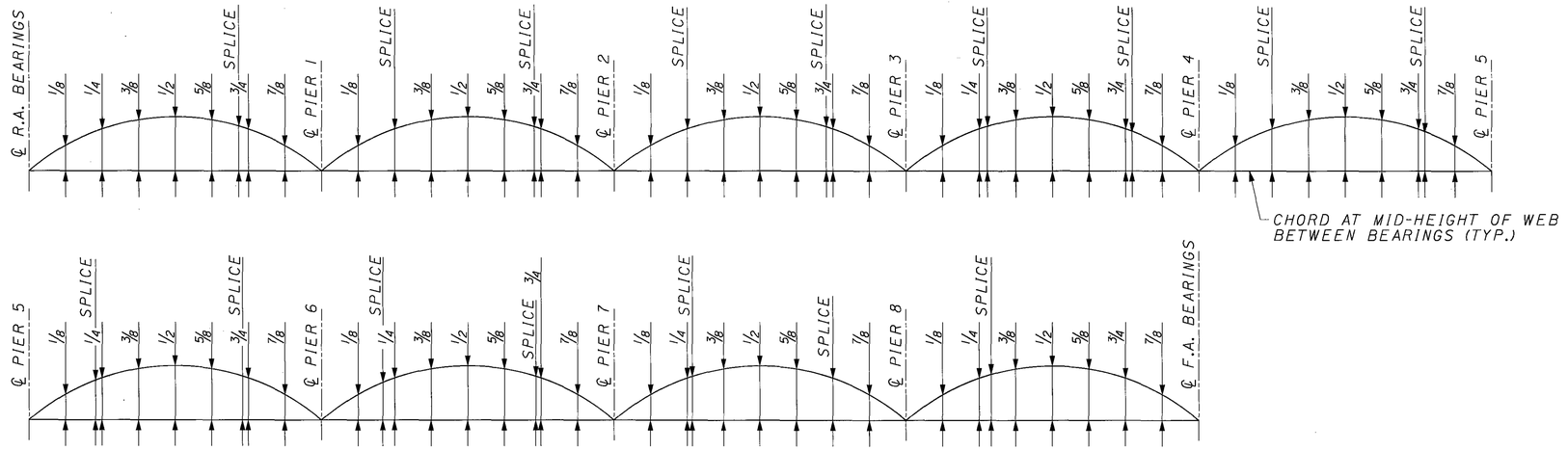
CAMBER DIAGRAM 2 - STEEL
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

49/77

409/612

SU271SDI.DGN 6/25/04 SJK,JLS,KH,RC



CAMBER DIAGRAM

DEFLECTION AND CAMBER TABLE - BEAMS 6 & 10

	BEARING POINT	SPAN 1								BEARING POINT	SPAN 2								BEARING POINT	SPAN 3								BEARING POINT
		1/8	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	3/16	3/8	7/16	7/16	5/16	1/4	3/16	1/16	0	1/16	1/4	3/8	7/16	3/8	1/4	1/4	1/16	0	1/16	1/4	3/8	1/2	7/16	1/4	1/4	1/16	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	1 1/2	2 5/8	3 1/8	3	2 1/4	1 5/8	1 1/4	3/8	0	1/2	1 1/2	2 9/16	3	2 1/2	1 11/16	1 1/2	7/16	0	9/16	1 3/4	2 3/4	3 3/16	2 13/16	1 7/8	1 11/16	9/16	0
REQUIRED SHOP CAMBER	0	1 11/16	3	3 9/16	3 7/16	2 9/16	1 7/8	1 7/16	7/16	0	9/16	1 3/4	2 5/16	3 7/16	2 7/8	1 15/16	1 3/4	1/2	0	5/8	2	3 1/8	3 11/16	3 1/4	2 1/8	1 15/16	5/8	0

DEFLECTION AND CAMBER TABLE - BEAMS 6 & 10

	BEARING POINT	SPAN 4									BEARING POINT	SPAN 5								BEARING POINT	SPAN 6								BEARING POINT
		1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8		1/8	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8		1/8	SPLICE	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/16	3/16	3/16	5/16	3/8	3/8	1/4	3/16	1/16	0	1/16	1/8	1/4	1/4	1/4	3/16	1/8	1/16	0	1/16	1/8	1/8	3/16	3/16	1/8	1/16	1/16	0	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	3/8	1 5/16	1 7/16	2 1/4	2 11/16	2 7/16	1 9/16	1 3/8	9/16	0	1/4	15/16	1 9/16	1 15/16	1 3/4	1 3/16	1	7/16	0	1/4	1 1/16	7/8	1 3/8	1 1/2	1 1/8	3/4	9/16	0	0
REQUIRED SHOP CAMBER	0	7/16	1 1/2	1 5/8	2 9/16	3 1/16	2 13/16	1 13/16	1 9/16	5/8	0	5/16	1 1/16	1 13/16	2 3/16	2	1 3/8	1 1/8	1/2	0	5/16	13/16	1	1 9/16	1 11/16	1 1/4	13/16	5/8	0	0

DEFLECTION AND CAMBER TABLE - BEAMS 6 & 10

	BEARING POINT	SPAN 7									BEARING POINT	SPAN 8								BEARING POINT	SPAN 9								BEARING POINT
		1/8	SPLICE	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	SPLICE	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/8	5/16	3/8	1/2	9/16	1/2	5/16	5/16	1/8	0	1/16	3/16	3/16	5/16	3/8	3/8	3/16	1/16	0	1/16	3/16	1/4	5/16	7/16	7/16	3/8	1/4	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	7/8	1 13/16	2 3/16	3 5/16	3 3/4	3 1/8	2 1/8	1 15/16	1 11/16	0	5/16	1 1/4	1 7/16	2 1/4	2 11/16	2 5/16	1 3/8	7/16	0	7/16	1 5/16	1 11/16	2 5/16	3 1/16	3 3/16	2 11/16	1 9/16	0
REQUIRED SHOP CAMBER	0	1	2 1/8	2 9/16	3 13/16	4 5/16	3 5/8	2 7/16	2 1/4	1 13/16	0	3/8	1 7/16	1 5/8	2 9/16	3 1/16	2 11/16	1 9/16	1/2	0	1/2	1 1/2	1 15/16	2 5/8	3 1/2	3 5/8	3 1/16	1 13/16	0

NOTES

ADDITIONAL NOTES: SEE SHEET 48/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
DLR	SJK	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709021	

CAMBER DIAGRAM 3 - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

50/77

410/612

SU271SD1.DGN 6/23/04 SJK,JLS,KH,RC

DEFLECTION AND CAMBER TABLE - BEAMS 7 & 9

	BEARING POINT	SPAN 1								BEARING POINT	SPAN 2								BEARING POINT	SPAN 3								BEARING POINT
		1/8	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	3/16	3/8	7/16	7/16	5/16	1/4	3/16	1/16	0	1/16	1/4	3/8	7/16	3/8	1/4	1/4	1/16	0	1/16	1/4	7/16	1/2	7/16	5/16	1/4	1/16	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	1 9/16	2 3/4	3 1/4	3 1/8	2 5/16	1 11/16	1 5/16	3/8	0	1/2	1 9/16	2 5/8	3 1/16	2 5/8	1 3/4	1 9/16	1/2	0	9/16	1 13/16	2 13/16	3 5/16	2 7/8	1 15/16	1 3/4	5/8	0
REQUIRED SHOP CAMBER	0	1 3/4	3 1/8	3 11/16	3 9/16	2 5/8	1 15/16	1 1/2	7/16	0	9/16	1 13/16	3	3 1/2	3	2	1 13/16	9/16	0	5/8	2 1/16	3 1/4	3 13/16	3 5/16	2 1/4	2	1 1/16	0

DEFLECTION AND CAMBER TABLE - BEAMS 7 & 9

	BEARING POINT	SPAN 4									BEARING POINT	SPAN 5								BEARING POINT	SPAN 6								BEARING POINT
		1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8		1/8	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8		1/8	SPLICE	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/16	3/16	3/16	5/16	3/8	3/8	1/4	3/16	1/16	0	1/16	1/8	1/4	5/16	1/4	3/16	1/8	1/16	0	1/16	1/8	1/8	3/16	3/16	1/8	1/8	1/16	0	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	3/8	1 3/8	1 1/2	2 5/16	2 13/16	2 1/2	1 5/8	1 3/8	9/16	0	1/4	15/16	1 5/8	2	1 13/16	1 1/4	1	7/16	0	5/16	3/4	15/16	1 7/16	1 9/16	1 3/16	13/16	9/16	1/16	0
REQUIRED SHOP CAMBER	0	7/16	1 9/16	1 11/16	2 5/8	3 3/16	2 7/8	1 7/8	1 9/16	5/8	0	5/16	1 1/16	1 7/8	2 5/16	2 1/16	1 7/16	1 1/8	1/2	0	3/8	7/8	1 1/16	1 5/8	1 3/4	1 5/16	15/16	5/8	1/16	0

DEFLECTION AND CAMBER TABLE - BEAMS 7 & 9

	BEARING POINT	SPAN 7									BEARING POINT	SPAN 8								BEARING POINT	SPAN 9								BEARING POINT
		1/8	SPLICE	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	SPLICE	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/8	5/16	3/8	9/16	9/16	1/2	5/16	5/16	1/8	0	1/16	3/16	3/16	5/16	3/8	3/8	3/16	1/16	0	1/16	3/16	1/4	5/16	7/16	7/16	3/8	1/4	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	7/8	1 13/16	2 1/4	3 7/16	3 13/16	3 1/4	2 3/16	2	1 1/16	0	3/8	1 5/16	1 1/2	2 5/16	2 13/16	2 7/16	1 7/16	7/16	0	7/16	1 3/8	1 3/4	2 7/16	3 3/16	3 5/16	2 13/16	1 5/8	0
REQUIRED SHOP CAMBER	0	1	2 1/8	2 5/8	4	4 3/8	3 3/4	2 1/2	2 5/16	1 3/16	0	7/16	1 1/2	1 11/16	2 5/8	3 3/16	2 13/16	1 5/8	1/2	0	1/2	1 9/16	2	2 3/4	3 5/8	3 3/4	3 3/16	1 7/8	0

DEFLECTION AND CAMBER TABLE - BEAM 8

	BEARING POINT	SPAN 1								BEARING POINT	SPAN 2								BEARING POINT	SPAN 3								BEARING POINT
		1/8	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/4	3/8	7/16	7/16	5/16	1/4	3/16	1/16	0	1/16	1/4	3/8	7/16	3/8	1/4	1/4	1/16	0	1/16	1/4	7/16	1/2	7/16	5/16	1/4	1/16	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	1 9/16	2 13/16	3 5/16	3 1/8	2 3/8	1 11/16	1 5/16	7/16	0	1/2	1 5/8	2 11/16	3 1/8	2 11/16	1 3/4	1 9/16	1/2	0	9/16	1 13/16	2 7/8	3 3/8	2 15/16	1 15/16	1 13/16	5/8	0
REQUIRED SHOP CAMBER	0	1 13/16	3 3/16	3 3/4	3 9/16	2 11/16	1 15/16	1 1/2	1/2	0	9/16	1 7/8	3 1/16	3 9/16	3 1/16	2	1 13/16	9/16	0	5/8	2 1/16	3 5/16	3 7/8	3 3/8	2 1/4	2 1/16	1 1/16	0

DEFLECTION AND CAMBER TABLE - BEAM 8

	BEARING POINT	SPAN 4									BEARING POINT	SPAN 5								BEARING POINT	SPAN 6								BEARING POINT
		1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8		1/8	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8		1/8	SPLICE	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/16	3/16	3/16	5/16	3/8	3/8	1/4	3/16	1/16	0	1/16	1/8	1/4	5/16	1/4	3/16	1/8	1/16	0	1/16	1/8	1/8	3/16	3/16	3/16	1/8	1/16	0	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	7/16	1 3/8	1 1/2	2 3/8	2 7/8	2 9/16	1 5/8	1 7/16	9/16	0	1/4	1	1 11/16	2 1/16	1 7/8	1 1/4	1	7/16	0	5/16	3/4	15/16	1 1/2	1 5/8	1 1/4	1 3/16	9/16	1/16	0
REQUIRED SHOP CAMBER	0	1/2	1 9/16	1 11/16	2 11/16	3 1/4	2 15/16	1 7/8	1 5/8	5/8	0	5/16	1 1/8	1 15/16	2 3/8	2 1/8	1 7/16	1 1/8	1/2	0	3/8	7/8	1 1/16	1 11/16	1 13/16	1 7/16	15/16	5/8	1/16	0

DEFLECTION AND CAMBER TABLE - BEAM 8

	BEARING POINT	SPAN 7									BEARING POINT	SPAN 8								BEARING POINT	SPAN 9								BEARING POINT
		1/8	SPLICE	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	SPLICE	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	7/8	
DEFLECTION DUE TO WEIGHT OF STEEL	0	1/8	5/16	3/8	9/16	5/8	1/2	3/8	5/16	1/8	0	1/16	3/16	3/16	5/16	7/16	3/8	1/4	1/16	0	1/16	3/16	1/4	5/16	7/16	1/2	3/8	1/4	0
DEFLECTION DUE TO REMAINING DEAD LOAD	0	15/16	1 7/8	2 5/16	3 7/16	3 7/8	3 1/4	2 3/16	2	1 1/16	0	3/8	1 5/16	1 1/2	2 3/8	2 7/8	2 1/2	1 1/2	7/16	0	7/16	1 3/8	1 3/4	2 7/16	3 1/4	3 3/8	2 7/8	1 5/8	0
REQUIRED SHOP CAMBER	0	1 1/16	2 3/16	2 11/16	4	4 1/2	3 3/4	2 9/16	2 5/16	1 3/16	0	7/16	1 1/2	1 11/16	2 11/16	3 5/16	2 7/8	1 3/4	1/2	0	1/2	1 9/16	2	2 3/4	3 11/16	3 7/8	3 1/4	1 7/8	0

NOTES

CAMBER DIAGRAM: SEE SHEET 50/77.

ADDITIONAL NOTES: SEE SHEET 48/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN SJK | REVIEWED DAP | DATE 3/18/04
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709021

CAMBER DIAGRAM 4 - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

51/77

411
612

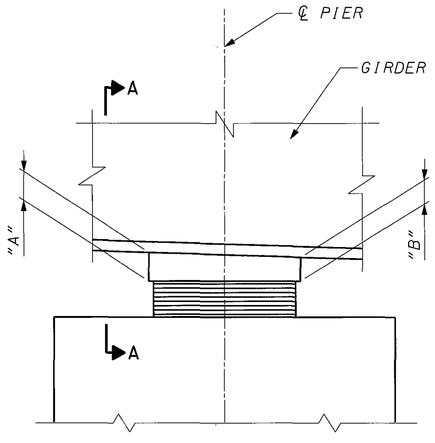
SU271SDK.DGN 6/23/04 SJK,JLS,KH,RC

ELASTOMERIC BEARING DIMENSIONS

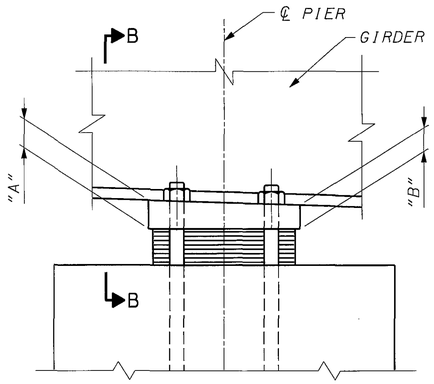
BEARING MARK	TYPE	ELASTOMER WIDTH IN.	ELASTOMER LENGTH IN.	TOTAL BEARING HEIGHT IN.	NUMBER OF STEEL LAMINATES	STEEL LAMINATE THICKNESS IN.	THICKNESS OF INTERIOR NEOPRENE LAMINATE IN.	NUMBER OF INTERIOR LAMINATES	THICKNESS OF EXTERIOR NEOPRENE LAMINATE IN.	LOAD PLATE WIDTH IN.	LOAD PLATE LENGTH IN.	DIM. "A" IN.	DIM. "B" IN.	SEAT ADJUSTMENT* IN.
F-600	FIXED	29	14	4.503	7	0.0747	0.580	6	0.250	40	15	3.449	3.0	0.176
F-650	FIXED	29	13	3.573	6	0.0747	0.525	5	0.250	40	14	3.919	3.5	0.149
F-700	FIXED	29	14	4.493	8	0.0747	0.485	7	0.250	40	15	3.574	3.125	0.198
F-750	FIXED	29	15	4.113	7	0.0747	0.515	6	0.250	40	16	2.978	2.5	0.182
E-750	EXPANSION	29	18	6.012	9	0.0747	0.605	8	0.250	30	19	3.068	2.5	0.244

* ADJUSTMENT MADE TO SEAT TO COMPENSATE FOR THE VERTICAL DEFORMATION

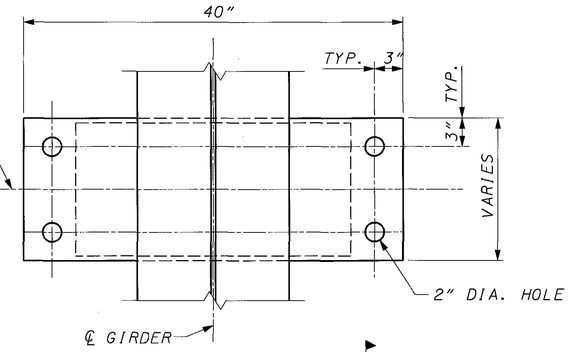
LOCATION	DESIGN LOADS (KIPS) DEAD	LIVE	TOTAL	BEARING TYPE
P3L	527.8	186.7	714.5	E-750
P4L	414.4	175.8	590.2	F-600
P5L	397.5	176.5	574.0	F-600
P6L	555.2	192.3	747.5	F-750
P7L	554.2	192.8	747.0	E-750
P3R	536.6	189.4	726.0	E-750
P4R	491.9	183.8	675.7	F-700
P5R	433.1	178.6	611.7	F-650
P6R	508.8	184.7	693.5	F-700
P7R	559.1	190.2	749.3	E-750



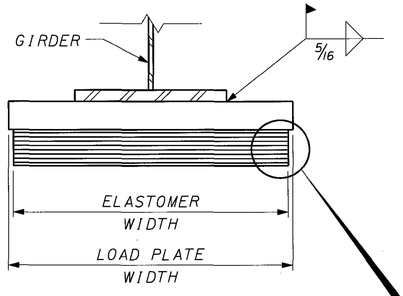
ELEVATION

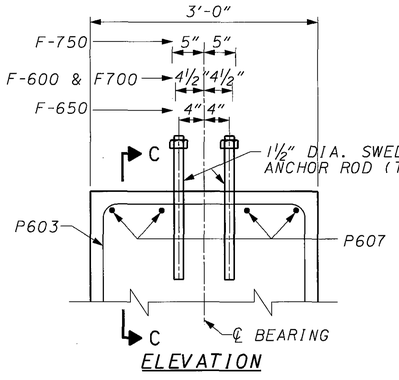


ELEVATION

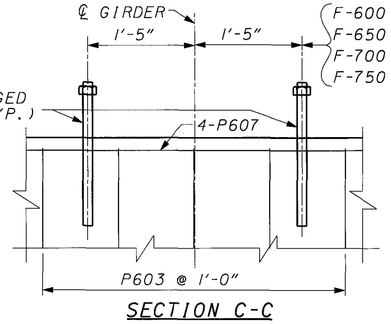


PLAN

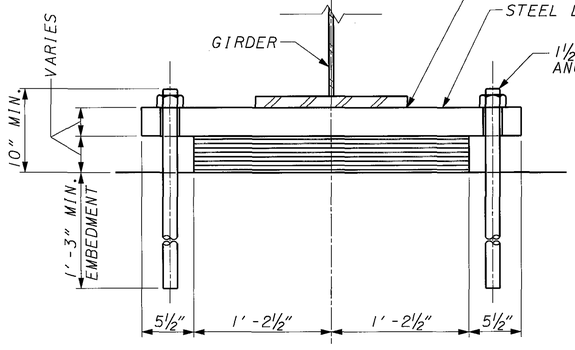




ELEVATION

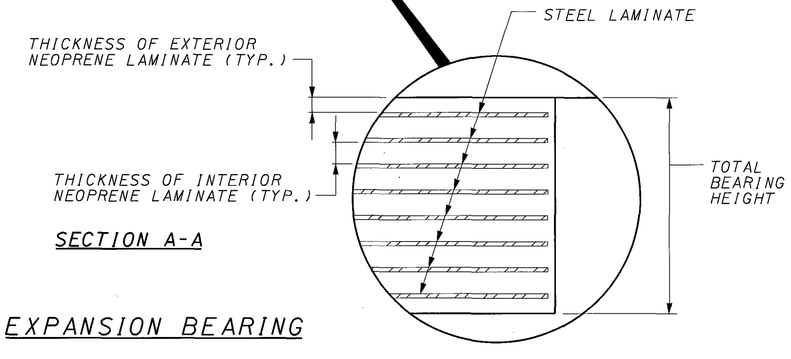


SECTION C-C



SECTION B-B

FIXED BEARING



SECTION A-A

EXPANSION BEARING

NOTES

ELASTOMERIC BEARINGS: THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED UNDER DIVISION I, SECTION 14.6.5 (METHOD B) OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

LOAD PLATE: THE STEEL LOAD PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.

BEARING REPOSITIONING: IF THE STEEL IS ERECTED AT AN AMBIENT TEMPERATURE HIGHER THAN 80°F OR LOWER THAN 40°F AND THE BEARING SHEAR DEFLECTION EXCEEDS 1/6 OF THE BEARING HEIGHT AT 60°F(±)10°F, RAISE THE GIRDERS TO ALLOW THE BEARINGS TO RETURN TO THEIR UNDEFORMED SHAPE AT 60°F(±)10°F.

WELDING: CONTROL WELDING SO THAT THE PLATE TEMERATURE AT THE ELASTOMER BONDED SURFACE DOES NOT EXCEED 300°F AS DETERMINED BY USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.

SWEDGED ANCHOR RODS: ANCHOR RODS SHALL BE GALVANIZED PER 711.02.

BEVELED LOAD PLATES: LOAD PLATES SHALL BE ASTM A709, GRADE 50W, STEEL. THE LOAD PLATES SHALL BE METALIZED PER 516.03 PRIOR TO BONDING WITH THE ELASTOMER.

BASIS OF PAYMENT: THE UNIT BID PRICE SHALL INCLUDE ALL MATERIALS, LABOR, AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS (EITHER FIXED OR EXPANSION). PAYMENT WILL BE MADE AT THE APPROPRIATE CONTRACT PRICE FOR ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE).

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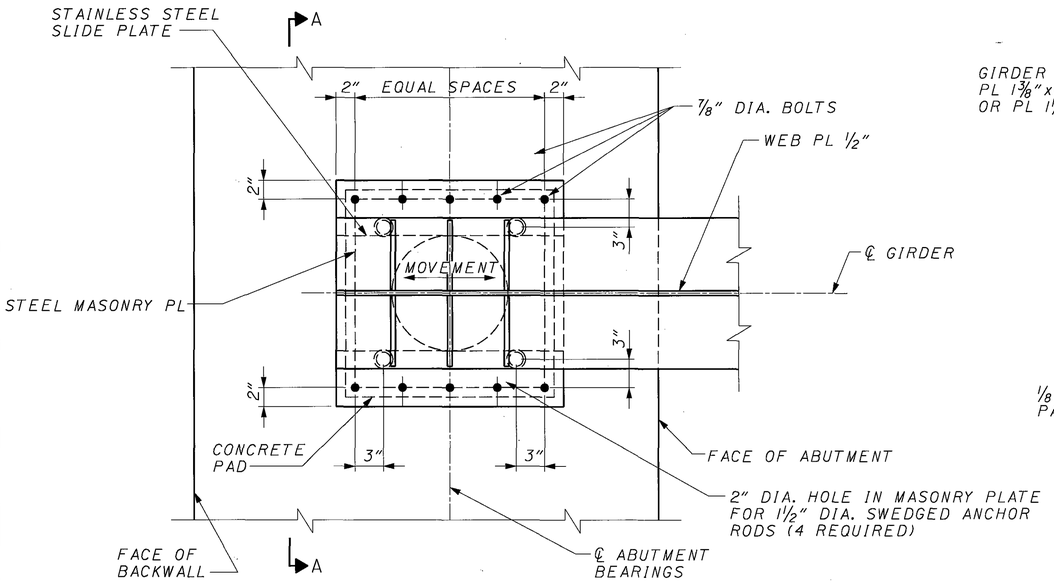
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ELASTOMERIC BEARING DETAILS - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOMPATH TRAIL, AND CUYAHOGA RIVER

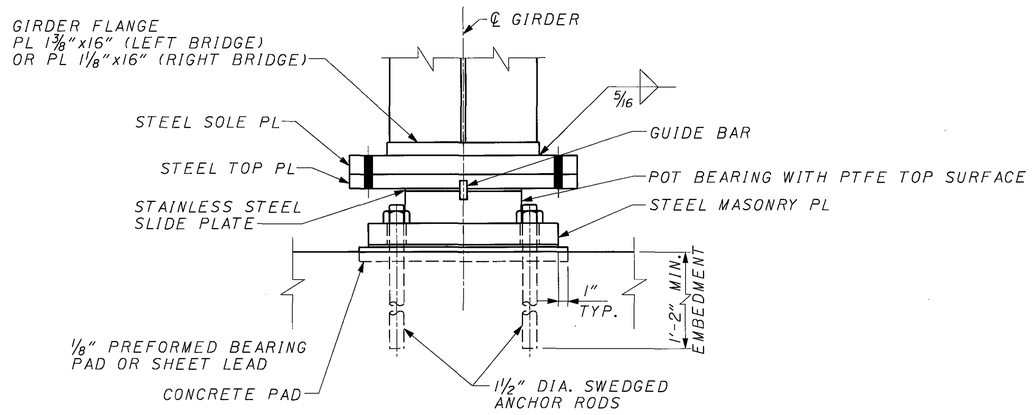
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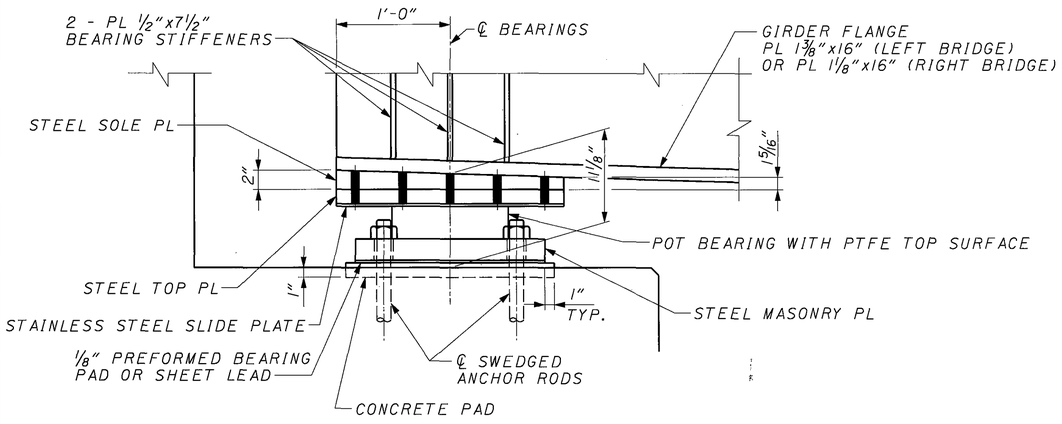
412/612



PLAN



SECTION A-A



ELEVATION

EXPANSION POT BEARING AT ABUTMENTS

NOTES

POT BEARINGS SHALL BE DESIGNED TO ACCOMMODATE THE LOADS AND MOVEMENTS INDICATED IN THE TABLE BELOW. THE POT BEARING DESIGN SHALL ALSO CONFORM TO THE ITEM 516 - STEEL POT BEARING PROPOSAL NOTE.

SWEDGED ANCHOR RODS: ANCHOR RODS SHALL BE GALVANIZED PER 711.02. ANCHOR ROD SPACING PER MANUFACTURER. ANCHOR RODS SHALL BE SET USING A STEEL TEMPLATE WITH A MINIMUM THICKNESS OF 1/4 INCH.

THE PIER AND ABUTMENT SEAT ELEVATIONS ARE BASED ON BEARING HEIGHTS PROVIDED IN THE TABLE BELOW. IF THE CONTRACTOR'S SELECTED BEARING MANUFACTURER HAS A DESIGN THAT DOES NOT CONFORM TO THE HEIGHTS PROVIDED IN THE TABLE, ADJUST THE BEARING SEAT ELEVATIONS AT NO ADDITIONAL COST TO THE STATE. ADJUST THE LOCATION OF REINFORCING STEEL HORIZONTALLY AS NECESSARY TO AVOID INTERFERENCE WITH THE BEARING ANCHOR BOLTS. MAINTAIN THE MINIMUM CONCRETE COVER AND MINIMUM SPACING REQUIRED BY THE PROJECT PLANS. IF THE REINFORCING STEEL CANNOT BE MOVED TO PROVIDE THE REQUIRED POSITION FOR THE ANCHOR BOLTS, THE CONTRACTOR'S BEARING MANUFACTURER SHALL RE-DESIGN THE BEARINGS TO ACCOMMODATE AN ACCEPTABLE ANCHOR BOLT CONFIGURATION.

LOCATION	DESIGN LOADS (KIPS)				MAX. ALLOWABLE FRICTION FACTOR	CATEGORY	ROTATION (RADIANS)	DESIGN EXPANSION (IN.)	BEARING TYPE	HEIGHT ALLOWANCE
	DEAD	LIVE	TOTAL	LATERAL						
R ABUT L	160.7	103.1	263.8	31.3	0.11	300 K	0.0358	5.71	GUIDED	1 1/8"
PIER 1L	547.9	186.6	734.5	106.4	0.11	750 K	0.0235	4.64	GUIDED	14 1/4"
PIER 2L	482.9	183.1	666.0	93.6	0.11	700 K	0.0219	3.43	GUIDED	13 7/8"
PIER 8L	576.8	190.9	767.7	112.2	0.11	800 K	0.0226	3.69	GUIDED	14 1/4"
F ABUT L	161.4	102.1	263.5	31.4	0.11	300 K	0.0362	4.79	GUIDED	1 1/8"
R ABUT R	152.1	105.9	258.0	29.6	0.11	300 K	0.0327	5.68	GUIDED	1 1/8"
PIER 1R	549.9	186.7	736.6	106.9	0.11	750 K	0.0214	4.70	GUIDED	14 1/4"
PIER 2R	547.9	190.0	737.9	106.5	0.11	750 K	0.0215	3.46	GUIDED	13 7/8"
PIER 8R	546.8	186.2	733.0	106.2	0.11	750 K	0.0217	3.52	GUIDED	14 1/4"
F ABUT R	152.8	105.9	258.7	29.7	0.11	300 K	0.0328	4.51	GUIDED	1 1/8"

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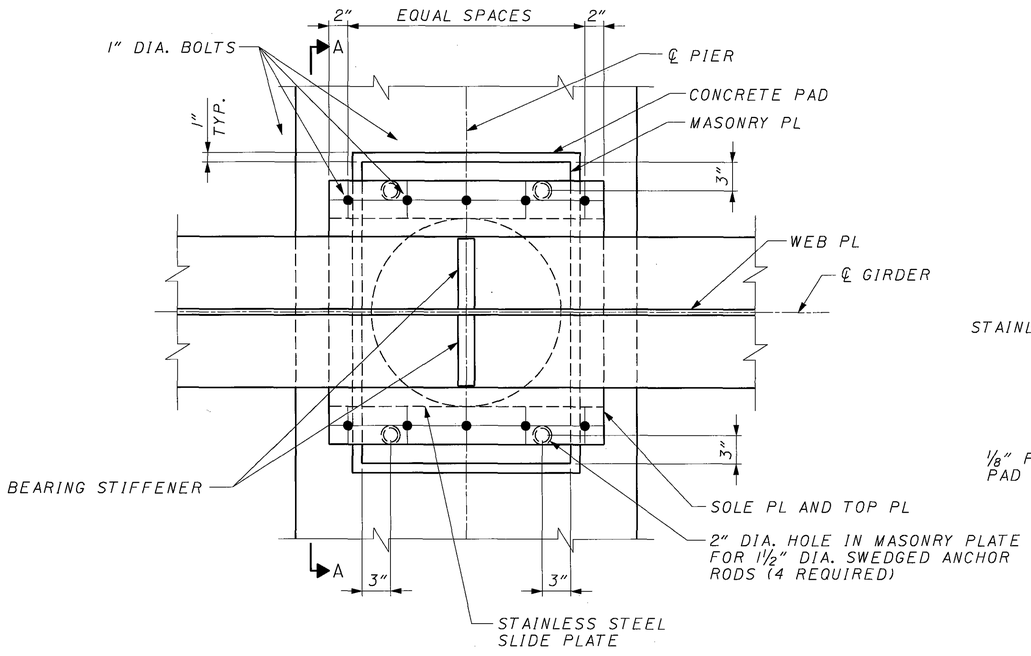
POT BEARINGS AT ABUTMENTS - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

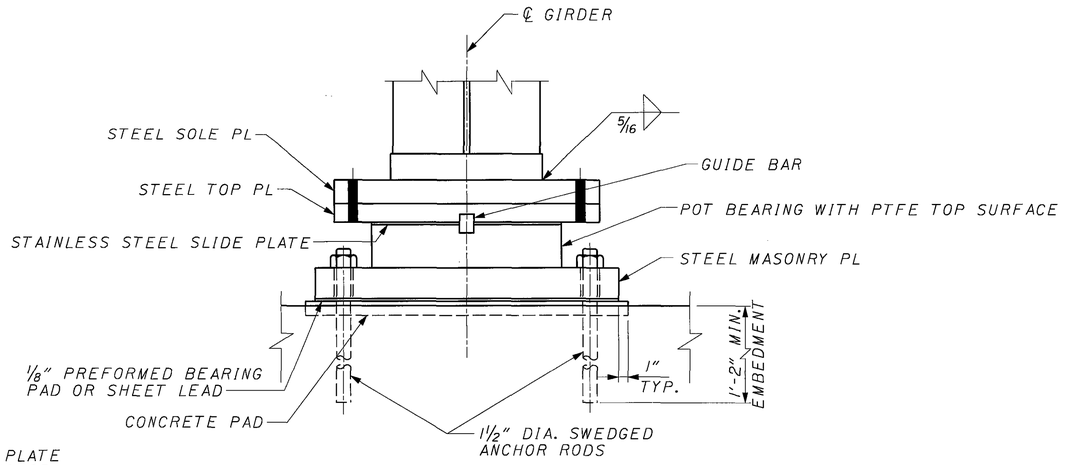
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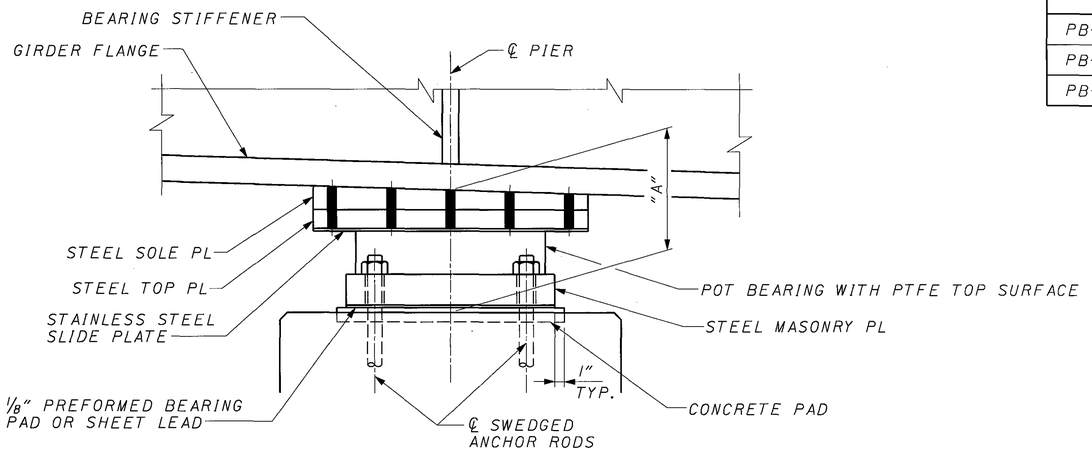


PLAN



SECTION A-A

BEARING	LOCATION	"A"
PB-2	1L, 1R, 8L, 8R	14¼"
PB-3	2L	13⅞"
PB-4	2R	13⅞"



ELEVATION

EXPANSION POT BEARING AT PIERS

NOTES

ADDITIONAL NOTES: SEE SHEET 53/77.

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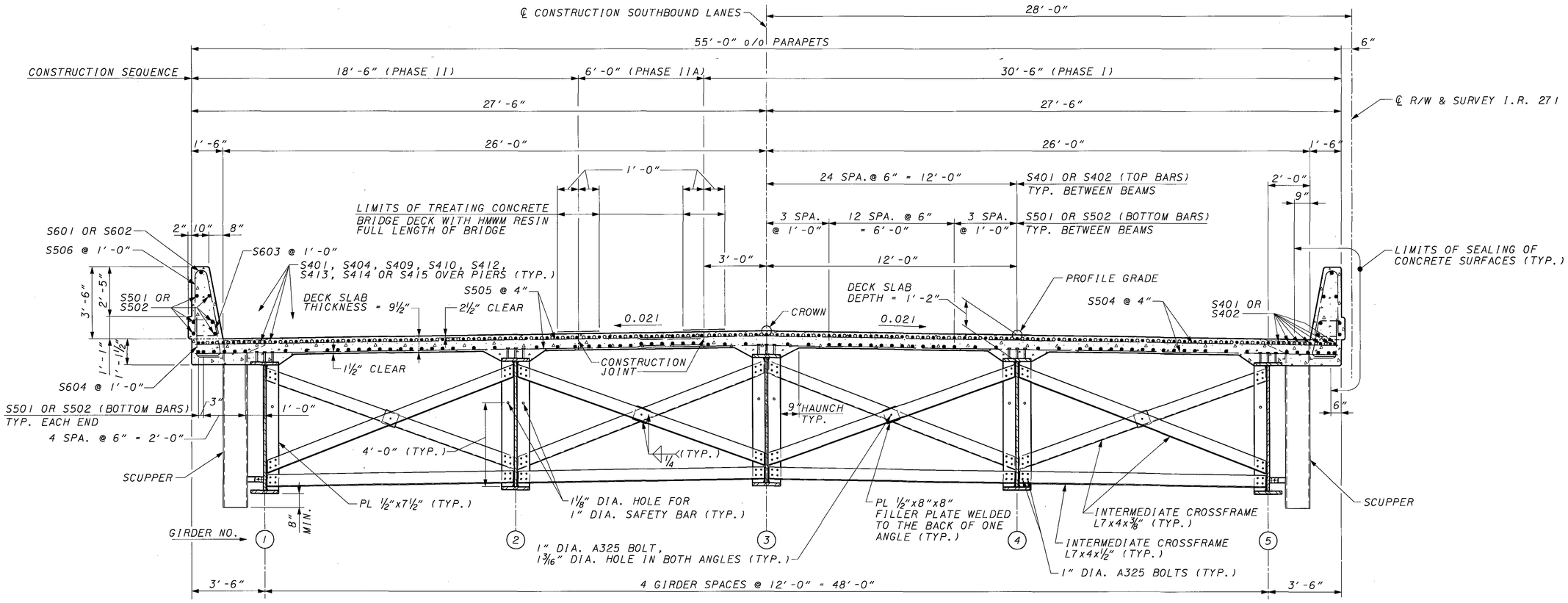
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POT BEARINGS AT PIERS - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

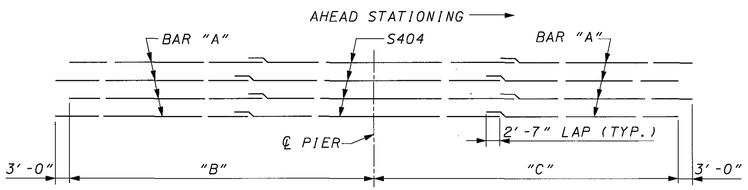
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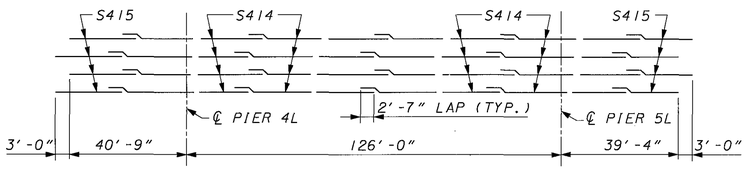
414/612



TRANSVERSE SECTION



STAGGER BARS OVER PIERS 1-3 & 6-8 LEFT
STAGGER BARS OVER PIERS 1-8 RIGHT



STAGGER BARS OVER PIERS 4 & 5 LEFT

TABLE OF STAGGERED REINFORCING BARS OVER PIERS (LEFT)

PIER	"A"	"B"	"C"
1	S410	54'-6¼"	66'-1¾"
2	S409	60'-9¾"	58'-0¼"
3	S401	63'-9¼"	59'-0¾"
6	S413	64'-10"	63'-4"
7	S414	65'-5½"	67'-4½"
8	S412	66'-10"	59'-4"

TABLE OF STAGGERED REINFORCING BARS OVER PIERS (RIGHT)

PIER	"A"	"B"	"C"
1	S407	54'-4½"	56'-7½"
2	S411	61'-5½"	60'-4½"
3	S409	57'-8¼"	61'-1¾"
4	S406	50'-3¾"	58'-4¼"
5	S405	47'-10¼"	51'-11¾"
6	S408	65'-9¾"	49'-10¼"
7	S411	58'-9½"	63'-0½"
8	S407	57'-3¼"	53'-8¾"

NOTES

WELD ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". DO NOT WELD ATTACHMENTS TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE AT LEAST 1" FROM EDGE OF FLANGE, BE AT LEAST 2" LONG, AND BE AT LEAST ¼" FOR THICKNESSES UP TO ¾" OR 5/16" FOR GREATER THAN ¾" THICK.

DECK SLAB CONCRETE QUANTITY: THE ESTIMATED QUANTITY OF DECK SLAB CONCRETE IS BASED ON THE CONSTANT DECK SLAB THICKNESS, AS SHOWN, PLUS THE QUANTITY OF CONCRETE THAT FORMS EACH GIRDER HAUNCH. THE ESTIMATE ASSUMES A CONSTANT HAUNCH THICKNESS OF 4½ INCHES AND A CONSTANT HAUNCH WIDTH OUTSIDE THE EDGE OF EACH GIRDER FLANGE OF 9 INCHES. DEVIATE FROM THIS HAUNCH THICKNESS AS NECESSARY TO PLACE THE DECK SURFACE AT THE FINISHED GRADE. THE ALLOWABLE TOLERANCE FOR THE HAUNCH WIDTH OUTSIDE THE EDGE OF EACH GIRDER FLANGE IS ± 3 INCHES.

REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-7" FOR #4 BARS, 2'-6" FOR LONGITUDINAL #5 BARS, 2'-10" FOR TRANSVERSE #5 BARS AND 3'-0" FOR #6 BARS.

ERECTION BOLTS: THE HOLE DIAMETER IN THE GIRDER STIFFENERS SHALL BE 3/16" LARGER THAN THE DIAMETER OF THE ERECTION BOLTS. THE CROSS FRAME MEMBERS SHALL HAVE SLOTTED HOLES, 5/16" LONGER THAN THE BOLT DIAMETER AND 1/16" WIDER THAN THE ERECTION BOLT DIAMETER. THE SLOT SHALL BE PARALLEL TO THE LONGITUDINAL DIMENSION OF THE CROSS FRAME MEMBER. ERECTION BOLTS SHALL BE HIGH STRENGTH BOLTS AND SHALL REMAIN IN PLACE. SUPPLY TWO HARDENED WASHERS WITH EACH HIGH STRENGTH BOLT. FULLY TORQUE THE BOLTS OR USE A LOCK WASHER IN ADDITION TO THE TWO HARDENED WASHERS. FURNISH ERECTION BOLTS AS PART OF ITEM 513. DO NOT PERMANENTLY ATTACH THE CROSSFRAMES TO THE INTERMEDIATE STIFFENERS UNTIL THE CONCRETE DECK HAS BEEN PLACED.

FASTENERS: ALL BOLTS SHALL BE A325. TYPE 3 BOLTS SHALL BE USED. EACH ANCHOR ASSEMBLY SHALL INCLUDE A BOLT, NUT AND TWO (2) WASHERS, TIGHTENED ACCORDING TO 513.

CROSSFRAME CONNECTION DETAILS: SEE SHEET 47/77.

CONCRETE PARAPET: SEE STANDARD DRAWING SBR-1-99.

SCUPPER DETAILS: SEE SHEET 69/77.

DECK PLACEMENT SEQUENCE: SEE SHEET 56/77.

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SECTION 1 - STEEL

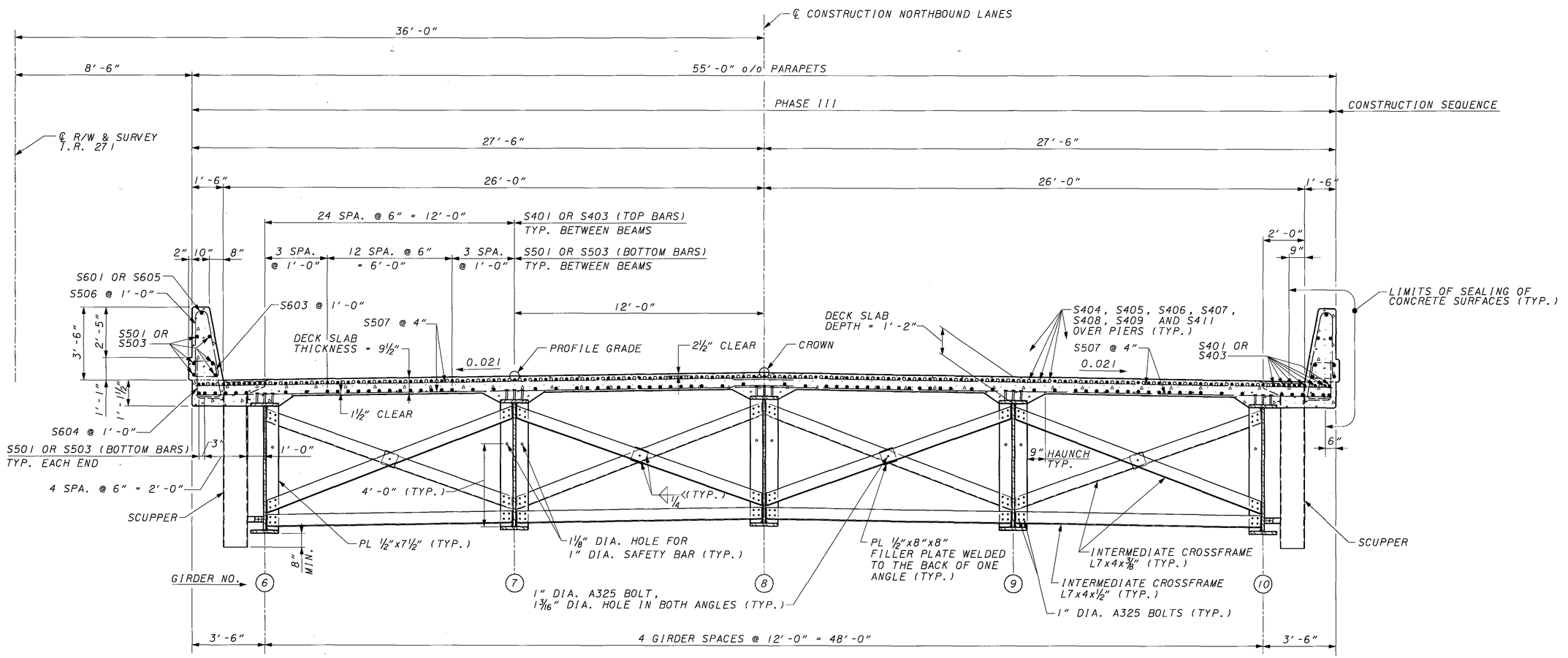
TRANSVERSE SECTION
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

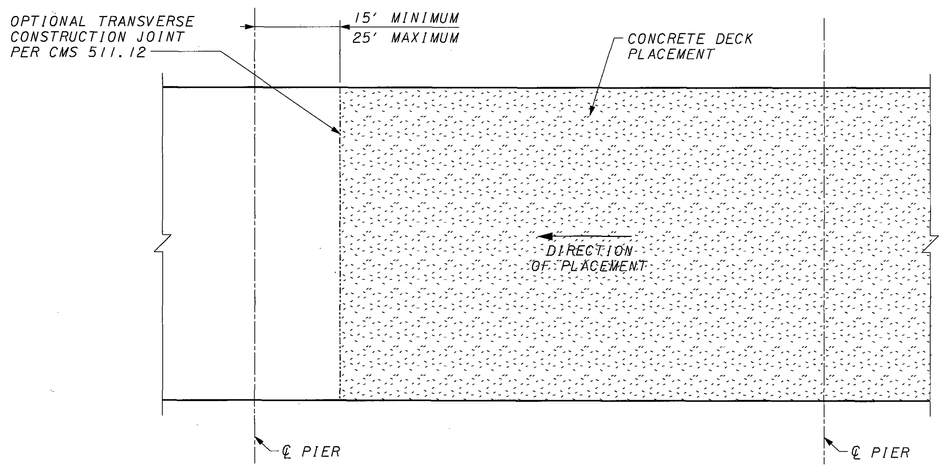
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TRANSVERSE SECTION



TYPICAL LOCATION OF OPTIONAL TRANSVERSE CONSTRUCTION JOINT

NOTES

DECK PLACEMENT SEQUENCE:
THE CONTRACTOR HAS THE OPTION OF PLACING THE CONCRETE DECK WITH TRANSVERSE CONSTRUCTION JOINTS OR PLACING THE CONCRETE DECK IN A CONTINUOUS OPERATION. THESE OPTIONAL CONSTRUCTION JOINTS SHALL BE FORMED IN ACCORDANCE WITH CMS 511.12, AND SHALL BE LOCATED NOT LESS THAN 15 FEET NOR MORE THAN 25 FEET FROM THE CENTERLINE OF BEARINGS AT A PIER SUCH THAT THE MAJORITY OF THE DECK CONCRETE IS PLACED IN THE SPAN WHERE THE CONSTRUCTION JOINT IS LOCATED. (SEE "TYPICAL LOCATION OF TRANSVERSE CONSTRUCTION JOINT" DETAIL). NO TRANSVERSE CONSTRUCTION JOINTS ARE PERMITTED IN THE DECK BETWEEN PIERS 4L AND 5L. REGARDLESS OF THE PLACEMENT METHOD, THE CONTRACTOR SHALL SUBMIT HIS PLACEMENT PROCEDURE FOR APPROVAL NOT LESS THAN 21 DAYS BEFORE THE PLANNED PLACEMENT.

ADDITIONAL NOTES: SEE SHEET 55/77.

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DLR	JLS	DAP	3/18/04
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KAK		7709021	

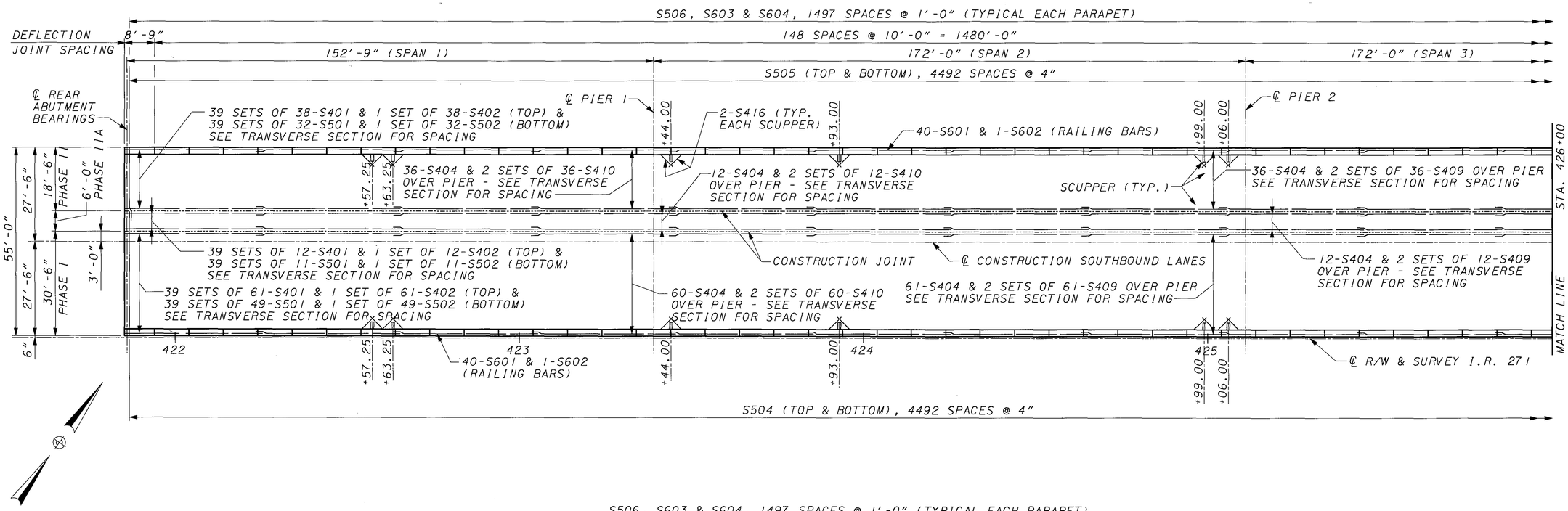
TRANSVERSE SECTION 2 - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

56/77

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SU271TSB.DGN 6/23/04 JLS,TWH,KH,RC



SLAB PLAN - LEFT BRIDGE

NOTES

SLAB PLAN CONTINUED: SEE SHEET 58/77.

TRANSVERSE SECTION: SEE SHEET 55/77.

SCUPPER DETAILS: SEE SHEET 69/77.

ADDITIONAL NOTES: SEE SHEET 55/77.

DECK PLACEMENT SEQUENCE: SEE SHEET 56/77.

STAGGER BARS OVER PIERS: SEE DETAILS SHEET 55/77.

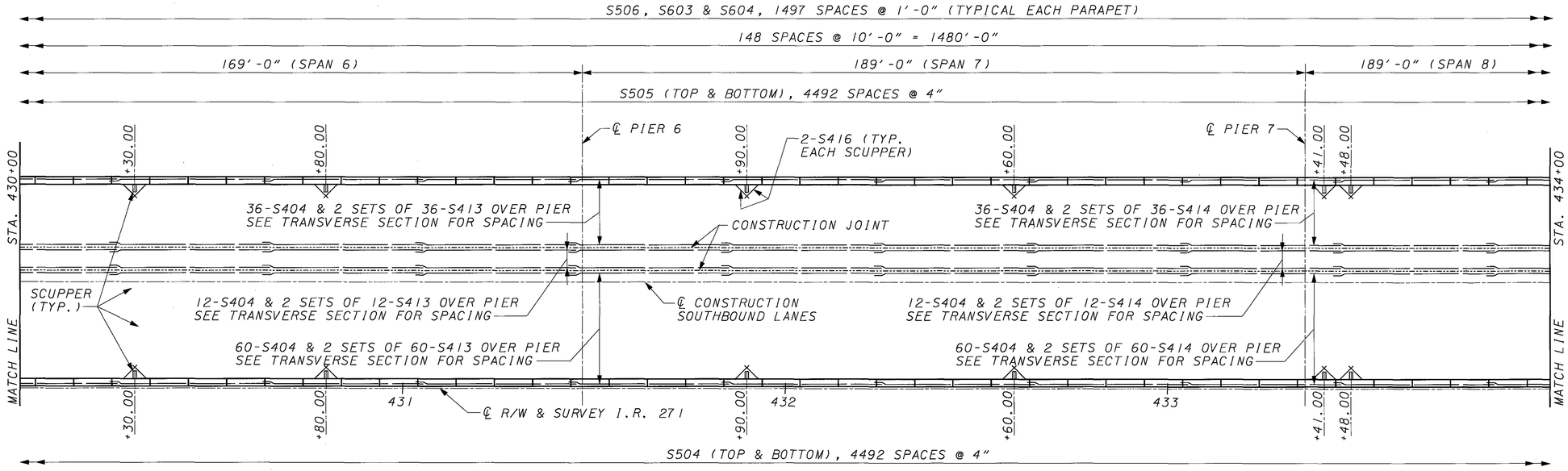
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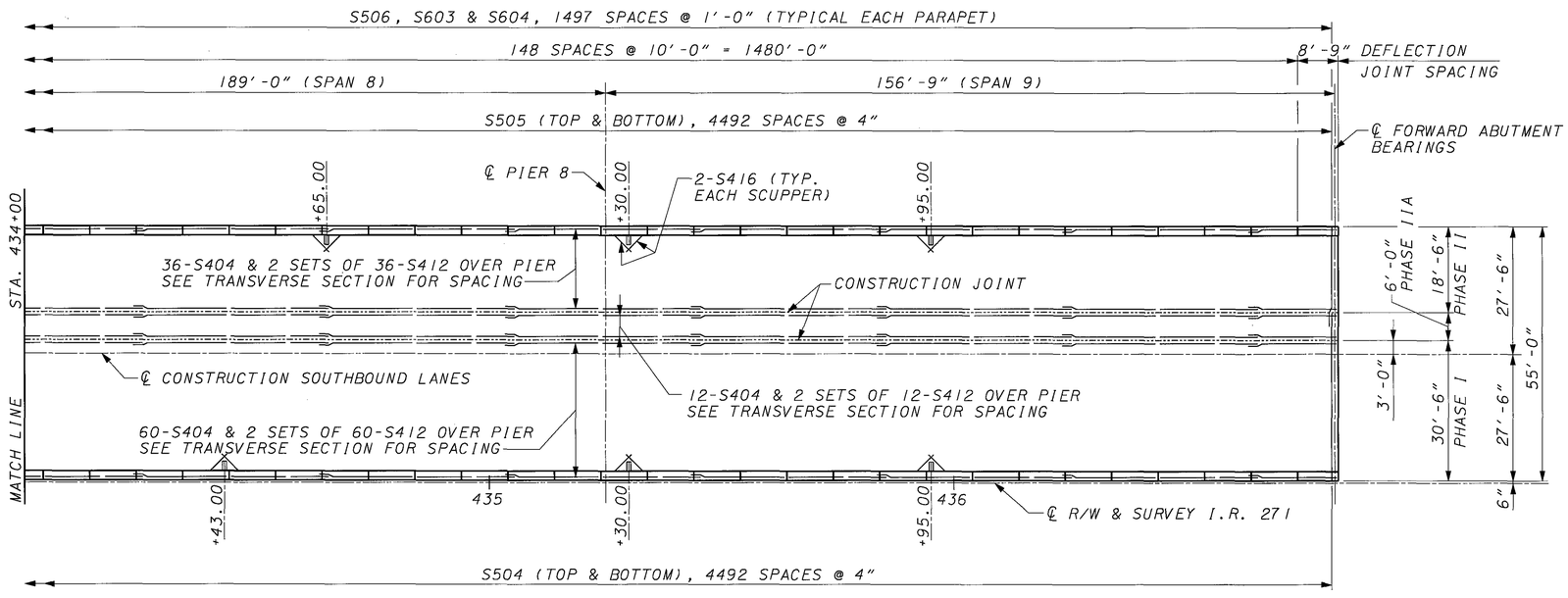
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SLAB PLAN 1 - STEEL
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

SU271SDC.DGN 6/23/04 KH,JLS,RC





SLAB PLAN - LEFT BRIDGE

NOTES

TRANSVERSE SECTION: SEE SHEET 55/77.

SCUPPER DETAILS: SEE SHEET 69/77.

ADDITIONAL NOTES: SEE SHEET 55/77.

DECK PLACEMENT SEQUENCE: SEE SHEET 56/77.

STAGGER BARS OVER PIERS: SEE DETAILS SHEET 55/77.

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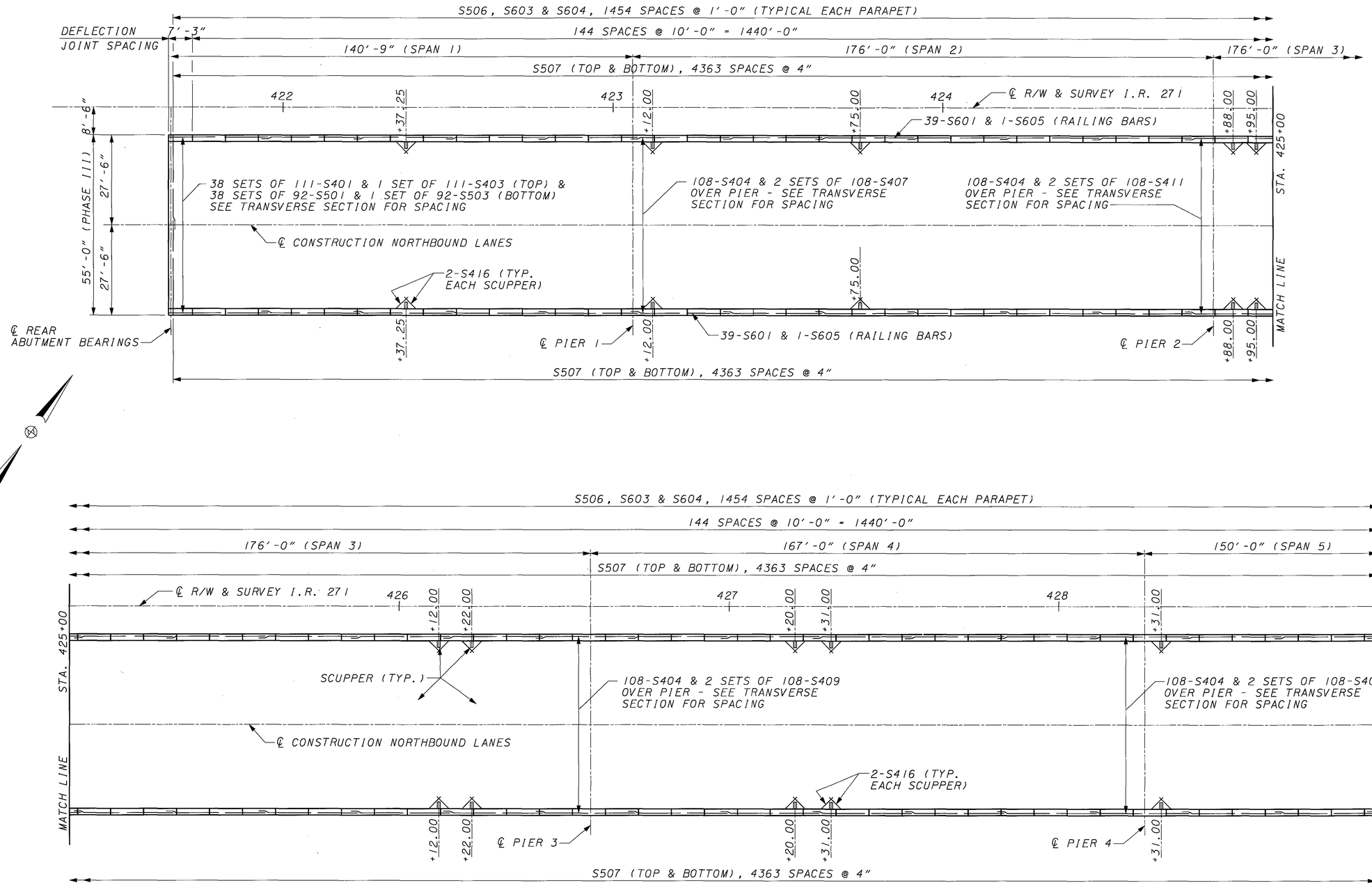
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SLAB PLAN 2 - STEEL
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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SLAB PLAN - RIGHT BRIDGE

NOTES

SLAB PLAN CONTINUED: SEE SHEET 60/77.

TRANSVERSE SECTION: SEE SHEET 56/77.

SCUPPER DETAILS: SEE SHEET 69/77.

ADDITIONAL NOTES: SEE SHEET 55/77.

DECK PLACEMENT SEQUENCE: SEE SHEET 56/77.

STAGGER BARS OVER PIERS: SEE DETAIL SHEET 55/77.

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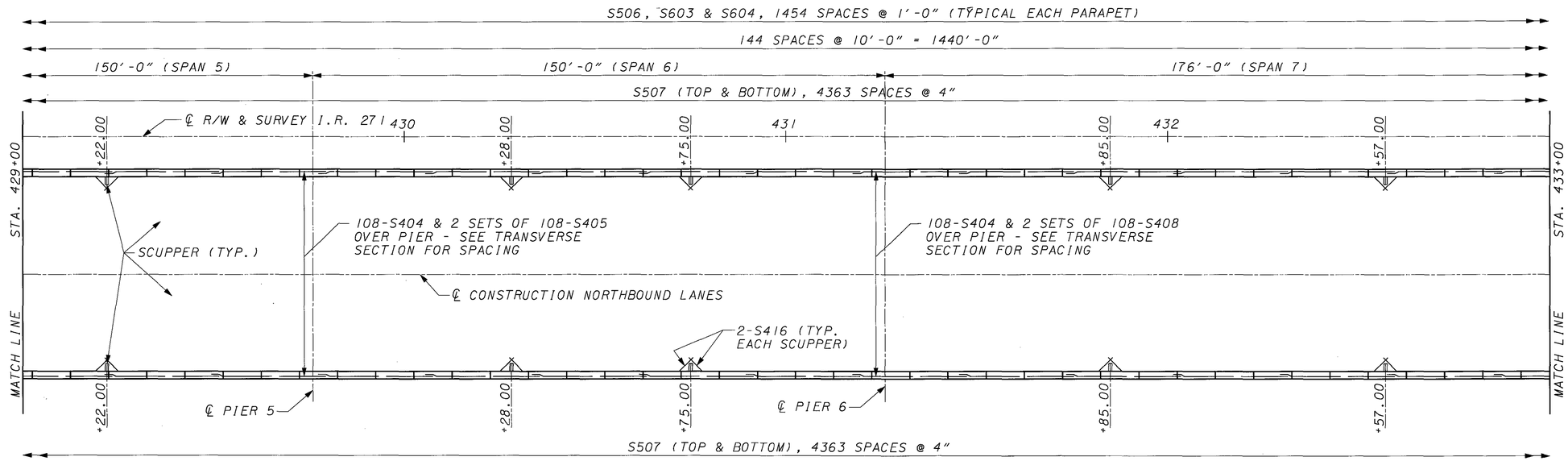
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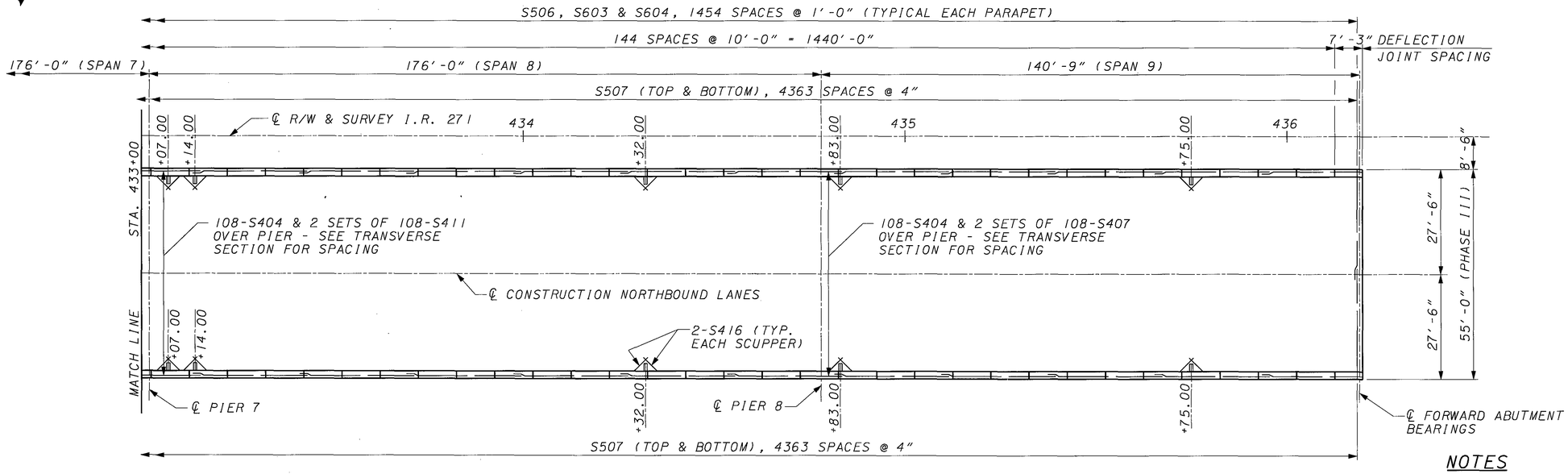
SLAB PLAN 3 - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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SLAB PLAN - RIGHT BRIDGE

NOTES

TRANSVERSE SECTION: SEE SHEET 56/77.

SCUPPER DETAILS: SEE SHEET 69/77.

ADDITIONAL NOTES: SEE SHEET 55/77.

DECK PLACEMENT SEQUENCE: SEE SHEET 56/77.

STAGGER BARS OVER PIERS: SEE DETAIL SHEET 55/77.

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SLAB PLAN 4 - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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SU271SDD.DGN 6/23/04 TWH,JLS,RC

GALVANIZED STAY - IN - PLACE FORMS

GALVANIZED STEEL, STAY - IN - PLACE (SIP) DECK FORMS MAY BE USED BY THE CONTRACTOR IN PLACE OF REMOVABLE FORMS.

MATERIALS:

PERMANENT STEEL BRIDGE DECK FORMS AND SUPPORTS SHALL BE FABRICATED FROM STEEL CONFORMING TO ASTM SPECIFICATION A653 (GRADE 33 THROUGH 80). ALL BRIDGE FORM PANELS AND ACCESSORIES SHALL HAVE A GALVANIZED COATING CLASS OF G165 ACCORDING TO ASTM A653.

MATERIAL THICKNESS THINNER THAN 20 GAGE SHALL NOT BE USED.

DESIGN LOADING:

THE STEEL FORMS AND SUPPORTS SHALL BE DESIGNED ON THE BASIS OF DEAD LOAD OF FORM, REINFORCEMENT AND PLASTIC CONCRETE PLUS 50 POUNDS PER SQUARE FOOT FOR CONSTRUCTION LOADS.

THE VALLEYS OF SIP FORMS MAY BE FILLED WITH EXPANDED POLYSTYRENE, AS RECOMMENDED BY THE MANUFACTURER, TO REDUCE THE DEAD LOAD AND TO COMPENSATE FOR THE ADDITIONAL WEIGHT OF STEEL, CONCRETE AND SIP FORMS. THE CONTRACTOR SHALL FURNISH THE CALCULATIONS SHOWING THE INCREASE IN DEAD LOAD DUE TO THE USE OF HIS PROPOSED SIP FORMS. NO REDESIGN OF STRUCTURAL STEEL GIRDERS WILL BE REQUIRED FOR AN INCREASE IN DEAD LOAD UP TO FIFTEEN (15) POUNDS PER SQUARE FOOT OF THE DECK AREA BETWEEN GIRDERS. IF THE DEAD LOAD INCREASE IS MORE THAN 15 PSF, THE CONTRACTOR SHALL FURNISH THE CALCULATIONS AND DRAWINGS SHOWING THE CHANGES REQUIRED TO THE STRUCTURAL STEEL FRAMING. THE CONTRACTOR'S PROPOSED STRUCTURAL STEEL DETAILS SHALL BE SIMILAR TO THE DETAILS SHOWN IN THE CONTRACT PLANS. IN ALL CASES THE CONTRACTOR SHALL FURNISH REVISED CAMBER AND DEFLECTION CALCULATIONS DUE TO ANY CHANGE IN DEAD LOAD.

BASIS OF DESIGN:

DEFLECTION UNDER THE WEIGHT OF THE FORMS, THE PLASTIC CONCRETE, AND THE REINFORCEMENT SHALL NOT EXCEED 1/180 OF THE FORM SPAN OR 1/2 INCH, WHICHEVER IS LESS, AND THE MINIMUM LOADING IS 120 PSF.

THE PERMISSIBLE FORM CAMBER SHALL BE BASED ON THE ACTUAL DEAD LOAD CONDITION. CAMBER SHALL NOT BE USED TO COMPENSATE FOR DEFLECTION IN EXCESS OF THE FOREGOING LIMITS.

THE DESIGN SPAN OF THE FORM SHEETS SHALL BE:
THE STRINGER SPACING - (FLANGE WIDTH + 2").

SHOP AND ERECTION DRAWINGS:

ALL THE STRUCTURAL STEEL WORK REQUIRED TO FURNISH AND ERECT THE SIP FORMS SHALL BE IN ACCORDANCE WITH ITEM 513 OF THE OHIO DEPARTMENT OF TRANSPORTATION (ODOT) CONSTRUCTION AND MATERIALS SPECIFICATIONS. SHOP DRAWINGS AS DESCRIBED IN 513.06 WILL BE REQUIRED.

THESE PLANS SHALL INDICATE THE GRADE OF STEEL, AND THE PHYSICAL AND SECTION PROPERTIES FOR ALL PARTS OF THE FORM, ALONG WITH LENGTH, SIZE AND SPACING OF ALL COMPONENTS OF THE FORMS INCLUDING THE WELDS. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR THE STEEL DECK FORMS.

UNLOADING AND HANDLING OF MATERIALS:

FABRICATED METAL STAY - IN - PLACE FORMING MATERIALS SHALL NOT BE UNLOADED OR HANDLED IN SUCH A MANNER AS TO DAMAGE OR ALTER THE CONFIGURATION OF THE FORMS. DAMAGED MATERIALS SHALL BE REPLACED AT NO ADDITIONAL COST TO THE STATE.

STORAGE OF MATERIALS:

ALL FABRICATED METAL STAY - IN - PLACE FORMS WHICH ARE STORED AT THE PROJECT SITE SHALL BE STORED AT LEAST 4 INCHES ABOVE THE GROUND ON PLATFORMS, SKIDS OR OTHER SUITABLE SUPPORTS AND SHALL BE PROTECTED AGAINST CORROSION AND DAMAGE FROM ANY SOURCE.

CONSTRUCTION:

FORM SHEETS SHALL NOT BE PERMITTED TO REST DIRECTLY ON THE TOP OF THE GIRDER. SHEETS SHALL BE SECURELY FASTENED TO FORM SUPPORTS AND SHALL HAVE A MINIMUM BEARING LENGTH OF 1 (ONE) INCH AT EACH END. SHEETS SHALL BE CENTERED BETWEEN THE FORM SUPPORTS. FORM SUPPORTS SHALL BE PLACED IN DIRECT CONTACT WITH THE FLANGE OF GIRDER. ALL ATTACHMENTS SHALL BE MADE BY BOLTS, CLIPS OR OTHER APPROVED MEANS.

WELDING TO THE GIRDER SHALL NOT BE PERMITTED. WELDING AND WELDS SHALL BE IN ACCORDANCE WITH SECTION 513.21 OF THE CMS EXCEPT THAT 1/8 INCH FILLET WELDS WILL BE PERMITTED.

IN THE AREAS WHERE THE FORM SHEETS LAP, THE FORM SHEETS SHALL BE SECURELY FASTENED TO ONE ANOTHER BY SCREWS AT A MAXIMUM SPACING OF 18 INCHES. THE ENDS OF THE FORM SHEETS SHALL BE SECURELY ATTACHED TO THE SUPPORT ANGLES WITH SCREWS AT A MAXIMUM SPACING OF 18 INCHES.

ANY EXPOSED FORM METAL WHERE THE GALVANIZED COATING HAS BEEN DAMAGED SHALL BE THROUGHLY CLEANED, WIRE BRUSHED, THEN PAINTED WITH TWO COATS OF ZINC OXIDE ZINC DUST PRIMER, FEDERAL SPECIFICATION TT-P-641D, TYPE II, NO COLOR ADDED, TO THE SATISFACTION OF THE ENGINEER. MINOR HEAT DISCOLORATION IN AREAS OF WELDS NEED NOT BE TOUCHED UP.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE LOCATED AT THE BOTTOM OF A FLUTE AND 1/4 INCH WEEP HOLES SHALL BE FIELD DRILLED AT NOT MORE THAN 12 INCHES ON CENTER ALONG THE LINE OF THE JOINT.

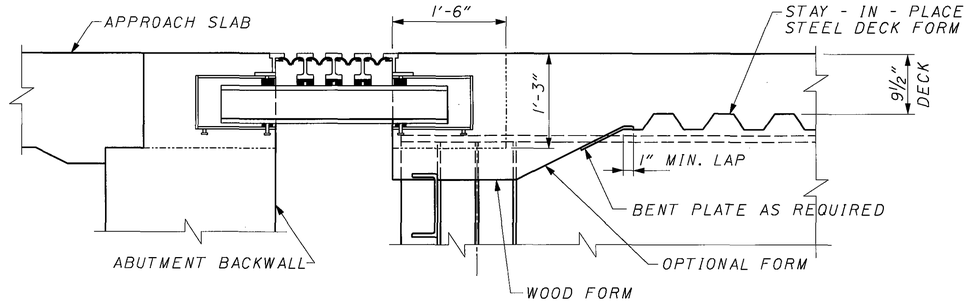
ALL CUTS SHALL BE MADE BY A SAW. NO FLAME CUTTING WILL BE PERMITTED.

EACH SHEET OF STEEL DECK FORM SHALL BE SCREWED DOWN IMMEDIATELY UPON PLACEMENT.

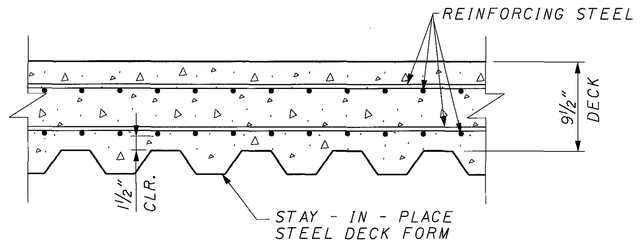
TIMBER FORMS SHALL BE USED TO FORM THE OVERHANG AT THE EXTERIOR GIRDER. SUBMIT OVERHANG FALSEWORK DETAILS WITH THE GIRDER SHOP DRAWINGS.

BASIS OF PAYMENT:

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE SIP FORMS, ADDITIONAL CONCRETE, STRUCTURAL STEEL AND ALL INCIDENTALS, FURNISHING ALL REQUIRED CALCULATIONS AND DRAWINGS, AND ANY TIME DELAYS ASSOCIATED WITH THE USE OF SIP FORMS. THE COST THEREOF SHALL BE INCLUDED IN THE COST OF ITEM 894 HIGH PERFORMANCE CONCRETE FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN. NO EXTENSION OF TIME WILL BE ALLOWED DUE TO ANY TIME DELAYS DUE TO THE USE OF SIP FORMS.



SECTION AT ABUTMENT



LONGITUDINAL SECTION
THRU DECK SLAB

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		770901(3)(L) 770902(LR)	

STAY - IN - PLACE DECK FORMS - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, & R
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

61/77

421/612

SU27IMDC.DGN 6/23/04 KH,JLS,RC

SCREED ELEVATION TABLE - LEFT BRIDGE

SPAN POINT	R.A. BRGS.	SPAN 1							PIER 1	SPAN 2								PIER 2
		1/8	1/4	3/8	1/2	5/8	SPLICE	7/8		1/8	- 1/4	SPLICE	3/8	1/2	5/8	SPLICE	7/8	
	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION
CURB LINE	791.30	790.90	790.46	789.95	789.37	788.72	788.14	787.36	786.73	786.11	785.53	785.37	784.96	784.36	783.69	782.95	782.27	781.59
BEAM 1	791.34	790.94	790.50	789.99	789.41	788.76	788.18	787.41	786.78	786.15	785.57	785.41	785.00	784.40	783.74	782.99	782.31	781.63
BEAM 2	791.60	791.18	790.72	790.20	789.62	788.98	788.41	787.65	787.03	786.40	785.81	785.65	785.24	784.63	783.97	783.23	782.56	781.89
C.J.	791.66	791.24	790.78	790.27	789.69	789.05	788.48	787.71	787.09	786.46	785.88	785.71	785.30	784.69	784.03	783.30	782.63	781.95
C.J.	791.79	791.36	790.91	790.39	789.81	789.17	788.60	787.84	787.22	786.59	786.00	785.84	785.42	784.82	784.16	783.42	782.75	782.08
BEAM 3 & CROWN	791.85	791.43	790.97	790.45	789.87	789.23	788.66	787.90	787.28	786.65	786.06	785.90	785.48	784.88	784.22	783.48	782.81	782.14
BEAM 4 & P.G.	791.60	791.19	790.74	790.22	789.64	789.00	788.42	787.66	787.03	786.40	785.82	785.66	785.24	784.64	783.98	783.24	782.56	781.89
BEAM 5	791.34	790.94	790.50	789.99	789.41	788.76	788.18	787.41	786.78	786.15	785.57	785.41	785.00	784.39	783.73	782.99	782.31	781.63
CURB LINE	791.30	790.90	790.46	789.95	789.36	788.72	788.14	787.36	786.73	786.11	785.52	785.37	784.95	784.35	783.69	782.95	782.27	781.59

SCREED ELEVATION TABLE - LEFT BRIDGE

SPAN POINT	SPAN 3							PIER 3	SPAN 4								PIER 4
	1/8	SPLICE	3/8	1/2	5/8	SPLICE	7/8		1/8	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8	
	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION
CURB LINE	780.99	780.51	779.86	779.25	778.56	777.90	777.12	776.45	775.88	775.31	774.82	774.25	773.60	772.88	772.55	772.13	771.40
BEAM 1	781.04	780.55	779.91	779.29	778.60	777.95	777.16	776.49	775.92	775.35	774.86	774.29	773.64	772.92	772.59	772.17	771.44
BEAM 2	781.28	780.79	780.14	779.51	778.83	778.19	777.41	776.74	776.16	775.58	775.09	774.51	773.86	773.15	772.83	772.41	771.69
C.J.	781.35	780.85	780.20	779.58	778.90	778.25	777.47	776.81	776.23	775.64	775.15	774.57	773.92	773.21	772.89	772.47	771.75
C.J.	781.47	780.98	780.32	779.70	779.02	778.37	777.60	776.93	776.35	775.77	775.27	774.69	774.04	773.33	773.01	772.60	771.88
BEAM 3 & CROWN	781.53	781.04	780.39	779.76	779.08	778.44	777.66	777.00	776.41	775.83	775.33	774.75	774.11	773.40	773.08	772.66	771.94
BEAM 4 & P.G.	781.28	780.80	780.15	779.53	778.84	778.19	777.41	776.74	776.17	775.59	775.10	774.52	773.87	773.16	772.84	772.42	771.69
BEAM 5	781.03	780.55	779.90	779.28	778.60	777.94	777.16	776.49	775.92	775.35	774.86	774.28	773.63	772.92	772.59	772.17	771.44
CURB LINE	780.99	780.51	779.86	779.24	778.56	777.90	777.12	776.45	775.87	775.30	774.82	774.24	773.59	772.87	772.55	772.13	771.40

SCREED ELEVATION TABLE - LEFT BRIDGE

SPAN POINT	SPAN 5							PIER 5	SPAN 6								PIER 6
	1/8	1/4	SPLICE	1/2	5/8	3/4	7/8		1/8	SPLICE	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8	
	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION
CURB LINE	770.89	770.42	769.93	769.49	769.01	768.54	768.07	767.63	767.09	766.92	766.57	766.01	765.39	764.70	764.16	763.96	763.24	762.58
BEAM 1	770.94	770.46	769.97	769.53	769.06	768.58	768.11	767.67	767.13	766.97	766.61	766.05	765.43	764.74	764.21	764.01	763.29	762.62
BEAM 2	771.19	770.72	770.23	769.78	769.31	768.84	768.37	767.92	767.37	767.20	766.84	766.28	765.65	764.96	764.44	764.24	763.53	762.87
C.J.	771.25	770.78	770.29	769.85	769.37	768.90	768.43	767.99	767.44	767.27	766.90	766.34	765.71	765.03	764.50	764.31	763.60	762.93
C.J.	771.38	770.91	770.42	769.97	769.50	769.02	768.56	768.11	767.56	767.39	767.03	766.46	765.84	765.15	764.63	764.43	763.72	763.06
BEAM 3 & CROWN	771.44	770.97	770.48	770.04	769.56	769.09	768.62	768.17	767.62	767.45	767.09	766.52	765.90	765.21	764.69	764.49	763.79	763.12
BEAM 4 & P.G.	771.19	770.72	770.23	769.78	769.31	768.84	768.37	767.92	767.38	767.21	766.85	766.29	765.67	764.98	764.45	764.25	763.54	762.87
BEAM 5	770.94	770.46	769.97	769.53	769.06	768.58	768.11	767.67	767.13	766.96	766.61	766.05	765.43	764.73	764.20	764.00	763.29	762.62
CURB LINE	770.89	770.42	769.93	769.49	769.01	768.54	768.07	767.63	767.09	766.92	766.57	766.01	765.39	764.69	764.16	763.96	763.24	762.58

SCREED ELEVATION TABLE - LEFT BRIDGE

SPAN POINT	SPAN 7							PIER 7	SPAN 8								PIER 8
	1/8	SPLICE	3/8	1/2	5/8	SPLICE	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	3/4	7/8	
	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION
CURB LINE	761.92	761.33	760.72	760.06	759.31	758.49	757.69	756.92	756.26	755.63	755.04	754.37	753.62	752.94	752.81	752.01	751.27
BEAM 1	761.96	761.37	760.76	760.10	759.35	758.53	757.73	756.97	756.30	755.68	755.08	754.41	753.66	752.98	752.86	752.06	751.32
BEAM 2	762.21	761.60	760.98	760.32	759.57	758.76	757.97	757.22	756.55	755.91	755.31	754.63	753.89	753.22	753.09	752.30	751.57
C.J.	762.27	761.67	761.05	760.38	759.64	758.83	758.04	757.28	756.61	755.97	755.37	754.70	753.95	753.28	753.16	752.37	751.63
C.J.	762.40	761.79	761.17	760.50	759.76	758.95	758.16	757.41	756.74	756.10	755.49	754.82	754.07	753.41	753.28	752.49	751.76
BEAM 3 & CROWN	762.46	761.85	761.23	760.57	759.82	759.01	758.22	757.47	756.80	756.16	755.55	754.88	754.14	753.47	753.34	752.55	751.82
BEAM 4 & P.G.	762.21	761.61	761.00	760.33	759.59	758.77	757.98	757.22	756.55	755.92	755.32	754.65	753.90	753.23	753.10	752.31	751.57
BEAM 5	761.96	761.37	760.76	760.09	759.35	758.53	757.73	756.97	756.30	755.67	755.08	754.41	753.66	752.98	752.85	752.05	751.32
CURB LINE	761.92	761.32	760.71	760.05	759.30	758.48	757.68	756.92	756.26	755.63	755.03	754.37	753.61	752.94	752.81	752.01	751.27

SCREED ELEVATION TABLE - LEFT BRIDGE

SPAN POINT	SPAN 9								
	1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	7/8	F.A. BRGS.
	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION
CURB LINE	750.74	750.25	750.12	749.78	749.28	748.71	748.07	747.35	746.59
BEAM 1	750.78	750.29	750.16	749.82	749.32	748.76	748.11	747.39	746.63
BEAM 2	751.03	750.53	750.39	750.05	749.54	748.97	748.33	747.62	746.88
C.J.	751.09	750.59	750.45	750.11	749.60	749.03	748.39	747.69	746.94
C.J.	751.22	750.72	750.58	750.23	749.72	749.15	748.52	747.81	747.07
BEAM 3 & CROWN	751.28	750.78	750.64	750.30	749.79	749.22	748.58	747.88	747.13
BEAM 4 & P.G.	751.03	750.54	750.40	750.06	749.56	748.99	748.35	747.63	746.88
BEAM 5	750.78	750.29	750.16	749.82	749.32	748.75	748.11	747.39	746.63
CURB LINE	750.74	750.25	750.11	749.78	749.28	748.71	748.07	747.35	746.59

NOTES

NOTATION: R.A. - REAR ABUTMENT
F.A. - FORWARD ABUTMENT
C.J. - CONSTRUCTION JOINT
P.G. - PROFILE GRADE

SCREED ELEVATIONS SHOWN ARE FOR THE DECK SLAB SURFACE PRIOR TO CONCRETE PLACEMENT. ALLOWANCE HAS BEEN MADE FOR ANTICIPATED CALCULATED DEAD LOAD DEFLECTIONS.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN SCB | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013

SCREED ELEVATIONS 1 - STEEL
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

62/77

422/612

SU271SD0.DGN 8/25/04 SCB,RC,JLS

SCREED ELEVATION TABLE - RIGHT BRIDGE

SPAN POINT	R.A. BRGS.	SPAN 1								PIER 1	SPAN 2								PIER 2
		1/8	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	SPLICE	3/8	1/2	5/8	SPLICE	3/4	7/8	
	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION
CURB LINE	781.72	781.32	780.89	780.40	779.87	779.28	778.87	778.67	778.07	777.51	776.89	776.32	775.75	775.13	774.43	773.79	773.69	772.95	772.25
BEAM 6	781.76	781.36	780.93	780.45	779.91	779.32	778.91	778.71	778.11	777.55	776.94	776.37	775.79	775.17	774.48	773.84	773.73	772.99	772.29
BEAM 7 & P.G.	782.01	781.62	781.19	780.71	780.17	779.58	779.17	778.97	778.37	777.81	777.19	776.62	776.05	775.43	774.74	774.09	773.99	773.24	772.54
BEAM 8 & CROWN	782.27	781.87	781.45	780.96	780.42	779.83	779.42	779.22	778.62	778.06	777.44	776.88	776.31	775.69	774.99	774.35	774.24	773.49	772.80
BEAM 9	782.01	781.62	781.19	780.71	780.17	779.58	779.17	778.97	778.37	777.81	777.19	776.62	776.05	775.43	774.74	774.09	773.99	773.24	772.54
BEAM 10	781.76	781.36	780.93	780.45	779.91	779.32	778.91	778.71	778.11	777.55	776.94	776.37	775.79	775.17	774.48	773.84	773.73	772.99	772.29
CURB LINE	781.72	781.32	780.89	780.40	779.87	779.28	778.87	778.67	778.07	777.51	776.89	776.32	775.75	775.13	774.43	773.79	773.69	772.95	772.25

SCREED ELEVATION TABLE - RIGHT BRIDGE

SPAN POINT	SPAN 3								PIER 3	SPAN 4								PIER 4
	1/8	SPLICE	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8	
	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION
CURB LINE	771.64	771.05	770.50	769.89	769.19	768.52	768.44	767.69	766.99	766.39	765.85	765.79	765.30	764.72	764.07	763.37	763.24	762.66	761.99
BEAM 6	771.68	771.09	770.55	769.93	769.23	768.56	768.49	767.74	767.03	766.44	765.89	765.83	765.34	764.76	764.11	763.41	763.28	762.71	762.04
BEAM 7 & P.G.	771.93	771.35	770.81	770.19	769.49	768.82	768.74	767.99	767.28	766.69	766.15	766.09	765.60	765.02	764.37	763.67	763.54	762.96	762.29
BEAM 8 & CROWN	772.19	771.60	771.06	770.45	769.75	769.07	769.00	768.24	767.53	766.94	766.40	766.34	765.86	765.27	764.62	763.92	763.79	763.21	762.54
BEAM 9	771.93	771.35	770.81	770.19	769.49	768.82	768.74	767.99	767.28	766.69	766.15	766.09	765.60	765.02	764.37	763.67	763.54	762.96	762.29
BEAM 10	771.68	771.09	770.55	769.93	769.23	768.56	768.49	767.74	767.03	766.44	765.89	765.83	765.34	764.76	764.11	763.41	763.28	762.71	762.04
CURB LINE	771.64	771.05	770.50	769.89	769.19	768.52	768.44	767.69	766.99	766.39	765.85	765.79	765.30	764.72	764.07	763.37	763.24	762.66	761.99

SCREED ELEVATION TABLE - RIGHT BRIDGE

SPAN POINT	SPAN 5								PIER 5	SPAN 6								PIER 6
	1/8	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8		1/8	SPLICE	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8	
	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION
CURB LINE	761.45	760.93	760.44	759.91	759.34	758.73	758.58	758.10	757.51	756.97	756.61	756.46	755.94	755.39	754.80	754.40	754.19	753.59	753.02
BEAM 6	761.50	760.98	760.48	759.95	759.38	758.77	758.62	758.15	757.55	757.01	756.65	756.50	755.98	755.43	754.84	754.44	754.23	753.63	753.07
BEAM 7 & P.G.	761.75	761.23	760.74	760.21	759.64	759.03	758.87	758.40	757.80	757.27	756.91	756.76	756.24	755.69	755.10	754.70	754.49	753.88	753.32
BEAM 8 & CROWN	762.00	761.48	761.00	760.47	759.89	759.28	759.13	758.65	758.05	757.52	757.16	757.01	756.50	755.95	755.35	754.95	754.74	754.13	753.57
BEAM 9	761.75	761.23	760.74	760.21	759.64	759.03	758.87	758.40	757.80	757.27	756.91	756.76	756.24	755.69	755.10	754.70	754.49	753.88	753.32
BEAM 10	761.50	760.98	760.48	759.95	759.38	758.77	758.62	758.15	757.55	757.01	756.65	756.50	755.98	755.43	754.84	754.44	754.23	753.63	753.07
CURB LINE	761.45	760.93	760.44	759.91	759.34	758.73	758.58	758.10	757.51	756.97	756.61	756.46	755.94	755.39	754.80	754.40	754.19	753.59	753.02

SCREED ELEVATION TABLE - RIGHT BRIDGE

SPAN POINT	SPAN 7								PIER 7	SPAN 8								
	1/8	SPLICE	1/4	3/8	1/2	5/8	SPLICE	3/4	7/8		1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	SPLICE	7/8
	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION
CURB LINE	752.44	752.01	751.89	751.33	750.70	750.00	749.28	749.24	748.48	747.76	747.13	746.55	746.42	745.97	745.35	744.67	743.93	743.87	743.19
BEAM 6	752.48	752.05	751.93	751.37	750.74	750.04	749.32	749.28	748.52	747.80	747.17	746.59	746.46	746.02	745.40	744.71	743.97	743.91	743.23
BEAM 7 & P.G.	752.74	752.30	752.19	751.63	751.01	750.30	749.58	749.54	748.77	748.06	747.43	746.85	746.71	746.28	745.66	744.97	744.23	744.17	743.49
BEAM 8 & CROWN	752.99	752.56	752.44	751.88	751.26	750.55	749.84	749.79	749.02	748.31	747.68	747.10	746.97	746.53	745.91	745.22	744.48	744.42	743.74
BEAM 9	752.74	752.30	752.19	751.63	751.01	750.30	749.58	749.54	748.77	748.06	747.43	746.85	746.71	746.28	745.66	744.97	744.23	744.17	743.49
BEAM 10	752.48	752.05	751.93	751.37	750.74	750.04	749.32	749.28	748.52	747.80	747.17	746.59	746.46	746.02	745.40	744.71	743.97	743.91	743.23
CURB LINE	752.44	752.01	751.89	751.33	750.70	750.00	749.28	749.24	748.48	747.76	747.13	746.55	746.42	745.97	745.35	744.67	743.93	743.87	743.19

SCREED ELEVATION TABLE - RIGHT BRIDGE

SPAN POINT	PIER 8	SPAN 9									F.A. BRGS.
		1/8	1/4	SPLICE	3/8	1/2	5/8	3/4	7/8		
	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION	ELEVATION
CURB LINE	742.50	742.01	741.56	741.38	741.11	740.65	740.14	739.57	738.95	738.29	
BEAM 6	742.54	742.05	741.60	741.42	741.16	740.69	740.18	739.61	738.99	738.33	
BEAM 7 & P.G.	742.79	742.30	741.85	741.68	741.42	740.95	740.44	739.87	739.24	738.58	
BEAM 8 & CROWN	743.04	742.56	742.11	741.93	741.67	741.21	740.70	740.13	739.50	738.84	
BEAM 9	742.79	742.30	741.85	741.68	741.42	740.95	740.44	739.87	739.24	738.58	
BEAM 10	742.54	742.05	741.60	741.42	741.16	740.69	740.18	739.61	738.99	738.33	
CURB LINE	742.50	742.01	741.56	741.38	741.11	740.65	740.14	739.57	738.95	738.29	

NOTES

NOTATION: R.A. - REAR ABUTMENT
F.A. - FORWARD ABUTMENT
P.G. - PROFILE GRADE

ADDITIONAL NOTES: SEE SHEET 62/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

REVIEWED DAP DATE 3/18/04
DRAWN SCB REVISED
DESIGNED KAK CHECKED DLR
STRUCTURE FILE NUMBER 7709021

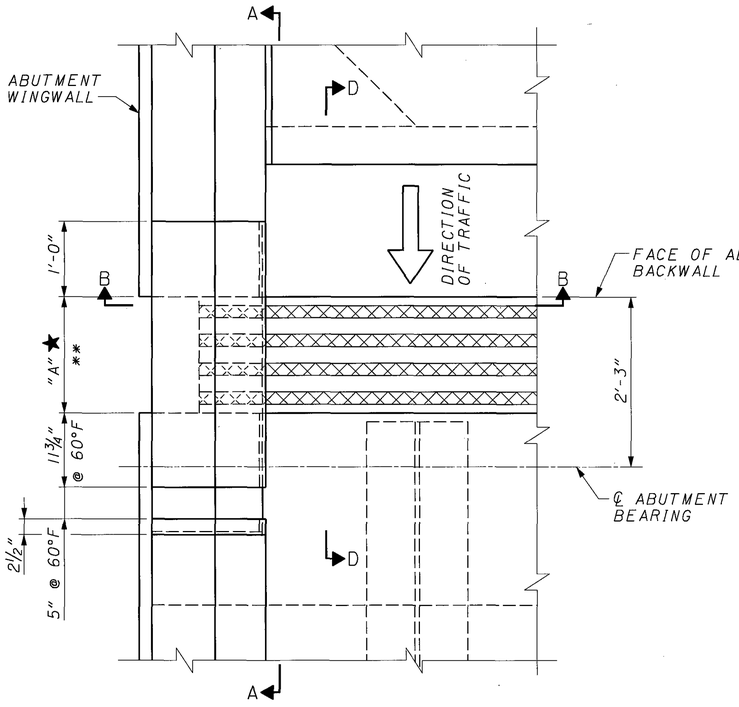
SCREED ELEVATIONS 2 - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

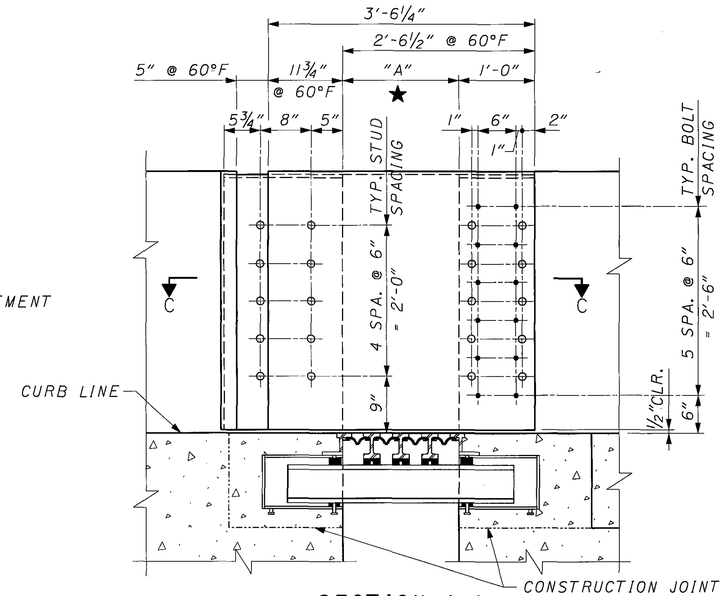
63/77

423/612

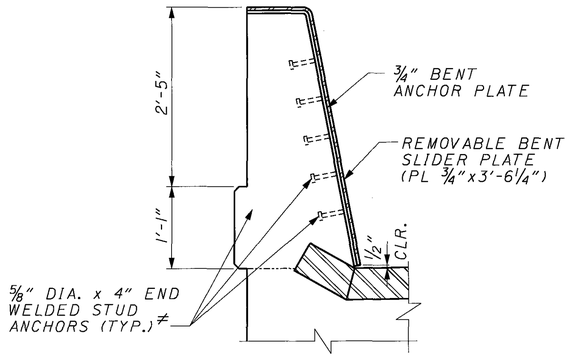
SU271SD0.DGN 8/26/04 SCB,RC,JLS



PLAN

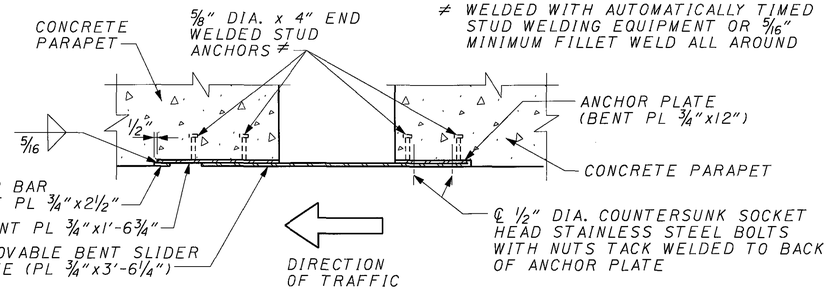


SECTION A-A

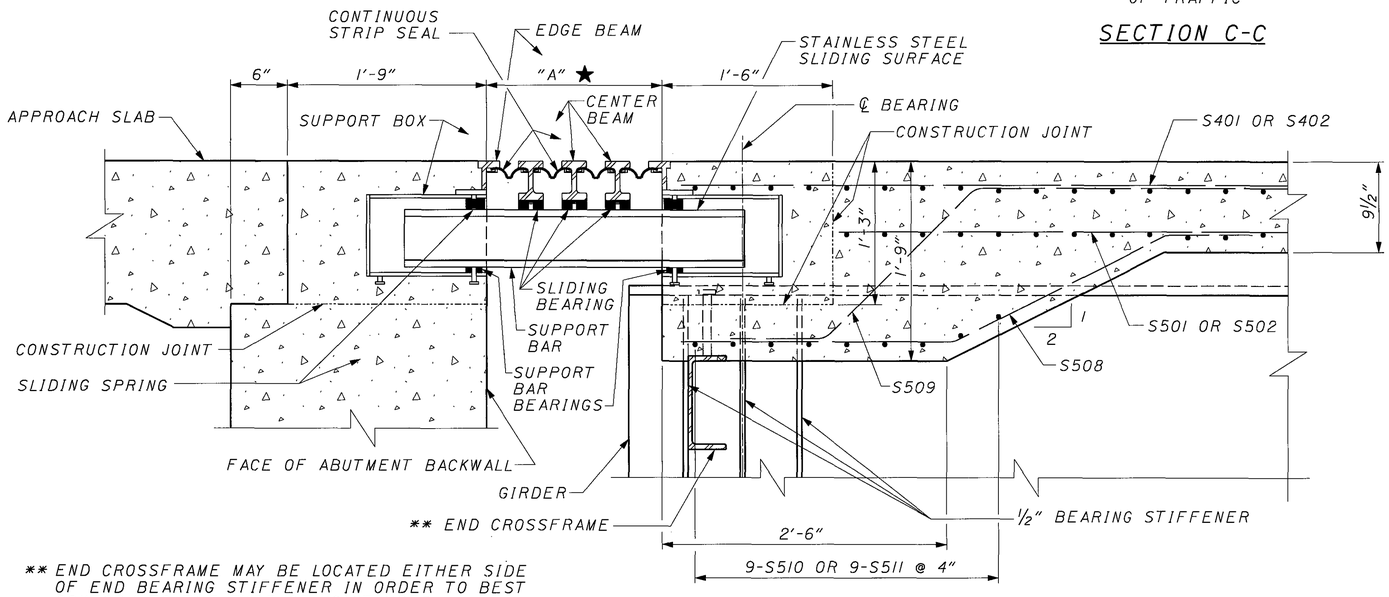


SECTION B-B

≠ WELDED WITH AUTOMATICALLY TIMED STUD WELDING EQUIPMENT OR ⅝" MINIMUM FILLET WELD ALL AROUND



SECTION C-C



SECTION D-D

** END CROSSFRAME MAY BE LOCATED EITHER SIDE OF END BEARING STIFFENER IN ORDER TO BEST CONFORM TO THE TYPE OF JOINT USED.

MAXIMUM EXPANSION/CONTRACTION LENGTHS (FROM 60° F)		
REAR ABUTMENT	EXPANSION	CONTRACTION
LEFT BRIDGE	3 13/16"	5 11/16"
RIGHT BRIDGE	3 13/16"	5 11/16"

★ JOINT OPENINGS VARY PER MANUFACTURER
WABO STM 1200 - 14¾" @ 60°F
TECHSTAR LG4rto - 18½" @ 60°F
D.S. BROWN D320 - 16.32" @ 60°F

JOINT SETTING TABLE				
TEMPERATURE (°F)	DIMENSION "A" (INCHES)			
	LEFT BRIDGE		RIGHT BRIDGE	
	R.A.	F.A.	R.A.	F.A.
30°F	★ +1 7/8"	* +1 5/8"	★ +1 7/8"	* +1½"
40°F	★ +1¼"	* +1 1/16"	★ +1¼"	* +1"
50°F	★ +⅝"	* +9/16"	★ +⅝"	* +½"
60°F	★	*	★	*
70°F	★ -⅝"	* -9/16"	★ -⅝"	* -½"
80°F	★ -1¼"	* -1 1/16"	★ -1¼"	* -1"
90°F	★ -1 7/8"	* -1⅝"	★ -1 7/8"	* -1½"

* SEE SHEET 65/77.

NOTATION

R.A. INDICATES REAR ABUTMENT
F.A. INDICATES FORWARD ABUTMENT

NOTES

PARAPET PLATES SHALL BE ARRANGED SUCH THAT THE SLIDING SURFACE IS TO THE TRAILING END OF THE MODULAR JOINT.

FORWARD ABUTMENT MODULAR JOINT DETAILS: SEE SHEET 65/77.

END CROSSFRAME DETAILS: SEE SHEET 66/77.

MODULAR EXPANSION JOINT GENERAL NOTE SEE SHEET 14/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DATE 3/18/04
REVIEWED DAP
STRUCTURE FILE NUMBER 7709013(L) 7709021(R)
DRAWN JLS
REVISED
DESIGNED KAK
CHECKED DLR

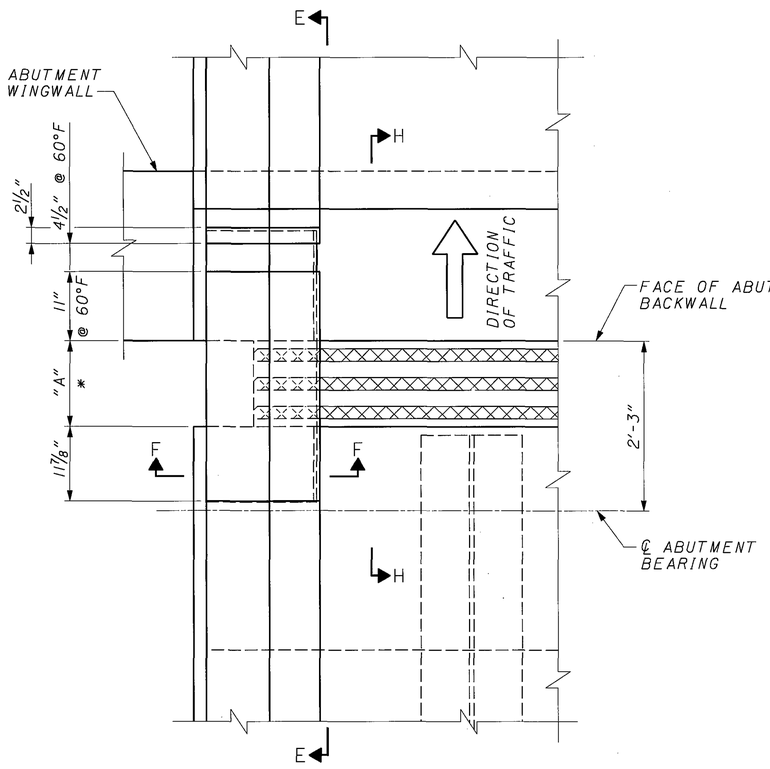
REAR ABUTMENT MODULAR JOINT - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

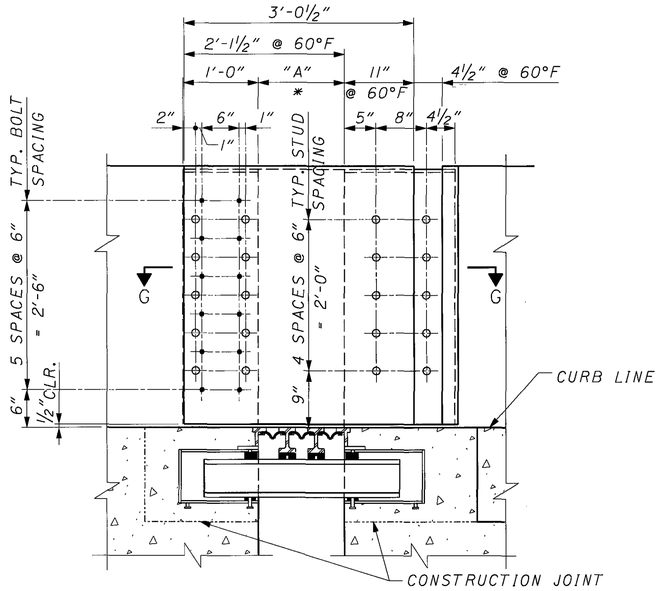
64/77

424/612

SU271EXA.DGN 6/23/04 KH,JLS,RC

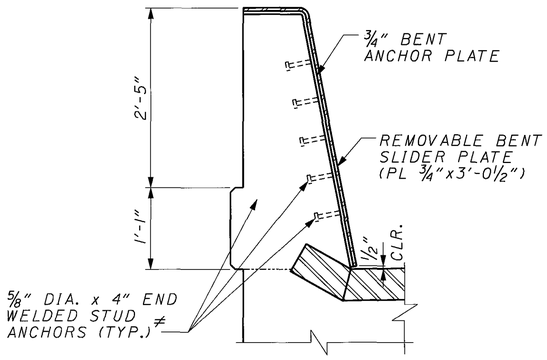


PLAN



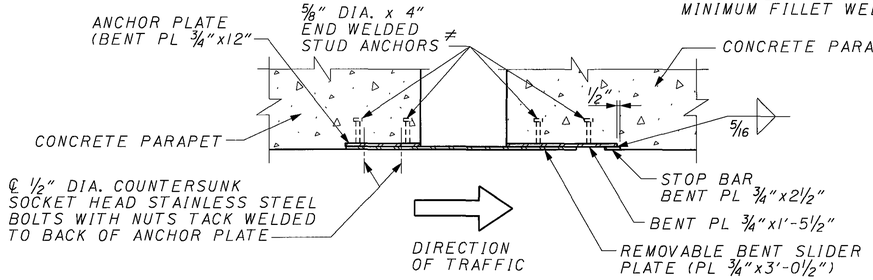
SECTION E-E

MAXIMUM EXPANSION/CONTRACTION LENGTHS (FROM 60° F)		
FORWARD ABUTMENT	EXPANSION	CONTRACTION
LEFT BRIDGE	3 3/16"	4 13/16"
RIGHT BRIDGE	3"	4½"



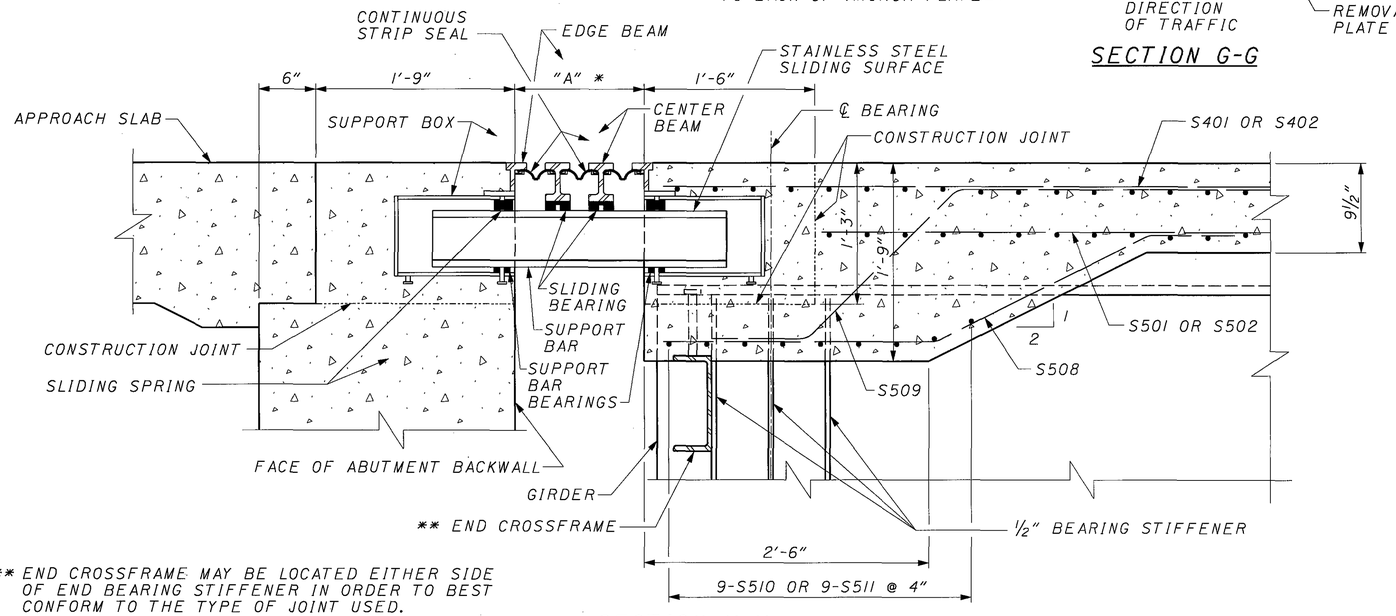
SECTION F-F

≠ WELDED WITH AUTOMATICALLY TIMED STUD WELDING EQUIPMENT OR 5/16" MINIMUM FILLET WELD ALL AROUND



SECTION G-G

* JOINT OPENINGS VARY PER MANUFACTURER
WABO STM 900 - 10½" @ 60°F
TECHSTAR LG3rro - 13⅝" @ 60°F
D.S. BROWN D240 - 12.24" @ 60°F



SECTION H-H

** END CROSSFRAME MAY BE LOCATED EITHER SIDE OF END BEARING STIFFENER IN ORDER TO BEST CONFORM TO THE TYPE OF JOINT USED.

NOTES

REAR ABUTMENT MODULAR JOINT DETAILS: SEE SHEET 64/77.

DIMENSION "A" & JOINT SETTING TABLE: SEE SHEET 64/77.

MODULAR EXPANSION JOINT GENERAL NOTE SEE SHEET 14/77.

ADDITIONAL NOTES: SEE SHEET 64/77.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

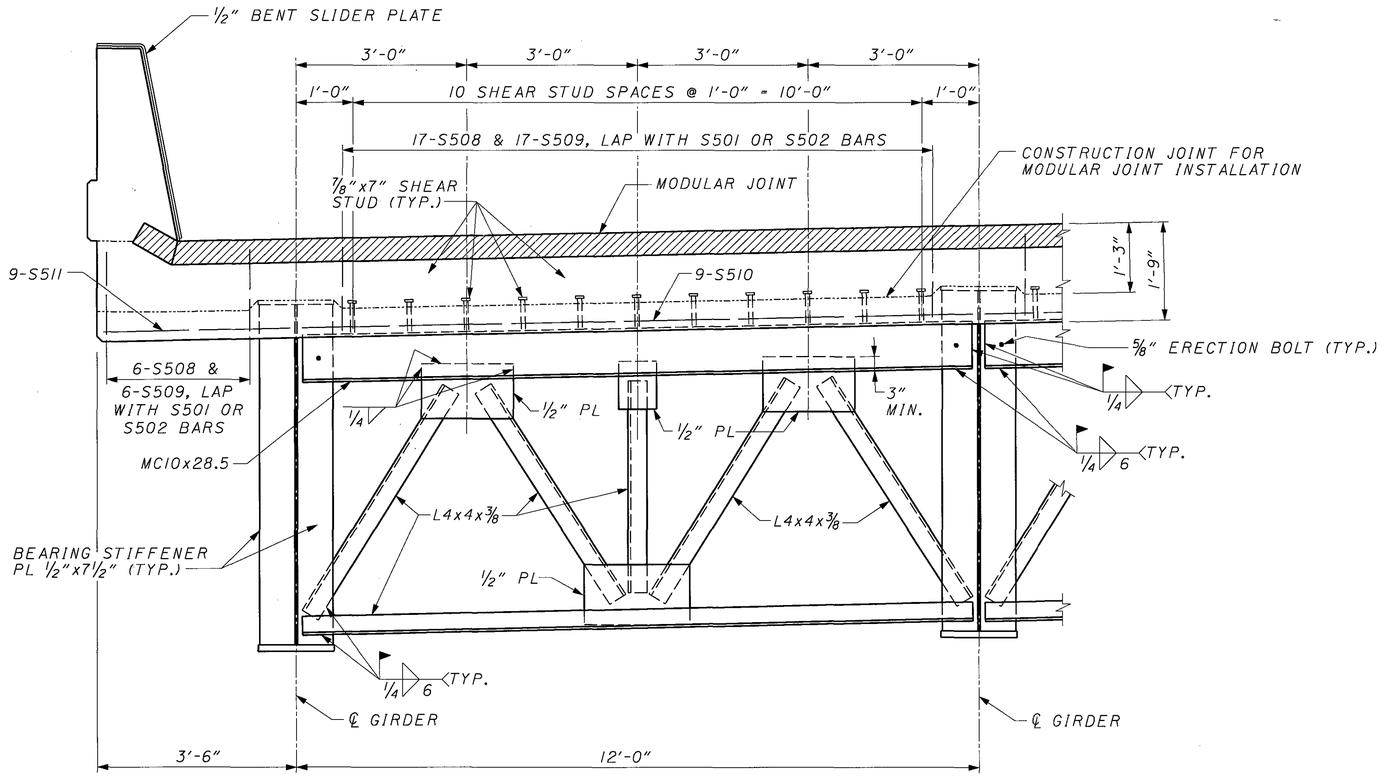
FORWARD ABUTMENT MODULAR JOINT - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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425/612

SU271EXA.DGN 6/23/04 KH,JLS,RC



END CROSSFRAME DETAIL

NOTES

TRANSVERSE SECTIONS: SEE SHEETS 55/77 & 56/77.

SU271EXB.DGN 6/23/04 KH,JL,S,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

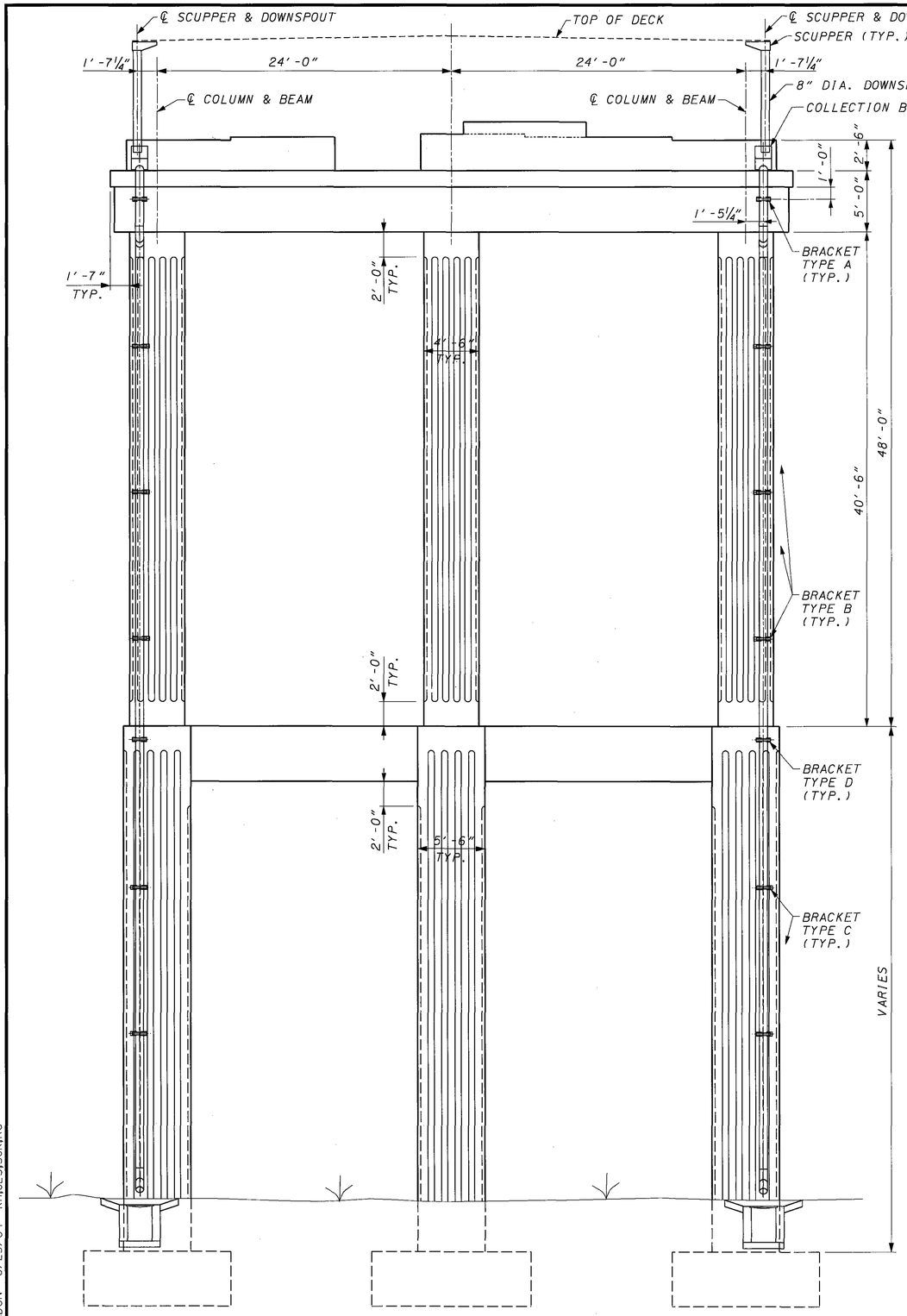
DESIGNED	DRAWN	REVIEWED	DATE
DLR	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		770901(3L) 770902(1R)	

JOINT & END CROSSFRAME DETAILS - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

66/77

426/612



ELEVATION

** INCLUDED WITH ITEM 518 - SCUPPER, INCLUDING SUPPORTS FOR PAYMENT

DOWNSPOUT END ELEVATION

LOCATION	LEG	ELEVATION "A"
PIER 1L	LEFT	730.5
PIER 1L	RIGHT	728.5
PIER 1R	LEFT	733.7
PIER 1R	RIGHT	734.5
PIER 2L	LEFT	688.0
PIER 2L	RIGHT	689.0
PIER 2R	LEFT	692.0
PIER 2R	RIGHT	698.5
PIER 4L	LEFT	667.0
PIER 4L	RIGHT	669.5
PIER 4R	LEFT	668.5
PIER 4R	RIGHT	666.5
PIER 7L	LEFT	652.5
PIER 7L	RIGHT	662.5
PIER 7R	LEFT	656.5
PIER 7R	RIGHT	658.5
PIER 8L	LEFT	702.5
PIER 8L	RIGHT	707.5
PIER 8R	LEFT	693.5
PIER 8R	RIGHT	693.5

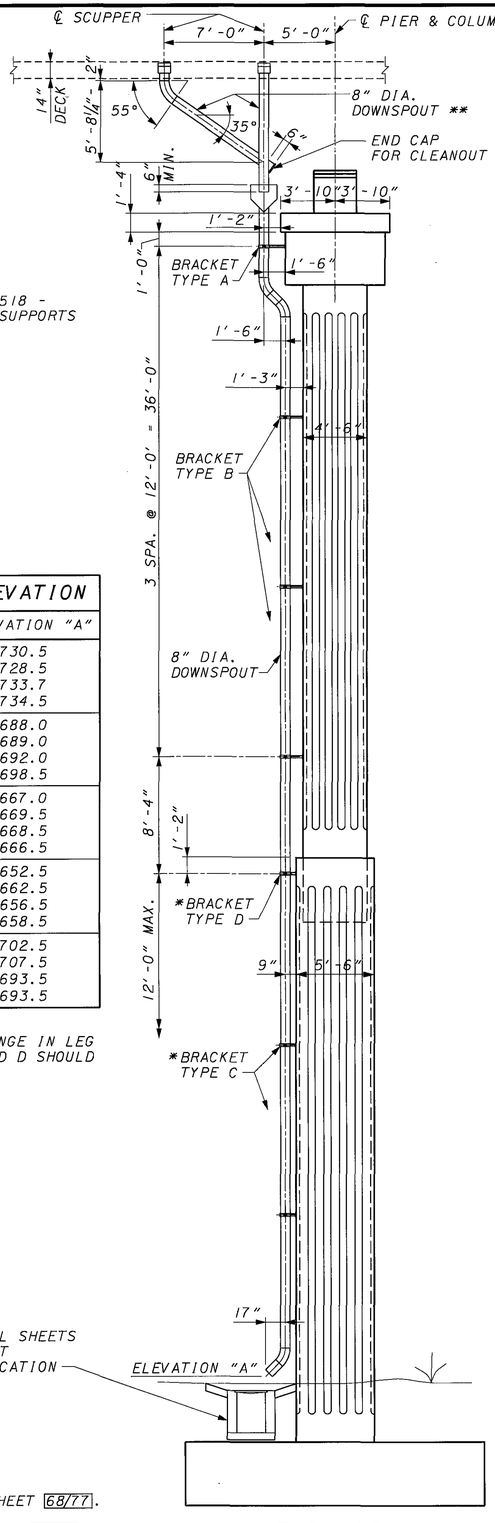
* PIER 1 AND 8 HAVE NO CHANGE IN LEG SIZE. BRACKETS TYPE C AND D SHOULD BE TYPE B

SEE DRAINAGE DETAIL SHEETS FOR SPECIFIC OUTLET DETAILS AT EACH LOCATION

NOTES

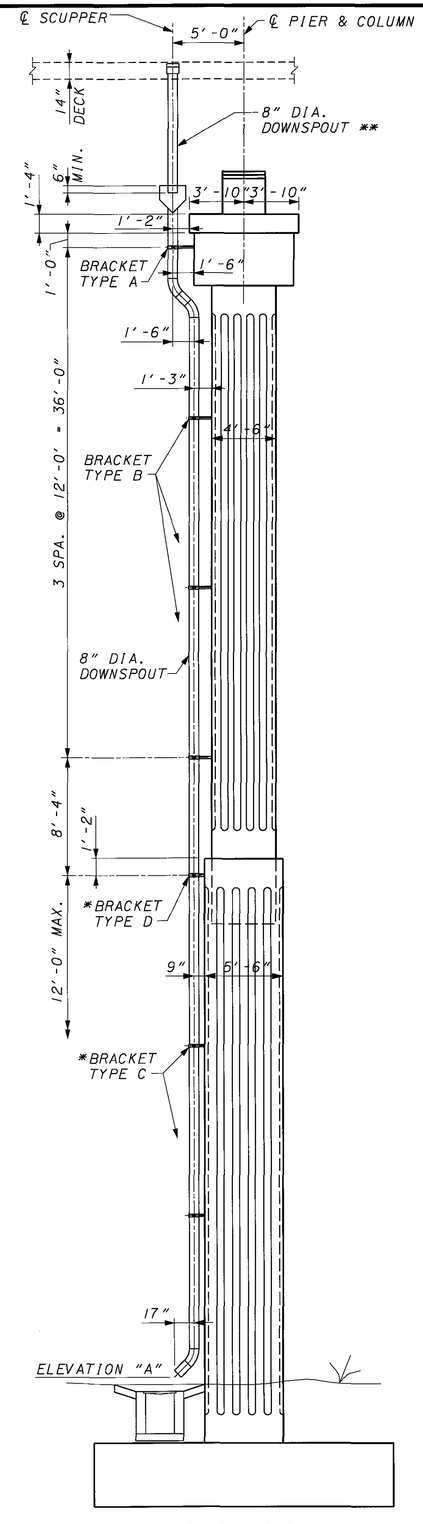
DOWNSPOUT DETAILS: SEE SHEET 68/77.

SCUPPER DETAILS: SEE SHEET 69/77.



END VIEW

(PIERS 2 AND 7, LEFT AND RIGHT BRIDGES)



END VIEW

(PIERS 1, 4 AND 8, LEFT AND RIGHT BRIDGES)

SU27ISDF.DGN 6/23/04 KH,JLS,SJK,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

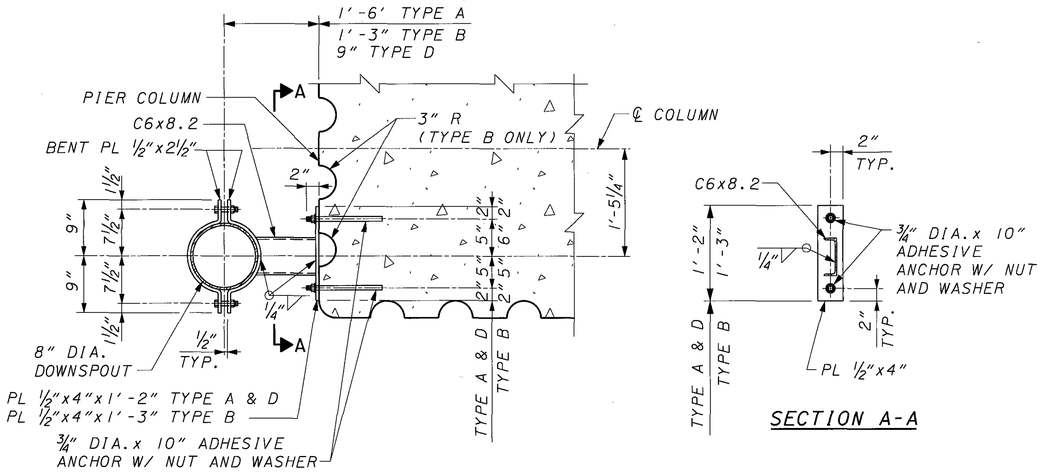
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KAK	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709013(L) 7709021(R)	

DOWNSPOUTS AT PIERS - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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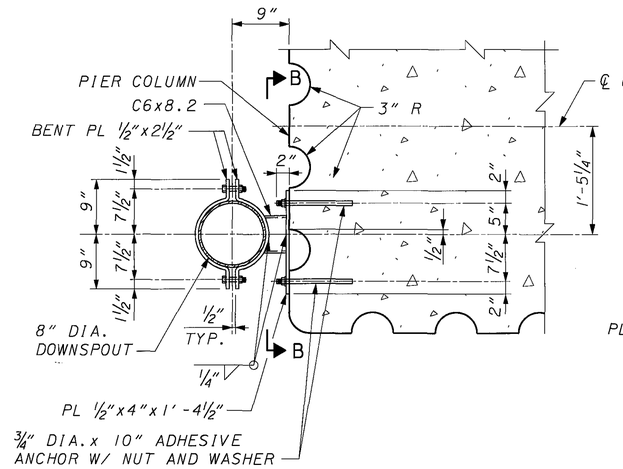
427/612

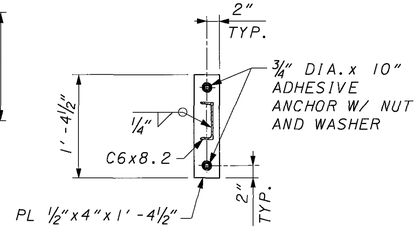


SECTION A-A

DOWNSPOUT MOUNTING BRACKET

TYPE A, B & D

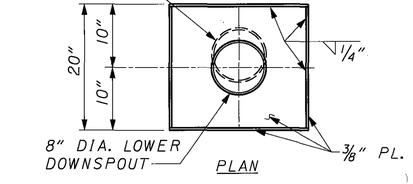




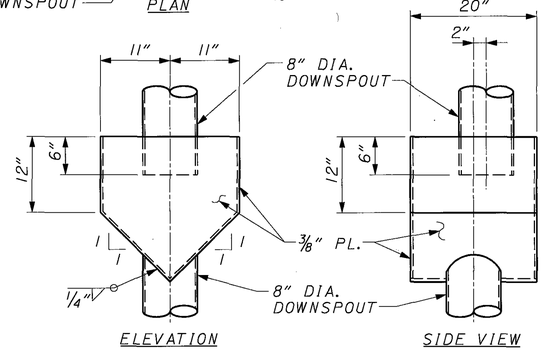
SECTION B-B

DOWNSPOUT MOUNTING BRACKET

TYPE C

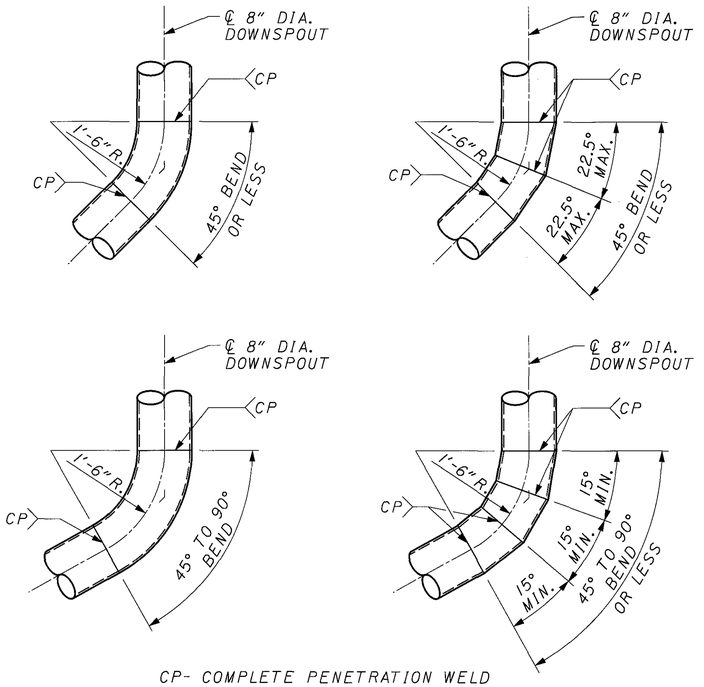


PLAN



ELEVATION SIDE VIEW

COLLECTION BOX



CP- COMPLETE PENETRATION WELD

SMOOTH RADIUS BEND MITERED BEND

DOWNSPOUT BEND DETAILS

NOTES:

DOWNSPOUT: SHALL BE STANDARD WEIGHT (28.55 P.L.F.) SCHEDULE 40, 8" DIAMETER STEEL PIPE WITH A WALL THICKNESS OF 0.322". ELBOWS SHALL BE SCHEDULE 40 WELDED FITTINGS WITH FULL PENETRATION BUTT WELDS. ELBOW AND COLLECTION BOXES SHALL BE SHOP FABRICATED WITH THE DOWNSPOUTS. FIELD SPLICES IN THE DOWNSPOUTS SHALL BE VICTAULIC COUPLING STYLE 99, DRESSER COUPLING STYLE 38, OR EQUAL.

ELBOWS AND BENDS SHALL BE STANDARD LONG RADIUS OR DOUBLE MITERED. THE CENTERLINE RADIUS SHALL BE 1'-6".

MATERIALS FOR SCUPPERS, DOWNSPOUTS, COLLECTION BOXES, MOUNTING BRACKETS, COUPLINGS AND HARDWARE SHALL BE GALVANIZED PER 711.02 AFTER FABRICATION. TOUGHNESS TESTING IN ACCORDANCE WITH ASTM E436 IS NOT REQUIRED.

ADHESIVE ANCHORS SHALL BE HVA ADHESIVE ANCHORS AS MANUFACTURED BY HILTI CORPORATION, MOLLY PARABOND CAPSULE ANCHOR AS MANUFACTURED BY EMHART CORPORATION, OR AN APPROVED EQUAL.

PAYMENT: SCUPPER SUPPORT ANGLES, SUPPORT BOLTS, PIPE OUTLETS AND MOUNTING BRACKETS AND HARDWARE ARE INCLUDED FOR PAYMENT WITH ITEM 518 - SCUPPER, INCLUDING SUPPORTS.

COLLECTION BOXES SHALL BE INCLUDED FOR PAYMENT WITH ITEM 518 - 8" PIPE DOWNSPOUT, INCLUDING SPECIALS.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

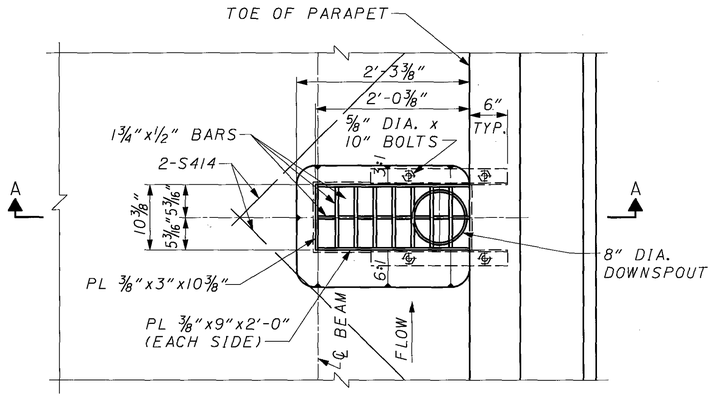
DATE 3/18/04
REVIEWED DAP
STRUCTURE FILE NUMBER 770901(31L) 770902(1R)
DRAWN JLS
REVISED
DESIGNED KAK
CHECKED BLN

DRAINAGE DETAILS 1 - STEEL

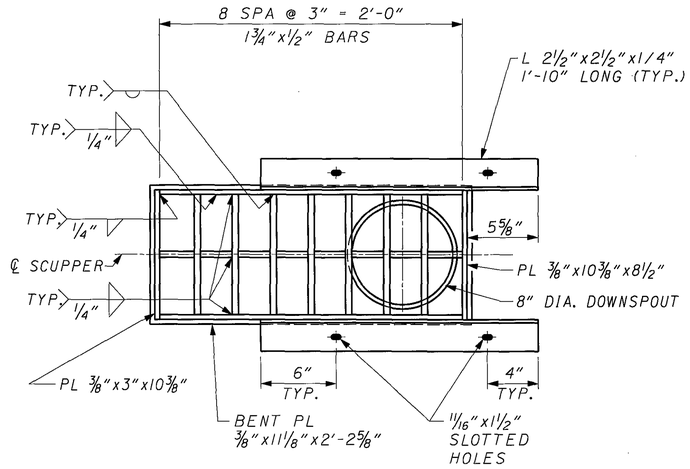
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

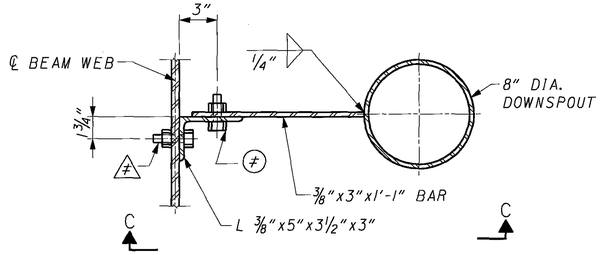
SU271SDG.DGN 6/23/04 SCB,KH,JLS,RC



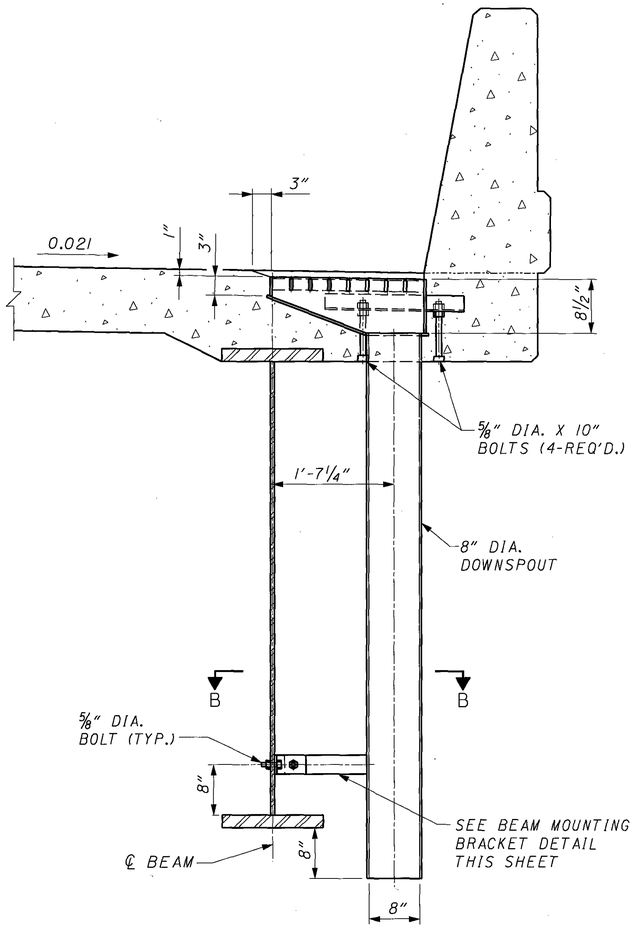
PLAN



PLAN

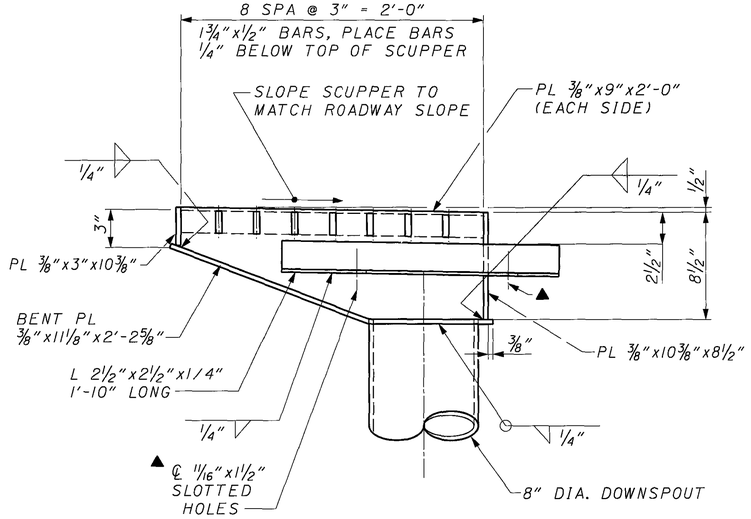


SECTION B-B



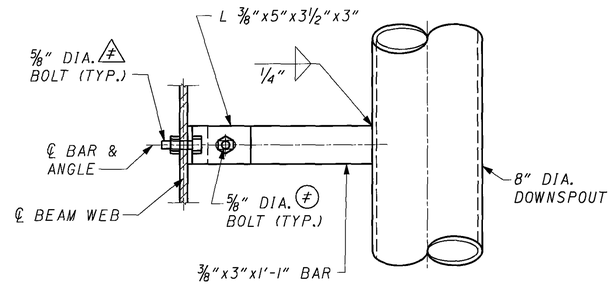
SECTION A-A

SCUPPER LAYOUT



ELEVATION

SCUPPER DETAILS



≠ - SEE FASTENER NOTE 1.

≠ - SEE FASTENER NOTE 2.

VIEW C-C

BEAM MOUNTING BRACKET DETAILS

FASTENER NOTES:

1. THE SIZE OF THE SLOTTED HOLES SHALL BE 11/16" x 1 9/16". THE SLOT SHALL BE HORIZONTAL IN THE 3/8"x3" BAR AND VERTICAL IN THE ANGLE. BOLTS SHALL BE 5/8" DIA. A325 TYPE 1, GALVANIZED, WITH HEX NUT AND TWO WASHERS. TIGHTEN ACCORDING TO 513.

2. THE BOLTS SHALL BE 5/8" DIA. A325 TYPE 1, GALVANIZED FOR GALVANIZED, METALIZED OR PAINTED STRUCTURES OR A325 TYPE 3, FOR BARE WEATHERING STEEL STRUCTURES. EACH ASSEMBLY SHALL INCLUDE A BOLT, NUT AND TWO WASHERS. TIGHTEN ACCORDING TO 513. FOR WEATHERING STEEL STRUCTURES, PROVIDE A 3 1/2" x 3 1/2" x 1/8" PREFORMED BEARING PAD, 711.21, WITH A 13/16" DIA. HOLE BETWEEN THE BEAM WEB AND THE ANGLE. AFTER THE CONCRETE DECK HAS BEEN POURED, FIELD DRILL THE 13/16" DIA. HOLE IN THE WEB.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709013(L) 7709021(R)	

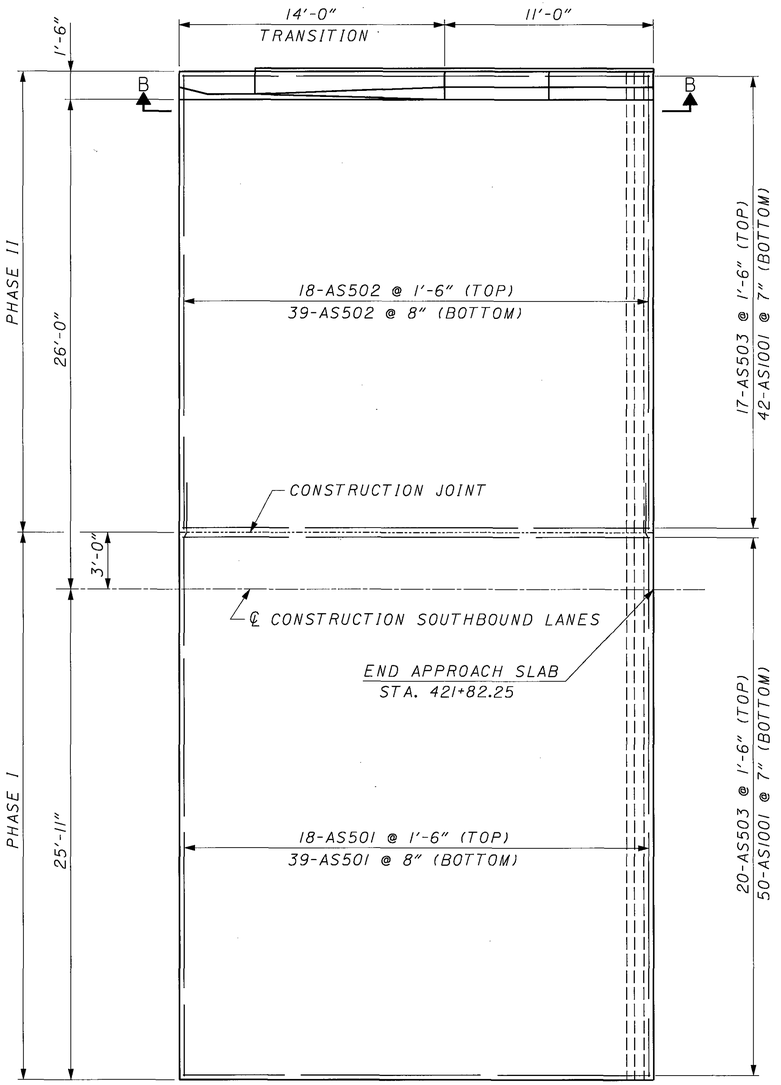
DRAINAGE DETAILS 2 - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

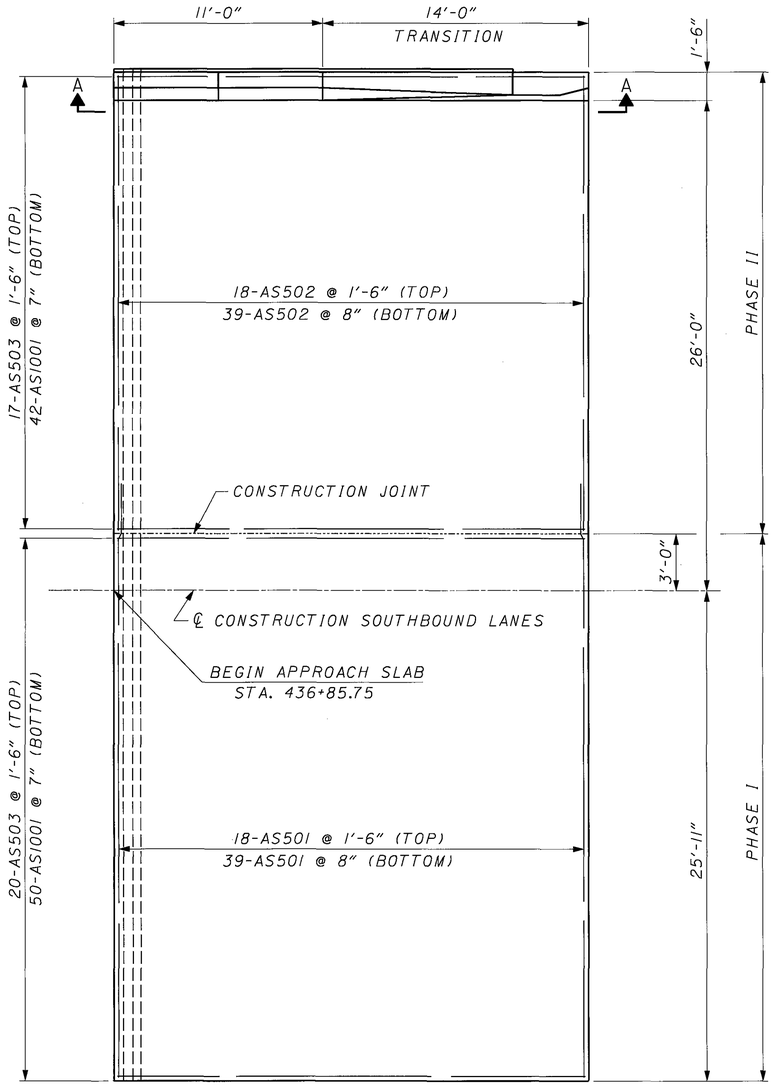
69 / 77

429 / 612

SU271SDG.DGN 6/23/04 SCB,KH,JLS,RC



REAR APPROACH SLAB - LEFT



FORWARD APPROACH SLAB - LEFT

NOTES

CROSS SLOPE: THE RATE OF CROSS SLOPE VARIES BETWEEN THE BRIDGE DECK AND THE APPROACH PAVEMENT. A SMOOTH TRANSITION FROM 0.021 AT THE BRIDGE DECK TO 0.016 AT THE APPROACH PAVEMENT SHALL BE MADE WITHIN 32.5' OF THE BRIDGE ENDS. (250:1 TRANSITION, SEE SUPERELEVATION TABLE FOR ADDITIONAL INFORMATION).

SECTIONS A-A & B-B: SEE SHEET 72/77.

ADDITIONAL APPROACH SLAB DETAILS: SEE STANDARD DRAWING AS-1-81.

QUANTITIES ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN FOR PAYMENT.

ADDITIONAL NOTES: SEE SHEET 72/77.

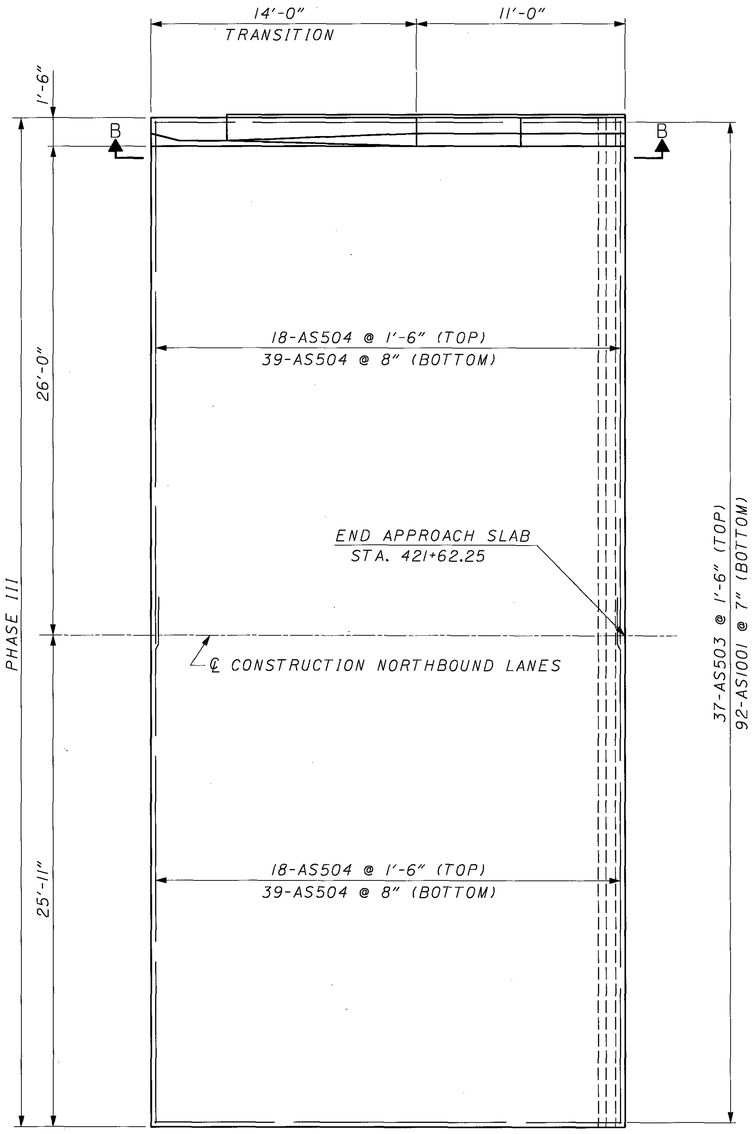
SU27IASA.DGN 6/23/04 KH,JLS,RC

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

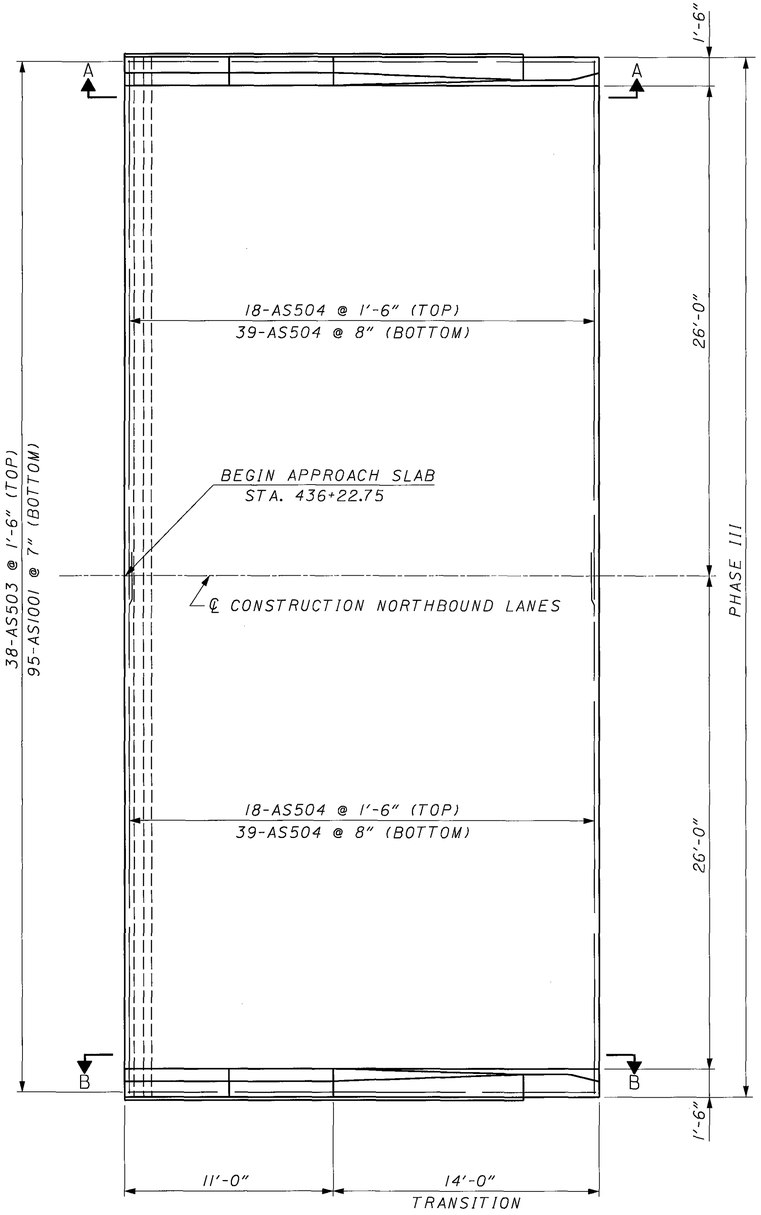
DESIGNED	DRAWN	REVIEWED	DATE
DLR	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709013	

APPROACH SLABS - SOUTHBOUND - STEEL
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02



REAR APPROACH SLAB - RIGHT



FORWARD APPROACH SLAB - RIGHT

NOTES

SECTIONS A-A & B-B: SEE SHEET 72/77.

ADDITIONAL NOTES: SEE SHEET 70/77.

SU271ASA.DGN 6/23/04 KH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

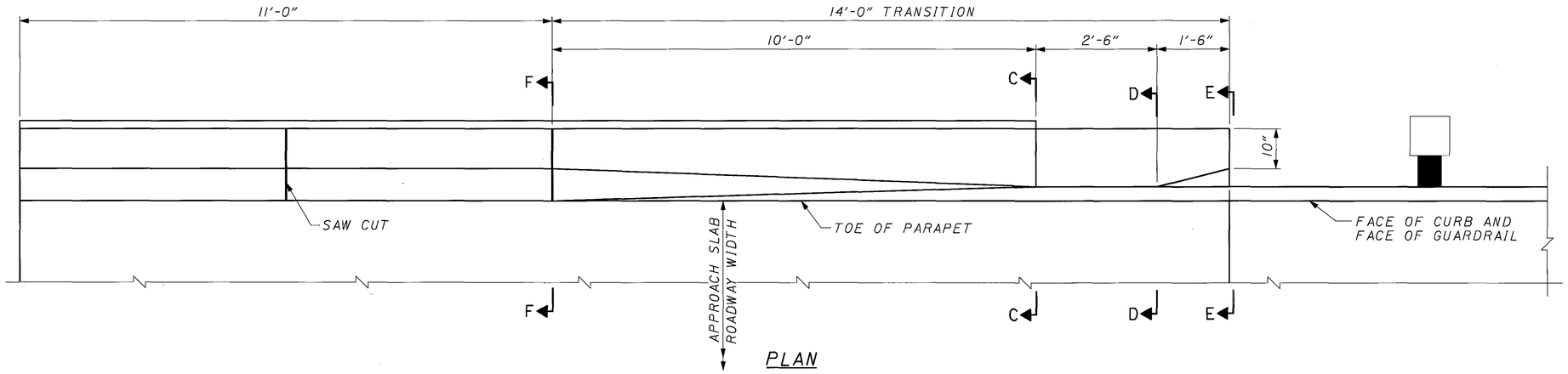
DESIGNED	DRAWN	REVIEWED	DATE
DLR	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709021	

APPROACH SLABS - NORTHBOUND - STEEL
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

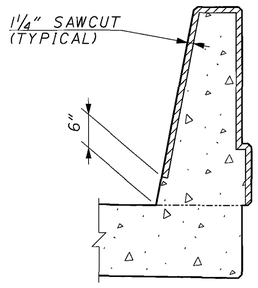
SUM-271-8.02

71/77

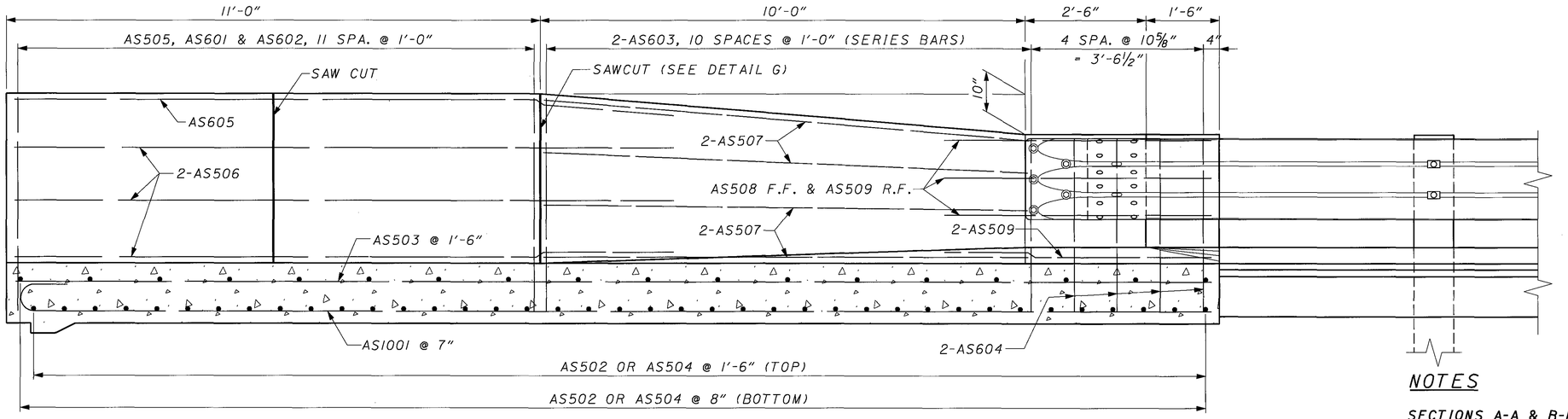
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612



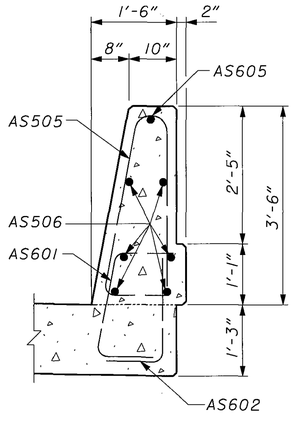
PLAN



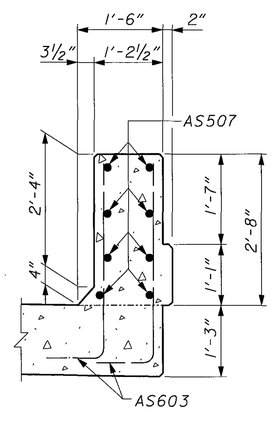
DETAIL G



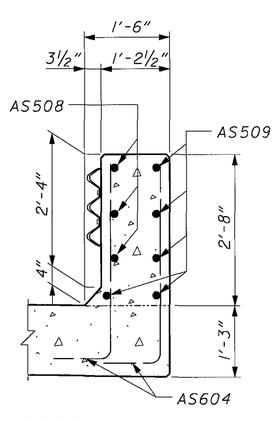
SECTION A-A (SHOWN)
SECTION B-B (OPPOSITE HAND)



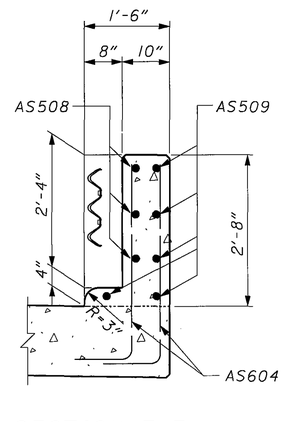
SECTION F-F



SECTION C-C



SECTION D-D



SECTION E-E

NOTES

SECTIONS A-A & B-B: FOR LOCATIONS SEE SHEETS 70/77 AND 71/77.

CONCRETE PARAPETS: AS SOON AS A CONCRETE SAW CAN BE OPERATED WITHOUT DAMAGING THE FRESHLY PLACED CONCRETE, SAWCUT 1¼" DEEP CONTROL JOINTS INTO THE PERIMETER OF THE CONCRETE PARAPET STARTING AND ENDING AT THE ELEVATION OF THE CONCRETE DECK. PLACE THE SAWCUTS AT A MINIMUM OF 6 FEET AND A MAXIMUM OF 10 FEET CENTERS. USE AN EDGE GUIDE, FENCE, OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE, AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF ¼". SEAL THE PERIMETER OF THE DEFLECTION CONTROL JOINT TO A MINIMUM DEPTH OF 1" WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO ASTM C920, TYPE S. LEAVE THE BOTTOM ½" OF THE INSIDE AND OUTSIDE FACE UNSEALED TO ALLOW WATER TO ESCAPE.

ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN:
CONCRETE, REINFORCING STEEL, DEFLECTION JOINT SAWCUT AND CAULKING MATERIAL FOR PARAPET ARE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN FOR PAYMENT.

BRIDGE TERMINAL ASSEMBLIES: SEE STANDARD CONSTRUCTION DRAWINGS GR-3.1 AND GR-3.2.

ADDITIONAL RAILING DETAILS SEE STANDARD DRAWING SBR-1-99.

NOTATION: F.F - FRONT FACE; R.F. - REAR FACE.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
DLR	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709013(L)	
		7709021(R)	

APPROACH SLAB RAILING DETAILS - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, CUYAHOGA RIVER
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

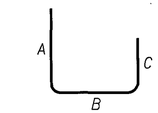
SU271ASB.DGN 6/23/04 KH,JLS,RC

ABUTMENTS

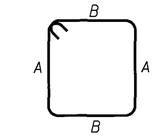
CALCULATED KH DATE 9/03
CHECKED KAK DATE 11/03

MARK	S.B.B.- LEFT R.A.	S.B.B.- LEFT F.A.	S.B.B.- LEFT TOTAL	N.B.B.- RIGHT R.A.	N.B.B.- RIGHT F.A.	N.B.B.- RIGHT TOTAL	GRAND TOTAL	LENGTH	TYPE	A	B	C	D	INC.	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
A501	56	56	112	56	56	112	224	8'-5"	1	1'-4"	6'-0"	1'-4"			983	983
A502	49	18	67	9	36	45	112	3'-4"	1	0'-10"	1'-11"	0'-10"			233	156
A503	31	31	62	16	6	22	84	7'-5"	7						480	170
A504	6	6	12	6	12	18	30	1'-5"	STR.						18	27
A505					40	40	40	28'-9"	STR.							1199
A506					6	6	6	31'-7"	STR.							198
A507		106	106		92	92	198	8'-11"	1	0'-10"	8'-2"	0			986	856
A508		4	4		8	8	12	20'-5"	STR.						85	170
A509		1 SER. OF 16	1 SER. OF 16		2 SER. OF 16	2 SER. OF 16	3 SER. OF 16	2'-11" TO 10'-5"	STR.					6"	111	223
A510		1 SER. OF 5	1 SER. OF 5		2 SER. OF 5	2 SER. OF 5	3 SER. OF 5	8'-5" TO 20'-5"	STR.					3'-0"	75	150
A511		2	2		4	4	6	10'-5"	STR.						22	43
A512	33	22	55	22		22	77	5'-10"	3	2'-11"					335 *	134 *
A513	31	20	51				51	30'-2"	STR.						1605	
A514	31	20	51				51	24'-2"	STR.						1285	
A515		2	2				2	33'-2"	STR.						69	
A516		2	2				2	41'-4"	STR.						86	
A517	12	11	23	3		3	26	26'-5"	STR.						634	83
A518		4	4				4	30'-6"	STR.						127	
A519		2	2				2	33'-2"	STR.						69	
A520	1 SER. OF 28	1 SER. OF 28	2 SER. OF 28				2 SER. OF 28	10'-1" TO 10'-11"	STR.					3/8"-	614	
A521	2		2	2		2	4	31'-2"	STR.						65	65
A522	4		4				4	23'-8"	STR.						99	
A523	109		109				109	5'-11"	1	0'-10"	5'-2"	0			673	
A524	88		88				88	10'-9"	STR.						987	
A525	12		12				12	23'-6"	STR.						294	
A526	1 SER. OF 7		1 SER. OF 7				1 SER. OF 7	9'-0" TO 23'-6"	STR.					2'-5"	119	
A527	16		16	20		20	36	13'-2"	STR.						220	275
A528	1 SER. OF 5		1 SER. OF 5				1 SER. OF 5	12'-0" TO 13'-8"	STR.					5"	67	
A529	1 SER. OF 14		1 SER. OF 14				1 SER. OF 14	2'-11" TO 8'-2"	STR.					4 7/8"-	81	
A530	2		2				2	8'-3"	STR.						17	
A531	1		1				1	7'-4"	STR.						8	
A532	2		2				2	32'-2"	STR.						67	
A533				9		9	9	11'-0"	STR.							103
A534				20		20	20	41'-2"	STR.							859
A535				2		2	2	42'-10"	STR.							89
A536				92		92	92	8'-0"	1	0'-10"	7'-3"	0				768
A537				6		6	6	15'-4"	STR.							96
A538				8		8	8	10'-0"	STR.							83
A539				4		4	4	5'-6"	10							23
A540				4		4	4	5'-6"	STR.							23
A541				10		10	10	3'-8"	STR.							38
A542				3		3	3	21'-8"	STR.							68
A543				4		4	4	25'-9"	STR.							107
A544				2		2	2	27'-5"	STR.							57
A545				1 SER. OF 23		1 SER. OF 23	1 SER. OF 23	10'-1" TO 10'-10"	STR.					3/8"+		251

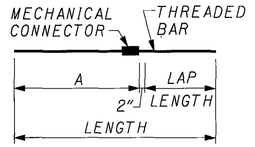
* WEIGHT DOES NOT INCLUDE WEIGHT OF MECHANICAL CONNECTORS



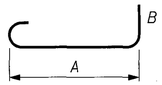
TYPE 1



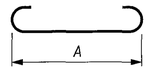
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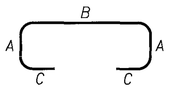
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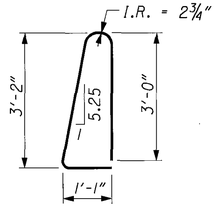
TYPE 4



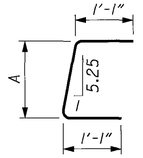
TYPE 5



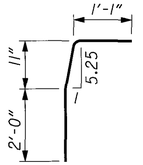
TYPE 6



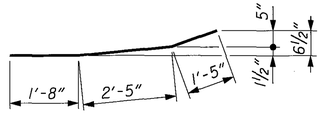
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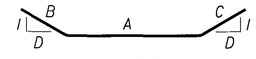
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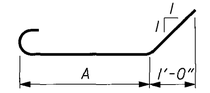
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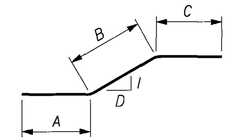
TYPE 10



TYPE 11



TYPE 12



TYPE 13

NOTES:

ABUTMENT REINFORCING STEEL LIST CONTINUED ON SHEET 74/77.

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST LETTER IDENTIFIES BAR LOCATION, THE NEXT DIGIT INDICATES THE BAR SIZE DESIGNATION, THE REMAINING DIGITS STATE THE SEQUENCE NUMBER.

EXAMPLE: A511
A = LOCATION OF THE BAR IN STRUCTURE (ABUTMENT)
5 = BAR SIZE DESIGNATION
11 = SEQUENCE NUMBER

BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED.

ALL REINFORCING STEEL TO BE EPOXY COATED.

NOTATION: N.B.B. - NORTHBOUND BRIDGE
S.B.B. - SOUTHBOUND BRIDGE
R.A. - REAR ABUTMENT
F.A. - FORWARD ABUTMENT
STR. - STRAIGHT
SER. - SERIES

SU27IRIB.DGN 6/23/04 KH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN KH | REVIEWED DAP 3/18/04 | DATE | STRUCTURE FILE NUMBER 770901(3L) 770902(1R)
CHECKED KAK | REVISED

REINFORCING STEEL LIST - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

73/77

433/612

ABUTMENTS (CONT.)

CALCULATED KH DATE 9/03
CHECKED KAK DATE 11/03

MARK	S.B.B.- LEFT R.A.	S.B.B.- LEFT F.A.	S.B.B.- LEFT TOTAL	N.B.B.- RIGHT R.A.	N.B.B.- RIGHT F.A.	N.B.B.- RIGHT TOTAL	GRAND TOTAL	LENGTH	TYPE	A	B	C	D	INC.	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
A601	1	1	2	1	2	3	5	3'-1"	1	1'-0"	1'-5"	1'-0"			9	14
A602	3	3	6	3	6	9	15	4'-0"	8	2'-0"					36	54
A603	3	3	6	3	6	9	15	2'-11"	1	2'-0"	1'-1"	0			26	39
A604					6	6	6	29'-0"	STR.							261
A605	56	56	112	56	56	112	224	7'-3"	1	3'-1"	1'-5"	3'-1"			1220	1220
A606		91	91		126	126	217	9'-0"	1	1'-0"	8'-2"	0			1230	1703
A607		3	3		6	6	9	18'-4"	11	17'-0"	1'-4"	0	2.0		83	165
A608		1	1		2	2	3	3'-4"	STR.						5	10
A609		2	2		4	4	6	10'-5"	STR.						31	63
A610		1 SER. OF 7	1 SER. OF 7		2 SER. OF 7	2 SER. OF 7	3 SER. OF 7	8'-5" TO 20'-5"	STR.					2'-0"	152	303
A611		1 SER. OF 16	1 SER. OF 16		2 SER. OF 16	2 SER. OF 16	3 SER. OF 16	3'-4" TO 10'-10"	STR.					6"	170	340
A612		6	6		12	12	18	20'-5"	STR.						184	368
A613				30		30	30	5'-10"	STR.							262
A614					24	24	24	31'-11"	STR.							1151
A615		110	110	28	90	118	228	13'-6"	1	2'-7"	8'-8"	2'-7"			2230	2393
A616	1		1				1	3'-8"	STR.						6	
A617				76		76	76	12'-6"	1	2'-7"	7'-8"	2'-7"				1427
A618	13	11	24	10		10	34	7'-0"	3	3'-6"					252 *	105 *
A619	3	3	6				6	30'-2"	STR.						272	
A620	3	3	6				6	24'-2"	STR.						218	
A621		8	8				8	41'-4"	STR.						497	
A622		8	8				8	33'-2"	STR.						399	
A623	18	13	31	12		12	43	9'-3"	11	1'-0"	7'-3"	1'-0"	1.0		431	167
A624	11	10	21	6		6	27	26'-5"	STR.						833	238
A625	28	28	56	13		13	69	3'-11"	9						329	76
A626	28	28	56	13		13	69	2'-11"	STR.						245	57
A627		8	8				8	33'-2"	STR.						399	
A628	24	6	30				30	30'-6"	STR.						1374	
A629	56		56				56	8'-8"	STR.						729	
A630	10		10				10	31'-2"	STR.						468	
A631	20		20				20	23'-11"	STR.						718	
A632	77		77				77	15'-6"	1	2'-7"	10'-8"	2'-7"			1793	
A633	31		31				31	9'-11"	STR.						462	
A634	1 SER. OF 10		1 SER. OF 10				1 SER. OF 10	8'-0" TO 9'-11"	STR.					2½"+	135	
A635	1 SER. OF 14		1 SER. OF 14				1 SER. OF 14	2'-11" TO 8'-2"	STR.					4⅞"-	117	
A636	1 SER. OF 7		1 SER. OF 7				1 SER. OF 7	9'-0" TO 23'-6"	STR.					2'-5"	171	
A637	2		2				2	8'-3"	STR.						25	
A638	3		3				3	20'-10"	11	1'-4"	19'-6"	0	2.5		94	
A639	1 SER. OF 28		1 SER. OF 28				1 SER. OF 28	11'-1" TO 11'-11"	STR.					⅜"-	484	
A640	55		55				55	7'-2"	STR.						592	
A641	9		9				9	32'-2"	STR.						435	
A642				36		36	36	6'-8"	1	1'-0"	5'-10"	0				360
A643				3		3	3	41'-2"	STR.							185
A644				3		3	3	13'-2"	STR.							59
A645				7		7	7	31'-2"	STR.							328
A646				3		3	3	11'-7"	1	1'-0"	10'-9"	0				52
A647				25		25	25	15'-3"	1	1'-0"	14'-5"	0				573
A648				75		75	75	8'-1"	1	1'-0"	7'-3"	0				911
A649				9		9	9	11'-5"	STR.							154
A650				7		7	7	42'-10"	STR.							450
A651				4		4	4	21'-8"	STR.							130
A652				6		6	6	25'-9"	STR.							232
A653				8		8	8	27'-5"	STR.							329
A654				1		1	1	15'-11"	11	12'-7"	3'-4"	0	12.0			24

* WEIGHT DOES NOT INCLUDE WEIGHT OF MECHANICAL CONNECTORS

ABUTMENTS (CONT.)

CALCULATED KH DATE 9/03
CHECKED KAK DATE 11/03

MARK	S.B.B.- LEFT R.A.	S.B.B.- LEFT F.A.	S.B.B.- LEFT TOTAL	N.B.B.- RIGHT R.A.	N.B.B.- RIGHT F.A.	N.B.B.- RIGHT TOTAL	GRAND TOTAL	LENGTH	TYPE	A	B	C	D	INC.	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
A701		110	110	28	90	118	228	10'-8"	1	1'-2"	8'-8"	1'-2"			2398	2573
A702					24	24	24	32'-3"	STR.							1582
A703	112	112	224	112	112	224	448	15'-1"	1	6'-9"	1'-11"	6'-9"			6906	6906
A704	10	8	18	7		7	25	8'-0"	3	4'-0"					294 *	114 *
A705		8	8				8	41'-4"	STR.						676	
A706		8	8				8	33'-2"	STR.						542	
A707	2	2	4	2		2	6	9'-0"	STR.						74	37
A708		1 SER. OF 28	1 SER. OF 28				1 SER. OF 28	11'-0" TO 11'-10"	STR.					⅜"-	653	
A709		8	8				8	33'-2"	STR.						542	
A710		55	55				55	9'-0"	1	1'-2"	8'-2"	0			1012	
A711	10		10				10	31'-2"	STR.						637	
A712	20		20				20	24'-2"	STR.						988	
A713	56		56				56	9'-9"	1	1'-2"	8'-9"	0			1116	
A714	77		77				77	12'-8"	1	1'-2"	10'-8"	1'-2"			1994	
A715	12		12				12	23'-6"	STR.						576	
A716	33		33				33	11'-8"	1	1'-2"	9'-8"	1'-2"			787	
A717	9		9				9	32'-2"	STR.						592	
A718	33		33				33	14'-6"	1	2'-7"	9'-8"	2'-7"			978	
A719				7		7	7	42'-10"	STR.							613
A720				7		7	7	31'-2"	STR.							446
A721				76		76	76	9'-8"	1	1'-2"	7'-8"	1'-2"				1502
A722				45		45	45	8'-4"	1	1'-2"	7'-4"	0				766
A723				8		8	8	27'-5"	STR.							448
A724				1 SER. OF 23		1 SER. OF 23	1 SER. OF 23	11'-11" TO 12'-8"	STR.					⅜"+		578
A801					14	14	14	30'-3"	STR.							1130
A802	7	7	14	7		7	21	12'-0"	3	6'-0"					449 *	224 *
A803	7	7	14				14	24'-2"	STR.						903	
A804	7	7	14				14	30'-2"	STR.						1128	
A805				7		7	7	41'-2"	STR.							769
A806				7		7	7	13'-2"	STR.							246
A901	96		96				96	11'-1"	1	1'-7"	9'-9"	0			3618	
D801	36	36	72	36	36	72	144	4'-11"	12	2'-7"					945	945
														TOTAL WEIGHT	55,176	40,041

NOTES:

ADDITIONAL NOTES: SEE SHEET 73/77

BENDING DIAGRAM: SEE SHEET 73/77

SU271RIB.DGN 6/23/04 KH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN KH | REVIEWED DAP | DATE 3/18/04
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

REINFORCING STEEL LIST 2 - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

PIERS

CALCULATED TWH DATE 9/03
CHECKED KAK DATE 11/03

MARK	SOUTHBOUND BRIDGE - LEFT									NORTHBOUND BRIDGE - RIGHT									GRAND TOTAL	LENGTH	TYPE	A	B	C	D	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7	PIER 8	TOTAL	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7	PIER 8	TOTAL									
P401		129	183	189	177	189	162		1029		90	126	159	153	159	150		837	1866	19'-2"	2	4'-8"	4'-8"			13,175	10,716
P402		516	732	756	708	756	648		4116		360	504	636	612	636	600		3348	7464	5'-9"	4	4'-8"	8"			15,810	12,860
P403	138	123	123	123	123	123	123	120	996	96	123	123	123	123	123	123	120	954	1950	15'-2"	2	3'-8"	3'-8"			10,091	9665
P404	552	492	492	492	492	492	492	480	3984	384	492	492	492	492	492	492	480	3816	7800	4'-9"	4	3'-8"	8"			12,641	12,108
P501	2	2	2	2	2	2	2	2	16	2	2	2	2	2	2	2	2	16	32	28'-8"	STR.					478	478
P502	20	20	20	20	20	20	20	20	160	20	20	20	20	20	20	20	20	160	320	28'-9"	STR.					4798	4798
P503	10	10	10	10	10	10	10	10	80	10	10	10	10	10	10	10	10	80	160	6'-3"	1	2'-9"	1'-0"	2'-9"		522	522
P504	8	8	8	8	8	8	8	8	64	8	8	8	8	8	8	8	8	64	128	11'-9"	1	2'-9"	6'-8"	2'-9"		784	784
P505	2	2	2	2	2	2	2	2	16	2	2	2	2	2	2	2	2	16	32	16'-8"	STR.					278	278
P506		20	20	20	20	20	20		120		20	20	20	20	20	20		120	240	28'-0"	STR.					3504	3504
P507		76	76	76	76	76	76		456		76	76	76	76	76	76		456	912	10'-1"	1	3'-1"	4'-2"	3'-1"		4796	4796
P508	45	45	45	45	45	45	45	45	360	45	45	45	45	45	45	45	45	360	720	12'-10"	6	1'-0"	7'-4"	2'-0"		4819	4819
P509		6	6	6	6		6		30		6	6	6	6		6		30	60	19'-6"	STR.					610	610
P510						2			2										2	14'-6"	STR.					30	
P511		4	4	4	4				16		2	4	2	2	4	2		16	32	11'-6"	STR.					192	192
P512	6							6	12	6	4		4	4		4	6	28	40	10'-6"	STR.					131	307
P513						6			6						6			6	12	20'-6"	STR.					128	128
P514		2	2	2	2		6		14			2			2			4	18	12'-6"	STR.					183	52
P515	6							6	12	6							6	12	24	17'-6"	STR.					219	219
P516						4			4										4	13'-6"	STR.					56	
P601	208	176	176	176	176	208	208	240	1568	208	176	176	176	176	208	208	208	1536	3104	12'-0"	1	3'-10"	4'-8"	3'-10"		28,262	27,685
P602	32	32	32	32	32	32	32	32	256	32	32	32	32	32	32	32	32	256	512	14'-0"	1	3'-10"	6'-8"	3'-10"		5383	5383
P603	30	30	30	30	30	30	30	30	240	46	46	46	46	46	46	46	46	368	608	13'-4"	1	5'-6"	2'-8"	5'-6"		4806	7370
P604			4				4		8			4				4		8	16	9'-0"	STR.					108	108
P605	4	4	4	4	4	4	4	4	32	8	8	8	8	8	8	8	8	64	96	4'-8"	1	3'-10"	1'-0"	0		224	449
P606	4	4	4	4	4	4	4	4	32	4	4	4	4	4	4	4	4	32	64	16'-8"	STR.					801	801
P607	4	4	4	4	4	4	4	4	32	4	4	4	4	4	4	4	4	32	64	28'-8"	STR.					1378	1378
P608	36							36	72	36							36	72	144	25'-4"	1	4'-1"	17'-6"	4'-1"		2740	2740
P609		40	40	40	40		42		202		37	40	37	37		37		188	390	27'-4"	1	4'-1"	19'-6"	4'-1"		8293	7718
P610	40	40	40	40	40	40	40	40	320										320	4'-8"	3	2'-4"				✳2243	
P611	18	18	18	18	18	18	18	18	144										144	7'-0"	1	2'-4"	2'-8"	2'-4"		1514	
P612						22			22										22	22'-4"	1	4'-1"	14'-6"	4'-1"		738	
P613		42	42	42	42				168		21	42	21	21	44	21		170	338	19'-4"	1	4'-1"	11'-6"	4'-1"		4878	4937
P614	57							57	114	57	42		42	42		42	57	282	396	18'-4"	1	4'-1"	10'-6"	4'-1"		3139	7765
P615		21	21	21	21		63		147			21			22			43	190	20'-4"	1	4'-1"	12'-6"	4'-1"		4489	1313
P616						46			46						40			40	86	28'-4"	1	4'-1"	20'-6"	4'-1"		1958	1702
P617						44			44										44	21'-4"	1	4'-1"	13'-6"	4'-1"		1410	
P701			9				9		18			9				9		18	36	10'-6"	6	3'-1"	2'-8"	1'-2"		386	386
P702			8				8		16			8				8		16	32	4'-8"	1	1'-2"	2'-8"	1'-2"		153	153
P703	60							60	120	60							60	120	240	12'-6"	1	1'-2"	10'-6"	1'-2"		3066	3066
P801							72		72										72	14'-9"	1	1'-4"	12'-6"	1'-4"		2836	
P901		78	78	78	78	78	78		468		78	78	78	78	78	78		468	936	45'-9"	4	44'-6"	0			72,797	72,797
P902		78	78		78		78		312		78	78	78	78	78	78		468	780	16'-6"	STR.					17,503	26,255
P903						23			23										23	17'-1"	1	1'-7"	14'-6"	1'-7"		1336	
P904		30	30	30	30				120		15	30	15	15	36	16		127	247	14'-1"	1	1'-7"	11'-6"	1'-7"		5746	6081
P905											30		30	30		32		122	122	13'-1"	1	1'-7"	10'-6"	1'-7"			5427
P906		18	18	18	18				72			15			20			35	107	15'-1"	1	1'-7"	12'-6"	1'-7"		3692	1795
P907	78								78										78	50'-6"	4	49'-3"	0			13,393	
P908								78	78								78	78	156	45'-3"	4	44'-0"	0			12,000	12,000
P909	78							78	156	78							78	156	312	13'-6"	1	12'-2"	1'-7"	0		7160	7160
P910				78		78			156										156	19'-0"	STR.					10,078	
P911						36			36										36	16'-1"	1	1'-7"	13'-6"	1'-7"		1969	
P912										78								78	78	36'-3"	4	35'-0"	0				9614

✳ WEIGHT DOES NOT INCLUDE WEIGHT OF MECHANICAL CONNECTORS

NOTES:

PIER REINFORCING STEEL LIST CONTINUED ON SHEET 76/77.

ADDITIONAL NOTES: SEE SHEET 73/77

BENDING DIAGRAMS: SEE SHEET 73/77

SU271RIA.DGN 6/23/04 TWH,JLS,HN,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 770901(3L) 770902(1R)

REINFORCING STEEL LIST 3 - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

P I E R S (CONT.)

CALCULATED TWH DATE 9/03
CHECKED KAK DATE 11/03

MARK	SOUTHBOUND BRIDGE - LEFT									NORTHBOUND BRIDGE - RIGHT									GRAND TOTAL	LENGTH	TYPE	A	B	C	D	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7	PIER 8	TOTAL	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7	PIER 8	TOTAL									
P1001				12	12				24				12	12				24	48	54'-8"	STR.					5646	5646
P1002												90						90	90	41'-8"	STR.						16,136
P1003													90					90	90	51'-11"	STR.						20,106
P1004														90				90	90	49'-11"	STR.						19,331
P1005															102			102	102	52'-4"	STR.						22,969
P1006		22	22	22	22	22	22		132		22	22	22	22	22	22		132	264	56'-0"	5	53'-2"				31,808	31,808
P1007											90	90	90	90	102	102		564	564	15'-10"	1	14'-4"	1'-10"	0			38,426
P1008		74	74	74	74				296		68	68	68	68		78		350	646	22'-6"	1	1'-10"	19'-6"	1'-10"		28,658	33,886
P1009						83			83						86			86	169	23'-6"	1	1'-10"	20'-6"	1'-10"		8393	8696
P1010																102		102	102	49'-7"	STR.						21,762
P1011											90							90	90	28'-11"	STR.						11,199
P1101	4	2	2	2	2	2	2	4	20	4	2	2	2	2	2	2	4	20	40	55'-4"	STR.					5880	5880
P1102	12	12	12			12	12	12	72	12	12	12			12	12	12	72	144	54'-8"	STR.					20,912	20,912
P1103							54		54										54	22'-10"	1	2'-0"	19'-6"	2'-0"		6551	
P1104	24	24	23	23	23	24	24	24	189	24	24	23	23	23	24	24	24	189	378	58'-0"	1	2'-0"	54'-8"	2'-0"		58,241	58,241
P1105	42							42	84	42							42	84	168	20'-10"	1	2'-0"	17'-6"	2'-0"		9298	9298
P1106		90							90										90	42'-4"	STR.					20,243	
P1107			90	90		102			282										282	60'-0"	STR.					89,896	
P1108					90				90										90	58'-0"	STR.					27,734	
P1109							90		90										90	53'-2"	STR.					25,423	
P1110		90	90	90	90	102	90		552										552	18'-2"	1	16'-6"	2'-0"			53,279	
TOTAL WEIGHT																										689,686	605,215

NOTES:

ADDITIONAL NOTES: SEE SHEET 73/77

BENDING DIAGRAMS: SEE SHEET 73/77

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

REINFORCING STEEL LIST 4 - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

76/77

436/612

SU27IRIA.DGN 6/23/04 TWH,JLS,SJK,HN,KH,RC

SUPERSTRUCTURE

CALCULATED JLS DATE 9/03
CHECKED KAK DATE 12/03

MARK	BRIDGE S.B.B.	BRIDGE N.B.B.	GRAND TOTAL	LENGTH	TYPE	A	B	C	D	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
S401	4545	4218	8763	40'-0"	STR.					121,442	112,705
S402	111		111	38'-3"	STR.					2836	
S403		111	111	32'-8"	STR.						2418
S404	648	864	1512	51'-0"	STR.					22,036	29,382
S405		216	216	28'-6"	STR.						4112
S406		216	216	32'-11"	STR.						4749
S407		432	432	34'-1"	STR.						9836
S408		216	216	36'-5"	STR.						5254
S409	216	216	432	38'-0"	STR.					5483	5483
S410	216		216	38'-11"	STR.					5615	
S411		432	432	39'-6"	STR.						11,399
S412	216		216	41'-8"	STR.					6012	
S413	216		216	42'-8"	STR.					6156	
S414	648		648	45'-0"	STR.					19,479	
S415	216		216	21'-0"	STR.					3030	
S416	160	160	320	5'-0"	STR.					534	534
S501	3588	3496	7084	40'-0"	STR.					149,691	145,853
S502	92		92	35'-0"	STR.					3358	
S503		92	92	29'-6"	STR.						2831
S504	8986		8986	33'-4"	STR.					312,413	
S505	8986		8986	24'-2"	STR.					226,499	
S506	2996	2910	5906	7'-5"	7					23,176	22,511
S507		17,452	17,452	28'-9"	STR.						523,320
S508	160	160	320	5'-2"	13	2'-4"	2'-11½"	0'-10"	2	862	862
S509	160	160	320	5'-5"	13	0'-10"	1'-10½"	2'-10"	1	904	904
S510	72	72	144	11'-9"	STR.					882	882
S511	36	36	72	3'-2"	STR.					119	119
S601	80	78	158	40'-0"	STR.					4806	4686
S602	2		2	17'-2"	STR.					52	
S603	2996	2910	5906	3'-11"	8	1'-11"				17,625	17,119
S604	2996	2910	5906	2'-10"	1	1'-11"	1'-1"	0		12,750	12,384
S605		2	2	11'-2"	STR.						34
									TOTAL WEIGHT	945,760	917,377

APPROACH SLABS

CALCULATED JLS DATE 10/03
CHECKED KAK DATE 11/03

MARK	LEFT - SOUTHBOUND REAR	LEFT - SOUTHBOUND FWD.	LEFT - SOUTHBOUND TOTAL	RIGHT - NORTHBOUND REAR	RIGHT - NORTHBOUND FWD.	RIGHT - NORTHBOUND TOTAL	GRAND TOTAL	LENGTH	TYPE	A	B	C	D	INC.	** LEFT WEIGHT (LBS.)	** RIGHT WEIGHT (LBS.)
AS501	57	57	114				114	31'-4"	STR.						3726	
AS502	57	57	114				114	24'-1"	STR.						2864	
AS503	37	37	74	37	38	75	149	24'-6"	STR.						1891	1917
AS504				114	114	228	228	28'-7"	STR.							6797
AS505	12	12	24	12	24	36	60	7'-5"	7						186	278
AS506	6	6	12	6	12	18	30	13'-6"	STR.						169	253
AS507	8	8	16	8	16	24	40	10'-0"	STR.						167	250
AS508	3	3	6	3	6	9	15	5'-6"	10						34	52
AS509	5	5	10	5	10	15	25	5'-6"	STR.						57	86
AS601	12	12	24	12	24	36	60	3'-11"	8	1'-11"					141	212
AS602	12	12	24	12	24	36	60	2'-10"	1	1'-11"	1'-1"	0			102	153
AS603	2 SER.OF 11	2 SER.OF 11	4 SER.OF 11	2 SER.OF 11	4 SER.OF 11	6 SER.OF 11	10 SER.OF 11	4'-4" TO 5'-2"	1	3'-6" TO 4'-4"	1'-0"	0		1"	314	471
AS604	8	8	16	8	16	24	40	4'-4"	1	3'-6"	1'-0"	0			104	156
AS605	1	1	2	1	2	3	5	13'-7"	11	10'-10"	2'-9"	0	12.0		41	61
AS1001	92	92	184	92	95	187	371	25'-11"	4	24'-6"	0				20,520	20,854
														TOTAL WEIGHT	30,316	31,540

** WEIGHTS FOR INFORMATIONAL PURPOSES ONLY - REINFORCING STEEL IS INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T = 15"), AS PER PLAN FOR PAYMENT.

NOTES:

ADDITIONAL NOTES: SEE SHEET 73/77

BENDING DIAGRAMS: SEE SHEET 73/77

SU271RIA.DGN 6/23/04 TWH,JLS,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DATE 3/18/04
REVIEWED DAP
STRUCTURE FILE NUMBER 7709013(L) 7709021(R)
DRAWN JLS
REVISED
DESIGNED KAK
CHECKED DLR

REINFORCING STEEL LIST 5 - STEEL
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

77/77

437
612

B.M. #3 - CHISELED SQUARE ON N.W. CORNER OF WEST HEADWALL OF CULVERT STA. 424+89.10, 299.10' LT. EL. 682.71

CONSTRUCTION LIMITS

EXISTING CRUSHED AGGREGATE SLOPE PROTECTION (TO BE REMOVED)

LIMITS OF TEMPORARY SHEETING, CANTILEVERED MIWIMUM Sx = 65 in³/FT.

LIMITS OF CRUSHED AGGREGATE SLOPE PROTECTION

END APPROACH SLAB STA. 421+82.25 BRIDGE TERMINAL ASSEMBLY, TYPE 2

RETAINING WALL

℄ REAR ABUTMENT BEARINGS STA. 421+85.00

PROFILE GRADE LINE

℄ REAR ABUTMENT BEARINGS STA. 421+65.00

6' DIA. TYPE C ROCK CHANNEL PROTECTION (2' THICK)

℄ PIER 1 STA. 422+82.00

℄ PIER 2 STA. 424+00.00

℄ PIER 3 STA. 425+18.00

℄ PIER 4 STA. 422+90.00

℄ PIER 5 STA. 424+32.50

℄ PIER 6 STA. 425+75.00

15' DIA. TYPE C ROCK CHANNEL PROTECTION (2' THICK)

24' DIA. TYPE C ROCK CHANNEL PROTECTION (2' THICK)

EXISTING STRUCTURE TO BE REMOVED

℄ CONSTRUCTION SOUTHBOUND LANES

℄ CONSTRUCTION NORTHBOUND LANES

℄ R/W & SURVEY L.R. 27

SCUPPERS (TYP.)

PHASE I

PHASE II

PHASE III

M 54° 13' 47" E

STA. 426+00

RISER

G (TO BE RELOCATED)

END APPROACH SLAB STA. 421+62.25

BRIDGE TERMINAL ASSEMBLY, TYPE 1

SEE STORM SEWER PROFILES SHEETS 304 TO 308 FOR ADDITIONAL DRAINAGE DETAILS.

CONSTRUCTION LIMITS

RIVERVIEW ROAD (60' R/W)

MATCH LINE

GUARDRAIL STA. 421+39.35

LA-R/W

T ESMT

LEGEND

- DENOTES WETLANDS
- DENOTES 36" CASING PIPE UNDER RAILWAY

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED STEEL PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: c/c BEARINGS 120'-0"±; 5 @ 170'-0"±; 2 @ 188'-0"±; 150'-0"± (LEFT) 105'-0"±; 2 @ 165'-0"±; 4 @ 170'-0"±; 188'-0"±; 150'-0"± (RIGHT)

ROADWAY: 32'-8"± F/F PARAPETS

APPROACH SLABS: AS-1-54 (25' LONG)

LOADING: CF-2000 ADEQUATE FOR AASHO ALTERNATE LOADING

SKEW: 0°±

ALIGNMENT: TANGENT

WEARING SURFACE: 1¼" LATEX MODIFIED CONCRETE OVERLAY

CONDITION: FAIR

YEAR BUILT: 1968

STRUCTURE FILE NO.: 7709005 (LEFT) 7709064 (RIGHT)

DISPOSITION: REMOVED

PROPOSED STRUCTURE

TYPE: PRESTRESSED CONCRETE I-BEAM COMPOSITE WITH REINFORCED CONCRETE DECK ON REINFORCED CONCRETE ABUTMENTS AND PIERS

SPANS: c/c PIERS 105'-0"; 2 @ 142'-6"; 110'-0"; 185'-0"; 2 @ 232'-0"; 185'-0"; 82'-6"; 81'-6" (LEFT) 117'-0"; 2 @ 118'-0"; 139'-0"; 185'-0"; 2 @ 232'-0"; 185'-0"; 129'-0" (RIGHT)

ROADWAY: 52'-0" TOE TO TOE PARAPETS

LOADING: HS 25 AND THE ALTERNATE MILITARY LOADING FUTURE WEARING SURFACE = 60 P.S.F.

SKEW: 0°00'00"

ALIGNMENT: TANGENT

WEARING SURFACE: MONOLITHIC CONCRETE

APPROACH SLABS: AS-1-81 (25'-0" LONG)

LATITUDE: 41°15'35"N

LONGITUDE: 81°33'40"W

CROWN RATE: 0.021

AVERAGE DAILY TRAFFIC: 29,700 (2004)

DESIGN AVERAGE DAILY TRAFFIC: 39,840 (2024)

DESIGN AVERAGE DAILY TRUCK TRAFFIC: 8,970 (2024)

FOUNDATION INVESTIGATION LEGEND

⊕ - INDICATES BORING LOCATION

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DHD | DRAWN JLS | CHECKED DLR | REVISED | REVISED DAP | DATE 3/18/04

STRUCTURE FILE NUMBER 7709073(L) 7709021(R)

SUMMIT COUNTY
STA. 421+62.25
STA. 436+85.75

SITE PLAN 1 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

1 / 123

438 / 612

SU271SPN.DGN 6/23/04 SJK,JLS,KH,TWH,RC

B.M. #4 - CHISELED SQUARE ON N.W. CORNER OF WEST HEADWALL OF CULVERT
STA. 427+74.15, 125.45' LT.
EL. 669.63

B.M. #5 - 5/8" REBAR WITH BENCH MARK CAP
STA. 430+52.43, 5.72' LT.
EL. 658.08

STA. 426+00

STA. 432+00

(3) GAS TANKS

B.M. #4

CONSTRUCTION LIMITS

VALLEY RAILWAY

T(FO)

T

YTEL

CONCRETE APRON AND ROCK CHANNEL PROTECTION, TYPE C, 1'-6" THICK WITH FABRIC FILTER (TYP.)

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

ROCK CHANNEL PROTECTION, TYPE A, 3'-0" THICK WITH FABRIC FILTER

LA-R/W

A ESMT

MINIMUM REQUIRED HORIZONTAL CLEARANCE = 25.00'

MINIMUM PROPOSED HORIZONTAL CLEARANCE = 54.9'

EXISTING STRUCTURE TO BE REMOVED

ACCESS ROAD

℄ PIER 4
STA. 426+65.00

℄ PIER 5
STA. 428+70.00

℄ PIER 6
STA. 431+02.00

SCUPPER (TYP.)

PROP. 15"

PROP. 18"

PHASE I

PHASE IIA

PHASE III

℄ CONSTRUCTION SOUTHBOUND LANES

℄ CONSTRUCTION NORTHBOUND LANES

PROFILE GRADE LINE

℄ R/W & SURVEY I.R. 271

N 54° 13' 47" E

B-09

B-10

B-11

B-12

B-13

B-14

B-15

B-16

B-17

B-18

B.M. #5

T ESMT

SA ESMT

SH ESMT

+80.00

+40.00

+65.00

+30.00

+48.00

+19.00

+26.00

+35.00

+47.00

+55.00

+27.00

+46.00

5'-0"

26'-0"

22'-11"

12'-1"

8'-0"

55'-0" o/o PARAPETS

MINIMUM EXISTING HORIZONTAL CLEARANCE = 16.7' ±

CONCRETE APRON AND ROCK CHANNEL PROTECTION, TYPE C, 1'-6" THICK WITH FABRIC FILTER (TYP.)

FIBER OPTIC CABLE (DO NOT DISTURB)

SEE STORM SEWER PROFILES SHEETS 304 TO 308 FOR ADDITIONAL DRAINAGE DETAILS.

CUYAHOGA

MATCH LINE

MATCH LINE

LEGEND

- DENOTES WETLANDS

- DENOTES 36" CASING PIPE UNDER RAILWAY

FOUNDATION INVESTIGATION LEGEND

- INDICATES BORING LOCATION

SU271SP0.DGN 6/23/04 KH,JLS,TWH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DHD | DRAWN JLS | REVISED DAP 3/18/04 | DATE

CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709073(L) 7709021(R)

SUMMIT COUNTY
STA. 421+62.25
STA. 436+85.75

SITE PLAN 2 - CONCRETE

BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

2/123

439/612

B.M. #6 - 5/8" REBAR WITH BENCH MARK CAP
STA. 433+67.04, 5.26' LT.
EL. 666.28

B.M. #7 - 5/8" REBAR WITH BENCH MARK CAP
STA. 434+80.92, 9.95' RT.
EL. 692.99

LEGEND

▨ - DENOTES WETLANDS

SEE STORM SEWER PROFILES SHEETS 304 TO 308 FOR ADDITIONAL DRAINAGE DETAILS.

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

STA. 432+00

RIVER

CONSTRUCTION LIMITS

ROCK CHANNEL PROTECTION, TYPE A, 3'-0" THICK WITH FABRIC FILTER

EXISTING STRUCTURE TO BE REMOVED

EXISTING CRUSHED AGGREGATE SLOPE PROTECTION (TO BE REMOVED)

LIMITS OF CRUSHED AGGREGATE SLOPE PROTECTION

LIMITS OF TEMPORARY SHEETING, CANTILEVERED MINIMUM Sx = 14 in³/FT

THE OHIO & ERIE CANAL TOWPATH TRAIL

BIKE PATH

TOWPATH ACCESS TRAIL

BONSTRING (DO NOT DISTURB)

LA-R/W

GUARDRAIL STA. 431+14.90

GUARDRAIL STA. 436+52.00

GUARDRAIL LT & RT STA. 436+25.37

℄ FORWARD ABUTMENT BEARINGS STA. 436+83.00

BEGIN APPROACH SLAB STA. 436+85.75

BRIDGE TERMINAL ASSEMBLY, TYPE 1

BRIDGE TERMINAL ASSEMBLY, TYPE 2

BEGIN APPROACH SLAB STA. 436+22.75

℄ PIER 7 STA. 433+06.00

℄ PIER 7 STA. 433+34.00

℄ PIER 8 STA. 434+91.00

℄ PIER 8 STA. 435+19.00

℄ PIER 9 STA. 436+01.50

℄ CONSTRUCTION SOUTHBOUND LANES

℄ CONSTRUCTION NORTHBOUND LANES

℄ R/W & SURVEY L.R. 271

PROFILE GRADE LINE

PROP. 15"

PROP. 18"

PROP. 24"

PROP. 36"

20' DIA. TYPE C ROCK CHANNEL PROTECTION (2' THICK)

18' DIA. TYPE C ROCK CHANNEL PROTECTION (2' THICK)

6' DIA. TYPE C ROCK CHANNEL PROTECTION (2' THICK)

SCUPPERS (TYP.)

RETAINING WALL

EXISTING STRUCTURE TO BE REMOVED

CONSTRUCTION LIMITS

PHASE I

PHASE IIA

PHASE III

PARAPETS

CONCRETE APRON AND ROCK CHANNEL PROTECTION, TYPE C, 1'-6" THICK WITH FABRIC FILTER

MATCH LINE

CUYAHOGA

BUCKEYE TRAIL

THE OHIO & ERIE CANAL TOWPATH TRAIL

FOUNDATION INVESTIGATION LEGEND

⊕ - INDICATES BORING LOCATION

SU271SPP.DGN 6/23/04 KH,JLS,TWH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DHD | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

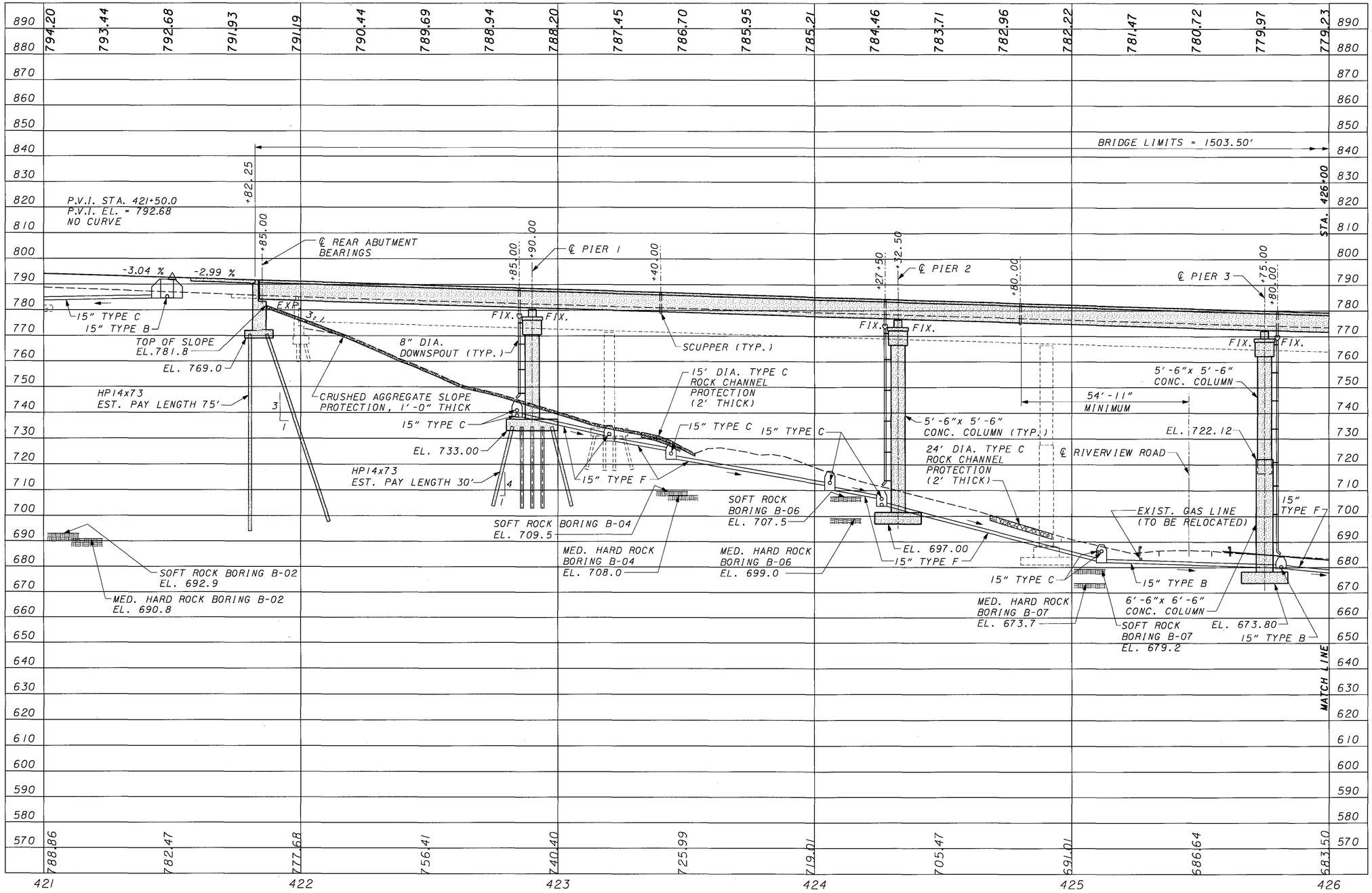
SUMMIT COUNTY
STA. 421+62.25
STA. 436+85.75

SITE PLAN 3 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

3 / 123

440 / 612



PROFILE ALONG INSIDE EDGE OF PAVEMENT (LEFT BRIDGE)

SU271SPQ.DGN 6/23/04 SJK,JLS,TWH,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

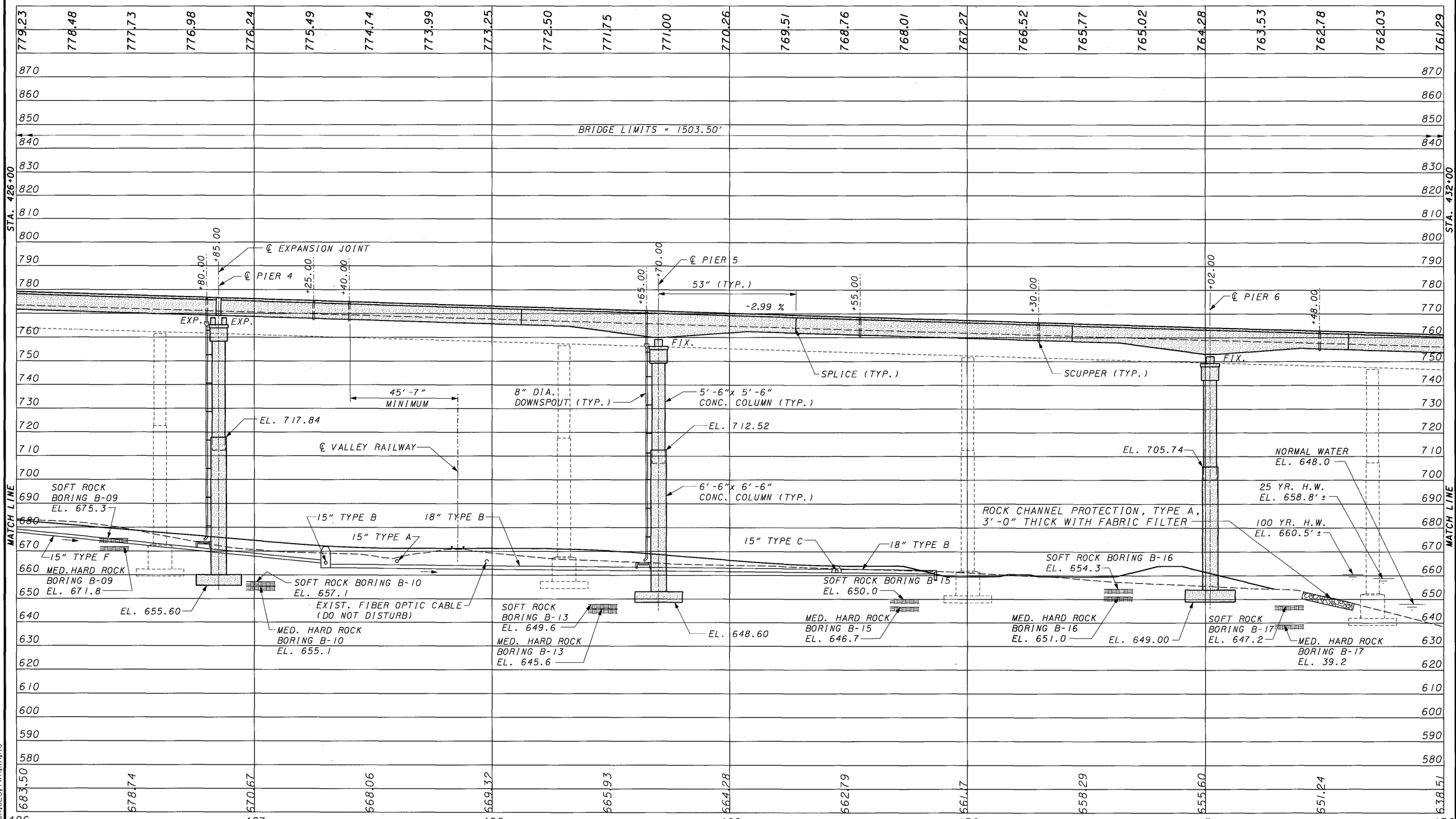
DESIGNED DHD | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013

SITE PLAN 4 - CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

4 / 123

441 / 612



PROFILE ALONG INSIDE EDGE OF PAVEMENT (LEFT BRIDGE)

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
DHD	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013	

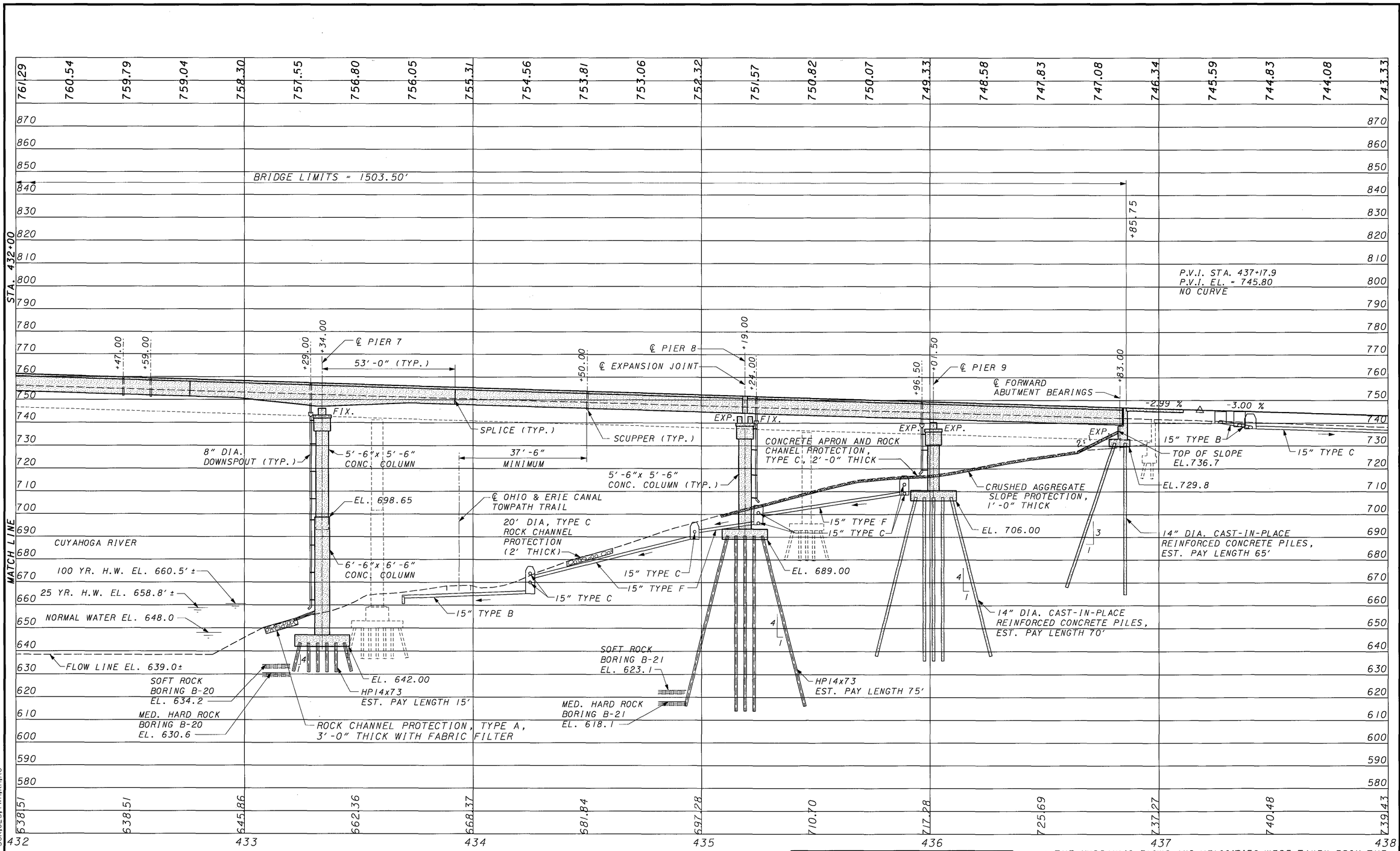
SITE PLAN 5 - CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

5 / 123

442 / 612

SU271SPR.DGN 6/23/04 SJK,JLS,TWH,KH,RC



PROFILE ALONG INSIDE EDGE OF PAVEMENT (LEFT BRIDGE)

HYDRAULICS INFORMATION

DRAINAGE AREA = 525 SQ MI

EST. Q 25 = 15786 cfs; V 25 = 10.6 fps
EST. Q 100 = 20305 cfs; V 100 = 11.2 fps

STRUCTURE CLEARS EST. 25 YEAR H.W. BY 71.8'; AND THE EST. 100 YEAR H.W. BY 70.1'

* THE HYDRAULIC FLOWS AND VELOCITIES WERE TAKEN FROM THE BOSTON MILLS RD. BRIDGE OVER THE CUYAHOGA RIVER BRIDGE REPLACEMENT SITE PLAN. THE BOSTON MILLS RD. BRIDGE IS APPROXIMATELY 1000 FT. DOWNSTREAM FROM THE I-271 BRIDGE. HIGH WATER ELEVATIONS WERE DETERMINED BY PROJECTING THE HIGH WATER ELEVATIONS AT BOSTON MILLS RD. BRIDGE BACK TO THE I-271 BRIDGE.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DHD | DRAWN JLS | REVISED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013

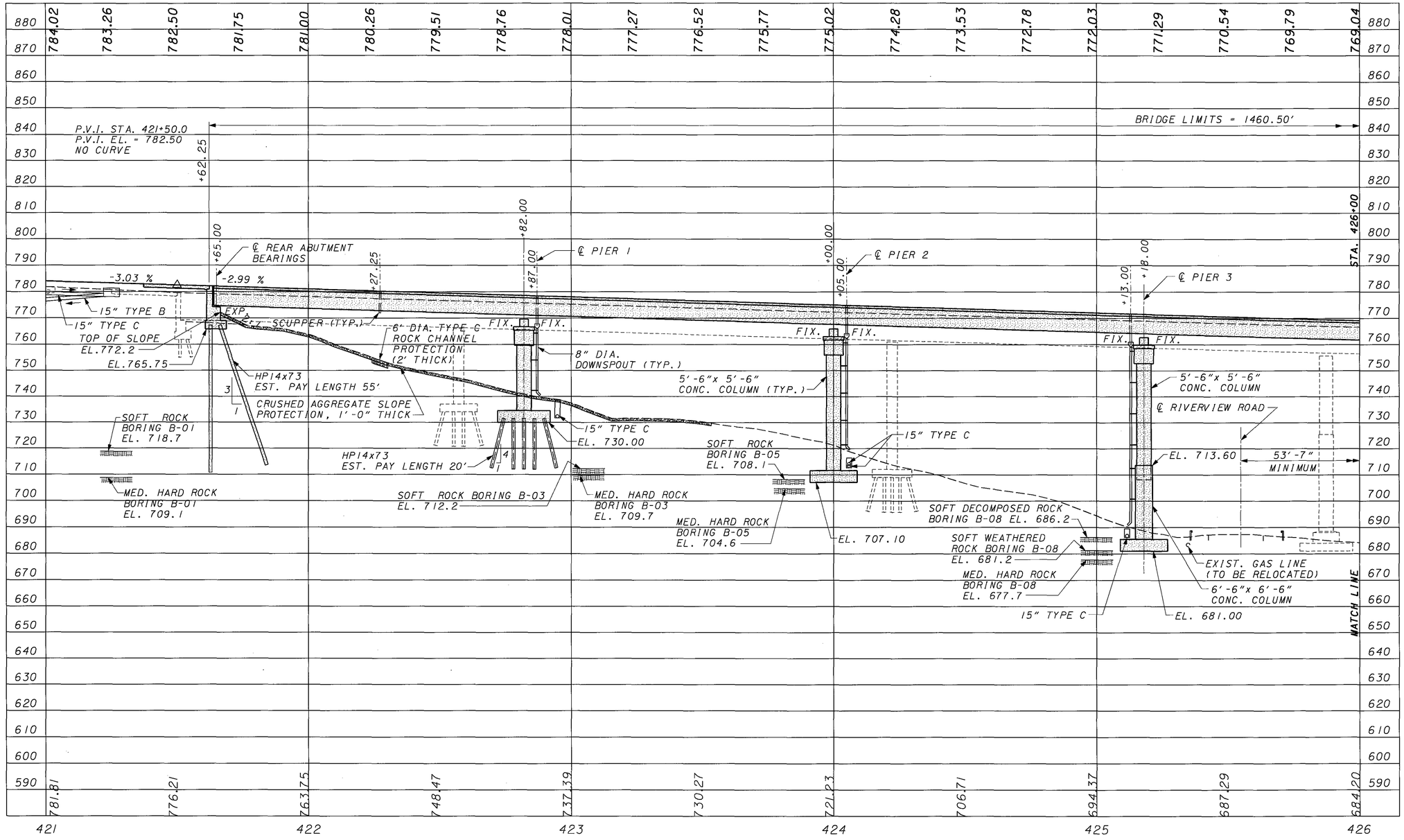
SITE PLAN 6 - CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

6 / 123

443 / 612

SU271SPS.DGN 6/23/04 SJK,JLS,TWH,KH,RC



PROFILE ALONG INSIDE EDGE OF PAVEMENT (RIGHT BRIDGE)

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DHD | DRAWN JLS | REVIEWED DAP 3/18/04 | DATE
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709021

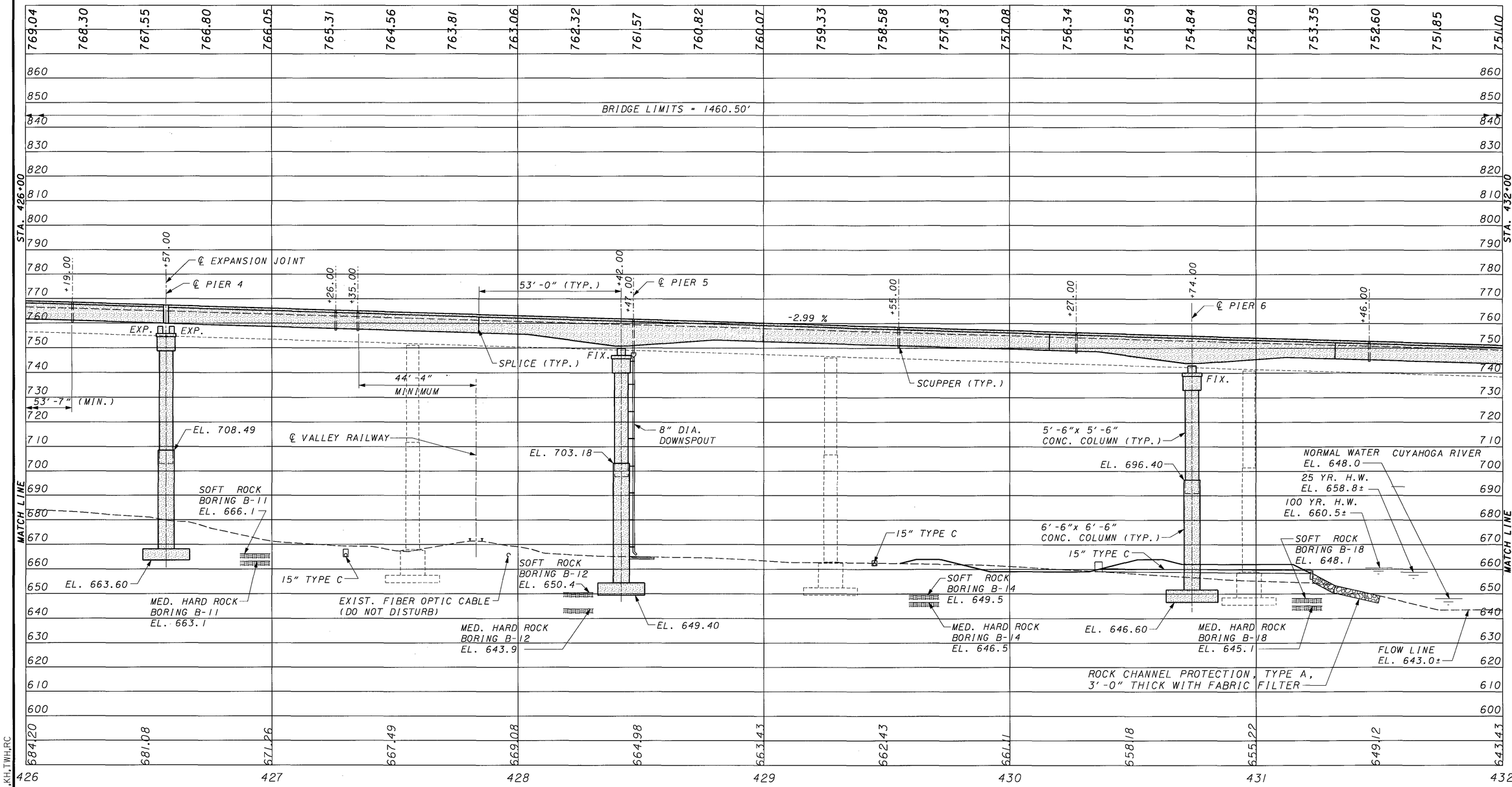
SITE PLAN 7 - CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

7 / 123

444 / 612

SU271SPT.DGN 6/23/04 SJK,JLS,TWH,KH,RC



PROFILE ALONG INSIDE EDGE OF PAVEMENT (RIGHT BRIDGE)

HYDRAULICS INFORMATION
DRAINAGE AREA = 525 SQ MI
EST. Q 25 = 15786 cfs; V 25 = 10.6 fps EST. Q 100 = 20305 cfs; V 100 = 11.2 fps
STRUCTURE CLEARS EST. 25 YEAR H.W. BY 71.8'; AND THE EST. 100 YEAR H.W. BY 70.1'

* THE HYDRAULIC FLOWS AND VELOCITIES WERE TAKEN FROM THE BOSTON MILLS RD. BRIDGE OVER THE CUYAHOGA RIVER BRIDGE REPLACEMENT SITE PLAN. THE BOSTON MILLS RD. BRIDGE IS APPROXIMATELY 1000 FT. DOWNSTREAM FROM THE I-271 BRIDGE. HIGH WATER ELEVATIONS WERE DETERMINED BY PROJECTING THE HIGH WATER ELEVATIONS AT BOSTON MILLS RD. BRIDGE BACK TO THE I-271 BRIDGE.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DHD | DRAWN JLS | CHECKED DLR | REVIEWED DAP | DATE 3/18/04 | REVISED | STRUCTURE FILE NUMBER 7709021

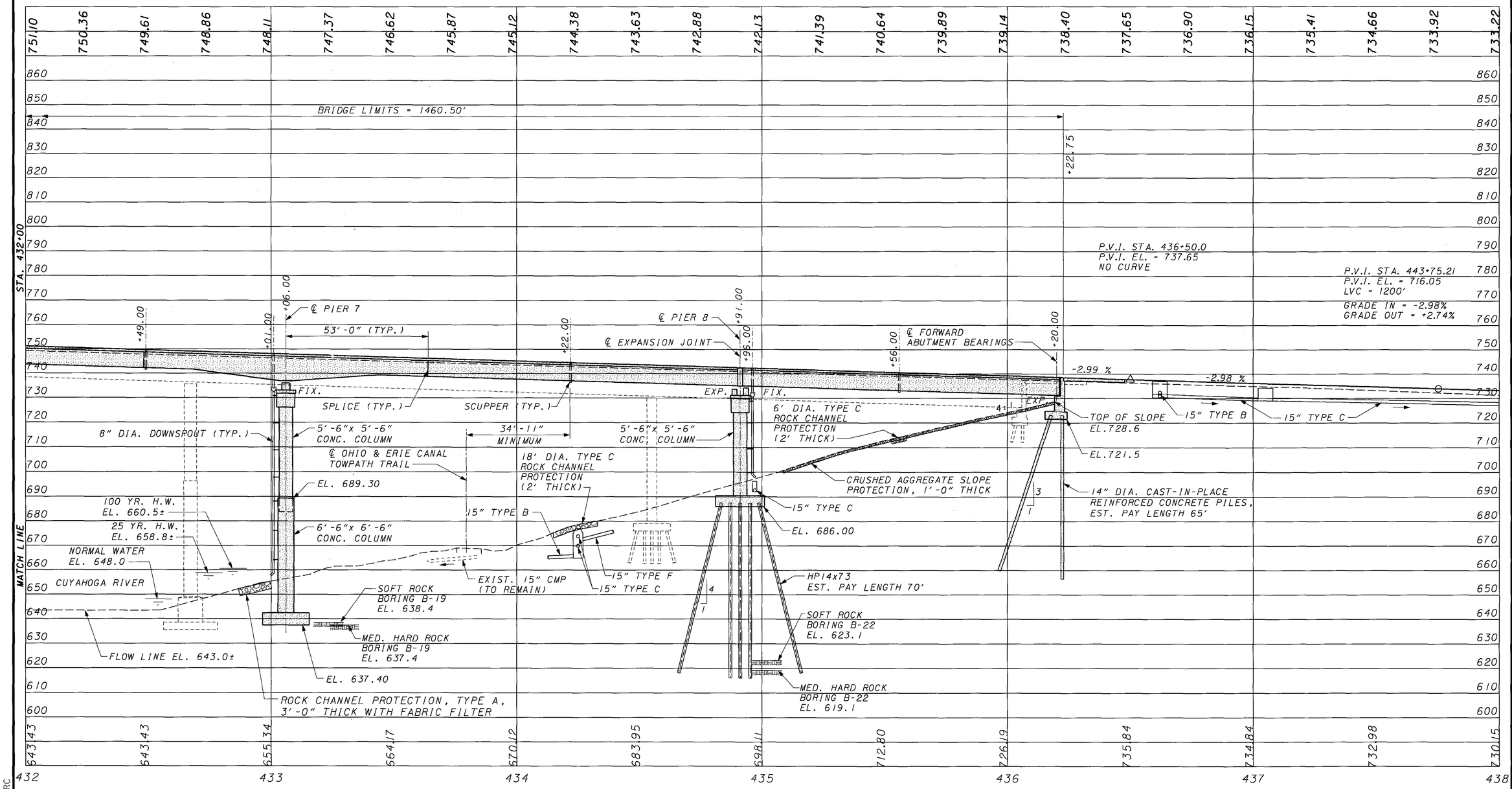
SITE PLAN 8 - CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

8 / 123

445 / 612

SU271SPU.DGN 6/23/04 CAR,JLS,SJK,KH,TWH,RC



PROFILE ALONG INSIDE EDGE OF PAVEMENT (RIGHT BRIDGE)

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
DHD	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709021	

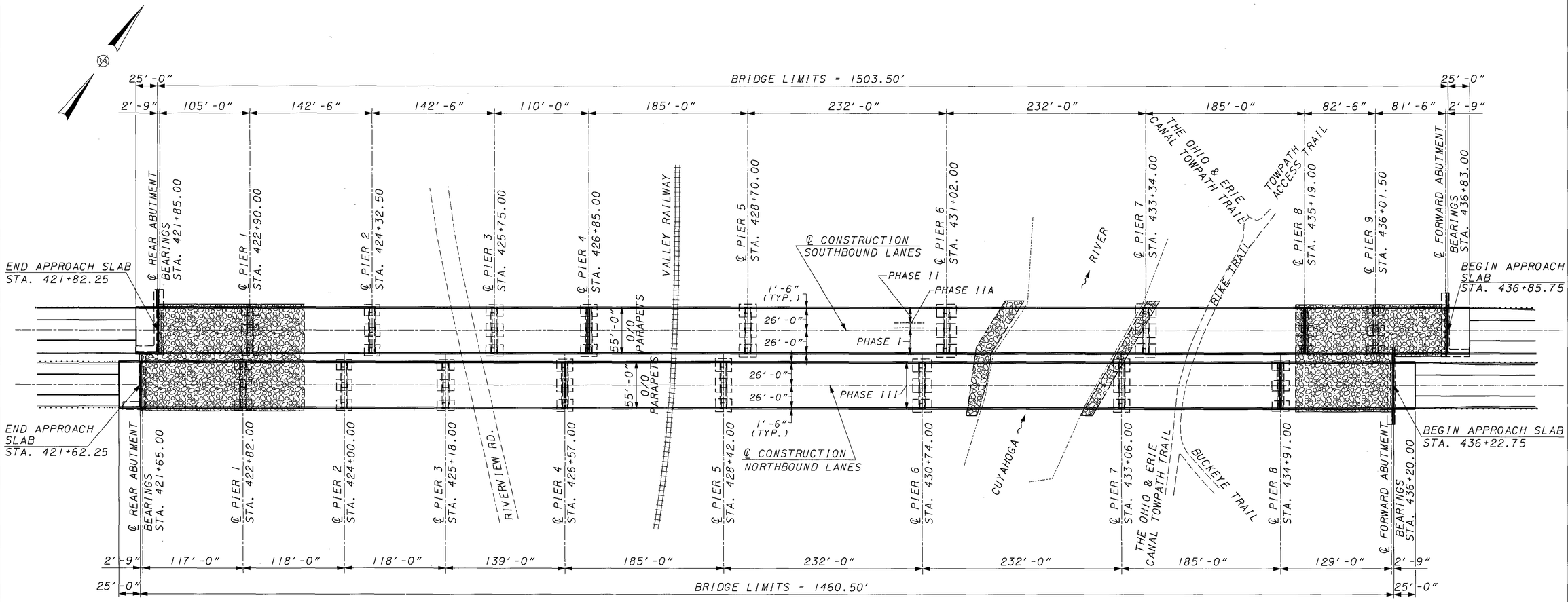
SITE PLAN 9 - CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

9 / 123

446 / 612

SU271SPV.DGN 6/23/04 SJK,JLS,KH,RC



PLAN

SU271GPN.DGN 6/23/04 TWH,SJK,JLS,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
DLR	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709013(L) 7709021(R)	

SUMMIT COUNTY
STA. 421+62.25
STA. 436+85.75

GENERAL PLAN - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

10 / 123

447
612

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWINGS:

AS-1-81	REVISED 7-19-2002
EXJ-6-95	REVISED 7-19-2002
PSID-1-99	REVISED 7-18-2003
SBR-1-99	REVISED 7-19-2002

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS

864	DATED 7-11-2000
894	DATED 4-19-2002
954	DATED 9-9-1997

DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO THE "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO), 2002.

THE FOLLOWING PUBLICATIONS WERE ALSO USED IN THE DESIGN OF UNIT 2:

AASHTO, "GUIDE SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF SEGMENTAL CONCRETE BRIDGES", 2ND EDITION, 1999.

AASHTO, "GUIDE SPECIFICATIONS FOR THERMAL EFFECTS IN CONCRETE BRIDGE SUPERSTRUCTURES", 1989.

AMERICAN CONCRETE INSTITUTE, "PREDICTION OF CREEP, SHRINKAGE, AND TEMPERATURE EFFECTS IN CONCRETE STRUCTURES.". ACI 209R-92, 1997.

DESIGN LOADING

HS25 AND THE ALTERNATE MILITARY LOADING
FUTURE WEARING SURFACE (FWS) ALLOWANCE OF 60 PSF
STAY-IN-PLACE FORM ALLOWANCE OF 15 PSF BETWEEN FLANGES
FUTURE VANDAL PROTECTION FENCE ALLOWANCE OF 0.6 PSF

CONSTRUCTION LOADING

THE BEAM DESIGN FOR UNIT 2 HAS BEEN CHECKED FOR A CONSTRUCTION LOAD OF 10 PSF APPLIED AFTER THE POST-TENSIONING DUCT GROUT HAS REACHED ITS MINIMUM DESIGN STRENGTH AND REMOVED PRIOR TO OPENING THE BRIDGE TO TRAFFIC.

MATERIALS

SUPERSTRUCTURE DECK, PARAPET & DIAPHRAGM (CLASS HP).f'c = 4500 PSI
SUBSTRUCTURE CONCRETE - CLASS C .....f'c = 4000 PSI
REINFORCING STEEL - ASTM A615 OR A996 GRADE 60
- MINIMUM YIELD STRENGTH 60,000 PSI
SPIRAL REINFORCEMENT MAY BE PLAIN BARS, ASTM A82 OR A615
STRUCTURAL STEEL (CROSSFRAMES) - ASTM A709 GRADE 36 OR 50
- MIN. fy = 36,000 PSI
SUPERSTRUCTURE PRESTRESSED CONCRETE GIRDERS (UNITS 1 & 3) .....
f'c = 7000 PSI
f'ci = 5000 PSI
SUPERSTRUCTURE PRESTRESSED CONCRETE GIRDERS (UNIT 2) .....
f'c = 8000 PSI
f'ci = 5500 PSI
PRESTRESSED CONCRETE CLOSURE POURS (UNIT 2).....
f'c= 6000 PSI
(5500 PSI PRIOR TO APPLICATION OF POST-TENSIONING)
PRESTRESSING STRAND, AASHTO M203, GRADE 270 LOW RELAXATION.....
f's = 270,000 PSI
fpy = 243,000 PSI

(UNITS 1 & 3) - ½" DIAMETER SEVEN-WIRE, UNCOATED, LOW-RELAXATION STRANDS. NOMINAL STRAND AREA = 0.167 IN^2.

(UNIT 2) - 0.6" DIAMETER SEVEN-WIRE, UNCOATED, LOW-RELAXATION STRANDS. NOMINAL STRAND AREA = 0.217 IN^2.

ALLOWABLE STRESSES

PRE-TENSIONED PRESTRESSED CONCRETE (UNITS 1 & 3):
TEMPORARY STRESSES BEFORE LOSSES DUE TO CREEP AND SHRINKAGE:
COMPRESSION..... 0.6 f'ci
TENSION (WITH BONDED REINFORCEMENT).....7.5 x SQRT(f'ci)

STRESSES AT SERVICE LOAD AFTER ALL LOSSES:
COMPRESSION DUE TO PERMANENT LOADS + LIVE LOAD .....0.6 f'c
COMPRESSION DUE TO PERMANENT LOADS ..... 0.4 f'c
COMPRESSION DUE TO ½ x PERMANENT LOAD + LIVE LOAD....0.4 f'c
TENSION (WITH BONDED REINFORCEMENT)..... 6 x SQRT(f'c)

POST-TENSIONED PRESTRESSED CONCRETE (UNIT 2):
STRESSES AT RELEASE:
COMPRESSION.....0.55 f'ci
TENSION (WITH BONDED REINFORCEMENT).....6 x SQRT(f'ci)

STRESSES DURING ERECTION:
COMPRESSION..... 0.5 f'c
TENSION (WITH BONDED REINFORCEMENT).....6 x SQRT(f'c)

TEMPORARY STRESSES BEFORE LOSSES DUE TO CREEP AND SHRINKAGE
COMPRESSION..... 0.6 f'c
TENSION (BEAMS WITH BONDED REINFORCEMENT).....6 x SQRT(f'c)
TENSION (CLOSURE POURS WITH AUXILIARY BONDED REINFORCEMENT).....3 x SQRT(f'c)

STRESSES AT SERVICE LOAD AFTER ALL LOSSES:
COMPRESSION DUE TO PERMANENT LOADS + LIVE LOAD .....0.6 f'c
COMPRESSION DUE TO PERMANENT LOADS .....0.45 f'c
COMPRESSION DUE TO ½ x PERMANENT LOAD + LIVE LOAD....0.4 f'c
TENSION (BEAMS WITH BONDED REINFORCEMENT).....6 x SQRT(f'c)
TENSION (CLOSURE POURS WITH AUXILIARY BONDED REINFORCEMENT).....3 x SQRT(f'c)

PRESTRESSING STEEL:
STRESS PRIOR TO SEATING.....0.8 F'S
STRESS AT ANCHORAGE IMMEDIATELY AFTER SEATING.....0.7 f's
STRESS AT INTERNAL LOCATIONS IMMEDIATELY AFTER SEATING.....0.74 f's
STRESS AT SERVICE LOAD AFTER LOSSES.....0.80 fpy

DIMENSIONS

DIMENSIONS SHOWN ON THE PLANS ARE FINAL IN PLACE DIMENSIONS AT 60 DEGREES F. ADJUSTMENTS FOR GRADE, ELASTIC SHORTENING, SHRINKAGE, ETC. SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE INCLUDED IN THE SHOP DRAWINGS.

DECK PROTECTION METHOD

- EPOXY COATED REINFORCING STEEL
- 2½" CONCRETE COVER

MONOLITHIC WEARING SURFACE

IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATION AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK, BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02 AND 513.04.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS WHICH HAVE BEEN VERIFIED IN THE FIELD.

EXISTING BRIDGE PLANS

MAY BE INSPECTED AT THE ODOT DISTRICT FOUR OFFICE IN AKRON, OHIO.

CONSTRUCTION SEQUENCE

ALSO SEE MAINTENANCE OF TRAFFIC PLAN SHEETS 21 THROUGH 57 OF 612 . THE FOLLOWING SEQUENCE OF CONSTRUCTION IS REQUIRED:

PHASE 1 CONSTRUCTION:
A. WITH TWO LANES OF TRAFFIC MAINTAINED ON EACH OF THE EXISTING STRUCTURES, INSTALL THE PHASE-LINE SHEETING AT THE FORWARD AND REAR ABUTMENTS OF THE EXISTING LEFT BRIDGE.
B. REMOVE THE EXISTING MEDIAN-SIDE WINGWALLS ON THE REAR AND FORWARD ABUTMENTS OF THE LEFT BRIDGE, AS DETAILED IN THE REMOVAL DETAILS ON SHEETS 16/123 AND 17/123.
C. DRIVE PILES AND CONSTRUCT THE MEDIAN-SIDE PORTIONS OF THE LEFT BRIDGE ABUTMENTS INCLUDING AT LEAST THREE PILES AT THE RIGHT FORWARD ABUTMENT AND THE LEFT BRIDGE PIERS.
D. ERECT THE NEW CONCRETE BEAMS AND STEEL CROSSFRAMES ON THE NEW BEARINGS, IN GENERAL CONFORMANCE WITH THE ERECTION SEQUENCE ON SHEET 68/123.
E. CONSTRUCT THE NEW BRIDGE DECK, PARAPET, AND APPROACH SLABS FOR THE MEDIAN-SIDE PART OF THE LEFT BRIDGE.
F. SWITCH SOUTHBOUND TRAFFIC TO THE NEW BRIDGE.

PHASE 2 CONSTRUCTION:
A. WITH TWO LANES OF SOUTHBOUND TRAFFIC MAINTAINED ON THE MEDIAN-SIDE PORTION OF THE LEFT BRIDGE, REMOVE THE EXISTING SOUTHBOUND BRIDGE.
B. DRIVE PILES AND CONSTRUCT THE REMAINDER OF THE LEFT BRIDGE ABUTMENTS AND PIERS.
C. ERECT THE NEW CONCRETE BEAMS AND STEEL CROSSFRAMES ON THE NEW BEARINGS, IN GENERAL CONFORMANCE WITH THE ERECTION SEQUENCE ON SHEET 68/123.
D. CONSTRUCT THE NEW BRIDGE DECK, PARAPET, AND APPROACH SLABS FOR THE OUTSIDE PART OF THE LEFT BRIDGE.

PHASE 2A CONSTRUCTION:
A. WITH TWO LANES OF SOUTHBOUND TRAFFIC MAINTAINED ON THE MEDIAN-SIDE PORTION OF THE LEFT BRIDGE, ERECT CROSSFRAMES BETWEEN THE PHASE I AND PHASE II CONSTRUCTION AND CONSTRUCT THE CLOSURE PORTION OF THE DECK.
B. APPLY THE HMWM RESIN TO THE CONCRETE DECK AND SEAL OTHER CONCRETE SURFACES.
C. SWITCH SOUTHBOUND TRAFFIC TO THE OUTSIDE PORTION OF THE BRIDGE, AND SWITCH NORTHBOUND TRAFFIC TO THE MEDIAN-SIDE PORTION OF THE BRIDGE.

PHASE 3 CONSTRUCTION:
A. WITH TWO LANES OF TRAFFIC MAINTAINED IN EACH DIRECTION ON THE NEW LEFT BRIDGE, REMOVE THE EXISTING RIGHT BRIDGE.
B. DRIVE PILES AND CONSTRUCT THE ABUTMENTS AND PIERS FOR THE NEW RIGHT BRIDGE.
C. ERECT THE NEW CONCRETE BEAMS AND STEEL CROSSFRAMES ON THE NEW BEARINGS, IN GENERAL CONFORMANCE WITH THE ERECTION SEQUENCE ON SHEET 68/123.
D. CONSTRUCT THE NEW BRIDGE DECK, PARAPET, AND APPROACH SLABS FOR THE NEW RIGHT BRIDGE.
E. APPLY THE HMWM RESIN TO THE CONCRETE DECK (AS NEEDED) AND SEAL OTHER CONCRETE SURFACES.
F. SWITCH NORTHBOUND TRAFFIC TO THE NEW RIGHT BRIDGE.
G. SWITCH SOUTHBOUND TRAFFIC TO THE FINAL POSITION ON THE LEFT BRIDGE.

NATIONAL PARK SERVICE COORDINATION:

THE PROPOSED PROJECT INVOLVES THE CUYAHOGA VALLEY NATIONAL PARK. THE CONTRACTOR SHALL SCHEDULE HIS CONSTRUCTION ACTIVITIES TO LIMIT THE IMPACT TO THE NORMAL OPERATIONS OF THE NATIONAL PARK SERVICE WHICH INCLUDES, BUT IS NOT LIMITED TO THE VALLEY RAILWAY, CUYAHOGA RIVER RECREATION USE, AND THE OHIO & ERIE CANAL TOWPATH TRAIL. THE PERMITTED CLOSURES, ACTIVITIES, AND RESTRICTIONS ARE DESCRIBED IN THE NATIONAL PARK SERVICE COORDINATION GENERAL NOTE SHEET NO. 23.

THE PERMITTED TOWPATH TRAIL CLOSURE TIMES ARE LIMITED. NO WORK SHALL BE PERFORMED OVER THE TOWPATH TRAIL WHILE IT IS OPEN TO USERS.

THE CONTRACTOR IS NOT PERMITTED TO WORK WITHIN THE EXISTING RIGHT OF WAY OF THE VALLEY RAILWAY EXCEPT IN AREAS PROVIDED BY TEMPORARY RIGHT OF WAY. THE CONTRACTOR IS TO SCHEDULE WORK OVER THE VALLEY RAILWAY WHEN THE RAILROAD IS NOT OPERATING.

ENVIRONMENTAL COMMITMENTS:

SEE GENERAL NOTE SHEET NO. 19 AND 20 FOR ENVIRONMENTAL COMMITMENTS AND RESTRICTIONS.

ITEM 202 - STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN

WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC, THE REQUIRED PORTIONS OF THE EXISTING STRUCTURES SHALL BE REMOVED UPON RECEIVING PERMISSION FROM THE ENGINEER.

REMOVE ABUTMENTS PER 202, EXCEPT THAT BACKWALLS AND WINGWALLS SHALL BE REMOVED AT LEAST TO THE TOP OF THE BEAM SEATS, AND IN PHASES AS NOTED IN THE REMOVAL DETAILS ON SHEETS 16/123 AND 17/123. REMOVE PIERS PER ITEM 202.

PROTECTION OF TRAFFIC: PRIOR TO DEMOLITION OF ANY PORTIONS OF THE EXISTING SUPERSTRUCTURE, SUBMIT PLANS FOR THE PROTECTION OF TRAFFIC (VEHICULAR, PEDESTRIAN, BOAT, ETC.) ADJACENT TO AND/OR UNDER THE STRUCTURE TO THE DIRECTOR AT LEAST 30 DAYS BEFORE CONSTRUCTION BEGINS. THESE PLANS SHALL INCLUDE PROVISIONS FOR ANY DEVICES AND STRUCTURES THAT MAY BE NECESSARY TO ENSURE SUCH PROTECTION. MAINTAIN THE TEMPORARY VERTICAL CLEARANCES SPECIFIED ON THE PLANS OR IN THE PROPOSAL AT ALL TIMES EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR. ALL COSTS ASSOCIATED WITH THIS TRAFFIC PROTECTION WILL BE INCLUDED WITH ITEM 202 FOR PAYMENT.

GENERAL NOTES CONTINUED: SEE SHEET 12/123.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

GENERAL NOTES 1 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

SU27IGNN.DGN 6/23/04 JLS,RC

LOADING LIMITATIONS: NO PART OF THE STRUCTURE SHALL BE SUBJECTED TO UNIT STRESSES THAT EXCEED 136.5% OF ALLOWABLE UNIT STRESSES AS DEFINED IN THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DUE EITHER TO DEMOLITION, ERECTION OR CONSTRUCTION METHODS, OR TO THE USE OR MOVEMENT OF DEMOLITION OR ERECTION EQUIPMENT ON OR ACROSS THE STRUCTURE. SUBMIT STRUCTURAL ANALYSIS COMPUTATIONS, BY AN OHIO REGISTERED PROFESSIONAL ENGINEER, SHOWING THE ALLOWABLE STRESSES AND THE MAXIMUM STRESSES PRODUCED BY THE REMOVAL METHODS OR EQUIPMENT TO THE DIRECTOR AT LEAST 20 DAYS BEFORE CONSTRUCTION BEGINS.

MEASUREMENT & PAYMENT: THE DEPARTMENT WILL MEASURE THE QUANTITY OF REMOVALS ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES OF REMOVALS AT THE CONTRACT PRICE FOR ITEM 202 - STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

ASBESTOS NOTIFICATION

AN ASBESTOS SURVEY OF THE I.R. 271 BRIDGE STRUCTURES OVER THE CUYAHOGA VALLEY (SFN: SUM-271-0802 L&R) SCHEDULED FOR REPLACEMENT WAS CONDUCTED BY A CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALIST. THE SURVEY DETERMINED THAT NO ASBESTOS IS PRESENT ON ANY OF THE BRIDGE STRUCTURES.

A COPY OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA) NOTIFICATION OF DEMOLITION AND RENOVATION FORMS, PARTIALLY COMPLETED AND SIGNED BY THE BRIDGE OWNER, WILL BE PROVIDED TO THE SUCCESSFUL BIDDER. THE CONTRACTOR SHALL COMPLETE THE FORM AND SUBMIT IT TO:

AKRON REGIONAL AIR QUALITY MANAGEMENT DISTRICT
146 S. HIGH ST., SUITE 904
AKRON, OHIO 44308
LYNN M. MALCOLM, ADMIN.
(330) 375-2480
FAX: (330) 275-2402

AT LEAST TEN (10) WORKING DAYS PRIOR TO THE START OF DEMOLITION AND/OR REHABILITATION. THE CONTRACTOR SHALL PROVIDE A COPY OF THE COMPLETED FORM TO THE ENGINEER.

IMPORTANT REQUIRED ON THE FORM WILL INCLUDE: 1.) THE CONTRACTORS NAME AND ADDRESS, 2.) THE SCHEDULED DATES FOR THE START AND COMPLETION OF THE BRIDGE REMOVAL AND 3.) A DESCRIPTION OF THE PLANNED DEMOLITION WORK AND THE METHOD(S) TO BE USED. A COPY OF THE OEPA FORM IS AVAILABLE FOR INSPECTION AT THE ODOT DISTRICT 4 OFFICE, 2088 S. ARLINGTON ROAD, AKRON, OHIO, 44306.

BASIS OF PAYMENT: THE CONTRACTOR SHALL FURNISH ALL FEES, LABOR, AND MATERIAL NECESSARY TO COMPLETE AND SUBMIT THE OEPA NOTIFICATION FORM. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN ITEM 202 - STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

ITEM 202 - REMOVAL, MISC.: EXISTING PILE

THE PROPOSED PILING HAS BEEN ARRANGED TO AVOID THE EXISTING PILES SUPPORTING THE EXISTING ABUTMENTS AND SOME PIERS. THE LOCATION OF THE EXISTING PILES WAS DERIVED FROM EXISTING PLAN. SHOULD EXISTING PILES INTERFERE WITH THE PILE DRIVING OPERATIONS, THE INTERFERING EXISTING PILES SHALL BE REMOVED.

A QUANTITY OF 11 PILES AT THE REAR ABUTMENTS; 13 PILES AT THE FORWARD ABUTMENTS; AND 29 PILES AT THE PIERS TO BE REMOVED HAS BEEN INCLUDED IN PLANS TO BE USED BY THE ENGINEER IN CASE OF PILE DRIVING CONFLICT.

WORK UNDER THIS ITEM SHOULD INCLUDE ALL LABOR, TOOLS, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETELY REMOVE THE PILE. MOST EXISTING FOOTINGS ARE TO BE LEFT IN PLACE AS DIRECTED IN THE "STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN" NOTE. THE BID PRICE OF THE PILE REMOVAL SHOULD ALSO INCLUDE ALL COSTS ASSOCIATED WITH THE REMOVAL OF ADDITIONAL PORTIONS OF REINFORCED CONCRETE SUBSTRUCTURE TO ACCESS THE EXISTING PILES FOR REMOVAL.

THE FOLLOWING EXISTING PILES WERE INDICATED ON THE ORIGINAL CONSTRUCTION PLANS:

REAR ABUTMENTS: 12" DIA. CAST-IN-PLACE PILES. ESTIMATED PAY LENGTH = 30 FEET
PIER 1 (LEFT): 12BP53 PILES. ESTIMATED PAY LENGTH = 34 FEET
PIER 1 (RIGHT): 12BP53 PILES. ESTIMATED PAY LENGTH = 27 FEET
PIER 2 (LEFT): 12BP53 PILES. ESTIMATED PAY LENGTH = 20 OR 17 FEET
PIER 7 (LEFT): 12BP53 PILES. ESTIMATED PAY LENGTH = 22 FEET
PIER 8 (LEFT): 12" DIA. CAST-IN-PLACE PILES. ESTIMATED PAY LENGTH = 40 FEET
PIER 8 (RIGHT): 12" DIA. CAST-IN-PLACE PILES. ESTIMATED PAY LENGTH = 30 FEET
FORWARD ABUTMENTS: 12" DIA. CAST-IN-PLACE PILES. ESTIMATED PAY LENGTH = 60 FEET

PAYMENT FOR THE REMOVAL OF INDIVIDUAL PILES AND SUBSTRUCTURE CONCRETE FOR ACCESS WILL BE MADE PER EACH UNDER ITEM 202 - REMOVAL, MISC.: EXISTING PILE.

ITEM 503 - COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN

TEMPORARY SHEET PILING SHALL BE PERFORMED IN ACCORDANCE WITH ITEM 504 AND DRIVEN TO SUPPORT THE ROADWAY EMBANKMENT DURING PHASED CONSTRUCTION EXCAVATION. SHEET PILING BEHIND THE EXISTING REAR ABUTMENT SHALL EXTEND APPROXIMATELY 20 FEET FROM THE BACK FACE OF THE EXISTING ABUTMENT. IT SHALL BE DRIVEN TO A MINIMUM DEPTH OF 30 FEET BELOW THE ELEVATION OF THE PROPOSED ABUTMENT AND HAVE A MINIMUM SECTION MODULUS OF 65 IN^3 PER FOOT OF WALL. SHEET PILING IN FRONT OF THE NEW FORWARD ABUTMENT SHALL EXTEND ABOUT 30 FEET FROM THE BACK FACE OF THE EXISTING ABUTMENT AND SHALL HAVE A MINIMUM SECTION MODULUS OF 14 IN^3 PER FOOT OF WALL AND EMBEDMENT OF 20 FEET. THE SHEET PILING BEHIND THE EXISTING FORWARD ABUTMENT SHALL BE ABOUT 20 FEET FROM THE BACK FACE AND SHALL HAVE A MINIMUM SECTION MODULUS OF 14 IN^3 PER FOOT OF WALL AND EMBEDMENT OF 20 FEET. PORTIONS OF SHEET PILING SHALL BE REMOVED AS NECESSARY TO PLACE PROPOSED ABUTMENT CONCRETE. ALL SHEET PILING SHALL BE REMOVED WHEN PHASE 2 BACKFILLING IS COMPLETE. THIS WORK SHALL BE INCLUDED WITH ITEM 503 - COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN, FOR PAYMENT.

UTILITY LINES

THE UTILITY(IES) SHALL BEAR ALL EXPENSE INVOLVED IN RELOCATING THE AFFECTED UTILITY LINES. THE CONTRACTOR AND UTILITY(IES) ARE TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

ITEM 503, UNCLASSIFIED EXCAVATION, AS PER PLAN

FILL THE VOID CREATED BY EXCAVATING FOR THE ABUTMENT FOOTINGS WITH TYPE B GRANULAR MATERIAL, 703.16.C. AFTER THE FOOTING AND THE BREASTWALL HAVE BEEN CONSTRUCTED, FILL THE VOID BEHIND EACH ABUTMENT UP TO THE BEAM SEAT ELEVATION AND FROM THE BEAM SEAT UP ON A 1:1 SLOPE TO THE SUBGRADE ELEVATION PRIOR TO CONSTRUCTING THE BACKWALL AND SETTING THE BEAMS ON THE ABUTMENT. THE BACKFILL MATERIAL BEHIND THE ABUTMENTS SHALL BE TYPE B GRANULAR MATERIAL, 703.16.C, PLACED AND COMPACTED IN 6 INCH LIFTS.

PILES TO BEDROCK (HP14x73 STEEL PILES)

DRIVE PILES TO REFUSAL ON BEDROCK. THE DEPARTMENT WILL CONSIDER REFUSAL TO BE OBTAINED BY PENETRATING SOFT BEDROCK FOR SEVERAL INCHES TO A MINIMUM RESISTANCE OF 20 BLOWS PER INCH OR BY CONTACTING HARD BEDROCK AND THE PILE RECEIVING AT LEAST 20 BLOWS. SELECT THE HAMMER SIZE TO ACHIEVE THE REQUIRED DEPTH TO BEDROCK AND REFUSAL.

UNIT	ULTIMATE BEARING VALUE (TONS/PILE)
ABUTMENT	
LEFT REAR	190
RIGHT REAR	170
PIER	
1 LEFT	146
7 LEFT	154
8 LEFT	138
1 RIGHT	139
8 RIGHT	

ABUTMENT PILES:
LEFT REAR ABUTMENT: 44 PILES 80 FEET LONG, ORDER LENGTH
RIGHT REAR ABUTMENT: 29 PILES 60 FEET LONG, ORDER LENGTH

PIER PILES:
PIER 1 LEFT: 41 PILES 35 FEET LONG, ORDER LENGTH
PIER 7 LEFT: 64 PILES 20 FEET LONG, ORDER LENGTH
PIER 8 LEFT: 41 PILES 80 FEET LONG, ORDER LENGTH
PIER 1 RIGHT: 41 PILES 25 FEET LONG, ORDER LENGTH
PIER 8 RIGHT: 41 PILES 75 FEET LONG, ORDER LENGTH

PILE DESIGN LOADS (ULTIMATE BEARING VALUE) (14 INCH DIAMETER CAST-IN-PLACE REINFORCED CONCRETE PILES)

THE ULTIMATE BEARING VALUE IS 130 TONS PER PILE FOR THE LEFT FORWARD ABUTMENT PILES. THE ULTIMATE BEARING VALUE IS 130 TONS PER PILE FOR THE RIGHT FORWARD ABUTMENT PILES.

THE ULTIMATE BEARING VALUE IS 126 TONS PER PILE FOR THE PIER 9 LEFT PILES.

ABUTMENT PILES (14 INCH DIAMETER):
LEFT FORWARD ABUTMENT: 40 PILES 70 FEET LONG, ORDER LENGTH
2 DYNAMIC LOAD TESTING ITEMS
RIGHT FORWARD ABUTMENT: 42 PILES 70 FEET LONG, ORDER LENGTH
1 DYNAMIC LOAD TESTING ITEM

PIER PILES (14 INCH DIAMETER):
PIER 9 LEFT: 36 PILES 75 FEET LONG, ORDER LENGTH
1 DYNAMIC LOAD TESTING ITEM

BATTERED FRICTION PILES

THE BLOW COUNT FOR BATTERED PILES SHALL BE THE BLOW COUNT DETERMINED FOR VERTICAL PILES OF THE SAME ULTIMATE BEARING VALUE DIVIDED BY AN EFFICIENCY FACTOR (D). COMPUTE THE EFFICIENCY FACTOR (D) AS FOLLOWS:

$D = (1 - U \times G) / (1+G^2)^{1/2}$

U = COEFFICIENT OF FRICTION, WHICH IS ESTIMATED AT 0.05 FOR DOUBLE-ACTING AIR OPERATED OR DIESEL HAMMERS; 0.1 FOR SINGLE-ACTING AIR OPERATED OR DIESEL HAMMERS; AND 0.2 FOR DROP HAMMERS.
G = RATE OF BATTER (1/3, 1/4, ETC.)

FOUNDATION BEARING PRESSURE

FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE AS TABULATED BELOW. THE ALLOWABLE BEARING PRESSURE IS ALSO TABULATED BELOW.

UNIT	BEARING PRESSURE, TSF	
	MAXIMUM	ALLOWABLE
PIER 2 LEFT	4.7	5.0
PIER 3 LEFT		5.0
PIER 4 LEFT	6.0	6.0
PIER 5 LEFT	6.0	6.0
PIER 6 LEFT		5.0
PIER 2 RIGHT	4.4	5.0
PIER 3 RIGHT		5.0
PIER 4 RIGHT		5.0
PIER 5 RIGHT	6.0	6.0
PIER 6 RIGHT		5.0
PIER 7 RIGHT	6.0	6.0

FOOTINGS

SHALL EXTEND A MINIMUM OF 3 INCHES INTO COMPETENT BEDROCK. IF NECESSARY DUE TO POOR BEDROCK MATERIAL, THE FOOTINGS SHOULD BE LOWERED. IF THE LOW POINT OF THE COMPETENT BEDROCK SURFACE OCCURS 2 FEET OR MORE ABOVE PLAN ELEVATION, THE FINAL FOOTING ELEVATIONS MAY BE RAISED, UPON RECOMMENDATION OF A GEOTECHNICAL ENGINEER AND APPROVAL BY THE DIRECTOR, BUT TO AN ELEVATION NOT HIGHER THAN WILL PROVIDE AT LEAST ONE FOOT OF COVER. STEPPING OF INDIVIDUAL FOOTINGS WILL NOT BE PERMITTED UNLESS SHOWN ON THE PLANS.

GENERAL NOTES CONTINUED: SEE SHEET 13/123.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

GENERAL NOTES 2 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

SU271GNN.DGN 6/23/04 TWH,JLS,RC

ITEM 514, FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT, AS PER PLAN
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN

THE STEEL TO BE PAINTED SHALL INCLUDE ALL OUTSIDE SURFACES OF THE SCUPPERS BELOW THE BRIDGE DECK, DOWNSPOUTS, THEIR SUPPORT BRACKETS AND ALL MISCELLANEOUS ATTACHMENT HARDWARE SUCH AS CLAMPS, NUTS, BOLTS AND WASHERS. THE TOP COAT COLOR SHALL CLOSELY MATCH THE COLOR OF THE EPOXY-URETHANE SEALER APPLIED TO THE PIERS (FEDERAL STANDARD NO. 595B-17778 - "LIGHT NEUTRAL").

THE PAINT MAY BE FIELD APPLIED OR SHOP APPLIED. IF THE PAINT IS SHOP APPLIED, THE TWO SHOP COATS (EPOXY/URETHANE PER 514) SHALL BE APPLIED IN A STRUCTURAL STEEL FABRICATION SHOP HAVING PERMANENT BUILDINGS PER 513.04 AND PRE-QUALIFIED AT THE 513 LEVEL UF. THE PAINTER IS UNDER SUPERVISION OF A QUALITY CONTROL PAINT SPECIALIST AND IS A 513 FABRICATOR, THE FIELD PAINTING SUBCONTRACTOR PERFORMING TOUCH UP WORK IN THE FIELD AND/OR SHOP PAINTING AT THE 513 FABRICATOR'S FACILITY OR AN INDEPENDENT PAINTER THAT IS CERTIFIED BY SSPC-QP3 WITH FACILITIES EVALUATION AND ACCEPTANCE BY THE DEPARTMENT.

ALL GALVANIZED STEEL TO BE PAINTED SHALL BE PREPARED PRIOR TO PAINTING PER THE ITEM 514, FIELD PAINTING, MISC.: SURFACE PREPARATION OF GALVANIZED STEEL NOTE. THE EPOXY COATING SHALL BE APPLIED WITHIN 24 HOURS OF THE BRUSH-OFF BLASTING.

FIELD REPAIRS AND TOUCH UPS SHALL FOLLOW WORK LIMITATIONS SPECIFIED PER 514 AND BE AS DIRECTED BY THE ENGINEER. BOLTS SHALL BE PAINTED IN THE FIELD.

PAYMENT FOR THE INTERMEDIATE COAT AND FINISH COAT PAINTING SHALL BE MADE PER LUMP SUM UNDER ITEM 514, FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT, AS PER PLAN, AND ITEM 514, FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN.

ITEM 514, FIELD PAINTING, MISC.: SURFACE PREPARATION OF GALVANIZED STEEL

THE GALVANIZED STEEL DRAINAGE SYSTEM SHALL BE PAINTED WITH AN EPOXY INTERMEDIATE COAT AND URETHANE FINISH COAT. PRIOR TO PAINTING, THE GALVANIZED SURFACES TO BE PAINTED SHALL RECEIVE THE PREPARATION DETAILED BELOW.

PRIOR TO GALVANIZING ALL CORNERS OF THERMALLY CUT OR SHEARED EDGES SHALL HAVE A 1/16 INCH RADIUS OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE. SURFACE PREPARATION MAY BE PERFORMED IN THE SHOP OR IN THE FIELD.

STEEL TO BE PAINTED SHALL NOT BE POST-TREATED WITH WATER QUENCHING NOR CHROMATE CONVERSION COATED, SINCE THESE WILL ADVERSELY AFFECT THE BOND BETWEEN THE GALVANIZED STEEL AND THE PAINT. THE CONTRACTOR SHALL VERIFY THESE TREATMENTS HAVE NOT BEEN PERFORMED BY THE GALVANIZING SHOP, AND SHALL PERFORM A SPOT TEST PER ASTM D201 TO CHECK FOR THE PRESENCE OF A CHROMATE CONVERSION COATING.

AFTER GALVANIZATION, ZINC HIGH SPOTS SUCH AS METAL DRIP LINE AND OTHERS THAT WOULD DETRACT FROM THE PAINT APPEARANCE WILL BE MADE FLUSH WITH THE SURROUNDING SURFACE BY SSPC SP2 OR SP3. CARE SHALL BE TAKEN THAT THE BASE GALVANIZED COATING IS NOT REMOVED. REPAIRED AREAS SHALL BE CHECKED FOR REQUIRED COATING THICKNESS.

GALVANIZED COATINGS DAMAGED IN THE SHOP SHALL BE REPAIRED PER ASTM A780 METHOD A3. GALVANIZED COATINGS DAMAGED IN THE FIELD SHALL BE REPAIRED PER ASTM A780 METHOD A1.

AFTER REMOVING HIGH SPOTS, THE GALVANIZED COATING SHALL BE CLEANED PER SSPC SP-1. THE CLEANING SOLUTION SHALL BE AN ALKALINE SOLUTION WITH A PH RANGING FROM A MINIMUM OF 11 TO A MAXIMUM OF 12. THIS SOLUTION CAN BE APPLIED BY IMMERSION OR SPRAY OR SOFT NYLON BRUSH. IF IMMERSING OR SPRAYING, MAINTAIN A SOLUTION TEMPERATURE OF 140° F TO 180° F FOLLOW CLEANING WITH A HOT WATER OR HOT PRESSURE WASHER RINSE NOT EXCEEDING 1450 PSI. . INDIVIDUAL PIECES SHALL BE SEPARATED AND POSITIONED TO FACILITATE DRAINAGE AND DRYING. THE PIECES SHALL BE COMPLETELY DRY BEFORE PROCEEDING.

AFTER CLEANING, THE PIECES SHALL BE ABRASIVE BLASTED PER SSPC-SP7 BRUSH-OFF BLAST CLEANING. THE BLASTING OPERATION SHALL ROUGHEN THE GALVANIZED SURFACE TO AN ANGULAR SURFACE PROFILE OF 0.25 TO 0.50 MILS. THE BLASTING EQUIPMENT, TECHNIQUE AND ABRASIVE MATERIAL SHALL BE SELECTED TO PROVIDE FOR THE SPECIFIED SURFACE PROFILE WITHOUT REMOVAL OF ZINC LAYERS. THE FINAL ZINC MILLAGE SHALL NOT BE LESS THAN 3.0 MILS AND SHALL BE MEASURED PRIOR TO EPOXY COAT APPLICATION. ALL ABRASIVE RESIDUE SHALL BE REMOVED WITH CLEAN COMPRESSED AIR OR OTHER METHODS ACCEPTABLE TO THE DEPARTMENT.

AFTER OBTAINING THE SURFACE PROFILE, APPLY THE TWO COAT PAINT SYSTEM. THE EPOXY COATING SHALL BE APPLIED WITHIN 24 HOURS OF THE BRUSH-OFF BLASTING.

PAYMENT FOR THE SURFACE PREPARATION OF THE GALVANIZED STEEL FOR PAINTING, AS DESCRIBED ABOVE, SHALL BE MADE PER ITEM 514, FIELD PAINTING, MISC.: SURFACE PREPARATION OF GALVANIZED STEEL.

ITEM 864, SEALING OF CONCRETE SURFACES (EPOXY URETHANE)

EPOXY-URETHANE SHALL BE THE NEUTRAL COLOR (FS 595B-17778). ALL ABUTMENT SURFACES SHALL BE COMPLETELY SEALED DOWN TO GROUND LINE WITH EPOXY-URETHANE. ALL PIER SURFACES, EXCEPT THE TOP AND BOTTOM HORIZONTAL FACES OF THE CAP AND THE BOTTOM FACE STRUT, SHALL BE COMPLETELY SEALED DOWN TO GROUND LINE WITH EPOXY-URETHANE. THE SUPERSTRUCTURES SHALL BE SEALED AS PER PLAN DETAILS.

ITEM 894 - HIGH PERFORMANCE CONCRETE FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN

THE DESIGN MIX SHALL BE CLASS HP4. (SEE CMS TABLE 499.03-4.). CURING SHALL BE PER METHOD (A) WATER CURE ONLY.

CONCRETE PARAPETS: AS SOON AS A CONCRETE SAW CAN BE OPERATED WITHOUT DAMAGING THE FRESHLY PLACED CONCRETE, SAWCUT 1¼" DEEP CONTROL JOINTS INTO THE PERIMETER OF THE CONCRETE PARAPET STARTING AND ENDING AT THE ELEVATION OF THE CONCRETE DECK. PLACE THE SAWCUTS AT A MINIMUM OF 6 FOOT AND A MAXIMUM OF 10 FOOT CENTERS. USE AN EDGE GUIDE, FENCE, OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE, AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF ¼ INCH. SEAL THE PERIMETER OF THE DEFLECTION CONTROL JOINT TO A MINIMUM DEPTH OF 1 INCH WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO ASTM C920, TYPE S.

LEAVE THE BOTTOM ½ INCH OF THE INSIDE AND OUTSIDE FACE UNSEALED TO ALLOW WATER TO ESCAPE.

THE QUANTITY OF CONCRETE, DEFLECTION JOINT SAWCUT, CAULKING MATERIAL AND ½ INCH PREFORMED EXPANSION JOINT FILLER FOR PARAPET ALONG THE LENGTH OF THE TURNED BACK WINGWALLS SHALL BE INCLUDED IN THIS ITEM FOR PAYMENT.

GENERAL NOTES CONTINUED: SEE SHEET 14/123.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
DLR	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709013(L) 7709021(R)	

GENERAL NOTES 3 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

450/612

SU271GNN.DGN 6/23/04 JLS,RC

ITEM SPECIAL - MODULAR EXPANSION JOINT

A. DESCRIPTION

THIS ITEM SHALL CONSIST OF FURNISHING ALL MATERIALS, SERVICES, LABOR, TOOLS, EQUIPMENT, AND INCIDENTALS NECESSARY TO DESIGN, FABRICATE, INSPECT, TEST, AND INSTALL MODULAR EXPANSION JOINTS IN ACCORDANCE WITH THE PLANS AND THESE NOTES. ALL REQUIREMENTS OF CMS 513, STRUCTURAL STEEL MEMBERS, LEVEL UF APPLY, UNLESS MODIFIED BY THESE NOTES.

B. DESIGN

1. MODULAR JOINTS AND THEIR SUPPORTS SHALL BE DESIGNED FOR AASHTO HS25 LOADING WITH 100% IMPACT. MODULAR DEVICES MAIN LOAD BEARING BEAMS, SUPPORT BEAMS, AND WELDS SHALL BE DESIGNED FOR FATIGUE. THE MANUFACTURER OF THE EXPANSION JOINT MUST SUBMIT DESIGN CALCULATIONS SHOWING THAT THE DEVICE CAN MEET THE IMPACT AND FATIGUE DESIGN REQUIREMENTS. THE FATIGUE CYCLES SHOULD BE 2,000,000 + TRUCK LOAD CYCLES.

2. THE DESIGN SHALL BE PREPARED BY AND CHECKED UNDER THE AUTHORITY OF AN OHIO-REGISTERED PROFESSIONAL ENGINEER AND BEAR HIS OR HER PROFESSIONAL ENGINEER SEAL. THE DESIGN CALCULATIONS SHALL BE INCLUDED WITH THE CONTRACTOR'S SUBMISSION OF SHOP DRAWINGS PER CMS 513.06.

3. THE SHOP DRAWINGS SHALL CONTAIN A DETAILED INSTALLATION PROCEDURE AND INCLUDE ANY SPECIFIC MANUFACTURER'S NOTES NECESSARY FOR COMPLETION OF THE WORK AND CONSTRUCTION PHASING.

4. THE MODULAR JOINT COMPONENTS, JOINT ARMOR AND ANCHORAGES SHALL BE DESIGNED AND TESTED ACCORDING TO THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT # 402 APPENDIX A AND B.

5. TEMPORARY AND FIELD CONNECTIONS TO THE BRIDGE SHALL BE DESIGNED TO ACCOMMODATE ADJUSTMENTS FOR ROADWAY GEOMETRY AND VARYING TEMPERATURE.

6. THE MODULAR JOINT SHALL ACCOMMODATE THE PLAN SPECIFIED MOVEMENT FOR A COLD CLIMATE AS SPECIFIED BY 2002 AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES SECTION 3.16.

7. SPACING OF SUPPORT BEAMS SHALL BE LIMITED TO 3'-0" CENTERS UNDER MAIN LOAD BEARING BEAMS UNLESS FATIGUE TESTING OF THE ACTUAL WELDING CONNECTION DETAILS HAS BEEN PERFORMED TO SHOW THAT A GREATER SPACING IS ACCEPTABLE.

8. SUPPORT BAR BEARINGS WILL BE SUPPLIED TO TRANSFER THE LOAD FROM THE SUPPORT BARS TO THE JOINT ARMOR.

9. EQUALIZATION SPRINGS WHICH WORK COUNTER TO THE COMPRESSION FORCES OF THE SEALING ELEMENTS SHALL BE USED TO MAINTAIN EQUALIZATION EXPANSION PROPERTIES FOR EACH ELEMENT ACROSS THE JOINT.

10. CONTROL SPRINGS WHICH WORK LONGITUDINALLY SHALL BE USED TO MAINTAIN EQUIDISTANT SPACING BETWEEN TRANSVERSE SEPARATION BEAMS.

11. SEPARATION BEAMS/ TRANSVERSE DIVIDERS SHALL BE SUPPLIED AS NEEDED.

12. THE SEAL SHALL BE A STRIP SEAL TYPE CONNECTED TO MATCHING RETAINERS CONNECTED TO THE JOINT ARMOR AND MACHINED GROOVES IN THE CENTER BEAM. EACH INDIVIDUAL STRIP SEAL SHALL NOT EXCEED 3.15 INCHES OF TOTAL HORIZONTAL MOVEMENT.

13. THE NEOPRENE SEALS, SUPPORT BAR BEARINGS, AND EQUALIZATION SPRINGS SHALL BE REMOVABLE AND REPLACEABLE.

14. THE SEALS AND RETAINERS SHALL BE SET 1/8" LOWER THAN THE ROADWAY SURFACE.

15. THE MODULAR EXPANSION JOINT SHALL BE DESIGNED AND FABRICATED AS A CONTINUOUS FULL LENGTH JOINT WITHOUT FIELD SPLICES, EXCEPT AS REQUIRED FOR PHASED CONSTRUCTION.

C. MATERIALS

1. STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 50. CENTER BEAMS, EDGE BEAMS, AND JOINT ARMOR SHALL BE CHARPY V NOTCH IMPACT TESTED PER ASTM A709 TABLE S1.2 ZONE 2 TEMPERATURE RANGE. TUBE SECTIONS SHALL BE ASTM A501 OR A500 GRADE B.

2. STAINLESS STEEL SHALL BE ASTM A240 TYPE 304, NO. 8 FINISH WITH A MINIMUM THICKNESS OF 13 GAGE.

3. ELASTOMERIC, PTFE, URETHANE AND PREFORMED FABRIC MATERIALS USED IN SUPPORT BAR BEARINGS SHALL BE TESTED AND REPORTED BY THE MANUFACTURER OR AN INDEPENDENT TESTING LABORATORY FOR EACH BEARING AND SPRING TYPE. THE SUBMISSION OF MATERIAL CERTIFICATION AND TESTING DATA SHALL BE PER 501.06. THESE MATERIALS SHALL BE TESTED ACCORDING TO THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT # 402 APPENDIX A "GUIDELINE FOR DURABILITY TESTING OF SPRINGS AND BEARINGS FOR MBEJ".

4. STRIP SEALS SHALL BE EXTRUDED POLYCHLOROPRENE CONFORMING TO ASTM D2628. THE RECOVERY TEST IS NOT APPLICABLE, DUE TO CONFIGURATION OF THE SEAL. PHYSICAL PROPERTIES OF THE STRIP SEAL SHALL CONFORM TO TABLE "A". THE MANUFACTURER OR AN ACCREDITED LABORATORY SHALL TEST EACH LOT AS SPECIFIED AND SUBMIT CERTIFIED TEST DATA PER 501.06. THE SEAL AND RETAINER ARE IN INTEGRAL SYSTEM SUPPLIED BY ONE MANUFACTURER.

TABLE A
(PHYSICAL PROPERTIES OF SEAL ELEMENT)

PROPERTY	REQUIREMENT	ASTM METHOD
TENSILE STRENGTH, MIN. PSI	2000	D412
ELONGATION @ BREAK, MIN.(PERCENT)	250	D412
HARDNESS, TYPE A DUROMETER, POINTS	60±5	D2240 (MODIFIED)
OVEN AGING, 70 HR @ 212° F, TENSILE STRENGTH LOSS, MAX. ELONGATION, LOSS, MAX. HARDNESS, TYPE A DUROMETER, POINTS CHANGE	 20% 20% 0 TO +10	D573 D2240 (MODIFIED)
OIL SWELL, ASTM OIL 3, 70 HR @ 212° F, WEIGHT CHANGE MAX.	45%	D471
OZONE RESISTANCE 20% STRAIN, 300 PPHM IN AIR, 70 HR @ 104° F (WIPED WITH TOLUENE TO REMOVE SURFACE CONTAMINATION)	NO CRACKS	D1149
LOW TEMPERATURE STIFFENING 7 DAYS@ 14° F HARDNESS, TYPE A DUROMETER, POINTS CHANGE COMPRESSION SET, 70 HR @ 212° F. MAX.	 0 TO +15 40%	D2240 D2240 (MODIFIED) D395 METHOD B

5. SEAL RETAINERS: EXTRUDE, HOT ROLL OR MACHINE, STEEL RETAINERS INTO A SOLID SHAPE. RETAINERS MANUFACTURED FROM BENT PLATE OR BUILT UP PIECES ARE NOT ACCEPTABLE. THE INTERNAL DIMENSIONS OF THE RETAINER SHALL BE SPECIFIED BY THE MANUFACTURER TO ACHIEVE POSITIVE SEAL AND ANCHORAGE.

6. CENTER BEAMS SHALL BE SOLID, NON-WELDED, MACHINED OR EXTRUDED STEEL SECTION.

7. LUBRICANT - ADHESIVE. ONE PART MOISTURE CURING POLYURETHANE COMPOUND MEETING THE REQUIREMENTS OF ASTM D4070 AND AS SPECIFIED BY THE SEAL MANUFACTURER.

8. HARDWARE SHALL BE ASTM A325 TYPE ONE, GALVANIZED OR A449 GALVANIZED.

D. FABRICATION

1. THE STRUCTURAL STEEL COMPONENTS OF THE MODULAR JOINTS SHALL BE FABRICATED ACCORDING TO CMS 513.

2. THE MODULAR JOINT SHALL BE SHOP ASSEMBLED WITH ALL COMPONENTS EXCEPT NEOPRENE SEALS, PER CMS 513.24, EXCEPT THAT FULL ASSEMBLY IS REQUIRED WITH PHASED CONSTRUCTION.

3. JOINTS IN STRIP SEALS: NO JOINTS ARE ALLOWED, UNLESS APPROVED BY THE DIRECTOR.

4. JOINTS IN RETAINERS: WELDS SHALL BE WATER TIGHT, PARTIAL PENETRATION WELDS AROUND THE OUTER PERIPHERY OF THE ABUTTING SURFACES. SPLICES SHALL ONLY BE MADE IN THE COMPRESSION ZONE OF THE JOINT ARMOR. GRIND FLUSH ALL WELDS IN CONTACT WITH THE SEAL AND JOINT ARMOR. DO NOT USE SHORT PIECES OF RETAINERS LESS THAN 6'-0" LONG, UNLESS REQUIRED AT PARAPETS. DO NOT PROVIDE ADDITIONAL SPLICES IN RETAINERS AT PARAPET SECTIONS OTHER THAN REQUIRED FOR GEOMETRY.

5. SHOP OR FIELD WELDS OF CENTER BEAMS AND JOINT ARMOR SHALL BE COMPLETE PENETRATION WELDS, GROUND TO PROVIDE SMOOTH TRANSITIONS, AND SHALL BE 100 % ULTRASONICALLY TESTED PER AASHTO/AWS D1.5M/D1.5:2002 BRIDGE WELDING CODE, WITH ACCEPTANCE CRITERIA PER TABLE 6.3, WITNESSED BY THE DEPARTMENT.

6. THE CENTER BEAM TO SUPPORT BAR CONNECTIONS SHALL BE COMPLETE PENETRATION WELDS, GROUND TO PROVIDE SMOOTH TRANSITIONS, AND SHALL BE 100% ULTRASONICALLY TESTED PER AASHTO/AWS D1.5M/D1.5:2002 BRIDGE WELDING CODE, WITH ACCEPTANCE CRITERIA PER TABLE 6.3, WITNESSED BY THE DEPARTMENT.

7. TEMPORARY SUPPORTS: FABRICATOR-DESIGNED AND INSTALLED SUPPORTS ARE REQUIRED TO SUPPORT SHIPPING, ERECTION, AND CONSTRUCTION FORCES WITHOUT DAMAGE TO THE STEEL ARMOR OR COATINGS. THESE SUPPORTS SHALL BE ADJUSTABLE FOR FIELD TEMPERATURE SETTING.

E. COATING

1. ALL STEEL SURFACES AND COMPONENTS, EXCEPT AT STAINLESS STEEL AND PTFE SLIDING SURFACES, SHALL BE COATED PER CMS 516.03. DAMAGED COATINGS SHALL BE REPAIRED PER CMS 516.03. METALIZED COATINGS SHALL NOT BE FIELD PAINTED.

2. PRIOR TO SHIPPING, RETAINER GROOVES SHALL BE PROTECTED FROM CONSTRUCTION DEBRIS BY THE INSTALLATION OF BACKER RODS OR OTHER EFFECTIVE MASKING TECHNIQUES.

F. INSTALLATION

1. THE JOINT MANUFACTURER'S TECHNICAL REPRESENTATIVE SHALL PHYSICALLY OVERSEE THE FABRICATION, INSTALLATION, ADJUSTMENT AND TESTING DURING ALL OPERATIONS. WHERE SPECIAL INSTRUCTIONS ARE NOT CONTAINED HEREIN OR ELSEWHERE IN THESE NOTES, DIRECTION FOR THE INSTALLATION SHALL BE ACCORDING TO THE RECOMMENDATIONS OF THE TECHNICAL REPRESENTATIVE. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE THE TECHNICAL REPRESENTATIVE.

2. THE SUPERSTRUCTURE DECK ADJCENT TO THE ABUTMENT SHALL BE IN PLACE WITH AN APPROPRIATE BLOCKOUT BEFORE INSTALLING THE MODULAR JOINT. THE JOINT SHALL BE POSITIONED TO MATCH ROADWAY GEOMETRY, SUPERSTRUCTURE CONNECTIONS AND TEMPERATURE OPENING. CARE SHALL BE TAKEN TO MAINTAIN EXACT ALIGNMENT OF ADJACENT ENDS OF THE ARMOR AND CENTER BEAMS FOR FIELD-WELDED UNITS. TEMPORARY SUPPORTS SHALL BE PROVIDED AS DIRECTED BY THE MANUFACTURER TO MAINTAIN THE PROPER POSITIONING FOR PHASED CONSTRUCTION, THE CONTRACTOR'S METHODS FOR INSTALLATION AND TEMPORARY SUPPORTS SHALL ACHIEVE SEPERATION OF THE PHASES AND UNRESTRICTED TEMPERATURE MOVEMENT.

3. THE CONTRACTOR'S METHODS OF CONCRETE PLACEMENT SHALL INCLUDE VIBRATION AND HAND WORK AS NECESSARY TO ACHIEVE CONSOLIDATION AND ELIMINATE AIR VOIDS, PARTICULARLY IN AND AROUND THE JOINT BLOCKOUTS.

4. PLACE CONCRETE IN THE DECK BLOCKOUT FIRST AND ALLOW IT TO CURE. CHECK THE THE ABUTMENT OR ADJACENT SPAN SIDE OF THE MODULAR JOINT FOR ALIGNMENT AND TEMPERATURE ADJUSTMENT. TEMPERATURE SHALL BE MEASURED AT THE UNDERSIDE OF THE CONCRETE DECK AT EACH END AND MID-SPAN TO ACHIEVE THE AVERAGE SUPERSTRUCTURE TEMPERATURE. PLACE CONCRETE IN THE BACKWALL BLOCKOUT SECOND. THE MANUFACTURER'S REPRESENTATIVE SHALL CHECK THAT TEMPERATURE MOVEMENT HAS NOT CAUSED ANY DAMAGE TO THE BOND BETWEEN THE JOINT AND THE CONCRETE.

5. EXAMINE SEAL RETAINERS FOR SOIL OR DEFECTS THAT CAN DAMAGE THE SEAL. REPAIR ANY DEFECTS AS DIRECTED BY THE MANUFACTURER'S REPRESENTATIVE.

6. THE NEOPRENE SEAL ELEMENTS AND THE RETAINER GROOVES SHALL BE SOLVENT CLEANED TO REMOVE OIL, GREASE, OR OTHER SOIL IMMEDIATELY PRIOR TO INSTALLING THE SEALS. THE SEALS SHALL BE INSTALLED WITH THE RECOMMENDED ADHESIVE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE BONDING SURFACES SHALL BE CLEAN, DRY, AND WARMER THAN 45° F.

7. THE COMPLETE, INSTALLED EXPANSION DEVICE SHALL BE TESTED FOR WATERTIGHTNESS, BY FLOODING THE TOTAL EXPANSION JOINT LENGTH WITH WATER FOR A PERIOD OF NOT LESS THAN ONE HOUR. THE ENTIRE JOINT SYSTEM SHALL BE COVERED EITHER BY PONDED OR FLOWING WATER. SHOULD THE JOINT SYSTEM EXHIBIT ANY EVIDENCE OF WATER LEAKAGE, THE CONTRACTOR SHALL LOCATE THE POINTS OF LEAKAGE AND SHALL TAKE ANY AND ALL MEASURES NECESSARY TO STOP THE LEAKAGE. THIS WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE. AFTER ALL REPAIRS HAVE BEEN MADE, AN ADDITIONAL TEST FOR WATERTIGHTNESS SHALL BE PERFORMED.

G. METHOD OF MEASUREMENT

THE DEPARTMENT WILL MEASURE THE MODULAR JOINTS BY THE NUMBER OF FEET HORIZONTALLY ALONG THE JOINT CENTERLINE AND BETWEEN THE OUTER LIMITS OF THE FABRICATED JOINT.

H. BASIS OF PAYMENT

PAYMENT WILL BE MADE AT CONTRACT PRICES FOR:

ITEM	UNIT	DESCRIPTION
SPECIAL	FOOT	MODULAR EXPANSION JOINT

SU271EXN.DGN 6/23/04 HN,JLS,KH,TWH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED K.A.K | REVISED | STRUCTURE FILE NUMBER 7709031(L) 7709021(R)

MODULAR EXPANSION JOINT NOTES - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOMPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

ESTIMATED QUANTITIES (CONCRETE)

CALCULATED ALP DATED 10/03
CHECKED JLS DATED 02/04

ITEM	ITEM EXT.	TOTAL LEFT STRUCTURE	TOTAL RIGHT STRUCTURE	UNIT	DESCRIPTION	LEFT STRUCTURE (SOUTHBOUND) SUPER	ABUTS.	PIERS	GEN'L	RIGHT STRUCTURE (NORTHBOUND) SUPER	ABUTS.	PIERS	GEN'L	SEE SHEET
202	11003	LUMP	LUMP		STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				LUMP				LUMP	11/123
202	98100	32	21	EACH	REMOVAL, MISC.: EXISTING PILE				32				21	12/123
503	11101	LUMP	LUMP		COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN				LUMP				LUMP	12/123
503	21101	5989	3859	CU YD	UNCLASSIFIED EXCAVATION, AS PER PLAN		820	5169			575	3284		12/123
503	31120	451	518	CU YD	SHALE EXCAVATION			451				518		
505	11100	LUMP	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION				LUMP				LUMP	
507	00300	9515	5840	FT	STEEL PILES HP14x73, FURNISHED		3520	5995			1740	4100		
507	00350	8565	5285	FT	STEEL PILES HP14x73, DRIVEN		3300	5265			1595	3690		
507	00600	5120	2730	FT	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN		2600	2520			2730			
507	00650	5500	2940	FT	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED		2800	2700			2940			
509	10000	1,894,489	1,688,717	POUND	EPOXY COATED REINFORCING STEEL	1,041,956	54,655	797,878		963,679	40,105	684,933		
511	41001	3621	3083	CU YD	CLASS C CONCRETE, PIER ABOVE FOOTINGS, AS PER PLAN			3621				3083		43/123
511	43500	556	403	CU YD	CLASS C CONCRETE, ABUTMENT INCLUDING FOOTING		556				403			
511	46500	1333	1125	CU YD	CLASS C CONCRETE, FOOTING			1333				1125		
511	52000	LUMP	LUMP		CLASS HP CONCRETE, TEST SLAB	LUMP				LUMP				
512	33001	11	5	SQ YD	TYPE 2 WATERPROOFING, AS PER PLAN		11				5			19/123 22/123
514	00301	LUMP	LUMP		FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT, AS PER PLAN *	LUMP				LUMP				13/123
514	00401	LUMP	LUMP		FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN *	LUMP				LUMP				13/123
514	27800	LUMP	LUMP		FIELD PAINTING, MISC.: SURFACE PREPARATION OF GALVANIZED STEEL	LUMP				LUMP				13/123
514	1000	7	5	EACH	FINAL INSPECTION REPAIR *	7				5				
515	15054	38	35	EACH	DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LEVEL 3, TYPE 4 MODIFIED (78")	38				35				
515	16000	35	35	EACH	PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, MISC.: POST-TENSIONED SPLICED BEAM SEGMENTS (SEE PROPOSAL NOTE)	35				35				
515	20000	168	166	EACH	INTERMEDIATE DIAPHRAGMS	168				166				
516	11210	110	110	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (3")	110				110				
516	11210	55	55	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (5")	55				55				
SPECIAL	51612400	55	55	FT	MODULAR EXPANSION JOINT	55				55				14/123
516	44000	42	42	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (8"x24"x1.474" WITH 9"x26" BEVELED LOAD PLATE)	42				42				
516	44000	5	7	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (8"x24"x1.474" WITH 9"x40" BEVELED LOAD PLATE)	5				7				
516	44100	29	21	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (8"x24"x2.374" WITH 9"x26" BEVELED LOAD PLATE)	29				21				
516	44400	5	5	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (24"x32"x6.125" WITH 25"x50" BEVELED LOAD PLATE)	5				5				
516	44400	10	10	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (24"x32"x8.125" WITH 25"x50" BEVELED LOAD PLATE)	10				10				
516	44400	10	10	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (18"x24"x9.875" WITH 20"x26" BEVELED LOAD PLATE)	10				10				
518	12300	36	32	EACH	SCUPPERS, INCLUDING SUPPORTS	36				32				
518	21200	206	167	CU YD	POROUS BACKFILL WITH FILTER FABRIC		206				167			
518	40000	191	170	FT	6" PERFORATED CORRUGATED PLASTIC PIPE		191				170			
518	40010	82	116	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS		82				116			
518	51100	1032	687	FT	8" PIPE DOWNSPOUT, INCLUDING SPECIALS	1032				687				
523	20000	3	1	EACH	DYNAMIC LOAD TESTING		2	1			1			
526	25001	297	302	SQ YD	REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN				297				302	117/123
SPECIAL	53000300	147,460	147,460	POUND	STRUCTURE, MISC.: POST-TENSIONING (SEE SPECIAL PROVISION)	147,460				147,460				
864	10100	14,456	13,086	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	7784	183	6489		7539	114	5433		
894	10001	3392	3262	CU YD	HIGH PERFORMANCE CONCRETE FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN	3392				3262				13/123

* SEE PROPOSAL NOTE

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RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN JLS | CHECKED BLN | REVISED

DATE 3/18/04
REVISED DAP
STRUCTURE FILE NUMBER 7709013 (L) 7709021 (R)

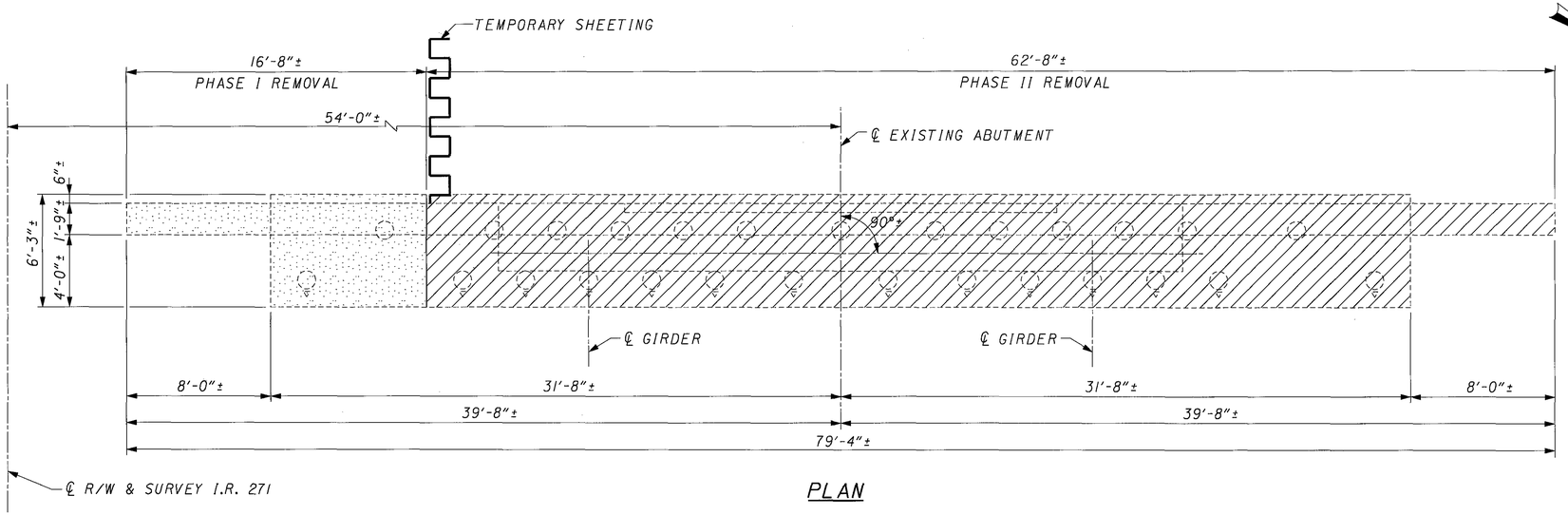
ESTIMATED QUANTITIES - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

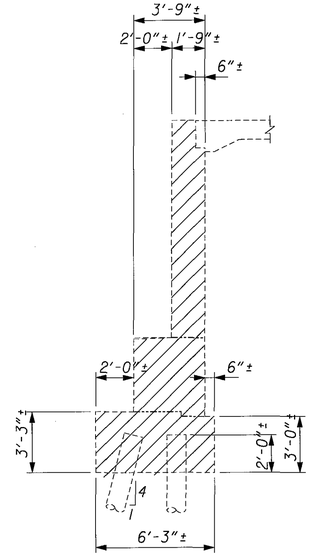
15/123

452/612

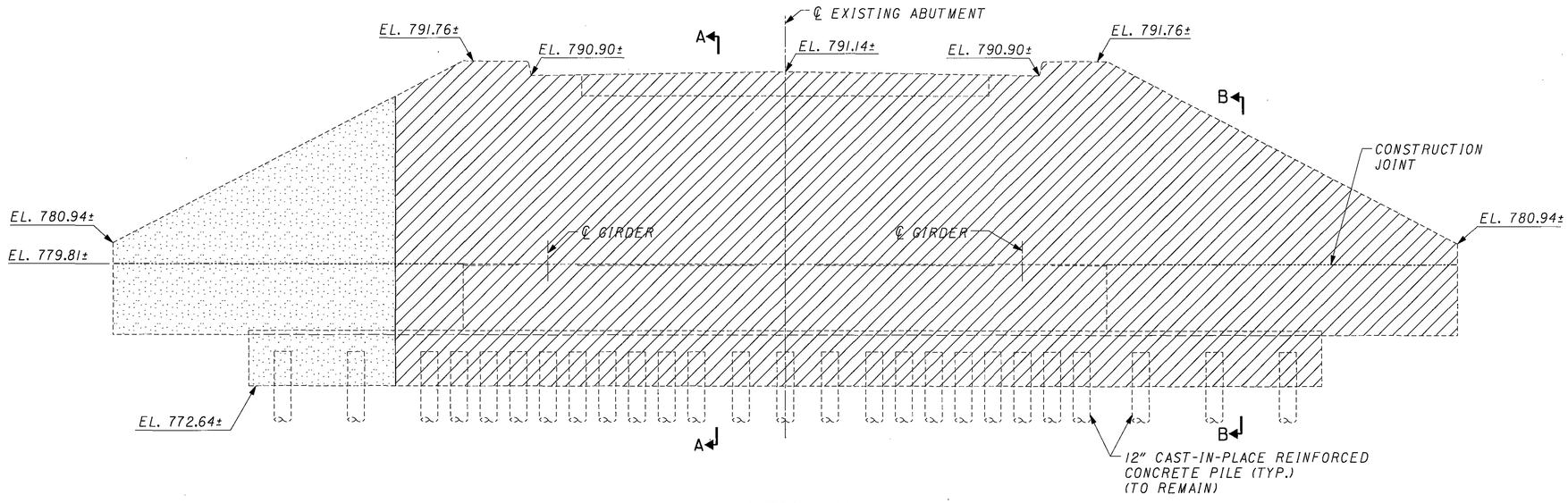
SU271EQN.DGN 11/02/04 KH,TWH,JLS,SJK,RC,CAR,HN



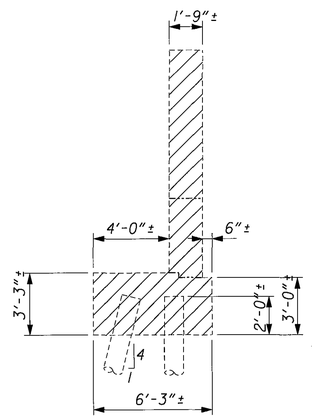
PLAN



SECTION A-A



ELEVATION



SECTION B-B

LEGEND

INDICATES MATERIALS TO BE REMOVED DURING PHASE I REMOVAL

INDICATES MATERIALS TO BE REMOVED DURING PHASE II REMOVAL

NOTE

EXISTING RIGHT REAR ABUTMENT WILL BE REMOVED IN ACCORDANCE WITH CMS 202 DURING PHASE III.

SU271MDN.DGN 6/23/04 TWH,JLS,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
DLR	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709013	

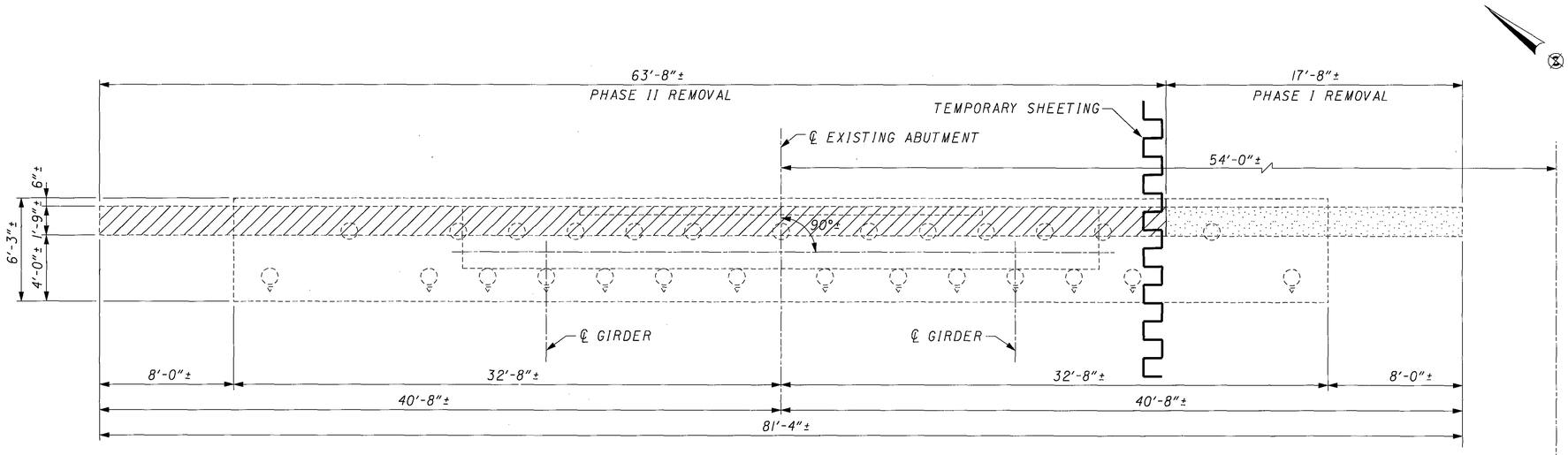
REAR ABUTMENT REMOVAL - CONCRETE

BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

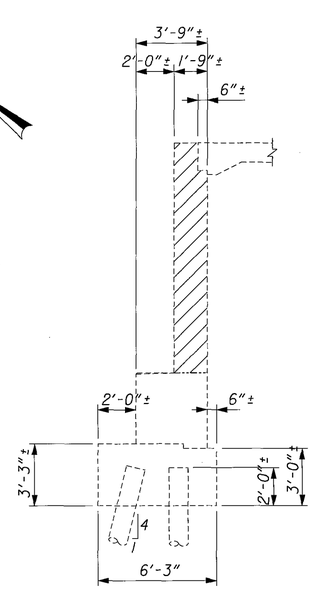
SUM-271-8.02

16/123

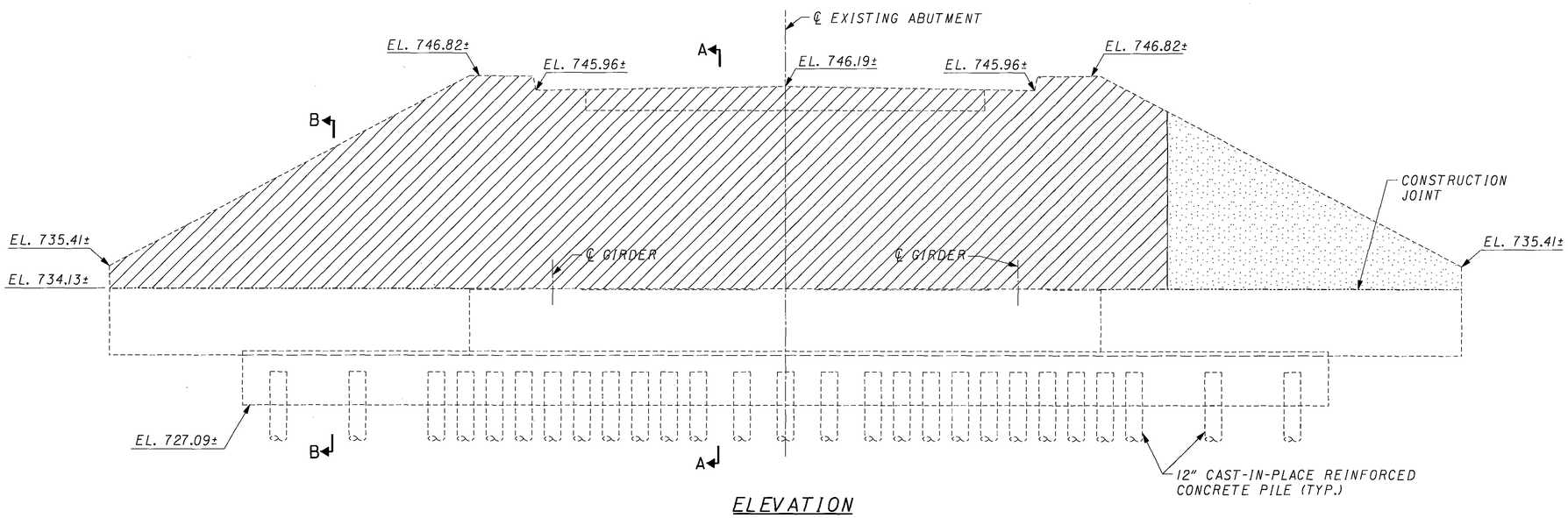
453/612



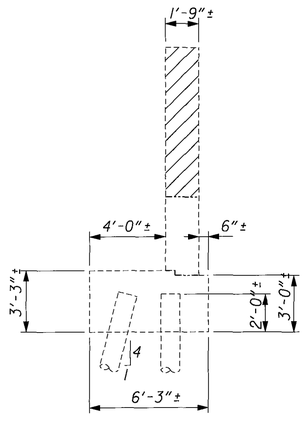
PLAN



SECTION A-A



ELEVATION



SECTION B-B

LEGEND

INDICATES MATERIALS TO BE REMOVED DURING PHASE I REMOVAL

INDICATES MATERIALS TO BE REMOVED DURING PHASE II REMOVAL

NOTE

EXISTING RIGHT REAR ABUTMENT WILL BE REMOVED IN ACCORDANCE WITH CMS 202 DURING PHASE III.

SU271MD0.DGN 6/23/04 TWH,JLS,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

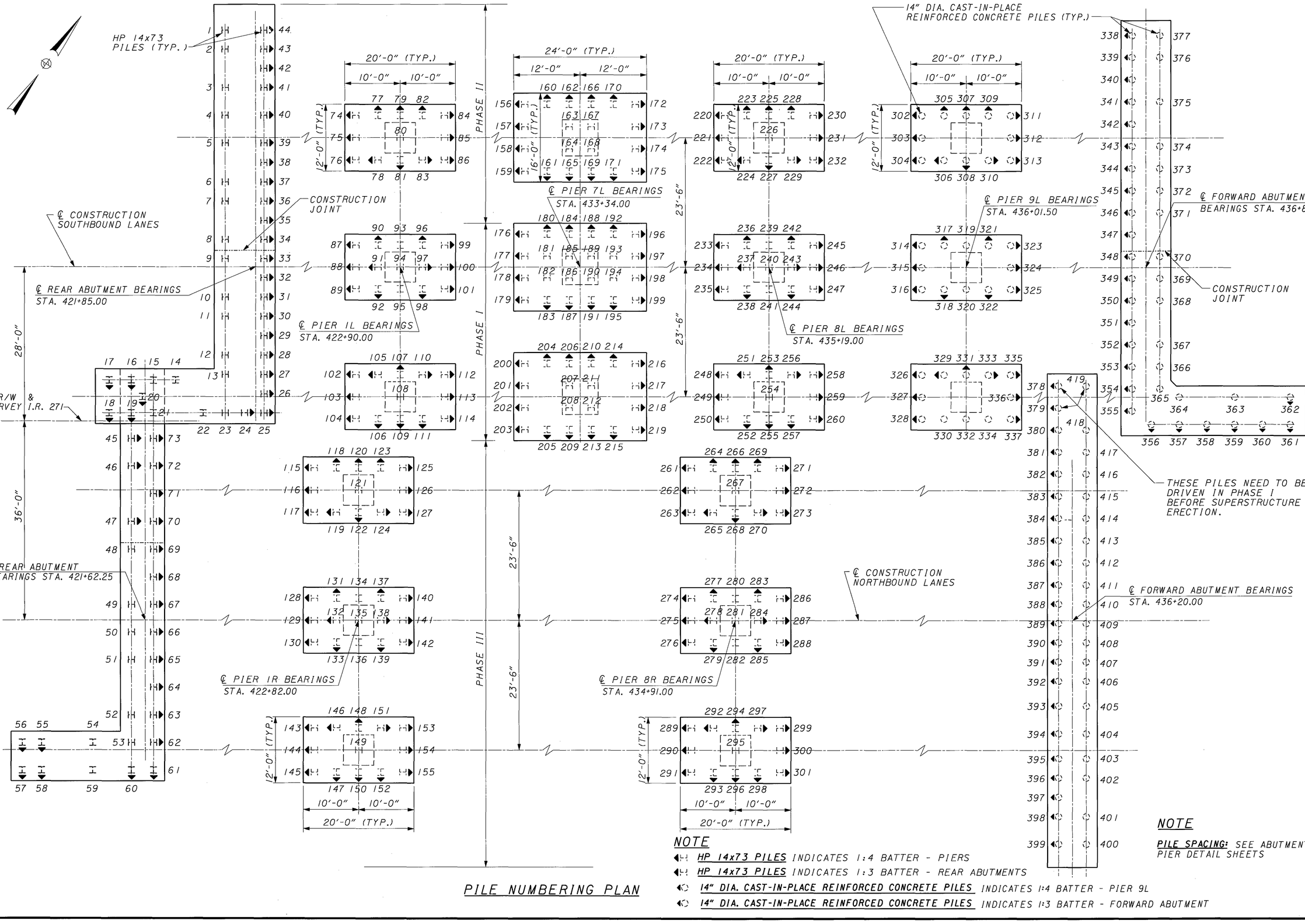
DESIGNED	DRAWN	REVIEWED	DATE
DLR	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709013	

FORWARD ABUTMENT REMOVAL - CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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454
612



PILE NUMBERING PLAN

NOTE

HP 14x73 PILES INDICATES 1:4 BATTER - PIERS

HP 14x73 PILES INDICATES 1:3 BATTER - REAR ABUTMENTS

14" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILES INDICATES 1:4 BATTER - PIER 9L

14" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILES INDICATES 1:3 BATTER - FORWARD ABUTMENT

NOTE

PILE SPACING: SEE ABUTMENT & PIER DETAIL SHEETS

SU271PIB.DGN 6/23/04 TWH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

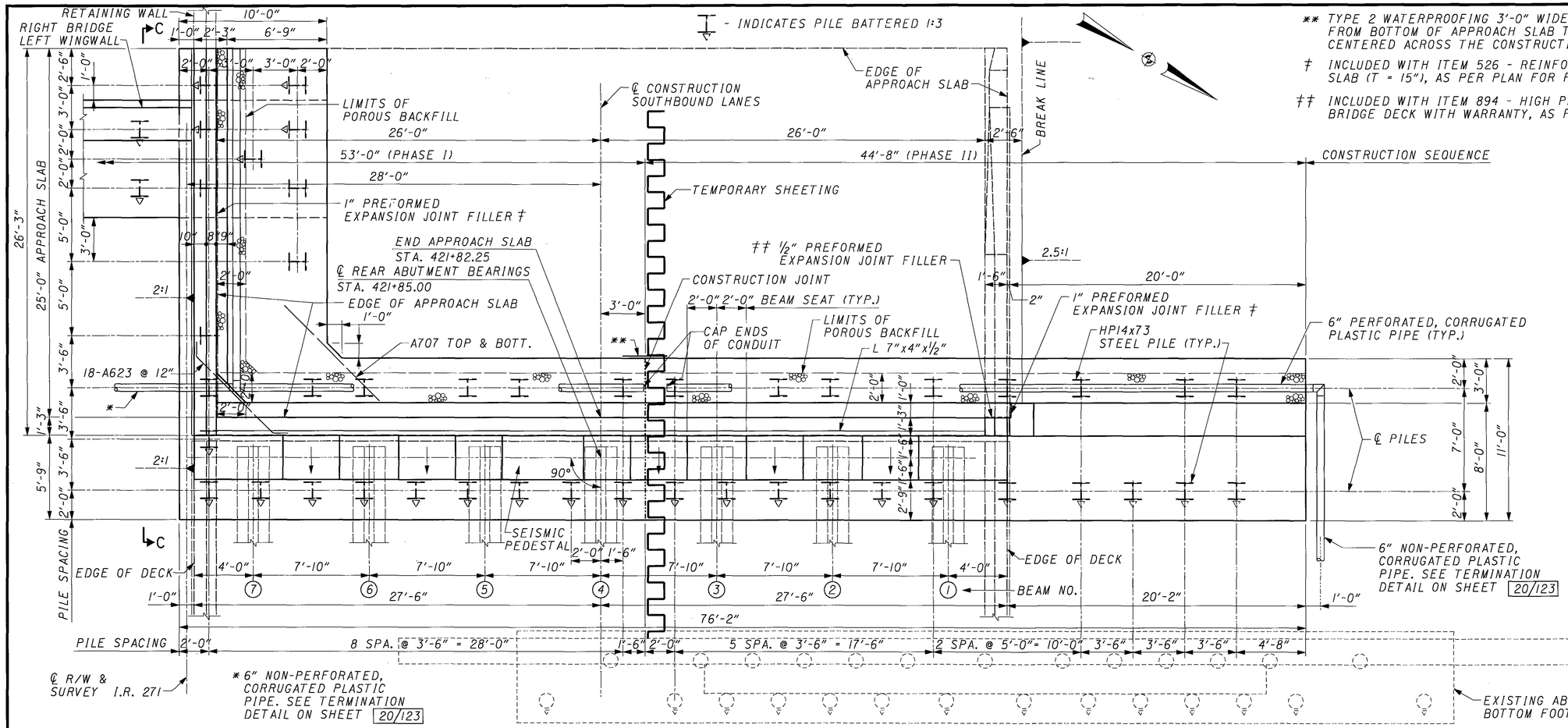
DESIGNED BLN | DRAWN TWH | REVIEWED DAP | DATE 3/18/04
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

PILE NUMBERING - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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NOTES

REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-0" FOR #5 VERTICAL BARS, 2'-9" FOR #5 HORIZONTAL BARS, 2'-5" FOR #6 VERTICAL BARS, 3'-4" FOR #6 HORIZONTAL BARS, 3'-10" FOR #7 VERTICAL AND HORIZONTAL BARS AND 5'-10" FOR #8 BARS.

POROUS BACKFILL WITH FILTER FABRIC, 2'-0" THICK, SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE, TO ONE FOOT BELOW THE EMBANKMENT SURFACE, AND LATERALLY TO THE ENDS OF THE WINGWALLS. GEOTEXTILE FABRIC SHALL CONFORM WITH 712.09, TYPE A. THE BOTTOM OF THE POROUS BACKFILL SHALL BE SLOPED LATERALLY TO DRAIN. GEOTEXTILE FABRIC IS INCLUDED WITH POROUS BACKFILL FOR PAYMENT.

SECTIONS A-A & B-B: SEE SHEET 20/123

VIEW C-C: SEE SHEET 21/123

SEISMIC PEDESTAL DETAIL: SEE SHEET 29/123

MECHANICAL CONNECTOR DETAIL: SEE SHEET 26/123

PILE NUMBERING DIAGRAM: SEE SHEET 18/123

GRADING PLAN: SEE SHEETS 279 AND 282 .

NOTATION: F.F. - FRONT FACE
R.F. - REAR FACE
E.F. - EACH FACE

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709013	

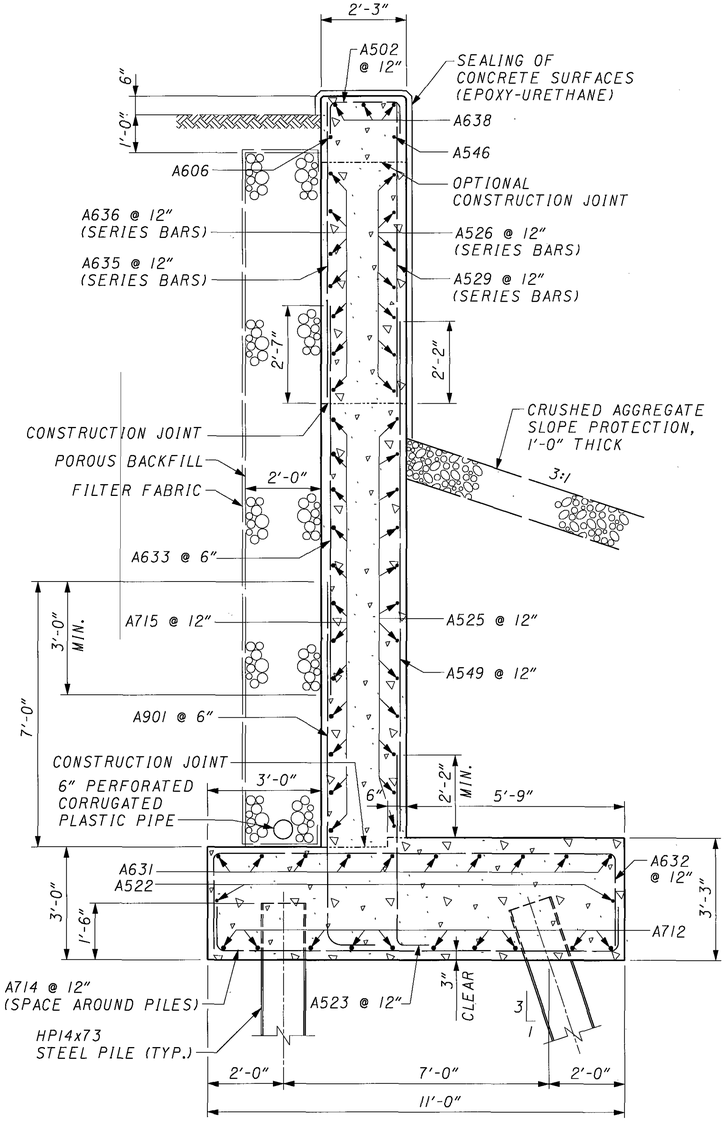
LEFT REAR ABUTMENT - CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

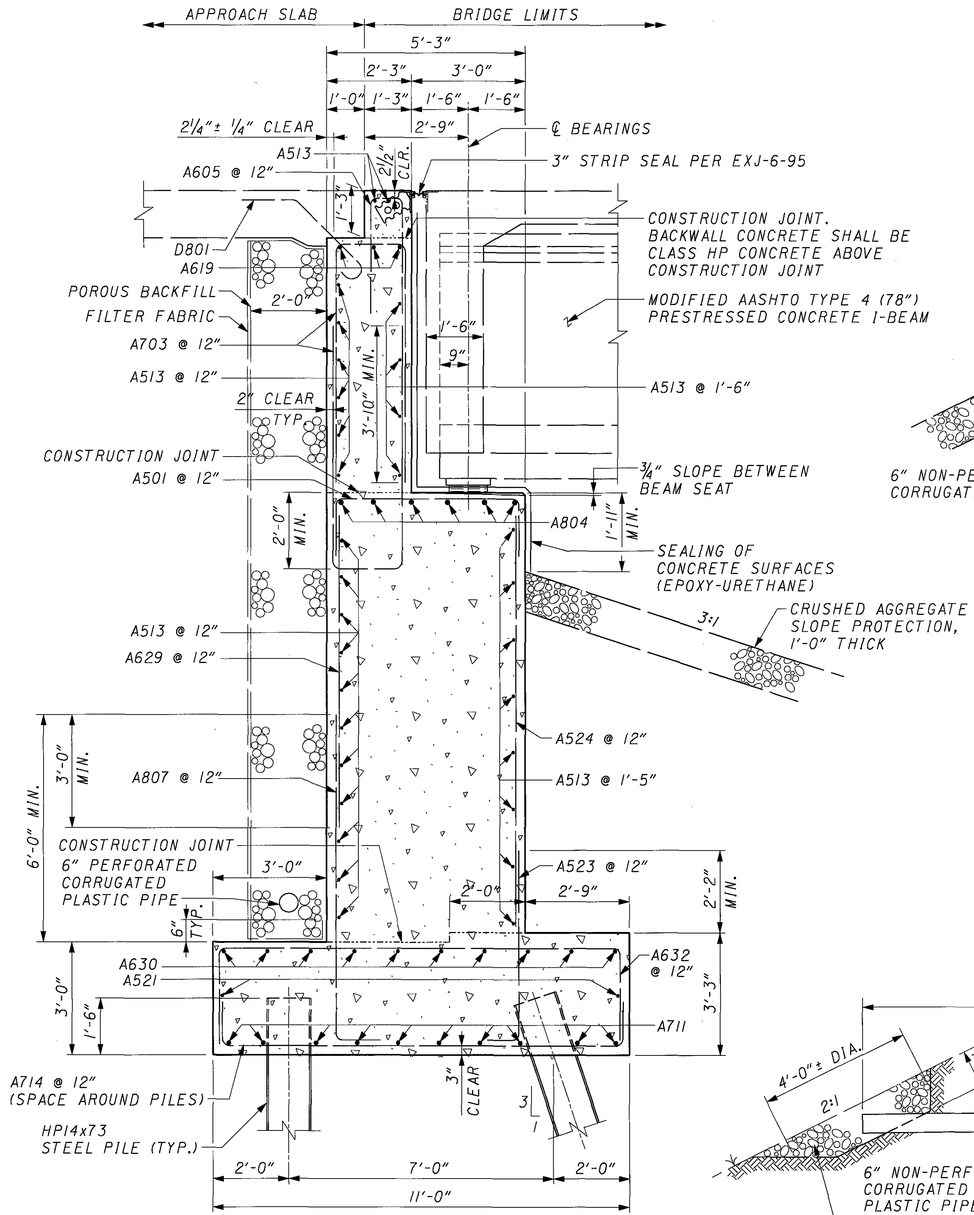
19/123

456/612

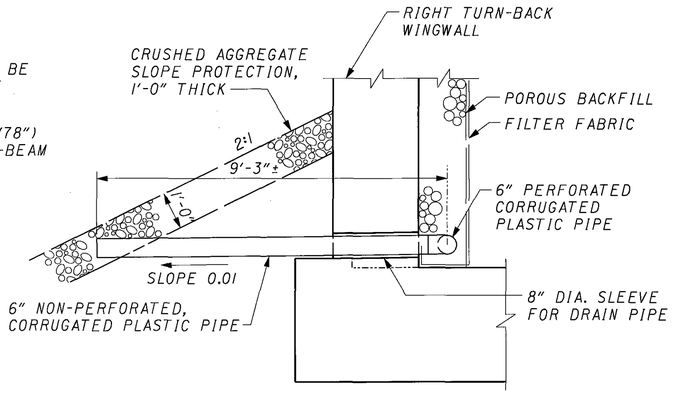
SU271RA0.DGN 6/23/04 TWH,KH,JLS,RC



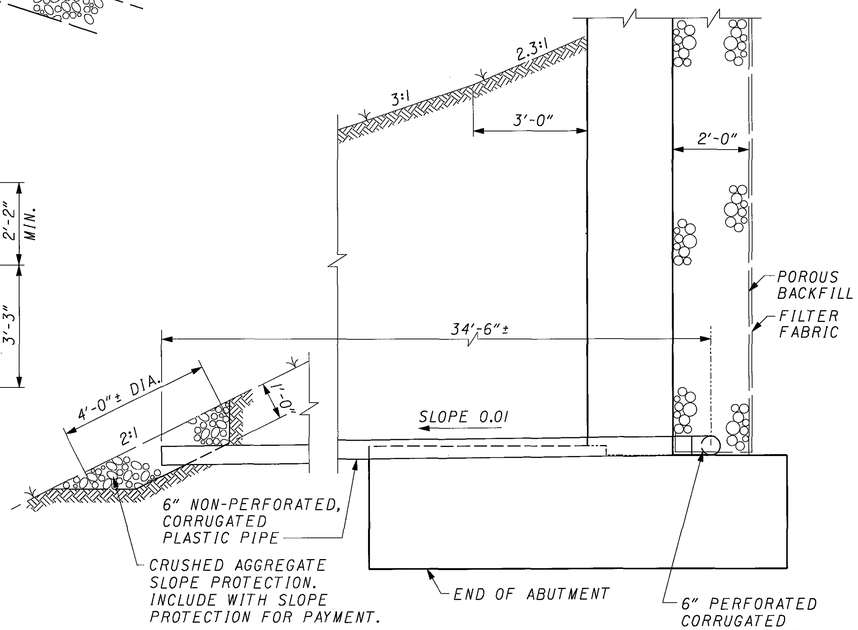
SECTION B-B



SECTION A-A



TERMINATION OF 6" (RIGHT) NON-PERFORATED CONDUIT



TERMINATION OF 6" (LEFT) NON-PERFORATED CONDUIT

NOTES

ADDITIONAL NOTES: SEE SHEET 19/123

SU271ADO.DGN 6/23/04 JLS,KH,TWH,RC

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709013	

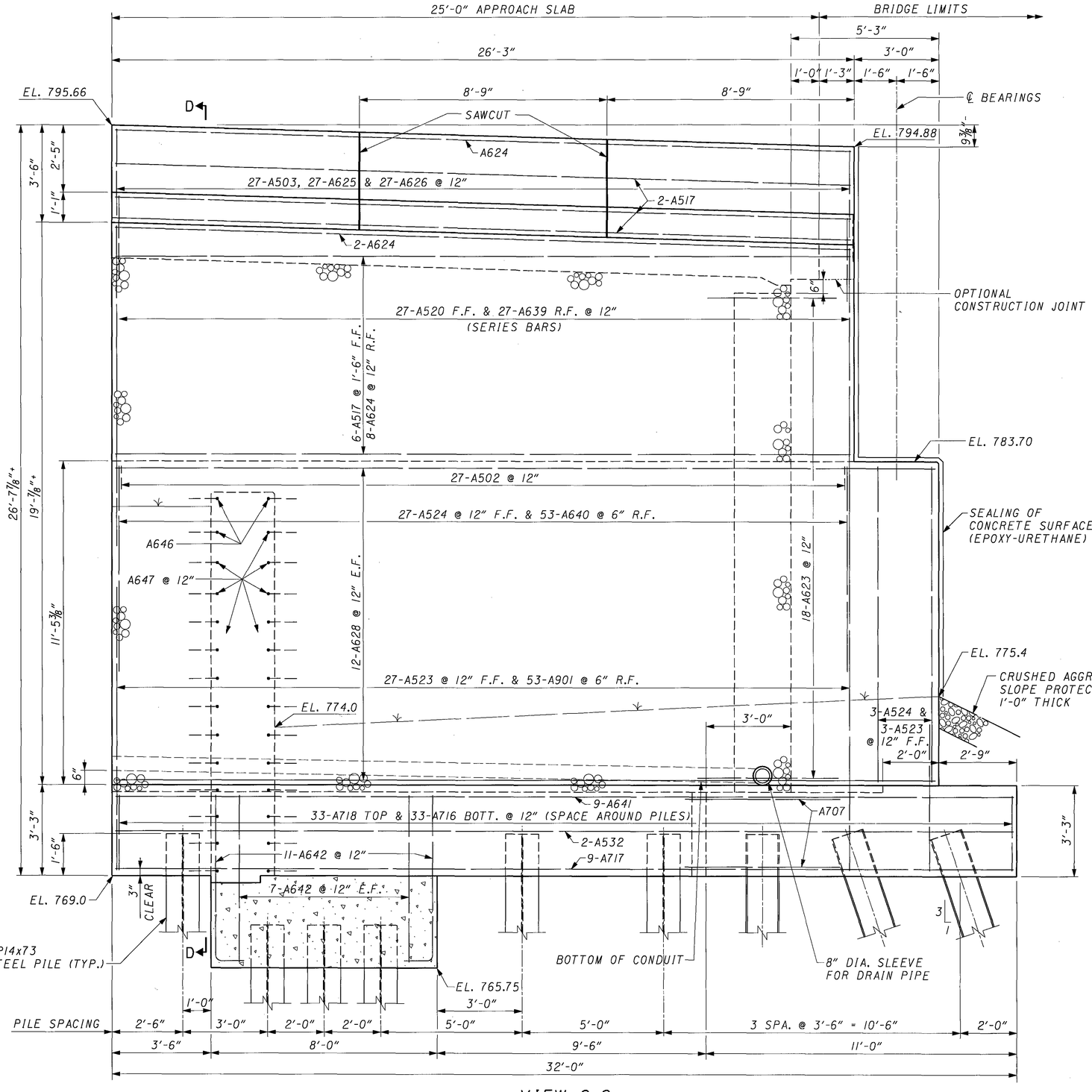
LEFT REAR ABUTMENT DETAILS - CONCRETE

BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

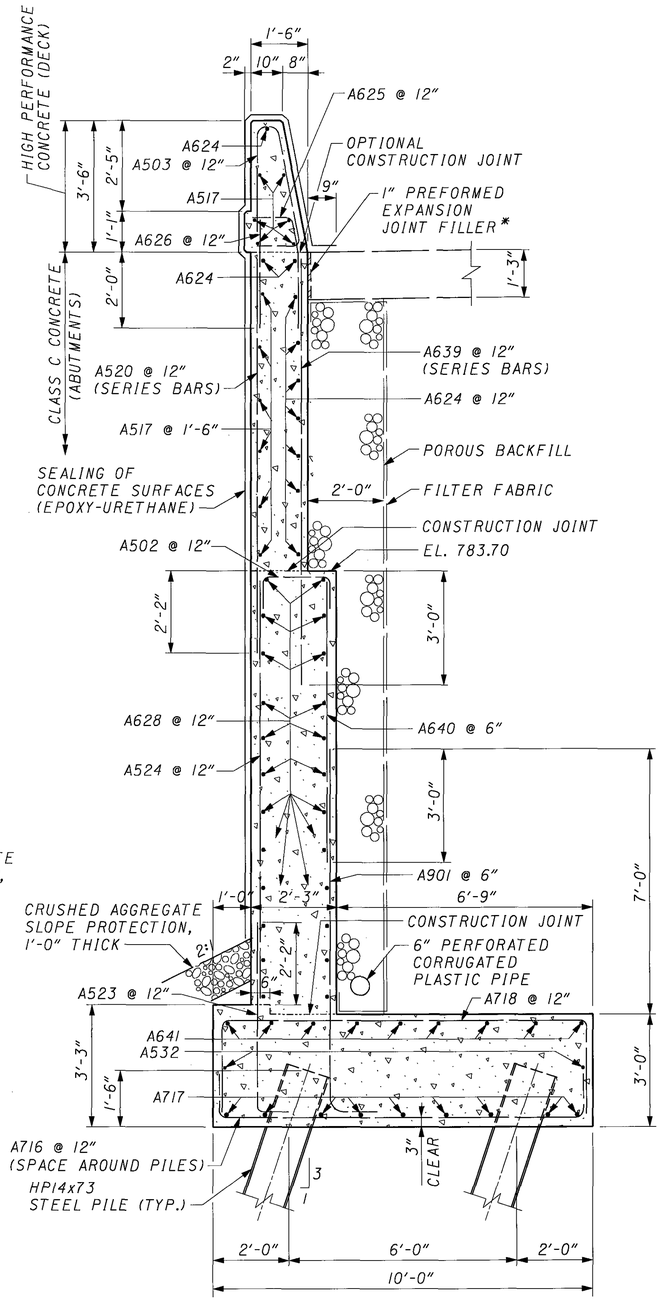
20/123

457/612



VIEW C-C

* INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN FOR PAYMENT



SECTION D-D

NOTES

ADDITIONAL NOTES: SEE SHEET 19/123

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
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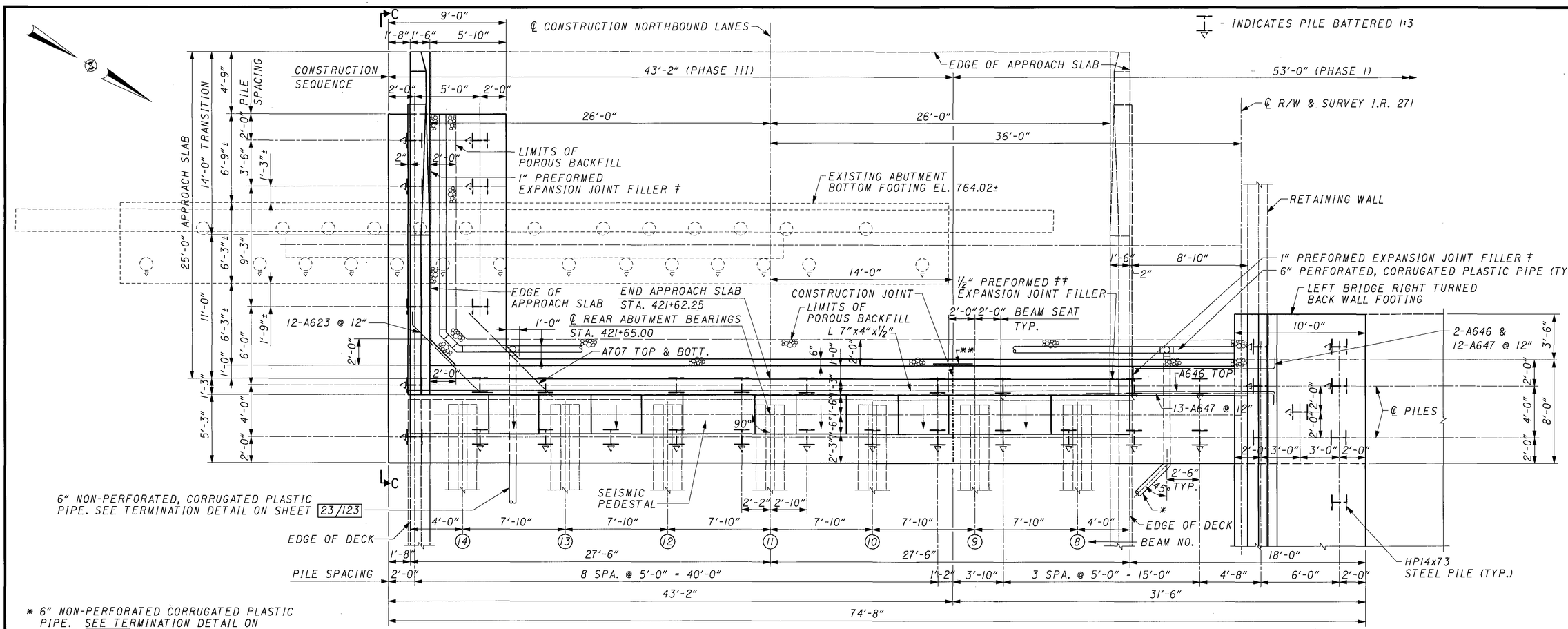
LEFT REAR ABUTMENT DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

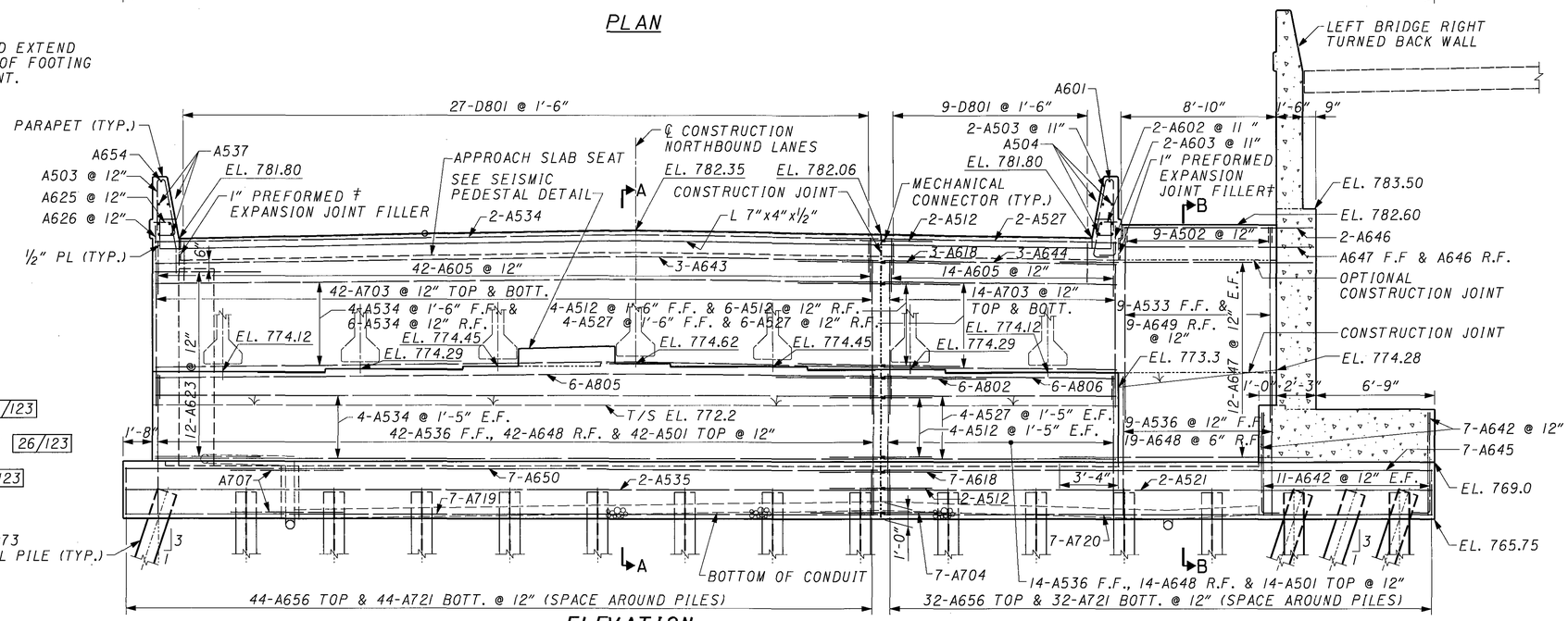
21/123

458/612

SU271ADO.DGN 6/23/04 JLS,KH,R



PLAN



ELEVATION

* 6" NON-PERFORATED CORRUGATED PLASTIC PIPE. SEE TERMINATION DETAIL ON SHEET 23/123.

** TYPE 2 WATERPROOFING 3'-0" WIDE SHOULD EXTEND FROM BOTTOM OF APPROACH SLAB TO TOP OF FOOTING CENTERED ACROSS THE CONSTRUCTION JOINT.

† INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN FOR PAYMENT

†† INCLUDED WITH ITEM 894 - HIGH PERFORMANCE CONCRETE FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN FOR PAYMENT.

NOTES

ADDITIONAL NOTES: SEE SHEET 19/123

SECTIONS A-A & B-B: SEE SHEET 23/123

VIEW C-C: SEE SHEET 24/123

SEISMIC PEDESTAL DETAIL: SEE SHEET 29/123

MECHANICAL CONNECTOR DETAIL: SEE SHEET 26/123

PILE NUMBERING DIAGRAM: SEE SHEET 18/123

NOTATION: F.F. - FRONT FACE
R.F. - REAR FACE
E.F. - EACH FACE

SU271RAP.DGN 6/23/04 JLS,KH,TWH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

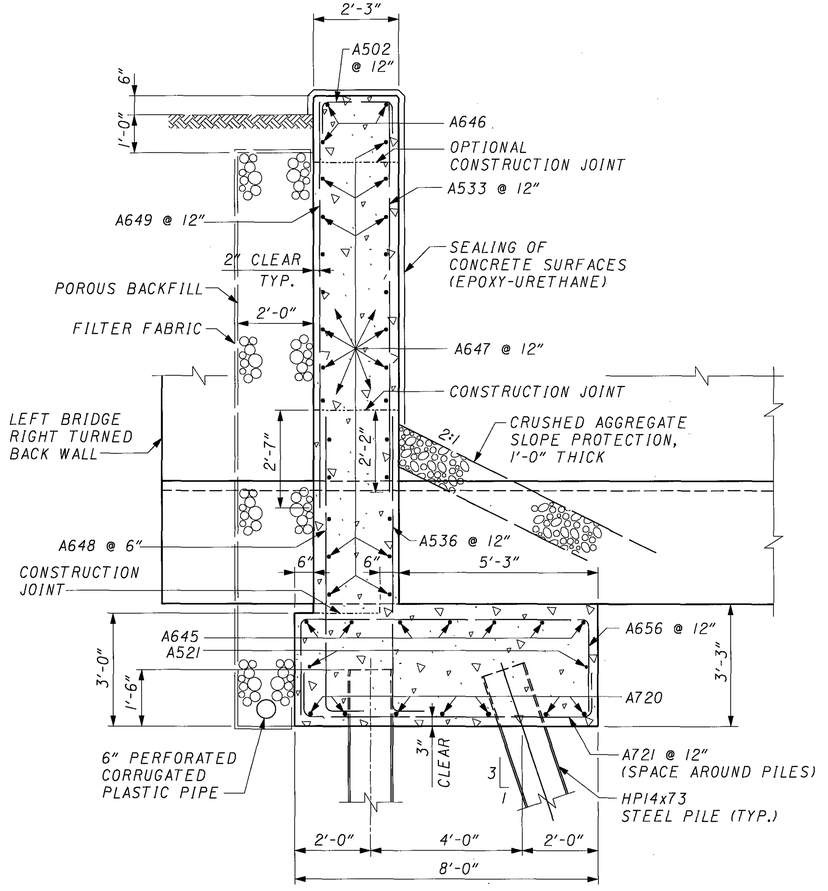
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RIGHT REAR ABUTMENT - CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

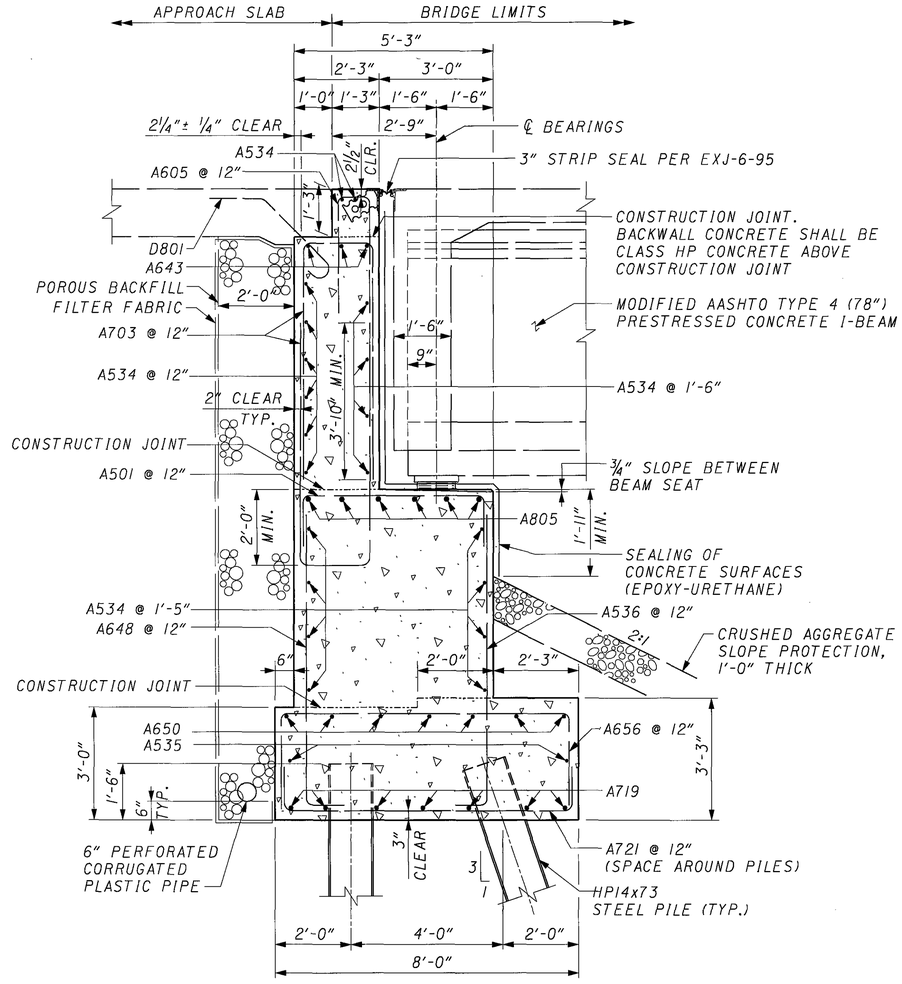
SUM-271-8.02

22/123

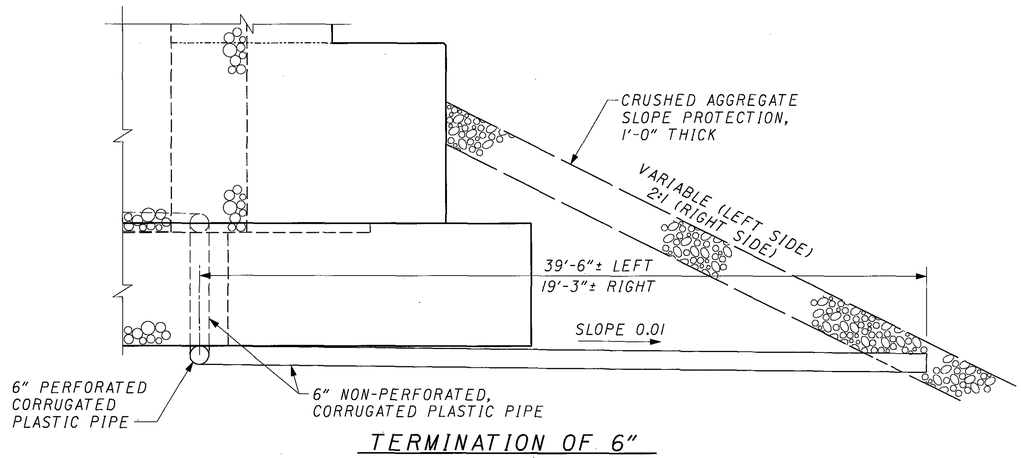
459/612



SECTION B-B



SECTION A-A



TERMINATION OF 6" NON-PERFORATED CONDUIT

NOTES

ADDITIONAL NOTES: SEE SHEET 19/123

SU271ADP.DGN 6/23/04 JLS,KH,TWH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVISED	DATE
BLN	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
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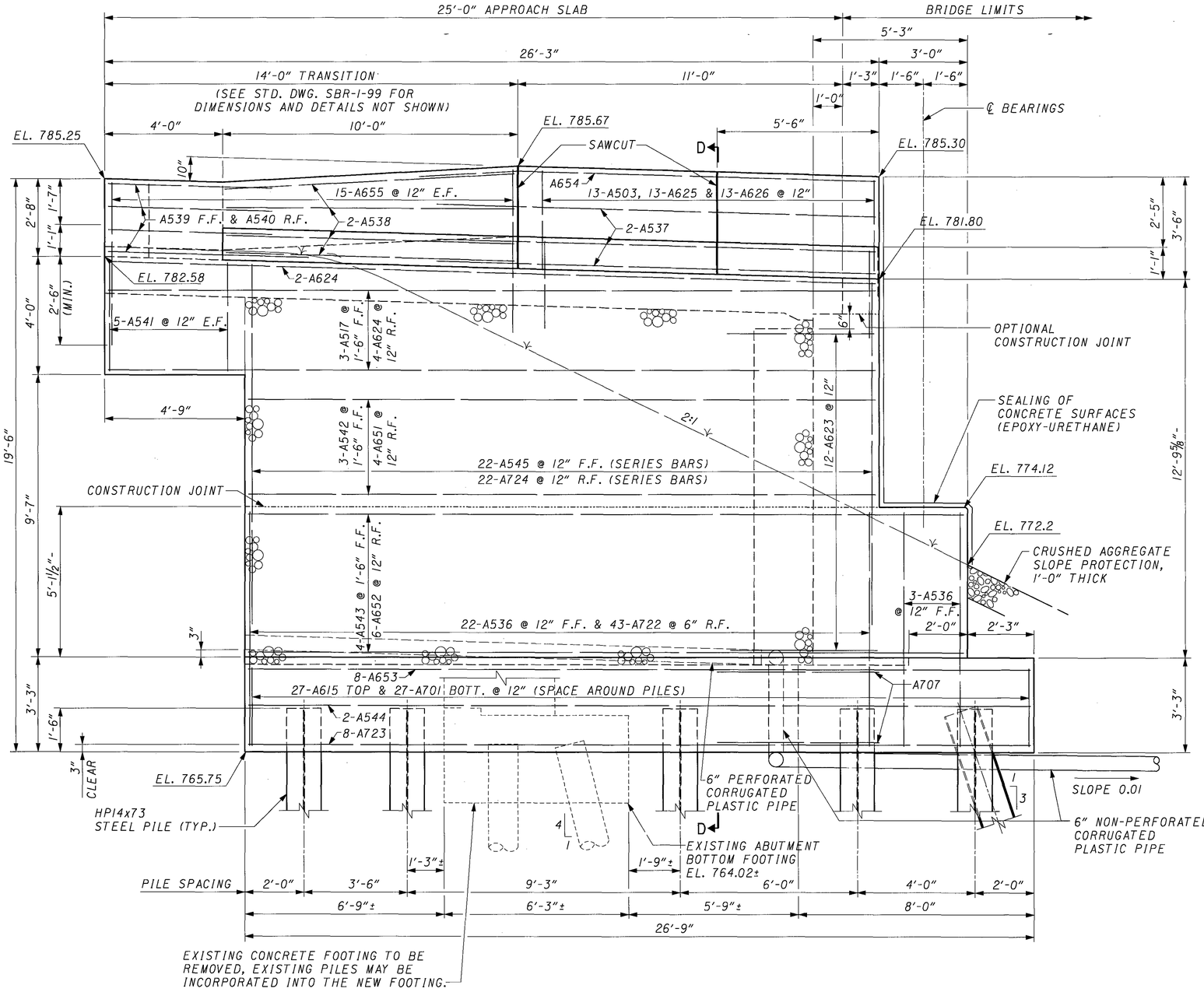
RIGHT REAR ABUTMENT DETAILS - CONCRETE

BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

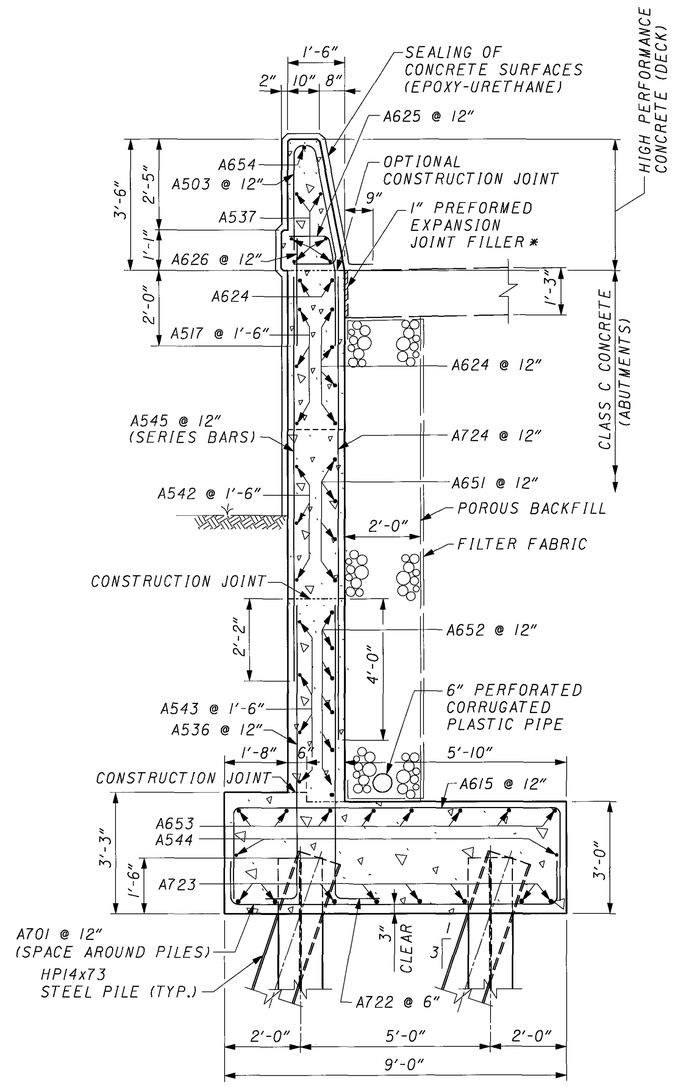
SUM-271-8.02

23/123

460/612



VIEW C-C



SECTION D-D

* INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN FOR PAYMENT

NOTES

ADDITIONAL NOTES: SEE SHEET 19/123

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVISED	DATE
BLN	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709021	

RIGHT REAR ABUTMENT DETAILS - CONCRETE

BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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461/612

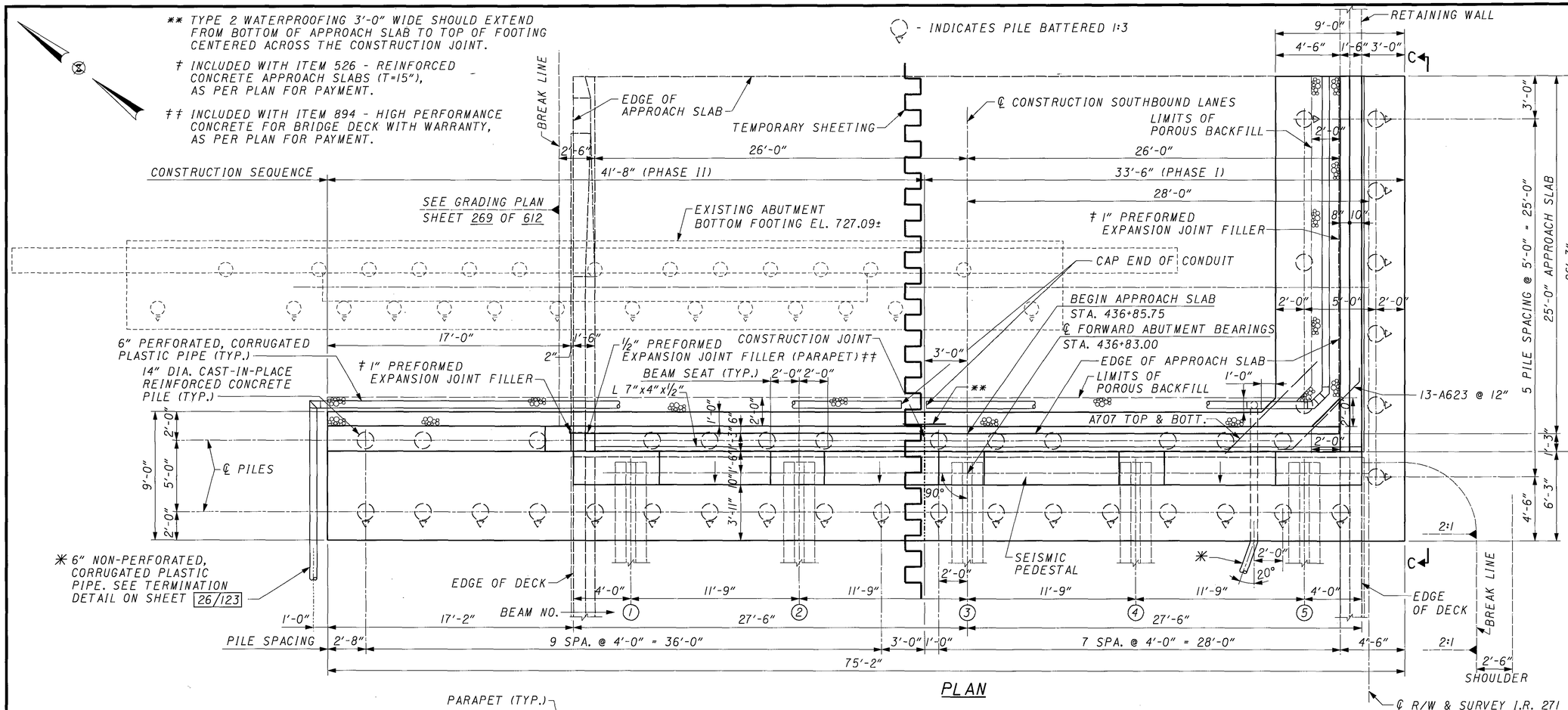
SU271ADP.DGN 6/23/04 JLS,KH,TWH,RC

** TYPE 2 WATERPROOFING 3'-0" WIDE SHOULD EXTEND FROM BOTTOM OF APPROACH SLAB TO TOP OF FOOTING CENTERED ACROSS THE CONSTRUCTION JOINT.

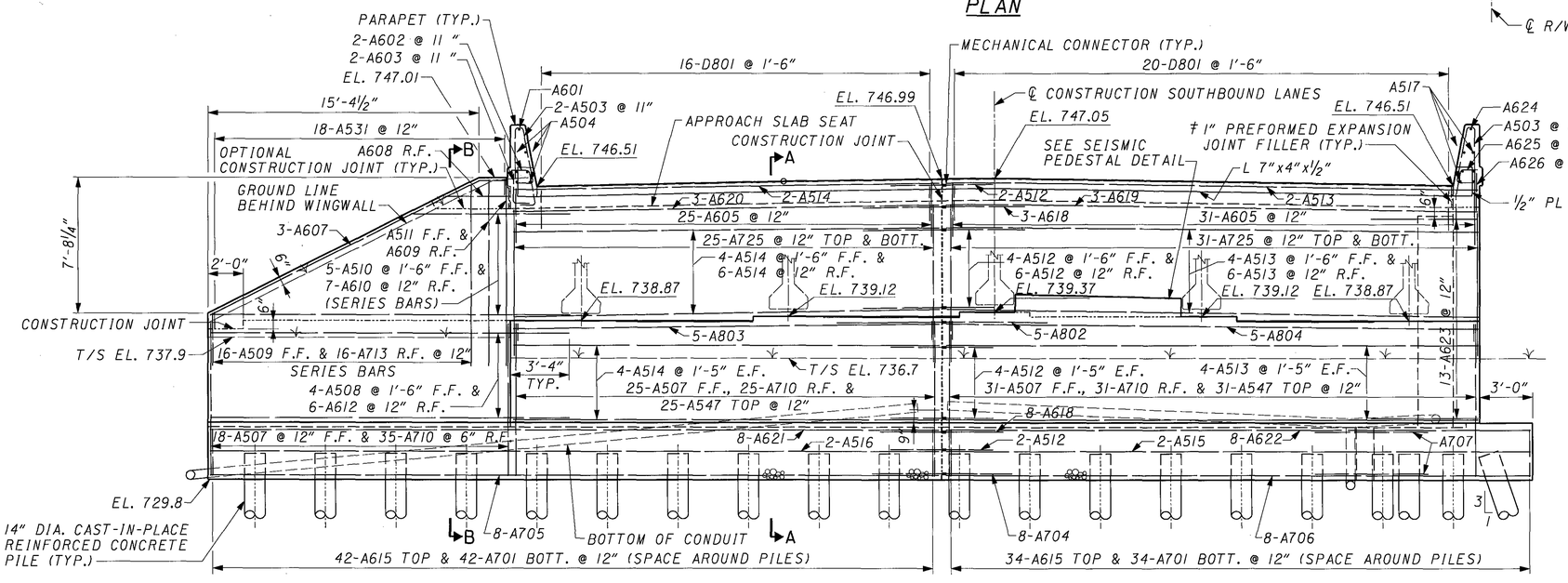
† INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN FOR PAYMENT.

†† INCLUDED WITH ITEM 894 - HIGH PERFORMANCE CONCRETE FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN FOR PAYMENT.

℄ - INDICATES PILE BATTERED 1:3



PLAN



ELEVATION

NOTES

ADDITIONAL NOTES: SEE SHEET 19/123

SECTIONS A-A & B-B: SEE SHEET 26/123

VIEW C-C: SEE SHEET 27/123

SEISMIC PEDESTAL DETAIL: SEE SHEET 29/123

MECHANICAL CONNECTOR DETAL: SEE SHEET 26/123

PILE NUMBERING DIAGRAM: SEE SHEET 18/123

NOTATION: F.F. - FRONT FACE
R.F. - REAR FACE
E.F. - EACH FACE

LEFT FORWARD ABUTMENT - CONCRETE

BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

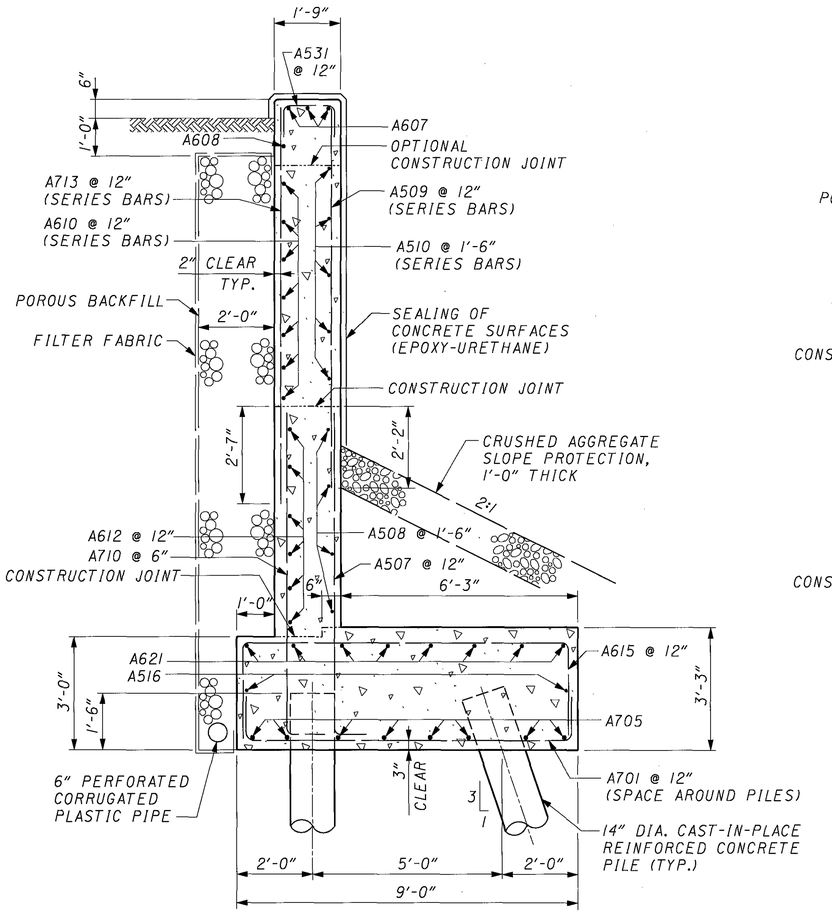
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BLN	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		79090/13	

SUM-271-8.02

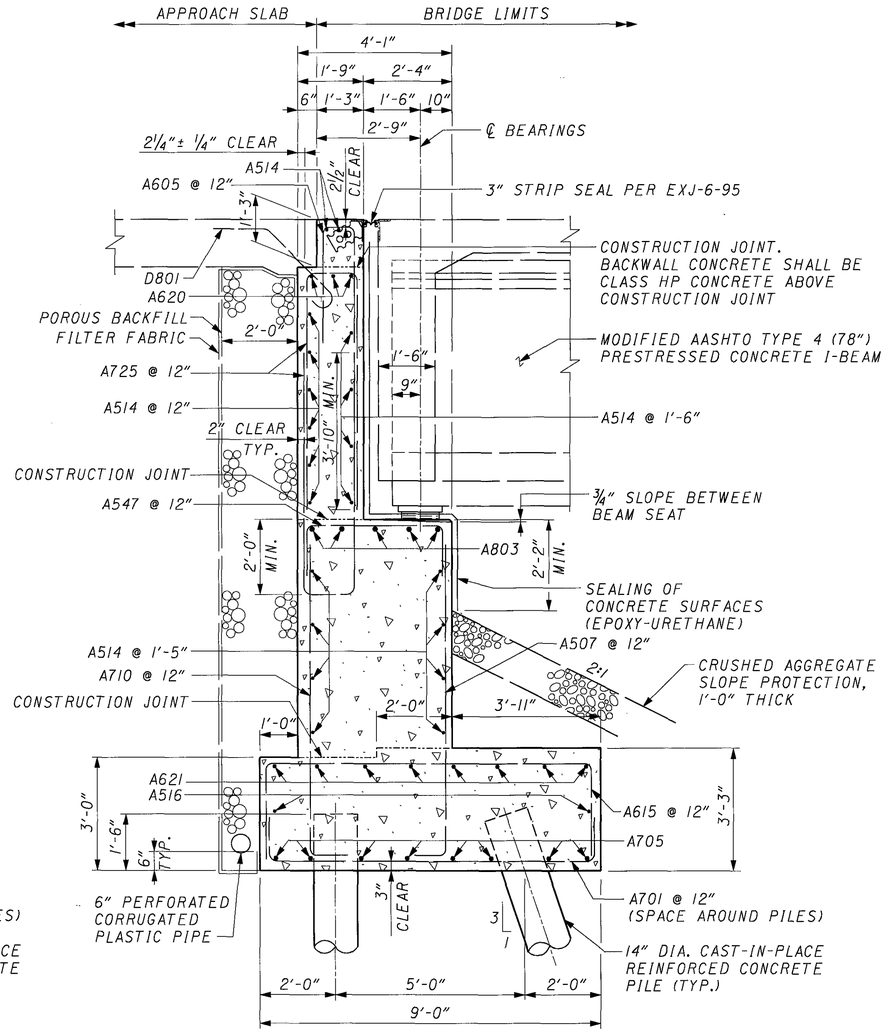
25/123

462/612

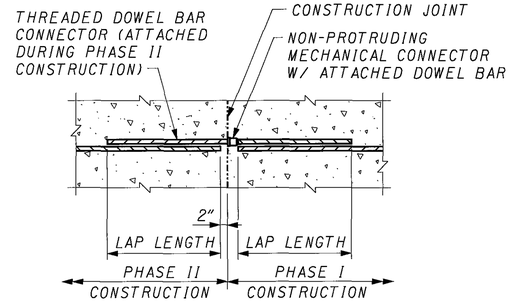
SU271FAO.DGN 6/23/04 TWH,KH,JLS,RC



SECTION B-B



SECTION A-A

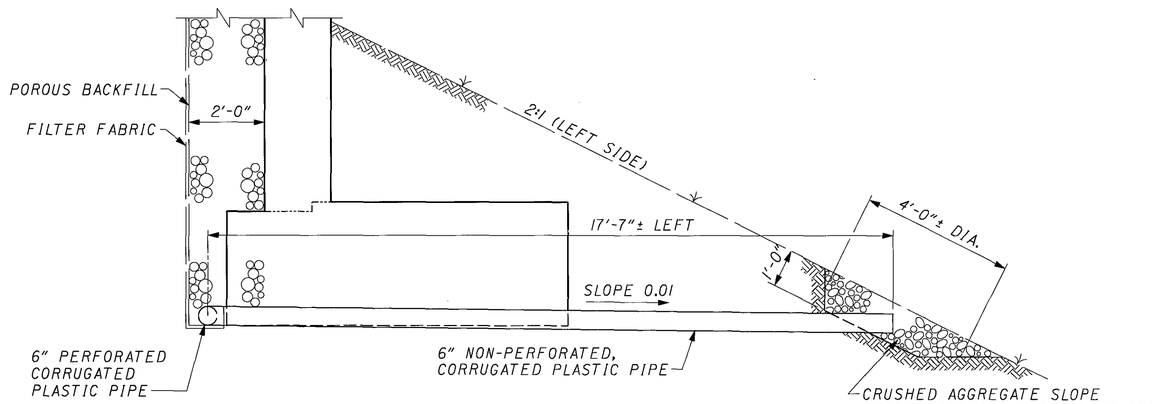


MECHANICAL CONNECTOR DETAIL

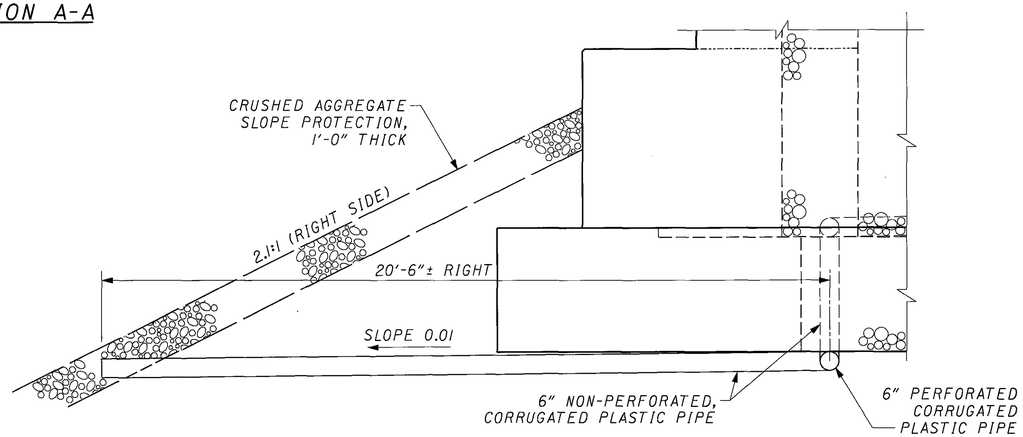
BAR SIZE	LAP LENGTH (HORIZONTAL)
#5	2'-9"
#6	3'-4"
#7	3'-10"
#8	5'-10"

NOTES

ADDITIONAL NOTES: SEE SHEET 19/123



TERMINATION OF 6" NON-PERFORATED CONDUIT (LEFT)



TERMINATION OF 6" NON-PERFORATED CONDUIT (RIGHT)

SU271ADQ.DGN 6/23/04 KH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN KH | CHECKED KAK | REVIEWED DAP | DATE 3/18/04 | REVISED | STRUCTURE FILE NUMBER 7709013

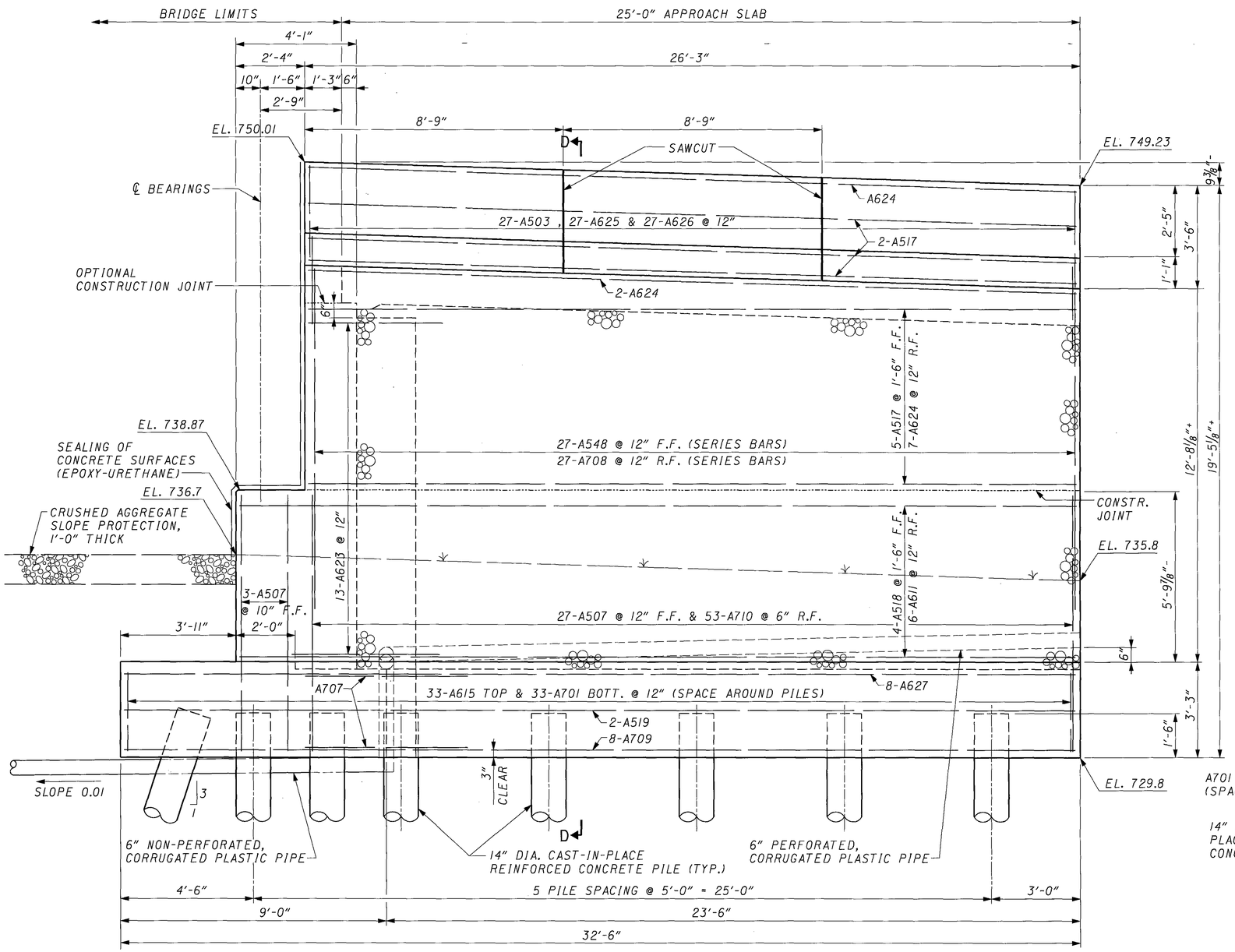
LEFT FORWARD ABUTMENT DETAILS - CONCRETE

BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

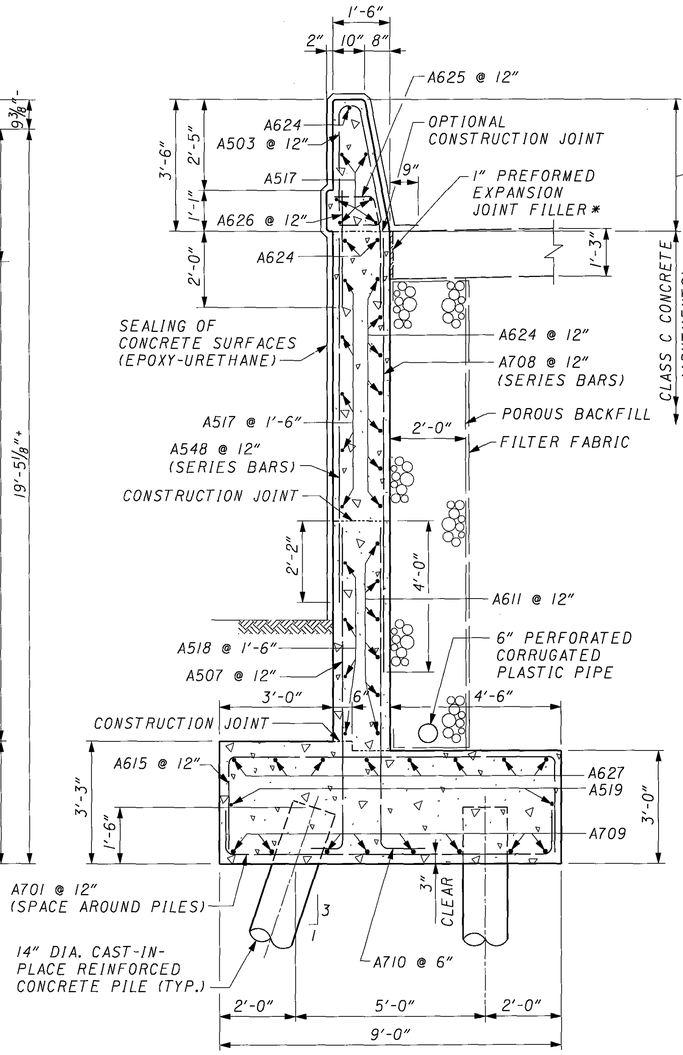
SUM-271-8.02

26/123

463/612



VIEW C-C



SECTION D-D

* INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN FOR PAYMENT

NOTES

ADDITIONAL NOTES: SEE SHEET 19/123

SU271ADD.DGN 6/23/04 JL,S,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN KH | REVIEWED DAP | DATE 3/18/04
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709013

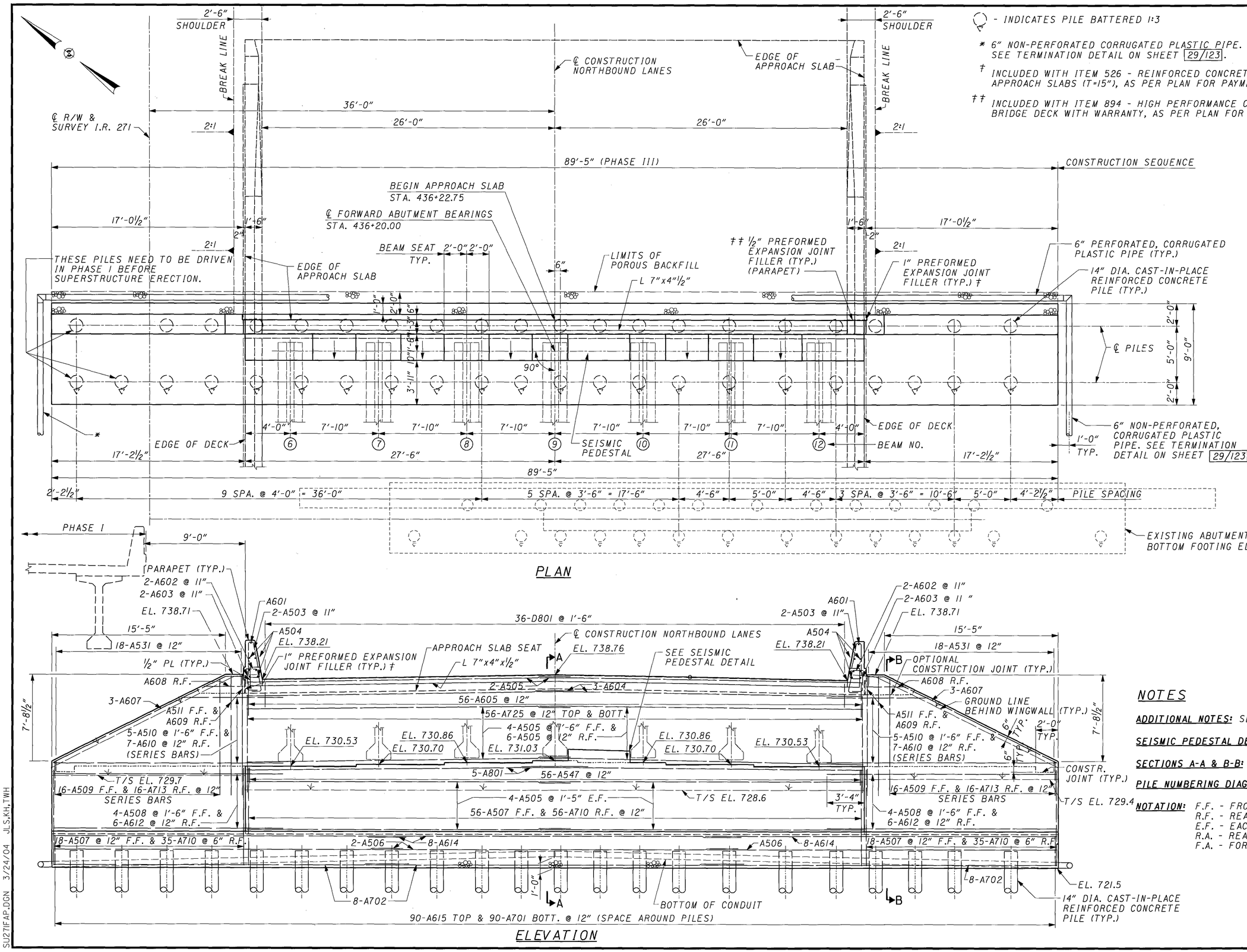
LEFT FORWARD ABUTMENT DETAILS - CONCRETE

BRIDGE NO. SUM-271-0802
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

27/123

464/612



- ℄ A - INDICATES PILE BATTERED 1:3
- * 6" NON-PERFORATED CORRUGATED PLASTIC PIPE. SEE TERMINATION DETAIL ON SHEET 29/123.
- † INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN FOR PAYMENT.
- †† INCLUDED WITH ITEM 894 - HIGH PERFORMANCE CONCRETE FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN FOR PAYMENT.

NOTES

ADDITIONAL NOTES: SEE SHEET 19/123

SEISMIC PEDESTAL DETAIL: SEE SHEET 29/123

SECTIONS A-A & B-B: SEE SHEET 29/123

PILE NUMBERING DIAGRAM: SEE SHEET 18/123

NOTATION: F.F. - FRONT FACE
R.F. - REAR FACE
E.F. - EACH FACE
R.A. - REAR ABUTMENT
F.A. - FORWARD ABUTMENT

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KAK		7709021	

RIGHT FORWARD ABUTMENT - CONCRETE

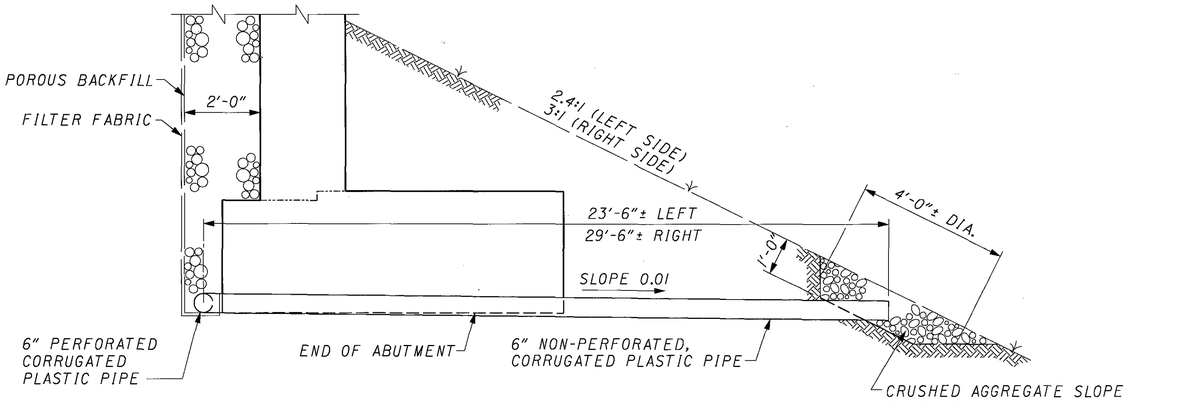
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

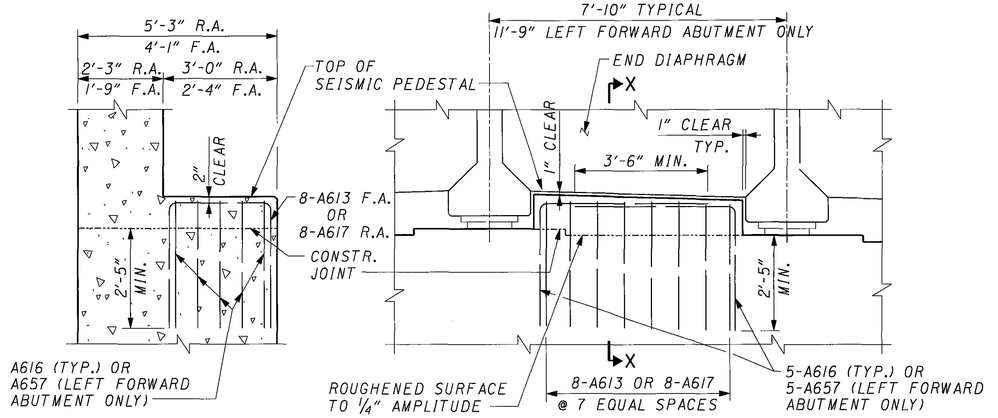
28/123

465/612

SU271FAP.DGN 3/24/04 JLS,KH,TWH



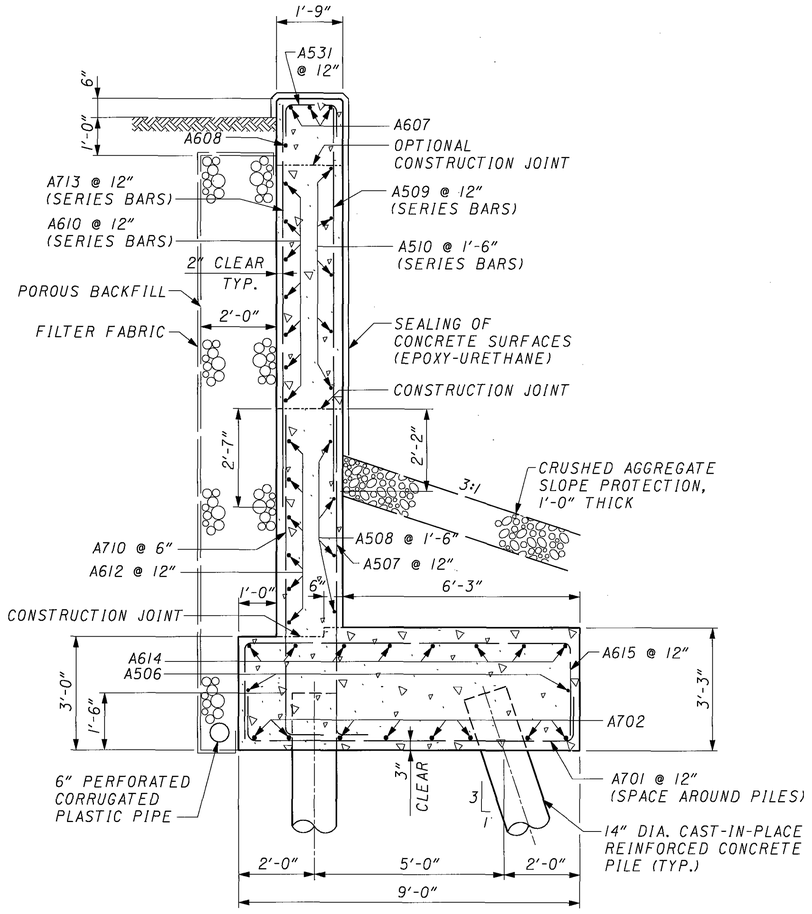
TERMINATION OF 6" NON-PERFORATED CONDUIT



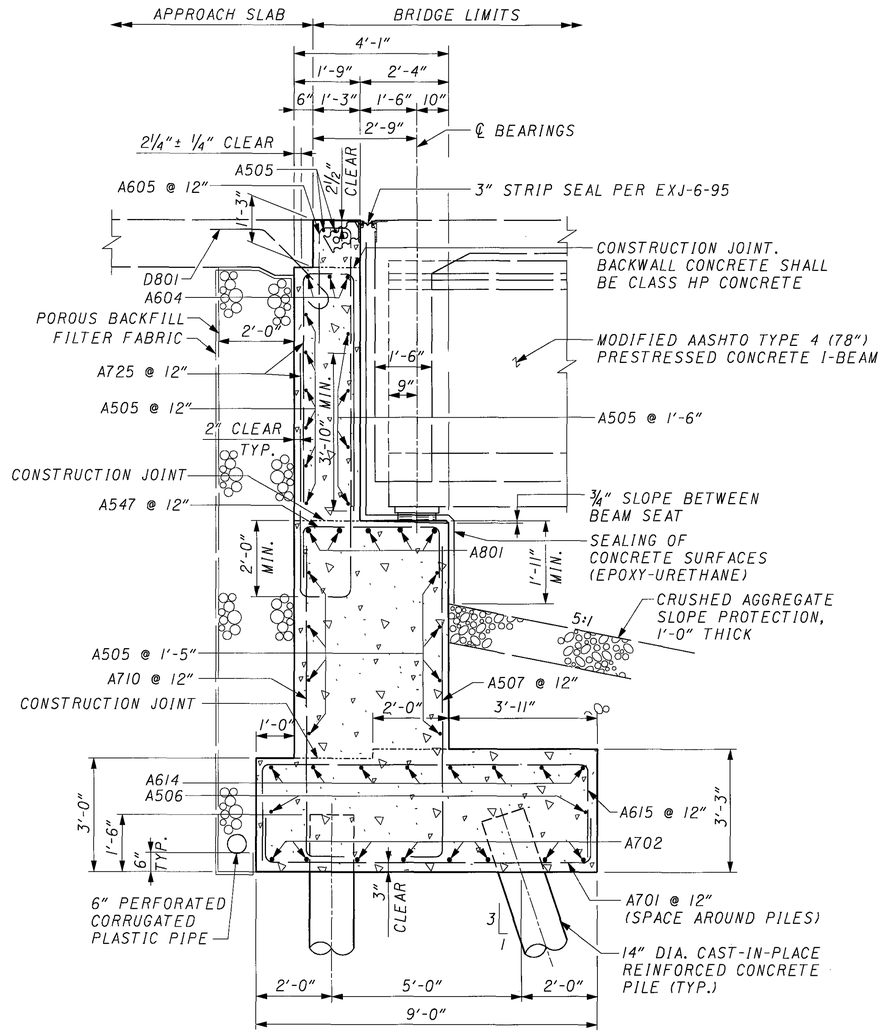
SECTION X-X

ELEVATION

SEISMIC PEDESTAL DETAIL



SECTION B-B



SECTION A-A

NOTES

ADDITIONAL NOTES: SEE SHEET 19/123

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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BLN	KH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709021	

RIGHT FORWARD ABUTMENT DETAILS - CONCRETE

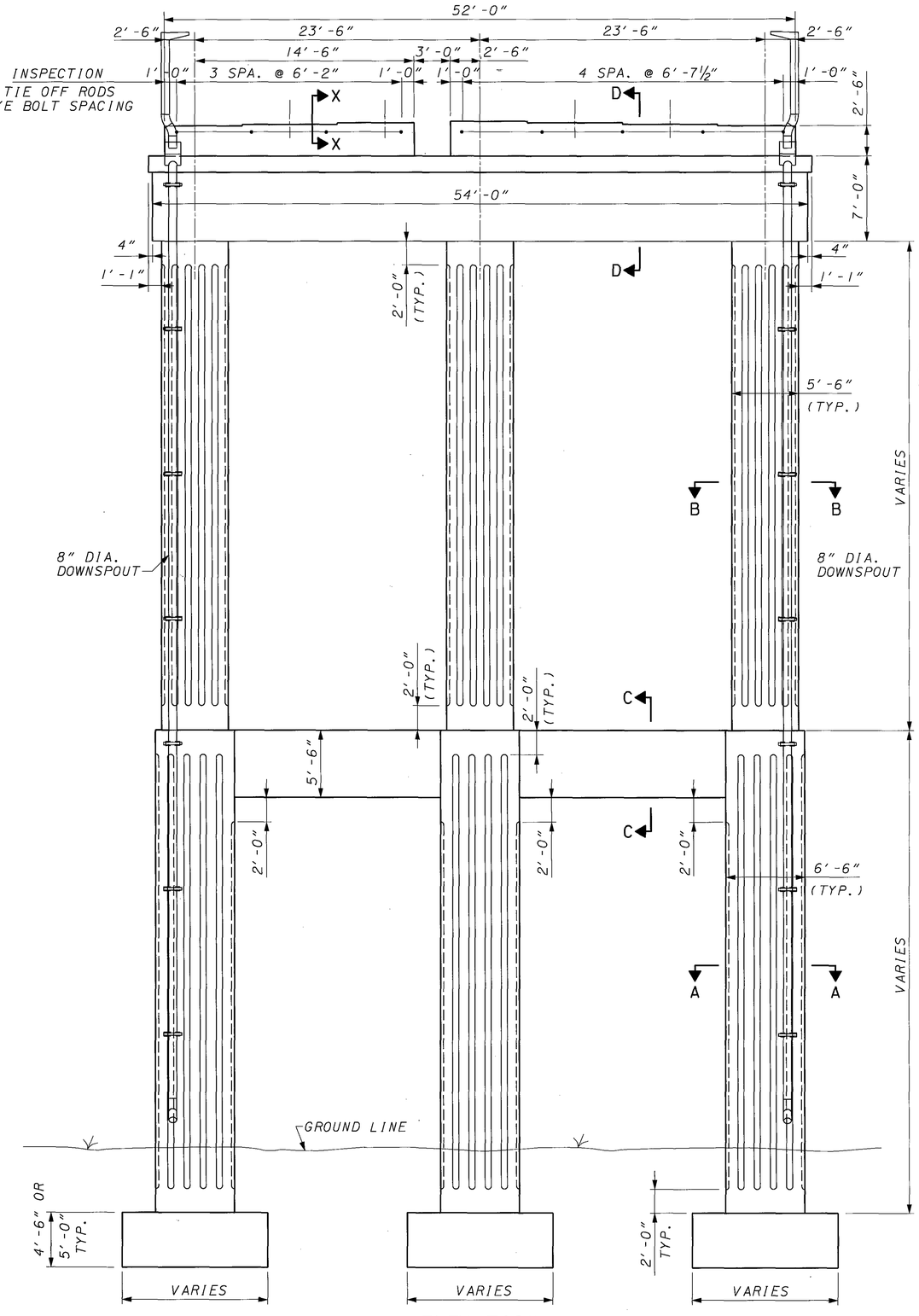
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

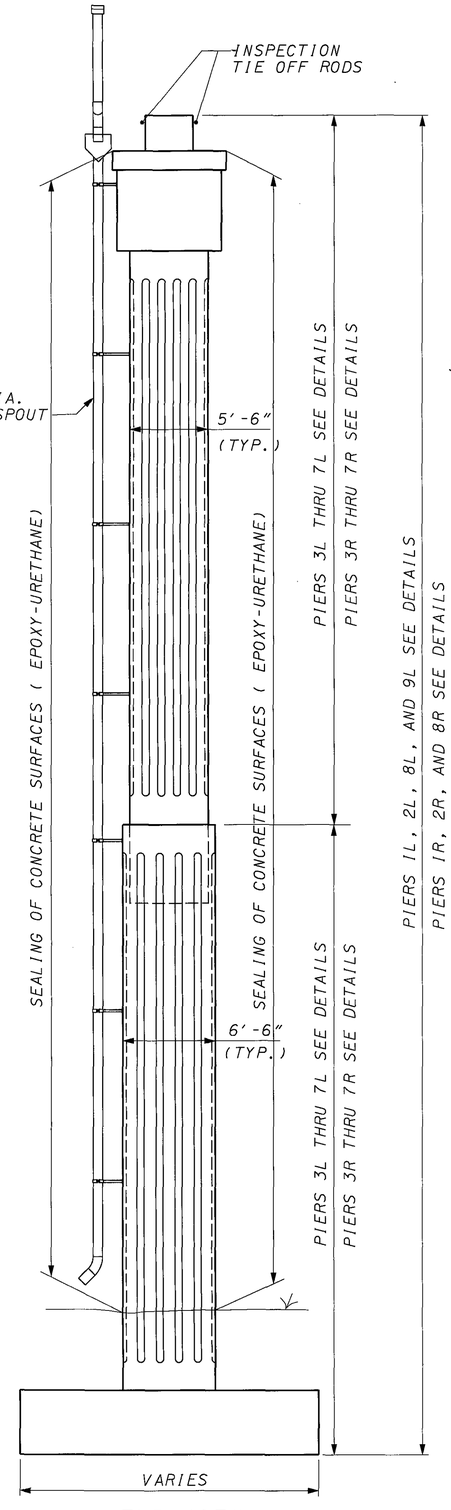
29/123

466/612

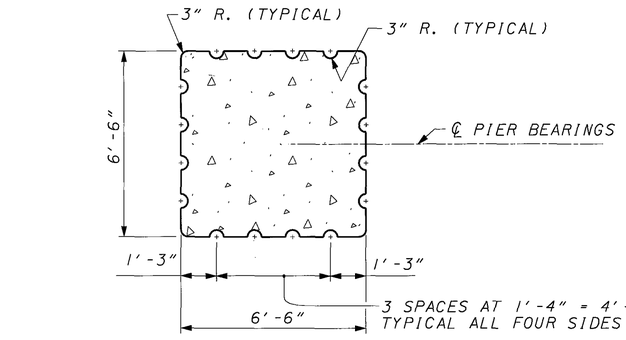
SU271ADR.DGN 6/23/04 JLS,KH,TWH,RC



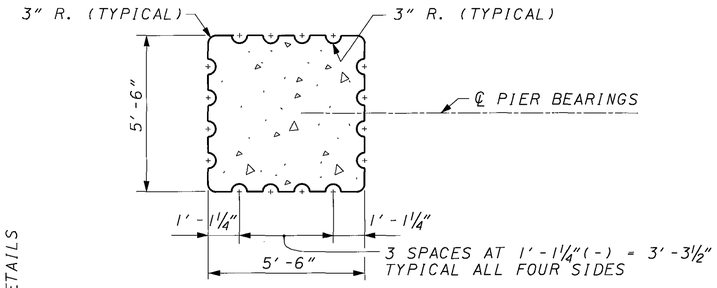
ELEVATION



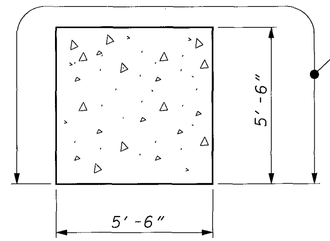
END VIEW



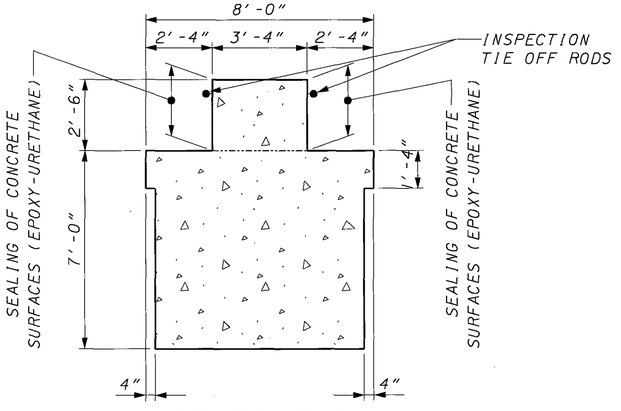
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

NOTES

PIER DETAILS: SEE SHEET 31/123 TO 55/123.
SECTION X-X: SEE SHEET 43/123.
PIER DRAINAGE DETAILS: SEE SHEET 112/123.

SU271PIC.DGN 6/23/04 TWH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

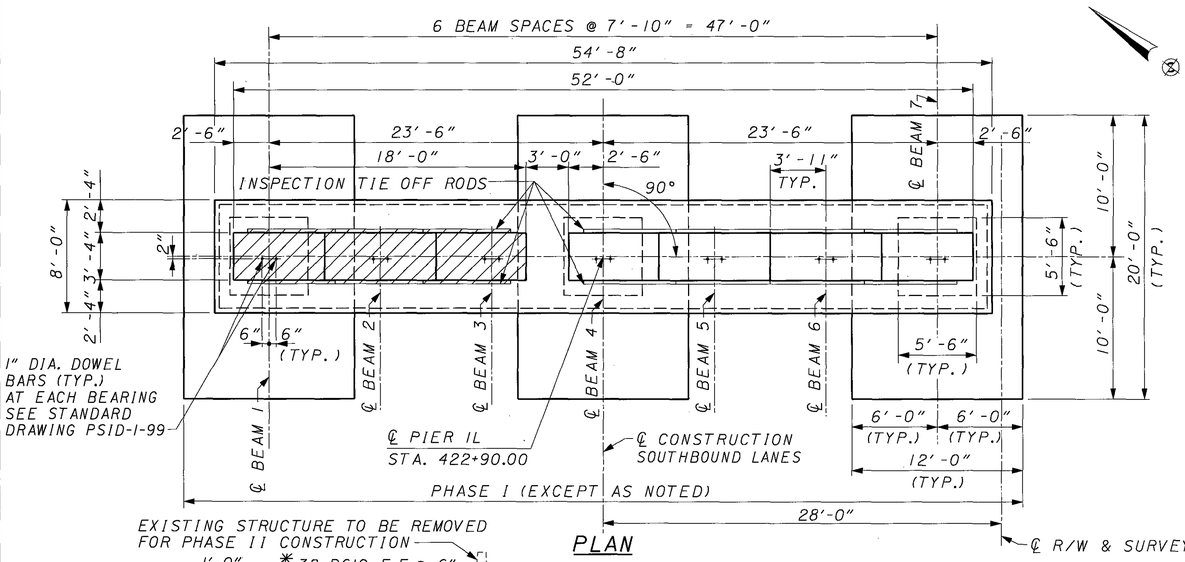
DESIGNED	DRAWN	REVISED	REVISED	DATE
BLN	TWH		DAP	3/18/04
CHECKED	REVISED		STRUCTURE FILE NUMBER	
DLR			7709013(L) 7709021(R)	

PIERS AESTHETIC DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

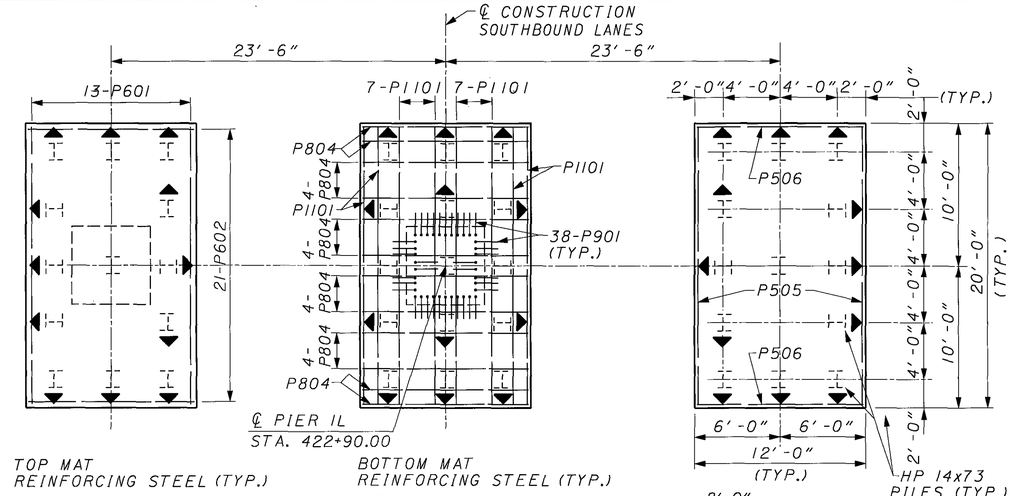
SUM-271-8.02

30/123

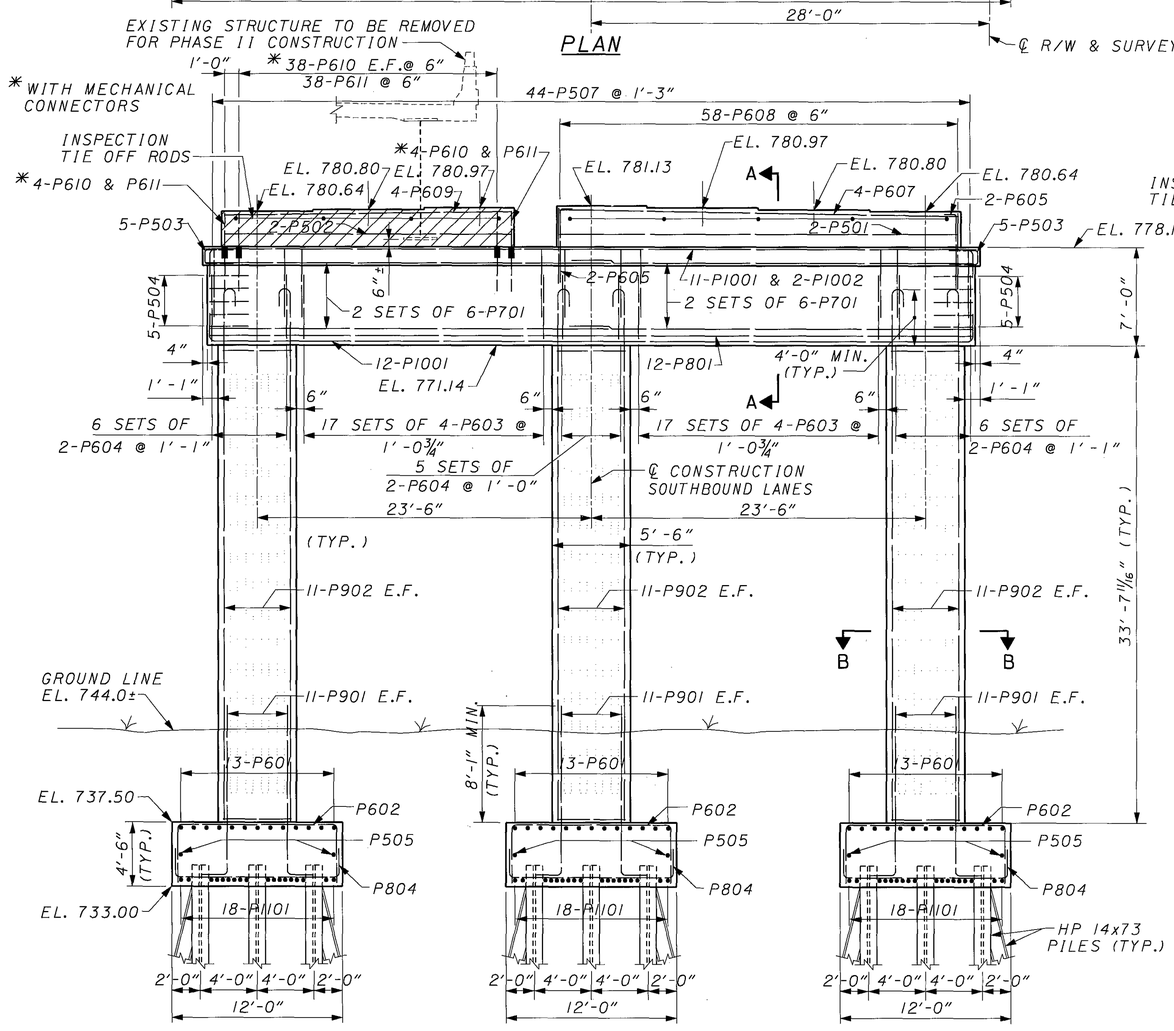
467/612



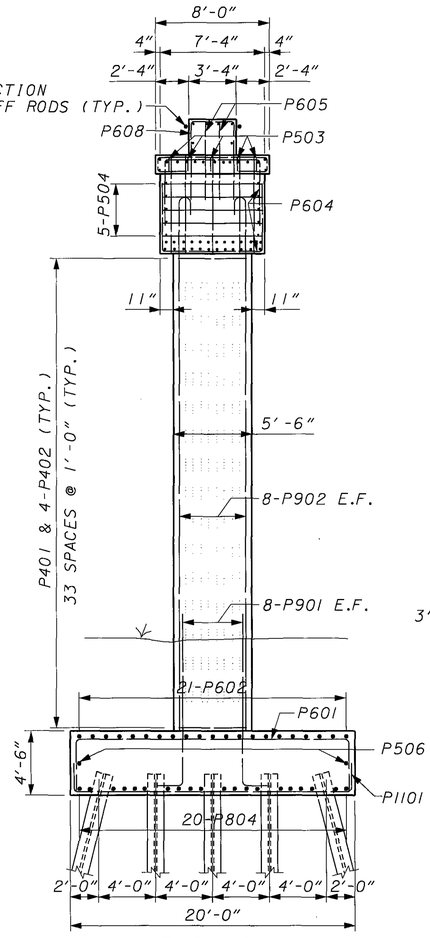
PLAN



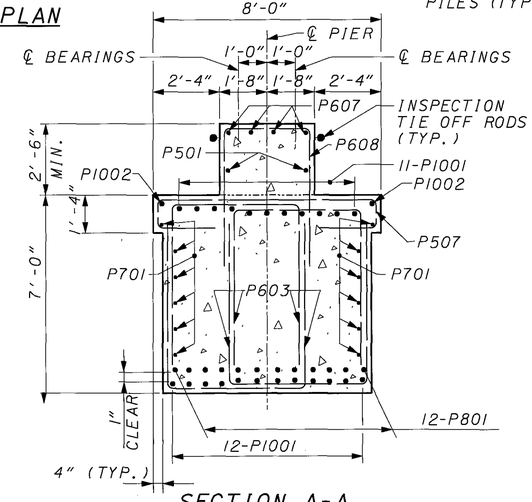
FOOTING PLAN



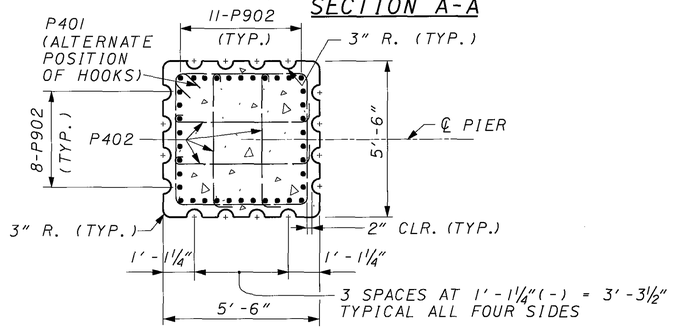
ELEVATION



END VIEW



SECTION A-A



SECTION B-B

NOTES

INDICATES PHASE II CONSTRUCTION

HP 14x73 PILES INDICATES 1:4 BATTER

PILE NUMBERING: SEE SHEET 18/123.

BRIDGE SEAT REINFORCING, SETTING DOWELS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF DOWEL BAR HOLES.

ADDITIONAL NOTES: SEE SHEET 34/123.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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DLR		7709013	

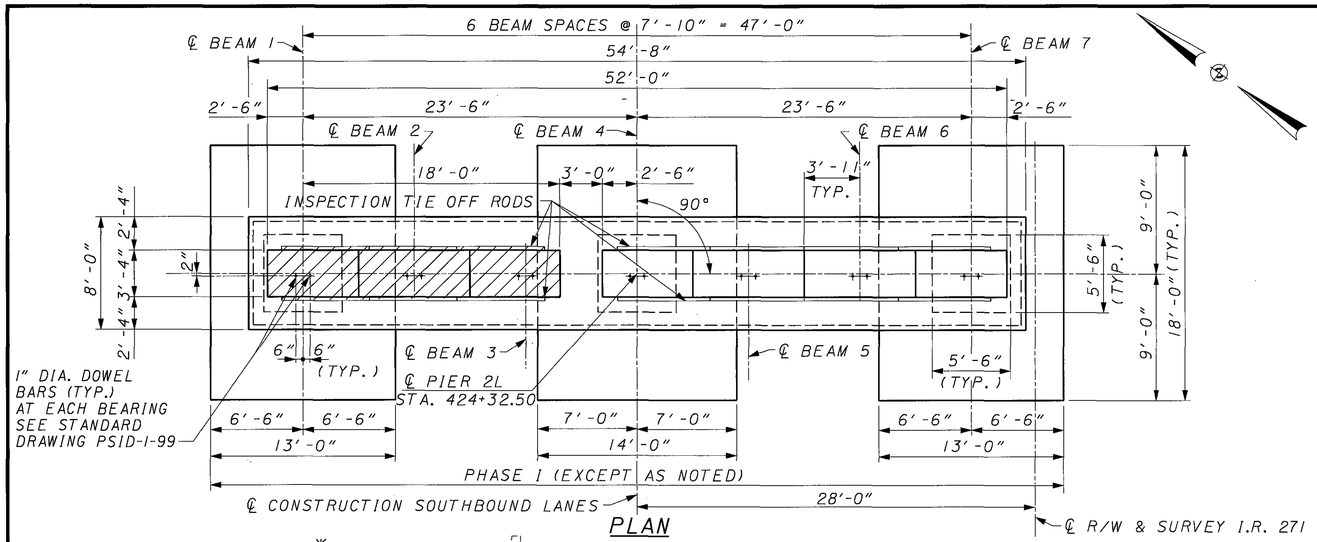
PIER 1L DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

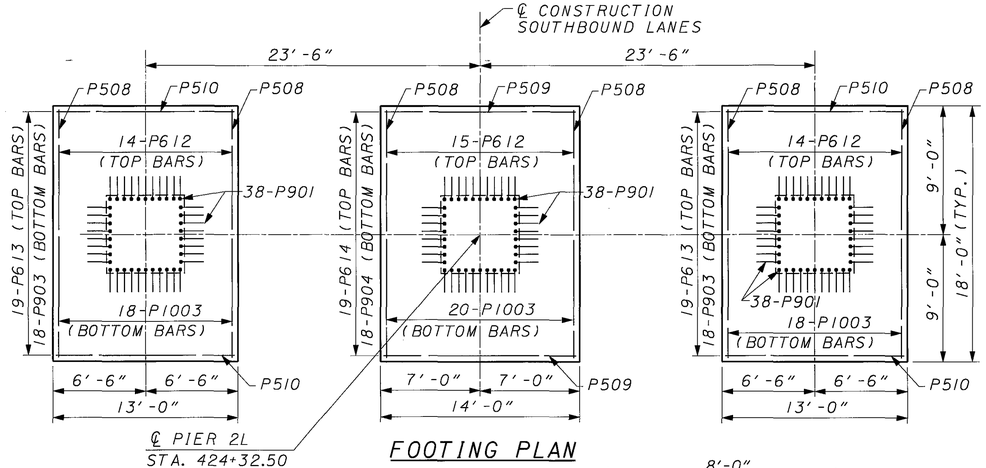
31/123

468/612

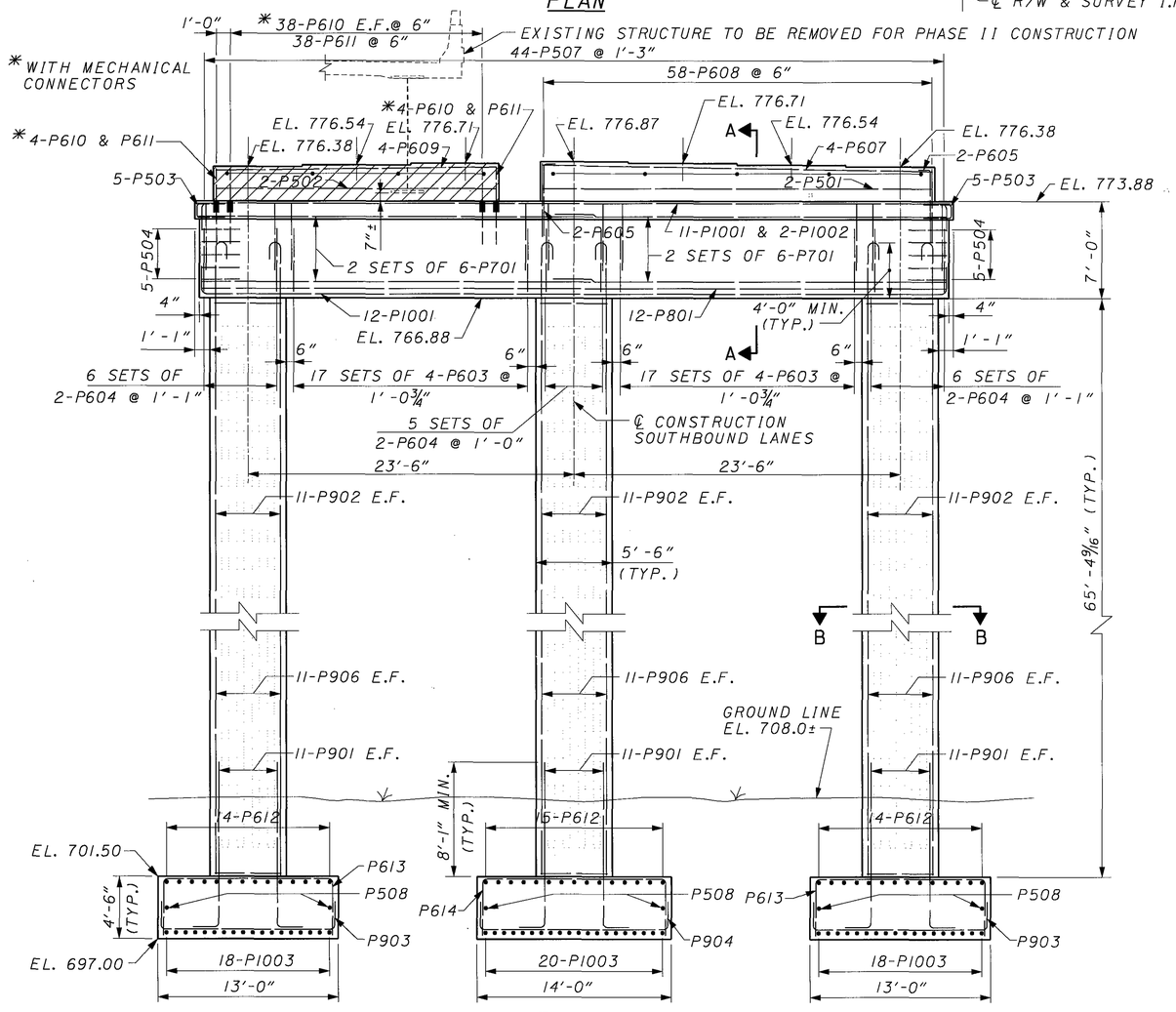
SU271PAL.DGN 6/23/04 TWH,JLS,KH,SJK,RC



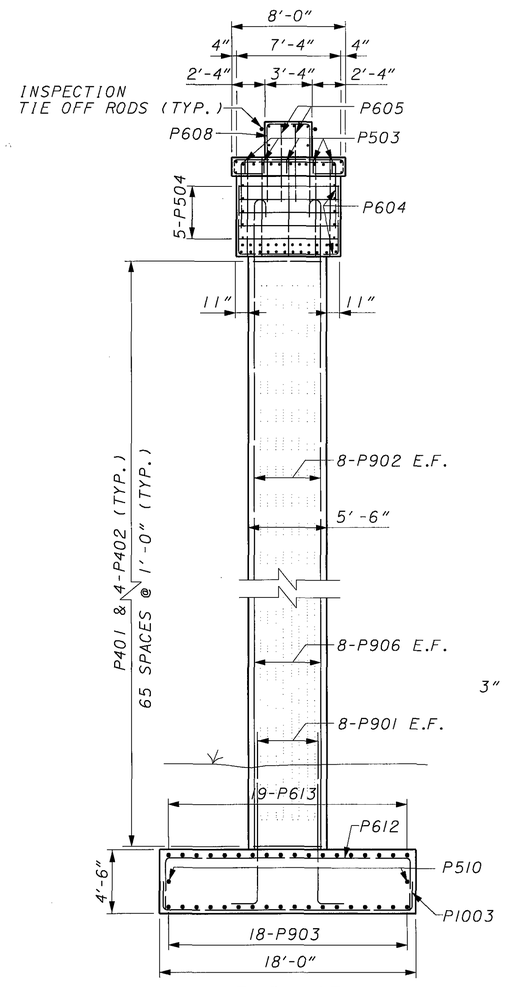
PLAN



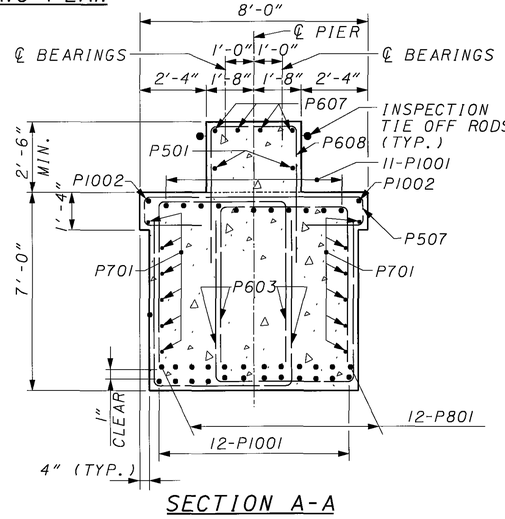
FOOTING PLAN



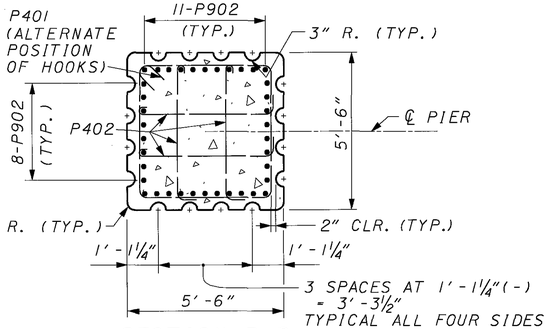
ELEVATION



END VIEW



SECTION A-A



SECTION B-B

NOTES:

INDICATES PHASE II CONSTRUCTION

BRIDGE SEAT REINFORCING, SETTING DOWELS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF DOWEL BAR HOLES.

ADDITIONAL NOTES: SEE SHEET 34/123.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
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DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DAP	3/18/04
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DLR		7709013	

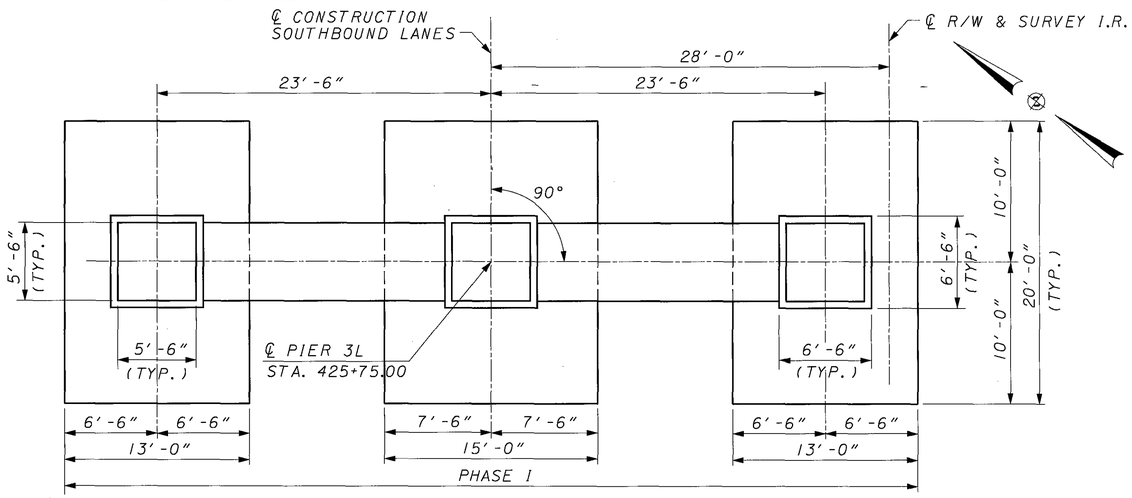
PIER 2L DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

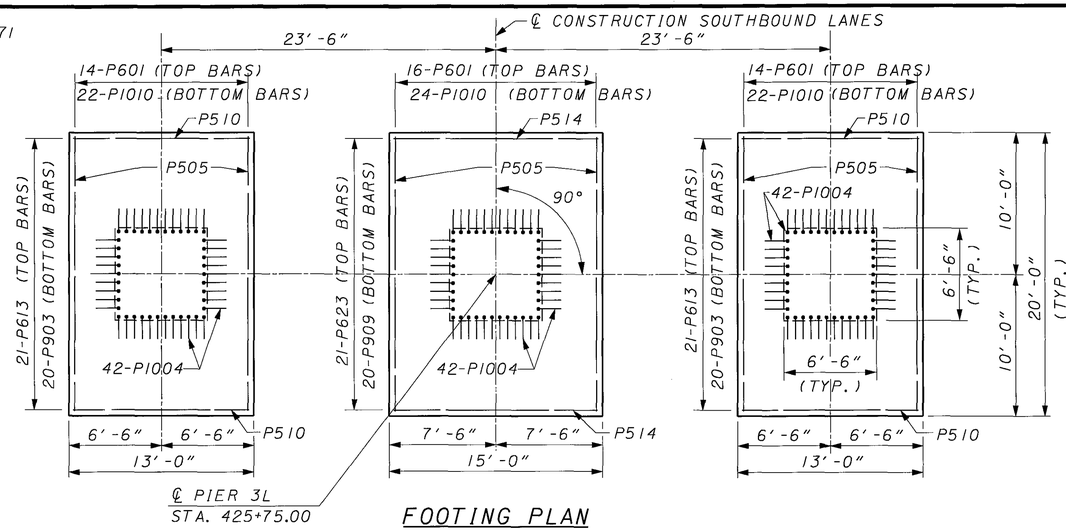
32/123

469/612

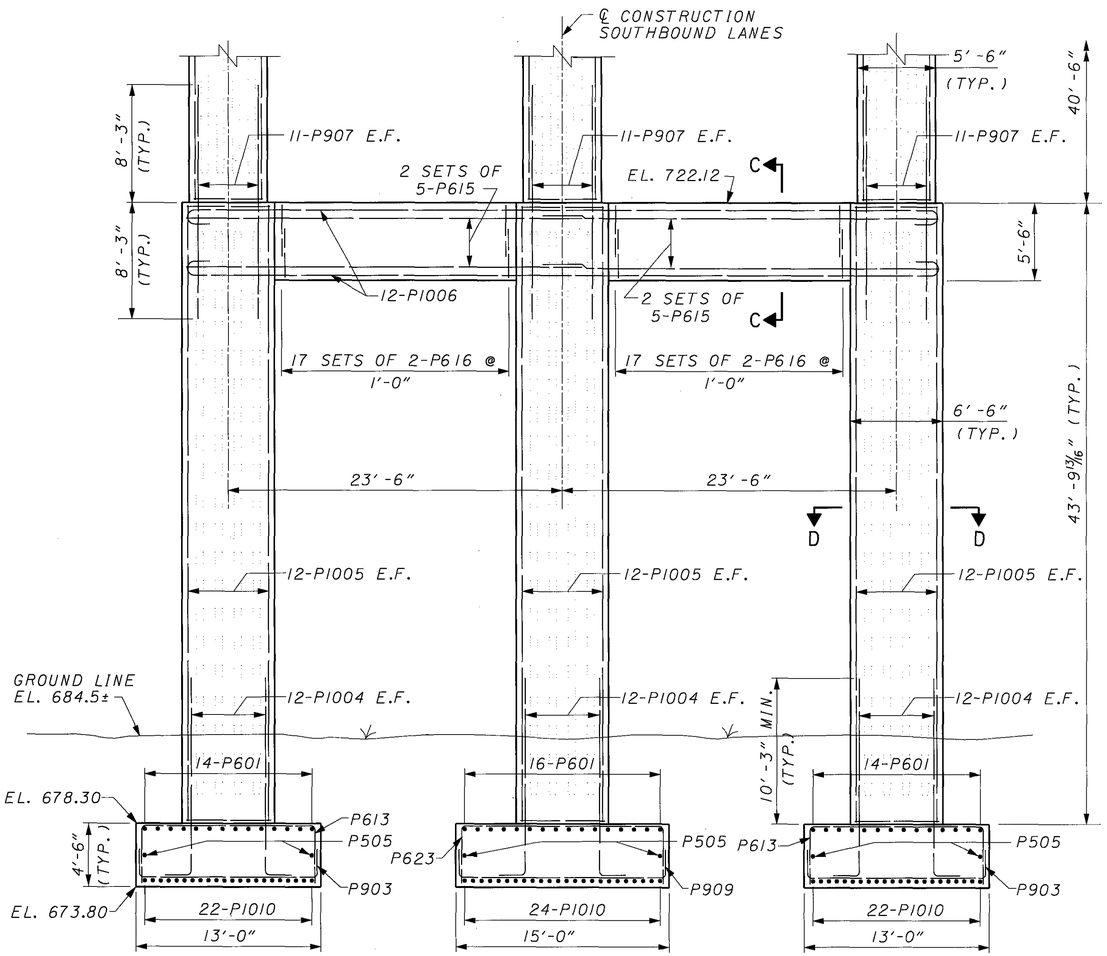
SU271PBL.DGN 6/23/04 JLS,TWH,KH,RC



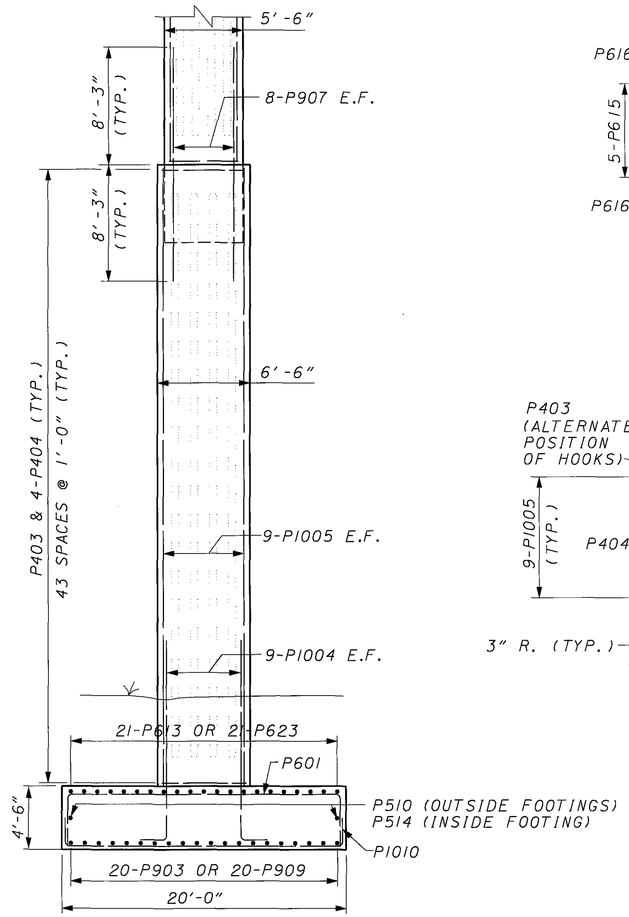
PLAN



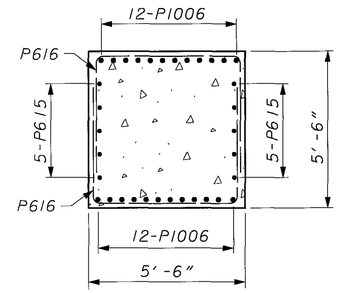
FOOTING PLAN



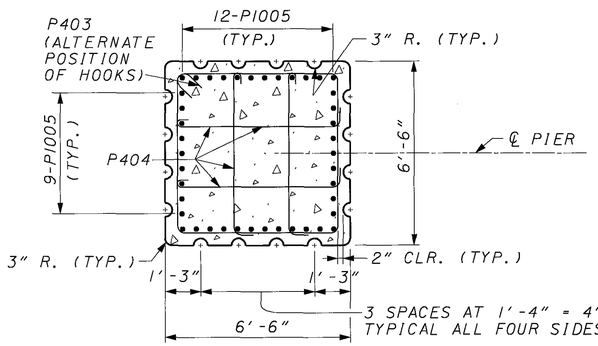
ELEVATION



END VIEW



SECTION C-C



SECTION D-D

NOTES

ADDITIONAL NOTES: SEE SHEET 34/123.

SU27IPCL.DGN 6/23/04 TWH,JLS,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | REVISED DAP 3/18/04 | DATE | STRUCTURE FILE NUMBER 7709013

CHECKED DLR

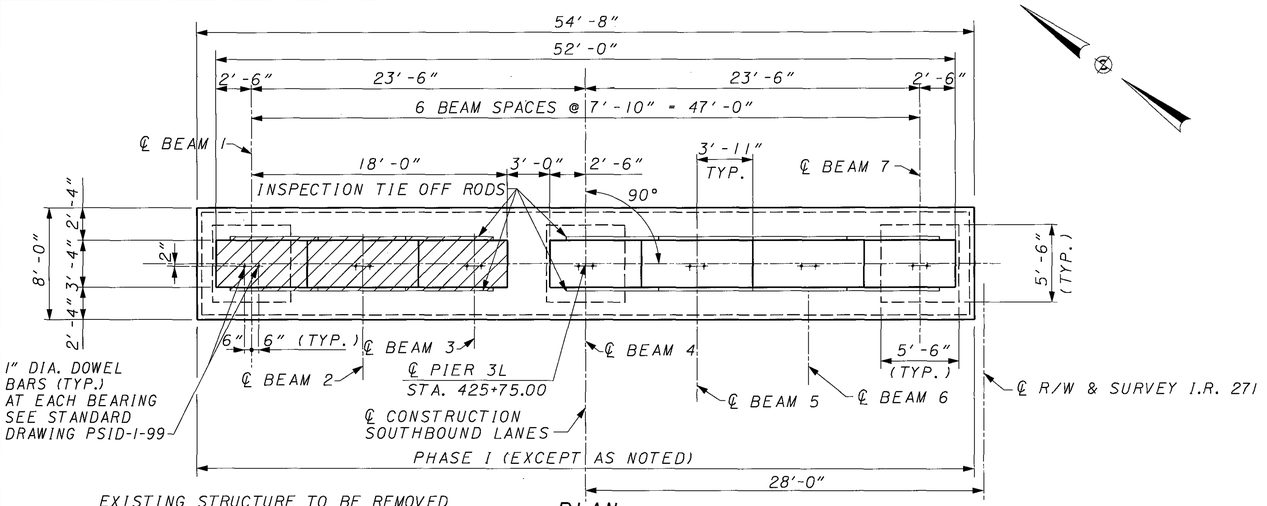
PIER 3L DETAILS BOTTOM SEGMENT- CONCRETE

BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

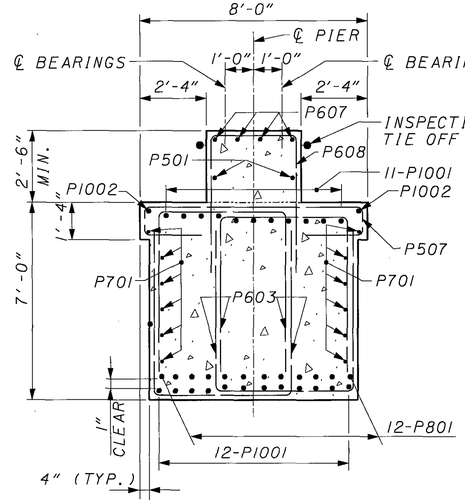
SUM-271-8.02

33/123

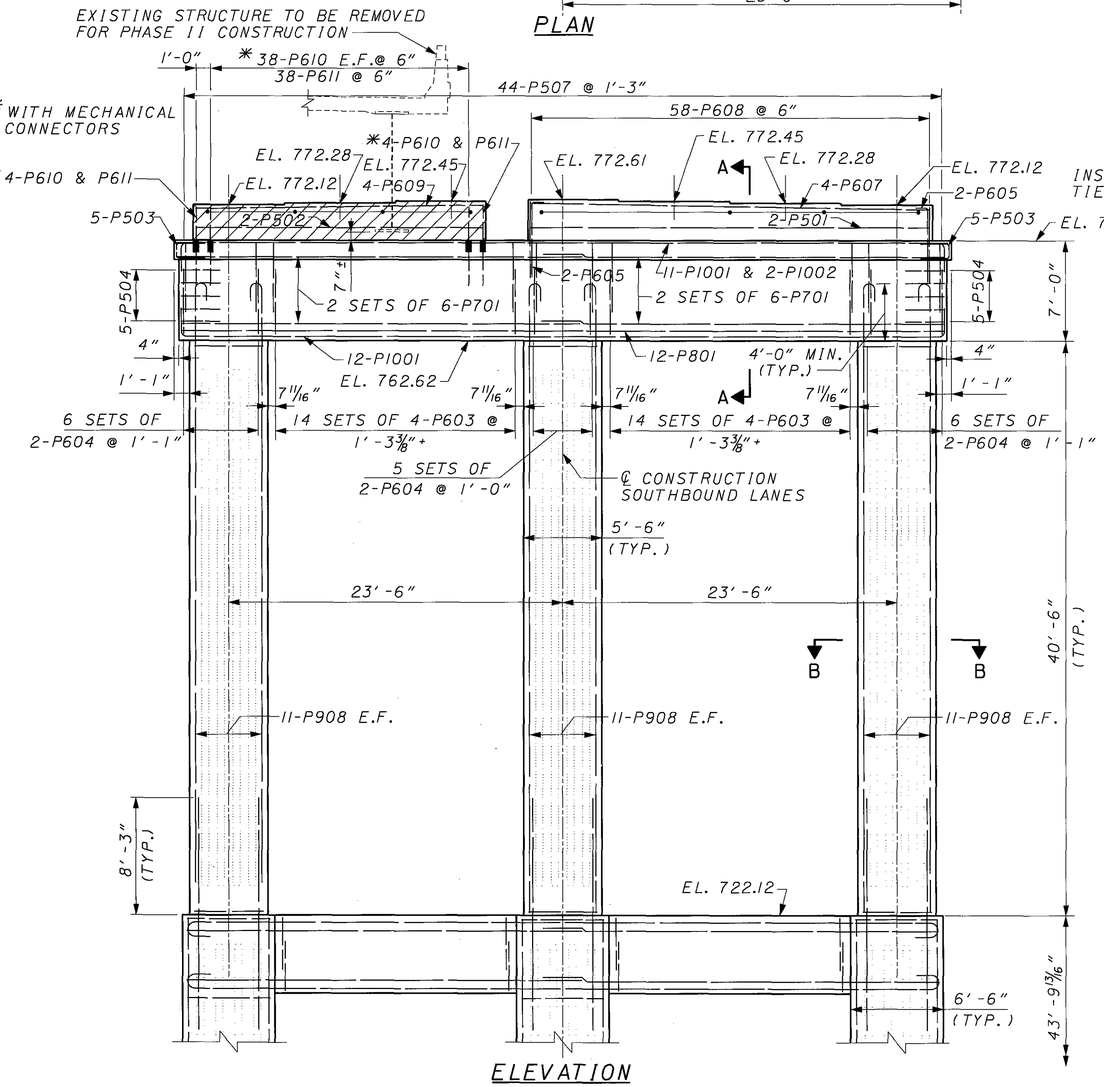
470/612



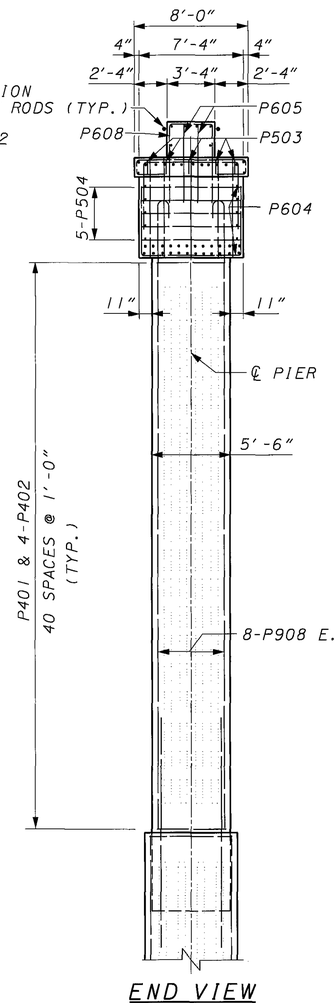
PLAN



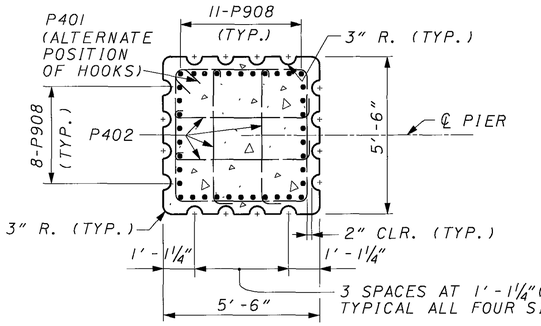
SECTION A-A



ELEVATION



END VIEW



SECTION B-B

NOTES

REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-9" FOR #5 HORIZONTAL BARS, 3'-0" FOR #6 VERTICAL BARS, 2'-5" FOR #6 HORIZONTAL BARS, 3'-11" FOR #7 HORIZONTAL BARS, 8'-1" FOR #9 VERTICAL BARS, 10'-3" FOR #10 VERTICAL BARS.

PIER AESTHETIC DETAILS: SEE SHEET 30/123.

MECHANICAL CONNECTOR DETAIL: SEE SHEET 26/123.

COLUMN OPTIONAL RE-BAR SPLICES: SEE SHEET 43/123.

INSPECTION TIE OFF RODS: SEE SHEET 43/123.

NOTATION: E.F. - EACH FACE
R. - RADIUS
(TYP.) - TYPICAL
CLR. - CLEAR COVER

INDICATES PHASE II CONSTRUCTION

BRIDGE SEAT REINFORCING, SETTING DOWELS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF DOWEL BAR HOLES.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

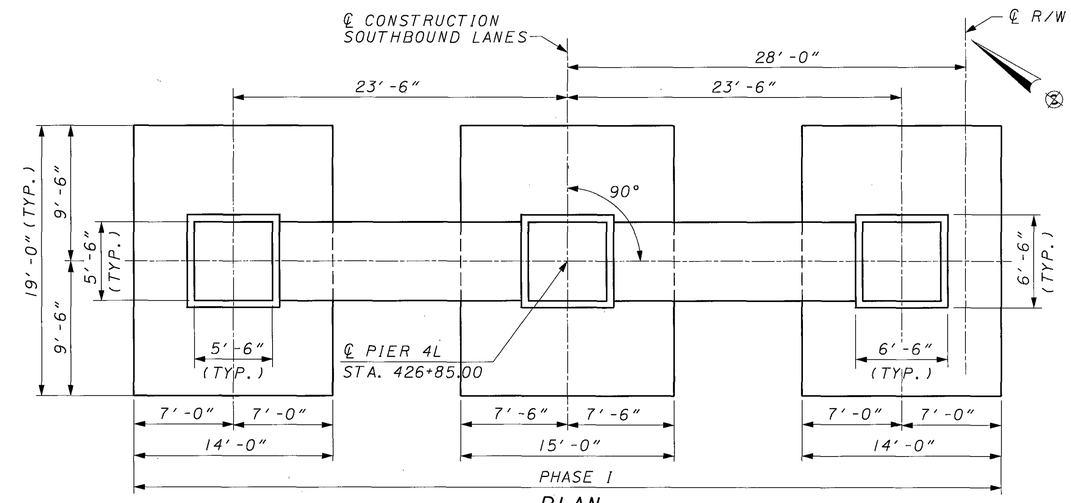
DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013	

PIER 3L DETAILS TOP SEGMENT - CONCRETE

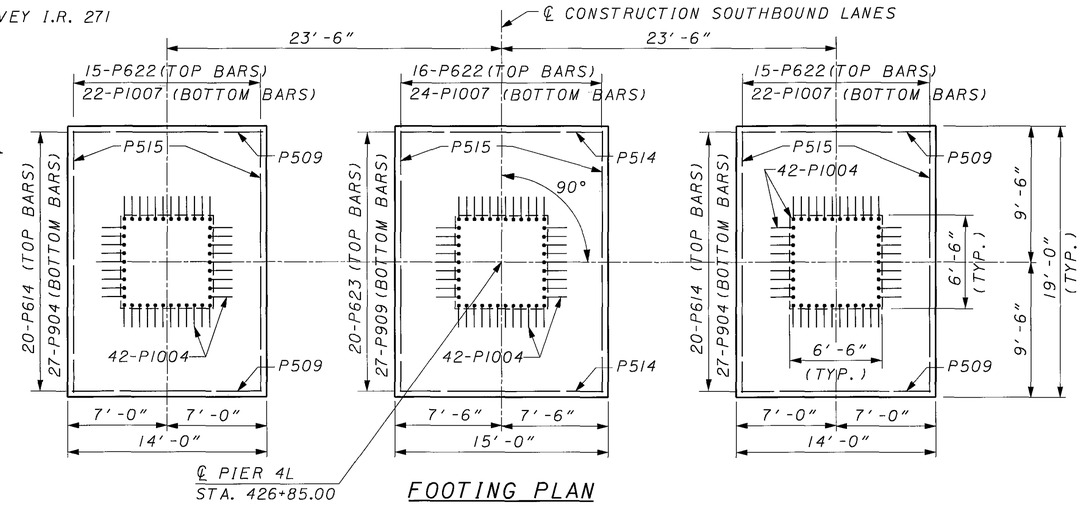
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

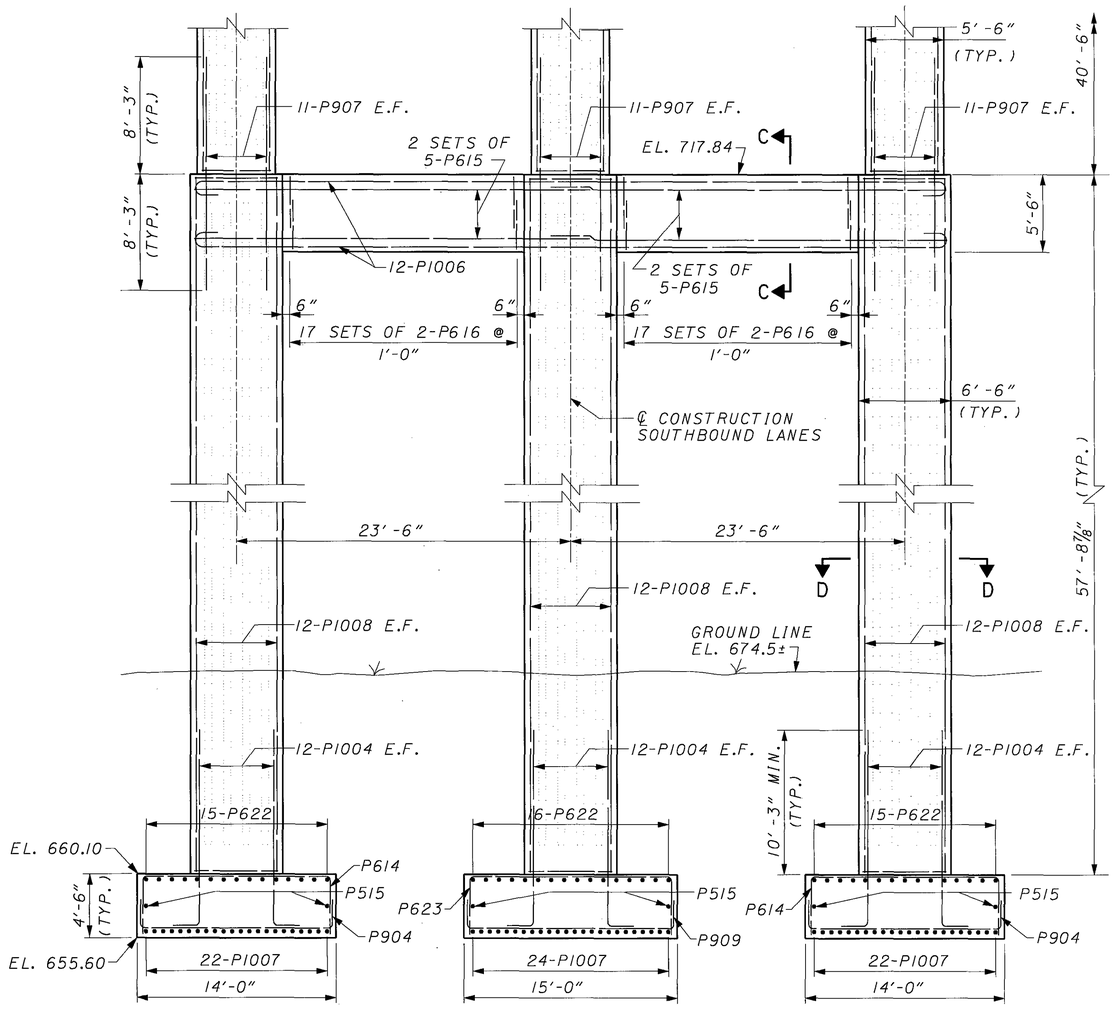
SU271PCL.DGN 6/23/04 TWH,JLS,KH,SJK,RC



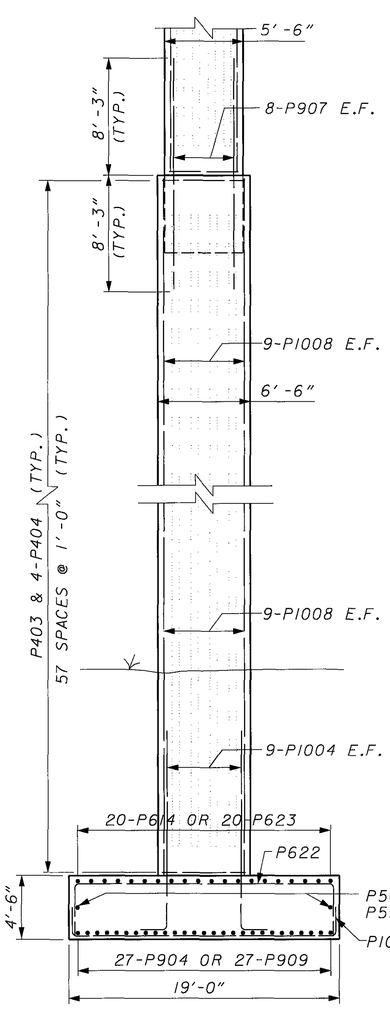
PLAN



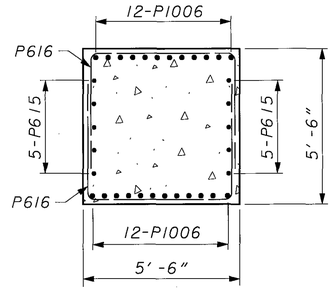
FOOTING PLAN



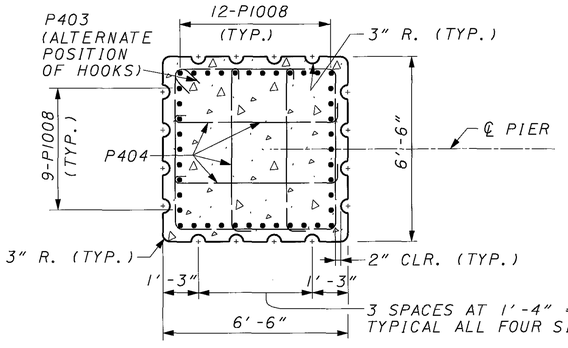
ELEVATION



END VIEW



SECTION C-C



SECTION D-D

NOTES:

ADDITIONAL NOTES: SEE SHEET 34/123.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
GLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013	

PIER 4L DETAILS BOTTOM SEGMENT- CONCRETE

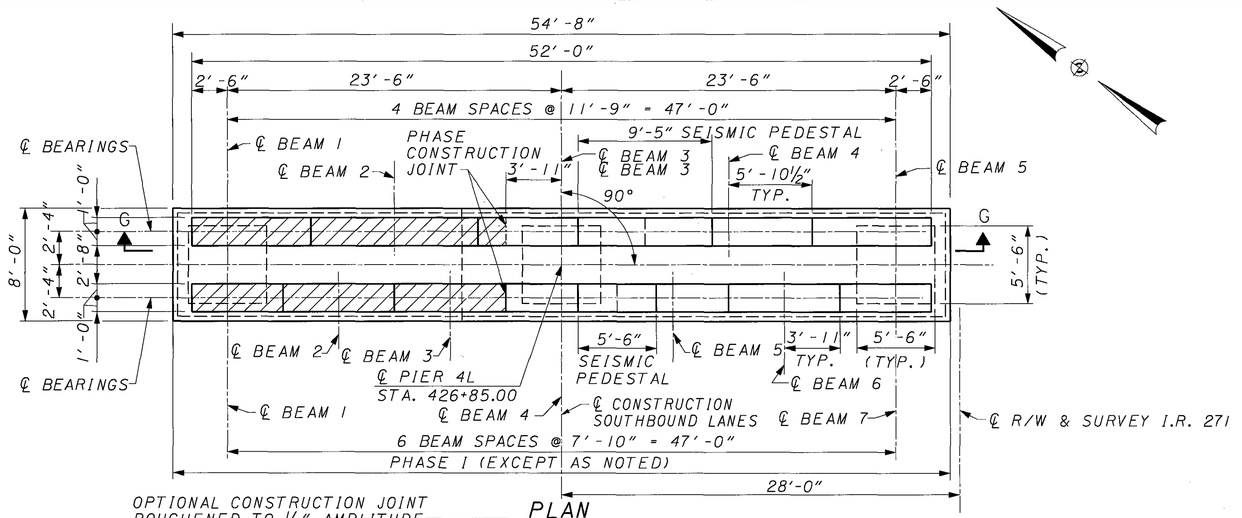
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

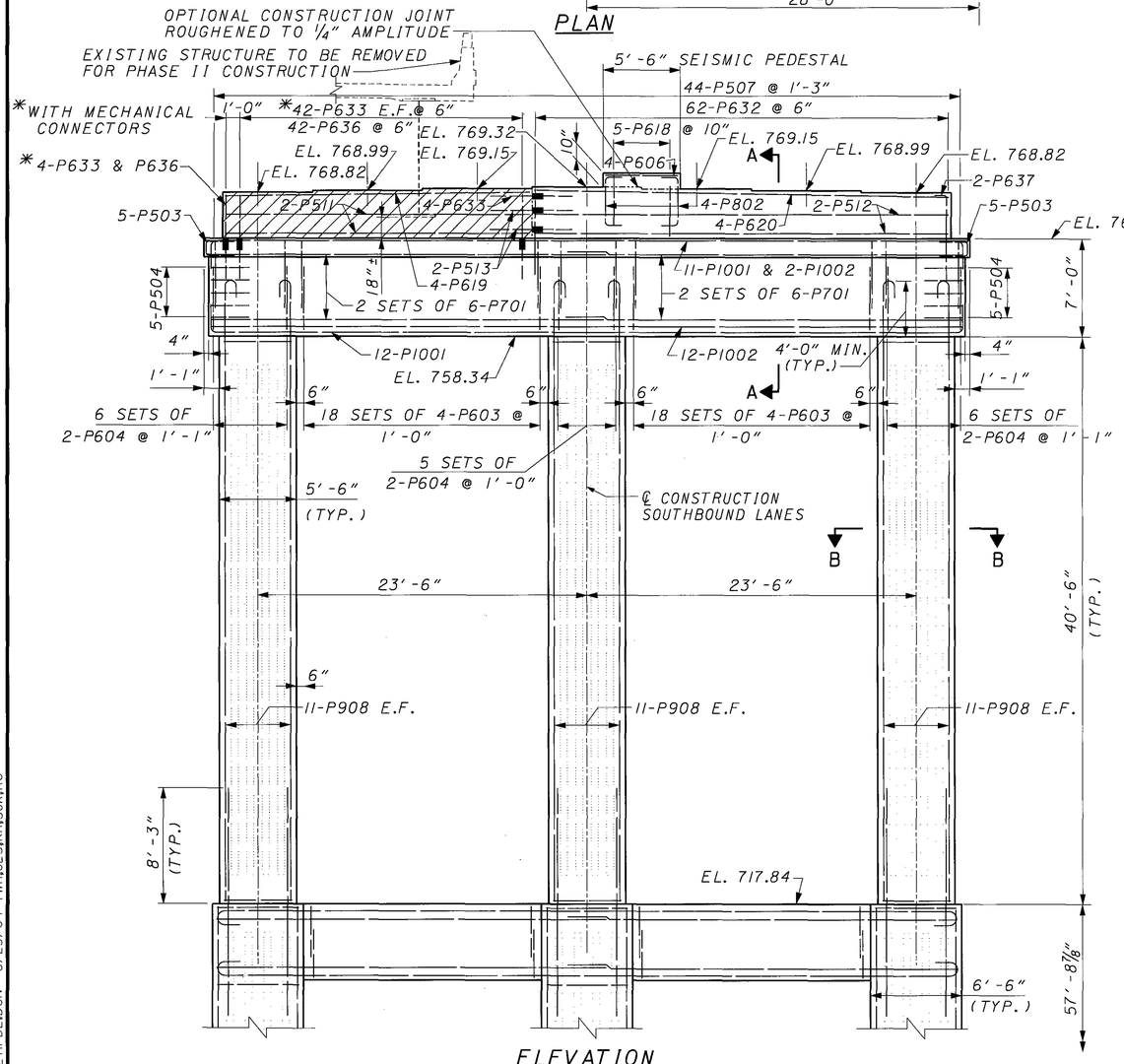
35/123

472/612

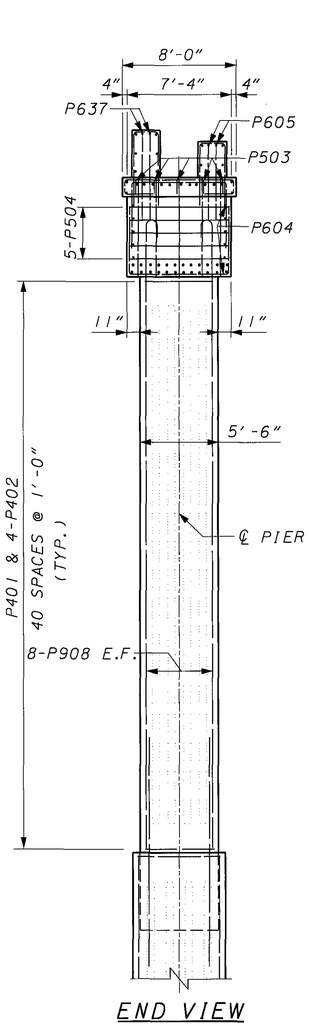
SU271PDL.DGN 6/23/04 TWH,JLS,KH,RC



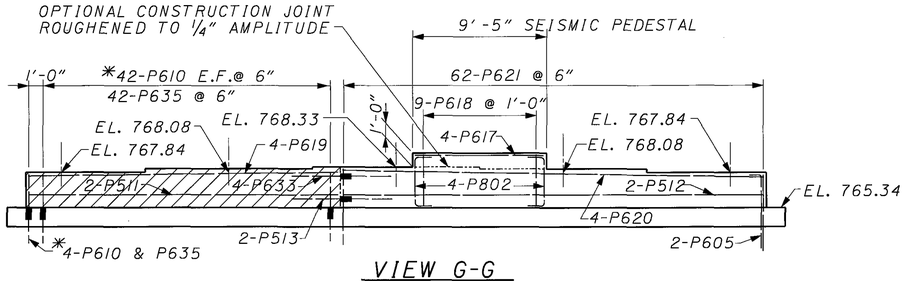
PLAN



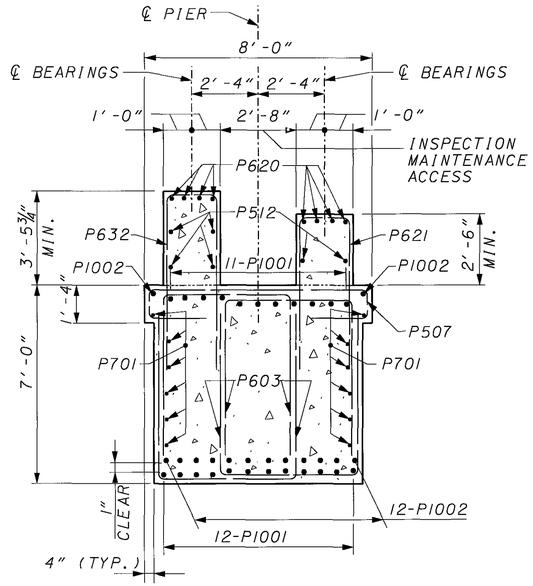
ELEVATION



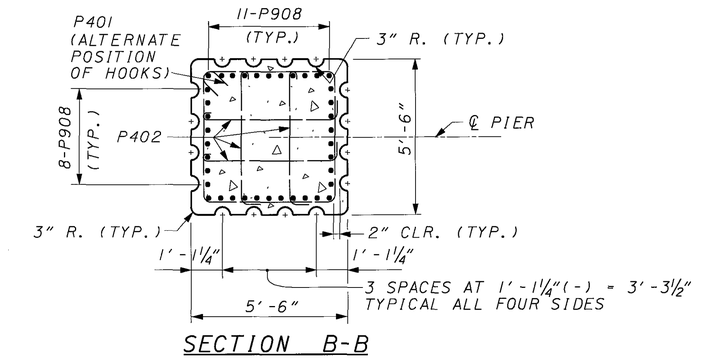
END VIEW



VIEW G-G



SECTION A-A



SECTION B-B

NOTES

INDICATES PHASE II CONSTRUCTION

SEISMIC PEDESTAL DETAILS: SEE SHEET 43/123.

ADDITIONAL NOTES: SEE SHEET 34/123.

BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD ¼" AT THE FORWARD BEARINGS TO COMPENSATE FOR THE VERTICAL DEFORMATION OF THE BEARINGS.

RICHLAND ENGINEERING LIMITED
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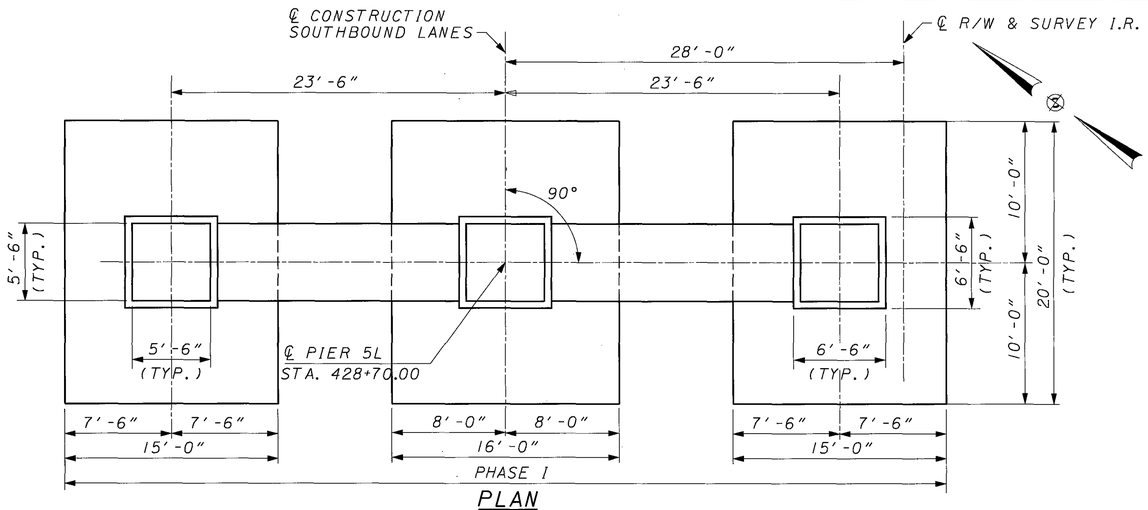
DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DAP	10/29/03
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013	

PIER 4L DETAILS TOP SEGMENT - CONCRETE

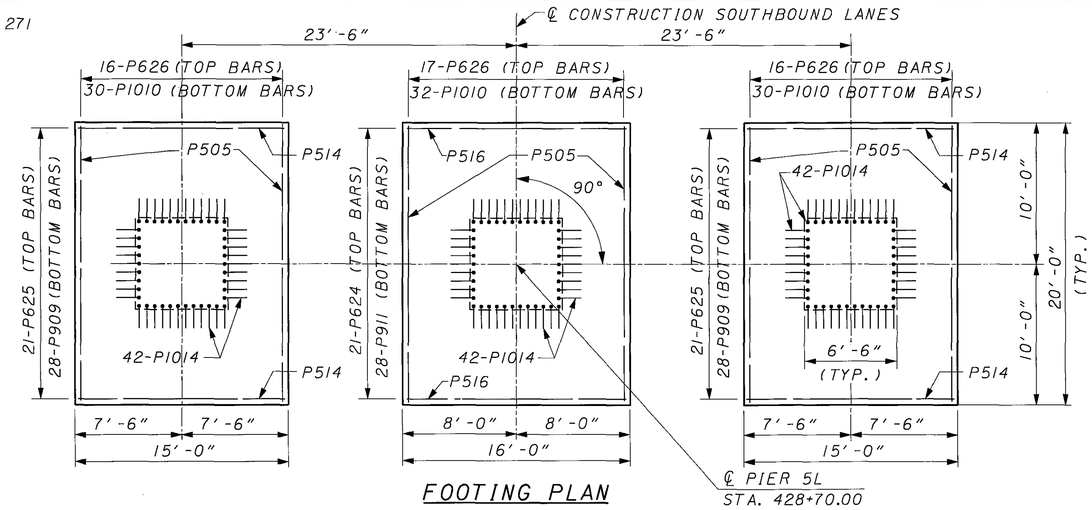
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

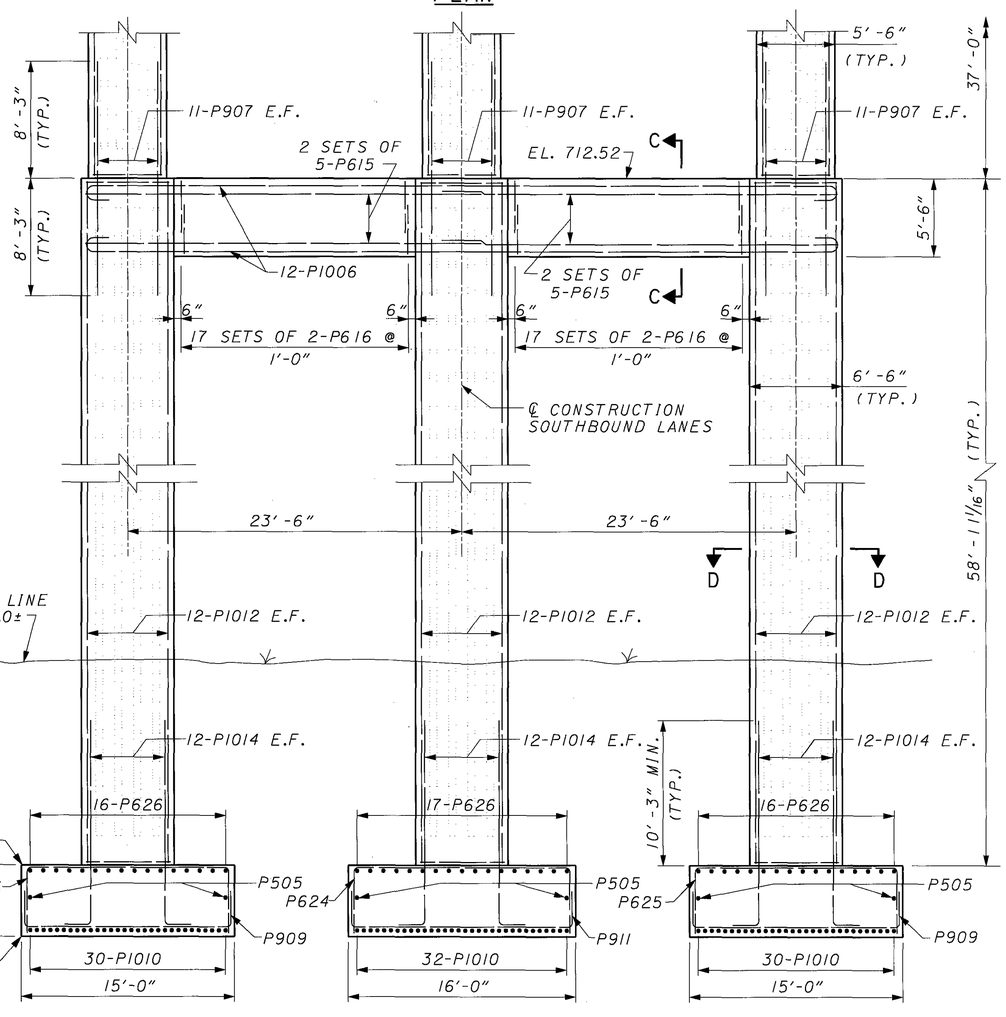
SU271PDL.DGN 6/23/04 TWH,JLS,KH,SJK,RC



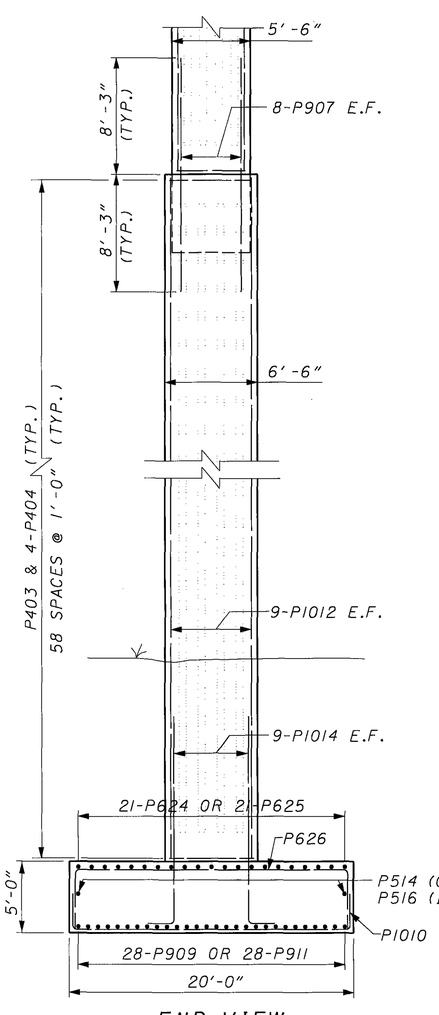
PLAN



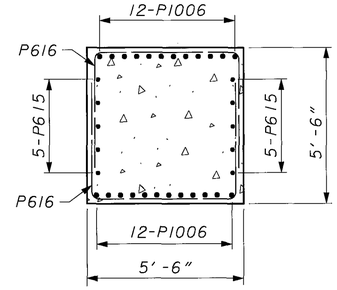
FOOTING PLAN



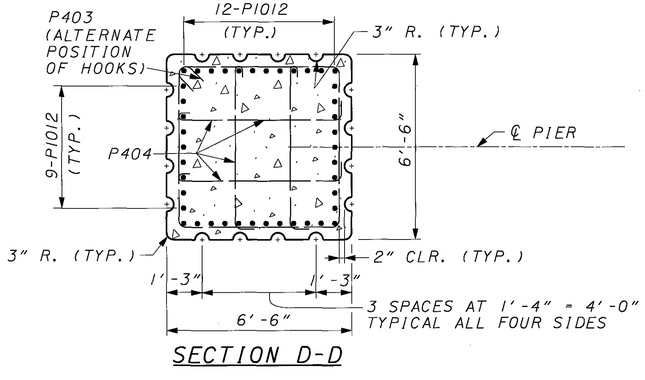
ELEVATION



END VIEW



SECTION C-C



SECTION D-D

NOTES

ADDITIONAL NOTES: SEE SHEET 34/123.

SU271PEL.DGN 6/23/04 TWH,JLS,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | REVIEWED DAP | DATE 3/18/04 | STRUCTURE FILE NUMBER 7709013
CHECKED DLR | REVISED

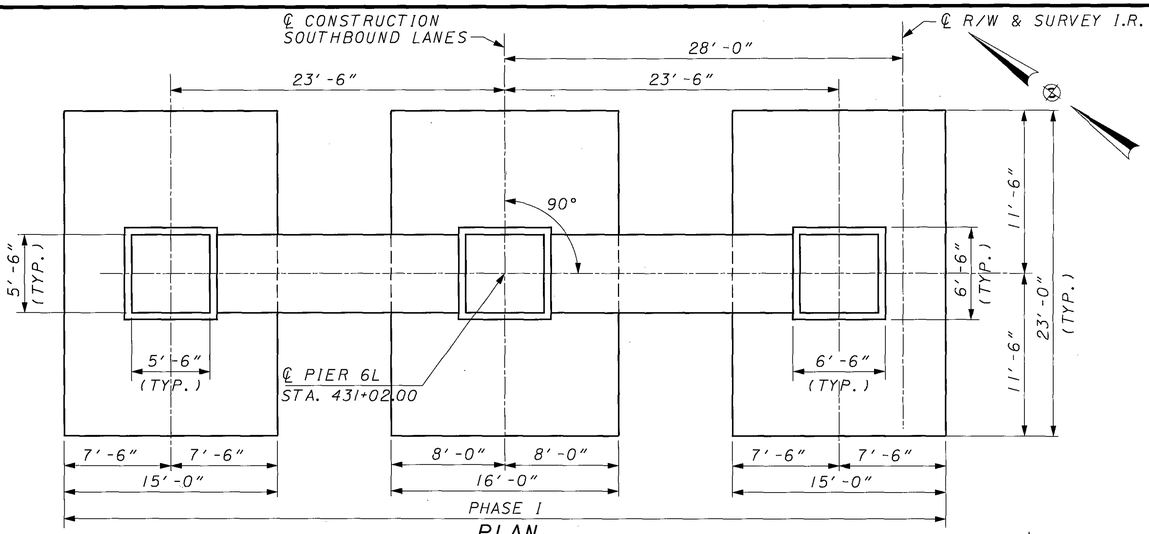
PIER 5L DETAILS BOTTOM SEGMENT- CONCRETE

BRIDGE NO. SUM-271-0802
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

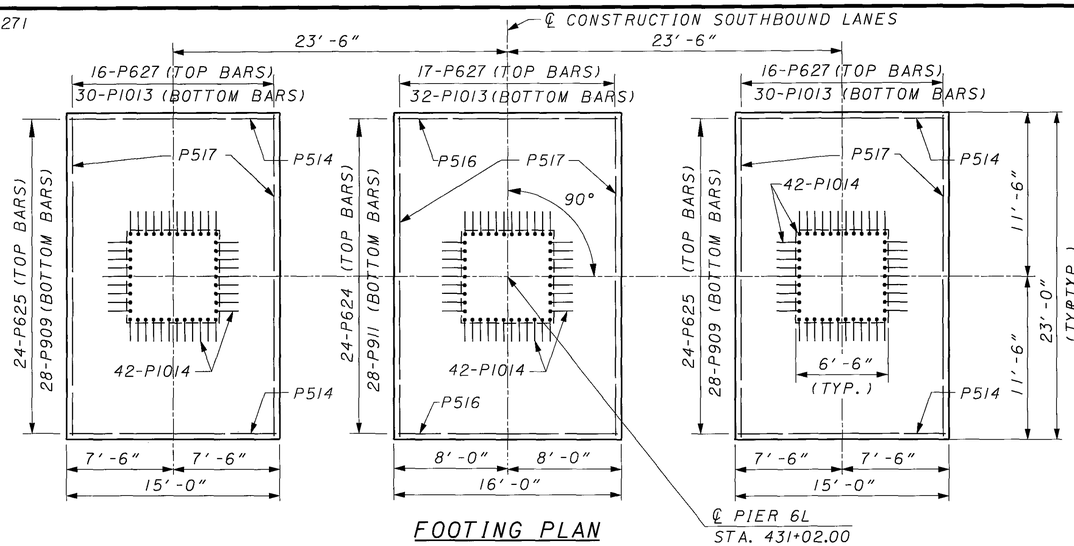
SUM-271-8.02

37/123

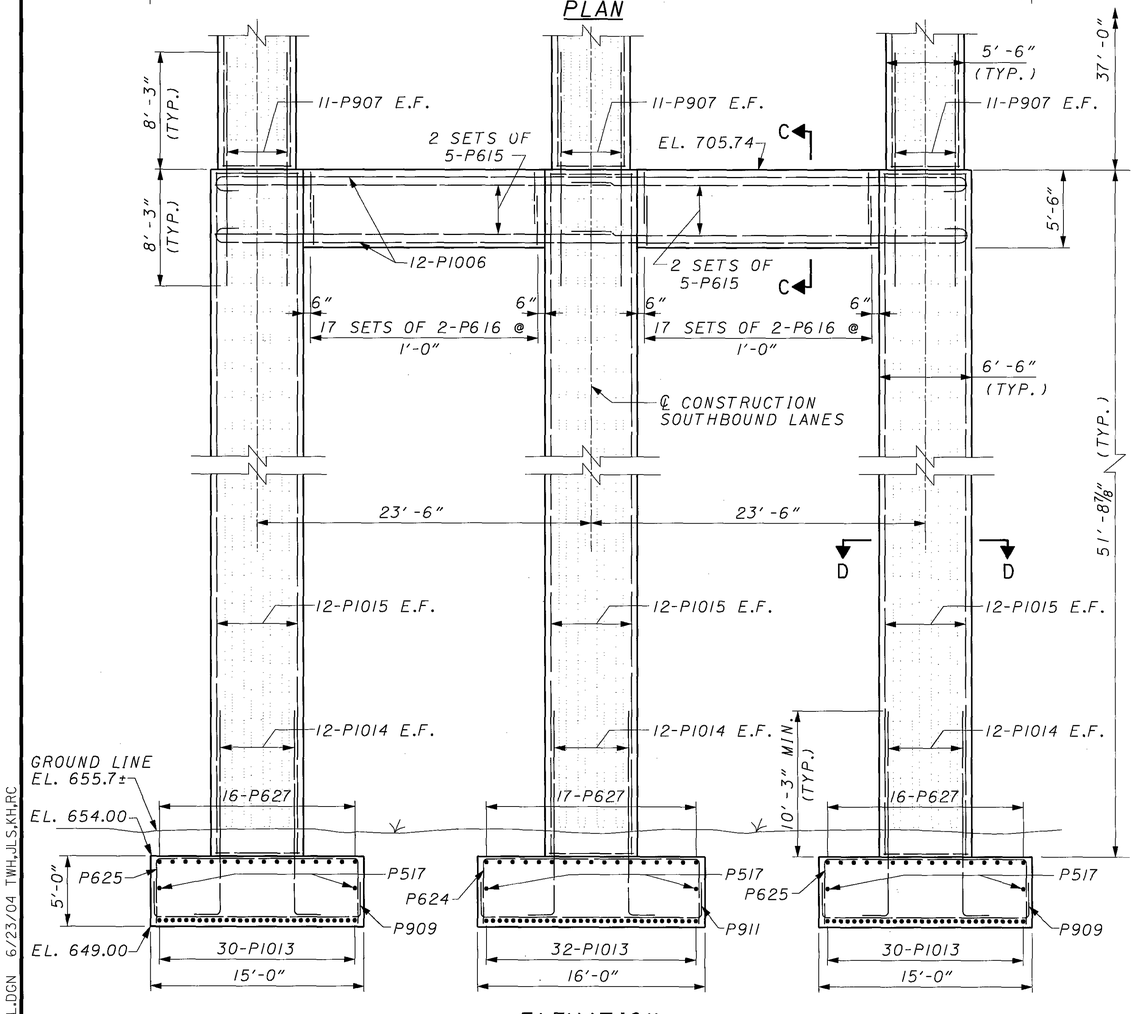
474/612



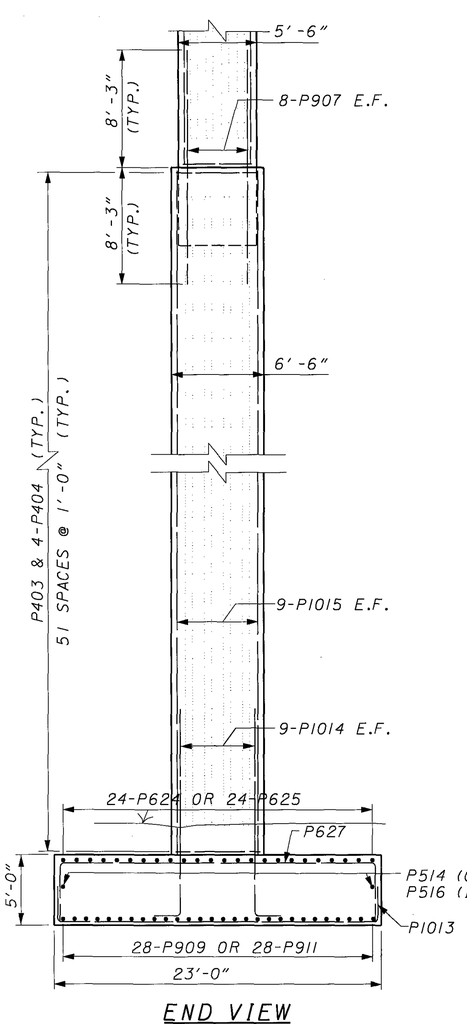
PLAN



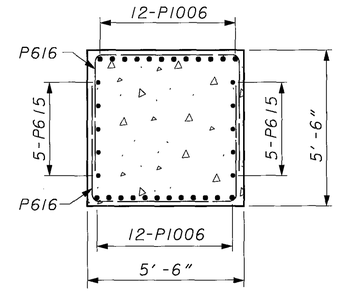
FOOTING PLAN



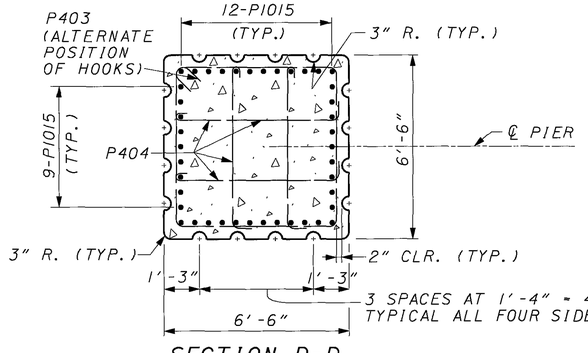
ELEVATION



END VIEW



SECTION C-C



SECTION D-D

NOTES

ADDITIONAL NOTES: SEE SHEET 34/123.

RICHLAND ENGINEERING LIMITED
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DESIGNED	DRAWN	REVIEWED	DATE
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DLR		77090/3	

PIER 6L DETAILS BOTTOM SEGMENT- CONCRETE

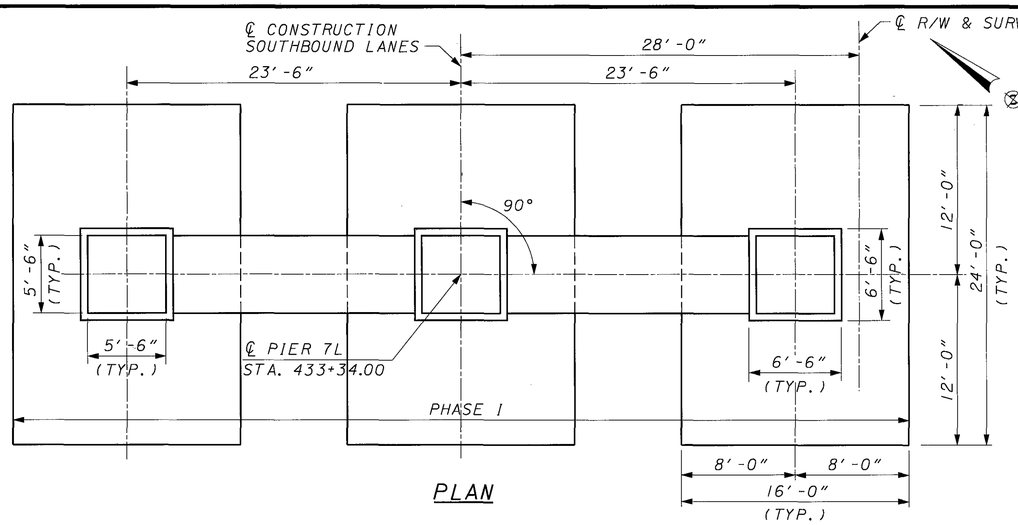
SUM-271-8.02

BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

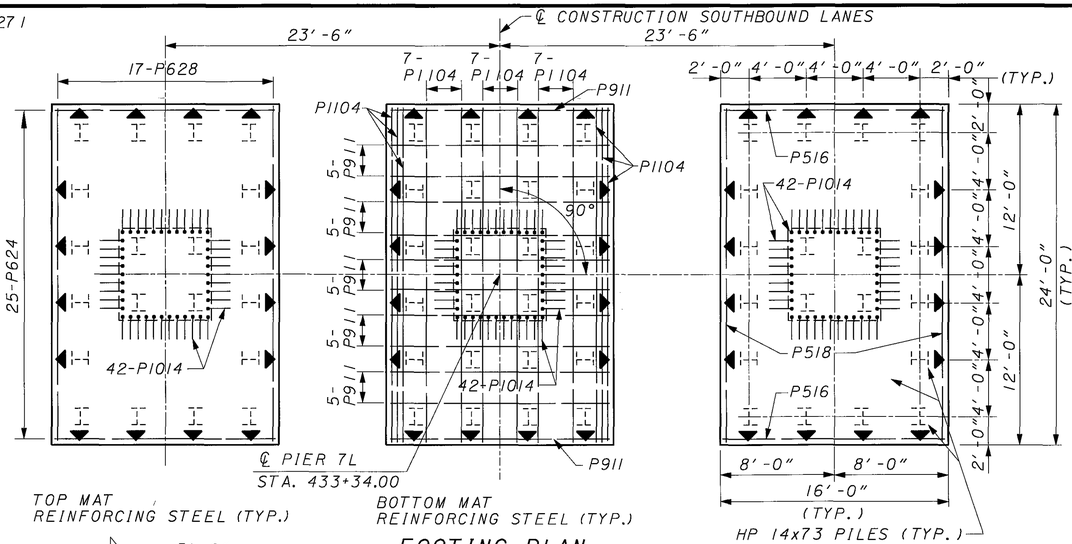
38/123

475/612

SU27IPFL.DGN 6/23/04 TWH,JLS,KH,RC



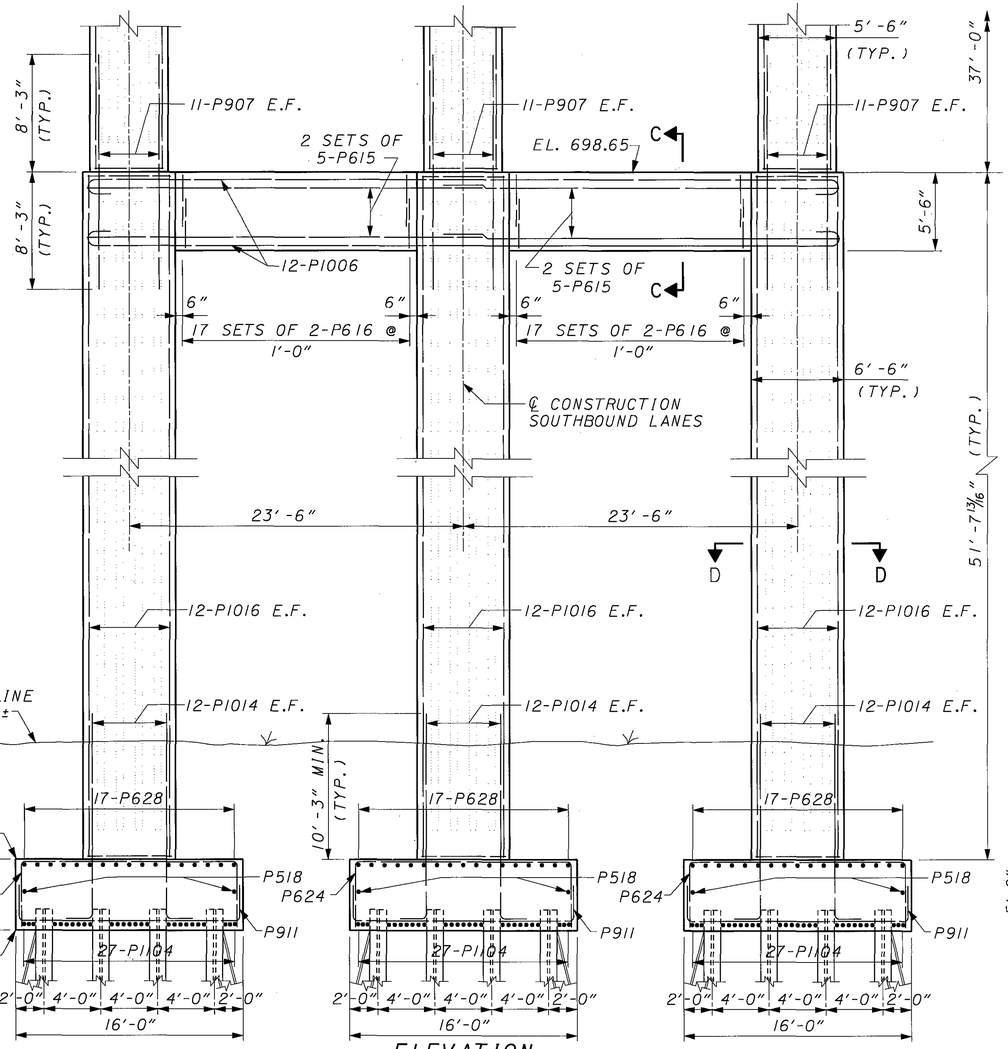
PLAN



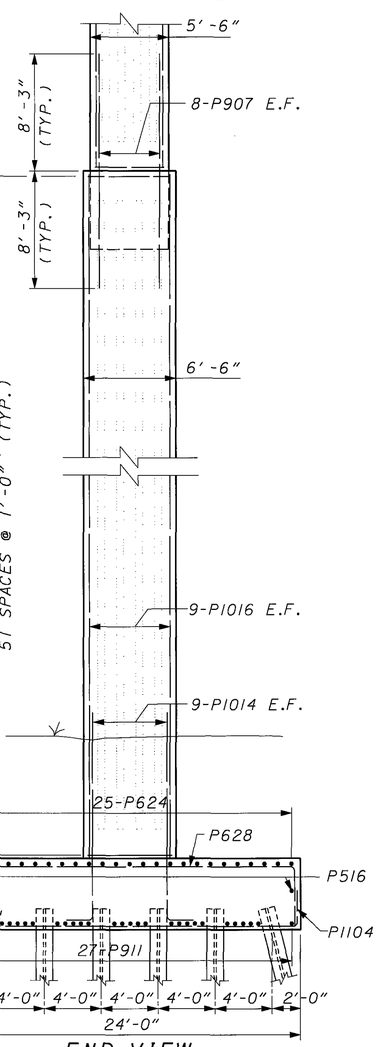
TOP MAT REINFORCING STEEL (TYP.)

BOTTOM MAT REINFORCING STEEL (TYP.)

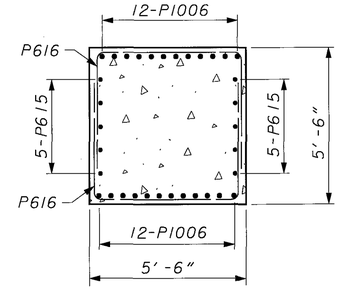
FOOTING PLAN



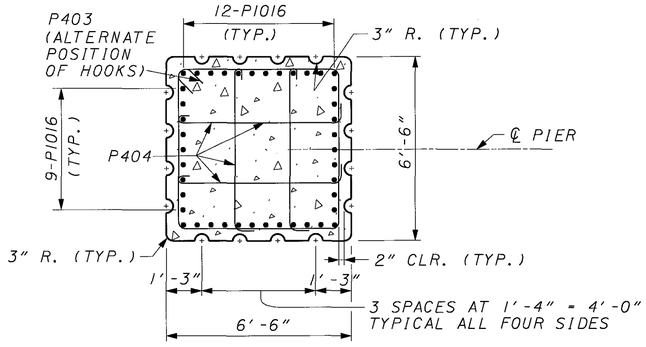
ELEVATION



END VIEW



SECTION C-C



SECTION D-D

NOTES

HP 14x73 PILES INDICATES 1:4 BATTER

PILE NUMBERING: SEE SHEET 18/123.

ADDITIONAL NOTES: SEE SHEET 34/123.

RICHLAND ENGINEERING LIMITED
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BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013	

PIER 7L DETAILS BOTTOM SEGMENT- CONCRETE

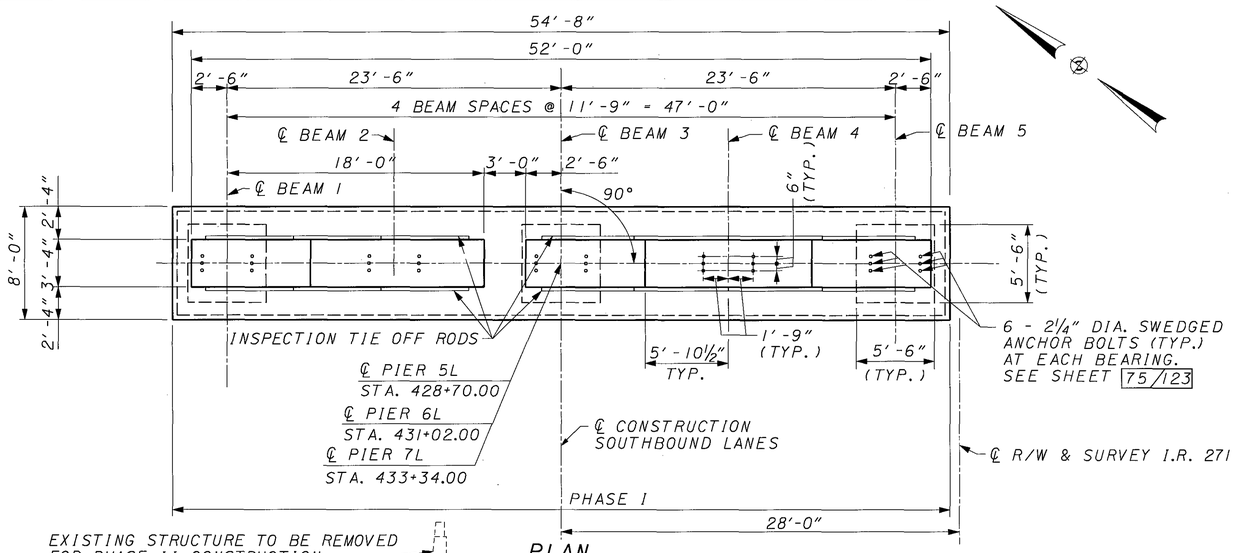
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, CUYAHOGA RIVER
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

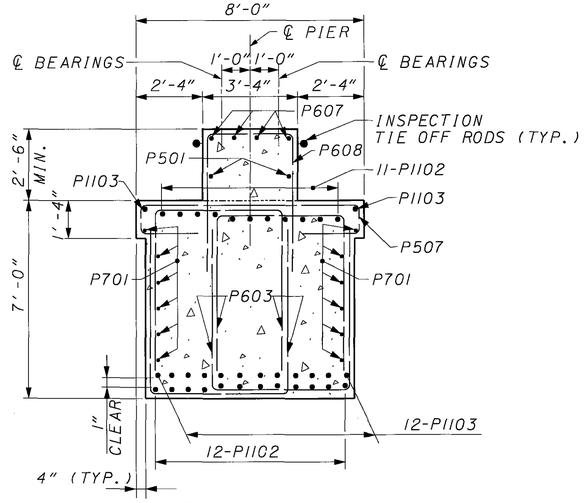
39/123

476/612

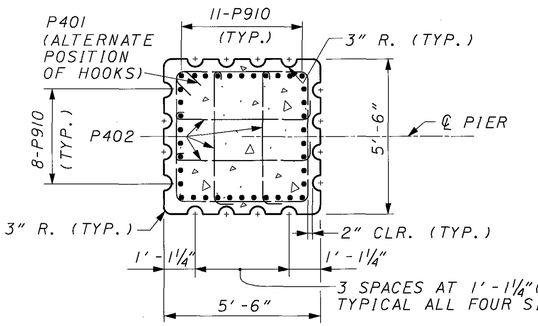
SU271PGL.DGN 6/23/04 TWH,JLS,KH,SJK,RC



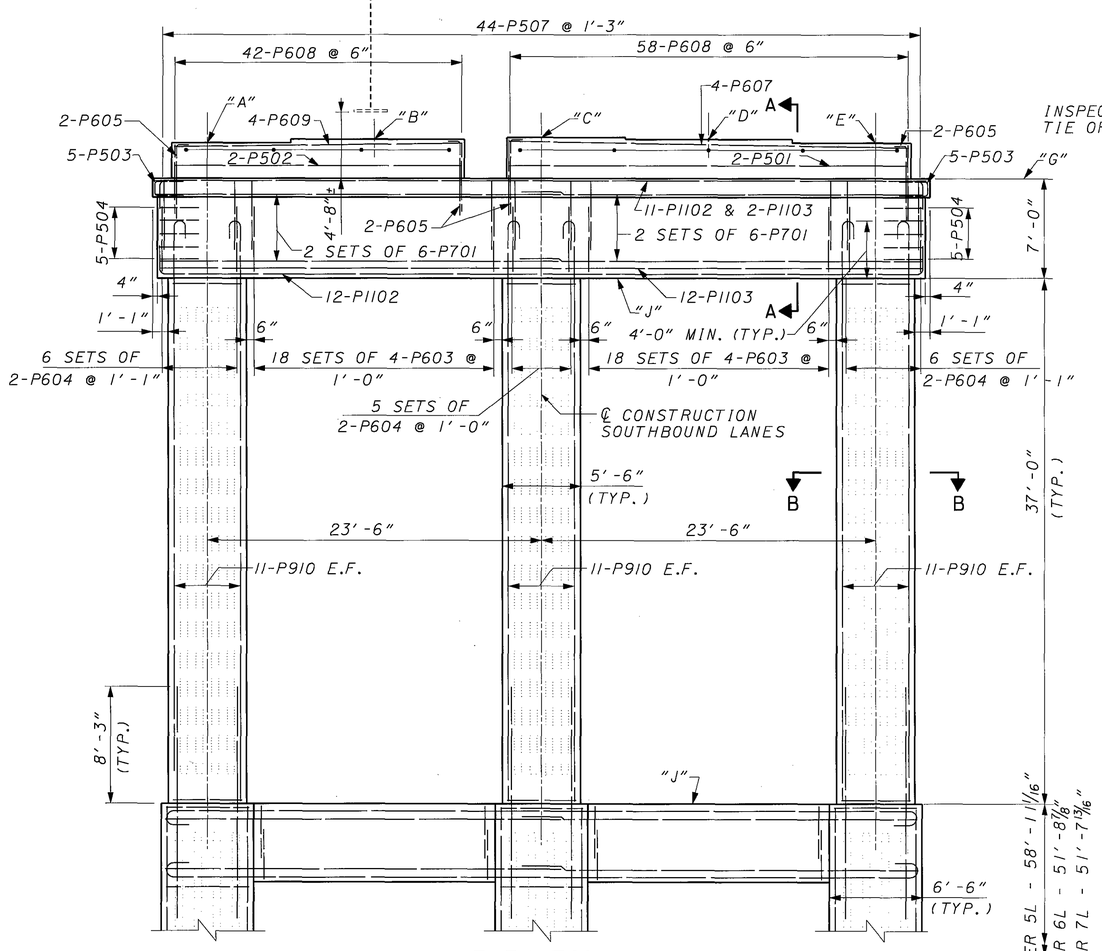
PLAN



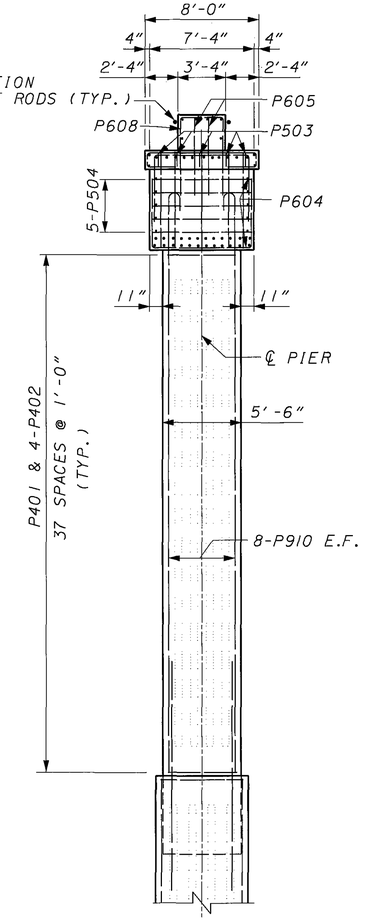
SECTION A-A



SECTION B-B



ELEVATION



END VIEW

ELEVATION TABLE

LOCATION		PIER 5L	PIER 6L	PIER 7L
"A"	BEAM 1 SEAT	EL. 759.02	EL. 752.24	EL. 745.15
"B"	BEAM 2 SEAT	EL. 759.27	EL. 752.49	EL. 745.39
"C"	BEAM 3 SEAT	EL. 759.51	EL. 752.74	EL. 745.64
"D"	BEAM 4 SEAT	EL. 759.27	EL. 752.49	EL. 745.39
"E"	BEAM 5 SEAT	EL. 759.02	EL. 752.24	EL. 745.15
"G"	TOP CAP	EL. 756.52	EL. 749.74	EL. 742.65
"H"	BOTTOM CAP	EL. 749.52	EL. 742.74	EL. 735.65
"J"	BOTTOM COLUMN (TOP SEGMENT)	EL. 712.52	EL. 705.74	EL. 698.65

NOTES

ADDITIONAL NOTES: SEE SHEET 34/123.

BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD AT PIERS 5L, 6L & 7L TO COMPENSATE FOR THE VERTICAL DEFORMATION OF THE BEARINGS, SEE TABLE.

BRIDGE SEAT ADJUSTMENT TABLE		
PIER 5L	PIER 6L	PIER 7L
5/16"	1/4"	5/16"

BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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PIER 5L, 6L & 7L DETAILS TOP SEGMENT - CONCRETE

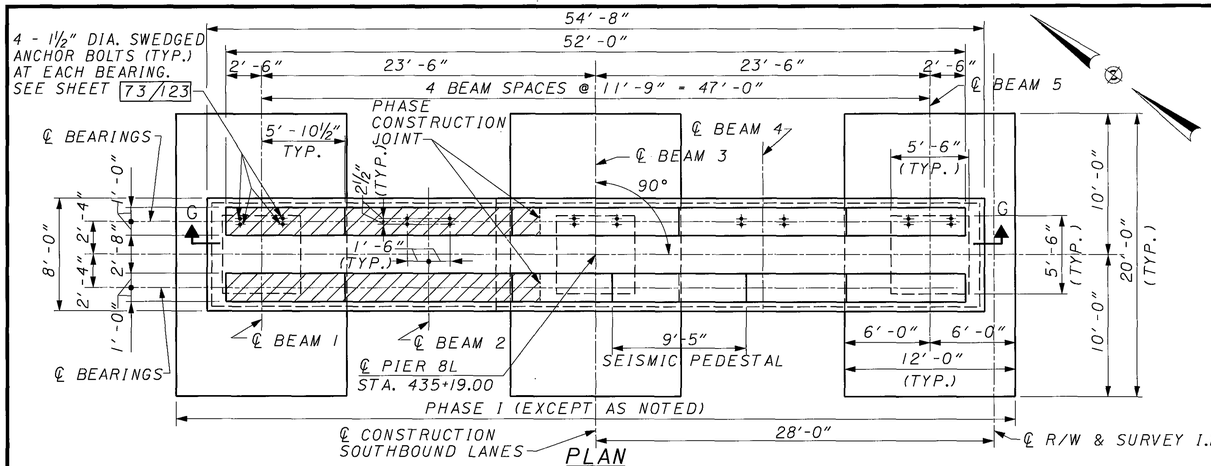
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

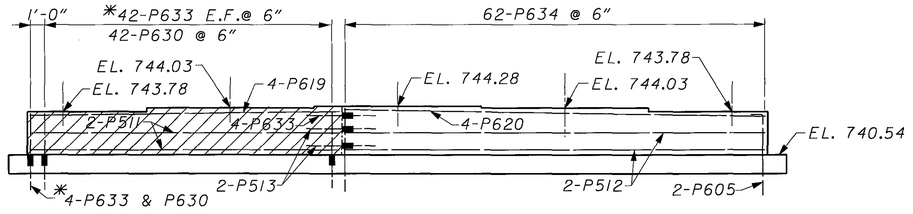
40/123

477/612

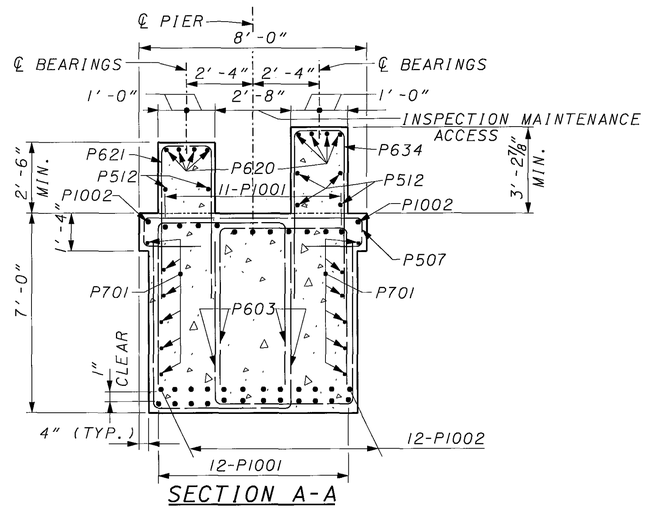
SU271PEL.DGN 6/23/04 TWH,JLS,KH,RC



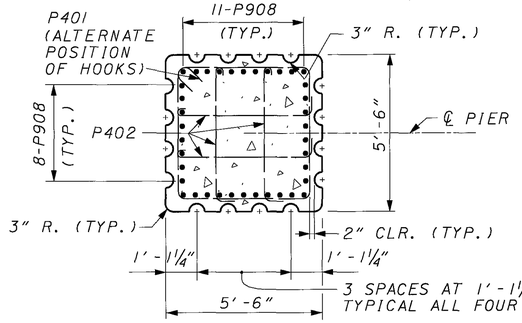
PLAN



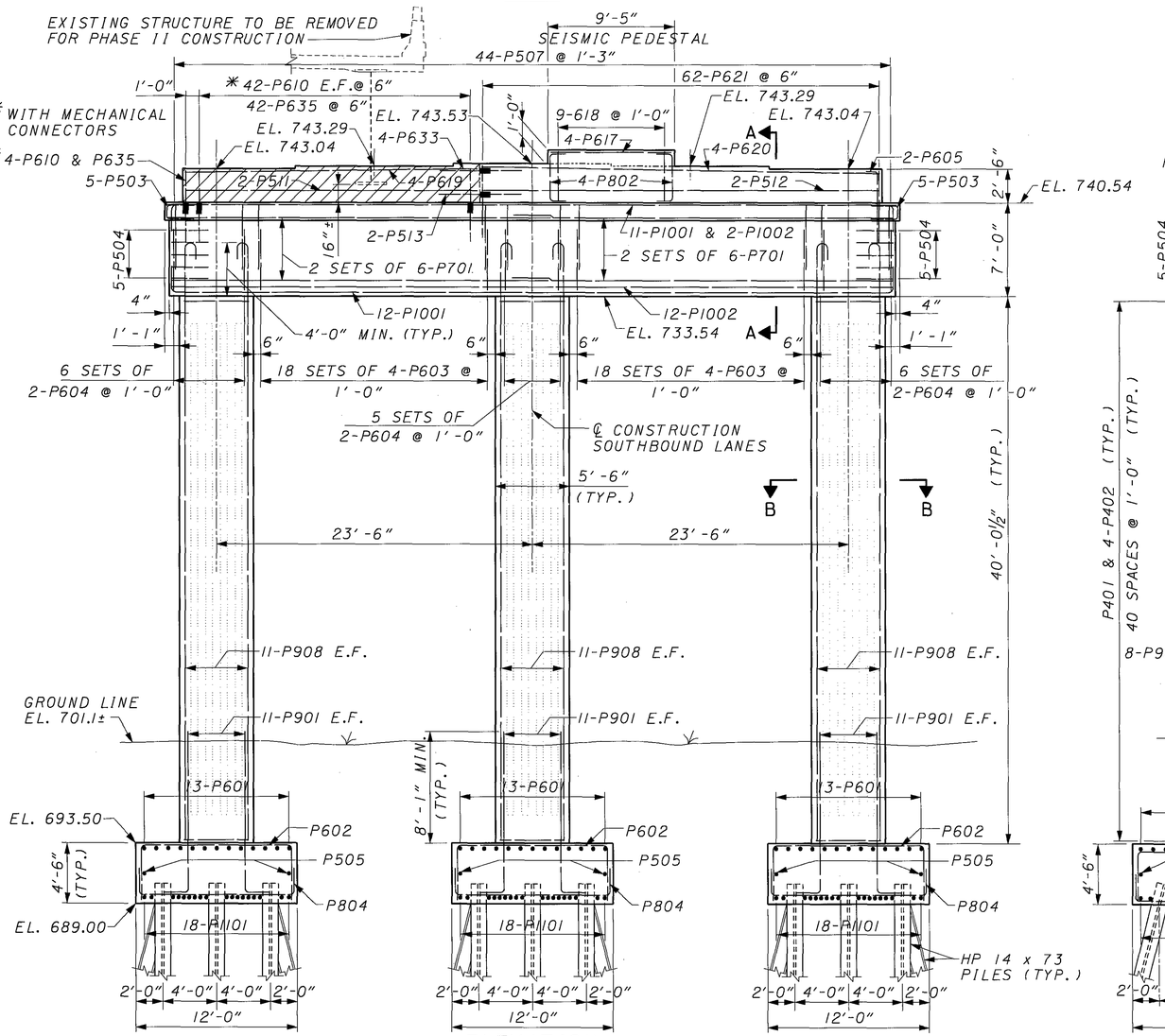
VIEW G-G



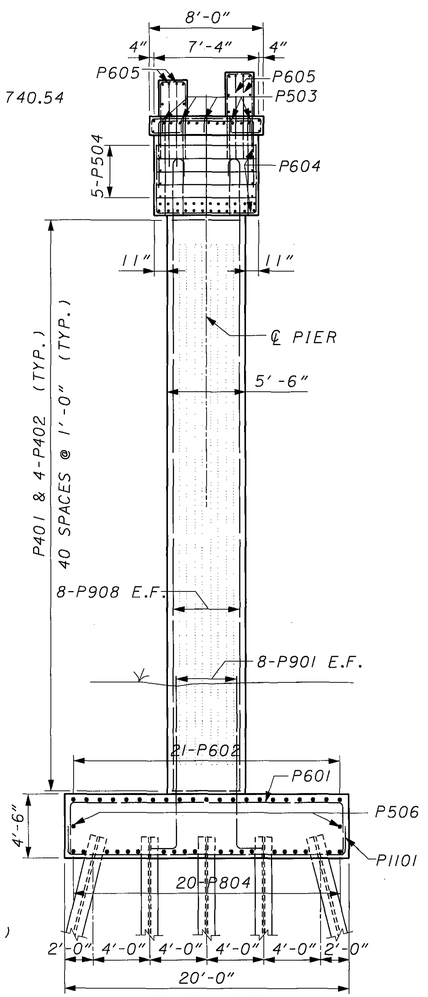
SECTION A-A



SECTION B-B



ELEVATION



END VIEW

NOTES

FOOTING PLAN: SEE SHEET 43/123.

SEISMIC PEDESTAL DETAIL: SEE SHEET 43/123.

BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD ¼" AT THE REAR BEARINGS TO COMPENSATE FOR THE VERTICAL DEFORMATION OF THE BEARINGS.

BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

ADDITIONAL NOTES: SEE SHEET 34/123.

INDICATES PHASE II CONSTRUCTION

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		77090/13	

PIER 8L DETAILS - CONCRETE

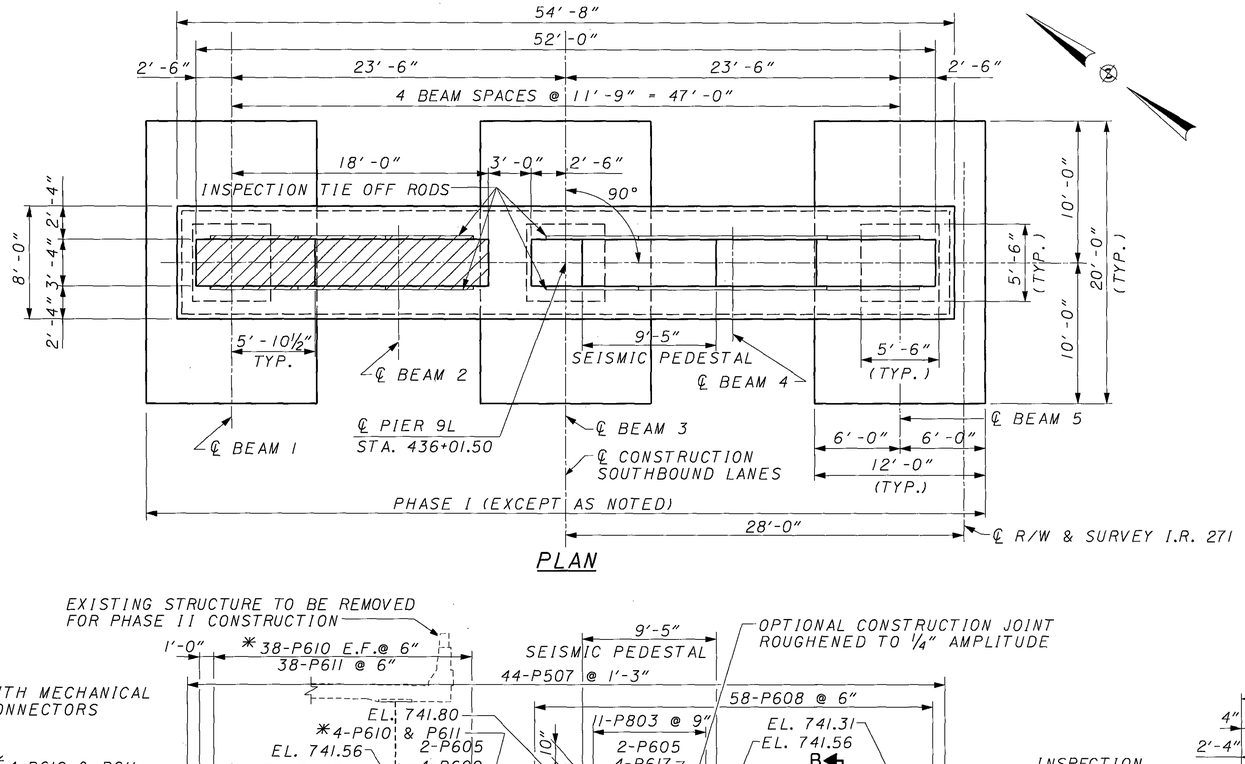
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

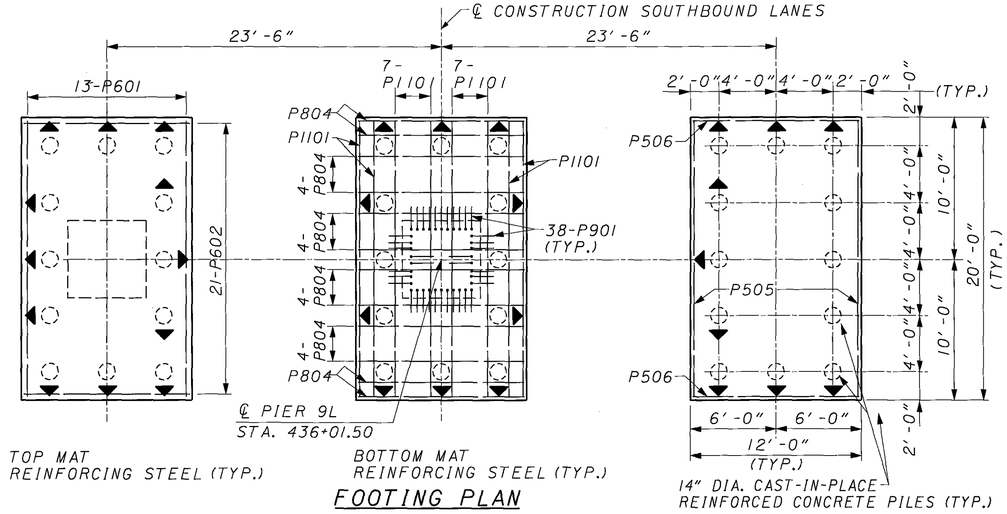
41/123

478/612

SU271PHL.DGN 6/23/04 TWH,JLS,KH,RC



PLAN

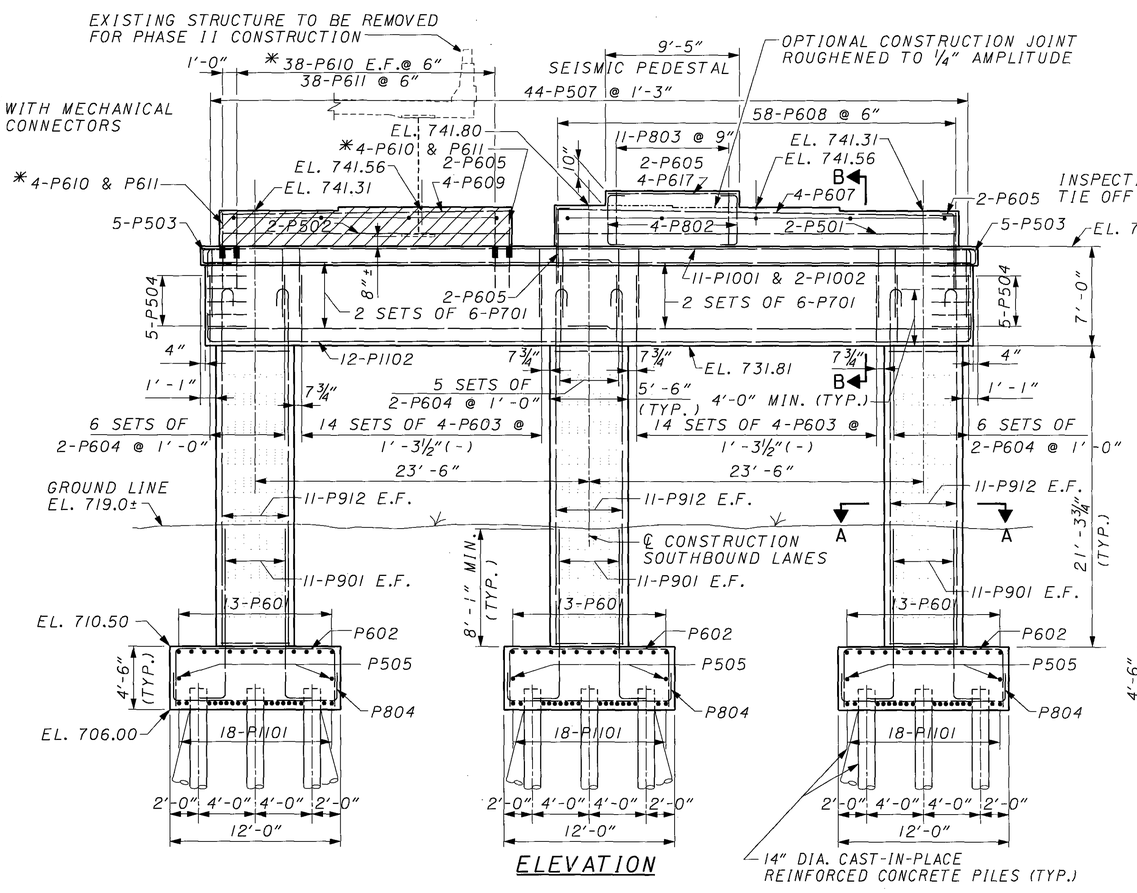


TOP MAT REINFORCING STEEL (TYP.)

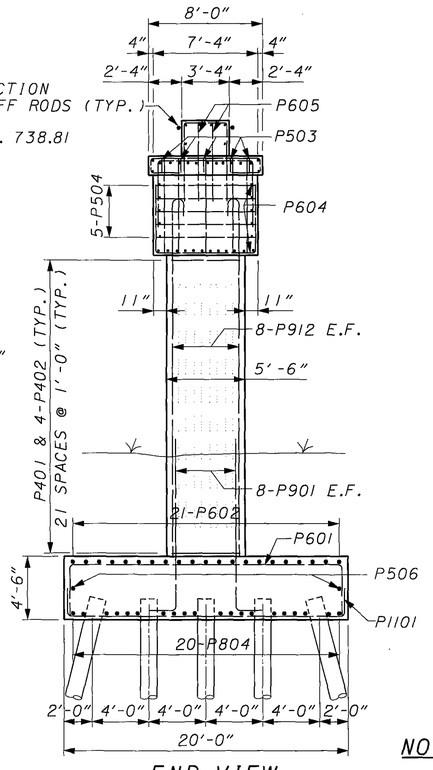
BOTTOM MAT REINFORCING STEEL (TYP.)

FOOTING PLAN

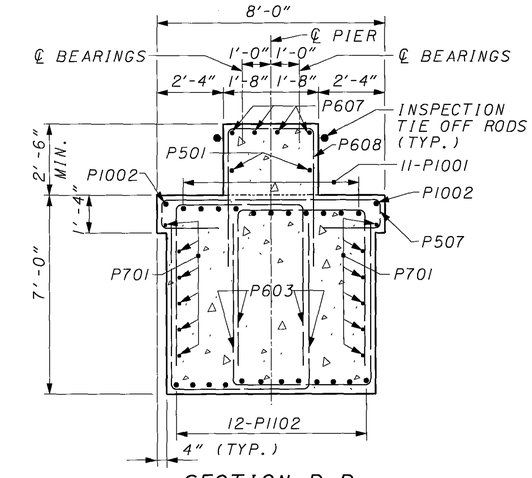
14" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILES (TYP.)



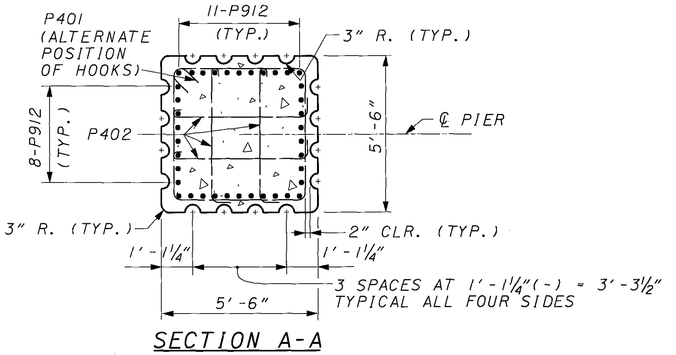
ELEVATION



END VIEW



SECTION B-B



SECTION A-A

NOTES

◀○ 14" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILES INDICATES 1:4 BATTER

PILE NUMBERING: SEE SHEET 18/123.

ADDITIONAL NOTES: SEE SHEET 34/123.

▨ INDICATES PHASE II CONSTRUCTION

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
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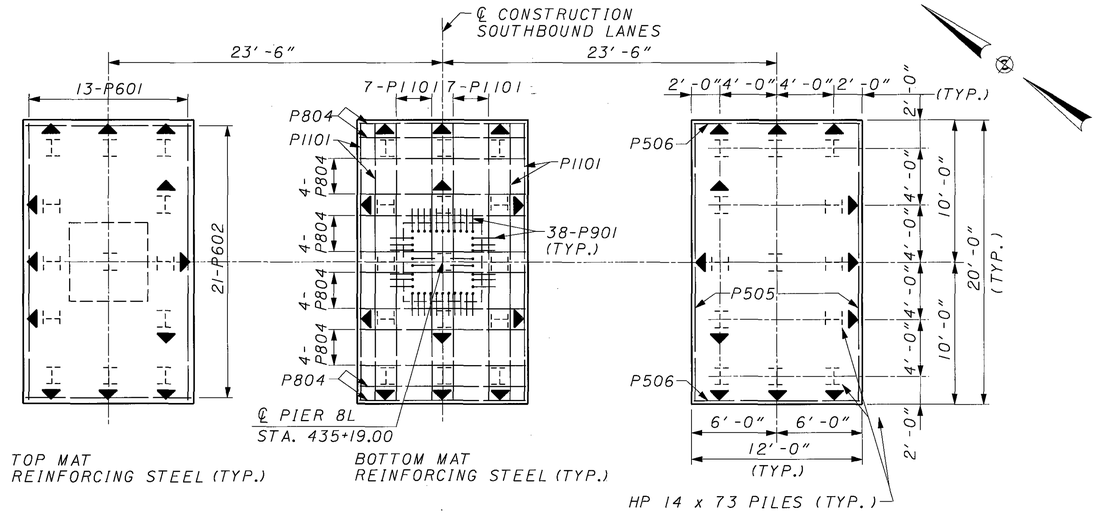
PIER 9L DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

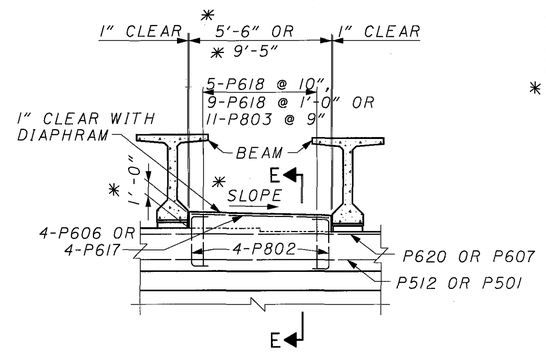
42/123

479/612

SU271PJL.DGN 6/23/04 TWH.JLS.KH.RC

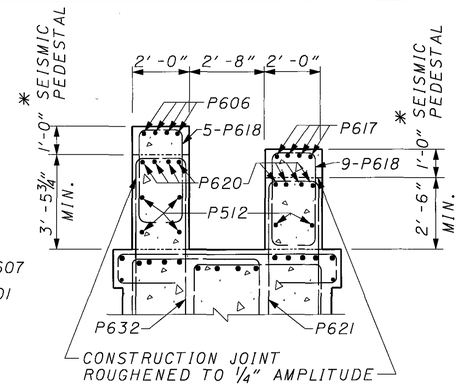


PIER 8L - FOOTING PLAN



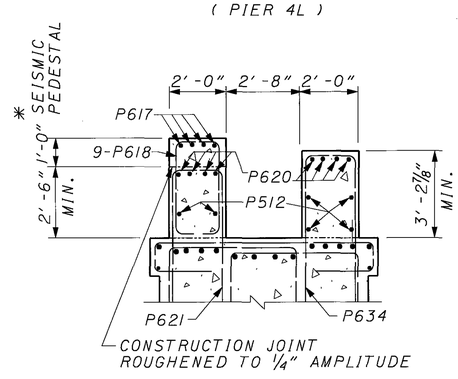
SEISMIC PEDESTAL DETAIL

* SLOPE TOP OF SEISMIC PEDESTAL PER DIAPHRAGM, SEE SHEETS 97/123, 99/123, AND 103/123.



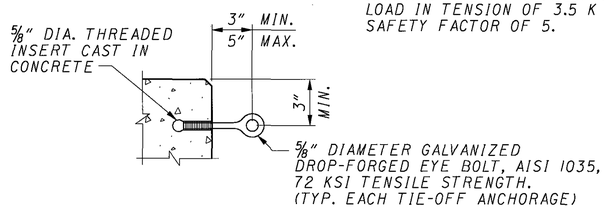
SECTION E-E

(PIER 4L)



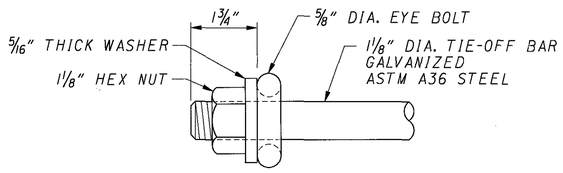
SECTION E-E

(PIER 8L)



INSERTS ARE TO DEVELOP A SAFE LOAD IN TENSION OF 3.5 K WITH A SAFETY FACTOR OF 5.

SECTION X-X

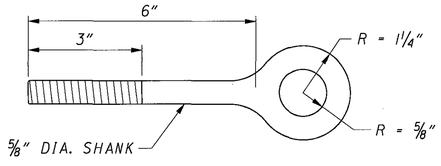


END DETAIL

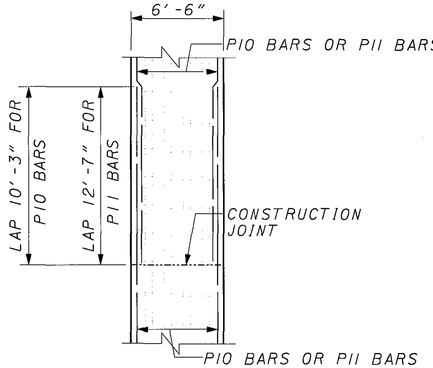
NOTES: THREAD ONLY THAT PORTION OF THE TIE-OFF BAR REQUIRED FOR NUT PLACEMENT. GALVANIZE AFTER CUTTING AND THREADING.

BURR THREADS AFTER FINGER TIGHTENING NUT.

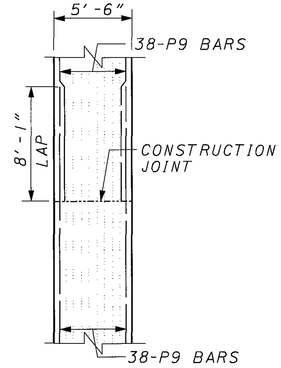
THREADED INSERTS MAY BE MOVED SLIGHTLY IN ORDER TO AVOID REINFORCING STEEL.



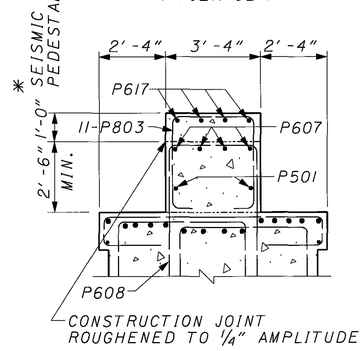
EYE BOLT DETAIL
INSPECTION TIE OFF ROD DETAIL



OPTIONAL RE-BAR SPLICE TYPICAL 6'-6" COLUMN



OPTIONAL RE-BAR SPLICE TYPICAL 5'-6" COLUMN



SECTION E-E

(PIER 9L)

NOTES

HP 14 x 73 PILES INDICATES 1:4 BATTER

PILE NUMBERING: SEE SHEET 18/123.

INSPECTION LANYARD TIE-OFF MATERIALS AND INSTALLATION FOR CONCRETE INSERTS, EYE BOLTS, BARS AND HARDWARE SHALL BE INCLUDED FOR PAYMENT AS INCIDENTAL TO ITEM 511, CLASS C CONCRETE, PIER ABOVE FOOTING, AS PER PLAN.

ADDITIONAL NOTES: SEE SHEET 34/123.

SECTION X-X: FOR LOCATION SEE SHEET 30/123.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013	

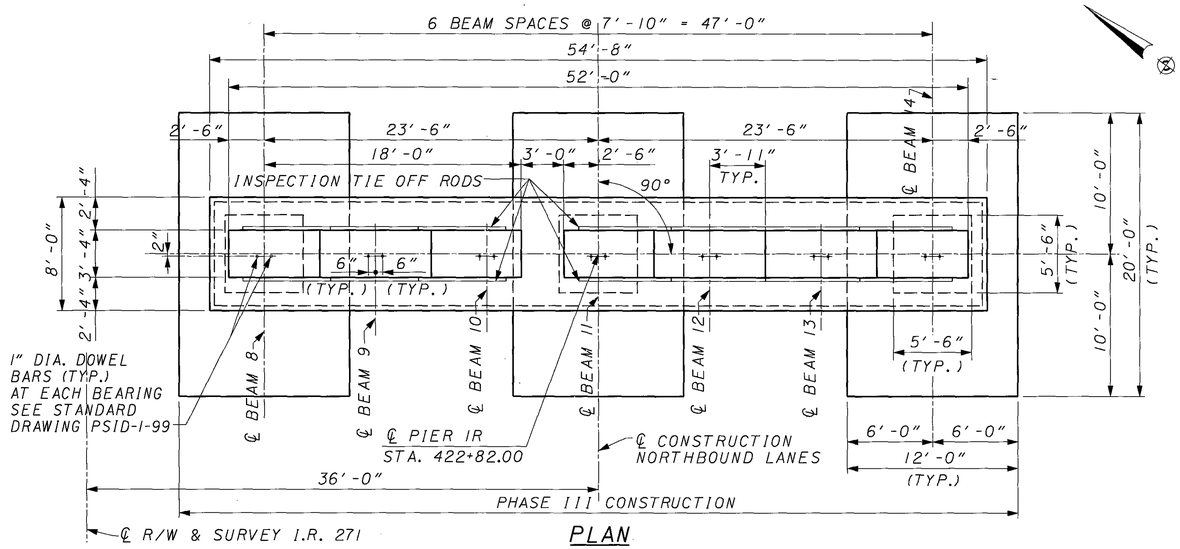
PIER DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

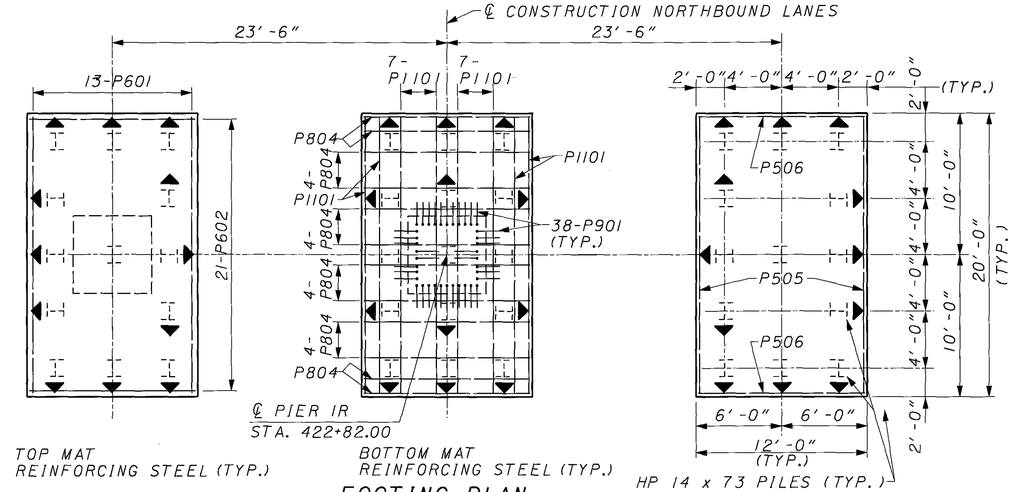
43/123

480/612

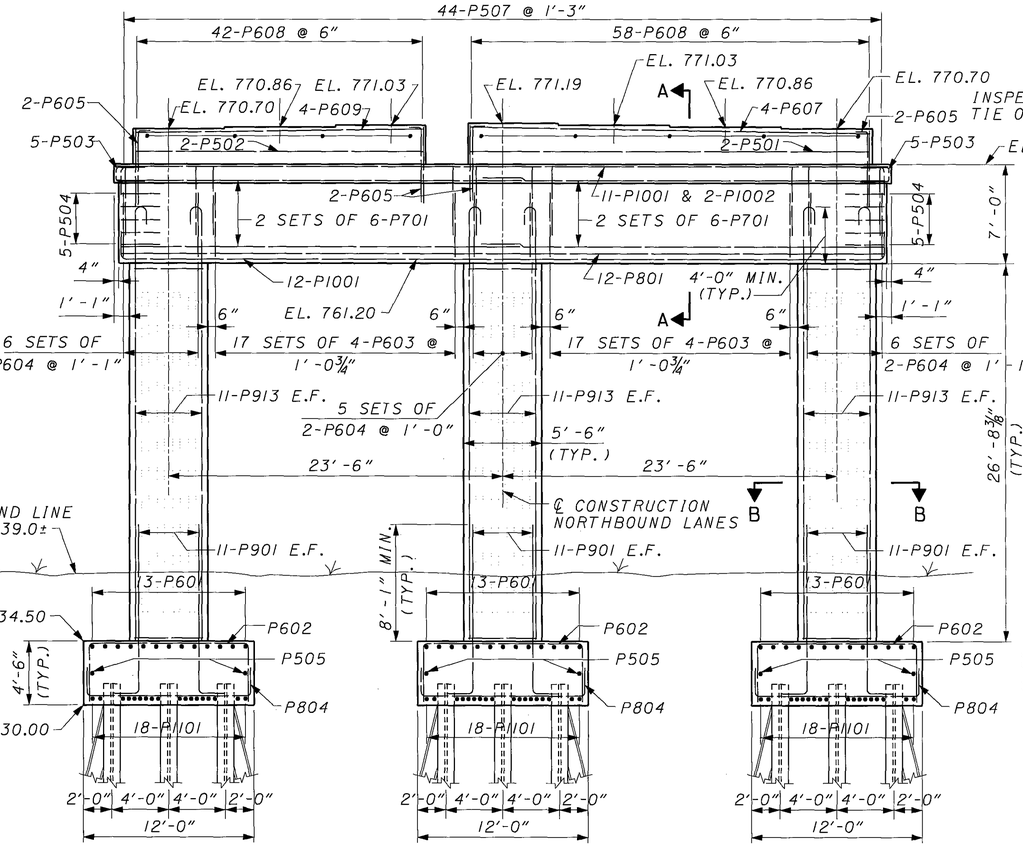
SU271PHL.DGN 6/23/04 TWH,JLS,KH,RC



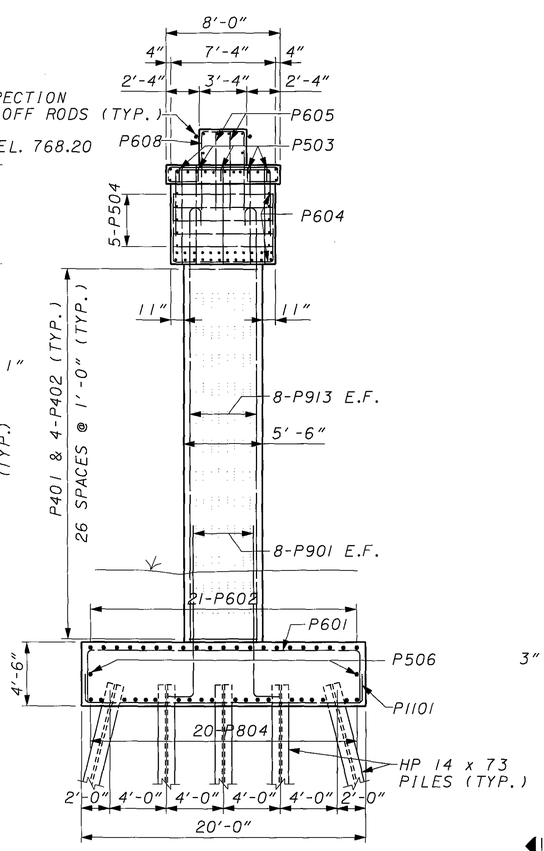
PLAN



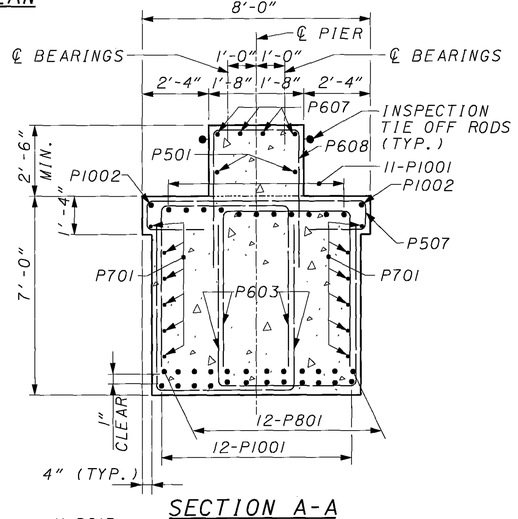
FOOTING PLAN



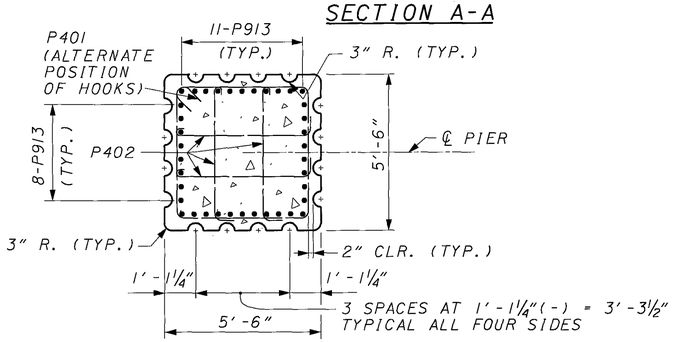
ELEVATION



END VIEW



SECTION A-A



SECTION B-B

NOTES

1. ◀|⊣ **HP 14x73 PILES** INDICATES 1:4 BATTER
2. **PILE NUMBERING:** SEE SHEET 18/123.
3. **ADDITIONAL NOTES:** SEE SHEET 34/123.
4. **BRIDGE SEAT REINFORCING, SETTING DOWELS:** ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF DOWEL BAR HOLES.

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29 NORTH PARK STREET
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DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709021	

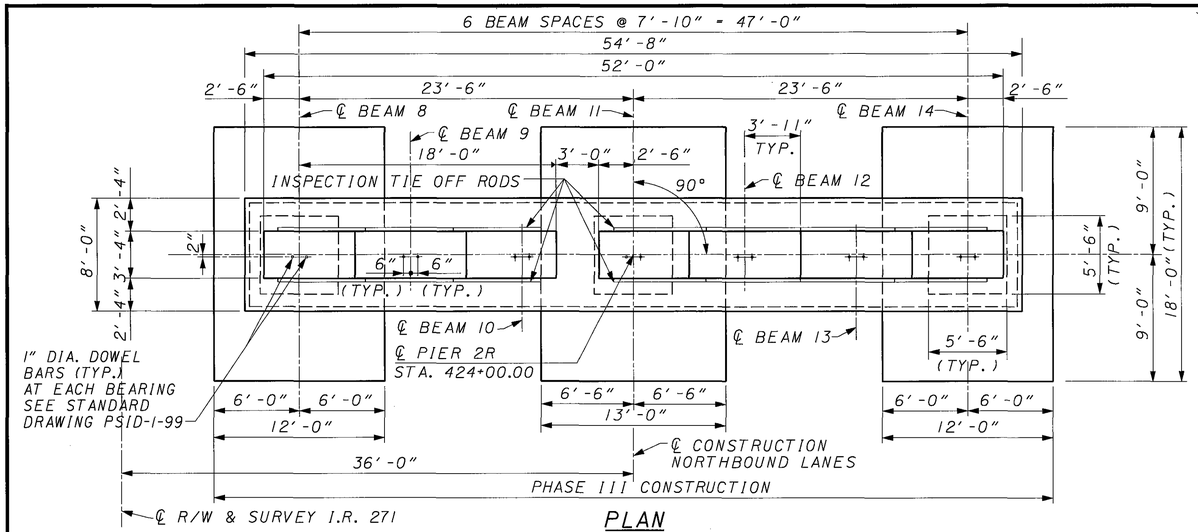
PIER 1R DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

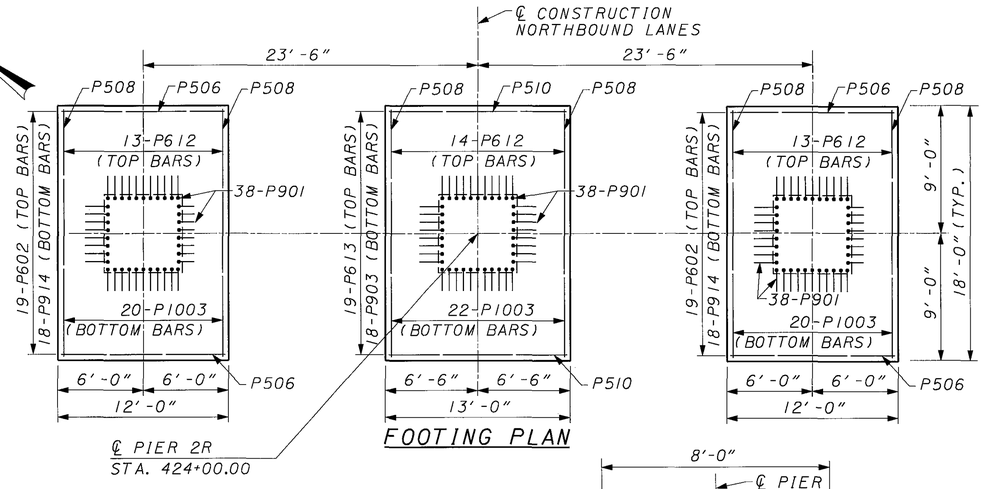
44/123

481/612

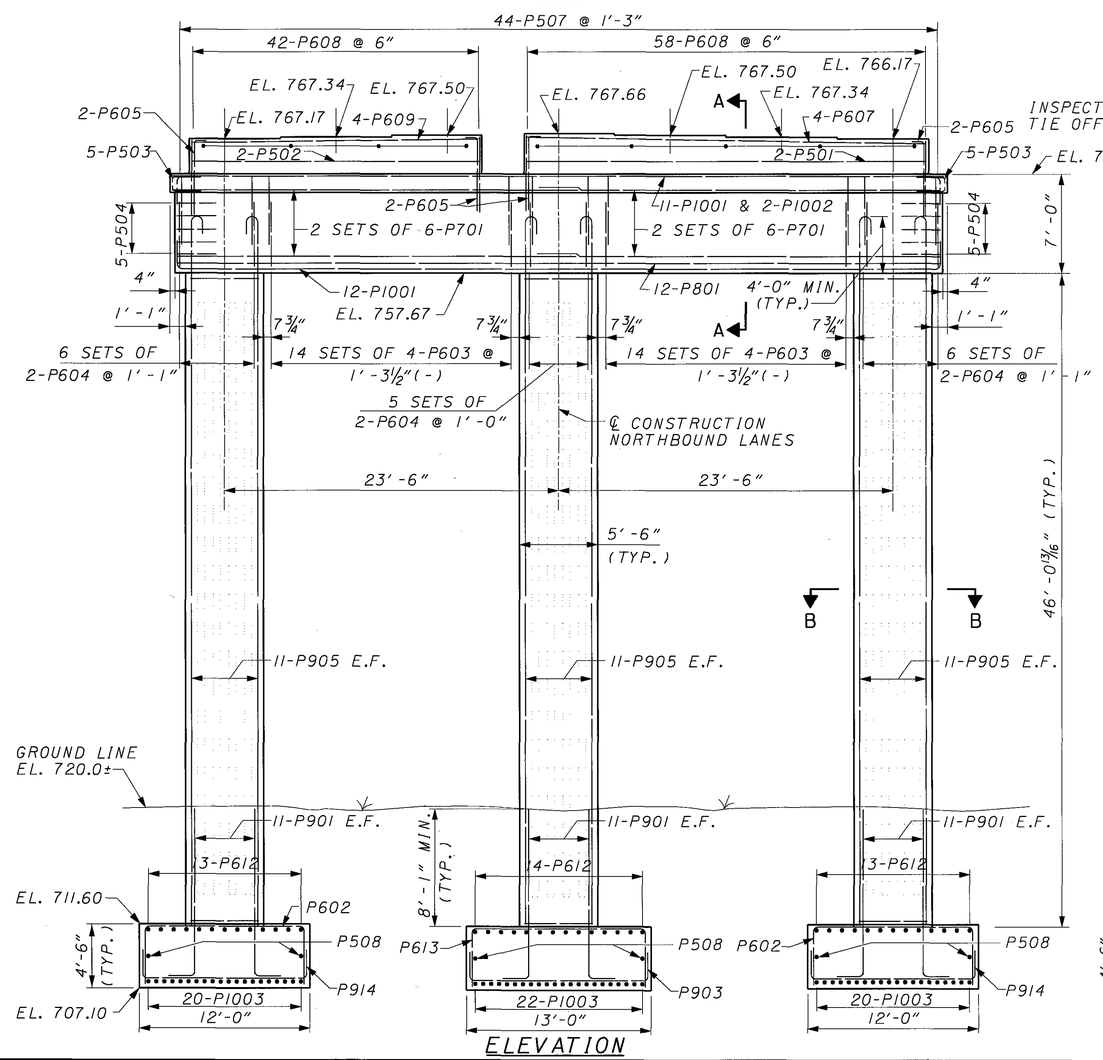
SU27IPAR.DGN 6/23/04 TWH,JLS,KH,SJK,RC



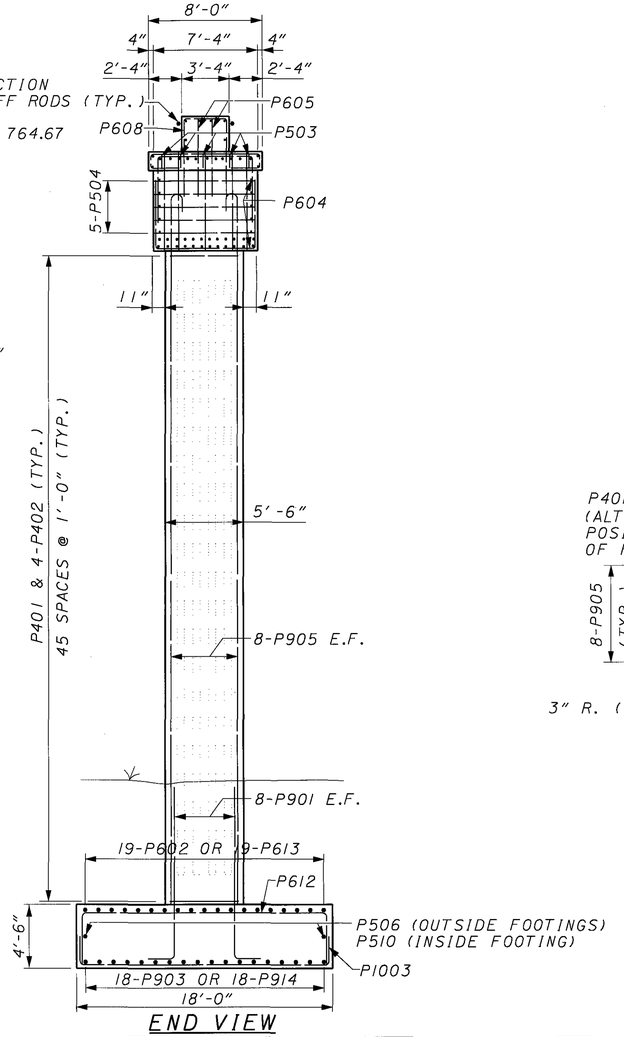
PLAN



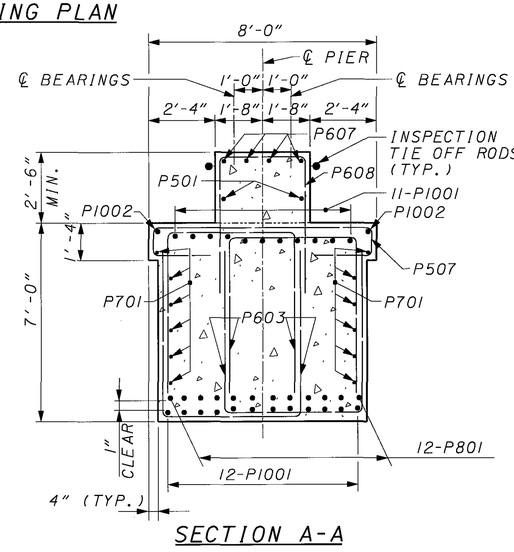
FOOTING PLAN



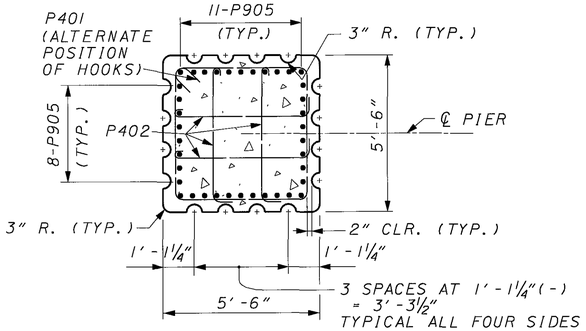
ELEVATION



END VIEW



SECTION A-A



SECTION B-B

NOTES

ADDITIONAL NOTES: SEE SHEET 34/123.

BRIDGE SEAT REINFORCING, SETTING DOWELS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF DOWEL BAR HOLES.

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MANSFIELD, OHIO 44902

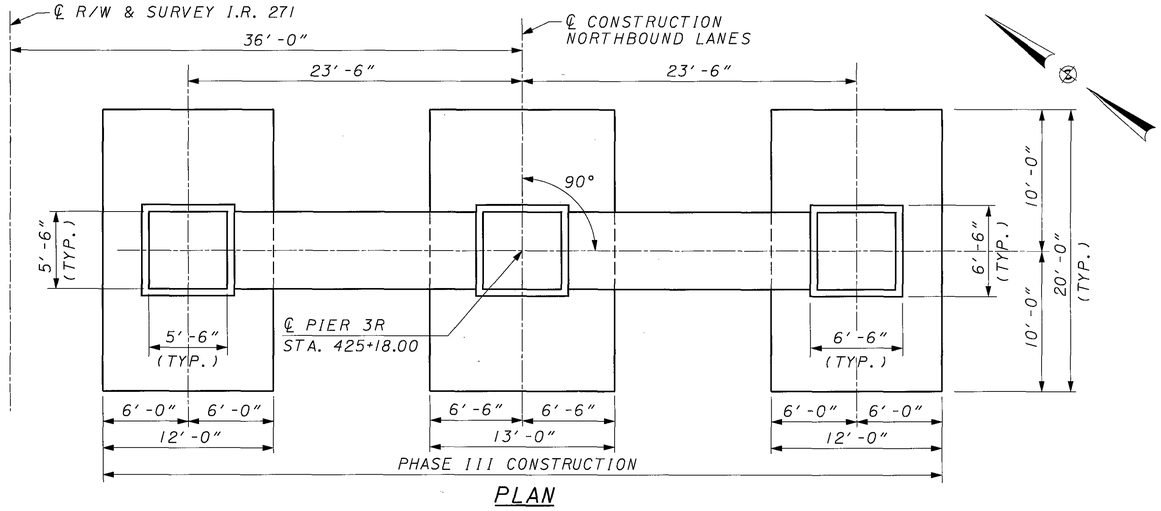
DESIGNED BLN | DRAWN TWH | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709021

PIER 2R DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

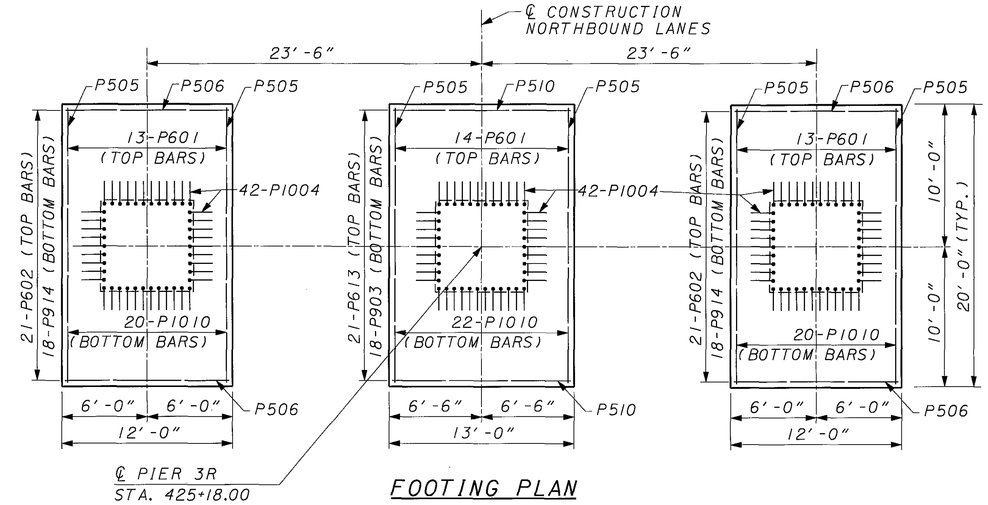
SUM-271-8.02

45/123
482/612

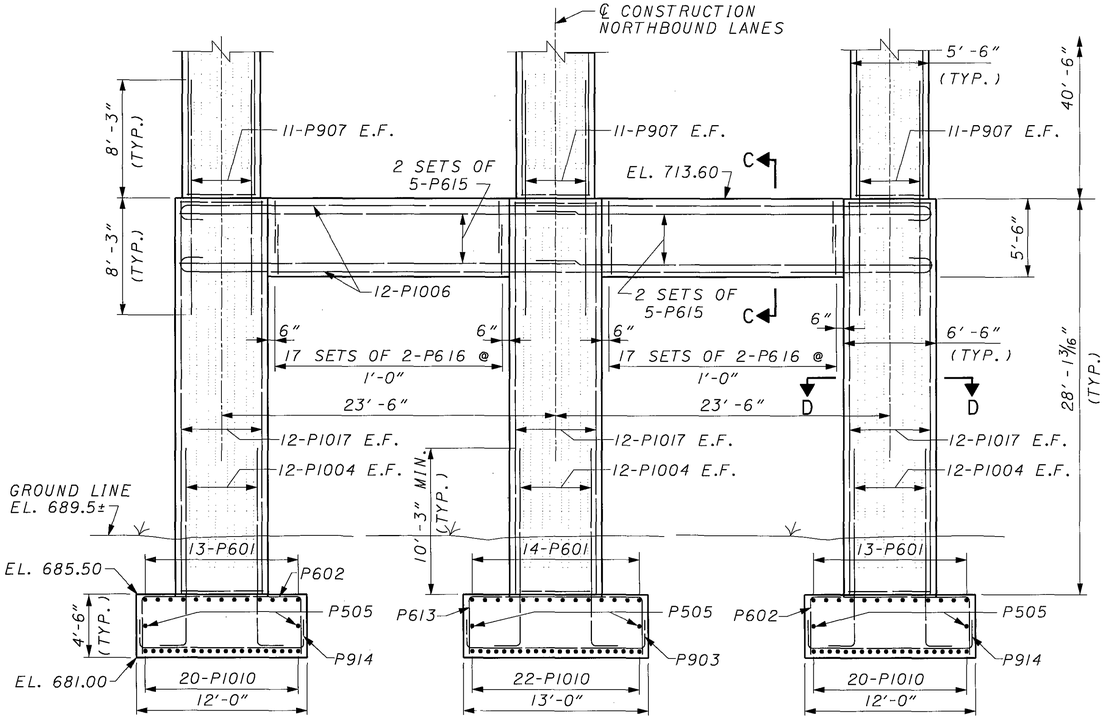
SU271PBR.DGN 6/23/04 TWH,JLS,KH,SJK,RC



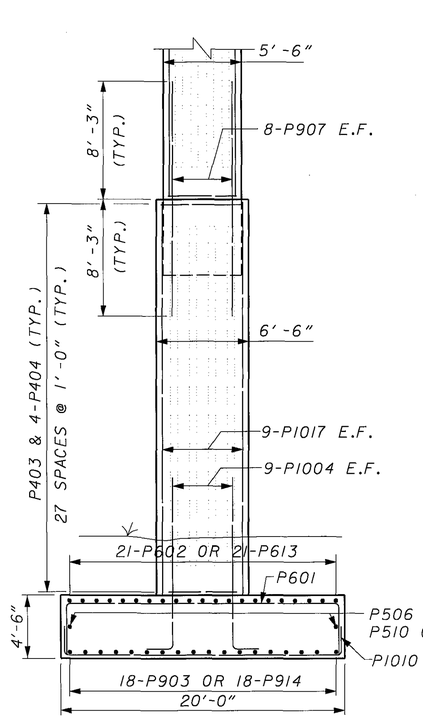
PLAN



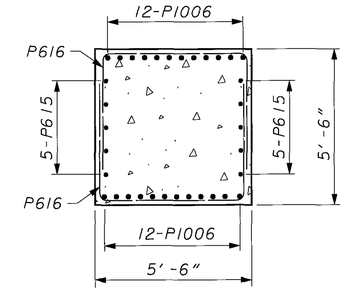
FOOTING PLAN



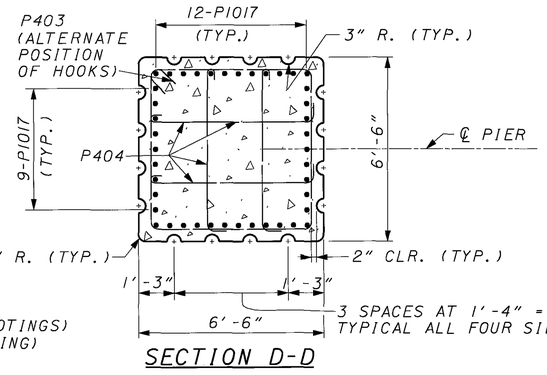
ELEVATION



END VIEW



SECTION C-C



SECTION D-D

NOTES: SEE SHEET 34/123.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVISED	DATE	REVISED	DATE
BLN	TWH			DAP	3/18/04
CHECKED					
DLR					

STRUCTURE FILE NUMBER 7709021

PIER 3R DETAILS BOTTOM SEGMENT- CONCRETE

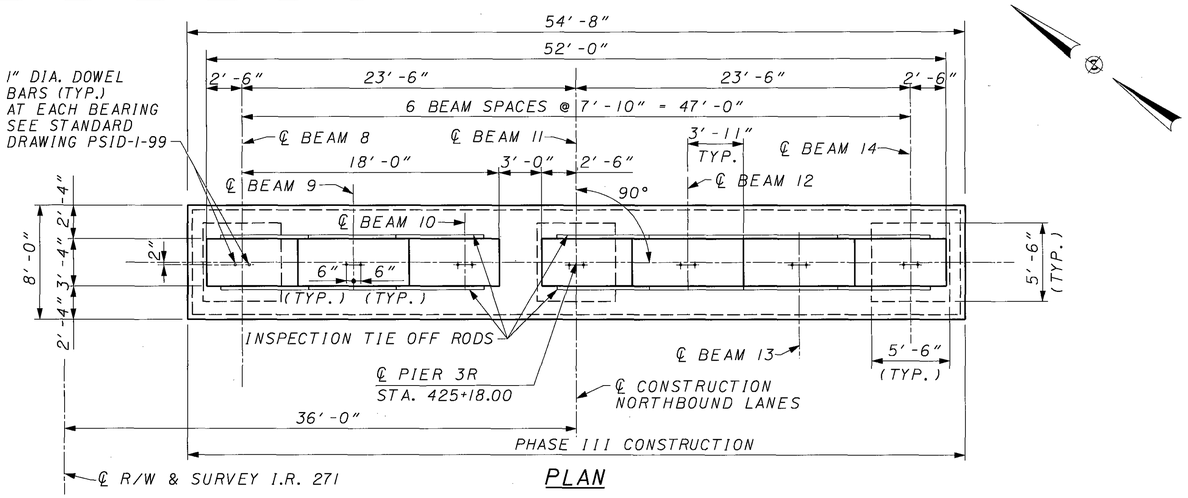
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

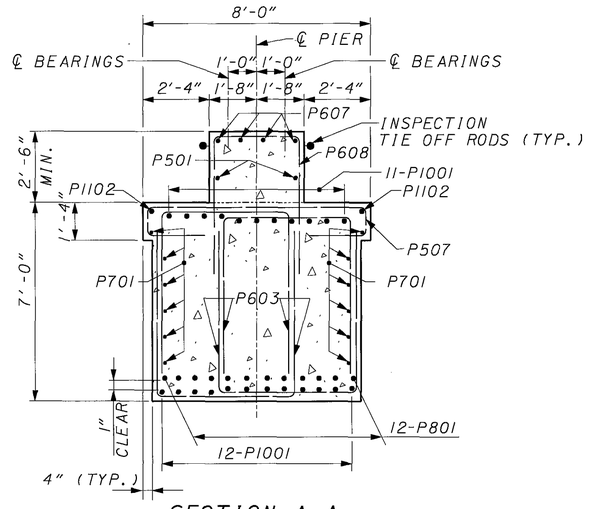
46/123

483/612

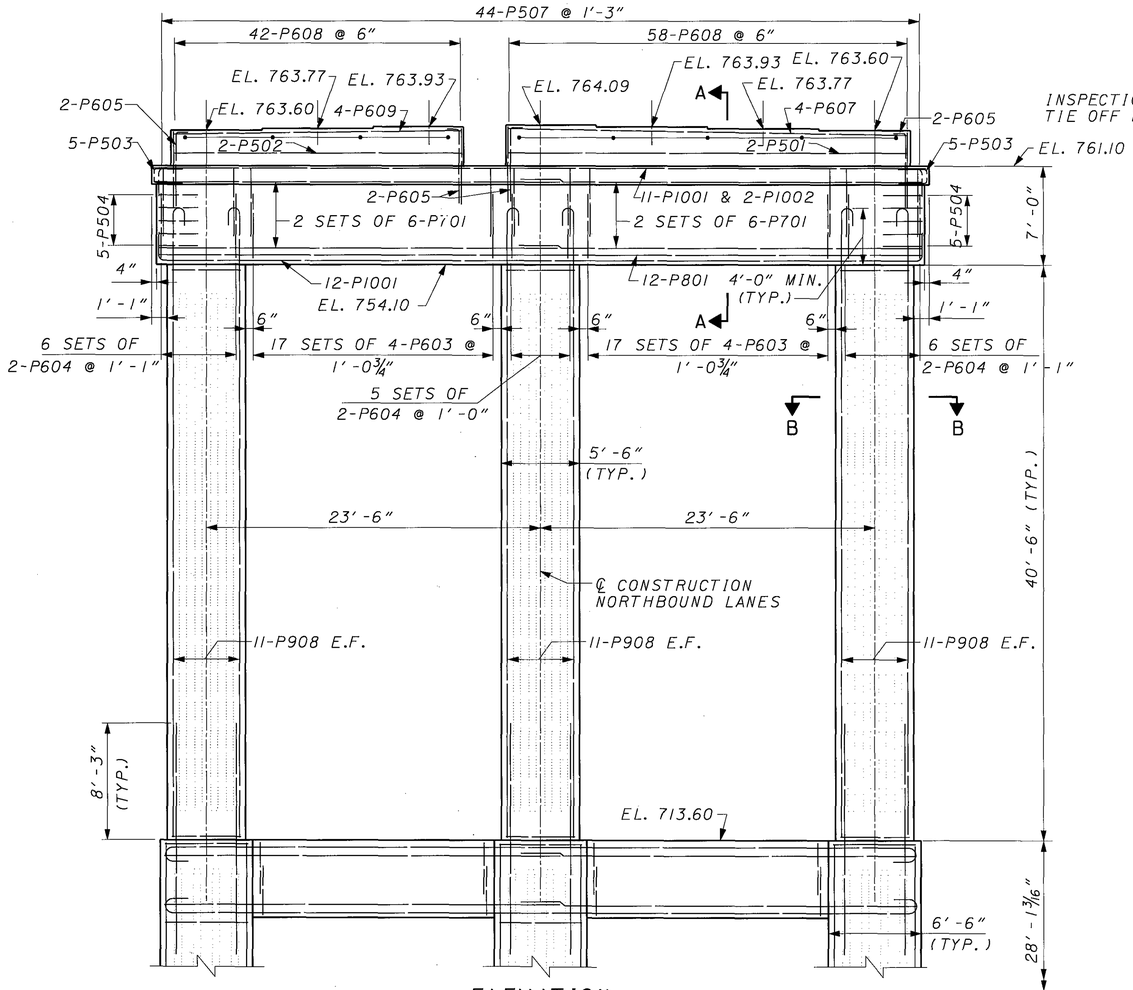
SU271PCR.DGN 6/23/04 TWH,JLS,KH,RC



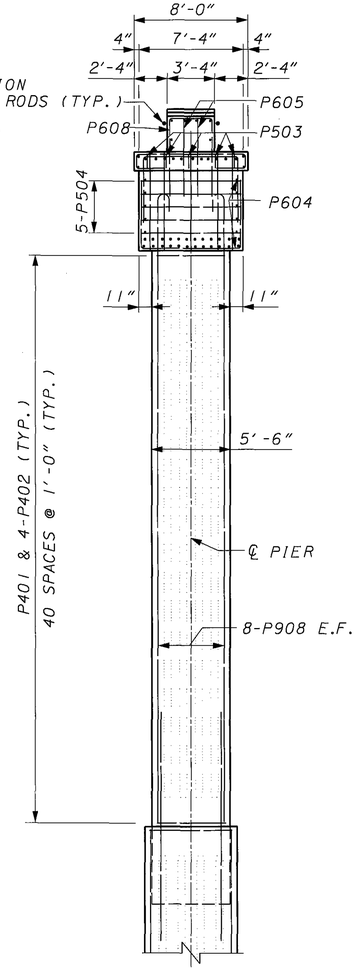
PLAN



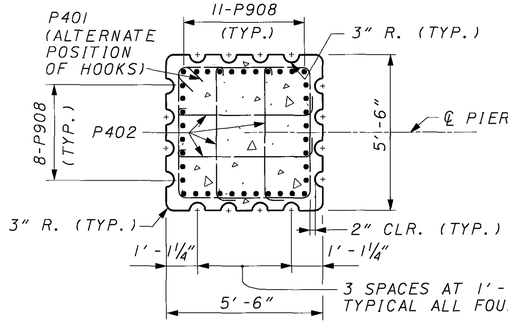
SECTION A-A



ELEVATION



END VIEW



SECTION B-B

NOTES

ADDITIONAL NOTES: SEE SHEET 34/123.

BRIDGE SEAT REINFORCING, SETTING DOWELS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF DOWEL BAR HOLES.

SU271PCR.DGN 6/23/04 TWH,JLS,KH,RC

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

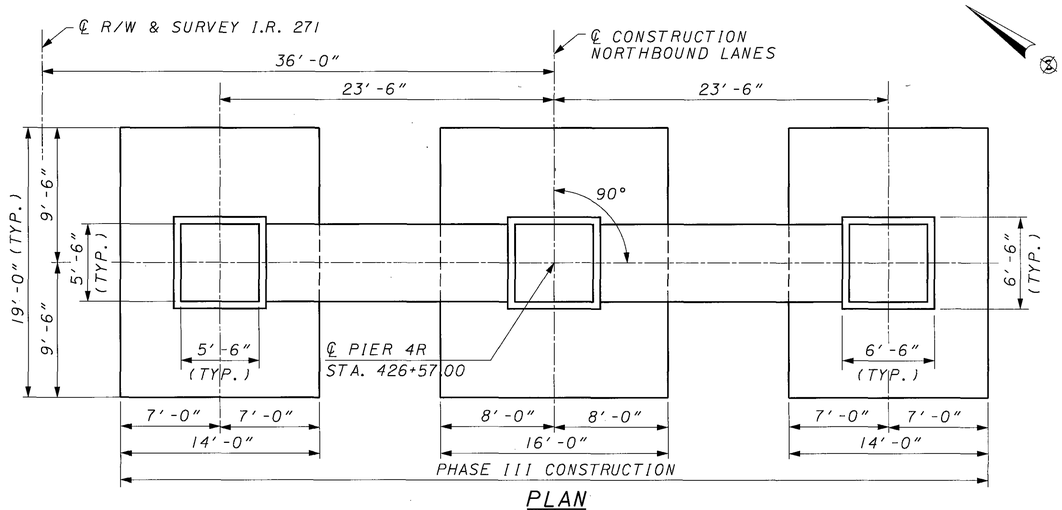
DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709021	

PIER 3R DETAILS TOP SEGMENT - CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

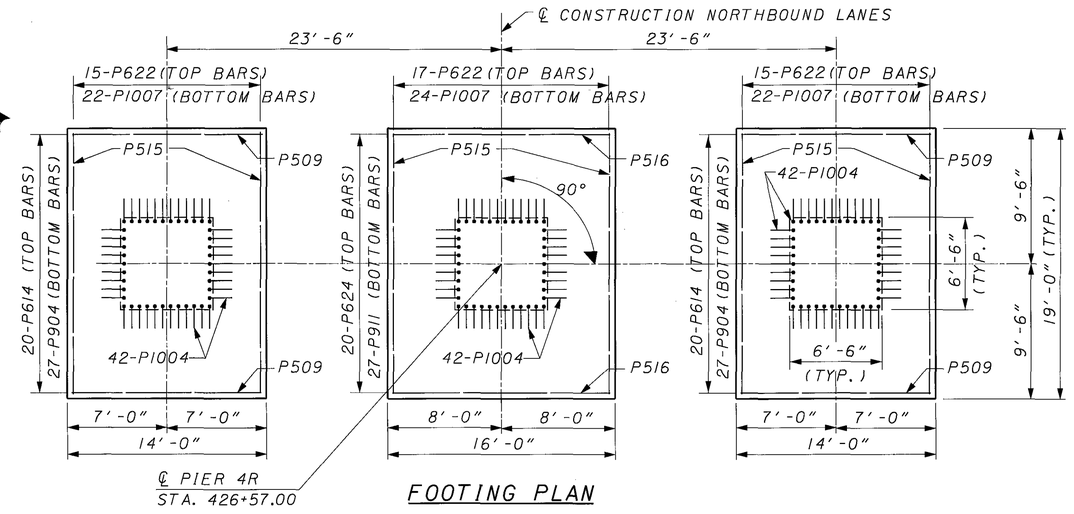
SUM-271-8.02

47/123

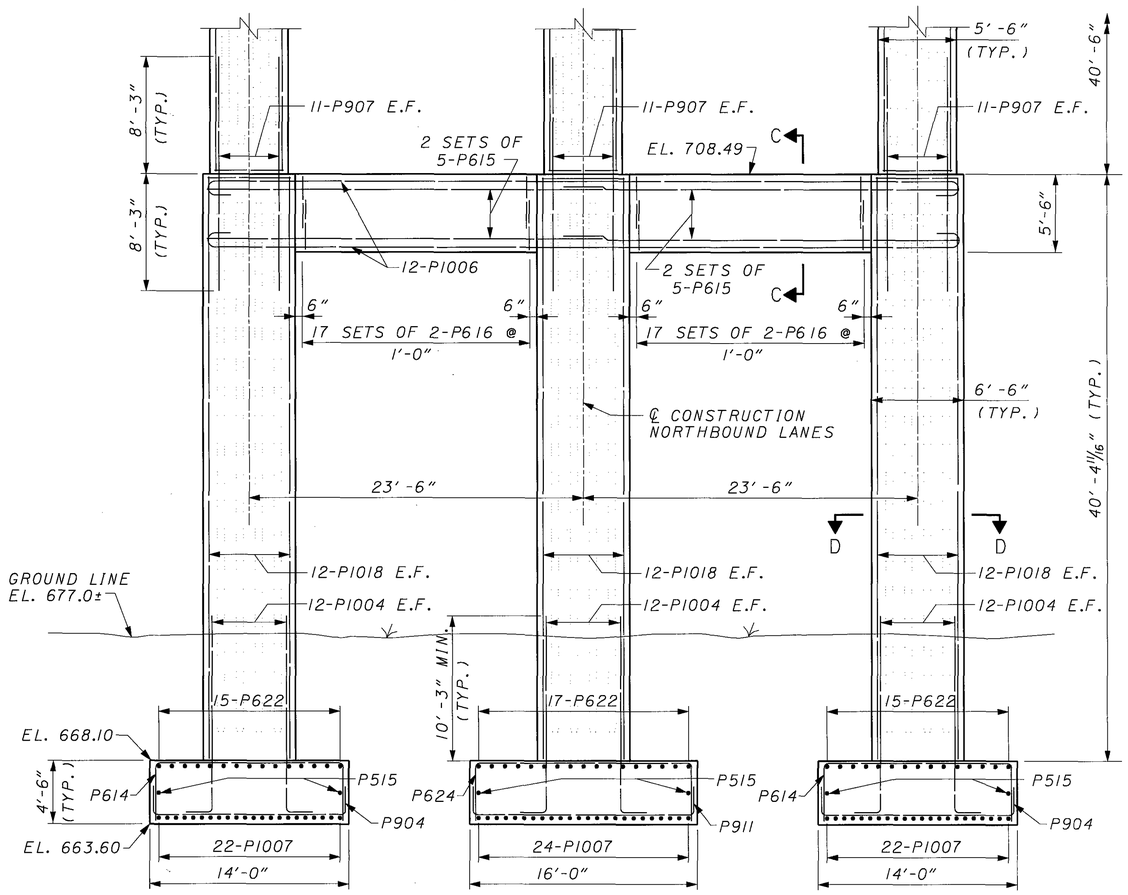
484/612



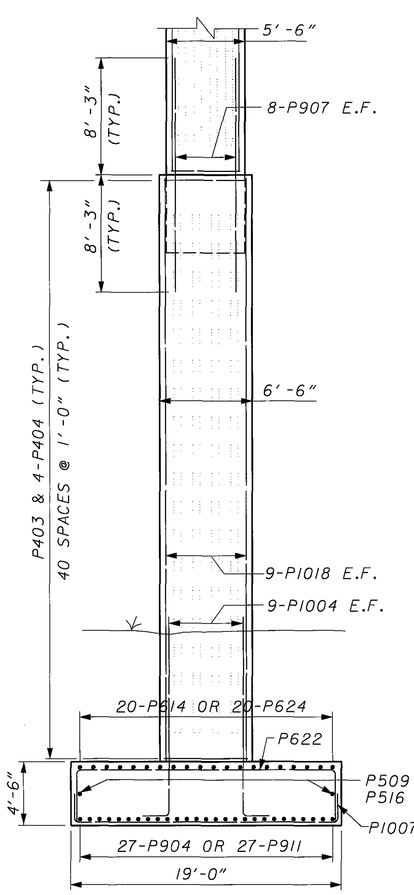
PLAN



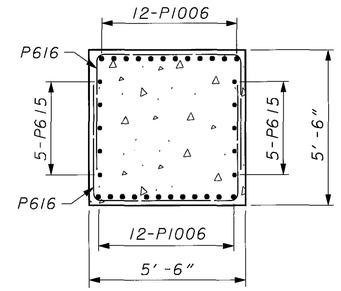
FOOTING PLAN



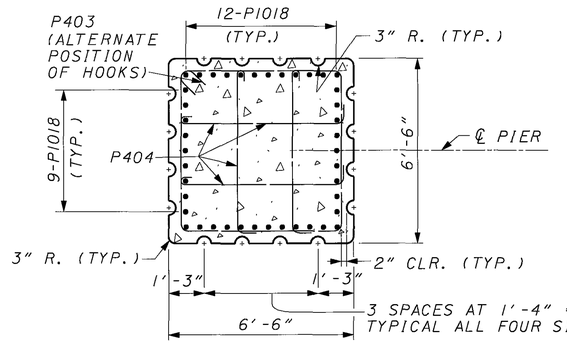
ELEVATION



END VIEW



SECTION C-C



SECTION D-D

NOTES: SEE SHEET 34/123.

RICHLAND ENGINEERING LIMITED
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MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709021	

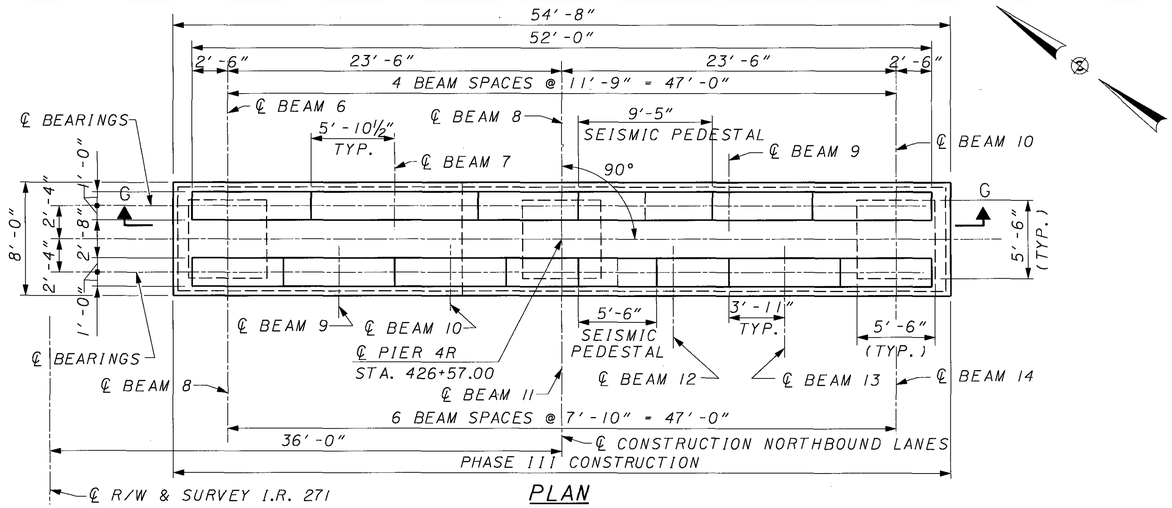
PIER 4R DETAILS BOTTOM SEGMENT- CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

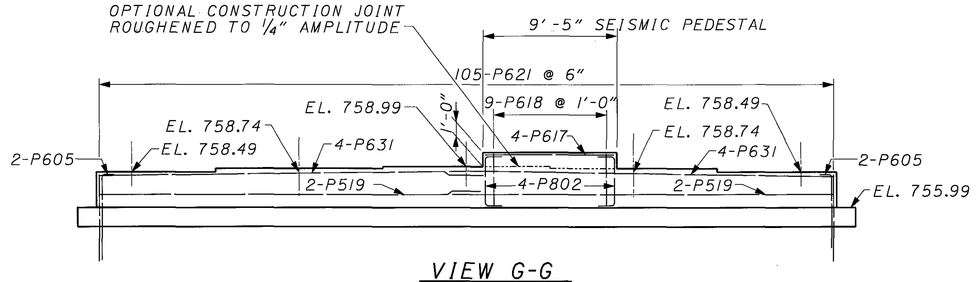
48/123

485/612

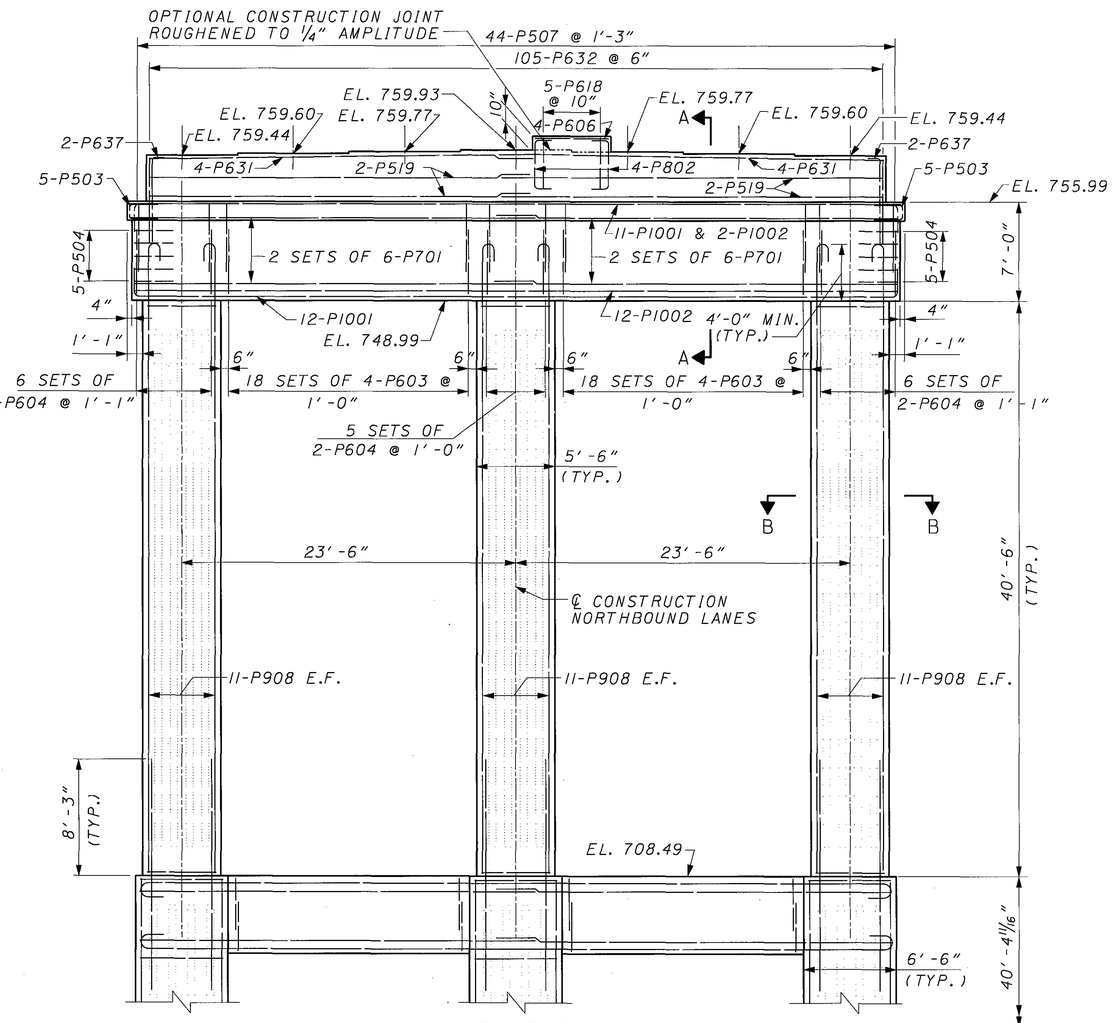
SU271PDR.DGN 6/23/04 TWH,JLS,KH,RC



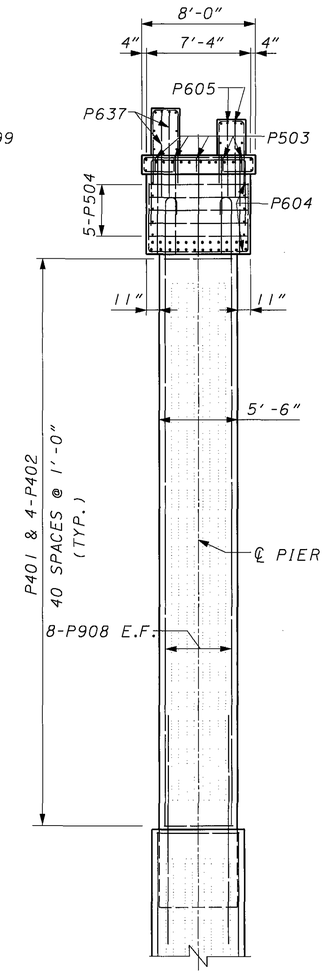
PLAN



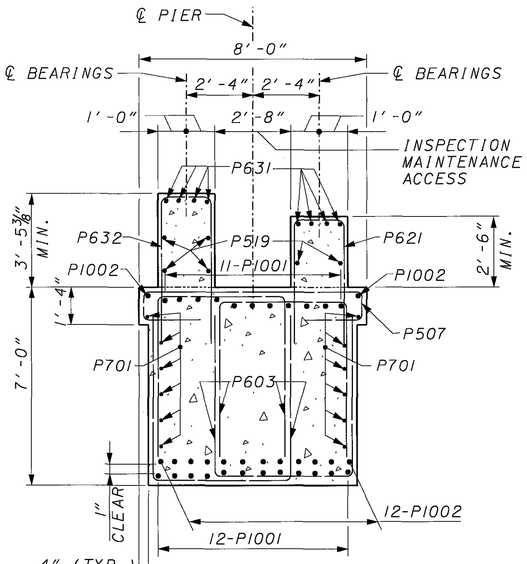
VIEW G-G



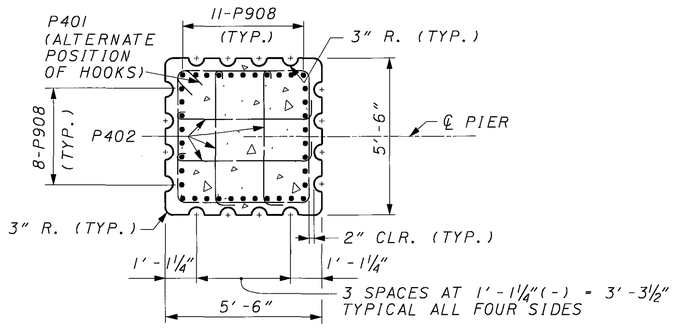
ELEVATION



END VIEW



SECTION A-A



SECTION B-B

NOTES

SEISMIC PEDESTAL DETAILS: SEE SHEET 55/123.

ADDITIONAL NOTES: SEE SHEET 34/123.

BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD ¼" AT THE FORWARD BEARINGS TO COMPENSATE FOR THE VERTICAL DEFORMATION OF THE BEARINGS.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709021

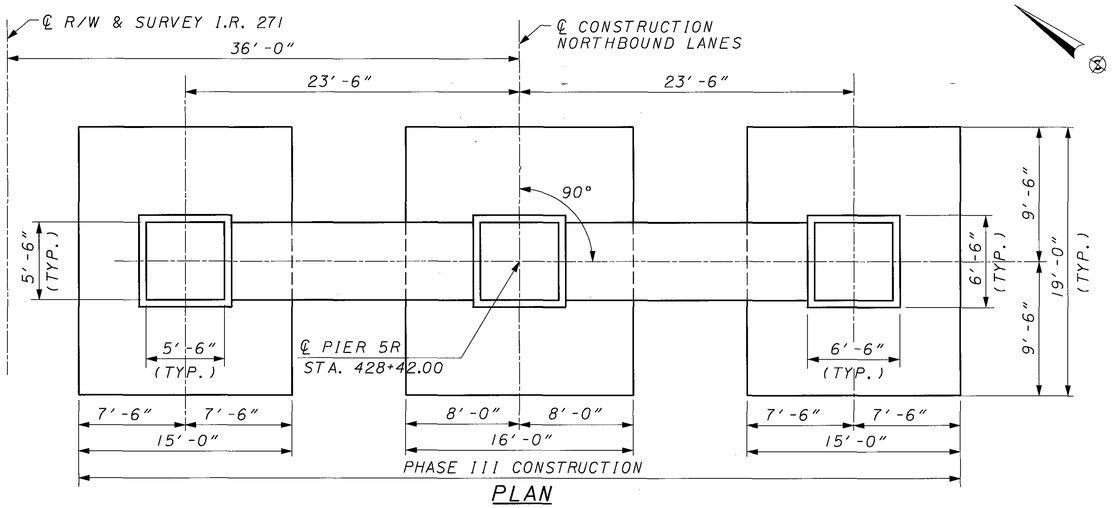
PIER 4R DETAILS TOP SEGMENT - CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

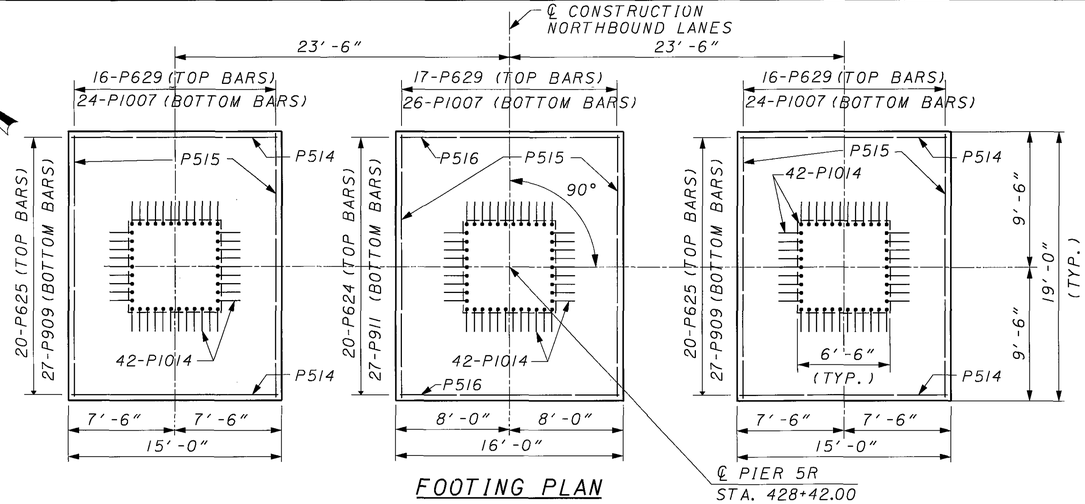
49/123

486/612

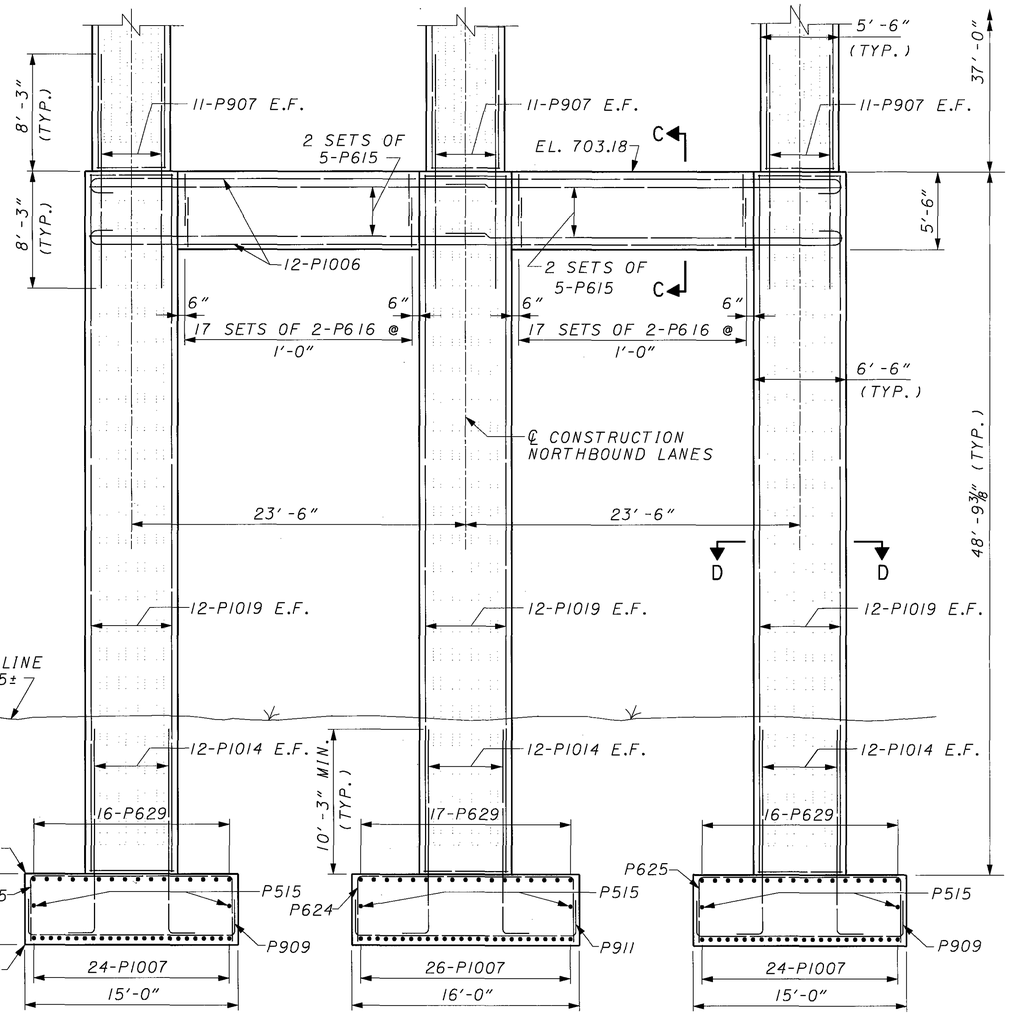
SU271PDR.DGN 6/23/04 TWH,JLS,KH,RC



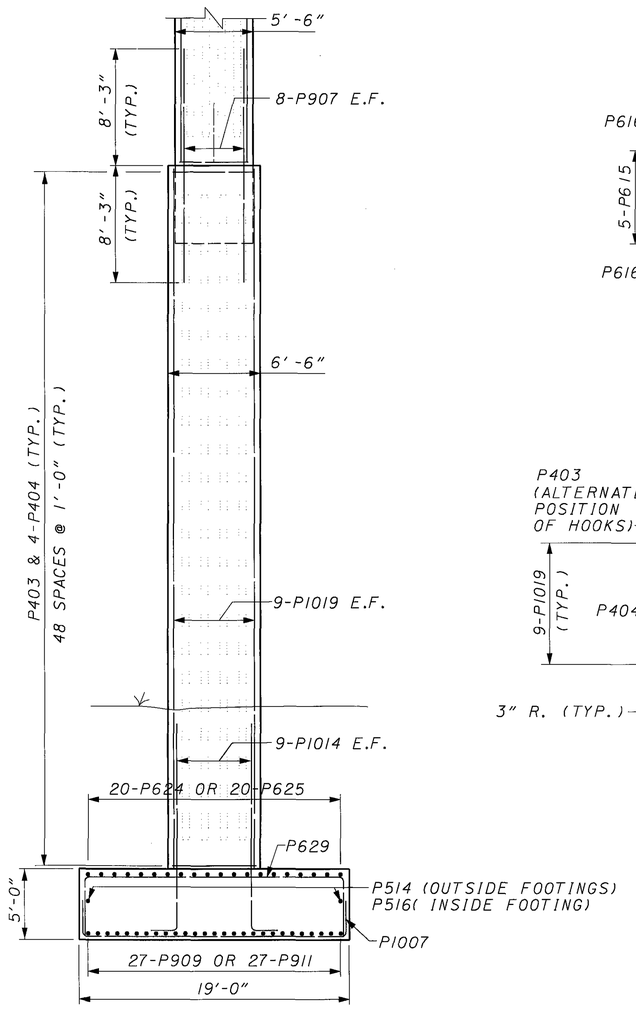
PLAN



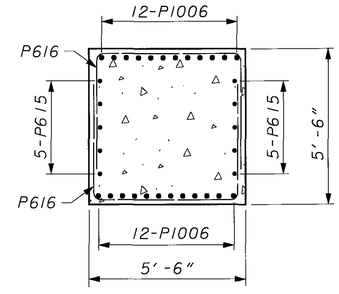
FOOTING PLAN



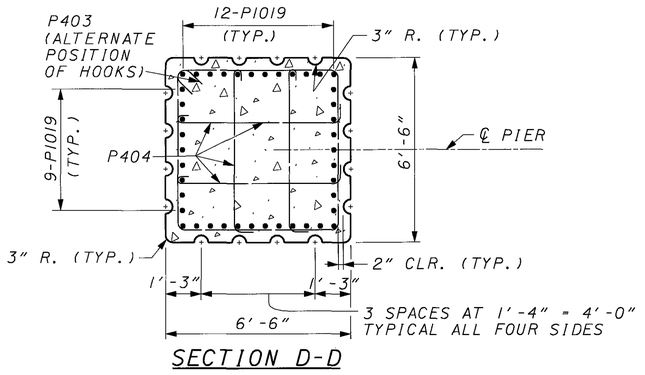
ELEVATION



END VIEW



SECTION C-C



SECTION D-D

NOTES: SEE SHEET 34/123.

SU271PER.DGN 6/23/04 TWH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

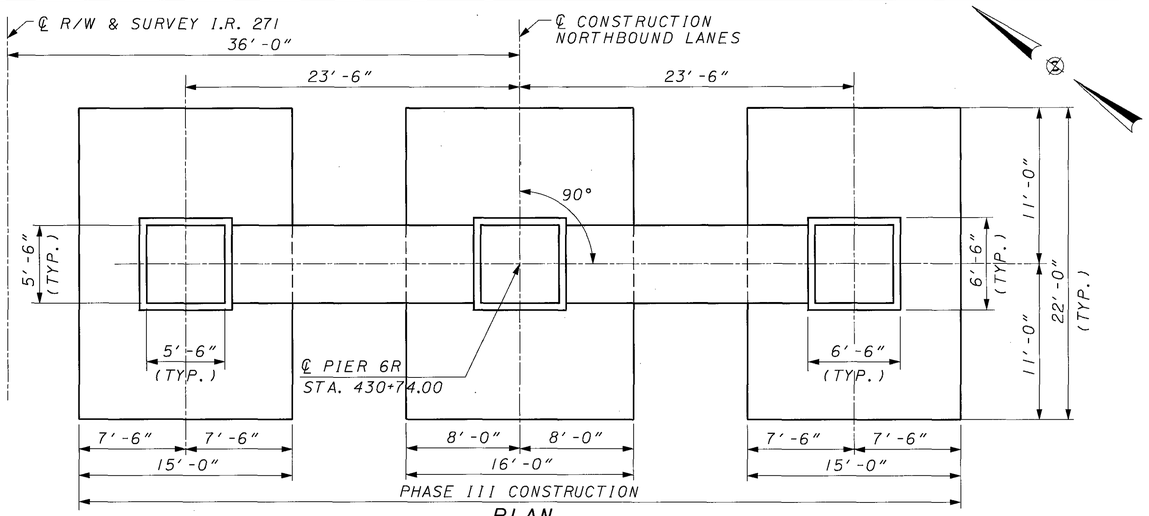
DESIGNED	DRAWN	REVIEWED	DATE
BLN	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709021	

PIER 5R DETAILS BOTTOM SEGMENT- CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

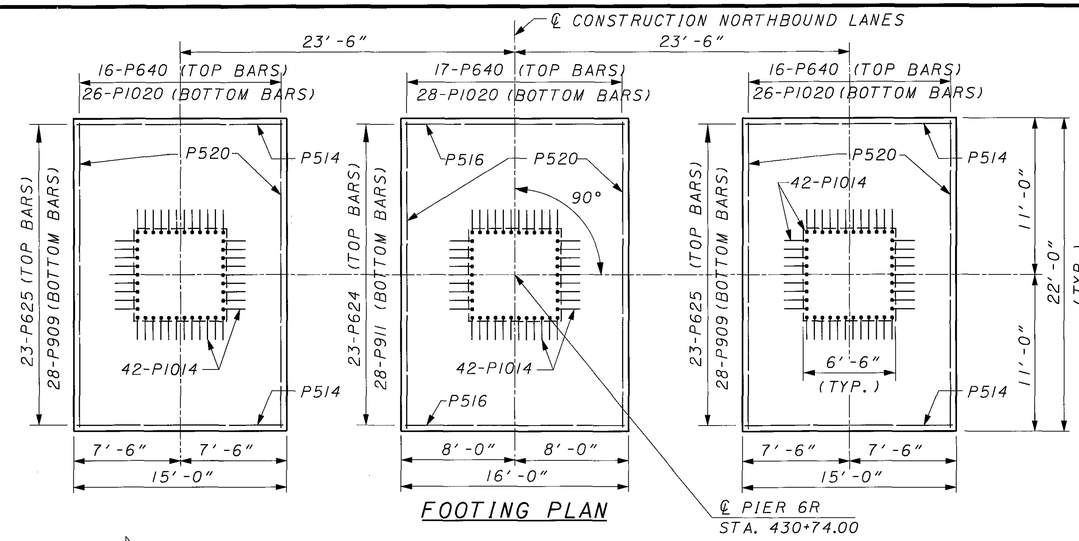
SUM-271-8.02

50/123

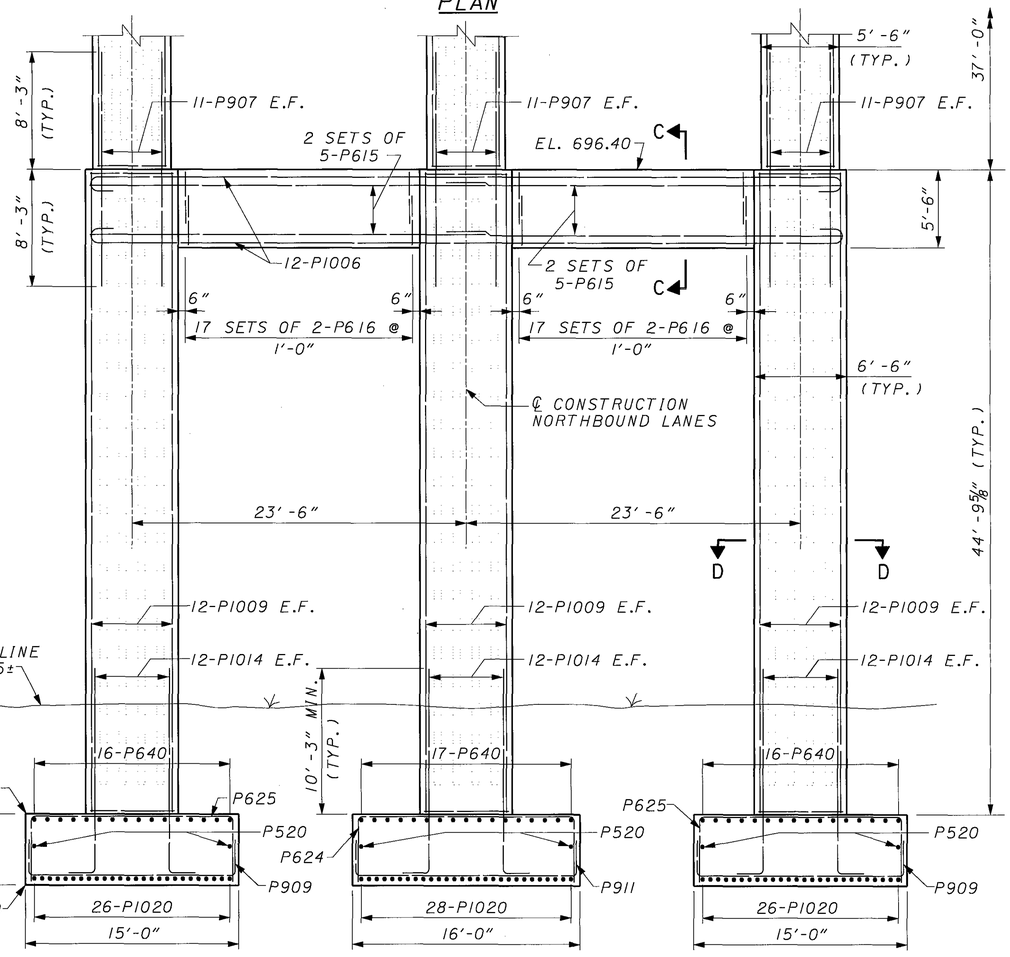
487/612



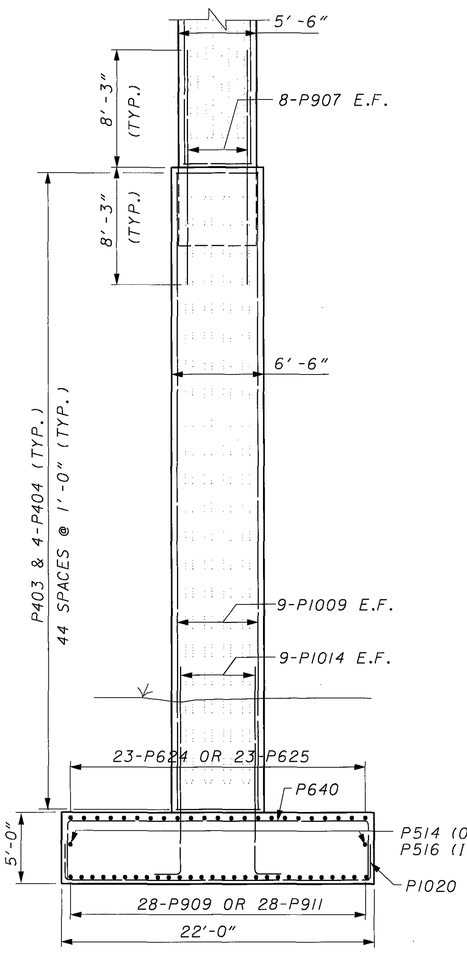
PLAN



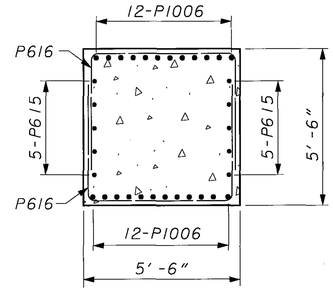
FOOTING PLAN



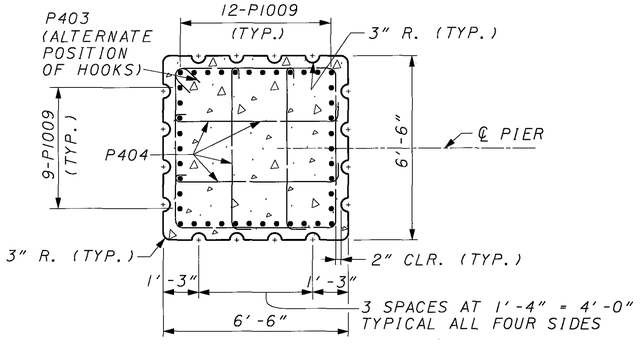
ELEVATION



END VIEW



SECTION C-C



SECTION D-D

NOTES: SEE SHEET 34/123.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
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DLR		7709021	

PIER 6R DETAILS BOTTOM SEGMENT - CONCRETE

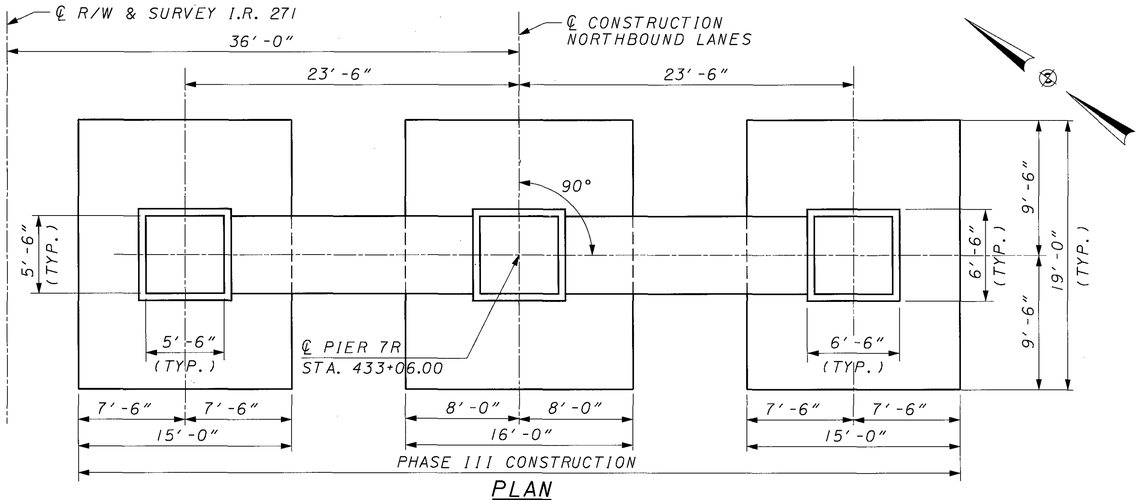
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

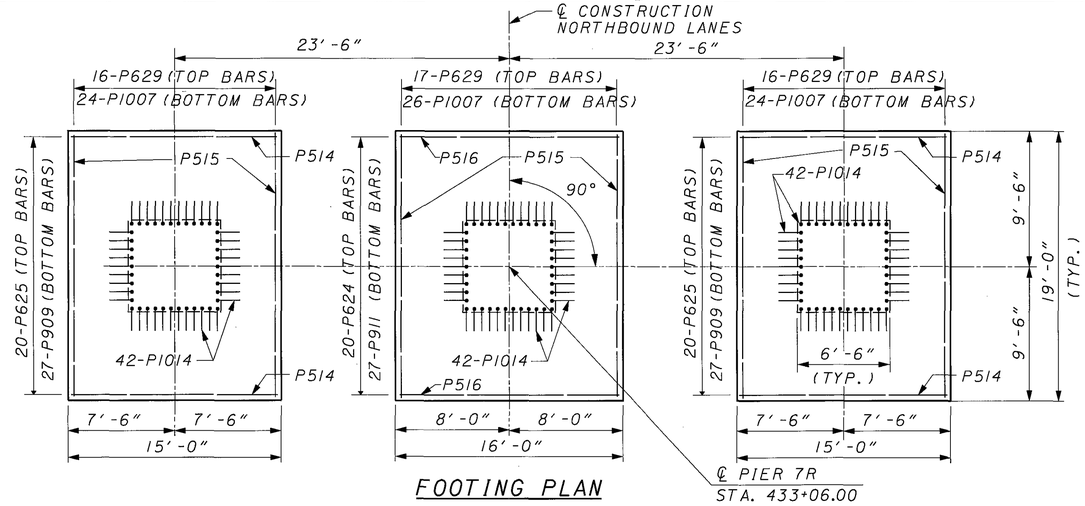
51/123

488/612

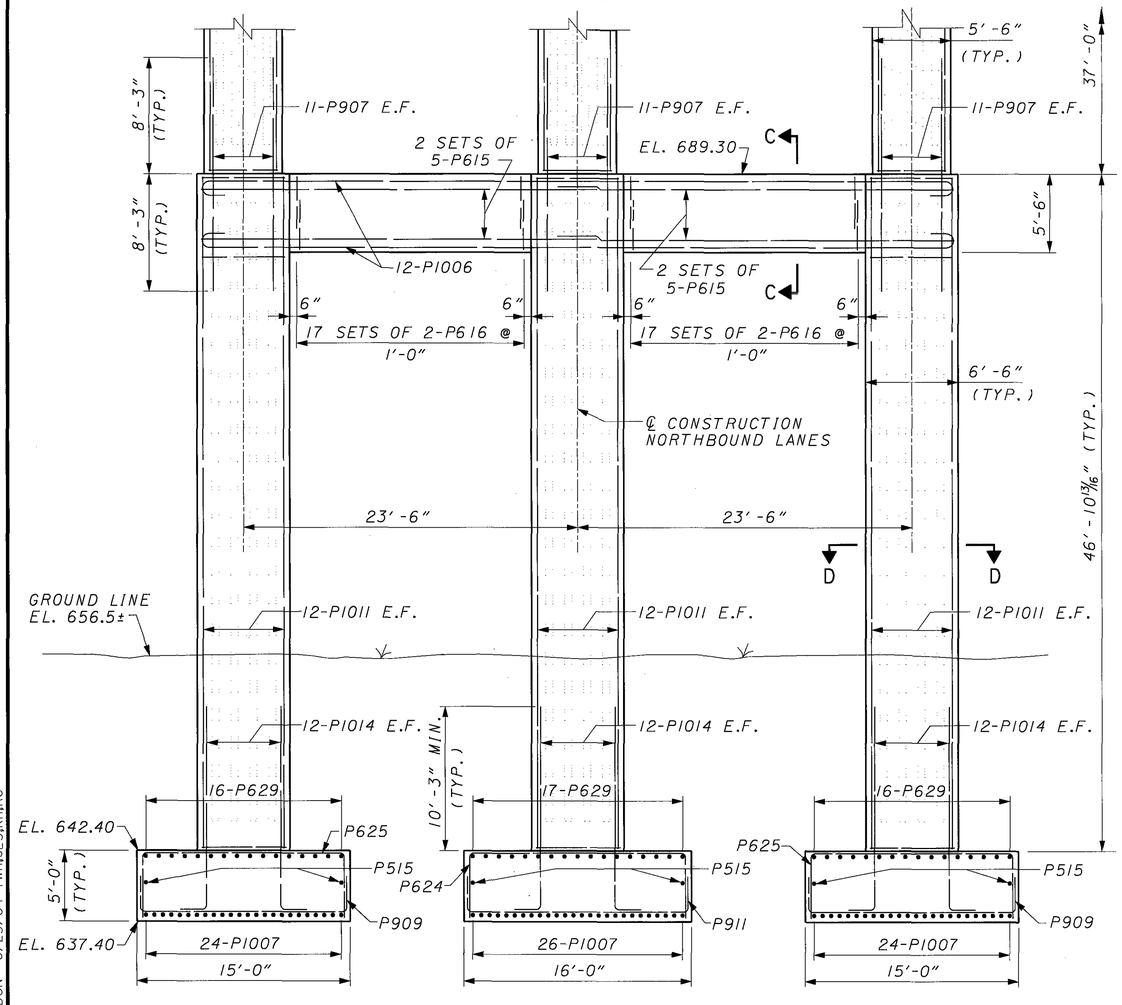
SU271PFR.DGN 6/23/04 TWH,JLS,KH,S,JK,RC



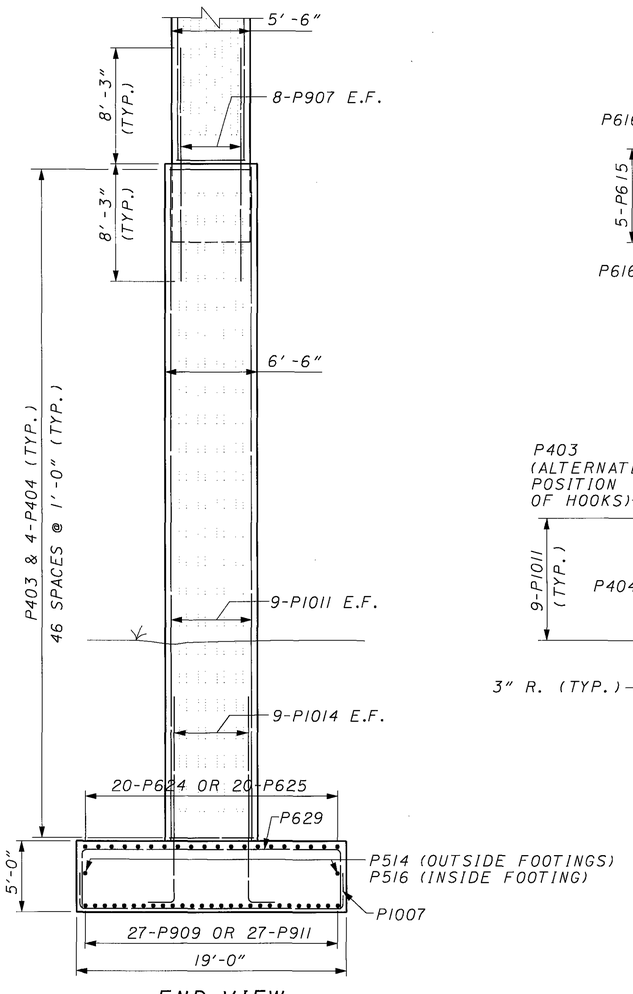
PLAN



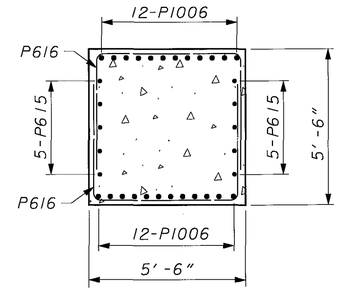
FOOTING PLAN



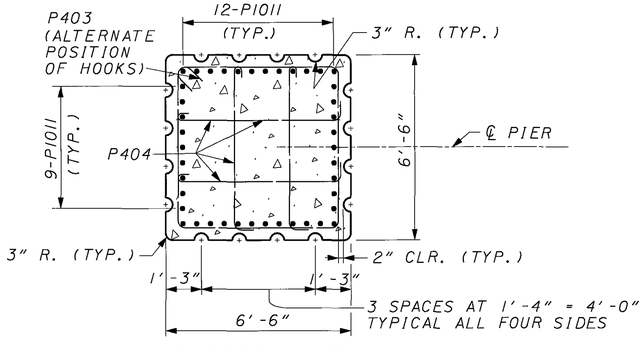
ELEVATION



END VIEW



SECTION C-C



SECTION D-D

NOTES: SEE SHEET 34/123.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
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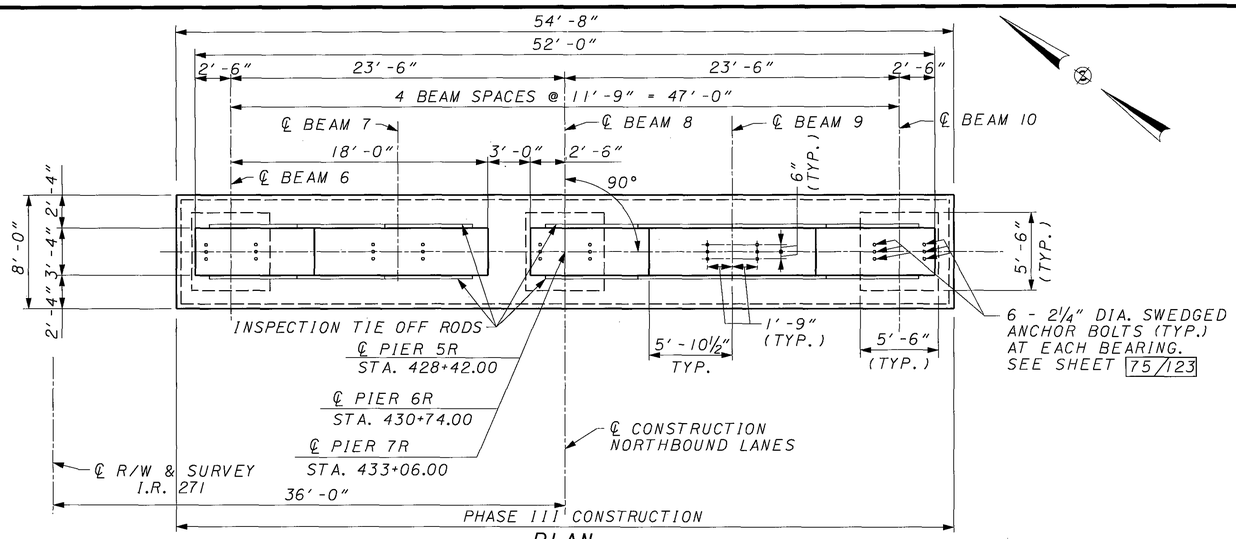
PIER 7R DETAILS BOTTOM SEGMENT- CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

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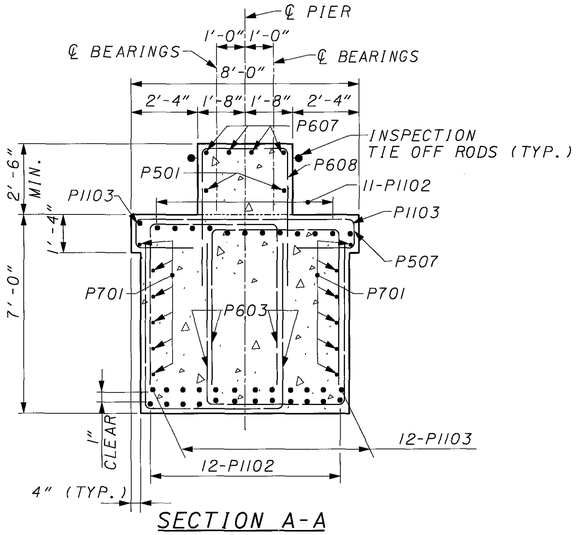
52/123

489/612

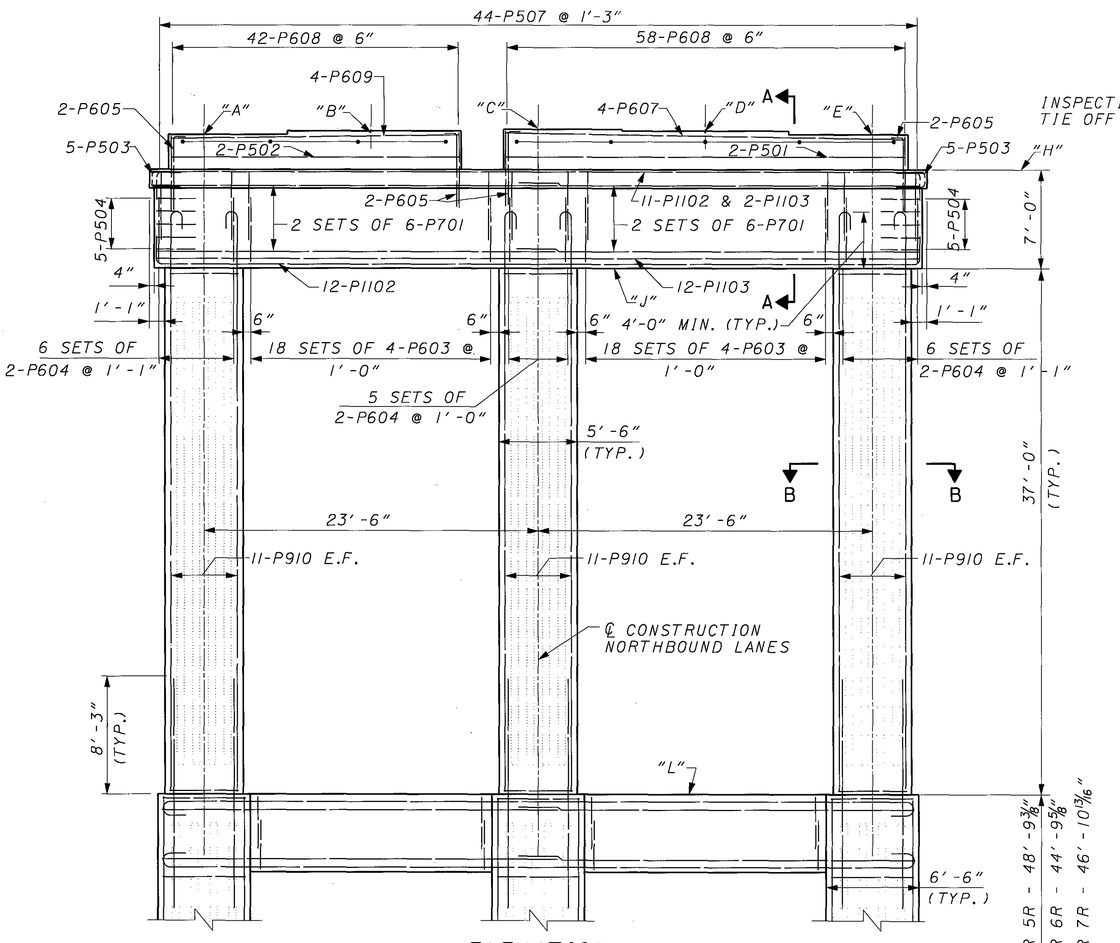
SU271PGR.DGN 6/23/04 TWH,JLS,KH,RC



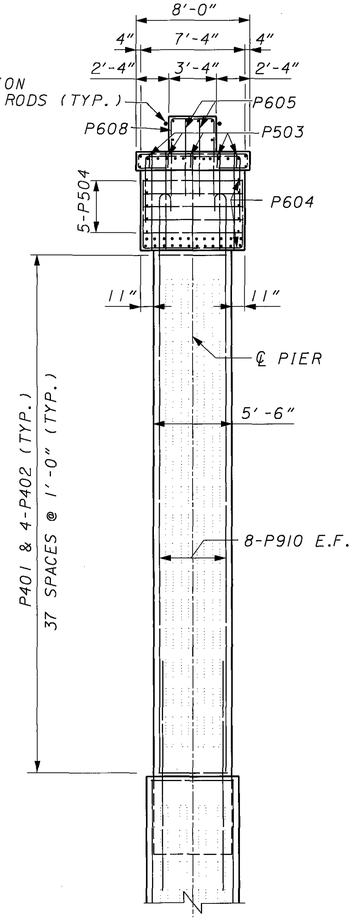
PLAN



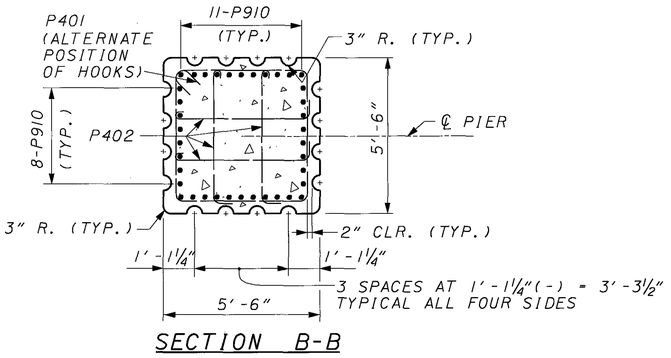
SECTION A-A



ELEVATION



END VIEW



SECTION B-B

ELEVATION TABLE

LOCATION	PIER 5R	PIER 6R	PIER 7R
"A" BEAM 6 SEAT	EL. 749.68	EL. 742.90	EL. 735.80
"B" BEAM 7 SEAT	EL. 749.92	EL. 743.15	EL. 736.05
"C" BEAM 8 SEAT	EL. 750.17	EL. 743.40	EL. 736.30
"D" BEAM 9 SEAT	EL. 749.92	EL. 743.15	EL. 736.05
"E" BEAM 10 SEAT	EL. 749.68	EL. 742.90	EL. 735.80
"H" TOP CAP	EL. 747.18	EL. 740.40	EL. 733.30
"J" BOTTOM CAP	EL. 740.18	EL. 733.40	EL. 726.30
"L" BOTTOM COLUMN (TOP SEGMENT)	EL. 703.18	EL. 696.40	EL. 689.30

NOTES

ADDITIONAL NOTES: SEE SHEET 34/123.

BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD AT PIERS 5R, 6R & 7R TO COMPENSATE FOR THE VERTICAL DEFORMATION OF THE BEARINGS, SEE TABLE.

BRIDGE SEAT ADJUSTMENT TABLE		
PIER 5R	PIER 6R	PIER 7R
5/16"	¼"	5/16"

BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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PIER 5R, 6R & 7R DETAILS TOP SEGMENT - CONCRETE

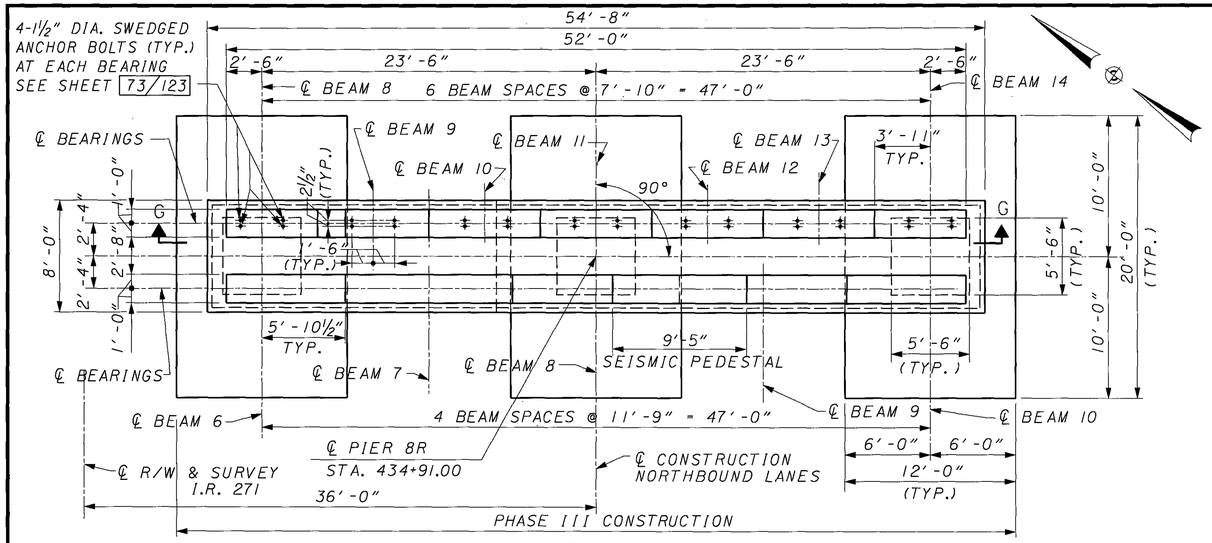
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

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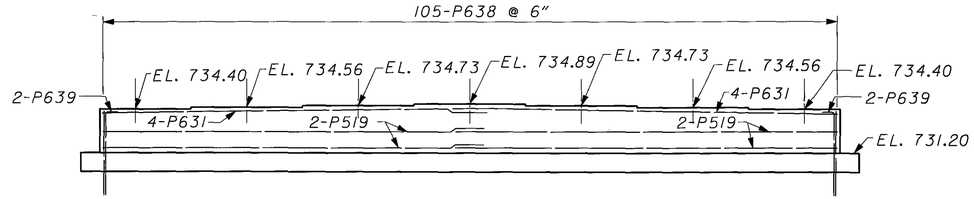
53/123

490/612

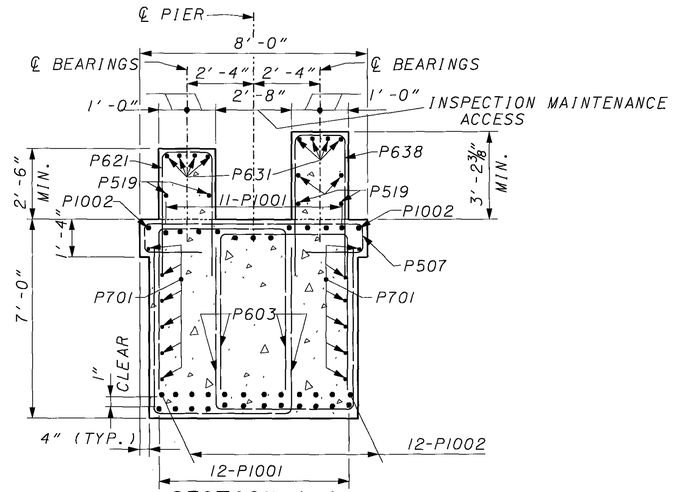
SU271PIER.DGN 6/23/04 TWH,JLS,HN,SJK,RC



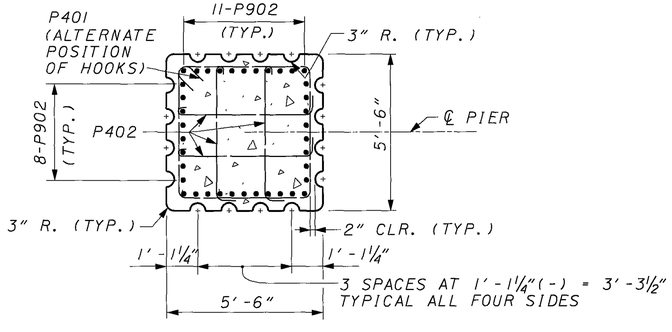
PLAN

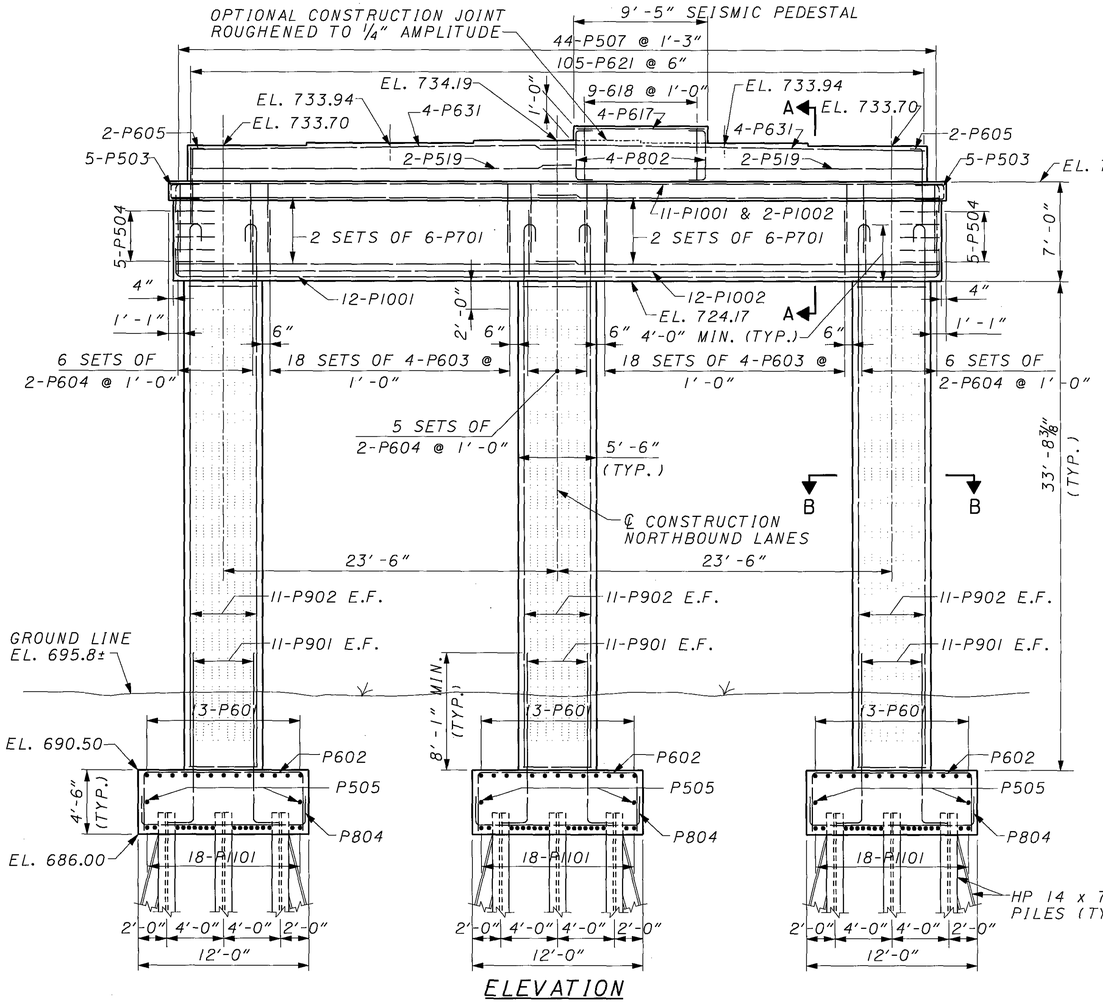


VIEW G-G

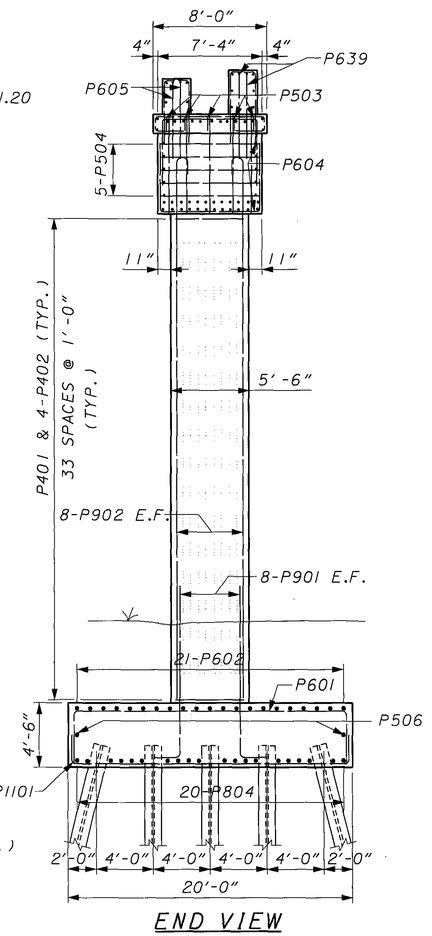


SECTION A-A





ELEVATION



END VIEW

NOTES

FOOTING PLAN: SEE SHEET 55/123.

SEISMIC PEDESTAL DETAILS: SEE SHEET 55/123.

ADDITIONAL NOTES: SEE SHEET 34/123.

BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD ¼" AT THE REAR BEARINGS TO COMPENSATE FOR THE VERTICAL DEFORMATION OF THE BEARINGS.

BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

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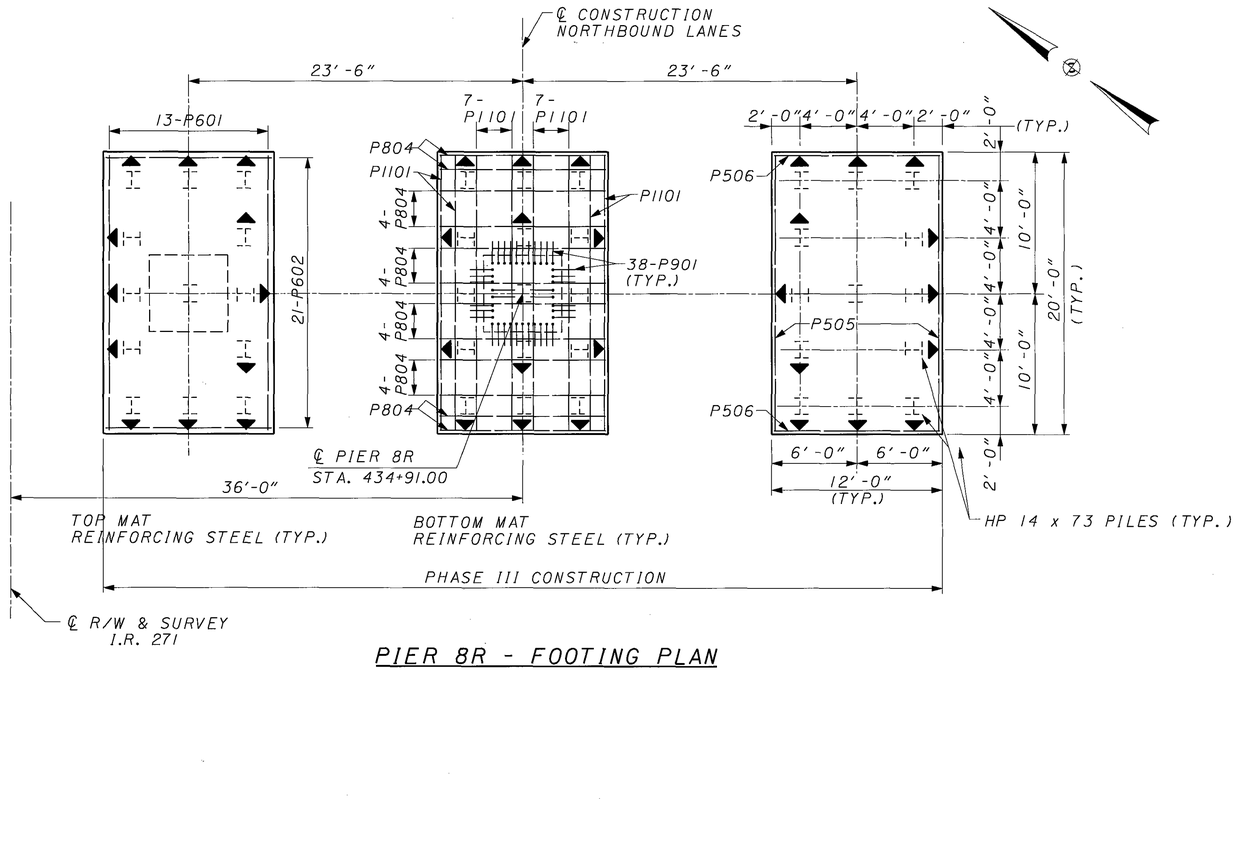
PIER 8R DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

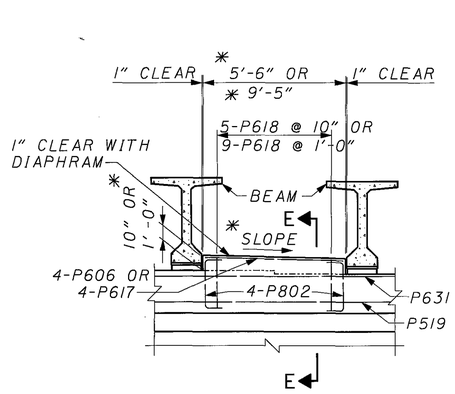
54/123

491/612

SU27\PHR.DGN 6/23/04 TWH,JLS,HN,RC

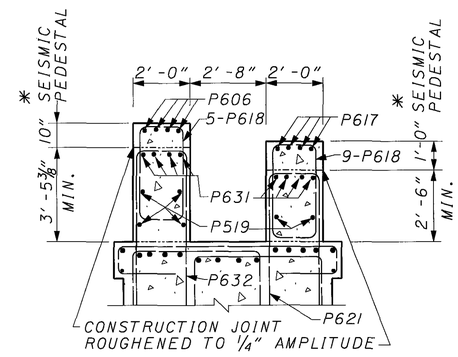


PIER 8R - FOOTING PLAN

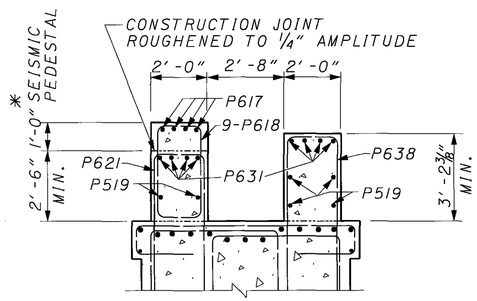


SEISMIC PEDESTAL DETAIL

*SLOPE TOP OF SEISMIC PEDESTAL PER DIAPHRAGM, SEE SHEETS 98/123 AND 100/123.



SECTION E-E
(PIER 4R)



SECTION E-E
(PIER 8R)

NOTES

◀|⊣ **HP 14x73 PILES** INDICATES 1:4 BATTER

PILE NUMBERING: SEE SHEET 18/123.

ADDITIONAL NOTES: SEE SHEET 34/123.

RICHLAND ENGINEERING LIMITED
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DLR		7709021	

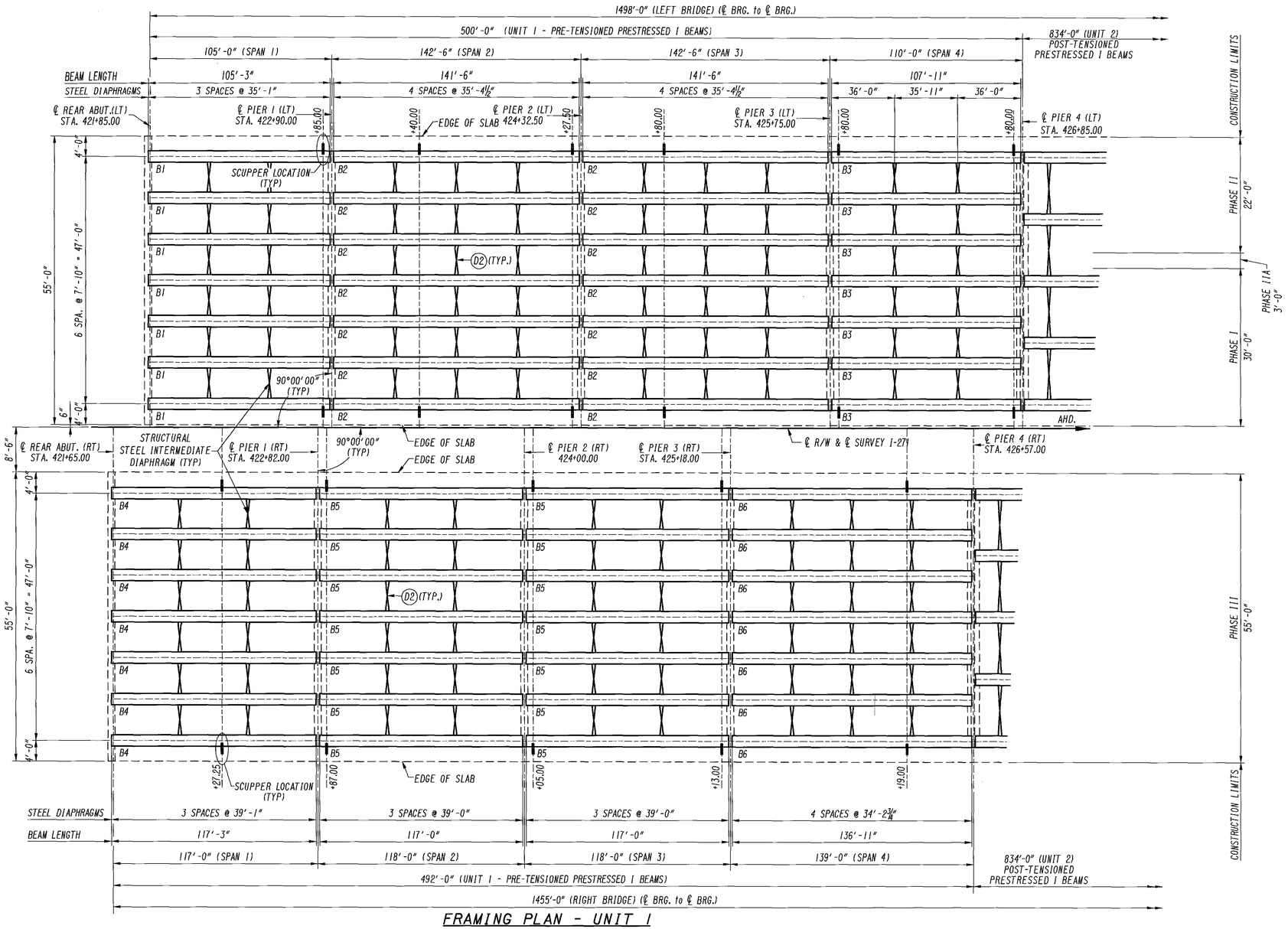
PIER DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 R
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SUM-271-8.02

55/123

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SU271PHR.DGN 6/23/04 TWH,JLS,HN,RC



FRAMING PLAN - UNIT 1

NOTE:
INTERMEDIATE CROSS FRAMES SHALL NOT BE PERMANENTLY ATTACHED IN THE CLOSURE POUR LOCATION (PHASE IIA) UNTIL THE CONCRETE POURS ON BOTH SIDES OF THE CLOSURE POUR LOCATION HAVE BEEN COMPLETED.

NOTES:

DIAPHRAGMS	SEE SHEETS 93/123 TO 104/123
SCUPPER DETAILS	SEE SHEET 114/123
TRANSVERSE SECTION	SEE SHEET 76/123
STEEL DIAPHRAGMS	SEE SHEETS 92/123

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
CHESTER, DAYTON, LEBANON, LOUISVILLE, MIDDLETOWN, CINCINNATI

DESIGNED BJF | DRAWN JAR | REVIEWED JGG | DATE 03-31-04
CHECKED RSP | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

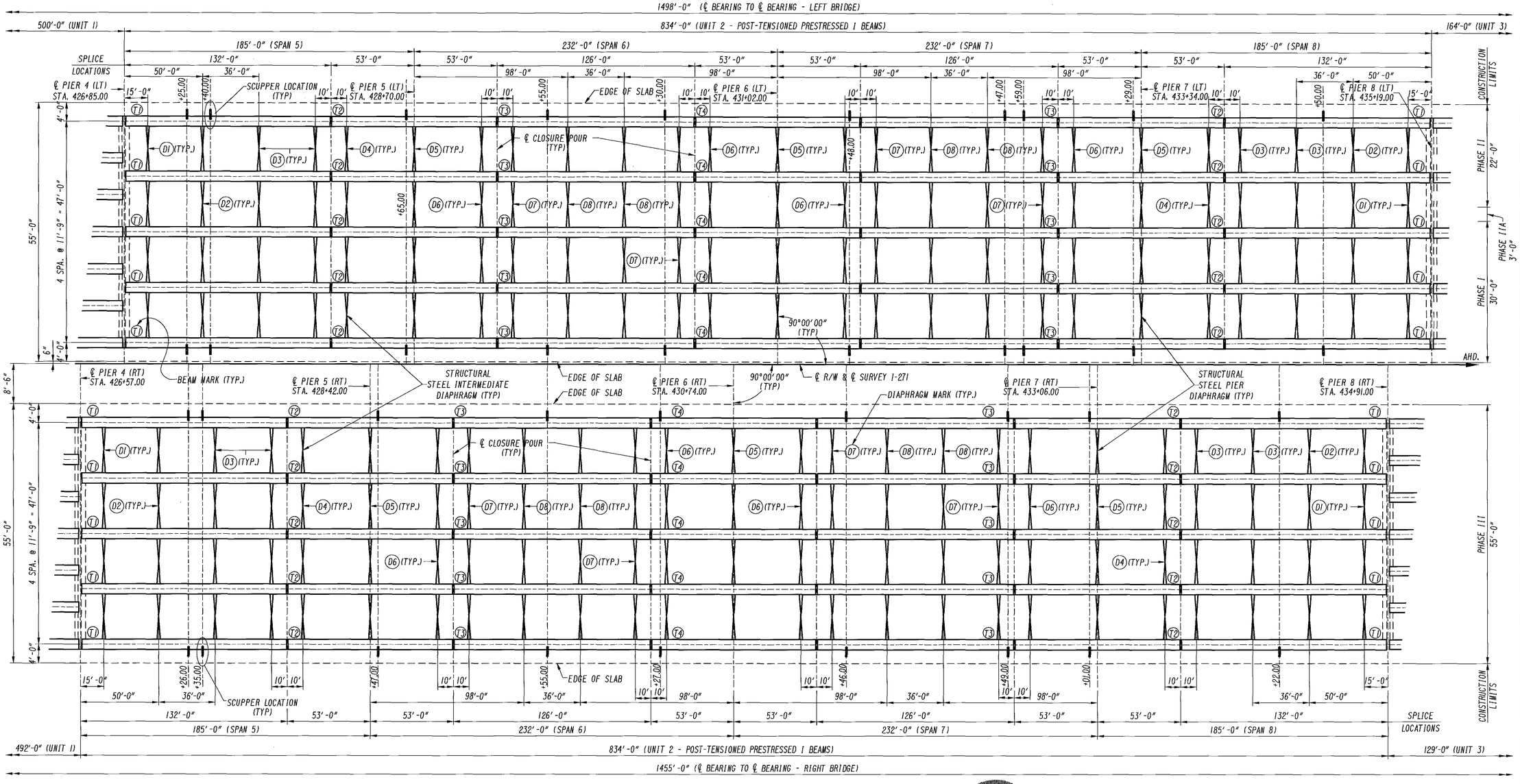
FRAMING PLAN - UNIT 1 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

56/123

493/612

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FRAMING PLAN - UNIT 2

BEAM MARK KEY

- (T1) TYPE 1 - END SEGMENT
- (T2) TYPE 2 - PIER SEGMENT
- (T3) TYPE 3 - DROP-IN SEGMENT
- (T4) TYPE 4 - PIER SEGMENT

STATE OF OHIO
DAVID HOLMAN DEITZ
E-65326
REGISTERED
PROFESSIONAL ENGINEER

David Holman Deitz 9.7.2004

NOTE:
INTERMEDIATE CROSS FRAMES SHALL NOT BE PERMANENTLY ATTACHED IN THE DECK CLOSURE POUR LOCATION (PHASE IIA) UNTIL THE CONCRETE POURS ON BOTH SIDES OF THE CLOSURE POUR LOCATION HAVE BEEN COMPLETED.

NOTES:

DIAPHRAGMS	SEE SHEETS 93/123 TO 104/123
SCUPPER DETAILS	SEE SHEET 114/123
TRANSVERSE SECTION	SEE SHEET 77/123
STEEL DIAPHRAGMS	SEE SHEETS 92/123

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
ENGINEERING • MIDDLETOWN • CHESTER • HARVILLE • LOUISVILLE

DESIGNED DHD | DRAWN JAR | CHECKED BNR | REVIEWED JGG | REVISED | DATE 03-31-04

STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

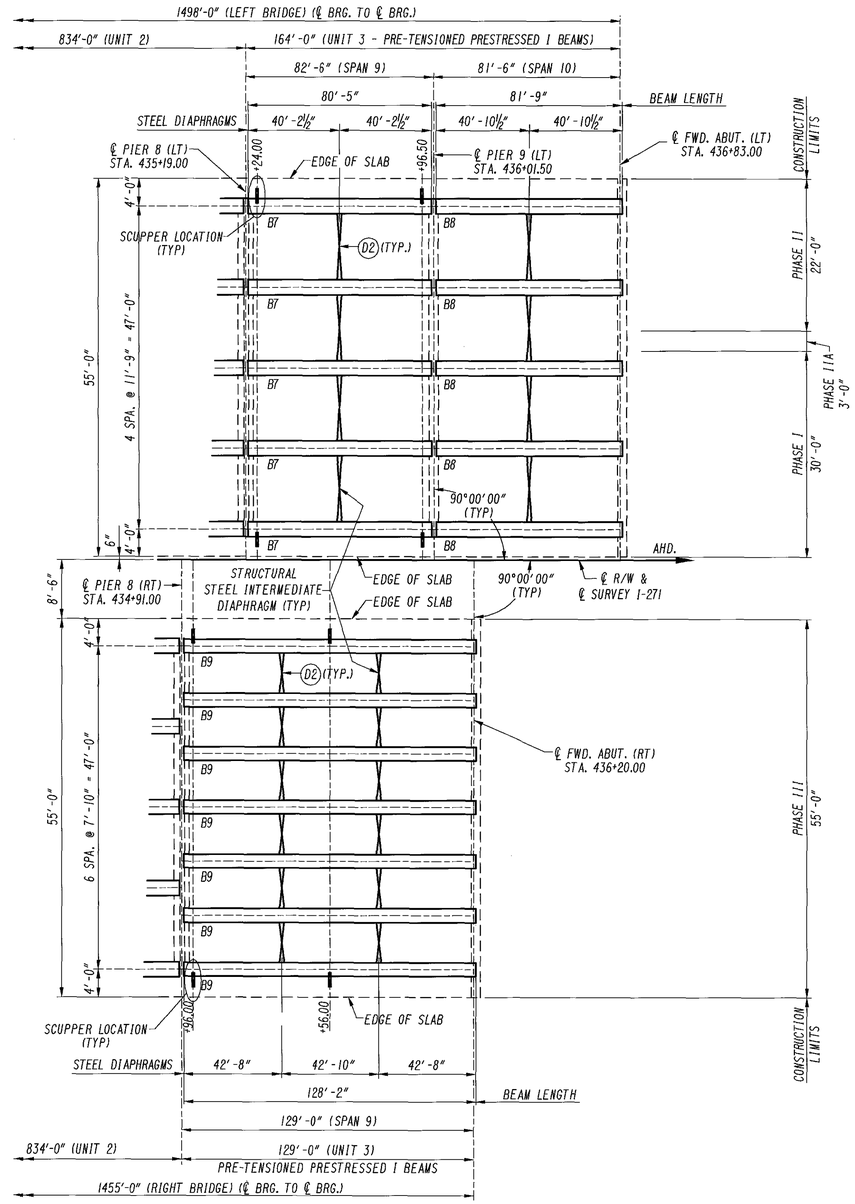
FRAMING PLAN - UNIT 2 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

57/123

494/612

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03/01/2004
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FRAMING PLAN - UNIT 3

NOTE:
INTERMEDIATE CROSS FRAMES SHALL NOT BE PERMANENTLY ATTACHED IN THE CLOSURE POUR LOCATION (PHASE IIA) UNTIL THE CONCRETE POURS ON BOTH SIDES OF THE CLOSURE POUR LOCATION HAVE BEEN COMPLETED.

NOTES:

DIAPHRAGMS SEE SHEETS 93/123 TO 104/123
SCUPPER DETAILS SEE SHEET 114/123
TRANSVERSE SECTION SEE SHEET 78/123
STEEL DIAPHRAGMS SEE SHEETS 92/123

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED PROFESSIONAL ENGINEER
9/7/2004

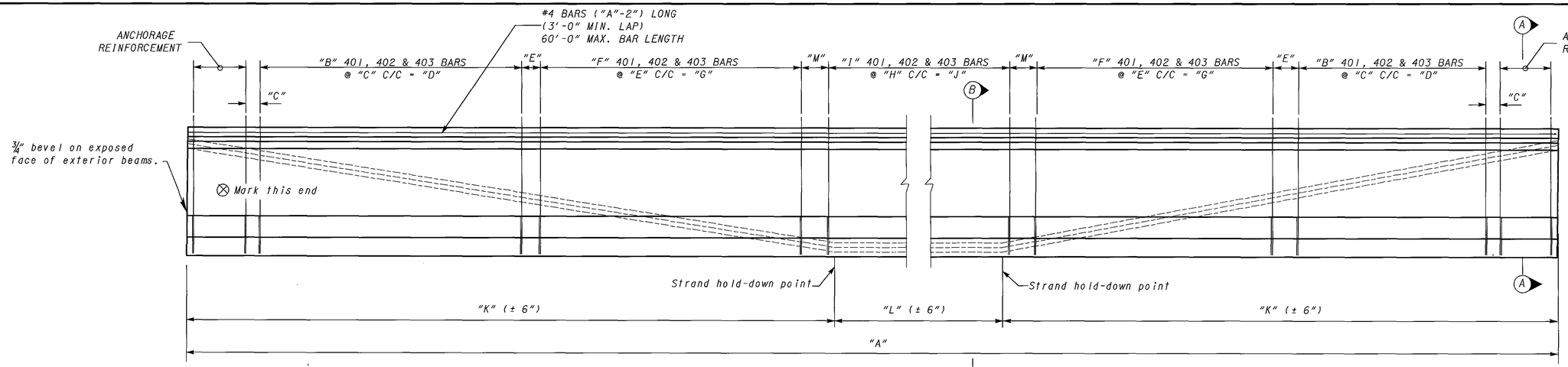
PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
KEVIN CHESTER, DARRYL ILSAN, DOUGLAS ILSAN
MIDDLETOWN, SURVEYORS

DESIGNED	DRAWN	REVIEWED	DATE
BJF	J AR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RSP		7709013(L) 7709021(A)	

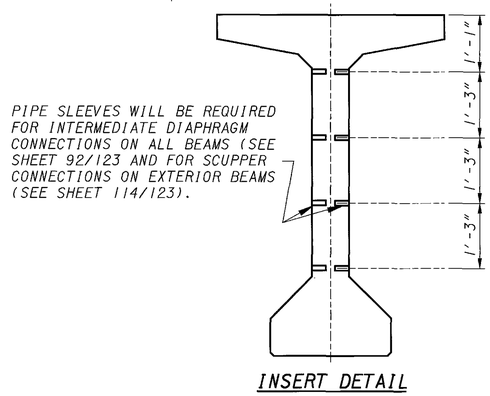
FRAMING PLAN - UNIT 3 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

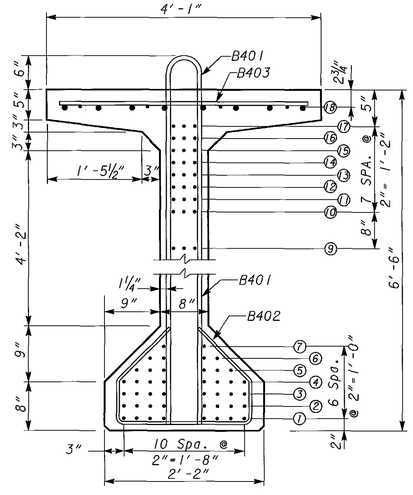
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09/01/2004
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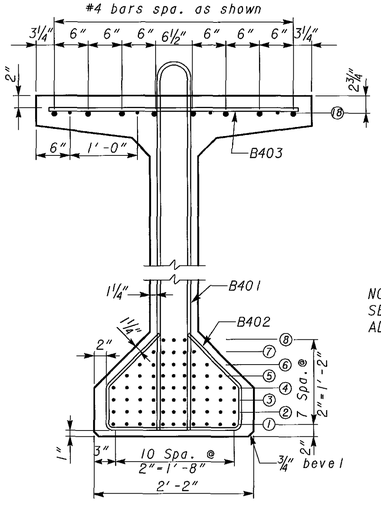
ELEVATION OF BEAM



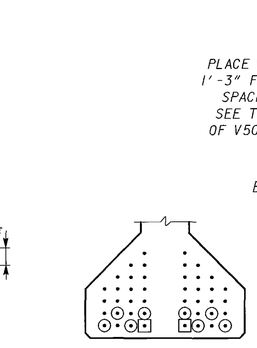
INSERT DETAIL



SECTION A-A



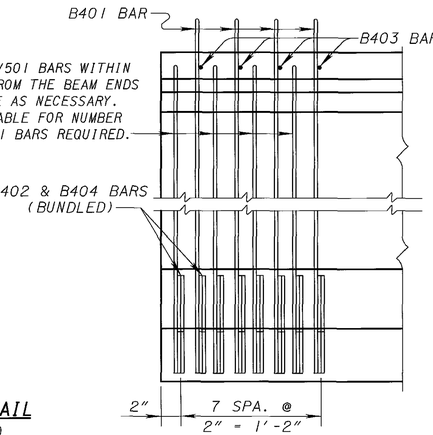
SECTION B-B



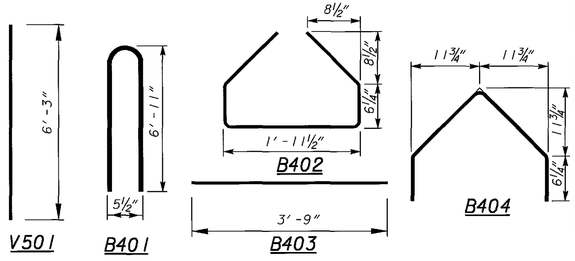
EXTENDED STRAND DETAIL

(@ PIERS 1, 2, 3, & 9)

NOTE :
SEE STANDARD DRAWING PSID-1-99 FOR ADDITIONAL EXTENDED STRAND DETAILS.



ANCHORAGE REINFORCEMENT



V501 B401 B402 B403 B404

NOTES

PRE-TENSIONED STRANDS:

PRE-TENSIONED STRANDS SHALL BE 0.5" DIAMETER, SEVEN WIRE LOW-RELAXATION STRAND (As=0.167 sq. in.), ASTM A416, GRADE 270.

CONSTRUCTION METHOD:

NO BOND STRESS SHALL BE TRANSFERRED TO THE CONCRETE, NOR SHALL END ANCHORS BE RELEASED UNTIL THE CONCRETE HAS OBTAINED f'ci (SHOWN IN TABLE) AS SHOWN BY STANDARD CYLINDERS MADE AND CURED IDENTICALLY WITH THE GIRDERS; f'c (SHOWN IN TABLE) SHALL BE ATTAINED AT OR PRIOR TO 28 DAYS. AN INITIAL PRESTRESS FORCE OF 33,820 lbs PER LOW RELAXATION STRAND SHALL BE APPLIED SUCH AS TO DEVELOP A STRESS OF 202 ksi. BEAMS WITH HONEYCOMB OF SUCH EXTENT AS TO EFFECT THE STRENGTH OF RESISTANCE TO DETERIORATION WILL NOT BE ACCEPTED. AN ALLOWANCE OF .0005L (LENGTH) SHALL BE MADE FOR SHORTENING OF BEAMS DUE TO SHRINKAGE AND ELASTIC CHANGE.

AGE OF PRECAST BEAMS (UNITS 1 & 3)

THE BEAMS SHALL BE A MINIMUM OF 100 DAYS OLD PRIOR TO PLACEMENT OF DECK/DIAPHRAGM CONCRETE OVER THE INTERIOR PIERS OF UNITS 1 & 3.

SHOP DRAWINGS:

BEAM FABRICATION SHALL NOT COMMENCE PRIOR TO THE APPROVAL OF STRUCTURAL STEEL DIAPHRAGM SHOP DRAWINGS.

05:55:52 AM

* REQUIRES TWO HOLD-DOWN DEVICES

NOTE : ALL REINFORCEMENT SHALL BE EPOXY COATED

Mark	No. Reqd.	Strand Data with number indicated in rows: Midspan (SECTION B-B) (1) (2) (3) (4) (5) (6) (7) (8) (18)	Strand Data with number indicated in rows: End (SECTION A-A) (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18)	Total No.	Concrete Stress (PSI) f'ci	Concrete Stress (PSI) f'c	B401 BARS REQ'D	B402 BARS REQ'D	B403 BARS REQ'D	B404 BARS REQ'D	V501 BARS REQ'D	HOLD DOWN CAPACITY Pu/ Strand (kips)	HOLD DOWN CAPACITY Pu/ Unit (kips)
B1	7	11 11 5 3	4 8 8 2 3 3 3 3 4	34	5000	7000	111	119	111	16	8	3.9	47.0
B2	14	11 11 11 9 3 3 3 3	4 8 8 8 6 3 3 3 3 3 3 3 4	58	5000	7000	142	150	142	16	20	3.2	57.5 *
B3	7	11 11 5 3	4 8 8 2 3 3 3 3 4	34	5000	7000	109	117	109	16	8	3.8	45.5
B4	7	11 11 3 3 3 3 3	4 8 8 3 3 3 3 3 3 3 4	41	5000	7000	122	130	122	16	12	3.7	77.8 *
B5	14	11 11 3 3 3 3 3	4 8 8 3 3 3 3 3 3 3 4	41	5000	7000	120	128	120	16	12	3.7	78.0 *
B6	7	11 11 11 9 5 3 3 3	4 8 8 8 6 2 3 3 3 3 3 3 3 4	60	5000	7000	135	143	135	16	20	3.3	49.1 *
B7	5	11 11	4 11 8 3 4	26	5000	7000	98	106	98	16	4	4.0	11.9
B8	5	11 11	4 11 8 3 4	26	5000	7000	99	107	99	16	4	3.9	11.6
B9	7	11 11 11 9 3 3 3 3	4 8 8 8 6 3 3 3 3 3 3 3 4	58	5000	7000	128	136	128	16	20	3.3	78.9 *

Mark	Beam Data (measured along centerline) Dimensions A	B	C	D	E	F	G	H	I	J	K	L	M	Approximate Weight (lbs/ea.)
B1	105'-3"	33	9"	24'-0"	1'-4"	16	20'-0"	2'-0"	5	8'-0"	47'-7½"	10'-0"	1'-2½"	124,300
B2	141'-6"	45	9"	33'-0"	1'-6"	17	24'-0"	2'-0"	10	18'-0"	56'-6"	28'-6"	1'-2"	167,112
B3	107'-11"	33	9"	24'-0"	1'-6"	15	21'-0"	2'-0"	5	8'-0"	48'-1 1½"	10'-0"	1'-4½"	127,453
B4	117'-3"	36	9"	26'-3"	1'-4"	18	22'-8"	2'-0"	6	10'-0"	47'-1½"	23'-0"	1'-3½"	138,472
B5	117'-0"	35	9"	25'-6"	1'-4"	17	21'-4"	2'-0"	8	14'-0"	47'-0"	23'-0"	1'-3"	138,177
B6	136'-11"	43	9"	31'-6"	1'-6"	13	18'-0"	2'-0"	15	28'-0"	55'-2"	26'-7"	1'-4½"	161,698
B7	80'-5"	6	8"	3'-4"	9"	31	22'-6"	1'-4"	16	20'-0"	35'-2½"	10'-0"	1'-7½"	94,874
B8	81'-9"	6	8"	3'-4"	9"	31	22'-6"	1'-4"	17	21'-4"	35'-10½"	10'-0"	1'-7½"	96,547
B9	128'-2"	41	9"	30'-0"	1'-6"	13	18'-0"	2'-0"	12	22'-0"	51'-4"	25'-6"	1'-6"	151,365

05/07/2004

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STATE OF OHIO RANDALL S PALMER 57755 REGISTERED PROFESSIONAL ENGINEER
9/1/04

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
ENGINEERING • SURVEYING • PLANNING
WIN CHESTER, NASHVILLE, LOUISVILLE, MIDDLETOWN, CLEVELAND

DESIGNED	DRAWN	CHECKED
BJF	JAR	RSP

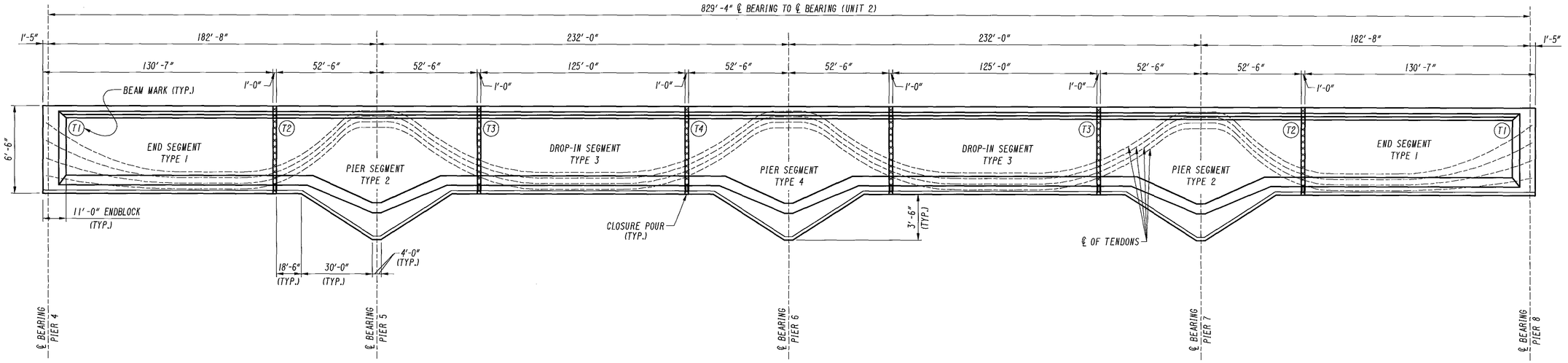
REVIEWED JGG — DATE 03-31-04 — REVISED

STRUCTURE FILE NUMBER 770903(L) 770902(A)

PRESTRESSED BEAM DETAILS - UNITS 1 & 3 - CONC.

BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02



ELEVATION

NUMBER OF BARS PER SEGMENT

BAR TYPE	TYPE 1	TYPE 2	TYPE 3	TYPE 4	ENDBLOCK
B301	76	58	94	58	7
B405					4
B406	169	92	223	92	
B407	87	83	96	83	8
SERIES B408		60 (2-SERIES)		60 (2-SERIES)	
SERIES B409		46 (2-SERIES)		46 (2-SERIES)	
B410		19		19	
B411		9		9	
SERIES B412		58 (2-SERIES)		58 (2-SERIES)	
B501					16
B502					32
B503					36
B504					9
B505					8
B506					7
B507	2	4	4	4	
B601					4
B1101		8		8	
B1102		8		8	
B1103		4		4	

NOTE: ALL REINFORCEMENT SHALL BE EPOXY COATED.

NOTES

POST-TENSIONING TENDONS - SEE SHEET 65/123 TO 66/123 FOR DETAILS

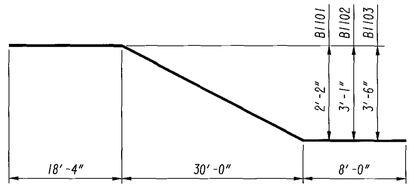
CONSTRUCTION METHOD - NO BOND STRESS SHALL BE TRANSFERED TO THE CONCRETE, NOR SHALL END ANCHORS BE RELEASED UNTIL THE CONCRETE HAS ATTAINED f'ci = 5500 psi AS SHOWN BY STANDARD CYLINDERS MADE AND CURED IDENTICALLY WITH THE BEAMS; f'c = 8000 psi SHALL BE ATTAINED AT OR PRIOR TO SHIPMENT OF THE BEAMS. AN INITIAL PRESTRESS FORCE OF 44,000 LBS PER LOW RELAXATION STRAND SHALL BE APPLIED SUCH AS TO DEVELOP A STRESS OF 202,500 psi. BEAMS WITH HONEYCOMB OF SUCH EXTENT AS TO AFFECT THE STRENGTH OR RESISTANCE TO DETERIORATION WILL NOT BE ACCEPTED.

DIMENSIONS - THE DIMENSIONS DETAILED ALONG THE LENGTH OF ALL BEAM SEGMENTS DO NOT CONTAIN AN ALLOWANCE FOR THE EFFECT OF LONGITUDINAL GRADE. INCLUDE PROPER ALLOWANCE FOR THE DIMENSIONS IN THE SHOP DRAWINGS.

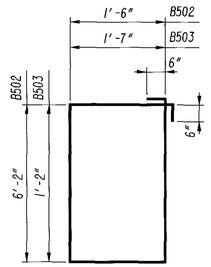
ALL DIMENSIONS SHOWN ON THE PLANS ARE FINAL IN PLACE DIMENSIONS, ADJUSTMENTS FOR EFFECTS SUCH AS CREEP AND SHRINKAGE ARE THE RESPONSIBILITY OF THE CONTRACTOR. ALL SUCH ADJUSTMENTS SHALL BE INCLUDED IN THE SHOP DRAWINGS.

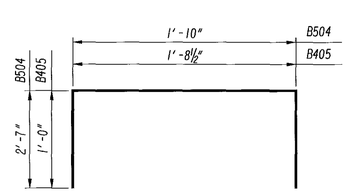
PIER SEGMENT HANDLING - THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING DETAILED CALCULATIONS OF THE STRESSES INDUCED DURING SHIPPING AND LIFTING OF BEAM SEGMENTS. THE STRESSES SHALL NOT EXCEED THE ALLOWABLE STRESSES SHOWN IN THE GENERAL NOTES.

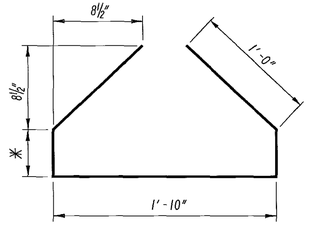
BEAM FABRICATION SHALL NOT COMMENCE PRIOR TO THE APPROVAL OF STRUCTURAL STEEL DIAPHRAGM SHOP DRAWINGS.

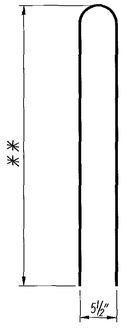


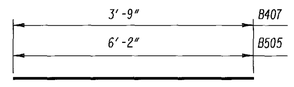
BARS B501

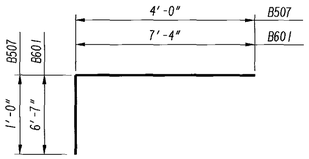












* BAR B301 = 6 1/4"
BAR B411 = 1'-10 1/4"
SERIES B412 = 29 BARS, VARIES FROM 6 3/4" TO 1'-9 3/4" BY INCREMENTS OF (±) 1/2"

** BAR B406 = 6'-11"
SERIES B408 = 30 BARS, VARIES FROM 7'-0" TO 9'-3" BY INCREMENTS OF (±) 1"
SERIES B409 = 23 BARS, VARIES FROM 9'-4" TO 10'-4 3/4" BY INCREMENTS OF (±) 5/8"
BAR B410 = 10'-5"

STATE OF OHIO
DAVID HOLMAN DEITZ
E-65326
REGISTERED
PROFESSIONAL ENGINEER

David Holman Deitz
9.7.2009

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09/07/2004
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PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
ENGINEERING
KEVIN CHESTER, RABEVILLE, LOUISVILLE, MIDDLETOWN, SURVEYING

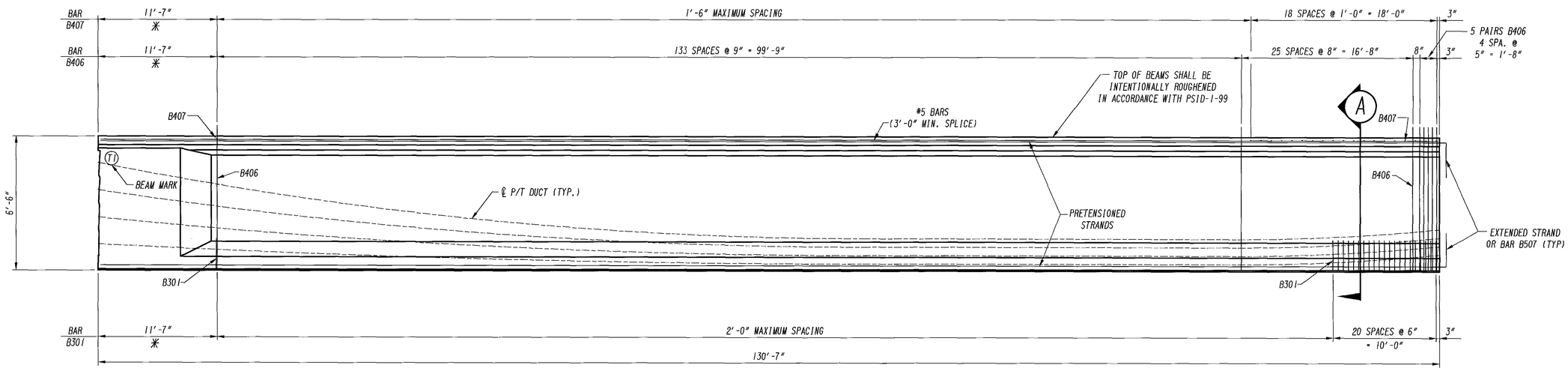
DESIGNED DHD | DRAWN JBB | CHECKED BNR | REVISED | REVIEWED JGG | DATE 03-31-04
STRUCTURE FILE NUMBER 770901(L) 770902(A)

UNIT 2 - GIRDER ELEVATION - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

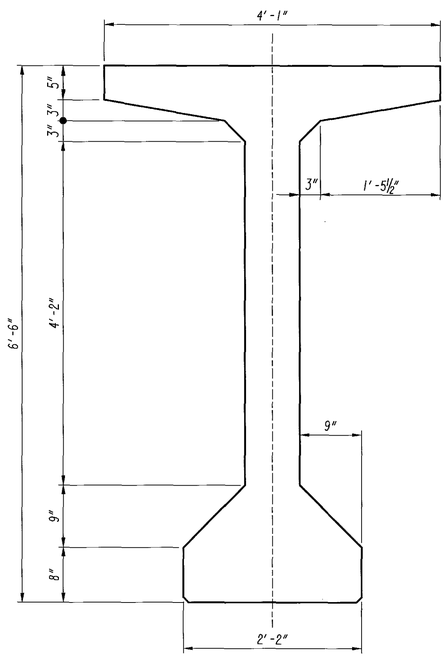
60/123

497/612

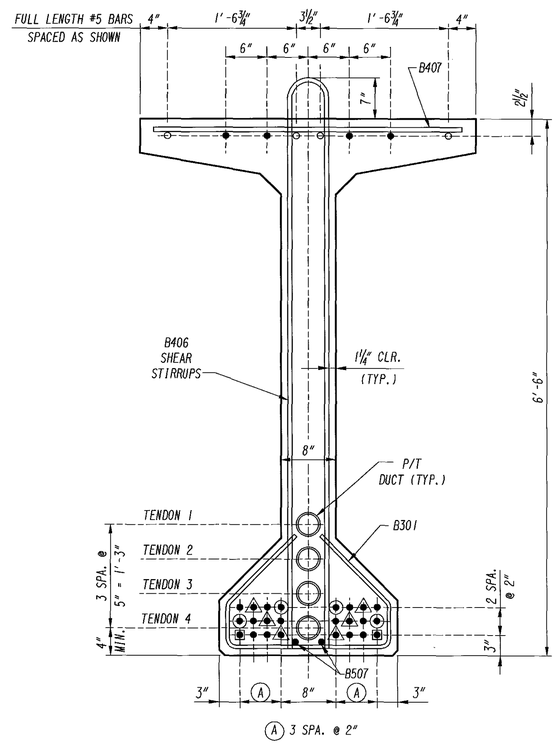


ELEVATION - TYPE 1 BEAM SEGMENT

✳ FOR END BLOCK REINFORCEMENT SEE SHEET 64/123.



PCIB SECTION



SECTION A-A

▲ DEBOND STRANDS - 16'-0" EACH END
⊙ DEBOND STRANDS - 17'-6" MARKED END
⊡ EXTENDED STRAND - UNMARKED END

STATE OF OHIO
DAVID HOLMAN DEITZ
E-65326
REGISTERED
PROFESSIONAL ENGINEER
9.7.2004

NOTES:

- SEE SHEET 65/123 FOR LOCATION OF THE POST-TENSIONING DUCTS AND TENDON INFORMATION.
- PRE-TENSIONED STRANDS SHALL BE: 0.6" DIAMETER SEVEN WIRE LOW LAX STRANDS, ASTM 416, GRADE 270 As = 0.217 SQ. IN.
- SEE SHEET 67/123 FOR DETAILS OF EXTENDED STRANDS AND BAR B507.

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
Palmer ENGINEERING & SURVEYING
WITH OFFICES IN CHESTER, NASHVILLE, LOUISVILLE AND MIDDLETOWN SERVICE AREA

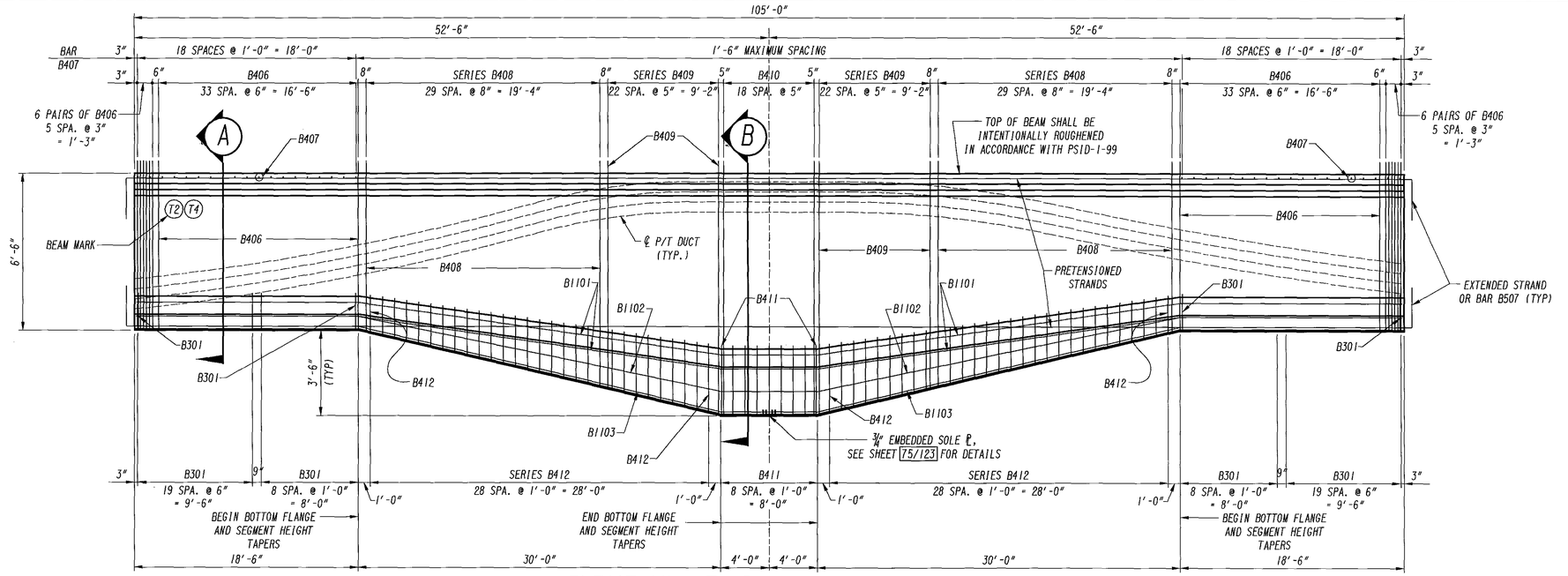
DESIGNED DHD | DRAWN JAR | REVIEWED JGG | DATE 03-31-04
CHECKED BNR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

UNIT 2 - TYPE 1 SEGMENT - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

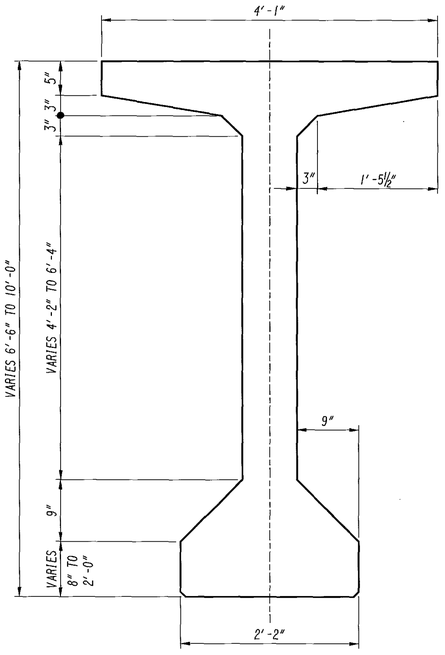
SUM-271-8.02

61/123
498/612

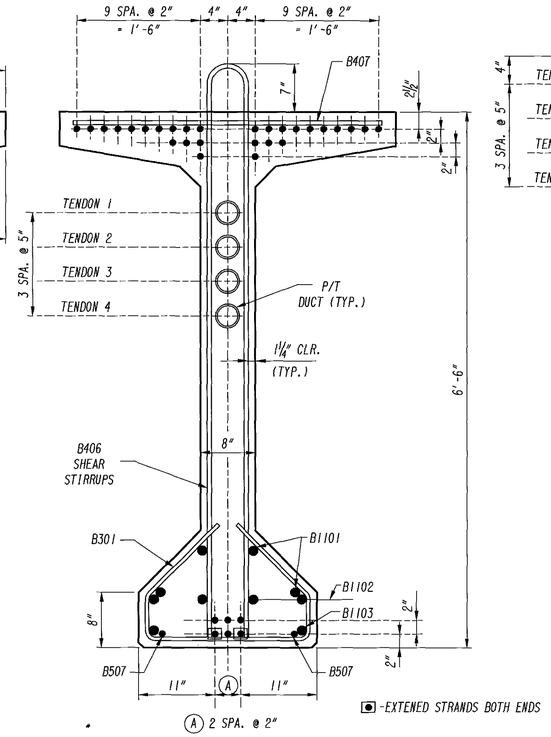
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03/07/2004
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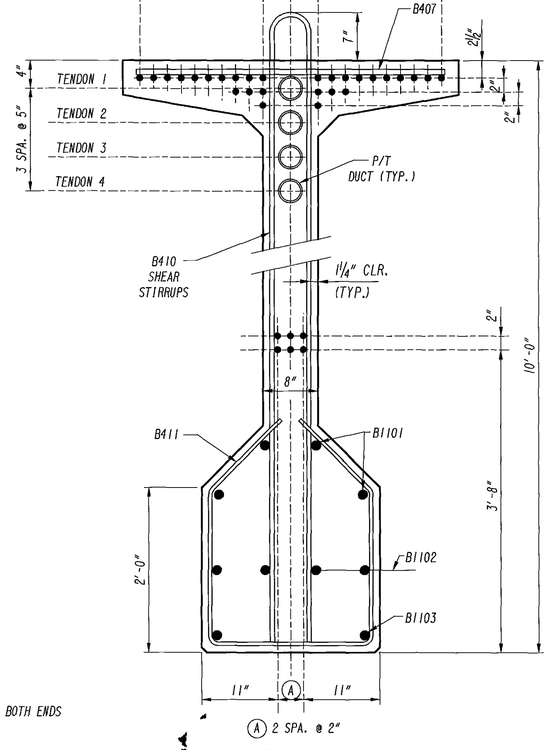
ELEVATION - TYPE 2 & 4 BEAM SEGMENT



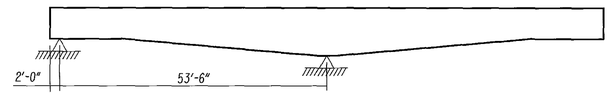
PCIB SECTION



SECTION A-A



SECTION B-B



PIER SEGMENT STORAGE DETAIL

STATE OF OHIO
DAVID
HOLMAN
DEITZ
E-65326
REGISTERED
PROFESSIONAL ENGINEER
9.7.2004

NOTES:

- SEE SHEETS 65/123 & 66/123 FOR LOCATION OF THE POST-TENSIONING DUCTS AND TENDON INFORMATION.
- PRE-TENSIONED STRANDS SHALL BE: 0.6" DIAMETER SEVEN WIRE LOW LAX STRANDS, ASTM 416, GRADE 270 As = 0.217 SQ. IN.
- SEE SHEET 67/123 FOR DETAILS OF EXTENDED STRANDS AND BAR B507.

PALMER ENGINEERING
146 N. BREIEL BLVD.
MIDDLETOWN, OH 45042
Palmer ENGINEERING
WWW.PALMERENGINEERING.COM

DESIGNED	DRAWN	REVIEWED	DATE
DHD	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BWR		770902(J) 770902(R)	

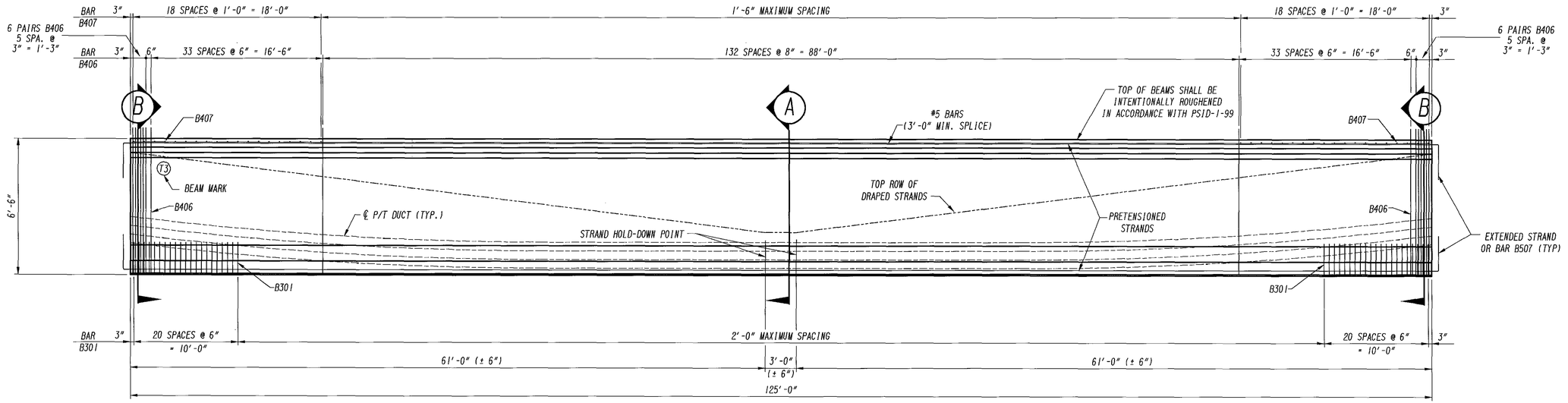
UNIT 2 - TYPE 2 & 4 SEGMENT - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

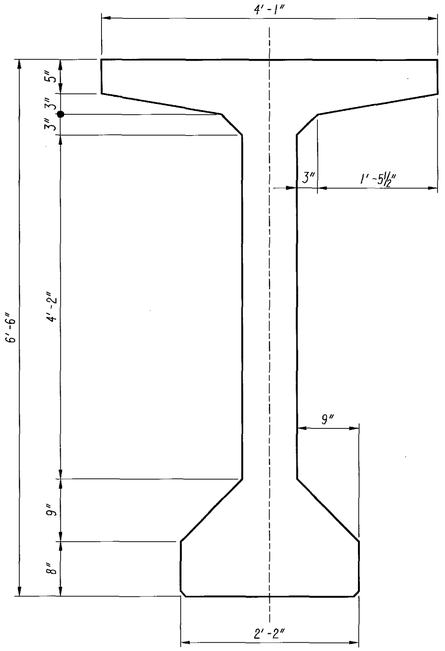
62/123

499/612

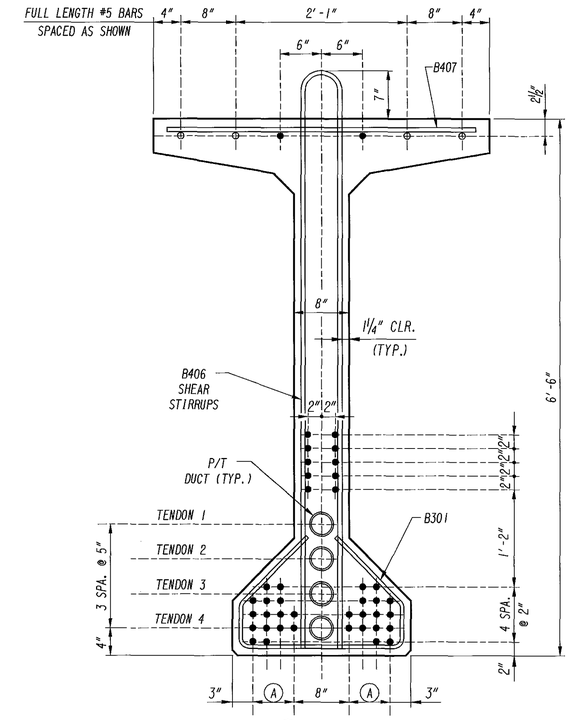
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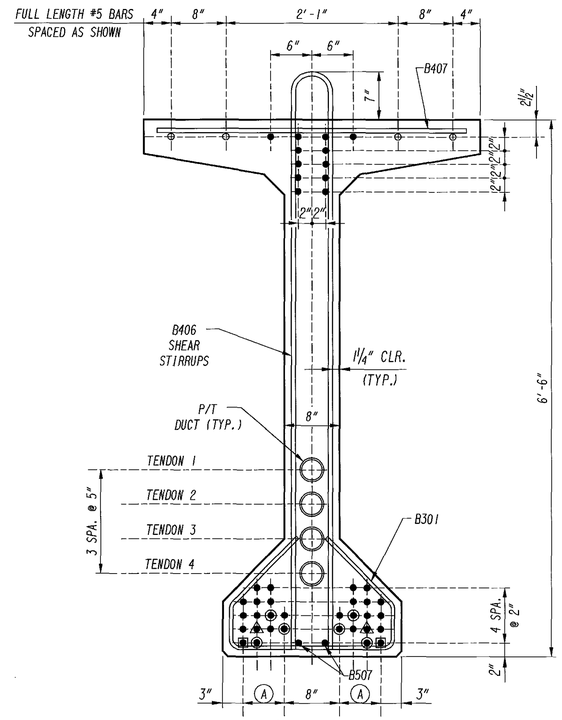
ELEVATION - TYPE 3 BEAM SEGMENT



PCIB SECTION



SECTION A-A
(@ CENTER OF SEGMENT)



SECTION B-B
(@ SEGMENT END)

EXTENDED STRAND - BOTH ENDS
DEBONDED STRANDS 37'-0" - BOTH ENDS
DEBONDED STRANDS 13'-6" - BOTH ENDS

STATE OF OHIO
DAVID HOLMAN DEITZ
E-65326
REGISTERED
PROFESSIONAL ENGINEER
9.7.2004

NOTES:

- SEE SHEET 65/123 & 66/123 FOR LOCATION OF THE POST-TENSIONING DUCTS AND TENDON INFORMATION.
- PRE-TENSIONED STRANDS SHALL BE: 0.6" DIAMETER SEVEN WIRE LOW LAX STRANDS, ASTM 416, GRADE 270 As = 0.217 SQ. IN.
- SEE SHEET 67/123 FOR DETAILS OF EXTENDED STRANDS AND BAR B507.

PALMER ENGINEERING
146 N. BRIEL BLVD. MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
DHD	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BNR		7709013(L) 7709021(R)	

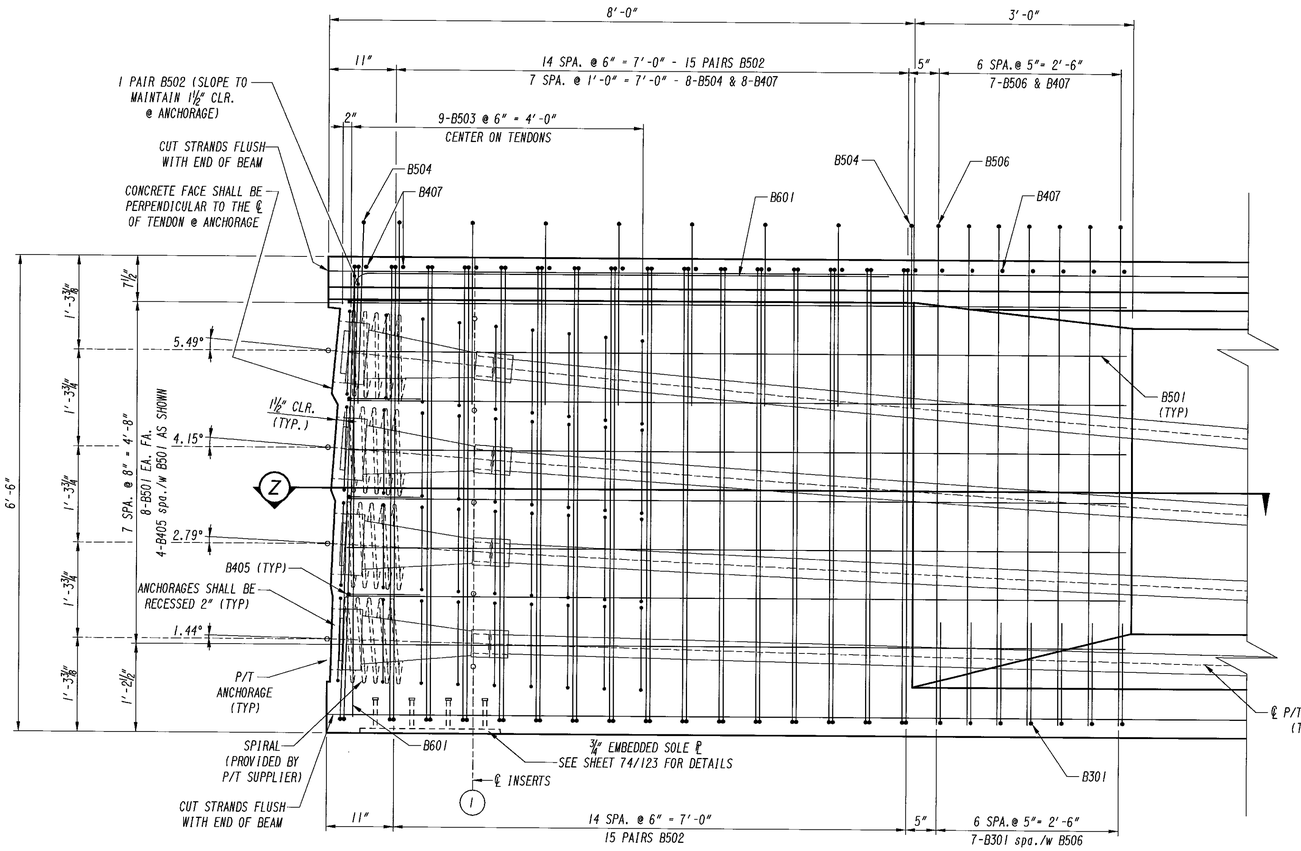
UNIT 2 - TYPE 3 SEGMENT - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

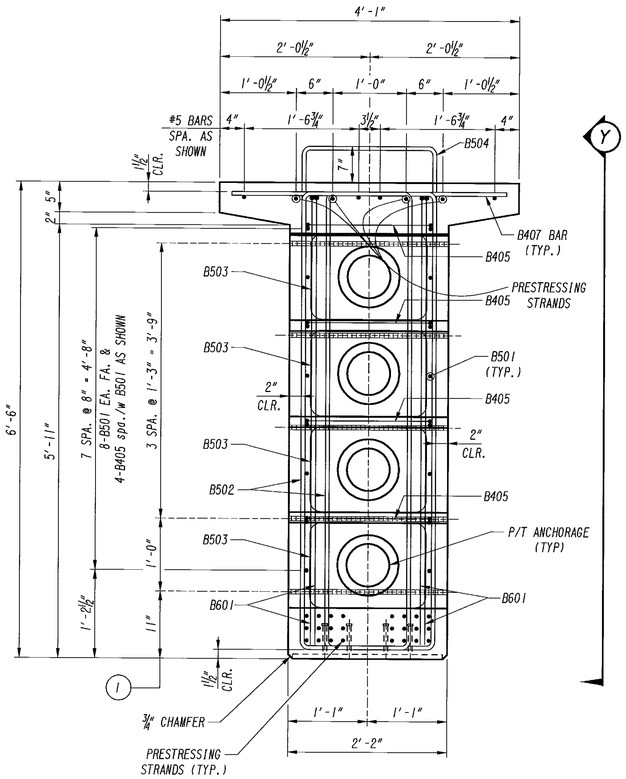
63/123

500/612

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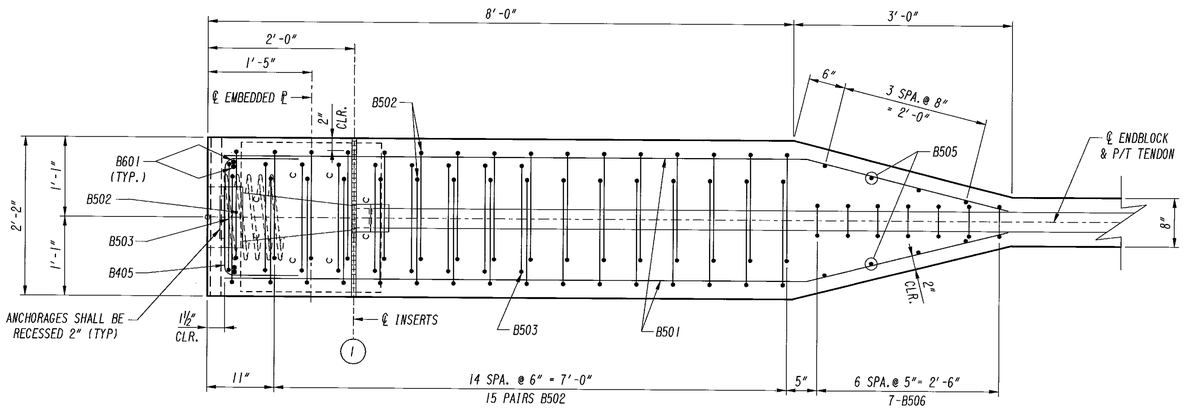


VIEW Y-Y



ENDBLOCK

(1) ℄ THREADED INSERTS TO FIT ¾"x2'-2" OR ¾"x3'-8" BAR INSTALLED AT THE SITE. CONTINUOUS COIL TIES SHALL BE USED.



SECTION Z-Z

STATE OF OHIO
DAVID HOLMAN DEITZ
E-65326
REGISTERED
PROFESSIONAL ENGINEER
9.7.2004

NOTES

1. FABRICATE ANCHORAGE BLOCKOUT SO THAT NO COMPONENT OF THE ANCHOR ASSEMBLAGE EXTENDS BEYOND THE END OF THE BEAM.
2. THE ANCHORAGE DEVICE SELECTED BY THE CONTRACTOR SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE PROPOSAL NOTE AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
3. DEBONDED STRANDS NOT SHOWN FOR CLARITY, SEE SHEET 61/123.
4. SEE SHEET 65/123 FOR P/T TENDON INFORMATION.

Palmer ENGINEERING

DESIGNED	DRAWN	REVIEWED	DATE
PJS	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DHD		7709013(L) 7709021(R)	

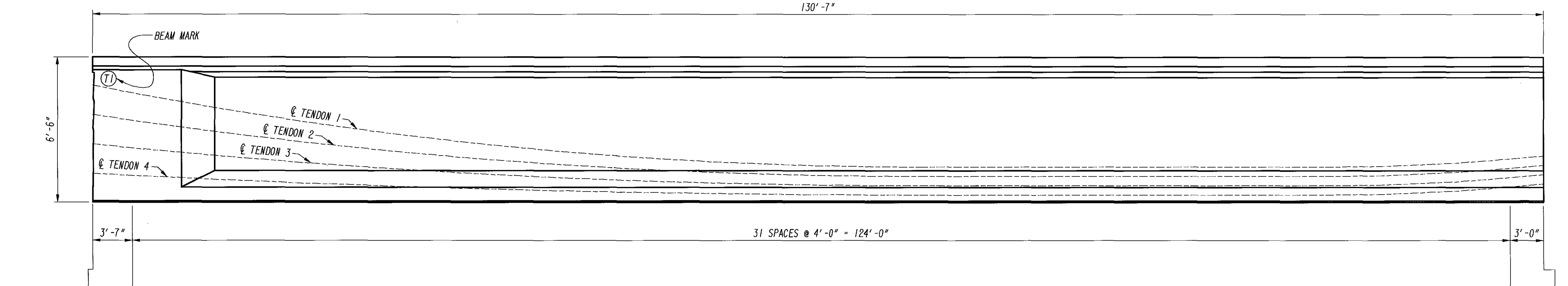
UNIT 2 ENDBLOCK DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

64/123

501/612

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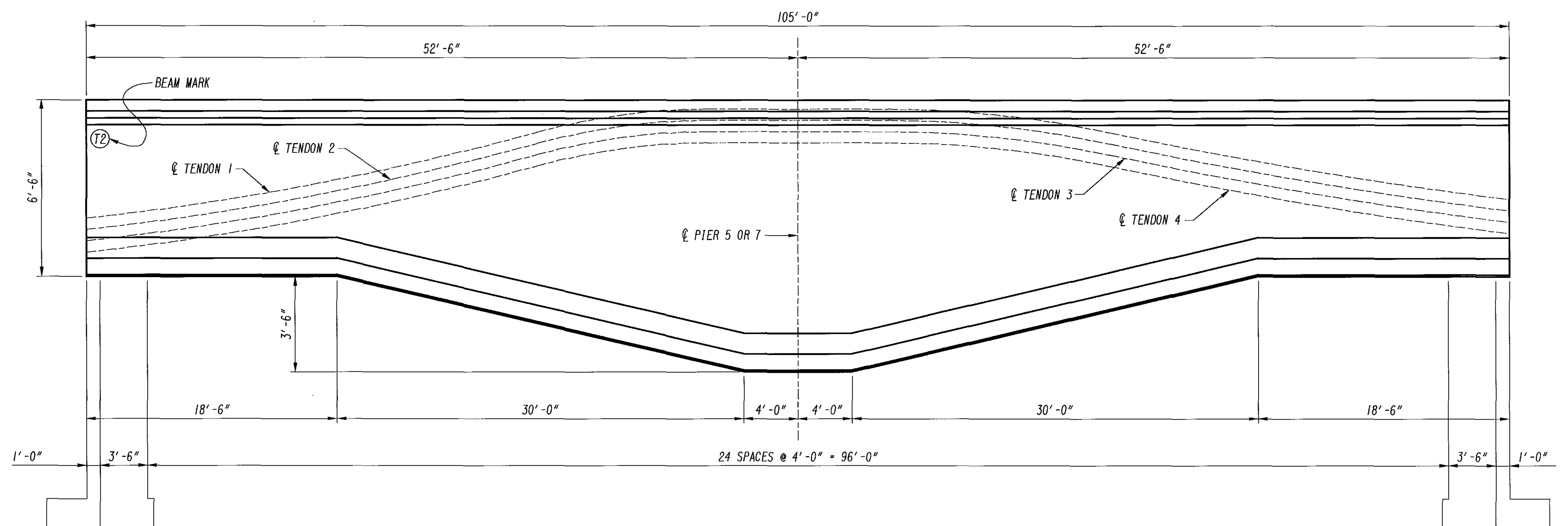


	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
TENDON 1	-15 3/8	-19 1/2	-23 13/16	-27 7/8	-31 11/16	-35 5/16	-38 5/8	-41 11/16	-44 1/2	-47 1/8	-49 7/16	-51 1/2	-53 5/16	-54 7/8	-56 3/16	-57 1/4	-58 1/16
TENDON 2	-31 1/8	-34 3/16	-37 1/2	-40 9/16	-43 7/16	-46 1/8	-48 5/8	-50 15/16	-53 1/16	-55	-56 3/4	-58 5/16	-59 11/16	-60 7/8	-61 7/8	-62 11/16	-63 5/16
TENDON 3	-46 7/8	-48 15/16	-51 1/8	-53 1/4	-55 3/16	-57	-58 11/16	-60 1/4	-61 11/16	-62 15/16	-64 1/8	-65 3/16	-66 1/8	-66 15/16	-67 9/16	-68 1/8	-68 1/2
TENDON 4	-62 5/8	-63 11/16	-64 13/16	-65 7/8	-66 7/8	-67 13/16	-68 11/16	-69 1/2	-70 1/4	-70 7/8	-71 1/2	-72 1/16	-72 1/2	-72 15/16	-73 1/4	-73 9/16	-73 3/4

	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
TENDON 1	-58 5/8	-58 15/16	-59	-59	-59	-59	-59	-59	-59	-59	-59	-59	-58 5/8	-57 11/16	-56 3/16	-54 1/8	-52 3/16
TENDON 2	-63 11/16	-63 15/16	-64	-64	-64	-64	-64	-64	-64	-64	-64	-64	-63 5/8	-62 11/16	-61 3/16	-59 1/8	-57 3/16
TENDON 3	-68 13/16	-68 15/16	-69	-69	-69	-69	-69	-69	-69	-69	-69	-69	-68 5/8	-67 11/16	-66 3/16	-64 1/8	-62 3/16
TENDON 4	-73 7/8	-74	-74	-74	-74	-74	-74	-74	-74	-74	-74	-74	-73 5/8	-72 11/16	-71 3/16	-69 1/8	-67 3/16

END BEAM SEGMENT TYPE 1

TENDON PROFILE - ALL DIMENSIONS ARE GIVEN IN INCHES FROM TOP OF BEAM TO THE ℄ OF THE POST-TENSIONING DUCT.



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
TENDON 1	-51 7/16	-50 11/16	-47 13/16	-43 15/16	-39 1/2	-34 1/2	-28 15/16	-22 13/16	-16 1/2	-11 3/8	-7 5/8	-5 3/16	-4 1/16	-4	-4
TENDON 2	-56 7/16	-55 11/16	-52 13/16	-48 15/16	-44 1/2	-39 1/2	-33 15/16	-27 13/16	-21 1/2	-16 3/8	-12 5/8	-10 3/16	-9 1/16	-9	-9
TENDON 3	-61 7/16	-60 11/16	-57 13/16	-53 15/16	-49 1/2	-44 1/2	-38 15/16	-32 13/16	-26 1/2	-21 3/8	-17 5/8	-15 3/16	-14 1/16	-14	-14
TENDON 4	-66 7/16	-65 11/16	-62 13/16	-58 15/16	-54 1/2	-49 1/2	-43 15/16	-37 13/16	-31 1/2	-26 3/8	-22 5/8	-20 3/16	-19 1/16	-19	-19

	16	17	18	19	20	21	22	23	24	25	26	27	28	29
TENDON 1	-4	-4 1/16	-4 11/16	-6 1/8	-8 3/8	-11 7/16	-15 1/4	-19 7/8	-24 13/16	-29 7/16	-33 3/4	-37 3/4	-40 15/16	-41 13/16
TENDON 2	-9	-9 1/16	-9 11/16	-11 1/8	-13 3/8	-16 7/16	-20 1/4	-24 7/8	-29 13/16	-34 7/16	-38 3/4	-42 3/4	-45 15/16	-46 13/16
TENDON 3	-14	-14 1/16	-14 11/16	-16 1/8	-18 3/8	-21 7/16	-25 1/4	-29 7/8	-34 13/16	-39 7/16	-43 3/4	-47 3/4	-50 15/16	-51 13/16
TENDON 4	-19	-19 1/16	-19 11/16	-21 1/8	-23 3/8	-26 7/16	-30 1/4	-34 7/8	-39 13/16	-44 7/16	-48 3/4	-52 3/4	-55 15/16	-56 13/16

PIER SEGMENT TYPE 2

TENDON PROFILE - ALL DIMENSIONS ARE GIVEN IN INCHES FROM TOP OF BEAM TO THE ℄ OF THE POST-TENSIONING DUCT.

STRESSING INFORMATION

TENDON	JACKING FORCE (kips)	ELONGATION AFTER SEATING		
		END 1 (in)	END 2 (in)	TOTAL (in)
1	522	53 11/16"	7 3/4"	61 7/16"
2	522	54"	7 3/4"	61 3/4"
3	522	54 5/16"	7 13/16"	62 1/8"
4	522	54 5/8"	7 13/16"	62 7/16"

- ALL TENDONS SHALL BE STRESSED FROM BOTH ENDS. IF FIELD CONDITIONS DEVIATE FROM THE POST-TENSIONING DESIGN ASSUMPTIONS GIVEN BELOW, THE ABOVE VALUES SHALL BE ADJUSTED ACCORDINGLY.
- TENDONS SHALL BE STRESSED IN NUMERICAL ORDER AND IN ACCORDANCE WITH THE ERECTION SEQUENCE.
- POST-TENSIONING TENDONS SHALL CONSIST OF TWELVE (12) 0.6" DIAMETER SEVEN WIRE LOW LAX STRANDS PER TENDON, 2.604 SQ.INCH/TENDON.
- POST TENSIONING DESIGN ASSUMPTIONS =
  ANCHOR SET - 3/8"
  WOBBLE - 0.0002/FT.
  CURVATURE COEFFICIENT - 0.25
- POST TENSIONING DUCTS SHALL HAVE AN INSIDE DIAMETER GREATER THAN 3.0" AND AN OUTSIDE DIAMETER LESS THAN OR EQUAL TO 3.2".

STATE OF OHIO
DAVID HOLMAN DEITZ
E-65326
REGISTERED PROFESSIONAL ENGINEER
9.7.2004

Palmer ENGINEERING
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146 N. BREIEL BLVD.
MIDDLETOWN, OH 45042
WINCHESTER ■ NASHVILLE ■ LOUISVILLE ■ MIDDLETOWN ■ HURRICANE

REVIEWED JGG | DATE 03-31-04
STRUCTURE FILE NUMBER 7709013(L) 7709021(R)
DRAWN JAR | REVISED
DESIGNED LMS | CHECKED DHD

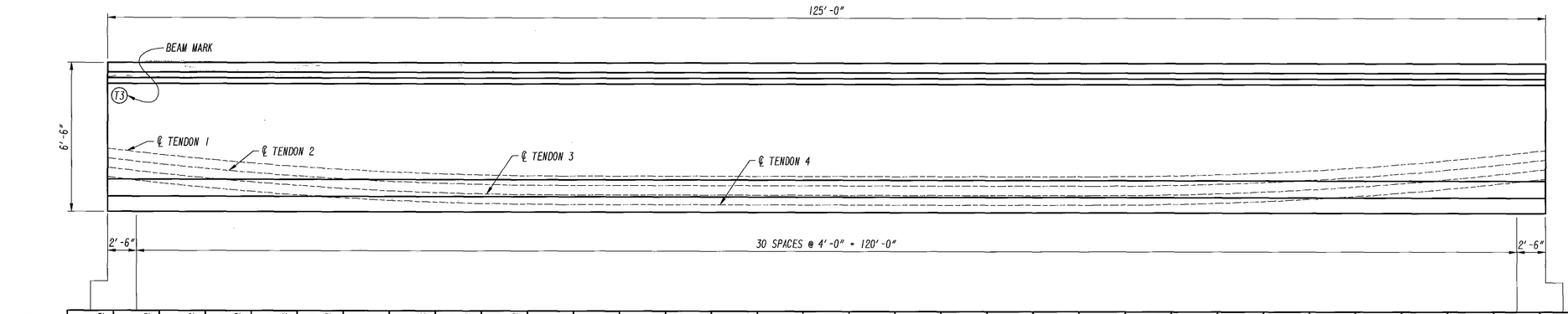
UNIT 2 - TENDON PROFILES - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

65/123

502/612

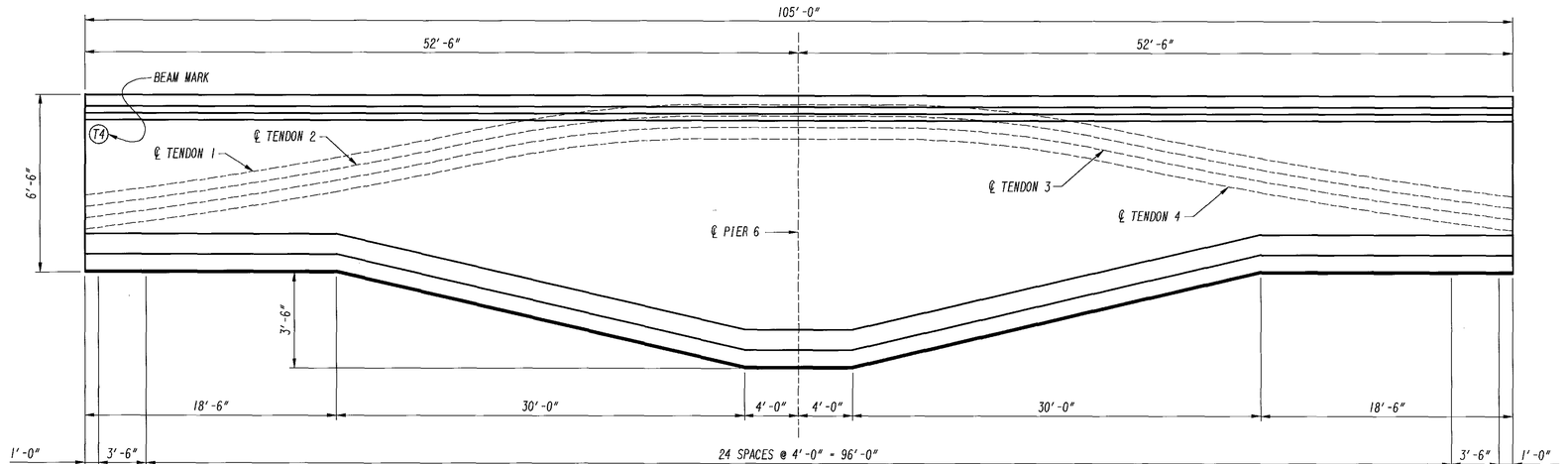
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TENDON 1	-42 5/8	-44 5/8	-47 9/16	-50 3/16	-52 1/2	-54 7/16	-56	-57 1/4	-58 3/16	-58 3/4	-59	-59	-59	-59	-59	-59	-59	-59	-59	-59	-59	-59	-59	-58 3/4	-58 3/16	-57 1/4	-56	-54 7/16	-52 1/2	-50 3/16	-47 9/16	-44 5/8	-42 5/8
TENDON 2	-47 5/8	-49 5/8	-52 9/16	-55 3/16	-57 1/2	-59 7/16	-61	-62 1/4	-63 3/16	-63 3/4	-64	-64	-64	-64	-64	-64	-64	-64	-64	-64	-64	-64	-64	-63 3/4	-63 3/16	-62 1/4	-61	-59 7/16	-57 1/2	-55 3/16	-52 9/16	-49 5/8	-47 5/8
TENDON 3	-52 5/8	-54 5/8	-57 9/16	-60 3/16	-62 1/2	-64 7/16	-66	-67 1/4	-68 3/16	-68 3/4	-69	-69	-69	-69	-69	-69	-69	-69	-69	-69	-69	-69	-69	-68 3/4	-68 3/16	-67 1/4	-66	-64 7/16	-62 1/2	-60 3/16	-57 9/16	-54 5/8	-52 5/8
TENDON 4	-57 5/8	-59 5/8	-62 9/16	-65 3/16	-67 1/2	-69 7/16	-71	-72 1/4	-73 3/16	-73 3/4	-74	-74	-74	-74	-74	-74	-74	-74	-74	-74	-74	-74	-74	-73 3/4	-73 3/16	-72 1/4	-71	-69 7/16	-67 1/2	-65 3/16	-62 9/16	-59 5/8	-57 5/8

DROP-IN SEGMENT TYPE 3

TENDON PROFILE - ALL DIMENSIONS ARE GIVEN IN INCHES FROM TOP OF BEAM TO THE ℄ OF THE POST-TENSIONING DUCT.



TENDON 1	-41 15/16	-40 5/16	-37 3/4	-33 3/4	-29 7/16	-24 5/16	-19 7/8	-15 1/4	-11 7/16	-8 3/4	-6 1/8	-4 11/16	-4 1/16	-4	-4	-4	-4 1/16	-4 11/16	-6 1/8	-8 3/4	-11 7/16	-15 1/4	-19 7/8	-24 5/16	-29 7/16	-33 3/4	-37 3/4	-40 5/16	-41 15/16
TENDON 2	-46 15/16	-45 5/16	-42 3/4	-38 3/4	-34 7/16	-29 5/16	-24 7/8	-20 1/4	-16 7/16	-13 3/4	-11 1/8	-9 11/16	-9 1/16	-9	-9	-9	-9 1/16	-9 11/16	-11 1/8	-13 3/4	-16 7/16	-20 1/4	-24 7/8	-29 5/16	-34 7/16	-38 3/4	-42 3/4	-45 5/16	-46 15/16
TENDON 3	-51 15/16	-50 5/16	-47 3/4	-43 3/4	-39 7/16	-34 5/16	-29 7/8	-25 1/4	-21 7/16	-18 7/8	-16 1/8	-14 11/16	-14 1/16	-14	-14	-14	-14 1/16	-14 11/16	-16 1/8	-18 3/4	-21 7/16	-25 1/4	-29 7/8	-34 5/16	-39 7/16	-43 3/4	-47 3/4	-50 5/16	-51 15/16
TENDON 4	-56 15/16	-55 5/16	-52 3/4	-48 3/4	-44 7/16	-39 5/16	-34 7/8	-30 1/4	-26 7/16	-23 7/8	-21 1/8	-19 11/16	-19 1/16	-19	-19	-19	-19 1/16	-19 11/16	-21 1/8	-23 3/4	-26 7/16	-30 1/4	-34 7/8	-39 5/16	-44 7/16	-48 3/4	-52 3/4	-55 5/16	-56 15/16

PIER SEGMENT TYPE 4

TENDON PROFILE - ALL DIMENSIONS ARE GIVEN IN INCHES FROM TOP OF BEAM TO THE ℄ OF THE POST-TENSIONING DUCT.

STATE OF OHIO
DAVID
HOLLIAN
DEITZ
E-65326
REGISTERED
PROFESSIONAL ENGINEER
9.7.2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED LMS | DRAWN JAR | REVIEWED JGG | DATE 03-31-04
CHECKED DHD | REVISED | STRUCTURE FILE NUMBER 27809131(L) 27809211(R)

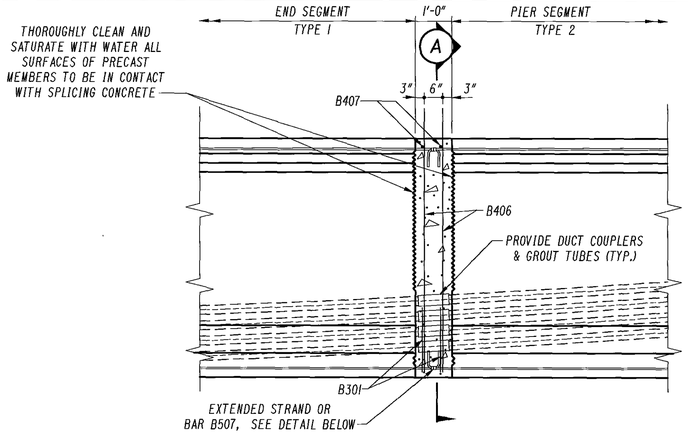
UNIT 2 - TENDON PROFILES - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

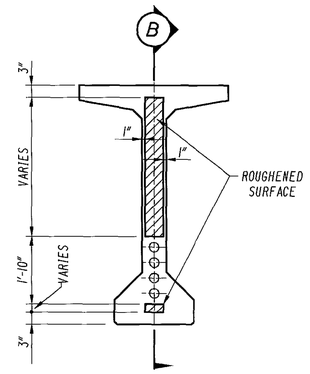
66 / 123

503 / 612

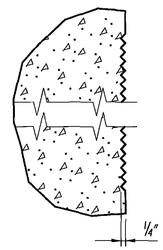
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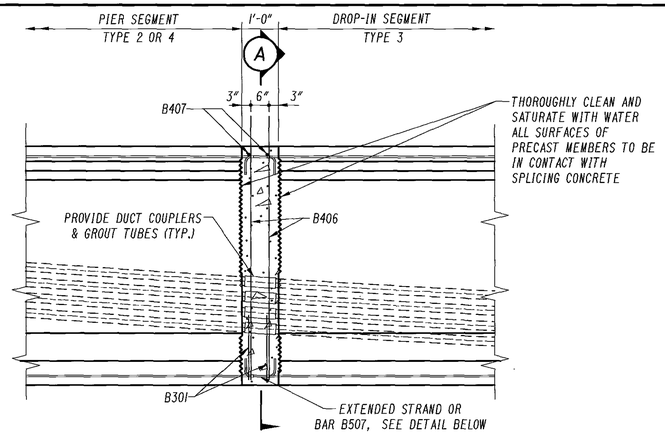
CAST-IN-PLACE CLOSURE POUR
END SEGMENT TO PIER SEGMENT



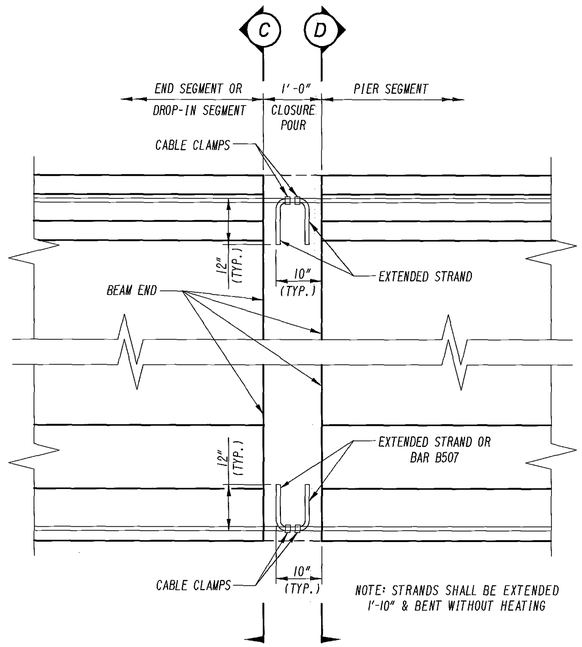
SECTION A-A



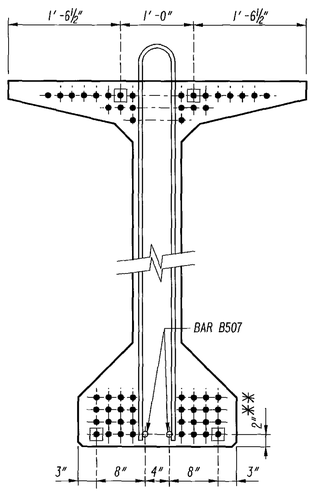
SECTION B-B



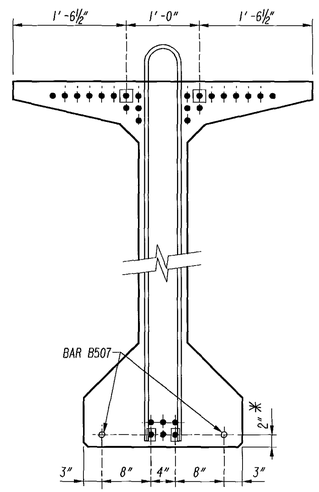
CAST-IN-PLACE CLOSURE POUR
PIER SEGMENT TO DROP-IN SEGMENT



STRAND EXTENSION
DETAIL @ CLOSURE POURS
(POST TENSIONING DUCTS & VERTICAL MILD REINF. NOT SHOWN FOR CLARITY)



SECTION C-C
(END SEGMENT OR DROP-IN SEGMENT)



SECTION D-D
(PIER SEGMENT)

** 3" FOR EXTENDED STRANDS IN END SEGMENTS

* 3" FOR BAR B507 FOR PIER SEGMENTS AT ENDS ADJACENT TO END SEGMENTS

NOTES :

- CLOSURE POUR CONCRETE : f'c = 6000 psi, 5500 psi PRIOR TO APPLICATION OF POST-TENSIONING
- TOP OF CLOSURE POUR SHALL BE INTENTIONALLY ROUGHENED IN ACCORDANCE WITH PSID-1-99.



PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
DHD	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BNR		770901(1) 770902(1)	

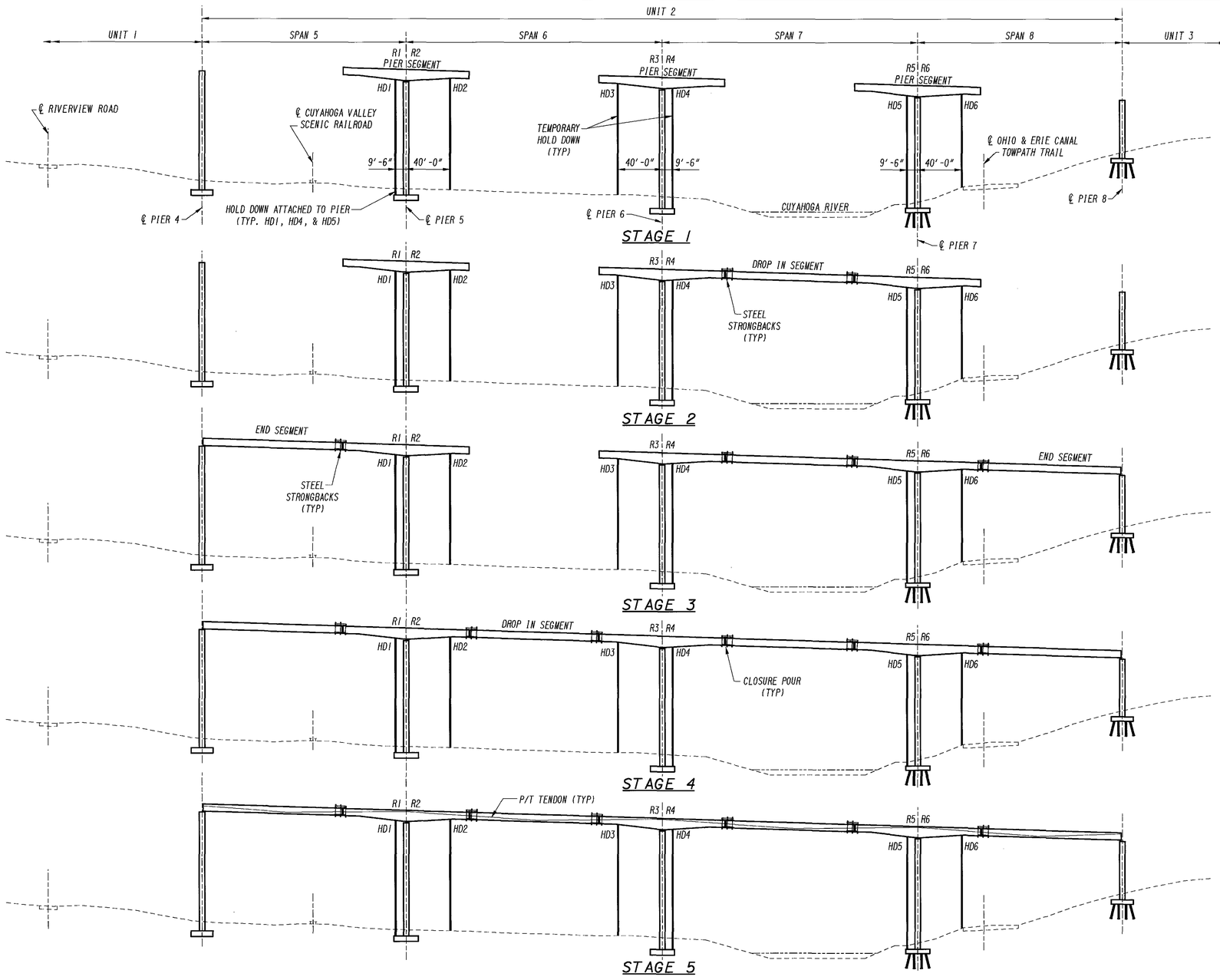
UNIT 2 - CLOSURE POUR DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

67 / 123

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SUGGESTED ERECTION SEQUENCE

(LEFT BRIDGE SHOWN, RIGHT BRIDGE SIMILAR)

STAGE 1:
1. CONSTRUCT PIERS AND ERECT TEMPORARY SUPPORTS AT PIERS 5 THROUGH 7.
2. DO NOT ERECT THE PRE-TENSIONED BEAMS OF UNITS 1 AND 3 IN SPANS ADJACENT TO UNIT 2 UNTIL POST-TENSIONING AND GROUTING OPERATIONS ARE COMPLETE. THE PRESENCE OF THESE BEAMS WILL INTERFERE WITH POST TENSIONING OPERATIONS AT PIERS 4 AND 8.
3. ERECT PIER SEGMENTS ON TEMPORARY SUPPORTS. SECURE ERECTED SEGMENTS TO THE HOLD DOWNS AND INSTALL STEEL DIAPHRAGMS BETWEEN BEAM LINES AS SEGMENTS ARE ERECTED.

STAGE 2:
1. ATTACH STEEL STRONGBACKS TO THE SPAN 7 DROP-IN SEGMENT.
2. ERECT THE SPAN 7 DROP-IN SEGMENT AND ATTACH STRONGBACKS TO PIER SEGMENTS. INSTALL STEEL DIAPHRAGMS BETWEEN BEAM LINES AS SEGMENTS ARE ERECTED.

STAGE 3:
1. ATTACH STEEL STRONGBACKS TO END SEGMENTS.
2. ERECT END SEGMENTS AND ATTACH STRONGBACKS TO PIER SEGMENTS. INSTALL STEEL DIAPHRAGMS BETWEEN BEAM LINES AS SEGMENTS ARE ERECTED.

STAGE 4:
1. ATTACH STEEL STRONGBACKS TO THE SPAN 6 DROP-IN SEGMENT.
2. ERECT THE SPAN 6 DROP-IN SEGMENT AND ATTACH STRONGBACKS TO PIER SEGMENTS. INSTALL STEEL DIAPHRAGMS BETWEEN BEAM LINES AS SEGMENTS ARE ERECTED.
3. CAST CLOSURE POURS BETWEEN ALL SEGMENTS

STAGE 5:
1. STAGE 1 POST-TENSIONING: AFTER ALL CLOSURE POURS HAVE REACHED THEIR DESIGN STRENGTH, APPLY POST-TENSIONING TO P/T TENDONS 1 & 2. (SEE TENDON PROFILE SHEETS FOR ADDITIONAL DETAILS)
2. REMOVE TEMPORARY HOLD DOWNS.
3. STAGE 2 POST-TENSIONING: APPLY POST-TENSIONING TO TENDONS 3 & 4.
4. GROUT POST-TENSIONING DUCTS. DO NOT ADD OR REMOVE LOADS UNTIL THE GROUT HAS REACHED ITS MINIMUM DESIGN STRENGTH AS PROVIDED IN THE SPECIAL PROVISIONS.

STAGE 6: (NOT SHOWN)
1. AFTER GROUT HAS REACHED ITS DESIGN STRENGTH, REMOVE TEMPORARY SUPPORTS, STRONGBACKS, AND ANY TEMPORARY BRACING REQUIRED BY THE CONTRACTOR (SEE NOTE 3).
2. REMAINING PRESTRESSED I-BEAMS IN UNITS 1 & 3 MAY BE ERECTED AFTER GROUTING OPERATIONS FOR UNIT 2 HAVE BEEN COMPLETED.
3. FORM AND PLACE CONCRETE DECK AND PIER DIAPHRAGMS. (SEE NOTE 5)
4. FORM AND PLACE PARAPETS.

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY SUPPORTS, ANY TEMPORARY BRACING, TEMPORARY HOLD DOWNS, AND STRONGBACKS. THE DESIGN SHALL BE PREPARED AND SEALED BY AN ENGINEER REGISTERED IN THE STATE OF OHIO.
2. THE CONTRACTOR SHALL SUBMIT A DETAILED ERECTION PROCEDURE TO THE ENGINEER FOR APPROVAL AT LEAST 30 DAYS PRIOR TO SETTING BEAMS.THIS PROCEDURE SHOULD INCLUDE A COMPLETE LIST OF ANTICIPATED CONSTRUCTION LOADS DURING EACH STEP OF ERECTION AND DETAILS OF TEMPORARY SUPPORTS, TEMPORARY HOLDDOWNS, STRONGBACKS, AND ANY TEMPORARY BRACING.
3. THE CONTRACTOR'S SELECTED ERECTION PROCEDURE SHALL PROVIDE FOR THE RELEASE OF HORIZONTAL FORCES TRANSFERED TO PIERS 4 THRU 8 DUE TO POST-TENSIONING AFTER COMPLETION OF THE GROUTING OPERATIONS.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING ERECTION.
5. THE BEAM DESIGN HAS BEEN CHECKED FOR A CONSTRUCTION LOAD OF 10 PSF APPLIED AFTER THE POST-TENSIONING DUCT GROUT HAS REACHED ITS MINIMUM DESIGN STRENGTH AND REMOVED PRIOR TO OPENING THE BRIDGE TO TRAFFIC.
6. THE GIRDER SEGMENTS SHALL BE A MINIMUM OF 28 DAYS OLD PRIOR TO ERECTION.
7. SEE SHEET 69/123 FOR CONCEPTUAL STRONGBACK AND TEMPORARY SUPPORT INFORMATION.
8. SEE SHEET 70/123 FOR PIER (R1-R6) AND HOLD DOWN (HD1-HD6) REACTIONS AT EACH STAGE OF CONSTRUCTION.

NOTE:
THE ERECTION SEQUENCE SHOWN IS ONLY A CONCEPTUAL SEQUENCE AND IS NOT THE REQUIRED METHOD OF CONSTRUCTION. ANY DEVIATION FROM THIS SEQUENCE SHALL REQUIRE ANALYSIS AND/OR RE-DESIGN OF THE PIERS AND BEAMS. THE ANALYSIS AND/OR RE-DESIGN SHALL BE PREPARED & SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF OHIO AND SHALL BE PERFORMED AT THE CONTRACTOR'S EXPENSE.

STATE OF OHIO
DAVID HOLMAN DEITZ
E-65326
REGISTERED
PROFESSIONAL ENGINEER
9.7.2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
ENGINEERS • CHARLESTON, NASHVILLE, LOUISVILLE
CINCINNATI, DAYTON, WASHINGTON

DESIGNED	DRAWN	REVIEWED	DATE
DHD	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BNR		7709021(6) 7709021(A)	

UNIT 2 ERECTION SEQUENCE - CONCRETE

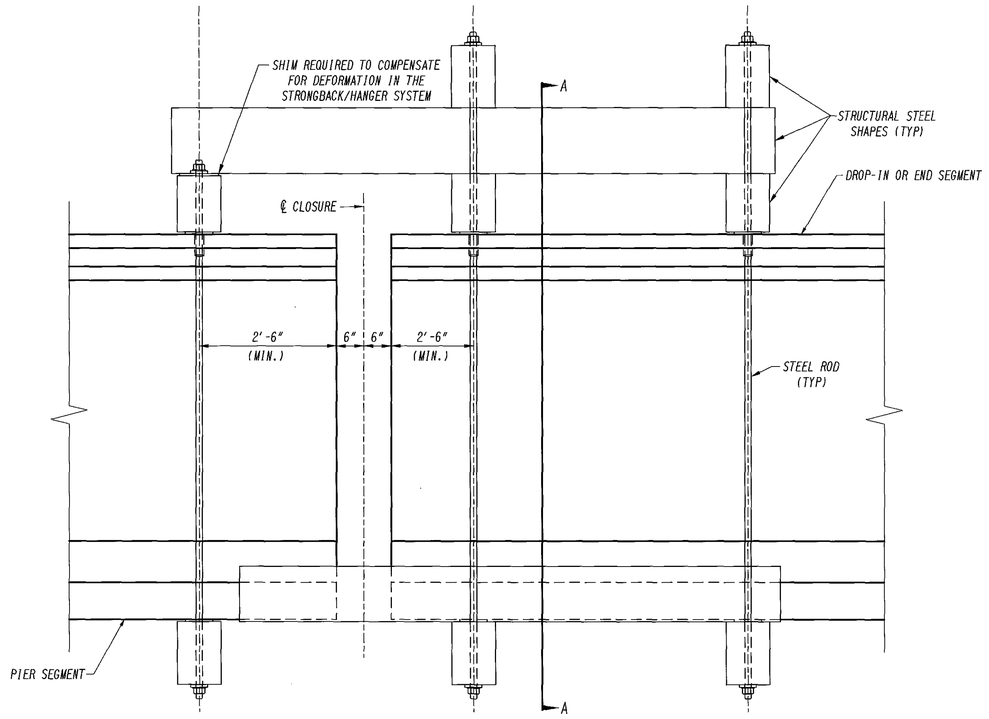
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, CUYAHOGA RIVER
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

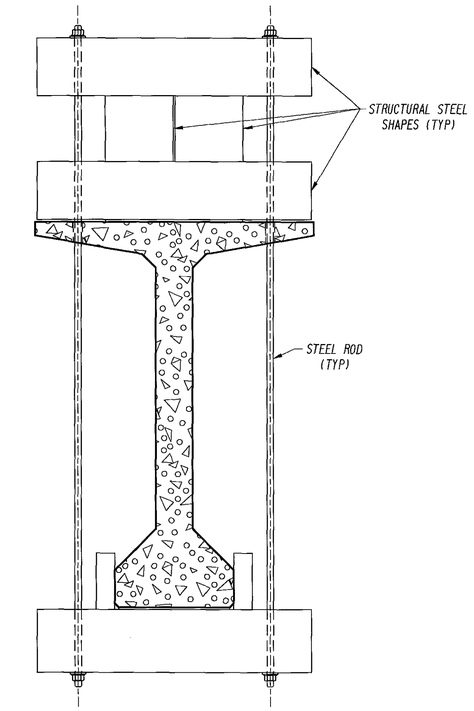
68/123

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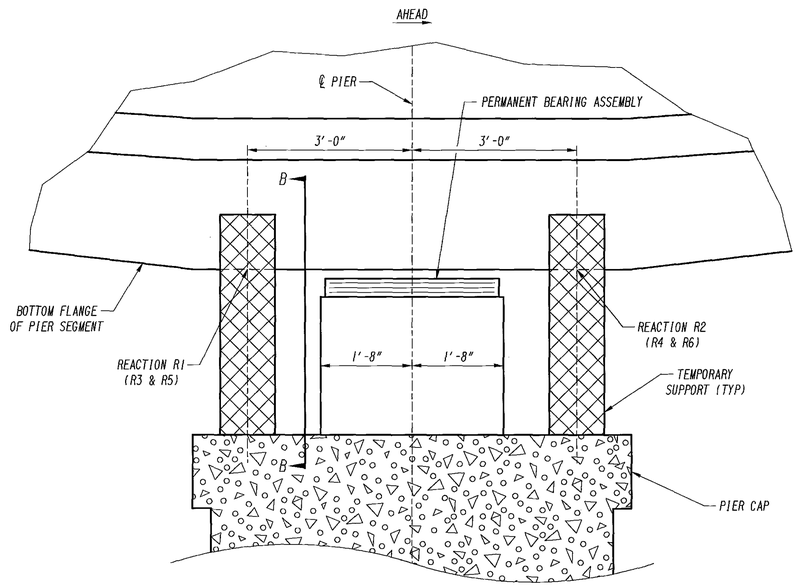
STRONGBACK ELEVATION



SECTION "A"

NOTES:

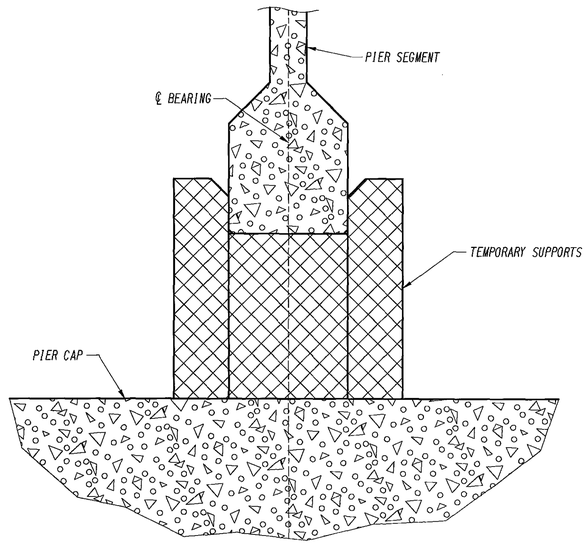
1. SEE SHEET 68/123 FOR ERECTION SEQUENCE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF TEMPORARY SUPPORTS AND STRONGBACKS. STRONGBACK AND TEMPORARY SUPPORT INFORMATION SHOWN IS A CONCEPTUAL DETAIL ONLY.
3. TEMPORARY SUPPORT DETAILS SHOWN REFLECT ASSUMED DIMENSIONS USED TO DETERMINE THE REACTIONS R1-R6 AND HOLD DOWN FORCES HD1-HD6. SEE SHEET 70/123 FOR REACTION INFORMATION.



TEMPORARY SUPPORT @ INTERIOR PIER

(PIER 5 SHOWN, PIERS 6 & 7 SIMILAR)

NOTE: BEAMS SHALL NOT BE SUPPORTED ON THE PERMANENT BEARING ASSEMBLIES AT PIERS 5, 6, & 7 UNTIL AFTER COMPLETION OF GIRDER POST-TENSIONING OPERATIONS.



SECTION "B"

NOTE: TEMPORARY SUPPORTS FOR PIERS 5,6 & 7 OF UNIT 2 SHALL BRACE GIRDER SEGMENTS FOR WIND LOADS IN THE HORIZONTAL PLANE DURING ERECTION.

STATE OF OHIO DAVID HOLMAN DEITZ E-65328 REGISTERED PROFESSIONAL ENGINEER

David Holman Deitz 9.7.2004

Palmer ENGINEERING

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED DHD | DRAWN JAR | REVIEWED JGG | DATE 03-31-04
CHECKED BWR | REVISED | STRUCTURE FILE NUMBER 770903(L) 770902(A)

UNIT 2 ERECTION DETAILS - 1 - CONCRETE

BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

69/123

506/612

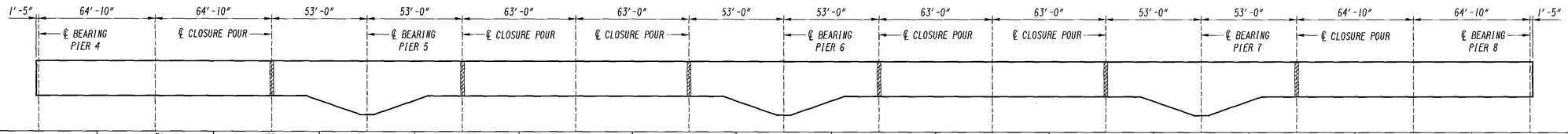
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SERVICE LOAD REACTIONS DURING ERECTION (KIPS)

		R1	R2	R3	R4	R5	R6	HD1	HD2	HD3	HD4	HD5	HD6
Stage 1	Dead Load + Impact	-156.2	-156.2	-156.2	-156.2	-156.2	-156.2	0.0	0.0	0.0	0.0	0.0	0.0
	Dead Load	-78.1	-78.1	-78.1	-78.1	-78.1	-78.1	0.0	0.0	0.0	0.0	0.0	0.0
Stage 2	Dead Load + Impact	-78.1	-78.1	0.0	-519.0	-519.0	0.0	0.0	0.0	189.1	0.0	0.0	189.1
	Dead Load	-78.1	-78.1	0.0	-333.3	-333.3	0.0	0.0	0.0	89.7	0.0	0.0	89.7
Stage 3	Dead Load + Impact	-535.3	0.0	0.0	-333.3	0.0	-717.0	0.0	197.8	90.6	0.0	292.1	0.0
	Dead Load	-341.5	0.0	0.0	-333.3	-134.2	-200.6	0.0	94.1	90.6	0.0	0.0	0.0
Stage 4	Dead Load + Impact	0.0	-666.5	-679.6	0.0	-134.2	-200.6	245.5	0.0	0.0	262.3	0.0	0.0
	Dead Load	-200.6	-134.2	-165.5	-165.5	-134.2	-200.6	0.0	0.0	0.0	0.0	0.0	0.0
Stage 5 Prior to P/T	Dead Load + Impact	-200.6	-134.2	-165.5	-165.5	-134.2	-200.6	0.0	0.0	0.0	0.0	0.0	0.0
	Dead Load	-200.6	-134.2	-165.5	-165.5	-134.2	-200.6	0.0	0.0	0.0	0.0	0.0	0.0

NOTES:

1. P/T = POST TENSIONING OF BEAM TENDONS.
2. REACTIONS ARE SERVICE LOAD REACTIONS PER BEAM LINE.
3. DEAD LOAD REACTIONS INCLUDE A 10 KIP ALLOWANCE FOR THE WEIGHT OF EACH STRONGBACK.
4. DEAD LOAD + IMPACT REACTIONS REPRESENT THE COMBINED FORCES OF DEAD LOAD AND THE DYNAMIC FORCE DUE TO ACCIDENTAL RELEASE OF A SEGMENT OR OTHER SUDDEN IMPACT. AN IMPACT FORCE EQUAL TO 100% OF THE STRONGBACK PLUS SEGMENT WEIGHT IS ASSUMED. THE IMPACT REACTION IS APPLIED INSTANTANEOUSLY AND IS NOT PRESENT ONCE THE SEGMENT IS IN PLACE ON THE STRUCTURE.
5. OTHER THAN THE 10 KIP ALLOWANCE FOR EACH STRONGBACK, NO CONSTRUCTION LOADING IS INCLUDED IN THE REACTIONS PROVIDED. WEIGHT OF THE TEMPORARY HOLD DOWNS IS NOT INCLUDED.
6. NEGATIVE REACTIONS GIVEN IN THE TABLE ARE ORIENTED DOWNWARD (COMPRESSION) POSITIVE REACTIONS ARE UPWARD (TENSION).
7. THE ERECTION LOADS PROVIDED ARE BASED ON THE SUPPORT ARRANGEMENT SHOWN ON SHEETS 68/123 & 69/123 AND THE ASSUMPTIONS PROVIDED BELOW. ANY CHANGE IN THE SUPPORT ARRANGEMENT OR IN THE ASSUMPTIONS LISTED WILL INVALIDATE THESE LOADS.
8. THE FOLLOWING ASSUMPTIONS WERE MADE IN THE ANALYSIS PERFORMED TO COMPUTE THE REACTIONS:
   A) HOLD DOWNS, HD1-HD6, ARE STEEL TIE RODS AND CAN ONLY TAKE TENSION LOADS. THE TIE RODS SHOULD BE TAUT AND ARE NOT PRE-TENSIONED WITH HYDRAULIC EQUIPMENT.
   B) PIER REACTIONS, R1-R6, CANNOT RESIST TENSION LOADS, THAT IS; THE SEGMENTS ARE NOT TIED DOWN AT THE PIERS.
9. FORCES IN THE TEMPORARY HOLD DOWNS AND REACTIONS ON TEMPORARY SUPPORTS WILL CHANGE AS A RESULT OF BEAM POST-TENSIONING. THE FORCES AND REACTIONS WILL DEPEND ON THE SPECIFIC TEMPORARY HOLD DOWN AND TEMPORARY SUPPORT SYSTEM SELECTED BY THE CONTRACTOR. CALCULATIONS FOR ESTIMATES OF THESE FORCES AND REACTIONS AS WELL AS CALCULATIONS SHOWING THAT THE SELECTED SYSTEM CAN SUPPORT THEM SHALL BE PREPARED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF OHIO.
10. SEE SHEET 68/123 FOR THE SUGGESTED ERECTION SEQUENCE.
11. SEE SHEET 69/123 FOR THE PIER TEMPORARY SUPPORT DETAILS.

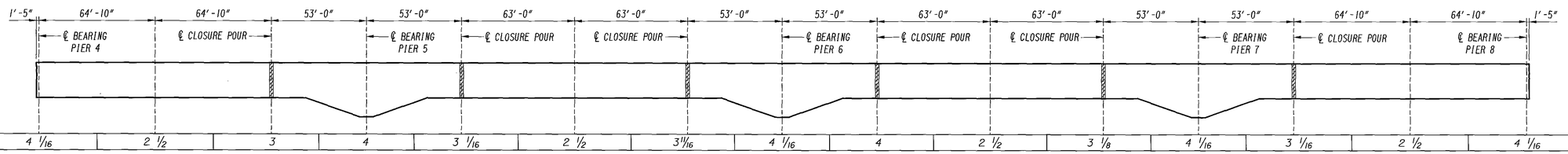


(1)	0	5 3/4	3 15/16	0	1 5/16	4 1/16	2	0	2 1/8	4 5/16	1 1/2	0	3 15/16	5 3/4	0
(2)	0	-3 11/16	-2	0	-1 3/16	-3 1/2	-1 11/16	0	-1 1/4	-3	-1 1/16	0	-1 7/8	-3 1/2	0
(3)	0	- 7/16	- 1/16	0	-13/16	-1 7/16	- 9/16	0	-11/16	-1 9/16	-7/8	0	- 1/8	- 1/2	0
(4)	0	0	1/16	0	- 1/4	- 5/16	- 1/8	0	- 1/8	- 5/16	- 3/16	0	1/16	0	0
(5)	0	1 11/16	1 15/16	0	-15/16	-1 1/4	- 3/8	0	1/16	- 9/16	-5/8	0	1 15/16	1 11/16	0

(1) DEFLECTION PRIOR TO DECK POURS (DUE TO FIRST & SECOND STAGE POST-TENSIONING)
(2) DEFLECTION DUE TO DECK POURS
(3) DEFLECTION DUE TO PARAPET WEIGHT
(4) DEFLECTION DUE TO FUTURE CREEP & SHRINKAGE (AFTER COMPLETION OF STRUCTURE)
(5) FINAL DEFLECTIONS = 1+2+3+4

ANTICIPATED CAMBER (INCH)

(- IS DOWNWARD; + IS UPWARD)



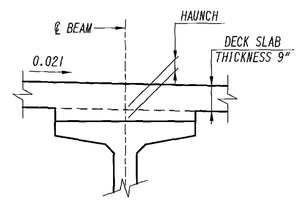
4 1/16	2 1/2	3	4	3 1/16	2 1/2	3 11/16	4 1/16	4	2 1/2	3 1/8	4 1/16	3 1/16	2 1/2	4 1/16

ANTICIPATED HAUNCH (INCH)

GENERAL NOTES:

1. ITEMS 1 THROUGH 5 IN THE ANTICIPATED CAMBER DIAGRAM ARE PROVIDED TO HELP THE CONTRACTOR AND ENGINEER TO TROUBLESHOOT ANY DEFLECTIONS PROBLEMS THAT MAY OCCUR DURING CONSTRUCTION.
2. ANY ERECTION ELEVATIONS REQUIRED TO SUCCESSFULLY CONSTRUCT THE BRIDGE SHALL BE THE CONTRACTOR'S RESPONSIBILITY. ERECTION ELEVATIONS SHOULD BE PREPARED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF OHIO. ESTIMATED ERECTION ELEVATIONS SHALL ACCOUNT FOR THE DEFLECTIONS OF THE CONTRACTOR'S ACTUAL SHORING SYSTEM, ANY CONSTRUCTION LOADS PROPOSED BY THE CONTRACTOR, AND ELASTIC DEFLECTIONS OF THE PIERS DURING ERECTION.
3. BEARING ELEVATIONS PROVIDED IN THE PLANS WERE SELECTED BASED ON THE DESIGN ENGINEER'S ESTIMATE OF CAMBERS. ADJUSTMENT OF THE HAUNCH THICKNESS AND PROFILE GRADE MAY BE REQUIRED IN THE EVENT THAT THE ACTUAL FIELD MEASURED CAMBERS DIFFER SIGNIFICANTLY FROM THOSE ANTICIPATED AT THE TIME OF DESIGN. ADJUSTMENT TO THE CONCRETE QUANTITY SHALL NOT BE MADE DUE TO VARIATIONS BETWEEN THE DESIGN ENGINEER'S ESTIMATE OF HAUNCH THICKNESS AND THE ACTUAL VALUE. IN addition, NO ADJUSTMENT IN THE CONCRETE QUANTITY SHALL BE MADE AS A RESULT OF REQUIRED CHANGE IN PROFILE. THE DESIGN ENGINEER'S ESTIMATE OF THE CONCRETE REQUIRED FOR THE UNIT 2 HAUNCH, BASED ON THE ANTICIPATED HAUNCH, IS PROVIDED IN THE TABLE TO THE RIGHT.

BREAKDOWN OF CONCRETE QUANTITY-UNIT 2 ITEM #894 (Cu. Yd.)		
	LEFT BRIDGE	RIGHT BRIDGE
HAUNCH	205	205
DECK	1273	1273



ANTICIPATED HAUNCH DETAIL

STATE OF OHIO
DAVID HOLMAN DEITZ
E-65328
REGISTERED
PROFESSIONAL ENGINEER
9.7.2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
ENGINEERING • SURVEYING
CINCINNATI • DAYTON • LEXINGTON • MIDDLETOWN • PARKERSBURG • WILLIAMSBURG

DESIGNED	DRAWN	REVIEWED	DATE
DHD	JAP	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MLV		7709013(L) 7709021(R)	

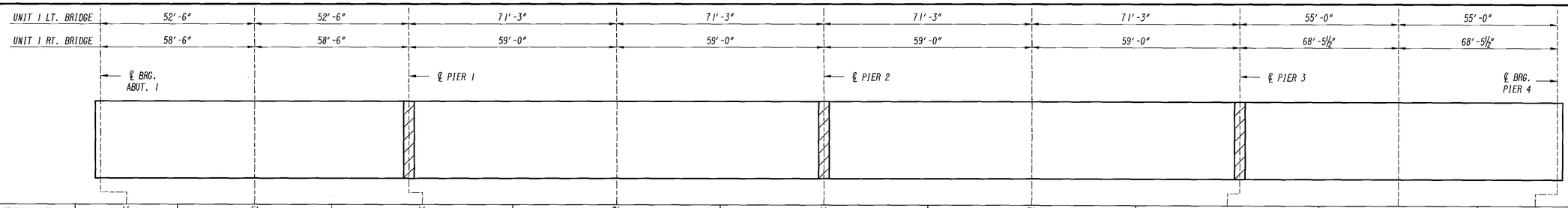
UNIT 2 - ERECTION DETAILS - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

70/123

507/612

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HAUNCH THICKNESS	2½"	2⅝"	2½"	2⅞"	2½"	2⅞"	2½"	2½"	2½"
CAMBER @ RELEASE	0	½"	0	1⅜"	0	1⅜"	0	⅜"	0
CAMBER @ ERECTION	0	¾"	0	2½"	0	2½"	0	¾"	0
LONG TERM CAMBER	0	1⅛"	0	3⅝"	0	3⅝"	0	1⅛"	0

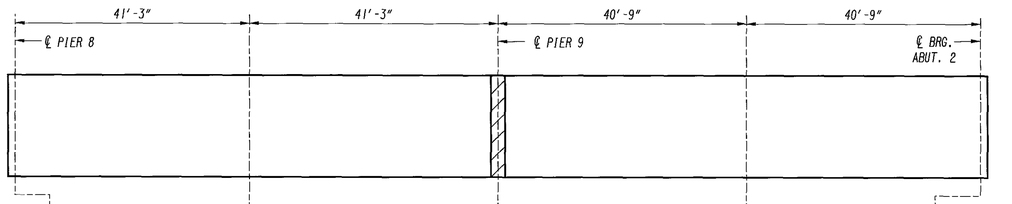
UNIT 1 - LEFT BRIDGE ANTICIPATED HAUNCH & CAMBER (INCH)

(- IS DOWNWARD; + IS UPWARD) (SLAB THICKNESS = 8½")

HAUNCH THICKNESS	2½"	2½"	2½"	2½"	2½"	2¾"	3"	2¼"	3"
CAMBER @ RELEASE	0	½"	0	⅝"	0	⅝"	0	1⅝"	0
CAMBER @ ERECTION	0	1"	0	1"	0	1"	0	2⅛"	0
LONG TERM CAMBER	0	1½"	0	1½"	0	1½"	0	4⅛"	0

UNIT 1 - RIGHT BRIDGE ANTICIPATED HAUNCH & CAMBER (INCH)

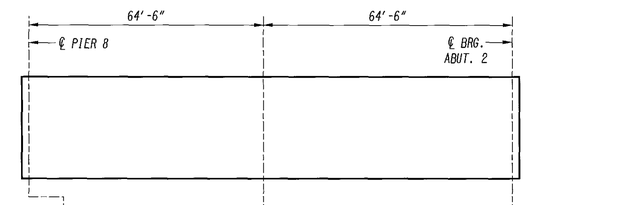
(- IS DOWNWARD; + IS UPWARD) (SLAB THICKNESS = 8½")



HAUNCH THICKNESS	2½"	2⅞"	2½"	2½"	2½"
CAMBER @ RELEASE	0	⅜"	0	⅜"	0
CAMBER @ ERECTION	0	⅝"	0	⅝"	0
LONG TERM CAMBER	0	⅞"	0	⅞"	0

UNIT 3 - LEFT BRIDGE ANTICIPATED HAUNCH & CAMBER (INCH)

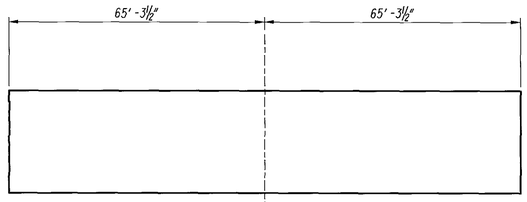
(- IS DOWNWARD; + IS UPWARD) (SLAB THICKNESS = 9")



HAUNCH THICKNESS	3½"	2¼"	3½"
CAMBER @ RELEASE	0	1½"	0
CAMBER @ ERECTION	0	2¾"	0
LONG TERM CAMBER	0	3⅞"	0

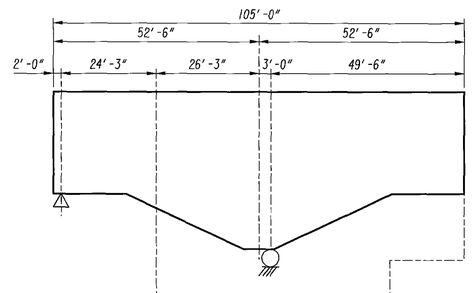
UNIT 3 - RIGHT BRIDGE ANTICIPATED HAUNCH & CAMBER (INCH)

(- IS DOWNWARD; + IS UPWARD) (SLAB THICKNESS = 8½")



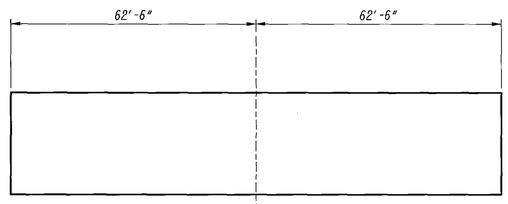
CAMBER @ RELEASE	⅜"
CAMBER @ ERECTION	½"

TYPE 1 SEGMENT



CAMBER @ RELEASE	-⅜"	1⅞"
CAMBER @ ERECTION	-½"	2⅞"

TYPE 2 & 4 SEGMENT



CAMBER @ RELEASE	1"
CAMBER @ ERECTION	1⅝"

TYPE 3 SEGMENT

UNIT 2 - ANTICIPATED CAMBER (INCH)

(- IS DOWNWARD; + IS UPWARD)

NOTE :
ERECTION CAMBER FOR UNIT 2, TYPE 2 & 4 SEGMENTS, IS GIVEN BEFORE PIECE IS IN PLACE ON PIER CAP & SUPPORTED AS DETAILED. SEE SHEET 70/123 FOR ADDITIONAL CAMBER AND HAUNCH INFORMATION.

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED PROFESSIONAL ENGINEER
9/1/2004

NOTE :
THE PRECAST CONCRETE FABRICATOR SHALL FURNISH CAMBER MEASUREMENTS FOR ALL BEAMS AND SEGMENTS TO THE ENGINEER. MEASUREMENTS SHALL BE TAKEN, WITH THE PIECES SUPPORTED AS ILLUSTRATED ON THIS SHEET, JUST PRIOR TO SHIPPING. INFORMATION COLLECTED SHALL ALSO INCLUDE THE AGE OF THE SPECIFIC PIECE, IN DAYS, AT THE TIME THE MEASUREMENTS ARE TAKEN.

Palmer ENGINEERING
PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
KENTUCKY OFFICE: LOUISVILLE
PENNSYLVANIA OFFICE: PITTSBURGH

DESIGNED	DRAWN	REVIEWED	DATE
DHD	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MLJ		7709031(L) 7709021(A)	

UNITS 1,2 & 3 - ERECTION DETAILS - CONCRETE

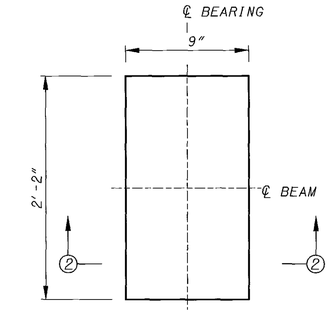
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

71/123

508/612

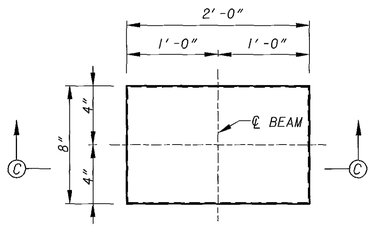
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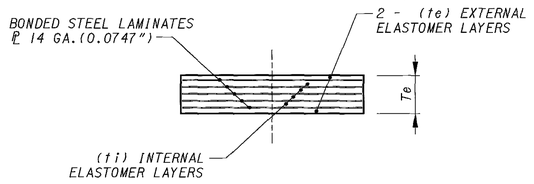
LOAD PLATE PLAN



SECTION ②—②



BEARING PAD PLAN



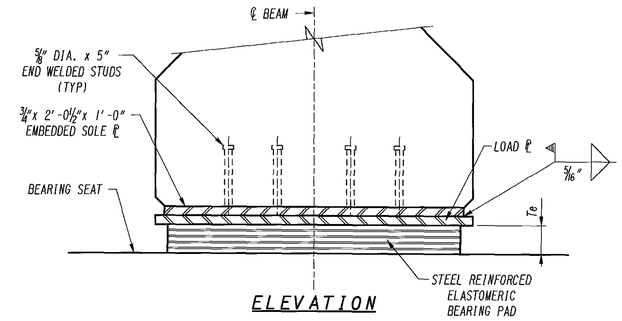
BEARING PAD DETAIL C-C

(FOR EXPANSION & FIXED BEARINGS)

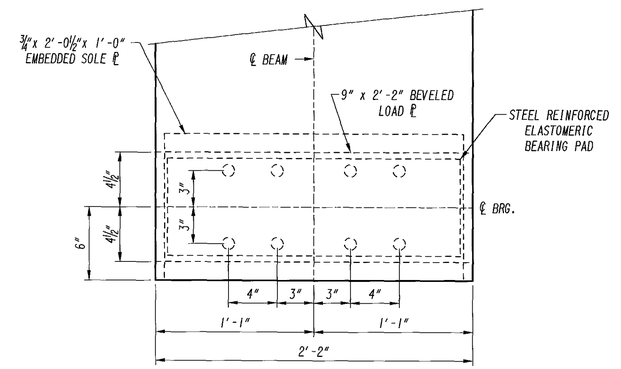
NOTES:

1. CONTROL WELDING SO THAT THE PLATE TEMPERATURE AT THE ELASTOMER BONDED SURFACE DOES NOT EXCEED 300°F AS DETERMINED BY USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.
2. THE ELASTOMER SHALL HAVE A HARDNESS OF 60 DUROMETER. THE BEARINGS WERE DESIGNED UNDER DIVISION I, SECTION 14.6.5 (METHOD B) OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
3. BASIS OF PAYMENT: THE UNIT BID PRICE SHALL INCLUDE ALL MATERIALS, LABOR, AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS. PAYMENT WILL BE AT THE CONTRACT PRICE FOR ITEM 516, ELASTOMERIC BEARINGS.
4. ALL PLATES SHALL BE ASTM A709 GRADE 50 AND SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 711.02.
5. BEVELED LOAD PLATES SHALL BE VULCANIZED TO THE ELASTOMER DURING THE MOLDING PROCESS.
6. ANCHOR BOLTS AT THE FIXED PIERS OF UNIT 2 SHALL BE 2¼″ DIAMETER ASTM F1554, GRADE 105. THE BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 711.02. BOLTS SHALL BE EMBEDDED A MINIMUM OF 2′-4″.
7. SEE STANDARD DRAWING PSID-1-99 FOR CHAMFER DETAILS AT SOLE PLATES.

BEARING LOCATION	BEARING TYPE	NO. REQ'D.	DEAD LOAD (KIPS)	LIVE LOAD (NO IMPACT) (KIPS)	TOTAL LOAD (KIPS)	ti	NO. OF ti	te (2 EA.)	NO. OF INTERNAL LAMINATES (14 GAGE)	Te
RT. REAR ABUT.	EXPANSION	7	167	70	237	0.375″	4	0.25″	5	2.374″
RT. PIER #1	FIXED	14	186	78	264	0.375″	2	0.25″	3	1.474″
RT. PIER #2	FIXED	14	175	74	249	0.375″	2	0.25″	3	1.474″
RT. PIER #3	FIXED	14	212	84	296	0.375″	2	0.25″	3	1.474″
RT. PIER #4 (REAR)	EXPANSION	7	202	67	269	0.375″	4	0.25″	5	2.374″
RT. PIER #8 (FWD)	FIXED	7	197	72	269	0.375″	2	0.25″	3	1.474″
RT. FWD. ABUT.	EXPANSION	7	193	72	265	0.375″	4	0.25″	5	2.374″
LT. REAR ABUT.	EXPANSION	7	150	72	222	0.375″	4	0.25″	5	2.374″
LT. PIER #1	FIXED	14	213	80	293	0.375″	2	0.25″	3	1.474″
LT. PIER #2	FIXED	14	216	81	297	0.375″	2	0.25″	3	1.474″
LT. PIER #3	FIXED	14	214	81	295	0.375″	2	0.25″	3	1.474″
LT. PIER #4 (REAR)	EXPANSION	7	160	66	226	0.375″	4	0.25″	5	2.374″
LT. PIER #8 (FWD)	FIXED	5	160	99	259	0.375″	2	0.25″	3	1.474″
LT. PIER #9	EXPANSION	10	174	109	283	0.375″	4	0.25″	5	2.374″
LT. FWD. ABUT.	EXPANSION	5	152	103	255	0.375″	4	0.25″	5	2.374″

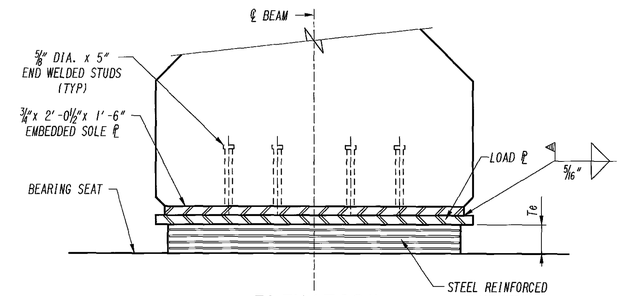


ELEVATION

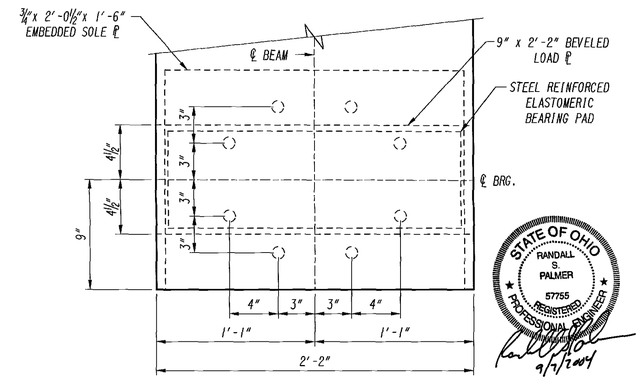


BEARING PLAN

(FIXED PIERS 1-3, EXP. PIER 9)



ELEVATION



BEARING PLAN

(PIER 4 (REAR), ABUT. 1 & 2)

PALMER ENGINEERING
146 N. BREIEL BLVD.
MIDDLETOWN, OH 45042
IN CHESTER, BEAVERCREEK, DAYTON, SPRINGFIELD, SHELBYVILLE, MIDDLETOWN, KENTUCKY

DESIGNED	DRAWN	REVIEWED	DATE
BJF	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RSP		7709013(L) 7709021(R)	

BEARING DETAILS - UNITS 1 & 3 - CONCRETE

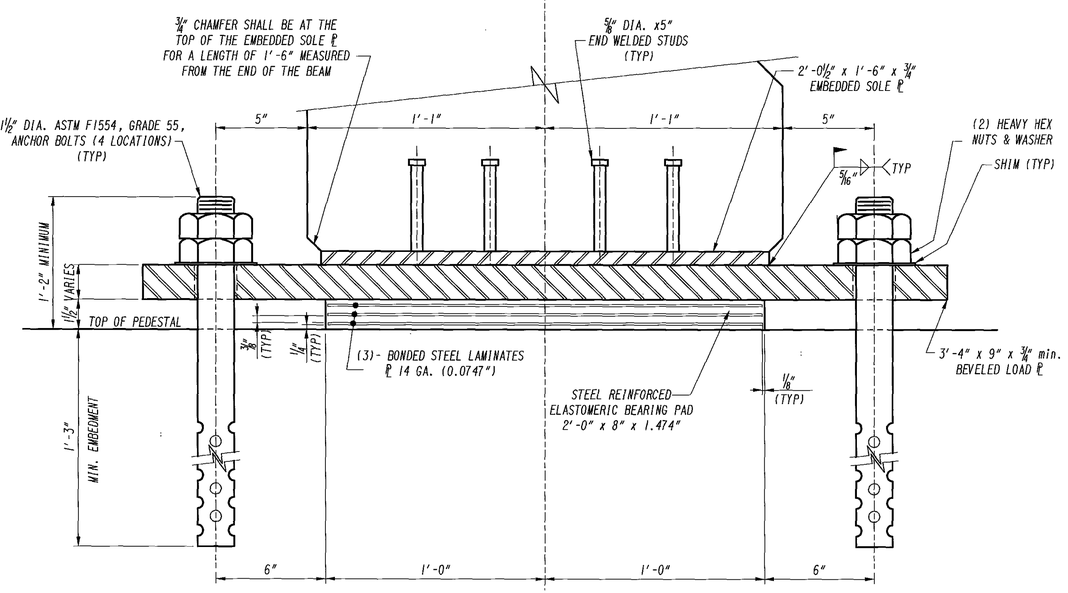
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

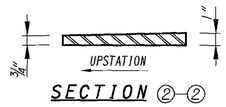
72 / 123

509 / 612

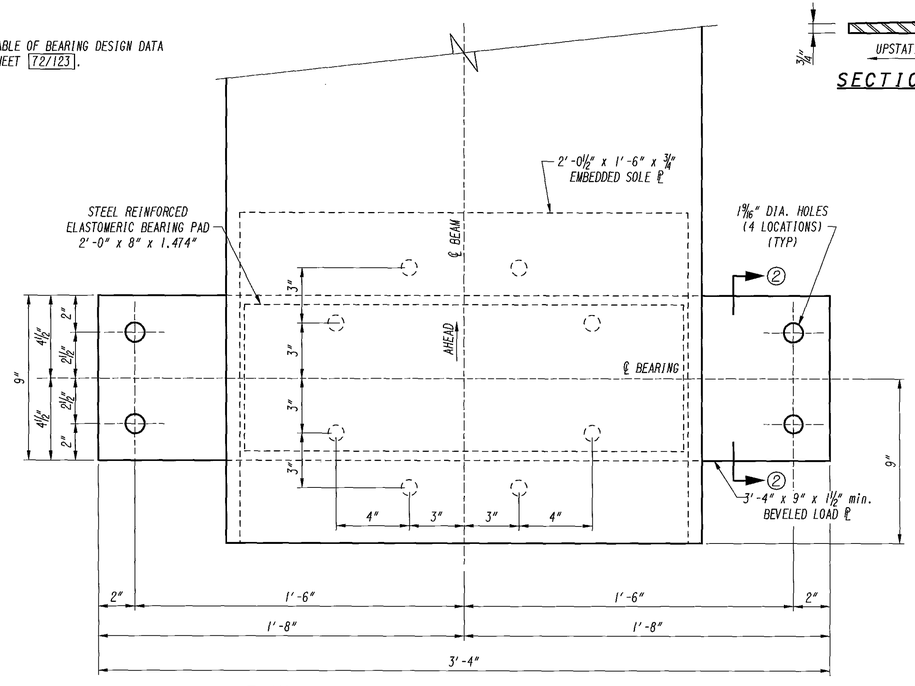
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NOTE:
FOR TABLE OF BEARING DESIGN DATA SEE SHEET 72/123.



SECTION ②—②



FIXED PIER BEARING ASSEMBLY DETAIL

(PIER 8, FWD. - UNIT 3 LT. & RT.)

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

Palmer ENGINEERING
PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED BJF
DRAWN JAR
CHECKED RSP
REVIEWED JGG
DATE 03-31-04
REVISED
STRUCTURE FILE NUMBER 770901(L) 770902(A)

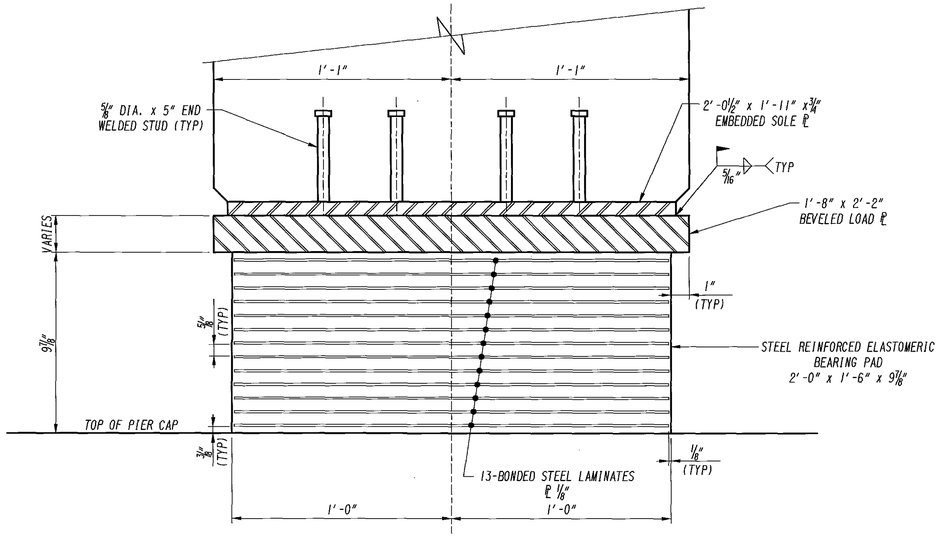
BEARING DETAILS - UNIT 3 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

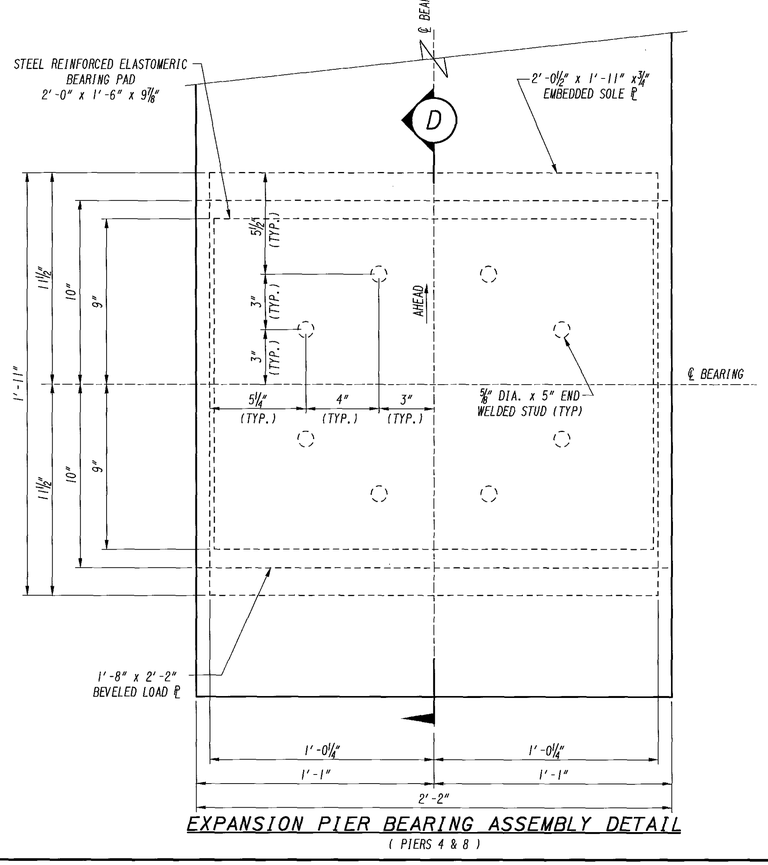
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73/123

510/612

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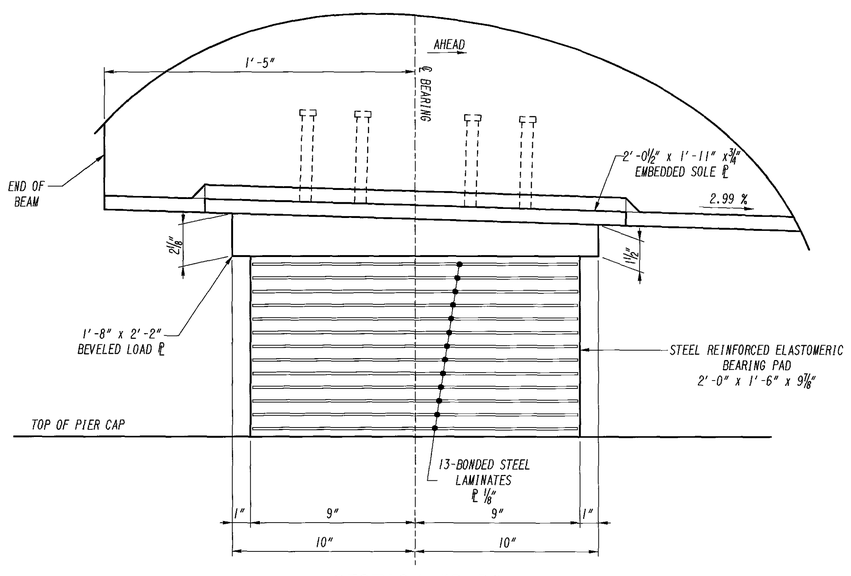


EXPANSION PIER BEARING ASSEMBLY DETAIL
(PIERS 4 & 8)

BEARING LOCATION	BEARING TYPE	NO. REQ'D.	DEAD LOAD (KIPS)	LIVE LOAD (NO IMPACT) (KIPS)	TOTAL LOAD (KIPS)
LT. PIER #4 (FWD)	EXPANSION	5	301	116	417
LT. PIER #8 (REAR)	EXPANSION	5	301	116	417
RT. PIER #4 (FWD)	EXPANSION	5	301	116	417
RT. PIER #8 (REAR)	EXPANSION	5	301	116	417

NOTE:
BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD 1/4 INCH AT THE PIER SEATS TO COMPENSATE FOR THE VERTICAL DEFORMATION OF THE BEARINGS.





SECTION "D-D"

FOR GENERAL NOTES, INSTALLATION NOTES, AND INFORMATION ON BEARING PADS AND LOAD PLATES SEE SHEET 72/123.

PALMER ENGINEERING
Palmer ENGINEERING & SURVEYING
146 N. BREIEL BLVD. MIDDLETOWN, OH 45042
MAIN OFFICE: MIDDLETOWN, CLEVELAND, COLUMBUS, DAYTON, LOUISVILLE, PITTSBURGH, WASHINGTON C.H.

DESIGNED WAH | DRAWN JAR | REVIEWED JGG | DATE 03-31-04
CHECKED PJS | REVISED | STRUCTURE FILE NUMBER 7709021(L) 7709021(A)

UNIT 2 - CONCRETE

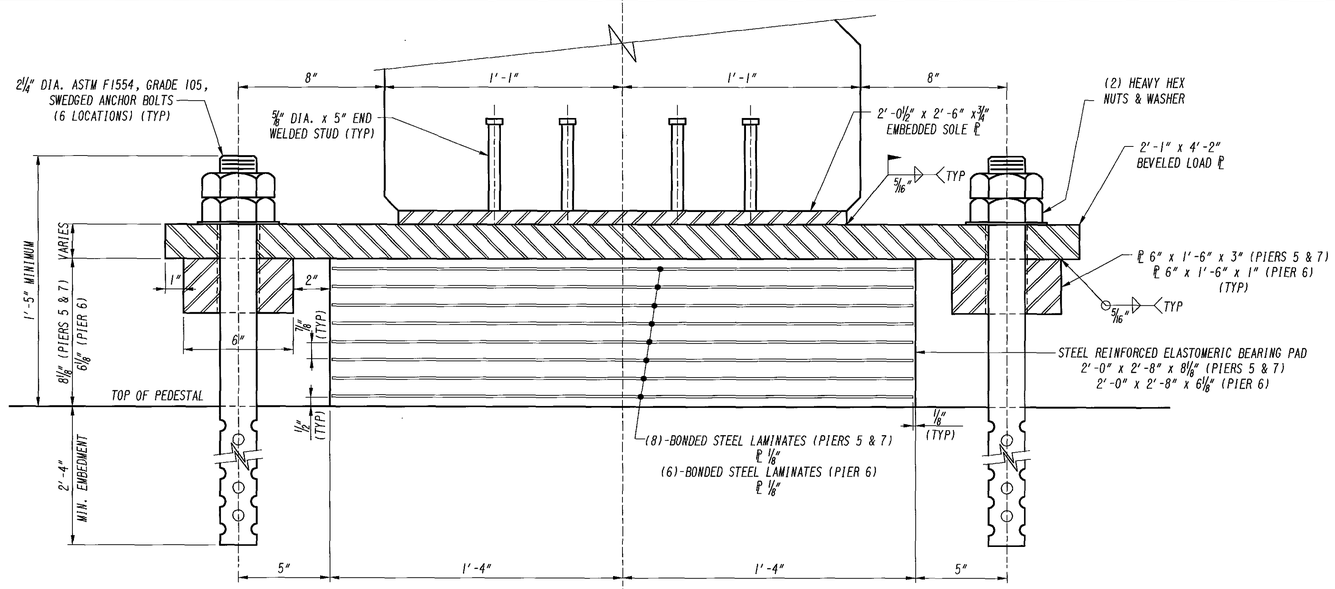
EXPANSION BEARING DETAILS - UNIT 2
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

74/123

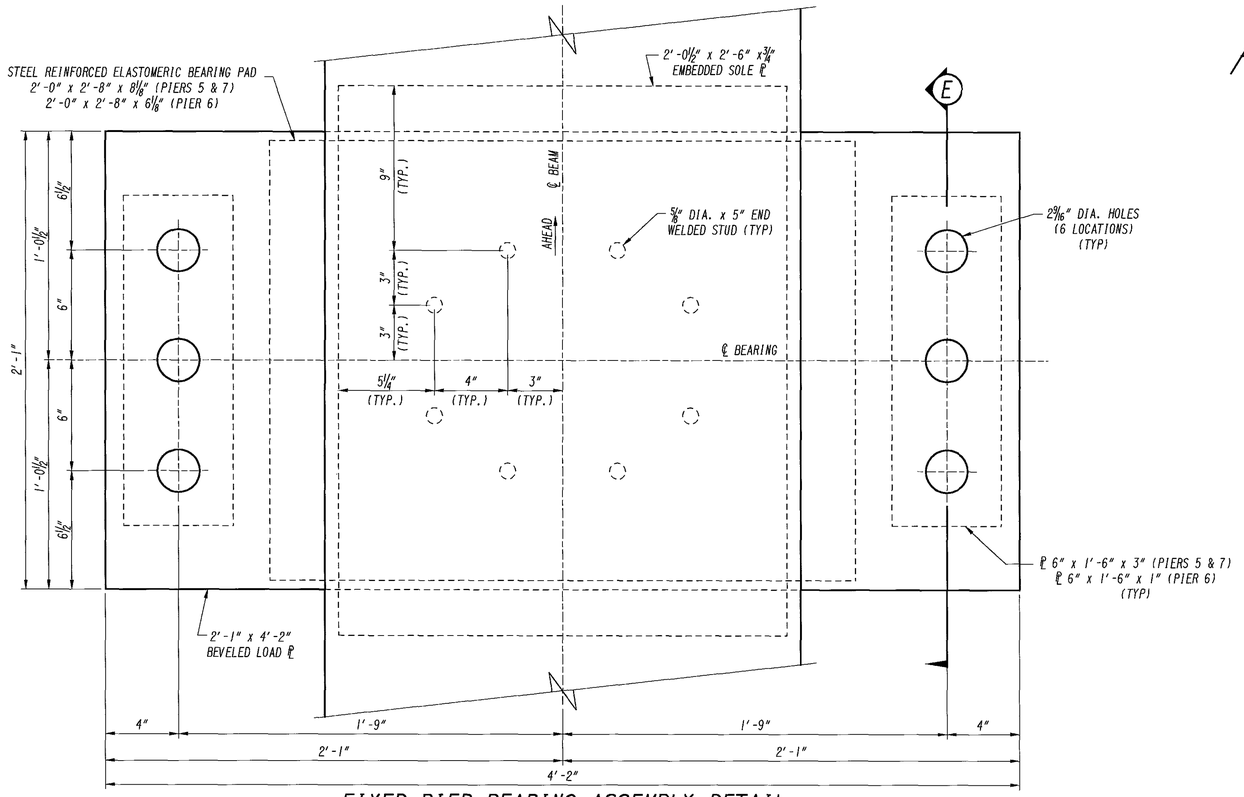
511
612

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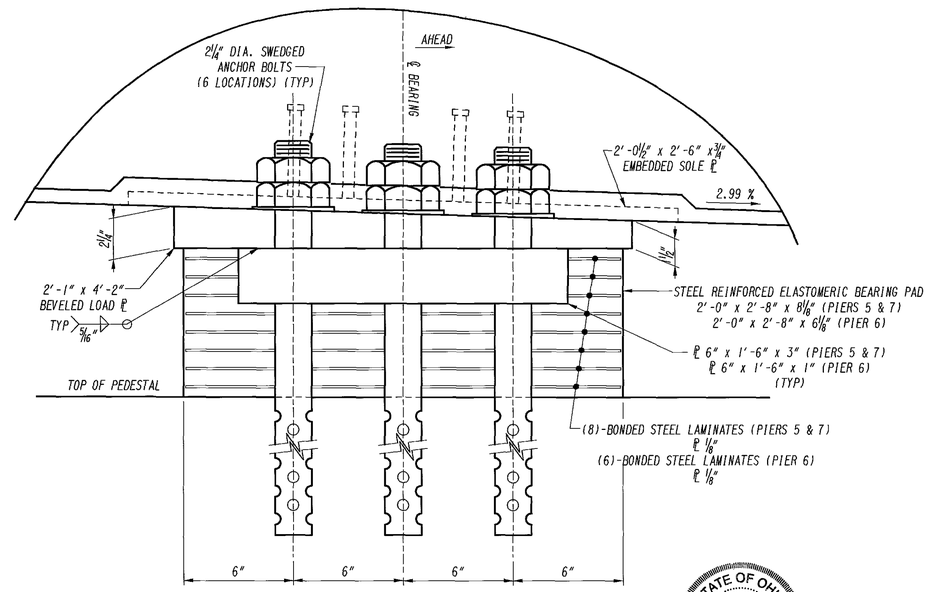


BEARING LOCATION	BEARING TYPE	NO. REQ'D.	DEAD LOAD (KIPS)	LIVE LOAD (NO IMPACT) (KIPS)	TOTAL LOAD (KIPS)
LT. PIER #5	FIXED	5	884	283	1167
LT. PIER #6	FIXED	5	884	283	1167
LT. PIER #7	FIXED	5	884	283	1167
RT. PIER #5	FIXED	5	884	283	1167
RT. PIER #6	FIXED	5	884	283	1167
RT. PIER #7	FIXED	5	884	283	1167

NOTE :
BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARDS 5/16" FOR PIERS 5 & 7 AND ¼" FOR PIER 6 AT THE PIER SEATS TO COMPENSATE FOR THE VERTICAL DEFORMATION OF THE BEARINGS.



FIXED PIER BEARING ASSEMBLY DETAIL
(PIERS 5, 6 & 7)



SECTION E-E



FOR GENERAL NOTES, INSTALLATION NOTES, AND INFORMATION ON BEARING PADS AND LOAD PLATES SEE SHEET 72/123.

Palmer ENGINEERING
PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

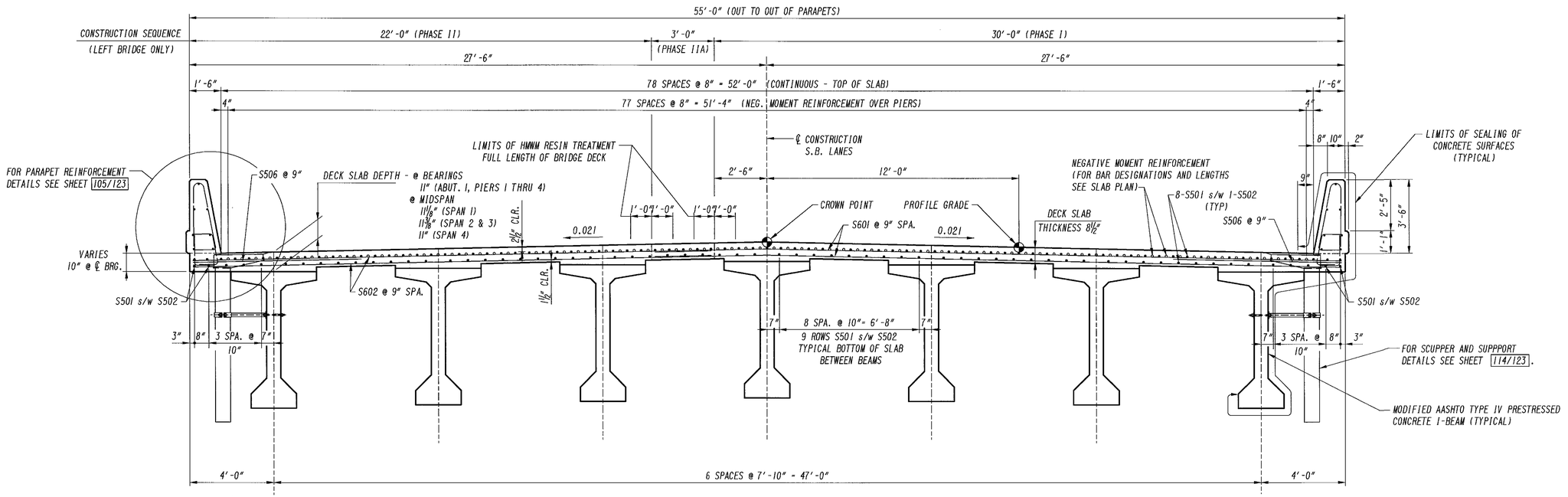
DESIGNED WAH | DRAWN JAR | CHECKED PJS | REVIEWED JGG | DATE 03-31-04 | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

CONCRETE

FIXED BEARING DETAILS - UNIT 2 - CONC
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

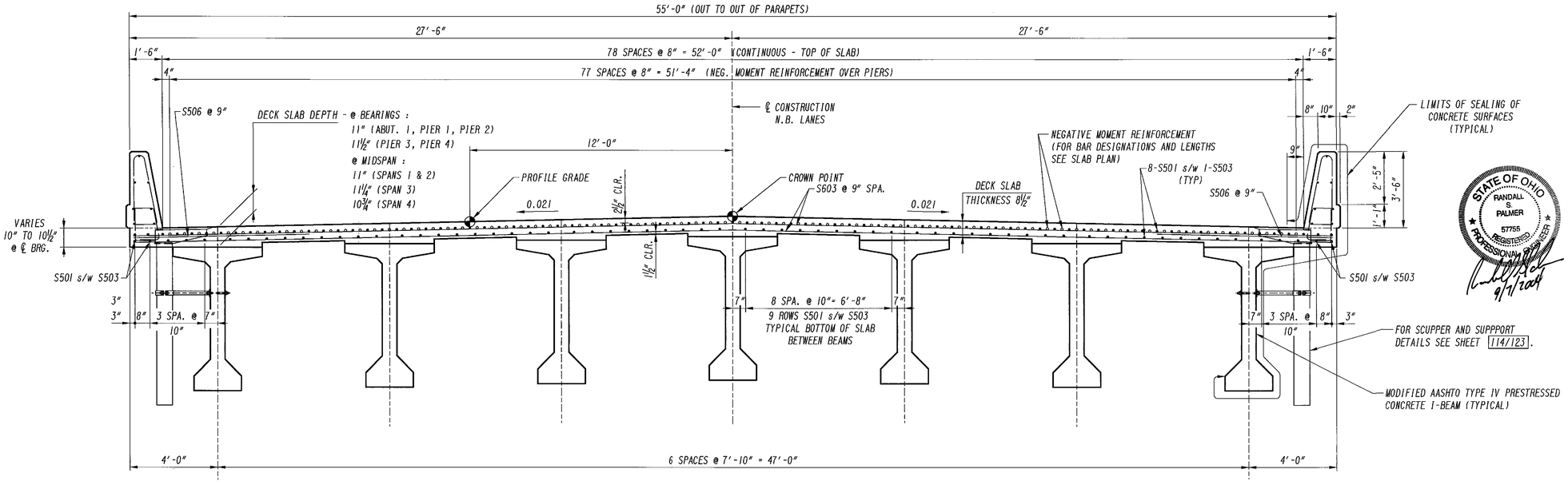
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TRANSVERSE DECK SECTION

(LEFT BRIDGE)



TRANSVERSE DECK SECTION

(RIGHT BRIDGE)(PHASE III)

STATE OF OHIO
RANDALL S PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/1/2004

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09/07/2004
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PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

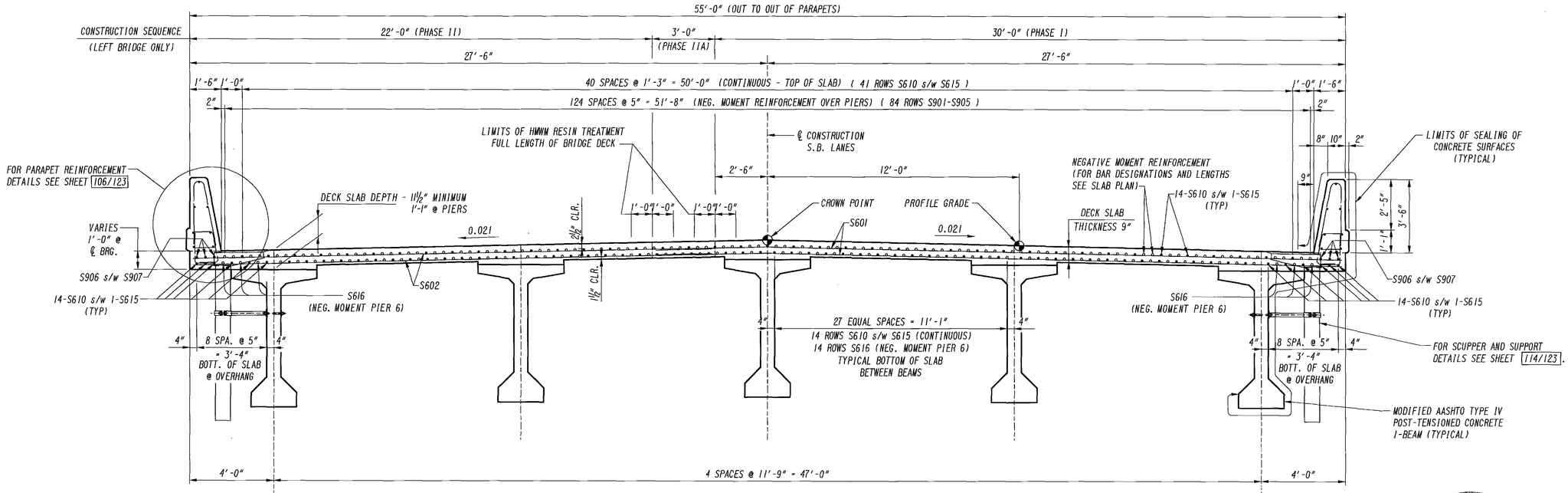
DESIGNED	DRAWN	REVIEWED	DATE
BJF	JBB	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RSP		7709021(L) 7709021(R)	

TRANSVERSE SECTION - UNIT 1 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

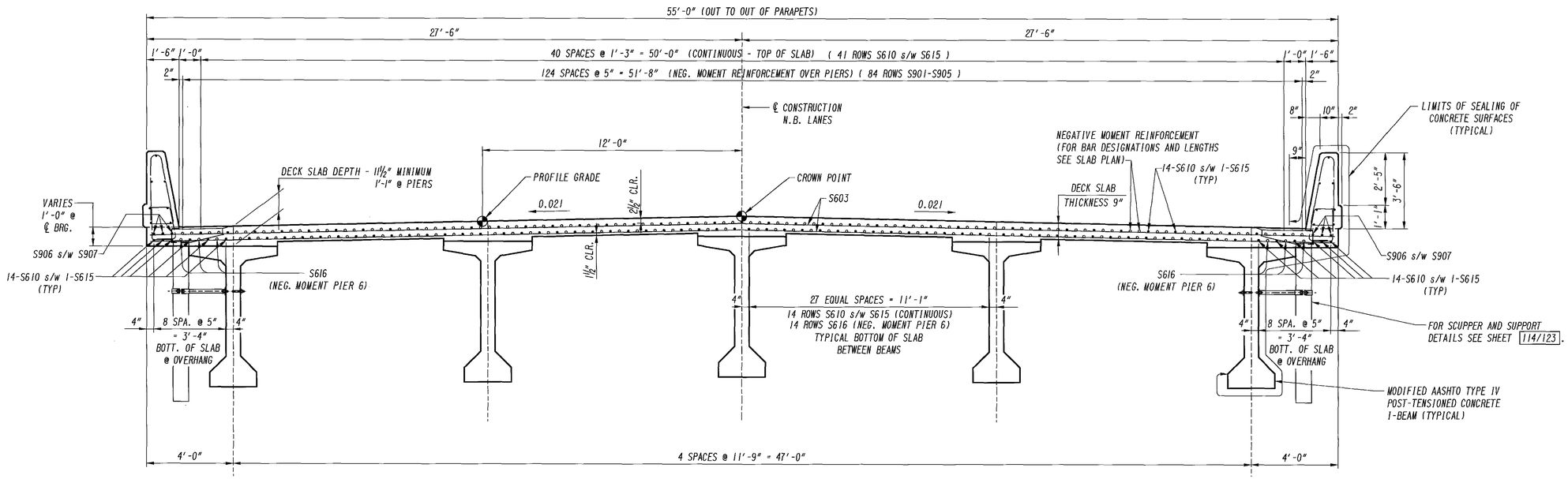
76 / 123

513
612



TRANSVERSE DECK SECTION
(LEFT BRIDGE)

STATE OF OHIO
DAVID HOLMAN DEITZ
E-65326
REGISTERED
PROFESSIONAL ENGINEER
9.7.2004



TRANSVERSE DECK SECTION
(RIGHT BRIDGE)(PHASE III)

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PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
ENGINEERING • SURVEYING
KY IN CHESTER, HASBY LLEN, LOUISVILLE, OHIO, SPRINGFIELD, TOLEDO, TROY, SURVEYING

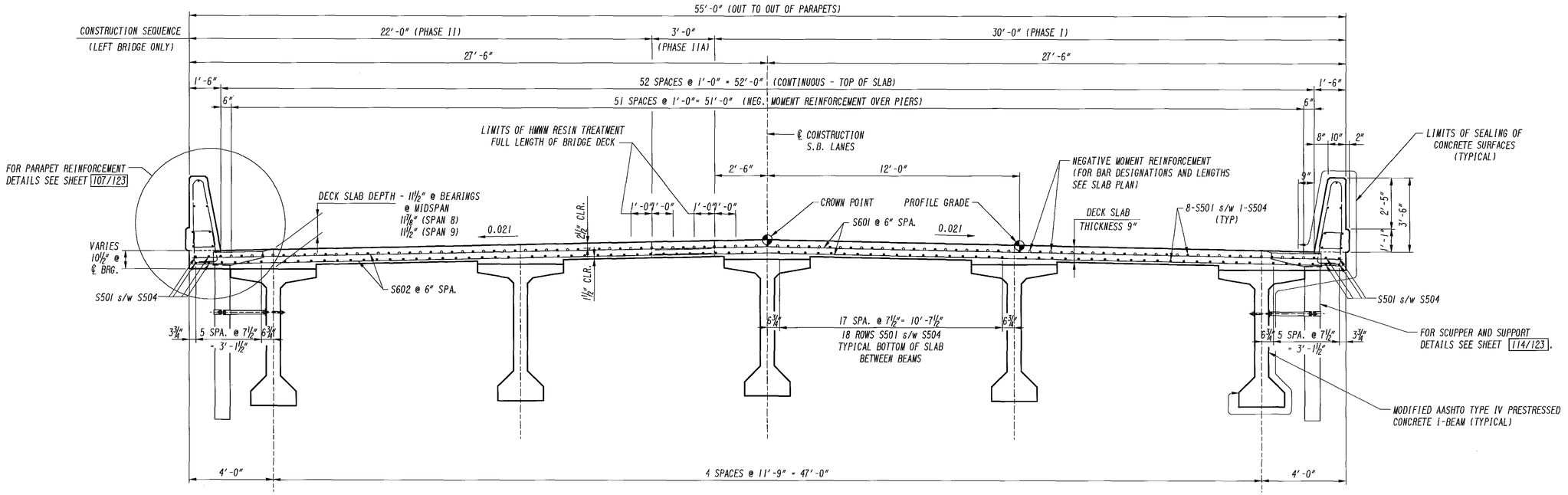
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CHECKED PJS | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

TRANSVERSE SECTION - UNIT 2 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

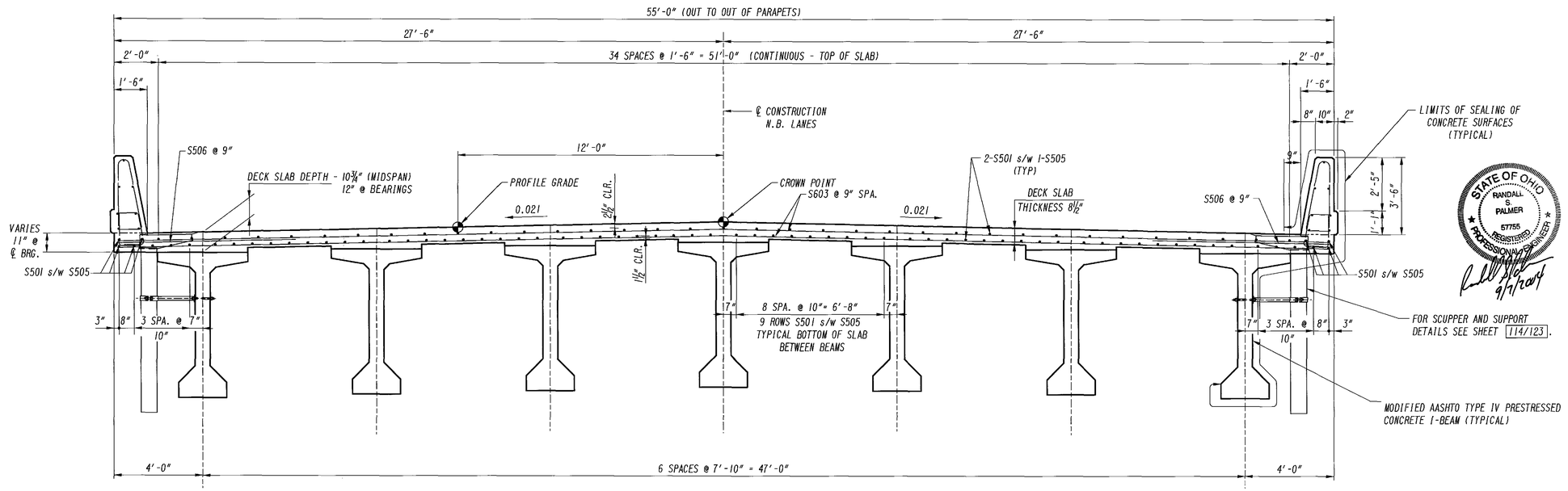
77 / 123

514 / 612



TRANSVERSE DECK SECTION

(LEFT BRIDGE)



TRANSVERSE DECK SECTION

(RIGHT BRIDGE)(PHASE III)

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

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PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
ENGINEERING MIDDLETOWN, OH
NEW IN CHESTER, NASHVILLE, LOUISVILLE
MAIDSTONE, HERRICKS

DESIGNED	DRAWN	REVIEWED	DATE
BJF	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RSP		7709013(L) 7709021(R)	

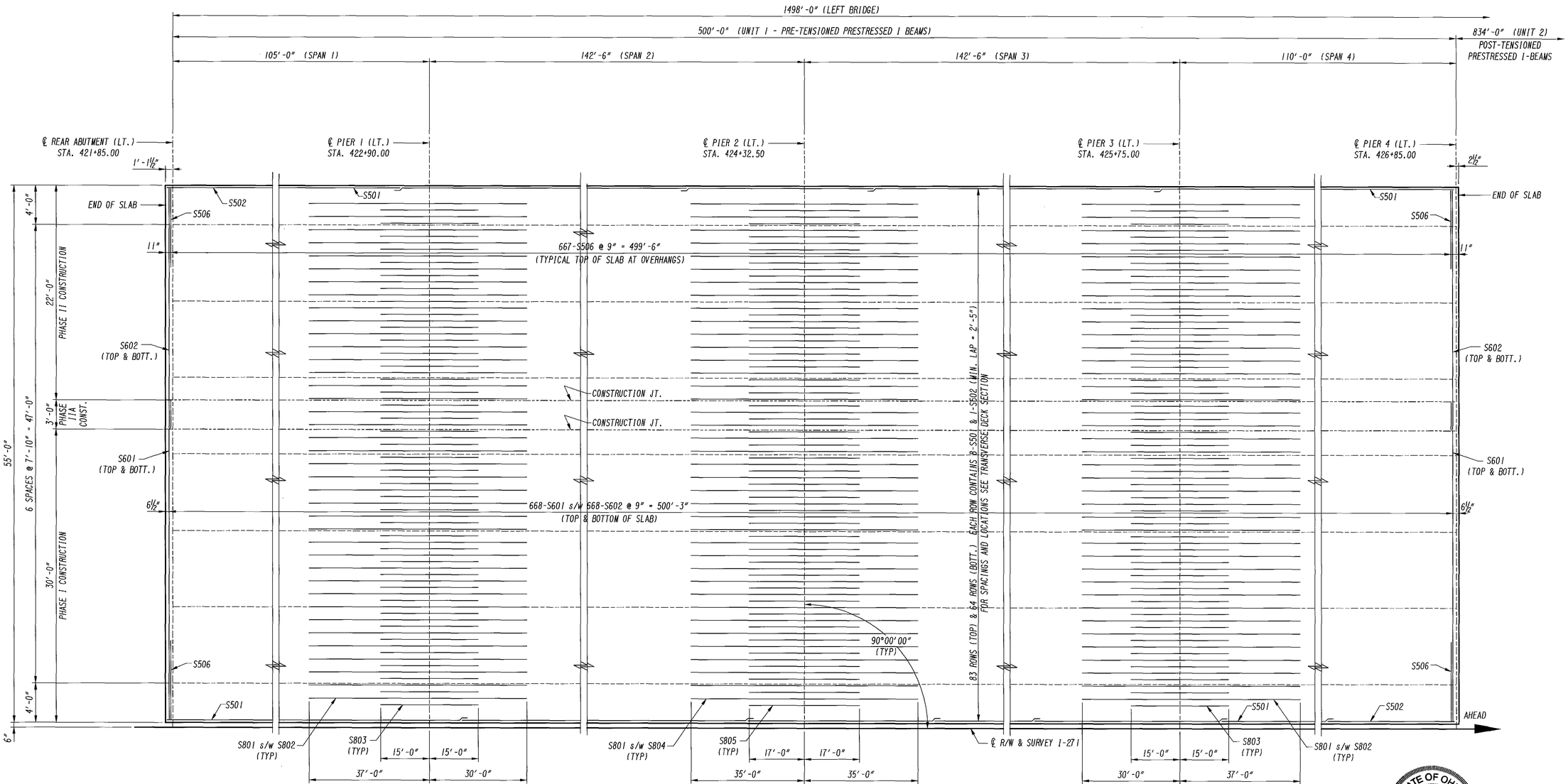
TRANSVERSE SECTION - UNIT 3 - CONCRETE

BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

78/123

515/612



SLAB REINFORCING PLAN - UNIT 1 (LT.) - CONCRETE

BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SLAB REINFORCING PLAN - UNIT 1 (LEFT BRIDGE)

NOTES:

SCUPPER LOCATIONS SEE SHEET 56/123

MINIMUM LAP SPLICE LENGTH
#5 - 2'-5"
#6 - 2'-11"
#8 - 6'-0"

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

Palmer ENGINEERING
PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

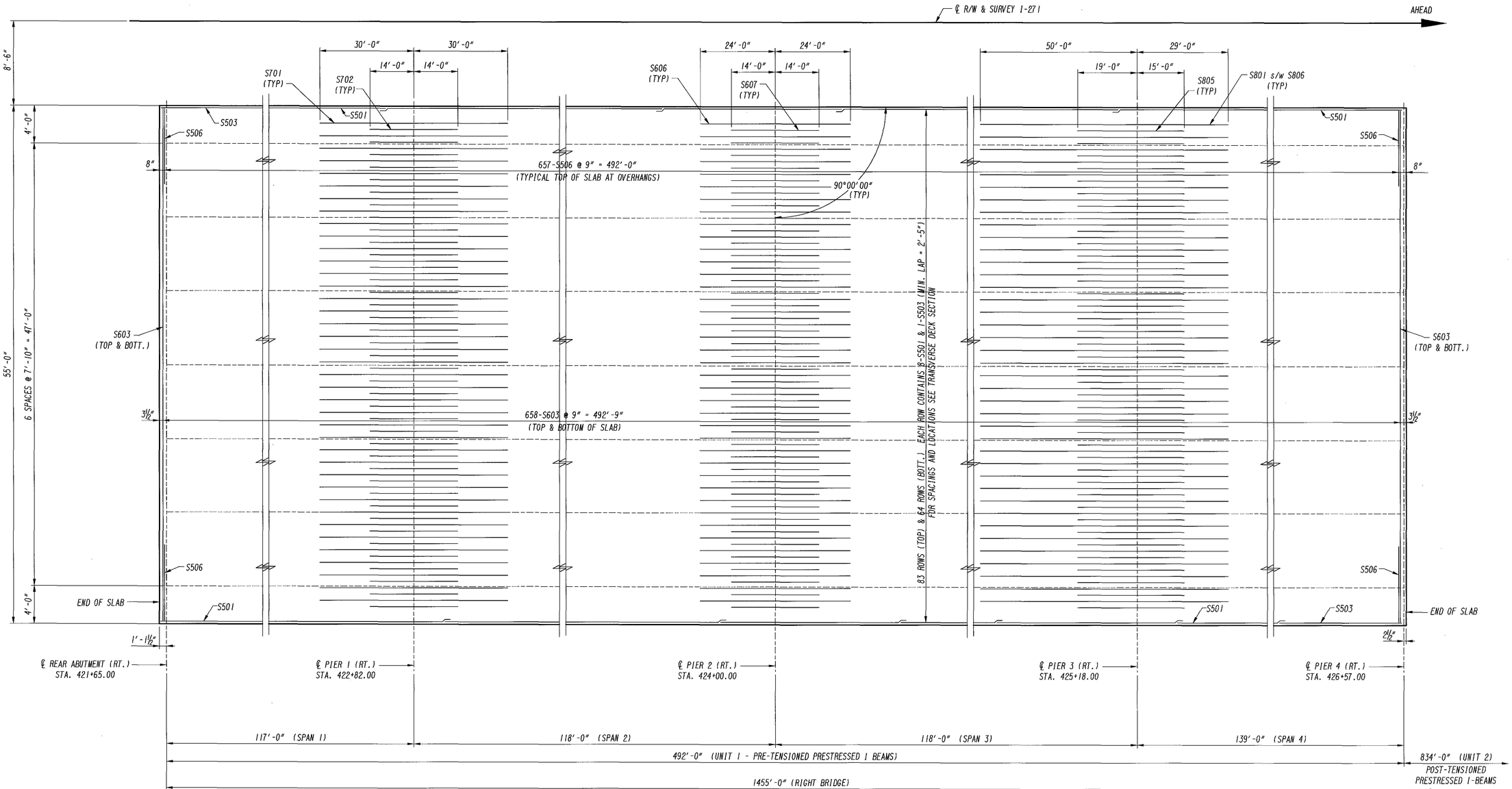
DESIGNED	DRAWN	REVIEWED	DATE
BJF	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RSP		77090/13(L)	

SUM-271-8.02

79/123

516/612

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SLAB REINFORCING PLAN - UNIT 1 (RIGHT BRIDGE)

(PHASE III)

NOTES:

SCUPPER LOCATIONS SEE SHEET 56/123

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/1/2004

MINIMUM LAP SPLICE LENGTH

#5 - 2'-5"
#6 - 2'-11"
#7 - 3'-8"
#8 - 6'-0"

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146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
AKRON CHESTER, WASHINGTON CHARLESTON, WEST VIRGINIA LOUISVILLE, KENTUCKY
MIDDLETOWN, OHIO CINCINNATI

REVIEWED	DATE
JGG	03-31-04

STRUCTURE FILE NUMBER
770902(R)

DESIGNED	DRAWN	REVISED
BJF	JAR	
CHECKED		
RSP		

SLAB REINFORCING PLAN - UNIT 1 (RT.)- CONCRETE

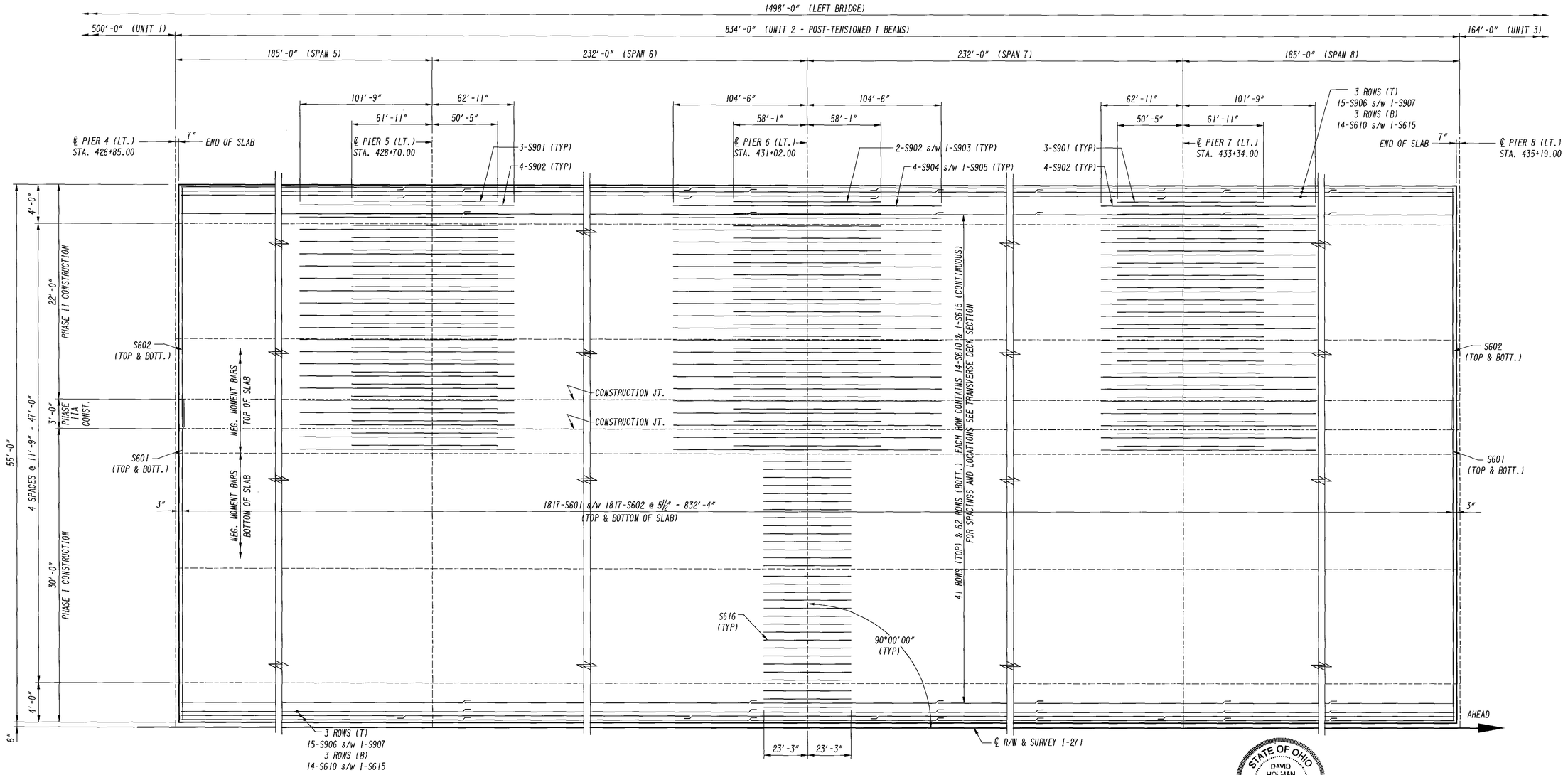
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

80/123

517/612

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STATE OF OHIO
DAVID HOLMAN DEITZ
E-65326
REGISTERED PROFESSIONAL ENGINEER

David Holman Deitz
9.7.2004

SLAB REINFORCING PLAN - UNIT 2 (LEFT BRIDGE)

NOTES:

SCUPPER LOCATIONS SEE SHEET 57/123

MINIMUM LAP SPLICES
#6 BARS = 2'-11"
#9 BARS = 7'-7"

(B) DENOTES BOTT. OF SLAB
(T) DENOTES TOP OF SLAB

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
PJS		77090/31(L)	

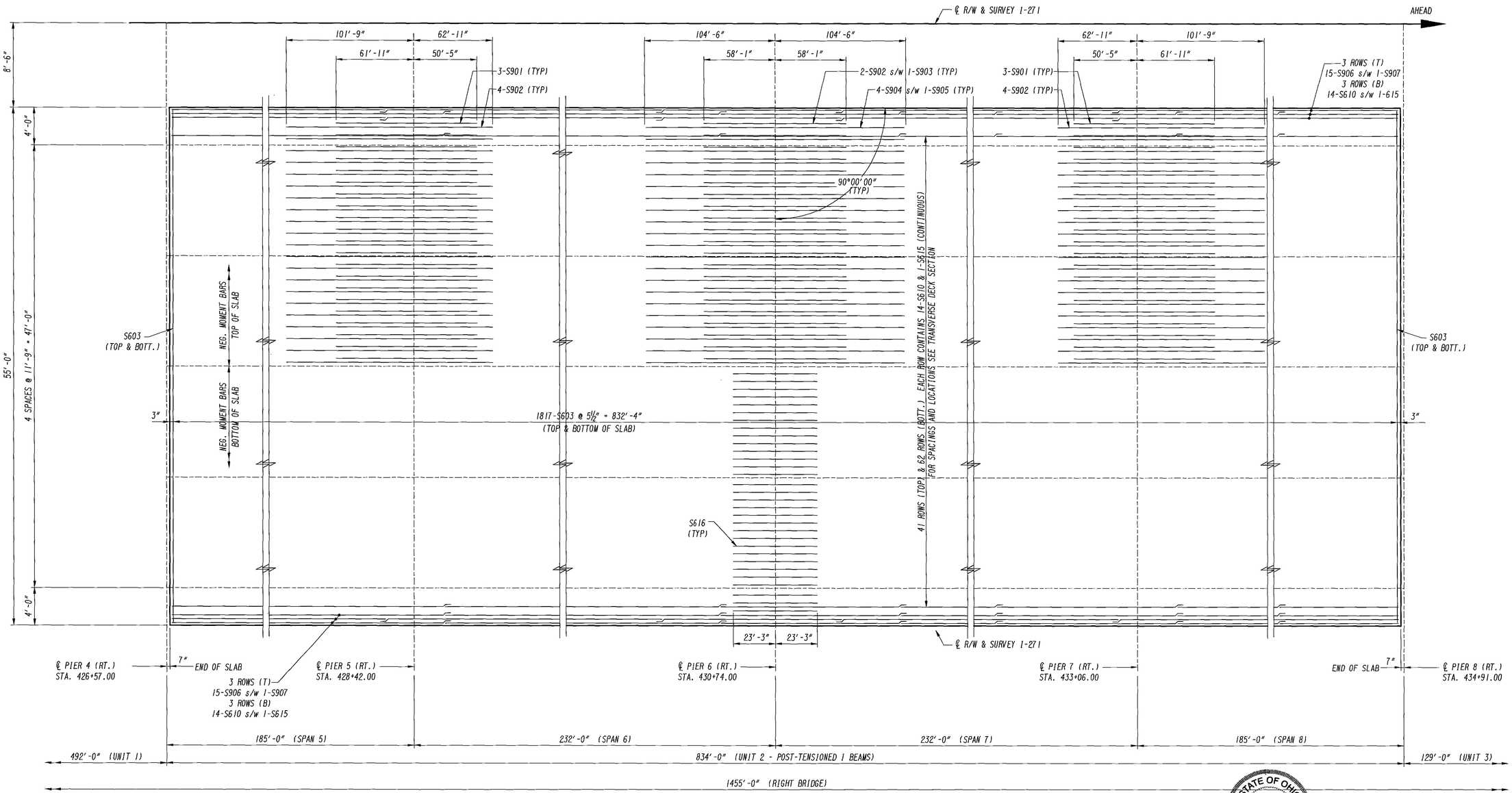
SLAB REINFORCING PLAN - UNIT 2 (L.T.)- CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

81 / 123

518
612

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SLAB REINFORCING PLAN - UNIT 2 (RIGHT BRIDGE)

(PHASE III)

STATE OF OHIO
DAVID HOLMAN DEITZ
E-66326
REGISTERED PROFESSIONAL ENGINEER

David Holman Deitz 9.7.2004

NOTES:

SCUPPER LOCATIONS SEE SHEET 57/123

MINIMUM LAP SPLICES
#6 BARS = 2'-11"
#9 BARS = 7'-7"

(B) DENOTES BOTT. OF SLAB
(T) DENOTES TOP OF SLAB

PALMER ENGINEERING
146 N. BRIBEL BLVD.
MIDDLETOWN, OH 45042
CHESTER • NASHVILLE • LOUISVILLE
MIDDLETOWN • GUERICKE

DESIGNED	DRAWN	REVIEWED	DATE
MLJ	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
PJS		770902 (R)	

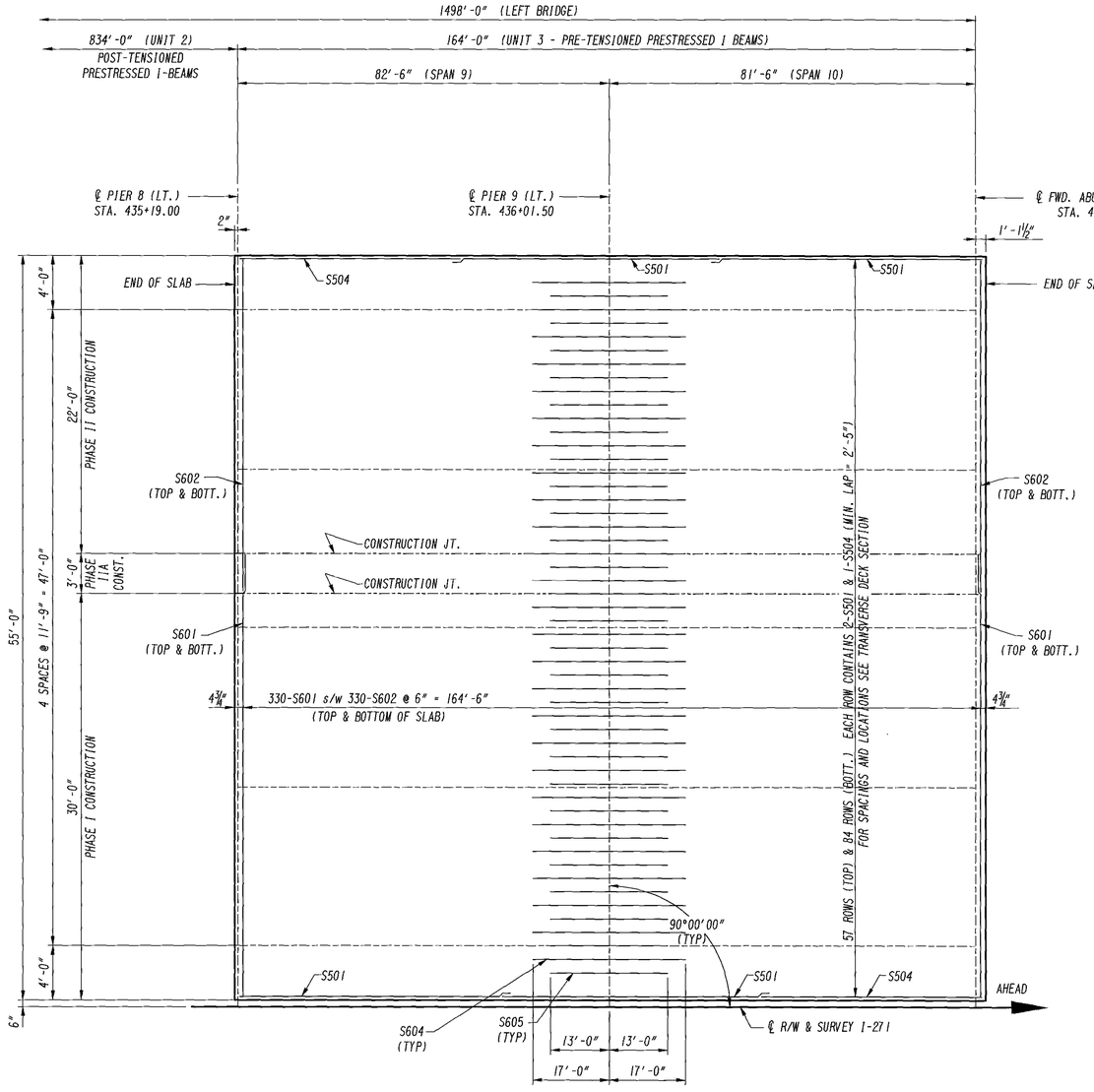
SLAB REINFORCING PLAN - UNIT 2 (RT.)- CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

82/123

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SLAB REINFORCING PLAN - UNIT 3 (LEFT BRIDGE)

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

MINIMUM LAP SPLICE LENGTH
#5 - 2'-5"

NOTES:

SCUPPER LOCATIONS SEE SHEET 58/123

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
CHESTER • ASHVILLE • LOCUST GROVE • MIDDLETOWN • MURRICANE

DESIGNED BJF
DRAWN JAR
CHECKED RSP
REVISED
REVIEWED JGG
DATE 03-31-04
STRUCTURE FILE NUMBER 770901(3)(L)

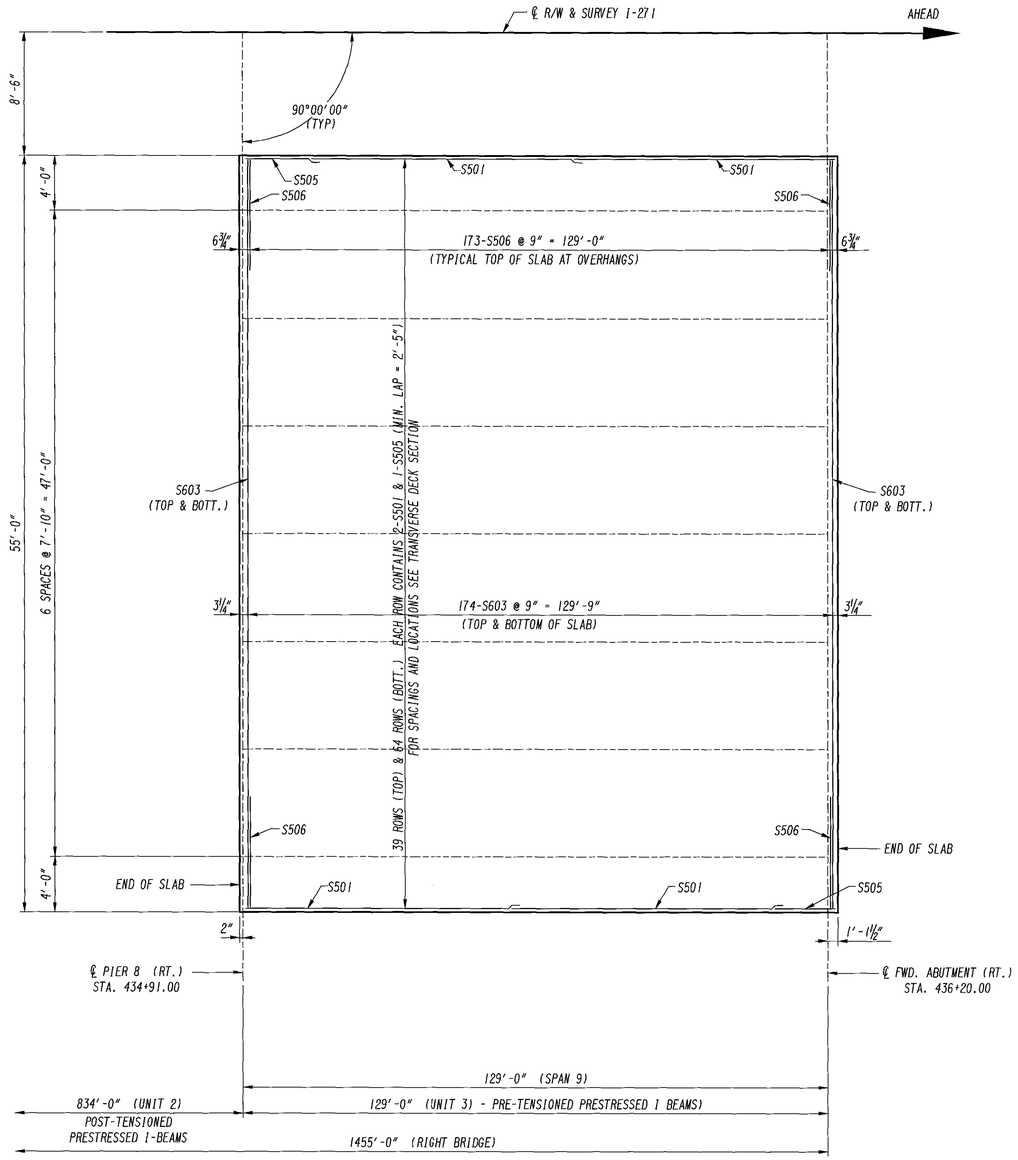
SLAB REINFORCING PLAN - UNIT 3 (L.T.) - CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

83/123

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SLAB REINFORCING PLAN - UNIT 3 (RIGHT BRIDGE)

(PHASE III)

NOTES:

SCUPPER LOCATIONS SEE SHEET 58/123

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/04

MINIMUM LAP SPLICE LENGTH
#5 - 2'-5"

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
BJF	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RSP		7709021(R)	

SLAB REINFORCING PLAN - UNIT 3 (RT.)- CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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GALVANIZED STAY - IN - PLACE FORMS

GALVANIZED STEEL, STAY - IN - PLACE (SIP) DECK FORMS MAY BE USED BY THE CONTRACTOR IN PLACE OF REMOVABLE FORMS.

MATERIALS:

PERMANENT STEEL BRIDGE DECK FORMS AND SUPPORTS SHALL BE FABRICATED FROM STEEL CONFORMING TO ASTM SPECIFICATION A653 (GRADE 33 THROUGH 80). ALL BRIDGE FORM PANELS AND ACCESSORIES SHALL HAVE A GALVANIZED COATING CLASS OF G165 ACCORDING TO ASTM A653.

MATERIAL THICKNESS THINNER THAN 20 GAGE SHALL NOT BE USED.

DESIGN LOADING:

THE STEEL FORMS AND SUPPORTS SHALL BE DESIGNED ON THE BASIS OF DEAD LOAD OF FORM, REINFORCEMENT AND PLASTIC CONCRETE PLUS 50 POUNDS PER SQUARE FOOT FOR CONSTRUCTION LOADS.

THE VALLEYS OF SIP FORMS MAY BE FILLED WITH EXPANDED POLYSTYRENE, AS RECOMMENDED BY THE MANUFACTURER, TO REDUCE THE DEAD LOAD AND TO COMPENSATE FOR THE ADDITIONAL WEIGHT OF STEEL, CONCRETE AND SIP FORMS. THE CONTRACTOR SHALL FURNISH THE CALCULATIONS SHOWING THE INCREASE IN DEAD LOAD DUE TO THE USE OF HIS PROPOSED SIP FORMS. NO REDESIGN OF PRECAST CONCRETE I-BEAMS WILL BE REQUIRED FOR AN INCREASE IN DEAD LOAD UP TO FIFTEEN (15) POUNDS PER SQUARE FOOT OF THE DECK AREA BETWEEN BEAMS. IF THE DEAD LOAD INCREASE IS MORE THAN 15 PSF, THE CONTRACTOR SHALL FURNISH THE CALCULATIONS AND DRAWINGS SHOWING THE CHANGES REQUIRED TO THE PRECAST CONCRETE I-BEAM FRAMING. THE CONTRACTOR'S PROPOSED PRECAST CONCRETE I-BEAM DETAILS SHALL BE SIMILAR TO THE DETAILS SHOWN IN THE CONTRACT PLANS. IN ALL CASES THE CONTRACTOR SHALL FURNISH REVISED CAMBER AND DEFLECTION CALCULATIONS DUE TO ANY CHANGE IN DEAD LOAD.

BASIS OF DESIGN:

DEFLECTION UNDER THE WEIGHT OF THE FORMS, THE PLASTIC CONCRETE, AND THE REINFORCEMENT SHALL NOT EXCEED 1/180 OF THE FORM SPAN OR ½ INCH, WHICHEVER IS LESS, AND THE MINIMUM LOADING IS 120 PSF.

THE PERMISSIBLE FORM CAMBER SHALL BE BASED ON THE ACTUAL DEAD LOAD CONDITION. CAMBER SHALL NOT BE USED TO COMPENSATE FOR DEFLECTION IN EXCESS OF THE FOREGOING LIMITS.

THE DESIGN SPAN OF THE FORM SHEETS SHALL BE:
THE BEAM SPACING - (FLANGE WIDTH + 2").

SHOP AND ERECTION DRAWINGS:

ALL THE STRUCTURAL STEEL WORK REQUIRED TO FURNISH AND ERECT THE SIP FORMS SHALL BE IN ACCORDANCE WITH ITEM 513 OF THE OHIO DEPARTMENT OF TRANSPORTATION (ODOT) CONSTRUCTION AND MATERIALS SPECIFICATIONS. SHOP DRAWINGS AS DESCRIBED IN 513.06 WILL BE REQUIRED.

THESE PLANS SHALL INDICATE THE GRADE OF STEEL, AND THE PHYSICAL AND SECTION PROPERTIES FOR ALL PARTS OF THE FORM, ALONG WITH LENGTH, SIZE AND SPACING OF ALL COMPONENTS OF THE FORMS INCLUDING THE WELDS. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR THE STEEL DECK FORMS.

UNLOADING AND HANDLING OF MATERIALS:

FABRICATED METAL STAY - IN - PLACE FORMING MATERIALS SHALL NOT BE UNLOADED OR HANDLED IN SUCH A MANNER AS TO DAMAGE OR ALTER THE CONFIGURATION OF THE FORMS. DAMAGED MATERIALS SHALL BE REPLACED AT NO ADDITIONAL COST TO THE STATE.

STORAGE OF MATERIALS:

ALL FABRICATED METAL STAY - IN - PLACE FORMS WHICH ARE STORED AT THE PROJECT SITE SHALL BE STORED AT LEAST 4 INCHES ABOVE THE GROUND ON PLATFORMS, SKIDS OR OTHER SUITABLE SUPPORTS AND SHALL BE PROTECTED AGAINST CORROSION AND DAMAGE FROM ANY SOURCE.

CONSTRUCTION:

FORM SHEETS SHALL NOT BE PERMITTED TO REST DIRECTLY ON THE TOP OF THE BEAM. SHEETS SHALL BE SECURELY FASTENED TO FORM SUPPORTS AND SHALL HAVE A MINIMUM BEARING LENGTH OF 1 (ONE) INCH AT EACH END. SHEETS SHALL BE CENTERED BETWEEN THE FORM SUPPORTS. FORM SUPPORTS SHALL BE PLACED IN DIRECT CONTACT WITH THE FLANGE OF BEAM. ALL ATTACHMENTS SHALL BE MADE BY BOLTS, CLIPS OR OTHER APPROVED MEANS.

WELDING AND WELDS SHALL BE IN ACCORDANCE WITH SECTION 513.21 OF THE CMS.

IN THE AREAS WHERE THE FORM SHEETS LAP, THE FORM SHEETS SHALL BE SECURELY FASTENED TO ONE ANOTHER BY SCREWS AT A MAXIMUM SPACING OF 18 INCHES. THE ENDS OF THE FORM SHEETS SHALL BE SECURELY ATTACHED TO THE SUPPORT ANGLES WITH SCREWS AT A MAXIMUM SPACING OF 18 INCHES.

ANY EXPOSED FORM METAL WHERE THE GALVANIZED COATING HAS BEEN DAMAGED SHALL BE THROUGHLY CLEANED, WIRE BRUSHED, THEN PAINTED WITH TWO COATS OF ZINC OXIDE ZINC DUST PRIMER, FEDERAL SPECIFICATION TT-P-641D, TYPE II, NO COLOR ADDED, TO THE SATISFACTION OF THE ENGINEER. MINOR HEAT DISCOLORATION IN AREAS OF WELDS NEED NOT BE TOUCHED UP.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE LOCATED AT THE BOTTOM OF A FLUTE AND ¼ INCH WEEP HOLES SHALL BE FIELD DRILLED AT NOT MORE THAN 12 INCHES ON CENTER ALONG THE LINE OF THE JOINT.

ALL CUTS SHALL BE MADE BY A SAW. NO FLAME CUTTING WILL BE PERMITTED.

EACH SHEET OF STEEL DECK FORM SHALL BE SCREWED DOWN IMMEDIATELY UPON PLACEMENT.

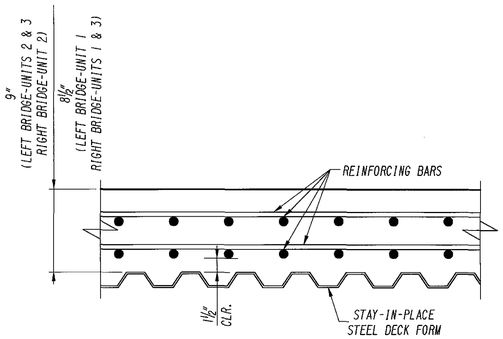
TIMBER FORMS SHALL BE USED TO FORM THE OVERHANG AT THE EXTERIOR BEAM. SUBMIT OVERHANG FALSEWORK DETAILS WITH THE BEAM SHOP DRAWINGS.

BASIS OF PAYMENT:

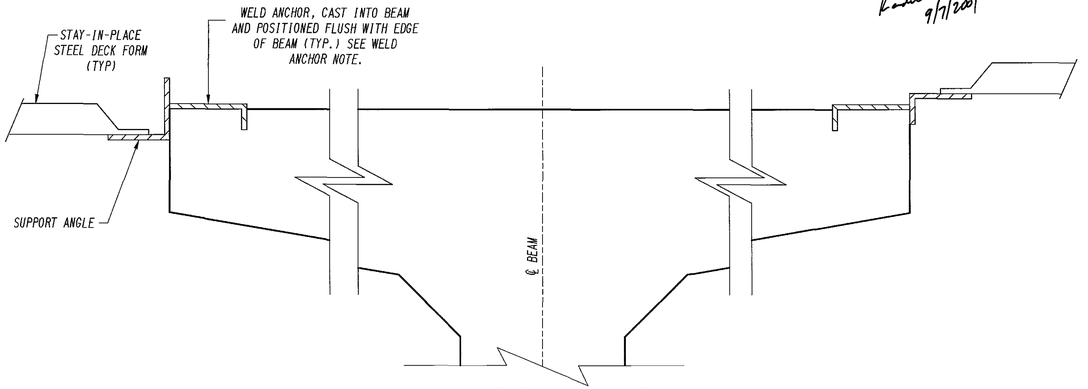
NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE SIP FORMS, ADDITIONAL CONCRETE, STRUCTURAL STEEL AND ALL INCIDENTALS, FURNISHING ALL REQUIRED CALCULATIONS AND DRAWINGS, AND ANY TIME DELAYS ASSOCIATED WITH THE USE OF SIP FORMS. THE COST THEREOF SHALL BE INCLUDED IN THE COST OF ITEM 894 HIGH PERFORMANCE CONCRETE FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN. NO EXTENSION OF TIME WILL BE ALLOWED DUE TO ANY TIME DELAYS DUE TO THE USE OF SIP FORMS.

WELD ANCHORS:

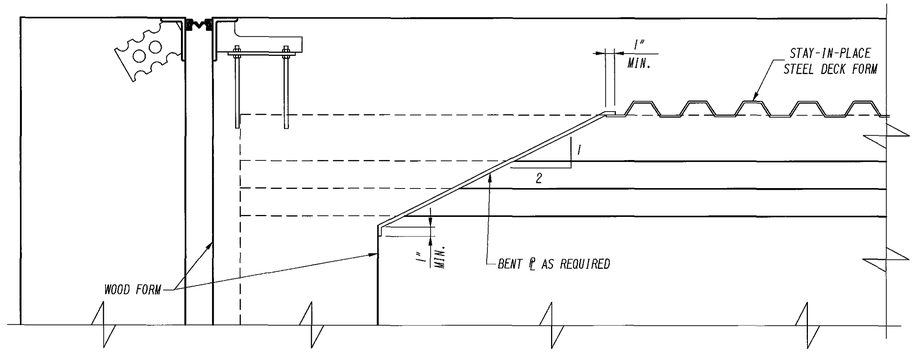
WELD ANCHORS ARE INCLUDED WITH PRECAST CONCRETE BEAM ITEM 515 FOR PAYMENT, AND THEIR LOCATIONS AND DETAILS SHALL BE INCLUDED IN PRECAST I-BEAM SHOP DRAWINGS.



LONGITUDINAL SECTION THRU DECK SLAB



DECK FORM SUPPORTS



SECTION AT DECK JOINT

(REAR ABUTMENT SHOWN, FORWARD ABUTMENT AND PIERS 4 & 8 SIMILAR)

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED PROFESSIONAL ENGINEER
9/7/2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
BOWLING GREEN MIDDLETOWN, OH 45042
NEW CHESTER, NASHVILLE, LOUISVILLE
MIDDLETOWN, HEBRON

DESIGNED	DRAWN	REVIEWED	DATE
DHD	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RSP		7709013(L) 7709021(R)	

STAY IN PLACE DECK FORMS - CONCRETE

BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

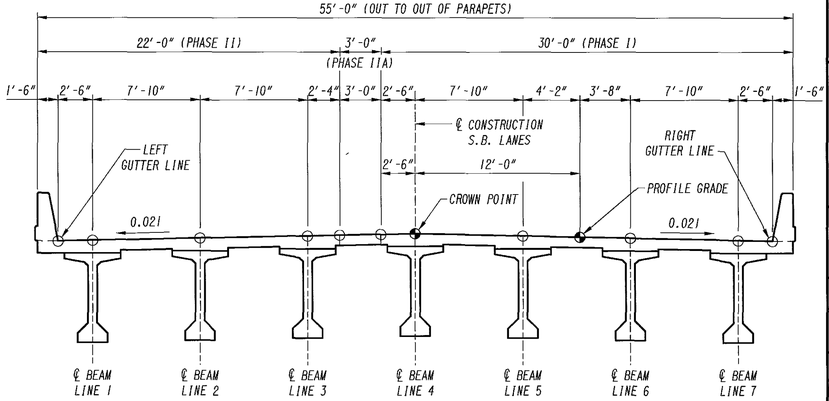
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SCREED ELEVATIONS - UNIT 1 - LEFT BRIDGE

POINT	STATION	LEFT GUTTER LINE	BEAM LINE 1	BEAM LINE 2	BEAM LINE 3	PHASE 2 JOINT	PHASE 1 JOINT	CROWN POINT AND BEAM LINE 4	BEAM LINE 5	PROFILE GRADE	BEAM LINE 6	BEAM LINE 7	RIGHT GUTTER LINE
℄ BRG. REAR ABUT.	421+85.00	791.339	791.392	791.556	791.721	791.770	791.833	791.885	791.721	791.634	791.556	791.392	791.339
1/8	421+98.13	790.967	791.019	791.184	791.348	791.397	791.460	791.513	791.348	791.261	791.184	791.019	790.967
1/4	422+11.25	790.591	790.643	790.808	790.972	791.021	791.084	791.137	790.972	790.885	790.808	790.643	790.591
3/8	422+24.38	790.209	790.261	790.426	790.591	790.639	790.702	790.755	790.591	790.503	790.426	790.261	790.209
1/2	422+37.50	789.820	789.873	790.037	790.202	790.251	790.314	790.366	790.202	790.114	790.037	789.873	789.820
5/8	422+50.63	789.424	789.476	789.641	789.805	789.854	789.917	789.970	789.805	789.718	789.641	789.476	789.424
3/4	422+63.75	789.020	789.073	789.237	789.402	789.451	789.514	789.566	789.402	789.314	789.237	789.073	789.020
7/8	422+76.88	788.611	788.664	788.828	788.993	789.042	789.105	789.157	788.993	788.905	788.828	788.664	788.611
℄ PIER 1	422+90.00	788.200	788.252	788.417	788.582	788.630	788.693	788.746	788.582	788.494	788.417	788.252	788.200
1/8	423+07.81	787.732	787.785	787.949	788.114	788.163	788.226	788.278	788.114	788.026	787.949	787.785	787.732
1/4	423+25.63	787.255	787.307	787.472	787.636	787.685	787.748	787.801	787.636	787.549	787.472	787.307	787.255
3/8	423+43.44	786.758	786.811	786.975	787.140	787.189	787.252	787.304	787.140	787.052	786.975	786.811	786.758
1/2	423+61.25	786.238	786.291	786.455	786.620	786.669	786.732	786.784	786.620	786.532	786.455	786.291	786.238
5/8	423+79.06	785.693	785.745	785.910	786.074	786.123	786.186	786.239	786.074	785.987	785.910	785.745	785.693
3/4	423+96.88	785.124	785.177	785.341	785.506	785.555	785.618	785.670	785.506	785.418	785.341	785.177	785.124
7/8	424+14.69	784.537	784.589	784.754	784.918	784.967	785.030	785.083	784.918	784.831	784.754	784.589	784.537
℄ PIER 2	424+32.50	783.939	783.992	784.156	784.321	784.370	784.433	784.485	784.321	784.233	784.156	783.992	783.939
1/8	424+50.31	783.471	783.524	783.688	783.853	783.902	783.965	784.017	783.853	783.765	783.688	783.524	783.471
1/4	424+68.13	782.994	783.046	783.211	783.375	783.424	783.487	783.540	783.375	783.288	783.211	783.046	782.994
3/8	424+85.94	782.497	782.550	782.714	782.879	782.928	782.991	783.043	782.879	782.791	782.714	782.550	782.497
1/2	425+03.75	781.977	782.030	782.194	782.359	782.408	782.471	782.523	782.359	782.271	782.194	782.030	781.977
5/8	425+21.56	781.432	781.485	781.649	781.814	781.863	781.926	781.978	781.814	781.726	781.649	781.485	781.432
3/4	425+39.38	780.863	780.916	781.080	781.245	781.294	781.357	781.409	781.245	781.157	781.080	780.916	780.863
7/8	425+57.19	780.276	780.328	780.493	780.657	780.706	780.769	780.822	780.657	780.570	780.493	780.328	780.276
℄ PIER 3	425+75.00	779.678	779.731	779.895	780.060	780.109	780.172	780.225	780.060	779.973	779.895	779.731	779.678
1/8	425+88.46	779.297	779.350	779.514	779.679	779.728	779.791	779.843	779.679	779.591	779.514	779.350	779.297
1/4	426+01.92	778.913	778.965	779.130	779.294	779.343	779.406	779.459	779.294	779.207	779.130	778.965	778.913
3/8	426+15.38	778.523	778.575	778.740	778.904	778.953	779.016	779.069	778.904	778.817	778.740	778.575	778.523
1/2	426+28.83	778.125	778.177	778.342	778.506	778.555	778.618	778.671	778.506	778.419	778.342	778.177	778.125
5/8	426+42.29	777.718	777.771	777.935	778.100	778.149	778.212	778.264	778.100	778.012	777.935	777.771	777.718
3/4	426+55.75	777.304	777.357	777.521	777.686	777.735	777.798	777.850	777.686	777.598	777.521	777.357	777.304
7/8	426+69.21	776.884	776.936	777.101	777.265	777.314	777.377	777.430	777.265	777.178	777.101	776.936	776.884
℄ BEARING PIER 4	426+82.67	776.459	776.512	776.676	776.841	776.890	776.953	777.005	776.841	776.753	776.676	776.512	776.459

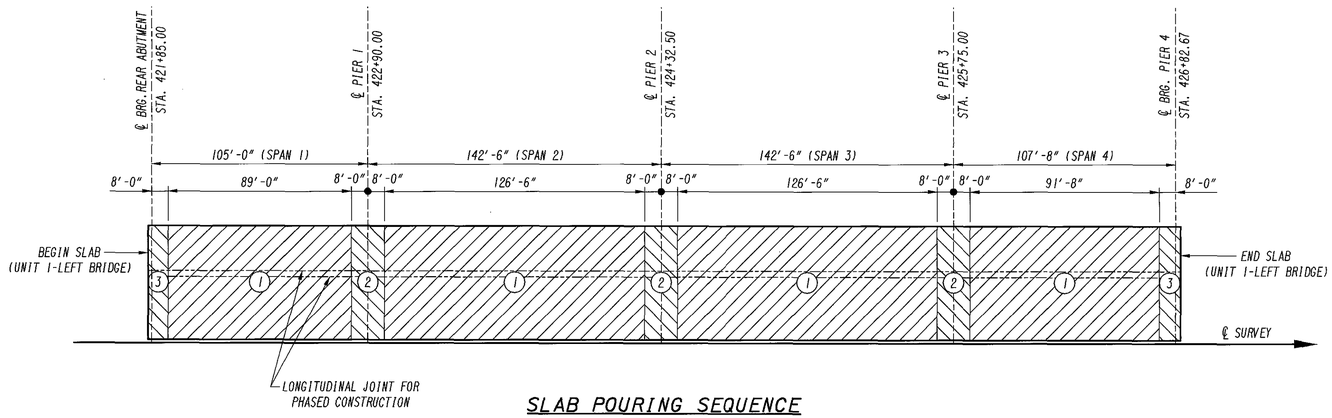


SCREED LOCATION KEY

(UNIT 1 - LEFT BRIDGE)

○ - SIGNIFIES POINTS WHERE ELEVATIONS ARE GIVEN (AT TOP OF CONCRETE)

NOTE :
CONTINUOUS DECK POUR PROCEDURES, WHICH PROCEED FROM END TO END OF THE BRIDGE, AND PLACE THE PIER DIAPHRAGM CONCRETE CONCURRENTLY WITH THE DECK CONCRETE, MAY BE APPROVED BY THE DIRECTOR IF THE PLACEMENT SUBMITTAL CAN ASSURE THAT THE DECK CONCRETE IN ADJACENT SPANS WILL BE PLACED BEFORE THE PIER DIAPHRAGM CONCRETE HAS REACHED ITS INITIAL SET.



SLAB POURING SEQUENCE

(UNIT 1 - LEFT BRIDGE)

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED PROFESSIONAL ENGINEER
9/7/2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
NEW JERSEY NASHVILLE LOUISVILLE
CHARLESTON HERNDON

REVIEWED	DATE
JGG	03-31-04
STRUCTURE FILE NUMBER	
77090/13(L)	
DRAWN	REVISED
JBB	
DESIGNED	
LAC	
CHECKED	
RSP	

SCREED ELEVATIONS-UNIT 1-LEFT BRIDGE-CONC.

BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

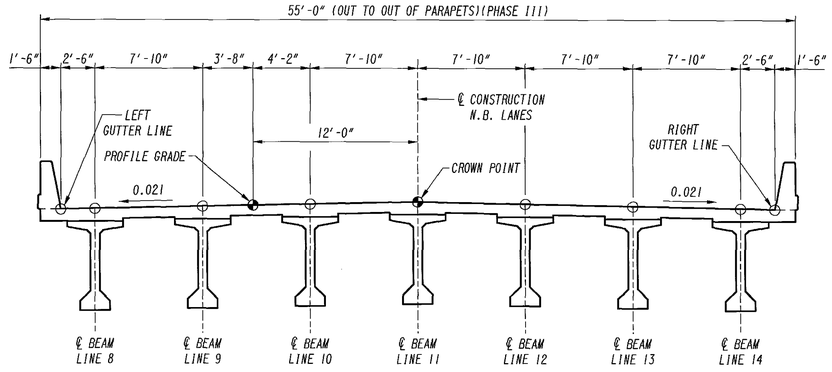
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523/612

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SCREED ELEVATIONS - UNIT 1 - RIGHT BRIDGE											
POINT	STATION	LEFT GUTTER LINE	BEAM LINE 8	BEAM LINE 9	PROFILE GRADE	BEAM LINE 10	CROWN POINT AND BEAM LINE 11	BEAM LINE 12	BEAM LINE 13	BEAM LINE 14	RIGHT GUTTER LINE
℄ BRG. REAR ABUT.	421+65.00	781.757	781.810	781.974	782.052	782.139	782.303	782.139	781.974	781.810	781.757
1/8	421+79.63	781.351	781.404	781.568	781.645	781.733	781.897	781.733	781.568	781.404	781.351
1/4	421+94.25	780.939	780.992	781.156	781.233	781.321	781.485	781.321	781.156	780.992	780.939
3/8	422+08.88	780.519	780.571	780.736	780.813	780.900	781.065	780.900	780.736	780.571	780.519
1/2	422+23.50	780.087	780.140	780.304	780.381	780.469	780.633	780.469	780.304	780.140	780.087
5/8	422+38.13	779.644	779.696	779.861	779.938	780.025	780.190	780.025	779.861	779.696	779.644
3/4	422+52.75	779.189	779.242	779.406	779.483	779.571	779.735	779.571	779.406	779.242	779.189
7/8	422+67.38	778.726	778.779	778.943	779.020	779.108	779.272	779.108	778.943	778.779	778.726
℄ PIER 1	422+82.00	778.259	778.312	778.476	778.553	778.641	778.805	778.641	778.476	778.312	778.259
1/8	422+96.75	777.848	777.901	778.065	778.142	778.230	778.394	778.230	778.065	777.901	777.848
1/4	423+11.50	777.433	777.485	777.650	777.727	777.814	777.979	777.814	777.650	777.485	777.433
3/8	423+26.25	777.009	777.061	777.226	777.303	777.390	777.555	777.390	777.226	777.061	777.009
1/2	423+41.00	776.574	776.627	776.791	776.868	776.956	777.120	776.956	776.791	776.627	776.574
5/8	423+55.75	776.127	776.180	776.344	776.421	776.509	776.673	776.509	776.344	776.180	776.127
3/4	423+70.50	775.669	775.722	775.886	775.963	776.051	776.215	776.051	775.886	775.722	775.669
7/8	423+85.25	775.203	775.255	775.420	775.497	775.584	775.749	775.584	775.420	775.255	775.203
℄ PIER 2	424+00.00	774.731	774.783	774.948	775.025	775.113	775.277	775.113	774.948	774.783	774.731
1/8	424+14.75	774.320	774.373	774.537	774.614	774.702	774.866	774.702	774.537	774.373	774.320
1/4	424+29.50	773.905	773.957	774.122	774.199	774.286	774.451	774.286	774.122	773.957	773.905
3/8	424+44.25	773.480	773.533	773.697	773.774	773.862	774.026	773.862	773.697	773.533	773.480
1/2	424+59.00	773.045	773.097	773.262	773.339	773.426	773.591	773.426	773.262	773.097	773.045
5/8	424+73.75	772.598	772.650	772.815	772.892	772.979	773.144	772.979	772.815	772.650	772.598
3/4	424+88.50	772.140	772.192	772.357	772.434	772.521	772.686	772.521	772.357	772.192	772.140
7/8	425+03.25	771.673	771.726	771.890	771.967	772.055	772.219	772.055	771.890	771.726	771.673
℄ PIER 3	425+18.00	771.203	771.255	771.420	771.497	771.584	771.749	771.584	771.420	771.255	771.203
1/8	425+35.08	770.748	770.801	770.965	771.042	771.130	771.294	771.130	770.965	770.801	770.748
1/4	425+52.17	770.285	770.338	770.502	770.579	770.667	770.831	770.667	770.502	770.338	770.285
3/8	425+69.25	769.806	769.859	770.023	770.100	770.188	770.352	770.188	770.023	769.859	769.806
1/2	425+86.33	769.307	769.359	769.524	769.601	769.688	769.853	769.688	769.524	769.359	769.307
5/8	426+03.42	768.786	768.838	769.003	769.080	769.167	769.332	769.167	769.003	768.838	768.786
3/4	426+20.50	768.244	768.296	768.461	768.538	768.625	768.790	768.625	768.461	768.296	768.244
7/8	426+37.58	767.685	767.737	767.902	767.979	768.066	768.231	768.066	767.902	767.737	767.685
℄ BEARING PIER 4	426+54.67	767.116	767.169	767.333	767.410	767.498	767.662	767.498	767.333	767.169	767.116

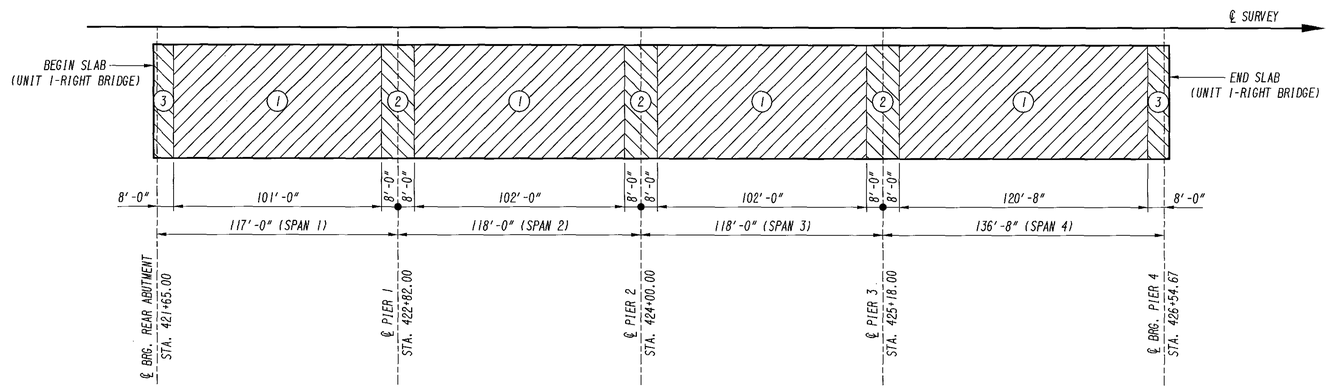


SCREED LOCATION KEY

(UNIT 1 - RIGHT BRIDGE)

○ - SIGNIFIES POINTS WHERE ELEVATIONS ARE GIVEN (AT TOP OF CONCRETE)

NOTE :
CONTINUOUS DECK POUR PROCEDURES, WHICH PROCEED FROM END TO END OF THE BRIDGE, AND PLACE THE PIER DIAPHRAGM CONCRETE CONCURRENTLY WITH THE DECK CONCRETE, MAY BE APPROVED BY THE DIRECTOR IF THE PLACEMENT SUBMITTAL CAN ASSURE THAT THE DECK CONCRETE IN ADJACENT SPANS WILL BE PLACED BEFORE THE PIER DIAPHRAGM CONCRETE HAS REACHED ITS INITIAL SET.



SLAB POURING SEQUENCE

(UNIT 1 - RIGHT BRIDGE)

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/1/04

Palmer ENGINEERING
PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
NEW CREATIVE SOLUTIONS

DESIGNED	DRAWN	REVIEWED	DATE
LAC	JBB	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RSP		7709021(R)	

SCREED ELEVATIONS-UNIT 1-RIGHT BRIDGE-CONC.
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

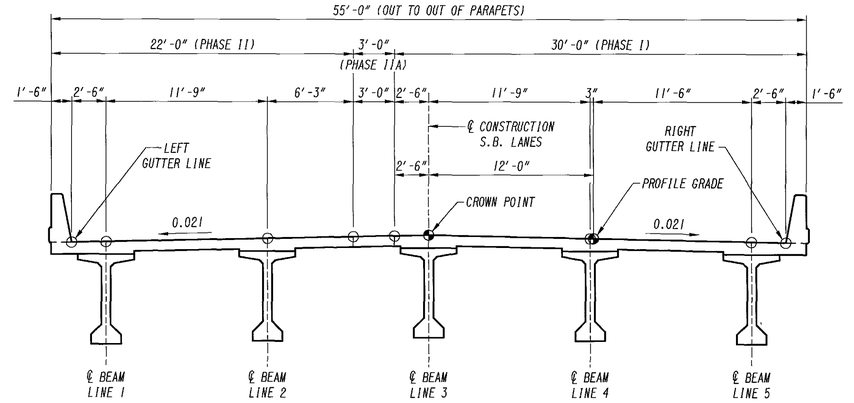
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524 / 612

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SCREED ELEVATIONS - UNIT 2 - LEFT BRIDGE											
POINT	STATION	LEFT GUTTER LINE	BEAM LINE 1	BEAM LINE 2	PHASE 2 JOINT	PHASE 1 JOINT	CROWN POINT AND BEAM LINE 3	BEAM LINE 4	PROFILE GRADE	BEAM LINE 5	RIGHT GUTTER LINE
℄ BEARING PIER 4	426+87.33	776.320	776.372	776.619	776.750	776.813	776.866	776.619	776.614	776.372	776.320
1/10	427+05.60	775.911	775.964	776.210	776.342	776.405	776.457	776.210	776.205	775.964	775.911
2/10	427+23.87	775.486	775.538	775.785	775.916	775.979	776.032	775.785	775.780	775.538	775.486
3/10	427+42.13	775.021	775.074	775.320	775.452	775.515	775.567	775.320	775.315	775.074	775.021
4/10	427+60.40	774.505	774.557	774.804	774.935	774.998	775.051	774.804	774.799	774.557	774.505
5/10	427+78.67	773.935	773.987	774.234	774.365	774.428	774.481	774.234	774.229	773.987	773.935
6/10	427+96.93	773.318	773.371	773.618	773.749	773.812	773.864	773.618	773.612	773.371	773.318
7/10	428+15.20	772.673	772.725	772.972	773.103	773.166	773.219	772.972	772.967	772.725	772.673
8/10	428+33.47	772.028	772.080	772.327	772.458	772.521	772.574	772.327	772.322	772.080	772.028
9/10	428+51.73	771.420	771.473	771.719	771.851	771.914	771.966	771.719	771.714	771.473	771.420
℄ PIER 5	428+70.00	770.858	770.911	771.157	771.289	771.352	771.404	771.157	771.152	770.911	770.858
1/10	428+93.20	770.205	770.258	770.505	770.636	770.699	770.751	770.505	770.499	770.258	770.205
2/10	429+16.40	769.620	769.672	769.919	770.050	770.113	770.166	769.919	769.914	769.672	769.620
3/10	429+39.60	769.061	769.114	769.361	769.492	769.555	769.607	769.361	769.355	769.114	769.061
4/10	429+62.80	768.478	768.531	768.777	768.909	768.972	769.024	768.777	768.772	768.531	768.478
5/10	429+86.00	767.830	767.882	768.129	768.260	768.323	768.376	768.129	768.124	767.882	767.830
6/10	430+09.20	767.101	767.154	767.400	767.532	767.595	767.647	767.400	767.395	767.154	767.101
7/10	430+32.40	766.301	766.354	766.601	766.732	766.795	766.847	766.601	766.595	766.354	766.301
8/10	430+55.60	765.466	765.519	765.765	765.897	765.960	766.012	765.765	765.760	765.519	765.466
9/10	430+78.80	764.657	764.709	764.956	765.087	765.150	765.203	764.956	764.951	764.709	764.657
℄ PIER 6	431+02.00	763.921	763.974	764.221	764.352	764.415	764.467	764.221	764.215	763.974	763.921
1/10	431+25.20	763.259	763.311	763.558	763.689	763.752	763.805	763.558	763.553	763.311	763.259
2/10	431+48.40	762.669	762.721	762.968	763.099	763.162	763.215	762.968	762.963	762.721	762.669
3/10	431+71.60	762.109	762.161	762.408	762.539	762.602	762.655	762.408	762.403	762.161	762.109
4/10	431+94.80	761.520	761.573	761.820	761.951	762.014	762.066	761.820	761.814	761.573	761.520
5/10	432+18.00	760.862	760.914	761.161	761.292	761.355	761.408	761.161	761.156	760.914	760.862
6/10	432+41.20	760.127	760.179	760.426	760.557	760.620	760.673	760.426	760.421	760.179	760.127
7/10	432+64.40	759.332	759.385	759.631	759.763	759.826	759.878	759.631	759.626	759.385	759.332
8/10	432+87.60	758.514	758.567	758.814	758.945	759.008	759.060	758.814	758.808	758.567	758.514
9/10	433+10.80	757.718	757.771	758.017	758.149	758.212	758.264	758.017	758.012	757.771	757.718
℄ PIER 7	433+34.00	756.984	757.037	757.284	757.415	757.478	757.530	757.284	757.278	757.037	756.984
1/10	433+52.27	756.453	756.506	756.753	756.884	756.947	756.999	756.753	756.747	756.506	756.453
2/10	433+70.53	755.967	756.020	756.266	756.398	756.461	756.513	756.266	756.261	756.020	755.967
3/10	433+88.80	755.518	755.571	755.817	755.949	756.012	756.064	755.817	755.812	755.571	755.518
4/10	434+07.07	755.070	755.123	755.370	755.501	755.564	755.616	755.370	755.364	755.123	755.070
5/10	434+25.33	754.594	754.647	754.893	755.025	755.088	755.140	754.893	754.888	754.647	754.594
6/10	434+43.60	754.072	754.125	754.372	754.503	754.566	754.618	754.372	754.366	754.125	754.072
7/10	434+61.87	753.497	753.550	753.797	753.928	753.991	754.043	753.797	753.791	753.550	753.497
8/10	434+80.13	752.871	752.923	753.170	753.301	753.364	753.417	753.170	753.165	752.923	752.871
9/10	434+98.40	752.205	752.258	752.504	752.636	752.699	752.751	752.504	752.499	752.258	752.205
℄ BEARING PIER 8	435+16.67	751.523	751.575	751.822	751.953	752.016	752.069	751.822	751.817	751.575	751.523



SCREED LOCATION KEY

(UNIT 2 - LEFT BRIDGE)

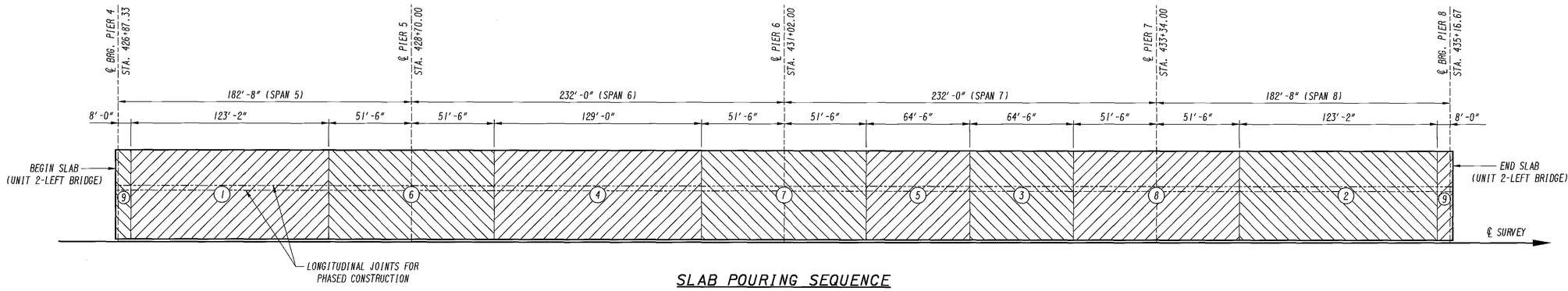
○ - SIGNIFIES POINTS WHERE ELEVATIONS ARE GIVEN (AT TOP OF CONCRETE)

NOTE :
ELEVATIONS GIVEN REPRESENT THE TOTAL ANTICIPATED ELEVATION CHANGE OF THE BEAMS (SUPERSTRUCTURE) FROM THE TIME PRIOR TO THE PLACEMENT OF THE FORMS UNTIL THE STRUCTURE IS IN SERVICE (ASSUMED TO BE APPROXIMATELY 3 YEARS AFTER THE POST-TENSIONING IS APPLIED TO THE BEAMS). THE ELEVATIONS ACCOUNT FOR ANTICIPATED DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF THE DECK, HAUNCHES, STAY-IN-PLACE FORMS, & PARAPETS AND LONG TERM DEFLECTIONS DUE TO CREEP AND SHRINKAGE.

STATE OF OHIO
DAVID HOLLIHAN DEITZ
E-65326
REGISTERED
PROFESSIONAL ENGINEER

David Holman Deitz
9.7.2009

NOTE :
CIRCLED NUMBERS IN THE SLAB POURING SEQUENCE PLAN SHOW THE REQUIRED PLACEMENT SEQUENCE OF THE DECK CONCRETE. NO CHANGES IN THE POURING SEQUENCE WILL BE PERMITTED.



SLAB POURING SEQUENCE

(UNIT 2 - LEFT BRIDGE)

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED LAC
DRAWN JBB
CHECKED DHD
REVIEWED JGG
DATE 03-31-04
REVISED
STRUCTURE FILE NUMBER 7709013(L)

SCREED ELEVATIONS-UNIT 2-LEFT BRIDGE-CONC.
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

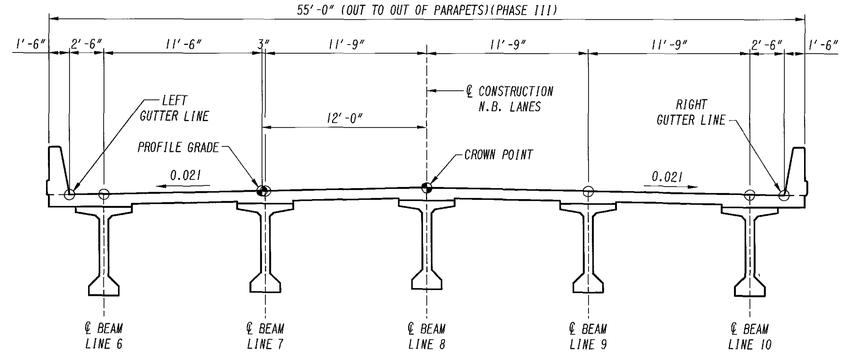
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SCREED ELEVATIONS - UNIT 2 - RIGHT BRIDGE									
POINT	STATION	LEFT GUTTER LINE	BEAM LINE 6	PROFILE GRADE	BEAM LINE 7	CROWN POINT AND BEAM LINE 8	BEAM LINE 9	BEAM LINE 10	RIGHT GUTTER LINE
℄ BEARING PIER 4	426+59.33	766.977	767.029	767.271	767.276	767.523	767.276	767.029	766.977
1/10	426+77.60	766.568	766.621	766.862	766.868	767.114	766.868	766.621	766.568
2/10	426+95.87	766.143	766.195	766.437	766.442	766.689	766.442	766.195	766.143
3/10	427+14.13	765.678	765.731	765.972	765.978	766.224	765.978	765.731	765.678
4/10	427+32.40	765.162	765.215	765.456	765.461	765.708	765.461	765.215	765.162
5/10	427+50.67	764.592	764.645	764.886	764.891	765.138	764.891	764.645	764.592
6/10	427+68.93	763.976	764.028	764.270	764.275	764.522	764.275	764.028	763.976
7/10	427+87.20	763.330	763.382	763.624	763.629	763.876	763.629	763.382	763.330
8/10	428+05.47	762.685	762.737	762.979	762.984	763.231	762.984	762.737	762.685
9/10	428+23.73	762.077	762.130	762.371	762.377	762.623	762.377	762.130	762.077
℄ PIER 5	428+42.00	761.515	761.568	761.809	761.815	762.061	761.815	761.568	761.515
1/10	428+65.20	760.863	760.915	761.157	761.162	761.409	761.162	760.915	760.863
2/10	428+88.40	760.277	760.330	760.571	760.576	760.823	760.576	760.330	760.277
3/10	429+11.60	759.719	759.771	760.013	760.018	760.265	760.018	759.771	759.719
4/10	429+34.80	759.135	759.188	759.429	759.435	759.681	759.435	759.188	759.135
5/10	429+58.00	758.487	758.539	758.781	758.786	759.033	758.786	758.539	758.487
6/10	429+81.20	757.758	757.811	758.052	758.058	758.304	758.058	757.811	757.758
7/10	430+04.40	756.959	757.011	757.253	757.258	757.505	757.258	757.011	756.959
8/10	430+27.60	756.123	756.176	756.417	756.423	756.669	756.423	756.176	756.123
9/10	430+50.80	755.314	755.367	755.608	755.613	755.860	755.613	755.367	755.314
℄ PIER 6	430+74.00	754.578	754.631	754.872	754.878	755.124	754.878	754.631	754.578
1/10	430+97.20	753.916	753.968	754.210	754.215	754.462	754.215	753.968	753.916
2/10	431+20.40	753.326	753.379	753.620	753.625	753.872	753.625	753.379	753.326
3/10	431+43.60	752.766	752.818	753.060	753.065	753.312	753.065	752.818	752.766
4/10	431+66.80	752.178	752.230	752.472	752.477	752.724	752.477	752.230	752.178
5/10	431+90.00	751.519	751.572	751.813	751.818	752.065	751.818	751.572	751.519
6/10	432+13.20	750.784	750.836	751.078	751.083	751.330	751.083	750.836	750.784
7/10	432+36.40	749.989	750.042	750.283	750.289	750.535	750.289	750.042	749.989
8/10	432+59.60	749.171	749.224	749.465	749.471	749.717	749.471	749.224	749.171
9/10	432+82.80	748.375	748.428	748.669	748.675	748.921	748.675	748.428	748.375
℄ PIER 7	433+06.00	747.642	747.694	747.936	747.941	748.188	747.941	747.694	747.642
1/10	433+24.27	747.111	747.163	747.405	747.410	747.657	747.410	747.163	747.111
2/10	433+42.53	746.624	746.677	746.918	746.924	747.170	746.924	746.677	746.624
3/10	433+60.80	746.175	746.228	746.469	746.474	746.721	746.474	746.228	746.175
4/10	433+79.07	745.727	745.780	746.021	746.027	746.273	746.027	745.780	745.727
5/10	433+97.33	745.251	745.304	745.545	745.551	745.797	745.551	745.304	745.251
6/10	434+15.60	744.730	744.782	745.024	745.029	745.276	745.029	744.782	744.730
7/10	434+33.87	744.154	744.207	744.448	744.454	744.700	744.454	744.207	744.154
8/10	434+52.13	743.528	743.580	743.822	743.827	744.074	743.827	743.580	743.528
9/10	434+70.40	742.862	742.915	743.156	743.162	743.408	743.162	742.915	742.862
℄ BEARING PIER 8	434+88.67	742.180	742.232	742.474	742.479	742.726	742.479	742.232	742.180



SCREED LOCATION KEY

(UNIT 2 - RIGHT BRIDGE)

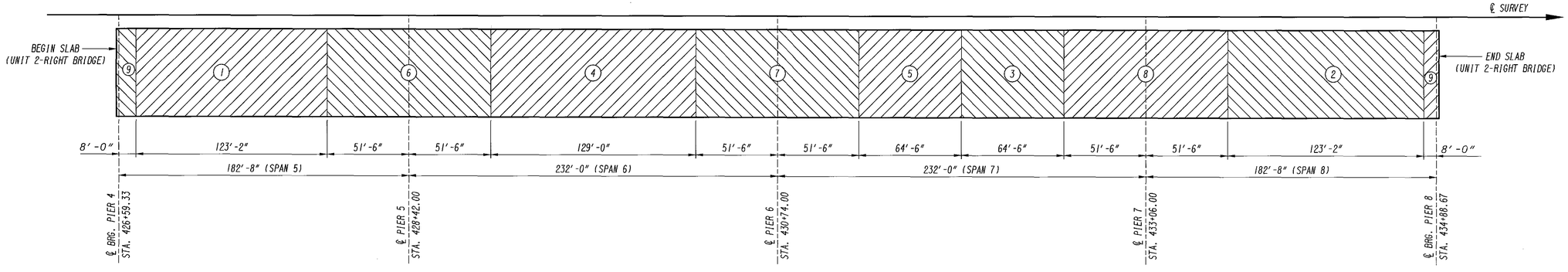
○ - SIGNIFIES POINTS WHERE ELEVATIONS ARE GIVEN (AT TOP OF CONCRETE)

NOTE :
ELEVATIONS GIVEN REPRESENT THE TOTAL ANTICIPATED ELEVATION CHANGE OF THE BEAMS (SUPERSTRUCTURE) FROM THE TIME PRIOR TO THE PLACEMENT OF THE FORMS UNTIL THE STRUCTURE IS IN SERVICE (ASSUMED TO BE APPROXIMATELY 3 YEARS AFTER THE POST-TENSIONING IS APPLIED TO THE BEAMS). THE ELEVATIONS ACCOUNT FOR ANTICIPATED DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF THE DECK, HAUNCHES, STAY-IN-PLACE FORMS, & PARAPETS AND LONG TERM DEFLECTIONS DUE TO CREEP AND SHRINKAGE.

STATE OF OHIO
DAVID
ROBERT
DEITZ
E-49326
REGISTERED
PROFESSIONAL ENGINEER

David Robert Deitz
9.7.2004

NOTE :
CIRCLED NUMBERS IN THE SLAB POURING SEQUENCE PLAN SHOW THE REQUIRED PLACEMENT SEQUENCE OF THE DECK CONCRETE.
NO CHANGES IN THE POURING SEQUENCE WILL BE PERMITTED.



SLAB POURING SEQUENCE

(UNIT 2 - RIGHT BRIDGE)

PALMER ENGINEERING
146 N. BRIGEL BLVD.
MIDDLETOWN, OH 45042
Palmer ENGINEERING
NEW YORK CHESTER, PA ASHEVILLE, NC LOUISVILLE, KY MIDDLETOWN, OH HARRISBURG, PA

DESIGNED LAC | DRAWN JBB | REVIEWED JGG | DATE 03-31-04
CHECKED DHD | REVISED | STRUCTURE FILE NUMBER 7709021(R)

SCREED ELEVATIONS-UNIT 2-RIGHT BRIDGE-CONC.
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

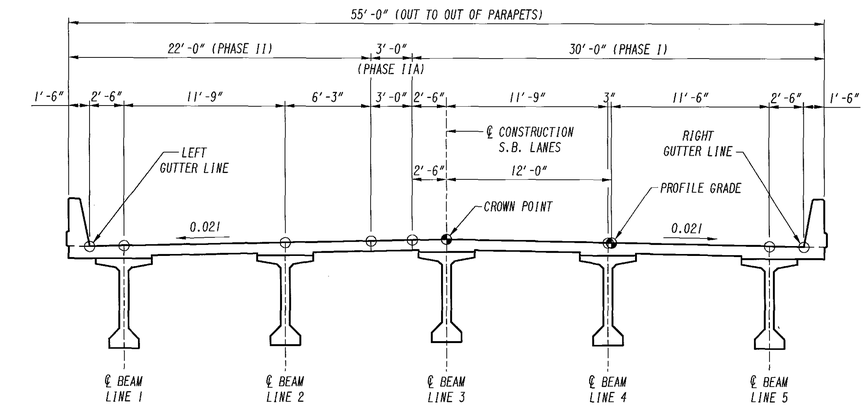
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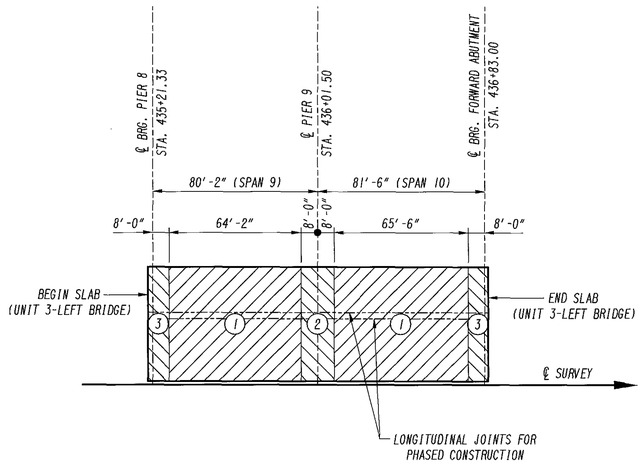
SCREED ELEVATIONS - UNIT 3 - LEFT BRIDGE											
POINT	STATION	LEFT GUTTER LINE	BEAM LINE 1	BEAM LINE 2	PHASE 2 JOINT	PHASE 1 JOINT	CROWN POINT AND BEAM LINE 3	BEAM LINE 4	PROFILE GRADE	BEAM LINE 5	RIGHT GUTTER LINE
℄ BEARING PIER 8	435+21.33	751.383	751.436	751.682	751.814	751.877	751.929	751.682	751.677	751.436	751.383
1/4	435+41.37	750.801	750.854	751.100	751.232	751.295	751.347	751.100	751.095	750.854	750.801
1/2	435+61.42	750.209	750.261	750.508	750.639	750.702	750.755	750.508	750.503	750.261	750.209
3/4	435+81.46	749.602	749.655	749.902	750.033	750.096	750.148	749.902	749.896	749.655	749.602
℄ PIER 9	436+01.50	748.986	749.039	749.285	749.417	749.480	749.532	749.285	749.280	749.039	748.986
1/4	436+21.88	748.395	748.448	748.694	748.826	748.889	748.941	748.694	748.689	748.448	748.395
1/2	436+42.25	747.794	747.846	748.093	748.224	748.287	748.340	748.093	748.088	747.846	747.794
3/4	436+62.63	747.177	747.230	747.476	747.608	747.671	747.723	747.476	747.471	747.230	747.177
℄ BRG. FORWARD ABUT.	436+83.00	746.549	746.602	746.849	746.980	747.043	747.095	746.849	746.843	746.602	746.549



SCREED LOCATION KEY

(UNIT 3 - LEFT BRIDGE)

○ - SIGNIFIES POINTS WHERE ELEVATIONS ARE GIVEN (AT TOP OF CONCRETE)



SLAB POURING SEQUENCE

(UNIT 3 - LEFT BRIDGE)

NOTE :
CONTINUOUS DECK POUR PROCEDURES, WHICH PROCEED FROM END TO END OF THE BRIDGE, AND PLACE THE PIER DIAPHRAGM CONCRETE CONCURRENTLY WITH THE DECK CONCRETE, MAY BE APPROVED BY THE DIRECTOR IF THE PLACEMENT SUBMITTAL CAN ASSURE THAT THE DECK CONCRETE IN ADJACENT SPANS WILL BE PLACED BEFORE THE PIER DIAPHRAGM CONCRETE HAS REACHED ITS INITIAL SET.

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED LAC | DRAWN JBB | CHECKED RSP | REVIEWED JGG | DATE 03-31-04 | REVISED | STRUCTURE FILE NUMBER 770901311(L)

SCREED ELEVATIONS-UNIT 3-LEFT BRIDGE-CONC.
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

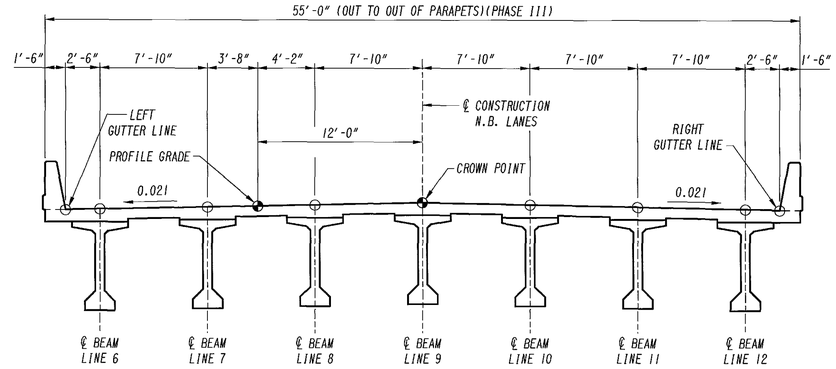
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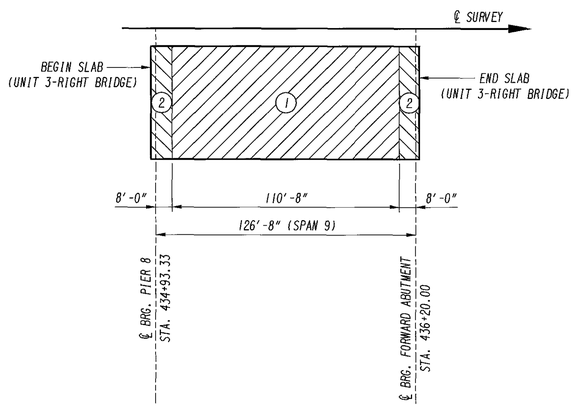
SCREED ELEVATIONS - UNIT 3 - RIGHT BRIDGE											
POINT	STATION	LEFT GUTTER LINE	BEAM LINE 6	BEAM LINE 7	PROFILE GRADE	BEAM LINE 8	CROWN POINT AND BEAM LINE 9	BEAM LINE 10	BEAM LINE 11	BEAM LINE 12	RIGHT GUTTER LINE
℄ BEARING PIER 8	434+93.33	742.040	742.093	742.257	742.334	742.422	742.586	742.422	742.257	742.093	742.040
1/8	435+09.17	741.611	741.664	741.828	741.905	741.993	742.157	741.993	741.828	741.664	741.611
1/4	435+25.00	741.175	741.227	741.392	741.469	741.556	741.721	741.556	741.392	741.227	741.175
3/8	435+40.83	740.726	740.778	740.943	741.020	741.107	741.272	741.107	740.943	740.778	740.726
1/2	435+56.67	740.261	740.313	740.478	740.555	740.642	740.807	740.642	740.478	740.313	740.261
5/8	435+72.50	739.779	739.831	739.996	740.073	740.160	740.325	740.160	739.996	739.831	739.779
3/4	435+88.33	739.281	739.334	739.498	739.575	739.663	739.827	739.663	739.498	739.334	739.281
7/8	436+04.17	738.771	738.823	738.988	739.065	739.152	739.317	739.152	738.988	738.823	738.771
℄ BRG. FORWARD ABUT.	436+20.00	738.253	738.305	738.470	738.547	738.635	738.799	738.635	738.470	738.305	738.253



SCREED LOCATION KEY

(UNIT 3 - RIGHT BRIDGE)

○ - SIGNIFIES POINTS WHERE ELEVATIONS ARE GIVEN (AT TOP OF CONCRETE)



SLAB POURING SEQUENCE

(UNIT 3 - RIGHT BRIDGE)

NOTE :
CONTINUOUS DECK POUR PROCEDURES, WHICH PROCEED FROM END TO END OF THE BRIDGE, AND PLACE THE PIER DIAPHRAGM CONCRETE CONCURRENTLY WITH THE DECK CONCRETE, MAY BE APPROVED BY THE DIRECTOR IF THE PLACEMENT SUBMITTAL CAN ASSURE THAT THE DECK CONCRETE IN ADJACENT SPANS WILL BE PLACED BEFORE THE PIER DIAPHRAGM CONCRETE HAS REACHED ITS INITIAL SET.

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/1/2004

Palmer ENGINEERING
PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED LAC | DRAWN JBB | CHECKED RSP | REVIEWED JGG | DATE 03-31-04 | REVISED | STRUCTURE FILE NUMBER 7709021(R)

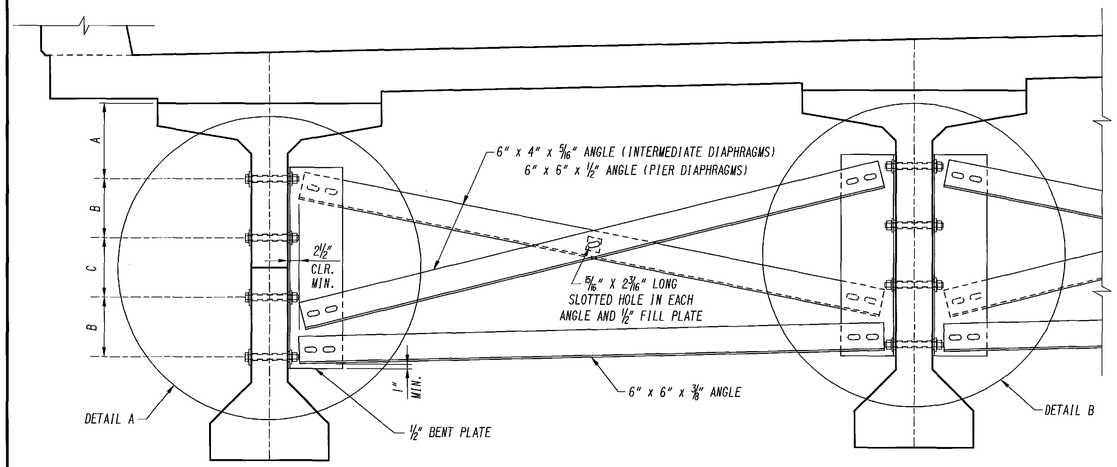
SCREED ELEVATIONS-UNIT 3-RIGHT BRIDGE-CONC.
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

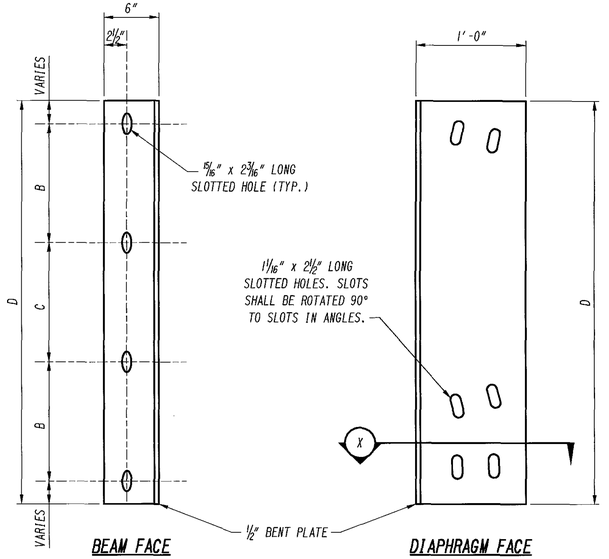
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INTERMEDIATE DIAPHRAGMS AND UNIT 2 PIER DIAPHRAGMS



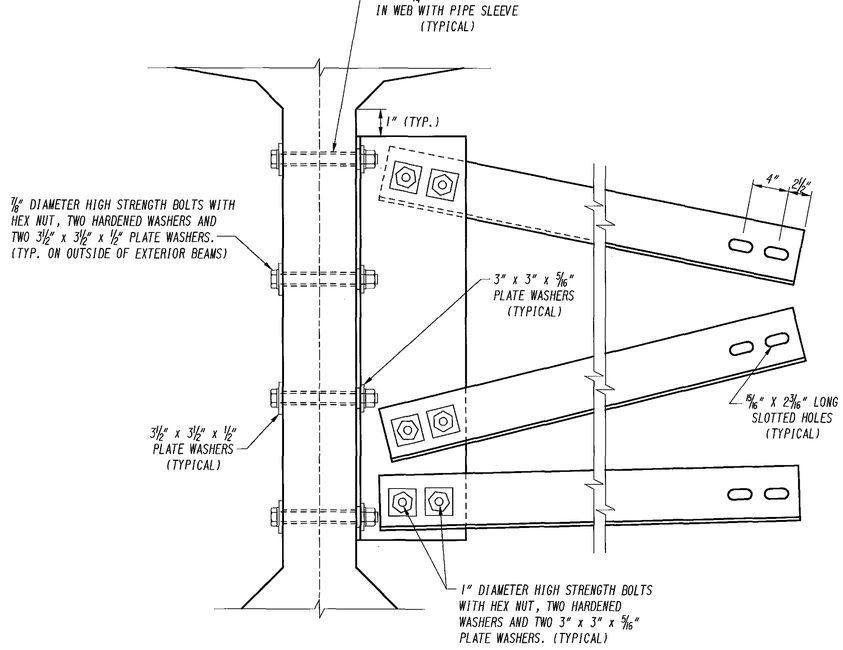
DIAPHRAGM SUPPORT



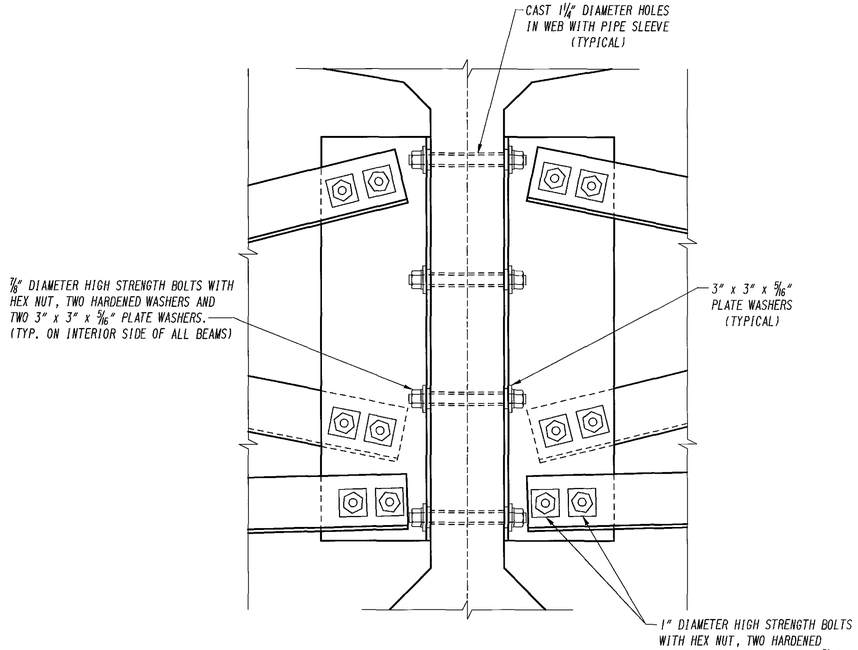
SECTION X

STATE OF OHIO
DAVID HOLMAN DEITZ
E-65926
REGISTERED PROFESSIONAL ENGINEER

David Holman Deitz
9.7.2004



DETAIL A



DETAIL B

TABLE OF DIMENSIONS

	A	B	C	D
D1	1'-3"	1'-0"	1'-7"	4'-0"
D2	1'-3"	1'-2"	1'-2"	4'-0"
D3	1'-3"	1'-1"	1'-1"	4'-0"
D4	1'-2 3/8"	1'-0"	1'-0"	4'-0"
D5	1'-4 1/2"	1'-10"	1'-10"	6'-2"
D6	1'-2 1/4"	1'-1"	1'-1"	4'-0"
D7	1'-7 1/8"	1'-0"	1'-2"	4'-0"
D8	1'-3"	1'-0"	1'-5"	4'-0"

SEE FRAMING PLAN FOR DIAPHRAGM LOCATIONS

NOTES

ALL STRUCTURAL STEEL, INCLUDING BOLTS, NUTS AND WASHERS, SHALL MEET THE FABRICATION AND ERECTION REQUIREMENTS SPECIFIED IN 513. THE DEPARTMENT WILL CONSIDER THESE COSTS TO BE INCIDENTAL TO ITEM 515, INTERMEDIATE DIAPHRAGMS.

ALL STRUCTURAL STEEL SHALL BE ASTM A709, GRADE 50, GALVANIZED ACCORDING TO 711.02.

BOLTS ARE ASTM A325, TYPE 1, ALL BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED ACCORDING TO 711.02.

LOCATE BOLT HOLES IN THE I-BEAM WEBS TO AVOID PRESTRESSING STRANDS AND POST TENSIONING DUCTS.

BEAM FABRICATION SHALL NOT COMMENCE PRIOR TO THE APPROVAL OF STRUCTURAL STEEL DIAPHRAGM SHOP DRAWINGS.

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
WAH	JBB	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
PJS		7709013(L) 7709021(R)	

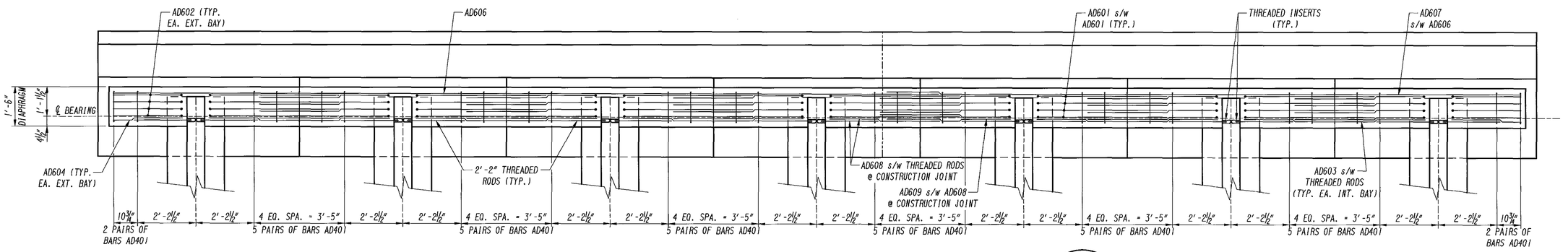
DIAPHRAGMS - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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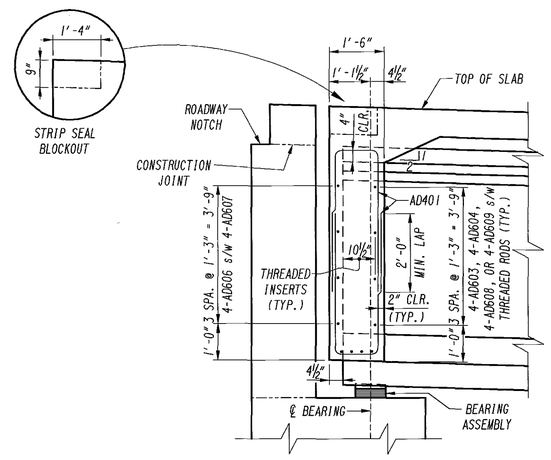
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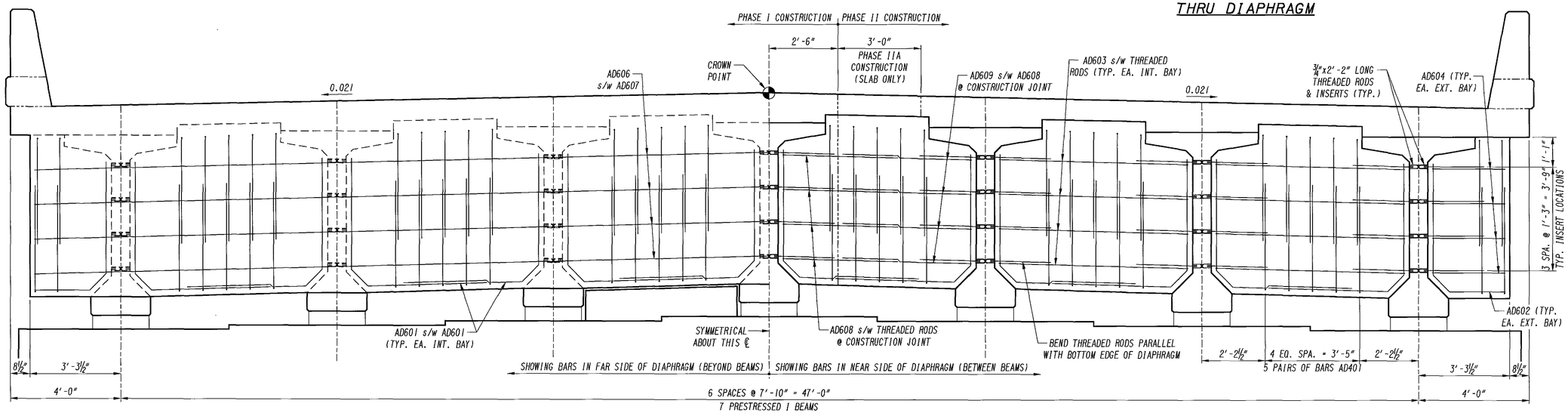


ABUTMENT DIAPHRAGM PLAN
EXPANSION - ABUTMENT I
LEFT BRIDGE

(DECK & TOP BEAM FLANGE REMOVED)
(LOOKING BACK STATION)



TYPICAL SECTION
THRU DIAPHRAGM



ABUTMENT DIAPHRAGM ELEVATION
EXPANSION - ABUTMENT I
LEFT BRIDGE

((LOOKING BACK STATION)

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED PROFESSIONAL ENGINEER
9/7/2004

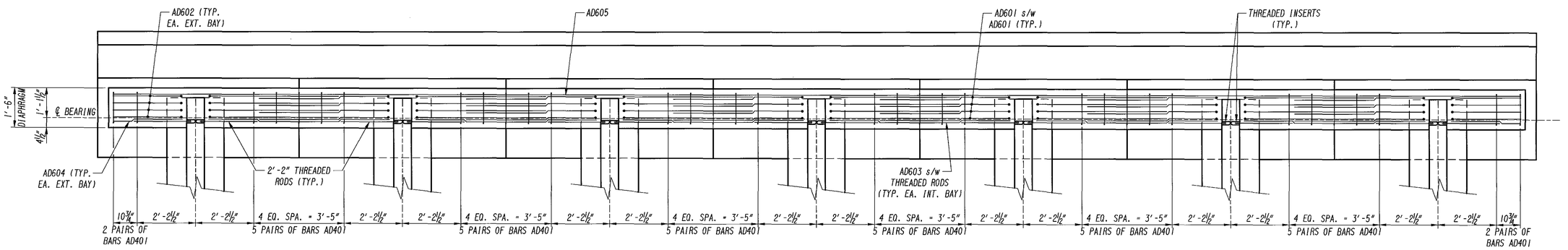
PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED PJS | DRAWN JAP | REVIEWED JGG | DATE 03-31-04
CHECKED LAC | REVISED | STRUCTURE FILE NUMBER 770901 3(L)

SUM-271-8.02 - LEFT BRIDGE - CONC.
EXP. ABUTMENT 1 DIAPHRAGM
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

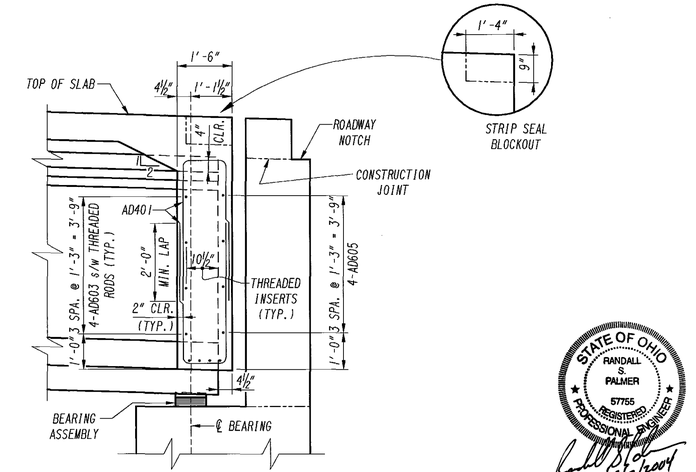
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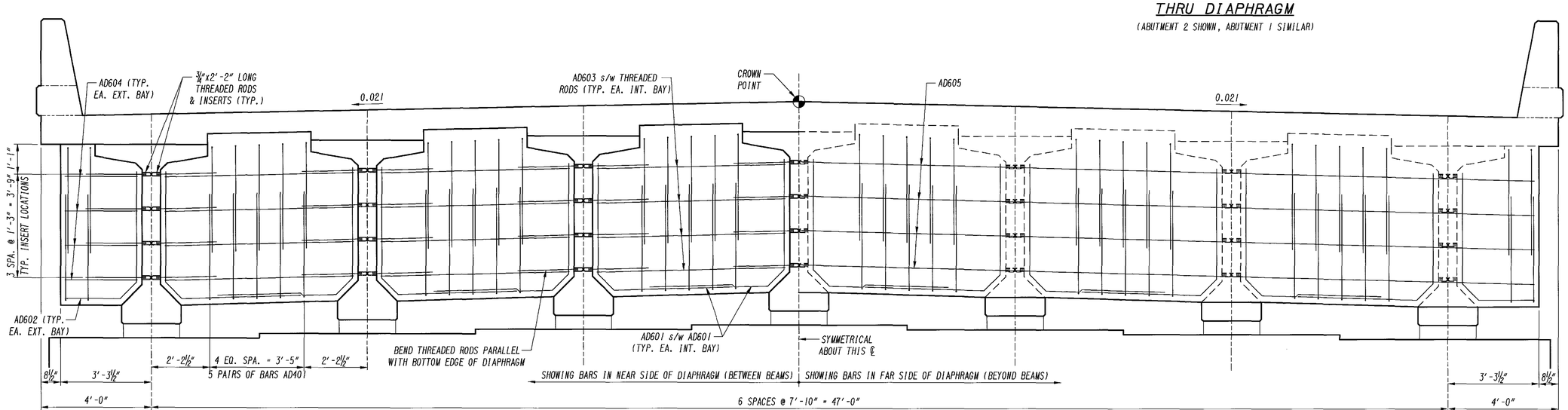
ABUTMENT DIAPHRAGM PLAN
EXPANSION - ABUTMENT 1 & 2
RIGHT BRIDGE

(DECK & TOP BEAM FLANGE REMOVED)



TYPICAL SECTION
THRU DIAPHRAGM

(ABUTMENT 2 SHOWN, ABUTMENT 1 SIMILAR)



ABUTMENT DIAPHRAGM ELEVATION
EXPANSION - ABUTMENT 1 & 2
RIGHT BRIDGE

(PHASE III)

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

Palmer ENGINEERING
PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED PJS | DRAWN JAP | REVIEWED JGG 03-31-04
CHECKED LAC | REVISED | STRUCTURE FILE NUMBER 7709021(R)

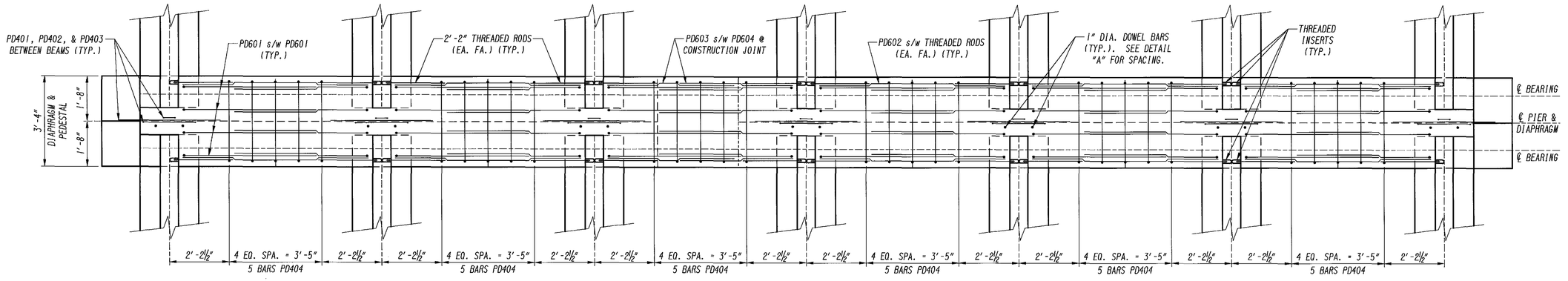
EXP. ABUTMENT DIAPHRAGM - RIGHT BRIDGE - CONC.
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

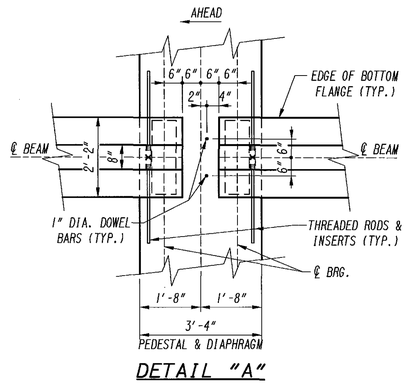
94 / 123

531 / 612

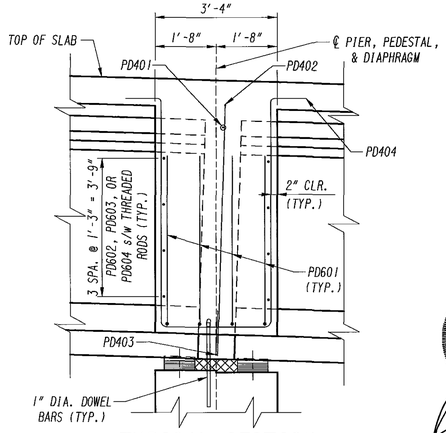
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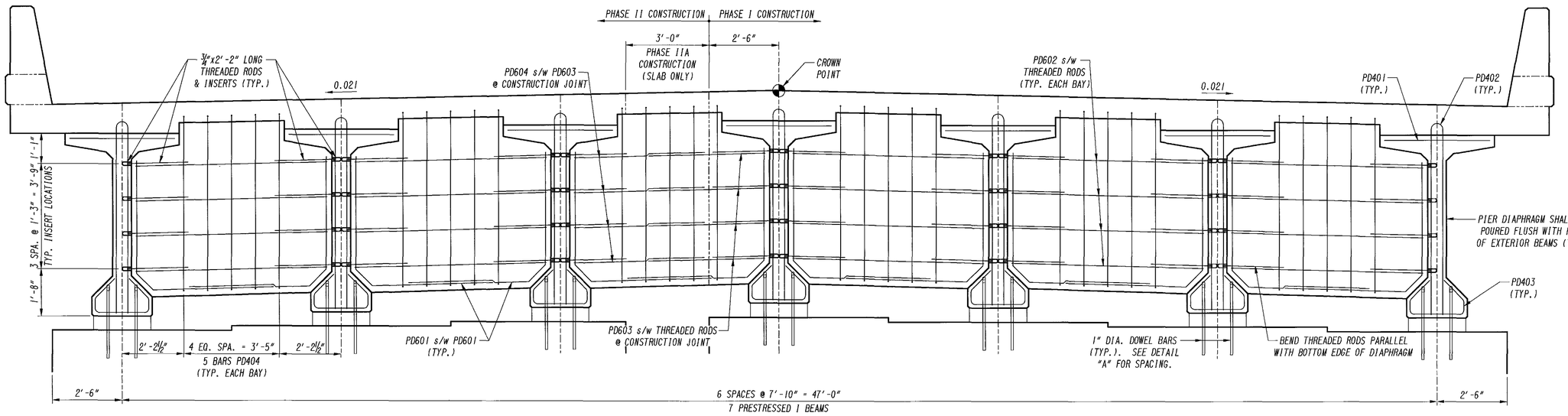
PIER DIAPHRAGM PLAN
FIXED - PIER 1, 2, & 3
LEFT BRIDGE
(DECK & TOP BEAM FLANGE REMOVED)



DETAIL "A"



TYPICAL SECTION
THRU DIAPHRAGM



PIER DIAPHRAGM ELEVATION
FIXED - PIER 1, 2, & 3
LEFT BRIDGE

SEE STANDARD DRAWING PSID-1-99 FOR 1" DIAMETER DOWEL BAR DETAILS.

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/1/2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
WWW.PALMERENGINEERING.COM

REVIEWED	DATE
JGG	03-31-04

STRUCTURE FILE NUMBER 7709013(L)

DESIGNED	DRAWN	CHECKED	REVISED
PJS	JAP	LMS	

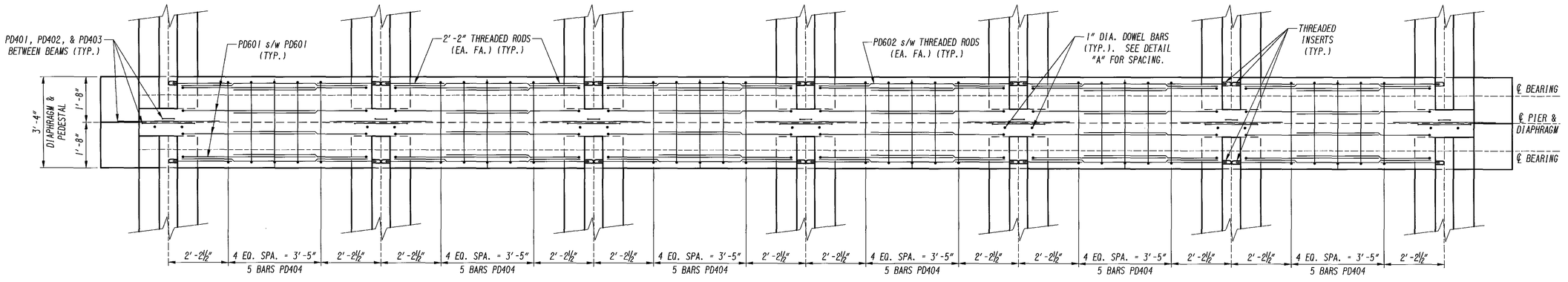
FIXED PIER DIAPH. - UNIT 1 - LT. BRIDGE - CONC.
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

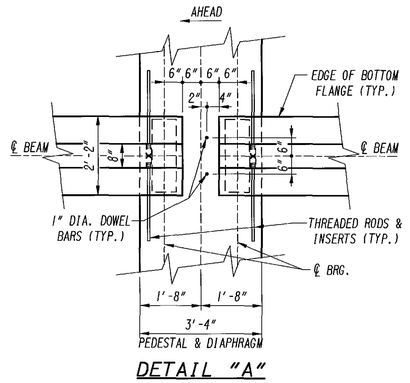
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532/612

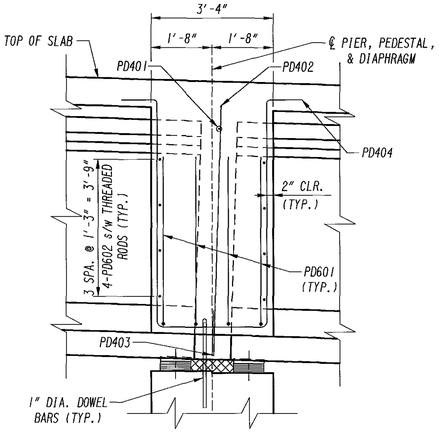
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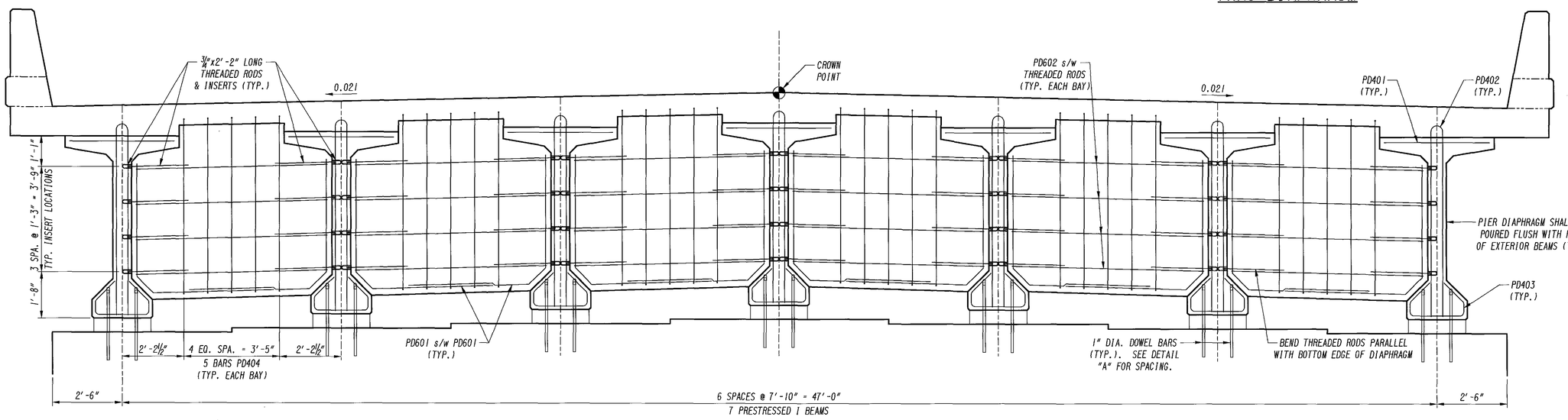
PIER DIAPHRAGM PLAN
FIXED - PIER 1, 2, & 3
RIGHT BRIDGE
(DECK & TOP BEAM FLANGE REMOVED)



DETAIL "A"



TYPICAL SECTION
THRU DIAPHRAGM



PIER DIAPHRAGM ELEVATION
FIXED - PIER 1, 2, & 3
RIGHT BRIDGE
(PHASE III)

SEE STANDARD DRAWING PSID-1-99 FOR 1" DIAMETER DOWEL BAR DETAILS.

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
ENGINEERING • SURVEYING • PLANNING
MIDDLETOWN • HERRICKS

DESIGNED	DRAWN	REVIEWED	DATE
PJS	JAP	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
LMS		7709021(R)	

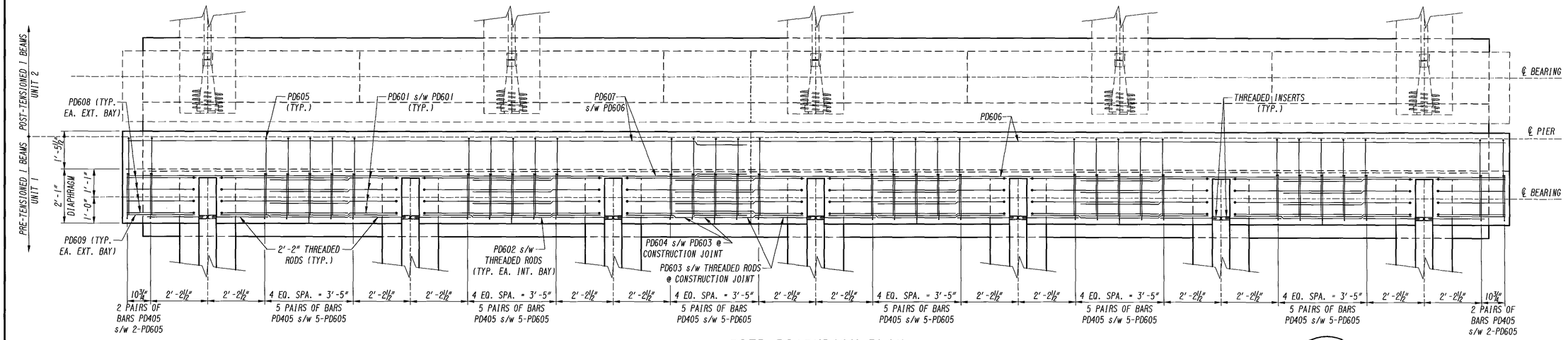
FIXED PIER DIAPH. - UNIT 1 - RT. BRIDGE - CONC.
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

96/123

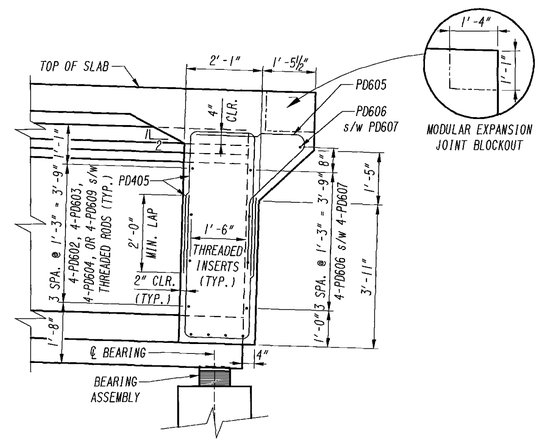
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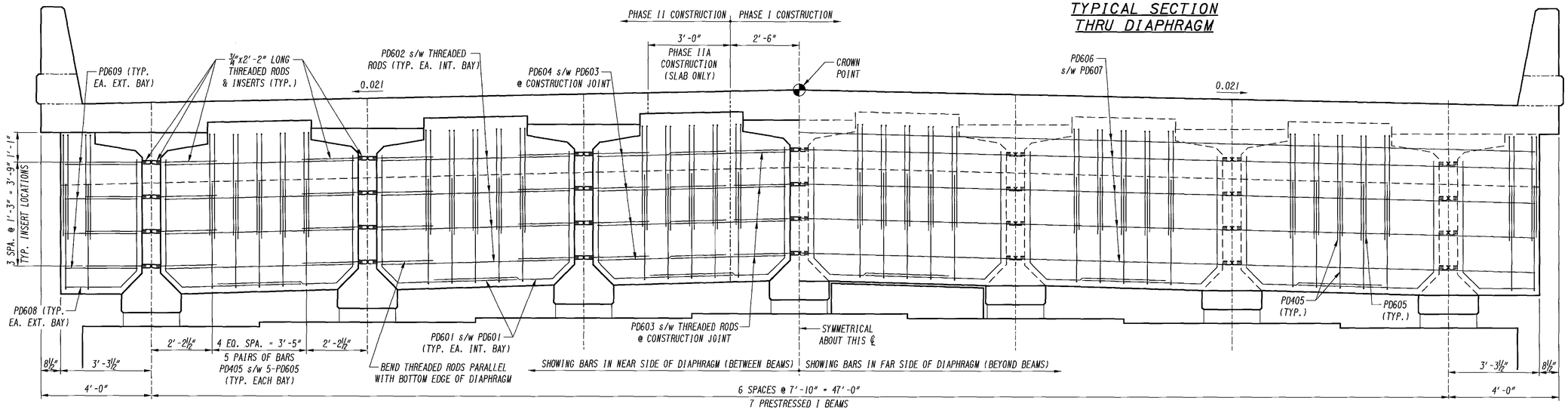


PIER DIAPHRAGM PLAN EXPANSION - PIER 4 LEFT BRIDGE

(DECK & TOP BEAM FLANGE REMOVED)



TYPICAL SECTION THRU DIAPHRAGM



PIER DIAPHRAGM ELEVATION EXPANSION - PIER 4 LEFT BRIDGE

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

Palmer ENGINEERING
PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
PJS	JAP	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
LMS		7709013(L)	

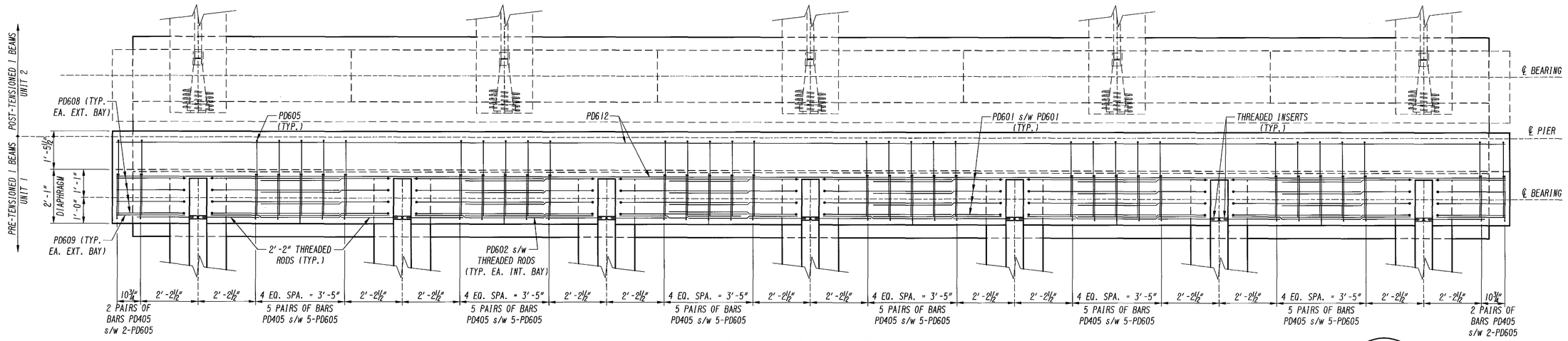
EXP. PIER DIAPH. - UNIT 1 - LT. BRIDGE - CONC.
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

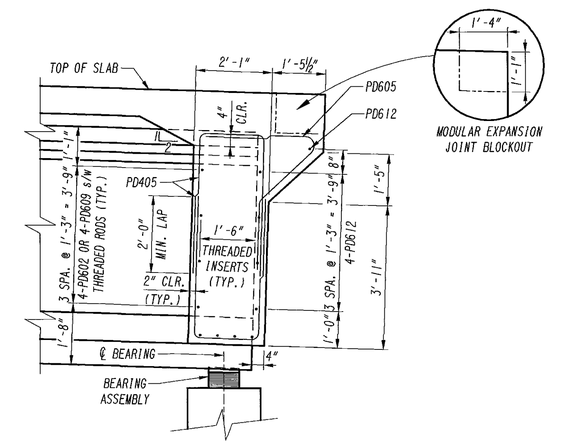
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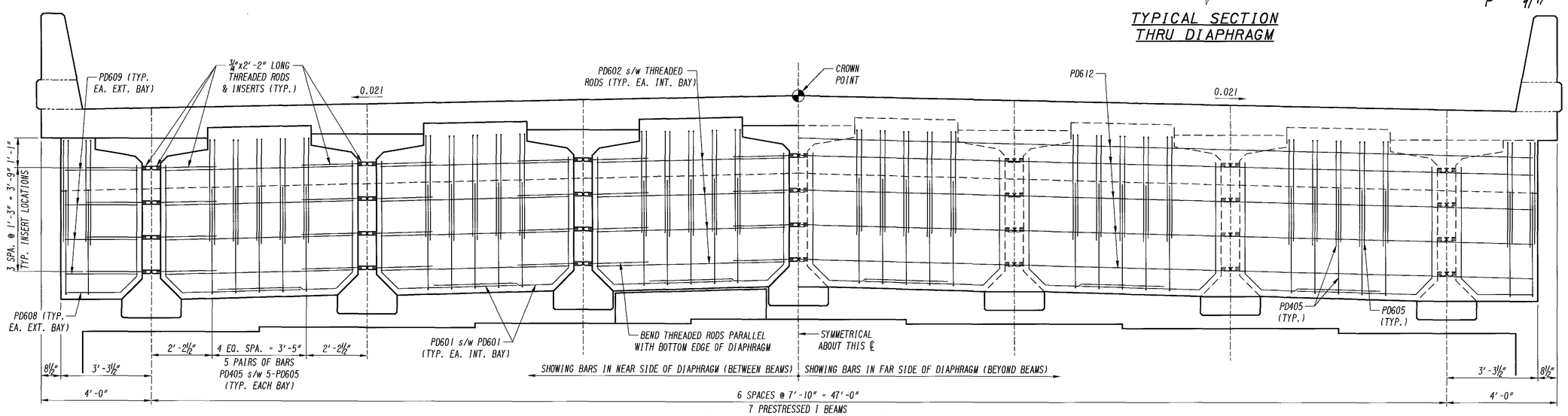
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PIER DIAPHRAGM PLAN
EXPANSION - PIER 4
RIGHT BRIDGE
(DECK & TOP BEAM FLANGE REMOVED)



TYPICAL SECTION
THRU DIAPHRAGM



PIER DIAPHRAGM ELEVATION
EXPANSION - PIER 4
RIGHT BRIDGE
(PHASE III)

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

Palmer ENGINEERING
PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
PJS	JAP	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
LMS		7709021(R)	

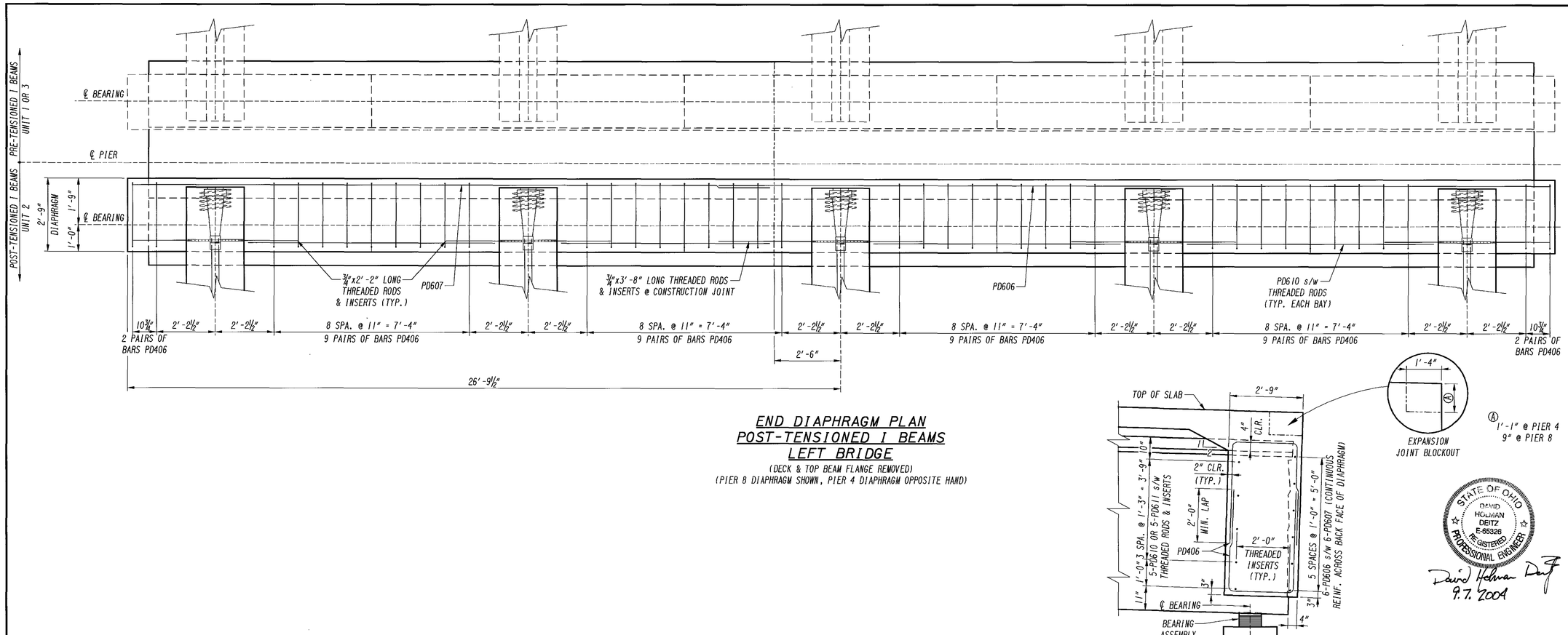
EXP. PIER DIAPH. - UNIT 1 - RT. BRIDGE - CONC.
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

98 / 123

535 / 612

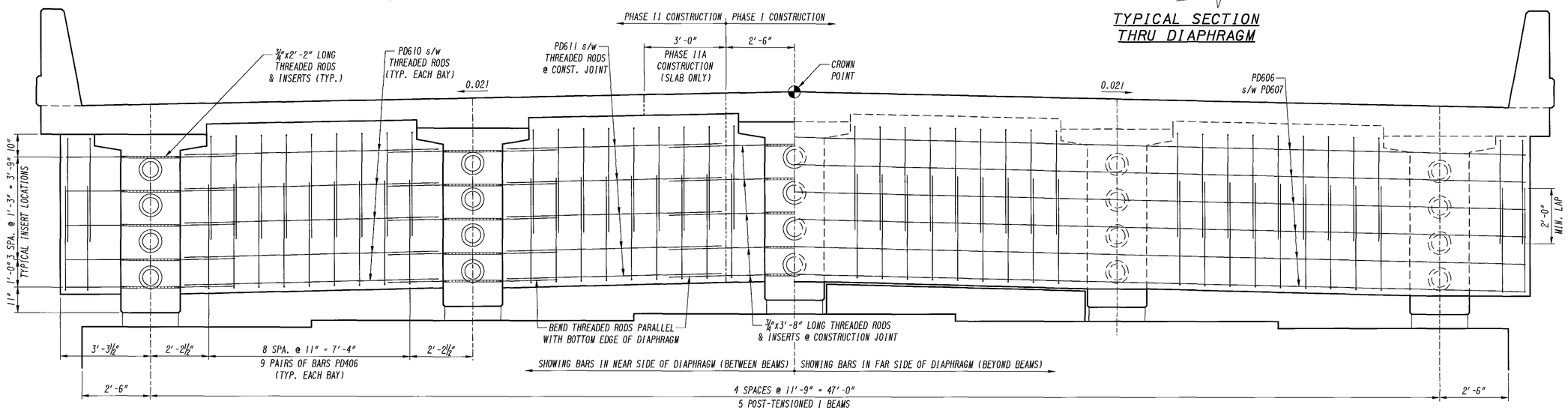
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END DIAPHRAGM PLAN
POST-TENSIONED I BEAMS
LEFT BRIDGE

(DECK & TOP BEAM FLANGE REMOVED)
(PIER 8 DIAPHRAGM SHOWN, PIER 4 DIAPHRAGM OPPOSITE HAND)

TYPICAL SECTION
THRU DIAPHRAGM



END DIAPHRAGM ELEVATION
POST-TENSIONED I BEAMS
LEFT BRIDGE

(PIER 8 DIAPHRAGM SHOWN, PIER 4 DIAPHRAGM OPPOSITE HAND)

STATE OF OHIO
DAVID HOLMAN DEITZ
E-65326
REGISTERED
PROFESSIONAL ENGINEER
David Holman Deitz
9.7.2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
PJS	JAP	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
JLM		77090/13(L)	

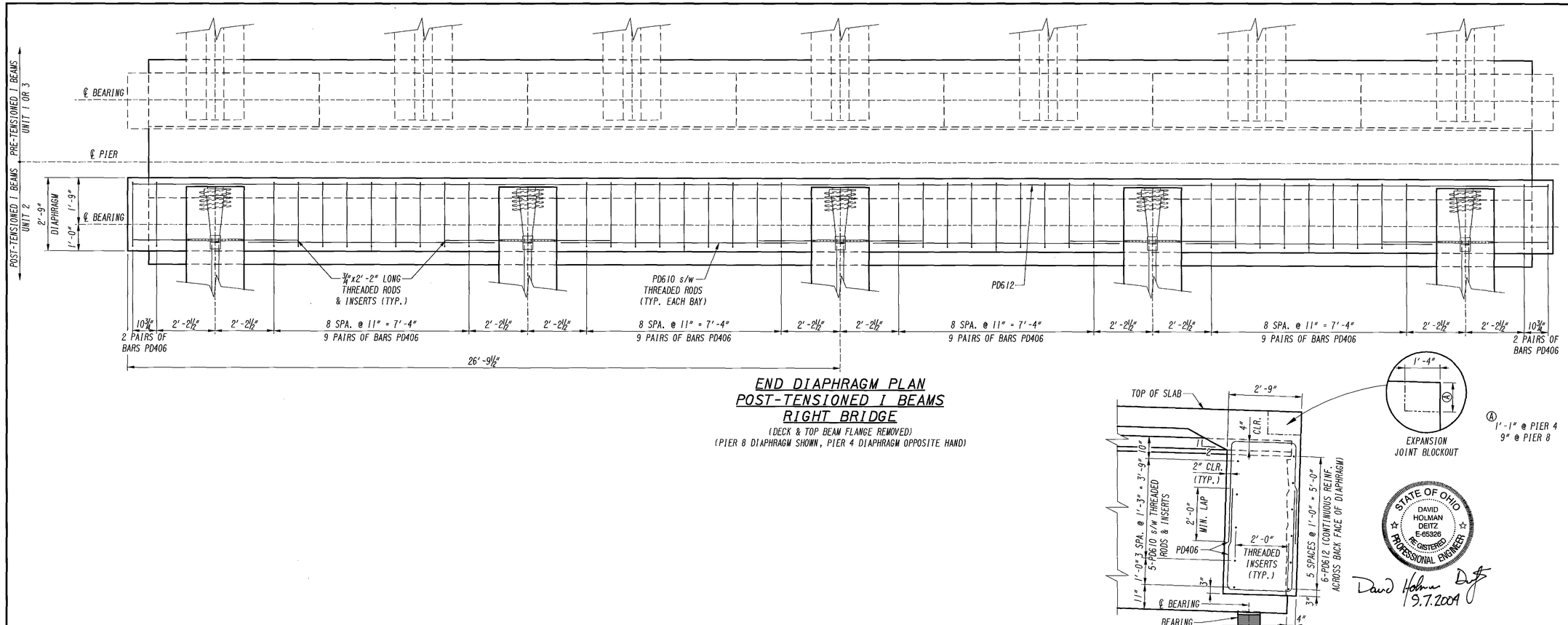
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BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

99 / 123

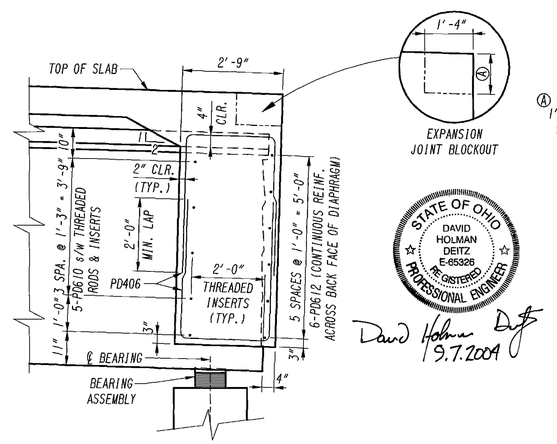
536 / 612

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END DIAPHRAGM PLAN POST-TENSIONED I BEAMS RIGHT BRIDGE

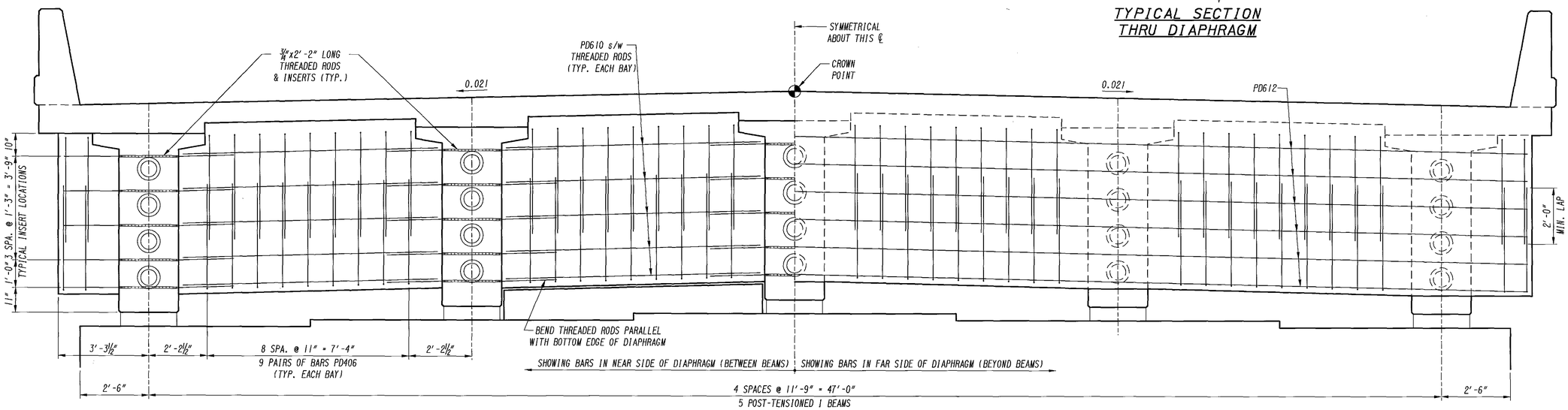
(DECK & TOP BEAM FLANGE REMOVED)
(PIER 8 DIAPHRAGM SHOWN, PIER 4 DIAPHRAGM OPPOSITE HAND)



Ⓐ 1'-1" @ PIER 4
9" @ PIER 8

David Holman Deitz 9.7.2004

TYPICAL SECTION THRU DIAPHRAGM



END DIAPHRAGM ELEVATION POST-TENSIONED I BEAMS RIGHT BRIDGE

(PHASE III)

Palmer ENGINEERING
PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
PJS	J AP	J GG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
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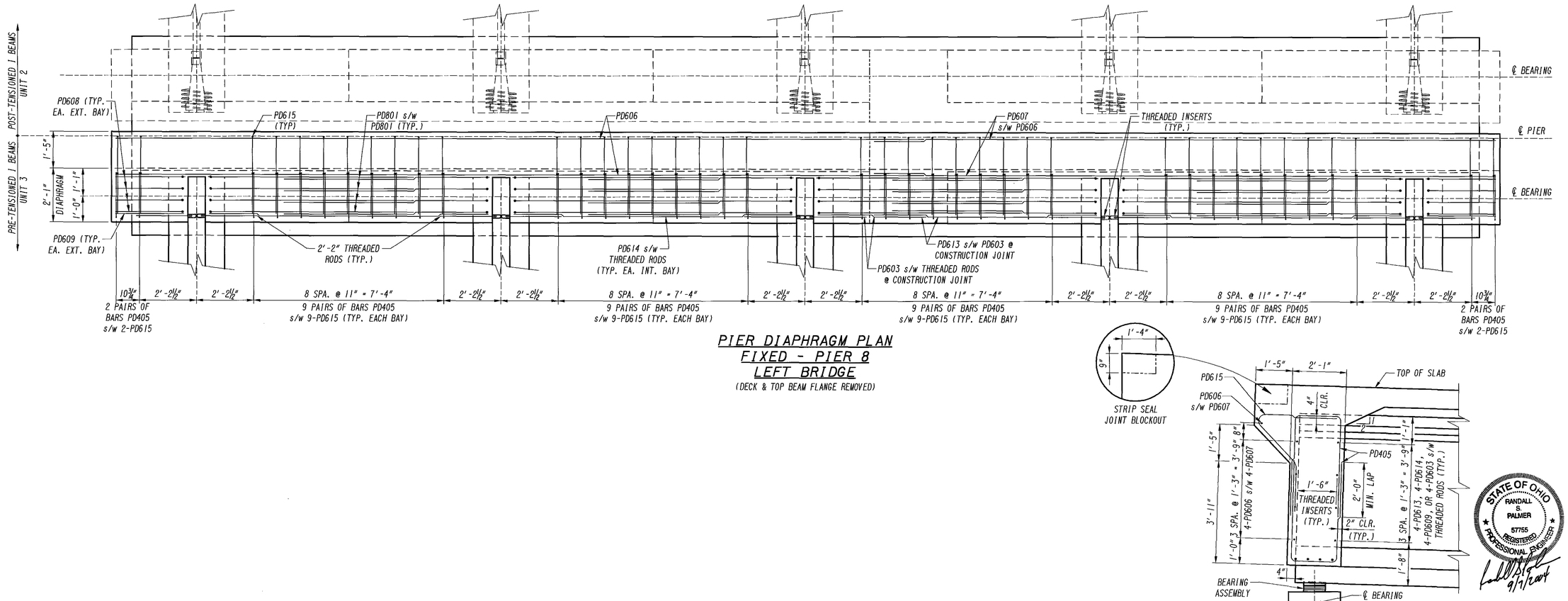
EXP. PIER DIAPH. - UNIT 2 - RT. BRIDGE - CONC.
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

100/123

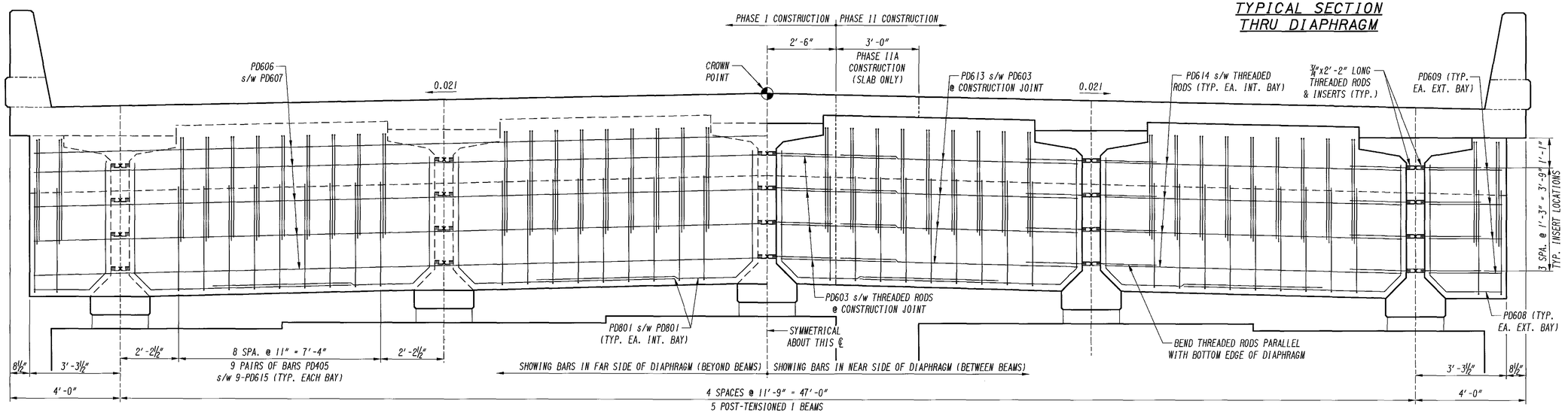
537/612

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PIER DIAPHRAGM PLAN
FIXED - PIER 8
LEFT BRIDGE
(DECK & TOP BEAM FLANGE REMOVED)

TYPICAL SECTION
THRU DIAPHRAGM



PIER DIAPHRAGM ELEVATION
FIXED - PIER 8
LEFT BRIDGE
(LOOKING BACK STATION)

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVISED	DATE
PJS	JAP	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
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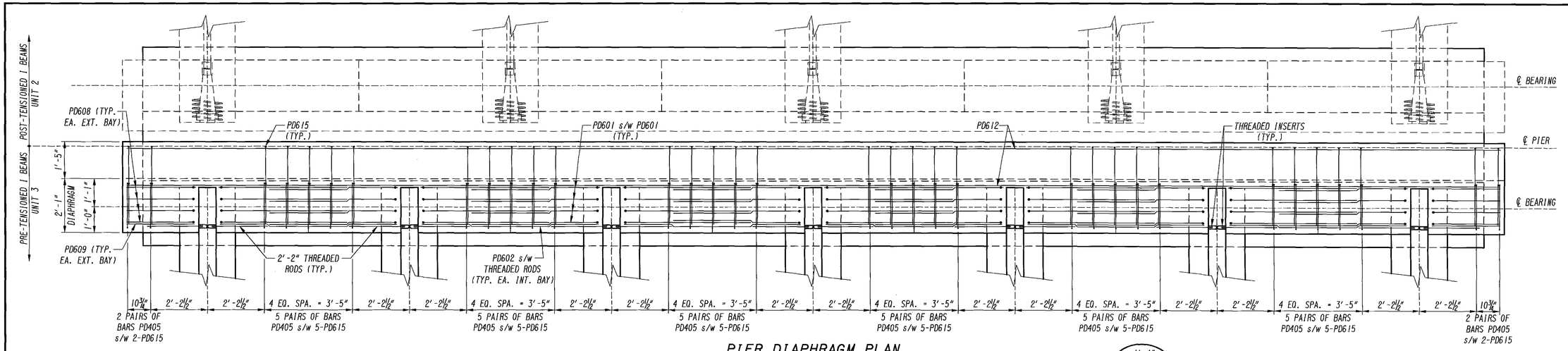
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BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

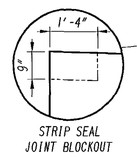
101 / 123

538 / 612

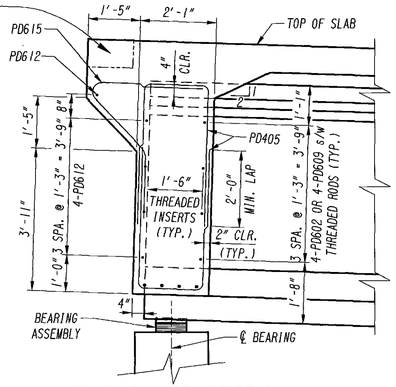
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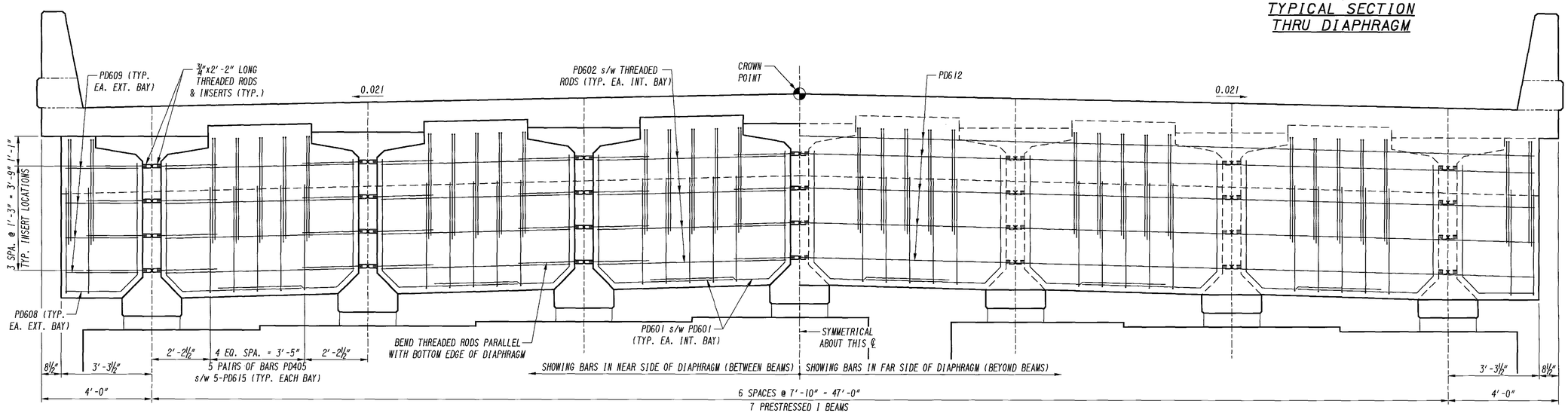
PIER DIAPHRAGM PLAN
FIXED - PIER 8
RIGHT BRIDGE
(DECK & TOP BEAM FLANGE REMOVED)



STRIP SEAL JOINT BLOCKOUT



TYPICAL SECTION THRU DIAPHRAGM



PIER DIAPHRAGM ELEVATION
FIXED - PIER 8
RIGHT BRIDGE
(LOOKING BACK STATION)(PHASE III)

STATE OF OHIO RANDALL S PALMER 57755 REGISTERED PROFESSIONAL ENGINEER 9/7/2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

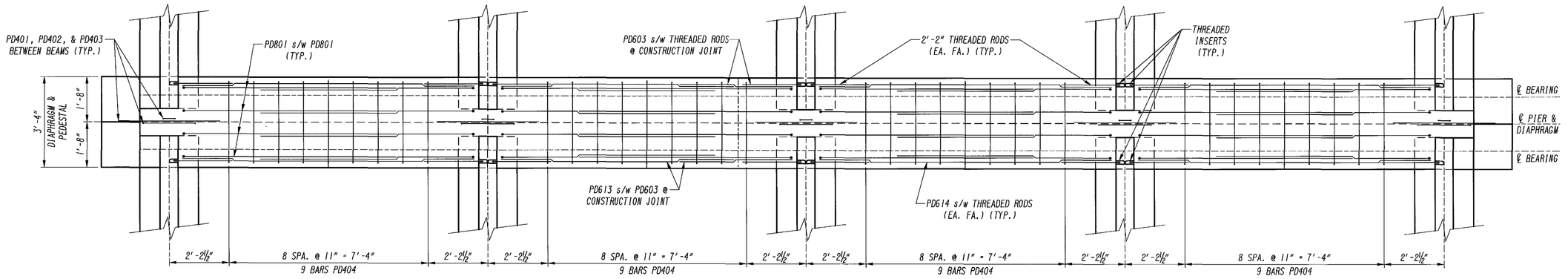
DESIGNED PJS | DRAWN JAP | REVIEWED JGG | DATE 03-31-04
CHECKED LMS | REVISED | STRUCTURE FILE NUMBER 7709021(R)

SUM-271-8.02

FIXED PIER DIAPH. - UNIT 3 - RT. BRIDGE - CONC.
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

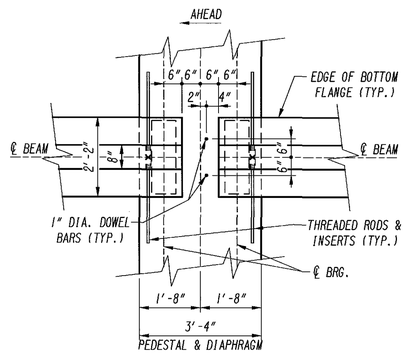
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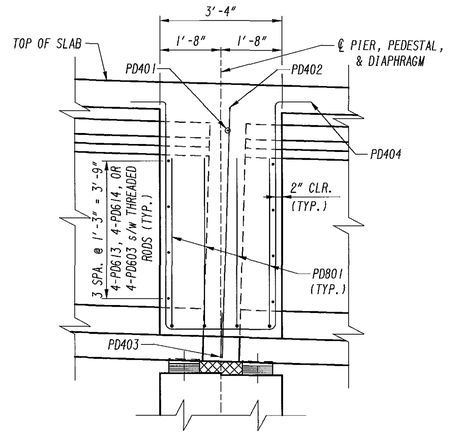


PIER DIAPHRAGM PLAN
EXPANSION - PIER 9
LEFT BRIDGE

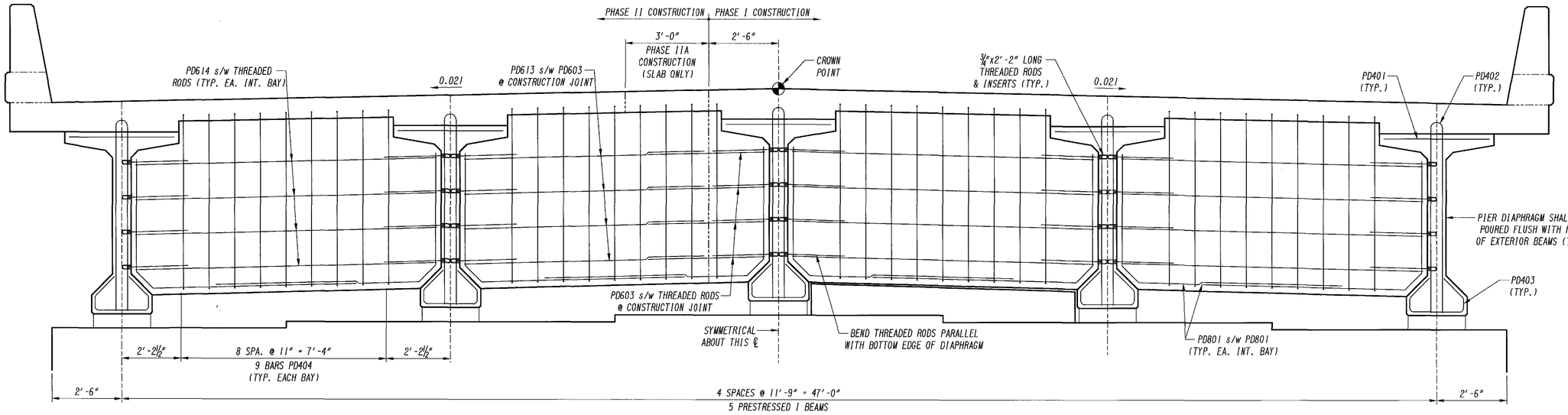
(DECK & TOP BEAM FLANGE REMOVED)



DETAIL "A"



TYPICAL SECTION
THRU DIAPHRAGM



PIER DIAPHRAGM ELEVATION
EXPANSION - PIER 9
LEFT BRIDGE

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/1/2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
PJS	JAP	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
LMS		77090131(L)	

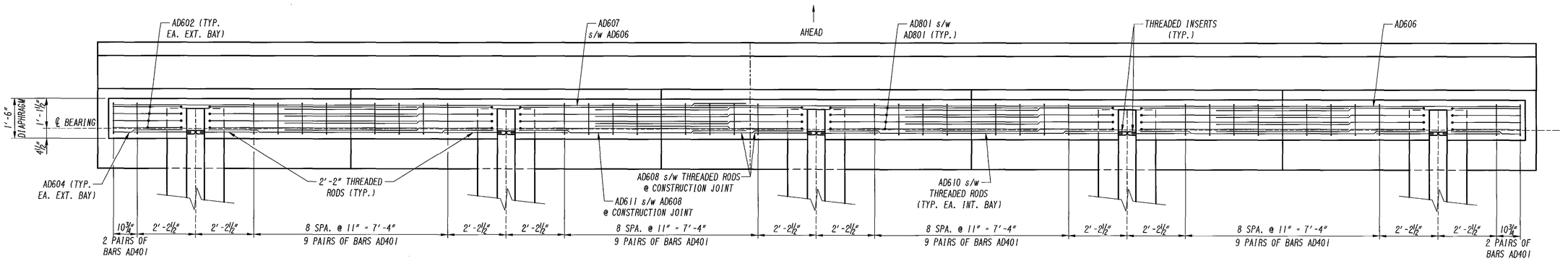
EXP. PIER DIAPH. - UNIT 3 - LT. BRIDGE - CONC.
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

103/123

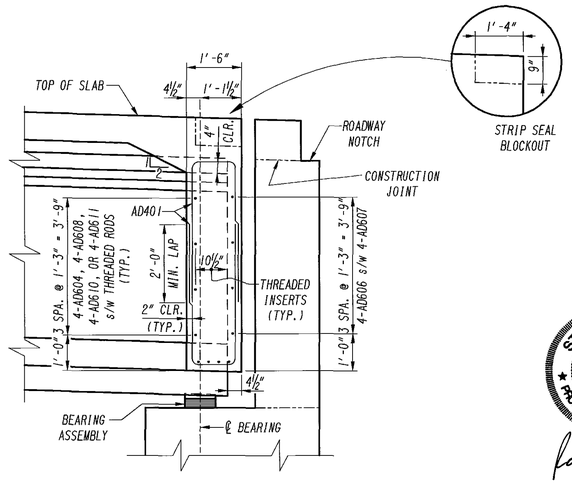
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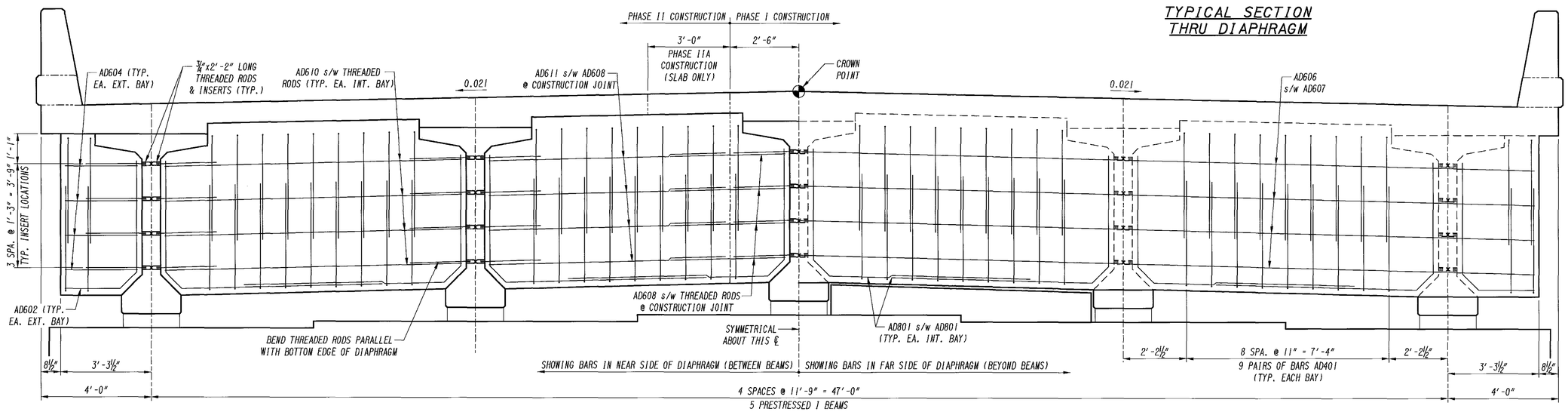


ABUTMENT DIAPHRAGM PLAN
EXPANSION - ABUTMENT 2
LEFT BRIDGE

(DECK & TOP BEAM FLANGE REMOVED)



TYPICAL SECTION
THRU DIAPHRAGM



ABUTMENT DIAPHRAGM ELEVATION
EXPANSION - ABUTMENT 2
LEFT BRIDGE

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
PJS	JAP	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
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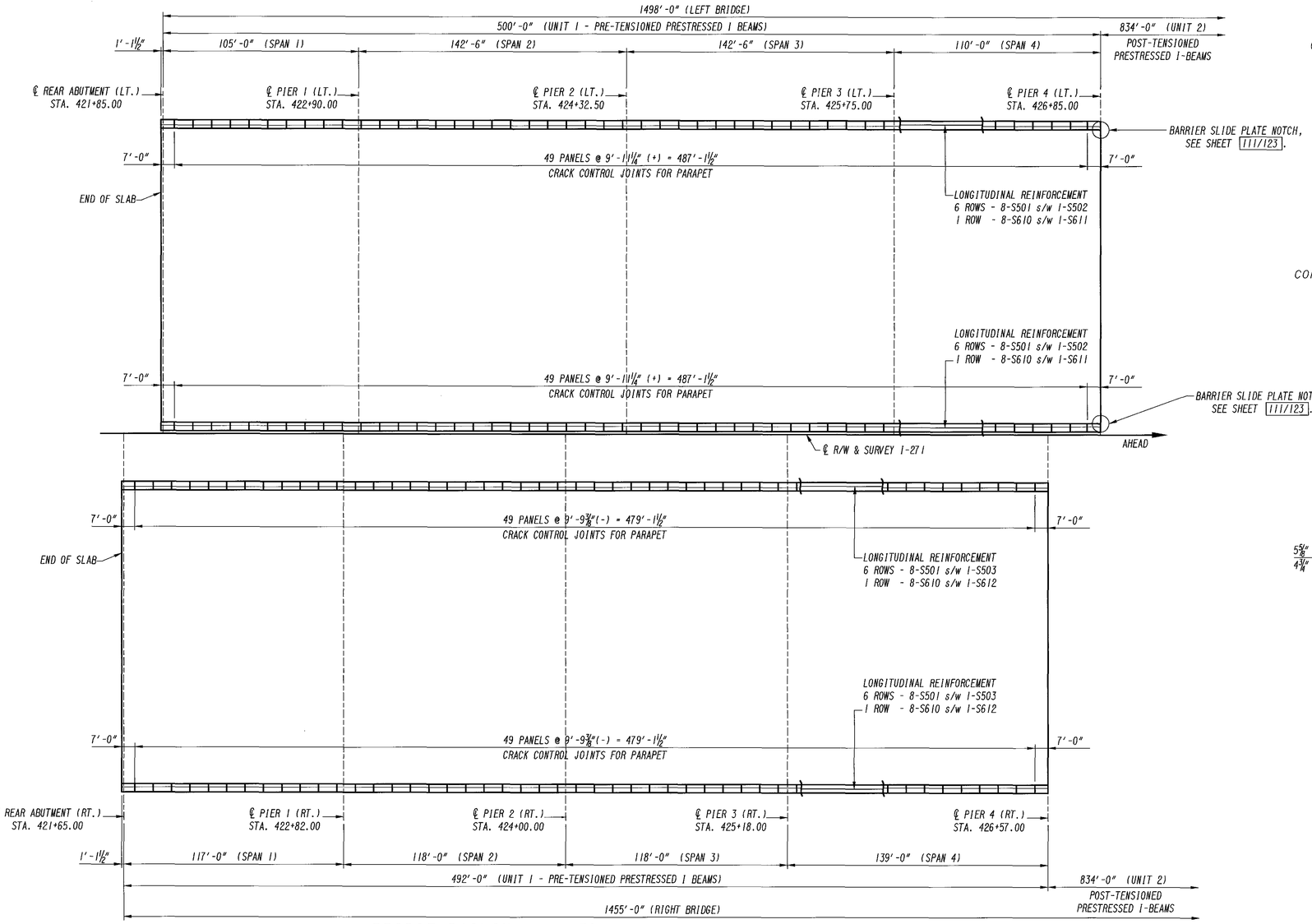
EXP. ABUTMENT 2 DIAPH. - LT. BRIDGE - CONC.
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

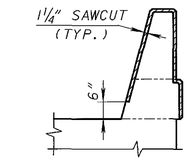
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541/612

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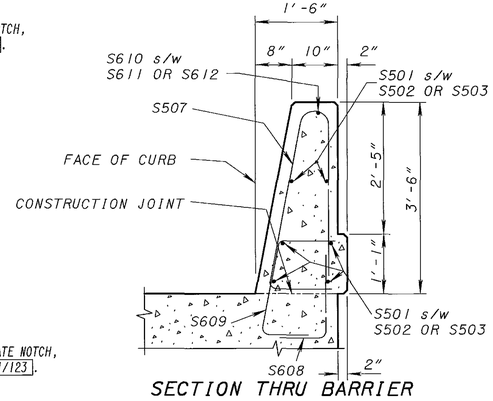


BRIDGE RAILING DEFLECTOR PARAPET - UNIT 1

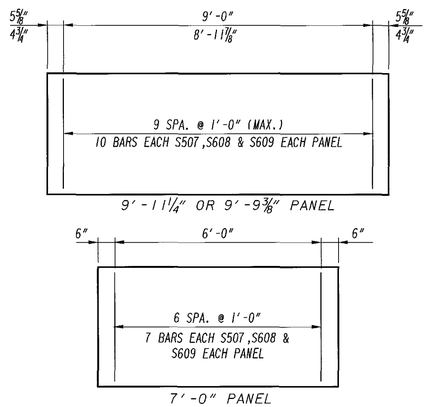


SAWCUT DETAIL

(section through sawcut)
Sawcut Perimeter = 7'-6"



SECTION THRU BARRIER



PANEL DETAILS

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED PROFESSIONAL ENGINEER
9/1/2004

LEGEND: N.S.=NEAR SIDE
F.S.=FAR SIDE

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
ASP	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
LAC		7709013(L) 7709021(R)	

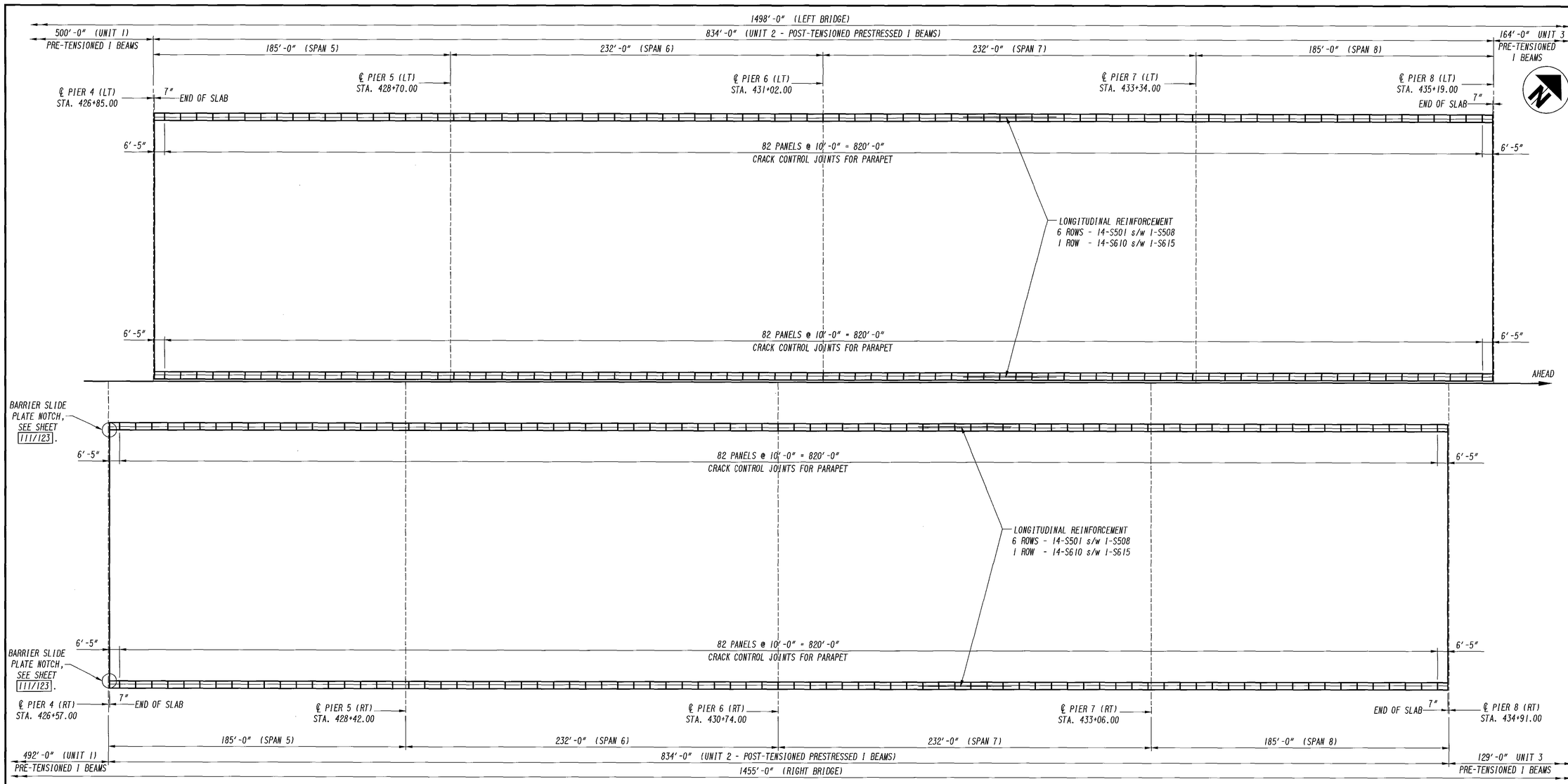
BRIDGE RAILING - UNIT 1 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

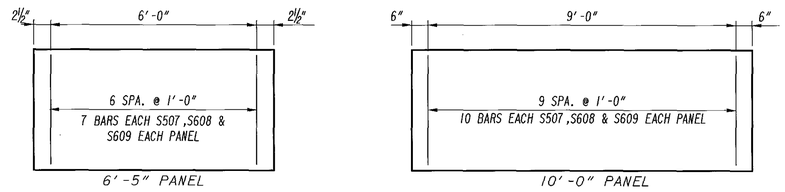
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542/612

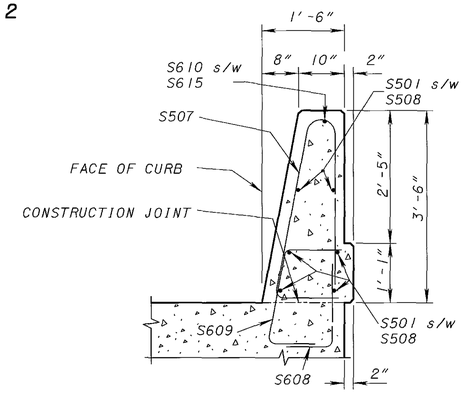
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BRIDGE RAILING DEFLECTOR PARAPET - UNIT 2



PANEL DETAILS



SECTION THRU BARRIER

SEE ODOT STD DWG SBR-1-99 FOR ADDITIONAL DETAILS

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042

DESIGNED	DRAWN	REVIEWED	DATE
ASP	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
LAC		7709013(L) 7709021(R)	

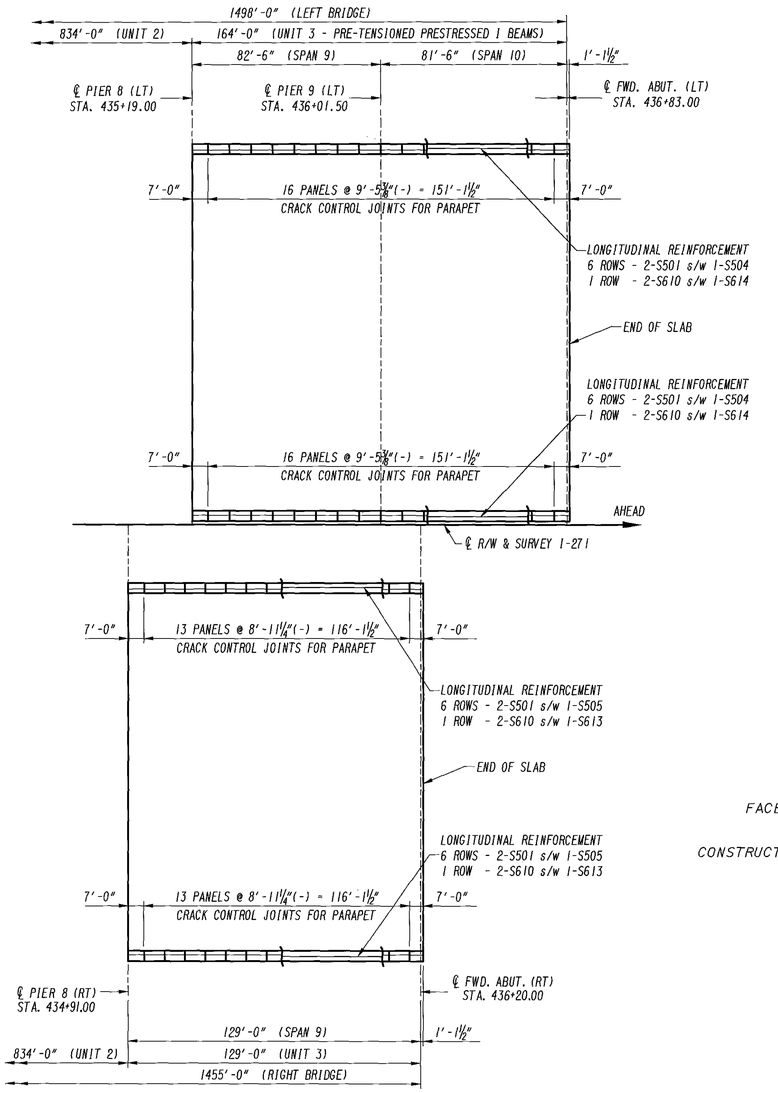
BRIDGE RAILING - UNIT 2 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

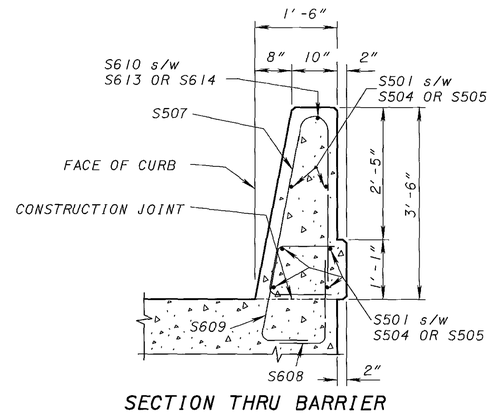
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543/612

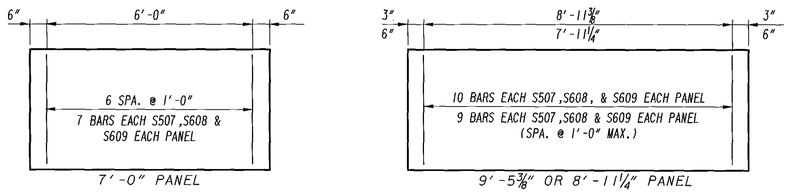
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BRIDGE RAILING DEFLECTOR PARAPET - UNIT 3



SECTION THRU BARRIER



PANEL DETAILS

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED PROFESSIONAL ENGINEER
9/7/2004

Palmer ENGINEERING
PALMER ENGINEERING
148 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
WIN CHESTER • FAIRFIELD • LOUISVILLE
SPRINGFIELD • STRUCTURES

DESIGNED	DRAWN	REVIEWED	DATE
RSP	JAR	JGG	03-31-04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
LAC		7709031(L) 7709021(A)	

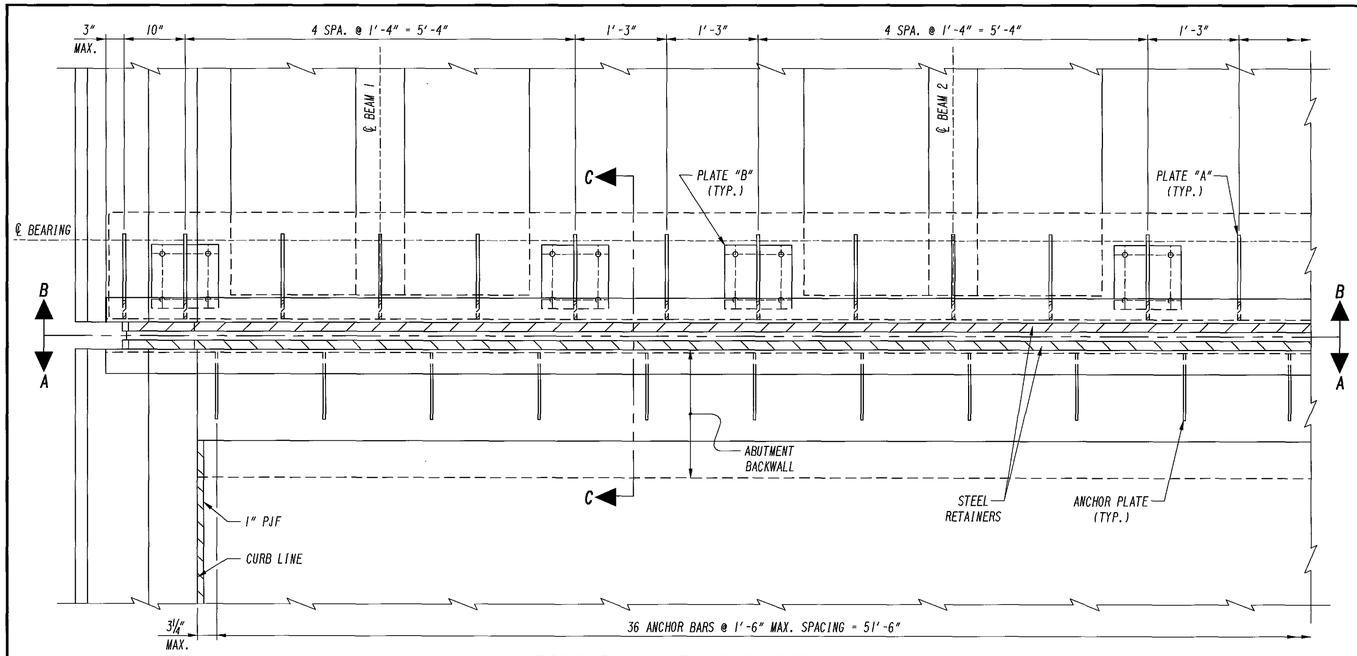
BRIDGE RAILING - UNIT 3 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

107 / 123

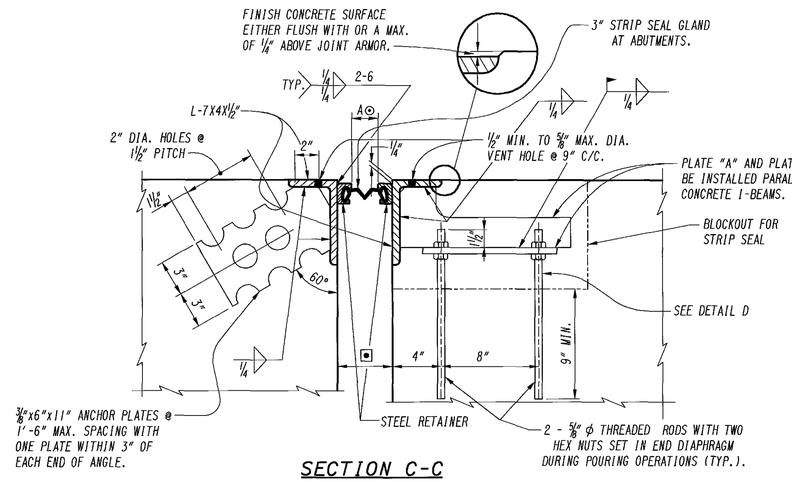
544 / 612

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PART PLAN AT ABUTMENT

(ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR)

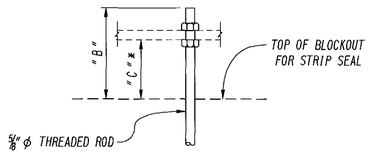


SECTION C-C

⊙ - DIMENSION "A" SHALL BE DETERMINED FROM TABLE ON THIS SHEET.

⊡ - THIS DIMENSION IS THE SUM OF (2XSTEEL RETAINER WIDTH+DIM."A").

FOR DETAILS OF PLATE "A", PLATE "B", STEEL RETAINER AND DETAIL AT CONSTRUCTION JOINT, SEE SHEET 110/123.

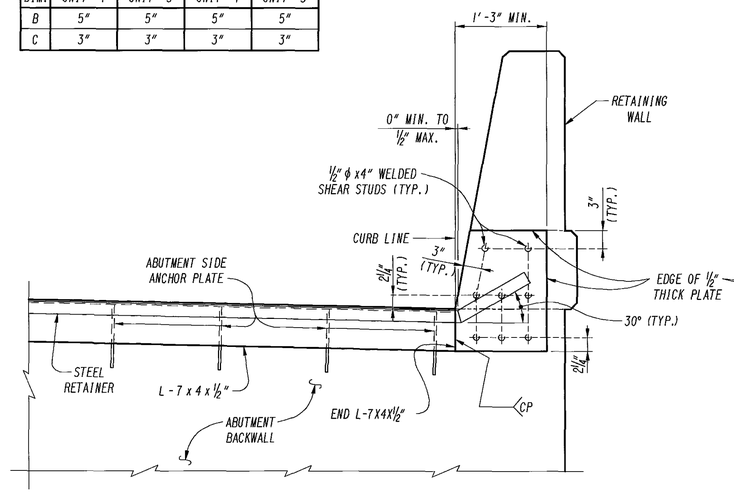


DETAIL D

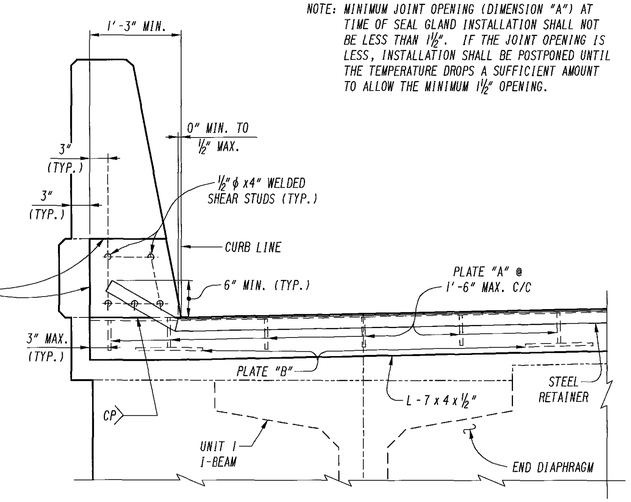
	LEFT BRIDGE		RIGHT BRIDGE	
DIM.	UNIT 1	UNIT 3	UNIT 1	UNIT 3
B	5"	5"	5"	5"
C	3"	3"	3"	3"

JOINT SETTING TABLE - DIMENSION "A"				
	LEFT BRIDGE		RIGHT BRIDGE	
°F	ABUT. 1	ABUT. 2	ABUT. 1	ABUT. 2
30	2 1/16"	1 15/16"	2"	1 7/8"
40	1 15/16"	1 13/16"	1 13/16"	1 11/16"
50	1 11/16"	1 11/16"	1 11/16"	1 11/16"
60	1½"	1 9/16"	1½"	1 5/8"
70	SEE NOTE	SEE NOTE	SEE NOTE	1½"
80	SEE NOTE	SEE NOTE	SEE NOTE	SEE NOTE
90	SEE NOTE	SEE NOTE	SEE NOTE	SEE NOTE

NOTE: MINIMUM JOINT OPENING (DIMENSION "A") AT TIME OF SEAL GLAND INSTALLATION SHALL NOT BE LESS THAN 1½". IF THE JOINT OPENING IS LESS, INSTALLATION SHALL BE POSTPONED UNTIL THE TEMPERATURE DROPS A SUFFICIENT AMOUNT TO ALLOW THE MINIMUM 1½" OPENING.



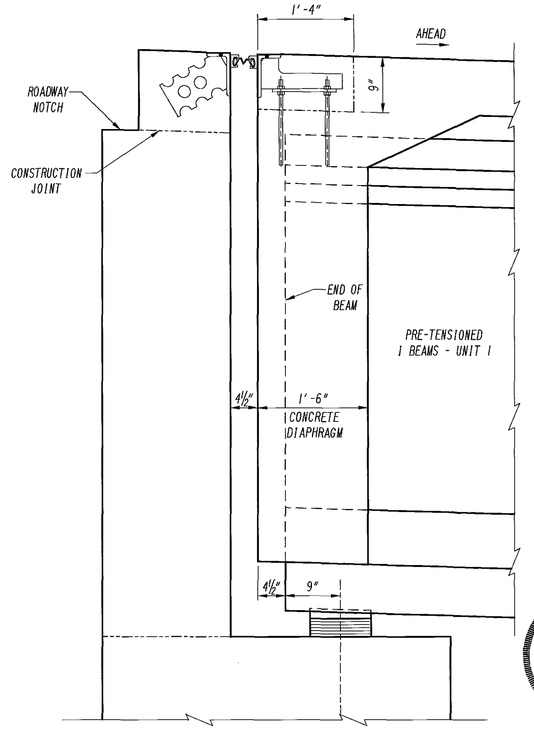
SECTION A-A



SECTION B-B

LEGEND

CP = COMPLETE PENETRATION WELD



ABUTMENT EXPANSION JOINT DETAIL

STATE OF OHIO
RANDALL S. PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/1/04

PALMER ENGINEERING
146 N. BRIEL BLVD.
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Palmer ENGINEERING
AN IN CHARTER, MEMBER FIRM OF THE ILLINOIS INSTITUTE OF TECHNOLOGY

DESIGNED WAH | DRAWN JAP | REVIEWED JGG | DATE 03-31-04
CHECKED PJS | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(A)

ABUTMENT STRIP SEAL EXPANSION JOINT - CONCRETE

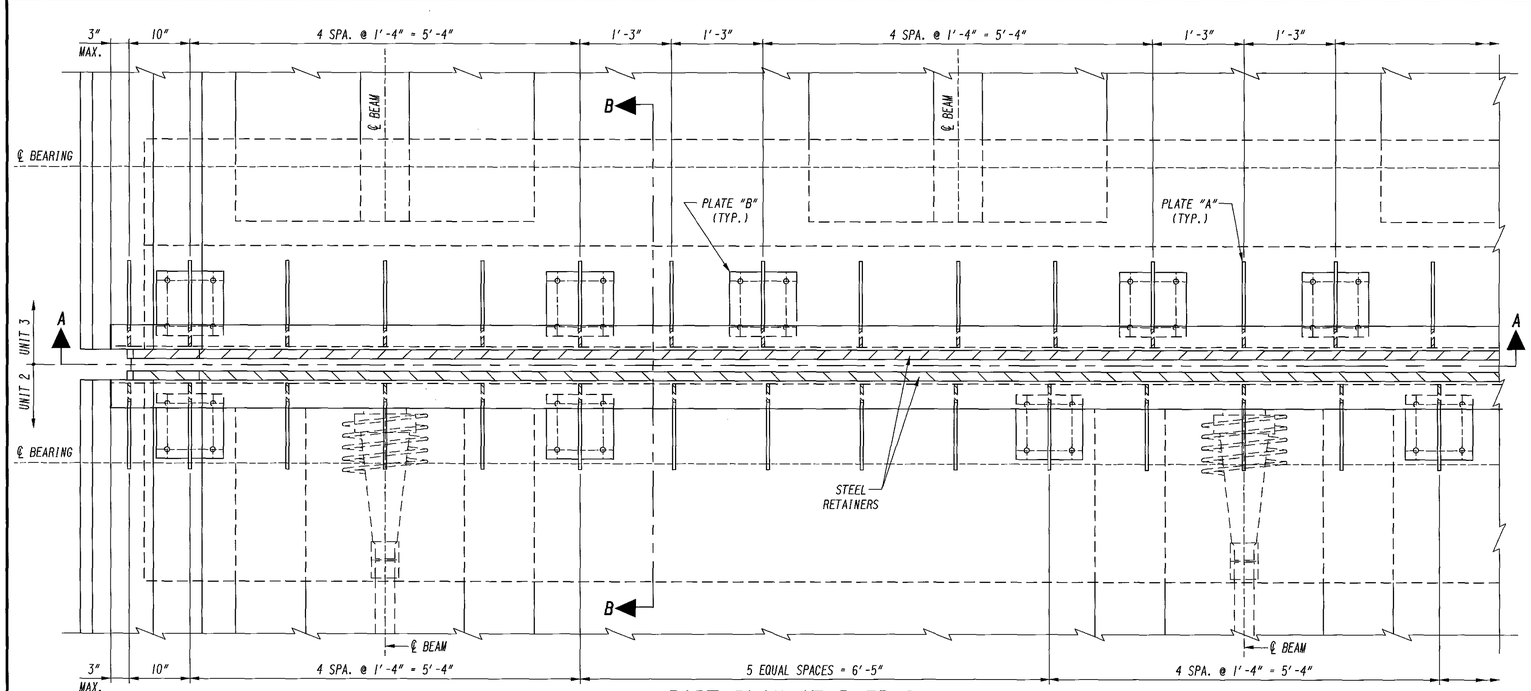
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

108/123

545/612

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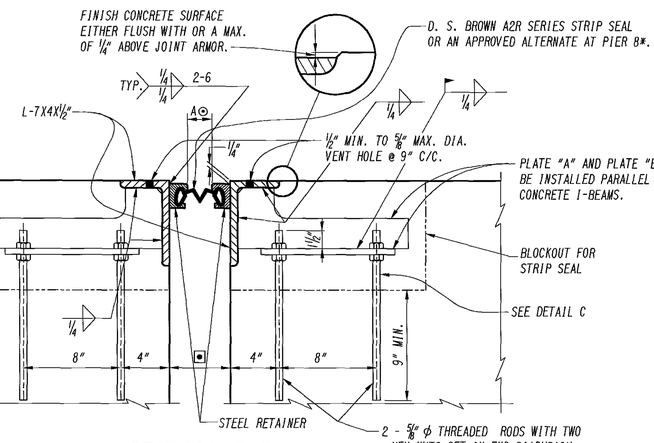
PART PLAN AT PIER 8

(RIGHT BRIDGE SHOWN, LEFT BRIDGE SIMILAR)

JOINT SETTING TABLE - DIMENSION "A"		
	LEFT BRIDGE	RIGHT BRIDGE
°F	PIER 8*	PIER 8*
30	$2\frac{7}{16}$"	$2\frac{1}{16}$"
40	$2\frac{5}{16}$"	$2\frac{1}{16}$"
50	$2\frac{3}{16}$"	$2\frac{1}{16}$"
60	2"	2"
70	$1\frac{15}{16}$"	$1\frac{15}{16}$"
80	SEE NOTE	SEE NOTE
90	SEE NOTE	SEE NOTE

NOTE: MINIMUM JOINT OPENING (DIMENSION "A") AT TIME OF SEAL GLAND INSTALLATION SHALL NOT BE LESS THAN $1\frac{1}{2}$". IF THE JOINT OPENING IS LESS, INSTALLATION SHALL BE POSTPONED UNTIL THE TEMPERATURE DROPS A SUFFICIENT AMOUNT TO ALLOW THE MINIMUM $1\frac{1}{2}$" OPENING.

* STRIP SEAL AT PIER 8 SHALL ACCOMODATE A MINIMUM JOINT OPENING (DIMENSION "A") OF $\frac{15}{16}$" AND A MAXIMUM JOINT OPENING OF $4\frac{7}{16}$". THIS RANGE INCLUDES AN ALLOWANCE FOR SHORTENING OF THE STRUCTURE DUE TO CREEP AND SHRINKAGE.

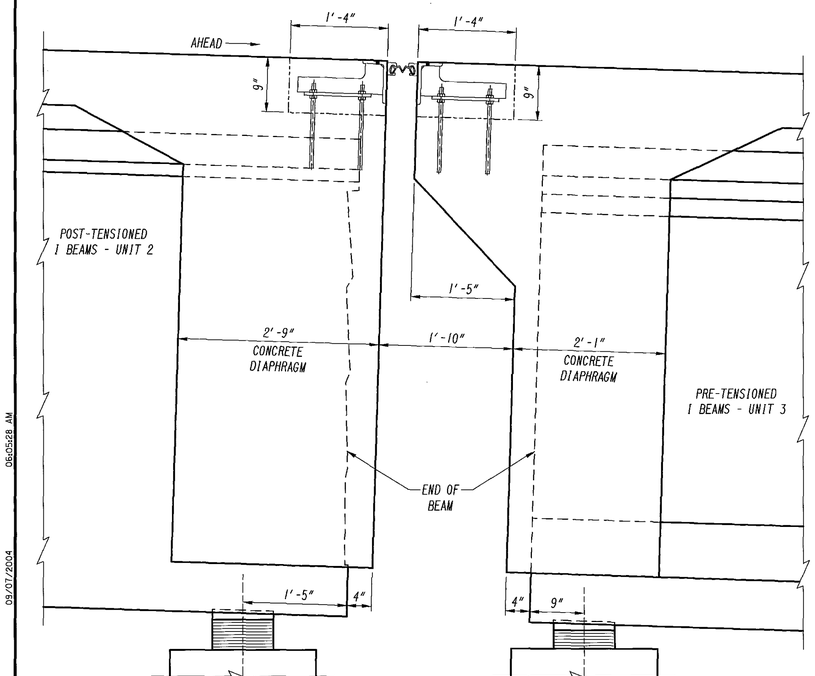


SECTION B-B

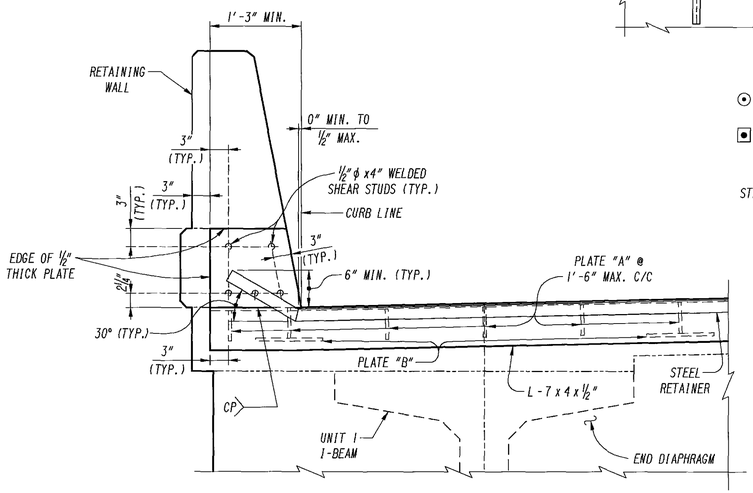
⊙ - DIMENSION "A" SHALL BE DETERMINED FROM TABLE ON THIS SHEET.

⊡ - THIS DIMENSION IS THE SUM OF (2XSTEEL RETAINER WIDTH+DIM."A").

FOR DETAILS OF PLATE "A", PLATE "B", STEEL RETAINER AND DETAIL AT CONSTRUCTION JOINT, SEE SHEET 110/123.



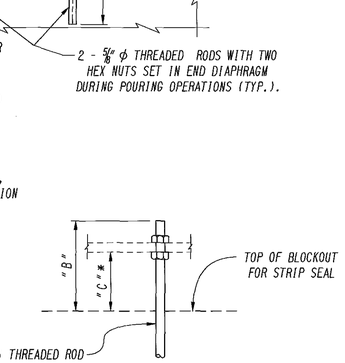
EXPANSION JOINT PIER 8 DETAIL



SECTION A-A

LEGEND

CP = COMPLETE PENETRATION WELD



DETAIL C

	LEFT BRIDGE		RIGHT BRIDGE	
DIM.	UNIT 2	UNIT 3	UNIT 2	UNIT 3
B	5"	5"	5"	5"
C	3"	3"	3"	3"

STATE OF OHIO
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KEVIN CHESTER, RAJESH ILLA, JOSEPH ILLA, SUDHEER TUMMURU, SURESH ILLA

DESIGNED WAH | DRAWN JAP | REVIEWED JGG | DATE 03-31-04
CHECKED PJS | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

PIER 8 STRIP SEAL EXPANSION JOINT - CONCRETE

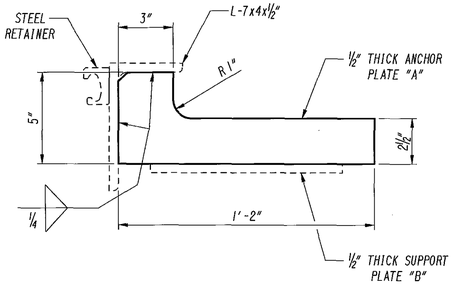
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

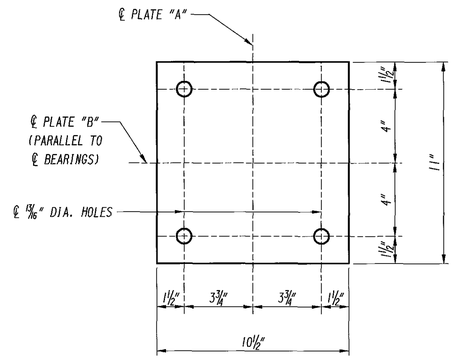
109/123

546/612

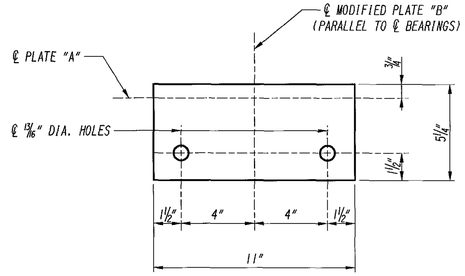
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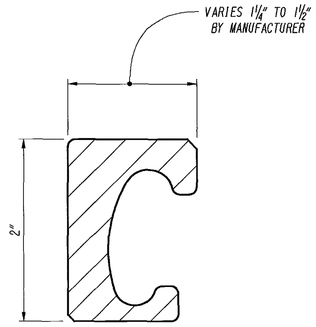
DETAIL OF PLATE "A"



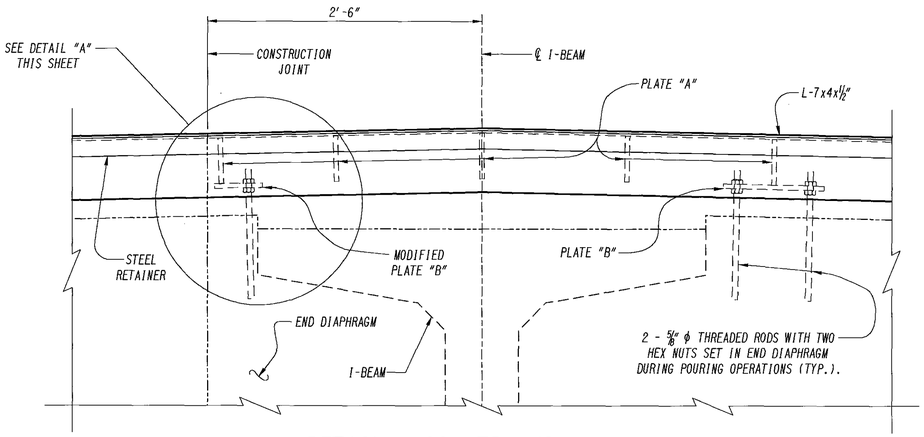
DETAIL OF PLATE "B"



DETAIL OF MODIFIED PLATE "B"

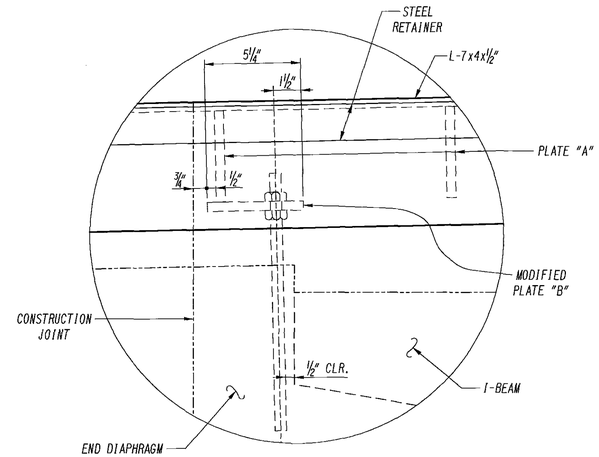


RETAINER DETAIL



DETAIL ℄ CONSTRUCTION JOINT

(CONSTRUCTION JOINT NOT REQUIRED ON RIGHT BRIDGE)



DETAIL "A"

NOTES

1. ALL STEEL PARTS SHALL BE ASTM A709, GRADE 50.
2. AT THE STAGE CONSTRUCTION JOINTS, EXPANSION DEVICES SHALL REQUIRE A COMPLETE PENETRATION WELDED BUTT JOINT. BUTT WELDS SHALL BE GROUND FLUSH WHEN IN CONTACT WITH SEALING GLAND.
3. SEALS SHALL BE ONE CONTINUOUS PIECE THROUGH THE TOTAL LENGTH OF THE STRUCTURE. THE SEAL USED FOR PHASE I CONSTRUCTION SHALL BE REMOVED AND REPLACED WHEN PHASE II CONSTRUCTION IS COMPLETED.
4. ALL COMPONENTS OF THE STRIP SEAL EXPANSION JOINT SHOWN, INCLUDING THE FURNISHING OF ALL MATERIALS, SERVICES, LABOR, TOOLS, EQUIPMENT, AND INCIDENTALS NECESSARY TO DESIGN, FABRICATE, INSPECT, TEST, AND INSTALL THE JOINT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS SHALL BE INCLUDED IN ITEM 516.
5. FOR LOCATION OF PLATE "A", PLATE "B", AND THE RETAINER CLIP ON THE STRIP SEAL, SEE SHEET 108/123 AND 109/123.
6. FOR ADDITIONAL GENERAL NOTES, SEE STANDARD DRAWING EXJ-6-95, SHEET 5/5.

STATE OF OHIO
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MIDDLETOWN • MASON • CINCINNATI • DAYTON • SPRINGFIELD • COLUMBUS • NEW ALBANY • HURRICANE • WEST VIRGINIA

DESIGNED WAH | DRAWN JAP | CHECKED PJS | REVIEWED JGG | DATE 03-31-04 | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(A)

STRIP SEAL EXPANSION JOINT DETAILS - CONCRETE

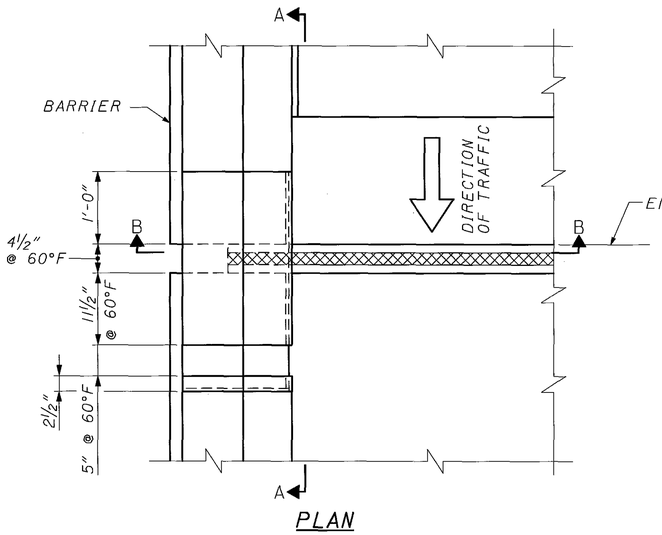
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

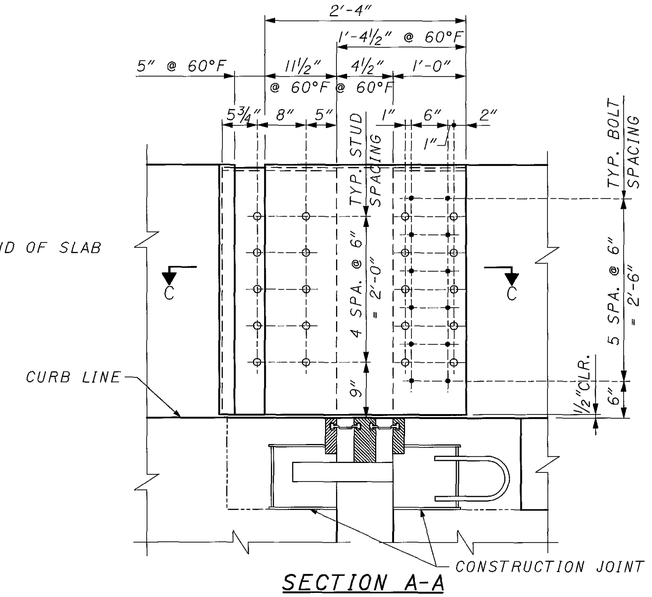
110 / 123

547 / 612

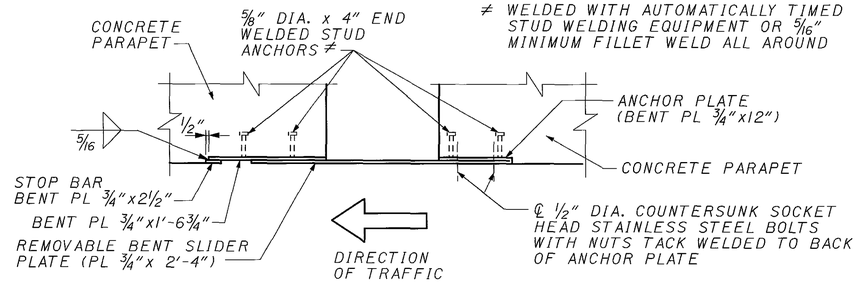
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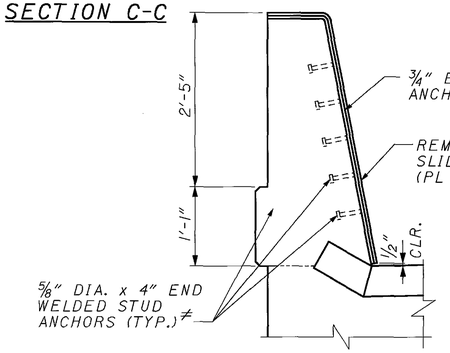
PLAN



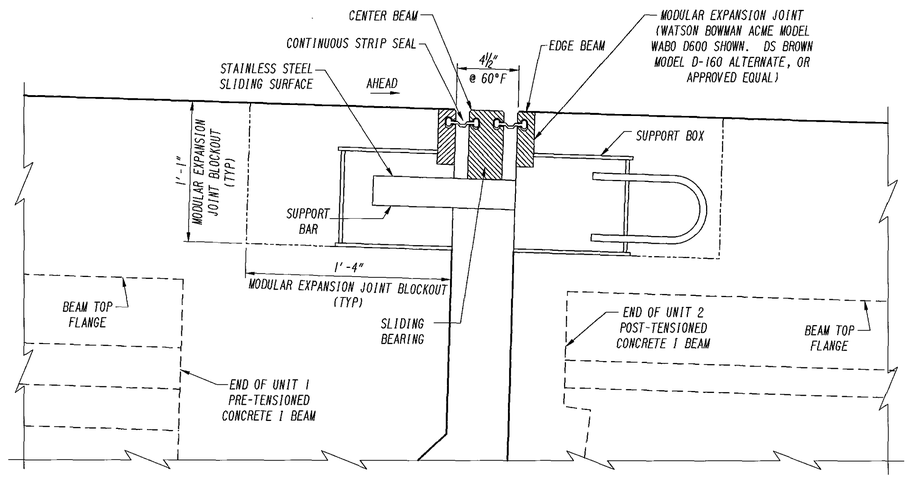
SECTION A-A



SECTION C-C



SECTION B-B

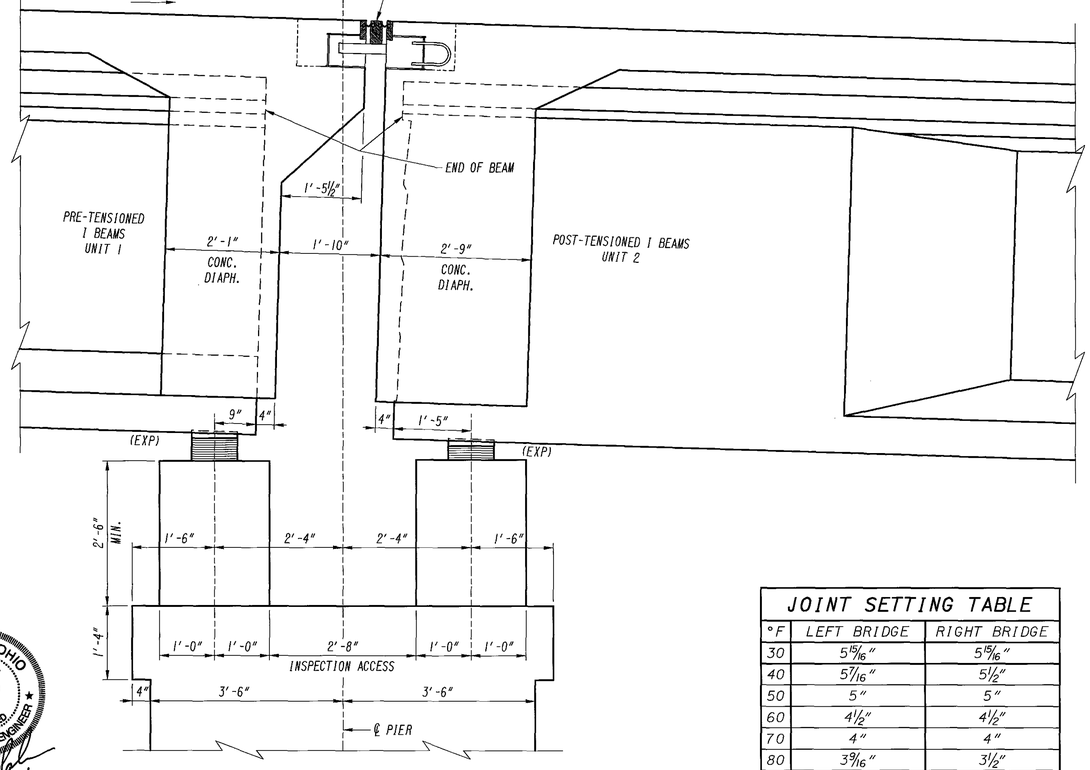


MODULAR EXPANSION JOINT DETAIL

NOTES:

1. MODULAR JOINTS AND THEIR SUPPORTS SHALL BE DESIGNED FOR A HS25 (MS22.5) LOADING WITH 100% IMPACT. MODULAR DEVICES MAIN LOAD BEARING BEAMS, SUPPORT BEAMS, AND WELDS SHALL BE DESIGNED FOR FATIGUE. THE MANUFACTURER OF THE EXPANSION JOINT MUST SUBMIT DESIGN CALCULATIONS SHOWING THAT THE DEVICE CAN MEET THE IMPACT AND FATIGUE DESIGN REQUIREMENTS. THE FATIGUE CYCLES SHOULD BE 2,000,000 + TRUCK LOAD CYCLES.
2. SPACING OF SUPPORT BEAMS SHALL BE LIMITED TO 3'-0" [1000mm] CENTERS UNDER MAIN LOAD BEARING BEAMS UNLESS FATIGUE TESTING OF THE ACTUAL WELDING CONNECTION DETAILS HAS BEEN PERFORMED TO SHOW THAT A GREATER SPACING IS ACCEPTABLE.
3. THE EXPANSION JOINT SHALL SEAL THE DECK SURFACE TO PREVENT WATER FROM PASSING THROUGH TO BELOW THE DECK.
4. THE EXPANSION JOINT SEALS SHALL ACCOMMODATE A TOTAL BEAM CONTRACTION OF 3⅝" AND A TOTAL BEAM EXPANSION OF 1¾" OVER A TEMPERATURE RISE OF 35°F AND A TEMPERATURE FALL OF 45°F. THIS MOVEMENT ALSO ACCOUNTS FOR SHORTENING OF THE STRUCTURE DUE TO CREEP AND SHRINKAGE.
5. SHOP OR FIELD WELDS SPLICING MAIN BEAMS, OR CONNECTIONS TO THE MAIN BEAMS SHALL BE FULL PENETRATION WELDED AND 100% NON-DESTRUCTIVELY TESTED IN ACCORDANCE WITH AWS D1.5 BRIDGE WELDING CODE. ANY REQUIRED FIELD SPLICES OR JOINTS AND NON-DESTRUCTIVE TESTING SHALL BE LOCATED AND DEFINED IN THE SHOP DRAWINGS.
6. THE EXPANSION JOINTS SHALL BE FABRICATED ACCORDING TO SUPPLEMENTAL SPECIFICATIONS 863. FABRICATORS OF MODULAR DEVICES SHALL BE PRE-QUALIFIED 513 LEVEL UF FABRICATORS.
7. APPROVED MANUFACTURER/FABRICATOR SHALL SUPPLY A QUALIFIED TECHNICAL REPRESENTATIVE TO THE JOB SITE DURING ALL INSTALLATION PROCEDURES.
8. SEALS SHALL BE ONE CONTINUOUS PIECE THROUGH THE TOTAL LENGTH OF THE STRUCTURE. THE SEAL USED FOR PHASE 1 CONSTRUCTION ON THE SOUTHBOUND BRIDGE SHALL BE REMOVED AND REPLACED WHEN PHASE 2 CONSTRUCTION IS COMPLETED.
9. PARAPET PLATES SHALL BE ARRANGED SUCH THAT THE SLIDING SURFACE IS TO THE TRAILING END OF THE MODULAR JOINT.

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9/7/2004



EXPANSION PIER 4 DETAIL

UNIT 1 & UNIT 2 WITH MODULAR EXPANSION JOINT

JOINT SETTING TABLE		
°F	LEFT BRIDGE	RIGHT BRIDGE
30	5 15/16"	5 15/16"
40	5 7/16"	5½"
50	5"	5"
60	4½"	4½"
70	4"	4"
80	3 9/16"	3½"
90	3 1/16"	3 1/16"

Palmer ENGINEERING

DESIGNED WAH | DRAWN JAR | CHECKED PJS | REVISED | REVIEWED JGG | DATE 03-31-04

STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

PIER 4 DIAPH. & EXP. JOINT DETAILS - CONCRETE

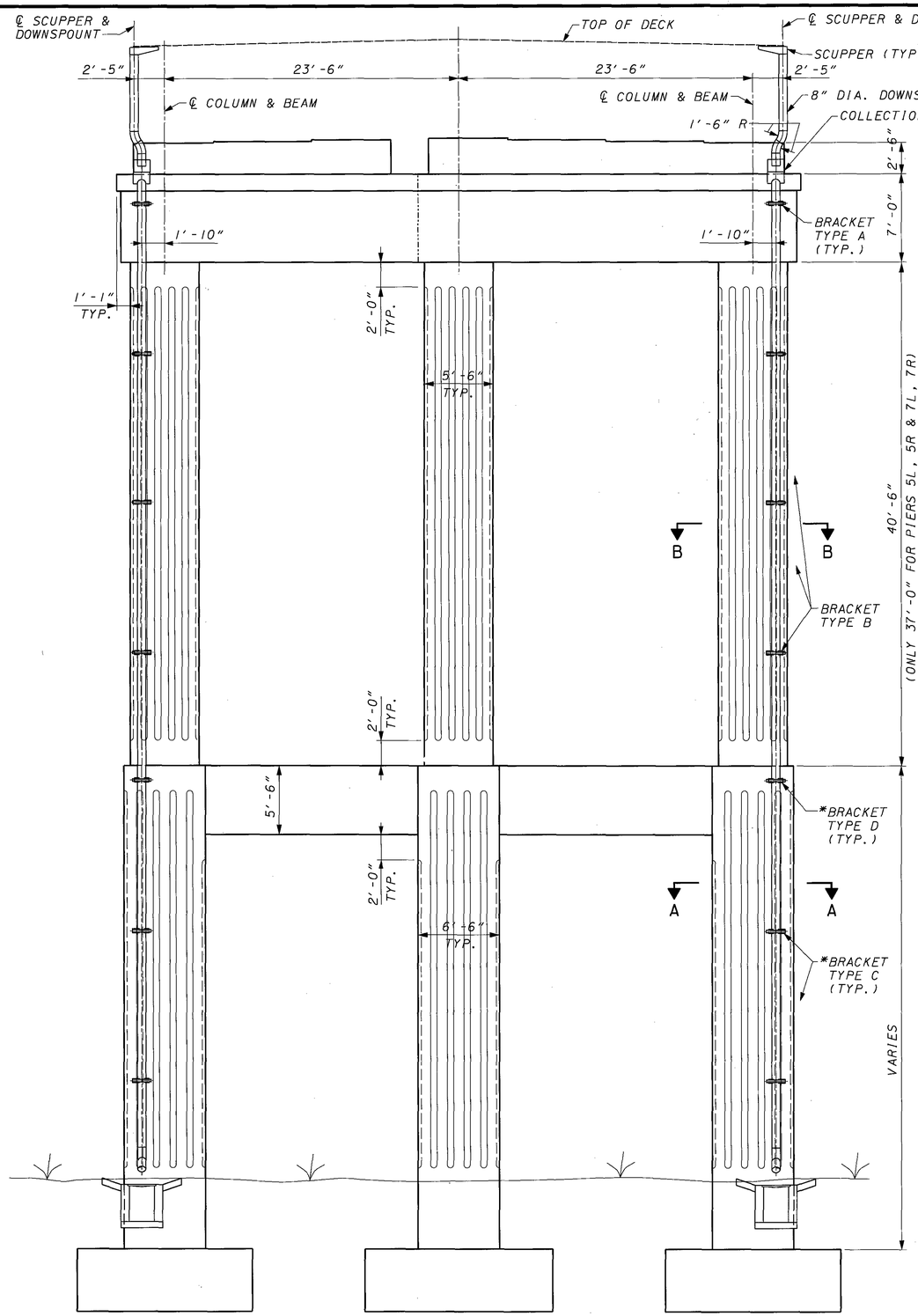
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

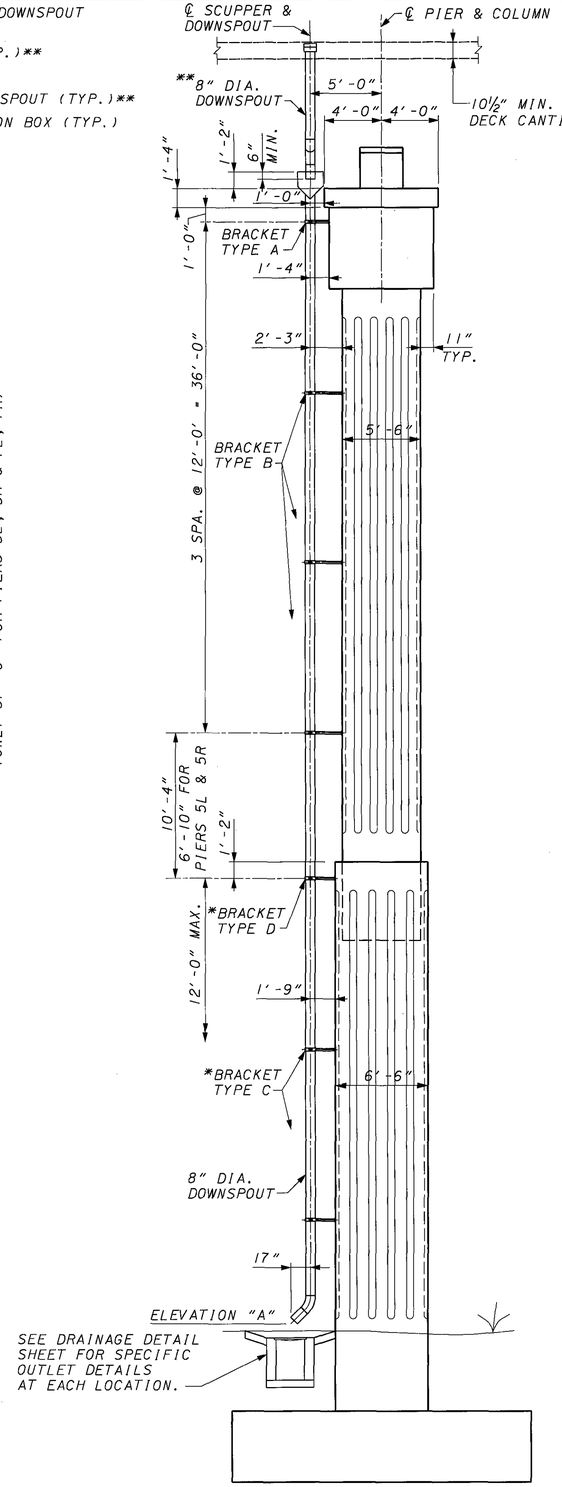
111 / 123

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ELEVATION



END VIEW

** INCLUDED WITH ITEM 516 - SCUPPER, INCLUDING SUPPORTS FOR PAYMENT

DOWNSPOUT END ELEVATION		
LOCATION	LEG	ELEVATION "A"
PIER 1L	LEFT	748.5
PIER 1L	RIGHT	742.5
PIER 1R	LEFT	739.5
PIER 1R	RIGHT	738.5
PIER 2L	LEFT	708.5
PIER 2L	RIGHT	710.5
PIER 2R	LEFT	717.5
PIER 2R	RIGHT	720.5
PIER 3L	LEFT	684.5
PIER 3L	RIGHT	684.0
PIER 3R	LEFT	690.5
PIER 3R	RIGHT	690.5
PIER 4L	LEFT	676.0
PIER 4L	RIGHT	677.0
PIER 5L	LEFT	667.0
PIER 5L	RIGHT	669.5
PIER 5R	LEFT	668.0
PIER 5R	RIGHT	667.0
PIER 7L	LEFT	651.0
PIER 7L	RIGHT	659.0
PIER 7R	LEFT	656.0
PIER 7R	RIGHT	656.0
PIER 8L	LEFT	700.5
PIER 8L	RIGHT	705.5
PIER 8R	LEFT	697.33
PIER 8R	RIGHT	697.33
PIER 9L	LEFT	713.5
PIER 9L	RIGHT	721.0

* PIERS 1, 2, 8, AND 9 HAVE NO CHANGE IN LEG SIZE. BRACKET TYPE C AND D SHOULD BE TYPE B.

NOTES

DOWNSPOUT MOUNTING BRACKETS: SEE SHEET 113/123.

ADDITIONAL NOTES: SEE SHEET 113/123.

SCUPPER DETAILS: SEE SHEET 114/123.

SU27ISDP.DGN 6/23/04 JLS,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

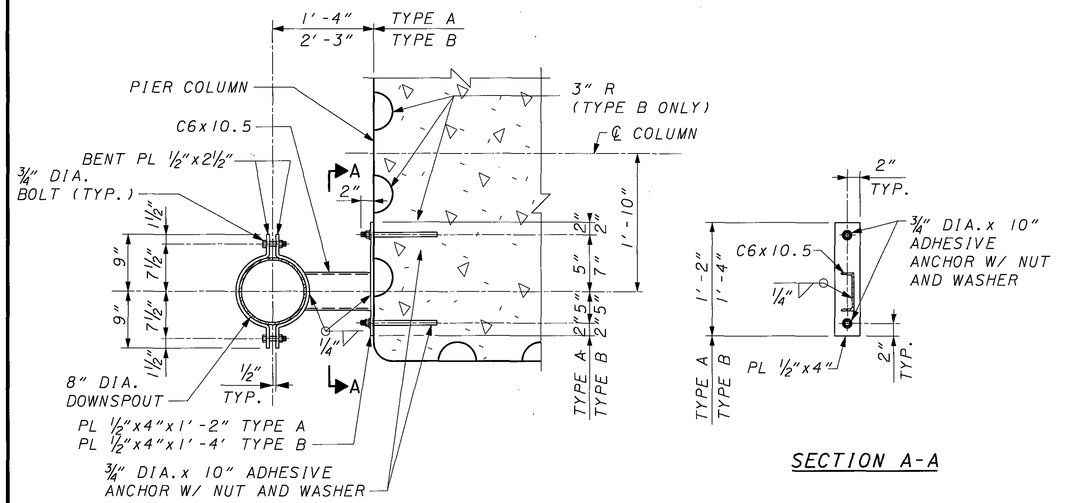
DESIGNED KAK | DRAWN JLS | REVIEWED DAP 10/29/03 | DATE
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

DOWNSPOUT AT PIER - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

112/123

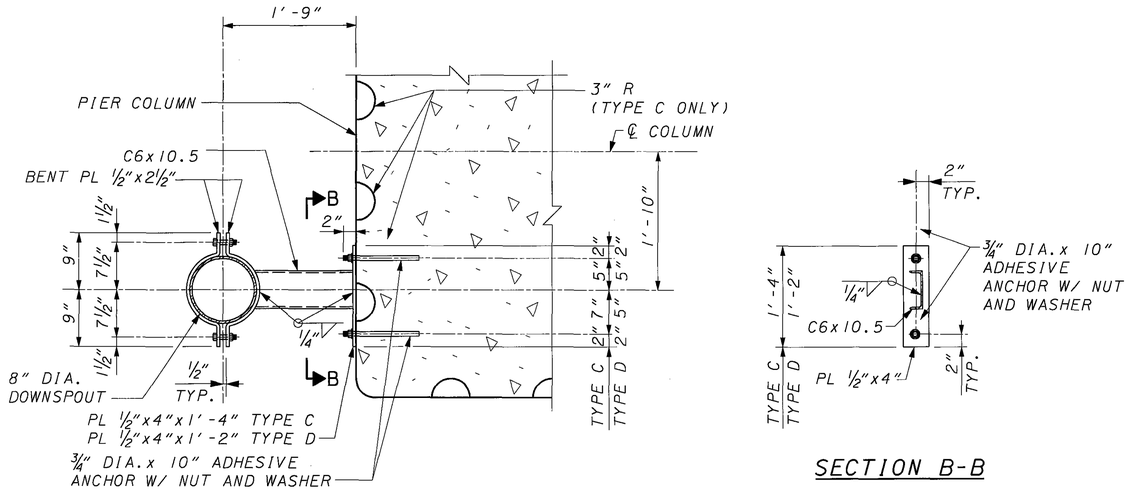
549/612



SECTION A-A

DOWNSPOUT MOUNTING BRACKET

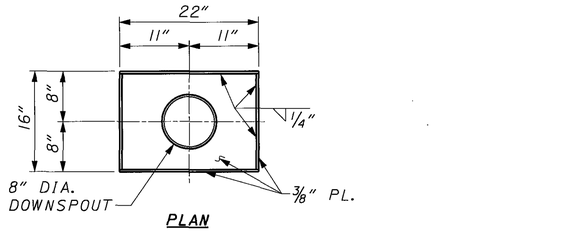
TYPE A & B



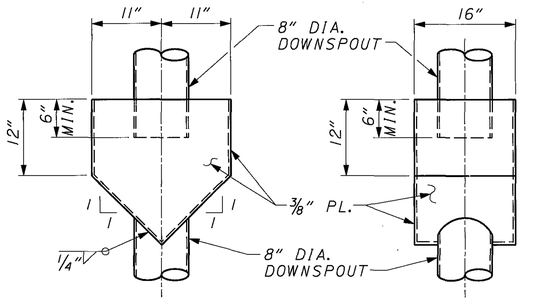
SECTION B-B

DOWNSPOUT MOUNTING BRACKET

TYPE C & D

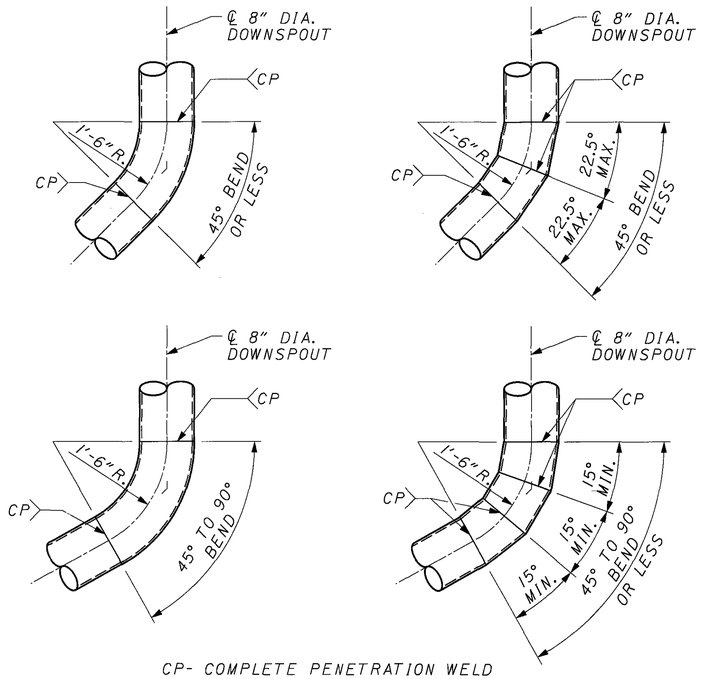


PLAN



ELEVATION SIDE VIEW

COLLECTION BOX



CP- COMPLETE PENETRATION WELD

SMOOTH RADIUS BEND MITERED BEND

DOWNSPOUT BEND DETAILS

NOTES:

DOWNSPOUT: SHALL BE STANDARD WEIGHT (28.55 P.L.F.) SCHEDULE 40, 8" DIAMETER STEEL PIPE WITH A WALL THICKNESS OF 0.322". ELBOWS SHALL BE SCHEDULE 40 WELDED FITTINGS WITH FULL PENETRATION BUTT WELDS. ELBOW AND COLLECTION BOXES SHALL BE SHOP FABRICATED WITH THE DOWNSPOUTS. FIELD SPLICES IN THE DOWNSPOUTS SHALL BE VICTAULIC COUPLING STYLE 99, DRESSER COUPLING STYLE 38, OR EQUAL.

ELBOWS AND BENDS SHALL BE STANDARD LONG RADIUS OR DOUBLE MITERED. THE CENTERLINE RADIUS SHALL BE 1'-6".

MATERIALS FOR SCUPPERS, DOWNSPOUTS, COLLECTION BOXES, MOUNTING BRACKETS, COUPLINGS AND HARDWARE SHALL BE GALVANIZED PER 711.02 AFTER FABRICATION. TOUGHNESS TESTING IN ACCORDANCE WITH ASTM AE436 IS NOT REQUIRED.

ADHESIVE ANCHORS SHALL BE HVA ADHESIVE ANCHORS AS MANUFACTURED BY HILTI CORPORATION, MOLLY PARABOND CAPSULE ANCHOR AS MANUFACTURED BY EMHART CORPORATION, OR AN APPROVED EQUAL.

PAYMENT: SCUPPER SUPPORT ANGLES, SUPPORT BOLTS, PIPE OUTLETS AND MOUNTING BRACKETS AND HARDWARE ARE INCLUDED FOR PAYMENT WITH ITEM 518 - SCUPPER, INCLUDING SUPPORTS.

COLLECTION BOXES SHALL BE INCLUDED FOR PAYMENT WITH ITEM 518 - 8" PIPE DOWNSPOUT, INCLUDING SPECIALS.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JLS	DAP	10/29/03
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709013(L) 7709021(R)	

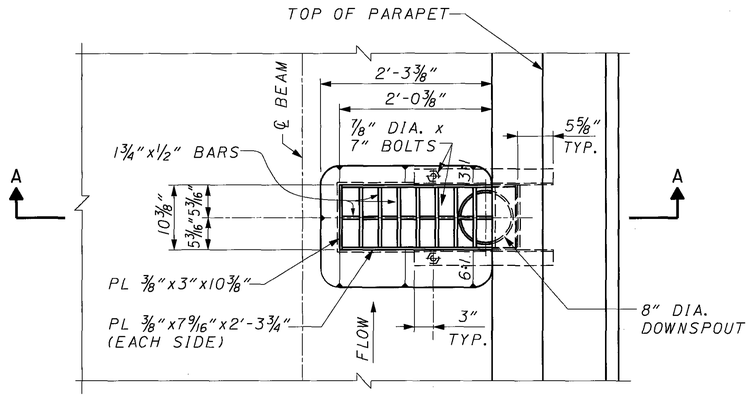
DRAINAGE DETAILS 1 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

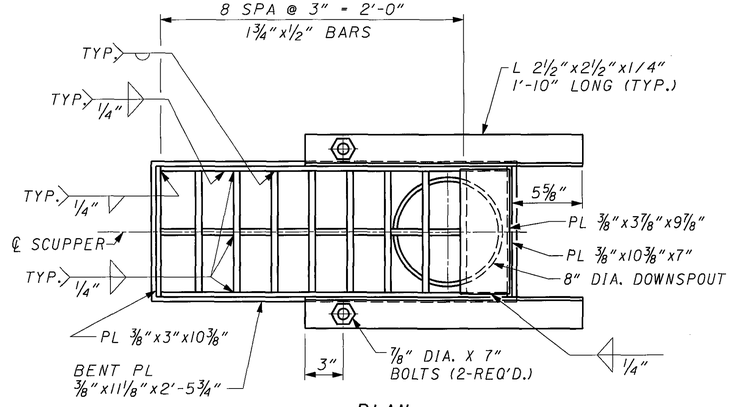
113/123

550/612

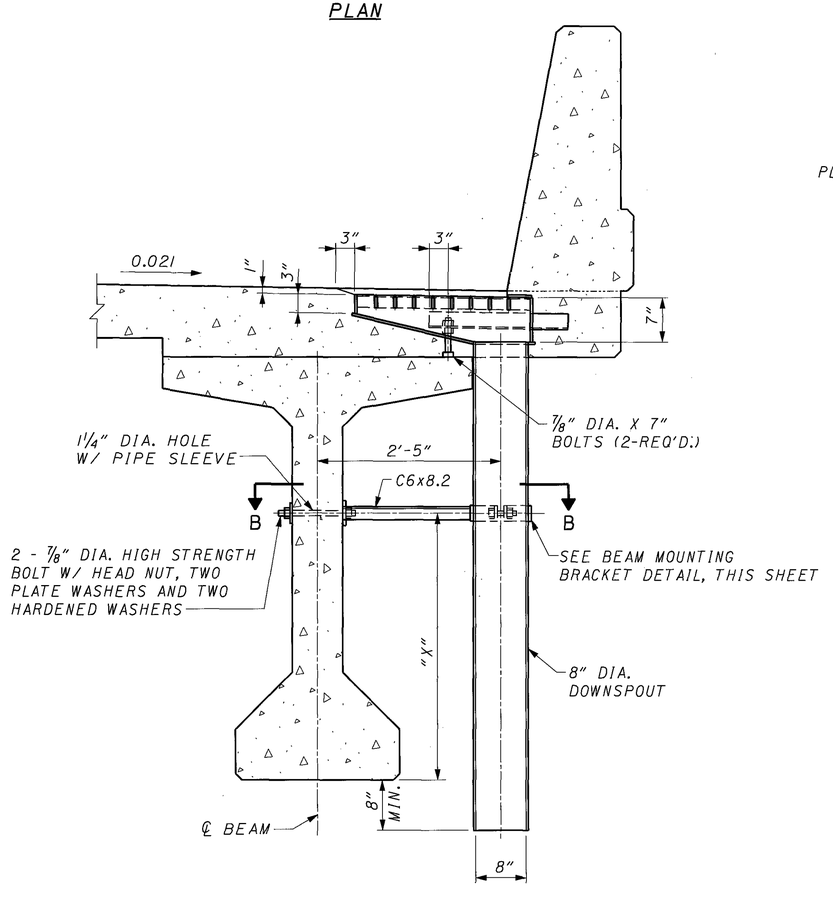
SU271SD0.DGN 6/23/04 SCB,KH,JLS,RC



PLAN

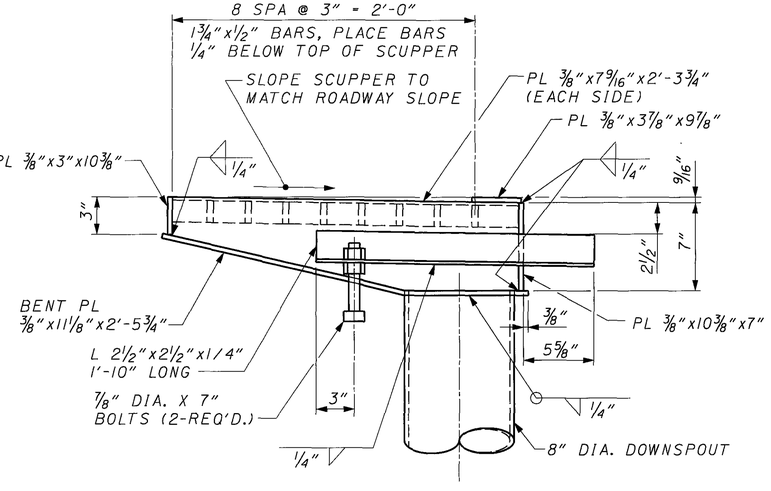


PLAN



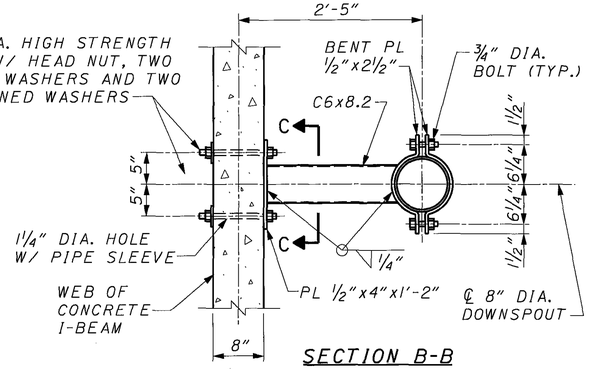
SECTION A-A

SCUPPER LAYOUT

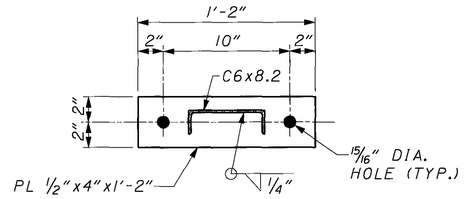


ELEVATION

SCUPPER DETAIL



SECTION B-B



SECTION C-C

BEAM MOUNTING BRACKET DETAIL

MOUNTING BRACKET LOCATION

BRIDGE	SPAN	STATION	DIM. "X"
LEFT	1,2,3,4,9	ALL	2'-7"
	5	427+25	3'-7"
		427+40	3'-7"
		428+65	4'-0"
	6	ALL	2'-9"
	7	431+48	4'-5"
		432+47	2'-11"
		432+59	2'-11"
		433+29	4'-0"
	8	ALL	3'-2"
	10	-	-
RIGHT	1,2,3,9	ALL	2'-7"
	4	426+19	3'-7"
	5	ALL	3'-1"
	6	428+47	4'-0"
		429+55	3'-7"
		430+27	3'-7"
	7	431+46	2'-11"
		432+49	3'-8"
		433+01	4'-0"
	8	ALL	3'-2"

NOTES

SCUPPER AND DECK REINFORCING STEEL CONFLICT: A MAXIMUM OF 1 - #6 MAIN TRANSVERSE REINFORCEMENT BAR IN THE TOP AND BOTTOM MATS, AND 1 - #5 TOP MAT CANTILEVER BAR IN UNITS 1 & 3 MAY BE FIELD CUT TO FACILITATE THE PLACEMENT OF THE SCUPPERS. A MAXIMUM OF 2 - #6 TOP AND BOTTOM MAT MAIN REINFORCEMENT BARS MAY BE FIELD CUT IN UNIT 2. REPAIRS TO THE CUT BARS SHALL BE MADE PER 709.00. ADDITIONAL BARS IN CONFLICT WITH SCUPPERS SHALL BE FIELD BENT TO ACCOMMODATE THE SCUPPER. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE ITEM 509 REINFORCING STEEL ITEM.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVISED	CHECKED	VERIFIED	DATE
KAK	JLS		BLN	DAP	10/29/03

STRUCTURE FILE NUMBER
7709013(L)
7709021(R)

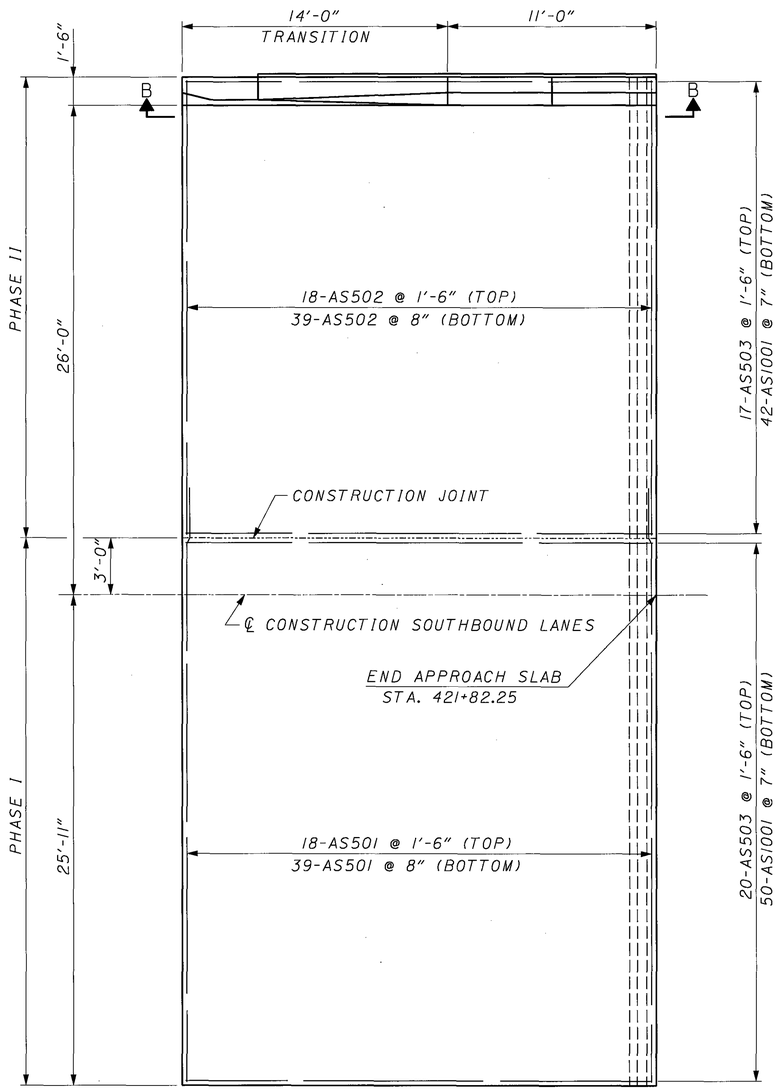
DRAINAGE DETAILS 2 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

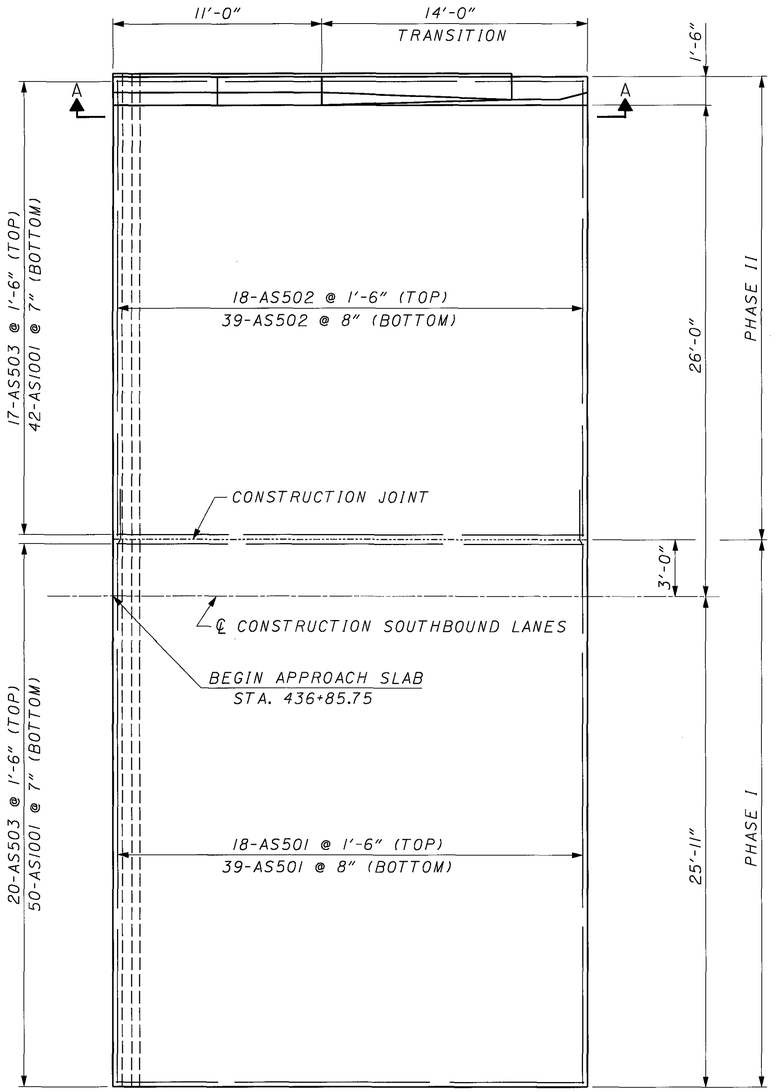
114 / 123

551
612

SU271SD0.DGN 6/24/04 SCB,JLS,KH,RC



REAR APPROACH SLAB - LEFT



FORWARD APPROACH SLAB - LEFT

NOTES

CROSS SLOPE: THE RATE OF CROSS SLOPE VARIES BETWEEN THE BRIDGE DECK AND THE APPROACH PAVEMENT. A SMOOTH TRANSITION FROM 0.021 AT THE BRIDGE DECK TO 0.016 AT THE APPROACH PAVEMENT SHALL BE MADE WITHIN 32.5' OF THE BRIDGE ENDS. (250:1 TRANSITION, SEE SUPERELEVATION TABLE FOR ADDITIONAL INFORMATION).

SECTIONS A-A & B-B: SEE SHEET 117/123.

ADDITIONAL APPROACH SLAB DETAILS: SEE STANDARD DRAWING AS-1-81.

QUANTITIES ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN FOR PAYMENT.

ADDITIONAL NOTES: SEE SHEET 117/123.

SU27IASN.DGN 6/23/04 JLS,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

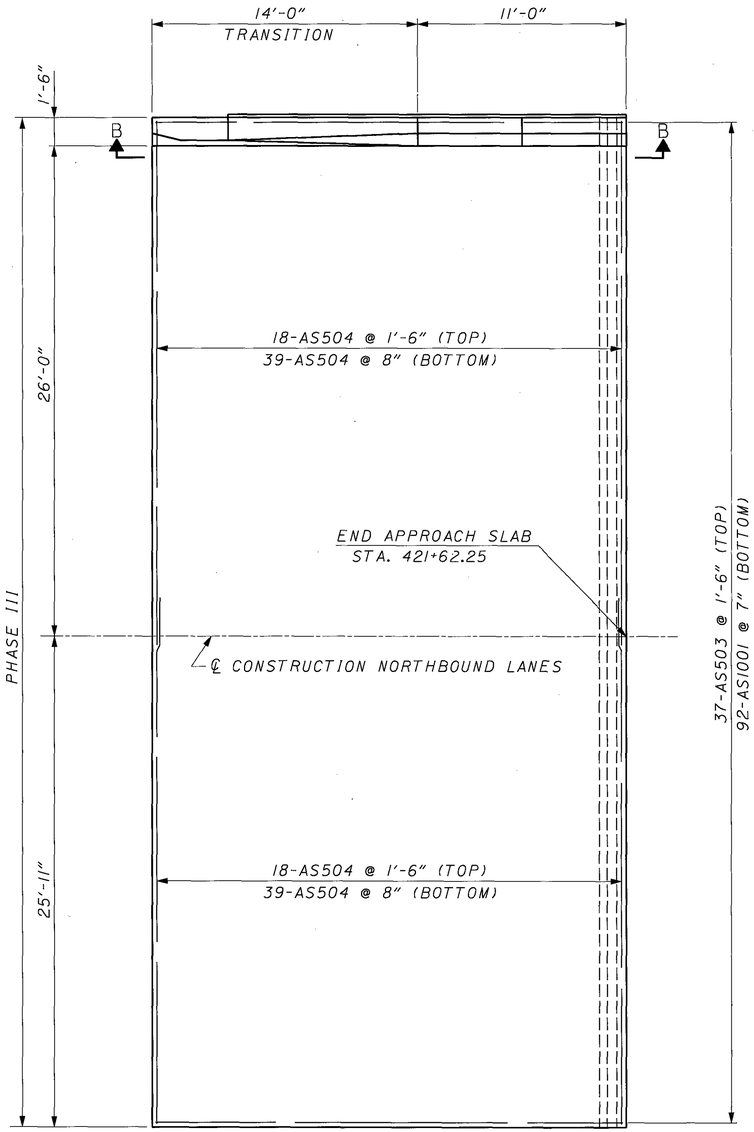
DESIGNED	DRAWN	REVIEWED	DATE
DLR	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709013	

APPROACH SLABS - SOUTHBOUND - CONCRETE
BRIDGE NO. SUM-271-0802 L
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

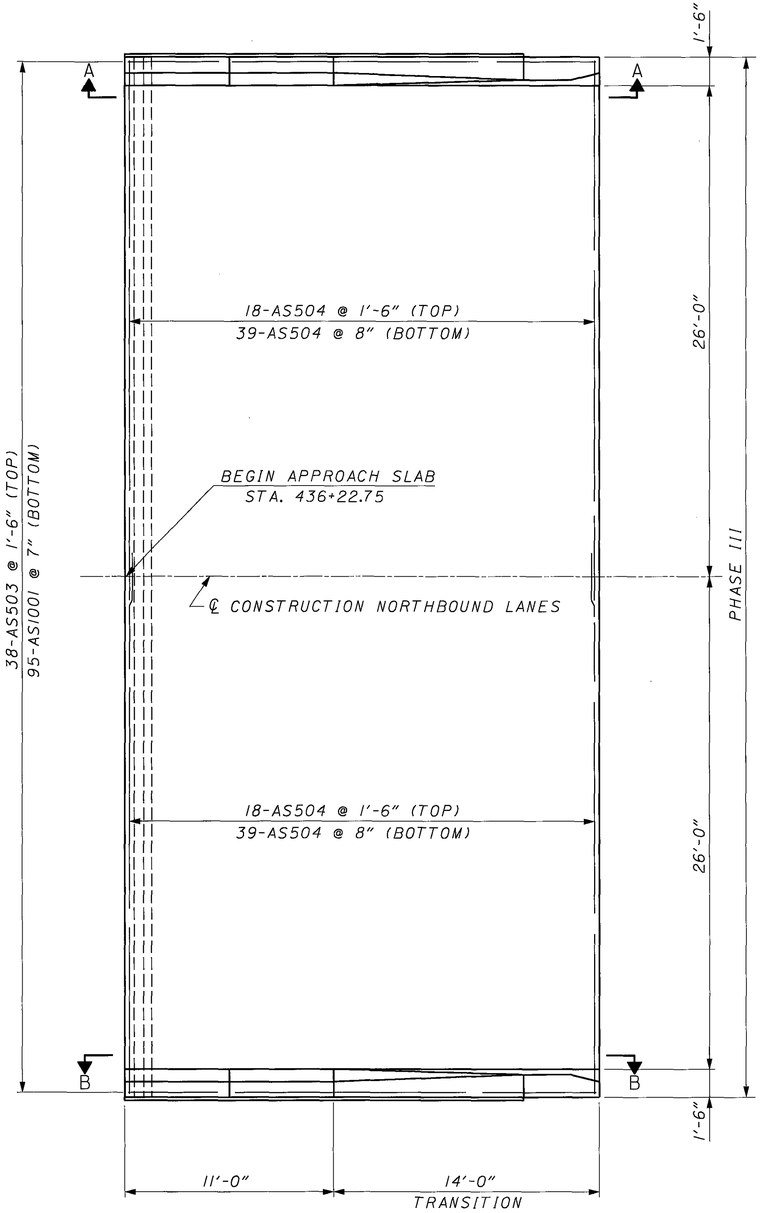
SUM-271-8.02

115/123

552/612



REAR APPROACH SLAB - RIGHT



FORWARD APPROACH SLAB - RIGHT

NOTES

SECTIONS A-A & B-B: SEE SHEET 117/123.

ADDITIONAL NOTES: SEE SHEET 117/123.

SU271ASN.DGN 6/23/04 JLS,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

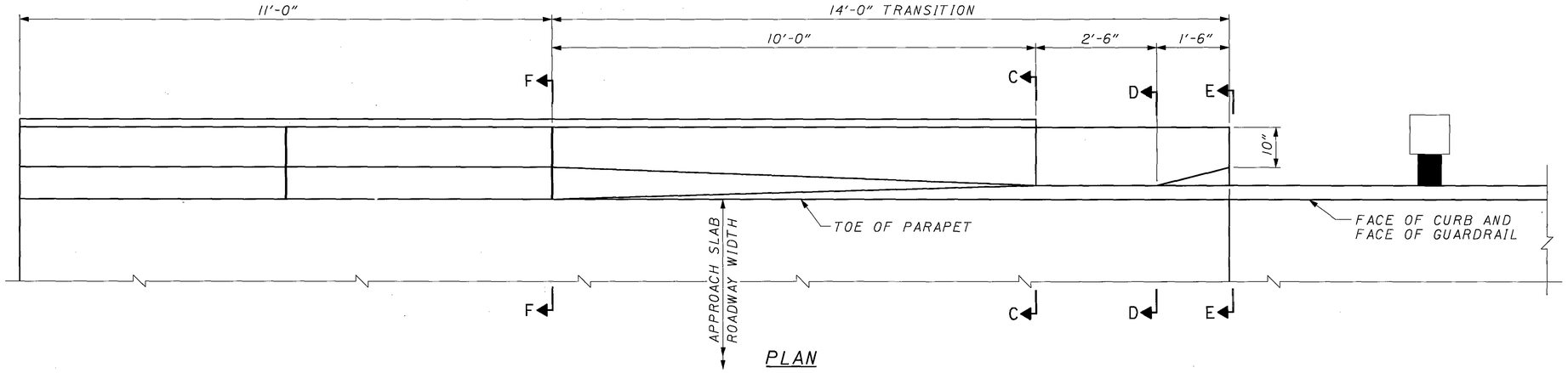
DESIGNED	DRAWN	REVISED	DATE
DLA	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KAK		7709021	

APPROACH SLABS - NORTHBOUND - CONCRETE
BRIDGE NO. SUM-271-0802 R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

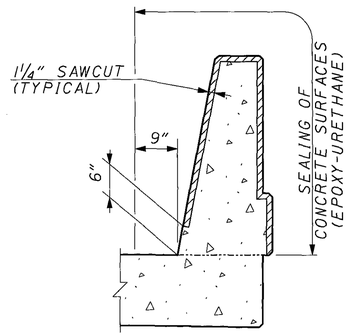
SUM-271-8.02

116/123

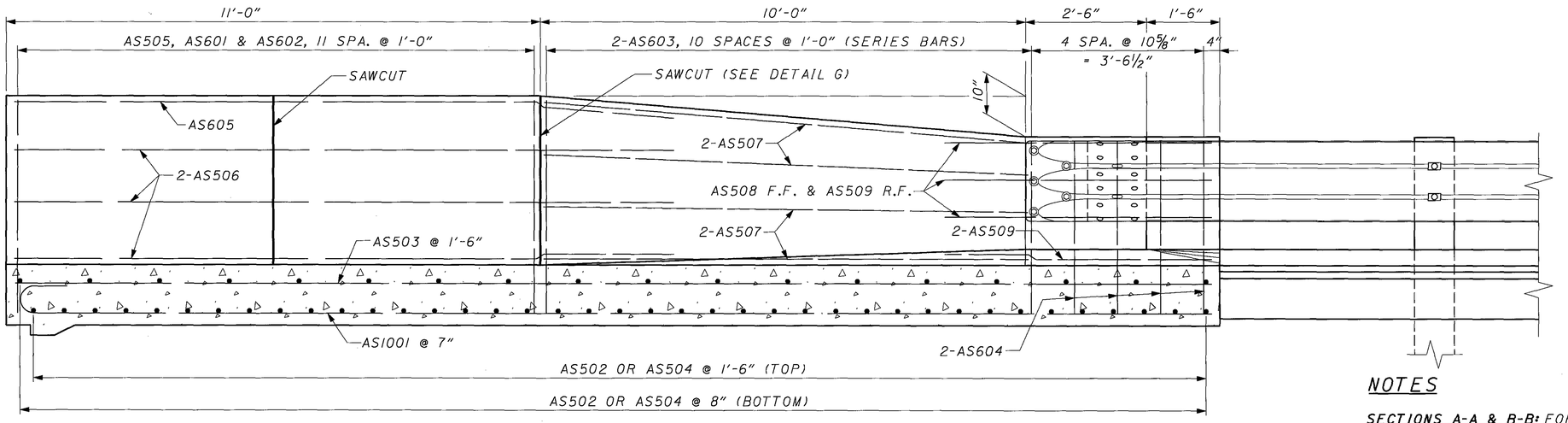
553/612



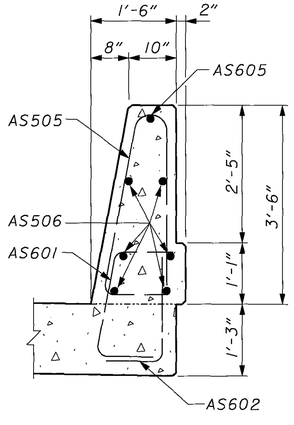
PLAN



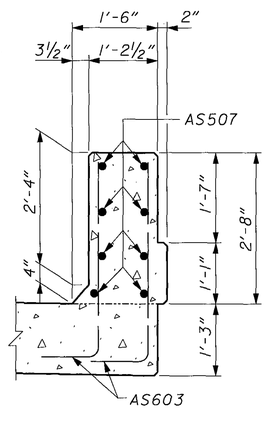
DETAIL G



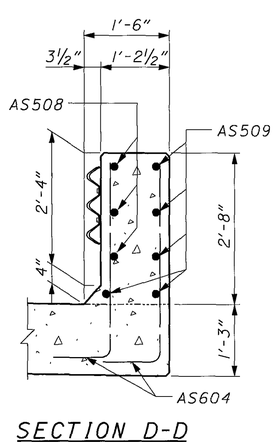
SECTION A-A (SHOWN)
SECTION B-B (OPPOSITE HAND)



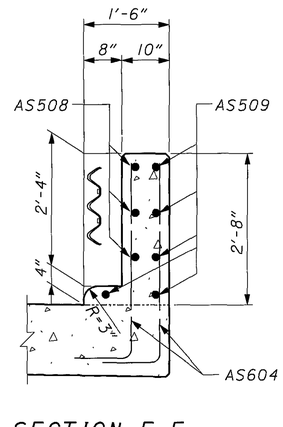
SECTION F-F



SECTION C-C



SECTION D-D



SECTION E-E

NOTES

SECTIONS A-A & B-B: FOR LOCATIONS SEE SHEETS 115/123 AND 116/123.

CONCRETE PARAPETS: AS SOON AS A CONCRETE SAW CAN BE OPERATED WITHOUT DAMAGING THE FRESHLY PLACED CONCRETE, SAWCUT 1¼" DEEP CONTROL JOINTS INTO THE PERIMETER OF THE CONCRETE PARAPET STARTING AND ENDING AT THE ELEVATION OF THE CONCRETE DECK. PLACE THE SAWCUTS AT A MINIMUM OF 6 FEET AND A MAXIMUM OF 10 FEET CENTERS. USE AN EDGE GUIDE, FENCE, OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE, AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF ¼". SEAL THE PERIMETER OF THE DEFLECTION CONTROL JOINT TO A MINIMUM DEPTH OF 1" WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO ASTM C920, TYPE S. LEAVE THE BOTTOM ½" OF THE INSIDE AND OUTSIDE FACE UNSEALED TO ALLOW WATER TO ESCAPE.

ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN: CONCRETE, REINFORCING STEEL, DEFLECTION JOINT SAWCUT, ½" PREFORMED EXPANSION JOINT FILLER, CAULKING MATERIAL FOR PARAPET AND SEALING OF CONCRETE SURFACES ARE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN FOR PAYMENT.

NOTATION: F.F - FRONT FACE; R.F. - REAR FACE.

BRIDGE TERMINAL ASSEMBLIES: SEE STANDARD CONSTRUCTION DRAWINGS GR-3.1 AND GR-3.2.

ADDITIONAL RAILING DETAILS SEE STANDARD DRAWING SBR-1-99.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN JLS | CHECKED KAK | REVISED | REVIEWED DAP 10/29/03 | DATE | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

APPROACH SLAB RAILING DETAILS - CONCRETE

BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

117/123

554/612

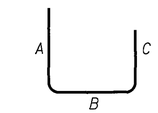
SU271ASO.DGN 6/23/04 KH,JLS,RC

ABUTMENTS

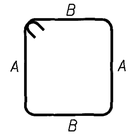
CALCULATED KH DATE 10/03
CHECKED KAK DATE 12/03

MARK	S.B.B.- LEFT R.A.	S.B.B.- LEFT F.A.	S.B.B.- LEFT TOTAL	N.B.B.- RIGHT R.A.	N.B.B.- RIGHT F.A.	N.B.B.- RIGHT TOTAL	GRAND TOTAL	LENGTH	TYPE	A	B	C	D	INC.	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
A501	56		56	56		56	112	7'-4"	1	1'-4"	4'-11"	1'-4"			428	428
A502	48		48	9		9	57	3'-4"	1	0'-10"	1'-11"	0'-10"			167	31
A503	29	29	58	15	4	19	77	7'-5"	7						449	147
A504	6	6	12	6	12	18	30	0'-11"	STR.						11	17
A505					40	40	40	28'-9"	STR.							1199
A506					6	6	6	31'-7"	STR.							198
A507		104	104		92	92	196	9'-3"	1	0'-10"	8'-6"	0			1003	887
A508		4	4		8	8	12	20'-5"	STR.						85	170
A509		1 SER. OF 16	1 SER.OF 16		2 SER. OF 16	2 SER.OF 16	3 SER. OF 16	2'-8" TO 10'-2"	STR.					6"	107	214
A510		1 SER. OF 5	1 SER.OF 5		2 SER. OF 5	2 SER.OF 5	3 SER. OF 5	8'-5" TO 20'-5"	STR.					3'-0"	75	150
A511		2	2		4	4	6	10'-2"	STR.						21	42
A512	33	22	55	22		22	77	5'-10"	3	2'-11"					335 *	134 *
A513	31	20	51				51	30'-2"	STR.						1605	
A514	31	20	51				51	24'-2"	STR.						1285	
A515		2	2				2	33'-2"	STR.						69	
A516		2	2				2	41'-4"	STR.						86	
A517	12	11	23	3		3	26	25'-11"	STR.						622	81
A518		4	4				4	28'-3"	STR.						118	
A519		2	2				2	32'-2"	STR.						67	
A520	1 SER. OF 27		1 SER.OF 27				1 SER. OF 27	9'-8" TO 10'-6"	STR.					3/8"+	284	
A521	2		2	2		2	4	31'-2"	STR.						65	65
A522	4		4				4	23'-8"	STR.						99	
A523	107		107				107	5'-11"	1	0'-10"	5'-2"	0			660	
A524	86		86				86	11'-3"	STR.						1009	
A525	12		12				12	23'-6"	STR.						294	
A526	1 SER. OF 7		1 SER.OF 7				1 SER. OF 7	9'-0" TO 23'-6"	STR.					2'-5"	119	
A527				20		20	20	13'-2"	STR.							275
A528	1 SER. OF 5		1 SER.OF 5				1 SER. OF 5	12'-0" TO 13'-8"	STR.					5"+	67	
A529	1 SER. OF 14		1 SER.OF 14				1 SER. OF 14	2'-6" TO 7'-9"	STR.					4 7/8"-	75	
A530	2		2				2	7'-10"	STR.						16	
A531		18	18		36	36	54	2'-10"	1	0'-10"	1'-5"	0'-10"			53	106
A532	2		2				2	31'-8"	STR.						66	
A533				9		9	9	10'-6"	STR.							99
A534				20		20	20	41'-2"	STR.							859
A535				2		2	2	42'-10"	STR.							89
A536				90		90	90	8'-6"	1	0'-10"	7'-10"	0				798
A537				6		6	6	14'-10"	STR.							93
A538				8		8	8	10'-0"	STR.							83
A539				4		4	4	5'-6"	STR.							23
A540				4		4	4	5'-6"	10							23
A541				10		10	10	3'-8"	STR.							38
A542				3		3	3	21'-2"	STR.							66
A543				4		4	4	24'-2"	STR.							101
A544				2		2	2	26'-5"	STR.							55
A545				1 SER. OF 22		1 SER.OF 22	1 SER. OF 22	9'-9" TO 10'-4"	STR.					3/8"-		230
A546	1		1				1	7'-4"	STR.						8	
A547		56	56		56	56	112	6'-2"	1	1'-4"	3'-9"	1'-4"			360	360
A548		1 SER. OF 27	1 SER. OF 27				1 SER. OF 27	8'-11" TO 9'-8"	STR.					3/8"-	262	
A549	16		16				16	13'-6"	STR.						225	

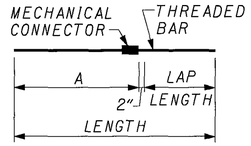
* WEIGHT DOES NOT INCLUDE WEIGHT OF MECHANICAL CONNECTORS



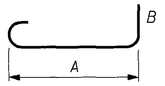
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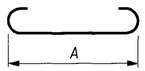
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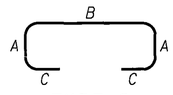
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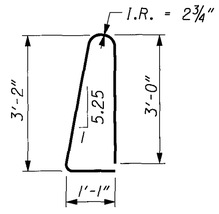
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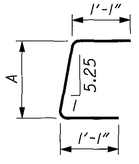
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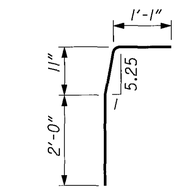
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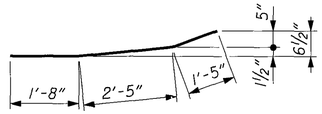
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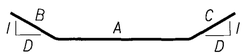
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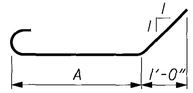
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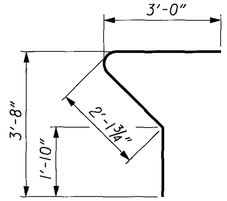
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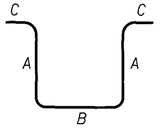
TYPE 11



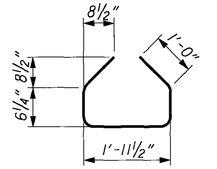
TYPE 12



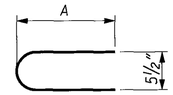
TYPE 13



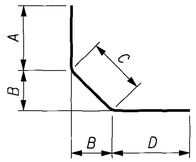
TYPE 14



TYPE 15



TYPE 16



TYPE 17

NOTES:

ABUTMENT REINFORCING STEEL LIST CONTINUED ON SHEET 119/123.

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST LETTER IDENTIFIES BAR LOCATION, THE NEXT DIGIT INDICATES THE BAR SIZE DESIGNATION, THE REMAINING DIGITS STATE THE SEQUENCE NUMBER.

EXAMPLE: A511
A = LOCATION OF THE BAR IN STRUCTURE (ABUTMENT)
5 = BAR SIZE DESIGNATION
11 = SEQUENCE NUMBER

BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED.

ALL REINFORCING STEEL TO BE EPOXY COATED.

NOTATION: N.B.B. - NORTHBOUND BRIDGE
S.B.B. - SOUTHBOUND BRIDGE
R.A. - REAR ABUTMENT
F.A. - FORWARD ABUTMENT
STR. - STRAIGHT
SER. - SERIES

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN KH | REVIEWED DAP | DATE 3/18/04
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

REINFORCING STEEL LIST 1 - CONCRETE

BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, CUYAHOGA RIVER
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

118/123

555
612

SU271R10.DGN 6/23/04 CAR,JLS,KH,RC

ABUTMENTS (CONT.)

CALCULATED KH DATE 10/03
CHECKED KAK DATE 12/03

MARK	S.B.B.- LEFT R.A.	S.B.B.- LEFT F.A.	S.B.B.- LEFT TOTAL	N.B.B.- RIGHT R.A.	N.B.B.- RIGHT F.A.	N.B.B.- RIGHT TOTAL	GRAND TOTAL	LENGTH	TYPE	A	B	C	D	INC.	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
A601	1	1	2	1	2	3	5	0'-11"	STR.						3	4
A602	2	2	4	2	4	6	10	4'-0"	8	2'-0"					24	36
A603	2	2	4	2	4	6	10	2'-11"	1	2'-0"	1'-1"	0			18	26
A604					6	6	6	29'-0"	STR.							261
A605	56	56	112	56	56	112	224	6'-9"	1	3'-1"	0'-11"	3'-1"			1136	1136
A606	1		1				1	3'-8"	STR.						6	
A607		3	3		6	6	9	18'-4"	11	17'-0"	1'-4"	0	2.0		83	165
A608		1	1		2	2	3	3'-4"	STR.						5	10
A609		2	2		4	4	6	10'-7"	STR.						32	64
A610		1 SER. OF 7	1 SER.OF 7		2 SER. OF 7	2 SER.OF 7	3 SER. OF 7	8'-5" TO 20'-5"	STR.					2'-0"	152	303
A611		6	6				6	28'-3"	STR.						255	
A612		6	6		12	12	18	20'-5"	STR.						184	368
A613		8	8		8	8	16	8'-2"	1	3'-3"	2'-0"	3'-3"			98	98
A614					24	24	24	31'-11"	STR.							1151
A615		109	109	27	90	117	226	13'-6"	1	2'-7"	8'-8"	2'-7"			2210	2372
A616	10		10	10	10	20	30	7'-5"	1	3'-3"	4'-4"	0			111	223
A617	8		8	8		8	16	8'-10"	1	3'-3"	2'-8"	3'-3"			106	106
A618	13	11	24	10		10	34	7'-0"	3	3'-6"					252 *	105 *
A619	3	3	6				6	30'-2"	STR.						272	
A620	3	3	6				6	24'-2"	STR.						218	
A621		8	8				8	41'-4"	STR.						497	
A622		8	8				8	33'-2"	STR.						399	
A623	18	13	31	12		12	43	9'-3"	11	1'-0"	7'-3"	1'-0"	1.0		431	167
A624	11	10	21	6		6	27	25'-11"	STR.						817	233
A625	27	27	54	13		13	67	3'-11"	9						318	76
A626	27	27	54	13		13	67	2'-11"	STR.						236	57
A627		8	8				8	32'-2"	STR.						386	
A628	24		24				24	28'-11"	STR.						1042	
A629	56		56				56	9'-2"	STR.						771	
A630	10		10				10	31'-2"	STR.						468	
A631	20		20				20	23'-11"	STR.						718	
A632	77		77				77	15'-6"	1	2'-7"	10'-8"	2'-7"			1793	
A633	31		31				31	10'-3"	STR.						477	
A634	1 SER. OF 10		1 SER.OF 10				1 SER. OF 10	8'-0" TO 9'-11"	STR.					2½"+	135	
A635	1 SER. OF 14		1 SER.OF 14				1 SER. OF 14	2'-6" TO 7'-9"	STR.					4⅞"-	108	
A636	1 SER. OF 7		1 SER.OF 7				1 SER. OF 7	9'-0" TO 23'-6"	STR.					2'-5"	171	
A637	2		2				2	7'-10"	STR.						24	
A638	3		3				3	20'-10"	11	1'-4"	19'-6"	0	2.5		94	
A639	1 SER. OF 27		1 SER.OF 27				1 SER. OF 27	10'-6" TO 11'-4"	STR.					⅜"+	443	
A640	53		53				53	7'-8"	STR.						610	
A641	9		9				9	31'-8"	STR.						428	
A642				36		36	36	6'-8"	1	1'-0"	5'-10"	0				360
A643				3		3	3	41'-2"	STR.							185
A644				3		3	3	13'-2"	STR.							59
A645				7		7	7	31'-2"	STR.							328
A646				3		3	3	11'-7"	1	1'-0"	10'-9"	0				52
A647				25		25	25	15'-3"	1	1'-0"	14'-5"	0				573
A648				75		75	75	8'-8"	1	1'-0"	7'-10"	0				976
A649				9		9	9	10'-11"	STR.							148
A650				7		7	7	42'-10"	STR.							450
A651				4		4	4	21'-2"	STR.							127
A652				6		6	6	24'-2"	STR.							218
A653				8		8	8	26'-5"	STR.							317
A654				1		1	1	15'-5"	11	12'-1"	3'-4"	0	12.0			23
A655				30		30	30	5'-10"	STR.							262
A656				76		76	76	12'-6"	1	2'-7"	7'-8"	2'-7"				1427
A657		10	10				10	9'-5"	1	3'-3"	6'-4"	0			141	

* WEIGHT DOES NOT INCLUDE WEIGHT OF MECHANICAL CONNECTORS

ABUTMENTS (CONT.)

CALCULATED KH DATE 10/03
CHECKED KAK DATE 12/03

MARK	S.B.B.- LEFT R.A.	S.B.B.- LEFT F.A.	S.B.B.- LEFT TOTAL	N.B.B.- RIGHT R.A.	N.B.B.- RIGHT F.A.	N.B.B.- RIGHT TOTAL	GRAND TOTAL	LENGTH	TYPE	A	B	C	D	INC.	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
A701		109	109	27	90	117	226	10'-8"	1	1'-2"	8'-8"	1'-2"			2376	2551
A702					24	24	24	32'-3"	STR.							1582
A703	112		112	112		112	224	13'-9"	1	6'-1"	1'-11"	6'-1"			3148	3148
A704	10	8	18	7		7	25	8'-0"	3	4'-0"					294 *	114 *
A705		8	8				8	41'-4"	STR.						676	
A706		8	8				8	33'-2"	STR.						542	
A707	2	2	4	2		2	6	9'-0"	STR.						74	37
A708		1 SER. OF 27	1 SER.OF 27				1 SER. OF 27	10'-9" TO 11'-6"	STR.					⅜"-	614	
A709		8	8				8	32'-2"	STR.						526	
A710		144	144		126	126	270	9'-7"	1	1'-2"	8'-7"	0			2821	2468
A711	10		10				10	31'-2"	STR.						637	
A712	20		20				20	24'-2"	STR.						988	
A713		1 SER. OF 16	1 SER.OF 16		2 SER. OF 16	2 SER.OF 16	3 SER. OF 16	3'-1" TO 10'-7"	STR.					6"	223	447
A714	77		77				77	12'-8"	1	1'-2"	10'-8"	1'-2"			1994	
A715	12		12				12	23'-6"	STR.						576	
A716	33		33				33	11'-8"	1	1'-2"	9'-8"	1'-2"			787	
A717	9		9				9	31'-8"	STR.						583	
A718	33		33				33	14'-6"	1	2'-7"	9'-8"	2'-7"			978	
A719				7		7	7	42'-10"	STR.							613
A720				7		7	7	31'-2"	STR.							446
A721				76		76	76	9'-8"	1	1'-2"	7'-8"	1'-2"				1502
A722				43		43	43	8'-10"	1	1'-2"	7'-10"	0				776
A723				8		8	8	26'-5"	STR.							432
A724				1 SER. OF 22		1 SER.OF 22	1 SER. OF 22	11'-7" TO 12'-2"	STR.					⅜"-		534
A725		112	112		112	112	224	13'-3"	1	6'-1"	1'-5"	6'-1"			3033	3033
A801					11	11	11	30'-3"	STR.							888
A802	6	5	11	6		6	17	12'-0"	3	6'-0"					352 *	192 *
A803	6	5	11				11	24'-2"	STR.						710	
A804	6	5	11				11	30'-2"	STR.						886	
A805				6		6	6	41'-2"	STR.							659
A806				6		6	6	13'-2"	STR.							211
A807	56		56				56	9'-11"	1	1'-4"	8'-9"	0			1483	
A901	94		94				94	11'-1"	1	1'-7"	9'-9"	0			3542	
D801	36	36	72	36	36	72	144	4'-11"	12	2'-7"					945	945
														TOTAL WEIGHT	54,655	40,105

NOTES:

ADDITIONAL NOTES: SEE SHEET 118/123.

BENDING DIAGRAMS: SEE SHEET 118/123.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN KH | REVIEWED DAP | DATE 3/18/04 | CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

REINFORCING STEEL LIST 2 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

119/123

556/612

SU271RIO.DGN 6/23/04 CAR,JLS,KH,TWH,RC

PIERS

CALCULATED TWH DATE 6/03
CHECKED KAK DATE 12/03

MARK	SOUTHBOUND BRIDGE - LEFT										NORTHBOUND BRIDGE - RIGHT										GRAND TOTAL	LENGTH	TYPE	A	B	C	D	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7	PIER 8	PIER 9	TOTAL	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7	PIER 8	TOTAL									
P401	102	198	123	123	114	114	114	123	66	1077	81	138	123	123	114	114	114	102	909	1986	19'-2"	2	4'-8"	4'-8"			13,789	11,638
P402	408	792	492	492	456	456	456	492	264	4308	324	552	492	492	456	456	456	408	3636	7944	5'-9"	4	4'-8"	8"			16,547	13,966
P403			132	174	177	156	156			795			84	123	147	135	141		630	1425	23'-2"	2	5'-8"	5'-8"			12,303	9749
P404			528	696	708	624	624			3180			336	492	588	540	564		2520	5700	6'-9"	4	5'-8"	8"			14,339	11,363
P501	2	2	2		2	2	2		2	14	2	2	2		2	2	2		12	26	28'-2"	STR.					411	353
P502	2	2	2		2	2	2		2	14	2	2	2		2	2	2		12	26	20'-2"	STR.					294	252
P503	10	10	10	10	10	10	10	10	10	90	10	10	10	10	10	10	10	10	80	170	6'-3"	1	2'-9"	1'-0"	2'-9"		587	522
P504	10	10	10	10	10	10	10	10	10	90	10	10	10	10	10	10	10	10	80	170	12'-3"	1	2'-9"	7'-0"	2'-9"		1150	1022
P505	6		6		6			6	6	30	6		6					6	18	48	19'-6"	STR.					610	366
P506	6							6	6	18	6	4	4					6	20	38	11'-6"	STR.					216	240
P507	44	44	44	44	44	44	44	44	44	396	44	44	44	44	44	44	44	44	352	748	13'-2"	6	1'-0"	7'-8"	2'-0"		5438	4834
P508		6								6		6							6	12	17'-6"	STR.					110	110
P509		2		4						6				4					4	10	13'-6"	STR.					84	56
P510		4	4							8		2	2						4	12	12'-6"	STR.					104	52
P511				6				6		12										12	21'-9"	STR.					272	
P512				6				6		12										12	29'-7"	STR.					370	
P513				6				6		12										12	5'-10"	3	2'-11"				73 ✳	
P514			2	2	4	4				12					4	4	4		12	24	14'-6"	STR.					181	181
P515				6						6				6	6		6		18	24	18'-6"	STR.					116	347
P516					2	2	6			10				2	2	2	2		8	18	15'-6"	STR.					162	129
P517						6				6										6	22'-6"	STR.					141	
P518							6			6										6	23'-6"	STR.					147	
P519														12				12	24	24	27'-2"	STR.						680
P520																6			6	6	21'-6"	STR.						135
P601	39		44					39	39	161	39		40					39	118	279	27'-4"	1	4'-1"	19'-6"	4'-1"		6610	4844
P602	63							63	63	189	63	38	42					63	206	395	19'-4"	1	4'-1"	11'-6"	4'-1"		5488	5982
P603	136	136	112	144	144	144	144	144	112	1216	136	112	136	144	144	144	144	144	1104	2320	14'-4"	1	4'-10"	5'-0"	4'-10"		26,179	23,768
P604	34	34	34	34	34	34	34	34	34	306	34	34	34	34	34	34	34	34	272	578	16'-4"	1	4'-10"	7'-0"	4'-10"		7507	6673
P605	4	4	4	2	8	8	8	4	4	46	8	8	8	4	8	8	8	4	56	102	5'-8"	1	4'-10"	1'-0"	0		392	477
P606				4						4				4					4	8	5'-2"	STR.					31	31
P607	4	4	4		4	4	4		4	28	4	4	4		4	4	4		24	52	28'-2"	STR.					1185	1015
P608	58	58	58		100	100	100		58	532	100	100	100		100	100	100		600	1132	13'-4"	1	5'-4"	3'-0"	5'-4"		10,654	12,016
P609	4	4	4		4	4	4		4	28	4	4	4		4	4	4		24	52	20'-2"	STR.					848	727
P610	84	84	84	88				88	84	512										512	5'-6"	3	2'-4"				4230✳	
P611	40	40	40						40	160										160	7'-4"	1	2'-4"	3'-0"	2'-4"		1762	
P612		43								43		40							40	83	25'-4"	1	4'-1"	17'-6"	4'-1"		1636	1522
P613		38	42							80		19	21						40	120	20'-4"	1	4'-1"	12'-6"	4'-1"		2443	1222
P614		19		40						59				40					40	99	21'-4"	1	4'-1"	13'-6"	4'-1"		1891	1282
P615			20	20	20	20	20			100			20	20	20	20	20		100	200	27'-10"	STR.					4181	4181
P616			68	68	68	68	68			340			68	68	68	68	68		340	680	13'-0"	1	4'-1"	5'-2"	4'-1"		6639	6639
P617				4				4	4	12				4				4	8	20	9'-1"	STR.					164	109
P618				14				9		23				14				9	23	46	9'-8"	6	3'-4"	1'-8"	1'-0"		334	334
P619				8				8		16										16	21'-9"	STR.					523	
P620				8				8		16										16	29'-7"	STR.					711	
P621				62				62		124				105				105	210	334	12'-0"	1	5'-4"	1'-8"	5'-4"		2235	3785
P622				46						46				47					47	93	26'-4"	1	4'-1"	18'-6"	4'-1"		1819	1859
P623			21	20						41										41	22'-4"	1	4'-1"	14'-6"	4'-1"		1375	
P624					21	24	75			120				20	20	23	20		83	203	24'-4"	1	4'-7"	15'-6"	4'-7"		4386	3034
P625					42	48				90					40	46	40		126	216	23'-4"	1	4'-7"	14'-6"	4'-7"		3154	4416
P626					49					49										49	28'-4"	1	4'-7"	19'-6"	4'-7"		2085	
P627						49				49										49	31'-4"	1	4'-7"	22'-6"	4'-7"		2306	
P628							51			51										51	32'-4"	1	4'-7"	23'-6"	4'-7"		2477	
P629															49		49		98	98	27'-4"	1	4'-7"	18'-6"	4'-7"			4023
P630								43		43										43	6'-0"	1	2'-4"	1'-8"	2'-4"		388	
P631														16				16	32	32	27'-4"	STR.						1314
P632				62						62				105					105	167	13'-8"	1	6'-2"	1'-8"	6'-2"		1273	2155
P633				96				96		192										192	6'-0"	3	2'-10"				1730 ✳	
P634								62		62										62	13'-2"	1	5'-11"	1'-8"	5'-11"		1226	
P635				43				43		86										86	6'-0"	1	2'-4"	1'-8"	2'-4"		775	
P636				43						43										43	7'-6"	1	3'-1"	1'-8"	3'-1"		484	
P637				2						2				4					4	6	7'-0"	1	6'-2"	1'-0"	0		21	42
P638																		105	105	105	13'-4"	1	6'-0"	1'-8"	6'-0"			2103
P639																		4	4	4	6'-4"	1	5'-6"	1'-0"	0			38
P640																49			49	49	30'-4"	1	4'-7"	21'-6"	4'-7"			2232
P701	24	24	24	24	24	24	24	24	24	216	24	24	24	24	24	24	24	24	192	408	28'-9"	STR.					12,693	11,283
P801	12	12	12							36	12	12	12						36	72	53'-8"	STR.					5159	5159
P802				16				8	8	32				16				8	24	56	5'-7"	1	1'-4"	3'-4"	1'-4"		477	358
P803									11	11										11	11'-6"	6	3'-4"	3'-0"	1'-4"		338	
P804	60							60	60	180	60							60	120	300	13'-9"	1	1'-4"	11'-6"	1'-4"		6608	4406

✳ WEIGHT DOES NOT INCLUDE WEIGHT OF MECHANICAL CONNECTORS

NOTES:

PIER REINFORCING STEEL LIST CONTINUED ON SHEET 121/123.

ADDITIONAL NOTES: SEE SHEET 118/123.

BENDING DIAGRAMS: SEE SHEET 118/123.

SU27IRSA.DGN 6/23/04 JLS,KH,TWH,HN,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED BLN | DRAWN TWH | REVIEWED DAP | DATE 3/18/04
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709031(L) 7709021(R)

REINFORCING STEEL LIST 3 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

120/123

557/612

PIERS (CONT.)

CALCULATED TWH DATE 6/03
CHECKED KAK DATE 12/03

MARK	SOUTHBOUND BRIDGE - LEFT										NORTHBOUND BRIDGE - RIGHT									GRAND TOTAL	LENGTH	TYPE	A	B	C	D	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7	PIER 8	PIER 9	TOTAL	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7	PIER 8	TOTAL								
P901	114	114						114	114	456	114	114						114	342	798	13'-8"	1	12'-4"	1'-7"	0		21,189	15,892
P902	114	114								228								114	114	342	38'-11"	4	37'-8"	0			30,168	15,084
P903		36	40							76		18	18						36	112	15'-1"	1	1'-7"	12'-6"	1'-7"		3898	1846
P904		18		54						72				54					54	126	16'-1"	1	1'-7"	13'-6"	1'-7"		3937	2953
P905												114							114	114	51'-4"	4	50'-1"	0				19,897
P906		114								114										114	39'-10"	STR.					15,439	
P907			114	114	114	114	114			570			114	114	114	114	114		570	1140	16'-6"	STR.					31,977	31,977
P908			114	114				114		342			114	114					228	570	45'-9"	4	44'-6"	0			53,198	35,465
P909			20	27	56	56				159					54	56	54		164	323	17'-1"	1	1'-7"	14'-6"	1'-7"		9235	9526
P910					114	114	114			342					114	114	114		342	684	42'-3"	4	41'-0"	0			49,128	49,128
P911					28	28	81			137				27	27	28	27		109	246	18'-1"	1	1'-7"	15'-6"	1'-7"		8423	6702
P912									114	114										114	26'-7"	4	25'-4"	0			10,304	
P913											114								114	114	32'-0"	4	30'-9"	0				12,403
P914												36	36						72	72	14'-1"	1	1'-7"	11'-6"	1'-7"			3448
P1001	23	23	23	23				23	11	126	23	23	23	23				23	115	241	56'-8"	1	1'-10"	53'-8"	1'-10"		30,723	28,041
P1002	2	2	2	14				14	2	36	2	2	2	14				14	34	68	53'-8"	STR.					8313	7852
P1003		56								56		62							62	118	20'-6"	1	1'-10"	17'-6"	1'-10"		4940	5469
P1004			126	126						252			126	126					252	504	16'-0"	1	14'-6"	1'-10"	0		17,350	17,350
P1005			126							126										126	43'-7"	STR.					23,630	
P1006			24	24	24	24	24			120			24	24	24	24	24		120	240	56'-0"	5	53'-2"				28,916	28,916
P1007				68						68				68	74		74		216	284	21'-6"	1	1'-10"	18'-6"	1'-10"		6291	19,983
P1008				126						126										126	57'-6"	STR.					31,175	
P1009																126			126	126	44'-7"	STR.						24,172
P1010			68		92					160			62						62	222	22'-6"	1	1'-10"	19'-6"	1'-10"		15,491	6003
P1011																	126		126	126	46'-8"	STR.						25,302
P1012					126					126										126	58'-9"	STR.					31,853	
P1013						92				92										92	25'-6"	1	1'-10"	22'-6"	1'-10"		10,095	
P1014					126	126	126			378					126	126	126		378	756	16'-6"	1	15'-0"	1'-10"	0		26,838	26,838
P1015						126				126										126	51'-6"	STR.					27,922	
P1016							126			126										126	51'-5"	STR.					27,877	
P1017													126						126	126	27'-11"	STR.						15,136
P1018														126					126	126	40'-2"	STR.						21,777
P1019															126				126	126	48'-7"	STR.						26,341
P1020																80			80	80	24'-6"	1	1'-10"	21'-6"	1'-10"			8434
P1101	54							54	54	162	54							54	108	270	22'-10"	1	2'-0"	19'-6"	2'-0"		19,653	13,102
P1102					23	23	23		12	81					23	23	23		69	150	57'-0"	1	2'-0"	53'-8"	2'-0"		24,530	20,896
P1103					14	14	14			42					14	14	14		42	84	53'-8"	STR.					11,976	11,976
P1104							81			81										81	26'-10"	1	2'-0"	23'-6"	2'-0"		11,548	
																										TOTAL WEIGHT	797,878	684,933

NOTES:

ADDITIONAL NOTES: SEE SHEET 118/123.

BENDING DIAGRAMS: SEE SHEET 118/123.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DATE 3/18/04
REVIEWED DAP
STRUCTURE FILE NUMBER 770901(3L) 770902(1R)
DRAWN TWH
REVISED
DESIGNED BLN
CHECKED DLR

REINFORCING STEEL LIST 4 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

121/123

558/612

SU271RSA.DGN 6/23/04 JLS,KH,TWH,HN,RC

REINFORCING STEEL LIST - SUPERSTRUCTURE

MARK	S.B.B. - LEFT UNIT 1	UNIT 2	UNIT 3	TOTAL	N.B.B. - RIGHT UNIT 1	UNIT 2	UNIT 3	TOTAL	GRAND TOTAL	LENGTH	TYPE	DIMENSIONS A	B	C	D	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
AD401	68	0	80	148	68	0	68	136	284	8'-8"	1	3'-10"	1'-2"	3'-10"		857	787
AD601	48	0	48	96	48	0	48	96	192	9'-1"	17	4'-0"	7½"	10½"	4'-3½"	1310	1310
AD602	8	0	8	16	8	0	8	16	32	6'-10"	17	4'-0"	7½"	10½"	2'-0"	164	164
AD603	20	0	0	20	24	0	24	48	68	6'-10"	STR.					205	493
AD604	8	0	8	16	8	0	8	16	32	2'-7"	STR.					62	62
AD605	0	0	0	0	4	0	4	8	8	53'-3"	STR.					0	640
AD606	4	0	4	8	0	0	0	0	8	31'-3"	STR.					376	0
AD607	4	0	4	8	0	0	0	0	8	23'-11"	STR.					287	0
AD608	4	0	4	8	0	0	0	0	8	4'-2"	STR.					50	0
AD609	4	0	0	4	0	0	0	0	4	4'-8"	STR.					28	0
AD610	0	0	12	12	0	0	0	0	12	10'-9"	STR.					194	0
AD611	0	0	4	4	0	0	0	0	4	8'-7"	STR.					52	0
AD801	0	0	32	32	0	0	0	0	32	12'-0"	17	4'-0"	7½"	10½"	7'-3"	1025	0
PD401	21	0	5	26	21	0	0	21	47	3'-9"	STR.					65	53
PD402	21	0	5	26	21	0	0	21	47	14'-0"	16					243	196
PD403	21	0	5	26	21	0	0	21	47	4'-9"	15					82	67
PD404	90	0	36	126	90	0	0	90	216	17'-2"	14	6'-3"	3'-0"	1'-0"		1445	1032
PD405	68	0	80	148	68	0	68	136	284	9'-3"	1	3'-10"	1'-9"	3'-10"		914	840
PD406	0	160	0	160	0	160	0	160	320	9'-11"	1	3'-10"	2'-5"	3'-10"		1060	1060
PD601	192	0	0	192	192	0	48	240	432	9'-2"	17	4'-0"	7½"	10½"	4'-3½"	2644	3304
PD602	140	0	0	140	168	0	24	192	332	6'-10"	STR.					1437	1971
PD603	28	0	12	40	0	0	0	0	40	4'-2"	STR.					250	0
PD604	28	0	0	28	0	0	0	0	28	4'-8"	STR.					196	0
PD605	34	0	0	34	34	0	0	34	68	6'-9"	13					345	345
PD606	5	12	5	22	0	0	0	0	22	31'-3"	STR.					1033	0
PD607	5	12	5	22	0	0	0	0	22	23'-11"	STR.					790	0
PD608	8	0	8	16	8	0	8	16	32	6'-10"	17	4'-0"	7½"	10½"	2'-0"	164	164
PD609	8	0	8	16	8	0	8	16	32	2'-7"	STR.					62	62
PD610	0	30	0	30	0	40	0	40	70	9'-3"	STR.					417	556
PD611	0	10	0	10	0	0	0	0	10	7'-10"	STR.					118	0
PD612	0	0	0	0	5	12	5	22	22	53'-2"	STR.					0	1757
PD613	0	0	12	12	0	0	0	0	12	8'-7"	STR.					155	0
PD614	0	0	36	36	0	0	0	0	36	10'-9"	STR.					581	0
PD615	0	0	40	40	0	0	34	34	74	6'-9"	13					406	345
PD801	0	0	64	64	0	0	0	0	64	12'-1"	17	4'-0"	7½"	10½"	7'-3"	2065	0
S501	1272	168	306	1746	1272	168	230	1670	3416	60'-0"	STR.					109265	104509
S502	159	0	0	159	0	0	0	0	159	40'-2"	STR.					6661	0
S503	0	0	0	0	159	0	0	159	159	32'-2"	STR.					0	5334
S504	0	0	153	153	0	0	0	0	153	49'-8"	STR.					7926	0
S505	0	0	0	0	0	0	115	115	115	14'-8"	STR.					0	1759
S506	1334	0	0	1334	1314	0	346	1660	2994	8'-0"	STR.					11131	13851
S507	1008	1668	348	3024	1008	1668	262	2938	5962	7'-5"	7					23392	22727
S508	0	12	0	12	0	12	0	12	24	26'-5"	STR.					331	331
S601	1336	3634	660	5630	0	0	0	0	5630	32'-11"	STR.					278352	0
S602	1336	3634	660	5630	0	0	0	0	5630	24'-8"	STR.					208588	0
S603	0	0	0	0	1316	3634	348	5298	5298	54'-8"	STR.					0	435015
S604	0	0	26	26	0	0	0	0	26	34'-0"	STR.					1328	0
S605	0	0	26	26	0	0	0	0	26	26'-0"	STR.					1015	0
S606	0	0	0	0	39	0	0	39	39	48'-0"	STR.					0	2812
S607	0	0	0	0	39	0	0	39	39	28'-0"	STR.					0	1640
S608	1008	1668	348	3024	1008	1668	262	2938	5962	2'-5"	1	1'-6"	1'-1"	0"		10977	10664
S609	1008	1668	348	3024	1008	1668	262	2938	5962	3'-6"	8	1'-8"	1'-1"	1'-1"		15897	15445
S610	16	1554	4	1574	16	1554	4	1574	3148	60'-0"	STR.					141849	141849
S611	2	0	0	2	0	0	0	0	2	44'-2"	STR.					133	0
S612	0	0	0	0	2	0	0	2	2	36'-2"	STR.					0	109
S613	0	0	0	0	0	0	2	2	2	15'-8"	STR.					0	47
S614	0	0	2	2	0	0	0	0	2	50'-8"	STR.					152	0
S615	0	111	0	111	0	111	0	111	222	33'-5"	STR.					5571	5571
S616	0	62	0	62	0	62	0	62	124	46'-6"	STR.					4330	4330
S701	0	0	0	0	39	0	0	39	39	60'-0"	STR.					0	4783
S702	0	0	0	0	39	0	0	39	39	28'-0"	STR.					0	2232
S801	117	0	0	117	39	0	0	39	156	60'-0"	STR.					18743	6248
S802	78	0	0	78	0	0	0	0	78	13'-0"	STR.					2707	0
S803	78	0	0	78	0	0	0	0	78	30'-0"	STR.					6248	0
S804	39	0	0	39	0	0	0	0	39	16'-0"	STR.					1666	0
S805	39	0	0	39	39	0	0	39	78	34'-0"	STR.					3540	3540
S806	0	0	0	0	39	0	0	39	39	25'-0"	STR.					0	2603

REINFORCING STEEL LIST - SUPERSTRUCTURE

MARK	S.B.B. - LEFT UNIT 1	UNIT 2	UNIT 3	TOTAL	N.B.B. - RIGHT UNIT 1	UNIT 2	UNIT 3	TOTAL	GRAND TOTAL	LENGTH	TYPE	DIMENSIONS A	B	C	D	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
S901	0	252	0	252	0	252	0	252	504	42'-6"	STR.					36414	36414
S902	0	420	0	420	0	420	0	420	840	46'-11"	STR.					66997	66997
S903	0	42	0	42	0	42	0	42	84	37'-8"	STR.					5379	5379
S904	0	168	0	168	0	168	0	168	336	55'-0"	STR.					31416	31416
S905	0	42	0	42	0	42	0	42	84	19'-4"	STR.					2761	2761
S906	0	90	0	90	0	90	0	90	180	60'-0"	STR.					18360	18360
S907	0	6	0	6	0	6	0	6	12	46'-3"	STR.					944	944
B301	0	60	0	60	0	60	0	60	120	4'-9"	15					107	107
B406	0	60	0	60	0	60	0	60	120	13'-7"	16					544	544
B407	0	60	0	60	0	60	0	60	120	3'-9"	STR.					150	150
															TOTAL WEIGHT	1041956	963679

STATE OF OHIO
RANDALL S PALMER
57755
REGISTERED
PROFESSIONAL ENGINEER
9/7/2004

NOTES:

FOR ADDITIONAL NOTES, SEE SHEET 118/123

BENDING DIAGRAMS: SEE SHEET 118/123

PALMER ENGINEERING
146 N. BRIEL BLVD.
MIDDLETOWN, OH 45042
KEVIN CHESTER, BRADLEY ILSLEY, JOEY ILSLEY
CONSULTING ENGINEERS

Palmer ENGINEERING

DESIGNED BJF | DRAWN JAR | REVIEWED JGG | DATE 03-31-04
CHECKED RSP | REVISED | STRUCTURE FILE NUMBER 7709073(L) 7709021(R)

REINFORCING STEEL LIST 5 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

122/123

559/612

06:05:28 AM 09/07/2004 ...\sum271rnl.dgn

APPROACH SLABS

CALCULATED JLS DATE 10/03
CHECKED KAK DATE 3/04

MARK	LEFT - SOUTHBOUND			RIGHT - NORTHBOUND			GRAND TOTAL	LENGTH	TYPE	A	B	C	D	INC.	** LEFT WEIGHT (LBS.)	** RIGHT WEIGHT (LBS.)
	REAR	FWD.	TOTAL	REAR	FWD.	TOTAL										
AS501	57	57	114				114	31'-4"	STR.						3726	
AS502	57	57	114				114	24'-1"	STR.						2864	
AS503	37	37	74	37	38	75	149	24'-6"	STR.						1891	1917
AS504				114	114	228	228	28'-7"	STR.							6797
AS505	12	12	24	12	24	36	60	7'-5"	7						186	278
AS506	6	6	12	6	12	18	30	13'-6"	STR.						169	253
AS507	8	8	16	8	16	24	40	10'-0"	STR.						167	250
AS508	3	3	6	3	6	9	15	5'-6"	10						34	52
AS509	5	5	10	5	10	15	25	5'-6"	STR.						57	86
AS601	12	12	24	12	24	36	60	3'-11"	8	1'-11"					141	212
AS602	12	12	24	12	24	36	60	2'-10"	1	1'-11"	1'-1"	0			102	153
AS603	2 SER.OF 11	2 SER.OF 11	4 SER.OF 11	2 SER.OF 11	4 SER.OF 11	6 SER.OF 11	10 SER.OF 11	4'-4" TO 5'-2"	1	3'-6" TO 4'-4"	1'-0"	0		1"	314	471
AS604	8	8	16	8	16	24	40	4'-4"	1	3'-6"	1'-0"	0			104	156
AS605	1	1	2	1	2	3	5	13'-7"	11	10'-10"	2'-9"	0	12.0		41	61
AS1001	92	92	184	92	95	187	371	25'-11"	4	24'-6"	0				20,520	20,854
												TOTAL WEIGHT			30,316	31,540

** WEIGHTS FOR INFORMATIONAL PURPOSES ONLY - REINFORCING STEEL IS INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T = 15"), AS PER PLAN FOR PAYMENT.

NOTES:

ADDITIONAL NOTES: SEE SHEET 118/123.

BENDING DIAGRAMS: SEE SHEET 118/123.

SU27RIP.DGN 6/23/04 JLS,KH,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED DLR | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED KAK | REVISED | STRUCTURE FILE NUMBER 7709031(L) 7709021(R)

REINFORCING STEEL LIST 6 - CONCRETE
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

123/123

560
612

** - INDICATES LOCATION OF MINUMUM HORIZONTAL CLEARANCE

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

EXISTING STRUCTURE

TYPE: CONTINUOUS STEEL BEAM WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 57'-0"±, 71'-6"±, 57'-0"± c/c BEARINGS (LEFT)
48'-6"±, 61'-0"±, 48'-6"± c/c BEARINGS (RIGHT)

ROADWAY: 38'-8 1/4"± F/F PARAPETS WITH 1'-7 7/8"± PARAPETS

LOADING: CF-2000 ADEQUATE FOR AASHO ALTERNATE LOADING

SKEW: 27°00'± R.F. (LEFT)
7°30'± R.F. (RIGHT)

ALIGNMENT: TANGENT

APPROACH SLABS: AS-1-54 (25'-0" LONG)

CONDITION: FAIR

YEAR BUILT: 1968 (LMC OVERLAY 1986)

STRUCTURE FILE NO.: LEFT 7709099
RIGHT 7709129

DISPOSITION: REHABILITATED

PROPOSED STRUCTURE

TYPE: REUSED WIDENED REINFORCED CONCRETE DECK WITH NEW 1 3/4" OVERLAY; REHABILITATED STEEL WORK, BEARINGS AND EXPANSION JOINTS; NEW FASCIA NON-COMPOSITE, CONTINUOUS BEAM LINE (SB MEDIAN); AND WIDENED REINFORCED CONCRETE PIERS AND ABUTMENTS.

SPANS: 57'-1 9/16"±, 71'-2 3/8"±, 56'-10 3/16"± c/c BEARINGS (LEFT)
48'-8 7/8"±, 60'-8 5/8"±, 48'-3 3/8"± c/c BEARINGS (RIGHT)

ROADWAY: 50'-0" T/T PARAPETS (LEFT)
38'-8 1/4"± T/T PARAPETS (RIGHT)

LOADING: HS20-44 AND ALTERNATE MILITARY LOADING
FUTURE WEARING SURFACE = 60 PSF

SKEW: 27°00'± R.F. (LEFT)
7°30'± R.F. (RIGHT)

ALIGNMENT: TANGENT

WEARING SURFACE: 1 3/4" SUPERPLASTICIZED DENSE CONCRETE

APPROACH SLABS: AS-1-81 (25'-0" LONG)

LATITUDE: N 41°15'51"

LONGITUDE: W 81°33'08"

CROWN RATE: 0.0156

CURRENT AVERAGE DAILY TRAFFIC: 29,700 (2004)

DESIGN AVERAGE DAILY TRAFFIC: 39,840 (2024)

DESIGN AVERAGE DAILY TRUCK TRAFFIC: 8,970 (2024)

- INDICATES PAVEMENT PLANING AND RESURFACING
- INDICATES WETLANDS

FOUNDATION INVESTIGATION LEGEND
- INDICATES BORING LOCATION

B.M. #9 - CONCRETE MONUMENT BOX WITH 5/8" REBAR
STA. 443+97.57, 0.03' LT.
EL. 725.29

B.M. #10 - CHISELED SQUARE ON CONCRETE HEADWALL
STA. 449+05.02, 155.33' RT.
EL. 699.89

SU27ISPL.DGN 9/7/04 JLS

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 7709099 (L) 7709129 (R)

SUMMIT COUNTY
STA. 449+05.06±
STA. 451+15.38±

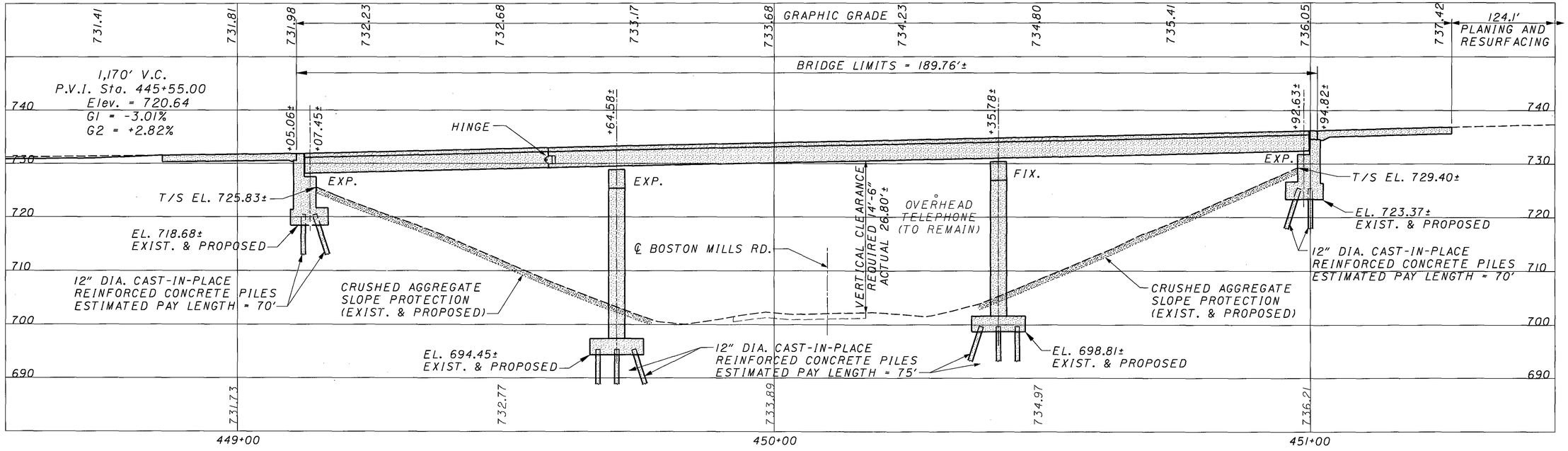
SITE PLAN - 1

BRIDGE NO. SUM-271-0854 L & R
OVER BOSTON MILLS ROAD

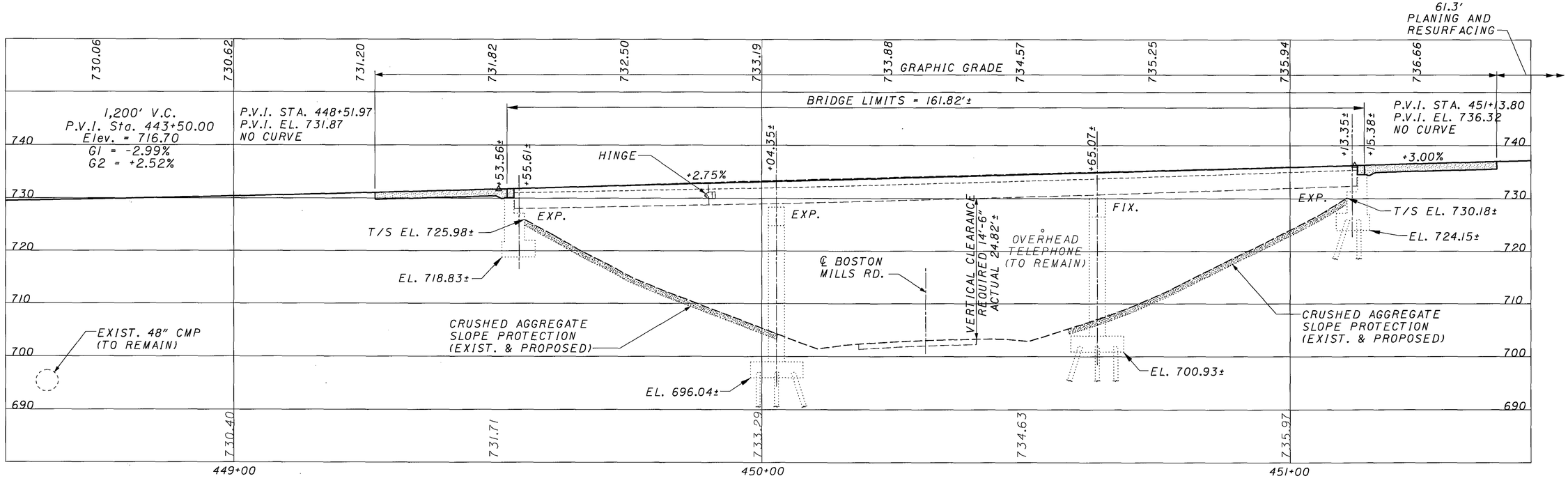
SUM-271-8.02

1 / 48

561 / 612



PROFILE ALONG INSIDE EDGE OF PAVEMENT (LEFT BRIDGE)



PROFILE ALONG INSIDE EDGE OF PAVEMENT (RIGHT BRIDGE)

SU271SP2.DGN 6/23/04 JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

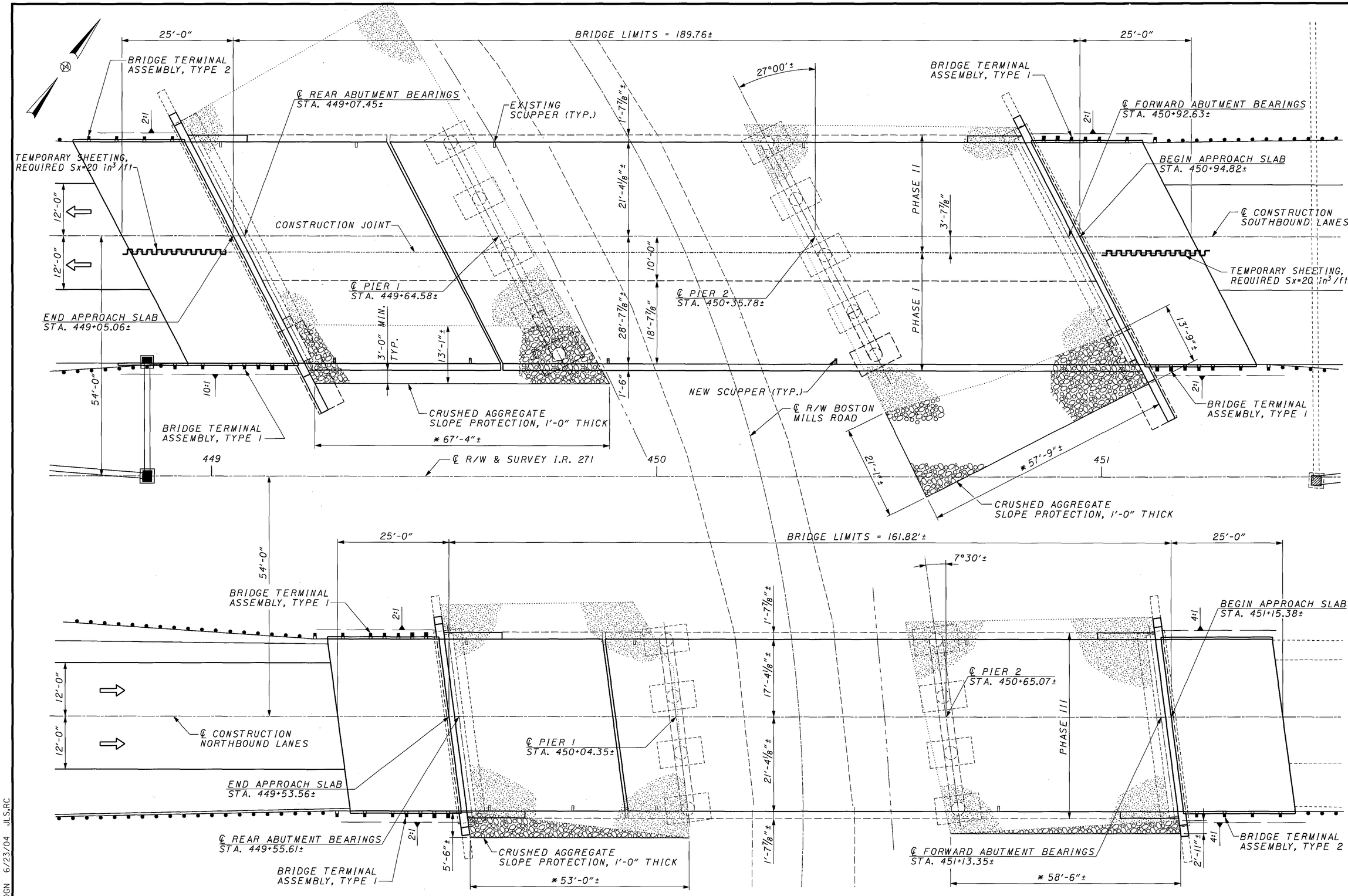
DESIGNED ALP | DRAWN SCB | REVIEWED DAP | DATE 3/18/04
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SITE PLAN - 2
BRIDGE NO. SUM-271-0854 L & R
OVER BOSTON MILLS ROAD

SUM-271-8.02

2 / 48

562
612



SU271GP1.DGN 6/23/04 JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP
DRAWN JLS
CHECKED BLN
REVISED
REVIEWED DAP
DATE 3/18/04
STRUCTURE FILE NUMBER 7709099(L) 7709129(R)

GENERAL PLAN
BRIDGE NO. SUM-271-0854 L & R
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GENERAL NOTES

REFERENCE: SHALL BE MADE TO STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS:

STANDARD DRAWINGS:	SUPPLEMENTAL SPECIFICATIONS:
AS-1-81, SHEETS 1 AND 2 OF 3 (REVISED 07-19-02)	846 (DATED 04-19-02)
BR-1 (REVISED 07-19-02)	847 (DATED 02-08-02)
BS-1-93 (REVISED 07-19-02)	848 (DATED 02-08-02)
EXJ-2-81 (REVISED 02-14-97)	864 (DATED 07-11-00)
EXJ-4-87 (REVISED 07-19-02)	894 (DATED 10-18-02)
GSD-1-96 (REVISED 07-19-02)	954 (DATED 09-09-97)
RB-1-55 (REVISED 02-02-59)	

DESIGN SPECIFICATIONS: THIS STRUCTURE CONFORMS TO THE "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2002 AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN DATA:
DESIGN LOADING - HS20-44 AND THE ALTERNATE MILITARY LOADING
- FUTURE WEARING SURFACE OF 60 LBS/FT²
CONCRETE CLASS HP - COMPRESSIVE STRENGTH 4500 PSI (SUPERSTRUCTURE)
CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 PSI (SUBSTRUCTURE)

REINFORCING STEEL
- ASTM A615 OR A996
- GRADE 60 WITH MINIMUM YIELD STRESS OF 60 KSI
- ALL REINFORCING SHALL BE EPOXY COATED PER MATERIAL SPECIFICATION 709.00
- SPLICES INDICATED ARE FOR GRADE 60 STEEL
- SPIRAL REINFORCEMENT MAY BE PLAIN BARS ASTM A82 OR A615

STRUCTURAL STEEL
- EXISTING: ASTM A709 - YIELD STRESS 36 KSI
- PROPOSED: ASTM A572/709, GRADE 50, YIELD STRESS 50 KSI

CONSTRUCTION SEQUENCE
ALSO SEE MAINTENANCE OF TRAFFIC PLAN SHEETS.
THE FOLLOWING IS THE REQUIRED SEQUENCE OF CONSTRUCTION:

PHASE I

LEFT BRIDGE

1. SET UP ZONE TO MAINTAIN TRAFFIC.
2. REMOVE 1¼" OF EXISTING LATEX MODIFIED CONCRETE OVERLAY, FOR PORTION OF BRIDGE DECK TO REMAIN, BY SCARIFICATION.
3. REMOVE PORTION OF BRIDGE DECK TO BE WIDENED.
4. REMOVE PORTION OF APPROACH SLABS.
5. REMOVE PORTION OF DECK TO BE REMOVED FOR EXPANSION JOINTS.
6. REMOVE PORTION OF EXISTING ABUTMENTS TO THE TOP OF THE EXISTING APPROACH SLAB SEAT AS DETAILED IN THE PLANS AND PROVIDE PORTION OF NEW STRIP SEALED JOINTS. THE SEAL SHALL BE LONG ENOUGH TO BE CONTINUOUS ACROSS THE BRIDGE DECK INCLUDING THE WIDENED PORTION.
7. REMOVE PORTION OF PIERS AND ABUTMENTS TO BE WIDENED.
8. WIDEN ABUTMENTS AND PIERS BY DOWELING INTO THE EXISTING.
9. REFURBISH AND RESET ROCKER BEARINGS FOR BEAM LINES 4 & 5 AT ABUTMENTS AND PIER 1. PROVIDE SHIM PLATES TO ADEQUATELY SEAT BEARINGS.
10. REFURBISH HINGES. CLEAN AND PAINT PIN ASSEMBLIES. DISASSEMBLE, CLEAN, PAINT, AND REASSEMBLE HINGES ON EXISTING OUTSIDE BEAM LINE 5.
11. SET NEW BEAM LINE 6 ON MEDIAN SIDE OF EXISTING SUPERSTRUCTURE TO ACCOMMODATE WIDENING THE SUPERSTRUCTURE TO 50'-0" TOE TO TOE OF PARAPETS. NEW BEAM LINE TO INCLUDE HINGE SIMILAR TO EXISTING BEAMS
12. INSTALL NEW CROSSFRAMES.
13. INSTALL NEW SCUPPERS.
14. WIDEN DECK.
15. REMOVE AN ADDITIONAL ½" LATEX MODIFIED CONCRETE OVERLAY BY HYDRODEMOLITION AND REMOVE ½" NEW DECK BY HYDRODEMOLITION FOR PHASE I PORTION OF DECK.
16. PLACE NEW 1¾" SUPERPLASTICIZED DENSE CONCRETE OVERLAY. USE FULL DEPTH SUPERPLASTICIZED DENSE CONCRETE WHERE NECESSARY.
17. REPLACE COMPRESSION SEAL IN DECK JOINT AT HINGES. THE SEAL SHALL BE LONG ENOUGH TO BE CONTINUOUS ACROSS THE BRIDGE DECK INCLUDING THE WIDENED PORTION.
18. INSTALL PORTION OF NEW FULL WIDTH APPROACH SLABS.
19. UPGRADE APPROACH GUARDRAIL TO CURRENT STANDARDS ON MEDIAN SIDE.
20. REMOVE ZONE TO MAINTAIN TRAFFIC.

RIGHT BRIDGE

NO WORK.

PHASE II

LEFT BRIDGE

1. SET UP ZONE TO MAINTAIN TRAFFIC.
2. REMOVE 1¼" OF EXISTING LATEX MODIFIED CONCRETE OVERLAY FOR REMAINING PORTION OF BRIDGE DECK BY SCARIFICATION.
3. REMOVE AN ADDITIONAL ½" OF LATEX MODIFIED CONCRETE OVERLAY BY HYDRODEMOLITION FOR REMAINING PORTION OF BRIDGE DECK.
4. REMOVE REMAINING PORTION OF EXISTING APPROACH SLABS.
5. REMOVE PORTION OF DECK TO BE REMOVED FOR EXPANSION JOINTS.
6. REMOVE REMAINING PORTION OF EXISTING ABUTMENTS TO THE TOP OF THE EXISTING APPROACH SLAB SEAT AS DETAILED IN THE PLANS, REMOVE PORTION OF WINGWALL TO BE REPLACED, AND PROVIDE NEW STRIP SEALED JOINTS. THE SEAL SHALL BE CONTINUOUS ACROSS THE BRIDGE DECK.
7. REFURBISH AND RESET REMAINING ROCKER BEARINGS AT ABUTMENTS AND PIER 1. PROVIDE SHIM PLATES TO ADEQUATELY SEAT BEARINGS.
8. REFURBISH HINGES. CLEAN AND PAINT PIN ASSEMBLIES. DISASSEMBLE, CLEAN, PAINT AND REASSEMBLE HINGES ON EXISTING OUTSIDE BEAM LINE 1.
9. CLEAN EXISTING SCUPPERS. REMOVE EVERY OTHER BAR. FORM A NEW CONCRETE SLOPE IN THE SCUPPER TO INCREASE THE BACKSLOPE INCLINE. REPAIR SCUPPERS AND EXTEND TO A MINIMUM OF 8" BELOW THE BOTTOM OF THE BEAMS.
10. PLACE REMAINING PORTION OF NEW 1¾" SUPERPLASTICIZED DENSE CONCRETE OVERLAY. USE FULL DEPTH SUPERPLASTICIZED DENSE CONCRETE WHERE NECESSARY.
11. REPLACE REMAINING PORTION OF COMPRESSION SEAL IN DECK JOINT AT HINGES. THE SEAL SHALL BE CONTINUOUS ACROSS THE BRIDGE DECK.
12. INSTALL REMAINING PORTION OF NEW FULL WIDTH APPROACH SLABS.
13. UPGRADE APPROACH GUARDRAIL AND PARAPET TRANSITIONS TO CURRENT STANDARDS ON NORTH SIDE OF BRIDGE. PARAPET TRANSITIONS ARE MODIFIED AS SHOWN IN THE PLANS.
13. REMOVE ZONE TO MAINTAIN TRAFFIC.

RIGHT BRIDGE

NO WORK.

PHASE III

LEFT BRIDGE

NO WORK.

RIGHT BRIDGE

1. SET UP ZONE TO MAINTAIN TRAFFIC.
2. REMOVE EXISTING 1¼" LATEX MODIFIED CONCRETE OVERLAY BY SCARIFICATION.
3. REMOVE AN ADDITIONAL ½" OF LATEX MODIFIED CONCRETE OVERLAY BY HYDRODEMOLITION.
4. REMOVE APPROACH SLABS.
5. REMOVE PORTION OF DECK TO BE REMOVED FOR EXPANSION JOINTS.
6. REMOVE EXISTING ABUTMENTS TO THE TOP OF THE EXISTING APPROACH SLAB SEAT AS DETAILED IN THE PLANS, REMOVE PORTION OF WINGWALLS TO BE REPLACED, AND PROVIDE NEW STRIP SEALED JOINTS.
7. REFURBISH AND RESET ROCKER BEARINGS AT ABUTMENTS AND PIER 1. PROVIDE SHIM PLATES TO ADEQUATELY SEAT BEARINGS.
8. REFURBISH HINGES. CLEAN AND PAINT PIN ASSEMBLIES. DISASSEMBLE, CLEAN, PAINT AND REASSEMBLE HINGES ON EXISTING OUTSIDE BEAM LINES.
9. CLEAN EXISTING SCUPPERS. REMOVE EVERY OTHER BAR. FORM A NEW CONCRETE SLOPE IN THE SCUPPER TO INCREASE THE BACKSLOPE INCLINE. REPAIR SCUPPERS AND EXTEND TO A MINIMUM OF 8" BELOW THE BOTTOM OF THE BEAMS.
10. PLACE NEW 1¾" SUPERPLASTICIZED DENSE CONCRETE OVERLAY. USE FULL DEPTH SUPERPLASTICIZED DENSE CONCRETE WHERE NECESSARY.
11. REPLACE COMPRESSION SEAL IN DECK AT HINGES.
12. INSTALL NEW FULL WIDTH APPROACH SLABS.
13. UPGRADE APPROACH GUARDRAIL AND PARAPET TRANSITIONS TO CURRENT STANDARDS. PARAPET TRANSITIONS ARE MODIFIED AS SHOWN IN THE PLANS
14. REMOVE ZONE TO MAINTAIN TRAFFIC.

OTHER WORK TO BE COMPLETED INCLUDES THE FOLLOWING:

1. REMOVE ALL BRUSH UNDER EACH STRUCTURE AND 20 FEET EACH SIDE OF THE STRUCTURES.
2. PAINT THE LAST 10 FEET OF EXISTING STEEL BEAM ENDS ADJACENT TO THE ABUTMENTS AND 10 FEET EACH SIDE OF THE HINGE JOINTS, INCLUDING ALL CROSSFRAMES WITHIN THESE LIMITS, ALL HINGES ON THE EXISTING INTERIOR BEAM LINES AND ALL NEW STEEL WITH SYSTEM OZEU. REMOVE THE EXISTING ZVV PAINT COMPLETELY. MATCH THE COLOR OF THE EXISTING PAINT.
3. PATCH MARKED LOCATIONS ON ABUTMENTS AND PIERS.
4. SEAL PARAPET AND SUBSTRUCTURE WITH EPOXY-URETHANE SEALER FOR THE NORTHBOUND AND SOUTHBOUND STRUCTURES.
5. PLACE CRUSHED AGGREGATE SLOPE PROTECTION.

DECK PROTECTION METHOD: EPOXY COATED REINFORCING STEEL, 2¼ INCH CONCRETE COVER, AND SUPERPLASTICIZED DENSE CONCRETE OVERLAY.

UTILITY LINES: ALL EXPENSES INVOLVED IN RELOCATING THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNERS. THE CONTRACTOR AND THE OWNERS ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

EXISTING STRUCTURES VERIFICATION: DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURES HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURES AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURES AND THE PROPOSED WORK, BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02, AND 513.04.

CONTRACT BID PRICES SHALL BE BASED UPON THE RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURES BY THE CONTRACTOR. HOWEVER, ALL PROJECT WORK SHALL BE BASED UPON ACTUAL DETAILS AND DIMENSIONS WHICH HAVE BEEN VERIFIED BY THE CONTRACTOR IN THE FIELD.

CONTINGENCY QUANTITIES: THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK LISTED IN THE GENERAL SUMMARY FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED AT THE ENGINEER'S DISCRETION SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING THE COMPLETION OF THIS PROJECT.

EXISTING STRUCTURE PLANS: MAY BE VIEWED BY PROSPECTIVE BIDDERS AT THE ODOT DISTRICT 4 OFFICE, AKRON, OHIO.

GENERAL NOTES CONTINUED: SEE SHEET 5/48

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN KH | REVIEWED DAP | DATE 3/18/04 | CHECKED BLN | REVISED

STRUCTURE FILE NUMBER 7709099(L) 7709129(R)

GENERAL NOTES - 1
BRIDGE NO. SUM-271-0854 L & R
OVER BOSTON MILLS ROAD

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SU271SN1.DGN 6/23/04 KH,CAR,JLS,RC

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN:

THIS WORK SHALL CONSIST OF THE REMOVAL OF THE PORTION OF CONCRETE DECK TO BE WIDENED (INCLUDING RIGHT PARAPET, DECK JOINTS, AND OTHER APPURTENANCES) FROM THE STEEL BEAMS, AND REMOVAL OF PORTIONS OF THE EXISTING SUBSTRUCTURE UNITS AS INDICATED IN THE PLANS AND GENERAL NOTES. ITEMS TO BE REMOVED INCLUDE ALL EXISTING MATERIALS BEING REPLACED BY NEW CONSTRUCTION AND MISCELLANEOUS ITEMS THAT ARE NOT SHOWN TO BE INCORPORATED INTO THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. CARE SHALL BE TAKEN DURING DECK REMOVALS TO PROTECT PORTIONS OF SUCH SYSTEMS THAT ARE TO BE SALVAGED AND INCORPORATED INTO THE PROPOSED STRUCTURE.

PROTECTION OF TRAFFIC: PRIOR TO DEMOLITION OF ANY PORTIONS OF THE EXISTING SUPERSTRUCTURE, THE CONTRACTOR SHALL SUBMIT PLANS FOR THE PROTECTION OF TRAFFIC (VEHICULAR, PEDESTRIAN, ETC.) ADJACENT TO AND/OR UNDER THE STRUCTURE TO THE DIRECTOR FOR APPROVAL. THESE PLANS SHALL INCLUDE PROVISIONS FOR ANY DEVICES AND STRUCTURES THAT MAY BE NECESSARY TO ENSURE SUCH PROTECTION. TEMPORARY VERTICAL CLEARANCES SPECIFIED ON THE PLANS OR IN THE PROPOSAL SHALL BE MAINTAINED AT ALL TIMES EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR.

DECK CONCRETE REMOVAL METHODS: CONCRETE MAY BE REMOVED BY CUTTING AND BY MEANS OF HAND OPERATED PNEUMATIC HAMMERS EMPLOYING POINTED OR BLUNTED CHISEL TYPE TOOLS. HYDRAULIC TYPE HOE RAMS WILL NOT BE PERMITTED. FOR REMOVALS ABOVE STEEL BRIDGE MEMBERS, A HAMMER HEAVIER THAN 35 POUNDS BUT NOT TO EXCEED 90 POUNDS MAY BE USED AT THE APPROVAL OF THE ENGINEER. REMOVAL METHODS OVER BRIDGE MEMBERS SHALL ENSURE ADEQUATE DEPTH CONTROL AND PREVENT NICKING OR GOUGING OF THE PRIMARY STEEL MEMBERS.

DUE TO THE PRESENCE OF WELDED ATTACHMENTS TO EXISTING STRUCTURAL STEEL (FINISHING MACHINE, SCUPPER AND FORM SUPPORTS, ETC.), CARE SHALL BE TAKEN DURING DECK REMOVAL TO AVOID DAMAGING BEAMS WHICH ARE TO REMAIN. BEAMS DAMAGED BY THE CONTRACTOR'S REMOVAL OPERATIONS SHALL, AT NO COST TO THE PROJECT, BE REPLACED OR REPAIRED. PROPOSED REPAIRS, DEVELOPED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER, SHALL BE SUBMITTED IN WRITING FOR REVIEW AND APPROVAL BY THE DIRECTOR, AT LEAST 20 DAYS BEFORE PERFORMING REPAIR WORK.

EXTRANEOUS MEMBERS: EXISTING EXTRANEOUS MEMBERS (I.E. FINISHING MACHINE AND FORM SUPPORTS, ETC. AND THE SUPPORTS FOR SCUPPERS AND BULB ANGLES WHICH ARE TO BE REMOVED) ATTACHED BY WELDED CONNECTIONS TO THE EXISTING STEEL MEMBERS SHALL BE REMOVED AND THE BEAM SURFACES GROUND SMOOTH. GRINDING SHALL BE CAREFULLY DONE AND PARALLEL TO THE BEAM SURFACES.

LOADING LIMITATIONS: NO PART OF THE STRUCTURE SHALL BE SUBJECTED TO UNIT STRESSES THAT EXCEED 136.5% OF ALLOWABLE UNIT STRESSES AS DEFINED IN THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DUE EITHER TO DEMOLITION, ERECTION OR CONSTRUCTION METHODS, OR TO THE USE OR MOVEMENT OF DEMOLITION OR ERECTION EQUIPMENT ON OR ACROSS THE STRUCTURE. STRUCTURAL ANALYSIS COMPUTATIONS, BY A OHIO REGISTERED PROFESSIONAL ENGINEER, SHOWING THE ALLOWABLE STRESSES AND THE MAXIMUM STRESSES PRODUCED BY THE CONTRACTOR'S METHODS OR EQUIPMENT SHALL BE SUBMITTED TO THE DIRECTOR FOR REVIEW AND APPROVAL AT LEAST 20 DAYS PRIOR TO THE START OF THE WORK.

PROTECTION OF STEEL SUPPORT SYSTEMS: BEFORE DECK SLAB CUTTING IS PERMITTED, THE OUTLINE OF PRIMARY STEEL MEMBERS IN CONTACT WITH THE BOTTOM OF THE DECK SHALL BE DRAWN ON THE SURFACE OF THE DECK. SMALL DIAMETER PILOT HOLES SHALL BE DRILLED 2 INCHES OUTSIDE THESE LINES TO CONFIRM THE LOCATION OF THE FLANGE EDGES. DECK CUTS OVER OR WITHIN 2 INCHES OF FLANGE EDGES SHALL NOT EXTEND LOWER THAN THE BOTTOM LAYER OF DECK SLAB REINFORCING STEEL. CUTS MADE OUTSIDE 2 INCHES FROM THE FLANGE EDGES MAY EXTEND THE FULL DEPTH OF THE DECK. DURING CUTTING OF THE DECK SLAB, CARE SHALL BE TAKEN NOT TO DAMAGE STEEL MEMBERS THAT ARE TO BE INCORPORATED INTO THE PROPOSED STRUCTURE.

CUT LINE CONSTRUCTION JOINT PREPARATION: SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVALS TO A MAXIMUM OF 1 INCH DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. INSTALL DOWEL BARS. PRIOR TO CONCRETE PLACEMENT, ABRASIVELY CLEAN JOINT SURFACES AND EXISTING EXPOSED REINFORCEMENT TO REMOVE LOOSE AND DISINTEGRATED CONCRETE AND LOOSE RUST. THE JOINT SURFACE AND EXPOSED REINFORCEMENT SHALL BE THOROUGHLY CLEANED OF ALL DIRT, DUST, OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURE, OR OTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. EXISTING REINFORCING STEEL DOES NOT HAVE TO HAVE A BRIGHT STEEL FINISH, BUT REMOVE ALL PACK AND LOOSE RUST. THOROUGHLY DRENCH EXISTING CONCRETE SURFACES WITH CLEAN WATER AND ALLOW TO DRY TO A DAMP CONDITION BEFORE PLACING CONCRETE.

SUBSTRUCTURE CONCRETE REMOVAL SHALL BE BY MEANS OF APPROVED PNEUMATIC HAMMERS EMPLOYING POINTED AND BLUNT CHISEL TOOLS. HYDRAULIC HOE-RAM TYPE HAMMERS WILL NOT BE PERMITTED. THE WEIGHT OF THE HAMMER SHALL NOT BE MORE THAN 35 POUNDS FOR REMOVAL WITHIN 18 INCHES OF PORTIONS TO BE PRESERVED. OUTSIDE THE 18 INCH LIMIT, A HAMMER HEAVIER THAN 35 POUNDS, BUT NOT TO EXCEED 90 POUNDS, MAY BE USED AT THE APPROVAL OF THE ENGINEER. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE.

PAYMENT: THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE WORK IN CONFORMANCE WITH THESE REQUIREMENTS, WITH PERTINENT PROVISIONS OF 202, AND TO THE SATISFACTION OF THE ENGINEER.

ASBESTOS NOTIFICATION

AN ASBESTOS SURVEY OF THE I.R. 271 BRIDGE STRUCTURES OVER THE BOSTON MILLS ROAD (SFN: SUM-271-0854 L&R) SCHEDULED FOR REHABILITATION WAS CONDUCTED BY A CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALIST. THE SURVEY DETERMINED THAT NO ASBESTOS IS PRESENT ON ANY OF THE BRIDGE STRUCTURES.

A COPY OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA) NOTIFICATION OF DEMOLITION AND RENOVATION FORMS, PARTIALLY COMPLETED AND SIGNED BY THE BRIDGE OWNER, WILL BE PROVIDED TO THE SUCCESSFUL BIDDER. THE CONTRACTOR SHALL COMPLETE THE FORM AND SUBMIT IT TO:

AKRON REGIONAL AIR QUALITY MANAGEMENT DISTRICT
146 S. HIGH ST. SUITE 904
AKRON, OHIO 44308
LYNN M. MALCOLM, ADMIN.
(330) 375-2480
FAX: (330) 375-2402

AT LEAST TEN (10) WORKING DAYS PRIOR TO THE START OF DEMOLITION AND/OR REHABILITATION, THE CONTRACTOR SHALL PROVIDE A COPY OF THE COMPLETED FORM TO THE ENGINEER.

INFORMATION REQUIRED ON THE FORM WILL INCLUDE: 1.) THE CONTRACTORS NAME AND ADDRESS, 2.) THE SCHEDULED DATES FOR THE START AND COMPLETION OF THE BRIDGE REMOVAL AND 3.) A DESCRIPTION OF THE PLANNED DEMOLITION WORK AND THE METHOD(S) TO BE USED. A COPY OF THE OEPA FORM IS AVAILABLE FOR INSPECTION AT THE ODOT DISTRICT 4 OFFICE, 2088 S. ARLINGTON ROAD, AKRON, OHIO, 44306.

BASIS FOR PAYMENT - THE CONTRACTOR SHALL FURNISH ALL FEES, LABOR, AND MATERIAL NECESSARY TO COMPLETE AND SUBMIT THE OEPA NOTIFICATION FORM. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

ITEM 503 - COFFERDAMS, CRIBS & SHEETING, AS PER PLAN

TEMPORARY SHEET PILING SHALL BE PERFORMED IN ACCORDANCE WITH ITEM 503 AND DRIVEN TO SUPPORT THE ROADWAY EMBANKMENT DURING PHASE I CONSTRUCTION OF I-271.

SHEET PILING AT THE ABUTMENT SHALL BEGIN 1'-6" FROM THE BACK OF THE EXISTING ABUTMENT FOOTING AND EXTEND APPROXIMATELY 28 FEET. IT SHALL BE DRIVEN TO A MINIMUM DEPTH OF 10 FEET BELOW THE BOTTOM OF FOOTING ELEVATION OF THE PROPOSED ABUTMENT AND HAVE A MINIMUM SECTION MODULUS OF 20 IN^3 PER FOOT OF WALL. THE SHEET PILING SHALL NOT INTERFERE WITH THE EXISTING 6" CMP.

ALL SHEET PILING SHALL BE REMOVED WHEN PHASE II BACKFILLING IS COMPLETE. THIS WORK SHALL BE INCLUDED WITH ITEM 503 - COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN, FOR PAYMENT.

ITEM 503 - UNCLASSIFIED EXCAVATION, AS PER PLAN:

BACKFILL MATERIAL BEHIND THE ABUTMENTS SHALL BE TYPE B GRANULAR MATERIAL, 703.16.C PLACED AND COMPACTED IN 6 INCH LIFTS.

PILE DESIGN LOADS (ULTIMATE BEARING VALUE)
12 INCH DIAMETER CAST-IN-PLACE REINFORCED CONCRETE PILES:

THE ULTIMATE BEARING VALUE IS 65 TONS PER PILE FOR THE ABUTMENT PILES. THE ULTIMATE BEARING VALUE IS 90 TONS PER PILE FOR THE PIER PILES.

ABUTMENT PILES:
12 PILES 75 FEET LONG, ORDER LENGTH
1 DYNAMIC LOAD TESTING ITEM

PIER PILES:
10 PILES 80 FEET LONG, ORDER LENGTH
1 DYNAMIC LOAD TESTING ITEM

BATTERED PILES:
THE BLOW COUNT FOR BATTERED PILES SHALL BE THE BLOW COUNT DETERMINED FOR VERTICAL PILES OF THE SAME ULTIMATE BEARING VALUE DIVIDED BY AN EFFICIENCY FACTOR (D). COMPUTE THE EFFICIENCY FACTOR (D) AS FOLLOWS:

$$D = (1-UG) / \sqrt{(1+G^2)}$$

U = COEFFICIENT OF FRICTION, WHICH IS ESTIMATED AT 0.05 FOR DOUBLE-ACTING AIR OPERATED OR DIESEL HAMMERS; 0.1 FOR SINGLE-ACTING AIR OPERATED OR DIESEL HAMMERS; AND 0.2 FOR DROP HAMMERS.
G = RATE OF BATTER (1/3, 1/4, ETC.)

ITEM 509 - REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN:

REPLACE ALL EXISTING REINFORCING BARS DEEMED BY THE ENGINEER TO BE UNUSABLE BECAUSE OF CORROSION. THE DEPARTMENT WILL MEASURE THE REPLACEMENT REINFORCING STEEL BY THE NUMBER OF POUNDS ACCEPTED IN PLACE. A QUANTITY OF 300 POUNDS FOR THE SOUTHBOUND BRIDGE AND A QUANTITY OF 100 POUNDS FOR THE NORTHBOUND BRIDGE IS INCLUDED IN THE ESTIMATED QUANITITES.

REPLACE ALL EXISTING REINFORCING STEEL BARS WHICH ARE TO BE INCORPORATED INTO THE NEW WORK AND ARE DEEMED BY THE ENGINEER TO BE MADE UNUSABLE BY CONCRETE REMOVAL OPERATIONS WITH NEW EPOXY COATED REINFORCING STEEL OF THE SAME SIZE AT NO COST TO THE DEPARTMENT.

ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL THREE (3), AS PER PLAN

ALL REQUIREMENTS OF 513 APPLY TO SHOP FABRICATED MEMBERS. PERFORM WORK FOR FIELD FABRICATED MEMBERS ACCORDING TO ITEM 513, EXCEPT AS MODIFIED HEREIN. THE DEPARTMENT WILL NOT REQUIRE THE CONTRACTOR PERFORMING FIELD FABRICATION TO BE PRE-QUALIFIED AS SPECIFIED IN SUPPLEMENT 1078. SUBMIT A WRITTEN LETTER OF MATERIAL ACCEPTANCE, 501.06, TO THE ENGINEER. PROVIDE SHOP DRAWINGS ACCORDING TO 513.06 OR SUPPLY THE ENGINEER WITH "AS-BUILT" DRAWINGS MEETING 513.06 AFTER COMPLETION OF FIELD FABRICATION. THE ENGINEER WILL REVIEW THE SUBMITTED DRAWINGS FOR CONCURRENCE WITH THE FINAL AS-BUILT CONDITION. IF NECESSARY, THE ENGINEER MAY CONTACT THE OFFICE OF STRUCTURAL ENGINEERING FOR TECHNICAL ASSISTANCE. IF THE ENGINEER IS SATISFIED WITH THE "AS-BUILT" DRAWINGS AND THE DELIVERED MATERIALS, SUPPLY A COPY OF THE DRAWINGS, STAMPED AND DATED, ALONG WITH MICROFILM, TO THE OFFICE OF STRUCTURAL ENGINEERING FOR RECORD PURPOSES.

THE FOLLOWING MEMBERS ARE INCLUDED IN THIS ITEM: CROSSFRAMES, HINGES AND BEARING DEVICES. THIS ITEM INCLUDES FURNISHING AND PLACING ANCHOR BARS FOR THE BEARINGS.

PAINTING OF 513 STEEL

NEW STEEL SHALL BE SHOP PRIMED, WHICH SHALL BE INCLUDED IN THE COST OF ITEM 513. THE NEW STEEL SHALL ALSO BE PREPARED AND PAINTED PER CMS 514 IN THE FIELD AS IF IT WERE EXISTING STEEL. QUANTITIES AND PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE SQUARE FOOT UNIT PRICE BID FOR THE APPROPRIATE 514 ITEMS.

GENERAL NOTES CONTINUED: SEE SHEET 6/48

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN KH | REVIEWED DAP | DATE 3/18/04 | STRUCTURE FILE NUMBER 7709099(L) 7709129(R)
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GENERAL NOTES - 2
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OVER BOSTON MILLS ROAD

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SU271SN1.DGN 6/23/04 KH,CAR,JLS,RC

ITEM 513 - STRUCTURAL STEEL, MISC.: STEEL PINS AND NUTS:

STEEL PINS SHALL BE ASTM A668 CLASS D STEEL FORGINGS. THE PINS SHALL MEET THE SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS FOR A36 STEEL AS SPECIFIED IN 711.01. IN ORDER TO MEET THE CHARPY V-NOTCH IMPACT REQUIREMENTS, THE STEEL MAY NEED TO BE HEAT TREATED. THE LONGITUDINAL AXIS OF THE PINS SHALL BE ORIENTED IN THE DIRECTION OF FORGING OF THE BARS. PINS SHALL BE COMPLETELY HARD CHROME PLATED TO A MINIMUM THICKNESS OF 3 MILS. THE SURFACE ROUGHNESS OF THE CHROMED PINS SHALL BE LESS THAN 20 MICRO INCHES ON THE BEARING SURFACE AND LESS THAN 125 MICRO INCHES (ANSI 125) ON THE ENDS AND THREADS.

THE PIN SPACERS AND NUTS SHALL BE A36 STEEL PRIME PAINTED WITH ORGANIC ZINC PER THE "PAINTING OF 513 STEEL" NOTE.

PINS, PIN SPACERS, NUTS AND SET SCREW SHALL BE INCLUDED FOR PAYMENT WITH ITEM 513 - STRUCTURAL STEEL MISC.: STEEL PINS AND NUTS.

ITEM 513 - STRUCTURAL STEEL, MISCELLANEOUS: DISASSEMBLE AND CLEAN HINGES

THIS ITEM SHALL INCLUDE ALL WORK NECESSARY TO REFURBISH EXTERIOR BEAM LINE HINGES. THE HINGES ON THE EXISTING OUTSIDE BEAM LINES SHALL BE DISASSEMBLED, HAND TOOL CLEANED (GRINDING IF NECESSARY), PAINTED ACCORDING TO ITEM 514 AND REASSEMBLED. THE DISASSEMBLY SHALL INCLUDE THE REMOVAL OF THE BOLTED WEB PLATES. ALL EXISTING BOLTS SHALL BE REPLACED WITH NEW 1" DIAMETER HIGH STRENGTH BOLTS, ASTM A325. EXISTING 3" DIAMETER PINS, WASHERS, HEX NUTS AND WEB PLATES SHALL BE REUSED. ALL WORK SHALL BE TO THE SATISFACTION OF THE ENGINEER. PAYMENT FOR THE ABOVE DESCRIBED LABOR AND MATERIALS WILL BE MADE AT THE CONTRACT PRICE BID FOR ITEM 513 - STRUCTURAL STEEL, MISCELLANEOUS: DISASSEMBLE AND CLEAN HINGES.

ITEM 514 - SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL, AS PER PLAN
ITEM 514 - FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT, AS PER PLAN
ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT, AS PER PLAN
ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN

THE LAST 10 FEET OF EACH EXISTING BEAM END ADJACENT TO THE ABUTMENTS AND 10 FEET EACH SIDE OF THE HINGE JOINT SHALL BE CLEANED AND PAINTED IN THE FIELD WITH PRIME, INTERMEDIATE AND FINISH COATS OF PAINT USING SYSTEM OZEU. THIS WORK INCLUDES ALL CROSSFRAMES WITHIN THESE LIMITS, ALL HINGES ON THE EXISTING INTERIOR BEAM LINES, AND ALL NEW STEEL. THE COST OF THIS WORK SHALL BE INCLUDED WITH SURFACE PREPARATION OF EXISTING STEEL, AS PER PLAN; FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT, AS PER PLAN; FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT, AS PER PLAN; AND FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN ITEMS FOR PAYMENT. THE COLOR OF THE FINISH COAT SHALL MATCH THE EXISTING COLOR.

PORTIONS OF THE STEEL BEAMS, SPLICE PLATES AND REMAINING END CROSSFRAMES TO BE EMBEDDED IN THE NEW CONCRETE NEED ONLY THE SURFACE PREPARATION AND PRIME COATING DEFINED IN CMS 514.

ITEM 516 - ELASTOMERIC COMPRESSION SEAL, AS PER PLAN:

IN ADDITION TO THE REQUIREMENTS OF ITEM 516, THE EXISTING JOINT ARMOR SHALL BE CLEANED USING ABRASIVE BLASTING PRIOR TO INSTALLING THE SEAL. THE COMPRESSION SEAL SEAT AREAS SHALL RECEIVE A BRUSH-OFF BLAST CLEANING (SSPC-SP7). THE TOP SURFACE SHALL BE CLEANED TO A NEAR-WHITE (SSPC-SP10) CONDITION. EXPOSED PORTIONS OF THE EXISTING JOINT ARMOR SHALL BE PAINTED IN ACCORDANCE WITH ITEM 514.

ITEM 516 - REFURBISH BEARING DEVICE, AS PER PLAN:

THIS ITEM SHALL INCLUDE ALL WORK NECESSARY TO PROPERLY ALIGN BRIDGE ROCKER BEARINGS AS WELL AS THEIR CLEANING AND PAINTING. INCLUDED SHALL BE THE DISASSEMBLY OF THE BEARINGS, HAND TOOL CLEANING (GRINDING IF NECESSARY), PAINTING ACCORDING TO ITEM 514, REPLACEMENT OF ANY DAMAGED SHEET LEAD WITH PREFORMED BEARING PADS (711.21), INSTALLATION OF ANY NECESSARY STEEL SHIMS OF THE SAME SIZE AS THE BEARINGS TO PROVIDE A SNUG FIT, REALIGNMENT OF THE UPPER BEARING PLATE BY REMOVING EXISTING WELDS AND REWELDING SO THAT THE BEARINGS ARE VERTICALLY ALIGNED AT 60° F (15° C), LUBRICATING SLIDING SURFACES, AND REASSEMBLY OF THE BEARINGS. ASSURE ALL BEARINGS ARE SHIMMED ADEQUATELY AND THAT NO BEAMS AND/OR BEARING DEVICES ARE "FLOATING". AT NO ADDITIONAL COST TO THE STATE, THE CONTRACTOR MAY INSTALL NEW BEARINGS OF THE SAME TYPE AS THE EXISTING IN PLACE OF REFURBISHING THE BEARINGS. ALL WORK SHALL BE TO THE SATISFACTION OF THE ENGINEER. PAYMENT FOR ALL OF THE ABOVE DESCRIBED LABOR AND MATERIALS WILL BE MADE AT THE CONTRACT PRICE BID FOR ITEM 516 - REFURBISH BEARING DEVICE, AS PER PLAN.

ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN:

THIS ITEM SHALL CONSIST OF FURNISHING ALL NECESSARY LABOR, MATERIALS, AND EQUIPMENT TO RAISE OR RE-POSITION ANY EXISTING STRUCTURES TO THE DIMENSIONS AND REQUIREMENTS DEFINED IN THE PROJECT PLANS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION AND OPERATION OF AN ADEQUATE JACKING SYSTEM, INCLUDING ANY TEMPORARY OR PERMANENT SUPPORTS NECESSARY TO PERFORM THE WORK DESCRIBED IN THE PROJECT PLANS. THREE (3) SETS OF JACKING PLANS, WHICH INCLUDE THE INFORMATION DESCRIBED IN THIS NOTE, SHALL BE SUBMITTED TO THE DIRECTOR FOR APPROVAL AT LEAST THIRTY (30) DAYS BEFORE THE ACTUAL WORK IS TO BEGIN. THE PLANS SHALL BE PREPARED AND STAMPED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER.

JACKING SUBMITTALS SHALL BE IN ACCORDANCE WITH CMS 501.05 AND INCLUDE AT LEAST THE FOLLOWING:

1. THE SIGNATURE AND NUMBER, OR PROFESSIONAL SEAL, OF THE OHIO REGISTERED PROFESSIONAL ENGINEER WHO PREPARED THE SUBMITTAL.
2. CALCULATIONS AND ANALYSIS OF THE STRUCTURE TO DETERMINE AND DEFINE THE ACTUAL LOADING APPLIED AT THE CONTRACTOR'S SELECTED JACKING POINTS.
3. A DRAWING SHOWING THE PHYSICAL AND DIMENSIONAL POSITION OF THE JACKS WITH RESPECT TO THE STRUCTURE INCLUDING CLEARANCES AND CENTER OF LIFT.
4. A SCHEMATIC LAYOUT OF JACKS, CHECK VALVES, PUMPS WITH 3 WAY RETRACTOR VALVE, PRESSURE GAUGES, FLOW CONTROL VALVES, ETC. IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ALL JACKS FOR EACH ABUTMENT AND EACH PIER SHALL BE THE SAME SIZE AND CONNECTED TOGETHER.
5. ANALYSIS AND CALCULATIONS OF THE STRESSES INDUCED OR CREATED IN THE STRUCTURE AND ANY TEMPORARY OR PERMANENT SUPPORTS. DESIGN CALCULATIONS FOR ANY TEMPORARY OR PERMANENT SUPPORTS.
6. PHYSICAL DIMENSIONS, MATERIALS, AND FABRICATION DETAILS OF ANY TEMPORARY OR PERMANENT SUPPORTS. HORIZONTAL AND VERTICAL MOVEMENT RESTRAINT SHALL BE PROVIDED.
7. A STEP BY STEP PROCEDURE DETAILING ALL STEPS IN THE JACKING OPERATION.
8. METHOD OF ATTACHMENT TO STRUCTURAL MEMBERS. WELDING TO TENSION AREAS WILL NOT BE PERMITTED.

THE WORK REQUIRED INCLUDES RAISING AND SUPPORTING THE BEAMS WHILE THE BEARINGS ARE REMOVED FROM THE ABUTMENTS AND PIERS, THE ABUTMENTS AND PIERS MODIFIED, AND NEW BEARINGS INSTALLED. THE WORK REQUIRED ALSO INCLUDES SUPPORTING THE BEAMS WHILE THE HINGES LOCATED ON THE EXISTING EXTERIOR BEAM LINES ARE DISASSEMBLED, CLEANED AND REASSEMBLED.THE ESTIMATED DEAD LOAD AT A BEARING IS 30 TONS AT THE ABUTMENTS, 105 TONS AT PIER 1 AND 25 TONS AT THE HINGES. THE WORK SHALL BE PERFORMED ACCORDING TO THE CONSTRUCTION SEQUENCE.

THE ENTIRE SYSTEM INCLUDING JACKS SHALL HAVE AT LEAST 20% MORE CAPACITY THAN REQUIRED BASED ON CALCULATED LOADS. JACKS SHALL HAVE A SWIVEL LOAD CAP, A DOMED PISTON HEAD, OR SOME OTHER DEVICE TO PROTECT AGAINST THE EFFECTS OF SIDE LOAD ON THE JACK. SINGLE ACTING RAMS WITHOUT OVER-TRAVEL PROTECTION SYSTEM SHALL NOT BE USED. SPARE EQUIPMENT SHALL BE AVAILABLE ON SITE FOR THE REQUIRED STRUCTURE RAISING IN THE EVENT OF A BREAKDOWN. A LIST OF SPARE EQUIPMENT SHALL BE PROVIDED TO THE ENGINEER.

THE JACKING OPERATION SHALL LIFT ALL BEAMS IN ANY ONE PHASE SIMULTANEOUSLY. MAXIMUM DIFFERENTIAL JACKING HEIGHT BETWEEN ANY ADJACENT ABUTMENTS OR PIERS SHALL BE 1 INCH OR LESS. THIS HEIGHT MAY BE MODIFIED IF CALCULATIONS, BY THE CONTRACTOR'S OHIO REGISTERED PROFESSIONAL ENGINEER, SHOW THE SUPERSTRUCTURE COMPONENTS WILL NOT BE TEMPORARILY STRESSED BEYOND ALLOWABLE STRESSES FOR THOSE COMPONENTS AND THAT NO PERMANENT STRESSES WILL BE INDUCED ON THE COMPONENTS AFTER THEY OBTAIN THEIR FINAL POSITION. JACKS SHALL HAVE LOCKING NUTS TO POSITIVELY LOCK AND SUPPORT THE STRUCTURE DURING THE LIFT.

JACKS ALONE SHALL NOT BE USED TO SUPPORT LOADS EXCEPT DURING THE ACTUAL JACKING OPERATION. TEMPORARY SUPPORTS, BLOCKING OR OTHER METHODS APPROVED BY THE DIRECTOR SHALL BE USED. IF, DURING THE JACKING OPERATIONS, CRACKING OF THE CONCRETE SUPERSTRUCTURE, SEPARATION OF THE CONCRETE DECK FROM THE STEEL STRINGERS, OR OTHER DAMAGE TO THE STRUCTURE IS VISUALLY OBSERVED, IMMEDIATELY CEASE THE JACKING OPERATION AND INSTALL SUPPORTS TO THE SATISFACTION OF THE ENGINEER. ANALYZE THE DAMAGE AND SUBMIT A METHOD OF CORRECTION TO THE ENGINEER FOR APPROVAL. EPOXY INJECT ALL BEAMS THAT SEPARATE FROM THE DECK FOR THE DISTANCE OF THE SEPARATION IN ACCORDANCE WITH ODOT'S PROPOSAL NOTE "CONCRETE REPAIR BY EPOXY INJECTION". THE DEPARTMENT WILL NOT PAY FOR THE COST OF THIS EPOXY INJECTION OR OTHER REQUIRED REPAIRS. THE CONTRACTOR SHALL DEMONSTRATE TO THE ENGINEER THAT THE BRIDGE BEARINGS ARE FULLY SEATED AT ALL CONTACT AREAS. IF FULL SEATING IS NOT ATTAINED, SUITABLE MEANS OF REPAIR, SUBJECT TO THE APPROVAL OF THE ENGINEER, WILL BE REQUIRED AT THE CONTRACTOR'S EXPENSE. ANY DAMAGE TO THE STRUCTURAL MEMBERS, CONNECTIONS, OR PARTS THAT ARE TO REMAIN AS PART OF THE PERMANENT CONSTRUCTION SHALL BE CORRECTED OR REPAIRED BY THE CONTRACTOR, AT HIS EXPENSE, TO THE SATISFACTION OF THE ENGINEER.

PAYMENT SHALL BE MADE AT THE LUMP SUM PRICE BID FOR ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN. THIS SHALL INCLUDE ALL NECESSARY TOOLS, LABOR, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THIS ITEM OF WORK.

ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN

PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED INCLUDING ALL EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH-PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING.

THE ESTIMATED QUANTITY OF PATCHING REQUIRED IS BASED ON FIELD MEASUREMENTS OF ABOVE GROUND DETERIORATION. THE CONTRACTOR SHALL EXCAVATE REPAIR AREAS THAT EXTEND TO THE EXISTING GROUND LINE. THE ENGINEER SHALL DETERMINE THE EXTENT OF BELOW GROUND REPAIR BASED ON THE CONTRACTOR'S EXCAVATION.

THE CONTRACTOR SHOULD INCLUDE THIS EXCAVATION, PERFORMED IN ACCORDANCE WITH ITEM 503, IN THE UNIT PRICE BID FOR ITEM 519 - PATCHING OF CONCRETE STRUCTURE, AS PER PLAN.

ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN

THE APPROACH SLAB THICKNESS VARIES AT THE BRIDGE. THE SHAPE OF THE CURBING ON THE APPROACH SLABS SHALL BE CONSTANT FOR THE FULL LENGTH OF THE APPROACH SLABS.

QUANTITIES OF CONCRETE, CURBS, REINFORCING STEEL, MECHANICAL CONNECTORS AND JOINTS SHALL BE INCLUDED WITH THIS ITEM FOR PAYMENT.

SEE SHEET 46/48 FOR APPROACH SLAB DETAILS.

ITEM 848 - SURFACE PREPARATION USING HYDRODEMOLITION, AS PER PLAN

WORK PERFORMED UNDER THIS ITEM SHALL INCLUDE REMOVAL OF A NOMINAL THICKNESS OF ½" OF CONCRETE FROM BOTH THE EXISTING ORIGINAL DECK AND FROM THE PROPOSED WIDENED DECK.

ITEM 894 - HIGH PERFORMANCE CONCRETE, FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN

THE DESIGN MIX SHALL BE MIX NO. 4

CURING SHALL BE PER METHOD (A) WATER CURE ONLY.

IN ADDITION TO AREAS DESIGNATED FOR SEALING WITH HIGH MOLECULAR WEIGHT METHACRYLATE IN CMS 511.22, THE CONTRACTOR SHALL SEAL ALL PHASE CONSTRUCTION JOINTS AS DETAILED ON THE TRANSVERSE DECK SECTION AND ALL PATCHED PORTABLE CONCRETE BARRIER ANCHOR HOLES. THE LIMITS OF THE SEALER APPLICATION SHALL BE AT LEAST 2" FROM THE EDGE OF THE PATCHED ANCHOR HOLE.

PAYMENT FOR THE ABOVE SEALING SHALL BE INCLUDED WITH THIS HIGH PERFORMANCE CONCRETE ITEM.

QUANTITIES OF CONCRETE, DEFLECTION JOINT SAWCUT AND CAULKING MATERIAL FOR PARAPET SHALL BE INCLUDED WITH THIS HIGH PERFORMANCE CONCRETE ITEM.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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BLN		7709099(L) 7709129(R)	

GENERAL NOTES - 3
BRIDGE NO. SUM-271-0854 L & R
OVER BOSTON MILLS ROAD

SUM-271-8.02

SU27SNLDGN 9/7/04 KH,RC,JLS

ESTIMATED QUANTITIES

CALCULATED ALP DATED 8/03
CHECKED JLS DATED 01/04

ITEM	ITEM EXT.	TOTAL LEFT STRUCTURE (S.B.B.)	TOTAL RIGHT STRUCTURE (N.B.B.)	UNIT	DESCRIPTION	LEFT STRUCTURE (SOUTHBOUND)				RIGHT STRUCTURE (NORTHBOUND)				SEE SHEET
						SUPER	ABUTS.	PIERS	GEN'L	SUPER	ABUTS.	PIERS	GEN'L	
202	11203	LUMP	LUMP		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				LUMP				LUMP	5/48
503	11101	LUMP			COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN				LUMP					5/48
503	21101	148		CU YD	UNCLASSIFIED EXCAVATION, AS PER PLAN		99	49						5/48
505	11100	LUMP			PILE DRIVING EQUIPMENT MOBILIZATION				LUMP					
507	00500	1590		FT	12" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN		840	750						
507	00550	1700		FT	12" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED		900	800						
509	10000	49452	3570	POUND	EPOXY COATED REINFORCING STEEL	32829	8387	8236		1209	2361			
509	20001	300	100	POUND	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN				300				100	5/48
510	10000	412	402	EACH	DOWEL HOLES WITH NON-SHRINK, NON METALLIC GROUT	74	322	16		148	254			
511	41000	24		CU YD	CLASS C CONCRETE, PIER ABOVE FOOTINGS			24						
511	43500	78	8	CU YD	CLASS C CONCRETE, ABUTMENT INCLUDING FOOTING		78				8			
511	46500	14		CU YD	CLASS C CONCRETE, FOOTING			14						
512	33000	6		SQ YD	TYPE 2 WATERPROOFING		6							
513	10061	LUMP			STRUCTURAL STEEL MEMBERS, LEVEL THREE (3), AS PER PLAN	LUMP								5/48
513	95030	1		EACH	STRUCTURAL STEEL, MISCELLANEOUS: STEEL PINS AND NUTS	1								6/48
513	95030	2	2	EACH	STRUCTURAL STEEL, MISCELLANEOUS: DISASSEMBLE AND CLEAN HINGES	2				2				6/48
514	00051	5250	2650	SQ FT	SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL, AS PER PLAN (SEE PROPOSAL NOTE)	5250				2650				6/48
514	00057	5250	2650	SQ FT	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT, AS PER PLAN (SEE PROPOSAL NOTE)	5250				2650				6/48
514	00061	4725	2650	SQ FT	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT, AS PER PLAN (SEE PROPOSAL NOTE)	4725				2650				6/48
514	00067	4725	2650	SQ FT	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN (SEE PROPOSAL NOTE)	4725				2650				6/48
514	10000	6	3	EACH	FINAL INSPECTION REPAIR (SEE PROPOSAL NOTE)	6				3				
516	10500	23		FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC COMPRESSION SEAL	23								
516	10901	37	43	FT	ELASTOMERIC COMPRESSION SEAL, AS PER PLAN	37				43				6/48
516	11210	118	83	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL	118				83				
516	45305	15	15	EACH	REFURBISH BEARING DEVICE, AS PER PLAN	15				15				6/48
516	47001	LUMP	LUMP		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN				LUMP				LUMP	6/48
518	12200	4		EACH	SCUPPERS, INCLUDING SUPPORTS	4								
518	12700	4	7	EACH	SCUPPER, VERTICAL EXTENSION	4				7				
518	12800	4	7	EACH	SCUPPER MODIFICATION	4				7				
518	21200	39		CU YD	POROUS BACKFILL WITH FILTER FABRIC		39							
518	40000	52		FT	6" PERFORATED CORRUGATED PLASTIC PIPE		52							
518	40010	30		FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS		30							
519	11101	12	27	SQ FT	PATCHING CONCRETE STRUCTURE, AS PER PLAN		12				18	9		6/48
523	20000	2		EACH	DYNAMIC LOAD TESTING		1	1						
526	25001	284	221	SQ YD	REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN				284				221	6/48
848	10201	1051	693	SQ YD	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION (1-3/4" THICK), AS PER PLAN	1051				693				28/48 29/48
848	20001	1051	693	SQ YD	SURFACE PREPARATION USING HYDRODEMOLITION, AS PER PLAN	1051				693				6/48
848	30200	14	6	CU YD	SUPERPLASTICIZED DENSE CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY	14				6				
848	50000	6	3	SQ YD	HAND CHIPPING	6				3				
848	50100	LUMP	LUMP		TEST SLAB				LUMP				LUMP	
848	50200	6	5	CU YD	FULL-DEPTH REPAIR	6				5				
848	50320	626	666	SQ YD	EXISTING CONCRETE OVERLAY REMOVED (1¼" THICK)	626				666				
848	50340	95	25	SQ YD	REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY	95				25				
864	10100	912	680	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY - URETHANE)	428	135	349		335	97	248		
894	10001	134	9	CU YD	HIGH PERFORMANCE CONCRETE FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN	134				9				6/48

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
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REVISED DAP 3/18/04 DATE
STRUCTURE FILE NUMBER 7709099(L) 7709129(R)
DRAWN HN
REVISED
DESIGNED ALP
CHECKED BLN

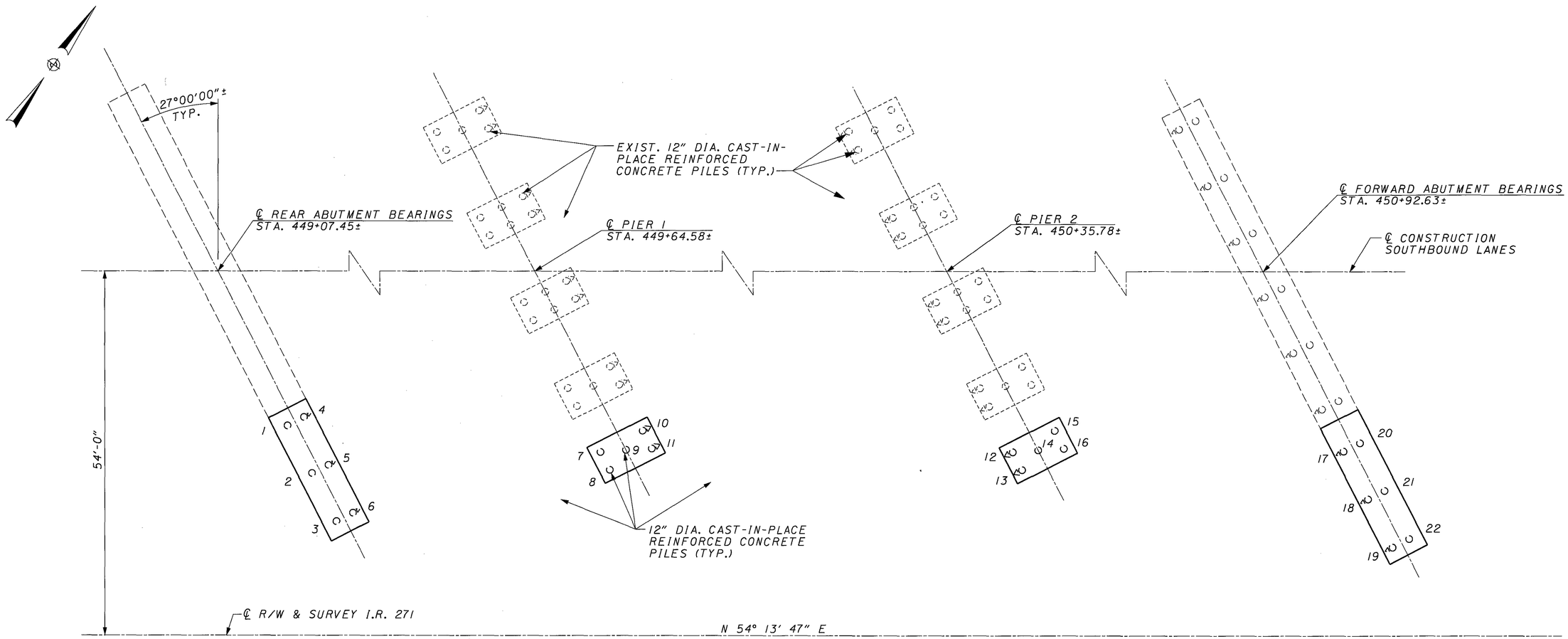
ESTIMATED QUANTITIES
BRIDGE NO. SUM-271-0854 L & R
OVER BOSTON MILLS ROAD

SUM-271-8.02

7/48

1567/612

SU271E01.DGN 11/02/04 HN,RC,JLS,HN



PILE NUMBERING - LEFT BRIDGE

LEGEND

- ○ PROPOSED 12 " DIA. CAST-IN-PLACE REINFORCED CONCRETE PILES
- ○▷ PROPOSED 12" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILES, BATTERED AT 1H:4V
- ◌ EXISTING 12" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILES
- ◌▷ EXISTING 12" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILES, BATTERED AT 1H:4V

NOTES

PILE SPACING: SEE SHEETS 19/48, 21/48 & 25/48.

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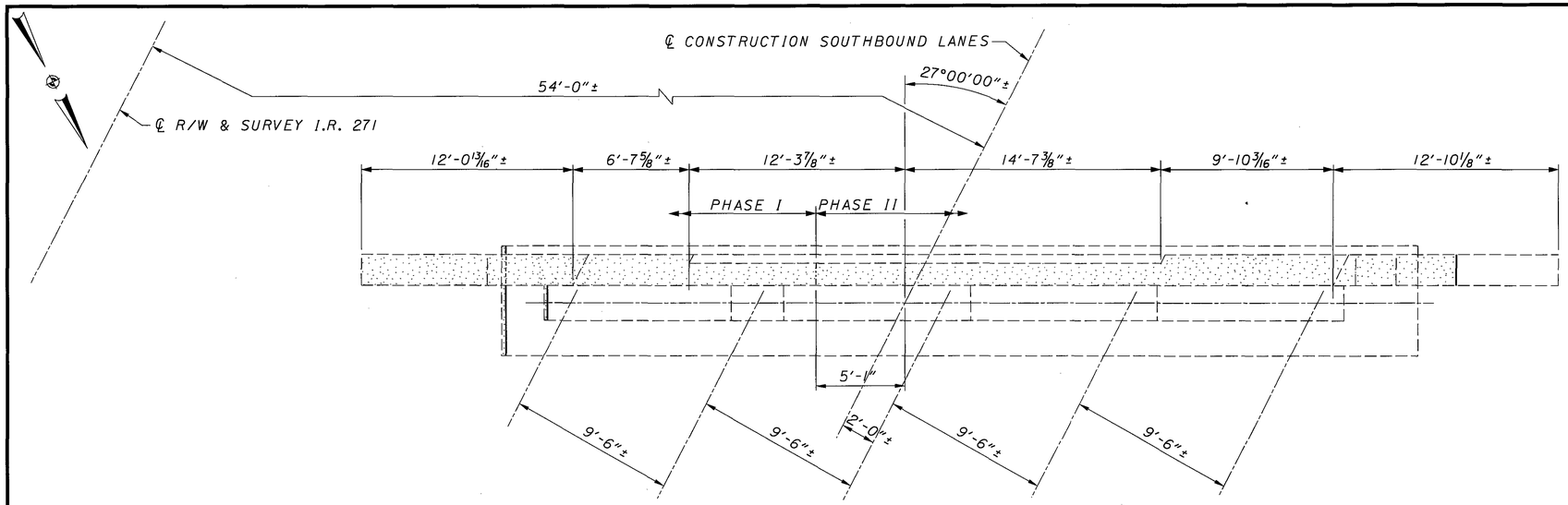
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BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

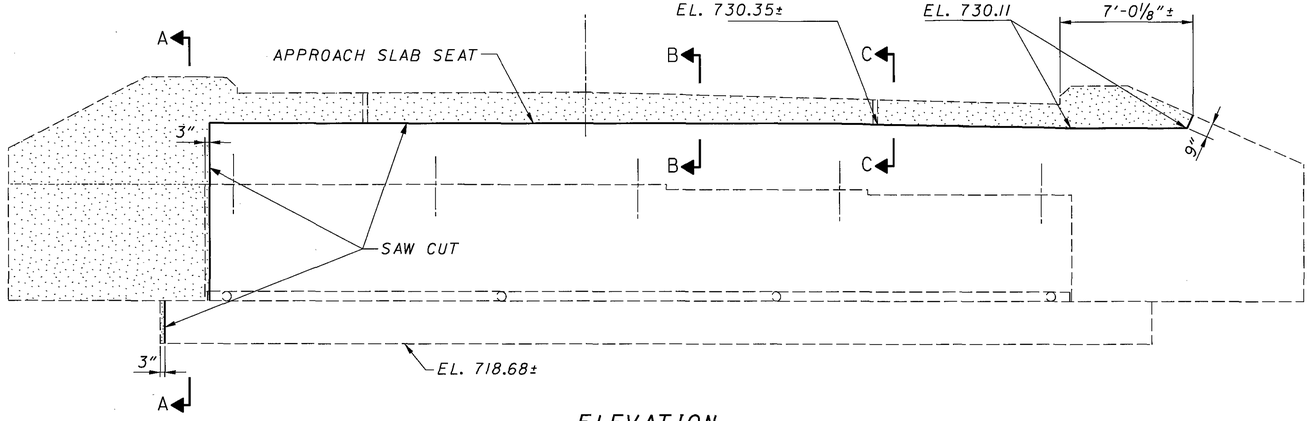
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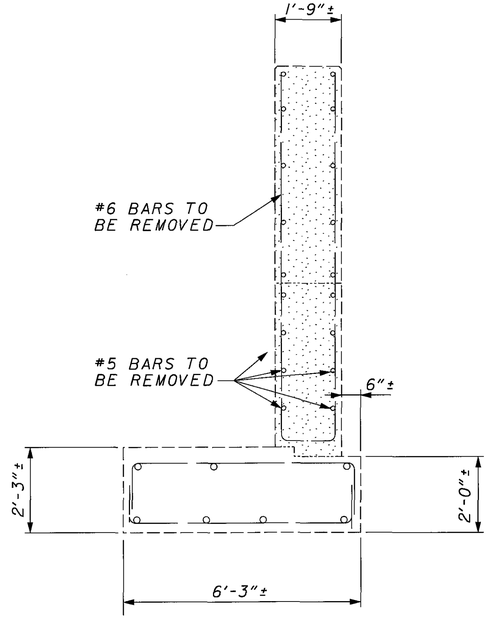
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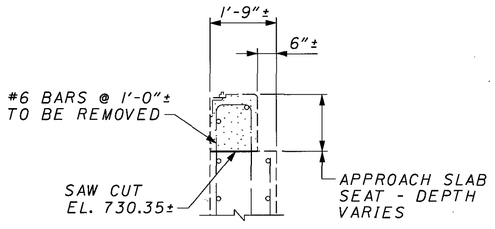
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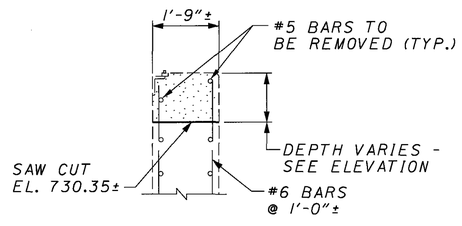
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SECTION A-A



SECTION B-B



SECTION C-C

LEGEND

EXISTING MATERIAL TO BE REMOVED UNDER ITEM 202 - PORTIONS OF STRUCTURE REMOVED.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
ALP	TWH	DAP	3/18/04
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BLN		7709099	

REAR ABUTMENT REMOVAL DETAILS - LEFT BRIDGE

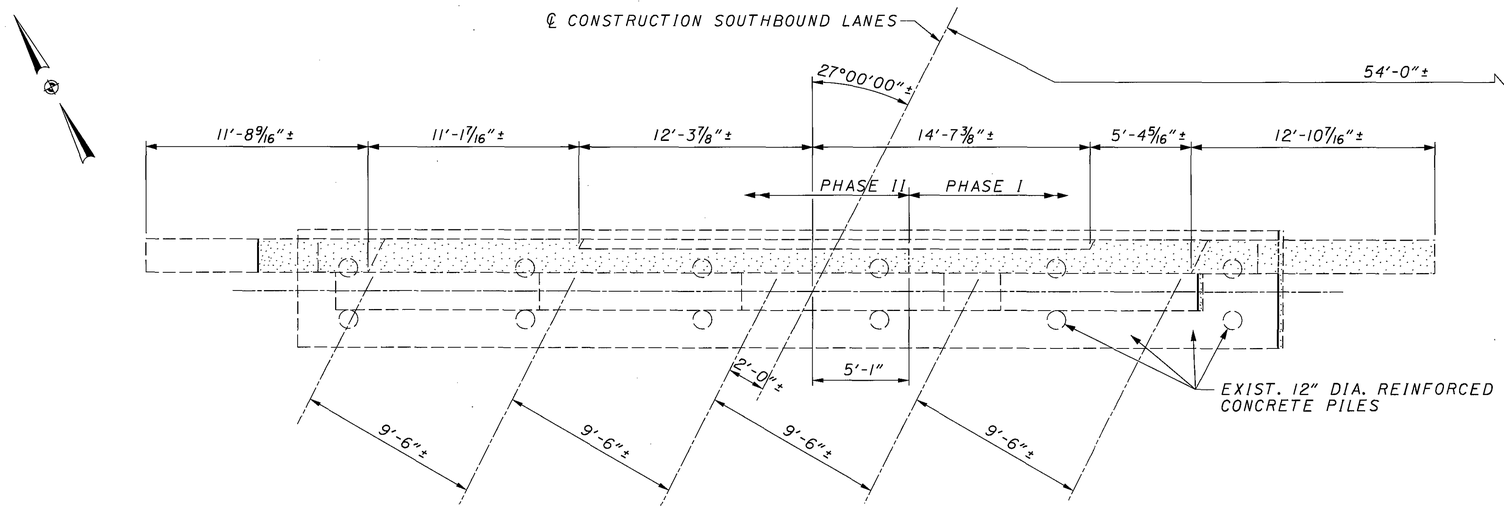
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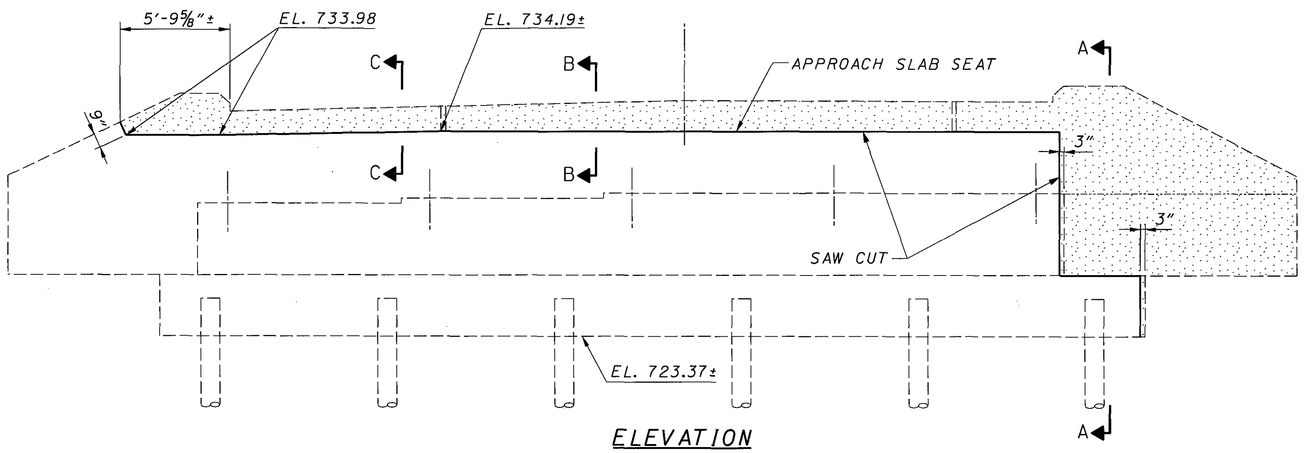
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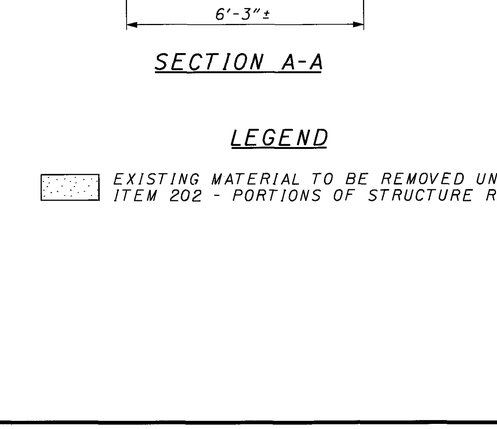
SU271SM2.DGN 6/23/04 JLS,RC



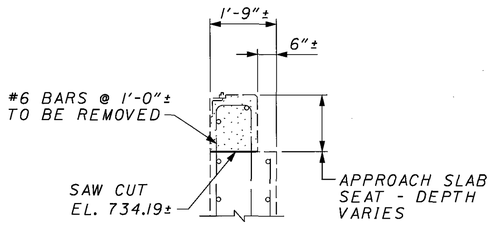
PLAN



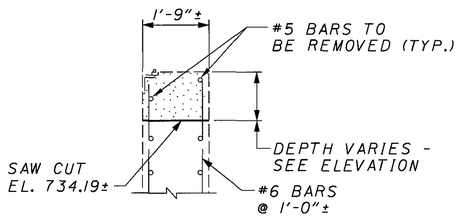
ELEVATION



SECTION A-A



SECTION B-B



SECTION C-C

LEGEND

EXISTING MATERIAL TO BE REMOVED UNDER ITEM 202 - PORTIONS OF STRUCTURE REMOVED.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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BLN		7709099	

FORWARD ABUTMENT REMOVAL DETAILS - LEFT BRIDGE

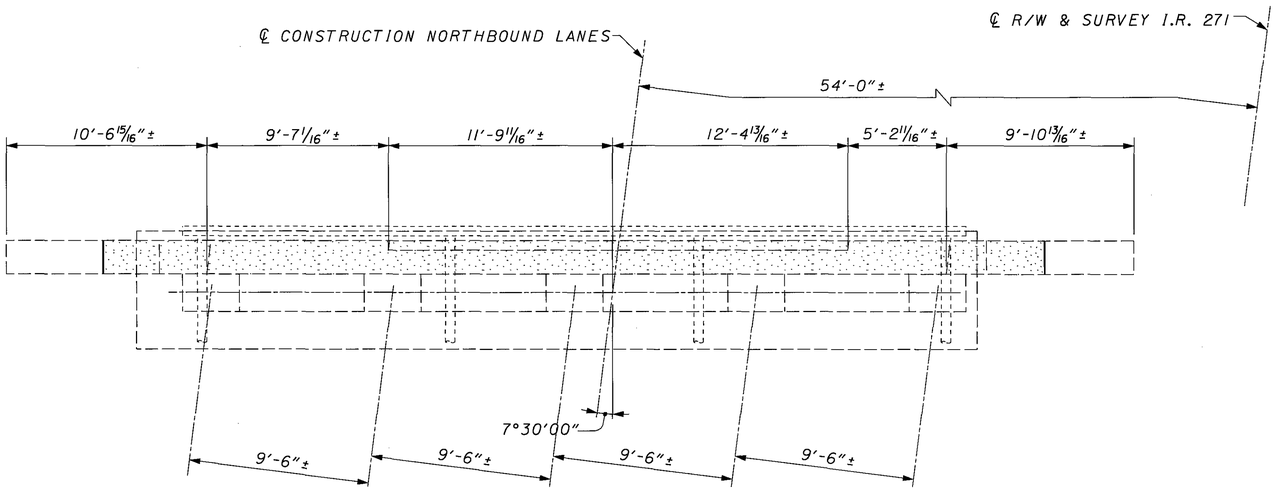
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

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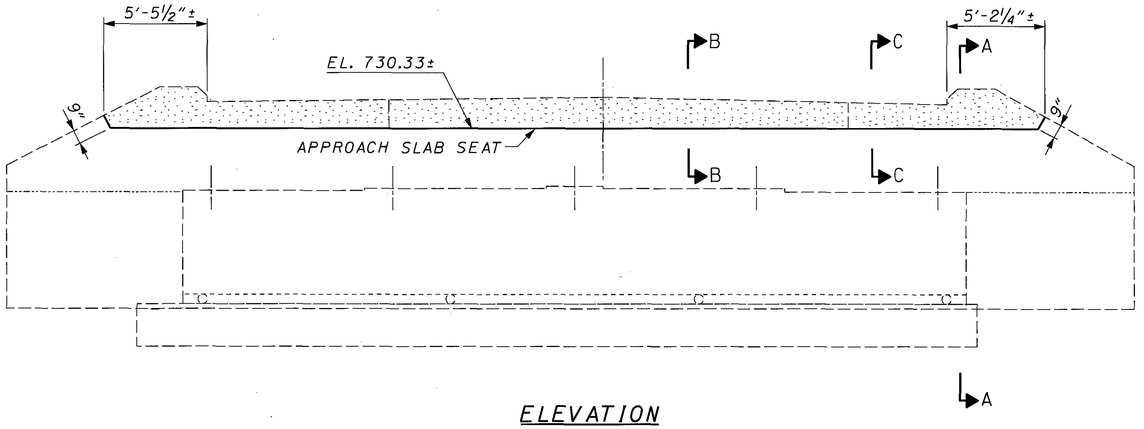
570
612

SU271SM2.DGN 6/23/04 JLS,RC

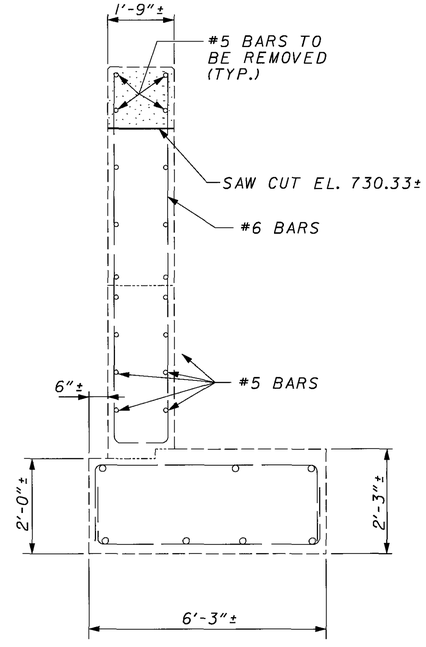


PLAN

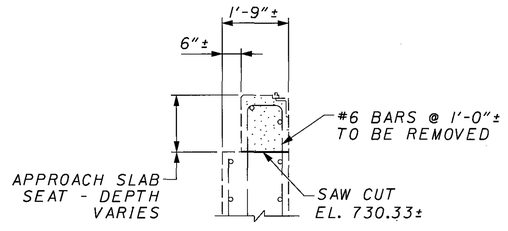
(PHASE III CONSTRUCTION)



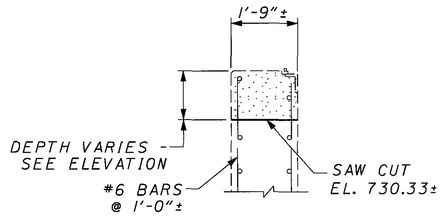
ELEVATION



SECTION A-A



SECTION B-B



SECTION C-C

LEGEND

EXISTING MATERIAL TO BE REMOVED UNDER ITEM 202 - PORTIONS OF STRUCTURE REMOVED.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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REAR ABUTMENT REMOVAL DETAILS - RIGHT BRIDGE

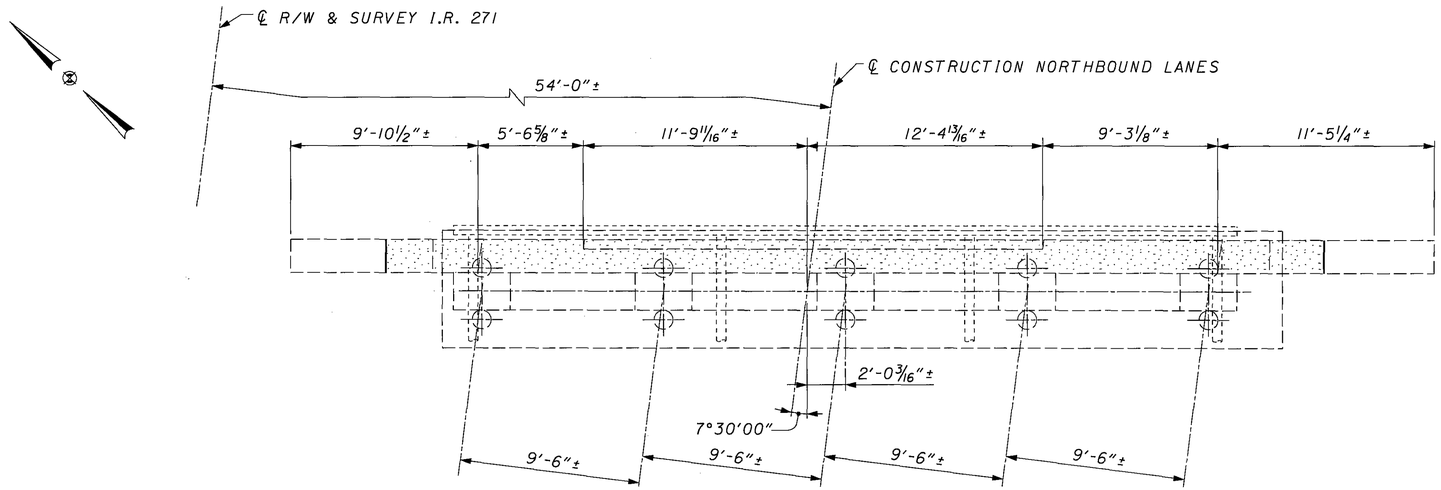
BRIDGE NO. SUM-271-0854 R
OVER BOSTON MILLS ROAD

SUM-271-8.02

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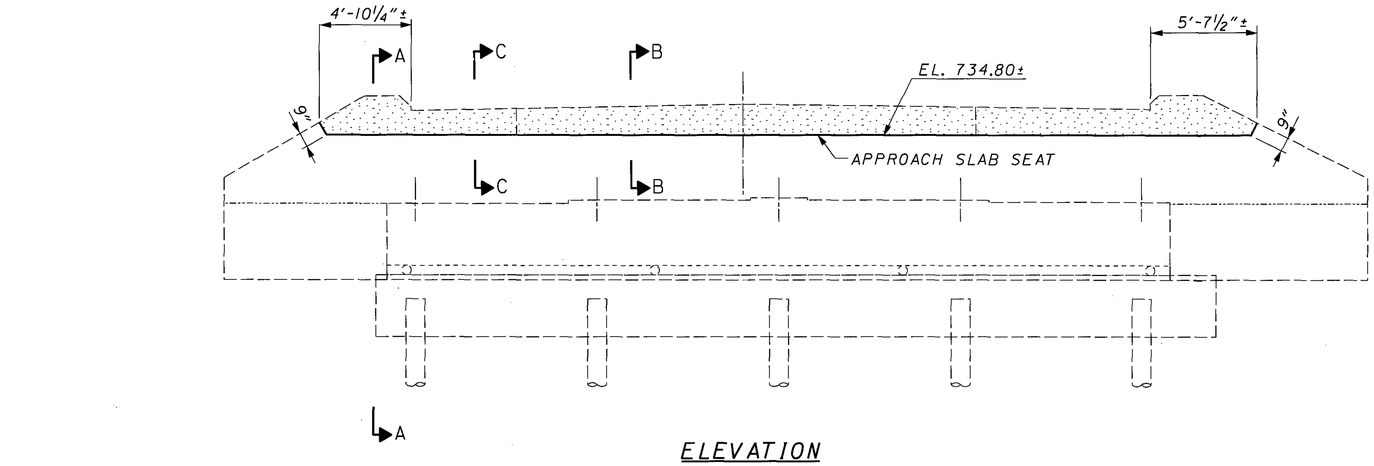
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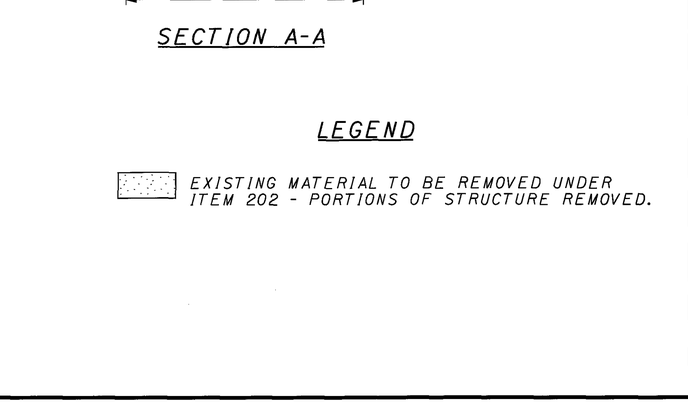


PLAN

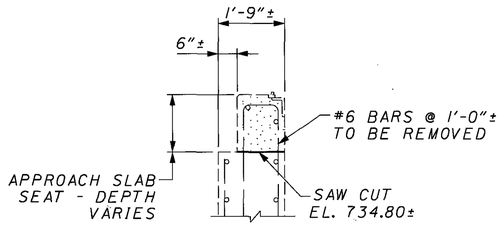
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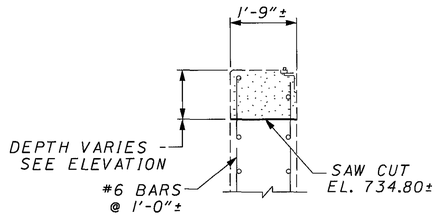
ELEVATION



SECTION A-A



SECTION B-B



SECTION C-C

LEGEND

EXISTING MATERIAL TO BE REMOVED UNDER ITEM 202 - PORTIONS OF STRUCTURE REMOVED.

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BLN		7709129	

FORWARD ABUTMENT REMOVAL DETAILS - RIGHT BRIDGE

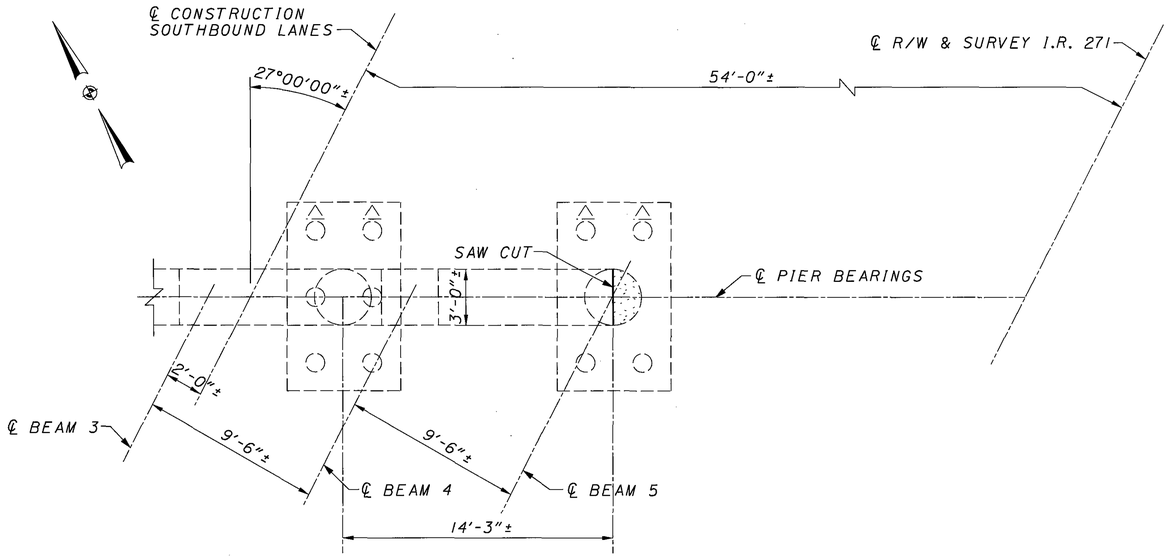
BRIDGE NO. SUM-271-0854 R
OVER BOSTON MILLS ROAD

SUM-271-8.02

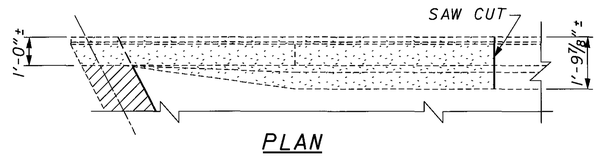
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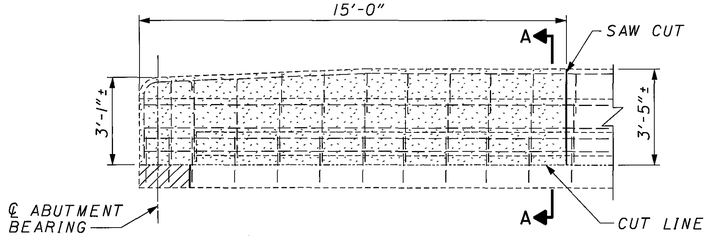
SU271SM5.DGN 6/23/04 JLS,RC



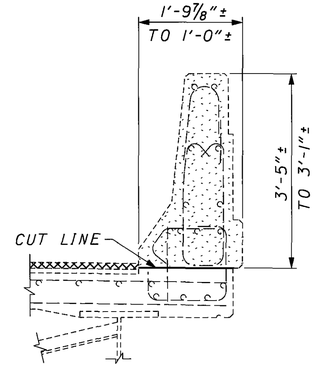
PLAN



PLAN



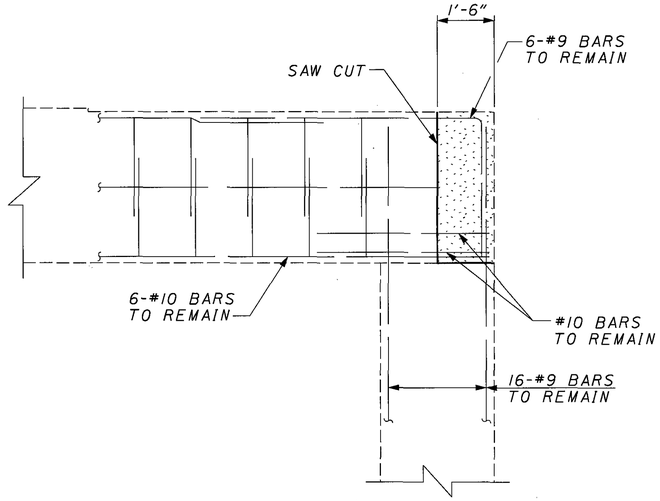
ELEVATION



SECTION A-A

PARAPET REMOVAL

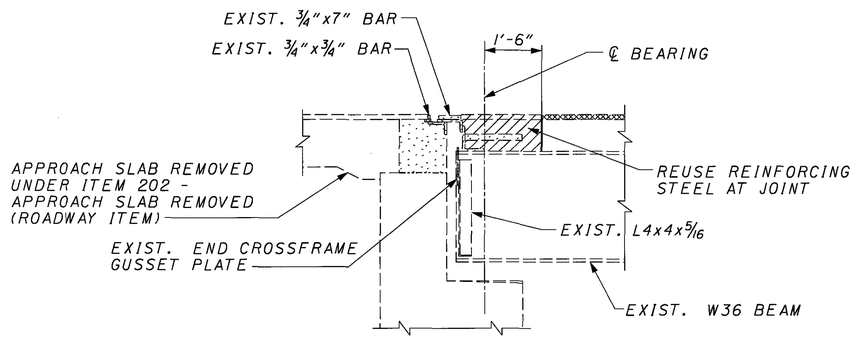
SOUTHBOUND (2 REQUIRED)
NORTHBOUND (4 REQUIRED)



ELEVATION

PIER REMOVAL

(PHASE I REMOVAL)



REMOVAL AT ABUTMENT JOINTS

LEGEND

- EXISTING MATERIAL TO BE REMOVED UNDER ITEM 202 - PORTIONS OF STRUCTURE REMOVED.
- EXISTING MATERIAL TO BE REMOVED UNDER ITEM 848 - FULL DEPTH REPAIR.
- EXISTING LATEX MODIFIED CONCRETE TO BE REMOVED - 1¼" BY SCARIFICATION AND ½" BY HYDRODEMOLITION.

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CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 7709099(L) 7709129(R)

EXISTING PIER, PARAPET & JOINT REMOVAL

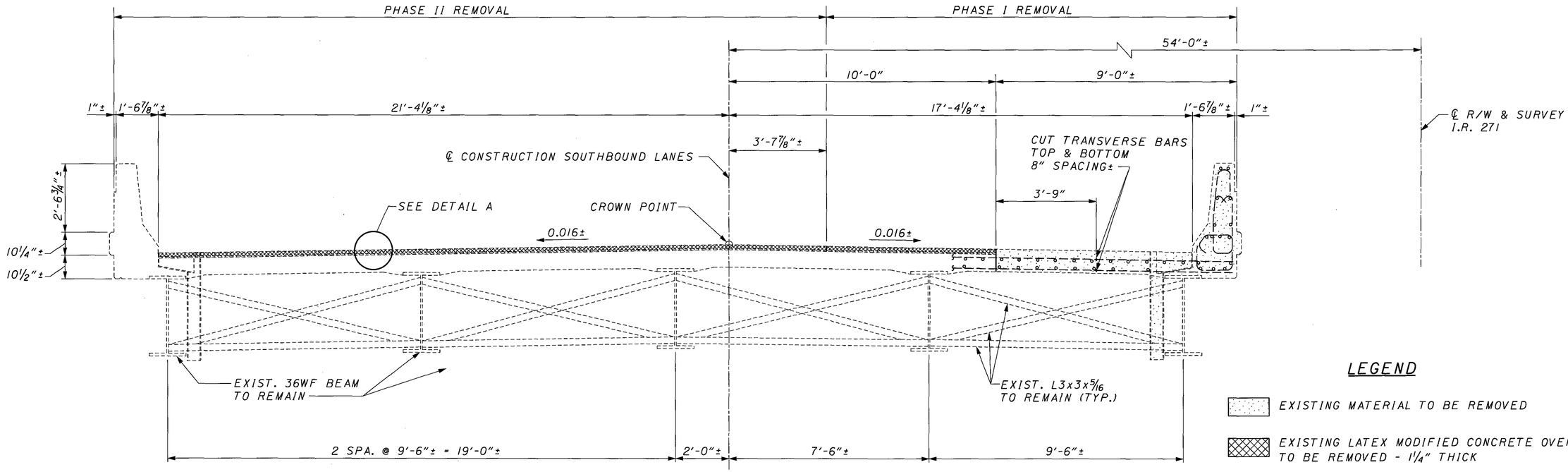
BRIDGE NO. SUM-271-0854 L & R
OVER BOSTON MILLS ROAD

SUM-271-8.02

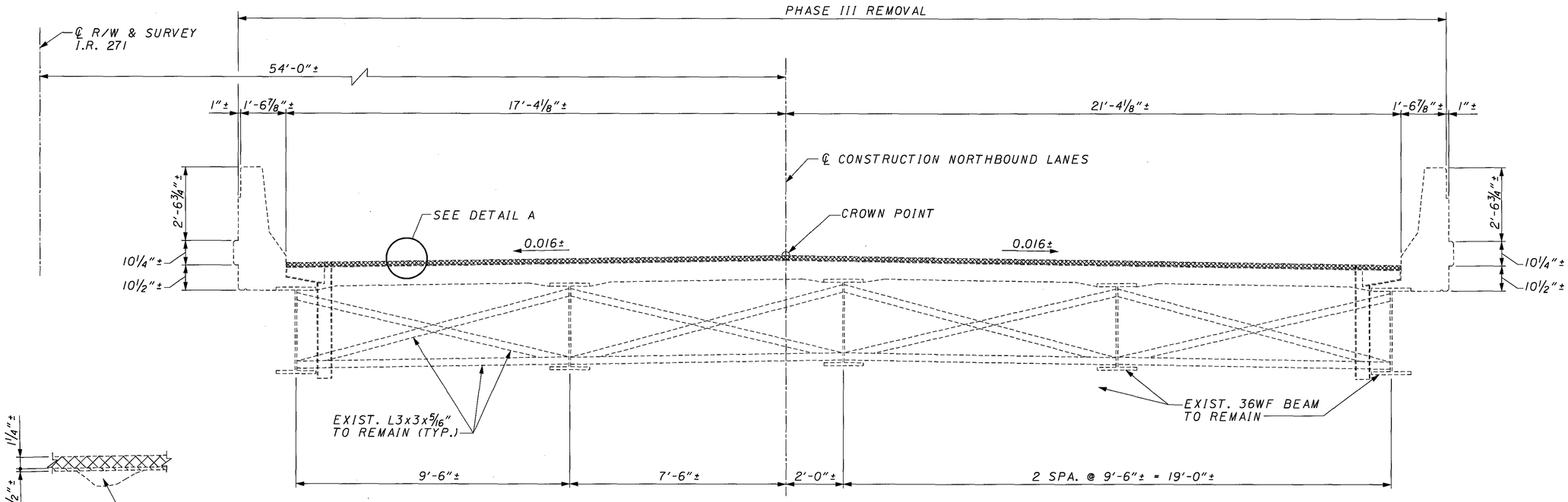
13/48

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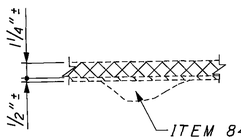
SU271SM4.DGN 9/7/04 RC,JLS



EXISTING TRANSVERSE SECTION
LEFT BRIDGE



EXISTING TRANSVERSE SECTION
RIGHT BRIDGE



DETAIL A

LEGEND

- EXISTING MATERIAL TO BE REMOVED
- EXISTING LATEX MODIFIED CONCRETE OVERLAY TO BE REMOVED - 1¼" THICK
- EXISTING LATEX MODIFIED CONCRETE TO BE REMOVED BY HYDRODEMOLITION - ½" THICK

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BLN		7709099 (L) 7709129 (R)	

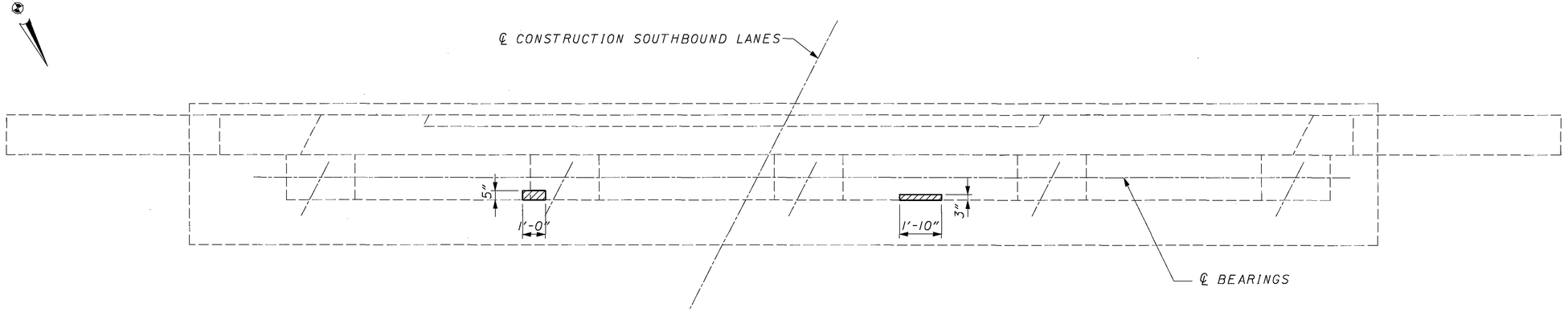
EXISTING SUPERSTRUCTURE REMOVAL
BRIDGE NO. SUM-271-0854 L & R
OVER BOSTON MILLS ROAD

SUM-271-8.02

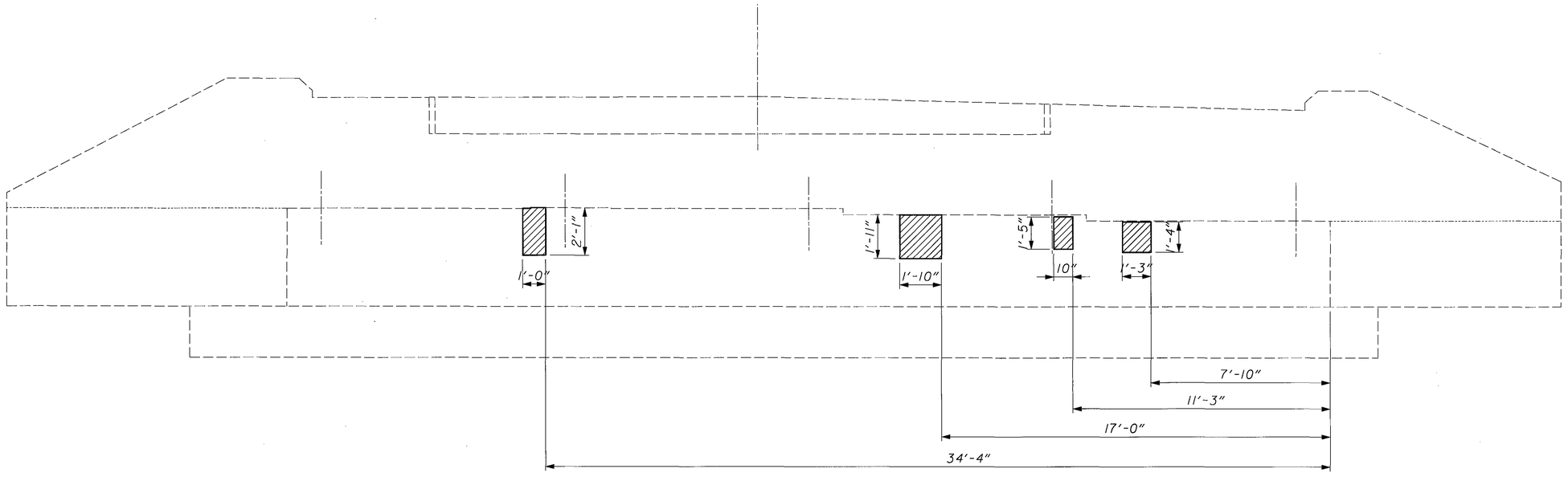
14/48

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SU27IMD1.DGN 9/7/04 RC,JLS



PLAN



ELEVATION

▨ - INDICATES ESTIMATED PATCHING PER ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN.

THE SOUNDING OF THE CONCRETE WAS PERFORMED ON AUGUST 28, 2003.

SU27MD2.DGN 6/23/04 JLS,RC

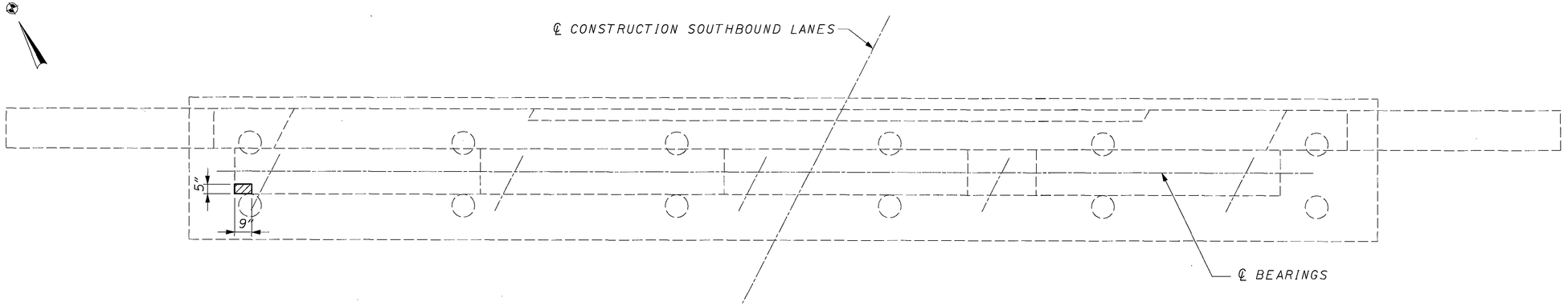
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MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
ALP	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709099	

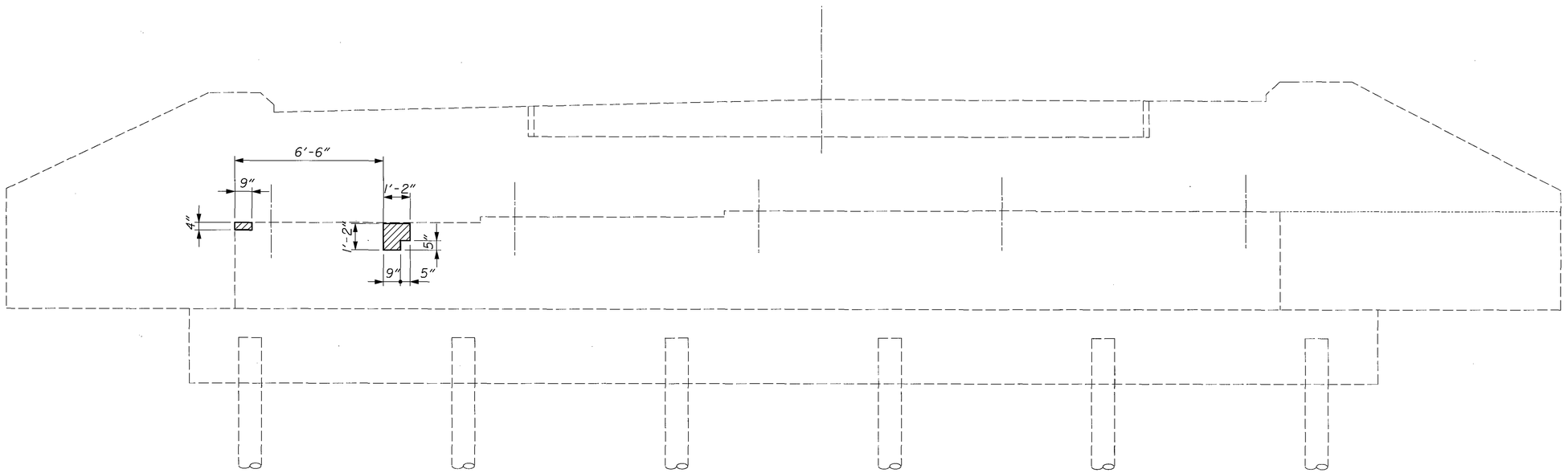
PATCHING DETAILS - REAR ABUTMENT

BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02



PLAN



ELEVATION

▨ - INDICATES ESTIMATED PATCHING PER ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN.

THE SOUNDING OF THE CONCRETE WAS PERFORMED ON AUGUST 28, 2003.

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CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709099	

PATCHING DETAILS - FORWARD ABUTMENT

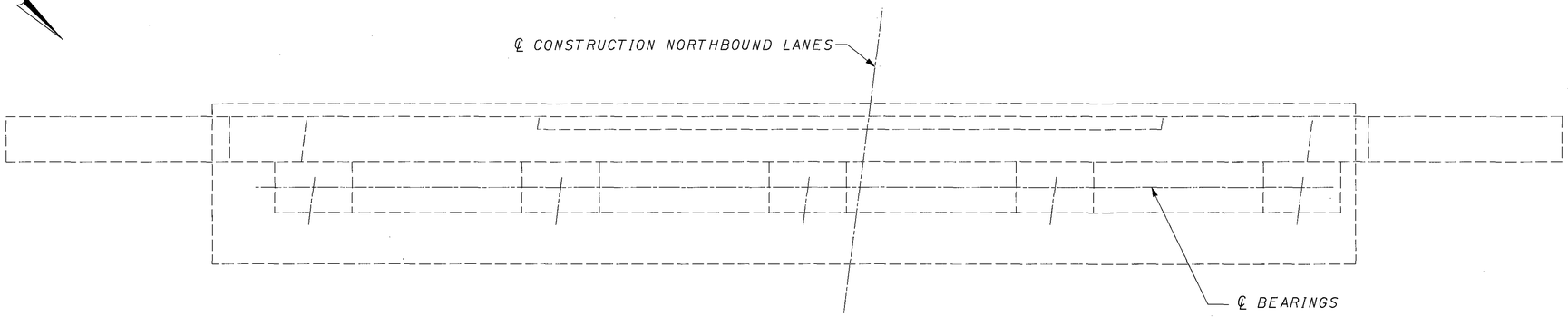
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SUM-271-8.02

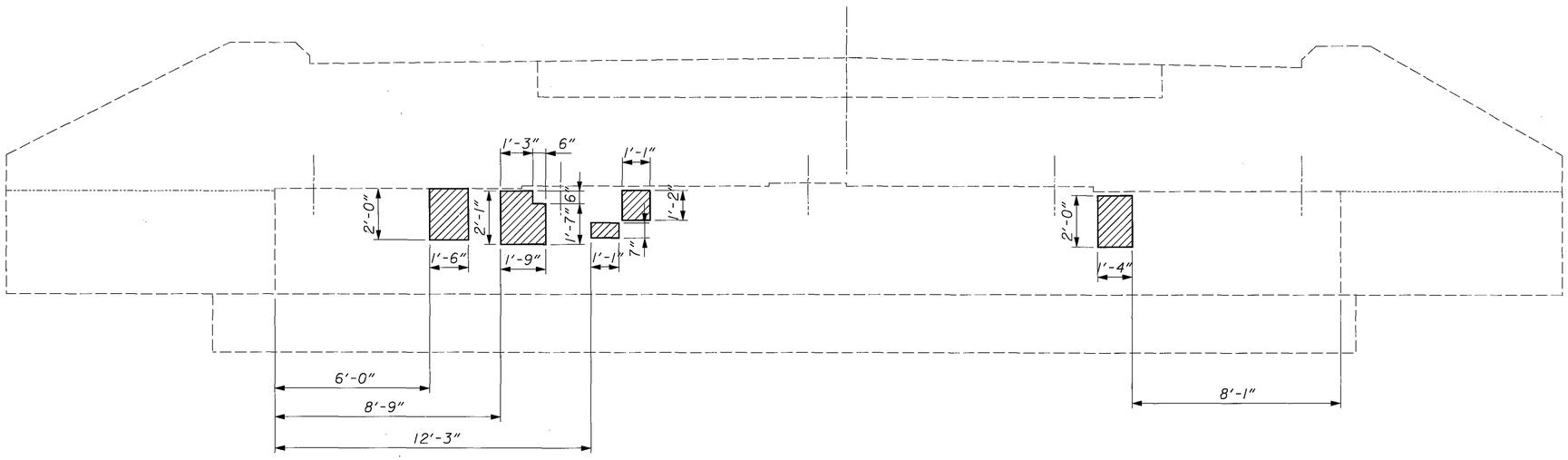
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SU27MD2.DGN 6/23/04 JLS,RC



PLAN



ELEVATION

▨ - INDICATES ESTIMATED PATCHING PER ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN.

THE SOUNDING OF THE CONCRETE WAS PERFORMED ON AUGUST 28, 2003.

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BLN		7709129	

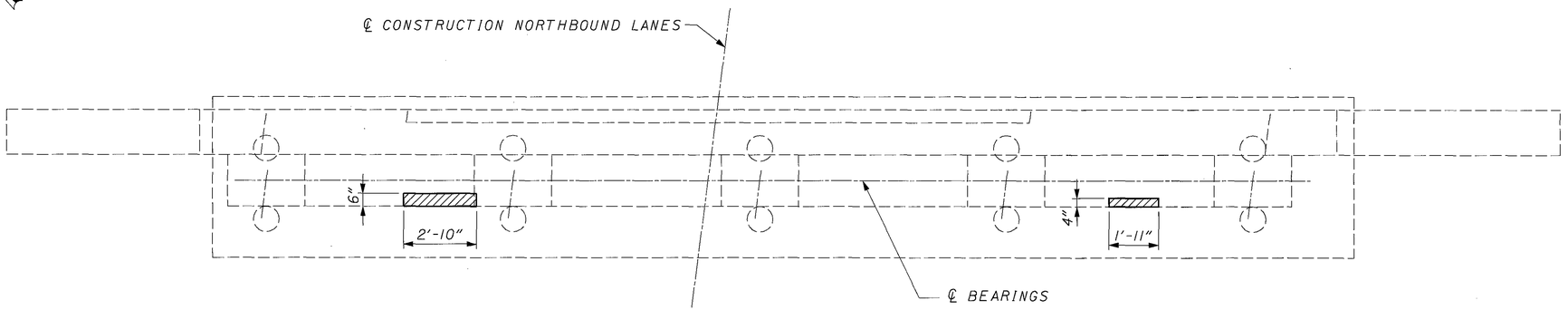
PATCHING DETAILS - REAR ABUTMENT

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OVER BOSTON MILLS ROAD

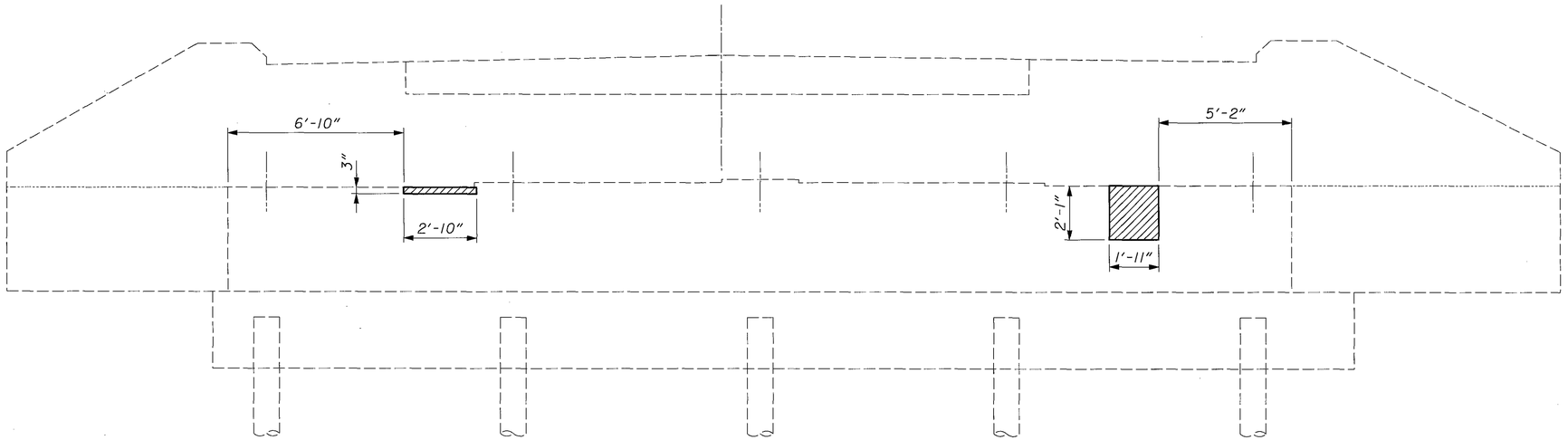
SUM-271-8.02

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PLAN



ELEVATION

▨ - INDICATES ESTIMATED PATCHING PER ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN.

THE SOUNDING OF THE CONCRETE WAS PERFORMED ON AUGUST 28, 2003.

SU27MD2.DGN 6/23/04 JLS,RC

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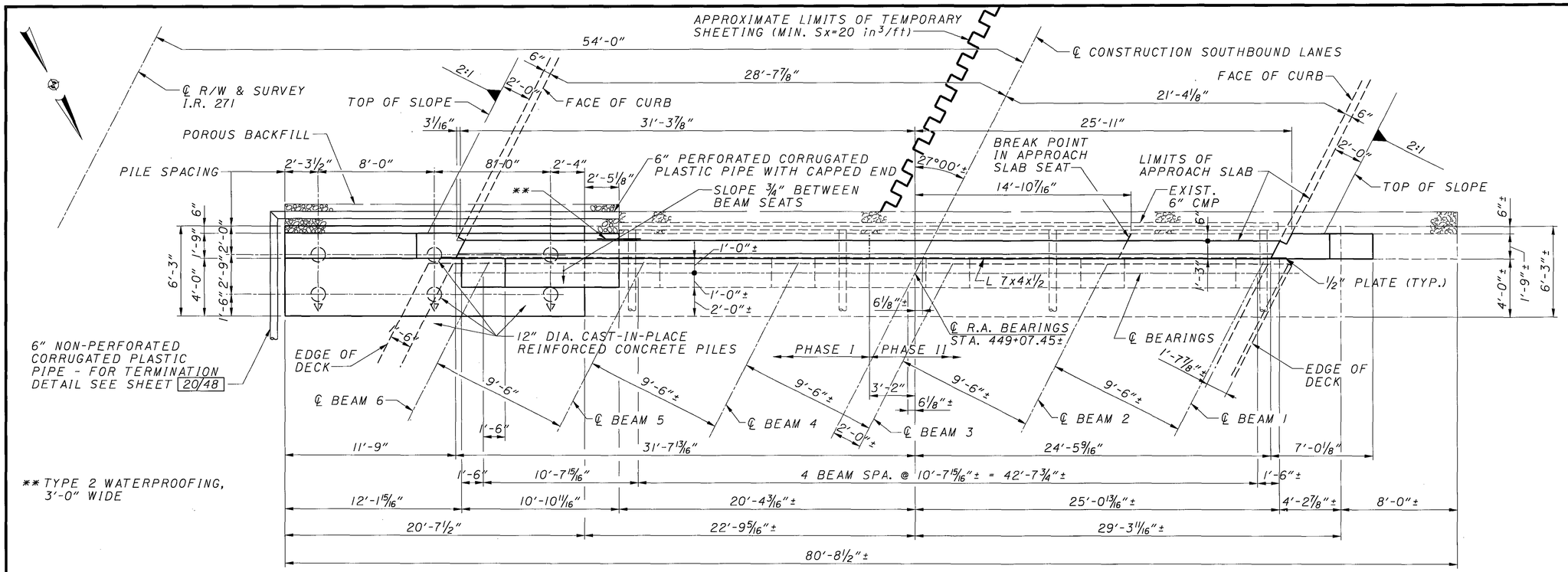
PATCHING DETAILS - FORWARD ABUTMENT

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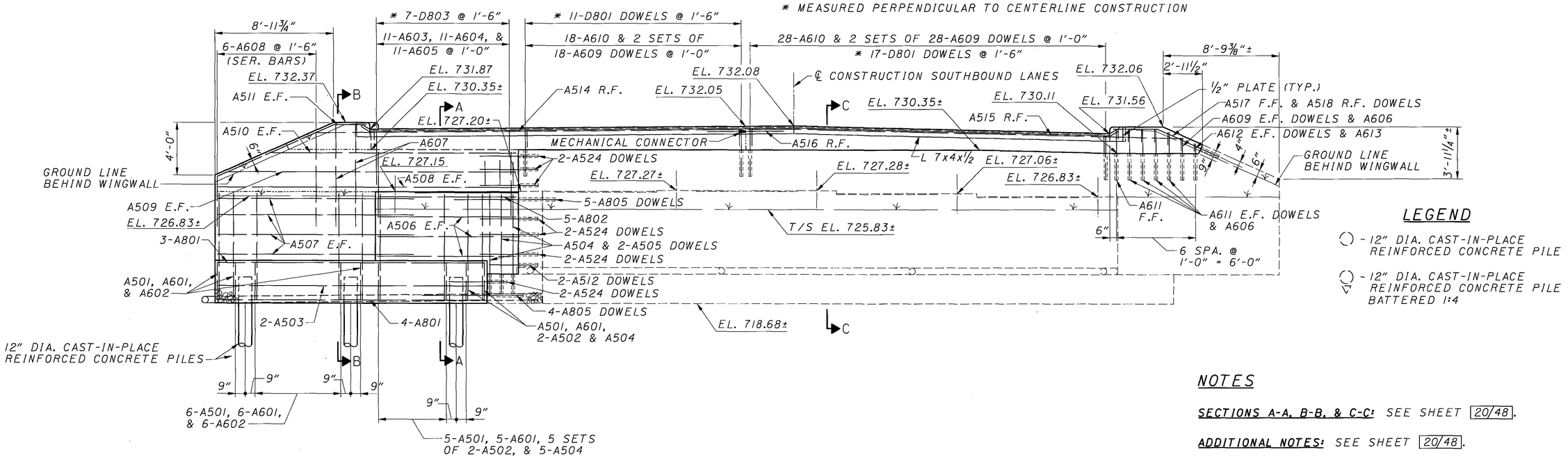
SUM-271-8.02

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612



PLAN



ELEVATION

LEGEND

- ○ - 12" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILE
- ○ (4) - 12" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILE BATTERED 1:4

NOTES

SECTIONS A-A, B-B, & C-C: SEE SHEET 20/48.

ADDITIONAL NOTES: SEE SHEET 20/48.

MECHANICAL CONNECTOR DETAIL: SEE SHEET 22/48.

TEMPORARY SHEET PILING: SEE SHEET 5/48.

NOTATION: F.F. = FRONT FACE
R.F. = REAR FACE
E.F. = EACH FACE

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REAR ABUTMENT - LEFT BRIDGE

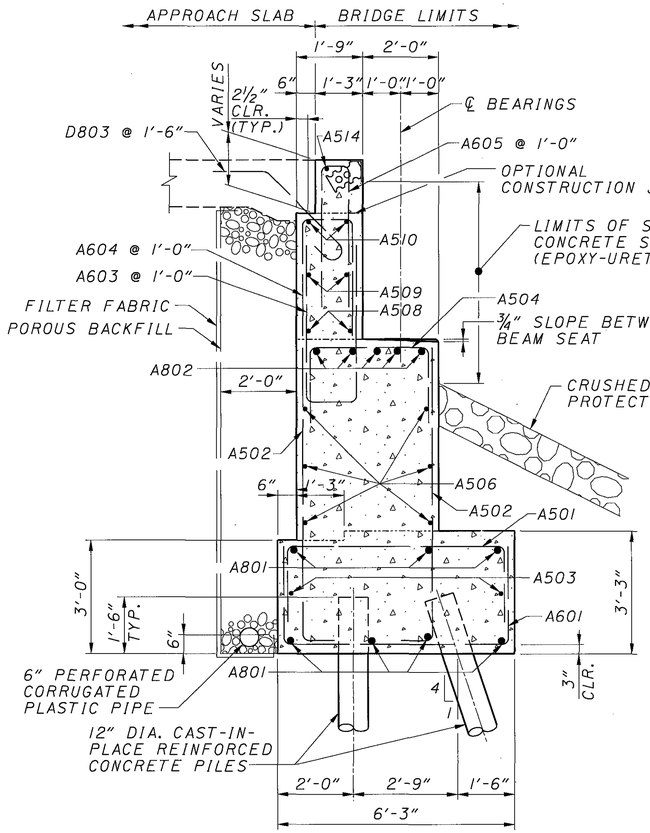
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OVER BOSTON MILLS ROAD

SUM-271-8.02

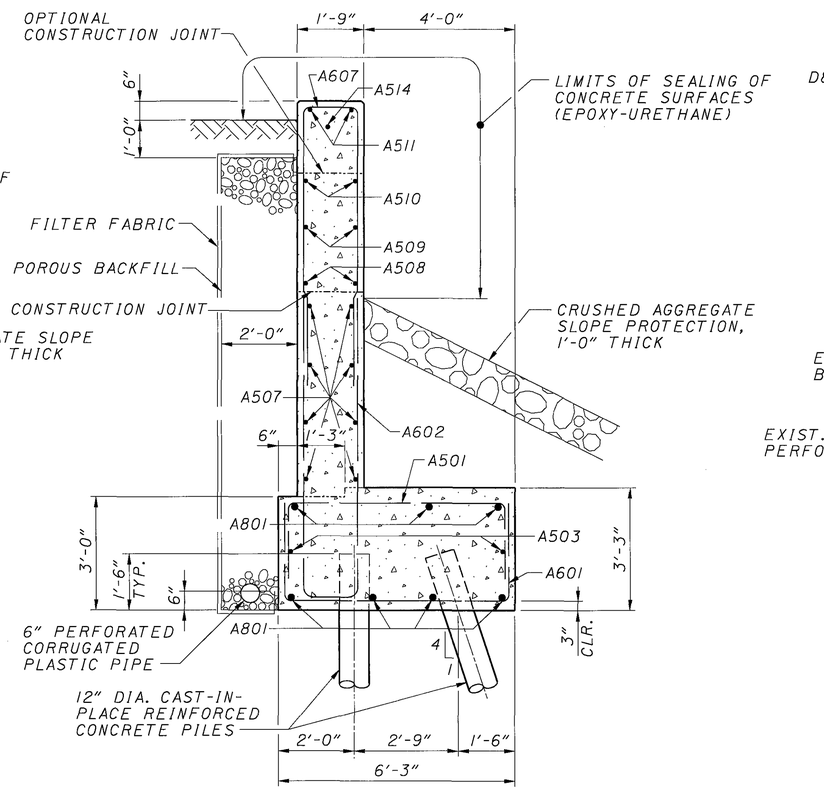
19/48

579/612

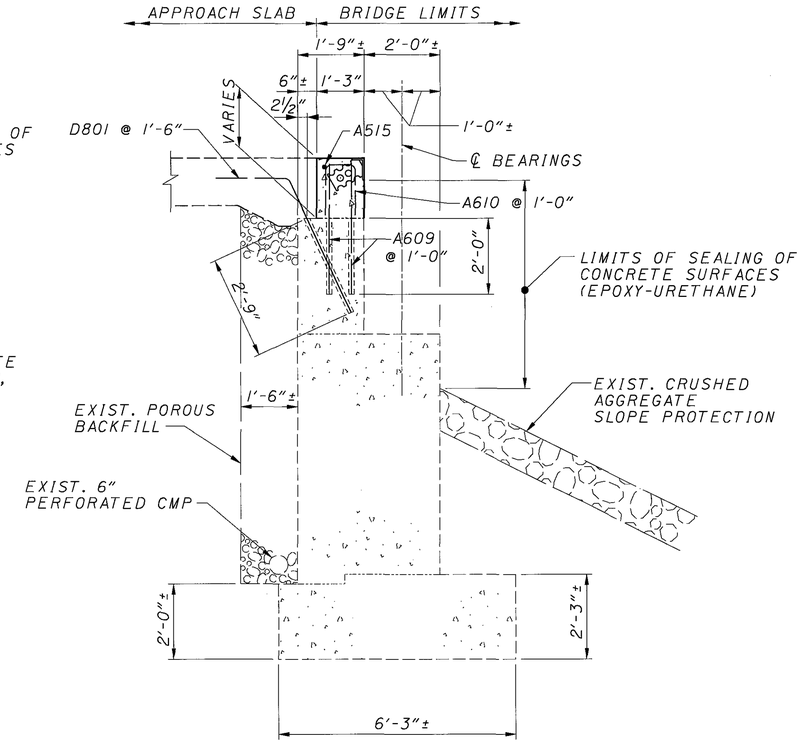
SU271RAI.DGN 6/23/04 JLS,RC



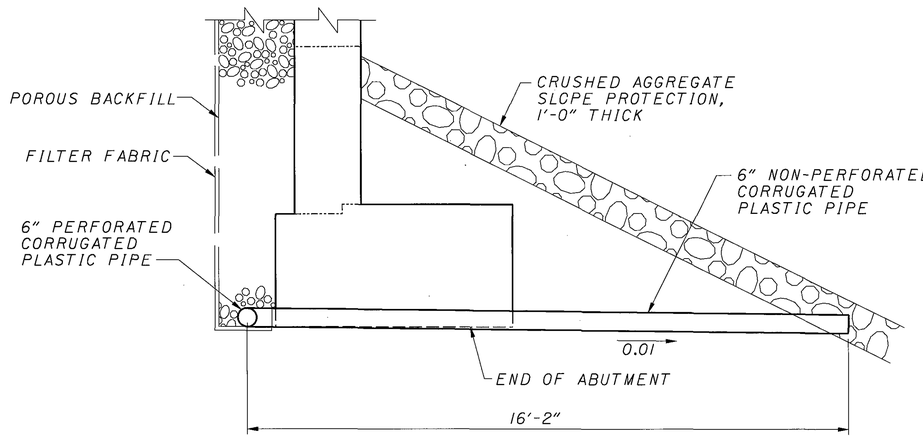
SECTION A-A



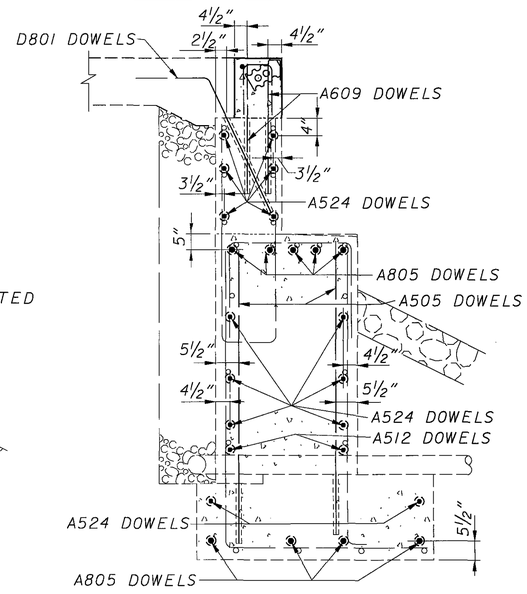
SECTION B-B



SECTION C-C



TERMINATION OF 6" NON-PERFORATED CORRUGATED PLASTIC PIPE



DOWEL HOLE LOCATIONS

NOTES

REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-0" FOR VERTICAL #5 BARS, 2'-9" FOR HORIZONTAL #5 BARS, 2'-6" FOR VERTICAL #6 BARS AND 3'-4" FOR HORIZONTAL #6 BARS, AND 4'-9" FOR #8 HORIZONTAL BARS.

DOWEL EMBEDMENTS SHALL BE 1'-6" FOR #5 BARS, 2'-0" FOR #6 BARS, AND 2'-9"FOR #8 BARS.

DOWEL HOLES SHALL BE FILLED WITH NON-SHRINK, NON-METALLIC GROUT PER CMS 705.20.

POROUS BACKFILL WITH FILTER FABRIC, 2'-0" THICK, SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE, TO ONE FOOT BELOW THE EMBANKMENT SURFACE, AND LATERALLY FROM THE CONSTRUCTION JOINT AT THE NEW ABUTMENT SECTION TO THE ENDS OF THE WINGWALLS.

SECTIONS A-A, B-B, & C-C: FOR LOCATION SEE SHEET 19/48.

MECHANICAL CONNECTOR DETAIL: SEE SHEET 22/48.

EXISTING REINFORCING STEEL DO NOT DAMAGE EXISTING REINFORCING STEEL WHICH IS TO REMAIN. A REBAR LOCATOR SHALL BE USED PRIOR TO DRILLING ANY HOLES TO ENSURE THAT NO REBAR IS DAMAGED.

TYPE 2 WATERPROOFING IS TO BE 3'-0" WIDE, CENTERED ON THE CONSTRUCTION JOINT AND SEALED FROM THE TOP OF THE FOOTING TO THE APPROACH SLAB SEAT.

SU27IRA2.DGN 6/23/04 JLS,RC

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

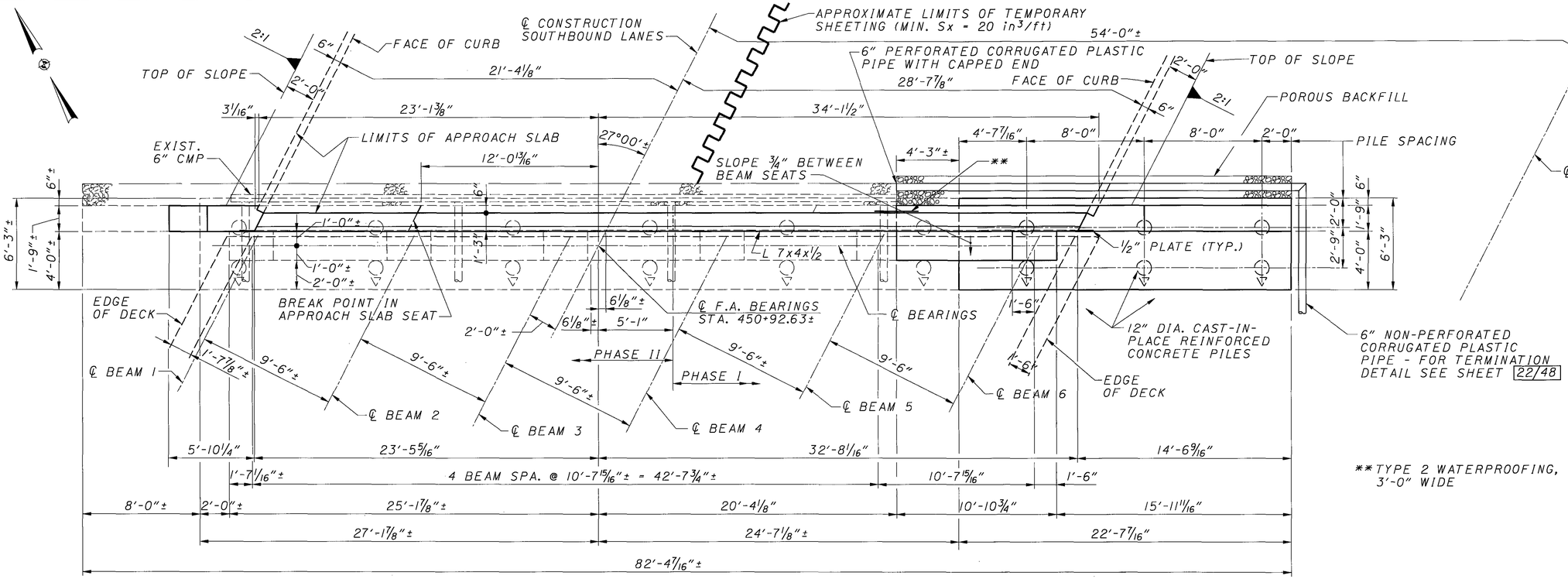
DESIGNED	DRAWN	REVIEWED	DATE
ALP	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709099	

REAR ABUTMENT DETAILS - LEFT BRIDGE
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

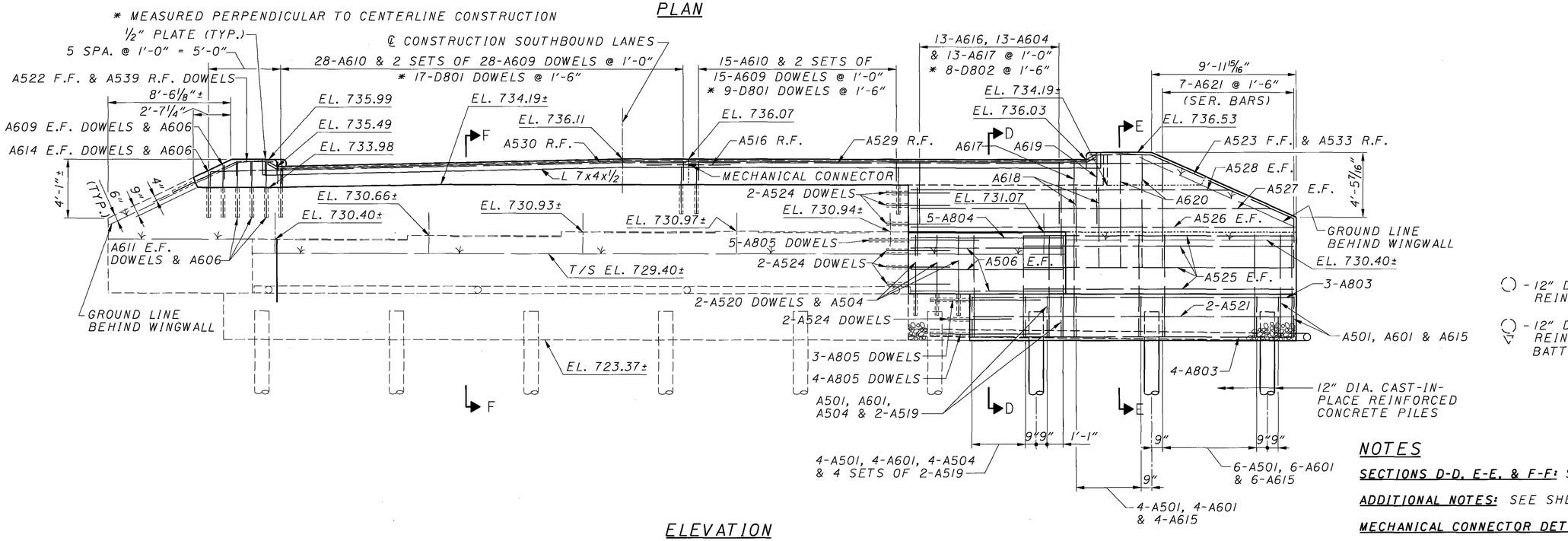
SUM-271-8.02

20/48

580/612



PLAN



ELEVATION

LEGEND

- ○ - 12" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILE
- ◯ - 12" DIA. CAST-IN-PLACE REINFORCED CONCRETE PILE BATTERED 1:4

NOTES

SECTIONS D-D, E-E, & F-F: SEE SHEET 22/48.

ADDITIONAL NOTES: SEE SHEET 20/48.

MECHANICAL CONNECTOR DETAIL: SEE SHEET 22/48.

TEMPORARY SHEET PILING: SEE SHEET 5/48.

NOTATION: F.F. = FRONT FACE
R.F. = REAR FACE
E.F. = EACH FACE

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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BLN		7709099	

FORWARD ABUTMENT - LEFT BRIDGE

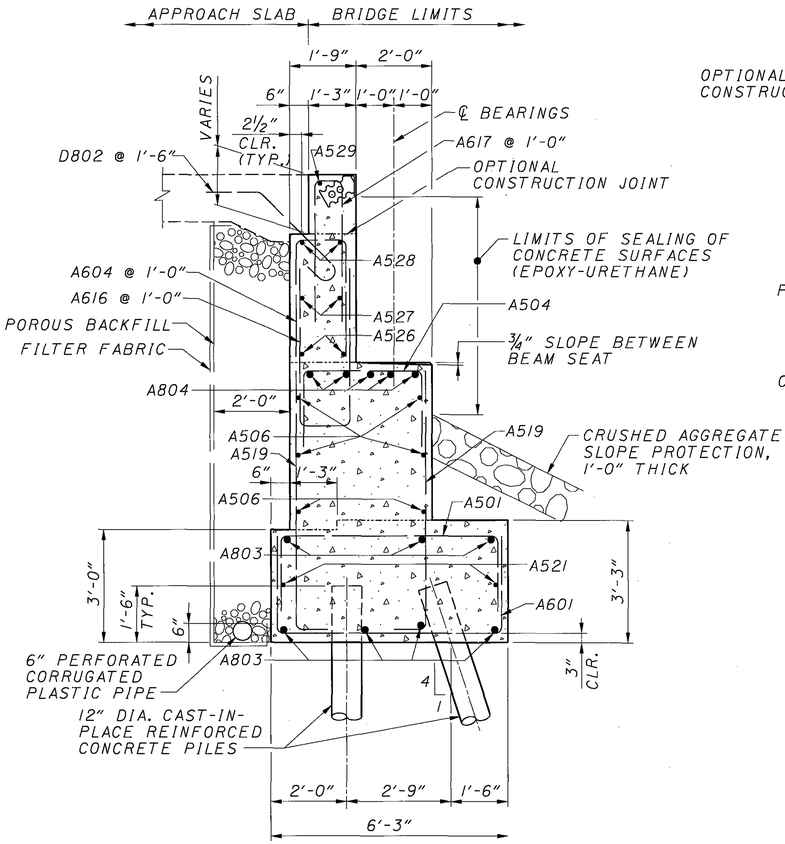
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OVER BOSTON MILLS ROAD

SUM-271-8.02

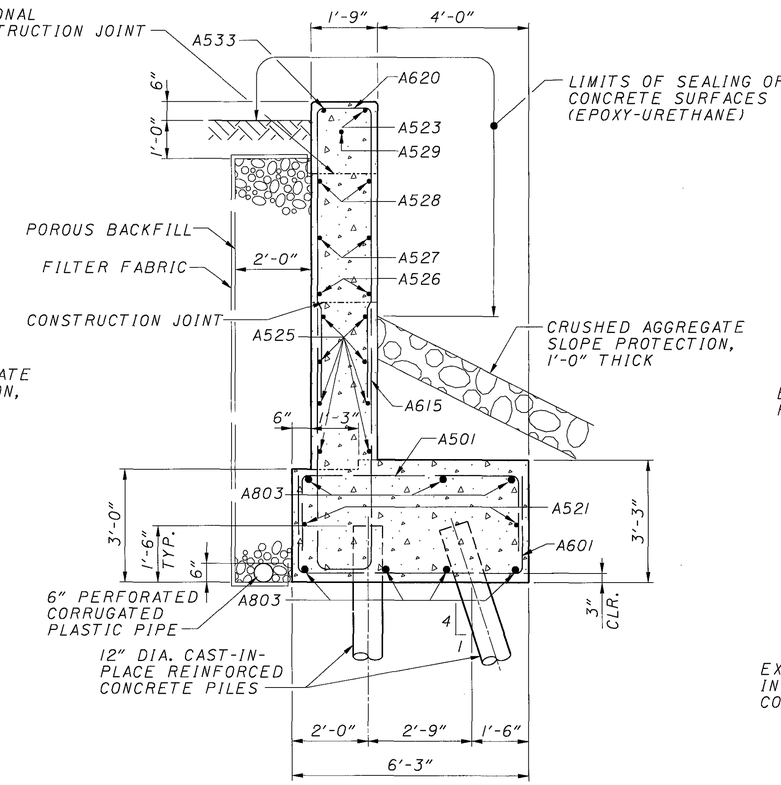
21/48

581/612

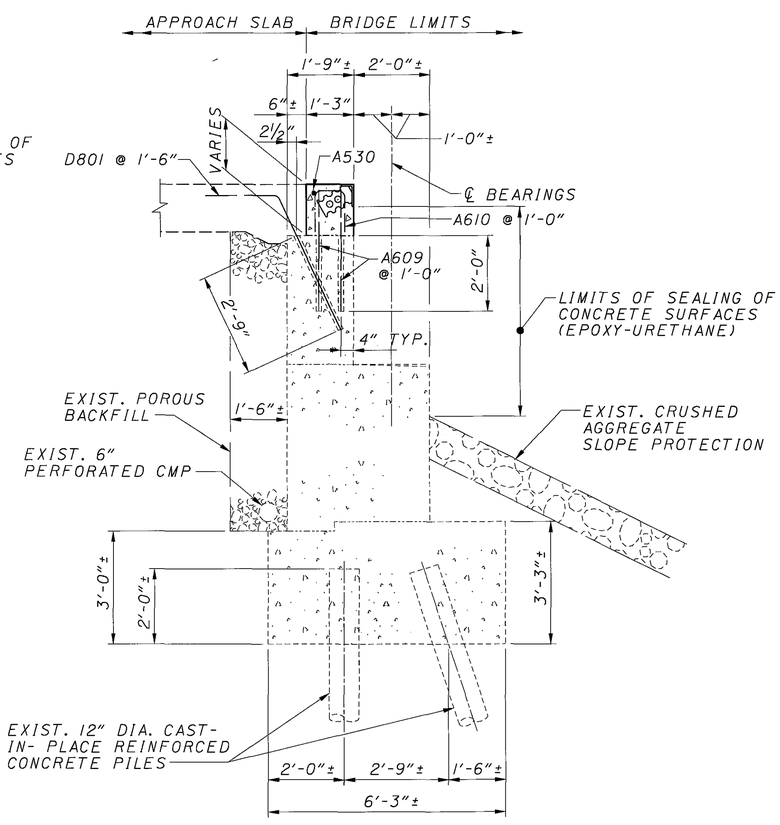
SU271FA1.DGN 6/23/04 TWH,JLS,RC



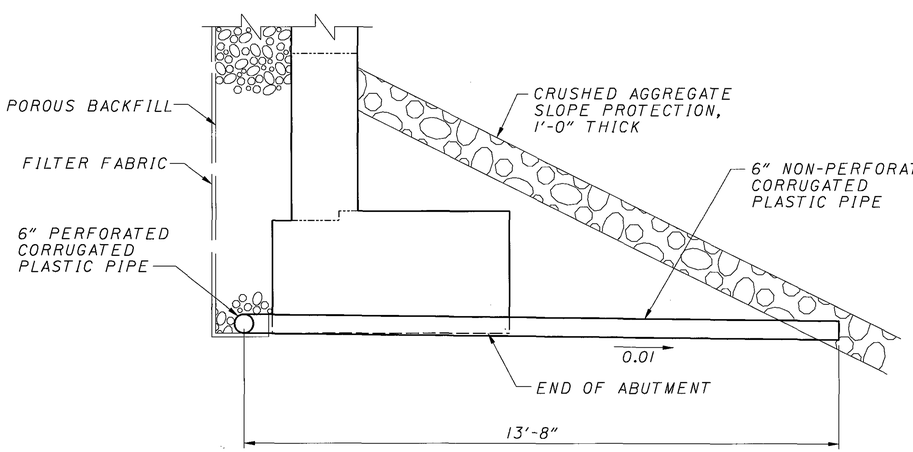
SECTION D-D



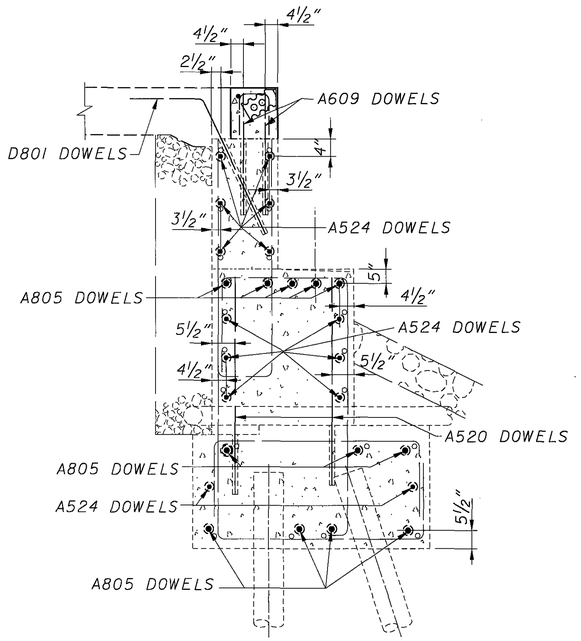
SECTION E-E



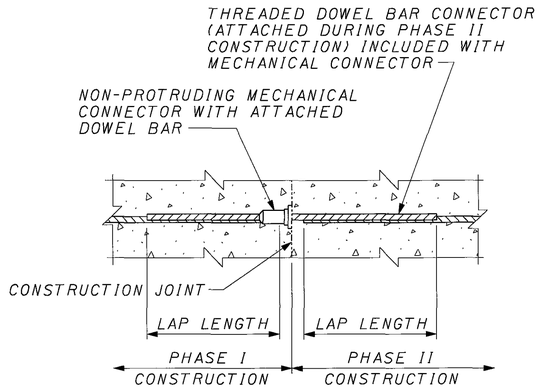
SECTION F-F



TERMINATION OF 6" NON-PERFORATED CORRUGATED PLASTIC PIPE



DOWEL HOLE LOCATIONS



MECHANICAL CONNECTOR DETAIL

NOTES

SECTIONS D-D, E-E, & F-F: FOR LOCATION SEE SHEET 21/48.

ADDITIONAL NOTES: SEE SHEET 20/48.

SU271FA2.DGN 6/23/04 JLS,RC

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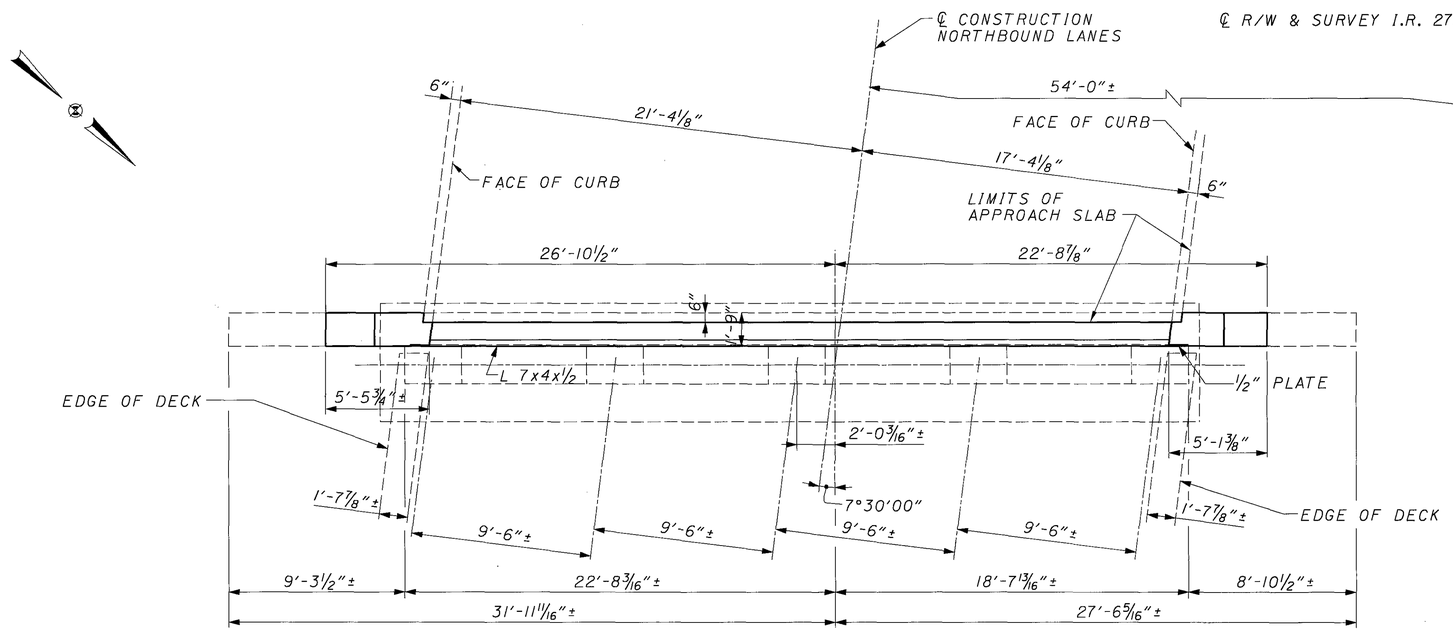
FORWARD ABUTMENT DETAILS - LEFT BRIDGE

BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

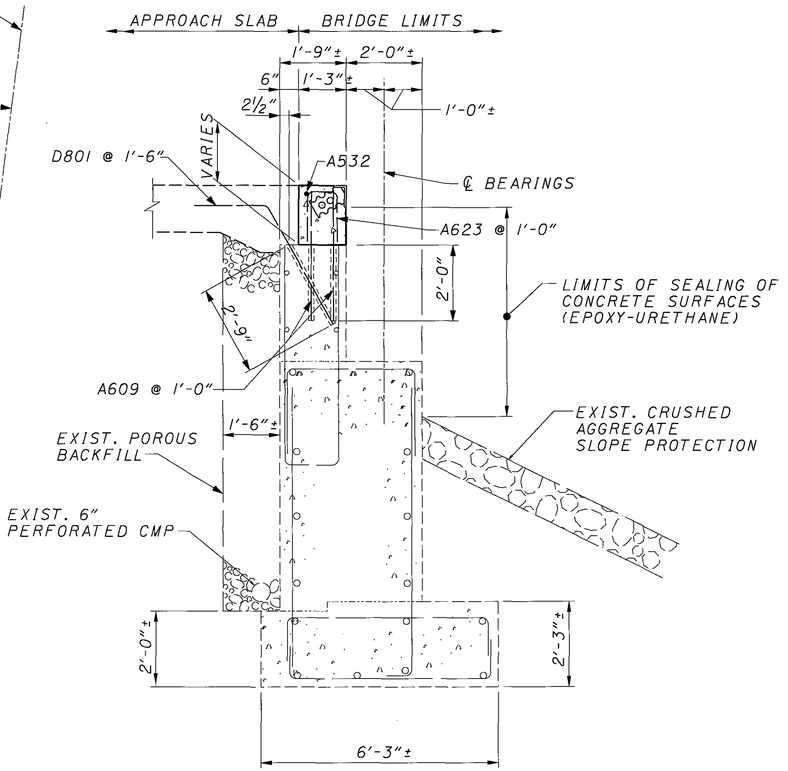
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22/48

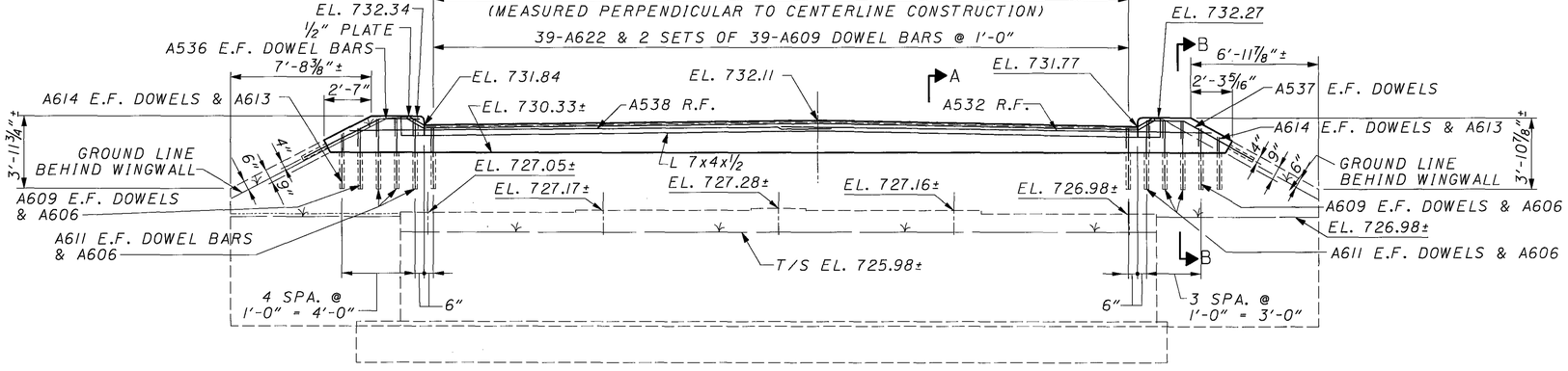
582/612



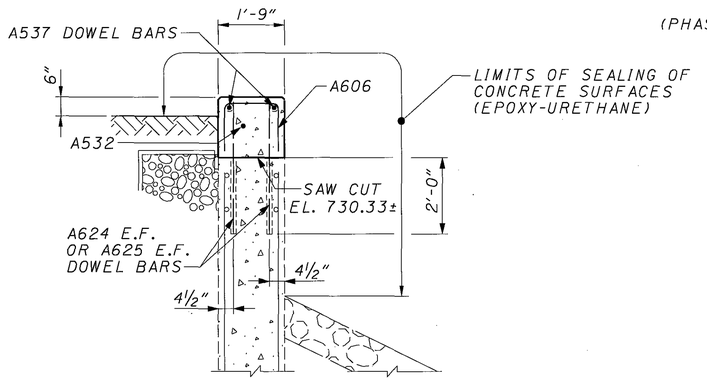
PLAN



SECTION A-A



ELEVATION
(PHASE III CONSTRUCTION)



SECTION B-B

NOTES

REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-0" FOR VERTICAL #5 BARS, 2'-9" FOR HORIZONTAL #5 BARS AND 2'-6" FOR VERTICAL #6 BARS.

DOWEL DEPTHS SHALL BE 1'-6" FOR #5 BARS, 2'-0" FOR #6 BARS, AND 2'-9" FOR #8 BARS.

DOWEL HOLES SHALL BE FILLED WITH NON-SHRINK, NON-METALLIC GROUT PER CMS 705.20.

NOTATION: F.F. = FRONT FACE
R.F. = REAR FACE
E.F. = EACH FACE

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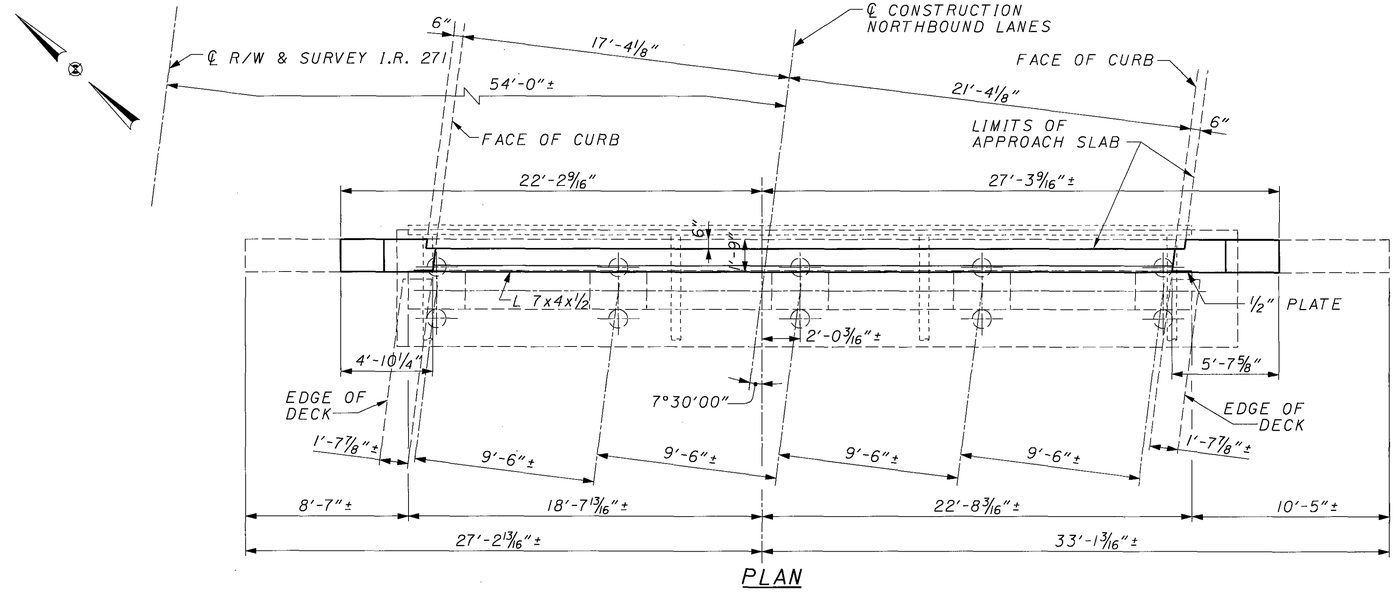
REAR ABUTMENT - RIGHT BRIDGE
BRIDGE NO. SUM-271-0854 R
OVER BOSTON MILLS ROAD

SUM-271-8.02

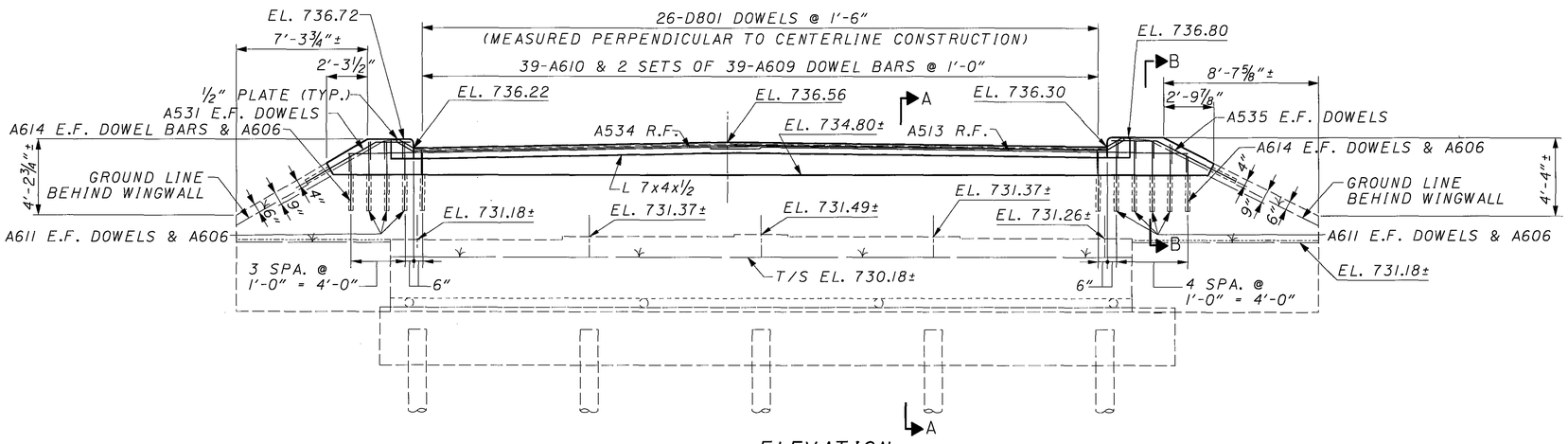
23/48

583/612

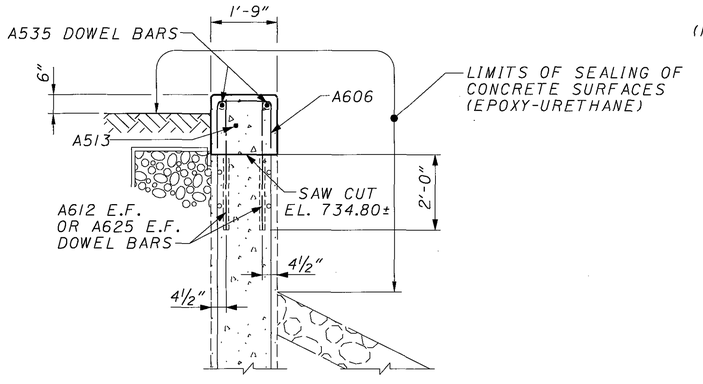
SU271RA3.DGN 6/23/04 TWH,JLS,RC



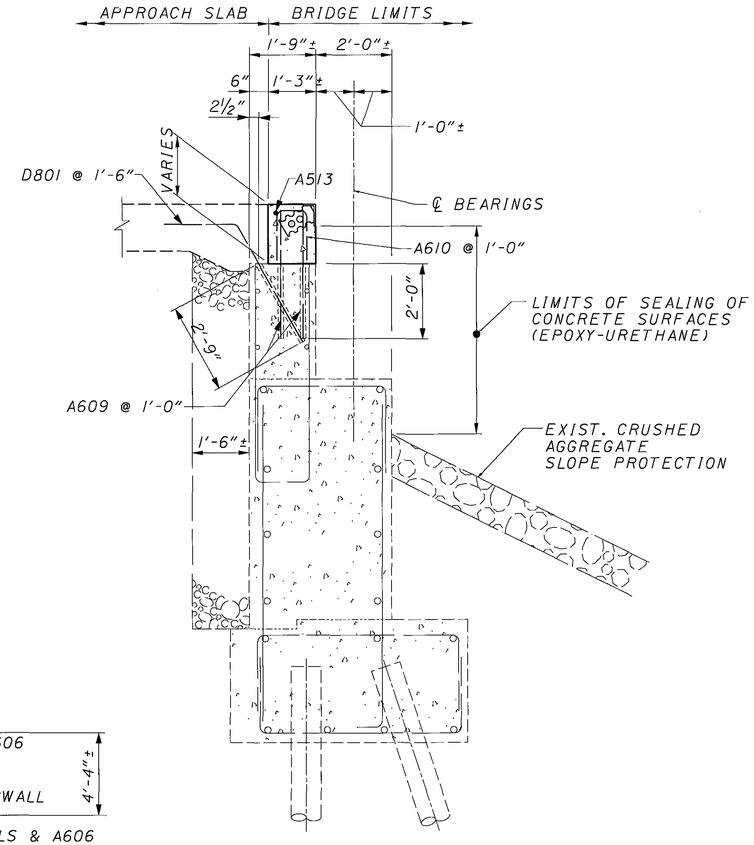
PLAN



ELEVATION
(PHASE III CONSTRUCTION)



SECTION B-B



SECTION A-A

NOTES: SEE SHEET 23/48.

RICHLAND ENGINEERING LIMITED
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ALP	HN	DAP	3/18/04	7709129
CHECKED	REVISED			
BLN				

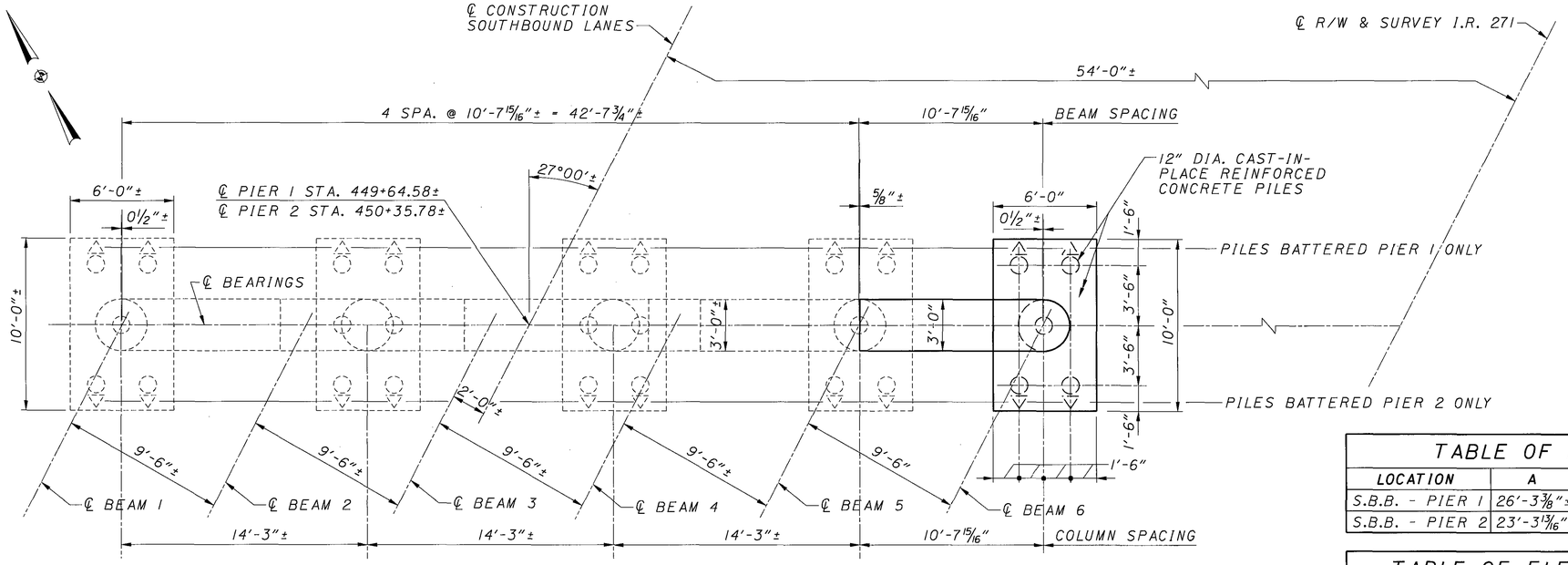
FORWARD ABUTMENT - RIGHT BRIDGE
BRIDGE NO. SUM-271-0854 R
OVER BOSTON MILLS ROAD

SUM-271-8.02

24/48

584/612

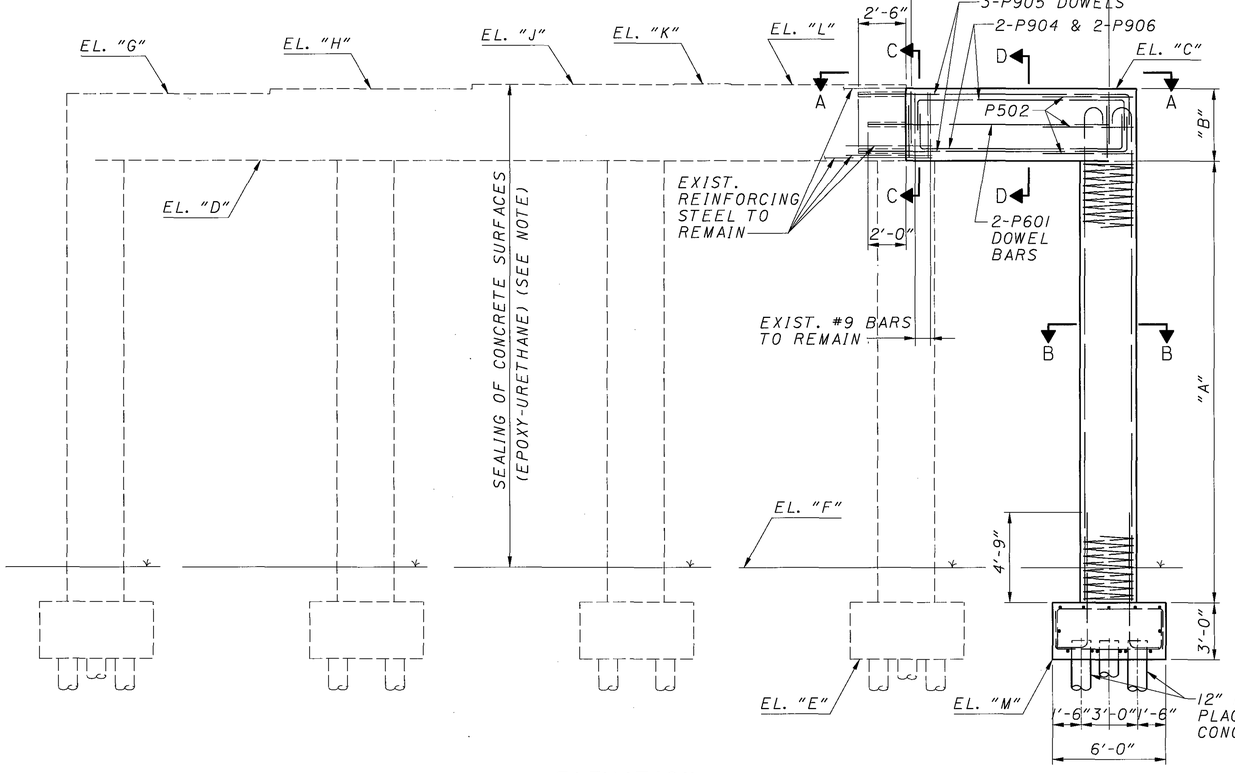
SU271RA4.DGN 6/23/04 JLS,RC



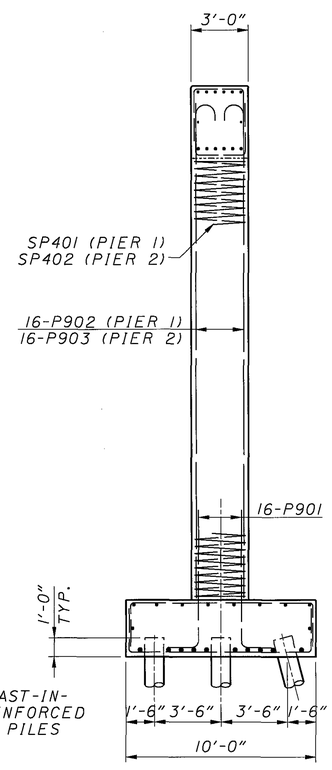
PLAN
(PHASE 1 CONSTRUCTION)

TABLE OF ELEVATIONS AND DIMENSIONS						
LOCATION	A	B	C	D	E	F
S.B.B. - PIER 1	26'-3 3/8"±	3'-10 13/16"	727.68	723.73±	694.45±	702.0±
S.B.B. - PIER 2	23'-3 13/16"±	4'-0 1/2"	729.25	725.13±	698.81±	705.0±

TABLE OF ELEVATIONS AND DIMENSIONS						
LOCATION	G	H	J	K	L	M
S.B.B. - PIER 1	727.23±	727.47±	727.70±	727.71±	727.65±	694.45
S.B.B. - PIER 2	728.63±	728.88±	729.13±	729.16±	729.12±	698.81



ELEVATION



END VIEW

LEGEND

- ○ 12" CAST-IN-PLACE REINFORCED CONCRETE PILE
- ◁○ 12" CAST-IN-PLACE REINFORCED CONCRETE PILE BATTERED 1:4

NOTES

REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-0" FOR VERTICAL #5 BARS AND 2'-9" FOR HORIZONTAL #5 BARS.

SEALING OF CONCRETE SURFACES: ALL EXISTING AND PROPOSED PIER SURFACES ABOVE THE GROUND LINE, EXCEPT FOR THE TOP OF THE PIER CAP, SHALL BE SEALED WITH AN EPOXY-URETHANE SEALER.

FOOTING DETAILS AND REINFORCING: SEE SHEET 26/48.

VIEW A-A: SEE SHEET 26/48.

SECTIONS B-B, C-C AND D-D: SEE SHEET 26/48.

ADDITIONAL NOTES: SEE SHEET 26/48.

NOTATION: S.B.B. = SOUTHBOUND BRIDGE

RICHLAND ENGINEERING LIMITED
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PIERS - LEFT BRIDGE

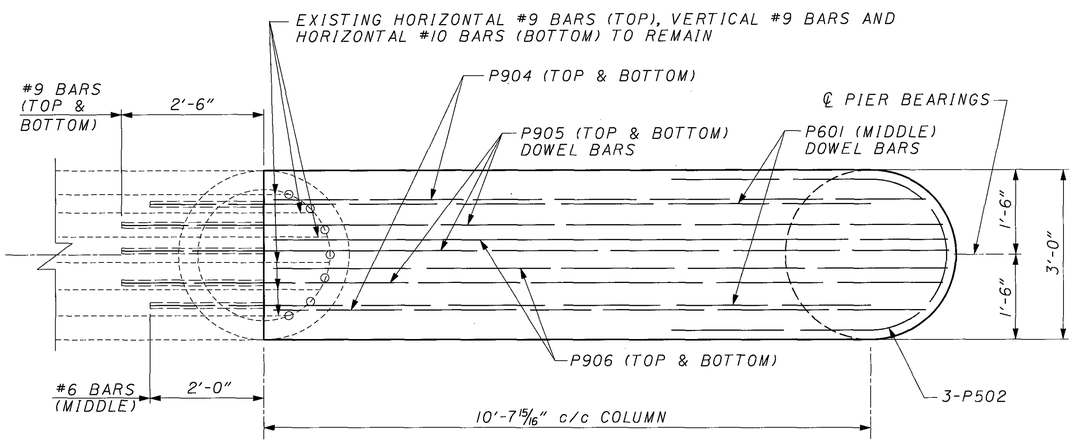
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

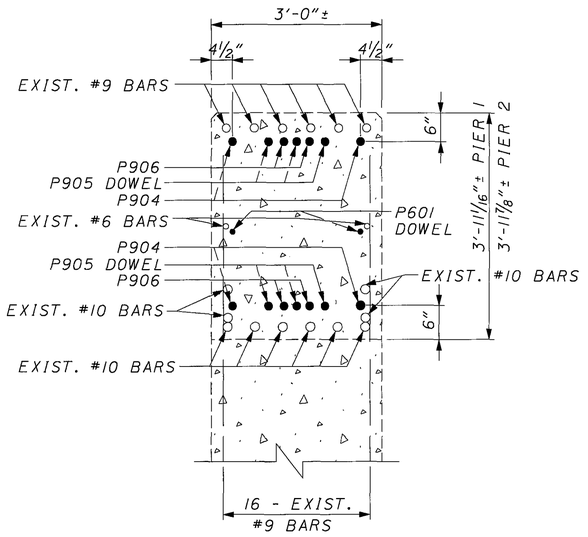
25/48

585/612

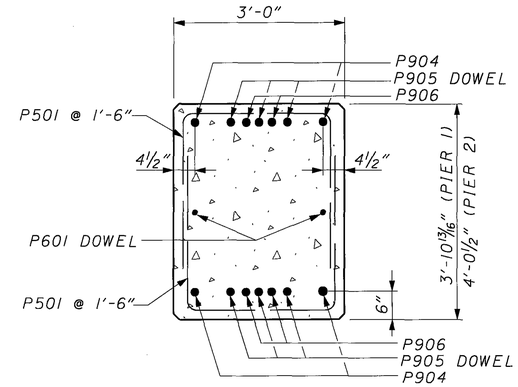
SU271PII.DGN 6/24/04 TWH,JLS,RC



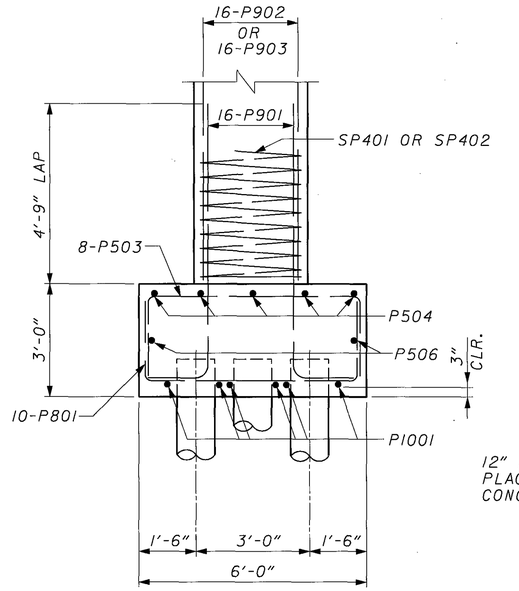
VIEW A-A



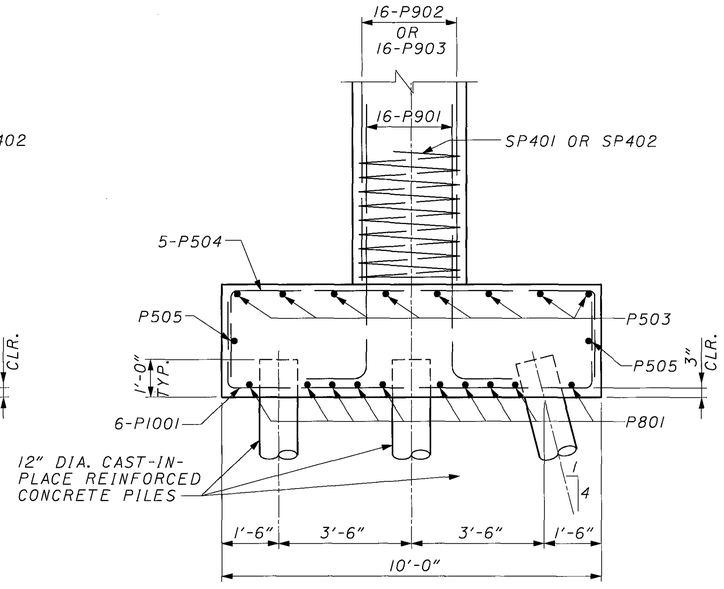
SECTION C-C



SECTION D-D

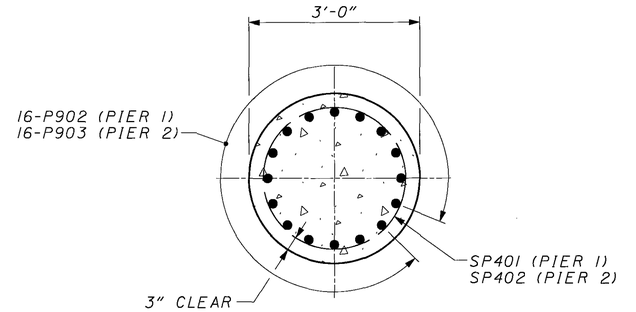


FRONT ELEVATION

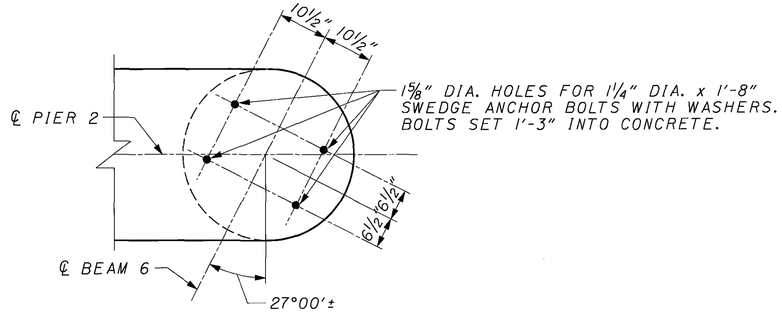


SIDE ELEVATION

FOOTING DETAILS



SECTION B-B



BEARING ANCHOR PLAN

(PIER 2, LEFT BRIDGE)

NOTES

DOWEL HOLES SHALL BE FILLED WITH NON-SHRINK, NON-METALLIC GROUT PER CMS 705.20.

BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRESETTING OF BEARING ANCHORS.

FURNISHING AND PLACING ANCHOR BOLTS IS INCLUDED WITH ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL THREE (3), AS PER PLAN FOR PAYMENT.

RICHLAND ENGINEERING LIMITED
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REVISED

STRUCTURE FILE NUMBER 7709099

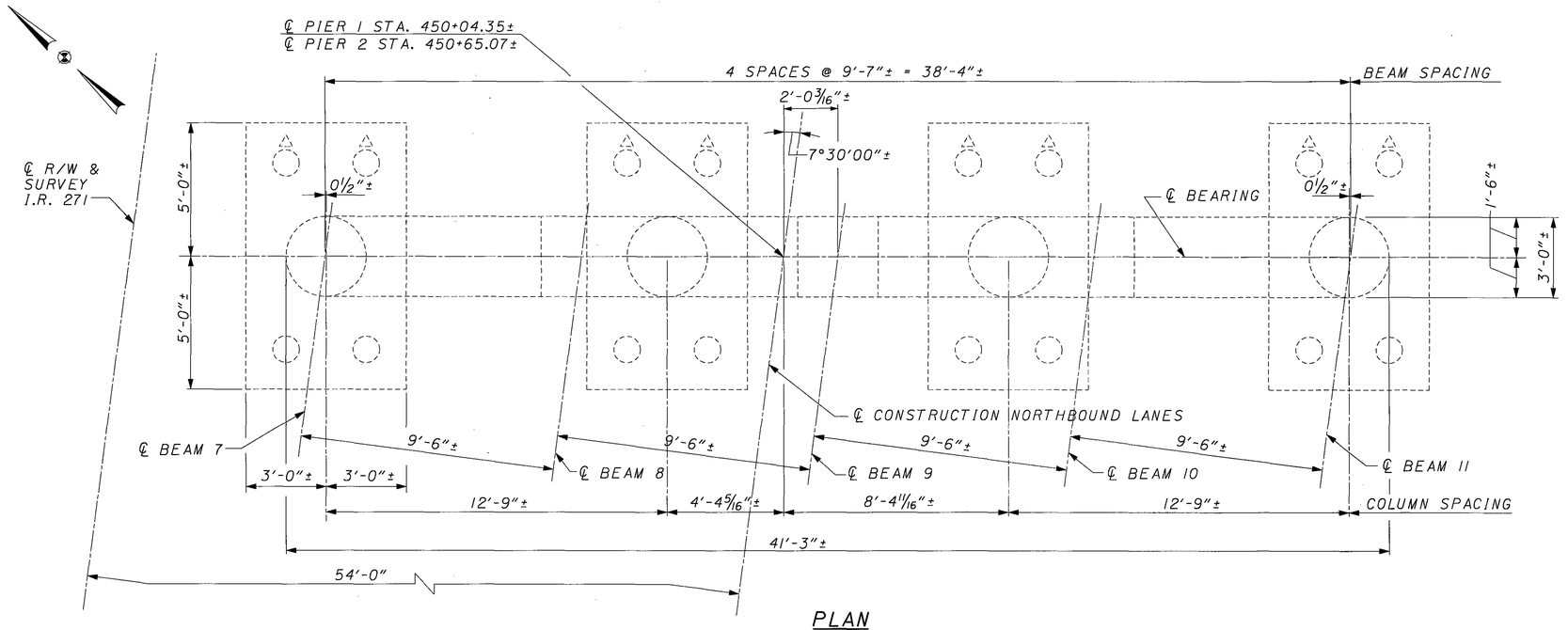
PIER DETAILS - LEFT BRIDGE
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

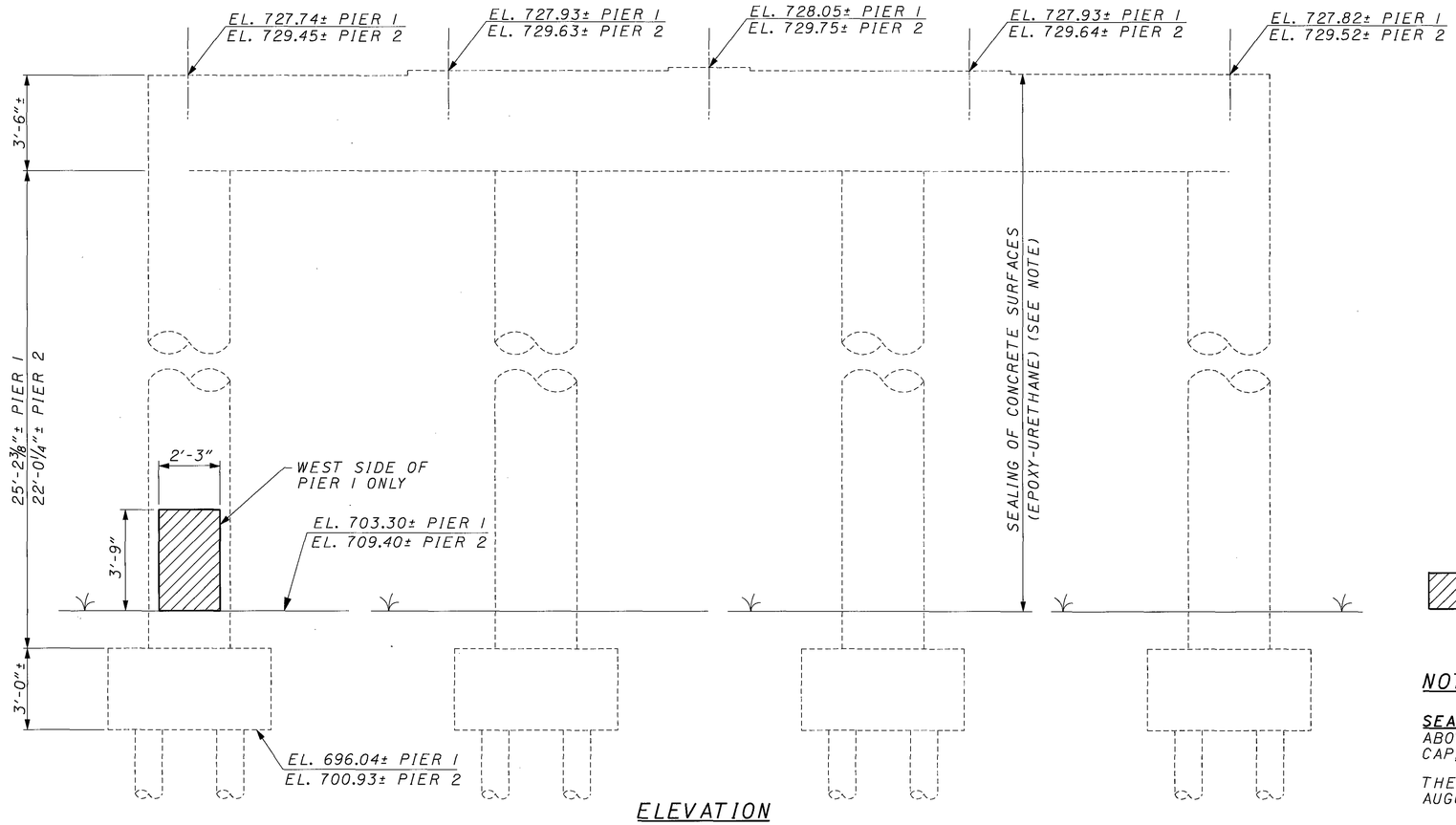
26/48

586/612

SU271PI2.DGN 9/7/04 RC,JLS



PLAN



ELEVATION

- INDICATES PATCHING PER ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN.

NOTES

SEALING OF CONCRETE SURFACES: ALL EXISTING PIER SURFACES ABOVE THE GROUND LINE, EXCEPT FOR THE TOP OF THE PIER CAP, SHALL BE SEALED WITH AN EPOXY-URETHANE SEALER.

THE SOUNDING OF THE CONCRETE WAS PERFORMED ON AUGUST 28, 2003.

SU271SW8.DGN 6/24/04 JLS,RC

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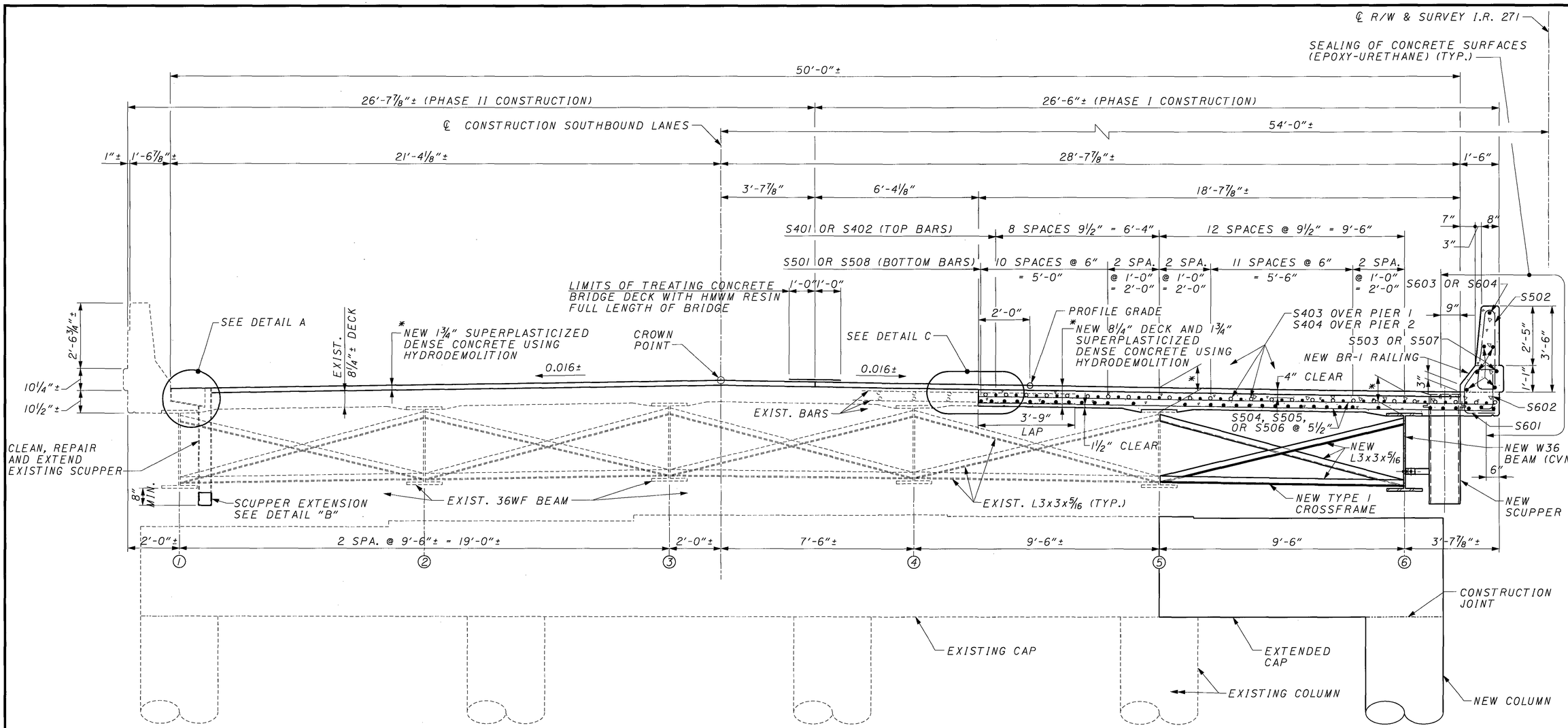
DESIGNED	DRAWN	REVIEWED	DATE
ALP	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709/29	

EXISTING PIERS - RIGHT BRIDGE
BRIDGE NO. SUM-271-0854 R
OVER BOSTON MILLS ROAD

SUM-271-8.02

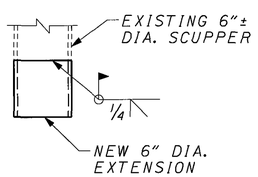
27/48

587/612



PROPOSED TRANSVERSE SECTION

LEFT BRIDGE



DETAIL B

NOTES

* **DECK SLAB CONCRETE QUANTITY:** THE ESTIMATED QUANTITY OF DECK SLAB CONCRETE IS BASED ON THE CONSTANT INITIAL DECK SLAB THICKNESS, 8¾" DECK, PLUS THE QUANTITY OF CONCRETE THAT FORMS EACH BEAM HAUNCH. THE ESTIMATE ASSUMES A HAUNCH THICKNESS OF 1¼" FOR EXISTING 36WF194, 1 5/16" FOR EXISTING 36WF170, 1 9/16" FOR EXISTING 36WF230, A HAUNCH THICKNESS OF 1 7/16" FOR THE NEW W36x170, 1 11/16" FOR THE NEW W36x300 AND W36x230, 1⅜" FOR THE NEW W36x194 AND A CONSTANT HAUNCH WIDTH OUTSIDE THE EDGE OF EACH BEAM FLANGE OF 9 INCHES. DEVIATE FROM THIS HAUNCH THICKNESS AS NECESSARY TO PLACE THE BOTTOM OF DECK AT THE CORRECT ELEVATIONS TO MATCH EXISTING DECK CONDITIONS. THE ALLOWABLE TOLERANCE FOR THE HAUNCH WIDTH OUTSIDE THE EDGE OF EACH BEAM FLANGE IS ±3 INCHES. FOR SUPERPLASTICIZED DENSE CONCRETE OVERLAY, DEVIATE FROM THE 1¾" THICKNESS AS NECESSARY TO PLACE THE DECK SURFACE AT THE FINISHED GRADE.

THE HAUNCH THICKNESS WAS MEASURED AT THE CENTERLINE OF THE BEAM, FROM THE SURFACE OF THE DECK TO THE BOTTOM OF THE TOP FLANGE MINUS THE DECK SLAB THICKNESS. THE AREA OF ALL EMBEDDED STEEL PLATES HAS BEEN DEDUCTED FROM THE HAUNCH QUANTITY IN ACCORDANCE WITH 511.24.

THE INITIALLY PLACED THICKNESS OF THE CONCRETE DECK IS 8¾". THE TOP ½" WILL BE REMOVED BY HYDRODEMOLITION, AND THE REMOVAL IS INCLUDED IN ITEM 848 - SURFACE PREPARATION USING HYDRODEMOLITION, AS PER PLAN FOR PAYMENT.

CVN: WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), FURNISH MATERIAL THAT MEETS THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.

REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-0" FOR #4 BARS, 3'-3" FOR #5 BARS, AND 4'-3" FOR #6 BARS.

CONCRETE PARAPET: SEE STANDARD DRAWING BR-1 AND DEFLECTOR PARAPET DETAILS ON SHEETS 44/48 AND 45/48.

GENERAL STEEL DETAILS: SEE STANDARD DRAWING GSD-1-96.

DETAILS "A" AND "C": SEE SHEET 29/48.

SCUPPERS: FOR LOCATIONS SEE SHEET 41/48.

MATERIALS SHOWN ARE NEW UNLESS OTHERWISE NOTED.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
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BLN		7709099	

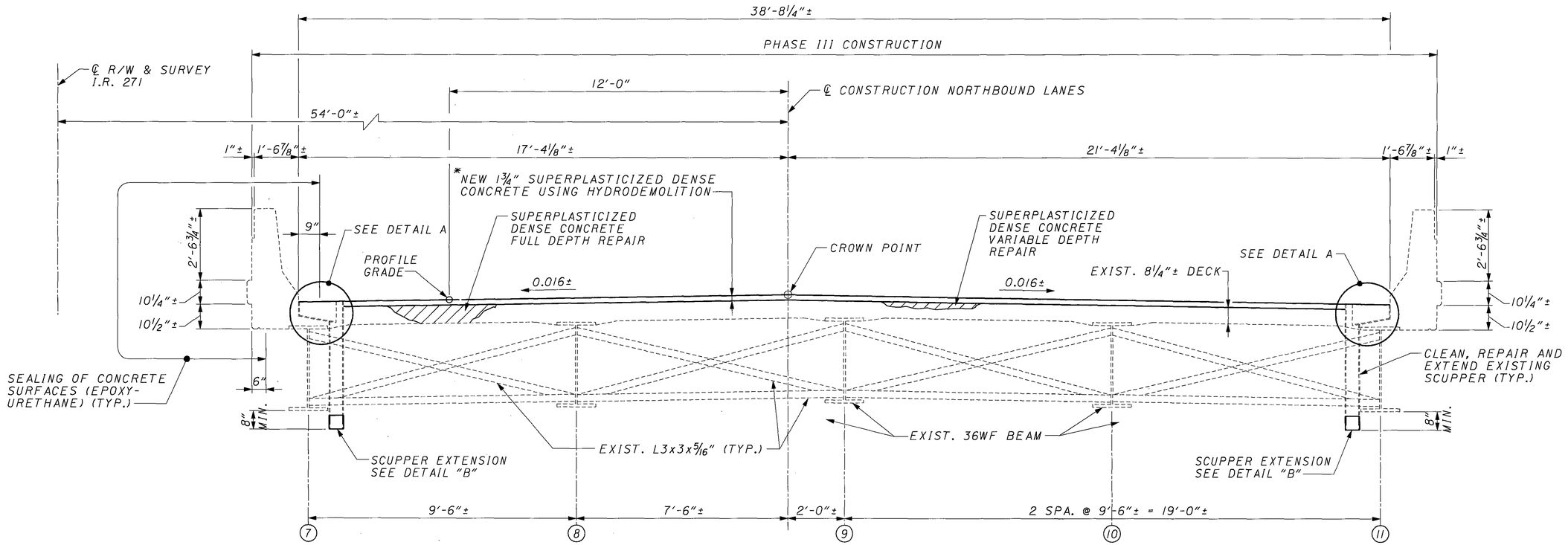
TRANSVERSE SECTION - LEFT BRIDGE
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

28/48

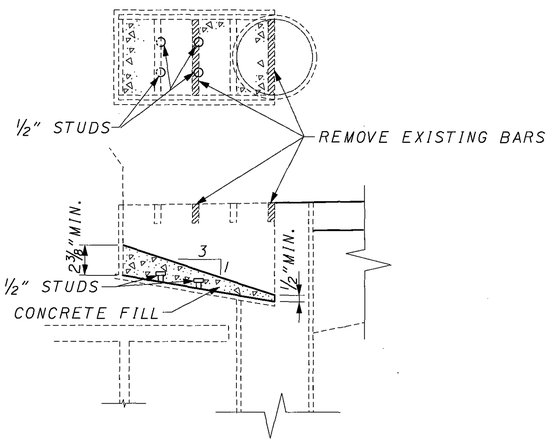
588/612

SU271TSLDGN 9/7/04 RC,HN,JLS

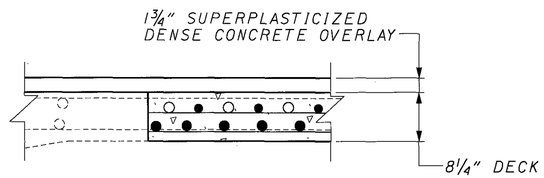


PROPOSED TRANSVERSE SECTION
RIGHT BRIDGE

*FOR SUPERPLASTICIZED DENSE CONCRETE OVERLAY, DEVIATE FROM THE 1¾" THICKNESS AS NECESSARY TO PLACE THE DECK SURFACE AT THE FINISHED GRADE.



DETAIL A
SCUPPER MODIFICATION



DETAIL C

NOTES

DETAIL "B": SEE SHEET 28/48.

DETAIL "C": FOR LOCATION SEE SHEET 28/48.

SU271TS2.DGN 9/7/04 RC,JLS

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MANSFIELD, OHIO 44902

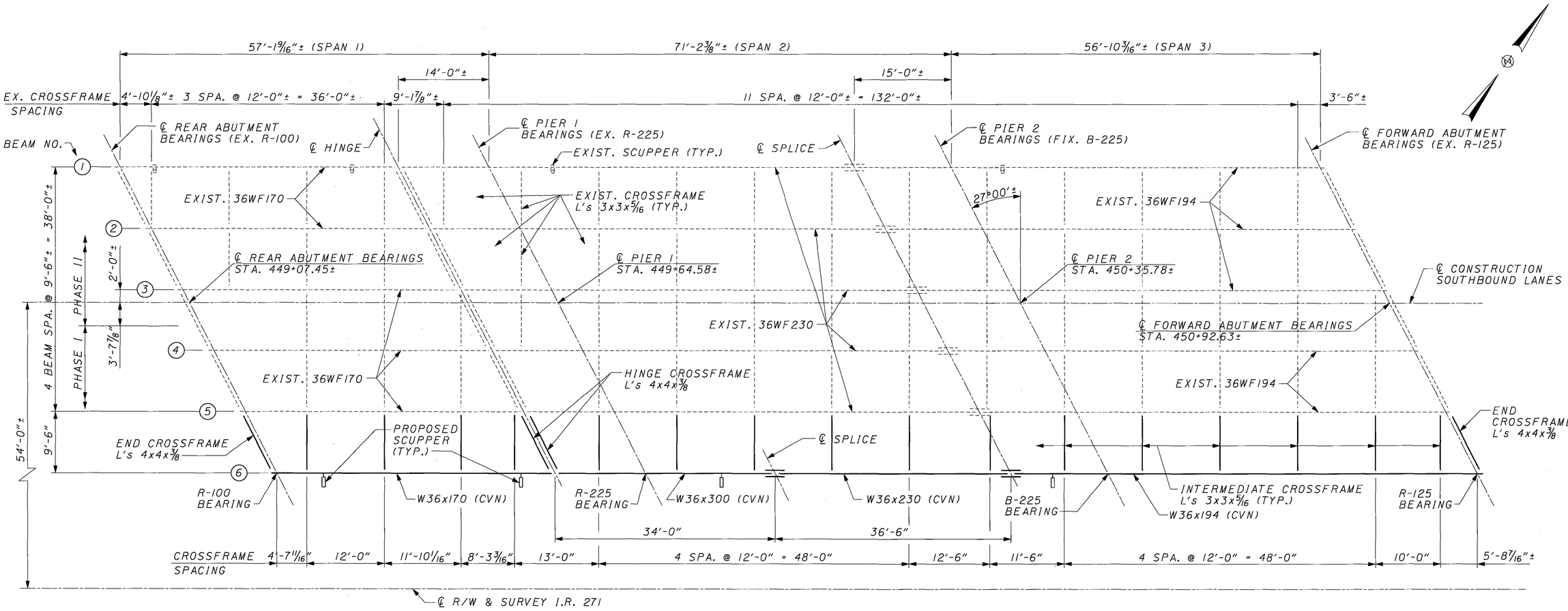
DESIGNED ALP | DRAWN TWH | REVIEWED DAP | DATE 3/18/04
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 7709129

TRANSVERSE SECTION - RIGHT BRIDGE
BRIDGE NO. SUM-271-0854 R
OVER BOSTON MILLS ROAD

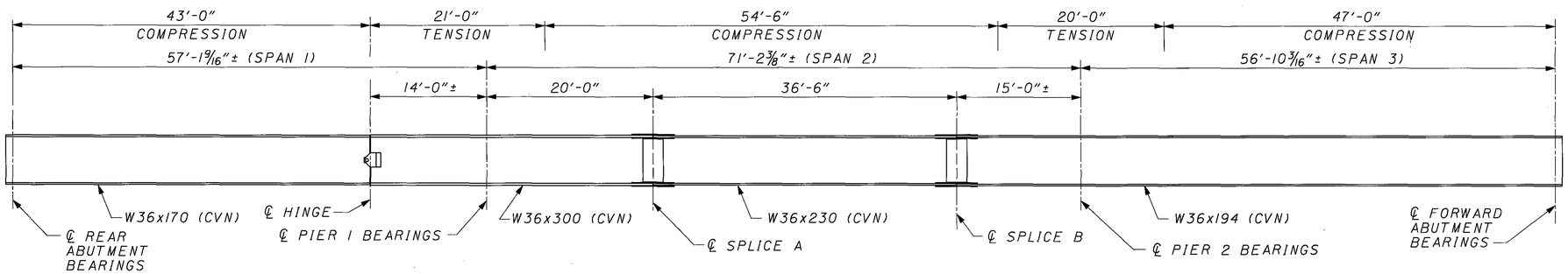
SUM-271-8.02

29/48

589
612



FRAMING PLAN



NEW BEAM ELEVATION

(BEAM LINE 6)

NOTES:

WELD ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION. DO NOT WELD ATTACHMENTS TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE AT LEAST 1" FROM EDGE OF FLANGE, BE AT LEAST 2" LONG, AND BE AT LEAST 1/4" FOR THICKNESSES UP TO 3/4" OR 5/16" FOR GREATER THAN 3/4".

EXISTING BEAM ELEVATION AND PAINTING DETAILS: SEE SHEET 42/48.

NEW STEEL IS TO BE ASTM A572/A709, GRADE 50.

BEARING DETAILS: SEE STANDARD DRAWING RB-1-55.

TRANSVERSE SECTION: SEE SHEET 28/48.

BEAM DETAILS: SEE SHEET 31/48.

HINGE DETAILS: SEE SHEETS 32/48 AND 33/48.

ADDITIONAL NOTES: SEE SHEET 28/48.

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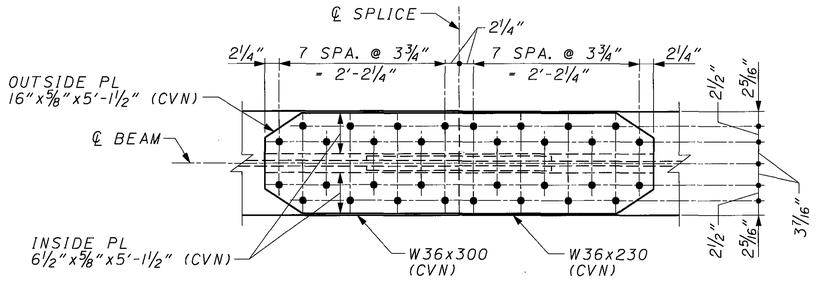
DESIGNED	DRAWN	REVISED	DATE
ALP	JLS		3/18/04
CHECKED	REVISED		STRUCTURE FILE NUMBER
BLN			7709099

FRAMING PLAN AND NEW BEAM ELEVATION - LEFT BRIDGE
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

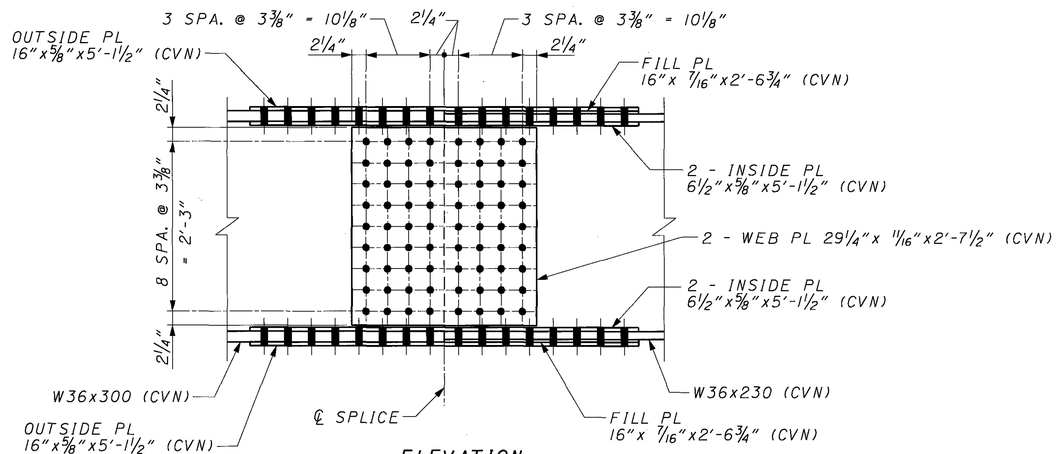
SUM-271-8.02

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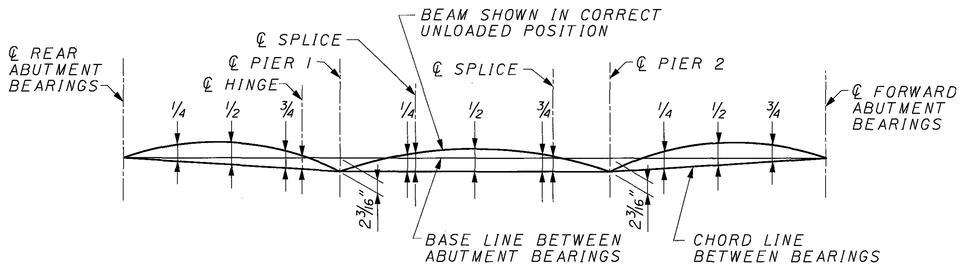


PLAN



ELEVATION

SPLICE A DETAILS



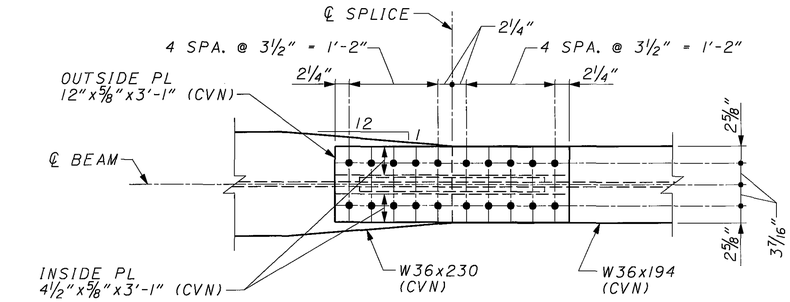
CAMBER DIAGRAM

BEAM 6 ONLY

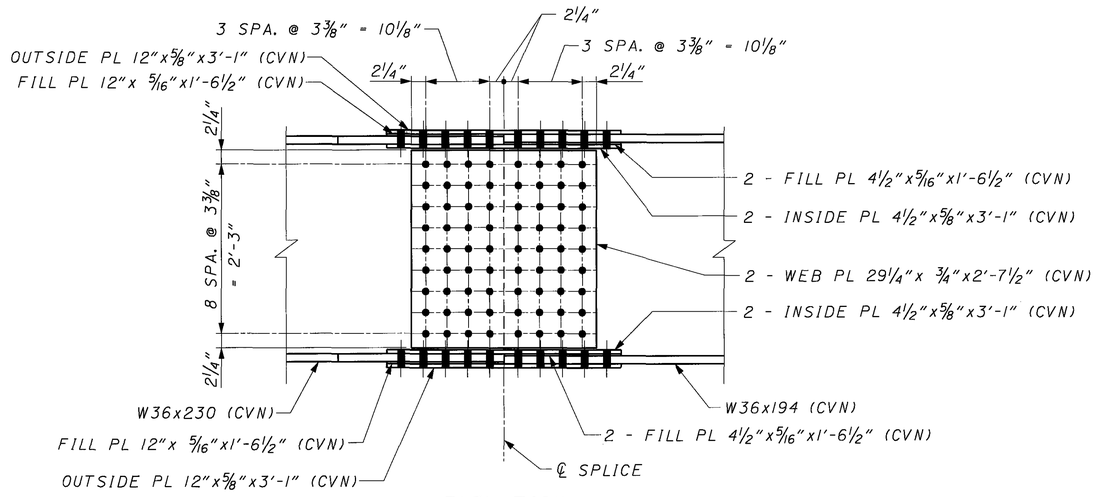
DEFLECTION AND CAMBER TABLE

		SPAN 1					SPAN 2						SPAN 3				
		R.A.	1/4	1/2	3/4	HINGE	℄ PIER 1	1/4	SPLICE	1/2	3/4	SPLICE	℄ PIER 2	1/4	1/2	3/4	F.A.
BEAM 6	DEFLECTION DUE TO WEIGHT OF STEEL	0	1/16	1/16	0	0	0	1/16	1/16	3/16	1/16	1/16	0	0	1/16	1/16	0
	DEFLECTION DUE TO NEW DECK CONCRETE	0	1/8	1/8	0	0	0	1/8	1/8	1/4	1/8	1/8	0	1/16	3/16	1/8	0
	DEFLECTION DUE TO REMAINING DEAD LOAD	0	1/8	1/8	0	0	0	1/8	1/8	1/4	1/8	1/16	0	1/16	1/8	1/8	0
	ADJUSTMENT FOR VERTICAL CURVE	0	-3/16	-1/4	-3/16	-3/16	0	-5/16	-5/16	-3/8	-5/16	-1/4	0	-3/16	-1/4	-3/16	0
	REQUIRED SHOP CAMBER	0	1/8	1/16	-3/16	-3/16	0	0	0	1/8	0	0	0	-1/16	1/8	1/8	0

NOTE: POSITIVE VALUES INDICATE CAMBER ABOVE CHORD LINE BETWEEN BEARINGS.



PLAN



ELEVATION

SPLICE B DETAILS

NOTES:

NEW STEEL IS TO BE ASTM A572/709, GRADE 50.

ALL FASTENERS FOR BEAM SPLICE ARE 1⅛" DIAMETER, TYPE 1, HIGH STRENGTH BOLTS ASTM A325 UNLESS OTHERWISE NOTED.

CVN: WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), FURNISH MATERIAL THAT MEETS THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.

NOTATION: R.A. = REAR ABUTMENT
F.A. = FORWARD ABUTMENT

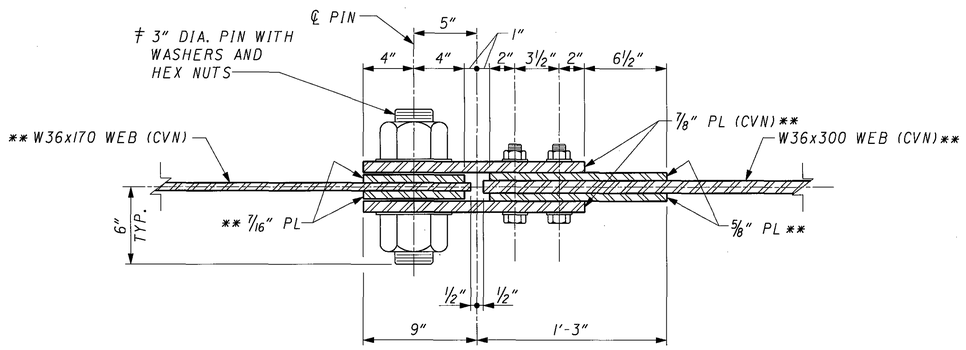
SU27TSD1.DGN 6/24/04 TWH,JLS,RC

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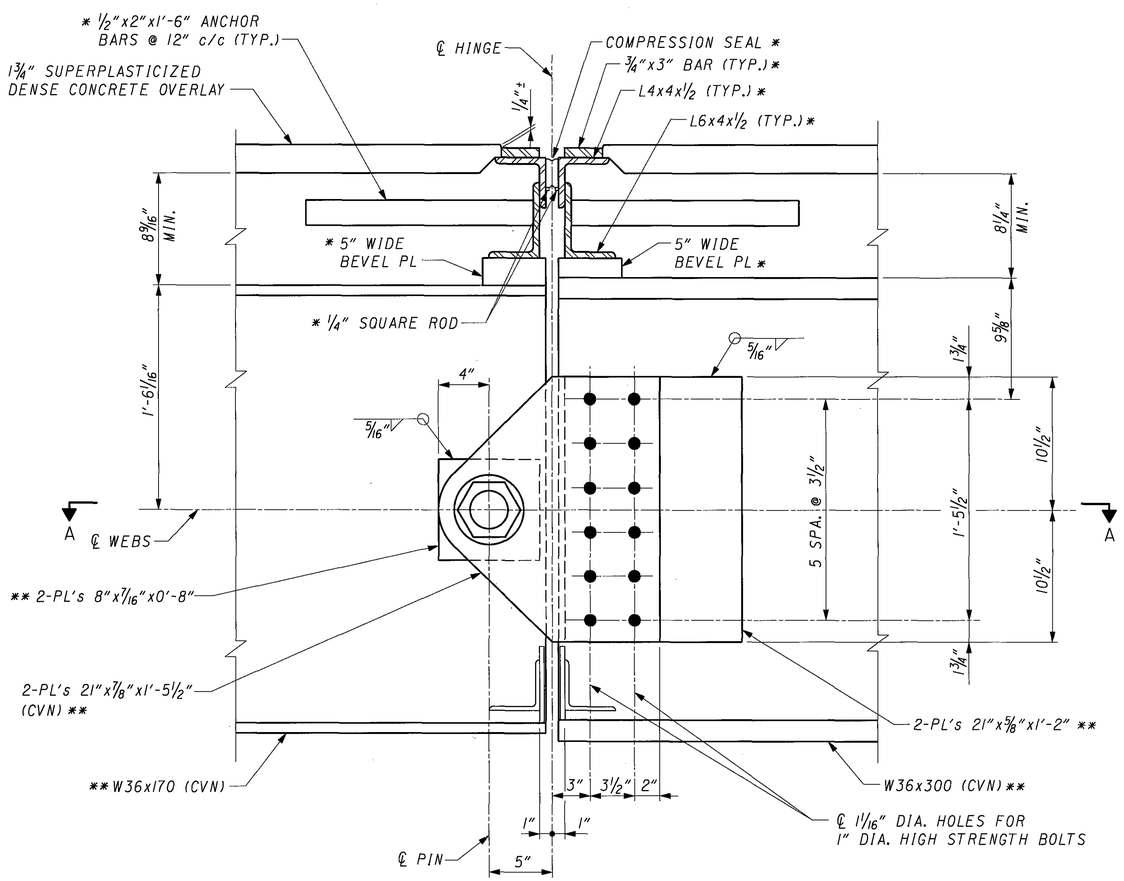
DESIGNED ALP | DRAWN TWH | REVISED DAP 3/18/04 | DATE | CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 7709099

SUPERSTRUCTURE DETAILS - LEFT BRIDGE
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

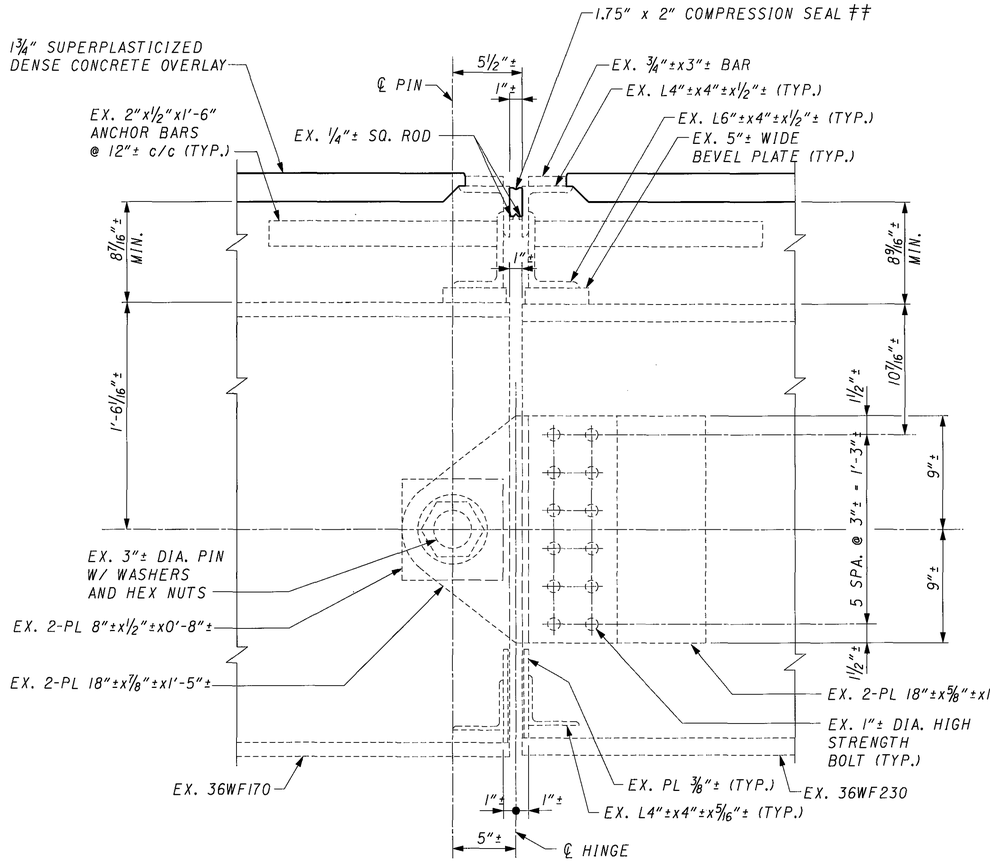
SUM-271-8.02



SECTION A-A



HINGE DETAIL AT NEW BEAMS



HINGE DETAIL AT EXISTING BEAMS

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC COMPRESSION SEAL FOR PAYMENT.

** INCLUDED WITH ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL THREE (3) FOR PAYMENT.

† INCLUDED WITH ITEM 513 - STRUCTURAL STEEL, MISC.: STEEL PINS AND NUTS FOR PAYMENT.

†† INCLUDED WITH ITEM 516 - ELASTOMERIC COMPRESSION SEAL FOR PAYMENT.

NOTES

NEW STEEL IS TO BE ASTM A572/709, GRADE 50.

MATERIALS SHOWN ARE NEW UNLESS OTHERWISE NOTED.

FASTENERS FOR HINGES SHALL BE 1" DIAMETER HIGH STRENGTH BOLTS, ASTM A325, TYPE 1, UNLESS OTHERWISE NOTED.

CVN: WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), FURNISH MATERIAL THAT MEETS THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.07.

HINGE JOINT DETAILS: SEE SHEET 33/48.

COMPRESSION SEAL DETAIL: SEE SHEET 40/48.

HINGES ON THE EXISTING EXTERIOR BEAM LINES OF THE LEFT BRIDGE AND RIGHT BRIDGE ARE TO BE DISASSEMBLED AND REFURBISHED PER ITEM 513 - STRUCTURAL STEEL MISCELLANEOUS: DISASSEMBLE AND CLEAN HINGES.

COMPRESSION SEAL TO BE REPLACED FULL WIDTH OF DECK.

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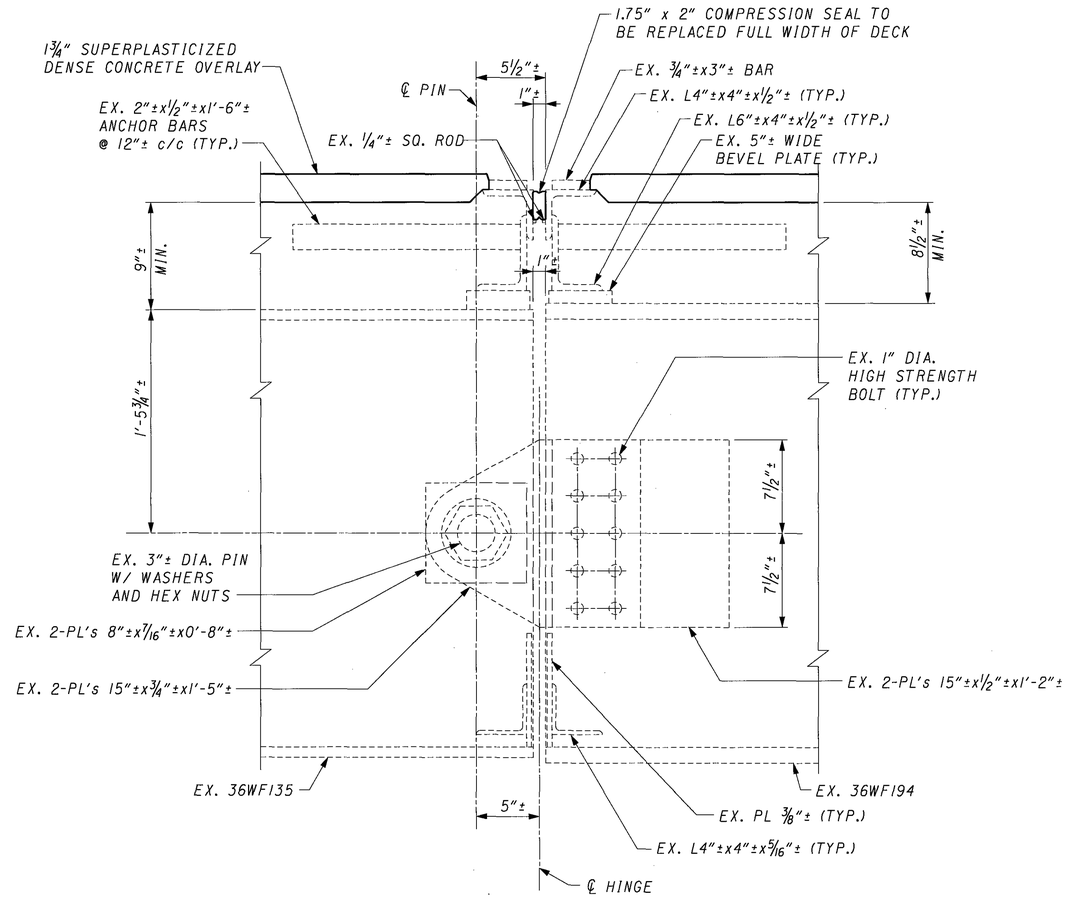
DESIGNED ALP | DRAWN JLS | CHECKED BLN | REVISED | REVIEWED DAP 3/18/04 | DATE | STRUCTURE FILE NUMBER 7709099

HINGE DETAILS - LEFT BRIDGE

BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

SU271FPD.DGN 6/24/04 JLS,RC



HINGE JOINT DETAIL
(RIGHT BRIDGE)

NOTES: SEE SHEET 32/48 .

SU27IFPD.DGN 6/24/04 KH,JLS,RC

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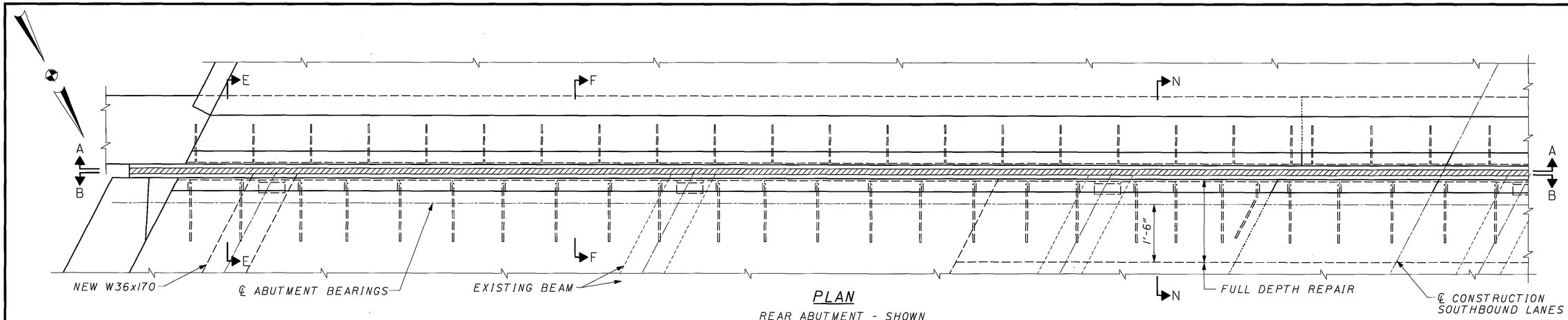
DESIGNED	DRAWN	REVIEWED	DATE
ALP	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709129	

HINGE JOINT DETAIL - RIGHT BRIDGE
BRIDGE NO. SUM-271-0854 R
OVER BOSTON MILLS ROAD

SUM-271-8.02

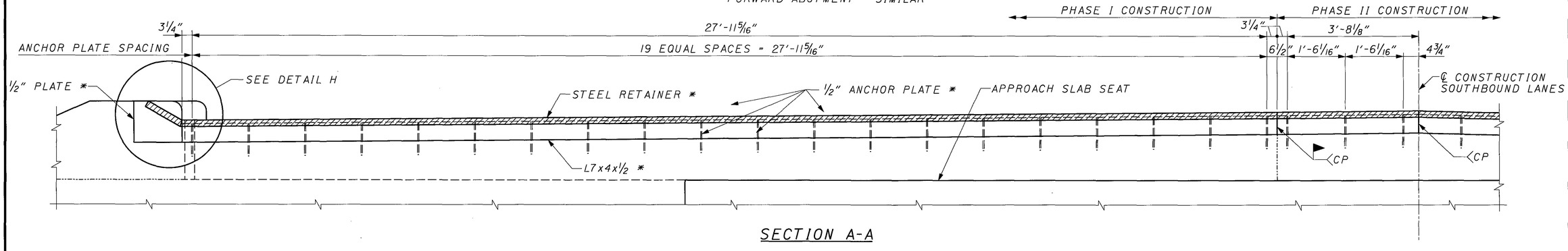
33/48

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612

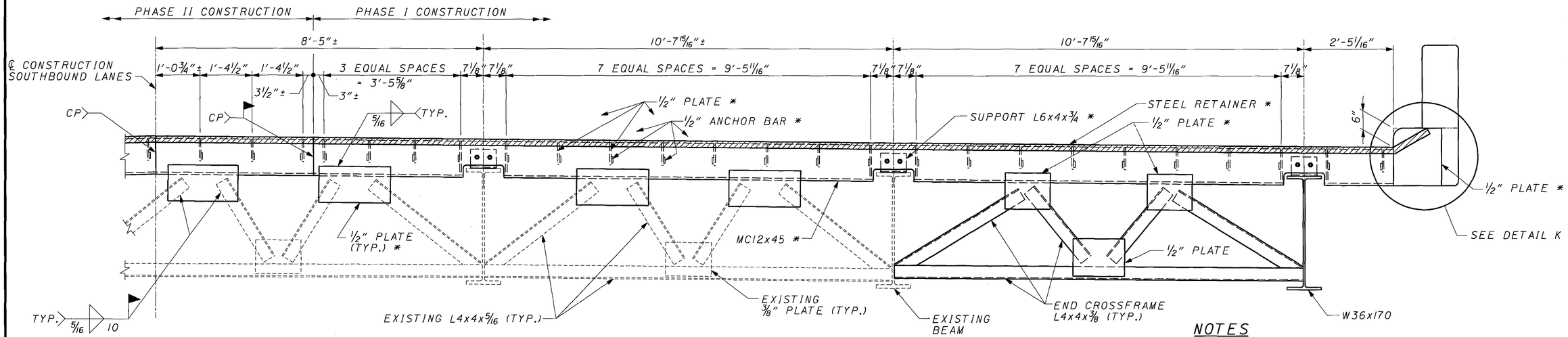


PLAN

REAR ABUTMENT - SHOWN
FORWARD ABUTMENT - SIMILAR



SECTION A-A



SECTION B-B

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, FOR PAYMENT.

NOTES

JOINT DETAILS: FOR ADDITIONAL DETAILS SEE STANDARD DRAWING EXJ-4-87.

END CROSSFRAME DETAILS: FOR ADDITIONAL DETAILS SEE STANDARD DRAWING GSD-1-96

SECTIONS E-E & F-F: SEE SHEET 36/48.

DETAILS H & K: SEE SHEET 36/48.

JOINT SETTING TABLE: SEE SHEET 36/48.

SECTIONS N-N: SEE SHEET 38/48.

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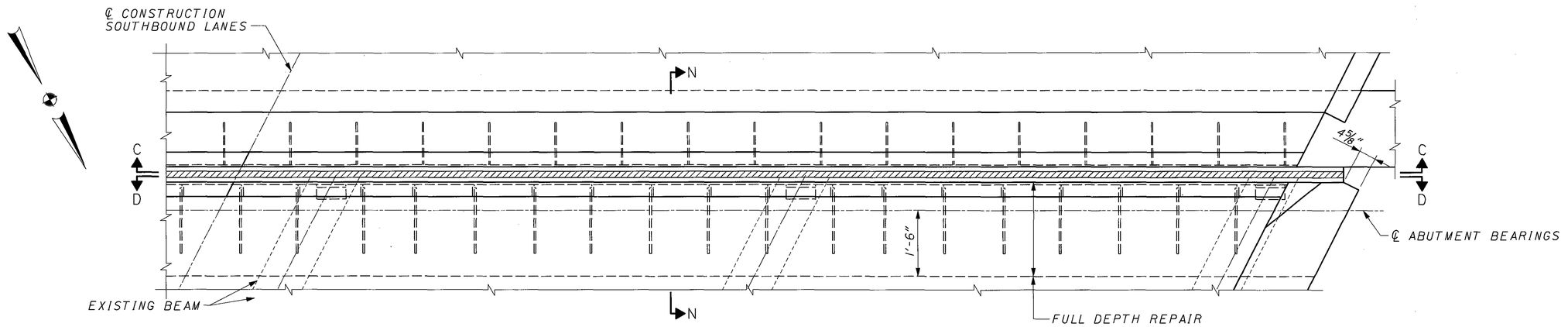
ABUTMENT JOINT - 1 - LEFT BRIDGE
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

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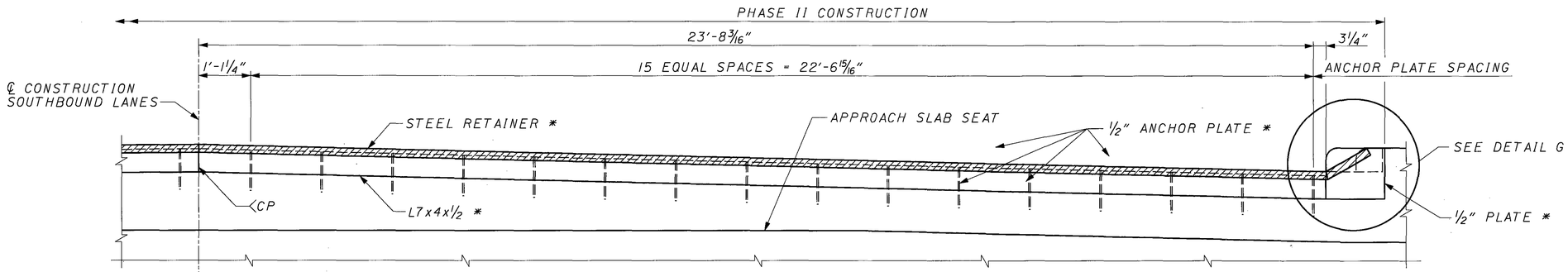
594/612

SU27ISD4.DGN 6/24/04 JLS,RC

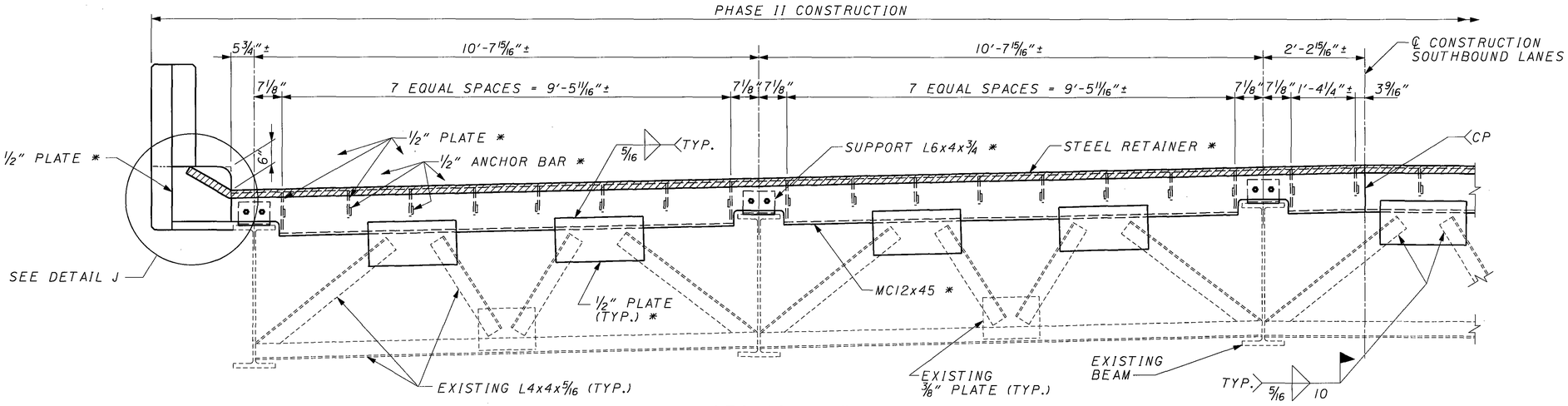


PLAN

REAR ABUTMENT - SHOWN
FORWARD ABUTMENT - SIMILAR



SECTION C-C



SECTION D-D

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, FOR PAYMENT.

NOTES

DETAILS G & J: SEE SHEET 36/48.

ADDITIONAL NOTES: SEE SHEET 34/48.

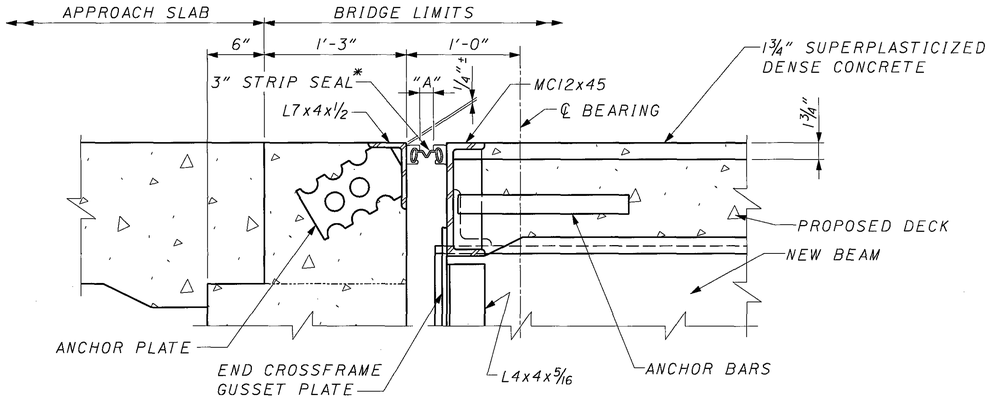
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CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709099	

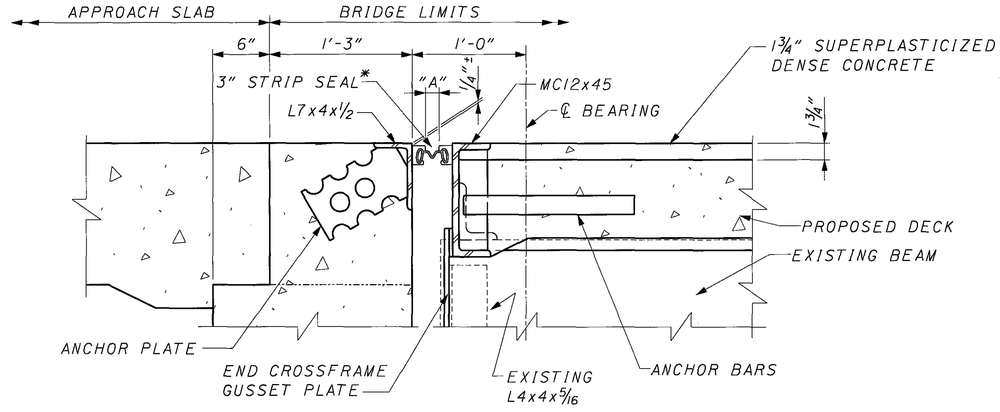
ABUTMENT JOINT - 2 - LEFT BRIDGE
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02



SECTION E-E

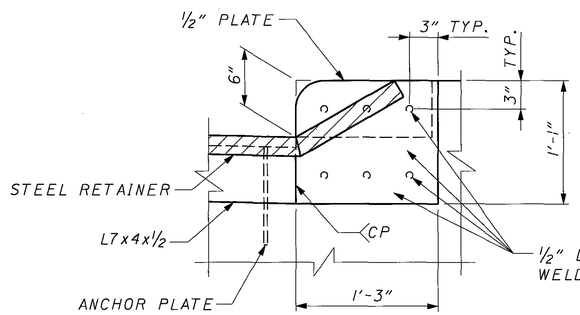
(NEW DECK & NEW BEAM)



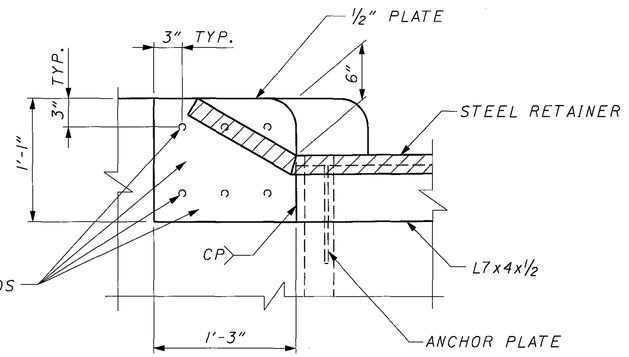
SECTION F-F

(NEW DECK & EXISTING BEAM)

* 3" STRIP SEAL SHALL BE CONTINUOUS ACROSS THE BRIDGE DECK INCLUDING THE WIDENED PORTION.

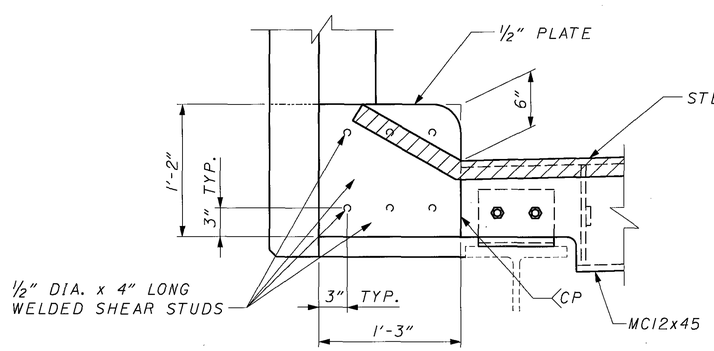


DETAIL G

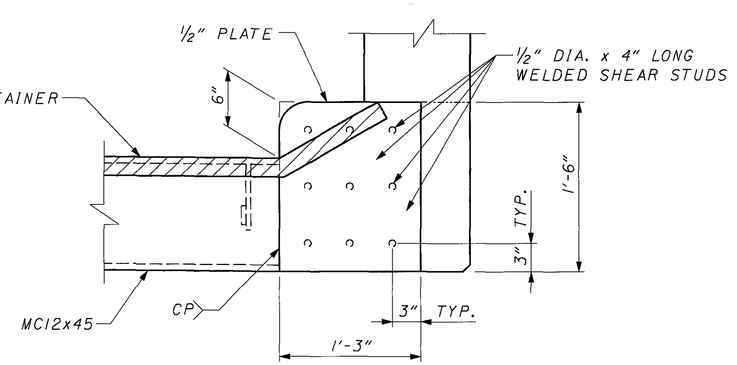


DETAIL H

JOINT SETTING TABLE		
TEMPERATURE	DIMENSION A	
	REAR ABUTMENT	FORWARD ABUTMENT
30°	1 1/8"	1 3/16"
40°	1 3/16"	1 3/4"
50°	1 11/16"	1 3/4"
60°	1 5/8"	1 11/16"
70°	1 9/16"	1 5/8"
80°	1 7/16"	1 5/8"
90°	1 3/8"	1 9/16"



DETAIL J



DETAIL K

NOTES

SECTION E-E & F-F: FOR LOCATIONS SEE SHEET 34/48.

DETAILS G, H, J & K: FOR LOCATIONS SEE SHEETS 34/48 AND 35/48.

ADDITIONAL NOTES: SEE SHEET 34/48.

SU271SD5.DGN 6/24/04 JLS,RC

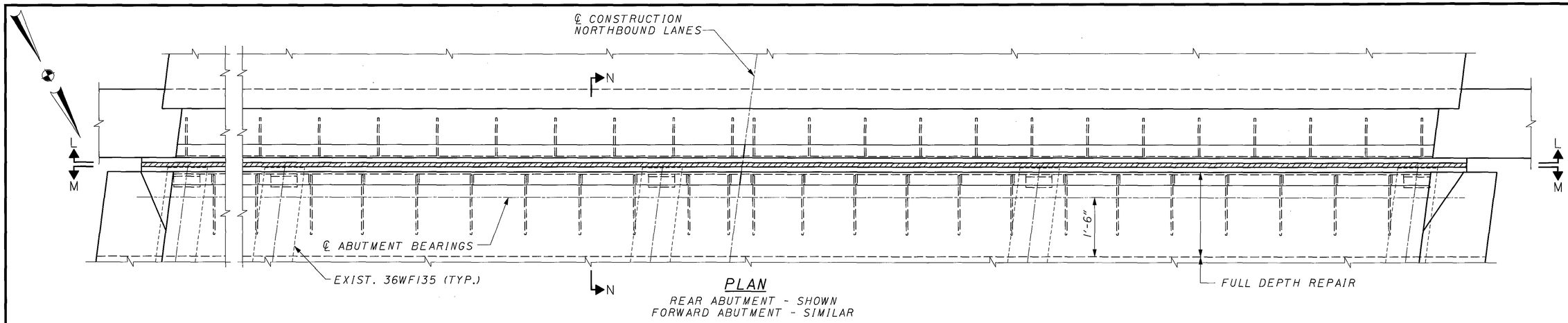
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DESIGNED ALP | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 7709099

ABUTMENT JOINT DETAILS - LEFT BRIDGE

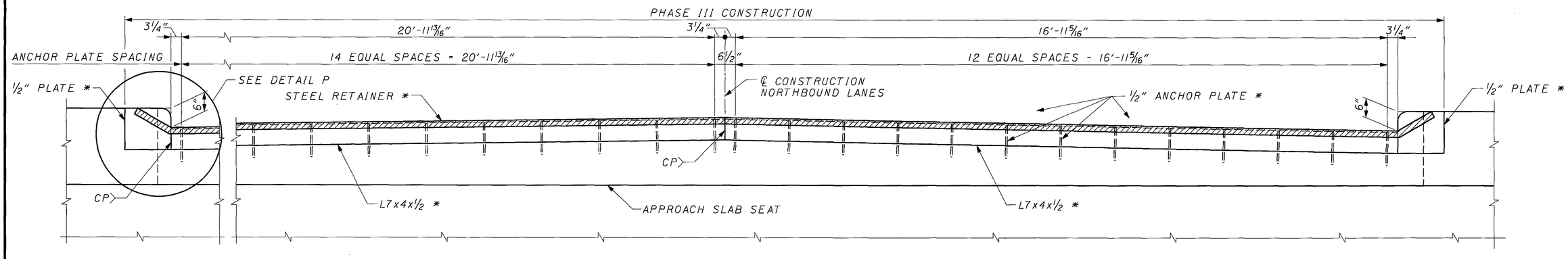
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

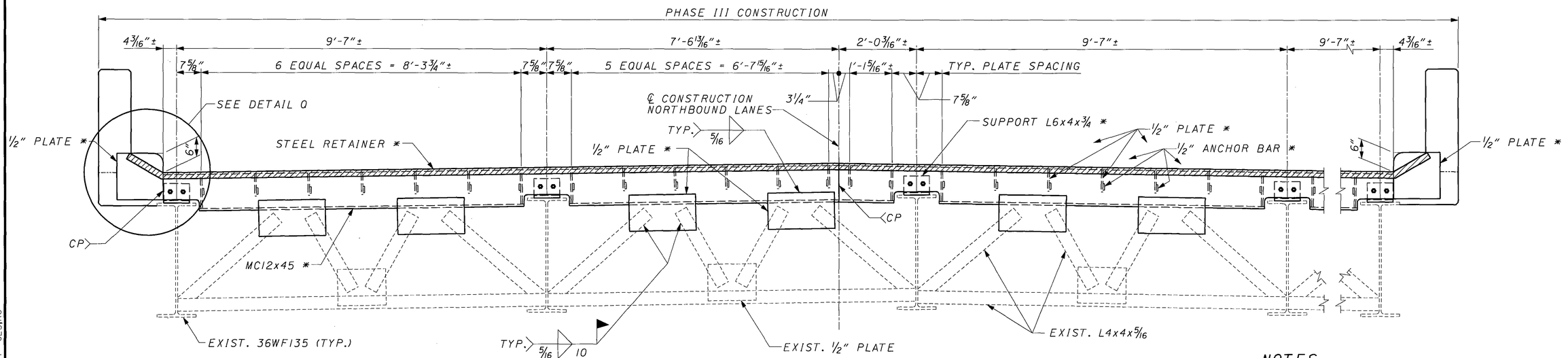


PLAN

REAR ABUTMENT - SHOWN
FORWARD ABUTMENT - SIMILAR



SECTION L-L



SECTION M-M

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, FOR PAYMENT.

NOTES

SECTION N-N: SEE SHEET 38/48.

DETAILS P & Q: SEE SHEET 38/48.

JOINT SETTING TABLE: SEE SHEET 38/48.

ADDITIONAL NOTES: SEE SHEET 34/48.

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DESIGNED	DRAWN	REVIEWED	DATE
ALP	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709129	

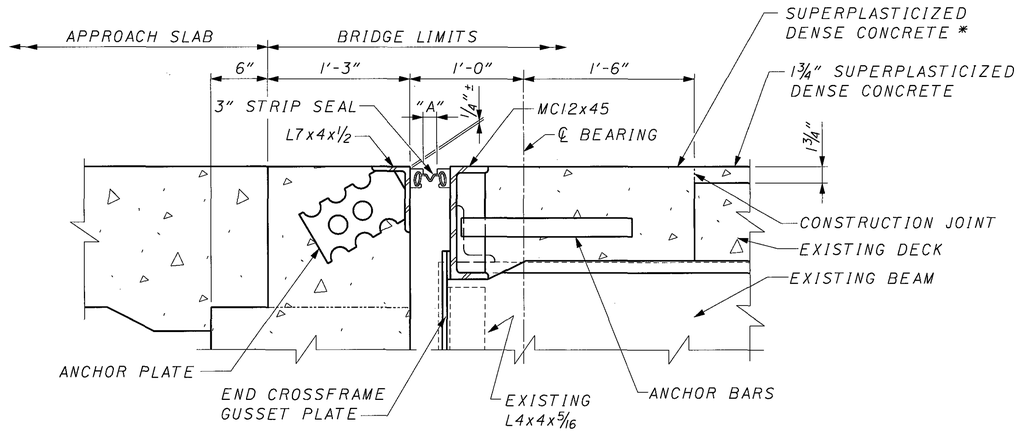
ABUTMENT JOINT - RIGHT BRIDGE
BRIDGE NO. SUM-271-0854 R
OVER BOSTON MILLS ROAD

SUM-271-8.02

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SU27ISD8.DGN 6/24/04 JLS.RC

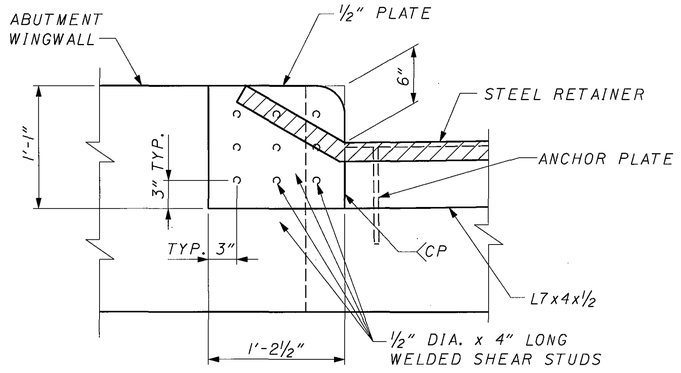


SECTION N-N

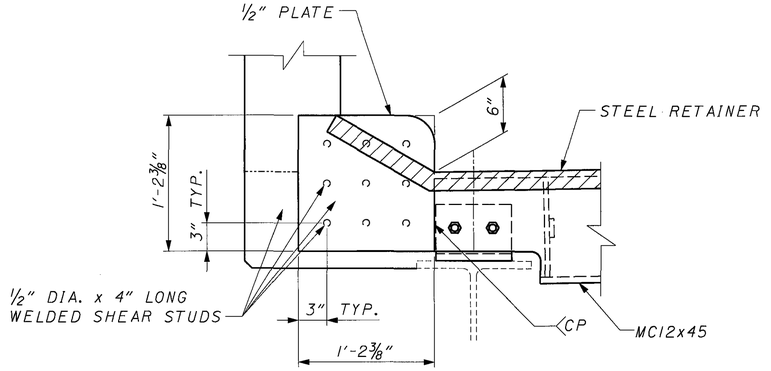
(EXISTING DECK & EXISTING BEAM)

* INCLUDED WITH ITEM 848 - FULL DEPTH REPAIR, FOR PAYMENT.

JOINT SETTING TABLE		
TEMPERATURE	DIMENSION A	
	REAR ABUTMENT	FORWARD ABUTMENT
30°	1 7/8"	1 13/16"
40°	1 13/16"	1 3/4"
50°	1 11/16"	1 3/4"
60°	1 5/8"	1 11/16"
70°	1 9/16"	1 5/8"
80°	1 7/16"	1 5/8"
90°	1 3/8"	1 9/16"



DETAIL P



DETAIL Q

NOTES

SECTION N-N: FOR LOCATION SEE SHEETS 34/48 & 35/48, 37/48 .

DETAILS P & Q: FOR LOCATION SEE SHEETS 37/48 .

ADDITIONAL NOTES: SEE SHEET 34/48.

SU271SD9.DGN 6/24/04 JLS,RC

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | CHECKED BLN | REVISED | REVIEWED DAP | DATE 3/18/04 | STRUCTURE FILE NUMBER 7709129

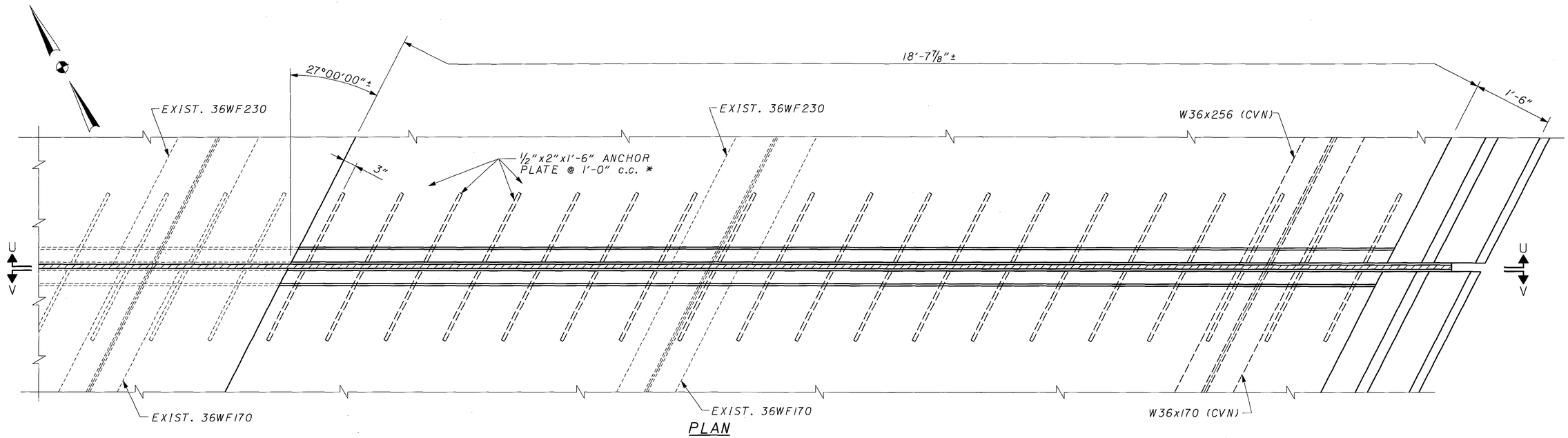
ABUTMENT JOINT DETAILS - RIGHT BRIDGE

BRIDGE NO. SUM-271-0854 R
OVER BOSTON MILLS ROAD

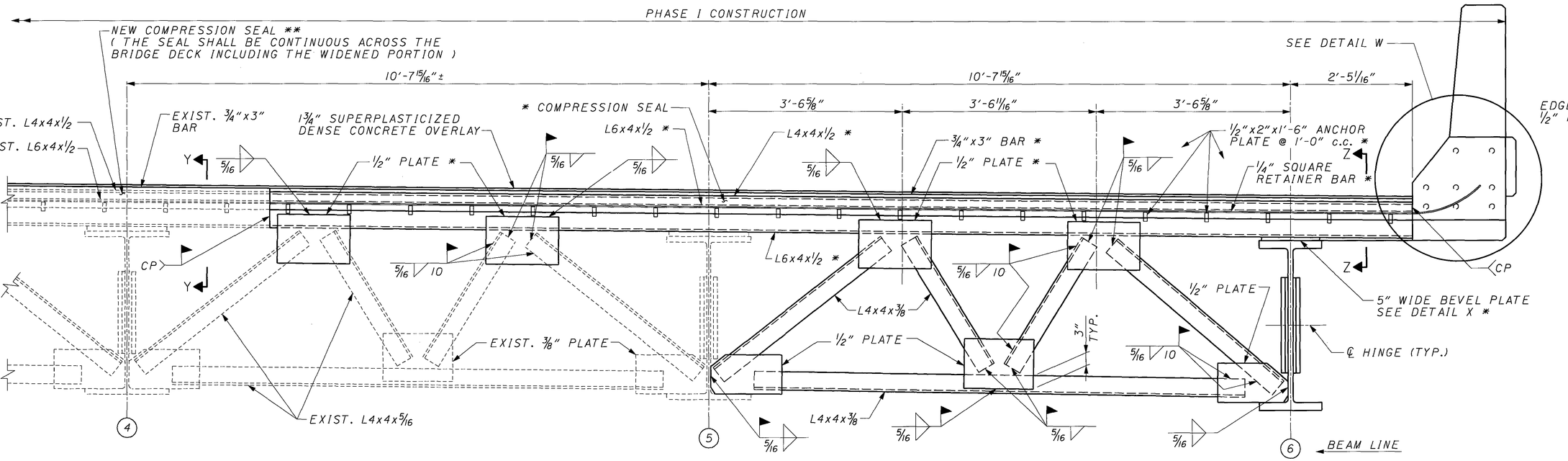
SUM-271-8.02

38/48

598/612



PLAN



SECTION U-U (SHOWN)
SECTION V-V (SIMILAR)

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC COMPRESSION SEAL FOR PAYMENT

** INCLUDED WITH ITEM 516 - ELASTOMERIC COMPRESSION SEAL FOR PAYMENT

NOTES

DETAILS W & X: SEE SHEET 40/48.

SECTIONS Y-Y & Z-Z: SEE SHEET 40/48.

HINGE DETAILS: SEE SHEET 32/48.

ADDITIONAL NOTES: SEE SHEET 40/48.

SU271SD6.DGN 6/24/04 JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | REVISED DAP 3/18/04 | DATE | STRUCTURE FILE NUMBER 7709099

CHECKED BLN | REVISED

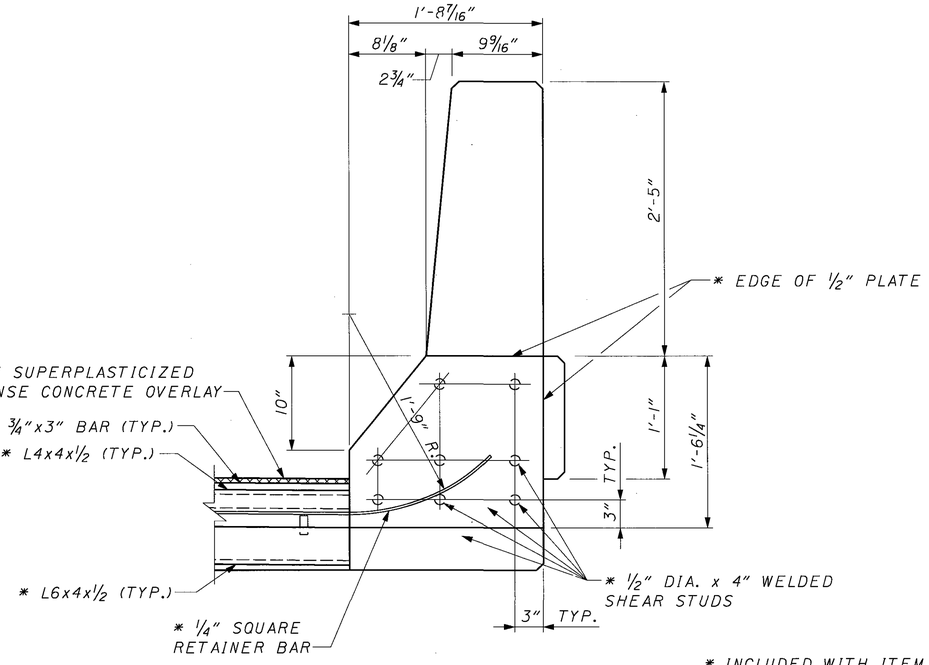
HINGE JOINT - LEFT BRIDGE

BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

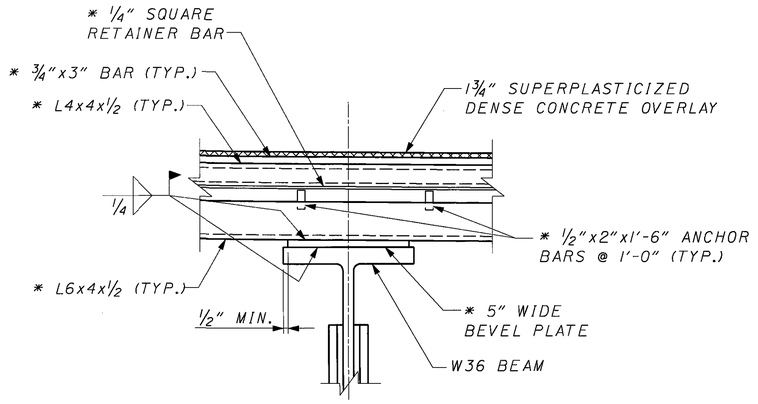
SUM-271-8.02

39/48

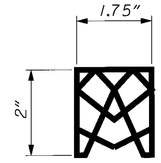
599/612



DETAIL W



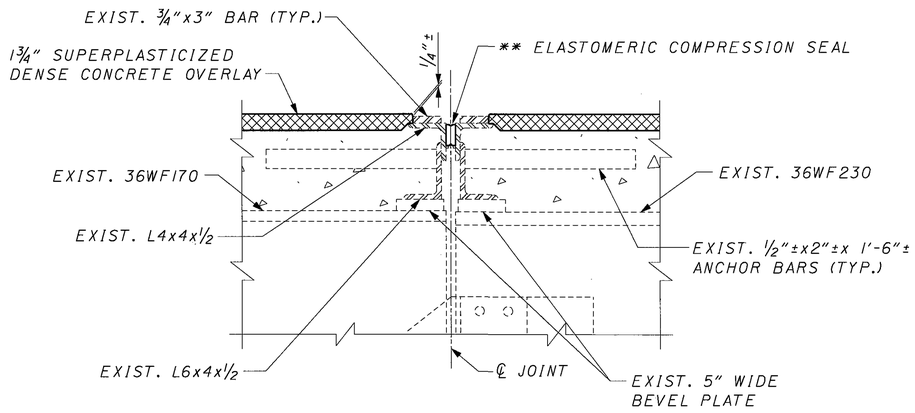
DETAIL X



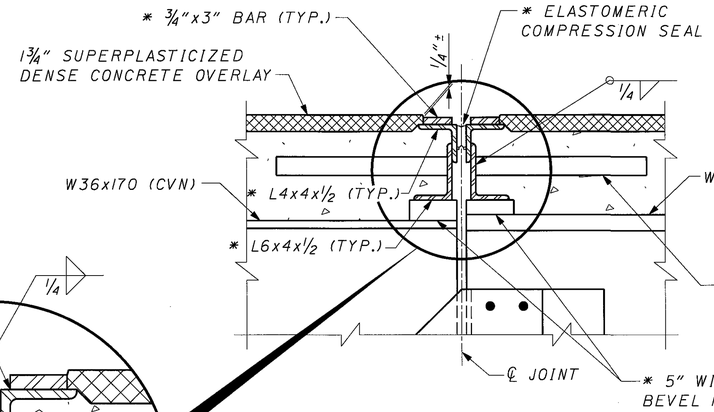
ELASTOMERIC COMPRESSION SEAL

* INCLUDED WITH ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC COMPRESSION SEAL FOR PAYMENT

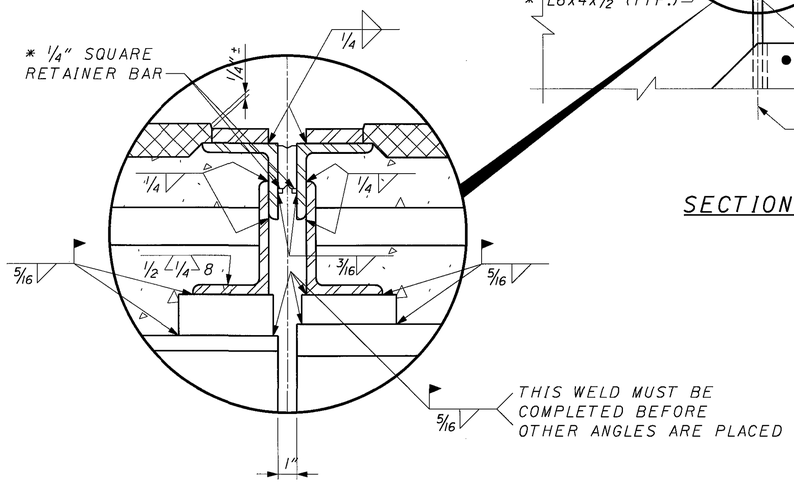
** INCLUDED WITH ITEM 516 - ELASTOMERIC COMPRESSION SEAL, AS PER PLAN, FOR PAYMENT



SECTION Y-Y



SECTION Z-Z



NOTES

JOINT DETAILS: FOR ADDITIONAL JOINT DETAILS SEE STANDARD DRAWING EXJ-2-81.

DETAILS W & X: FOR LOCATION SEE SHEET 39/48.

SECTIONS Y-Y & Z-Z: FOR LOCATION SEE SHEET 39/48.

HINGE DETAILS: SEE SHEET 32/48.

COMPRESSION SEAL TO BE REPLACED FULL WIDTH OF DECK.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN JLS | REVIEWED DAP | DATE 3/18/04
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 7709099

HINGE JOINT DETAILS - LEFT BRIDGE

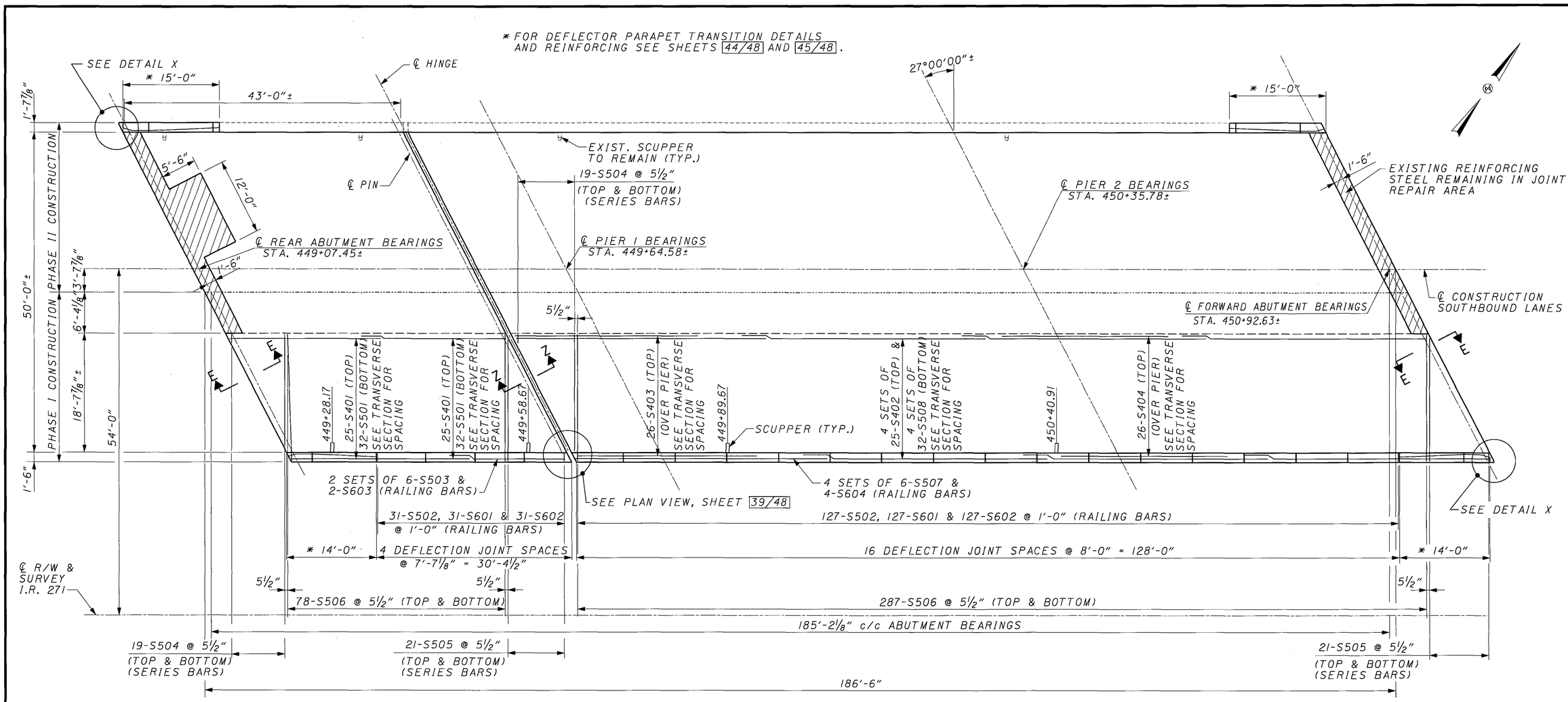
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

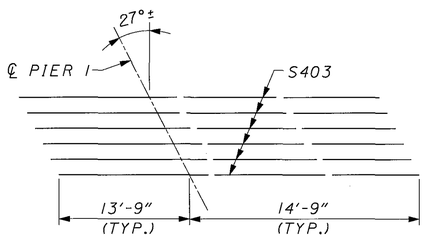
40/48

600/612

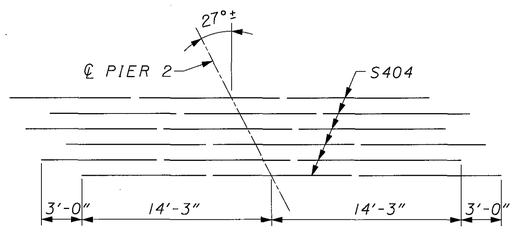
SU271SD7.DGN 9/7/04 RC,JLS



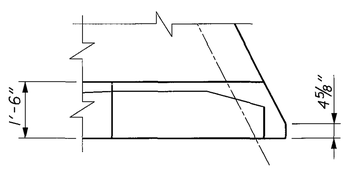
SLAB PLAN



S403 BARS OVER PIER I



STAGGER OF S404 BARS OVER PIER 2



DETAIL X

LEGEND

INDICATES ESTIMATED SUPERPLASTICIZED DENSE CONCRETE FULL DEPTH REPAIR.

NOTES

TRANSVERSE SECTION: SEE SHEET 28/48.

SECTION E-E: SEE SHEET 36/48.

SECTION Z-Z: SEE SHEET 40/48.

ADDITIONAL NOTES: SEE SHEET 28/48.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP
DRAWN TWH
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REVISED
REVIEWED DAP 3/18/04
DATE
STRUCTURE FILE NUMBER 7709099

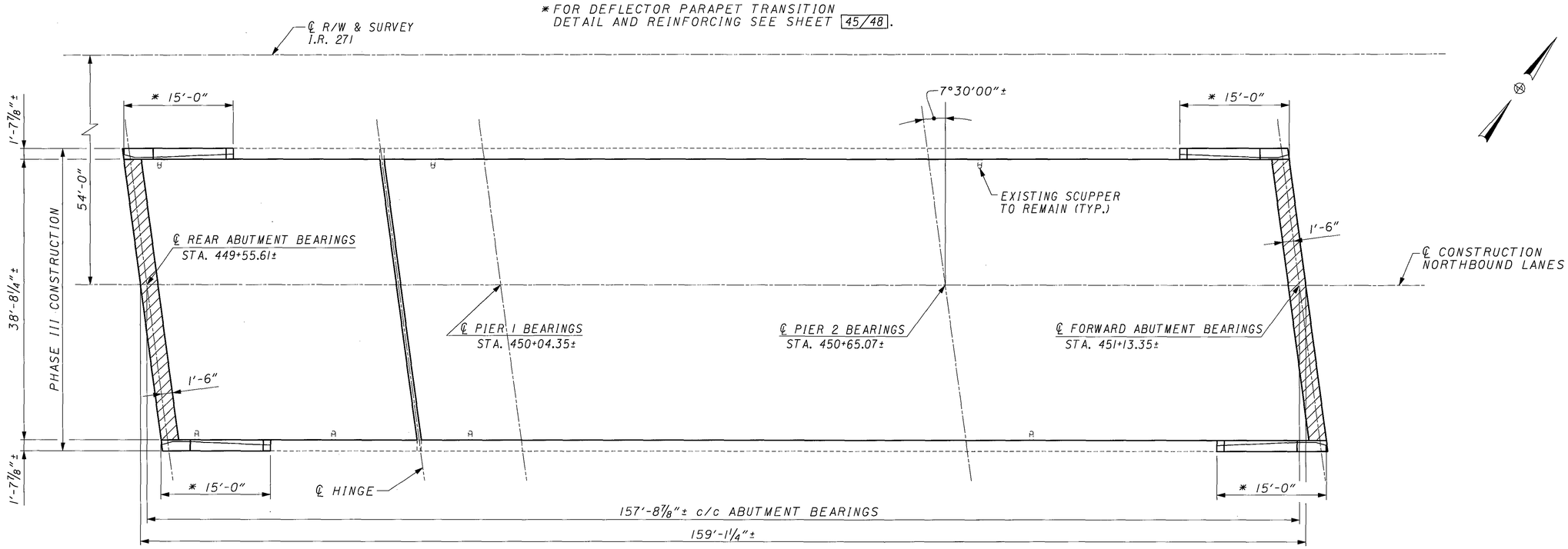
SLAB PLAN - LEFT BRIDGE
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

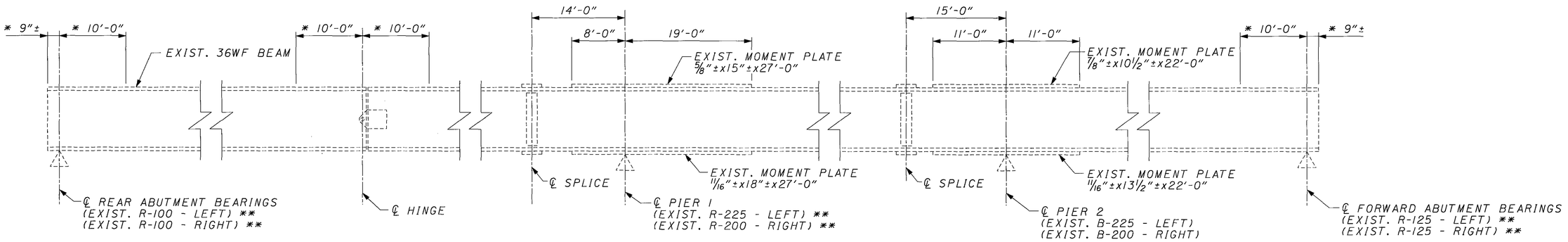
41/48

601/612

SU271SCL.DGN 6/24/04 JLS,RC



DECK PLAN



EXISTING BEAM ELEVATION AND PAINTING DETAIL

(LEFT BRIDGE BEAMS SHOWN)
(RIGHT BRIDGE BEAMS SIMILAR)

* INCLUDED WITH ITEM 514 - FIELD PAINTING OF EXISTING STRUCTURAL STEEL, SYSTEM OZEU, AS PER PLAN FOR PAYMENT.

** INCLUDED WITH ITEM 516 - REFURBISH BEARING DEVICE, AS PER PLAN FOR PAYMENT.

LEGEND

INDICATES ESTIMATED SUPERPLASTICIZED DENSE CONCRETE FULL DEPTH REPAIR.

NOTES

TRANSVERSE SECTION: SEE SHEET 29/48.

SU271SC2.DGN 6/24/04 JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVISED	DATE
ALP	JLS	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709/29	

SLAB PLAN & BEAM ELEVATION - RIGHT BRIDGE
BRIDGE NO. SUM-271-0854 R
OVER BOSTON MILLS ROAD

SUM-271-8.02

42/48

602
612

SCREED ELEVATION TABLE - LEFT BRIDGE

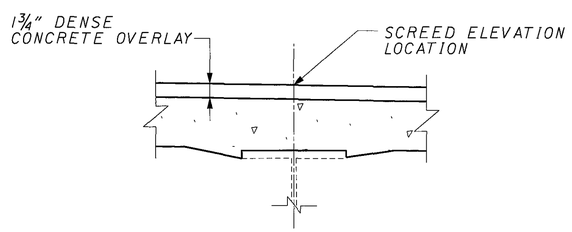
SPAN POINT	REAR ABUT. BEARINGS	1/4	1/2	3/4	HINGE	℄ PIER 1	1/4	SPLICE	1/2	3/4	SPLICE	℄ PIER 2	1/4	1/2	3/4	FWD. ABUT. BEARINGS
	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS
CURB LEFT	731.60	731.84	732.08	732.32	732.32	732.60	732.94	732.99	733.31	733.68	733.74	734.07	734.39	734.74	735.09	735.43
BEAM 1	731.61	731.85	732.09	732.33	732.33	732.61	732.95	732.99	733.32	733.69	733.75	734.08	734.40	734.75	735.10	735.44
BEAM 2	731.84	732.09	732.33	732.57	732.57	732.85	733.20	733.24	733.58	733.95	734.01	734.34	734.67	735.02	735.37	735.71
BEAM 3	732.07	732.32	732.57	732.81	732.81	733.10	733.45	733.49	733.83	734.20	734.27	734.61	734.93	735.29	735.64	735.99
CROWN	732.12	732.37	732.62	732.86	732.87	733.15	733.50	733.55	733.88	734.26	734.32	734.66	734.99	735.35	735.70	736.05
CONST. JOINT	732.09	732.35	732.59	732.84	732.84	733.13	733.48	733.53	733.86	734.24	734.31	734.65	734.97	735.33	735.69	736.04
BEAM 4	732.06	732.32	732.57	732.81	732.82	733.10	733.46	733.50	733.85	734.22	734.29	734.63	734.96	735.32	735.67	736.03
CONST. JOINT	732.04	732.30	732.55	732.80	732.80	733.09	733.45	733.49	733.83	734.21	734.28	734.62	734.95	735.31	735.67	736.02
PROFILE GRADE	732.03	732.29	732.54	732.78	732.79	733.08	733.44	733.48	733.82	734.20	734.27	734.61	734.94	735.30	735.66	736.02
BEAM 5	731.99	732.25	732.50	732.75	732.76	733.05	733.41	733.45	733.80	734.18	734.25	734.59	734.92	735.29	735.64	736.00
BEAM 6	731.92	732.19	732.44	732.69	732.70	732.99	733.36	733.40	733.75	734.14	734.20	734.55	734.89	735.26	735.62	735.98
CURB RIGHT	731.91	732.17	732.43	732.68	732.69	732.98	733.35	733.39	733.74	734.13	734.19	734.54	734.88	735.25	735.61	735.97

SCREED ELEVATION TABLE - INITIAL PLACEMENT OF DECK WIDENING (LEFT BRIDGE)

SPAN POINT	REAR ABUT. BEARINGS	1/4	1/2	3/4	HINGE	℄ PIER 1	1/4	SPLICE	1/2	3/4	SPLICE	℄ PIER 2	1/4	1/2	3/4	FWD. ABUT. BEARINGS
	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS
CONST. JOINT	732.04	732.29	732.54	732.80	732.80	733.09	733.44	733.48	733.81	734.20	734.27	734.62	734.95	735.30	735.66	736.02
PROFILE GRADE	732.03	732.28	732.53	732.79	732.79	733.08	733.43	733.47	733.80	734.19	734.26	734.61	734.94	735.29	735.65	736.02
BEAM 5	731.99	732.24	732.49	732.75	732.76	733.05	733.40	733.45	733.78	734.17	734.24	734.59	734.92	735.28	735.64	736.00
BEAM 6	731.92	732.18	732.43	732.70	732.70	732.99	733.35	733.39	733.73	734.13	734.19	734.55	734.89	735.24	735.61	735.98
CURB RIGHT	731.91	732.16	732.42	732.68	732.69	732.98	733.34	733.38	733.72	734.12	734.19	734.54	734.88	735.24	735.60	735.97

SCREED ELEVATION TABLE - RIGHT BRIDGE

SPAN POINT	REAR ABUT. BEARINGS	1/4	1/2	HINGE	3/4	℄ PIER 1	1/4	1/2	3/4	SPLICE	℄ PIER 2	1/4	1/2	3/4	FWD. ABUT. BEARINGS
	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS	ELEVATIONS
CURB LEFT	731.82	732.16	732.49	732.78	732.83	733.16	733.58	734.00	734.41	734.48	734.83	735.16	735.50	735.83	736.16
BEAM 7	731.83	732.16	732.50	732.78	732.83	733.17	733.59	734.00	734.42	734.48	734.84	735.17	735.50	735.83	736.17
PROFILE GRADE	731.93	732.26	732.60	732.88	732.93	733.27	733.68	734.10	734.52	734.58	734.94	735.27	735.60	735.93	736.26
BEAM 8	732.01	732.35	732.69	732.97	733.02	733.36	733.77	734.19	734.61	734.67	735.03	735.36	735.69	736.02	736.35
CROWN	732.16	732.50	732.83	733.12	733.17	733.50	733.92	734.34	734.75	734.82	735.17	735.50	735.84	736.17	736.50
BEAM 9	732.14	732.47	732.81	733.09	733.14	733.48	733.90	734.31	734.73	734.79	735.15	735.48	735.81	736.14	736.48
BEAM 10	732.02	732.35	732.69	732.97	733.02	733.36	733.78	734.19	734.61	734.67	735.03	735.36	735.69	736.03	736.36
BEAM 11	731.90	732.24	732.57	732.86	732.91	733.24	733.66	734.08	734.49	734.56	734.91	735.24	735.58	735.91	736.24
CURB RIGHT	731.90	732.23	732.57	732.85	732.90	733.24	733.66	734.07	734.49	734.55	734.91	735.24	735.57	735.90	736.24



NOTES:

SCREED ELEVATIONS SHOWN ARE FOR THE SURFACE OF THE SUPERPLASTICIZED DENSE CONCRETE OVERLAY PRIOR TO THE PLACEMENT OF CONCRETE OR SUPERPLASTICIZED DENSE CONCRETE OVERLAY. ALLOWANCE HAS BEEN MADE FOR ANTICIPATED CALCULATED DEAD LOAD DEFLECTIONS. ADDITIONAL SCREED ELEVATIONS HAVE BEEN PROVIDED TO ACCOUNT FOR THE INITIAL PLACEMENT OF THE CLASS HP DECK WIDENING.

NOTATION: R.A. = REAR ABUTMENT
F.A. = FORWARD ABUTMENT
CONST. = CONSTRUCTION
BRGS. = BEARINGS

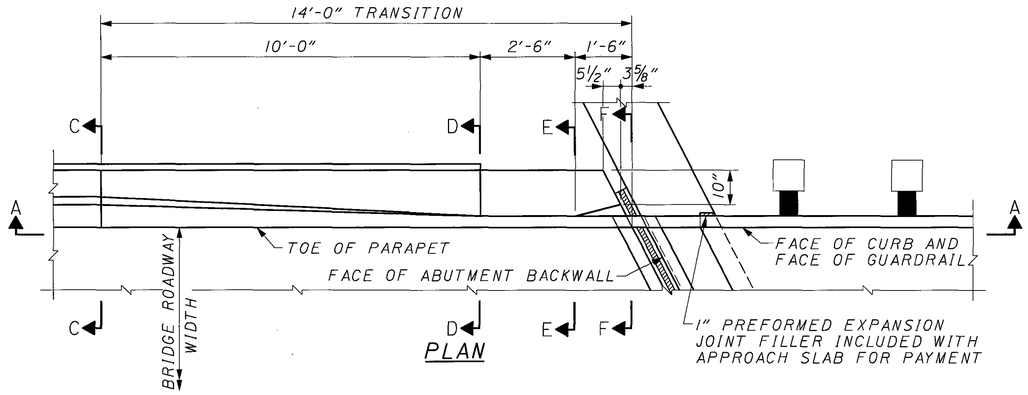
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

REVIEWED DAP DATE 3/18/04
STRUCTURE FILE NUMBER 7709099(L) 7709129(R)
DRAWN KH
REVISED
DESIGNED ALP
CHECKED BLN

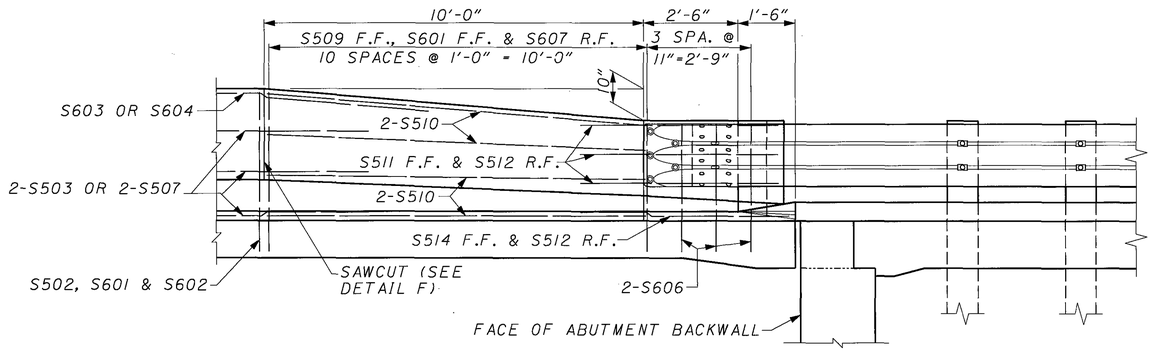
SCREED ELEVATIONS
BRIDGE NO. SUM-271-0854 L & R
OVER BOSTON MILLS ROAD

SUM-271-8.02

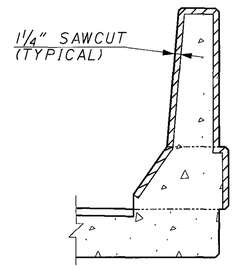
SU271SD3.DGN 6/24/04 KH,JLS,RC



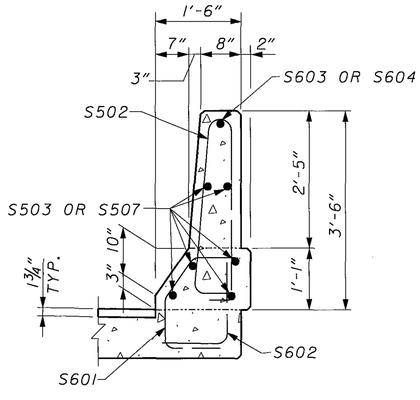
PLAN



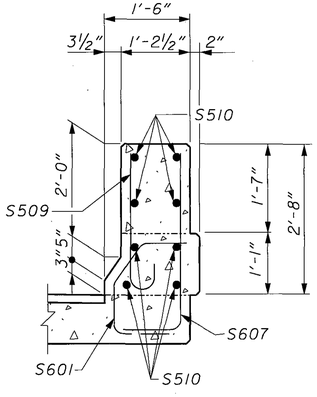
SECTION A-A



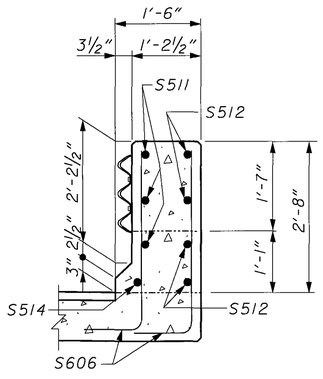
DETAIL F



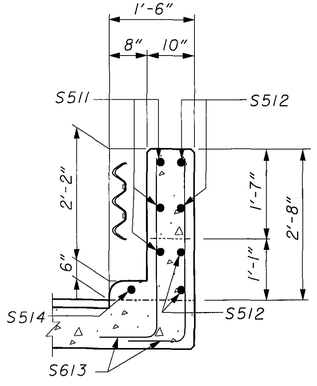
SECTION C-C



SECTION D-D



SECTION E-E



SECTION F-F

NOTES

CONTROL JOINTS FOR CONCRETE PARAPETS: THE JOINTS SHALL BE CONSTRUCTED BY SAWING 1¼" DEEP ALONG THE PERIMETER OF THE PARAPET AS SOON AS THE SAW CAN BE OPERATED WITHOUT DAMAGING THE CONCRETE.

THE USE OF AN EDGE GUIDE, FENCE OR JIG IS REQUIRED TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE, AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF ¼ INCH.

THE PERIMETER OF THE DEFLECTION CONTROL JOINT SHALL BE SEALED WITH A POLYURETHANE OR POLYMERIC MATERIAL TO A MINIMUM DEPTH OF ONE INCH CONFORMING TO ASTM C920, TYPE S. THE BOTTOM ONE-HALF INCH OF THE OUTSIDE AND INSIDE FACE OF THE PARAPET SHOULD BE LEFT UNSEALED TO ALLOW ANY WATER WHICH MAY ENTER THE JOINT TO ESCAPE.

QUANTITIES OF CONCRETE, DEFLECTION JOINT SAWCUT AND CAULKING MATERIAL FOR PARAPET ARE INCLUDED WITH ITEM 894 - HIGH PERFORMANCE CONCRETE, FOR BRIDGE DECK WITH WARRANTY, AS PER PLAN FOR PAYMENT.

NOTATION: F.F - FRONT FACE; R.F. - REAR FACE.

BRIDGE TERMINAL ASSEMBLIES: SEE STANDARD CONSTRUCTION DRAWINGS GR-3.1 AND GR-3.2.

ADDITIONAL RAILING DETAILS SEE STANDARD DRAWING BR-1

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

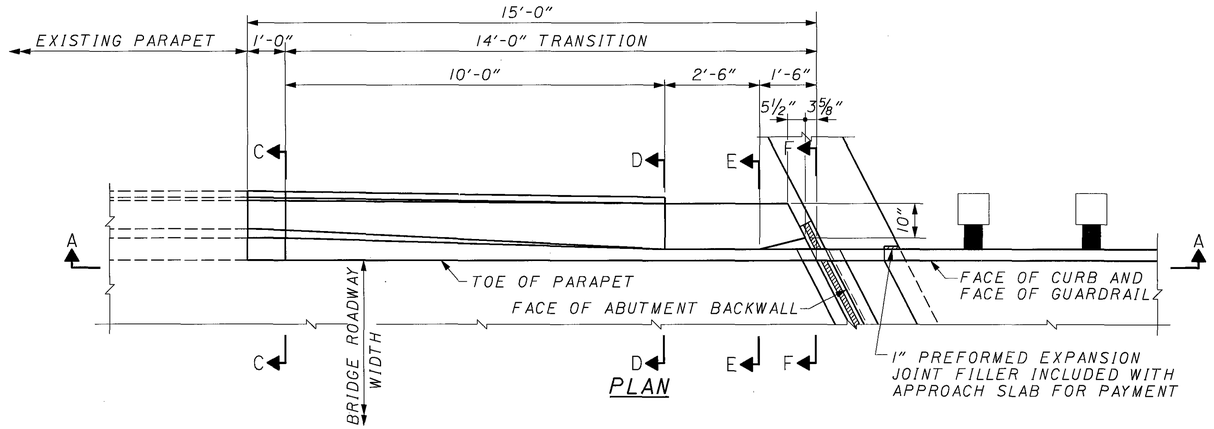
DESIGNED	DRAWN	REVIEWED	DATE
ALP	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709099	

DEFLECTOR PARAPET DETAILS - LEFT BRIDGE

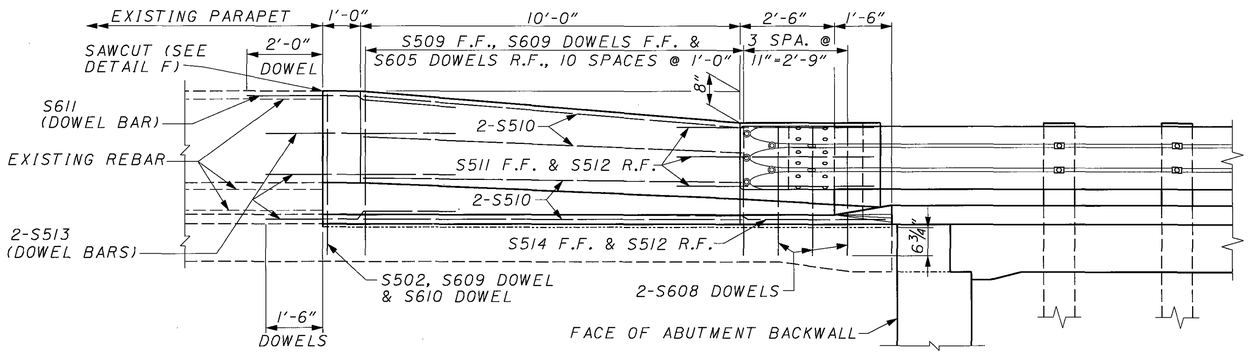
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

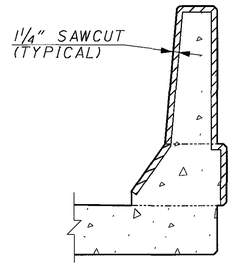
SU271SM1.DGN 6/24/04 TWH,JLS,RC



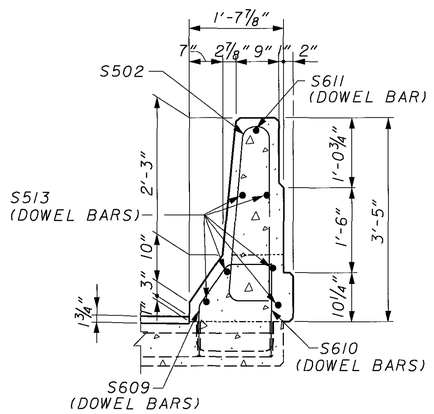
PLAN



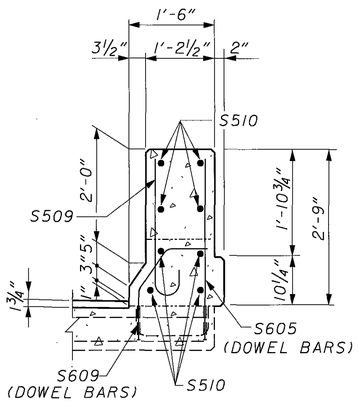
SECTION A-A



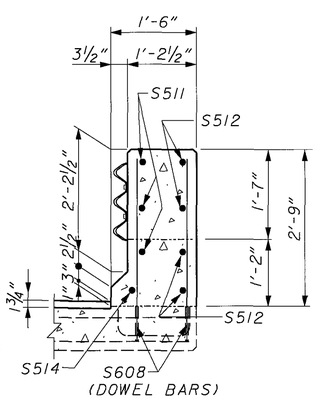
DETAIL F



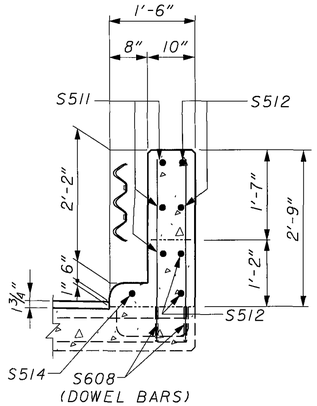
SECTION C-C



SECTION D-D



SECTION E-E



SECTION F-F

NOTES

ADDITIONAL NOTES: SEE SHEET 44/48.

SU27ISMIA.DGN 6/24/04 TWH,JLS,RC

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

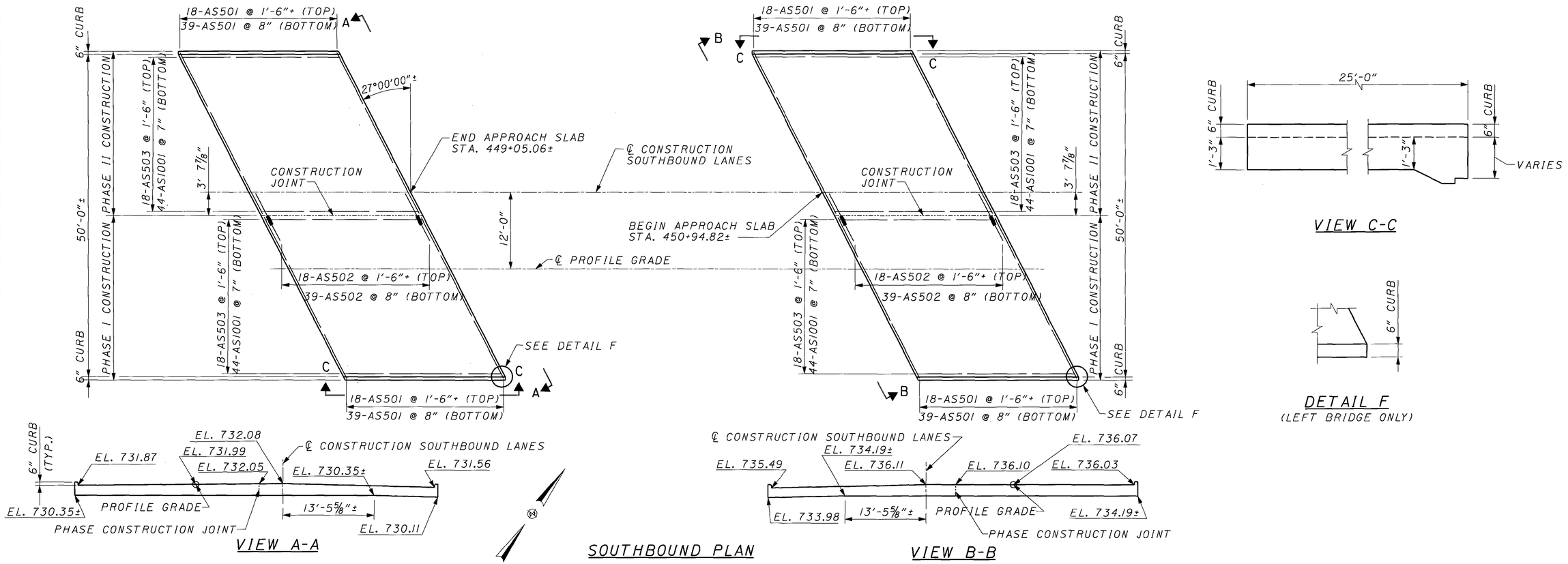
DESIGNED	DRAWN	REVIEWED	DATE
ALP	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709099(L) 7709129(R)	

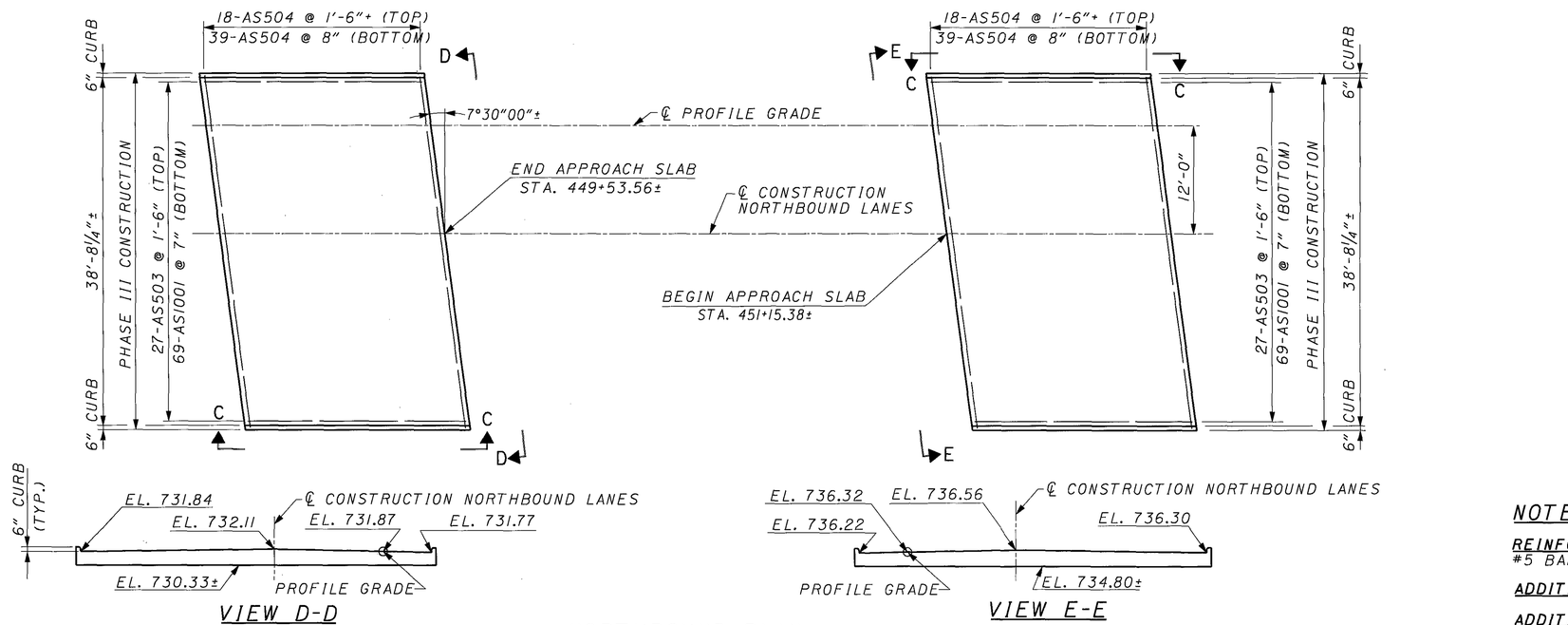
DEFLECTOR PARAPET REHABILITATION
BRIDGE NO. SUM-271-0854 L & R
OVER BOSTON MILLS ROAD

SUM-271-8.02

45/48

605/612





NOTES

REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-9" FOR #5 BARS.

ADDITIONAL DETAILS: SEE STD. DRAWING AS-1-81.

ADDITIONAL NOTES: SEE SHEET 6/48.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
ALP	TWH	DAP	3/18/04
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BLN		7709099 (L) 7709129 (R)	

APPROACH SLABS & DETAILS

BRIDGE NO. SUM-271-0854 L & R
OVER BOSTON MILLS ROAD

SUM-271-8.02

46/48

606/612

SU27ISMT.DGN 6/24/04 TWH,JLS,RC

ABUTMENTS

CALCULATED TWH DATE 7/03
CHECKED ALP DATE 7/03

MARK	S.B.B. REAR	S.B.B. FWD.	N.B.B. REAR	N.B.B. FWD.	TOTAL	LENGTH	TYPE	A	B	C	INC.	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
A501	16	18			34	9'-8"	1	2'-0"	5'-11"	2'-0"		343	
A502	14				14	8'-9"	1	0'-10"	8'-0½"	0		128	
A503	2				2	20'-1"	STR.					42	
A504	10	9			19	7'-2"	1	2'-0"	3'-5"	2'-0"		142	
A505	6				6	7'-9"	STR.					49	
A506	6	6			12	10'-6"	STR.					131	
A507	8				8	14'-11"	STR.					124	
A508	2				2	22'-8"	STR.					47	
A509	2				2	21'-10"	STR.					46	
A510	2				2	18'-8"	STR.					39	
A511	2				2	12'-1"	10	9'-8"	2'-6"	6		25	
A512	2				2	3'-8"	STR.					8	
A513				1	1	26'-8"	STR.						28
A514	1				1	32'-0"	STR.					33	
A515	1				1	33'-1"	STR.					35	
A516	1	1			2	5'-10"	3	2'-11"				12 *	
A517	1				1	8'-5"	10	5'-1"	3'-4"	5⅜		9	
A518	1				1	7'-6"	10	5'-1"	2'-5"	5⅜		8	
A519		12			12	7'-10"	1	0'-10"	7'-1"	0		98	
A520		6			6	5'-11"	STR.					37	
A521		2			2	22'-3"	STR.					46	
A522		1			1	7'-3"	10	4'-10"	2'-5"	5¾		8	
A523		1			1	15'-0"	10	4'-3"	10'-9"	6		16	
A524	14	14			28	4'-5"	STR.					129	
A525		8			8	18'-9"	STR.					156	
A526		2			2	26'-6"	STR.					55	
A527		2			2	25'-0"	STR.					52	
A528		2			2	22'-0"	STR.					46	
A529		1			1	32'-10"	STR.					34	
A530		1			1	33'-0"	STR.					34	
A531				2	2	6'-4"	10	4'-5"	1'-11"	6 15/16			13
A532			1		1	23'-7"	STR.						25
A533		1			1	14'-4"	10	3'-7"	10'-9"	6		15	
A534				1	1	22'-11"	STR.						24
A535				2	2	7'-4"	10	4'-11"	2'-5"	6			15
A536			2		2	6'-9"	10	4'-7"	2'-2"	6 3/16			14
A537			2		2	6'-4"	10	4'-4"	2'-0"	6 11/16			13
A538			1		1	26'-4"	STR.						28
A539		1			1	8'-2"	10	4'-10"	3'-4"	5¾		9	
A601	16	18			34	10'-9"	1	2'-7"	5'-11"	2'-7"		549	
A602	9				9	17'-3"	1	8'-1"	1'-5"	8'-1"		233	
A603	11				11	9'-5"	1	4'-2"	1'-5"	4'-2"		156	
A604	11	13			24	7'-1"	1	3'-0"	1'-5"	3'-0"		255	
A605	11				11	8'-9"	1	4'-1"	0'-11"	4'-1"		145	
A606	5	5	8	9	27	2'-10"	1	1'-0"	1'-2"	1'-0"		43	72
A607	2				2	16'-5"	1	7'-8"	1'-5"	7'-8"		49	
A608	1 SER.OF 6				1 SER.OF 6	7'-10" TO 15'-5"	1	3'-4½" TO 7'-2"	1'-5"	3'-4½" TO 7'-2"	9"	105	
A609	94	88	82	78	342	3'-3"	STR.					888	781
A610	46	43		39	128	3'-3"	1	1'-4"	0'-11"	1'-4"		434	190
A611	9	6	12	14	41	3'-9"	STR.					84	146
A612	2				2	2'-9"	STR.					8	
A613	1		2		3	2'-2"	1	8"	1'-2"	8"		3	7
A614		2	4	4	10	3'-0"	STR.					9	36
A615		12			12	15'-5"	1	7'-2"	1'-5"	7'-2"		278	
A616		13			13	10'-7"	1	4'-9"	1'-5"	4'-9"		207	
A617		14			14	9'-1"	1	4'-3"	0'-11"	4'-3"		191	
A618		2			2	12'-5"	1	5'-8"	1'-5"	5'-8"		37	
A619		1			1	10'-1"	1	4'-9"	0'-11"	4'-9"		15	
A620		2			2	16'-9"	1	7'-10"	1'-5"	7'-10"		50	
A621		1 SER.OF 7			1 SER.OF 7	7'-11" TO 15'-11"	1	3'-5" TO 7'-5"	1'-5"	3'-5" TO 7'-5"	8"	125	
A622			39		39	2'-11"	1	1'-2"	0'-11"	1'-2"			171

ABUTMENTS (CONT'D)

CALCULATED TWH DATE 7/03
CHECKED ALP DATE 7/03

MARK	S.B.B. REAR	S.B.B. FWD.	N.B.B. REAR	N.B.B. FWD.	TOTAL	LENGTH	TYPE	A	B	C	INC.	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
A801	7				7	20'-3"	STR.					378	
A802	5				5	10'-6"	STR.					140	
A803		7			7	22'-2"	STR.					414	
A804		5			5	10'-7"	STR.					141	
A805	9	12			21	7'-8"	STR.					430	
D801	28	26	26	26	106	5'-9"	10	1'-11"	3'-11"	6⅜		829	798
D802		8			8	6'-0"	6	3'-8"				128	
D803	7				7	5'-9"	6	3'-5"				107	
										TOTAL WEIGHT		8387	2361

* WEIGHT DOES NOT INCLUDE WEIGHT OF MECHANICAL CONNECTORS

PIERS

CALCULATED JLS DATE 6/03
CHECKED ALP DATE 6/03

MARK	S.B.B. PIER 1	S.B.B. PIER 2	TOTAL	LENGTH	TYPE	A	B	C	S.B.B. WEIGHT (LBS.)
P501	16	16	32	8'-2"	1	2'-10½"	2'-8"	2'-10½"	273
P502	3	3	6	9'-6"	7	2'-9"	4'-0"	2'-6¾"	59
P503	8	8	16	10'-1"	1	2'-4"	5'-8"	2'-4"	168
P504	5	5	10	14'-1"	1	2'-4"	9'-8"	2'-4"	147
P505	2	2	4	5'-8"	STR.				24
P506	2	2	4	9'-8"	STR.				40
P601	2	2	4	12'-8"	STR.				76
P801	10	10	20	9'-11"	1	2'-4"	5'-8"	2'-4"	530
P901	16	16	32	8'-9"	1	1'-7"	7'-5"	0	952
P902	16		16	30'-2"	8	28'-11"			1641
P903		16	16	27'-4"	8	26'-1"			1487
P904	4	4	8	14'-0"	1	1'-7"	11'-5"	1'-7"	381
P905	6	6	12	15'-9"	1	1'-7"	14'-5"	0	643
P906	4	4	8	14'-5"	1	1'-7"	11'-10"	1'-7"	392
P1001	6	6	12	13'-8"	1	2'-4"	9'-8"	2'-4"	706
SP401	1		1	26'-0"	9				379
SP402		1	1	23'-0"	9				338
								TOTAL WEIGHT	8236

NOTES:

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST LETTER IDENTIFIES BAR LOCATION, THE NEXT DIGIT INDICATES THE BAR SIZE DESIGNATION, THE REMAINING DIGITS STATE THE SEQUENCE NUMBER.

EXAMPLE: A511
A = LOCATION OF THE BAR IN STRUCTURE (ABUTMENT)
5 = BAR SIZE DESIGNATION
11 = SEQUENCE NUMBER

BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED. R INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED.

ALL REINFORCING STEEL TO BE EPOXY COATED.

NOTATION: N.B.B. - NORTHBOUND BRIDGE
S.B.B. - SOUTHBOUND BRIDGE

BENDING DIAGRAM: SEE SHEET 48/48 .

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN TWH | REVIEWED DAP | DATE 3/18/04
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 7709099(L) 7709129(R)

REINFORCING STEEL LIST - 1

BRIDGE NO. SUM-271-0854 L & R
OVER BOSTON MILLS ROAD

SUM-271-8.02

SU271SM3.DGN 6/24/04 TWH,JLS,RC

SUPERSTRUCTURE

CALCULATED TWH DATE 4/03
CHECKED ALP DATE 7/03

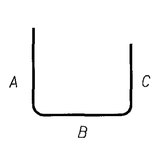
MARK	BRIDGE S.B.B.	BRIDGE N.B.B.	TOTAL	LENGTH	TYPE	A	B	C	INC.	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
S401	50		50	22'-4"	STR.					746	
S402	100		100	37'-2"	STR.					2483	
S403	26		26	28'-6"	STR.					495	
S404	26		26	31'-6"	STR.					547	
S501	64		64	23'-0"	STR.					1535	
S502	160	4	164	7'-1"	5					1182	30
S503	12		12	16'-1"	STR.					201	
S504	4 SER OF 19		4 SER OF 19	1'-4" TO 17'-6"	STR.				10¾"	746	
S505	4 SER OF 21		4 SER OF 21	1'-3" TO 19'-2"	STR.				10¾"	894	
S506	730		730	19'-10"	STR.					15,101	
S507	24		24	35'-3"	STR.					882	
S508	128		128	38'-0"	STR.					5073	
S509	4 SER OF 11	4 SER OF 11	8 SER OF 11	2'-11" TO 3'-9"	8				15/16"	153	153
S510	32	32	64	10'-0"	STR.					334	334
S511	12	12	24	5'-5"	11					68	68
S512	16	16	32	4'-11"	STR.					82	82
S513	12	24	36	6'-5"	STR.					80	161
S514	4	4	8	4'-5"	STR.					18	18
S601	180		180	3'-1"	4	10½"				834	
S602	158		158	2'-6"	1	1'-9"	11"	0		593	
S603	2		2	18'-9"	STR.					56	
S604	4		4	36'-1"	STR.					217	
S605	2 SER OF 11	4 SER OF 11	6 SER OF 11	3'-3" TO 4'-1"	STR.					121	22
S606	12		12	4'-0"	1	3'-2"	12"	0"		72	
S607	2 SER OF 11		2 SER OF 11	4'-0" TO 4'-10"	1	3'-2" TO 4'-0"	12"	0	1"	146	
S608	12	24	36	3'-2"	STR.					57	114
S609	24	48	72	2'-4"	4	0"				84	168
S610	2	4	6	2'-4"	STR.					7	14
S611	2	4	6	7'-5"	STR.					22	45
									TOTAL WEIGHT	32,829	1209

APPROACH SLABS

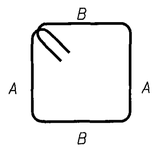
CALCULATED TWH DATE 7/03
CHECKED ALP DATE 8/03

MARK	S.B.B. REAR	S.B.B. FWD.	N.B.B. REAR	N.B.B. FWD.	TOTAL	LENGTH	TYPE	A	B	C	INC.	S.B.B. WEIGHT (LBS.)	N.B.B. WEIGHT (LBS.)
AS501	114	114			228	28'-0"	STR.					6659	
AS502	57	57			114	5'-10"	3	2'-11"				694 *	
AS503	36	36	27	27	126	24'-6"	STR.					1840	1380
AS504			57	57	114	39'-6"	STR.						4697
AS1001	88	88	69	69	314	25'-11"	8	24'-6"				19,627	15,390
											TOTAL WEIGHT	28,820	21,467 **

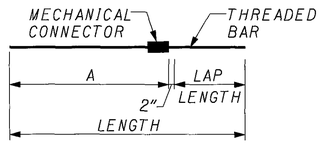
* WEIGHT DOES NOT INCLUDE WEIGHT OF MECHANICAL CONNECTORS



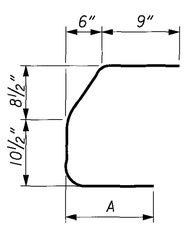
TYPE 1



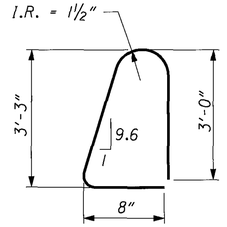
TYPE 2



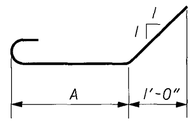
TYPE 3



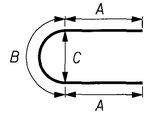
TYPE 4



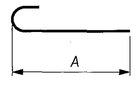
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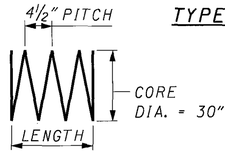
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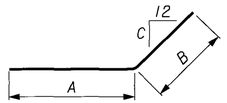
TYPE 7



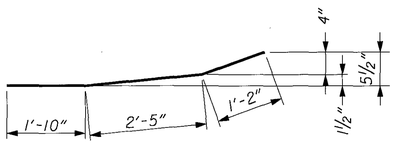
TYPE 8



TYPE 9



TYPE 10



TYPE 11

BENDING DIAGRAM

** REINFORCING STEEL WEIGHT SHOWN FOR INFORMATION ONLY. REINFORCING STEEL INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T=15"), AS PER PLAN FOR PAYMENT.

NOTES: SEE SHEET 47/48 .

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED ALP | DRAWN TWH | REVIEWED DAP 3/18/04 | DATE
CHECKED BLN | REVISED | STRUCTURE FILE NUMBER 7709099(L) 7709129(R)

REINFORCING STEEL LIST - 2
BRIDGE NO. SUM-271-0854 L & R
OVER BOSTON MILLS ROAD

SUM-271-8.02

48/48

608
612

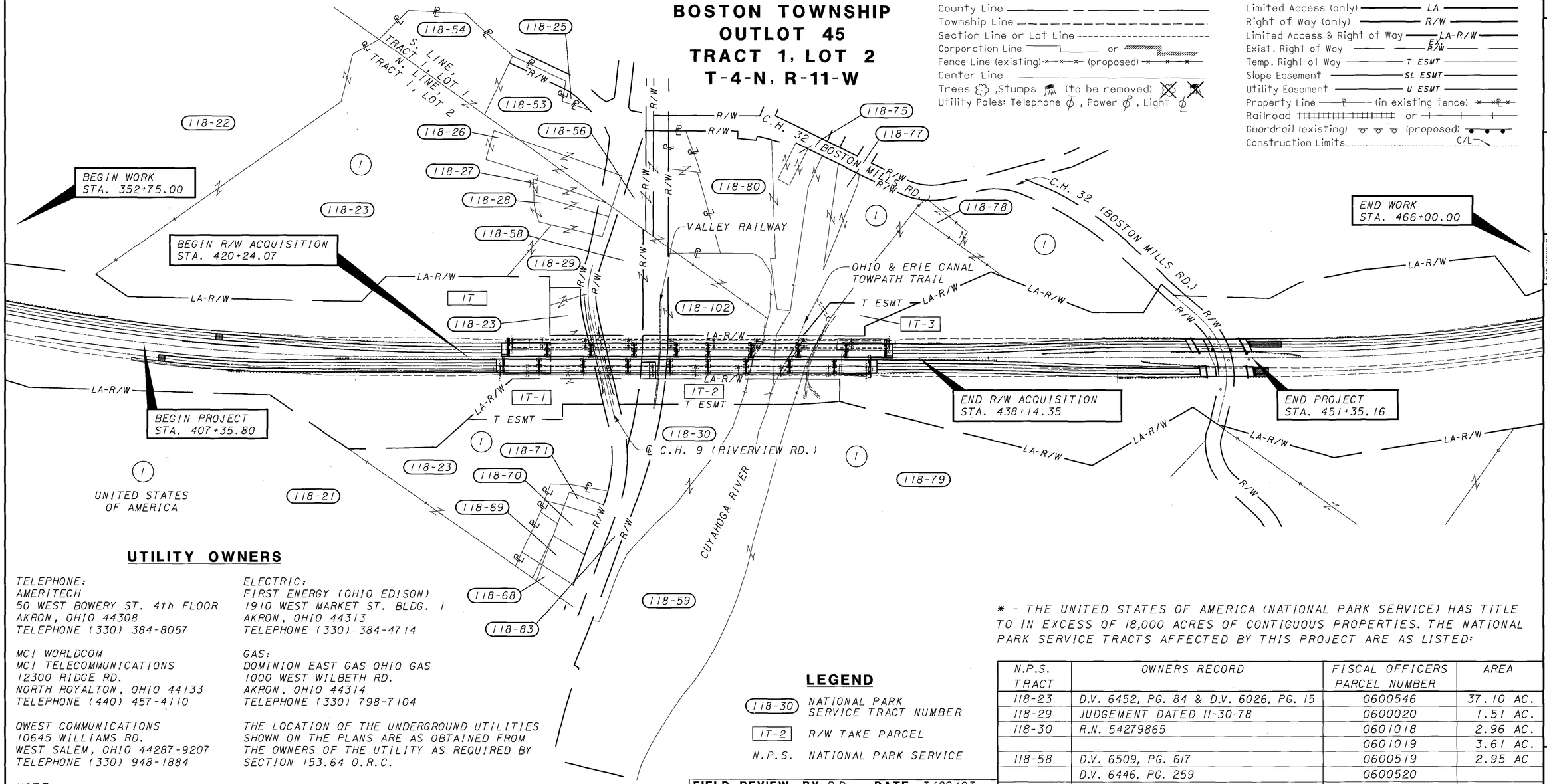
SU271SM3.DGN 6/24/04 TWH,JL,S,RC

SUMMIT COUNTY
BOSTON TOWNSHIP
OUTLOT 45
TRACT 1, LOT 2
T-4-N, R-11-W

CONVENTIONAL SIGNS

County Line
Township Line
Section Line or Lot Line
Corporation Line or
Fence Line (existing) (proposed)
Center Line
Trees, Stumps (to be removed)
Utility Poles: Telephone, Power, Light

Limited Access (only) LA
Right of Way (only) R/W
Limited Access & Right of Way LA-R/W
Exist. Right of Way EX. R/W
Temp. Right of Way T ESMT
Slope Easement SL ESMT
Utility Easement U ESMT
Property Line (in existing fence)
Railroad or
Guardrail (existing) (proposed)
Construction Limits C/L



UTILITY OWNERS

TELEPHONE:
AMERITECH
50 WEST BOWERY ST. 4th FLOOR
AKRON, OHIO 44308
TELEPHONE (330) 384-8057

MCI WORLDCOM
MCI TELECOMMUNICATIONS
12300 RIDGE RD.
NORTH ROYALTON, OHIO 44133
TELEPHONE (440) 457-4110

QWEST COMMUNICATIONS
10645 WILLIAMS RD.
WEST SALEM, OHIO 44287-9207
TELEPHONE (330) 948-1884

ELECTRIC:
FIRST ENERGY (OHIO EDISON)
1910 WEST MARKET ST. BLDG. 1
AKRON, OHIO 44313
TELEPHONE (330) 384-4714

GAS:
DOMINION EAST GAS OHIO GAS
1000 WEST WILBETH RD.
AKRON, OHIO 44314
TELEPHONE (330) 798-7104

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF THE UTILITY AS REQUIRED BY SECTION 153.64 O.R.C.

NOTE:
ALL TEMPORARY PARCELS TO BE OF "48" MONTH DURATION

LEGEND

(118-30) NATIONAL PARK SERVICE TRACT NUMBER
[IT-2] R/W TAKE PARCEL
N.P.S. NATIONAL PARK SERVICE

* - THE UNITED STATES OF AMERICA (NATIONAL PARK SERVICE) HAS TITLE TO IN EXCESS OF 18,000 ACRES OF CONTIGUOUS PROPERTIES. THE NATIONAL PARK SERVICE TRACTS AFFECTED BY THIS PROJECT ARE AS LISTED:

N.P.S. TRACT	OWNERS RECORD	FISCAL OFFICERS PARCEL NUMBER	AREA
118-23	D.V. 6452, PG. 84 & D.V. 6026, PG. 15	0600546	37.10 AC.
118-29	JUDGEMENT DATED 11-30-78	0600020	1.51 AC.
118-30	R.N. 54279865	0601018	2.96 AC.
		0601019	3.61 AC.
118-58	D.V. 6509, PG. 617	0600519	2.95 AC
	D.V. 6446, PG. 259	0600520	
		0600522	
		0600523	
		0600524	
118-59	GOVERNOR'S DEED DATED 12-15-89	0600565	12.31 AC.
	(OHIO CANAL LANDS) O.R. 389, PG. 587		
118-79	D.V. 5889, PG. 829	0600554	5.89 AC.
		0600561	76.98 AC.
118-83	D.V. 7513, PG. 719	N/A	3.53 AC.

FIELD REVIEW BY B.B.	DATE: 3/20/03	
OWNERSHIP VERIFIED BY B.B.	DATE: 3/20/03	
DJH	05/21/03	REVISED OWNERS RECORD TABLE
REV	DATE	DESCRIPTION
DATE OF COMPLETION: 3/24/03		

SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

1 OWNERSHIPS
4 PARCELS

NET RESIDUE = RECORD AREA - TOTAL PRO - NET TAKE
ALL AREAS IN ACRES DV = DEED VOLUME

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD DOCUMENT NUMBER BOOK	OWNERS RECORD DOCUMENT NUMBER PAGE	FISCAL OFFICERS PARCEL NUMBER	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUCTURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS AND PERSONALTY	AS ACQUIRED RECEPTION NUMBER
IT	UNITED STATES OF AMERICA	1,2	*	*	*	*		0.566		0.566				STATE	FOR CONSTRUCTION OF NEW BRIDGE	
IT-1		1,2	*	*	*	*		1.402		1.402					FOR CONSTRUCTION OF NEW BRIDGE	
IT-2		1,2,3	*		*	*		2.070		2.070					FOR CONSTRUCTION OF NEW BRIDGE	
IT-3		1,3	*	*	*	*		0.800		0.800					FOR CONSTRUCTION OF NEW BRIDGE	

HORIZONTAL SCALE IN FEET
0 100 200 400

PID NO. 21450

R/W DESIGNER BB
R/W REVIEWER RJM

PROPERTY MAP & SUMMARY OF ADDITIONAL RIGHT OF WAY

SUM-271-8.02

1 / 4

609 / 612

2145ORM.DGN 9/08/04 CEO.RC

SUMMIT COUNTY
BOSTON TOWNSHIP
TRACT 1, LOT 2
OUTLOT 45
T-4-N, R-11-W

PARCEL	EASEMENT REQUIRED	TOTAL AREA	AREA OF OVERLAP		
			HIGHWAY	AERIAL	TEMPORARY
AERIAL	EXISTING	17473 S.F.	1588 S.F.		2294 S.F.
HIGHWAY	EXISTING	1588 S.F.		1588 S.F.	
IT-2	TEMPORARY FOR REMOVAL OF PIER	2294 S.F.		2294 S.F.	

NOTE:
SEE RIGHT OF WAY PLAN (TREE DATA) SHEET NO. 4 OF 4 FOR TREE LOCATION, SIZE AND TYPE.

MONUMENT LEGEND

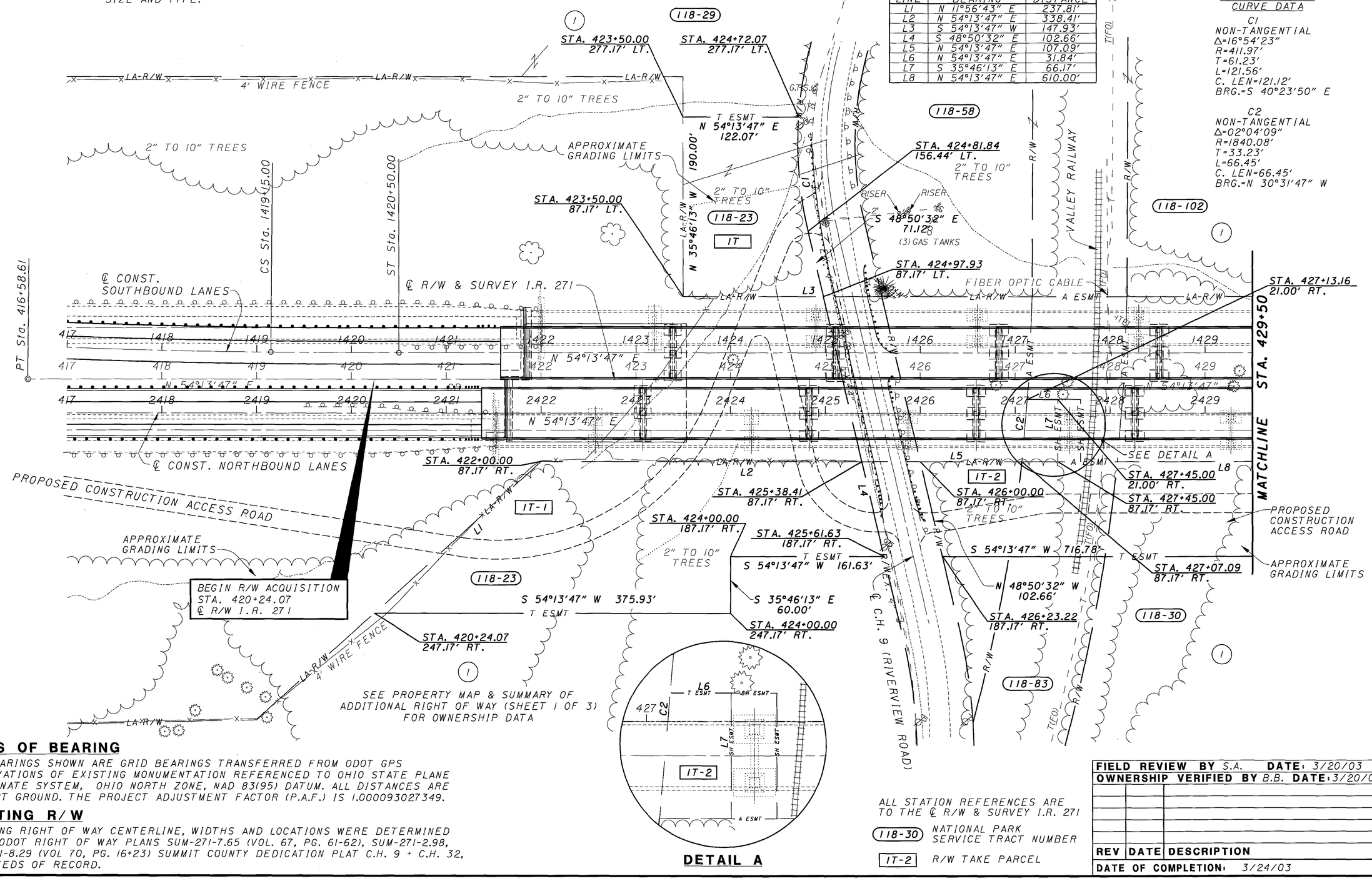
- -3/4 " x 30" REBAR WITH 1 ½" ALUMINUM CAP STAMPED "ODOT ROW RLS 7209"
- © -CONC. ℄ R/W MONUMENT FOUND

LINE	BEARING	DISTANCE
L1	N 11°56'43" E	237.81'
L2	N 54°13'47" E	338.41'
L3	S 54°13'47" W	147.93'
L4	S 48°50'32" E	102.66'
L5	N 54°13'47" E	107.09'
L6	N 54°13'47" E	31.84'
L7	S 35°46'13" E	66.17'
L8	N 54°13'47" E	610.00'

TEMPORARY R/W CURVE DATA

C1
NON-TANGENTIAL
Δ=16°54'23"
R=411.97'
T=61.23'
L=121.56'
C. LEN=121.12'
BRG.=S 40°23'50" E

C2
NON-TANGENTIAL
Δ=02°04'09"
R=1840.08'
T=33.23'
L=66.45'
C. LEN=66.45'
BRG.=N 30°31'47" W



DETAIL A

BASIS OF BEARING

ALL BEARINGS SHOWN ARE GRID BEARINGS TRANSFERRED FROM ODOT GPS OBSERVATIONS OF EXISTING MONUMENTATION REFERENCED TO OHIO STATE PLANE COORDINATE SYSTEM, OHIO NORTH ZONE, NAD 83(95) DATUM. ALL DISTANCES ARE PROJECT GROUND. THE PROJECT ADJUSTMENT FACTOR (P.A.F.) IS 1.000093027349.

EXISTING R/W

EXISTING RIGHT OF WAY CENTERLINE, WIDTHS AND LOCATIONS WERE DETERMINED USING ODOT RIGHT OF WAY PLANS SUM-271-7.65 (VOL. 67, PG. 61-62), SUM-271-2.98, SUM-271-8.29 (VOL 70, PG. 16+23) SUMMIT COUNTY DEDICATION PLAT C.H. 9 + C.H. 32, AND DEEDS OF RECORD.

ALL STATION REFERENCES ARE TO THE ℄ R/W & SURVEY I.R. 271

(118-30) NATIONAL PARK SERVICE TRACT NUMBER

[IT-2] R/W TAKE PARCEL

FIELD REVIEW BY S.A. DATE: 3/20/03		
OWNERSHIP VERIFIED BY B.B. DATE: 3/20/03		
REV	DATE	DESCRIPTION
DATE OF COMPLETION: 3/24/03		

HORIZONTAL SCALE IN FEET
0 25 50 100

PID NO. 21450

R/W DESIGNER BB
R/W REVIEWER RJM

RIGHT OF WAY PLAN
STA. 417+00.00 TO STA. 429+50.00

SUM-271-8.02

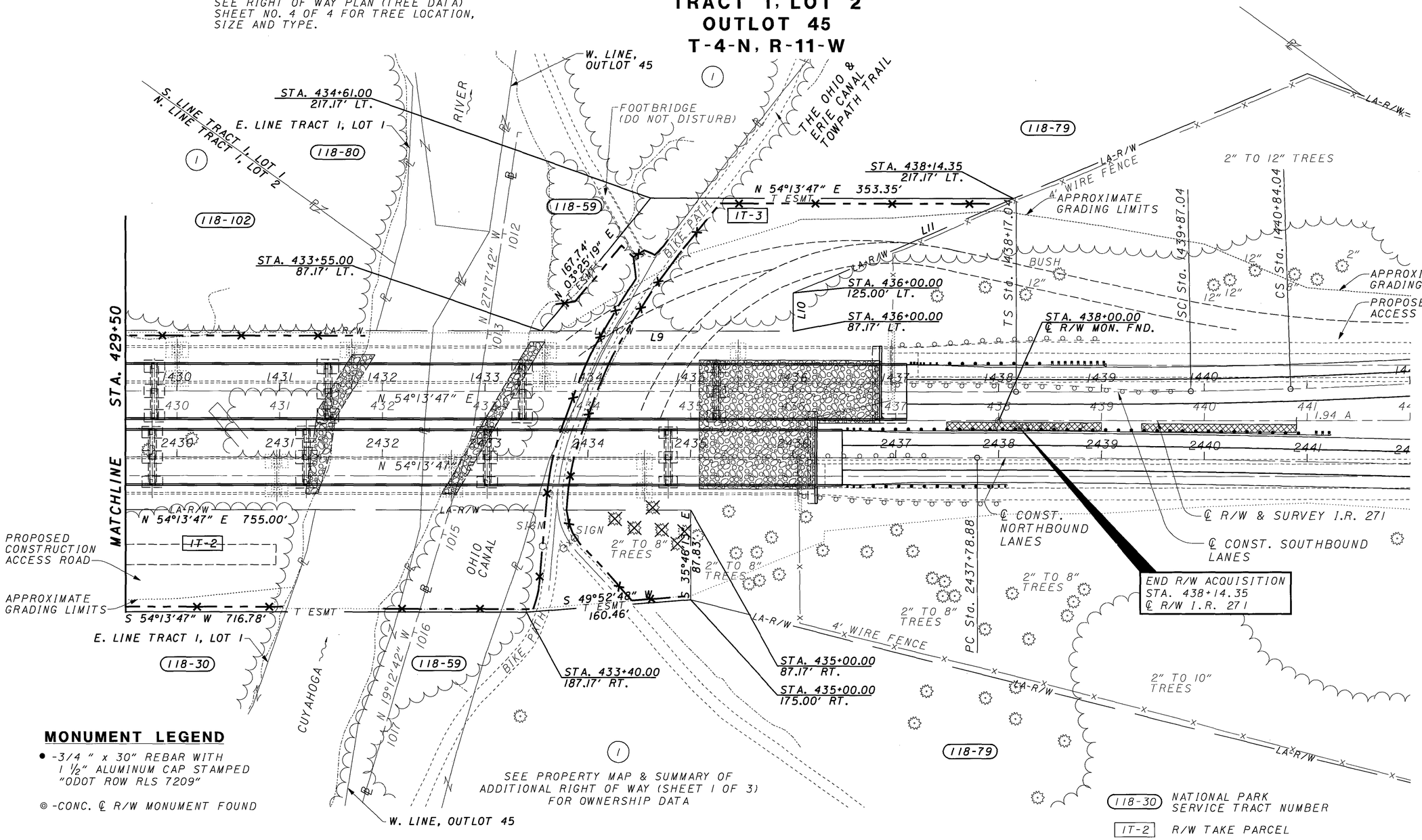
2 / 4

610
612

21450RPL.DGN 3/29/04 CEO

SUMMIT COUNTY
BOSTON TOWNSHIP
TRACT 1, LOT 2
OUTLOT 45
T-4-N, R-11-W

NOTE:
SEE RIGHT OF WAY PLAN (TREE DATA) SHEET NO. 4 OF 4 FOR TREE LOCATION, SIZE AND TYPE.



MONUMENT LEGEND

- ● -3/4 " x 30" REBAR WITH 1 ½" ALUMINUM CAP STAMPED "ODOT ROW RLS 7209"
- ◎ -CONC. ℄ R/W MONUMENT FOUND

(1) SEE PROPERTY MAP & SUMMARY OF ADDITIONAL RIGHT OF WAY (SHEET 1 OF 3) FOR OWNERSHIP DATA

(118-30) NATIONAL PARK SERVICE TRACT NUMBER

[IT-2] R/W TAKE PARCEL

LINE	BEARING	DISTANCE
L9	S 54°13'47" W	245.00'
L10	S 35°46'13" E	37.83'
L11	S 30°57'43" W	233.33'

BASIS OF BEARING

ALL BEARINGS SHOWN ARE GRID BEARINGS TRANSFERRED FROM ODOT GPS OBSERVATIONS OF EXISTING MONUMENTATION REFERENCED TO OHIO STATE PLANE COORDINATE SYSTEM, OHIO NORTH ZONE, NAD 83(95) DATUM. ALL DISTANCES ARE PROJECT GROUND. THE PROJECT ADJUSTMENT FACTOR (P.A.F.) IS 1.000093027349.

EXISTING R/W

EXISTING RIGHT OF WAY CENTERLINE, WIDTHS AND LOCATIONS WERE DETERMINED USING ODOT RIGHT OF WAY PLANS SUM-271-7.65 (VOL. 67, PG. 61-62), SUM-271-2.98, SUM-271-8.29 (VOL 70, PG. 16+23) SUMMIT COUNTY DEDICATION PLAT C.H. 9 + C.H. 32, AND DEEDS OF RECORD.

FIELD REVIEW BY S.A. DATE: 3/20/03
OWNERSHIP VERIFIED BY B.B. DATE: 3/20/03

REV	DATE	DESCRIPTION

DATE OF COMPLETION: 3/24/03

HORIZONTAL SCALE IN FEET
0 25 50 100

PID NO. 21450
R/W DESIGNER BB
R/W REVIEWER RJM

RIGHT OF WAY PLAN
STA. 429+50.00 TO STA. 442+00.00

SUM-271-8.02

3 / 4

611 / 612

2145ORP2.DGN 3/25/04 CEO

SUMMIT COUNTY
BOSTON TOWNSHIP
TRACT 1, LOT 2
OUTLOT 45
T-4-N, R-11-W

(1)

SEE PROPERTY MAP & SUMMARY OF ADDITIONAL RIGHT OF WAY (SHEET 1 OF 3) FOR OWNERSHIP DATA

EXISTING FOOT BRIDGE
DO NOT DISTURB

18" ASH
14" MAPLE
15" MAPLE
14" MAPLE
16" OAK
16" OAK
12" OAK
15" OAK
14" OAK
12" OAK
14" OAK
14" OAK
12" OAK

13" ASH
18" ASH
20" MAPLE
20" MAPLE
20" MAPLE
20" MAPLE
20" MAPLE
20" OAK
16" OAK
16" OAK
14" OAK
15" OAK
40" OAK
12" TWIN MAPLE

12" MAPLE
12" BOXELDER
12" BOXELDER
30" DEAD
15" MAPLE
14" DEAD
12" ELM

14" CHERRY
14" ELM
12" OAK
42" SYCAMORE
15" OAK
30" HICKORY
15" DEAD
13" COTTONWOOD
19" LOCUST
14" OAK

20" MAPLE
14" DEAD
12" DEAD
36" OAK

15" ASH
20" DEAD
17" OAK
15" OAK
14" OAK
12" OAK
17" OAK
15" OAK
15" OAK

12" DEAD
12" DEAD
15" DEAD
15" ELM
20" MAPLE
15" OAK
15" OAK
15" OAK
40" QUAD OAK

12" COTTONWOOD
(SAVE)

12" ASH
12" CHERRY
12" CHERRY
12" CHERRY
12" CHERRY
13" CHERRY
13" CHERRY
15" CHERRY
16" DEAD
24" DEAD
12" MAPLE
17" MAPLE
15" MAPLE
17" MAPLE
16" MAPLE
14" MAPLE
16" MAPLE
15" MAPLE
12" MAPLE

14" CRABAPPLE
13" ELM
12" ELM
12" ELM
12" ELM
12" ELM
13" ELM
13" ELM
13" ELM
16" MAPLE
16" MAPLE

24" DEAD
28" DEAD
22" ELM
14" ELM
14" SPRUCE
14" SPRUCE

12" COTTONWOOD
15" COTTONWOOD
15" COTTONWOOD
14" COTTONWOOD
12" BOXELDER

24" DEAD
30" DEAD
24" SYCAMORE
24" SYCAMORE
16" BOXELDER
12" CHERRY
14" OSAGEORANGE

14" ELM
14" DEAD
15" SYCAMORE

(1)

SEE PROPERTY MAP & SUMMARY OF ADDITIONAL RIGHT OF WAY (SHEET 1 OF 3) FOR OWNERSHIP DATA

NOTE:
ALL TREES 12 INCHES OR LARGER IN SIZE HAVE BEEN LOCATED AND IDENTIFIED WITHIN PROJECT AREA.

FIELD REVIEW BY S.A. DATE: 3/20/03		
OWNERSHIP VERIFIED BY B.B. DATE: 3/20/03		
DJH	04/07/04	REVISED STATUS OF TREES
REV	DATE	DESCRIPTION
DATE OF COMPLETION: 3/24/03		

HORIZONTAL SCALE IN FEET
0 30 60 120

PID NO. 21450

R/W DESIGNER BB
R/W REVIEWER RJM

RIGHT OF WAY PLAN (TREE DATA)
STA. 420+50.00 TO 438+26.13

SUM-271-8.02

4 / 4

612 / 612

21450RT.DGN 3/29/04 CEO

GENERAL INFORMATION

INTRODUCTION

THIS REPORT CONSISTS OF THE SUBSURFACE INVESTIGATION OF A PROPOSED PROJECT TO INCLUDE THE WIDENING AND REALIGNMENT OF I-271 SB AND NB ASSOCIATED WITH REPLACEMENT OF BRIDGE NO. SUM-271-0802 L&R OVER THE CUYAHOGA RIVER VALLEY IN SUMMIT COUNTY. THE PROJECT ALONG I-271 SB STARTS APPROXIMATELY 1100 FEET SOUTH OF THE SOUTH ABUTMENT OF BRIDGE NO. SUM-271-0802 AND ENDS APPROXIMATELY 1200 FEET NORTH OF THE NORTH ABUTMENT OF BRIDGE NO. SUM-271-0802. THE PROJECT ALONG I-271 NB STARTS APPROXIMATELY 1200 FEET SOUTH OF THE SOUTH ABUTMENT OF BRIDGE NO. SUM-271-0802 AND ENDS APPROXIMATELY 1300 FEET NORTH OF THE NORTH ABUTMENT OF BRIDGE NO. SUM-271-0802. THE PROPOSED HORIZONTAL ALIGNMENT WILL SHIFT THE CENTERLINE OF THE EXISTING LANES APPROXIMATELY 26' TOWARDS THE MEDIAN FOR THE SOUTHBOUND LANES AND 18' TOWARDS THE MEDIAN FOR THE NORTHBOUND LANES. THE APPROXIMATE PROFILE GRADE WILL BE MAINTAINED.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

THE PROJECT SITE LIES ON THE GLACIATED, DEEPLY DISSECTED ALLEGHENY PLATEAU AT APPROXIMATE ELEVATIONS RANGING FROM 725 TO 825 FEET. THE WISCONSIN GLACIER PASSED OVER THE AREA AND LEFT A COATING OF DRIFT MATERIALS (LARGELY TILL) OF VARIABLE THICKNESS. THE SURFACE AND SUBSURFACE SOILS, IN THE VICINITY OF THE SITE, CONSIST PRIMARILY OF LAYERS OF SILT LOAM, SILTY CLAY LOAM, SILTY CLAY, LOAMY SAND, AND GRAVELLY LOAMY SAND WHICH CAN BE CLASSIFIED AS A-1 OR A-2, A-4, A-6, AND A-7 SOILS BASED ON THE AASHTO SOIL CLASSIFICATION SYSTEM. HOWEVER, THE PROJECT SITE HAS INCURRED CUT AND FILL OPERATIONS DUE TO EXISTING I-271 CONSTRUCTION AND THE COMPOSITION OF THE SURFACE AND SUBSURFACE SOILS WAS CHANGED IN MOST AREAS. BASED ON INFORMATION OBTAINED FROM THE OHIO GEOLOGICAL SURVEY, TOP OF BEDROCK IN THE VICINITY OF THE PROJECT SITE IS ANTICIPATED TO BE PRESENT AT APPROXIMATE ELEVATIONS RANGING FROM 630 TO 710 FEET. AT THESE ELEVATIONS, BEDROCK IS EXPECTED TO CONSIST OF SHALES AND SHALY SANDSTONES OF THE CUYAHOGA FORMATION.

EXPLORATION

A CME-55 TRUCK-MOUNTED DRILLING RIG WAS MOBILIZED TO ADVANCE THE TEST BORINGS USING 3.25-IN. I.D. HOLLOW STEM AUGERS (HSA). REPRESENTATIVE DISTURBED SAMPLES OF THE SOIL WERE COLLECTED USING A STANDARD 2.0-IN. O.D. SPLIT BARREL SAMPLER DRIVEN INTO THE SOIL BY MEANS OF A 140-LB. HAMMER FALLING FREELY THROUGH A DISTANCE OF 30-IN. (STANDARD PENETRATION TEST, ASTM D 1586). ALL TEST BORINGS WERE MONITORED FOR THE PRESENCE OF GROUNDWATER DURING THE DRILLING OPERATIONS AND BEFORE BACKFILLING THE BOREHOLES.

INVESTIGATIONAL FINDINGS

BRIDGE NO. SUM-271-0802 L & R OVER CUYAHOGA RIVER VALLEY

TEST BORINGS B-01, B-02, B-24, AND B-25 WERE ADVANCED AT THE TOP OF ABUTMENT SLOPES IN THE MEDIAN OR OUTSIDE SHOULDER WHILE TEST BORINGS B-03 THROUGH B-23 WERE ADVANCED BELOW THE BRIDGE ON THE ABUTMENT SLOPES OR IN THE CUYAHOGA RIVER VALLEY. TEST BORINGS B-01 THROUGH B-25 WERE ADVANCED THROUGH TOPSOIL WITH THE EXCEPTION OF B-02, B-22, AND B-23. THE APPROXIMATE THICKNESS OF THE TOPSOIL RANGED FROM THREE (3) TO SIX (6) INCHES WITH AN AVERAGE THICKNESS OF FIVE (5) INCHES. TEST BORING B-02 WAS ADVANCED THROUGH APPROXIMATELY EIGHT (8) INCHES OF ASPHALT PAVEMENT, FOUR (4) INCHES OF CEMENTED SLAG BASE AND FOUR (4) INCHES OF GRAVEL WITH SAND (A-1-b) ROADBASE. TEST BORINGS B-22 AND B-23 WERE ADVANCED THROUGH CRUSHED AGGREGATE LIMESTONE COBBLES OF THE ABUTMENT SLOPE THAT MEASURED 1.0 AND 4.5 FEET THICK, RESPECTIVELY. COBBLES MEASURING 2.5 FEET THICK WERE ENCOUNTERED IN TEST BORING B-03 BELOW THE TOPSOIL. THE SUBSURFACE SOILS ENCOUNTERED BELOW THE TOPSOIL, BELOW THE ROADBASE MATERIAL, AND BELOW THE COBBLES CONSISTED OF BOTH FILL MATERIALS AND NATURAL SOILS. FILL MATERIALS WERE ENCOUNTERED IN ALL TEST BORINGS WITH THE EXCEPTION OF B-03, B-04, B-13, B-16, B-17, B-18, AND B-20 THROUGH B-23 WHERE NATURAL SOILS WERE ENCOUNTERED. THE FILL MATERIALS ENCOUNTERED ABOVE THE NATURAL SOILS AND ABOVE THE BEDROCK CONSISTED OF COARSE AND FINE SAND (A-3a), SANDY SILT (A-4a), AND SILT AND CLAY (A-6a). THE APPROXIMATE THICKNESS OF THE FILL MATERIALS RANGED FROM 1.0 FOOT IN TEST BORING B-22 TO 100.3 FEET IN TEST BORING B-02. NATURAL SOILS ENCOUNTERED CONSISTED OF BOTH NON-COHESIVE AND COHESIVE SOILS ABOVE THE BEDROCK AND TO TERMINATION DEPTH. NON-COHESIVE SOILS ENCOUNTERED CONSISTED OF GRAVEL AND ROCK FRAGMENTS (A-1-a), GRAVEL AND ROCK FRAGMENTS WITH SAND (A-1-b), GRAVEL AND ROCK FRAGMENTS WITH SAND AND SILT (A-2-4), COARSE AND FINE SAND (A-3a), NON-PLASTIC SANDY SILT (A-4a), AND NON-PLASTIC SILT (A-4b) WHILE COHESIVE SOILS CONSISTED OF SANDY SILT (A-4a), SILT (A-4b), SILT AND CLAY (A-6a), AND CLAY (A-7-6). CLAY SHALE BEDROCK WAS ENCOUNTERED IN ALL OF THE TEST BORINGS WITH THE EXCEPTION OF B-23, B-24, AND B-25 BELOW APPROXIMATE ELEVATIONS RANGING FROM 623.1 FEET TO 718.7 FEET. THESE TEST BORINGS WERE TERMINATED IN CLAY SHALE BEDROCK.

THE LABORATORY TEST RESULTS INDICATED THAT THE MOISTURE CONTENTS OF THE TESTED COHESIVE SOIL SAMPLES RANGED FROM 9% TO 53%. THE RELATIVELY HIGH MOISTURE CONTENTS WERE THE RESULT OF ORGANIC MATTER PRESENT IN THE SAMPLES. THE MOISTURE CONTENTS OF THE TESTED NON-COHESIVE SOILS RANGED FROM 7% TO 48%. THE CONSISTENCY OF THE COHESIVE SOILS WAS FOUND TO RANGE FROM "VERY SOFT" TO "HARD", BUT WAS GENERALLY "STIFF" TO "VERY STIFF". THE RELATIVE DENSITY OF THE NON-COHESIVE SOILS WAS FOUND TO RANGE FROM "VERY LOOSE" TO "DENSE", BUT WAS GENERALLY "MEDIUM DENSE".

TWENTY (20) OF THE 31 COHESIVE SOIL SAMPLES TESTED FOR ATTERBERG LIMITS CONTAINED NATURAL MOISTURE CONTENTS GREATER THAN OR EQUAL TO THEIR PLASTIC LIMITS BUT LESS THAN THEIR LIQUID LIMITS. NORMALLY, SOILS WITH MOISTURE CONTENTS GREATER THAN THEIR LIQUID LIMITS ARE IN A LIQUID STATE AND HAVE NO SHEAR STRENGTH. SOILS WITH MOISTURE CONTENTS GREATER THAN THEIR PLASTIC LIMITS AND LESS THAN THEIR LIQUID LIMITS ARE IN A PLASTIC STATE, AND HAVE THE POTENTIAL OF VOLUME CHANGE UNDER CERTAIN LOADING CONDITIONS.

BRIDGE NO. SUM-271-0854 LEFT OVER BOSTOM MILLS ROAD

TEST BORINGS BMB-01 THROUGH BMB-03 WERE ADVANCED THROUGH TOPSOIL. THE APPROXIMATE THICKNESS OF TOPSOIL RANGED FROM THREE (3) INCHES TO EIGHT (8) INCHES WITH AN AVERAGE THICKNESS OF FIVE (5) INCHES. THE SUBSURFACE MATERIALS ENCOUNTERED CONSISTED OF BOTH FILL MATERIALS AND NATURAL SOILS BELOW THE TOPSOIL. BOTH FILL MATERIALS AND NATURAL SOILS CONSISTED OF PRIMARILY COHESIVE SOILS. THE FILL MATERIAL ENCOUNTERED ABOVE APPROXIMATE ELEVATIONS RANGING FROM 692.9 FEET TO 701.6 FEET CONSISTED OF SILT AND CLAY (A-6a), SANDY SILT (A-4a), AND COURSE AND FINE SAND (A-3a). THE NATURAL COHESIVE SOILS ENCOUNTERED BELOW THE FILL MATERIAL AND TO TERMINATION DEPTH CONSISTED OF SANDY SILT (A-4a), SILT (A-4b), SILT AND CLAY (A-6a), SILTY CLAY (A-6b), AND CLAY (A-7-6). THE NATURAL NON-COHESIVE SOILS ENCOUNTERED CONSISTED OF SILT (A-4b) IN THESE TEST BORINGS.

THE CONSISTENCY OF THE COHESIVE FILL MATERIALS WAS FOUND TO RANGE FROM "SOFT" TO "HARD", BUT WAS PRIMARILY "STIFF". THE CONSISTENCY OF THE NATURAL COHESIVE SOILS WAS FOUND TO RANGE FROM "SOFT" TO "HARD", BUT WAS PRIMARILY "VERY STIFF". THE LABORATORY TEST RESULTS INDICATED THAT THE MOISTURE CONTENTS OF THE TESTED COHESIVE SOIL SAMPLES RANGED FROM 13% TO 30%. THE MOISTURE CONTENTS OF THE TESTED NON-COHESIVE SOILS RANGED FROM 21% TO 25%. EIGHT (8) OF THE ELEVEN COHESIVE SOIL SAMPLES TESTED FOR ATTERBERG LIMITS CONTAINED NATURAL MOISTURE CONTENTS GREATER THAN OR EQUAL TO THEIR PLASTIC LIMITS BUT LESS THAN THEIR LIQUID LIMITS. NORMALLY, SOILS WITH MOISTURE CONTENTS GREATER THAN THEIR LIQUID LIMITS ARE IN A LIQUID STATE AND HAVE NO SHEAR STRENGTH. SOILS WITH MOISTURE CONTENTS GREATER THAN THEIR PLASTIC LIMITS AND LESS THAN THEIR LIQUID LIMITS ARE IN A PLASTIC STATE, AND HAVE THE POTENTIAL OF VOLUME CHANGE UNDER CERTAIN LOADING CONDITIONS.

GROUNDWATER CONDITIONS

THE GROUNDWATER LEVELS WERE MEASURED AT THE TEST BORING LOCATIONS DURING DRILLING OPERATIONS. HOWEVER, IN SOME OF THE TEST BORINGS, GROUNDWATER LEVELS WERE NOT MEASURED DURING DRILLING OPERATIONS BECAUSE THE LOWER PORTIONS OF THE HOLES WERE ADVANCED UTILIZING THE WASH BORE METHOD. AT MOST OF THE TEST BORING LOCATIONS, GROUNDWATER LEVELS WERE NOT MEASURED UPON COMPLETION OF THE ROCK CORING OPERATIONS BECAUSE THE WATER WAS USED AS A COOLING AGENT AND TO EXTRACT THE ROCK CUTTINGS WHEN ROCK CORING WAS PERFORMED. IN ORDER TO MEASURE THE WATER LEVEL OVER AN EXTENDED PERIOD OF TIME, OPEN STANDPIPE PIEZOMETERS WERE INSTALLED IN TEST BORINGS B-02, B-07, AND B-21. THESE EXTENDED STATIC GROUNDWATER LEVEL READINGS IN THE OPEN STAND PIPE PIEZOMETERS WERE USED TO ESTIMATE THE PHREATIC SURFACE FOR ANALYZING STABILITY OF THE ABUTMENT SLOPES. DIAGRAMS OF THE OPEN STANDPIPE PIEZOMETERS ARE SHOWN IN THE BORING LOGS. THE RESULTS OF THESE MEASUREMENTS ARE SUMMARIZED IN TABLE 4.3.1. IT SHOULD BE NOTED THAT GROUNDWATER ELEVATIONS ARE SUBJECT TO SEASONAL FLUCTUATIONS. THE REMAINING TEST BORINGS WERE BACKFILLED IMMEDIATELY UPON COMPLETION FOR SAFETY PURPOSES. THE EXTENDED GROUNDWATER READINGS INDICATED IN TABLE 4.3.1 FOR TEST BORINGS B-02, B-07, AND B-21 WERE THE HIGHEST WATER LEVEL MEASURED DURING MONITORING.

LEGEND

DESCRIPTION	ODOT CLASS
GRAVEL	A-1-a ( )
GRAVEL WITH SAND	A-1-b (0)
FINE SAND	A-3 (0)
COARSE AND FINE SAND	A-3a (0)
GRAVEL WITH SAND AND SILT	A-2-4 (0)
GRAVEL WITH SAND, SILT AND CLAY	A-2-6 ( )
SANDY SILT	A-4a (8)
SILT	A-4b (8)
SILT AND CLAY	A-6a (10)
SILTY CLAY	A-6b (12)
ELASTIC CLAY	A-7-5 ( )
CLAY	A-7-6 (15)
RANDOM FILL	VISUAL CLASSIFICATION
WEATHERED SHALE	VISUAL CLASSIFICATION
MUDSTONE	VISUAL CLASSIFICATION
SHALE	VISUAL CLASSIFICATION
SANDSTONE	VISUAL CLASSIFICATION
LIMESTONE	VISUAL CLASSIFICATION
VARIOUS OTHER MATERIAL	VISUAL CLASSIFICATION

**SILT AND CLAY COMBINED

SOD AND/OR TOP SOIL - X - APPROXIMATE DEPTH

BERM MATERIAL

AUGER BORING - PLAN VIEW

DRIVE SAMPLE AND/OR CORE BORING - PLAN VIEW

ROADWAY OR AUGER BORING PLOTTED TO VERTICAL SCALE ONLY

DRIVE SAMPLE AND/OR CORE BORING PLOTTED TO VERTICAL SCALE ONLY

● WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT

⊖ INDICATES A NON-PLASTIC MATERIAL WITH A HIGH WATER CONTENT

W FREE WATER

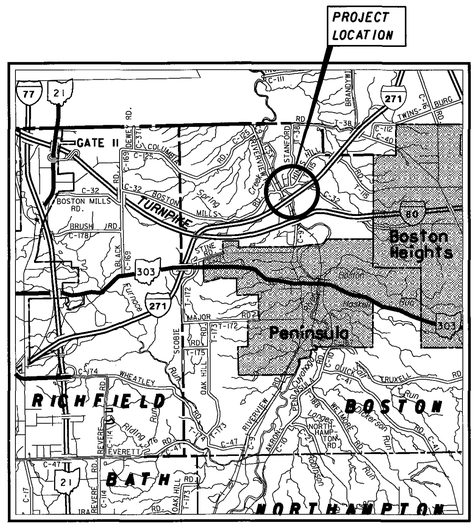
STATIC WATER LEVEL

NUMBER OF BLOWS FOR STANDARD PENETRATION TEST
X - NUMBER OF BLOWS FOR FIRST 0.5 FT.
Y - NUMBER OF BLOWS FOR SECOND 0.5 FT.
Z - NUMBER OF BLOWS FOR THIRD 0.5 FT.
(or X/Y/Z)

NOTE: FIGURES BESIDE BORINGS INDICATE WATER CONTENT IN PERCENT. e.g. 15

NOTE

ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN ON THE SOIL PROFILE SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATIONS, SOIL TESTS, AND BEDROCK BORINGS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF MATERIALS MANAGEMENT AT 1600 WEST BROAD STREET, THE OFFICE OF ROADWAY ENGINEERING OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET.



LOCATION MAP

Recon - PRIME ENGINEERING & ARCHITECTURE INC. - JANUARY 2003

Drilling - PRIME ENGINEERING & ARCHITECTURE INC. - JANUARY 28 THROUGH MARCH 31, 2003

Drafting - RICHLAND ENGINEERING LIMITED - J.L.S. - APRIL 23, 2003

Report - PRIME ENGINEERING & ARCHITECTURE INC. - APRIL 17, 2003

"SUBSURFACE EXPLORATION REPORT FOR SUM-271-8.02 BRIDGES" APRIL 17, 2003

SFINOTES.DGN 3/26/04 JLS,CAR,HN

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

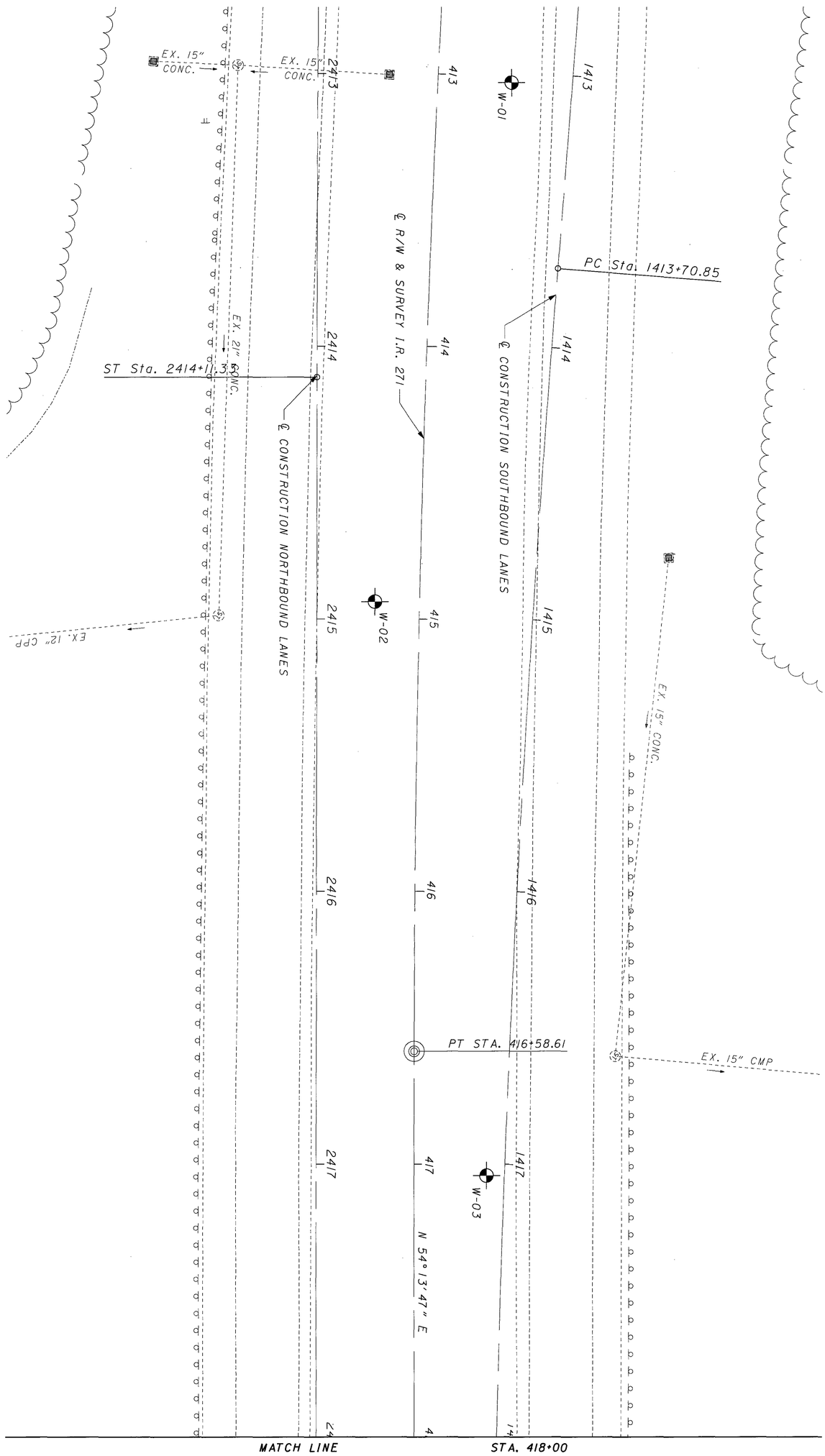
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DLR	CAR	DAP	4/28/03
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013(L) 7709021(R)	

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOMPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

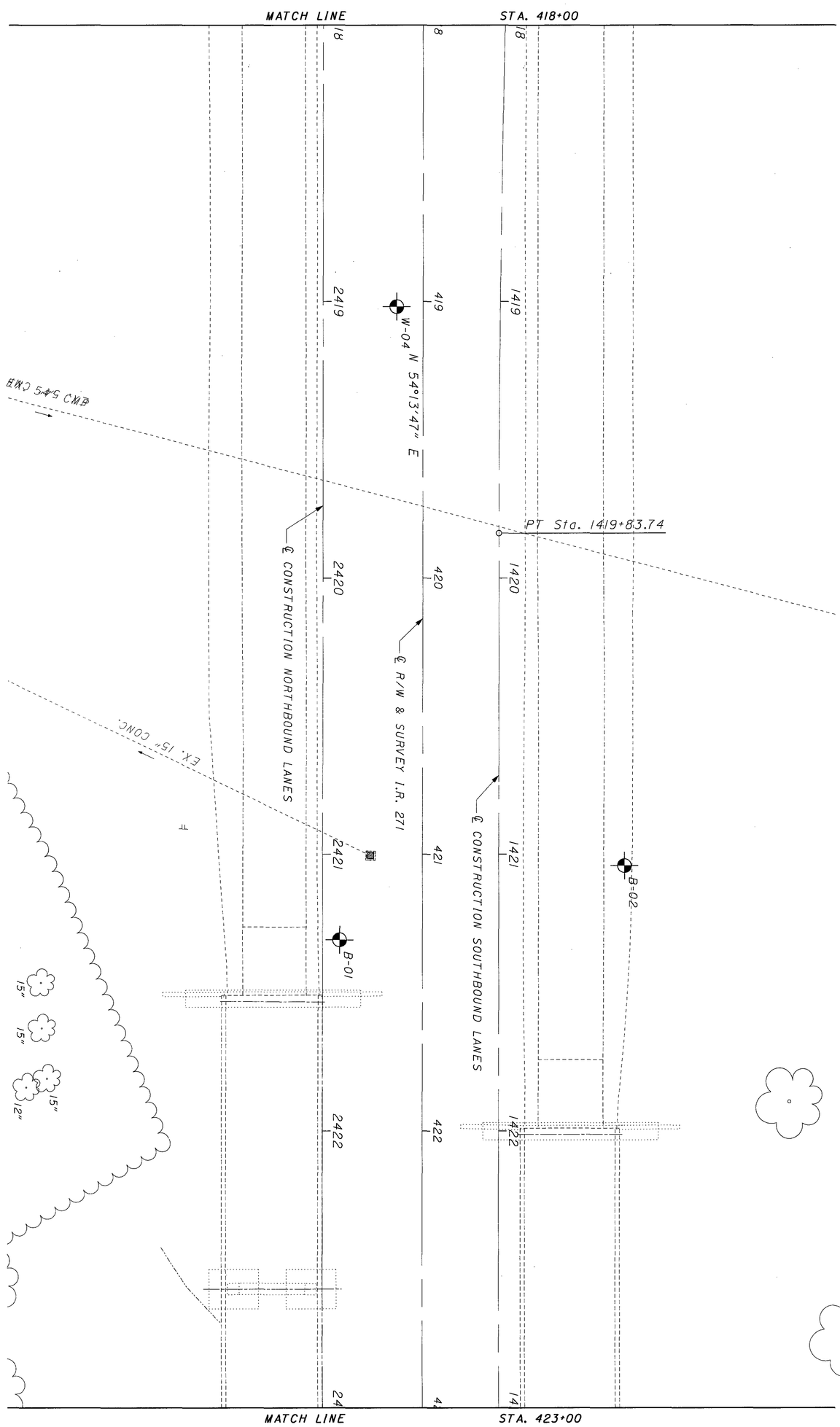
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47

SU271IIPA.DGN 03/26/04



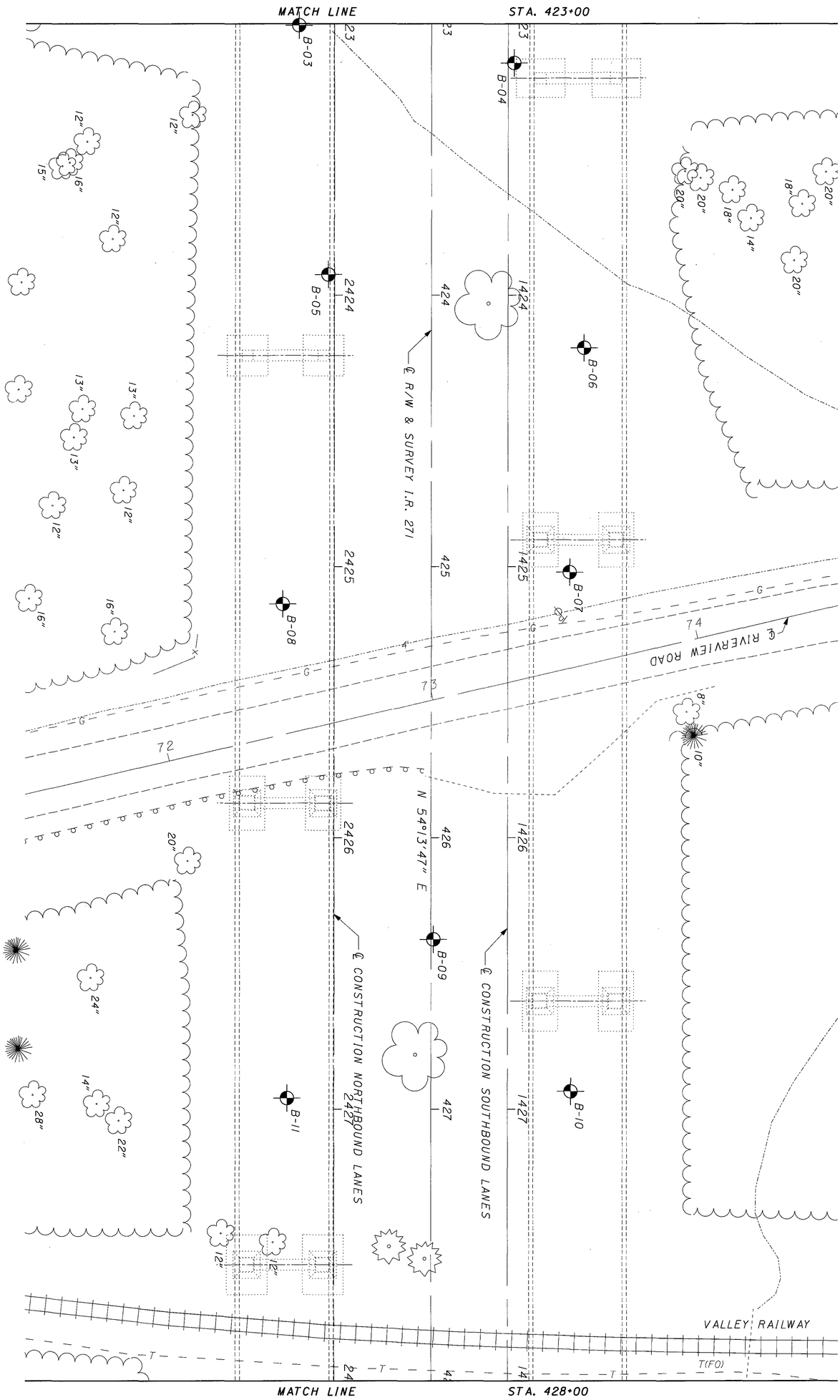
2 / 47	**SUM-271-8.02**	**STRUCTURE FOUNDATION INVESTIGATION** BRIDGE NO. SUM-271-0802 L & R OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER	DESIGNED KAK CHECKED DLR	DRAWN JLS REVISED	REVIEWED DAP 4/28/03 STRUCTURE FILE NUMBER 7709013(L) 7709021(R)		RICHLAND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902

SU271IPB.DGN 4/21/03 JLS



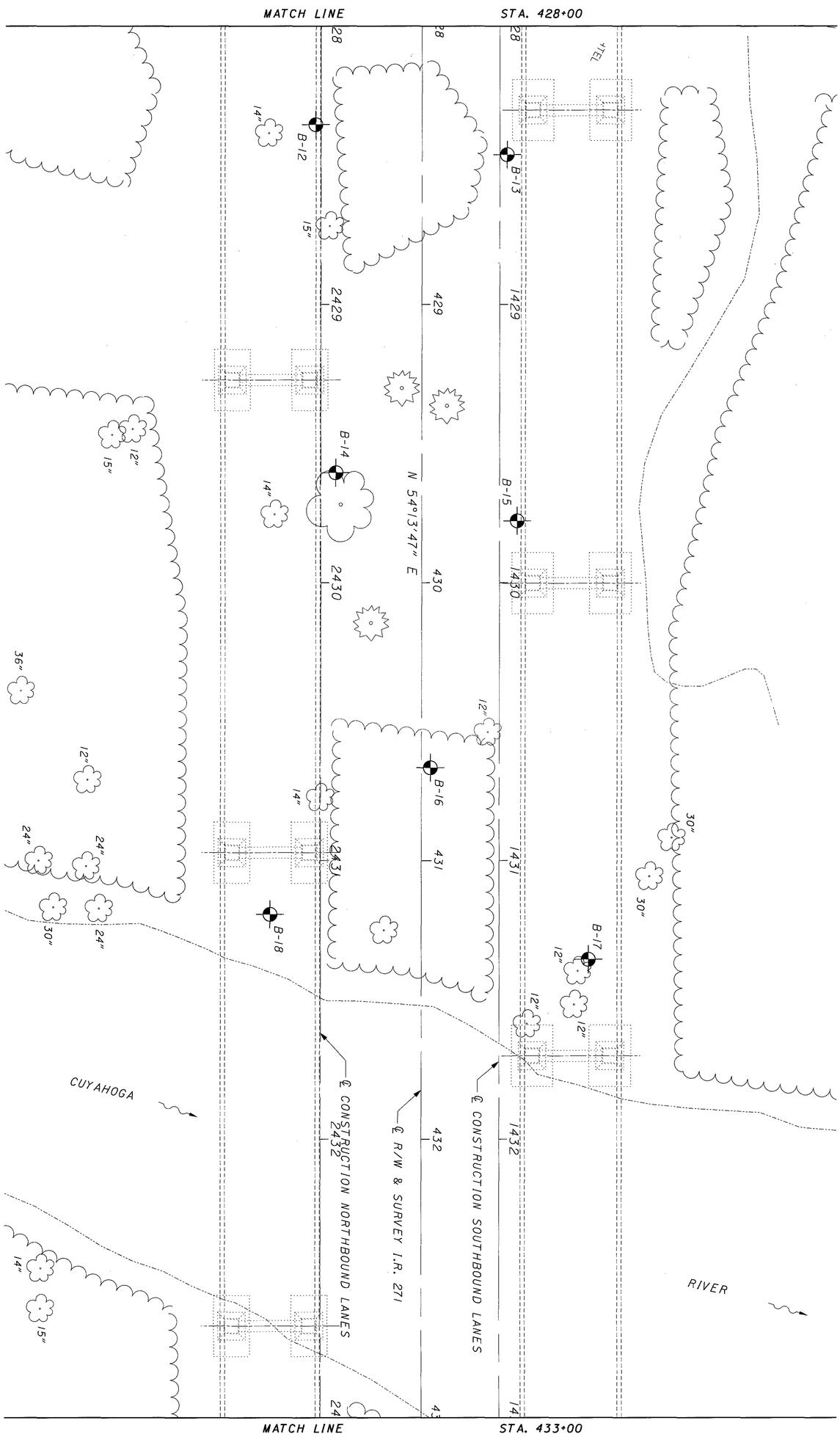
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			CHECKED DLR	REVISED	STRUCTURE FILE NUMBER 7709013(L) 7709021(R)		

SU271IIPC.DGN 03/26/04 JLS,HN



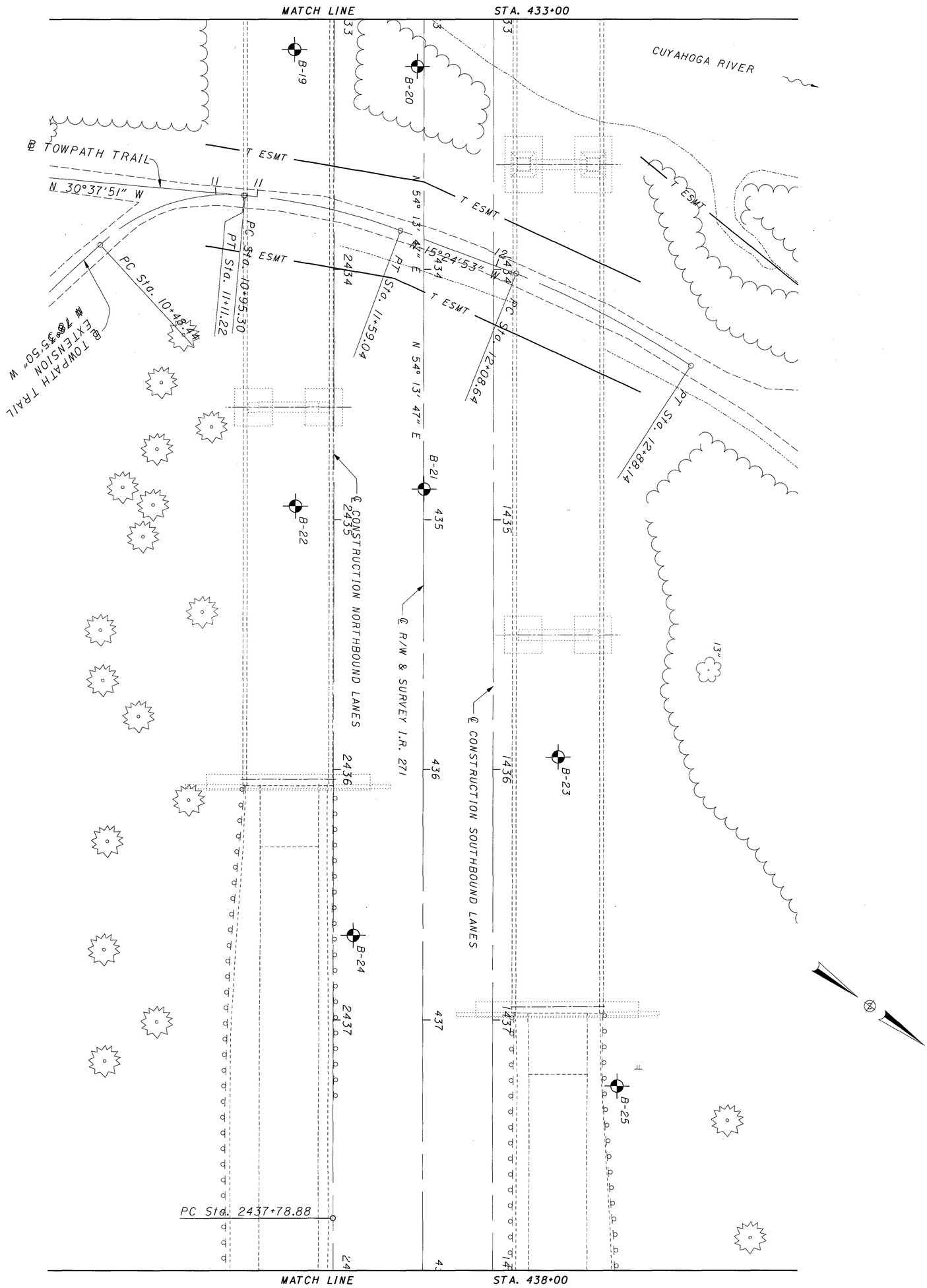
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SU271IIPD.DGN 03/26/04 JLS,HN



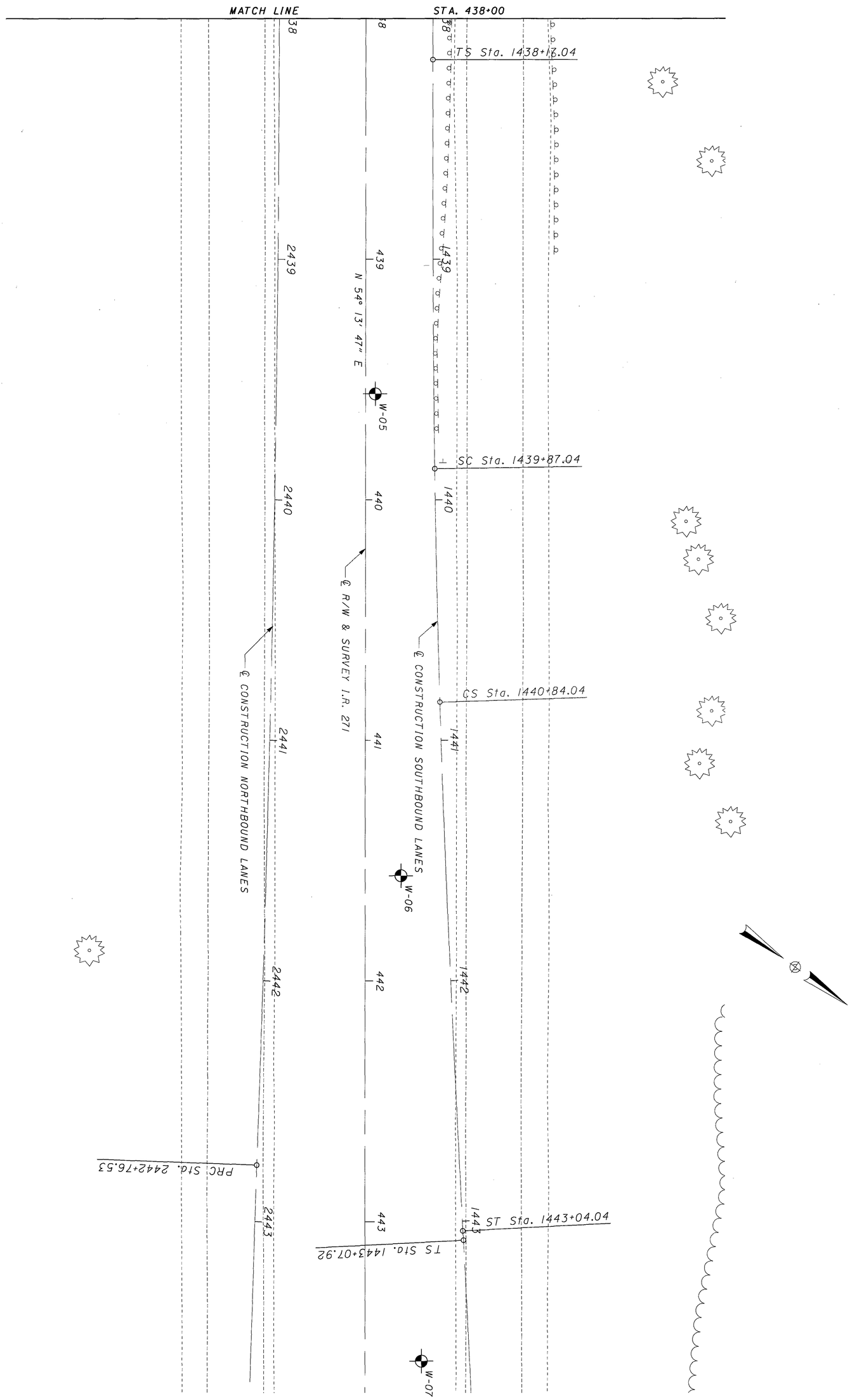
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SU27IIPE.DGN 4/28/03 JLS



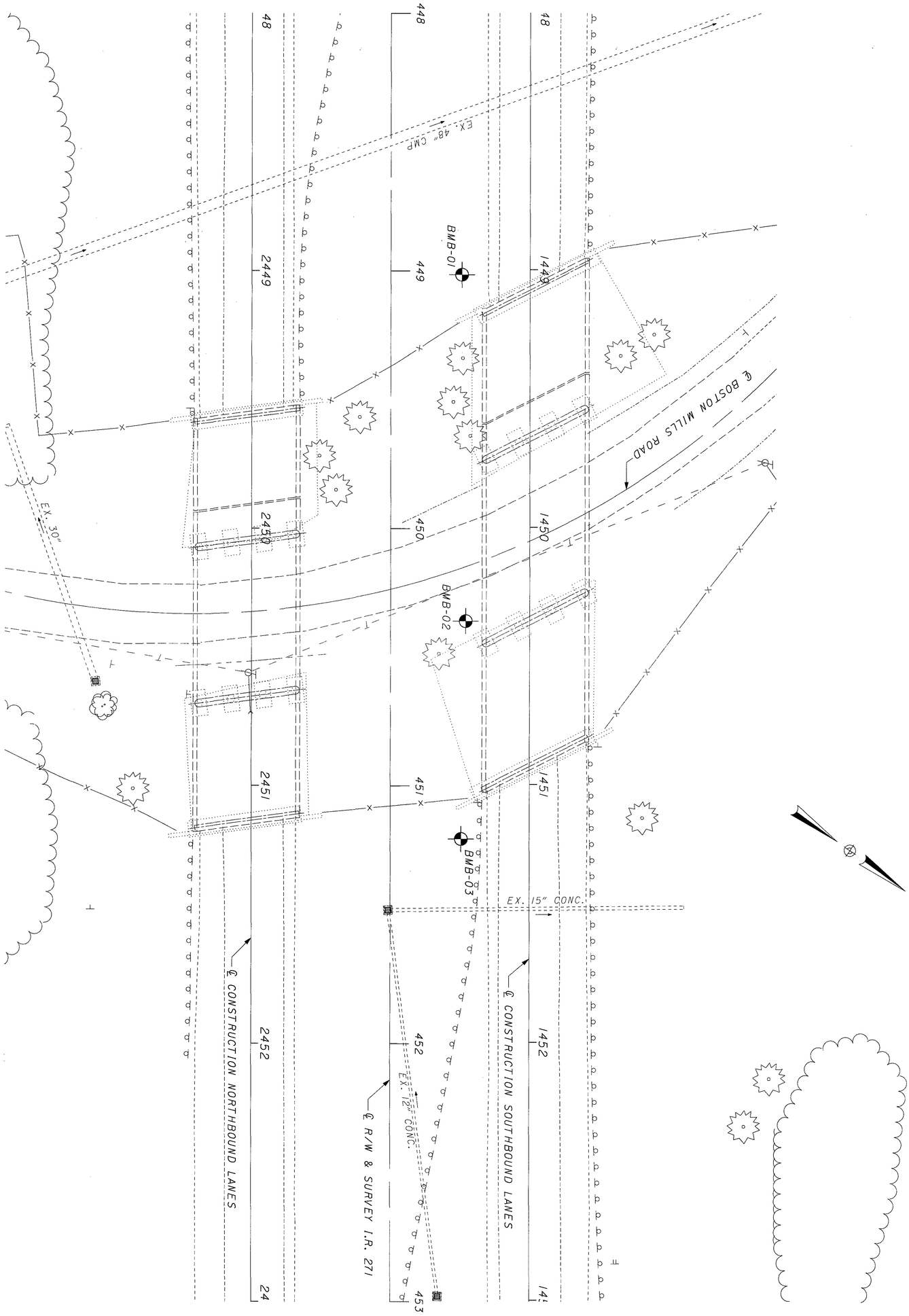
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			CHECKED DLR	REVISED	STRUCTURE FILE NUMBER 7709013(L) 7709021(R)	

SU271IPF.DGN 03/26/04 JLS,HN

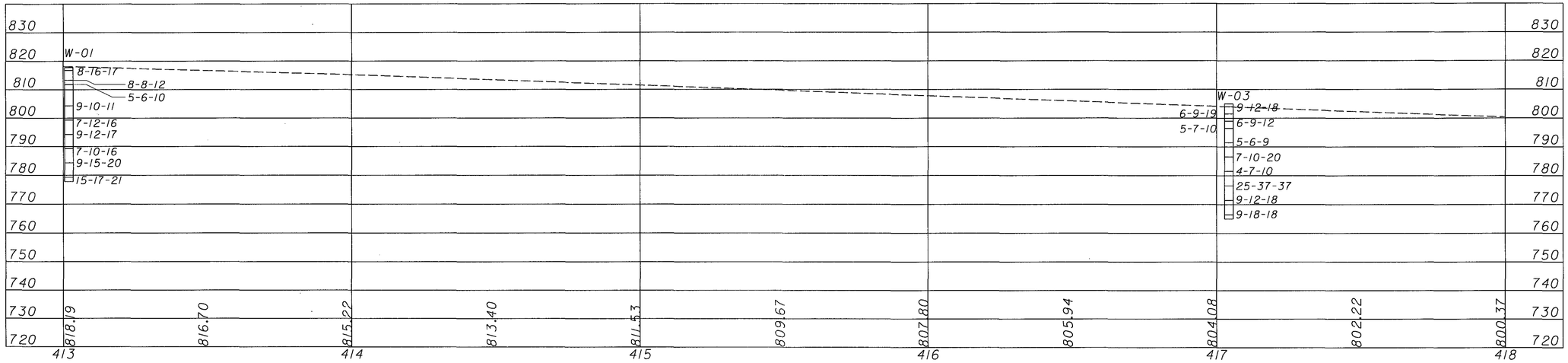


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			CHECKED DLR	REVISED	STRUCTURE FILE NUMBER 770901(L) 770902(R)		

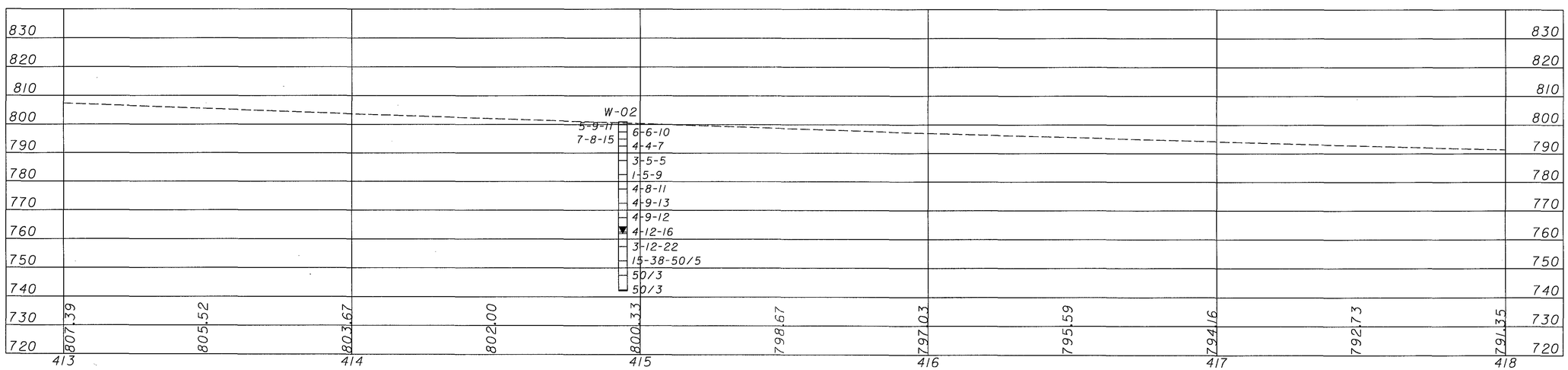
SU27IIPN.DGN 3/21/03 JLS



8/47	**SUM-271-8.02**	**STRUCTURE FOUNDATION INVESTIGATION** BRIDGE NO. SUM-271-0854 L & R OVER BOSTON MILLS ROAD	DESIGNED KAK	DRAWN JLS	REVIEWED DAP 4/28/03	DATE	RICHLAND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902
			CHECKED DLR	REVISED	STRUCTURE FILE NUMBER 7709099(L) 7709129(R)		



PROFILE ALONG INSIDE EDGE OF PAVEMENT - SOUTHBOUND



PROFILE ALONG INSIDE EDGE OF PAVEMENT - NORTHBOUND

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

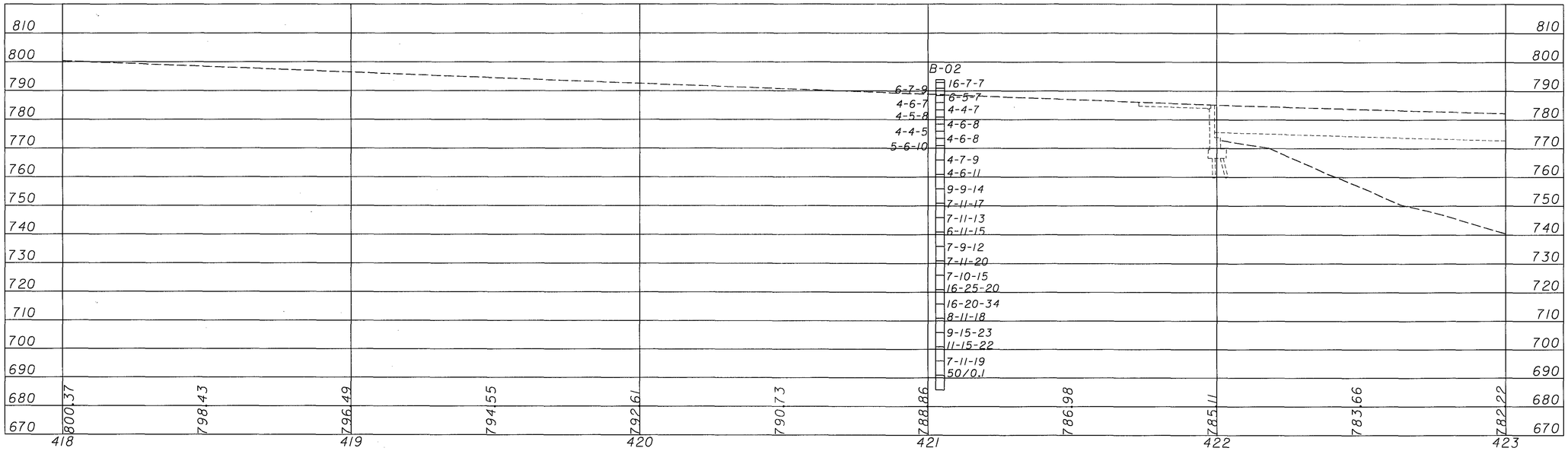
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KAK	JLS	DAP	4/28/03
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013(L)	
		7709021(R)	

STRUCTURE FOUNDATION INVESTIGATION

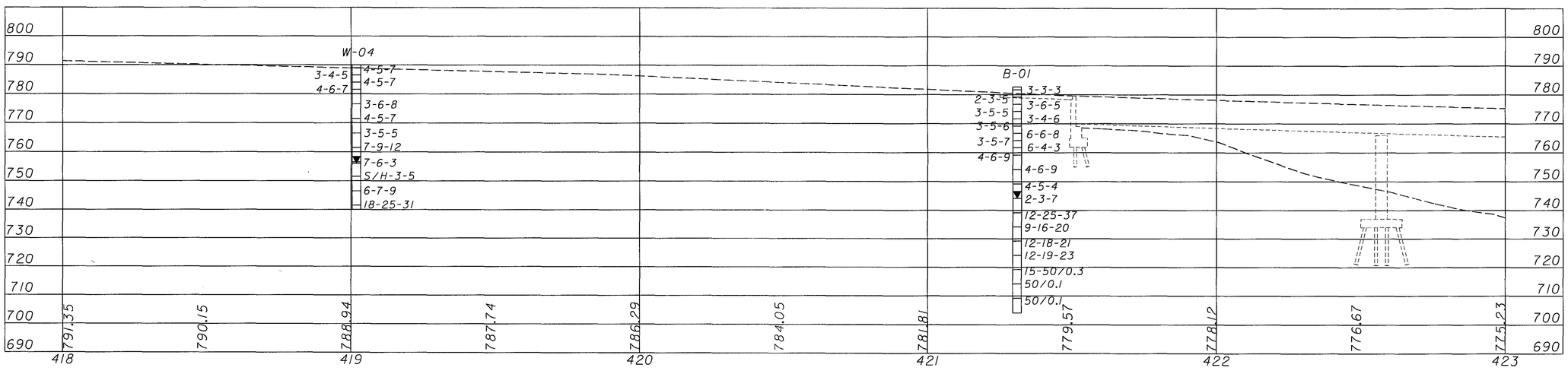
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

SU27NPG.DGN 03/26/04 JLS,HN



PROFILE ALONG INSIDE EDGE OF PAVEMENT - SOUTHBOUND



PROFILE ALONG INSIDE EDGE OF PAVEMENT - NORTHBOUND

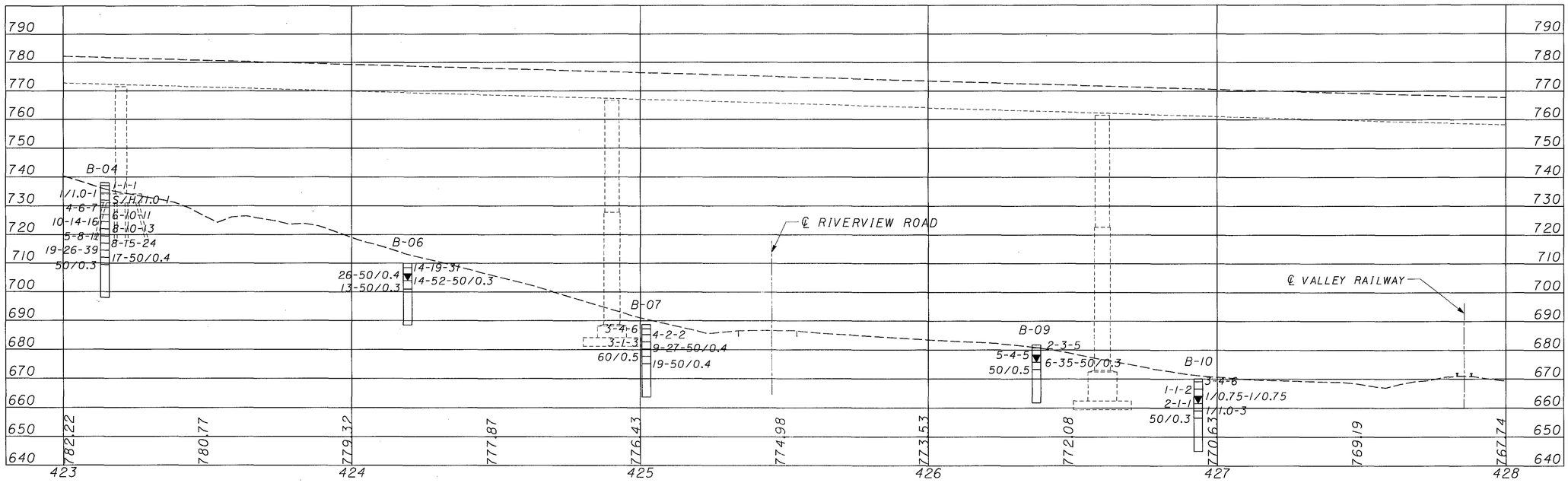
SU27INPH.DGN 03/26/04 JLS,HN

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

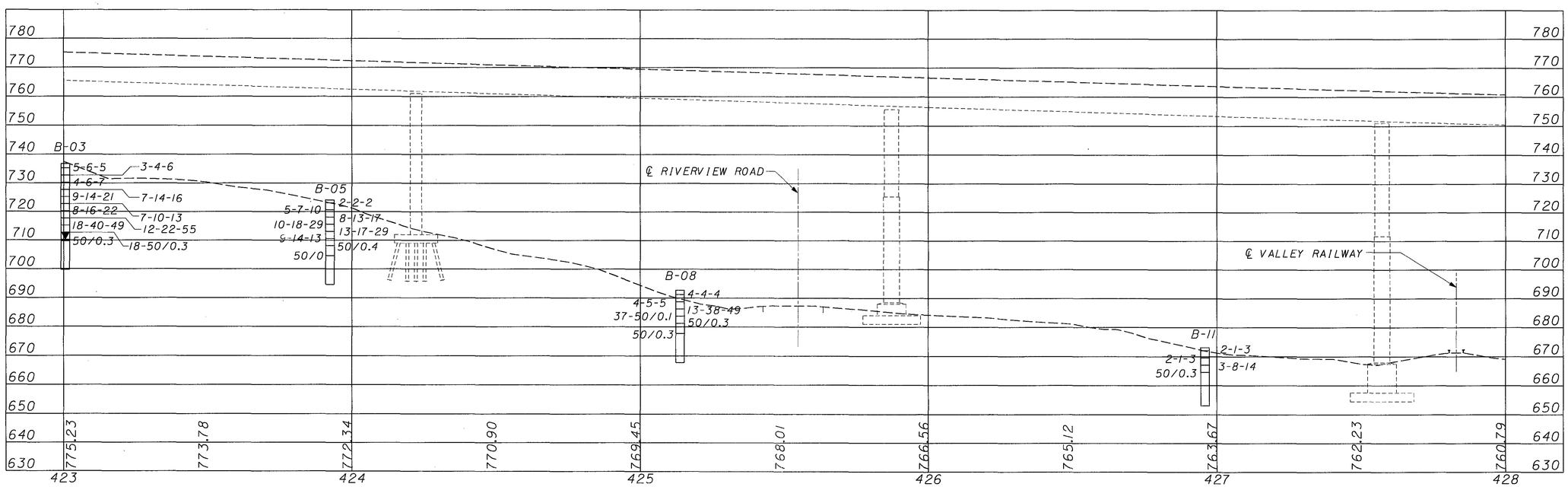
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KAK	JLS	DAP	4/28/03
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013(L) 7709021(R)	

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02



PROFILE ALONG INSIDE EDGE OF PAVEMENT - SOUTHBOUND



PROFILE ALONG INSIDE EDGE OF PAVEMENT - NORTHBOUND

SU27IPJ.DGN 4/28/03 JLS

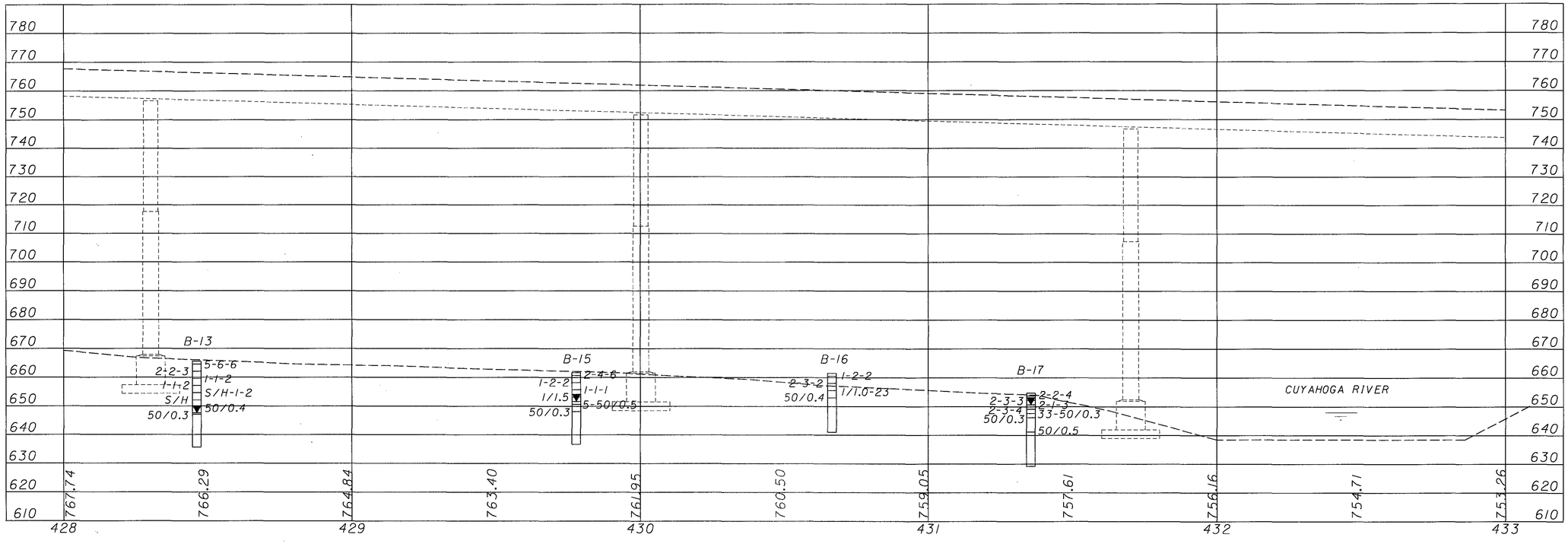
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	JLS	DAP	4/28/03
CHECKED	REVISED	STRUCTURE FILE NUMBER	
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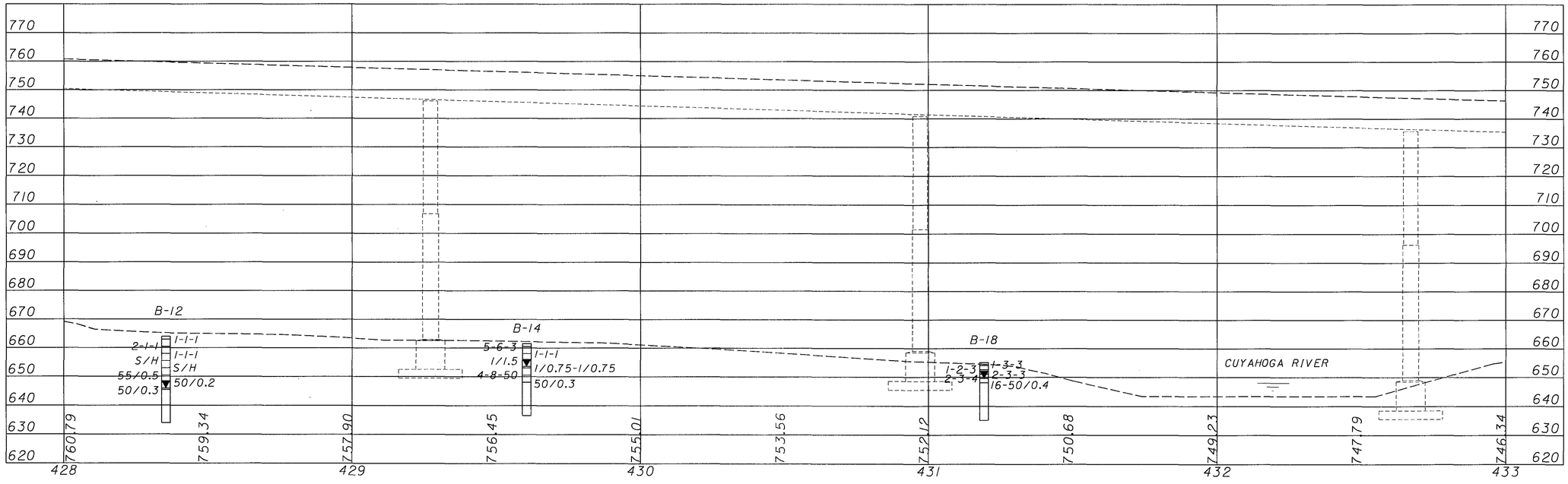
STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02



PROFILE ALONG INSIDE EDGE OF PAVEMENT - SOUTHBOUND



PROFILE ALONG INSIDE EDGE OF PAVEMENT - NORTHBOUND

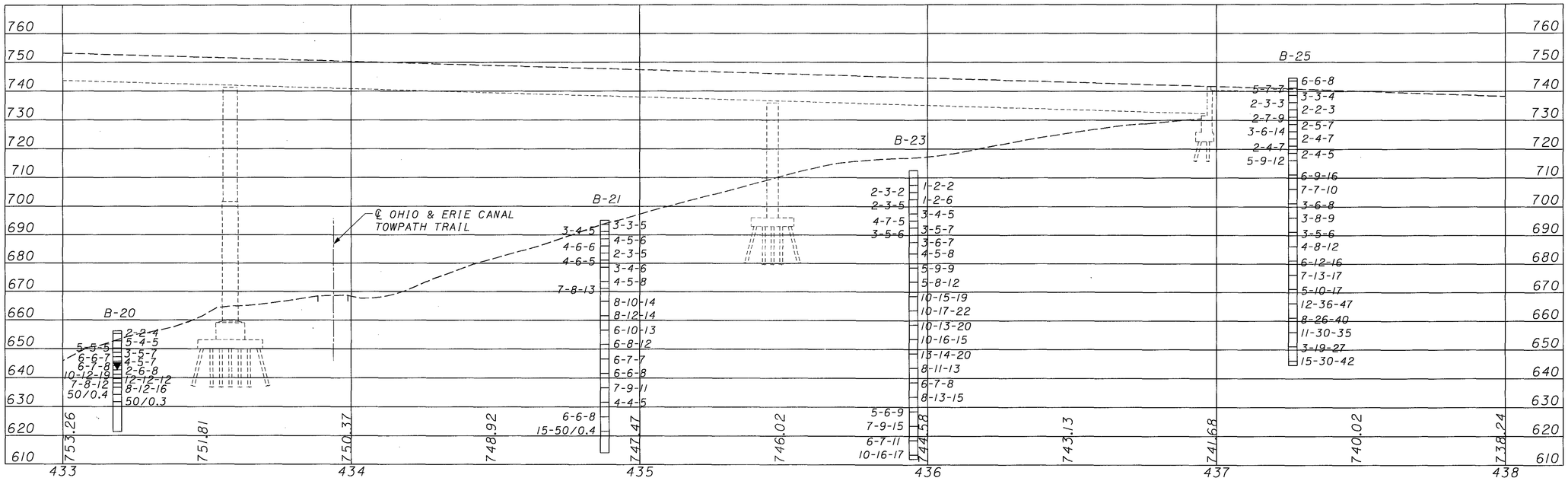
SU27IPK.DGN 03/26/04 JLS,HN

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

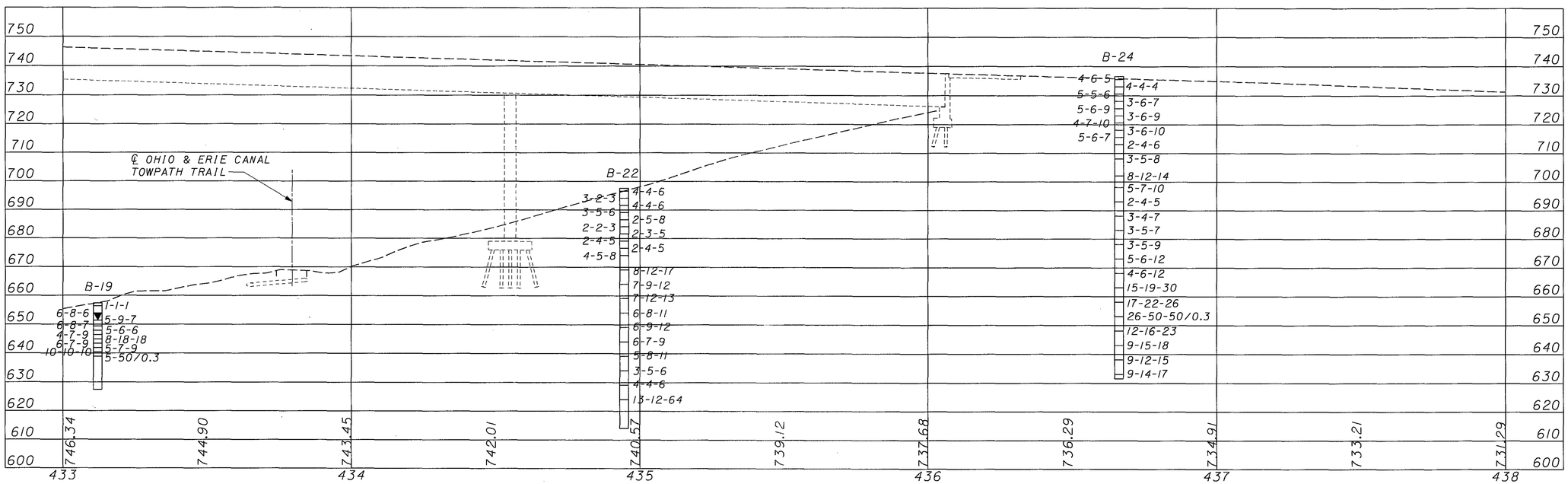
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CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013(L) 7709021(R)	

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02



PROFILE ALONG INSIDE EDGE OF PAVEMENT - SOUTHBOUND



PROFILE ALONG INSIDE EDGE OF PAVEMENT - NORTHBOUND

SU27NIPL.DGN 03/26/04 JLS.HN

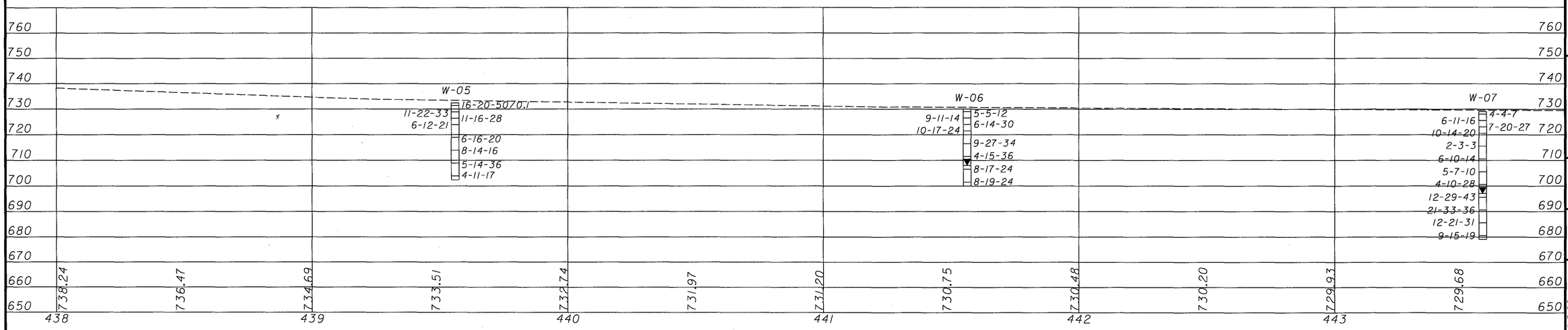
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
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CHECKED	REVISED	STRUCTURE FILE NUMBER	
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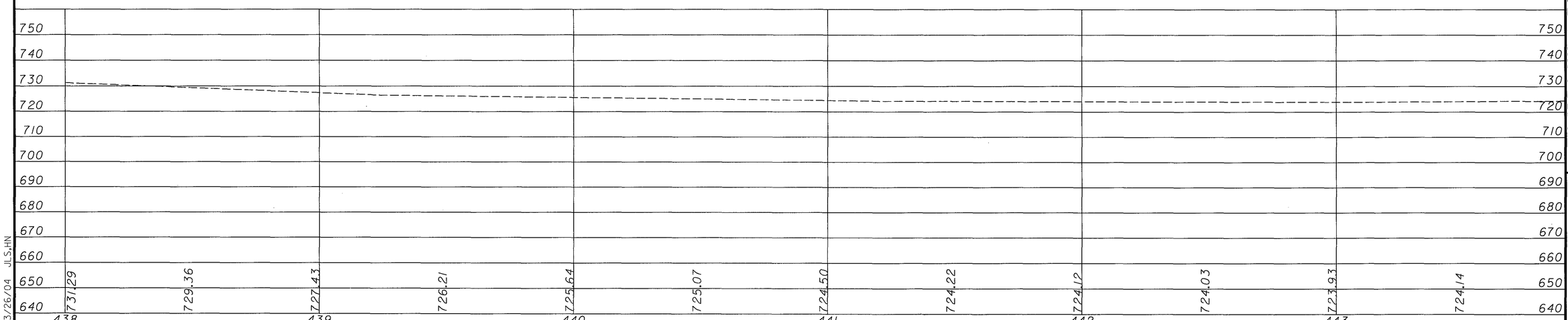
STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02



PROFILE ALONG INSIDE EDGE OF PAVEMENT - SOUTHBOUND



PROFILE ALONG INSIDE EDGE OF PAVEMENT - NORTHBOUND

SU27IIPM.DGN 03/26/04 JLS.HN

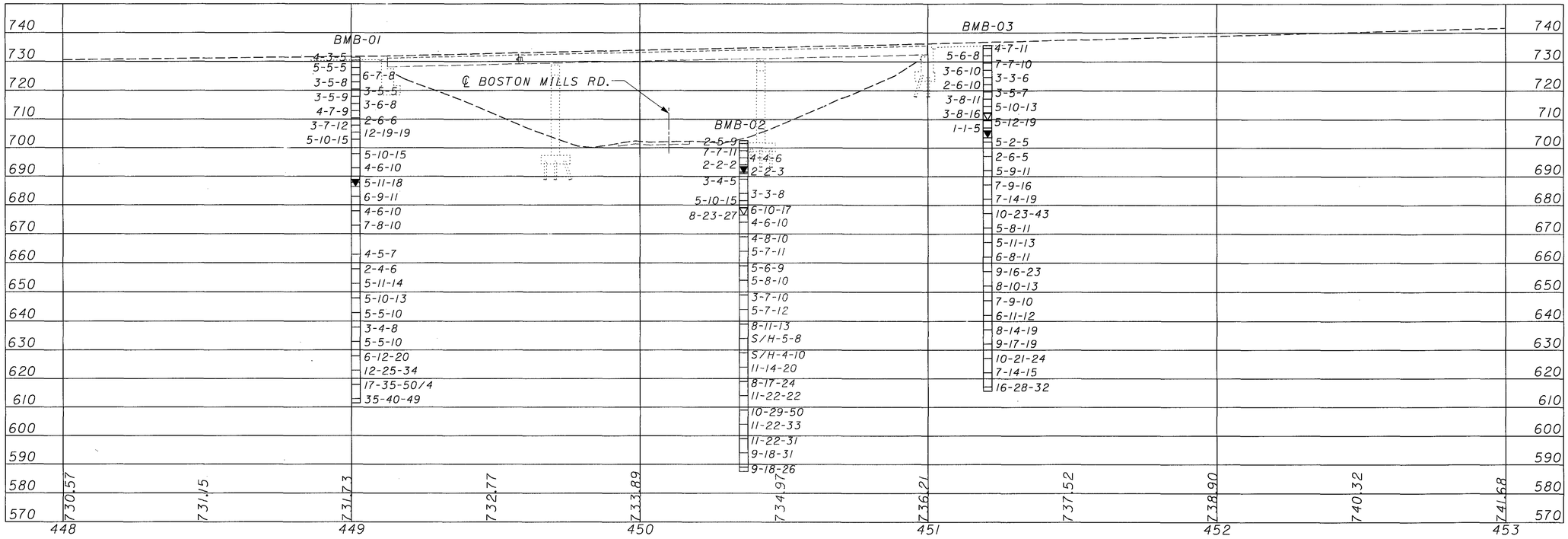
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
DLR	JLS	DAP	4/28/03
CHECKED	REVISED	STRUCTURE FILE NUMBER	
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STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02



PROFILE ALONG INSIDE EDGE OF PAVEMENT - SOUTHBOUND

SU27IIPO.DGN 10/31/03 JLS

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
DLR	JLS	DAP	4/28/03
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709099	

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

15
47

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-01

STA. & OFFSET: 421+30.96, 29.84' Rt.

ELEVATION: 782.7ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 3/4/03 — DATE COMPLETED: 3/6/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using a Diedrich D-50 ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 38.5 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
782.2	0.5		TOPSOIL													
			Medium stiff to stiff, brown SANDY SILT (A-4a), some clay, little to trace rock fragments, moist (Fill).	SS 1	1.0	3 3 3	6	3.0	18	30	21	9	13	7	80	A-4a
			Note: Trace roots at 1.0 feet													
			Note: Trace rock fragments from 6.0 to 21.0 feet.	SS 2	3.5	2 3 5	8	4.5+	16	–	–		–	–		VISUAL
				SS 3	6.0	3 6 5	11	4.5+	16	–	–		–	–		VISUAL
				SS 4	8.5	3 5 5	10	4.5+	17	–	–		–	–		VISUAL
				SS 5	11.0	3 4 6	10	3.25	18	–	–		–	–		VISUAL
				SS 6	13.5	3 5 6	11	4.5+	19	–	–		–	–		VISUAL
				SS 7	16.0	6 6 8	14	4.5+	16	–	–		–	–		VISUAL
				SS 8	18.5	3 5 7	12	4.25	17	30	20	10	3	10	88	A-4a
761.7	21.0		Loose, brown COARSE AND FINE SAND (A-3a) layer.	SS 9	21.0	6 4 3	7	–	17	–	–		–	–		VISUAL
760.2	22.5		Stiff, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist (Fill).	SS 10	23.5	4 6 9	15	4.0	15	–	–		–	–		VISUAL
				SS 11	28.5	4 6 9	15	3.5	17	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-01

STA. & OFFSET: 421+30.96, 29.84' Rt.

ELEVATION: 782.7ft

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using a Diedrich D-50 ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 38.5 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Stiff, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist (Fill). *(continued)*	SS 12	33.5	4 5 4	9	1.75	19	–	–		–	–		VISUAL
			Note: Groundwater was encountered at 38.5 feet during drilling operations.	SS 13	38.5	2 3 7	10	2.0	22	–	–		–	–		VISUAL
				SS 14	43.5	12 25 37	62	4.5+	16	–	–		–	–		VISUAL
738.2	44.5		Hard, gray SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist (Glacial Till).													
				SS 15	48.5	9 16 20	36	4.5+	12	–	–		–	–		VISUAL
				SS 16	53.5	12 18 21	39	4.5+	12	–	–		–	–		VISUAL
				SS 17	58.5	12 19 23	42	4.5+	14	30	19	11	2	7	91	A-6a
718.7	64.0		Soft, gray, decomposed CLAY SHALE.	SS 18	63.5	15 50/0.3	50+	3.5	11	–	–		–	–		VISUAL
				SS 19	68.5	50/0.1	50+	–	17	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

IPA.DGN 4/28/03 CAR

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP 4/28/03 | DATE | CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, SCENIC RAILROAD, AND CUYAHOGA RIVER

SUM-271-8.02

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-01

STA. & OFFSET: 421+30.96, 29.84' Rt.

ELEVATION: 782.7ft

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using a Diedrich D-50 ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 38.5 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Soft, gray, decomposed CLAY SHALE. *(continued)*													
			Note: Augered to 73.6 feet and began coring rock.	SS	73.5	50+		–	17	–	–		–	–		VISUAL
709.1	73.6		Medium hard, gray, weathered CLAY SHALE, laminar bedding, fissile.	20 CORE Run 1	73.6	50/0.1										
			Note: Bedrock is in very poor condition as per RQD. Unconfined compressive strength of the core sample was 3479 psi at 77.7 feet and is considered medium strength.			100% (20%)										
704.1	78.6		TERMINATION DEPTH = 78.6 FEET		78.6											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-02

STA. & OFFSET: 421+04.13, 73.39' Lt.

ELEVATION: 793.9ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 2/6/03 — DATE COMPLETED: 2/6/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA and WB — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using a Mobile B-57 Truck-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations. Extended GW reading was 66.2 feet on April, 3 2003.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	WELL LOG	WELL CONSTRUCTION DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
793.2	0.7		ASPHALT PAVEMENT			SS 1	1.0	16 14		–	48	–	–		–	–		VISUAL
792.8	1.1		SLAG BASE (Cemented, Roadbase)			1A	1.1				12							VISUAL
792.5	1.4		Brown GRAVEL WITH SAND (A-1-b), moist. (Roadbase)		Bentonite Seal	SS 1B	1.4	7 7			24							VISUAL
			Stiff to very stiff, brown SANDY SILT (A-4a), little clay, trace rock fragments, moist (Fill).			SS 1C	3.0	6 16 7 9	3.0		22	–	–		–	–		VISUAL
						SS 2												
788.4	5.5		Stiff, brown and gray SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist (Fill).			SS 3	5.5	6 12 5 7	4.5		18	30	19	11	1	7	91	A-6a
						SS 4	8.0	4 13 6 7	3.75		17	–	–		–	–		VISUAL
						SS 5	10.5	4 11 4 7	4.5		18	–	–		–	–		VISUAL
						SS 6	13.0	4 13 5 8	3.75		19	–	–		–	–		VISUAL
778.4	15.5		Stiff, brown SANDY SILT (A-4a), some clay, trace rock fragments, moist (Fill).			SS 7	15.5	6 14 8	2.75		19	–	–		–	–		VISUAL
775.9	18.0		Stiff to hard, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist. (Fill)			SS 8	18.0	4 9 5	2.5		20	–	–		–	–		VISUAL
						SS 9	20.5	6 14 8	4.5+		19	–	–		–	–		VISUAL
					Grout backfill	SS 10	23.0	5 16 10	4.5		16	–	–		–	–		VISUAL
						SS 11	28.0	7 16 9	4.5+		16	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore

TEST BORING LOG WITH WELL 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP 4/28/03 | DATE | STRUCTURE FILE NUMBER 7709013(L) 7709021(A)
CHECKED DLR | REVISED

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

17 / 47

IPB.DGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-02

STA. & OFFSET: 421+04.13, 73.39' Lt.

ELEVATION: 793.9ft

PROJECT: SUM-271-0802 - Bridge Boring

PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using a Mobile B-57 Truck-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations. Extended GW reading was 66.2 feet on April, 3 2003.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	WELL LOG	WELL CONSTRUCTION DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Stiff to hard, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist. (Fill) *(continued)* Note: Gray color present from 23.0 to 48.0 feet. Note: Trace roots at 38.0 feet.		Grout backfill	SS 12	33.0	4 6 11 17	4.5+	17	–	–		–	–		VISUAL
						SS 13	38.0	9 9 14 23	4.5	17	–	–		–	–		VISUAL
						SS 14	43.0	7 11 17 28	4.5+	16	–	–		–	–		VISUAL
						SS 15	48.0	7 11 13 24	3.25	16	–	–		–	–		VISUAL
			Note: Switched to Wash Bore with Roller Bit at 60.0 feet.		Grout backfill	SS 16	53.0	6 11 15 26	3.25	17	–	–		–	–		VISUAL
						SS 17	58.0	7 9 12 21	3.5	18	–	–		–	–		VISUAL
						SS 18	63.0	7 11 20 31	4.5+	17	–	–		–	–		VISUAL
					GW at 66.2' on 4/3/03 GW at 66.5' on 3/14/03 GW at 66.6' on 2/26/03	SS 19	68.0	7 10 15 25	2.25	22	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore

B-02: PAGE 2 OF 3

TEST BORING LOG WITH WELL 03001GBRID.GPJ PRIMEING.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-02

STA. & OFFSET: 421+04.13, 73.39' Lt.

ELEVATION: 793.9ft

PROJECT: SUM-271-0802 - Bridge Boring

PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using a Mobile B-57 Truck-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations. Extended GW reading was 66.2 feet on April, 3 2003.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	WELL LOG	WELL CONSTRUCTION DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
720.9	73.0		Medium dense, brown COARSE AND FINE SAND (A-3a) layer, moist (Fill).			SS 20A	73.0	16 25 20 45	–	15	–	–		–	–		VISUAL
719.9	74.0		Hard, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist (Fill).			SS 20B	74.0		4.5+	19	–	–		–	–		VISUAL
					Bentonite Seal	SS 21A	78.0	16 20 34 54	4.5	20	–	–		–	–		VISUAL
715.9	78.0		Hard, brown SANDY SILT Layer, moist (Fill).		Sand	SS 21B	79.0		–	15	–	–		–	–		VISUAL
714.4	79.5		Very stiff to hard, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist (Fill). Note: Possible boulder encountered at 82.5 feet.		Top of Screen @ 80.0'	SS 22	83.0	8 11 18 29	2.5	19	33	20	13	5	13	82	A-6a
						SS 23	88.0	9 15 23 38	2.25	20	–	–		–	–		VISUAL
					Bottom of Screen @ 90.0'	SS 24	93.0	11 15 22 37	2.75	20	–	–		–	–		VISUAL
695.9	98.0		Very stiff, brown and dark brown SILT AND CLAY (A-6a), little sand, trace rock fragments, trace organic, moist (Fill).		Backfill with Sand	SS 25A	98.0	7 11 19 30	2.75	25	–	–		–	–		VISUAL
692.9	101.0		Soft, gray, decomposed CLAY SHALE.			SS 25B	99.2				–	–		–	–		VISUAL
690.8	103.1		Note: Wash Bored to 103 feet and began coring rock.			SS 26 CORE Run-1	103.0 103.1	50/0.1	50+	–	16	–		–	–		VISUAL
685.8	108.1		Medium hard to hard, dark gray, weathered to slightly weathered, CLAY SHALE, laminar bedding, fissile, few fossils. Note: Bedrock is in good condition as per RQD. Unconfined compressive strength of the core sample was 1058 psi at 103.2 feet and is considered low strength. Note: Horizontal fractures at 105.2 and 105.8 feet. TERMINATION DEPTH = 108.1 FEET.														

92% (84%)

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore

B-02: PAGE 3 OF 3

TEST BORING LOG WITH WELL 03001GBRID.GPJ PRIMEING.GDT 4/17/03

IPC.DGN 03/26/04 CAR,HN

PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
KAK	CAR	DAP	4/28/03
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DLR		7709013(L) 7709021(R)	

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-03

STA. & OFFSET: 423+00.57, 49.1' Rt.

ELEVATION: 736.7ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 1/29/03 DATE COMPLETED: 1/29/03

SAMPLER DIAM: 2" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 3.25" TYPE: HSA OTHER:

DRILLING INFORMATION:

Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:

Groundwater was encountered at 26.5 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
736.2	0.5		TOPSOIL Brown COBBLE	SS 1	1.5	5 9 5 = 11	--	7	--	--		--	--		VISUAL
733.7	3.0		Stiff, brown SILTY CLAY (A-6b), trace sand, trace rock fragments, moist.	SS 2	4.0	3 4 6 = 10	2.25	24	38	21	17	2	9	89	A-6b
				SS 3	6.5	4 6 7 = 13	2.25	25	--	--		--	--		VISUAL
727.2	9.5		Very stiff to hard, gray SANDY SILT (A-4a), some clay, trace rock fragments, moist (Glacial Till).	SS 4	9.0	7 14 16 = 30	4.5+	14	--	--		--	--		VISUAL
				SS 5	11.5	9 14 21 = 35	4.5+	13	--	--		--	--		VISUAL
				SS 6	14.0	7 10 13 = 23	4.5+	14	--	--		--	--		VISUAL
				SS 7	16.5	8 16 22 = 38	4.5+	14	--	--		--	--		VISUAL
717.7	19.0		Hard, gray SILT (A-4b) layer, moist.	SS 8A	19.0	12 22 55 = 77	4.0	16	--	--		--	--		VISUAL
716.7	20.0		Hard, gray SANDY SILT (A-4a), some clay, little rock fragments, moist (non-plastic).	SS 8B	20.0			8	--	--		--	--		VISUAL
				SS 9	21.5	18 40 49 = 89	0	10	--	--		--	--		VISUAL
712.2	24.5		Soft, gray, decomposed CLAY SHALE.	SS 10	24.0	18 50/0 = 50+	3.75	13	--	--		--	--		VISUAL
			Note: Augered to 27.0 feet and began coring rock.	SS 11	26.5	50/0.3 = 50+	1.75	16	--	--		--	--		VISUAL
709.7	27.0		Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile, with few fossils. Note: Bedrock is in excellent condition as per RQD. Unconfined compressive strength of the core sample was 1259 psi at 28.1 feet and is considered low strength. Note: Horizontal fractures encountered at approximately 27.7, 28.9, and 31.1 feet.	CORE Run-1	27.0										

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-03

STA. & OFFSET: 423+00.57, 49.1' Rt.

ELEVATION: 736.7ft

PROJECT: SUM-271-0802 - Bridge Boring PROJECT No.: 03001g

DRILLING INFORMATION:

Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:

Groundwater was encountered at 26.5 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile, with few fossils. *(continued)*			100% (93%)									
699.7	37.0		TERMINATION DEPTH = 37.0 FEET.		37.0										

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

IPD.DGN 03/26/04 CAR,HN

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, CUYAHOGA RIVER
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-04

STA. & OFFSET: 423+14.42, 30.26' Lt.

ELEVATION: 738.0ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION. Summit County, Ohio

DATE STARTED: 3/31/03 — DATE COMPLETED: 3/31/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using a Diedrich D-50 ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
737.5	0.5		TOPSOIL Very soft, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist.	SS 1	1.0	1 2 (1 1 1)	0	22	--	--		--	--		VISUAL
			Note: Trace roots at 1.0 and 3.5 feet.	SS 2	3.5	1 (1/1.0 1)	0.75	21	--	--		--	--		VISUAL
				SS 3	6.0	1 (WOH/1.0 1)	0	21	--	--		--	--		VISUAL
729.5	8.5		Stiff to very stiff, gray SILT AND CLAY (A-6a), little sand, trace rock fragments, moist. (Glacial till)	SS 4	8.5	13 (4 6 7)	4.25	16	--	--		--	--		VISUAL
				SS 5	11.0	21 (6 10 11)	4.5+	14	--	--		--	--		VISUAL
				SS 6	13.5	30 (10 14 16)	4.5+	14	--	--		--	--		VISUAL
				SS 7	16.0	23 (8 10 13)	4.5+	15	--	--		--	--		VISUAL
				SS 8	18.5	19 (5 8 11)	4.5+	15	--	--		--	--		VISUAL
717.0	21.0		Hard, gray SANDY SILT (A-4a), some clay, little rock fragments, moist.	SS 9	21.0	39 (8 15 24)	4.5+	13	28	20	8	13	4	37/45	A-4a
				SS 10	23.5	65 (19 28 39)	4.5+	10	--	--		--	--		VISUAL
				SS 11	26.0	50+ (17 50/0.4)	4.5+	11	--	--		--	--		VISUAL
709.5	28.5		Soft, gray, decomposed CLAY SHALE, moist. Note: Augered to 30.0 feet and began coring rock.	SS 12	28.5	50+ (50/0.3)	--	5	--	--		--	--		VISUAL
708.0	30.0		Medium hard to hard, dark gray, highly weathered to weathered CLAY SHALE, laminar bedding, fissile. Note: Soft, highly weathered clay seam from 30.8 to 31.3, 31.8	CORE Run-1	30.0										

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WOH = Weight Of Hammer

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-04

STA. & OFFSET: 423+14.42, 30.26' Lt.

ELEVATION: 738.0ft

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using a Diedrich D-50 ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			to 32.0, 32.7 to 32.9, and 33.4 to 33.5 feet. Medium hard to hard, dark gray, highly weathered to weathered CLAY SHALE, laminar bedding, fissile. *(continued)*			100% (70%)									
703.0	35.0		Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile. Note: Run-1 bedrock is in fair condition as per RQD. Unconfined compressive strength of the core sample was 719 psi at 30.3 feet and is considered low strength. Note: Run-2 bedrock is in good condition as per RQD.	CORE Run-2	35.0	98% (80%)									
698.0	40.0		TERMINATION DEPTH = 40.0 FEET.		40.0										

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WOH = Weight Of Hammer

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP 4/28/03 | DATE
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

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IPE.DGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-05

STA. & OFFSET: 423+92.39, 38.27' Rt.

ELEVATION: 724.1ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 1/29/03 DATE COMPLETED: 1/29/03

SAMPLER DIAM: 2" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 3.25" TYPE: HSA OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
723.6	0.5		TOPSOIL Soft, brown SILT AND CLAY (A-6a), trace sand, trace rock fragments, trace roots, moist (Fill).	SS 1	1.0	4 (2 2 2)	0.5	25	–	–		–	–		VISUAL
720.6	3.5		Very stiff to hard, brown SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist (Glacial Till).	SS 2	3.5	17 (5 7 10)	4.5+	18	–	–		–	–		VISUAL
				SS 3	6.0	30 (8 13 17)	4.5+	17	–	–		–	–		VISUAL
				SS 4	8.5	47 (10 18 29)	4.5+	18	36	23	13	4	8	89	A-6a
713.1	11.0		Hard to very stiff, gray SANDY SILT (A-4a), little clay, trace rock fragments, moist.	SS 5	11.0	46 (13 17 29)	4.5+	16	–	–		–	–		VISUAL
				SS 6	13.5	27 (9 14 13)	4.5+	12	–	–		–	–		VISUAL
708.1	16.0		Soft, dark gray, highly weathered CLAY SHALE, moist. Note: Spoon refusal at 18.5 feet. Augered to 19.5 feet and began coring bedrock.	SS 7	16.0	50+ 50/0.4	0	13	–	–		–	–		VISUAL
				SS 8	18.5	50+ 50/0									
704.6	19.5		Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile. Note: Bedrock is in good condition as per RQD. Unconfined compressive strength of the core sample was 2773 psi at 20.3 feet and is considered medium strength.	CORE Run-1	19.5	98% (85%)									
694.6	29.5		TERMINATION DEPTH = 29.5 FEET.		29.5										

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

B-05: PAGE 1 OF 1

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-06

STA. & OFFSET: 424+19.38, 56.14' Lt.

ELEVATION: 710.0ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 1/30/03 DATE COMPLETED: 1/30/03

SAMPLER DIAM: 2" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 3.25" TYPE: HSA OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 6.0 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring opratations.

GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
709.7	0.3		TOPSOIL Hard, brown SANDY SILT (A-4a), little sand, little rock fragments, moist. (Fill)	SS 1	1.5	50 (14 19 31)	4.5+	14							
707.5	2.5		Soft, gray, decomposed CLAY SHALE, moist.												
706.0	4.0		Soft, gray, highly weathered CLAY SHALE, moist.	SS 2	4.0	50+ 28 50/0.4	4.5+	7							
				SS 3	6.0	50+ (14 52 50/0.3)	2.75	12							
			Note: Augered to 11.0 feet and began coring bedrock.	SS 4	9.0	50+ 15 50/0.3	1.5	12							
699.0	11.0		Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile. Note: Bedrock is in good condition as per RQD. Unconfined compressive strength of the core sample was 1729 psi at 11.2 feet and is considered low strength. Note: Horizontal fractures encountered at approximately 17.0 and 19.0 feet. Note: Vertical fracture encountered at approximately 17.5 feet.	CORE Run-1	11.0	100% (82%)									
688.5	21.5		TERMINATION DEPTH = 21.5 FEET.		21.5										

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

B-06: PAGE 1 OF 1

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, CUYAHOGA RIVER
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

21
47

IPF.DGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-07

STA. & OFFSET: 425+02.05, 50.83' Lt.

ELEVATION: 688.7ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 1/30/03 — DATE COMPLETED: 1/30/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring. Extended GW reading was 1.5 feet on April,3 2003.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	WELL LOG	WELL CONSTRUCTION DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(ROD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
688.3	0.4		TOPSOIL		Test Bore cuttings GW at 1.5' on 4/3/03 GW at 1.9' on 2/28/03 Bentonite Seal GW at 2.8' on 3/14/03 Sand	SS 1	1.5	3 4 6	10	2.5	20	–	–		–	–		
			Stiff to soft, dark brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist. (Fill)			SS 2	3.5	4 2 2	4	–	22	–	–		–	–		VISUAL
682.7	6.0		Soft, brown SANDY SILT (A-4a), little clay, trace rock fragments, moist.		Top of Screen @ 7.3'	SS 3	6.0	3 1 3	4	4.5+	21	–	–		–	–		VISUAL
680.2	8.5		Hard, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist.			SS 4	8.5	9 27 50/0.4	50+	4.5	12	40	26	14	–	–		A-6a
679.2	9.5		Soft, brown and gray, highly weathered CLAY SHALE. Note: Little iron staining from 11.0 to 12.5 and 14.0 to 14.4 feet.		Bottom of Screen @ 12.3'	SS 5	11.0	50/0.5	50+	–	6	–	–		–	–		VISUAL
			Note: Augered to 15.0 feet and began coring bedrock.			SS 6	13.5	19 50/0.4	50+	–	8	–	–		–	–		VISUAL
673.7	15.0		Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile. Note: Bedrock is in good condition as per RQD. Unconfined compressive strength of the core sample was 925 psi at 16.0 feet and is considered low strength. Note: Angular fracture close to 45 degree encountered at approximately 18.6 feet. Note: Horizontal fracture encountered at approximately 19.4 feet.		Backfill with Sand	CORE Run-1	15.0	95% (85%)										
663.7	25.0		TERMINATION DEPTH = 25.0 FEET.				25.0											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

B-07: PAGE 1 OF 1

TEST BORING LOG WITH WELL 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-08

STA. & OFFSET: 425+13.75, 55.04' Rt.

ELEVATION: 692.7ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 1/31/03 — DATE COMPLETED: 1/31/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(ROD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
692.2	0.5		TOPSOIL Medium stiff, dark brown SANDY SILT (A-4a), little clay, trace rock fragments, moist. (Fill)	SS 1	1.5	4 4 4	8	2.25	25	–	–		–	–		VISUAL
688.7	4.0		Stiff, brown SANDY SILT (A-4a), little clay, trace rock fragments, moist.	SS 2	4.0	4 5 5	10	2.0	21	–	–		–	–		VISUAL
686.2	6.5		Soft, brown decomposed CLAY SHALE, moist.	SS 3	6.5	13 38 49	87	4.5	8	–	–		–	–		VISUAL
				SS 4	9.0	37 50/0.1	50+	4.5	8	–	–		–	–		VISUAL
681.2	11.5		Soft, gray, highly weathered CLAY SHALE, moist. Note: Augered to 15.0 feet and began coring bedrock.	SS 5	11.5	50/0.3	50+	–	5	–	–		–	–		VISUAL
				SS 6	14.0	50/0.3	50+	–	5	–	–		–	–		VISUAL
677.7	15.0		Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile. Note: Bedrock is in good condition as per RQD. Unconfined compressive strength of the core sample was 1236 psi at 15.6 feet and is considered low strength.	CORE Run-1	15.0	95% (75%)										
667.7	25.0		TERMINATION DEPTH = 25.0 FEET.		25.0											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

B-08: PAGE 1 OF 1

TEST BORING LOGS 03001GBRID.GPJ PRIMENG.GDT 4/17/03

IPG.DGN 03/26/04 CAR,HN

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

REVIEWED DAP — DATE 4/28/03
DRAWN CAR — REVISED
DESIGNED KAK — CHECKED DLR
STRUCTURE FILE NUMBER 7709013(L) 7709021(A)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-09

STA. & OFFSET: 426+37.43, 0.92' Lt.

ELEVATION: 681.8ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 1/28/03 — DATE COMPLETED: 1/28/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:

Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:

Groundwater was encountered at 6.0 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
681.3	0.5		TOPSOIL Loose, brown SANDY SILT (A-4a), some clay, trace rock fragments, moist (Fill).	SS 1	1.0	2 3 5	8	–	20	–	–		–	–		VISUAL
678.3	3.5		Loose, brown ROCK FRAGMENTS WITH SAND (A-1-b), moist to wet.	SS 2	3.5	5 4 5	9	–	19	–	–		–	–		VISUAL
			Note: Groundwater was encountered at 6.0 feet during drilling operations.	SS 3A	6.0	6 35 50/0.3	50+	–	15 8	–	–		–	–		VISUAL
675.3	6.5		Soft, brown to gray, highly weathered CLAY SHALE, little iron staining. Note: Color changed to gray at 7.0 feet.	SS 4	8.5	50/0.5	50+	–	6	–	–		–	–		VISUAL
			Note: Augered to 10.0 feet and began coring bedrock.	CORE Run-1	10.0											
671.8	10.0		Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile, with few small pyrite nodules. Note: Bedrock is in excellent condition as per RQD. Unconfined compressive strength of the core sample was 701 psi at 10.8 feet and is considered low strength.						97% (95%)							
661.8	20.0		TERMINATION DEPTH = 20.0 FEET.		20.0											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

B-09: PAGE 1 OF 1

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-10

STA. & OFFSET: 426+93.41, 51.3' Lt.

ELEVATION: 670.1ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 1/28/03 — DATE COMPLETED: 1/28/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:

Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:

Groundwater was encountered at 8.5 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
669.6	0.5		TOPSOIL Stiff, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, trace roots, moist (Fill).	SS 1	1.0	3 4 6	10	4.0	16	–	–		–	–		VISUAL
666.6	3.5		Soft to very soft, dark brown SANDY SILT (A-4a), little to some clay, trace to little rock fragments, trace organic, moist (Fill).	SS 2	3.5	1 1 2	3	0	45	–	–		–	–		VISUAL
			Note: Sample wet at 8.5 feet.	SS 3	6.0	1/0.75 1/0.75 1/0.75	0	0	26	–	–		–	–		VISUAL
661.6	8.5		Very loose, brown SILT (A-4b), little sand, trace to no rock fragments, wet (Non-plastic).	SS 4	8.5	2 1 1	2	–	32	–	–		–	–		VISUAL
659.1	11.0		Very loose, gray COARSE AND FINE SAND (A-3a), little silt, wet (non-plastic).	SS 5	11.0	1/1.0 3	3	–	33	–	–		–	–		VISUAL
657.1	13.0		Very soft, gray, highly weathered CLAY SHALE, dry.	SS 6	13.5	50/0.3	50+	–	2	–	–		–	–		VISUAL
			Note: Augered to 15.0 feet and began coring bedrock.	CORE Run-1	15.0											
655.1	15.0		Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile. Note: Bedrock is in good condition as per RQD. Unconfined compressive strength of the core sample was 1427 psi at 15.7 feet and is considered low strength.						95% (90%)							
645.1	25.0		TERMINATION DEPTH = 25.0 FEET.		25.0											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

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TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

REVIEWED DAP — DATE 4/28/03
STRUCTURE FILE NUMBER 7709013(L) 7709021(R)
DRAWN CAR — REVISED
DESIGNED KAK — CHECKED DLR

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

23
47

IPH.DGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-11

STA. & OFFSET: 426+95.90, 53.27' Rt.

ELEVATION: 673.1ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 1/28/03 — DATE COMPLETED: 1/28/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
672.6	0.5		TOPSOIL Soft, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist (Fill).	SS 1	1.0	2 1 3	4	1.0	21	–	–		–	–		VISUAL
669.6	3.5		Soft, brown, mottled gray SILT AND CLAY (A-6a), little sand, trace rock fragments, moist.	SS 2	3.5	2 1 3	4	3.5	21	–	–		–	–		VISUAL
				SS 3A	6.0	3 8	22	3.25	23	–	–		–	–		VISUAL
666.1	7.0		Soft, brown, decomposed CLAY SHALE	SS 3B	7.0	14			14	–	–		–	–		VISUAL
664.6	8.5		Soft, gray, highly weathered CLAY SHALE Note: Augered to 10.0 feet and began coring bedrock.	SS 4	8.5	50/0.3	50+	–	5	–	–		–	–		VISUAL
663.1	10.0		Medium hard to hard, dark gray, weathered to slightly weathered SILTY SHALE, laminar bedding, fissile, with few fossils. Note: Bedrock is in good condition as per RQD. Unconfined compressive strength of the core sample was 849 psi at 10.5 feet and is considered low strength. Note: Angular fracture, approximately 70 degree at 14.3 feet.	CORE Run-1	10.0		95% (80%)									
653.1	20.0		TERMINATION DEPTH = 20.0 FEET.		20.0											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

B-11: PAGE 1 OF 1

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-12

STA. & OFFSET: 428+35.41, 37.9' Rt.

ELEVATION: 663.9ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 3/26/03 — DATE COMPLETED: 3/26/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using a Diedrich D-50 ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 18.0 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
663.4	0.5		TOPSOIL Soft, brown SANDY SILT (A-4a), little clay, trace rock fragments, trace roots, moist. (Fill)	SS 1	1.0	1 1 1	2	0	22	–	–		–	–		VISUAL
661.4	2.5		Soft to very soft, dark brown SANDY SILT (A-4a), little clay, trace rock fragments, trace organics, moist.	SS 2	3.5	2 1 1	2	0	44	–	–		–	–		VISUAL
				SS 3	6.0	1 1 1	2	0	31	–	–		–	–		VISUAL
			Note: Weight of Hammer drove Split Spoon 1.5 feet at sample depths 8.5 and 11.0 feet.	SS 4	8.5	WOH WOH	0	0	32	–	–		–	–		VISUAL
				SS 5	11.0	WOH WOH	0	0	33	–	–		–	–		VISUAL
650.4	13.5		Soft, highly weathered, CLAY SHALE, dry to wet.	SS 6	13.5	55/0.5	50+	–	5	–	–		–	–		VISUAL
			Note: Groundwater encountered at 18.0 feet during drilling operations.	SS 7	16.0	50/0.2	50+	–	5	–	–		–	–		VISUAL
			Note: Augered to 20.0 feet and began coring bedrock.	SS 8	18.5	50/0.3	50+	–	14	–	–		–	–		VISUAL
643.9	20.0		Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile, few fossils. Note: Occasional interbedded SILTY SHALE seams encountered from 21.0 to 21.8 feet. Note: Angular fracture, approximately 20 degree to horizontal encountered at 21.1 feet. Note: Bedrock is in excellent condition as per RQD. Unconfined compressive strength of the core sample was 3264 psi at 20.0 feet and is considered medium strength. Note: Soft, decomposed clay shale seam, 1 inch in thickness encountered at 24.5 feet.	CORE Run-1	20.0		96% (92%)									
638.9	25.0		Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile, few fossils.	CORE Run-2	25.0		100% (96%)									
633.9	30.0		TERMINATION DEPTH = 30.0 FEET.		30.0											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WOH = Weight Of Hammer

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TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

REVIEWED DAP 4/28/03 — DRAWN CAR — DESIGNED KAK — CHECKED DLR — REVISED

STRUCTURE FILE NUMBER 7709031(J) 7709021(A)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

24/47

IP:LDGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-13

STA. & OFFSET: 428+46.19, 30.65' Lt.

ELEVATION: 665.6ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 3/26/03 — DATE COMPLETED: 3/26/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using a Diedrich D-50 ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 18.0 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
665.2	0.4		TOPSOIL Stiff to very soft, dark brown SANDY SILT (A-4a), little to some clay, trace rock fragments, trace organics, moist.	SS 1	1.0	5 6 6	12	3.5	18	–	–		–	–		VISUAL
				SS 2	3.5	2 2 3	5	1.0	23	–	–		–	–		VISUAL
				SS 3	6.0	1 1 2	3	0.5	27	–	–		–	–		VISUAL
			Note: Some clay from 8.5 feet to 16.0 feet.	SS 4	8.5	1 1 2	3	0	28	–	–		–	–		VISUAL
			Note: Weight of Hammer drove Split Spoon the first 0.5 feet at sample depth 11.0, and 1.5 feet at sample depth 13.5 feet.	SS 5	11.0	WOH 1 2	3	0	24	–	–		–	–		VISUAL
				SS 6	13.5	WOH WOH	WOH	0	29	–	–		–	–		VISUAL
649.6	16.0		Soft, gray, highly weathered CLAY SHALE, dry.	SS 7	16.0	50/0.4	50+	–	6	–	–		–	–		VISUAL
			Note: Groundwater was encountered at 18.0 feet during drilling operations.													
647.1	18.5		Soft, gray, decomposed CLAY SHALE, wet.	SS 8	18.5	50/0.3	50+	–	13	–	–		–	–		VISUAL
645.6	20.0		Note: Augered to 20.0 feet and began coring bedrock.	CORE Run-1	20.0		94% (89%)									
			Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile. Note: 0.5 inch soft, decomposed shale seam encountered at 20.7 feet. Note: Bedrock is in good condition as per RQD. Unconfined compressive strength of the core sample was 1290 psi at 21.5 feet and is considered low strength.													
640.6	25.0		Medium hard to hard, dark gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile. Note: Run-2 bedrock is in excellent condition as per RQD.	CORE Run-2	25.0		98% (92%)									
635.6	30.0		TERMINATION DEPTH = 30.0 FEET.		30.0											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WOH = Weight Of Hammer

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TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-14

STA. & OFFSET: 429+60.52, 30.69' Rt.

ELEVATION: 661.5ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 3/27/03 — DATE COMPLETED: 3/27/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using a Diedrich D-50 ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 8.0 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
661.0	0.5		TOPSOIL Stiff, dark brown SANDY SILT (A-4a), trace clay, trace rock fragments, trace wood, moist. (Fill) Note: Trace wood at 2.5 feet.	SS 1	1.0	5 6 3	9	–	36	–	–		–	–		VISUAL
659.0	2.5		Soft, dark brown SANDY SILT (A-4a), some clay, trace rock fragments, trace organics, moist.	SS 2	3.5	1 1 1	2	0	35	–	–		–	–		VISUAL
655.5	6.0		Very loose, brown SANDY SILT (A-4a), trace clay, trace rock fragments, moist to wet. (Non-plastic) Note: Groundwater was encountered at 8.0 feet during drilling operations.	SS 3	6.0	1/1.5 1/1.5	1/1.5	–	29	–	–		–	–		VISUAL
				SS 4	8.5	1/0.75 1/0.75	1/0.75	–	37	–	–		–	–		VISUAL
650.5	11.0		Loose, brown GRAVEL AND ROCK FRAGMENTS WITH SAND AND SILT (A-2-4), moist.	SS 5A	11.0	4 8 50	58	–	11	–	–		–	–		VISUAL
649.5	12.0		Soft, gray, highly weathered CLAY SHALE, moist.	SS 5B	12.0			–	10	–	–		–	–		VISUAL
			Note: Augered to 15.0 feet and began coring bedrock.	SS 6	13.5	50/0.3	50+	–	12	–	–		–	–		VISUAL
646.5	15.0		Medium hard, gray, weathered CLAY SHALE, laminar bedding, fissile, few fossils. Note: Run-2 bedrock is in poor condition as per RQD.	CORE Run-1	15.0		100% (30%)									
641.5	20.0		Medium hard, gray, weathered CLAY SHALE, laminar bedding, fissile, few fossils. Note: Bedrock is in poor condition as per RQD. Unconfined compressive strength of the core sample was 2514 psi at 22.1 feet and is considered medium strength.	CORE Run-2	20.0		100% (25%)									
636.5	25.0		TERMINATION DEPTH = 25.0 FEET.		25.0											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

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TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03 | CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

25
47

IPJDGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-15

STA. & OFFSET: 429+77.78, 34.37' Lt.

ELEVATION: 661.7ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 3/26/03 — DATE COMPLETED: 3/27/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:

Ohio TestBor Inc. using a Diedrich D-50 ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:

Groundwater was encountered at 10.0 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
661.3	0.4		TOPSOIL Stiff, dark brown SANDY SILT (A-4a), some clay, trace rock fragments, trace organics, moist. (Fill)	SS 1	1.0	2 4 6	10	2.5	18	–	–		–	–		VISUAL
658.2	3.5		Soft, dark brown SANDY SILT (A-4a), some clay, trace rock fragments, trace organics, moist.	SS 2	3.5	1 2 2	4	1.0	53	–	–		–	–		VISUAL
				SS 3	6.0	1 1 1	2	0	33	–	–		–	–		VISUAL
653.2	8.5		Very loose, dark brown SANDY SILT (A-4a), trace clay, trace rock fragments, trace organics, moist to wet. (Non-plastic) Note: Groundwater was encountered at 10.0 feet during drilling operations.	SS 4	8.5	1/1.5	1/1.5	--	38	–	–		–	–		VISUAL
650.7	11.0		Loose, brown and gray GRAVEL AND ROCK FRAGMENTS WITH SAND AND SILT(A-2-4), wet.	SS 5A	11.0	5 50/0.5	50+	–	11	–	–		–	–		VISUAL
650.0	11.7		Soft, gray, highly weathered CLAY SHALE, moist.	SS 5B	11.7		50/0.5	–	9	–	–		–	–		VISUAL
			Note: Augered to 15.0 feet and began coring bedrock.	SS 6	13.5	50/0.3	50+	–	13	–	–		–	–		VISUAL
646.7	15.0		Medium hard, gray, weathered CLAY SHALE, laminar bedding, fissile. Note: Bedrock is in poor condition as per RQD. Unconfined compressive strength of the core sample was 852 psi at 16.8 feet and is considered low strength.	CORE Run-1	15.0		100% (46%)									
641.7	20.0		Medium hard, gray, highly weathered to weathered CLAY SHALE, laminar bedding, fissile. Note: Highly weathered with some very close fractures from 20.0 to 21.7 feet. Note: Run-2 bedrock is in poor condition as per RQD.	CORE Run-2	20.0		100% (42%)									
636.7	25.0		TERMINATION DEPTH = 25.0 FEET.		25.0											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

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TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-16

STA. & OFFSET: 430+66.52, 3.2' Lt.

ELEVATION: 661.5ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 3/27/03 — DATE COMPLETED: 3/27/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:

Ohio TestBor Inc. using a Diedrich D-50 ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:

Groundwater was not encountered during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
661.0	0.5		TOPSOIL Very loose to loose, dark brown SANDY SILT (A-4a), trace clay, trace rock fragments, trace organics, moist. (Non-plastic)	SS 1	1.0	1 2 2	4	–	32	–	–		–	–		VISUAL
				SS 2	3.5	3 3 2	5	–	17	–	–		–	–		VISUAL
655.5	6.0		Very stiff, dark brown SANDY SILT (A-4a), little clay, trace rock fragments, trace organics, moist.	SS 3A	6.0	1/1.0	23	0	30	–	--		–	–		VISUAL
654.3	7.2		Soft, gray, highly weathered CLAY SHALE, moist.	SS 3B	7.2	23		–	5	–	–		–	–		VISUAL
			Note: Augered to 10.5 feet and began coring bedrock.	SS 4	8.5	50/0.4	50+	–	4	--	--		–	–		VISUAL
651.0	10.5		soft to medium hard, gray, highly weathered to weathered CLAY SHALE, laminar bedding, fissile. Note: Bedrock is in poor condition as per RQD. Unconfined compressive strength of the core sample was 1715 psi at 11.5 feet and is considered low strength.	CORE Run-1	10.5		94% (40%)									
			Note: Soft, highly weathered clay shale from 15.0 to 15.5 feet.													
646.0	15.5		soft to medium hard, gray, highly weathered to weathered CLAY SHALE, laminar bedding, fissile. Note: Soft, highly weathered clay shale from 15.5 to 16.9 feet. Note: Run-2 bedrock is in poor condition as per RQD.	CORE Run-2	15.5		98% (31%)									
641.0	20.5		TERMINATION DEPTH = 20.5 FEET		20.5											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

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TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

IPK.DGN 03/26/04 CAR,HN

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP 4/28/03 | DATE
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(A)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-17

STA. & OFFSET: 431+35.52, 60.29' Lt.

ELEVATION: 654.7ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 3/28/03 DATE COMPLETED: 3/28/03

SAMPLER DIAM: 2" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 3.25" TYPE: HSA OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using a Diedrich D-50 ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 4.0 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
654.3	0.4		TOPSOIL													
			Loose, brown SANDY SILT (A-4a), trace clay, trace to no rock fragments, moist.	SS 1	1.0	2 2 4	6	--	22	NP	NP	NP	0	56	44	A-4a
652.2	2.5		Loose, brown to gray COARSE AND FINE SAND (A-3a), little silt, moist to wet.	SS 2	2.5	2 3 3	6	--	25	NP	NP	NP	0	69	31	A-3a
650.7	4.0		Note: Groundwater encountered at 4.0 feet during drilling operations.	SS 3	4.0	2 2 2	4	--	30	NP	NP	NP	0	47	38/16	A-4a
649.2	5.5		Loose, gray SANDY SILT (A-4a), trace clay, trace to no rock fragments, wet.	SS 4	5.5	3 4 3	7	--	16	NP	NP	NP	64	26	9	A-1-a
			Loose to dense, brown ROCK FRAGMENTS (A-1-a), some sand, trace silt, wet.	SS 5A	7.0	50+	50/0.3	--	15	NP	NP	NP	56	34	10	A-1-a
647.2	7.5		Soft, gray, decomposed CLAY SHALE, moist.	SS 5B	7.5	50+	50/0.3	--	10	--	--		--	--		VISUAL
				SS 6	8.5	50+	50/0.3	--	11	--	--		--	--		VISUAL
				SS 7	13.5	50+	50/0.5	--	8	--	--		--	--		VISUAL
			Note: Augered to 15.5 feet and began coring bedrock.													
639.2	15.5		Medium hard to hard, gray, weathered CLAY SHALE, laminar bedding, fissile. Note: Run-1 bedrock is in good condition as per RQD. Unconfined compressive strength of the core sample was 1009 psi at 16.8 feet and is considered low strength.	CORE Run 1	15.5		100% (80%)									
634.2	20.5		Medium hard, gray, highly weathered to weathered CLAY SHALE, laminar bedding, fissile. Note: Ocassional clay seams 0.2 inches in thickness from 20.5 to 25.5 feet. Note: Run-2 bedrock is in poor condition as per RQD.	CORE Run 2	20.5		94% (41%)									
629.2	25.5		TERMINATION DEPTH = 25.5 FEET.		25.5											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

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TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-18

STA. & OFFSET: 431+19.28, 54.22' Rt.

ELEVATION: 655.1ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 3/28/03 DATE COMPLETED: 3/28/03

SAMPLER DIAM: 2" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 3.25" TYPE: HSA OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using a Diedrich D-50 ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 5.5 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
654.6	0.5		TOPSOIL													
			Loose, brown ROCK FRAGMENTS WITH SAND (A-1-b), little silt, trace clay, moist.	SS 1	1.0	1 3 3	6	--	11	NP	NP	NP	49	27	24	A-1-b
652.6	2.5		Loose, brown ROCK FRAGMENTS (A-1a), some sand, trace silt, moist to wet.	SS 2	2.5	1 2 3	5	--	7	NP	NP	NP	54	35	11	A-1-a
				SS 3	4.0	2 3 3	6	--	7	NP	NP	NP	56	33	11	A-1-a
			Note: Groundwater encountered at 5.5 feet during drilling operations.	SS 4	5.5	3 3 4	7	--	17	NP	NP	NP	62	28	10	A-1-a
648.1	7.0		Soft, gray, decomposed CLAY SHALE, moist.	SS 5	7.0	50+	50/0.4	--	9	NP	NP	NP	--	--		VISUAL
			Note: Augered to 10.0 feet and began coring bedrock.													
645.1	10.0		Medium hard, gray, highly weathered to weathered CLAY SHALE, laminar bedding, fissile. Note: Bedrock is in fair condition as per RQD. Unconfined compressive strength of the core sample was 722 psi at 10.4 feet and is considered low strength.	CORE Run 1	10.0		96% (71%)									
			Note: Soft, highly weathered clay shale from 14.3 to 15.0 feet.													
640.1	15.0		Medium hard, gray, weathered CLAY SHALE, laminar bedding, fissile.	CORE Run 2	15.0		95% (70%)									
635.1	20.0		TERMINATION DEPTH = 20.0 FEET.		20.0											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

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TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

REVIEWED DAP DATE 4/28/03
STRUCTURE FILE NUMBER 7709013(L) 7709021(R)
DRAWN CAR REVISED
DESIGNED KAK CHECKED DLR

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, CUYAHOGA RIVER
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

27
47

IPL.DGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-19

STA. & OFFSET: 433+12.08, 51.81' Rt.

ELEVATION: 657.4ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 3/13/03 — DATE COMPLETED: 3/13/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 6.0 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
657.0	0.4		TOPSOIL Soft to stiff, brown to gray SANDY SILT (A-4a), some to little clay, trace to little rock fragments, moist. (Fill) Note: Trace roots to 2.5 feet.	SS 1	1.0	1 1 1	2	--	18	--	--		--	--		VISUAL
			Note: encountered little clay and little rock fragments at 3.5 feet.	SS 2	3.5	6 8 6	14	--	11	--	--		--	--		VISUAL
651.4	6.0		Note: Groundwater was encountered at approximately 6.0 feet during drilling operations. Medium dense, gray ROCK FRAGMENTS (A-1-a), some sand, trace silt, wet.	SS 3	6.0	5 9 7	16	--	11				--	--		VISUAL
				SS 4	8.0	8 8 7	15	--	13	NP	NP	NP	57	29	14	A-1-a
647.9	9.5		Medium dense, gray SILT (A-4b), little clay, trace sand, wet.	SS 5	9.5	5 8 4	12	--	26	NP	NP	NP	0	6	61/33	A-4b
646.4	11.0		Very stiff to hard, gray SANDY SILT (A-4a), some clay, some to trace rock fragments, wet.	SS 6	11.0	6 7 9	16	4.0	14				21	25	31/23	A-4a
				SS 7	12.5	9 18 18	36	4.5+	13				10	27	39/24	A-4a
				SS 8	14.0	6 7 9	16	3.25	17				3	20	48/29	A-4a
641.9	15.5		Very stiff, gray SILT (A-4b), little clay, little sand, trace rock fragments, wet.	SS 9	15.5	5 7 9	16	4.0	16				5	20	51/24	A-4b
640.4	17.0		Medium dense, gray ROCK FRAGMENTS WITH SAND, little silt, wet.	SS 10	17.0	10 10 10	20	1.5	10	--	--		--	--		VISUAL
638.4	19.0		Note: Augered to 20.0 feet and began coring bedrock.	SS 11A	18.5	16 50+	50+	2.5	15	--	--		--	--		VISUAL
			Soft, gray, decomposed CLAY SHALE, moist.	SS 11B	19.0	5 50/0.3		--	11	--	--		--	--		VISUAL
637.4	20.0		Medium hard, gray, highly weathered to weathered CLAY SHALE, laminar bedding, fissile. Note: Very soft, highly weathered clay shale from 20.6 to 22.0 feet. Note: Run-1 bedrock is in poor condition as per RQD. Unconfined compressive strength of the core sample was 983 psi at 24.5 feet and is considered low strength.	CORE Run-1	20.0	100% (30%)										
632.4	25.0		Medium hard, gray, highly weathered to weathered CLAY SHALE, laminar bedding, fissile. Note: Very soft, highly weathered clay shale from 25.6 to 26.6 feet and 28.3 to 30.0 feet. Note: Run-2 bedrock is in fair condition as per RQD.	CORE Run-2	25.0	100% (50%)										
627.4	30.0		TERMINATION DEPTH = 30.0 FEET.		30.0											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-20

STA. & OFFSET: 433+18.86, 2.68' Rt.

ELEVATION: 656.2ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 3/14/03 — DATE COMPLETED: 3/14/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 13.5 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
655.8	0.4		TOPSOIL Medium stiff, brown SANDY SILT, some clay, trace rock fragments, trace roots, moist.	SS 1	1.0	2 3 3	6	1.0	24	--	--		--	--		VISUAL
654.1	2.1		Stiff, gray SILT (A-4b), little clay, trace to little sand, no to trace rock fragments, moist.	SS 1A	2.1	2 3 4										
				SS 1B			7	2.25	25	--	--		--	--		VISUAL
				SS 2	3.5	5 4 5	9	3.25	22				--	--		VISUAL
				SS 3	6.0	5 5 5	10	3.75	21				0	2	65/33	A-4b
				SS 4	7.5	3 5 7	12	1.75	25				0	3	68/29	A-4b
				SS 5	9.0	7 6 7	13	1.5	25				0	1	78/21	A-4b
			Note: Little sand and trace rock fragments at 10.5 feet.	SS 6	10.5	6 7 5	12	--	19				2	12	59/27	A-4b
644.2	12.0		Stiff to hard, gray SANDY SILT (A-4a), little clay, trace to "and" rock fragments, moist. Note: 1.0 inch, wet coarse and fine sand seam encountered at 12.9 feet.	SS 7	12.0	7 8 7	15	3.75	14				8	20	46/26	A-4a
				SS 8A	13.5	6 8 6	14	--	20				6	23	45/26	A-4a
				SS 9	15.0	10 12 19	31	4.5+	12				6	22	72	A-4b
				SS 10	16.5	12 12 12	24	--	8				47	12	41	A-4a
				SS 11	18.0	7 8 12	20	4.25	12				21	26	53	A-4a
				SS 12	19.5	8 12 16	28	--	10				--	--		VISUAL
634.2	22.0		Soft, gray, highly weathered CLAY SHALE, dry. Note: Driller indicated possible softer clay seams from 23.5 to 24.0 feet. Note: Augered to 24.8 feet and began coring bedrock.	SS 13	22.0	50+ 50/0.4	50+	--	6	--	--		--	--		VISUAL
631.4	24.8		Soft, gray, weathered CLAY SHALE, laminar to indistinct bedding, fissile to broken	SS 14	24.5	50+ 50/.03	50+	--	5	--	--		--	--		VISUAL
630.6	25.6		Medium hard, gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile. Note: Run-1 bedrock is in fair condition as per RQD. Unconfined compressive strength of the core sample was 2636 psi at 28.2 feet and is considered medium strength.	CORE Run-1	24.8	96% (70%)										
				CORE	29.8											

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

IPM.DGN 03/26/04 CAR,HN

PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-20

STA. & OFFSET: 433+18.86, 2.68' Rt.

ELEVATION: 656.2ft

PROJECT: SUM-271-0802 - Bridge Boring

PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 13.5 feet during drilling operations. No groundwater level reading was taken upon completion of drilling operations because water was introduced into the hole during rock coring oprations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	FIELD DATA: BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	FIELD DATA: PENETROMETER (tons/ft²)	LAB: MOISTURE CONTENT (%)	LAB: ATTERBERG LIMITS (%) LL	PL	PI	LAB: AGGREGATE (%)	LAB: COARSE AND FINE SAND (%)	LAB: SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	LAB: CLASSIFICATION SYMBOL
624.6	31.6		Medium hard, gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile. *(continued)*	Run-2											
			Note: Run-2 bedrock is in poor condition as per RQD.			86% (30%)									
622.7	33.5		Soft, gray, highly weathered CLAY SHALE, laminar to indistinct bedding, fissile to broken.												
621.4	34.8		Medium hard, gray, weathered to slightly weathered SHALE, laminar bedding, fissile.		34.8										
			TERMINATION DEPTH = 34.8 FEET.												

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic

B-20: PAGE 2 OF 2

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-21

STA. & OFFSET: 434+87.82, 0.21' Lt.

ELEVATION: 695.1ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring

PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 2/4/03 DATE COMPLETED: 2/4/03

SAMPLER DIAM: 2" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 3.25" TYPE: HSA and WB OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations. Extended GW reading was 27.8 feet on April, 3 2003.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	WELL LOG	WELL CONSTRUCTION DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	FIELD DATA: BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	FIELD DATA: PENETROMETER (tons/ft²)	LAB: MOISTURE CONTENT (%)	LAB: ATTERBERG LIMITS (%) LL	PL	PI	LAB: AGGREGATE (%)	LAB: COARSE AND FINE SAND (%)	LAB: SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	LAB: CLASSIFICATION SYMBOL
694.6	0.5		TOPSOIL														
			Loose to medium dense, brown to gray SILT (A-4b), trace clay, trace sand, trace to no rock fragments, moist. (Non-plastic)		Bentonite Seal	SS 1	1.5	8 (3 3 5)	--	26	--	--		--	--		VISUAL
						SS 2	4.0	9 (3 4 5)	--	24	NP	NP	NP	0	1	61/38	A-4b
						SS 3A SS 3B	6.5 7.0	11 (4 5 6)	-- --	24 23	-- --	-- --		-- --	-- --		VISUAL VISUAL
						SS 4	9.0	12 (4 6 6)	--	21	--	--		--	--		VISUAL
			Note: Color changed to gray at approximately 7.0 feet.			SS 5	11.5	8 (2 3 5)	--	29	--	--		--	--		VISUAL
			Note: 2.0 inch wet seams at 11.7 and 12.9 feet.			SS 6	14.0	11 (4 6 5)	--	19	--	--		--	--		VISUAL
			Note: 1.0 inch FINE SAND seam at 15.1 feet.			SS 7	16.5	10 (3 4 6)	2.25	19	--	--		--	--		VISUAL
678.6	16.5		Stiff, gray SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist.			ST 8	19.0	ST		19	30	19	11	2	8	90	A-6a
			Note: 0.5 inch FINE SAND seam at 22.0 feet.		Test Bore cuttings	SS 9	21.5	13 (4 5 8)	3.25	18	30	18	12	3	9	88	A-6a
			Note: Switched to Wash Bore with Roller Bit at 24.0 feet.			SS 10	24.0	21 (7 8 13)	4.5+	16	--	--		--	--		VISUAL
671.1	24.0		Very stiff to stiff, gray SILT (A-4b), little clay, trace sand, trace to no rock fragments, moist.														
			Note: Piezometer groundwater measured at 27.8 feet 4/3/03.		GW at 27.8' on 4/3/03 GW at 28.2' on 3/14/03 GW at 28.8' on 2/28/03	SS 11	28.5	24 (8 10 14)	4.25	23	--	--		--	--		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore, ST = Shelby Tube

B-21: PAGE 1 OF 3

TEST BORING LOG WITH WELL 03001GBRID.GPJ PRIMENG.GDT 4/17/03

IPN.DGN 03/26/04 CAR,HN

PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

29
47

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-21

STA. & OFFSET: 434+87.82, 0.21' Lt.

ELEVATION: 695.1ft

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations. Extended GW reading was 27.8 feet on April, 3 2003.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	WELL LOG	WELL CONSTRUCTION DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED (%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Very stiff to stiff, gray SILT (A-4b), little clay, trace sand, trace to no rock fragments, moist. *(continued)*		Bentonite Seal	SS 12	33.5	6 12 14 — 26	4.5+	21	–	–		–	–		VISUAL
					Sand	SS 13	38.5	6 10 13 — 23	4.25	22	–	–		–	–		VISUAL
			Note: Sample was moist to wet at 43.5 feet.		Top of Screen @40'	SS 14	43.5	6 8 12 — 20	3.25	26	–	–		–	–		VISUAL
					Bottom of Screen @ 45'	SS 15	48.5	6 7 7 — 14	3.75	24	–	–		–	–		VISUAL
						SS 16	53.5	6 6 8 — 14	1.75	26	–	–		–	–		VISUAL
636.6	58.5		Very stiff, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist.			SS 17	58.5	7 9 11 — 20	2.25	29	–	–		–	–		VISUAL
631.1	64.0		Loose to medium dense, gray SILT (A-4b), trace clay, trace to no sand, moist to wet (non-plastic).		Backfill with Sand	SS 18	63.5	4 4 5 — 9	–	30	–	–		–	–		VISUAL
						SS 19	68.5	6 6 — 14	–	28	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore, ST = Shelby Tube

TEST BORING LOG WITH WELL 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-21

STA. & OFFSET: 434+87.82, 0.21' Lt.

ELEVATION: 695.1ft

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations. Extended GW reading was 27.8 feet on April, 3 2003.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	WELL LOG	WELL CONSTRUCTION DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED (%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Loose to medium dense, gray SILT (A-4b), trace clay, trace to no sand, moist to wet (non-plastic). *(continued)*					8									
623.1	72.0		Soft, gray, highly weathered CLAY SHALE, moist.			SS 20	73.5	15 50+ 50/0.4 — 50+	–	10	–	–		–	–		VISUAL
			Note: Wash Bored to 77.0 feet and began coring bedrock.														
618.1	77.0		Medium hard to hard, dark gray, highly weathered to slightly weathered, CLAY SHALE, laminar bedding, fissile, few pyrite nodules. Note: Bedrock is in good condition as per RQD. Unconfined compressive strength of the core sample was 759 psi at 77.4 feet and is considered low strength.			CORE Run-1	77.0	100% (90%)									
614.1	81.0		TERMINATION DEPTH = 81.0 FEET.				81.0										

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore, ST = Shelby Tube

TEST BORING LOG WITH WELL 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

IPO.DGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-22

STA. & OFFSET: 434+94.55, 51.26' Rt.

ELEVATION: 697.6ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 2/5/03 — DATE COMPLETED: 2/5/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA and WB — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			LIMESTONE COBBLES (Abutment Slope Protection)													
696.6	1.0		Stiff to medium stiff, brown SANDY SILT (A-4a), some clay, trace rock fragments, moist.	SS 1	1.0	4 4 6	10	1.5	14	–	–		–	–		VISUAL
				SS 2	3.5	3 2 3	5	0.25	22	–	–		–	–		VISUAL
692.6	5.0		Loose to medium dense, brown SILT (A-4b), trace clay, trace sand,trace to no rock fragments, moist. (Non-plastic)	SS 3	6.0	4 4 6	10	–	27	–	–		–	–		VISUAL
				SS 4	8.5	3 5 6	11	–	34	–	–		–	–		VISUAL
686.6	11.0		Stiff to medium stiff, brown to gray SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist.	SS 5A	11.0	2 5 8	13	3.0	30	–	–		–	–		VISUAL
				SS 6	13.5	2 2 3	5	0.5	21	–	–		–	–		VISUAL
			Note: Color changed to gray at approximately 16.0 feet.	SS 7	16.0	2 3 5	8	1.25	19	–	–		–	–		VISUAL
				SS 8	18.5	2 4 5	9	1.5	20	30	18	12	3	9	88	A-6a
				SS 9	21.0	2 4 5	9	2.5	18	–	–		–	–		VISUAL
			Note: Switched to Wash Bore with Roller Bit at 25.0 feet.	SS 10	23.5	4 5 8	13	3.0	18	–	–		–	–		VISUAL
669.1	28.5		Very stiff, gray SILT (A-4b), little clay, trace sand, trace to no rock fragments, moist.	SS 11	28.5	8 12 17	29	3.5	22	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore

B-22: PAGE 1 OF 3

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-22

STA. & OFFSET: 434+94.55, 51.26' Rt.

ELEVATION: 697.6ft

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Very stiff, gray SILT (A-4b), little clay, trace sand, trace to no rock fragments, moist. *(continued)*	SS 12	33.5	7 9 12	21	4.5+	21	–	–		–	–		VISUAL
				SS 13	38.5	7 12 13	25	4.5	23	–	–		–	–		VISUAL
			Note: Interbedded clay seams encountered at 43.5 feet.	SS 14	43.5	6 8 11	19	1.25	29	–	–		–	–		VISUAL
				SS 15	48.5	6 9 12	21	3.5	22	–	–		–	–		VISUAL
644.1	53.5		Medium dense to loose, gray SILT (A-4b), trace clay, trace to no sand, moist to wet (non-plastic).	SS 16	53.5	6 7 9	16	–	27	–	–		–	–		VISUAL
				SS 17	58.5	5 8 11	19	–	30	26	22	4	0	0	55/45	A-4b
				SS 18	63.5	3 5 6	11	–	33	–	–		–	–		VISUAL
				SS 19	68.5	4 4	10	–	30	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore

B-22: PAGE 2 OF 3

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

31
47

IPP.DGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-22

STA. & OFFSET: 434+94.55, 51.26' Rt.

ELEVATION: 697.6ft

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Medium dense to loose, gray SILT (A-4b), trace clay, trace to no sand, moist to wet (non-plastic). *(continued)*			6									
624.1	73.5		Hard, gray SANDY SILT (A-4a), some clay, little rock fragments, moist.	SS 20A	73.5	13 12 64	4.5+	12	–	–		–	–		VISUAL
623.1	74.5		Soft, gray, decomposed CLAY SHALE, moist.	SS 20B	74.5	9		9	–	–		–	–		VISUAL
			Note: Wash Bored to 78.5 feet and began coring rock.												
619.1	78.5		Medium hard to hard, gray, weathered to slightly weathered CLAY SHALE, laminar bedding, fissile. Note: Bedrock is in excellent condition as per RQD. Unconfined compressive strength of the core sample was 1195 psi at 78.7 feet and is considered low strength. Note: Soft, highly weathered clay shale from 80.9 to 81.5 feet.	CORE Run-1	78.5	100% (94%)									
614.1	83.5		TERMINATION DEPTH = 83.5 FEET.		83.5										

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore

B-22: PAGE 3 OF 3

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-23

STA. & OFFSET: 435+95.08, 54.1' Lt.

ELEVATION: 712.5ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 1/31/03 — DATE COMPLETED: 1/31/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA and WB — OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			LIMESTONE COBBLES (Riprap), with silt and clay.												
708.0	4.5		Soft, brown SANDY SILT (A-4a), some clay, trace rock fragments, moist.	SS 1	5.0	1 2 2 4	2.75	23	–	–		–	–		VISUAL
705.0	7.5		Loose, brown SILT (A-4b), trace clay, trace sand, trace to no rock fragments, moist. (Non-plastic)	SS 2	7.5	2 3 2 5	–	26	NP	NP	NP	0	6	72/22	A-4b
				SS 3	10.0	1 2 6 8	–	25	–	–		–	–		VISUAL
700.0	12.5		Medium stiff to stiff, gray SILT AND CLAY (A-6-a), trace sand, trace rock fragments, moist.	SS 4	12.5	2 3 5 8	2.0	28	–	–		–	–		VISUAL
				SS 5	15.0	3 4 5 9	2.75	29	–	–		–	–		VISUAL
695.0	17.5		Medium dense, gray SILT (A-4b) layer, moist.	SS 6	17.5	4 7 5 12	–	23	–	–		–	–		VISUAL
693.5	19.0		Stiff to hard, gray SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist.	SS 7	20.0	3 5 7 12	4.5	22	–	–		–	–		VISUAL
				SS 8	22.5	3 5 6 11	4.25	22	31	20	11	1	1	98	A-6a
				SS 9	25.0	3 6 7 13	4.0	20	–	–		–	–		VISUAL
				SS 10	29.0	4 5 8 13	3.0	22	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore

B-23: PAGE 1 OF 3

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

IPO.DGN 03/26/04 CAR,HN

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
23 NORTH PARK STREET MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03 | CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-23

STA. & OFFSET: 435+95.08, 54.1' Lt.

ELEVATION: 712.5ft

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Stiff to hard, gray SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist. *(continued)*												
			Note: Switched to Wash Bore with Roller Bit at 34.0 feet.	SS 11	34.0	18 (5 9 9)	4.0	19	–	–		–	–		VISUAL
				SS 12	39.0	20 (5 8 12)	2.5	18	–	–		–	–		VISUAL
				SS 13	44.0	34 (10 15 19)	4.5+	17	–	–		–	–		VISUAL
				SS 14	49.0	39 (10 17 22)	4.5+	18	–	–		–	–		VISUAL
658.5	54.0		Hard to very stiff, gray SILT (A-4b), little clay, trace sand, trace to no rock fragments, moist.	SS 15	54.0	33 (10 13 20)	4.5	24	–	–		–	–		VISUAL
				SS 16	59.0	31 (10 16 15)	4.5+	23	–	–		–	–		VISUAL
				SS 17	64.0	34 (13 14 20)	3.0	25	–	–		–	–		VISUAL
				SS	69.0	24 (8	4.0	25	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore

B-23: PAGE 2 OF 3

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-23

STA. & OFFSET: 435+95.08, 54.1' Lt.

ELEVATION: 712.5ft

PROJECT: SUM-271-0802 - Bridge Boring — PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using an ATV-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Hard to very stiff, gray SILT (A-4b), little clay, trace sand, trace to no rock fragments, moist. *(continued)*	18		(11 13)									
638.5	74.0		Medium dense, gray SILT (A-4b), trace clay, trace to no sand, moist. (Non-plastic)	SS 19	74.0	15 (6 7 8)	–	28	–	–		–	–		VISUAL
				SS 20	79.0	28 (8 13 15)	–	29	NP	NP	NP	0	0	64/36	A-4b
			Note: Sample was moist to wet at 79.0 and 84.0 feet.	SS 21	84.0	15 (5 6 9)	–	29	–	–		–	–		VISUAL
				SS 22	89.0	24 (7 9 15)	–	29	–	–		–	–		VISUAL
			Note: Sample was moist to wet at 94.0 feet.	SS 23	94.0	18 (6 7 11)	–	29	–	–		–	–		VISUAL
613.5	99.0		Hard, gray SANDY SILT (A-4a), some clay, trace rock fragments, moist.	SS 24	99.0	33 (10 16 17)	4.25	14	–	–		–	–		VISUAL
612.0	100.5		TERMINATION DEPTH = 100.5 FEET.												

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore

B-23: PAGE 3 OF 3

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 770901(31(L) 770902(1(A)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

33 / 47

IPR.DGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-24

STA. & OFFSET: 436+66.15, 28.04' Rt.

ELEVATION: 736.6ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 2/14/03 DATE COMPLETED: 2/14/03

SAMPLER DIAM: 2" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 3.25" TYPE: HSA and WB OTHER:

DRILLING INFORMATION:
Ohio TestBor Inc. using a Mobile B-57 Truck-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations.

ELEV (ft)	DEPTH (ft)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
736.1	0.5		TOPSOIL medium stiff, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist. (Fill)	SS 1	1.0	4 4 5	11	4.5	17	31	20	11	8	15	76	A-6a
733.1	3.5		Stiff, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist.	SS 2	3.5	4 4 4	8	2.75	24	--	--		--	--		VISUAL
730.6	6.0		Stiff to very stiff, brown SANDY SILT (A-4a), some clay, trace rock fragments, moist.	SS 3	6.0	5 5 6	11	4.5+	20	--	--		--	--		VISUAL
				SS 4	8.5	3 6 7	13	4.0	21	--	--		--	--		VISUAL
725.6	11.0		Stiff, brown to gray CLAY (A-7-6), trace to no sand, trace to no rock fragments, moist.	SS 5	11.0	5 6 9	15	3.25	28	--	--		--	--		VISUAL
				SS 6	13.5	3 8 9	15	3.75	27	51	27	24	0	0	100	A-7-6
			Note: Occasional Slickenside present from 11.0 to 23.5 feet.	SS 7	16.0	4 7 10	17	2.5	29	--	--		--	--		VISUAL
			Note: 4.0 inch inclined gray silt seam approximately 0.2 inch in thickness at 19.0 feet. Note: Trace roots at 19.7 feet.	SS 8	18.5	3 6 10	16	4.25	26	--	--		--	--		VISUAL
			Note: Color changed to gray at approximately 21.0 feet.	SS 9	21.0	5 6 7	13	1.25	27	--	--		--	--		VISUAL
713.1	23.5		Stiff, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist.	SS 10	23.5	2 4 6	10	3.0	23	--	--		--	--		VISUAL
				SS 11	28.5	3 5 8	13	1.25	23	--	--		--	--		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore, ST = Shelby Tube

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-24

STA. & OFFSET: 436+66.15, 28.04' Rt.

ELEVATION: 736.6ft

PROJECT: SUM-271-0802 - Bridge Boring PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using a Mobile B-57 Truck-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations.

ELEV (ft)	DEPTH (ft)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Stiff, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist. *(continued)*	ST 12	32.5	ST			21	31	18	13	0	0	100	A-6a
702.1	34.5		Medium dense, gray SILT (A-4b), layer, moist. (Non-plastic) Note: Switched to Wash Bore with Roller Bit at 36.0 feet.	SS 13	34.5	8 12 14	26	4.5+	16	--	--		--	--		VISUAL
700.6	36.0		Stiff to very stiff, gray SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist.													
			Note: Some silt lenses encountered from 39.5 to 41.0 feet.	SS 14	38.5	5 7 10	17	1.25	25	--	--		--	--		VISUAL
				SS 15	43.5	2 4 5	9	1.5	23	31	19	12	1	7	92	A-6a
				SS 16	48.5	3 4 7	11	1.5	22	--	--		--	--		VISUAL
				SS 17	53.5	3 5 7	12	2.25	21	--	--		--	--		VISUAL
				SS 18	58.5	3 5 9	14	4.0	20	--	--		--	--		VISUAL
				SS 19	63.5	5 6 12	18	1.75	17	--	--		--	--		VISUAL
668.1	68.5			SS 20	68.5	4 6	18	2.25	25	--	--		--	--		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore, ST = Shelby Tube

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

IPS.DGN 03/26/04 CAR,HN

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP 4/28/03 | DATE
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOMPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-24

STA. & OFFSET: 436+66.15, 28.04' Rt.

ELEVATION: 736.6ft

PROJECT: SUM-271-0802 - Bridge Boring PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor Inc. using a Mobile B-57 Truck-Mounted Drilling Rig

GROUNDWATER INFORMATION:
No Groundwater level reading was taken during drilling or upon completion of drilling operations due to water was introduced into the hole for wash boring and rock coring operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Very stiff to hard, gray SILT (A-4b), little clay, trace sand, trace to no rock fragments, moist. *(continued)* Note: 0.25 inch gray FINE SAND seam at 69.8 feet. Note: Consistency changed to very stiff to hard at 71.5 feet.			12									
				SS 21	73.5	15 49 19 30	4.5+	19	–	–		–	–		VISUAL
658.1	78.5		Very dense, gray GRAVEL AND ROCK FRAGMENTS WITH SAND (A-1-b) layer, moist.	SS 22	78.5	17 48 22 26	4.5	21	–	–		–	–		VISUAL
				SS 23	83.5	26 50+ 50 50/0.3	–	11	–	–		–	–		VISUAL
650.6	86.0		Hard, gray SILT (A-4b), little clay, trace to no sand, trace to no rock fragments, moist.												
				SS 24	88.5	12 39 16 23	4.5	25	–	–		–	–		VISUAL
				SS 25	93.5	9 33 15 18	2.0	25	29	23	6	0	0	50/50	A-4b
638.1	98.5		Medium dense to dense, gray SILT (A-4b), trace clay, trace to no sand, moist. (Non-plastic)	SS 26	98.5	9 27 12 15	–	26	–	–		–	–		VISUAL
				SS 27	103.5	9 31 14 17	–	28	–	–		–	–		VISUAL
631.6	105.0		TERMINATION DEPTH = 105.0 FEET.												

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, WB = Wash Bore, ST = Shelby Tube

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-25

STA. & OFFSET: 437+26.44, 77.91' Lt.

ELEVATION: 744.65ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Bridge Boring PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 3/6/03 DATE COMPLETED: 3/6/03

SAMPLER DIAM: 2" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 3.25" TYPE: HSA OTHER:

DRILLING INFORMATION:
North America Drilling, Inc. using a CME 55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during or upon completion of drilling operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
744.3	0.4		TOPSOIL Medium dense, brown SANDY SILT (A-4a), little clay, little rock fragments, moist (Fill, non-plastic).	SS 1	1.0	6 8 14 8	3.0	16	NP	NP	NP	11	22	28/40	A-4a
741.2	3.5		Stiff to medium stiff, brown SANDY SILT (A-4a), some clay, trace rock fragments, trace roots, moist (Fill).	SS 2	3.5	5 7 14 7	1.0	20	–	–		–	–		VISUAL
				SS 3	6.0	3 3 7 4	0	24	–	–		–	–		VISUAL
736.2	8.5		Loose, brown SANDY SILT (A-4a), little clay, little rock fragments, moist (Fill, non-plastic).	SS 4	8.5	2 3 6 3	0.5	13	–	–		–	–		VISUAL
				SS 5	11.0	2 3 5 3	0.25	16	–	–		–	–		VISUAL
731.7	13.0		Very stiff to stiff, brown SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist.	SS 6	13.5	2 7 16 9	3.0	23	–	–		–	–		VISUAL
				SS 7	16.0	2 5 12 7	3.0	25	–	–		–	–		VISUAL
726.2	18.5		Very stiff, brown SILT (A-4b), some clay, trace sand layer, moist.	SS 8	18.5	3 8 20 14	4.5+	21	28	21	7	0	1	59/40	A-4b
723.7	21.0		Stiff to very stiff, gray SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist.	SS 9	21.0	2 4 11 7	1.5	30	–	–		–	–		VISUAL
				SS 10	23.5	2 4 11 7	1.5	28	–	–		–	–		VISUAL
				SS 11	26.0	2 4 9 5	1.0	34	–	–		–	–		VISUAL
				SS 12	28.5	5 9 21 12	0.75	27	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, ST = Shelby Tube

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03 | CHECKED DLR | REVISED

STRUCTURE FILE NUMBER 7709013(L) 7709021(A)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOCA RIVER

SUM-271-8.02

35/47

IPT.DGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-25

STA. & OFFSET: 437+26.44, 77.91' Lt.

ELEVATION: 744.65ft

PROJECT: SUM-271-0802 - Bridge Boring PROJECT No.: 03001g

DRILLING INFORMATION:
North America Drilling, Inc. using a CME 55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during or upon completion of drilling operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Stiff to very stiff, gray SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist. *(continued)*	SS 13	33.5	6 9 16	25	3.5	22	–	–		–	–		VISUAL
				ST 14	35.0	ST				–	–		–	–		VISUAL
				SS 15	38.5	7 7 10	17	2.5	22	–	–		–	–		VISUAL
				SS 16	43.5	3 6 8	14	2.75	27	–	–		–	–		VISUAL
			Note: Some thin-inclined clay layers encountered at 48.5 feet.	SS 17	48.5	3 8 9	17	0.75	13	–	–		–	–		VISUAL
			Note: Occasional interbedded silt lenses from 48.5 to 63.5 feet.	SS 18	53.5	3 5 6	11	0.25	9	–	–		–	–		VISUAL
				SS 19	58.5	4 8 12	20	0.25	24	30	19	11	0	2	97	A-6a
681.2	63.5		Very stiff to hard, gray SILT (A-4b), little clay, trace sand, trace to no rock fragments, moist.	SS 20	63.5	6 12 16	28	2.5	21	–	–		–	–		VISUAL
			Note: Sample was moist to wet at 68.5 feet.	SS 21	68.5	7 13	30	2.0	23	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, ST = Shelby Tube

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: B-25

STA. & OFFSET: 437+26.44, 77.91' Lt.

ELEVATION: 744.65ft

PROJECT: SUM-271-0802 - Bridge Boring PROJECT No.: 03001g

DRILLING INFORMATION:
North America Drilling, Inc. using a CME 55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during or upon completion of drilling operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Very stiff to hard, gray SILT (A-4b), little clay, trace sand, trace to no rock fragments, moist. *(continued)*			17										
				SS 22	73.5	5 10 17	27	4.5+	18	–	–		–	–		VISUAL
				SS 23	78.5	12 38 47	83		18	–	–		–	–		VISUAL
				SS 24	83.5	8 26 40	66	3.75	21	–	–		–	–		VISUAL
				SS 25	88.5	11 30 35	65	3.75	21	–	–		–	–		VISUAL
			Note: Sample was moist to wet at 93.5 feet.	SS 26	93.5	3 19 27	46	2.75	22	–	–		–	–		VISUAL
				SS 27	98.5	15 30 42	72	3.75	21	–	–		–	–		VISUAL
644.7	100.0		TERMINATION DEPTH = 100.0 FEET.													

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non Plastic, ST = Shelby Tube

TEST BORING LOG3 03001GBRID.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(A)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOCA RIVER

SUM-271-8.02

36
47

IPU.DGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: BMB-01

STA. & OFFSET: 449+01.48, 27.73' Lt.

ELEVATION: 731.4ft

CLIENT: Richland Engineering Ltd.

PROJECT: Bridge No. SUM-271-0854 Lt. over BM Road — PROJECT No.: 03001g

LOCATION: Summit County, OH

DATE STARTED: 2/26/03 — DATE COMPLETED: 2/27/03

SAMPLER DIAM: 2.0" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
North America Drilling, Inc. using a CME 55 Truck Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 45.0 feet during and 45.0 feet upon completion of drilling operations.

▼ GROUNDWATER DURING DRILLING ▽ GROUNDWATER UPON COMPLETION ▼ EXTENDED GROUNDWATER READING

ELEV (ft.)	DEPTH (ft.)	Soil/Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
731.1	0.3		TOPSOIL													
			Medium stiff to stiff, brown SILT AND CLAY (A-6a), trace sand, trace to no rock fragments (fill).	SS 1	1.0	4 5 3	8	3.75	23	35	22	13	0	5	94	A-6a
				SS 2	3.5	5 5 5	10	1.75	23	–	–		–	–		VISUAL
725.4	6.0		Stiff, brown SANDY SILT (A-4a), some clay, trace rock fragments (fill).	SS 3	6.0	6 7 8	15	2.5	16	–	–		–	–		VISUAL
				SS 4	8.5	3 5 8	13	1.5	15	–	–		–	–		VISUAL
720.4	11.0		Stiff to hard, brown SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist (fill).	SS 5	11.0	5 5 5	10	1.5	23	–	–		–	–		VISUAL
				SS 6	13.5	6 9 5	14	3.0	23	–	–		–	–		VISUAL
				SS 7	16.0	5 6 8	14	4.0	19	–	–		–	–		VISUAL
				SS 8	18.5	4 7 9	16	4.5	18	–	–		–	–		VISUAL
				SS 9	21.0	2 6 6	12	3.25	19	–	–		–	–		VISUAL
				SS 10	23.5	7 7 12	19	4.5	18	–	–		–	–		VISUAL
				SS 11	26.0	12 19 19	38	4.5+	17	–	–		–	–		VISUAL
702.3	29.1		Very stiff, brown SANDY SILT (A-4a), little clay, trace rock fragments, moist. (fill)	SS 12A	28.5	5 10 15	25	3.75	19	–	–		–	–		VISUAL
701.4	30.0		Very stiff, brown SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist (fill).	SS 12B	29.1			1.25	16	–	–		–	–		VISUAL
				SS 13	33.5	5 10 15	25	4.5+	19	–	–		–	–		VISUAL
692.9	38.5			SS 14	38.5	4 6 10	16	3.0	23	29	21	8	0	11	43/45	A-4a

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Augur, ST = Shelby Tube, NP = Non Plastic, WOH = Weight Of Hammer

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: BMB-01

STA. & OFFSET: 449+01.48, 27.73' Lt.

ELEVATION: 731.4ft

PROJECT: Bridge No. SUM-271-0854 Lt. over BM Road — PROJECT No.: 03001g

DRILLING INFORMATION:
North America Drilling, Inc. using a CME 55 Truck Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 45.0 feet during and 45.0 feet upon completion of drilling operations.

▼ GROUNDWATER DURING DRILLING ▽ GROUNDWATER UPON COMPLETION ▼ EXTENDED GROUNDWATER READING

ELEV (ft.)	DEPTH (ft.)	Soil/Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Very stiff to stiff, brown to gray SANDY SILT (A-4a), some clay, trace to no rock fragments, moist. *(continued)*													
				SS 15	43.5	5 11 18	29	1.75	19	–	–		–	–		VISUAL
				SS 16	48.5	9 9 11	20	2.25	20	–	–		–	–		VISUAL
			Note: Color changed to gray at approximately 53.5 feet.	SS 17	53.5	4 6 10	16	1.25	27	28	19	9	0	1	37/62	A-4a
				SS 18	58.5	7 8 10	18	1.0	27	–	–		–	–		VISUAL
				ST 19	63.5	ST			29	–	–		–	–		VISUAL
				SS 20	68.5	4 5 7	12	0.75	28	–	–		–	–		VISUAL
				SS 21	73.5	2 4 6	10	0.5	29	–	–		–	–		VISUAL
				SS 22	78.5	5 11 14	25	0.5	28	–	–		–	–		VISUAL
647.9	83.5		Very stiff to hard, gray SILT (A-4b), some clay, trace to no sand, moist.	SS 23	83.5	5 10 13	23	0.5	23	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Augur, ST = Shelby Tube, NP = Non Plastic, WOH = Weight Of Hammer

TEST BORING LOG3 03001GBMR.GPJ PRIMENG.GDT 4/17/03

IPV.DGN 4/28/03 JLS

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709099

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: BMB-01

STA. & OFFSET: 449+01.48, 27.73' Lt.

ELEVATION: 731.4ft

PROJECT: Bridge No. SUM-271-0854 Lt. over BM Road — PROJECT No.: 03001g

DRILLING INFORMATION:
North America Drilling, Inc. using a CME 55 Truck Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 45.0 feet during and 45.0 feet upon completion of drilling operations.

▼ GROUNDWATER DURING DRILLING ▽ GROUNDWATER UPON COMPLETION ▼ EXTENDED GROUNDWATER READING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Very stiff to hard, gray SILT (A-4b), some clay, trace to no sand, moist. *(continued)*	SS 24	88.5	15 (5/10/10)	1.75	22	25	20	5	0	0	52/48	A-4b
				SS 25	93.5	12 (3/6/6)	1.25	22	–	–		–	–		VISUAL
				SS 26	98.5	15 (5/5/10)	0.75	23	–	–		–	–		VISUAL
627.9	103.5		Hard, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist.	SS 27	103.5	32 (6/12/20)	3.0	17	–	–		–	–		VISUAL
				SS 28	108.5	59 (12/25/34)	4.5+	16	–	–		–	–		VISUAL
				SS 29	113.5	85 (17/35/50/4)	4.5+	15	–	–		–	–		VISUAL
				SS 30	118.5	89 (35/40/49)	4.5+	16	–	–		–	–		VISUAL
611.4	120.0		TERMINATION DEPTH = 120.0 FEET												

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Augur, ST = Shelby Tube, NP = Non Plastic, WOH = Weight Of Hammer

TEST BORING LOG3 03001GBMR.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: BMB-02

STA. & OFFSET: 450+35.89, 29.32' Lt.

ELEVATION: 702.5ft

CLIENT: Richland Engineering Ltd.

PROJECT: Bridge No. SUM-271-0854 Lt. over BM Road — PROJECT No.: 03001g

LOCATION: Summit County, OH

DATE STARTED: 2/7/03 DATE COMPLETED: 2/10/03

SAMPLER DIAM: 2.0" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 325" TYPE: HSA OTHER:

DRILLING INFORMATION:
North America Drilling, Inc. using a CME 55 Truck Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 11.5 feet during and at 26.0 feet upon completion of drilling operations.

▼ GROUNDWATER DURING DRILLING ▽ GROUNDWATER UPON COMPLETION ▼ EXTENDED GROUNDWATER READING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
701.8	0.7		TOPSOIL Stiff, brown SILT AND CLAY (A-6a), little sand, trace to no rock fragments, trace roots (fill).	SS 1	1.0	14 (6/7/7)	4.5+	17	–	–		–	–		VISUAL
699.0	3.5		Very stiff to soft, brown SILTY CLAY (A-6b), trace sand, trace to no rock fragments, moist to wet.	SS 2	3.5	18 (7/7/11)	2.75	23	–	–		–	–		VISUAL
				SS 3	6.0	10 (4/4/6)	1.75	28	40	24	16	0	3	97	A-6b
				SS 4	8.5	4 (2/2/2)	–	28	–	–		–	–		VISUAL
691.5	11.0		Medium stiff to stiff, brown SILT (A-4b), some clay, trace sand, moist to wet.	SS 5	11.0	5 (2/3/3)	–	26	–	–		–	–		VISUAL
				SS 6	13.5	9 (3/4/5)	4.5+	23	–	–		–	–		VISUAL
				ST 7	16.0	ST	–		–	–		–	–		VISUAL
684.0	18.5		Medium dense, brown COARSE AND FINE SAND (A-3a), trace rock fragments, moist.	SS 8	18.5	11 (3/5/6)	–	20	–	–		–	–		VISUAL
681.5	21.0		Very stiff to hard, brown SILT (A-4b), some clay, trace sand, moist.	SS 9	21.0	25 (5/10/15)	2.5	22	–	–		–	–		VISUAL
				SS 10	23.5	27 (6/10/17)	1.25	22	26	17	9	0	3	52/46	A-4b
				SS 11	26.0	50 (8/23/27)	4.5+	18	–	–		–	–		VISUAL
674.3	28.2		Very stiff, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist.	SS 12	28.5	16 (4/6/10)	1.5	25	–	–		–	–		VISUAL
				SS 13	33.5	18 (4/6/10)	1.0	26	–	–		–	–		VISUAL
				SS 14	38.5	18 (5/7/11)	1.5	23	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Augur, ST = Shelby Tube, NP = Non Plastic, WOH = Weight Of Hammer

TEST BORING LOG3 03001GBMR.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DRAWN CAR | DESIGNED KAK | DATE 4/28/03 | REVIEWED DAP | CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709099

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

38
47

IPW.DGN 4/28/03 JLS

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: BMB-02

STA. & OFFSET: 450+35.89, 29.32' Lt.

ELEVATION: 702.5ft

PROJECT: Bridge No. SUM-271-0854 Lt. over BM Road

PROJECT No.: 03001g

DRILLING INFORMATION:
North America Drilling, Inc. using a CME 55 Truck Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 11.5 feet during and at 26.0 feet upon completion of drilling operations.

▼ GROUNDWATER DURING DRILLING ▽ GROUNDWATER UPON COMPLETION ▼ EXTENDED GROUNDWATER READING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Very stiff, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist. *(continued)*												
				SS 15	43.5	15 (5 6 9)	1.0	25	–	–		–	–		VISUAL
				SS 16	48.5	18 (5 8 10)	0.75	26	–	–		–	–		VISUAL
				SS 17	53.5	17 (3 7 10)	0.75	28	–	–		–	–		VISUAL
				SS 18	58.5	19 (5 7 12)	0.75	25	–	–		–	–		VISUAL
				SS 19	63.5	24 (8 11 13)	1.5	21	31	19	12	0	1	98	A-6a
634.0	68.5		Stiff, gray SILT (A-4b), some clay, trace sand, moist.	SS 20	68.5	WOH (WOH 5 8)	1.5	23	–	–		–	–		VISUAL
				SS 21	73.5	WOH (WOH 4 10)	–	24	–	–		–	–		VISUAL
624.0	78.5		Hard, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist.	SS 22	78.5	34 (11 14 20)	2.5	18	–	–		–	–		VISUAL
				SS 23	83.5	41 (8 17 24)	4.0	20	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Augur, ST = Shelby Tube, NP = Non Plastic, WOH = Weight Of Hammer

TEST BORING LOGS 03001GBMR.GPJ PRIMENG.GDT 4/17/03

BMB-02: PAGE 2 OF 3

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: BMB-02

STA. & OFFSET: 450+35.89, 29.32' Lt.

ELEVATION: 702.5ft

PROJECT: Bridge No. SUM-271-0854 Lt. over BM Road

PROJECT No.: 03001g

DRILLING INFORMATION:
North America Drilling, Inc. using a CME 55 Truck Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 11.5 feet during and at 26.0 feet upon completion of drilling operations.

▼ GROUNDWATER DURING DRILLING ▽ GROUNDWATER UPON COMPLETION ▼ EXTENDED GROUNDWATER READING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Hard, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist. *(continued)*	SS 24	88.5	44 (11 22 22)	4.5+	13	–	–		–	–		VISUAL
609.0	93.5		Hard, gray SILT AND CLAY (A-6a), little to trace sand, trace rock fragments, moist.	SS 25	93.5	79 (10 29 50)	4.5+	15	32	18	14	8	13	78	A-6a
				SS 26	98.5	55 (11 22 33)	4.5+	14	–			–	–		VISUAL
				SS 27	103.5	53 (11 22 31)	3.5	18	–			–	–		VISUAL
				SS 28	108.5	49 (9 18 31)	4.25	18	–			–	–		VISUAL
				SS 29	113.5	44 (9 18 26)	4.5+	19	–			–	–		VISUAL
587.5	115.0		TERMINATION DEPTH = 115.0 FEET												

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Augur, ST = Shelby Tube, NP = Non Plastic, WOH = Weight Of Hammer

TEST BORING LOGS 03001GBMR.GPJ PRIMENG.GDT 4/17/03

BMB-02: PAGE 3 OF 3

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709099

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

39
47

IPX.DGN 4/28/03 JLS

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: BMB-03

STA. & OFFSET: 451+20.60, 27.62' Lt.

ELEVATION: 735.6ft

CLIENT: Richland Engineering Ltd.

PROJECT: Bridge No. SUM-271-0854 Lt. over BM Road — PROJECT No.: 03001g

LOCATION: Summit County, OH

DATE STARTED: 2/28/03 — DATE COMPLETED: 3/4/03

SAMPLER DIAM: 2.0" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
North America Drilling, Inc. using a CME 55 Truck Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 32.0 feet during and at 25.8 feet upon completion of drilling operations.

▼ GROUNDWATER DURING DRILLING ▽ GROUNDWATER UPON COMPLETION ▼ EXTENDED GROUNDWATER READING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
735.3	0.3		TOPSOIL												
			Very stiff to stiff, brown SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist (fill).	SS 1	1.0	4 7 11 — 18		17	37	22	15	2	10	88	A-6a
				SS 2	3.5	5 6 8 — 14		21	–	–		–	–		VISUAL
				SS 3	6.0	7 7 10 — 17		19	–	–		–	–		VISUAL
				SS 4	8.5	3 6 10 — 16		20	–	–		–	–		VISUAL
				SS 5	11.0	3 3 6 — 9		21	–	–		–	–		VISUAL
				SS 6	13.5	2 6 10 — 16		21	–	–		–	–		VISUAL
				SS 7	16.0	3 5 7 — 12		22	–	–		–	–		VISUAL
				SS 8	18.5	3 8 11 — 19		25	–	–		–	–		VISUAL
714.6	21.0		Note: Dark brown organic layer encountered at 19.8 feet. Hard to medium stiff, brown CLAY (A-7-6), trace sand, trace rock fragments, moist to wet.	SS 9	21.0	5 10 13 — 23		21	–	–		–	–		VISUAL
				SS 10	23.5	3 8 16 — 24		19	–	–		–	–		VISUAL
				SS 11	26.0	5 12 19 — 31		24	48	26	22	2	1	97	A-7-6
				SS 12	28.5	1 1 5 — 6		30	–	–		–	–		VISUAL
702.1	33.5		Brown gravel with sand and silt layer, wet.	SS 13A	33.5	5 2 5 — 7		18	–	–		–	–		VISUAL
701.6	34.0		Medium dense to very dense, gray SILT (A-4b), trace clay, trace sand, moist.	13B	34.0			28	–	–		–	–		VISUAL
				SS 14	38.5	2 5 5 — 11		25	NP	NP	NP	0	1	63/36	A-4b

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Augur, ST = Shelby Tube, NP = Non Plastic, WOH = Weight Of Hammer

BMB-03: PAGE 1 OF 3

TEST BORING LOG3 03001GBMR.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: BMB-03

STA. & OFFSET: 451+20.60, 27.62' Lt.

ELEVATION: 735.6ft

PROJECT: Bridge No. SUM-271-0854 Lt. over BM Road — PROJECT No.: 03001g

DRILLING INFORMATION:
North America Drilling, Inc. using a CME 55 Truck Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 32.0 feet during and at 25.8 feet upon completion of drilling operations.

▼ GROUNDWATER DURING DRILLING ▽ GROUNDWATER UPON COMPLETION ▼ EXTENDED GROUNDWATER READING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Medium dense to very dense, gray SILT (A-4b), trace clay, trace sand, moist. *(continued)*	SS 15	43.5	5 9 11 — 20		21	–	–		–	–		VISUAL
				SS 16	48.5	7 9 16 — 25		23	–	–		–	–		VISUAL
				SS 17	53.5	7 14 19 — 33		21	–	–		–	–		VISUAL
				SS 18	58.5	10 23 43 — 66		21	–	–		–	–		VISUAL
672.1	63.5		Very stiff to hard, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist.	SS 19	63.5	5 8 11 — 19		29	–	–		–	–		VISUAL
				SS 20	68.5	5 11 13 — 24		28	–	–		–	–		VISUAL
				SS 21	73.5	8 8 11 — 19		24	–	–		–	–		VISUAL
				SS 22	78.5	9 16 23 — 39	1.75	20	30	18	12	0	1	99	A-6a
				SS 23	83.5	8 10 13 — 23	1.75	25	–	–		–	–		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Augur, ST = Shelby Tube, NP = Non Plastic, WOH = Weight Of Hammer

BMB-03: PAGE 2 OF 3

TEST BORING LOG3 03001GBMR.GPJ PRIMENG.GDT 4/17/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709099

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-08542 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

40
47

IPY.DGN 4/28/03 JLS

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: BMB-03

STA. & OFFSET: 451+20.60, 27.62' Lt.

ELEVATION: 735.6ft

PROJECT: Bridge No. SUM-271-0854 Lt. over BM Road

PROJECT No.: 03001g

DRILLING INFORMATION:
North America Drilling, Inc. using a CME 55 Truck Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 32.0 feet during and at 25.8 feet upon completion of drilling operations.

▼ GROUNDWATER DURING DRILLING ▽ GROUNDWATER UPON COMPLETION ▼ EXTENDED GROUNDWATER READING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Very stiff to hard, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist. *(continued)*	SS 24	88.5	7 9 10 19	0.75	26	–	–		–	–		VISUAL
				SS 25	93.5	8 11 12 23	1.0	27	–	–		–	–		VISUAL
			Note: Occasional silt lenses encountered at 98.5 feet.	SS 26	98.5	8 14 19 33	2.25	23	–	–		–	–		VISUAL
632.1	103.5		Hard to very stiff, gray SILT (A-4b), some clay, trace sand, trace to no rock fragments, moist.	SS 27	103.5	9 17 19 36	4.5+	21	–	–		–	–		VISUAL
				SS 28	108.5	10 21 24 45	3.0	21	–	–		–	–		VISUAL
				SS 29	113.5	7 14 15 29	3.5	21	–	–		–	–		VISUAL
				SS 30	118.5	16 28 32 60	3.5	21	–	–		–	–		VISUAL
615.6	120.0		TERMINATION DEPTH = 120.0 FEET												

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Augur, ST = Shelby Tube, NP = Non Plastic, WOH = Weight Of Hammer

BMB-03: PAGE 3 OF 3

TEST BORING LOG3 03001GBMR.GPJ PRIMENG.GDT 4/17/03

IPZ.DGN 4/28/03 JLS

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709099

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0854 L
OVER BOSTON MILLS ROAD

SUM-271-8.02

41/47

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: W-01

STA. & OFFSET: 413+01.92, 26.95' Lt.

ELEVATION: 817.8ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Retaining Wall Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 2/26/03 DATE COMPLETED: 2/26/03

SAMPLER DIAM: 2" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 3.25" TYPE: HSA OTHER:

DRILLING INFORMATION:
North America Drilling, Inc. using a CME-55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during or upon completion of drilling operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LIQUID LIMIT LL	PLASTIC LIMIT PL	PLASTICITY INDEX PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
817.5	0.3		TOPSOIL													
			Hard to very stiff, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist. (Fill)	SS 1	1.0	8 16 17	33	4.5+	11	--	--		--	--		VISUAL
				SS 2	3.5	8 8 12	20	--	20	--	--		--	--		VISUAL
811.5	6.3		Very stiff, brown SILT (A-4b), some clay, trace sand, moist.	SS 3	6.0	5 6 10	16	2.75	26	30	23	7	0	1	51/48	A-4b
			Note: Unconfined compressive strength of the soil sample was 5878 psf at 8.0 feet.	ST 4	8.0		ST		28							VISUAL
804.3	13.5		Medium dense to dense, brown SILT (A-4b), trace clay, trace sand, moist (non-plastic).	SS 5	13.5	9 10 11	21	--	32	--	--		--	--		VISUAL
				SS 6	18.5	7 12 16	28	--	19	--	--		--	--		VISUAL
				SS 7	23.5	9 12 17	29	--	13	NP	NP	NP	0	8	77/16	A-4b
				SS 8	28.5	7 10 16	26	--	25	--	--		--	--		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non-plastic, ST = Shelby Tube

TEST BORING LOG3 03001GREW.GPJ PRIMENG.GDT 4/2/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: W-01

STA. & OFFSET: 413+01.92, 26.95' Lt.

ELEVATION: 817.8ft

PROJECT: SUM-271-0802 - Retaining Wall Boring — PROJECT No.: 03001g

DRILLING INFORMATION:
North America Drilling, Inc. using a CME-55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during or upon completion of drilling operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LIQUID LIMIT LL	PLASTIC LIMIT PL	PLASTICITY INDEX PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Medium dense to dense, brown SILT (A-4b), trace clay, trace sand, moist (non-plastic). *(continued)*	SS 9	33.5	9 15 20	35	--	16	--	--		--	--		VISUAL
				SS 10	38.5	15 17 21	38	--	20	--	--		--	--		VISUAL
777.8	40.0		TERMINATION DEPTH = 40.0 FEET.													

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non-plastic, ST = Shelby Tube

TEST BORING LOG3 03001GREW.GPJ PRIMENG.GDT 4/2/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 770901(3)(L) 770902(1)(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

IPZA.DGN 03/26/04 CAR,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: W-02

STA. & OFFSET: 414+93.97, 16.44' Rt.

ELEVATION: 800.9ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Retaining Wall Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 2/14/03 — DATE COMPLETED: 2/14/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
North America Drilling, Inc. using a CME-55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 39.0 feet during drilling operations.

GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
800.6	0.3		TOPSOIL													
			Very stiff, brown and gray SILT AND CLAY (A-6a), little sand, trace rock fragments, moist. (Fill)	SS 1	1.0	5 9 11	20	4.5+	15	--	--		--	--		VISUAL
				SS 2	3.5	6 6 10	16	3.5	18	--	--		--	--		VISUAL
796.9	4.0		Very stiff, brown and gray SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist. Note: Trace roots encountered at approximately 5.0 feet.	SS 3	6.0	7 8 15	23	4.5	16	32	19	13	2	9	89	A-6a
792.4	8.5		Medium dense to loose, brown SILT (A-4b), trace clay, trace sand, moist (non-plastic).	SS 4	8.5	4 4 7	11	--	19	--	--		--	--		VISUAL
				SS 5	13.5	3 5 5	10	--	16	--	--		--	--		VISUAL
784.7	16.2		Medium dense, brown SANDY SILT (A-4a), trace clay, trace to no rock fragments, moist (non-plastic).	SS 6	18.5	1 5 9	14	--	11	--	--		--	--		VISUAL
				SS 7	23.5	4 8 11	19	--	10	NP	NP	NP	0	40	45/15	A-4a
772.4	28.5		Medium dense, brown SILT (A-4b), trace clay, trace sand, moist (non-plastic).	SS 8	28.5	4 9 13	22	--	24	NP	NP	NP	0	10	73/17	A-4b

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non-plastic

TEST BORING LOG3 0300\GREW.GPJ PRIMENG.GDT 3/25/03

W-02: PAGE 1 OF 2

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: W-02

STA. & OFFSET: 414+93.97, 16.44' Rt.

ELEVATION: 800.9ft

PROJECT: SUM-271-0802 - Retaining Wall Boring — PROJECT No.: 03001g

DRILLING INFORMATION:
North America Drilling, Inc. using a CME-55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 39.0 feet during drilling operations.

GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
767.4	33.5		Medium dense, brown COARSE AND FINE SAND (A-3a), moist.	SS 9A	33.5	4 9 12	21	--	19	--	--		--	--		VISUAL
766.9	34.0		Medium dense, brown SILT (A-4b), trace clay, trace sand, moist (non-plastic).	SS 9B	34.0			--	26	--	--		--	--		VISUAL
762.4	38.5		Medium dense, brown to gray COARSE AND FINE SAND (A-3a), wet. Note: Color changed to gray at approximately 39.0 feet.	SS 10A	38.5	4 12 16	28	--	25	--	--		--	--		VISUAL
				SS 10B	39.0			--	23	--	--		--	--		VISUAL
757.4	43.5		Hard, gray SILT AND CLAY (A-6a), trace sand, trace rock fragments, moist.	SS 11	43.5	3 12 22	34	2.5	14	--	--		--	--		VISUAL
751.4	49.5		Soft, gray, decomposed SILTY SHALE.	SS 12	48.5	15 38 50/5	50+	4.5+	13	--	--		--	--		VISUAL
				SS 13	53.5	50/3	50+	4.5+	11	--	--		--	--		VISUAL
742.1	58.8		TERMINATION DEPTH = 58.8 FEET.	SS 14	58.5	50/3	50+	--	5	--	--		--	--		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non-plastic

TEST BORING LOG3 0300\GREW.GPJ PRIMENG.GDT 3/25/03

W-02: PAGE 2 OF 2

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY, TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

43
47

IPZB.DGN 03/26/04 JLS,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: W-03

STA. & OFFSET: 417+04.23, 26.53' Lt.

ELEVATION: 805.0ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Retaining Wall Boring PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 2/6/03 DATE COMPLETED: 2/6/03

SAMPLER DIAM: 2" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 3.25" TYPE: HSA OTHER:

DRILLING INFORMATION:
North America Drilling, Inc. using a CME-55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during or upon completion of drilling operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
804.7	0.3		TOPSOIL													
			Very stiff, brown to gray SANDY SILT (A-4a), some clay, trace rock fragments, moist. (Fill)	SS 1A	1.0	9 12 18	30	4.5+	17	--	--		--	--		VISUAL
				SS 1B	1.8			2.75	12	--	--		--	--		VISUAL
			Note: Color changed to gray at approximately 1.8 feet.	SS 2	3.5	6 9 19	28	4.5+	15	29	19	10	1	5	43/52	A-4a
				SS 3	6.0	6 9 12	21	4.5+	15	--	--		--	--		VISUAL
797.0	8.0		Very stiff to stiff, brown SILT AND CLAY (A-6a), trace to little sand, trace rock fragments, moist.	SS 4	8.5	5 7 10	17	4.5+	17	31	20	11	2	6	92	A-6a
				SS 5	13.5	5 6 9	15	4.5+	22	--	--		--	--		VISUAL
			Note: Little sand at 18.5 feet.	SS 6	18.5	7 10 20	30	4.5	12	--	--		--	--		VISUAL
782.0	23.0		Very stiff, gray SANDY SILT (A-4a), some clay, trace rock fragments, moist.	SS 7	23.5	4 7 10	17	4.5	16	--	--		--	--		VISUAL
776.5	28.5		Very dense to medium dense, brown COARSE AND FINE SAND (A-3a), moist.	SS 8	28.5	25 37 37	74	--	8	--	--		--	--		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non-plastic

TEST BORING LOG3 03001GREW.GPJ PRIMENG.GDT 3/25/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: W-03

STA. & OFFSET: 417+04.23, 26.53' Lt.

ELEVATION: 805.0ft

PROJECT: SUM-271-0802 - Retaining Wall Boring PROJECT No.: 03001g

DRILLING INFORMATION:
North America Drilling, Inc. using a CME-55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during or upon completion of drilling operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
			Very dense to medium dense, brown COARSE AND FINE SAND (A-3a), moist. *(continued)*	SS 9	33.5	9 12 18	30	--	10	--	--		--	--		VISUAL
				SS 10	38.5	9 18 18	36	--	16	--	--		--	--		VISUAL
765.0	40.0		TERMINATION DEPTH = 40.0 FEET.													

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non-plastic

TEST BORING LOG3 03001GREW.GPJ PRIMENG.GDT 3/25/03

PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03 | CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(A)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

44
47

IPZC.DGN 03/26/04 JLS,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: W-04

STA. & OFFSET: 419+01.83, 9.55' Rt.

ELEVATION: 790.0ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Retaining Wall Boring PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 3/4/03 DATE COMPLETED: 3/4/03

SAMPLER DIAM: 2" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 3.25" TYPE: HSA OTHER:

DRILLING INFORMATION:
Ohio TestBor, Inc. using a Diedrich D-50 ATV-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 34.0 feet during drilling operations.

GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
789.7	0.3		TOPSOIL													
			Stiff, brown SANDY SILT (A-4a), some clay, trace rock fragments, moist. (Fill)	SS 1	1.0	4 5 7	12	3.0	16	--	--		--	--		VISUAL
				SS 2	3.5	3 4 5	9	3.0	20	29	23	6	1	2	46/51	A-4a
			Note: Gray color present at 6.0 feet.	SS 3	6.0	4 5 7	12	4.5	15	--	--		--	--		VISUAL
				SS 4	8.5	4 6 7	13	4.5+	16	--	--		--	--		VISUAL
				ST 5	11.0	ST			15	--	--		--	--		VISUAL
				SS 6	13.5	3 6 8	14	4.5+	17	--	--		--	--		VISUAL
771.5	18.5		Stiff to very stiff, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist. (Fill)	SS 7	18.5	4 5 7	12	4.5+	14	--	--		--	--		VISUAL
			Note: Gray color present at 18.5 and 23.5 feet.	SS 8	23.5	3 5 5	10	4.5	17	--	--		--	--		VISUAL
				SS 9	28.5	7 9 12	21	4.5+	15	31	19	12	3	13	84	A-6a

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non-plastic, ST = Shelby Tube, WOR = Weight of Rods

W-04: PAGE 1 OF 2

TEST BORING LOG3 03001GREW.GPJ PRIMENG.GDT 3/27/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: W-04

STA. & OFFSET: 419+01.83, 9.55' Rt.

ELEVATION: 790.0ft

PROJECT: SUM-271-0802 - Retaining Wall Boring PROJECT No.: 03001g

DRILLING INFORMATION:
Ohio TestBor, Inc. using a Diedrich D-50 ATV-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 34.0 feet during drilling operations.

GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
756.5	33.5		Brown SANDY SILT, little clay, trace rock fragments layer.	SS 10A	33.5	7 6 3	9	1.0	20	--	--		--	--		VISUAL
755.5	34.5		Loose, brown COARSE AND FINE SAND (A-3a), trace to little silt, wet.	SS 10B	34.5			--	28	--	--		--	--		VISUAL
			Note: Weight of rods drove the Split Spoon 6 inches prior to hammering. Note: Little silt at 38.5 feet.	SS 11	38.5	W.O.R. 3 5	8	--	23	--	--		--	--		VISUAL
746.5	43.5		Brown ROCK FRAGMENTS WITH SAND (A-1-b) layer, wet.	SS 12A	43.5	6 7 9	16	--	16	--	--		--	--		VISUAL
745.5	44.5		Very stiff, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist.	SS 12B	44.5			3.0	19	--	--		--	--		VISUAL
741.5	48.5		Very dense, gray SILT (A-4b), trace clay, trace sand, moist (non-plastic).	SS 13	48.5	18 25 31	56	--	21	--	--		--	--		VISUAL
740.0	50.0		TERMINATION DEPTH = 50.0 FEET.													

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non-plastic, ST = Shelby Tube, WOR = Weight of Rods

W-04: PAGE 2 OF 2

TEST BORING LOG3 03001GREW.GPJ PRIMENG.GDT 3/27/03

IPZD.DGN 03/26/04 JLS,HN

PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

45
47

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: W-05

STA. & OFFSET: 439+55.96, 4.02' Lt.

ELEVATION: 732.4ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Retaining Wall Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 2/6/03 — DATE COMPLETED: 2/6/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
North America Drilling, Inc. using a CME-55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was not encountered during or upon completion of drilling operations.

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
732.1	0.3		TOPSOIL													
			Hard, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, trace roots, moist.	SS 1	1.0	16 20 50/0.1	50+	4.5+	12	--	--		--	--		VISUAL
729.4	3.0		Very dense to dense, gray SILT (A-4b), trace clay, trace sand, moist (non-plastic).	SS 2	3.5	11 22 33	55	--	16	NP	NP	NP	0	7	71/21	A-4b
				SS 3	6.0	11 16 28	44	3.25	15	--	--		--	--		VISUAL
723.9	8.5		Hard, gray SILT AND CLAY, (A-6a), little sand with few fine sand seams, moist.	SS 4	8.5	6 12 21	33	4.5+	17	--	--		--	--		VISUAL
718.9	13.5		Medium dense to dense, gray SILT (A-4b), little sand, trace clay, moist (non-plastic).	SS 5	13.5	6 16 20	36	--	20	--	--		--	--		VISUAL
			Note: Encountered few sand seams at 18.5 feet.	SS 6	18.5	8 14 16	30	--	21	--	--		--	--		VISUAL
				SS 7A	23.5	5 14 36	50	--	24	--	--		--	--		VISUAL
703.9	28.5		Very stiff, gray SILT AND CLAY, trace sand, trace to no rock fragments, moist.	SS 8	28.5	4 11 17	28	1.75	25	--	--		--	--		VISUAL
702.4	30.0		TERMINATION DEPTH = 30.0 FEET.													

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non-plastic

TEST BORING LOG3 03001GREW.GPJ PRIMENG.GDT 3/25/03

W-05: PAGE 1 OF 1

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: W-06

STA. & OFFSET: 441+56.30, 14.95' Lt.

ELEVATION: 730.0ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Retaining Wall Boring — PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 2/3/03 — DATE COMPLETED: 2/3/03

SAMPLER DIAM: 2" — TYPE: SS — HAMMER WT.: 140lb — FALL: 30"

CASING DIAM: 3.25" — TYPE: HSA — OTHER:

DRILLING INFORMATION:
North America Drilling, Inc. using a CME-55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 22.0 feet during drilling and at 15.9 feet upon completion of drilling operations.

▼ GROUNDWATER DURING DRILLING ▽ GROUNDWATER UPON COMPLETION ▼ EXTENDED GROUNDWATER READING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
729.7	0.3		TOPSOIL													
			Very stiff, brown SANDY SILT (A-4a), some clay, trace rock fragments, moist. (Fill)	SS 1	1.0	5 5 12	17	3.25	12	--	--		--	--		VISUAL
726.5	3.5		Very stiff, brown to gray SILT AND CLAY (A-6a), little sand, trace rock fragments, moist.	SS 2	3.5	9 11 14	25	4.5+	15	--	--		--	--		VISUAL
				SS 3A	6.0	6 14 30	44	--	14	28	17	11	2	20	78	A-6a
723.5	6.5		Gray COARSE AND FINE SAND (A-3a) layer, moist.	SS 3B	6.5				4	--	--		--	--		VISUAL
722.5	7.5		Dense to very dense, gray SILT (A-4b), trace clay, trace sand, moist (non-plastic).	SS 4	8.5	10 17 24	41	--	--	23	--	--	--	--		VISUAL
				SS 5	13.5	9 27 34	61	--	--	19	--	--	--	--		VISUAL
711.5	18.5		Hard, gray SILT AND CLAY (A-6a), trace sand with few silt seams, moist.	SS 6	18.5	4 15 36	51	2.5	19	--	--		--	--		VISUAL
709.0	21.0		Dense, gray COARSE AND FINE SAND (A-3a), wet.													
			Note: Sample was wet at 22.0 feet.	SS 7	23.5	8 17 24	41	--	21	--	--		--	--		VISUAL
				SS 8	28.5	8 19 24	43	--	20	--	--		--	--		VISUAL
700.0	30.0		TERMINATION DEPTH = 30.0 FEET.													

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non-plastic

TEST BORING LOG3 03001GREW.GPJ PRIMENG.GDT 3/25/03

W-06: PAGE 1 OF 1

PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP | DATE 4/28/03 | CHECKED DLR | REVISED

STRUCTURE FILE NUMBER
770901 3 1(L)
770902 1(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

46
47

IPZE.DGN 03/26/04 JLS,HN

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: W-07

STA. & OFFSET: 443+57.73, 23.51' Lt

ELEVATION: 729.1ft

CLIENT: Richland Engineering Ltd.

PROJECT: SUM-271-0802 - Retaining Wall Boring PROJECT No.: 03001g

LOCATION: Summit County, Ohio

DATE STARTED: 2/3/03 DATE COMPLETED: 2/3/03

SAMPLER DIAM: 2" TYPE: SS HAMMER WT.: 140lb FALL: 30"

CASING DIAM: 3.25" TYPE: HSA OTHER:

DRILLING INFORMATION:
North America Drilling, Inc. using a CME-55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 32.0 feet during drilling operations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
728.8	0.3		TOPSOIL													
			Stiff to hard, brown SANDY SILT (A-4a), some clay, trace rock fragments, moist. (Fill)	SS 1	1.0	4 4 7	11	2.75	16	--	--		--	--		VISUAL
726.1	3.0		Stiff, brown to gray SILT AND CLAY (A-6a), little sand, trace to no rock fragments, moist.	SS 2	3.5	6 11 16	27	4.5+	15	31	19	12	0	15	84	A-6a
				SS 3	6.0	7 20 27	47	4.5+	12	--	--		--	--		VISUAL
			Note: Some fine sand seams encountered at 6.5 feet.													
720.6	8.5		Very dense to loose, gray SILT (A-4b), trace clay, trace sand, wet (non-plastic).	SS 4	8.5	10 14 20	34	--	20	--	--		--	--		VISUAL
				SS 5	13.5	2 3 3	6	--	26	NP	NP	NP	0	10	70/20	A-4b
710.6	18.5		Very stiff to hard, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist to wet. Note: Few silt seams at 18.5 feet.	SS 6	18.5	6 10 14	24	3.0	22	--	--		--	--		VISUAL
				SS 7	23.5	5 7 10	17	0.5	28	--	--		--	--		VISUAL
				SS 8	28.5	4 10 28	38	0.75	27	--	--		--	--		VISUAL

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non-plastic

TEST BORING LOG3 03001GREW.GPJ PRIMENG.GDT 3/25/03

PRIME ENGINEERING & ARCHITECTURE INC.

TEST BORING No.: W-07

STA. & OFFSET: 443+57.73, 23.51' Lt

ELEVATION: 729.1ft

PROJECT: SUM-271-0802 - Retaining Wall Boring PROJECT No.: 03001g

DRILLING INFORMATION:
North America Drilling, Inc. using a CME-55 Truck-Mounted Drill Rig

GROUNDWATER INFORMATION:
Groundwater was encountered at 32.0 feet during drilling operations.

▼ GROUNDWATER DURING DRILLING

ELEV (ft.)	DEPTH (ft.)	Soil/ Rock Symbol	MATERIAL DESCRIPTION	SAMPLE NUMBER	SAMPLE DEPTH	BLOWS/6 INCHES	N-VALUE (BLOWS/FT) OR REC%/(RQD%)	PENETROMETER (tons/ft²)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (%) LL	PL	PI	AGGREGATE (%)	COARSE AND FINE SAND (%)	SILT AND CLAY COMBINED(%) OR SILT(%)/CLAY(%)	CLASSIFICATION SYMBOL
695.6	33.5		Gray COARSE AND FINE SAND (A-3a) layer, wet.	SS 9	33.5	12 29 43	72	--	17	--	--		--	--		VISUAL
694.3	34.8		Very dense, gray SILT (A-4b), trace clay, trace sand, wet (non-plastic).	SS 10	38.5	21 33 36	69	--	22	--	--		--	--		VISUAL
				SS 11	43.5	12 21 31	52	--	20	--	--		--	--		VISUAL
681.6	47.5		Hard, gray SILT AND CLAY (A-6a), trace sand, trace to no rock fragments, moist.	SS 12	48.5	9 15 19	34	1.75	23	--	--		--	--		VISUAL
679.1	50.0		TERMINATION DEPTH = 50.0 FEET.													

NOTES/REMARKS: SS = Split Spoon, HSA = Hollow Stem Auger, NP = Non-plastic

TEST BORING LOG3 03001GREW.GPJ PRIMENG.GDT 3/25/03

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED KAK | DRAWN CAR | REVIEWED DAP 4/28/03 | DATE
CHECKED DLR | REVISED | STRUCTURE FILE NUMBER 7709013(L) 7709021(R)

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SUM-271-0802 L & R
OVER RIVERVIEW ROAD, VALLEY RAILWAY,
TOWPATH TRAIL, AND CUYAHOGA RIVER

SUM-271-8.02

47
47

IPZF.DGN 03/26/04 JLS,HN

GENERAL INFORMATION

INTRODUCTION

THIS REPORT CONSISTS OF THE SUBSURFACE INVESTIGATION OF A PROPOSED PROJECT TO INCLUDE THE WIDENING AND REALIGNMENT OF I-271 SB AND NB ASSOCIATED WITH REPLACEMENT OF BRIDGE NO. SUM-271-0802 L&R OVER THE CUYAHOGA RIVER VALLEY IN SUMMIT COUNTY. THE PROJECT ALONG I-271 SB STARTS APPROXIMATELY 1100 FEET SOUTH OF THE SOUTH ABUTMENT OF BRIDGE NO. SUM-271-0802 AND ENDS APPROXIMATELY 1200 FEET NORTH OF THE NORTH ABUTMENT OF BRIDGE NO. SUM-271-0802. THE PROJECT ALONG I-271 NB STARTS APPROXIMATELY 1200 FEET SOUTH OF THE SOUTH ABUTMENT OF BRIDGE NO. SUM-271-0802 AND ENDS APPROXIMATELY 1300 FEET NORTH OF THE NORTH ABUTMENT OF BRIDGE NO. SUM-271-0802. THE PROPOSED HORIZONTAL ALIGNMENT WILL SHIFT THE CENTERLINE OF THE EXISTING LANES APPROXIMATELY 26' TOWARDS THE MEDIAN FOR THE SOUTHBOUND LANES AND 18' TOWARDS THE MEDIAN FOR THE NORTHBOUND LANES. THE APPROXIMATE PROFILE GRADE WILL BE MAINTAINED.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

THE PROJECT SITE LIES ON THE GLACIATED, DEEPLY DISSECTED ALLEGHENY PLATEAU AT APPROXIMATE ELEVATIONS RANGING FROM 725 TO 825 FEET. THE WISCONSIN GLACIER PASSED OVER THE AREA AND LEFT A COATING OF DRIFT MATERIALS (LARGELY TILL) OF VARIABLE THICKNESS. THE SURFACE AND SUBSURFACE SOILS, IN THE VICINITY OF THE SITE, CONSIST PRIMARILY OF LAYERS OF SILT LOAM, SILTY CLAY LOAM, SILTY CLAY, LOAMY SAND, AND GRAVELLY LOAMY SAND WHICH CAN BE CLASSIFIED AS A-1 OR A-2, A-4, A-6, AND A-7 SOILS BASED ON THE AASHTO SOIL CLASSIFICATION SYSTEM. HOWEVER, THE PROJECT SITE HAS INCURRED CUT AND FILL OPERATIONS DUE TO EXISTING I-271 CONSTRUCTION AND THE COMPOSITION OF THE SURFACE AND SUBSURFACE SOILS WAS CHANGED IN MOST AREAS. BASED ON INFORMATION OBTAINED FROM THE OHIO GEOLOGICAL SURVEY, TOP OF BEDROCK IN THE VICINITY OF THE PROJECT SITE IS ANTICIPATED TO BE PRESENT AT APPROXIMATE ELEVATIONS RANGING FROM 630 TO 710 FEET. AT THESE ELEVATIONS, BEDROCK IS EXPECTED TO CONSIST OF SHALES AND SHALY SANDSTONES OF THE CUYAHOGA FORMATION.

EXPLORATION

A CME-55 TRUCK-MOUNTED DRILLING RIG WAS MOBILIZED TO ADVANCE THE TEST BORINGS USING 3.25-IN. I.D. HOLLOW STEM AUGERS (HSA). REPRESENTATIVE DISTURBED SAMPLES OF THE SOIL WERE COLLECTED USING A STANDARD 2.0-IN. O.D. SPLIT BARREL SAMPLER DRIVEN INTO THE SOIL BY MEANS OF A 140-LB. HAMMER FALLING FREELY THROUGH A DISTANCE OF 30-IN. (STANDARD PENETRATION TEST, ASTM D 1586). ALL TEST BORINGS WERE MONITORED FOR THE PRESENCE OF GROUNDWATER DURING THE DRILLING OPERATIONS AND BEFORE BACKFILLING THE BOREHOLES.

INVESTIGATIONAL FINDINGS

TEST BORINGS R-01, R-04 THROUGH R-10, R-12, R-15, R-16, R-18 THROUGH R-23, AND R-26 WERE ADVANCED THROUGH EXISTING ASPHALT PAVEMENT. THE APPROXIMATE THICKNESS OF THE ASPHALTIC CONCRETE RANGED FROM SIX (6) TO FIFTEEN (15) INCHES WITH AN AVERAGE THICKNESS OF 9.1 INCHES. THE ASPHALTIC CONCRETE WAS UNDERLAIN BY A SLAG BASE MATERIAL IN TEST BORINGS R-01, R-04, R-06, R-08 THROUGH R-10, R-12, R-15, R-16, R-18 THROUGH R-20, AND R-26 WITH THE EXCEPTION OF TEST BORINGS R-05 AND R-07 WHERE NO SLAG BASE OR ROADBASE MATERIALS WERE ENCOUTERED. THE APPROXIMATE THICKNESS OF THE SLAG BASE RANGED FROM FOUR (4) TO 10.5 INCHES WITH AN AVERAGE THICKNESS OF 7.3 INCHES. IN TEST BORINGS R-01, R-04, R-06, R-08, R-09, R-12, R-18 THROUGH R-20, AND R-26, THIS SLAB BASE IS CEMENTED TOGETHER INTO A SOLID SLAB. IN TEST BORINGS R-10, R-15, AND R-16, THIS SLAG BASE IS IN LOOSE FORM, POSSIBLY DUE TO CRUMBLING UNDER THE LOAD OF TRAFFIC. ROADBASE MATERIAL ENCOUTERED BELOW THE SLAG BASE AND BELOW THE ASPHALTIC CONCRETE CONSISTED OF EITHER COARSE AND FINE (A-3a) OR GRAVEL WITH SAND (A-1-b). COARSE AND FINE SAND LAYER (A-3a) WAS ENCOUNTERED IN TEST BORINGS R-01, R-04, R-06, R-08 THROUGH R-10, R-12, R-15. GRAVEL WITH SAND LAYER (A-1-b) WAS ENCOUNTERED IN TEST BORINGS R-20 THROUGH R-23 AND R-26. THE APPROXIMATE THICKNESS OF THE COARSE AND FINE SAND LAYER RANGED FROM TWO (2) TO FOUR (4) INCHES WITH AN AVERAGE THICKNESS OF 2.9 INCHES. THE APPROXIMATE THICKNESS OF THE GRAVEL WITH SAND LAYER RANGED FROM 5.2 TO 9.0 INCHES WITH AN AVERAGE THICKNESS OF 6.9 INCHES. TEST BORINGS R-02, R-03, R-11, R-13, R-14, R-17, R-24 AND R-25 WERE ADVANCED THROUGH TOPSOIL. THE APPROXIMATE THICKNESS OF THE TOPSOIL RANGED FROM TWO (2) TO SEVEN (7) INCHES WITH AN AVERAGE THICKNESS OF 3.8 INCHES. THE SUBSURFACE SOILS ENCOUNTERED BELOW THE ASPHALTIC CONCRETE, TOPSOIL, AND ROADBASE MATERIALS CONSISTED OF BOTH COHESIVE AND NON-COHESIVE SOILS. THE COHESIVE SOILS ENCOUNTERED CONSISTED OF SANDY SILT (A-4a), SILT AND CLAY (A-6a), PLASTIC SILT (A-4b), AND SILTY CLAY (A-6b) AND THE NON-COHESIVE SOILS ENCOUNTERED CONSISTED OF NON-PLASTIC SILT (A-4b) AND GRAVEL WITH SAND (A-1-b). NEITHER PEAT NOR BEDROCK WERE ENCOUNTERED IN ANY OF THE ROADWAY TEST BORING DURING OUR SUBSURFACE EXPLORATION.

THREE (3) OF THE TEN COHESIVE SOIL SAMPLES TESTED FOR ATTERBERG LIMITS CONTAINED NATURAL MOISTURE CONTENTS GREATER THAN OR EQUAL TO THEIR PLASTIC LIMITS, BUT LESS THAN THEIR LIQUID LIMITS.

ALL OF THE SAMPLES TESTED FOR ATTERBERG LIMITS CONTAINED NATURAL MOISTURE CONTENTS WHICH WERE ABOVE THEIR PLASTIC LIMITS MINUS THREE PERCENT.

GROUNDWATER WAS NOT ENCOUNTERED IN ANY OF THE TEST BORINGS. IT SHOULD BE NOTED THAT GROUNDWATER ELEVATIONS ARE SUBJECT TO SEASONAL FLUCTUATIONS.

LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS - 13 SAMPLES TESTED

DESCRIPTION	ODOT CLASS	% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
GRAVEL	A-1-a ( )	--	--	--	--	--	--	--	--	--
GRAVEL WITH SAND	A-1-b (0)	29	26	37	--	8	NP	NP	9	1
FINE SAND	A-3 (0)	--	--	--	--	--	--	--	--	--
COARSE AND FINE SAND	A-3a (0)	--	--	--	--	--	--	--	--	--
GRAVEL WITH SAND AND SILT	A-2-4 (0)	--	--	--	--	--	--	--	--	--
GRAVEL WITH SAND, SILT AND CLAY	A-2-6 ( )	--	--	--	--	--	--	--	--	--
SANDY SILT	A-4a (8)	5.3	4	7.3	37	45.8	28	8.5	19	4
SILT	A-4b (8)	0	1.3	1.3	67.3	30.3	27.5	4.0	22.7	3
SILT AND CLAY	A-6a (10)	3.5	4.3	8.3	--	83.3	32	13.5	16.5	4
SILTY CLAY	A-6b (12)	3	4	7	--	87	35	19	16	1
ELASTIC CLAY	A-7-5 ( )	--	--	--	--	--	--	--	--	--
CLAY	A-7-6 (15)	--	--	--	--	--	--	--	--	--
RANDOM FILL					VISUAL CLASSIFICATION			** SILT AND CLAY COMBINED		
WEATHERED SHALE					VISUAL CLASSIFICATION					
MUDSTONE					VISUAL CLASSIFICATION					
SHALE					VISUAL CLASSIFICATION					
SANDSTONE					VISUAL CLASSIFICATION					
LIMESTONE					VISUAL CLASSIFICATION					
VARIOUS OTHER MATERIAL					VISUAL CLASSIFICATION					

SOD AND/OR TOP SOIL = X = APPROXIMATE DEPTH

BERM MATERIAL

AUGER BORING - PLAN VIEW

DRIVE SAMPLE AND/OR CORE BORING - PLAN VIEW

ROADWAY OR AUGER BORING PLOTTED TO VERTICAL SCALE ONLY

DRIVE SAMPLE AND/OR CORE BORING PLOTTED TO VERTICAL SCALE ONLY

● WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT

⊖ INDICATES A NON-PLASTIC MATERIAL WITH A HIGH WATER CONTENT

W FREE WATER

STATIC WATER LEVEL

NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (X or X/Y/Z)
X = NUMBER OF BLOWS FOR FIRST 0.5 FT.
Y = NUMBER OF BLOWS FOR SECOND 0.5 FT.
Z = NUMBER OF BLOWS FOR THIRD 0.5 FT.

NOTE: FIGURES BESIDE BORINGS INDICATE WATER CONTENT IN PERCENT. e.g. 15

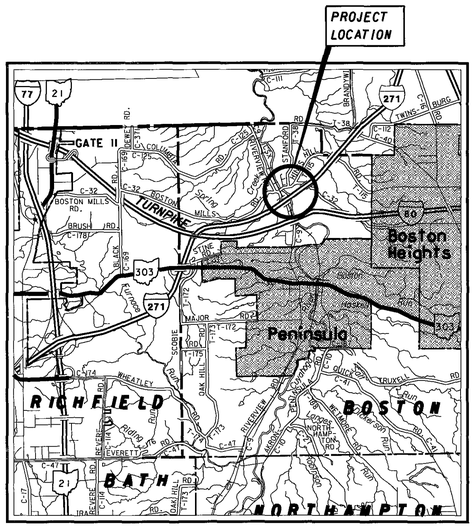
ADDITIONAL BORINGS

BORINGS E1 THROUGH E9 WERE OBTAINED FOR SLOPE STABILITY INVESTIGATIONS. BORINGS A1 THROUGH A4 WERE OBTAINED IN THE AREA OF POSSIBLE ACCESS ROAD LOCATIONS.

PROJECT INDEX				
STATIONS FROM TO	PLAN VIEW SHEET	PROFILE SHEET	CUT MAX.	FILL EMB. MAX.
340+00 TO 367+00	3/15	4/15	2'	2'
367+00 TO 392+00	5/15	6/15	2'	2'
392+00 TO 417+00	7/15	8,14/15	2'	3'
417+00 TO 442+00	9/15	10,11,14,15/15	3'	4'
442+00 TO 467+00	12/15	13/15	2.5'	2'

NOTE

ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN ON THE SOIL PROFILE SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATIONS, SOIL TESTS, AND BEDROCK BORINGS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF MATERIALS MANAGEMENT AT 1600 WEST BROAD STREET, THE OFFICE OF ROADWAY ENGINEERING OR THE OFFICE OF STRUCTURAL ENGINEERING AT 25 SOUTH FRONT STREET.



LOCATION MAP

Recon - PRIME ENGINEERING & ARCHITECTURE INC. - JANUARY 2003

Drilling - PRIME ENGINEERING & ARCHITECTURE INC. - JANUARY 28, 2003 THROUGH JUNE 17, 2003

Drafting - RICHLAND ENGINEERING LIMITED - S.A.M. - MARCH 20, 2003

SUBSURFACE INVESTIGATION REPORT BY PRIME ENGINEERING & ARCHITECTURE, INC. FOR SUM-271-8.02 FOR "ROADWAY" DATED MARCH 7, 2003 AND "EMBANKMENT SLOPES AND ACCESS ROADS" DATED (REVISED) FEBRUARY 10, 2004 ARE AVAILABLE AT THE DISTRICT 4 OFFICE.

PRIME ENGINEERING, INC. AND RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

REVIEWED PRS
DATE 10/21/03
DRAWN SAM
REVISED
DESIGNED PEA
CHECKED

SOIL PROFILE

SUM-271-8.02

1/15

SOILIFA.DGN 3/26/04 SAM,JLS

SUMMARY OF SOIL TEST DATA

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC
* DENOTES SILT AND CLAY COMBINED
** DENOTES SAMPLES TAKEN AT OR NEAR GRADE

Station & Offset	Depth From	To	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L	P.I.	% W.C.	ODOT Class
354+08.21	1.5	3.5	Brown SANDY SILT, some clay, trace rock fragments							16	VISUAL
71.73' Lt	3.5	5.0	Gray SANDY SILT, some clay, little rock fragments							15	VISUAL
(R-01)											
357+95.73	0.3	1.4	3	4	7		86 *	31	13	17	A-6a **
32.95' Rt	1.4	4.0	Brown SANDY SILT, some clay, trace rock fragments (fill)							11	VISUAL
(R-02)	4.0	8.5	Gray SILT AND CLAY, little sand, trace rock fragments							13	VISUAL
	8.5	10.0	Brown SILT AND CLAY, little sand, trace rock fragments							18	VISUAL
361+83.61	0.3	3.0	Brown SILT AND CLAY, little sand, trace rock fragments							15	VISUAL
33.14' Lt.	3.0	6.0	Brown SILT, some clay, little sand, trace rock fragments							16	VISUAL
(R-03)	6.0	8.5	Brown SANDY SILT, some clay, trace rock fragments							18	VISUAL
	8.5	10.0	Brown SILT AND CLAY, little sand, trace rock fragments							19	VISUAL
365+81.72	1.4	3.5	2	4	10	33	49	30	11	18	A-6a **
71.89' Lt.	3.5	5.0	Brown SILT AND CLAY, little sand, trace rock fragments (fill)							18	VISUAL
(R-04)											
369+78.51	1.0	4.5	Brown SANDY SILT, some clay, trace rock fragments							15	VISUAL
35.80' Lt.	4.5	5.0	Brown SILT, little clay, trace sand, trace rock fragments							18	VISUAL
(R-05)											
373+76.09	1.7	3.5	Brown SILT AND CLAY, little sand, trace rock fragments (fill)							18	VISUAL
71.26' Lt.	3.5	5.0	Brown SILT AND CLAY, little sand, trace rock fragments (fill)							15	VISUAL
(R-06)											
377+77.55	1.1	3.5	6	5	9		80 *	33	15	16	A-6a **
34.80' Lt.	3.5	5.0	Brown SILT AND CLAY, little sand, trace rock fragments							14	VISUAL
(R-07)											
381+79.58	1.4	2.5	Brown SILT AND CLAY, little sand, trace rock fragments (fill)							20	VISUAL
72.72' Lt.	2.5	5.0	Brown SANDY SILT, little clay, trace rock fragments							20	VISUAL
(R-08)											
385+76.52	1.5	3.2	Brown SILT AND CLAY, little sand, trace rock fragments (fill)							16	VISUAL
38.12' Lt.	3.2	5.0	Brown and gray SILT AND CLAY, little sand, trace rock fragments							18	VISUAL
(R-09)											
389+86.81	1.5	3.5	Gray SANDY SILT, little clay, trace rock fragments (fill)							22	VISUAL
72.47' Lt.	3.5	5.0	2	3	6	38	47	28	10	17	A-4a **
(R-10)											
393+88.52	0.2	3.5	Gray SILT AND CLAY, trace sand, trace rock fragments							18	VISUAL
35.32' Lt.	3.5	5.0	Gray SILT AND CLAY, trace sand, trace rock fragments							18	VISUAL
(R-11)											
397+91.38	1.4	2.5	Gray SANDY SILT, little clay, trace rock fragments (fill)							18	VISUAL
72.15' Lt.	2.5	5.0	Gray SILT, trace sand, trace rock fragments (non-plastic)							17	VISUAL
(R-12)											
401+91.83	0.6	3.0	Gray SANDY SILT, some clay, trace rock fragments , trace roots (fill)							14	VISUAL
33.89' Lt.	3.0	5.0	Gray SILT AND CLAY, little sand, trace rock fragments							14	VISUAL
(R-13)											
404+94.05	0.4	3.5	0	1	1	67	31	27	3	24	A-4b **
35.59' Rt.	3.5	5.0	Brown SILT, little clay, trace sand							30	VISUAL
(R-14)											
405+95.53	1.5	3.5	Gray SANDY SILT, some clay, trace rock fragments (fill)							22	VISUAL
72.76' Lt.	3.5	5.0	Gray SILT, little sand, trace rock fragments (non-plastic)							19	VISUAL
(R-15)											
408+93.56	1.4	2.5	Gray SILT AND CLAY, little sand, trace rock fragments (fill)							29	VISUAL
73.39' Rt.	2.5	6.0	0	3	2	72	24	NP	NP	25	A-4b **
(R-16)	6.0	8.5	Brown SILT, trace sand, trace to no rock fragments (non-plastic)							27	VISUAL
	8.5	10.0	Brown SILT, trace sand, trace to no rock fragments (non-plastic)							25	VISUAL
409+99.29	0.2	3.0	0	0	1	63	36	28	5	19	A-4b **
33.04' Lt.	3.0	4.1	Brown GRAVEL WITH SAND							7	VISUAL
(R-17)	4.1	6.0	Brown SILT AND CLAY, little sand, trace rock fragments							19	VISUAL
	6.0	8.0	Brown SILT, little sand, trace rock fragments (non-plastic)							23	VISUAL
	8.0	10.0	Gray SILT AND CLAY, little sand, trace rock fragments							23	VISUAL
414+02.47	1.6	2.5	Gray COARSE AND FINE SAND (SLAG)							26	VISUAL
72.99' Lt.	2.5	6.0	1	2	2	43	52	30	6	27	A-4a **
(R-18)	6.0	8.5	Brown SANDY SILT, some clay, trace rock fragments							24	VISUAL
	8.5	10.0	Brown SILT, trace sand, trace rock fragments (non-plastic)							25	VISUAL
416+04.42	1.8	3.5	7	6	11	33	44	28	10	15	A-4a **
73.22' Rt.	3.5	6.0	Brown SANDY SILT, some clay, trace rock fragments							16	VISUAL
(R-19)	6.0	9.0	Brown SANDY SILT, some clay, trace rock fragments							16	VISUAL
	9.0	10.0	Gray SILT, little sand, trace rock fragments (non-plastic)							17	VISUAL
440+05.42	1.7	2.3	29	26	37		8 *	NP	NP	9	A-1-b **
71.50' Rt.	2.3	3.5	Brown SANDY SILT, some clay, trace rock fragments (fill)							17	VISUAL
(R-20)	3.5	6.0	Brown and gray SANDY SILT, some clay, little rock fragments (fill)							12	VISUAL
	6.0	8.5	Brown SANDY SILT, some clay, little rock fragments (fill)							13	VISUAL
	8.5	9.0	Brown GRAVEL WITH SAND							14	VISUAL
	9.0	10.0	Gray SILT, trace sand, trace rock fragments (non-plastic)							19	VISUAL

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC
* DENOTES SILT AND CLAY COMBINED
** DENOTES SAMPLES TAKEN AT OR NEAR GRADE

Station & Offset	Depth From	To	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L	P.I.	% W.C.	ODOT Class
441+06.47	1.8	3.3	11	5	10	34	40	26	8	17	A-4a **
72.78' Lt.	3.3	6.0	Brown GRAVEL WITH SAND (fill)							7	VISUAL
(R-21)	6.0	8.5	Gray SILT, trace sand, trace rock fragments (non-plastic)							16	VISUAL
	8.5	10.0	Gray SILTAND CLAY, trace sand, trace rock fragments							20	VISUAL
445+92.86	1.4	3.5	Brown and gray SANDY SILT, some clay, trace rock fragments (fill)							15	VISUAL
73.55' Lt.	3.5	4.5	Brown and gray SANDY SILT, some clay, trace rock fragments (fill)							20	VISUAL
(R-22)	4.5	5.0	Brown GRAVEL WITH SAND							6	VISUAL
452+16.40	1.5	3.5	Gray SANDY SILT, some clay, trace rock fragments							15	VISUAL
73.72' Lt.	3.5	5.0	Brown SANDY SILT, some clay, little rock fragments (fill)							7	VISUAL
(R-23)											
456+00.78	0.2	2.5	3	4	7		86 *	34	15	15	A-6a **
29.06' Lt.	2.5	6.0	Gray SILT, some clay, trace sand							16	VISUAL
(R-24)	6.0	8.5	Gray SILT, some clay, trace sand							24	VISUAL
	8.5	10.0	Gray SILT, some clay, trace sand							27	VISUAL
460+00.88	0.2	2.3	Brown SILT AND CLAY, little sand, trace rock fragments							15	VISUAL
26.73' Rt.	2.3	6.0	Gray SILT, little sand, trace to no rock fragments (non-plastic)							20	VISUAL
(R-25)	6.0	8.5	Gray SILT, little sand, trace to no rock fragments (non-plastic)							26	VISUAL
	8.5	10.0	Gray SILT, little sand, trace to no rock fragments (non-plastic)							26	VISUAL
463+95.95	1.6	3.5	3	4	7		87 *	35	19	16	A-6b **
74.19' Lt.	3.5	5.0	Brown SILTY CLAY, little sand, trace rock fragments							17	VISUAL
(R-26)											

SOILFB.DGN 3/20/03 SAM

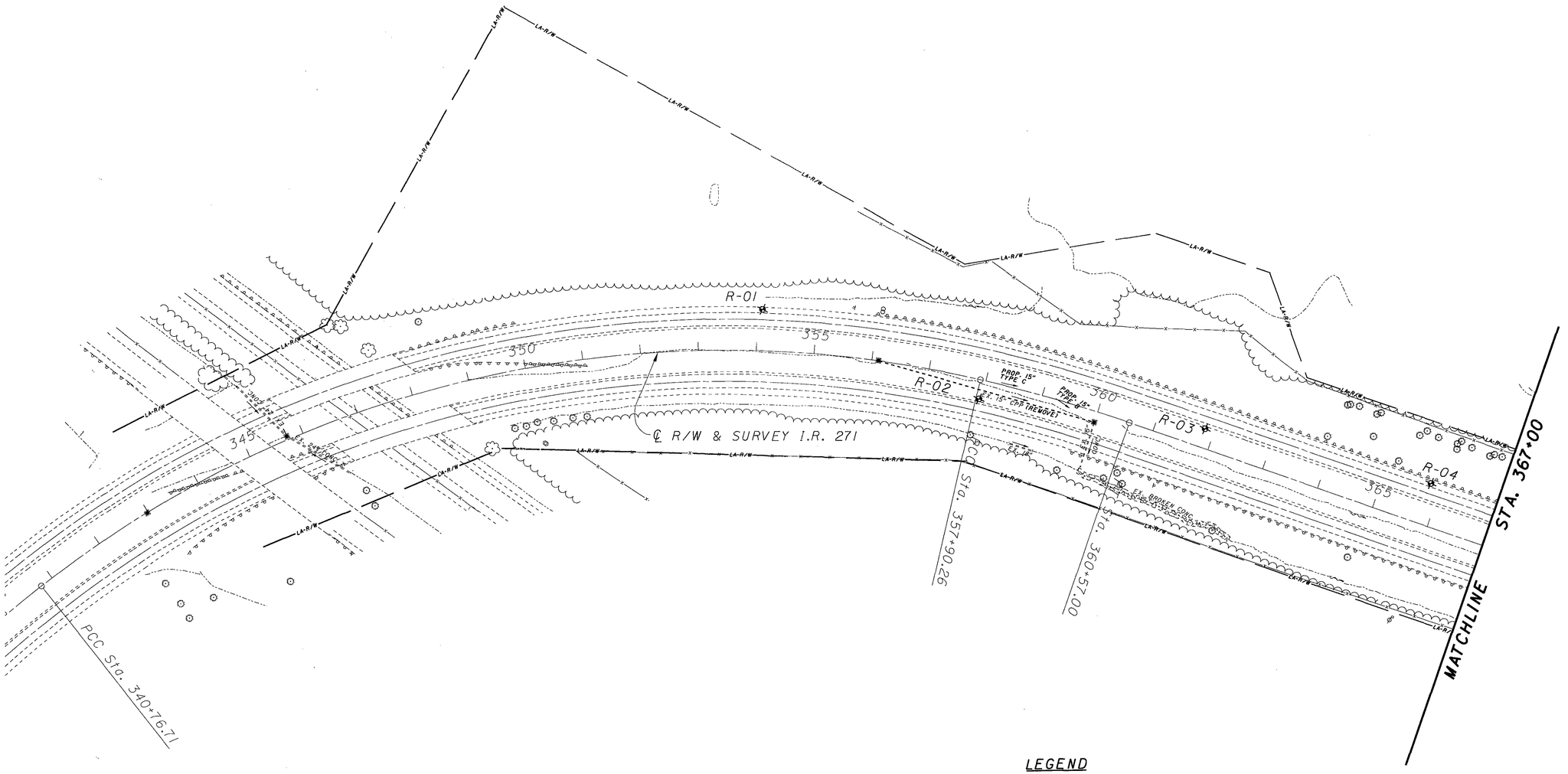
PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

REVIEWED PRS | DATE 10/21/03
DRAWN SAM | REVISED
DESIGNED PEA | CHECKED

SOIL PROFILE

SUM-271-8.02

2
15



LEGEND

- R-XX INDICATES ROADWAY BORING LOCATION
- E-XX INDICATES EMBANKMENT STABILITY BORING LOCATION
- W-XX INDICATES RETAINING WALL BORING LOCATION
- B-XX INDICATES STRUCTURE FOUNDATION BORING LOCATION (SUM-271-0802L&R)
- BMB-XX INDICATES STRUCTURE FOUNDATION BORING LOCATION (SUM-271-0854L)

NOTE: FOR ADDITIONAL SOIL BORINGS SEE STRUCTURE FOUNDATION INVESTIGATION SHEETS .

SOIL1.DGN 10/21/03 SAM,JLS

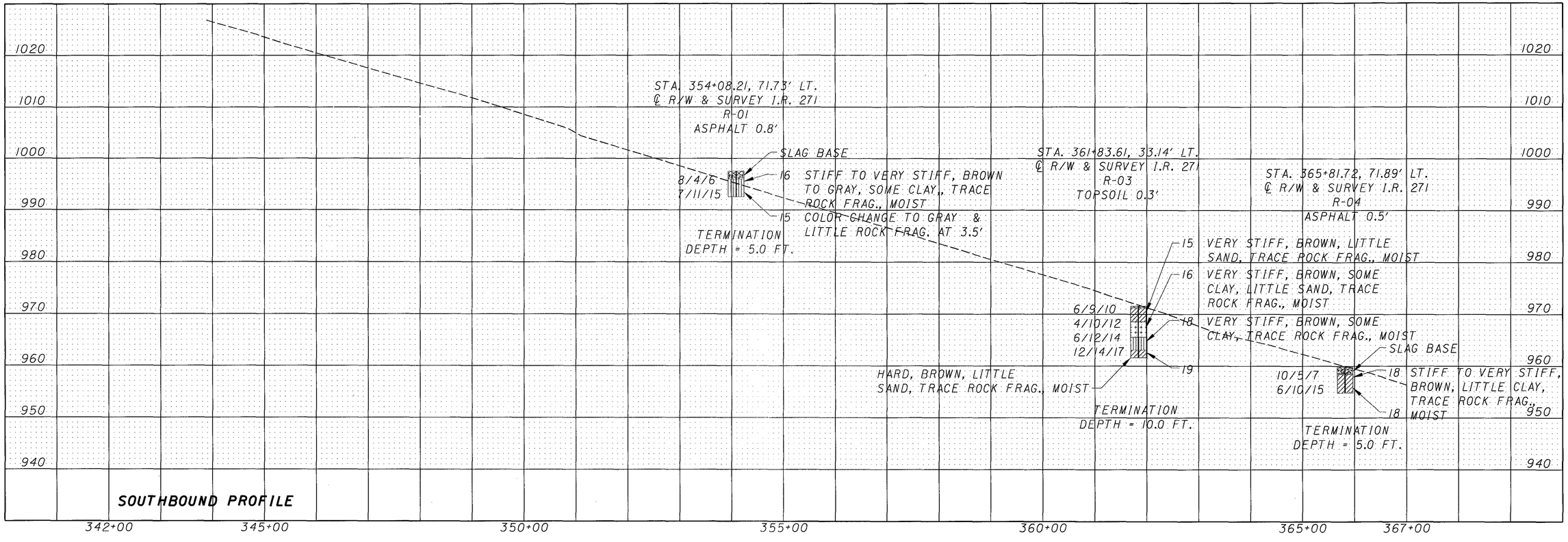
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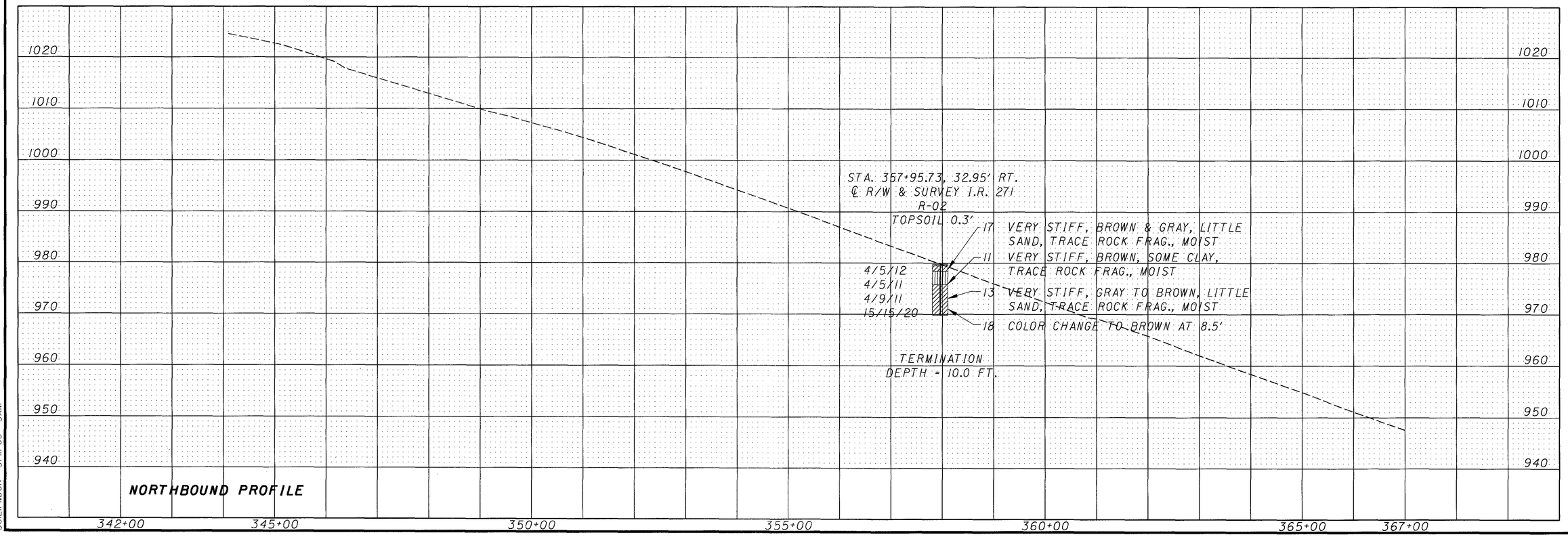
DESIGNED	DRAWN	REVIEWED	DATE
PEA	SAM	PRS	10/21/03
CHECKED	REVISED		

SOIL PROFILE
STA. 340+00 TO STA. 367+00

SUM-271-8.02

3
15





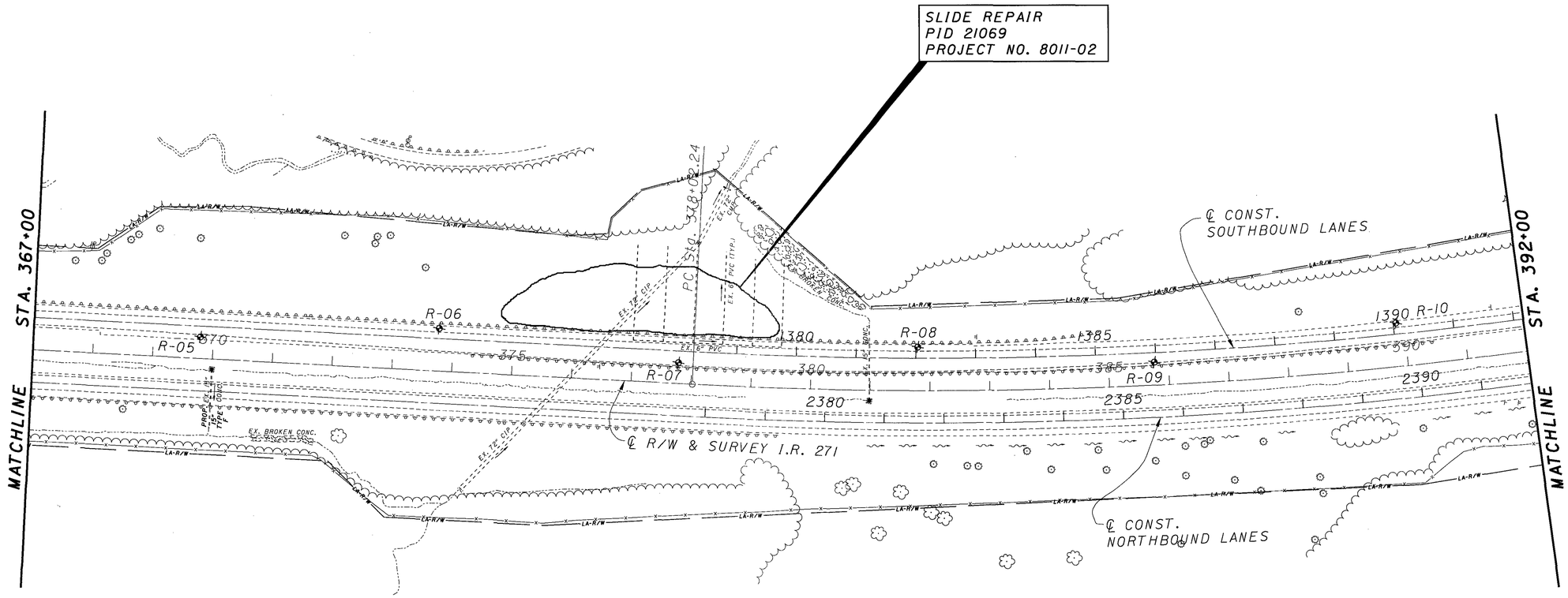
SOILFI.DGN 3/11/03 SAM

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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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PEA	SAM	PRS
CHECKED	REVISED	DATE
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SOIL PROFILE
STA. 342+00 TO STA. 367+00

SUM-271-8.02



LEGEND

- R-XX INDICATES ROADWAY BORING LOCATION
- E-XX INDICATES EMBANKMENT STABILITY BORING LOCATION
- W-XX INDICATES RETAINING WALL BORING LOCATION
- B-XX INDICATES STRUCTURE FOUNDATION BORING LOCATION (SUM-271-0802L&R)
- BMB-XX INDICATES STRUCTURE FOUNDATION BORING LOCATION (SUM-271-0854L)

NOTE: FOR ADDITIONAL SOIL BORINGS SEE STRUCTURE FOUNDATION INVESTIGATION SHEETS .

SOIL2.DGN 10/21/03 JLS

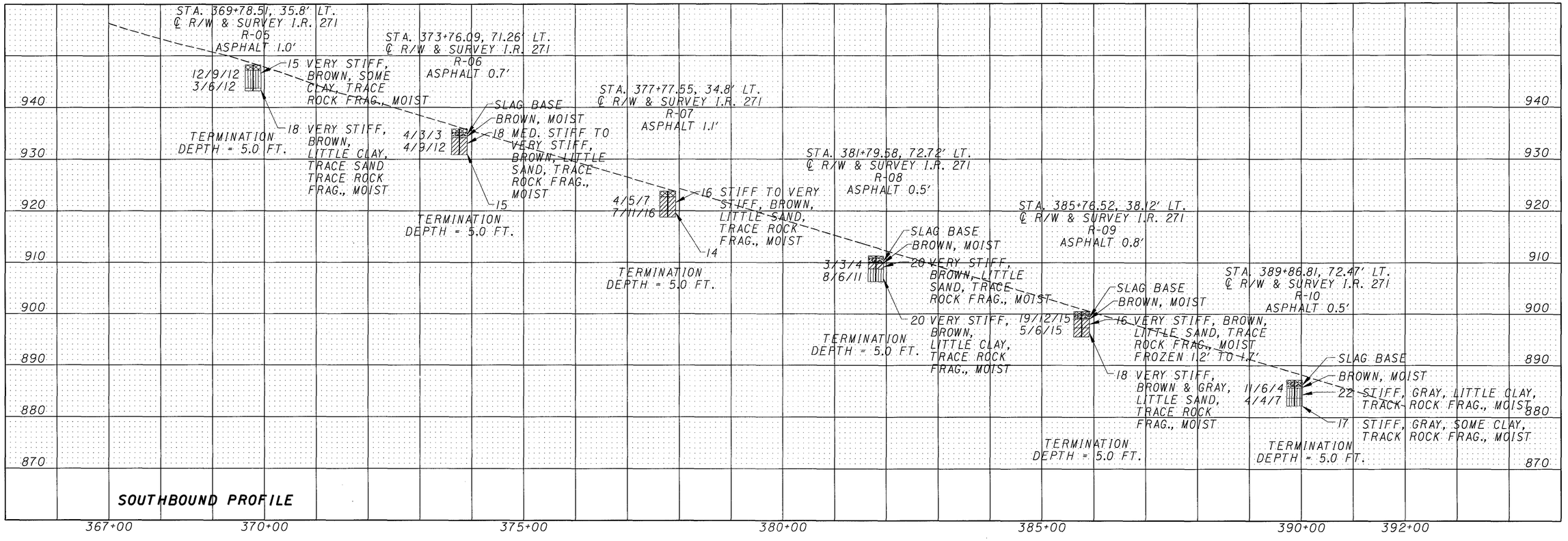
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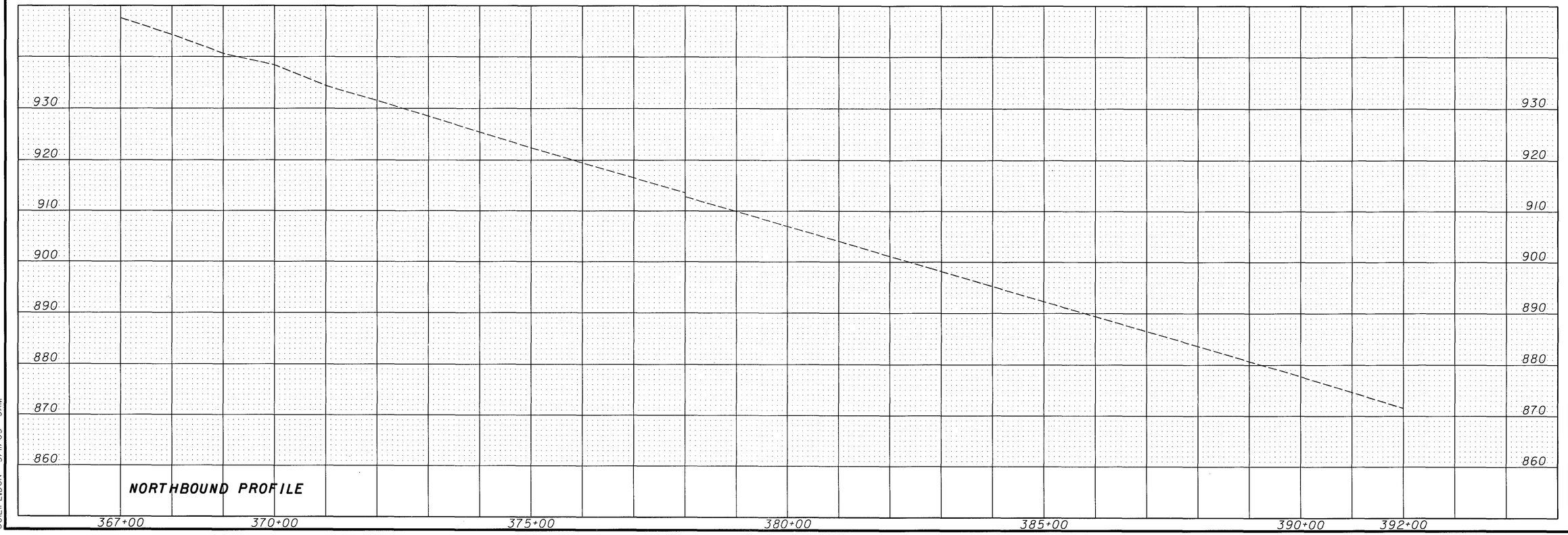
DESIGNED PEA | DRAWN SAM | REVIEWED PRS
CHECKED | REVISED | DATE 10/21/03

SOIL PROFILE
STA. 367+00 TO STA. 392+00

SUM-271-8.02

5
15





SOILIF2.DGN 3/11/03 SAM

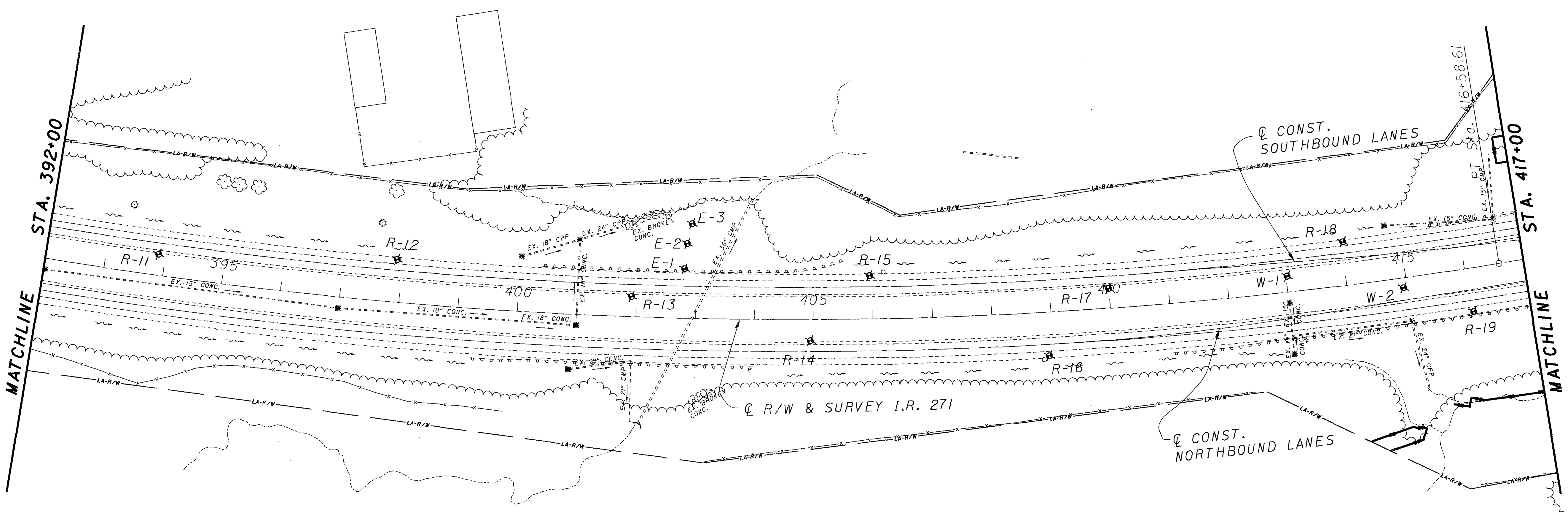
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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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PEA	SAM	PRS
CHECKED	REVISED	DATE
		10/21/03

SOIL PROFILE
STA. 367+00 TO STA. 392+00

SUM-271-8.02

6
15



LEGEND

R-XX	INDICATES ROADWAY BORING LOCATION
E-XX	INDICATES EMBANKMENT STABILITY BORING LOCATION
W-XX	INDICATES RETAINING WALL BORING LOCATION
B-XX	INDICATES STRUCTURE FOUNDATION BORING LOCATION (SUM-271-0802L&R)
BMB-XX	INDICATES STRUCTURE FOUNDATION BORING LOCATION (SUM-271-0854L)

NOTE: FOR ADDITIONAL SOIL BORINGS SEE STRUCTURE FOUNDATION INVESTIGATION SHEETS .

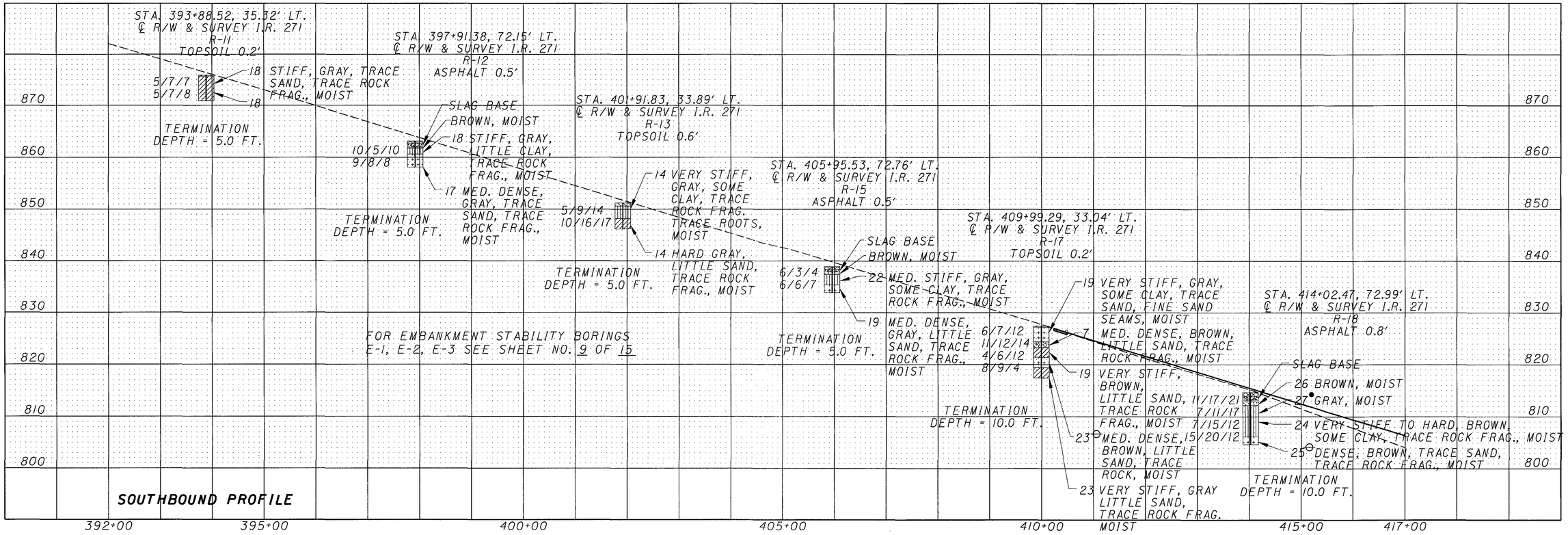
SOIL3.DGN 3/13/03 SAM

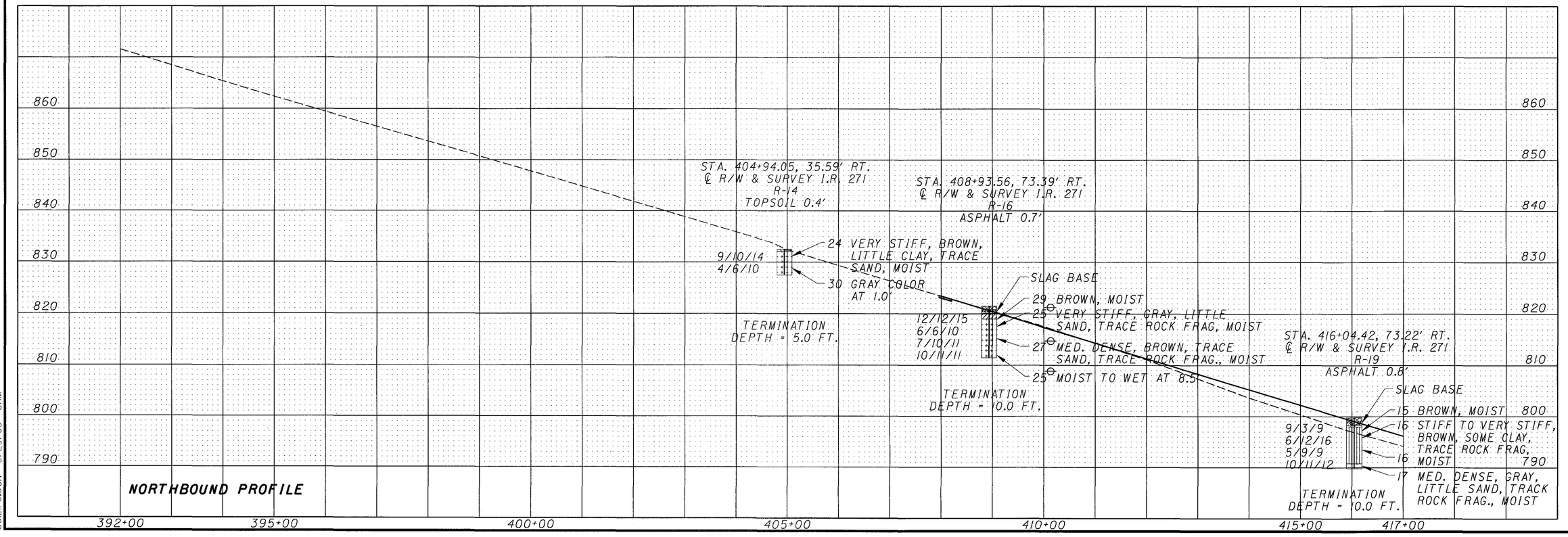
PRIME ENGINEERING, INC. AND
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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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PEA	SAM	PRS
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SOIL PROFILE
STA. 392+00 TO STA. 417+00

SUM-271-8.02





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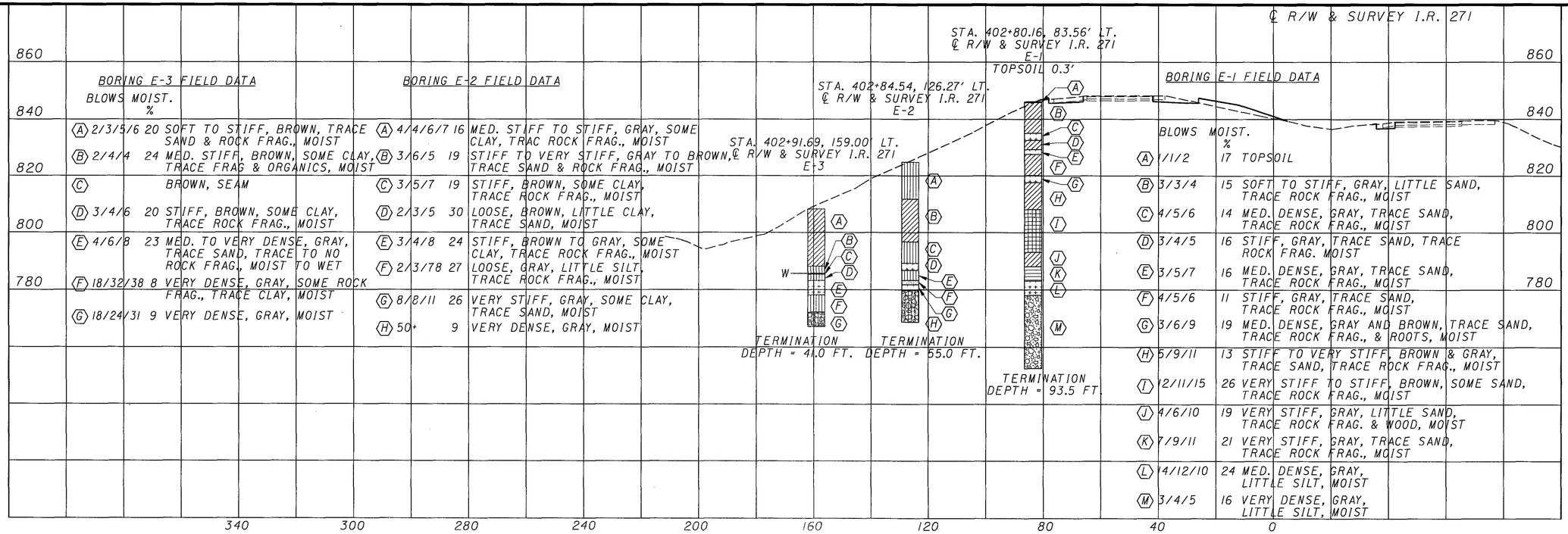
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PEA	SAM	PRS
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SOIL PROFILE
STA. 392+00 TO STA. 417+00

SUM-271-8.02

8
15

SOILIF3.DGN 3/29/03 SAM



BORING E-3 FIELD DATA

	BLOWS	MOIST. %	
A	2/3/5/6	20	SOFT TO STIFF, BROWN, TRACE SAND & ROCK FRAG., MOIST
B	2/4/4	24	MED. STIFF, BROWN, SOME CLAY, TRACE FRAG & ORGANICS, MOIST
C			BROWN, SEAM
D	3/4/6	20	STIFF, BROWN, SOME CLAY, TRACE ROCK FRAG., MOIST
E	4/6/8	23	MED. TO VERY DENSE, GRAY, TRACE SAND, TRACE TO NO ROCK FRAG., MOIST TO WET
F	18/32/38	8	VERY DENSE, GRAY, SOME ROCK FRAG., TRACE CLAY, MOIST
G	18/24/31	9	VERY DENSE, GRAY, MOIST

BORING E-2 FIELD DATA

	BLOWS	MOIST. %	
A	4/4/6/7	16	MED. STIFF TO STIFF, GRAY, SOME CLAY, TRAC ROCK FRAG., MOIST
B	3/6/5	19	STIFF TO VERY STIFF, GRAY TO BROWN, TRACE SAND & ROCK FRAG., MOIST
C	3/5/7	19	STIFF, BROWN, SOME CLAY, TRACE ROCK FRAG., MOIST
D	2/3/5	30	LOOSE, BROWN, LITTLE CLAY, TRACE SAND, MOIST
E	3/4/8	24	STIFF, BROWN TO GRAY, SOME CLAY, TRACE ROCK FRAG., MOIST
F	2/3/78	27	LOOSE, GRAY, LITTLE SILT, TRACE ROCK FRAG., MOIST
G	8/8/11	26	VERY STIFF, GRAY, SOME CLAY, TRACE SAND, MOIST
H	50+	9	VERY DENSE, GRAY, MOIST

BORING E-1 FIELD DATA

	BLOWS	MOIST. %	
A	1/1/2	17	TOPSOIL
B	3/3/4	15	SOFT TO STIFF, GRAY, LITTLE SAND, TRACE ROCK FRAG., MOIST
C	4/5/6	14	MED. DENSE, GRAY, TRACE SAND, TRACE ROCK FRAG., MOIST
D	3/4/5	16	STIFF, GRAY, TRACE SAND, TRACE ROCK FRAG. MOIST
E	3/5/7	16	MED. DENSE, GRAY, TRACE SAND, TRACE ROCK FRAG., MOIST
F	4/5/6	11	STIFF, GRAY, TRACE SAND, TRACE ROCK FRAG., MOIST
G	3/6/9	19	MED. DENSE, GRAY AND BROWN, TRACE SAND, TRACE ROCK FRAG., & ROOTS, MOIST
H	5/9/11	13	STIFF TO VERY STIFF, BROWN & GRAY, TRACE SAND, TRACE ROCK FRAG., MOIST
I	12/11/15	26	VERY STIFF TO STIFF, BROWN, SOME SAND, TRACE ROCK FRAG., MOIST
J	4/6/10	19	VERY STIFF, GRAY, LITTLE SAND, TRACE ROCK FRAG. & WOOD, MOIST
K	7/9/11	21	VERY STIFF, GRAY, TRACE SAND, TRACE ROCK FRAG., MOIST
L	14/12/10	24	MED. DENSE, GRAY, LITTLE SILT, MOIST
M	3/4/5	16	VERY DENSE, GRAY, LITTLE SILT, MOIST

XSECTS.DGN 8/29/03 RB,HN

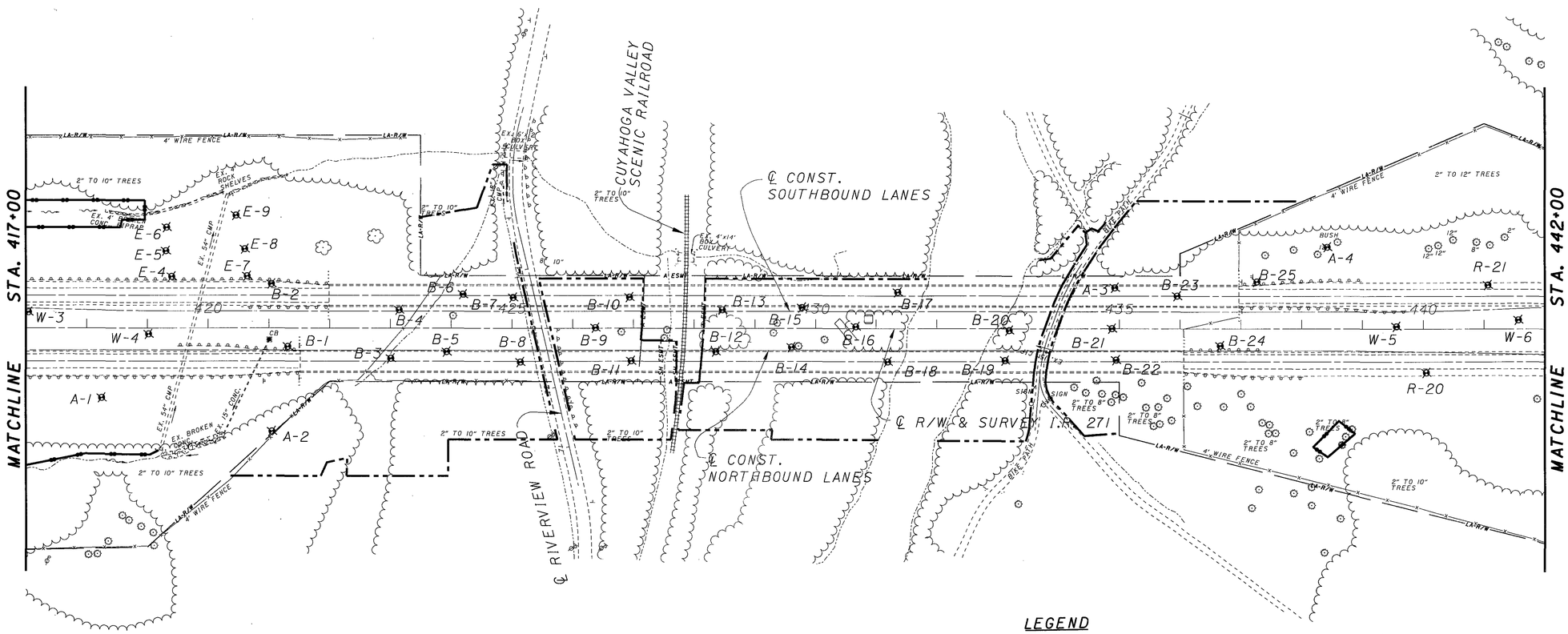
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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED
PEA	SAM	PRS
CHECKED	REVISED	DATE 10/21/03

SOIL PROFILE
CROSS SECTION STA. 403+00

SUM-271-8.02

9
15



LEGEND

A-XX	INDICATES ACCESS ROAD BORING LOCATION
R-XX	INDICATES ROADWAY BORING LOCATION
E-XX	INDICATES EMBANKMENT STABILITY BORING LOCATION
W-XX	INDICATES RETAINING WALL BORING LOCATION
B-XX	INDICATES STRUCTURE FOUNDATION BORING LOCATION (SUM-271-0802L&R)
BMB-XX	INDICATES STRUCTURE FOUNDATION BORING LOCATION (SUM-271-0854L)

NOTE: FOR ADDITIONAL SOIL BORINGS SEE STRUCTURE FOUNDATION INVESTIGATION SHEETS .

SOIL PROFILE
STA. 417+00 TO STA. 442+00

SUM-271-8.02

10
15

DESIGNED PEA
DRAWN SAM
REVIEWED PRS
CHECKED
REVISED
DATE 10/21/03

PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

SOIL4.DGN 10/29/03 SAM,JLS

STA. 418+24.83, 113.89' RT.
℄ R/W & SURVEY I.R. 271
A-01
TOPSOIL 0.7'

6/7/8 — 12 SOFT TO VERY STIFF, BROWN, TRACE SAND, TRACE ROCK FRAG., MOIST

TERMINATION
DEPTH = 30.0 FT.

STA. 421+05.15, 168.73' RT.
℄ R/W & SURVEY I.R. 271
A-02
TOPSOIL 0.7'

2/3/2 — 20 LOOSE TO VERY LOOSE, BROWN, LITTLE SILT, MOIST

3/4/5 W — 24 LOOSE BROWN TO GRAY, SOME CLAY, LITTLE SAND, MOIST TO WET

3/5/7 — 16 STIFF TO VERY STIFF, SOME CLAY, TRACE ROCK FRAG., MOIST

15/21/29
9/14/17 — 18 DENSE, GRAY, TRACE SAND, TRACE ROCK FRAG., MOIST

13 HARD, GRAY, SOME CLAY, TRACE ROCK FRAG., MOIST

TERMINATION
DEPTH = 30.0 FT.

STA. 440+05.42, 71.5' RT.
℄ R/W & SURVEY I.R. 271
R-20
ASPHALT 0.8'

SLAG BASE

27/35/14
5/9/8
4/5/7
5/14/12 — 9 BROWN, MOIST

17 BROWN, MOIST

12 VERY STIFF TO STIFF, BROWN, SOME CLAY, TRACE ROCK FRAG.

13 GRAY COLOR AT 3.5'

14 BROWN, MOIST

19 MED. DENSE, GRAY, TRACE SAND, TRACK ROCK FRAG., MOIST

TERMINATION
DEPTH = 10.0 FT.

NORTHBOUND PROFILE

800 790 780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630

760 750 740

417+00 420+00 425+00 430+00 435+00 440+00 442+00

SOILF4nb.DGN 10/29/03 SAM.JLS

PRIME ENGINEERING, INC. AND
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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

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PEA	SAM	PRS	10/21/03
CHECKED		REVISED	

SOIL PROFILE - NORTHBOUND
STA. 417+00 TO STA. 442+00

SUM-271-8.02

11
15

FOR EMBANKMENT STABILITY BORINGS
E-4, E-5, E-6, E-7, E-8, E-9
SEE SHEET NO. 13 OF 15

STA. 438+42.29, 135.66' LT.
℄ R/W & SURVEY I.R. 271
A-04
TOPSOIL 0.7'

6/6/7 — 12 STIFF TO MED. STIFF, BROWN, LITTLE CLAY, LITTLE ROCK FRAG. MOIST
3/3/4 — 29 LOOSE, BROWN, LITTLE CLAY, TRACE TO NO SAND, MOIST
BROWN, LITTLE SILT, MOIST
3/3/5 — 5 MED. STIFF, BROWN, SOME CLAY, TRACE SAND & ROOTS, MOIST
5/8/16 — 17 VERY STIFF, GRAY, TRACE SAND, TRACE ROCK FRAG., MOIST
W
7/8/16 — 17 VERY STIFF, GRAY, LITTLE CLAY, TRACE TO NO ROCK FRAG., MOIST
7/9/10 — 3 MED. DENSE, BROWN, TRACE SILT, MOIST
3/5/8 — 20 MED. DENSE, GRAY, TRACE CLAY, TRACE ROCK FRAG., WET
TERMINATION DEPTH = 25.0 FT.

STA. 441+06.47, 72.78' LT.
℄ R/W & SURVEY I.R. 271
R-21
ASPHALT 1.3'

17 BROWN, MOIST
32/22/11 — BROWN, MOIST
6/12/12 — 7 MED. DENSE, BROWN, MOIST
5/15/22
30/22/28 — 16 MED. DENSE, GRAY, TRACE SAND, TRACE ROCK FRAG., MOIST
TERMINATION DEPTH = 10.0 FT. — 20 HARD, GRAY, TRACE SAND, TRACE ROCK FRAG., MOIST

STA. 434+92.82, 67.81' LT.
℄ R/W & SURVEY I.R. 271
A-03

4/6/5 — 22 MED. DENSE, GRAY, SOME SILT, MOIST
3/3/3 — 15 SOFT TO MED. STIFF, BROWN, SOME CLAY, LITTLE ROCK FRAG., MOIST
3/3/5 — 13 LOOSE, BROWN, TRACE SILT, MOIST
2/2/4 — 33 MED. STIFF, BROWN, SOME CLAY, TRACE ROCK FRAG., MOIST
4/4/6 — 20 STIFF, GARY, TRACE SAND, TRACE ROCK FRAG., MOIST
3/5/6 — 21 STIFF, GRAY, NO TO TRACE SAND, MOIST
4/4/5 — 24 LOOSE, GRAY, TRACE SAND, TRACE ROCK FRAG., MOIST
TERMINATION DEPTH = 250.0 FT.

800 790 780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630

417+00 420+00 425+00 430+00 435+00 440+00 442+00

SOUTHBOUND PROFILE

SOILF4sb.DGN 10/29/03 SAM,JLS

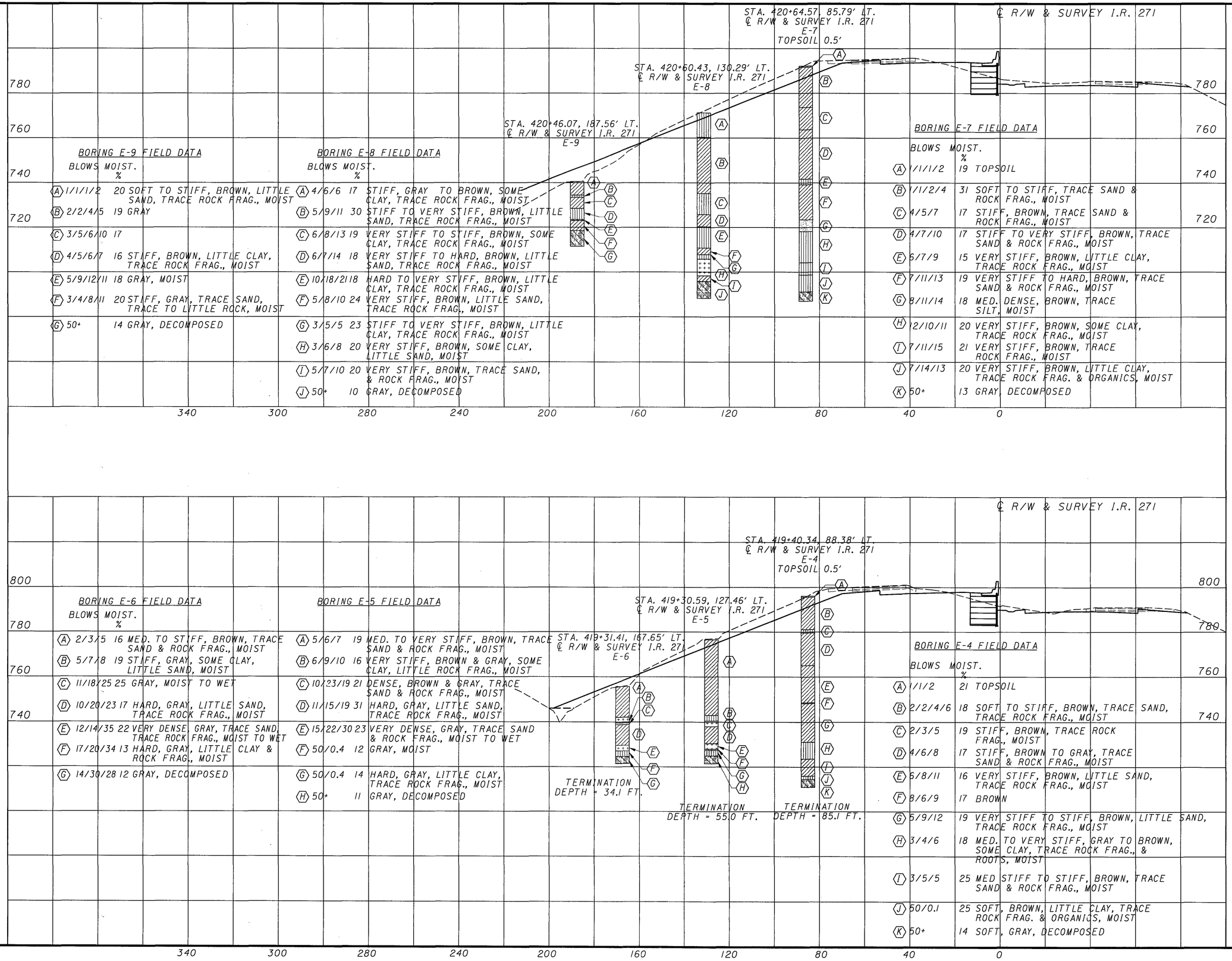
PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
PEA	SAM	PRS	10/21/03
CHECKED		REVISED	

SOIL PROFILE - SOUTHBOUND
STA. 417+00 TO STA. 442+00

SUM-271-8.02

12
15



XSECTS.DGN 8/29/03 RBJHN

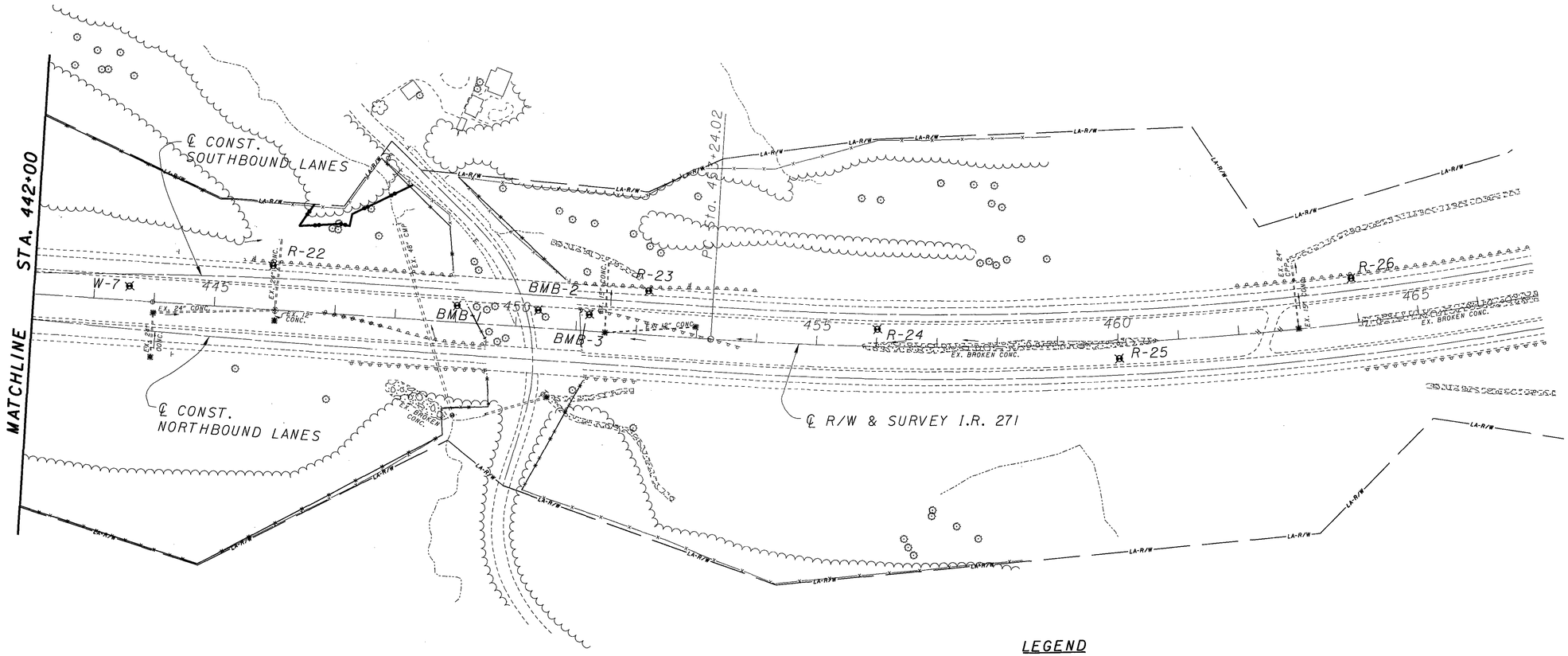
PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

REVIEWED PRS | DRAWN SAM | DESIGNED PEA | CHECKED | DATE 10/21/03 | REVISED

SOIL PROFILE
CROSS SECTION STA. 419+50 & STA. 421+00

SUM-271-8.02

13
15



LEGEND

- R-XX INDICATES ROADWAY BORING LOCATION
- E-XX INDICATES EMBANKMENT STABILITY BORING LOCATION
- W-XX INDICATES RETAINING WALL BORING LOCATION
- B-XX INDICATES STRUCTURE FOUNDATION BORING LOCATION (SUM-271-0802L&R)
- BMB-XX INDICATES STRUCTURE FOUNDATION BORING LOCATION (SUM-271-0854L)

NOTE: FOR ADDITIONAL SOIL BORINGS SEE STRUCTURE FOUNDATION INVESTIGATION SHEETS .

SOIL5.DGN 10/29/03 SAM.JLS

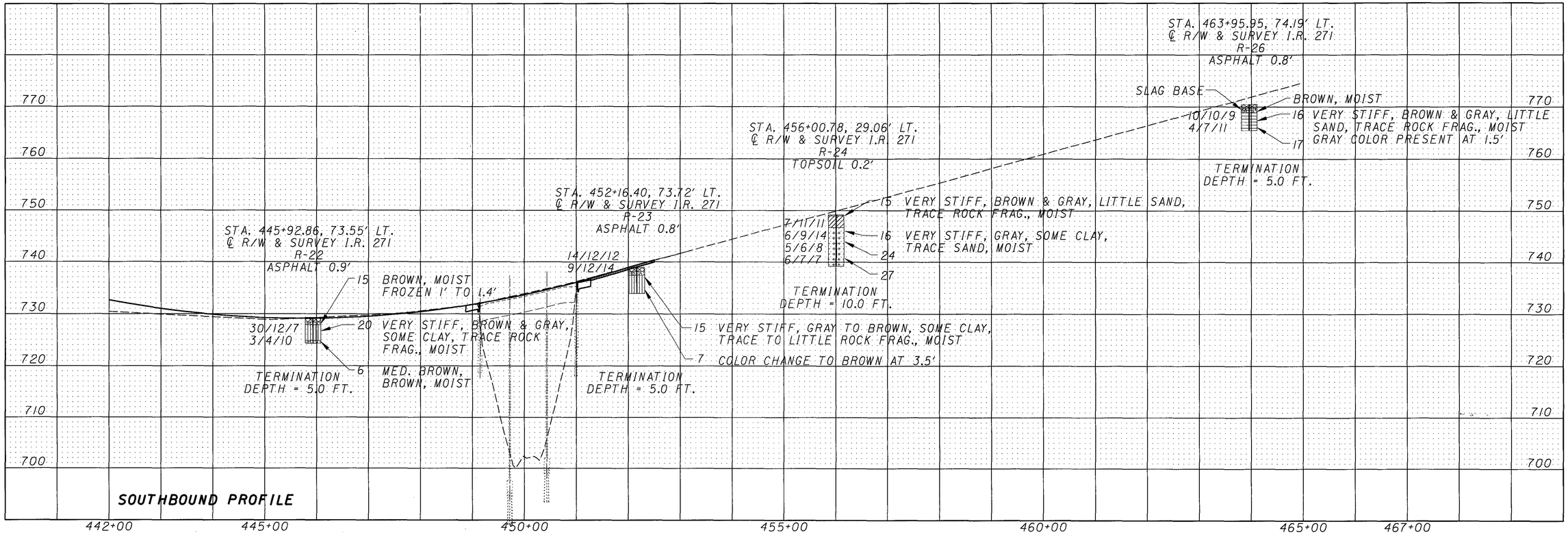
PRIME ENGINEERING, INC. AND
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29 NORTH PARK STREET
MANSFIELD, OHIO 44902

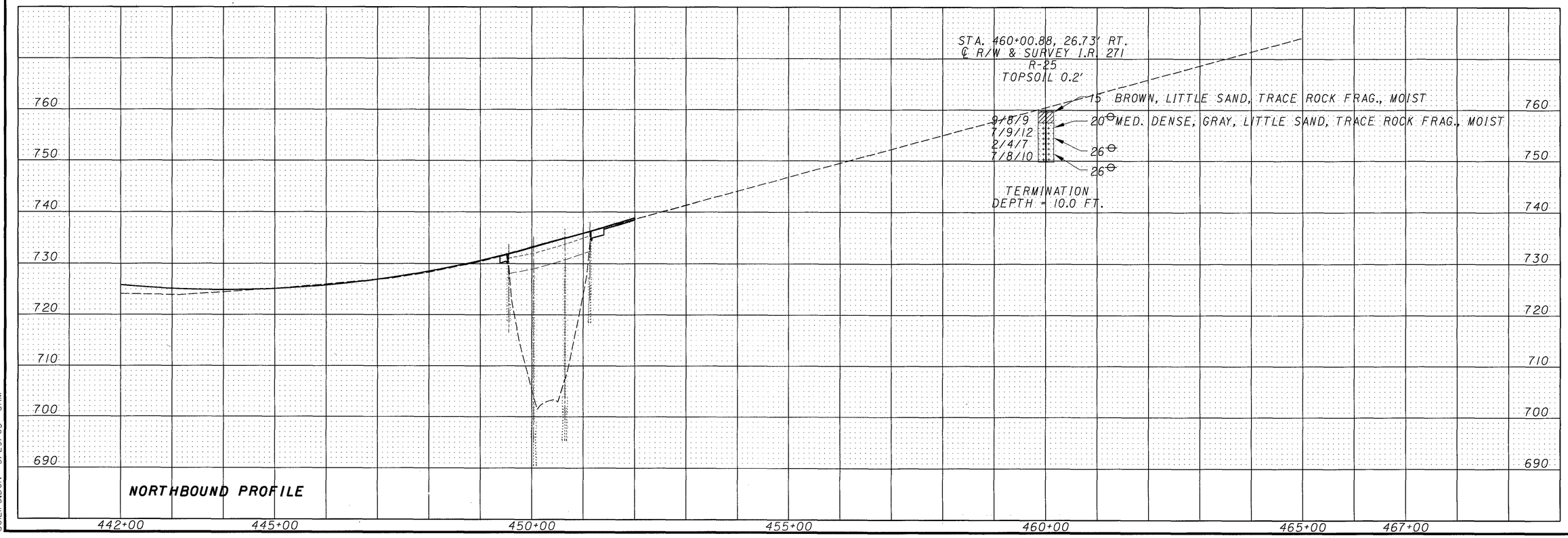
DESIGNED	DRAWN	REVIEWED	
PEA	SAM	PRS	
CHECKED	REVISED	DATE	
		10/21/03	

SOIL PROFILE
STA. 442+00 TO STA. 467+00

SUM-271-8.02

14
15





SOILF5.DGN 3/29/03 SAM

PRIME ENGINEERING, INC. AND
RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	DRAWN	REVIEWED	DATE
PEA	SAM	PRS	10/21/03
CHECKED		REVISED	

SOIL PROFILE
STA. 442+00 TO STA. 467+00

SUM-271-8.02

15
15