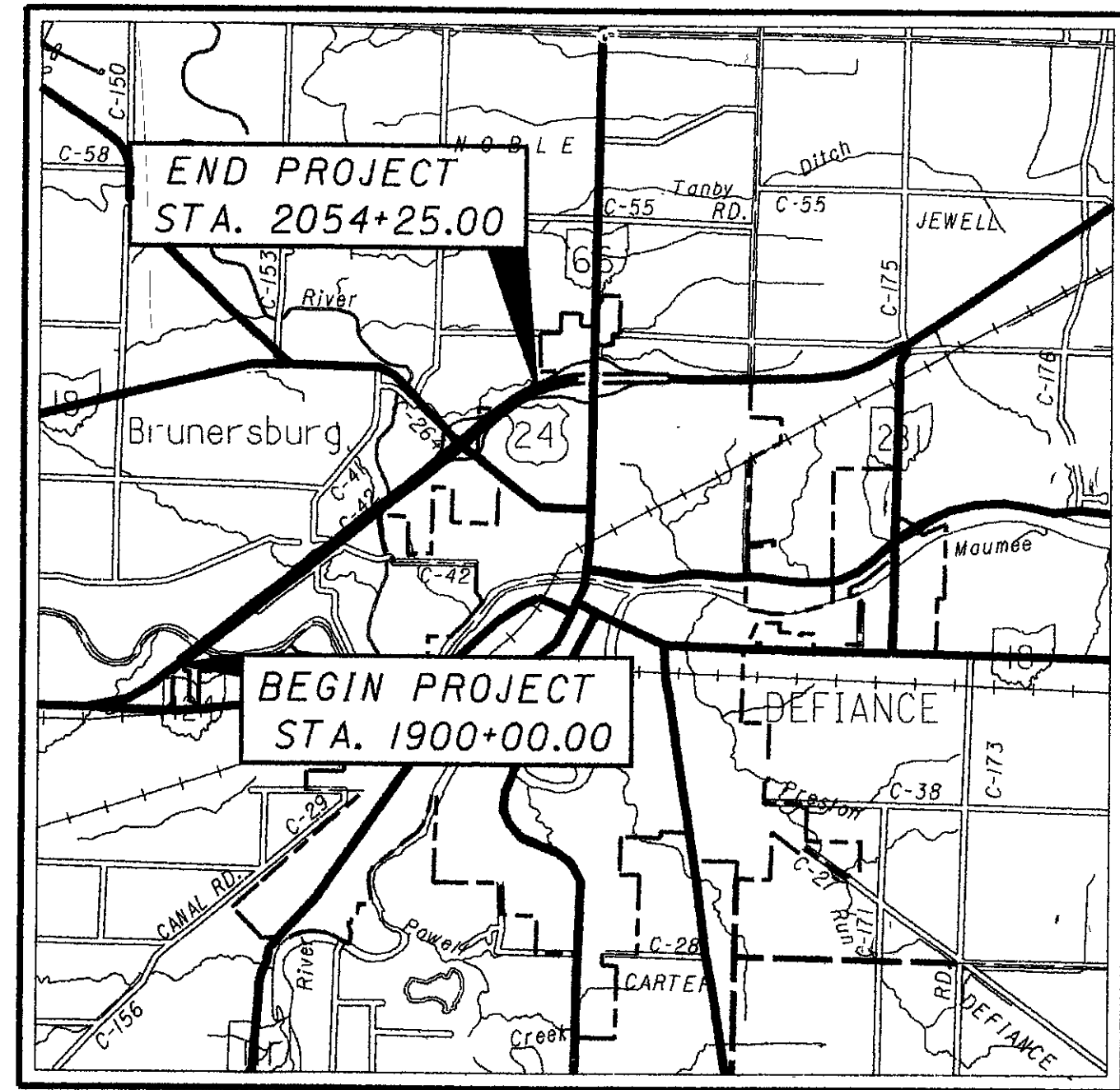


STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

DEF-24-7.96
CITY OF DEFIANCE
DEFIANCE COUNTY
NOBLE TOWNSHIP



LOCATION MAP
LATITUDE: 41°18'05"N LONGITUDE: 84°22'38"W
SCALE IN MILES

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

DESIGN DESIGNATIONS: SEE SCHEMATIC PLANS
PLAN PREPARED BY:

K&K
KOHLI & KALIHAR ASSOCIATES, INC.
ENGINEERS AND SURVEYORS
2244 Baton Rouge Ave., Lima, Ohio 45805 419-227-1135
FAX 419-227-4674

PB PARSONS BRINCKERHOFF
QUADE & DOUGLAS, INC.
6235 ENTERPRISE COURT
DUBLIN, OHIO 43016

DGL
CONSULTING ENGINEERS
Darsand Grohne Long Limited

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

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STATE SERVICE ROAD: HORIZONTAL ALIGNMENT	04-28-05	2, 314
CONNECTOR ROAD: HORIZONTAL ALIGNMENT & SUPERELEVATION	06-06-05	5, 341, 376
HARDING STREET: HORIZONTAL ALIGNMENT & SUPERELEVATION	06-06-05	5, 365, 376

STANDARD CONSTRUCTION DRAWINGS

NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE
BP-1.1	7/28/00	RM-1.1	4/18/03	DM-4.1	7/19/02	HL-40.10	4/19/02	TC-73.10	1/19/01	800	4/15/05		
BP-2.1	7/16/04			DM-4.3	7/19/02	HL-60.21	1/21/05	TC-81.10	5/11/00	802	4/15/05		
BP-2.2	7/16/04	CB-1.1	7/19/02	DM-4.4	7/19/02	HL-60.31	7/20/01	TC-81.20	1/16/04	832	4/17/04		
BP-2.3	7/16/04	CB-1.2	7/19/02	DM-5.1	7/19/02			TC-83.10	5/11/00	833	2/12/03		
BP-2.4	7/16/04	CB-2.1	7/19/02			TC-21.20	1/19/01	TC-83.20	1/16/04	872	10/30/03		
BP-4.1	7/16/04	CB-2.2	7/19/02	A-1-69	7/19/02	TC-22.10	1/19/01	TC-84.20	5/11/00	880	4/15/05		
BP-5.1	7/28/00	CB-2.3	7/19/02			TC-22.20	1/19/01	TC-84.21	3/6/00	884	4/15/05		
BP-6.1	7/28/00	CB-3.1	7/19/02	AS-1-81	7/19/02	TC-41.10	1/19/01	TC-85.20	5/11/00	898	7/16/04		
BP-8.1	7/28/00	CB-3.3	7/19/02			TC-41.20	1/19/01						
BP-9.1	4/15/05	CB-3.4	7/19/02	BR-1	7/19/02	TC-41.40	1/18/02	WO-1.2	1/21/05				
						TC-41.50	1/19/01						
F-2.1	7/28/00	HW-1.1	1/21/05	GSD-F-96	7/19/02	TC-42.10	1/19/01	MT-35.10	4/20/01				
F-3.1	7/28/00	HW-2.1	7/19/02			TC-42.20	4/20/01	MT-95.30	7/16/04				
F-3.3	7/28/00	HW-2.2	7/19/02	PCB-91	7/19/02	TC-51.11	4/20/01	MT-95.70	4/19/02				
F-3.4	7/28/00					TC-51.12	4/20/01	MT-95.82	4/19/02				
		I-2.3	7/16/04	PSID-I-99	7/18/03	TC-52.10	4/20/01	MT-100.00	4/19/02				
GR-1.1	7/16/04					TC-52.20	4/20/01	MT-101.60	10/18/02				
GR-2.1	1/16/04	MH-1.2	7/19/02	SICD-I-96	7/19/02	TC-61.10	1/19/01	MT-101.70	10/18/02				
GR-3.1	4/18/03					TC-65.10	1/21/05	MT-105.10	10/18/02				
GR-3.2	4/18/03	DM-1.1	1/21/05	HL-10.31	7/20/01	TC-65.11	1/21/05	MT-105.11	10/18/02				
GR-4.2	4/15/05	DM-1.2	1/21/05	HL-20.11	4/19/02	TC-71.10	1/21/05						
		DM-1.4	1/21/05	HL-20.21	1/21/05	TC-72.20	1/21/05						

REV.-RLS

PROJECT DESCRIPTION

IMPROVE EXISTING SUPER-2 HIGHWAY TO 4-LANE DIVIDED HIGHWAY. APPROXIMATE LENGTH IS 2.92 MILES. PROJECT IS ON TANGENT ALIGNMENT WITH RIVER CROSSINGS OVER THE MAUMEE AND TIFFIN RIVERS AND A GRADE SEPARATION AT SWITZER RD. / HIGH ST.

RECONSTRUCTION OF S.R. 15/18 INTERCHANGE ALONG WITH 0.63 MILES OF S.R. 15/18; RE-ALIGNMENT AND RE-CONSTRUCTION OF SWITZER ROAD / W. HIGH ST. AND A CONNECTOR ROAD FROM W. HIGH ST. TO S.R. 15/18.

EARTH DISTURBED AREAS

PROJECT E.D.A. = 108.55 ACRES
ESTIMATED CONTRACTOR E.D.A. = 15.95 ACRES
NOTICE OF INTENT E.D.A. = 124.50 ACRES

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.

2005 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 THE HIGHWAY AND THAT THE PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

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 Norman K. Rehak
DATE 9/30/05 DISTRICT DEPUTY DIRECTOR

APPROVED London Proctor
DATE 12-7-05 DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO.
E040(538)

PID NO.
24337

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT
NONE

DEF-24-7.96

1
660

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060087 - PID - 24337
DIST 01 3/8/2006

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7:47:20 AM

9/23/2005

d:\PROJECTS\24337\DGN\GBO01.dgn

GAS TRANSMISSION PIPELINES

EXISTING US 24

BASIS OF BEARING: BEARINGS ARE BASED UPON OHIO NORTH ZONE GRID COORDINATES. A PROJECT ADJUSTMENT FACTOR (P.A.F.) OF 1.00008827 HAS BEEN USED TO PROVIDE GROUND COORDINATES FOR THIS PROJECT. TO OBTAIN STATE PLANE GRID COORDINATES, DIVIDE EACH NORTHING AND EASTING BY THE P.A.F.

DESIGN DESIGNATION - W. HIGH ST./SWITZER RD. CURRENT ADT (2008) 1137 DESIGN YEAR ADT (2028) 1375 DESIGN HOURLY VOLUME (2028) 144 DIRECTIONAL DISTRIBUTION AVG. 50% & 50% TRUCKS (24 HOUR B&C) AVG. 4.0% DESIGN SPEED 55 MPH LEGAL SPEED, W. HIGH ST. 35 MPH LEGAL SPEED, SWITZER RD. 55 MPH

DESIGN DESIGNATION - STATE SERVICE RD. CURRENT ADT (2008) 192 DESIGN YEAR ADT (2028) 290 DESIGN HOURLY VOLUME (2028) N/A DIRECTIONAL DISTRIBUTION AVG. 50% & 50% TRUCKS (24 HOUR B&C) AVG. N/A DESIGN SPEED 55 MPH LEGAL SPEED 55 MPH

DESIGN FUNCTIONAL CLASSIFICATION - RURAL MINOR ACCESS ROAD (LOW VOLUME LOCAL ROADS STANDARDS APPLIED TO HORIZONTAL ALIGNMENT, LANE WIDTHS, AND SHOULDER WIDTHS.

BEGIN PROJECT STA. 1900+00.00 S.L.M. = 7.96 E040(538)

BEGIN WORK STA. 1892+00

PROJECT COORDINATES table with columns: ROADWAY, ID, STATION, NORTH (Y), EAST (X). Rows for U.S. 24 (P.O.B., P.O.E.) and MAUMEE RIVER (P.O.B., P.O.E.).

EXISTING 18" CONDUIT TYPE A

36" CONDUIT TYPE B

42" CONDUIT TYPE C

STRUCTURE NO. DEF-24-0827 L&R

27" CONDUIT TYPE A, APP.

30" CONDUIT TYPE A, APP.

CURVE SERV-1 P.I. Sta = 101+10.29 D = 34° 07' 06" (RT) Dc = 9° 30' 00" R = 603.11' T = 185.07' L = 359.14' E = 27.76' ed=0.083

CURVE SERV-2 P.I. Sta = 105+19.71 D = 40° 30' 42" (LT) Dc = 28° 00' 00" R = 204.63' T = 75.52' L = 144.68' E = 13.49' ed=0.081

CURVE SWI-1 P.I. Sta = 106+39.31 D = 15° 22' 00" (LT) Dc = 5° 00' 00" R = 1,145.92' Ls = 210.00' Theta = 5° 15' 00" LT = 140.06' ST = 70.06' x = 209.82' y = 6.41' k = 104.97' p = 1.60'

CURVE SWI-2 P.I. Sta = 113+91.24 D = 38° 33' 59" (RT) Dc = 6° 00' 00" R = 954.93' Ls = 220.00' Theta = 6° 36' 00" LT = 146.77' ST = 73.43' x = 219.71' y = 8.44' k = 109.95' p = 2.11'

CURVE EXSERV-1 P.I. Sta = 100+58.62 D = 11° 48' 23" (RT) Dc = 10° 15' 00" R = 558.98' T = 57.80' L = 115.18' E = 2.98' ed=N/A

CURVE EXSERV-2 P.I. Sta = 104+23.90 D = 26° 10' 35" (LT) Dc = 57° 17' 45" R = 100.00' T = 23.25' L = 45.69' E = 2.67' ed=N/A

CURVE EXSWI-1 P.I. Sta = 100+00.00 D = 16° 00' 53" (RT) Dc = 5° 00' 00" R = 1,145.92' T = 161.20' L = 320.29' E = 11.28' ST Sta. 108+96.86

CURVE EXSWI-2 P.I. Sta = 18+09.79 D = 39° 14' 17" (LT) Dc = 12° 59' 59" R = 440.75' T = 157.11' L = 301.84' E = 27.16'

CURVE 424D-1 P.I. Sta = 1904+61.45 D = 49° 17' 38" (RT) Dc = 8° 00' 00" R = 716.20' T = 328.61' L = 616.17' E = 71.79' ed = 0.081

- 1 - N 50° 37' 31" E
2 - N 84° 44' 37" E
3 - N 44° 13' 55" E
4 - N 65° 44' 41" W
5 - N 62° 25' 53" E
6 - N 36° 17' 19" E
7 - N 1° 19' 53" E

STRUCTURE NO. DEF-24-0941 L&R

STRUCTURE NO. DEF-24-0981 L&R

BEGIN WORK STA. 102+00

BEGIN WORK STA. 106+10.76

END WORK STA. 120+20

BEGIN WORK STA. 96+00

STRUCTURE NO. DEF-24-0929

DETAIL A - STATE SERVICE ROAD

DESIGN DESIGNATION - U.S. 24 CURRENT ADT (2008) 9590 DESIGN YEAR ADT (2028) 12710 DESIGN HOURLY VOLUME (2028) 1398 DIRECTIONAL DISTRIBUTION 57% & 43% TRUCKS (24 HOUR B&C) AVG. 46% DESIGN SPEED 70 MPH LEGAL SPEED 55 MPH DESIGN FUNCTIONAL CLASSIFICATION - URBAN PRINCIPAL ARTERIAL



HORIZONTAL SCALE IN FEET 0 300 600

SCHEMATIC PLAN

DEF-24-7.96

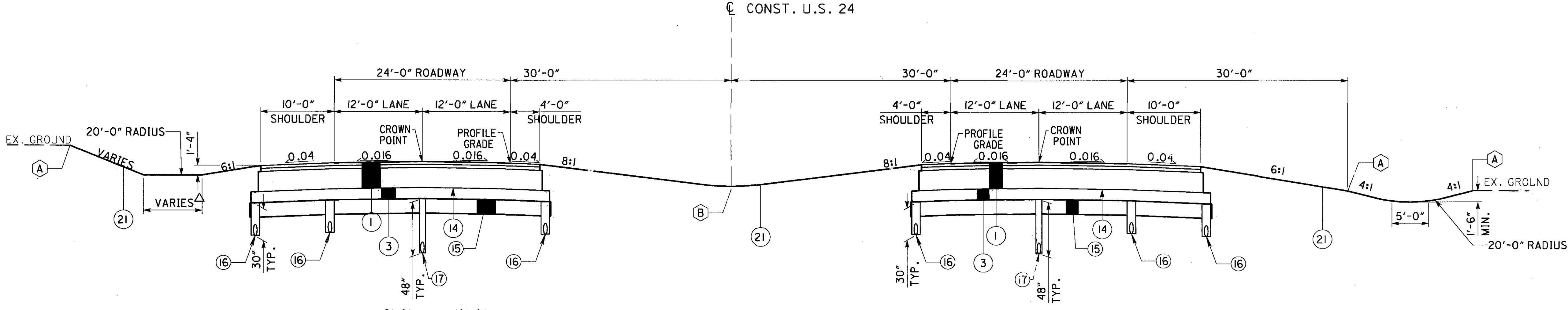
2/600

STA. 1945+00

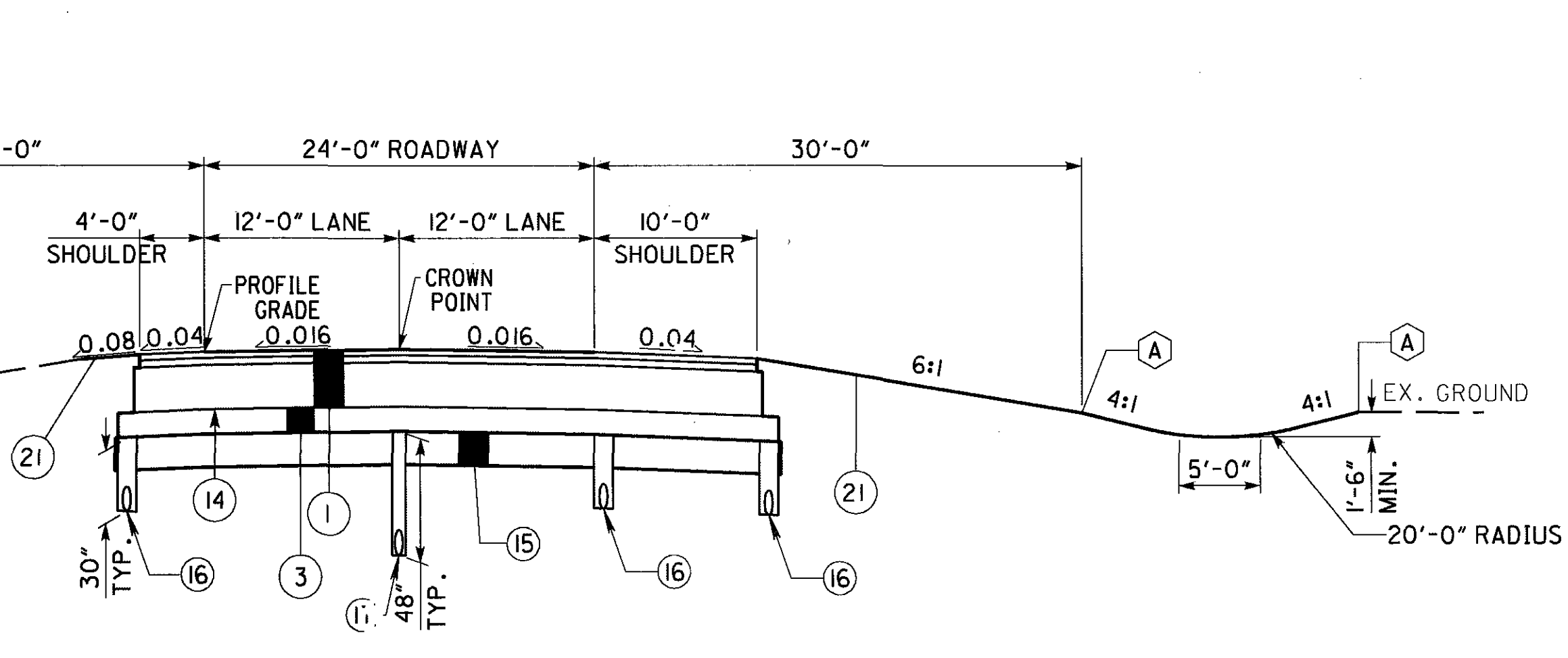
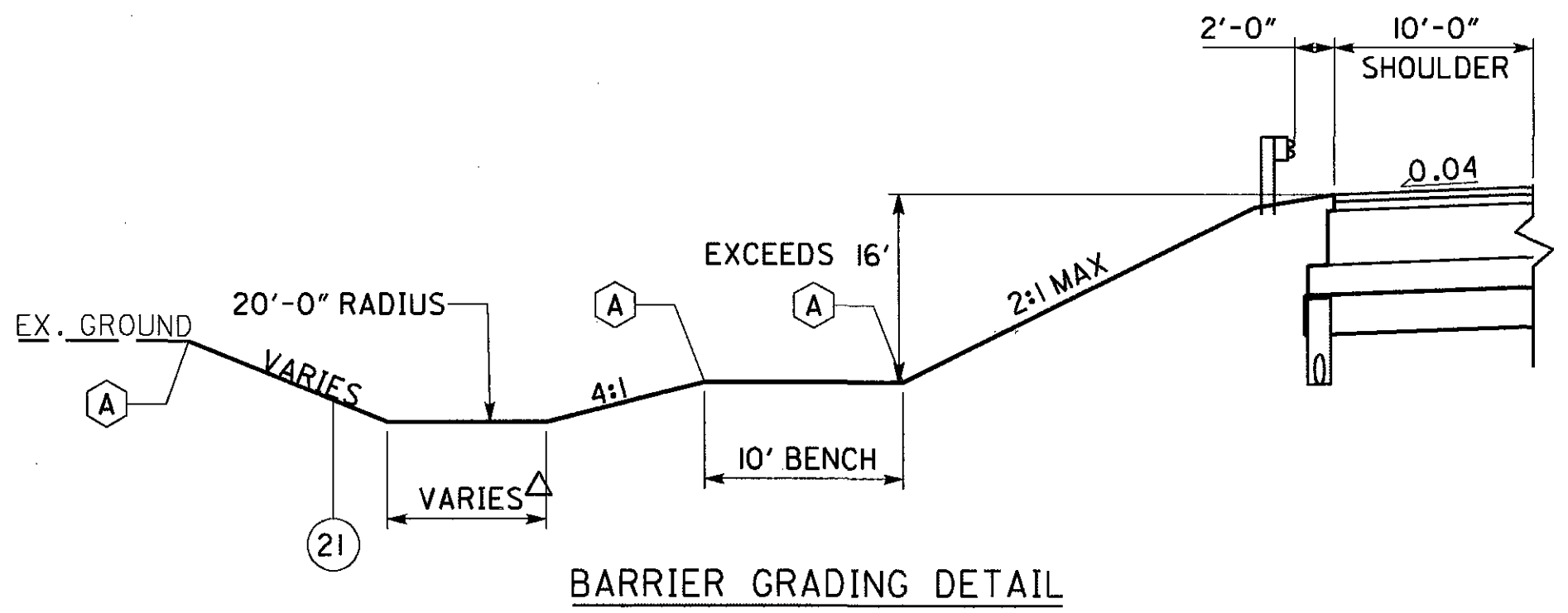
STA. 1945+00

MATCH LINE

MATCH LINE STA. 2012+00



APPLIES AT:
 STA. 1900+00.00 TO STA. 1914+17.65 = 1417.65 FT.
 STA. 1919+48.86 TO STA. 1974+40.41 = 5491.55 FT.
 STA. 1975+55.32 TO STA. 1996+00.28 = 2044.96 FT.
 STA. 2006+01.64 TO STA. 2013+00.00 = 1193.36 FT.
 TOTAL = 10147.52 FT



U.S. 24 NORMAL SECTION - EASTBOUND

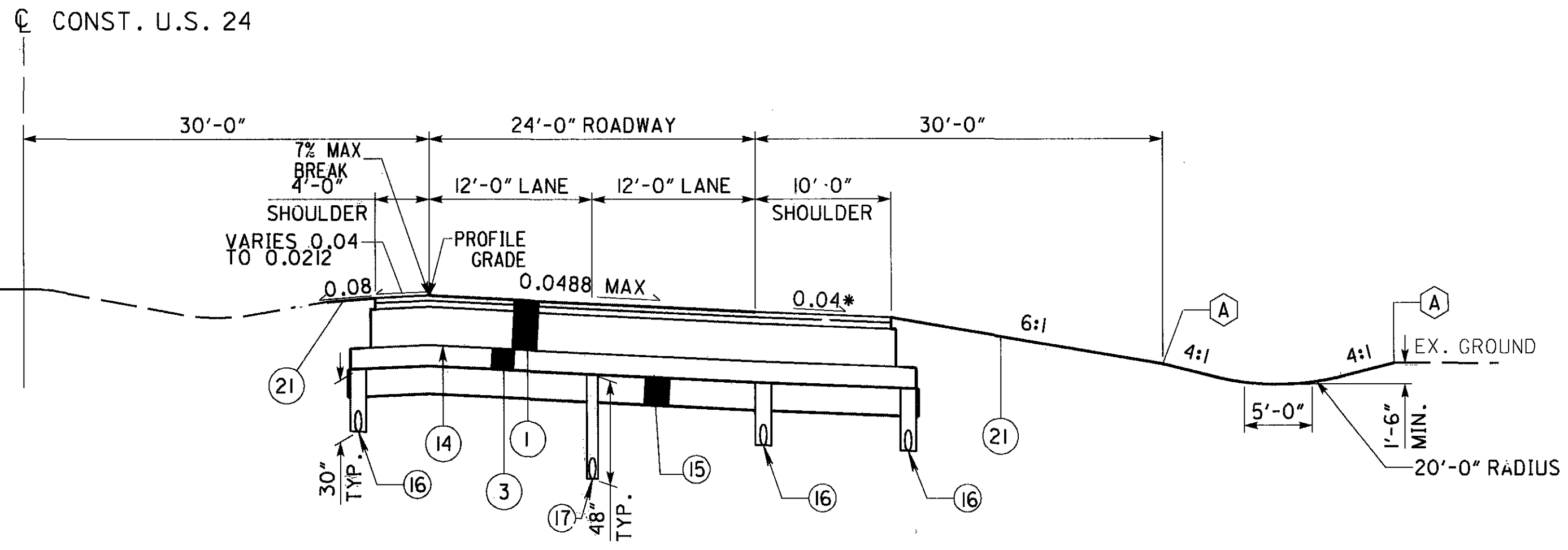
APPLIES AT:
 STA. 2046+50.00 TO STA. 2049+56.52 = 306.52 FT.

LEGEND

- ① ITEM 880 - 14" ASPHALT CONCRETE (7 YEAR WARRANTY)**
 CONVENTIONAL EQUIVALENT:
 ITEM 442 - 1.5" ASPHALT CONCRETE SURFACE COURSE,
 12.5MM, TYPE A (446)
 ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE, 0.04 GAL/SQ. YD.
 ITEM 442 - 1.5" ASPHALT CONCRETE INTERMEDIATE COURSE,
 19MM, TYPE A (446)
 ITEM 407 - TACK COAT, 0.075 GAL/SQ. YD.
 ITEM 302 - 11" ASPHALT CONCRETE BASE
- ③ ITEM 304 - 6" AGGREGATE BASE
- ⑭ ITEM 408 - PRIME COAT 0.40 GAL/SQ. YD.
- ⑮ ITEM 206 - LIME STABILIZED SUBGRADE (T=16")
- ⑯ ITEM 605 - 6" SHALLOW PIPE UNDERDRAINS
- ⑰ ITEM 605 - 6" CONSTRUCTION UNDERDRAINS
- ⑳ ITEM 659 - SEEDING AND MULCHING

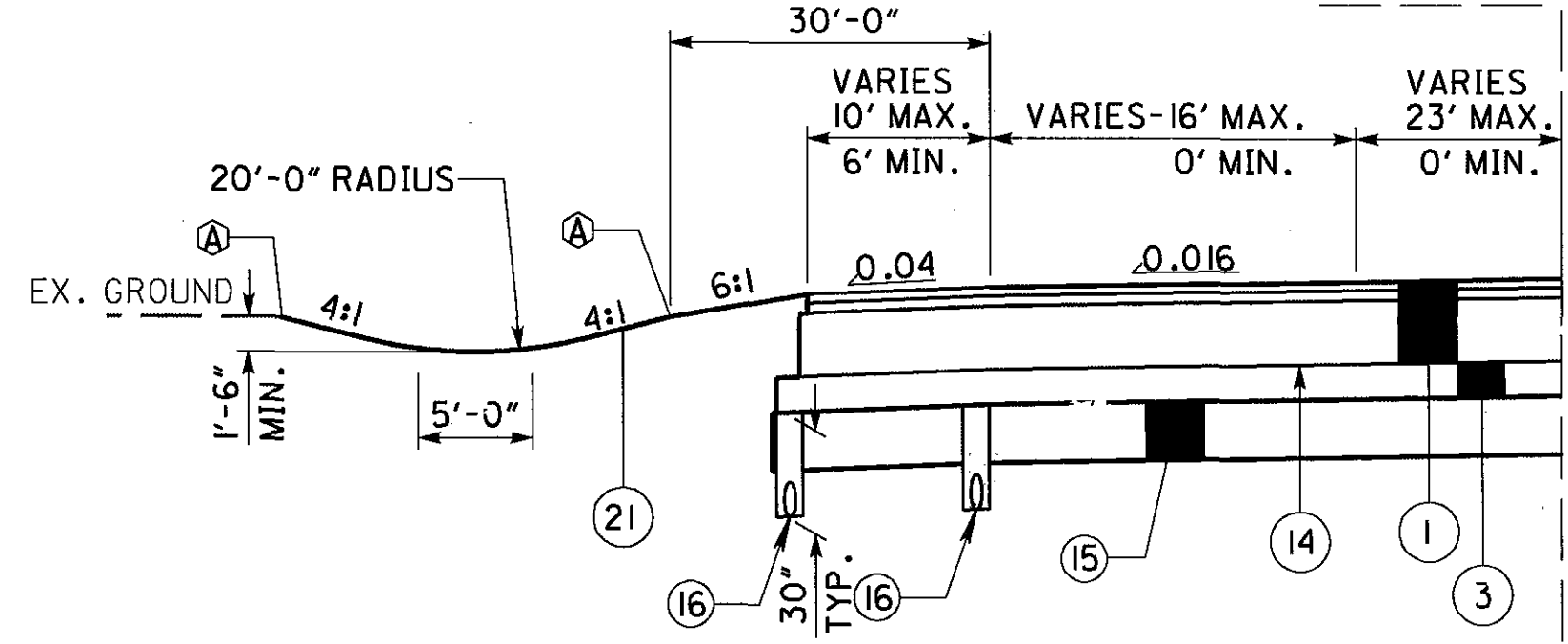
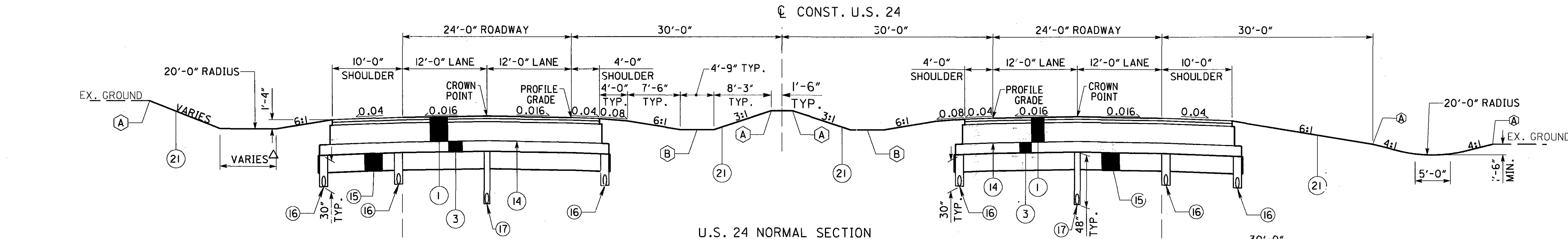
NOTES:

- Ⓐ - 4'-0" ROUNDING
 - Ⓑ - 8'-0" ROUNDING
 - * OR RATE OF SUPERELEVATION IF GREATER
 - **LIFT THICKNESSES AND STEP WIDTHS SHOWN IN THE PLAN ARE FOR QUANTITY ESTIMATION ONLY AND ARE NOT REQUIRED LIFT THICKNESSES FOR ACTUAL CONSTRUCTION.
- △ SEE SHEET 12



U.S. 24 SUPERELEVATED SECTION - EASTBOUND

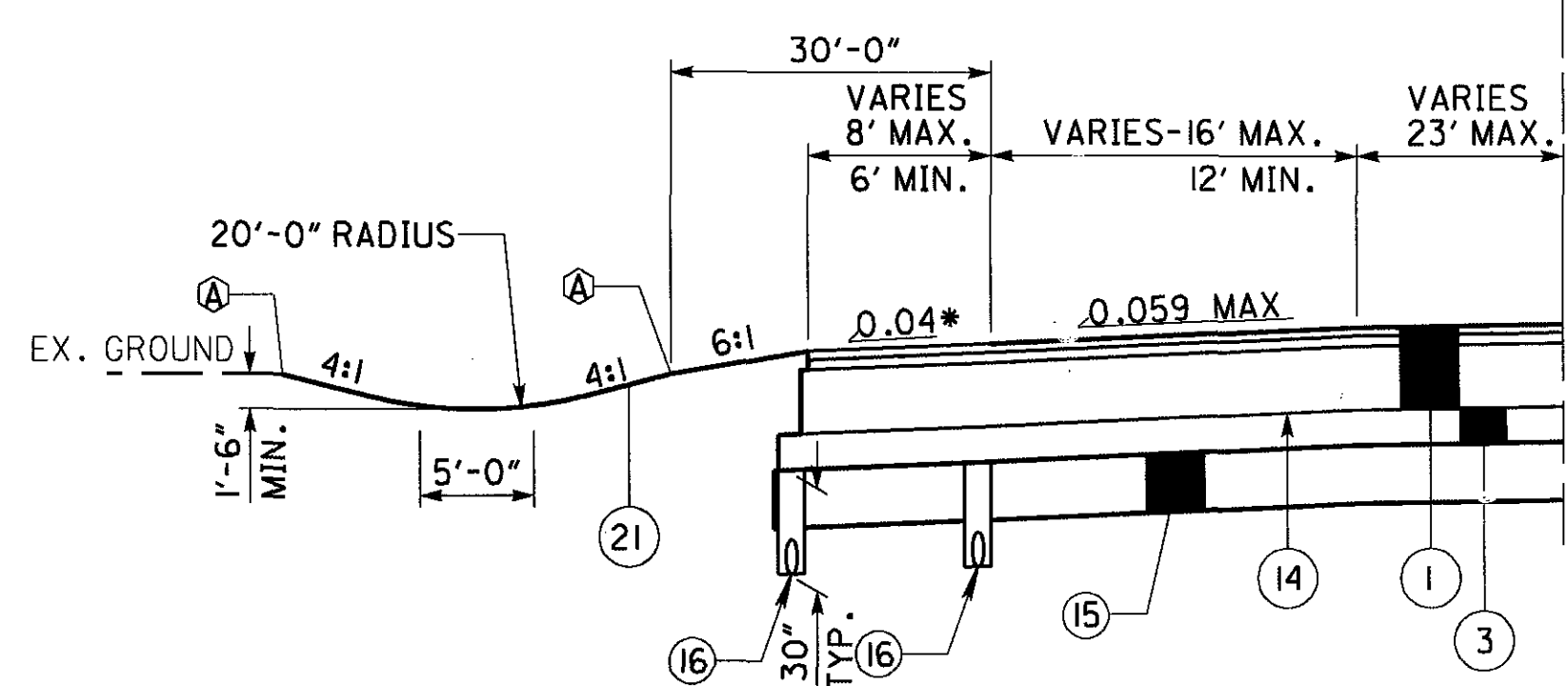
APPLIES AT:
 STA. 2049+56.52 TO STA. 2055+00.00 = 543.48 FT.



RAMP A:
APPLIES AT STA. 2008+57.60 TO STA. 2021+62.00 = 1304.40 FT.

RAMP C:
APPLIES AT STA. 2041+05.42 TO STA. 2045+70.75 = 465.33 FT.

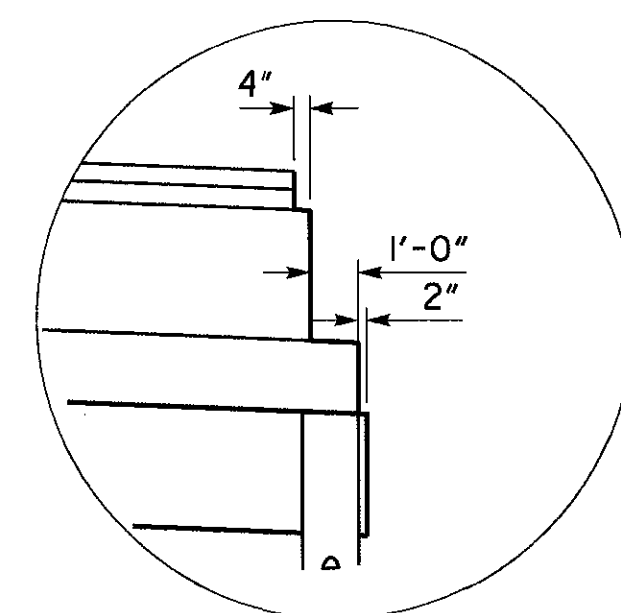
TOTAL = 1769.73 FT.



RAMP A:
APPLIES AT STA. 2021+62.00 TO STA. 2023+61.50 = 199.50 FT.

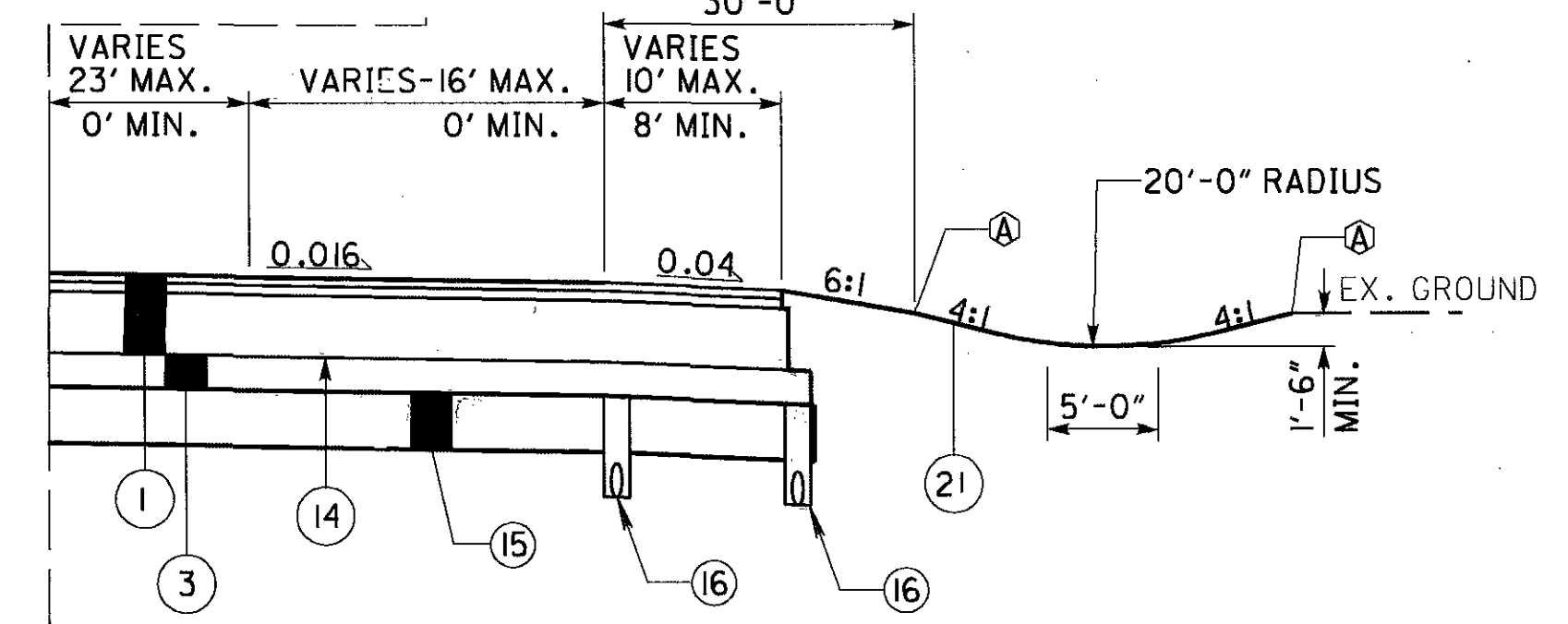
RAMP C:
APPLIES AT STA. 2037+61.78 TO STA. 2041+05.42 = 343.64 FT.

TOTAL = 543.14 FT.



LEGEND

- ① ITEM 880 - 14" ASPHALT CONCRETE (7 YEAR WARRANTY)**
CONVENTIONAL EQUIVALENT:
ITEM 442 - 1.5" ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446)
ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE, 0.04 GAL./SQ. YD.
ITEM 442 - 1.5" ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE A (446)
ITEM 407 - TACK COAT, 0.075 GAL./SQ. YD.
ITEM 302 - 11" ASPHALT CONCRETE BASE
- ③ ITEM 304 - 6" AGGREGATE BASE
- ⑭ ITEM 408 - PRIME COAT 0.40 GAL./SQ. YD.
- ⑮ ITEM 206 - LIME STABILIZED SUBGRADE (T=16")
- ⑰ ITEM 605 - 6" SHALLOW PIPE UNDERDRAINS
- ⑱ ITEM 605 - 6" CONSTRUCTION UNDERDRAINS
- ⑳ ITEM 659 - SEEDING AND MULCHING

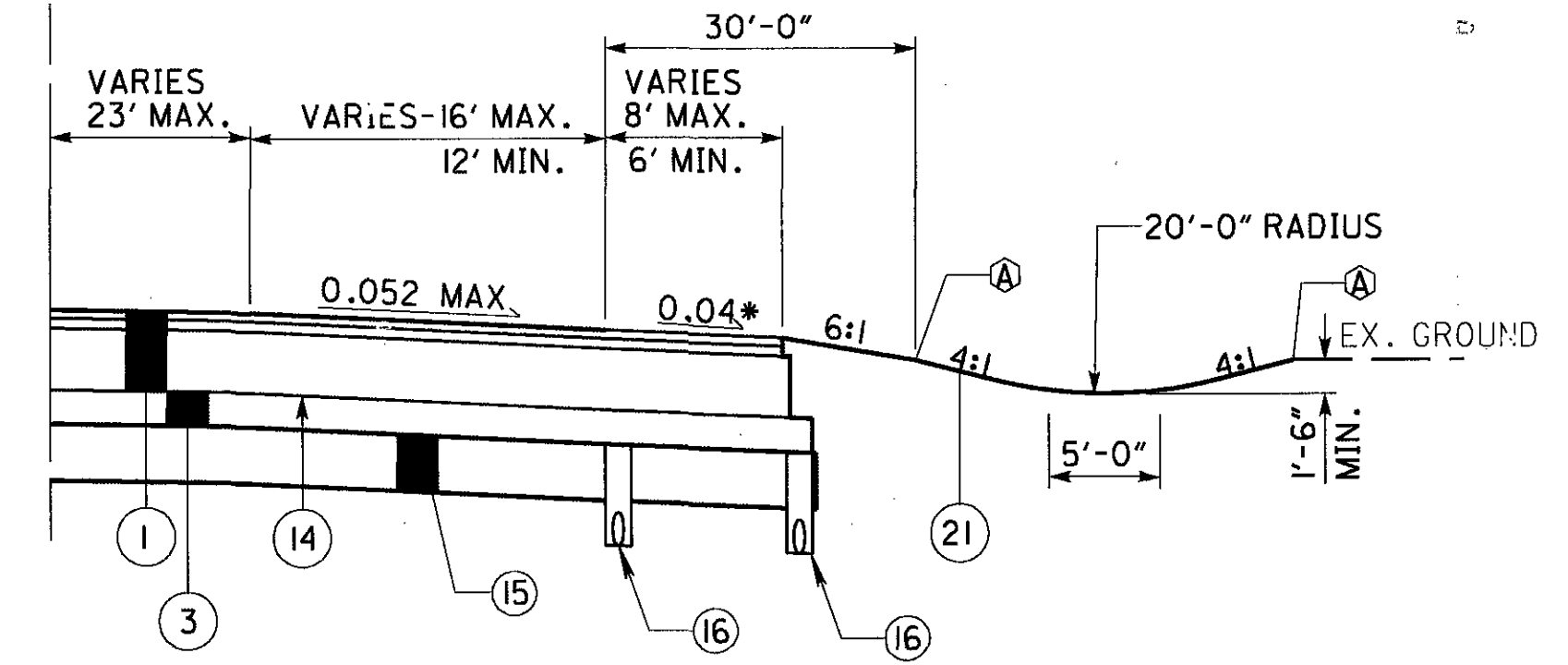


RAMP B:
APPLIES AT STA. 2013+44.05 TO STA. 2018+10.10 = 466.05 FT.

RAMP D:
APPLIES AT STA. 2041+03.50 TO STA. 2054+25.00 = 1321.50 FT.

RAMP 424D:
APPLIES AT STA. 1908+42.57 TO STA. 1923+45.02 = 1502.45 FT.

TOTAL = 3290.00 FT.



RAMP B:
APPLIES AT STA. 2018+10.10 TO STA. 2021+54.92 = 344.82 FT.

RAMP D:
APPLIES AT STA. 2038+62.84 TO STA. 2041+03.50 = 240.66 FT.

RAMP 424D:
APPLIES AT STA. 1906+42.77 TO STA. 1908+42.57 = 199.80 FT.

TOTAL = 785.28 FT.

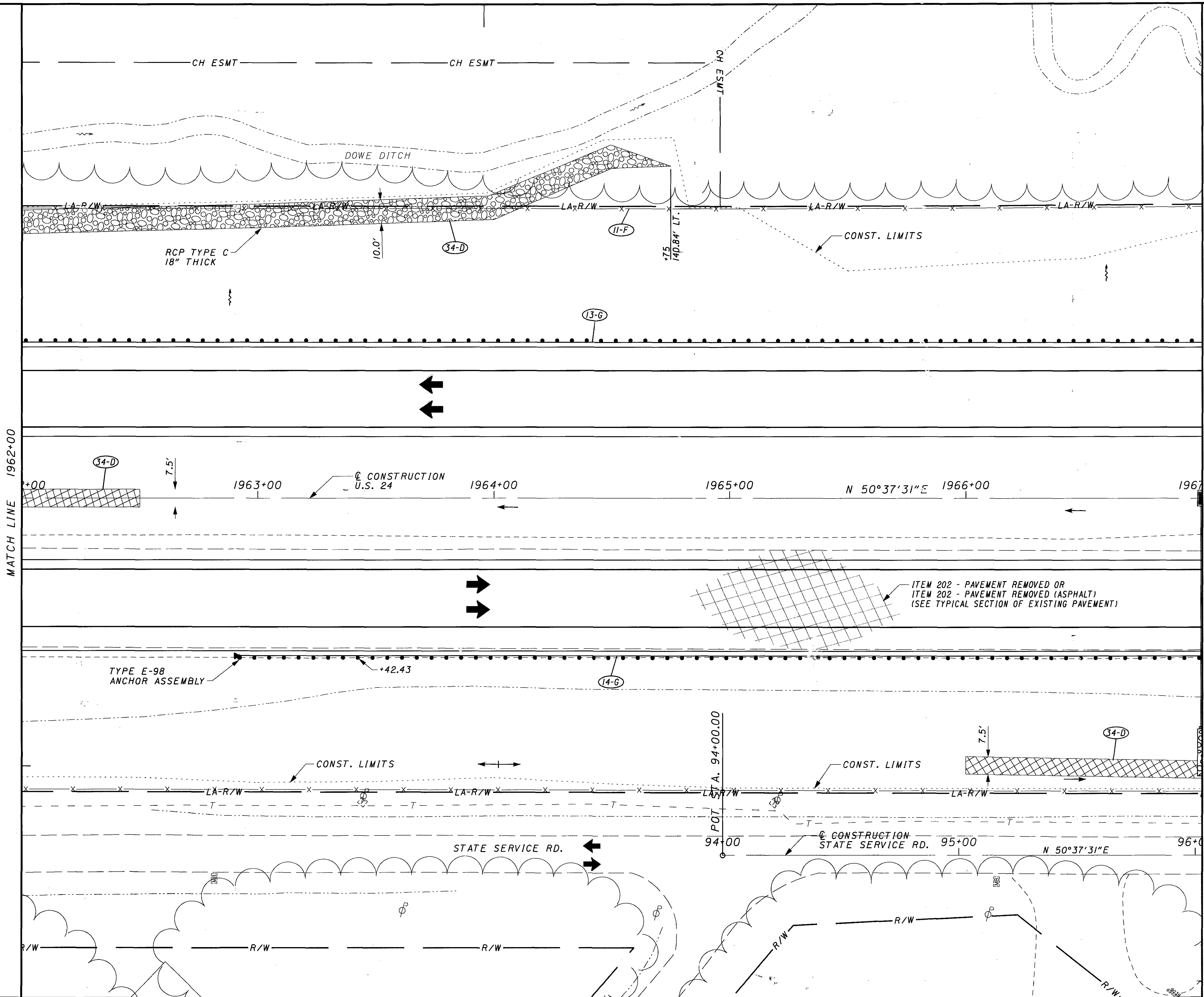
NOTES:

- Ⓐ - 4'-0" ROUNDING
- Ⓑ - 8'-0" ROUNDING
- △ SEE SHEET 12
- * OR RATE OF SUPERELEVATION IF GREATER
- **LIFT THICKNESSES AND STEP WIDTHS SHOWN IN THE PLAN ARE FOR QUANTITY ESTIMATION ONLY AND ARE NOT REQUIRED LIFT THICKNESSES FOR ACTUAL CONSTRUCTION.

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9/23/2005

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CALCULATED
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CHECKED
MAD

0 20 40
HORIZONTAL
SCALE IN FEET

PLAN - U.S. 24
STA. 1962+00 TO STA. 1967+00

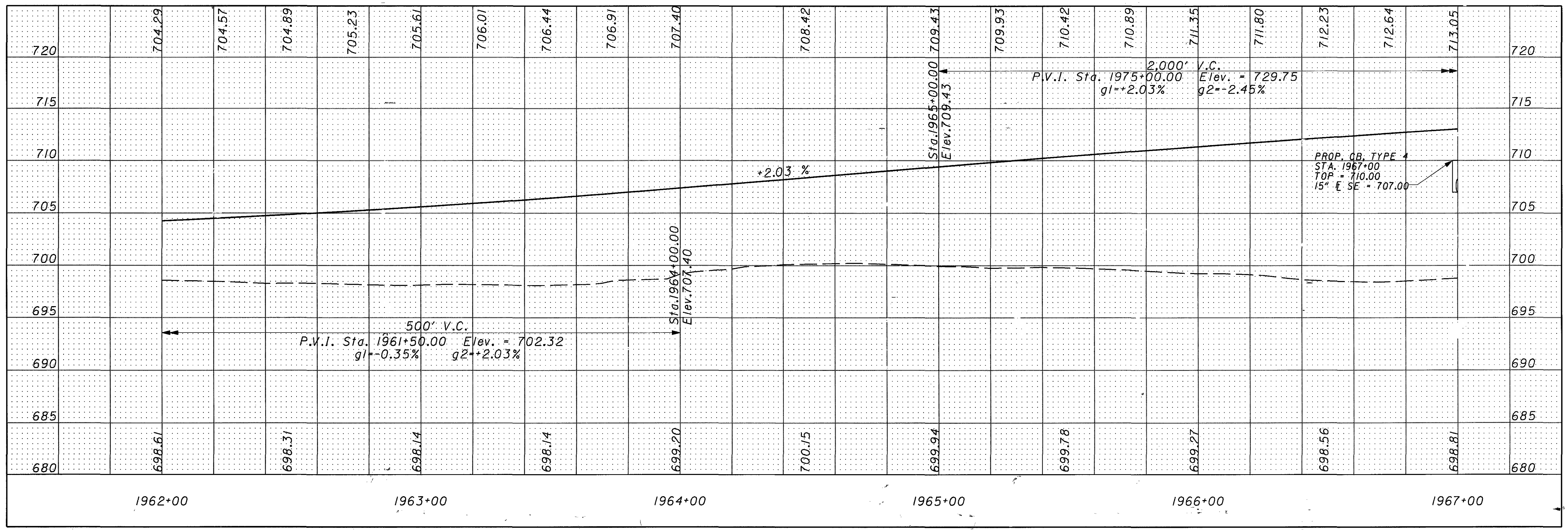
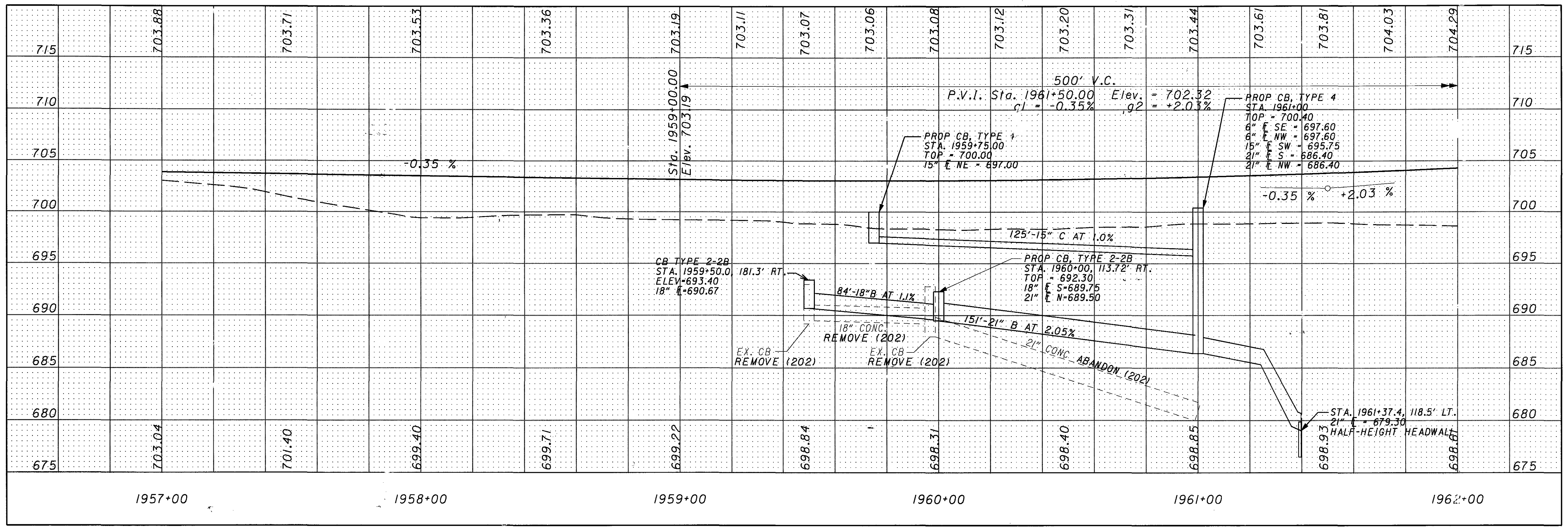
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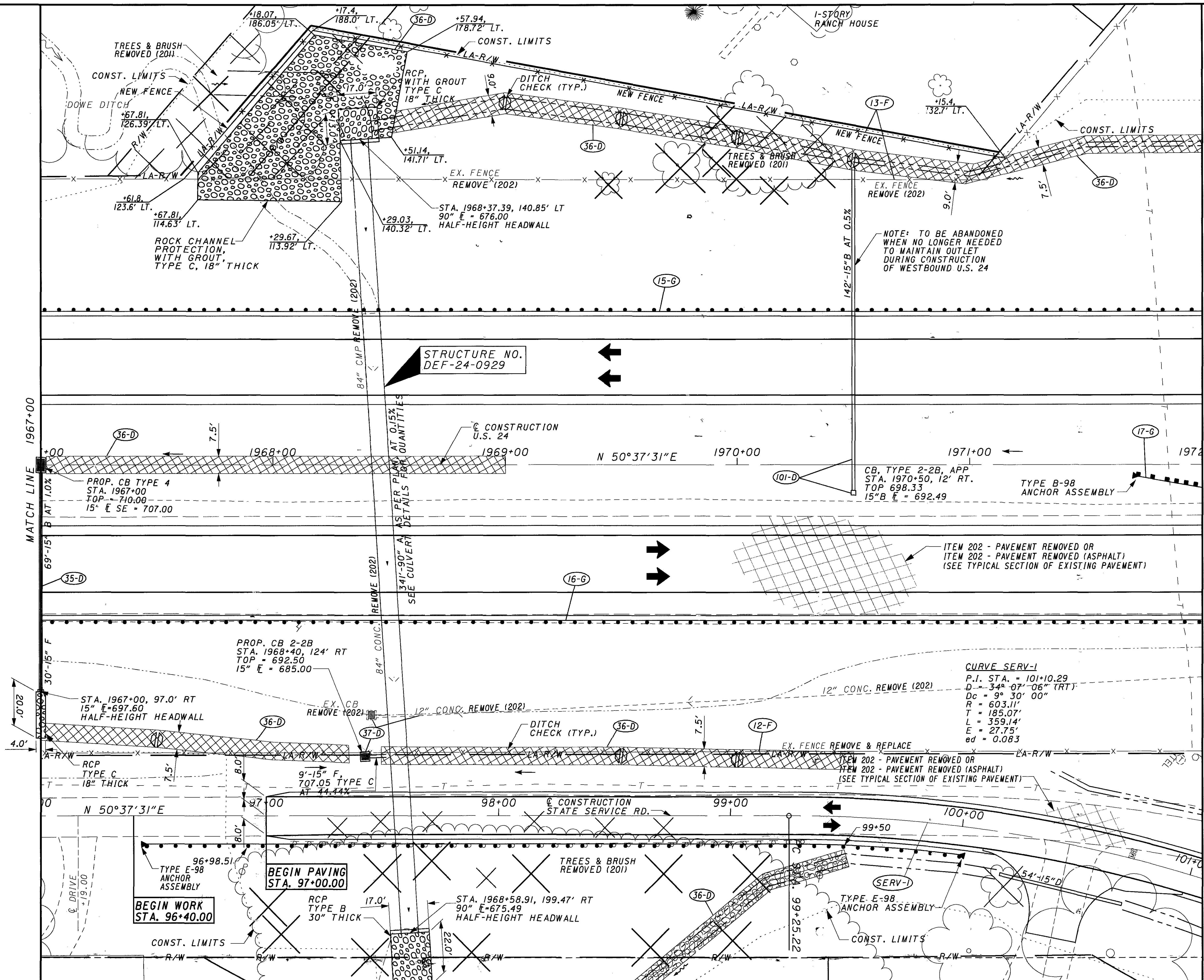


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PROFILE - U.S. 24
STA 1957+00 TO STA. 1967+00

DEF-24-7.96

131
660



CALCULATED
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HORIZONTAL
SCALE IN FEET

PLAN - U.S. 24
STA. 1967+00 TO STA. 1972+00

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9/23/2005

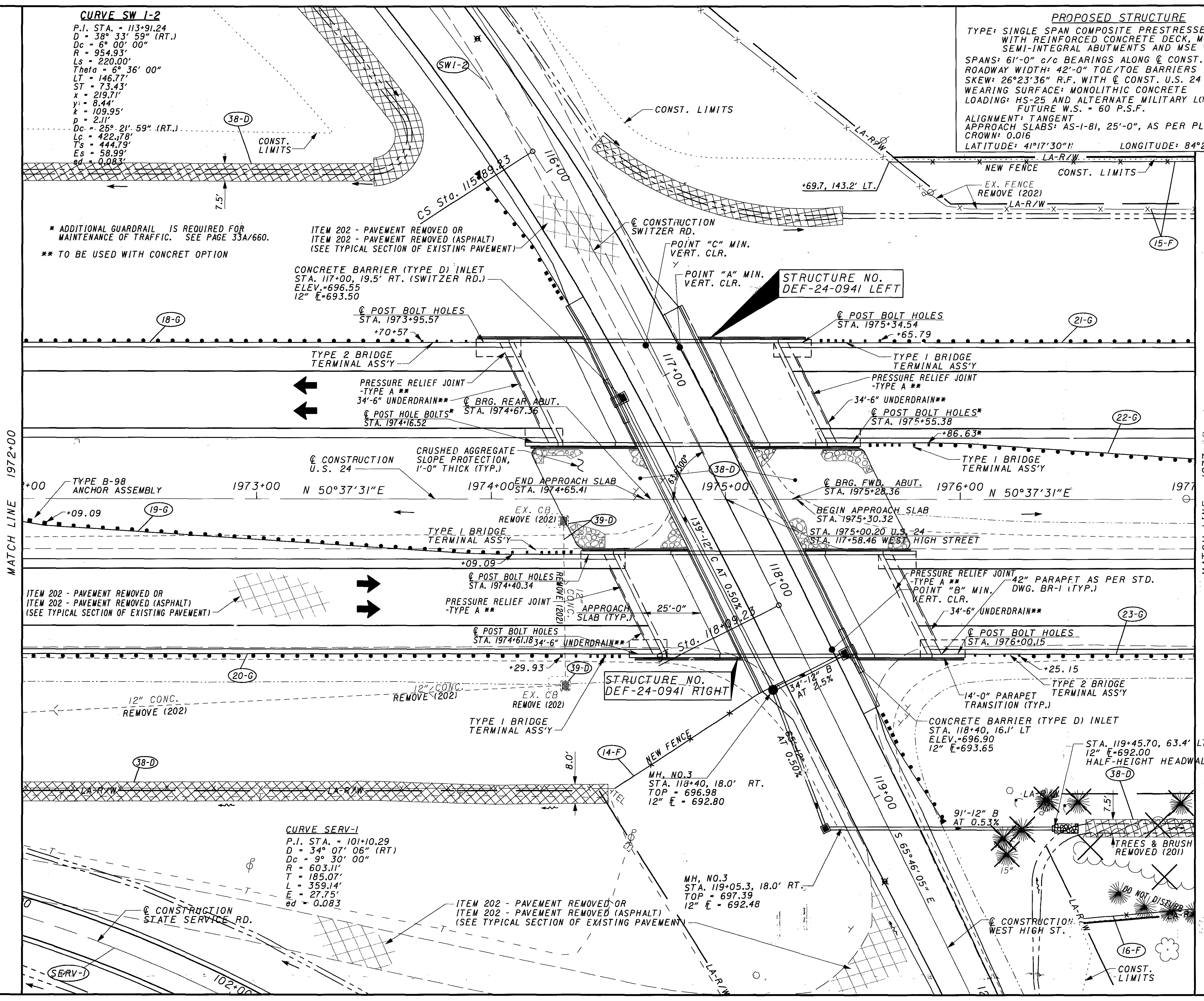
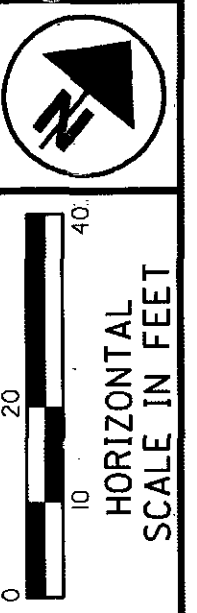
g:\PROJECTS\24337\ADGN\GPII8.dgn

CURVE SW 1-2

P.I. STA. = 113+91.24
 D = 38° 33' 59" (RT.)
 Dc = 6° 00' 00"
 R = 954.93'
 Ls = 220.00'
 Theta = 6° 36' 00"
 LT = 146.77'
 ST = 73.43'
 x = 219.71'
 y = 8.44'
 k = 109.95'
 p = 2.11'
 Dc = 25° 21' 59" (RT.)
 Lc = 422.78'
 Ts = 444.79'
 Es = 58.99'
 ed = 0.083

PROPOSED STRUCTURE

TYPE: SINGLE SPAN COMPOSITE PRESTRESSED CONCRETE BEAM WITH REINFORCED CONCRETE DECK, MODIFIED SEMI-INTEGRAL ABUTMENTS AND MSE WALLS
 SPANS: 61'-0" c/c BEARINGS ALONG C CONST. U.S. 24
 ROADWAY WIDTH: 42'-0" TOE/TOE BARRIERS
 SKEW: 26°23'36" R.F. WITH C CONST. U.S. 24
 WEARING SURFACE: MONOLITHIC CONCRETE
 LOADING: HS-25 AND ALTERNATE MILITARY LOADING
 FUTURE W.S. = 60 P.S.F.
 ALIGNMENT: TANGENT
 APPROACH SLABS: AS-I-81, 25'-0", AS PER PLAN
 CROWN: 0.016
 LATITUDE: 41°17'30"N LONGITUDE: 84°23'31"W



* ADDITIONAL GUARDRAIL IS REQUIRED FOR MAINTENANCE OF TRAFFIC. SEE PAGE 33A/660.
 ** TO BE USED WITH CONCRET OPTION

ITEM 202 - PAVEMENT REMOVED OR ITEM 202 - PAVEMENT REMOVED (ASPHALT) (SEE TYPICAL SECTION OF EXISTING PAVEMENT)

CONCRETE BARRIER (TYPE D) INLET STA. 117+00, 19.5' RT. (SWITZER RD.)
 ELEV. = 696.55
 12" E = 693.50

STRUCTURE NO. DEF-24-0941 LEFT

STRUCTURE NO. DEF-24-0941 RIGHT

CURVE SERV-1

P.I. STA. = 101+10.29
 D = 34° 07' 06" (RT.)
 Dc = 9° 30' 00"
 R = 603.11'
 L = 185.07'
 Ls = 359.14'
 E = 27.75'
 ed = 0.083

MH, NO.3 STA. 119+05.3, 18.0' RT.
 TOP = 697.39
 12" E = 692.48

CALCULATED RLM CHECKED MAD

PLAN - U.S. 24
 STA. 1972+00 TO STA. 1977+00

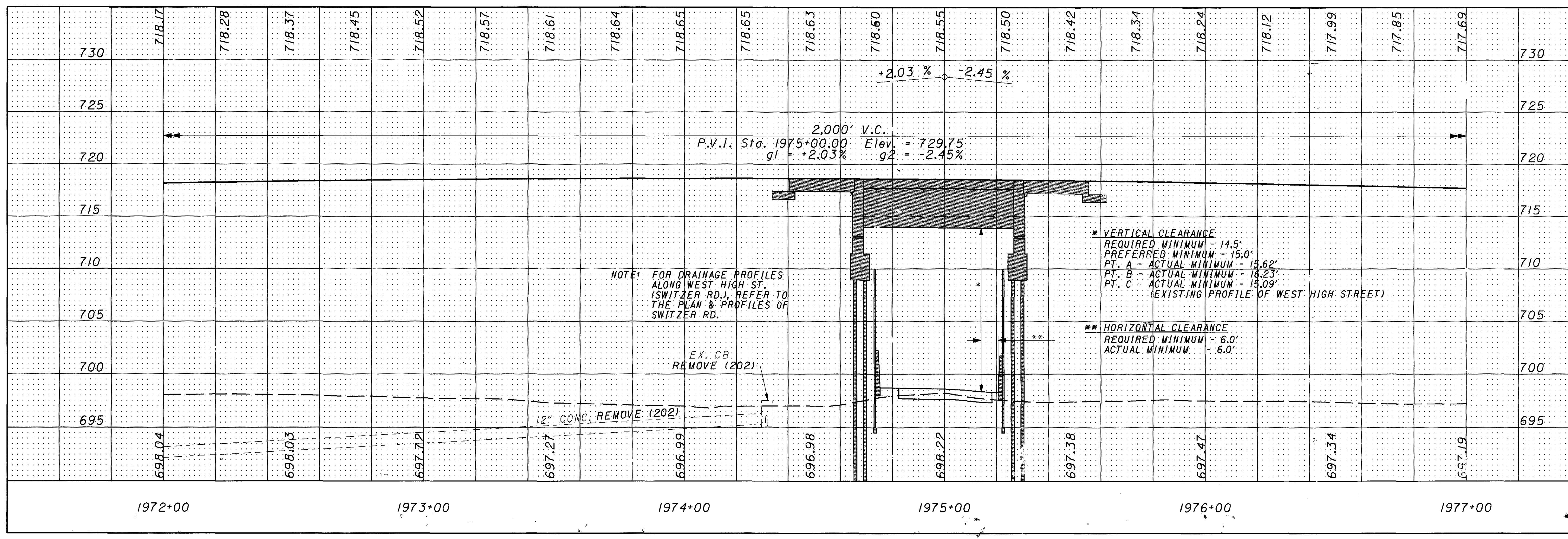
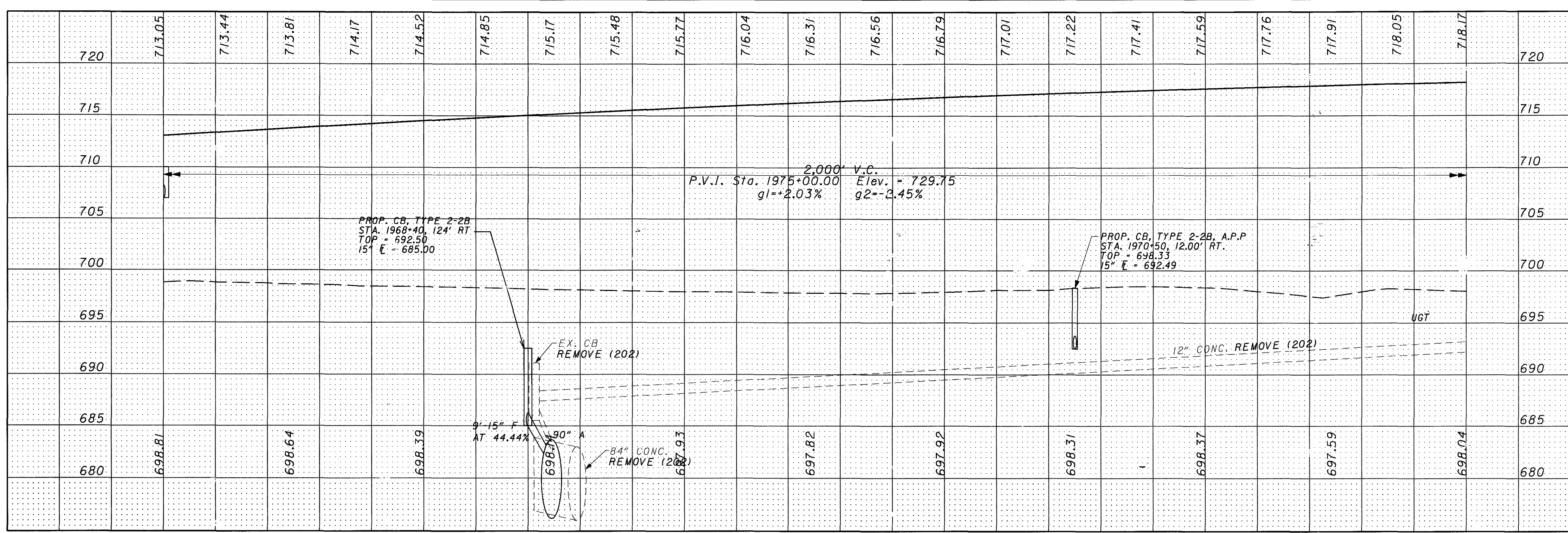
DEF-24-7.96

133
 660

8:09:23 AM

9/23/2005

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NOTE: FOR DRAINAGE PROFILES ALONG WEST HIGH ST. (SWITZER RD.), REFER TO THE PLAN & PROFILES OF SWITZER RD.

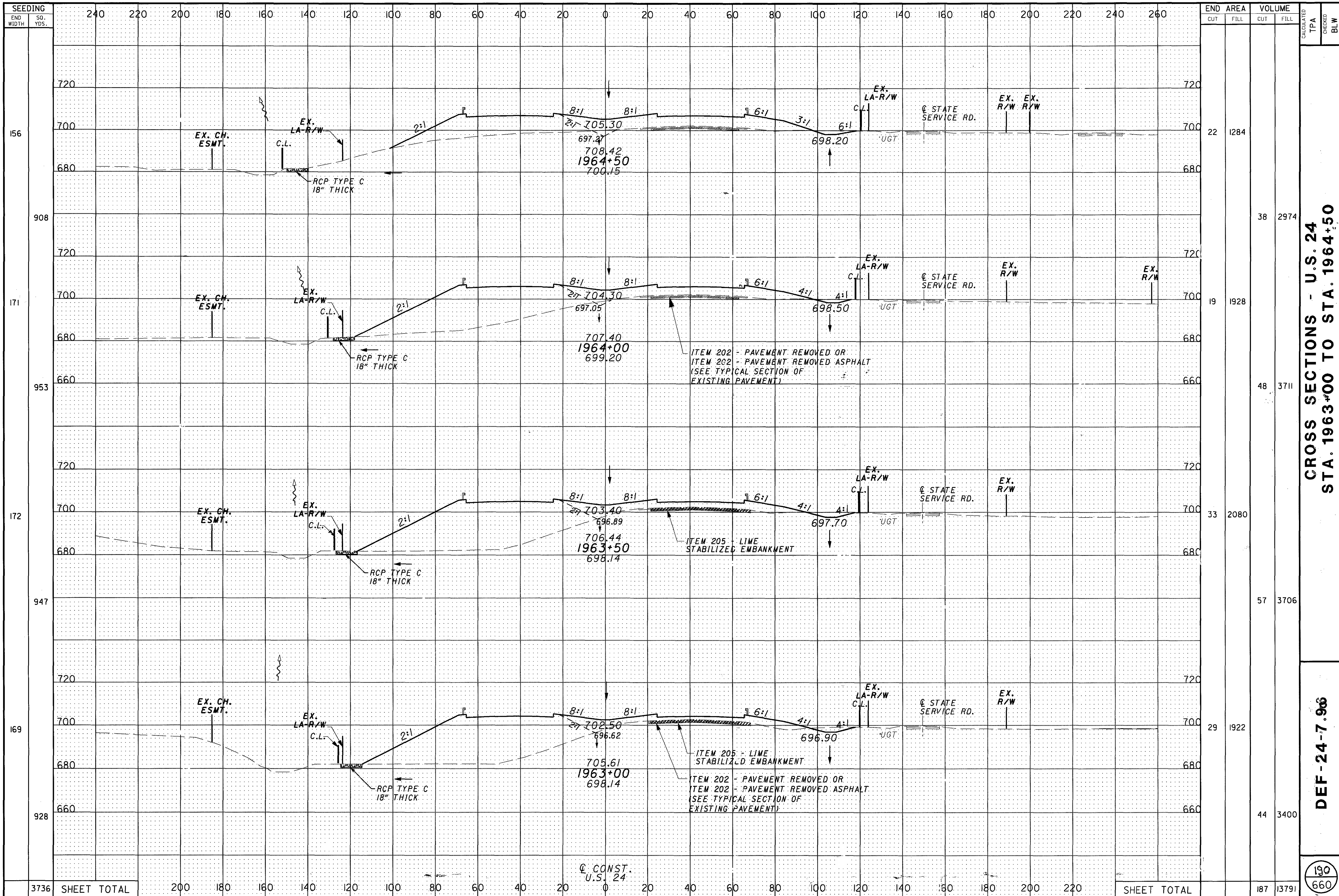
* VERTICAL CLEARANCE
 REQUIRED MINIMUM - 14.5'
 PREFERRED MINIMUM - 15.0'
 PT. A - ACTUAL MINIMUM - 15.62'
 PT. B - ACTUAL MINIMUM - 16.23'
 PT. C - ACTUAL MINIMUM - 15.09'
 (EXISTING PROFILE OF WEST HIGH STREET)

** HORIZONTAL CLEARANCE
 REQUIRED MINIMUM - 6.0'
 ACTUAL MINIMUM - 6.0'

CALCULATED
 RLM
 CHECKED
 MAD

PROFILE - U.S. 24
 STA. 1967+00 TO STA. 1977+00

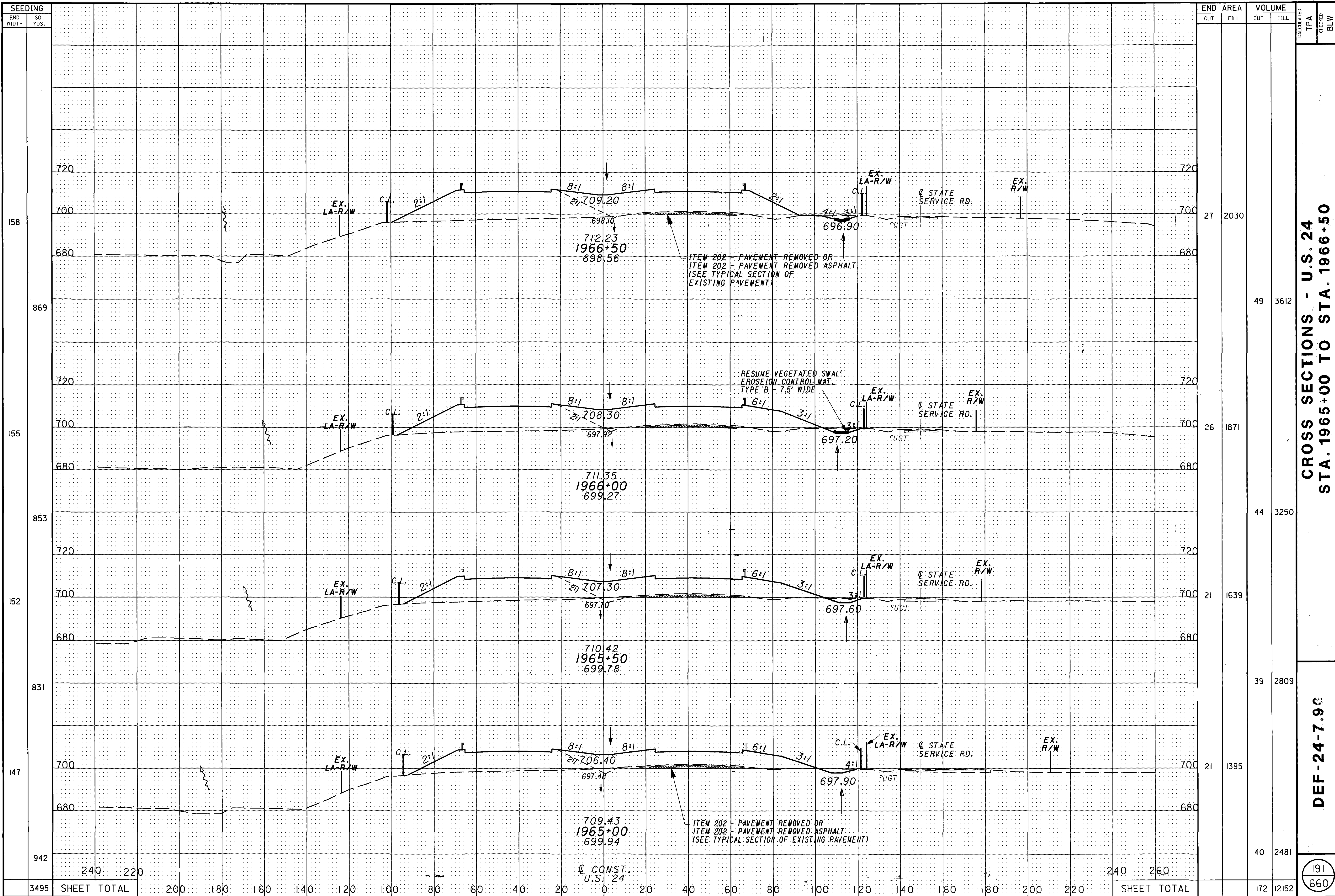
DEF-24-7.96



CROSS SECTIONS - U.S. 24
 STA. 1963+00 TO STA. 1964+50

DEF-24-7.906

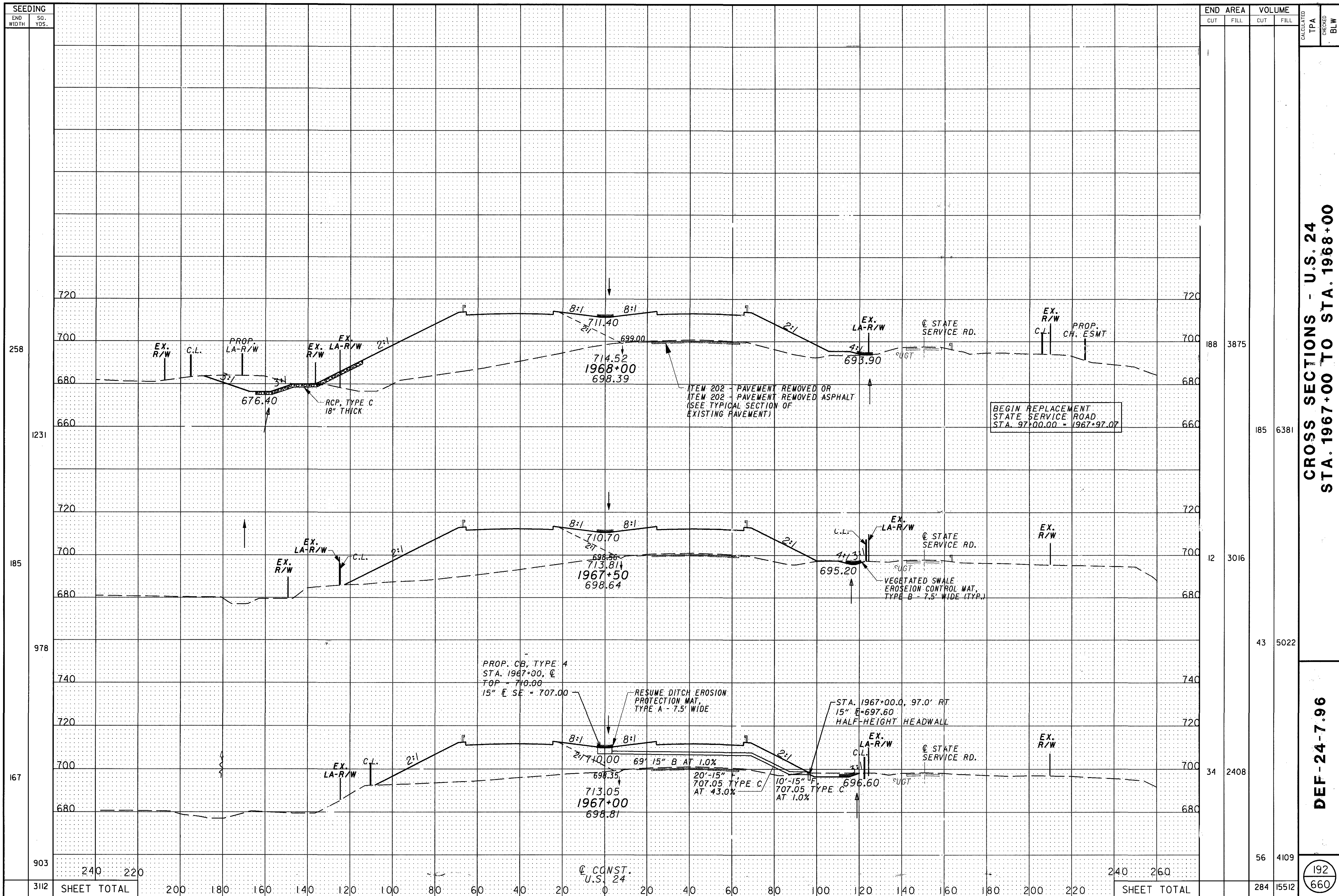
150
 660



CALCULATED TPA CHECKED BLW
 CROSS SECTIONS - U.S. 24
 STA. 1965+00 TO STA. 1966+50

DEF-24-7.90

191
 660



258

1231

185

978

167

903

188

185

12

43

34

56

EX. R/W

C.L.

PROP. LA-R/W

EX. LA-R/W

EX. R/W

676.40

RCP, TYPE C
18" THICK

8:1

8:1

711.40

699.00

714.52

1968+00

698.39

ITEM 202 - PAVEMENT REMOVED OR
ITEM 202 - PAVEMENT REMOVED ASPHALT
(SEE TYPICAL SECTION OF
EXISTING PAVEMENT)

EX. LA-R/W

C STATE SERVICE RD.

EX. R/W

C.L.

PROP. CH. ESMT

BEGIN REPLACEMENT
STATE SERVICE ROAD
STA. 97+00.00 = 1967+97.07

EX. R/W

EX. LA-R/W

C.L.

2:1

8:1

8:1

710.70

698.56

713.81

1967+50

698.64

C.L.

EX. LA-R/W

C STATE SERVICE RD.

EX. R/W

VEGETATED SWALE
EROSION CONTROL MAT,
TYPE B - 7.5' WIDE (TYP.)

PROP. CB, TYPE 4
STA. 1967+00, C
TOP = 710.00
15" E SE = 707.00

RESUME DITCH EROSION
PROTECTION MAT,
TYPE A - 7.5' WIDE

STA. 1967+00.0, 97.0' RT
15" R = 697.60
HALF-HEIGHT HEADWALL

EX. LA-R/W

C.L.

2:1

8:1

8:1

710.00

698.35

713.05

1967+00

698.81

20'-15" TYPE C
707.05 TYPE C
AT 43.0%

10'-15" TYPE C
707.05 TYPE C
AT 1.0%

C.L.

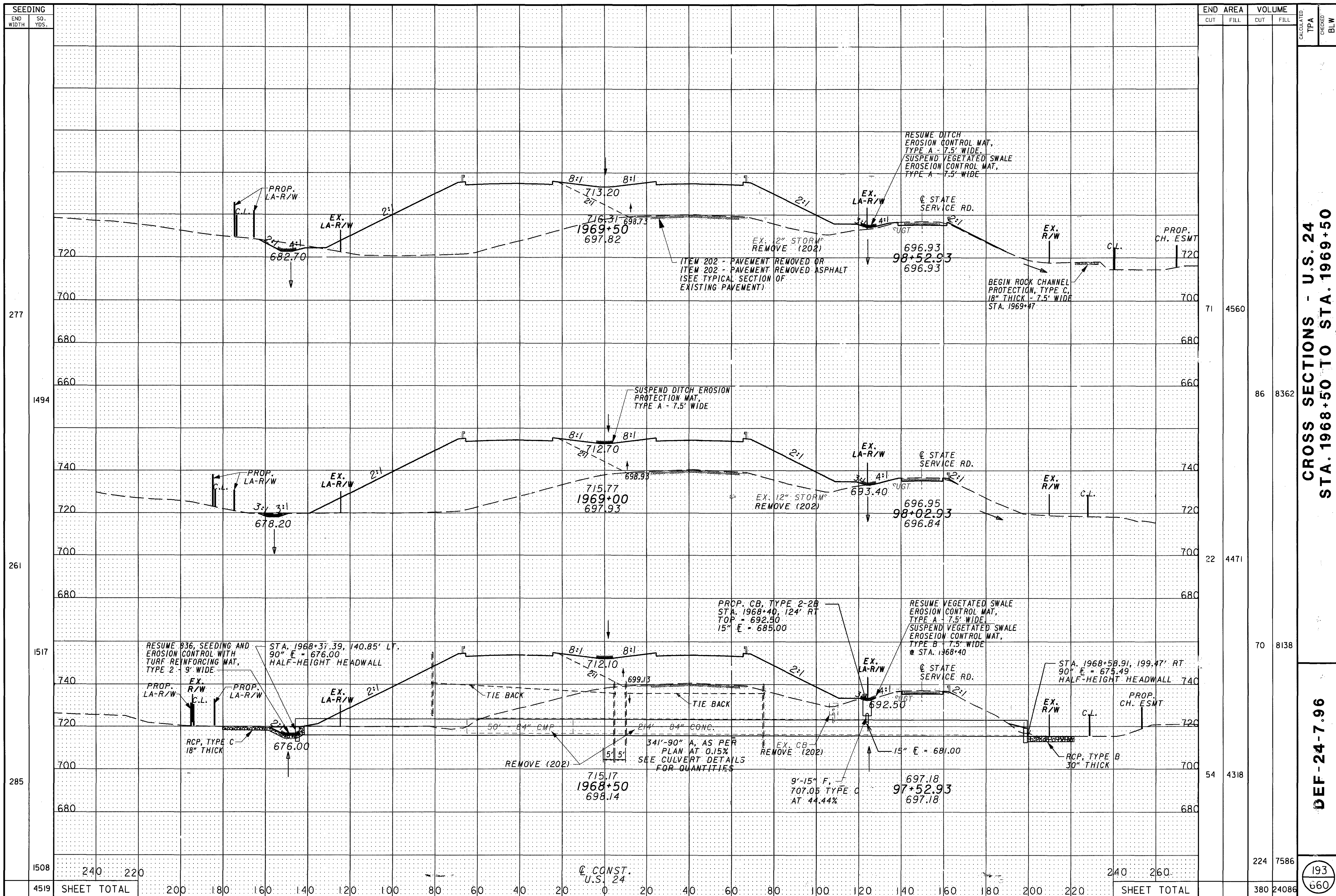
EX. LA-R/W

C STATE SERVICE RD.

EX. R/W

240 260

SHEET TOTAL

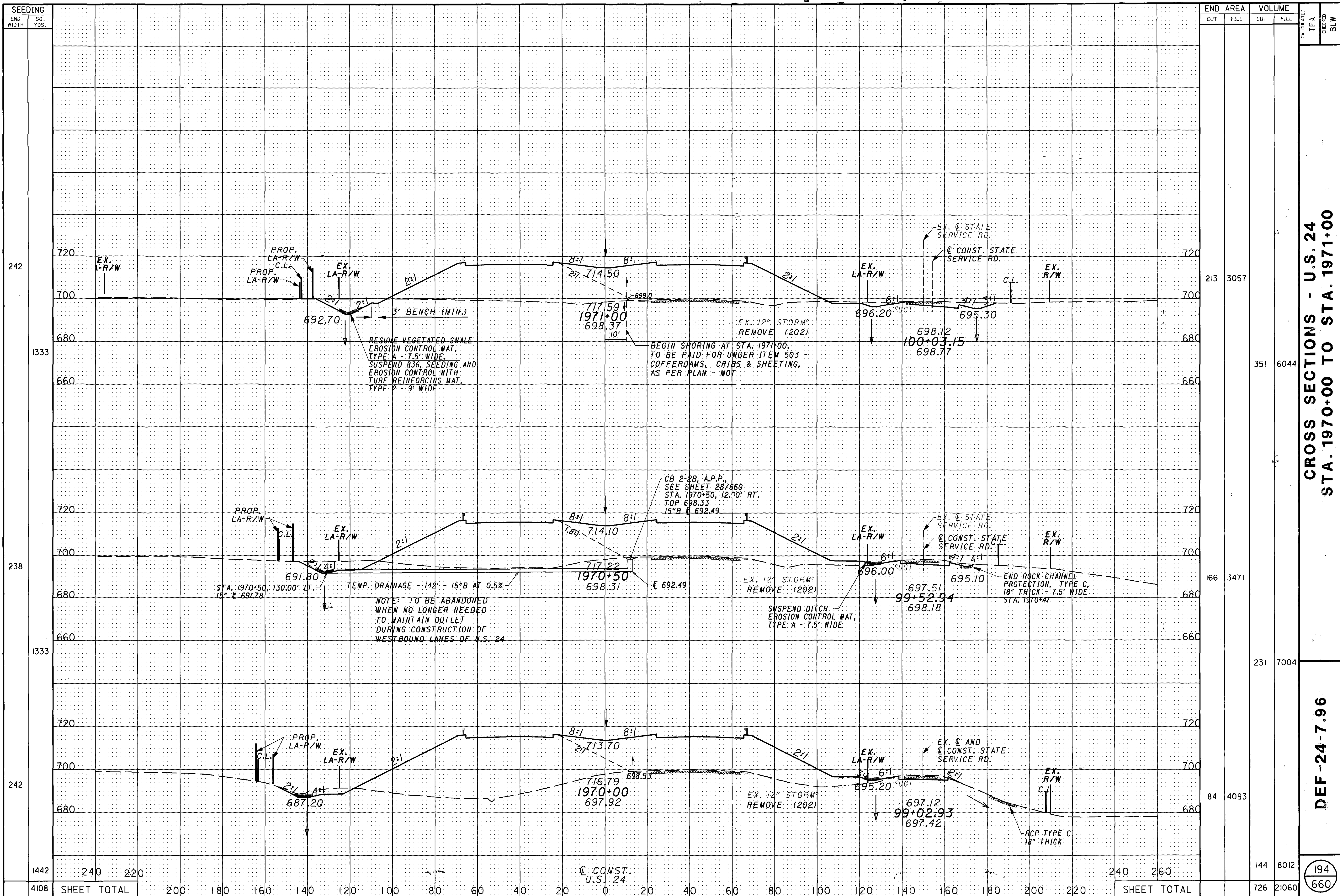


SEEDING	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
277			71	4560
261			22	4471
285			54	4318
1508	240	220	224	7586
4519	SHEET TOTAL		380	24086

CROSS SECTIONS - U.S. 24
 STA. 1968+50 TO STA. 1969+50

DEF-24-7.96

193
 660

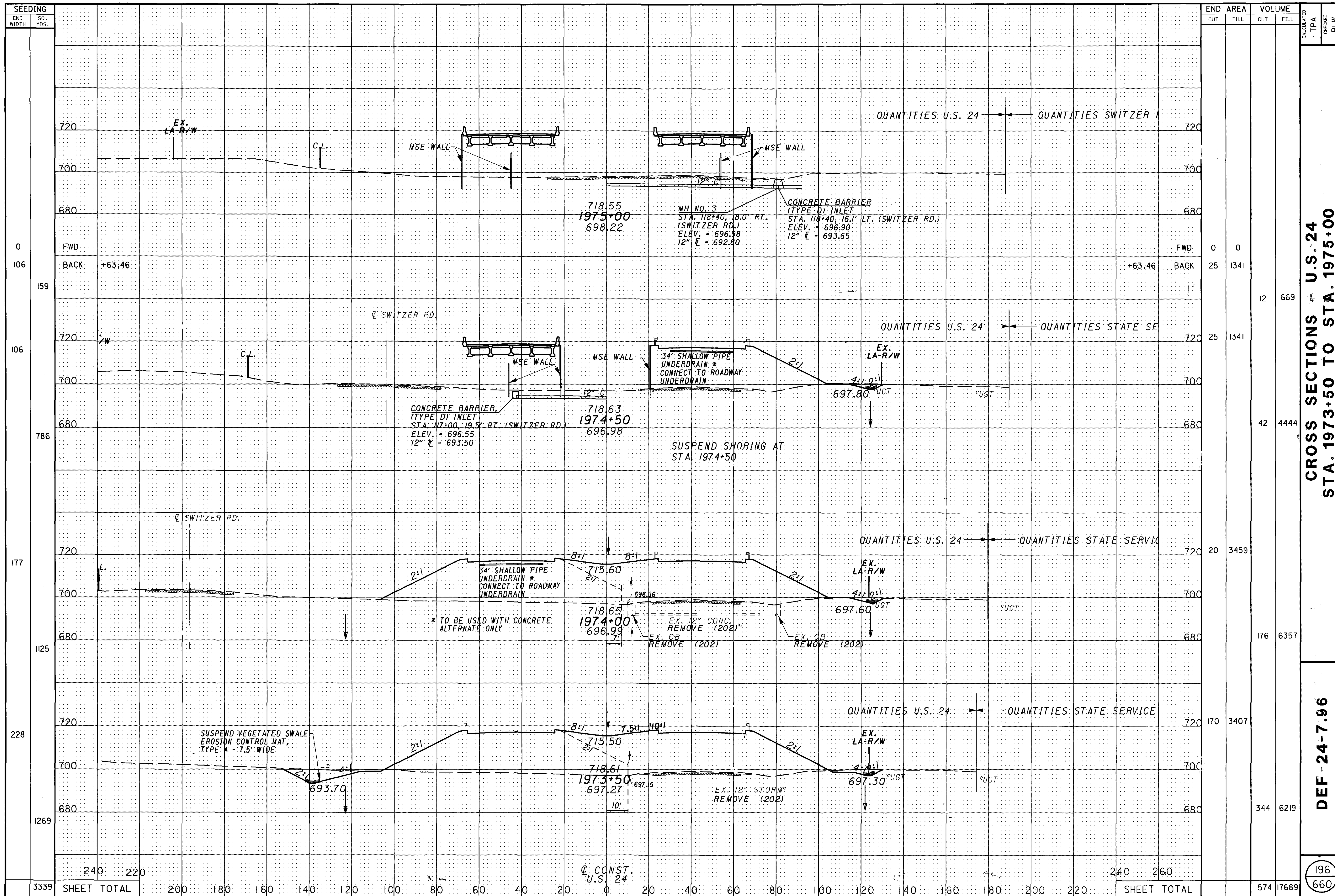


SEEDING	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
END WIDTH				
SO. YDS.				
242			213	3057
1333			351	6044
238			166	3471
1333			231	7004
242			84	4093
1442	240	220	144	8012
4108	SHEET TOTAL		726	21060

CROSS SECTIONS - U.S. 24
STA. 1970+00 TO STA. 1971+00

DEF-24-7.96

194
660

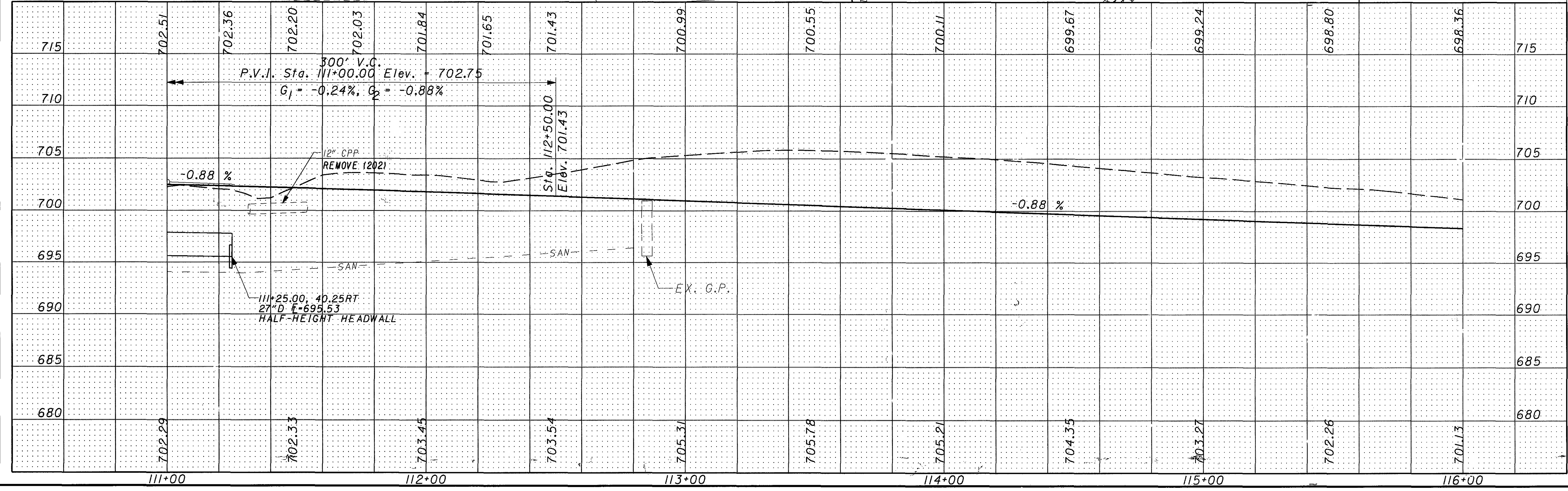
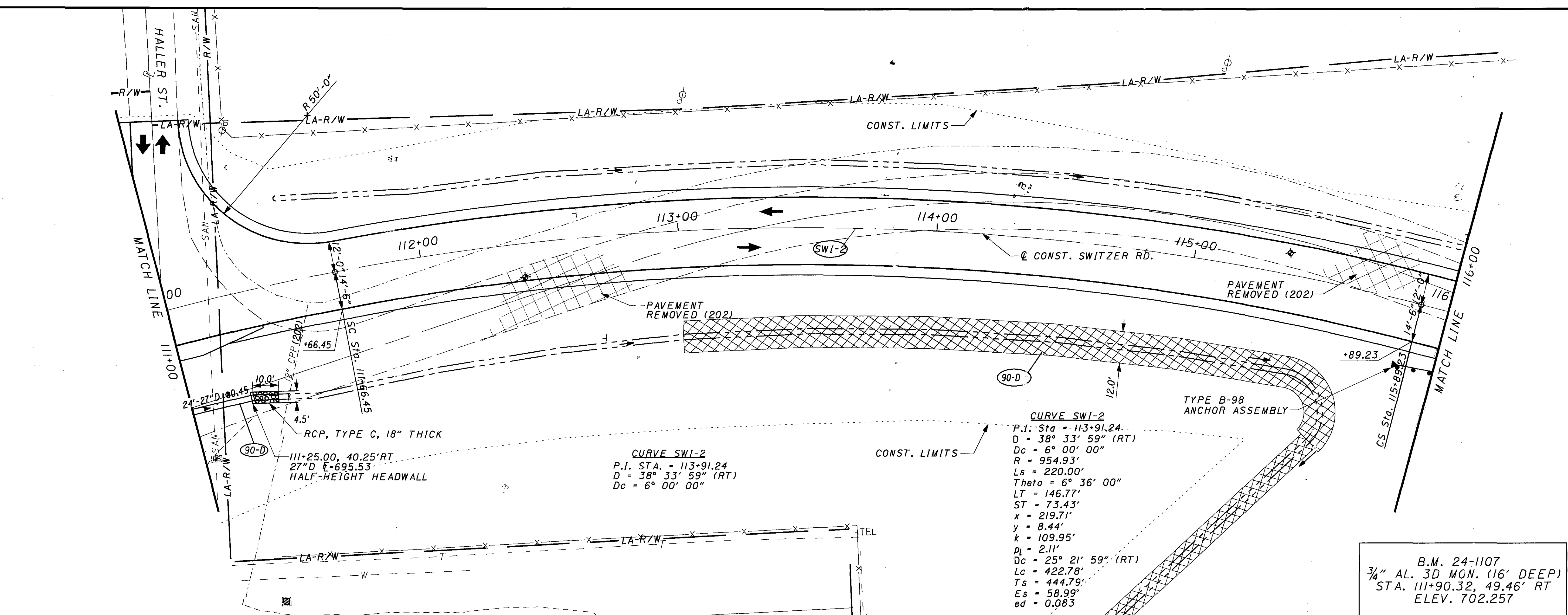


SEEDING	
END WIDTH	SO. YDS.
0	
106	
159	
106	
786	
177	
1125	
228	
1269	
3339	

END AREA	VOLUME	
	CUT	FILL
0	0	
25	1341	
12	669	
25	1341	
42	4444	
20	3459	
176	6357	
170	3407	
344	6219	
574	17689	

CALCULATED TPA
 CHECKED BLW
CROSS SECTIONS U.S. 24 STA. 1973+50 TO STA. 1975+00
DEF-24-7.96
 196
 660

SHEET TOTAL		SHEET TOTAL	
240	220	240	260
200	180	200	220

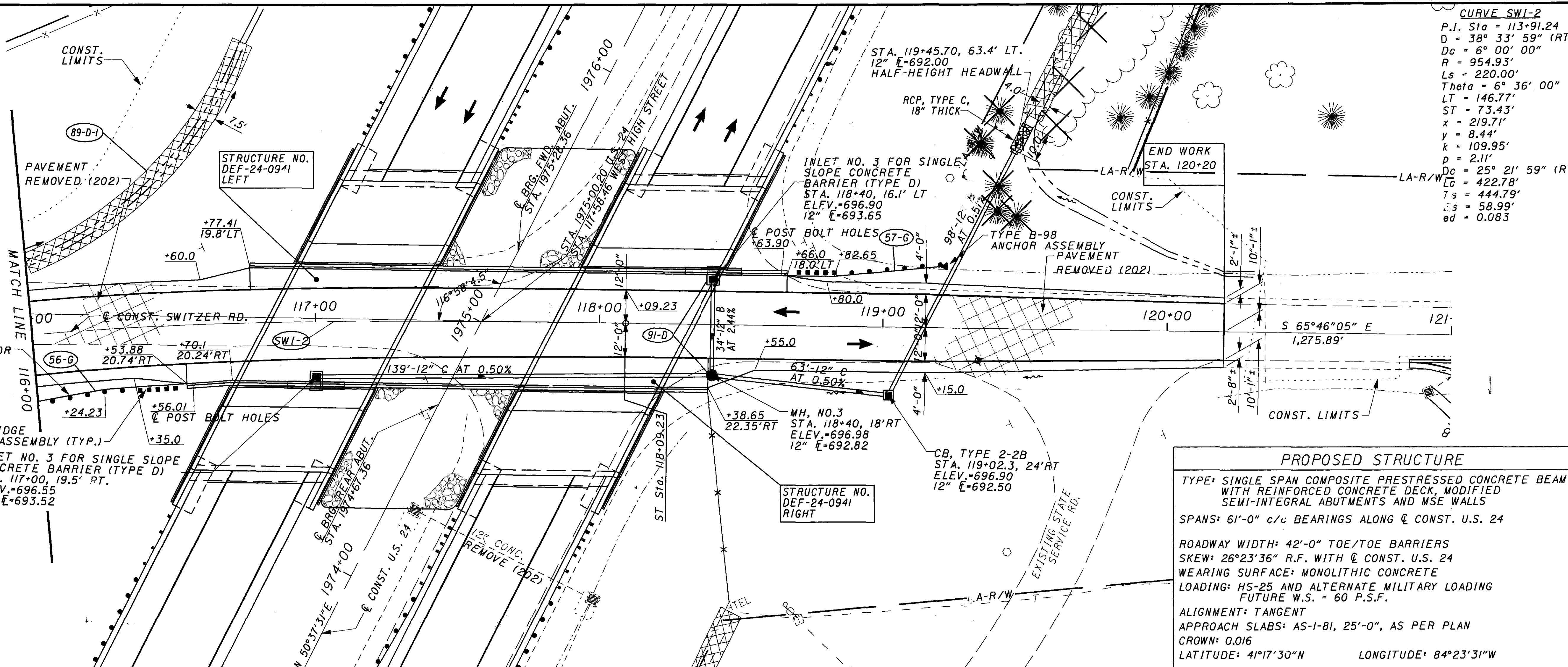


B.M. 24-1107
 3/4" AL. 3D MGN. (16' DEEP)
 STA. 111+90.32, 49.46' RT
 ELEV. 702.257

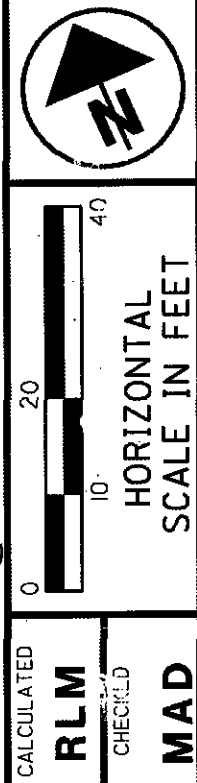
8:20:03 AM

9/23/2005

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CURVE SWI-2
 P.I. Sta = 113+91.24
 D = 38° 33' 59" (RT)
 Dc = 6° 00' 00"
 R = 954.93'
 Ls = 220.00'
 Theta = 6° 36' 00"
 LT = 146.77'
 ST = 73.43'
 x = 219.71'
 y = 8.44'
 k = 109.95'
 p = 2.11'
 Dc = 25° 21' 59" (RT)
 Lc = 422.78'
 Ts = 444.79'
 Ls = 58.99'
 ed = 0.083

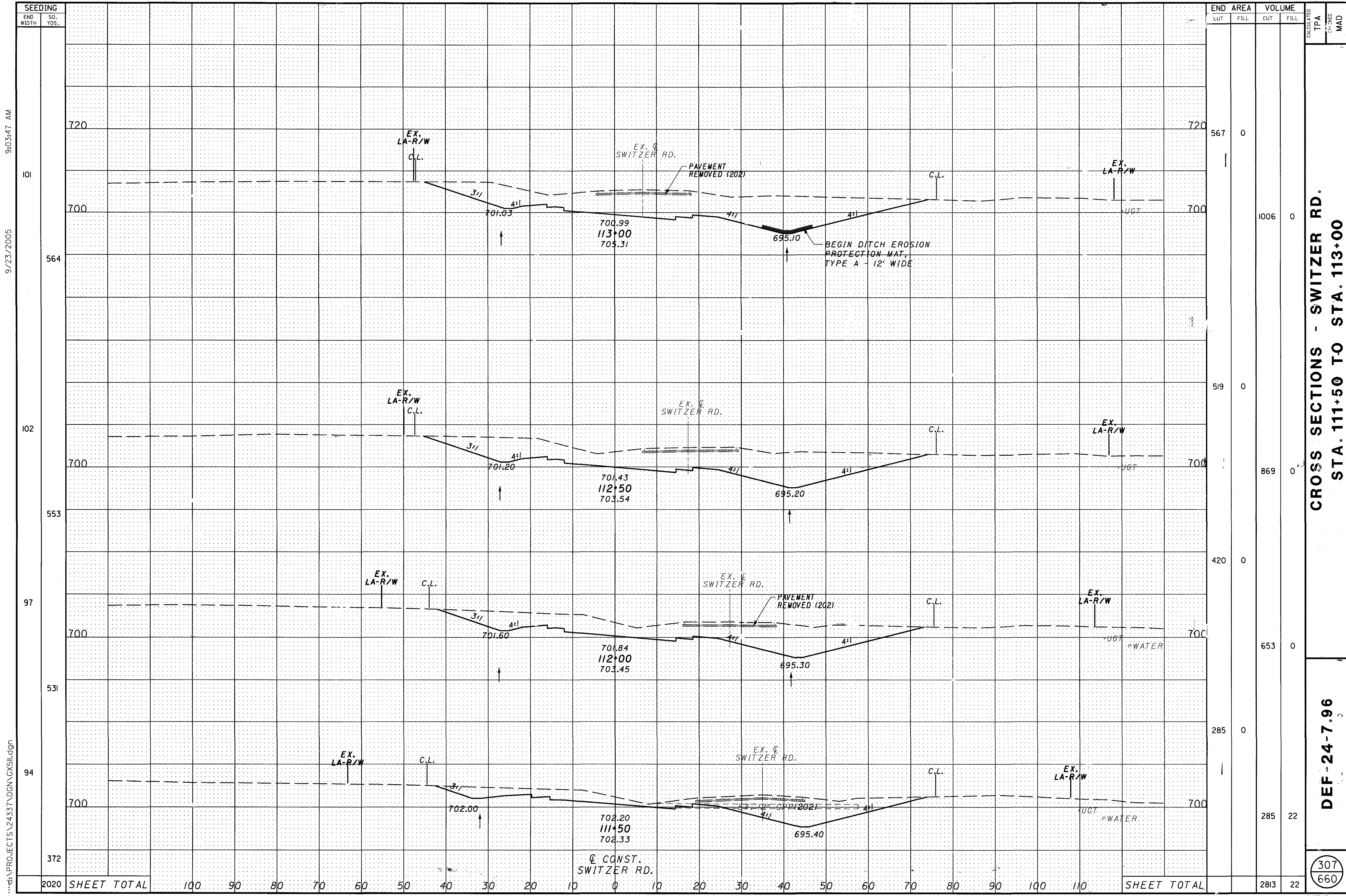


715	698.36	697.92	697.72	697.57	697.46	697.39	697.37	697.39	697.46	697.57	697.73	697.93	698.17	698.46	699.08	715
710																710
705																705
700																700
695																695
690																690
685																685
680																680
116+00	701.13	699.57	701.13	698.33	698.19	698.66	697.98	698.03	698.44	699.11	699.33	699.55	699.69			

PLAN AND PROFILE - SWITZER RD.
STA. 116+00 TO STA. 121+00

DEF-24-7.06

299
660



9/23/2005 9:03:47 AM
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CROSS SECTIONS - SWITZER RD.
STA. 111+50 TO STA. 113+00

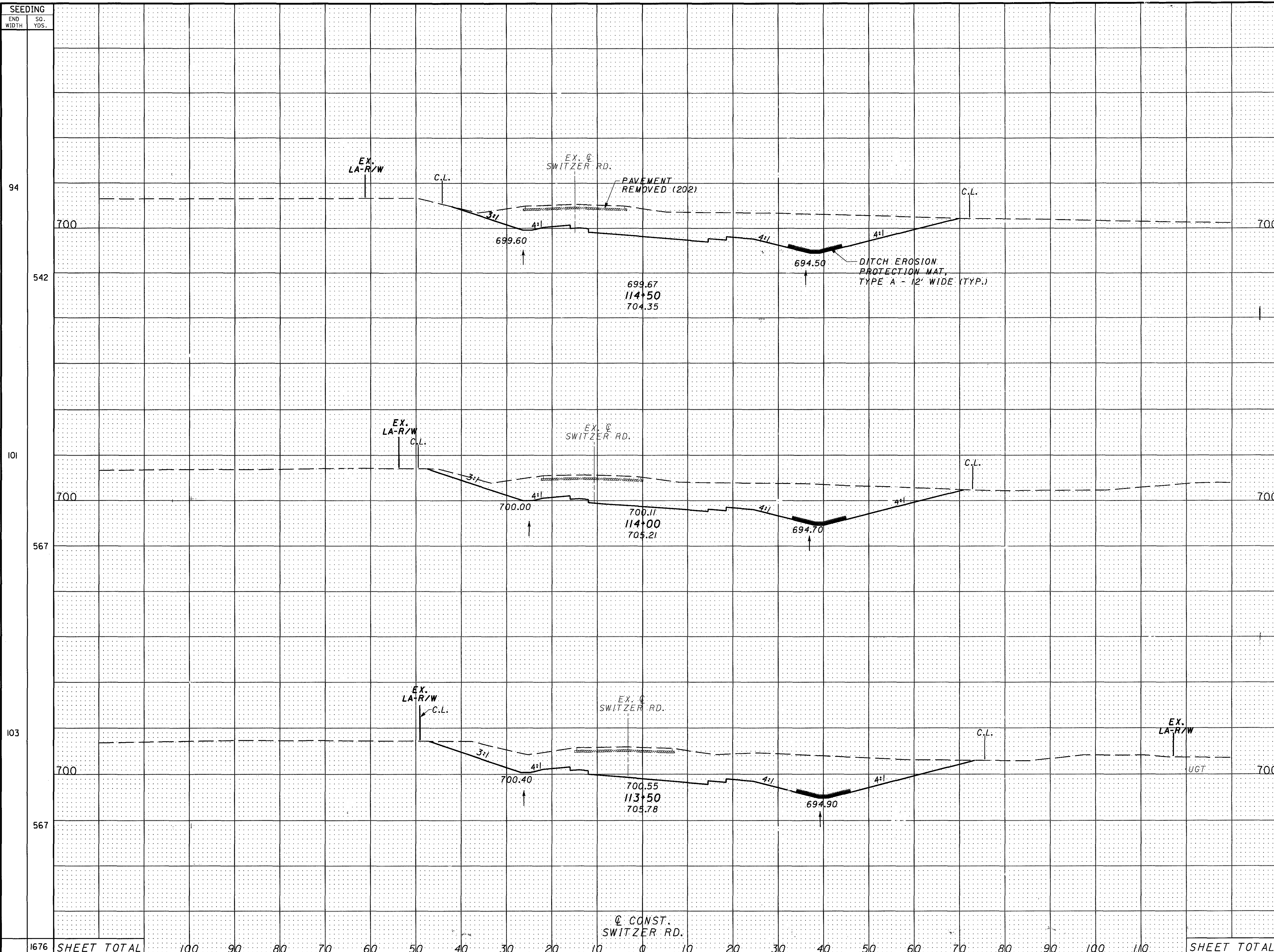
DEF-24-7.96

307
 660

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9/23/2005

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END AREA	VOLUME	
	CUT	FILL
543	0	0
542	1028	0
567	0	0
567	1076	0
595	0	0
567	1076	0
SHEET TOTAL	3180	0

CROSS SECTIONS - SWITZER RD.
 STA. 113+50 TO STA. 114+50

DEF - 24-7.96

308
660

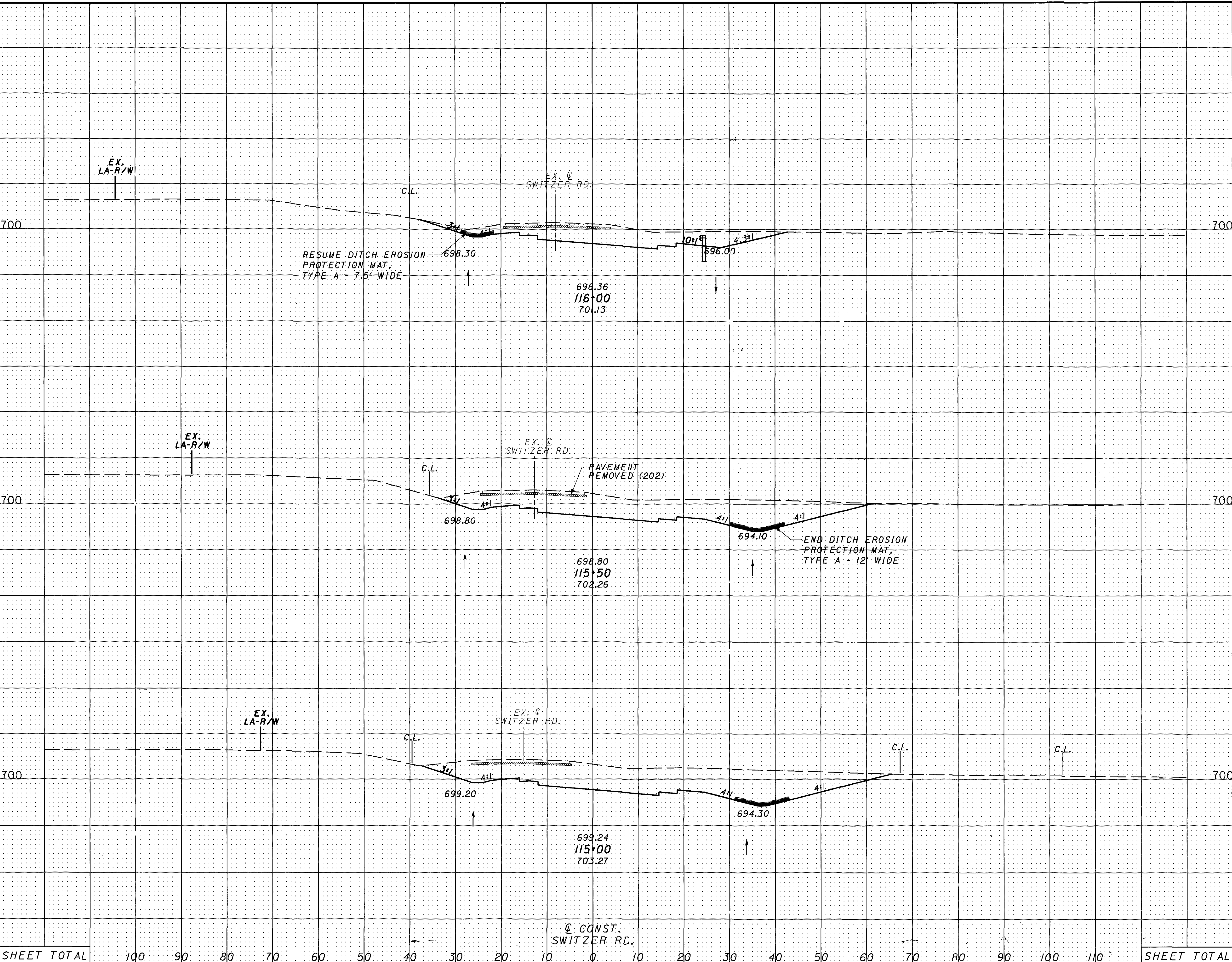
SYSTEM

9/04/16 AM

9/23/2005

PROJECTS\24337\DN\X511.dgn

SEEDING	
END WIDTH	SO. YDS.
61	
381	
76	
444	
84	
494	
1319	SHEET TOTAL



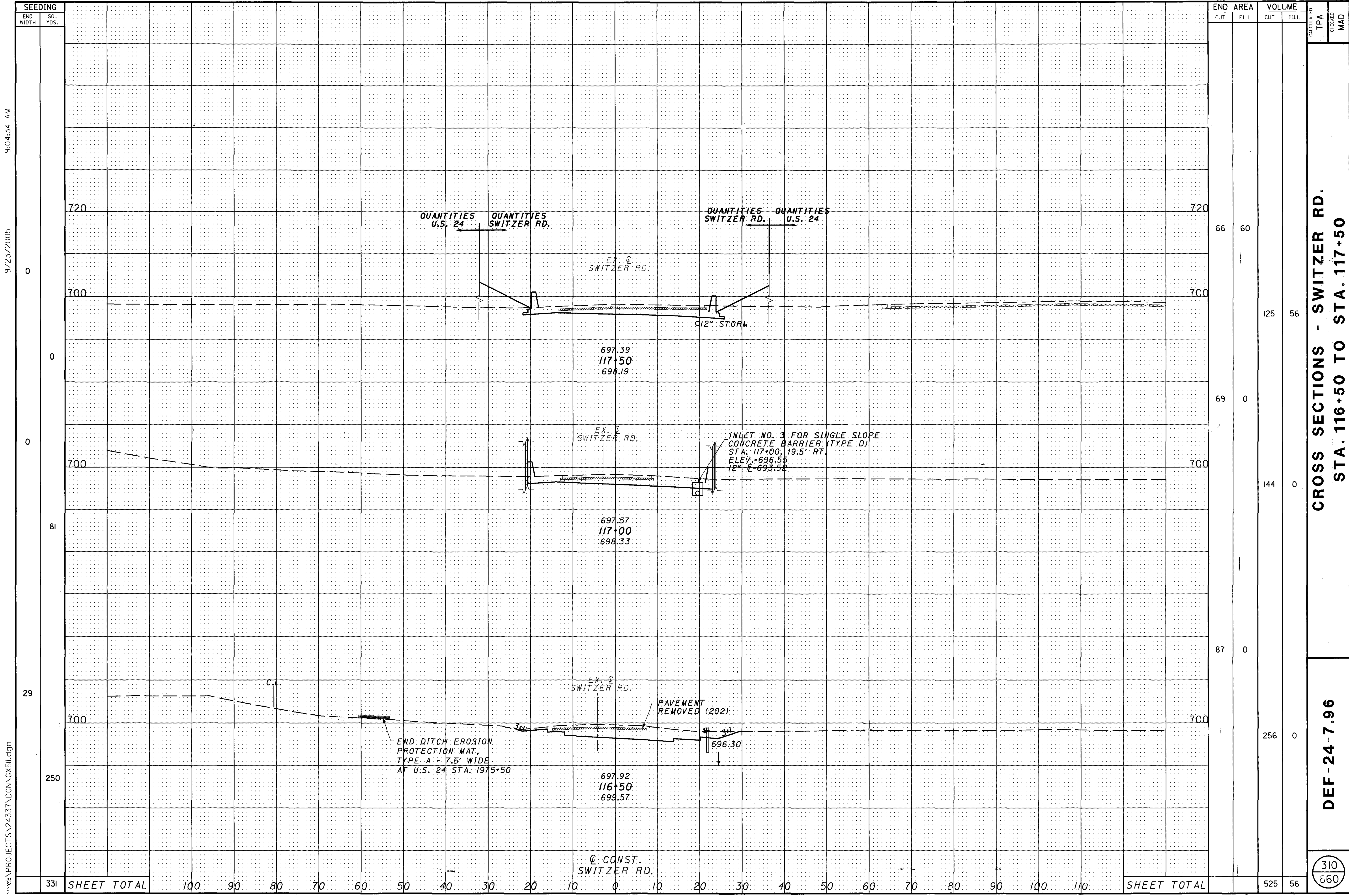
END AREA	VOLUME	CALCULATED	
		CUT	FILL
189	0		
513	0		
365	0		
767	0		
463	0		
931	0		
2211	0		

CROSS SECTIONS - SWITZER RD.
STA. 115+00 TO STA. 116+00

DEF-24-7.96

309	660
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ccccDGNcSPECIFICATIONcccc ccccPRFcccc cccccSYTIMEcccc



9:04:34 AM

9/23/2005

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SEEDING												END AREA		VOLUME		CALCULATED													
END WIDTH	SO. YDS.	100	90	80	70	60	50	40	30	20	10	0	10	20	30	40	50	60	70	80	90	100	110	CUT	FILL	CUT	FILL	TPA	MAD
																								66	60				
																										125	56		
																								69	0				
																										144	0		
																								87	0				
																										256	0		
331	SHEET TOTAL	100	90	80	70	60	50	40	30	20	10	0	10	20	30	40	50	60	70	80	90	100	110	SHEET TOTAL		525	56	310	560

CROSS SECTIONS - SWITZER RD.
STA. 116+50 TO STA. 117+50

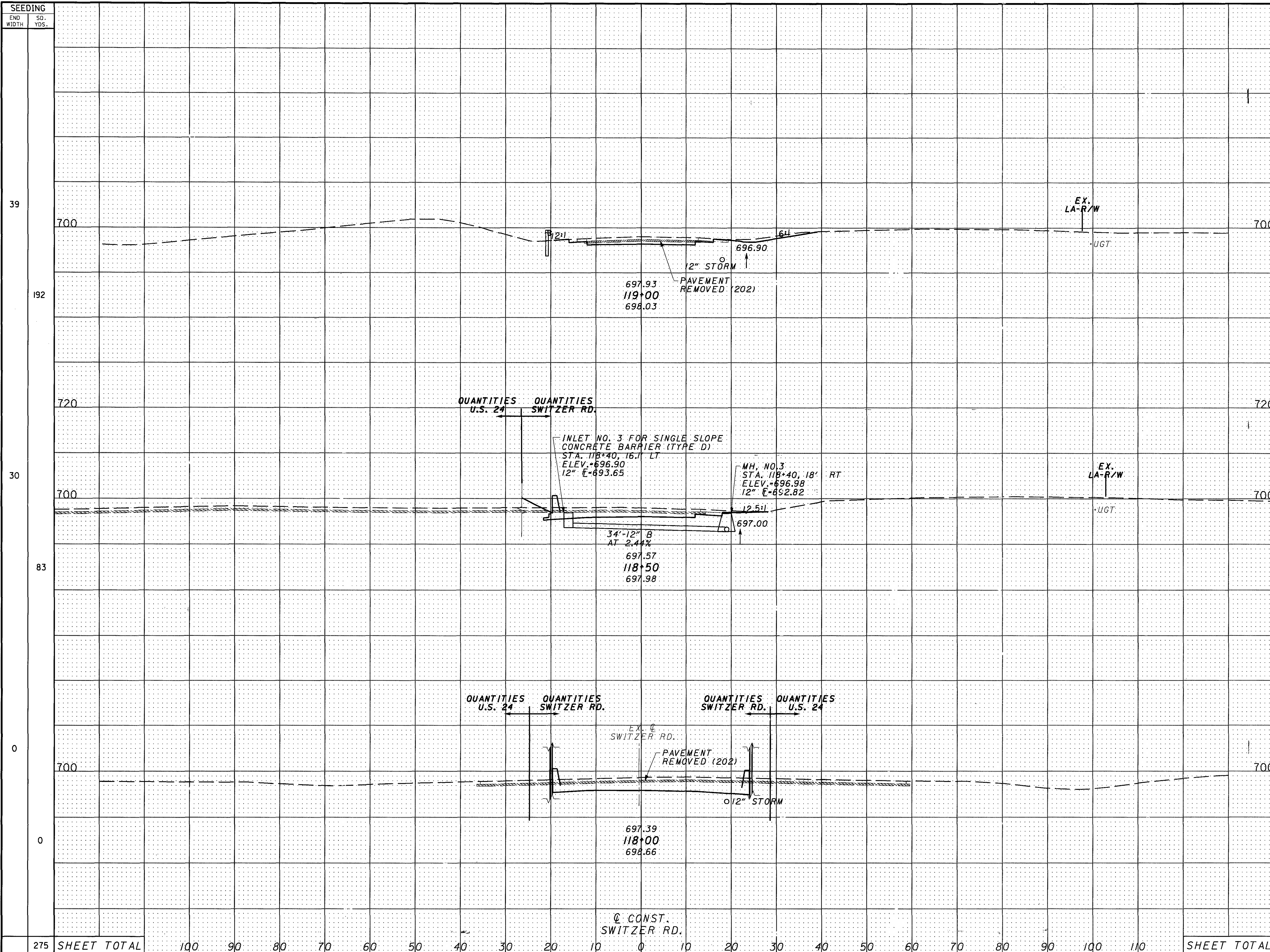
DEF-24-7.96

310
560

9/04:53 AM

9/23/2005

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END	AREA		VOLUME		CALCULATED	CHECKED
	CUT	FILL	CUT	FILL		
25		30				
192			58	38		
720						
30						
83						
0						
0						
82		10				
0						
0						
137			65			
306		122				

CROSS SECTIONS - SWITZER RD.
 STA. 118+00 TO STA. 119+00

DEF-24-7.96

311
660

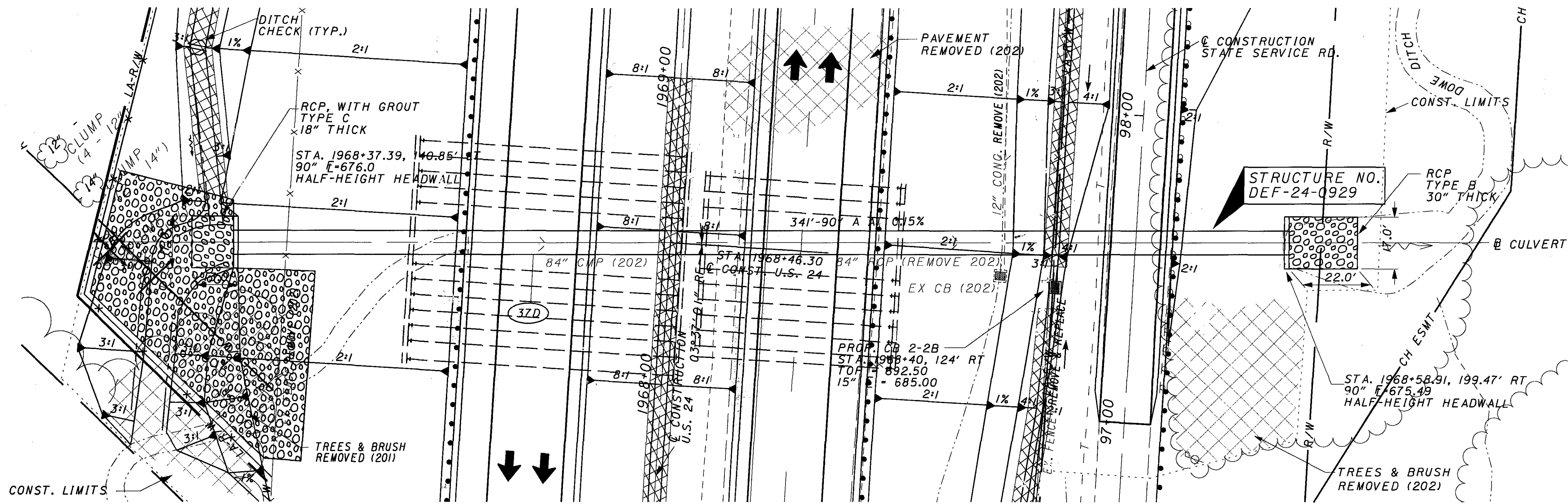
275 SHEET TOTAL

SHEET TOTAL

7:40:00 AM

9/23/2005

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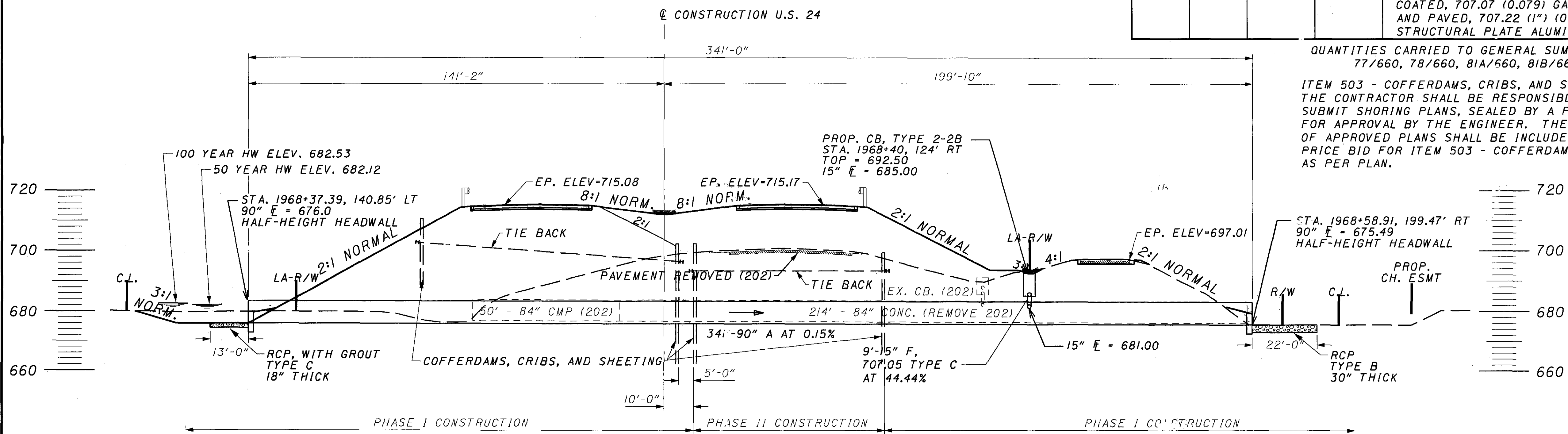
EXISTING STRUCTURE

TYPE: CMP AND RCP
 SIZE: 84" DIA.
 SKEW: 3°35'41" RF.
 ALIGNMENT: TANGENT
 DATE BUILT:
 CONDITION:

HYDRAULIC DESIGN DATA

DRAINAGE AREA = 1355 ACRES
 Q₅₀ = 241 CFS
 Q₁₀₀ = 267 CFS
 HW₅₀ = 682.12
 HW₁₀₀ = 682.53
 V₅₀ = 10.75 FPS
 V₁₀₀ = 11.11 FPS

ESTIMATED QUANTITIES				
ITEM	EXT	QUAN	UNIT	DESCRIPTION
202	11000	LUMP	LUMP	STRUCTURE REMOVED
503	11101	LUMP	LUMP	COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN (SEE SHEET 409/660)
601	32104	35	CU. YD.	ROCK CHANNEL PROTECTION, TYPE B WITH FABRIC FILTER
601	3440	218	CU. YD.	ROCK CHANNEL PROTECTION, WITH GROUT, TYPE C
602	20000	9.0	CU. YD.	CONCRETE MASONRY
603	29001	341	FT.	90" CONDUIT, TYPE A, 706.02 D-LOAD 2500 OR 96" 707.02 (0.109) GALVANIZED, 707.02 (0.079) ALUMINIZED, 707.02 W/CFP (0.079), 707.03 (0.138) STRUCTURAL PLATE 707.04 (1") (0.079) POLYMER COATED, 707.07 (0.079) GALVANIZED ASPHALT COATED AND PAVED, 707.22 (1") (0.164) ALUMINUM, 707.23 (0.150) STRUCTURAL PLATE ALUMINUM



QUANTITIES CARRIED TO GENERAL SUMMARY, SHEETS 76/660, 77/660, 78/660, 81A/660, 81B/660, AND 81C/660.

ITEM 503 - COFFERDAMS, CRIBS, AND SHEETING, AS PER PLAN: THE CONTRACTOR SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT SHORING PLANS, SEALED BY A PROFESSIONAL ENGINEER FOR APPROVAL BY THE ENGINEER. THE COST OF PREPARATION OF APPROVED PLANS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 503 - COFFERDAMS, CRIBS, AND SHEETING, AS PER PLAN.

CALCULATED TPA CHECKED RLM
 HORIZONTAL SCALE IN FEET
 CULVERT DETAIL
 U.S. 24 STA. 1968+46
 DEF-24-7.96
 409
 660

7:42:30 AM

9/23/2005

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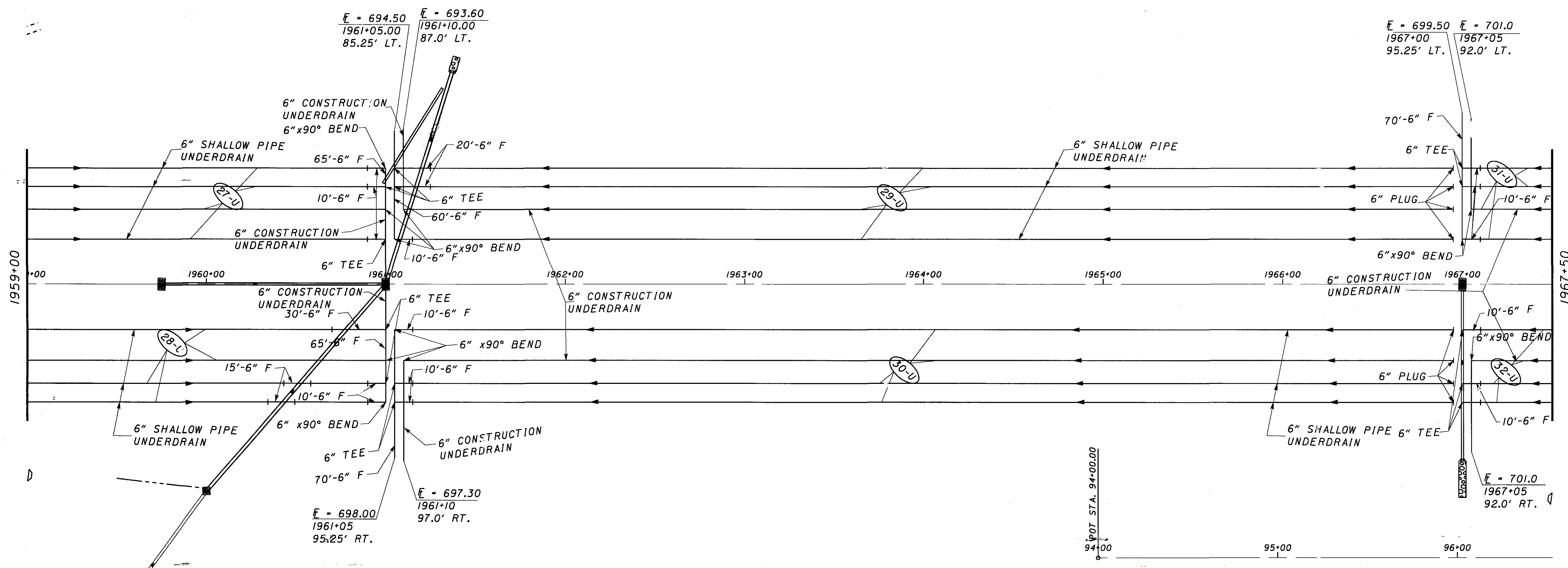
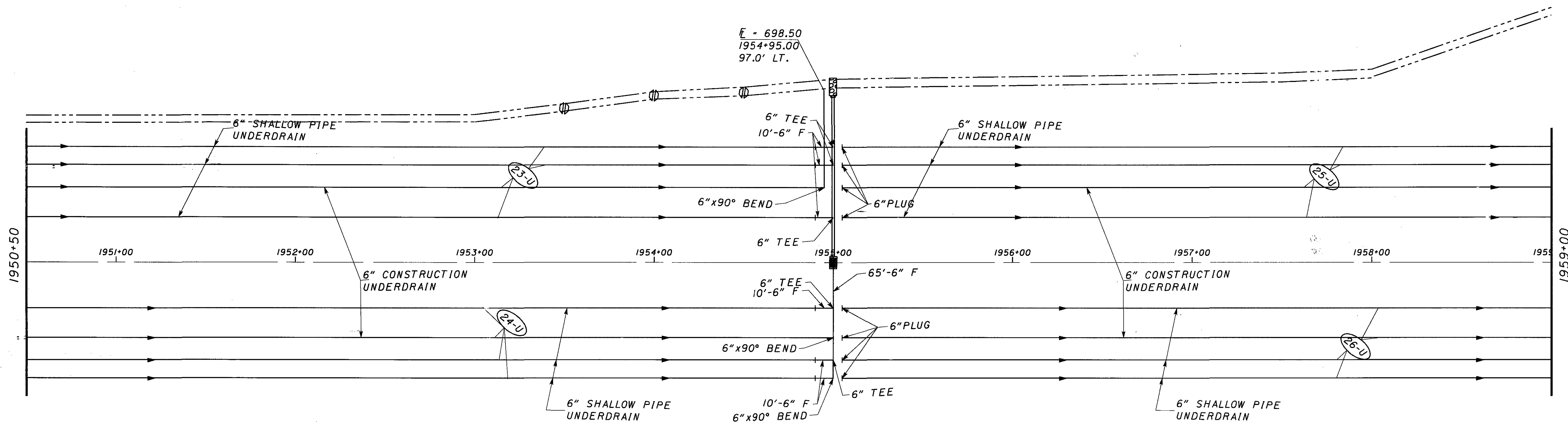
0 15 30
HORIZONTAL
SCALE IN FEET

CALCULATED
BLW
CHECKED
RLM

UNDERDRAIN DETAILS - US 24
STA. 1950+50 TO STA. 1967+50

DEF-24-7.96

419
660

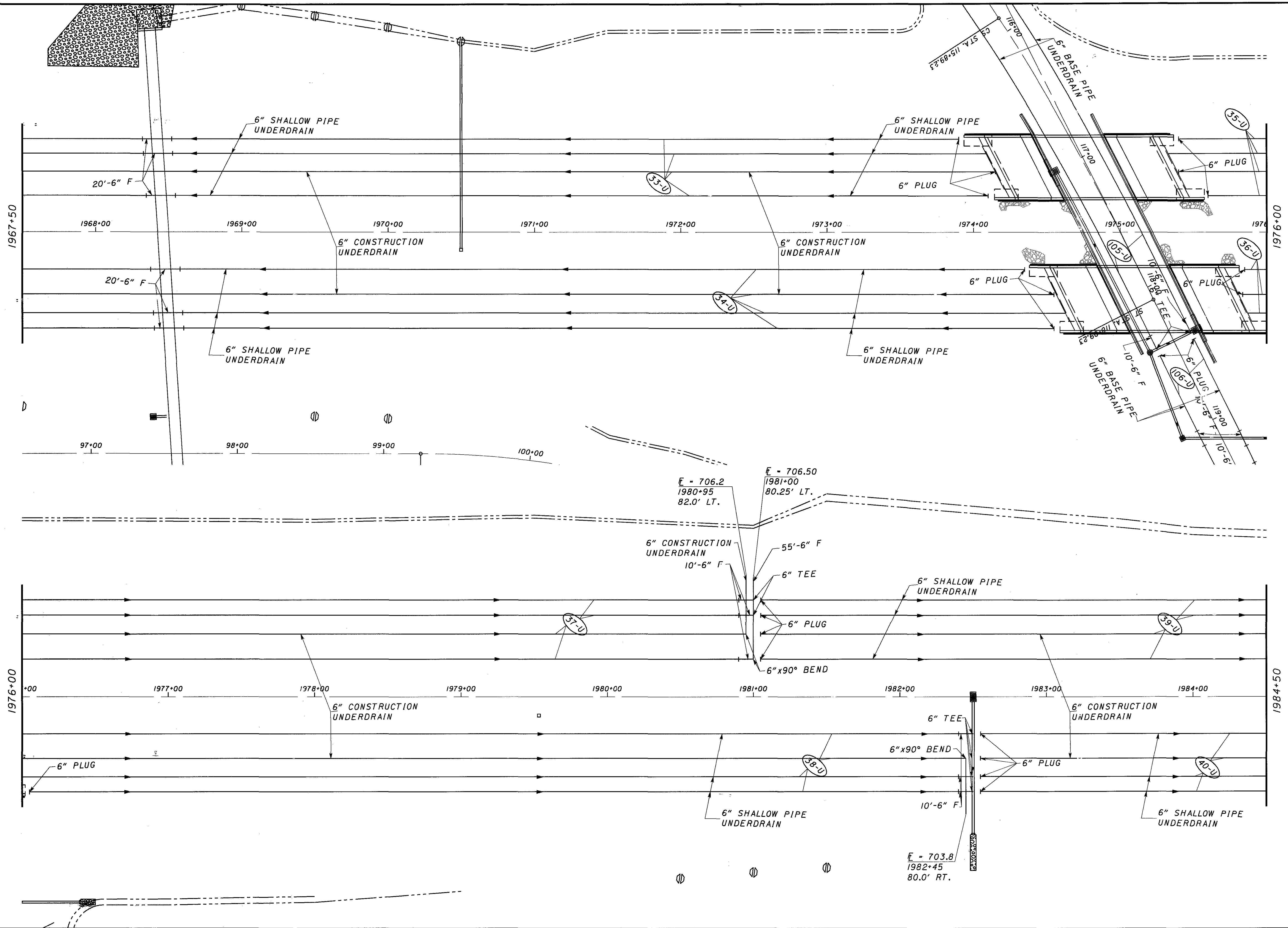



94+00
95+00
96+00
97+00
98+00
99+00
100+00
101+00
102+00
103+00
104+00
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106+00
107+00
108+00
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197+00
198+00
199+00
200+00

7:42:48 AM

9/23/2005

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 30
 0
 1" = 30'
 HORIZONTAL SCALE IN FEET
 CALCULATED BY BLW
 CHECKED BY RLM

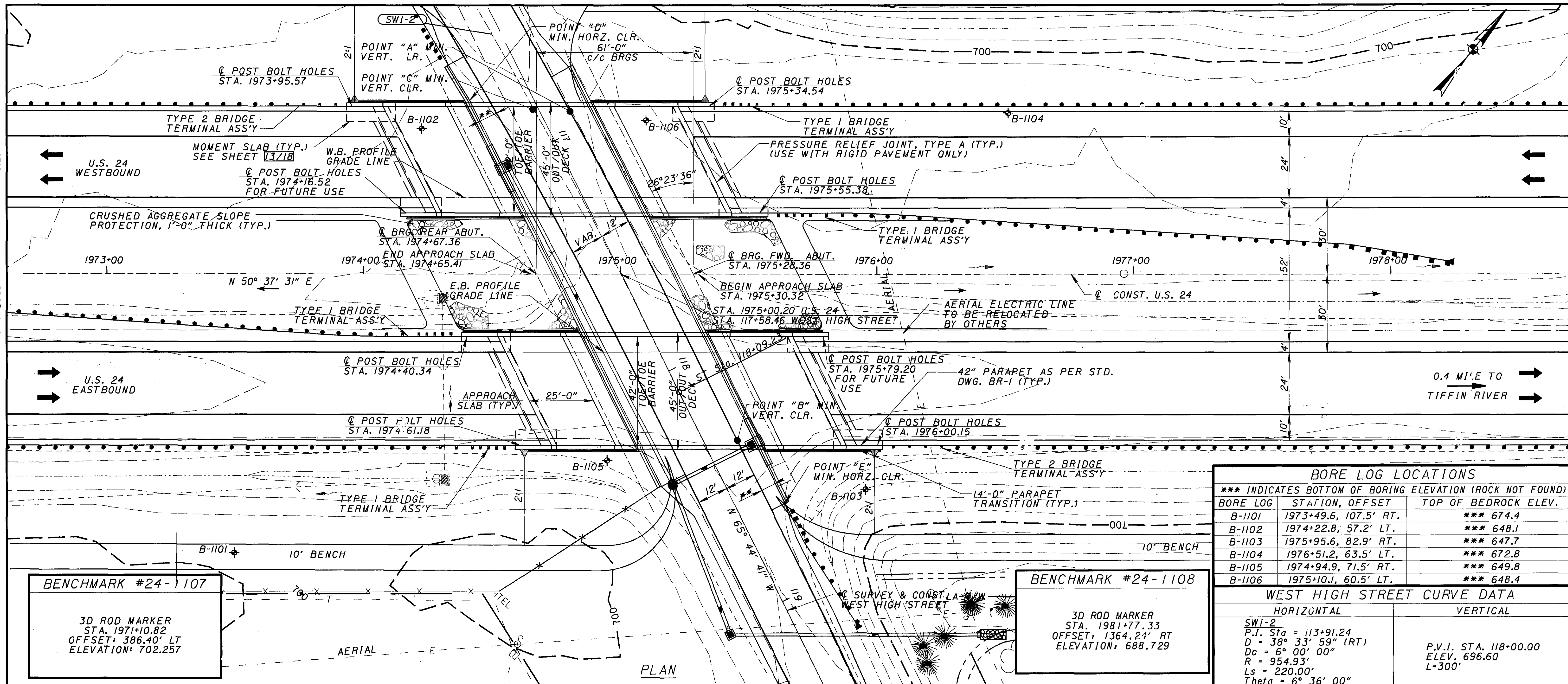
UNDERDRAIN DETAILS - US 24
 STA. 1967+50 TO STA. 1984+50

DEF-24-7.96
 420
 650

10:38:25 AM

9/19/2005

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BENCHMARK #24-1107
 3D ROD MARKER
 STA. 1971+10.82
 OFFSET: 386.40' LT
 ELEVATION: 702.257

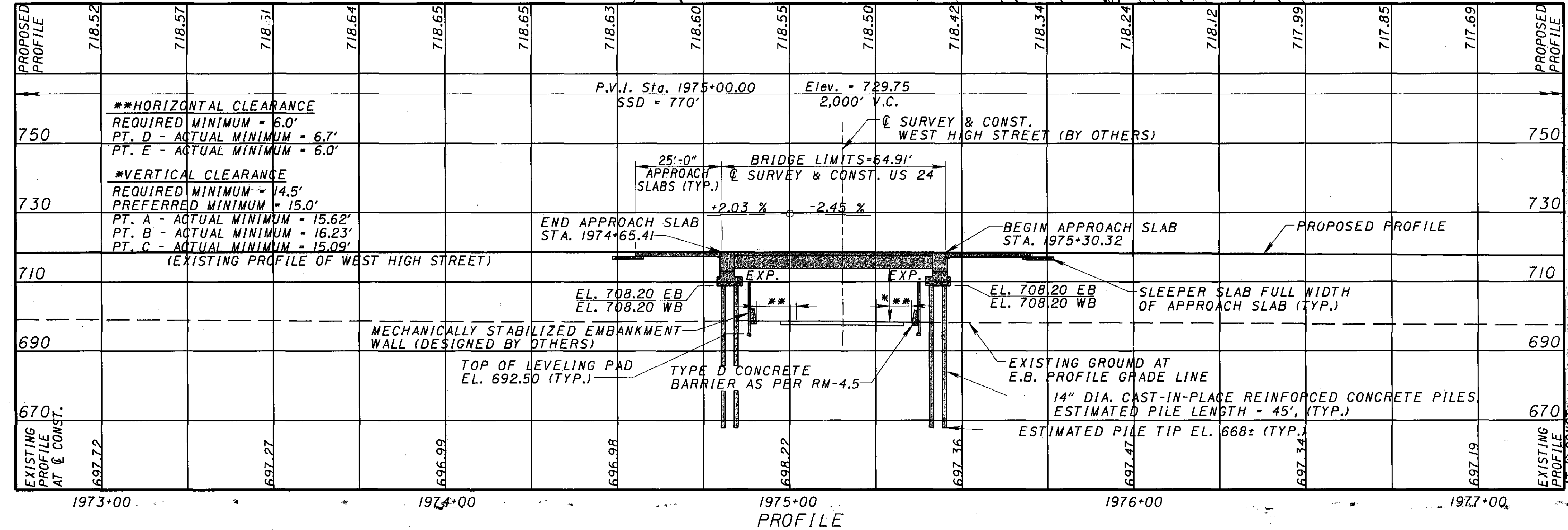
BENCHMARK #24-1108
 3D ROD MARKER
 STA. 1981+77.33
 OFFSET: 1364.21' RT
 ELEVATION: 688.729

BORE LOG LOCATIONS
 *** INDICATES BOTTOM OF BORING ELEVATION (ROCK NOT FOUND)

BORE LOG	STATION, OFFSET	TOP OF BEDROCK ELEV.
B-1101	1973+49.6, 107.5' RT.	*** 674.4
B-1102	1974+22.8, 57.2' LT.	*** 648.1
B-1103	1975+95.6, 82.9' RT.	*** 647.7
B-1104	1976+51.2, 63.5' LT.	*** 672.8
B-1105	1974+94.9, 71.5' RT.	*** 649.8
B-1106	1975+10.1, 60.5' LT.	*** 648.4

WEST HIGH STREET CURVE DATA

HORIZONTAL	VERTICAL
SWI-2	
P.I. STA = 113+91.24	
D = 38° 33' 59" (RT)	
Dc = 6° 00' 00"	
R = 954.93'	
Ls = 220.00'	
Theta = 6° 36' 00"	
LT = 146.77'	
ST = 73.43'	
x = 219.71'	
y = 8.44'	
k = 109.95'	
p = 2.11'	
Dc = 25° 21' 59" (RT)	
Lc = 422.78'	
Ts = 444.79'	
Es = 58.99'	
	P.V.I. STA. 118+00.00 ELEV. 696.60 L=300'



NOTES:
 EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.
 * - INDICATES BORING LOCATION

TRAFFIC DATA
 CURRENT ADT (2008) = 13031
 DESIGN ADT (2028) = 20264
 DESIGN ADTT (2028) = 9321

PROPOSED STRUCTURE
 TYPE: SINGLE SPAN COMPOSITE PRESTRESSED CONCRETE BEAM WITH REINFORCED CONCRETE DECK, MODIFIED SEMI-INTEGRAL ABUTMENTS AND MSE WALLS
 SPANS: 61'-0" c/c BEARINGS ALONG & CONSTRUCTION U.S. 24
 ROADWAY WIDTH: 42'-0" TOE/TOE BARRIERS
 SKEW: 26°23'36" R.F. WITH & CONSTRUCTION U.S. 24
 WEARING SURFACE: MONOLITHIC CONCRETE
 LOADING: HS-25 AND ALTERNATE MILITARY LOADING
 FUTURE W.S. = 60 P.S.F.
 ALIGNMENT: TANGENT
 APPROACH SLABS: AS-1-B, 25'-0", AS PER PLAN
 CROWN: 0.016
 LATITUDE: 41°17'30"N LONGITUDE: 84°23'31"W

DESIGN AGENCY: KOHLI & KALINER ASSOCIATES, INC. ENGINEERS AND SURVEYORS
 DATE: 4-5-05
 DRAWN: JMK
 CHECKED: THH
 DESIGNED: RTH
 COUNTY: DEFIANCE COUNTY
 STA. 1974+65.41
 STA. 1975+30.32
 SITE PLAN
 BR. D&E NO. DEF-24-0941 L & R
 U.S. 24 OVER WEST HIGH STREET
 DEF-24-7.96
 PID 24337
 1/18
 533
 660

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWINGS:

AS-1-81 REVISED 7-19-02
 BR-1 REVISED 7-19-02
 PSID-1-99 REVISED 7-18-03
 SICD-1-96 REVISED 7-19-02

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATION:

898 DATED 7-16-04

DESIGN SPECIFICATIONS

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 TO THE ODOT BRIDGE DESIGN MANUAL.

DESIGN LOADING

DESIGN LOADING: HS25 AND THE ALTERNATE MILITARY LOADING.

FUTURE WEARING SURFACE (FWS) OF 60 POUNDS PER SQUARE FOOT.

DESIGN DATA

QC/QA CONCRETE CLASS QSC2- COMPRESSIVE STRENGTH 4500 PSI (SUPERSTRUCTURE INCLUDING CONCRETE DIAPHRAGMS)

QC/QA CONCRETE CLASS QSC1 - COMPRESSIVE STRENGTH 4000 PSI (SUBSTRUCTURE)

REINFORCING STEEL - ASTM A615 OR A996, GRADE 60, MINIMUM YIELD STRENGTH 60,000 PSI

CONCRETE FOR PRESTRESSED BEAMS:
 COMPRESSIVE STRENGTH (FINAL) - 7000 PSI
 COMPRESSIVE STRENGTH (RELEASE) - 5000 PSI

PRESTRESSING STRAND:
 AREA = 0.167 SQUARE INCHES
 ULTIMATE STRENGTH = 270 KSI
 INITIAL STRESS = 202.5 KSI (LOW RELAXATION STRANDS)

STRUCTURAL STEEL - ASTM A709 GRADE 50, YIELD STRENGTH 50,000 PSI (EXCEPT FOR OPTIONAL INTERMEDIATE STEEL DIAPHRAGMS)

OPTIONAL INTERMEDIATE STEEL DIAPHRAGMS - ASTM A709 GRADE 36 OR 50, GALVANIZED ACCORDING TO 711.02

DECK PROTECTION METHOD

EPOXY COATED REINFORCING STEEL
 2-1/2" CONCRETE COVER

MONOLITHIC WEARING SURFACE

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

PILE DESIGN LOADS (ULTIMATE BEARING VALUE)

PILE DESIGN LOADS (ULTIMATE BEARING VALUE): THE ULTIMATE BEARING VALUE IS 114 TONS PER PILE FOR THE 14-INCH DIAMETER C.I.P. ABUTMENT PILES. THIRTY TWO (32) TONS OF THE 114 TONS OF ULTIMATE BEARING VALUE PER ABUTMENT PILE IS DUE TO THE POSSIBILITY OF DOWN DRAG FORCES INDUCED BY LONG-TERM SECONDARY CONSOLIDATION SETTLEMENT OF THE NATURAL SOILS UNDER THE APPROACH EMBANKMENT.

ABUTMENT PILES:

56 PILES 50 FEET LONG, ORDER LENGTH
 4 DYNAMIC LOAD TESTING ITEMS (ONE FOR EACH ABUTMENT)

PILE SLEEVES

PILE SLEEVES SHALL BE USED TO MAINTAIN A VOID IN THE SELECT GRANULAR EMBANKMENT SO THE PROPOSED PILES CAN BE INSTALLED AFTER THE MSE WALL CONSTRUCTION IS COMPLETED. THE SLEEVES SHALL BE MADE OF A MATERIAL THAT DOES NOT PROMOTE CORROSION WITHIN THE SELECT GRANULAR EMBANKMENT AND THE SLEEVE MATERIAL SHALL BE SATISFACTORY TO THE WALL COMPANY. CONSIDER USING SECTIONS OF PLASTIC PIPE STRONG ENOUGH TO MAINTAIN THE REQUIRED VOID. A BENTONITE SLURRY SHALL BE PLACED IN THE VOID LOCATED BETWEEN THE PILE AND THE SLEEVE. THE SLURRY SHALL CONSIST OF ONE PART CEMENT (BY VOLUME), ONE PART BENTONITE, AND TEN PARTS WATER. THE COST OF ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE ITEM SPECIAL FOR THE APPROPRIATE PROPRIETARY WALL.

ITEM 526 - REINFORCED CONCRETE APPROACH SLABS, AS PER PLAN

CONCRETE FOR APPROACH SLABS AND DEFLECTOR PARAPETS WHICH ARE SUPPORTED ON THE APPROACH SLABS SHALL BE CLASS S, CMS 499. THE COST OF THE DEFLECTOR PARAPET WHICH IS SUPPORTED ON THE APPROACH SLAB, INCLUDING CONCRETE, REINFORCING STEEL, AND OTHER INCIDENTALS, SHALL BE INCLUDED IN THE UNIT COST FOR ITEM 526 - REINFORCED CONCRETE APPROACH SLABS, AS PER PLAN.

PROPRIETARY RETAINING WALL DATA:

THE PROPRIETARY WALL SUPPLIER SHALL DESIGN THE INTERNAL STABILITY OF A MECHANICALLY STABILIZED EARTH (MSE) WALL IN ACCORDANCE WITH THE SPECIAL PROVISIONS TO SUPPORT THE ABUTMENT. THE DESIGN FOR INTERNAL STABILITY SHALL INCLUDE AN UNFACTORED HORIZONTAL STRIP LOAD FROM THE SUPERSTRUCTURE OF 4.4 K/FT APPLIED PERPENDICULAR TO THE FACE OF WALL AT THE BASE OF THE CONCRETE FOOTING.

ABBREVIATIONS

NF - NEAR FACE
 FF - FAR FACE
 TYP. - TYPICAL
 CLR - CLEAR
 SPS - SPACES
 C.P.P. - CORRUGATED PLASTIC PIPE

ITEM 516 - SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL, AS PER PLAN

INSTALL A 3 FOOT WIDE NEOPRENE SHEET AT LOCATIONS SHOWN IN THE PLANS. SECURE THE NEOPRENE SHEETING TO THE CONCRETE WITH 1-1/4" X #10 GAGE (LENGTH X SHANK DIAMETER) GALVANIZED BUTTON HEAD SPIKES THROUGH A 1 INCH OUTSIDE DIAMETER, #10 GAGE GALVANIZED WASHER. MAXIMUM FASTENER SPACING IS 9 INCHES. USE OF OTHER SIMILAR GALVANIZED DEVICES, WHICH WILL NOT DAMAGE EITHER THE NEOPRENE OR THE CONCRETE WILL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

CENTER THE NEOPRENE STRIPS ON ALL JOINTS. FOR HORIZONTAL JOINTS, SECURE THE HORIZONTAL NEOPRENE STRIP BY USING A SINGLE LINE OF FASTENERS, STARTING AT 6 INCHES, +/-, FROM THE TOP OF THE NEOPRENE STRIP. FOR THE VERTICAL JOINTS SECURE THE VERTICAL NEOPRENE STRIP BY USING A SINGLE VERTICAL LINE OF FASTENERS, STARTING AT 6 INCHES, +/-, FROM THE VERTICAL EDGE OF THE NEOPRENE STRIP NEAREST TO THE CENTERLINE OF ROADWAY. FOR VERTICAL JOINTS, INSTALL 2 ADDITIONAL FASTENERS AT 6 INCHES, CENTER TO CENTER, ACROSS THE TOP OF THE NEOPRENE STRIP ON THE SAME SIDE OF THE VERTICAL JOINT AS THE SINGLE VERTICAL ROW OF FASTENERS IS LOCATED.

THE VERTICAL NEOPRENE STRIPS SHALL COMPLETELY OVERLAP THE HORIZONTAL STRIPS. LAP LENGTHS OF THE HORIZONTAL STRIPS THAT ARE NOT VULCANIZED OR ADHESIVE BONDED, SHALL BE AT LEAST 1 FOOT IN LENGTH, OR 6 INCHES IN LENGTH IF THE LAP IS VULCANIZED OR ADHESIVE BONDED. NO LAPS ARE ACCEPTABLE IN VERTICALLY INSTALLED NEOPRENE STRIPS.

THE NEOPRENE SHEETING SHALL BE 3/32" THICK GENERAL PURPOSE, HEAVY DUTY NEOPRENE SHEET WITH NYLON FABRIC REINFORCEMENT. THE SHEETING SHALL BE "FAIRPRENE NUMBER NN-0003", BY E. I. DUPONT DE NEMOURS AND COMPANY, INC., "WINGPRENE" BY THE GOODYEAR TIRE AND RUBBER COMPANY, OR AN APPROVED ALTERNATE. THE NEOPRENE SHEETING SHALL CONFORM TO THE FOLLOWING:

DESCRIPTION OF TEST	ASTM METHOD	REQUIREMENT
THICKNESS, INCHES	D751	0.094 +/- 0.01
BREAKING STRENGTH, GRAB, LBS, MINIMUM (LONG. X TRANS.)	D751	700 X 700
ADHESIVE STRIP, 1" WIDE X 2" LONG, LBS MINIMUM	D751	9
BURST STRENGTH, PSI MINIMUM	D751	1400
HEAT AGING, 70 HR, 212 DEGREES F, 180 DEGREE BEND WITHOUT CRACKING	D2136	NO CRACKING OF COATING
LOW TEMP. BRITTLINESS, 1 HR, -40 DEGREES F, BEND AROUND 1/4" MANDREL	D2136	NO CRACKING OF COATING

METHOD OF MEASUREMENT: THE DEPARTMENT WILL MEASURE THE TOTAL LENGTH OF JOINT TO BE SEALED BY THE NUMBER OF FEET.

BASIS OF PAYMENT: THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516, SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL, AS PER PLAN.

ITEM 898 - QC/QA CONCRETE, MISC.: CLASS QSC2, MOMENT SLABS WITH PARAPETS, AS PER PLAN

THE COST OF THE REINFORCING STEEL CONTAINED IN THIS ITEM SHALL BE INCLUDED IN THE UNIT COST FOR ITEM 898 - QC/QA CONCRETE, MISC.: CLASS QSC2, MOMENT SLABS WITH PARAPETS, AS PER PLAN.

10:31:0 AM

9/19/2005

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DESIGN AGENCY
KOHL & KALHER ASSOCIATES INC.
 ENGINEERS AND SURVEYORS
 311 East Main Street, Lima, Ohio 45801 419-227-1195

DATE 4-5-05
 REVIEWED DGB
 DRAWN RTH
 CHECKED THH
 STRUCTURE FILE NUMBER
 LC-2001207
 RIGHT-2001207

GENERAL NOTES
 BRIDGE NO. DEF-24-0941 L & R
 U.S. 24 OVER WEST HIGH STREET

DEF-24-7.96
 P/D 24337

2/18

534
 660

100% FEDERAL FUNDING

ESTIMATED QUANTITIES FOR BRIDGE DEF-24-0941 L&R

ITEM	EXTENSION	100% FEDERAL FUNDING			UNIT	DESCRIPTION	ABUTMENTS		SUPERSTRUCTURE		GENERAL		SEE SHEET NO.
		TOTAL E.B.	TOTAL W.B.	GRAND TOTAL			E.B.	W.B.	E.B.	W.B.	E.B.	W.B.	
503	11100	LUMP	LUMP	LUMP		COFFERDAMS, CRIBS, AND SHEETING					LUMP	LUMP	
505	11100	LUMP	LUMP	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION					LUMP	LUMP	
507	00600	1260	1260	2520	FT	14' CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	1260	1260					
507	00650	1400	1400	2800	FT	14' CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	1400	1400					
509	10000	44,965	44,965	89,930	POUND	EPOXY COATED REINFORCING STEEL	7597	7597	37,368	37,368			
512	10100	555	555	1110	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	58	58	497	497			
515	15010	5	5	10	EACH	DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LEVEL 3, TYPE 3			5	5			
515	20000	4	4	8	EACH	INTERMEDIATE DIAPHRAGMS			4	4			
516	13200	104	104	208	SQ FT	1/2" PREFORMED EXPANSION JOINT FILLER	104	104					
516	13600	77	77	154	SQ FT	1" PREFORMED EXPANSION JOINT FILLER			77	77			
516	13900	277	277	554	SQ FT	2" PREFORMED EXPANSION JOINT FILLER	277	277					
516	14021	125	125	250	FT	SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL, AS PER PLAN	125	125					2/18
516	44101	10	10	20	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN; 10"x19"x3" WITH 11"x20"x1 1/4" LOAD PLATE, HP10x42 SUPPORT POST, AND 11"x22"x1 1/2" TOP PLATE	10	10					15/18
523	20000	2	2	4	EACH	DYNAMIC LOAD TESTING	2	2					
526	25001	250	250	500	SQ YD	REINFORCED CONCRETE APPROACH SLABS (T=15'), AS PER PLAN	250	250					2/18, 14/18
SPECIAL	61013500	3209	3212	6421	SQ FT	OPTION A - REINFORCED EARTH WALL SYSTEM (REAR ABUTMENT)*	3209	3212					18A/18
SPECIAL	61013500	3190	3200	6390	SQ FT	OPTION A - REINFORCED EARTH WALL SYSTEM (FWD. ABUTMENT)*	3190	3200					18A/18
SPECIAL	61013700	3209	3212	6421	SQ FT	OPTION B - RETAINED EARTH WALL SYSTEM (REAR ABUTMENT)*	3209	3212					18A/18
SPECIAL	61013700	3190	3200	6390	SQ FT	OPTION B - RETAINED EARTH WALL SYSTEM (FWD. ABUTMENT)*	3190	3200					18A/18
SPECIAL	61013900	3209	3212	6421	SQ FT	OPTION C - A.R.E.S. RETAINING WALL SYSTEM (REAR ABUTMENT)*	3209	3212					18A/18
SPECIAL	61013900	3190	3200	6390	SQ FT	OPTION C - A.R.E.S. RETAINING WALL SYSTEM (FWD. ABUTMENT)*	3190	3200					18A/18
SPECIAL	61014100	3209	3212	6421	SQ FT	OPTION D - MSE PLUS RETAINING WALL SYSTEM (REAR ABUTMENT)*	3209	3212					18A/18
SPECIAL	61014100	3190	3200	6390	SQ FT	OPTION D - MSE PLUS RETAINING WALL SYSTEM (FWD. ABUTMENT)*	3190	3200					18A/18
SPECIAL	61016200	145	145	290	FT	CONCRETE COPING (REAR ABUTMENT)	145	145					
SPECIAL	61016200	145	145	290	FT	CONCRETE COPING (FWD. ABUTMENT)	145	145					
898	10200	151	152	303	CU YD	QC/QA CONCRETE, CLASS QSC2, SUPERSTRUCTURE (DECK)			151	152			
898	11000	17	17	34	CU YD	QC/QA CONCRETE, CLASS QSC2, SUPERSTRUCTURE (PARAPET)			17	17			
898	20160	100	100	200	CU YD	QC/QA CONCRETE, CLASS QSC1, SUBSTRUCTURE (ABUTMENT INCLUDING FOOTING)	100	100					
898	98000	3	3	6	CU YD	QC/QA CONCRETE, MISC.: CLASS QSC1, 6' UNREINFORCED CONCRETE SLAB	3	3					
898	98000	33	33	66	CU YD	QC/QA CONCRETE, MISC.: CLASS QSC2, MOMENT SLABS WITH PARAPETS, AS PER PLAN	33	33					2/18

\$TIME\$

\$DATE\$

\$FILE\$

* MSE WALL OPTIONS: THIS PROJECT CONTAINS FOUR MSE WALL OPTIONS. THE CONTRACTOR SHALL BID ON ONLY ONE OPTION AND BUILD THE OPTION CORRESPONDING WITH THE BID. THE CONTRACTOR SHALL BID ZERO FOR THE OTHER THREE OPTIONS.

DESIGN AGENCY
KOHLI & KALHER ASSOCIATES, INC.
 ENGINEERS AND SURVEYORS
 311 East Market Street, Lima, Ohio 43001 419-227-1155

DATE 4-5-05
 REVIEWED DGB
 DRAWN BLW
 CHECKED MAD
 RTH
 STATION 2001+25.00
 RIGHT-2001/217

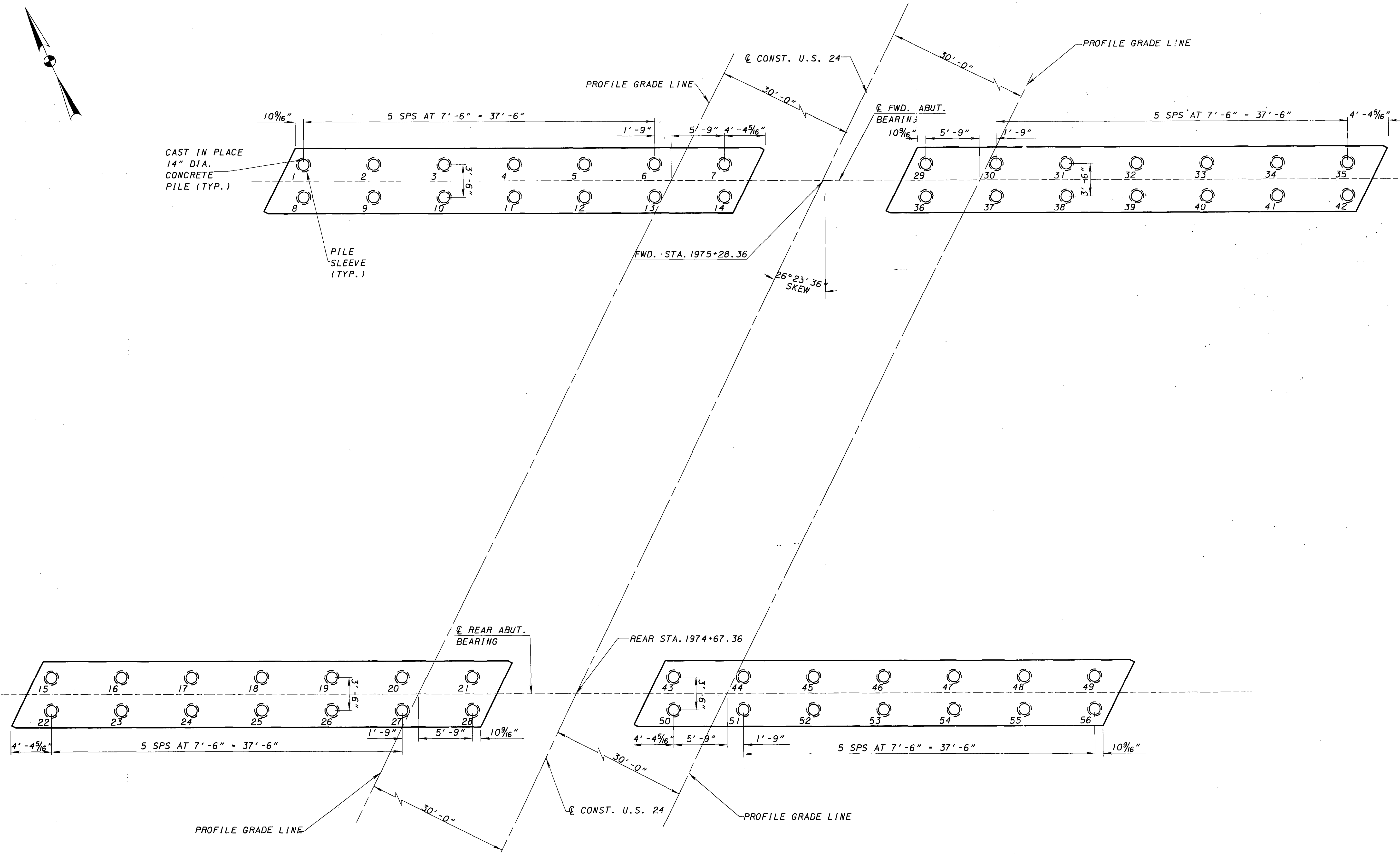
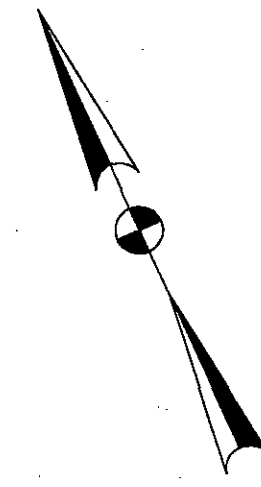
ESTIMATED QUANTITIES
 BRIDGE NO. DEF-24-0941 L&R
 U.S. 24 OVER WEST HIGH STREET

DEF-24-7.96
 PID 24337

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9/19/2005

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DESIGN AGENCY
KOHL & KALHER ASSOCIATES, INC.
ENGINEERS AND SURVEYORS
311 East Market Street, Lima, Ohio 45001 419-227-1155

DESIGNED	RTH	DRAWN	BLW	REVIEWED	DATE
CHECKED	THH				4-5-05
				STATIONING	2001+25
				RIGHT-OF-WAY	2001+17

FOUNDATION PLAN
BRIDGE NO. DEF-24-0941 L&R
U.S. 24 OVER WEST HIGH STREET

DEF-24-7.95
PIU 24337

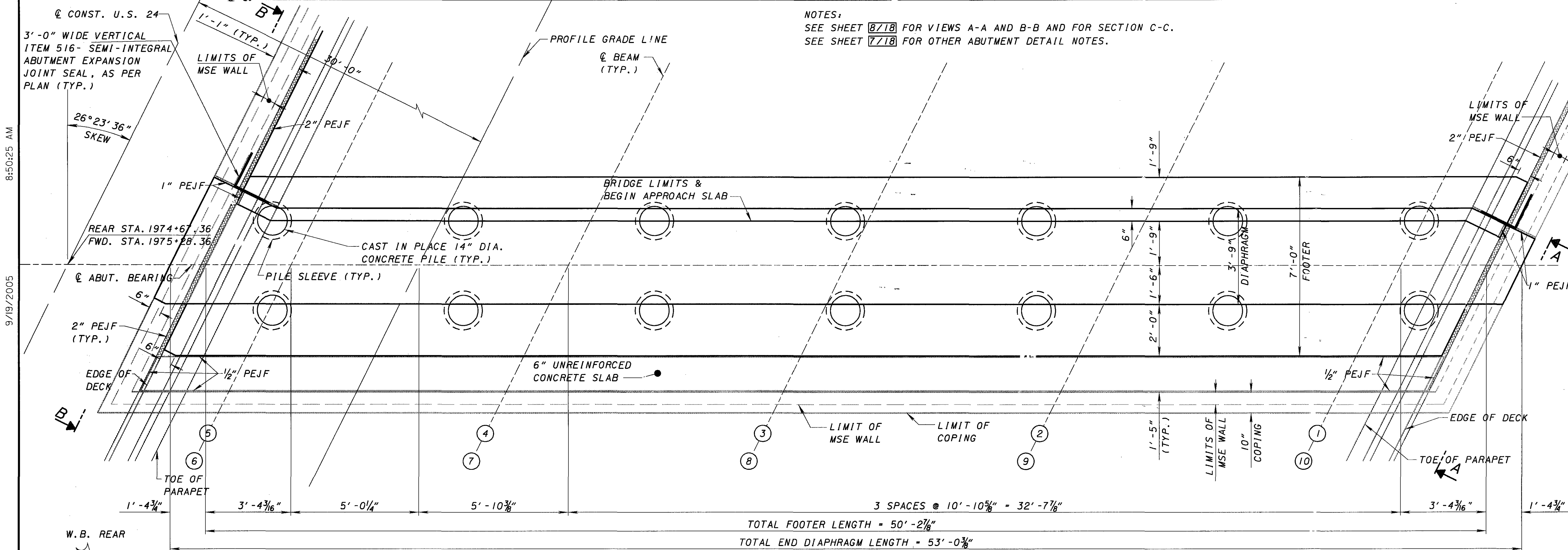
4/18

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9/19/2005

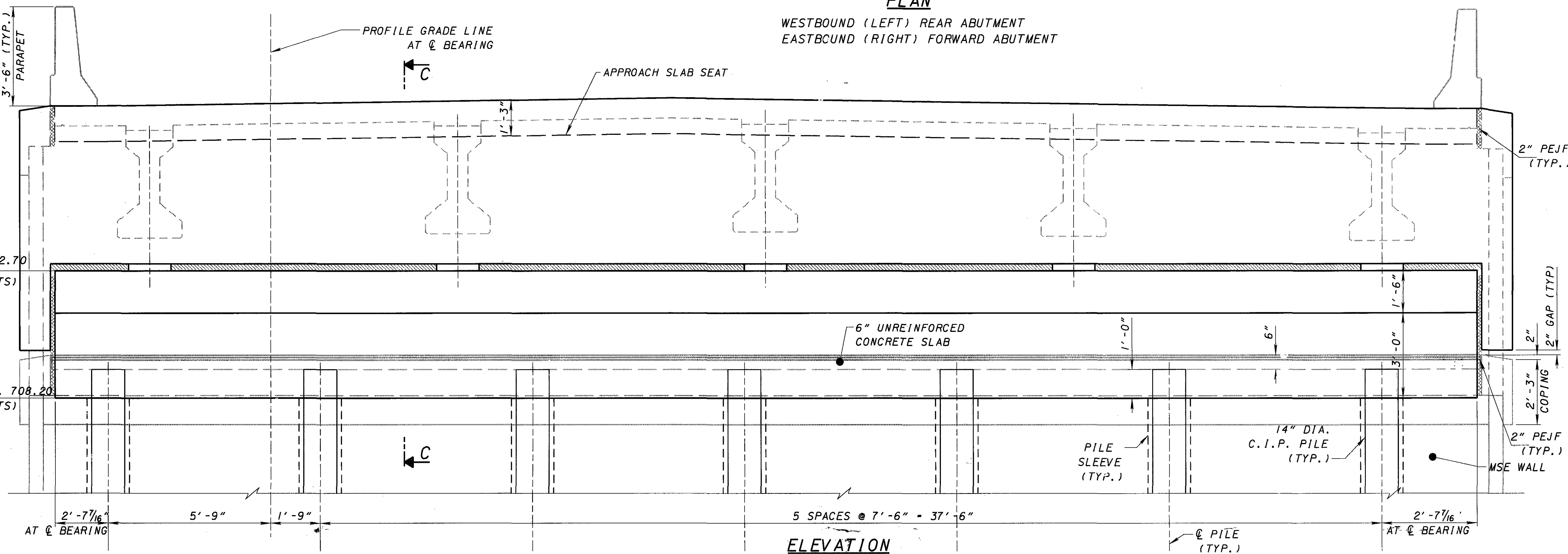
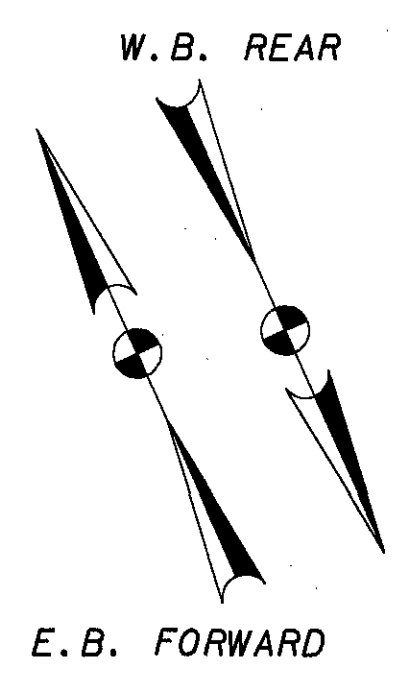
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NOTES:
 SEE SHEET 8/18 FOR VIEWS A-A AND B-B AND FOR SECTION C-C.
 SEE SHEET 7/18 FOR OTHER ABUTMENT DETAIL NOTES.

PLAN

WESTBOUND (LEFT) REAR ABUTMENT
 EASTBOUND (RIGHT) FORWARD ABUTMENT



ELEVATION

DESIGN AGENCY
KOHLI & KALHER ASSOCIATES, INC.
 ENGINEERS AND SURVEYORS
 311 East Main Street, Suite 400, Reno, NV 89501

DATE: 4-5-05
 REVIEWED: CGB
 STRUCTURE FILE NUMBER: LEP-2001225
 LEFT: 2001225
 RIGHT: 2001217

DESIGNED: RTH
 CHECKED: THH

BRIDGE NO. DEF-24-094 / L&R
 U.S. 24 OVER WEST HIGH STREET

DEF-24-7.96
 PID 24337

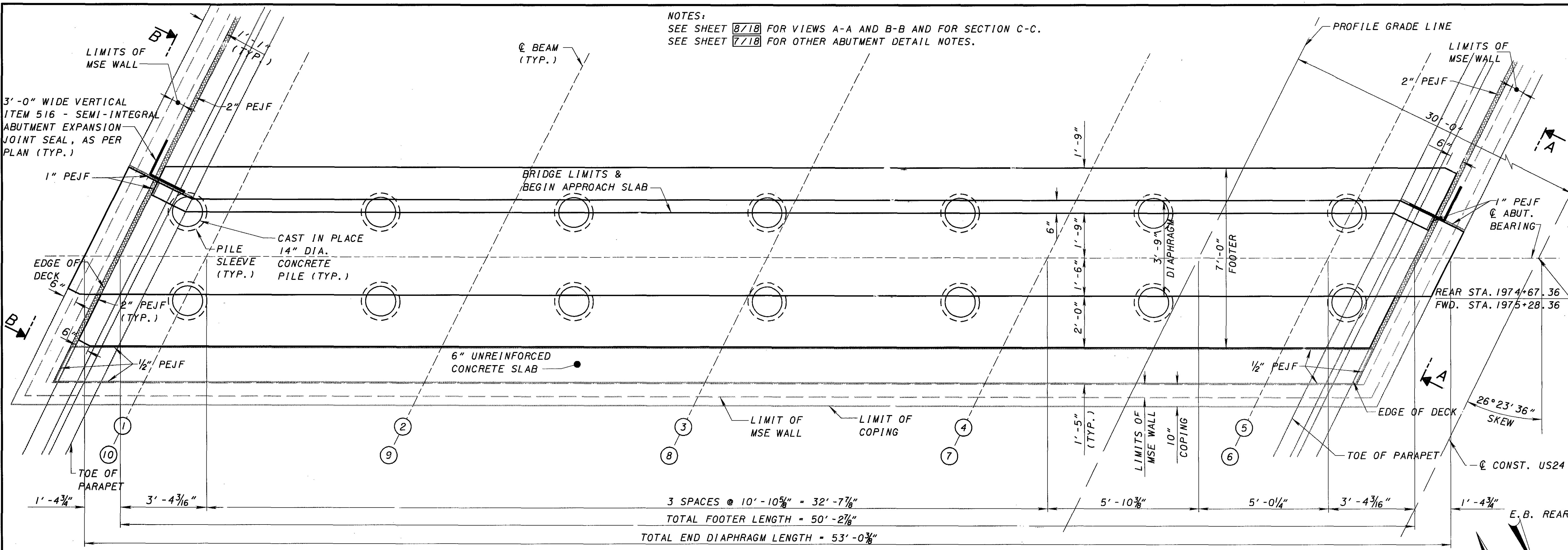
5/18
 537
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NOTES:
 SEE SHEET 8/18 FOR VIEWS A-A AND B-B AND FOR SECTION C-C.
 SEE SHEET 7/18 FOR OTHER ABUTMENT DETAIL NOTES.

10:31:43 AM

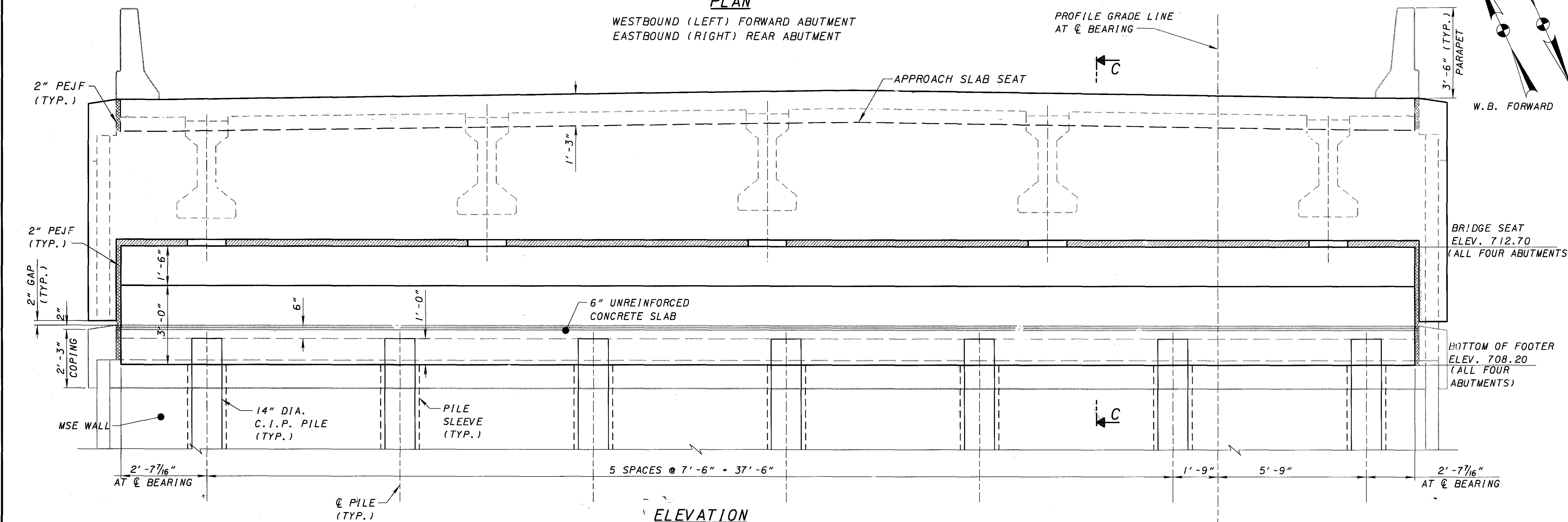
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PLAN

WESTBOUND (LEFT) FORWARD ABUTMENT
 EASTBOUND (RIGHT) REAR ABUTMENT



ELEVATION

DESIGN AGENCY
 KOHLI & KALHER ASSOCIATES, INC.
 ENGINEERS AND SURVEYORS
 311 East Main Street, Littleton, CO 80120

DATE 4-5-05

REVIEWED DGB

DRAWN INK

DESIGNED RTH

CHECKED THH

WESTBOUND FORWARD AND EASTBOUND REAR ABUTMENT DETAILS

BRIDGE NO. DEF-24-0941 L_{RR}R

U.S. 24 OVER WEST HIGH STREET

DEF-24-7.96

PID 24J37

6/18

538

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9/19/2005

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NOTES:

ABUTMENT DIAPHRAGM, PRESTRESSED I-BEAM SUPERSTRUCTURE
ABUTMENT DIAPHRAGM, PRESTRESSED I-BEAM SUPERSTRUCTURE:
PLACE THE CONCRETE ENCASING THE PRESTRESSED I-BEAM
STRUCTURAL MEMBERS AS PART OF THE DECK POUR.

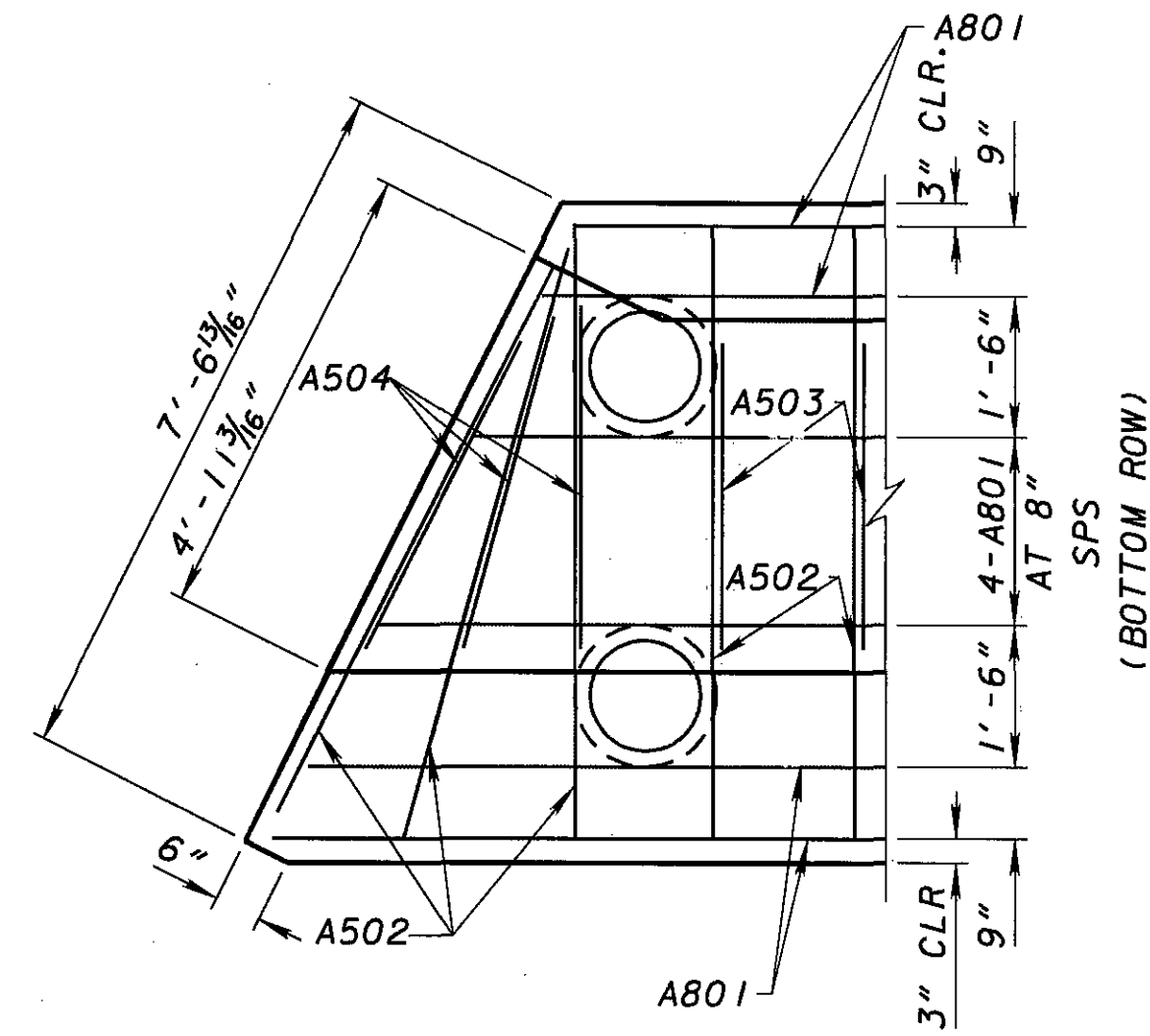
BRIDGE SEAT ELEVATIONS
BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD 0.01
FEET AT ABUTMENTS TO COMPENSATE FOR THE VERTICAL
DEFORMATION OF THE BEARINGS.

FOR ADDITIONAL NEOPRENE SHEETING NOTES AND DETAILS,
SEE STANDARD DRAWING SICD-1-96.

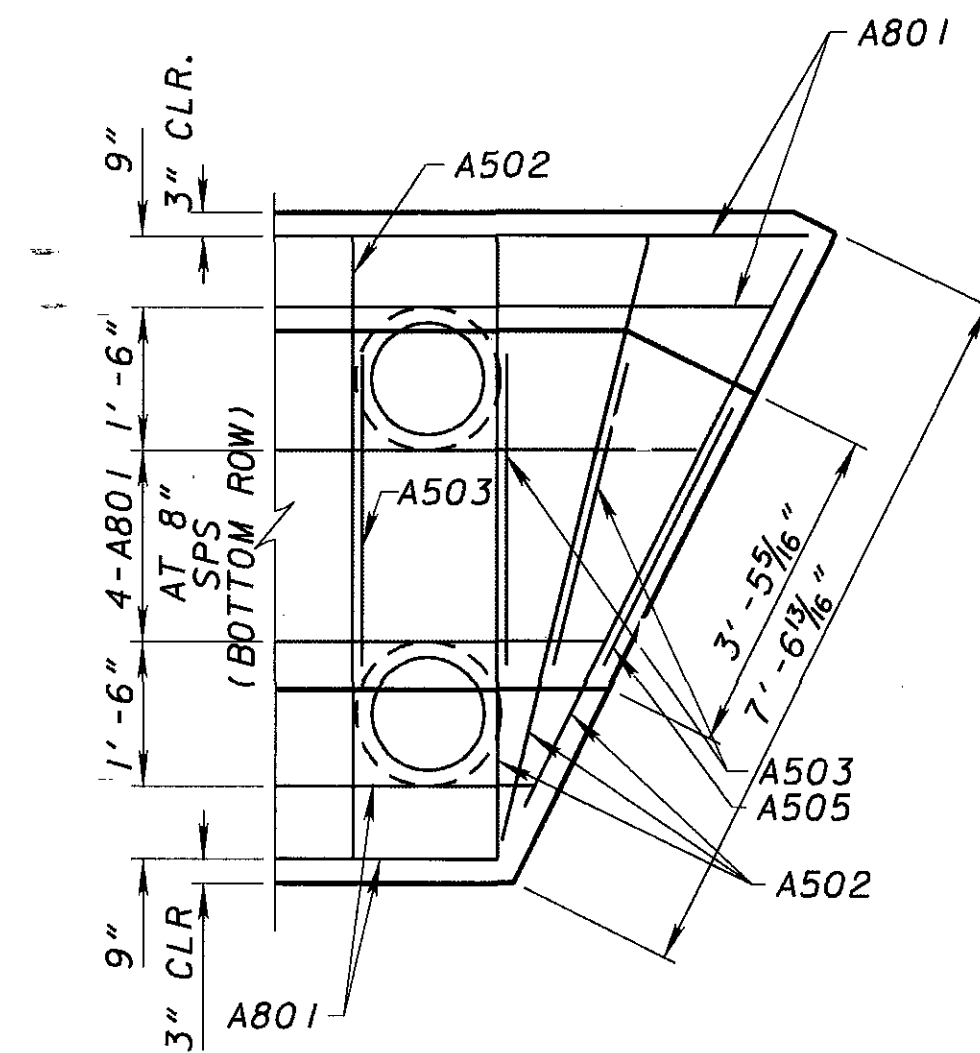
EXPANDED POLYSTYRENE FILLER OR REMOVABLE FORMS SHALL BE
USED IN FORMING TO PROVIDE THE CLEARANCE REQUIRED BETWEEN
THE ABUTMENT AND THE SUPERSTRUCTURE AND SHALL BE INCLUDED
WITH THE SUPERSTRUCTURE CONCRETE FOR PAYMENT.

ABBREVIATIONS
NF - NEAR FACE
FF - FAR FACE
TYP - TYPICAL
CLR - CLEAR
SPS - SPACES

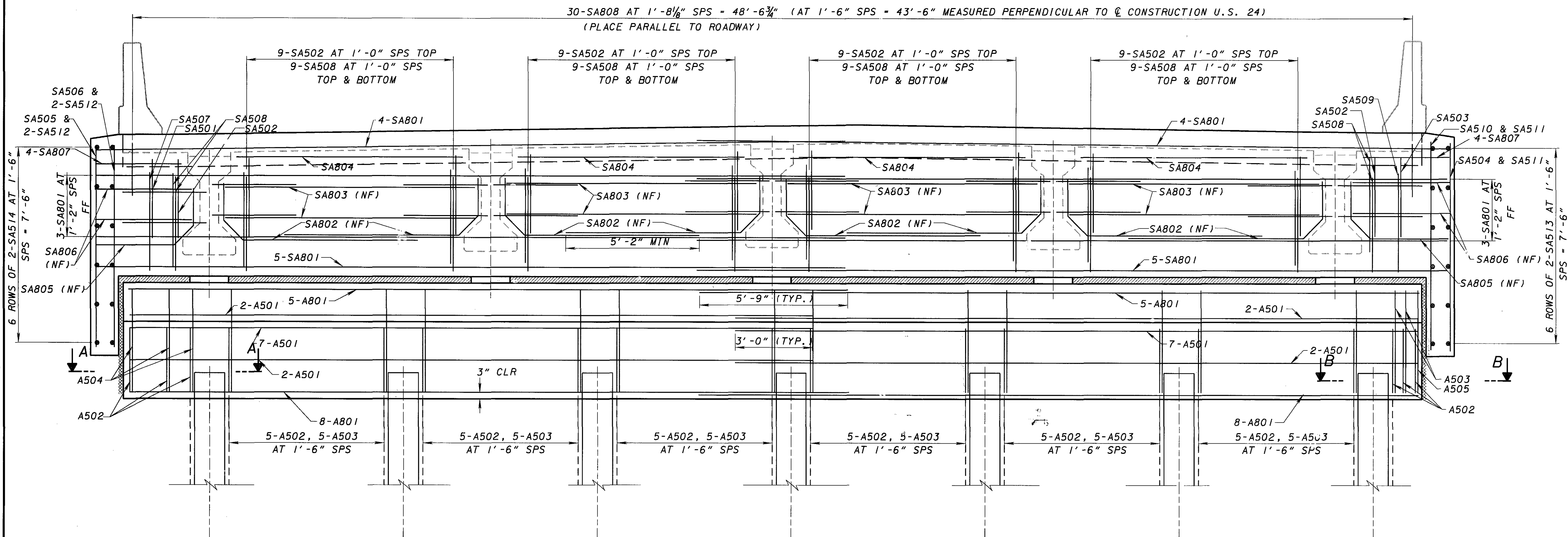
MINIMUM LAP LENGTH (UNLESS NOTED OTHERWISE)	
#5 BAR	= 3'-0"
#6 BAR	= 3'-6"
#8 BAR	= 5'-9"



SECTION A-A



SECTION B-B



ELEVATION

DESIGN AGENCY: KOWI & KALLHER ASSOCIATES INC.
 ENGINEER: A. D. SUKUTER, P.E.
 311 East Main Street, Lima, Ohio 45801 419-222-1135

DESIGNED	BLW	CHECKED	THH
DRAWN	BLW	REVISION	
REVISED	DGB	DATE	4-5-05
FILE NUMBER	STRUCTURE FILE NUMBER: 2001217		
PROJECT	RIGHT 2001217		

ABUTMENT DETAILS
 BRIDGE NO. DEF-24-0941 L&R
 U.S. 24 OVER WEST HIGH STREET

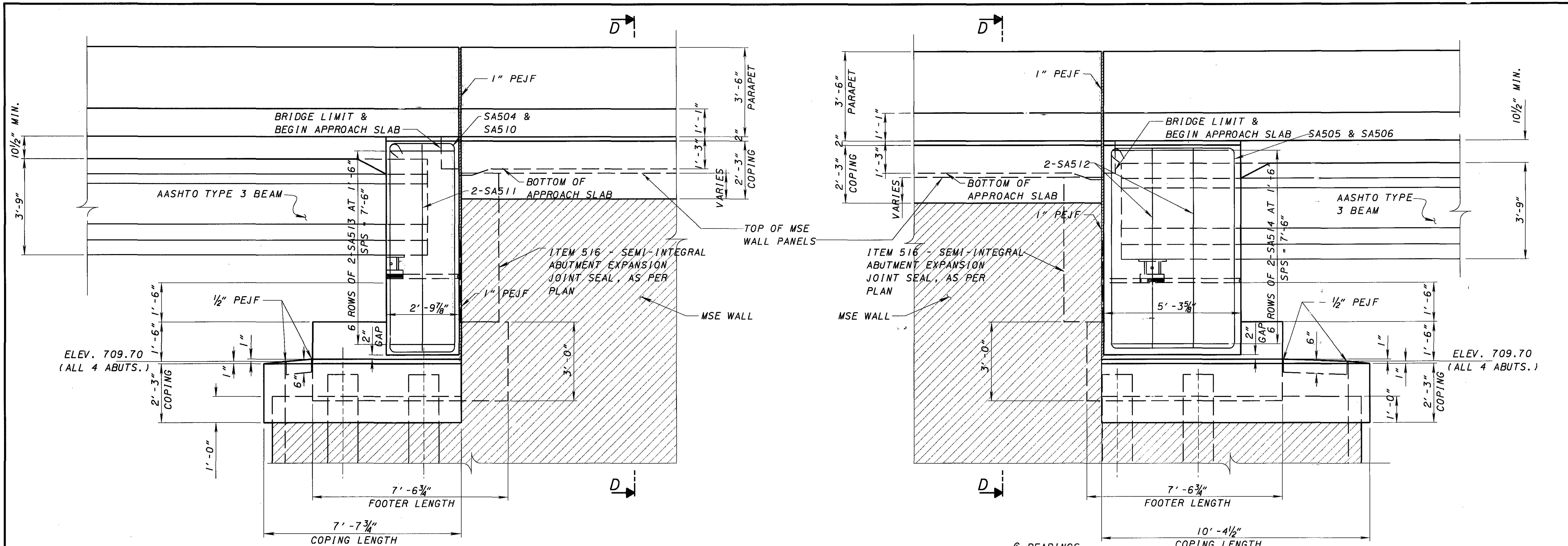
DEF-24-7.96
 PID 24337

7/18
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 660

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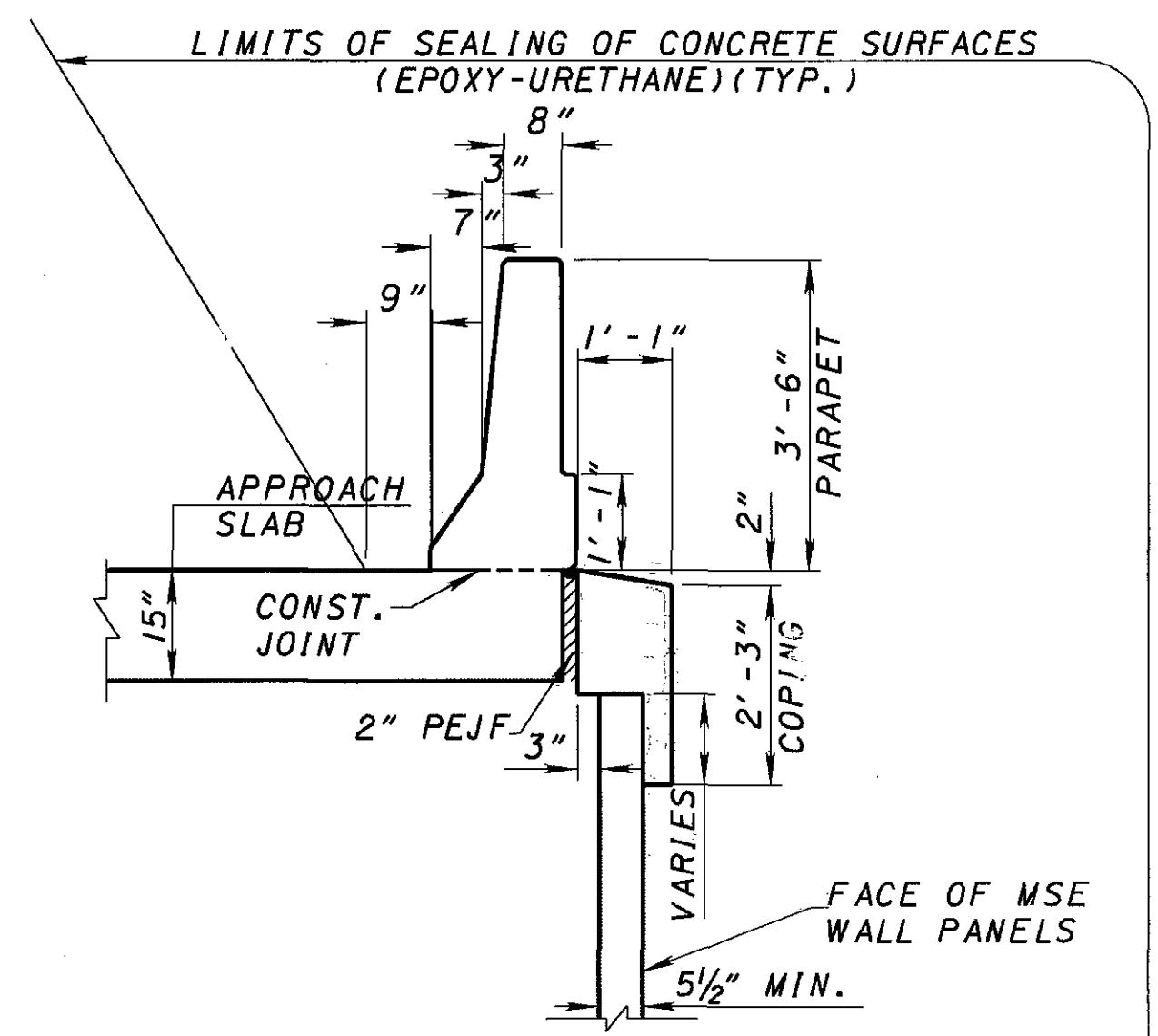
9/19/2005

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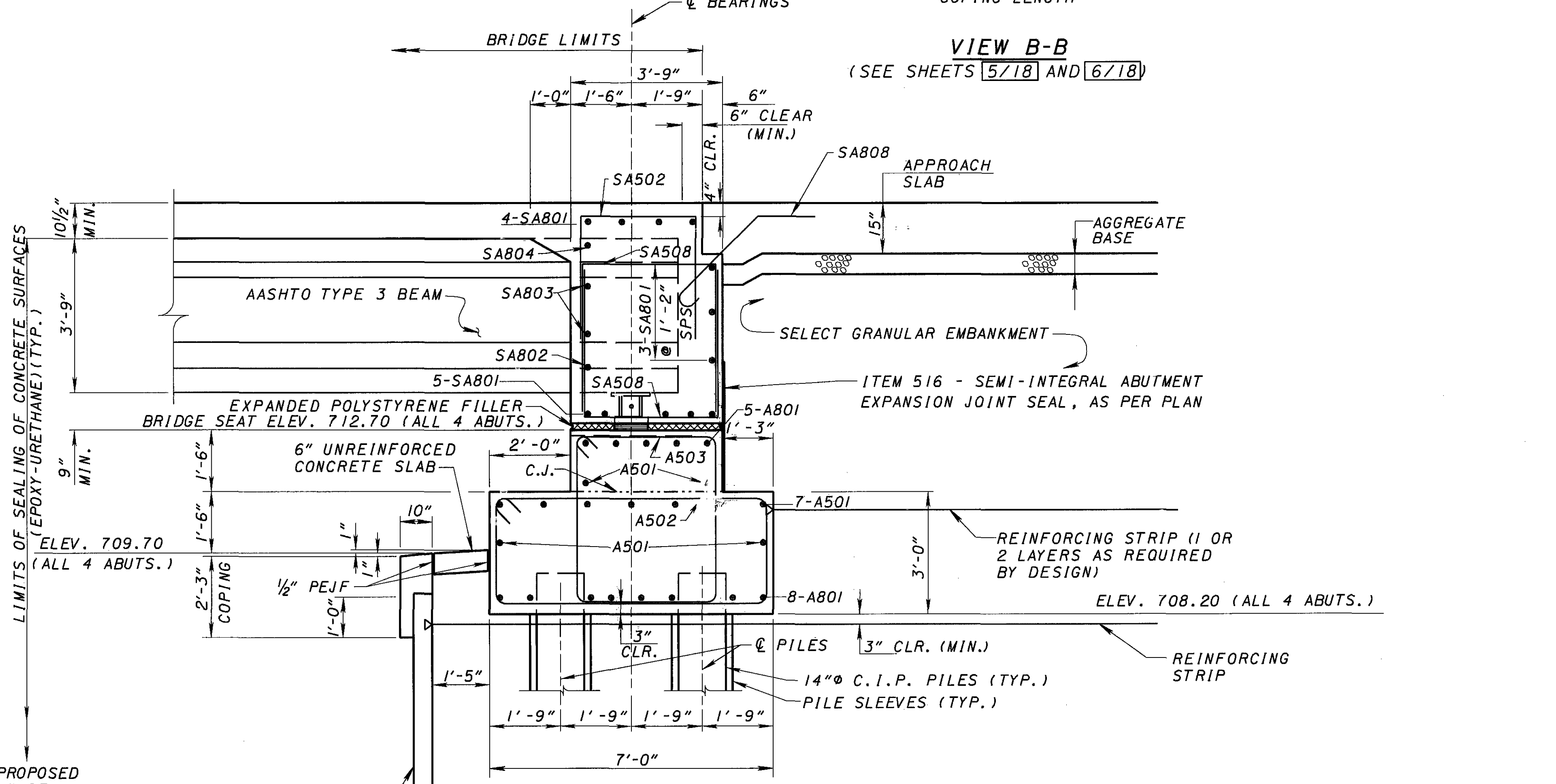


VIEW A-A
(SEE SHEETS 5/18 AND 6/18)

VIEW B-B
(SEE SHEETS 5/18 AND 6/18)



SECTION D-D



SECTION C-C
(SEE SHEETS 5/18 AND 6/18)

SEE SHEET 7/18 FOR
ABUTMENT DETAIL NOTES.

DESIGN AGENCY
KÖHL & KAHLER ASSOCIATES, INC.
ENGINEERS AND SURVEYORS
311 East Market Street, Lima, Ohio 45801 419-227-1135

DATE 4-5-05
REVIEWED DGB
DRAWN BLW
DESIGNED RTH
CHECKED THH

STANDARD FILE NUMBER
EFT 200 1221
RIGHT 200 1217

ABUTMENT DETAILS
BRIDGE NO. DEF-24-0941 L&R
U.S. 24 OVER WEST HIGH STREET

DEF-24-7.96
PID 24337

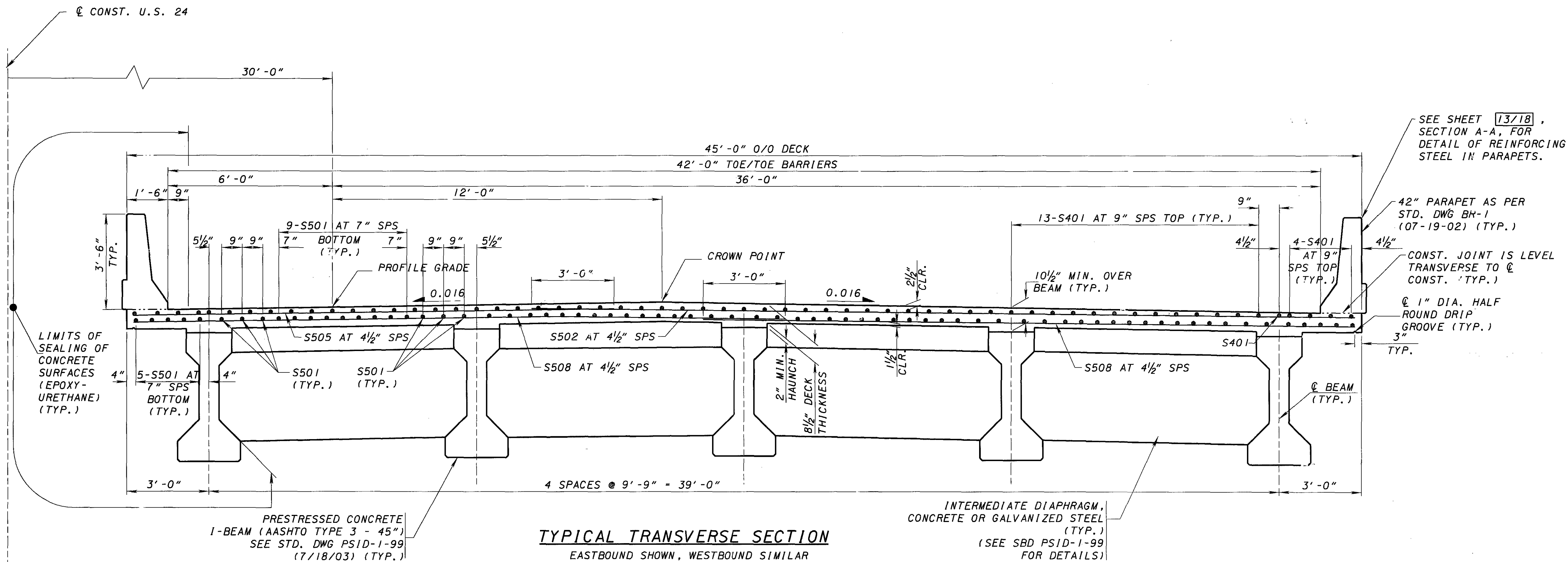
8/18

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10:38:51 AM

9/19/2005

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TYPICAL TRANSVERSE SECTION
 EASTBOUND SHOWN, WESTBOUND SIMILAR

- SEE SHEET 10/18 FOR FRAMING PLAN.
- SEE SHEET 11/18 FOR BEAM DETAILS.
- SEE SHEET 12/18 FOR DECK REINFORCING STEEL.
- SEE SHEET 13/18 FOR PARAPET REINFORCING STEEL.
- SEE SHEET 14/18 FOR SCREED ELEVATIONS.

ABUTMENT DIAPHRAGM, PRESTRESSED I-BEAM SUPERSTRUCTURE
 ABUTMENT DIAPHRAGM, PRESTRESSED I-BEAM SUPERSTRUCTURE:
 PLACE THE CONCRETE ENCASING THE PRESTRESSED I-BEAM
 STRUCTURAL MEMBERS AS PART OF THE DECK POUR.

SEE SHEET 13/18 SECTION A-A, FOR DETAIL OF REINFORCING STEEL IN PARAPETS.

DESIGN AGENCY: KOHL & KALHER ASSOCIATES, INC.
 ENGINEERS ARCHITECTS SURVEYORS
 311 East Main Street, Lima, Ohio 45201 419-227-1188

DATE	4-5-05
REVIEWED	DOB
DRAWN	IMK
DESIGNED	RTH
CHECKED	THH
STRUC. NO.	50
FILE NUMBER	RIGHT-200121

TRANSVERSE SECTION
 BRIDGE NO. DEF-24-0941 L&R
 U.S. 24 OVER WEST HIGH STREET

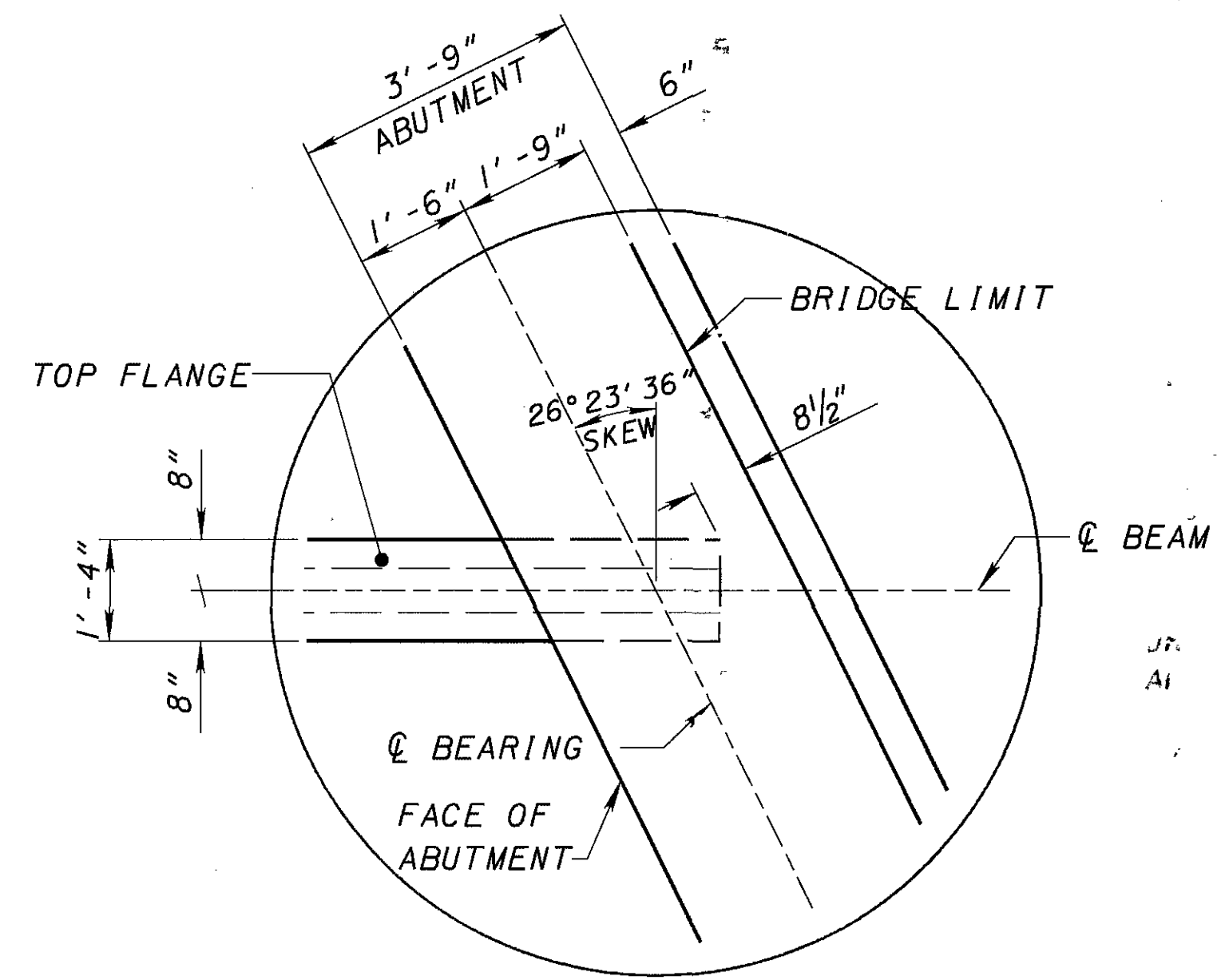
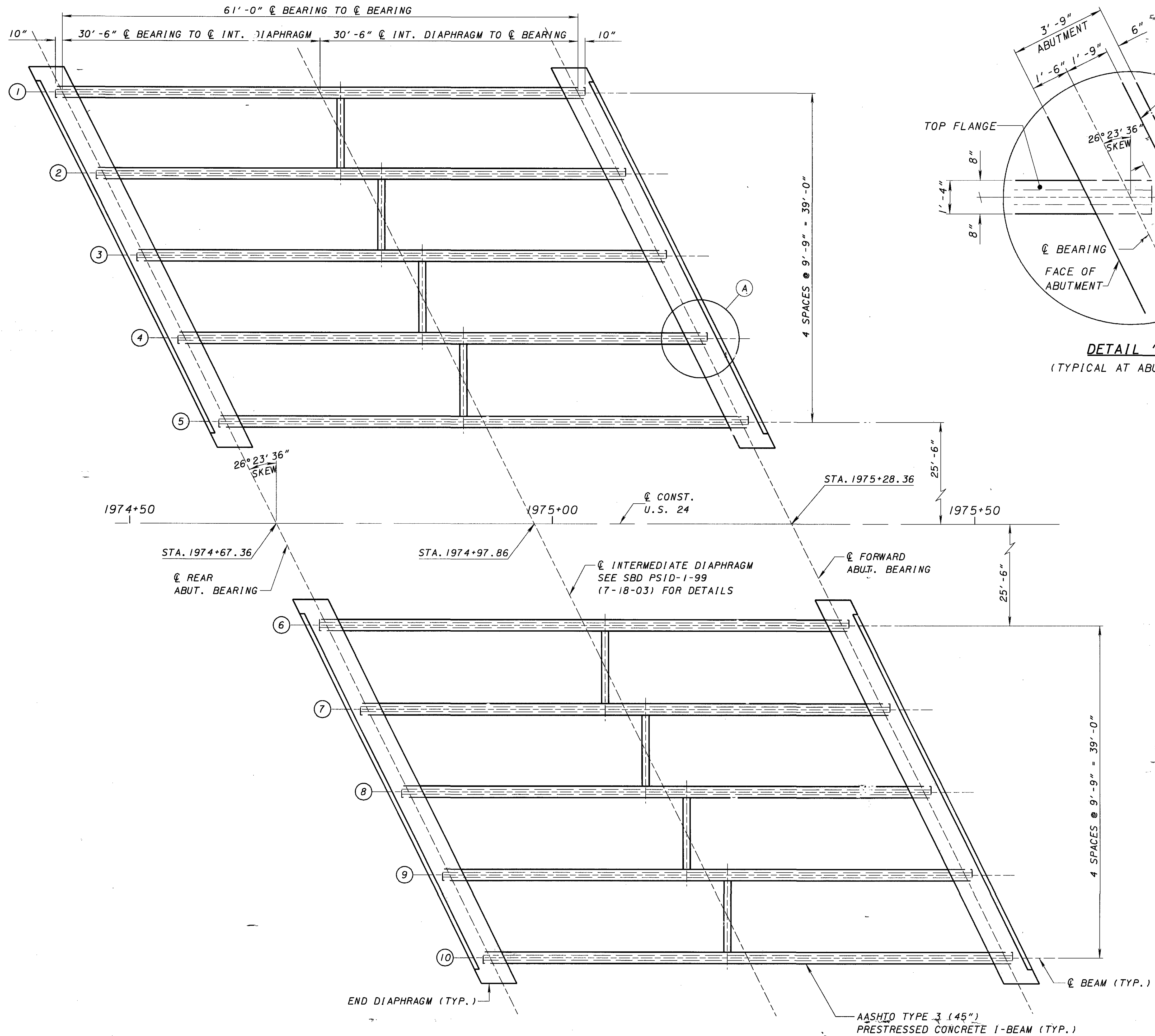
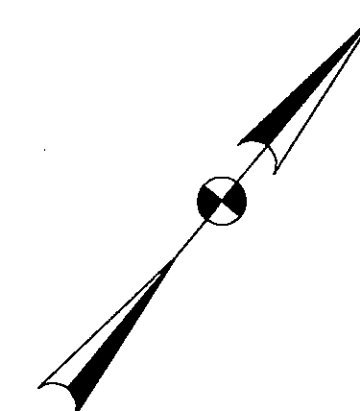
DEF-24-7.96
 PID 24337

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DESIGN AGENCY
KOHLI & KALHEER ASSOCIATES, INC.
 ENGINEERS AND SURVEYORS
 311 East Market Street, Lima, Ohio 45801 419-227-1188

DESIGNED	RT	CHECKED	THH
DRAWN	IMK	REVISED	
REVIEWED	LJB	DATE	4-5-05
STRUCTURE FILE NUMBER	2001217		
LEFT	2001225		
RIGHT	2001217		

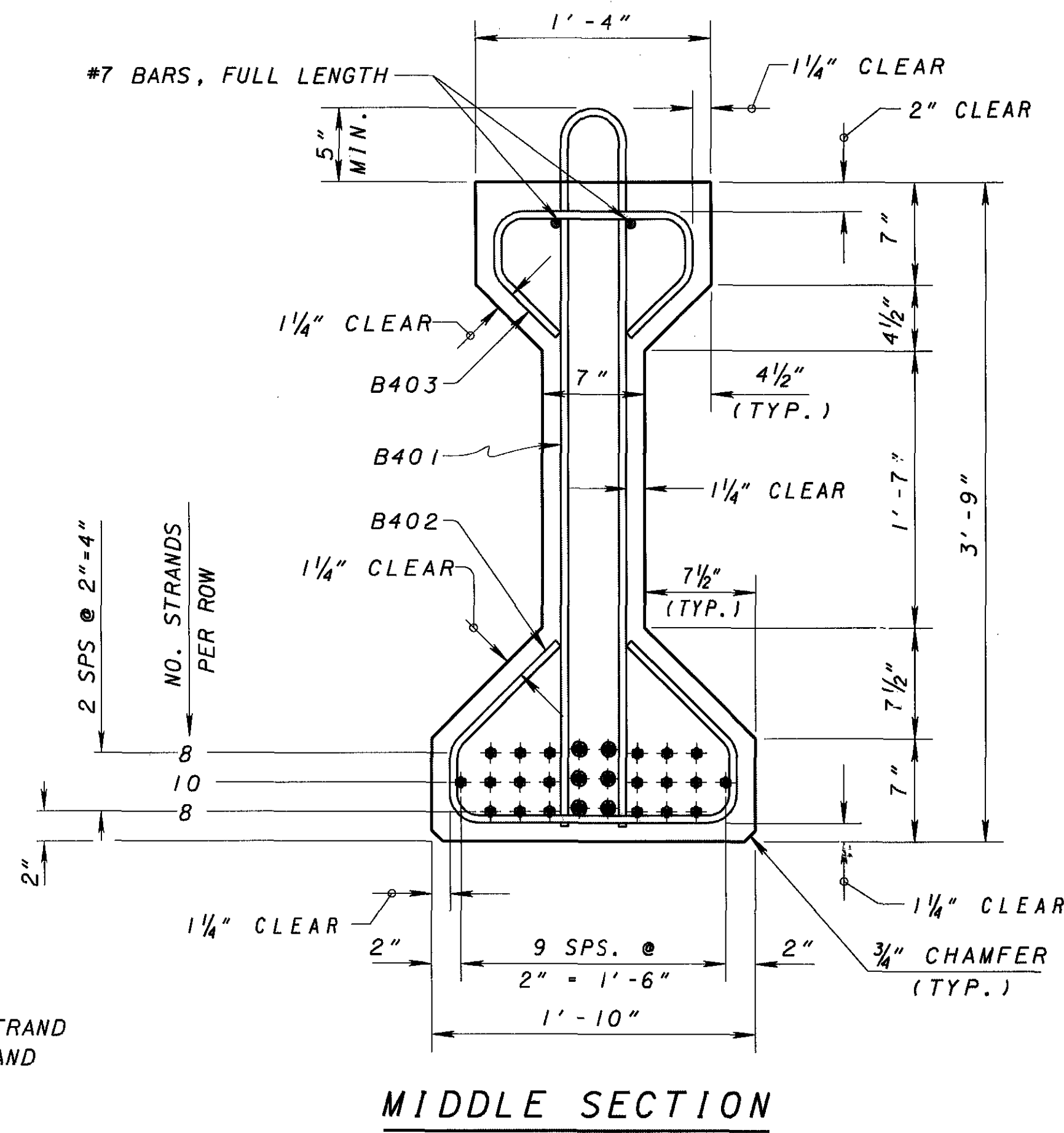
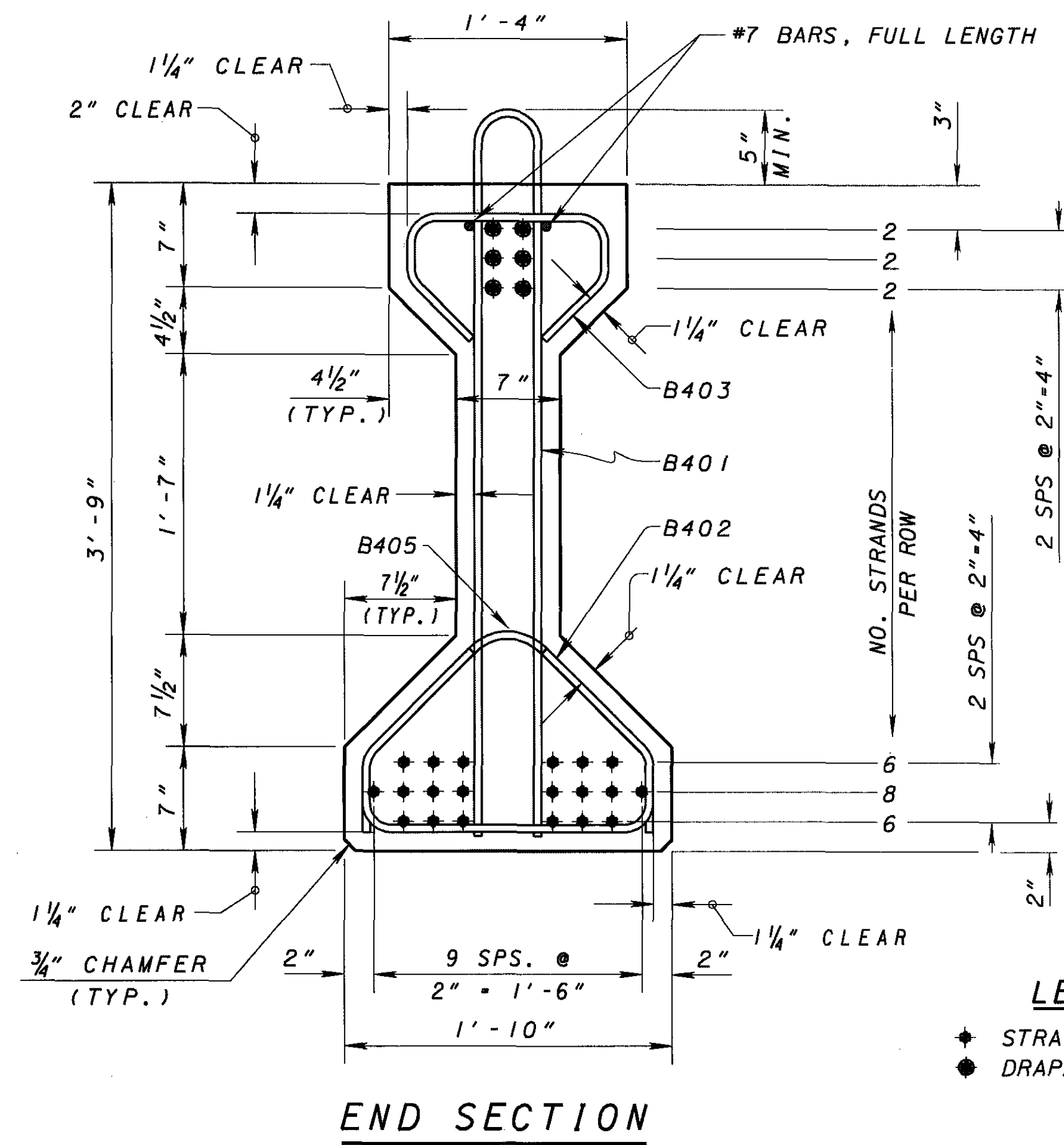
FRAMING PLAN
 BRIDGE NO. DEF-24-0941 L&R
 U.S. 24 OVER WEST HIGH STREET

DEF-24-7.96
 PID 24337

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9/19/2005

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LEGEND

◆ STRAIGHT STRAND
● DRAPED STRAND

AASHTO TYPE 3 BEAM
(26 TOTAL STRANDS, 6 DRAPED)

NOTES:
INITIAL PRESTRESSING TENSION LOAD FOR LOW-RELAXATION STRAND SHALL BE 33,818 LB/STRAND.

ABBREVIATIONS:
NF - NEAR FACE
FF - FAR FACE
SPS - SPACES

PRESTRESSED CONCRETE I-BEAM DETAILS:
SEE STANDARD DRAWING PSID-1-99 (7-18-03)

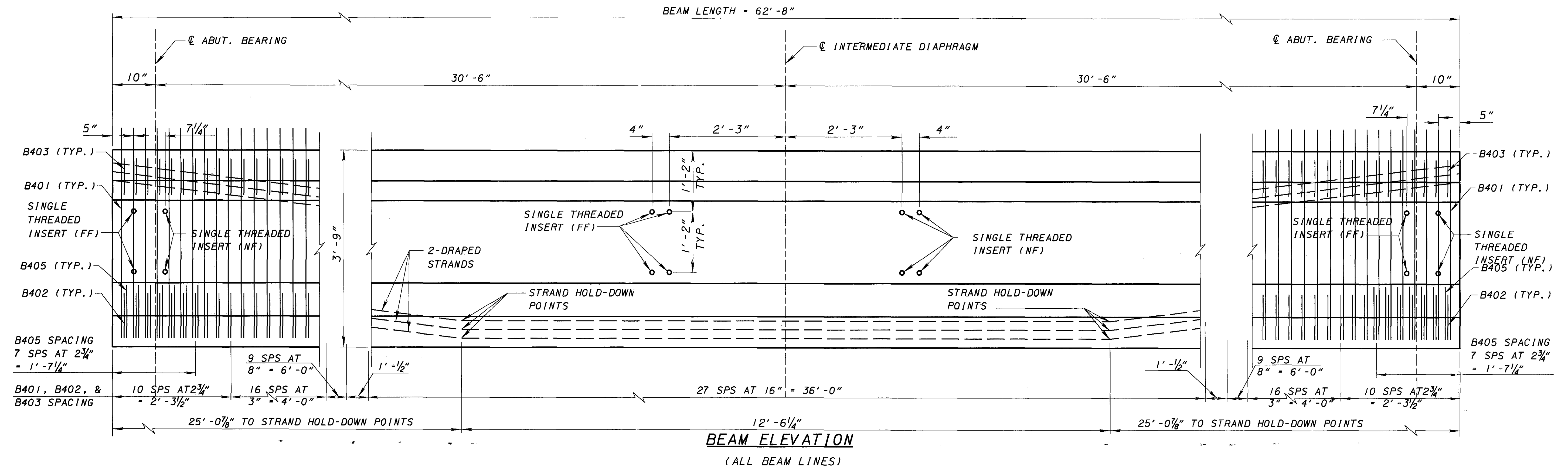
THREADED INSERTS MAY BE MOVED SLIGHTLY WHERE NECESSARY TO AVOID REINFORCING STEEL AND PRESTRESSING STRANDS. SEE FRAMING PLAN FOR OMITTED THREADED INSERTS ON EXTERIOR FACE OF EXTERIOR BEAMS.

THREADED INSERTS SHOWN FOR INTERMEDIATE DIAPHRAGMS ARE FOR CAST-IN-PLACE CONCRETE DIAPHRAGMS. THE CONTRACTOR MAY CHOOSE GALVANIZED STEEL INTERMEDIATE DIAPHRAGMS INSTEAD, PER SBD PSID-1-99, AND PROVIDE SLEEVED HOLES INSTEAD OF THREADED INSERTS.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

BEAM DIMENSIONS			
BEAM MARK	NO. REQ'D	DIMENSIONS	APPROXIMATE WEIGHT (LBS)
E.B.	5	SEE BEAM ELEVATION	36,535
W.B.	5	SEE BEAM ELEVATION	36,535

BEAM MARK	NUMBER OF STRANDS PER ROW		CONCRETE STRENGTHS		B401 BARS	B402 BARS	B403 BARS	B405 BARS
	ROW NUMBER	TOTAL STRANDS	f'c i	f'c	REQ'D	REQ'D	REQ'D	REQ'D
			SEE END SECTION AND MIDDLE SECTION					
E.B.	SEE END SECTION AND MIDDLE SECTION	26	5000	7000	98	98	98	14
W.B.	SEE END SECTION AND MIDDLE SECTION	26	5000	7000	98	98	98	14

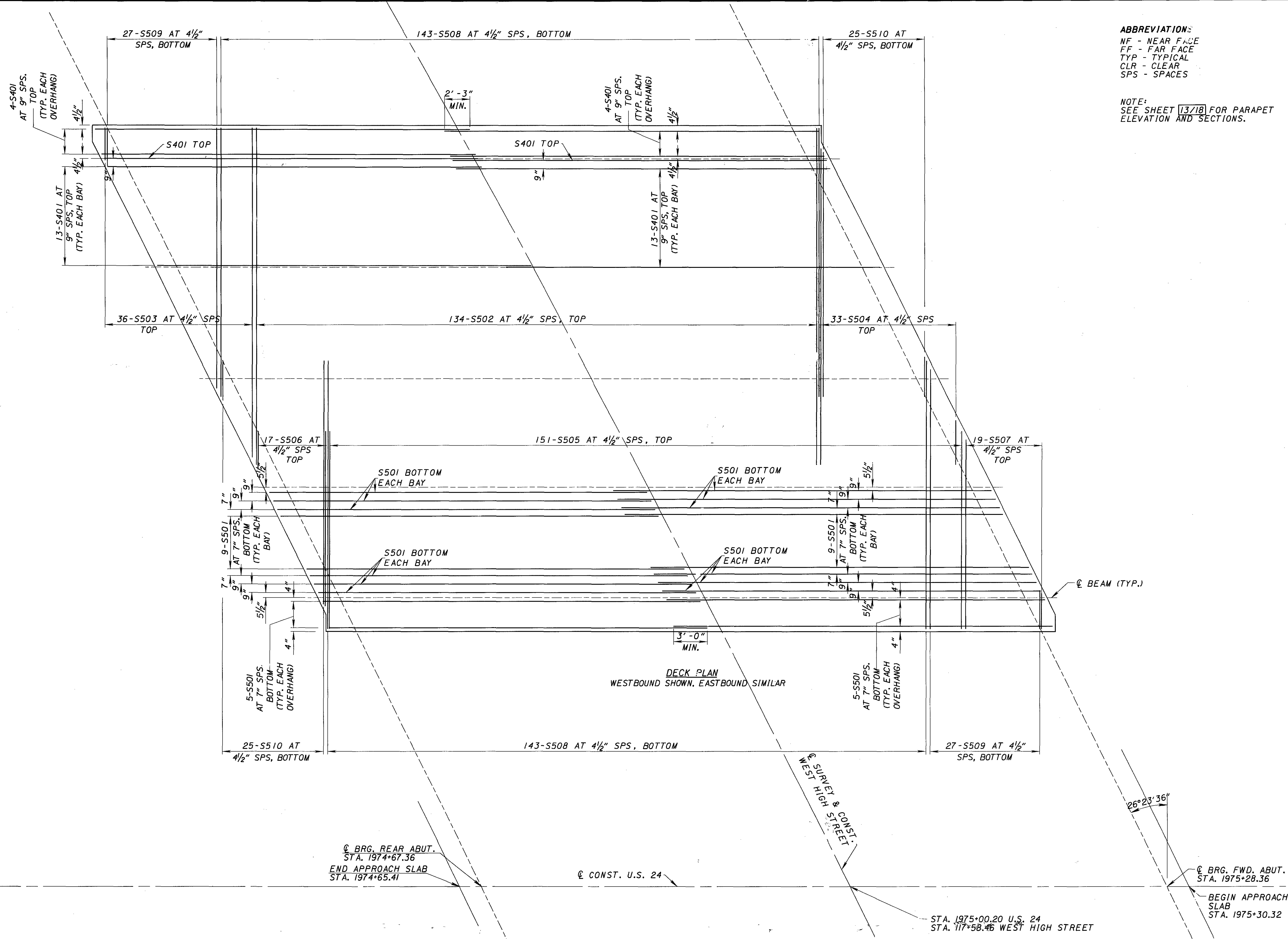


DESIGN AGENCY: KOHLI & VALIER ASSOCIATES, INC.
 BRIDGE NO.: DEF-24-0941 L&R
 U.S. 24 OVER WEST HIGH STREET
 DESIGNER: RTH
 CHECKED: THH
 DRAWN: INK
 REVISED: []
 DATE: 4-5-05
 STRUC. FILE NUMBER: []
 LIGHT: 2001217
 DESIGN: DGB
 DEF-24-7.96
 PID 24337
 11/18
 543
 660

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9/19/2005

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ABBREVIATION:
 NF - NEAR FACE
 FF - FAR FACE
 TYP - TYPICAL
 CLR - CLEAR
 SPS - SPACES

NOTE:
 SEE SHEET 13/18 FOR PARAPET
 ELEVATION AND SECTIONS.

DESIGN AGENCY
KOHLI & KAUFER ASSOCIATES, INC.
 ENGINEERS AND SURVEYORS
 311 East Market Street, Lima, Ohio 45801 419-272-1185

DESIGNED BLW	CHECKED RTH	DRAWN B.W	REVIEWED DGB	DATE 4-5-05
STRUCTURE FILE NUMBER LEFT-2001225				PROJECT NUMBER RIGHT-2001217

DECK PLAN
 BRIDGE NO. DEF-24-0941 L&R
 U.S. 24 OVER WEST HIGH STREET

DEF-24-7.96
PID 24337

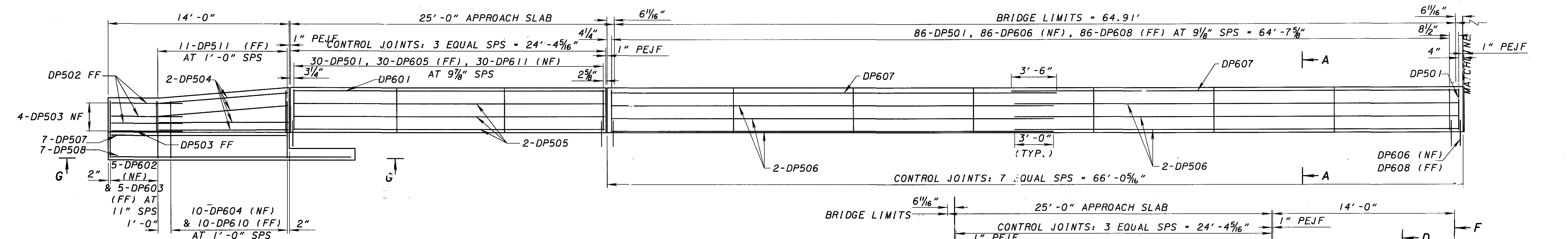
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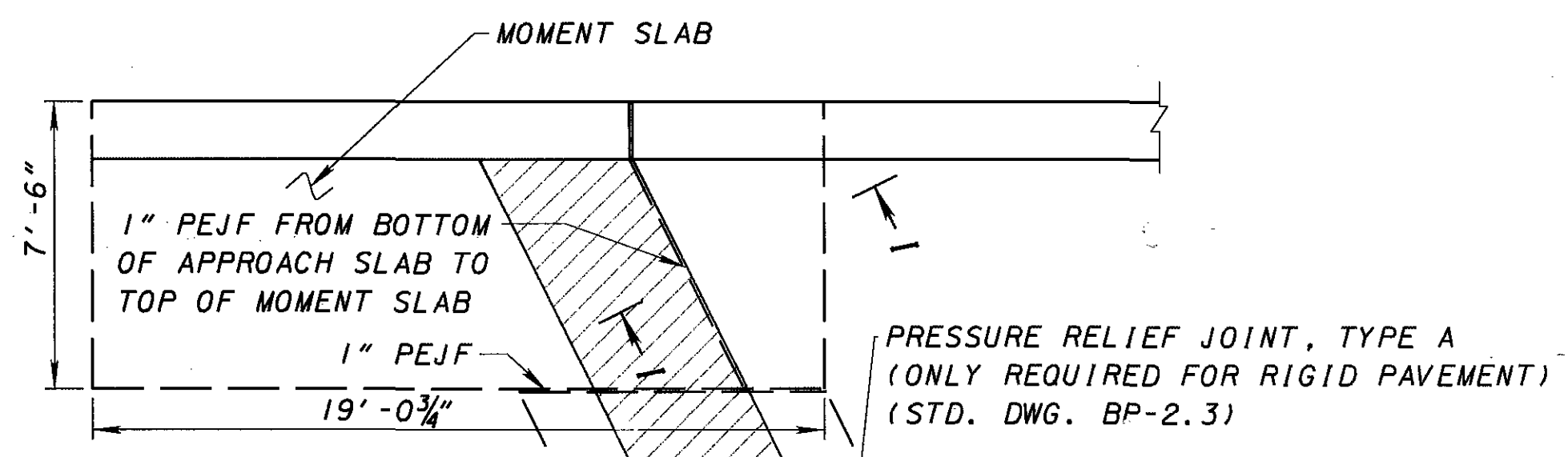
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9/19/2005

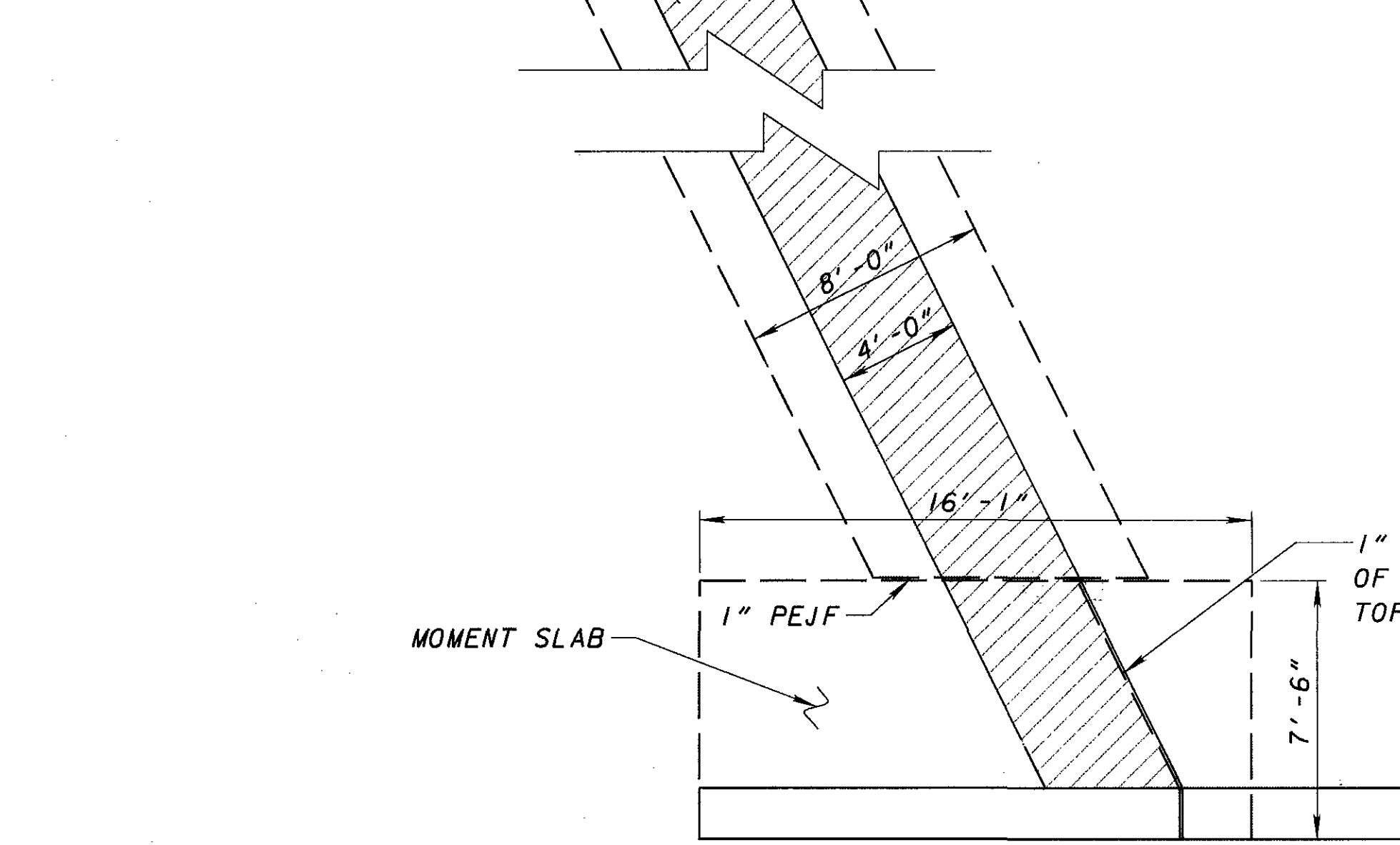
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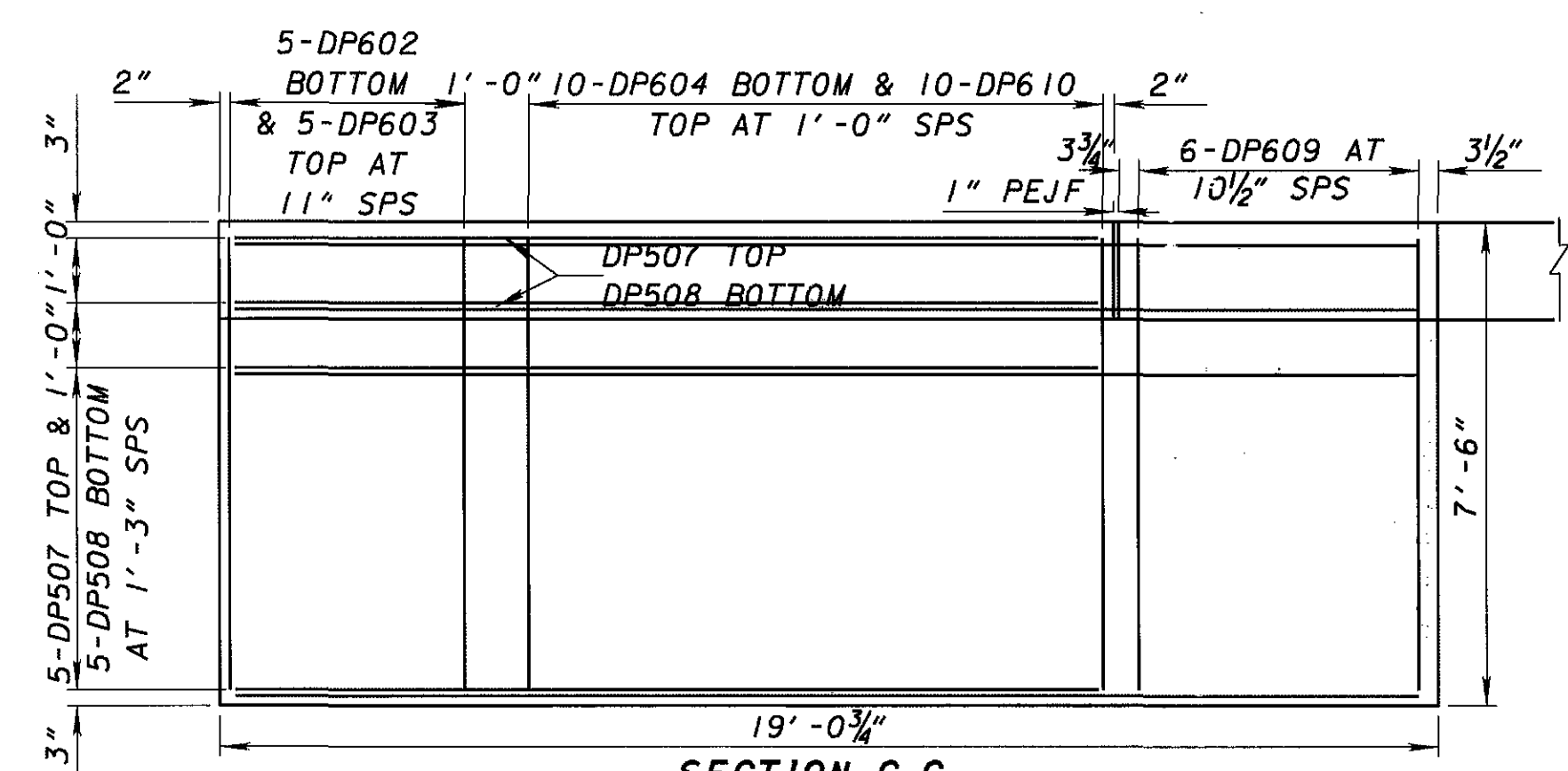
PARAPET ELEVATION (TYPICAL OF 4)



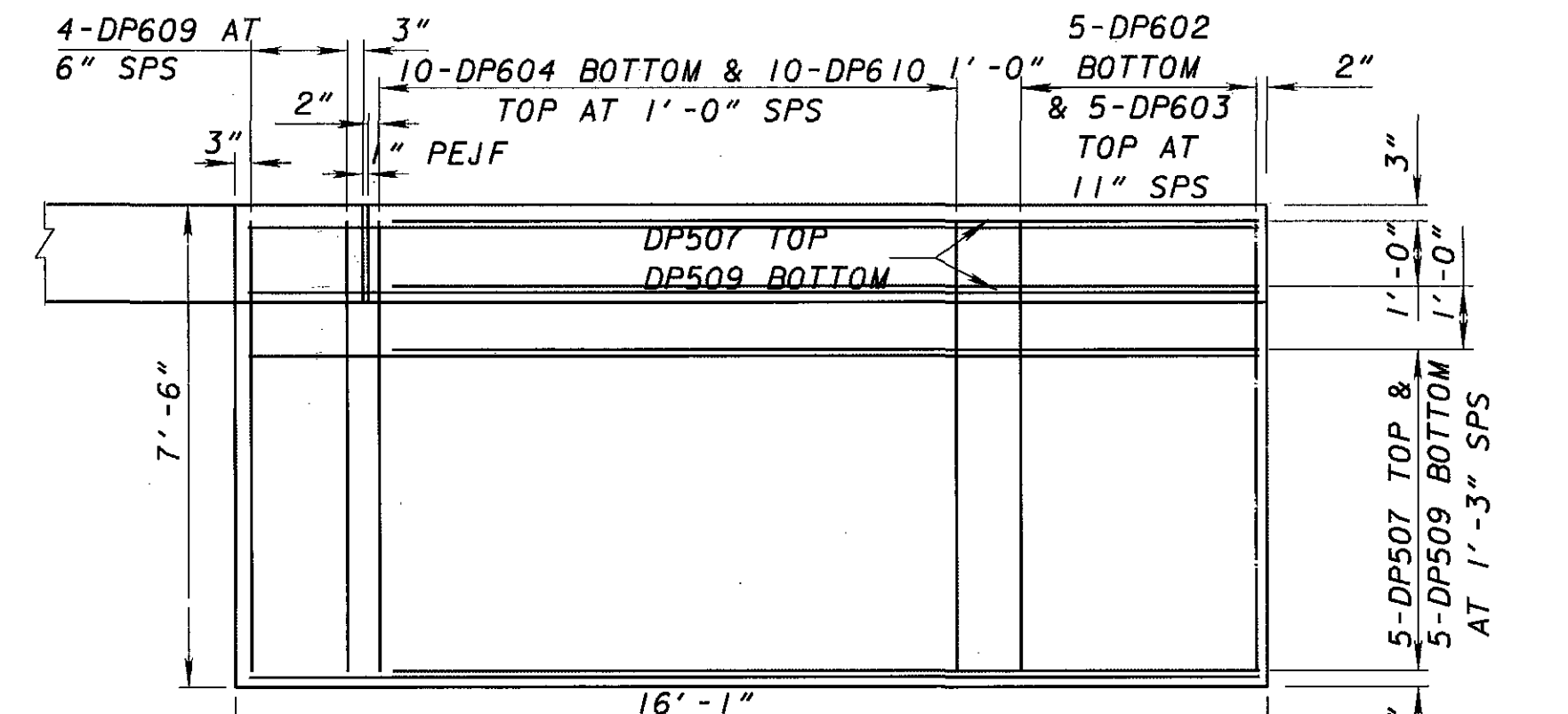
MOMENT SLAB UNDER PARAPET



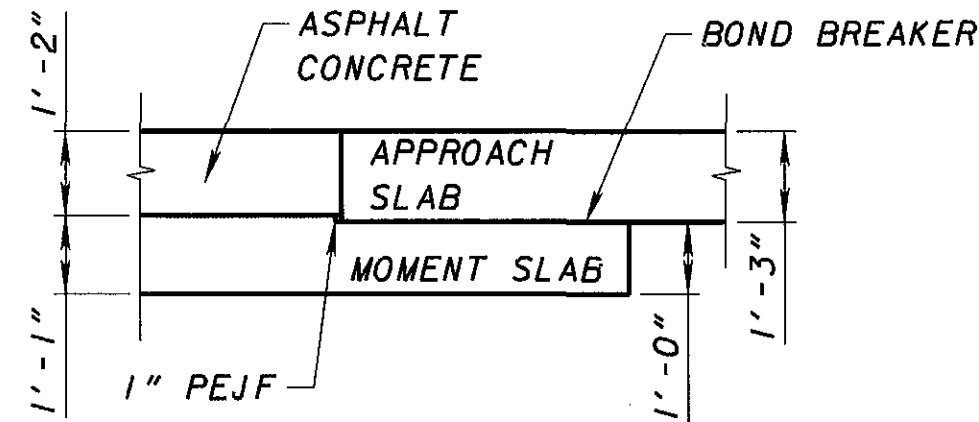
PLAN VIEW (TYPICAL OF 4)



SECTION G-G MOMENT SLAB UNDER PARAPET

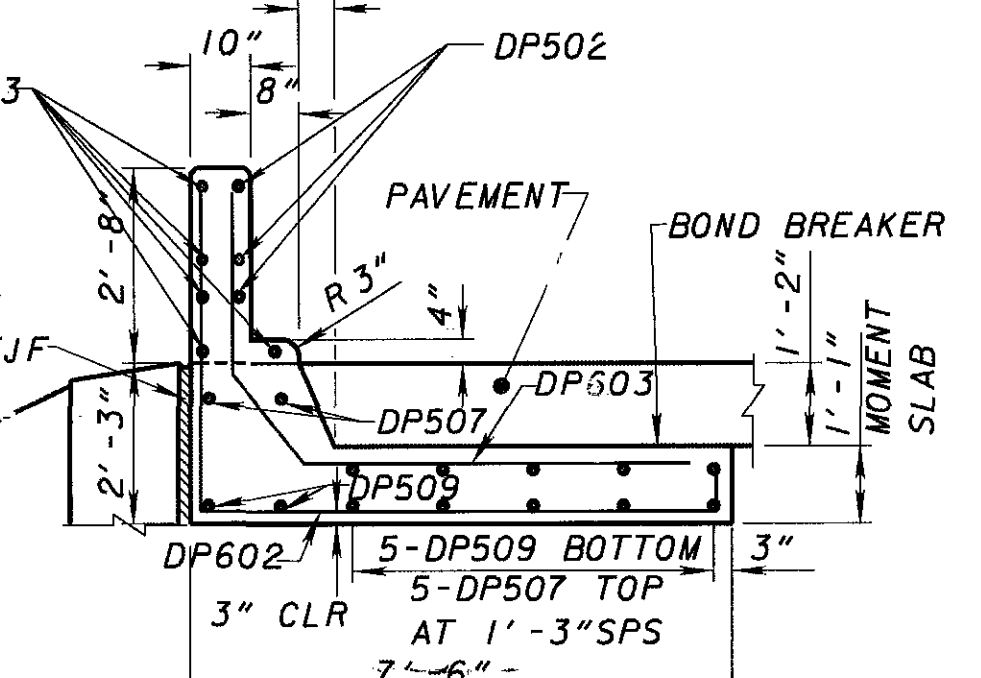
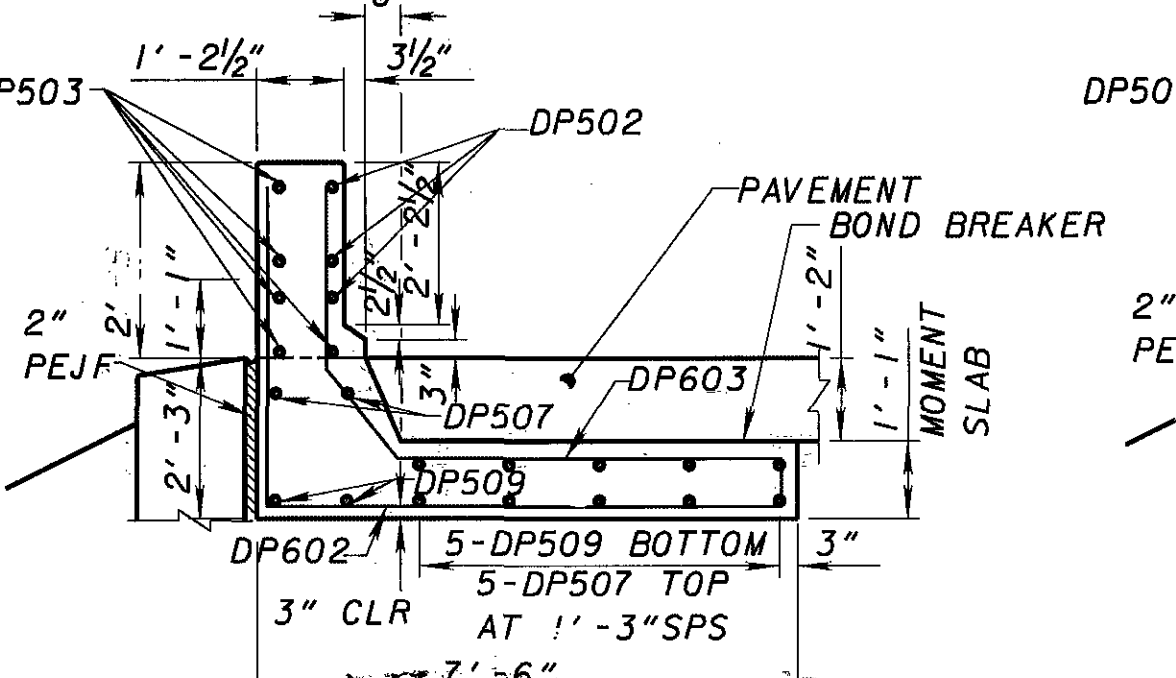
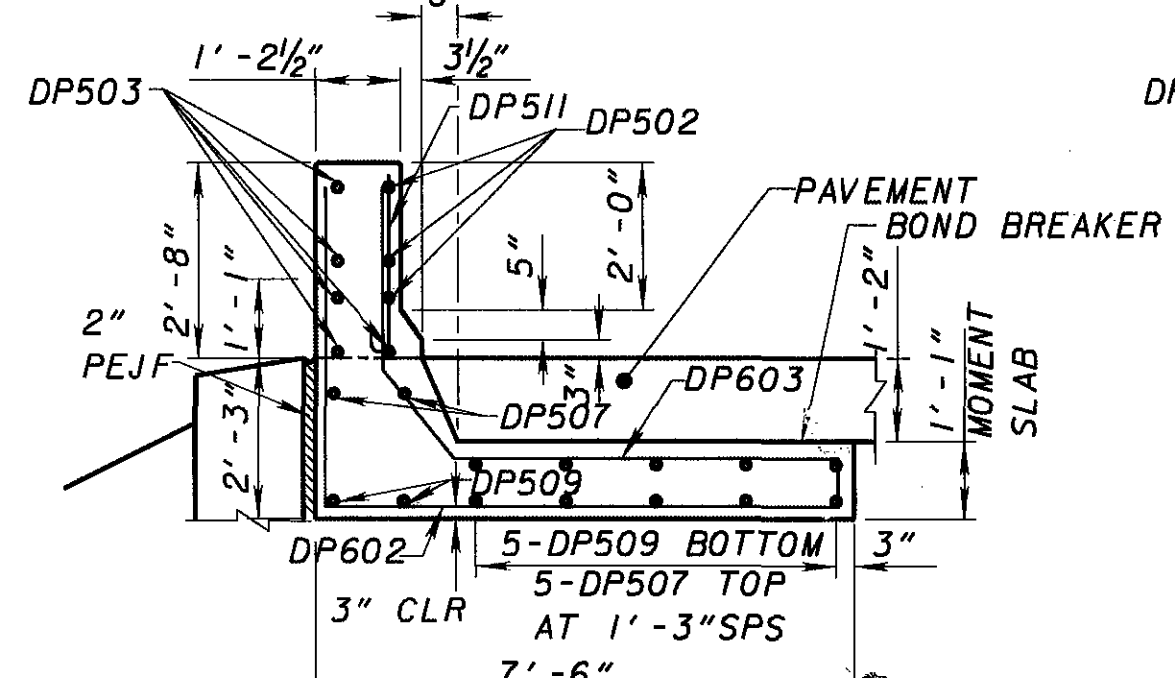
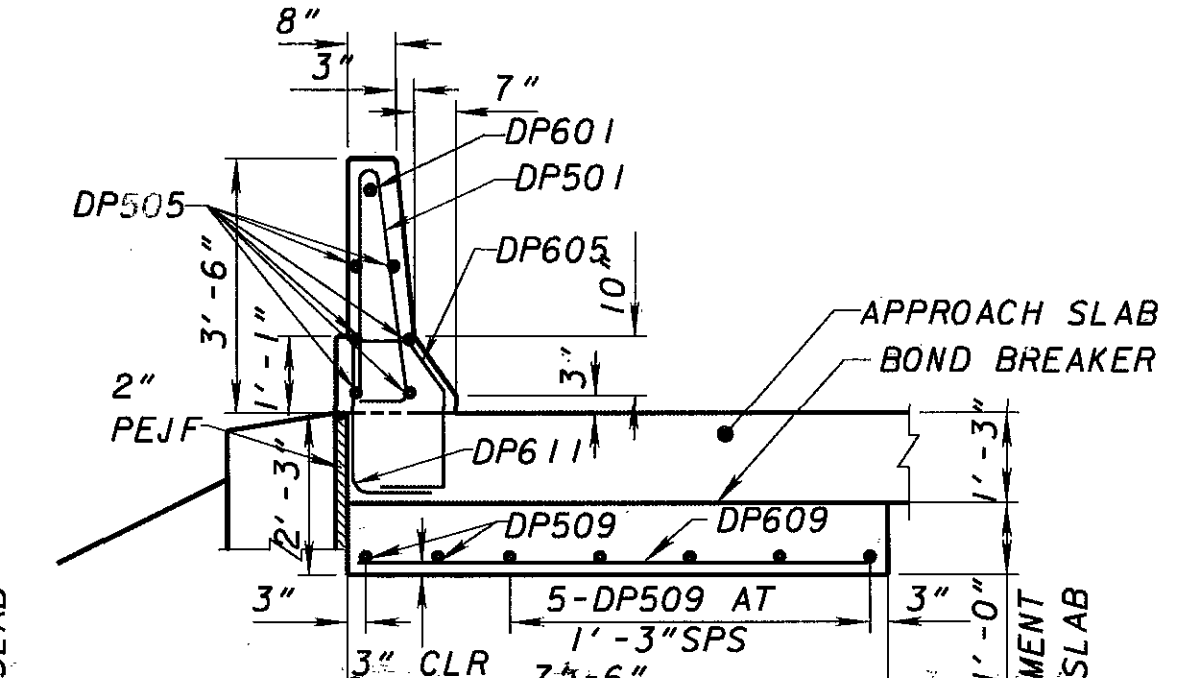
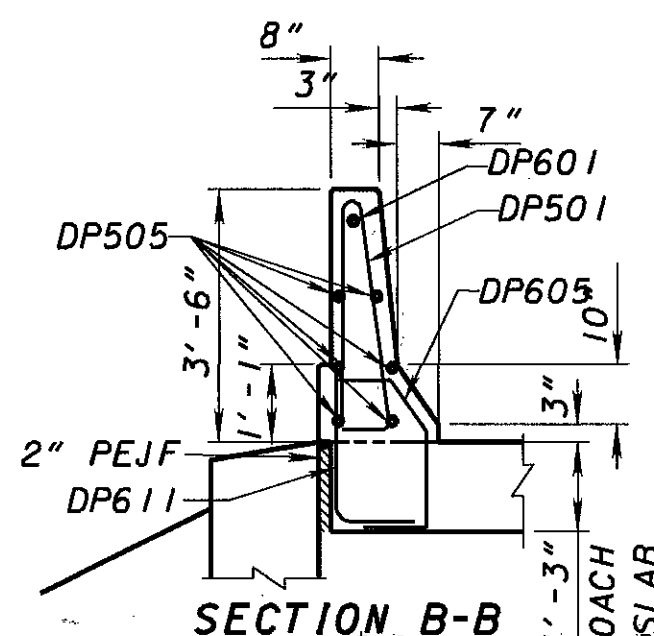
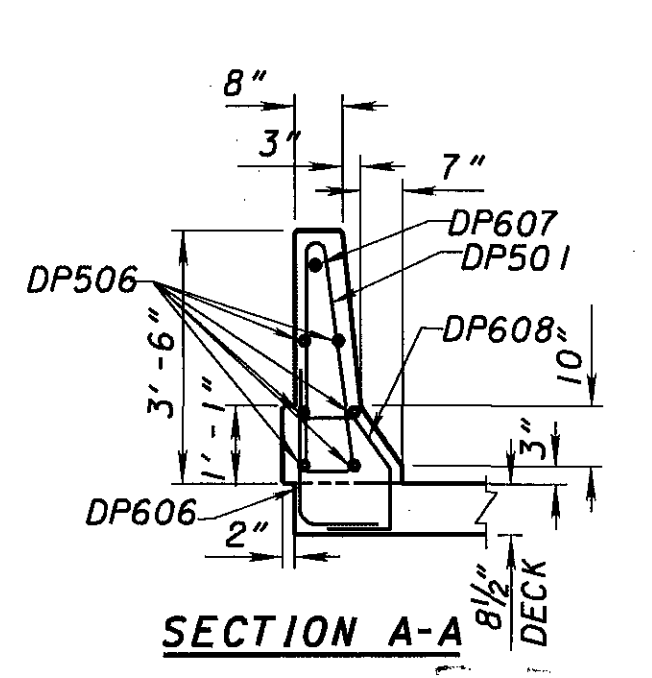


SECTION H-H MOMENT SLAB UNDER PARAPET



SECTION I-I

NOTE: SEE STANDARD DRAWING BR-1 FOR ADDITIONAL PARAPET DETAILS.



DESIGN AGENCY
KOHLI & KALHER ASSOCIATES, INC.
 ENGINEERS AND SURVEYORS
 311 East Main Street, Suite 400, Denver, CO 80202
 303.733.1111

DATE
4-5-05

REVIEWED
 DGB

DESIGNED
 BLW

CHECKED
 RTH

DRAWN
 BLW

STRUCTURE FILE NUMBER
LEFT-2001225

RIGHT-2001217

DEFLECTOR PARAPET DETAILS
 BRIDGE NO. DEF-24 0941 L&R
 U.S. 24 OVER WEST HIGH STREET

DEF-24-7.96
 P I D 24337

13/18

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9/19/2005

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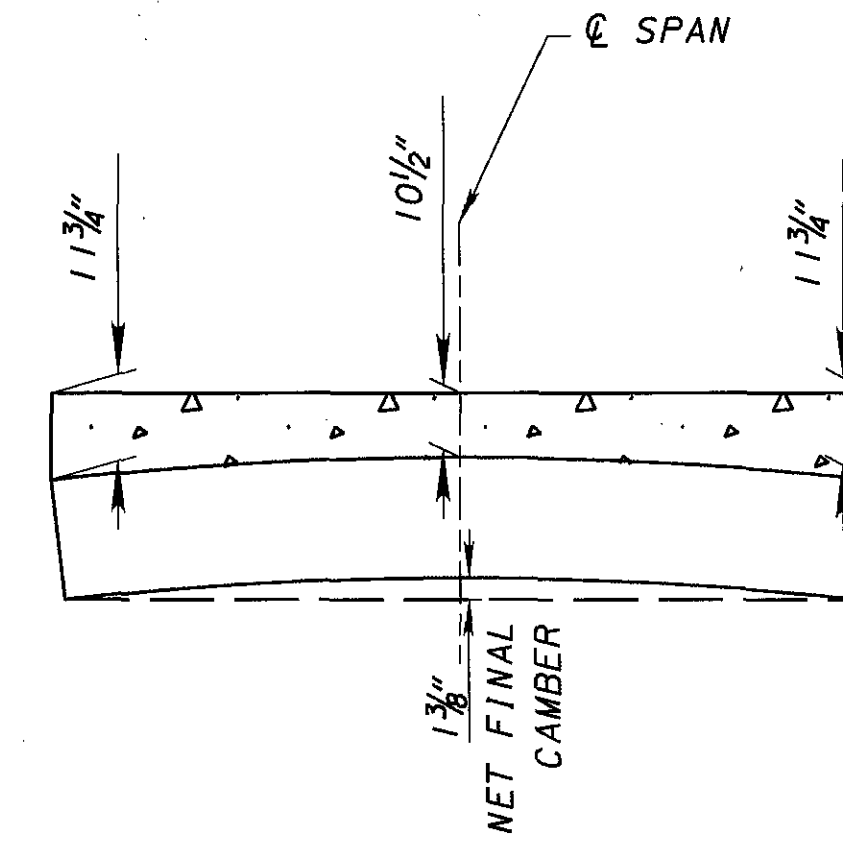
WEST BOUND SCREED TABLE

Table with columns: SPAN POINT, STATION, REAR ABUTMENT, 1/4, 1/2, 3/4, FORWARD ABUTMENT. Rows include TOE OF PARAPET, BEAM 1-5, CROWN POINT, PROFILE GRADE, and CL OF CONST.

EAST BOUND SCREED TABLE

Table with columns: SPAN POINT, STATION, REAR ABUTMENT, 1/4, 1/2, 3/4, FORWARD ABUTMENT. Rows include CL OF CONST., TOE OF PARAPET, BEAM 6-10, CROWN POINT, PROFILE GRADE, and TOE OF PARAPET.

NOTE: SCREED ELEVATIONS SHOWN ARE FOR THE DECK SLAB SURFACE PRIOR TO CONCRETE PLACEMENT. ALLOWANCE HAS BEEN MADE FOR ANTICIPATED CALCULATED DEAD LOAD DEFLECTIONS.



DECK SLAB THICKNESS DIAGRAM

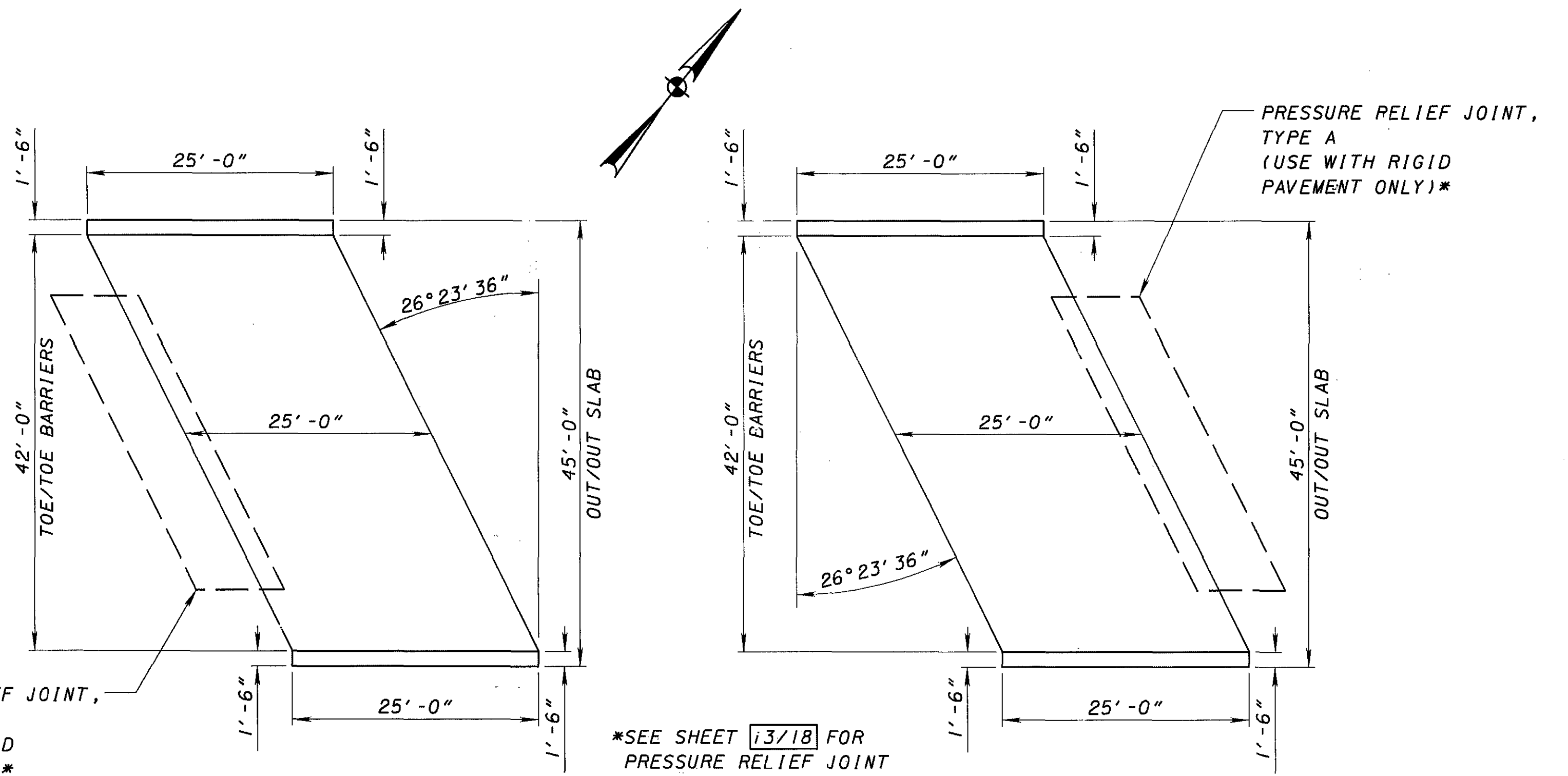
DECK SLAB THICKNESS FOR CONCRETE QUANTITY:

THE TOPPING THICKNESSES SHOWN FROM THE TOP OF THE DECK SLAB TO THE TOP OF THE FLANGE ALONG THE CENTERLINE OF THE I-BEAM ARE THEORETICAL DIMENSIONS...

DESIGN SLAB THICKNESS = 8 1/2" HAUNCH = TOPPING THICKNESS SHOWN MINUS THE DESIGN SLAB THICKNESS

THE NET FINAL CAMBER IS SHOWN ON THIS DIAGRAM.

CALCULATED CAMBER AT THE TIME OF RELEASE IS 1 1/8 INCHES. CALCULATED CAMBER AT THE TIME OF ERECTION IS 2 INCHES. CALCULATED LONG-TERM CAMBER IS 2 3/4 INCHES.



APPROACH SLAB PLAN (REAR)

APPROACH SLAB PLAN (FORWARD)

*SEE SHEET 13/18 FOR PRESSURE RELIEF JOINT AND MOMENT SLAB DETAILS

KOHLI & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS

REVIEWED DGB 4-5-05. DRAWN BLW 4-5-05. CHECKED THH 4-5-05.

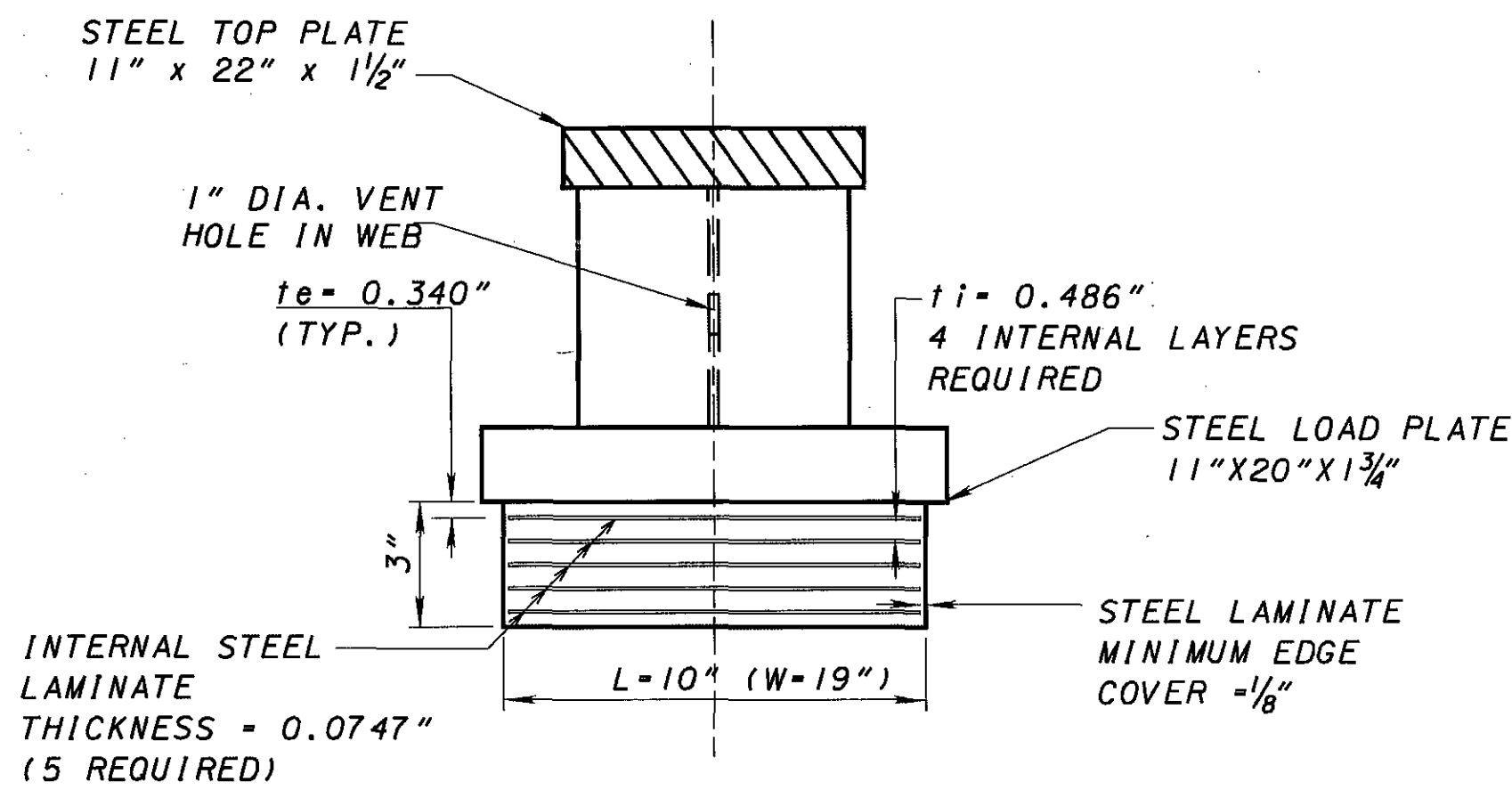
SCREED AND APPROACH SLAB DETAILS BRIDGE NO. DEF-24-0941-L&R U.S. 24 OVER WEST HIGH STREET

DEF-24-7.96 PID 24337

10:35:00 AM

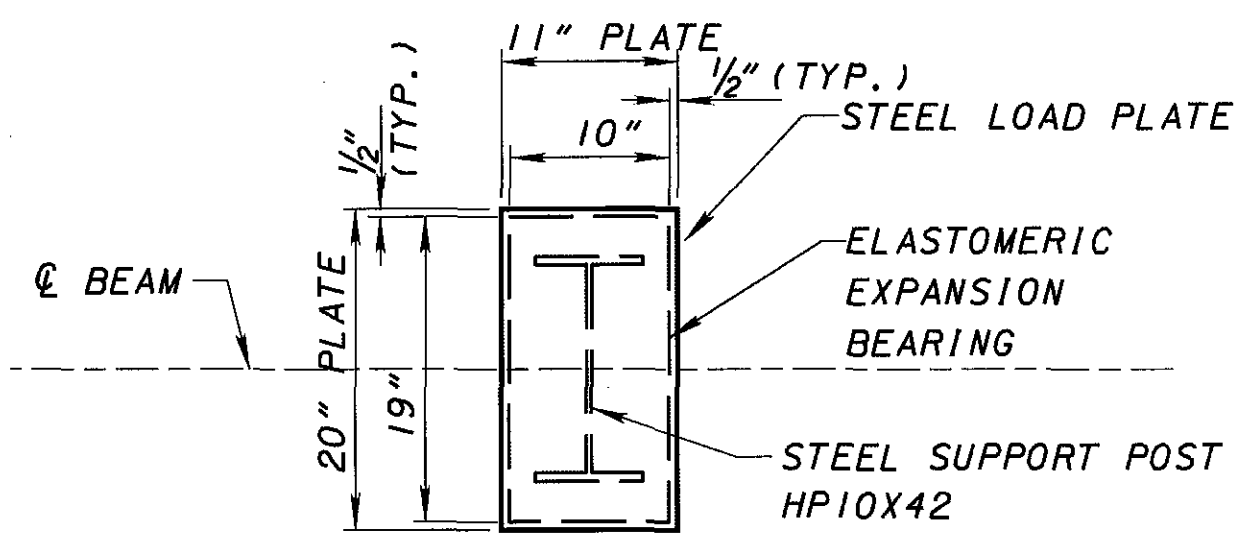
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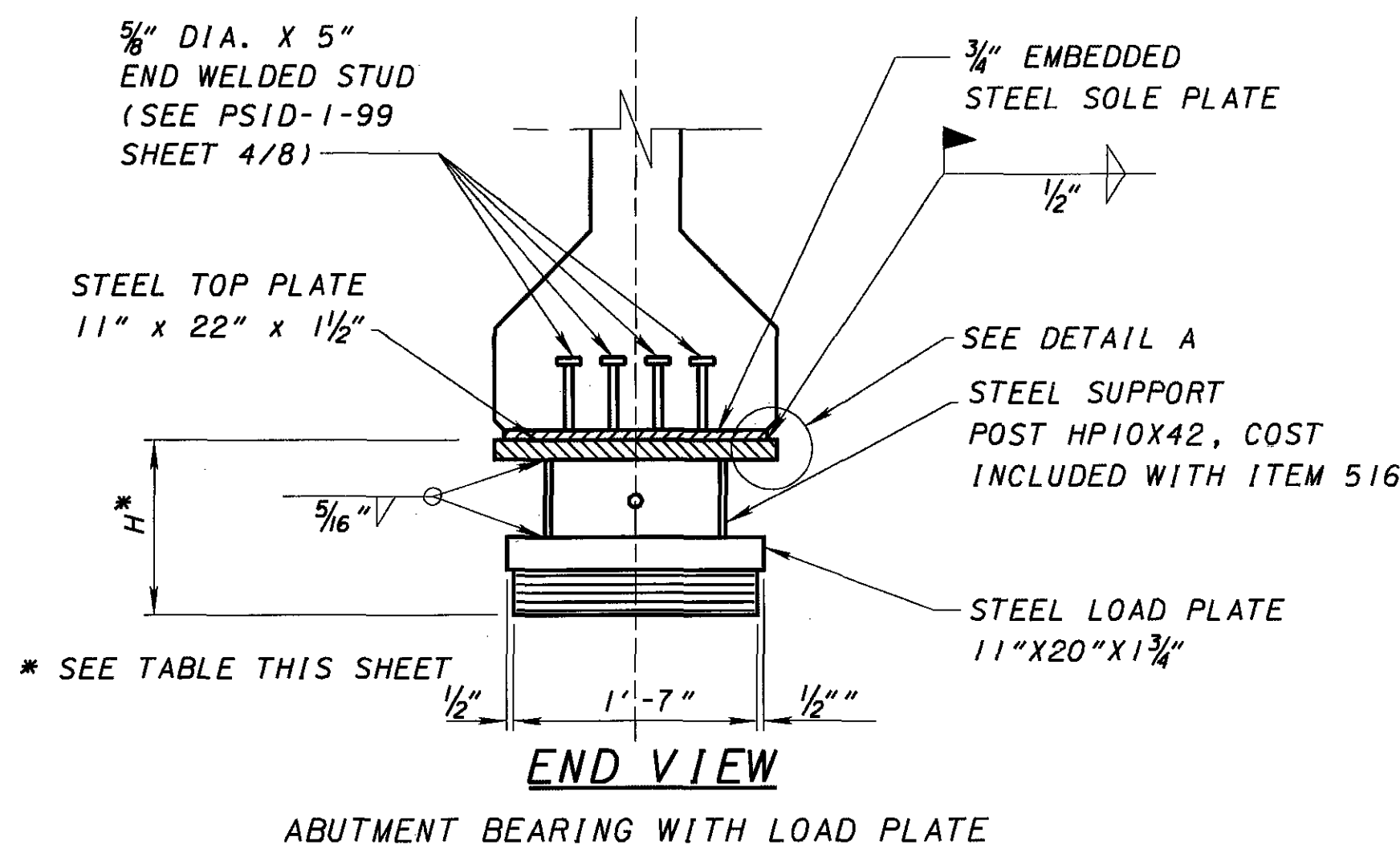


SIDE VIEW
LAMINATED ELASTOMERIC EXPANSION BEARING, 60 DUROMETER

REAR AND FORWARD ABUTMENTS
 DEAD LOAD REACTION = 109.8 KIPS
 LIVE LOAD REACTION = 67.6 KIPS
 MAXIMUM DESIGN LOAD = 177.4 KIPS

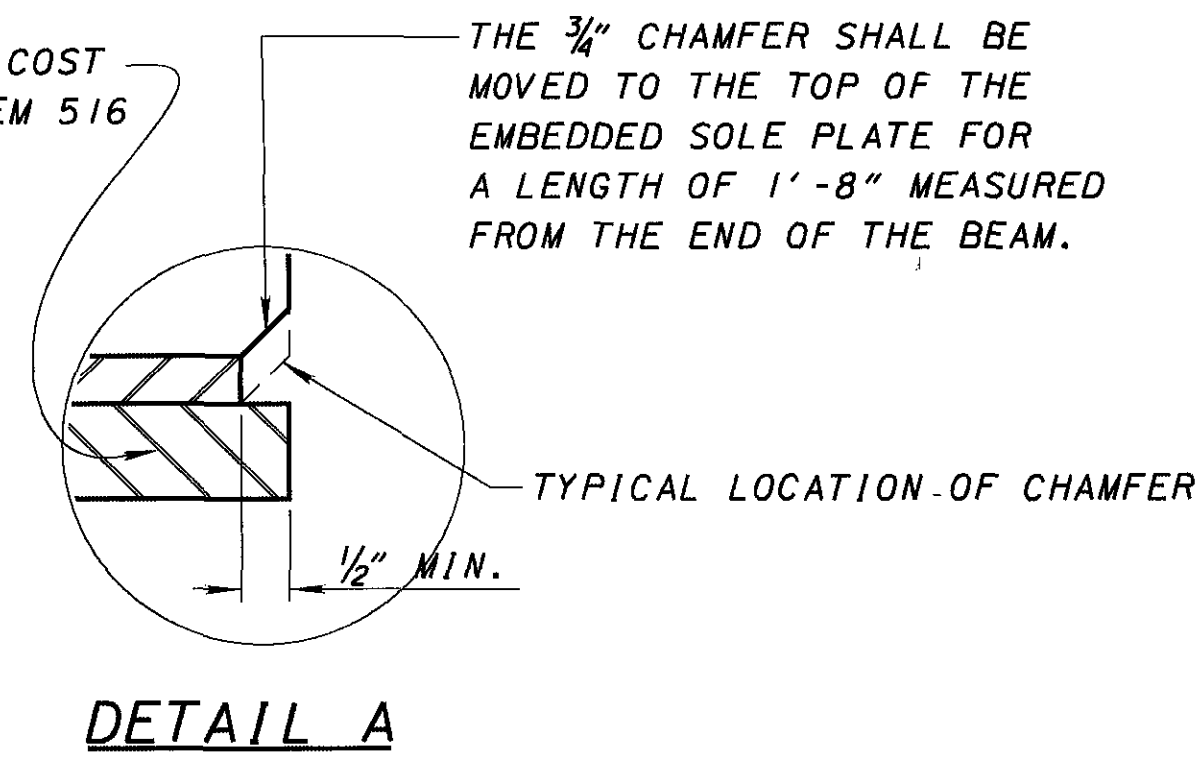


PLAN VIEW-ABUTMENT BEARING



END VIEW
 ABUTMENT BEARING WITH LOAD PLATE

STEEL TOP PLATE
 11" x 22" x 1 1/2", COST
 INCLUDED WITH ITEM 516



DETAIL A

WELDING: CONTROL WELDING SO THAT THE PLATE TEMPERATURE AT THE ELASTOMER BONDED SURFACE DOES NOT EXCEED 300 DEGREES F AS DETERMINED BY USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.

ELASTOMERIC BEARINGS: THE ELASTOMER SHALL HAVE A HARDNESS OF 60 DUROMETER. THE BEARINGS WERE DESIGNED UNDER DIVISION 1, SECTION 14.6.6 (METHOD A) OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES. ALL STEEL PLATES IN CONTACT WITH AN ELASTOMERIC BEARING SHALL BE VULCANIZED (BONDED) TO THE BEARING.

BASIS OF PAYMENT: THE UNIT BID PRICE SHALL INCLUDE ALL MATERIALS, LABOR, TESTING, AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS WITH LOAD PLATES, SUPPORT POSTS, AND TOP PLATES. PAYMENT WILL BE MADE AT THE CONTRACT PRICE FOR ITEM 516, EACH, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN: 10"X19"X3" WITH 11"X20"X1 3/4" LOAD PLATE, HP10X42 SUPPORT POST, AND 11"X22"X1 1/2" TOP PLATE.

BRIDGE SEAT ELEVATIONS: BRIDGE SEAT ELEVATIONS HAVE BEEN ADJUSTED UPWARD 0.01 FEET AT ABUTMENTS TO COMPENSATE FOR THE VERTICAL DEFORMATION OF THE BEARINGS.

NOTE: SEE SHEET [2/18] FOR TYPE OF STRUCTURAL STEEL TO BE USED FOR BEARINGS.

ABUTMENT	BEAM LINE	Q ABUT. BEARING		PROFILE GRADE	TOP OF PAV'T GRADE AT Q BEAM & Q BRG.	DISTANCE FROM T/PAV'T TO BOT/BEAM	BOT/BEAM ELEV.	BRIDGE SEAT ELEV.†	H
		STATION	OFFSET						
REAR	1	1974+35.35	64.50' L	718.64	718.47	4.73'	713.74	712.70	1.05'
	2	1974+40.19	54.75' L	718.64	718.63		713.90		1.21'
	3	1974+45.03	45.00' L	718.64	718.78		714.05		1.36'
	4	1974+49.87	35.25' L	718.63	718.71		713.98		1.29'
	5	1974+54.71	25.50' L	718.63	718.56		713.83		1.14'
	6	1974+80.01	25.50' R	718.59	718.52		713.79		1.10'
	7	1974+84.85	35.25' R	718.58	718.66		713.93		1.24'
	8	1974+89.69	45.00' R	718.58	718.72		713.99		1.30'
	9	1974+94.53	54.75' R	718.57	718.56		713.83		1.14'
	10	1974+99.37	64.50' R	718.56	718.39		713.66		0.97'
FWD.	1	1974+96.35	64.50' L	718.56	718.39	4.73'	713.66	712.70	0.97'
	2	1975+01.19	54.75' L	718.55	718.54		713.81		1.12'
	3	1975+06.03	45.00' L	718.54	718.68		713.95		1.26'
	4	1975+10.87	35.25' L	718.53	718.61		713.88		1.19'
	5	1975+15.71	25.50' L	718.52	718.45		713.72		1.03'
	6	1975+41.01	25.50' R	718.45	718.38		713.65		0.96'
	7	1975+45.85	35.25' R	718.44	718.52		713.79		1.10'
	8	1975+50.69	45.00' R	718.42	718.56		713.83		1.14'
	9	1975+55.53	54.75' R	718.41	718.40		713.67		0.98'
	10	1975+60.37	64.50' R	718.39	718.22		713.49		0.80'

DESIGN AGENCY: KOHLER & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS 311 East Walnut Street, Lima, Ohio 45801 419-227-1185
 DATE: 4-5-05
 REVIEWED: DGB
 DRAWN: BLW
 DESIGNED: RTH
 CHECKED: THH
 STRUCTURE FILE NUMBER: LEFT-200/225 RIGHT-200/217
 BEARING DETAILS
 BRIDGE NO. DEF-24-0941 L&R
 U.S. 24 OVER WEST HIGH STREET
 DEF-24-7-96
 PID 24337
 15/18
 547
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9/19/2005

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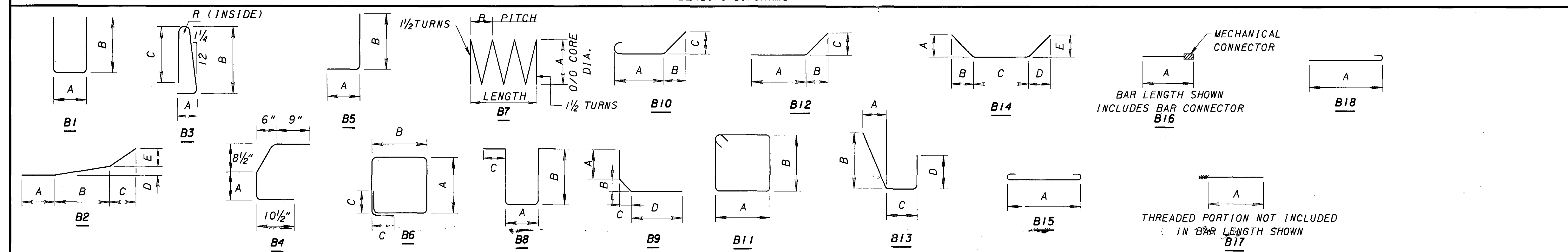
MARK	NUMBER			LENGTH	WEIGHT	TYPE	DIMENSIONS						
	E. B.	W. B.	TOTAL				A	B	C	D	E	R	INC.
EPOXY COATED													
ABUTMENTS													
A501	44	44	88	26'-5"	2425	S							
A502	72	72	144	18'-6"	2779	B11	6'-6"	2'-6"					
A503	64	64	128	15'-0"	2003	B11	3'-3"	4'-0"					
A504	6	6	12	15'-10"	198	B11	3'-8"	4'-0"					
A505	2	2	4	14'-6"	60	B11	3'-0"	4'-0"					
A801	52	52	104	27'-10"	7729	S							
TOTAL					15,194								

MARK	NUMBER			LENGTH	WEIGHT	TYPE	DIMENSIONS						
	E. B.	W. B.	TOTAL				A	B	C	D	E	R	INC.
EPOXY COATED													
SUPERSTRUCTURE-ABUTMENT END DIAPHRAGM													
SA501	2	2	4	8'-9"	37	B1	3'-0"	3'-0"					
SA502	76	76	152	8'-7"	1361	B1	2'-10"	3'-0"					
SA503	2	2	4	8'-4"	35	B1	2'-7"	3'-0"					
SA504	2	2	4	21'-0"	88	B11	2'-6"	7'-9"					
SA505	2	2	4	25'-10"	108	B11	4'-10"	7'-10"					
SA506	2	2	4	25'-6"	106	B11	4'-7"	7'-11"					
SA507	2	2	4	16'-0"	67	B11	4'-0"	3'-9"					
SA508	152	152	304	10'-3"	3250	B1	3'-4"	3'-7"					
SA509	2	2	4	14'-6"	60	B11	3'-4"	3'-8"					
SA510	2	2	4	21'-8"	90	B11	2'-9"	7'-10"					
SA511	4	4	8	7'-9"	65	S							
SA512	8	8	16	7'-10"	131	S							
SA513	24	24	48	2'-6"	125	S							
SA514	24	24	48	4'-7"	229	S							
SA801	48	48	96	29'-3"	7497	S							
SA802	16	16	32	9'-2"	783	B9	1'-5"	9"	9"	6'-9"			
SA803	16	16	32	9'-8"	826	S							
SA804	8	8	16	8'-9"	374	S							
SA805	4	4	8	5'-5"	116	B9	1'-5"	9"	9"	3'-0"			
SA806	8	8	16	3'-9"	160	S							
SA807	16	16	32	3'-5"	292	S							
SA808	60	60	120	5'-2"	1655	B10	2'-10"	1'-0"	1'-0"				
TOTAL					17,455								

- NOTES:**
1. ALL DIMENSIONS ARE OUT TO OUT.
 2. ALL REINFORCING STEEL SHALL BE EPOXY COATED.
 3. AN "S" IN THE "TYPE" COLUMN INDICATES STRAIGHT BARS.
 4. REFER TO CMS SECTION 509.05 FOR STANDARD BEND DIMENSIONS.

REINFORCING BAR SPLICE:
 REINFORCING BAR SPLICE LENGTHS SHALL CONFORM TO THE MINIMUM LENGTHS SPECIFIED BY 509.07 OF THE CONSTRUCTION AND MATERIALS SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

BENDING DIAGRAMS



DESIGN AGENCY
KOH & KAUFER ASSOCIATES, INC.
 ENGINEERS, ARCHITECTS, SURVEYORS
 311 East Market Street, Lima, Ohio 45801 419-227-1155

DATE 4-5-05
 REVIEWED DGB
 STRUCTURE FILE NUMBER LEFT-2007225
 RIGHT-2001217

DRAWN BLW
 CHECKED RTH

REINFORCING STEEL LIST
 BRIDGE NO. DEF-24-0941 L&R
 U.S. 24 OVER WEST HIGH STREET

DEF-24-7.96
 PID 24337

16/18
 548
 660

10:33:28 AM

9/19/2005

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EPOXY COATED													
SUPERSTRUCTURE - DECK													
MARK	NUMBER			LENGTH	WEIGHT	TYPE	DIMENSIONS						
	EB	WB	TOTAL				A	B	C	D	E	R	INC.
S401	122	122	244	33'-5"	5447	S							
S501	140	140	280	33'-10"	9881	S							
S502	134	134	268	30'-0"	8386	S							
S503	1 SET OF 36	1 SET OF 36	2 SETS OF 36	VARIES 29'-4" TO 2'-11"	1211	S							9/16"
S504	1 SET OF 33	1 SET OF 33	2 SETS OF 33	VARIES 28'-2" TO 4'-0"	1107	S							9/16"
S505	151	151	302	17'-8"	5565	S							
S506	1 SET OF 17	1 SET OF 17	2 SETS OF 17	VARIES 15'-6" TO 3'-5"	335	S							9/16"
S507	1 SET OF 19	1 SET OF 19	2 SETS OF 19	VARIES 16'-9" TO 3'-2"	395	S							9/16"
S508	286	286	572	23'-10"	14,219	S							
S509	2 SETS OF 27	2 SETS OF 27	4 SETS OF 27	VARIES 23'-1" TO 3'-5"	1493	S							9/16"
S510	2 SETS OF 25	2 SETS OF 25	4 SETS OF 25	VARIES 21'-8" TO 3'-6"	1312	S							9/16"
TOTAL					49,351								

EPOXY COATED													
DEFLECTOR PARAPET													
MARK	NUMBER			LENGTH	WEIGHT	TYPE	DIMENSIONS						
	EB	WB	TOTAL				A	B	C	D	E	R	INC.
SUPERSTRUCTURE													
DP501	174	174	348	7'-1"	2571	B3	8"	3'-3"	3'-0"				1 1/2"
DP506	24	24	48	34'-4"	1719	S							
DP606	174	174	348	3'-3"	1699	B5	11"	2'-6"					
DP607	4	4	8	34'-7"	416	S							
DP608	174	174	348	2'-11"	1525	B4	9"						
TOTAL					7930								
INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS, AS PER PLAN													
DP501	120	120	240	7'-1"	1773	B3	8"	3'-3"	3'-0"				1 1/2"
DP505	24	24	48	24'-0"	1202	S							
DP601	4	4	8	24'-0"	288	S							
DP605	120	120	240	3'-6"	1262	B4	1'-4"						
DP611	120	120	240	3'-10"	1382	B5	11"	3'-1"					
INCLUDED WITH ITEM 898 - QC/QA CONCRETE, MISC. CLASS QSC2, MOMENT SLABS WITH PARAPETS, AS PER PLAN													
DP502	12	12	24	5'-8"	142	B2	1'-10"	2'-5"	1'-5"	1 1/2"	5"		
DP503	20	20	40	5'-8"	236	S							
DP504	32	32	64	10'-0"	668	S							
DP507	28	28	56	13'-6"	789	S							
DP508	14	14	28	18'-6"	540	S							
DP509	14	14	28	15'-7"	455	S							
DP510				NOT USED									
DP511	4 SETS OF 11	4 SETS OF 11	8 SETS OF 11	VARIES 3'-0" TO 3'-10"	314	B18	2'-5" TO 3'-3"						0'-1"
DP602	20	20	40	11'-9"	706	B13	0"	4'-5"	7'-0"	8"			
DP603	20	20	40	9'-5"	566	B9	2'-7"	1'-3"	1'-0"	5'-4"			
DP604	4 SETS OF 10	4 SETS OF 10	8 SETS OF 10	VARIES 11'-9" TO 12'-7"	1462	B13	0"	4'-5" TO 5'-3"	7'-0"	8"			
DP609	20	20	40	7'-0"	421	S							
DP610	4 SETS OF 10	4 SETS OF 10	8 SETS OF 10	VARIES 9'-5" TO 10'-3"	1182	B9	2'-7" TO 3'-5"	1'-3"	1'-0"	5'-4"			

NOTES:

1. SEE SHEET 16/18 FOR BENDING DIAGRAM.
2. ALL DIMENSIONS ARE OUT TO OUT.
3. ALL REINFORCING STEEL SHALL BE EPOXY COATED.
4. AN "S" IN THE "TYPE" COLUMN INDICATES STRAIGHT BARS.
5. REFER TO CMS SECTION 509.05 FOR STANDARD BEND DIMENSIONS.

REINFORCING BAR SPLICE:
REINFORCING BAR SPLICE LENGTHS SHALL CONFORM TO THE MINIMUM LENGTHS SPECIFIED BY 509.07 OF THE CONSTRUCTION AND MATERIALS SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

DESIGN AGENCY: **MOYER & KALHER ASSOCIATES, INC.**
 ENGINEER: **DAVID L. MOYER**
 311 East Main Street, Lima, Ohio 45801 419-227-1135

DATE: **4-5-05**
 REVIEWED: **DGB**
 STRUCTURE FILE NUMBER: **LRFT-2001225**
 RIGHT-2001217

DRAWN: **BLW**
 CHECKED: **RTH**

REINFORCING STEEL LIST
 BRIDGE NO. DEF-24-0941 L & R
 U.S. 24 OVER WEST HIGH STREET

DEF-24-7.96
PID 24337

17/18
 549
 660

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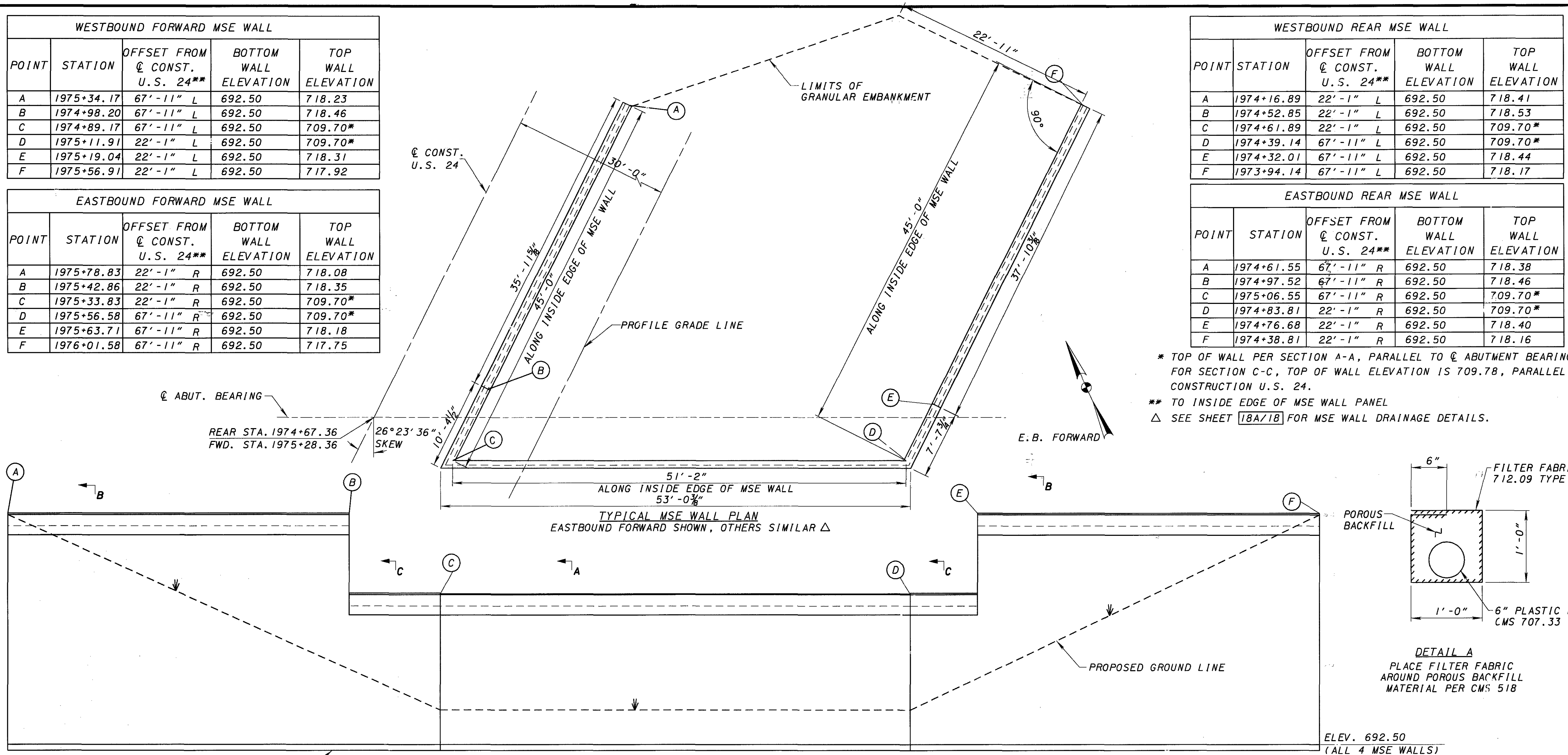
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WESTBOUND FORWARD MSE WALL				
POINT	STATION	OFFSET FROM Q. CONST. U.S. 24**	BOTTOM WALL ELEVATION	TOP WALL ELEVATION
A	1975+34.17	67'-11" L	692.50	718.23
B	1974+98.20	67'-11" L	692.50	718.46
C	1974+89.17	67'-11" L	692.50	709.70*
D	1975+11.91	22'-1" L	692.50	709.70*
E	1975+19.04	22'-1" L	692.50	718.31
F	1975+56.91	22'-1" L	692.50	717.92

EASTBOUND FORWARD MSE WALL				
POINT	STATION	OFFSET FROM Q. CONST. U.S. 24**	BOTTOM WALL ELEVATION	TOP WALL ELEVATION
A	1975+78.83	22'-1" R	692.50	718.08
B	1975+42.86	22'-1" R	692.50	718.35
C	1975+33.83	22'-1" R	692.50	709.70*
D	1975+56.58	67'-11" R	692.50	709.70*
E	1975+63.71	67'-11" R	692.50	718.18
F	1976+01.58	67'-11" R	692.50	717.75

WESTBOUND REAR MSE WALL				
POINT	STATION	OFFSET FROM Q. CONST. U.S. 24**	BOTTOM WALL ELEVATION	TOP WALL ELEVATION
A	1974+16.89	22'-1" L	692.50	718.41
B	1974+52.85	22'-1" L	692.50	718.53
C	1974+61.89	22'-1" L	692.50	709.70*
D	1974+39.14	67'-11" L	692.50	709.70*
E	1974+32.01	67'-11" L	692.50	718.44
F	1973+94.14	67'-11" L	692.50	718.17

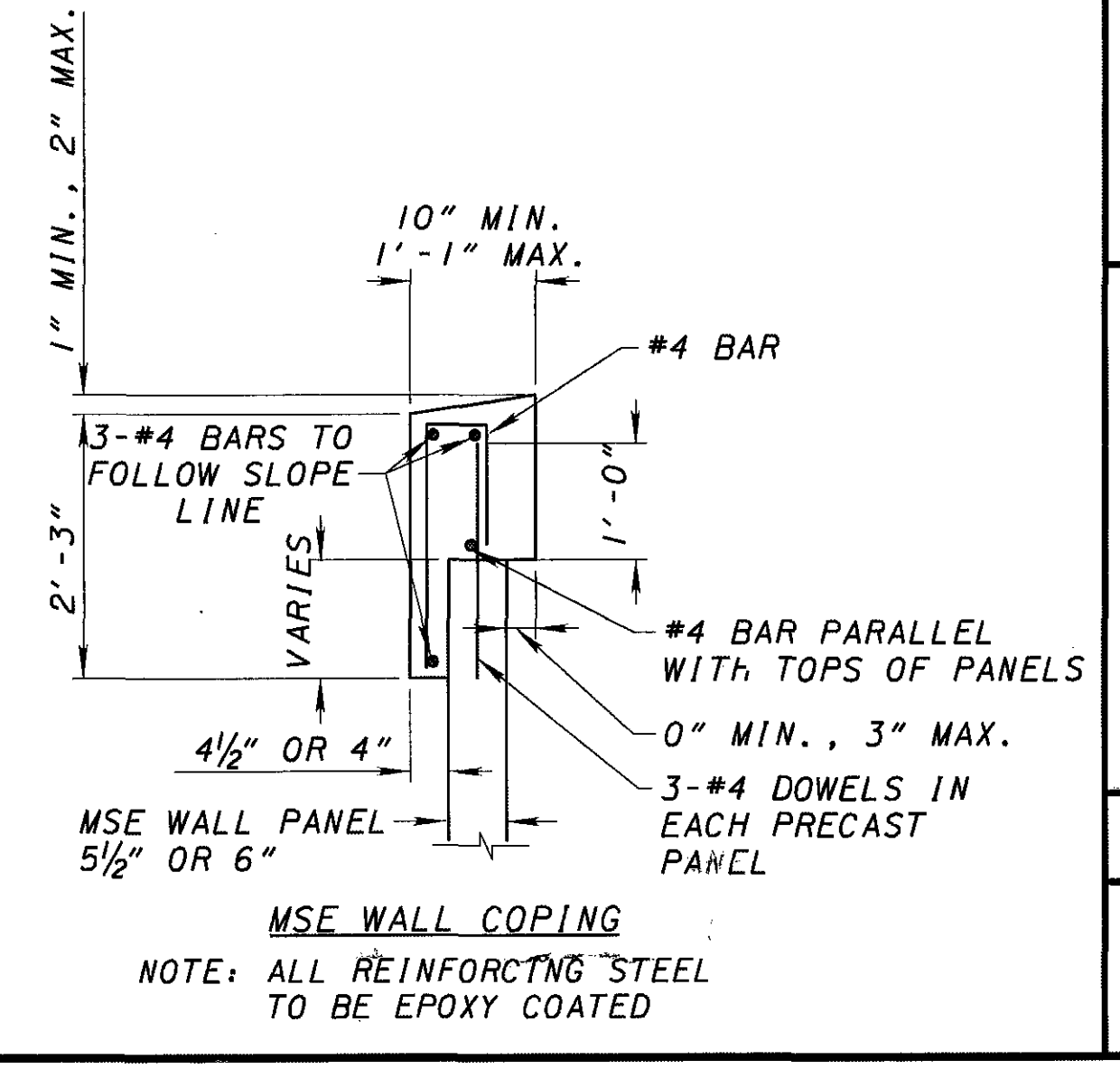
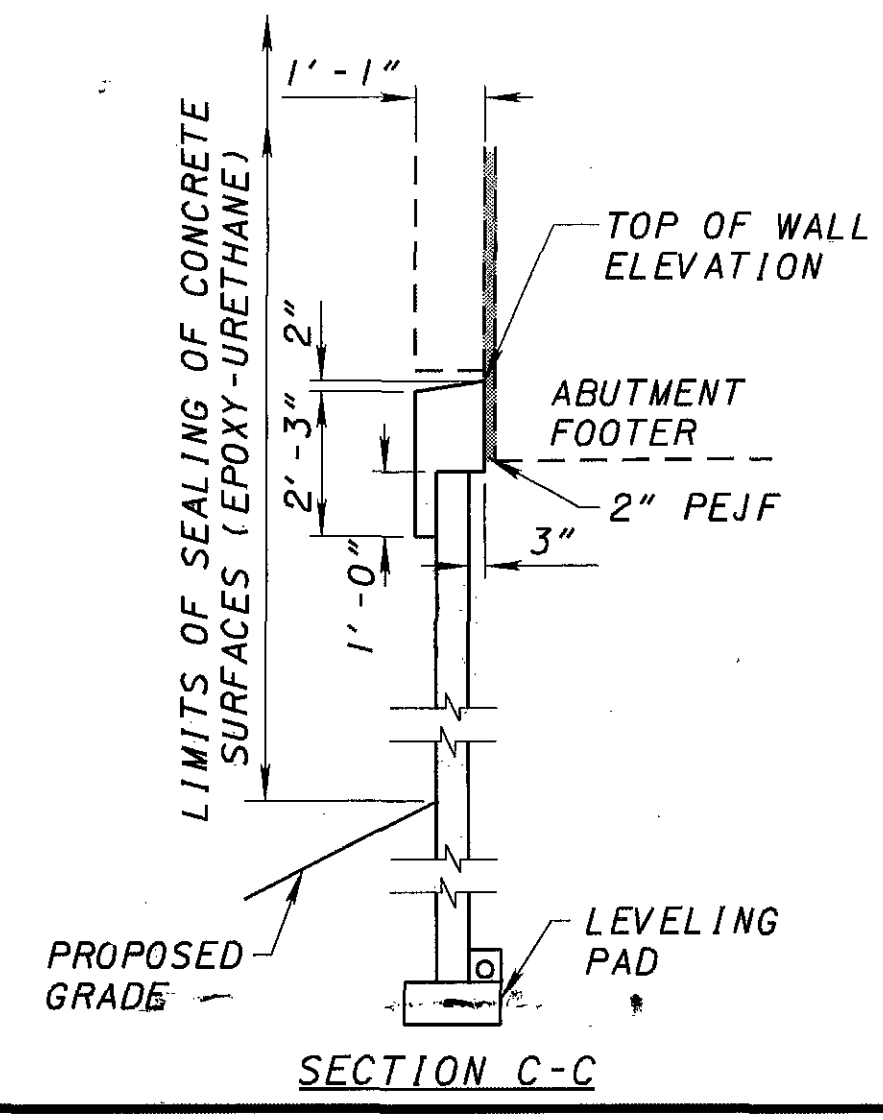
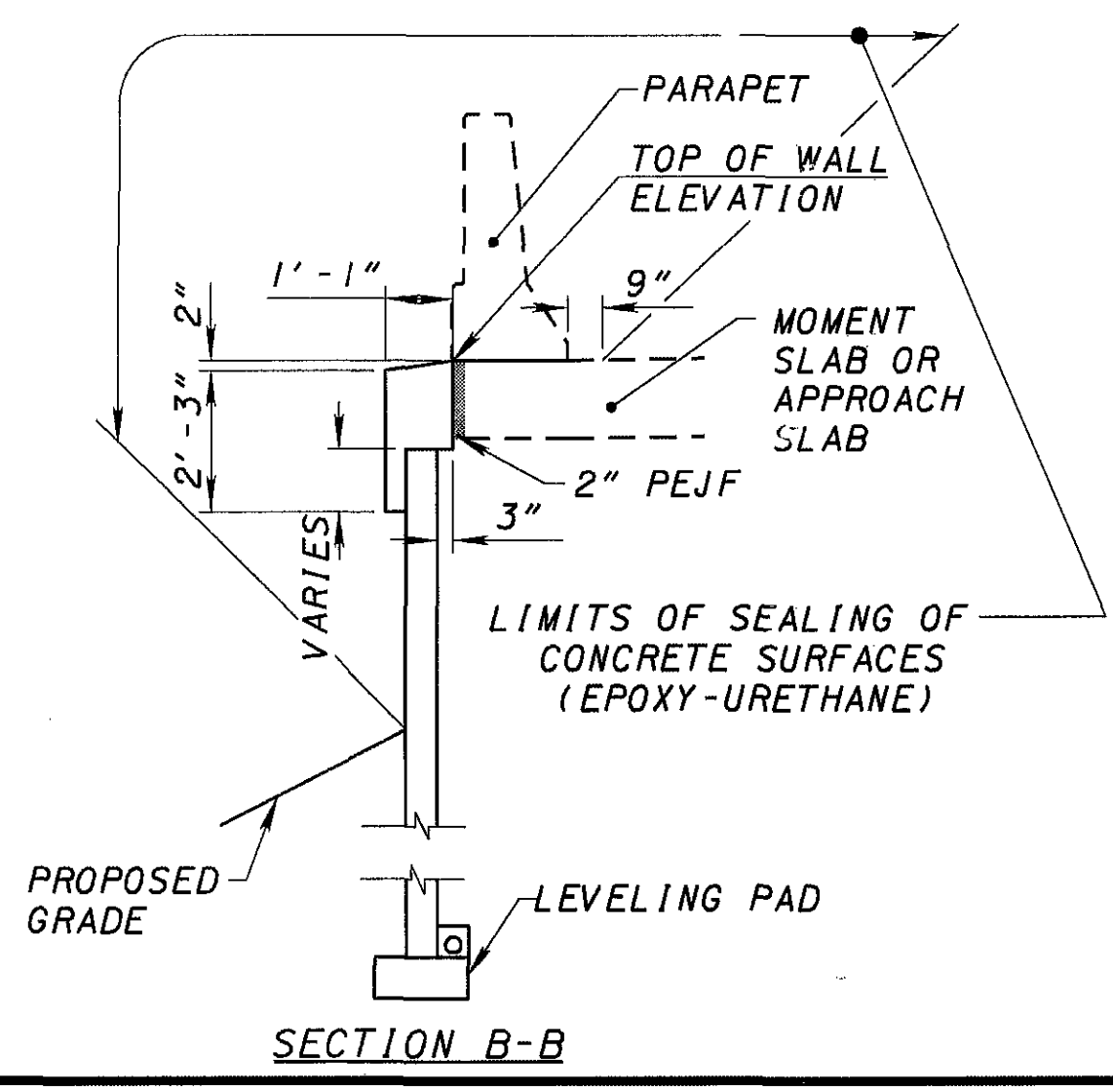
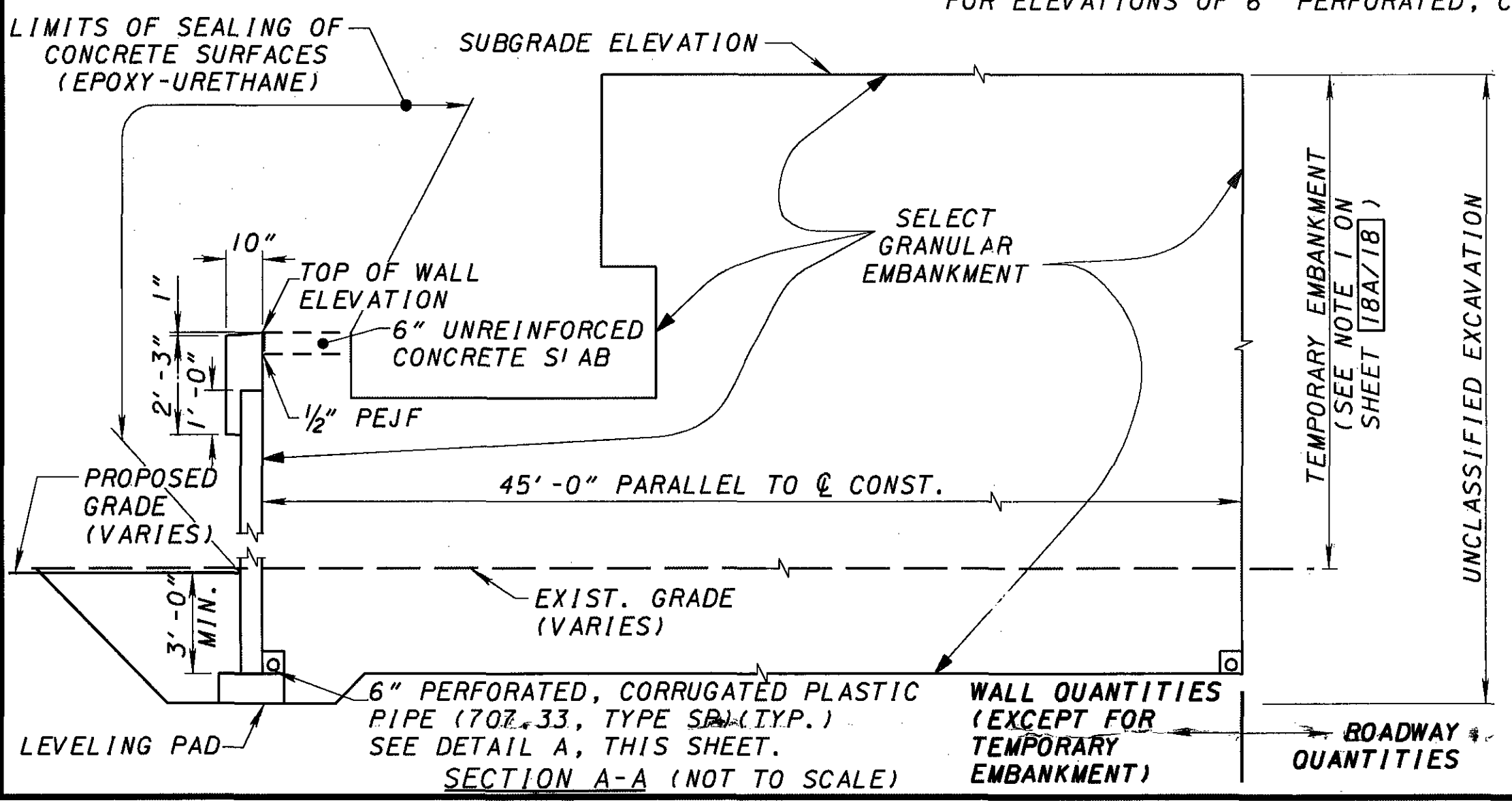
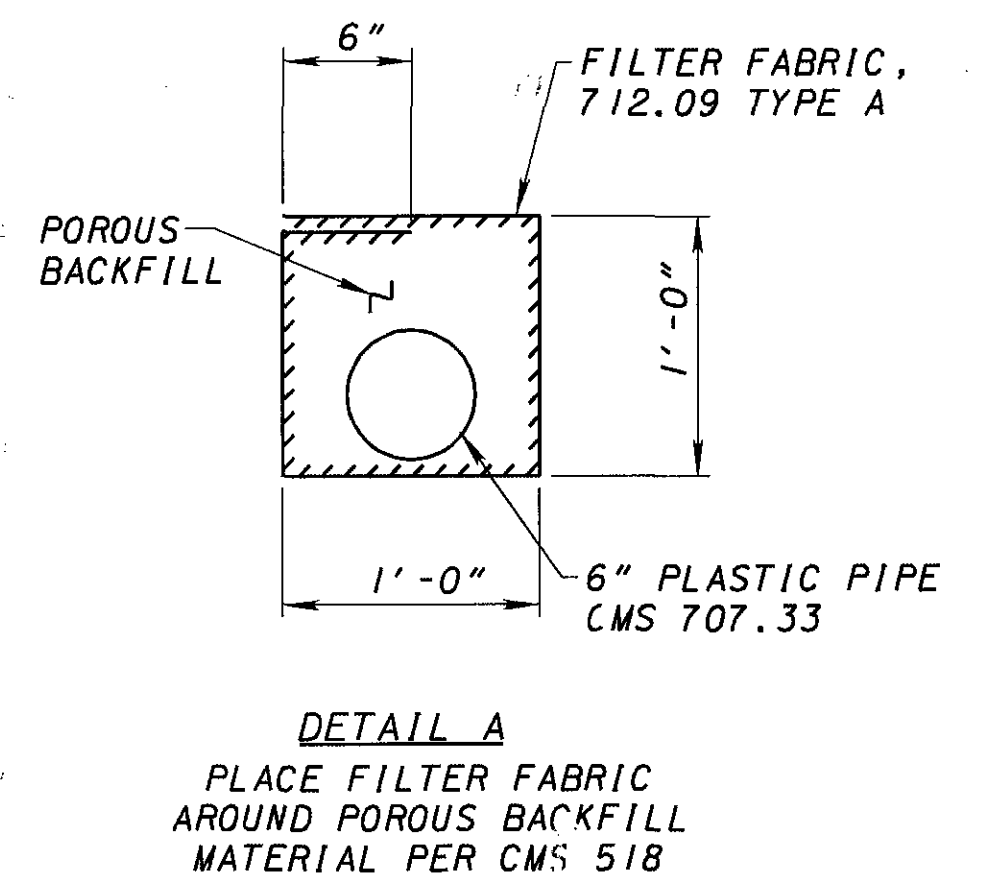
EASTBOUND REAR MSE WALL				
POINT	STATION	OFFSET FROM Q. CONST. U.S. 24**	BOTTOM WALL ELEVATION	TOP WALL ELEVATION
A	1974+61.55	67'-11" R	692.50	718.38
B	1974+97.52	67'-11" R	692.50	718.46
C	1975+06.55	67'-11" R	692.50	709.70*
D	1974+83.81	22'-1" R	692.50	709.70*
E	1974+76.68	22'-1" R	692.50	718.40
F	1974+38.81	22'-1" R	692.50	718.16



* TOP OF WALL PER SECTION A-A, PARALLEL TO Q ABUTMENT BEARING.
FOR SECTION C-C, TOP OF WALL ELEVATION IS 709.78, PARALLEL TO Q CONSTRUCTION U.S. 24.

** TO INSIDE EDGE OF MSE WALL PANEL

Δ SEE SHEET 18A/18 FOR MSE WALL DRAINAGE DETAILS.



DESIGNER: KOHLI & KALHER ASSOCIATES, INC. ENGINEERS AND SURVEYORS 311 East Main Street, Lima, Ohio 43001-4192-1215

DESIGNED: RTH

CHECKED: THH

DRAWN: BLW

REVIEWED: DGB

DATE: 4-5-05

STANDARD FILE NUMBER: LEFT-200127S RIGHT-200127

MECHANICALLY STABILIZED EMBANKMENT (MSE) WALL DETAILS

BRIDGE NO. DEF-24-0941 L&R

U.S. 24 OVER WEST HIGH STREET

DEF-24-7.96

PID 24337

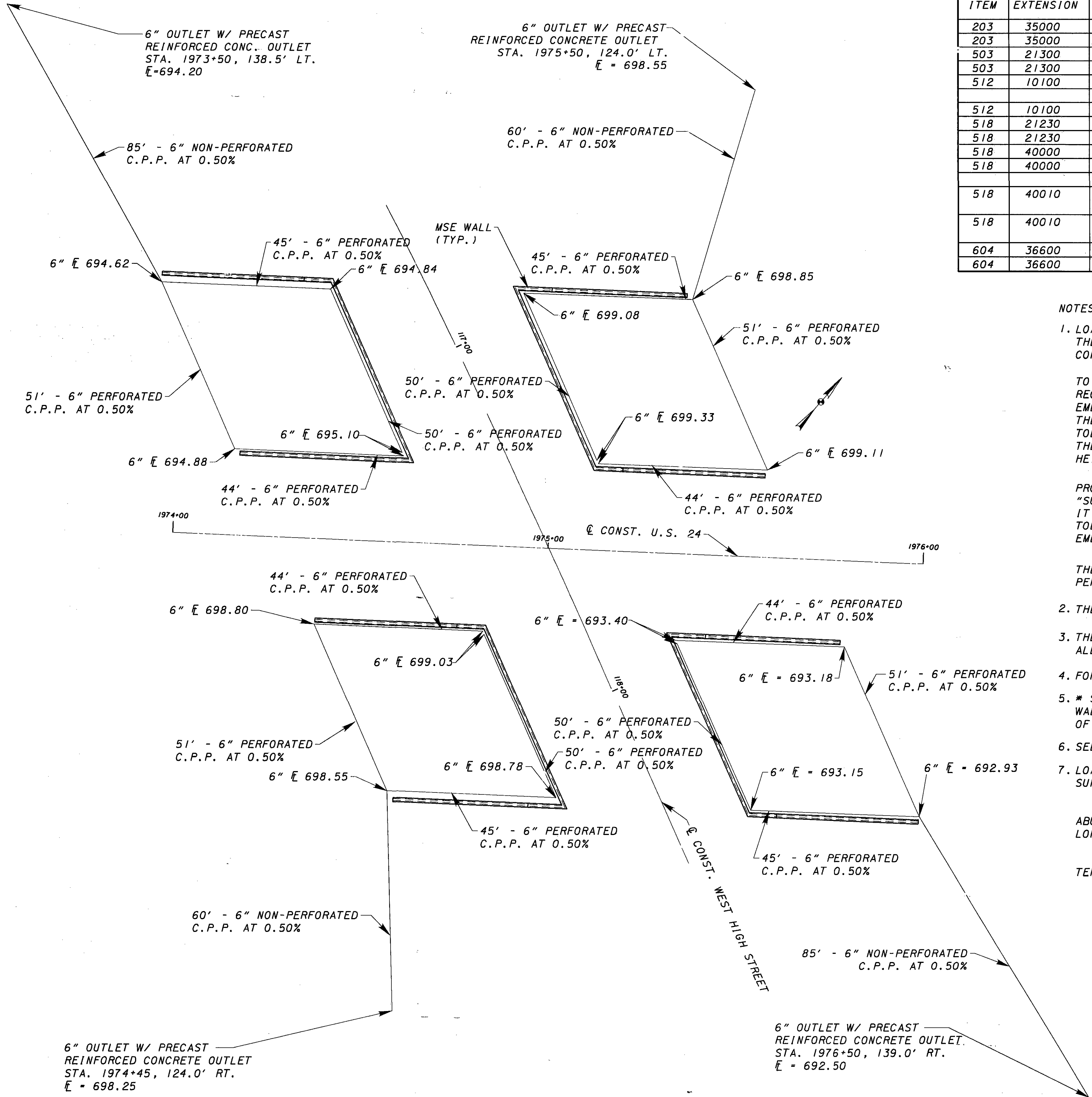
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MSE WALL DRAINAGE DETAILS

ESTIMATED QUANTITIES*
(FOR INFORMATION ONLY)

ITEM	EXTENSION	TOTAL E.B.	TOTAL W.B.	GRAND TOTAL	UNIT	DESCRIPTION
203	35000	2 08	2108	4216	CU YD	(SELECT) GRANULAR EMBANKMENT (REAR ABUTMENT)
203	35000	2 08	2108	4216	CU YD	(SELECT) GRANULAR EMBANKMENT (FWD. ABUTMENT)
503	21300	LUMP	LUMP	LUMP		UNCLASSIFIED EXCAVATION (REAR ABUTMENT)
503	21300	LUMP	LUMP	LUMP		UNCLASSIFIED EXCAVATION (FWD. ABUTMENT)
512	10100	212	212	424	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (REAR ABUT.)
512	10100	212	212	424	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (FWD. ABUT.)
518	21230	LUMP	LUMP	LUMP		POROUS BACKFILL WITH FILTER FABRIC (REAR ABUTMENT)
518	21230	LUMP	LUMP	LUMP		POROUS BACKFILL WITH FILTER FABRIC (FWD. ABUTMENT)
518	40000	190	190	380	FT	6" PERFORATED CORRUGATED PLASTIC PIPE (REAR ABUTMENT)
518	40000	190	190	380	FT	6" PERFORATED CORRUGATED PLASTIC PIPE (FWD. ABUTMENT)
518	40010	60	85	145	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS (REAR ABUTMENT)
518	40010	85	60	145	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS (FWD. ABUTMENT)
604	36600	1	1	2	EACH	PRECAST REINFORCED CONCRETE OUTLET (REAR ABUTMENT)
604	36600	1	1	2	EACH	PRECAST REINFORCED CONCRETE OUTLET (FWD. ABUTMENT)

NOTES:

- LOAD FROM THE NEW FILL WILL CAUSE SETTLEMENT TO OCCUR IN THE NATURAL SOIL BENEATH THE NEW FILL. THE TOTAL SETTLEMENT (THE SUM OF BOTH THE PRIMARY AND SECONDARY CONSOLIDATION SETTLEMENT) IS ESTIMATED TO BE APPROXIMATELY 6 TO 7 1/4 INCHES.

TO MINIMIZE THE POTENTIAL FOR WALL DISTRESS RESULTING FROM SETTLEMENT, IT IS RECOMMENDED THAT THE MSE WALL CONSTRUCTION NOT BE PERFORMED AT THE SAME TIME AS THE EMBANKMENT CONSTRUCTION UNLESS THE SELECTED WALL MANUFACTURER WILL WARRANTY THAT THE STRUCTURE WILL TOLERATE SEVERAL INCHES OF SETTLEMENT. IF THE MSE WALL CANNOT TOLERATE SIGNIFICANT TOTAL AND DIFFERENTIAL SETTLEMENT, THEN IT IS RECOMMENDED THAT THE LIMITS OF THE EARTHEN EMBANKMENT FILL BE TEMPORARILY EXTENDED SO THAT THE FULL HEIGHT OF FILL IS BUILT TO "SURCHARGE" THE MSE WALL AND ABUTMENT FOUNDATION AREAS.

PROVIDED THAT MSE WALL CONSTRUCTION DOES NOT COMMENCE UNTIL THE NECESSARY "SURCHARGE" PERIOD OF TIME (ESTIMATED 2 TO 3 MONTHS) HAS BEEN PERMITTED TO OCCUR, IT IS ESTIMATED THAT THE MSE WALL FACE AND REINFORCED ZONE WILL NEED TO BE ABLE TO TOLERATE THE SECONDARY CONSOLIDATION SETTLEMENT RESULTING FROM THE APPROACH EMBANKMENT FILL, OR ROUGHLY 1/2 TO 3/4 INCH OF SETTLEMENT.

THE WALL SYSTEM (REGARDLESS OF THE SIZE OF PANELS) SHALL ACCOMMODATE UP TO ONE (1) PERCENT DIFFERENTIAL SETTLEMENT IN THE LONGITUDINAL DIRECTION.
- THE WALL SYSTEM SHALL BE DESIGNED FOR A 100-YEAR DESIGN LIFE.
- THE MSE WALL REINFORCED SOIL ZONE IS RECOMMENDED TO BE DESIGNED USING A MAXIMUM ALLOWABLE UNIT BEARING PRESSURE OF 5 KIPS PER SQUARE FOOT (KSF) FOR EACH ABUTMENT.
- FOR ADDITIONAL INFORMATION, SEE PROPRIETARY DETAIL SHEETS.
- * SEE SPECIAL PROVISIONS FOR PROPRIETARY WALLS. EACH ITEM IS INCLUDED WITH APPROVED WALL SYSTEM ITEM SPECIAL FOR PAYMENT. ESTIMATED QUANTITY IS THE SAME REGARDLESS OF WHICH OPTION IS CHOSEN.
- SEE SHEET [3/18] FOR MSE WALL AND CONCRETE COPING QUANTITIES.
- LOADS:
SUPERSTRUCTURE
- DEAD LOAD REACTION = SUPPORTED ON PILES
- LIVE LOAD REACTION = 2 FEET OF SURCHARGE
ABUTMENT WEIGHT = SUPPORTED ON PILES
LONGITUDINAL LOAD = 220 KIPS TOTAL OR 4.4 KIPS/HORZ. FT OF WALL (FORCE IS PERPENDICULAR TO MSE WALL AND IS DUE TO THERMAL, BRAKING, AND HORIZONTAL EARTH FORCES)
TEMPORARY CONSTRUCTION LOADS ARE THE CONTRACTOR'S RESPONSIBILITY.

DESIGN AGENCY: KOHL & KALHEB ASSOCIATES, INC. ENGINEERS AND SURVEYORS 311 East Market Street, Lima, Ohio 45801 419-227-1155
 DATE: 4-5-05
 DRAWN: DGB
 CHECKED: THH
 DESIGNED: RTH
 MECHANICALLY STABILIZED EMBANKMENT (MSE) WALL DETAILS
 BRIDGE NO. DEF-24-0941 L&R
 U.S. 24 OVER WEST HIGH STREET
 DEF-24-7.96
 PID 24337
 18A/18
 550A
 650