CUY-90-14.90

PID 77332/85531

APPENDIX EX-21

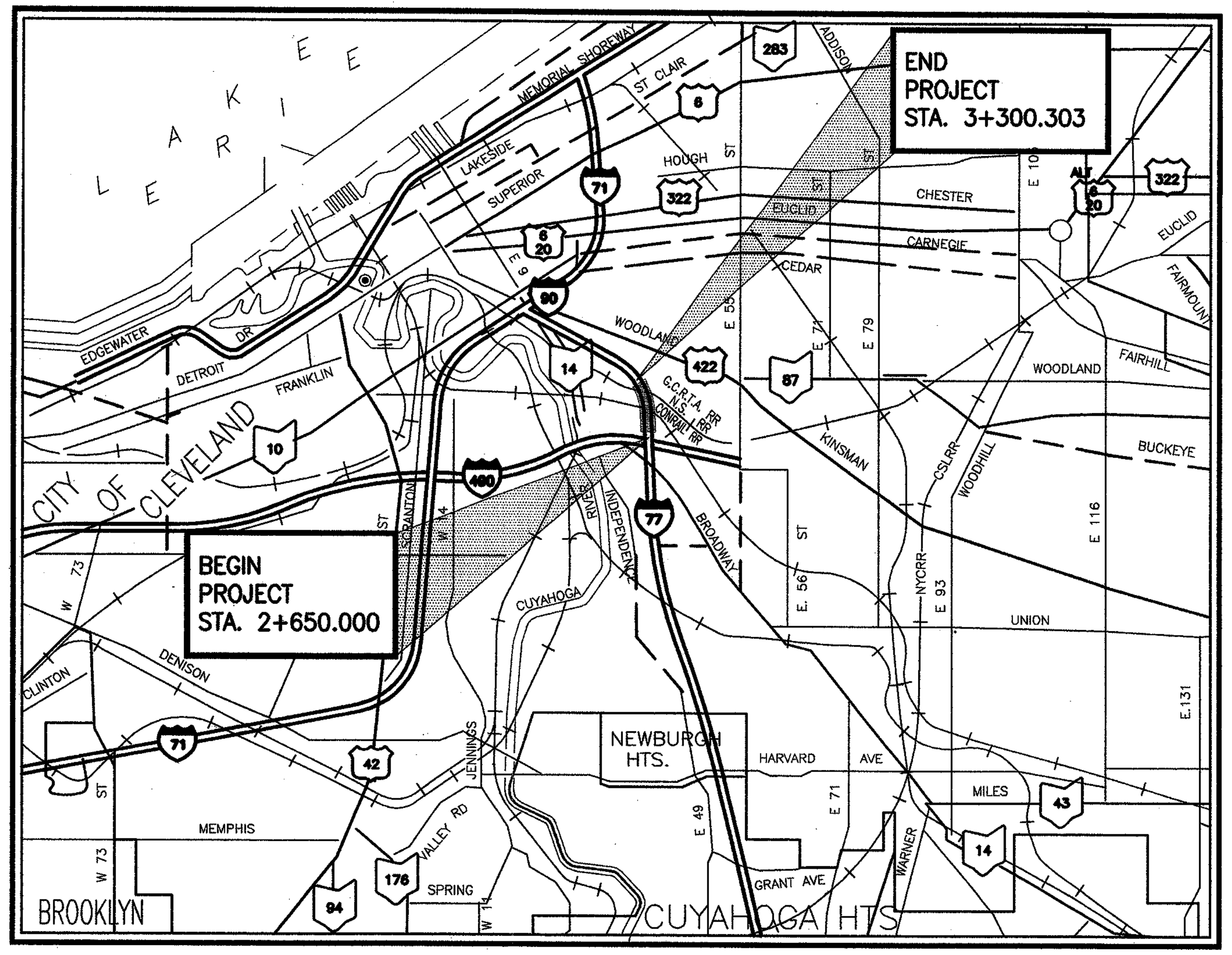
CUY-077-23458 PID 14949

(Reference Document)

State of Ohio
Department of Transportation
Jolene M. Molitoris, Director

Innerbelt Bridge
Construction Contract Group 1 (CCG1)

Revision Date: 1998



LOCATION MAP

Latitude: N 41°29'05"
Longitude: W 81°39'50"

SCALE IN KILOMETERS 0.5 0 0.5 1 1.5

Portion to be improved
U.S. Routes (480)
U.S. Routes (422)
State Routes (21)
Other Roads (65)

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
CUY-77-23.458
PART 1

REHABILITATION OF EXISTING SEPARATED CROSSING WITH CONRAIL, G.C.R.T.A., & N.S. RAILROADS AND KINGSBURY RUN

CITY OF CLEVELAND
CUYAHOGA COUNTY

FOR PART 2, SEE CUY-77-23.458 PART 2

INDEX OF SHEETS

Title Sheet ____ 1
Schematic Geometric Plans ____ 2
Typical Sections ____ 3-7
General Notes ____ 8-9A
M.O.T. Plans ____ 10-15,15A,16,16A,17-17I, 18,18A,19-38,38A-38C
General Summary ____ 39-41
Calculations ____ 42-44
Plan ____ 46-54
Profile ____ 55-62
Cross Sections ____ 63-68
Miscellaneous Details ____ 69-71
Sewer Profiles ____ 71A,72
Water Work ____ 72A-72I
Traffic Control Plan ____ 73-84,84A-84G
Lighting ____ 85,85A,86-87A,88-93A
Cast-in-Place Structures ____ 94-105,105A-105D,106-219, 219A,220-257,257A,258-266,266A,267-279
R/W Plans ____ 280-295

(SHEET 45 NOT USED)

PROJECT DESCRIPTION

Rehabilitation of the existing 617m long structure over the Conrail, G.C.R.T.A., and N.S. Railroads, Iron Ct., E 37th St. and Kingsbury Run by complete replacement of the superstructure and partial replacement of the substructure to accomodate widening; Redesign of entrance and exit ramps at the south end of the project.

LIMITED ACCESS

This project 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 revised code of Ohio.

1997 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 except as noted on sheet 11 and that 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 (I) of the Revised Code of Ohio, the revised prima facia speed limits as indicated herein are determined to be reasonable and safe, and are hereby established for the duration of this project. The prima facia speed limit or limits hereby established shall become effective when appropriate signs giving notice thereof are erected.

DESIGN DESIGNATION

Current ADT (1996)	82760
Design Year ADT (2020)	85250
Design Hourly Volume (2020)	7673
Directional Distribution	65%
Trucks (24 Hour B&C)	13%
Design Speed	90 km/h
Legal Speed	50 mph
Design Functional Classification	Urban, Interstate

Design Exceptions

Design Feature	Approval Dates	Sheet Numbers
Superelevation Rate	2-20-97	4
Curbed Shoulder Width	2-20-97	4,5
Bridge Width	2-20-97	96

UNDERGROUND UTILITIES

TWO WORKING DAYS
BEFORE YOU DIG
CALL 800-362-2764 (Toll Free)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

STATE OF OHIO GEORGE TOMICH 60930 REGISTERED PROFESSIONAL ENGINEER

George Tomich 2-16-98
GEORGE TOMICH P.E.

Plans Prepared By: HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114

PARTS 1 & 2

STANDARD CONSTRUCTION DRAWINGS												SUPPLEMENTAL SPECS.	
BP-1.1M	10-28-94	GR5.3M	11-30-94	DM1.1M	10-21-97	HL-60.11M	5-01-95	TC-51.12M	3-31-94	MT-95.70M	1-30-95	806	9-09-97
BP-2.1M	4-08-97	GR6.1M	1-3-96	DM1.2M	10-21-97	HL-60.12M	3-31-95	TC-52.10M	7-29-94	MT-98.19M	3-01-96	816	4-21-97
BP-2.2M	10-21-97			DM4.1M	6-30-95	HL-60.21M	3-31-95	TC-52.20M	7-29-94	MT-99.10M	1-30-95	863	9-09-97
BP-2.5M	4-08-97	RM1.1M	4-8-97	DM4.3M	6-30-95	HL-60.31M	3-31-95	TC-61.10M	3-31-94	MT-99.20M	1-30-95	1055	12-30-96
BP-3.1M	10-28-94	RM4.1M	10-21-97	DM4.4M	6-30-95			TC-65.10M	11-1-95	MT-101.20M	3-01-96		
BP-4.1M	10-28-94	RM4.3M	10-21-97			TC-7.65M	2-01-94	TC-65.11M	11-1-95	MT-101.60M	4-25-94		
BP-5.1M	10-28-94	RM4.4M	10-21-97	LA-1.1M	9-06-95	TC-12.30M	2-1-94	TC-71.10M	9-1-93	MT-102.10M	1-30-95		
BP-7.1M	10-28-94					TC-21.10M	12-10-96	TC-72.20M	9-1-93	MT-105.10M	4-25-94		
		CB-1.2M	7-12-95	HL-10.11M	5-01-95	TC-21.20M	12-10-96	TC-82.10M	11-24-93	MT-105.11M	4-25-94		
F-1.1M	4-08-97	CB-2.3M	7-12-95	HL-10.12M	5-01-95	TC-21.40M	2-1-94	TC-83.10M	11-24-93	MT-110.20M	3-01-96		
F-3.1M	4-21-95	CB-3.2M	7-12-95	HL-10.13M	5-01-95	TC-22.10M	2-1-94	TC-83.20M	11-24-93				
		CB-4.2M	10-21-97	HL-20.11M	3-31-95	TC-22.20M	2-1-94	TC-84.20M	11-24-93				
GR1.1M	10-21-97			HL-20.14M	5-01-95	TC-31.21M	3-31-94	TC-85.10M	11-24-93				
GR1.2M	1-3-96	HW-2.1M	7-12-95	HL-20.15M	3-31-95	TC-32.10M	3-31-94	TC-85.20M	11-24-93	EXJ-4-87M	3-20-95		
GR1.3M	11-30-94	HW-2.2M	7-12-95	HL-30.11M	3-31-95	TC-32.11M	3-31-94			A-1-69M	3-20-95		
GR2.1M	10-21-97			HL-30.21M	5-01-95	TC-41.10M	3-31-94	MT-35.10M	1-30-95	AS-1-81M	10-25-94		
GR2.2M	10-21-97	I-1.2M	9-6-95	HL-30.22M	3-31-95	TC-41.20M	7-1-94	MT-35.11M	1-30-95	BR-1M	12-15-94		
GR3.1M	10-21-97	I-2.1M	10-21-97	HL-30.31M	5-01-95	TC-41.40M	3-31-94	MT-95.30M	4-25-94	PCB-91M	3-20-95		
GR3.2M	10-21-97			HL-40.10M	3-31-95	TC-42.10M	3-31-94	MT-95.31M	4-25-94	VPF-1-90M	3-20-95		
GR5.1M	4-21-95	MH-1.2M	9-6-95	HL-50.11M	3-31-95	TC-42.20M	3-31-94	MT-95.32M	4-25-94	BS-1-93M	12-15-94		
GR5.2M	11-30-94			HL-50.21M	8-31-94	TC-51.11M	9-30-94	MT-95.40M	4-25-94	GSD-1-96	2-12-97		

APPROVED: (signature)
DATE: [illegible] DISTRICT DEPUTY DIRECTOR

APPROVED: ____________
DATE: ________ DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO. **IM-77-5(46)**
PID NO. **14949**
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT **CONRAIL, G.C.R.T.A., N.S.**
CUY-77-23.458

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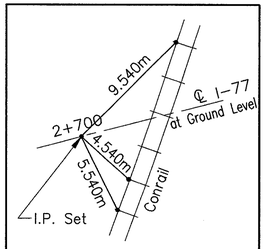
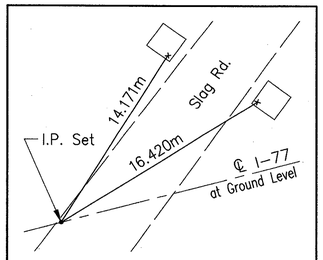


3–PK's in South Side RR Ties

STA. 2+700
N 25422.512
E 28850.086



2–Crosses on Top of Conc.

STA. 3+040
N 25751.451
E 28764.067

BENCH MARK LOCATIONS

BM #1 – S.W. CORNER OF MON. BOX AT THE INTERSECTION OF TRUMBULL AND E. 37TH STREET. M/L STA. 2+618.5, 134.5m LT. ELEV. = 205.374.

BM #2 – N.W. CORNER OF MON. BOX AT THE INTERSECTION OF CROTON AND E. 37TH STREET. M/L STA. 3+226.8, 52.6m RT. ELEV. = 204.749.

BM #3 – N.W. CORNER OF MON. BOX WEST OF I–77 ON CENTERLINE OF CROTON STREET. M/L STA. 3+300.4, 49.2m LT. ELEV. = 205.691.

BM #4 – CHISELLED SQUARE AT THE S.W. CORNER OF PARAPET. M/L STA. 2+685.7, 28.6m LT. ELEV. = 208.538.

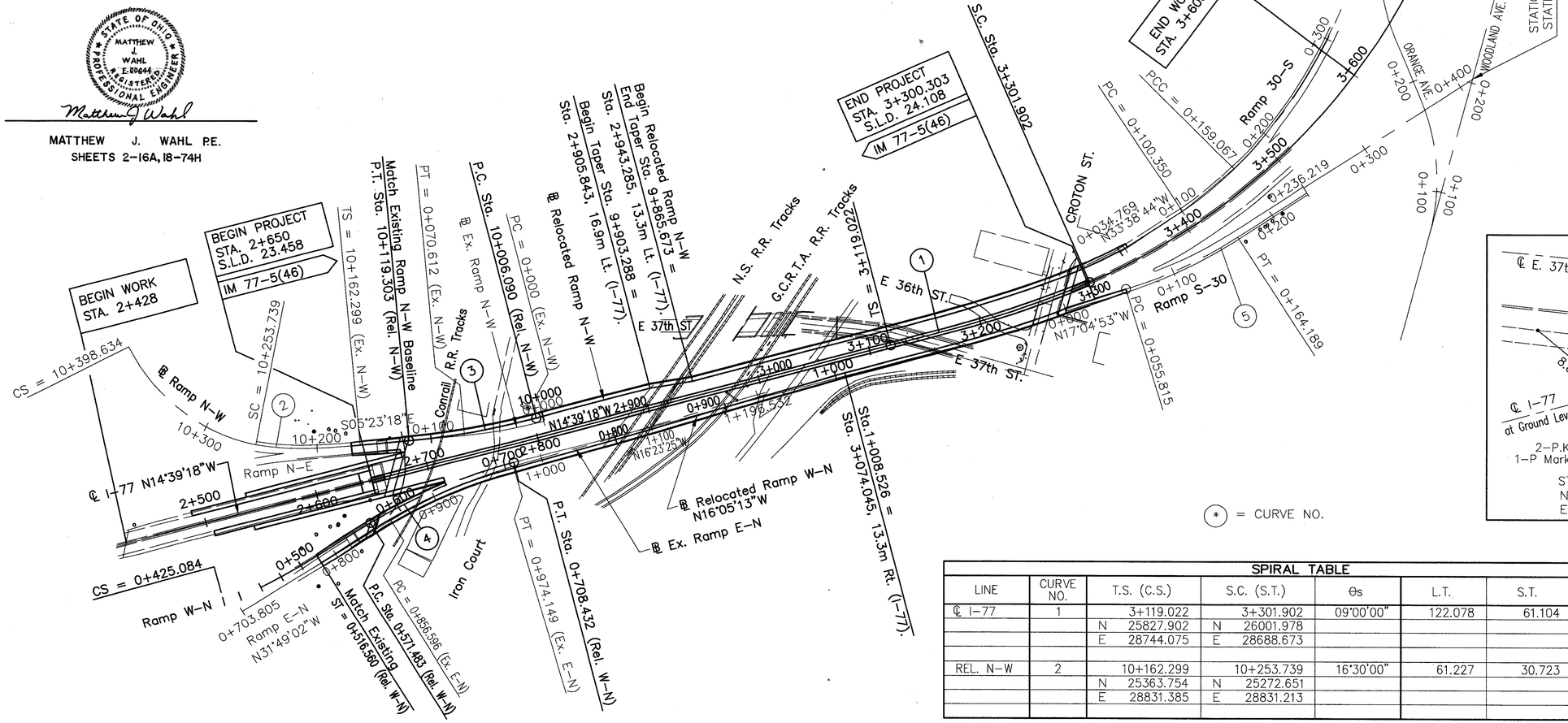
BM #5 – CHISELLED SQUARE ON N.E. WINGWALL OF NORTH ABUTMENT. M/L STA. 3+265.0, 15.2m RT. ELEV. = 213.250

BM #6 – TOP OF MON. IN CENTERLINE OF E. 37TH STREET AT R.T.A. TRESTLE. M/L STA. 3+053.4, 36.6m LT. ELEV. = 190.192.

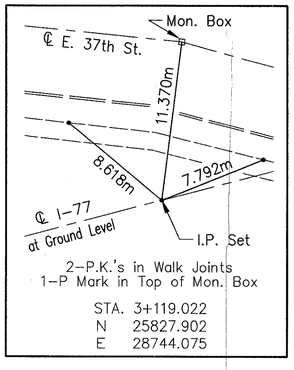
STATE OF OHIO
MATTHEW J. WAHL
E-80644
REGISTERED
PROFESSIONAL ENGINEER

Matthew J. Wahl

MATTHEW J. WAHL P.E.
SHEETS 2-16A, 18-74H



(*) = CURVE NO.



2–P.K.'s in Walk Joints
1–P Mark in Top of Mon. Box

STA. 3+119.022
N 25827.902
E 28744.075

SPIRAL TABLE

LINE	CURVE NO.	T.S. (C.S.)	S.C. (S.T.)	θs	L.T.	S.T.	Ls	emax
℄ I–77	1	3+119.022	3+301.902	09°00'00"	122.078	61.104	182.880	0.042
		N 25827.902	N 26001.978					
		E 28744.075	E 28688.673					
REL. N–W	2	10+162.299	10+253.739	16°30'00"	61.227	30.723	91.440	0.060
		N 25363.754	N 25272.651					
		E 28831.385	E 28831.213					

GEOMETRICS TABLE

LINE	CURVE NO.	P.C. STATION	P.C. NORTHING	P.C. EASTING	P.I. STATION	P.I. NORTHING	P.I. EASTING	P.T. STATION	P.T. NORTHING	P.T. EASTING	△	R (m)	T (m)	L (m)	E (m)	emax
REL. N–W	3	10+006.090	25517.925	28807.667	10+062.821	25463.040	28822.020	10+119.303	25406.560	28827.347	09°16'00"	700.000	56.731	113.214	2.295	0.040
REL. W–N	4	0+571.483	25372.826	28900.660	0+640.474	25431.450	28864.287	0+708.432	25498.196	28846.833	17°09'44"	457.200	68.991	136.949	5.176	0.050
EX. S–30	5	0+055.815	26033.608	28694.715	0+110.356	26085.744	28678.694	0+164.189	26131.444	28648.924	16°00'00"	388.084	54.542	108.374	3.813	0.042

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE
1 : 2000

CALCULATED MJW
CHECKED ZSS

SCHEMATIC GEOMETRIC PLAN

CUY-77-23.458

Legend:

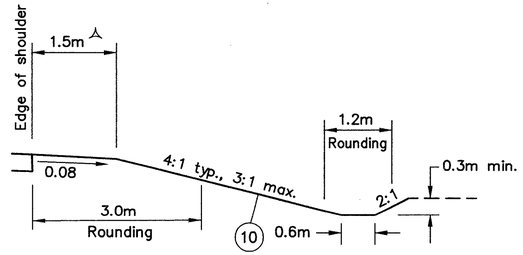
(1) Item 446 – Asphalt Concrete Surface Course, Type 1, PG64–28.
(2) Item 446 – Asphalt Concrete Intermediate Course, Type 2, PG64–28
(2A) Item 448 – Asphalt Concrete Intermediate Course, Type 1 (Under Guardrail), As Per Plan
(3) Item 302 – Bituminous Aggregate Base, PG64–22
(4) Item 304 – Aggregate Base
(5) Item 203 – Subgrade Compaction
(6) Item 408 – Bituminous Prime Coat
(7) Item 622 – Concrete Barrier, Type B–1270 As Per Plan A
(8) Item 605 – 150 mm Unclassified Pipe Underdrain
(9) Item 254 – Pavement Planing Bituminous
(10) Item 659 – Seeding and Mulching
(11) Item 606 – Guardrail, Type 5
(12) Item 622 – Concrete Barrier, Type B–1270, As Per Plan
(14) Item 611 – Reinforced Concrete Approach Slab (T=380mm), As Per Plan
(15) Item 407 – Tack Coat
(16) Item 202 – Concrete Barrier Removed
(17) Item 202 – Approach Slab Removed
(18) Item 202 – Pavement Removed
(19) Item 203 – Excavation, Including Embankment Construction
(20) Item 407 – Tack Coat for Intermediate Course

Existing Legend:

(A) Existing 152mm ± Asphalt Concrete
(B) Existing 229mm ± Reinforced Concrete Pavement
(C) Existing 152mm ± Aggregate Base
(D) Existing Underdrain
(E) Existing 1270mm Concrete Barrier
(F) Existing Guardrail
(G) Existing Reinforced Concrete Approach Slab
(H) Existing 76mm ± Asphalt Concrete

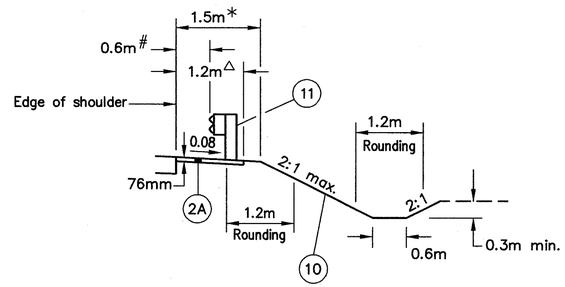
Notes:

1.) Plane 83mm of existing pavement from Sta. 2+625 to Sta. 2+650 and resurface using 38mm of Item 446 – Ashalt Concrete Surface Course, and 45mm of Item 446 – Asphalt Concrete Intermediate Course to transition shoulder from existing cross slope to proposed cross slope.
2.) Pavement widening shall begin at Sta 2+490 (Lt.) and Sta 2+505 (Rt.).
3.) Proposed Shoulder shall begin at Sta 2+540 (Lt. & Rt.).
4.) Existing concrete barrier to be removed from Sta. 2+428 to Sta. 2+650 for M.O.T. crossover. Barrier shall be replaced with Type B–1270, As Per Plan A (See Sheet 69 for barrier transition details).
5.) Cross slope varies from 0.040 at Sta. 2+636.960 to 0.016 at Sta. 2+656.960.
6.) Pavement Planing and Resurfacing station limits shall match the overlays placed for Maintenance of Traffic north and south of the bridge See Sheets 19 & 20. Planing thickness includes the MOT overlay and 83mm of the existing asphalt or to the top of the existing concrete barrier base. Final grade shall match existing conditions.
7.) Existing pavement thicknesses are approximate.



Normal Grading Section – Mainline and Ramp

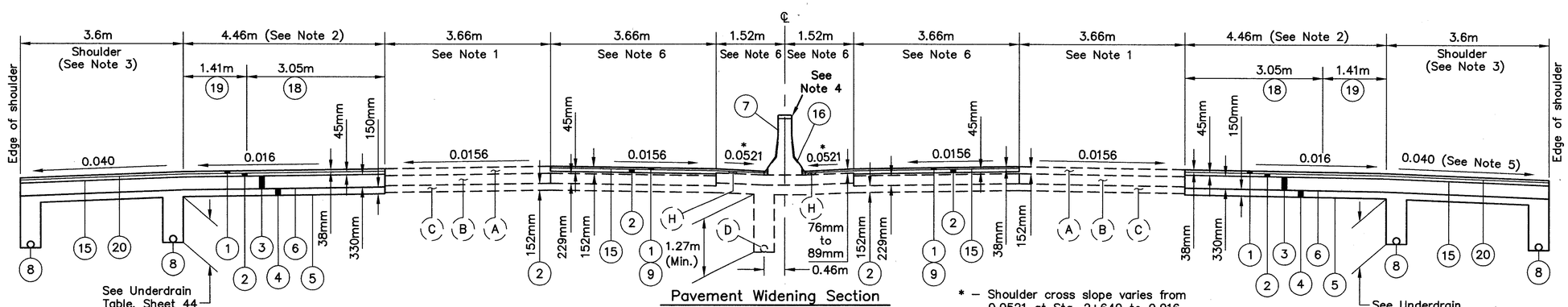
△1.8m for left side of ramps



Barrier Grading Section – Mainline and Ramps

Sta. 2+490.000 to Sta. 2+665.000 (Rt.)
Sta. 2+505.000 to Sta. 2+660.400 (Lt.)
Sta. 3+308.000 to Sta. 0+050 (30–S) (Lt.)
Sta. 3+289.000 to Sta. 3+327.628 (Rt.)

0.9m for left side of ramps
* 1.8m for left side of ramps
△ 1.5m for left side of ramps



Pavement Widening Section

Sta. 2+490.000 to Sta. 2+650.000 (Lt.) = 160m
Sta. 2+505.000 to Sta. 2+650.000 (Rt.) = 145m
Total = 305m

* – Shoulder cross slope varies from 0.0521 at Sta. 2+640 to 0.016 at Sta. 2+650

HNTB ARCHITECTS ENGINEERS PLANNERS

CALCULATED M.JW CHECKED ZSS

TYPICAL SECTIONS - I-77

CUY-77-23.458

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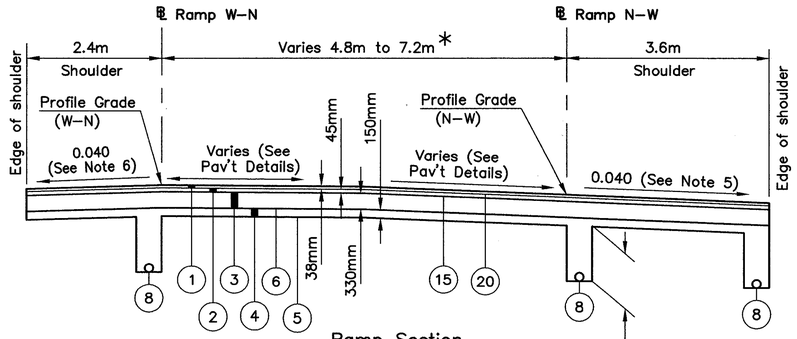


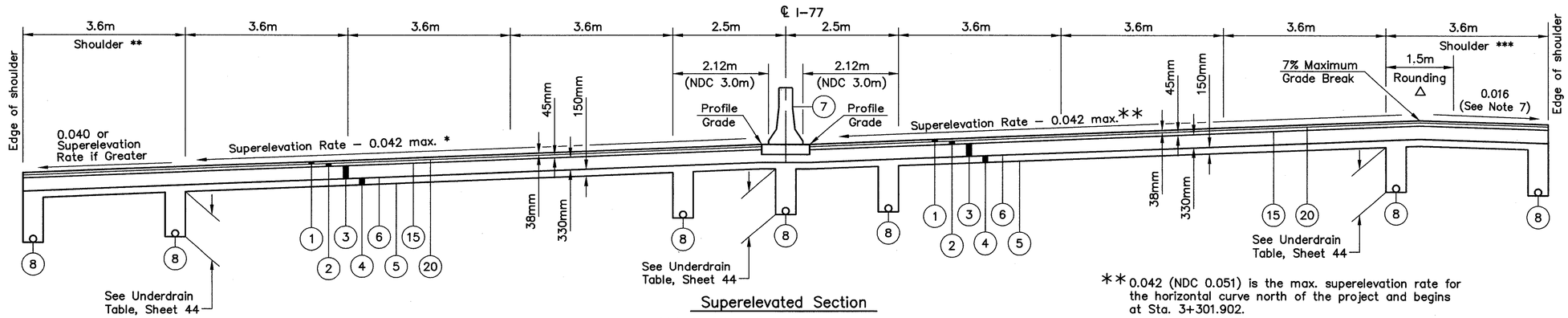
Ramp Section

Sta. 0+516.560 to Sta. 0+571.288 (W–N) = 54.728m
Sta. 10+127.809 to Sta. 10+169.918 (N–W) = 42.109m
Total = 96.837m

* See Pavement Details, sheet 69, for location of transitions from proposed 7.2m pavement to existing 7.315m (24') pavement width.

** Shoulder widening extends to Sta. 3+345.251

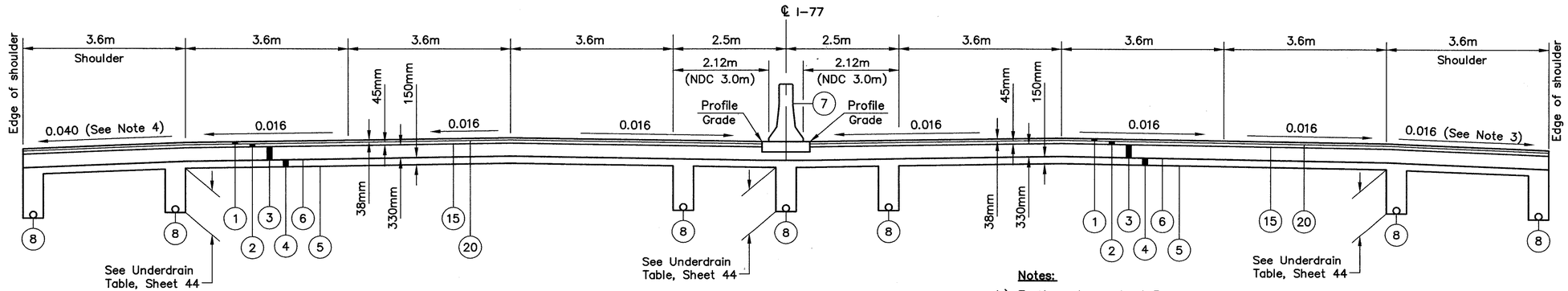
*** Shoulder widening extends to Sta. 3+327.628
△ Rounding provided to match existing conditions



Superelevated Section

Sta. 3+285.004 (Skewed) to Sta. 3+300.303 = 15.299m

** 0.042 (NDC 0.051) is the max. superelevation rate for the horizontal curve north of the project and begins at Sta. 3+301.902.



Normal Section

Sta. 2+650.000 to Sta. 2+666.711 (Skewed) = 16.711m

Notes:

1.) For legend see sheet 3.
2.) NDC = Normal Design Criteria.
3.) Cross slope varies from 0.040 at Sta. 2+636.960 to 0.016 at Sta. 2+656.960.
4.) Cross slope varies from 0.040 at Sta. 2+664.400 to 0.048 at Sta. 2+667.400.
5.) Ramp W–N : Cross slope varies from 0.040 at Sta. 0+584.440 to 0.0332 at Sta. 0+571.300.
Ramp N–W : Cross slope varies from 0.0209 at Sta. 10+127.800 to 0.040 at Sta. 10+141.800.
6.) Ramp W–N : Cross slope varies from 0.040 at Sta. 0+531.300 to –0.0332 at Sta. 0+571.300.
Ramp N–W : Cross slope varies from –0.070 at Sta. 10+127.800 to 0.040 at Sta. 10+167.800.
7.) Cross slope varies from 0.016 at Sta. 0+001.157 (S–30) to 0.028 at Sta. 0+011.157 (S–30).

HNTB ARCHITECTS ENGINEERS PLANNERS

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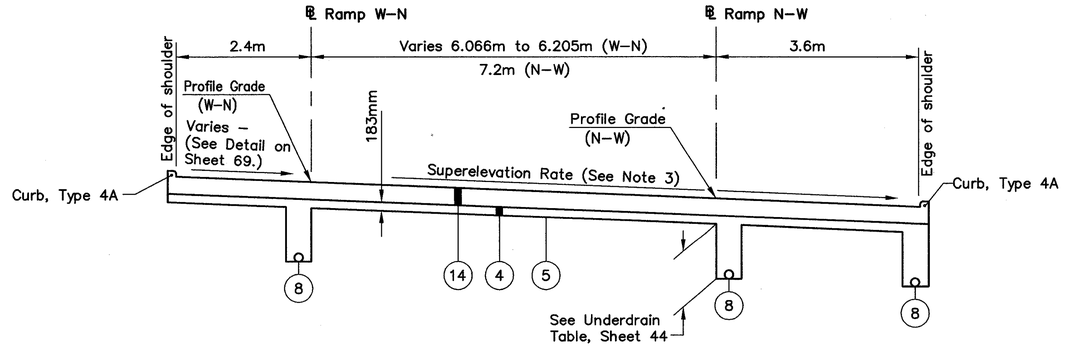
CALCULATED M.JW CHECKED ZSS

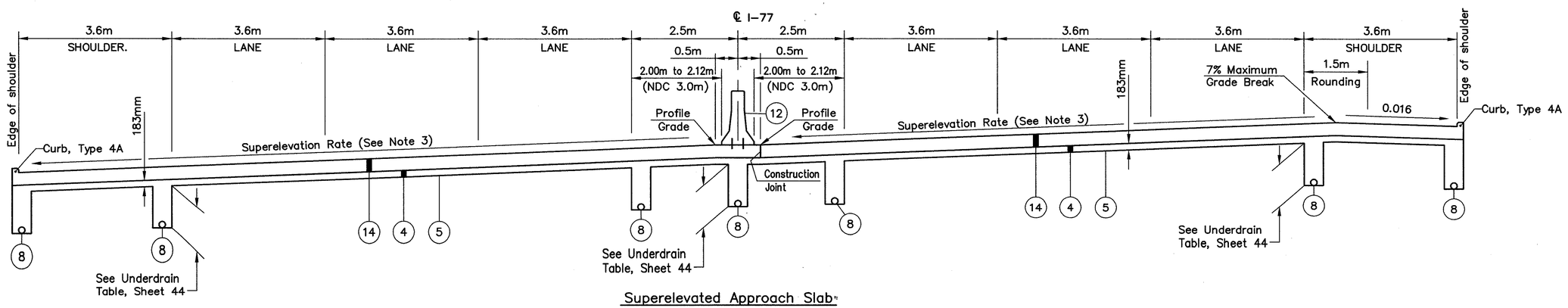
TYPICAL SECTIONS – I-77 AND RAMPS

CUY-77-23.458



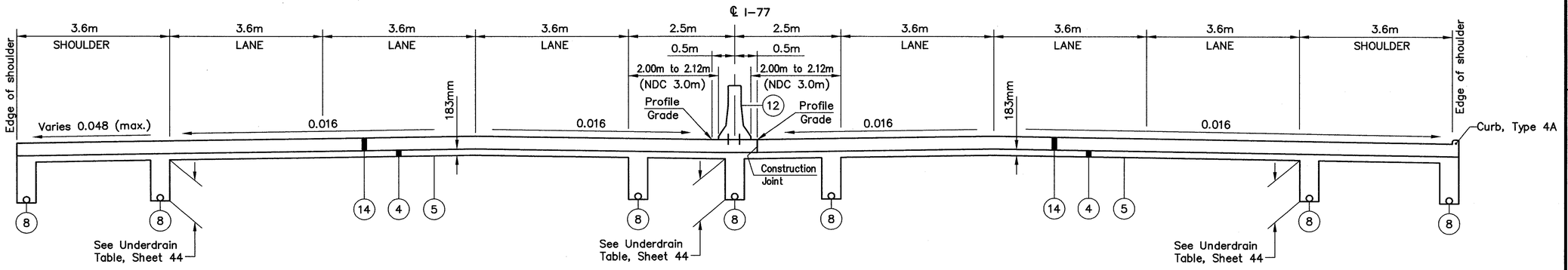
Proposed Ramp Approach Slab

Sta. 0+571.288 to Sta. 0+578.888 (W–N) = 7.6m
Sta. 10+120.209 to Sta. 10+127.809 (N–W) = 7.6m
Total = 15.2m



Superelevated Approach Slab

Sta. 3+277.404 to Sta. 3+285.004 = 7.6m



Normal Approach Slab

Sta. 2+666.711 (Skewed) to Sta. 2+674.311 (Skewed) = 7.6m

Notes:

1.) For legend see sheet 3.
2.) For extension of curb on approach roadways, see plan sheets.
3.) For approach slab elevations, see sheets 254, 255.

HNTB ARCHITECTS ENGINEERS PLANNERS

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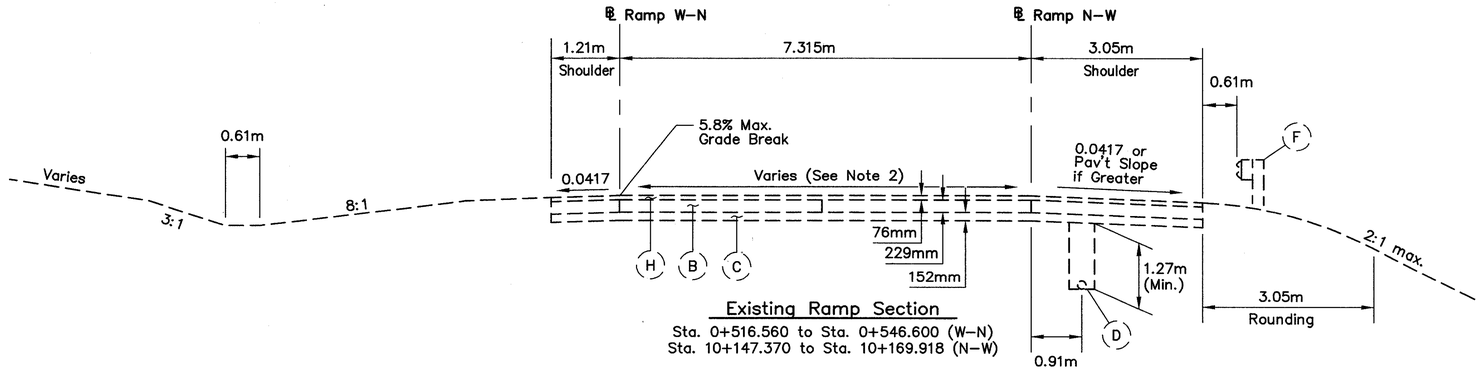
CALCULATED M.JW CHECKED ZSS

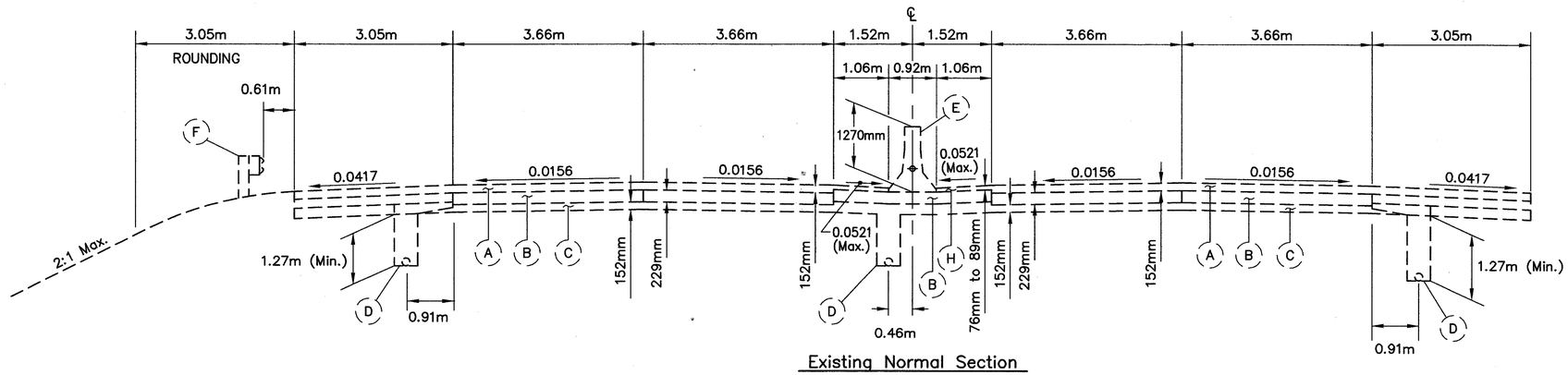
TYPICAL SECTIONS – APPROACH SLABS

CUY–77–23.458



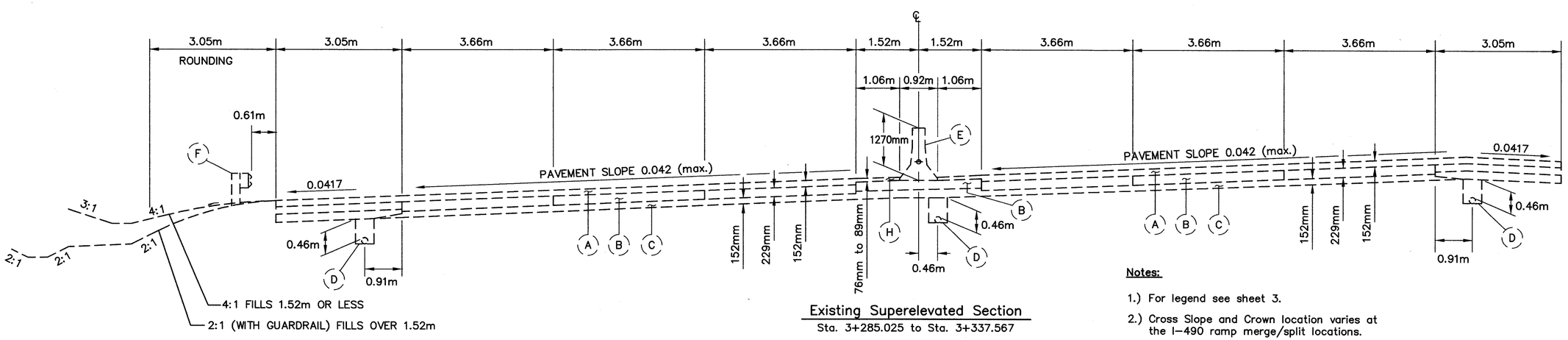
Existing Ramp Section

Sta. 0+516.560 to Sta. 0+546.600 (W–N)
Sta. 10+147.370 to Sta. 10+169.918 (N–W)



Existing Normal Section

Sta. 2+427.493 to Sta. 2+653.137



Existing Superelevated Section

Sta. 3+285.025 to Sta. 3+337.567

Notes:

1.) For legend see sheet 3.

2.) Cross Slope and Crown location varies at the I–490 ramp merge/split locations.

3.) Existing pavement thicknesses are approximate.

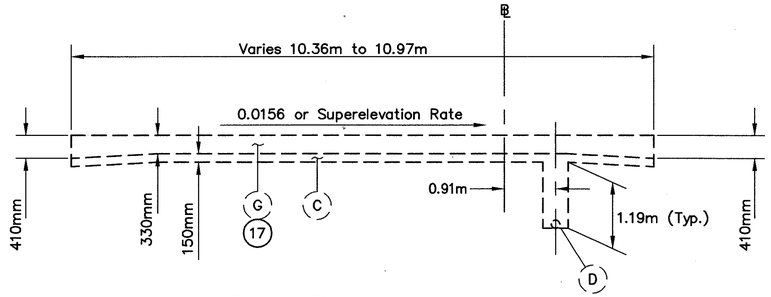
HNTB ARCHITECTS ENGINEERS PLANNERS

J:\jobs\24621\techprod\drawings\14949GYA.dwg view = PLOT4

CALCULATED MJW CHECKED ZSS

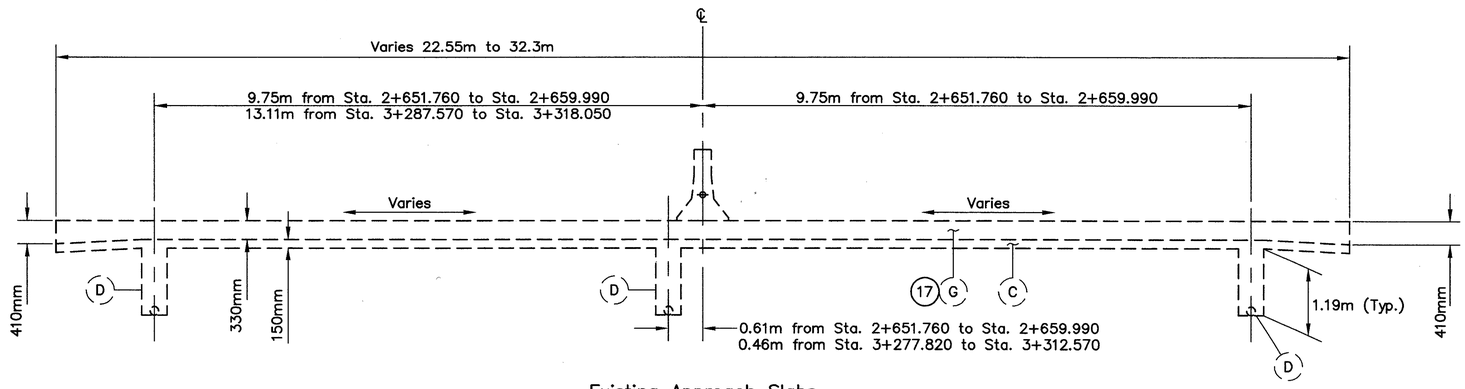
EXISTING TYPICAL SECTIONS

CUY–77–23.458



Existing Ramp Approach Slabs

Ramp W–N Sta. 0+546.600 to Sta. 0+554.220
Ramp N–W Sta. 10+139.750 to Sta. 10+147.370



Existing Approach Slabs

Sta. 2+653.130 to Sta. 2+660.750
Sta. 3+277.400 to Sta. 3+285.020

Notes:

1.) For legend see sheet 3.

2.) Existing pavement widths and thicknesses are approximate.

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\jobs\24621\techprod\drawings\14949GYA.dwg view = PLOT5

CALCULATED MJW CHECKED ZSS

EXISTING TYPICAL SECTIONS

CUY-77-23.458

GENERAL

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:

AT&T
3833 WEYMOUTH ROAD
MEDINA, OH 44256
PHONE: (216) 723-9110

AMERITECH
13630 LORAIN AVE., 4TH FLR.
CLEVELAND, OH 44111
PHONE: (216) 476-6142

BUCKEYE PIPELINE CO.
P.O. BOX 542
MANTUA, OH 44255
PHONE: (330) 274-2234

CLE. ELECTRIC ILLUMINATING CO.
P.O. BOX 5000
CLEVELAND, OH 44101
PHONE: (216) 634-7232

CLEVELAND PUBLIC POWER
1300 LAKESIDE AVE.
CLEVELAND, OH 44114
PHONE: (216) 664-4245

CITY OF CLEVELAND DIVISION OF HEAT AND WATER
1201 LAKESIDE AVE.
CLEVELAND, OH 44114
PHONE: (216) 664-2444

CITY OF CLEVELAND DIVISION OF WATER POLLUTION CONTROL
12302 KIRBY AVE.
CLEVELAND, OH 44108
PHONE: (216) 664-3785

EAST OHIO GAS
1201 EAST 55TH STREET
CLEVELAND, OH 44103
PHONE (216) 736-6675

WORLD COM
120 RAVINE ST.
AKRON, OHIO 44303
PHONE: (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.

PROGRESS SCHEDULE (CRITICAL PATH METHOD)

SEE SHEET 9A.

ADJUSTMENTS IN CONTRACT TIME

TIME EXTENSIONS WILL ONLY BE CONSIDERED WHEN CONTROLLING ITEMS OF WORK ON THE APPROVED CPM SCHEDULE ARE AFFECTED DUE TO NO FAULT OF THE CONTRACTOR. NO EXTENSIONS OF THE CONTRACT COMPLETION DATES SHALL BE MADE FOR ANY WEATHER DELAYS OCCURRING BETWEEN DECEMBER 1 AND APRIL 30.

WHEN ADDITIONAL WORK IS REQUIRED, TIME EXTENSIONS WILL ONLY BE GRANTED FOR CONTROLLING ITEMS ON THE CPM SCHEDULE.

TIME EXTENSIONS GRANTED DURING CONSTRUCTION YEARS 1998, 1999 AND 2000 SHALL NOT EXTEND THE OVERALL CONTRACT COMPLETION DATE.

PROJECT PROGRESS MEETINGS

PROGRESS MEETINGS WILL BE HELD EVERY FOUR (4) WEEKS AT THE PROJECT OFFICE, OR OTHER LOCATION DESIGNATED BY THE CONSTRUCTION ENGINEER, AND ATTENDED BY O.D.O.T. AND CONTRACTOR DECISION-MAKING PERSONNEL.

THE PURPOSE OF THESE MEETINGS WILL BE TO DISCUSS CRITICAL OPERATIONS AND POTENTIAL PROBLEMS. THE CONTRACTOR WILL CONFIRM THE NUMBER AND DURATION OF WORK SHIFTS, NUMBER OF WORK CREWS, AND SPECIFIC PORTIONS OF THE WORK TO BE PERFORMED DURING THE FOLLOWING WEEKS.

THESE MEETINGS CAN ONLY BE WAIVED BY THE CONSTRUCTION ENGINEER.

HNTB ARCHITECTS ENGINEERS PLANNERS

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 U.S.G.S. DATUM.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS 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 WORK LIMITS.

COOPERATION BETWEEN CONTRACTORS

THE CONTRACTOR SHALL COOPERATE AND COORDINATE HIS OPERATIONS WITH THE CONTRACTOR'S ON OTHER PROJECTS THAT MAY BE IN FORCE DURING THE LIFE OF THIS CONTRACT. NO WAIVER OF ANY PROVISIONS OF 105.07 OF THE CONSTRUCTION AND MATERIAL SPECIFICATION IS INTENDED. PROJECT CUY-77-22.876 (PID 13567) IS A BRIDGE REHABILITATION PROJECT FOR MAINLINE IR 77 OVER IR 490. THIS PROJECT WILL BE COORDINATED WITH THE CUY-77-23.458 (PID 14949) PROJECT.

ROADWAY

REMOVAL OF TREES OR STUMPS

ALL 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. THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED.

SIZES	NO. TREES	NO. STUMPS	TOTAL
450mm	2	0	2

NON-RIGID PAVEMENT REMOVAL

THE REMOVAL AND DISPOSAL OF NON-RIGID PAVEMENT SHALL BE INCLUDED FOR PAYMENT IN ITEM 203 - EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION.

MONUMENTS

MONUMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS AS SHOWN IN THE PLANS AND AT THE LOCATIONS SHOWN ON SHEET NO. 43.

ADDITIONAL SOIL INFORMATION

THE SOIL PROFILE AND/OR STRUCTURE FOUNDATION INVESTIGATION SHEETS FROM THE ORIGINAL CONSTRUCTION PLANS (CUY-21-14.55) MAY BE OBTAINED IN DISTRICT 12, THE OFFICE OF MATERIALS MANAGEMENT OR THE OFFICE OF STRUCTURAL ENGINEERING.

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 ON STANDARD CONSTRUCTION DRAWING GR-1.1M. PAYMENT SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE RESPECTIVE GUARDRAIL ITEMS.

LOCATION OF GUARDRAIL

THE LOCATIONS OF GUARDRAIL RUNS, AS SHOWN IN THESE PLANS, ARE SUBJECT TO ADJUSTMENT PRIOR TO FINAL ACCEPTANCE. THE ENGINEER SHALL BE SATISFIED THAT ALL INSTALLATIONS WILL AFFORD MAXIMUM PROTECTION FOR TRAFFIC.

ITEM 606, ANCHOR ASSEMBLY, TYPE E

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING AN ET-2000, OPTION "C" GUARDRAIL END TERMINAL AS MANUFACTURED BY SYRO STEEL COMPANY, 1170 N. STATE STREET, GIRARD, OHIO 44420 (TELEPHONE: 216-545-4373).

THE ANCHOR ASSEMBLY SHALL BE PLACED IN ACCORDANCE WITH THE MANUFACTURER'S CURRENT SPECIFICATIONS AND AT THE LOCATIONS SHOWN IN THE PLANS.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE CONTRACT PRICE FOR 606, EACH, ANCHOR ASSEMBLY, TYPE E. PAYMENT SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT THE 7.62-METER LONG ANCHOR ASSEMBLY, INCLUDING ALL RELATED HARDWARE, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER TO INSTALL A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY. THIS ITEM SHALL ALSO INCLUDE PAYMENT OVER AND ABOVE THE COST OF STANDARD TYPE 5 GUARDRAIL FOR INSTALLING TYPE 1 BREAKAWAY POSTS PER STANDARD CONSTRUCTION DRAWING GR-1.3M AT THE FOLLOWING LOCATIONS: 1) AT THE POINT WHERE THE ANCHOR ASSEMBLY AND THE GUARDRAIL RUN MEET; AND 2) AT THE NEXT THREE (3) POST LOCATIONS INTO THE GUARDRAIL RUN.

ITEM 202 - REMOVAL MISC: IMPACT ATTENUATOR REMOVED FOR STORAGE

THE IMPACT ATTENUATOR LOCATED AT STA. 2+709 LT. SHALL BE REMOVED FROM THE ROADWAY IN A MANNER THAT PREVENTS DAMAGE TO THE ATTENUATOR.

THE REMOVED IMPACT ATTENUATOR SHALL BE PACKAGED SUCH AS NECESSARY TO PREVENT DAMAGE TO ALL PARTS DURING DELIVERY OF AND STORAGE AT THE ODOT WARRENSVILLE YARD - 25609 EMERY ROAD, WARRENSVILLE HEIGHTS, OHIO 44128 (SR 175 AT INTERSECTION OF I-271 AND EMERY ROAD), BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER. THE PROJECT ENGINEER SHALL GIVE THE WARRENSVILLE TRAFF IC DEPARTMENT (292-5801) 48 HOUR NOTICE PRIOR TO ANY DELIVERIES. THE PROJECT ENGINEER SHALL BE RESPONSIBLE FOR FURNISHING ALL NECESSARY TRANSFER/RECIEVING DOCUMENTATION TO THE YARD.

ALL COSTS ASSOCIATED WITH THE REMOVAL, STORAGE, AND DELIVERY OF

THE IMPACT ATTENUATOR SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 202-REMOVAL MISC: IMPACT ATTENUATOR REMOVED FOR STORAGE.

ITEM 203, DITCH CLEANOUT, AS PER PLAN

THIS WORK SHALL CONSIST OF REESTABLISHING THE ORIGINAL RECORD GRADE OF THE EXISTING DITCHES. THE GEOMETRY OF THE DITCH SHALL BE AS DETAILED ON SHEET 72A. SURPLUS OR UNSUITABLE MATERIAL, AS DETERMINED BY THE ENGINEER, SHALL BE DISPOSED OF AS PER 203.05. EMBANKMENT REQUIRED FOR ERODED CONDITIONS SHALL MEET THE REQUIREMENTS OF 203.07 EXCEPT THAT THE COMPACTION REQUIREMENTS ARE WAIVED. SEEDING AND MULCHING SHALL MEET THE REQUIREMENTS OF ITEM 659.

MEASUREMENT OF THE DITCH CLEANOUT SHALL BE THE ACTUAL NUMBER OF METERS MEASURED ALONG THE CENTERLINE OF THE DITCH. FOR LOCATION AND LIMITS OF THE DITCH CLEANOUT, SEE SHEET 44.

PAYMENT FOR ALL THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 203, DITCH CLEANOUT, AS PER PLAN.

ITEM 203, EMBANKMENT, AS PER PLAN

ALL FILL MATERIAL FOR CONSTRUCTION OF THE APPROACH EMBANKMENT AND FOR FILLING THE EXCAVATION VOID CREATED BY THE REMOVAL OF THE EXISTING REAR ABUTMENT SHALL BE PLACED IN 150mm LIFTS AND COMPACTED IN ACCORDANCE WITH 304.04.

FENCE

THE FOLLOWING CONTINGENCY QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR THE REMOVAL AND REPLACEMENT OF DAMAGED FENCE, THE REPLACEMENT OF MISSING FENCE AND THE PLACEMENT OF ADDITIONAL FENCE AT LOCATIONS INDICATED BY THE ENGINEER:

ITEM 202 - FENCE REMOVED _____ 150 METERS
ITEM 607 - FENCE, TYPE CLT _____ 200 METERS

CALCULATED NMA | CHECKED MJW

GENERAL NOTES

CUY-77-23.458

PAVEMENT

ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE

THE RATE OF APPLICATION OF THE 407 TACK COAT FOR INTERMEDIATE COURSE SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF 0.23 LITERS PER SQUARE METER OF TACK COAT FOR INTERMEDIATE COURSE FOR ESTIMATING PURPOSES ONLY.

ITEM 407 - TACK COAT

THE RATE OF APPLICATION OF THE 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF 0.45 LITERS PER SQUARE METER OF TACK COAT FOR ESTIMATING PURPOSES ONLY.

ITEM 408 - BITUMINOUS PRIME COAT

THE RATE OF APPLICATION OF THE 408 BITUMINOUS PRIME COAT SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF 1.80 LITERS PER SQUARE METER OF BITUMINOUS PRIME COAT FOR ESTIMATING PURPOSES ONLY.

CURB AND MEDIAN ON APPROACH SLABS

THE SHAPE OF THE MEDIAN AND/OR CURBING ON APPROACH SLABS SHALL BE TRANSITIONED FROM THE STANDARD SECTION ON THE APPROACHES TO THE SECTION USED ON THE BRIDGE, WITHIN THE LIMITS OF THE APPROACH SLAB (SEE SHEET 69).
PAYMENT FOR THE MEDIAN SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 622 - CONCRETE BARRIER, TYPE B-1270, AS PER PLAN. PAYMENT FOR THE CURB IS INCLUDED IN THE UNIT PRICE BID FOR THE APPROACH SLAB AS NOTED ON STANDARD DRAWING AS-1-81M.

PAVING UNDER GUARDRAIL

THIS OPERATION SHALL INCLUDE PREPARATION OF THE GRADED SHOULDER USING 203, LINEAR GRADING, AND PAVING UNDER THE GUARDRAIL USING ITEM 448, ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1 (UNDER GUARDRAIL), AS PER PLAN.

ITEM 203, LINEAR GRADING, SHALL CONSIST OF EXCAVATING TOPSOIL AND PLACING GRANULAR MATERIAL 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 203.05.

THE REMOVED MATERIAL SHALL BE REPLACED WITH CONPACTABLE GRANULAR MATERIAL CONFORMING TO 203.02 PLACED TO GRADE AS DETAILED ON THE TYPICAL SECTIONS OR AS APPROVED BY THE ENGINEER.

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 A BITUMINOUS 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, UNDER GUARDRAIL, PG64-22 AS PER PLAN.

EXISTING TYPICAL SECTIONS

EXISTING TYPICAL SECTIONS HAVE BEEN TAKEN FROM THE RECORDS AND ARE BELIEVED TO REPRESENT THE EXISTING PAVEMENT, BUT THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THE SAME.

FOR FURTHER INFORMATION IN REGARD TO THE EXISTING TYPICAL SECTIONS, THE CONTRACTOR SHALL REFER TO THE PREVIOUS CONSTRUCTION PLANS. THESE PLANS MAY BE REVIEWED AT THE OHIO DEPARTMENT OF TRANSPORTATION, DISTRICT TWELVE OFFICES, 5500 TRANSPORTATION BOULEVARD, GARFIELD HEIGHTS, OHIO 44125-5396.

THE FOLLOWING PLANS ARE AVAILABLE FOR REFERENCE:
CUY-77-13.79 AND CUY-90-16.21
CUY-21-14.55 [CUY-77-14.55]
CUY-21-(13.77) (14.94) [CUY-77-(13.77) (14.94)]
CUY-21-14.12 [CUY-77-14.12]

ENVIRONMENTAL COMMITMENT

AN ENVIRONMENTAL SITE ASSESSMENT CONCLUDED THAT THE SOIL BETWEEN STA. 2+710 TO STA. 2+805 (I-77) BETWEEN STA. 0+635 TO STA. 0+700 (RAMP W-N) AND BETWEEN STA. 10+030 TO STA. 10+950 (RAMP N-W) IS CLASSIFIED AS A SOLID WASTE PER THE OHIO ENVIRONMENTAL PROTECTION AGENCY REGULATIONS. ALL EXCAVATED SOIL IN THIS LOCATION IS TO BE REMOVED AND REUSED AS FILL IN THE SAME LOCATION WITHIN THE PROJECT SITE. A COPY OF THE PHASE II ENVIRONMENTAL SITE ASSESSMENT IS AVAILABLE FOR EXAMINATION AT THE OFFICE OF CONTRACT SALES (ROOM 119, CENTRAL OFFICE, COLUMBUS) AND AT THE DISTRICT 12 ODOT OFFICE (TRANSPORTATION PLANNING AND PROGRAMS DEPARTMENT, GARFIELD HEIGHTS). INFORMATION CONTAINED IN THE PHASE II ENVIRONMENTAL SITE ASSESSMENT MAY AID THE CONTRACTOR IN DETERMINING THE IDENTIFIED SOLID WASTE LOCATIONS.

IF THE ENGINEER DETERMINES THAT THE EXCAVATED SOILS CAN NOT BE REUSED ON THIS PROJECT (WHETHER THE SOILS ARE EXCESS OR THE MATERIALS DO NOT SATISFY THE REQUIREMENTS OF CMS 203) IT WILL BE NECESSARY FOR THE CONTRACTOR TO PROPERLY DISPOSE OF THE SAID MATERIALS IN A REGULATED SOLID WASTE FACILITY.

THE 1) REMOVAL AND REUSE OR 2) THE REMOVAL AND DISPOSAL OF THESE SOLID WASTE MATERIALS WITHIN THE AFOREMENTIONED LIMITS SHALL COMPLY WITH ALL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS.

THERE WILL BE NO ADDITIONAL COMPENSATION FOR REMOVAL AND REUSE OF THE SOLID WASTE MATERIALS. THIS WORK SHALL BE INCIDENTAL WITHIN NORMAL EARTHWORK AND/OR STRUCTURAL PAY ITEMS.

FOR THE REMOVAL AND DISPOSAL OF SOLID WASTE MATERIALS, THE CONTRACTOR SHALL FURNISH ALL THE LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO EXCAVATE, STORE, TEST (FOR DISPOSAL), TRANSPORT AND DISPOSAL OF REGULATED MATERIALS, INCLUDING ANY REQUIRED PERMITS, APPROVALS, OR FEES. PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT PRICE BID PER METRIC TON.

THE FOLLOWING CONTINGENCY QUANTITY, AS DIRECTED BY THE ENGINEER, HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR REMOVAL AND DISPOSAL OF SOLID WASTE:

ITEM SPECIAL - WORK INVOLVING SOLID WASTE	50 METRIC TON

GENERAL (CONTINUED FROM SHEET 8)

PROGRESS SCHEDULE (CRITICAL PATH METHOD)

THE PRE-CONSTRUCTION MEETING SHALL BE HELD NO LATER THAN 30 CALENDAR DAYS AFTER THE CONTRACT IS SIGNED. THE CONTRACTOR SHALL SUBMIT THEIR PROPOSED CPM SCHEDULE AT THE PRE-CONSTRUCTION MEETING FOR REVIEW BY THE CONSTRUCTION ENGINEER. WRITTEN COMMENTS REGARDING THE CPM SCHEDULE WILL BE FORWARDED TO THE CONTRACTOR BY THE CONSTRUCTION ENGINEER WITHIN 14 CALENDAR DAYS AFTER THE PRE-CONSTRUCTION MEETING.

A FINAL CPM SCHEDULE SHALL BE SUBMITTED TO THE CONSTRUCTION ENGINEER WITHIN 30 CALENDAR DAYS FROM THE DATE OF THE PRE-CONSTRUCTION MEETING BUT AT LEAST SEVEN (7) CALENDAR DAYS PRIOR TO THE DATE DESIGNATED AS THE STARTING DATE IN THE CPM SCHEDULE. THE SCHEDULE SHALL BE SIGNED AND DATED BY THE PRIME CONTRACTOR AND NAMED SUBCONTRACTORS.

THE CONTRACTOR SHALL SUBMIT SEPARATE CRITICAL PATH SCHEDULES FOR THE FOLLOWING:

PART 1, PHASES 1 & 2 AND PART 2, PHASE 1 (ALL COMBINED IN ONE CPM)
PART 1, PHASE 3
PART 1, PHASE 4
PART 1, PHASE 5

THE CRITICAL PATHS FOR EACH SCHEDULE SHALL BE CREATED SUCH THAT THE BEGINNING OF EACH IS NOT BASED UPON THE COMPLETION DATE OF THE PREVIOUS CPM SCHEDULE.

THE ABOVE MENTIONED CPM SCHEDULES SHALL DETAIL THE NUMBER OF SHIFTS AND THE SHIFT SIZE (CREW SIZE). THE SHIFT DURATION AND WORK TIMES SHALL ALSO BE SHOWN.

THE ABOVE MENTIONED CPM SCHEDULES FOR PART 1, PHASES 3, 4 & 5 SHALL NOT SHOW A START DATE PRIOR TO DECEMBER 1 OF THE YEAR BEFORE THE CORRESPONDING INTERIM COMPLETION DATE.

UPDATED CPM SCHEDULES SHALL BE SUBMITTED BY THE CONTRACTOR EACH MAY 1 SHOWING ALL WORK TO BE COMPLETED BETWEEN MAY 1 AND THE INTERIM OR FINAL COMPLETION DATES. THIS UPDATED CPM SCHEDULE SHALL BE USED WHEN ANY REQUESTS FOR TIME EXTENSIONS FOR ANY REASON ARE MADE.

ADDITIONAL CPM UPDATES MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.

PART 1, PHASES 1, 2, 3, 4 & 5 ARE NOTED ON SHEETS 11, 12, & 99 OF 295. PART 2, PHASE 1, 2, & 3 ARE NOTED ON SHEET 7 OF 58. EACH PHASE SHALL BE COMPRISED OF NOTES AND THE DETAILS IN THE PLANS THAT MAKE UP EACH PHASE.

INTERIM COMPLETION DATES/LIQUIDATED DAMAGES

THE FOLLOWING PHASES SHALL BE COMPLETED BY THE INTERIM COMPLETION DATES SHOWN:

PART 1, PHASES 1 & 2	OCTOBER 15, 1998
PART 2, PHASE 1	OCTOBER 15, 1998
PART 1, PHASE 3	OCTOBER 15, 1999
PART 1, PHASES 4 & 5	OCTOBER 15, 2000

INCIDENTAL WORK ITEMS WHICH DO NOT EFFECT THE MAINTENANCE OF TRAFFIC REQUIREMENTS, OR THE IMPLEMENTATION OF THE SUBSEQUENT PHASE, MAY BE PERFORMED BEYOND THE INTERIM COMPLETION DATES SHOWN ABOVE PROVIDING THAT THEY ARE COMPLETED BY THE FINAL COMPLETION DATE. THE INTERIM COMPLETION DATES SHOWN SHALL NOT APPLY TO THOSE INCIDENTAL ITEMS OF WORK.

PART 1, PHASE 2 SHALL BE LIMITED TO 10 CALENDAR DAYS, AFTER WHICH LIQUIDATED DAMAGES OF $10,800 PER DAY SHALL APPLY.

PART 2, PHASE 3 SHALL BE COMPLETED WITHIN 20 DAYS FOLLOWING THE COMPLETION OF PART 1, PHASE 5, AFTER WHICH LIQUIDATED DAMAGES AS PER 108.07 SHALL APPLY.

LIQUIDATED DAMAGES OF $10,800 PER DAY SHALL BE ASSESSED PER CALENDAR DAY FOR ANY INTERIM COMPLETION DATE NOT MET.

CALCULATED NMA CHECKED MJW

GENERAL NOTES

CUY-77-23.458

CALCULATED M.J.W | CHECKED N.M.A

MAINTENANCE OF TRAFFIC GENERAL NOTES

GENERAL

BEFORE WORK BEGINS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE NAMES AND TELEPHONE NUMBERS OF AT LEAST TWO PERSONS WHO CAN BE CONTACTED 24 HOURS PER DAY BY THE OHIO DEPARTMENT OF TRANSPORTATION, AND ALL INTERESTED POLICE AGENCIES. THESE PERSONS SHALL BE RESPONSIBLE FOR PLACING OR REPLACING NECESSARY TRAFFIC CONTROL DEVICES TO MAINTAIN THE SAFETY OF THE TRAVELED PAVEMENT.

TRAFFIC SHALL BE MAINTAINED WITHOUT INTERRUPTION DURING CONSTRUCTION OF THE WORK EXCEPT AS OTHERWISE APPROVED BY THE ENGINEER OR SPECIFIED IN THESE NOTES OR PLANS. THE CONTRACTOR SHALL SET UP AND OPERATE HIS EQUIPMENT IN SUCH A MANNER AS TO NOT ENCROACH UPON THE TRAVELED PAVEMENT.

TRAFFIC IS TO BE MAINTAINED IN A UNIFORM PATTERN THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT AND IS NOT TO BE SUBJECTED TO CONSTANT LANE SHIFTS.

THE USE OF BERMS TO MAINTAIN TRAFFIC IS PROHIBITED EXCEPT WHERE THE PLANS INDICATE, OR AS OTHERWISE APPROVED BY THE ENGINEER. SHOULD ANY EXISTING OR NEW BERM AREAS BECOME DAMAGED OR DESTROYED DUE TO THE CONTRACTOR'S NEGLIGENCE OR FAILURE TO PROVIDE ADEQUATE SIGNS, BARRICADES, CONES, FLAGGERS, OR OTHER TRAFFIC CONTROL DEVICES, THE RESTORATION OF THE BERMS WILL BE AT THE CONTRACTOR'S EXPENSE, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF OPERATION, IN WRITING, TO THE PROJECT ENGINEER FOR HIS APPROVAL AT LEAST 14 DAYS PRIOR TO ANY TRAFFIC RESTRICTION. THE CONTRACTOR SHALL ALSO NOTIFY THE FOLLOWING AGENCIES 7 DAYS PRIOR TO ANY PHASE CHANGES OR RAMP CLOSURES:

GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY	566-5100
METRO REGIONAL TRANSIT AUTHORITY	(330) 762-0341
CUYAHOGA COUNTY BOARD OF MENTAL RETARDATION	241-8230
CLEVELAND BOARD OF EDUCATION	574-8500
CITY OF CLEVELAND :	
-COMMISIONER OF TRAFFIC ENGINEERING	664-3194
-POLICE TRAFFIC COMMISIONER	623-5188
-FIRE DEPARTMENT HEADQUARTERS	664-6800
-COMMISSIONER OF ENGINEERING AND CONSTRUCTION	664-2381

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 NO. 1-800-272-8772) CERTIFIED WORKSITE TRAFFIC SUPERVISOR (WTS) ,2) THE NATIONAL SAFETY COUNCIL, TRAFFIC CONTROL ZONES SUPERVISORS COURSE, PHONE NO. 800-441-5103, OR TAKE THE FOLLOWING COURSE BY THE THE NATIONAL HIGHWAY INSTITUE, DESIGN AND OPERATION OF WORK ZONE TRAFFIC CONTROL, PHONE NO. (703) 235-0528 .THE WTS POSITION IS ESTABLISHED FOR THE PURPOSE OF MONITORING AND CORRECTING ANY TRAFFIC CONTROL DEFICIENCIES IN THE WORK ZONE. THE WTS SHALL OVERSEE ALL OPERATIONS THAT AFFECT THE MOVEMENT OF VEHICULAR AND PEDESTRIAN TRAFFIC THROUGH THE WORK ZONE.

THE WTS SHALL BE PRESENT WHEN THE CONTRACTOR OR SUBCONTRACTOR INSTALLS A TRAFFIC RESTRICTION, LANE CLOSURE ETC. IN LIEU OF THE WTS BEING PRESENT WHEN A SUBCONTRACTOR HAS A TRAFFIC CONTROL ZONE IN PLACE THE SUBCONTRACTOR MAY USE HIS OWN PERSONNEL THAT IS A CERTIFIED WTS. THE SUBCONTRACTOR MUST PRESENT A COPY OF HIS WTS CERTIFICATE TO THE PROJECT ENGINEER. A WTS MUST BE PRESENT FOR ANY CLOSURE OR TRAFFIC RESTRICTION THAT TAKES PLACE ON THE PROJECT. IF THE RESTRICTIONS ARE SHORT TERM, THE WTS SHALL MONITOR THE ZONE FOR COMPLIANCE. DURING THE LANE CLOSURE HE SHALL MAKE SURE ALL TRAFFIC CONTROL ITEMS ARE FUNCTIONING PROPERLY. TRAFFIC CONTROL WILL BE THE WTS MAIN DUTY DURING IMPLEMENTATION OF ZONES OR SHORT TERM ZONES. THE WTS SHALL HAVE THE AUTHORITY TO HAVE THE DEFICIENCIES CORRECTED AS SOON AS POSSIBLE. THE WTS SHALL PROVIDE THE PROJECT ENGINEER A SKETCH OF THE (TCP) TRAFFIC CONTROL PLAN EVERY DAY THERE IS TO BE A SHORT TERM TRAFFIC RESTRICTION, LANE CLOSURE ETC. THIS TCP SHALL SHOW HOW THE WORK ZONES ARE TO BE IMPLEMENTED.

DAILY, INCLUDING ONE DAY DURING THE WEEKEND AND HOLIDAYS (AS SPECIFIED BELOW) THE WTS SHALL SPEND A MINIMUM OF ONE HOUR REVIEWING AND MAINTAINING THE WORK ZONE. THESE HOURS MAY BE ADJUSTED BY THE ENGINEER. THE HOURS MAY BE REDUCED DURING THE WINTER CONSTRUCTION SEASON IF DIRECTED BY THE ENGINEER. THE WTS SHALL INSPECT THE WORK ZONE AT THE BEGINNING AND END OF EACH WORK DAY, ONE TIME PER WEEK DURING THE HOURS OF DARKNESS AND ONCE PER WEEKEND.

A RECORD OF EACH DAY'S REVIEW SHALL BE GIVEN TO THE PROJECT ENGINEER THE FOLLOWING WORKDAY, IN WRITING AND SHALL INCLUDE: TRAFFIC CONTROL DEVICE CONDITION, PLACEMENT, VISIBILITY, TRAFFIC FLOW CONDITIONS, INCIDENTS, CONGESTION POINTS, ADEQUACY OF ADVANCED WARNING SIGNS BEYOND THE PROJECT LIMITS, INTERACTION OF WORK VEHICLES WITH TRAFFIC, PROPER STORAGE OF MATERIALS AND EQUIPMENT, ACCIDENTS, DEFICIENCIES AND RESOLUTIONS OF THE DEFICIENCIES, ETC.

THE WTS SHALL BE AVAILABLE ON A 24-HOUR BASIS TO REPAIR AND/OR REPLACE DAMAGED OR MISSING TRAFFIC CONTROL DEVICES. A 24-HOUR PHONE NUMBER SHALL BE MADE AVAILABLE TO THE PROJECT ENGINEER IN ORDER TO CONTACT THE WTS. THE WTS SHALL HAVE A PAGER AND THE PHONE NUMBER PROVIDED TO THE PROJECT ENGINEER.

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 THE CONTRACTOR NOT AS A PENALTY BUT AS A LIQUIDATED DAMAGE.

PAYMENT FOR THE WTS SHALL BE INCLUDED UNDER THE LUMP SUM ITEM 614 - MAINTAINING TRAFFIC.

TRUCK MOUNTED ATTENUATOR

WHEN THE CONTRACTOR IS PERFORMING SHORT TERM WORK ON BERMS OR MEDIANS LESS THAN 3m (10ft) IN WIDTH AND ON A ROAD WITH SPEEDS 45 MPH OR HIGHER, A TRUCK MOUNTED ATTENUATOR (T.M.A.) MUST TRAIL THE OPERATION. THIS SAME TRUCK MUST HAVE A TYPE B FLASHING ARROW PANEL MOUNTED ON IT FACING THE REAR OF THE TRUCK.

THE T.M.A. SHALL BE AN ALPHA 60 M.D., MANUFACTURED BY ENERGY ABSORPTION SYSTEMS. INC. ONE WACKER DRIVE, CHICAGO, ILL. 60601-2076 (312) 467-6750

AN EQUAL PRODUCT MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER, THE T.M.A. MUST BRING A VEHICLE WEIGHING ABOUT 1800 TO 4500 LBS. AND TRAVELING AT 60 MPH TO A SAFE, CONTROLLED STOP, PER NCHRP 350 CRITERIA. THE MANUFACTURER'S SPECIFICATION MUST BE FOLLOWED CONCERNING THE SIZE OF THE TRUCK AND THE CONNECTIONS TO THE T.M.A..

OPERATIONS THAT THE T.M.A AND FLASHING ARROW PANEL ARE INTENDED FOR, BUT NOT LIMITED TO, ARE THE FOLLOWING:

1.) INSTALLATION, COVERING, UNCOVERING OF CONSTRUCTION SIGNS.
2.) SET-UP AND TEAR- DOWN OF A LANE CLOSURE.
3.) PLACING OR PICKING UP DRUMS, CONES, OR EQUIPMENT.
4.) APPLYING PAVEMENT MARKINGS WITH A MOVING ZONE OR RAISED PAVEMENT MARKERS.
5.) OTHER TIMES AS DIRECTED BY THE ENGINEER

ALL COSTS ASSOCIATED WITH THIS ITEM ARE TO BE INCLUDED IN ITEM 614 - MAINTAINING TRAFFIC.

TRAFFIC CONTROL DEVICES LOCATED OUTSIDE THE LIMITS OF CONSTRUCTION

IN ADDITION TO THE REQUIREMENTS OF 614.03(b) OF THE CMS, THE CONTRACTOR SHALL FURNISH, ERECT, MAINTAIN, AND SUBSEQUENTLY REMOVE SUCH ADDITIONAL TRAFFIC CONTROL DEVICES LOCATED OUTSIDE OF THE LIMITS OF CONSTRUCTION AS ARE REQUIRED ON HIGHWAYS WHICH ARE USED AS DETOURS, INCLUDING THE "ROAD CLOSED" SIGNS UPON THE BARRICADES AT THE POINT WHERE THE HIGHWAY IS CLOSED.

PHASING OF CONSTRUCTION

PHASING OF CONSTRUCTION AS IT APPEARS IN THESE MAINTENANCE OF TRAFFIC PLANS IS INTENDED TO PROVIDE FOR THE COMPLETION OF ALL PROPOSED WORK IN FIVE PHASES AS DESCRIBED UNDER "CONSTRUCTION SEQUENCE" ON SHEETS 11 & 12 AND DETAILED IN THE M.O.T. PLANS.

THE CONTRACTOR SHALL COMPLETE ALL WORK EXCLUSIVE OF PLACING THE FINAL PAVEMENT MARKINGS WITHIN A CONSTRUCTION PHASE BEFORE BEGINNING WORK ON THE NEXT PHASE.

ITEM 614 - MAINTAINING TRAFFIC

GENERAL PROVISIONS

1. TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH THE CONSTRUCTION SEQUENCE NOTES ON SHEET 11 & 12 AND AS SHOWN ON THE M.O.T. AND DETOUR PLANS. THE CONTRACTOR SHALL SET UP AND OPERATE HIS EQUIPMENT IN SUCH A MANNER AS TO MINIMIZE ENCROACHMENT UPON THE TRAVELED WIDTH OF PAVEMENT.

2. DURING NON-WORKING PERIODS, OPEN EXCAVATIONS SHALL BE DELINEATED WITH WARNING FLASHERS AND/OR OTHER APPROVED DEVICES AS DEEMED APPROPRIATE BY THE ENGINEER. (LOCATIONS OTHER THAN I-77)

3. EXISTING SIGNS LOCATED WITHIN THE ROAD WORK AREAS WHICH ARE NECESSARY FOR INTERIM OR PERMANENT TRAFFIC CONTROL SHALL BE REMOVED AND REERECTED IN LOCATIONS AS APPROVED BY THE ENGINEER.

4. THE CONTRACTOR SHALL FURNISH, ERECT, MAINTAIN AND REMOVE ALL TRAFFIC CONTROL DEVICES NECESSARY FOR MAINTAINING TRAFFIC. THIS INCLUDES ALL NECESSARY TEMPORARY PANEL SIGNS AND ASSOCIATED SIGN POSTS AND FOUNDATIONS. THE CONTRACTOR SHALL DETERMINE WHAT SIGNS ARE NEEDED AND ADVISE THE ENGINEER 2 WEEKS IN ADVANCE OF HIS DETAILED PLANS. ALL TEMPORARY OVERLAYS REVISING EXISTING SIGNS SHALL HAVE BLACK LETTERS ON AN ORANGE BACKGROUND, EXCEPT AS NOTED. ALL SIGNS AND OVERLAYS SHALL BE CONSIDERED AS PART OF THE LUMP SUM PAYMENT FOR ITEM 614 - MAINTAINING TRAFFIC.

5. ANY EXISTING SIGNS THAT CONFLICT WITH THE MAINTENANCE OF TRAFFIC SCHEME SHALL BE REMOVED AND REERECTED AT A LATER DATE OR COVERED. WHERE THE PLANS CALL FOR A PERMANENT SIGN TO BE COVERED, THE CONTRACTOR SHALL DO SO IN SUCH A MANNER SO AS TO AVOID DAMAGING THE PERMANENT SIGN WHEN THE COVER IS REMOVED. THE COVER SHALL BE TOTALLY OPAQUE. THE USE OF ADHESIVE TAPE APPLIED DIRECTLY TO A SIGN FACE IS STRICTLY PROHIBITED.

6. TRAFFIC CONTROL DEVICES SHALL BE SET UP PRIOR TO THE START OF CONSTRUCTION, AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH SPECIAL CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS THEY ARE NEEDED AND SHALL BE IMMEDIATELY REMOVED THEREAFTER. WHERE OPERATIONS ARE PERFORMED IN PHASES, THERE SHALL BE IN PLACE ONLY THOSE DEVICES THAT APPLY TO THE CONDITION PRESENT DURING THE PHASE IN PROGRESS. ALL SIGNS WITH MESSAGES WHICH DO NOT APPLY DURING A CERTAIN PERIOD SHALL BE COVERED OR SET ASIDE OUT OF THE VIEW OF TRAFFIC.

7. SHORT TERM LANE CLOSURES

ONE LANE SHORT TERM LANE CLOSURES ARE ONLY PERMITTED DURING THE FOLLOWING TIMES. TWO LANES MUST BE MAINTAINED AT ALL OTHER TIMES. CLOSURE TIMES FOR THE 3 LANE SECTION OF I-77 OR OTHER FREEWAYS WILL ONLY BE PERMITTED AS STATED ON THE DISTRICT 12 PERMITTED LANE CLOSURE REFERENCE MAP. COPIES OF THE PERMITTED LANE CLOSURE MAP ARE AVAILABLE FROM THE DISTRICT 12 WORK ZONE TRAFFIC CONTROL ENGINEER (216) 581-2333 #373.

SHORT TERM LANE CLOSURE TIMES:

WEEKDAYS	WEEKENDS
MON (PM) - FRI (AM)	FRI (PM) - MON (AM)
9PM-6AM	11PM (FRI) - 8AM (SAT)
	9PM (SAT) - 11AM (SUN)
	9PM (SUN) - 6AM (MON)

THE HOURS MAY BE EXTENDED ON SATURDAY OR SUNDAY MORNING WHEN NO SPECIAL EVENT OR HOLIDAY IS OCCURRING. THE CONTRACTOR NEED NOT OPEN THE LANE UNTIL TRAFFIC IS BACKED UP ONE HALF MILE AS DETERMINED BY THE ENGINEER. AT THAT TIME, THE CONTRACTOR WILL HAVE FIFTEEN (15) MINUTES TO RE-OPEN THE LANE. IF THE LANE IS NOT OPENED IN FIFTEEN (15) MINUTES, LIQUIDATED DAMAGES SHALL APPLY.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BE AWARE OF THE BACKUP SO THAT WHEN THE ENGINEER NOTIFIES THE CONTRACTOR TO OPEN THE LANE, THE CONTRACTOR CAN DO SO. IN NO OTHER CASE MAY THESE HOURS BE EXTENDED.

LIQUAIDATED DAMAGES WILL BE ACCESSED THE CONTRACTOR IF LANES ARE CLOSED OR REMAIN CLOSED OUTSIDE OF THE ABOVE PERMITTED LANE CLOSURE TIMES. THE AMOUNT OF LIQUIDATED DAMAGES WILL BE AS FOLLOWS: $100.00 PER MINUTE THE LANE IS CLOSED.

NO SHORT TERM LANE CLOSURES SHALL BE IN EFFECT FOR THE FOLLOWING DESIGNATED HOLIDAYS:

CHRISTMAS	NEW YEARS	EASTER
MEMORIAL DAY	FOURTH OF JULY	
LABOR DAY	THANKSGIVING	

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

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

NO ADDITIONAL LANE CLOSURES ON I-77 SHALL BE PERMITTED FOR DOWNTOWN EVENTS EXCEEDING 15,000 SEATING CAPACITY FOR TWO HOURS PRIOR TO OR TWO HOURS AFTER THE EVENT.

TOTAL CLOSURE OF I-77

THE CONTRACTOR MAY TOTALLY CLOSE I-77 IN BOTH DIRECTIONS WITH THE APPROVAL OF THE ENGINEER. A TOTAL CLOSURE IN ONE OR BOTH DIRECTIONS MAY ONLY TAKE PLACE DURING THE FOLLOWING TIMES:

MON-THURS 11PM TO 5AM, SAT 1AM TO 7AM, SUN 1AM TO 10AM

THE CONTRACTOR MUST NOTIFY THE ENGINEER 1 WEEK IN ADVANCE OF THE TOTAL CLOSURE. IF THE CONTRACTOR ELECTS TO CLOSE I-77 IN ONE OR BOTH DIRECTIONS HE MUST SUBMIT A TRAFFIC CONTROL PLAN (SKETCH) TO THE ENGINEER FOR HIS APPROVAL. ALL TRAFFIC CONTROL ITEMS INCLUDING DETOUR SIGNING AND LANE CLOSURES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL BE PAID FOR UNDER ITEM 614 MAINTAINING TRAFFIC LUMP SUM.

8. LENGTH AND DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS 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.

   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.

9. NOTICE OF CLOSURE SIGNS, AS DETAILED IN THESE PLANS, SHALL BE ERECTED BY THE CONTRACTOR AT LEAST ONE WEEK IN ADVANCE OF THE SCHEDULED ROAD OR RAMP CLOSURE. THE SIGNS SHALL BE ERECTED ON THE RIGHT HAND SIDE OF THE ROAD/RAMP FACING TRAFFIC. THEY SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF ANY OTHER TRAFFIC CONTROL SIGNS. ON ROADWAYS, THEY SHOULD BE ERECTED AT THE POINT OF CLOSURE. THE SIGNS MAY BE ERECTED ANYWHERE ON RAMPS AS LONG AS THEY ARE VISIBLE TO THE MOTORISTS USING THE RAMP. ON ENTRANCE RAMPS, THE SIGN SHALL BE ERECTED WELL IN ADVANCE OF THE MERGE AREA TO AVOID DISTRACTING MOTORISTS.

10. WHENEVER ANY WORK IS BEING DONE DIRECTLY OVER A TRAVELED LANE OR SHOULDER, THE CONTRACTOR SHALL SUPPLY SUFFICIENT SAFETY EQUIPMENT, AS APPROVED BY THE ENGINEER, TO PROTECT THE TRAVELING PUBLIC FROM ANY CONSTRUCTION DEBRIS. IF TRAVELED LANES UNDER STRUCTURE ARE TO BE CLOSED FOR REASONS OF SAFETY, METHOD AND TIMES OF CLOSURE MUST BE PER THE SHORT TERM CLOSURE TIMES. REFER TO STANDARD CONSTRUCTION DRAWING MT-95.30M FOR LANE CLOSURES.

11. A CONCRETE BARRIER SHALL SEPARATE OPPOSING TRAFFIC FLOWS AT ALL TIMES. WORK SHALL BE SEQUENCED SO THAT CONCRETE BARRIER ENDS ARE NOT LEFT UNPROTECTED WITHOUT A TAPERED END SECTION OR OTHER METHOD APPROVED BY THE ENGINEER.

12. ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE LATEST EDITION OF 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 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

CONSTRUCTION SEQUENCE

THE INSTALLATION OF ALL DETOUR AND MAINTENANCE OF TRAFFIC SIGNING SHALL BE PERFORMED WHEN REQUIRED BY THE CONTRACTOR AS OUTLINED IN THE CONSTRUCTION SEQUENCE. ANY REVISIONS THAT THE CONTRACTOR MAKES TO THE SEQUENCE OF CONSTRUCTION MUST BE APPROVED BY THE ENGINEER.

I-77 WORK SHALL BE PERFORMED IN THE FOLLOWING ORDER AS INDICATED BELOW:

ITEMS 1A-1E OF THE DETOUR CONSTRUCTION SEQUENCE FOR CUY-77-23.458 PART 2 SHALL BE COMPLETED PRIOR TO IMPLEMENTATION OF THE DETOUR IN PHASE 2.

THE FOLLOWING SIGNALIZED INTERSECTIONS WILL BE MAINTAINED AS PART OF CUY-77-23.458 PART 2.

i. EAST 30TH/BROADWAY
ii. EAST 30TH/ORANGE
iii. BROADWAY/EAST 34TH
iv. BROADWAY/EAST 37TH
v. BROADWAY/I-490 OFF RAMP
vi. BROADWAY/DILLE
vii. EAST 30TH/WOODLAND
viii. BROADWAY/I-77 OFF RAMP
ix. BROADWAY/FINN
x. BROADWAY/ROCKEFELLER

PHASE 1

EXISITING TRAFFIC PATTERNS SHALL BE MAINTAINED NORTHBOUND AND SOUTHBOUND ON I-77. SINGLE LANE CLOSURE SHALL BE USED DURING THE INSTALLATION OF THE TEMPORATY LIGHTING. REMOVE RAISED PAVEMENT MARKERS SOUTHBOUND AND INSTALL TEMPORARY TRAFFIC CONTROL SOUTHBOUND AS SHOWN IN THE PLANS. SHIFT SOUTHBOUND TRAFFIC TO MEDIAN LANE AND SHOULDER FOR PAVEMENT AND STRUCTURE WIDENING.

A. WORK REQUIRED

1. INSTALL TEMPORARY LIGHTING ON THE OUTSIDE OF THE EXISTING SOUTHBOUND STRUCTURE FOR USE DURING PHASES 2 AND 3 (SEE SHEETS 88 & 89 FOR DETAILS).
2. PROVIDE NEW LIGHTING CIRCUITRY FOR CIRCUIT GAL1 AND GAL2 (SEE LIGHTING PLANS).
3. REMOVE EXISTING SOUTHBOUND SHOULDER AND GUARDRAIL AND CONSTRUCT PAVEMENT WIDENING AND GUARDRAIL REPLACEMENT FROM STA. 2+467 TO THE KINGSBURY RUN BRIDGE AND FROM THE BRIDGE TO STA. 0+048 (RAMP 30-S).
4. REMOVE THE EXISTING I-77 BRIDGE PARAPET AT THE RAMP N-W EXIT GORE. CONSTRUCT TEMPORARY BRIDGE WIDENING TO BE USED DURING PHASE 3 MAINTENANCE OF TRAFFIC. BRIDGE WIDENING SHALL BE AS DETAILED ON SHEETS 109-112.
5. REMOVE OVERHEAD SIGNS FROM THE SOUTHBOUND STRUCTURE.

B. REQUIREMENTS

1. TEMPORARY LIGHTING SHALL BE INSTALLED DURING OFF PEAK PERIODS UTILIZING SINGLE LANE CLOSURES PER MT-95.30M. THIS WORK SHALL BE COMPLETED PRIOR TO SETTING UP THE WORK ZONE AT RAMPS N-E/N-W.
2. DURING PAVEMENT AND STRUCTURE WIDENING MAINTAIN TWO LANES SOUTHBOUND ON I-77 BY SHIFTING TRAFFIC ONTO THE MEDIAN SHOULDER.
3. MAINTAIN ONE LANE ON RAMPS N-E/N-W.
4. PORTABLE CONCRETE BARRIER SHALL BE USED TO PROTECT TRAFFIC FROM THE WORK AREA.
5. NORTHBOUND TRAFFIC SHALL NOT BE AFFECTED.
6. OVERHEAD SIGNS SHALL BE REMOVED AT THE END OF PHASE 1 IN CONJUNCTION WITH IMPLEMENTING PHASE 2.

PHASE 2

INSTALL DETOUR & M.O.T. SIGNING AS SHOWN IN THE DETOUR AND M.O.T. PLANS. INSTALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY RAISED PAVEMENT MARKERS FOR PHASE 2 AND SHIFT TRAFFIC TO THE OUTSIDE LANE AND SHOULDER NORTHBOUND AND SOUTHBOUND.

A. WORK REQUIRED

1. REMOVE THE EXISTING MEDIAN BARRIER FROM STA. 2+428 TO THE KINGSBURY RUN BRIDGE AND FROM THE KINGSBURY RUN BRIDGE TO STA. 3+601.
2. ABANDON THE EXISTING MEDIAN INLETS AND INSTALL TEMPORARY CATCH BASINS WHERE SPECIFIED IN THE MOT PLANS.
3. REMOVE EXISTING RAISED PAVEMENT MARKERS NORTHBOUND.
4. PLANE THE EXISTING ASPHALT PAVEMENT AS NECESSARY TO PLACE PAVEMENT OVERLAY FOR MAINTENANCE OF TRAFFIC.
5. PLACE OVERLAY AS DETAILED ON SHEETS 19 & 20.
6. INSTALL THE STEEL PLATES, AS DETAILED ON SHEET 108 ON THE EXISTING SOUTHBOUND BRIDGE AND REMOVE THE EXISTING MEDIAN LIGHTS FROM THE NORTHBOUND BRIDGE.
7. REMOVE NORTHBOUND OVERHEAD SIGNS AND SUPPORTS.

B. REQUIREMENTS

1. THE NORTHBOUND AND SOUTHBOUND DETOUR ROUTE AS SHOWN ON SHEETS 17 TO 17F SHALL BE ACTIVATED.
   a. UNCOVER AND MAINTAIN ALL DETOUR ROUTE SIGNS ON INTERSTATES AND LOCAL STREETS.
   b. ACTIVATION OF THE DETOURS SHALL BE PERFORMED IN CONJUNCTION WITH THE CLOSING OF THE I-77 RAMPS ON A WEEKEND (8 P.M. FRIDAY TO 4 A.M. MONDAY).
2. RAMPS N-E/N-W, W-N/E-N, S-30 AND 30-S SHALL BE CLOSED.
3. MAINTAIN TWO LANES OF TRAFFIC NORTHBOUND AND SOUTHBOUND ALONG I-77 BY SHIFTING TRAFFIC ONTO THE OUTSIDE SHOULDERS, AS DETAILED ON SHEETS 26-31.
4. PORTABLE CONCRETE BARRIER AND DRUMS SHALL BE USED TO PROTECT TRAFFIC FROM THE WORK AREA. PORTABLE CONCRETE BARRIER SHALL BE USED AT CLOSED RAMP N-E/N-W.
5. MAINTAIN TWO LANES OF TRAFFIC WHILE THE M.O.T. OVERLAY IS PLACED TO WITHIN THE LIMITS OF THE M.O.T. DETAILED ON SHEETS 27-30. THE REMAINING OVERLAY SOUTH OF THE BRIDGE SHALL BE PLACED DURING OFF PEAK PERIODS USING SHORT TERM LANE CLOSURES WHILE MAINTAINING ONE LANE OF TRAFFIC NORTHBOUND AND SOUTHBOUND.
6. THE REMOVAL OF EXISTING MEDIAN LIGHTS SHALL BE PERFORMED LAST TO MINIMIZE THE TIME NORTHBOUND TRAFFIC WILL BE WITHOUT LIGHTING UNTIL THE CROSSOVER IS IMPLEMENTED IN PHASE 3.

PHASE 3

INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY RAISED PAVEMENT MARKERS AS SHOWN FOR PHASE 3 IN THE PLANS AND SWITCH NORTHBOUND TRAFFIC TO EXISTING SOUTHBOUND STRUCTURE.

A. WORK REQUIRED

1. REMOVE THE EXISTING NORTHBOUND KINGSBURY RUN STRUCTURE AND CONSTRUCT THE NEW NORTHBOUND STRUCTURE.
2. REMOVE THE EXISTING NORTHBOUND OUTSIDE SHOULDER AND GUARDRAIL AND CONSTRUCT PAVEMENT WIDENING AND GUARDRAIL REPLACEMENT FROM STA. 2+505 TO THE KINGSBURY RUN BRIDGE AND FROM THE KINGSBURY RUN BRIDGE TO STA. 0+055.815 (RAMP S-30).
3. PERFORM PAVEMENT PLANING AND RESURFACING FROM STA 2+625 TO THE KINGSBURY RUN BRIDGE FOR I-77 NORTHBOUND.
4. INSTALL PERMANENT LIGHTING ON THE OUTSIDE BARRIER OF THE NORTHBOUND STRUCTURE FOR USE DURING PHASE 4.

B. REQUIREMENTS

1. MAINTAIN FOUR 3.3m LANES (2 NORTHBOUND AND 2 SOUTHBOUND) ON THE EXISTING SOUTHBOUND KINGSBURY RUN STRUCTURE.

CALCULATED M.J.W. CHECKED N.M.A.

MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY-77-23.458

2. MAINTAIN FOUR LANES THROUGHOUT CROSSOVERS NORTH AND SOUTH OF THE BRIDGE AS DETAILED ON SHEETS 32–36.

3. MAINTAIN NORTHBOUND AND SOUTHBOUND DETOUR ROUTES.

   a. MAINTAIN DETOUR SIGNING.

   b. ACTIVATE THE EAST 37TH STREET OR CROTON AVENUE TEMPORARY CLOSURE AS REQUIRED FOR THE BRIDGE REHABILITATION. THESE TWO TEMPORARY CLOSURES SHALL NEVER BE IMPLEMENTED AT THE SAME TIME.

4. THE EXISTING HIGH MAST LIGHTING CIRCUITS NORTH AND SOUTH OF THE BRIDGE SHALL REMAIN IN OPERATION. TEMPORARY LIGHTING INSTALLED IN PHASE 1 SHALL BE IN OPERATION ON THE BRIDGE.

5. RAMPS N–E/N–W, W–N/E–N, S–30 AND 30–S SHALL REMAIN CLOSED.

6. PORTABLE CONCRETE BARRIER SHALL BE USED TO PROTECT TRAFFIC FROM THE WORK AREA.

PHASE 4

INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY RAISED PAVEMENT MARKERS FOR PHASE 4 AS SHOWN IN THE PLANS AND SWITCH ALL TRAFFIC TO NEWLY CONSTRUCTED NORTHBOUND STRUCTURE.

A. WORK REQUIRED

1. REMOVE THE EXISTING SOUTHBOUND KINGSBURY RUN STRUCTURE AND CONSTRUCT THE NEW SOUTHBOUND STRUCTURE.

2. PERFORM PAVEMENT PLANING AND RESURFACING FROM STA 2+625 TO THE KINGSBURY RUN BRIDGE FOR I–77 SOUTHBOUND.

3. INSTALL THE PERMANENT LIGHTING ON THE SOUTHBOUND STRUCTURE.

B. REQUIREMENTS

1. MAINTAIN FOUR LANES (2 NORTHBOUND AND TWO SOUTHBOUND) ON THE RECENTLY CONSTRUCTED NORTHBOUND KINGSBURY RUN STRUCTURE AND THE CROSSOVERS NORTH AND SOUTH OF THE BRIDGE AS DETAILED ON SHEETS 37–38, 38A–38C.

2. THE EXISTING HIGH MAST LIGHTING CIRCUITS NORTH AND SOUTH OF THE BRIDGE SHALL REMAIN IN OPERATION. BRIDGE LIGHTING INSTALLED IN PHASE 3 SHALL BE IN OPERATION ON THE BRIDGE.

3. MAINTAIN NORTHBOUND AND SOUTHBOUND DETOUR ROUTES

   a. MAINTAIN DETOUR SIGNING.

   b. ACTIVATE THE EAST 37TH STREET OR CROTON AVENUE TEMPORARY CLOSURE AS REQUIRED FOR THE BRIDGE REHABILITATION. THESE TWO TEMPORARY CLOSURES SHALL NEVER BE IMPLEMENTED AT THE SAME TIME.

4. RAMPS N–E/N–W, W–N/E–N, S–30 AND 30–S SHALL REMAIN CLOSED.

5. PORTABLE CONCRETE BARRIER SHALL BE USED TO PROTECT TRAFFIC FROM THE WORK AREAS.

PHASE 5

INSTALL TEMPORARY PAVEMENT MARKING AND TEMPORARY RAISED PAVEMENT MARKERS AS SHOWN IN PLANS FOR PHASE 2. SWITCH SOUTHBOUND TRAFFIC TO NEWLY CONSTRUCTED SOUTHBOUND STRUCTURE.

A. WORK REQUIRED

1. REMOVE THE PAVEMENT OVERLAY INSTALLED AT THE MEDIAN LOCATIONS IN PHASE 2.

2. REMOVE TEMPORARY DRAINAGE STRUCTURES AND RECONSTRUCT MEDIAN INLETS.

3. CONSTRUCT THE MEDIAN BARRIER FROM STA. 2+428 TO THE KINGSBURY RUN BRIDGE AND FROM THE KINGSBURY RUN BRIDGE TO STA. 3+601.

4. PLACE ASPHALT RESURFACING TO THE EXISTING PROFILE GRADE ELEVATIONS.

5. INSTALL OVERHEAD SIGNING.

6. REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES AND INSTALL FINAL TRAFFIC CONTROL DEVICES AND PAVEMENT MARKINGS.

7. OPEN ROADWAY AND REMOVE DETOURS.

B. REQUIREMENTS

1. MAINTAIN TWO LANES OF TRAFFIC NORTHBOUND AND SOUTHBOUND ALONG I–77 BY SHIFTING TRAFFIC ONTO THE OUTSIDE SHOULDERS AND NEWLY CONSTRUCTED PAVEMENT, AS DETAILED IN PHASE 2.

2. MAINTAIN DETOUR SIGNING.

3. PORTABLE CONCRETE BARRIER AND DRUMS SHALL BE USED TO PROTECT TRAFFIC FROM THE WORK AREA.

4. ALL RAMPS SHALL REMAIN CLOSED DURING THIS PHASE.

5. MAINTAIN TWO LANES OF TRAFFIC WHILE THE BARRIER IS CONSTRUCTED. PAVEMENT PLANING AND RESURFACING SOUTH OF THE BRIDGE SHALL BE PLACED DURING OFF PEAK PERIODS USING SHORT TERM LANE CLOSURES WHILE MAINTAINING ONE LANE OF TRAFFIC NORTHBOUND AND SOUTHBOUND.

FAILURE TO COMPLY

IF THERE IS ANY FAILURE TO COMPLY WITH PROVISIONS FOR TRAFFIC CONTROL SET OUT IN THESE PLANS AND NOTES, OR WITH THE PROVISIONS OF THE "MANUAL", THE HIGHWAY IN THE VICINITY OF THE WORK AREA SHALL NOT BE CONSIDERED IN A CONDITION FOR THE SAFE AND CONVENIENT USE BY THE TRAVELING PUBLIC. ANY FAILURE TO KEEP THE HIGHWAY IN THE VICINITY OF THE WORK AREA IN A CONDITION FOR THE SAFE AND CONVENIENT USE BY THE TRAVELING PUBLIC SHALL BE CONSIDERED A BREACH OF THIS CONTRACT. WORK SHALL BE SUSPENDED UNTIL THE CONTRACTOR COMPLIES WITH THE PROVISIONS OF THE AFOREMENTIONED ITEMS.

ITEM 614–LAW ENFORCEMENT OFFICER (WITH PATROL CAR)

IN ADDITION TO THE REQUIREMENTS OF 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:

1. 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.
2. DURING THE ENTIRE ADVANCE PREPARATION AND CLOSURE SEQUENCE WHERE COMPLETE BLOCKAGE OF TRAFFIC IS REQUIRED.

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 THE CITY OF CLEVELAND POLICE DEPARTMENT, 1300 ONTARIO STREET, 623–5000.

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 QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 614 – LAW ENFORCEMENT OFFICER
WITH PATROL CAR _____1000 HOURS

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.

STOPPING TRAFFIC ON THE FREEWAY

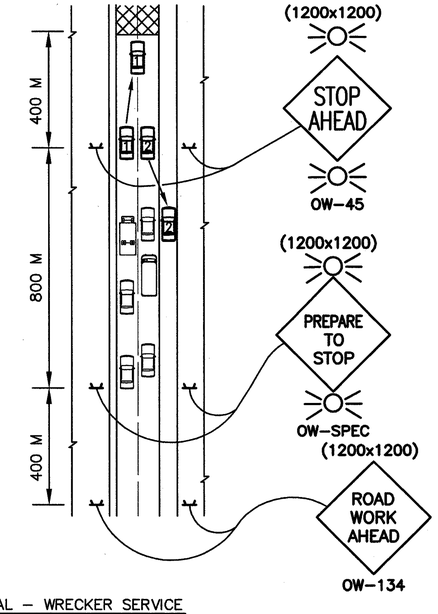
ANYTIME COMPLETE STOPPAGE OF TRAFFIC ON THE FREEWAY IS NECESSARY AND APPROVED BY THE ENGINEER, IT SHALL BE COMPLETED IN SUCH A WAY THAT NO DIRECTION IS CLOSED MORE THAN 10 MINUTES

IN ANY ONE CONSECUTIVE 30 MINUTE PERIOD. A MINIMUM OF TWO (2) LAW ENFORCEMENT PATROL VEHICLES SHALL BE USED TO PACE MOTORISTS TO A STOP. AFTER TRAFFIC HAS BEEN SLOWED, ONE (1) PATROL VEHICLE SHALL TRAVEL ALONG THE ROADWAY SHOULDER 500 FEET BEHIND THE BACK OF STOPPED VEHICLES. IF STOPPAGE OCCURS IN THE VICINITY OF THE I–490 RAMP FREEWAY ENTRANCE, THE CONTRACTOR SHALL USE LEO'S ON THE RAMP TO STOP TRAFFIC. FOR ALL OTHER RAMP ENTRANCES THE CONTRACTOR SHALL USE FLAGGERS ON THE RAMP TO STOP TRAFFIC. THE CONTRACTOR SHALL ERECT AND MAINTAIN "ROADWORK AHEAD", "PREPARE TO STOP", AND "STOP AHEAD" SIGNS WITH FLASHING 305MM TRAFFIC SIGNAL HEADS IN ACCORDANCE WITH 632. THESE SIGNS SHALL BE ILLUMINATED DURING NIGHT OPERATIONS.

ANYTIME A COMPLETE STOPPAGE OF TRAFFIC ON THE FREEWAY IN ANY GIVEN DIRECTION IS REQUIRED, THE ABOVE PROCEDURE SHALL BE USED. IN ADDITION, A PORTABLE CHANGEABLE MESSAGE SIGN SHALL BE USED TO WARN MOTORISTS OF THE STOPPED CONDITION.

COMPLETE STOPPAGE OF TRAFFIC SHALL ONLY BE PERMITTED DURING THE FOLLOWING HOURS:

MONDAY	11:00 PM	TO	TUESDAY	5:00 AM
TUESDAY	11:00 PM	TO	WEDNESDAY	5:00 AM
WEDNESDAY	11:00 PM	TO	THURSDAY	5:00 AM
THURSDAY	11:00 PM	TO	FRIDAY	5:00 AM



ITEM SPECIAL – WRECKER SERVICE

THE CONTRACTOR SHALL PROVIDE A WRECKER SERVICE FOR ANY DISABLED VEHICLE WITHIN THE ROADWAY THAT AFFECTS THE FLOW OF TRAFFIC DURING ANY TEMPORARY OR PERMANENT LANE(S) CLOSURE. THE INTENT IS TO REMOVE THE DISABLED VEHICLE TO A LOCATION OFF THE TRAVELED WAY.

THE TOW TRUCKS SHALL BE CAPABLE OF HANDLING A GROSS WEIGHT OF 18,000 POUNDS. EACH TRUCK SHALL BE EQUIPPED WITH AN AMBER CAB MOUNTED FLASHING LIGHT, TOW RIG, CUSHIONED BUMPER, AND REAR PINTLE HOOKS. FOR LARGE DISABLED TRUCKS, THE CONTRACTOR SHALL PROVIDE MORE THAN ONE TOW TRUCK, AS NEEDED. TOWING SHALL BE PROVIDED TO REMOVE DISABLED VEHICLES FROM WITHIN THE ROADWAY TO A SAFE LOCATION OFF THE TRAVELED WAY. THIS SERVICE SHALL BE PROVIDED AT NO CHARGE TO THE OPERATORS OF THE DISABLED VEHICLES. THE OPERATORS OF THE DISABLED VEHICLES WILL BE REQUESTED TO FILL

CALCULATED MJW CHECKED NMA

MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY–77–23.458

OUT A FORM PROVIDED BY ODOT. THIS FORM SHALL BE SUBMITTED TO ODOT FOR PAYMENT OF THE TOW. ANY ADDITIONAL TOWING TO AN OFF SITE LOCATION SHALL BE ARRANGED BY THE POLICE OR MOTORIST, BUT SHALL NOT BE PART OF THE WORK REQUIRED UNDER THIS CONTRACT.

THE TOW TRUCK MAY BE CALLED TO THE SCENE BY THE POLICE, CONTRACTOR, ENGINEER, OR DESIGNATED ENGINEER'S OR CONTRACTOR'S REPRESENTATIVES. THE TOW TRUCK MUST RESPOND TO AND ARRIVE AT THE SCENE OF THE DISABLED VEHICLE NO LATER THAN TEN MINUTES AFTER THE RECEIPT OF THE CALL. IF THE TOW TRUCK CANNOT ARRIVE IN TEN MINUTES AS DEEMED BY THE PROJECT ENGINEER, THIS REQUIREMENT MAY BE WAIVED. THE CONTRACTOR MUST PROVIDE TEN MINUTES RESPONSE SERVICE EVEN THOUGH THERE MAY BE MULTIPLE DISABLED VEHICLES AT DIFFERENT LOCATIONS WITHIN THE LIMIT OF WORK. IN THE CASE OF SERIOUS VEHICULAR ACCIDENTS, THE TOW TRUCK MUST NOT REMOVE THE DISABLED VEHICLES UNTIL AUTHORIZED BY THE POLICE OR THE ENGINEER. THE CONTRACTOR SHALL NOT LET ANY VEHICLE REMAIN IN THE TRAVELLED WAY FOR 30 MINUTES WITHOUT NOTIFYING THE WRECKER SERVICE. IF THE WRECKER SERVICE IS NOT NOTIFIED IN 30 MINUTES, THE CONTRACTOR SHALL ONLY BE PAID FOR ONE HALF OF THE WRECKER SERVICE UNIT PRICE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE REPRESENTATIVES TO ENSURE THE WRECKER SERVICE RESPONDS WITHIN THESE GUIDELINES. THE WRECKER SERVICE SHALL RESPOND TO ANY VEHICLE WITHIN THE LIMITS OF STA. 2+150 TO STA. 4+100 ON I–77.

THE CONTRACTOR SHALL PROVIDE THE PHONE NUMBERS OF THE WRECKER SERVICE TO THE POLICE AND ENGINEER AS SOON AS THEY BECOME AVAILABLE.

WRECKER SERVICE SHALL BE MEASURED AS FOLLOWS :
–ONE EACH FOR PASSENGER CARS INCLUDING STATION WAGONS, MINI VANS AND VANS, LIGHT COMMERCIAL VEHICLES INCLUDING PANEL TRUCKS AND PICK–UP TRUCKS WHICH DO NOT HAVE DUAL TIRES;
–TWO EACH FOR HEAVY COMMERCIAL VEHICLES INCLUDING TRACTORS, SEMITRAILER AND TRACTOR TRAILER COMBINATIONS.

PAYMENT FOR WRECKER SERVICE WILL BE MADE AT THE CONTRACT UNIT PRICE PER EACH. THIS PRICE SHALL BE FULL COMPENSATION FOR FURNISHING THE TOW TRUCK, OPERATOR, TOOLS, EQUIPMENT, INSURANCE AND ALL OTHER MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM SPECIAL – WRECKER SERVICE _____ 200 EACH

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CON–STRUCTION ONLY. THE INSTALLATION, AND OPERATION (INCLUDING ERECTION, MAINTENANCE AND REMOVAL) OF ALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS, EXCEPT WHERE OTHERWISE NOTED, SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

UTILITIES

EXISTING UNDERGROUND UTILITIES ARE SHOWN ON ROADWAY PLAN SHEETS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING TYPE AND LOCATION OF OVERHEAD AND UNDERGROUND UTILITIES AND, AS NECESSARY, ADJUST LOCATION OF TEMPORARY TRAFFIC SIGNAL OR SIGN INSTALLATIONS, AS APPROVED BY THE ENGINEER, TO AVOID INTERFERENCE OR DAMAGE THERETO.

ABUTTING PROPERTIES

THE CONTRACTOR SHALL MAINTAIN SAFE AND SATISFACTORY ACCESS TO ALL ABUTTING PROPERTIES. THE CONTRACTOR MUST NOTIFY ALL PROPERTY OWNERS OF ACCESS RESTRICTIONS ONE WEEK IN ADVANCE. ALL RESTRICTIONS AND CLOSURES SHALL BE PROPERLY SIGNED AND/OR BARRICADED.

CONSTRUCTION TRAFFIC

ALL CONSTRUCTION TRAFFIC SHALL USE ACCEPTABLE TRUCK ROUTES TO ACCESS THE CONSTRUCTION AREA. USE OF LOCAL RESIDENTIAL STREETS IS STRICTLY PROHIBITED UNLESS ALLOWED IN WRITING BY THE LOCAL ENFORCEMENT AGENCY.

EQUIPMENT AND MATERIAL STORAGE

IN ORDER TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC THE CONTRACTORS ATTENTION IS DIRECTED TO 614.03. IN ADDITION THE FOLLOWING PROVISIONS SHALL APPLY:

1. CONSTRUCTION EQUIPMENT, MATERIALS AND VEHICLES IN USE DURING THE WORKING DAY SHALL NOT BE PARKED OR STORED ANY CLOSER THAN 9.1 METERS TO THE EDGE OF ROADWAY PAVEMENT, UNLESS BEHIND PERMANENT GUARDRAIL, WHEN THE EQUIPMENT AND/OR VEHICLES ARE NOT IN OPERATION.

2. PRIVATE VEHICLES BELONGING TO CONTRACTOR'S EMPLOYEES SHALL NOT BE PARKED WITHIN THE EXISTING RIGHT OF WAY LIMITS OF THIS PROJECT AT ANY TIME EXCEPT IN SPECIFIED AREAS DESIGNATED BY THE ENGINEER.

3. ANY REMOVED ITEMS SHALL NOT BE STORED ON THE RIGHT OF WAY FOR MORE THAN 30 DAYS.

4. ALL DISTURBED AREAS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE STATE.

TRAFFIC CONTROL MATERIALS

A. SIGNS

SIGN DIMENSIONS AND SPECIFICATIONS, INCLUDING LETTER SIZES, SHALL BE AS PROVIDED IN THE "MANUAL", OR IN SIGN DESIGN DRAWINGS PROVIDED BY THE DEPARTMENT OF TRANSPORTATION. THE SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER PRIOR TO THE START OF THE PROJECT. ADVANCE WARNING SIGNS ARE TO BE PROVIDED AS SHOWN IN THE PLANS. ORANGE CONSTRUCTION SIGNS SHALL BE REFLECTORIZED WITH FLOURESCENT ORANGE SHEETING.

B. SIGN SUPPORTS

SUPPORTS SHALL BE ADEQUATE IN MASS AND STABILITY TO PREVENT THE SIGNS BEING BLOWN OVER BY WIND OR VEHICULAR GENERATED AIR TURBULENCE. SEE STANDARD CONSTRUCTION DRAWINGS MT–105.10M AND MT–105.11M

C. DRUMS

DRUMS SHALL BE IN ACCORDANCE WITH PERTINENT SECTIONS OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. ALL PERMANENT LANE CLOSURES SHALL BE DELINEATED WITH DRUMS SPACED AS SHOWN IN THE PLANS. ALL COSTS FOR INSTALLING, MAINTAINING AND SUBSEQUENT REMOVAL OF SAID DRUMS SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 – MAINTAINING TRAFFIC.

D. LIGHTING DEVICES

FLASHERS SHALL BE 12 VOLT BATTERY–OPERATED MODELS WITH 178mm DIAMETER YELLOW LENSES ILLUMINATED BY RAPID INTER–MITTENT FLASHES OF SHORT DURATION AND SHALL BE PLACED AS INDICATED ON THE PLANS.

E. FLASHING ARROW PANEL

WHENEVER ANY PART OF THE TRAVELED SURFACE IS CLOSED, THE MOTORIST SHALL BE WARNED AND DIVERTED BY THE CONTRACTOR THROUGH THE USE OF ONE FLASHING ARROW PANEL FOR EACH LANE CLOSED. THE CONTRACTOR SHALL REFER TO STANDARD DRAWING TC–35.10M AND THE PROVISION SET FORTH IN OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR ALL INFORMATION REGARDING FURNISHING, MAINTAINING AND USE OF FLASHING ARROW PANEL. PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 – MAINTAINING TRAFFIC.

F. PAYMENT

PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 – MAINTAINING TRAFFIC.

MAINTAINING TRAFFIC, MISC.:
ITEM 614 – ADDITIONAL SIGNS, GROUND MOUNTED, AS DIRECTED BY THE ENGINEER

WHEN ADDITIONAL SIGNING IS NEEDED TO MAINTAIN TRAFFIC THE CONTRACTOR SHALL FURNISH THE SIGN OR SIGNS AS DIRECTED BY THE ENGINEER. THESE SIGNS SHALL BE GROUND MOUNTED AND MEET ALL THE SPECIFICATIONS OF THE PLAN, PROPOSAL AND CURRENT YEAR STATE OF OHIO, DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS (AS NOTED IN THE TITLE SHEET).

PAYMENT FOR THIS ITEM SHALL INCLUDE BUT NOT BE LIMITED TO THE COST TO FURNISH THE SIGN, ERECT IT, INCLUDING DRIVE POSTS OR OTHER APPROVED METHOD OF SUPPORT, MAINTAIN IT, AND REMOVE IT.

PAYMENT SHALL BE BY SQUARE METER.
MAINTAINING TRAFFIC, MISC.:
ITEM 614 – ADDITIONAL SIGNS, GROUND MOUNTED, AS DIRECTED BY THE ENGINEER _____ 50 SQ. METERS.

ITEM SPECIAL – REPLACEMENT SIGN

FLAT SHEET SIGNS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER. REPLACEMENT SIGNS SHALL BE NEW. OTHER MATERIALS MAY BE IN USED BUT GOOD CONDITION SUBJECT TO APPROVAL BY THE ENGINEER.

PAYMENT FOR THE NEW SIGNS SHALL BE MADE AT THE CONTRACT PRICE PER SQUARE METER FOR ITEM SPECIAL – REPLACEMENT SIGN, AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF DAMAGED SIGNS, HARDWARE AND SUPPORTS, AND PROVIDING THE NECESSARY REPLACEMENT HARDWARE, SUPPORTS, ETC.

AN ESTIMATED QUANTITY OF 50 SQUARE METERS HAS BEEN PROVIDED IN THE GENERAL SUMMARY.

REPLACEMENT DRUM

DRUMS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER. REPLACEMENT DRUMS SHALL BE NEW.

PAYMENT FOR THE REPLACEMENT DRUMS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614 – MAINTAINING TRAFFIC, AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF THE DAMAGED DRUM, AND PROVIDING AND MAINTAINING THE REPLACEMENT DRUM IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS FOR THE ORIGINAL DRUM.

DOUBLED FINES SIGN

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN, COVER DURING SUSPENSION OF WORK, AND SUBSEQUENTLY REMOVE DOUBLED FINES SIGNS, R–180. THE SIGNS SHALL BE DUAL MOUNTED PAST THE ROAD CONSTRUCTION AHEAD SIGNS APPROXIMATELY 152 METERS OR AS DIRECTED BY THE ENGINEER. THE SIGNS SHALL BE INSTALLED ON ALL THE FREEWAYS LEADING INTO THE PROJECT. SIGNS SHALL BE POSTED ON ALL ENTRANCE RAMPS ENTERING THE PROJECT ON THE RIGHT SIDE ONLY (SINGLE INSTALLATION ONLY).

THE FOLLOWING QUANTITY HAS HAS BEEN CARRIED TO THE GENERAL SUMMARY TO BE USED AS STATED ABOVE:

ITEM 614 – DOUBLED FINES IN WORK ZONE SIGN _____ 2 EACH

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 AND SUPPORTS (R–10) (45 MPH) WITHIN THE WORK LIMITS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE CONTRACTOR SHALL COVER OR REMOVE ANY EXISTING SPEED LIMIT OR MINIMUM SPEED SIGNS 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 4 HOURS BEFORE THE ACTUAL START OF WORK. THE SIGNS SHALL BE REMOVED OR COVERED NO LATER THAN 4 HOURS FOLLOWING THE RESTORATION OF ALL THE LANES TO TRAFFIC WITH NO RESTRICITONS, OR SOONER AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL ERECT A WORK ZONE SPEED LIMIT SIGN IN ADVANCE OF ANY LANE RESTRICTION EXPECTED TO LAST AT LEAST 30 DAYS, OR AS DIRECTED BY THE ENGINEER. THE SIGN SHALL BE MOUNTED ON BOTH SIDES OF DIVIDED HIGHWAYS, 152 METERS IN ADVANCE OF THE LANE REDUCTION TAPER. THE SIGN SHALL BE MOUNTED ON THE RIGHT SIDE, 76 METERS IN ADVANCE OF THE LANE REDUCTION TAPER ON UNDIVIDED HIGHWAYS. THE SIGN SHALL BE REPEATED, ON THE SIDE NEAREST TRAFFIC, EVERY 1.6 km FOR 55 MPH ZONES AND EVERY 0.8 km FOR 45 MPH ZONES. THESE SIGNS SHALL ALSO BE ERECTED IMMEDIATELY AFTER EACH OPEN ENTRANCE RAMP WITHIN THE ZONE. A SIGN TO INDICATE THE RESUMPTION OF THE STATUTORY SPEED LIMIT SHALL BE ERECTED AT THE END OF ANY REDUCED SPEED ZONE. THIS SIGN SHALL BE A R–8A.

CALCULATED MJW CHECKED NMA

MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY–77–23.458

THE CONTRACTOR MAY USE SIGN 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 730.19 AND U.S. DEPARTMENT OF TRANSPORTATION SUPPLEMENTAL SPECIFICATION FOR THE TYPE III–C SHEETING, FP–85. WORK ZONE SPEED LIMIT SIGNS SHALL BE MOUNTED ON TWO (2) ITEM 630 GROUND MOUNTED SUPPORTS, NO. 3 POSTS.

WORK SPEED LIMIT SIGNS AND SUPPORTS WILL BE MEASURED AS THE NUMBER OF SIGN INSTALLATIONS, INCLUDING THE SIGNS AND NECCESAY 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.

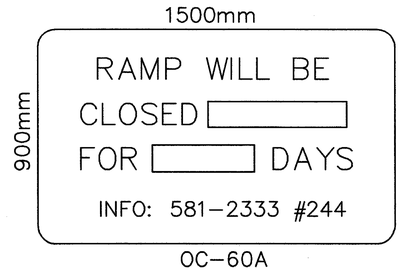
PAYMENT FOR ACCEPTED QUANTITIES, COMPLETE IN PLACE, WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR FUNISHING, ERECTING, MAINTAINING, COVERING DURING SUSPENSION OF WORK, AND REMOVING THE SIGNS AND SUPPORTS.

ITEM 614 – WORK ZONE SPEED LIMIT SIGN _____ 6 EACH
ITEM 614 – RESUME LEGAL SPEED SIGN _____ 2 EACH

NOTICE OF CLOSURE SIGNS

THESE SIGNS SHALL BE ERECTED BY THE CONTRACTOR AT LEAST TWO WEEKS IN ADVANCE OF THE SCHEDULED ROAD CLOSURE. THE SIGNS SHALL BE ERECTED ON THE RIGHT HAND SIDE OF THE ROAD FACING TRAFFIC. THEY SHALL BE LOCATED IN THE FIELD SO AS NOT TO INTERFERE WITH ANY PERMANENT SIGNS. THESE SIGNS SHALL BE ERECTED AT THE POINT OF CLOSURE LOCATIONS OF THE ROADWAY SCHEDULED FOR CLOSURE.

PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 MAINTAINING TRAFFIC AND SHALL INCLUDE FURNISHING, ERECTING, MAINTAINING AND REMOVING THE SIGN SUPPORTS.



TRUCKS AND EQUIPMENT INGRESS & EGRESS

THE CONTRACTOR SHALL OBTAIN THE ENGINEER'S APPROVAL FOR THE LOCATIONS CONSTRUCTION VEHICLES MAY ENTER AND LEAVE THE WORK AREA. THE AREAS OF INGRESS AND EGRESS MUST BE MARKED WITH 1200mm (BLACK ON FLOURESCENT ORANGE TYPE "H" SHEETING) WARNING SIGNS WITH THE LEGEND – TRUCKS ENTERING, OR TRUCKS EXITING, OR TRUCKS ENTERING/EXITING HIGHWAY. THE SIGNS SHALL HAVE TYPE "A" FLASHING LIGHTS ON THEM AND BE COVERED WHEN NOT IN USE.

REMOVAL OF EXISTING PAVEMENT MARKINGS

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARYFOR THE REMOVAL OF THE EXISTING PAVEMENT MARKINGS WITHIN THE LIMITS OF MAINTENANCE OF TRAFFIC. THE REMOVAL OF TEMPORARY PAVEMENT MARKINGS SHALL BE CONSIDERED PART OF ITEM 614 – MAIN–TAINING TRAFFIC. NO SEPARATE PAYMENT WILL BE MADE.

ITEM 642 – REMOVAL OF PAVEMENT MARKINGS_____11,500 m

ADDITIONAL TEMPORARY PAVEMENT MARKINGS

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR THE PLACEMENT OF TEMPORARY PAVEMENT MARKING IN ADDITION TO THOSE QUANTIFIED ELSEWHERE ON THE PLANS.

ITEM 614 – TEMP. EDGE LINE, CLASS 1, 740.06 TYPE 1 _____ 8 Km
ITEM 614 – TEMP. EDGE LINE, CLASS 1, 642 PAINT _____ 3 Km
ITEM 614 – TEMP. LANE LINE, CLASS 1, 740.06 TYPE 1 _____ 3 Km
ITEM 614 – TEMP. LANE LINE, CLASS 1, 642 PAINT _____ 1 Km
ITEM 614 – TEMP. CHANNELIZING LINE, CLASS 1, 740.06 TYPE 1 _____ 1000 m
ITEM 614 – TEMP. CHANNELIZING LINE, CLASS 1, 642 PAINT _____ 100 m
ITEM 614 – TEMP. TRANSVERSE LINE, CLASS 1, 740.06 TYPE 1 _____ 100 m

ITEM 616 – DUST CONTROL

THE CONTRACTOR SHALL FURNISH AND APPLY WATER AND CALCIUM CHLORIDE FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. THE FOLLOWING CONTINGENCY QUANTITIES HAVE BEEN INCLUDED FOR DUST CONTROL PURPOSES:

ITEM 616 – WATER _____ 200 CU. m
ITEM 616 – CALCIUM CHLORIDE _____ 5 M TON

PUBLIC SAFETY

THE PERIOD OF TIME THAT A HAZARD IS LEFT UNPROTECTED BY THE REMOVAL OF GUARDRAIL SHALL BE HELD TO AN ABSOLUTE MINIMUM AND IN NO CASE SHALL SUCH A PERIOD BE LONGER THAN ONE WORKING DAY. IF, AFTER ONE DAY, THE ENTIRE RUN OF GUARDRAIL CONSTRUCTION IS NOT COMPLETE THE FOLLOWING SHALL APPLY:

A. IN AREAS WHERE EXISTING GUARDRAIL HAS BEEN REMOVED OR THE GUARDRAIL IS IN A PARTIAL STAGE OF COMPLETION, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TYPE II BARRICADES WITH TYPE C (STEADY PUBLIC SAFETY).

B. IF THE EXISTING GUARDRAIL IS FOR THE PROTECTION OF AN OBSTACLE (I.E. SIGN SUPPORT, BRIDGE PARAPET, ETC.) THE CONTRACTOR SHALL ERECT ITEM – PORTABLE CONCRETE BARRIER PER ODOT SPECIFICATIONS. THE REQUIREMENTS OF PARAGRAPH "A" SHALL APPLY TO THE REMAINING GUARDRAIL WITHIN THE RUN. TEMPORARY BARRIER SHALL BE AS PER MC–9.2.

C. THE REQUIREMENTS STATED IN "A" SHALL APPLY FOR A PERIOD NOT TO EXCEED ONE WEEK. WHERE THE REBUILDING OR CONSTRUCTION OF ANY RUN OF GUARDRAIL CANNOT BE ACCOMPLISHED WITHIN ONE WEEK, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TEMPORARY CONCRETE BARRIER IN THE INTERIM TIME IT TAKES TO COMPLETE THE WORK. THE APPROACH END OF THE TEMPORARY CONCRETE BARRIER SHALL BE FLARED 10 FT. (130' AT 13:1 TAPER AND SHALL INCLUDE A TEMPORARY END TERMINAL AS PER MC–9.2. IN ADDITION, A TYPE II BARRICADE WITH TYPE B (HIGH INTENSITY FLASHER) WARNING LIGHT SHALL BE PLACED IN FRONT OF THIS INITIAL SECTION OF TEMPORARY BARRIERS TO PROVIDE FOREWARNING TO THE APPROACHING TRAFFIC.

D. TEMPORARY CONCRETE BARRIER IS NOT REQUIRED TO SEPARATE OPPOSING TRAFFIC WHEN THE MEDIAN BARRIER IS REMOVED PROVIDED THAT BOTH MEDIAN LANES REMAIN CLOSED UNTIL THE NEW MEDIAN BARRIER IS IN PLACE. FOR HAZARDS WITHIN THESE ZONE, PARAGRAPHS A, B, AND C ABOVE STILL APPLY.

WHEN THE LANE ADJACENT TO THE GUARDRAIL IS CLOSED TO TRAFFIC, THE PROVISIONS OF PARAGRAPH "A" ABOVE SHALL APPLY AFTER 1 DAY, THE PROVISIONS OF PARAGRAPH "B" SHALL APPLY AFTER 5 DAYS, AND THE PROVISIONS OF PARAGRAPH "C" SHALL APPLY AFTER 15 DAYS.

THE TERM "GUARDRAIL" AS USED HEREIN SHALL BE UNDERSTOOD TO COVER ALL TYPES OF GUARDRAIL, EXISTING OR PROPOSED FOR THE PROJECT, INCLUDING BARRIER DESIGN GUARDRAIL AND CONCRETE BARRIER.

THE COST OF COMPLYING WITH THESE SAFETY PROCEDURES SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614–MAINTAINING TRAFFIC.

WORK ZONE DROP–OFFS

DURING THE RECONSTRUCTION OF THE SHOULDERS OR OTHER OPERATIONS THAT MAY CAUSE DROP OFFS THE FOLLOWING TREATMENTS SHALL BE FOLLOWED.

DISTANCE FROM TRAVELED WAY	DEPTH OF DROP–OFF	TREATMENT REQUIRED	
		DAY	NIGHT
0.9m (3 ft.) 3.6m (12 ft.)	≤ 12.5cm (5 in.)	DRUMS	DRUMS
0.9m (3 ft.) 3.6m (12 ft.)	> 12.5cm (5 in.) ≤ 30cm (12 in.)	DRUMS	BARRIER
>3.6m (12 ft.)	≤ 60cm (24 in.)	DRUMS	DRUMS
>3.6m (12 ft.)	> 60cm (24 in.)	DRUMS	BARRIER

NO DROP–OFFS WILL BE ALLOWED CLOSER THAN 0.9m (3 ft.) TO THE TRAVELED WAY UNLESS APPROVED BY THE ENGINEER.

A WEDGE TREATMENT MAY BE USED TO ELIMINATE THE DROP–OFF CONDITION. THE WEDGE WILL HAVE A 3:1 SLOPE AND BE OF UNYIELDING MATERIAL.

THE COST TO TREAT THE DROP–OFF CONDITION WILL BE INCLUDED UNDER ITEM 614 – MAINTAINING TRAFFIC, LUMP SUM. A LANE MAY BE CLOSED DURING SHORT TERM LANE CLOSURE TIMES AS A TREATMENT.

CURE WATER

THE CONTRACTOR IS RESPONSIBLE TO CONTROL ANY WATER THAT FLOWS ONTO THE ROADWAY. DURING TIMES WHEN THE WATER MAY FREEZE, IT IS THE CONTRACTORS RESPONSIBILITY TO MAKE SURE THE ROADWAY DOES NOT BECOME ICY.

NIGHT VESTS

ALL OF THE CONTRACTORS AND SUB CONTRACTORS PERSONNEL WORKING DURING THE HOURS OF DARKNESS SHALL WEAR A 100% SILVER REFLECTIVE SAFETY VEST. THE SAFETY VEST SHALL BE PROVIDED BY THE CONTRACTOR. THE VEST MAY HAVE SEVERAL LIME OR ORANGE STRIPES ON IT.

CITY NOISE ORDINANCES

THE CONTRACTOR MUST NOTIFY THE CITY OF CLEVELAND OF NIGHT WORK. IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN PERMISSION FROM THE CITY TO WORK AT NIGHT. IF THE CITY WILL NOT ALLOW A CERTAIN OPERATION AT NIGHT THE CONTRACTOR WILL INCREASE HIS WORK FORCE TO PERFORM THE OPERATION AT TIMES THE CITY WILL ALLOW.

FLASHING LIGHTS

ALL WORK VEHICLES AND EQUIPMENT THAT ENTER THE WORK ZONE MORE THAN ONCE A DAY MUST BE EQUIPPED WITH AT LEAST ONE FLASHING, ROTATING , OR OSCILLATING AMBER LIGHT THAT IS VISIBLE IN ALL DIRECTIONS OF TRAFFIC FOR AT LEAST ONE QUARTER OF A MILE, DAY OR NIGHT.

CALCULATED M.J.W CHECKED N.M.A

MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY–77–23.458

RUMBLE STRIPS

RUMBLE STRIPS SHALL BE PLACED IN ADVANCE OF THE LANE SHIFTS IN BOTH DIRECTIONS ON I-77. THE RUMBLE STRIPS SHALL TRANSVERSE ALL THE TRAVELED LANES ON I-77. THE EXACT LOCATIONS SHALL BE AS DIRECTED BY THE ENGINEER. THE RUMBLE STRIPS DO NOT HAVE TO BE REPLACED OR REPAIRED DURING WINTER MONTHS. AFTER THE WINTER MONTHS THE RUMBLE MAY HAVE TO BE REPLACED DUE TO PLOW DAMAGE. THE RUMBLE STRIPS MUST BE IN PLACE DURING ALL PHASES OF THE CONSTRUCTION PROJECT THAT AFFECTS TRAFFIC.

THE RUMBLE STRIPS SHALL BE 10cm WIDE, 4.5mm (±1mm) THICK IN PLACE AND SHALL TRAVERSE THE TOTAL LANE WIDTH. THERE WILL BE TWO SECTIONS OF RUMBLE STRIPS IN EACH DIRECTION. THE FIRST SECTION WILL BE 10 CROSSWISE STRIPES 1.8m APART. THE SECOND SECTION WILL START APPROXIMATELY 27m TOWARDS THE CONSTRUCTION ACTIVITY. THERE WILL BE 10 STRIPS CROSSWISE AT 1.3m APART.

THE RUMBLE STRIPS SHALL BE REMOVED WHEN THEY ARE NO LONGER NEEDED AS DETERMINED BY THE ENGINEER. MATERIAL USED FOR THE RUMBLE STRIPS SHALL BE PREFORMED THERMOPLASTIC MATERIAL CALLED PREMARK, MANUFACTURED BY FLINT TRADING, INC. THOMASVILLE, NC 27360 PHONE (910) 475-6600 OR AN APPROVED EQUAL. THE MANUFACTURER'S RECOMMENDATIONS MUST BE FOLLOWED FOR INSTALLATION. THIS ITEM WILL BE PAID FOR UNDER ITEM 614 – MAINTAINING TRAFFIC (LUMP SUM) AND WILL INCLUDE ALL LABOR MATERIALS AND EQUIPMENT FOR THE INSTALLATION, MAINTENANCE AND REMOVAL OF THE RUMBLE STRIPS.

ITEM 622 – PORTABLE CONCRETE BARRIER, 1270mm, AS PER PLAN

IT IS ANTICIPATED THAT THE SAME BARRIER WILL BE USED IN VARIOUS PHASES OF CONSTRUCTION. MOVEMENT OF THE CONCRETE BARRIER BETWEEN PHASES SHALL BE ACCOMPLISHED IN ONE WORKING DAY. ADJACENT TRAFFIC LANE SHALL BE CLOSED, SHORT-TERM, WHEN MOVING BARRIER. ALL COSTS INVOLVED IN REMOVING AND REINSTALLING THE CONCRETE BARRIER WILL BE INCLUDED IN THE CONTRACT PRICE BID FOR ITEM 622 – PORTABLE CONCRETE BARRIER AS PER PLAN AND PORTABLE CONCRETE BARRIER, TYPE BRD, ANCHORED, AS PER PLAN.

DELINEATION OF PORTABLE CONCRETE BARRIER

PORTABLE CONCRETE BARRIER (PCB) SHALL BE DELINEATED WITH REFLECTORS, OBJECT MARKERS, AND REFLECTIVE SHEETING. STEADY BURN WARNING LIGHTS ARE NOT REQUIRED ON PCB.

A. 1270mm PORTABLE CONCRETE BARRIER

1. REFLECTORS AND THEIR MOUNTING SHALL CONFORM TO ITEM 626 EXCEPT THAT THEY SHALL HAVE A MAXIMUM SPACING OF 15 METERS.

2. THE TOP MOUNTED OBJECT MARKER (230mm X 380mm) WITH ORANGE REFLECTIVE SHEETING, TYPE G (730.19) SHALL BE MOUNTED MIDWAY BETWEEN THE FACE MOUNTED REFLECTORS. WHEN ADJACENT TO A REVERSIBLE TRAFFIC DIRECTION LANE OR BETWEEN OPPOSING TRAFFIC FLOWS, THEY SHALL BE MOUNTED IN PAIRS FACING TRAFFIC FROM EACH DIRECTION.

PLACING PORTABLE CONCRETE BARRIER

WHEN PLACING OR REMOVING PCB THE ADJACENT LANE SHALL BE CLOSED WHEN POSSIBLE.

GUARDRAIL REPLACEMENT

NO HAZARD SHALL BE LEFT UNPROTECTED EXCEPT FOR THE ACTUAL TIME NECESSARY TO REMOVE THE EXISTING PROTECTION, PREPARE THE SITE, AND INSTALL TEMPORARY PROTECTION OR TO REMOVE THE TEMPORARY PROTECTION, PREPARE THE SITE AND INSTALL THE PERMANENT PROTECTION, IN A CONTINUOUS OPERATION. THE REMOVAL OF ALL GUARDRAIL AND OR OTHER PROTECTION SHALL AT ALL TIMES BE AS DIRECTED BY THE ENGINEER. NO PROTECTION SHALL BE REMOVED UNTIL THE REPLACEMENT MATERIAL IS ON THE SITE, READY FOR INSTALLATION. FAILURE TO COMPLY WITH THIS REQUIREMENT SHALL BE DEEMED SUFFICIENT CAUSE TO ORDER WORK SUSPENDED UNTIL SUCH TIME AS THE ENGINEER IS ASSURED OF COMPLIANCE. "REQUIREMENT OF PUBLIC SAFETY" NOTE, SHEET 14, SHALL BE FOLLOWED AT ALL TIMES.

ITEM 614 – TEMPORARY PAVEMENT MARKINGS AND SIGNS

ALL TEMPORARY PAVEMENT MARKINGS AND SIGNS REQUIRED FOR A PARTICULAR LANE CLOSURE OR TRAFFIC PATTERN SHALL BE INSTALLED ON A SINGLE WORK DAY, AND THE CORRESPONDING TRAFFIC PATTERN, AS DETAILED ON THE PLANS, SHALL BE IMPLEMENTED IMMEDIATELY.

TYPICAL LOCATIONS INCLUDE:

A. LANE CLOSURES
B. LANE SHIFTS

THE TEMPORARY PAVEMENT MARKINGS ARE ESTIMATED ELSEWHERE IN THE PLANS (SEE SHEET 14) AND ARE INCLUDED FOR USE AS DIRECTED BY THE ENGINEER FOR TEMPORARY WORK ZONE PAVEMENT MARKINGS AND SIGNS PER THE REQUIREMENTS OF STANDARD CONSTRUCTION DRAWING MT-99.10M.

MAINTENANCE OF TRAFFIC FOR ROADS UNDER OR OVER I-77

THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRAFFIC ON ALL ROADS OR RAMPS THAT THE WORK ENCROACHES ON OR NEAR. THIS INCLUDES ANY OPERATIONS THAT MAY EFFECT TRAFFIC OR PEDESTRIANS OR THEIR SAFETY.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A TRAFFIC CONTROL PLAN FOR THE MAINTENANCE OF TRAFFIC THROUGH THE WORK AREA. THE TRAFFIC CONTROL PLAN (TCP) SHALL SHOW THE ADVANCE WARNING SIGNS, PAVEMENT MARKINGS, AND ALL TRAFFIC CONTROL DEVICES NEEDED TO MAINTAIN SAFE TRAVEL THROUGH THE AREA.

THE OHIO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST REVISION, AND ODOT'S STANDARD DRAWINGS SHALL BE MINIMUM GUIDELINES FOR THE TCP.

ALL COSTS ASSOCIATED WITH TRAFFIC CONTROL FOR ROADS OFF I-77, INCLUDING BUT NOT LIMITED TO SIGNING, STRIPING (PAINT OR TAPE), LEO'S WITH/WITHOUT PATROL CAR, PORTABLE CONCRETE BARRIER, DRUMS ETC. SHALL BE INCLUDED UNDER ITEM 614-MAINTAINING TRAFFIC, LUMP SUM. NO PLAN ITEMS WILL BE USED TO PAY FOR MAINTAINING TRAFFIC ON THE ROADS OFF I-77 UNLESS SPECIFICALLY CALLED OUT IN THE PLANS.

THE CITY AND EMERGENCY SERVICES MUST BE NOTIFIED BY THE CONTRACTOR OF LANE RESTRICTIONS OR CLOSURES.

ITEM 614 – PORTABLE CHANGEABLE MESSAGE, CLASS I OR II, SIGN, AS PER PLAN

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND REMOVE, WHEN NO LONGER NEEDED, FOUR (4) CHANGEABLE MESSAGE SIGNS, ON SITE. THE SIGNS SHALL BE OF A TYPE SHOWN ON A LIST OF APPROVED PCMS UNITS MAINTAINED BY THE DIRECTOR. CLASS I UNITS ARE LEGIBLE FOR A DISTANCE OF 380M. AND CLASS II UNITS ARE LEGIBLE FOR A DISTANCE OF APPROXIMATELY 260M.

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 AN ELECTRICAL SERVICE DROP FROM A LOCAL UTILITY COMPANY.

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 WILL BE OFF.

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.

ALL MESSAGES TO BE DISPLAYED ON THE SCREEN 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 PRE-PROGRAMMED 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 MESSAGES SHALL BE SUPPORTED, BUT NORMALLY, NOT MORE THAN TWO MESSAGE PHASES SHOULD BE EMPLOYED, ALTHOUGH THREE PHASES MAY BE USED IN UNUSUAL CONDITIONS. PCMS FORMAT SHALL PERMIT THE COMPLETE MESSAGE FOR EACH PHASE TO BE READ AT 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 UNIT SHALL BE MAINTAINED IN GOOD WORKING ORDER BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF 614.03(c). 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 AND THE ENTIRE COST TO CONTROL TRAFFIC ACCRUED BY THE DEPARTMENT WILL BE DEDUCTED FROM MONEYS DUE, OR TO BECOME DUE THE CONTRACTOR ON HIS CONTRACT.

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

THE REQUIREMENT TO FURNISH, INSTALL, MAINTAIN AND REMOVE A PCMS UNIT ON THIS PROJECT SHALL NOT IN ANY WAY RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES AS OUTLINED IN 104.04.

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

PAYMENT FOR THE ABOVE DESCRIBED ITEM SHALL BE AT THE CONTRACT UNIT PRICE BID PER SIGN-MONTH FOR EACH ITEM 614 PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN AND SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, FUELS, LUBRICATING OILS, SOFTWARE, HARDWARE AND INCIDENTALS TO PERFORM THE ABOVE DESCRIBED WORK.

ITEM 614 – PORTABLE CHANGEABLE MESSAGE SIGN, CLASS 1, AS PER PLAN_____2 @ 36 MONTHS = 72 SIGN-MONTHS

ITEM 614 – PORTABLE CHANGEABLE MESSAGE SIGN, CLASS 2, AS PER PLAN_____2 @ 36 MONTHS = 72 SIGN-MONTHS

WORK ON OR ABOVE RAILROAD PROPERTY

SPECIAL PROVISIONS AND REQUIREMENTS APPLY TO WORK BEING DONE IN THE VICINITY OF RAILROAD PROPERTY. FOR RAILROAD PROVISIONS AND REQUIREMENTS SEE SHEETS 100 & 101.

ITEM 614 – TEMPORARY RAISED PAVEMENT MARKER

QUANTITIES SHOWN IN THE MAINTENANCE OF TRAFFIC PLANS ARE FOR USE AS DIRECTED BY THE ENGINEER. IF THE ENGINEER DETERMINES THAT AN EXISTING RAISED PAVEMENT MARKER (RPM) IS IN USABLE CONDITION AND LIES ON THE SAME LINE THAT THE TEMPORARY RPM WOULD BE PLACED, THE THE TEMPORARY RPM WILL BE NON-PERFORMED.

OVERLAY FOR MAINTENANCE OF TRAFFIC AND INTERIM PAVEMENT TRANSITIONS

DUE TO MAINTENANCE OF TRAFFIC REQUIREMENTS, PORTIONS OF THE EXISTING CONCRETE BARRIER SHALL BE REMOVED AND THE MEDIAN, INSIDE SHOULDERS, AND INSIDE LANES OVERLAYED AS SHOWN ON SHEETS 19 AND 20.

IN THE AREAS OF OVERLAY FOR MAINTAINANCE OF TRAFFIC, (SEE SHEETS 19 & 20) AFTER THE COMPLETION OF THE BRIDGE REHABILITATION, THE CONTRACTOR SHALL PLANE OUT THE OVERLAY 83mm BELOW THE EXISTING (PRE-OVERLAY) ASPHALT SURFACE OR TO THE BASE OF THE EXISTING CONCRETE BARRIER. AFTER INSTALLATION OF THE NEW MEDIAN BARRIER AND MEDIAN INLETS THE CONTRACTOR SHALL RESURFACE THE MEDIAN LANES AND SHOULDER AS SHOWN IN THE TYPICAL SECTIONS (SEE SHEET 3).

CALCULATED MJW CHECKED NMA

MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY-77-23.458

AT LOCATIONS WHERE INTERIM PAVEMENT TRANSITIONS ARE CALLED FOR IN THE M.O.T. PLANS (SEE SHEET 22), AND AS APPROVED BY THE ENGINEER, OR AT LOCATIONS AS DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL PLANE THE PAVEMENT AT VARIABLE DEPTHS (38mm MIN.) AND RESURFACE WITH 38mm OF ASPHALT CONCRETE IN ACCORDANCE WITH THE APPLICABLE SECTION OF THE CMS TO PROVIDE A SMOOTH TRANSITION OF THE PAVEMENT GRADES AND CROSS SLOPES FOR MAINTAINING TRAFFIC.

IN ADDITION TO THE QUANTITIES SHOWN FOR THE OVERLAY FOR MAINTAINANCE OF TRAFFIC, THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS APPROVED BY THE ENGINEER TO PERFORM THIS WORK. :

ITEM 254 - PAVEMENT PLANING, BITUMINOUS, AS PER PLAN _____ 250 SQ. METERS

ITEM 448 - ASPHALT CONCRETE SURFACE COURSE, TYPE I, PG64-28 _____ 10 CU. METERS

ITEM 407 - TACK COAT _____ 113 LITERS

ITEM 614 - TEMPORARY IMPACT ATTENUATOR, QUADGUARD SYSTEM

THIS WORK SHALL CONSIST OF FURNISHING A TEMPORARY IMPACT ATTENUATOR, AS REQUIRED IN THE PLANS. THIS ITEM SHALL INCLUDE ALL RELATED HARDWARE, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER TO CONSTRUCT A COMPLETE AND FUNCTIONAL QUADGUARD IMPACT ATTENUATOR SYSTEM. THE IMPACT ATTENUATOR SHALL BE A QUADGUARD cz MODEL # QZ3006Y AS MANUFACTURED BY THE ENERGY ABSORPTION SYSTEMS INC., ONE EAST WACKER DRIVE, CHICAGO, ILLINOIS 60601; TELEPHONE (312) 467-6750. THE ATTENUATOR SHALL BE PLACED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND AT THE LOCATION SHOWN IN THE PLAN.

THE BACKUP SYSTEM SHALL BE TRANSITIONED FROM THE CONCRETE BARRIER SHAPE TO A RECTANGULAR SHAPE FOR USE AS A CONCRETE BACKUP FOR THE QUADGUARD SYSTEM. THE MANUFACTURER SHALL PROVIDE THE DETAILS FOR THE SHAPE AND TRANSITION. THE COSTS FOR THIS WORK NEC ESSARY FOR COMPLETION OF THE ITEM SHALL BE CONSIDERED INCIDENTAL.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTION, REPAIRING, AND OTHERWISE RESTORING THE TEMPORARY IMPACT ATTENUATOR IN ACCORDANCE WITH THE MANUFACTURER'S MAINTAINANCE INSTRUCTIONS WHILE IT IS IN USE ON THE PROJECT. SUCH REPAIRS SHALL BE PERFORMED WITHIN TWELVE (12) HOURS OF THE INCIDENT WHICH CAUSED DAMAGE TO THE ATTENUATOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING ALL NECESSARY MATERIALS AND EQUIPMENT REQUIRED TO PERFORM THE ABOVE DESCRIBED RESTORATION OF THE ATTENUATOR. ONE (1) EXTRA COMPLETE SET OF HEX-FOAM CARTRIDGES, AS MANUFACTURED BY ENERGY ABSORPTION SYSTEM INC., FOR THE ATTENUATOR FURNISHED, SHALL BE STOCKED AT ALL TIMES FOR THE ABOVE REPAIRS AND THE COST SHALL BE INCLUDED IN THE COST OF THE TEMPORARY ATTENUATOR.

AFTER THE WORK IS COMPLETE, AND THE TEMPROARY IMPACT ATTENUATOR IS REMOVED, IT SHALL BE DELIVERED AND UNLOADED BY THE CONTRACTOR TO THE O.D.O.T. RIVEREDGE YARD, 4940 OLD GRAYTON ROAD, CLEVELAND, OHIO 44135 (216-676-5295) AND BECOME PROPERTY OF THE STATE, AT LEAST 48 HOURS ADVANCE NOTICE WILL BE REQUIRED BEFORE DELIVERY.

THE NOSE COVER OF THE TEMPORARY IMPACT ATTENUATOR SHALL BE MARKED WITH THREE EVENLY SPACED FOUR INCH (4") WIDE HORIZONTAL STRIPES (TWO WHITE, ONE ORANGE) OF REFLECTORIZED SHEETING, TYPE G-730.19.

ALL COSTS FOR THE REPAIR OF THE TEMPORARY ATTENUATOR SHALL BE BORNE BY THE CONTRACTOR (HOWEVER, HE MAY RECOVER THESE COSTS FROM THE PARTY CAUSING THE DAMAGE TO THE ATTENUATOR). THE STATE WILL ASSUME NO REPAIR COST OF THE TEMPORARY ATTENUATOR DURING ITS USE ON THE PROJECT.

PAYMENT FOR THE INITIAL INSTALLATION INCLUDING THE PAD AND ALL THE NECESSARY HARDWARE, THE SUBSEQUENT REMOVAL, DELIVERY, UNLOADING AT THE RIVEREDGE YARD, AND THE STATE'S ASSUMPTION OF OWNERSHIP INCLUDING ONE (1) SET OF SPARE HEX-FOAM CARTRIDGES SHALL BE PAID FOR UNDER THE UNIT BID PRICE FOR ITEM 614 - TEMPORARY IMPACT ATTENUATOR, QUADGUARD SYSTEM.

MAINTAINING THE TRAVELED WAY

THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING THE ROAD WAY PER 614.02 TRAFFIC FACILITIES, IN THE CONSTRUCTION AND MATERIAL SPECIFICATIONS.
PER 614.02: (b)THROUGH TRAFFIC.
" WHEN THE HIGHWAY UNDER CONSTRUCTION IS BEING USED BY THE THROUGH TRAFFIC INCLUDING PERIODS OF SUSPENSION OF THE WORK, THE CONTRACTOR SHALL SO MAINTAIN BY USE OF LABOR, EQUIPMENT AND MATERIALS THAT PORTION OF THE HIGHWAY BEING USED, THAT IS SMOOTH, FREE FROM HOLES, RUTS, RIDGES, BUMPS AND DUST .

HIGHWAY IN THE ABOVE PARAGRAPH INCLUDES ALL TRAVELED SURFACES AND BERMS INCLUDING THE BRIDGES WITHIN THE PROJECT LIMITS. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN THE ROADWAY DURING THE WINTER MONTHS.

THE CONTRACTOR S RESPONSIBILITY TO MAINTAIN THE HIGHWAY WILL START THE FIRST DAY OF WORK AND WILL INCLUDE BOTH DIRECTIONS.

THE CONTRACTOR MAY USE ANY TYPE OF MATERIAL HE SEES FIT WITH THE APPROVAL OF THE ENGINEER. AN OVERLAY OF THE BRIDGE IS NOT AN ACCEPTABLE REPAIR METHOD. UNLESS THERE IS AN EMERGENCY AS DETERMINED BY THE ENGINEER, LANE CLOSURES WILL ONLY BE PERMITTED DURING THE TIMES ALLOWED FOR SHORT TERM LANE CLOSURES.

PAYMENT FOR THE MAINTENANCE OF THE HIGHWAY WILL BE INCLUDED IN THE LUMP SUM BID ITEM 614 MAINTAINING TRAFFIC. THIS WILL INCLUDE BUT NOT BE LIMITED TO ALL LABOR, MATERIAL, EQUIPMENT AND TRAFFIC CONTROL NEEDED TO MAINTAIN THE ROADWAY IN A SAFE, PASSABLE CONDITION AT THE POSTED SPEED LIMIT.

CALCULATED MJW CHECKED NMA

MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY-77-23.458

MAINTENANCE OF TRAFFIC SUBSUMMARY

SHEET NO.	LOCATION	SIDE	614													614					622		
			TEMPORARY LINES, CLASS 1, 740.06 TYPE 1						TEMPORARY LINES, CLASS 1, 642 PAINT														
			EDGE LINE		LANE LINE	CHANNELIZING LINE	TRANSVERSE LINE			EDGE LINE		LANE LINE	CHANNELIZING LINE	TRANSVERSE LINE		BARRIER REFLECTOR, TYPE A	BARRIER REFLECTOR, TYPE B	OBJECT MARKER	TEMPORARY GUARDRAIL, ON BRIDGE	TEMPORARY IMPACT ATTENTUATOR, QUADGUARD SYSTEM	PORTABLE CONCRETE BARRIER, 1270mm, AS PER PLAN	PORTABLE CONCRETE BARRIER, 1270mm, TYPE BRD, ANCHORED, AS PER PLAN	
			WHITE	YELLOW						WHITE	YELLOW												
			METER	METER	METER	METER	METER			METER	METER	METER	METER	METER		EACH	EACH	EACH	METER	EACH	METER	METER	
	PHASE 1																						
21	2+368 – 2+490	LT.	122	122		122																	
21	2+490 – 2+660	LT.	170	170	170																		
21	2+480 – 2+660	LT.																			180		
22	2+660 – 2+745.7	LT.																		1		86	
21	2+480 – 2+746	LT.															12	11					
22	2+660 – 2+717	LT.								57	57	57											
22	2+717 – 2+800	LT.								83	83		83										
22	2+800 – 3+083	LT.									283	283	283										
22	RAMP N–E/N–W	LT.									70		104	95			3	2			21	74	
	PHASE 2																						
27	2+169 – 2+319	RT.	150	150		150																	
27	2+319 – 2+660	RT.	341	341	341																		
27	2+297 – 2+523	LT.	226	226		226																	
27	2+379 – 2+520	RT.															10	9			141		
27	2+523 – 2+660	LT.	137	137	137																		
28	2+660 – 3+281	LT.								621	621	621											
28	2+660 – 2+775	RT.								115	115	115											
28	2+632 – 2+661	LT.																			29		
28	2+661 – 2+794	LT.																				133	
28	2+632 – 2+794	LT.															12	11					
28	2+775 – 2+865	RT.								90	90		90										
28	2+865 – 3+272	RT.								407	407	407											
29	3+119 – 3+280	LT.																				161	
30	3+280 – 3+685	LT.																			405		
29	3+119 – 3+685	LT.															39	38					
30	3+272 – 3+603	RT.	331	331	331																		
30	3+603 – 3+693	RT.	90	90		90																	
30	3+281 – 3+746	LT.	465	465	465																		
31	3+746 – 3+842	LT.	96	96		96																	
31	3+693 – 4+037	RT.	344	344	344																		
31	3+842 – 4+019	LT.	177	177	177																		
31	4+009 – 4+037	RT.				29																	
31	4+019 – 4+059	LT.		40	40	81	45																
171	RAMP W–N	LT.		163																			
171	RAMP 30–S	LT.	63																				
171	RAMP E–N	LT.	450																				
171	RAMP S–30	RT.	42																				
SHEET SUB–TOTAL :			3204	2852	2005	794	45			1373	1726	1483	560	95		0	76	71	0	1	776	454	

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949MS.dwg view = PLOT1

CALCULATED MJW CHECKED NMA

MAINTENANCE OF TRAFFIC SUBSUMMARY

CUY–77–23.458

MAINTENANCE OF TRAFFIC SUBSUMMARY

SHEET NO.	LOCATION	SIDE	614 TEMPORARY LINES, CLASS 1, 740.06 TYPE 1							614 TEMPORARY LINES, CLASS 1, 642 PAINT						614					622		
			EDGE LINE		LANE LINE	CHANNELIZING LINE	TRANSVERSE LINE			EDGE LINE		LANE LINE	CHANNELIZING LINE	TRANSVERSE LINE		BARRIER REFLECTOR, TYPE A	BARRIER REFLECTOR, TYPE B	OBJECT MARKER	TEMPORARY GUARDRAIL, ON BRIDGE	TEMPORARY IMPACT ATTENTUATOR, QUADGUARD SYSTEM	PORTABLE CONCRETE BARRIER, 1270mm, AS PER PLAN	PORTABLE CONCRETE BARRIER, 1270mm, TYPE BRD, ANCHORED, AS PER PLAN	
			WHITE	YELLOW						WHITE	YELLOW												
			METER	METER	METER	METER	METER			METER	METER	METER	METER	METER		EACH	EACH	EACH	METER	EACH	METER	METER	
	PHASE 3																						
32	2+169 – 2+428	RT.	259	259	259																		
32	2+297 – 2+428	LT.	131	131	131																		
32	2+428 – 2+661	L/R	466	466		466															233		
32	2+456 – 2+661	RT.															15	14			205		
33	RAMP W–N	RT.																			9		
33	2+632 – 2+661	LT.																			29		
33	2+661 – 2+794	LT.																				133	
33	2+632 – 2+794	LT.															12	11					
33	2+661 – 3+300	LT.															44	43					MOUNT ON EX. BARRIER FOR N.B.
33	2+661 – 3+283	LT.								1244	1244	1244										622	
35	3+283 – 3+601	L/R	636	636		636															318		
32	2+428 – 3+601	L/R															158	156					
35	3+601 – 4+019	LT.	418	418	418																		
35	3+601 – 4+037	RT.	436	436	436																		
35	3+283 – 3+301	L/R																			18		
35	3+278 – 3+302	L/R																			24		
36	4+019 – 4+059	LT.		40	40	81	45																
36	4+009 – 4+037	RT.				29																	
	PHASE 4																						
37	2+169 – 2+428	RT.	259	259	259																		
37	2+297 – 2+428	LT.	131	131	131																		
37	2+428 – 2+670	L/R	484	484		484															242		
38	2+670 – 2+715	RT.	90	90		90																45	
38	2+640 – 2+676	RT.														2	3	2	7.62		36		
38	2+715 – 3+240	RT.	1050	1050	1050																	525	
38A	3+240 – 3+271	RT.	62	62		62																31	
38B	3+271 – 3+601	L/R	660	660		660															330		
37	2+428 – 3+601	L/R															158	156					
38B	3+277 – 3+395	RT.															10	9			128		
38B	3+601 – 4+019	LT.	418	418	418																		
38B	3+601 – 4+037	RT.	436	436	436																		
38C	4+019 – 4+059	LT.		40	40	81	45																
38C	4+009 – 4+037	RT.				29																	
	RAMP 30–S	LT.																			9		
	PHASE 5																						
	(SAME LAYOUT AS PHASE 2)		2357	2397	1835	672	45			1233	1233	1143	90				61	58			575	294	
SHEET SUB–TOTAL :			8293	8413	5453	3290	135			2477	2477	2387	90	0		2	461	449	7.62	0	2156	1650	
SHEET SUB–TOTAL CARRIED FROM SHEET 16 :			3204	2852	2005	794	45			1373	1726	1483	560	95		0	76	71	0	1	776	454	
TOTAL CARRIED TO GENERAL SUMMARY :			11497	11265	7.458 Km	4084	180			3850	4203	3.870 Km	650	95		2	537	520	7.62	1	2932	2104	
			22.762 Km							8.053 Km													

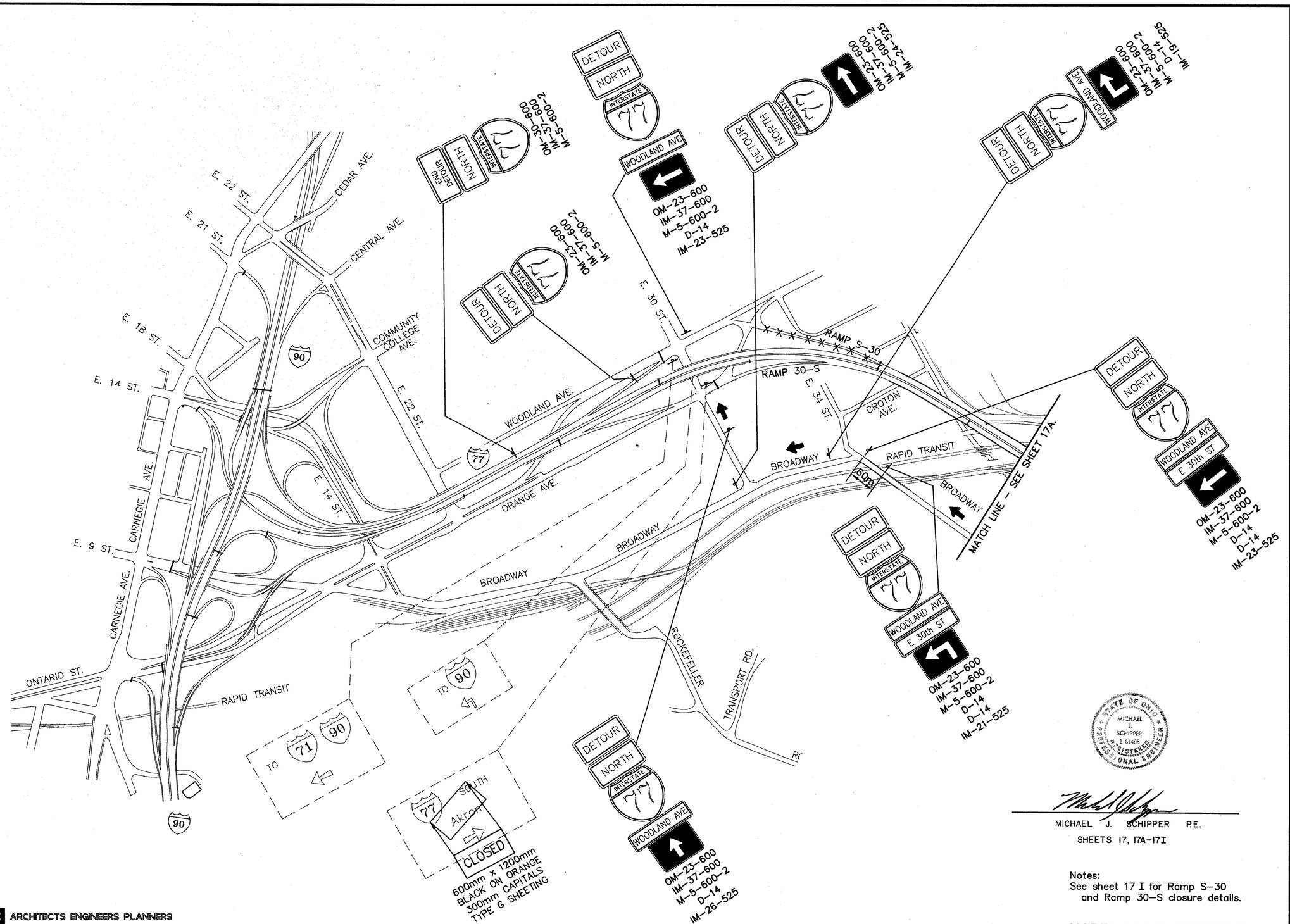
HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949MS.dwg view = PLOT2

CALCULATED MJW CHECKED NMA

MAINTENANCE OF TRAFFIC SUBSUMMARY

CUY–77–23.458



HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\14949GDA.dwg

MICHAEL J. SCHIPPER P.E.
SHEETS 17, 17A-17I

Notes:
See sheet 17 I for Ramp S-30 and Ramp 30-S closure details.

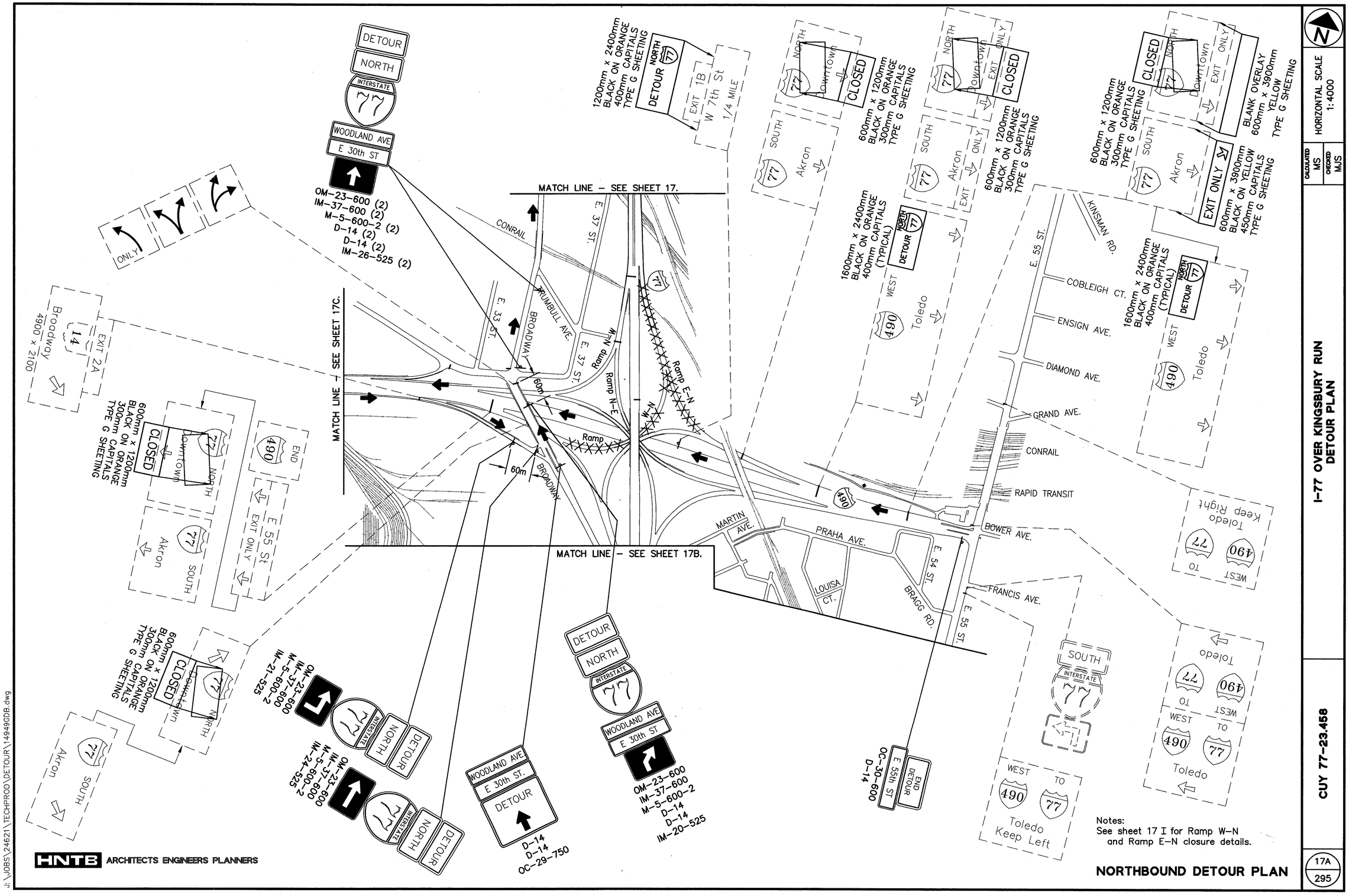
NORTHBOUND DETOUR PLAN

CALCULATED MS
CHECKED MJS
HORIZONTAL SCALE 1:4000

I-77 OVER KINGSBURY RUN
DETOUR PLAN

CUY 77-23.458

17
295


DETOUR
NORTH
INTERSTATE
77
WOODLAND AVE
E 30th ST
OM-23-600 (2)
IM-37-600 (2)
M-5-600-2 (2)
D-14 (2)
D-14 (2)
IM-26-525 (2)
1200mm x 2400mm
BLACK ON ORANGE
400mm CAPITALS
TYPE G SHEETING
DETOUR
NORTH
77
EXIT 1B
W 7th St
1/4 MILE
ONLY
MATCH LINE – SEE SHEET 17.
CONRAIL
E. 37 ST.
E. 33 ST.
RUMBULL AVE.
BROADWAY
60m
Ramp M-N
Ramp N-E
Ramp E-N
Ramp W-N
MATCH LINE – SEE SHEET 17C.
MATCH LINE – SEE SHEET 17B.
Broadway
4900 x 2100
EXIT 2A
14
600mm x 1200mm
BLACK ON ORANGE
300mm CAPITALS
TYPE G SHEETING
CLOSED
DOWNTOWN
NORTH
77
END
490
E 55 St
EXIT ONLY
Akron
SOUTH
600mm x 1200mm
BLACK ON ORANGE
300mm CAPITALS
TYPE G SHEETING
OM-23-600
IM-37-600
M-5-600-2
M-24-525
OM-23-600
IM-37-600
M-5-600-2
M-21-525
DETOUR
NORTH
INTERSTATE
77
WOODLAND AVE
E 30th St.
DETOUR
D-14
D-14
OC-29-750
OM-23-600
IM-37-600
M-5-600-2
D-14
D-14
IM-20-525
1600mm x 2400mm
BLACK ON ORANGE
400mm CAPITALS
(TYPICAL)
DETOUR
NORTH
77
WEST
490
Toledo
600mm x 1200mm
BLACK ON ORANGE
300mm CAPITALS
TYPE G SHEETING
DOWNTOWN
EXIT ONLY
CLOSED
SOUTH
Akron
77
600mm x 3900mm
BLACK ON YELLOW
450mm CAPITALS
TYPE G SHEETING
BLANK OVERLAY
600mm x 3900mm
YELLOW
TYPE G SHEETING
EXIT ONLY
E. 55 ST.
KINSMAN RD.
COBLEIGH CT.
ENSIGN AVE.
DIAMOND AVE.
GRAND AVE.
CONRAIL
RAPID TRANSIT
MARTIN AVE.
PRAHA AVE.
BOWER AVE.
LOUISA CT.
E. 54 ST.
BRAGG RD.
FRANCIS AVE.
E 55th ST
END DETOUR
OC-30-600
D-14
SOUTH
INTERSTATE
77
WEST
TO
490
Toledo
Keep Left
Toledo
Keep Right
TO
WEST
490
77
Toledo
Notes:
See sheet 17 I for Ramp W-N
and Ramp E-N closure details.
HNTB ARCHITECTS ENGINEERS PLANNERS
NORTHBOUND DETOUR PLAN
N
HORIZONTAL SCALE
1:4000
CALCULATED MS
CHECKED MJS
I-77 OVER KINGSBURY RUN
DETOUR PLAN
CUY 77-23.458
17A
295
J:\JOBS\24621\TECHPROD\DETOUR\149496DB.dwg

MATCH LINE – SEE SHEET 17A.

WOODLAND AVE
E 30th ST
DETOUR
D-14
D-14
OC-29-750

WOODLAND AVE
E 30th ST
DETOUR
14 Broadway
NW | SE
D-14
D-14
OC-29L-750

WOODLAND AVE
E 30th ST
DETOUR
D-14
D-14
OC-29LT-750

1200mm x 2400mm
BLACK ON ORANGE
250mm CAPITALS
TYPE G SHEETING
DETOUR
WOODLAND AVE
E 30th ST

EXIT 161B
490 WEST
Toledo
E 55th St
EXIT ONLY

77 NORTH
Cleveland

EXIT 161A
14
Broadway

1200mm x 2400mm
BLACK ON ORANGE
250mm CAPITALS
TYPE G SHEETING
DETOUR
WOODLAND AVE
E 30th ST

EXIT 161A
14
Broadway

1200mm x 2400mm
BLACK ON ORANGE
250mm CAPITALS
TYPE G SHEETING
DETOUR
WOODLAND AVE
E 30th ST

EXIT 161A
14
Broadway
1/4 MILE

EXIT 160
Pershing Ave

EXIT 161B
490 WEST
Toledo
E 55th St
3/4 MILE

77 NORTH
Cleveland

1200mm x 2400mm
BLACK ON ORANGE
250mm CAPITALS
TYPE G SHEETING
DETOUR
WOODLAND AVE
E 30th ST

EXIT 161A
14
Broadway
3/4 MILE

EXIT 160
Pershing Ave
1/4 MILE

1200mm x 2400mm
BLACK ON ORANGE
250mm CAPITALS
TYPE G SHEETING
DETOUR
WOODLAND AVE
E 30th ST

EXIT 161A
14
Broadway
1 1/2 MILE

EXIT 160
Pershing Ave
1 MILE

EXIT 159B
Fleet Ave

DILLE AVE.
ROSEVILLE CT.
E. 45 ST.
GALLUP AVE.
AVERY AVE.
LESTER ST.
NURSERY ST.
E. 50 ST.
E. 51 ST.
SWEENEY AVE.
MAURICE AVE.
BELLFORD AVE.
GLAZIER ST.
FINN AVE.
FINN AVE.
TRUSCON AVE.
E. 55 ST.
BROADWAY
WENDELL AVE.
MEAD CT.
MEAD AVE.
PERSHING AVE.
TRACK RD.
FOWLER AVE.
COWAN ST.
HECTOR ST.
LUFKIN AVE.
CONRAIL
E. 49 ST.
DOLLOF
MC BRIDE AVE.
E. 54 ST.
E. 56 ST.
E. 57 ST.
PERSHING AVE.
E. 44 ST.
E. 48 ST.
MC BRIDE AVE.
FRAZEE AVE.
ANSON AVE.
BARKWILL AVE.
ST.
49
HAMM AVE.
E.
GUY AVE.
N & W R.R.
REID AVE.
E. 50 ST.
E. 51 ST.
ACME CT.
E. 44 ST.
IRA RD.
E. 46 ST.
77
490

HNTB ARCHITECTS ENGINEERS PLANNERS

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NORTHBOUND DETOUR PLAN

N

HORIZONTAL SCALE
1:4000

CALCULATED MS
CHECKED MJS

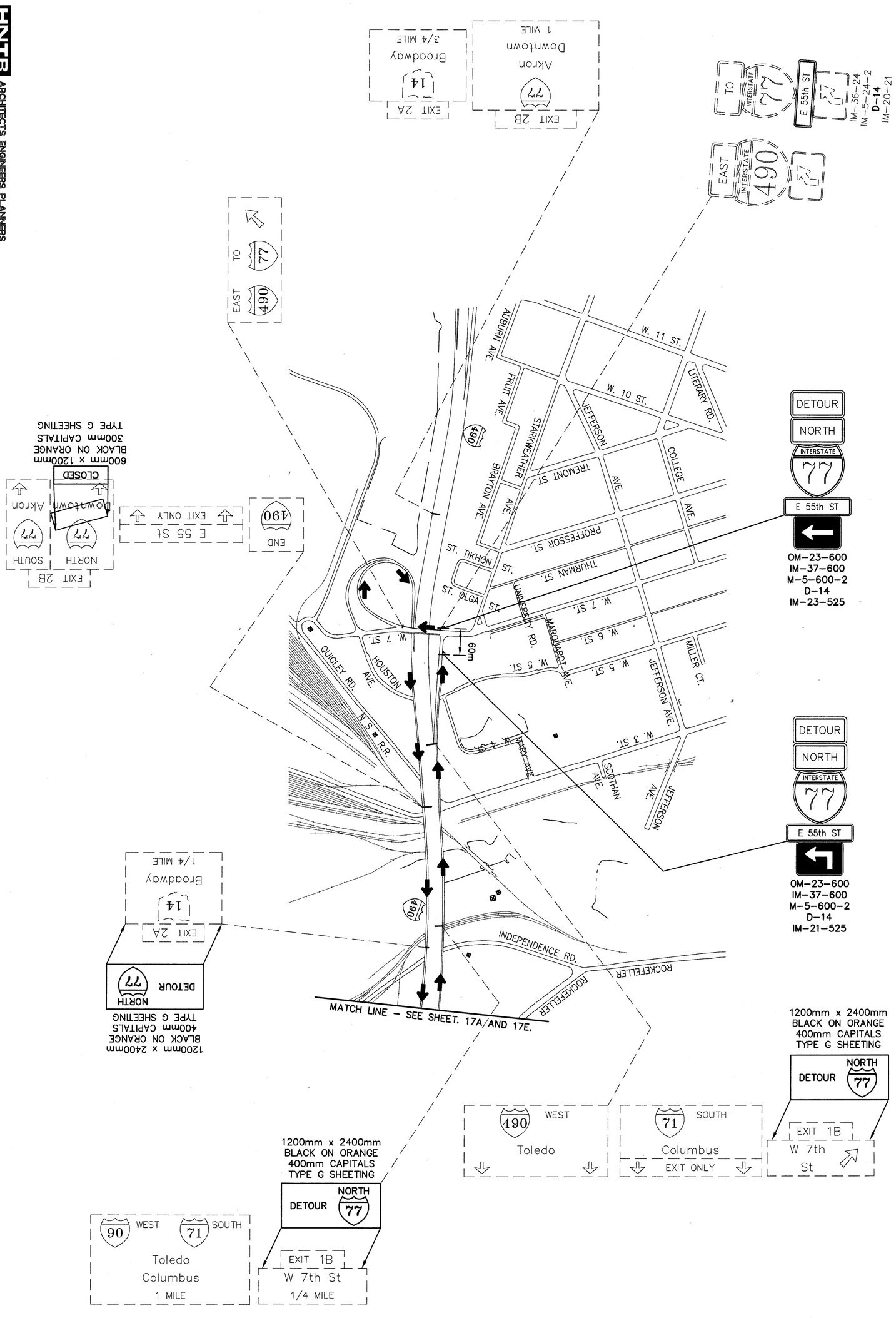
I-77 OVER KINGSBURY RUN
DETOUR PLAN

CUY 77-23.458

17B
295

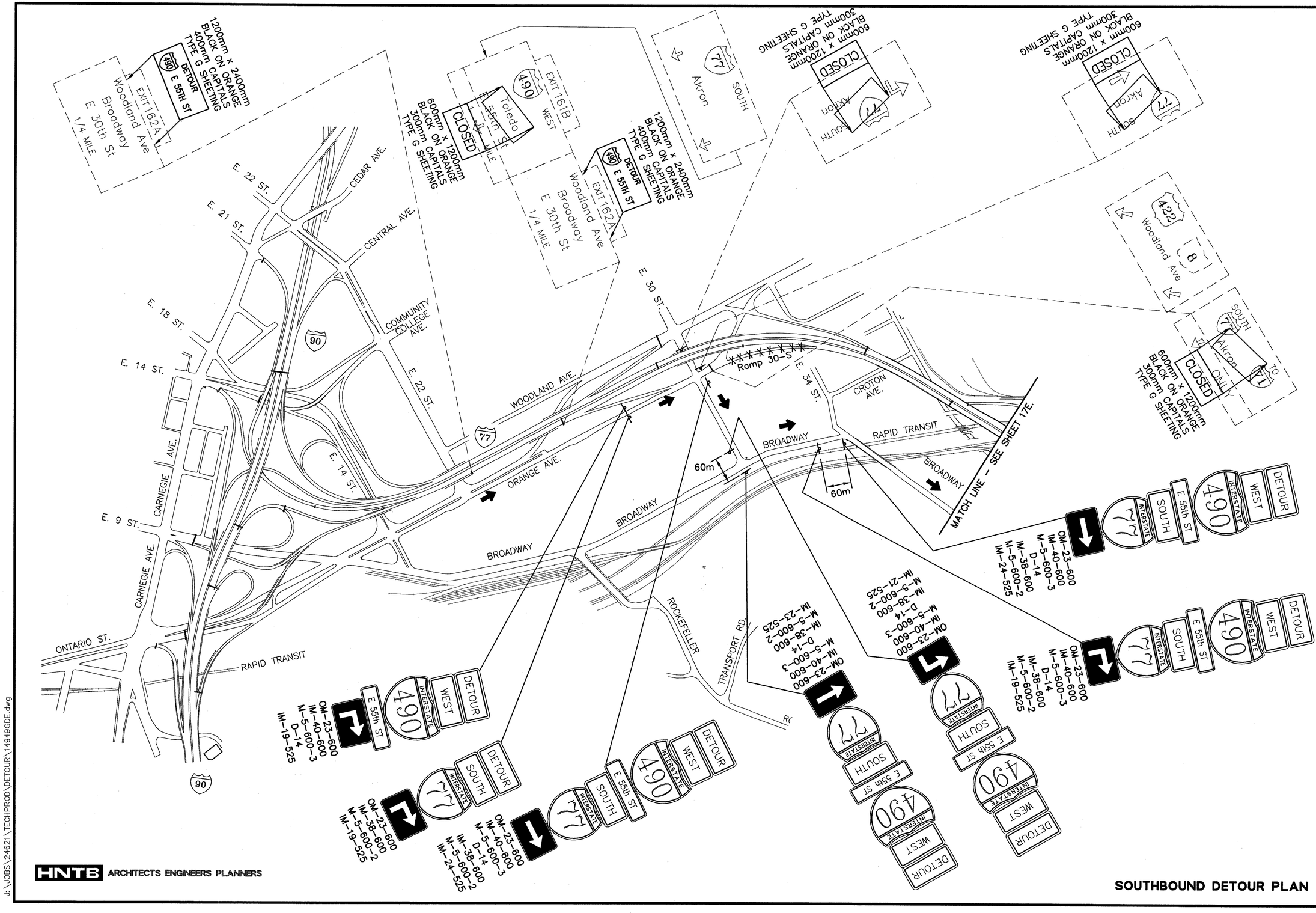
J:\JOBS\24621\TECHPROD\DETOUR\14949GDD.dwg

HNTB ARCHITECTS ENGINEERS PLANNERS



NORTHBOUND AND SOUTHBOUND DETOUR PLAN

17C / 295	CUY 77-23.458	I-77 OVER KINGSBURY RUN DETOUR PLAN	CALCULATED MS CHECKED MJS	HORIZONTAL SCALE 1:4000



HNTB ARCHITECTS ENGINEERS PLANNERS

SOUTHBOUND DETOUR PLAN

I-77 OVER KINGSBURY RUN
DETOUR PLAN

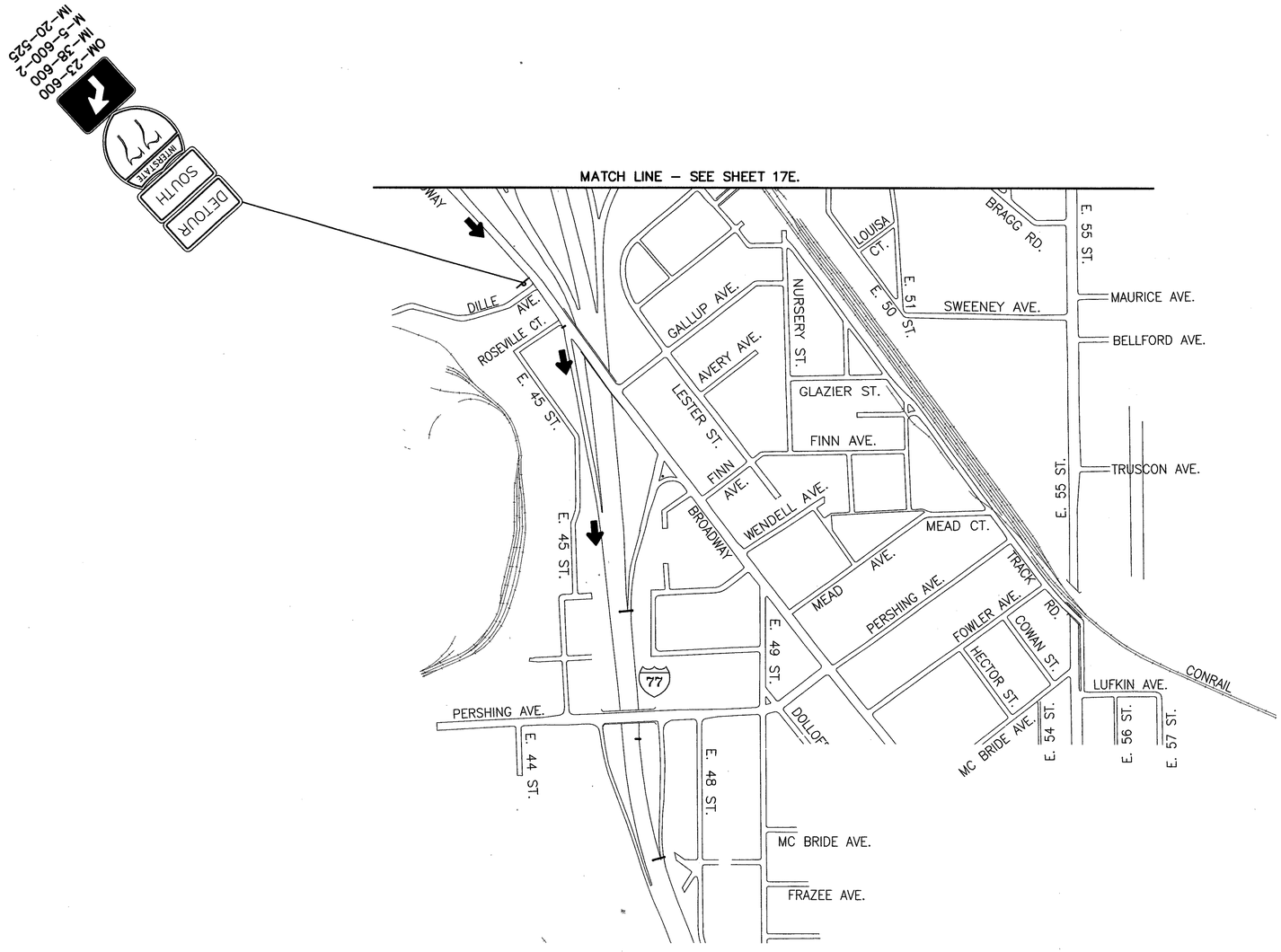
CUY 77-23.458

HORIZONTAL SCALE
1: 4000

CALCULATED MS
CHECKED MJS

17D
295

J:\JOBS\24621\TECHPROD\DETOUR\14949GDE.dwg



HNTB ARCHITECTS ENGINEERS PLANNERS

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SOUTHBOUND DETOUR PLAN

N

HORIZONTAL SCALE
1:4000

CALCULATED MS
CHECKED MJS

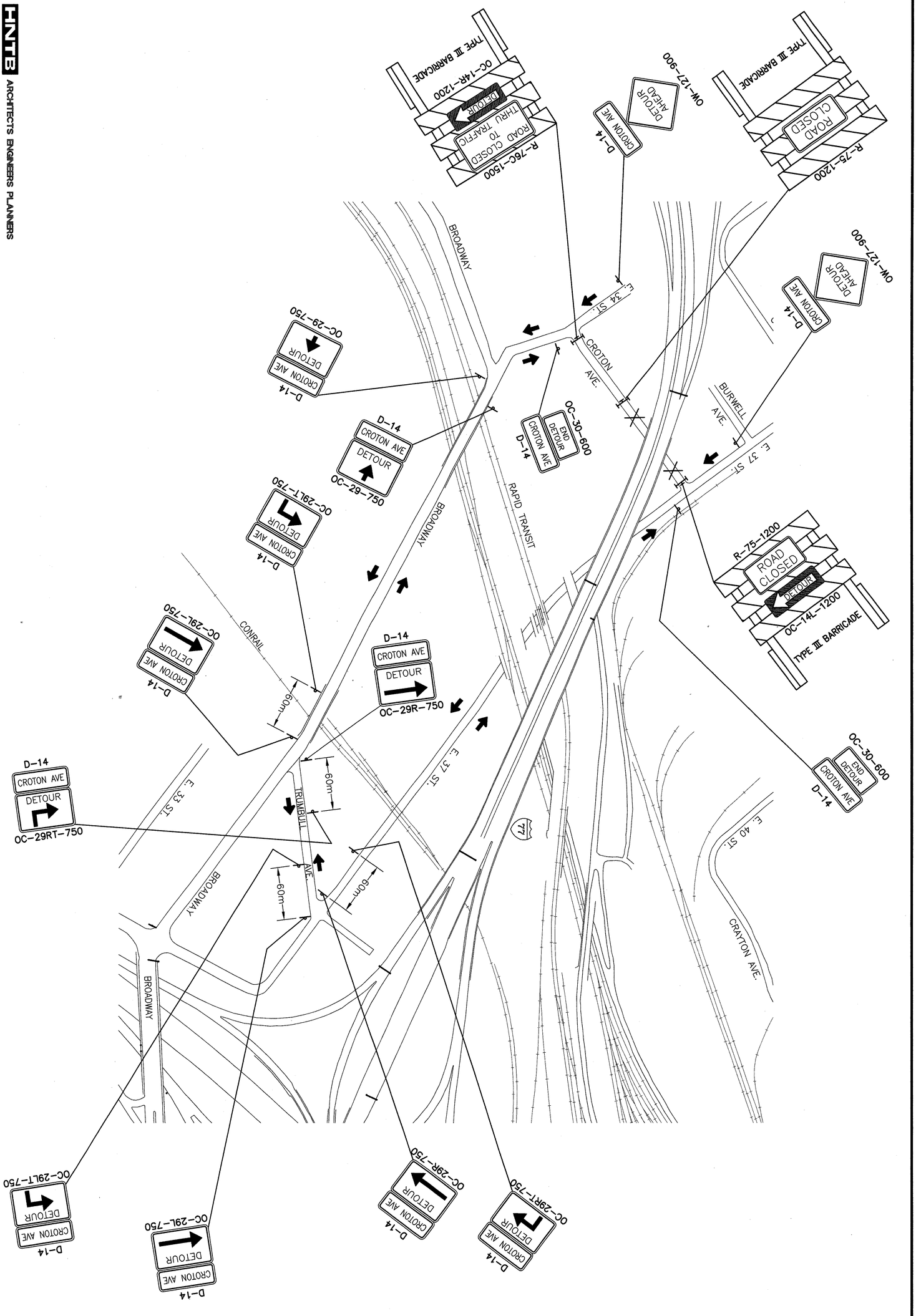
I-77 OVER KINGSBURY RUN
DETOUR PLAN

CUY 77-23.458

17F
295

J:\JOBS\24621\TECHPROD\DETOUR\14949GDH.dwg

HNTB ARCHITECTS ENGINEERS PLANNERS



17G / 295	CUY 77-23.458	I-77 OVER KINGSBURY RUN CROTON AVENUE TEMPORARY CLOSURE PLAN	CALCULATED / CHECKED	HORIZONTAL SCALE 1:2000

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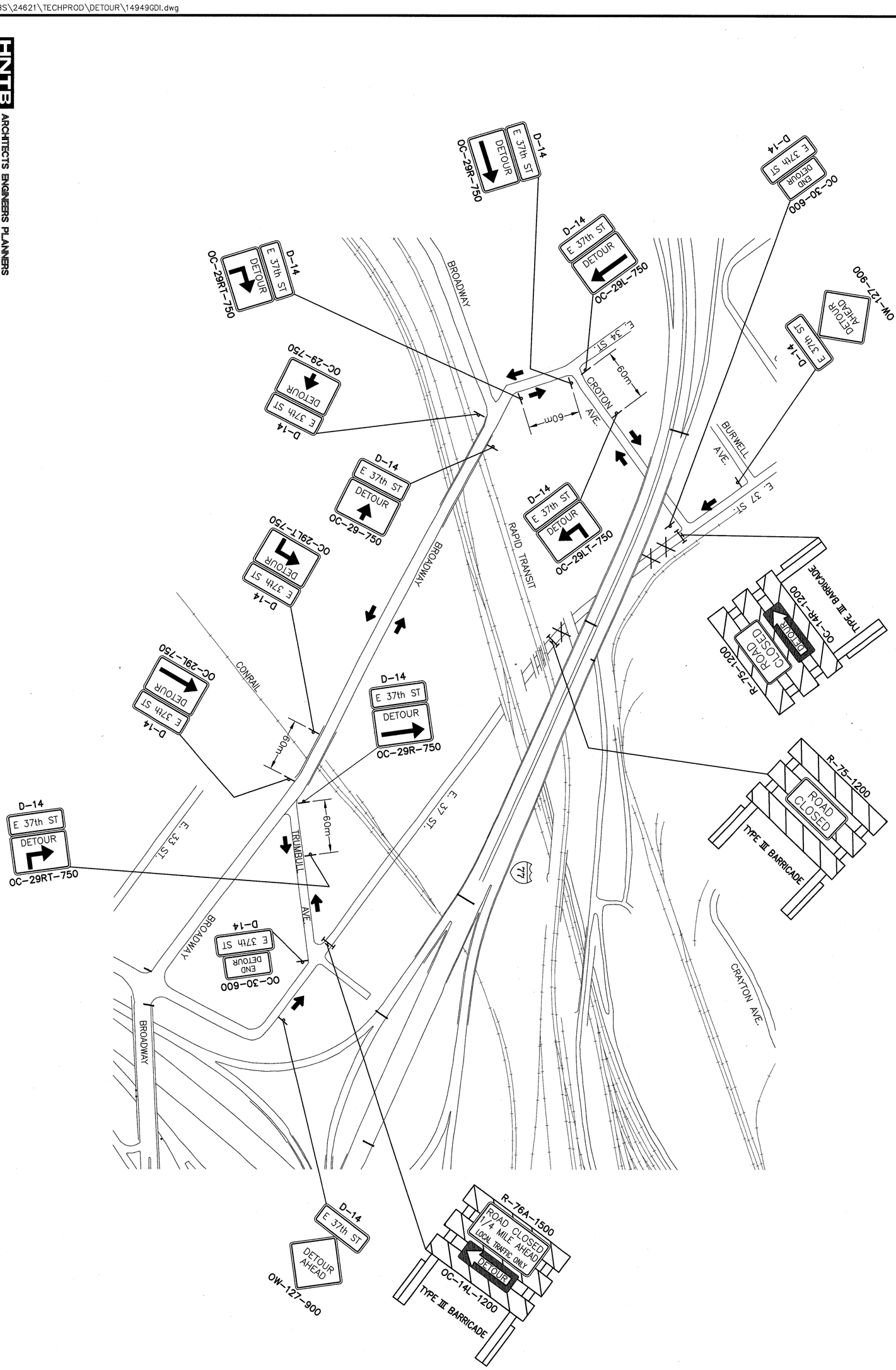
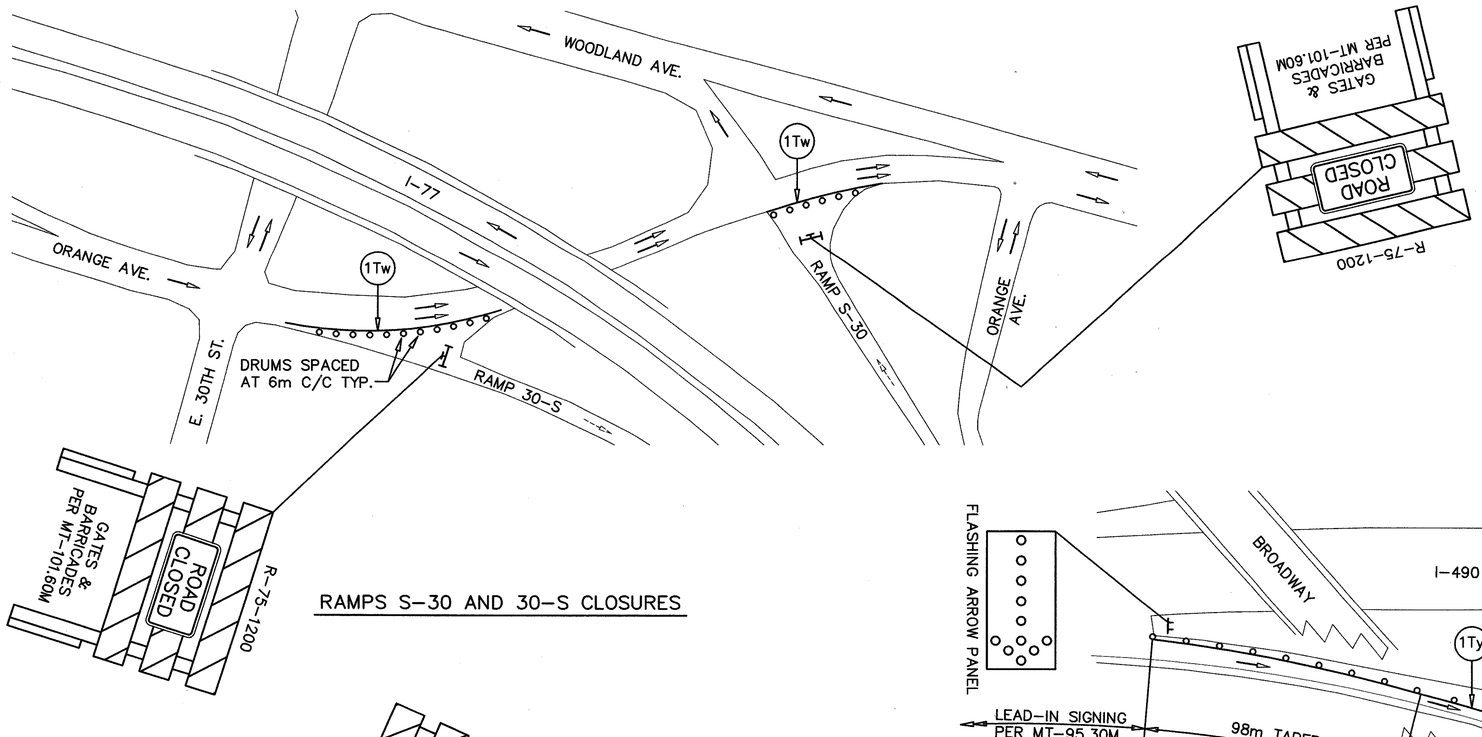
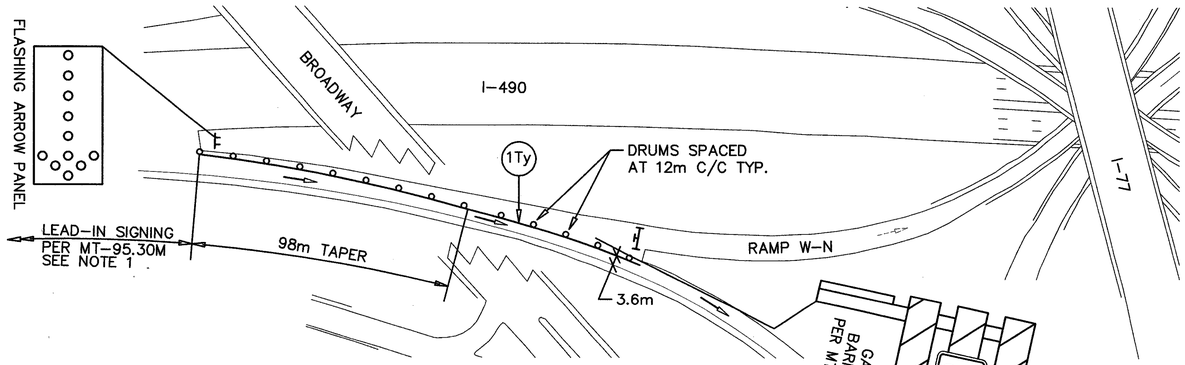
HNTB ARCHITECTS ENGINEERS PLANNERS



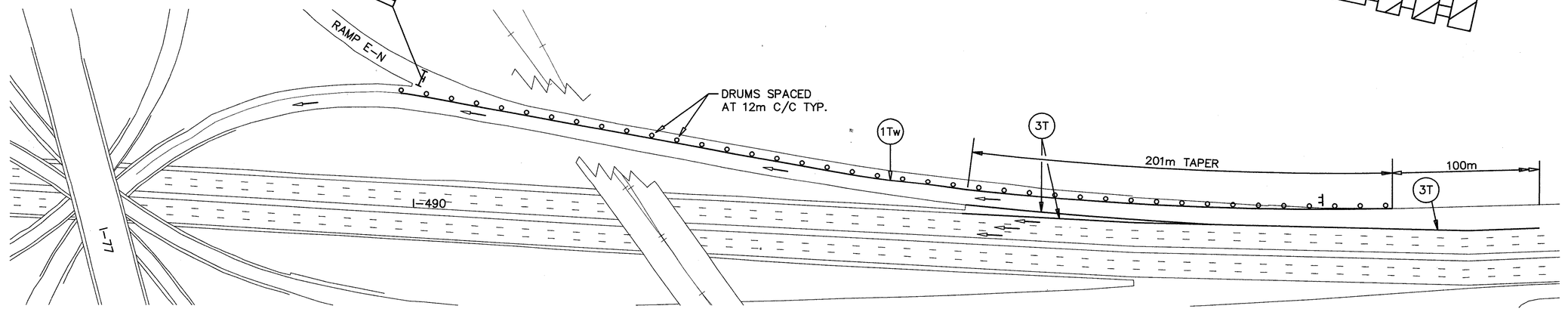
17H / 295	CUY 77-23.458	I-77 OVER KINGSBURY RUN EAST 37TH STREET TEMPORARY CLOSURE PLAN	CALCULATED / CHECKED	HORIZONTAL SCALE 1:2000



RAMPS S-30 AND 30-S CLOSURES



RAMP W-N CLOSURE



RAMP E-N CLOSURE

NOTE 1: LEAD-IN SIGNING PER MT-95.30 WITH THE EXCEPTION THAT ALL ADVANCED WARNING SIGNS SHALL HAVE AN I-77 SHIELD (M-5-600-2) AND NORTH CARDINAL (IM-37-600) MOUNTED ABOVE.

Notes:
For pavement marking legend see Sheet 21.

HNTB ARCHITECTS ENGINEERS PLANNERS

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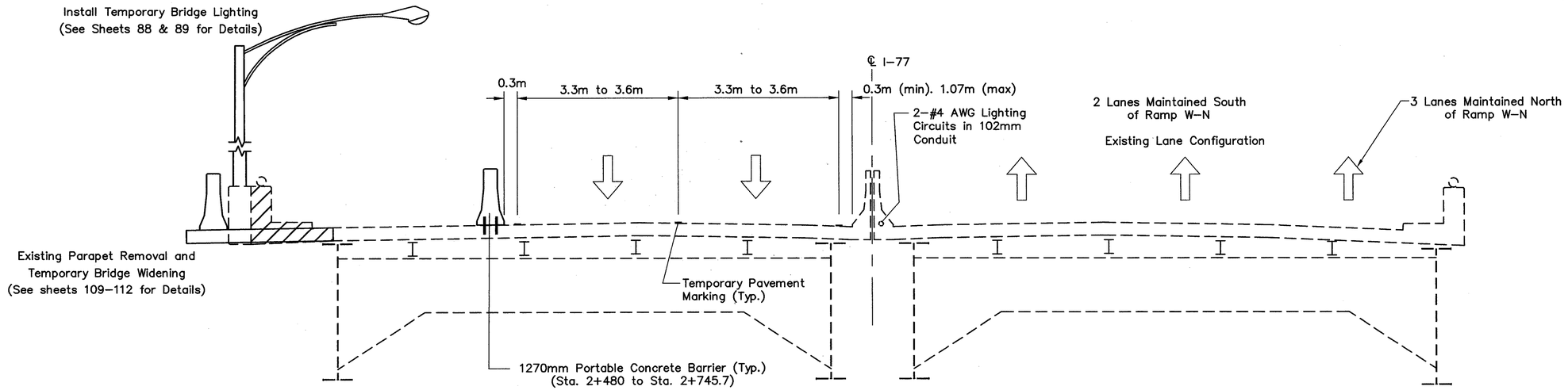
HORIZONTAL SCALE 1:1000

CALCULATED | CHECKED

I-77 OVER KINGSBURY RUN

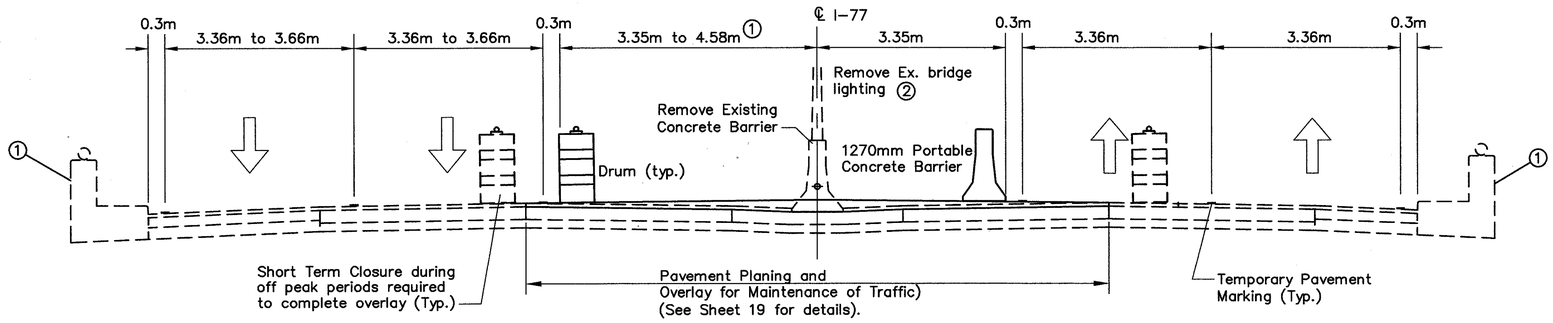
RAMPS W-N, E-N, 30-S AND S-30 CLOSURE DETAILS

CUY 77-23.458



Phase 1 – Typical Section

Sta. 2+430 to Sta. 2+745.7
Note: Limits of Structure: Sta. 2+660 to Sta. 3+280.

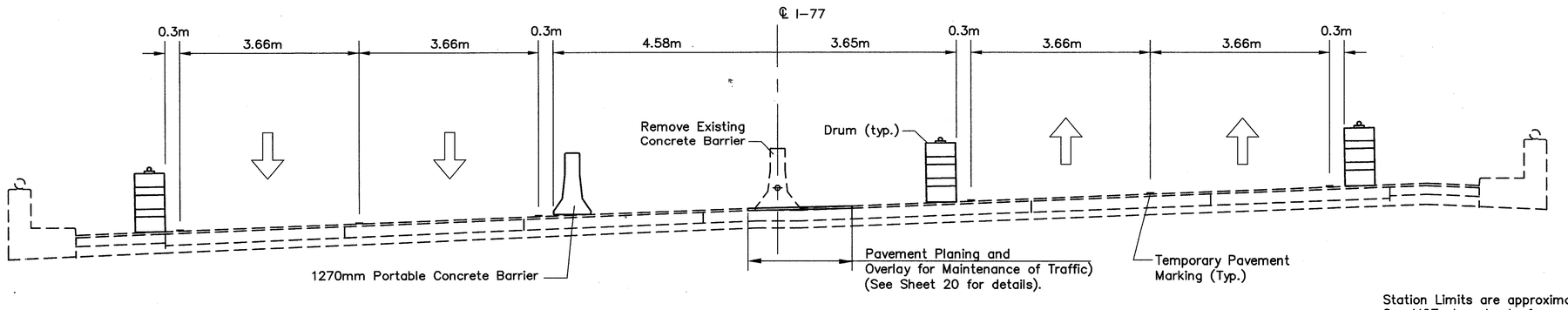


① Parapets are offset 10.7m Lt & Rt. at the location the I-490 bridge. Pavement width increases to 11.9m north of the I-490 bridge.

② The existing median bridge lighting shall be removed at the end of Phase 2. See sheet 108 for details of plate over the median barrier at the locations of light poles.

Phase 2 – Typical Section (South of Kingsbury Run Bridge)

Sta. 2+428 to Sta. 2+660



Phase 2 – Typical Section (North of Kingsbury Run Bridge)

Sta. 3+280 to Sta. 3+601

Station Limits are approximate. See MOT plan sheets for exact locations where typicals apply.

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\jobs\24621\techprod\drawings\14949MDB.dwg view = PLOT1

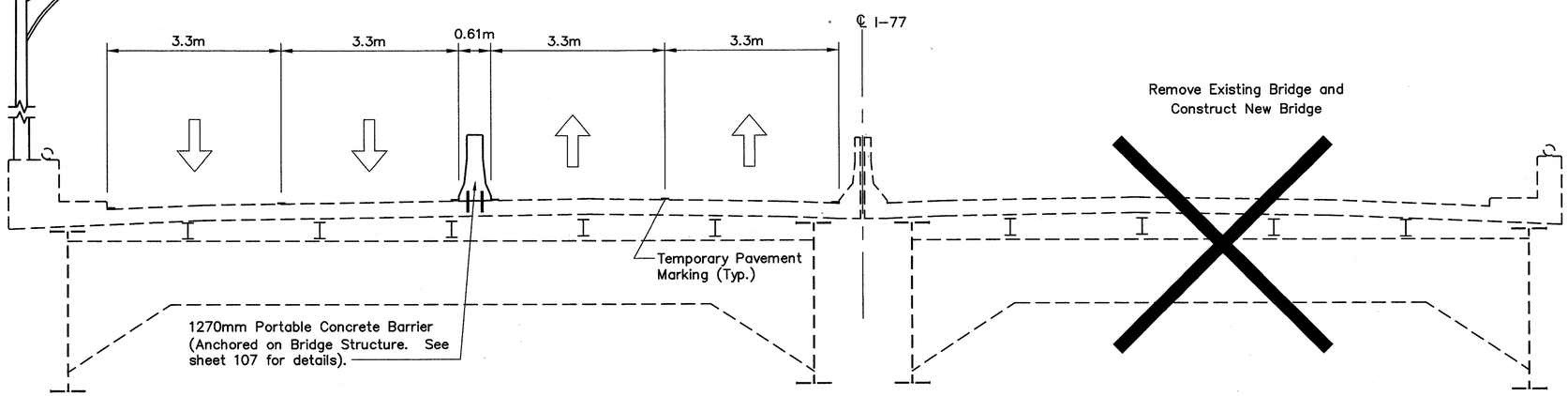
METRIC SCALE 1:50

CALCULATED MJW CHECKED NMA

MAINTENANCE OF TRAFFIC TYPICAL SECTIONS

CUY-77-23.458

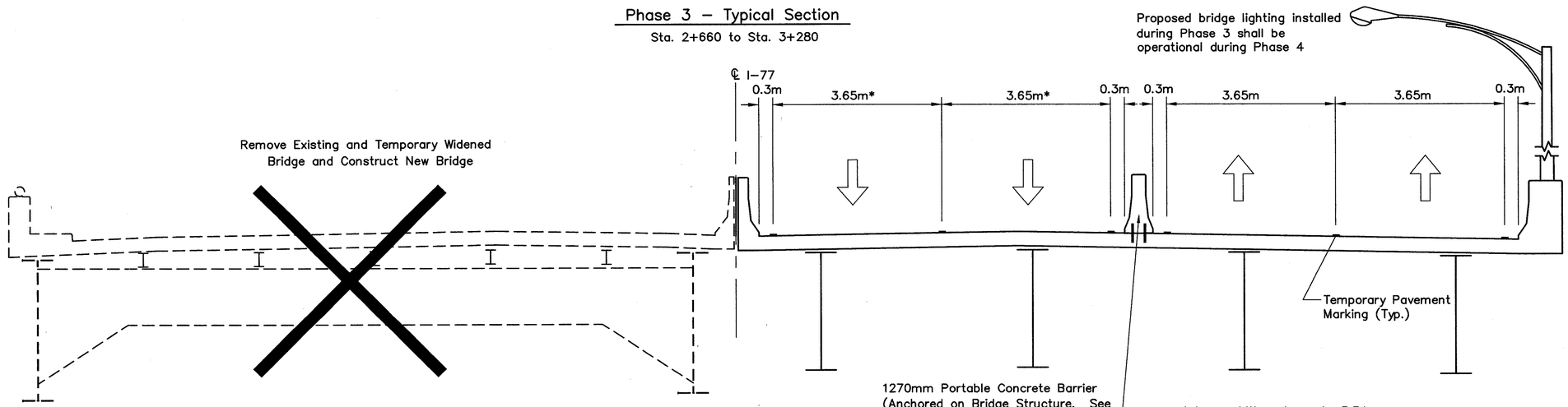
Temp. Lighting installed during Phase 1 shall be in operation during Phase 3.



Phase 3 – Typical Section

Sta. 2+660 to Sta. 3+280

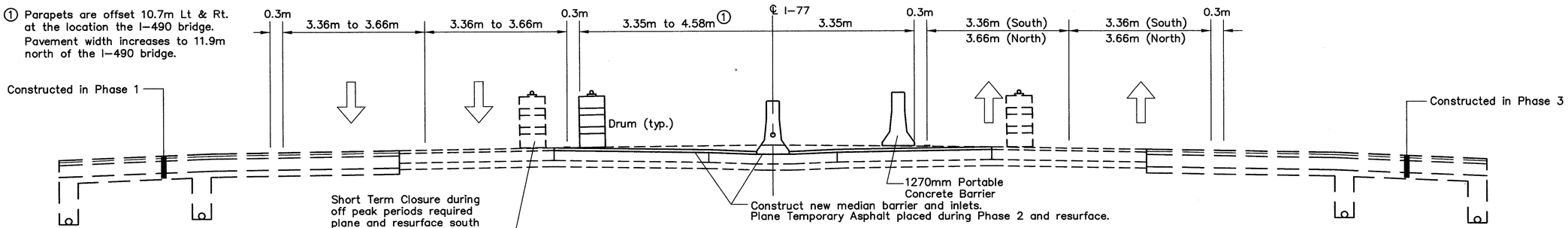
Proposed bridge lighting installed during Phase 3 shall be operational during Phase 4



* Lane width reduces to 3.34m at the North and South Abutment at the location of temporary sheeting and portable concrete barrier.

Phase 4 – Typical Section

Sta. 2+660 to Sta. 3+280



Phase 5 – Typical Section

Sta. 2+428 to Sta. 2+660
Sta. 3+280 to Sta. 3+601

Station Limits are approximate. See MOT plan sheets for exact locations where typicals apply.

HNTB ARCHITECTS ENGINEERS PLANNERS

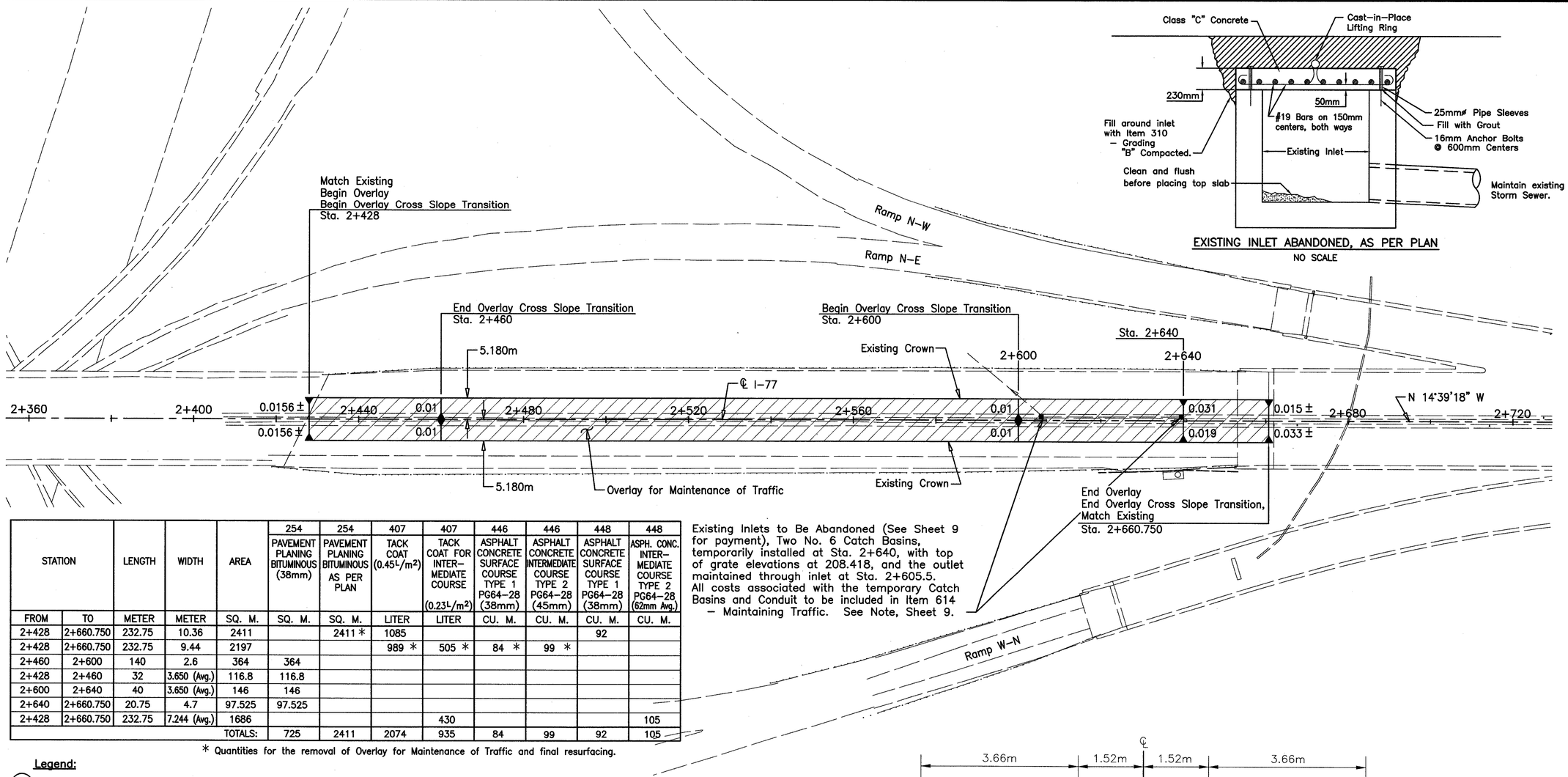
J:\Jobs\24621\techprod\drawings\14949MDB.dwg view = PLOT2

METRIC SCALE 1:50

CALCULATED MJW CHECKED NMA

MAINTENANCE OF TRAFFIC TYPICAL SECTIONS

CUY-77-23.458



EXISTING INLET ABANDONED, AS PER PLAN
NO SCALE

STATION		LENGTH	WIDTH	AREA	254 PAVEMENT PLANING BITUMINOUS (38mm)	254 PAVEMENT PLANING BITUMINOUS AS PER PLAN	407 TACK COAT (0.45L/m²)	407 TACK COAT FOR INTER–MEDIATE COURSE (0.23L/m²)	446 ASPHALT CONCRETE SURFACE COURSE TYPE 1 PG64–28 (38mm)	446 ASPHALT CONCRETE INTERMEDIATE COURSE TYPE 2 PG64–28 (45mm)	448 ASPHALT CONCRETE SURFACE COURSE TYPE 1 PG64–28 (38mm)	448 ASPH. CONC. INTER–MEDIATE COURSE TYPE 2 PG64–28 (62mm Avg.)
FROM	TO	METER	METER	SQ. M.	SQ. M.	SQ. M.	LITER	LITER	CU. M.	CU. M.	CU. M.	CU. M.
2+428	2+660.750	232.75	10.36	2411		2411 *	1085				92	
2+428	2+660.750	232.75	9.44	2197			989 *	505 *	84 *	99 *		
2+460	2+600	140	2.6	364	364							
2+428	2+460	32	3.650 (Avg.)	116.8	116.8							
2+600	2+640	40	3.650 (Avg.)	146	146							
2+640	2+660.750	20.75	4.7	97.525	97.525							
2+428	2+660.750	232.75	7.244 (Avg.)	1686				430				105
				TOTALS:	725	2411	2074	935	84	99	92	105

* Quantities for the removal of Overlay for Maintenance of Traffic and final resurfacing.

Existing Inlets to Be Abandoned (See Sheet 9 for payment), Two No. 6 Catch Basins, temporarily installed at Sta. 2+640, with top of grate elevations at 208.418, and the outlet maintained through inlet at Sta. 2+605.5. All costs associated with the temporary Catch Basins and Conduit to be included in Item 614 – Maintaining Traffic. See Note, Sheet 9.

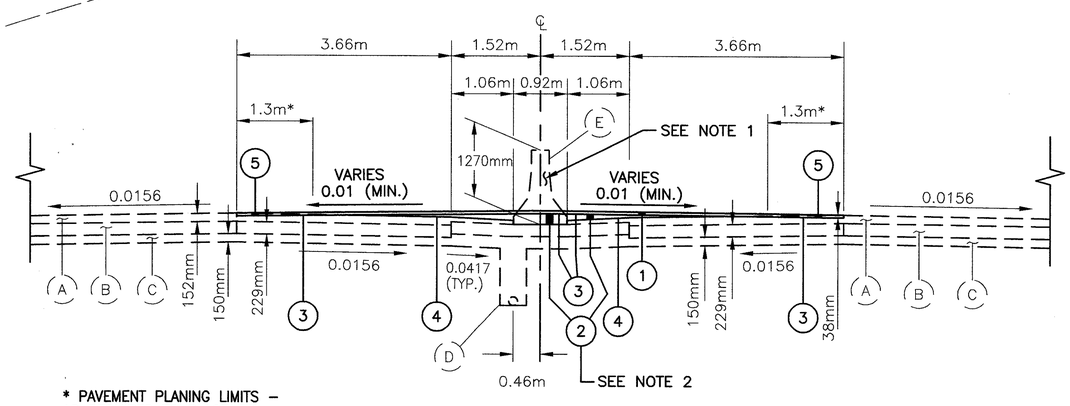
Legend:

(1) Item 448 – Asphalt Concrete Surface Course, Type 1, PG64–28
(2) Item 448 – Asphalt Concrete Intermediate Course, Type 2, PG64–28
(3) Item 407 – Tack Coat
(4) Item 407 – Tack Coat for Intermediate Course
(5) Item 254 – Pavement Planing, Bituminous (38mm)

Notes:

1.) To be removed and subsequently replaced, See Roadway Plans for removal and replacement quantities.
2.) Use minimum depth of intermediate course as required to obtain 0.01 cross slope on one side of ℄. Cross slope of opposite side varies as required.
3.) For Proposed Roadway Typical Sections see sheet 3.

(A) Existing 152mm ± Asphalt Concrete
(B) Existing 229mm ± Reinforced Concrete Pavement
(C) Existing 152mm ± Aggregate Base
(D) Existing Underdrain
(E) Existing 1270mm Concrete Barrier



* PAVEMENT PLANING LIMITS – AS REQUIRED TO PLACE 38mm SURFACE COURSE.

Overlay for Maintenance of Traffic
Sta. 2+428.000 to Sta. 2+640.000

HNTB ARCHITECTS ENGINEERS PLANNERS

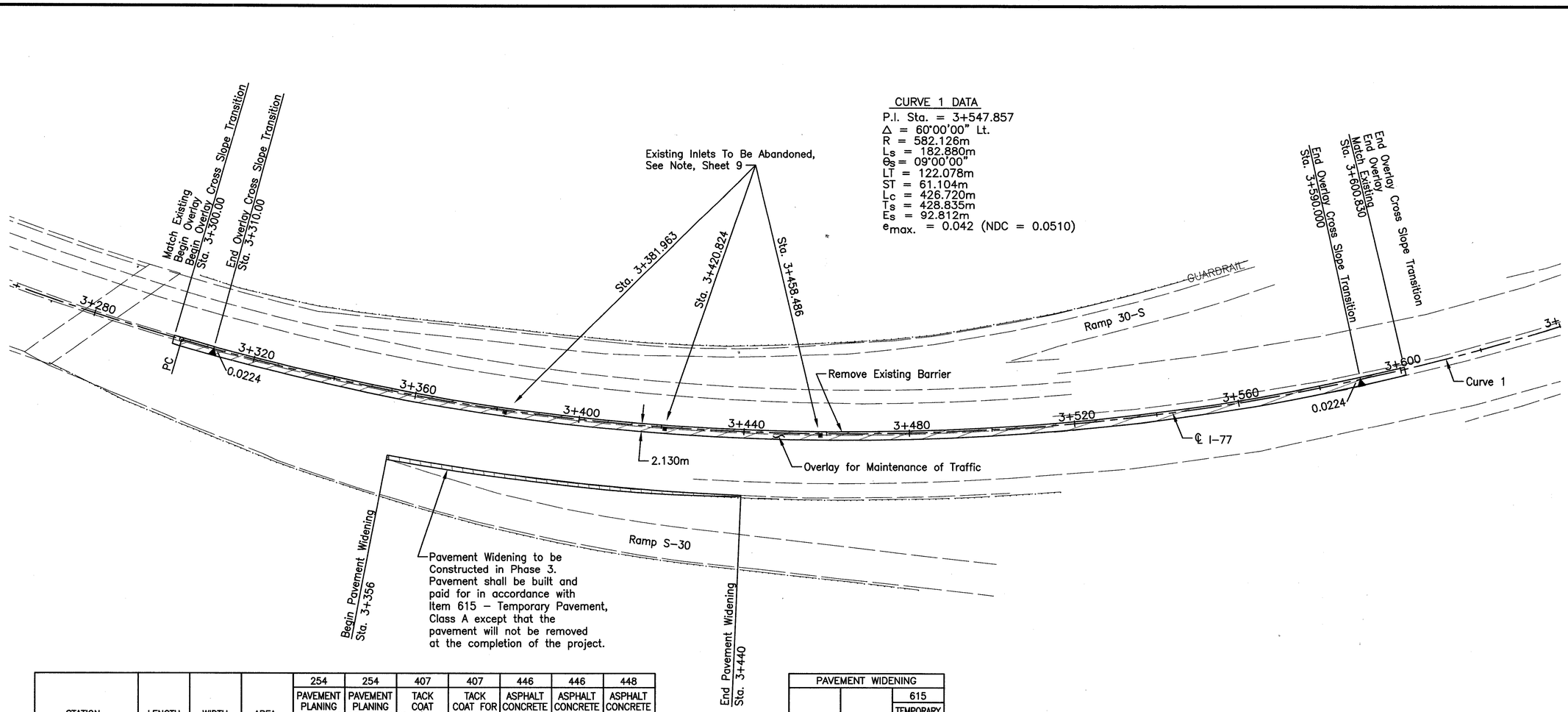
HORIZONTAL SCALE 1:500

CALCULATED ZSS CHECKED MJW

TEMPORARY OVERLAY PLAN STA. 2+430 TO STA. 2+640

CUY–77–23.458

J:\JOBS\24621\TECHPROD\DRAWINGS\14949MDA.dwg view = PLOT1



STATION		LENGTH	WIDTH	AREA	254 PAVEMENT PLANING BITUMINOUS (38mm)	254 PAVEMENT PLANING BITUMINOUS AS PER PLAN	407 TACK COAT (0.45 L/m²)	407 TACK COAT FOR INTERMEDIATE COURSE (0.23 L/m²)	446 ASPHALT CONCRETE SURFACE COURSE TYPE 1 PG64-28 (38mm)	446 ASPHALT CONCRETE INTERMEDIATE COURSE TYPE 2 PG64-28 (45mm)	448 ASPHALT CONCRETE SURFACE COURSE TYPE 1 PG64-28 (47mm AVG.)
FROM	TO	METER	METER	SQ. M.	SQ. M.	SQ. M.	LITER	LITER	CU. M.	CU. M.	CU. M.
3+300	3+601	301	2.13	641		641 *	289				30
3+300	3+601	301	1.21	364	364						
3+300	3+601	301	1.81*	545				125 *	21 *	25*	
				TOTALS:	364	641	289	125	21	25	30

* Quantities for the removal of Overlay for Maintenance of Traffic and final resurfacing.
Includes 0.3mm additional width on each side outside of existing barrier base.

PAVEMENT WIDENING		
STATION	WIDTH	615 TEMPORARY PAVEMENT CLASS A
	METER	SQ. M.
3+356	1.1	25.2
3+380	1.0	19.0
3+400	0.9	17.0
3+420	0.8	11.0
3+440	0.3	
	TOTALS:	73

Legend:

(1) Item 448 – Asphalt Concrete Surface Course, Type 1, PG64-28

(3) Item 407 – Tack Coat

(4) Item 254 – Pavement Planing, Bituminous (38mm)

Notes:

1.) To be removed and subsequently replaced, See Roadway Plans for removal and replacement quantities.

2.) For Existing Inlet Abandoned detail see sheet 19.

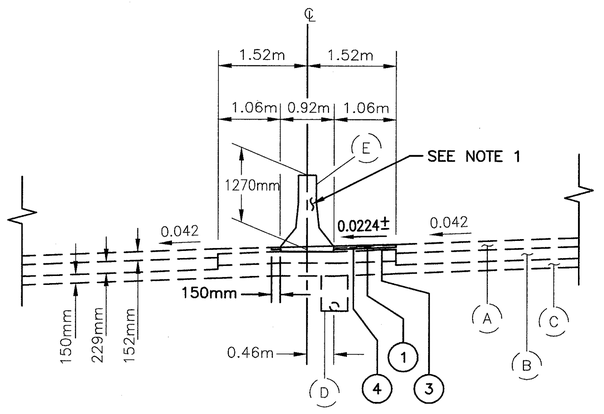
(A) Existing 152mm ± Asphalt Concrete

(B) Existing 229mm ± Reinforced Concrete Pavement

(C) Existing 152mm ± Aggregate Base

(D) Existing Underdrain

(E) Existing 1270mm Concrete Barrier



Overlay for Maintenance of Traffic
Sta. 3+300.000 to Sta. 3+601.000

HNTB ARCHITECTS ENGINEERS PLANNERS

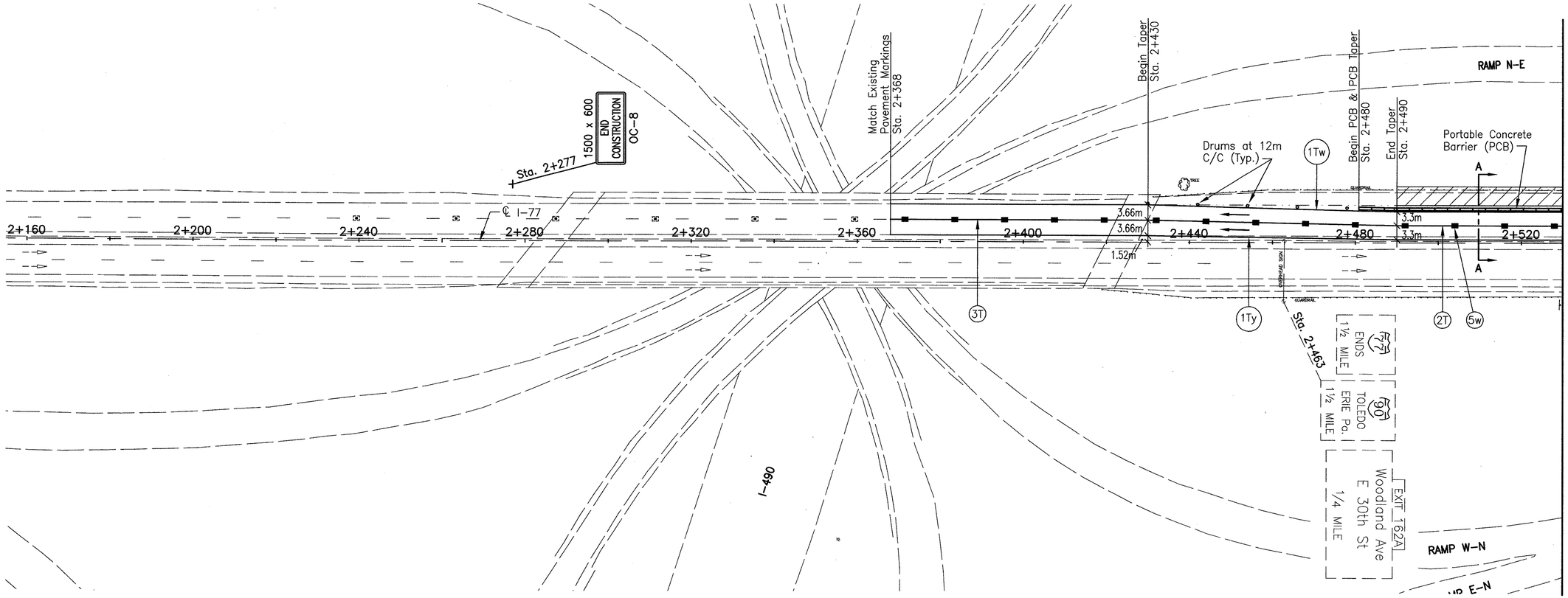
J:\JOBS\24621\TECHPROD\DRAWINGS\14949MDA.dwg view = PLOT2

CALCULATED ZSS CHECKED MJW

HORIZONTAL SCALE 1:500

TEMPORARY OVERLAY PLAN STA. 3+300 TO STA. 3+601

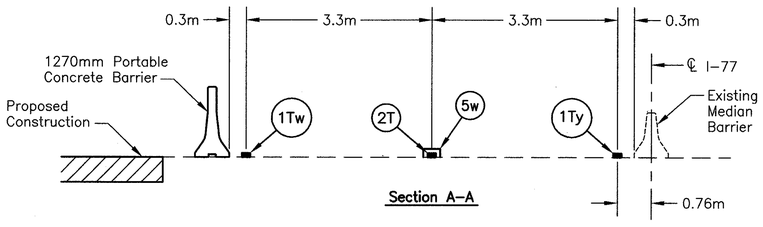
CUY-77-23.458



MATCHLINE STA. 2+530 SEE SHEET 22.

PHASE 1			
STATION		SIDE	614 TEMPORARY RAISED PAVEMENT MARKER (WHITE)
FROM	TO		EACH
2+368	3+038	LT.	59
2+708	2+800	LT.	12
2+800	3+038	LT.	21
TOTAL :			92

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16
TYPICAL SECTION	18



LEGEND

- EXISTING SIGN TO REMAIN
- EXISTING SIGN TO BE REMOVED
- EXISTING SIGN TO BE OVERLAYED
- PROPOSED SIGN
- DIRECTIONAL ARROW
- PORTABLE CONCRETE BARRIER
- PROPOSED CONSTRUCTION
- EXISTING RAISED PAVEMENT MARKER
- TEMPORARY RAISED PAVEMENT MARKER (12m SPACING)

(1T) ITEM 614 – TEMPORARY EDGE LINE, CLASS 1, 740.06 TYPE I
(1) ITEM 614 – TEMPORARY EDGE LINE, CLASS 1, 642 PAINT
(2T) ITEM 614 – TEMPORARY LANE LINE, CLASS 1, 740.06 TYPE I
(2) ITEM 614 – TEMPORARY LANE LINE, CLASS 1, 642 PAINT
(3T) ITEM 614 – TEMPORARY CHANNELIZING LINE, CLASS 1, 740.06 TYPE I
(3) ITEM 614 – TEMPORARY CHANNELIZING LINE, CLASS 1, 642 PAINT
(4T) ITEM 614 – TEMPORARY TRANSVERSE LINE, CLASS 1, 740.06 TYPE I
(4) ITEM 614 – TEMPORARY TRANSVERSE LINE, CLASS 1, 642 PAINT
(5w) ITEM 614 – TEMPORARY RAISED PAVEMENT MARKER

w = WHITE, y = YELLOW } IN BALLOON CALLOUT

HNTB ARCHITECTS ENGINEERS PLANNERS

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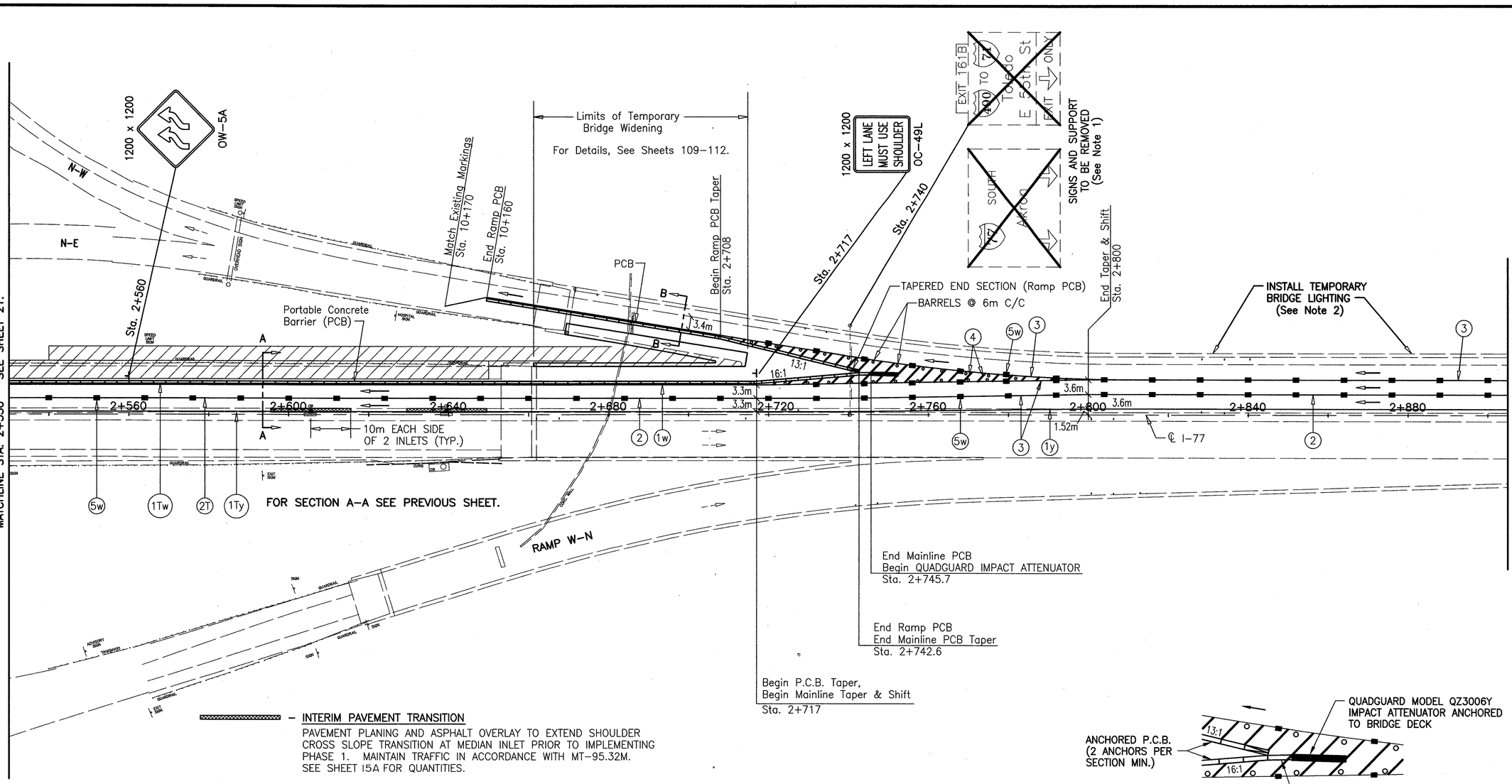
HORIZONTAL SCALE 1:500

CALCULATED MJW CHECKED NMA

MAINTENANCE OF TRAFFIC PHASE 1

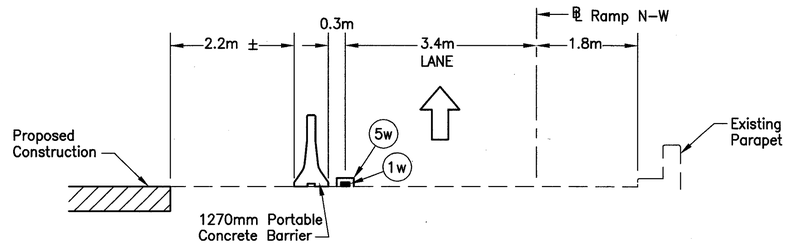
CUY-77-23.458



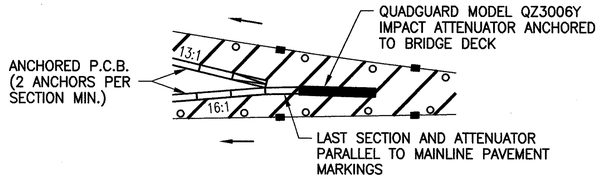
— INTERIM PAVEMENT TRANSITION

PAVEMENT PLANING AND ASPHALT OVERLAY TO EXTEND SHOULDER CROSS SLOPE TRANSITION AT MEDIAN INLET PRIOR TO IMPLEMENTING PHASE 1. MAINTAIN TRAFFIC IN ACCORDANCE WITH MT-95.32M. SEE SHEET 15A FOR QUANTITIES.

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16
LEGEND	21
SECTION A-A	21
TYPICAL SECTION	18
TEMPORARY LIGHTING	88-89
TEMPORARY BRIDGE WIDENING	109-112



Section B-B



TEMPORARY IMPACT ATTENUATOR DETAIL

NOTES:

1.) EXISTING OVERHEAD SIGNS AND SUPPORTS ARE TO BE REMOVED AT THE END OF PHASE 1 JUST PRIOR TO IMPLEMENTING PHASE 2.

2.) THE TEMPORARY BRIDGE LIGHTING IS TO BE INSTALLED DURING OFF-PEAK HOURS USING A SINGLE LANE CLOSURE PRIOR TO SETTING UP THE WORK ZONE AT THE OFF RAMP.

HNTB ARCHITECTS ENGINEERS PLANNERS

HORIZONTAL SCALE 1:500

CALCULATED MJW CHECKED NMA

MAINTENANCE OF TRAFFIC PHASE 1

CUY-77-23.458

22
295

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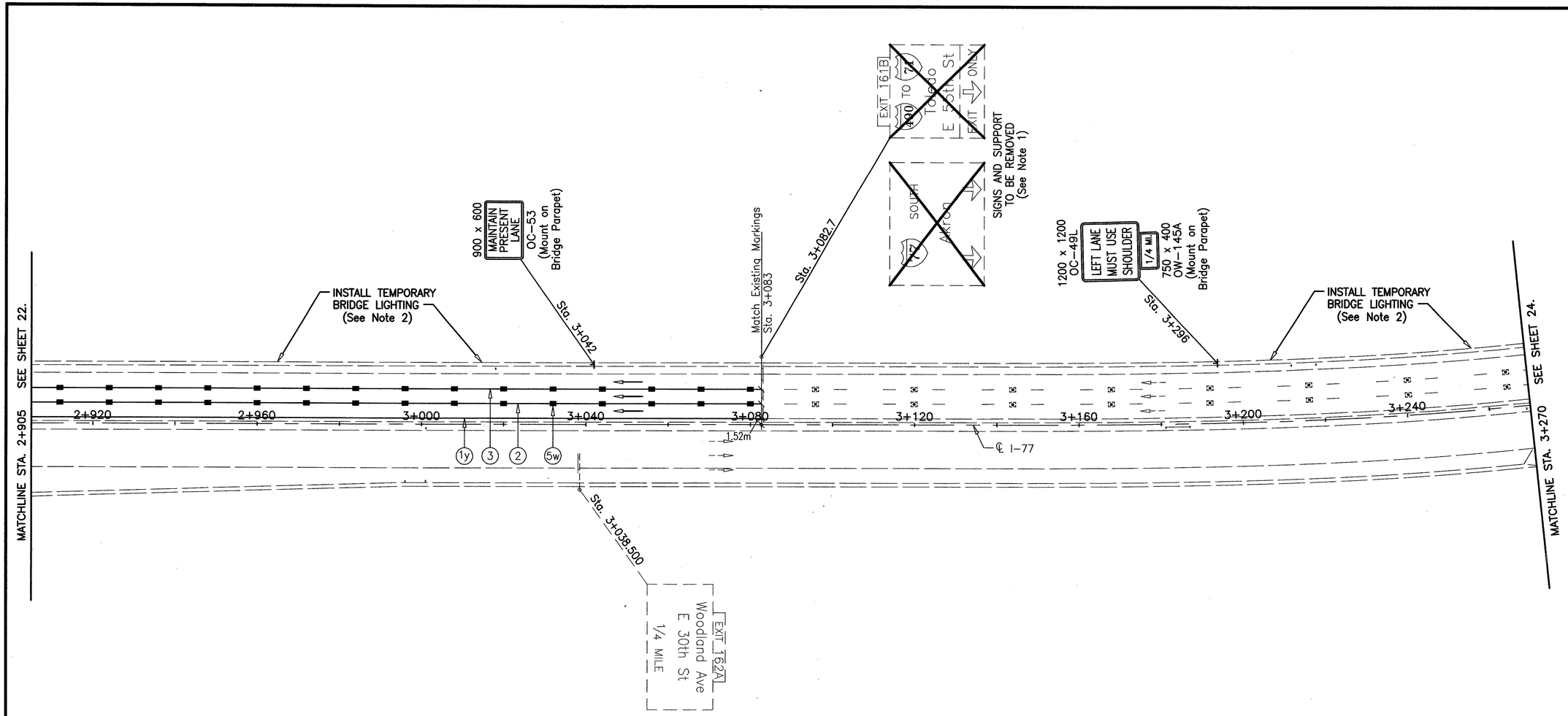

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16
LEGEND	21
TYPICAL SECTION	18
TEMPORARY LIGHTING	88-89

NOTES:

1.) EXISTING OVERHEAD SIGNS AND SUPPORTS ARE TO BE REMOVED AT THE END OF PHASE 1 JUST PRIOR TO IMPLEMENTING PHASE 2.

2.) THE TEMPORARY BRIDGE LIGHTING IS TO BE INSTALLED DURING OFF-PEAK HOURS USING A SINGLE LANE CLOSURE PRIOR TO SETTING UP THE WORK ZONE AT THE OFF RAMP.

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE 1:500

CALCULATED MJW
CHECKED NMA

MAINTENANCE OF TRAFFIC PHASE 1

CUY-77-23.458

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16
LEGEND	21
TYPICAL SECTION	18
TEMPORARY LIGHTING	88–89

HNTB ARCHITECTS ENGINEERS PLANNERS

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CALCULATED MJW
CHECKED NMA

HORIZONTAL SCALE
1:500

MAINTENANCE OF TRAFFIC
PHASE 1

CUY-77-23.458

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16
LEGEND	21
TYPICAL SECTION	18
TEMPORARY LIGHTING	88-89

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE
1:500

CALCULATED MJW
CHECKED NMA

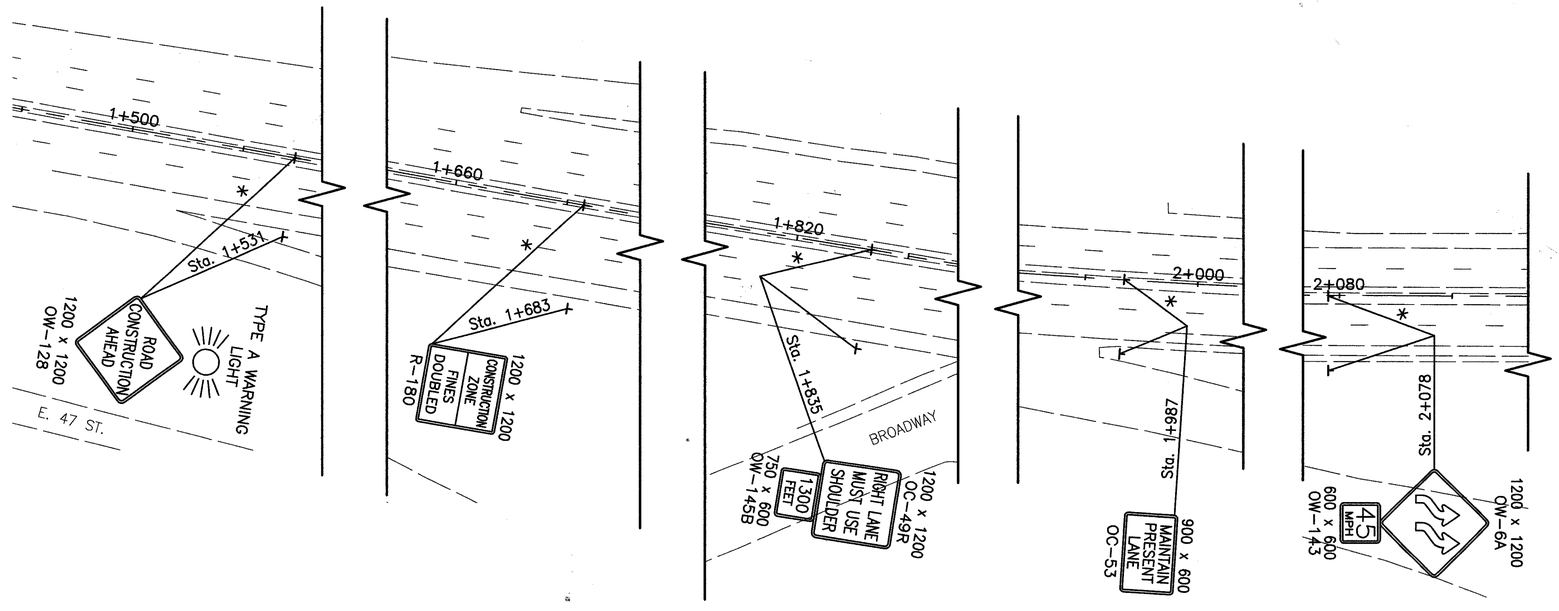
MAINTENANCE OF TRAFFIC
PHASE 1

CUY-77-23.458

FOR PHASES 2, 3, 4, AND 5 THE FOLLOWING SIGNS SHALL BE PLACED ON BOTH THE LEFT AND RIGHT SIDES OF NORTHBOUND I-77 AT THE LOCATIONS LISTED BELOW. THE LOCATION MAY BE FIELD ADJUSTED BY THE ENGINEER AFTER PLACEMENT TO BETTER ALIGN WITH TRAFFIC QUEUES.

TYPE A WARNING LIGHT

①	ROAD CONSTRUCTION AHEAD	OW-128	(1200 x 1200)	N.B. 3.2 KM (2 MILES) IN ADVANCE OF CROSSOVER N.B. 1.6 KM (1 MILE) IN ADVANCE OF CROSSOVER
	W/			
	* MILE	OW-145A	(750 x 400)	
②	WATCH FOR STOPPED TRAFFIC	OW-166	(1200 x 1200)	N.B. 3.05 KM IN ADVANCE OF CROSSOVER



* MOUNT SIGN CENTERED OVER CONCRETE BARRIER

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE 1:500

CALCULATED MJW CHECKED NMA

MAINTENANCE OF TRAFFIC PHASE 2

CUY-77-23.458

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16
LEGEND	21
TYPICAL SECTION	18

PHASE 2			
STATION		SIDE	614 TEMPORARY RAISED PAVEMENT MARKER (WHITE)
FROM	TO		EACH
2+169	4+037	RT.	156
2+297	4+059	LT.	147
4+019	4+359	LT.	33
TOTAL :			336

PHASE 5			
STATION		SIDE	614 TEMPORARY RAISED PAVEMENT MARKER (WHITE)
FROM	TO		EACH
2+169	4+037	RT.	156
2+297	4+059	LT.	147
4+019	4+359	LT.	33
TOTAL :			336

HNTB ARCHITECTS ENGINEERS PLANNERS

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CALCULATED MJW
CHECKED NMA

HORIZONTAL SCALE 1:500

MAINTENANCE OF TRAFFIC PHASE 2

CUY-77-23.458

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16
LEGEND	21
TYPICAL SECTION	18

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE
1:500

CALCULATED MJW
CHECKED NMA

MAINTENANCE OF TRAFFIC
PHASE 2

CUY-77-23.458

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16
LEGEND	21
TYPICAL SECTION	18

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE
1:500

CALCULATED M.JW
CHECKED NMA

MAINTENANCE OF TRAFFIC PHASE 2

CUY-77-23.458

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16
TYPICAL SECTION	18
LEGEND	21

HNTB ARCHITECTS ENGINEERS PLANNERS

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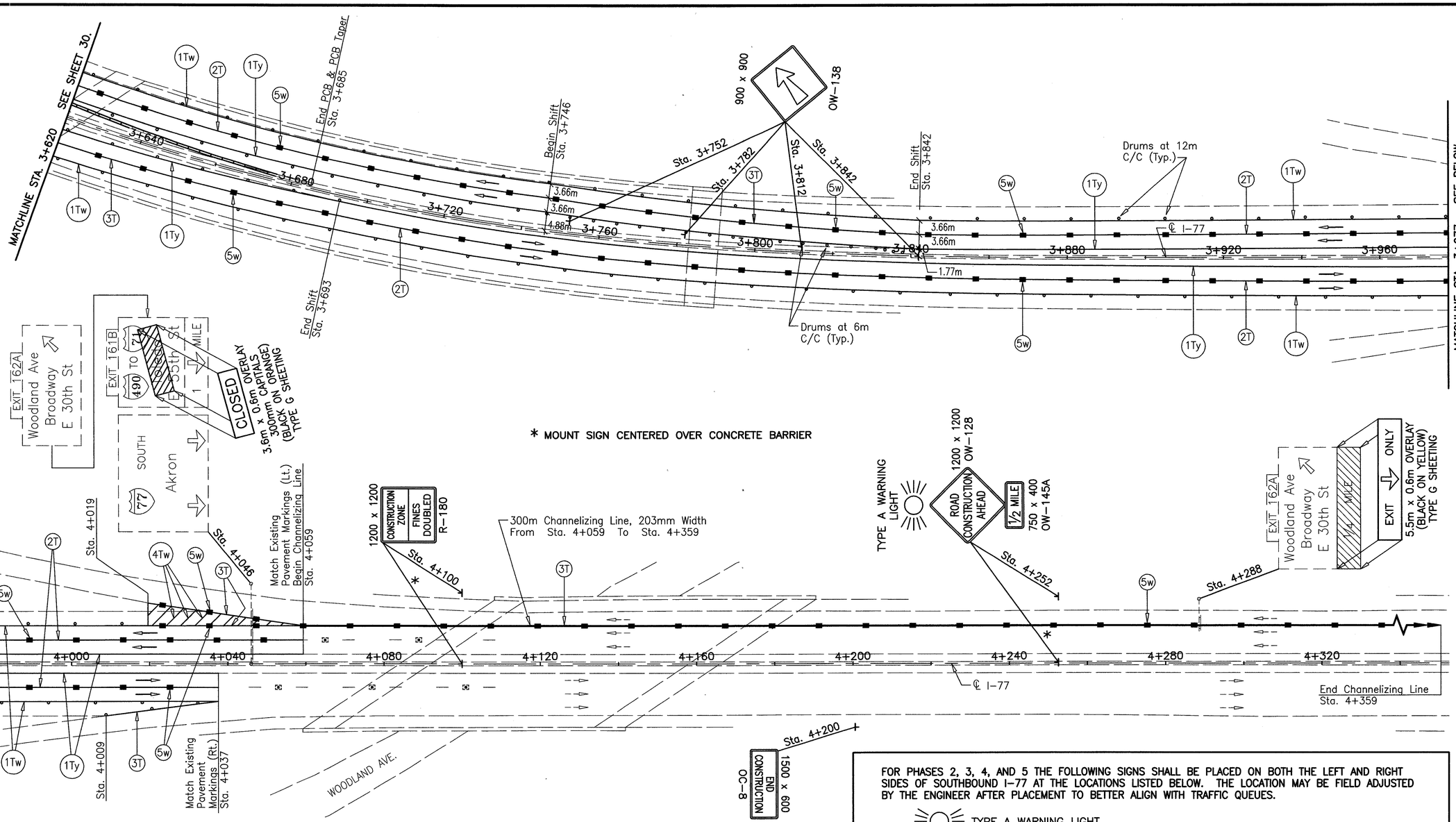
HORIZONTAL SCALE
1:500

CALCULATED MJW
CHECKED NMA

MAINTENANCE OF TRAFFIC PHASE 2

CUY-77-23.458



CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16
LEGEND	21
TYPICAL SECTION	18

FOR PHASES 2, 3, 4, AND 5 THE FOLLOWING SIGNS SHALL BE PLACED ON BOTH THE LEFT AND RIGHT SIDES OF SOUTHBOUND I-77 AT THE LOCATIONS LISTED BELOW. THE LOCATION MAY BE FIELD ADJUSTED BY THE ENGINEER AFTER PLACEMENT TO BETTER ALIGN WITH TRAFFIC QUEUES.

TYPE A WARNING LIGHT

ROAD CONSTRUCTION AHEAD — OW-128 (1200 x 1200) W/ 1 MILE OW-145A (750 x 400) — S.B. 1.6 KM (1 MILE) IN ADVANCE OF CROSSOVER

② WATCH FOR STOPPED TRAFFIC — OW-166 (1200 x 1200) — S.B. 1.2 KM IN ADVANCE OF CROSSOVER

HNTB ARCHITECTS ENGINEERS PLANNERS

HORIZONTAL SCALE 1:500

CALCULATED MJW
CHECKED NMA

MAINTENANCE OF TRAFFIC
PHASE 2

CUY-77-23.458

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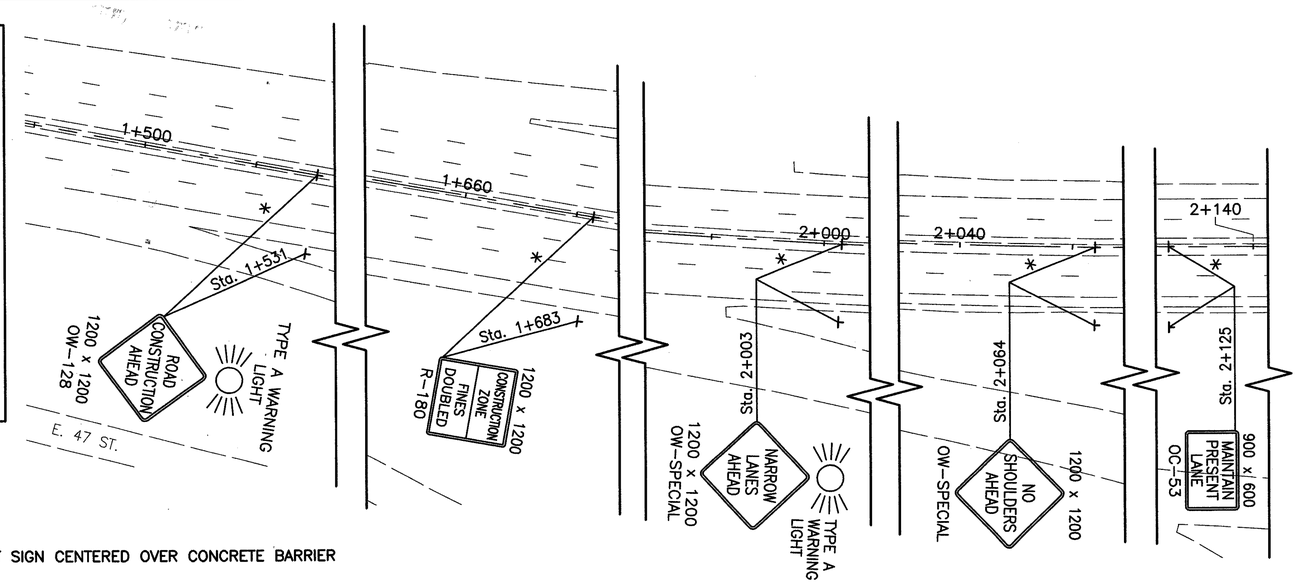
FOR PHASES 2, 3, 4, AND 5 THE FOLLOWING SIGNS SHALL BE PLACED ON BOTH THE LEFT AND RIGHT SIDES OF NORTHBOUND I-77 AT THE LOCATIONS LISTED BELOW. THE LOCATION MAY BE FIELD ADJUSTED BY THE ENGINEER AFTER PLACEMENT TO BETTER ALIGN WITH TRAFFIC QUEUES.

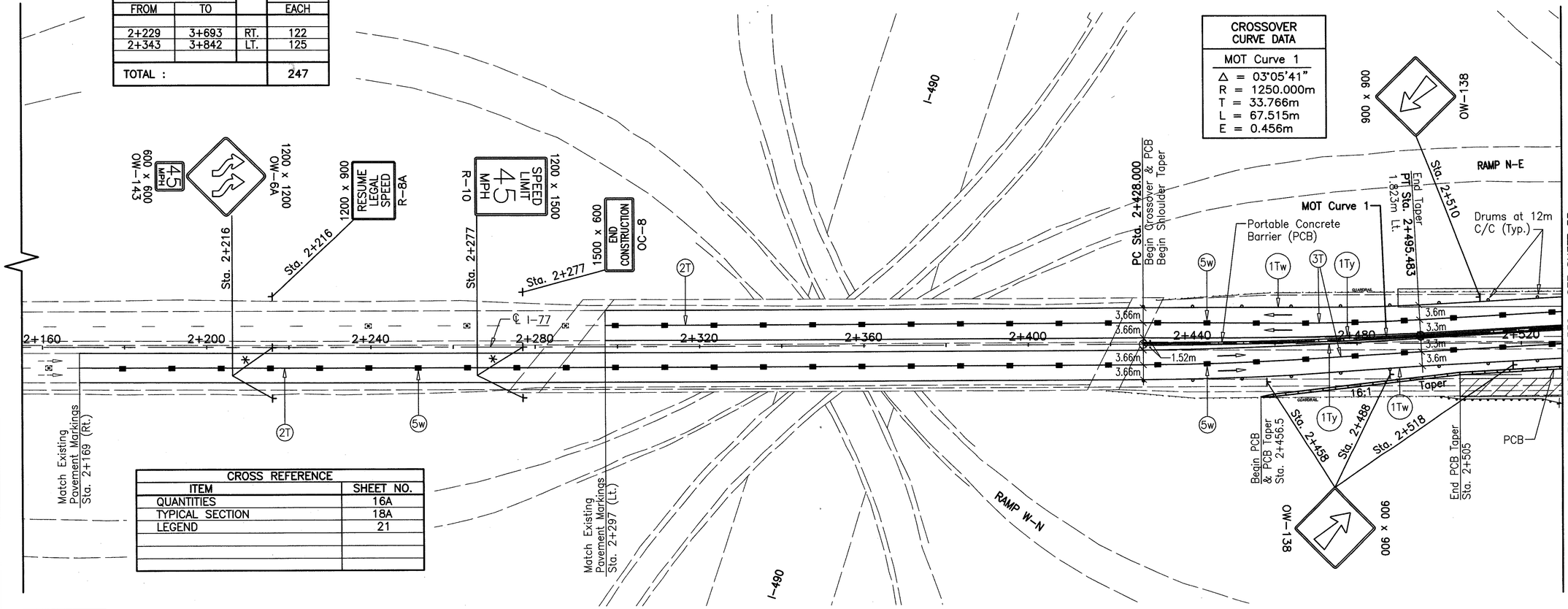
TYPE A WARNING LIGHT

①	ROAD CONSTRUCTION AHEAD	OW-128	(1200 x 1200)	N.B. 3.2 KM (2 MILES) IN ADVANCE OF CROSSOVER N.B. 1.6 KM (1 MILE) IN ADVANCE OF CROSSOVER
	W/			
	* MILE	OW-145A	(750 x 400)	
②	WATCH FOR STOPPED TRAFFIC	OW-166	(1200 x 1200)	N.B. 3.05 KM IN ADVANCE OF CROSSOVER



* MOUNT SIGN CENTERED OVER CONCRETE BARRIER

PHASE 3			614
STATION		SIDE	TEMPORARY RAISED PAVEMENT MARKER (WHITE)
FROM	TO		EACH
2+229	3+693	RT.	122
2+343	3+842	LT.	125
TOTAL :			247



CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16A
TYPICAL SECTION	18A
LEGEND	21

CROSSOVER CURVE DATA
MOT Curve 1
Δ = 03°05'41"
R = 1250.000m
T = 33.766m
L = 67.515m
E = 0.456m

HNTB ARCHITECTS ENGINEERS PLANNERS

HORIZONTAL SCALE 1:500

CALCULATED M.J.W. CHECKED N.M.A.

MAINTENANCE OF TRAFFIC PHASE 3

CUY-77-23.458

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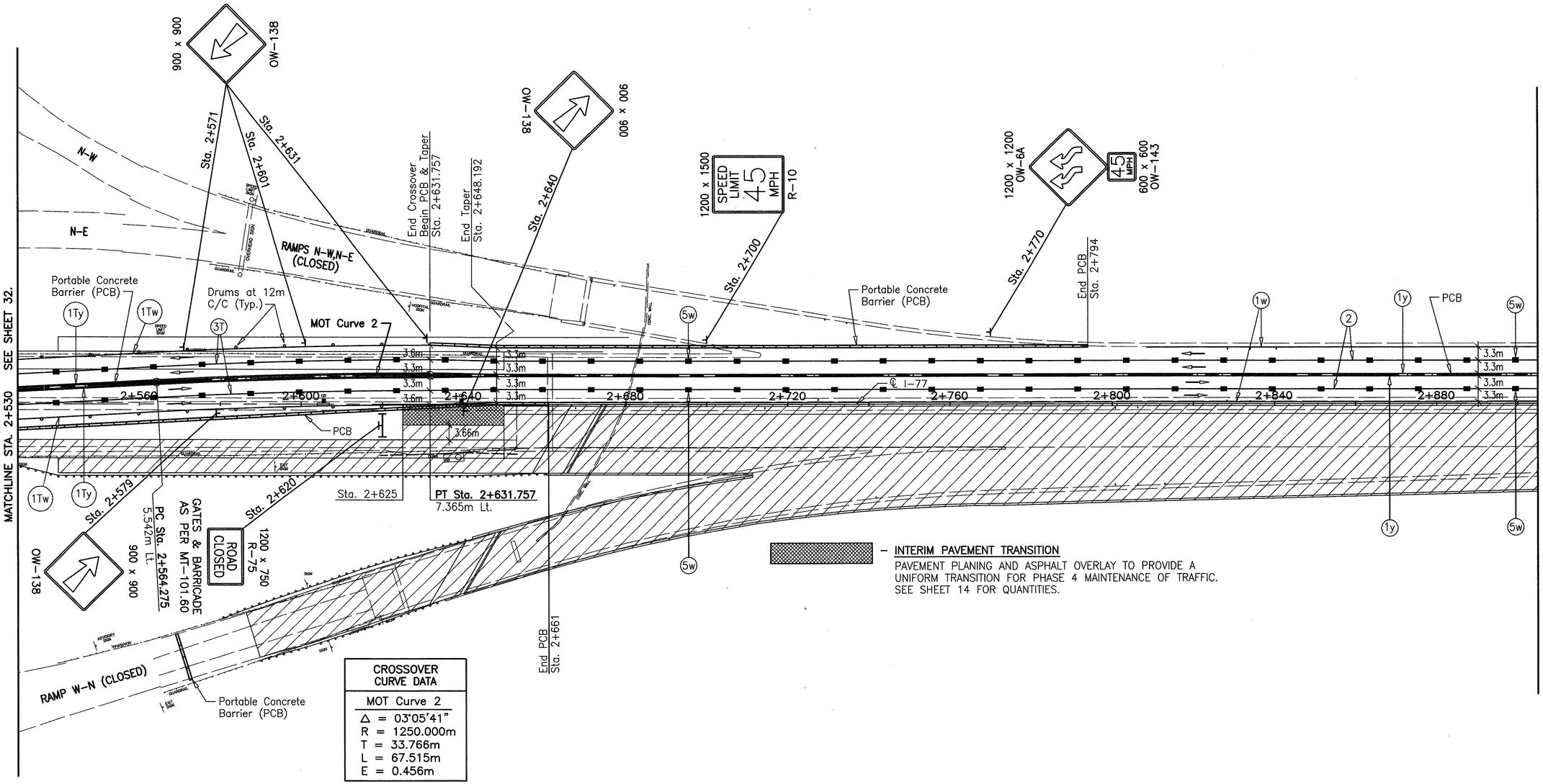

CROSSOVER CURVE DATA
MOT Curve 2
Δ = 03°05'41"
R = 1250.000m
T = 33.766m
L = 67.515m
E = 0.456m

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16A
TYPICAL SECTION	18A
LEGEND	21

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE 1:500

CALCULATED MJW
CHECKED NMA

MAINTENANCE OF TRAFFIC PHASE 3

CUY-77-23.458

NOTE:
SIGNS ARE TO BE MAINTAINED ON EXISTING AND PROPOSED STRUCTURE WHEN POSSIBLE.

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16A
TYPICAL SECTION	18A
LEGEND	21

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE 1:500

CALCULATED MJW
CHECKED NMA

MAINTENANCE OF TRAFFIC PHASE 3

CUY-77-23.458

CROSSOVER CURVE DATA

MOT Curve 3
Δ = 29°25'35"
R = 525.000m
T = 137.860m
L = 269.633m
E = 17.799m

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16A
TYPICAL SECTION	18A
LEGEND	21

HNTB ARCHITECTS ENGINEERS PLANNERS

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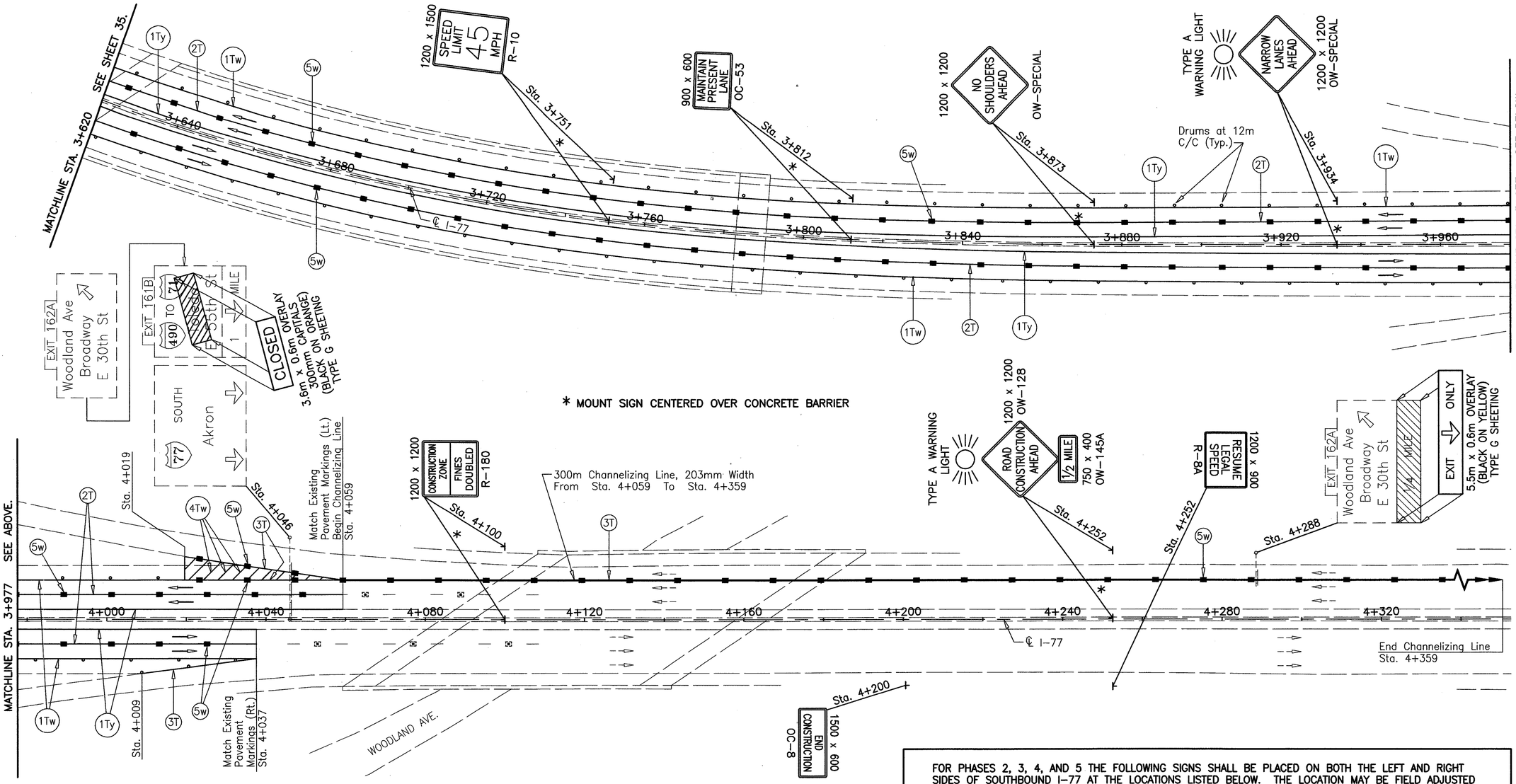
HORIZONTAL SCALE 1:500

CALCULATED MJW
CHECKED NMA

MAINTENANCE OF TRAFFIC PHASE 3

CUY-77-23.458



CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16A
TYPICAL SECTION	18A
LEGEND	21

HNTB ARCHITECTS ENGINEERS PLANNERS

FOR PHASES 2, 3, 4, AND 5 THE FOLLOWING SIGNS SHALL BE PLACED ON BOTH THE LEFT AND RIGHT SIDES OF SOUTHBOUND I-77 AT THE LOCATIONS LISTED BELOW. THE LOCATION MAY BE FIELD ADJUSTED BY THE ENGINEER AFTER PLACEMENT TO BETTER ALIGN WITH TRAFFIC QUEUES.

TYPE A WARNING LIGHT

ROAD CONSTRUCTION AHEAD OW-128 (1200 x 1200) S.B. 1.6 KM (1 MILE) IN ADVANCE OF CROSSOVER

W/

1 MILE OW-145A (750 x 400)

② WATCH FOR STOPPED TRAFFIC OW-166 (1200 x 1200) S.B. 1.2 KM IN ADVANCE OF CROSSOVER

CALCULATED MJW
CHECKED NMA

HORIZONTAL SCALE 1:500

MAINTENANCE OF TRAFFIC PHASE 3

CUY-77-23.458

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FOR PHASES 2, 3, 4, AND 5 THE FOLLOWING SIGNS SHALL BE PLACED ON BOTH THE LEFT AND RIGHT SIDES OF NORTHBOUND I-77 AT THE LOCATIONS LISTED BELOW. THE LOCATION MAY BE FIELD ADJUSTED BY THE ENGINEER AFTER PLACEMENT TO BETTER ALIGN WITH TRAFFIC QUEUES.

TYPE A WARNING LIGHT

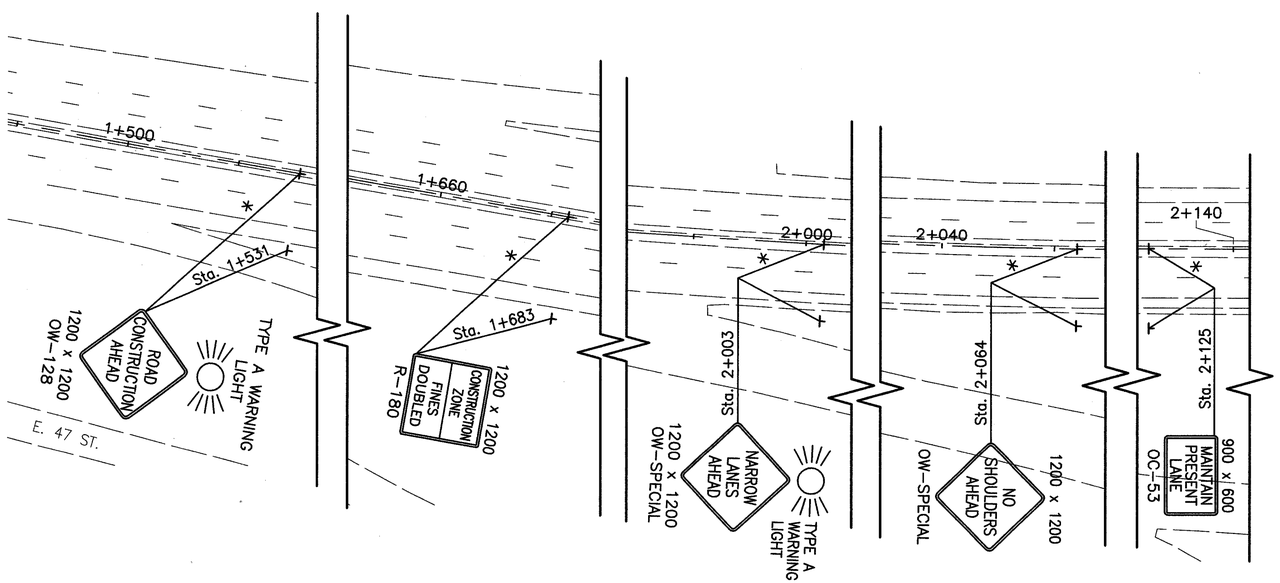
① ROAD CONSTRUCTION AHEAD — OW-128 (1200 x 1200) — N.B. 3.2 KM (2 MILES) IN ADVANCE OF CROSSOVER; N.B. 1.6 KM (1 MILE) IN ADVANCE OF CROSSOVER

W/

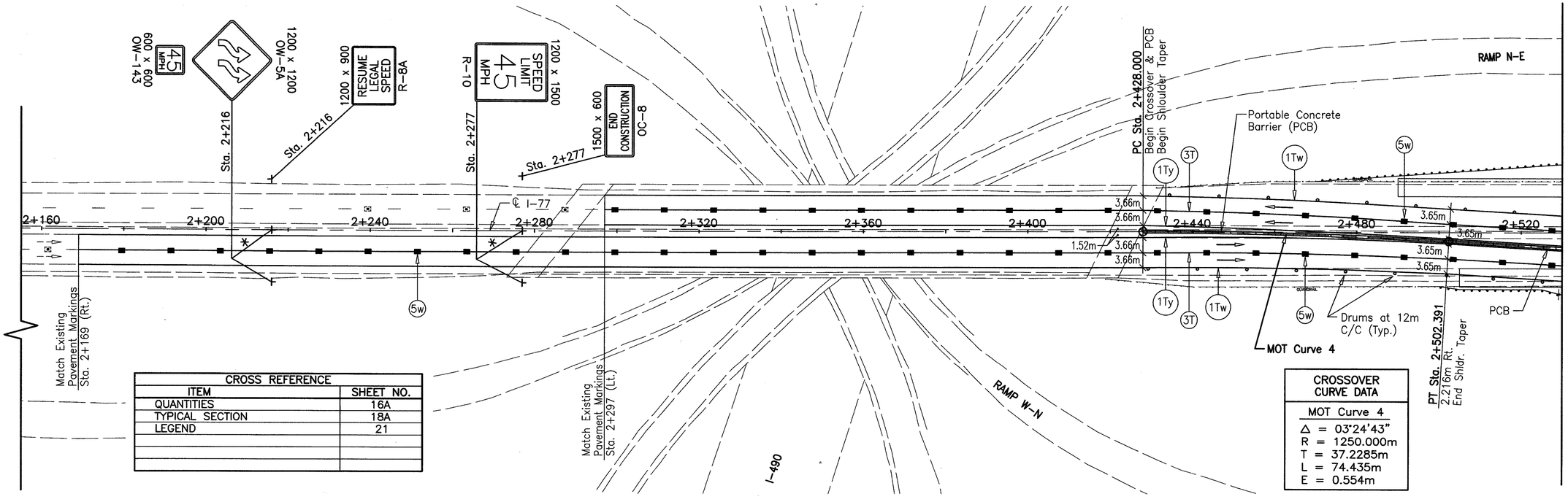
* MILE — OW-145A (750 x 400)

② WATCH FOR STOPPED TRAFFIC — OW-166 (1200 x 1200) — N.B. 3.05 KM IN ADVANCE OF CROSSOVER

PHASE 4			
STATION		SIDE	614 TEMPORARY RAISED PAVEMENT MARKER (WHITE)
FROM	TO		EACH
2+428	3+600	LT.	98
2+428	3+600	RT.	98
TOTAL :			196



* MOUNT SIGN CENTERED OVER CONCRETE BARRIER



CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16A
TYPICAL SECTION	18A
LEGEND	21

CROSSOVER CURVE DATA
MOT Curve 4
Δ = 03°24'43"
R = 1250.000m
T = 37.2285m
L = 74.435m
E = 0.554m

HNTB ARCHITECTS ENGINEERS PLANNERS

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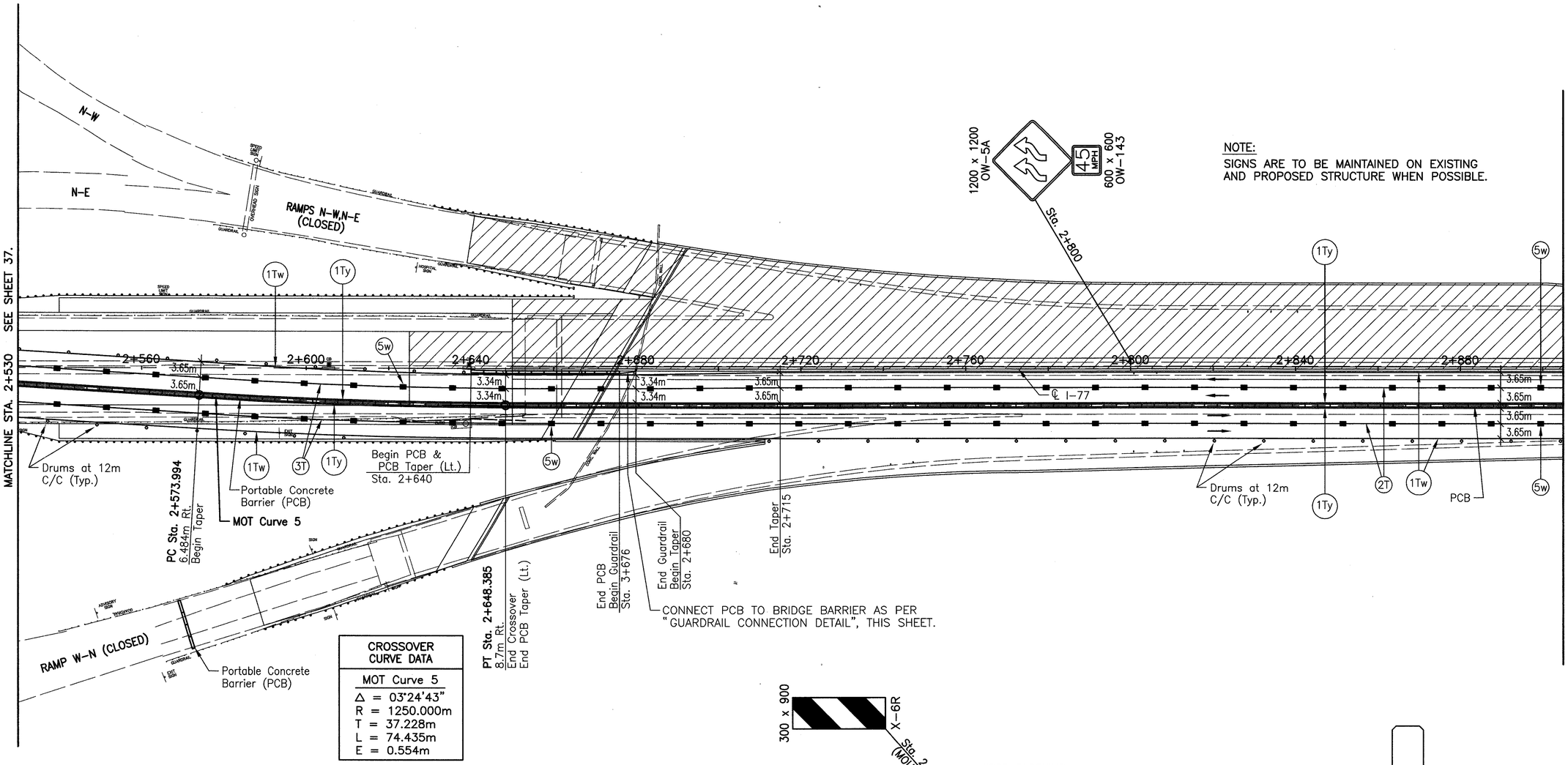
HORIZONTAL SCALE 1:500

CALCULATED MJW CHECKED NMA

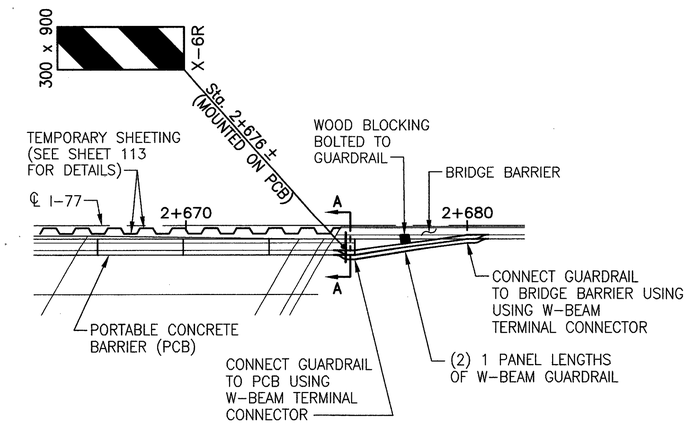
MAINTENANCE OF TRAFFIC PHASE 4

CUY-77-23.458

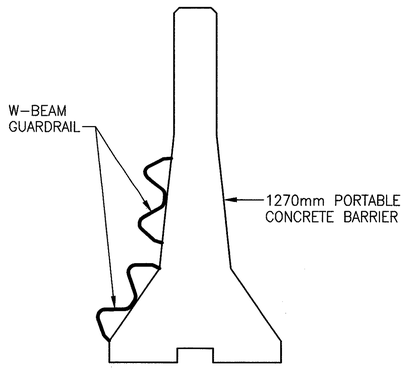


CROSSOVER CURVE DATA
MOT Curve 5
Δ = 03°24'43"
R = 1250.000m
T = 37.228m
L = 74.435m
E = 0.554m

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16A
TYPICAL SECTION	18A
LEGEND	21



GUARDRAIL CONNECTION DETAIL
NO SCALE



SECTION A-A
NO SCALE

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949MPW.dwg

HORIZONTAL SCALE
1:500

CALCULATED MJW
CHECKED NMA

MAINTENANCE OF TRAFFIC
PHASE 4

CUY-77-23.458

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16A
TYPICAL SECTION	18A
LEGEND	21

HNTB ARCHITECTS ENGINEERS PLANNERS

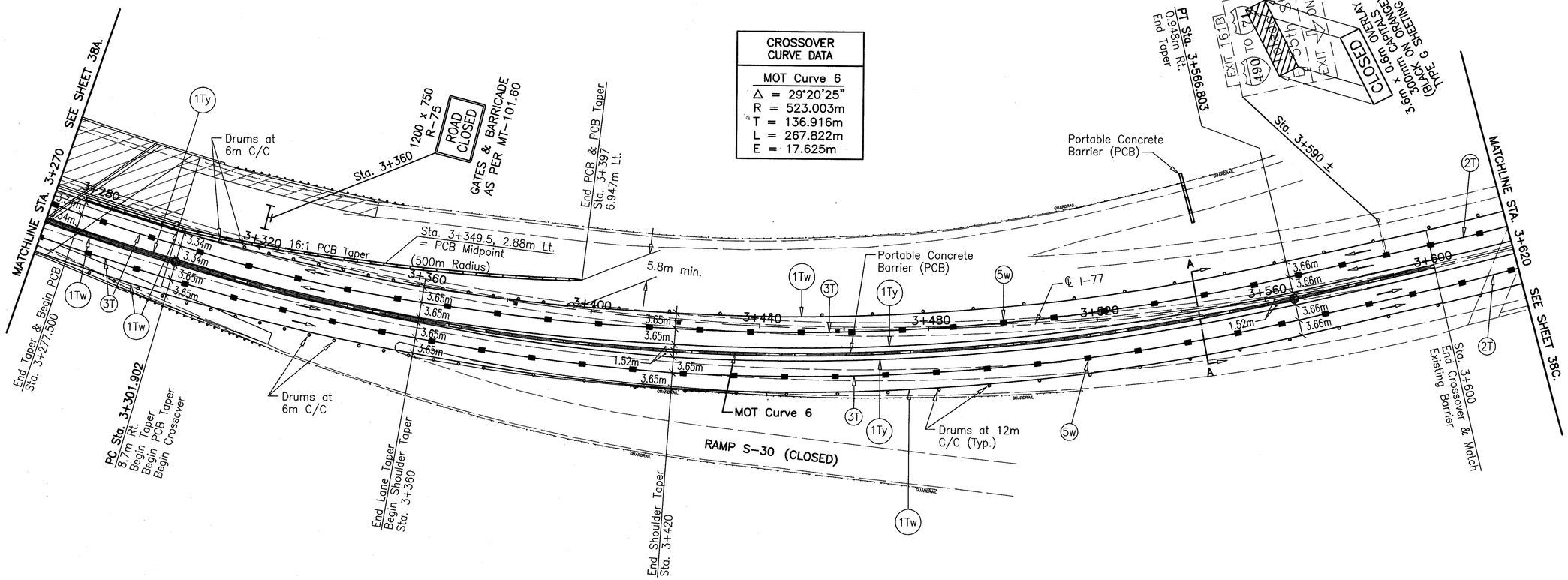
J:\JOBS\24621\TECHPROD\DRAWINGS\14949MPX.dwg

HORIZONTAL SCALE 1:500

CALCULATED MJW
CHECKED NMA

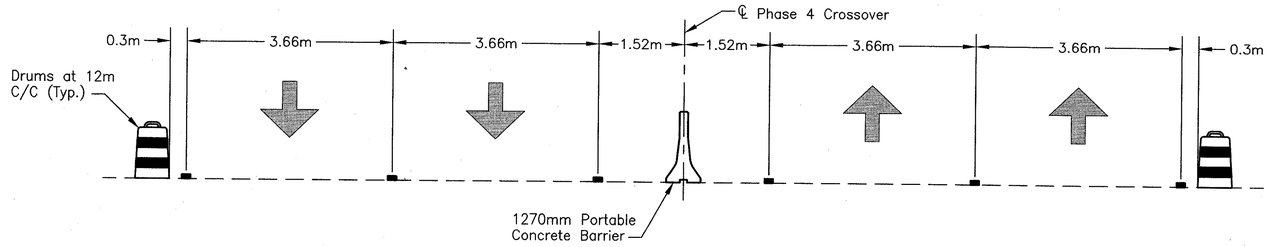
MAINTENANCE OF TRAFFIC PHASE 4

CUY-77-23.458



CROSSOVER CURVE DATA
MOT Curve 6
Δ = 29°20'25"
R = 523.003m
T = 136.916m
L = 267.822m
E = 17.625m

CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16A
TYPICAL SECTION	18A
LEGEND	21



Section A–A

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949MPY.dwg

HORIZONTAL SCALE 1:500

CALCULATED M.JW CHECKED NMA

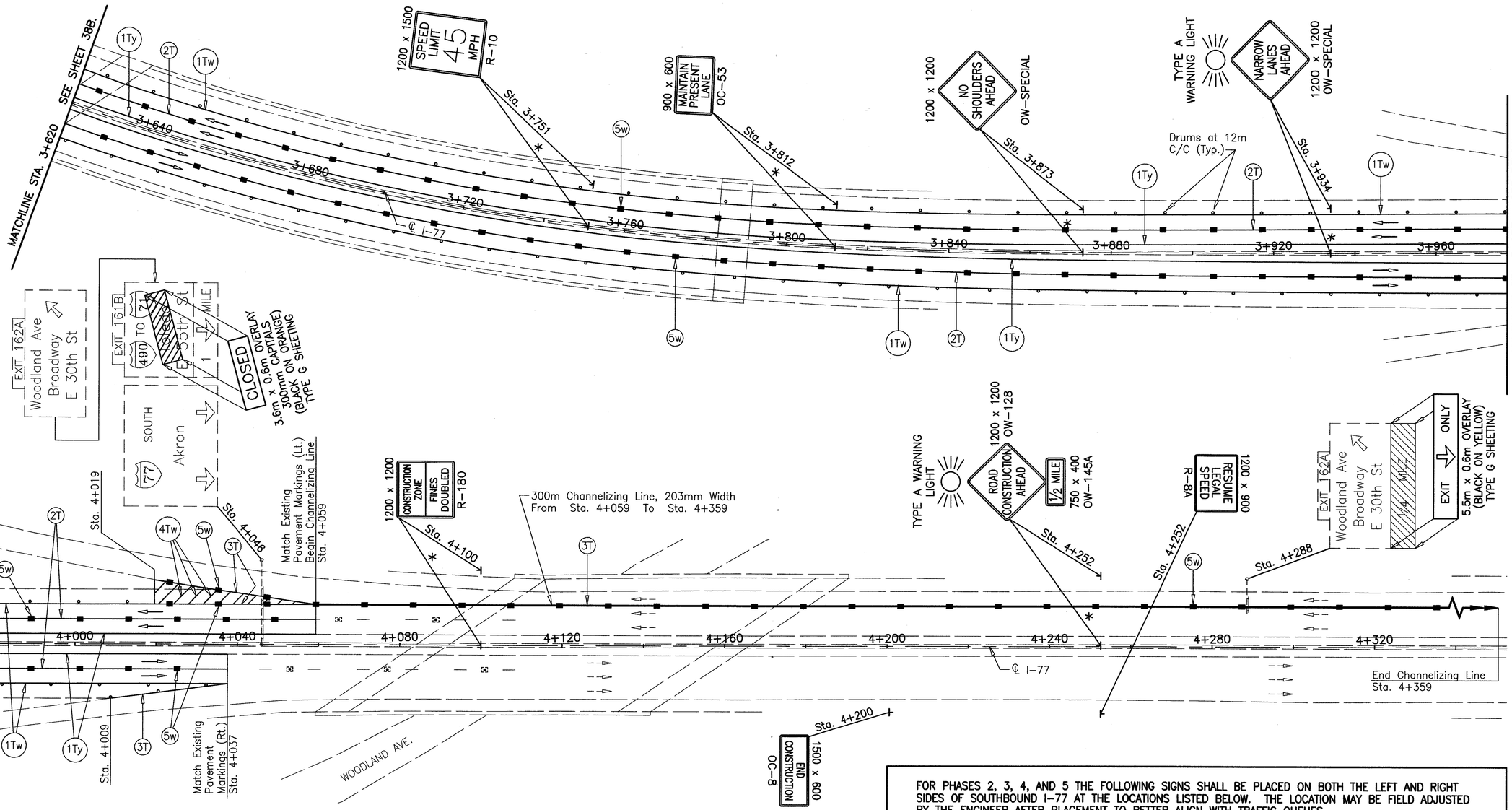
MAINTENANCE OF TRAFFIC PHASE 4

CUY-77-23.458

38B

295

MAINTENANCE OF TRAFFIC
PHASE 4



CROSS REFERENCE	
ITEM	SHEET NO.
QUANTITIES	16A
TYPICAL SECTION	18A
LEGEND	21

FOR PHASES 2, 3, 4, AND 5 THE FOLLOWING SIGNS SHALL BE PLACED ON BOTH THE LEFT AND RIGHT SIDES OF SOUTHBOUND I-77 AT THE LOCATIONS LISTED BELOW. THE LOCATION MAY BE FIELD ADJUSTED BY THE ENGINEER AFTER PLACEMENT TO BETTER ALIGN WITH TRAFFIC QUEUES.

TYPE A WARNING LIGHT

ROAD CONSTRUCTION AHEAD OW-128 (1200 x 1200) S.B. 1.6 KM (1 MILE) IN ADVANCE OF CROSSOVER

W/

1 MILE OW-145A (750 x 400)

② WATCH FOR STOPPED TRAFFIC OW-166 (1200 x 1200) S.B. 1.2 KM IN ADVANCE OF CROSSOVER

HNTB ARCHITECTS ENGINEERS PLANNERS

HORIZONTAL SCALE 1:500

CALCULATED MJW
CHECKED NMA

CUY-77-23.458

38C
295

J:\JOBS\24621\TECHPROD\DRAWINGS\14949MPZ.dwg

SHEET NUMBER																				COST PARTICIPATION		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	AS PER PLAN REFERENCE SHT.#
8	9	42	43	44		63	64	65	66	67	68	71		72H													
																										ROADWAY	
LUMP																						201	M11000	LUMP		CLEARING AND GRUBBING	
		578																				202	M22900	578	SQ. METER	APPROACH SLAB REMOVED	
		2883																				202	M23000	2883	SQ. METER	PAVEMENT REMOVED	
			550																			202	M30700	550	METER	CONCRETE BARRIER REMOVED	
				30										18								202	M35100	48	METER	PIPE REMOVED, 600 mm AND UNDER	
			537																			202	M38000	537	METER	GUARDRAIL REMOVED	
				1																		202	M58200	1	EACH	INLET REMOVED	
	5																					202	M58401	5	EACH	INLET ABANDONED, AS PER PLAN	9
				3																		202	M58500	3	EACH	CATCH BASIN ABANDONED	
	80																					SPECIAL	202M70100	80	METER	PIPE CLEANOUT, 254 mm	9
	60																					SPECIAL	202M70100	60	METER	PIPE CLEANOUT, 305 mm	9
	60																					SPECIAL	202M70100	60	METER	PIPE CLEANOUT, 457 mm	9
150			319																			202	M75000	469	METER	FENCE REMOVED	
			LUMP																			202	M98000	LUMP		REMOVAL MISC. : IMPACT ATTENUATOR REMOVED FOR STORAGE	8
						135	386	252	469	120	93	64										203	M12000	1519	CU. METER	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION	
		233				103	264	525	171	2255	294											203	M20000	3845	CU. METER	EMBANKMENT	
								7311			1801											203	M20001	9112	CU. METER	EMBANKMENT, AS PER PLAN	8
		4650																				203	M50000	4650	SQ. METER	SUBGRADE COMPACTION	
				963																		203	M55001	963	METER	DITCH CLEANOUT, AS PER PLAN	8,71A
		55																				203	M60100	55	METER	LINEAR GRADING	
			3																			604	M40501	3	EACH	REFERENCE MONUMENT, AS PER PLAN	43
			624.84																			606	M13000	624.84	METER	GUARDRAIL, TYPE 5	
			1																			606	M26100	1	EACH	ANCHOR ASSEMBLY, TYPE E	
			4																			606	M35000	4	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 1	
			2																			606	M35100	2	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 2	
200			131																			607	M23000	331	METER	FENCE, TYPE CLT	
			16																			622	M23405	16	METER	CONCRETE BARRIER, TYPE B-1270, AS PER PLAN	9,69
			518																			622	M23405	518	METER	CONCRETE BARRIER, TYPE B-1270, AS PER PLAN A	9,69
																										EROSION CONTROL	
	850																					207	M10000	850	SQ. METER	TEMPORARY SEEDING AND MULCHING	
	2900																					207	M30000	2900	METER	FILTER FABRIC FENCE	
	15																					207	M40000	15	METER	TEMPORARY SLOPE DRAIN	
	60																					207	M55500	60	SQ. METER	TEMPORARY DITCH PROTECTION	
	300																					207	M70000	300	EACH	STRAW OR HAY BALES	
	30			4																		601	M32200	34	CU. METER	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	
	40																					601	M34200	40	CU. METER	ROCK CHANNEL PROTECTION, TYPE C WITHOUT FILTER	
						393	642	1158	914	458	673											659	M10000	4238	SQ. METER	SEEDING AND MULCHING	
	200																					659	M14000	200	SQ. METER	REPAIR SEEDING AND MULCHING	
	200																					659	M20000	200	KILOGRAM	COMMERCIAL FERTILIZER	
	55																					659	M35000	55	CU. METER	WATER	
	2200																					659	M40000	2200	SQ. METER	MOWING	
				500																		670	M40000	500	SQ. METER	DITCH EROSION PROTECTION	

CALCULATED NMA/AKE
CHECKED M.JW

GENERAL SUMMARY

CUY-77-23.458

HNTB ARCHITECTS ENGINEERS PLANNERS

J: \JOBS\24621\TECHPROD\DRAWINGS\14949GG.dwg view = PLOT1

SHEET NUMBER																				COST PARTICIPATION		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	AS PER PLAN REFERENCE SHT.#
9	15A	19	20	42		44							71		72H												
																										DRAINAGE	
						0.7																602	M20000	0.7	CU. METER	CONCRETE MASONRY	
						49																603	M00900	49	METER	150mm CONDUIT, TYPE B	
14						12																603	M01500	26	METER	150mm CONDUIT, TYPE F, 707.42	
14																						603	M04400	14	METER	300mm CONDUIT, TYPE B	
						1																603	M04600	1	METER	300mm CONDUIT, TYPE C	
2						51																603	M05900	53	METER	375mm CONDUIT, TYPE B	
						50																603	M06100	50	METER	375mm CONDUIT, TYPE C	
						42																603	M06700	42	METER	375mm CONDUIT, TYPE F, 707.05 TYPE C	
						19																603	M07600	19	METER	450mm CONDUIT, TYPE C	
						2																604	M01600	2	EACH	CATCH BASIN, NO. 5	
						1																604	M04901	1	EACH	CATCH BASIN, NO. 2–3, AS PER PLAN	71A
5																						604	M14603	5	EACH	INLET, NO. 3B1270, AS PER PLAN	9
						1																604	M17900	1	EACH	INLET, PAVEMENT, 2.4m	
						1																604	M18700	1	EACH	INLET, PAVEMENT, 3.6m	
						2																604	M19100	2	EACH	INLET, PAVEMENT, 4.2m	
						2																604	M19900	2	EACH	INLET, PAVEMENT, 5.4m	
						1																604	M20300	1	EACH	INLET, PAVEMENT, 6.0m	
						3																604	M31500	3	EACH	MANHOLE, NO. 3	
						1																604	M35500	1	EACH	MANHOLE RECONSTRUCTED TO GRADE	
900																						SPECIAL	604M50000	900	KILOGRAM	MISCELLANEOUS METAL	9
						200																605	M11110	200	METER	150mm SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP	
						1083																605	M13410	1083	METER	150mm UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP	
																										PAVEMENT	
		725	364	417																		254	M01000	1506	SQ. METER	PAVEMENT PLANING, BITUMINOUS	
	250	2411	641																			254	M01001	3302	SQ. METER	PAVEMENT PLANING, BITUMINOUS, AS PER PLAN	15,15A
				1535																		302	M46000	1535	CU. METER	BITUMINOUS AGGREGATE BASE, PG64–22	
				822									40									304	M20000	862	CU. METER	AGGREGATE BASE	
	113	2074	289	2878																		407	M10000	5354	LITER	TACK COAT	
		935	125	1471																		407	M14000	2531	LITER	TACK COAT FOR INTERMEDIATE COURSE	
				8370																		408	M10000	8370	LITER	BITUMINOUS PRIME COAT	
		99	25	228																		446	M46040	352	CU. METER	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64–28	
		84	21	193																		446	M47010	298	CU. METER	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64–28	
		105																				448	M46040	105	CU. METER	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64–28	
				50																		448	M46061	50	CU. METER	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1 UNDER GUARDRAIL, PG64–22, AS PER PLAN	9A
	10	92	30																			448	M47010	132	CU. METER	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64–28	
				50																		609	M10000	50	METER	ASPHALT CONCRETE CURB, TYPE–1, PG64–22	
				19																		609	M26000	19	METER	CURB, TYPE 6	
				681																		611	M25001	681	SQ. METER	REINFORCED CONCRETE APPROACH SLAB (T=380mm), AS PER PLAN	254
																										WATER WORKS	
															1							638	M10700	1	EACH	FIRE HYDRANT REMOVED AND DISPOSED OF	
															20							SPECIAL	638M20402	20	METER	200mm WATER MAIN DUCTILE IRON PIPE WITH PUSH–ON JOINTS AND RETAINED MECHANICAL JOINT FITTINGS, ANSI CLASS 56(*)	72D–72F
															1							SPECIAL	638M23506	1	EACH	200mm CUTTING–IN VALVE WITH VALVE BOX, COMPLETE(*)	72H
															1							SPECIAL	638M30200	1	EACH	TEMPORARY WATER SERVICE CONNECTION, COMPLETE (*)	72F
															1							SPECIAL	638M30400	1	EACH	PLUGGING EXISTING WATER MAIN AND BRANCHES (*)	72F

(*) CLEVELAND SPECIFICATIONS

HNTB ARCHITECTS ENGINEERS PLANNERS

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CALCULATED NMA/AKE
CHECKED MJW

GENERAL SUMMARY

CUY–77–23.458

SHEET NUMBER																				COST PARTICIPATION		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	AS PER PLAN REFERENCE SHT.#
9A	12	13	14		15	16A	20	21	27	32	37																
																										ENVIRONMENTAL	
50																						SPECIAL	690M65010	50	METRIC TON	WORK INVOLVING SOLID WASTE	9A
																										MAINTENANCE OF TRAFFIC	
	1000																					614	M11100	1000	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR	
						7.62																SPECIAL	614M12300	7.62	METER	TEMPORARY GUARDRAIL ON BRIDGE	38
						1																614	M12350	1	EACH	TEMPORARY IMPACT ATTENUATOR, QUADGUARD SYSTEM	15A
			6																			614	M12470	6	EACH	WORK ZONE SPEED LIMIT SIGN	
		2																				614	M12480	2	EACH	DOUBLED FINES IN WORK ZONE SIGN	
			2																			614	M12490	2	EACH	RESUME LEGAL SPEED SIGN	13,14
		50																				SPECIAL	614M12500	50	SQ. METER	REPLACEMENT SIGN	13
		200																				SPECIAL	614M12710	200	EACH	WRECKER SERVICE	12,13
								92	672	247	196											614	M12800	1207	EACH	TEMPORARY RAISED PAVEMENT MARKER	
						2																614	M13200	2	EACH	BARRIER REFLECTOR, TYPE A	
						537																614	M13300	537	EACH	BARRIER REFLECTOR, TYPE B	
						520																614	M13350	520	EACH	OBJECT MARKER	
		50																				614	M 18010	50	SQ. METER	MAINTAINING TRAFFIC, MISC.: ADDITIONAL SIGNS, GROUND MOUNTED, AS DIRECTED BY THE ENGINEER	13
					72																	614	M18601	72	SIGN MO.	PORTABLE CHANGABLE MESSAGE SIGN, AS PER PLAN, CLASS 1 SIGN	15
					72																	614	M18601	72	SIGN MO.	PORTABLE CHANGABLE MESSAGE SIGN, AS PER PLAN, CLASS 2 SIGN	15
			1			3.870																614	M20100	4.870	KILOMETER	TEMPORARY LANE LINE, CLASS 1, 642 PAINT	
			3			7.458																614	M20200	10.458	KILOMETER	TEMPORARY LANE LINE, CLASS 1, 740.06, TYPE 1	
			3			8.053																614	M22100	11.053	KILOMETER	TEMPORARY EDGE LINE, CLASS 1, 642 PAINT	
			8			22.762																614	M22200	30.762	KILOMETER	TEMPORARY EDGE LINE, CLASS 1, 740.06, TYPE 1	
			100			650																614	M23200	750	METER	TEMPORARY CHANNELIZING LINE, CLASS 1, 642 PAINT	
			1000			4084																614	M23400	5084	METER	TEMPORARY CHANNELIZING LINE, CLASS 1, 740.06, TYPE 1	
						95																614	M25200	95	METER	TEMPORARY TRANSVERSE LINE, CLASS 1, 642 PAINT	
			100			180																614	M25400	280	METER	TEMPORARY TRANSVERSE LINE, CLASS 1, 740.06, TYPE 1	
																						615	M10000	LUMP		TEMPORARY ROAD	
							73															615	M20000	73	SQ. METER	TEMPORARY PAVEMENT, CLASS A	
			200																			616	M10000	200	CU. METER	WATER	
			5																			616	M20000	5	METRIC TON	CALCIUM CHLORIDE	
						2932																622	M40031	2932	METER	PORTABLE CONCRETE BARRIER, 1270mm, AS PER PLAN	15
						2104																622	M40051	2104	METER	PORTABLE CONCRETE BARRIER, TYPE BRD, ANCHORED, AS PER PLAN, 1270mm	15
			11500																			642	M30000	11500	METER	REMOVAL OF PAVEMENT MARKING	
																										LIGHTING (SEE SHEET 86)	
																										TRAFFIC CONTROL (SEE SHEETS 79,80)	
																										STRUCTURES (SEE SHEET 106)	
																						614	M11000	LUMP		MAINTAINING TRAFFIC	
																						806	M16021	40	MONTH	FIELD OFFICE, TYPE C, AS PER PLAN	9
																						806	M26000	40	MONTH	COMPUTER EQUIPMENT FOR FIELD OFFICE	
																						623	M10000	LUMP		CONSTRUCTION LAYOUT STAKES	
																						624	M10000	LUMP		MOBILIZATION	
																						SPECIAL	100M00300	LUMP		PREMIUM ON RAILROADS' PROTECTIVE PUBLIC LIABILITY AND PROPERTY DAMAGE LIABILITY INSURANCE	

CALCULATED NMA/AKE
CHECKED MJW

GENERAL SUMMARY

CUY-77-23.458

HNTB ARCHITECTS ENGINEERS PLANNERS

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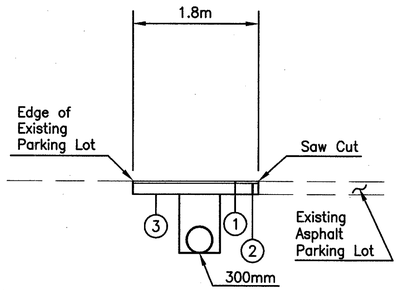


(1) Item 446 – 38mm, Asphalt Concrete Surface Course, Type 1, PG64–28

(2) Item 302 – 121mm, Bituminous Aggregate Base, PG64–22

(3) Item 203 – Subgrade Compaction

PARKING LOT REPAIR DETAIL

All costs associated with pavement repair shall be included in the cost of the pertinent 603 item per CMS 603.09.

PAVEMENT

STATION FROM	STATION TO	SIDE	LENGTH	AVERAGE WIDTH	SURFACE AREA	203 SUBGRADE COMPACTION	254 PAVEMENT PLANING BITUMINOUS (83mm)	302 (330mm) BITUMINOUS AGGREGATE BASE PG64–22	304 (150mm) AGGREGATE BASE	407 TACK COAT (.45L/m²)	407 TACK COAT INTERMEDIATE COURSE (.23L/m²)	408 BITUMINOUS PRIME COAT (1.8L/m²)	446 (38mm) ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64–28	446 (45mm) ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64–28	448 (76mm) ASPHALT CONCRETE INT. COURSE, TYPE 1 (UNDER GUARDRAIL), PG64–28 AS PER PLAN	611 REINFORCED CONCRETE APPROACH SLAB, T = 380mm, AS PER PLAN
FROM	TO		METER	METER	SQ. METER	SQ. METER	SQ. METER	CU. METER	CU. METER	LITER	LITER	LITER	CU. METER	CU. METER	CU. METER	SQ. METER
2+625.00	2+650.00	LT & RT	25	16.68	417		417			187.7	95.9		15.8	18.8		
2+490.00	2+505.00	LT.	15	4.46	66.9	66.9		22.1	10.0	30.1	15.4	120.4	2.5	3.0		
2+505.00	2+540.00	LT & RT	35	8.92	312.2	312.2		103.0	46.8	140.5	71.8	562.0	11.9	14.0		
2+540.00	2+650.00	LT & RT	110	16.12	1773.2	1773.2		585.2	266.0	797.9	407.8	3191.8	67.4	79.8		
2+650.00	2+666.711	LT & RT	16.71	33.04	552.1	552.1		182.2	82.8	248.4	127.0	993.8	21.0	24.8		
2+666.711	2+674.311	LT & RT	PLANIMETERED		258.3				47.3≠	116.2	59.4					258.3
3+277.404	3+285.004	LT & RT	PLANIMETERED		257.1				47.0≠	115.7	59.1					257.1
3+285.004	3+300.303	LT & RT	PLANIMETERED		526.1	526.1		173.6	78.9	236.7	121.0	947.0	20.0	23.7		
3+300.303	3+345.251	LT.	42.22 *	3.6	152.0	152.0		50.2	22.8	68.4	35.0	273.6	5.8	6.8		
3+300.303	3+327.628	RT.	28.45 *	3.375	96.0	96.0		31.7	14.4	43.2	22.1	172.8	3.6	4.3		
10+124.3	10+211.3	RT.	87.0	1.2	104.4					47.0	24.0				7.9	
10+120.209	10+127.809	LT & RT	PLANIMETERED		100.6				18.4≠	45.3	23.1					100.6
10+127.809	10+145	LT & RT	16.51 *	13.2	217.9	217.9		71.9	32.7	98.1	50.1	392.2	8.3	9.8		
10+145	10+169.918	LT.	24.92	9.01	224.5	224.5		74.1	33.7	101.0	51.6	404.1	8.5	10.1		
10+145	10+155	RT.	10.0	3.6	36.0	36.0		11.9	5.4	16.2	8.3	64.8	1.4	1.6		
10+155	10+169.918	RT.	14.92	3.325	49.6	49.6		16.4	7.4	22.3	11.4	89.3	1.9	2.2		
0+516.560	0+546	LT.	29.44	1.805	53.1	53.1		17.5	8.0	23.9	12.2	95.6	2.0	2.4		
0+516.560	0+524.069	RT.	7.51	7.2	54.1	54.1		17.9	8.1	24.3	12.4	97.4	2.1	2.4		
0+516.560	0+530	RT.	13.44	3.325	44.7	44.7		14.8	6.7	20.1	10.3	80.5	1.7	2.0		
0+524.069	0+571.288	RT.	43.78 *	6.76	296.0	296.0		97.7	44.4	133.2	68.1	532.8	11.2	13.3		
0+571.288	0+578.888	LT & RT	PLANIMETERED		65.0				11.9≠	29.3	15.0					65.0
0+530	0+564.39	RT.	32.45 *	3.6	116.8	116.8		38.5	17.5	52.6	26.9	210.2	4.4	5.3		
0+546	0+573.86	LT.	26.58 *	2.4	63.8	63.8		21.1	9.6	28.7	14.7	114.8	2.4	2.9		
2+540	2+665	LT.	125	1.2	150.0					67.5	34.5				11.4	
2+540	2+658.8	RT.	118.8	1.2	142.6					64.2	32.8				10.8	
3+308	0+047.8 (30–S)	LT.	41.2	1.2	49.4					22.2	11.4				3.8	
3+289	0+053.7 (S–30)	RT.	37.6	1.2	45.1					20.3	10.4				3.4	
0+508.8	0+576.9	RT.	68.1	1.5	102.2					46.0	23.5				7.8	
0+517.8	0+562.9	LT.	45.1	1.2	54.1					24.3	12.4				4.1	
ASPHALT CURB LOCATIONS △			44	0.33	14.5	14.5		4.8	2.2	6.5	3.3	26.1	0.6	0.7		
					TOTAL	4650	417	1535	822	2878	1471	8370	193	228	50	681

* CORRECTED LENGTH

≠ THICKNESS IS 183mm UNDER APPROACH SLABS

△ PAVEMENT QUANTITIES FOR ADDITIONAL SHOULDER WIDTH AT ASPHALT CURB LOCATIONS, PER STANDARD DRAWING BP–5.1M. FOR CURB LOCATIONS, SEE TABLE BELOW.

LINEAR GRADING

STATION FROM	STATION TO	ROADWAY	SIDE	203 LINEAR GRADING
FROM	TO			METER
0+042	0+048	RAMP 30–S	LT	6
10+170	10+211	RAMP N–W	RT	41
0+509	0+517	RAMP W–N	LT	8
			TOTAL	55

PAVEMENT REMOVED

STATION FROM	STATION TO	SIDE	LENGTH	WIDTH	202 PAVEMENT REMOVED	202 APPROACH SLAB REMOVED	203 EMBANKMENT	REMARKS
FROM	TO		METER	METER	SQ. METER	SQ. METER	CU. METER	
2+490	2+650	LT.	160	3.05	488			
2+505	2+650	RT.	145	3.05	442			
2+650	2+653.1	LT & RT	3.1	23.77	74			
2+653.1	2+660.8	LT & RT	7.7	23.2		178.6		
3+277.4	3+285	LT & RT	6.0	38.4		230.4		PERPENDICULAR LENGTH
3+285.004	3+300.303	LT & RT	–	–	505			PLANIMETERED
3+300.303	3+332.6	LT.	32.3	1.6	52			
3+332.6	3+345.251	LT.	12.7	2.3	29			
0+027.4	0+040.2	RT.	12.8	3.05	39			RAMP S–30
0+040.2	0+055.815	RT.	15.6	2.90	45			RAMP S–30
10+139.7	10+147.4	LT & RT	7.7	11		84.7		RAMP N–W
10+147.4	10+169.918	LT & RT	22.5	11.6	261			RAMP N–W
0+516.560	0+546.6	LT & RT	30.0	11.2	336			RAMP W–N
0+546.6	0+554.2	LT & RT	7.6	11		83.6		RAMP W–N
E. 36th ST		LT & RT	70	7.5	525 **		200	
E. 36th ST @ CROTON		LT & RT	–	–	87 **		33	PLANIMETERED
				TOTAL	2883	578	233	

** INCLUDES INTEGRAL CURB

CURB

STATION FROM	STATION TO	SIDE	609 CURB TYPE 6	609 ASPHALT CONCRETE CURB, PG64–22, TYPE 1
FROM	TO		METER	METER
2+635.8	2+636.8	RT.		1
2+639.2	2+657	RT.		17.8
3+289	3+293.1	RT.		4.1
3+296.7	3+297.7	RT.		1
3+308	3+311.9	LT.		3.9
3+316.7	3+317.7	LT.		1
10+126.4	10+129.1	RT.		2.7
10+133.3	10+138.2	RT.		4.9
10+141.8	10+142.8	RT.		1
0+539.9	0+540.9	RT.		1
0+545.1	0+555.9	RT.		10.8
CROTON @ EAST 36th ST		RT.	19.0	
		TOTAL	19	50

HNTB ARCHITECTS ENGINEERS PLANNERS

CALCULATED NMA CHECKED MJW

PAVEMENT QUANTITIES

CUY–77–23.458

CONCRETE BARRIER

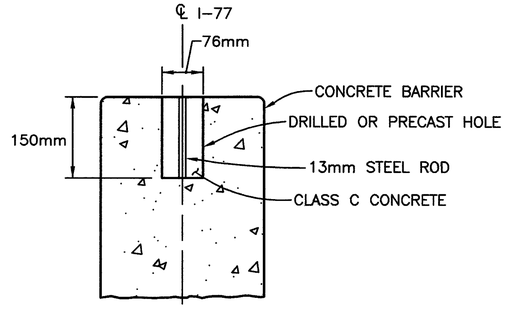
STATION		SIDE	202	622	622
			CONCRETE BARRIER REMOVED	CONCRETE BARRIER TYPE B-1270, AS PER PLAN A	CONCRETE BARRIER TYPE B-1270, AS PER PLAN
FROM	TO		METER	METER	METER
2+428	2+660.75	℄	232.8		
2+428	2+666.711	℄		238.7	
2+666.711	2+674.311	℄			7.6
3+277.404	3+600.000	℄	322.6		
3+277.404	3+285.004	℄			7.6
3+285.004	3+600.830	℄		315.8	
DEDUCT FOR OVERHEAD SIGN SUPPORTS - 2 EACH @ 3.0m		℄	-6.0	-6.0	
DEDUCT FOR INLETS - 5 EA @ 6.1m				-30.5	
TOTAL			550	518	16

FENCE

SHEET NO.	REF	STATION		SIDE	LOCATION	202	607	REMARKS
		FROM (OFFSET)	TO (OFFSET)			FENCE REMOVED	FENCE, TYPE CLT	
						METER	METER	
48,54	R4	10+137.9 (12.6)	0+541.8 (23.0)	RT.	RAMP N-W TO RAMP W-N	139		ALONG EXISTING ABUTMENT
51	R6	3+188.2 (15.4)	3+228.2 (25.0)	RT & LT	I-77	58		
51	R7	3+203.2 (17.8)	3+237.1 (19.0)	RT & LT	I-77	51.4		
51	R8	3+228.2 (25.0)	3+232.6 (17.3)	RT.	I-77	9.2		
52	R9	3+261.3 (15.7)	3+308.9 (37.8)	RT.	I-77 (S-30)	60.5		
52	F1	3+258.7 (19.8)	3+268.7 (20.0)	RT.	I-77		58.0	REMOVE & REPLACE DUE TO DRAINAGE CONSTRUCTION
		3+289.0 (35.8)	3+308.9 (37.8)					
48	F3	10+137.9 (12.6)	10+118 (4.2)	RT.	N-W		21.6	
54	F4	2+665.8 (17.4)	0+583.3 (3.0)	RT & LT	W-N		20.5	
54	F5	0+541.8 (23.0)	0+569.7 (10.3)	RT.	W-N		30.6	
					TOTAL	319	131	

GUARDRAIL

SHEET NO.	REF	STATION		SIDE	202	202	606	606	606	606	REMARKS
					REMOVAL MISC: IMPACT ATTENUATOR REMOVED FOR STORAGE	GUARDRAIL REMOVED	GUARDRAIL, TYPE 5	BRIDGE TERMINAL ASSEMBLY TYPE 1	BRIDGE TERMINAL ASSEMBLY TYPE 2	ANCHOR ASSEMBLY TYPE E	
		FROM	TO		LUMP	METER	METER	EACH	EACH	EACH	
46-48	GR1	2+467.3	2+665	LT.			182.88			1	
46,47	R1	2+467.3	2+654.4	LT.		187.1					
46,47	GR2	2+499.883	2+659.423	RT.			160.02	1			
46,47	R2	2+499.883	2+653.1	RT.		153.2					
52	GR3	3+288.408	0+053.686	RT.			38.10		1		RAMP S-30
52	R11	0+000	0+053.686	RT.		53.7					RAMP S-30
52	R12	3+296.8	0+047.8	LT.		52.6					RAMP 30-S
52	GR4	3+307.342	0+047.813	LT.			41.91	1			RAMP 30-S
48,53	GR7	10+123.673	10+211.303	RT.		20.7	87.63		1		RAMP N-W
54	GR5	0+508.926	0+577.506	LT.			68.58	1			RAMP W-N
54	R13	0+508.926	0+548	LT.		39.1					RAMP W-N
54	GR6	0+517.834	0+563.554	RT.			45.72	1			RAMP W-N
54	R14	0+517.834	0+548	RT.		30.2					RAMP W-N
48	R15	2+709		LT.	LUMP						
TOTAL					LUMP	537	624.84	4	2	1	



NOTE:
COST OF FURNISHING AND PLACING STEEL ROD AND CLASS "C" CONCRETE INCLUDED IN PRICE BID FOR ITEM 604 REFERENCE MONUMENT, AS PER PLAN.

DETAIL OF REFERENCE MONUMENT PLACED IN CONCRETE BARRIER

MONUMENTS

STATION	604 REFERENCE MONUMENTS, AS PER PLAN
	EACH
P.O.T. STA. 2+588.455	1
S.C. STA. 3+301.902	1
P.O.C. 3+596.647	1
TOTAL	3

MONUMENT LOCATIONS ARE FROM RECORD PLAN INFORMATION BUT WERE NOT OBSERVED DURING FIELD SURVEY.

CALCULATED MJW CHECKED NMA

MISCELLANEOUS QUANTITIES

CUY-77-23.458

HNTB ARCHITECTS ENGINEERS PLANNERS

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DRAINAGE

SHEET NO.	STRUCTURE NO.	PIPE NO.	STATION FROM	STATION TO	ROADWAY	SIDE	202 PIPE REMOVED 600mm AND UNDER (METER)	202 INLET REMOVED (EACH)	202 CATCH BASIN ABANDONED (EACH)	601 ROCK CHANNEL PROTECTION, TYPE C W/ FILTER (CU. METER)	602 CONCRETE MASONRY (CU. METER)	603 300mm CONDUIT, TYPE C (METER)	603 375mm CONDUIT, TYPE B (METER)	603 375mm CONDUIT, TYPE C (METER)	603 375mm CONDUIT, TYPE F 707.05 TYPE C (METER)	603 450mm CONDUIT, TYPE C (METER)	604 INLET, PAVEMENT, 2.4m (EACH)	604 INLET, PAVEMENT, 3.6m (EACH)	604 INLET, PAVEMENT, 4.2m (EACH)	604 INLET, PAVEMENT, 5.4m (EACH)	604 INLET, PAVEMENT, 6.0m (EACH)	604 CATCH BASIN NO. 2–3, AS PER PLAN (EACH)	604 CATCH BASIN, NO. 5 (EACH)	604 MANHOLE, NO. 3 (EACH)	604 MANHOLE RECON–STRUCTED TO GRADE (EACH)
47	D1	P1	2+637.8	2+635.3	I–77	RT.				1.08	0.22				6.0		1									
47	R3		2+637.5		I–77	RT.	30.0 △	1																		
54	D2	P2	0+558.0	0+543.0	℄ RAMP W–N	RT.								15.0						1						
54	D3	P3	0+543.0	0+531.5	℄ RAMP W–N	RT.				1.08	0.22			10.8						1						
54	D3A		0+547		℄ RAMP W–N	RT.																				1 △△
48	D4	P4	10+131.2	10+140.0	℄ RAMP N–W	RT.								7.7					1							
53	D4A	P4A	10+140.0	10+150.0	℄ RAMP N–W	RT.				1.08	0.22			8.9				1								
48	R3A		2+745.2		I–77	RT.			1																	
51	R5		3+209.3		I–77	RT.			1																	
52	D5	P5	3+294.9	3+292.1	I–77	RT.									17.7				1							
52	D6	P6	3+292.1	3+285.7	I–77	RT.							6.6											1		
52	D7	P7	3+285.7	3+261.0	I–77	RT.							31.0	1.0											1	
52	D7A	P7A	3+261.0	3+260.5	I–77	RT.							2.7												1	
52	D8	P8	3+314.3	3+299.8	I–77	LT.									17.6						1					
52	D9	P9	3+299.8	3+284.0	I–77	LT.						1.0				18.3								1		
48		P10	PIER 1R #	2+719.2	I–77	RT.								6.0												
51	D11	P11	3+157.6	3+152.7	I–77	L/R							10.4										1			
51	D12			3+152.7	I–77	RT.																			1	
52	R12A		3+285.9		I–77	LT.			1																	
					TOTAL		30	1	3	4	0.7	1	51	50	42	19	1	1	2	2	1	1	2	3	1	

\# – SEE STRUCTURE PLANS, SHEET 258, FOR PIPE DETAILS
△ – PIPE OUTLET UNKNOWN, ACTUAL REMOVAL LIMITS TO BE DIRECTED BY THE ENGINEER
△△ – EXISTING T/C=204.326, PROPOSED T/C=205.505

NOTE:
FOR MEDIAN INLET REPLACEMENT QUANTITIES SEE SHEET 9.

DRAINAGE

LOCATION	SIDE	203 DITCH CLEANOUT, AS PER PLAN (METER)	670 DITCH EROSION PROTECTION (SQ. METER)	REMARKS
RAMP W–N	LT.	248	100.0	CLEAN FROM 0+550 TO EX. DOWNSTREAM CB ON RAMP W–N
RAMP W–N	RT.	244	100.0	CLEAN FROM P3 TO EX. DOWNSTREAM CB ON RAMP E–N
RAMP N–W	RT.	200	100.0	CLEAN FROM 10+169.9 TO EX. DOWNSTREAM CB ON RAMP N–W
RAMP S–30	LT.	127	100.0	CLEAN FROM EX. CB ON NB I–77 TO D6
RAMP 30–S	RT.	144	100.0	CLEAN FROM EX. CB ON S–30 TO D9
TOTAL		963	500	

UNDERDRAIN

SHEET NO.	REF. NO.	STATION FROM	STATION TO	SIDE	ELEVATIONS UPPER	ELEVATIONS LOWER	OUTLET	603 150mm CONDUIT TYPE F 707.42 ** (METER)	603 150mm CONDUIT TYPE B (METER)	605 150mm UNCLASSIFIED PIPE UNDER–DRAIN W/ FABRIC WRAP (METER)	605 150mm SHALLOW PIPE UNDERDRAIN W/ FABRIC WRAP (METER)
46,47	U1	2+490	2+560	LT.	208.670 *	207.643	–		–		70
		2+560	2+639.5	LT.	207.643	207.354	(TO U3)			80	
46,47	U2	2+505	2+540	RT.	208.500 *	207.981	–		5		35
		2+540	2+638	RT.	207.981	206.708	206.693			95	
47	U3	2+540	2+639.5	LT.	207.847	207.362	207.340 *		8	100	
47	U4	2+540	2+638	RT.	207.870	206.702	206.693	3			95
47,48	U5	2+639.5	2+683	LT.	207.494	207.362	(TO U3)		–	44	
47,48	U6	2+639.5	2+681	LT.	207.480	207.354	(TO U3)		–	42	
47,48	U7	2+638	2+666	RT.	206.973	206.708	206.693		5	25	
47,48	U8	2+638	2+664	RT.	206.931	206.702	206.693	3		23	
47,48	U9	2+650	2+675	LT.	207.461	207.386	(TO U10)		2	25	
47,48	U10	2+650	2+674	℄	207.452	207.380 *	–			24	
47,48	U11	2+650	2+672	RT.	207.454	207.388	(TO U10)		3	22	
48,53	U12	10+120	10+169.9	RT.	206.578	206.021	(TO U13)		4	50	
48,53	U13	10+121	10+169.9	℄	206.641	206.010 *	–			49	
48,53	U14	10+123	10+169.9	LT.	206.781	206.380 *	–			47	
54	U15	0+516.6	0+578	℄	205.249	202.530 *	–			62	
54	U16	0+516.6	0+572	RT.	204.810	202.590 *	–			56	
54	U17	0+516.6	0+568	RT.	204.862	202.600	(TO U16)		3	52	
52	U18	3+266	3+295	RT.	211.944	211.538	211.523	3		26	
52	U19	3+268	3+295	RT.	211.968	211.538	211.523		5	25	
52	U20	3+276	3+300.3	RT.	211.465	211.386	(TO U21)		2	24	
52	U21	3+278	3+300.3	℄	211.446	211.380 *	–			22	
52	U22	3+280	3+300.3	LT.	211.449	211.389	(TO U21)		3	20	
52	U23	3+288	3+345.2	LT.	210.659	210.160 *	–			57	
52	U24	3+291	3+345.2	LT.	210.448	210.171	(TO U23)		4	54	
52	U25	3+295	3+327.6	RT.	211.625	211.538	211.523		5	29	
52	U26	3+295	3+327.6	RT.	211.613	211.532	211.523	3		30	
							TOTALS	12	49	1083	200

* – Existing Elevation (Connect to Existing Underdrain)
** – Non–Perforated

HNTB ARCHITECTS ENGINEERS PLANNERS

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CALCULATED AKE CHECKED MJW

DRAINAGE QUANTITIES

CUY–77–23.458

EXISTING UTILITIES LEGEND

— —W— —	WATER
— —G— —	GAS
— —T— —	TELEPHONE
— —TV— —	CATV
— —E— —	ELECTRIC
— —TC— —	TRAFFIC CONTROL
— —STM— —	STORM SEWER
— —SAN— —	SANITARY SEWER
— —UNK— —	UNKNOWN
— —SFM— —	SANITARY FORCE MAIN
----------	(DATUR)

SYMBOLS:

- MANHOLE
- POLE/MARKER
- VALVE/VENT/TEST STATION
- FIRE HYDRANT
- HANDHOLE/BOX
- PED/TRANSFORMER
- METER
- FURNISHED SURVEY CONTROL

ABBREVIATIONS:

LP	LIGHT POLE
UP	UTILITY POLE
NAP	NO ASSOCIATED PIPING FOUND FROM VALVE TO ANY OTHER UTILITY OR STRUCTURE.
(FO)	FIBER OPTIC
(DATUR)	DEPICTED ACCORDING TO UTILITY RECORDS, NO ELECTRONIC INFORMATION WAS OBTAINED.
(AATUR)	ABANDONED ACCORDING TO UTILITY RECORDS
E———	UTILITY END POINT
EOI	END OF ELECTRONIC DESIGNATING INFORMATION

UNLESS OTHERWISE NOTED, UTILITY LINE LIMITS DEPICTED REPRESENT FIELD DESIGNATING LIMITS AND NOT ENDPOINTS OF UTILITIES.

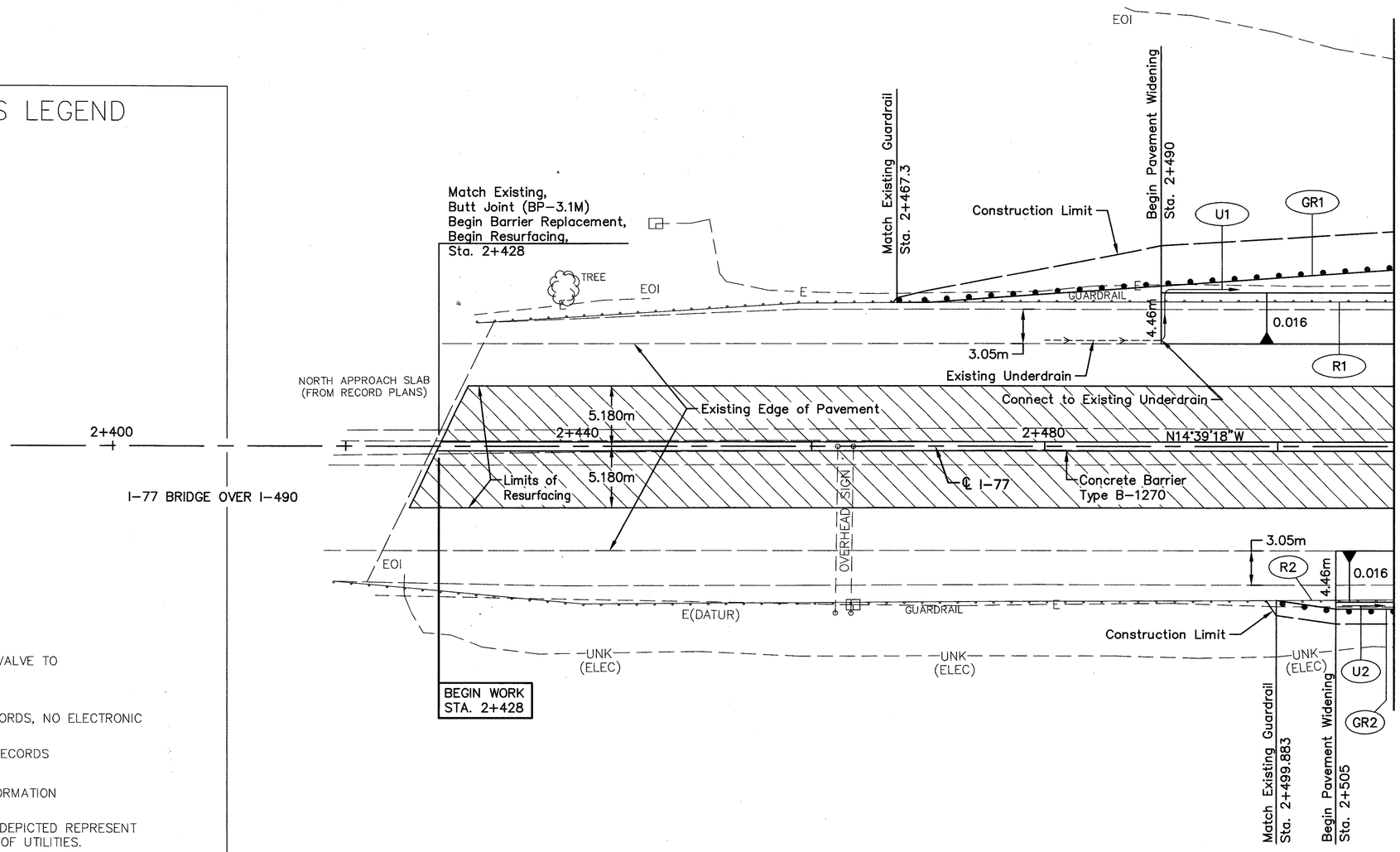
UTILITY INFORMATION THAT IS LABELED "DATUR" IS DERIVED FROM AVAILABLE RECORDS. SUCH INFORMATION MAY NOT BE ACCURATE OR RELIABLE. SO-DEEP EXPRESSLY DISCLAIMS RESPONSIBILITY FOR THE ACCURACY OR RELIABILITY OF UTILITY INFORMATION THAT IS DEPICTED ACCORDING TO RECORDS.

DEPTH AND SIZE INFORMATION SHOWN HEREON IS TAKEN FROM AVAILABLE UTILITY RECORDS, AND HAS NOT BEEN VERIFIED.

UTILITY DEPTH AND SIZE INFORMATION IS UNAVAILABLE UNLESS OTHERWISE SHOWN ON PLAN SHEETS.

TRAFFIC CONTROL SENSORS IN PAVING ARE NOT SHOWN HEREON.

(COMM)	COMMUNICATIONS
(AATFI)	ABANDONED ACCORDING TO FIELD INSPECTION



MATCHLINE STA. 2+510 SEE SHEET 47.

Legend:

▨ – PLANING AND RESURFACING

CROSS REFERENCE	
ITEM	SHEET NO.
ROADWAY QUANTITIES	42,43
DRAINAGE QUANTITIES	44
UNDERDRAIN ELEVATIONS	44
CROSS SECTIONS	63

HORIZONTAL SCALE
1:200

CALCULATED MJW
CHECKED ZSS

PLAN – INTERSTATE ROUTE 77
STA. 2+490 TO STA. 2+510

CUY-77-23.458

46
295

HNTB ARCHITECTS ENGINEERS PLANNERS

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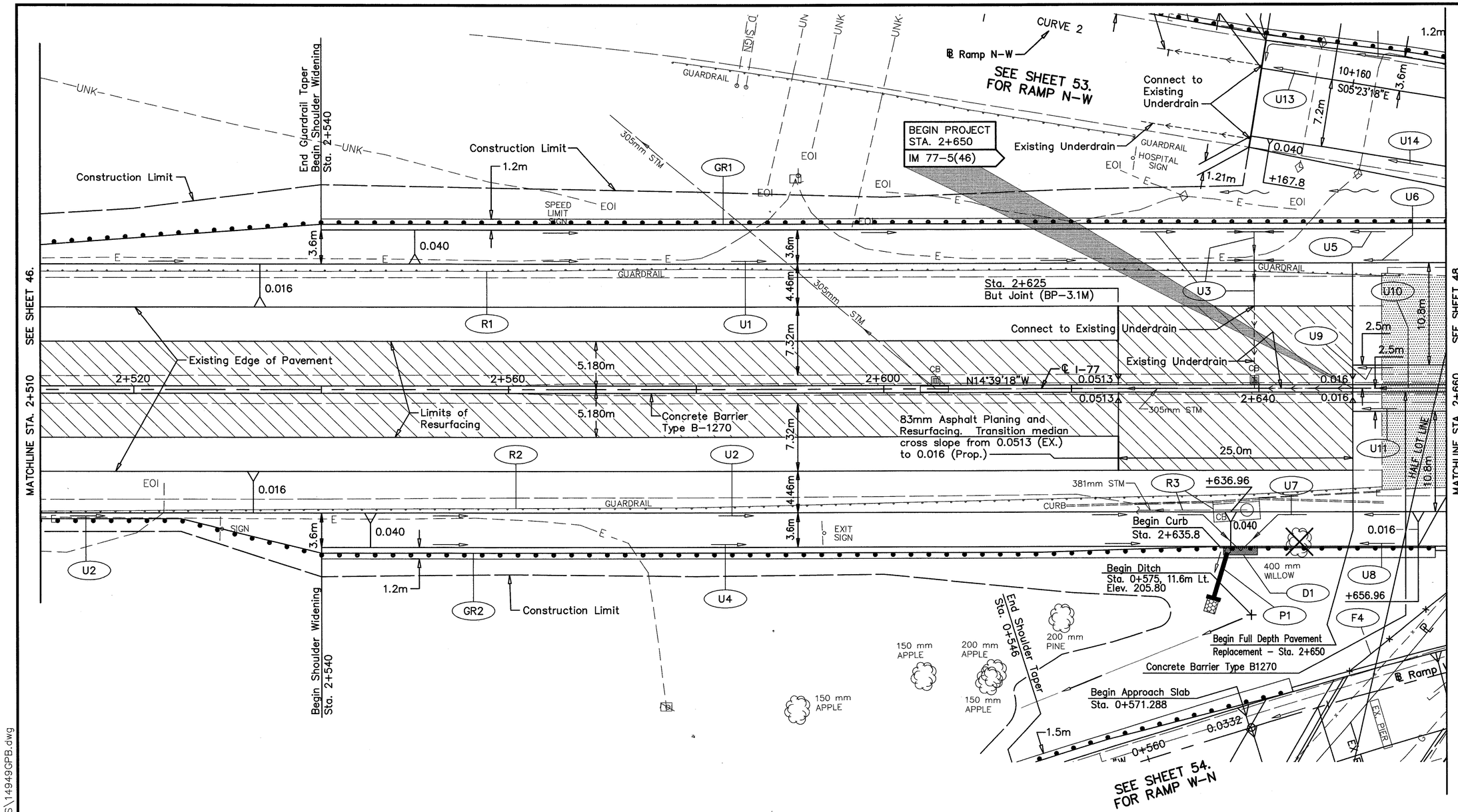

Legend:

- EXISTING APPROACH SLAB
- PLANING AND RESURFACING

CROSS REFERENCE	
ITEM	SHEET NO.
ROADWAY QUANTITIES	42,43
DRAINAGE QUANTITIES	44
UNDERDRAIN ELEVATIONS	44
UTILITY LEGEND	46
I-77 PROFILE	55
CROSS SECTIONS	63-65
SEWER PROFILES	72

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949GPB.dwg

HORIZONTAL SCALE 1:200

CALCULATED MJW CHECKED ZSS

PLAN - INTERSTATE ROUTE 77 STA. 2+510 TO STA. 2+660

CUY-77-23.458

CURVE 3 DATA
P.I. Sta. = 10+062.821
Δ = 09°16'00"
R = 700.000m
T = 56.731m
L = 113.214m
E = 2.295m
emax. = 0.040

* For variations in superelevation see bridge plans, sheets 251–253.

Begin Approach Slab
Sta. 10+127.809
End Approach Slab
Sta. 10+120.209
Match Existing Ramp N–W Baseline
P.T. Sta. 10+119.303

MATCHLINE STA. 10+140 SEE SHEET 53.

S = 0.016
Sta. 10+134.903

Sta. 10+099.903
S = 0.040

S = 0.0400*
Sta. 10+016.065

S = 0.0267*
P.C. Sta. 10+006.090

S05°23'18"E

End Guardrail
Sta. 2+665

Relocated Ramp N–W

Existing Ramp N–W

Ramp N–W

CURVE 3

Ramp W–N

Sta. 2+680.759

SEE GORE SLOPE DETAIL THIS SHEET

Existing Impact Attenuator TO BE REMOVED

Concrete Barrier Type B1270

Concrete Barrier

Iron Court

℄ I–77

1.0m Barrier and Gap

N14°39'18"W

Abandon

CONRAIL TRACK

2.50 m C/L FENCE

EX L/A

EX R/W

AERIAL

EX AERIAL

CONC. WALL

ASPHALT DRIVE

CONC. SLAB

MONITERING WELL

OVERHEAD SIGN

GAS LINE MKR.

VENT

UNK

THH (DATUR)

MH (FROM RECORD PLANS)

PIER 1L (E)

PIER 1L (W)

PIER 2L

PIER 3L

PIER 1R

PIER 2R (E)

PIER 2R (W)

PIER 3R

PIER 4R

P4 F3 D4A D4 U13 U12 U14 GR7 GR1 R15 U5 U6 U10 U9 U11 U7 R4 U8 P10 R3A

1.2m 3.6m 2.4m 7.2m 7.0m 0.070 0.040 0.048 0.0209 10+120 10+080 10+040 10+000 +674.4 +664.4 2+680 2+720 2+760 2+800

305mm STM 381mm STM 457mm STM 203mm 102mm

CURVE 4 DATA
P.I. Sta. = 0+640.474
Δ = 17°09'44" Rt.
R = 457.200m
T = 68.991m
L = 136.949m
E = 5.176m
emax. = 0.050

UNDER BRIDGE 10.8m 2.7m

CURVE 4

Ramp W–N 0+720 N16°05'13"W

0+680 0+640 +635.84 +655.0 4.8m 0.016 0.0333 0.0325 0.050

S = 0.0500
Sta. 0+687.572

P.T. Sta. 0+708.432
Baseline Shifts 4.8m Rt.
Begin Taper

S = 0.016
Sta. 0+730.072

EXIST. CULVERT

Min. Vert. Clearance Location

End Approach Slab
Sta. 2+674.311

Begin Approach Slab
Sta. 2+666.711

End Ramp Taper
Sta. 2+711.323, 25.169m Rt. ℄ I–77 =
Sta. 0+644.840, 4.8m Rt. ℄ Ramp W–N

MATCHLINE STA. 0+630 SEE SHEET 54.

MATCHLINE STA. 2+660 SEE SHEET 47.

MATCHLINE STA. 2+810 SEE SHEET 49.

CROSS REFERENCE	
ITEM	SHEET NO.
ROADWAY QUANTITIES	42,43
DRAINAGE QUANTITIES	44
UNDERDRAIN ELEVATIONS	44
UTILITY LEGEND	46
I–77 PROFILE	55,56
RAMP N–W PROFILE	60
RAMP W–N PROFILE	61,62
CROSS SECTIONS	65
SEWER PROFILES	72
STRUCTURE SITE PLAN	94–96

HNTB ARCHITECTS ENGINEERS PLANNERS

Legend:
— EXISTING APPROACH SLAB

Note:
For details of pipe P10, see Structure Plan sheet 258.

GORE SLOPE DETAIL

Note:
For additional superelevation data, see the bridge plans, sheet 251.

HORIZONTAL SCALE 1:200

CALCULATED MJW
CHECKED ZSS

PLAN – INTERSTATE ROUTE 77
STA. 2+660 TO STA. 2+810

CUY–77–23.458

48
295

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*For variations in superelevation see bridge plans, sheets 251–253.

MATCHLINE STA. 2+810 SEE SHEET 48.

S = 0.0160* Sta. 9+998.065

L/A

EX L/A

AERIAL

℄ Ramp N–W

EX AERIAL

S14°39'18"E

9+960

EX. SCUPPER EX. SCUPPER EX. SCUPPER

PIER 4L

EOI

MH (FROM RECORD PLANS)

457mm STM

MH (FROM RECORD PLANS)

UNK

PIER 4L

457mm STM

MH (FROM RECORD PLANS)

EX. SCUPPER EX. SCUPPER

2+840

N14°39'18"W

1.0m Barrier and Gap

2+880

℄ I–77

Concrete Barrier

457mm STM

EXIST. 4.78m CIRC. SEWER

457mm STM

Begin Taper Sta. 9+908.159 = Sta. 2+900.971, 16.9m Lt. (I–77).

R/W

3.6m

9+920

S14°39'18"E

PIER 5L

EX R/W

EX R/W

PIER 5L

10.8m

2.5m

UNDER BRIDGE

PIER 5R

EXIST. CULVERT

EX. SCUPPER

0+760

℄ Ramp W–N

EX AERIAL

EX L/A

AERIAL

PIER 5R

EX R/W

Min. Vert. Clearance Location

0+800

N16°05'13"W

R/W

0+840

N.S. RAILROAD

(COMM)

(FO)

CONC. WALL

End Taper Sta. 9+865.843 = Sta. 2+943.134, 13.3m Lt. (I–77).

EXIST. 2.74m x 3.05m BOX CULVERT

AERIAL

EX AERIAL

9+880

10.8m

2.5m

C/L 1.5 M DITCH

EX R/W

PIER 6L

PIER 6L

2+920

R/W

EX R/W

PIER 6R

PIER 6R

EX R/W

R/W

0+880

Min. Vert. Clearance Location

R/W

AERIAL

MATCHLINE STA. 2+960 SEE SHEET 50.

CROSS REFERENCE	
ITEM	SHEET NO.
UTILITY LEGEND	46
I–77 PROFILE	56,57
STRUCTURE SITE PLAN	94–96

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949GPD.dwg

HORIZONTAL SCALE 1:200

CALCULATED MJW CHECKED ZSS

PLAN – INTERSTATE ROUTE 77 STA. 2+810 TO STA. 2+960

CUY–77–23.458

49
295

MATCHLINE STA. 2+960 SEE SHEET 49.

MATCHLINE STA. 3+110 SEE SHEET 51.

HORIZONTAL SCALE 1:200

CALCULATED MJW
CHECKED ZSS

PLAN – INTERSTATE ROUTE 77
STA. 2+960 TO STA. 3+110

CUY-77-23.458

End Acceleration Lane Taper Sta.1+008.526 = Sta. 3+074.045, 13.3m Rt. (I–77).

CROSS REFERENCE	
ITEM	SHEET NO.
UTILITY LEGEND	46
I–77 PROFILE	57,58
RTA ACCESS DRIVE	71
STRUCTURE SITE PLAN	94–96

HNTB ARCHITECTS ENGINEERS PLANNERS

J: \JOBS\24621\TECHPROD\DRAWINGS\14949GPE.dwg

MATCHLINE STA. 3+110 SEE SHEET 50.

MATCHLINE STA. 3+260 SEE SHEET 52.

TS = 3+119.022

Begin Superelevation Transition Sta. 3+136.902

1.092M DEPTH

O.L. 268

O.L. 17

O.L. 18

1.85 m C/L FENCE

1.28 m CONC. WALK

CURB & GUTTER

L/A

EX L/A

EOI

Sta. 3+185.726

E. 36th St. (Previously Vacated)

WW1

1.6 M CHAIN LINK FENCE

1.7 M CHAIN LINK FENCE

EX. SCUPPER

305mm STM

1.40 m C/L FENCE

MH (FROM RECORD PLANS)

R7

R6

R5

R8

PIER 9L

PIER 10L

PIER 11L

PIER 9R

PIER 10R

PIER 11R

D11

D12

P11

℄ I-77

Min. Vert. Clearance Location

1067mm STM

N16°01'00"E (R-R) (SURV)

℄ E. 37TH ST.

Abandon Water Main

Bulkhead

Concrete Barrier

Abandon

Remove Pavement and Curb

Proposed Curb

1.0m Barrier and Gap

℄ E. 36th St.

Sta. 3+210.767

CURVE 1 DATA

P.I. Sta. = 3+547.857
Δ = 60°00'00" Lt.
R = 582.126m
Ls = 182.880m
θs = 09°00'00"
LT = 122.078m
ST = 61.104m
Lc = 426.720m
Ts = 428.835m
Es = 92.812m
emax. = 0.042 (NDC 0.0510)

Construction Limit

PLUG ABANDONED WATER MAIN END

REMOVE EXISTING 305mm x 203mm TEE & INSTALL SPOOL

W(DATUR)

T(DATUR) (AATUR)

457mm STM

203mm W(DATUR)

305mm (4)STD

2.40 m C/L FENCE

AERIAL

EX AERIAL

EX R/W

0.016

10.8m

3.6m

2.5m

3+120

3+160

3+200

3+240

CURVE 1

GATE

ASPHALT

CONC. APPRO.

CONC. WALK

1.5 M CHAIN LINK FENCE

1.9 M CHAIN LINK FENCE

U/DGRD. TELE. MARKER

U/DGRD. CABLE

#17330.000 W/ U/DGRD. CABLE

℄ CROTON ST.

WW2

UP

MH

CB

CROSS REFERENCE	
ITEM	SHEET NO.
ROADWAY QUANTITIES	42,43
WATERWORK QUANTITIES	72H
UTILITY LEGEND	46
I-77 PROFILE	58,59
SEWER PROFILES	71A
STRUCTURE SITE PLAN	94-96

HNTB ARCHITECTS ENGINEERS PLANNERS

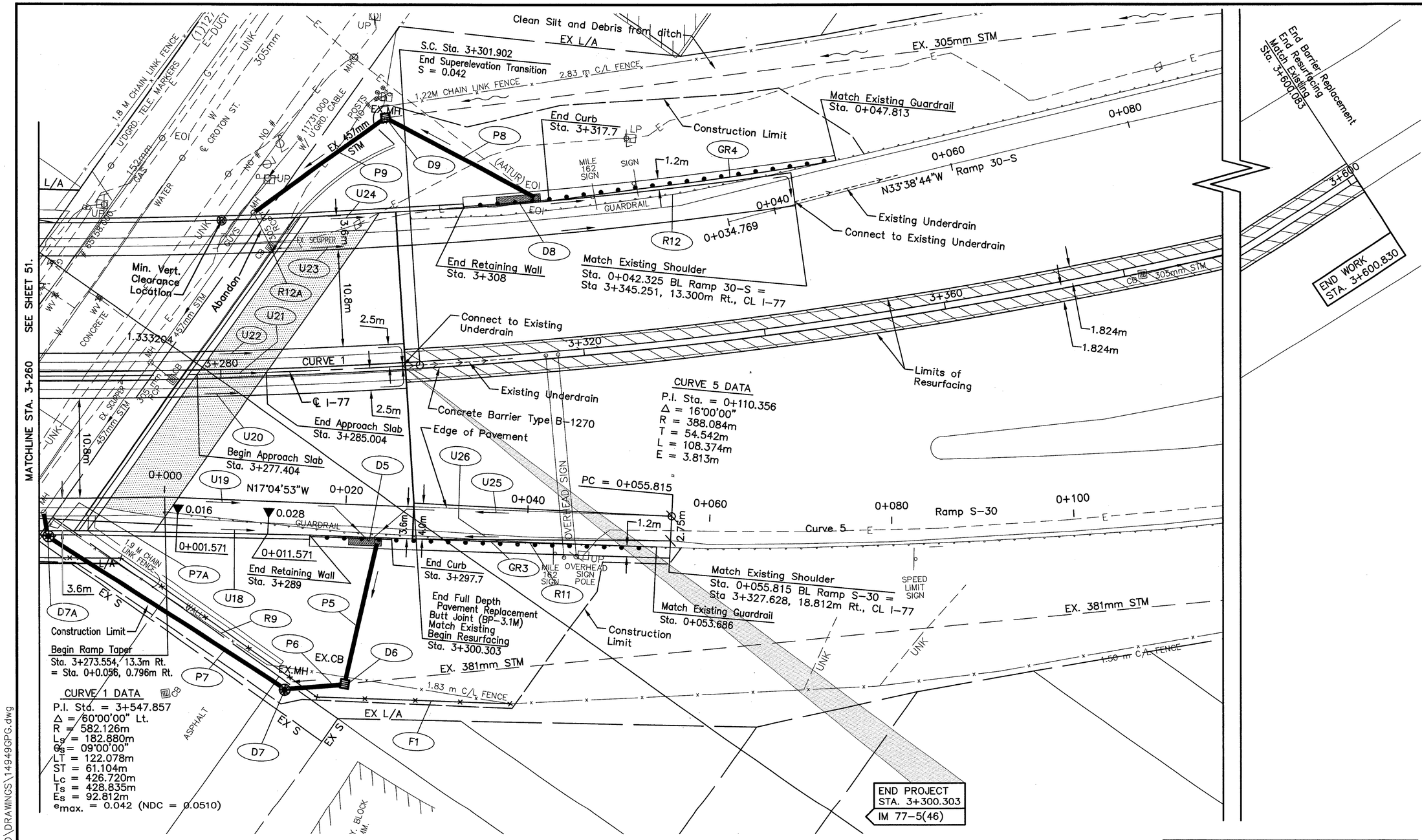
J:\JOBS\24621\TECHPROD\DRAWINGS\14949GPF.dwg

HORIZONTAL SCALE 1:200

CALCULATED MJW CHECKED ZSS

PLAN - INTERSTATE ROUTE 77 STA. 3+110 TO STA. 3+260

CUY-77-23.458



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HNTB ARCHITECTS ENGINEERS PLANNERS

Note:
For Median Inlet locations North of the bridge, see the Overlay For Maintenance of Traffic Plan, sheet 20.

Legend:
- EXISTING APPROACH SLAB
- PLANING AND RESURFACING

CROSS REFERENCE	
ITEM	SHEET NO.
ROADWAY QUANTITIES	42,43
DRAINAGE QUANTITIES	44
UNDERDRAIN ELEVATIONS	44
UTILITY LEGEND	46
I-77 PROFILE	59
CROSS SECTIONS	66
SUPERELEVATION TABLE	70
SEWER PROFILES	72
STRUCTURE SITE PLAN	94-96

HORIZONTAL SCALE 1:200

CALCULATED MJW CHECKED ZSS

PLAN - INTERSTATE ROUTE 77 STA. 3+260 TO STA. 3+600.083

CUY-77-23.458

SC = 10+253.739
10+253.739
10+240
10+200
CURVE 2
℄ Ramp N-W
Match Existing Guardrail Sta. 10+211.383
Existing Underdrain
GR7
1.2m
3.05m
Match Existing, Butt Joint (BP-3.1M) End Lt. & Rt. Shoulder Tapers Sta. 10+169.918
TS = 10+162.299
Begin Rt. Shoulder Taper Sta. 10+155
Construction Limit
U12
P4A
D4A
HALF LOT LINE
SEE SHEET 48.
Connect to Existing Underdrain
10+160
S05°23'18"E
3.6m
7.2m
End Curb +141.8
0.040
U13
U14
+167.8
2.4m
MATCHLINE STA. 10+140
Begin Lt. Shoulder Taper Sta. 10+145
BEGIN PROJECT STA. 2+650
IM 77-5(46)
Existing Underdrain
GUARDRAIL
HOSPITAL SIGN
1.21m
U6
U5
0.048
7.0m
+664.4
+674.4
U10
U9
Concrete Barrier Type B1270
Sta. 2+680.7
GAS LINE VENT MKR.
2+680
Construction Limit
1.2m
GR1
SPEED LIMIT SIGN
0.040
3.6m
4.46m
7.32m
GUARDRAIL
305mm STM
Sta. 2+625
But Joint (BP-3.1M)
R1
U1
U3
Connect to Existing Underdrain
Existing Underdrain
℄ I-77
N14°39'18"W
0.0513
0.016
2+560
5.180m
2+600
2+640
10.8m
2.5m
2.5m
EX. SCUPPER
EX. SCUPPER
OVERPASS
UNK
WATER MH
FH
WV
1.3m C/L FENCE
1.5m C/L FENCE
PINE
400 mm MULBERRY
400 mm MULBERRY
300 mm ASH
EOI
E
VK

Legend:

- EXISTING APPROACH SLAB
- PLANING AND RESURFACING

CURVE 2 DATA
P.I. Sta. = 10+356.131
Δ = 52° 17' 29" Rt.
R = 158.762m
Ls = 91.440m
θs = 16°30'00"
LT = 61.227m
ST = 30.723m
Lc = 144.896m
Ts = 193.831m
emax. = 0.060

CROSS REFERENCE	
ITEM	SHEET NO.
ROADWAY QUANTITIES	42,43
DRAINAGE QUANTITIES	44
UNDERDRAIN ELEVATIONS	44
UTILITY LEGEND	46
RAMP N-W PROFILE	60
CROSS SECTIONS	67
RAMP DETAILS	69
SEWER PROFILES	72

HNTB ARCHITECTS ENGINEERS PLANNERS

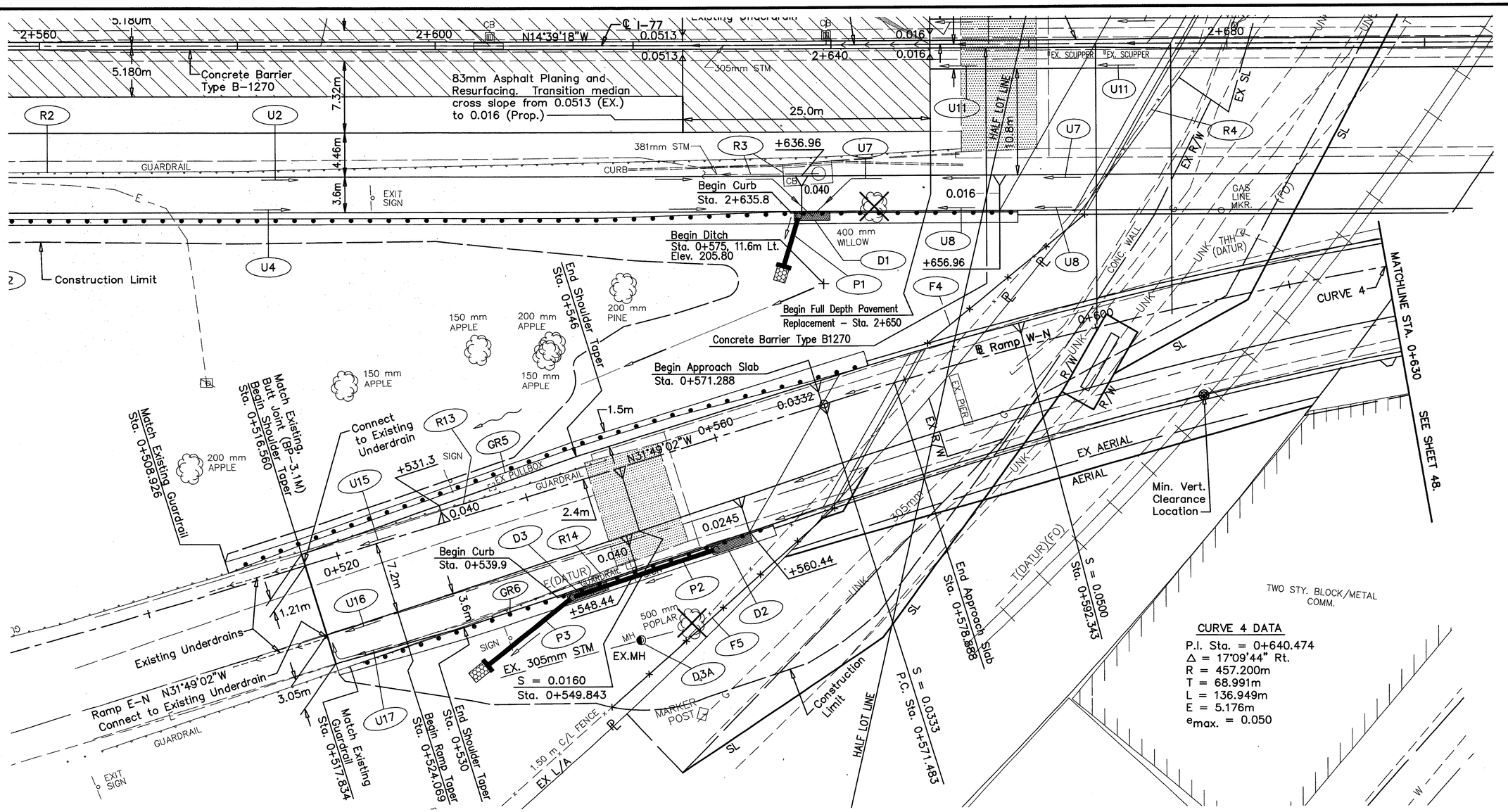
J:\JOBS\24621\TECHPROD\DRAWINGS\14949GPH.dwg

HORIZONTAL SCALE 1:200

CALCULATED MJW CHECKED ZSS

PLAN - RAMP N-W STA. 10+140 TO STA. 10+169.918

CUY-77-23.458



CURVE 4 DATA

P.I. Sta. = 0+640.474
Δ = 17°09'44" Rt.
R = 457.200m
T = 68.991m
L = 136.949m
E = 5.176m
$e_{max.}$ = 0.050

Legend:

- EXISTING APPROACH SLAB
- PLANING AND RESURFACING

CROSS REFERENCE	
ITEM	SHEET NO.
ROADWAY QUANTITIES	42,43
DRAINAGE QUANTITIES	44
UNDERDRAIN ELEVATIONS	44
UTILITY LEGEND	46
RAMP W-N PROFILE	61,62
CROSS SECTIONS	68
RAMP DETAILS	69
SEWER PROFILES	72
STRUCTURE SITE PLAN	94-96

HNTB ARCHITECTS ENGINEERS PLANNERS

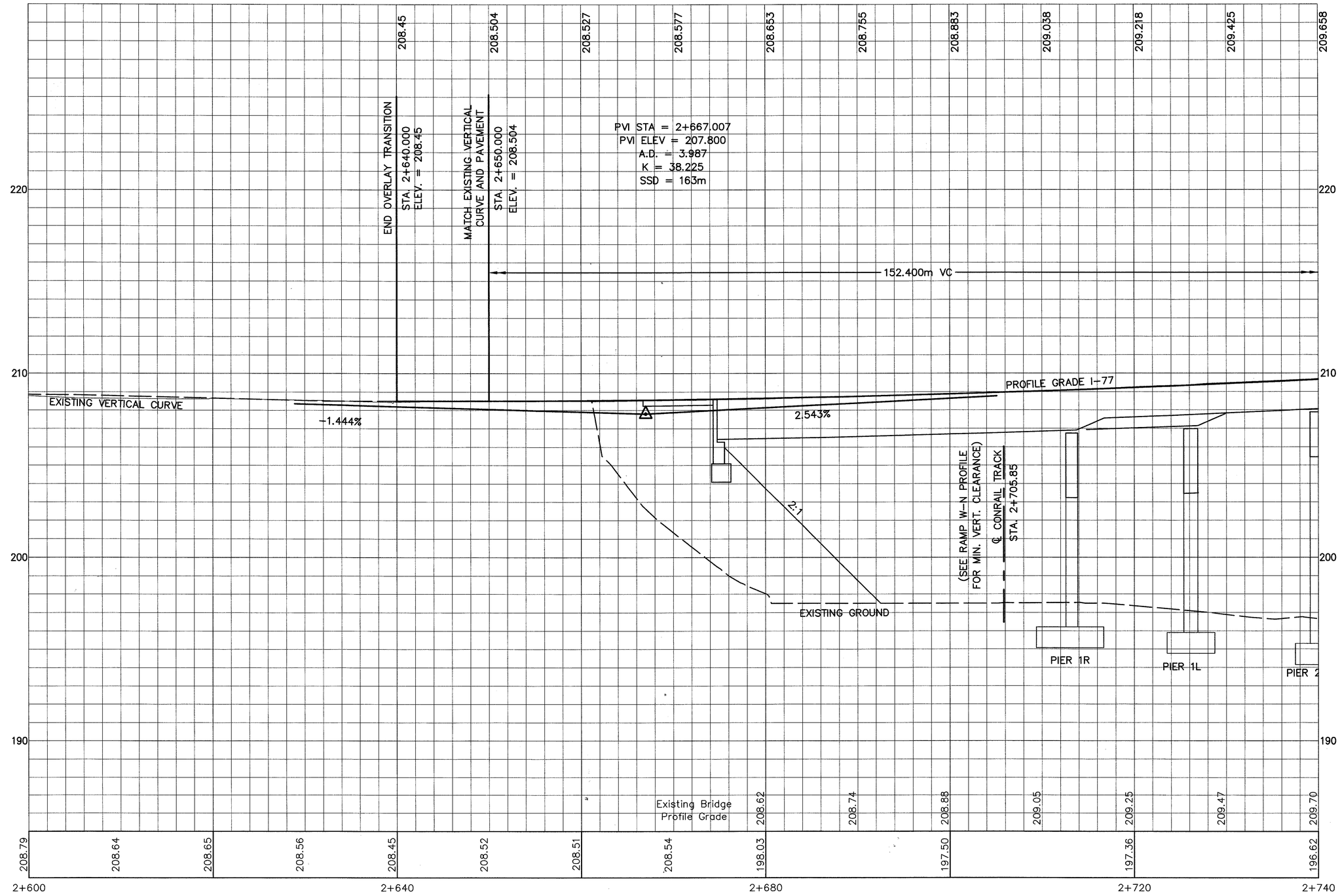
J: \JOBS\24621\TECHPROD\DRAWINGS\14949GPI.dwg

HORIZONTAL SCALE 1:200

CALCULATED M.JW CHECKED ZSS

PLAN – RAMP W-N STA. 0+516.560 TO STA. 0+630

CUY-77-23.458



HNTB ARCHITECTS ENGINEERS PLANNERS

J: \JOBS\24621\TECHPROD\DRAWINGS\14949GZA.dwg

CALCULATED MJW | CHECKED ZSS | HORIZONTAL SCALE 1:200 | VERTICAL SCALE 1:100

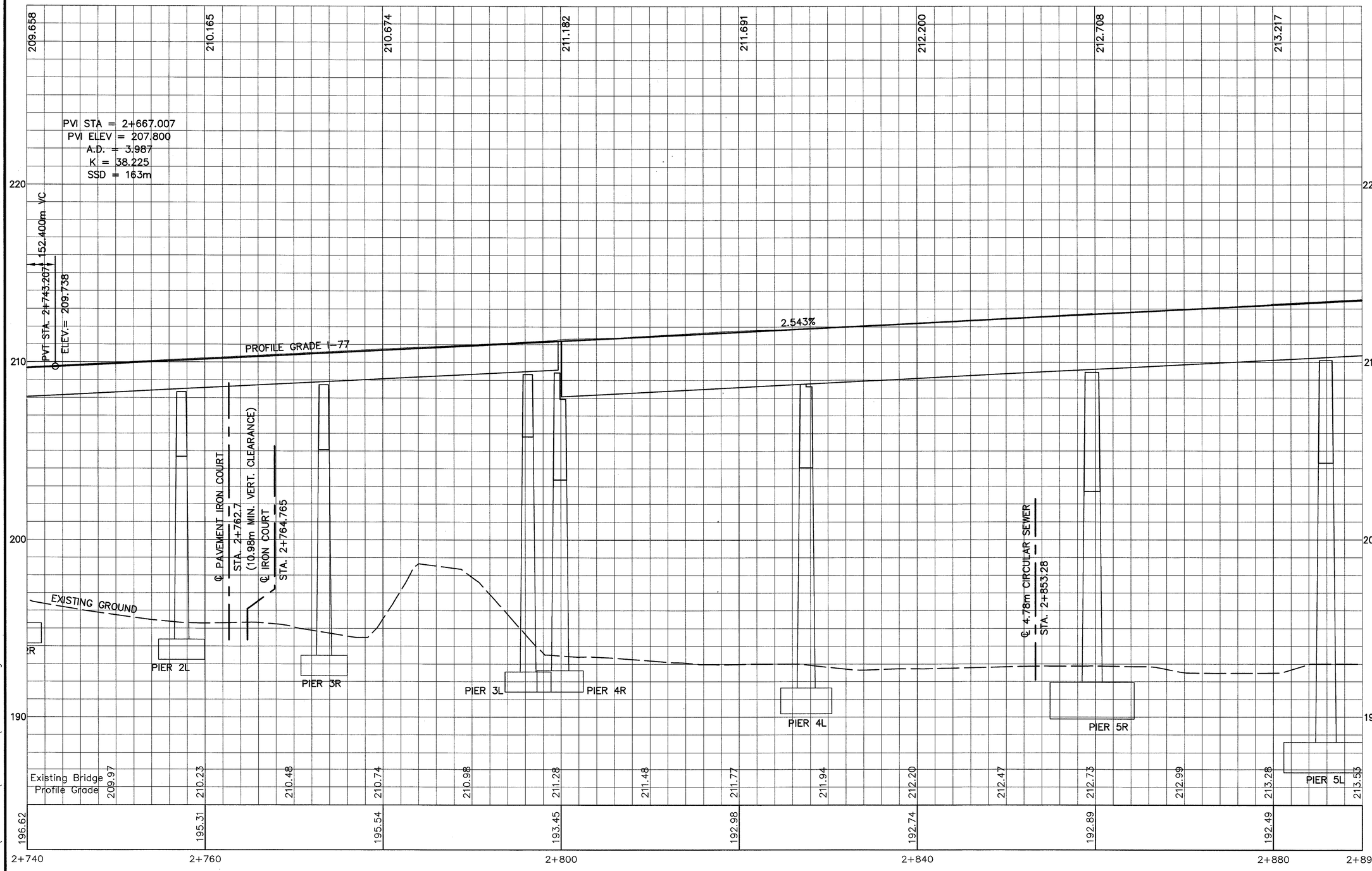
PROFILE – INTERSTATE ROUTE 77 STA. 2+640 TO STA. 2+740

CUY-77-23.458

PROFILE – INTERSTATE ROUTE 77
STA. 2+740 TO STA. 2+890

CALCULATED	HORIZONTAL SCALE
MJW	1:200
CHECKED	VERTICAL SCALE
ZSS	1:100

CUY-77-23.458



HNTB ARCHITECTS ENGINEERS PLANNERS

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PROFILE – INTERSTATE ROUTE 77
STA. 2+890 TO STA. 3+040

CALCULATED MJW
CHECKED ZSS
HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100

PVI STA = 3+048.007
PVI ELEV = 217.490
A.D. = 4.534
K = 67.230
SSD = 165m

304.800m VC

2.543%

PROFILE GRADE I-77

PVC STA. 2+895.607
ELEV.= 213.614

EXISTING GROUND

℄ N.S. R.R. TRACKS
STA. 2+895.025
(16.68m MIN VERT. CLEARANCE)

℄ N.S. R.R. TRACKS
STA. 2+911.58

STA. 2+914.80

STA. 2+917.81

℄ 2.74m x 3.05m BOX CULVERT
STA. 2+918.95

12.02m MIN. VERT. CLEARANCE

℄ G.C.R.T.A. TRACKS
STA. 2+978.33

℄ G.C.R.T.A. TRACKS
STA. 2+988.51

PIER 6R

PIER 6L

PIER 7R

PIER 7L

Existing Bridge Profile Grade	213.79	214.05	214.31	214.51	214.70	214.89	215.04	215.18	215.36	215.44	215.62	215.70	215.76	215.81	215.91
	193.00		193.03		194.26		198.55		199.00		198.51		197.13		204.04

220 210 200 190

2+890 2+920 2+960 3+000 3+040

HNTB ARCHITECTS ENGINEERS PLANNERS

CUY-77-23.458

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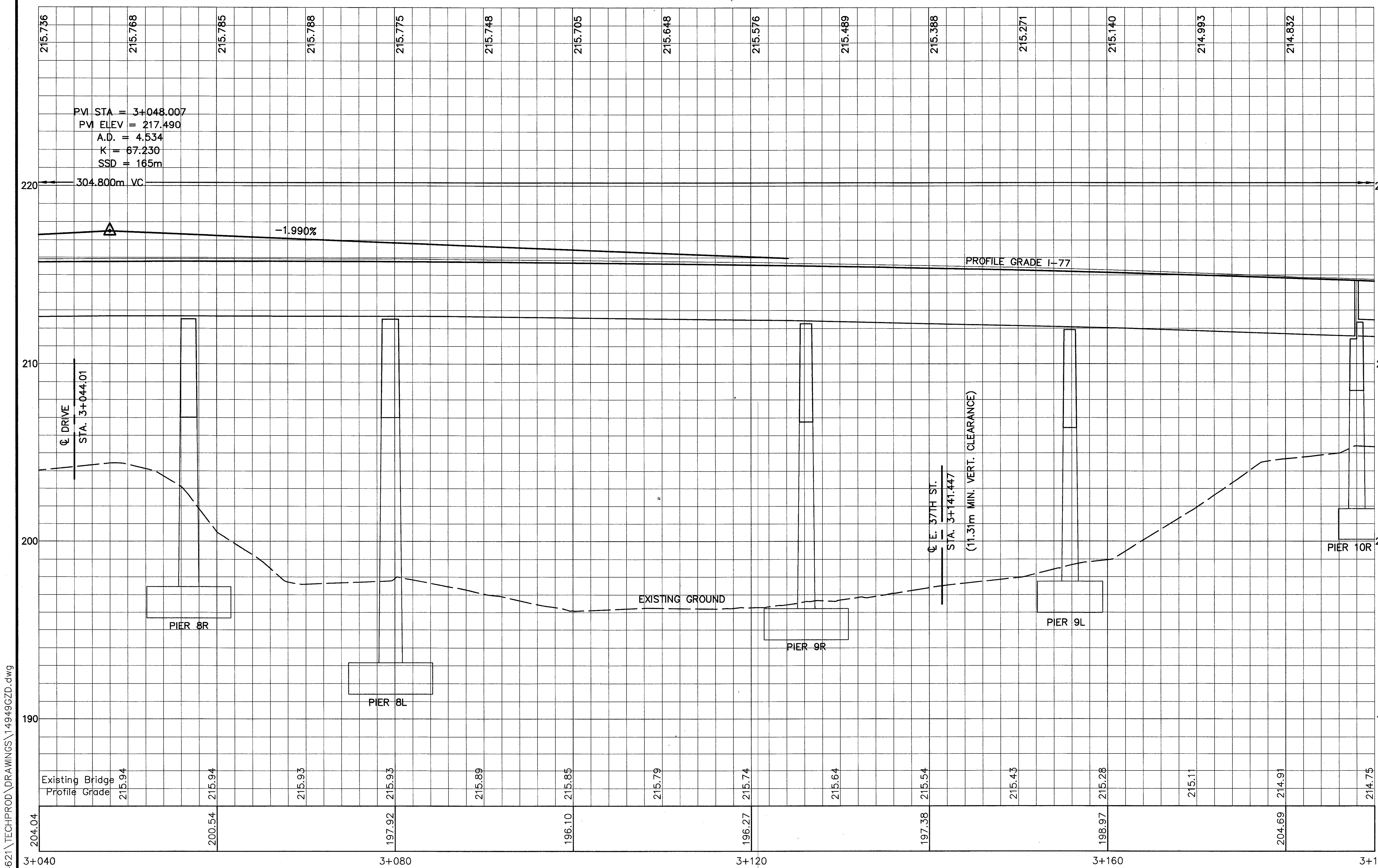

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE 1:200

VERTICAL SCALE 1:100

CALCULATED MJW

CHECKED ZSS

PROFILE – INTERSTATE ROUTE 77
STA. 3+040 TO STA. 3+190

CUY-77-23.458

214.656 214.465 214.067 213.669 213.271 212.873 212.475

PVI STA = 3+048.007
PVI ELEV = 217.490
A.D. = 4.534
K = 67.230
SSD = 165m

304.800m VC

PVT STA. 3+200.407
ELEV.= 214.457

PROFILE GRADE I-77

-1.990%

-1.958%

MATCH EXISTING
STA. 3+300.303
ELEV. = 212.469

℄ E. 36TH ST.
STA. 3+208.112
PREVIOUSLY
VACATED

PIER 10L

PIER 11R

EXISTING GROUND

PIER 11L

℄ CROTON ST.
STA. 3+261.200

(5.21m MIN.
VERT. CLEARANCE)

220
210
200
190

214.54 214.34 214.14 213.91 213.71 213.49 213.29 213.06 212.83

Existing Bridge
Profile Grade

205.09 205.50 205.40 205.39 212.58 212.48 212.11 211.70

3+190 3+200 3+240 3+280 3+320 3+340

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949GZE.dwg

HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:100
CALCULATED MJW
CHECKED ZSS

PROFILE - INTERSTATE ROUTE 77
STA. 3+190 TO STA. 3+300.303

CUY-77-23.458

59
295

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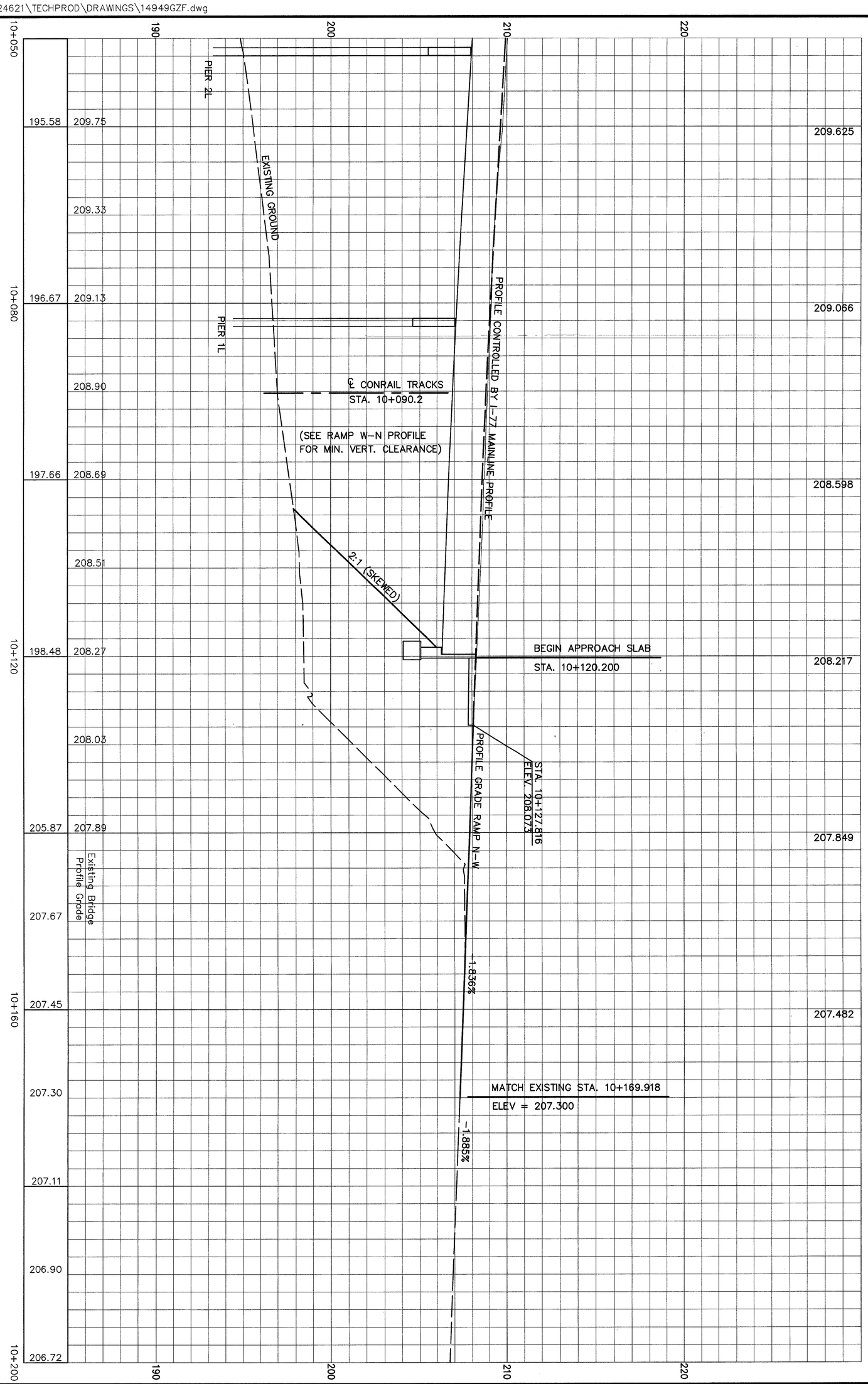
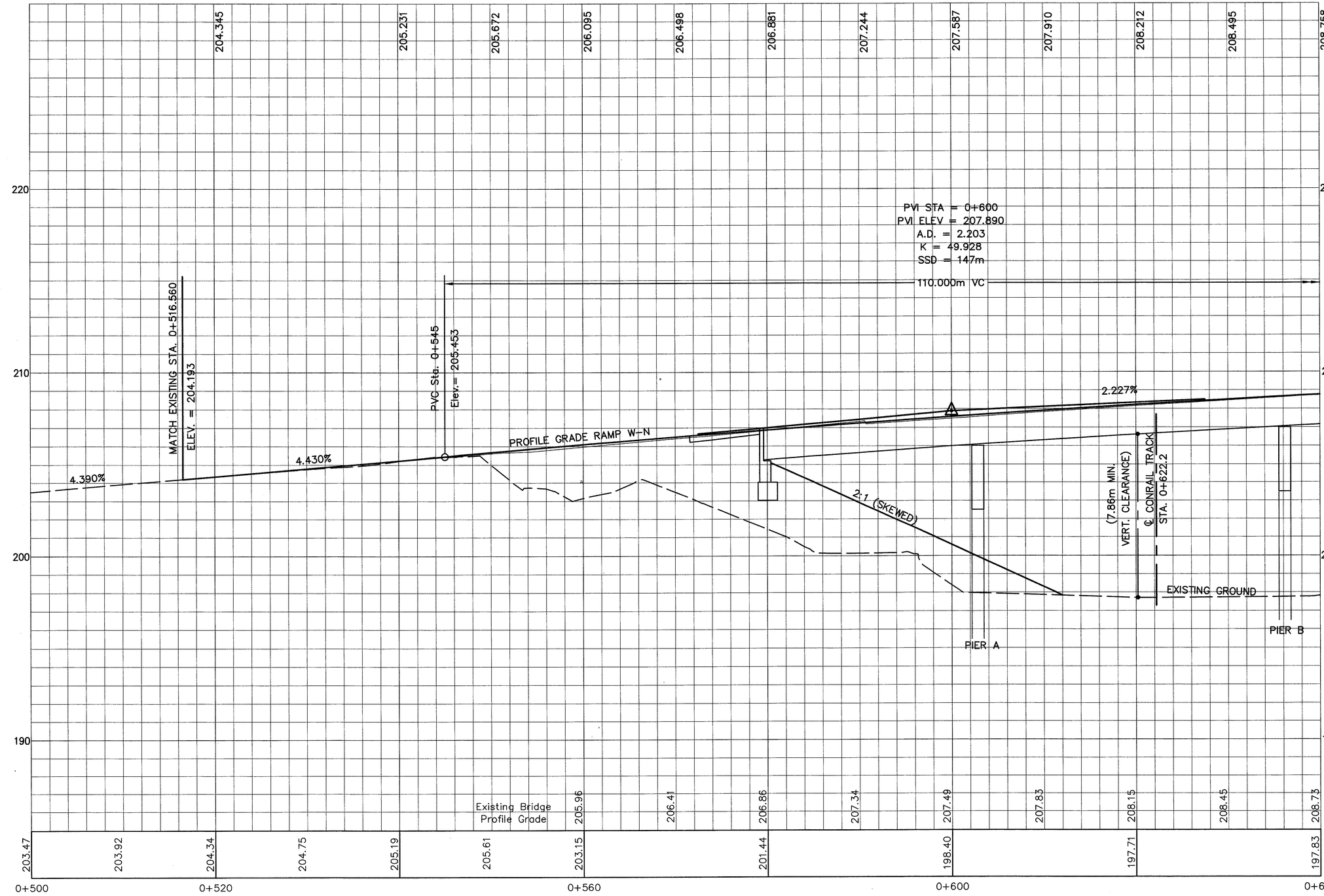
HNTB ARCHITECTS ENGINEERS PLANNERS



60 / 295	CUY-77-23.458	PROFILE - RAMP N-W STA. 10+120.200 TO STA. 10+169.918	CALCULATED MJW CHECKED ZSS	1:200 VERTICAL SCALE 1:100



HNTB ARCHITECTS ENGINEERS PLANNERS

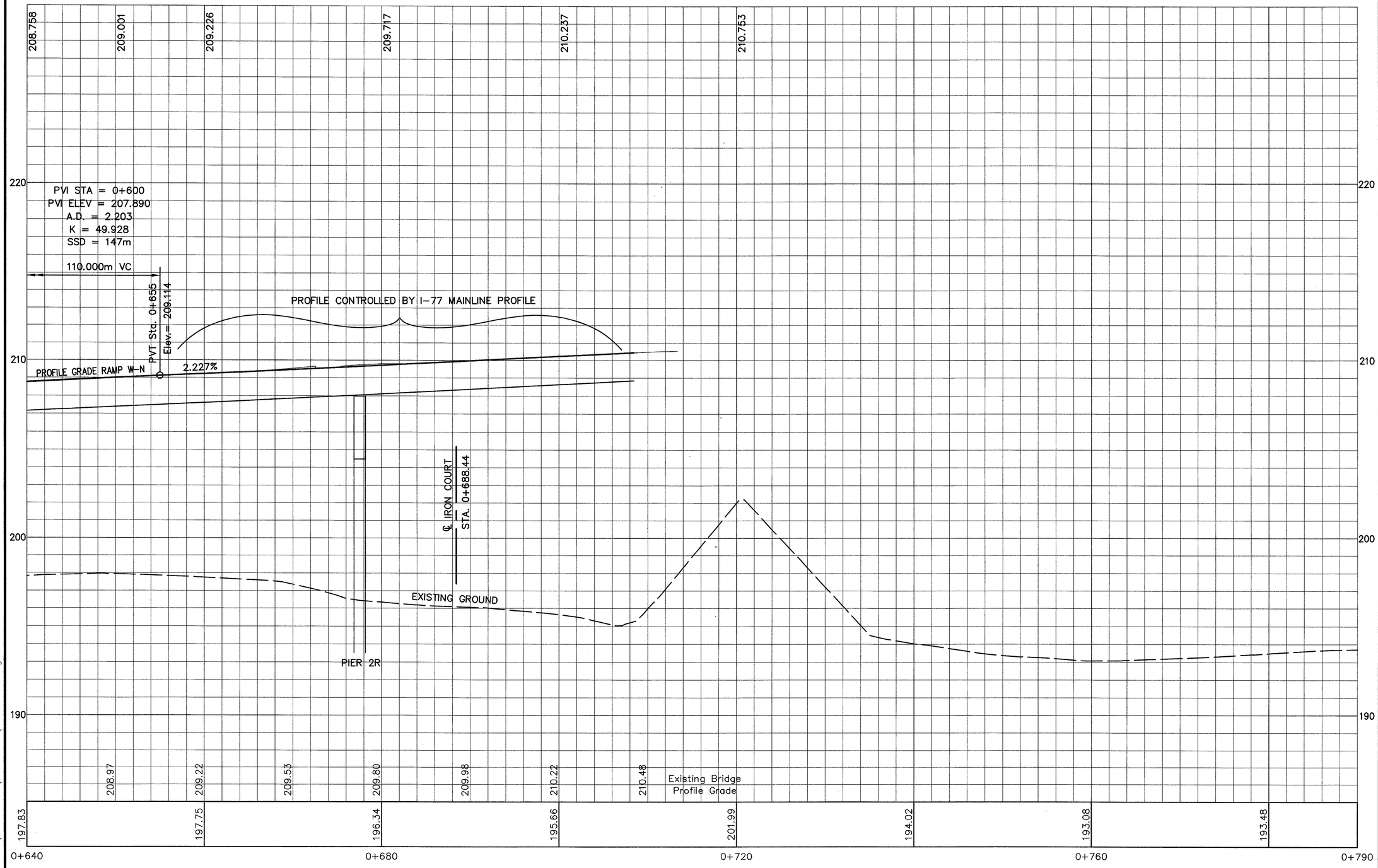
J: \JOBS\24621\TECHPROD\DRAWINGS\14949GZG.dwg

CALCULATED MJW
CHECKED ZSS

1:200
VERTICAL SCALE
1:100

PROFILE - RAMP W-N
STA. 0+516.560 TO STA. 0+640

CUY-77-23.458



HNTB ARCHITECTS ENGINEERS PLANNERS

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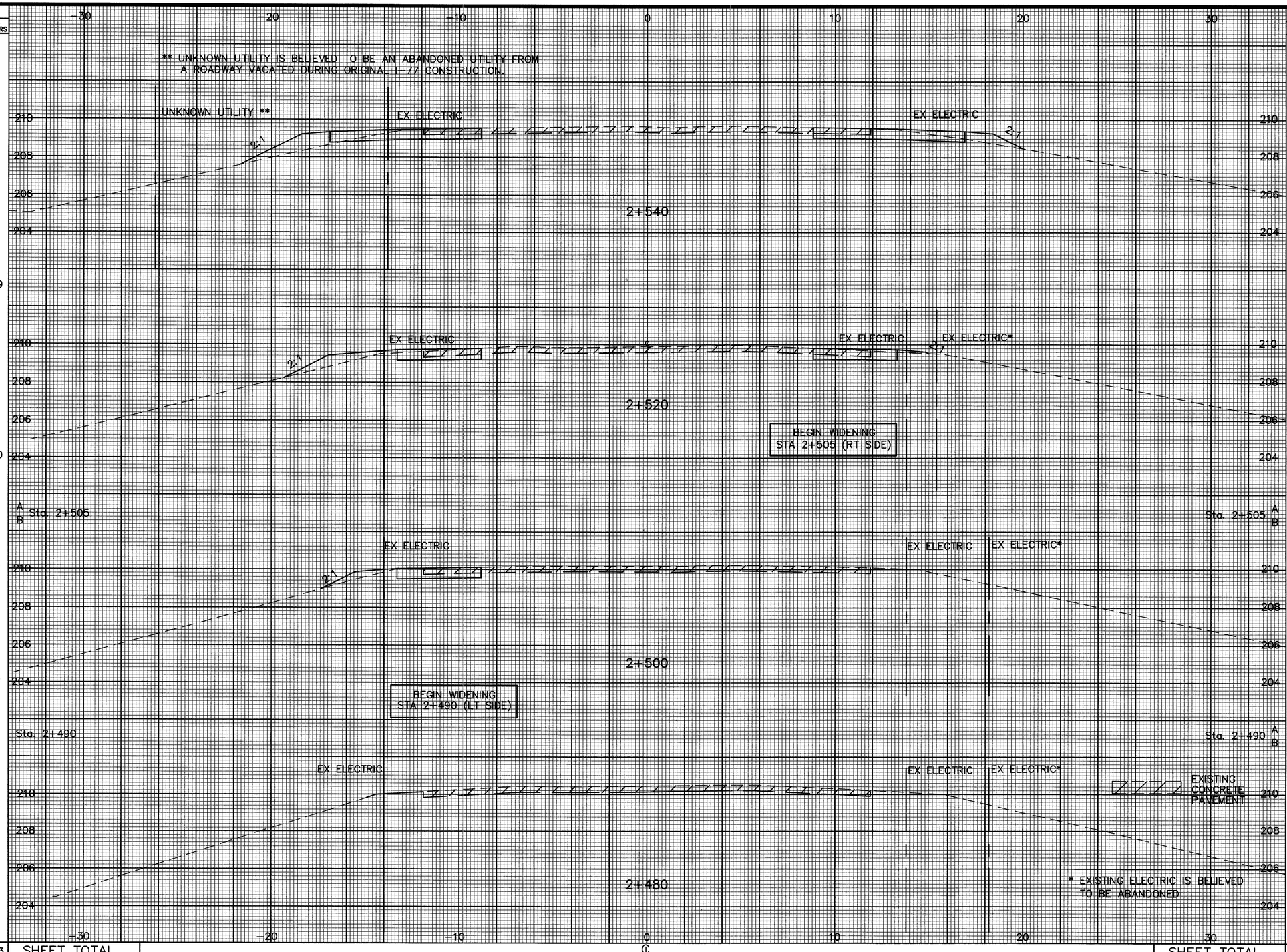
CALCULATED MJW
CHECKED ZSS

1:200
VERTICAL SCALE
1:100

PROFILE – RAMP W-N
STA. 0+640 TO STA. 0+708.432

CUY-77-23.458

SEEDING END WIDTH	SEEDING SQ. METERS
8.9	169
8.0	120
8.0	
4.3	22
4.3	43
4.3	
4.3	39
3.4	
	393



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
4.9	3.8		
		74	58
2.5	2.0		
		38	30
Sta. 2+505 A	2.5	2.0	
Sta. 2+505 B	1.5	1.5	
		8	6
1.5	0.9		
		15	9
Sta. 2+490 A	1.5	0.9	
Sta. 2+490 B	0.0	0.0	
0.0	0.0		
SHEET TOTAL		135	103

CALCULATED MJW
CHECKED NMA

CROSS SECTIONS – I-77 STA. 2+480 TO STA. 2+540

CUY-77-23.458

63
295

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949GXA.dwg view = PLOT1

SEEDING END WIDTH	SEEDING SQ. METERS		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
		2+620				
9.7	165		4.9	4.8	102	71
		2+600				
6.8	146		5.3	2.3	96	56
		2+580				
7.8	160		4.3	3.3	91	66
		2+560				
8.2	171		4.8	3.3	97	71
	642	SHEET TOTAL			386	264

EX ELECTRIC EX ELECTRIC

EX ELECTRIC EX ELECTRIC

EX ELECTRIC

UNKNOWN UTILITY ** EX ELECTRIC EX ELECTRIC

** UNKNOWN UTILITY IS BELIEVED TO BE AN ABAINDONED UTILITY FROM A ROADWAY VACATED DURING ORIGINAL I-77 CONSTRUCTION.

EXISTING CONCRETE PAVEMENT

SHEET TOTAL

HNTB ARCHITECTS ENGINEERS PLANNERS

CALCULATED MJW CHECKED NMA

CROSS SECTIONS - I-77 STA. 2+560 TO STA. 2+620

CUY-77-23.458

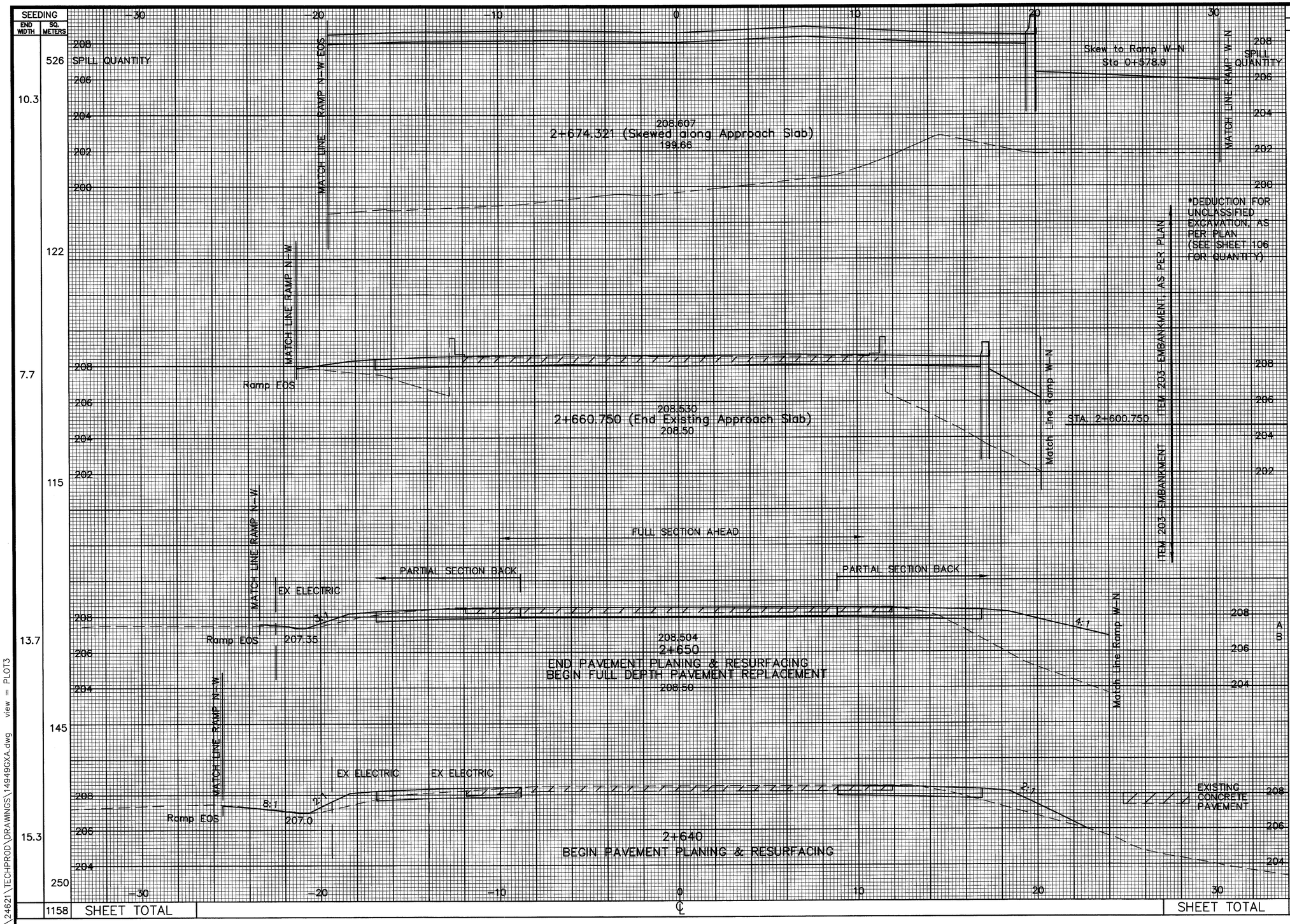
64
295

J:\JOBS\24621\TECHPROD\DRAWINGS\14949GXA.dwg view = PLOT2

SEEDING END WIDTH	SEEDING SQ. METERS
	526
10.3	
	122
7.7	
	115
13.7	
	145
15.3	
	250
	1158

SPILL QUANTITY

SHEET TOTAL



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
		0	5000
0.0	358.5		
			-353*
		29	2664
4.3	34.1		7311
		76	295
A 9.8	20.8		
B 5.4	20.8		
		51	130
4.7	5.2		
		96	100
		252	525

SHEET TOTAL

CALCULATED MJW
CHECKED NMA

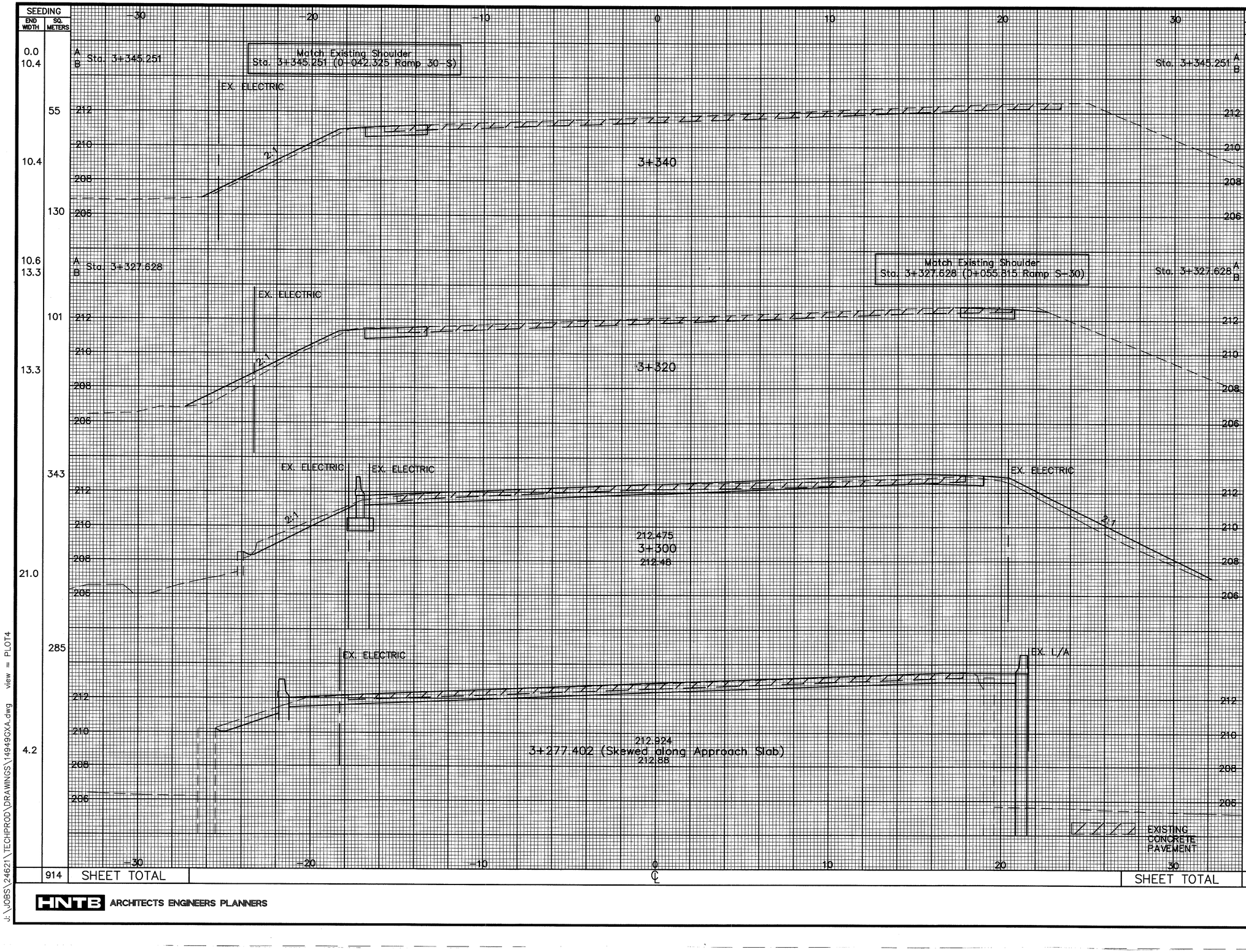
CROSS SECTIONS - I-77 STA. 2+640 TO STA. 2+674.321

CUY-77-23.458

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949GXA.dwg view = PLOT3

SEEDING END WIDTH	SEEDING SQ. METERS	
0.0		A
10.4		B Sta. 3+345.251
	55	
10.4		
	130	
10.6		A
13.3		B Sta. 3+327.628
	101	
13.3		
	343	
21.0		
	285	
4.2		
	914	SHEET TOTAL



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0	0		
1.2	1.6		
		6	8
1.2	1.6		
		15	20
1.2	1.6		
2.8	2.8		
		21	21
2.8	2.8		
		154	72
12.6	4.4		
		273	50
11.6	0.0		
		SHEET TOTAL 469	171

CALCULATED MJW
CHECKED NMA

CROSS SECTIONS – I-77 STA. 3+277.402 TO STA. 3+340

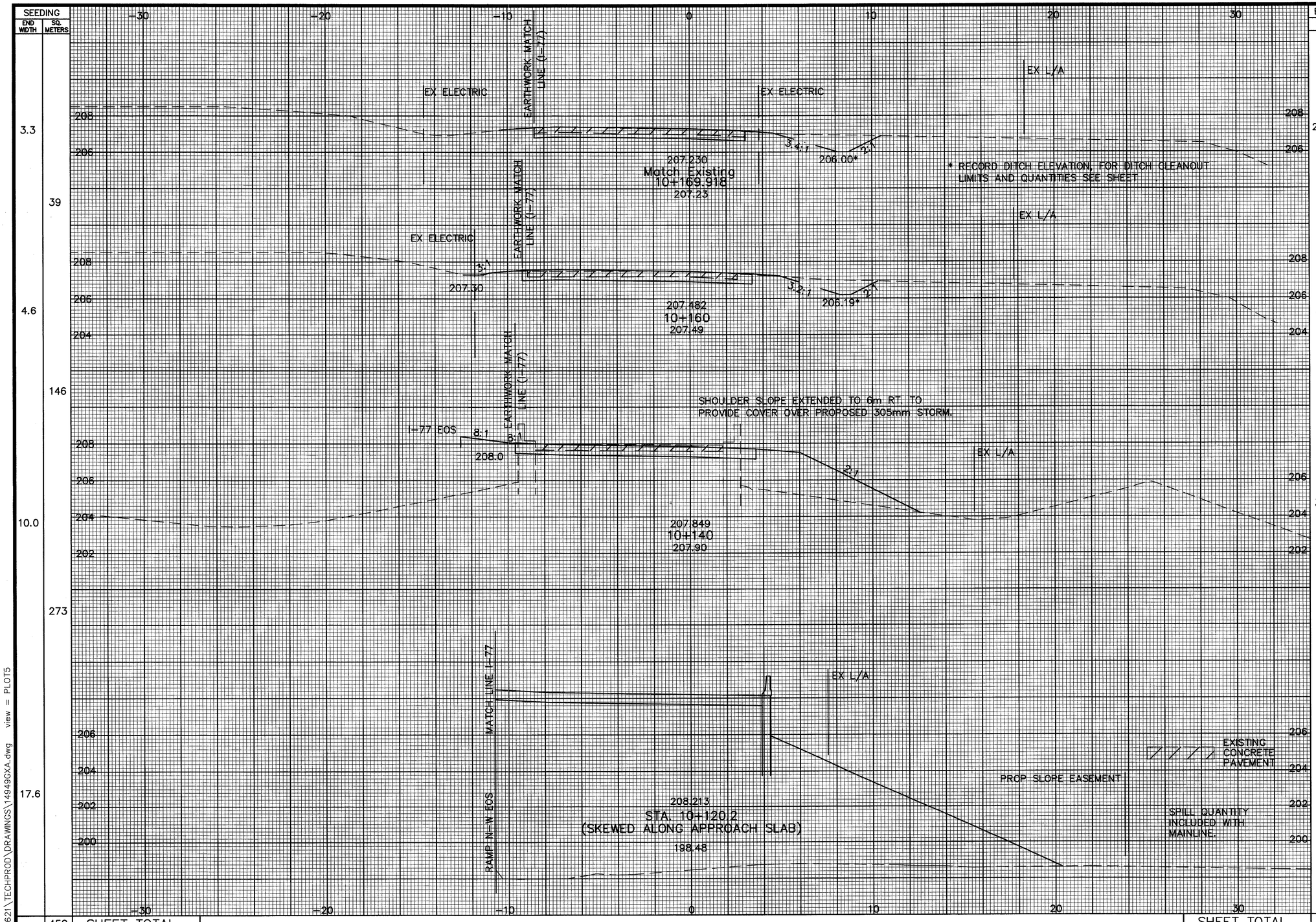
CUY-77-23.458

66
295

J: \JOBS\24621\TECHPROD\DRAWINGS\14949GXA.dwg view = PLOT4

HNTB ARCHITECTS ENGINEERS PLANNERS

SEEDING END WIDTH	SEEDING SQ. METERS	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
3.3	39	2.7	0.0	29	1
4.6	146	3.1	0.1	61	148
10.0	273	3.0	14.7	30	2106
17.6		0	198		
	458 SHEET TOTAL			120	2255
				SHEET TOTAL	



CALCULATED M.JW
CHECKED NMA

CROSS SECTIONS - RAMP N-W

CUY-77-23.458

67
295

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949GXA.dwg view = PLOT5

CROSS SECTIONS – RAMP W–N

CALCULATED MJW | CHECKED NMA

SEEDING END WIDTH	SEEDING SQ. METERS	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
22.0	308	0.0	158.9	0	1672
17.7 / 21.3	119	A 0 / B 0	A 56.8 / B 58.7	0	290
17.9	164	0	41.3		1801
3.3	70	3.3	0	23	293
3.7	12	2.8	0.1	61 / 9	1 / 0
3.0		2.6	0		
	673 SHEET TOTAL			93	294 SHEET TOTAL

-161*

*DEDUCTION FOR UNCLASSIFIED EXCAVATION, AS PER PLAN (SEE SHEET 106 FOR QUANTITY)

SPILL QUANTITY INCLUDED WITH MAINLINE.

Skew to I-77 Sta. 2+674.321

MATCH LINE I-77

MATCH LINE STA. 0+560

206.840
0+578.900 (Skewed along Approach Slab)
201.70
(CORRECTED EARTHWORK LENGTH = 15.5m)

PARTIAL SECTION AHEAD

EX L/A

EX SLOPE EASE

12:1
205.37
2:1

206.095
0+560
203.15

EX L/A

13.7:1
205.20
3:1

STA. 0+554.200

ITEM 203=EMBANKMENT, AS PER PLAN

205.901
0+554.200
203.73

EX L/A

ITEM 203=EMBANKMENT

205.231
0+540
205.22

EX. ELECTRIC

4:1

Match Existing
Sta. 0+516.560

204.345
0+520
204.34

EXISTING CONCRETE PAVEMENT

Sta. 0+516.560

-30 -20 -10 0 10 20 30

℄

HNTB ARCHITECTS ENGINEERS PLANNERS

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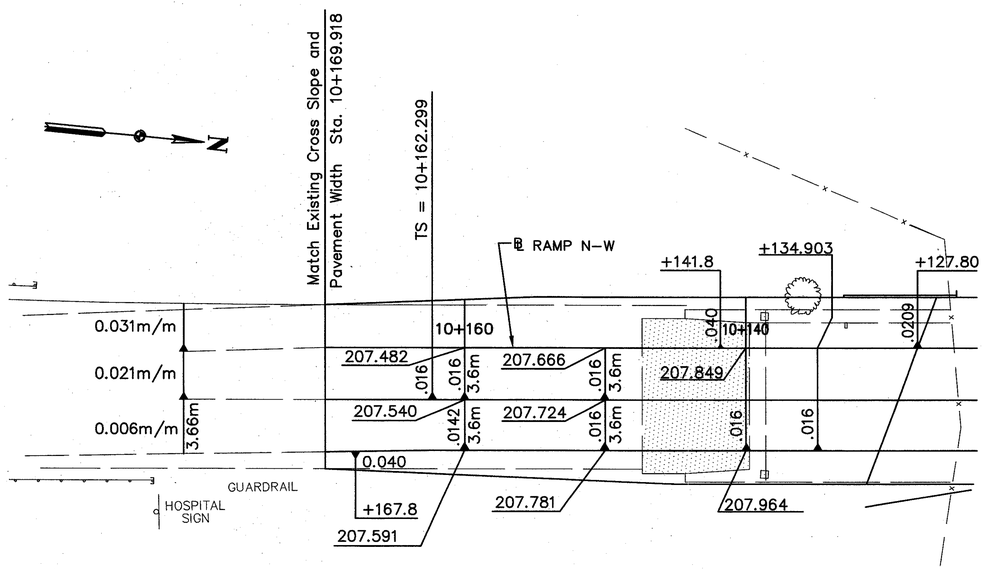
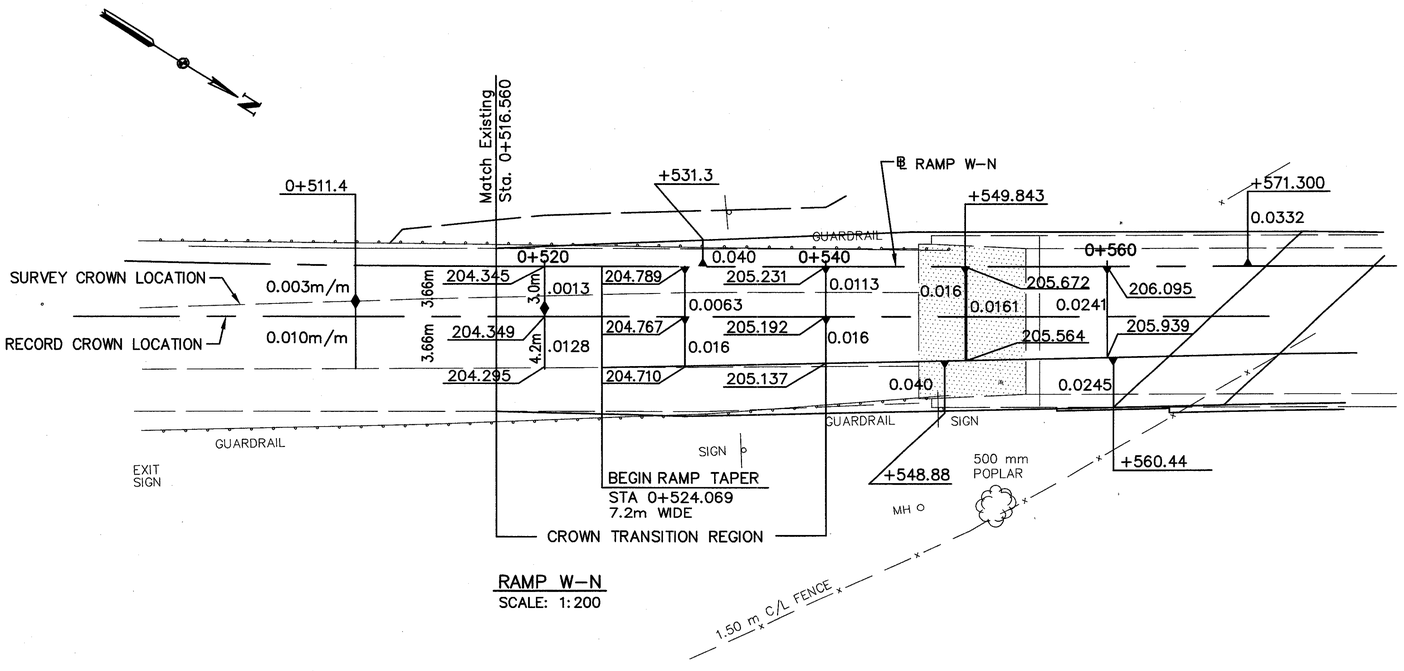


RAMP N–W
SCALE: 1:200



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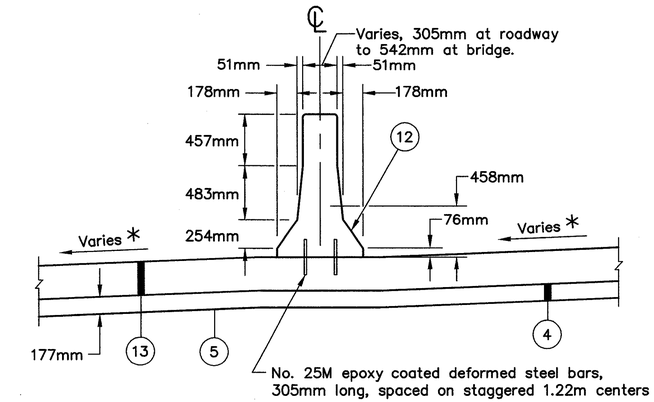
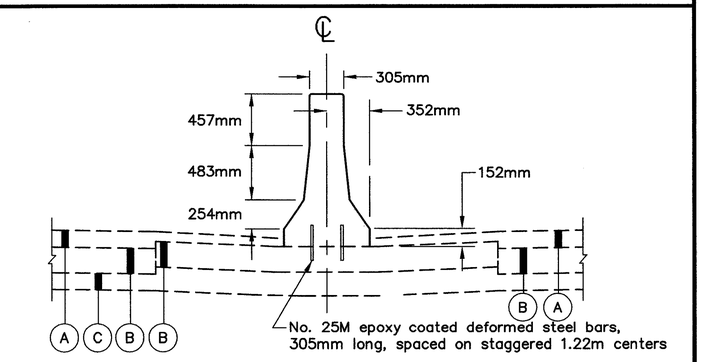
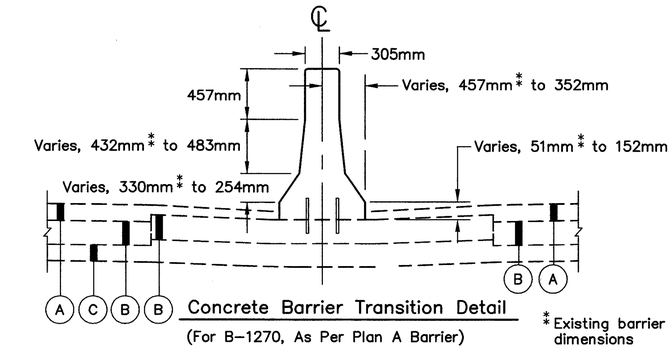


Concrete Barrier, Type B–1270, As Per Plan
(on approach slabs)
Sta. 2+666.711 to Sta. 2+674.311
Sta. 3+277.404 to Sta. 3+285.004

Cross slope is 0.016 from Sta. 2+666.711 to Sta. 2+674.311
* Cross slope varies from 0.037 at Sta. 3+277.404 to 0.038 at Sta. 3+285.004



Concrete Barrier, Type B–1270, As Per Plan A
Sta. 2+433.000 to Sta. 2+666.711
Sta. 3+285.004 to Sta. 3+595.000



Concrete Barrier Transition Detail
(For B–1270, As Per Plan A Barrier)
Sta. 2+428.000 to Sta. 2+433.000
Sta. 3+595.000 to Sta. 3+600.000

* Existing barrier dimensions

Notes:
For legend see sheet 3.

If the existing concrete barrier base is found to be unsuitable for reuse, as determined by the Engineer, it shall be replaced. All cost associated with base replacement, including removal of the existing pavement, shall be included with the cost of Item 622 – Concrete Barrier, Type B–1270, As Per Plan A

CALCULATED M.JW
CHECKED ZSS

ROADWAY DETAILS

CUY–77–23.458

HNTB ARCHITECTS ENGINEERS PLANNERS

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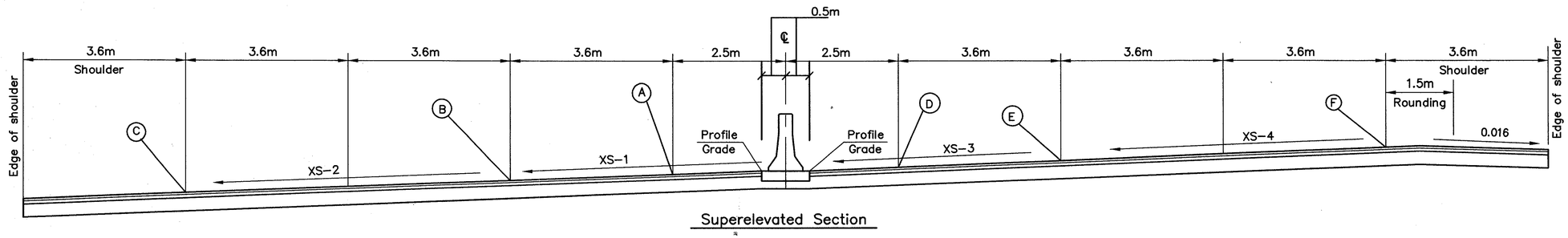

Superelevated Section

STATION	C	XS–2	B	A	XS–1	PROFILE GRADE	XS–3	D	E	XS–4	F
3+280.000	212.398	–0.0371	212.665	212.799	–0.0371	212.873	+0.0358	212.945	213.073	+0.0358	213.331
3+290.000	212.171	–0.0393	212.454	212.595	–0.0393	212.674	+0.0386	212.751	212.890	+0.0386	213.168
3+300.000	211.943	–0.0416	212.242	212.392	–0.0416	212.475	+0.0415	212.558	212.707	+0.0415	213.006
3+300.303	211.937	–0.0416	212.236	212.386	–0.0416	212.469	+0.0415	212.552	212.701	+0.0415	213.000

NOTE: FOR SUPERELEVATED PAVEMENT ELEVATIONS ON THE PROPOSED STRUCTURE SEE SHEETS 248–253.

HNTB ARCHITECTS ENGINEERS PLANNERS

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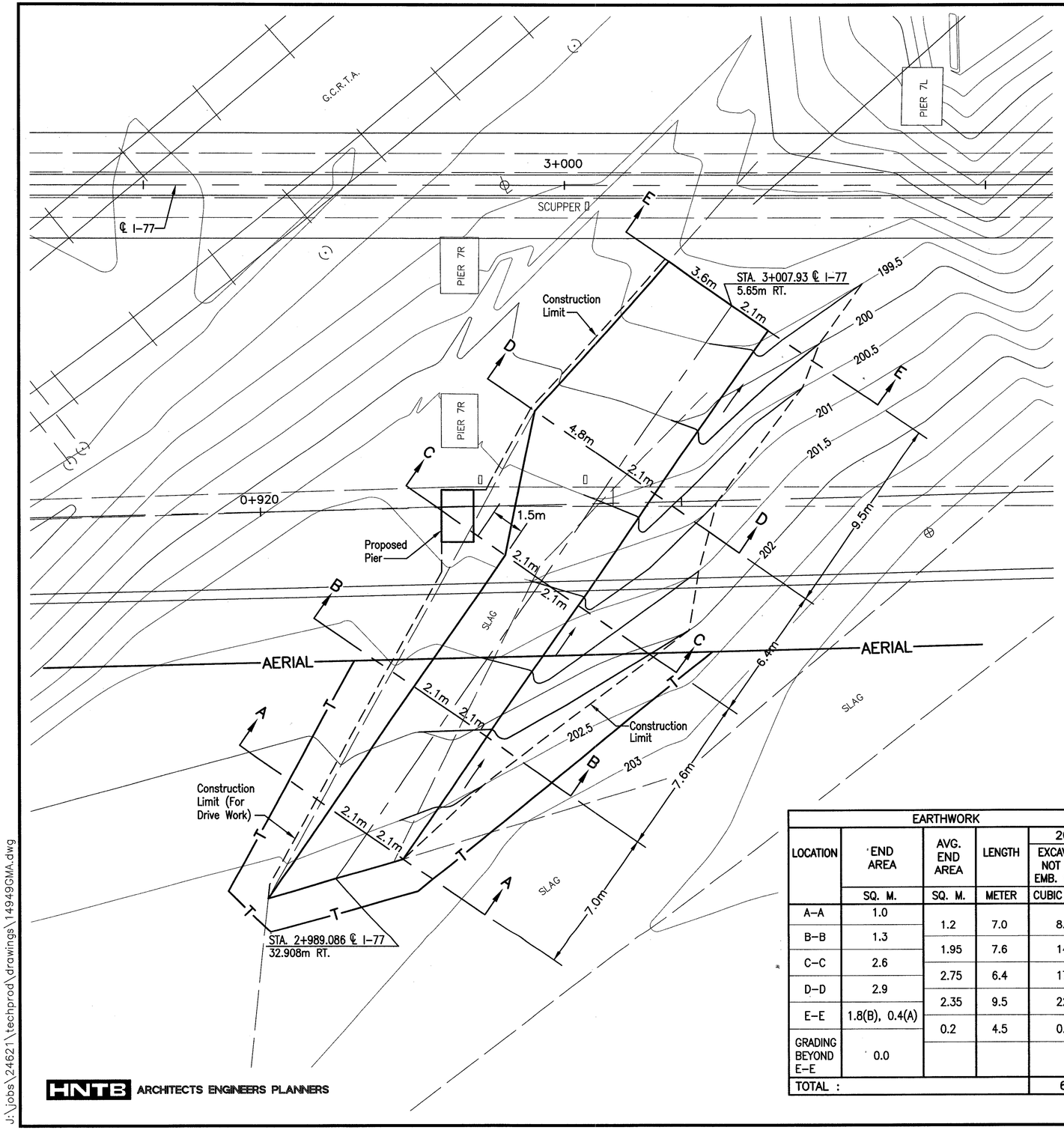
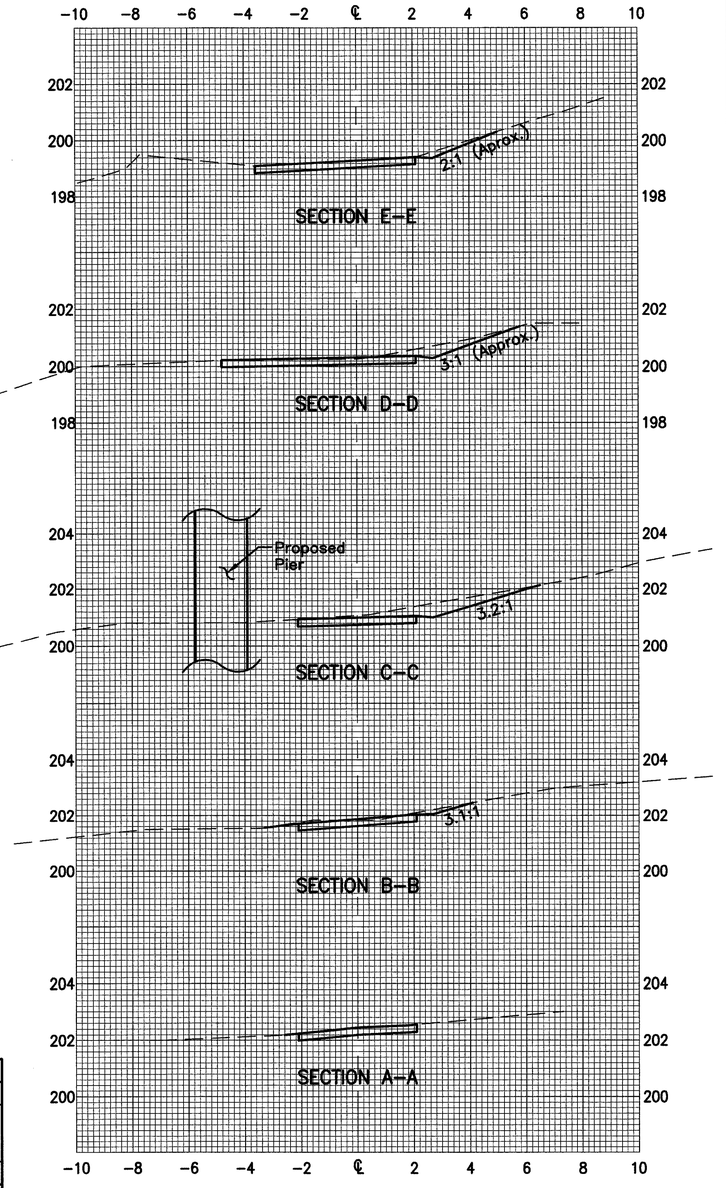
CALCULATED M.J.W
CHECKED ZSS

SUPERELEVATION TABLE

CUY–77–23.458





EARTHWORK				
LOCATION	END AREA	AVG. END AREA	LENGTH	203 EXCAVATION NOT INCL. EMB. CONST.
	SQ. M.	SQ. M.	METER	CUBIC METER
A–A	1.0	1.2	7.0	8.4
B–B	1.3	1.95	7.6	14.8
C–C	2.6	2.75	6.4	17.6
D–D	2.9	2.35	9.5	22.3
E–E	1.8(B), 0.4(A)	0.2	4.5	0.9
GRADING BEYOND E–E	0.0			
TOTAL :				64

DRIVE QUANTITIES					
FROM	TO	LENGTH	AVG. WIDTH	AREA	304 (250mm) AGG. BASE
		METER	METER	SQ. M.	CU. M.
A–A	C–C	14.6	4.2	61.32	15.3
C–C	D–D	6.4	5.55	35.52	8.9
D–D	E–E	9.5	6.3	59.85	15.0
TOTAL :					40

HNTB ARCHITECTS ENGINEERS PLANNERS

HORIZONTAL SCALE 1:100

CALCULATED MJW CHECKED

RTA ACCESS DRIVE

CUY-77-23.458

71
295

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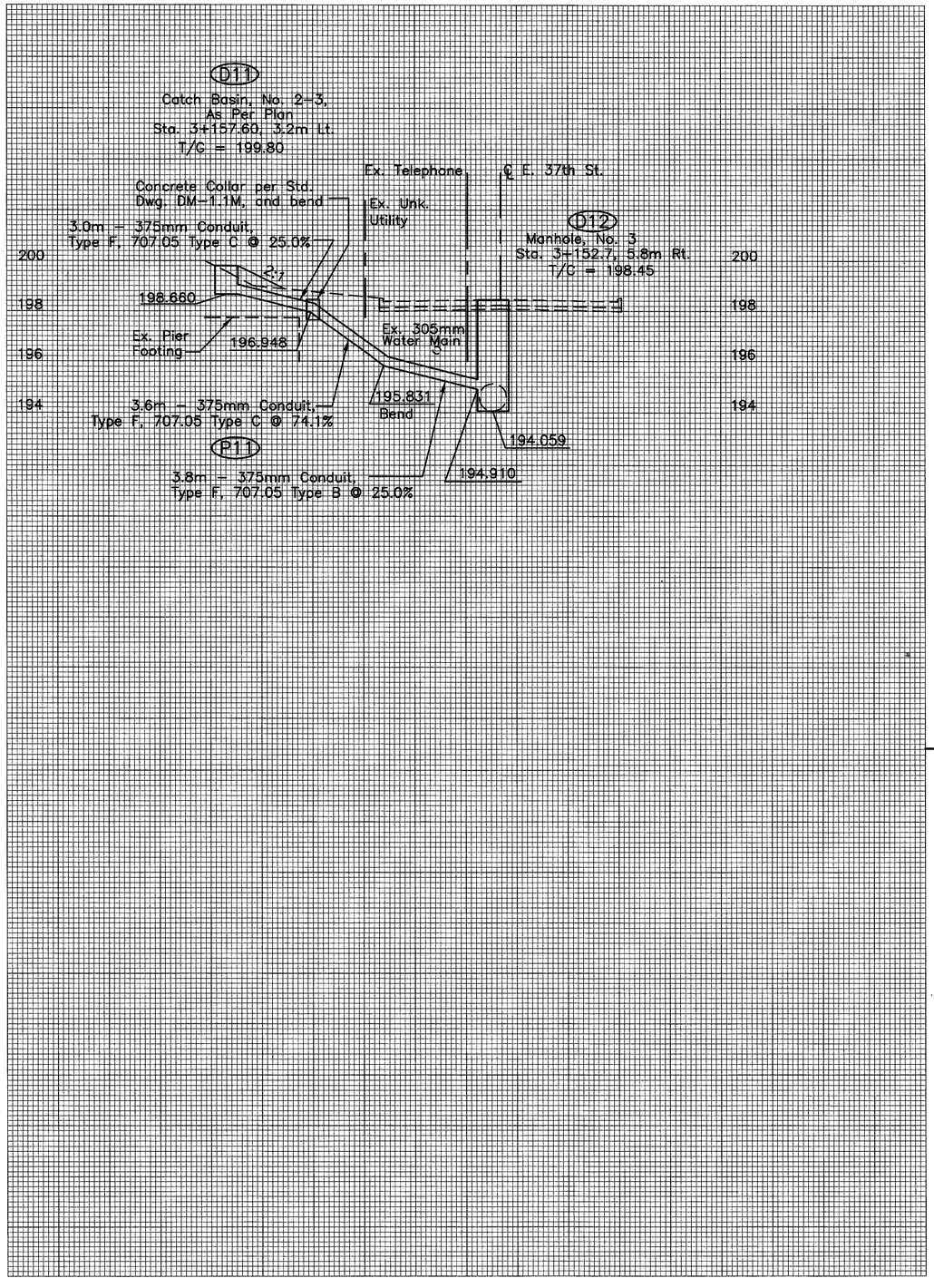
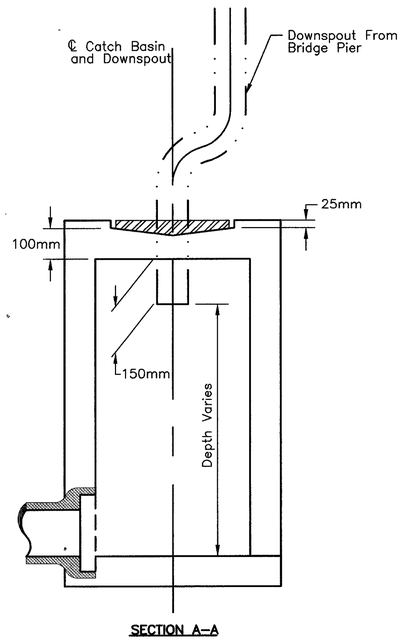
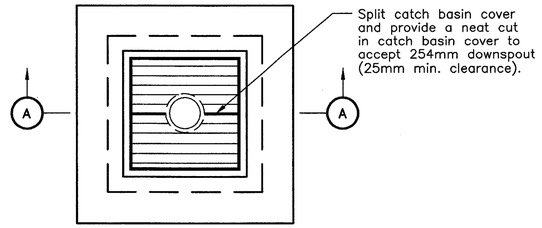




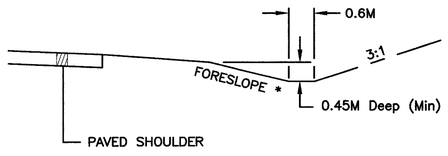
SECTION A-A



PLAN

CATCH BASIN No. 2-3, AS PER PLAN

NO SCALE



TYPICAL DITCH DETAIL

(FOR DITCH CLEANOUT, AS PER PLAN)

(NO SCALE)

*FORSLOPES

8:1 SLOPE	RAMPS W-N, E-N
4:1 SLOPE	RAMP N-W
2:1 SLOPE	RAMP S-30, 30-S

CALCULATED AKE
CHECKED MJW

SEWER PROFILES AND DRAINAGE DETAILS

CUY-77-23.458

71A
295

HNTB ARCHITECTS ENGINEERS PLANNERS

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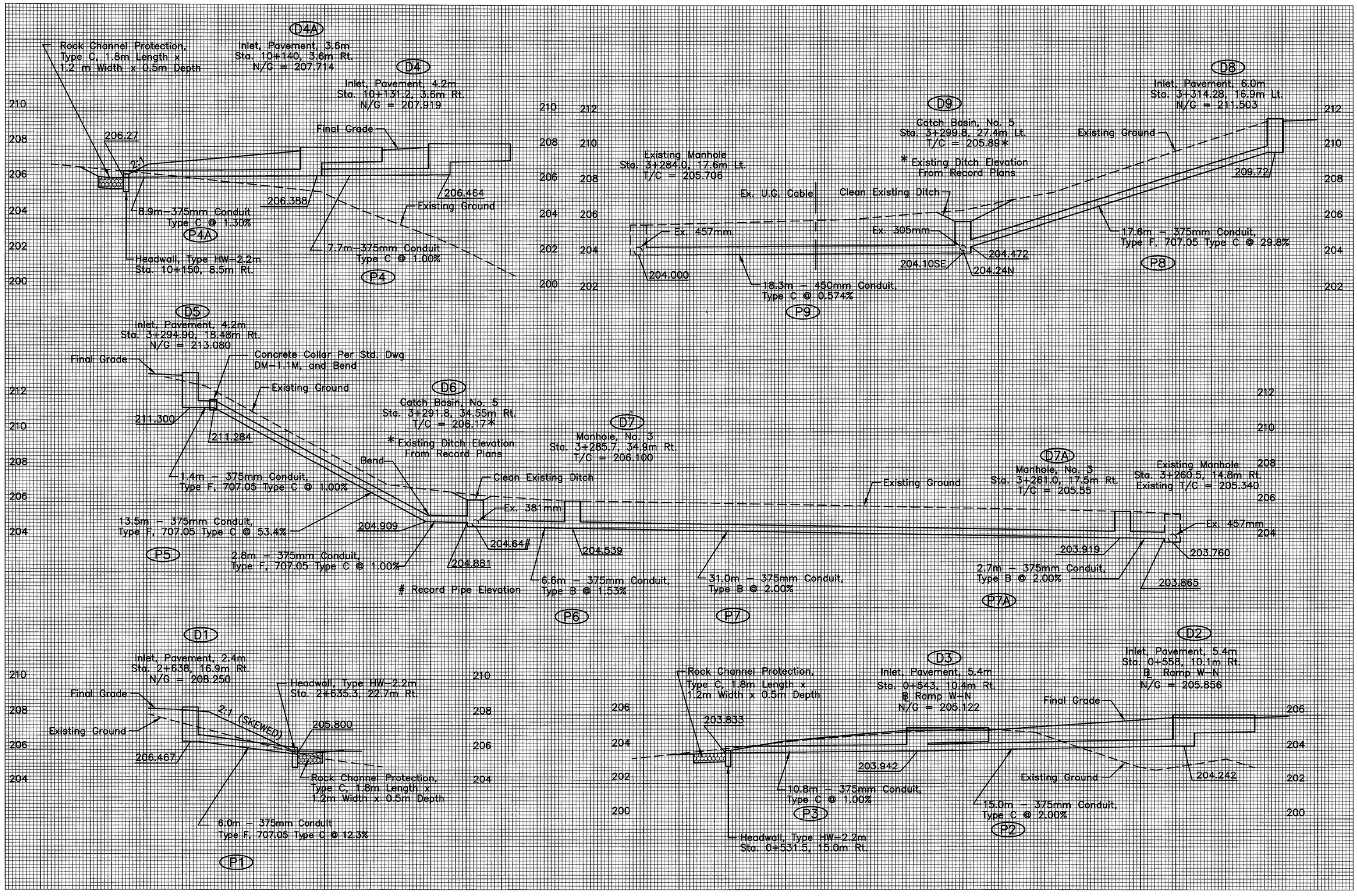

HNTB ARCHITECTS ENGINEERS PLANNERS

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CALCULATED AKE | CHECKED MJW

SEWER PROFILES

CUY-77-23.458

WATERWORK NOTES

GENERAL

CONVERSION OF ENGLISH WATERWORK NOTES

THE ENGLISH WATERWORK NOTES CONTAINED IN THIS PLAN SHALL BE CONVERTED TO METRIC UNITS USING THE ENGLISH TO SI (METRIC) CONVERSION FACTORS PROVIDED IN SECTION 109.011 OF THE 1997 CONSTRUCTION AND MATERIAL SPECIFICATIONS. THE APPENDIX OF ASTM E 380 SHALL BE UTILIZED FOR ANY ADDITIONAL CONVERSION FACTORS REQUIRED. CONVERSIONS SHALL BE APPROPRIATELY PRECISE AND SHALL REFLECT STANDARD INDUSTRY METRIC VALUES WHERE SUITABLE.

SCOPE OF WORK

THE WORK CONTEMPLATED UNDER THIS CONTRACT COMPRISES THE FURNISHING AND INSTALLING COMPLETE WITH VALVES AND OTHER APPURTENANCES, WATER MAIN RELOCATIONS AND PERFORMING OTHER INCIDENTAL WORK NECESSARY AS SHOWN ON SHEET NO. 51 AND 72 I

GENERAL NOTES

THE FIELD TESTING HEAD SHALL BE 75 PSI PLUS THAT DUE TO THE STATIC HEAD, BUT IN NO CASE LESS THAN 150 PSI.

THE CONTRACTOR SHALL NOTIFY MR. RICHARD KMETZ, SUPERVISOR OF THE CLEVELAND WATER DEPARTMENT INSPECTION AND ENFORCEMENT UNIT THREE (3) WEEKS PRIOR TO STARTING ANY WATER WORKS CONSTRUCTION. CALL 664–2342.

AFTER AWARD OF CONTRACT, THE CONTRACTOR THROUGH THE PROJECT ENGINEER SHALL SUBMIT TO THE CITY OF CLEVELAND WATER DEPARTMENT, INSPECTION AND ENFORCEMENT SECTION, A CONSTRUCTION SCHEDULE RELATING TO WATERWORK.

DEFINITIONS

WHEREVER IN THESE SPECIFICATIONS OR IN OTHER CONTRACT DOCUMENTS THE FOLLOWING TERMS OR PRONOUNS IN PLACE OF THEM ARE USED, THE INTENT AND MEANING SHALL BE INTERPRETED AS FOLLOWS:

THE STATE

THE STATE IS THE STATE OF OHIO ACTING THROUGH ITS AUTHORIZED REPRESENTATIVE.

ENGINEER

THE ENGINEER IS DISTRICT DEPUTY DIRECTOR OR DISTRICT ENGINEER, THE DISTRICT CONSTRUCTION ENGINEER OR THE DISTRICT MAINTENANCE ENGINEER OR THE PROJECT ENGINEER ASSIGNED TO ADMINISTER THE CONTRACT, OR THEIR DULY DESIGNATED DEPUTIES, AGENTS, OR REPRESENTATIVES.

THE CITY

THE CITY IS THE DIRECTOR, DEPARTMENT OF PUBLIC UTILITIES OF THE CITY OF CLEVELAND OR THEIR DULY DESIGNATED DEPUTIES, AGENTS OR REPRESENTATIVES.

STATUS OF CITY INSPECTORS

INSPECTORS AS DESIGNATED BY THE DIRECTOR OF PUBLIC UTILITIES ARE AUTHORIZED TO INSPECT ALL WORK DONE AND MATERIALS FURNISHED, SUCH INSPECTION MAY EXTEND TO ALL OR ANY PART OF THE WATERWORK, AND TO THE PREPARATION OR MANUFACTURE OF THE MATERIALS TO BE USED IN THE WATERWORK. THE CITY INSPECTOR AS DESIGNATED BY THE DIRECTOR OF PUBLIC UTILITIES WILL MAKE WORK INSTRUCTIONS THROUGH THE PROJECT ENGINEER. ARRANGEMENTS FOR CITY INSPECTORS ARE TO BE MADE BY NOTIFYING INSPECTION AND ENFORCEMENT DIVISION OF WATER AND HEAT (664–2342), WITHIN THE TIME SPECIFIED. NO WORK SHALL BE ACCEPTED UNLESS INSPECTED.

ACCESS TO WORK AND PLACE OF MANUFACTURE

THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND DIRECTOR OF PUBLIC UTILITIES, AT LEAST SEVEN (7) DAYS PREVIOUS TO THE COMMENCEMENT OF THE MANUFACTURE OF ANY MATERIALS, OF THE TIME AND PLACE WHERE THE MANUFACTURE IS TO COMMENCE, IN ORDER THAT A REPRESENTATIVE OF THE ENGINEER AND DIRECTOR MAY BE PRESENT TO INSPECT THE MANUFACTURE. THE CONTRACTOR SHALL PROVIDE, WITHOUT CHARGE OR EXPENSE TO THE STATE AND CITY, ALL NECESSARY ASSISTANCE TO THE ENGINEER AND DIRECTOR WHEN REQUIRED FOR INSPECTION OR VERIFICATION OF WORK DONE.

DIMENSIONS, DETAILED DRAWINGS AND ELEVATIONS

FIGURED DIMENSIONS ON DRAWINGS SHALL TAKE PRECEDENT OVER MEASUREMENTS BY SCALE, AND DETAILED DRAWINGS ARE TO TAKE PRECEDENCE OVER GENERAL DRAWINGS AND SHALL BE CONSIDERED AS EXPLANATORY OF THEM AND NOT AS INDICATING EXTRA WORK. IF, HOWEVER, ANY OF THE DETAILED DRAWINGS SHOW MORE ELABORATE OR EXPENSIVE WORK THAN IS NORMALLY SPECIFIED AND INDICATED BY THE CONTRACT DRAWINGS, NOTICE THEREOF MUST BE GIVEN TO THE ENGINEER BY THE CONTRACTOR WITHIN TEN (10) DAYS AFTER RECEIPT OF SUCH DETAILED DRAWINGS IN ORDER THAT THE DRAWINGS MAY BE AMENDED OR THE ADDITIONAL EXPENSE ON ACCOUNT OF SUCH WORK MAY BE ADJUSTED AND AUTHORIZED. IF THE ENGINEER DOES NOT RECEIVE SUCH NOTICE FROM THE CONTRACTOR WITHIN TEN (10) DAYS AFTER THE DETAILED DRAWINGS HAVE BEEN RECEIVED BY HIM, IT IS HEREBY AGREED THAT THE CONTRACTOR ACCEPTS THE DRAWINGS AND WILL EXECUTE THEM WITHOUT CLAIM FOR EXTRA COMPENSATION.

ERRORS AND DISCREPANCIES

IF THE CONTRACTOR, IN THE COURSE OF HIS WORK, FINDS ANY DISCREPANCY BETWEEN THE PLANS, DESCRIPTION AND LOCATION OF WORK, ESTIMATE OF QUANTITIES, THE PHYSICAL CONDITION OF THE LOCALITY, OR ANY ERRORS IN PLANS OR IN THE LAYOUT AS GIVEN BY THE DRAWINGS AND INSTRUCTIONS WHICH MAKE IT IMPOSSIBLE FOR HIM TO COMPLETE THE WORK REQUIRED UNDER THE PLANS AND SPECIFICATIONS, IT SHALL BE HIS DUTY TO IMMEDIATELY INFORM THE ENGINEER IN WRITING AND THE ENGINEER SHALL VERIFY THE SAME. ANY WORK DONE AFTER SUCH DISCOVERY, UNTIL AUTHORIZED, SHALL BE DONE AT THE CONTRACTOR'S RISK.

FLOODS AND FREEZING WEATHER

PROPER FACILITIES SHALL BE PROVIDED FOR PROTECTING THE WORK FROM DAMAGE BY FLOOD RAIN OR FROST, AND WORK DONE IN FREEZING WEATHER SHALL BE DONE IN SUCH MANNER AS THE ENGINEER MAY APPROVE. VALVES SHALL BE PROTECTED FROM FREEZING UNTIL BACKFILLED IN THE COMPLETED WORK.

ADDITIONAL WORK

(A) ATTENTION IS CALLED TO THE FACT THAT THE WORK OF THIS CONTRACT INCLUDED CERTAIN PERFORMANCE AS INCIDENTAL TO THE ITEMIZED REQUIREMENTS HEREOF, THOUGH NOT EXCLUSIVE AS FOLLOWS: TO PERFORM ALL EXCAVATION, BACKFILLING, SHEETING, SHORING, AND TO TEST AND CHLORINATE THE INSTALLATION. THE STATE WILL MAKE NO SPECIFIC OR SEPARATE PAYMENT OR ALLOWANCE, BUT THE COST THERE SHALL BE INCLUDED IN THE PRICES STIPULATED TO BE PAID FOR UNDER THE VARIOUS WATERWORK ITEMS TO BE DONE UNDER THIS CONTRACT.

(B) PRELIMINARY FLUSHING: BEFORE BEING PLACED IN SERVICE, ALL DIRT AND FOREIGN MATTER SHALL BE REMOVED FROM THE NEW WATER MAIN OR EXTENSIONS TO EXISTING MAINS BY A THOROUGH FLUSHING THROUGH THE HYDRANTS OR BY OTHER APPROVED MEANS. EACH VALVED SECTION OF NEWLY LAID PIPE SHALL BE FLUSHED INDEPENDENTLY. THIS SHALL BE DONE AFTER THE PRESSURE TEST AND MAY BE DONE BEFORE OR AFTER THE TRENCH SHALL HAVE BEEN BACKFILLED.

TESTING MAINS

(A.) ALL PIPES, VALVES, FITTINGS, ETC., SHALL BE LAID IN SUCH A MANNER AS TO LEAVE ALL JOINTS WATERTIGHT. AFTER THE PIPE IS LAID, SUCH LENGTHS OF THE WATER MAIN AS THE DIRECTOR OR HIS DESIGNATE MAY DETERMINE, SHALL BE TESTED UNDER HYDROSTATIC PRESSURE INDICATED IN GENERAL NOTES.

(B.) THE HYDROSTATIC TEST SHALL BE UNDER THE DIRECTION OF THE DIRECTOR OF PUBLIC UTILITIES OR HIS DESIGNATE. THE CONTRACTOR MAY OBTAIN WATER FOR TESTING BY OBSERVING THE RULES AND REGULATIONS ENFORCED IN THE MUNICIPALITIES OR TOWNSHIPS IN WHICH THE WORK IS BEING DONE. THE CITY WILL FURNISH A PRESSURE GAUGE FOR MEASURING THE PRESSURE ON THE WATER MAIN, BUT THE CONTRACTOR SHALL FURNISH A SUITABLE PUMP, PIPES, TEST HEADS AND ALL APPLIANCES, LABOR, FUEL AND OTHER APPURTENANCES NECESSARY TO MAKE THESE TESTS.

(C.) THE HYDROSTATIC TEST PRESSURE SHALL BE FOR A DURATION OF A MINIMUM OF TWO (2) HOURS WITH ALL VALVES CLOSED DURING WHICH TIME THE INTERNAL PRESSURE SHALL REMAIN WITHIN 5 PSI OF THE SPECIFIED TEST PRESSURE. SHOULD THE TEST PRESSURE DROP MORE THAN 5 PSI, THE CONTRACTOR SHALL RECHARGE THE WATER MAIN TO THE SPECIFIED TEST PRESSURE AND LOCATE AND REPAIR THE LEAK TO THE SATISFACTION OF THE CITY. ANY DAMAGED OR DEFECTIVE PIPE, PIPE JOINTS, FITTINGS, VALVES, HYDRANTS OR APPURTENANCES SHALL BE REPAIRED OR REPLACED WITH SOUND MATERIAL AND THE HYDROSTATIC PRESSURE TEST REPEATED.

(D.) AFTER A SECTION OF THE WATER MAIN HAS BEEN TESTED, THE CONTRACTOR SHALL FLUSH THE SAME. IN THE CASE OF SUPPLY MAINS WHERE DRAINS ARE CONNECTED TO VALVE OR DRAIN VAULTS, THE CONTRACTOR SHALL, WITHIN A REASONABLE TIME AFTER THE TEST HAS BEEN COMPLETED, PUMP ALL WATER OUT OF THE VAULTS. FLUSHING SHALL BE DONE IN ACCORDANCE WITH THESE SPECIFICATIONS.

(E.) IN COLD WEATHER IMMEDIATELY AFTER TESTING A SECTION OF THE WATER MAIN, THE CONTRACTOR SHALL OPEN ALL VALVES, AND IN THE CASE OF SUPPLY MAINS ALL AIR RELIEF VALVES, BYPASSES AND DRAINS AND PROPERLY DRAIN BONNETS OF ALL VALVES IN THE SECTION OF THE WATER MAIN, AND TAKE ALL OTHER PRECAUTIONS NECESSARY TO PREVENT INJURY TO WATER MAIN AND APPURTENANCES DUE TO FREEZING.

(F.) IN ORDER TO BE ABLE TO MAKE PROPER ALLOWANCE FOR LEAKAGE AT VALVES, AIR RELIEF VALVES, BYPASSES, AND DRAINS, ONLY THOSE SECTIONS OF WATER MAIN MAY BE TESTED AS SHALL HAVE SUCH VALVES, TEST PLUGS AND CAPS ACCESSIBLE.

(G.) IN TESTING NEW MAINS, THE CONTRACTOR SHALL NOT BE PERMITTED TO USE ANY PART OF THE EXISTING MAINS IN HIS TEST UNLESS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS. THE LIMITS OF THE HYDROSTATIC SHALL BE AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL PROVIDE BLIND FLANGES, PLUGS OR CAPS, DEPENDING ON DESIGN, TO THE TESTED LENGTH OF THE PROPOSED MAIN SO THAT IT WILL BE COMPLETELY INDEPENDENT OF THE SAID EXISTING MAINS. PROPER RESTRAINT OF ALL BLIND FLANGES, PLUGS OR CAPS TO PREVENT BLOWOFF SHALL BE PROVIDED AND IN THE CASE OF DEAD END MAINS CONCRETE PIERS WILL BE REQUIRED. NO EXTRA PAYMENT WILL BE MADE AND THE ENTIRE COST SHALL BE DEEMED TO BE INCLUDED IN THE BID PRICE.

WATER MAIN DISINFECTION

(A.) WATER MAIN DISINFECTION SHALL CONSIST OF: FLUSHING WATER MAINS AFTER THE HYDROSTATIC TEST AND PRIOR TO THE CHLORINATION PROCEDURE; THE CHLORINATION PROCEDURE, THE FINAL FLUSHING AND SAMPLING.

1. TAPS, TAPPING SADDLES, SERVICE PIPES, COMBINATION BLOWOFFS, AND EXISTING WATER MAINS WITH READILY ACCESSIBLE CONTROL VALVES, AND ALL PIPES, APPLIANCES, LABOR AND OTHER APPURTENANCES SHALL BE FURNISHED OR PROVIDED BY THE CONTRACTOR. THEY SHALL BE USED FOR INTRODUCING DISINFECTING AGENT AND WATER FOR FLUSHING INTO THE NEW OR EXTENDED WATER MAINS. TAPS OR SERVICE PIPES SHALL BE A MINIMUM ONE INCH (1") SIZE OF COPPER TO IRON PIPE THREAD CONFIGURATION. ADDITIONAL TAPS SHALL BE PROVIDED IF NECESSARY. ALL ONE INCH (1") TAPS ON DUCTILE IRON WATER MAINS WITH THICKNESS LESS THAN CLASS 56 WILL REQUIRE BRONZE DOUBLE STRAP TAPPING SADDLES, OR APPROVED EQUAL, FURNISHED BY THE CONTRACTOR. COMBINATION BLOWOFFS AND SAMPLING TAPS SHALL BE: EITHER TAPPED OUTLET OR REGULAR BRANCH OUTLET TEES; AND/OR TAPPED PLUGS OR PIPE ENDS WHICH SHALL BE PLUGGED; OR HAVE ENDS CONNECTED TO WATER SYSTEM AFTER SATISFACTORY DISINFECTION AND FLUSHING. TAPPING OF WATER MAINS FOR CHLORINATION SHALL BE IN ACCORDANCE WITH THAT SPECIFIED IN PARAGRAPH "WORK TO BE DONE BY CITY".

2. ON EXISTING WATER MAINS AND ON NEW, RELOCATED OR EXTENDED WATER MAINS PLACED IN SERVICE ONLY THE CITY WILL OPERATE THE VALVES. THE CONTRACTOR WILL COOPERATE WITH CITY'S CHLORINATION CREW IN COORDINATING THE CHLORINATION AND FLUSHING IN DETERMINING THE AMOUNTS AND EXTENT OF CHLORINATION AND FLUSHING.

3. SUCH LENGTHS OF THE WATER MAIN AS THE CITY MAY DETERMINE, SHALL BE CHLORINATED; HOWEVER, IN NO CASE SHALL THE LENGTH EXCEED THAT WHICH CAN BE CHLORINATED SATISFACTORILY IN ONE (1) WORK DAY. SUCH MAXIMUM LENGTH IS GENERALLY UP TO THREE (3) MILES TOTAL, INCLUDING BRANCHES AND CONNECTING WATER MAIN(S), FOR SIXTEEN INCH (16") AND SMALLER; AND THREE (3) VALVE SECTIONS, OR TWO (2) MILES, FOR TWENTY INCH (20") OR LARGER WATER MAINS.

4. THE CONTRACTOR SHALL PREPARE AND PRESENT TO THE CITY FOR APPROVAL A PLAN FOR ALL DISINFECTION FROM THE HYDROSTATIC TESTING TO THE FINAL FLUSHING FOR THE NEW OR EXTENDED WATER MAIN, INCLUDING ANY BRANCHES. THE DISINFECTION PLAN SHALL SHOW COMPLETE LAYOUT, INCLUDING SIZES AND LOCATION OF: (A) FLUSHING WATER SOURCE; (B) WATER SOURCE FOR CHLORINATION UTILIZING CALCIUM HYPOCHLORITE SOLUTION FURNISHED IN MIXING DRUM; (C) BLENDING WATER SOURCE TO ASSURE PROPER AND UNIFORM CONCENTRATION OF CHLORINATION SOLUTION THROUGHOUT THE WATER MAIN TO BE DISINFECTED; (D) OUTLETS TO BE UTILIZED OR PROVIDED FOR THE DRAWING AND FINAL FLUSHING OF CHLORINE SOLUTION THROUGH AND FROM THE WATER MAIN BEING DISINFECTED; AND (E) TYPE, NUMBER, SEQUENCE AND SIZES OF OUTLETS INCLUDING FIRE HYDRANTS AND VALVES TO BE OPERATED.

CALCULATED DJF CHECKED MJW

WATERWORK GENERAL NOTES

CUY-77-23.458

5. BEFORE HYDROSTATIC TESTING WILL BE PERMITTED, THE CONTRACTOR SHALL OBTAIN FROM THE CITY, DIVISION OF WATER & HEAT, PERMITS AND SALES, MISCELLANEOUS SERVICE RECEIPT (MR CARD). APPROVED WATER MAIN PLANS OF THE NEW WATER MAIN OR EXTENSION SHALL BE USED IN PREPARATION OF THE PLAN FOR DISINFECTION. UPON RECEIPT OF APPROVAL BY THE COMMISSIONER OF WATER AND HEAT OF THE PLAN FOR DISINFECTION, THE CONTRACTOR SHALL SUBMIT THE PLANS TO THE INSPECTION AND ENFORCEMENT RESIDENT INSPECTOR ALONG WITH THE MISCELLANEOUS SERVICE RECEIPT (MR CARD). ONLY UPON RECEIPT OF THE PLANS AND MR CARD WILL THE CHLORINATION PROCEDURE BE PERFORMED. THE CITY'S CHLORINATION CREW WILL INSPECT THE ENTIRE JOB AS TO BEING IN ACCORDANCE WITH APPROVED PLANS AND FOOTAGE LENGTH ON MAINS TO BE CHLORINATED.

6. CHLORINATION PROCEDURE FOR DISINFECTING NEW OR EXTENDED WATER MAINS SHALL BE BY THE CONTINUOUS FEED METHOD USING A SOLUTION FORMED BY MIXING WATER AND CALCIUM HYPOCHLORITE. NO OTHER FORM OF CHLORINE WILL BE USED. AMERICAN WATER WORKS ASSOCIATION AWWA STANDARD FOR DISINFECTING WATER MAINS – ANSI/AWWA C–651–86 SHALL BE FOLLOWED AS TO NEED, PROCEDURES, METHODS, HOLDING TIME, FREE CHLORINE RESIDUAL, APPLICATION AND CONFINEMENT TO WATER MAIN BEING DISINFECTED. WATER USED FOR CHLORINATION, BLENDING OF CHLORINATION SOLUTION TO DETERMINED CONCENTRATION, AND TO FEED DOSAGE INTO FULL LENGTH OF MAINS TO BE DISINFECTED SHALL BE OBTAINED AS FOR TESTING.

7. THE CITY WILL SUPPLY THE PUMP, SOLUTION MIXING PADDLE, 35 GALLON DRUM, GASOLINE POWERED ELECTRIC GENERATOR, AND SUPPLY OF POWDERED CALCIUM HYPOCHLORITE. THE CONTRACTOR SHALL SUPPLY ALL PIPES, HOSES, VALVES, FITTINGS, ETC., FOR USE EITHER TO CONVEY WATER, CHLORINE SOLUTION OR COMBINATION THEREOF AND TO DISPOSE OF HIGHLY CHLORINATED WATER FLUSHED TO WASTE.

8. THE CONTRACTOR SHALL COOPERATE WITH THE CITY'S CHLORINATION CREW OR RESIDENT INSPECTOR BY OPERATING ANY REQUIRED WATER MAIN APPURTENANCES TO ASSURE THE DISINFECTION OF SUCH APPURTENANCES AND OF ANY PIPE BRANCHES TO ASSURE CHLORINATION SOLUTION IS CONFINED TO WATER MAIN BEING DISINFECTED.

9. THE WATER DEPARTMENT CHLORINATION CREW WILL DETERMINE THE LENGTH OF TIME THE CHLORINE SOLUTION IS TO BE HELD IN THE WATER MAIN BEING DISINFECTED.

(B.) FLUSHING

1. BEFORE DISINFECTION ALL DIRT AND FOREIGN MATTER SHALL BE REMOVED FROM THE NEW WATER MAIN OR EXTENSIONS TO EXISTING MAINS BY A THOROUGH FLUSHING THROUGH THE HYDRANTS OR BY OTHER APPROVED MEANS. EACH VALVE SECTION OF THE NEWLY LAID PIPE SHALL BE FLUSHED INDEPENDENTLY. THIS SHALL BE DONE AFTER THE PRESSURE TEST. FLUSHING SHALL BE IN ACCORDANCE WITH ANSI/AWWA C 651 STANDARD FOR DISINFECTING WATER MAINS. WHERE THE FLUSHING VELOCITY SPECIFIED THEREIN CANNOT BE ATTAINED, FLUSHING RATES AS DETERMINED BY THE DIRECTOR TO BE SUFFICIENT SHALL BE PERMITTED. IF IN THE OPINION OF THE DIRECTOR THE FLUSHING PRIOR TO THE CHLORINATION PROCEDURE DOES NOT REMOVE DIRT OR OTHER ACCUMULATIONS IN THE PIPE, THE PIPE SHALL BE CLEANED BY MECHANICAL MEANS BY THE CONTRACTOR AND THE FLUSHING SHALL BE REPEATED.

2. THE FLUSHING OF THE CHLORINATION SOLUTION SHALL BE DONE BY THE CITY UNTIL THE CHLORINE SOLUTION IS TOTALLY FLUSHED OUT OF THE SYSTEM BEING DISINFECTED. ALL FLUSHING SHALL BE UNDER THE CONTROL OF THE DIRECTOR OF PUBLIC UTILITIES, OR HIS DESIGNATE. THE CONTRACTOR SHALL OBTAIN WATER FOR FLUSHING IN THE SAME MANNER AS FOR TESTING.

3. IN FLUSHING, THE CITY SHALL PROPERLY DISPOSE OF THE CHLORINATION SOLUTION. ONLY POINTS OF DISCHARGE APPROVED BY THE CITY'S CHLORINATION CREW SHALL BE UTILIZED WITHOUT ANY TREATMENT TO CHEMICALLY NEUTRALIZE THE SOLUTION. IN CASES WHERE DIRECT DISPOSAL IS NOT APPROVED, THE CITY SHALL NEUTRALIZE THE CHLORINE SOLUTION AS PROVIDED IN APPENDIX B OF AWWA C–651. THE CITY SHALL OBTAIN APPROVAL, IN WRITING, OF THE LOCAL SEWER AUTHORITY BEFORE DISPOSING TO A SANITARY SEWER. A COPY OF SUCH WRITTEN APPROVAL SHALL BE PROVIDED TO THE RESIDENT INSPECTOR AND CHLORINATION CREW BEFORE ANY FLUSHING IS BEGUN.

4. THE CITY'S CHLORINATION CREW WILL DETERMINE WHEN THE DISINFECTION SOLUTION HAS BEEN SATISFACTORILY FLUSHED FROM THE MAIN AND BRANCHES.

(C.) SAMPLING

1. A TIME PERIOD AS DETERMINED BY THE CITY SHALL ELAPSE BEFORE WATER SAMPLES ARE TAKEN FROM THE WATER MAIN(S) AND BRANCH(ES) TO DETERMINE THE BACTERIOLOGICAL QUALITY OF THE WATER THEREIN. IN NO CASE, SHALL THE TIME PERIOD BE LESS THAN TWENTY– FOUR (24) HOURS. NO SAMPLES SHALL BE TAKEN FROM FIRE HYDRANTS. THE CONTRACTOR SHALL ASSIST THE CITY'S CHLORINATION CREW IN OBTAINING SAMPLES. THE CITY WILL FURNISH ALL CONTAINERS AND CONTROL PROCEDURES FOR OBTAINING SAMPLES. THE CITY WILL DETERMINE THE NUMBER AND LOCATIONS OF SAMPLES TO BE TAKEN FROM THE DISINFECTED SECTIONS. THE CITY WILL DETERMINE THE BACTERIOLOGICAL QUALITY OF THE WATER SAMPLES. IF SAMPLING RESULTS IN TWO (2) CONSECUTIVE POSITIVE SAMPLES, THE PROCEDURE OF CHLORINATION, FLUSHING AND SAMPLING SHALL BE REPEATED. FIGURE 1, SUGGESTED COMBINATION AND SAMPLING TAP, TAKEN FROM AWWA C–651, IS HEREIN MADE A PART OF THESE SPECIFICATIONS.

2. IN CASES WHERE THE LENGTH OF WATER MAIN IS LESS THAN 350 FEET, AFTER HYDROSTATIC TESTING ONLY, PRELIMINARY FLUSHING AND SAMPLING WILL BE DONE; HOWEVER, IF THERE ARE TWO (2) POSITIVE SAMPLES, AFTER FLUSHING, THE ENTIRE PROCEDURE OF PRELIMINARY FLUSHING, CHLORINATION, FLUSHING AND SAMPLING SHALL BE REQUIRED. THE CITY'S CHLORINATION CREW WILL COMPLETE AND DISTRIBUTE THE CHLORINATION APPROVAL FORM.

CONTRACTOR'S LABOR

THE CONTRACTOR SHALL FURNISH AT LEAST TWO (2) TRAINED WORKMEN TO PERFORM ALL LABOR UNDER THE SUPERVISION AND DIRECTION OF THE CITY'S CHLORINATION CREW. THE CONTRACTOR'S LABORERS SHALL PERFORM ALL DUTIES SPECIFIED IN WATER MAIN DISINFECTION GENERAL NOTE. THE CONTRACTOR SHALL PROVIDE PROPER EQUIPMENT AND PROTECTIVE CLOTHING AS MAY BE REQUIRED BY THE LABORERS IN PERFORMING THE NEEDED TASK. THE CITY WILL MIX THE CHLORINATION SOLUTION TO BE USED BY THE CONTRACTOR FOR DISINFECTING.

ACCESS PITS

(A.) THE CONTRACTOR SHALL PROVIDE TIGHTLY WOOD SHEETED ACCESS PITS, CONFORMING TO THE REQUIREMENTS OF "THE SPECIFIC SAFETY REQUIREMENTS OF THE INDUSTRIAL COMMISSION OF OHIO RELATING TO CONSTRUCTION" RULE 4121:1–3–13, FOR ACCESS TO ALL WATER MAIN APPURTENANCES TO BE UTILIZED IN DISINFECTING WATER MAINS.

(B.) THE CONTRACTOR SHALL HAVE ON HAND READY FOR USE, PUMPING EQUIPMENT TO DEWATER ANY AND ALL ACCESS PITS USED FOR DISINFECTING WATER MAINS AND SHALL DEWATER THE ACCESS PITS WHEN ORDERED BY THE DIRECTOR.

CONNECTION OF NEW MAINS

WHEN THE NEW MAINS HAVE BEEN TESTED AND CHLORINATED AND ARE READY TO BE CONNECTED TO THE OLD MAIN, THE CONTRACTOR SHALL MAKE SUCH CONNECTIONS AT A TIME DESIGNATED BY THE CITY. PRIOR TO SHUTTING DOWN THE EXISTING MAINS, THE CONTRACTOR SHALL TAKE SUITABLE PRECAUTIONS TO ASSURE A MINIMUM INTERRUPTION TO SERVICE, INCLUDING THE FOLLOWING:

(A) PERFORM ALL NECESSARY EXCAVATION, INCLUDING BELL HOLES, EXPOSING THE EXISTING MAIN SUFFICIENTLY FOR THE OPERATION OF THE PIPE SAW BY THE CITY, OR PIPE CUTTING BY THE CONTRACTOR.

(B) REMOVE THE CAP OR PLUG FROM THE END OF THE NEW MAIN.

(C) SWAB THE INSIDE OF ALL PIPES, BENDS AND SLEEVES TO BE USED IN CONNECTION THOROUGHLY WITH A CHLORINE SOLUTION OF AT LEAST 100 P.P.M.

(D) MAKE UP AS MUCH OF THE CONNECTION AS POSSIBLE OUTSIDE THE DITCH TO ELIMINATE THE NEED FOR MAKING MOST OF THE NECESSARY JOINTS DURING THE SHUTDOWN. BY CAREFUL MEASUREMENT ALL PIPE CUTS CAN BE MADE BY THE CONTRACTOR PRIOR TO SHUTTING DOWN.

(E) HAVE SUFFICIENT MANPOWER AND EQUIPMENT ON THE SITE TO PERFORM THE OPERATION IN A MINIMUM OF TIME.

(F) PERFORM AS MUCH OF THE SERVICE AND HYDRANT CONNECTION WORK ALONG RELOCATED MAINS AS IS POSSIBLE.

(G) IN THE TIME PERIOD FROM MAY TO OCTOBER, SHUTDOWNS SHALL NOT BE PERMITTED DUE TO SYSTEM DEMANDS, UNLESS OTHERWISE APPROVED BY THE CITY.

PAINTING

(A) IT IS THE INTENTION OF THESE SPECIFICATIONS TO PROVIDE THAT ALL METAL WORK SUBJECT TO CORROSION SHALL BE SATISFACTORILY PROTECTED BY A DURABLE COATING OF PAINT OR OTHER APPROVED MATERIAL AND THAT ALL METAL SURFACES NOT BURIED IN EARTH, OR IN CONCRETE SHALL BE LEFT CLEAN AND WELL PAINTED AT THE COMPLETION OF THE CONTRACT. UNLESS OTHERWISE SPECIFIED, THE PROTECTION SHALL BE AT LEAST THAT GIVEN BY THREE (3) COATS OF APPROVED PAINT. THE FIRST COAT IS TO BE APPLIED AT THE SHOP BEFORE THE METAL HAS RUSTED AND AFTER ALL GREASE, DIRT AND SCALE HAS BEEN REMOVED. BOLTS AND NUTS SHALL NOT BE SHOP COATED, BUT SHALL RECEIVE THREE (3) COATS OF APPROVED PAINT AFTER INSTALLATION.

(B) ALL METAL WORK WHICH HAS NOT BEEN COATED BEFORE THE ARRIVAL ON THE JOB SHALL BE GIVEN A TEMPORARY PROTECTIVE COATING OF SUCH A NATURE AS TO PERMIT THE READY ADHERENCE OF FUTURE COATINGS. THE TEMPORARY COATING SHALL BE A GOOD GRADE ASPHALTIC PAINT OR OTHER APPROVED MATERIAL. THE TEMPORARY PROTECTION SHALL APPLY PARTICULARLY TO THE VALVE BOXES AND COVERS, MANHOLE RINGS AND COVERS, LADDERS AND LADDER RUNGS, DRESSER TYPE COUPLINGS AND ELSEWHERE WHEN IN THE OPINION OF THE CITY, SUCH PROTECTION IS NECESSARY.

(C) ALL SURFACES OF METAL WHICH WILL BE IN CONTACT AFTER ASSEMBLING SHALL BE PAINTED, AT LEAST ONE COAT, BEFORE ASSEMBLING. THE FINAL COAT OF PAINT ON ALL EXPOSED WORK SHALL BE GIVEN SHORTLY BEFORE THE COMPLETION OF THE CONTRACT.

(D) WHERE PAINTING CLAUSES APPEAR HEREINAFTER, THEY SHALL TAKE PRECEDENCE OVER THIS SECTION, EXCEPT THAT TEMPORARY PROTECTION HEREIN DESCRIBED MAY BE REQUIRED.

(E) ALL OF THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE PARTICULAR ITEM REQUIRING THE PAINTING.

TESTS, INSPECTION AND REPORTS

NOTWITHSTANDING THE REQUIREMENTS OF ANY OTHER PROVISIONS OF THESE SPECIFICATIONS, THE CONTRACTOR SHALL ARRANGE FOR AND PAY ALL COSTS INVOLVED FOR SHOP INSPECTION OF ALL MATERIALS FURNISHED, MANUFACTURE OF ALL PIPE, VALVES, FITTINGS, ETC., FIELD AND SHOP WELDS AND WELDING, AND FURNISH TO THE STATE AND THE CITY OF CLEVELAND COPIES OF ALL SHOP, FABRICATION, MANUFACTURE AND OTHER RELATED INSPECTION REPORTS OF MATERIALS FURNISHED. THIS INSPECTION SHALL BE DONE BY A RECOGNIZED INSPECTION LABORATORY APPROVED BY THE CITY OF CLEVELAND. IN THE CASE OF ANY ITEM NOT SPECIFICALLY MENTIONED IN THE "WATERWORK NOTES," OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS – JANUARY 1, 1997 SHALL GOVERN.

HANDLING PIPE AND ACCESSORIES

(A) UNLOADING PIPE, FITTINGS, VALVES, HYDRANTS, AND OTHER ACCESSORIES SHALL, UNLESS OTHERWISE DIRECTED, BE UNLOADED AT THE POINT OF DELIVERY, HAULED TO AND DISTRIBUTED AT THE SITE OF THE PROJECT BY THE CONTRACTOR. THEY SHALL AT ALL TIMES BE HANDLED WITH CARE TO AVOID DAMAGE. IN LOADING AND UNLOADING, THEY SHALL BE LIFTED BY HOISTS OR SLID, OR ROLLED ON SKIDWAYS IN SUCH MANNER AS TO AVOID SHOCK. UNDER NO CIRCUMSTANCES SHALL THEY BE DROPPED. PIPE HANDLED ON SKIDWAYS MUST NOT BE SKIDDED OR ROLLED AGAINST PIPE ALREADY ON THE GROUND.

(B) AT SITE OF WORK: IN DISTRIBUTING THE MATERIAL AT THE SITE OF THE WORK, EACH PIECE SHALL BE UNLOADED OPPOSITE OR NEAR THE PLACE WHERE IT IS TO BE LAID IN THE TRENCH.

(C) PROTECTION OF PIPE COATING: PIPE SHALL BE HANDLED IN SUCH MANNER THAT A MINIMUM AMOUNT OF DAMAGE TO THE COATING WILL RESULT. ANY PIPE OR FITTING, THE COATING OF WHICH HAS BEEN DAMAGED IN SHIPPING OR HANDLING, SHALL HAVE THE DAMAGED PORTION WELL CLEANED AND COVERED WITH AN ASPHALT PAINT, APPROVED BY THE CITY BEFORE BEING PLACED IN THE WORK. THE CONTRACTOR SHALL THOROUGHLY COAT ALL EXPOSED PARTS OF BOLTS AND NUTS WITH AN APPROVED ASPHALT PAINT, AFTER ALL PIPE HAS BEEN LAID AND BEFORE BACKFILLING HAS BEEN PLACED. ALL FIELD COATINGS SHALL BE FURNISHED BY THE CONTRACTOR.

(D.) PROTECTION OF CONCRETE PIPE: IF, IN THE PROCESS OF MANUFACTURE, TRANSPORTATION, OR HANDLING, ANY CONCRETE PIPE OR SPECIAL RECEIVES ANY INDENTATION OR DEFORMATION TO THE CONCRETE, STEEL ENDS OR CONNECTIONS, THE REMOVAL OF WHICH WILL IN ANY DEGREE INJURE IT, SUCH PIPE OR SPECIAL SHALL BE REJECTED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

(E) PIPE KEPT CLEAN: THE INTERIOR OF THE PIPE, FITTINGS, AND OTHER ACCESSORIES SHALL BE KEPT FREE FROM DIRT AND FOREIGN MATTER AT ALL TIMES.

(F) FROST PROTECTION: VALVES AND HYDRANTS BEFORE INSTALLATION SHALL BE DRAINED AND STORED IN A MANNER THAT WILL PROTECT THEM FROM DAMAGE BY FREEZING.

CALCULATED DJF
CHECKED MJW

WATERWORK GENERAL NOTES

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HNTB ARCHITECTS ENGINEERS PLANNERS

CALCULATED DJF
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WATERWORK GENERAL NOTES

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CHANGES IN WATER MAINS

(A) WHEREVER IT BECOMES NECESSARY, IN THE OPINION OF THE ENGINEER OR CITY TO CHANGE THE LOCATION OR ELEVATION OF WATER MAINS AND HYDRANTS AND WHERE CONNECTIONS ARE TO BE MADE BETWEEN EXISTING DISTRIBUTION MAINS AND WATER MAINS UNDER THIS CONTRACT, THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING WATER LINE MATERIALS REQUIRED TO MAKE THE CONNECTION, AND SHALL FURNISH AND INSTALL COMPLETE ALL THE DUCTILE IRON PIPE, PRESTRESSED CONCRETE CYLINDER PIPE, FITTINGS, AND VALVES TO MAKE THE CONNECTIONS INDICATED, EXCEPT TAPPING SLEEVES AND VALVES WHICH SHALL BE FURNISHED BY THE CONTRACTOR AND INSTALLED BY THE CITY. PRESSURE TAPS FOR DISTRIBUTION MAINS SHALL BE MADE BY THE CITY OF CLEVELAND DIVISION OF WATER AND HEAT. THE CONTRACTOR SHALL ALSO FURNISH ALL NECESSARY LABOR, MATERIALS, TOOLS, AND EQUIPMENT AND MAKE THE EXCAVATION, BACKFILL, AND REPAVING FOR SUCH CONNECTIONS. PAYMENT FOR THIS WILL BE INCLUDED IN PRICE BID UNDER APPROPRIATE ITEM FOR SIZE OF WATER MAIN OR CONNECTION TO BE INSTALLED. ALL PIPES, VALVES, AND APPURTENANCES REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR. (SEE WORK TO BE DONE BY THE CITY).

WORK TO BE DONE BY THE CITY OF CLEVELAND

(A) THE CITY WILL INSTALL ALL BRANCH SLEEVES AND VALVES FURNISHED BY THE CONTRACTOR. THE CONTRACTOR SHALL SUPPLY THE BRANCH SLEEVES AND VALVES AND DO ALL THE NECESSARY EXCAVATION, BACKFILLING AND REPAVING REQUIRED THEREFORE. THE CONTRACTOR SHALL FURNISH ALL AIR COMPRESSORS REQUIRED FOR THE WORK.

(B) IN LOCATIONS WHERE BRANCH SLEEVES AND VALVES CANNOT BE INSTALLED, THE CONTRACTOR WILL BE REQUIRED TO CUT IN TEES AND SLEEVE–IN THE REMAINDER OF THE CUT SECTION OF THE EXISTING MAIN. TO SPEED UP THIS OPERATION, IT IS CALLED TO THE CONTRACTOR'S ATTENTION THAT THE WATER DEPARTMENT HAS ON HAND AT HARVARD YARDS MOTOR OPERATED PIPE CUTTERS WHICH ARE AVAILABLE FOR CUTTING PIPE BY CITY FORCES. COST INCLUDES THAT FOR LABOR, USE OF PIPE CUTTING MACHINE, AND TRUCK. THE CITY WILL CHARGE FOR CUTTING PIPE BY CITY FORCES. THE COSTS CHARGED MUST BE OBTAINED FROM THE PERMITS–SALES SECTION OF THE DIVISION OF WATER AND HEAT, PUBLIC UTILITIES BUILDING, 1201 LAKESIDE AVENUE, CLEVELAND, OHIO 44114. THE CONTRACTOR SHALL DO ALL NECESSARY EXCAVATION, BACKFILLING AND REPAVING AND ALL AIR COMPRESSOR AND CRANE SERVICE SHALL BE FURNISHED BY THE CONTRACTOR.

EXCAVATION

(A) THE CONTRACTOR SHALL REMOVE ALL EXISTING STRUCTURES, ROADWAYS, DRIVEWAYS AND OTHER SIMILAR MATERIALS AND MAKE ALL EXCAVATION NECESSARY FOR THE PROPER CONSTRUCTION OF THE WATER MAIN, PIPE CONNECTIONS AND APPURTENANT STRUCTURES, INCLUDING TUNNEL AND SHAFT EXCAVATION. THE EXCAVATION SHALL INCLUDE THE REMOVAL, HANDLING, REHANDLING AND DISPOSAL OF MATERIALS ENCOUNTERED IN THE WORK AND SHALL INCLUDE ALL PUMPING, BAILING, DRAINAGE, SHEETING AND BRACING. MOREOVER, THE CONTRACTOR MUST ASSUME ALL RESPONSIBILITY FOR ANY ADDED EXPENSE OR OTHER LIABILITY WHICH MAY ARISE BY MEANS OF QUICKSAND, OBSTACLES OR CONDITIONS FORESEEN AND UNFORESEEN OR ENCOUNTERED IN THE WORK OF THIS CONTRACT.

(B)TRENCHES SHALL IN EVERY CASE BE OF SUFFICIENT WIDTH TO PERMIT SOLID PACKING OF BACKFILL UNDER AND AROUND PIPES, AND SATISFACTORY CONSTRUCTION OF ALL APPURTENANCES AND FOR SUCH SHEETING AND SHORING, PUMPING AND DRAINING AS MAY BE NECESSARY.

(C) THE TRENCH SHALL BE DUG TO THE ALIGNMENT AND DEPTH REQUIRED AND ONLY SO FAR IN ADVANCE OF PIPE LAYING AS THE ENGINEER SHALL PERMIT. THE TRENCH SHALL BE SO BRACED AND DRAINED THAT WORKMEN MAY WORK THEREIN SAFELY AND EFFICIENTLY. IT IS ESSENTIAL THAT THE DISCHARGE FROM PUMPS BE LED TO NATURAL DRAINAGE CHANNELS, TO DRAINS, OR TO SEWERS.

(D) THE TRENCH WIDTH MAY VARY WITH AND DEPEND UPON THE DEPTH OF TRENCH AND THE NATURE OF THE EXCAVATED MATERIAL ENCOUNTERED, BUT IN ANY CASE SHALL BE OF AMPLE WIDTH TO PERMIT THE PIPE TO BE LAID AND JOINTED PROPERLY AND OF THE BACKFILL TO BE PLACED AND COMPACTED PROPERLY. THE MINIMUM WIDTH OF UNSHEETED, TRENCH SHALL BE EIGHTEEN (18) INCHES; AND FOR PIPE TEN (10) INCHES OR LARGER, AT LEAST TWELVE (12) INCHES LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE FOR CONCRETE PIPE AND EIGHTEEN (18) INCHES LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE FOR IRON AND STEEL PIPE, EXCEPT BY CONSENT OF THE ENGINEER. THE MAXIMUM CLEAR WIDTH OF TRENCH SHALL BE NOT MORE THAN TWO (2) FEET GREATER THAN THE OUTSIDE PIPE DIAMETER. WHEN SHEETING AND BRACING IS USED, THE TRENCH WIDTH SHALL BE INCREASED ACCORDINGLY.

(E) THE TRENCH, UNLESS OTHERWISE SPECIFIED, SHALL HAVE A FLAT BOTTOM CONFORMING TO THE GRADE TO WHICH THE PIPE IS TO BE LAID. THE PIPE SHALL BE LAID UPON SOUND SOIL CUT TRUE AND EVEN, SO THAT THE BARREL OF THE PIPE WILL HAVE A BEARING FOR ITS FULL LENGTH.

(F) ANY PART OF THE TRENCH EXCAVATED BELOW GRADE SHALL BE CORRECTED WITH APPROVED MATERIAL, THOROUGHLY COMPACTED.

(G) WHEN THE UNCOVERED TRENCH BOTTOM AT SUBGRADE IS SOFT AND IN THE OPINION OF THE ENGINEER CANNOT SUPPORT THE PIPE, A FURTHER DEPTH AND OR WIDTH SHALL BE EXCAVATED AND BACKFILLED TO PIPE FOUNDATION GRADE AS REQUIRED UNDER (F), OR OTHER APPROVED MEANS SHALL BE ADOPTED TO ASSURE A FIRM FOUNDATION FOR THE PIPE.

(H) LEDGE ROCK, BOULDERS, LARGE STONES, AND SHALE SHALL BE REMOVED TO PROVIDE A CLEARANCE OF AT LEAST SIX (6) INCHES BELOW ALL PARTS OF THE PIPE, VALVES, OR FITTINGS AND A CLEAR WIDTH OF SIX (6) INCHES ON EACH SIDE OF ALL CONCRETE PIPE AND NINE (9) INCHES ON EACH SIDE OF ALL CAST IRON AND STEEL PIPE SHALL BE PROVIDED.

(I) EXCAVATION BELOW SUBGRADE IN ROCK, SHALE OR IN BOULDERS SHALL BE BACKFILLED TO SUBGRADE WITH APPROVED MATERIAL, THOROUGHLY COMPACTED.

(J) BELL HOLES OR AMPLE DIMENSIONS SHALL BE DUG IN EARTH TRENCHES AT EACH JOINT TO PERMIT THE JOINTING TO BE MADE PROPERLY. ADEQUATE CLEARANCE FOR PROPER JOINTING OF PIPE LAID IN ROCK SHALL BE PROVIDED AT BELL HOLES.

(K) THE USE OF EXCAVATING MACHINERY WILL BE PERMITTED EXCEPT IN PLACES WHERE ITS OPERATION WILL CAUSE DAMAGE TO TREES, BUILDINGS, OR EXISTING STRUCTURES ABOVE OR BELOW GROUND, IN WHICH CASE HAND METHODS SHALL BE EMPLOYED.
(L) TREES, FENCES, POLES AND ALL OTHER PROPERTY SHALL BE PROTECTED UNLESS THEIR REMOVAL IS AUTHORIZED. ANY PROPERTY DAMAGED SHALL BE SATISFACTORILY RESTORED BY THE CONTRACTOR.

(M) HYDRANTS UNDER PRESSURE, VALVE PIT COVERS, VALVE BOXES, CURB STOP BOXES FIRE OR POLICE CALL BOXES, OR OTHER UTILITY CONTROLS SHALL BE LEFT UNOBSTRUCTED AND ACCESSIBLE DURING THE CONSTRUCTION PERIOD.

(N) THE CONTRACTOR SHALL MAINTAIN ALL EXCAVATIONS IN GOOD ORDER DURING THE CONSTRUCTION, SO AS NOT TO HINDER OR INJURE THE PIPE LAYING, MASONRY OR OTHER WORK. HE SHALL TAKE ALL REASONABLE PRECAUTIONS TO PREVENT MOVEMENT OF THE SIDES OF SUCH EXCAVATION, AND SHALL REMOVE AT HIS OWN EXPENSE ANY MATERIAL SLIDING INTO THE EXCAVATION.

SHEETING AND BRACING

(A) THE CONTRACTOR SHALL FURNISH AND PUT IN PLACE SUCH SHEETING AND BRACING AS MAY BE REQUIRED TO SUPPORT THE SIDES OF TRENCHES OR OTHER EXCAVATION AND SHALL REMOVE SUCH SHEETING AND BRACING, AS THE TRENCH OR EXCAVATION IS FILLED UP, UNLESS THE ENGINEER SHALL ORDER IT LEFT IN PLACE, IN WHICH CASE THE CONTRACTOR SHALL CUT THE PLANK OFF AT A HEIGHT AS ORDERED BY THE ENGINEER, OR AS CALLED FOR ON THE CONTRACT DRAWINGS. THAT PORTION OF THE TIMBER ORDERED TO BE LEFT IN PLACE WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER THOUSAND BOARD FEET MEASURE. NO PAYMENT WILL BE MADE FOR WASTED ENDS. A QUANTITY OF_____ M.B.F. HAS BEEN PROVIDED IN THE GENERAL SUMMARY FOR ITEM SPECIAL – SHEETING LEFT IN PLACE.

(B) FOR ALL EXCAVATIONS FOR THE WORK DESCRIBED HEREIN, THE CONTRACTOR SHALL FURNISH AND PLACE SHEETING AND BRACING SO AS TO REDUCE TO A MINIMUM THE POSSIBILITY OF INJURY OR DAMAGE TO THE SAME.

(C) IF THE ENGINEER IS OF THE OPINION THAT AT ANY POINT SUFFICIENT OR PROPER SUPPORTS, SHEETING, OR BRACINGS HAVE NOT BEEN PROVIDED, HE MAY ORDER ADDITIONAL SUPPORTS, SHEETING OR BRACING, AT THE EXPENSE OF THE CONTRACTOR, AND THE COMPLIANCE WITH SUCH ORDERS BY THE CONTRACTOR SHALL NOT RELIEVE OR RELEASE HIM FROM HIS RESPONSIBILITY FOR SUFFICIENCY OF SUCH SUPPORTS.

(D) SHEETING AND BRACING SHALL BE PROVIDED IN ACCORDANCE WITH RULE 4121:1–3–13 OF " THE SPECIFIC SAFETY REQUIREMENTS OF THE INDUSTRIAL COMMISSION OF OHIO RELATING TO CONSTRUCTION."

PREQUALIFICATIONS OF CONTRACTOR FOR TAPPING

THAT THE COMMISSIONER OF WATER IS AUTHORIZED TO DEEM PERSONS OR FIRMS QUALIFIED TO TAP MAINS FOR SERVICE CONNECTION REINSTALLATION AFTER QUALIFICATIONS OF TAPPER, INSPECTION OF EQUIPMENT, AND PROVEN ABILITY AND WORKMANSHIP HAVE BEEN ESTABLISHED AS TO TAP SIZES TO HIS SATISFACTION. TO DETERMINE THE QUALIFICATIONS OF ANY PERSON OR FIRM TO TAP MAINS, THE COMMISSIONER OR HIS DESIGNEE SHALL WITNESS THE INSTALLATION OF A SERVICE CONNECTION IN A WATER MAIN UNDER PRESSURE AND INSPECT TAPPING EQUIPMENT TO BE USED BY TAPPER. UPON SUCCESSFUL COMPLETION OF A TAP SIZE, THE TAPPER SHALL BE CERTIFIED BY LETTER FROM THE COMMISSIONER TO THE DIRECTOR OF TRANSPORTATION OF TAPPER'S COMPETENCE AND QUALIFICATIONS. THIS QUALIFICATION MAY BE REVOKED BY THE COMMISSIONER OF WATER AND HEAT IF IT IS DETERMINED THAT THE TAPPER'S COMPETENCY IS NOT MAINTAINED OR EQUIPMENT IS CHANGED.

NO TAPPING SHALL BE DONE WITHOUT THE KNOWLEDGE AND APPROVAL OF THE DIVISION OF WATER AND HEAT INSPECTOR. FOR EACH TAP TO BE MADE TO REINSTALL A WATER SERVICE CONNECTION, THE TAPPER SHALL OBTAIN AND COMPLETE A CITY OF CLEVELAND "CITY METER REPAIRS HY" FORM C OF C 101–130A FROM THE INSPECTOR. FAILURE TO PRESENT FORM AT TIME OF COMPLETION OF REINSTALLATION SHALL BE CAUSE FOR IMMEDIATE DISQUALIFICATION.

ON CLASS 52 DUCTILE IRON WATER MAIN ALL SERVICE CONNECTIONS WILL REQUIRE A BRONZE DOUBLE STRAP TAPPING SADDLE.

LAYING PIPE

(A) PROPER IMPLEMENTS, TOOLS, AND FACILITIES, SATISFACTORY TO THE ENGINEER, SHALL BE PROVIDED AND USED BY THE CONTRACTOR FOR THE SAFE AND CONVENIENT PROSECUTION OF THE WORK. ALL PIPE, FITTINGS, AND VALVES SHALL BE CAREFULLY LOWERED INTO THE TRENCH, PIECE BY PIECE, BY MEANS OF DERRICK, PROPER SLINGS, AND OTHER SUITABLE TOOLS OR EQUIPMENT, IN SUCH MANNER AS TO PREVENT DAMAGE TO PIPE OR COATING. UNDER NO CIRCUMSTANCES SHALL PIPE OR ACCESSORIES BE DROPPED OR DUMPED INTO THE TRENCH. IF ANY DEFECTIVE PIECE IS DISCOVERED WHILE PIPE IS SUSPENDED OR AFTER BEING LAID, A NEW PIECE SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.

(B) ALL FOREIGN MATTER OR DIRT SHALL BE REMOVED FROM THE INSIDE OF THE PIPE BEFORE IT IS LOWERED INTO ITS POSITION IN THE TRENCH, AND IT SHALL BE KEPT CLEAN BY APPROVED MEANS DURING AND AFTER LAYING.

(C) AT TIMES WHEN PIPE LAYING IS NOT IN PROGRESS, THE OPEN ENDS OF PIPE SHALL BE CLOSED BY APPROVED MEANS, AND NO TRENCH WATER SHALL BE PERMITTED TO ENTER THE PIPE. NO PIPE SHALL BE LAID IN WATER, OR WHEN THE TRENCH CONDITIONS OR THE WEATHER IS UNSUITABLE FOR SUCH WORK, EXCEPT BY PERMISSION OF THE ENGINEER.

(D) WHEREVER NECESSARY TO DEFLECT PIPE FROM A STRAIGHT LINE, EITHER IN THE VERTICAL OR HORIZONTAL PLANE TO AVOID OBSTRUCTIONS, TO PLUMB STEMS, OR FOR OTHER REASONS, THE DEGREE OF DEFLECTION SHALL BE APPROVED BY THE ENGINEER.

(E) BEFORE LAYING DUCTILE IRON PIPE, ALL LUMPS, BLISTERS AND EXCESS COAL TAR COATING SHALL BE REMOVED FROM THE BELL AND SPIGOT ENDS OF EACH PIPE. THE PIPE ENDS SHALL THEN BE KEPT CLEAN UNTIL JOINTS ARE MADE.

(F) BEFORE LAYING CONCRETE PIPE, THE PIPE ENDS SHALL BE MADE SMOOTH WITH EMERY CLOTH, FILE OR OTHER APPROVED MEANS, WIRE BRUSHED AND WIPED UNTIL CLEAN AND DRY. PIPE ENDS SHALL BE KEPT CLEAN UNTIL JOINTS ARE MADE. AFTER CLEANING AND DRYING, ALL CONTACT SURFACES OF THE GASKETS AND STEEL JOINT RINGS SHALL BE COATED WITH AN APPROVED FLAX SOAP BEFORE ENTERING THE SPIGOT ENDS INTO THE SOCKET. IMMEDIATELY AFTER THE JOINT IS PULLED TOGETHER, THE PIPE SHALL BE BLOCKED WITH WOOD BLOCKING. A SURCINGLE SHALL BE INSTALLED AROUND THE JOINT AND THE PIPE SHALL BE SECURED WITH EARTH OR SAND AS REQUIRED, CAREFULLY TAMPED UNDER AND ON EACH SIDE UP TO THE SPRING–LINE OF THE PIPE, INCLUDING THE BELL HOLES. ALL BLOCKING SHALL BE REMOVED WHEN BACKFILL HAS REACHED THE SPRING LINE FOR THE PIPE.

FLOATING

THE CONTRACTOR SHALL TAKE EVERY PRECAUTION AGAINST THE FLOATING OF THE PIPE DUE TO WATER COMING INTO THE TRENCH, OR THROUGH CAVING IN, FLUSHING OR PUDDLING. IN CASE OF SUCH FLOATING THE CONTRACTOR SHALL REPLACE THE PIPE AT HIS OWN EXPENSE AND MAKE WHOLLY GOOD ANY INJURY OR DAMAGE WHICH MAY HAVE RESULTED.

WATERWORK GENERAL NOTES

PLUGGING DEAD ENDS

STANDARD RESTRAINED PLUGS WITH CLAMPS SHALL BE INSERTED INTO THE BELLS OF ALL DEAD ENDS OF PIPES, TEES, OR CROSSES, AND SPIGOT ENDS SHALL HAVE RESTRAINED CAPS AND CLAMPS INSTALLED BY THE CONTRACTOR, ON ALL MAINS CONSTRUCTED BY HIM AND ON EXISTING WATER MAINS WHERE INDICATED IN THE CONTRACT DRAWINGS. CONCRETE PIERS SHALL BE PLACED WHEN CALLED FOR ON THE CONTRACT DRAWINGS, OR ORDERED BY THE CITY. THE COST OF FURNISHING AND INSTALLING THE PLUGS IN NEW WATER MAINS SHALL BE INCLUDED IN THE PER LINEAR FOOT PRICE BID FOR THE VARIOUS SIZES OF NEW WATER MAINS. THE COST OF FURNISHING AND INSTALLING THE PLUG IN EXISTING WATER MAIN SHALL BE INCLUDED IN THE UNIT PRICE BID FOR EACH "ITEM SPECIAL—PLUGGING EXISTING WATER MAINS AND BRANCHES," CLASSIFIED AS TO SIZE AS SHOWN ELSEWHERE IN THESE PLANS. PAYMENT FOR TEMPORARY PLUGS OR CAPS FOR TESTING AND CHLORINATION SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAL FOOT OF WATER MAIN TO BE TESTED AND CHLORINATED.

BACKFILLING

(A) BACKFILL, UNLESS OTHERWISE SPECIFIED, MAY BE MADE WITH MATERIAL EXCAVATED FROM TRENCHES, PROVIDING IT MINIMALLY CONFORMS TO THE REQUIREMENTS OF ITEM 603 OF THE O.D.O.T. "CONSTRUCTION AND MATERIAL SPECIFICATIONS" AND IS SATISFACTORY TO THE CITY. IF, IN THE OPINION OF THE ENGINEER, THE MATERIAL EXCAVATED IS UNSATISFACTORY, THEN THE CONTRACTOR SHALL FURNISH AT HIS OWN EXPENSE OTHER MATERIAL SUITABLE FOR BACKFILL. ALL BACKFILL SHALL BE FREE FROM SLAG, CINDERS, RUBBISH AND OTHER OBJECTIONABLE MATERIAL.

(B) BEFORE LAYING THE PIPE, THE BOTTOM OF THE TRENCH SHALL BE BROUGHT TO THE GRADE OF THE BOTTOM OF THE PIPE, EXCEPT AT FIELD JOINTS. WHEREVER THE BOTTOM OF THE TRENCH HAS BEEN EXCAVATED BELOW THE BOTTOM OF THE PIPE, THE CONTRACTOR SHALL PLACE SAND, OR OTHER MATERIAL SATISFACTORY TO THE ENGINEER TO BRING THE BOTTOM OF THE TRENCH TO THE GRADE OF THE BOTTOM OF THE PIPE. THIS BED SHALL BE THOROUGHLY TAMPED BEFORE THE PIPE IS LAID.

(C) UNLESS OTHERWISE SPECIFIED, THE BACKFILL UNDER, AROUND AND TO A DEPTH OF ONE (1) FOOT ABOVE THE TOP OF ALL PIPE SHALL BE MADE WITH SAND IN ACCORDANCE WITH 703.02, WHICH MATERIAL SHALL BE FREE FROM OBJECTIONABLE MATERIAL NOTED ABOVE. THE CONTRACTOR MUST USE SPECIAL CARE IN PLACING THIS PORTION OF THE BACKFILL, SO AS TO AVOID INJURING, DISTORTING OR MOVING THE PIPE DURING COMPACTION. ABOVE THIS LEVEL THE BACKFILL SHALL BE MADE WITH MATERIAL SATISFACTORY TO THE ENGINEER, MINIMALLY CONFORMING TO ITEM 603 (TYPE "B" CONDUIT UNDER PAVEMENT OR TYPE "C" CONDUIT WHEN NOT UNDER PAVEMENT) AND PER PARAGRAPH (G) BELOW.

(D) BACKFILLING AS NOTED IN PARAGRAPH (C) SHALL BE TAMPED IN THIN LAYERS, SIMULTANEOUSLY ON EACH SIDE OF THE PIPE, AND THOROUGHLY COMPACTED, SO AS TO PROVIDE A SOLID BACKING AGAINST THE EXTERNAL SURFACE OF THE PIPE.

(E) ONLY AFTER THE BACKFILL PREVIOUSLY MENTIONED HAS BEEN SATISFACTORILY COMPACTED, MAY WORK PROCEED IN PLACING THE REMAINING BACKFILL WHICH MUST BE CAREFULLY PLACED AND COMPACTED IN FOUR INCH LOOSE DEPTH LAYERS BY TAMPING, WITH MECHANICAL TAMPERS OR ROLLING. ALL PRECAUTIONS MUST BE TAKEN TO ELIMINATE FUTURE SETTLEMENT. THE NUMBER OF WORKERS TAMPING SHALL BE NOT LESS THAN THE NUMBER BACKFILLING, AND ADDITIONAL WORKERS SHALL BE KEPT IN THE TRENCH TO SPREAD THE MATERIAL.

(F) BACKFILLING SHALL NOT BE DONE IN FREEZING WEATHER, EXCEPT BY PERMISSION OF THE ENGINEER, AND IT SHALL NOT BE MADE WITH FROZEN MATERIAL, NOR SHALL ANY FILL BE MADE WHERE THE MATERIAL ALREADY IN THE DITCH IS FROZEN.

(G) ALL BACKFILL FROM ONE (1) FOOT ABOVE THE PIPE TO THE TOP OF BACKFILL SHALL BE MADE WITH CRUSHED STONE PER SECTION 603.02 OF THE O.D.O.T. SPECIFICATIONS WHERE PERMANENT PAVEMENTS, CURBS, DRIVEWAYS, OR SIDEWALKS ARE CONSTRUCTED OVER OR HAVE BEEN OPENED FOR OR UNDERCUT BY THE EXCAVATION; OR WHERE ORDERED BY THE ENGINEER.

(H) SPECIAL TREATMENT OF THE TRENCH WILL BE REQUIRED WHERE CINDER OR ACTIVE SULPHUR BEARING SHALE OR CLAY EXCAVATION EXCEEDING ONE FOOT MEASURED FROM THE TOP SURFACE IS ENCOUNTERED. BEFORE LAYING THE PIPE, THE BOTTOM OF THE TRENCH SHALL BE DUG BELOW GRADE AND THEN BROUGHT TO THE GRADE OF THE PIPE IN THE FOLLOWING MANNER: A FOUR (4) INCH LAYER OF CRUSHED LIMESTONE SHALL BE PLACED ON THE ENTIRE WIDTH OF THE BOTTOM OF THE TRENCH FOLLOWED BY A FILLER OF HYDRATED LIME AND A LAYER OF THREE (3) INCHES OF SAND. THE CRUSHED LIMESTONE SHALL BE WELL GRADED FROM THE FINE TO COARSE AND FREE FROM SLAG, CINDERS, ASHES, RUBBISH OR OTHER OBJECTIONABLE MATERIAL. ALL LIMESTONE MUST BE CAPABLE OF BEING PASSED THROUGH A 3/4 INCH SIEVE. ON TOP OF THIS LAYER OF CRUSHED STONE, HYDRATED LIME SHALL BE SUPPLIED IN THE AMOUNT OF 3/8 OF A POUND PER SQUARE FOOT OF TRENCH. THIS BED OF CRUSHED LIMESTONE SHALL BE THOROUGHLY TAMPED BEFORE THE 3" LAYER OF SAND IS PLACED. THE BACKFILL AROUND AND TO THE DEPTH OF 3" ABOVE THE TOP OF PIPE SHALL BE MADE WITH SAND. THE CONTRACTOR MUST USE SPECIAL CARE IN PLACING THIS PORTION OF THE BACKFILL SO AS TO AVOID INJURING OR MOVING THE PIPE WHEN COMPACTING SAME. ON TOP OF THE SAND THE CONTRACTOR SHALL PLACE ANOTHER LAYER OF CRUSHED LIMESTONE FIVE (5) INCHES THICK ON THE ENTIRE WIDTH OF THE TRENCH. ON TOP OF THE COMPACTED LAYER OF LIMESTONE HYDRATED LIME SHALL THEN BE APPLIED IN THE AMOUNT OF 3/4 OF A POUND PER SQUARE FOOT OF TRENCH. THE REMAINING BACKFILL SHALL BE MADE WITH GRANULAR MATERIAL, AS SPECIFIED IN PARAGRAPH (G) ABOVE, CAREFULLY PLACED AND COMPACT BY TAMPING, OR ROLLING. ALL PRECAUTIONS SHALL BE TAKEN TO ELIMINATE FUTURE SETTLEMENT. THE TREATMENT OF THE TRENCH BOTTOM, PREVIOUSLY DESCRIBED, MAY BE OMITTED WHERE THE CINDER DEPTH MEASURED FROM THE TOP SURFACE DOES NOT EXCEED 2'–6".

PROVISIONS FOR PROTECTING THE WORK

THE CONTRACTOR SHALL FURNISH ALL THE NECESSARY EQUIPMENT, SHALL TAKE ALL NECESSARY PRECAUTIONS AND SHALL ASSUME THE ENTIRE COST OF HANDLING ANY SEWAGE, SEEPAGE, STORM SURFACE AND FLOOD FLOWS OR ICE, WHICH MAY BE ENCOUNTERED AT ANY TIME DURING THE CONSTRUCTION OF THE WORK. THE MANNER OF PROVIDING FOR THESE OCCURRENCES SHALL MEET WITH THE APPROVAL OF THE ENGINEER. AFTER INSTALLATION, THE CONTRACTOR SHALL FURNISH AND MAINTAIN SATISFACTORY PROTECTION TO ALL EQUIPMENT WHETHER OF THIS OR OTHER CONTRACT AGAINST INJURY BY WEATHER, FLOODING OR BY DIRECT OR INCIDENTAL DAMAGE FROM HIS OWN OPERATIONS, LEAVING ALL WORK IN A PERFECT CONDITION AT THE COMPLETION OF THE CONTRACT. NO EXTRA PAYMENT WILL BE MADE FOR THIS WORK BUT THE ENTIRE COST OF THE SAME SHALL BE INCLUDED IN THE WORK TO BE DONE IN THIS CONTRACT.

DRAWINGS

(A) THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR FOR APPROVAL, DUPLICATE PRINTS OF ALL SHOP DRAWINGS AS DEVELOPED BY THE FABRICATOR, FOR CONCRETE PIPE, FITTINGS AND SPECIALS, AND MISCELLANEOUS DETAILS, SUCH AS VALVES, DRAIN FORGOINGS, PRECAST VALVES, CASTINGS, ETC. DRAWINGS SHALL INCLUDE DETAILS, LAYOUTS AND LAYING SCHEDULE FOR ALL PIECES FURNISHED REQUIRING DRAWING SUBMITTAL.

(B) ONE PRINT OF EACH OF THE DRAWINGS SUBMITTED WILL BE RETURNED WITH THE CRITICISMS OR APPROVAL OF THE DIRECTOR. IN CASE THE DRAWINGS ARE NOT APPROVED, THE CONTRACTOR SHALL AGAIN SEND FOR APPROVAL DUPLICATE REVISED PRINTS OF THE DRAWINGS TO TAKE CARE OF THE CRITICISMS NOTED, AND AFTER THE DRAWINGS HAVE BEEN FINALLY APPROVED, THE CONTRACTOR SHALL FURNISH TO THE DIRECTOR THREE (3) REPRODUCTABLE TRACINGS ON CLOTH OR MYLAR, OF EACH DRAWING. NO WORK SHALL BE DONE IN THE SHOP UNTIL AFTER THE DRAWINGS HAVE BEEN FINALLY APPROVED. DRAWINGS SHALL BE ON A COMPOSITE SHEETS 24" X 36". NO SMALLER SHEETS WILL BE ACCEPTED. MYLAR FILM THICKNESS SHALL BE 5 MILS.

(C) THE APPROVAL OF THE DRAWINGS BY THE DIRECTOR SHALL NOT RELIEVE THE CONTRACTOR OF ANY OF HIS OBLIGATIONS IN CONNECTION WITH THIS CONTRACT.

TUNNELING

TUNNELING WILL NOT BE PERMITTED WITHOUT PERMISSION OF THE ENGINEER. IN BACKFILLING TUNNELS, SAND SHALL BE USED AS FAR AS POSSIBLE AND BALANCE OF BACKFILLING MADE WITH CONCRETE, RAMMED IN PLACE.

LISTS AND INVOICES

(A) THE CONTRACTOR SHALL FURNISH THE CITY WITH THE LIST IN DUPLICATE OF PIECES IN EACH SHIPMENT OF PIPE AND SPECIALS, GIVING THE SERIAL NUMBER AND DESIGNATION OF EACH PIPE AND SPECIAL SENT AT THAT TIME.

(B) THE MATERIAL SHALL BE SHIPPED IN SUCH SECTIONS AS THE STATE AND CITY MAY ORDER.

ITEM SPECIAL – DUCTILE IRON PIPE AND FITTINGS

WORK INCLUDED

(A) THE CONTRACTOR SHALL UNDER THIS ITEM, FURNISH ALL THE MATERIALS FOR AND SHALL PROPERLY CONSTRUCT AND CONNECT IN PLACE AT THE LOCATIONS SHOWN ON THE DRAWINGS OR AS DIRECTED, ALL DUCTILE IRON PIPE AND FITTINGS, INCLUDING ALL EXCAVATION WORK, THE CUTTING INTO AND REMOVAL OF EXISTING PIPE, AND BACKFILLING. ALL AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT. IN GENERAL THIS WORK SHALL INCLUDE THE FURNISHING, LAYING, CONNECTING, PAINTING AND TESTING OF PIPE AND FITTINGS, THE EXCAVATION, SHEETING AND SHORING, AND BACKFILLING. IF SO NOTED ON THE CONTRACT DRAWINGS, THE CUTTING INTO, REMOVAL AND STORAGE OF EXISTING MAINS AND THE FURNISHING OF ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT TO COMPLETE THE WORK AS SPECIFIED, SHOWN OR ORDERED.

(B) IN MAKING THE CONNECTION TO EXISTING MAINS WHERE BRANCH SLEEVES CAN BE USED, THE CONTRACTOR SHALL SUPPLY THE SAME. THE DIVISION OF WATER WILL INSTALL THE BRANCH SLEEVE AND MAKE THE PRESSURE TAP IN ACCORDANCE WITH "WORK TO BE DONE BY THE CITY". IF THE INSTALLATION OF BRANCH SLEEVES AND VALVES CANNOT BE ACCOMPLISHED, THE CONTRACTOR WILL BE REQUIRED TO USE TEES AND SLEEVES TO COMPLETE THE CONNECTION. THE CONTRACTOR WILL BE REQUIRED TO MAKE THE NECESSARY EXCAVATION, BACKFILL AND REPAVING (IF NOT PAID FOR SEPARATELY AS PART OF THE PLANS).

DUCTILE–IRON PIPE AND FITTINGS

(A) ALL PIPE AND FITTINGS SHALL BE MANUFACTURED IN ALL RESPECTS IN ACCORDANCE WITH, AND SHALL MEET THE REQUIREMENTS OF THE LATEST "AMERICAN NATIONAL STANDARD" SPECIFICATIONS FOR DUCTILE–IRON PIPE CENTRIFUGALLY CAST IN METAL MOLDS OR SANDLINED MOLDS, AND DUCTILE IRON FITTINGS FOR WATER AND OTHER LIQUIDS, ADOPTED BY THE AMERICAN WATER WORKS ASSOCIATION; WHICH STANDARDS EXCEPT AS HEREIN MODIFIED ARE MADE A PART OF THESE SPECIFICATIONS. PIPE UP TO AND INCLUDING 20 INCHES SHALL HAVE RETAINED MECHANICAL JOINT PIPE AND FITTINGS. BOLTLESS RESTRAINED PIPE AND FITTINGS SHALL BE USED WHERE CALLED FOR ON THE CONTRACT DRAWINGS. PIPE 24–INCH AND LARGER SHALL HAVE BOLTLESS RESTRAINED SLIP–ON JOINTS WITHIN "RESTRAINED DISTANCE" SHOWN ON THE CONTRACT DRAWINGS.

(B) ALL PIPE AND FITTINGS SHALL BE CEMENT LINED AND OF THE SIZE AND THICKNESS AND PRESSURE CLASSES NOTED ON THE RESPECTIVE CONTRACT DRAWING OR DIRECTLY SPECIFIED. ALL FITTINGS ON PIPE SIZES UP TO AND INCLUDING 12–INCHES SHALL BE OF THE SHORT BODIED TYPE.

(C) THE CONTRACTOR SHALL FURNISH CENTRIFUGAL CAST DUCTILE–IRON CEMENT LINED PIPE. DUCTILE–IRON METAL SHALL HAVE A MINIMUM TENSILE STRENGTH OF 60,000 PSI, MINIMUM YIELD STRENGTH OF 42,000 PSI AND MINIMUM ELONGATION OF 10 PERCENT AND SHALL BE FOR THE THICKNESS CLASS NOTED ON THE CONTRACT DRAWINGS OR DIRECTLY SPECIFIED. PIPE MAY BE FURNISHED IN 18 OR 20 FOOT NOMINAL LAYING LENGTHS. THE CENTRIFUGALLY CAST DUCTILE SHALL CONFORM TO THE AMERICAN NATIONAL STANDARD ANSI A21.51–1976/AWWA C151–76 AND ALL SUBSEQUENT AMENDMENTS THERETO. PIPE ON STRAIGHT RUNS SHALL HAVE PUSH–ON SINGLE RUBBER–GASKET COMPRESSION JOINTS, ALL IN ACCORDANCE WITH AMERICAN NATIONAL STANDARD ANSI A21.11–80/AWWA C111–80 RUBBER–GASKET JOINTS FOR DUCTILE–IRON PRESSURE PIPE AND FITTINGS. ALL PIPE SHALL BE CEMENT LINED. FOR PIPE SIZES UP TO AND INCLUDING 20–INCHES, RETAINED MECHANICAL JOINTS SHALL BE FURNISHED AT BENDS, TEES, CROSSES, SPECIAL FITTINGS AND BETWEEN VERTICAL OFFSETS OR BENDS, ON HYDRANT BRANCHES AND SHALL BE RETAINED AS SPECIFIED IN PARAGRAPH E, "RETAINED MECHANICAL JOINTS" OF THE "JOINTS" SUBSECTION.

(D) THE CONTRACTOR SHALL FURNISH DUCTILE–IRON CEMENT LINED FITTINGS. ALL DUCTILE–IRON FITTINGS ON PIPE SIZES 16" AND LARGER SHALL BE MANUFACTURED IN ACCORDANCE WITH AMERICAN NATIONAL STANDARD ANSI A21.10– 82/AWWA C110–82 AND ALL SUBSEQUENT AMENDMENTS THERETO. METAL FOR FITTINGS SHALL CONFORM TO AMERICAN NATIONAL STANDARD ANSI A21.10–82. ALL FITTINGS SHALL BE OF THE SHORT BODIED TYPE IN ACCORDANCE WITH ANSI/AWWA C153/A21.53–84 AND ALL SUBSEQUENT AMENDMENTS THERETO.

(E) STANDARD THICKNESS AND PIPE CLASS TABLES

THE THICKNESS OF THE CENTRIFUGALLY CAST DUCTILE IRON PIPE SHALL CONFORM TO THE FOLLOWING TABLE:

STANDARD THICKNESS OF CENTRIFUGALLY CAST, DUCTILE IRON PIPE

WORKING:		CLASSES				FIT–	WORKING:		CLASSES				FIT–
SIZE	PRES–	52	53	54	56	TINGS	SIZE	PRES–	52	53	54	56	TINGS
	SURE					CLASS		SURE					CLASS
IN.	PSI					PSI	IN.	PSI					PSI
4"	350	.29	.32	.35	.41	350	20"	350	.42	.45	.48	.54	350
6"	350	.31	.34	.37	.43	350	24"	350	.44	.47	.50	.56	350
8"	350	.33	.36	.39	.45	350	30"	350	.47	.51	.55	.63	250
10"	350	.35	.38	.41	.47	350	36"	350	.53	.58	.63	.73	250
12"	350	.37	.40	.43	.49	350	42"	350	.59	.65	.71	.83	250
16"	350	.40	.43	.46	.52	350	48"	350	.65	.72	.79	.93	250

(F) ALL FITTINGS, UNLESS OTHERWISE NOTED IN THE CONTRACT DRAWINGS,SUCH AS BENDS, TEES, CROSSES, HYDRANT BRANCHES, ETC. SHALL HAVE BELL AND BELL, BELL AND PLAIN ENDS OF THE MECHANICAL BOLTED STUFFING–BOX TYPE WITH PIPE OR FITTING PLAIN END SEALING GASKET AND BOLTED FOLLOWER GLAND. MECHANICAL JOINT FITTINGS SHALL BE THE MECHANICAL JOINTED BOLTED STUFFING–BOX TYPE IN ACCORDANCE WITH AMERICAN NATIONAL STANDARD ANSI A21.11–80/AWWA C111–80 RUBBER–GASKET JOINTS FOR DUCTILE IRON AND GRAY– IRON PRESSURE PIPE AND FITTINGS. ALL FITTINGS SHALL BE CEMENT LINED. ALL MECHANICAL JOINTS SHALL BE RETAINED AS SPECIFIED IN PARAGRAPH E: "RETAINED MECHANICAL JOINTS" OF THE JOINTS SUBSECTION. PIPE AND FITTINGS WITHIN "RESTRAINED DISTANCE" ON PIPE SIZES 24–INCH AND LARGER SHALL BE FURNISHED WITH BOLTLESS RESTRAINED SLIP–ON JOINTS.

(G) WHERE "RESTRAINED DISTANCES" ARE SHOWN ON THE PLANS OR DIRECTLY SPECIFIED, PIPE AND FITTINGS HAVING APPROVED SLIPON SINGLE RUBBER–GASKET BOLTLESS RESTRAINED TYPE JOINTS SHALL BE FURNISHED.

(H) GLANDS FOR ALL MECHANICAL JOINT PIPE AND FITTINGS SHALL BE DUCTILE– IRON. BOLTS AND NUTS SHALL BE CORROSION RESISTANT, HIGH–STRENGTH, LOW ALLOY STEEL IN ACCORDANCE WITH AMERICAN NATIONAL STANDARD ANSI A21.11– 80/AWWA C111–80 RUBBER GASKET JOINTS FOR DUCTILE–IRON AND GRAY–IRON PRESSURE PIPE AND FITTINGS.

GASKETS SHALL BE OF RUBBER OR OTHER EQUALLY EFFECTIVE PROTECTION AGAINST UNEVEN DISTORTION OF GASKET.

(I) WHERE FITTINGS ARE SHOWN WHICH ARE NOT COVERED BY THE ABOVE SPECIFICATIONS, THEY IN SUCH PARTICULARS AS ARE LACKING THEREON SHALL CONFORM TO THE DIMENSIONS AND OTHERWISE MEET THE SPECIFICATIONS FOR THE RESPECTIVE TYPE WHICH ARE CARRIED IN THE LATEST REVISIONS TO THE CURRENT EDITION OF THE DUCTILE IRON PIPE RESEARCH ASSOCIATION "HANDBOOK OF DUCTILE IRON PIPE" OR WHICH ARE OTHERWISE SHOWN ON THE CONTRACT DRAWINGS.

(J) WHEREVER CHANGES IN LINES AND GRADES OF THE MAIN AS SHOWN ON THE DRAWINGS ARE NOT STANDARD FITTING DEFLECTIONS, THE CONTRACTOR WILL BE PERMITTED TO SUBMIT DETAILS USING COMBINATIONS OF STANDARD FITTINGS AND SMALL DEFLECTIONS (NOT TO EXCEED THE MANUFACTURER'S MAXIMUM SUGGESTED JOINT OPENING) IN THE ADJOINING LENGTHS OF PIPE.

(K) ON NEW OR EXTENDED WATER MAINS, UP TO AND INCLUDING 20–INCH DIAMETER WHERE WATER MAINS END OR TERMINATE AND ARE NOT CONNECTED TO EXISTING MAINS, RETAINED MECHANICAL BELL JOINT PLUGS ARE TO BE INSTALLED. ON MAINS 24" AND LARGER AN APPROVED TYPE RESTRAINED CAP/PLUG SHALL BE FURNISHED AND INSTALLED. PLUGS CAPS SHALL BE FURNISHED WITH TWO (2) PLUGGED TWO (2")–INCH TAPS FOR DRAIN AND AIR RELIEF CONNECTIONS.

(L) CLOSURE PIECES SHALL BE ACCURATELY MEASURED AND CUT IN THE FIELD AND INSTALLED USING SOLID SHORT PATTERN SLEEVES HAVING MECHANICAL BELL JOINTS. MECHANICAL BELL JOINT SLEEVES SHALL BE OF THE RETAINED TYPE AS SPECIFIED IN PARAGRAPH E, "RETAINED MECHANICAL JOINTS", OF THE "JOINTS" SUBSECTION.

(M) TESTS, INSPECTION, REPORTS AND ANALYSES OF TESTS OF SAMPLES FOR ALL MATERIALS SHALL BE FURNISHED IN ACCORDANCE WITH THESE SPECIFICATIONS.

(N) BITUMASTIC COATING SHALL BE APPLIED ON THE EXTERIOR OF ALL DUCTILE IRON PIPE AND FITTINGS IN ACCORDANCE WITH AWWA SPECIFICATIONS.

CEMENT LINING

ALL PIPE AND FITTINGS SHALL BE GIVEN A CEMENT MORTAR LINING AT THE POINT OF MANUFACTURE. THE LINING SHALL CONFORM TO THE AMERICAN NATIONAL STANDARD A21.4–1980 (AWWA C104–80) AND ALL SUBSEQUENT AMENDMENTS THERETO.

MARKING

ALL PIPE AND FITTINGS SHALL BE SUITABLY MARKED TO DENOTE THE MANUFACTURER, CLASS, DATE, WEIGHT AND OTHER ELEMENTS OF IDENTIFICATION.

FACING AND DRILLING

ALL FLANGES SHALL BE CAST SOLID AND FACED ACCURATELY AT RIGHT ANGLES TO THE AXIS OF THE PIPE. ALL FLANGES SHALL BE COATED WITH WHITE LEAD IMMEDIATELY AFTER THEY HAVE BEEN FACED AND DRILLED. ALL FLANGED PIPE AND FITTINGS SHALL BE FACED AND DRILLED TO ANSI B16.1, 125 LB. DRILLING, UNLESS SPECIAL DRILLING IS CALLED FOR. WHERE TAP OR STUD BOLTS ARE REQUIRED, FLANGES SHALL ALSO BE TAPPED.

LAYING

(A) PROPER AND SUITABLE TOOLS AND APPLIANCES FOR THE SAFE AND CONVENIENT HANDLING AND LAYING OF THE PIPE AND FITTINGS SHALL BE USED. GREAT CARE SHALL BE TAKEN TO PREVENT THE PIPE COATING AND FITTINGS FROM BEING DAMAGED PARTICULARLY ON THE INSIDE OF THE PIPES AND FITTINGS AND ANY SUCH DAMAGE SHALL BE REMEDIED AS DIRECTED. ALL PIPES AND FITTINGS SHALL BE CAREFULLY EXAMINED BY THE CONTRACTOR FOR DEFECTS JUST BEFORE LAYING AND NO PIPE OR FITTINGS SHALL BE LAID WHICH IS KNOWN TO BE DEFECTIVE.

(B) IF ANY DEFECTIVE PIPE IS DISCOVERED AFTER HAVING BEEN LAID, IT SHALL BE REMOVED AND REPLACED WITH A SOUND PIPE OR FITTING IN A SATISFACTORY MANNER, BY THE CONTRACTOR AT HIS OWN EXPENSE. ALL PIPES AND FITTINGS SHALL BE THOROUGHLY CLEANED BEFORE THEY ARE LAID, SHALL BE KEPT CLEAN UNTIL THEY ARE USED IN THE COMPLETED WORK, AND WHEN LAID, SHALL CONFORM TO THE LINES AND GRADES. OPEN ENDS OF PIPES SHALL BE KEPT PLUGGED WITH A BULKHEAD DURING CONSTRUCTION.

(C) PIPE LAID IN TRENCH SHALL BE LAID TO A FIRM AND EVEN BEARING FOR ITS FULL LENGTH. PRECAUTIONS SHALL BE TAKEN AGAINST FLOATING.

(D) IT IS THE INTENTION OF THESE SPECIFICATIONS TO SECURE FIRST CLASS WORKMANSHIP IN THE PLACING OF PIPE AND ACCESSORIES. IN SUCH DETAILS AS ARE NOT SPECIFICALLY MENTIONED HEREIN OR CALLED FOR ON THE DRAWINGS, THE CONTRACTOR WILL BE REQUIRED TO CONFORM WITH THE APPLICABLE SECTIONS OF THE LATEST AMERICAN NATIONAL STANDARD ANSI/AWWA C600–77, INSTALLATION OF GRAY AND DUCTILE CAST IRON WATER MAINS AND APPURTENANCES AS ADOPTED BY THE AMERICAN WATER WORKS ASSOCIATION.

CUTTING PIPE

WHENEVER THE PIPES REQUIRE CUTTING TO FIT INTO THE LINES, THE WORK SHALL BE DONE IN A SATISFACTORY MANNER SO AS TO LEAVE A SMOOTH END AT RIGHT ANGLES TO THE AXIS OF THE PIPE. WHEN A PIECE OF PIPE IS CUT TO FIT INTO THE LINE, NO PAYMENT WILL BE MADE FOR THE PORTION CUT OFF AND NOT USED IN THE LINE.

JOINTS

(A) FLANGED JOINTS

(1) FLANGED JOINTS SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS. FLANGES SHALL BE EITHER CAST STEEL, FORGED OR ROLLED STEEL, OR PROPERLY WELDED AND MACHINED FABRICATED STEEL PLATES, WELDED TO PIPE WITH TWO CONTINUOUS WELDS. THEY SHALL HAVE PLAIN FACES AND SHALL BE FACED TRUE AND SMOOTH AT RIGHT ANGLES TO THE AXIS OF THE PIPE AND SHALL BE SPOT FACED ON THE BACK. DRILLING SHALL CONFORM TO ANSI B16.1, 125 LBS. EACH BLIND FLANGE SHALL BE CAST IRON AND HAVE BOSSES TAPPED AT TOP AND BOTTOM FOR TWO (2) INCH STANDARD PIPE AND FURNISHED WITH PLUGS.

(2) ALL BOLTS AND NUTS USED IN THE FINISHED WORK FOR FLANGES SHALL BE MADE OF SILICON BRONZE (ASTM B 98–74A, ALLOY A) OR STAINLESS STEEL (ASTM A 276–75, TYPE 302). THE ENDS OF ALL BOLTS MUST BE FINISHED TO STANDARD RADIUS IN ACCEPTABLE MANNER. ALL SCREW THREADS SHALL BE AMERICAN STANDARD COARSE THREAD (N.C.). STUD BOLTS DOUBLE END (ROD) SHALL BE USED TO MAKE THE FLANGED JOINTS ON PIPE. ALL DIMENSIONS TO BE ACCORDING TO AMERICAN STANDARD HEAVY. BOLTS AND NUTS SHALL BE DELIVERED TO THE FIELD FREE FROM GREASE, RUST AND DIRT AND SHALL BE PROPERLY PROTECTED FROM MOISTURE AND DIRT IN THE FIELD. GASKETS FOR FLANGED PIPE SHALL BE 5X MANILA ROPE PATTERN OR OTHER APPROVED TYPE.

(3) ALL FLANGES SHALL BE ACCURATELY FACED AT RIGHT ANGLES TO THE AXIS OF THE PIPE. ALL FLANGES SHALL BE COATED WITH A SEALANT IMMEDIATELY AFTER THEY HAVE BEEN FACED AND DRILLED AND TAPPED FOR STUD BOLTS.

(B) SLIP–ON JOINTS

ALL PIPE UNLESS OTHERWISE REQUIRED, SHOWN ON CONTRACT DRAWING, DIRECTLY SPECIFIED OR CONNECTED TO FITTINGS, VALVES AND HYDRANTS SHALL HAVE SOCKET BY PLAIN END RUBBER–GASKET PUSH–ON JOINTS WITH RADIALLY COMPRESSED LOCKED IN PLACE RUBBER RING GASKETS APPROVED BY THE COMMISSIONER OF WATER AND HEAT. SLIP–ON COMPRESSION JOINTS SHALL CONFORM TO THE REGULAR AND SPECIAL REQUIREMENT FOR PUSH–ON JOINTS IN AMERICAN NATIONAL STANDARD ANSI/AWWA C111/A21.11–80 FOR RUBBER GASKET JOINTS FOR DUCTILE–IRON AND GRAY–IRON PRESSURE PIPE AND FITTINGS.

(C) MECHANICAL JOINTS

ALL FITTINGS AND PIPE BELL ENDS CONNECTED TO FITTINGS, UNLESS OTHERWISE REQUIRED, SHOWN ON CONTRACT DRAWINGS, OR DIRECTLY SPECIFIED SHALL HAVE BELL OR PLAIN END JOINTS OF THE MECHANICAL BOLTED STUFFING–BOX TYPE WITH SEALING GASKET AND BOLTED DUCTILE– IRON FOLLOWER GLAND AND, WHERE REQUIRED OR CALLED FOR ON THE CONTRACT DRAWINGS, BE OF THE SPECIFIED RETAINED TYPE. BOLTS AND NUTS FOR MECHANICAL JOINTS SHALL BE CORROSION RESISTANT, HIGH STRENGTH, LOW ALLOY STEEL. MECHANICAL JOINTS SHALL CONFORM TO THE REGULAR AND SPECIAL REQUIREMENT THAT ALL GLANDS SHALL BE DUCTILE–IRON WITH JOINT DIMENSIONS AND TOLERANCES, BOLT HOLES AND SLOTS, GASKETS, RUBBER, QUALITY CONTROL, BOLTS AND NUTS AND MARKING BE IN CONFORMANCE WITH AMERICAN NATIONAL STANDARD ANSI/AWWA C111/A21.11– 80 FOR RUBBER–GASKET JOINTS FOR DUCTILE– IRON AND GRAY–IRON PRESSURE PIPE AND FITTINGS. WHERE REQUIRED OR CALLED FOR ON THE CONTRACT DRAWINGS, MECHANICAL JOINTS SHALL BE RETAINED AS SPECIFIED IN PARAGRAPH E, "RETAINED MECHANICAL JOINTS". ALL MECHANICAL JOINTS SHALL BE POLYETHYLENE ENCASED AS SPECIFIED IN PARAGRAPH G, "POLYETHYLENE ENCASEMENT."

(D) VICTAULIC TYPE COUPLINGS

(1) WHERE SHOWN ON THE DRAWINGS OR WHERE REQUIRED, THE CONTRACTOR SHALL FURNISH AND INSTALL VICTAULIC TYPE COUPLINGS FOR CONNECTION OF DUCTILE IRON REDUCERS TO VALVES, CONCRETE PIPE OR STEEL PIPE. STEEL PIPE ENDS SHALL BE FABRICATED AND GROOVED AS INDICATED ON THE DRAWINGS. THE COUPLINGS SHALL BE ADAPTED FOR INSTALLATION ON SHOULDERED END CAST IRON SPACERS, REDUCERS AND FITTINGS AND DESIGNED FOR NOT LESS THAN THE WORKING PRESSURE NOTED ON THE CONTRACT DRAWINGS. COUPLINGS SHALL BE COMPOSED OF MALLEABLE IRON HOUSINGS HELD TOGETHER WITH STEEL BOLTS HEAT TREATED AND "HOT–DIP" GALVANIZED AND WITH A CONTINUOUS HOLLOW, MOLDED RUBBER SEALING RING, OF SUCH TYPE THAT THE SEAL BECOMES TIGHT AS THE PRESSURE WITHIN THE PIPE INCREASES. THE JOINTS SHALL BE CONSTRUCTED AND INSTALLED AND BE EQUAL IN ALL RESPECTS TO THOSE MANUFACTURED BY THE VICTAULIC COMPANY OF AMERICA. MALLEABLE HOUSINGS SHALL CONFORM TO THE "STANDARD SPECIFICATIONS FOR MALLEABLE IRON CASTINGS ASTM DESIGNATION A 47–68". BOLTS SHALL BE MANUFACTURED BY THE COUPLING MANUFACTURER AND SHALL BE HEAT TREATED STEEL BOLTS HAVING 100,000 PSI. TENSILE STRENGTH. ALL BOLTS AND NUTS SHALL BE ZINC COATED BY THE "HOT–DIP" METHOD ACCORDING TO ASTM DESIGNATION A123.

(2) ALL METAL PARTS OF THE COUPLINGS SHALL BE COATED AT THE SHOP WITH ONE COAT OF BITUMINOUS PRIMER FURNISHED BY THE SAME MANUFACTURER WHO FURNISHES THE COATINGS AS SPECIFIED UNDER "COATING".

(E) RETAINED MECHANICAL JOINTS

ON ALL PIPE AND FITTINGS AT BENDS, TEES, CROSSES, SPECIAL FITTINGS, BETWEEN VERTICAL OFFSETS OR BENDS, ON HYDRANT BRANCHES, ON VALVES AND HYDRANT BASE ELBOWS UP TO AND INCLUDING 20–INCH SIZE WHERE SHOWN ON THE DRAWINGS OR WHERE REQUIRED BY "RESTRAINED DISTANCE", THE CONTRACTOR SHALL FURNISH AND INSTALL RETAINED TYPE MECHANICAL JOINTS. PIPE AND FITTING BELL JOINT AND GASKETS SHALL BE FURNISHED AS SPECIFIED. GLANDS FOR RETAINED MECHANICAL JOINTS SHALL BE BOLTED TYPE OF DUCTILE–IRON MATERIAL CONFORMING TO AMERICAN NATIONAL STANDARD ANSI/AWWA C111/A21.11–80 FOR RUBBER–GASKET JOINTS FOR DUCTILE–IRON AND GRAY–IRON PRESSURE PIPE AND FITTINGS AND/OR CONFORMING WITH ASTM A 536–80 WITH THE ADDITIONAL REQUIREMENT THAT ALL SUCH GLANDS SHALL BE OF THE DUCTILE–IRON GRADE 60–42–10 MINIMUM REQUIREMENTS OF CENTRIFUGALLY CAST DUCTILE–IRON PIPE. RETAINED MECHANICAL JOINTS SHALL BE EQUIPPED WITH CUPPED END SQUARE HEAD CORROSION RESISTANT ALLOY STEEL OR COPPER–BEARING DUCTILE IRON SET SCREWS THREADED THROUGH TAPPED AND THREADED HOLES IN THE GLAND LIP. GLAND FLANGE SHALL BE THICKENED AND GLAND LIP SHALL BE EXTENDED TO PROVIDE FOR GLAND STRENGTH AND SET SCREW SIZE. NO SPLIT RETAINER GLANDS SHALL BE USED. LONGER BOLTS FOR JOINT ASSEMBLY SHALL BE FURNISHED WITH RETAINER GLANDS. SET SCREWS SHALL BE MINIMUM FIVE–EIGHTHS INCH (5/8") SIZE. NUMBER OF PERPENDICULAR SET SCREWS PER

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WATERWORK GENERAL NOTES

CUY–77–23.458

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HNTB ARCHITECTS ENGINEERS PLANNERS

RETAINED JOINT SHALL BE: 4 FOR 4" PIPE, 6 FOR 6" PIPE, MINIMUM OF 8 FOR 8" PIPE, MINIMUM OF 12 FOR 10" PIPE, 16 FOR 12" PIPE, 24 FOR 16" PIPE, AND 28 FOR 20" PIPE. WEDGE ACTION TYPE RETAINED MECHANICAL JOINTS HAVING TWIST-OFF NUTS MAY BE USED IF APPROVED BY THE COMMISSIONER OF WATER AND HEAT AS TO SIZE, NUMBER AND BOLT SIZE. WHERE JOINT DEFLECTION IS NECESSARY FOR ALIGNMENT SUCH DEFLECTION SHALL BE LIMITED TO 3 DEGREES. SET SCREWS SHALL BE TIGHTENED AFTER JOINT IS MADE TO 75 FOOT-POUNDS TORQUE. SET-SCREW TIGHTENING SHALL BE DONE AFTER THE JOINT BOLTS HAVE BEEN TIGHTENED. SET SCREWS SHALL ALL BE MADE FINGER-TIGHT AND TIGHTENED TO MAXIMUM TORQUE BY ALTERNATING TO OPPOSITE SIDES. ALL RETAINED MECHANICAL JOINT RETAINER GLANDS SHALL BE OF A DESIGN APPROVED BY THE COMMISSIONER OF WATER AND HEAT. ALL RETAINED JOINTS SHALL BE RATED FOR 250 PSI PRESSURE. ALL RETAINED JOINTS SHALL BE POLYETHYLENE ENCASED AS SPECIFIED IN PARAGRAPHG.

(F) BOLTLESS RESTRAINED SLIP-ON JOINTS

WHERE DUCTILE-IRON PIPE SIZE IS GREATER THAN 20-INCHES ON PIPE AND FITTINGS WHERE "TIED DISTANCE" IS REQUIRED OR SHOWN ALL RESTRAINT SHALL BE OF THE BOLTLESS RESTRAINED SLIP-ON JOINT TYPE AND SHALL EXTEND FOR A MINIMUM DISTANCE OF ONE (1) EIGHTEEN FOOT (18') LENGTH OF PIPE OUT OF BOTH ENDS OF FITTINGS. VALVES WITHIN "RESTRAINED DISTANCES" SHALL BE OF THE TYPE INDICATED ON THE CONTRACT DRAWINGS. BOLTLESS RESTRAINED SLIP-ON JOINTS SHALL BE OF A DESIGN APPROVED BY THE COMMISSIONER OF WATER AND HEAT.

(G) POLYETHYLENE ENCASEMENT

ALL MECHANICAL JOINTS, ALL RETAINED MECHANICAL JOINTS AND ALL PIPE AND FITTING WHERE SHOWN ON THE DRAWING OR WHERE REQUIRED SHALL BE POLYETHYLENE ENCASED. POLYETHYLENE ENCASEMENT FOR MECHANICAL JOINTS, RETAINED MECHANICAL JOINTS OR ANY JOINT REQUIRING BOLTS SHALL BE GENERALLY IN ACCORDANCE WITH AMERICAN NATIONAL STANDARD ANSI/AWWA C105/A21.582 FOR POLYETHYLENE ENCASEMENT FOR DUCTILE-IRON PIPING FOR WATER AND OTHER LIQUIDS. MECHANICAL JOINTS, RETAINED MECHANICAL JOINTS AND ALL BOLTED JOINTS SHALL HAVE DOUBLE POLYETHYLENE ENCASEMENT OF CLASS "C" (BLACK) FILM, METHOD "C" DOUBLING SHEET AND PROVIDING ONE FOOT (1') MINIMUM OVERLAP ON PIPE OR FITTING ON BOTH SIDES OF JOINT. ALL PIPE AND FITTINGS WHERE SHOWN ON THE DRAWINGS OR WHERE OTHERWISE REQUIRED TO BE POLYETHYLENE ENCASED SHALL BE ENCASED USING CLASS "C" FILM, METHOD "B". POLYETHYLENE ENCASEMENT SHALL BE SECURELY TAPED SNUG AROUND PIPE AND FITTINGS.

(H) ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS AND RETAINED MECHANICAL JOINTS SHALL HAVE FIELD APPLIED THREE (3) COAT OF BITUMASTIC COATING PRIOR TO POLYETHYLENE ENCASEMENT.

PAINTING

AFTER ERECTION AND BEFORE POLYETHYLENE ENCASEMENT, ALL EXPOSED OR DAMAGED COATING AND ALL BOLTS FOR MECHANICAL JOINTS, RETAINED MECHANICAL JOINTS, FLANGES AND VICTAULIC OR COMPRESSION TYPE BOLTED SLEEVED COUPLINGS SHALL BE CLEANED AND PAINTED WITH THREE (3) FIELD COATS OF KOPPERS BITUMASTIC SUPER TANK SOLUTION OR EQUIVALENT.

DRAWINGS

(A) THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR FOR APPROVAL DUPLICATE PRINTS OF ALL SHOP DRAWINGS FOR PIPE AND FITTINGS AND MISCELLANEOUS OR SPECIAL DETAILS OF PIPE AND FITTING JOINTS WHICH ARE NOT STANDARD CONSTRUCTION OR FULLY DETAILED IN THE REGULAR CATALOG OF THE COMPANY FURNISHING THE PIPE, FITTINGS AND SPECIALS. NO WORK SHALL BE DONE IN THE SHOP UNTIL AFTER THE DRAWINGS HAVE BEEN APPROVED.

(B) THE APPROVAL OF THE DRAWINGS BY THE DIRECTOR SHALL NOT RELIEVE THE CONTRACTOR OF ANY OF HIS OBLIGATIONS IN CONNECTION WITH THIS CONTRACT.

MEASUREMENT

THE NUMBER OF LINEAR FEET OF DUCTILE IRON PIPE AND CONNECTIONS TO BE PAID FOR SHALL BE ACTUAL NUMBER OF LINEAR FEET FURNISHED AND PLACED IN ACCORDANCE WITH THESE SPECIFICATIONS AS MEASURED ALONG THE AXIS OF THE PIPING. FOR CONNECTIONS BETWEEN NEW AND EXISTING MAIN, MEASUREMENT SHALL BE THE DISTANCE FROM CENTERLINE TO CENTERLINE OF MAINS AND THE ACTUAL LENGTH OF EXISTING MAIN ORDERED TO BE REMOVED TO MAKE THE CONNECTION.

PAYMENT

THE FOOTAGE MEASURED AS PROVIDED ABOVE SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR "ITEM SPECIAL-WATER MAIN, DUCTILE IRON PIPE – WITH _____ JOINTS AND FITTINGS", CLASSIFIED AS TO SIZE AND CLASS WHICH PAYMENT SHALL BE FULL COMPENSATION FOR A COMPLETED WATER MAIN INSTALLATION IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS INCLUDING ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, ETC. NECESSARY AND INCLUDING BUT NOT LIMITED TO EXCAVATION, BEDDING, BACKFILL, SURFACE RESTORATION, AND FURNISHING, LAYING, CONNECTING, TESTING, PAINTING, POLYETHYLENE ENCASING PIPE FITTINGS, AND JOINTS. THE PAY ITEM DESCRIPTIONS AND UNIT FOR THIS PROJECT ARE:

ITEM SPECIAL –"WATER MAIN, DUCTILE IRON PIPE
WITH_____ JOINTS AND FITTINGS, ANSI CLASS_____ (L.F.)"

ITEM SPECIAL – PLUGGING EXISTING WATER MAIN AND BRANCHES

IN ADDITION TO PLUGGING THE EXISTING 203mm WATER MAIN ON EAST 36th ST., THIS ITEM SHALL ALSO INCLUDE THE REMOVAL OF THE EXISTING 305mm x 203mm TEE AT CROTON ST. AND INSTALLATION OF THE PROPOSED SPOOL PIECE (AS DETAILED ON SHEET 72J), INCLUDING ALL LABOR MATERIAL, EQUIPMENT, TOOLS, ETC. NECESSARY AND INCLUDING BUT NOT LIMITED TO EXCAVATION, BEDDING, BACKFILL, SURFACE RESTORATION, AND FURNISHING AND LAYING, CONNECTING, TESTING, PAINTING, POYETHYLENE ENCASING PIPE FITTINGS, AND JOINTS. THE PAY ITEM DESCRIPTION FOR THIS WORK IS:

ITEM SPECIAL – PLUGGING EXISTING WATER MAIN AND BRANCHES

ITEM SPECIAL – TEMPORARY WATER SERVICE CONNECTION, COMPLETE

WORK INCLUDED

THE CONTRACTOR SHALL FURNISH AND INSTALL THE TEMPORARY WATER SERVICE CONNECTION(S) INCLUDING PIPE AND FITTINGS AT LOCATIONS SHOWN ON THE PLANS. MATERIAL USED FOR PROVIDING THE TEMPORARY WATER SERVICE 3" AND UNDER CONNECTION SHALL BE APPROVED BY THE ENGINEER AND THE DIVISION OF WATER. MATERIAL USED FOR PROVIDING THE TEMPORARY WATER SERVICE 4" AND LARGER SHALL CONFORM WITH THE SPECIFICATIONS FOR DUCTILE IRON WATER MAINS.

PAYMENT

(A) THE WORK INCLUDED IN THIS ITEM SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER EACH CLASSIFIED AS TO SIZE FOR "ITEM SPECIAL – TEMPORARY WATER SERVICE CONNECTION COMPLETE," WHICH PRICE SHALL CONSTITUTE FULL PAYMENT SHALL INCLUDE THE EXCAVATION, BACKFILLING, DIVISION OF WATER TAPPING FEE (IF APPLICABLE) AND THE FURNISHING OF ALL LABOR, TOOLS, MATERIALS AND ALL EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN PLACE AS SHOWN. SEEDING AND SODDING, REPAVING (BOTH TEMPORARY AND PERMANENT), SIDEWALK REPLACEMENT AND OTHER SITE .RESTORATION SHALL BE INCLUDED IF NOT PAID FOR SEPARATELY UNDER OTHER ITEMS INDICATED IN THE PLANS.

(B) THE DIVISION OF WATER WILL REQUIRE THAT THE CONTRACTOR PAY ALL DIVISION OF LABOR CHARGES FOR "FLUSHING, TESTING AND SAMPLING" OF THE PAYMENT FOR DIVISION OF WATER LABOR SHALL BE MADE TO THE PERMITS AND SALES SECTION PRIOR TO ANY WATER SERVICE CONNECTION WORK BEING PERFORMED.

(C) UPON COMPLETION OF WATER WORK AND THE TEMPORARY CONNECTION IS NO LONGER NEEDED, THE CONTRACTOR SHALL REMOVE THE TEMPORARY CONNECTION AND REPLACE THE DAMAGED SEEDED, SODDED OR PAVED AREAS IF NOT PAID FOR SEPARATELY UNDER OTHER ITEMS OF WORK IN THIS CONTRACT.

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WATERWORK GENERAL NOTES

CUY-77-23.458

WATERMAIN CONSTRUCTION

The contractor shall notify the City of Cleveland, Division of Water, Inspection and Enforcement Unit three (3) weeks prior to starting waterwork (216/664-2342).

Sequence for the construction of the relocated watermain is as follows:

1. Install and close line valve east of hydrant in existing main.
2. Install 50.8mm (2") temporary bypass pipe from hydrant to service connection #41 to maintain service. Bypass must be flushed and sampled before placing into service.
3. Install 203mm (8") relocation and connect to existing main.
4. Test, flush, and sample main.
5. Open valves.
6. Remove temporary bypass and abandoned 203mm (8") watermain.

NOTE: Provide 1.5m Lateral Clearance between relocated water main and proposed pier footing.

Sta. 2+747.5, 18.5m Rt.
Cutting-In Valve & Valve Box, Complete

Sta. 2+745.2, 21.2m Rt.
45° Horizontal Bend & Thrust Block

Sta. 2+745.2, 24.4m Rt.
45° Horizontal Bend & Thrust Block

Sta. 2+743.0, 26.8m Rt.
45° Horizontal Bend, and Thrust Block

Sta. 2+739.8, 26.9m Rt.
45° Horizontal Bend, and Thrust Block

End Watermain Relocation with one (1) Full Length (5.49m) out of Bend; Connect with Sleeves and Shorts.

50.8mm (2") Temporary Bypass Connect from Hydrant to Service Connection

End Relocation at Existing Hydrant Tee Sta 2+747.8, 18.2m Rt.

Remove Existing Watermain

Pier Footing

HORIZONTAL SCALE 1 : 200

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WATERWORK PLANS

CUY-77-23.458

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HNTB ARCHITECTS ENGINEERS PLANNERS

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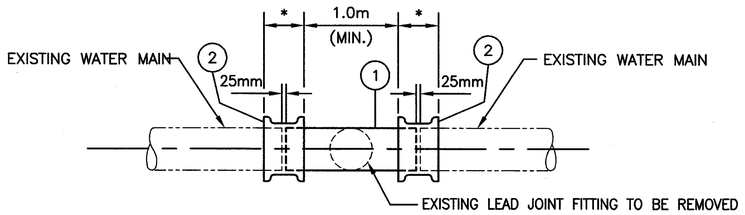


SPOOL PIECE INSTALLATION DETAIL

NOT TO SCALE

(1) PLAIN END X PLAIN END DUCTILE IRON PIPE AS SPECIFIED (CUT–TO–SUIT)

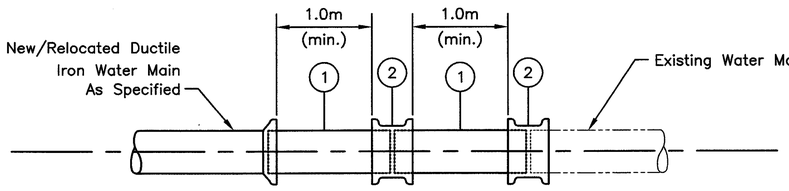
(2) * CONNECTION SHALL BE MADE WITH RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT OR LONG PATTERN) DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250 OR COMPRESSION COUPLINGS.

COMPRESSION COUPLINGS SHALL BE OF A GASKETED, SLEEVE TYPE WITH DIAMETERS TO PROPERLY FIT PLAIN END IRON PIPE. EACH COUPLING SHALL CONSIST OF ONE (1) MIDDLE RING, WITHOUT STOPS, TWO (2) FOLLOWER GLANDS, TWO (2) RUBBER–COMPOUND BUNA–N BLEND, WEDGE SECTION GASKETS, AND SUFFICIENT TRACKHEAD STAINLESS STEEL BOLTS AND NUTS (ASTM A276/A193/194, TYPE 304, EXTRA HEAVY HEX) TO PROPERLY COMPRESS THE GASKETS.

MIDDLE RING AND FOLLOWER GLANDS SHALL BE OF EITHER STEEL OR DUCTILE IRON (ASTM–A536)

THE COMPRESSION COUPLING SHALL BE WITHOUT STOPS AND BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI AND SHALL BE EQUAL TO THE DRESSER STYLE No's 38, 138 OR 162 (TRANSITION TYPE) OR SMITH–BLAIR 441 STRAIGHT OR TRANSITION COUPLINGS.

(3) ALL BOLTS AND NUTS ON MECHANICAL JOINTS INCLUDING THOSE ON THE "RETAINED" TYPE, SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C–105/A21.5–88, CLASS "C", METHOD "B".

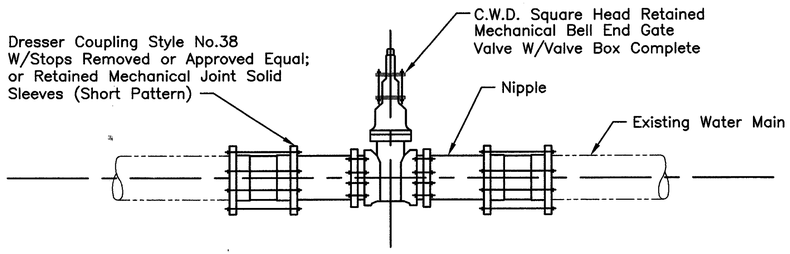


SLEEVE INSTALLATION DETAIL

NOT TO SCALE

(1) Plain End x Plain End Ductile Iron Pipe as Specified (Cut–to–Suit)

(2) Ductile Iron Class 350 Retained Mechanical Joint Solid Sleeves (Short Pattern)

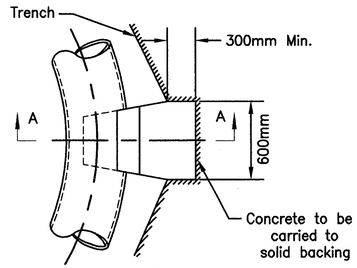


CUT–IN–VALVE DETAIL

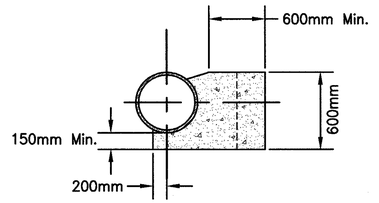
NOT TO SCALE

NOTE:

Before cutting existing water main the nipples shall be connected to the mechanical joint bell end gate valve. After cutting pipe final connections shall be made with couplings/solid sleeves as specified.



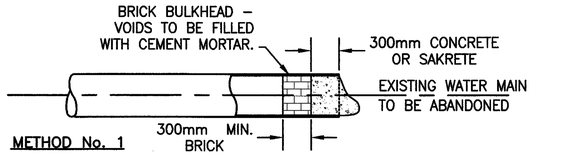
PLAN



SECTION A–A

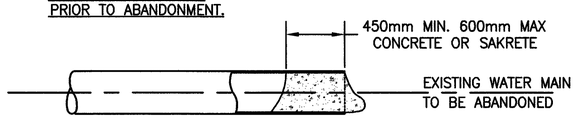
THRUST BLOCK FOR BENDS

NOT TO SCALE



METHOD No. 1

NOTE:
PROPERLY DRAIN MAIN
PRIOR TO ABANDONMENT.



METHOD No. 2

PLUGGING ABANDONED WATER MAIN ENDS

NOT TO SCALE

WATERWORK										
SHEET NO.	REF NO.	STATION FROM	STATION TO	SIDE	202 PIPE REMOVED 600mm AND UNDER	638 FIRE HYDRANT REMOVED AND DISPOSED OF	SPECIAL PLUGGING EXISTING WATER MAIN AND BRANCHES,	SPECIAL 200mm CUTTING–IN VALVE WITH VALVE BOX, COMPLETE	SPECIAL 200mm WATER MAIN DUCTILE IRON PIPE WITH PUSH ON JOINTS AND RETAINED MECHANICAL JOINT FITTINGS, ANSI CL 56	SPECIAL TEMPORARY WATER SERVICE CONNECTION, COMPLETE
					METER	EACH	EACH	EACH	METER	EACH
51	WW1	3+179		LT.		1				
51	WW2	3+237.5		RT.			1			
72G	WW3	2+747.5		RT.				1		
72G	WW4	2+736.0	2+747.8	RT.	18				20	
72G	WW5	2+710.0	2+746.0	RT.						1
			TOTAL		18	1	1	1	20	1

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WATERWORK QUANTITIES AND DETAILS

CUY–77–23.458

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WATER WORK NOTES

DIVISION OF WATER - LABOR CHARGES

THE CITY, DIVISION OF WATER, WILL CHARGE TO THE CONTRACTOR CERTAIN CHARGES PURSUANT TO SECTION 531.03(a) OF THE CODIFIED ORDINANCES OF THE DIVISION OF WATER, AS AMENDED BY ORDINANCE 1043-75 AND ADOPTED BY THE CITY OF CLEVELAND BOARD OF CONTROL RESOLUTION NO: 003-82, AND PER ORDINANCE NO: 2661-81, FOR DIVISION OF WATER LABOR REQUIRED IN THE WORK PAYABLE TO THE PERMITS AND SALES SECTION OF THE DIVISION OF WATER, BEFORE ANY WORK IS PERFORMED.

THE CONTRACTOR SHALL PROVIDE IN HIS BID, INCLUDED WITH THE APPROPRIATE PAY ITEM FOR WATER WORK TO BE PERFORMED IN THIS CONTRACT, ANY AND ALL CITY OF CLEVELAND, DIVISION OF WATER, LABOR CHARGES IN THE AMOUNTS INDICATED HEREIN. NO ADDITIONAL COMPENSATION WILL BE PROVIDED TO THE CONTRACTOR(S) BY THE STATE FOR DIVISION OF WATER LABOR CHARGES FOR WORK REQUIRED TO BE PERFORMED BY THE DIVISION OF WATER BUT THE REQUIRED DIVISION OF LABOR CHARGES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR(S) AND SHALL BE DEEMED TO BE INCLUDED IN THE PRICE BID FOR THE APPROPRIATE WATER WORK PAY ITEM.

DIVISION OF WATER CHARGES STIPULATED HEREIN ARE ON A FLAT RATE BASIS, UNLESS OTHERWISE SPECIFIED AS A "DEPOSIT - COST PLUS" BASIS.

ANY WORK PERFORMED ON CONCRETE WATER MAINS WILL BE PRICED 55% ABOVE THE CHARGES INDICATED BELOW.

NEW CONNECTIONS: (INSTALLATION ONLY - GENERAL SERVICE AND FIRE LINES)

1"	$ 55.00	4"	$ 710.00
1" (SINGULAR)	$ 95.00	6"	$ 745.00
1-1/2"	$ 445.00	8"	$ 840.00
2"	$ 480.00	10"	$ 1,000.00
3"	$ 555.00	12"	$ 1,400.00

RETAP AND RECONNECTS: (INSTALLATION ONLY - GENERAL SERVICE AND FIRE LINES)

1"	$ 55.00	4"	$ 710.00
1" (SINGULAR)	$ 95.00	6"	$ 745.00
1-1/2"	$ 445.00	8"	$ 840.00
2"	$ 480.00	10"	$ 1,000.00
3"	$ 555.00	12"	$ 1,400.00

EXTEND: (INSTALLATION ONLY - GENERAL SERVICE AND FIRE LINES)

1"	$ 55.00	4"	$ 710.00
1" (SINGULAR)	$ 95.00	6"	$ 745.00
1-1/2"	$ 445.00	8"	$ 840.00
2"	$ 480.00	10"	$ 1,000.00
3"	$ 555.00	12"	$ 1,400.00

FIRE LINES - O.S. & Y. AND CHECK VALVES: (LABOR ONLY - ASSEMBLE AND INSTALL; OR REMOVE AND RESET)

4"	$ 100.00	10"	$ 175.00
6"	$ 125.00	12"	$ 200.00
8"	$ 150.00		

METERS - BYPASS AND CHECK VALVES: (LABOR ONLY - ASSEMBLE AND INSTALL; OR REMOVE AND RESET)

1-1/2"	$ 190.00	6"	$ 375.00
2"	$ 190.00	8"	$ 475.00
3"	$ 190.00	10"	$ 600.00
4"	$ 285.00	12"	$ 725.00

BACKFLOW PREVENTION DEVICE: (LABOR ONLY - REMOVE AND RESET)

1-1/2"	$ 190.00	6"	$ 375.00
2"	$ 190.00	8"	$ 475.00
3"	$ 190.00	10"	$ 600.00
4"	$ 285.00	12"	$ 725.00

TAPPING SLEEVES AND VALVES: (LABOR ONLY - INSTALL, TAP AND TEST)
SEE PARAGRAPH "WORK TO BE DONE BY CITY"

MAIN SIZE		MAIN SIZE	
6" OR LESS	$ 465.00	12"	$ 505.00
8"	$ 475.00	16"	$ 595.00
10"	$ 485.00	20"	$1,800.00 DEPOSIT (COST PLUS)

PIPE CUTTING: (PER CUT)

MAIN SIZE	
8" OR LESS	$ 150.00
10" OR 12"	$ 180.00
16" OR MORE	$ 600.00 DEPOSIT (COST PLUS)

PLUGGING SERVICE CONNECTIONS AND WATER MAINS:

MAIN SIZE:	
5/8" THROUGH 2"	$ 115.00
3" THROUGH 12"	$ 475.00
16" AND LARGER	$ 500.00 DEPOSIT (COST PLUS)

RESETTING OF SMALL METERS: (LABOR ONLY - COST OF METER NOT INCLUDED)

1" AND SMALLER	$ 40.00

CURB VALVES: (LABOR ONLY - ON INSTALLATION REQUIRING AN EASEMENT, INSIDE METER, OR FIRE LINE)

1-1/2" AND 2"	$ 60.00
3" THROUGH 8"	$ 120.00
10" AND 12"	$ 200.00

CHLORINATION: (LABOR ONLY)

MAIN SIZE	COST PER FOOT	MINIMUM CHARGE
6"	$ 0.35	$ 420.00
8"	$ 0.45	$ 485.00
10"	$ 0.45	$ 485.00
12"	$ 0.55	$ 550.00
16"	$ 0.60	$ 630.00
20" AND LARGER	ACTUAL COST	ACTUAL COST

FLUSH, TEST AND SAMPLE: (LABOR ONLY)

WHERE LENGTH OF NEW/RELOCATED/LOWERED PIPE IS 350 FEET OR LESS - $ 250.00

CALCULATED | CHECKED

WATER WORK NOTES

CUY-77-23.458

721
295

ITEM SPECIAL – EPOXY PAVEMENT MARKINGS

A. DESCRIPTION:

This work shall consist of furnishing and applying epoxy pavement markings in accordance with the requirements described herein. Except where otherwise indicated in these specifications, the requirements of Sections 641 and 740 of the Construction and Material Specifications shall apply to the installation and use of this material.

In general, the markings shall consist of four components:

1. Part A (White or Yellow),
2. Part B,
3. Size I Glass Beads, and
4. Size II Glass Beads, as described below.

B. EPOXY MATERIAL:

Material supplied shall be a two part epoxy system capable of being applied at ambient temperatures down to 50 degrees F. The material shall be capable of retaining reflective glass beads of the drop–on or spray–on type.

The epoxy shall comply with the following requirements:

1. Formulation

The epoxy shall be formulated as a long life pavement marking system free of any peroxides, and/or TMPTA (Tri–Methylol Propane Tri–Acrylate) and other such multi–functional monomers. The epoxy should be designed to provide simple volumetric mixing ratio of its components (such as 2:1).

2. Viscosity:

The viscosity of the various parts shall be as follows:

Part A White	19,000 – 20,000 cP
Part A Yellow	25,000 – 26,000 cP
Part B	1,950 – 2,050 cP

At the point of application the viscosities shall be within 10 percent of each other.

3. Weight:

The weight of each part shall be as follows:

Part A White	11.8 lbs./gal. +/– 0.2 lbs./gal.
Part A Yellow	12.8 lbs./gal. +/– 0.2 lbs./gal.
Part B	9.6 lbs./gal. +/– 0.2 lbs./gal.

4. Epoxide Number:

The epoxide number of the epoxy resin shall be 0.5 +/– 0.05 as determined by ASTM D–1652 for both White and Yellow Part A on a pigment free basis.

5. Amine Number:

The amine number of the curing agent (Part B) shall be +/– 50 as per ASTM D–2074.

6. Toxicity:

Upon heating to application temperature, the material shall not exude fumes which are toxic or injurious to persons or property. Upon curing the materials should be completely inert with all components fully reacted and environmentally safe.

7. Laboratory Drying Time:

The pavement marking material, when mixed in the proper ratio and applied at the properly prescribed wet film thickness at 75 degrees F +/– 2 degrees F and with the proper saturation of glass spheres, shall exhibit a no tracking time of 45–50 minutes when tested according to ASTM D–711.

8. Field Drying Time:

The pavement marking material shall have a setting time to a no–tracking condition of not more than 35 minutes at 75 degrees F +/– 2 degrees F. The line must be protected from tracking during the setting period by one or more of the following methods:

a. Coning off the wet line from traffic,
b. Use of a convoy of moving vehicles to prevent traffic crossing the wet line, and
c. Saturation of the line with glass beads to prevent tracking.

9. Curing:

The epoxy material shall be capable of fully curing under a constant surface temperature of 45 degrees F or above.

10. Adhesion to Pavement (Concrete and Asphalt):

The cured pavement marking materials, when tested according to ACI Method 503, shall have such a high degree of adhesion to the specified concrete (compressive strength 4,000 psi minimum) or asphalt surface that there shall be a 100 percent substrate failure in the performance of this test.

The prepared specimens shall be conditioned at room temperature (75 degrees F +/– 2 degrees F) for a minimum of 24 hours and a maximum of 72 hours prior to the performance of the tests indicated.

11. Hardness:

The pavement marking materials, when tested according to ASTM D–2240–75, shall have a Shore D Hardness of between 70 and 90.

Samples shall be allowed to cure at room temperature (75 degrees F +/– 2 degrees F) for a minimum of 24 hours and a maximum of 72 hours prior to performing the indicated test.

12. Tensile Strength:

When tested according to ASTM D–638, the epoxy pavement marking materials shall have a tensile strength of not less than 5,000 pounds per square inch.

The Type IV specimens shall be cast in a suitable mold and pulled at a rate of 1/4" per minute by a suitable dynamic testing machine.

The samples shall be allowed to cure at room temperature (75 degrees F +/– 2 degrees F) for a minimum of 72 hours before performing the indicated tests.

13. Compressive Strength:

When tested according to ASTM D–695, the catalyzed epoxy pavement marking materials shall have a compressive strength of not less than 12,000 pounds per square inch.

The cast sample shall be conditioned at room temperature (75 degrees F +/– 2 degrees F) for a minimum of 72 hours before performing the indicated tests.

The rate of compression of these samples shall be no more than 1/4" per minute.

14. Abrasion Resistance:

The abrasion resistance shall be evaluated on a Taber Abrader with a 1,000 gram load and CS–17 wheels. The duration of the test shall be 1,000 cycles. The wear index shall be calculated based on ASTM test method C–501 and the wear index for the catalyzed material shall not be more than 100 mg.

The tests shall be run on cured samples of material which have been applied at a film thickness of 20 +/– 0.5 mil to code S–16 stainless steel plates.

The samples shall be allowed to cure at 75 degrees F +/– 2 degrees F for a minimum of 24 hours and a maximum of 72 hours prior to performing the indicated tests.

CONVERSION OF ENGLISH NOTES:

THE ENGLISH NOTES CONTAINED IN THIS PLAN SHALL BE CONVERTED FACTORS PROVIDED IN SECTION 109.011 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS. CONVERSIONS SHALL BE APPROPRIATELY PRECISE AND SHALL RERFLECT STANDARD INDUSTRY METRIC VALUES WHERE SUITABLE.

15. Impact Strength:

Properly mixed material shall be applied on a minimum of 28 day old clean concrete and shall be allowed to cure for 72 hours at 75 degrees F +/– 2 degrees F. Film thickness of the material shall be at the appropriately prescribed thickness.

At a temperature of 75 degrees F +/– 2 degrees F, a two pound (2 lb.) round steel ball shall be dropped from a height of 4 feet onto the cured sample. No cracking or chipping of the material shall take place.

16. Color:

The mixed epoxy compound, both White and Yellow, must be applied to 2 sets of 3" x 6" aluminum panels at 20 +/– 1 mil in thickness, one set with no glass spheres and one set with glass spheres as specified in this Specification (ensure the 50/50 distribution of Size I and Size II spheres, for this will impact the results of this test). Expose the prepared samples in a Q.U.V. Environmental Testing Chamber, as described in ASTM G–53, and they shall conform to the following requirements.

The test shall be conducted for 75 hours at 122 degrees F, 4 hours humidity and 4 hours U.V., in alternating cycles. The prepared panels shall be cured at 77 degrees F for 72 hours prior to exposure.

The color of the White epoxy material shall not be darker than Federal Standard No. 595A–17855.

The color of the Yellow epoxy material shall be reasonably close to Federal Standard No. 595A–13415.

17. Accelerated Life–Cycle Aging Test:

The material must not show any evidence of blistering, bubbling, or delaminating when submitted to test Method ATR–931.

C. GLASS BEADS:

In addition to the requirements of 740.10, the following shall apply:

1. The glass spheres shall be colorless, clean, transparent, free from milkiness or excessive air bubbles; and essentially clean from surface scarring or scratching.

2. The glass spheres shall have the following gradation when tested in accordance with ASTM D–1214:

Size I: U.S. Standard Sieve No.	Percent Retained
10	0
12	0–5
14	5–20
16	40–80
18	10–40
20	0–5
Pan	0–2

Size II: U.S. Standard Sieve No.	Percent Retained
20	0–5
30	5–20
50	30–75
80	9–32
Pan	0–10

3. Size I and Size II glass beads shall be spherical in shape and at least 70 percent shall be true spheres. Size I spheres shall be tested for roundness according to the procedural directives of the Materials Bureau. Size II spheres shall be tested in accordance with ASTM D–1155.

4. The refractive index of the spheres shall be a minimum of 1.50 as determined by the liquid immersion method at 77 degrees F. The silica content of the glass spheres shall not be less than 60 percent.

PLAN SHEETS 73 THROUGH 84G
PREPARED BY:

THOMAS FOK & ASSOCIATES, LIMITED

Thomas D.Y. Fok

THOMAS D.Y. FOK, P.E., P.S.

STATE OF OHIO THOMAS D.Y. FOK 24979 REGISTERED PROFESSIONAL ENGINEER

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TRAFFIC CONTROL NOTES

CUY–77–23.458

ITEM SPECIAL – EPOXY PAVEMENT MARKINGS (CONTINUED)

5. The Size I beads shall be coated with a silane–type adherence coating to enhance their embedment in, and adherence to the applied binder film. The coated beads shall emit a yellow–green fluorescence when tested by the Dansyl Chloride test procedure. The Size II beads shall be treated with a moisture–proof coating. Both sizes of Glass beads shall show no tendency to absorb moisture in storage and shall remain free of clusters and lumps.

   They shall flow freely from dispensing equipment at any time when surface and atmospheric conditions are satisfactory for marking operations.

6. The moisture–resistance of the glass spheres shall be determined on the basis of the following test:

   Place two pounds (2 lbs.) of spheres in a washed cotton bag, having a thread count of 50 per square inch (warp and woof) and immerse the bag in a container of water for 30 seconds.

   Remove the bag and force excess water from the sample by squeezing the bag. Suspend and allow to drain for two hours at room temperature (70–72 degrees F), then mix the sample in the bag shaking thoroughly.

   Transfer a sample slowly to a clean, dry glass funnel having a stem 4" in length, with a 3/8" inside diameter stem entrance opening and a minimum stem exit opening of 1/4".

   The entire sample shall flow freely through the funnel without stoppage. When first introduced into the funnel, if the spheres clog, it is permissible to lightly tap the funnel to initiate the flow.

D. STRIPING EQUIPMENT

Equipment for applying the epoxy pavement marking shall be capable of mixing the components in proportions recommended by the manufacturer and applying glass beads at the time of line placement. The marking equipment used shall be capable of applying epoxy material at the specified thickness, width, and pattern. The contractor shall provide a calibrated measuring device acceptable to the Engineer to measure the epoxy resin in the striper tanks.

In general, the applicating equipment shall be a mobile, truck mounted and self contained pavement marking machine, specifically designed to apply epoxy binder and reflective glass spheres in continuous and skip line patterns. The applicating equipment shall be maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. In addition, the truck mounted unit shall be provided with accessories to allow for the marking of legends, symbols, crosswalks and other special patterns.

The Engineer and the material manufacturer together may approve the use of a portable applicator in lieu of truck mounted accessories for use in applying special markings only, provided such equipment can demonstrate satisfactory application of reflectorized markings in accordance with these specifications.

The mobile applicator shall include the following features:

1. Individual material reservoirs, for the storage of Part A and Part B of the epoxy binder.
2. Heating equipment of sufficient capacity to maintain the individual binder components at the manufacturer's recommended temperature and produce the required amount of heat at the mixing head & gun tip and maintain those temperatures with the tolerances recommended by the material manufacturer for spray application.
3. Adequate individual tanks for the storage and dispensing of Size I and Size II glass spheres.
4. Individual dispensers for the simultaneous application of Size I and Size II glass spheres respectively. Each dispenser shall be capable of applying spheres at a rate of 10 to 20 pounds per gallon of the epoxy binder. The applied combined total of both sizes of beads should be a minimum of 25 lbs./gal. (12 to 13 lbs. of each size per gallon).
5. Individual metering devices or pressure gauges, on the proportioning pumps (one indicator per pump) as well as stroke counters to monitor gallon usage. All such devices shall be visible to the Engineer.
6. All the necessary spray equipment, mixers, compressors and other appurtenances to allow for the placement of a reflectorized pavement marking system in a simultaneous sequence of operations.
7. A minimum 24" long static mixer unit as manufactured by Kenics Company or equal for proper mixing of the two components.
8. A completely enclosed flush and purge system to clean the lines and the guns without exuding any of the solution into the environment.

E. CLEANING AND SURFACE PREPARATION:

The contractor shall clean the surface to remove all debris, laitance and any other contaminants that may hinder the adhesion of the system to the surface. Whenever grinding, scarifying, sandblasting, shot blasting or other operations are performed, the debris generated must be contained through vacuum type equipment or equivalent and the work shall be conducted in such a manner that the finished pavement surface is not damaged or left in a pattern that will mislead or misdirect the motorist. When these operations are completed the pavement surface shall first be power broomed and then blown off with compressed air to remove residue and debris resulting from the cleaning work. All such debris must be properly contained (especially when removing Yellow paint lines) and disposed of in the appropriate manner.

Removal and cleaning work shall be conducted in such a manner as to control and minimize airborne dust, and similar debris so as to prevent a hazard to motor vehicle operation or nuisance to property.

Care shall be taken on Bituminous and Portland Cement Concrete surfaces when performing removal and cleaning work to prevent damage to transverse and longitudinal joint sealers.

1. Limits of Work:

   Cleaning and surface preparation work shall be confined to the surface area specified for the application of pavement marking materials; or the surface area of existing pavement markings that are specified for removal on the plans, or as directed by the Engineer.

   Surface preparation work includes cleaning for lines or cleaning for words and symbols. Lines will be meant to include: Center Lines, Lane Lines, Dotted Lines, Channelizing Lines, Edge Lines, Stop Lines, Crosswalk Lines, and Transverse Lines.

   When lines are cleaned, the area of preparation will be the width of the new pavement marking, or existing line, plus one inch (1") on each side.

   When words, symbols, or other miscellaneous markings are cleaned the area of preparation will be sufficiently large to accommodate the new marking, or to remove the existing marking. No new marking shall be applied on any pavement that has not been properly prepared as per this specification.

2. Removal Of Concrete Curing Compounds:

   On new Portland Cement Concrete pavements, cleaning operations shall not begin until a minimum of 30 days after the installation of concrete. The extent of the blasting work shall be to clean and prepare the concrete surface such that:

   a. There is not visible evidence of curing compound on the concrete surface.
   b. There are no heavy puddled deposits of curing compound in the valleys of the textured concrete surface.
   c. All remaining curing compound is intact; all loose and flaking material is removed.
   d. The peaks of the textured pavement surface are rounded in profile and free of sharp edges and irregularities.
   e. The extent of the removal should be as such to insure the laitance is removed on both old as well as new concrete.

3. Removal of Existing Pavement Markings:

   Existing pavement markings shall be cleaned for the purpose of:

   a. Preparing the pavement surface for the application of new pavement marking in the same location as the existing markings.
   b. To remove existing markings that are in good condition which, if allowed to remain, will interfere with or otherwise conflict with newly applied marking patterns.

   It shall be understood that in this context cleaning means the removal of an existing marking. It is not intended that all deteriorated existing pavement markings be removed.

   Example: If a new marking is applied to an unmarked "gap" in a broken line and the existing broken line pattern is worn or deteriorated, as determined by the Engineer, to the extent that it is not misleading or confusing to the motorist, the existing markings do not require removal.

   Pavement markings shall be cleaned to the extent that 95 percent to 100 percent of the existing marking is removed. Removal operations shall be conducted in such a manner that no more than moderate color and/or surface texture change results on the surrounding pavement surface.

The cost of cleaning and surface preparation, including removal of concrete curing compounds and removal of existing pavement markings, as indicated above, shall be included in the unit costs for the various items of work listed in the proposal. No separate payment for cleaning or surface preparation shall be made.

F. INSTALLATION:

Epoxy marking material shall only be applied when the surface is clean and dry and when the pavement and air temperatures are above 50 degrees F, unless approved in advance by the Engineer and the material manufacturer. The contractor shall transfer the entire contents of each material container to the striper tanks. The material shall be thoroughly mixed at all times during application.

Both components (Part I and Part II) shall be brought to the temperature recommended by the manufacturer prior to mixing and spraying.

Epoxy marking material, plus resin, shall be applied uniformly to the surface to be marked at the following rates in Gallons per Mile of Line:

Line Type	Width of Line (inches) 4	6	8	12	24
Solid Line	22.00	33.00	44.00	66.00	132.00
Broken Line	5.50	8.25	11.00	16.50	33.00
Dotted Line	7.33	11.00	14.67	22.00	44.00
Areas, Symbols, Arrows, or Words	1 gallon per 80 square feet				

Thinning shall not be permitted.

Glass beads shall be applied to the uncured epoxy material in sufficient quantity so that the beads completely fill the epoxy film from the film–pavement interface to the top surface of the film to the extent that there are loose beads on the surface of the uncured line. The rate of application shall not be less than 25 pounds of glass beads per gallon of epoxy material applied.

The Size I and Size II reflective beads shall be dispensed sequentially through individual dispensing guns on the wet material, with the large gradation beads (Size I) applied first, and the smaller gradation (Size II) applied second, in the same pass of the equipment. The combined application rate shall be 25 pounds of glass beads per gallon of epoxy material (25 lbs./gal.), with each size ranging between 12 and 13 pounds per gallon (12–13 lbs./gal.).

If the epoxy marking does not dry to a no–tracking condition consistently and shows a cyclical soft spot, the contractor shall cease marking application until the problem is corrected.

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TRAFFIC CONTROL NOTES

CUY–77–23.458

14949TNB 1:1M 02-10-98

ITEM SPECIAL – EPOXY PAVEMENT MARKINGS (CONTINUED)

G. CERTIFICATION OF COMPLIANCE:
The material manufacturer shall furnish a notarized certification that the material complies with the provisions of this specification. It shall not be inferred that the provisions of a certification of compliance waives state inspection, sampling or testing.

H. LABORATORY SAMPLES:
Promptly after execution of the contract, the contractor shall notify the Engineer of the sources of material he expects to use. The material manufacturer shall furnish samples of the epoxy materials as may be required by the Engineer, a minimum of ten days before the date of intended use of these materials.

I. INFRARED SPECTRA:
A copy of the infrared spectra of each component on each lot number shall be supplied by the manufacturer along with the certification papers. This infrared spectra will be on record with the department to serve as a quality control measure for the future supply of this system to the state.

J. QUALIFYING A MANUFACTURER:
The manufacturer must have expertise reinforced with history in this particular field to qualify, such as:
1. Completed and passed the service test in accordance with Supplemental Specification 1047.
2. Verifiable installations
3. Ample production capacity
4. Proper facility
5. Compliance with EPA regulations
6. A verifiable quality control program.

K. QUALIFYING A CONTRACTOR:
In order for an installer of such pavement marking material to be approved, he must submit a certificate from a pre–approved manufacturer of such epoxy pavement marking materials, certifying that such a contractor has functional, appropriate equipment to install the epoxy pavement marking material stated with the technology in this specification and he has and continues to be successful at performing this type of work.

L. PERFORMANCE REQUIREMENTS:
The system shall provide effective delineation on concrete as well as asphalt pavement for the specified period and provide the following initial retroreflectivity requirements, as measured with a Mirolux–12:

Specific Luminance
(millicandelas/square foot/foot candle)
250 min.
White Lines, Symbols, and Legends
175 min.
Yellow Line

M. METHOD OF MEASUREMENT:
In addition to the requirements of Section 641.12, the following shall apply:
1. The contractor must submit certified documents from the manufacturer of the amount of gallons and pounds of beads shipped for a particular project.
2. In the field, the contractor shall furnish a calibrated measuring device to be used to measure the quantity of materials used such as stroke counters mounted on the dispensing pumps. Stroke counter readings must be taken at the beginning and end of each day by the state authorized inspector. Caution must be taken while re–circulating the material to turn off the stroke counter on the pump. (Using the "dipping the tank" method as the only measure is not sufficient.)
3. The rate of application of materials shall be verified by comparing the amount of material used with the computed amount needed for each section.
Where short sections are involved and it is not practical or feasible to determine the quantities used on each and every short section, such sections may, by agreement between the Engineer and contractor, be grouped together to verify the quantities used.

N. DEDUCTION FOR DEFICIENCY:
In lieu of the requirements of Section 641.11, the following shall apply:
The amount of marking material (including Part A, Part B, Size I glass beads and Size II glass beads) applied per unit of measurement will be computed each day by the Engineer.
The following tolerances shall be used for purposes of adjusting the unit price for each item:
A tolerance of 5 percent for deficiency of marking material (Part A, Part B, Size I Glass Beads, and Size II Glass Beads) shall be permissible without deductions. If calculations reveal that the 5 percent tolerance has been exceeded, and an insufficient amount of material has been applied, the contract unit price shall be reduced in the following manner:
For a deficiency greater than 5 percent, but less than or equal to 12.5 percent, payment will be based on 90 percent of the contract unit price.
For a deficiency greater than 12.5 percent, but less than 20 percent, payment will be based on 80 percent of the contract unit price. If the deficiency for any material is 20 percent or more, the work shall be considered unsatisfactory and shall be replaced at the expense of the contractor, including all labor, equipment, traffic control, and material requirements.
The re–application shall be applied over the existing binder with the proper surface preparation as stated in 641.05.
If the deficiency exceeds 50 percent, the material shall be applied at the rates stated under INSTALLATION above. If the deficiency is between 20 and 50 percent, the rates of re–application of Parts A & B shall be at one half the rates stated under INSTALLATION above. In either case, the glass beads shall be applied at 25 pounds of glass beads per gallon of epoxy material applied.

O. FINAL ACCEPTANCE:
Pavement markings which are unacceptable, or become unacceptable prior to final acceptance, as determined by the Engineer, for causes such as, but not limited to, improper application, loss of adhesion to the pavement, non–uniform retroreflectivity, or non–retroreflectivity, shall be replaced by the Contractor with markings conforming to these specifications and requirements at his expense without delay, or the Contractor may request that the work be considered non–performed. The Contractor will receive no payment for unacceptable work which is considered non–performed.

P. BASIS OF PAYMENT:
All work performed and measured as described above will be paid at the contract unit price bid (subject to adjustment for deficiency) for the following items:

UNIT	ITEM	DESCRIPTION
KILOMETER	SPECIAL	Pavement Marking, Misc.: Lane Line
KILOMETER	SPECIAL	Pavement Marking, Misc.: Edge Line
METER	SPECIAL	Pavement Marking, Misc.: Channelizing Line
METER	SPECIAL	Pavement Marking, Misc.: Transverse Line
METER	SPECIAL	Pavement Marking, Misc.: Dotted Line, 100 mm

PROTECTIVE COATING OF OVERHEAD SIGN SUPPORT SECTIONS:

General
Overhead sign supports can be separated into major sections such as end frames, trusses, vertical poles and cantilever arms. During the implementation of this work item it will be beneficial to refer to the major sections of the overhead sign supports rather than the whole support. More specific instructions and flexibility can be given based upon the unit of measure and payment per major support section. The protective coating of overhead sign support sections shall be a four part process to include surface preparation followed by a three step coating system. This three step coating system shall consist of an epoxy prime coat, an epoxy intermediate coat, and a urethane top coat, with each coat a different color. For an explanation of the materials to be used see note entitled "Coating System". The purpose of this coating is to provide protection for new (unweathered) and older (weathered) galvanized steel support sections from corrosive elements in the atmosphere. Coating and surface preparation of the new galvanized support sections should be done by the manufacturer.
The contractor shall take all necessary precautions to comply with pollution laws, rules or regulations of federal, state, or local agencies. The coating materials specified for the work can be hazardous to the health of the applicator if not applied as per the manufacturer's instructions. The contractor shall follow the data sheet and the label on the paint containers. These precautions shall include the use of respirators and eye and skin protection as specified. The contractor shall also insure that his painting operations and location will not endanger or adversely affect the public in general.

The proposed cleaning and coating operations shall be performed only when the ambient temperature is 50 degrees F or above for a period of 24 continuous hours. Paint shall not be applied during rain, fog, or mist, or when the steel surface temperature is less than 5 degrees F above the dew point. Paint shall not be applied to wet or damp surfaces, or on frosted or ice coated surfaces. Paint shall not be applied when the relative humidity is greater than 85%. All steel surfaces of truss and end frames, including the welded areas, ballast enclosure mounting bracket and the base plates are to be cleaned and coated. Before each coating is applied, it shall be mixed with an approved power mechanical mixer to a uniform consistency which shall be maintained during its application. Each coat shall be applied in a workmanlike manner as a continuous film of uniform thickness which is free of holes, pores, runs, or sags. All coats shall be applied by brush. Thinning of paint is strictly prohibited. Paint not capable of being applied as specified shall not be used. The coating shall penetrate all joints and connections. The engineer shall be notified 24 hours prior to any cleaning or coating operations so that inspection services can be provided.

To provide assurances that no thinning of the protective coating material is being done, periodic checks by a state inspector will be made of the material. These checks will be made utilizing a viscosity test cup procedure, as provided by the manufacturer of the material. The frequency of these checks will be determined by the engineer, based upon field evaluation and job performance.
If the viscosity check reveals that the material has been thinned, immediate rejection of the material shall be made.
This rejection shall require the contractor to immediately stop using the material, and provide new material of the proper specification per plan. In addition, the coating of the sign support with the non-approved material shall be considered unacceptable. Therefore the support shall be stripped and re-coated with approved material (unthinned material).
3 to 4 viscosity checks indicating a perpetual quality control problem (thinned material) shall be considered sufficient justification to terminate the contract.
The cost for the viscosity test kit shall be borne by the contractor and considered incidental to the item specials per coat. The test kit shall contain items such as instructions, viscosity cup, standard comparison rates, carrying case, cleaning equipment, stopwatch, etc. The kit shall be given to the state inspector for use during the performance of the work. After the project is complete, the test kit shall revert to the state as state property.

Coating System

The coating system shall consist of a polyamide-cured epoxy prime coat, a polyamide-cured epoxy intermediate coat and an aliphatic polyurethane top coat. The coating materials used shall be those as listed from one of the following manufacturers or an approved equal:

1. Ameron
   210 North Berry Street
   Brea, California 92622
   Local telephone contact : (419) 885-5336
   Prime Coat : Amercoat 385
   Intermediate Coat : amerlock 400
   Top Coat : Amercoat 450 hs

2. ICI/Devoe Coatings (Glidden)
   5480 Cloverleaf Pkwy. #5
   Valley View, Ohio 44125
   Local Telephone Contact : (216) 328-1581
   Prime Coat : Devran 4170 Corrosion Resistant Epoxy
   Intermediate Coat : Devran 4170 Corrosion Resistant Epoxy
   Top Coat : Devthane 4708 Aliphatic Urethane Enamel

3. Porter Paint Co.
   400 South 13th Street
   Louisville, Ky 40201
   Local Telephone Contact : (419) 666-0026
   Prime Coat : Porter Paints MCR 4300
   Intermediate Coat : Porter Paints MCR 4300
   Top Coat : Porter Paints Hythane

4. Polycarb
   33095 Bainbridge Road
   P.O. Box 39278
   Solon, Ohio 44139
   Local Telephone Contact : (440) 248-1223
   Prime Coat : Mark-60 (Ultrapox)
   Intermediate Coat : Mark-60 (Ultrapox)
   Top Coat : Mark-73 (Ultra-Kote)

5. Sherwin-Williams Company
   671 Beta Drive
   Mayfield Village, Ohio 44143
   Local Telephone Contact : (440) 461-3310
   Prime Coat : Tile-Clad II Hi-Bild Primer
   Intermediate Coat : Hi-Solids Catalyzed Epoxy
   Top Coat : Hi-Bild Aliphatic Polyurethane Enamel

All three coats of the system shall be manufactured by the same company to insure compatibility among coats.

Surface Preparations, New Support Sections
New unweathered galvanized support sections shall have their surface preparation as well as their protective coating done at the manufacturer of the support sections.
The support sections shall be prepared for coating by sspc-sp1 followed by sspc-sp7 (solvent cleaning) followed by a brush-off blast. Blasting abrasives containing more than 1% free silica shall not be allowed. Before the prepared surface degrades from the prescribed standards, the prime coat shall be applied.
In every case, the surface shall be coated with the epoxy prime coat on the same day of surface preparation. Careful handling and storage will be required to prevent marring or scraping, or other surface damage, to the prepared surface.
Payment shall include all labor, equipment, handling, transportation costs and materials necessary to accomplish this item of work per major support section.

Basis of Payment will be as follows:
Item 630-Surface Preparation, New Support Sections at the Contract Bid Price per each Major Support Section.

Surface Preparation, Existing Support Sections
Existing, weathered galvanized support sections shall have their surface prepration as well as their protective coating under conditions of temperature and humidity within the same range as specified by the manufacturer of the epoxy-prime coat material to be used immediately after this cleaning operation. The support sections shall be prepared for coating by sspc-sp1 followed by sspc-sp6 (solvent cleaning followed by a commercial blast cleaning). Before the prepared surface degrades from the prescribed standards, the prime coat shall be applied. In every case, the surface shall be coated with the epoxy prime coat on the same day as the surface preparation. Careful handling and storage will be required to prevent any scraping, marring, or other surface damage to the prepared surface.

Payment shall include all labor, equipment, handling, transportation costs and materials necessary to accomplish this item of work per major support section.

Basis of Payment will be as follows:
Item 630-Surface Preparation, Existing Support Sections at the Contract Bid Price per each Major Support Section.

Coating, Epoxy Prime Coat, Support Sections:
This item shall consist of one (1) coat of an epoxy primer to support sections. The total dry film thickness of this coat shall be between 1.5 and 2.0 mils. If more than one pass is necessary to obtain the required thickness, that coat shall be borne by the contractor. This coat shall in all cases be applied by brush over surfaces that were prepared earlier that same day. The thinning of the epoxy material is strictly prohibited. Material not capable of being applied as specified shall not be used.
When the average dry film thickness of this coat over the entire support section is less than the specified 1.5 mils, but is at least 1.25 mils, the contract bid price for this item shall be reduced in direct proportion to the percent deficiency of coating up to 16-2/3%. If the deficiency of coating is more than 16-2/3%, (i.e. the average dry film thickness is less than 1.25 mils) the work for this item shall be considered unsatisfactory and shall be recoated at the full expense of the contractor, including all labor, equipment and material.
The epoxy prime coat chosen by the contractor shall be one of the following two-component compositions conforming to its listed properties:

Amercoat 385

% solids by volume :	47% +/- 3 %
Pot Life :	8 hrs. @ 77 degrees F (25 degrees C)
Drying Time :	4 hrs. @ 77 degrees F

Devran 4170 Corrosion Resistant Epoxy Primer 5465 Series

% Solids by Volume :	54% +/- 1%
% Solids by Weight :	71 % +/- 1%
Pot Life :	4 hrs. @ 77 degrees F
Drying Time :	touch 1-2 hrs., recoat 7 hrs.
Viscosity :	95-100 ku

MCR-4301 Epoxy Primer

% Solids by Volume :	48.0% +/- 2%
Pot Life :	30 hrs. @ 50-60 degrees F 16 hrs. @ 80-100 degrees F
Drying Time :	4-6 hrs. @ 50-60 degrees F

Mark-60 Ultrapox

% Solids by Weight :	70-75% +/- 2%
Pot Life :	6 hrs. @ 75 degrees F
Drying Time :	2-3 hrs. initial set @ 75 degrees F
Viscosity :	300-500 cps @ 75 degrees F

Tile-Clad II Hi-Bild Primer

% Solids by Volume :	48% +/- 2%
% Solids by Weight :	63% +/- 2%
Pot Life :	8 hrs. @ 77 degrees F @ 77 degrees F
Drying Time :	1 hr. to touch, 6 hrs. to recoat

CALCULATED MBP
CHECKED WJS

TRAFFIC CONTROL NOTES

CUY-77-23.458

14949TND 1:1M 02-10-98

PROTECTIVE COATING OF OVERHEAD SIGN SUPPORT SECTIONS (CONTINUED):

For new support sections this prime coat shall be done at the manufacturer of the support sections. Verification by the manufacturer of the coating material for the prime coat procedures will be required. Careful handling and storage will be required to prevent any scraping, marring or other surface damage to the prime coat. The payment shall include all labor, equipment, handling costs, and materials necessary to accomplish this item of work. This prime coat shall be manufactured by the same company supplying the intermediate and top coats. A properly calibrated dry film thickness instrument will be used to check the coating.

Basis of Payment will be as follows:
Item 630–Coating, Epoxy Prime coat, Support Sections, at the Contract Bid Price per each major support section.

Coating Epoxy Intermediate Coat, Support Sections:
This item shall consist of the application of one (1) coat of epoxy to support sections. The total dry film thickness of this coat shall not be less than six (6.0) mils. If more than one pass is necessary to obtain the required thickness, that coat shall be borne by the contractor. This coat shall be applied by brush. Thinning of the epoxy material is strictly prohibited. Material not capable of being applied as specified shall not be used.

When the average dry film thickness of this coat over the entire support section is less than the specified six (6.0) mils, but is at least five (5.0) mils, the contract price for this item shall be reduced in direct proportion to the percent deficiency of coating up to 16–2/3%. If the deficiency of coating is more than 16–2/3 %,(i.e. the average film thickness is less than 5.0 mils), the work for this item shall be considered unsatisfactory, and shall be recoated at the full expense of the contractor, including all labor, equipment, and material. The epoxy intermediate coat chosen by the contractor shall be one of the following two–component compositions conforming to its listed properties:

Amerlock 400

% Solids by Volume : 83% +/– 2%
Pot Life : 2–1/2 hrs. @ 70 degrees F
Drying Time : 20 hrs. @ 70 degrees F

Devran 4170 Corrosion Resistant Epoxy Primer 5465 Series

% Solids by Volume : 54% +/– 1%
% Solids by Weight : 71 % +/– 1%
Pot Life : 4 hrs. @ 77 degrees F
Drying Time : touch 1–2 hrs., recoat 7 hrs.
Viscosity : 95–100 ku
70 degrees F, 50% r.h.

MCR–4301 epoxy primer

% Solids by Volume : 48.0% +/– 2%
Pot Life : 30 hrs. @ 50–0 degrees F, 16 hrs. @ 80 degrees F
Drying Time : 1–2 hrs. @ 60–80 degrees F

Mark–60 Ultrapox

% Solids by Weight : 70–75% +/– 2%
Pot Life : 6 hrs. @ 75 degrees F
Drying Time : 2–3 hrs. initial set @ 75 degrees F

Hi–Solids Catalyzed Epoxy

% Solids by Volume : 61% +/– 2% (slate gray)
% Solids by Weight : 77% +/– 2%
Pot Life : 5 hrs. @ 77 degrees F
Drying Time : 1 hr. to touch, 4 hrs. tack free
6 hrs. to recoat @ 77 degrees F, 50% r.h.

At least 24 hours, but no more than three (3) days, shall elapse after the application of the epoxy prime coat, and before the application of the epoxy intermediate coat. Surfaces shall in all cases be clean before the intermediate coat is applied.
For new support sections, the intermediate coat shall be done at the manufacturer of the support sections. Verification by the manufacturer for the intermediate coat procedure will be required. Careful handling and storage will be required to prevent any scraping, marring or other surface damage to the intermediate coat. The payment shall include all labor, equipment, handling costs and material necessary to accomplish this item of work. This intermediate coat shall be manufactured by the same company supplying the prime and top coats. A properly calibrated dry film thickness instrument will be used to check the coating.

Basis of Payment will be as follows:
Item 630–Coating, Epoxy, Intermediate Coat, Support Sections at the Contract Bid Price per each Major Support Section.

Coating, Urethane Top Coat, Support Sections
This item shall consist of the application of one (1) coat of urethane to support sections. The total dry film thickness of this coat shall not be less than one and one–half (1.5) mils. If more than one pass is necessary to obtain the required thickness, that coat shall be borne by the contractor. This coat shall be applied by brush. Thinning of the urethane material is strictly prohibited. Material not capable of being applied as specified shall not be used.

When the average dry film thickness of this coat over the entire support section is less than the specified one and one–half (1.5) mils,but is at least one (1.0) mil, the contract price for this item shall be reduced in direct proportion to the percent deficiency of coating up to 33–1/3%. If the deficiency of the coating is more than 33–1/3% , (i.e. the average dry film thickness is less than 1.0 mil), the work for this item shall be considered unsatisfactory and shall be recoated at the full expense of the contractor, including all labor, equipment and material.
The urethane top coat chosen by the contractor shall be one of the following materials conforming to its listed properties:

Amercoat 450 HS

% Solids by Volume : 45% +/– 2%
Pot Life : 20 hrs. @ 77 degrees F
Drying Time : 8 hrs. @ 77 degrees F dry through

Devthane 4708 Aliphatic Urethane Enamel (6200/6252)

% Solids by Volume : 48 +/– 1%
% Solids by Weight : 59 +/– 1%
Pot Life : 6 hrs. @ 70 degrees F
Drying Time: 4 hrs. @ 77 degrees F recoat

Hythane

% Solids by Volume : 42 +/– 2%
Pot Life : 16 hrs. @ 50 degrees F
12 hrs. @ 75 degrees F

Mark–73 (Ultra–Kote)

% Solids by Volume : 52.5% +/– 2%
% Solids by Weight : 55% +/– 2%
Pot Life : 8 hrs. @ 75 degree F
Drying Time : 4–5 hrs. @ 75 degrees F tack free
Viscosity : 70–75 ku @ 75 degrees F

Hi–Bild Aliphatic Polyurethane Enamel

% Solids by Volume : 40% +/– 2% (catalyzed)
% Solids by Weight : 48 % +/– 2%
Pot Life : 6 hrs. @ 77 degrees F
Drying Time : 30 min. to touch, 4 hrs. tack free
18 hrs. min. 72 hrs. max to recoat

At least 24 hours, but no more than three (3) days, shall elapse after the application of the epoxy intermediate coat, and before the application of the urethane top coat. Surfaces shall in all cases be clean before the top coat is applied.
For new support sections, this top coat shall be done at the manufacturer of the support sections. Verification by the manufacturer for the top coat procedure will be required. Careful handling and storage will be required to prevent any scraping, marring or other surface damage to the top coat.
The payment shall include all labor, equipment, handling cost and materials necessary to accomplish this item of work. This top coat shall be manufactured by the same company supplying the prime and intermediate coats. A properly calibrated dry film instrument will be used to check the coating.
Basis of Payment will be as follows:
Item 630–Coating, Urethane Top Coat, Support Sections at the Contract Bid Price per each Major Support Section.

SUPPORT	SUB FRAME	VERTICAL POLE	CANTILEVERED ARM	TOTAL
1		1	1	2
2	2			2
3	2			2
4		1	1	2
5		1	1	2
			TOTAL	10

CALCULATED MBP CHECKED WJS

TRAFFIC CONTROL NOTES

CUY–77–23.458

77
295

THOMAS FOK & ASSOCIATES, LIMITED

1494STNE 1:1M 02–10–98

RPM GENERAL NOTES

Materials Supplied by The Department
All materials are to be Contractor furnished, except that the Department shall supply RPM materials in the quantities shown herein to the Contractor. Pay items for the Department supplied materials shall be indicated as "Installation Only". The quantity and type of Department supplied materials are shown on sheet 2 /292 of this plan.

For some projects having quantities of less than 20 RPMs, the contractor may pick up RPM materials at the District Offices. Quantities over 20 RPMs will be picked up at the Recycler's Warehouse or as arranged with the District. The Contractor shall pick up Department supplied RPM materials at the specified location(s) for transport to the work site or to the Contractor's storage facility. The Recycled Raised Pavement Marker (RPM) Authorization Form is to be signed by the District Construction Engineer prior to pick up of the RPMs. The Contractor shall notify the District and/or the parties listed on the authorization form in writing at least five (5) calendar days prior to pick up of the department supplied materials. The contractor shall store the RPMs without damage or contamination with foreign matter. A deduction in the amount of the actual cost to the Department shall be made for materials damaged by the Contractor or for castings received by the Contractor which were not installed and were not returned to the Department.

Return of Non-performed Raised Pavement Marker Materials Supplied by the Department.
Raised Pavement Marker Materials Supplied by the Department, that are non-performed shall be carefully repacked or packed in the boxes in the same style and quantity as originally received from the Department. Casting styles shall not be mixed within any one container.
The Contractor shall clearly mark on the outside of each container, the color of the prismatic retro-reflector, the style of casting.
Boxes shall be placed on skids or pallets in the same style (Low Profile or Conventional, reflectorised or non reflectorised) and no more than 420 RPMs (or 21 Boxes) on one skid.
Only use the boxes supplied by the Raised Pavement Marker Recycler.
Boxes must be marked with the recycler's part or catalog number and the project number. The recycler's catalog or part numbers may be obtained from the Office of Traffic Engineering in Columbus, Ohio or from the recycler. Boxes not marked with the proper recycler's catalog or part numbers, and the department's project number will not be accepted at the recycler's warehouse.
Non Performed Materials will be returned to the location as specified by the District Construction Engineer within 30 Days of the completion of the project.
The above work including all labor, equipment and material needed to perform the work, shall be considered incidental to the respective pay item.
If the department has to repackage the RPMs correctly, the Contractor will be assessed the actual cost for repackaging the Materials by the Department's Forces.

Loading of Materials Supplied by the Department at the Recycler's Warehouse
Trucks shall have a loading height of 48 inches and be able to back up flush to the loading dock. Trucks shall not have any obstructions or protrusions that prevent the loading by a standard forklift or lift truck.

Semi trucks or 20 foot commercial trucks are the most appropriate trucks for loads in excess of 4 pallets (one pallet = 21 boxes = 2100 lbs). Stake body trucks are appropriate to load less than 4 pallets, provided the truck is rated for the load and the load can be safely secured for transport by chaining or strapping down as needed.
Pickup trucks are appropriate for loads of approximately one pallet, provided the pickup truck is rated for the load and the load can be safely secured for transport.
Dump trucks, tilt bed trucks, and non-commercial moving vans will not be loaded by the recyclers warehouse.
The warehouse supervisor will refuse to load any truck that is unsafe to load or unsuitable for the load being placed on the truck.

ITEM 202 - RAISED PAVEMENT MARKERS REMOVED FOR STORAGE, AS PER PLAN

Raised pavement markers shall be removed from the roadway in a manner that prevents damage to the castings. Removed markers shall be collected, stored in 55 gallon drums (with amount of markers clearly marked) and then delivered to the ODOT Warrensville yard - 25609 Emery Road, Warrensville Heights, Ohio 44128 (SR 175 at intersection of I-271 and Emery Road.), by the contractor, as directed by the engineer. The project engineer shall give the Warrensville Traffic Department (292-5801) 48 hour notice prior to any deliveries. The project engineer shall be responsible for furnishing all necessary transfer/receiving documentation to the yard. All costs associated with the removal, storage and delivery of these markers shall be included in the unit bid price for Item 202 - Raised Pavement Markers Removed For Storage, As Per Plan.

ITEM 631 - SIGN SERVICE, AS PER PLAN

Sign Service shall be as described in the Construction and Material Specifications, Section 631.06 and shall include all pullboxes, flexible conduits and all other equipment required to complete the electrical service for this installation. For additional details, see structure details sheet number 49/295.

CALCULATED MBP CHECKED WJS

TRAFFIC CONTROL NOTES

CUY-77-23.458

78
295

THOMAS FOK & ASSOCIATES, LIMITED

14949TNF 1:1M 02-10-98

SHEET NUMBER												ITEM	ITEM EXTENSION	QUANTITY	UNIT	DESCRIPTION	SEE SHEET NUMBER
				77			82	83	84								
																TRAFFIC CONTROL	
							230					202	M54101	230	EACH	RAISED PAVEMENT MARKER REMOVED FOR STORAGE, AS PER PLAN	78
							230					621	M00200	230	EACH	RAISED PAVEMENT MARKER, INSTALLATION ONLY	
									4			625	M32000	4	EACH	GROUND ROD	
							29					626	M00100	29	EACH	BARRIER REFLECTOR, TYPE A	
							132					626	M00200	132	EACH	BARRIER REFLECTOR, TYPE B	
								66				630	M03100	66	METER	GROUND MOUNTED SUPPORT, NO. 3 POST	
								29				630	M06100	29	METER	GROUND MOUNTED SUPPORT, NO. 6 POST	
								9				630	M06400	9	METER	GROUND MOUNTED SUPPORT, S100 x 11.5 BEAM	
								10				630	M06500	10	METER	GROUND MOUNTED SUPPORT, W150 x 13.5 BEAM	
				10								630	M09102	10	EACH	SURFACE PREPARATION, NEW SUPPORT SECTION	
				10								630	M09104	10	EACH	COATING, EPOXY PRIME COAT, SUPPORT SECTION	
				10								630	M09106	10	EACH	COATING, EPOXY, INTERMEDIATE COAT, SUPPORT SECTION	
				10								630	M09108	10	EACH	COATING, URETHANE, TOP COAT, SUPPORT SECTION	
									2			630	M26000	2	EACH	COMBINATION OVERHEAD SIGN SUPPORT, TYPE TC-12.30M DESIGN 10	
									1			630	M26200	1	EACH	COMBINATION OVERHEAD SIGN SUPPORT, TYPE TC-12.30M DESIGN 12	
									2			630	M45500	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8	
								3				630	M79501	3	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN "A"	84D
								1				630	M79501	1	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN "B"	84E
								2				630	M79501	2	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN "C"	84E
								18				630	M80102	18	SQ METER	SIGN, FLAT SHEET, TYPE G	
									44			630	M80204	44	SQ METER	SIGN, EXTRU SHEET, TYPE G	
								4				630	M84500	4	EACH	GROUND MOUNTED BEAM SUPPORT FOUNDATION	
									4			630	M84510	4	EACH	RIGID OVERHEAD SIGN SUPPORT FOUNDATION	
								12				630	M84900	12	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	
								2				630	M85600	2	EACH	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND REERECTION	
								17				630	M86002	17	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
								4				630	M86102	4	EACH	REMOVAL OF GROUND MOUNTED BEAM SUPPORT AND DISPOSAL	
									7			630	M87100	7	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION	

CALCULATED CSK CHECKED WJS

TRAFFIC CONTROL PLAN
GENERAL SUMMARY

CUY-77-23.458

SHEET NUMBER												ITEM	ITEM EXTENSION	QUANTITY	UNIT	DESCRIPTION	SEE SHEET NUMBER
						81	82	83	84								
																TRAFFIC CONTROL (CON'T)	
									5			630	M87400	5	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	
								6				630	M87500	6	EACH	REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	
									1			630	M89706	1	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30	
									4			630	M89802	4	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65M	
									12			630	M97700	12	EACH	SIGNING, MISC: COMBINATION SIGN AND LIGHT SUPPORT FOUNDATION ANCHOR BOLT	
									2			631	M84000	2	EACH	SIGN SERVICE	
									3			631	M84001	3	EACH	SIGN SERVICE, AS PER PLAN	78
									10			631	M84300	10	EACH	SIGN WIRED	
									5			631	M85100	5	EACH	DISCONNECT SWITCH WITH ENCLOSURE, TYPE X	
									12			631	M87202	12	EACH	BALLAST, TYPE CMRI-175-480, INTEGRAL	
									7			631	M87302	7	EACH	BALLAST, TYPE CMRI-250-480, INTEGRAL	
									12			631	M89200	12	EACH	MERCURY VAPOR LUMINAIRE, TYPE TC-31.21M WITH 175 WATT LAMP	
									7			631	M89300	7	EACH	MERCURY VAPOR LUMINAIRE, TYPE TC-31.21M WITH 250 WATT LAMP	
									23			631	M94200	23	EACH	REMOVAL OF LUMINAIRE AND DISPOSAL	
									5			631	M94304	5	EACH	REMOVAL OF DISCONNECT SWITCH AND DISPOSAL	
									23			631	M94404	23	EACH	REMOVAL OF BALLAST AND DISPOSAL	
									12			631	M94406	12	EACH	REMOVAL OF SIGNS WIRED	
									5			631	M94412	5	EACH	REMOVAL OF SIGN SERVICE AND DISPOSAL	
						7.32						SPECIAL	69080000	7.32	KILOMETER	PAVEMENT MARKING, MISC.: EDGE LINE	
						6.61						SPECIAL	69080000	6.61	KILOMETER	PAVEMENT MARKING, MISC.: LANE LINE	
						269						SPECIAL	69080010	269	METER	PAVEMENT MARKING, MISC.: TRANSVERSE LINE	
						402						SPECIAL	69080010	402	METER	PAVEMENT MARKING, MISC.: CHANNELIZING LINE	
						43						SPECIAL	69080010	43	METER	PAVEMENT MARKING, MISC.: DOTTED LINE, 100 MM	

CALCULATED CSK
CHECKED WJS

TRAFFIC CONTROL PLAN
GENERAL SUMMARY

CUY-77-23.458

ITEM SPECIAL – PAVEMENT MARKING, MISC.: 100 mm EDGE LINE, WHITE & YELLOW

LOCATION	STATION FROM	TO	CALCULATION (METERS)	YELLOW (METERS)	WHITE (METERS)
I–77, NB	2+150	4+070	1920	1920	
	2+150	3+327	1177		1177
	3+356	4+070	714		714
I–77, SB	2+280	4+070	1790	1790	
	2+280	2+680	400		400
	2+540	2+680	140		140
	2+784	3+353	569		569
RAMP W–N	0+516	0+708	192	192	
	0+516	0+743	227		227
RAMP N–W	10+025	10+170	145		145
	10+128	10+170	42	42	
				3944	3372

TOTAL = 7316
= 7.32 km.

ITEM SPECIAL – PAVEMENT MARKING, MISC.: 100 mm LANE LINE

LOCATION	STATION FROM	TO	CALCULATION (METERS)	SUB–TOTAL (METERS)
I–77, NB	2+150	4+070	1920	1920
	2+565	4+070	1505	1505
I–77, SB	2+150	4+070	1920	1920
	2+879	4+070	1191	1191
RAMP N–W	0+744	0+816	73	73
				6609

TOTAL = 6609
= 6.61 km.

ITEM SPECIAL – PAVEMENT MARKING, MISC.: 100 mm DOTTED LINE, WHITE

LOCATION	STATION FROM	TO	CALCULATION (METERS)	SUB–TOTAL (METERS)
RAMP S–30	0+010	0+053	43	43

TOTAL = 43 METERS

ITEM SPECIAL – PAVEMENT MARKING, MISC.: 300 mm TRANSVERSE LINE, WHITE

LOCATION	STATION FROM	TO	CALCULATION (METER)	SUB–TOTAL (METER)
I–77, SB	2+540	2+680	30	30
RAMP N–W	10+025	10+129	208	208
RAMP S–30	0+053	0+085	31	31

TOTAL = 269 METERS

ITEM SPECIAL – PAVEMENT MARKING, MISC.: 200 mm CHANNELIZING LINE

LOCATION	STATION FROM	TO	CALCULATION (METER)	SUB–TOTAL (METER)
RAMP W–N	0+708	0+743	35	35
RAMP N–W	2+680	2+784	104 x 2 = 208	208
	2+784	2+879	95	95
RAMP S–30	0+053	0+085	32 x 2 = 64	64

TOTAL = 402 METERS

CALCULATED MBP CHECKED WJS

TRAFFIC CONTROL PLAN
PAVEMENT MARKING CALCULATIONS

CUY–77–23.458

14949TSA 1:1M 02–05–98

ITEM 621 – RAISED PAVEMENT MARKERS, INSTALLATION ONLY

LOCATION	STATION		EDGE LINE		LANE LINE	CHANNELIZING LINE	SPACING
			LENGTH	YELLOW/RED	WHITE	WHITE/RED	
	FROM	TO	METER		EACH	EACH	METER
I–77 NORTHBOUND	2+150	4+070	1920		55		36
	2+565	4+070	1505		43		36
I–77 SOUTHBOUND	2+280	4+070	1790		51		36
	2+784	4+070	1286		37		36
RAMP W–N	0+516	0+708	192	9			24
	0+708	0+743	35			4	12
RAMP N–W	10+128	10+170	42	3			24
	2+680	2+784	104			10	12
	2+680	2+784	104			10	12
RAMP S–30	0+053	0+085	32			4	12
	0+053	0+085	32			4	12
				12	186	32	
				TOTAL = 12 + 186 + 32 = 230			

ITEM 202 – RAISED PAVEMENT MARKERS REMOVED FOR STORAGE, AS PER PLAN

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN PLACED IN THE GENERAL SUMMARY. FOR ADDITIONAL NOTES SEE SHEET NO. 78 .

ITEM 202 – RAISED PAVEMENT MARKERS REMOVED FOR STORAGE, AS PER PLAN — 230 EACH

ITEM 626 – BARRIER REFLECTOR, TYPE A

	STATION FROM	TO	SIDE	LENGTH (METER)	1 REFLECTOR @ 30 m SPA.
	2+467.061	2+665	LT.	200.00	8
	2+499.883	2+659.423	RT.	160.02	6
	3+307.342	0+047.813	LT.	41.91	3
	3+288.408	0+053.686	RT.	26.67	2
RAMP W–N	0+508.926	0+577.506	LT.	68.58	3
	0+517.834	0+563.554	RT.	45.72	3
	10+123.673	10+211.303	RT.	87.63	4
					SUBTOTAL = 29

ITEM 626 – BARRIER REFLECTOR, TYPE B

	STATION FROM	TO	SIDE	LENGTH (METER)	1 REFLECTOR @ 30 m SPA.
	2+480	3+600	L/R	1120.00	40 x 2 = 80
	2+659.423	2+711	RT.	51.58	3
	2+711	3+288.408	RT.	577.41	20
	2+685	3+307.342	LT.	622.34	22
RAMP W–N	0+577.506	0+645	LT.	67.49	3
	0+563.554	0+645	RT.	81.45	4
					SUBTOTAL = 132

CALCULATED MBP CHECKED WJS

TRAFFIC CONTROL PLAN
RAISED PAVEMENT MARKERS

CUY–77–23.458

630 – GROUND MOUNTED SIGNS

SHEET NO.	REF. NO.	STATION	LOCATION (℄ OF I-77)	SIDE	CODE	SIZE (W x H)	GROUND MOUNTED SUPPORT, NO. 3 POST	GROUND MOUNTED SUPPORT, NO. 6 POST	SIGN, FLAT SHEET, TYPE G	GROUND MOUNTED BEAM SUPPORT FOUNDATION	GROUND MOUNTED SUPPORT, S100 x 11.5 BEAM	GROUND MOUNTED SUPPORT, W150 x 13.5 BEAM	SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN "A"	SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN "B"	SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN "C"	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	REMOVAL OF GROUND MOUNTED BEAM SUPPORT AND DISPOSAL	REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND REERECTION	REMARKS
						mm x mm	METER	METER	SQ. METER	EACH	METER	METER	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
84A	4S	2+529	NB	RT	R-7B-1200	1200x2400		*6.60/6.80	2.88							1	2				REMOVE & RELOCATE NEW
84A	5S	2+565	SB	LT	R-7B-1200	1200x2400		*7.50/7.70	2.88							1	2				REMOVE & RELOCATE NEW
84A	6S	2+593	NB	RT	GC	3050x1400				2	4.10/4.40							2		1	REMOVE & RELOCATE EXISTING
84A	7S	(W-N) 0+533	NB	LT	W-60R-1200	1200x1200	5.10/5.11		1.44							1	2				REMOVE & RELOCATE NEW
84A	8S	(W-N) 0+533	NB	RT	W-60R-1200	1200x1200	5.60/5.80		1.44							1	2				REMOVE & RELOCATE NEW
84A	9S	(W-N) 0+565.678	NB	RT	X-6R-300	300x900	4.40		0.27							1	1				REMOVE & RELOCATE NEW
84A	10S	(W-N) 0+575.350	NB	LT	X-6L-300	300x900	4.40		0.27							1	1				REMOVE & RELOCATE NEW
84A	11S	2+643	NB	RT	W-49R-1200	1200x1200	5.60/5.80		1.44							1	2				REMOVE & RELOCATE NEW
84A	12S	2+651	NB	RT	X-6L-300	300x900			0.27						1				1		MEDIAN MOUNTED
84A	12AS	2+660	NB	RT	X-6R-300	300x900	5.60		0.27							1	1				REMOVE & RELOCATE NEW
84B	15S	2+803	NB	RT	R-2-1500	1500x1500x1500			0.97				1								POLE MOUNTED
84B	17S	3+079.518	SB	LT	W-42-1200	1200x1200			1.44				1						1		POLE MOUNTED
84B	17S	"	"	"	W-145B-600	450x600			0.27				1						1		POLE MOUNTED
84B	20S	3+080	SB	LT	W-42-1200	1200x1200			1.44					1					1		MEDIAN MOUNTED
84B	20S	"	"	"	W-145B-600	450x600			0.27										1		MEDIAN MOUNTED
84C	21S	3+290	SB	LT	X-6L-300	300x900			0.27						1				1		MEDIAN MOUNTED
84C	22S	3+315	NB	RT	N-41-300	300x1200	4.70		0.36							1	1				REMOVE & RELOCATE NEW
84C	23S	3+322.4	SB	LT	N-41-300	300x1200	4.70		0.36							1	1				REMOVE & RELOCATE NEW
84C	24S	3+327.6	SB	LT	GSH-1	3000x600				2		4.10/5.00						2		1	REMOVE & RELOCATE EXISTING
		"	"	"	GED-120-600	3000x600															
84C	29S	(30-S) 0+125	SB	LT	R-2-1500	1500x1500x1500	5.00		0.97							1	1				REMOVE & RELOCATE NEW
84C	30S	3+308	SB	LT	X-6R-300	300x900	4.40		0.27							1	1				REMOVE & RELOCATE NEW
TOTALS THIS SHEET							66.21 USE 66	28.60 USE 29	17.78 USE 18	4	8.50 USE 9	9.10 USE 10	3	1	2	12	17	4	6	2	

* = 2 POSTS (2 NO. 3 POSTS BACK TO BACK)

CALCULATED MBP CHECKED WJS

TRAFFIC CONTROL PLAN
GROUND MOUNTED SIGN SUB-SUMMARY

CUY-77-23.458

OVERHEAD MOUNTED SIGNS

SHEET NO.	REFERENCE NO.	STATION	LOCATION (℄ OF 1–77)	CODE	SIZE (W x H)	630 OVERHEAD SIGN SUPPORT COMBINATION TYPE TC–12.30 DESIGN 10 8.1 METER ARM	630 OVERHEAD SIGN SUPPORT COMBINATION TYPE TC–12.30M DESIGN 10 8.7 METER ARM	630 OVERHEAD SIGN SUPPORT COMBINATION TYPE TC–12.30M DESIGN 12 9.1 METER ARM	630 OVERHEAD SIGN SUPPORT TYPE TC–7.65 DESIGN 8	630 SIGNING MISC: COMBINATION SIGN AND LIGHT SUPPORT FOUNDATION ANCHOR BOLT	630 RIGID OVERHEAD SIGN SUPPORT FOUNDATION	630 REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL TYPE TC–12.30	630 REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL TYPE TC–7.65M	630 SIGN, EXTRU SHEET, TYPE G	630 REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	630 REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION	625 GROUND ROD	INFORMATION ONLY LUMINAIRE SUPPORT ASSEMBLY TC–31.21 1.0 ARM	INFORMATION ONLY LUMINAIRE SUPPORT ASSEMBLY TC–31.21 1.3 ARM	INFORMATION ONLY LUMINAIRE SUPPORT ASSEMBLY TC–31.21 1.7 ARM	INFORMATION ONLY SIGN ATTACHMENT ASSEMBLY	631 REMOVAL OF LUMINAIRE AND DISPOSAL	631 REMOVAL OF SIGN SERVICE AND DISPOSAL	631 REMOVAL OF DISCONNECT SWITCH AND DISPOSAL	631 REMOVAL OF SIGN WIRED	631 REMOVAL OF BALLAST AND DISPOSAL	631 SIGN WIRED	631 SIGN SERVICE	631 SIGN SERVICE, AS PER PLAN	631 DISCONNECT SWITCH WITH ENCLOSURE, TYPE X	631 BALLAST, TYPE CMRI–175–480, INTEGRAL	631 BALLAST, TYPE CMRI–250–480, INTEGRAL	631	631 MERCURY VAPOR LUMINARE TYPE TC–31.21M WITH 175 WATT LAMP	631 MERCURY VAPOR LUMINARE TYPE TC–31.21M WITH 250 WATT LAMP	REMARKS
					mm x mm	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	SQ. M	EACH	EACH	EACH	EA	EA	EA	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
84A	1S	2+463	NB	GB									1				1					2			1	2												REMOVE
	1S	2+560	NB	GB					1		2					1				2	4						1				2				2		REERECT
84A	2S	2+463	NB	GB																		1	1	1	1	1											REMOVE
	2S	2+560	NB	GB												1	2		1		4						1	1		1	1			1			REERECT
84A	3S	2+463	NB	GE																		2			1	2											REMOVE
	3S	2+560	NB	GE												1			2		4						1				2			2		REERECT
84B	13S	2+739	SB	GG											1							2			1	2											REMOVE
84B	14S	2+739	SB	GE						4			1			1				2	4	2	1	1	1	2	1		1	1		2			2		REMOVE/REERECT
	14S	2+757.379	SB	GE				1																												
84B	16S	3+038.5	NB	GE											1							2	1	1	1	2											REMOVE
	16S	3+056.845	NB	GE	5480x2750	1				4		1		15.07					2		4						1		1	1	2			2		NEW
				GEP	2740x610									1.67																						
84B	18S	3+081.6	SB	GG											1							2			1	2											REMOVE
84B	19S	3+081.6	SB	GE						4			1			1				2	3	2	1	1	1	2	1		1	1		2			2		REMOVE/REERECT
	19S	3+079.516	SB	GE			1																													
84C	25S	3+317.8	NB	GB					1		2		1			1	2			1	3	1	1	1	1	1	1		1		1				1		REMOVE/REERECT
84C	26S	3+317.8	NB	GB												1		2			3	2			1	2	1			2			2			REMOVE/REERECT
84C	27S	3+317.8	NB	GB											1							2			1	2											REMOVE
	27S	3+317.8	NB	GB	3960x2750									10.89					2		3						1			2			2			NEW
				GEP	2740x610									1.67																						
84C	28S	3+317.8	NB	GE											1							3			1	3											REMOVE
	28S	3+317.8	NB	GE	6400x1990									12.74				3			3						1			3			3			NEW
				GEP	2740x610									1.67																						
TOTALS THIS SHEET						1	1	1	2	12	4	1	4	43.71 USE 44	5	7	4					23	5	5	12	23	10	2	3	5	12	7		12	7	

NOTE:
FOR ADDITIONAL DETAILS FOR ITEM 630 SIGNING, MISC: COMBINATION SIGN AND LIGHT SUPPORT FOUNDATION ANCHOR BOLT EACH, SEE STRUCTURAL DETAIL SHEET NUMBER 49/295 .

THOMAS FOK & ASSOCIATES, LIMITED

14949TSD 1:1M 02-10-98

CALCULATED MBP
CHECKED WJS

TRAFFIC CONTROL PLAN
OVERHEAD SIGN SUB-SUMMARY

CUY-77-23.458

84
295

LEGEND

EXISTING SIGN TO REMAIN

EXISTING SIGN TO BE REMOVED AND NOT REUSED

PROPOSED SIGN

EXISTING SIGN TO BE REMOVED AND REUSED

EXISTING SIGN TO BE REMOVED AND REPLACED WITH NEW SIGN

(A) ITEM SPECIAL – LANE LINE
(B) ITEM SPECIAL – EDGE LINE (WHITE)
(C) ITEM SPECIAL – EDGE LINE (YELLOW)
(D) ITEM SPECIAL – TRANSVERSE LINE, WHITE, (3.6m c/c)
(E) ITEM SPECIAL – CHANNELIZING LINE
(F) ITEM SPECIAL – DOTTED LINE, WHITE, 100mm
(G) ITEM SPECIAL – TRANSVERSE LINE, WHITE, (15m c/c)

DIRECTIONAL ARROW

TO Toledo
INTRANS 71
INTRANS 490
(4600mm x 1800mm) GG

E. 55th St
(4900mm x 1800mm) GE

EXISTING OVERHEAD SUPPORT AND SIGNS TO REMAIN (NO WORK)

W-6-1200
35 MPH
W-143-600
EXISTING SIGNS TO REMAIN (NO WORK)

HOSPITAL
W-29-750
(750mm)
EXISTING SIGN TO REMAIN (NO WORK)

BEGIN PROJECT
STA. 2+650
IM 77 (5) 46

STA. 10+224
STA. 10+182
STA. 10+169.918
END PAVEMENT MARKING

10+200
10+160
18:1 TAPER RATE
Ramp N-W
10+120
10+080

EXISTING SIGN REMOVED
NEW SIGN RELOCATED
SPEED LIMIT 50 MINIMUM 35
R-7B-1200
5S

STA. 2+150 RIGHT
BEGIN PAVEMENT MARKINGS
STA. 2+280 LEFT
BEGIN PAVEMENT MARKINGS

STA. 2+540
STA. 2+565

18:1 TAPER RATE

2+140 2+440 2+480 2+520 2+560 N14°39'18"W 2+600 2+640 2+680 2+720

℄ I-77

Concrete Barrier

MATCHLINE STA. 2+735 SEE SHEET 84B

STA. 2+463
STA. 2+529
STA. 2+560
BEGIN LANE LINE
STA. 2+565
STA. 2+593

EXISTING SIGN REMOVED
NEW SIGN RELOCATED
SPEED LIMIT 50 MINIMUM 35
R-7B-1200
4S

EXISTING SIGN TO BE REMOVED AND NEW SIGN INSTALLED

STA. 0+362
STA. 0+516.560
BEGIN PAVEMENT MARKING
STA. 0+533
STA. 0+565.678
STA. 0+575.350
STA. 0+643
STA. 2+651
STA. 2+660

X-6L-300 10S
X-6R-300 9S
X-6L-300 12S
W-6R-1200 7S
W-49R-1200 11S
X-6R-300 12AS
W-53-1200 RIGHT LANE ENDS

EXISTING SIGNS TO REMAIN (NO WORK)
EXISTING SIGNS TO BE REMOVED AND NEW SIGNS INSTALLED
EXISTING SIGN TO BE REMOVED AND NEW SIGN INSTALLED
EXISTING SIGN TO BE REMOVED AND NEW SIGN INSTALLED
EXISTING SIGN TO BE REMOVED AND NEW SIGN INSTALLED

0+520
0+560
0+600
0+640
0+680
0+720
Ramp W-N

90 Toledo Erie Pa 1 1/2 MILES
(3960mm x 3660mm) GB
1S

77 ENDS 1 1/2 MILES
(3350mm x 2900mm) GB
2S

Woodland Ave E 30th St 1/2 MILE
(5480mm x 2600mm) GE
3S

EXIT 162 A
(2740mm x 610mm) GEP

Jacobs Field Gund Arena NEXT 3 EXITS
(2030mm x 1370mm) GC
EXISTING TO REMAIN (NO WORK)

Cuy Community College
(3050mm x 1400mm) GC
EXISTING TO BE RELOCATED AND EXISTING SIGN TO BE REUSED
6S

EXISTING SIGNS TO BE REMOVED AND RE-ERECTED
EXISTING SUPPORT TO BE REMOVED AND NEW NEW SUPPORT TO BE RELOCATED

14949TPA 1:500M 02-1-0-98

HORIZONTAL SCALE 1:500

CALCULATED CSK
CHECKED WJS

TRAFFIC CONTROL PLAN
STA. 2+268 TO STA. 2+735

CUY-77-23.458

84A
295

TRAFFIC CONTROL PLAN
STA. 2+735 TO STA. 3+110

CUY-77-23.458

CALCULATED CSK
CHECKED WJS

HORIZONTAL SCALE
1:500

84B
295

SEE SHEET 84A

MATCHLINE STA. 2+735

MATCHLINE STA. 3+110

SEE SHEET 84C

STA. 2+739

STA. 2+757.379

STA. 2+783.940

STA. 2+878.940

STA. 2+809.985

STA. 2+803

STA. 0+816.526

STA. 3+038.5

STA. 3+056.845

STA. 3+079.516

STA. 3+081.6

STA. 3+080

End Taper

Ramp N-W

Ramp W-N

¢ I-77

1.8m

GEP
(2740mm x 610mm)
EXIT 161 B
INTERSTATE 490 TO INTERSTATE 71
Toledo
E 55TH St
EXIT ONLY
(4880mm x 3660mm)
GE
EXISTING SIGN REMOVED AND RELOCATED

(5200mm x 2900mm)
GG
INTERSTATE 71 SOUTH
Akron
EXISTING SIGN TO BE REMOVED

EXISTING OVERHEAD SIGN TO BE REMOVED AND RELOCATED
GEP
(2740mm x 610mm)
EXIT 161 B
INTERSTATE 490 TO INTERSTATE 71
Toledo
E 55TH St
EXIT ONLY
(4880mm x 3660mm)
GE

(5200mm x 2900mm)
GG
INTERSTATE 71 SOUTH
Akron

EXISTING POLE MOUNTED SIGNS TO BE REMOVED NEW SIGNS RELOCATED
14'-0"
W-42-1200
1 MILE
W-145B-600

NEW POLE MOUNTED SIGN
YIELD
R-2-1500

EXISTING POLE MOUNTED SIGNS TO BE REMOVED NEW SIGNS RELOCATED
15'-1"
W-42-1200
1 MILE
W-145B-600

GEP
(2740mm x 610mm)
EXIT 162 A
Woodland Ave
E 30th St
1/4 MILE

(5480mm x 2600mm)
GB
EXISTING OVERHEAD SIGN TO BE REMOVED NEW SIGN RELOCATED

14949TPB 1:500M 02-10-98

TRAFFIC CONTROL PLAN
STA. 3+110 TO STA. 3+700

CUY-77-23.458

CALCULATED CSK
CHECKED WJS

HORIZONTAL SCALE
1:500

84C
295

MATCHLINE STA. 3+110 SEE SHEET 84B

END PROJECT
STA. 3+300.303
IM 77 (5) 46

EXISTING SIGN TO BE REMOVED AND NEW SIGN INSTALLED
30S X-8R-300

EXISTING SIGN TO BE REMOVED AND NEW SIGN INSTALLED
21S X-8L-300

23S MILE 1 6 2 N-41-300
EXISTING SIGN REMOVED NEW SIGN INSTALLED

24S EXIT 161 B HOSPITAL 1 MILE
EXISTING SIGN TO BE RELOCATED

29S R2-1500

EXISTING SIGN REMOVED NEW SIGN INSTALLED

STA. 0+125
STA. 3+290
STA. 3+308
STA. 3+322.4
STA. 3+327.6
STA. 0+042.325 END PAVEMENT MARKING
STA. 4+070 END PAVEMENT MARKING

Ramp 30-S
Ramp S-30

I-77

EXISTING SIGN TO BE REMOVED AND NEW SIGN INSTALLED
22S MILE 1 6 2 N-41-300

STA. 3+315
STA. 3+317.8
STA. 3+327 END PAVEMENT MARKING
STA. 3+352
STA. 3+394

EXISTING SUPPORT AND SIGN TO REMAIN (NO WORK)
W-97 (1200mm)

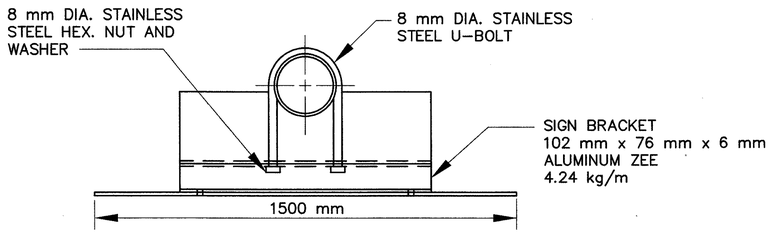
EXISTING SUPPORT AND SIGN TO REMAIN (NO WORK)
(2750mm x 1500mm)

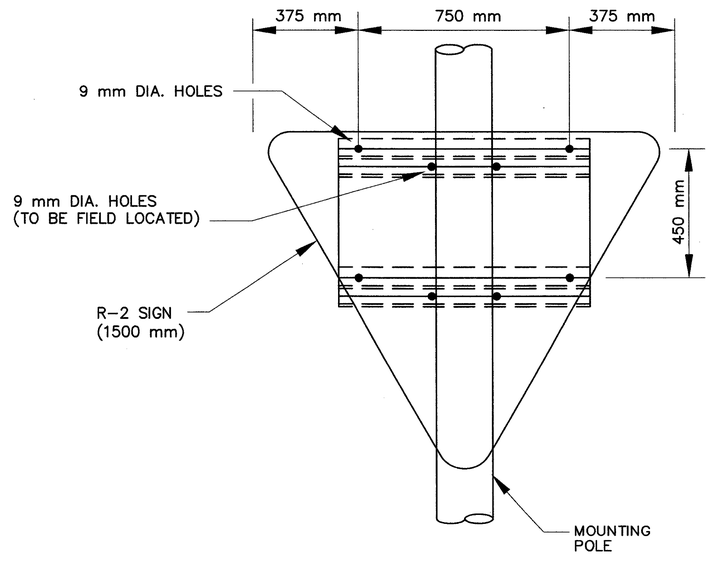
EXISTING SIGNS 25S & 26S TO BE REMOVED AND RE-ERECTED
25S INTERSTATE 90 Toledo Erie Pa. (3350mm x 3660mm) GB
26S EXIT 163 E 9th St 3/4 MILE (3960mm x 1840mm) GEP (2740mm x 610mm) GB

EXISTING SUPPORT TO BE REMOVED AND NEW ERECTED
BLACK/YELLOW WITH 254mm CAPS

EXISTING SIGNS 27S & 28S TO BE REMOVED AND REPLACED WITH NEW
27S EXIT 162 B E 22nd St E 14th St 1/4 MILE (3960mm x 2600mm) GB GEP (2740mm x 610mm)
28S EXIT 162 A Woodland Ave E 30th St (6400mm x 1840mm) GE GEP (2740mm x 610mm)

14949TPC 1:500M 02-10-98





SIGN SUPPORT ASSEMBLY, POLE MOUNTED,
AS PER PLAN "A"

N.T.S.

STA. 2+803

NOTES:

1.) SIGN SHOULD BE MOUNTED 2.5 m ABOVE PAVEMENT SURFACE.

2.) THE POLE DIAMETER AT SIGN LOCATION SHOULD BE APPROXIMATELY 0.2 m.

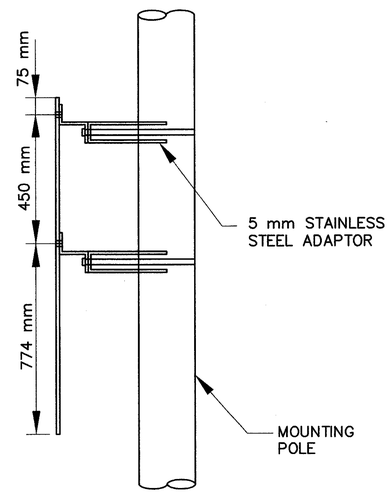
3.) FOR DETAILS NOT SHOWN, SEE STD. DWG. TC-22.20M.

4.) WHERE SIGN ATTACHES TO ZEE BAR, BOLT HOLE LOCATIONS SHALL BE IN ACCORDANCE WITH STD. CONSTRUCTION DWG. TC-52.10M.

5.) MULTIPLE FLAT SHEET INSTALLATIONS SHALL USE A SIGN ASSEMBLY ATTACHED TO ZEE BAR. PAYMENT FOR THE BACKING ASSEMBLY SHALL BE INCIDENTAL TO THE SIGN SUPPORT ASSEMBLY.

6.) POLE MOUNTED INSTALLATIONS OF SIGN W-42 AND W-145B SHALL BE MOUNTED IN A SIMILIAR FASHION AS SHOWN IN DETAIL SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN "A" (THIS SHEET).

7) PAYMENT FOR SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN "A" INCLUDES ALL LABOR AND MATERIAL TO ATTACH EACH SIGN TO THE REQUIRED MOUNTING POLE. INCLUDED ARE BANDS, BRACKETS, BOLTS AND ALL OTHER NECESSARY HARDWARE TO COMPLETE THIS ITEM OF WORK.



THOMAS FOK & ASSOCIATES, LIMITED

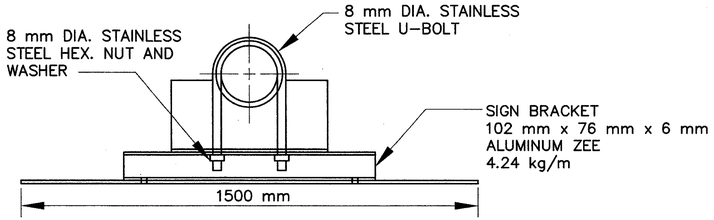
14949TDA 1:1M 02-05-98

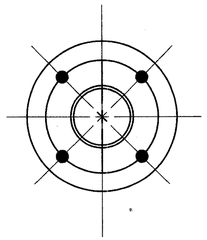
CALCULATED CSK
CHECKED RJZ

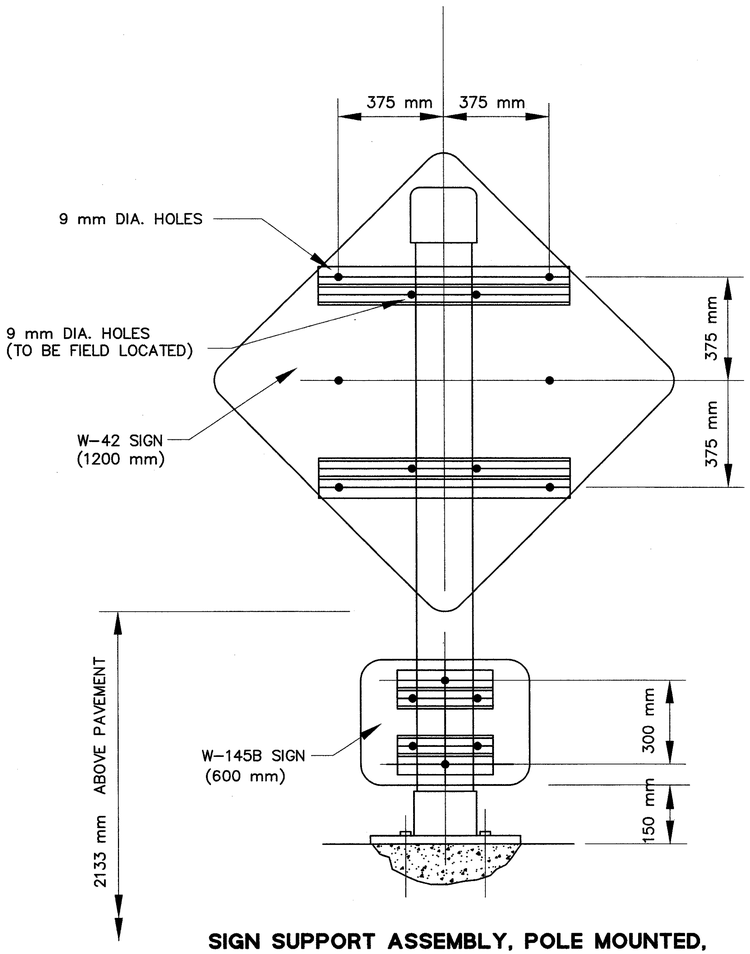
TRAFFIC CONTROL PLAN
GROUND MOUNTED SIGN DETAIL

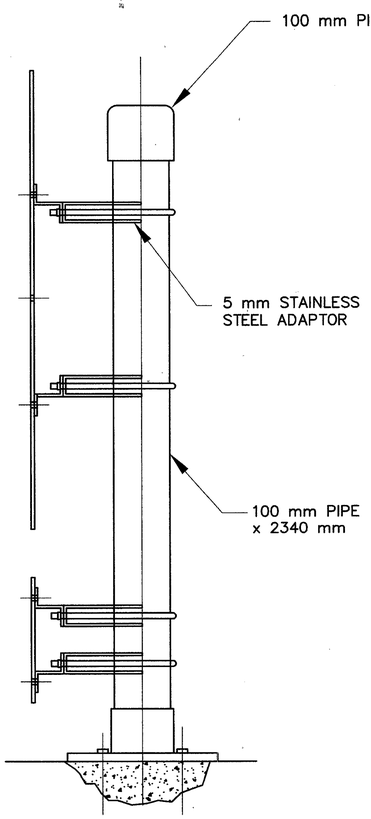
CUY-77-23.458

84D
295









SIGN SUPPORT ASSEMBLY, POLE MOUNTED,
AS PER PLAN "B"
N.T.S.
STA. 3+080

NOTES:

1.) SIGN SHOULD BE MOUNTED 2.1 m MIN. ABOVE PAVEMENT SURFACE.

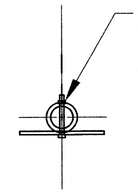
2.) FOR DETAILS NOT SHOWN, SEE STD. DWG. TC-22.20M.

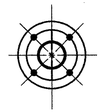
3.) WHERE SIGN ATTACHES TO ZEE BAR, BOLT HOLE LOCATIONS SHALL BE IN ACCORDANCE WITH STD. CONSTRUCTION DWG. TC-52.10M AND TR2-4.

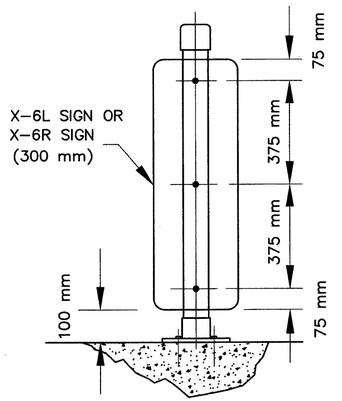
4.) MULTIPLE FLAT SHEET INSTALLATIONS SHALL USE A SIGN ASSEMBLY ATTACHED TO ZEE BAR. PAYMENT FOR THE BACKING ASSEMBLY SHALL BE INCIDENTAL TO THE SIGN SUPPORT ASSEMBLY.

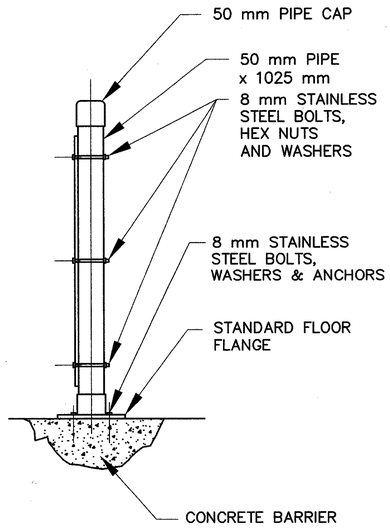
5) PAYMENT FOR SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN "B" SHALL INCLUDE ALL LABOR AND MATERIAL TO ATTACH ONE W-42 AND ONE W-145B SIGN TO THE MEDIAN CONCRETE BARRIER. INCLUDED ARE 100mm PIPE, CAPS, FLANGES, BANDS, BRACKETS, BOLTS AND ALL OTHER NECESSARY HARDWARE TO COMPLETE THIS ITEM OF WORK.

6) PAYMENT FOR SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN "C" SHALL INCLUDE ALL LABOR AND MATERIAL TO ATTACH ONE X-6L OR ONE X-6R SIGN TO THE MEDIAN CONCRETE BARRIER. INCLUDED ARE 100mm PIPE, CAPS, FLANGES, BANDS, BRACKETS, BOLTS AND ALL OTHER NECESSARY HARDWARE TO COMPLETE THIS ITEM OF WORK.









SIGN SUPPORT ASSEMBLY, POLE MOUNTED,
AS PER PLAN "C"
N.T.S.
STA. 2+651
STA. 3+290

THOMAS FOK & ASSOCIATES, LIMITED

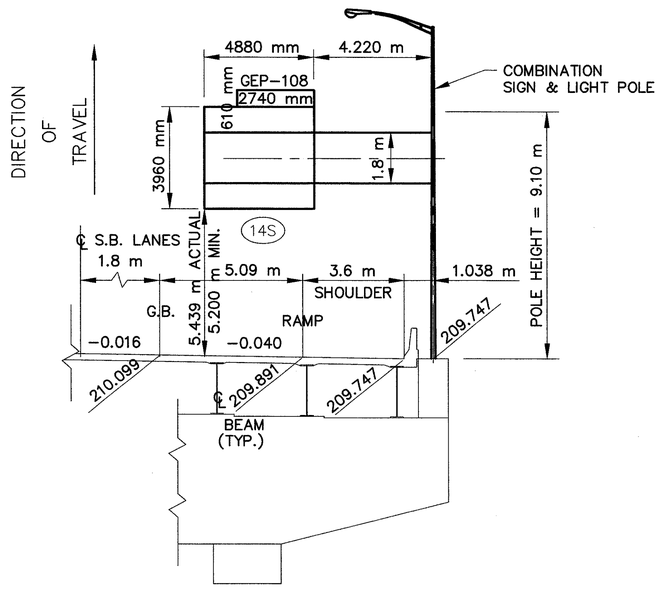
14949TDB 1:1M 02-05-98

CALCULATED CSK
CHECKED RJZ

TRAFFIC CONTROL PLAN
GROUND MOUNTED SIGN DETAILS

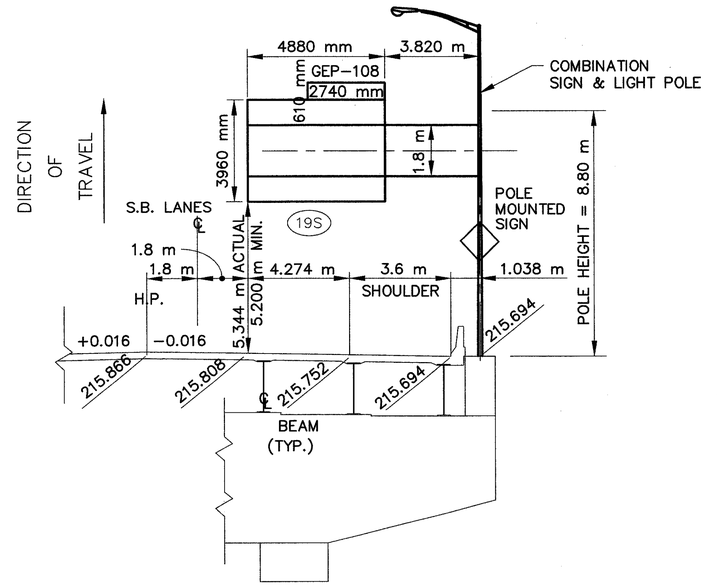
CUY-77-23.458

84E
295



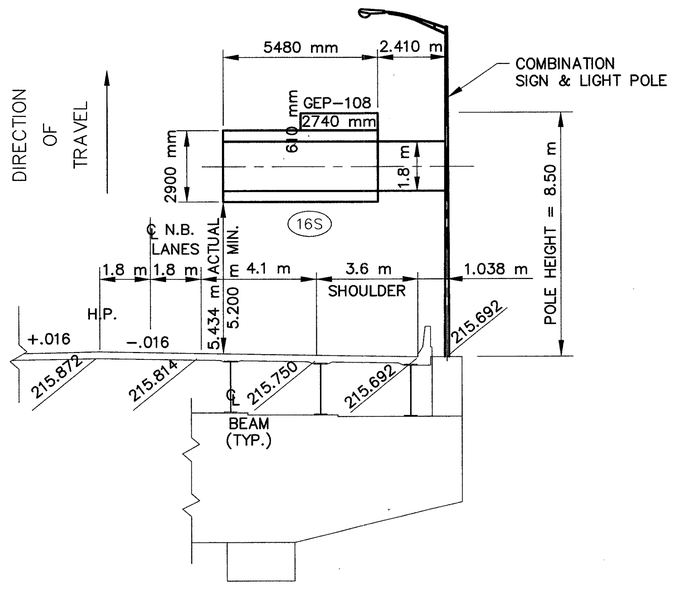
STA. 2+757.379, 23.150 m LT.
SOUTHBOUND I-77

SIGN SUPPORT TC-12.30 DESIGN 12
9.10 m ARM



STA. 3+079.516, 18.050 m LT.
SOUTHBOUND I-77

SIGN SUPPORT TC-12.30 DESIGN 10
8.70 m ARM



STA. 3+056.845, 18.490 m RT.
NORTHBOUND I-77

SIGN SUPPORT TC-12.30 DESIGN 10
8.10 m ARM

CALCULATED CSK
CHECKED RJZ

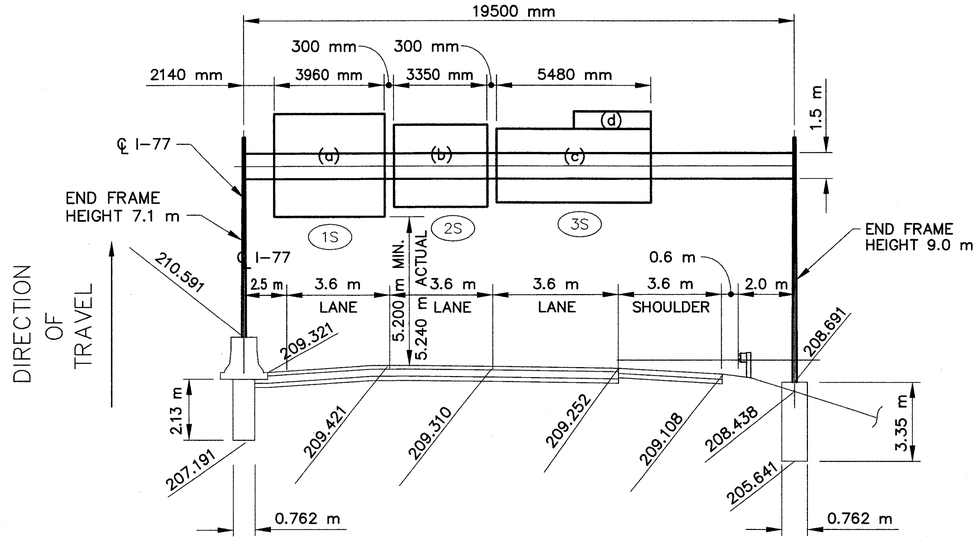
TRAFFIC CONTROL PLAN
OVERHEAD SIGN DETAILS

CUY-77-23.458

84F
295

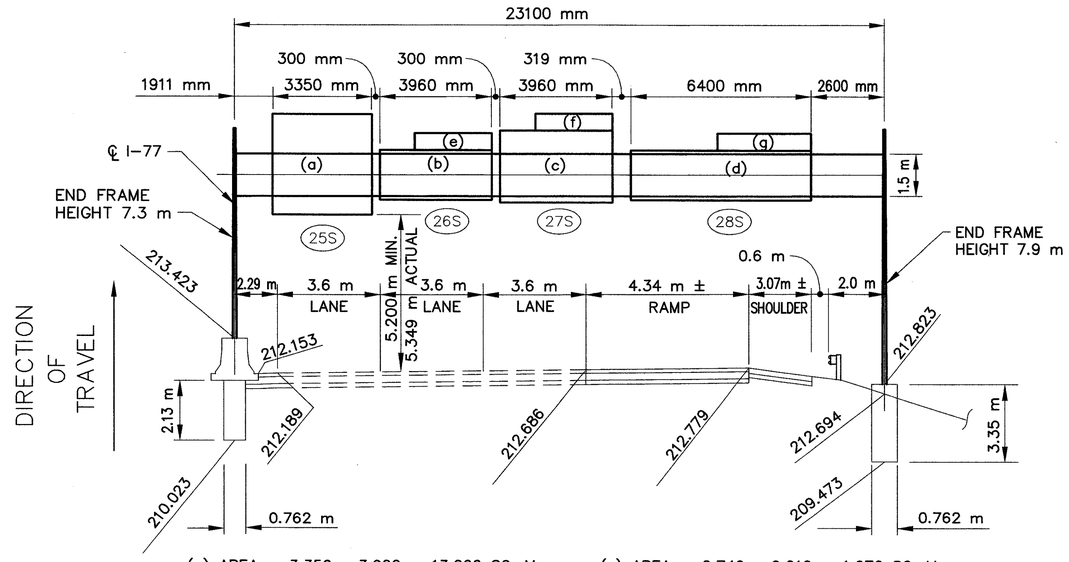
14949TEA 1:100M 02-10-98

THOMAS FOK & ASSOCIATES, LIMITED



(a) AREA = 3.960 x 3.960 = 15.682 SQ. M
(b) AREA = 3.350 x 3.200 = 10.720 SQ. M
(c) AREA = 5.480 x 2.890 = 15.837 SQ. M
(d) AREA = 2.740 x 0.610 = 1.670 SQ. M

STA. 2+560 N.B. I–77
SIGN SUPPORT TC–7.65 DESIGN 8



(a) AREA = 3.350 x 3.960 = 13.266 SQ. M
(b) AREA = 3.960 x 2.140 = 8.474 SQ. M
(c) AREA = 3.960 x 2.890 = 11.444 SQ. M
(d) AREA = 6.400 x 2.140 = 13.696 SQ. M
(e) AREA = 2.740 x 0.610 = 1.670 SQ. M
(f) AREA = 2.740 x 0.610 = 1.670 SQ. M
(g) AREA = 2.740 x 0.610 = 1.670 SQ. M

STA. 3+317.8 N.B. I–77
SIGN SUPPORT TC–7.65 DESIGN 8

CALCULATED CSK
CHECKED RJZ

TRAFFIC CONTROL PLAN
OVERHEAD SIGN DETAILS

CUY–77–23.458

84G
295

1494TEB 1:100M 02–10–98

THOMAS FOK & ASSOCIATES, LIMITED

LIGHTING NOTES

SPECIFICATIONS

THESE NOTES ARE SUPPLEMENTAL TO ITEMS 625 AND 713 OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS.

SCOPE OF WORK

THE CONTRACTOR SHALL REMOVE EXISTING LIGHTING FACILITIES FROM THE BRIDGE STRUCTURE AND ADJACENT ROADWAY AS INDICATED ON THE PLANS AND AS DIRECTED BY THE ENGINEER. INSTALL NEW LIGHTING FACILITIES ON THE REHABILITATED BRIDGE AS INDICATED AND AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE PROPERLY COMPLETED, INCLUDING INCIDENTALS, AS SHOWN ON THE DRAWINGS AND HEREAFTER SPECIFIED.

ALL WORK IN THIS CONTRACT SHALL CONFORM TO THE LATEST NATIONAL ELECTRIC SAFETY CODE AND OSHA, EXCEPT WHERE LOCAL REGULATIONS ARE MORE STRINGENT, IN WHICH CASE LOCAL REGULATIONS SHALL GOVERN.

THE MAJOR ITEMS TO BE FURNISHED AND INSTALLED BY THIS CONTRACTOR SHALL BE AS FOLLOWS:

a. NEW LIGHT POLES, BRACKET ARMS AND LUMINAIRES FOR BRIDGE LIGHTING;
b. NEW ELECTRICAL DISTRIBUTION SYSTEM FOR BRIDGE LIGHTING;
c. INSTALLATION OF NEW ELECTRICAL DISTRIBUTION SYSTEMS FOR EXISTING LIGHTING CIRCUITS IMPACTED BY ROADWAY WIDENING;
d. REMOVAL OF EXISTING UNDERPASS LIGHTING INCLUDING LUMINAIRES, MOUNTING BRACKETS, EXPOSED CONDUIT AND ELECTRICAL CABLE;
e. REMOVAL OF EXISTING BRIDGE MOUNTED LIGHTING INCLUDING POLES, BRACKET ARMS, LUMINAIRES AND ELECTRICAL DISTRIBUTION SYSTEMS;
f. THE INSTALLATION, MAINTENANCE AND SUBSEQUENT REMOVAL OF TEMPORARY LIGHT POLES, BRACKET ARMS, LUMINAIRES, ELECTRICAL DISTRIBUTION SYSTEMS AND POWER SUPPLIES.
g. GROUNDING

LUMINAIRES

LUMINAIRES SHALL BE RATED AT 480 VOLT, 310 WATT INTEGRAL REGULATOR BALLAST FOR USE WITH HIGH PRESSURE SODIUM LAMPS AND SHALL BE GENERAL ELECTRIC M400A CUTOFF OR AMERICAN ELECTRIC SERIES 25/26 HORIZONTAL CUTOFF OR EQUAL APPROVED BY THE ENGINEER.

LAMPS – HIGH PRESSURE SODIUM

SUPPLEMENTING 713.14 OF THE SPECIFICATIONS, HIGH PRESSURE SODIUM (H.P.S.) LAMPS SHALL BE OF THE WATTAGE INDICATED IN THE PLANS AND SHALL BE GENERAL ELECTRIC "LUCALOX", WESTINGHOUSE "CERAMALUX", SYLVANIA "LUMALUX" OR EQUAL APPROVED BY THE ENGINEER.

CONDUIT ON STRUCTURE

EXPANSION FITTINGS FOR RIGID STEEL CONDUIT ON STRUCTURE SHALL BE OZ (TYPE AX–8), CROUSE–HINDS (TYPE XJ–8), APPLETON (TYPE XJ–8) OR EQUAL APPROVED BY THE ENGINEER. EACH EXPANSION FITTING SHALL HAVE A COPPER EXTERNAL BONDING JUMPER.

HAZARDOUS MATERIALS

NO MATERIAL FURNISHED UNDER THIS SPECIFICATION SHALL CONTAIN POLYCHLORINATED BIPHEYLS (PCBS). TRANSFORMERS, BALLASTS AND CAPACITORS SHALL BE MARKED "NO PCBS" IN ACCORDANCE WITH FEDERAL ENVIRONMENT PROTECTION AGENCY REGULATION 40 CFR 761.

ITEM 625: POWER SERVICE, AS PER PLAN

EXISTING POWER SERVICE LOCATIONS SHALL BE USED FOR NEW LIGHTING. THE RECONNECTION OF NEW DISTRIBUTION CIRCUITS TO EXISTING CIRCUITS CONDUCTORS AT EXISTING CONTROL CENTER IS INCLUDED IN THIS WORK. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CIRCUITS, POWER SUPPLIES AND CONTROL CENTERS AFFECTED BY THIS WORK.

THE POWER SUPPLYING AGENCY FOR THIS PROJECT IS:

THE CLEVELAND PUBLIC POWER
1300 LAKESIDE AVENUE
CLEVELAND, OH 44114

SERVICE SHALL BE 480 VOLTS, 2–WIRE, GROUNDED NEUTRAL. ELECTRICAL ENERGY FROM EXISTING POWER SERVICES SHALL CONTINUE TO BE CHARGED TO THE MAINTAINING AGENCY. THE CONTRACTOR SHALL PAY ELECTRICAL ENERGY CHARGES FOR NEW POWER SERVICES ESTABLISHED BY THIS PROJECT. AFTER ACCEPTANCE OF THE LIGHTING, POWER SERVICE ELECTRICAL ENERGY ACCOUNTS SHALL BE TRANSFERRED TO THE MAINTAINING AGENCY NOTED IN THE PLANS. THIS SHALL INCLUDE NEW POWER SERVICE ESTABLISHED BY THIS PROJECT AS WELL AS REASSIGNMENT OF EXISTING SERVICE DUE TO WORK PERFORMED BY THIS PROJECT.

ITEM 625: TEMPORARY LIGHTING, AS PER PLAN

TEMPORARY LIGHTING SHALL BE PROVIDED AS PER PLAN. TEMPORARY LIGHTING PLANS INCLUDE USE OF EXISTING LIGHT POLE ANCHORAGES ON THE BRIDGE. THE CONTRACTOR MUST VERIFY SUITABILITY AND DIMENSIONS OF EXISTING ANCHOR BOLTS AND ANCHORAGES PRIOR TO INSTALLING TEMPORARY LIGHTING. IF ANY ANCHORAGES ARE FOUND TO UNSUITABLE OR DAMAGED, THE CONTRACTOR MUST PROVIDE AN ALTERNATE MOUNTING, INCLUDING ADAPTOR BASE PLATES IF REQUIRED. COORDINATE WITH THE LOCAL UTILITY FOR THE LOCATION OF TEMPORARY POWER SUPPLIES. DO NOT DISCONNECT OR ALTER ANY EXISTING LIGHTING EQUIPMENT UNTIL TEMPORARY LIGHTING PROVISIONS ARE INSTALLED AND ARE OPERATIONAL. ALL REQUIRED LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO PROVIDE A COMPLETE AND OPERATING TEMPORARY LIGHTING SYSTEM ARE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 625: TEMPORARY LIGHTING, AS PER PLAN.

ITEM 202: DISCONNECT EXISTING CIRCUIT

THIS ITEM OF WORK SHALL CONSIST OF THE DISCONNECTION OF AN EXISTING LIGHT CIRCUIT AT A PULL BOX OR A LIGHT POLE.

DISCONNECTION AT A PULL BOX SHALL INVOLVE CUTTING THE EXISTING CIRCUIT AND REMOVING ALL SPLICE KITS. ANY CABLE THAT IS TO BE ABANDONED SHALL BE TERMINATED IN A MANNER SUCH THAT NO CABLE IS LEFT REMAINING IN THE PULL BOX.

DISCONNECTION AT A LIGHT SHALL INVOLVE THE REMOVAL OF THE PART OF CABLE THAT IS TO BE ABANDONED FROM THE POLE. THOSE ENDS OF THE CONNECTOR KITS FROM WHICH THE ABANDONED CABLE IS REMOVED SHALL BE PLUGGED AND TAPED.

ANY CABLE THAT IS TO BE REUSED IN A PULL BOX OR LIGHT POLE SHALL BE CUT IN A MANNER SO THAT THERE IS SUFFICIENT LENGTH OF CABLE LEFT FOR RECONNECTION. CABLE SPLICE KITS AND CONNECTOR KITS WILL BE PAID FOR RESPECTIVELY UNDER EACH ITEM 625.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH ITEM 202 "DISCONNECT EXISTING CIRCUIT" AND SHALL BE FULL COMPENSATION INCLUDING ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK.

ITEM SPECIAL MAINTAIN EXISTING LIGHTING

EXISTING ROADWAYS WHICH ARE TO REMAIN OPEN TO TRAFFIC DURING CONSTRUCTION OF THIS PROJECT AND WHICH ARE LIGHTED SHALL HAVE THE LIGHTING MAINTAINED AS DESCRIBED HEREIN.

BEFORE ANY WORK IS STARTED IN THE IMMEDIATE VICINITY OF ANY EXISTING LIGHTING CIRCUITS, REPRESENTATIVES OF THE STATE, THE MAINTAINING AGENCY, AND THE CONTRACTOR SHALL MAKE A VISUAL INSPECTION OF THE EXISTING ROADWAY LIGHTING CIRCUITS TO BE MAINTAINED. DURING THIS INSPECTION, A WRITTEN RECORD OF THE CONDITION OF THE EXISTING LIGHTING SHALL BE MADE BY THE STATE REPRESENTATIVE. THIS WRITTEN REPORT SHALL NOTE INDIVIDUAL LUMINAIRES WHICH ARE NOT IN WORKING ORDER, INDIVIDUAL POLES WHICH ARE NOT STANDING, AND INDIVIDUAL CIRCUITS WHICH ARE NOT IN WORKING ORDER. THE COMPLETED REPORT SHALL BE SIGNED BY THE REPRESENTATIVES OF THE STATE, THE MAINTAINING AGENCY, AND THE CONTRACTOR.

IF, AS A RESULT OF THIS INSPECTION, IT IS DETERMINED THAT THE CONDITION OF THE EXISTING SYSTEM IS BELOW THAT REQUIRED FOR THE SAFETY OF THE TRAVELING PUBLIC, THEN THE MAINTAINING AGENCY SHALL MAKE REPAIRS NECESSARY TO RETURN THE SYSTEM TO AN ACCEPTABLE CONDITION. FOLLOWING THESE REPAIRS, THE SYSTEM SHALL AGAIN BE INSPECTED AND A REPORT MADE AND SIGNED AS OUTLINED HEREIN.

WHEN THE EXISTING SYSTEM IS IN AN ACCEPTABLE CONDITION, IT SHALL BE TURNED OVER TO THE CONTRACTOR WHO SHALL THEN BE REQUIRED TO MAINTAIN THE EXISTING LIGHTING TO THE CONDITION OUTLINED IN THIS REPORT WITH THE EXCEPTION OF KNOCKDOWNS DUE TO TRAFFIC ACCIDENTS.

BETTERMENT SHALL BE COVERED IN ITEMS OF WORK PERTAINING TO THE CONSTRUCTION OF PERMANENT IMPROVEMENTS.

THE MAINTAINING AGENCY WILL PAY FOR ELECTRICAL ENERGY CONSUMED BY EXISTING POWER SERVICES AND BY PROPOSED PERMANENT POWER SERVICES AFTER ACCEPTANCE. THE CONTRACTOR WILL PAY FOR ELECTRICAL ENERGY, INSTALLATION, REMOVAL, AND MAINTENANCE OF ANY TEMPORARY POWER SERVICES.

DO NOT DISCONNECT EXISTING CIRCUITS UNTIL REPLACEMENT CIRCUIT IS INSTALLED AND READY TO CONNECT.

THE LUMP SUM PRICE BID FOR ITEM SPECIAL – MAINTAIN EXISTING LIGHTING SHALL INCLUDE PAYMENT FOR ALL LABOR, EQUIPMENT, AND MATERIALS, AND INCIDENTALS NECESSARY TO MAINTAIN THE EXISTING LIGHTING.

UNDERDRAINS FOR PULL BOXES

REFERENCE IS MADE TO STANDARD DRAWINGS FOR DETAILS OF DRAINING PULL BOXES. UNDERDRAINS FOR PULL BOXES SHALL BE USED AS DIRECTED BY THE ENGINEER AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED APPROXIMATELY 6 METERS. THE FOLLOWING QUANTITY HAS BEEN CARRIED FORWARD TO THE GENERAL SUMMARY:

ITEM 603	100mm CONDUIT, TYPE E	18 METERS

ELECTRICAL SERVICE FOR ILLUMINATED SIGNS

THE PAY ITEMS IN THE LIGHTING GENERAL SUMMARY INCLUDE THE PULL BOX OR JUNCTION BOX ADJACENT TO EACH LIGHTED SIGN AND THE ELECTRICAL SERVICE CONNECTIONS LEADING INTO THE BOX, INCLUDING CABLE SPLICING KITS IN THE PULL BOX OR JUCTION BOX. QUANTITIES FOR ELECTRICAL SERVICE FROM THE CONNECTION IN THE PULL BOX OR JUNCTION BOX TO THE SIGN ARE INCLUDED IN THE TRAFFIC CONTROL GENERAL SUMMARY.

DESIGNED TL
CHECKED CML

LIGHTING NOTES

CUY-77-23.458

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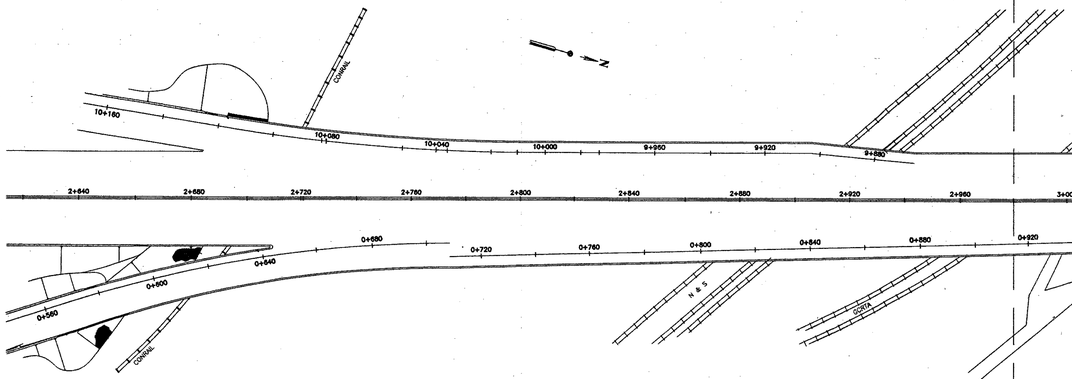
LIGHTING SCHEMATIC PLAN

SHEET NO. 91



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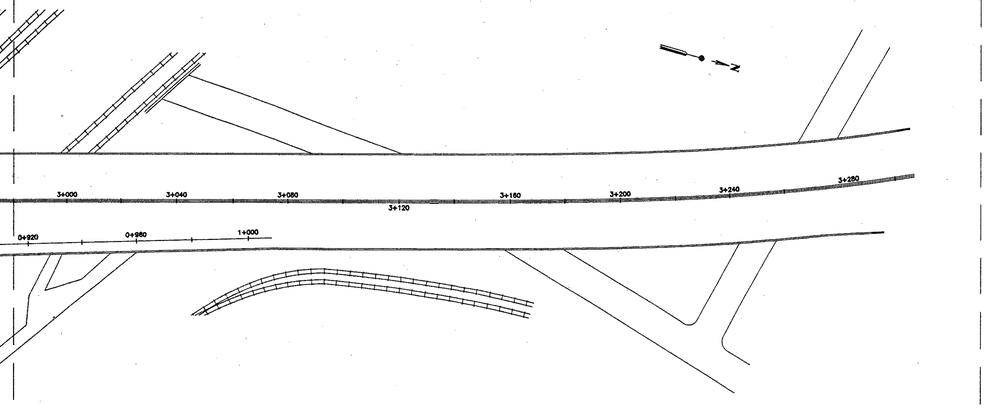

SANTANGELO & LINDSAY, INC.
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FAX: (412) 847-0673

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HORIZONTAL SCALE
1 : 1000

DESIGNED TL
CHECKED CML

LIGHTING SCHEMATIC PLAN

CUY-77-23.458

LIGHTING GENERAL SUMMARY

LINE NO.	SHEET NO.						SHEET NO.							COST PARTICIPATION				ITEM	ITEM EXTENSION	GRAND TOTAL	UNIT	DESCRIPTION	AS PER PLAN LINE NO.	LINE NO.
	85	93	93A																					
1		1																202	75300	1	EACH	PULLBOX REMOVED		1
2		9																202	75400	9	EACH	LIGHT POLE REMOVED (WITH TWIN BRACKET ARMS)		2
3		4																202	75506	4	EACH	LUMINAIRE REMOVED (UNDERPASS)		3
4		18																202	75506	18	EACH	LUMINAIRE REMOVED (LIGHT POLE MOUNTED)		4
5		4																202	75800	4	EACH	DISCONNECT EXISTING CIRCUIT		5
6																								6
7	18																	603	00400	18	METER	100mm CONDUIT, TYPE E		7
8			19															625	00500	19	EACH	CONNECTOR KIT, TYPE II		8
9			19															625	00600	19	EACH	CONNECTOR KIT, TYPE III		9
10			12															625	01500	12	EACH	CABLE SPLICING KIT		10
11																								11
12			16															625	10500	16	EACH	LIGHT POLE, MISC.: DESIGN A1.2B15.2		12
13			64															625	10610	64	EACH	LIGHT POLE ANCHOR U-BOLTS FOR STRUCTURE (PARAPET MOUNTED)		13
14			3															625	18600	3	EACH	BRACKET ARM, MISC.: 1.2 METERS		14
15																								15
16			2,574															625	23200	2,574	METER	NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE		16
17			614															625	23400	614	METER	NO. 10 AWG POLE AND BRACKET CABLE		17
18			558															625	24100	558	METER	38 MM DUCT CABLE WITH TWO NO. 4 AWG 5000 VOLT CABLES		18
19			1,235															625	25400	1,235	METER	CONDUIT, 51 MM, 713.04		19
20			19															625	26250	19	EACH	LUMINAIRE, CONVENTIONAL STYLE B, TYPE III, 310 WATT H.P.S., 713.11, 480 V		20
21																								21
22			538															625	29002	538	METER	TRENCH, 0.6 M DEEP		22
23			19															625	29920	19	EACH	STRUCTURE JUNCTION BOX, TYPE II		23
24																								24
25			3															625	30700	3	EACH	PULL BOX, 713.08, 450mm		25
26			2															625	32000	2	EACH	GROUND ROD		26
27			2															625	33000	2	EACH	STRUCTURE GROUNDING SYSTEM (FOR BRIDGE NO.S CUY-77-23.458 L & R)		27
28																		625	34001	2	EACH	POWER SERVICE, AS PER PLAN	27	28
29	LUMP																	625	39001	LUMP	—	TEMPORARY LIGHTING, AS PER PLAN	27	29
30																								30
31	LUMP																	SPECIAL	625 40000	LUMP	—	MAINTAIN EXISTING LIGHTING		31
32																								32
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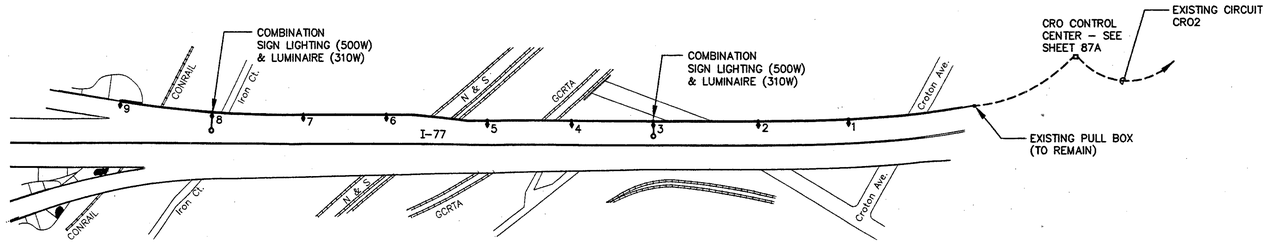
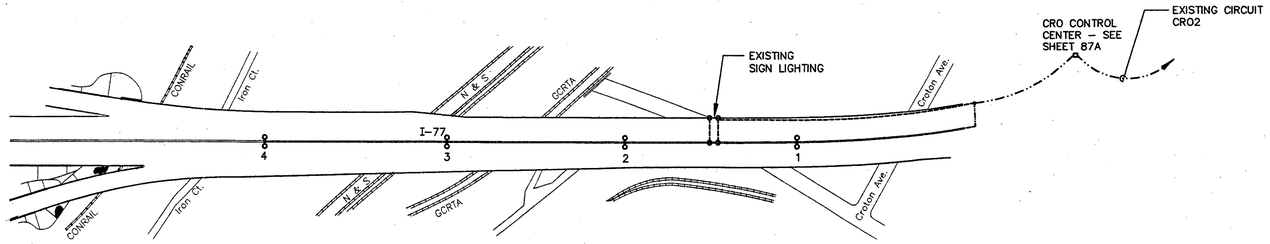
DESIGNED TL
CHECKED CML

LIGHTING GENERAL SUMMARY

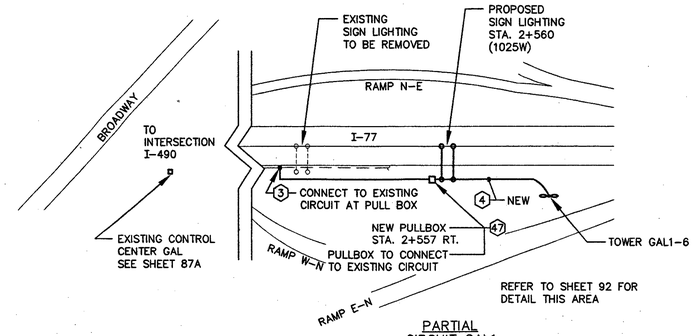
CUY-77-23.458



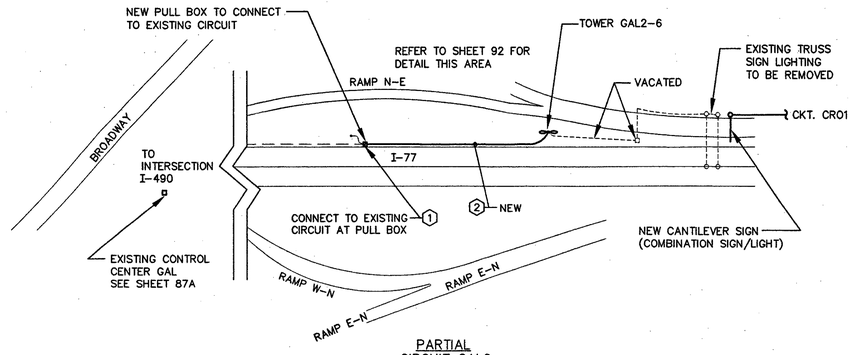
CIRCUIT CRO1
(PROPOSED)



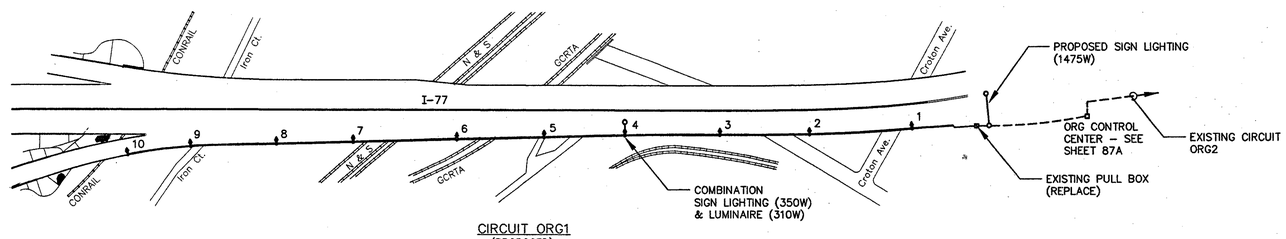
CIRCUIT CRO1
(EXISTING)



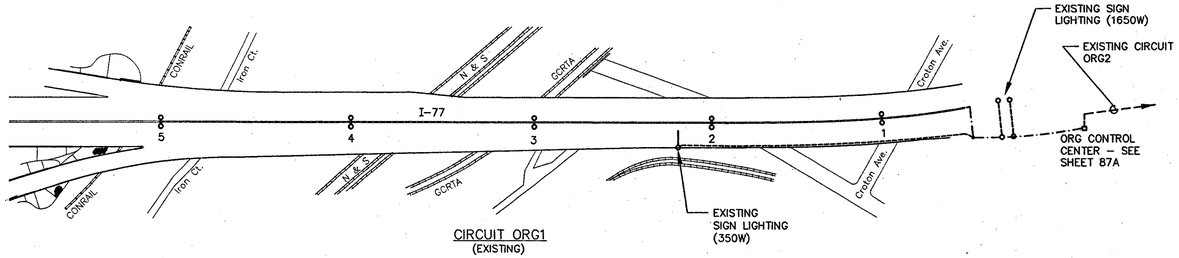
PARTIAL
CIRCUIT GAL1
(EXISTING & PROPOSED)



PARTIAL
CIRCUIT GAL2
(EXISTING)



CIRCUIT ORG1
(PROPOSED)



CIRCUIT ORG1
(EXISTING)

CONTROL CENTER DATA																	
CIRCUIT CENTER		LOCATION	SECONDARY				SERVICE SWITCH (TYPE)	LAMP TYPE			SIGN LOAD (WATTS)	CIRCUIT LOAD (AMPS)	CIRCUIT FUSES (AMPS)	CIRCUIT DROP (%)	NOTES
			VOLTAGE (VOLTS)	LOAD (KVA)	XFMR (KVA)	CABLE (AWG)		310–WHPS 0.9 A EACH	1000 –W HPS 2.5 A EACH						
		SHEET No.													
CRO	CRO	STA. 3+455 I–77 SB 15 M LT.	480	18.3			S–100	9	10		2875	39.6			EXISTING CONTROL CENTER
	CRO1			6.8				9	2		1000	15.7	30	2.41	NEW
	CRO2			11.5					8		1875	23.9	30		EXISTING
	CRO3												35		SPARE CKT. (EXIST.)
ORG	ORG	STA. 3+482 I–77 NB 6 M RT.	480	21.3			S–100	10	11		3625	45.2			EXISTING CONTROL CENTER
	ORG1			6.3				10			1825	12	25	2.3	NEW
	ORG2			15					11		1800	31.2	40		EXISTING
	ORG3												40		SPARE CKT. (EXIST.)
GAL	GAL	NEAR BROADWAY	480	17.4			S–100	6	12		1025	37.5			EXISTING CONTROL CENTER
	GAL1			9.2				3	6		1025	19.8	25		EXISTING
	GAL2			8.2				3	6			17.7	25		EXISTING
	GAL3												25		SPARE CKT. (EXIST.)

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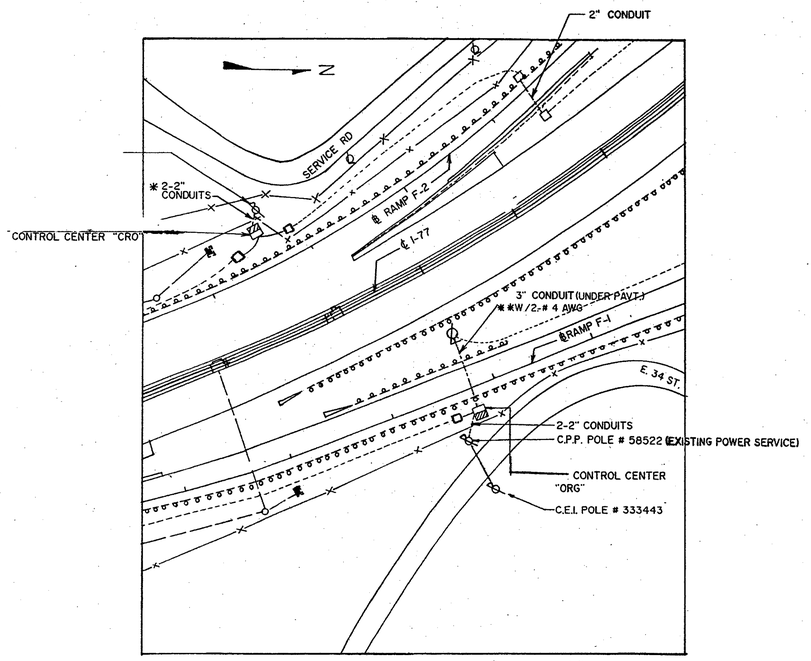
HORIZONTAL SCALE
N.T.S.

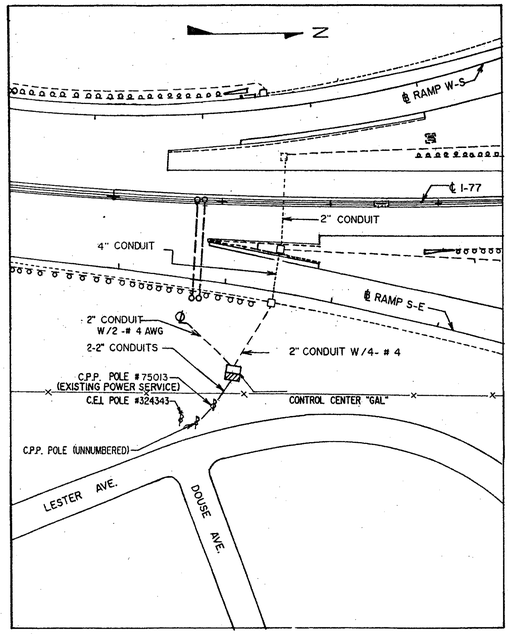
DESIGNED TL
CHECKED CML

CIRCUIT LAYOUT MAPS

CUY-77-23.458



EXISTING POWER SERVICE "ORG" AND "CRO" (N.T.S.)



EXISTING POWER SERVICE "GAL" (N.T.S.)

NOTE:

KEYS TO CONTROL CENTER PADLOCKS ARE AVAILABLE AT THE O.D.O.T. DISTRICT OFFICE PHONE: (216) 581-2333, EXT. 240.

LEGEND

- *EXISTING POWER SERVICE UTILITY POLE (TO BE REUSED)*
- *EXISTING FENCE*
- *EXISTING LIGHT POLE*
- *EXISTING CIRCUIT(S)*
- *EXISTING PULL BOX*
- *EXISTING PAD MOUNTED CONTROL CENTER*
- *EXISTING 1/2"ø DUCT CABLE W/2-NO. 4 AWG 5000 VOLT CABLES*

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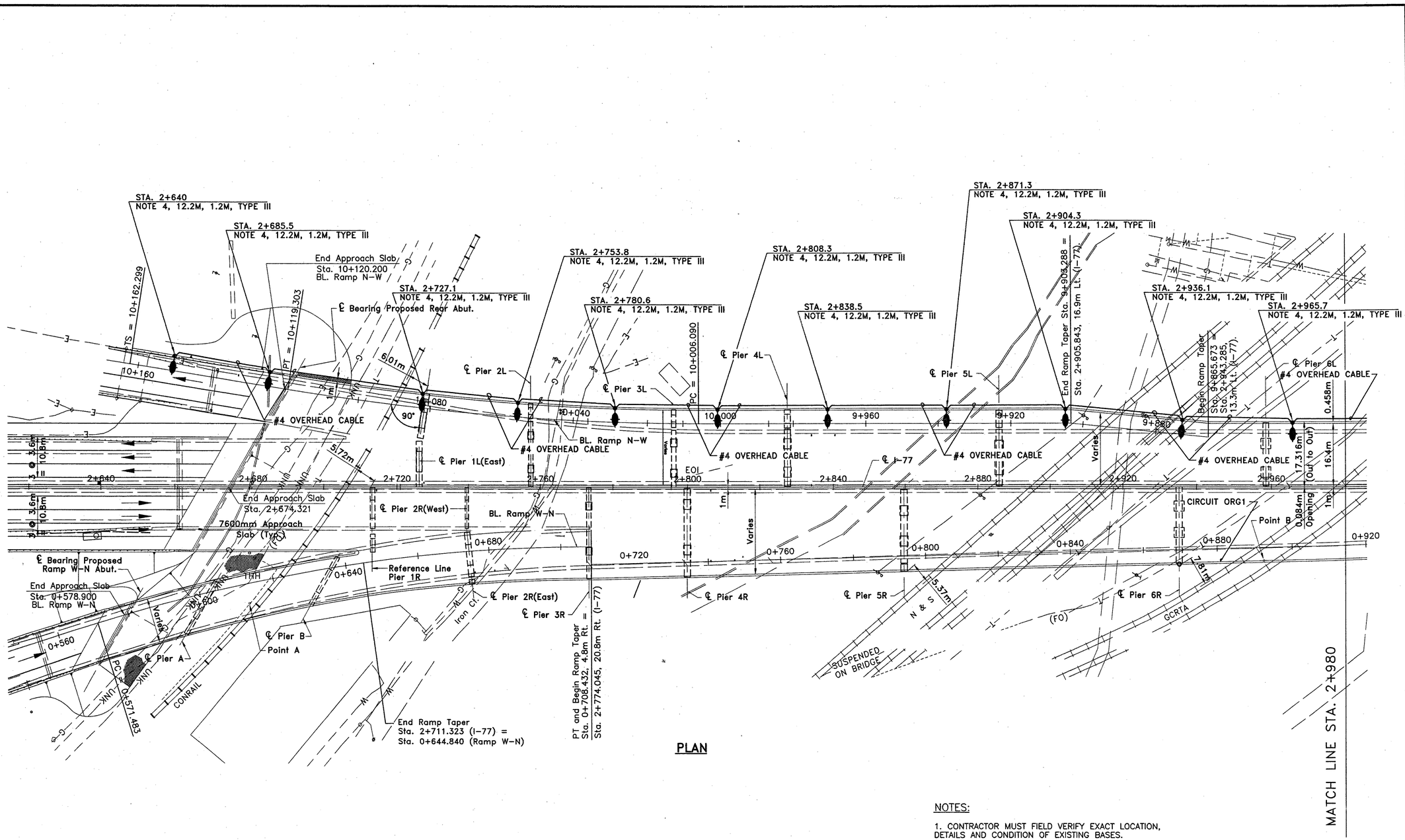
HORIZONTAL SCALE N.T.S.

DESIGNED TL | CHECKED CML

EXISTING ELECTRICAL SERVICES

CUY-77-23.458



PLAN

NOTES:

1. CONTRACTOR MUST FIELD VERIFY EXACT LOCATION, DETAILS AND CONDITION OF EXISTING BASES. SEE SHEET 85.

2. NOTIFY PROJECT ENGINEER IMMEDIATELY IF ANY EXISTING PILASTER OR ANCHORAGE IS DAMAGED OR UNABLE TO BE RE-USED.

3. INSTALL TEMPORARY OVERHEAD CABLE BETWEEN POLES PRIOR TO DISCONNECTING EXISTING CIRCUIT CRO1.

4. CONTRACTOR HAS OPTION OF USING EITHER 250W H.P.S. OR 310W H.P.S. FOR TEMPORARY LIGHTING.

LEGEND

STRUCTURE MOUNTED LIGHTING POLE WITH LUMINAIRE.

#4 OVERHEAD CABLE

SANTANGELO & LINDSAY, INC.
CONSULTING ENGINEERS

307 EIGHTH STREET
NEW BRIGHTON, PA 15066
PHONE: (412) 847-0407
FAX: (412) 847-0673

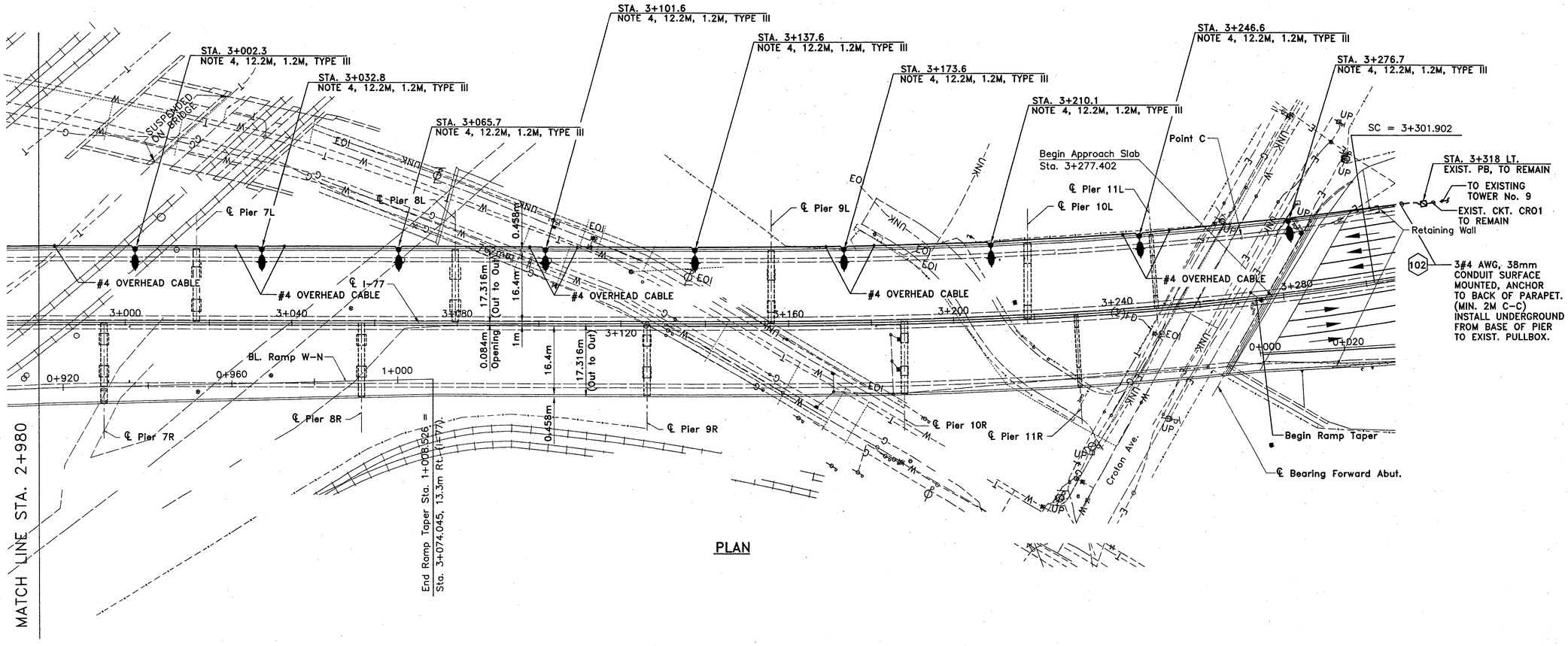
J:\JOBS\24621\TECHPROD\DRAWINGS\LIGHTING\TEMP1.DWG

HORIZONTAL SCALE
1 : 500

DESIGNED TL
CHECKED CML

TEMPORARY LIGHTING PLAN STA. 2+620 TO STA. 2+980

CUY-77-23.458



PLAN

NOTES:

1. CONTRACTOR MUST FIELD VERIFY EXACT LOCATION, DETAILS AND CONDITION OF EXISTING BASES. SEE SHEET 85.

2. NOTIFY PROJECT ENGINEER IMMEDIATELY IF ANY EXISTING PILASTER OR ANCHORAGE IS DAMAGED OR UNABLE TO BE RE-USED.

3. INSTALL TEMPORARY OVERHEAD CABLE BETWEEN POLES PRIOR TO DISCONNECTING EXISTING CIRCUIT CRO1.

4. CONTRACTOR HAS OPTION OF USING EITHER 250W H.P.S. OR 310W H.P.S. FOR TEMPORARY LIGHTING.

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HORIZONTAL SCALE
1 : 500

DESIGNED TL
CHECKED CML

TEMPORARY LIGHTING PLAN STA. 2+980 TO STA. 3+300

CUY-77-23.458

FOR INFORMATION ONLY

REFERENCE NUMBER	SHEET NUMBER	SIDE	ROADWAY	STATION TO STATION	LUMINAIRE, CONVENTIONAL STYLE B,TYPE III, 250W H.P.S. OR 310W H.P.S.,480 V (EACH)	LIGHT POLE, DESIGN AT-X1.2B12.2 (EACH)	CONDUIT 38MM, 713.04 (METERS)	No. 4 AWG 5000 VOLT OVERHEAD DISTRIBUTION CABLE (METERS)	No. 10 AWG POLE AND BRACKET CABLE (METERS)	CABLE SPLICING KIT (EACH)	CONNECTOR KIT TYPE IV (EACH)	TRENCH 0.6 M DEEP (METERS)
				SHEET 88								
62	88	Lt.	I-77 SB	2+640	1	1			2.5		2	
63	88	Lt.	I-77 SB	2+640 to 2+685.5				25.9				
64	88	Lt.	I-77 SB	2+685.5	1	1			2.5		2	
65	88	Lt.	I-77 SB	2+685.5 to 2+727.1				42				
66	88	Lt.	I-77 SB	2+727.1	1	1			2.5		2	
67	88	Lt.	I-77 SB	2+727.1 to 2+753.8				26.5				
68	88	Lt.	I-77 SB	2+753.8	1	1			2.5		2	
69	88	Lt.	I-77 SB	2+753.8 to 2+780.6				26.8				
70	88	Lt.	I-77 SB	2+780.6	1	1			2.5		2	
71	88	Lt.	I-77 SB	2+780.6 to 2+808.3				27.7				
72	88	Lt.	I-77 SB	2+808.3	1	1			2.5		2	
73	88	Lt.	I-77 SB	2+808.3 to 2+838.5				30.2				
74	88	Lt.	I-77 SB	2+838.5	1	1			2.5		2	
75	88	Lt.	I-77 SB	2+838.5 to 2+871.3				32.9				
76	88	Lt.	I-77 SB	2+871.3	1	1			2.5		2	
77	88	Lt.	I-77 SB	2+871.3 to 2+904.3				32.9				
78	88	Lt.	I-77 SB	2+904.3	1	1			2.5		2	
79	88	Lt.	I-77 SB	2+904.3 to 2+936.1				32				
80	88	Lt.	I-77 SB	2+936.1	1	1			2.5		2	
81	88	Lt.	I-77 SB	2+936.1 to 2+965.7				29.6				
82	88	Lt.	I-77 SB	2+965.7	1	1			2.5		2	
83	88	Lt.	I-77 SB	2+965.7 to 2+980.0				14.3				
				TOTALS SHEET 88	11	11		320.8	27.5		22	
				SHEET 89								
84	89	Lt.	I-77 SB	2+980.0 to 3+002.3				22				
85	89	Lt.	I-77 SB	3+002.3	1	1			2.5		2	
86	89	Lt.	I-77 SB	3+002.3 to 3+032.8				30.5				
87	89	Lt.	I-77 SB	3+032.8	1	1			2.5		2	
88	89	Lt.	I-77 SB	3+032.8 to 3+065.7				32.9				
89	89	Lt.	I-77 SB	3+065.7	1	1			2.5		2	
90	89	Lt.	I-77 SB	3+065.7 to 3+101.6				35.9				
91	89	Lt.	I-77 SB	3+101.6	1	1			2.5		2	
92	89	Lt.	I-77 SB	3+101.6 to 3+137.6				35.9				
93	89	Lt.	I-77 SB	3+137.6	1	1			2.5		2	
94	89	Lt.	I-77 SB	3+137.6 to 3+173.6				35.9				
95	89	Lt.	I-77 SB	3+173.6	1	1			2.5		2	
96	89	Lt.	I-77 SB	3+173.6 to 3+210.1				35.9				
97	89	Lt.	I-77 SB	3+210.1	1	1			2.5		2	
98	89	Lt.	I-77 SB	3+210.1 to 3+246.6				35.9				
99	89	Lt.	I-77 SB	3+246.6	1	1			2.5		2	
100	89	Lt.	I-77 SB	3+246.6 to 3+276.7				35.9				
101	89	Lt.	I-77 SB	3+276.7	1	1			2.5		2	
102	89	Lt.	I-77 SB	3+276.7 to 3+318			44.2	44.2				8
103	89	Lt.	I-77 SB	3+318						2		
				TOTALS SHEET 89	9	9	44.2	345	22.5	2	18	8

DESIGNED TL
CHECKED CWL

TEMPORARY LIGHTING

CUY-77-23.43

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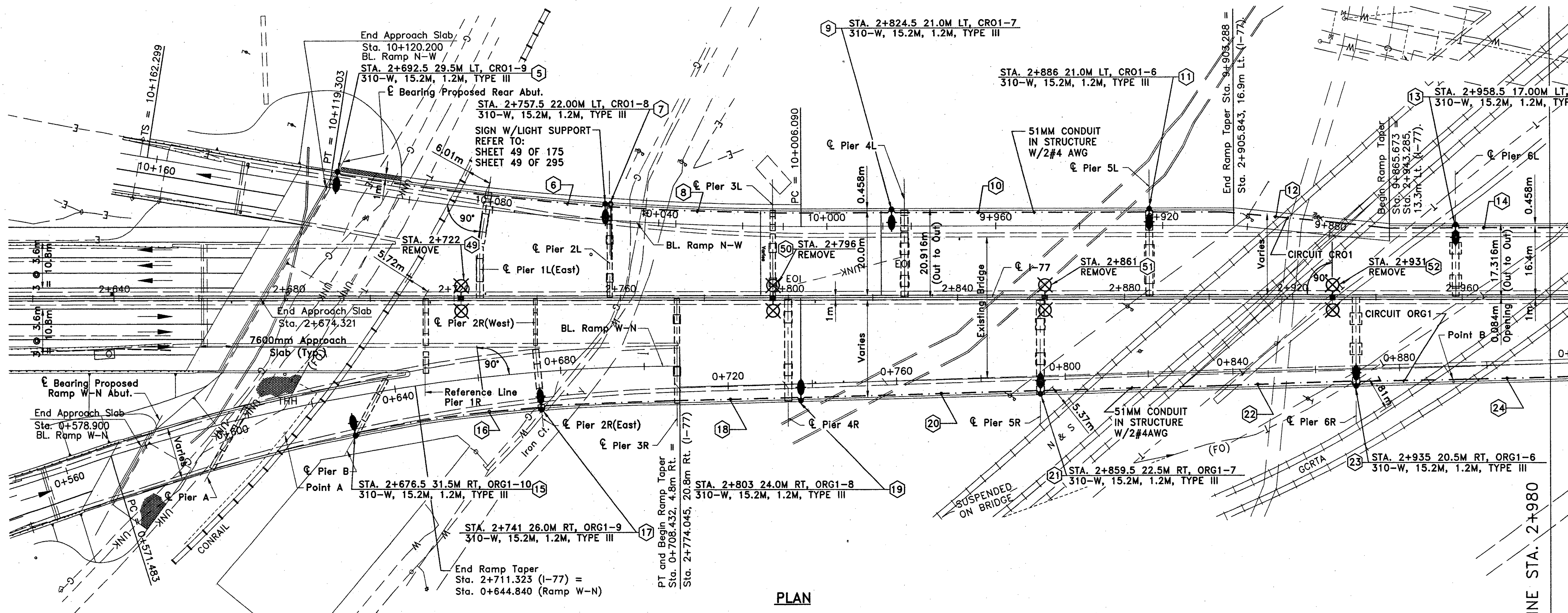

PLAN

LEGEND

Symbol	Description
(structure mounted pole symbol)	STRUCTURE MOUNTED LIGHTING POLE WITH 310 WATT H.P.S. LUMINAIRE.
(existing pole symbol)	EXISTING LIGHTING POLE WITH TWIN BRACKET ARMS. TO BE REMOVED.
(pullbox symbol)	PULLBOX
(underpass symbol)	EXISTING UNDERPASS LIGHTING TO BE REMOVED
———	51MM CONDUIT IN STRUCTURE WITH #4 AWG CONDUCTORS.
———	38MM DUCT CABLE WITH TWO No. 4 AWG 5000 VOLT CABLES (IN TRENCH)
— —	EXISTING LIGHTING CIRCUIT TO REMAIN.
10	LIGHTING REFERENCE NUMBER (SEE SUB-SUMMARY SHEETS)
o— —o	OVERHEAD TRUSS SIGN SUPPORT
o———	OVERHEAD CANTILEVER SIGN SUPPORT

CIRCUIT-POLE NUMBER
POLE LOCATION
℄ OFFSET
STA. 2+961 20.0M RT, ORG1-10
310-W, 15.2M, 1.2M, TYPE III
I.E.S. DIST.
ARM LENGTH
LUMINAIRE MOUNTING HEIGHT
LUMINAIRE WATTAGE

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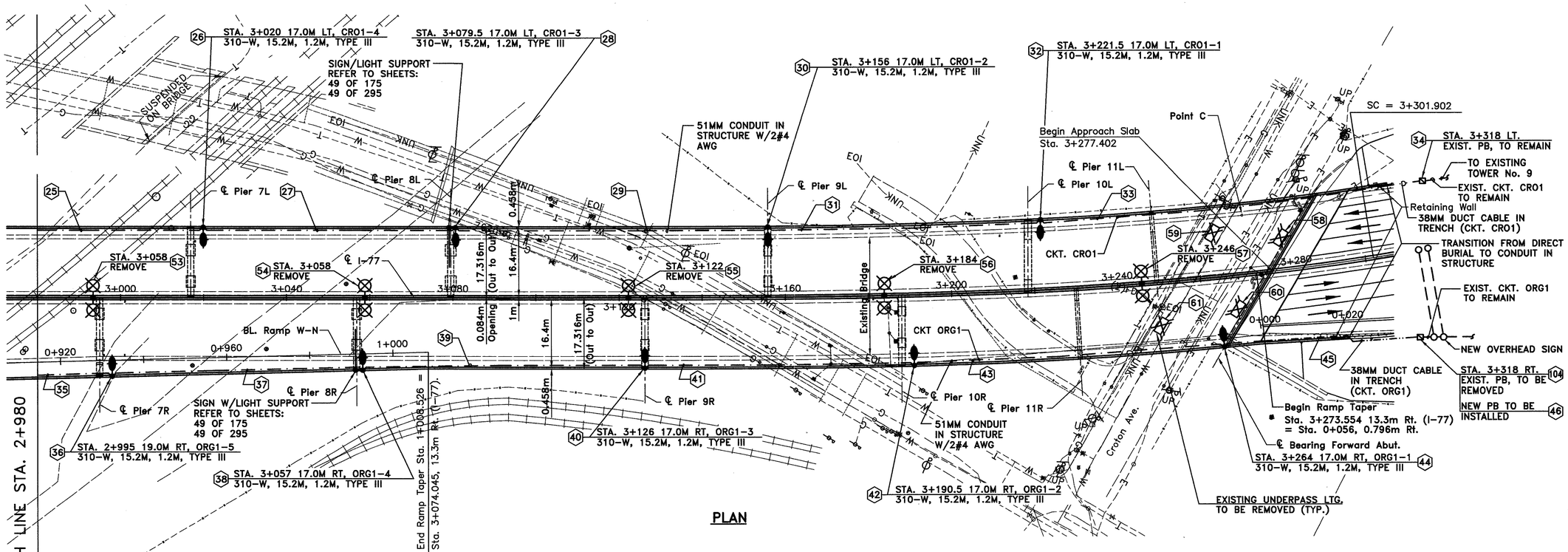
HORIZONTAL SCALE 1 : 500

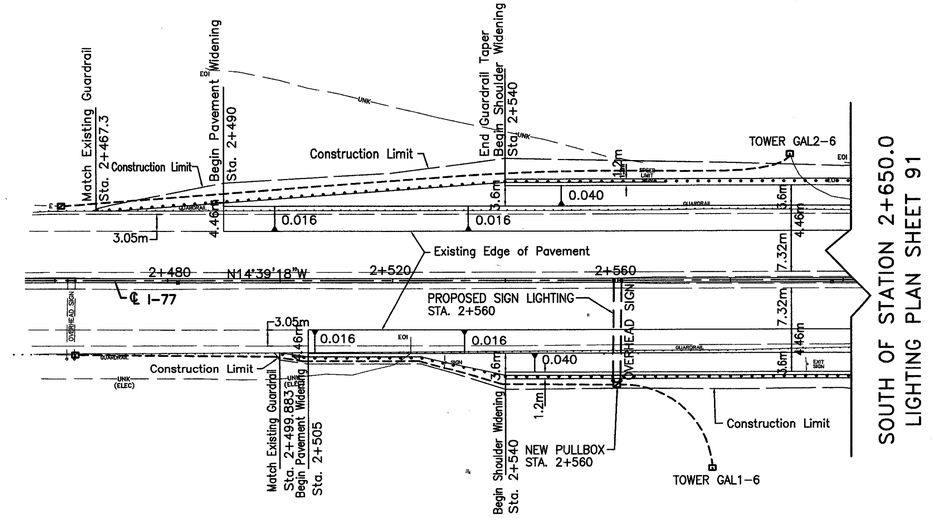
DESIGNED TL
CHECKED CML

LIGHTING PLAN
STA. 2+620 TO STA. 2+980

CUY-77-23.458



PLAN



PARTIAL DETAIL OF CIRCUIT GAL1 AND GAL2
REFER TO DRAWING 87

SANTANGELO & LINDSAY, INC.
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HORIZONTAL SCALE
1 : 500

DESIGNED TL
CHECKED CML

LIGHTING PLAN
STA. 2+980 TO STA. 3+300

CUY-77-23.458

REFERENCE NUMBER	SHEET NUMBER	SIDE	ROADWAY	STATION TO STATION	ITEM NO. 202				
					LIGHT POLE REMOVED (WITH TWIN BRACKET ARMS)	LUMINAIRE REMOVED (LIGHT POLE MOUNTED)	PULL BOX REMOVED	LUMINAIRE REMOVED (UNDERPASS)	DISCONNECT EXISTING CIRCUIT
					EACH				
				SHEET 87					
	87	Rt.	I-77	GAL2					1
	87	Rt.	I-77	GAL1					1
	87	Lt.	I-77	CRO1					1
	87	Lt.	I-77	CRO2					1
				TOTALS SHEET 87					4
				SHEET 91					
49	91	℄	I-77 (MEDIAN)	2+722.0	1	2			
50	91	℄	I-77 (MEDIAN)	2+796.0	1	2			
51	91	℄	I-77 (MEDIAN)	2+861.0	1	2			
52	91	℄	I-77 (MEDIAN)	2+931.0	1	2			
				TOTALS SHEET 91	4	8			
				SHEET 92					
53	92	℄	I-77 (MEDIAN)	2+994.0	1	2			
54	92	℄	I-77 (MEDIAN)	3+058.0	1	2			
55	92	℄	I-77 (MEDIAN)	3+122.0	1	2			
56	92	℄	I-77 (MEDIAN)	3+184.0	1	2			
57	92	℄	I-77 (MEDIAN)	3+246.0	1	2			
58	92	Lt.	CROTON AVE.	——				1	
59	92	Rt.	CROTON AVE.	——				1	
60	92	Lt.	CROTON AVE.	——				1	
61	92	Rt.	CROTON AVE.	——				1	
104	92	Rt.		3+318.0			1		
				TOTALS SHEET 92	5	10	1	4	
				TOTALS CARRIED TO GENERAL SUMMARY	9	18	1	4	4

DESIGNED TL
CHECKED CML

LIGHTING REMOVAL PLAN SUB-SUMMARY

CUY-77-23.458

93
295

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LIGHTING PLAN SUB-SUMMARY

DESIGNED TL | CHECKED CML

REFERENCE NUMBER	SHEET NUMBER	SIDE	ROADWAY	STATION TO STATION	ITEM NO. 625																				
					LUMINAIRE, STYLE B, TYPE III, 310 W H.P.S., 480 V	LIGHT POLE, MISC.: DESIGN A1.2B15.2	BRACKET ARM, MISC.: 1.2 METERS	GROUND ROD	LIGHT POLE ANCHOR U-BOLTS FOR STRUCTURE (PARAPET MOUNTED)	STRUCTURE JUNCTION BOX, TYPE II	PULL BOX 713.08, 450mm	TRENCH 0.6 M DEEP	CONDUIT, 51 MM, 713.04	NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	38 MM DUCT CABLE WITH TWO NO. 4 AWG 5000 VOLT CABLES		NO. 10 AWG POLE AND BRACKET CABLE		CONNECTOR KIT, TYPE II	CONNECTOR KIT, TYPE III	STRUCTURE GROUNDING SYSTEM FOR BRIDGE NO. CUY-77-23.458			CABLE SPLICING KIT	
					EACH							METERS							EACH							
				SHEET 87																					
①	87	Lt.	I-77 SB																					2	
②	87	Lt.	I-77 SB								1	250			255									2	
③	87	Rt.	I-77 NB																						
④	87	Rt.	I-77 NB									250			255									2	
⑦	87	Rt.	I-77 NB	2+557 RT.							1													2	
				TOTALS SHEET 87							2	500			510									8	
				SHEET 91																					
⑤	91	Lt.	I-77 SB	2+692.5	1	1			4	1							35		1	1					
⑥	91	Lt.	I-77 SB	2+692.5 to 2+757.5									65	135											
⑦	91	Lt.	I-77 SB	2+757.5	1		1			1							18		1	1					
⑧	91	Lt.	I-77 SB	2+757.5 to 2+824.5									67	139											
⑨	91	Lt.	I-77 SB	2+824.5	1	1			4	1							35		1	1					
⑩	91	Lt.	I-77 SB	2+824.5 to 2+886.0									62	128											
⑪	91	Lt.	I-77 SB	2+886.0	1	1			4	1							35		1	1					
⑫	91	Lt.	I-77 SB	2+886.0 to 2+958.5									73	151											
⑬	91	Lt.	I-77 SB	2+958.5	1	1			4	1							35		1	1					
⑭	91	Lt.	I-77 SB	2+958.5 to 2+980.0									22	49											
⑮	91	Rt.	I-77 NB	2+676.5	1	1			4	1							35		1	1					
⑯	91	Rt.	I-77 NB	2+676.5 to 2+741.0									65	135											
⑰	91	Rt.	I-77 NB	2+741.0	1	1			4	1							35		1	1					
⑱	91	Rt.	I-77 NB	2+741.0 to 2+803.0									62	129											
⑲	91	Rt.	I-77 NB	2+803.0	1	1			4	1							35		1	1					
⑳	91	Rt.	I-77 NB	2+803.0 to 2+859.5									57	119											
㉑	91	Rt.	I-77 NB	2+859.5	1	1			4	1							35		1	1					
㉒	91	Rt.	I-77 NB	2+859.5 to 2+935.0									76	157											
㉓	91	Rt.	I-77 NB	2+935.0	1	1			4	1							35		1	1					
㉔	91	Rt.	I-77 NB	2+935.0 to 2+980.0									45	95											
				TOTALS SHEET 91	10	9	1		36	10			594	1,237			333		10	10					
				SHEET 92																					
㉕	92	Lt.	I-77 SB	2+980.0 to 3+020.0									40	85											
㉖	92	Lt.	I-77 SB	3+020.0	1	1			4	1							35		1	1					
㉗	92	Lt.	I-77 SB	3+020.0 to 3+079.5									60	125											
㉘	92	Lt.	I-77 SB	3+079.5	1		1			1							18		1	1					
㉙	92	Lt.	I-77 SB	3+079.5 to 3+156.0									77	159											
㉚	92	Lt.	I-77 SB	3+156.0	1	1			4	1							35		1	1					
㉛	92	Lt.	I-77 SB	3+156.0 to 3+221.5									66	137											
㉜	92	Lt.	I-77 SB	3+221.5	1	1			4	1							35		1	1					
㉝	92	Lt.	I-77 SB	3+221.5 to 3+318.0								14	83	171	19									2	
㉞	92	Lt.	I-77 SB	3+318.0				1													1				
㉟	92	Rt.	I-77 NB	2+980.0 to 2+995.0									15	35											
㊱	92	Rt.	I-77 NB	2+995.0	1	1			4	1							35		1	1					
㊲	92	Rt.	I-77 NB	2+995.0 to 3+057.0									62	129											
㊳	92	Rt.	I-77 NB	3+057.0	1		1			1							18		1	1					
㊴	92	Rt.	I-77 NB	3+057.0 to 3+126.0									69	143											
㊵	92	Rt.	I-77 NB	3+126.0	1	1			4	1							35		1	1					
㊶	92	Rt.	I-77 NB	3+126.0 to 3+190.5									65	135											
㊷	92	Rt.	I-77 NB	3+190.5	1	1			4	1							35		1	1					
㊸	92	Rt.	I-77 NB	3+190.5 to 3+264.0									74	153											
㊹	92	Rt.	I-77 NB	3+264.0	1	1			4	1							35		1	1					
㊺	92	Rt.	I-77 NB	3+264.0 to 3+318.0								24	30	65	29										
㊻	92	Rt.	I-77 NB	3+318.0				1			1										1			2	
				TOTALS SHEET 92	9	7	2	2	28	9	1	38	641	1,337	48		281		9	9	2			4	
TOTALS CARRIED TO GENERAL SUMMARY					19	16	3	2	64	19	3	538	1,235	2,574	558		614		19	19	2			12	

CUY-77-23.458

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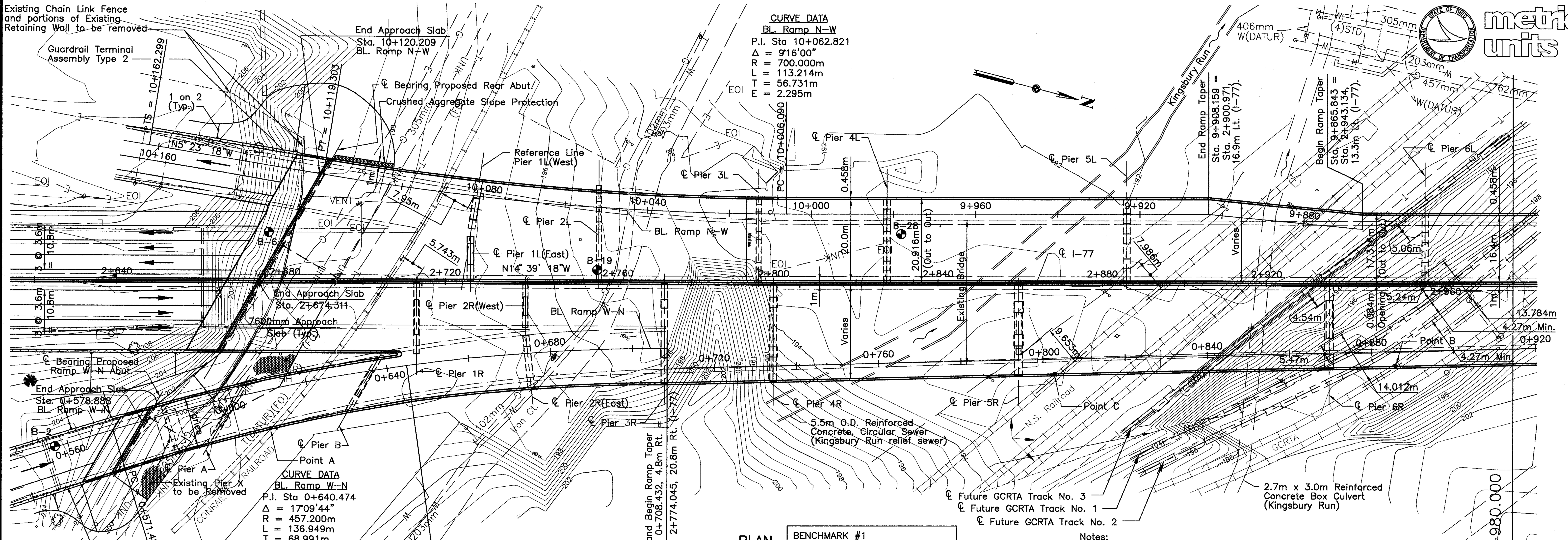


PLAN

BENCHMARK #1
▭ SW corner of mon. box at int. of Trumbull and E. 37th set 134.5m Lt. of Sta. 2+618.5 Elev. 205.374

*Matches Existing
**On outside of curve
***See detail, Sheet 3 of 175

HORIZONTAL CLEARANCES	ACTUAL	REQUIRED
℄ Conrail to Pier 1L (West), Shaft	7.950m	6.096m
℄ Conrail to Pier 1R, Capbeam	5.743m*	6.401m**
℄ N.S. Railroad to Pier 5L, Shaft	7.986m	6.706m
℄ N.S. Railroad to Pier 5R, Wall	9.653m	6.706m
℄ GCRTA to Pier 6L, Shaft	13.784m	6.706m
℄ GCRTA to Pier 6R, Shaft***	14.012m	6.706m

Notes:

Earthwork limits shown are approximate. Actual slopes shall conform to plan cross sections.

Elevations in ( ) are existing elevations.

For bottom of proposed footing elevations, foundation information, substructure locations, guardrail stations, utility legend, existing and proposed structure blocks, top of slope elevations, and traffic data, see Sheet 3 of 175.

For I-77 Profile, see Sheet 2 of 175.

For temporary steel sheeting, see Sheets 19 thru 24 of 175.

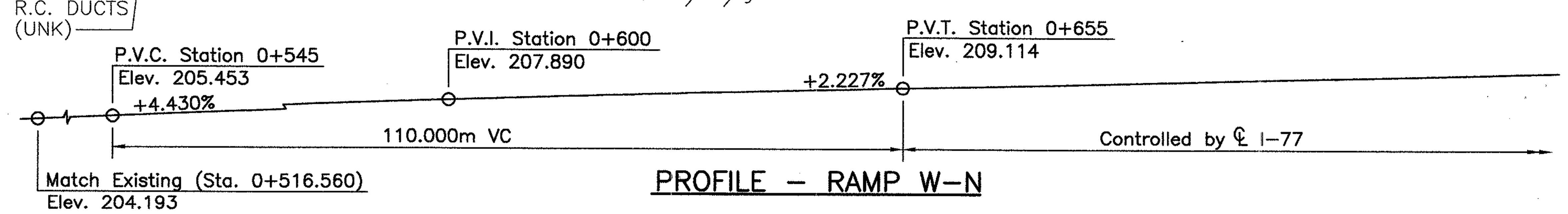
All utilities shall remain except those referenced in the Structure General Notes, Sheet 6 and 7 of 175.

For scupper locations, see Sheet 153 of 175.

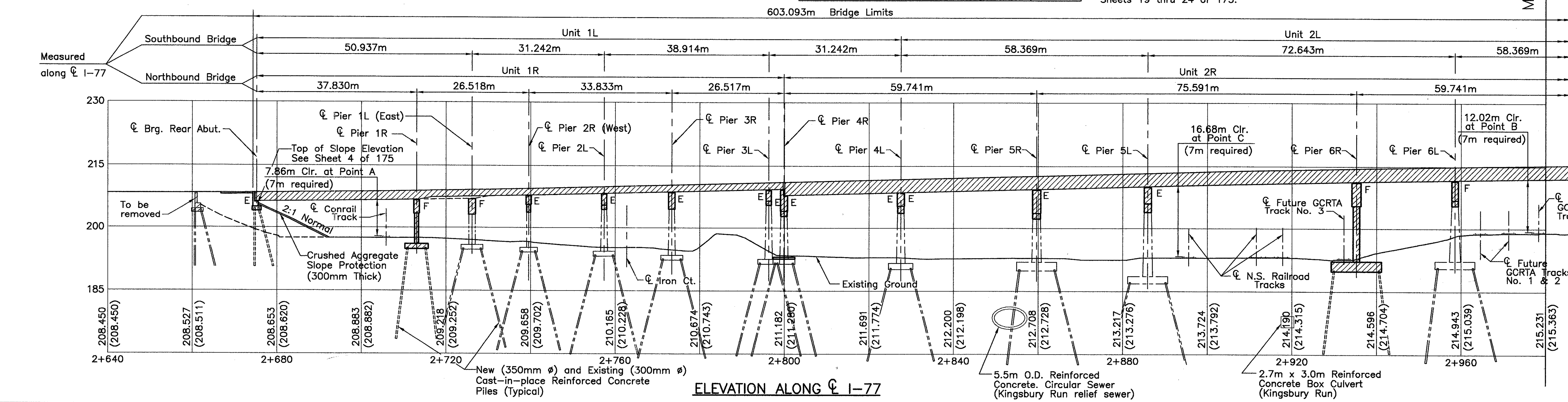
E designates expansion.
F designates fixed.
⊕ designates 1959 boring location.

All elevations and stations are in meters.

MATCH LINE STA. 2+980.000



PROFILE - RAMP W-N



ELEVATION ALONG ℄ I-77

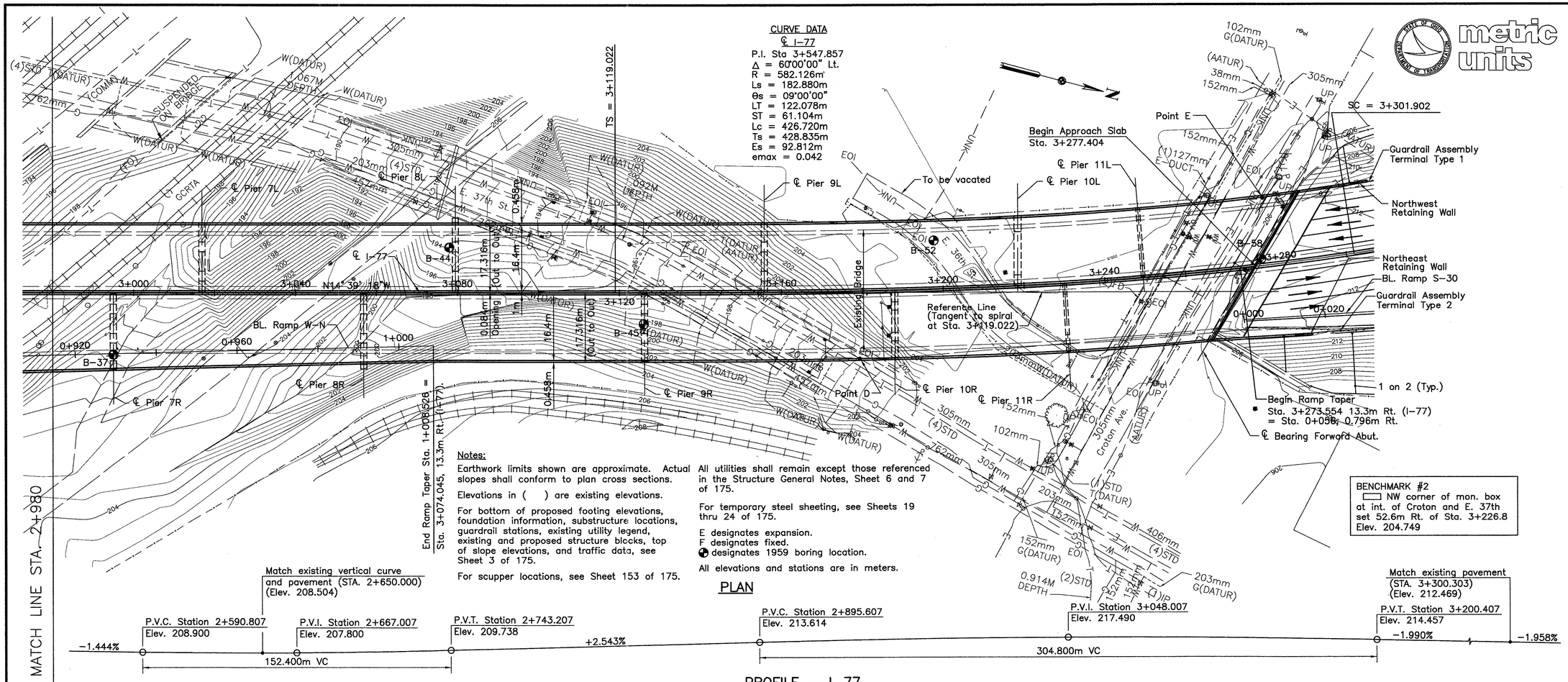
\24621\techprod\drawings\bridge\SITE1.dwg

DESIGN AGENCY	HNTB ARCHITECTS ENGINEERS PLANNERS One Cleveland Center 1375 East Ninth Street Cleveland, Ohio 44114-1724
REVIEWED RER	DATE 09-12-97
STRUCTURE FILE NUMBER	1806726
DRAWN JOL/JLV	REVISED
DESIGNED JOL	CHECKED FSJ/MJL

CUYAHOGA COUNTY
STA. 2+674.311
STA. 3+277.404

SITE PLAN
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458



Notes:

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For bottom of proposed footing elevations, foundation information, substructure locations, guardrail stations, existing utility legend, existing and proposed structure blocks, top of slope elevations, and traffic data, see Sheet 3 of 175.

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For temporary steel sheeting, see Sheets 19 thru 24 of 175.

E designates expansion.
F designates fixed.
◓ designates 1959 boring location.

All elevations and stations are in meters.

PLAN

STATE OF OHIO
GEORGE TOMICH
60930
REGISTERED PROFESSIONAL ENGINEER

George Tomich 2-16-98
GEORGE TOMICH, P.E.

SHEETS: 94-105
105A, 105B, 105C, 105D
106-219, 219A
220-257, 257A
258-266, 266A
267-279 OF 295

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DATE	REVIEWED	DRAWN	DESIGNED
09-12-97	RER	JOL/JLV	JOL
STRUCTURE FILE NUMBER	REVISED		CHECKED
1806726			FSJ/MJL

CUYAHOGA COUNTY
STA. 2+674.311
STA. 3+277.404

SITE PLAN
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

2/175

95/295

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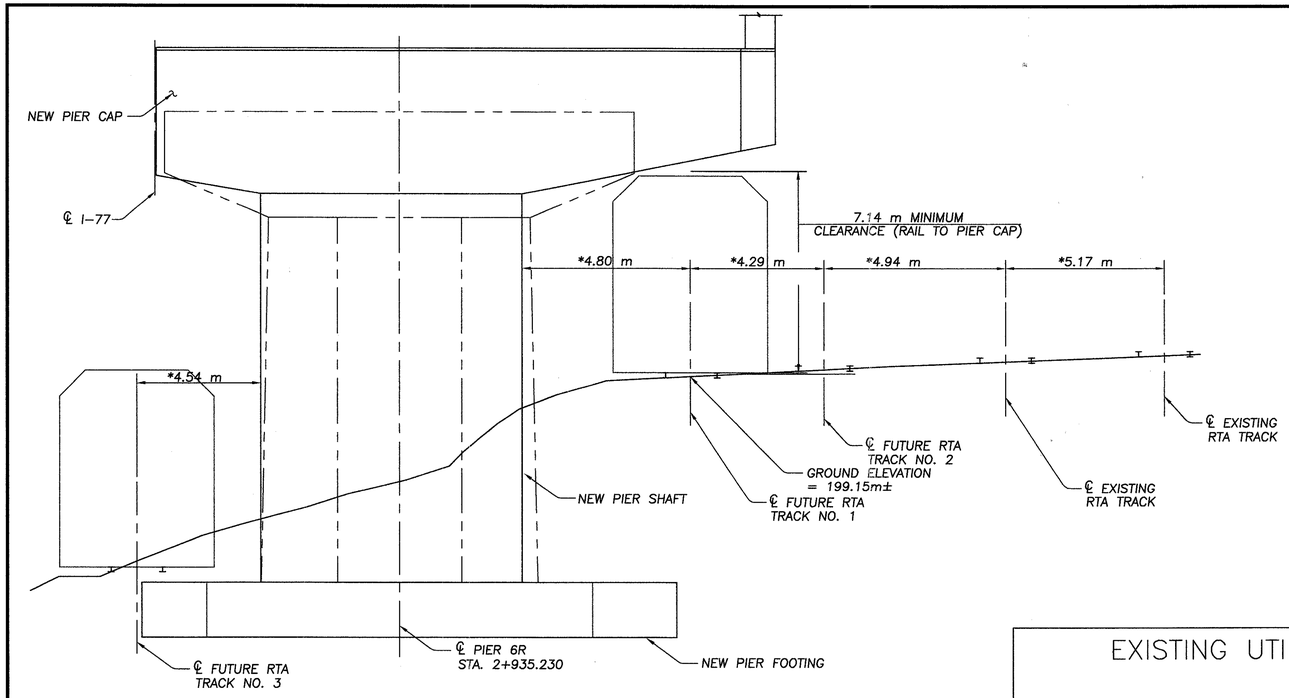


CROSS SECTION AT PIER 6R

(* MEASURED NORMAL TO TRACKS)

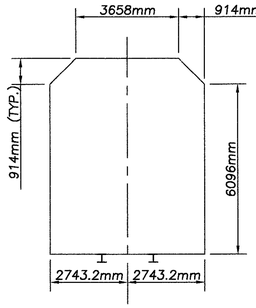
BOTTOM OF PROPOSED FOOTING ELEVATIONS	
UNIT	ELEV
EXIST. REAR ABUTMENT TEMPORARY WIDENING	203.515
REAR ABUTMENT	203.600
RAMP W–N ABUTMENT	202.150
PIER A	196.440
PIER B	194.920
PIER 1R	194.920
PIER 2R(E)	194.158
PIER 2L	193.243
PIER 3L	191.414
PIER 4L	190.195
PIER 5R	189.890
PIER 5L	186.842
PIER 6R	189.814
PIER 7R	190.805
PIER 10R	200.100
PIER 10L	203.910
PIER 11L	203.606
FORWARD ABUTMENT	204.2±
N.E. RET. WALL	211.000
N.W. RET. WALL	209.700

℄ RAMP W–N SUBSTRUCTURE LOCATION		
UNIT	STATION	SKEW*
℄ BRG. RAMP W–N ABUTMENT	0+580.000	46°05'42" LF
℄ PIER A	0+602.843	43°13'56" LF
℄ PIER B	0+636.185	39°03'14" LF

* MEASURED FROM LOCAL TANGENT
LF DENOTES LEFT FORWARD

℄ I–77 SUBSTRUCTURE LOCATION		
UNIT	STATION	SKEW
℄ BRG. REAR ABUTMENT	2+675.200	30°00'00" LF
℄ PIER 1R	2+713.030	0°00'00"
℄ PIER 1L (EAST)	2+726.137	0°00'00"
REF. LINE PIER 1L (WEST)	2+724.237	9°16'00" LF
℄ PIER 2R (EAST)	2+738.316	5°57'49" RF
℄ PIER 2R (WEST)	2+739.548	0°00'00"
℄ PIER 2L	2+757.379	0°00'00"
℄ PIER 3R	2+773.381	0°00'00"
℄ PIER 3L	2+796.293	0°00'00"
℄ PIER 4R	2+799.898	0°00'00"
℄ PIER 4L	2+827.535	0°00'00"
℄ PIER 5R	2+859.639	0°00'00"
℄ PIER 5L	2+885.904	0°00'00"
℄ PIER 6R	2+935.230	0°00'00"
℄ PIER 6L	2+958.547	0°00'00"
℄ PIER 7R	2+994.971	0°00'00"
℄ PIER 7L	3+016.916	0°00'00"
℄ PIER 8R	3+056.845	0°00'00"
℄ PIER 8L	3+079.516	0°00'00"
℄ PIER 9R	3+126.187	0°00'00"*
℄ PIER 9L	3+155.793	0°00'00"*
℄ PIER 10R	3+188.010	0°00'00"*
℄ PIER 10L	3+218.390	0°00'00"*
℄ PIER 11R	3+229.972	3°18'45" RF*
℄ PIER 11L	3+249.479	4°34'47" RF*
℄ BRG. FORWARD ABUTMENT	3+276.454	29°57'28" LF*

* MEASURED FROM I–77 TANGENT
LF DENOTES LEFT FORWARD
RF DENOTES RIGHT FORWARD



TYPICAL GCRTA RAIL CLEARANCE CORRIDOR

FOUNDATION DATA (NEW SUBSTRUCTURE):
THE FOLLOWING FOUNDATION RECOMMENDATIONS ARE BASED ON 1959 BORING LOGS TAKEN FOR THE ORIGINAL CONSTRUCTION.
ALL PILES SHALL BE 350mm DIAMETER CAST IN PLACE REINFORCED CONCRETE PILES. FOR ESTIMATED AVERAGE PAY LENGTHS OF THE PILES, SEE PILING PLAN SHEETS 34 THRU 37 OF 175.
FOR PILE ULTIMATE BEARING VALUES AND ADDITIONAL PILE NOTES, SEE SHEET 6 OF 175.

EXISTING UTILITIES LEGEND

		SYMBOL:	
— —W— —	WATER	○	MANHOLE
— —G— —	GAS	▯	POLE/MARKER
— —T— —	TELEPHONE	⊠	VALVE/VENT/TEST STATION
— —TV— —	CATV	✡	FIRE HYDRANT
— —E— —	ELECTRIC	◊	HANDHOLE/BOX
— —TC— —	TRAFFIC CONTROL	⌘	PED/TRANSFORMER
— —STM— —	STORM SEWER	⬡	METER
— —SAN— —	SANITARY SEWER	▲	FURNISHED SURVEY CONTROL
— —UNK— —	UNKNOWN		
— —SFM— —	SANITARY FORCE MAIN		
----------	(DATUR)		

ABBREVIATIONS:

LP LIGHT POLE

UP UTILITY POLE

NAP NO ASSOCIATED PIPING FOUND FROM VALVE TO ANY OTHER UTILITY OR STRUCTURE.

(FO) FIBER OPTIC

(DATUR) DEPICTED ACCORDING TO UTILITY RECORDS, NO ELECTRONIC INFORMATION WAS OBTAINED.

(AATUR) ABANDONED ACCORDING TO UTILITY RECORDS

E——— UTILITY END POINT

EOI END OF ELECTRONIC DESIGNATING INFORMATION

UNLESS OTHERWISE NOTED, UTILITY LINE LIMITS DEPICTED REPRESENT FIELD DESIGNATING LIMITS AND NOT ENDPOINTS OF UTILITIES.

UTILITY INFORMATION THAT IS LABELED "DATUR" IS DERIVED FROM AVAILABLE RECORDS. SUCH INFORMATION MAY NOT BE ACCURATE OR RELIABLE. SO–DEEP EXPRESSLY DISCLAIMS RESPONSIBILITY FOR THE ACCURACY OR RELIABILITY OF UTILITY INFORMATION THAT IS DEPICTED ACCORDING TO RECORDS.

DEPTH AND SIZE INFORMATION SHOWN HEREON IS TAKEN FROM AVAILABLE UTILITY RECORDS, AND HAS NOT BEEN VERIFIED.

UTILITY DEPTH AND SIZE INFORMATION IS UNAVAILABLE UNLESS OTHERWISE SHOWN ON PLAN SHEETS.

TRAFFIC CONTROL SENSORS IN PAVING ARE NOT SHOWN HEREON.

(COMM) COMMUNICATIONS

(AATFI) ABANDONED ACCORDING TO FIELD INSPECTION

TRAFFIC DATA (YEAR 2020) — I–77 — ADT 85,250 — ADTT 11,080

STATE OF OHIO DEPARTMENT OF TRANSPORTATION — metric units

TOP OF SLOPE ELEVATION		
LOCATION		ELEVATION
Rear Abutment	West Corner	205.584
	East Corner	205.876
Ramp W–N Abutment	West Corner	205.023
	East Corner	204.174
Forward Abutment	West Corner	205.715
	East Corner	205.511

STATION OF FIRST ROADWAY GUARDRAIL POST ADJACENT TO BRIDGE	
℄ I–77 STATION	2+657.518 RT. 3+290.251 RT. 3+309.302 LT.
BL. RAMP W–N STATION	0+561.649 RT. 0+575.601 LT.
BL. RAMP N–W STATION	10+125.578 RT.

EXISTING STRUCTURES
TYPE: Twin continuous welded steel girders with floorbeams and stringers (Units 2 & 3) and multiple continuous welded steel girders (Units 1 & 4) with reinforced concrete deck and substructure.
SPANS: (measured along ℄ I–77) Northbound – 51.511m, 26.518m, 33.833m, 26.517m, 59.741m, 75.591m, 59.741m, 61.874m, 69.342m, 61.823m, 41.962m, 46.482m. Ramp W–N – 29.870m, 49.682m, 38.804m. Southbound – 64.618m, 31.242m, 38.914m, 31.242m, 58.369m, 72.643m, 58.369m, 62.600m, 76.277m, 62.597m, 31.089m, 26.975m. Ramp N–W – 57.351m.
ROADWAY: Northbound – Varies 13.868m min. to 20.574m max. f/parapet to f/curb. Southbound – Varies 13.868m min. to 23.774m max. f/parapet to f/curb. Ramps – 10.363m f/f curbs.
LOAD FREQUENCY: CF2000(57) and the Alternate Military Loading
SKEW: Varies
ALIGNMENT: Tangent and spiral left
WEARING SURFACE: 38mm Thick dense concrete overlay
APPROACH SLABS: 7620mm long
YEAR BUILT: 1964
STRUCTURE FILE NUMBER: 1806726

PROPOSED STRUCTURES
TYPE: New continuous welded A572M painted steel girders; composite with the reinforced concrete deck superstructure; supported by the rehabilitated and widened existing reinforced concrete substructure.
SPANS: Northbound (measured along ℄ I–77) – 37.830m, 26.518m, 33.833m, 26.517m, 59.741m, 75.591m, 59.741m, 61.874m, 69.342m, 61.823m, 41.962m, 46.482m. Southbound (measured along ℄ I–77) – 50.937m, 31.242m, 38.914m, 31.242m, 58.369m, 72.643m, 58.369m, 62.600m, 76.277m, 62.597m, 31.089m, 26.975m. Ramp W–N (measured along ramp BL.) – 22.843m, 33.342m, 38.289m, 33.329m.
ROADWAY: Varies (see slab details on sheet 130 thru 138 of 175. Northbound and Southbound: 16.4m minimum toe of parapet to toe of parapet. (NDC = 17.4m)
LOADING: MS 18 Case 1 and the Alternate Military Loading
SKEW: Varies (see Substructure Location table)
WEARING SURFACE: 25mm Monolithic concrete
APPROACH SLABS: AS–1–81M (7600mm long)
ALIGNMENT: Tangent and spiral left
BRIDGE COORDINATES: N–41°–29'–05" W–81°–39'–50"
SUPERELEVATION: Varies (see superelevation diagram on sheet 146 and 149 of 175.

DESIGN AGENCY — HNTB — One Cleveland Center, 1375 East 9th Street, Suite 1500, Cleveland, Ohio 44114–1724 — ARCHITECTS ENGINEERS PLANNERS

DESIGNED JOL — DRAWN ADY/JLV — CHECKED FSJ/MJL — DATE 09–12–97 — REVISED — REVISED RER — STRUCTURE FILE NUMBER 1806726

SITE PLAN NOTES AND TABLES

BRIDGE NO. CUY–77–23.458
OVER KINGSBURY RUN

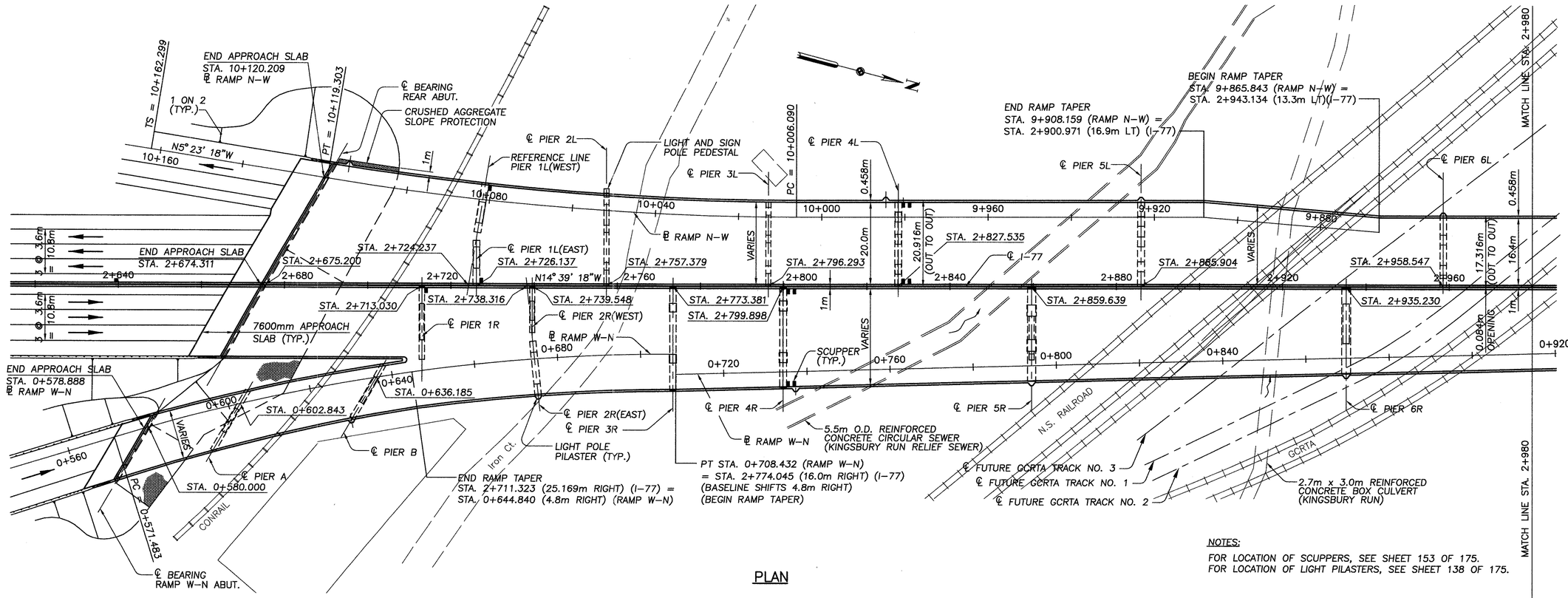
CUY–77–23.458

3 / 175

96 / 295

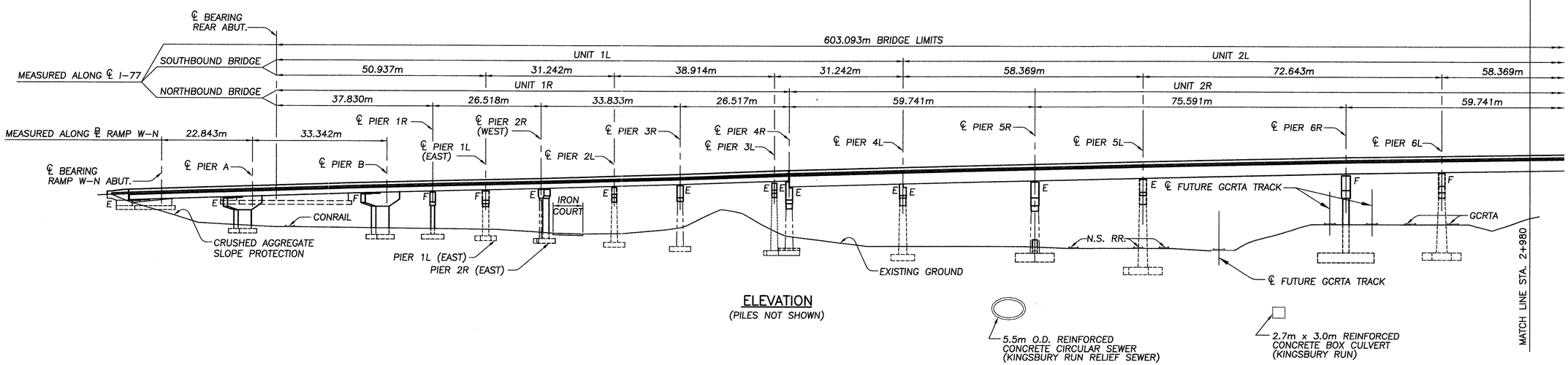
\\24621\techprod\drawings\bridge\SITE2A

metric units



PLAN

NOTES:
FOR LOCATION OF SCUPPERS, SEE SHEET 153 OF 175.
FOR LOCATION OF LIGHT PILASTERS, SEE SHEET 138 OF 175.



ELEVATION
(PILES NOT SHOWN)

5.5m O.D. REINFORCED CONCRETE CIRCULAR SEWER (KINGSBURY RUN RELIEF SEWER)

2.7m x 3.0m REINFORCED CONCRETE BOX CULVERT (KINGSBURY RUN)

\24621\techprod\drawings\bridge\GPE1.dwg

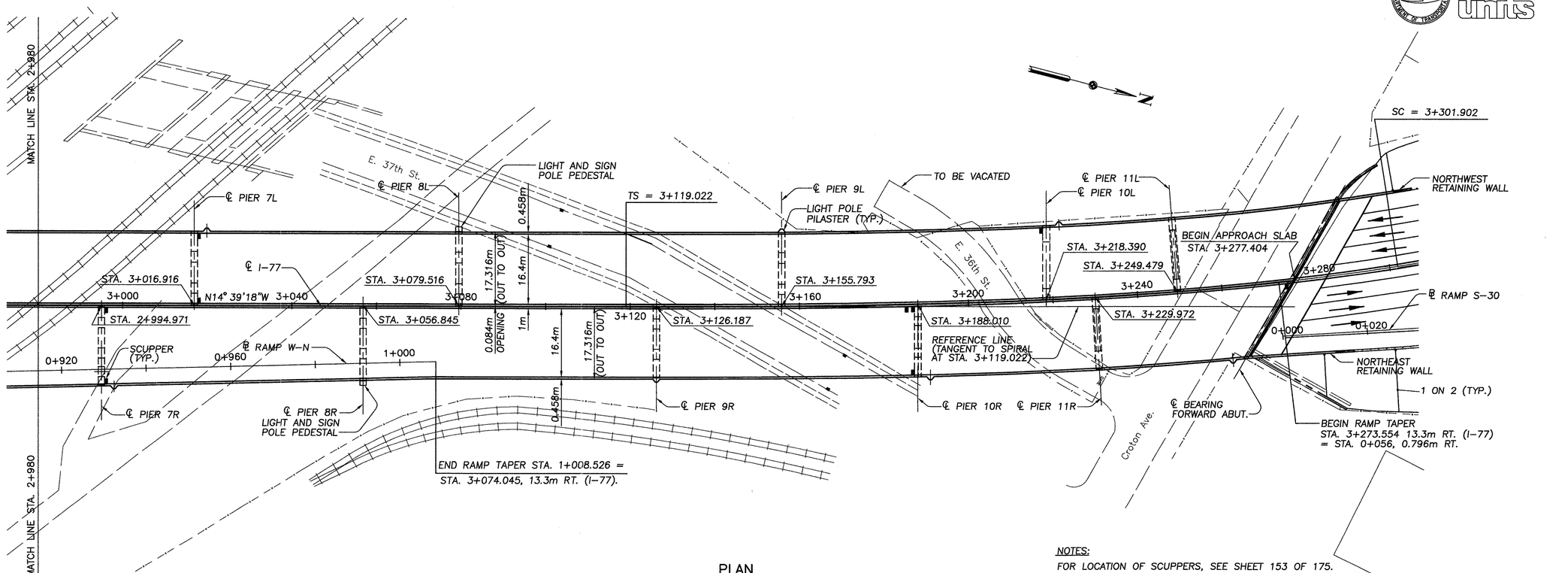
DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
JOL	JLV	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

GENERAL PLAN AND ELEVATION
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

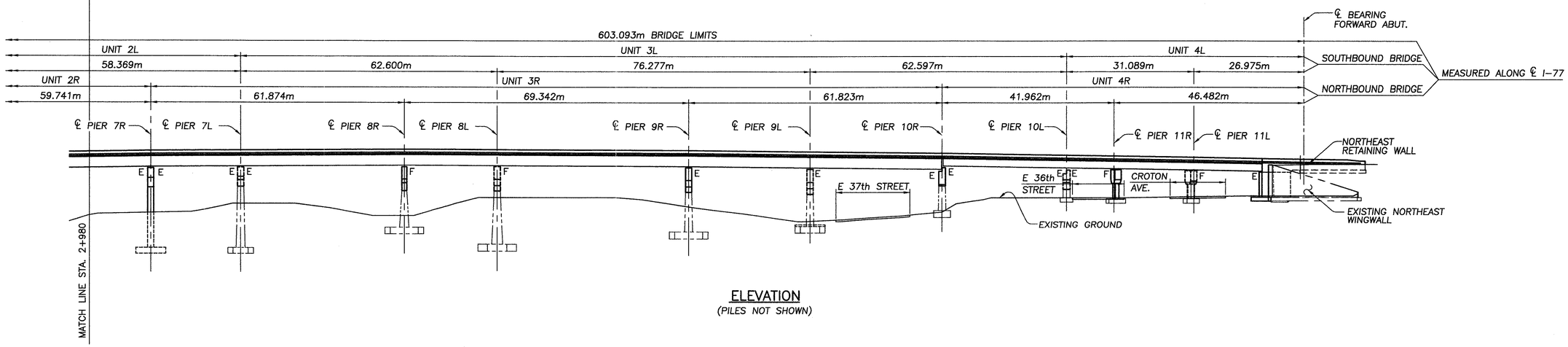
metric units



PLAN

NOTES:

FOR LOCATION OF SCUPPERS, SEE SHEET 153 OF 175.
FOR LOCATION OF LIGHT PILASTERS, SEE SHEET 138 OF 175.



ELEVATION
(PILES NOT SHOWN)

\24621\techprod\drawings\bridge\GPE2.dwg

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
JOL	JLV	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

GENERAL PLAN AND ELEVATION
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

5 / 175

98
295

GENERAL NOTES – STRUCTURES OVER 3 METERS SPAN

PROPOSED WORK

MAJOR ITEMS OF WORK CONTAINED IN THE BRIDGE PLANS ARE SUMMARIZED BELOW. DETAILS OF THIS WORK ARE SHOWN IN THE PLANS. DETAILS OF THE CONSTRUCTION PHASES ARE DETAILED IN THE MAINTENANCE OF TRAFFIC PLANS AND IN THE CONSTRUCTION SEQUENCE DETAILS.

PHASE 1

1. BEGIN PERMANENT EMBANKMENT CONSTRUCTION BELOW EXISTING STRUCTURE FOR THE NEW REAR ABUTMENT.

2. DIRECT I–77 SOUTHBOUND TRAFFIC TO THE EASTERLY PORTION OF THE SOUTHBOUND BRIDGE AND DIRECT RAMP N–W TRAFFIC TO WESTERLY PORTION OF RAMP N–W.

3. INSTALL PORTABLE CONCRETE BARRIER AS REQUIRED FOR THIS CONSTRUCTION PHASE.

4. REMOVE PORTIONS OF EXISTING SUPERSTRUCTURE NEAR THE REAR ABUTMENT AND CONSTRUCT TEMPORARY SUPPORTS, GIRDER, CROSSFRAMES, AND DECK SLAB. CONCURRENTLY, CONSTRUCT PERMANENT PAVEMENT WIDENING ADJACENT TO THE NEWLY CONSTRUCTED TEMPORARY GIRDER SUPPORT.

5. INSTALL PORTABLE CONCRETE BARRIER ON THE NEW TEMPORARY DECK SLAB OF THE SOUTHBOUND BRIDGE FOR FINAL PHASE 1 CONSTRUCTION CONDITION.

PHASE 2

1. DIRECT I–77 SOUTHBOUND TRAFFIC TO THE WESTERLY PORTION OF THE SOUTHBOUND BRIDGE, CLOSE RAMP W–N AND RAMP N–W TO TRAFFIC, AND DIRECT I–77 NORTHBOUND TRAFFIC TO THE EASTERLY PORTION OF THE NORTHBOUND BRIDGE FOR FINAL PHASE 2 CONSTRUCTION.

2. REMOVE EXISTING ROADWAY MEDIAN BARRIER AS REQUIRED TO CONSTRUCT CROSSOVERS.

3. REMOVE EXISTING BRIDGE MEDIAN BARRIER AND PORTION OF DECK SLAB AS REQUIRED TO INSTALL TEMPORARY SHEET PILING AT REAR AND FORWARD ABUTMENTS.

PHASE 3

1. DIRECT I–77 NORTHBOUND TRAFFIC TO THE EASTERLY PORTION OF THE SOUTHBOUND BRIDGE.

2. REMOVE THE EXISTING NORTHBOUND BRIDGE SUPERSTRUCTURE AND PORTIONS OF THE EXISTING SUBSTRUCTURE UNITS.

3. CONSTRUCT NEW REAR ABUTMENT, NEW RAMP W–N ABUTMENT, NEW PORTIONS OF THE FORWARD ABUTMENT, NEW PIER PORTIONS, NEW SUPERSTRUCTURE STEEL GIRDERS AND CONCRETE DECK, NEW APPROACH SLABS, NEW BRIDGE DRAINAGE SYSTEM, AND NEW PIER CATWALKS AND ACCESS LADDERS.

PHASE 4

1. INSTALL PORTABLE CONCRETE BARRIERS ON THE NEW NORTHBOUND BRIDGE.

2. DIRECT I–77 NORTHBOUND TRAFFIC TO THE EASTERLY PORTION OF THE NEW NORTHBOUND BRIDGE AND DIRECT I–77 SOUTHBOUND TRAFFIC TO THE WESTERLY PORTION OF THE NEW NORTHBOUND BRIDGE.

3. REMOVE THE EXISTING SOUTHBOUND BRIDGE SUPERSTRUCTURE AND PORTIONS OF THE EXISTING SUBSTRUCTURE UNITS.

4. CONSTRUCT NEW REAR ABUTMENT, NEW PORTIONS OF THE FORWARD ABUTMENT, NEW PIER PORTIONS, NEW SUPERSTRUCTURE STEEL GIRDERS AND CONCRETE DECK, NEW APPROACH SLABS, NEW BRIDGE DRAINAGE SYSTEM, AND NEW PIER CATWALKS AND ACCESS LADDERS.

PHASE 5

1. INSTALL PORTABLE CONCRETE BARRIERS ON THE NEW SOUTHBOUND BRIDGE.
2. DIRECT I–77 SOUTHBOUND TRAFFIC TO THE WESTERLY PORTION OF THE NEW SOUTHBOUND BRIDGE.

3. CONSTRUCT REMAINING MEDIAN PORTION OF THE REAR AND FORWARD APPROACH SLABS AND NEW APPROACH ROADWAY MEDIAN BARRIERS.

4. REMOVE PORTABLE CONCRETE BARRIERS FROM THE NEW NORTHBOUND AND SOUTHBOUND BRIDGES.

5. RESUME NORMAL I–77 TRAFFIC.

DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1996 AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN LOADING

MS18, CASE 1, THE ALTERNATE MILITARY LOADING, AND A 2.87 kN/m2 FUTURE WEARING SURFACE, UNLESS OTHERWISE NOTED.

DESIGN STRESSES

HIGH PERFORMANCE CONCRETE – COMPRESSIVE STRENGTH 31.0 MPa (DECK)

HIGH PERFORMANCE CONCRETE – COMPRESSIVE STRENGTH 31.0 MPa (PARAPET)

HIGH PERFORMANCE CONCRETE – COMPRESSIVE STRENGTH 31.0 MPa (SUBSTRUCTURE)

REINFORCING STEEL – ASTM A615M, A616M, OR A617M GRADE 400 MINIMUM YIELD STRENGTH 400 MPa

STRUCTURAL STEEL – ASTM A572M, YIELD STRENGTH 350 MPa
– ASTM A36M, YIELD STRENGTH 250 MPa

FOUNDATION DATA (NEW SUBSTRUCTURE:

THE FOUNDATION RECOMMENDATIONS ARE BASED ON 1959 BORING LOGS TAKEN FOR THE ORIGINAL CONSTRUCTION.

PILE DESIGN LOADS (ULTIMATE BEARING VALUE)

THE ULTIMATE BEARING VALUE IS 990 kN PER PILE FOR THE REAR AND RAMP W–N ABUTMENT PILES. AN ADDITIONAL 90 kN OF ULTIMATE BEARING VALUE PER PILE IS DUE TO THE POSSIBILITY OF DOWN DRAG FORCES INDUCED BY EMBANKMENT SETTLEMENT. THE ORDER LENGTHS FOR THE 350 mm DIAMETER PILES IS: 82 PILE, 1148 METERS LONG, 41 SPLICES

THE ULTIMATE BEARING VALUE IS 900 kN PER PILE FOR THE FORWARD AND TEMPORARY ABUTMENTS. THE ULTIMATE BEARING VALUES FOR THE PIERS ARE AS FOLLOWS:

PIER A:	960 kN	PIER 1L(E):	NA
PIER B:	860 kN	**PIER 1L(W):	NA
PIER 1R:	920 kN	PIER 2L:	940 kN
PIER 2R(E):	980 kN	PIER 3L:	920 kN
PIER 2R(W):	NA	PIER 4L:	720 kN
**PIER 3R:	NA	PIER 5L:	1004 kN
PIER 4R:	NA	PIER 6L:	NA
PIER 5R:	854 kN	PIER 7L:	NA
PIER 6R:	902 kN	PIER 8L:	NA
PIER 7R:	934 kN	PIER 9L:	NA
**PIER 8R:	NA	PIER 10L:	996 kN
PIER 9R:	NA	PIER 11L:	900 kN
PIER 10R:	904 kN		
**PIER 11R:	NA		

FORWARD AND TEMPORARY ABUTMENT PILES (350 mm DIAMETER):
28 PILES, 643 METERS LONG, ESTIMATED LENGTH
6 PILES OF ORDER LENGTH 14 METERS LONG
22 PILES OF ORDER LENGTH 18 METERS LONG
7 PILES OF ORDER LENGTH 3 METERS LONG
7 PILES OF ORDER LENGTH 10 METERS LONG
8 PILES OF ORDER LENGTH 9 METERS LONG
22 SPLICES

PIER PILES (350 mm DIAMETER):
237 PILES, 4779 METER LONG, ESTIMATED LENGTH
22 PILES OF ORDER LENGTH 17 METERS LONG
215 PILES OF ORDER LENGTH 18 METERS LONG
139 PILES OF ORDER LENGTH 2 METERS LONG
47 PILES OF ORDER LENGTH 3 METERS LONG
29 PILES OF ORDER LENGTH 4 METERS LONG
215 SPLICES

**DENOTES EXISTING PIER FOUNDATIONS WHICH ARE NOT ADEQUATE TO SUPPORT A 2.87 kN/SQ.M. FUTURE WEARING SURFACE BUT ARE ADEQUATE TO SUPPORT A 1.43 kN/SQ.M. FUTURE WEARING SURFACE.

RESULTS OF THE STATIC LOAD TESTS FOR THE EXISTING STRUCTURE AT PIERS 4L, 5R, AND 9L AND THE FORWARD ABUTMENT ARE ON FILE AT THE OHIO DEPARTMENT OF TRANSPORTATION, DISTRICT 12, FOR REFERENCE.

PILE DRIVING CONSTRAINTS

PRIOR TO DRIVING ANY PILES IN PHASE 3, THE SPILL THROUGH SLOPE AND THE BRIDGE APPROACH EMBANKMENT AROUND THE REAR AND RAMP W–N ABUTMENTS SHALL BE CONSTRUCTED UP TO THE LEVEL OF THE SUBGRADE. THE EXCAVATION FOR THE ABUTMENT FOOTING AND INSTALLATION OF THE ABUTMENT PILES SHALL NOT BEGIN UNTIL AFTER ALL OTHER PILES TO BE PLACED IN PHASE 3 ARE INSTALLED.

PRIOR TO DRIVING ANY PILES IN PHASE 4, THE SPILL THROUGH SLOPES AND THE BRIDGE APPROACH EMBANKMENTS AROUND THE REAR ABUTMENT SHALL BE CONSTRUCTED UP TO THE LEVEL OF THE SUBGRADE. THE EXCAVATION FOR THE ABUTMENT FOOTINGS AND INSTALLATION OF THE ABUTMENT PILES SHALL NOT BEGIN UNTIL AFTER ALL OTHER PILES TO BE PLACED IN PHASE 4 ARE INSTALLED.

ITEM 507 – 350mm CAST IN PLACE REINFORCED CONCRETE PILES, DRIVEN, AS PER PLAN

PILE HAMMER: THE PILE HAMMER USED TO INSTALL THE 350mm PILES SHALL HAVE A STATE'S ENERGY RATING OF NOT LESS THAN 22 500 JOULES. THIS REQUIREMENT DOES NOT RELIEVE THE CONTRACTOR FROM 108.05 WHICH STATES THAT THE CONTRACTOR IS TO PROVIDE SUFFICIENT EQUIPMENT FOR PROSECUTING THE REQUIRED WORK. REFER TO "ODOT'S MANUAL OF PROCEDURES FOR STRUCTURES" TO OBTAIN THE STATE'S ENERGY RATING.

STANDARD DRAWINGS

REFERENCE SHALL BE MADE TO THE FOLLOWING STANDARD DRAWINGS:

EXJ–4–87M	REVISED 02–18–97	A–1–69M	DATED 03–20–95
AS–1–81M	DATED 10–25–94	BR–1M	DATED 12–15–94
PCB–91M	DATED 03–20–95	VPF–1–90M	DATED 03–20–95
HL–20.14M	DATED 05–01–95	TC–21.20M	DATED 02–01–94

SUPPLEMENTAL SPECIFICATIONS

REFERENCE SHALL BE MADE TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

863	DATED	09–09–97
910	DATED	04–21–97

PROPOSAL NOTES:

REFERENCE SHALL BE MADE TO THE FOLLOWING PROPOSAL NOTES:

ITEM SPECIAL–SEALING OF CONCRETE SURFACES
ITEM SPECIAL–CONCRETE REPAIR BY EPOXY INJECTION
516,517, AND 518–FABRICATED MEMBERS
METRIC SUBSTITUTION REQUIREMENTS FOR STRUCTURAL AND REINFORCING STEEL
622 PORTABLE CONCRETE BARRIER
HIGH PERFORMANCE CONCRETE

DIMENSIONS

DIMENSIONS ARE MEASURED HORIZONTALLY AND AT 15 °C UNLESS NOTED OTHERWISE. ALL DIMENSIONS ARE GIVEN IN MILLIMETERS, EXCEPT STATIONING AND ELEVATIONS, WHICH ARE GIVEN IN METERS, UNLESS NOTED OTHERWISE.

METRIC REINFORCING STEEL

GENERALLY, A "HARD CONVERSION" OF THE INCH–POUND MEASURED REINFORCING STEEL WAS USED THROUGHOUT THIS PROJECT. THE ONLY EXCEPTION TO THIS BEING WHERE NEW CONSTRUCTION MEETS EXISTING AND THE EXISTING INCH–POUND MEASURED REINFORCING STEEL MUST MATCH EXACTLY TO THE NEW METRIC BARS. IN THESE CASES ONLY SOFT CONVERTED BAR SIZES FOR INCH–POUND MEASURED NO. 7 AND NO. 10 BARS WERE NOTED IN THE PLANS SINCE THESE INCH–POUND BAR SIZES HAVE NO EQUIVALENT HARD CONVERTED BAR SIZES. THE FOLLOWING ARE THE "HARD CONVERTED" BAR SIZES AND THEIR INCH–POUND EQUIVELANT (THE METRIC BAR SIZES AS SHOWN IN THE 1997 ODOT C.M.S. SHOWN IN THE FAR LEFT COLUMN MAY BE USED IN LEIU OF THE "HARD CONVERTED" SIZES IN THE ADJACENT COLUMN):

METRIC BAR SIZE (IN C.M.S.)	METRIC BAR SIZE (IN PLANS)	"HARD CONVERTED" PROPERTIES NOMINAL MASS kg/m	DIAMETER mm	COMPARISON TO INCH–POUND BARS
13M	10M	0.785	11.3	20% < NO. 4
16M	15M	1.570	16.0	SAME AS NO. 5
19M	20M	2.355	19.5	6.8% > NO. 6
25M	25M	3.925	25.2	1.3% < NO. 8
29M	30M	5.495	29.9	9% > NO. 9
36M	35M	7.850	35.7	0.6% < NO. 11
43M	45M	11.775	43.7	3.5% > NO. 14
57M	55M	19.625	56.4	3% < NO. 18

DECK PROTECTION METHOD

EPOXY COATED REINFORCING STEEL (BOTH MATS), 65mm CONCRETE COVER, SEALING OF CONCRETE SURFACES AND HMWM RESIN

MONOLITHIC WEARING SURFACE

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 25mm THICK.

UTILITIES

INFORMATION SHOWN IN THE PLANS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.

ANY EXISTING, PRIVATELY–OWNED UTILITY FACILITIES ENCOUNTERED AT THE SITE OF THE WORK WHICH WILL INTERFERE WITH PORTIONS OF THE FINISHED ROADWAYS OR STRUCTURES SHALL BE REMOVED OR RELOCATED BY THE OWNER. ALL EXPENSES INVOLVED IN RELOCATING THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER. THE CONTRACTOR AND OWNER ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WOULD BE HELD TO A MINIMUM.

AT THE LEAST TWO WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS IN AN AREA WHICH MAY INVOLVE UNDERGROUND UTILITY FACILITIES, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER, THE REGISTERED UTILITY PROTECTION SERVICE AND THE OWNERS OF EACH UNDERGROUND UTILITY FACILITY SHOWN IN THE PLANS (SEE ROADWAY PLANS).

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
JMG	JMG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

STRUCTURAL GENERAL NOTES
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

6/175

99/295

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GENERAL NOTES - STRUCTURES OVER 3 METERS SPAN

UTILITIES (CONTINUED)

REFER TO BRIDGE SITE PLAN SHEETS FOR APPROXIMATE UTILITY LOCATIONS. THE FOLLOWING UTILITIES (BUT NOT LIMITED TO) MAY BE AFFECTED WITH THIS PROJECT:

RAMP W-N ABUTMENT: TWO (2) UNKNOWN UTILITIES, ONE (1) GAS LINE (TEMPORARY RELOCATION DURING CONSTRUCTION)

PIER A AREA: TWO (2) UNKNOWN UTILITIES, ONE (1) GAS LINE (TEMPORARY RELOCATION DURING CONSTRUCTION)

PIER 2R: ONE (1) GAS LINE, ONE (1) WATER LINE (BOTH OF THESE MUST BE RELOCATED)

PIER 6R: ONE (1) TELEPHONE LINE (TEMPORARY RELOCATION DURING CONSTRUCTION)

FORWARD ABUTMENT: ONE (1) ELECTRIC LINE (REMOVE)

PLANS OF THE EXISTING BRIDGE

CONSTRUCTION PLANS FOR THE EXISTING BRIDGES ARE ON FILE AT THE OHIO DEPARTMENT OF TRANSPORTATION, DISTRICT 12 OFFICE, 5500 TRANSPORTATION BOULEVARD, GARFIELD HEIGHTS, OHIO AND ARE AVAILABLE FOR REFERENCE.

EXISTING STRUCTURE 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 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 513.02.

CONTRACT BID PRICES SHALL BE BASED UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE 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.

WORK IN THE VICINITY OF RAILROADS

REFER TO THE SPECIAL CLAUSES IN THE PROPOSAL FOR SPECIFIC REQUIREMENTS FOR WORK ON THE PROPERTY OF THE CONSOLIDATED RAIL CORPORATION, NORFOLK AND WESTERN RAILWAY COMPANY AND THE GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY RIGHT OF WAYS.

CONSTRUCTION CLEARANCE OF 3 METERS HORIZONTALLY FROM THE CENTER OF TRACKS AND 7 METERS VERTICALLY FROM A POINT LEVEL WITH THE TOP OF THE HIGHER RAIL, AND 1.8 METERS FROM THE CENTER OF TRACKS, SHALL BE MAINTAINED AT ALL TIMES.

RAILROAD AERIAL LINES WILL BE RELOCATED BY THE RAILROAD. THE CONTRACTOR SHALL USE ALL PRECAUTIONS NECESSARY TO SEE THAT THE LINES ARE NOT DISTURBED DURING THE CONSTRUCTION STAGE AND SHALL COOPERATE WITH THE RAILROAD IN THE RELOCATION OF THESE LINES. THE COST OF THE RELOCATION SHALL BE INCLUDED IN THE RAILROAD FORCE ACCOUNT WORK.

THE CONTRACTOR SHALL COOPERATE AT ALL TIMES WITH THE LOCAL OFFICIALS OF THE RAILROAD COMPANY. HE SHALL USE ALL REASONABLE CARE AND DILIGENCE IN THE WORK IN ORDER TO AVOID ACCIDENTS, DAMAGE OR INTERFERENCE WITH THE TRAINS OR PROPERTY OF THE RAILROAD. THE CONTRACTOR SHALL NOTIFY THE LOCAL OFFICIALS OF THE RAILROAD PRIOR TO STARTING WORK THAT MAY AFFECT THE RAILROAD COMPANY AND FACILITIES.

PRIOR TO COMMENCING ANY WORK INVOLVING THE REMOVAL OF THE EXISTING STRUCTURE, THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR FOR APPROVAL BY DIRECTOR AND RAILROADS, COMPLETE DETAILS OF THE PROPOSED METHOD FOR REMOVING THE EXISTING STRUCTURE. NO DEMOLITION SHALL BEGIN UNTIL WRITTEN APPROVAL IS RECEIVED FROM THE DIRECTOR.

THE CONTRACTOR SHALL NOT AT ANY TIME PERMIT EQUIPMENT IN HIS USE TO ENTER UPON OR FOUL THE RAILROAD TRACKS EXCEPT WHEN SUCH EQUIPMENT IS PROTECTED BY AUTHORIZED EMPLOYEES OF THE RAILROADS, SEE SPECIAL CLAUSES FOR ADDITIONAL DETAILS.

THE CONTRACTOR SHALL NOT AT ANY TIME INTERRUPT ANY TRAIN MOVEMENTS. THE CONTRACTOR'S CRANES AND EQUIPMENT WILL BE REQUIRED TO MAINTAIN THE CONSTRUCTION CLEARANCES AND ALL OF THE TRACKS WILL REMAIN IN SERVICE. THE STEEL ERECTION OR REMOVAL MUST TAKE PLACE BETWEEN TRAIN MOVEMENTS. THE CONTRACTOR MUST SCHEDULE AROUND A HIGH VOLUME OF TRAINS PASSING THROUGH THIS PROJECT SITE. THE APPROXIMATE NUMBER OF TRAINS AND THEIR SPEEDS ARE ESTIMATED IN THE SPECIAL CLAUSES. SLOWER MOVING TRAINS OR STOPPED TRAINS, LIMITED SIGHT DISTANCE, TIME TO ERECT LONG STEEL SPAN MEMBERS, ETC. MUST BE FIGURED INTO THE ALLOWED CONSTRUCTION TIME BETWEEN TRAINS. NO ADDITIONAL COMPENSATION SHALL BE PROVIDED TO THE CONTRACTOR FOR ANY DELAYS TO THE CONTRACTOR DUE TO RAILROAD OPERATIONS AND/OR RESTRICTIONS.

NO SCAFFOLDING, PLANKS OR OTHER EQUIPMENT SHALL BE SUSPENDED OR ERECTED ABOVE OR WITHIN 3 METERS HORIZONTALLY AND 7 METERS VERTICALLY OF A RAIL OVER WHICH TRAINS ARE OPERATING WITHOUT PRIOR WRITTEN APPROVAL OF THE CHIEF ENGINEER OF THE RAILROAD COMPANY OR HIS AUTHORIZED REPRESENTATIVE.

FAILURE TO NOTIFY THE RAILROAD COMPANY AS NOTED ABOVE SHALL BE CAUSE FOR STOPPING WORK UNTIL ALL PROVISIONS FOR PROTECTING RAILROAD PROPERTY HAVE BEEN PROVIDED.

ALL COSTS TO THE RAILROAD IN CONNECTION WITH 1) CONSOLIDATED RAIL CORPORATION AND NORFOLK AND WESTERN RAILWAY COMPANY FLAGGING; 2) PROTECTIVE PERSONNEL; AND 3) ENGINEERING INSPECTION WILL BE BORNE BY THE DEPARTMENT WITH PAYMENT MADE TO THE RAILROAD BY THE DEPARTMENT. ALL COSTS TO THE CONTRACTOR IN CONNECTION WITH GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY FLAGGING WILL BE BORNE BY THE CONTRACTOR. ALL COSTS ASSOCIATED WITH THE REPAIR OF DAMAGE TO RAILROAD FACILITIES CAUSED BY THE CONTRACTOR'S OPERATIONS WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR WITH PAYMENT MADE BY THE CONTRACTOR TO THE RAILROAD THROUGH THE DEPARTMENT.

THE FOLLOWING RAILROADS ARE LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT:

CONRAIL
DIVISION ENGINEER
HOLIDAY DRIVE
PITTSBURGH, PA, 15220
TELEPHONE (412) 928-7255

NORFOLK SOUTHERN
C.T.GOEWEY, CHIEF ENGINEER
BRIDGES & STRUCTURES
99 SPRING STREET S.W.
ATLANTA, GEORGIA 30303
ATTN: C.P. BENNET
(404) 529-1256

GCRTA
1240 WEST 6TH STREET
CLEVELAND, OHIO 44113-1331
TELEPHONE (216) 566-5100

ADDITIONAL RESTRICTIONS BY GCRTA (FROM GCRTA STANDARD SPECIFICATION SECTION 01501):

3.1 RESTRICTIONS BY GCRTA

A. THE CONTRACTOR MUST RECEIVE A PERMIT PRIOR TO STARTING WORK THAT MAY AFFECT GCRTA PROPERTY AND FACILITIES. EACH CONTRACTOR MUST SUBMIT REQUESTS THROUGH THE E&C PROJECT MANAGER FOR PRIOR AUTHORITY APPROVAL FOR OCCUPYING THE RAIL RIGHT-OF-WAY. THESE REQUESTS WILL BE OF THREE TYPES:

1. RAIL RIGHT-OF-WAY OCCUPANCY PERMIT-REQUIRED FOR ALL WORK PERFORMED ON THE RAIL RIGHT-OF-WAY.
2. TRACK OUTAGE PERMIT-REQUIRED FOR ANY SINGLE TRACKING OPERATION WHERE ONE TRACK IS TAKEN OUT OF SERVICE.
3. POWER OUTAGE PERMIT-REQUIRED FOR ANY WORK ON THE RAIL RIGHT-OF-WAY THAT IS WITHIN 1.5 METERS OF THE CONDUCTOR WIRE.

ALL REQUESTS MUST BE SUBMITTED IN WRITING TO THE DIRECTOR OF ENGINEERING AND CONSTRUCTION SUPPORT BY NO LATER THAN 12:00 NOON OF THE PRECEDING WEDNESDAY FOR CONSIDERATION BY SUPERINTENDENT OF RAIL OPERATIONS. DUE TO OTHER ONGOING CONSTRUCTION AND MAINTENANCE PROJECTS, THERE IS NO GUARANTEE THAT ANY REQUEST WILL BE APPROVED. ALL REQUESTS WILL BE APPROVED OR DISAPPROVED IN WRITING.

B. IN THE EVENT OF A REVERSAL BY EITHER GCRTA OR THE CONTRACTOR OF ANY TRACK OR POWER OUTAGE PERMIT, A GOOD FAITH EFFORT MUST BE MADE TO NOTIFY THE OTHER PARTY PRIOR TO THE SCHEDULED OUTAGE. FAILURE TO CANCEL 12 HOURS PRIOR TO THE SCHEDULED OUTAGE WILL RESULT IN THE CONTRACTOR BEING ASSESSED LIQUIDATED DAMAGES IN THE AMOUNT OF $500 FOR EACH OCCURRENCE. THIS COST SHOULD BE PAID DIRECTLY BY THE CONTRACTOR TO RTA. FAILURE TO PAY WILL RESULT IN A REJECTION OF ALL FUTURE OUTAGE REQUESTS. RTA WILL MAKE A GOOD FAITH EFFORT TO NOTIFY THE CONTRACTOR 12 HOURS PRIOR TO ANY CANCELLATION. HOWEVER, IT IS UNDERSTOOD THAT EMERGENCIES MAY OCCUR WHICH MAY PREVENT RTA FROM CANCELING WITHIN THIS TIMEFRAME.

C. POWER OUTAGES WILL NOT BE ALLOWED DURING THE FOLLOWING CONDITIONS:
1. ON HOLIDAYS OR DURING SPECIAL EVENTS.
2. WHERE WEATHER CONDITIONS ARE SUCH THAT ICING OF THE CATENARY MAY OCCUR. RTA HAS EXPERIENCED ICING CONDITIONS WHEN THE TEMPERATURE IS BETWEEN 25 AND 35 DEGREES FAHRENHEIT WITH A CHANCE OF PRECIPITATION.

TO CONFIRM WHETHER CONDITIONS WILL BE AFFECTING RAIL OPERATIONS, THE CONTRACTOR MAY CALL EITHER THE TOWER AT 575-3918 OR THE LOAD DISPATCHER AT 575-3901.

D. ANY UNEXPECTED EFFECTS UPON THE OPERATIONS OF SCHEDULED/UNSCHEDULED TRAIN MOVEMENTS SHALL BE IMMEDIATELY CALLED IN TO THE TOWER DISPATCHER AT 575-3918.

E. THE CONTRACTOR MUST RECEIVE A RIGHT-OF-WAY OCCUPANCY PERMIT PRIOR TO LIFTING OF ANY BRIDGE SPAN OVER TRACKS. GCRTA RAIL PERSONNEL SHALL BE PRESENT IN THE AREA TO ENSURE A SAFE AND CLEAR AREA AFTER SPAN LIFT. DEMOLITION WORK SHALL STOP WHEN TRAINS PASS THROUGH A DEMOLITION AREA OR TRAINS SHALL BE STOPPED AT A SAFE DISTANCE IF IMMINENT DANGER IS SHOWN.

F. ALL WORK OVER GCRTA TRACKS SHALL BE DONE WITH THE OVERHEAD POWER OFF UNLESS AUTHORIZED BY BOTH DIRECTOR OF RAIL OPERATIONS AND DIRECTOR OF ENGINEERING AND CONSTRUCTION SUPPORT. IF THE CONTRACTOR REQUIRES THE DE-ENERGIZATION OF THE OVERHEAD POWER TO THE CATENARY SYSTEM, A POWER OUTAGE PERMIT MUST BE APPROVED.

3.2 RESUMPTION OF REVENUE SERVICE

A. THE TRACK MUST BE RETURNED TO THE AUTHORITY ONE HALF HOUR BEFORE THE START OF SCHEDULED REVENUE SERVICE. AT THE COMPLETION OF THE WEEK NIGHT SHIFT AND AT THE COMPLETION OF WEEKEND WORK, THE CONTRACTOR IS TO INSPECT AND SUBSEQUENTLY RELEASE THE WORK ZONE BACK TO THE AUTHORITY FOR RESUMPTION OF REVENUE SERVICE. THIS WILL REQUIRE THE CONTRACTOR TO ADHERE TO THE FOLLOWING PROCEDURES:

1. PRIOR TO RELEASE OF WORK ZONE, THE CONTRACTOR IS TO CLEAR HIS EQUIPMENT, MANPOWER AND MATERIALS FROM THE RIGHT-OF-WAY, AN AREA DEFINED AS 3 METERS FROM THE CENTERLINE OF EACH TRACK.

2. THE CONTRACTOR, ALONG WITH AN E & C REPRESENTATIVE WILL INSPECT THE ENTIRE WORK ZONE TO ASSURE THAT THE WORK COMPLETED COMPLIES WITH THE REQUIREMENTS OF THE AUTHORITY FOR THE RESUMPTION OF REVENUE SERVICE WITHIN A WORK ZONE. THE CONSTRUCTION, AT A MINIMUM, MUST COMPLY WITH FRA CLASS 4 SAFETY STANDARDS FOR TRACK OR COMPLIANCE WITH THESE CONSTRUCTION TOLERANCES.

3. OTHER REQUIREMENTS MAY BE IMPOSED BY THE AUTHORITY BASED ON AREA CONSTRUCTION TOLERANCES, PROCEDURES AND/OR PRACTICES. IMPOSITION OF SLOW ORDERS AND OTHER MEANS CAN BE REQUESTED BY THE CONTRACTOR IN ORDER TO ASSURE THE RESUMPTION OF SAFE REVENUE OPERATIONS.

4. WHEN EACH ITEM ABOVE HAS BEEN COMPLETED, THE CONTRACTOR SHALL CONTACT THE CUT TOWER AND NOTIFY THE SUPERVISOR OF THE RELEASE OF THE WORK ZONE BACK TO THE AUTHORITY.

5. AT THE COMPLETION OF EACH NIGHT SHIFT AND WEEKEND WORK, THE CONTRACTOR MUST INSPECT WORK SITE AND RELEASE IT TO GCRTA IN AN AESTHETICALLY PLEASING MANNER AS DETERMINED BY THE ENGINEER.

B. THE CONTRACTOR MUST COMPLY WITH THE PROVISIONS OF THESE GENERAL REQUIREMENTS AS REPRESENTING AN INTEGRAL PART OF HIS LEGAL OBLIGATION UNDER THIS CONTRACT.

3.3 TEMPORARY FALSEWORK AND PROTECTIVE STRUCTURES

A. IN ORDER TO PROTECT GCRTA TRAFFIC AGAINST DAMAGE FROM FALLING MATERIAL AND DEBRIS DURING DEMOLITION AND WHILE SUPERSTRUCTURE STEEL AND CONCRETE IS BEING PLACED OR WHILE WORK IS IN PROGRESS OVERHEAD, THE CONTRACTOR SHALL FURNISH AND ERECT A TEMPORARY STRUCTURE UNDER THE SPANS THAT ARE DIRECTLY OVER THE GCRTA TRACKS.

B. THE FLOORING AND SIDING OF THE TEMPORARY STRUCTURE SHALL HAVE NO CRACKS OR OPENINGS THROUGH WHICH MATERIAL PARTICLES MAY FALL. AS A MINIMUM, ONE LAYER OF 230 mm PLYWOOD WITH LAPPED JOINTS OR AN EQUIVALENT DESIGN SHALL BE PLACED BETWEEN THE LOWER FLANGES OF THE STRUCTURAL STEEL BEAMS ABOVE THE TRACK BED AND THE SHOULDERS OF THE GCRTA TRACKS.

C. THE TEMPORARY FALSEWORK SHALL BE SUITABLE FOR ATTACHMENT OF THE LIVE CATENARY WIRE SYSTEM, AND ALL SIGNAL, POWER AND COMMUNICATION CABLES. THE FALSEWORK SHALL BE REMOVED BY CONTRACTOR WHEN WORK IS COMPLETED.

D. DETAILS OF THE TEMPORARY FALSEWORK AND PROTECTIVE STRUCTURES INCLUDING THE PROPOSED TEMPORARY UNDERCLEARANCES TO THE GCRTA TRACKS, SHALL BE PREPARED BY A PROFESSIONAL ENGINEER FOR APPROVAL BY GCRTA DIRECTOR OF ENGINEERING AND CONSTRUCTION SUPPORT PRIOR TO STARTING ANY DEMOLITION OR CONSTRUCTION WORK.

E. THIS PROTECTIVE WORK SHALL BE PERFORMED AT THE CONTRACTOR'S COST.

F. BEFORE STARTING THE WORK OF ERECTING THE TEMPORARY FALSEWORK, THE CONTRACTOR MUST CONTACT LITEL COMMUNICATIONS SYSTEMS, INC., MR. CLIFF CALDWELL, AT (216) 948-1884 FOR THE PURPOSE OF MAKING ARRANGEMENTS TO PROTECT AND REATTACH THE FIBER OPTIC CABLE.

3.4 SPECIAL GCRTA REQUIREMENTS

A. OVERHEAD PROPULSIONS POWER CABLES (600 VOLTS, D.C.) SHALL ALWAYS BE CONSIDERED ENERGIZED. THE CONTRACTOR MUST NOT ASSUME THE POWER IS SHUT OFF UNTIL ACTUALLY CONFIRMED BY GCRTA ON A DAILY BASIS THAT SHUTDOWN HAS ACTUALLY BEEN ACCOMPLISHED. DESPITE POWER SHUT OFF, THE OVERHEAD PROPULSION CABLES ARE ALWAYS TO BE CONSIDERED HOT.

B. RTA AERIAL LINES ON GCRTA PROPERTY CAN BE RELOCATED BY GCRTA PERSONNEL IF NOTED AS SUCH ON THE PLANS AND SPECIFICATIONS. OTHERWISE, RESPONSIBILITY FALLS TO THE CONTRACTOR WITH RTA APPROVAL. THE CONTRACTOR SHALL USE ALL PRECAUTIONS NECESSARY TO SEE THAT THE LINES ARE NOT DISTURBED DURING THE CONSTRUCTION STAGE AND SHALL COOPERATE WITH GCRTA IN RELOCATION OF THESE LINES. THE COST OF THE RELOCATION SHALL BE PAID BY THE CONTRACTOR.

metric units

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HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724

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GENERAL NOTES – STRUCTURES OVER 3 METERS SPAN

C. NO EQUIPMENT OR MATERIAL SHALL BE SUSPENDED OR ERECTED ABOVE, WITHIN 4.9 METERS VERTICALLY OR HIGHER BASED ON EXISTING CATERNARY HEIGHTS, OR WITHIN 2.3 METERS HORIZONTALLY FROM THE CENTER OF THE TRACK OVER WHICH TRAINS ARE OPERATING, UNLESS OTHERWISE APPROVED BY GCRTA.

D. TRACK BALLAST MUST BE PROTECTED FROM CONTAMINATION DURING DEMOLITION AND CONSTRUCTION. SIGNAL EQUIPMENT MUST ALSO BE PROTECTED. THE CONTRACTOR MUST FURNISH DETAILS ON HOW HE PLANS TO PROTECT BOTH ITEMS.

E. NO EXCAVATION, REMOVAL OF EXISTING PIER FOUNDATIONS OR CONSTRUCTING NEW FOUNDATIONS ADJACENT TO GCRTA TRACKS WITHOUT APPROVAL OF GCRTA. SHEETING MAY BE REQUIRED TO PREVENT UNDERMINING OF TRACKS. IF SHEETING IS REQUIRED, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AND INSTALL SUCH SHEETING. PROPOSED SHEETING SHALL BE PREPARED BY A PROFESSIONAL ENGINEER FOR APPROVAL BY GCRTA DIRECTOR OF ENGINEERING AND CONSTRUCTION SUPPORT PRIOR TO STARTING ANY EXCAVATION OR DEMOLITION WORK.

F. IF PROPOSED CONSTRUCTION IS IN THE VICINITY OF A RAPID STATION, PEDESTRIAN TRAFFIC TO THE GCRTA STATION SHALL BE MAINTAINED AT ALL TIMES BY THE CONTRACTOR. STRUCTURALLY SOUND FENCING, BARRICADES, AND/OR SHELTERS SHALL BE PROVIDED TO PROTECT GCRTA USERS AT THE STATION ENTRANCES AND PLATFORMS. THE CONTRACTOR SHALL SUBMIT DETAILS OF THE PROTECTION SYSTEM FOR GCRTA'S APPROVAL BEFORE DEMOLITION IS STARTED.

G. NO CONSTRUCTION ACTIVITY SHALL TAKE PLACE WITHIN GCRTA CONSTRUCTION CLEARANCE LIMITS WHILE TRACK IS ACTIVE EXCEPT WITH FLAGGERS AND A RAIL RIGHT–OF–WAY OCCUPANCY PERMIT. DURING COMPLETE SHUTDOWN, CONTRACTOR IS CAUTIONED TO THE POSSIBILITY OF TRACK UTILIZATION BY RTA WORK TRAINS AND OTHER SERVICE EQUIPEMENT.

H. NO AT–GRADE CROSSING OF GCRTA TRACKS IS PERMITTED BY VEHICLES OR EQUIPMENT, WITHOUT PRIOR APPROVAL OF THE SUPERINTENDENT OF RAIL OPERATIONS.

I. THE CONTRACTOR SHALL PROVIDE, INSTALL, ERECT AND MAINTAIN SUITABLE LIGHTING AND PROTECTIONS FOR SAFE AND EFFICIENT PROGRESS AND FOR ANY WORK THAT IS TO BE PERFORMED AFTER DAYLIGHT HOURS.

J. FLAGGERS SHALL BE PROVIDED BY THE CONTRACTOR, EITHER THROUGH COMPANIES WHO SUPPLY CERTIFIED FLAGGER (OBTAIN LIST FROM GCRTA) OR BY TRAINING AND CERIFYING THEIR OWN EMPLOYEES THROUGH GCRTA. FOR FLAGGING PROCEDURES, FLAGGER TRAINING, AND SET–UP OF WORK ZONES, SEE SECTION 01502–STANDARD RAIL FLAGGING PROCEDURES.

K. ANY VIOLATION TO GCRTA CONSTRUCTION RESTRICTIONS BY THE CONTRACTOR MAY RESULT IN IMMEDIATE SHUTDOWN OF CONSTRUCTION ACTIVITIES UNTIL VIOLATION IS CORRECTED.

L. THESE PROCEDURES ARE APPLICABLE WHENEVER ANY PERSONNEL OR EQUIPMENT OF ANY CONTRACTOR ARE ON AUTHORITY RAIL PROPERTY AND/OR MORE SPECIFICALLY, WITHIN A DISTANCE OF 3.0 METERS FROM THE CENTERLINE OF EACH TRACK, INCLUDING ANY AND ALL WORK PERFORMED OVER TRACKS INCLUDING WORK BEING PERFORMED ON OVERHEAD HIGHWAY STRUCTURES.

ITEM 202–PORTIONS OF STRUCTURE REMOVED, OVER 6 METER SPAN, AS PER PLAN

PROTECTION OF TRAFFIC:
PRIOR TO DEMOLITION OF ANY PORTIONS OF THE EXISTING SUPERSTRUCTURE OR SUBSTRUCTURE, THE CONTRACTOR SHALL SUBMIT PLANS FOR THE PROTECTION OF TRAFFIC (VEHICULAR, RAIL, 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.
SUBSTRUCTURE CONCRETE REMOVAL:
THIS SHALL INCLUDE THE SUBSTRUCTURE ELEMENTS INDICATED IN THE PLANS INCLUDING REMOVAL OF EXISTING DOWNSPOUTS AT PIERS AND ABUTMENTS, NOT TO REMAIN IN PLACE, AND OTHER REMOVAL ITEMS THAT ARE NOT SEPARATELY LISTED FOR PAYMENT, EXCEPT FOR WEARING COURSE REMOVAL. 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. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE–RAMS WILL NOT BE PERMITTED EXCEPT FOR COMPLETE REMOVALS AS SPECIFIED BY THE ENGINEER. THE METHOD OF REMOVAL AND THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. ALL WORK SHALL BE DONE IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE THE EXISTING REINFORCING STEEL TO REMAIN.

THE WEIGHT OF THE HAMMER SHALL NOT BE MORE THAN 16 KILOGRAMS FOR REMOVAL WITHIN 450 mm OF PORTIONS TO BE PRESERVED. OUTSIDE THE 450 mm LIMIT, A HAMMER HEAVIER THAN 16 KILOGRAMS, BUT NOT TO EXCEED 41 KILOGRAMS, 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.

CUT LINE CONSTRUCTION JOINT PREPARATION:
SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVALS 25 mm DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. WHERE PRACTICABLE, THE EXISTING REINFORCING STEEL WHERE REQUIRED IN THE PLANS SHALL BE LEFT IN PLACE. INSTALL DOWEL BARS IF SPECIFIED. PRIOR TO CONCRETE PLACEMENT ABRASIVELY CLEAN JOINT SURFACE AND EXPOSED REINFORCEMENT TO REMOVE LOOSE AND DISINTEGRATED CONCRETE AND LOOSE DIRT, DUST, OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURE, OR OTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. CONCRETE BONDING SURFACES SHALL BE WET WITHOUT FREE WATER AS CONCRETE IS PLACED.

CONCRETE DECK REMOVAL:
THIS WORK SHALL CONSIST OF THE REMOVAL OF CONCRETE DECKS INCLUDING PARAPETS, RAILINGS, DECK JOINTS, AND OTHER APPURTENANCES FROM STEEL SUPPORTING SYSTEMS (GIRDERS, CROSS FRAMES, ETC.) CARE SHALL BE TAKEN DURING DECK REMOVALS TO PROTECT PORTIONS OF SUCH SYSTEMS THAT ARE TO BE SALVAGED AND INCORPORATED INTO THE PROPOSED STRUCTURE. IN THIS RESPECT, THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE RAM TYPE OF EQUIPMENT IS PROHIBITED.

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 DECK. SMALL DIAMETER PILOT HOLES SHALL BE DRILLED 50 mm OUTSIDE THESE LINES TO CONFIRM THE LOCATION OF FLANGE EDGES. DECK CUTS OVER OR WITHIN 50 mm OF FLANGE EDGES SHALL NOT EXTEND LOWER THAN THE BOTTOM LAYER OF DECK SLAB REINFORCING STEEL. CUTS MADE OUTSIDE 50 mm OF 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.

REMOVAL METHODS: CONCRETE MAY BE REMOVED BY CUTTING AND BY MEANS OF HAND OPERATED PNEUMATIC HAMMERS EMPLOYING POINTED OR BLUNTED CHISEL TYPE TOOLS. FOR REMOVALS ABOVE STEEL MEMBERS, A HAMMER HEAVIER THAN 16 KILOGRAMS BUT NOT TO EXCEED 41 KILOGRAMS MAY BE USED AS APPROVED BY THE ENGINEER TO ENSURE ADEQUATE DEPTH CONTROL AND TO PREVENT NICKING OR GOUGING PRIMARY STEEL MEMBERS.

DECK REMOVALS: DUE TO THE POSSIBLE 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 GIRDERS AND CROSSFRAMES WHICH ARE TO REMAIN. GIRDERS AND CROSSFRAMES DAMAGED BY THE CONTRACTOR'S REMOVAL OPERATIONS SHALL, AT NO COST TO THE PROJECT, BE REPLACED OR REPAIRED. PROPOSED REPAIRS, DEVELOPED BY A REGISTERED PROFESSIONAL ENGINEER, SHALL BE SUBMITTED IN WRITING FOR REVIEW AND APPROVAL BY THE DIRECTOR.

EXTRANEOUS MEMBERS: EXISTING EXTRANEOUS MEMBERS (i.e. FINISHING MACHINE AND FORM SUPPORTS, ETC.) ATTACHED BY WELDED CONNECTIONS TO PORTIONS OF THE TOP FLANGES DESIGNATED "TENSION" SHALL BE REMOVED AND THE FLANGE SURFACES GROUND SMOOTH. GRINDING SHALL BE CAREFULLY DONE AND PARALLEL TO THE FLANGES.

LOADING LIMITATIONS: NO PART OF THE STRUCTURE SHALL BE SUBJECTED TO UNIT STRESSES THAT EXCEED 136.5% OF THE ALLOWABLE UNIT STRESSES GIVEN 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 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 TWO WEEKS PRIOR TO THE START OF THE WORK.

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 THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS, WITH PERTINENT PROVISIONS OF ITEM 202, AND TO THE SATISFACTION OF THE ENGINEER.

ITEM 503 – UNCLASSIFIED EXCAVATION, AS PER PLAN

UNCLASSIFIED EXCAVATION SHALL BE IN ACCORDANCE WITH ITEM 503 EXCEPT THAT THE BACKFILL MATERIAL BEHIND THE ABUTMENTS SHALL BE 203 GRANULAR MATERIAL PLACED IN 150mm LIFTS & COMPACTED IN ACCORDANCE WITH 304.04.

TEMPORARY SHEETING (SECTION MODULUS TO BE DETERMINED BY CONTRACTOR AND VERIFIED BY ENGINEER) AT THE NORTHWEST AND NORTHEAST CORNERS OF THE FORWARD ABUTMENT SHALL BE INCLUDED WITH ITEM 503, COFFERDAMS, CRIBS, AND SHEETING, FOR PAYMENT.

REPLACEMENT OF EXISTING REINFORCING STEEL

ANY EXISTING REINFORCING BARS WHICH ARE TO BE INCORPORATED INTO THE NEW WORK AND WHICH ARE MADE UNUSABLE BY CONCRETE REMOVAL OPERATIONS SHALL BE REPLACED WITH NEW STEEL AT THE CONTRACTOR'S COST. ANY EXISTING REINFORCING BARS DEEMED BY THE ENGINEER TO BE UNUSABLE BECAUSE OF CORROSION SHALL BE REPLACED WITH NEW STEEL. AN ALLOWANCE SHALL BE MADE BY THE CONTRACTOR IN THE BID PRICE FOR THE APPROPRIATE CONCRETE ITEMS.

BONDING NEW CONCRETE TO EXISTING CONCRETE

SIKA ARMETEC 110 AS MANUFACTURED BY THE SIKA CORPORATION, LYNDHURST, NEW JERSEY, EMACO P24 AS MANUFACTURED BY MASTER BUILDERS, INC., CLEVELAND, OHIO, OR AN APPROVED ALTERNATIVE CEMENT BASED MORTAR CONTAINING EPOXY RESIN SHALL BE USED FOR BONDING AT ALL LOCATIONS WHERE NEW CONCRETE IS PLACED IN CONTACT WITH EXISTING CONCRETE.

PREPARATION OF THE SURFACE INCLUDING SCARIFICATION OF THE EXISTING CONCRETE, APPLICATION OF THE BONDING AGENT AND PLACEMENT OF THE NEW CONCRETE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND AS SHOWN IN THE PLANS.

NO SEPARATE PAYMENT WILL BE MADE FOR BONDING NEW CONCRETE TO THE OLD USING EPOXY RESIN CEMENT BONDING AGENT. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT CONCRETE ITEM. THIS PRICE SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT INCLUDING CLEANING, PREPARATION, AND SCARIFICATION OF THE EXISTING CONCRETE SURFACES.

ITEM 519–PATCHING OF CONCRETE STRUCTURES, AS PER PLAN & ITEM SPECIAL–CONCRETE REPAIR BY EPOXY INJECTION

A CONTINGENCY QUANTITY OF 200 SQ METERS OF PATCHING CONCRETE STRUCTURES HAS BEEN INCLUDED IN THE SUMMARY OF QUANTITIES FOR USE AS DIRECTED BY THE ENGINEER. THE SUBSTRUCTURE UNITS HAVE BEEN INSPECTED AND ALL EXPOSED DELAMINATED CONCRETE AREAS ON THESE SUBSTRUCTURE UNITS HAVE BEEN MARKED WITH PAINT. THESE MARKED AREAS REPRESENT THE ESTIMATED REPAIR AREAS AND SHOULD BE VERIFIED BY THE ENGINEER AS TO THEIR EXACT LIMITS AT THE TIME OF REPAIR.
THE FOLLOWING ARE THE ESTIMATED REPAIR AREAS FOR THE SUBSTRUCTURE UNITS:

SUBSTRUCTURE UNITS:

PIER 2R(E)	3 SQ. METERS	PIER 1L(E)	25 SQ. METERS
PIER 4R	10 SQ. METERS	PIER 1L(W)	6 SQ. METERS
PIER 7R	27 SQ. METERS	PIER 2L	2 SQ. METERS
PIER 8R	2 SQ. METERS	PIER 3L	3 SQ. METERS
PIER 9R	3 SQ. METERS	PIER 4L	88 SQ. METERS
FORWARD ABUTMENT	61 SQ. METERS	PIER 7L	20 SQ. METERS
		PIER 8L	2 SQ. METERS
		PIER 10L	3 SQ. METERS

ALL SURFACES TO BE PATCHED AND THE EXPOSED REINFORCING STEEL ARE TO BE ABRASIVELY BLAST CLEANED WITHIN 24 HOURS OF APPLICATION OF PATCHING MATERIAL.

A CONTINGENCY QUANTITY OF 60 METERS OF ITEM SPECIAL – CONCRETE REPAIR BY EPOXY INJECTION HAS BEEN INCLUDED IN THE ESTIMATED QUANTITIES FOR USE AS DIRECTED BY THE ENGINEER ON THE EXISTING SUBSTRUCTURE UNITS TO REMAIN.

TEMPORARY REMOVAL OF THE EXISTING SCUPPER AND DRAINAGE TROUGH DOWNSPOUTS TO REMAIN MAY BE NECESSARY TO ADEQUATELY ACCESS AND REPAIR SOME OF THE REPAIR AREAS. AN ALLOWANCE FOR THESE REMOVALS SHALL BE MADE BY THE CONTRACTOR IN THE BID PRICE FOR ITEM 519 – PATCHING OF CONCRETE STRUCTURES, AS PER PLAN, AND FOR ITEM SPECIAL – CONCRETE REPAIR BY EPOXY INJECTION.

ITEM 863 – STRUCTURAL STEEL MEMBER, LEVEL FIVE (5) FABRICATION, A572M–50, AS PER PLAN

THIS WORK SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 863 EXCEPT THAT THE SHOP DRAWING APPROVALS SHALL BE IN ACCORDANCE WITH 501.05 AND 513.02 OF THE ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY
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One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114–1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
JMG	JMG	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

STRUCTURAL GENERAL NOTES
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

8/175

101/295

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GENERAL NOTES – STRUCTURES OVER 3 METERS SPAN

CONCRETE DECK PLACEMENT SEQUENCE

A DECK POURING SEQUENCE IS REQUIRED FOR THIS PROJECT AND SHALL BE SCHEDULED AS FOLLOWS:
BEGIN POUR AT FORWARD ABUTMENT AND POUR CONCRETE DECK TOWARD THE SOUTH PROGRESSIVELY AND CONTINUOUSLY, SPAN BY SPAN.

BASED ON THE ABOVE POURING SEQUENCE, TIE DOWNS ARE REQUIRED AT THE FOLLOWING LOCATIONS TO RESIST THE FOLLOWING SPECIFIED UPLIFT FORCES:

AT PIER 10R		AT PIER 10L	
GIRDER 4R–A:	13 kN	GIRDER 4L–A:	54 kN
GIRDER 4R–B:	4 kN	GIRDER 4L–B:	40 kN
		GIRDER 4L–C:	26 kN
		GIRDER 4L–D:	13 kN
		GIRDER 4L–E:	2 kN

THE CONTRACTOR MAY PROPOSE AN ALTERNATE TO THE POUR SEQUENCE SPECIFIED. IF THE CONTRACTOR DESIRES AN ALTERNATE POUR SEQUENCE, DETAILS OF THE SEQUENCE SHALL BE SUBMITTED, IN TRIPLICATE, TO THE DIRECTOR FOR APPROVAL.

THE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE SUPERSTRUCTURE DECK CONCRETE.

CONCRETE PARAPETS

AS SOON AS A CONCRETE SAW CAN BE OPERATED WITHOUT DAMAGING THE FRESHLY PLACED CONCRETE, 25 mm DEEP CONTROL JOINTS SHALL BE SAWED INTO THE PERIMETER OF THE CONCRETE PARAPET. THE SAW CUT SHALL BE MADE IN THE COMPLETE CIRCUMFERENCE OF THE PARAPET, STARTING AND ENDING AT THE ELEVATION OF THE CONCRETE DECK. THE SAWCUTS SHALL BE PLACED AT A MINIMUM OF 2000 mm AND A MAXIMUM OF 3000 mm CENTERS. THE USE OF AN EDGE GUIDE, FENCE, OR JIG IS REQUIRED TO INSURE 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 6 mm. THE PERIMETER OF THE DEFLECTION CONTROL JOINT SHALL BE SEALED TO A MINIMUM DEPTH OF 25 mm WITH A CAULKING MATERIAL CONFORMING TO FEDERAL SPECIFICATION, TT–S–00227E TO A MINIMUM DEPTH OF 25 mm.

ITEM 863 – STRUCTURAL STEEL MEMBER, MISC.: SAFETY CABLE SYSTEM FOR GIRDER

DESCRIPTION: THIS WORK SHALL CONSIST OF DRILLING HOLES, AND FURNISHING AND INSTALLING A SAFETY CABLE SYSTEM ALONG THE GIRDERS AS DETAILED IN THE PLANS, AND IN ACCORDANCE WITH THESE SPECIFICATIONS, AND AS DIRECTED BY THE ENGINEER.

THE SAFETY CABLE SHALL HAVE AT LEAST 305 mm OF VERTICAL SAG AND NO MORE THAN A 610 mm VERTICAL SAG AT MIDPOINTS BETWEEN EACH INTERMEDIATE CABLE SUPPORT AND THE MIDPOINTS BETWEEN EACH END CABLE SUPPORT AND ADJACENT INTERMEDIATE CABLE SUPPORT.

MATERIAL: THE CABLE SHALL BE A 16 mm DIAMETER 6 X 9 ZINC COATED WIRE ROPE WITH AN INDEPENDENT WIRE ROPE CORE. THE CABLE SHALL BE EXTRA IMPROVED PLOW WIRE AND SHALL HAVE A MINIMUM BREAKING STRENGTH OF 178 kN. CABLE END ATTACHMENTS SHALL BE OPEN WEDGE SOCKETS AT ONE END OF EACH CABLE WHICH DEVELOP FULL CABLE STRENGTH, AND THE OTHER END OF EACH CABLE SHALL BE OPEN SPELTER SOCKETS WHICH DEVELOP FULL CABLE STRENGTH. BOTH ENDS SHALL BE GALVANIZED. COTTER PINS SHALL BE STAINLESS STEEL.

PAINTING DRILLED HOLES SHALL CONFORM TO AND INCLUDED FOR PAYMENT WITH ITEM 514 – FIELD PAINTING MISC.: SHOP PAINTING AND FIELD TOUCH–UP OF STRUCTURAL STEEL.

MEASUREMENT AND PAYMENT: THE 16 mm DIAMETER SAFETY CABLE SYSTEM WILL BE MEASURED AND PAID FOR PER METER OF SYSTEM (MEASURED ALONG THE TOP OF THE GIRDER WEB BETWEEN SUPPORT POINTS) COMPLETE, IN PLACE, AND ACCEPTED. THIS PRICE SHALL BE PAYMENT IN FULL FOR THE WORK AS SPECIFIED INCLUDING ALL CABLE, CABLE END ATTACHMENTS, DRILLING, AND INCIDENTALS AS REQUIRED AT THE UNIT PRICE BID PER METER OF ITEM 863 – STRUCTURAL STEEL MEMBER, MISC.: SAFETY CABLE SYSTEM FOR GIRDER.

ITEM 863 – STRUCTURAL STEEL MEMBER, MISC.: INSPECTION CATWALK

THIS WORK SHALL CONSIST OF PROVIDING AND INSTALLING INSPECTION CATWALK INCLUDING SUPPORTS AND INCIDENTALS AS SHOWN IN THE PLANS.

THIS WORK SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LINEAR METER OF CATWALK, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK TO THE SATISFACTION OF THE ENGINEER.

ITEM 863 – STRUCTURAL STEEL MEMBER, MISC.: ACCESS LADDER

THIS WORK SHALL CONSIST OF PROVIDING AND INSTALLING ACCESS LADDERS INCLUDING SUPPORTS AND INCIDENTALS AS SHOWN IN THE PLANS.

THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LINEAR METER OF ACCESS LADDER, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK TO THE SATISFACTION OF THE ENGINEER.

ITEM 516 – STRUCTURAL STEEL EXPANSION JOINT, AS PER PLAN

THIS WORK SHALL CONSIST OF PROVIDING AND INSTALLING SLIDING PLATE EXPANSION JOINTS AT THE TEMPORARY REAR ABLUTMENT AND AT PIERS 4, 7, AND 10 (LEFT AND RIGHT) AS SHOWN IN THE PLANS.

ALL STEEL PARTS OF THE JOINT ASSEMBLY SHALL BE ASTM A36M UNLESS OTHERWISE NOTED IN THE PLANS. ALL STEEL EXPANSION JOINT MATERIAL AS SHOWN IN THE PLANS SHALL BE METALIZED. THE THICKNESS OF THE COATING SHALL BE 150–200 MICROMETERS. THE WIRE USED FOR THE METALIZING SHALL CONSIST OF 85% ZINC AND 15% ALUMINUM. SURFACE PREPARATION AND APPLICATION SHALL CONFORM TO SSPC COATING SYSTEM GUIDE NO. 2300, "GUIDE FOR THERMAL SPRAY METALLIC COATING SYSTEMS". AN OPAQUE SEAL COAT MEETING SECTION 7.2, SEALERS AND TOPCOATS; SHALL BE APPLIED TO METALIZED SURFACES THAT WILL BE IN CONTACT WITH THE CONCRETE.

MEASUREMENT FOR PAY PURPOSES SHALL BE BASED ON THE LINEAR METERS OF JOINT SYSTEM, MEASURED HORIZONTALLY ALONG THE JOINT CENTERLINE AND BETWEEN THE OUTER LIMTS OF THE JOINT. THIS PAY ITEM SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THE JOINT IN PLACE, WHICH INCLUDES: THE JOINT ARMOR, METALIZING, ANCHORING DEVICES, TEMPORARY SUPPORTS AND THE END CROSSFRAME TOP GUSSET PLATES. PAYMENT WILL BE MADE PER LINEAR METER FOR ITEM 516 – STRUCTURAL STEEL EXPANSION JOINT, AS PER PLAN.

CONSTRUCTION OF BRIDGE RAILING ON ANY STRUCTURE OVER 3 METERS IN SPAN

ALL CONCRETE PARAPETS (INCLUDING MEDIAN BARRIER) SHALL NOT BE SLIP FORMED.

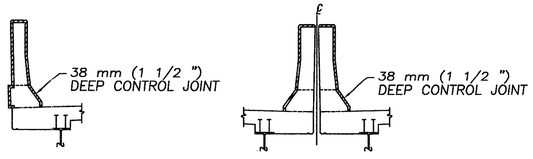
THE MINIMUM CONCRETE SLUMP DURING PLACEMENT OF ALL CONCRETE PARAPETS SHALL BE 152.4 mm (6 INCHES), AND A MAXIMUM SLUMP DURING PLACEMENT OF 203.2 mm (8 INCHES).

FORMS SHALL NOT BE REMOVED UNTIL AT LEAST 2 HOURS AFTER THE FINAL SET. DETERMINATION OF THE FINAL SET SHALL BE AS PER ASTM C266 (GILLMORE NEEDLE). TESTING SHALL BE PERFORMED BY THE CONTRACTOR AT NO COST TO THE STATE.

ANCHOR BOLTS FOR FENCE POSTS SHALL BE CAST IN PLACE.

THE CONTRACTOR SHALL CONSTRUCT 38 mm (1 ½") DEEP AND 6 mm (1/4") WIDE CONTROL JOINTS SPACED AT A MINIMUM OF 1830 mm (6 FT) AND A MAXIMUM OF 2440 mm (8 FT) ON CENTER. THE CONTROL JOINTS SHALL BE MADE IN THE COMPLETE CIRCUMFERENCE OF THE PARAPET, STARTING AND ENDING AT THE ELEVATION OF THE TOP OF THE CONCRETE DECK (SEE DETAILS BELOW). THE CONTRACTOR MAY EITHER FORM THE CONTROL JOINTS IN WITH FORM LINERS, OR, WITHIN 24 HOURS OF PLACEMENT, SAW CUT THE CONTROL JOINTS IN WITH THE USE OF AN EDGE GUIDE, FENCE, OR JIG WHICH IS REQUIRED TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE, AND ALIGNED ON ALL FACES OF THE PARAPET. THE ENTIRE LENGTH OF EACH CONTROL JOINT SHALL BE SEALED TO A MINIMUM DEPTH OF 38 mm (1 ½") WITH A CAULKING MATERIAL CONFORMING TO FEDERAL SPECIFICATION, TT–S–00227E.

▨ 38 mm (1 1/2 ") DEEP CONTROL JOINT



ITEM 516 – STEEL POT BEARING

1. DESCRIPTION

2.1 THIS ITEM SHALL CONSIST OF FURNISHING ALL MATERIALS, SERVICES, LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO DESIGN, FABRICATE, TEST AND INSTALL POT BEARINGS IN ACCORDANCE WITH THE PLANS AND THIS SPECIFICATION.
THE PROPOSAL NOTE "516, 517, 518 FABRICATED MEMBERS SHALL NOT APPLY TO THIS ITEM. SHOP DRAWINGS ARE REQUIRED FOR STEEL POT BEARINGS.

2.2 THE POT BEARING SHALL CONSIST OF THE FOLLOWING PARTS:

(1) RECTANGULAR SOLE PLATE – TOP SIDE BEVELED TO THE SLOPE OF THE GIRDER AND FIELD WELDED TO THE GIRDER FLANGE. BOTTOM SIDE LEVEL AND FACED WITH STAINLESS STEEL FOR EXPANSION BEARINGS. ON GUIDED BEARINGS, SOLE PLATE SHALL HAVE A GUIDE BAR. SOLE PLATE RIDES ON PISTON.

(2) CIRCULAR PISTON – TOP FACED WITH PTFE FOR EXPANSION BEARINGS. ON GUIDED BEARINGS, PISTON IS TO HAVE RECESS FOR GUIDE BAR WITH VERTICAL SIDES FACED WITH PTFE. PISTON SITS IN STEEL POT ON LUBRICATING AND ELASTOMERIC DISCS.

(3) COMBINED RECTANGULAR SOLE PLATE – CIRCULAR PISTON (FOR FIXED BEARINGS) – TOP SIDE BEVELED TO THE SLOPE OF THE GIRDER AND WELDED TO THE GIRDER FLANGE. BOTTOM SIDE LEVEL AND SITS IN STEEL POT ON LUBRICATING AND ELASTOMERIC DISCS.

(4) ELASTOMERIC DISC – CONFINED WITHIN POT FOR THE PURPOSE OF PROVIDING ROTATION AND SUPPORT FOR THE PISTON. LUBRICATING DISCS ARE PROVIDED ABOVE AND BELOW THE ELASTOMERIC DISC. THE DISC IS SEALED WITH BRASS SCALING RINGS.

(5) SEALING RINGS – SEAL BETWEEN POT AND PISTON USED TO CONTAIN THE ELASTOMERIC DISC.

(6) GUIDE BAR (FOR GUIDED BEARINGS) – ATTACHED TO OR INTEGRAL WITH SOLE PLATE FOR PURPOSE OF GUIDING EXPANSION BEARINGS AND TRANSMITTING LATERAL LOADS TO THE POT.

(7) CIRCULAR POT – CONTAINMENT FOR THE ELASTOMERIC DISC AND TRANSMISSION OF VERTICAL AND LATERAL LOADS TO MASONRY PLATES. FIELD WELDED TO MASONRY PLATES.

(8) MASONRY PLATE – DISTRIBUTE VERTICAL AND HORIZONTAL FORCES FROM THE STEEL POT TO THE CONCRETE BRIDGE SEAT. MASONRY PLATE SITS ON A BEARING PAD AND IS CONNECTED TO THE CONCRETE WITH ANCHOR BOLTS.

2.3. BEARING HEIGHT

(1) THE TOTAL BEARING HEIGHT SHOWN IN THE PLANS SHALL BE MET BY INCREASING THE SOLE PLATE THICKNESS OR POT BASE THICKNESS OR MASONRY PLATE THICKNESS OR ADDING A MAKE–UP PLATE BETWEEN THE POT AND MASONRY PLATE OR A COMBINATION THEREOF.

(2) IF A MAKE–UP PLATE IS USED IT SHALL HAVE A MINIMUM THICKNESS OF 13MM, AN OUTSIDE DIAMETER OF 32MM GREATER THAN THE POT AND BE SHOP WELDED TO THE POT BY AN 8MM FILLET WELD.

2. DESIGN AND MATERIALS REQUIREMENTS

2.1 THE DESIGN CRITERIA AND MATERIALS REQUIREMENTS SHALL BE GOVERNED BY THESE PROVISIONS AND ALL APPLICABLE SECTIONS OF AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION I, SECTION 19 AND DIVISION II, SECTION 18.3.

2.2 SOLE PLATE

(1) A572M, GRADE 350 STEEL WITH STAINLESS STEEL SLIDING SURFACE ON UNDER SIDE. TOP SIDE BEVELED TO THE SLOPE OF THE GIRDER. BOTTOM SIDE LEVEL.

(2) STAINLESS STEEL SHEET SURFACE SHALL CONFORM TO ASTM A167M OR A240M, TYPE 304. THE MINIMUM THICKNESS SHALL BE 1.5MM. STAINLESS STEEL IN CONTACT WITH PTFE SHALL HAVE A 0.0005MM RMS FINISH OR BETTER. THE SURFACE SHALL BE MECHANICALLY POLISHED. MATERIAL AND FINISH SHALL BE SUCH THAT THE REQUIREMENTS OF 4.2 (2) ARE MET.

(3) RECTANGULAR OR SQUARE IN PLAN.

(4) MINIMUM PLAN DIMENSIONS SHALL BE POT DIAMETER PLUS DESIGN MOVEMENT SHOWN IN THE PLANS PLUS 51MM.

(5) MINIMUM THICKNESS SHALL BE 19MM.

(6) FOR GUIDED EXPANSION BEARING GUIDE BAR IN SOLE PLATE, SEE 2.7.

2.3 PISTON

(1) ASTM A572M, GRADE 350 STEEL.

(2) DIAMETER OF PISTON SHALL BE 0.8MM LESS THAN THE INSIDE DIAMETER OF THE POT.

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DESIGNED	DRAWN	REVIEWED	DATE
JMG	JMG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

STRUCTURAL GENERAL NOTES
BRIDGE NO. CUY–77–23.458
OVER KINGSBURY RUN

CUY–77–23.458

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
metric units

GENERAL NOTES – STRUCTURES OVER 3 METERS SPAN

(3) PISTON THICKNESS SHALL BE SUFFICIENT TO PROVIDE A CLEARANCE OF 0.02 X POT O.D. + 3MM BETWEEN THE TOP OF THE POT WALL AND SURFACE ABOVE (GUIDE BAR IF GUIDED OR BOTTOM OF SOLE PLATE) THE POT WALL WHEN THE PISTON IN AN UNROTATED POSITION. ON GUIDED EXPANSION BEARINGS, THE PISTON THICKNESS SHALL BE SUFFICIENT TO TRANSMIT A LATERAL LOAD EQUAL TO 20 % OF THE VERTICAL DEAD LOADS SHOWN IN THE PLANS FROM THE GUIDE BAR TO THE POT WALL WITHOUT DEFLECTION/DISTORTION.

(4) PISTON WALLS SHALL BE TAPERED INWARD, TOWARD THE TOP, TO PREVENT BINDING AGAINST THE POT WALLS DURING ROTATION, AND THE BOTTOM EDGE SHALL BE ROUNDED WITH A MACHINED 3MM RADIUS.

(5) THE PISTON SHALL BE MACHINED FROM A SINGLE PIECE OF STRUCTURAL STEEL.

(6) ON GUIDED BEARINGS, THE BOTTOM OF THE RECESS SHALL BE A MINIMUM OF 10MM CLEAR TO GUIDE BAR IN SOLE PLATE.

(7) THE THICKNESS OF THE PISTON SHALL ENSURE THAT THE BOTTOM OF THE PISTON SHALL BE ENTIRELY BELOW THE TOP OF THE POT UP TO 200 PERCENT OF MAXIMUM DESIGN ROTATION.

(8) THE TOP OF THE PISTON AND THE SIDES OF GUIDE BAR RECESS ON GUIDED BEARINGS USED FOR EXPANSION BEARINGS SHALL BE FACED WITH PTFE. THE PTFE SURFACE SHALL CONSIST OF FINISHED UNFILLED PTFE SHEET MADE FROM VIRGIN PTFE RESIN OR 100 PERCENT PTFE, FABRIC MADE FROM VIRGIN PTFE MULTI–FILAMENT FIBER. MATERIAL AND FINISH SHALL BE SUCH THAT THE REQUIREMENTS OF 4.2 (2) ARE MET.

(9) PTFE FABRIC FIBERS SHALL CONFORM TO THE FOLLOWING:

A. THE RESIN FROM WHICH THE FIBERS ARE PRODUCED SHALL BE 100 PERCENT PTFE, CONFORMING TO ASTM D1457M.

B. TENSILE STRENGTH – ASTM D2256M – 165,474 KPA.

C. ELONGATION – ASTM D2256M – 75 PERCENT (MINIMUM).

D. THE TFE FABRIC SHALL HAVE A MINIMUM THICKNESS OF 1.6MM (COMPRESSED). MAXIMUM THICKNESS SHALL BE 3MM (COMPRESSED).

(10) FINISHED UNFILLED PTFE, SHEET SHALL BE MADE FROM 100 PERCENT VIRGIN PTFE RESIN AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

A. TENSILE STRENGTH D1457M, 19,305 KPA (MINIMUM).

B. ELONGATION ASTM D1457M – 200 PERCENT (MINIMUM).

C. SPECIFIC GRAVITY – ASTM D1457M – 2.13 (MINIMUM).

D. MELTING POINT – ASTM D1457M – 327 DEG C + 10,

E. MINIMUM THICKNESS SHALL BE 4.7 MM. SHEET SHALL BE RECESSED ONE HALF ITS THICKNESS INTO STEEL SUBSTRATE.

F. PTFE SHEET SHALL BE COMMERCIALLY ETCHED ON ITS BONDING SIDE.

2.4. COMBINED SOLE PLATE AND PISTON

(1) ALL APPLICABLE PROVISIONS OF 2.2 AND 2.3 SHALL APPLY.

(2) THE PISTON THICKNESS SHALL BE SUFFICIENT TO TRANSMIT A LOAD EQUAL TO 20% OF THE VERTICAL DEAD LOAD SHOWN IN THE PLANS TO THE POT WALL WITHOUT DEFLECTION/DISTORTION.

2.5. ELASTOMERIC DISC

(1) THE ELASTOMERIC DISC SHALL MEET THE FOLLOWING AVERAGE COMPRESSIVE STRESS REQUIREMENTS:

A. MAXIMUM OF 24,132 KPA WHEN THE BEARING VERTICAL DESIGN CAPACITY SPECIFIED IN THE PLAN IS APPLIED TO THE AREA OF THE DISC.

B. MINIMUM OF 4,826 kPa WHEN THE LESSER OF THE DEAD LOAD OR 20% OF THE BEARING VERTICAL DESIGN CAPACITY SPECIFIED IN THE PLAN IS APPLIED TO THE AREA OF THE DISC.

(2) MINIMUM DISC THICKNESS SHALL BE 0.067 X DISC DIAMETER.

(3) THE ELASTOMERIC DISC SHALL CONSIST OF 100 PERCENT VIRGIN POLYCHLOROPRENE (NEOPRENE) MEETING THE REQUIREMENTS OF CMS ITEM 711.23 OR 100 PERCENT VIRGIN NATURAL POLYISOPRENE (NATURAL RUBBER) MEETING THE REQUIREMENTS OF THE CURRENT AASHTO M251M.

(4) HARDNESS SHALL BE 50 DUROMETER +/– 10.

(5) THE DISC SHALL CONSIST OF ONE SOLID PIECE OF ELASTOMER.

(6) THE ELASTOMERIC DISC SHALL BE LUBRICATED BY MEANS OF 0.4MM THICK UNFILLED PTFE DISC THE SAME INSIDE DIAMETER AS THE POT, ONE LOCATED ABOVE THE AND ONE BELOW THE ELASTOMERIC DISC OR BY A LUBRICANT RECOMMENDED BY THE MANUFACTURER AND APPROVED BY THE DIRECTOR.

(7) TWO FLAT BRASS SEALING RINGS SHALL BE USED TO SEAL THE DISC. THE UPPER EDGE OF THE DISC SHALL BE RECESSED TO RECEIVE THE SEALING RINGS SO THAT THEY SIT FLUSH WITH THE UPPER SURFACE OF THE TOP LUBRICATING DISC.

2.6. SEALING RING

(1) RINGS SHALL BE FLAT AND MADE OF BRASS CONFORMING TO THE REQUIREMENTS OF ASTM B36M, HALF HARD.

(2) MINIMUM WIDTH SHALL BE 10MM.

(3) MINIMUM THICKNESS SHALL BE 1.3MM.

(4) THE RINGS SHALL HAVE A SMOOTH FINISH OF 0.00016MM (RMS) OR LESS.

(5) TWO RINGS ARE REQUIRED.

(6) THE RINGS SHALL BE SPLIT AND SNUGLY FIT THE RECESS IN THE ELASTOMERIC DISC AS WELL AS THE INSIDE DIAMETER OF THE POT. THE ENDS OF THE RINGS AT THE SPLIT SHALL BE CUT AT 45 DEGREES TO THE VERTICAL. THE MAXIMUM GAP SHALL BE 1.3MM WHEN INSTALLED. THE RINGS SHALL BE ARRANGED TO HAVE THE SPLITS STAGGERED A MINIMUM OF 90 DEGREES RELATIVE TO ONE ANOTHER.

2.7. GUIDE BARS

(1) ASTM A36M OR A572M, GRADE 350 FACED WITH STAINLESS STEEL.

(2) GUIDE BARS MAY BE INTEGRAL MY MACHINING FROM A SOLID SOLE PLATE OR THEY MAY BE ATTACHED TO THE SOLE PLATE BY PRESS FIT INTO RECESS AND WELDING THE ENDS. THE SIDE SURFACES OF THE GUIDE BARS SHALL BE FACED WITH STAINLESS STEEL, SEC 2.2 (2). WELDING OF GUIDE BARS TO THE SOLE PLATE SHALL BE PERFORMED PRIOR TO WELDING OF STAINLESS STEEL TO THE SOLE PLATE OR GUIDE BARS.

(3) THE TOTAL SPACE (BOTH SIDES) BETWEEN THE GUIDE BARS AND GUIDED MEMBERS SHALL BE 3MM MINUS 0, PLUS 1.5MM.

(4) THE GUIDE BARS SHALL BE DESIGNED FOR NO LESS THAN A LATERAL HORIZONTAL FORCE EQUAL TO 20% OF THE VERTICAL DEAD LOAD FORCE.

(5) GUIDING ARRANGEMENTS SHALL BE DESIGNED SO THAT THE GUIDED MEMBER IS ALWAYS WITHIN THE GUIDES AT ALL POINTS OF TRANSLATION AND ROTATION OF THE BEARING.

(6) SEE 2.3 (6).

2.8. POT

(1) A572M, GRADE 350 STEEL.

(2) THE POT SHALL CONSIST OF A SOLID PLATE INTO WHICH A CIRCULAR RECESS HAS BEEN MACHINED.

(3) DEPTH OF THE CIRCULAR RECESS SHALL BE EQUAL TO OR GREATER THAN ((0.5MM +R) X D/2 + 2.5MM = THICKNESS OF ELASTOMERIC AND LUBRICATING DISCS) WHERE R = DESIGN ROTATION: D = ELASTOMER DIAMETER.

(4) THE POT INSIDE DIAMETER SHALL BE THE SAME AS THE ELASTOMERIC DISC, SEE 2.5.

(5) THE OUTSIDE OF THE POT SHALL BE CIRCULAR.

(6) THE THICKNESS OF THE POT WALL SHALL BE SUFFICIENT TO TRANSMIT A LATERAL HORIZONTAL FORCE EQUAL TO 20% OF THE VERTICAL DEAD LOAD TO THE POT BASE WITH THE LOAD APPLIED AT THE CONTACT POINT AT TWO TIMES THE DESIGN ROTATION WITHOUT CAUSING DEFLECTION/DISTORTION TO THE POT WALL OR BASE.

(7) THE MINIMUM THICKNESS OF THE POT BENEATH THE ELASTOMER FOR A BEARING DIRECTLY ON A MASONRY PLATE SHALL BE THE GREATER OR MORE OF THE 0.045 X POT I.D. OR 13MM AND MEET THE REQUIREMENT OF 2.8 (6).

2.9. MAKE–UP PLATE

(1) ASTM A572M, GRADE 350 STEEL.

2.10. MASONRY PLATE

(1) ASTM A572M, GRADE 350 STEEL.

2.11. BEARING PAD SHEET LEAD SHALL CONFORM TO ASTM B29M.

3. FABRICATION

3.1. ATTACHMENT OF SHEET PTFE TO SUBSTRATE.

(1) PTFE SHEET SHALL BE RECESSED INTO AND BONDED TO A STEEL SUBSTRATE.

(2) PTFE SHALL BE RECESSED FOR ONE HALF ITS THICKNESS.

(3) THE BONDING SURFACE OF THE STEEL SHALL BE CLEANED OF RUST, SCALE, OIL AND GREASE BY BLAST CLEANING AND THEN WIPED CLEAN WITH A CLEANING SOLVENT. BLAST CLEANING SHALL BE PERFORMED WITHIN A MAXIMUM OF FOUR HOURS PRIOR TO BONDING.

(4) THE ADHESIVE MATERIAL AND THE BONDING PROCEDURES TO BE USED SHALL BE SUBMITTED TO THE DIRECTOR FOR APPROVAL PRIOR TO PERFORMANCE OF THE BONDING OPERATION. THE BONDING OPERATION SHALL BE PERFORMED UNDER CONTROLLED CONDITIONS AND IN ACCORDANCE WITH THESE APPROVED PROCEDURES.

(5) AFTER COMPLETION OF THE BONDING OPERATION, THE PTFE SURFACE SHALL BE SMOOTH AND FREE FROM BUBBLES.

3.2. ATTACHMENT OF PTFE FABRIC TO SUBSTRATE

(1) PTFE FABRIC SHALL BE MECHANICALLY INTERLOCKED AND BONDED TO THE STEEL SUBSTRATE.

(2) THE BONDING SURFACE OF THE STEEL SHALL BE CLEANED OF RUST, SCALE, OIL AND GREASE BY BLAST CLEANING AND THEN CLEANED WITH SOLVENT. BLAST CLEANING SHALL BE PERFORMED WITHIN A MAXIMUM OF FOUR HOURS PRIOR TO BONDING.

(3) THE MECHANICAL INTERLOCK AND ADHESIVE BONDING MATERIAL AND PROCEDURES SHALL BE SUBMITTED TO THE DIRECTOR FOR APPROVAL PRIOR TO PERFORMANCE OF THE BONDING OPERATION. THE BONDING OPERATION SHALL THEN BE PERFORMED UNDER CONTROLLED CONDITIONS AND IN ACCORDANCE WITH THESE APPROVED PROCEDURES AS APPROVED BY THE DIRECTOR.

(4) MIGRATION OF EPOXY THROUGH THE FABRIC WILL NOT BE PERMITTED.

(5) FABRIC SHALL BE FURNISHED IN ONE PIECE. EDGES SHALL BE OVERSEWN OR RECESSED SO THAT NO CUT FABRIC EDGES ARE EXPOSED.

3.3. ATTACHMENT OF SHEET STAINLESS STEEL

(1) STAINLESS STEEL SHALL BE ATTACHED TO ITS STEEL SUBSTRATE WITH AN APPROVED EPOXY TO ENSURE COMPLETE CONTACT, AND THEN SEAL WELDED. SEAL WELDS SHALL BE CONTINUOUS FOR THE ENTIRE PERIPHERY OF THE STAINLESS OVERLAY. THE ENTIRE STAINLESS STEEL SURFACE SHALL CONFORM TO THE REQUIREMENTS OF SECTION 2.2 (2) AFTER WELDING.

3.4. CORROSION PROTECTION

(1) ALL STEEL SURFACES EXPOSED TO THE ATMOSPHERE, EXCEPT STAINLESS STEEL SURFACES, SHALL BE SHOP PRIME COATED IN ACCORDANCE WITH ITEM 514, SYSTEM IZEU.

3.5. WELDING

(1) WELDING AS A MEANS OF ATTACHMENT SHALL BE DONE IN A CONTROLLED MANNER AND SHALL CONFORM TO CMS ITEM 513. WELDING TO A STEEL PLATE WHICH HAS BONDED TFE SURFACE MAY BE PERMITTED PROVIDING WELDING PROCEDURES ARE ESTABLISHED WHICH RESTRICT THE MAXIMUM TEMPERATURE REACHED BY THE BOND AREA TO LESS THAN 149 DEGREES (C), AS DETERMINED BY TEMPERATURE INDICATING PENCILS, OR OTHER SUITABLE MEANS.

3.6. TOLERANCES

(1) GENERAL FLATNESS CRITERIA

A. FLATNESS TOLERANCES SHALL BE DEFINED AS

1. CLASS A TOLERANCE = 0.0005 X NOMINAL DIMENSION.
2. CLASS B TOLERANCE – 0.001 X NOMINAL DIMENSION.
3. CLASS C TOLERANCE – 0.002 X NOMINAL DIMENSION.
4. NOMINAL DIMENSION SHALL BE DEFINED AS THE ACTUAL DIMENSION OF THE PLATE, IN MILLIMETERS, SPANNED BY THE STRAIGHTEDGE.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION — metric units

DESIGN AGENCY
HNTB One Cleveland Center 1375 East Ninth Street Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
JMC	JMC	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

STRUCTURAL GENERAL NOTES
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23458

10/175

103/295

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GENERAL NOTES – STRUCTURES OVER 3 METERS SPAN

B. FLATNESS SHALL BE DETERMINED BY PLACING A STRAIGHTEDGE, LONGER THAN THE NOMINAL DIMENSION TO BE MEASURED, IN CONTACT WITH THE SURFACE TO BE MEASURED OR AS PARALLEL TO IT AS POSSIBLE. SELECT A FEELER GAUGE HAVING A TOLERANCE OF + OR −0.03 INCHES AND ATTEMPT TO INSERT IT UNDER THE STRAIGHTEDGE. (THE SMALLEST NUMBER OF BLADES SHALL BE USED.) FLATNESS IS ACCEPTABLE IF THE FEELER DOES NOT PASS UNDER THE STRAIGHTEDGE. THE STRAIGHTEDGE MAY BE LOCATED AT ANY POSITION ON THE SURFACE AND NOT NECESSARILY AT 90 DEGREES TO THE EDGES.

C. TOLERANCES –SOLE PLATE

1. PLAN DIMENSIONS OVER 762MM: −0MM, +6MM.
2. PLAN DIMENSIONS UNDER 762MM: −0MM, +4MM.
3. FLATNESS OF SURFACE IN CONTACT WITH BEAM GIRDER – CLASS B.
4. FLATNESS OF BACKING SURFACE FOR STAINLESS STEEL – CLASS A. (EXPANSION BEARINGS).
5. THICKNESS: −0.8MM, +3MM.

D. TOLERANCES – PISTON

1. DIAMETERS GREATER THAN 508MM: +0.18MM
2. DIAMETERS LESS THAN 508MM: +0.13MM.
3. FOR EXPANSION BEARINGS WHERE UPPER SIDE IS FACED WITH PTFE, FLATNESS OF UPPER SIDE SHALL BE CLASS A.
4. FLATNESS OF LOWER SIDE: CLASS B

E. TOLERANCES – SOLE PLATE/PISTON

1. ALL APPLICABLE PROVISIONS OF C AND D

F. TOLERANCES – ELASTOMERIC DISC

1. DIAMETERS GREATER THAN 508MM: +2.4MM.
2. DIAMETERS LESS THAN 508MM: +1.5MM.
3. THICKNESS: −0MM, +3MM.

G. TOLERANCES – GUIDE BAR

1. LENGTH (UNLESS INTEGRAL): +3MM.
2. FLATNESS OF BACKING SURFACE FOR STAINLESS STEEL: CLASS A.
3. INSIDE OF BAR TO INSIDE OF BAR:: NOMINAL DIMENSION −0.8MM.
4. GUIDE BARS SHALL BE NOT MORE THAN 0.8MM OUT OF PARALLEL.
5. CROSS SECTIONAL DIMENSIONS: +1.5MM.

H. TOLERANCES – POT

1. THE INSIDE DIAMETER SHALL BE MACHINED TO A TOLERANCE OF +0.13 UP TO 508MM DIAMETER AND +0.18MM OVER 508MM DIAMETER.
2. POT UNDERSIDE SHALL BE MACHINED PARALLEL TO THE INSIDE TO A CLASS A TOLERANCE.

I. TOLERANCES – PTFE SUBSTRATES

1. SUBSTRATE FLATNESS: CLASS A.

J. TOLERANCE OF STEEL (NOT STAINLESS) IN CONTACT WITH STEEL (NOT STAINLESS): CLASS B

K. THE EDGES OF ALL PARTS SHALL BE BROKEN BY GRINDING SO THAT THERE ARE NO SHARP EDGES

L. TOLERANCES – OVERALL HEIGHTS OF BEARING: −1.5MM, AND 3MM

M. TOLERANCE – MAKE–UP PLATE

1. PLAN DIMENSION: −0MM, +6MM.
2. THICKNESS: −0.8MM, +3MM.
3. FLATNESS: CLASS B TOP AND BOTTOM.

N. TOLERANCES – MASONRY PLATE

1. PLAN DIMENSIONS: −0MM, +6MM.
2. THICKNESS: −0.8MM, +3MM.
3. FLATNESS – CLASS C FOR THE UNDERSIDE, CLASS B FOR THE UPPER SIDE.

4. TESTING

4.1. GENERAL

(1) TESTS SHALL BE PERFORMED BY THE MANUFACTURER OR AN INDEPENDENT TESTING LABORATORY. THE TESTING AGENT CHOSEN BY THE CONTRACTOR WILL BE SUBJECT TO APPROVAL BY THE DIRECTOR. APPROVAL WILL BE BASED ON 1) THE ABILITY OF THE TESTING FACILITY TO PERFORM THE REQUIRED TEST – POSSESSION OF PROPER TESTING EQUIPMENT AND TRAINED PERSONNEL, AND 2) SUBMITTAL OF A REPORT DESCRIBING THE TESTING PROCEDURES TO BE USED INCLUDING SETUP OF TESTING APPARATUS, STEPS TO BE FOLLOWED IN THE TESTING APPARATUS, STEPS TO BE FOLLOWED IN THE TESTING PROCEDURES, READINGS, CONVERSION OF READINGS TO FINAL DATA, AND SAMPLE CALCULATIONS SHOWING HOW FINAL RESULTS ARE OBTAINED FROM RAW DATA.

(2) SAMPLING

A. ONE GUIDED EXPANSION BEARING AND ONE FIXED BEARING SHALL BE CHOSEN, SELECTED AT RANDOM, FROM EACH APPLICABLE LOT OF COMPLETED BEARINGS.

1. ONE LOT SHALL CONSIST OF NO MORE THAN 2.5 BEARINGS OF ONE LOAD CATEGORY.

2. ONE LOAD CATEGORY SHALL CONSIST OF BEARINGS HAVING VERTICAL LOAD CAPACITY WITHIN A RANGE OF NO MORE THAN 890 KN.

4.2. FRICTION TEST SHALL BE PERFORMED ON EXPANSION BEARING SAMPLES CHOSEN AS DESCRIBED IN SECTION 4.1 (2) ABOVE.

(1) THE TEST SHALL BE CONDUCTED AT THE MAXIMUM WORKING STRESS FOR THE BEARING WITH THE LOAD APPLIED CONTINUOUSLY FOR 12 HOURS PRIOR TO MEASURING THE FRICTION. MAXIMUM WORKING STRESS SHALL BE DETERMINED BY DIVIDING THE MAXIMUM VERTICAL FORCE (OBTAINED FROM THE PLANS) BY THE AREAS OF PTFE USED ON TOP OF THE PISTON.

(2) THE STATIC AND DYNAMIC COEFFICIENT OF FRICTION SHALL BE DETERMINED. A SLIDING SPEED OF LESS THAN ONE mm PER MINUTE SHALL BE USED. THE COEFFICIENT OF FRICTION THUS DETERMINED SHALL NOT EXCEED 0.04.

4.3. PROOF LOAD TEST SHALL BE PERFORMED ON BEARING SAMPLES CHOSEN AS DESCRIBED IN SECTION 4.1 (2) ABOVE. THE EXPANSION BEARING MAY BE THE ONES USED FOR THE FRICTION TEST DESCRIBED IN 4.2 ABOVE

(1) A TEST BEARING SHALL BE LOADED TO 150 PERCENT OF THE BEARINGS RATED DESIGN CAPACITY AND SIMULTANEOUSLY SUBJECTED TO A ROTATIONAL RANGE OF 0.02 RADIANS (1.146O) OR DESIGN ROTATION, WHICHEVER IS GREATER, FOR A PERIOD OF ONE (1) HOUR. THE BEARING WILL BE VISUALLY EXAMINED BOTH DURING THE TEST AND UPON DISASSEMBLY AFTER THE TEST. ANY RESULTANT VISUALS DEFECTS, SUCH AS EXTRUDED OR DEFORMED ELASTOMER, POLYETHER URETHANE OR TFE, DAMAGED SCALES OR LIMITED RINGS, OR CRACKED STEEL, SHALL BE CAUSE FOR REJECTION OF THE LOT.

(2) DURING THE TEST, FOR POT BEARINGS THE STEEL BEARING PLATE AND STEEL PISTON SHALL MAINTAIN CONTINUOUS AND UNIFORM CONTACT FOR THE DURATION OF THE TEST. ANY OBSERVED LIFT–OFF WILL BE CAUSE FOR REJECTION OF THE LOT. BEARINGS NOT DAMAGED DURING TESTING MAY BE USED IN THE WORK.

4.4. ADHESION BETWEEN THE PTFE AND SUBSTRATE SHALL BE TESTED ON A TEST SPECIMEN IN ACCORDANCE WITH ASTM D429M, METHOD B. THE MINIMUM PEEL STRENGTH SHALL BE 4378 N/M. THIS TEST IS IN ADDITION TO ADHESION DETERMINED UNDER 4.2 AND 4.3 ABOVE.

4.5. TEST RESULTS SHALL BE PRESENTED IN A REPORT SHOWING RAW TEST DATA, REDUCED TEST DATA, SAMPLE CALCULATIONS, AND FINAL RESULTS ALONG WITH PHOTOGRAPHS AND CONCLUSIONS.

4.6. CERTIFIED TEST DATA FOR ALL STAINLESS STEEL, A36M OR A572M STEEL AND PTFE, SHALL BE FURNISHED TO THE DIRECTOR SHOWING COMPLIANCE WITH THE REQUIREMENTS OF THIS SPECIFICATION

4.7. THE DIRECTOR MAY REQUIRE ADDITIONAL BEARINGS TO BE TESTED EVEN THOUGH REQUIRED BEARING TESTS HAVE BEEN ACCEPTABLE. SUCH ADDITIONAL TESTS WILL BE PAID FOR UNDER ITEM SPECIAL, ADDITIONAL BEARING TEST, POT BEARING.

5. SHIPPING AND PACKING

5.1. BEARINGS SHALL BE SECURELY BANDED TOGETHER AS UNITS SO THAT THEY MAY BE SHIPPED TO THE JOB SITE AND STORED WITHOUT RELATIVE MOVEMENT OF THE BEARING PARTS OR DISASSEMBLY AT ANY TIME. THIS REQUIREMENT DOES NOT APPLY TO THE MASONRY PLATE OR 3MM SHEET LEAD WHICH SHALL BE SHIPPED FOR SEPARATE INSTALLATION. BEARINGS SHALL BE WRAPPED IN MOISTURE PROOF AND DUST PROOF MATERIAL TO PROTECT AGAINST SHIPPING AND JOB SITE CONDITIONS.

5.2. CARE SHALL BE TAKEN TO ENSURE THAT BEARINGS AT THE JOB SITE ARE STORED IN A DRY, SHELTERED AREA FREE FROM DIRT UNTIL INSTALLATION.

5.3. CENTERLINES SHALL BE MARKED ON APPROPRIATE BEARING PARTS FOR CHECKING ALIGNMENT IN THE FIELD AND BE SHOWN ON SHOP DRAWINGS.

5.4. EACH BEARING, MASONRY PLATE AND PAD SHALL HAVE A MARK NUMBER AND THE MARK NUMBER AND PLACEMENT LOCATION SHALL BE SHOWN ON THE SHOP DRAWINGS.

6. INSTALLATION

6.1. FIELD WELDING OF BEARING TO MASONRY PLATE SHALL MEET THE REQUIREMENT OF 3.5 (1).

6.2. BEARING SHALL BE EVENLY SUPPORTED OVER THEIR UPPER AND LOWER SURFACES UNDER ALL ERECTION AND SERVICE CONDITIONS.

6.3. ALIGN THE CENTERLINES OF THE BEARING ASSEMBLY WITH THOSE OF THE SUBSTRUCTURE AND SUPERSTRUCTURE OR ON GUIDED BEARINGS, ALIGN THE BEARINGS TO ALLOW FOR THE DESIGNATED EXPANSION DIRECTING OF THE STRUCTURE.

6.4. ERECTION BARS SHALL BE FASTENED TO THE BEAM FLANGE TO ACCURATELY POSITION THE GIRDER ONTO THE SOLE PLATE OF THE BEARING. THE GUIDE BAR ON GUIDED BEARINGS MUST BE IN PARALLEL WITH THE GIRDER. TOLERANCE IN SETTING THE GUIDE BAR SHALL BE 0.8MM IN THE LENGTH OF THE BAR OUT OF PARALLEL.

6.5. BEARING STRAPS OR RETAINING CLAMPS SHALL BE LEFT IN PLACE AS LONG AS POSSIBLE TO ENSURE PARTS OF BEARINGS ARE NOT INADVERTENTLY DISPLACED RELATIVE TO EACH OTHER.

6.6. SET OFFSETS OF UPPER AND LOWER BEARING PARTS TO COMPENSATE FOR AMBIENT TEMPERATURE AND AS REQUIRED BY PLANS.

6.7. CONCRETE BEARING SEATS SHALL BE PREPARED AT THE CORRECT ELEVATION AND SHALL BE LEVEL WITHIN 1:200.

6.8. FIELD PAINT EXPOSED STEEL IN ACCORDANCE WITH ITEM 514, SYSTEM IZEU.

7. METHOD OF MEASUREMENT

7.1. THE QUANTITY SHALL BE THE ACTUAL NUMBER OF POT BEARINGS FURNISHED WITHIN THE CATEGORIES LISTED IN THE ESTIMATED QUANTITIES TABLE. A COMPLETE AND ACCEPTABLE BEARING SYSTEM FURNISHED AND INSTALLED INCLUDING BEARING, MASONRY PLATE, BEARING PAD AND ANCHOR BOLTS WILL BE MEASURED ON AN EACH BASIS. NO DISTINCTION WILL BE MADE BETWEEN FIXED OR EXPANSION BEARINGS. THE CATEGORY OF EACH BEARING IS DETERMINED BY THE MAXIMUM VERTICAL REACTION LISTED IN THE CONSTRUCTION DRAWINGS.

7.2. ADDITIONAL BEARING TESTS, IF REQUIRED BY THE DIRECTOR, WILL BE MEASURED ON AN EACH BASIS FOR A SUCCESSFULLY TESTED AND ACCEPTED BEARING. TESTS RESULTING IN A REJECTED BEARING WILL NOT BE MEASURED AND PAID FOR.

8. BASIS OF PAYMENT

8.1. PAYMENT FOR POT BEARINGS WILL BE MADE AT THE CONTRACT UNIT PRICE PER EACH LISTED UNDER: ITEM 516 – STEEL POT BEARING.

8.2. NO SEPARATE PAYMENT WILL BE MADE FOR THE WORK LISTED UNDER TESTING AND ACCEPTANCE OF THIS SPECIFICATION. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE BEARINGS.

ITEM 518 – 254mm DOWNSPOUT, INCLUDING SPECIALS.

THIS WORK SHALL CONSIST OF PROVIDING AND INSTALLING DRAINAGE DOWN SPOUTS, TROUGH HOPPERS, AND ALL ASSOCIATED SUPPORTS, INCLUDING RELOCATION OF EXISTING DOWNSPOUT AT PIER 7R, AND INCIDENTALS AS SHOWN IN THE PLANS.

THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LINEAR METER OF PIPE, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK TO THE SATISFACTION OF THE ENGINEER.

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114–1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
JMG	JMG	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

STRUCTURAL GENERAL NOTES
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

GENERAL NOTES – STRUCTURES OVER 3 METERS SPAN

ITEM 518–STRUCTURE DRAINAGE, MISC.: NEOPRENE DRAINAGE TROUGH

DESCRIPTION:
THIS WORK SHALL INCLUDE FURNISHING AND INSTALLING, AT THE PIER EXPANSION JOINTS, THE NEOPRENE TROUGHS AND BITUMINOUS COATING AS DETAILED IN THE PLANS AND IN ACCORDANCE WITH THE SPECIFICATIONS.

MATERIALS:
ELASTOMERIC TROUGH SHEETING SHALL BE SHOP FABRICATED AND VULCANIZED BONDED WITH HEAT AND PRESSURE FROM NYLON REINFORCED NEOPRENE SHEET (NRNS). THE SHEET MATERIAL SHALL BE 2 mm THICK GENERAL PURPOSE, HEAVY DUTY NEOPRENE SHEET WITH NYLON FABRIC REINFORCEMENT. THE NRNS SHALL BE "FAIRPRENE NUMBER NN–0003" AS MANUFACTURED BY E. I. DUPONT DE NEMOURS AND COMPANY, INCORPORATED, "WINGPRENE" AS MANUFACTURED BY THE GOODYEAR TIRE AND RUBBER COMPANY, OR AN APPROVED EQUAL. THE SHEET SHALL CONFORM TO THE FOLLOWING:

THE ONE–PLY MATERIAL SHALL CONFORM TO ASTM D751M AND THE FOLLOWING:

THICKNESS, mm	2 mm±0.3mm
BREAKING STRENGTH, GRAB, WXF, MINIMUM	3114 X 3114N
ADHESIVE, 25 mm STRIP, 50 mm MIN., MINIMUM	40N
BURST STRENGTH (MULLEN), MINIMUM	9653 kPa MINIMUM
HEAT AGING, 70 HRS. @ 100°C 180° BEND WITHOUT CRACKING ASTM D2136M	NO CRACKING OF COATING
LOW TEMPERATURE BRITTLENESS 1 HR AT –40°C, BEND AROUND 6 mm MANDREL, ASTM D2136M	NO CRACKING OF COATING

CONNECTIONS:
CONNECTIONS FOR ELASTOMERIC TROUGH INCLUDING ALL CLAMP BARS, SUPPORTS, BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL ACCORDING TO 730.09 AND 730.10. ALL HOLES MADE IN THE FIELD SHALL BE DRILLED AND ALL CUTS MADE IN THE FIELD SHALL BE SAWN.

BITUMINOUS COATING – THE COATING SHALL CONFORM TO THE LATEST EDITION OF FEDERAL SPECIFICATION WW–P–405B, COATING F.

FABRICATION:
SHOP DRAWINGS FOR THE ELASTOMERIC TROUGHS SHALL BE PREPARED BY THE FARICATOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL. FABRICATION SHALL NOT BEGIN BEFORE THE SHOP DRAWINGS ARE APPROVED.

TROUGHS SHALL BE REFORMED IN THE SHOP TO CONFORM WITH THE TROUGH SHAPES AS SHOWN IN THE PLANS.

SHEETS SHALL BE FURNISHED IN ONE CONTINUOUS PIECE UNLESS A SHOP FABRICATED SPLICE, VULCANIZED (WITH HEAT AND PRESSURE) FIELD SPLICE IS INDICATED ON THE PLANS OR APPROVED BY THE DIRECTOR.

ADHESIVE FOR FIELD BONDING SHALL BE SIKASTIX 323 BY THE SIKA CHEMICAL CORPORATION OF LYNDHURST, NEW JERSY; FEL–POXY FP–101 BY THE FELT PRODUCTS MANUFACTURING COMPANY OF SKOKIE, ILLINOIS; MARK–184 BY POLY–CARB OF SOLON, OHIO; OR OTHER AS RECOMMENDED BY THE SHEETING MANUFACTURER.

HOLES IN THE TROUGHS SHALL BE LOCATED WITH THE AID OF A TEMPLATE FURNISHED BY THE STRUCTURAL STEEL FABRICATOR.

PREPARATION FOR INSTALLATION:
PRIOR TO INSTALLING THE NRNS SHEETING, ALL SURFACES WHICH ARE TO BE BONDED TOGETHER SHALL BE THOROUGHLY CLEANED AND KEPT DRY UNTIL THE ADHESIVE HAS BEEN APPLIED.

THE PREPARATION OF SURFACES SHALL BE ACCOMPLISHED NOT MORE THAN 24 HOURS PRIOR TO ADHESIVE BONDING. IMMEDIATELY AFTER MECHANICAL PREPARATION, THE FRESH SURFACES SHALL BE WIPED WITH METHYLETHYL KETONE, TOLUENE OR OTHER APPROVED SOLVENTS TO REMOVE CONTAMINANTS. CONTINUOUS AND CONSISTENT PRESSURE SHALL BE MAINTAINED ON THE BONDED COMPONENTS UNTIL THE ADHESIVE HAS ACHIEVED ENOUGH STRENGTH TO RESIST STRESS.

PRIOR TO USE, ALL EXTERIOR ELASTOMERIC SURFACES SHALL BE CLEANED WITH METHYLETHYL KETONE, TOLUENE OR OTHER APPROVED SOLVENT USING CLEAN DISPOSABLE CLOTHS. THEN, NOT MORE THAN SEVEN (7) DAYS PRIOR TO INSTALLATION, A THIN COATING OF APPROVED CYCLIZING PASTE SHALL BE APPLIED TO THE ELASTOMERIC BONDING SURFACES ONLY. AFTER 25 TO 40 MINUTES, THE PASTE SHALL BE WASHED FROM THE SURFACES WITH CLEAN WATER.

INSTALLATION :
SUBSTRATE SURFACES SHALL BE CLEAN, DRY AND MAINTAINED ABOVE 7°C DURING INSTALLATION AND ADHESIVE CURING. SUPPLEMENTAL HEATING WILL BE PERMITTED. ADHESIVE SHALL BE APPLIED LIBERALLY TO THE ELASTOMERIC BONDING SURFACES USING A SERRATED SPATULA IF NECESSARY TO ACHIEVE A COMPLETE AND RELATIVELY UNIFORM COATING.

SAMPLING AND TESTING:
EACH LOT OF NRNS SHEETING SHALL BE TESTED BY AN INDEPENDENT LABORATORY TO ENSURE COMPLIANCE WITH THESE PROVISIONS. TWO CERTIFIED COPIES OF THE QUALIFICATION TEST DATA INDICATING THAT THE TESTED MATERIAL COMPLY WITH THESE PROVISIONS SHALL BE SUBMITTED TO THE ODOT TESTING LABORATORY. SAMPLING WHEN REQUESTED, SHALL BE IN ACCORDANCE WITH 106.03 EXCEPT THAT WHERE NRNS SHEETING IS TO BE FABRICATED ACCORDING TO PLAN REQUIREMENTS, SAMPLES SHALL BE MADE AVAILABLE PRIOR TO FABRICATION. THE SAMPLE FROM EACH LOT AND FOR EACH PROJECT SHALL BE ONE PIECE, ONE METER (1 m) LONG. MATERIAL ACCEPTANCE WILL BE BASED UPON ODOT TESTING LABORATORY EVALUATION OF CERTIFIED TEST DATA, LABORATORY TEST OF SAMPLED MATERIAL, OR THE EVALUATION OF BOTH CERTIFIED TEST DATA AND TESTED SAMPLES.

BITUMINOUS COATING APPLICATION:
THE BITUMINOUS COATING SHALL BE BRUSH OR TROWEL APPLIED. PRIOR TO IT'S APPLICATION SURFACES SHALL BE WIPED WITH A SUITABLE SOLVENT USING CLEAN DRY CLOTHS TO REMOVE CONTAINMENT TRACES. SURFACES SHALL BE DRY AND WARMER THAN 4°C DURING COATING APPLICATION. COATING THICKNESS SHALL BE NOT LESS THAN 1.6 mm.

MEASUREMENT AND PAYMENT:
NEOPRENE DRAINAGE TROUGH MEASUREMENT WILL BE BASED ON THE ACTUAL NUMBER OF LINEAL METERS OF DRAINAGE TROUGH (MEASURED ALONG THE TOP OF THE TROUGH) COMPLETE AND IN PLACE AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM 518 – STRUCTURE DRAINAGE, MISC.: NEOPRENE DRAINAGE TROUGH. THIS PRICE SHALL BE PAYMENT IN FULL FOR FURNISHING ALL MATERIALS INCLUDING STAINLESS STEEL MEMBERS AS SHOWN IN THE PLANS, EQUIPMENT, LABOR AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AS DETAILED IN THE PLANS.

ITEM SPECIAL – RETAINING WALL, MISC.: TEMPORARY TIE BACK WALL

DESCRIPTION:
THE CONTRACTOR SHALL FURNISH ALL NECESSARY LABOR, EQUIPMENT AND MATERIALS, AND PERFORM ALL OPERATIONS NECESSARY FOR THE INSTALLATION OF SOIL ANCHORS INCLUDING TEMPORARY SHEETING, WALES, CONCRETE, ETC. IN ACCORDANCE WITH THESE SPECIFICATIONS AND IN REASONABLE CLOSE CONFORMITY WITH DETAILS SHOWN ON THE PLANS OR ESTABLISHED BY THE ENGINEER.

MATERIALS:
THE SOIL ANCHORS OR TIE BACKS, COUPLERS, STEEL WASHERS, PLATES, ETC. SHALL BE EPOXY COATED.

THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER PRIOR TO THE START OF CONSTRUCTION. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING INFORMATION, AS SPECIFIED BY THE MANUFACTURER:

- ANCHOR OR TIE BACK LAYOUT
- ANCHOR OR TIE BACK DESIGN DETAILS
- ANCHOR OR TIE BACK DESIGN CAPACITY
- GRADE AND PROPERTIES OF THE TENDON MATERIAL
- METHOD AND DETAILS OF PROPOSED GROUTING PROCEDURE
- GROUT TYPE, STRENGTH, AND ADDITIVES
- HOLE DIAMETER AND PROPOSED DRILLING METHOD

CONSTRUCTION REQUIREMENTS:
ACCEPTANCE TESTING FOR SOIL ANCHORS SHALL BE CONDUCTED ON ALL SOIL ANCHORS INSTALLED AND AS SPECIFIED BY THE MANUFACTURER EXCEPT THAT THE DESIGN WORKING LOAD SHALL BE AT LEAST 872 KN PER ANCHOR. ALL ACCEPTANCE TEST DATA SHALL BE RECORDED AND MADE AVAILABLE TO THE ENGINEER.

BASIS OF PAYMENT:
PAYMENT FOR THE TEMPORARY TIE BACK WALL WILL BE MADE AT THE CONTRACT UNIT BID PER SQUARE METER OF ITEM SPECIAL – RETAINING WALL, MISC.: TEMPORARY TIE BACK WALL, WHICH PRICE SHALL BE CONSIDERED FULL COMPENSATION FOR THE COST OF FURNISHING THE FULL LENGTH OF SOIL ANCHORS OR TIE BACKS, COUPLERS, STEEL WASHERS, PLATES, TEMPORARY SHEETING, WALES, CONCRETE, ETC. INSTALLING THE ANCHORS, SOIL ANCHOR OR TIE BACK ACCEPTANCE TESTING EQUIPMENT, ETC., ALTERING THE EQUIMENT AND METHODS OF INSTALLATION IN ORDER TO PRODUCE THE REQUIRED END RESULT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS, AND SHALL ALSO INCLUDE THE COST OF FURNISHING ALL TOOLS, MATERIALS, LABOR, EQUIPMENT AND ALL OTHER COSTS NECESSARY TO COMPLETE THE REQUIRED WORK. NO DIRECT PAYMENT WILL BE MADE FOR UNACCEPTABLE ANCHORS OR TIE BACKS OR FOR ANY DELAYS OR EXPENSES THROUGH CHANGES NECESSITATED BY IMPROPER OR UNACCEPTABLE MATERIAL OR EQUIPMENT.

PAYMENT FOR THE TEMPORARY TIE BACK WALL COMPLETE IN PLACE SHALL BE MADE AT THE UNIT PRICE BID PER SQUARE METER FOR ITEM SPECIAL – RETAINING WALL, MISC.: TEMPORARY TIE BACK WALL.

ITEM 514 – SHOP PAINTING AND FIELD TOUCHUP OF STRUCTURAL STEEL

DESCRIPTION

THIS SPECIFICATION COVERS SHOP CLEANING AND SHOP APPLICATION OF A 3 COAT PAINT SYSTEM ON ITEM 863 – STRUCTURAL STEEL AND THE FIELD CLEANING AND REPAIR OF SURFACES DAMAGED IN SHIPPING, HANDLING, AND ERECTING THE STRUCTURAL STEEL AND ANY OTHER DAMAGES DURING CONSTRUCTION.

THIS SPECIFICATION SHALL ALSO INCLUDE THE GALVANIZING AS PER 711.02 OF ALL NUTS, WASHERS, BOLTS, ANCHOR BOLTS, AND ALL OTHER STRUCTURAL MEMBERS DESIGNATED IN THE PLANS.

MATERIAL

A. A THREE COAT PAINT SYSTEM CONSISTING OF AN

ORGANIC ZINC PRIME COAT
EPOXY INTERMEDIATE COAT
URETHANE FINISH COAT

AND MEETING THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 910 ENTITLED "OZEU STRUCTURAL STEEL PAINT"

B. INORGANIC ZINC SILICATE PRIMER PAINT, FOR THE BOLTED FAYING SURFACES, MEETING THE REQUIREMENTS OF C & MS 708.17.

C. A TIE COAT. CONSISTING OF AN EPOXY INTERMEDIATE COAT, MEETING THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 910, "EPOXY INTERMEDIATE COAT" AND THINNED 50 %, BY VOLUME, WITH A THINNER AS RECOMMENDED BY THE PAINT MANUFACTURER.

APPROVED PAINT, ITEMS A AND C, SHALL BE FROM ONE MANUFACTURER, REGARDLESS OF SHOP OR FIELD APPLICATION.

APPROVED PAINT, ITEM B, MAY BE FROM A DIFFERENT MANUFACTURER THAN ITEMS A AND C. ITEM B PAINT USED SHALL BE FROM THE SAME MANUFACTURER FOR BOTH SHOP APPLICATION AND FIELD TOUCH–UP.

PRE–PAINT CONFERENCE

IF DESIGNATED ON THE PLAN A PRE–PAINT CONFERENCE SHALL BE HELD SEPARATELY FROM THE PRECONSTRUCTION MEETING. ATTENDEES TO THIS MEETING SHALL INCLUDE THE GENERAL CONTRACTOR, PAINT CONTRACTOR, STRUCTURAL STEEL ERECTOR, FABRICATOR, QUALITY CONTROL SPECIALIST, ENGINEER, STRUCTURAL STEEL ENGINEER, AND OTHERS IF REQUIRED IN THE PLAN.

THE MEETING SHALL TAKE PLACE BEFORE THE STEEL IS FABRICATED OR PAINTED.

QUALITY CONTROL SPECIALISTS

THIS PERSON WILL NOT BE A FOREMAN OR MEMBER OF THE CONTRACTOR'S OR FABRICATOR'S PRODUCTION STAFF (IE. HE WILL NOT ABRASIVE BLAST, PAINT, RECOVER SPENT ABRASIVES, ETC.).HE WILL NOT BE INVOLVED IN ANY OTHER MISCELLANEOUS TASK (IE. MIXING PAINT, RUNNING ERRANDS, RUNNING OR WORKING ON EQUIPMENT, ETC. DOCUMENTATION THAT PERSONNEL PERFORMING QUALITY CONTROL RELATED FUNCTIONS ARE QUALIFIED SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO ALLOWING THE QUALITY CONTROL SPECIALIST (QCS) TO BEGIN WORK. DOCUMENTATION/VERIFICATION SHALL BE PROVIDED TO THE ENGINEER THAT THE QCS HAS RECEIVED FORMAL TRAINING FROM ONE OF THE FOLLOWING: KTA TATOR, S.G. PINNEY, OR CORROSION CONTROL CONSULTANTS. HE SHALL BE EQUIPPED WITH MATERIAL SAFETY DATA SHEETS, TOOLS AND EQUIPMENT TO PROVIDE QUALITY CONTROL ON ALL FACETS OF THE WORK AND SHALL HAVE A THOROUGH UNDERSTANDING OF THE PLANS AND SPECIFICATIONS PERTAINING TO THIS PROJECT. HE SHALL BE RESPONSIBLE FOR INSPECTING THE EQUIPMENT AT THE SPECIFIED INTERVALS, THE ABRASIVES, AND THE WORK, AT ALL QUALITY CONTROL POINTS. HE SHALL ALSO BE RESPONSIBLE FOR VERIFYING THAT ALL WORK IS DONE WITHIN THE SPECIFIED WORK LIMITATION. HE SHALL COOPERATE WITH THE INSPECTOR AND COMPARE AND DOCUMENT QUALITY CONTROL READINGS. HE SHALL HAVE THE AUTHORITY TO STOP WORK AND THE RESPONSIBILITY TO INFORM THE CONTRACTOR'S OR FABRICATOR'S FOREMAN OF NONCONFORMING WORK.

QUALITY CONTROL SPECIALISTS WILL BE REQUIRED IN THE SHOP AND IN THE FIELD. BEFORE FABRICATION THE FABRICATOR SHALL DESIGNATE ONE INDIVIDUAL FOR EACH SHOP AS A QUALITY CONTROL SPECIALIST.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

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DESIGNED	DRAWN	REVIEWED	DATE
JMG	JMG	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

STRUCTURAL GENERAL NOTES
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

114/175

105/295

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GENERAL NOTES – STRUCTURES OVER 3 METERS SPAN

AT THE PRECONSTRUCTION OR PRE–PAINT MEETING, THE CONTRACTOR SHALL ALSO DESIGNATE ONE INDIVIDUAL ON EACH PROJECT AS A QUALITY CONTROL SPECIALIST (ONLY ONE PERSON PER PROJECT WILL BE NECESSARY UNLESS THE CONTRACTOR IS WORKING AT MORE THAN THREE (3) SITES SIMULTANEOUSLY). IT WILL THEN BE NECESSARY TO PROVIDE AN ADDITIONAL QUALITY CONTROL SPECIALIST AND A SET OF TESTING EQUIPMENT AS DESCRIBED IN THE EQUIPMENT SECTION FOR EACH ADDITIONAL THREE SITES BEING PAINTED SIMULTANEOUSLY.

QUALITY CONTROL POINTS

QUALITY CONTROL POINTS (QCP) ARE POINTS IN TIME WHEN ONE PHASE OF THE WORK IS COMPLETE AND READY FOR INSPECTION BY THE CONTRACTOR OR FABRICATOR AND THE STRUCTURAL STEEL ENGINEER OR THE ENGINEER PRIOR TO CONTINUING WITH THE NEXT OPERATIONAL STEP. AT THESE POINTS: THE CONTRACTOR OR FABRICATOR SHALL AFFORD ACCESS TO INSPECT ALL AFFECTED SURFACES. IF INSPECTION INDICATES A DEFICIENCY, THAT PHASE OF THE WORK SHALL BE CORRECTED IN ACCORDANCE WITH THESE SPECIFICATIONS PRIOR TO BEGINNING THE NEXT PHASE OF WORK. DISCOVERY OF DEFECTIVE WORK OR MATERIAL AFTER A QUALITY CONTROL POINT IS PAST OR FAILURE OF THE FINAL PRODUCT BEFORE FINAL ACCEPTANCE, SHALL NOT IN ANY WAY PREVENT REJECTION OR OBLIGATE THE STATE OF OHIO TO FINAL ACCEPTANCE.

QUALITY CONTROL POINTS (QCP)		(PURPOSE)
1.)	WASHING	REMOVE WATER SOLUBLE OIL, GREASE, SALT, DIRT, ETC.
2.)	SOLVENT CLEANING	REMOVE ASPHALTIC CEMENT, OIL, GREASE, SALT, DIRT, ETC., NOT REMOVED DURING WASHING
3.)	GRINDING EDGES	GRIND EDGES REQUIRED.
4.)	ABRASIVE BLASTING	BLAST SURFACE TO RECEIVE PAINT
5.)	PRIME COAT APPLICATION	CHECK SURFACE CLEANLINESS APPLY PRIME COAT CHECK COATING THICKNESS
6.)	INTERMEDIATE COAT APPLICATION	CHECK SURFACE CLEANLINESS APPLY INTERMEDIATE COAT CHECK COATING THICKNESS
7.)	FINISH COAT APPLICATION	CHECK SURFACE CLEANLINESS APPLY FINISH COAT CHECK COATING THICKNESS
8.)	VISUAL INSPECTION	VISUALLY INSPECT PAINT BEFORE SHIPMENT OF STEEL AND CHECK TOTAL SYSTEM THICKNESS
9.)	REPAIR OF DAMAGE AREAS	CHECK FOR DAMAGE AREAS AFTER COMPLETION OF STRUCTURE AND REPEAT QCP 1–7 FOR DAMAGE AREAS
10.)	FINAL REVIEW	WASH STRUCTURE AS PER QCP#1. VISUALLY INSPECT SYSTEM FOR ACCEPTANCE AND CHECK TOTAL SYSTEM THICKNESS.

SURFACE PREPARATION

THIS ITEM SHALL CONSIST OF WASHING, SOLVENT CLEANING, AND ABRASIVE CLEANING OF STRUCTURAL STEEL MEMBERS.

WASHING (QCP #1)

PRIOR TO ABRASIVE BLASTING, ALL SURFACES TO BE PAINTED SHALL BE WASHED WITH POTABLE WATER HAVING A NOZZLE PRESSURE OF AT LEAST 6.89 MPA AND A DELIVERY RATE OF NOT LESS THAN 0.25 LITERS PER SECOND. (QCP #1) THE CONTRACTOR OR FABRICATOR, SHALL PROVIDE EQUIPMENT SPECIFICATIONS TO VERIFY THE ABOVE. THE EQUIPMENT SHALL ALSO BE EQUIPPED WITH GAUGES TO VERIFY THE PRESSURE. THE WATER SHALL CONTAIN TRI–SODIUM PHOSPHATE DETERGENT AT A RATE OF 57 GRAMS (BY WEIGHT) PER LITER OF TECHNICAL GRADE, HYDRATED WATER (MINIMUM) TO REMOVE WATER SOLUBLE OIL, GREASE, SALT AND DIRT. BEFORE THE SURFACES DRY, THE BRIDGE OR STRUCTURAL STEEL MEMBER SHALL BE RINSED TO REMOVE ALL REMAINING DETERGENT. THE NOZZLE SHALL BE HELD AT A MAXIMUM OF 305 MILLIMETERS FROM THE SURFACE BEING WASHED OR RINSED. SURFACES SHALL NOT BE CONSIDERED AS CLEAN UNTIL CLEAR RINSE WATER RUNS OFF THE STRUCTURE. AFTER THE SURFACE IS RINSED AND ALLOWED TO DRY, IT SHALL BE CHECKED FOR REMAINING VISIBLE DIRT. SURFACES SHALL BE REWASHED AND RINSED AS NECESSARY TO REMOVE ALL REMAINING DIRT. THE FINISH COAT SHALL BE APPLIED WITHIN THREE (3) MONTHS OF WASHING THE STRUCTURE OR STRUCTURAL STEEL MEMBER.

SOLVENT CLEANING (QCP #2)

AFTER WASHING, ALL TRACES OF ASPHALTIC CEMENT, OIL, GREASE, DIESEL FUEL DEPOSITS, AND OTHER SOLUBLE CONTAMINANTS WHICH REMAIN, SHALL BE REMOVED BY SOLVENT CLEANING (QCP #2) (SEE SSPC– SP 1 SOLVENT CLEANING FOR RECOMMENDED PRACTICES). UNDER NO CIRCUMSTANCES SHALL ANY ABRASIVE BLASTING BE DONE TO AREAS WITH ASPHALTIC CEMENT, OIL, GREASE, OR DIESEL FUEL DEPOSITS. ALL SOLVENT CLEANED AREAS SHALL BE REWASHED AS PREVIOUSLY NOTED.

GRINDING EDGES (QCP #3)

THE EDGES OF ALL STEEL SHALL BE ROUNDED IN ACCORDANCE WITH AWS D1.5 SECTION 3.2.9 BEFORE ABRASIVE BLASTING.

ABRASIVE BLASTING (QCP #4)

ALL STEEL TO BE PAINTED SHALL BE BLAST CLEANED ACCORDING TO SSPC–SP10 (NEAR–WHITE BLAST) AS SHOWN IN SSPC–VIS 1–89 (PICTORIAL SURFACE PREPARATION STANDARDS FOR PAINTING STEEL SURFACES). STEEL SHALL BE MAINTAINED IN A BLAST CLEANED CONDITION UNTIL IT HAS RECEIVED A PRIME COAT OF PAINT.

DURING SHOP APPLICATION AND FIELD TOUCHUP GALVANIZED STEEL (INCLUDING CORRUGATED STEEL BRIDGE FLOORING), ADJACENT CONCRETE, EXISTING PAINTED SURFACE AND OTHER SURFACES NOT INTENDED TO BE PAINTED, SHALL BE MASKED TO PREVENT DAMAGE FROM ABRASIVE BLASTING AND PAINTING OPERATIONS.

THE ABRASIVE SHALL BE A RECYCLABLE STEEL GRIT. AFTER EACH USE AND PRIOR TO REUSE, THE STEEL GRIT SHALL BE CLEANED OF PAINT CHIPS, RUST, MILL SCALE AND OTHER FOREIGN MATERIAL BY EQUIPMENT SPECIFICALLY DESIGNED FOR SUCH CLEANING.

THE SURFACE PROFILE SHALL BE A MINIMUM OF 25 MICROMETERS AND A MAXIMUM OF 88 MICROMETERS. ABRASIVES OF A SIZE SUITABLE TO DEVELOP THE REQUIRED SURFACE PROFILE SHALL BE USED. ANY ABRASIVE BLASTING WHICH IS DONE WHEN THE STEEL TEMPERATURE IS LESS THAN 3 DEGREES ABOVE THE DEW POINT SHALL BE REBLASTED WHEN THE STEEL TEMPERATURE IS THREE (3) DEGREES ABOVE THE DEW POINT. DEW POINT SHALL BE DEFINED AS THE TEMPERATURE AT WHICH MOISTURE CONDENSES ON THE STEEL SURFACES.

ALL FINS, TEARS, SLIVERS, AND BURRED OR SHARP EDGES THAT ARE PRESENT ON ANY STEEL MEMBER AFTER BLASTING SHALL BE REMOVED BY GRINDING AND THE AREA REBLASTED.

ALL ABRASIVES AND RESIDUE SHALL BE REMOVED FROM SURFACES TO BE PAINTED WITH A VACUUM SYSTEM EQUIPPED WITH A BRUSH–TYPE CLEANING TOOL. ALL STEEL BLAST LEANED IN ANY ONE DAY SHALL BE KEPT DUST FREE AND PRIME COATED THE SAME DAY. FAILURE TO PRIME COAT THE SAME DAY WILL REQUIRE REBLASTING BEFORE PRIME COATING. NO DUST OR ABRASIVES FROM ADJACENT WORK SHALL BE LEFT ON THE FINISH COAT.

THE QUALITY CONTROL SPECIALIST SHALL PERFORM THE FOLLOWING TEST (AND THE INSPECTOR WILL VERIFY) TO ENSURE THAT THE AIR IS NOT CONTAMINATED: BLOW AIR FROM THE NOZZLE FOR THIRTY (30) SECONDS ONTO A WHITE CLOTH OR BLOTTER HELD IN A RIGID FRAME. IF ANY OIL OR OTHER CONTAMINANTS ARE PRESENT ON THE CLOTH OR BLOTTER, ABRASIVE BLASTING SHALL BE SUSPENDED UNTIL THE PROBLEM IS CORRECTED AND VERIFIED BY ANOTHER TEST. THIS TEST SHALL BE DONE AT THE START OF EACH SHIFT AND AT FOUR (4) HOUR INTERVALS.

ABRASIVE BLASTING AND PAINTING MAY TAKE PLACE SIMULTANEOUSLY ON ANY ONE BRIDGE AS LONG AS ABRASIVE BLASTING DEBRIS AND/OR DUST CREATED BY BE THE BLOWING OPERATION DOES NOT COME IN CONTACT WITH FRESHLY PAINTED SURFACES.

THE CONTRACTOR SHALL REMOVE ALL BLASTING RESIDUES FROM THE ROADWAY, PEDESTRIAN WALKWAYS, GUTTERS AND OTHER DRAINAGE FACILITIES AT THE END OF EACH DAY'S WORK. CARE SHALL BE TAKEN TO KEEP ALL BLASTING RESIDUES OUT OF DRAINS OR CATCH BASINS. NEARBY DRAINS AND CATCH BASINS SHALL BE COVERED DURING BLASTING OPERATIONS. BLASTING RESIDUE SHALL NOT BE PERMITTED ON SURFACES WHICH ARE BEING USED BY VEHICLES OR PEDESTRIANS. THE BLASTING RESIDUES SHALL BE DISPOSED OF OUTSIDE THE HIGHWAY RIGHT OF WAY.

TESTING EQUIPMENT

BOTH THE CONTRACTOR FOR THE FIELD APPLICATION AND THE FABRICATOR FOR SHOP APPLICATION, SHALL PROVIDE AND ASSIGN TO THE ENGINEER THE FOLLOWING TESTING EQUIPMENT IN GOOD WORKING ORDER, FOR THE DURATION OF THE PROJECT, ONE SET OF TESTING EQUIPMENT FOR EACH QUANTITY CONTROL SPECIALIST. THESE SHALL BE SEPARATE SETS FROM THOSE CONTRACTOR OR FABRICATOR PROVIDE FOR QUALITY CONTROL SPECIALIST.

EACH QUALITY CONTROL SPECIALIST SHALL HAVE HIS OWN TESTING EQUIPMENT. WHEN NO TEST EQUIPMENT IS AVAILABLE, NO WORK SHALL BE PERFORMED.

1. ONE (1) SPRING MICROMETER AND 1 ROLL OF COARSE AND 3 (UNLESS OTHERWISE SPECIFIED ON PLANS) ROLLS OF EXTRA–COARSE REPLICA TAPE.

2. ONE (1) POSITECTOR 2000–6000, QUANIX 2200, OR ELCOMETER (A345FBI1) AND THE CALIBRATION PLATES AS PER THE NBS CALIBRATION STANDARDS IN ACCORDANCE WITH ASTM D–1186.

3. ONE (1) SLING PSYCHROMETER INCLUDING PSYCHOMETRIC TABLES USED TO CALCULATE RELATIVE HUMIDITY AND DEW POINT TEMPERATURE.

4. TWO (2) STEEL SURFACE THERMOMETERS ACCURATE WITHIN 1 DEGREES.

5. FLASHLIGHT 2–D CELL

6. SSPC VISUAL STANDARD FOR ABRASIVE BLAST CLEANED STEEL SSPC–VIS 1–89

7. ONE (1) RECORDER THERMOMETER CAPABLE OF RECORDING THE DATE, TIME, AND TEMPERATURE OVER A PERIOD OF AT LEAST 12 HOURS.

HANDLING

ALL PAINT AND THINNER SHALL BE DELIVERED TO THE PROJECT SITE OR FABRICATOR'S SHOP IN ORIGINAL, UNOPENED CONTAINERS WITH LABELS INTACT. MINOR DAMAGE TO CONTAINERS IS ACCEPTABLE PROVIDED THE CONTAINER HAS NOT BEEN PUNCTURED. THINNER CONTAINERS SHALL BE A MAXIMUM OF NINETEEN (19) LITERS.

PAINT SHALL BE STORED AT THE TEMPERATURE RECOMMENDED BY THE MANUFACTURER TO PREVENT PAINT DETERIORATION.

EACH CONTAINER OF PAINT AND THINNER SHALL BE CLEARLY MARKED OR LABELED TO SHOW PAINT IDENTIFICATION, COMPONENT, COLOR, LOT NUMBER, STOCK NUMBER, DATE OF MANUFACTURE, AND INFORMATION AND WARNINGS AS MAY BE REQUIRED BY FEDERAL AND STATE LAWS.

ALL CONTAINERS OF PAINT AND THINNER SHALL REMAIN UNOPENED UNTIL REQUIRED FOR USE. THE LABEL INFORMATION SHALL BE LEGIBLE AND SHALL BE CHECKED AT THE TIME OF USE.

SOLVENT USED FOR CLEANING EQUIPMENT IS EXEMPT FROM THE ABOVE REQUIREMENTS.

PAINT WHICH HAS LIVERED, GELLED OR OTHERWISE DETERIORATED DURING STORAGE SHALL NOT BE USED. HOWEVER, THIXOTROPIC MATERIALS WHICH CAN BE STIRRED TO ATTAIN NORMAL CONSISTENCY MAY BE USED.

THE OLDEST PAINT OF EACH KIND SHALL BE USED FIRST. NO PAINT SHALL BE USED WHICH HAS SURPASSED ITS SHELF LIFE. PAINT MAY BE CONSIDERED AS ELIGIBLE FOR PAYMENT FOR MATERIAL ON HAND AS SPECIFIED IN 109.07. HOWEVER, ONLY PAINT WHICH THE CONTRACTOR CAN PROVE TO THE ENGINEER WILL BE USED DURING THE CONSTRUCTION SEASON SHALL BE ELIGIBLE FOR

metric units

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DESIGNED	DRAWN	REVIEWED	DATE
JMG	JMG	REK	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

STRUCTURAL GENERAL NOTES
BRIDGE NO. CUY–77–23458
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11B/175

105A/295

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GENERAL NOTES – STRUCTURES OVER 3 METERS SPAN

PAYMENT. THE CONTRACTOR SHALL PROVIDE THE ENGINEER CALCULATIONS INDICATING THE TOTAL SQUARE METERS OF STEEL TO BE PAINTED DURING THE CONSTRUCTION SEASON. HE SHALL ALSO PROVIDE CALCULATIONS SHOWING THE TOTAL NUMBER OF LITERS REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE TO STORE THE PAINT ON THE PROJECT IN SUCH MANNER TO PREVENT THEFT AND ADVERSE TEMPERATURES. HE SHALL PROVIDE THERMOMETERS CAPABLE OF MONITORING THE MAXIMUM HIGH AND LOW TEMPERATURES WITHIN THE STORAGE FACILITY. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY DISPOSING OF ALL UNUSED PAINT AND PAINT CONTAINERS.

THE CONTRACTOR SHALL FURNISH SHIPPING INVOICES FOR ALL MATERIALS USED ON THE PROJECT TO THE ENGINEER, PRIOR TO USE.

MIXING AND THINNING

ALL INGREDIENTS IN ANY CONTAINER OF PAINT SHALL BE THOROUGHLY MIXED IMMEDIATELY BEFORE USE AND SHALL BE AGITATED OFTEN ENOUGH DURING APPLICATION TO MAINTAIN A UNIFORM COMPOSITION; HOWEVER, THE PRIMER SHALL BE CONTINUOUSLY MIXED BY AN AUTOMATED AGITATION SYSTEM (HAND HELD MIXERS NOT ALLOWED). PAINT SHALL BE CAREFULLY EXAMINED AFTER MIXING FOR UNIFORMITY AND TO VERIFY THAT NO UNMIXED PIGMENT REMAINS ON THE BOTTOM OF THE CONTAINER. THE PAINT SHALL BE MIXED WITH A HIGH SHEAR MIXER (SUCH AS A JIFFY MIXER). PADDLE MIXERS OR PAINT SHAKERS ARE NOT ALLOWED. PAINT SHALL NOT BE MIXED OR KEPT IN SUSPENSION BY MEANS OF AN AIR STREAM BUBBLING UNDER THE PAINT SURFACE.

ALL PAINT SHALL BE STRAINED AFTER MIXING. STRAINERS SHALL BE OF A TYPE TO REMOVE ONLY SKINS AND UNDESIRABLE MATTER, BUT NOT THE PIGMENT.

NO THINNER SHALL BE ADDED TO THE PAINT WITHOUT THE ENGINEER'S APPROVAL, AND ONLY IF NECESSARY FOR PROPER APPLICATION AS RECOMMENDED BY THE MANUFACTURER. WHEN THE USE OF THINNER IS PERMISSIBLE, THINNER SHALL BE ADDED SLOWLY TO THE PAINT DURING THE MIXING PROCESS. ALL THINNING SHALL BE DONE UNDER SUPERVISION OF THE ENGINEER. IN NO CASE SHALL MORE THINNER BE ADDED THAN THAT RECOMMENDED BY THE MANUFACTURER'S PRINTED INSTRUCTIONS. ONLY THINNERS RECOMMENDED AND SUPPLIED BY THE PAINT MANUFACTURER MAY BE ADDED TO THE PAINT. NO OTHER ADDITIVES SHALL BE ADDED TO THE PAINT.

CATALYSTS, CURING AGENTS, OR HARDENERS WHICH ARE IN SEPARATE PACKAGES SHALL BE ADDED TO THE BASE PAINT ONLY AFTER THE BASE PAINT HAS BEEN THOROUGHLY MIXED. THE PROPER VOLUME OF THE CATALYST SHALL THEN BE SLOWLY POURED INTO THE REQUIRED VOLUME OF BASE WITH CONSTANT AGITATION. LIQUID WHICH HAS SEPARATED FROM THE PIGMENT SHALL NOT BE POURED OFF PRIOR TO THE MIXING. THE MIXTURE SHALL BE USED WITHIN THE POT LIFE SPECIFIED BY THE MANUFACTURER. THEREFORE ONLY ENOUGH PAINT SHALL BE CATALYZED FOR PROMPT USE. MOST MIXED, CATALYZED PAINTS CANNOT BE STORED, AND UNUSED PORTIONS OF THESE SHALL BE DISCARDED AT THE END OF EACH WORKING DAY.

COATING APPLICATION

GENERAL

ALL STRUCTURAL STEEL, SCUPPERS, BULB ANGLES, EXPANSION JOINTS, STEEL RAILING, EXPOSED STEEL PILING, DRAIN TROUGHS, GALVANIZED SURFACES AND OTHER AREAS INDICATED ON THE PLANS SHALL BE PAINTED UNLESS OTHERWISE NOTED IN THE PLANS.

GALVANIZED SURFACES TO BE EMBEDDED IN CONCRETE AND SURFACES IN CONTACT WITH SEALS, SHALL BE MASKED AND RECEIVE NO PAINT.

ALL AREAS WHERE FIELD WELDING IS REQUIRED SHALL BE MASKED PRIOR TO SHOP COATING AND RECEIVE NO PAINT.

THE TOP OF FLANGES SHALL RECEIVE THE PRIME COAT ONLY.

AREAS TO RECEIVE STUDS SHALL NOT BE MASKED BUT PAINT SHALL BE REMOVED BEFORE STUDS ARE APPLIED.

TREATMENT OF FAYING SURFACES

SURFACES INDICATED BELOW SHALL BE TREATED ACCORDING TO METHOD A OR METHOD B AS DESCRIBED IN THIS SPECIFICATION:

1. FAYING SURFACES OF MAIN BEAM OR GIRDER BOLTED FIELD SPLICES.
2. ALL INTERNAL CONTACT SURFACES OF FILLER AND SPLICE PLATES.
3. OTHER SURFACES INDICATED IN THE PLANS.

BOLTED CROSSFRAMES ON STRAIGHT BEAMS OR GIRDERS DO NOT NEED TO MEET THE REQUIREMENTS OF METHOD A OR METHOD B UNLESS INDICATED OTHERWISE IN THE PLANS.

METHOD A

THE FAYING SURFACES SHALL BE COATED WITH INORGANIC ZINC PRIMER. THE COATING OF THESE FAYING SURFACES WITH THE INORGANIC ZINC–RICH PRIMER SHALL BE DONE BY USING A DOUBLE MASKING TECHNIQUE. FIRST, THE AREAS ADJACENT TO THE FAYING SURFACES SHALL BE TIGHTLY MASKED AND THE INORGANIC ZINC PRIMER APPLIED. AFTER THIS PRIMER HAS DRIED SUFFICIENTLY ENOUGH TO AVOID DAMAGE, THE FAYING SURFACES SHALL BE MASKED AND THE REMAINDER OF THE GIRDER SHALL BE COATED WITH THE ORGANIC ZINC–RICH PRIMER AND SUBSEQUENT COATS.

ALL BOLTED SHOP CONNECTIONS AND BOLTED CROSS FRAMES SHALL BE REMOVED AND DISASSEMBLED PRIOR TO THE BLASTING AND COATING OF THE GIRDERS OR BEAMS. THE PARTS SHALL BE BLASTED SEPARATELY AND PRIMED, THEN REASSEMBLED AND THE BOLTS FULLY TIGHTENED USING THE TURN OF THE NUT METHOD.

METHOD B

THE FAYING SURFACES SHALL BE COATED WITH ORGANIC ZINC PRIMER ONLY PER THIS SPECIFICATION. IN ORDER TO USE METHOD B, THE PRIMER SHALL BE TESTED IN ACCORDANCE WITH THE METHODS DESCRIBED IN "ALLOWABLE STRESS DESIGN SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS". TESTING SHALL INCLUDE SLIP TESTS AND TENSION CREEP TESTS. A MINIMUM SLIP COEFFICIENT OF 0.33 SHALL BE ATTAINED.

TESTING SHALL BE PERFORMED BY AN ACCREDITED LABORATORY AT THE CONTRACTOR'S EXPENSE. CERTIFIED TEST RESULTS SHALL BE FURNISHED TO THE ENGINEER. DOCUMENTATION SHALL ALSO INCLUDE CERTIFICATION THAT THE ESSENTIAL VARIABLES (DEFINED IN SECTION 1.2, APPENDIX A, OF THE STRUCTURAL JOINTS SPECIFICATION) USED IN THE TESTING ARE THE SAME AS THOSE USED IN THE PAINT PROVIDED FOR THE STRUCTURE.

ALL GALVANIZED COMPONENTS, INCLUDING GALVANIZED NUTS, BOLTS, AND WASHERS, SHALL BE SOLVENT CLEANED AFTER INSTALLATION. THE EPOXY TIECOAT, EPOXY COAT AND THE URETHANE PROTECTIVE COAT SHALL THEN BE APPLIED.

TEMPORARY ERECTION MARKS ADDED BY THE FABRICATOR TO HIGHLIGHT OR ENHANCE THE REQUIRED STEEL STAMPED ERECTION MARKS SHALL BE MADE WITHOUT DAMAGING THE PAINT SYSTEM. TEMPORARY ERECTION MARKS SHALL BE APPLIED ONLY AFTER THE FINISH COAT IS CURED AND SHALL BE REMOVED AT THE END OF THE PROJECT.

UNLESS OTHERWISE SPECIFIED, ALL COATS SHALL BE APPLIED BY SPRAY.

THE CONTRACTOR FOR FIELD APPLICATION AND THE FABRICATOR FOR SHOP APPLICATION, SHALL SUPPLY THE ENGINEER WITH THE PRODUCT DATA SHEETS BEFORE ANY COATING IS DONE. THE PRODUCT DATA SHEETS SHALL INDICATE THE MIXING AND THINNING DIRECTIONS, THE RECOMMENDED SPRAY NOZZLES AND PRESSURES AND THE MINIMUM DRYING TIME FOR SHOP APPLIED COATS.

THESE PRODUCT DATA SHEETS SHALL BE FOLLOWED EXCEPT WHEN THEY CONFLICT WITH THESE SPECIFICATIONS, IN WHICH CASE THE SPECIFICATIONS SHALL GOVERN.

IF THE SURFACE IS DEGRADED OR CONTAMINATED AFTER SURFACE PREPARATION AND BEFORE PAINTING, THE SURFACE SHALL BE RESTORED BEFORE PAINTING APPLICATION. IN ORDER TO PREVENT DEGRADATION OR CONTAMINATION OF CLEANED SURFACE, THE PRIME COAT OF PAINT SHALL BE APPLIED WITHIN EIGHT (8) HOURS AFTER BLAST CLEANING AS REQUIRED IN SURFACE PREPARATION ABOVE.

CLEANING AND PAINTING SHALL BE SCHEDULED SO THAT DUST OR OTHER CONTAMINANTS DO NOT FALL ON WET, NEWLY–PAINTED SURFACES. SURFACES NOT INTENDED TO BE PAINTED SHALL BE SUITABLY PROTECTED FROM THE EFFECTS OF CLEANING AND PAINTING OPERATIONS. OVERSPRAY SHALL BE REMOVED WITH A STIFF BRISTLE BRUSH, WIRE SCREEN, OR A WATER WASH WITH SUFFICIENT PRESSURE TO REMOVE OVERSPRAY WITHOUT DAMAGING THE PAINT. THE OVERSPRAY MUST BE REMOVED BEFORE APPLYING THE NEXT COAT. ALL ABRASIVES AND RESIDUE SHALL BE REMOVED FROM PAINTED SURFACES BEFORE RECOATING, WITH A VACUUM SYSTEM EQUIPPED WITH A BRUSH TYPE CLEANING TOOL.

NO VISIBLE ABRASIVES FROM ADJACENT WORK SHALL BE LEFT ON ANY COAT. ABRASIVES SHALL BE REMOVED.

SPRAY APPLICATION FOR THE INTERMEDIATE COAT (EPOXY) SHALL NOT BE USED WHERE TRAFFIC (INCLUDING RAILROAD, HIGHWAY AND RIVER TRAFFIC, PUBLIC AND PRIVATE PROPERTY) IS AFFECTED UNLESS THE OPERATION IS TOTALLY CONTAINED TO PREVENT OVERSPRAY. IF BRUSHED MORE THAN ONE COAT MAY BE NECESSARY TO PRODUCE THE REQUIRED MILLAGE.

SPRAY APPLICATION (GENERAL)

ALL SPRAY APPLICATION OF PAINT SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

PRIMER INGREDIENTS SHALL BE KEPT UNIFORMLY MIXED IN. THE SPRAY EQUIPMENT SHALL BE KEPT CLEAN SO THAT DIRT, DRIED PAINT AND OTHER FOREIGN MATERIALS ARE NOT DEPOSITED IN THE PAINT FILM. ANY SOLVENT LEFT IN THE EQUIPMENT SHALL BE COMPLETELY REMOVED BEFORE USING.

PAINT SHALL BE APPLIED IN A UNIFORM LAYER WITH OVERLAPPING AT THE EDGES OF THE SPRAY PATTERN. THE BORDER OF THE SPRAY PATTERN SHALL BE PAINTED FIRST; WITH THE PAINTING OF THE INTERIOR OF THE SPRAY PATTERN TO FOLLOW, BEFORE MOVING TO THE NEXT SPRAY PATTERN AREA. A SPRAY PATTERN AREA IS SUCH THAT THE GUN SHALL BE HELD PERPENDICULAR TO THE SURFACE AND AT A DISTANCE WHICH WILL ENSURE THAT A WET LAYER OF PAINT IS DEPOSITED ON THE SURFACE. THE TRIGGER OF THE GUN SHOULD BE RELEASED AT THE END OF EACH STROKE. ALL BOLTS AND RIVET HEADS SHALL BE SPRAYED FROM AT LEAST TWO (2) DIRECTIONS OR BRUSHED TO INSURE COVERAGE.

EACH SPRAY OPERATOR SHALL DEMONSTRATE TO THE ENGINEER HIS ABILITY TO APPLY THE PAINT AS SPECIFIED. ANY OPERATOR WHO DOES NOT DEMONSTRATE THIS ABILITY SHALL NOT SPRAY.

IF MUD CRACKING OCCURS, THE AFFECTED AREA SHALL BE CLEANED TO BARE METAL IN ACCORDANCE WITH SURFACE PREPARATION ABOVE AND REPAINTED.

ALL SPRAY EQUIPMENT USED SHALL BE SUITABLE FOR USE WITH THE SPECIFIED PAINT. PAINT MANUFACTURER'S EQUIPMENT RECOMMENDATIONS SHALL BE CONSULTED IN THE EVENT OF PAINT APPLICATION PROBLEMS.

IF AIR SPRAY IS USED, TRAPS OR SEPARATORS SHALL BE PROVIDED TO REMOVE OIL AND CONDENSED WATER FROM THE AIR. THE TRAPS OR SEPARATORS MUST BE OF ADEQUATE SIZE AND MUST BE DRAINED PERIODICALLY DURING OPERATIONS. THE FOLLOWING TEST SHALL BE DONE BY THE CONTRACTOR AND VERIFIED BY THE ENGINEER TO INSURE THAT THE TRAPS OR SEPARATORS ARE WORKING PROPERLY. BLOW AIR FROM THE SPRAY GUN FOR THIRTY (30) SECONDS ONTO A WHITE CLOTH OR BLOTTER HELD IN A RIGID FRAME. IF ANY OIL, WATER OR OTHER CONTAMINANTS ARE PRESENT ON THE CLOTH OR BLOTTER: PAINTING SHALL BE SUSPENDED UNTIL THE PROBLEM IS CORRECTED AND VERIFIED BY ANOTHER TEST. THIS TEST SHALL BE DONE AT THE START OF EACH SHIFT AND AT FOUR (4) HOUR INTERVALS. THIS IS NOT REQUIRED FOR AN AIRLESS SPRAYER.

APPLICATION APPROVAL

THE BEGINNING OF THE APPLICATION OF EACH OF THE THREE DIFFERENT COATS SHALL BE SUBJECT TO INSPECTION AND APPROVAL. THE PURPOSE OF THIS INSPECTION IS TO DETECT ANY DEFECTS WHICH MIGHT RESULT FROM THE CONTRACTOR'S METHOD OF APPLICATION. IF ANY DEFECTS ARE DISCOVERED, THE CONTRACTOR SHALL MAKE ALL NECESSARY ADJUSTMENTS TO HIS METHOD OF APPLICATION TO ELIMINATE THESE DEFECTS BEFORE PROCEEDING WITH APPLICATION.

TEMPERATURE

PAINT SHALL NOT BE APPLIED WHEN THE TEMPERATURE OF THE AIR, STEEL, OR PAINT IS BELOW 10 DEGREES C. PAINT SHALL NOT BE APPLIED WHEN THE STEEL SURFACE TEMPERATURE IS EXPECTED TO DROP BELOW 10 DEGREES C BEFORE THE PAINT HAS CURED FOR THE MINIMUM TIMES SPECIFIED BELOW:

	10 C	15.6 C	21 C
PRIMER	4 HRS.	3 HRS.	2 HRS.
INTERMEDIATE	6 HRS.	5 HRS.	4 HRS.
FINISH	8 HRS.	6 HRS.	4 HRS.

THE ABOVE TEMPERATURES AND TIMES SHALL BE MONITORED WITH THE RECORDING THERMOMETER.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

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Cleveland, Ohio 44114-1724
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DESIGNED	DRAWN	REVIEWED	DATE
JMG	JMG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

STRUCTURAL GENERAL NOTES
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

110/175

105B/295

GENERAL NOTES – STRUCTURES OVER 3 METERS SPAN

MOISTURE

PAINT SHALL NOT EE APPLIED WHEN THE STEEL SURFACE TEMPERATURE IS LESS THAN 3 DEGREES C ABOVE THE DEW POINT. PAINT SHALL NOT BE APPLIED TO WET OR DAMP SURFACES OR ON FROSTED OR ICE–COATED SURFACES. PAINT SHALL NOT BE APPLIED WHEN THE RELATIVE HUMIDITY IS GREATER THAN 85%. PAINT SHALL NOT BE APPLIED DURING RAIN, FOG OR MIST UNLESS THE ABOVE MOISTURE CRITERIA IS MET.

CONTINUITY

EACH COAT OF PAINT SHALL BE APPLIED AS A CONTINUOUS FILM OF UNIFORM THICKNESS FREE OF ALL DEFECTS SUCH AS HOLIDAYS, RUNS, SAGS, ETC. ALL THIN SPOTS OR AREAS MISSED SHALL BE REPAINTED AND PERMITTED TO DRY BEFORE THE NEXT COAT OF PAINT IS APPLIED.

DRY FILM THICKNESS

PRIME THICKNESS, CUMULATIVE PRIME AND INTERMEDIATE THICKNESS AND CUMULATIVE PRIME, INTERMEDIATE AND FINISH THICKNESS SHALL BE DETERMINED BY USE OF TYPE 2 MAGNETIC GAGE IN ACCORDANCE WITH THE FOLLOWING:

FIVE (5) SEPARATE SPOT MEASUREMENT SPACED EVENLY OVER EACH 9.3 SQUARE METERS OF AREA TO BE MEASURED. FOR FIELD MEASUREMENTS THESE MEASUREMENTS SHALL BE TAKEN ON FLANGES, WEBS, CROSS BRACING, STIFFENERS, ETC. THREE (3) GAGE READINGS SHALL BE MADE FOR EACH SPOT MEASUREMENT OF EITHER THE SUBSTRATE OR THE PAINT. MOVE THE PROBE A DISTANCE OF 25 TO 75 MILLIMETERS FOR EACH NEW GAGE READING. DISCARD ANY UNUSUALLY HIGH OR LOW GAGE READING THAT CANNOT BE REPEATED CONSISTENTLY. TAKE THE AVERAGE (MEAN) OF THE THREE GAGE READINGS AS THE SPOT MEASUREMENT. THE AVERAGE OF FIVE SPOT MEASUREMENTS FOR EACH SUCH 9.3 SQUARE METER AREA SHALL NOT BE LESS THAN THE SPECIFIED THICKNESS. NO SINGLE SPOT MEASUREMENT IN ANY 9.3 SQUARE METER AREA SHALL BE LESS THAN 80% OF THE SPECIFIED THICKNESS. ANY ONE OF THREE READINGS WHICH ARE AVERAGE TO PRODUCE EACH SPOT MEASUREMENT, MAY UNDERRUN BY A GREATER AMOUNT. THE FIVE SPOT MEASUREMENTS SHALL BE MADE FOR EACH 9.3 SQUARE METER OF AREA AS FOLLOWS:

1. FOR STRUCTURES OR BATCH OF STRUCTURAL STEEL NOT EXCEEDING 28 SQUARE METER IN AREA, EACH 9.3 SQUARE METER AREA SHALL BE MEASURED.

2. FOR STRUCTURES OR BATCH OF STRUCTURAL STEEL NOT EXCEEDING 93 SQUARE METER IN AREA, THREE 9.3 SQUARE METER AREAS SHALL BE RANDOMLY SELECTED AND MEASURED.

3. FOR STRUCTURES OR BATCH OF STRUCTURAL STEEL EXCEEDING 93 SQUARE METER IN AREA, THE FIRST 93 SQUARE METER SHALL BE MEASURED AS STATED IN SECTION 2 AND FOR EACH ADDITIONAL 93 SQUARE METER, OR INCREMENT THEREOF, ONE 9.3 SQUARE METER AREA SHALL BE RANDOMLY SELECTED AND MEASURED.

4. IF THE DRY FILM THICKNESS FOR ANY 9.3 SQUARE METER AREA (SECTIONS 2 & 3 IS NOT IN COMPLIANCE WITH THE REQUIREMENTS OF PARAGRAPH 1 OF THIS SECTION, THEN EACH 9.3 SQUARE METER AREA SHALL BE MEASURED.

5. OTHER SIZE AREAS OR NUMBER OF SPOT MEASUREMENTS MAY BE SPECIFIED IN THE CONTRACT PLANS AS APPROPRIATE FOR THE SIZE AND SHAPE OF THE STRUCTURE TO BE MEASURED.

EACH COAT OF PAINT SHALL HAVE THE FOLLOWING MICROMETER THICKNESS MEASURED ABOVE THE PEAKS:

	MIN. SPEC THICKNESS	MAX. SPEC SPOT	MIN. SPOT	MAX
PRIME	75	125	63	188
INTERMEDIATE	125	175	100	262
SUB TOTAL	200	300	163	450
FINISH	50	100	40	150
TOTAL	250	400	203	600

FILM THICKNESSES GREATERTHAN THE MAXIMUM SPECIFIED THICKNESSES THAT DO NOT EXHIBIT DEFECTS (SUCH AS RUNS, SAGS, BUBBLES, MUDCRACKING, ETC.) AND FOR WHICH THE CONTRACTOR HAS RECEIVED A WRITTEN STATEMENT FROM THE COATING MANUFACTURER STATING THAT THIS EXCESSIVE THICKNESS IS NOT DETRIMENTAL, MAY REMAIN IN PLACE AT THE DISCRETION OF THE DIRECTOR.

FOR ANY SPOT OR MAXIMUM AVERAGE THICKNESS OVER 600 MICROMETERS, IT WILL BE NECESSARY FOR THE CONTRACTOR TO PROVE TO THE DEPARTMENT THAT THE EXCESS THICKNESS WILL NOT BE DETRIMENTAL TO THE COATING SYSTEM. THIS SHALL BE ACCOMPLISHED BY PROVIDING THE DIRECTOR, FOR APPROVAL, CERTIFIED TEST DATA PROVING THAT THE EXCESSIVE THICKNESS WILL ADEQUATELY BOND TO THE STEEL WHEN SUBJECTED TO THERMAL EXPANSION AND CONTRACTION. THIS THERMAL EXPANSION AND CONTRACTION AND EXPANSION CYCLES HAVE TAKEN PLACE, THE TESTED SYSTEM SHALL BE SUBJECTED TO PULL OFF TESTS AND THE RESULTS COMPARED TO THE RESULTS OF PULL OFF TESTS WHICH HAVE BEEN PERFORMED ON A PAINT SYSTEM WITH THE PROPER THICKNESSES. IN ADDITION TO THE CERTIFIED TEST RESULTS, IT WILL ALSO BE NECESSARY FOR THE CONTRACTOR TO PROVIDE THE DIRECTOR A WRITTEN STATEMENT FROM THE PAINT MANUFACTURER STATING THAT THIS EXCESSIVE THICKNESS IS NOT DETRIMENTAL.

IF THE DIRECTOR DOES NOT APPROVE THE EXCESSIVE COATING THICKNESSES OR THE CONTRACTOR ELECTS NOT TO PROVIDE THE REQUIRED WRITTEN STATEMENT FROM THE PLANT MANUFACTURER AND THE CERTIFIED TEST RESULTS WHEN REQUIRED, THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL REMOVE AND REPLACE THE COATING. THE REMOVAL AND REPLACEMENT OF THE COATING SHALL BE DONE AS SPECIFIED IN THE SECTION OF THIS SPECIFICATION TITLED REPAIR PROCEDURES.

PRIME, INTERMEDIATE AND FINISH COAT APPLICATION *(QCP #5, #6 & #7)*

EACH COAT OF PAINT SHALL BE IN A PROPER STATE OF CURE OR DRYNESS BEFORE THE APPLICATION OF THE SUCCEEDING COAT. PAINT SHALL BE CONSIDERED READY FOR RECOATING WHEN AN ADDITIONAL COAT CAN BE APPLIED WITHOUT THE EVELOPMENT OF ANY DETRIMENTAL FILM IRREGULARITIES, SUCH AS LIFTING, WRINKLING OR LOSS OF ADHESION OF THE UNDERCOAT. THE TIME INTERVAL BETWEEN COATING APPLICATIONS SHALL BE IN COMPLIANCE WITH MANUFACTURE'S WRITTEN INSTRUCTIONS AND NO MORE THAN THIRTY (30) DAYS BETWEEN THE PRIME AND INTERMEDIATE COATS AND THIRTEEN (13) DAYS BETWEEN THE INTERMEDIATE AND FINISH COATS. THESE MAXIMUM RECOAT TIMES INCLUDE WEATHER RELATED DAYS.

NO ADDITIONAL TIME FOR WEATHER DELAYS WILL BE ALLOWED. ANY COAT WHICH HAS CURED MORE THAN THE ABOVE ALLOTTED TIME WITHOUT RECOATING SHALL BE REMOVED AND THE STEEL REBLASTED TO SSPC–SP10.

THE COMPLETION DATE (MONTH AND YEAR) OF THE FINISH COAT AND THE LETTERS OZEU SHALL BE STENCILED ON THE STEEL IN 100 MILLIMETER LETTERS WITH A BLACK URETHANE PAINT. THIS DATE SHALL BE APPLIED AT FOUR LOCATIONS NEAR THE END OF EACH OUTSIDE BEAM ON THE OUTSIDE WEB VISIBLE FROM THE ROAD OR AS DIRECTED BY THE ENGINEER.

HANDLING AND SHIPPING

EXTREME CARE SHALL BE EXERCISED IN HANDLING THE STEEL IN THE SHOP, DURING SHIPPING, DURING ERECTION, AND DURING SUBSEQUENT CONSTRUCTION OF THE BRIDGE. PAINTED STEEL SHALL NOT BE MOVED OR HANDLED UNTIL SUFFICIENT CURE TIME HAS ELAPSED AND APPROVAL HAS BEEN OBTAINED FROM THE INSPECTOR. THE STEEL SHALL BE INSULATED FROM THE BINDING CHAINS BY SOFTENERS APPROVED BY THE ENGINEER. HOOKS AND SLINGS USED TO HOIST STEEL SHALL BE PADDED. DIAPHRAGMS AND SIMILAR PIECES SHALL BE SPACED IN SUCH A WAY THAT NO RUBBING WILL OCCUR DURING SHIPMENT THAT MAY DAMAGE THE COATINGS. THE STEEL SHALL BE STORED ON PALLETS AT THE JOB SITE, OR BY OTHER MEANS APPROVED BY THE ENGINEER, SO THAT IT DOES NOT REST ON THE GROUND OR SO THAT COMPONENTS DO NOT FALL OR REST ON EACH OTHER. ALL SHIPPING AND JOB SITE STORAGE DETAILS SHALL BE PRESENTED TO THE ENGINEER PRIOR TO FABRICATION IN WRITING AND BE APPROVED PRIOR TO SHIPPING THE STEEL. APPROVAL OF THE ABOVE DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY OF SHIPPING OR STORAGE DAMAGE.

REPAIR OF DAMAGED AREAS (QCP #9)

DAMAGED AREAS OF PAINT AND AREAS WHICH DO NOT COMPLY WITH THE REQUIREMENTS OF THIS SPECIFICATION, SHALL HAVE THE PAINT REMOVED AND ALL DEFECTS CORRECTED. THE STEEL SHALL THEN BE RETEXTURED TO A NEAR WHITE CONDITION TO PRODUCE A PROFILE OF BETWEEN 25 TO 88 MICROMETERS. THIS PROFILE SHALL BE MEASURED IMMEDIATELY PRIOR TO THE APPLICATION OF THE PRIME COAT TO INSURE THAT THE PROFILE IS NOT DESTROYED DURING THE FEATHERING PROCEDURE.

THE EXISTING PAINT SHALL BE FEATHERED TO EXPOSE A MINIMUM OF 12 MILLIMETERS OF EACH COAT.

DURING THE REAPPLICATION OF THE PAINT, CARE SHALL BE USED TO INSURE THAT EACH COAT OF PAINT IS ONLY APPLIED WITHIN THE FOLLOWING AREAS. THE PRIME COAT SHALL ONLY BE APPLIED TO THE SURFACE OF THE BARE STEEL AND THE EXISTING PRIME COAT, WHICH HAS BEEN EXPOSED BY FEATHERING. THE PRIME COAT SHALL NOT BE APPLIED TO THE ADJACENT INTERMEDIATE COAT. THE INTERMEDIATE COAT SHALL ONLY BE APPLIED TO THE NEW PRIME COAT AND THE EXISTING FEATHERED INTERMEDIATE COAT. THE INTERMEDIATE COAT AND THE EXISTING FINISH COAT WHICH HAS BEEN FEATHERED OR LIGHTLY SANDED. THE FINISH COAT SHALL NOT EXTEND BEYOND THE AREAS WHICH HAS BEEN FEATHERED OR LIGHTLY SANDED.

THE FIRST TWO COATS SHALL BE APPLIED BY BRUSH. THE FINISH COAT SHALL BE APPLIED BY EITHER BRUSH OR SPRAY.

IT MAY BE NECESSARY TO MAKE SEVERAL APPLICATIONS IN ORDER TO ACHIEVE THE PROPER THICKNESS FOR EACH COAT.

DURING THE APPLICATION OF THE PRIME COAT, THE PAINT SHOULD BE CONTINUOUSLY MIXED.

ALL ABRASIVE BLASTING AND PAINTING SHALL STILL BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS.

ALL REPAIRS SHOULD BE MADE IN A MANNER TO BLEND THE PATCHED ARE WITH THE ADJACENT COATING. THE FINISHED SURFACE OF THE PATCHED AREA SHALL HAVE A SMOOTH EVEN PROFILE WITH THE ADJACENT SURFACE.

THE FIRST REPAIR AREA SHALL BE USED AS A TEST SECTION AND NO MORE REPAIRS MADE UNTIL THE METHODS ARE APPROVED BY THE ENGINEER.

THE CONTRACTOR OR FABRICATOR SHALL SUBMIT HIS METHOD OF CORRECTING RUNS IN WRITING TO THE DIRECTOR FOR APPROVAL.

DAMAGED PAINT WHICH WILL BE INACCESSIBLE FOR COATING AFTER ERECTION SHALL BE REPAIRED AND RECOATED PRIOR TO ERECTION.

IN ORDER TO MINIMIZE DAMAGE TO THE PAINTED STEEL, CONCRETE SPLATTER AND FORM LEAKAGE SHALL BE WASHED FROM THE SURFACE OF THE STEEL SHORTLY AFTER THE CONCRETE IS PLACED AND BEFORE IT IS DRY. IF CONCRETE DRIES IT SHALL BE REMOVED AND PAINT REPAIRED.

TEMPORARY ATTACHMENTS, SUPPORTS FOR SCAFFOLDING AND, FINISHING MACHINE OR FORMS SHALL NOT DAMAGE THE COATING SYSTEM.(IN PARTICULAR, ON THE FASCIAS WHERE BRACING IS USED, SUFFICIENT SIZE SUPPORT PADS SHALL BE USED.)

AFTER THE ERECTION WORK HAS BEEN COMPLETED, INCLUDING ALL CONNECTIONS AND THE APPROVED REPAIR OF ANY DAMAGED BEAMS, GIRDERS OR OTHER STEEL MEMBERS, AND THE DECK HAS BEEN PLACED, THE CONTRACTOR AND ENGINEER SHALL INSPECT THE STRUCTURE FOR DAMAGED PAINT. (QCP #10). DAMAGED AREAS SHALL BE REPAIRED BY REPEATING QCP #1 TO #8. THE CONTRACTOR SHALL WASH THE STRUCTURE AS PER QCP#1 AFTER ALL WORK TO THE STRUCTURE IS COMPLETED.

SAFETY REQUIREMENTS AND PRECAUTIONS

THE CONTRACTOR SHALL MEET THE SAFETY REQUIREMENTS OF THE OHIO INDUSTRIAL COMMISSION AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), IN ADDITION TO THE SCAFFOLDING REQUIREMENTS BELOW.

THE CONTRACTOR IS REQUIRED TO MEET THE APPLICABLE SAFETY REQUIREMENTS OF THE OHIO INDUSTRIAL COMMISSION IN ADDITION TO THE SCAFFOLDING REQUIREMENTS SPECIFIED BELOW.

THE MATERIAL SAFETY DATA SHEETS (MSDS) SHALL BE PROVIDED AT THE PRECONSTRUCTION MEETING FOR ALL PAINT, THINNERS AND ABRASIVES USED ON THIS PROJECT. NO WORK SHALL START UNTIL THE MSDS HAS BEEN SUBMITTED.

THE FABRICATOR SHALL ALSO PROVIDE MSDS FOR ALL ABRASIVES TO BE USED ON THIS PROJECT TO THE SHOP INSPECTOR. NO WORK SHALL START UNTIL MSDS HAVE BEEN SUBMITTED.

SCAFFOLDING

RUBBER ROLLERS, OR OTHER PROTECTIVE DEVICES MEETING THE APPROVAL OF THE ENGINEER, SHALL BE USED ON SCAFFOLD FASTENINGS. METAL ROLLERS OR CLAMPS AND OTHER TYPES OF FASTENINGS WHICH WILL MAR OR DAMAGE COATED SURFACES SHALL NOT BE USED.

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GENERAL NOTES – STRUCTURES OVER 3 METERS SPAN

INSPECTION ACCESS FOR FIELD TOUCHUP

IN ADDITION TO THE REQUIREMENT OF 105.11, THE CONTRACTOR SHALL FURNISH, ERECT, AND MOVE SCAFFOLDING AND OTHER APPROPRIATE EQUIPMENT, TO PERMIT THE INSPECTOR THE OPPORTUNITY TO INSPECT (CLOSELY OBSERVE), ALL AFFECTED SURFACES. THIS OPPORTUNITY SHALL BE PROVIDED TO THE INSPECTOR DURING ALL PHASES OF THE WORK AND CONTINUE FOR A PERIOD OF AT LEAST TEN (10) WORKING DAYS AFTER THE TOUCH–UP WORK HAS BEEN COMPLETED. WHEN SCAFFOLDING IS USED, IT SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

WHEN SCAFFOLDING, OR THE HANGERS ATTACHED TO THE SCAFFOLDING ARE SUPPORTED BY HORIZONTAL WIRE ROPES, OR WHEN SCAFFOLDING IS PLACED DIRECTLY UNDER THE SURFACE TO BE PAINTED, THE FOLLOWING REQUIREMENTS SHALL BE COMPLIED WITH:

WHEN SCAFFOLDING IS SUSPENDED 1092 MILLIMETERS OR MORE BELOW THE SURFACE TO BE PAINTED, TWO ROWS OF GUARDRAIL SHALL BE PLACED ON ALL SIDES OF THE SCAFFOLDING. ONE ROW OF GUARDRAIL SHALL BE PLACED AT 1067 MILLIMETERS ABOVE THE SCAFFOLDING AND THE OTHER ROW AT 508 MILLIMETERS ABOVE THE SCAFFOLDING.

WHEN THE SCAFFOLDING IS SUSPENDED AT LEAST 534 MILLIMETERS, BUT LESS THAN 1092 MILLIMETERS BELOW THE SURFACE TO BE PAINTED, A ROW OF GUARDRAIL SHALL BE PLACED ON ALL SIDES OF THE SCAFFOLDING AT 508 MILLIMETERS ABOVE THE SCAFFOLDING.

TWO ROWS OF GUARDRAIL SHALL BE PLACED ON ALL SIDES OF SCAFFOLDING NOT PREVIOUSLY MENTIONED. THE ROWS OF GUARDRAIL SHALL BE PLACED AT 1067 AND 508 MILLIMETERS ABOVE SCAFFOLDING, AS PREVIOUSLY MENTIONED.

ALL SCAFFOLDING MUST BE AT LEAST 610 MILLIMETERS WIDE WHEN GUARDRAIL IS USED AND 711 MILLIMETERS WIDE WHEN THE SCAFFOLDING IS SUSPENDED LESS THAN 534 MILLIMETERS BELOW THE SURFACE TO BE PAINTED AND GUARDRAIL IS NOT USED. IF TWO OR MORE SCAFFOLDING ARE LAID PARALLEL TO ACHIEVE THE PROPER WIDTH, THEY MUST BE RIGIDLY ATTACHED TO EACH OTHER TO PRECLUDE ANY DIFFERENTIAL MOVEMENT.

ALL GUARDRAIL SHALL BE CONSTRUCTED AS A SUBSTANTIAL BARRIER WHICH IS SECURELY FASTENED IN PLACE AND IS FREE FROM PROTRUDING OBJECTS SUCH AS NAILS, SCREWS AND BOLTS. THERE SHALL BE AN OPENING IN THE GUARDRAIL, PROPERLY LOCATED, TO ALLOW THE INSPECTOR ACCESS ONTO THE SCAFFOLDING.

THE RAILS AND UPRIGHTS SHALL BE EITHER METAL OR WOOD. IF PIPE RAILING IS USED, THE RAILING SHALL HAVE A NOMINAL DIAMETER OF NO LESS THAN ONE AND ONE HALF INCHES. IF STRUCTURAL STEEL RAILING IS USE, THE RAILS SHALL BE 50 X 50 X 9 MILLIMETER STEEL ANGLES OR OTHER METAL SHAPES OF EQUAL OR GREATER STRENGTH. IF WOOD RAILING IS USED, THE RAILING SHALL BE 50 X 100 MILLIMETER (NOMINAL) STOCK. ALL UPRIGHTS SHALL BE SPACED AT NO MORE THAN 2.438 METER ON CENTER. IF WOOD UPRIGHTS ARE USED, THE UPRIGHTS SHALL BE 50 X 100 MILLIMETERS (NOMINAL) STOCK.

WHEN THE SURFACE TO BE INSPECTED IS MORE THAN 4.572 METERS ABOVE THE GROUND OR WATER, AND THE SCAFFOLDING IS SUPPORTED FROM THE STRUCTURE BEING PAINTED, THE CONTRACTOR SHALL PROVIDE THE INSPECTOR WITH A SAFETY BELT AND LIFELINE. THE LIFELINE SHALL NOT ALLOW A FALL GREATER THAN 1.830 METERS. THE CONTRACTOR SHALL PROVIDE A METHOD OF ATTACHING THE LIFELINE TO THE STRUCTURE INDEPENDENT OF THE SCAFFOLDING, CABLES, OR BRACKETS SUPPORTING THE SCAFFOLDING.

WHEN SCAFFOLDING IS MORE THAN 762 MILLIMETERS ABOVE THE GROUND, THE CONTRACTOR SHALL PROVIDE A LADDER FOR ACCESS ONTO THE SCAFFOLDING. THE LADDER AND ANY EQUIPMENT USED TO ATTACH THE LADDER TO THE STRUCTURE SHALL BE CAPABLE OF SUPPORTING 114 KILOGRAM WITH A SAFETY FACTOR OF AT LEAST FOUR (4). ALL RUNGS, STEPS, CLEATS, OR TREADS SHALL HAVE UNIFORM SPACING AND SHALL NOT EXCEED 305 MILLIMETERS ON CENTER. AT LEAST ONE SIDE RAIL SHALL EXTEND AT LEAST 914 MILLIMETERS ABOVE THE LANDING NEAR THE TOP OF THE LADDER.

AN ADDITIONAL LANDING SHALL BE REQUIRED WHEN THE DISTANCE FROM THE LADDER TO THE POINT WHERE THE SCAFFOLDING MAY BE ACCESSED, EXCEEDS 305 MILLIMETERS. THE LANDING SHALL BE A MINIMUM OF AT LEAST 610 MILLIMETERS WIDE AND 610 MILLIMETERS LONG. IT SHALL ALSO BE OF ADEQUATE SIZE AND SHAPE SO THAT THE DISTANCE FROM THE LANDING TO THE POINT WHERE THE SCAFFOLDING IS ACCESSED DOES NOT EXCEED 305 MILLIMETERS. THE LANDING SHALL BE RIGID AND FIRMLY ATTACHED TO THE LADDER; HOWEVER, IT SHALL NOT BE SUPPORTED BY THE LADDER. THE SCAFFOLDING SHALL BE CAPABLE OF SUPPORTING A MINIMUM OF ONE 454 KILOGRAMS.

IN ADDITION TO THE AFOREMENTIONED REQUIREMENTS, THE CONTRACTOR IS STILL RESPONSIBLE TO OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS, ORDINANCES, REGULATIONS, ORDERS AND DECREES.

THE CONTRACTOR SHALL FURNISH ALL NECESSARY TRAFFIC CONTROL TO PERMIT INSPECTION DURING AND AFTER ALL PHASES OF THE PROJECT.

PROTECTION OF PERSONS AND PROPERTY

THE CONTRACTOR SHALL COLLECT, REMOVE AND DISPOSE OF ALL BUCKETS, RAGS OR OTHER DISCARDED MATERIALS AND SHALL LEAVE THE JOB SITE IN A CLEAN CONDITION.

THE CONTRACTOR SHALL PROTECT ALL PORTIONS OF THE STRUCTURE WHICH ARE NOT TO BE PAINTED, AGAINST DAMAGE OR DISFIGUREMENT BY SPLASHES, SPATTERS, AND SMIRCHES OF PAINT.

THE CONTRACTOR SHALL INSTALL AND MAINTAIN SUITABLE SHIELDS OR ENCLOSURES TO PREVENT DAMAGE TO ADJACENT BUILDINGS, PARKED CARS, TRUCKS, BOATS, OR VEHICLES TRAVELING ON, OVER, OR UNDER STRUCTURES BEING PAINTED. THEY SHALL BE SUITABLY ANCHORED AND REINFORCED TO PREVENT INTERFERING WITH NORMAL TRAFFIC OPERATIONS IN THE OPEN LANES. PAYMENT FOR THE SHIELDS SHALL BE INCLUDED AS INCIDENTAL TO THE APPLICABLE FIELD COATING OPERATION. WORK SHALL BE SUSPENDED WHEN DAMAGE TO ADJACENT BUILDINGS, MOTOR VEHICLES, BOATS, OR OTHER PROPERTY IS OCCURRING.

WHEN OR WHERE ANY DIRECT OR INDIRECT DAMAGE OR INJURY IS DONE TO PUBLIC OR PRIVATE PROPERTY, THE CONTRACTOR SHALL RESTORE, AT HIS OWN EXPENSE, SUCH PROPERTY, TO A CONDITION SIMILAR OR EQUAL TO THAT EXISTING BEFORE SUCH DAMAGE OR INJURY WAS DONE.

POLLUTION CONTROL

THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO COMPLY WITH POLLUTION CONTROL LAWS, RULES OR REGULATIONS OF FEDERAL, STATE OR LOCAL AGENCIES.

WORK LIMITATIONS

ABRASIVE BLASTING AND PAINTING DONE IN THE FIELD SHALL BE PERFORMED BETWEEN APRIL 15 AND OCTOBER 15. EVEN THOUGH THE CONTRACTOR IS PERMITTED TO WORK PRIOR TO MAY 1, APRIL IS CONSIDERED A WINTER MONTH AND NO EXTENSION DUE TO ADVERSE WEATHER CONDITIONS WILL BE GRANTED FOR THIS PERIOD. ADDITIONAL WORK LIMITATIONS ON SPECIFIC BRIDGES/PROJECTS MAY BE REQUIRED BY PLAN NOTE.

METHOD OF MEASUREMENT

THE METHOD OF MEASUREMENTS SHALL BE ACCORDING TO THE PERTINENT OF 863, 514 AND 516 OF THE CURRENT CONSTRUCTIONS AND MATERIALS SPECIFICATIONS.

METHOD OF PAYMENT

THE AREA OF THE TOP OF THE TOP FLANGE WHICH SHALL RECEIVE THE PRIME COAT ONLY SHALL NOT BE INCLUDED IN THE MEASUREMENT FOR THE PAY ITEM.

THE COST OF THE ABOVE INCLUDING LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR EACH ITEM AS LISTED BELOW.

PAYMENT FOR THIS ITEM SHALL INCLUDE ALL LABOR, SURFACE PREPARATION, MATERIALS, INSPECTION AND EQUIPMENT TO SHOP APPLY A PRIME, INTERMEDIATE AND FINISH PAINT COAT AT THE ITEM 863 STRUCTURAL STEEL FABRICATOR'S SHOP FACILITIES. ALSO INCLUDED IN THIS ITEM IS ALL REQUIRED FIELD SITE SURFACE PREPARATION, CLEANING, PAINTING AND/OR REPAIR OF DAMAGED SHOP PAINT CAUSED DURING SHIPPING, ERECTION OR CONSTRUCTION PROCEDURES.

THE COST OF THE SURFACE PREPARATION AND PRIME COAT TO THE TOP OF THE TOP FLANGE SHALL BE INCLUDED AS AN INCIDENTAL FOR PAYMENT UNDER SHOP PAINTING AND FIELD TOUCH–UP OF STRUCTURAL STEEL.

SHOP PAINTING PER 863.29 SHALL NOT BE INCLUDED WITH THE PRICE BID FOR STRUCTURAL STEEL BUT SHALL BE INCLUDED WITH ITEM SPECIAL, SHOP PAINTING AND FIELD TOUCH–UP OF STRUCTURAL STEEL FOR PAYMENT.

ITEM	EXTEN.	UNIT	DESCRIPTION
514	27706	KILOGRAM	FIELD PAINTING, MISC.: SHOP PAINTING AND FIELD TOUCH–UP OF STRUCTURAL STEEL

ITEMS NOT INCLUDED IN THE BRIDGE PLANS

THE FOLLOWING ITEMS ARE NOT INCLUDED IN THE BRIDGE PLANS. SEE ROADWAY PLANS FOR DETAILS.

GRADING, APPROACH PAVEMENT
REMOVAL OF EXISTING PAVEMENTS, ETC.
MAINTENANCE OF TRAFFIC PLANS
LIGHTING PLANS

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STATE OF OHIO DEPARTMENT OF TRANSPORTATION

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MADE BY:	MJL	DATE: 9-12-97
CHECKED BY:	JMG	DATE: 9-12-97

ESTIMATED QUANTITIES

ITEM	ITEM EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUTMENTS	PIERS	SUPER-STRUCTURE	GENERAL	AS PER PLAN SHEET NO.
202	11203	LUMP SUM	LUMP SUM	PORTIONS OF STRUCTURE REMOVED, OVER 6 METER SPAN, AS PER PLAN				LUMP SUM	8 OF 175
503	11100	LUMP SUM	LUMP SUM	COFFERDAMS, CRIBS, AND SHEETING				LUMP SUM	
503	21101	3671	CU. METER	UNCLASSIFIED EXCAVATION, AS PER PLAN	985	2686			8 OF 175
504	11101	163	SQ. METER	STEEL SHEET PILING LEFT IN PLACE, AS PER PLAN (MINIMUM SECTION MODULUS = 442 CU. CENTIMETERS / m)	163				19 OF 175
504	11101	615	SQ. METER	STEEL SHEET PILING LEFT IN PLACE, AS PER PLAN (MINIMUM SECTION MODULUS = 1130 CU. CENTIMETERS / m)		615			23 OF 175
504	11101	294	SQ. METER	STEEL SHEET PILING LEFT IN PLACE, AS PER PLAN (MINIMUM SECTION MODULUS = 1500 CU. CENTIMETERS / m)		294			20 OF 175
505	11100	LUMP SUM	LUMP SUM	PILE DRIVING EQUIPMENT MOBILIZATION				LUMP SUM	
506	11100	LUMP SUM	LUMP SUM	STATIC LOAD TEST				LUMP SUM	
506	12200	2	EACH	SUBSEQUENT STATIC LOAD TEST				2	
507	00600	6488	METER	350 mm CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	1709	4779			
507	00650	6488	METER	350 mm CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	1709	4779			
507	50500	278	EACH	STEEL PILE SPLICES	63	215			
SPECIAL	51148000	6334	CU. METER	HIGH PERFORMANCE CONCRETE, SUPERSTRUCTURE (DECK) **			6334		
SPECIAL	51148020	882	CU. METER	HIGH PERFORMANCE CONCRETE, SUPERSTRUCTURE (PARAPET) **	22		860		
SPECIAL	51148040	5054	CU. METER	HIGH PERFORMANCE CONCRETE, SUBSTRUCTURE **	695	4359			
SPECIAL	51149000	LUMP SUM	LUMP SUM	HIGH PERFORMANCE CONCRETE, TRIAL MIX **				LUMP SUM	
SPECIAL	51149010	LUMP SUM	LUMP SUM	HIGH PERFORMANCE CONCRETE, TESTING **				LUMP SUM	
512	44400	6	SQ. METER	TYPE B WATERPROOFING	6				
SPECIAL	51267504	8049	SQ. METER	SEALING OF CONCRETE OF SURFACES (NON-EPOXY) **			8049		
SPECIAL	51267510	9236	SQ. METER	SEALING OF CONCRETE OF SURFACES (EPOXY - URETHANE) **	899	8337			
863	10301	5425 954	KILOGRAM	STRUCTURAL STEEL MEMBER, LEVEL FIVE (5) FABRICATION, A572M - 50, AS PER PLAN			5425 954		8 OF 175
863	95000	11 053	METER	STRUCTURAL STEEL MEMBER, MISC.: SAFETY CABLE SYSTEM FOR GIRDER			11 053		
863	95000	157	METER	STRUCTURAL STEEL MEMBER, MISC.: INSPECTION CATWALK		157			
863	95000	40	METER	STRUCTURAL STEEL MEMBER, MISC.: ACCESS LADDER		40			
863	95010	9	EACH	STRUCTURAL STEEL MEMBER, MISC.: MEDIAN BARRIER PLATE			9		
863	20000	61 732	EACH	WELDED STUD SHEAR CONNECTOR			61 732		
514	27706	5381 582	KILOGRAM	FIELD PAINTING MISC.: SHOP PAINTING AND FIELD TOUCH-UP OF STRUCTURAL STEEL			5381 582		
516	11210	115	METER	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL **			115		
516	12201	117	METER	STRUCTURAL STEEL EXPANSION JOINT, AS PER PLAN **			117		18, 128 OF 175
516	13200	25	SQ. METER	13 mm PREFORMED EXPANSION JOINT FILLER		25			
516	13600	19	SQ. METER	25 mm PREFORMED EXPANSION JOINT FILLER	19				
516	30500	9	METER	PVC WATERSTOP	9				
516	44100	5	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (450 mm X 505 mm X 69 mm)**		5			
516	44100	6	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (500 mm X 515 mm X 69 mm)**		6			
516	44100	6	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (430 mm X 490 mm X 73 mm)**		6			
516	44200	8	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (295 mm X 460 mm X 75 mm)**	8				
516	44200	1	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (270 mm X 390 mm X 75 mm)**	1				
516	44200	6	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (305 mm X 485 mm X 75 mm)**	6				
516	44200	8	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (320 mm X 505 mm X 75 mm)**	8				
516	44200	1	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (250 mm X 400 mm X 75 mm)**	1				
516	44200	2	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (400 mm X 430 mm X 82 mm)**		2			
516	44200	1	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (250 mm X 340 mm X 82 mm)**		1			
516	44200	5	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) (305 mm X 485 mm X 87 mm)**	5				
516	45000	40	EACH	STEEL POT BEARING (0 - 890 kN) **	5	35			
516	45000	76	EACH	STEEL POT BEARING (890 - 1780 kN) **		76			
516	45000	28	EACH	STEEL POT BEARING (1780 - 2670 kN) **		28			
516	45000	12	EACH	STEEL POT BEARING (2670 - 3560 kN) **		12			
516	45000	41	EACH	STEEL POT BEARING (3560 - 4450 kN) **		41			
SPECIAL	51645300	1	EACH	ADDITIONAL BEARING TEST, STEEL POT BEARING				1	
518	12301	22	EACH	SCUPPER, INCLUDING SUPPORTS, AS PER PLAN			22		153 OF 175
518	21200	343	CU. METER	POROUS BACKFILL WITH FILTER FABRIC	343				
518	40000	103	METER	150 mm PERFORATED CORRUGATED PLASTIC PIPE	103				
518	40010	36	METER	150 mm NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	36				
518	51200	293	METER	PIPE DOWNSPOUT, INCLUDING SPECIALS, 254 mm	7	286			
518	62100	22	METER	STRUCTURE DRAINAGE, MISC.: 254 mm PERFORATED CORRUGATED STEEL PIPE, 707.01	22				
518	62100	115	METER	STRUCTURE DRAINAGE, MISC.: NEOPRENE DRAINAGE TROUGH			115		
519	11101	455	SQ. METER	PATCHING CONCRETE STRUCTURE, AS PER PLAN	61	194		200	8 OF 175
SPECIAL	51912600	60	METER	CONCRETE REPAIR BY EPOXY INJECTION **				60	
523	11100	12	HOUR	DYNAMIC LOAD TEST				12	
601	12000	6	SQ. METER	RIPRAP, GROUTED				6	
601	20000	1581	SQ. METER	CRUSHED AGGREGATE SLOPE PROTECTION				1581	
SPECIAL	60740000	1334	METER	VANDAL PROTECTION FENCE, 1524 mm STRAIGHT, COATED FABRIC			1334		
SPECIAL	61050010	556	SQ. METER	RETAINING WALL, MISC.: TEMPORARY TIE BACK WALL		556			

**SEE PROPOSAL NOTE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Phone: 216/241-7334
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
JMG	GLG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

ESTIMATED QUANTITIES
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

12/175

106/295

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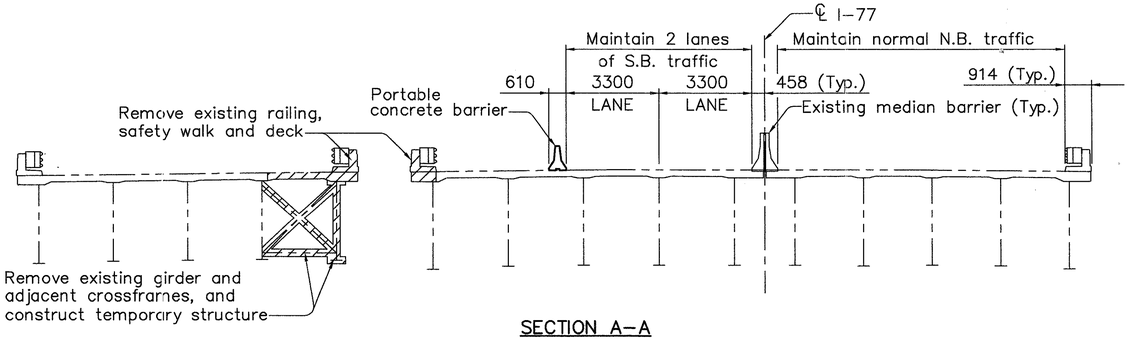
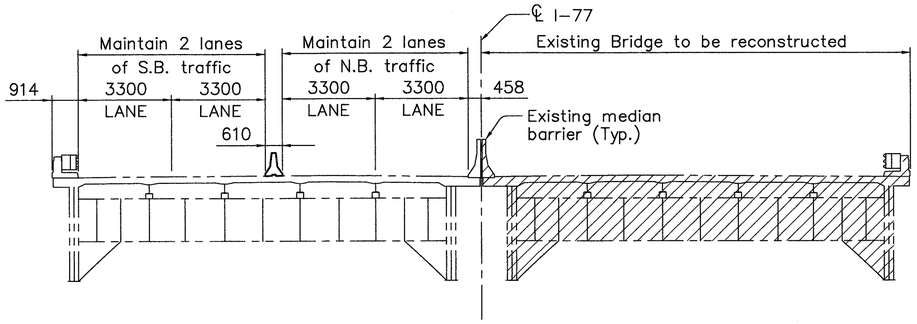
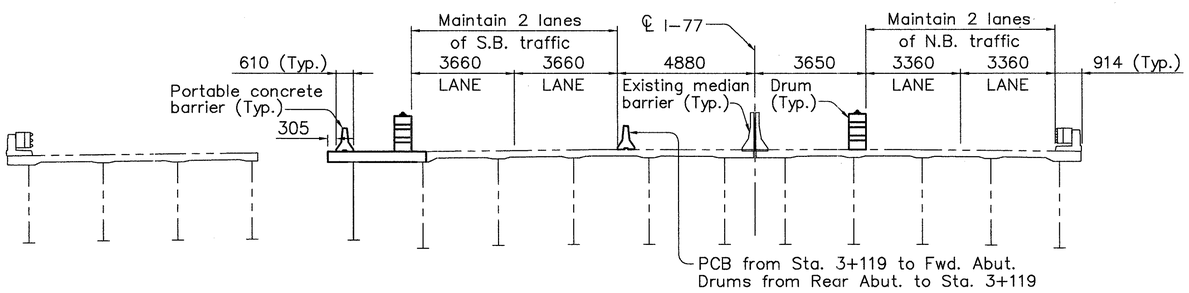


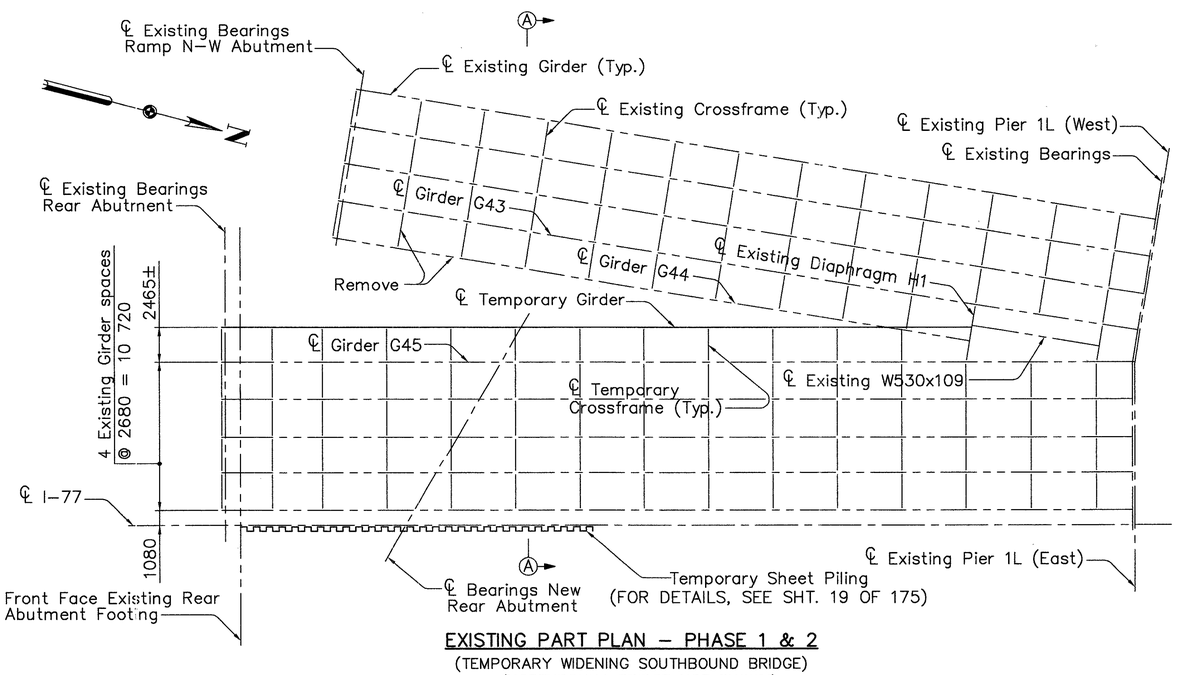
SECTION A–A
PHASE 1



PHASE 3
(MAIN SPANS, LOOKING NORTH)



SECTION A–A
PHASE 2



EXISTING PART PLAN – PHASE 1 & 2
(TEMPORARY WIDENING SOUTHBOUND BRIDGE)
(NORTHBOUND BRIDGE NOT SHOWN)
(FOR TEMP. STRUCTURE DETAILS, SEE SHTS. 15 OF 175 THRU 18 OF 175)

NOTES:

ALL PORTABLE CONCRETE BARRIERS ON THE BRIDGE SHALL BE ANCHORED USING RESIN ANCHORS AS PER STANDARD DRAWING PCB–91M. (THROUGH BOLTING IS NOT PERMITTED.) THERE SHALL BE 3 ANCHORS PER BARRIER SEGMENT. ANCHORS SHALL BE PLACED ON ONE SIDE OF THE BARRIER DURING PHASES 1 AND 2 AND ON BOTH SIDES OF THE BARRIER DURING PHASES 3 AND 4.

NO DEBRIS IS TO INTENTIONALLY FALL OR DROP ON RAILROAD PROPERTY.

PHASE 1

1. BEGIN PERMANENT EMBANKMENT, BELOW EXISTING STRUCTURE, FOR NEW REAR ABUTMENT.
2. DIRECT I–77 SB TRAFFIC TO THE EASTERLY PORTION OF THE SB BRIDGE. DIRECT RAMP N–W TRAFFIC TO WESTERLY PORTION OF RAMP N–W.
3. INSTALL PORTABLE CONCRETE BARRIER.
4. CONSTRUCT TEMPORARY GIRDER SUPPORT STRUCTURE AT EXISTING REAR ABUTMENT.
5. CONCURRENTLY WITH STEP 4, REMOVE EXISTING IMPACT ATTENUATOR, CONCRETE PARAPETS, DECK SLAB AND STEEL GIRDER (G44) AND ADJACENT CROSSFRAMES TO LIMITS SHOWN IN SECTION A–A PHASE 1.
6. CONCURRENTLY WITH STEP 4, CONSTRUCT PERMANENT PAVEMENT WIDENING ADJACENT TO NEWLY CONSTRUCTED TEMPORARY GIRDER SUPPORT STRUCTURE.
7. INSTALL TEMPORARY GIRDER END DIAPHRAGM BETWEEN EXISTING GIRDERS G43 AND G45. INSTALL TEMPORARY FASCIA GIRDER AND CROSSFRAMES.
8. CONSTRUCT TEMPORARY DECK SLAB.
9. INSTALL PORTABLE CONCRETE BARRIER AND DRUMS ON SB BRIDGE FOR FINAL PHASE 1 CONSTRUCTION CONDITION.

PHASE 2

1. DIRECT I–77 SB TRAFFIC TO THE WESTERLY PORTION OF THE SB BRIDGE FOR FINAL PHASE 1 CONSTRUCTION CONDITION, AS SHOWN IN SECTION A–A PHASE 2.
2. CLOSE RAMP W–N AND RAMP N–W TO TRAFFIC. DIRECT I–77 NB TRAFFIC TO THE EASTERLY PORTION OF THE NB BRIDGE, AS SHOWN IN SECTION A–A PHASE 2.
3. REMOVE EXISTING MEDIAN ROADWAY BARRIER AS REQUIRED TO CONSTRUCT CROSSOVERS.
4. REMOVE BRIDGE MEDIAN BARRIER AND PORTION OF DECK SLAB AS REQUIRED TO INSTALL TEMPORARY SHEET PILING TO RETAIN NEW REAR AND FORWARD ABUTMENT EMBANKMENT.
5. INSTALL TEMPORARY SHEET PILING BETWEEN NB AND SB BRIDGES TO RETAIN NEW REAR AND FORWARD ABUTMENT EMBANKMENT.

PHASE 3

1. SHIFT I–77 NB TRAFFIC TO THE EASTERLY PORTION OF THE SB BRIDGE, AS SOWN IN THE PHASE 3 CROSS SECTION.
2. REMOVE AND RECONSTRUCT NB BRIDGE AND RAMP W–N.

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114–1724
ARCHITECTS ENGINEERS PLANNERS

REVIEWED	DATE
RER	09–12–97
STRUCTURE FILE NUMBER	
1806726	
DRAWN	REVISED
ADY	
DESIGNED	CHECKED
ADY	FSJ/MJL

CONSTRUCTION SEQUENCE DETAILS–PHASE 1, 2 & 3
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

13/175

107
295

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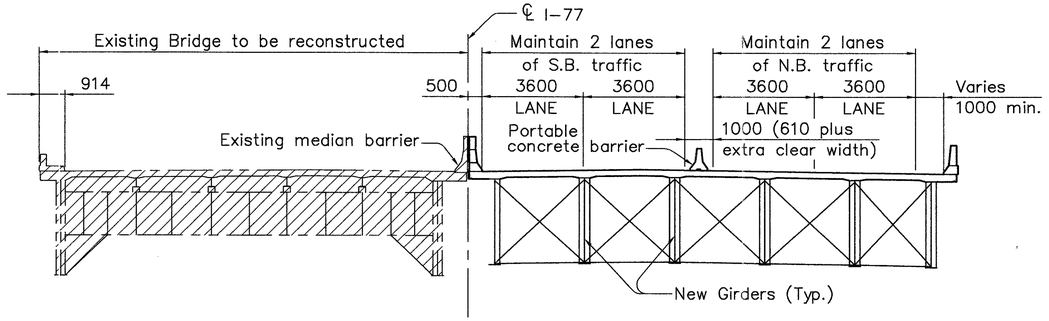
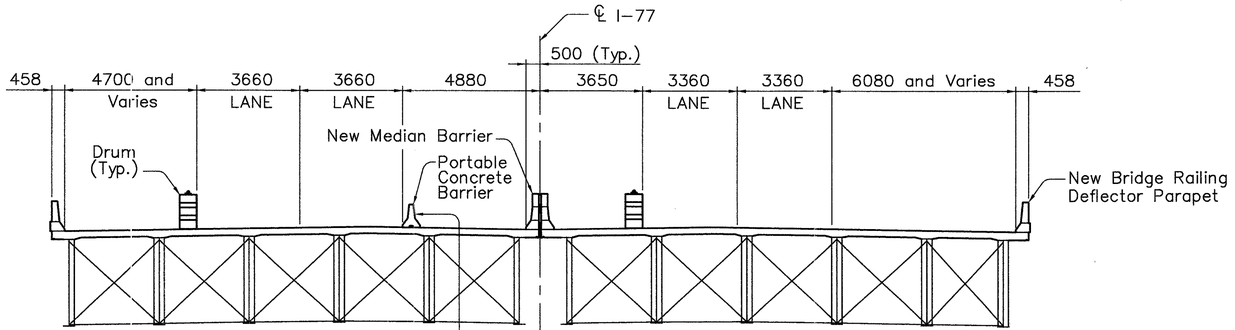


PHASE 4
(MAIN SPANS, LOOKING NORTH)



PHASE 5
(MAIN SPANS, LOOKING NORTH)

PHASE 4

1. INSTALL PORTABLE CONCRETE BARRIER ON NEWLY CONSTRUCTED NB BRIDGE.
2. SHIFT NB TRAFFIC TO THE EASTERLY PORTION OF THE NEWLY CONSTRUCTED NB BRIDGE.
3. SHIFT SB TRAFFIC TO THE WESTERLY PORTION OF THE NEWLY CONSTRUCTED NB BRIDGE.
4. REMOVE AND RECONSTRUCT SB BRIDGE AND RAMP N–W.

PHASE 5

1. INSTALL PORTABLE CONCRETE BARRIERS AND DRUMS ON THE NEW SB BRIDGE.
2. SHIFT SB TRAFFIC TO NEWLY CONSTRUCTED SB BRIDGE.
3. RECONSTRUCT ROADWAY MEDIAN BARRIER AT CROSSOVERS AND MEDIAN PORTION OF REAR AND FORWARD APPROACH SLABS.
4. REMOVE PORTABLE CONCRETE BARRIER AND DRUMS FROM NB BRIDGE AND SB BRIDGE.
5. RESUME NORMAL I–77 TRAFFIC.

metric units

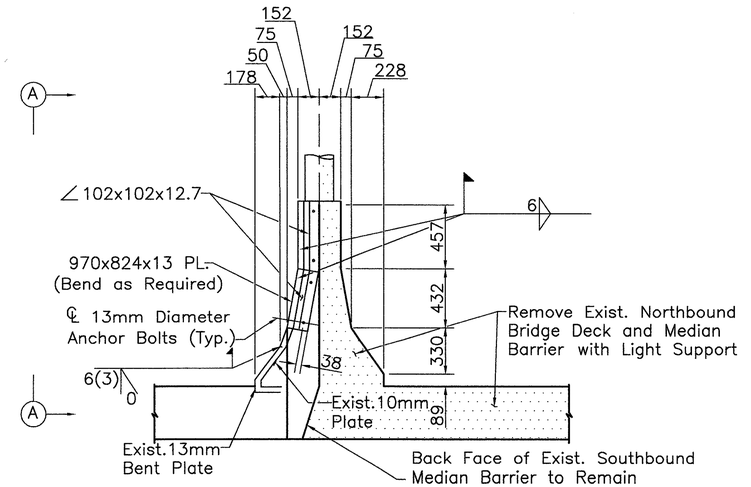
NOTES FOR TEMPORARY CLOSURE STEEL IN SB MEDIAN BARRIERS AT LIGHT POLES:

FOR LOCATIONS OF EXISTING MEDIAN MOUNTED LIGHT POLES, SEE LIGHTING PLANS.

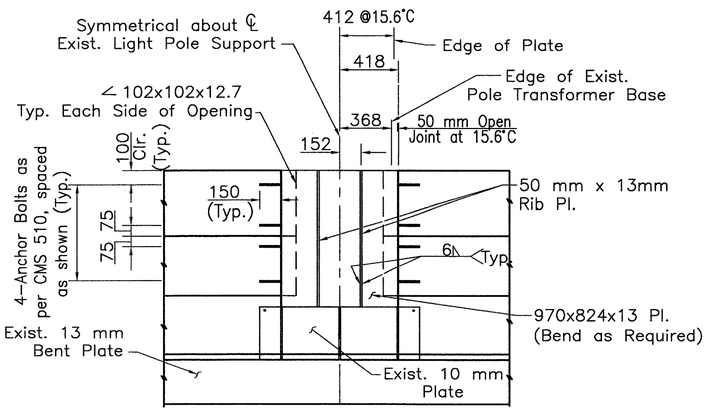
ANCHOR BOLTS SHALL BE 13 mm DIAMETER A325M EXPANSION BOLT ANCHORS DRILLED–IN–PLACE AND CAPABLE OF DEVELOPING A PULLOUT RESISTANCE OF NOT LESS THAN 22 241 NEWTONS.

ALL STRUCTURAL STEEL SHALL BE ASTM A36M GALVANIZED ACCORDING TO 711.02. GALVANIZING OF STEEL AND ALL MATERIALS INCLUDING STEEL AND ANCHOR BOLTS, SHALL BE INCLUDED WITH ITEM 863, STRUCTURAL STEEL MEMBER, MISC. MEDIAN BARRIER PLATE, FOR PAYMENT. THE MEDIAN BARRIER PLATE WILL BE MEASURED AND PAID FOR PER EACH LOCATION.

FOR PORTABLE CONCRETE BARRIER NOTE, SEE SHEET 13 OF 175.



SECTION THROUGH EXIST. LIGHT POLE SUPPORT
(Conduit not shown – Typical at 9 Locations)



SECTION A–A
(Conduit not shown)

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
ADY	ADY/JLV	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
FSJ/MJL		1806726	

CONSTRUCTION SEQUENCE DETAILS–PHASE 4,5 & REMOVAL DETAILS
BRIDGE NO. CUY–77–23.458
OVER KINGSBURY RUN

CUY–77–23.458

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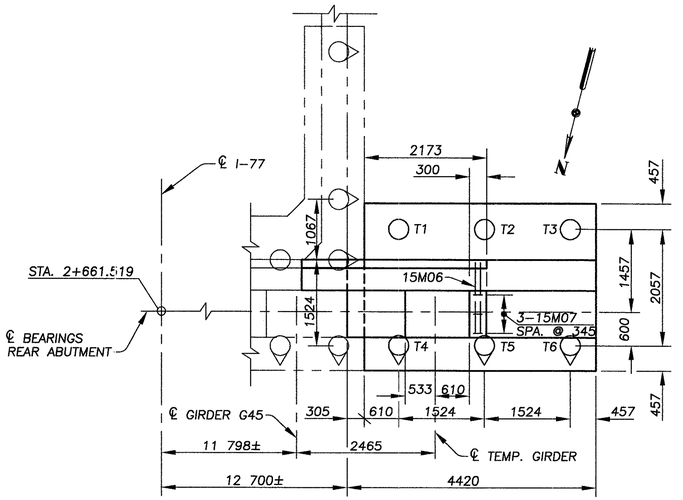
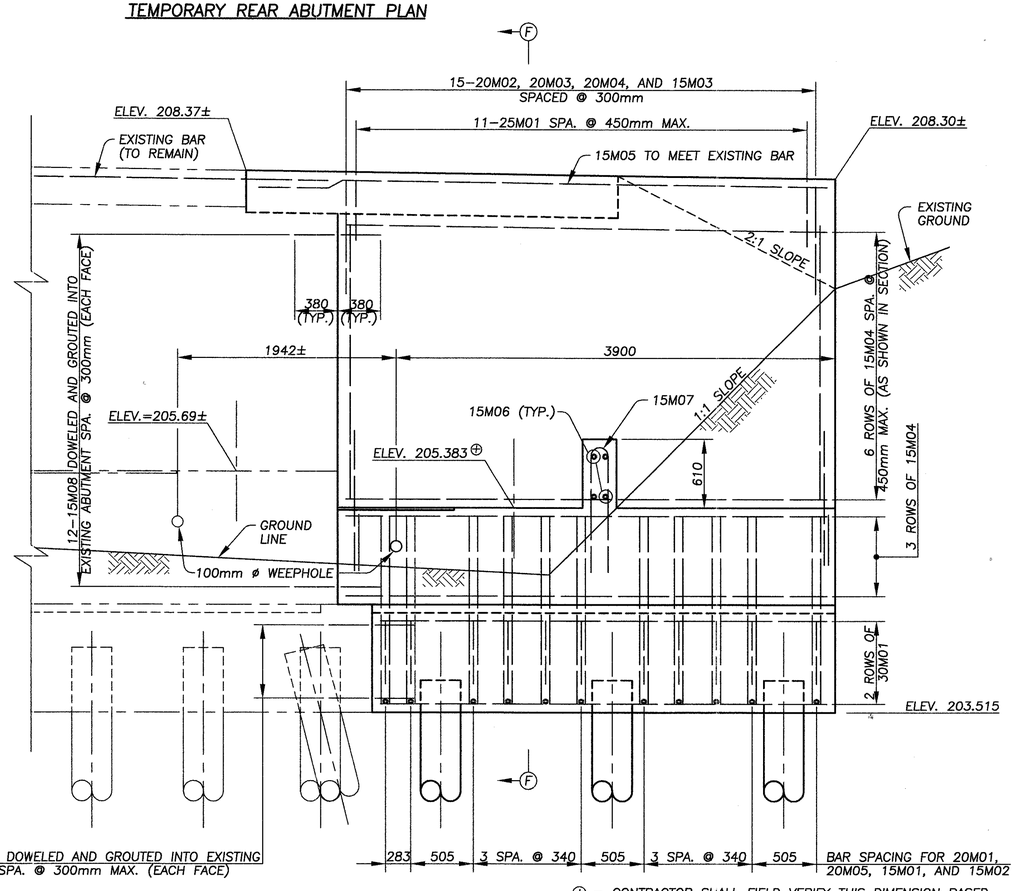


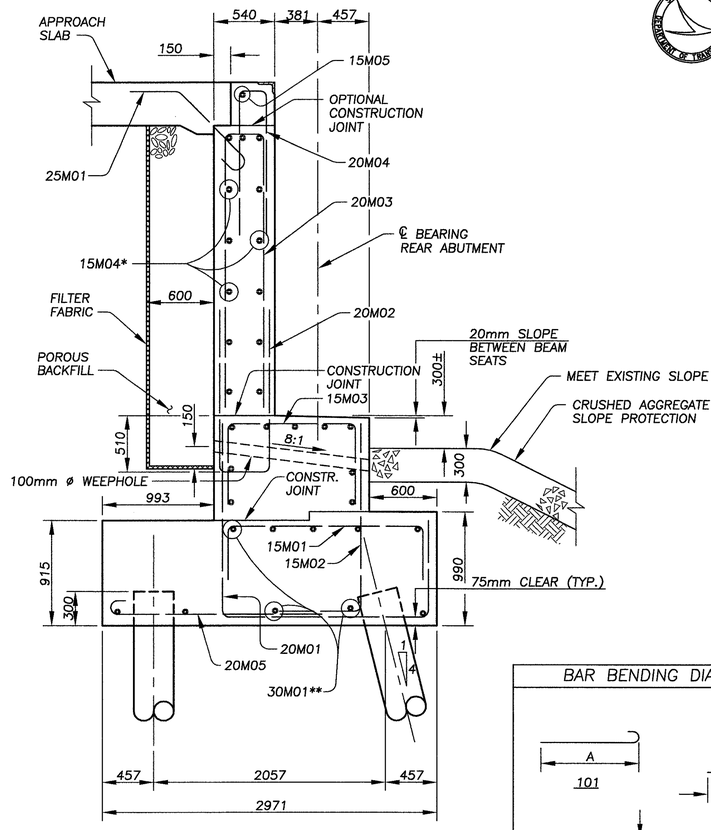
TEMPORARY REAR ABUTMENT PLAN

NOTE:
THE CONTRACTOR SHALL EXERCISE EXTREME CARE IN DRIVING PILES T1, T2, AND T3 DUE TO THE CLOSE PROXIMITY OF THE EXISTING BATTERED PILES.



⊕ – CONTRACTOR SHALL FIELD VERIFY THIS DIMENSION BASED ON THE EXISTING TOP OF DECK ELEVATIONS. REFER TO THE EXISTING STRUCTURE VERIFICATION NOTE IN THE STRUCTURAL GENERAL NOTES.

ELEVATION



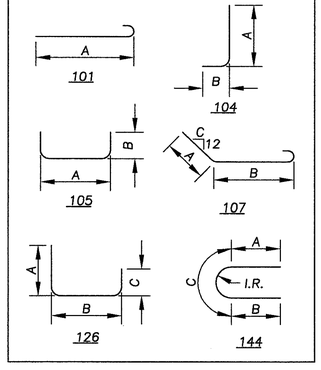
* – TYPICAL FOR ALL BARS NORMAL TO THE SECTION ABOVE THE TOP OF FOOTING, EXCEPT AS SHOWN.
** – TYPICAL FOR ALL BARS NORMAL TO THE SECTION BELOW THE TOP OF FOOTING.

SECTION F–F

REINFORCEMENT SCHEDULE

MARK	NUMBER	LENGTH	TYPE	A	B	C	I.R.
ETA15M01	11	2875	105	1829	563		
ETA15M02	11	2400	104	1705	735		
ETA15M03	15	2575	105	1225	715		
ETA15M04	22	4275	STR				
ETA15M05	1	5200	STR				
ETA15M06	4	1225	STR				
ETA15M07	3	2325	144	1045	1045	235	59
ETA15M08	30	760	STR				
ETA20M01	11	5325	126	2756	1829	840	
ETA20M02	15	3225	105	391	1467		
ETA20M03	15	5500	105	390	2605		
ETA20M04	15	2700	105	240	1280		
ETA20M05	11	1975	101	1877			
ETA25M01	11	1290	107	431	788	12	
ETA30M01	10	3975	STR				

BAR BENDING DIAGRAMS



NOTES:

THE BACKWALL CONCRETE ABOVE THE GIRDER SEAT CONSTRUCTION JOINT SHALL NOT BE POURED UNTIL AFTER THE GIRDER IS IN PLACE.

ALL NEW PILES SHALL BE 350mm ø CAST-IN-PLACE PILES.

ALL TEMPORARY ABUTMENT BARS SHALL BE PREFIXED ETA, AND SHALL BE EPOXY COATED.

ESTIMATED PILE LENGTH = 14 000 mm.

PILE CUTOFF ELEVATION = 203.815.

POROUS BACKFILL WITH FILTER FABRIC, 600 mm THICK, SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE AND LATERALLY TO THE ENDS OF THE WINGWALLS.

TEMPORARY REAR ABUTMENT CONCRETE SHALL BE PAID FOR WITH ITEM SPECIAL, HIGH PERFORMANCE CONCRETE, SUBSTRUCTURE.

FOR REAR ABUTMENT REMOVAL PLANS, SEE SHEET 25 OF 175.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	GLG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

TEMPORARY WIDENING
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

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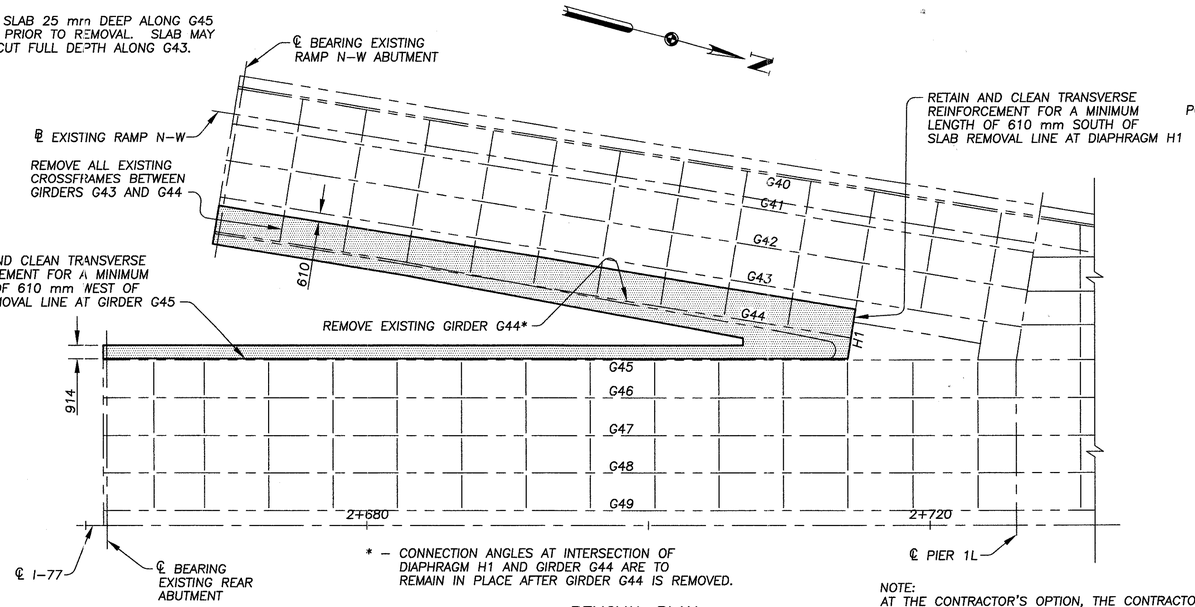
NOTE:
SAWCUT SLAB 25 mm DEEP ALONG G45 AND H1 PRIOR TO REMOVAL. SLAB MAY BE SAWCUT FULL DEPTH ALONG G43.

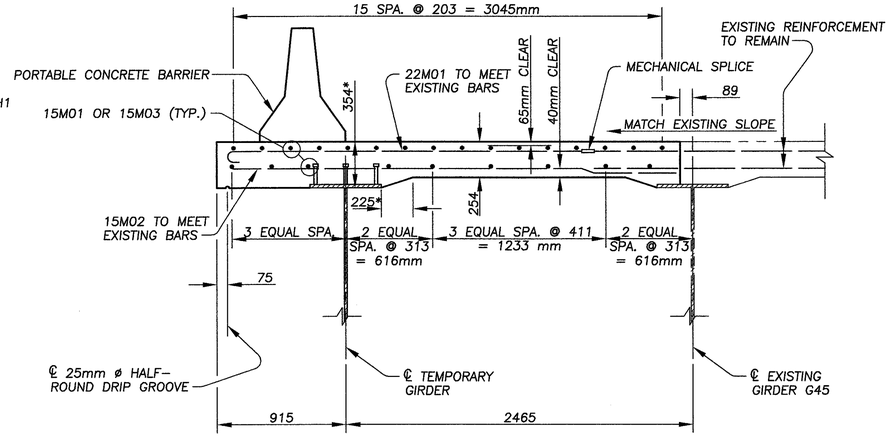


* – CONNECTION ANGLES AT INTERSECTION OF DIAPHRAGM H1 AND GIRDER G44 ARE TO REMAIN IN PLACE AFTER GIRDER G44 IS REMOVED.

REMOVAL PLAN

NOTE:
AT THE CONTRACTOR'S OPTION, THE CONTRACTOR MAY SAW CUT OVER THE CENTER OF THE FLANGE OF G45 AND PLACE 2 – 22 mm ø SHEAR STUDS PER ROW AT 305 mm ROW SPACING ON CENTER AND ELONGATE 22M014 AND 15M02 TO SAW CUT LINE IN LIEU OF SALVAGING EXISTING BARS. SHEAR STUDS SHALL BE 50 mm MIN. CLEAR OF EDGE OF FLANGE AND SAW CUT LINE.

RESTRICTIONS: THE CONTRACTOR SHALL DRILL HOLES ON OUTSIDE EDGE OF GIRDER G45 TO MEASURE THE DEPTH OF THE TOP FLANGE AND THE LOCATION OF THE GIRDER. THE CONTRACTOR SHALL NOT BRING A SAW BLADE WITHIN 6 mm OF THE TOP FLANGE. IN ADDITION THE CONTRACTOR MAY NOT CUT TRANSVERSE CUTS MORE THAN 200 mm INTO THE TOP SURFACE OF THE EXISTING SLAB.

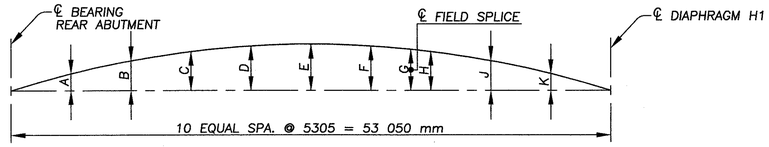


SECTION A–A

NOTES:

* DECK SLAB DEPTH: THE DISTANCE SHOWN FROM THE TOP OF THE DECK SLAB TO THE BOTTOM OF THE TOP FLANGE IS THE THEORETICAL DESIGN DIMENSION INCLUDING THE DESIGN HAUNCH THICKNESS OF 50 mm. THE QUANTITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED UPON THIS DIMENSION, MINUS THE DESIGN HAUNCH THICKNESS, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE GIRDER MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE. DEDUCTION SHALL BE MADE FOR VOLUME OF ENCASED STEEL PLATES AS PER 511.18.

A HAUNCH WIDTH OF 225 mm SHALL BE USED FOR COMPUTING QUANTITY OF CONCRETE. THE SLOPE OF THE HAUNCH MAY BE LESS AT THE CONTRACTOR'S OPTION.



CAMBER DIAGRAM

LOCATION	A	B	C	D	E	F	G	H	J	K
POINT ON SPAN	0.1	0.2	0.3	0.4	0.5	0.6	F.S.	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	13	24	32	37	38	37	33	32	24	13
DEFLECTION DUE TO REMAINING DEAD LOAD	23	44	60	69	72	69	63	60	44	23
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	–33	–59	–77	–88	–92	–88	–80	–77	–59	–33
REQUIRED SHOP CAMBER	3	9	15	18	18	18	16	15	9	3

NOTES:

ALL REINFORCEMENT STEEL SHALL BE PREFIXED ETS, AND SHALL BE EPOXY COATED.

THE MINIMUM LAP SPLICE LENGTH FOR ALL 15M BARS SHALL BE 580 mm.

NEGATIVE VALUES FOR DEFLECTIONS INDICATE DEFLECTIONS ABOVE THE CHORD LINE. NEGATIVE VALUES OF VERTICAL CURVE ADJUSTMENT AND TOTAL REQUIRED CAMBER INDICATE VALUES BELOW THE CHORD LINE.

DEFLECTIONS AND CONVEXITIES OR CONCAVITIES ARE GIVEN TO THE NEAREST MILLIMETER.

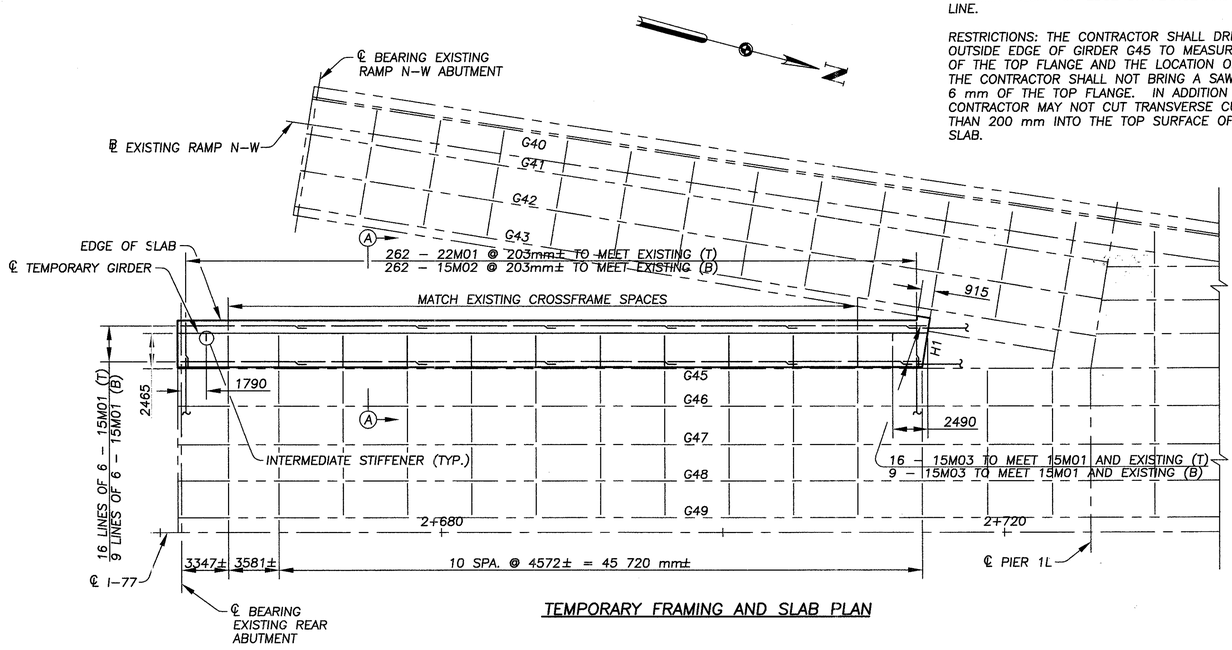
THE FOLLOWING ABBREVIATIONS ARE USED:
(T) = TOP (B) = BOTTOM

FOR SCREED ELEVATION NOTES, SEE SHEET 17 OF 175.

CONCRETE FOR TEMPORARY SUPERSTRUCTURE SHALL BE PAID FOR AS ITEM SPECIAL, HIGH–PERFORMANCE CONCRETE, SUPERSTRUCTURE (DECK).

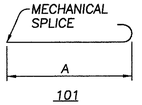
LEGEND:

▨ DENOTES PORTION OF DECK SLAB TO BE REMOVED ACCORDING TO ITEM 202.



TEMPORARY FRAMING AND SLAB PLAN

BAR BENDING DIAGRAM



REINFORCEMENT SCHEDULE

MARK	NUMBER	LENGTH	TYPE	A
TEMPORARY SLAB EPOXY COATED BARS				
ETS15M01	150	9150	STR	
ETS15M02	262	3350	STR	
ETS15M03	25	2050	STR	
ETS22M01	262	3000	101	2745

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114–1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	GLG	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

TEMPORARY WIDENING
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23458

16/175

110/295

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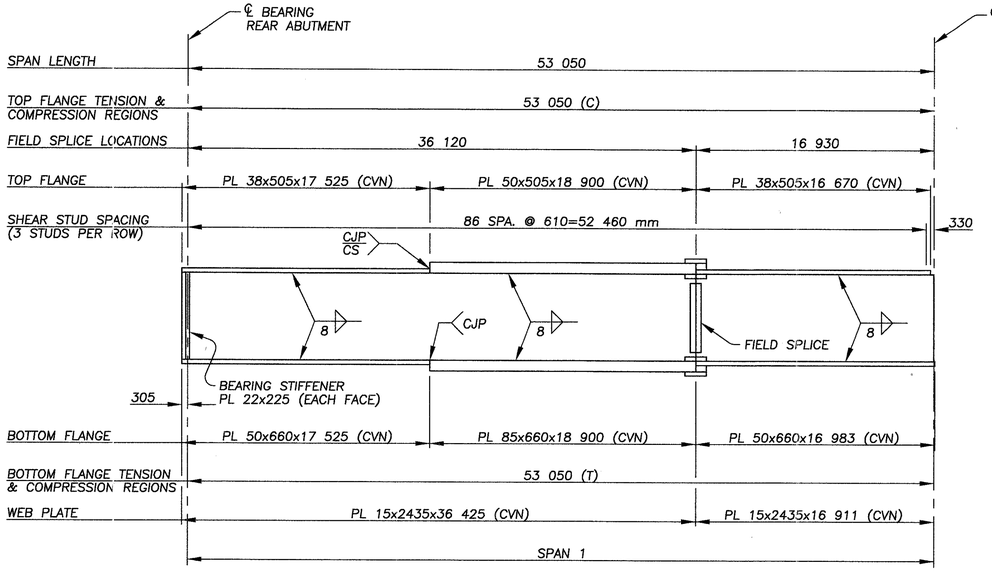
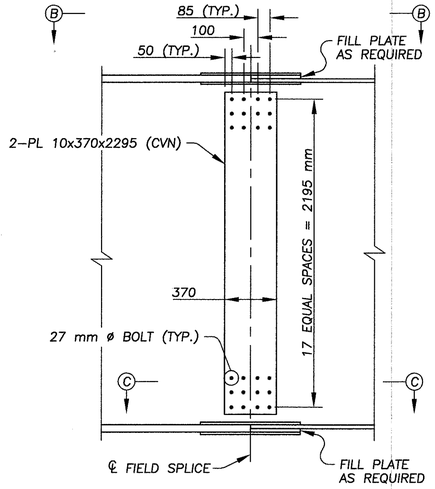
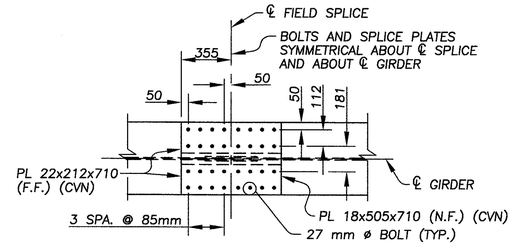


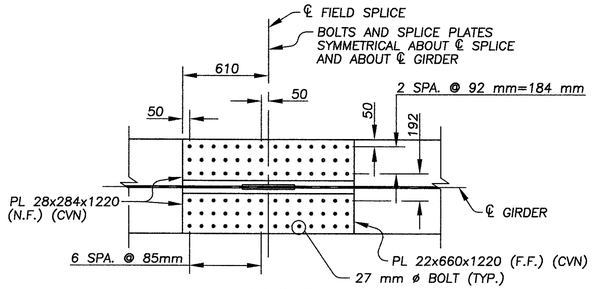
ELEVATION – TEMPORARY GIRDER



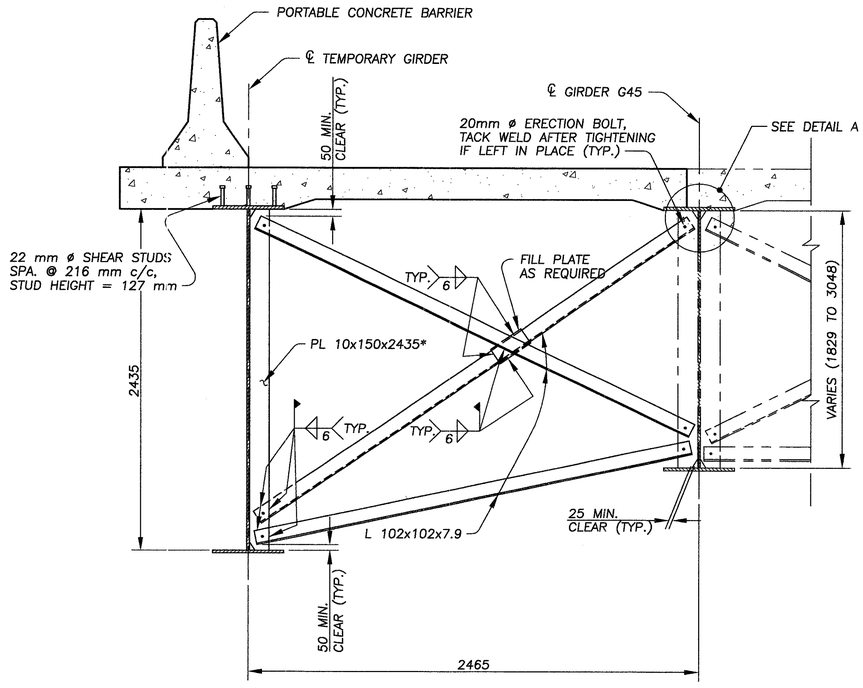
TEMPORARY GIRDER FIELD SPLICE



VIEW B–B



VIEW C–C



* – INTERMEDIATE STIFFENERS SHALL BE THE SAME SIZE AS CROSSFRAME CONNECTION PLATES

INTERMEDIATE CROSSFRAME DETAIL

SCREED ELEVATIONS – TEMPORARY SLAB

LOC.		℄ BRG.	0.1	0.2	0.3	0.4	0.5	0.6	F.S.	0.7	0.8	0.9	DIAPH. H1
GIRDER G45	EXISTING TOP OF DECK ELEVATION	208.446±	208.517±	208.588±	208.660±	208.731±	208.802±	208.874±	208.921±	208.945±	209.016±	209.101±	209.159±
TEMPORARY GIRDER	FINISHED TOP OF DECK *	208.346	208.418	208.491	208.563	208.734	208.720	208.804	208.827	208.839	208.917	208.993	209.064
	DEAD LOAD DEFLECTION	0.000	0.023	0.044	0.060	0.069	0.072	0.069	0.063	0.060	0.044	0.023	0.000
	SCREED ELEVATION	208.346	208.441	208.535	208.623	208.803	208.792	208.873	208.890	208.899	208.961	209.016	209.064

* CALCULATED FROM EXISTING TOP OF DECK ELEVATIONS AT GIRDER G45 AND MATCHING EXISTING CROSS SLOPES.

NOTES:

MASS OF TEMPORARY GIRDER = 42 254 kg

FOR SHEAR CONNECTOR DETAILS, SEE SHEET 115 OF 175.

ALL TEMPORARY STEEL SHALL BE IN ACCORDANCE WITH ASTM A36M.

WHERE A SHAPE OR PLATE IS LABELED "CVN" THE MATERIAL SHALL MEET THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS IN ACCORDANCE WITH 711.01.

FOR ADDITIONAL CROSSFRAME NOTES AND DETAILS, INCLUDING DETAIL A, SEE SHEET 114 OF 175.

ALL BOLTS SHALL BE GALVANIZED HIGH–STRENGTH BOLTS IN ACCORDANCE WITH ASTM A 325M.

FOR FIELD SPLICE PARTIAL SECTION DETAIL, SEE SHEET 113 OF 175.

TEMPORARY STEEL SHALL NOT BE PAINTED.

ALL STRUCTURAL STEEL FOR THE TEMPORARY GIRDER INCLUDING CROSSFRAMES, CONNECTION PLATES, AND FIELD SPLICES SHALL BE PAID FOR AS ITEM 863 – STRUCTURAL STEEL MEMBER, LEVEL FIVE (5) FABRICATION, A572M – 50, AS PER PLAN.

LEGEND:

F.F. = FAR FACE N.F. = NEAR FACE
CJP = COMPLETE JOINT PENETRATION GROOVE WELD
CS = BUTT WELD SUBJECT TO COMPRESSIVE STRESSES ONLY
(T) = AREA OF TENSION IN FLANGE
(C) = AREA OF COMPRESSION IN FLANGE

metric units

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One Cleveland Center
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ARCHITECTS ENGINEERS PLANNERS

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DRAWN	GLG
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REVIEWED	RER
DATE	09-12-97
REVISED	
STRUCTURE FILE NUMBER	1806726

TEMPORARY WIDENING
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23458

17/175

111/295

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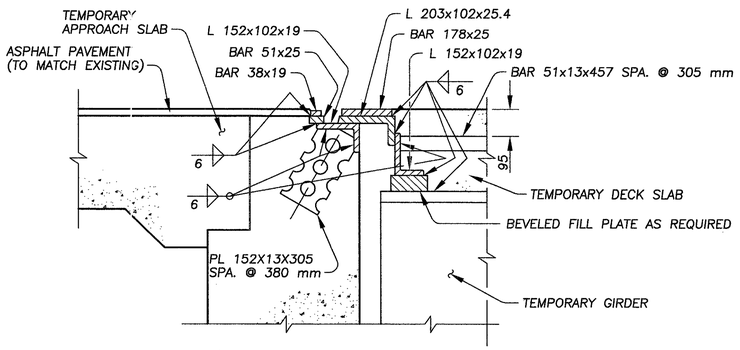
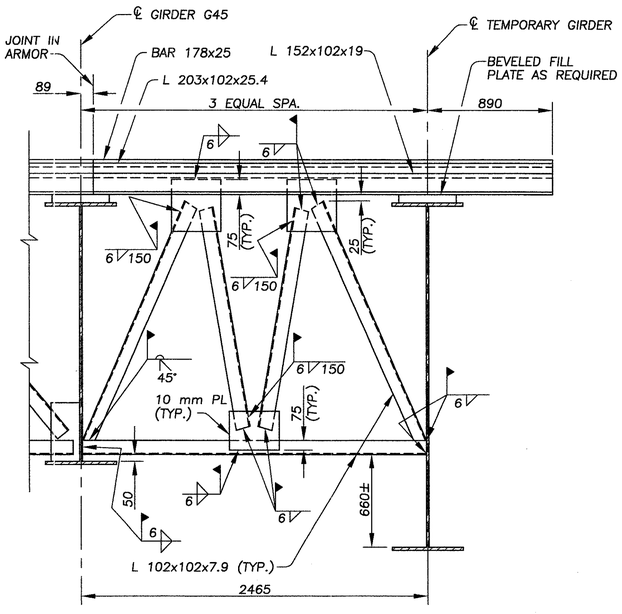


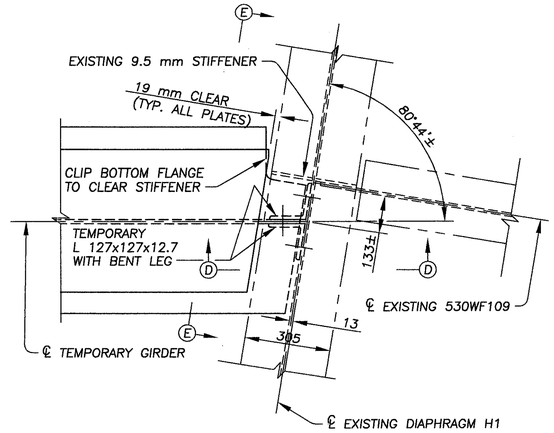
SLIDING PLATE EXPANSION JOINT

NOTE:
NEW TEMPORARY JOINT ARMOR SHALL BE FIELD WELDED TO EXISTING JOINT ARMOR WITH PARTIAL DEPTH BEVELED GROOVE WELDS GROUND SMOOTH.

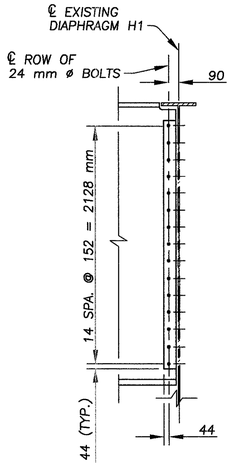
INCLUDE FOR PAYMENT WITH ITEM 516 – STRUCTURAL STEEL EXPANSION JOINT, AS PER PLAN.



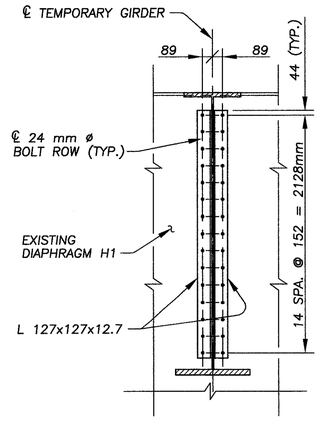
TEMPORARY END CROSSFRAME DETAIL



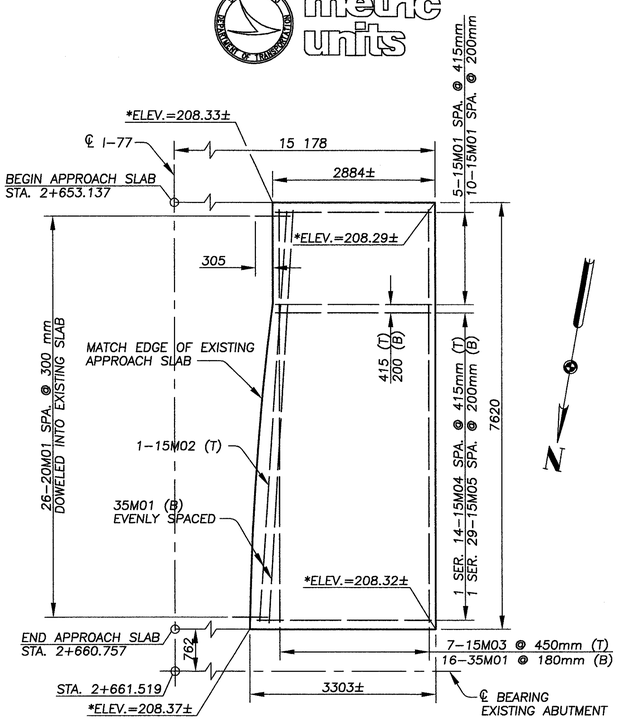
GIRDER CONNECTION DETAIL



SECTION D–D



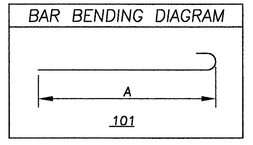
SECTION E–E



TEMPORARY APPROACH SLAB PLAN

* – APPROACH SLAB TO MATCH EXISTING ROADWAY CROSS SLOPE.

BAR BENDING DIAGRAM



REINFORCEMENT SCHEDULE

MARK	NUMBER	LENGTH	TYPE	A	INC.
ETAS15M01	15	2750	STR		
ETAS15M02	1	6400	STR		
ETAS15M03	7	7475	STR		
ETAS15M04	1 SER. 14	2775	STR		29
		3150			
ETAS15M05	1 SER. 29	2775	STR		13
		3150			
ETAS20M01	26	610	STR		
ETAS35M01	18	8000	101	7470	

NOTES:

FOR ADDITIONAL APPROACH SLAB NOTES AND DETAILS, SEE ODOT STANDARD DRAWING AS–1–81M.

ALL TEMPORARY APPROACH SLAB BARS SHALL BE PREFIXED ETAS, AND SHALL BE EPOXY COATED.

PRIOR TO CONNECTING TEMPORARY GIRDER TO DIAPHRAGM H1, THE PAINT BEHIND THE 127x127x12.7 CONNECTION ANGLES SHALL BE REMOVED FROM H1. INCLUDE WITH ITEM 202, PORTIONS OF STRUCTURE REMOVED, AS PER PLAN FOR PAYMENT.

ALL BOLTS SHALL BE HIGH–STRENGTH BOLTS IN ACCORDANCE WITH ASTM A 325M.

THE FOLLOWING ABBREVIATIONS ARE USED:
(T) = TOP (B) = BOTTOM

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
metric units

DESIGN AGENCY
HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724

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DHS	GLG	RER	09–12–97
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MJL		1806726	

TEMPORARY WIDENING
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

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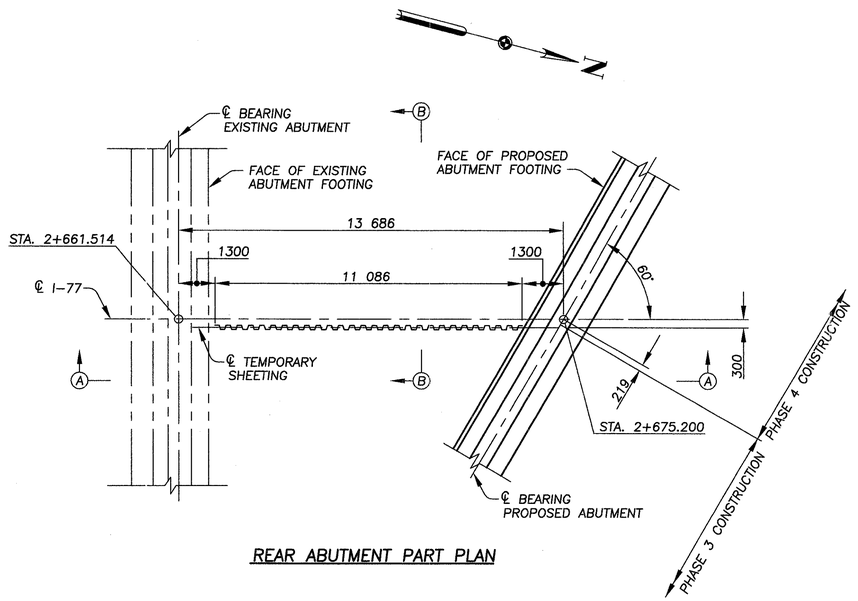
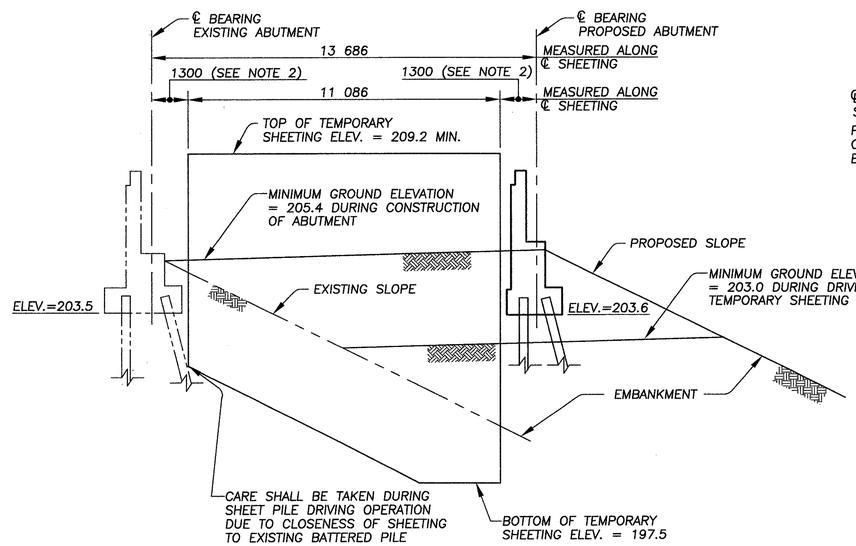
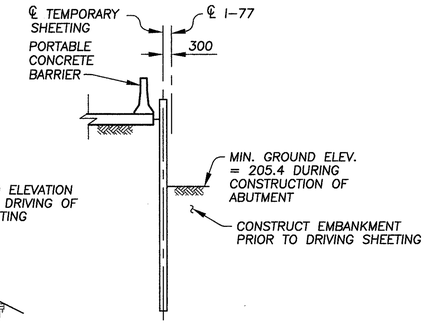


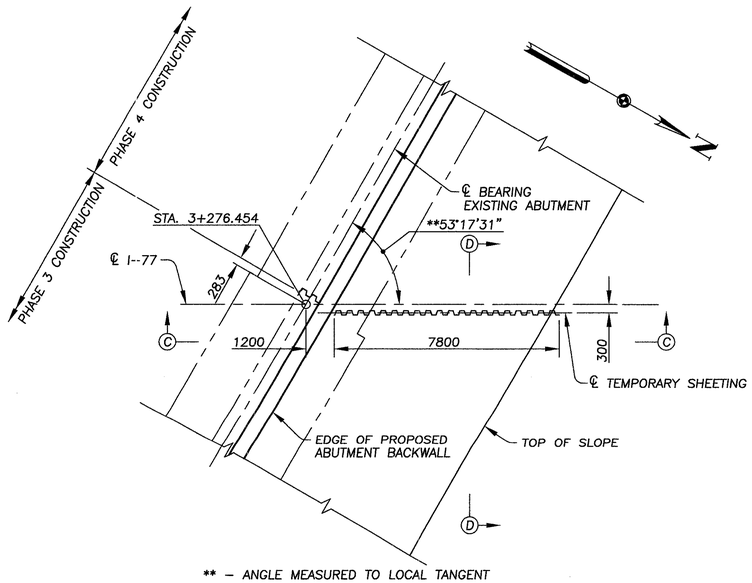
REAR ABUTMENT PART PLAN



SECTION A–A

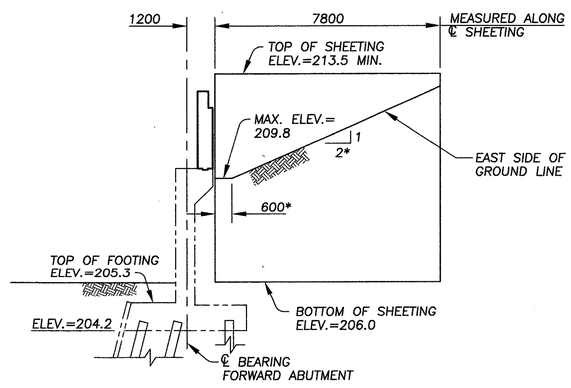


SECTION B–B



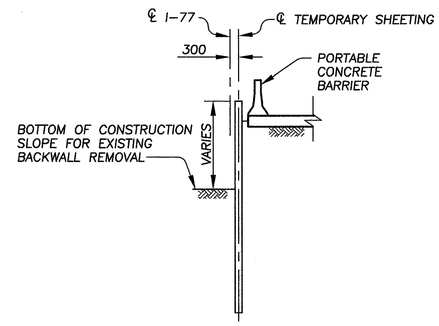
** – ANGLE MEASURED TO LOCAL TANGENT

FORWARD ABUTMENT PART PLAN



* – MEASURED NORMAL TO ℄ BEARINGS

SECTION C–C



SECTION D–D

NOTES:

1. ALL TEMPORARY SHEETING SHOWN SHALL BE A572M STEEL AND HAVE A MINIMUM SECTION MODULUS OF 442 cm^3/m
2. FOR THE REAR ABUTMENT, THE CONTRACTOR IS TO PROVIDE THE SECTION OF SHEETING TO FILL THE GAPS BETWEEN THE ABUTMENT BACKWALLS AND THE SHEETING SHOWN. THIS SECTION SHALL WITHSTAND A MINIMUM HORIZONTAL PRESSURE OF 20 kN/m^2
3. THE CONTRACTOR SHALL SUBMIT HIS CONSTRUCTION SEQUENCE TO THE ENGINEER FOR APPROVAL.
4. TEMPORARY SHEETING CAN BE REMOVED OR LEFT IN PLACE AT THE CONTRACTOR'S OPTION. IF LEFT IN PLACE THE SHEETING SHALL BE CUT 300mm BELOW THE ROADWAY SUBBASE. SHEETING WITHIN PROPOSED REAR ABUTMENT LIMITS MUST BE REMOVED TO CONSTRUCT THE PHASE 4 PORTION.
5. THE CONTRACTOR SHALL NOT OVERDRIVE SHEETING AT FORWARD ABUTMENT, TO AVOID DAMAGING EXISTING FOOTING.

metric units

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HNTB One Cleveland Center 1375 East Ninth Street Cleveland, Ohio 44114-1724
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TJM		1806726	

TEMPORARY STEEL SHEETING – ABUTMENTS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

19/175

113/295

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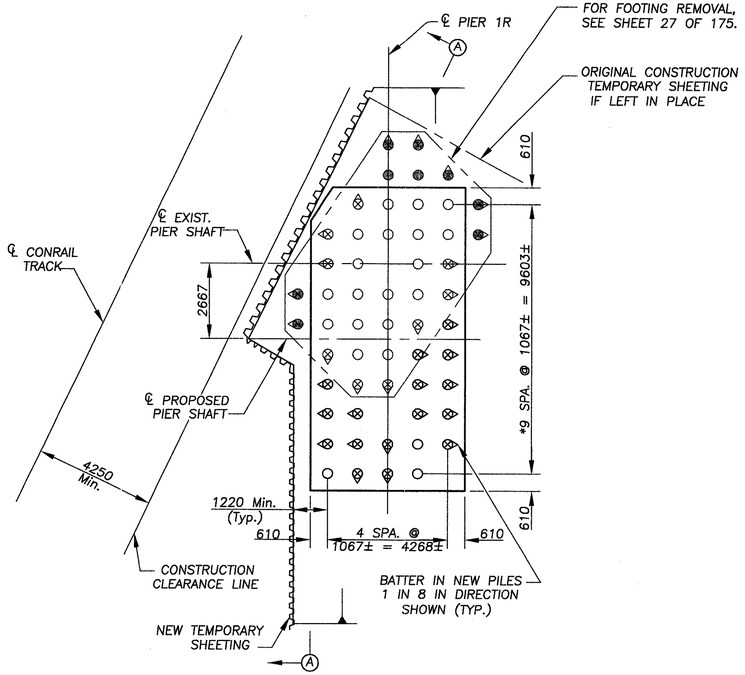
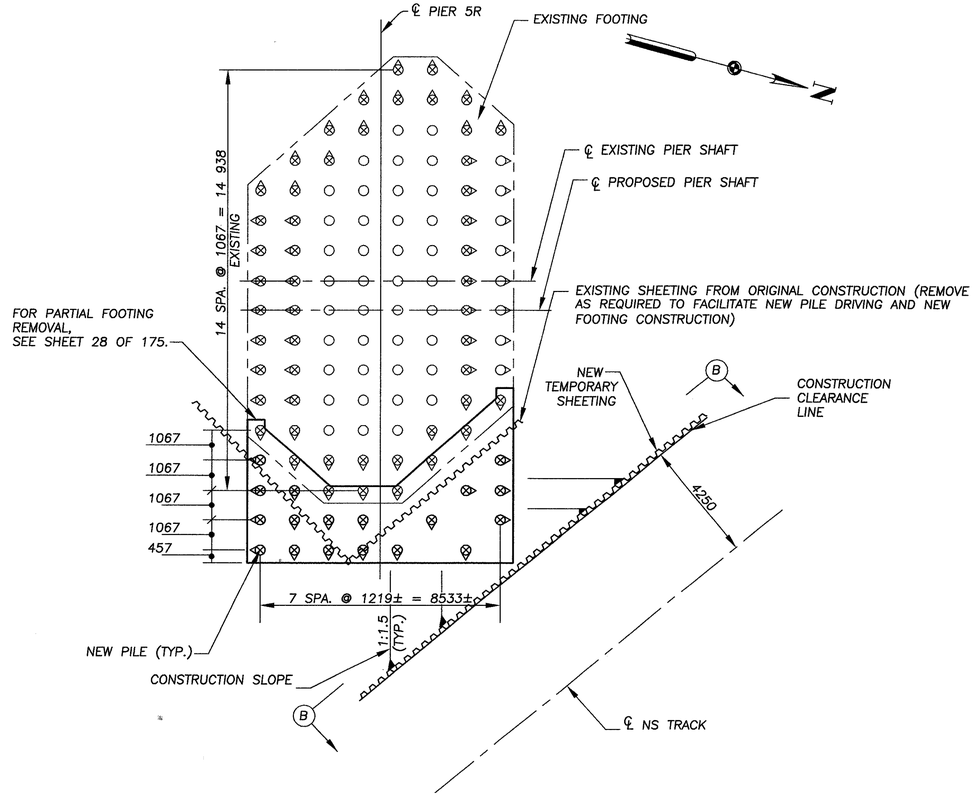
NOTE: DRIVE NEW TEMPORARY SHEETING BETWEEN CONSTRUCTION CLEARANCE LINE AND THE ORIGINAL CONSTRUCTION TEMPORARY SHEETING IF LEFT IN PLACE AND NEW FOOTING AS SHOWN.



PLAN, PIER 1R

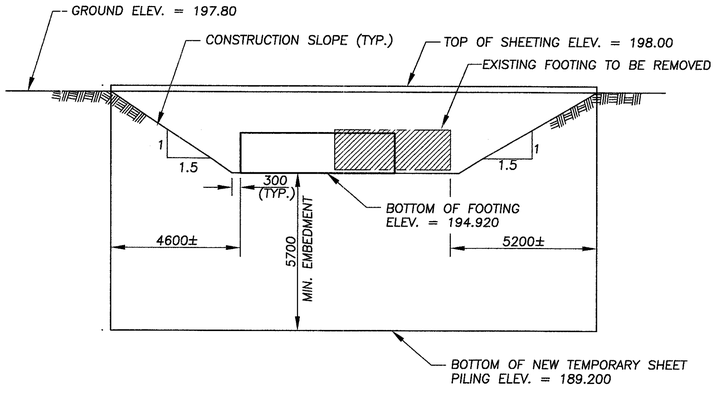
FOR PILE LOCATIONS AND NOTES, SEE SHEET 35 OF 175.



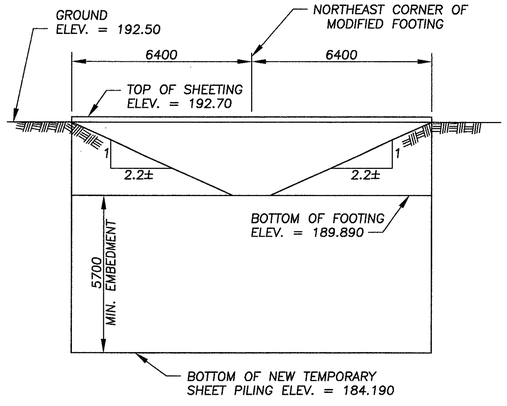
PLAN, PIER 5R

(NOTE: CONSTRUCTION SLOPE LIMITS ARE ONLY SHOWN WITHIN SHEETING LIMITS)

FOR PILE LOCATIONS AND NOTES, SEE SHEET 36 OF 175.



SECTION A–A



SECTION B–B

NOTES:

PIER 5R SHEETING (IF LEFT IN PLACE) SHALL BE CUT OFF 600 mm BELOW FINISH GRADE. HAND RAILING SHALL BE REQUIRED OR TOP OF SHEETING SHALL BE EXTENDED AT LEAST 1067 mm ABOVE GRADE. CALCULATIONS FOR THE SHEETING SHALL BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER FOR THE RAILROAD'S APPROVAL.

CONTRACTOR SHALL SUBMIT HIS CONSTRUCTION SEQUENCE TO THE ENGINEER FOR APPROVAL.

TEMPORARY SHEETING CAN BE REMOVED OR LEFT IN PLACE AT CONTRACTOR'S OPTION. IF LEFT IN PLACE, SHEETING SHALL BE CUT 0.3 M BELOW FINAL GROUND.

NEW TEMPORARY SHEETING SHALL BE $_{3}$A572M (MIN. S.M. = 1500 cm ^{2}/m)

EST. QUANTITY – PIER 1R = 185 m
PIER 5R = 109 m

metric units

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One Cleveland Center
1375 East Ninth Street
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ARCHITECTS ENGINEERS PLANNERS

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TEMPORARY STEEL SHEETING – PIER 1R & 5R
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

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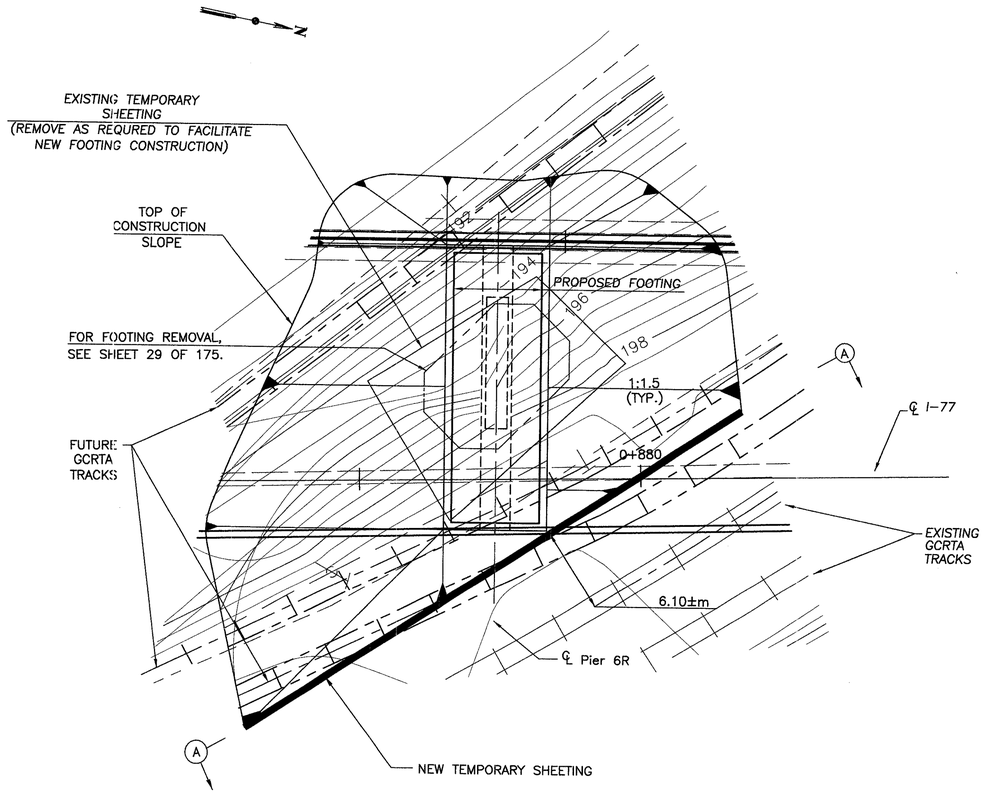
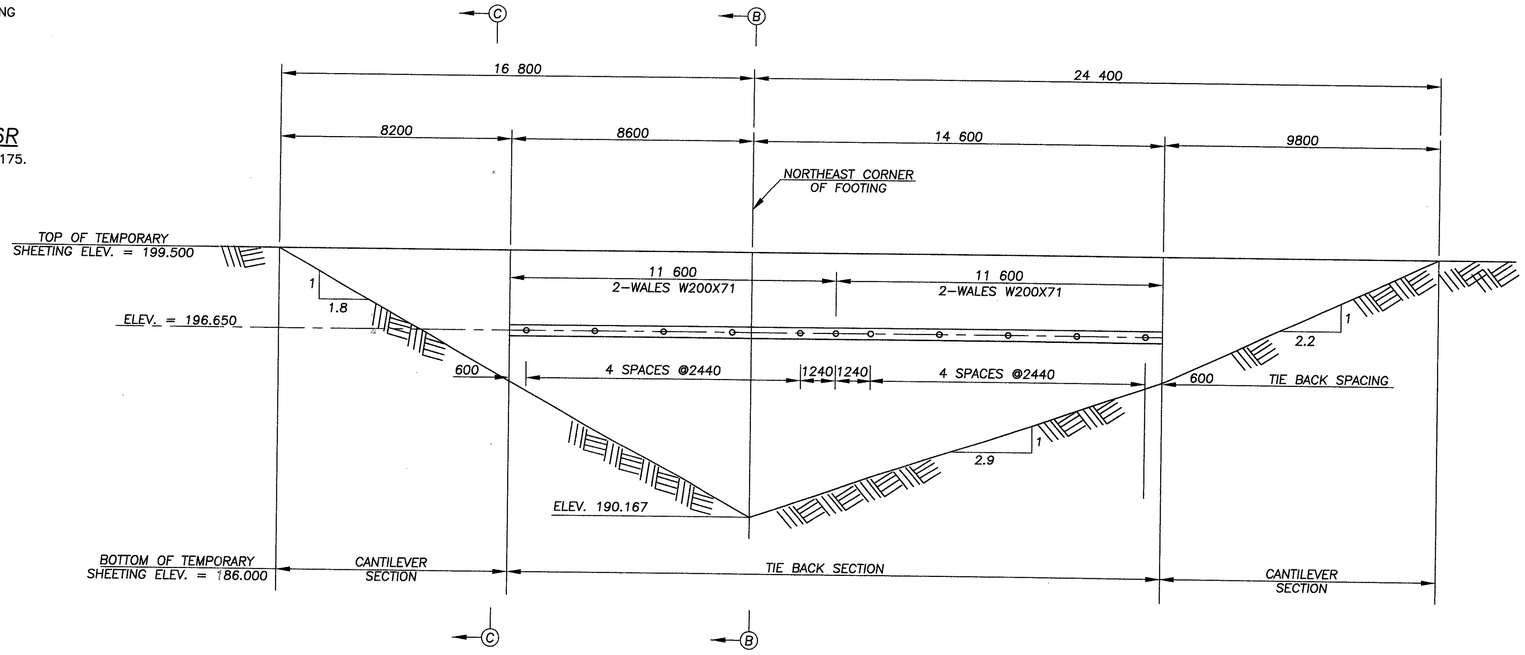


TEMPORARY SHEETING AT PIER 6R

FOR PILE LOCATIONS AND NOTES, SEE SHEET 36 OF 175.

SUGGESTED CONSTRUCTION SEQUENCE

1. DRIVE NEW TEMPORARY SHEETING TO FULL DEPTH.
2. EXCAVATE TO ELEV.=196.650, AS SHOWN IN SECTION B–B, SHEET 22 OF 175.
3. PLACE TIEBACKS.
4. EXCAVATE TO BOTTOM OF FOOTING FOR CONSTRUCTION OF NEW FOOTING.



SECTION A–A

NOTES:

NEW TEMPORARY SHEETING SHALL BE A572M WITH A MIN S.M. = 1960cm³/m.

ALL STRUCTURAL STEEL SHALL BE A36M.

HIGH STRENGTH BAR SHALL BE A–722M WITH Fu = 1102 MPa.

CONTRACTOR SHALL PROVIDE TIE BACK ANCHORAGE DETAILS TO THE ENGINEER FOR APPROVAL PRIOR TO THE INSTALLATION OF TIE BACK SYSTEM.

CONCRETE = CLASS C, f"c = 27.5 MPa.

PRELOAD TIE BACK 725 KN AT EACH TIE BACK LOCATION.

FOR ADDITIONAL NOTES SEE STRUCTURAL GENERAL NOTES.

PAYMENT FOR TEMPORARY SHEETING AT PIER 6R SHALL BE MADE UNDER ITEM SPECIAL–RETAINING WALL, MISC.: TEMPORARY TIE BACK WALL.

THE CONTRACTOR SHALL DEVELOP A PLAN FOR GCRTA APPROVAL PRIOR TO STARTING ANY WORK TO MONITOR ANY TRACK MOVEMENT AND TO RESTORE ANY TRACK THAT HAS BEEN DISTURBED.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY

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M.J.L.		1806726	

TEMPORARY STEEL SHEETING – PIER 6R
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

21/175

115/295

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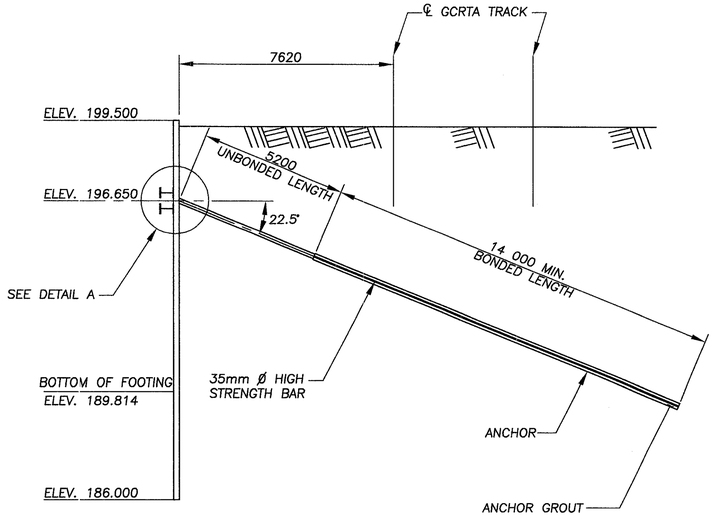
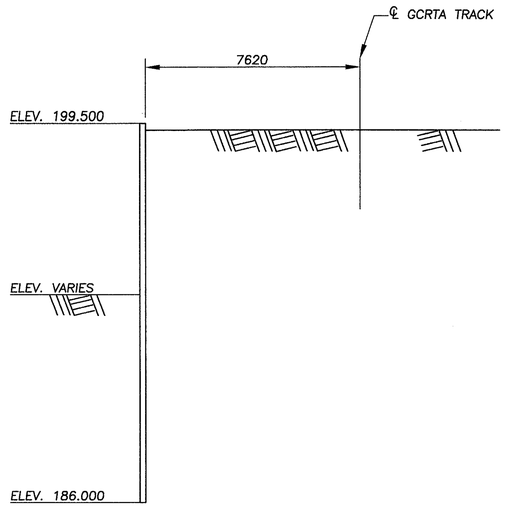
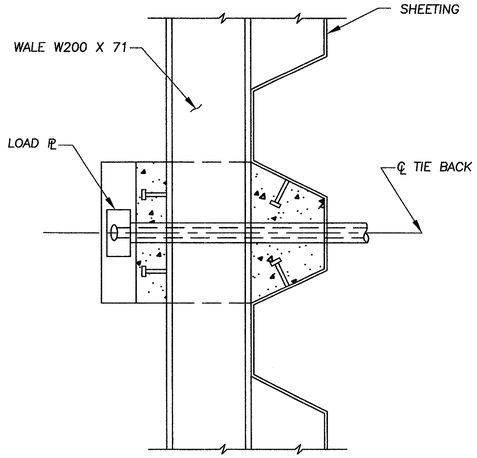


SECTION B–B

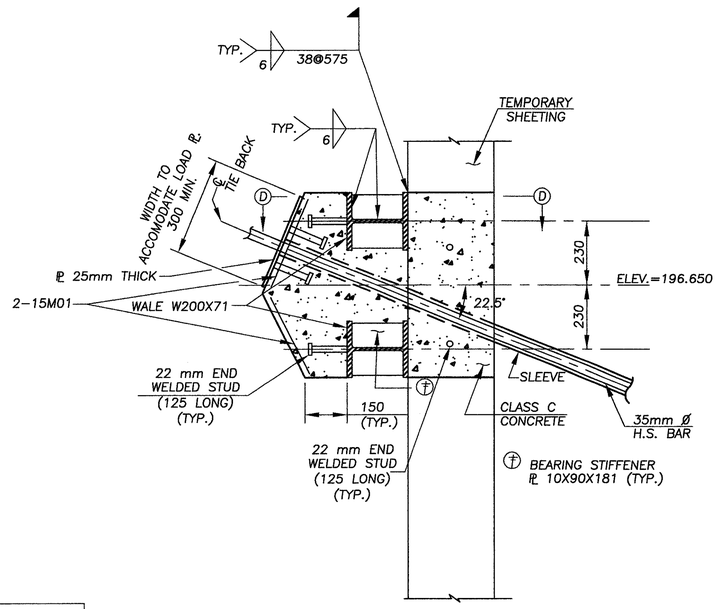


SECTION C–C



SECTION D–D

EPOXY COATED REINFORCEMENT			
MARK	NO. REQUIRED	LENGTH	TYPE
15M01	44	280mm	STR



DETAIL A

FOR NOTES, SEE SHEET 21 OF 175.

metric units

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Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

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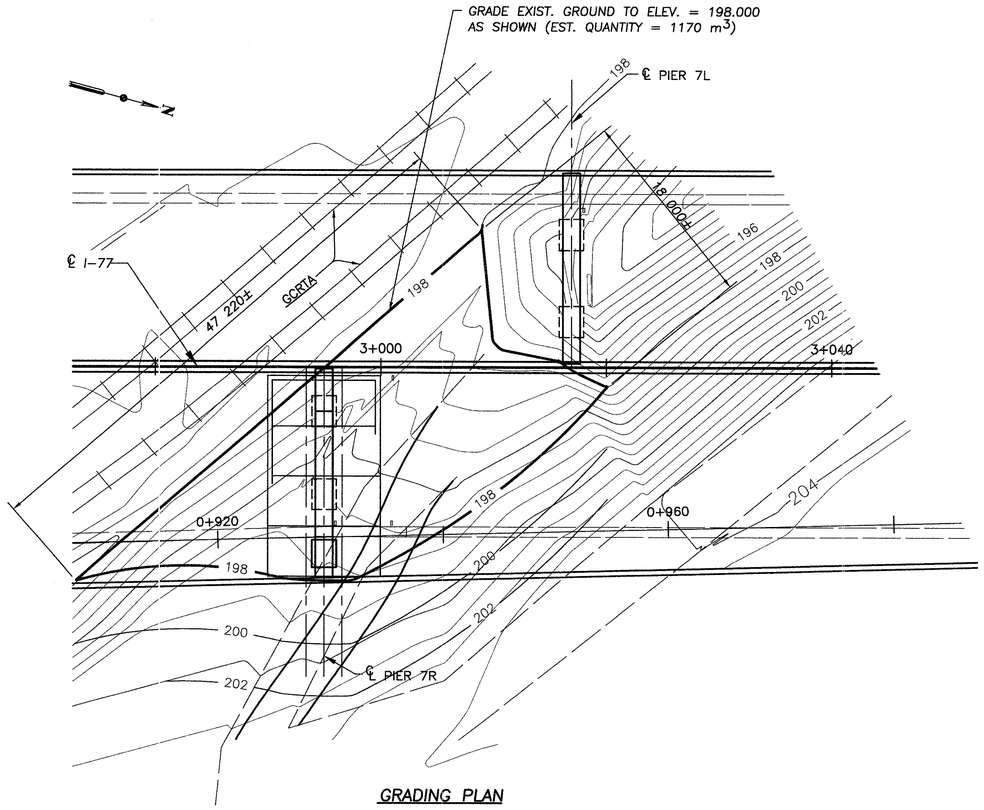
MJL		1806726	

TEMPORARY STEEL SHEETING – PIER 6R
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458



GRADING PLAN

SUGGESTED CONSTRUCTION SEQUENCE
1. GRADE GROUND AT PIER 7R AS SHOWN.
2. EXPLORE AND LOCATE ORIGINAL TEMPORARY SHEETING IF LEFT IN PLACE.
3. DRIVE NEW TEMPORARY SHEETING. AT SOUTHWEST CORNER, SHEETING DRIVING OPERATION WILL COME WITHIN THE CONSTRUCTION CLEARANCES OF GCRTA TRACK. CONTRACTOR SHALL OBTAIN PERMISSION FROM GCRTA FOR THIS OPERATION.
4. EXCAVATE WITHIN NEW TEMPORARY SHEETING LIMITS TO ELEV. 196.00±.
5. INSTALL BRACINGS (WALES AND STRUTS).
6. EXCAVATE TO BOTTOM OF FOOTING FOR CONSTRUCTING NEW PORTION OF FOOTING AND COLUMN.

NOTES:
TEMPORARY SHEETING CAN BE REMOVED OR LEFT IN PLACE AT CONTRACTOR'S OPTION. IF LEFT IN PLACE, SHEETING SHALL BE CUT 1.0 M BELOW FINAL GROUND.

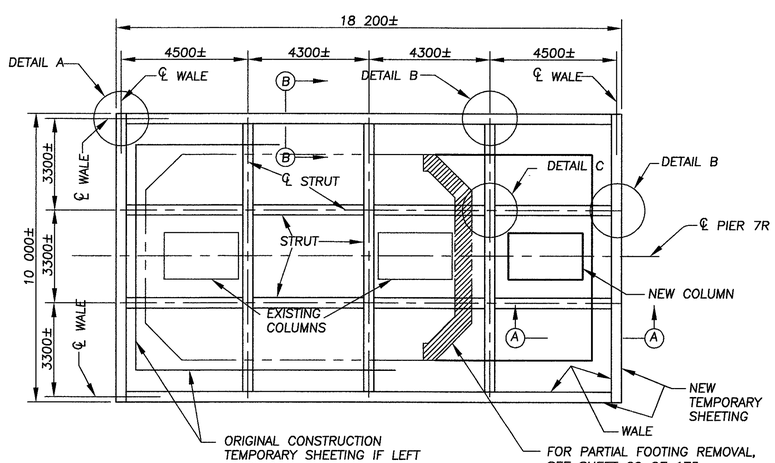
NEW TEMPORARY SHEETING SHALL BE A572M (MIN. S.M. = 1130 cm^3/m). ALL STRUCTURAL STEEL A36M. BOLTS = 24 mm DIAMETER H.S. BOLTS (A325M).

CONTRACTOR SHALL EXPLORE AND LOCATE THE ORIGINAL TEMPORARY SHEETING IF LEFT IN PLACE. NEW TEMPORARY SHEETING SHALL BE LOCATED OUTSIDE THE PERIMETERS OF THE ORIGINAL TEMPORARY SHEETING.

THE CONTRACTOR SHALL DEVELOP A PLAN FOR GCRTA APPROVAL PRIOR TO STARTING ANY WORK TO MONITOR ANY TRACK MOVEMENT AND TO RESTORE ANY TRACK THAT HAS BEEN DISTURBED.

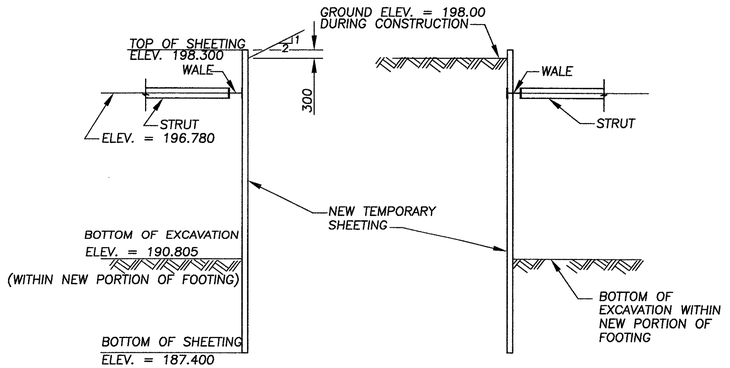
THE CONCTRACTOR SHALL ALSO DEVELOP A PLAN FOR GCRTA APPROVAL DETAILING THE CONSTRUCTION CLEARANCES FROM THE GCRTA TRACKS TO THE CONTRACTOR'S WORK LIMITS ADJACENT TO THE TEMPORARY SHEETING.

FOR DETAILS A, B AND C, SEE SHEET 24 OF 175.



PLAN OF SHEETING

FOR PILE LOCATIONS AND NOTES, SEE SHEET 36 OF 175.



SECTION A–A

SECTION B–B
(FOR DETAILS NOT SHOWN, SEE SECTION A–A)

metric units

DESIGN AGENCY
HNTB
ARCHITECTS ENGINEERS PLANNERS
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1375 East Ninth Street
Cleveland, Ohio 44114-1724

DESIGNED	DRAWN	REVIEWED	DATE
DHS	JMG	REK	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

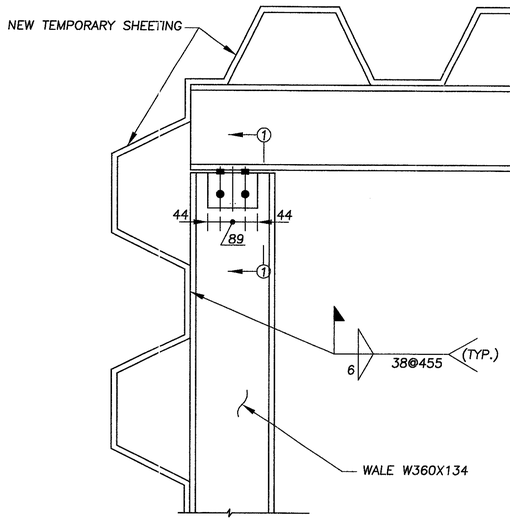
TEMPORARY STEEL SHEETING – PIER 7R
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

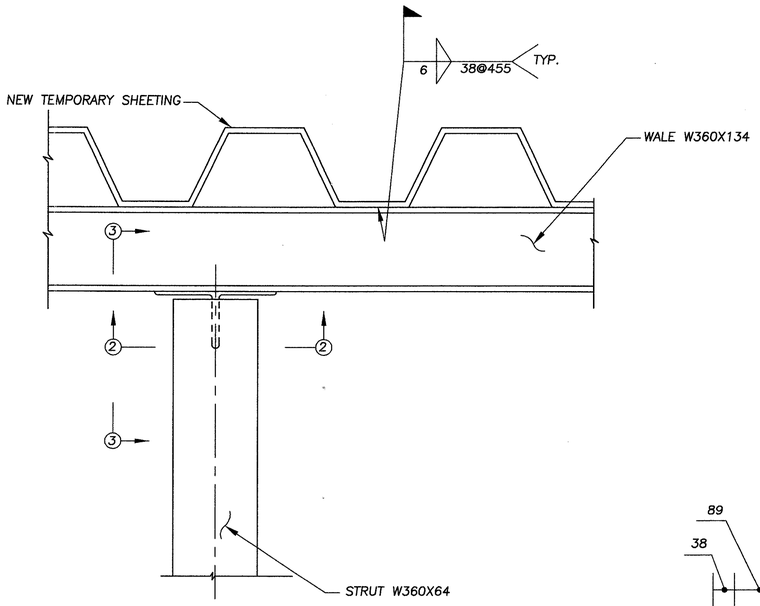
23/175

117/295

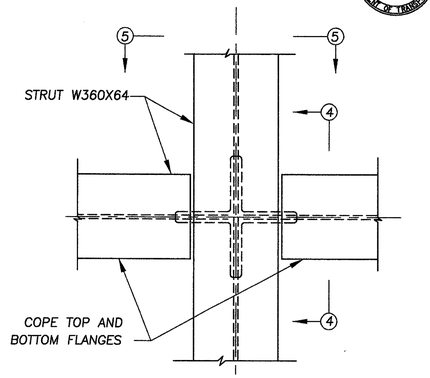
\24621\techprod\drawings\bridge\Temps3



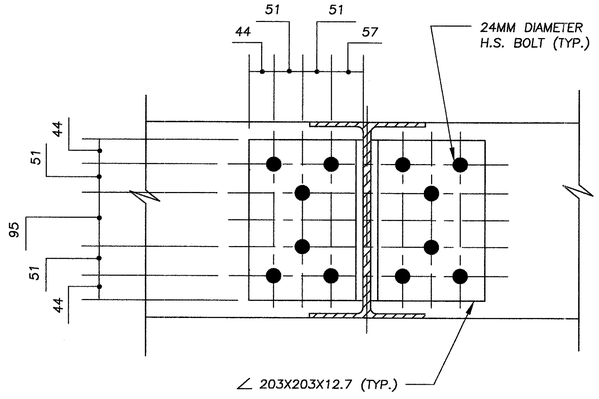
DETAIL A



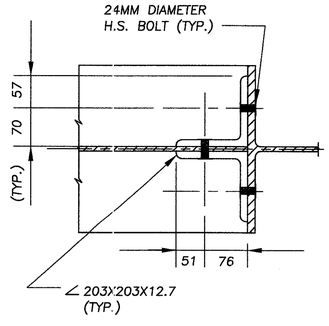
DETAIL B



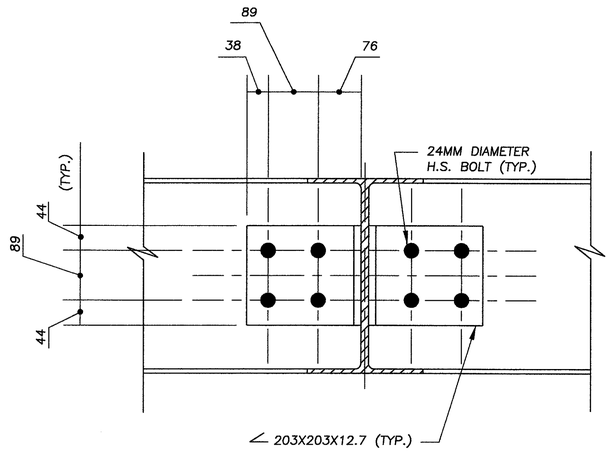
DETAIL C



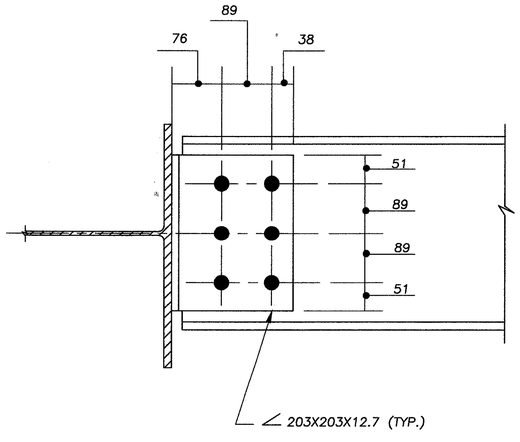
SECTION 2–2



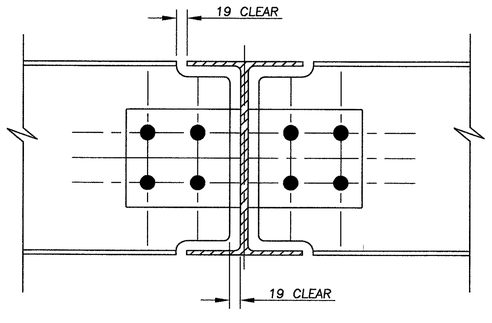
SECTION 1–1



SECTION 4–4
(SECTION 5–5 SIMILAR)



SECTION 3–3



SECTION 5–5
(FOR DETAILS NOT SHOWN, SEE SECTION 4–4)

FOR LOCATIONS OF DETAILS A,B AND C, SEE SHEET 23 OF 175.

FOR LOCATIONS OF DETAILS A, B, AND C, SEE SHEET 23 OF 175

metric units

DESIGN AGENCY
HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724

DESIGNED	DRAWN	REVIEWED	DATE
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CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

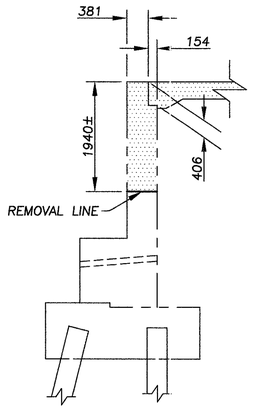
TEMPORARY STEEL SHEETING – PIER 7R
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

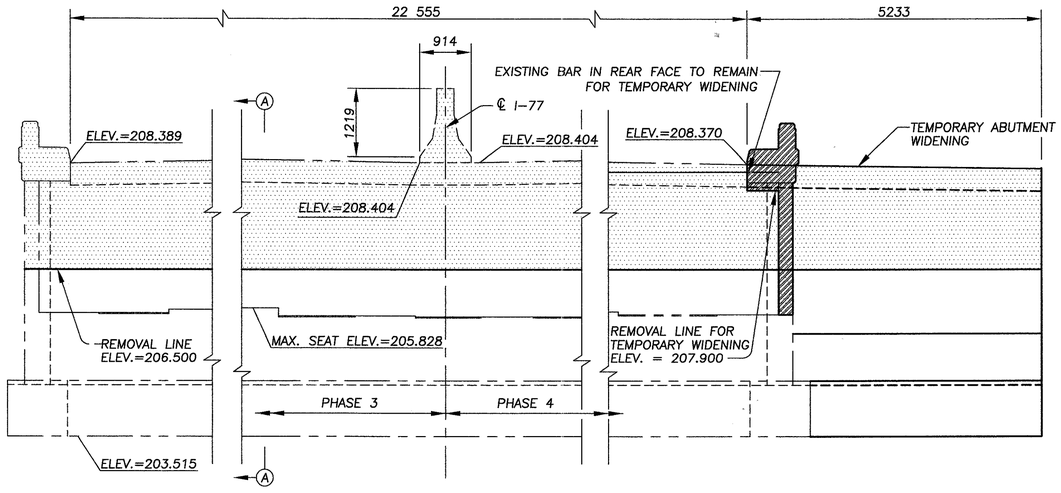
24/175

118/295

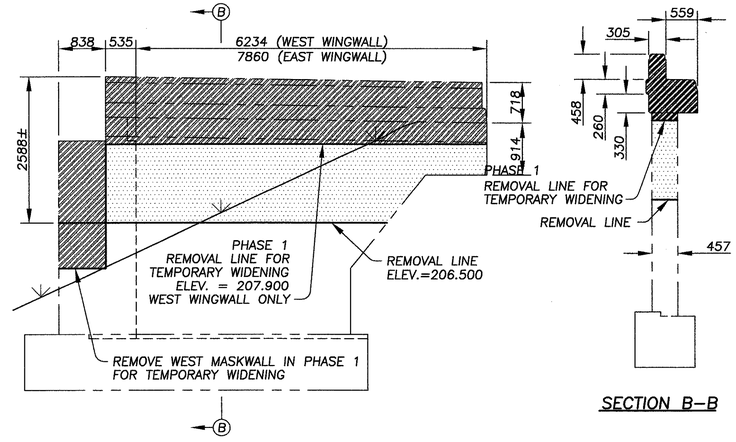
\24621\techprod\drawings\bridge\Temps4



SECTION A–A



REAR ABUTMENT ELEVATION

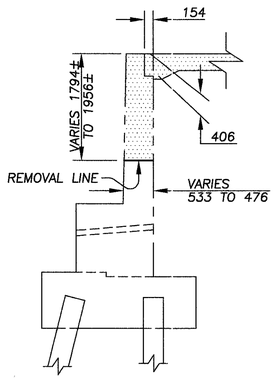


TYPICAL WINGWALL ELEVATION

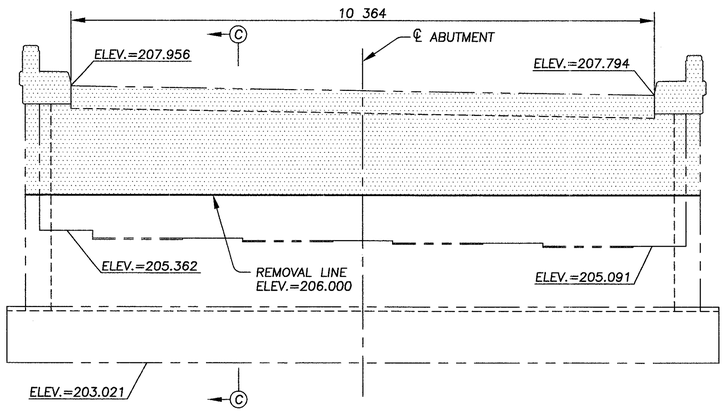
(TEMPORARY ABUTMENT WIDENING NOT SHOWN)

SECTION B–B

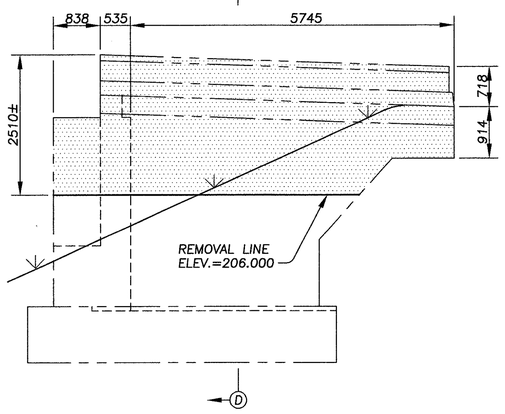
REAR ABUTMENT REMOVAL



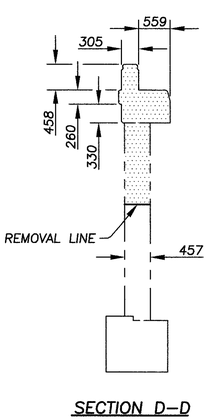
SECTION C–C



RAMP N–W ABUTMENT ELEVATION

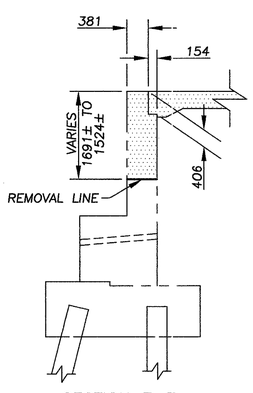


TYPICAL WINGWALL ELEVATION

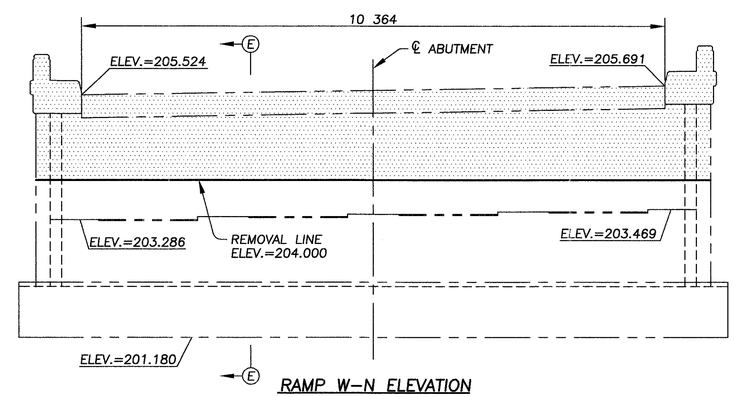


SECTION D–D

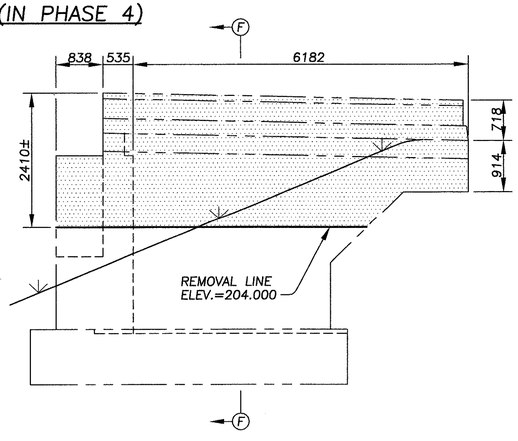
RAMP N–W ABUTMENT REMOVAL (IN PHASE 4)



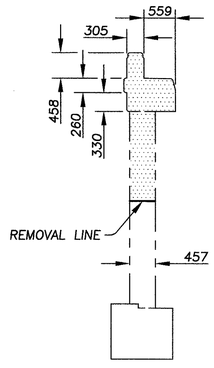
SECTION E–E



RAMP W–N ELEVATION



TYPICAL WINGWALL ELEVATION



SECTION F–F

RAMP W–N ABUTMENT REMOVAL (IN PHASE 3)

NOTES:

1. SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVALS 1" DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. INSTALL DOWEL BARS AS SPECIFIED. PRIOR TO CONCRETE PLACEMENT, ABRASIVELY CLEAN JOINT SURFACE AND EXPOSED REINFORCEMENT TO REMOVE LOOSE AND DISINTEGRATED CONCRETE AND LOOSE RUST. THEN, 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. CONCRETE BONDING SURFACES SHALL BE WET WITHOUT FREE WATER AS CONCRETE IS PLACED.
2. FOR REMOVAL DETAILS AT FORWARD ABUTMENT, SEE SHEET 44 OF 175.
3. FOR ADDITIONAL REMOVAL NOTES SEE STRUCTURAL GENERAL NOTES.
4. ALL DIMENSIONS SHOWN ARE APPROXIMATE (±).

LEGEND:

INDICATES REMOVAL (TO BE INCLUDED WITH ITEM 202, PORTIONS OF STRUCTURE REMOVED, AS PER PLAN FOR PAYMENT)

INDICATES REMOVAL FOR PHASE 1 TEMPORARY WIDENING (TO BE INCLUDED WITH ITEM 202, PORTIONS OF STRUCTURE REMOVED, AS PER PLAN FOR PAYMENT)

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

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HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
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DESIGNED	DRAWN	REVIEWED	DATE
GLG	GLG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

REAR ABUTMENT REMOVAL DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

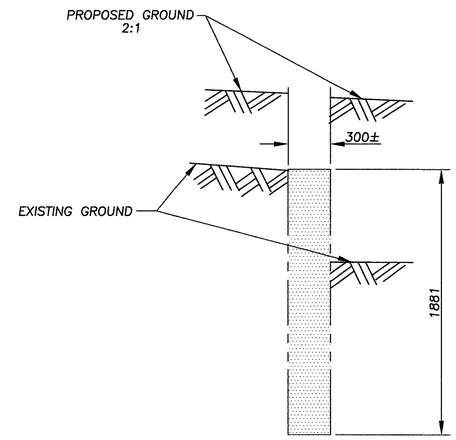
CUY-77-23.458

25/175

119/295

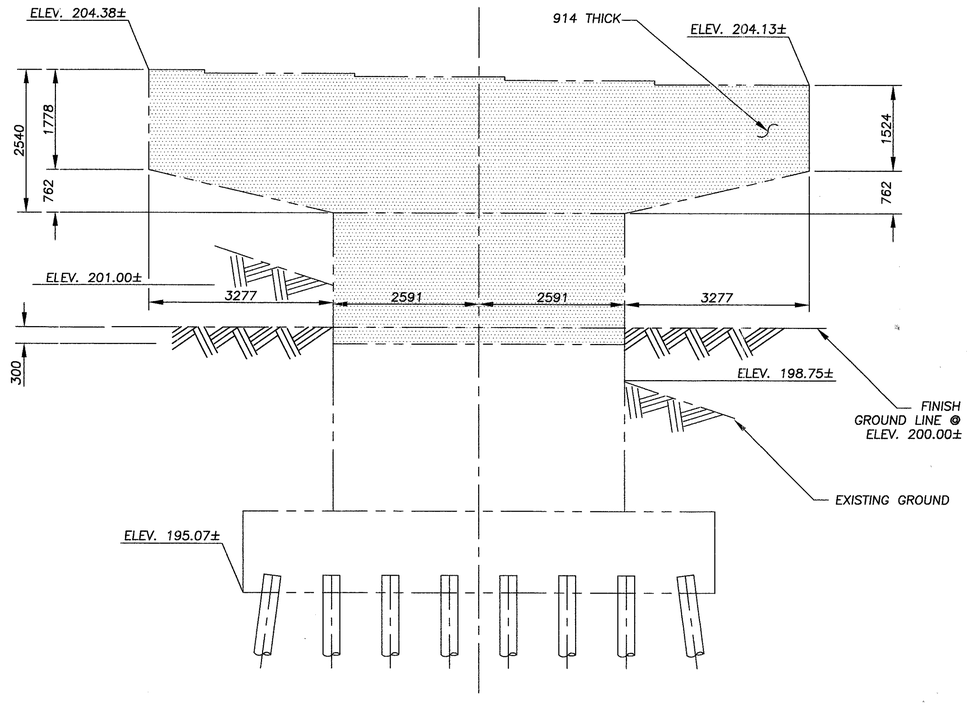
\24621\techprod\drawings\bridge\Abutr1

metric units



RETAINING WALL SECTION

(SEE SITE PLAN FOR LOCATION NEAR REAR ABUT.)



ELEVATION–PIER X

EXISTING PIER AT STA 0+584.982
RAMP W–N
(REMOVE DURING PHASE 3)

NOTE

1. FOR REMOVAL NOTES, SEE SHEET 25 OF 175.

LEGEND

INDICATES EXISTING STRUCTURE TO BE REMOVED (TO BE INCLUDED WITH ITEM 202 FOR PAYMENT)

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CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

MISCELLANEOUS REMOVAL DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

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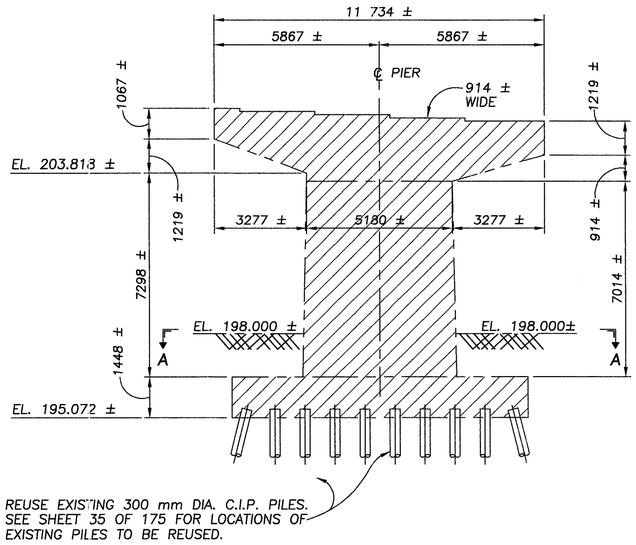
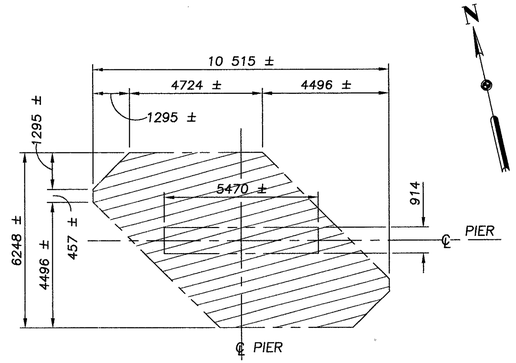


PIER B

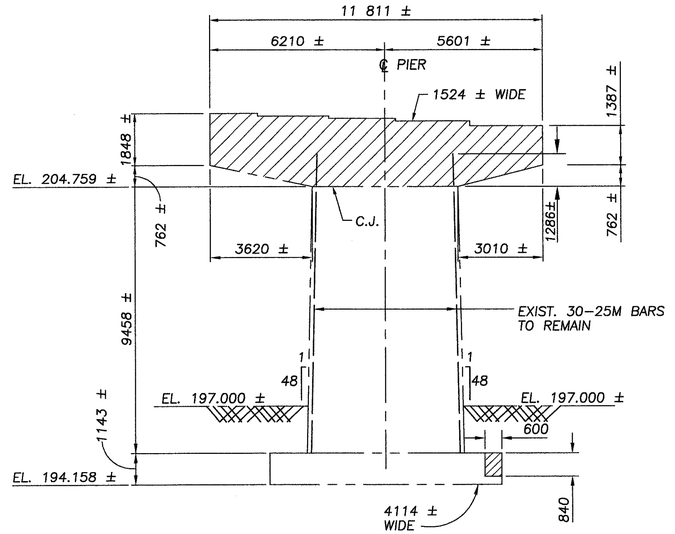


VIEW A–A

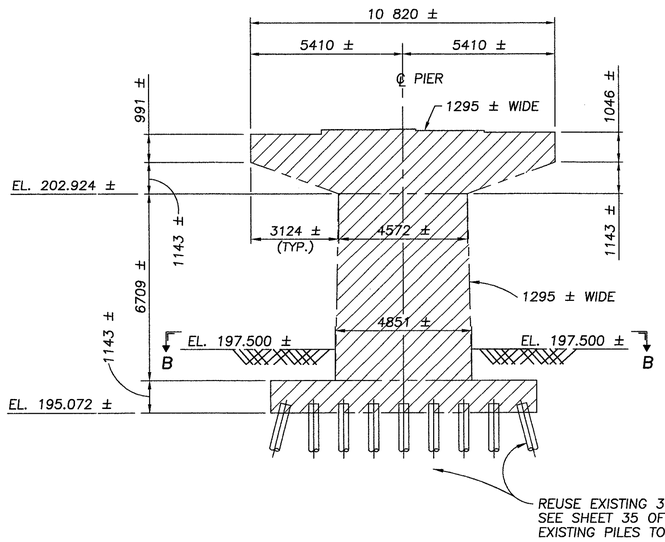
LEGEND

= AREAS TO BE REMOVED ACCORDING TO ITEM 202

C.J. = CONSTRUCTION JOINT

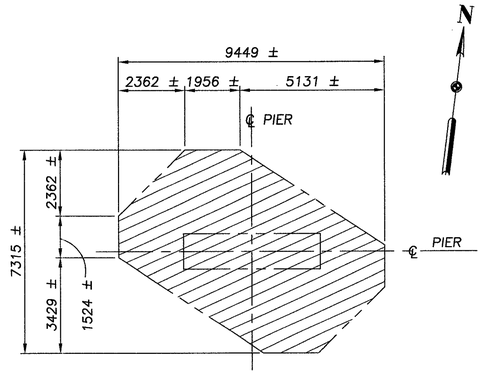


PIER 2R(E)

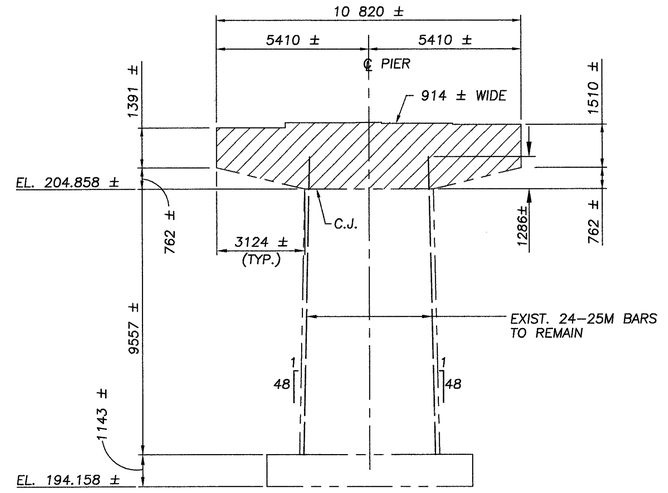


PIER 1R

FOR DETAILS OF EXISTING AND NEW TEMPORARY SHEETING AT PIER 1R, SEE SHEET 20 OF 175.



VIEW B–B



PIER 2RW

NOTE

FOR REMOVAL NOTES, SEE SHEET 25 OF 175.

REMOVALS ON THIS SHEET SHALL OCCUR IN PHASE 3.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

\24621\techprod\drawings\bridge\DEM01.DWG

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

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DHS	SJR	CT	9-12-97
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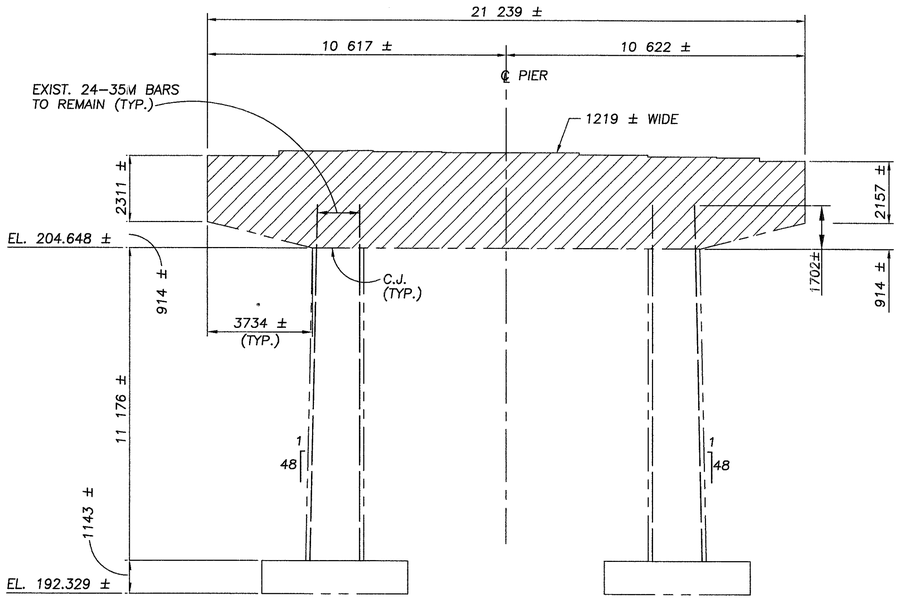
MJL/JV		1806726	

PIER REMOVAL DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

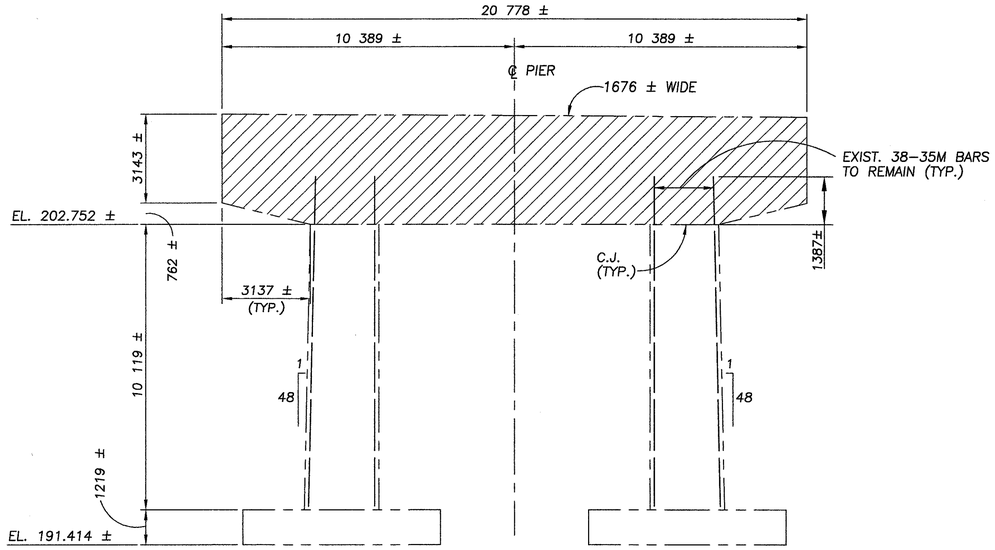
CUY-77-23.458

27/175

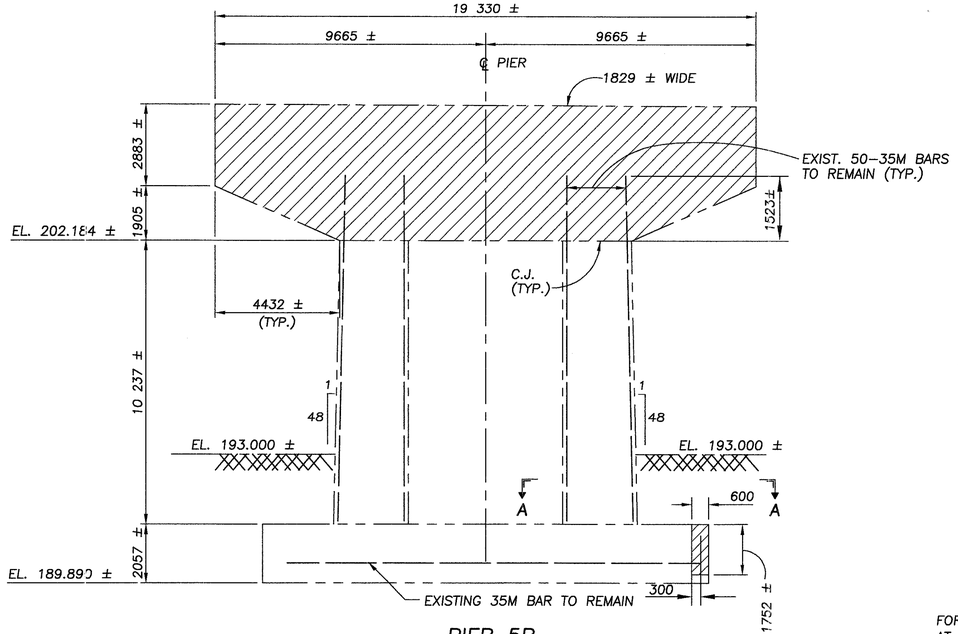
121/295



PIER 3R

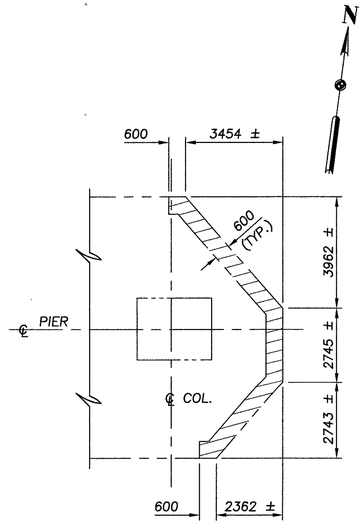


PIER 4R



PIER 5R

(EXISTING PILES NOT SHOWN – SEE SHEET 36 OF 175)



VIEW A–A

FOR DETAILS OF EXISTING AND NEW TEMPORARY SHEETING AT PIER 5R, SEE SHEET 20 OF 175.

NOTE

1. FOR REMOVAL NOTES, SEE SHEET 25 OF 175.
2. REMOVALS ON THIS SHEET SHALL OCCUR IN PHASE 3.

LEGEND

= AREAS TO BE REMOVED ACCORDING TO ITEM 202

C.J. = CONSTRUCTION JOINT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

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MJL/JV		1806726	

PIER REMOVAL DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

28/175

122/295

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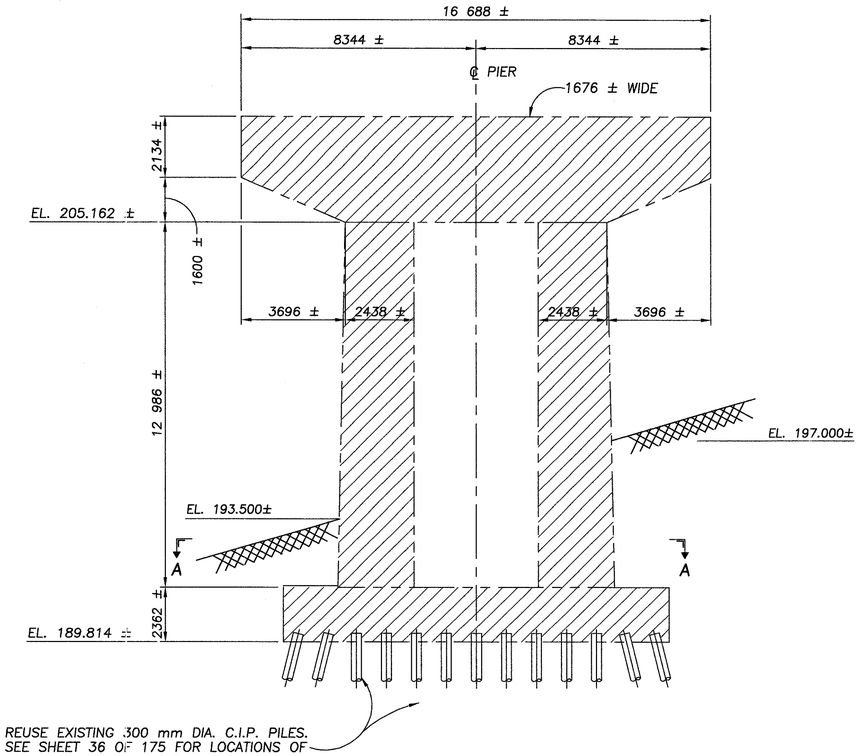
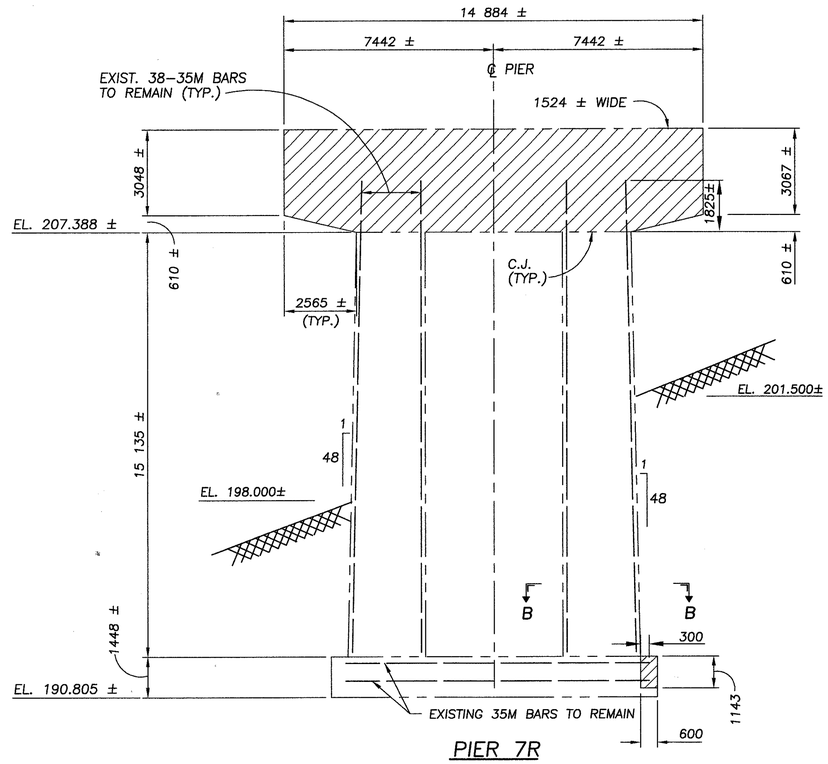


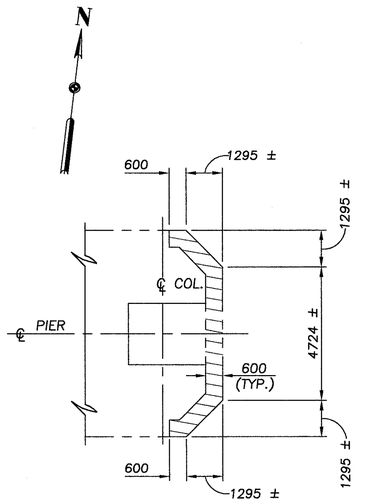
PIER 6R

FOR DETAILS OF EXISTING AND NEW TEMPORARY SHEETING AT PIER 6R, SEE SHEET 21 OF 175.

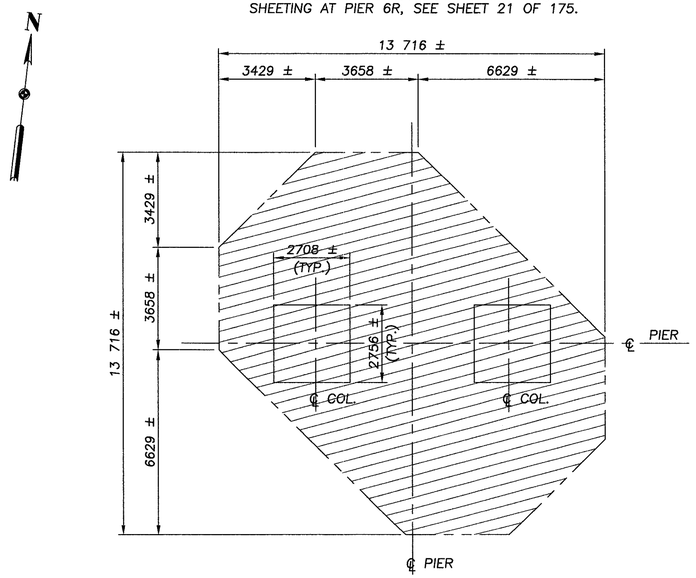


PIER 7R

FOR DETAILS OF EXISTING AND NEW TEMPORARY SHEETING AT PIER 7R, SEE SHEET 23 OF 175.
(EXISTING PILE NOT SHOWN, SEE SHEET 36 OF 175)



VIEW B–B

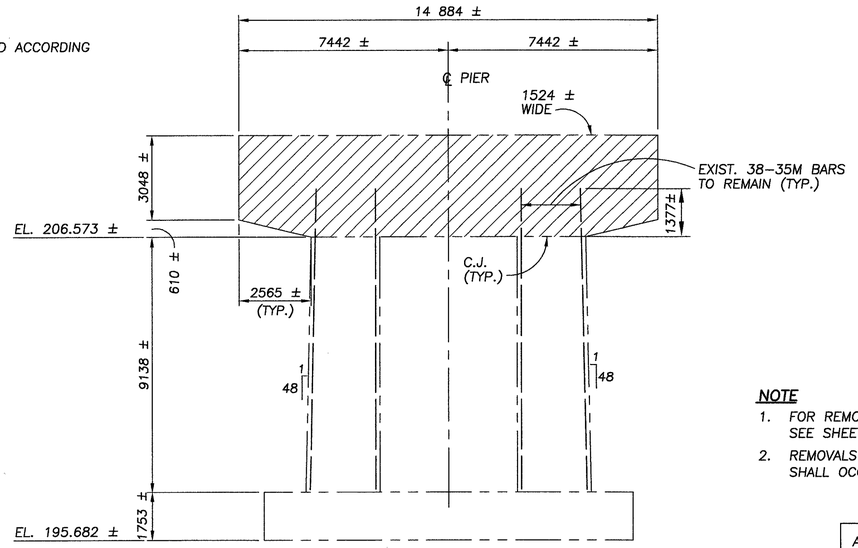


VIEW A–A

LEGEND

= AREAS TO BE REMOVED ACCORDING TO ITEM 202

C.J. = CONSTRUCTION JOINT



PIER 8R

NOTE

1. FOR REMOVAL NOTES, SEE SHEET 25 OF 175.
2. REMOVALS ON THIS SHEET SHALL OCCUR IN PHASE 3.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
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ARCHITECTS ENGINEERS PLANNERS

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MJL/JV		1806726	

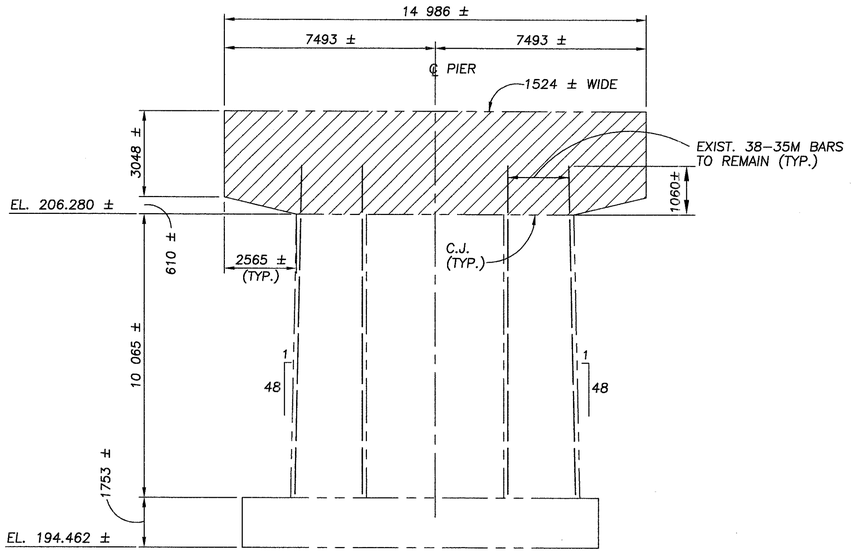
PIER REMOVAL DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

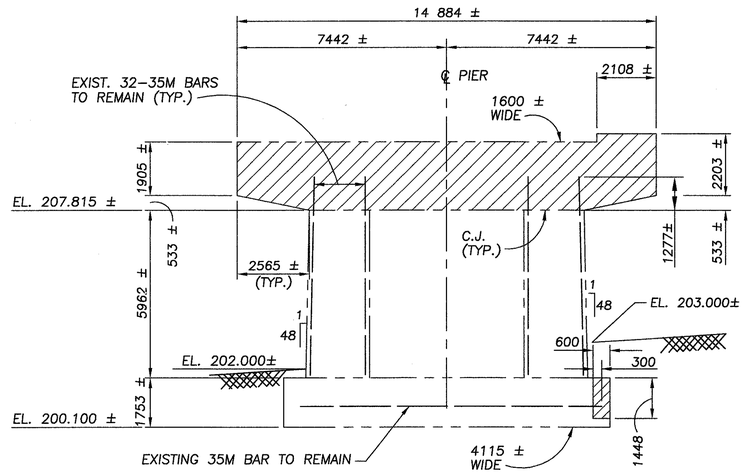
29/175

123/295

\24621\techprod\drawings\bridge\DEM03.DWG

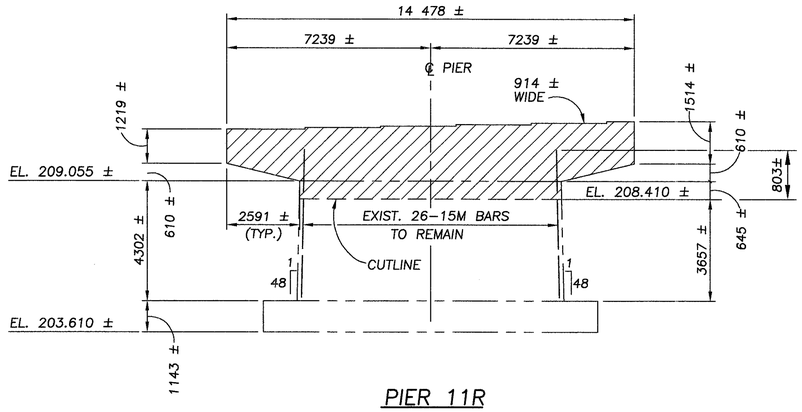


PIER 9R



PIER 10R

(EXISTING PILES NOT SHOWN – SEE SHEET 37 OF 175)



PIER 11R

NOTE

1. FOR REMOVAL NOTES, SEE SHEET 25 OF 175.
2. REMOVALS ON THIS SHEET OCCUR IN PHASE 3.

LEGEND

= AREAS TO BE REMOVED ACCORDING TO ITEM 202

C.J. = CONSTRUCTION JOINT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

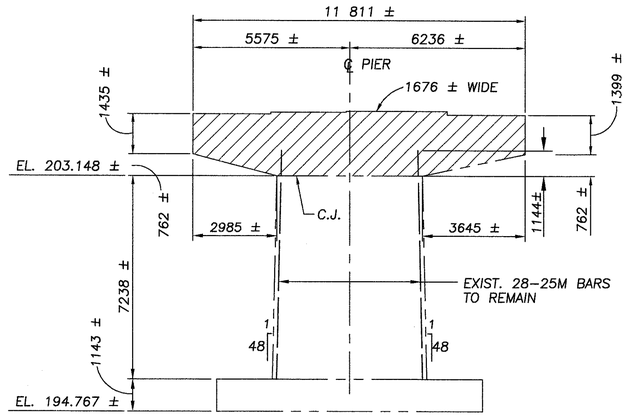
DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	SJR	GT	9-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL/JV		1806726	

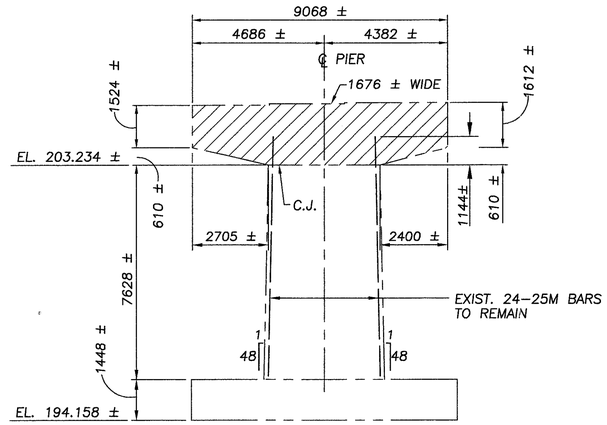
PIER REMOVAL DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

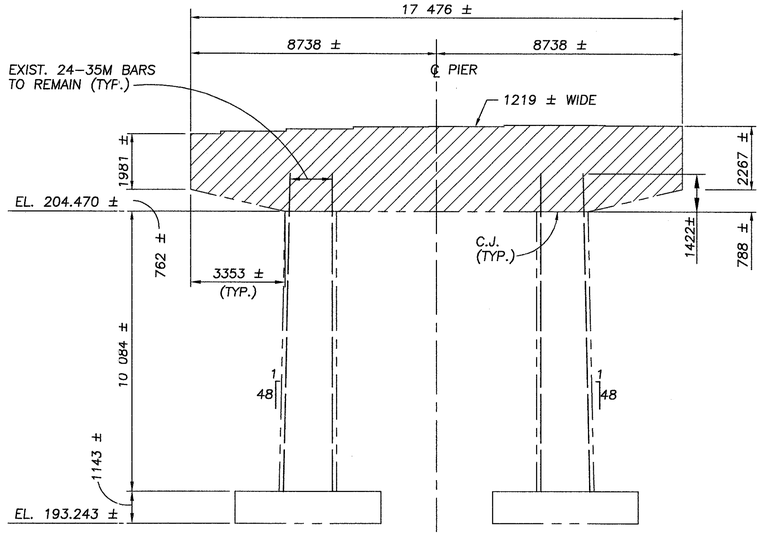
\24621\techprod\drawings\bridge\DEM04.DWG



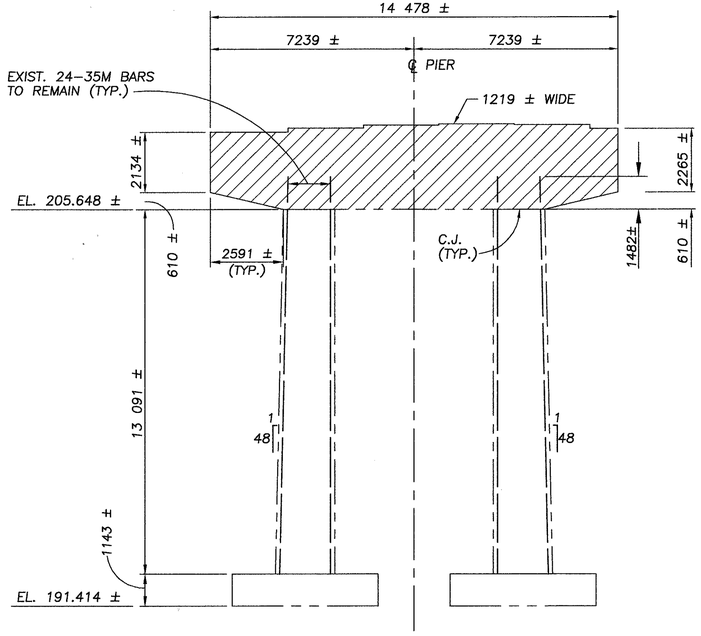
PIER 1L(E)



PIER 1L(W)



PIER 2L



PIER 3L

NOTE

1. FOR REMOVAL NOTES, SEE SHEET 25 OF 175.
2. REMOVALS ON THIS SHEET OCCUR IN PHASE 3.

LEGEND

= AREAS TO BE REMOVED ACCORDING TO ITEM 202

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STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

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PIER REMOVAL DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

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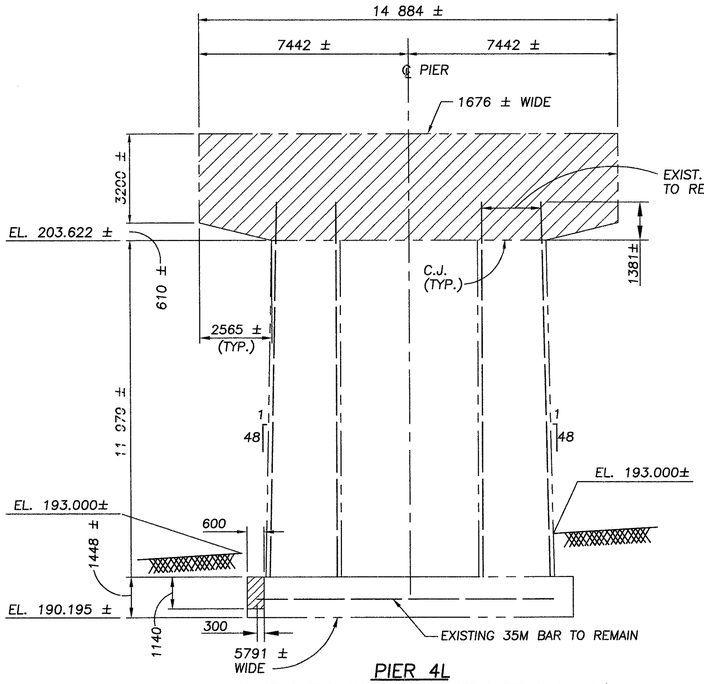
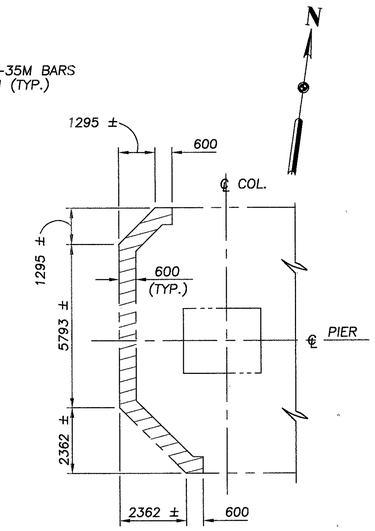
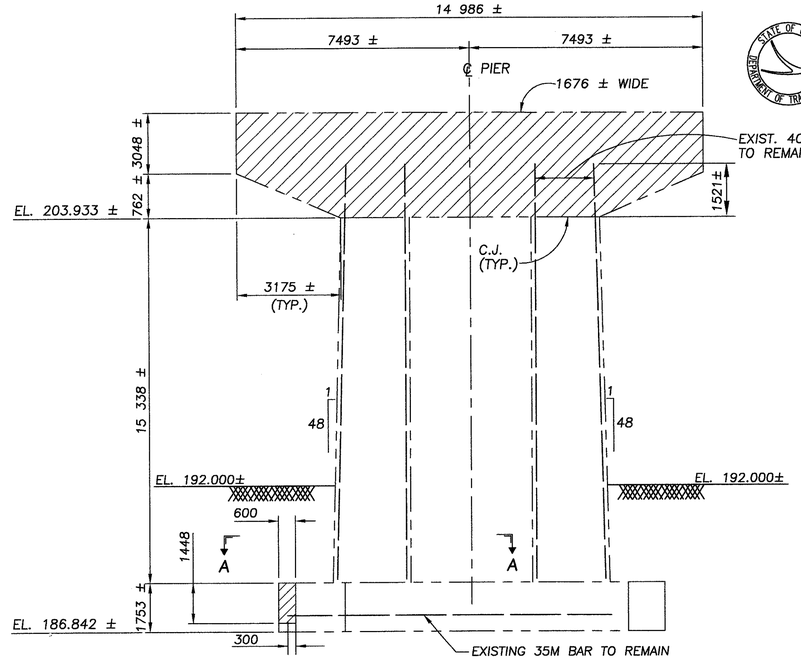


PIER 4L

(EXISTING PILES NOT SHOWN – SEE SHEET 36 OF 175)

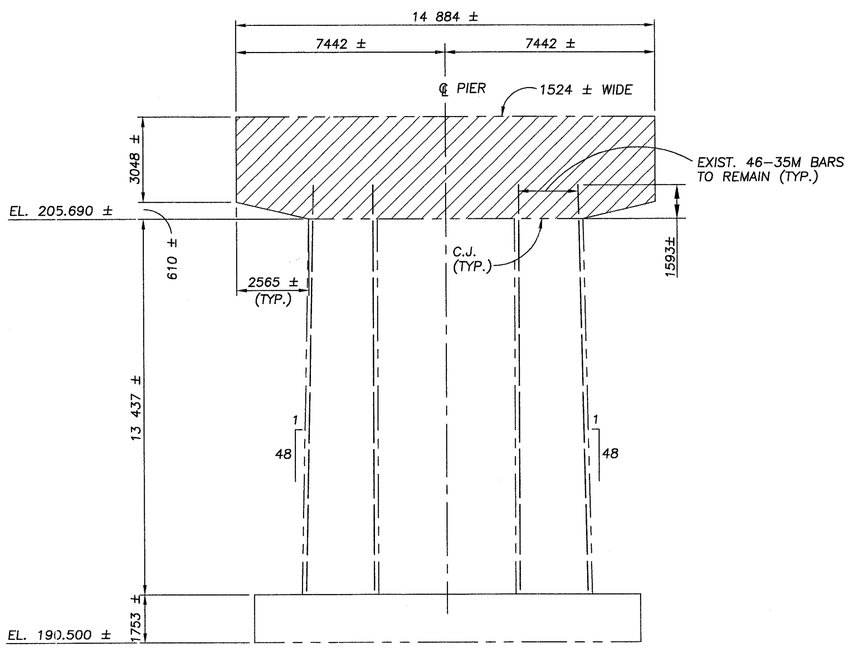


VIEW A–A

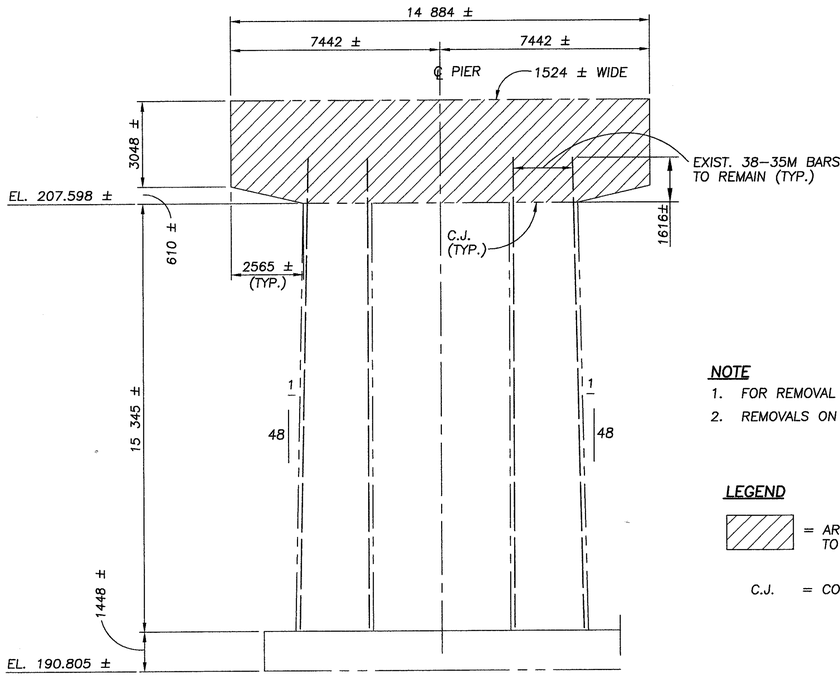


PIER 5L

(EXISTING PILES NOT SHOWN – SEE SHEET 36 OF 175)



PIER 6L



PIER 7L

NOTE

1. FOR REMOVAL NOTES, SEE SHEET 25 OF 175.
2. REMOVALS ON THIS SHEET SHALL OCCUR IN PHASE 4.

LEGEND

= AREAS TO BE REMOVED ACCORDING TO ITEM 202

C.J. = CONSTRUCTION JOINT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY

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1375 East 9th Street
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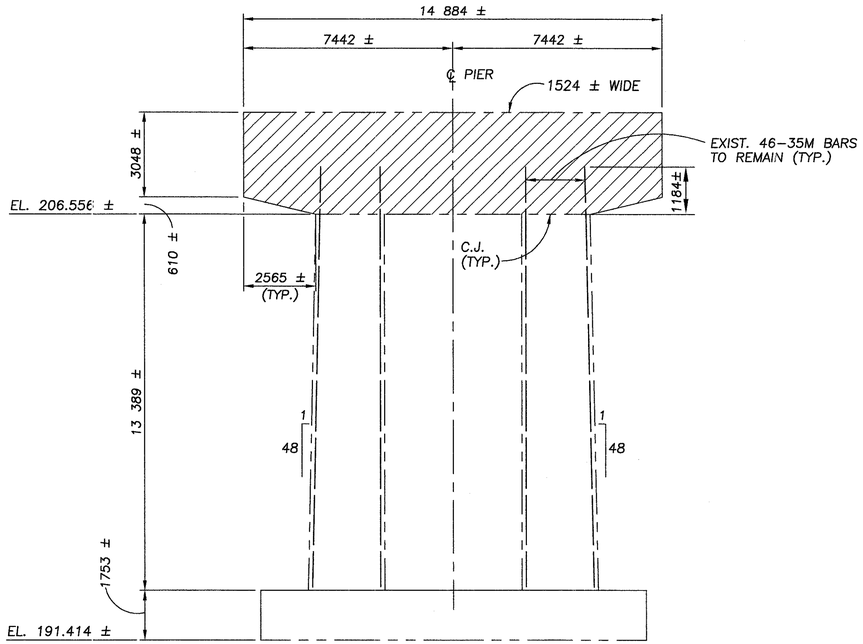
PIER REMOVAL DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

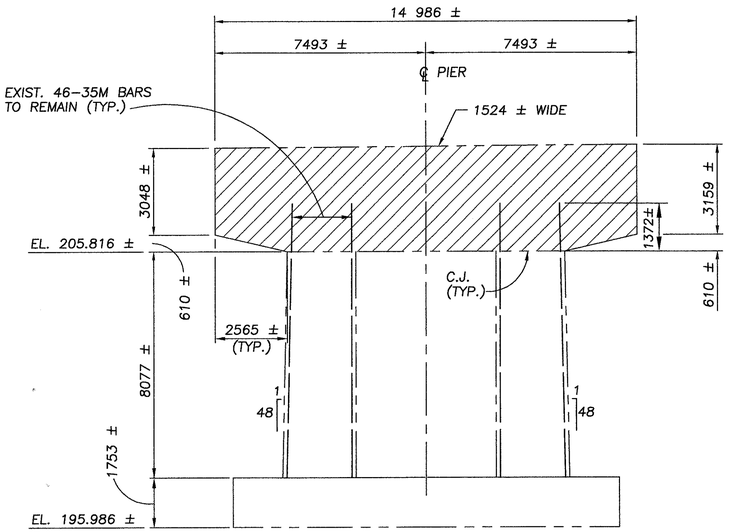
32/175

126/295

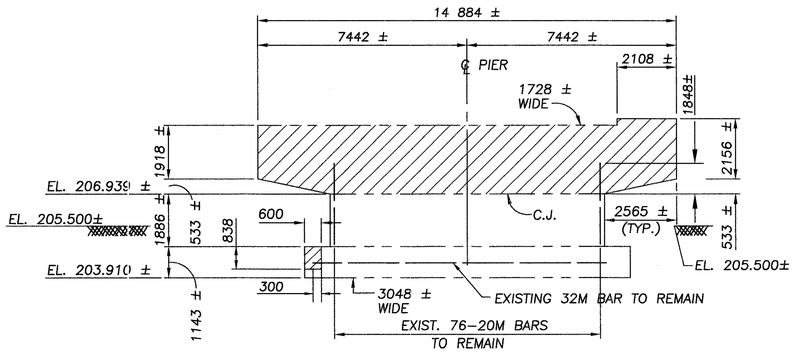
\24621\techprod\drawings\bridge\DEM06.DWG



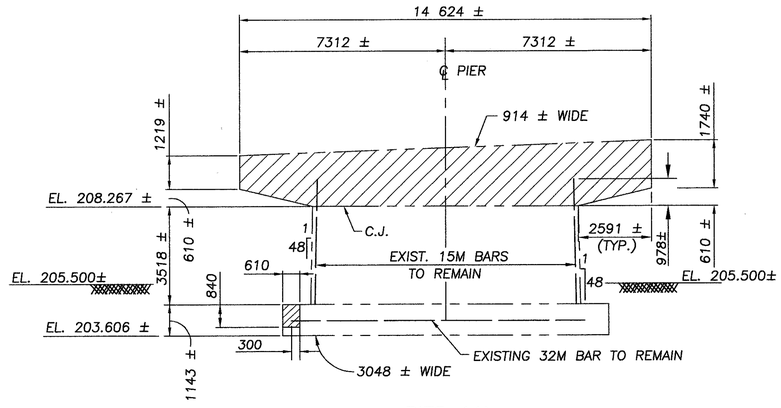
PIER 8L



PIER 9L



PIER 10L



PIER 11L

NOTE

1. FOR REMOVAL NOTES, SEE SHEET 25 OF 175.
2. REMOVALS ON THIS SHEET SHALL OCCUR IN PHASE 4.

LEGEND

= AREAS TO BE REMOVED ACCORDING TO ITEM 202

C.J. = CONSTRUCTION JOINT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

DEPARTMENT OF TRANSPORTATION STATE OF OHIO

DESIGN AGENCY
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Cleveland, Ohio 44114-1724
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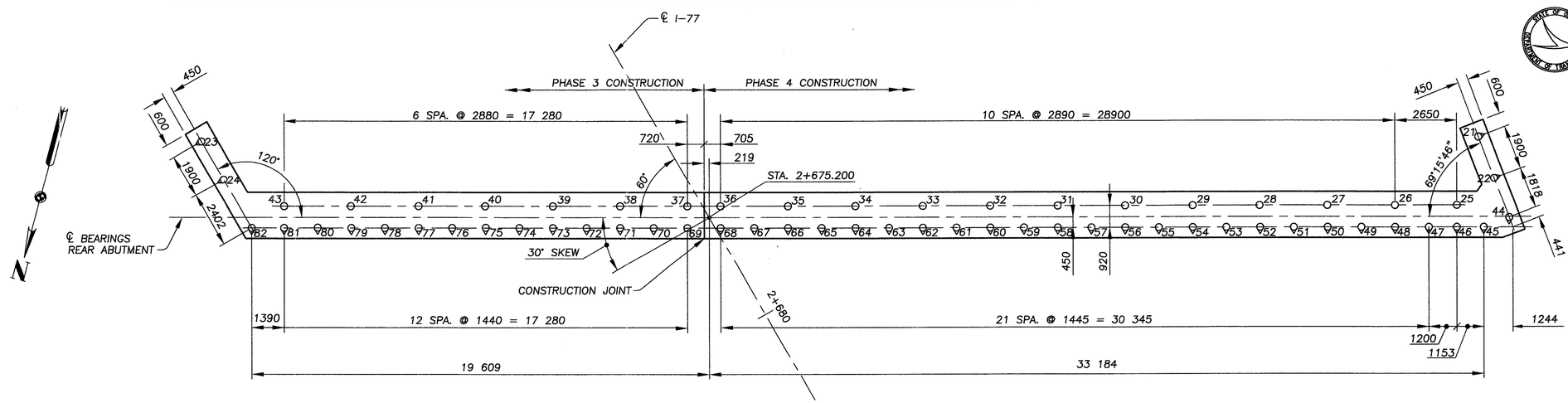
PIER REMOVAL DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

33/175

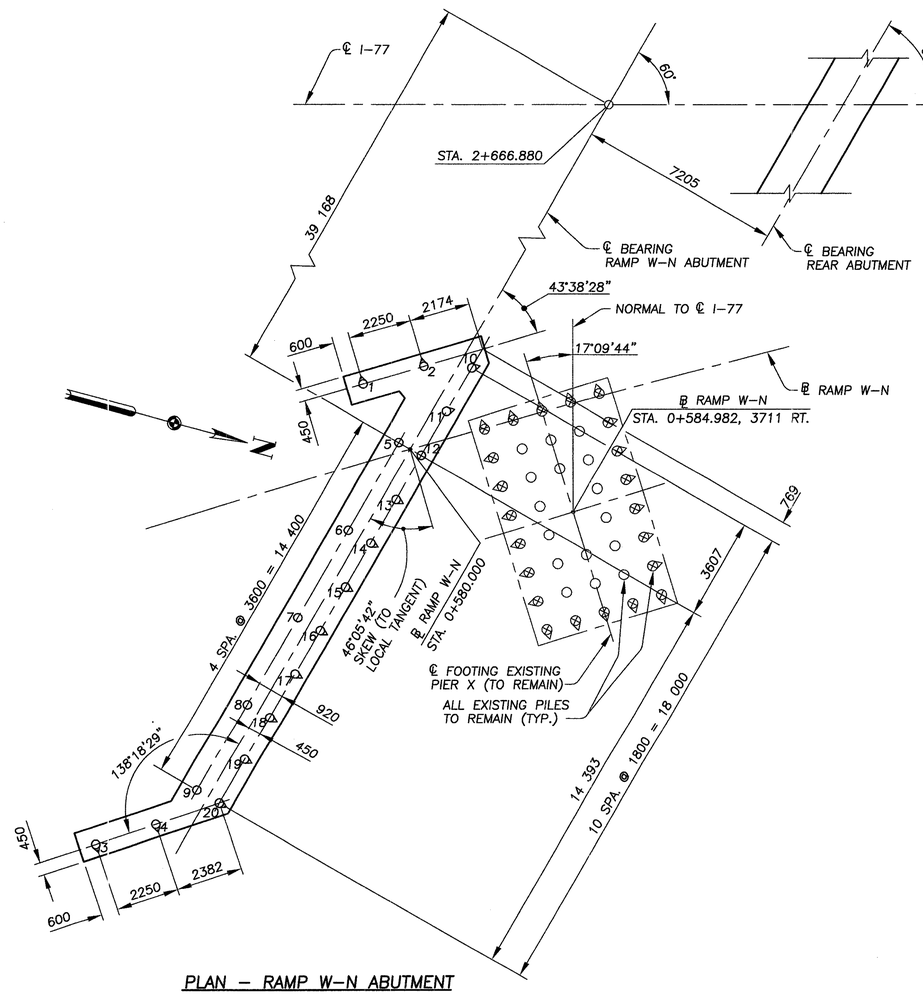
127/295

\24621\techprod\drawings\bridge\DEM07.DWG

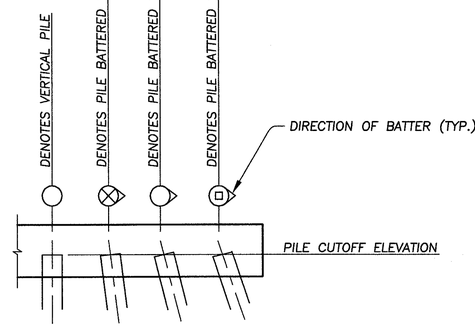


PLAN – REAR ABUTMENT

NOTE: PILE NO. 69 IS VERTICAL



PLAN – RAMP W–N ABUTMENT



PILE DESIGNATION LEGEND

PILE DESIGN DATA		
	REAR ABUTMENT	RAMP W–N ABUTMENT
PILE CUTOFF ELEVATION	204.200	202.750
ESTIMATED LENGTH PER PILE	14 000	14 000

NOTES:

ALL PROPOSED PILES FOR ABUTMENTS ARE TO BE 350mm ø CAST–IN–PLACE CONCRETE PILES

ALL EXISTING PILES ARE 300mm ø CAST–IN–PLACE CONCRETE PILES

FOR PILE ULTIMATE BEARING VALUES AND ADDITIONAL NOTES, SEE SHEET 6 OF 175.

metric units

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

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MJL		1806726	

PILE PLAN
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

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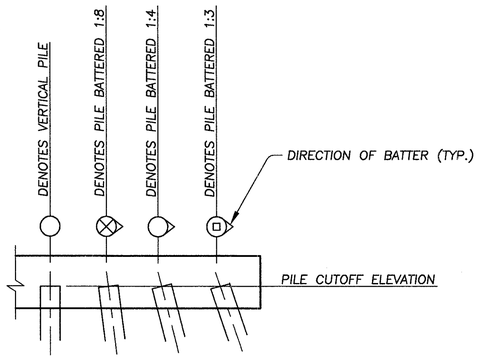
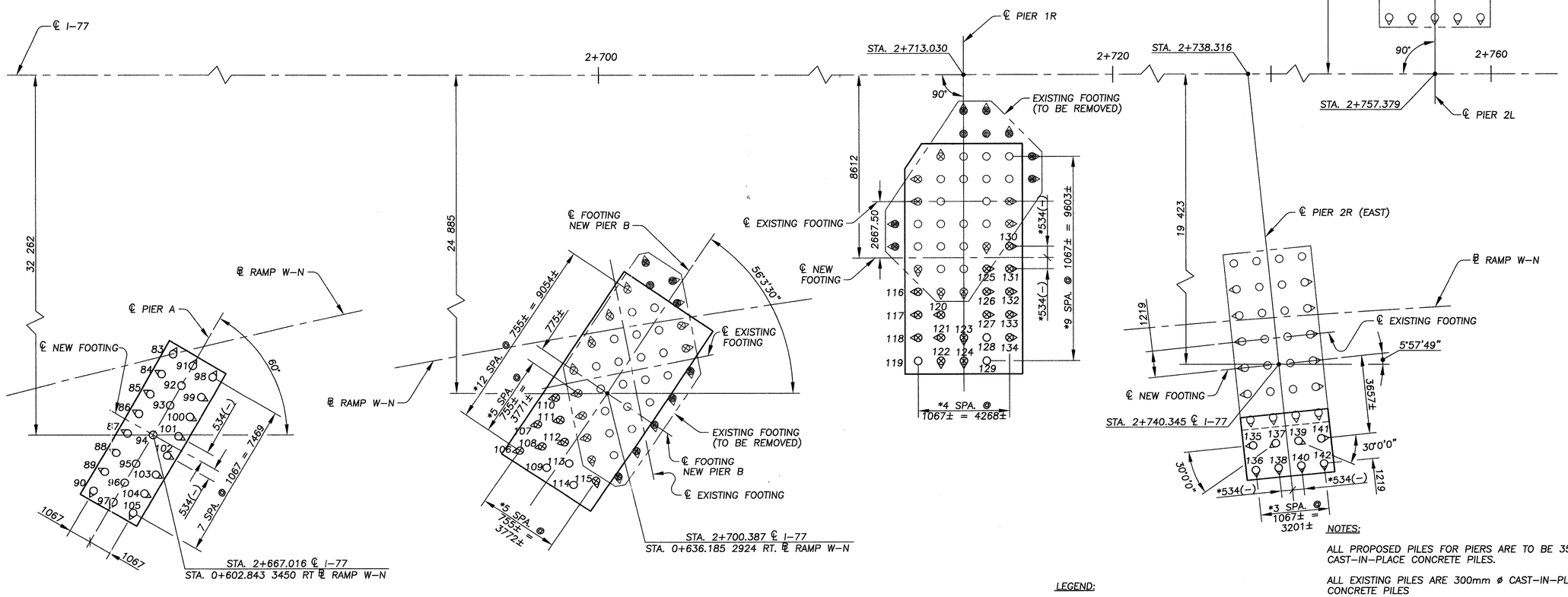
metric units

PILE DESIGN DATA					
	PIER A	PIER B	PIER 1R	PIER 2R (EAST)	PIER 2L
PILE CUTOFF ELEVATION	196.740	195.220	195.220	194.460	193.543
ESTIMATED LENGTH PER PILE	21 000	22 000	22 000	21 000	20 000



PILE DESIGNATION LEGEND



PILE PLAN

LEGEND:

⊕ INDICATES EXISTING PILE NOT TO BE REUSED

* – NEW PILES SHALL BE DRIVEN IN LINE WITH THE EXISTING PILES AS SHOWN.

NOTES:

ALL PROPOSED PILES FOR PIERS ARE TO BE 350mm ø CAST-IN-PLACE CONCRETE PILES.

ALL EXISTING PILES ARE 300mm ø CAST-IN-PLACE CONCRETE PILES

FOR DETAILS OF TEMPORARY SHEETING AT PIER 1R, SEE SHEET 20 OF 175.

FOR PILE ULTIMATE BEARING VALUES AND ADDITIONAL NOTES, SEE SHEET 6 OF 175

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED DHS | DRAWN GLG | REVIEWED RER | DATE 09-12-97
CHECKED MJL | REVISED | STRUCTURE FILE NUMBER 1806726

PILE PLAN
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

35/175

129/295

\24621\techprod\drawings\bridge\Footing2

metric units

610(–) 610(–)
1219 1219
℄ NEW FOOTING
154 158 161 164
155 165
156 159 162 166
157 160 163 167
1219 610(–)
1219 610(–)
1219 610(–)
18 447
℄ RAMP N–W
EXISTING FOOTING (TO REMAIN)
90°
2+800
STA. 2+796.293
℄ PIER 3L

*4 SPA. @ 1219± = 4876±
168 173 177 178 182
169 174 179 183
170 175 180 184
171 176 181 185
172 186
℄ RAMP N–W
4 SPA. @ 1067 = 4268
3735±
2667.50
℄ NEW FOOTING
℄ EXISTING FCOTING
10 447
90°
2+827.535
℄ PIER 4L

5.5 m O.D. SEWER
TOP OF GROUND TO
TOP OF PIPE = 11.6 m ±
3725 ±
*8 SPA. @ 1067± = 8536±
208 210 212 214 216 218 220 223
205 211 213 215 217 219 221 224
206 209
207 222 225 226
℄ RAMP N–W
3 SPA. @ 1067=3201
*4802±
1060.50
℄ NEW FOOTING
9379
℄ EXISTING FOOTING
90°
2+880
STA. 2+885.904
℄ PIER 5L

STA. 2+859.639
℄ PIER 5R
90°
10 897
℄ EXISTING FOOTING
℄ NEW FOOTING
1067
*5335±
187 191 202
188 200 203
189 192 194 196 199 204
190 193 195 197 198 201
*1067±
1067
1067
*610(–) *610(–)
*7 SPA. @ 1219± = 8533±

℄ PIER 6R
STA. 2+935.230
227 236 243 248 252 255 257 260 264 269 276
228 237 244 249 253 270 277
229 238 245 250 278
230 239 246
231 240
232
8684
℄ NEW AND EXISTING FOOTING
EXISTING FOOTING (TO BE REMOVED)
279
271 280
265 272 281
233 261 266 273 282
234 241 258 262 267 274 283
235 242 247 251 254 256 259 263 268 275 284
*14 SPA. @ 1067± = 14 938±
*10 SPA. @ 1067± = 10 670±

℄ I–77
℄ PIER 7R
STA. 2+994.971
3+000
90°
9913
℄ EXISTING FOOTING
℄ NEW FOOTING
2134
4268±
285 289 302 306
286 290 293 296 299 303 307
287 291 294 297 300 304 308
288 292 295 298 301 305 309
3 SPA. @ 1067 = 3201
*6 SPA. @ 1067± = 6402±

DENOTES VERTICAL PILE
DENOTES PILE BATTERED 1:8
DENOTES PILE BATTERED 1:4
DENOTES PILE BATTERED 1:3
DIRECTION OF BATTER (TYP.)
PILE CUTOFF ELEVATION

PILE DESIGNATION LEGEND

PILE PLAN

PILE DESIGN DATA						
	PIER 3L	PIER 4L	PIER 5L	PIER 5R	PIER 6R	PIER 7R
PILE CUTOFF ELEVATION	191.714	190.495	187.142	190.190	190.114	191.105
ESTIMATED LENGTH PER PILE	21 000	20 000	17 000	20 000	20 000	20 000

LEGEND:
- ● INDICATES EXISTING PILE NOT TO BE REUSED
- * – NEW PILES SHALL BE DRIVEN IN LINE WITH THE EXISTING PILES AS SHOWN.

NOTES:
ALL PROPOSED PILES FOR PIERS ARE TO BE 350mm ø CAST–IN–PLACE CONCRETE PILES

ALL EXISTING PILES ARE 300mm ø CAST–IN–PLACE CONCRETE PILES.

FOR DETAILS OF TEMPORARY SHEETING AT PIER 5R, SEE SHEET 20 OF 175.

FOR DETAILS OF TEMPORARY SHEETING AT PIER 6R, SEE SHEET 21 THRU 22 OF 175.

FOR DETAILS OF TEMPORARY SHEETING AT PIER 7R, SEE SHEET 23 THRU 24 OF 175.

FOR PILE ULTIMATE BEARING VALUES AND ADDITIONAL NOTES, SEE SHEET 6 OF 175.

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Suite 1500 Cleveland, Ohio 44114-1724
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DESIGNED	DRAWN	REVIEWED	DATE
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MJL		1806726	

PILE PLAN
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

36/175

130/295

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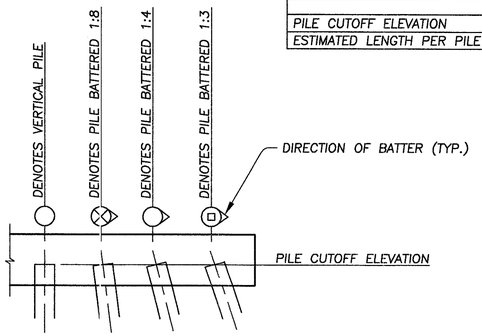
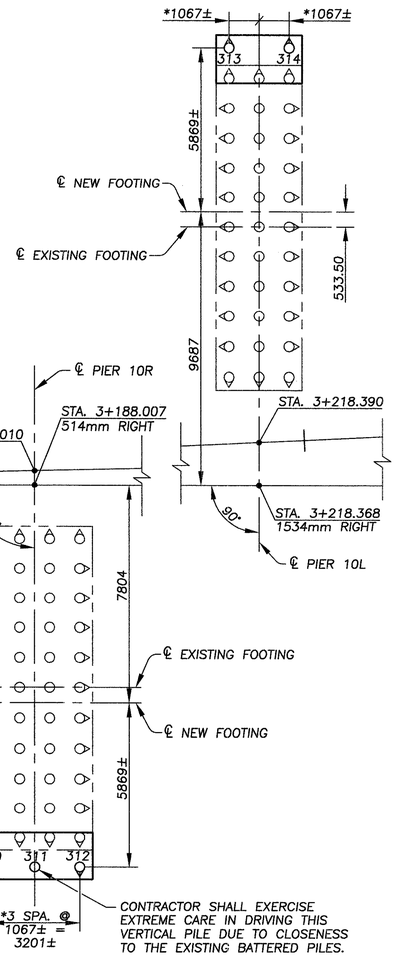
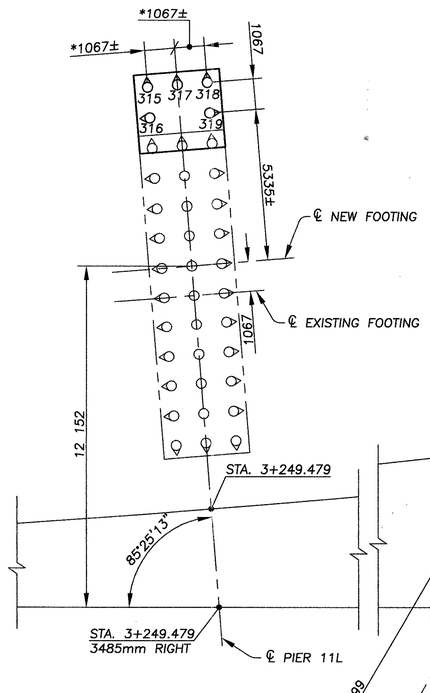
PILE DESIGN DATA

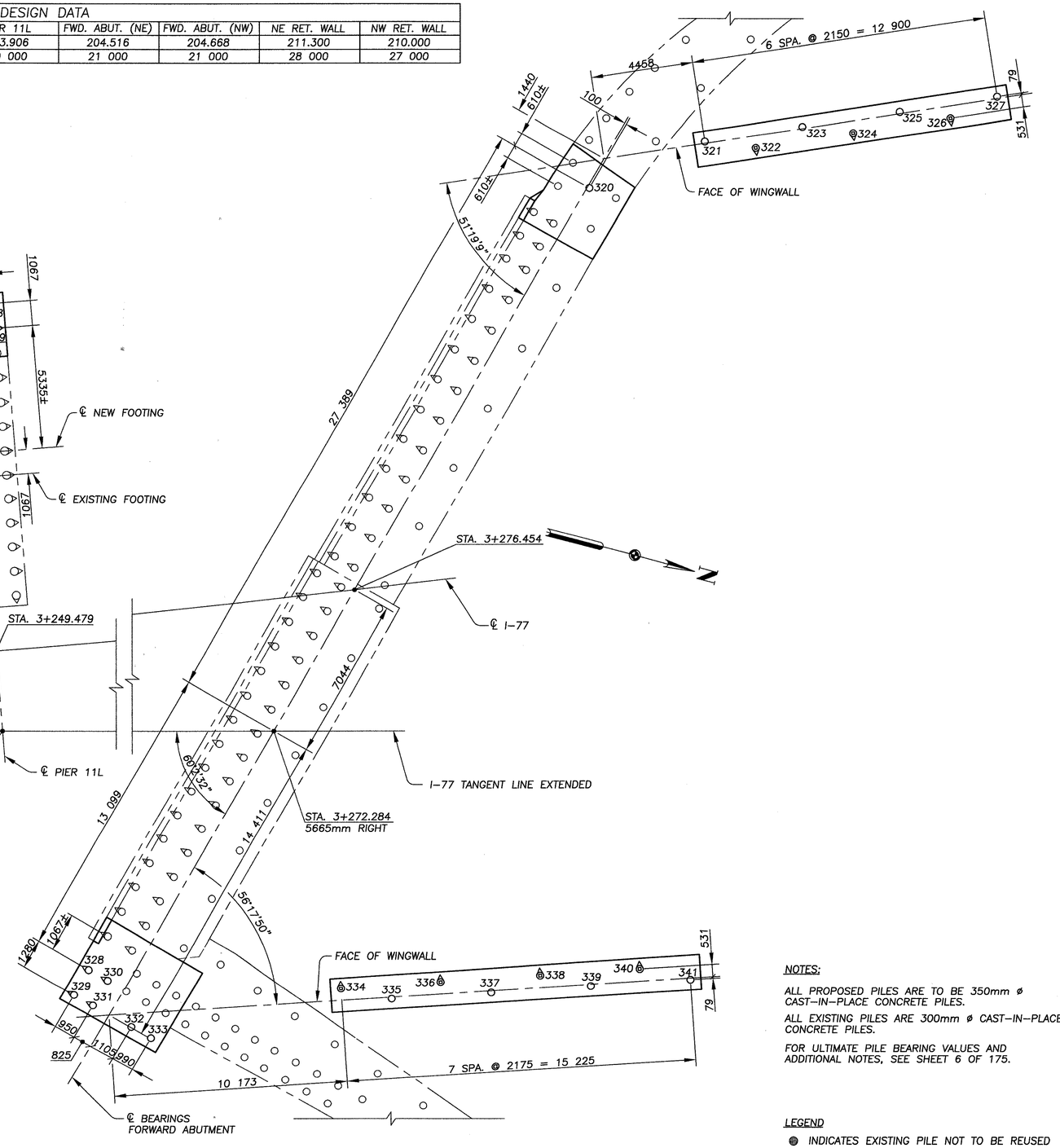
	PIER 10R	PIER 10L	PIER 11L	FWD. ABUT. (NE)	FWD. ABUT. (NW)	NE RET. WALL	NW RET. WALL
PILE CUTOFF ELEVATION	200.400	204.210	203.906	204.516	204.668	211.300	210.000
ESTIMATED LENGTH PER PILE	20 000	21 000	20 000	21 000	21 000	28 000	27 000



PILE DESIGNATION LEGEND







PILE PLAN

NOTES:

ALL PROPOSED PILES ARE TO BE 350mm ø CAST-IN-PLACE CONCRETE PILES.

ALL EXISTING PILES ARE 300mm ø CAST-IN-PLACE CONCRETE PILES.

FOR ULTIMATE PILE BEARING VALUES AND ADDITIONAL NOTES, SEE SHEET 6 OF 175.

LEGEND

● INDICATES EXISTING PILE NOT TO BE REUSED

* – NEW PILES SHALL BE DRIVEN IN LINE WITH THE EXISTING PILES AS SHOWN.

metric units

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DHS	GLG	RER	09-12-97
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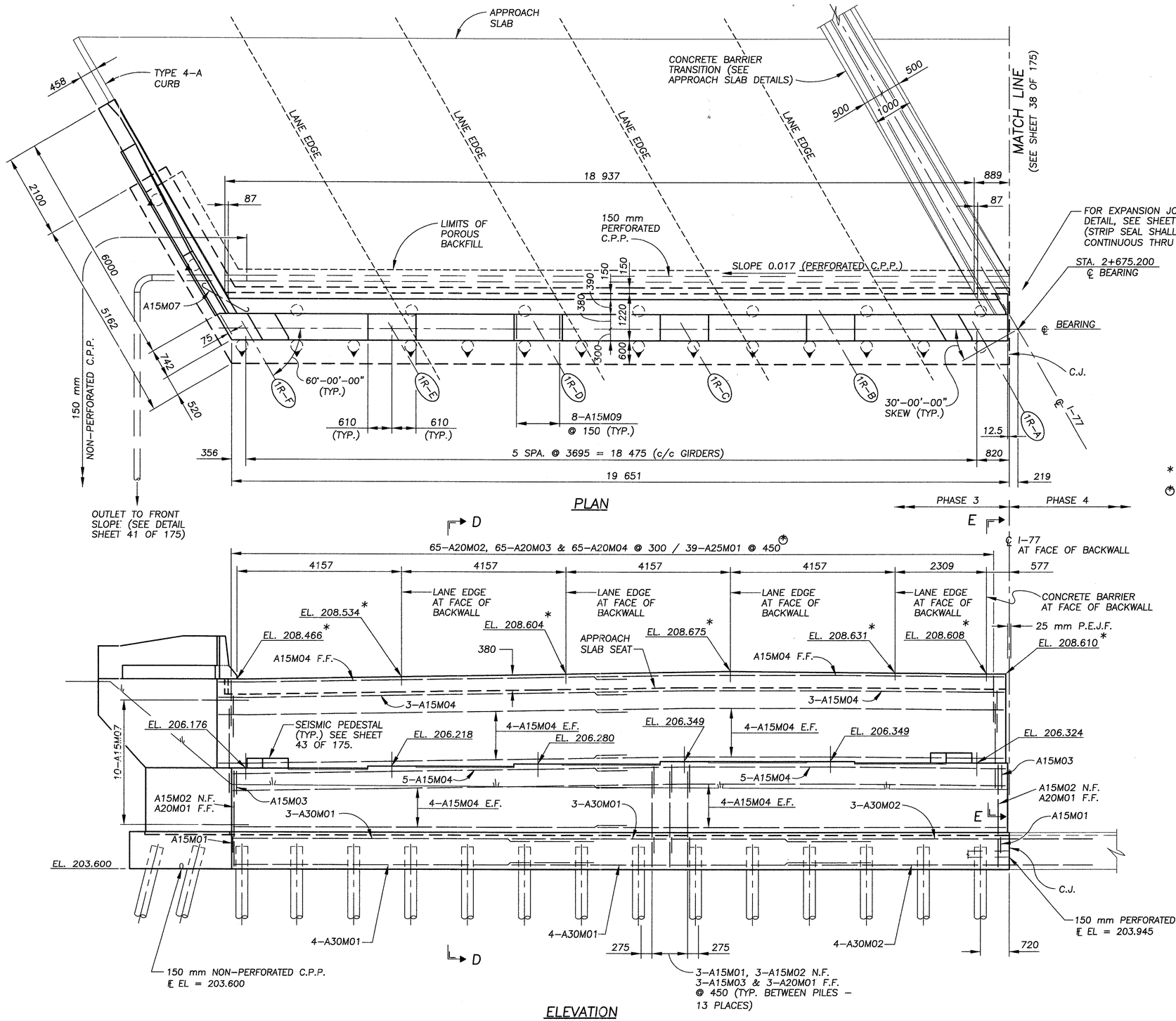
MJL		1806726	

PILE PLAN
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

37/175

131/295



metric units

MIN. REBAR LAPS
#15M = 750 mm
#30M = 2100 mm

NOTES

1. FOR WINGWALL ELEVATIONS, SEE SHEET 39 OF 175.
2. FOR SECTIONS D–D, E–E, ABUTMENT NOTES AND ABBREVIATIONS, SEE SHEET 43 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

REAR ABUTMENT PLAN AND ELEVATION

BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

37A/175

132/295

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1375 East Ninth Street
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ARCHITECTS ENGINEERS PLANNERS

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MJL/JV		1806726	

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metric units

MATCH LINE (SEE SHEET 37A OF 175)

LANE EDGE

APPROACH SLAB

TYPE 4–A CURB

℄ RAMP N–W

LIMITS OF POROUS BACKFILL

STA. 2+675.200 ℄ BEARINGS

STA. 10+119.385 ℄ BEARINGS

150 mm PERFORATED C.P.P.

SLOPE 0.01 (150 PERFORATED C.P.P.)

℄ BEARING

69°–15'–46"

62°–08'–46"

20°–44'–00"

64°–53'–56"

68°–04'–16"

68°–04'–16"

60°–00'–00" (TYPICAL EXCEPT AS SHOWN)

C.J.

℄ I–77

8–A15M09 @ 150 (TYP.)

600 (TYP.)

600 (TYP.)

1L–A

1L–B

1L–C

1L–D

1L–E

1L–F

1L–G

1L–H

1L–I

1L–J

33 800

33 534

34 229

5 SPA. @ 3695 = 18 475

2 SPA. @ 3602 = 7204

2 SPA. @ 3450 = 6900

266 87 219 1085 57 2100 6000 5032 585 547 75 450 1000 605 380 390 150 150 300 600 1220

N

150 mm NON–PERFORATED C.P.P.

OUTLET TO FRONT SLOPE (SEE DETAIL SHEET 41 OF 175)

FOR ADDITIONAL DETAIL, SEE ENLARGED PLAN, SHEET 40 OF 175.

PLAN

PHASE 4

℄ I–77 AT FACE OF BACKWALL

D

67–A20M02, 67–A20M03, 67–A20M04 @ 300/ 39–A25M02 @ 450

46–A20M02, 46–A20M03, 46–A20M04 @ 300/ 29–A25M02 @ 450

577 2309 4157 4157 4157 4157 374 2566 7551 3998

CONC. BARR. AT FACE OF BACKWALL

LANE EDGE AT FACE OF BACKWALL

LINE OF APPR. SLAB AT FACE OF BACKWALL

℄ RAMP N–W AT FACE OF BACKWALL

EL. 208.610 *

EL. 208.612 *

EL. 208.653 *

EL. 208.728 *

EL. 208.688 *

EL. 208.650 *

EL. 208.478 *

EL. 208.498 *

EL. 208.349 *

EL. 208.222 *

EL. 208.149 *

A15M04 F.F.

A15M05 F.F.

380

APPROACH SLAB SEAT

51 mm LIGHTING CONDUIT

SEISMIC PEDESTAL (TYP.) SEE SHEET 43 OF 175.

3–A15M04

3–A15M05

EL. 206.304

4–A15M04 E.F.

EL. 206.372

EL. 206.405

EL. 206.382

EL. 206.340

EL. 206.205

4–A15M05 E.F.

EL. 206.024

EL. 206.059

EL. 205.962

EL. 205.884

9–A15M08

A15M03

5–A15M04

5–A15M05

A15M02 N.F., A20M01 F.F.

A15M01

3–A30M01

A15M06 N.F., A20M06 F.F.

3–A15M05 E.F.

3–A30M03

C.J.

EL. 203.600

150 mm NON–PERFORATED C.P.P. ℄ EL = 203.600

2–A15M01, 2–A15M06 N.F.

2–A15M03 & 2–A20M06 F.F.

4–A30M01

4–A30M03

705

272.5

272.5

150 mm PERFORATED C.P.P. ℄ EL = 203.945

3–A15M01, 3–A15M02 N.F. 3–A15M03 & 3–A20M01 F.F. @ 450 (TYP. BETWEEN PILES – 13 PLACES)

3–A15M01, 3–A15M02 N.F. 3–A15M03 & 3–A20M01 F.F. @ 450 (TYP. BETWEEN PILES – 9 PLACES)

ELEVATION

* AT FACE OF BACKWALL

Ⓐ PLACE PARALLEL TO ℄ I–77

+ PLACE PARALLEL TO ℄ RAMP N–W

NOTES

1. FOR WINGWALL ELEVATIONS, SEE SHEET 39 OF 175.
2. FOR SECTION D–D, ABUTMENT NOTES AND ABBREVIATIONS, SEE SHEET 43 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

DESIGN AGENCY
HNTB One Cleveland Center 1375 East 9th Street Cleveland, Ohio 44114–1724
ARCHITECTS ENGINEERS PLANNERS

DATE 9–12–97
REVIEWED RER
STRUCTURE FILE NUMBER 1806726
DRAWN SJR
REVISED
DESIGNED DHS
CHECKED JOL,JV

REAR ABUTMENT PLAN AND ELEVATION
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

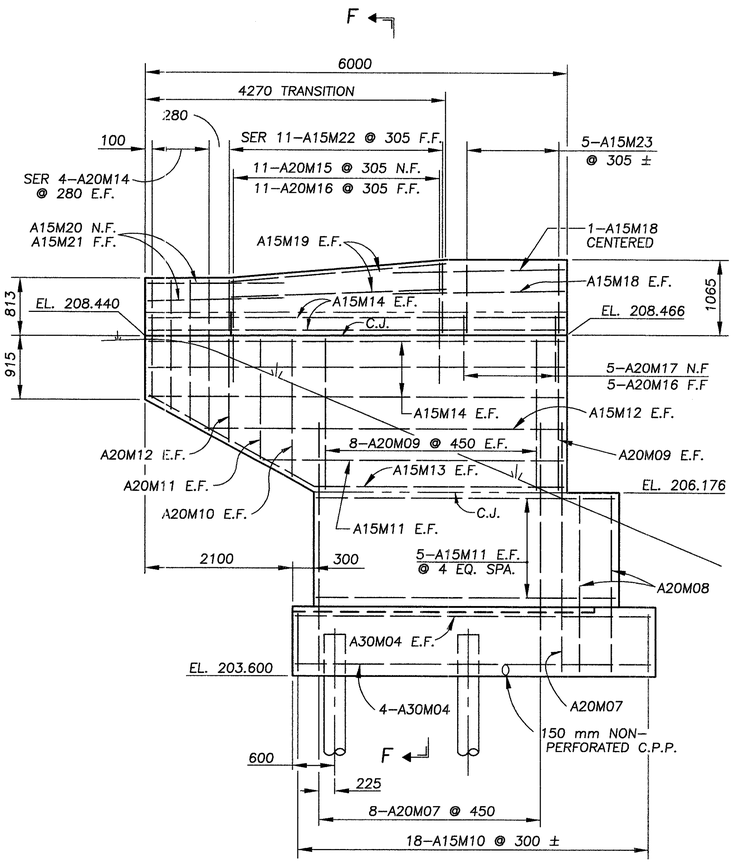
CUY–77–23.458

38/175

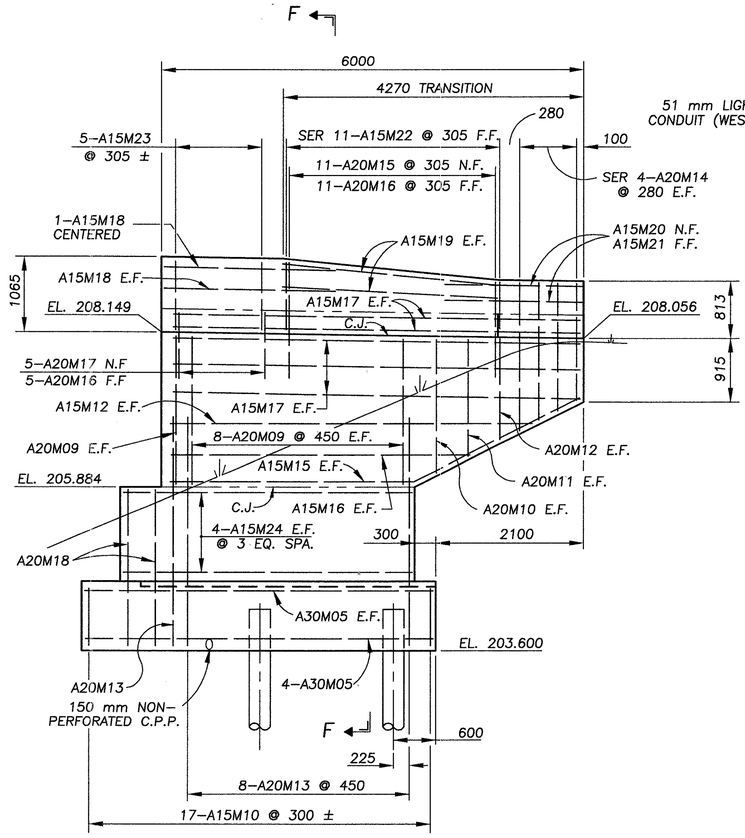
133/295

\24621\techprod\drawings\bridge\SABUT2.DWG

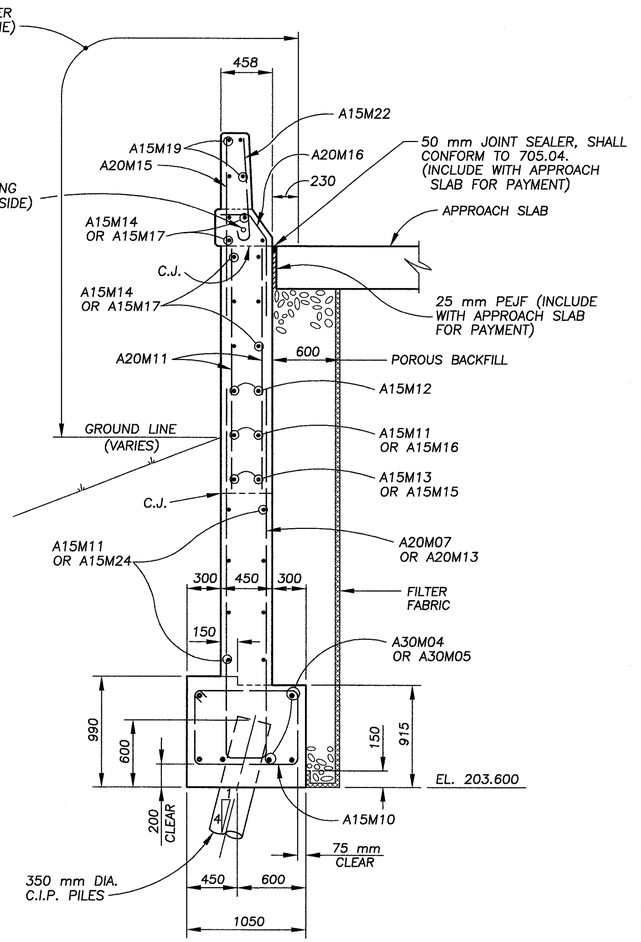
MIN. REBAR LAPS
#15M = 750 mm
#20M = 890 mm



EAST ELEVATION



WEST ELEVATION



SECTION F–F

NOTES

1. FOR ABUTMENT NOTES AND ABBREVIATIONS, SEE SHEET 43 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

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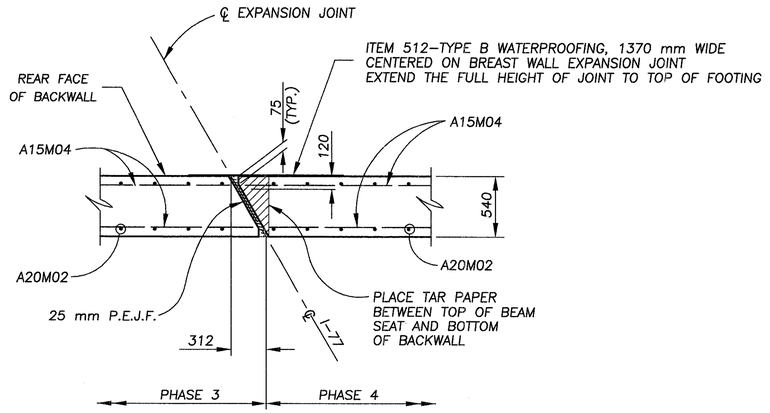
REAR ABUTMENT WINGWALL ELEVATIONS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

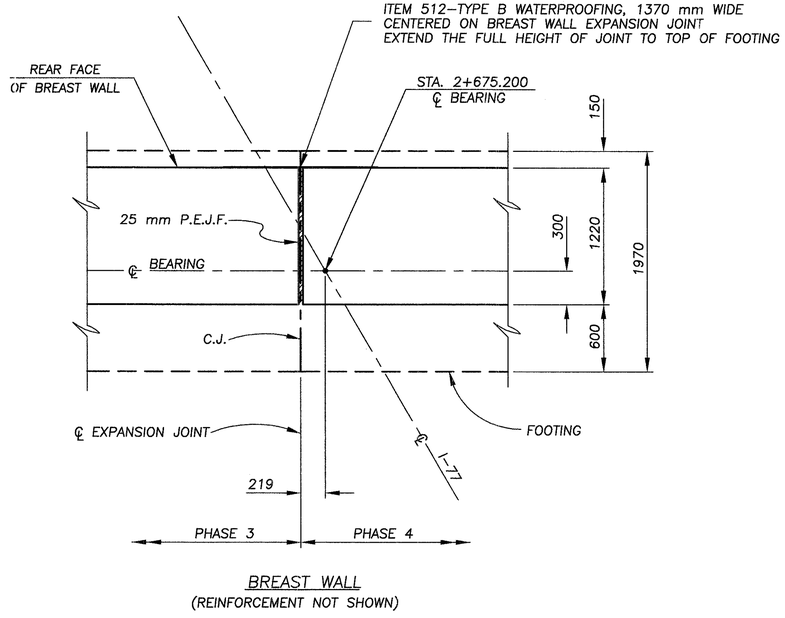
39/175

134/295

\24621\techprod\drawings\bridge\SABUT3.DWG

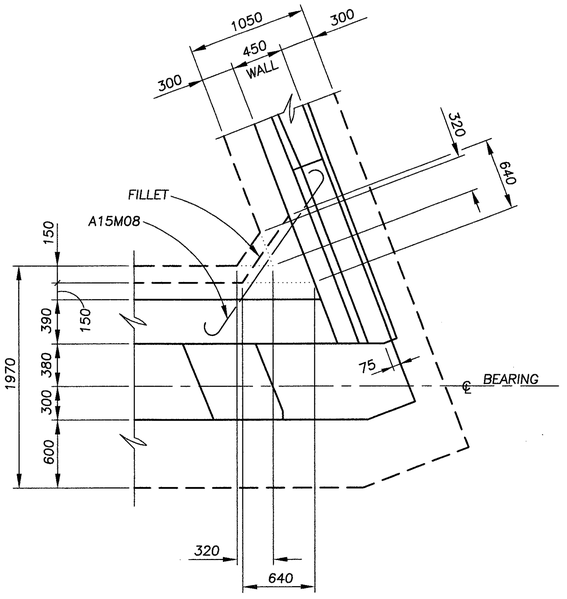


BACKWALL



BREAST WALL
(REINFORCEMENT NOT SHOWN)

SECTION THRU EXPANSION JOINT



ENLARGED PLAN
(AT CORNER)

N

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

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metric units

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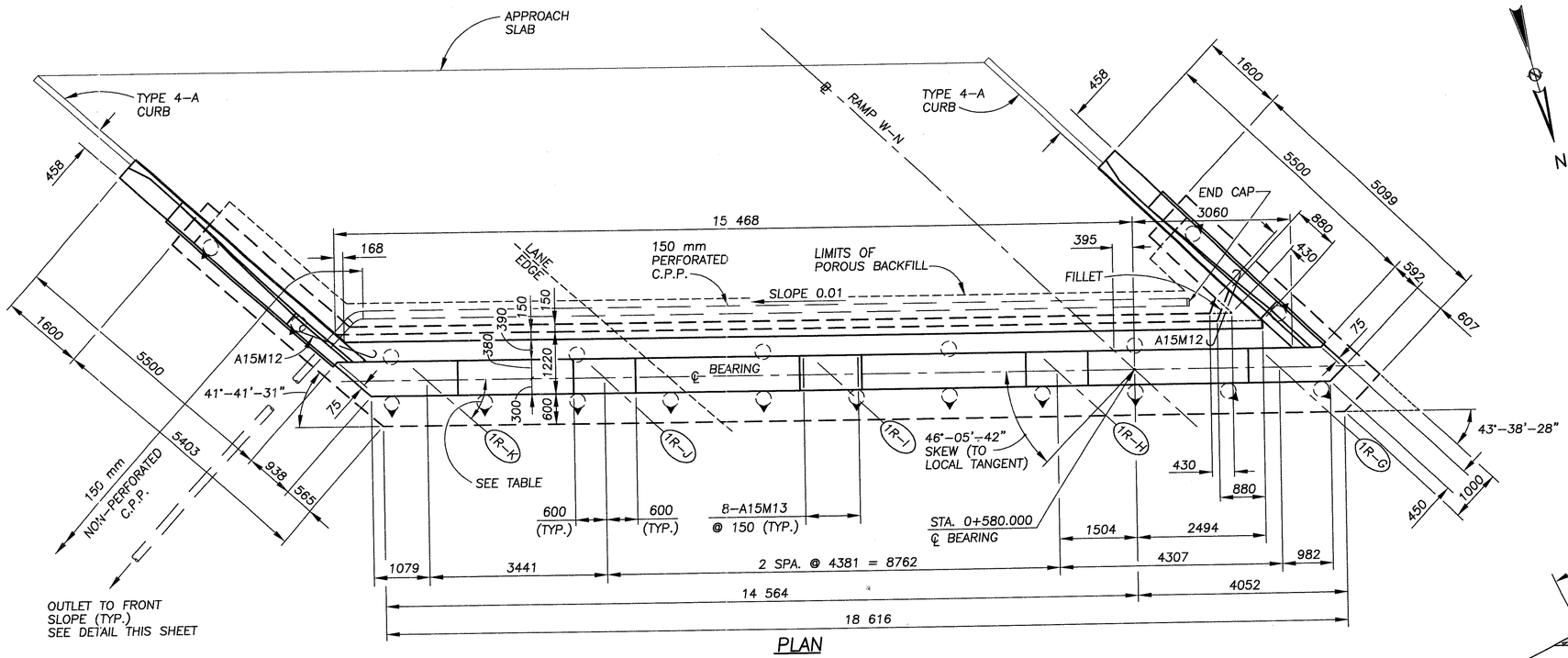
REVISED
STRUCTURE FILE NUMBER 1806726

REAR ABUTMENT SECTIONS AND DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

40/175

135/295



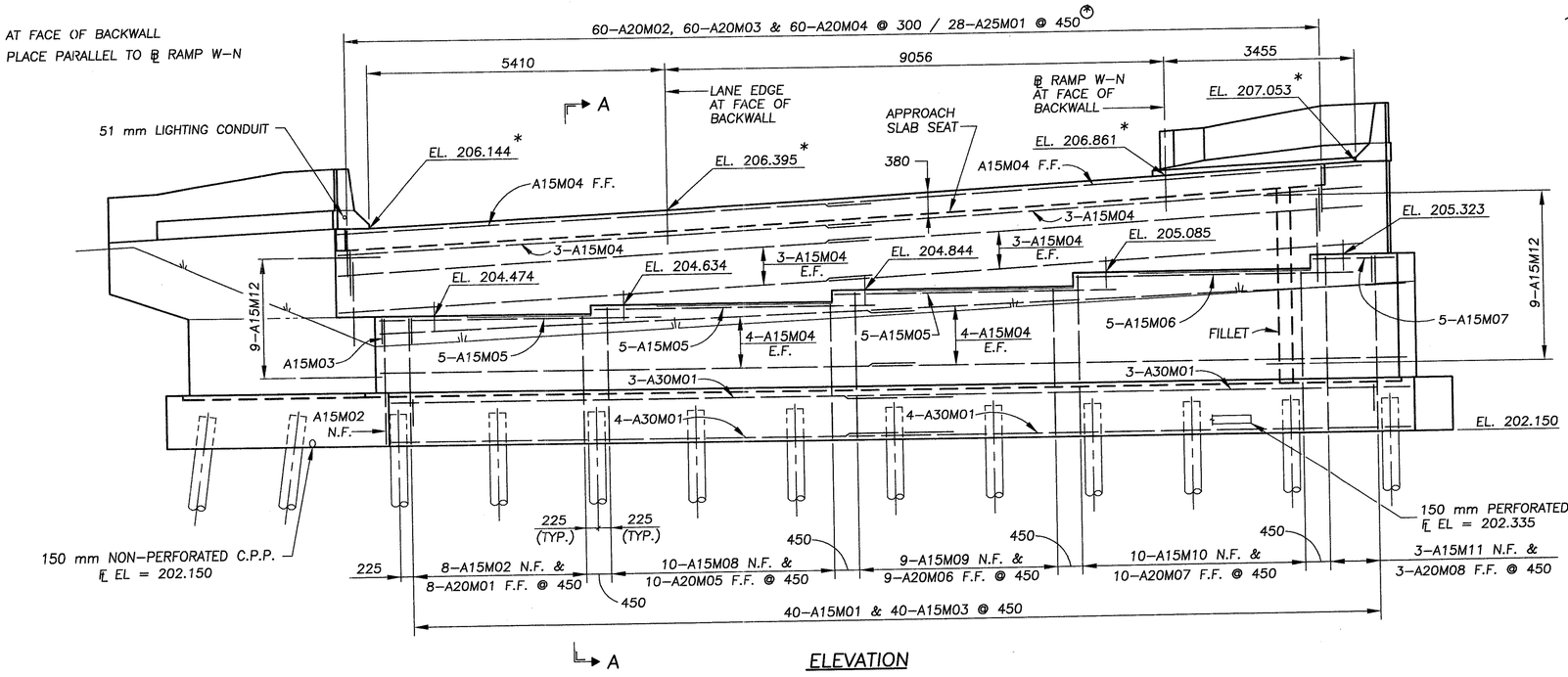
GIRDER	ANGLE
1R-G	43°-49'-02"
1R-H	43°-49'-02"
1R-I	43°-49'-02"
1R-J	43°-49'-02"
1R-K	42°-10'-35"

TERMINATION OF 150 mm AT FRONT SLOPE

MIN. REBAR LAPS
#15M = 750 mm
#30M = 2100 mm

* AT FACE OF BACKWALL

℗ PLACE PARALLEL TO ℄ RAMP W-N



ELEVATION

NOTES

1. FOR WINGWALL ELEVATIONS, SEE SHEET 42 OF 175.
2. FOR SECTION A-A, ABUTMENT NOTES AND ABBREVIATIONS, SEE SHEET 43 OF 175.
3. BRIDGE SEAT REINFORCING: REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.
4. FOR POT BEARING DETAILS AND ANCHOR ROD LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

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JOL/JV		1806726	

RAMP W-N ABUTMENT PLAN AND ELEVATION
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

41/175
136/295

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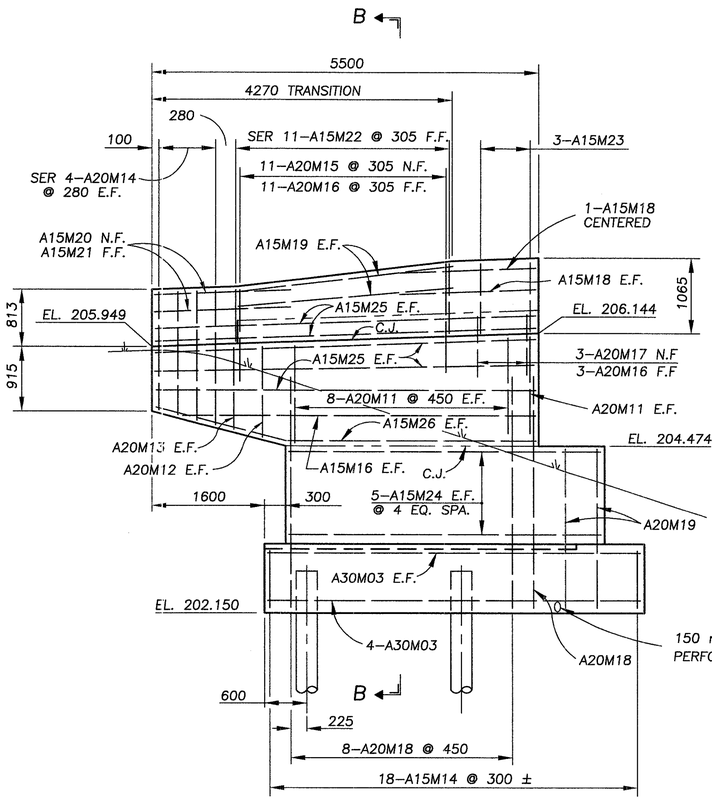
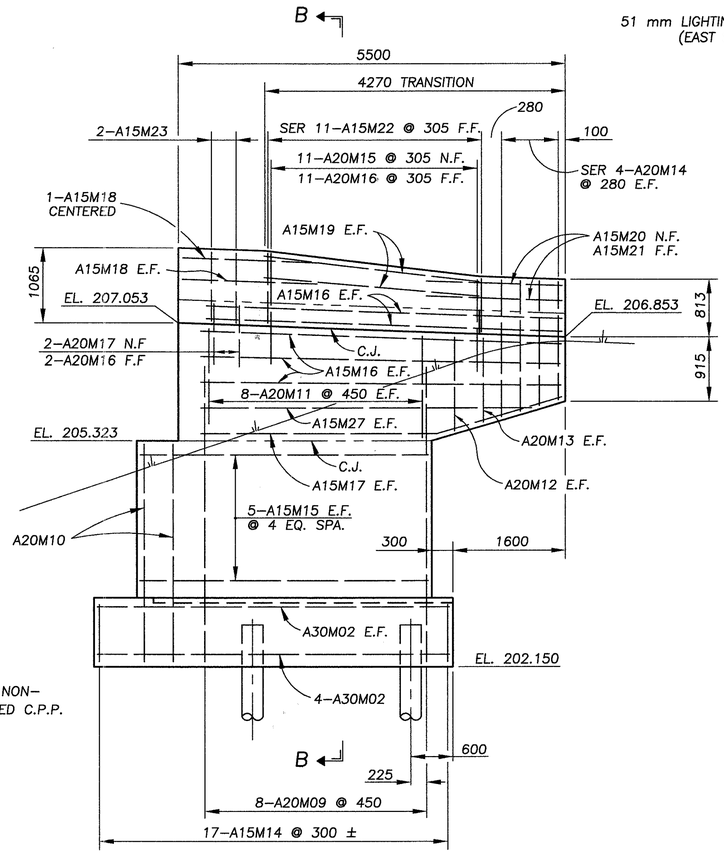
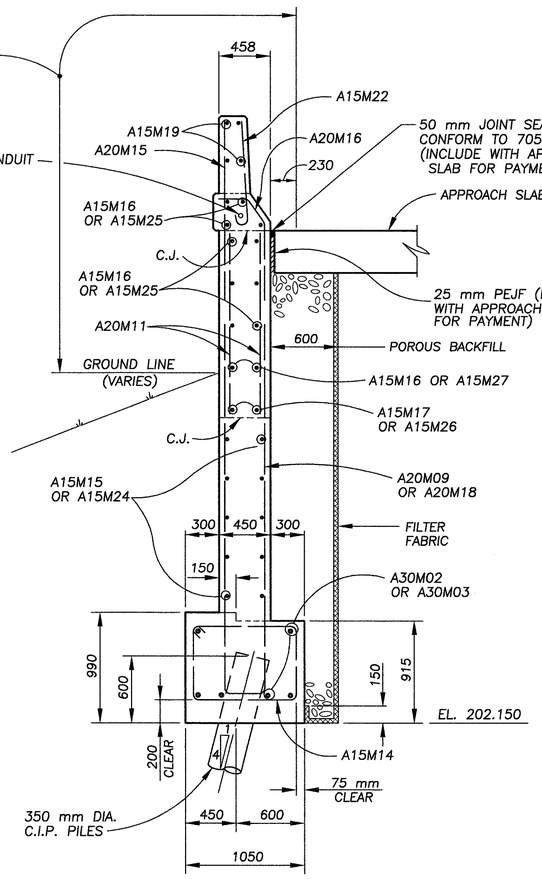
MIN. REBAR LAPS
#15M = 750 mm
#20M = 890 mm



EAST ELEVATION



WEST ELEVATION



SECTION B–B

NOTES:

1. FOR ABUTMENT NOTES AND ABBREVIATIONS, SEE SHEET 43 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

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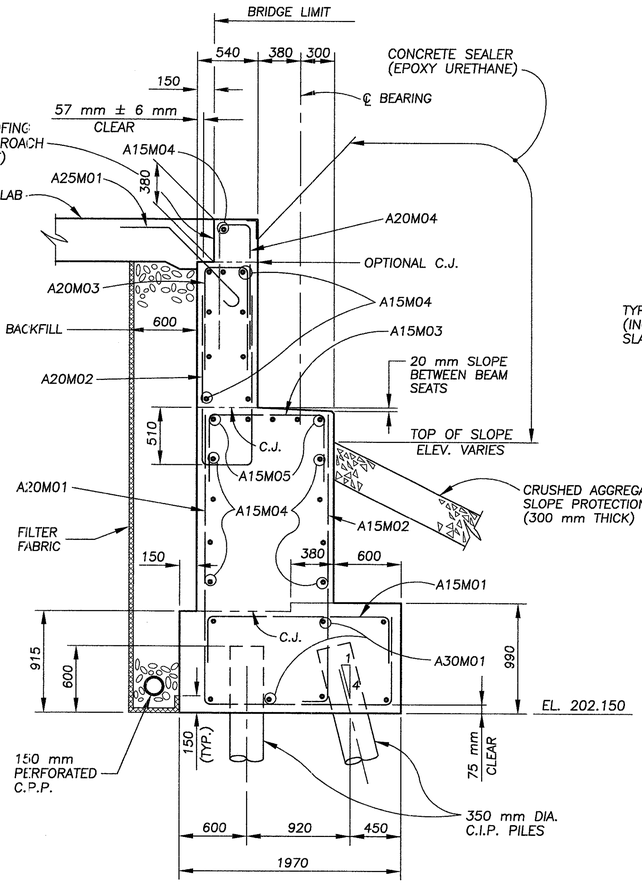
RAMP W–N WINGWALL ELEVATIONS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

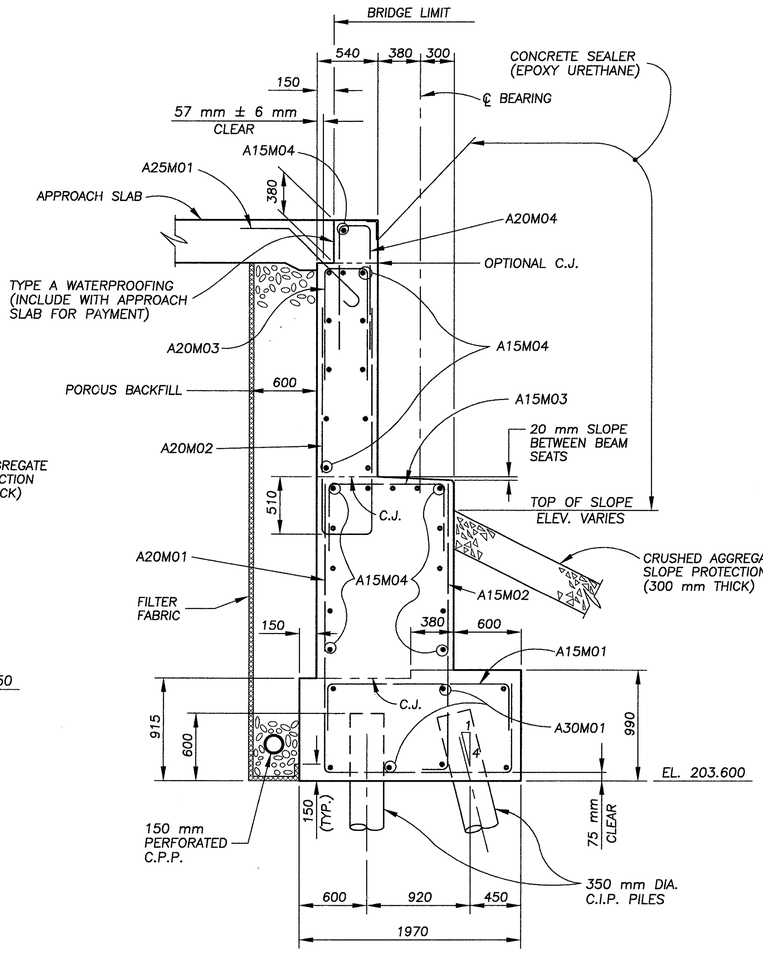
CUY–77–23.458

42/175

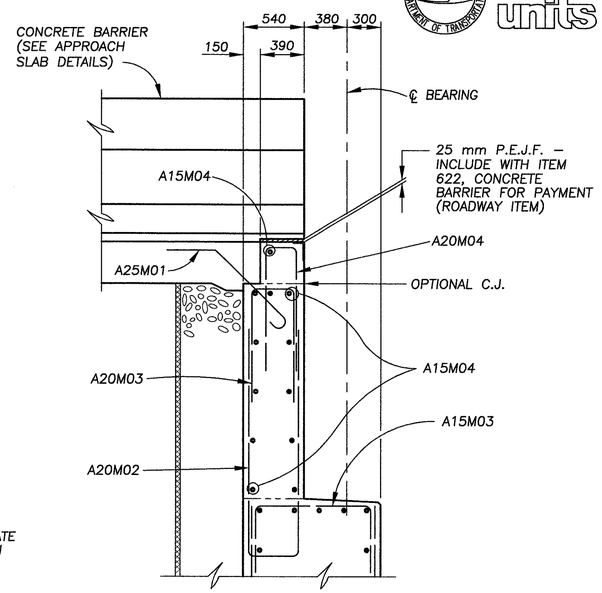
137/295



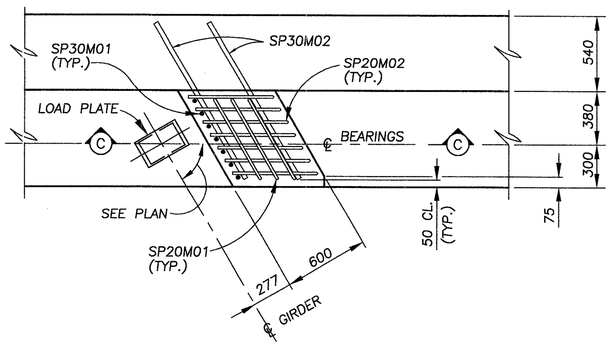
SECTION A–A
(RAMP W–N ABUTMENT)



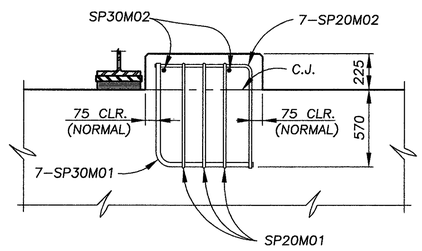
SECTION D–D
(REAR ABUTMENT)



SECTION E–E
FOR DETAIL NOT SHOWN, SEE SECTION D–D
(REAR ABUTMENT)



TYPICAL SEISMIC PEDESTAL PLAN



SECTION C–C

NOTES

1. POROUS BACKFILL WITH FILTER FABRIC, 600 mm THICK, SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE AND LATERALLY TO THE ENDS OF THE WINGWALLS.
2. BACKWALL CONCRETE: IN ADDITION TO THE PROVISIONS 511.08, BACKWALL CONCRETE ABOVE THE OPTIONAL CONSTRUCTION JOINT AT THE APPROACH SLAB SEAT SHALL NOT BE PLACED UNTIL AFTER THE DECK CONCRETE IN THE SPAN ADJACENT TO THE ABUTMENT HAS BEEN PLACED.
3. THE FOLLOWING ABBREVIATIONS ARE USED:

N.F.	– NEAR FACE	EL.	– ELEVATION
F.F.	– FAR FACE	TYP.	– TYPICAL
E.F.	– EACH FACE	C.I.P.	– CAST–IN–PLACE
C.J.	– CONSTRUCTION JOINT	P.E.J.F.	– PREFORMED EXPANSION JOINT FILLER
C.P.P.	– CORRUGATED PLASTIC PIPE		

4. FOR PILING PLAN, SEE SHEET 34 OF 175.
5. FOR ADDITIONAL BRIDGE PARAPET DETAILS, REFER TO STANDARD DRAWING BR–1M, SHEET 2 OF 2.
6. REINFORCING IN REAR ABUTMENT IS PREFIXED WITH "R" IN THE REINFORCING SCHEDULE.
7. REINFORCING IN RAMP W–N ABUTMENT IS PREFIXED WITH "WN" IN THE REINFORCING SCHEDULE.
8. FOR APPROACH SLAB DETAILS, SEE SHEET 150 AND 151 OF 175.
9. FOR GUARDRAIL TERMINAL ASSEMBLY CONNECTION NOTES, SEE SHEET 48 OF 175.
10. FOR SLOPE TREATMENT AT THE 150 mm PIPE OUTLET, SEE DETAIL ON SHEET 41 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
metric units

DESIGN AGENCY
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ABUTMENT SECTIONS AND NOTES
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

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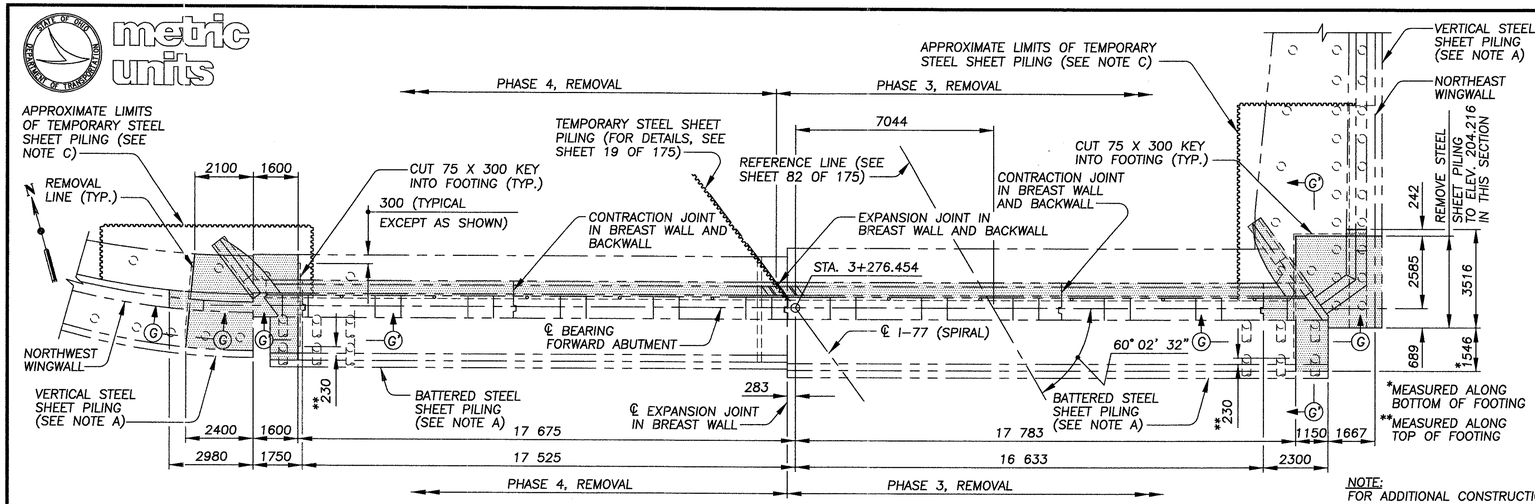
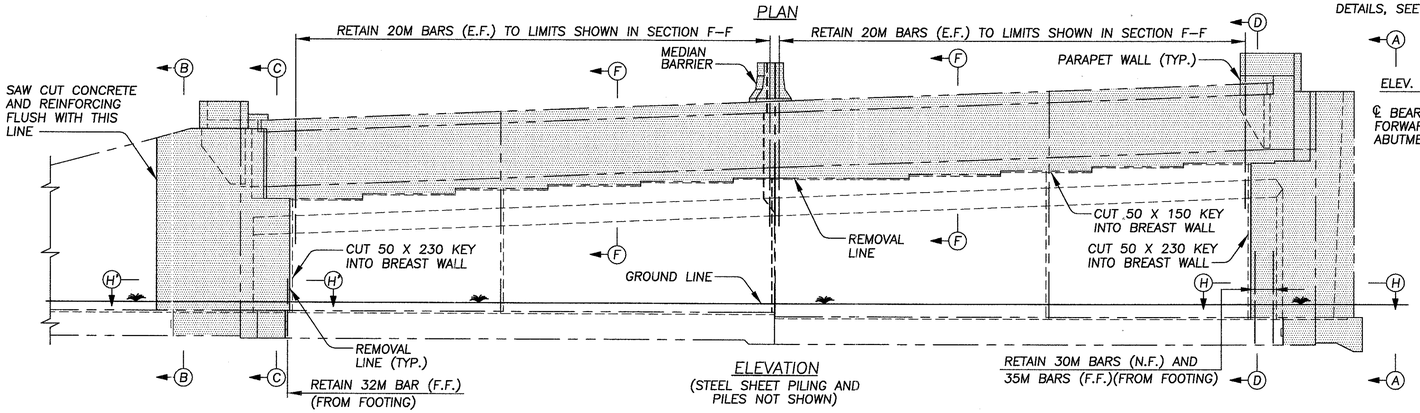
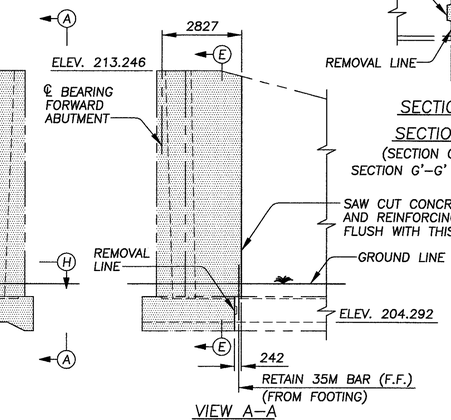
metric units



PLAN

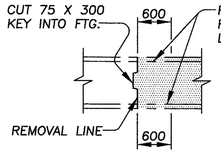


ELEVATION
(STEEL SHEET PILING AND PILES NOT SHOWN)

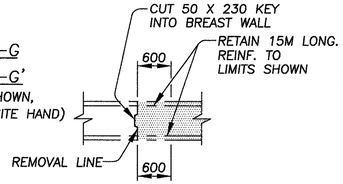


VIEW A-A
(ABUTMENT BREAST WALL NOT SHOWN)
(STEEL SHEET PILING AND PILES NOT SHOWN)

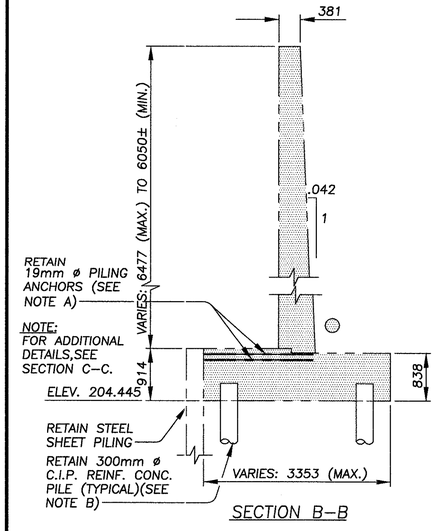
NOTE:
FOR ADDITIONAL CONSTRUCTION SEQUENCE DETAILS, SEE SHEET 13 AND 14 OF 175.



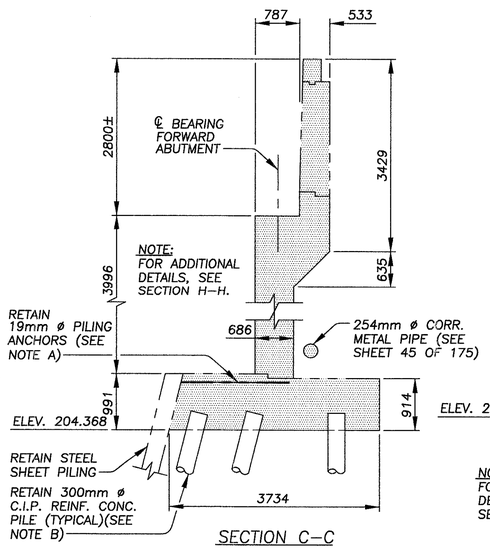
SECTION G-G
SECTION G'-G'
(SECTION G-G SHOWN, SECTION G'-G' OPPOSITE HAND)



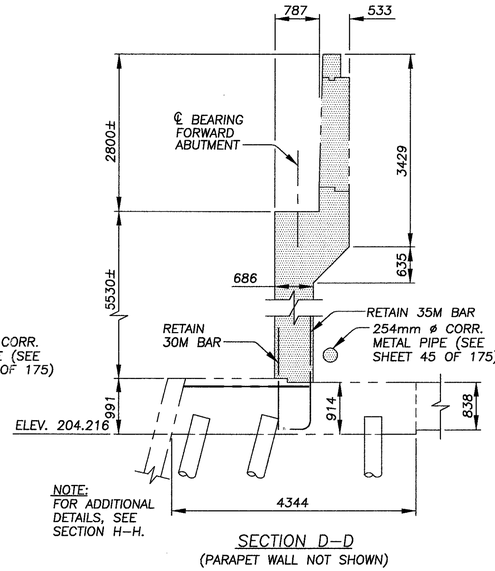
SECTION H-H
SECTION H'-H'
(SECTION H-H SHOWN, SECTION H'-H' OPPOSITE HAND)



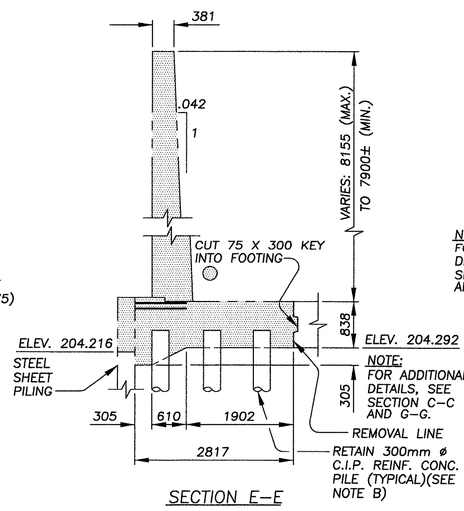
SECTION B-B



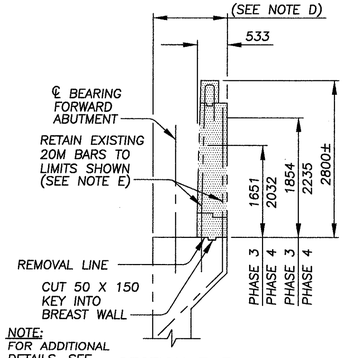
SECTION C-C



SECTION D-D
(PARAPET WALL NOT SHOWN)



SECTION E-E



SECTION F-F

NOTE A:
RETAIN EXISTING STEEL SHEET PILING AND 19mm ø PILING ANCHORS, EXCEPT AS SHOWN IN THE PLAN VIEW AND SECTION E-E.

NOTE B:
SPECIAL CARE SHALL BE TAKEN NOT TO DAMAGE THE 300mm ø C.I.P. REINFORCED CONCRETE PILES DURING REMOVAL OF THE FOOTING.

NOTE C:
SPECIAL CARE SHALL BE TAKEN WHEN PLACING THE TEMPORARY STEEL SHEET PILING SO AS NOT TO DAMAGE THE EXISTING STRUCTURE. THE TYPE, SIZE AND LOCATION OF THE TEMPORARY STEEL SHEET PILING AT THE NORTHWEST AND NORTHEAST WINGWALLS SHALL BE DETERMINED BY THE CONTRACTOR.

NOTE D:
REMOVE THE TOP SURFACE OF THE ABUTMENT BREAST WALL CONCRETE, AS REQUIRED, TO SOUND CONCRETE. SCARIFY THE TOP SURFACE OF THE ABUTMENT BREAST WALL. INCLUDE WITH ITEM 202, PORTIONS OF STRUCTURE REMOVED, AS PER PLAN.

NOTES:
ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS AND STATIONS ARE IN METERS.
[ ] INDICATES REMOVAL (TO BE INCLUDED WITH ITEM 202 FOR PAYMENT)
FOR FORWARD ABUTMENT DETAILS, SEE SHEETS 45 THRU 47 OF 175.
FOR RETAINING WALL DETAILS, SEE SHEET 48 OF 175.
THE FOLLOWING ABBREVIATIONS ARE USED:
TYP. = TYPICAL E.F. DENOTES EACH FACE
N.F. DENOTES NEAR FACE F.F. DENOTES FAR FACE

NOTE E:
THE CONTRACTOR SHALL HAVE THE OPTION OF SAW CUTTING THE EXISTING 20M BARS FLUSH WITH THE REMOVAL LINE AND REPLACING THEM WITH EPOXY COATED 20M DOWEL BARS @ 300mm SPACING (E.F.)(TO MATCH 15M17, 15M71, 20M01, AND 20M53 BARS, AS SHOWN ON SHEET 46 OF 175). THE EMBEDMENT LENGTH INTO THE EXISTING CONCRETE SHALL BE 380mm (MINIMUM) AND THE BAR LENGTHS ABOVE THE REMOVAL LINE SHALL BE THE SAME AS SHOWN IN SECTION F-F. THE DOWEL BARS SHALL BE AS PER ITEM 510 OF THE O.D.O.T. MATERIAL SPECIFICATIONS. NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE USE OF THESE DOWEL BARS.

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DHS	TJM	JLV		RER	09-12-97

STRUCTURE FILE NUMBER 1806726

FORWARD ABUTMENT REMOVAL DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

44/175

139/295

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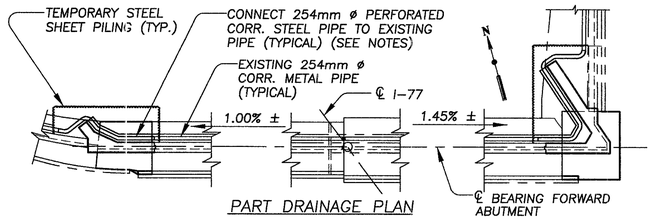
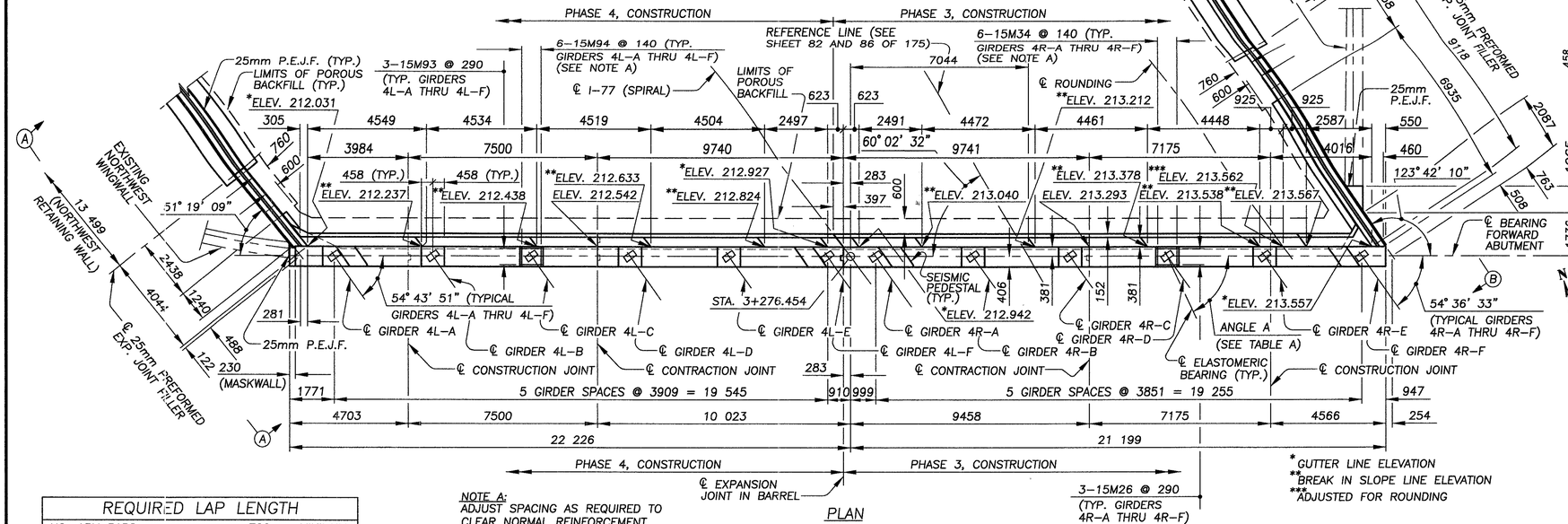


PART DRAINAGE PLAN

TABLE A			
GIRDER	ANGLE A	GIRDER	ANGLE A
4L–A	54° 43′ 51″	4R–A	55° 15′ 49″
4L–B	54° 43′ 51″	4R–B	55° 16′ 59″
4L–C	54° 43′ 51″	4R–C	55° 18′ 25″
4L–D	54° 43′ 51″	4R–D	55° 19′ 50″
4L–E	54° 43′ 51″	4R–E	55° 21′ 28″
4L–F	54° 43′ 51″	4R–F	55° 23′ 17″

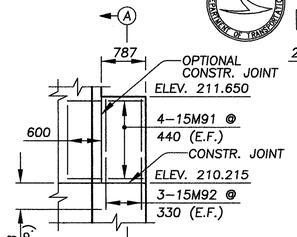
TABLE B				
GIRDER	4L–A	4L–F	4R–A	4R–F
DIM. A	219	219	228	219
B BARS	30M57	30M57	30M01	30M01
C BARS	20M77	20M77	20M29	20M31
D BARS	20M78	20M78	20M30	20M32
E BARS	30M58	30M58	30M02	30M03



NOTE A:
ADJUST SPACING AS REQUIRED TO CLEAR NORMAL REINFORCEMENT.

PLAN

* GUTTER LINE ELEVATION
** BREAK IN SLOPE LINE ELEVATION
*** ADJUSTED FOR ROUNDING



ELEVATION
(LOOKING EAST)
(EXISTING NORTHWEST WINGWALL NOT SHOWN)

SECTION A–A

NORTHWEST MASKWALL DETAILS

NOTES:
ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS AND STATIONS ARE IN METERS.

ALL REINFORCING BAR MARKS FOR THE FORWARD ABUTMENT SHALL BE PREFIXED FA EXCEPT FOR BAR 25M03 AND 25M53 WHICH SHALL BE PREFIXED DFA.

POROUS BACKFILL WITH FILTER FABRIC, 600mm AND 760mm THICK SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE AND LATERALLY TO THE END OF THE RETAINING WALLS.

THE CONNECTION BETWEEN THE EXISTING AND NEW 254mm ø PIPES SHALL BE DETERMINED BY THE CONTRACTOR WITH THE APPROVAL OF THE ENGINEER.

FOR PILE NUMBERS, PILE NOTES AND LEGEND, SEE SHEET 37 OF 175.

FOR RETAINING WALL DETAILS, SEE SHEET 48 OF 175.

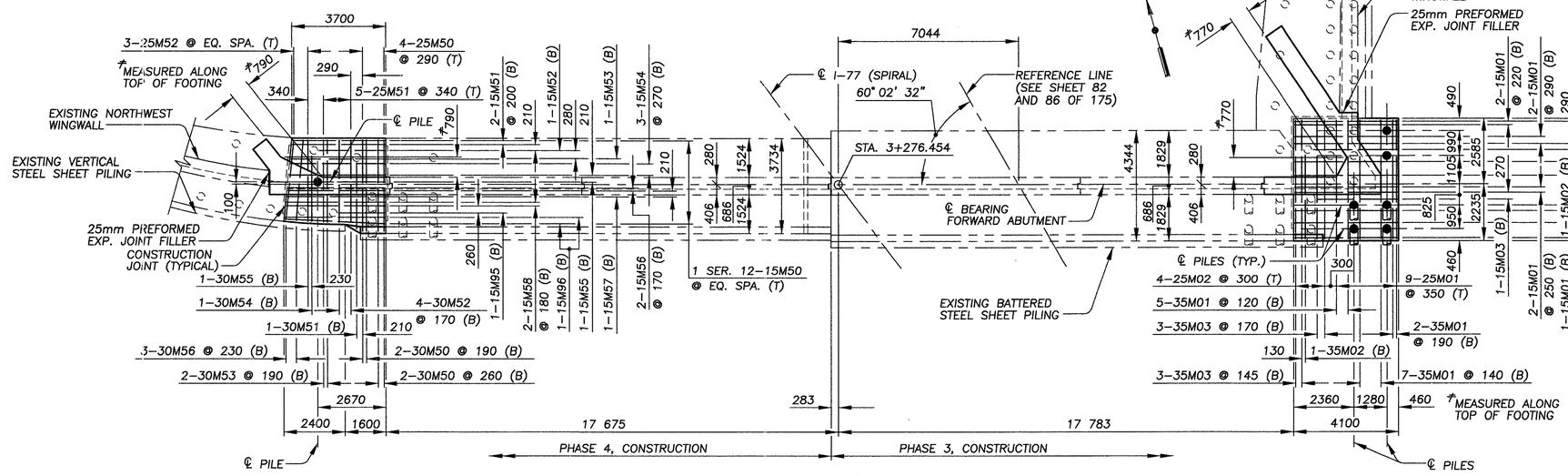
FOR REINFORCEMENT SCHEDULE, SEE SHEET 166 AND 167 OF 175.

FOR ADDITIONAL SEISMIC PEDESTAL DETAILS, SEE OHIO STD. DWG. A–1–69M, SHT. 5 OF 5.

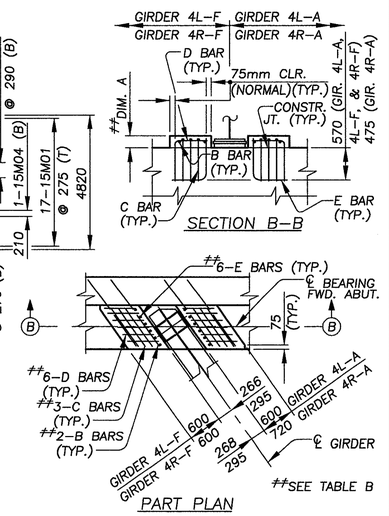
THE FOLLOWING ABBREVIATIONS ARE USED:

T = TOP	B = BOTTOM
TYP. = TYPICAL	E.F. = EACH FACE
N.F. = NEAR FACE	F.F. = FAR FACE
P.E.J.F. = PREFORMED EXPANSION JOINT FILLER	
—— — — —— INDICATES EXISTING STRUCTURE	

REQUIRED LAP LENGTH	
NO. 15M BARS	720mm MINIMUM
NO. 20M BARS (HORIZONTAL)	1310mm MINIMUM
NO. 20M BARS (VERTICAL)	1150mm MINIMUM
NO. 20M BARS (VERTICAL TO EXISTING 20M BARS)	920mm MINIMUM
NO. 35M BARS (VERTICAL)	3660mm MINIMUM



FOOTING PLAN



SECTION B–B

PART PLAN

SEISMIC PEDESTAL DETAILS

DESIGN AGENCY: HNTB ARCHITECTS ENGINEERS PLANNERS — One Cleveland Center, 1375 East Ninth Street, Cleveland, Ohio 44114-1724

DATE	STRUCTURE FILE NUMBER
REVIEWED RER 09-12-97	1806726
DRAWN JLV	REVISED
DESIGNED DHS	CHECKED TJM

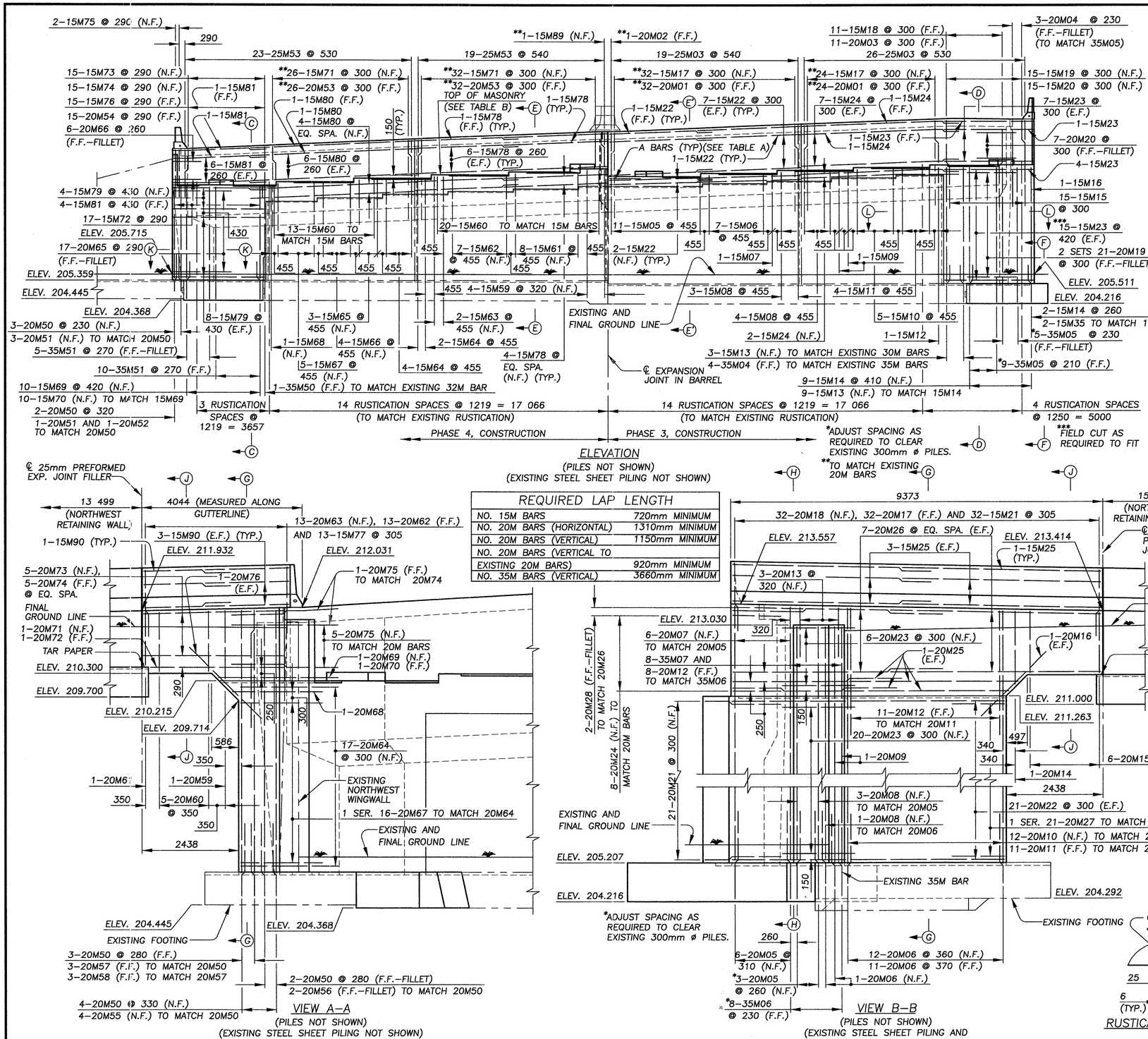
FORWARD ABUTMENT
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

45/175

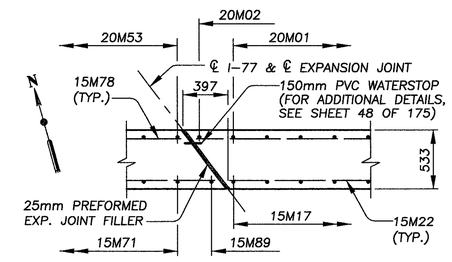
140/295

\\24621\techprod\drawings\bridge\fwdabut1.dwg

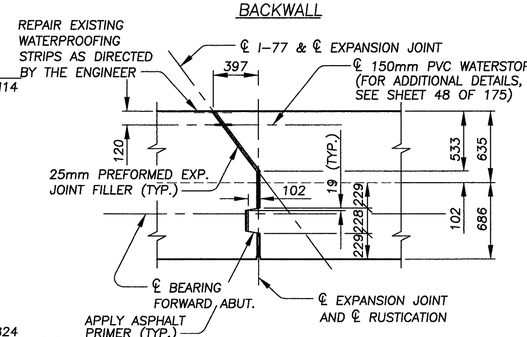


ELEVATION
(PILES NOT SHOWN)
(EXISTING STEEL SHEET PILING NOT SHOWN)

REQUIRED LAP LENGTH	
NO. 15M BARS	720mm MINIMUM
NO. 20M BARS (HORIZONTAL)	1310mm MINIMUM
NO. 20M BARS (VERTICAL)	1150mm MINIMUM
NO. 20M BARS (VERTICAL TO EXISTING 20M BARS)	920mm MINIMUM
NO. 35M BARS (VERTICAL)	3660mm MINIMUM



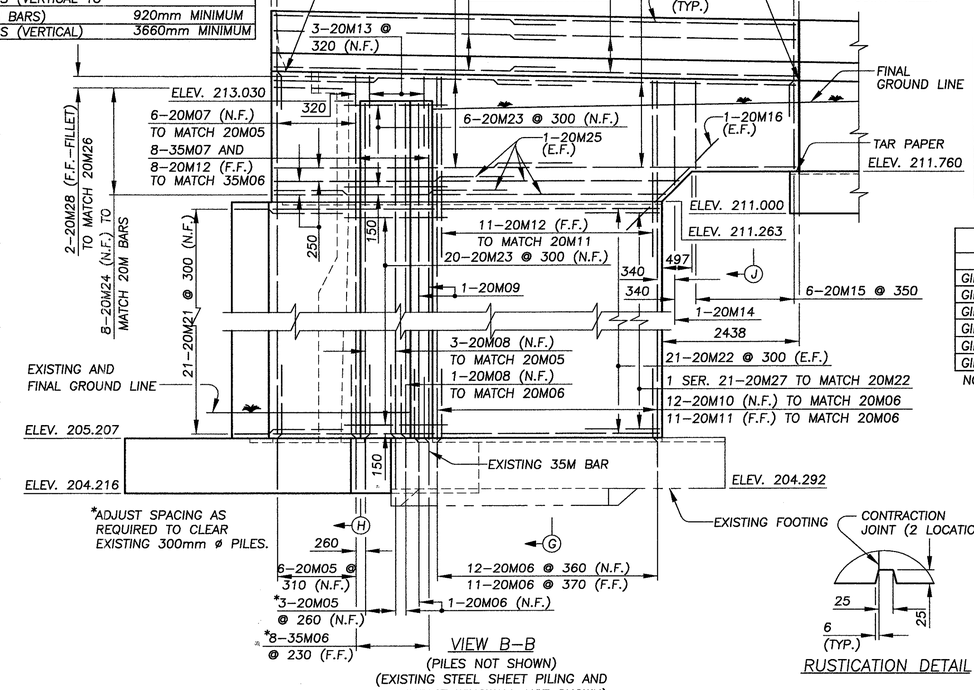
BACKWALL



BREAST WALL
(REINFORCEMENT NOT SHOWN)

SECTION THRU EXPANSION JOINT
(SECTION THRU CONTRACTION JOINT SIMILAR)

VIEW A–A
(PILES NOT SHOWN)
(EXISTING STEEL SHEET PILING NOT SHOWN)



VIEW B–B
(PILES NOT SHOWN)
(EXISTING STEEL SHEET PILING AND NORTHEAST WINGWALL NOT SHOWN)

TABLE A			
GIRDER	A BARS	GIRDER	A BARS
4L–A	3–15M87, 1–15M88	4R–A	3–15M27, 1–15M28
4L–B	4–15M84	4R–B	4–15M29
4L–C	4–15M85, 4–15M86	4R–C	4–15M30, 4–15M31
4L–D	4–15M84	4R–D	4–15M29
4L–E	4–15M84	4R–E	3–15M32, 1–15M33
4L–F	2–15M82, 1–15M83 AND 1–15M97	4R–F	———

TABLE B			
SOUTHBOUND		NORTHBOUND	
GIRDER 4L–A	ELEV. 210.215	GIRDER 4R–A	ELEV. 210.649
GIRDER 4L–B	ELEV. 210.392	GIRDER 4R–B	ELEV. 210.799
GIRDER 4L–C	ELEV. 210.565	GIRDER 4R–C	ELEV. 210.946
GIRDER 4L–D	ELEV. 210.756	GIRDER 4R–D	ELEV. 211.091
GIRDER 4L–E	ELEV. 210.922	GIRDER 4R–E	ELEV. 211.229
GIRDER 4L–F	ELEV. 211.085	GIRDER 4R–F	ELEV. 211.263

NOTE: FOR LOCATION OF GIRDERS, SEE SHEET 45 OF 175

RUSTICATION DETAIL

NOTES:
ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS AND STATIONS ARE IN METERS.

ALL REINFORCING BAR MARKS FOR THE FORWARD ABUTMENT SHALL BE PREFIXED FA EXCEPT FOR BAR 25M03 AND 25M53 WHICH SHALL BE PREFIXED DFA.

FOR SECTIONS C–C THRU L–L, SEE SHEET 47 OF 175.
FOR RETAINING WALL DETAILS, SEE SHEET 48 OF 175.
FOR NORTHWEST MASKWALL DETAILS, SEE SHEET 45 OF 175.
FOR MEDIAN BARRIER DETAILS, SEE SHEET 151 OF 175.
FOR REINFORCEMENT SCHEDULE, SEE SHEET 166 AND 167 OF 175.
FOR ADDITIONAL NOTES, SEE SHEET 45 OF 175.

THE FOLLOWING ABBREVIATIONS ARE USED:
TYP. = TYPICAL E.F. = EACH FACE
N.F. = NEAR FACE F.F. = FAR FACE
P.E.J.F. = PREFORMED EXPANSION JOINT FILLER
——— – – ——— INDICATES EXISTING STRUCTURE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	JLV	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

FORWARD ABUTMENT
BRIDGE NO. CUY-77-2345
OVER KINGSBURY RUN

CUY-77-23.458

46/175

141/295

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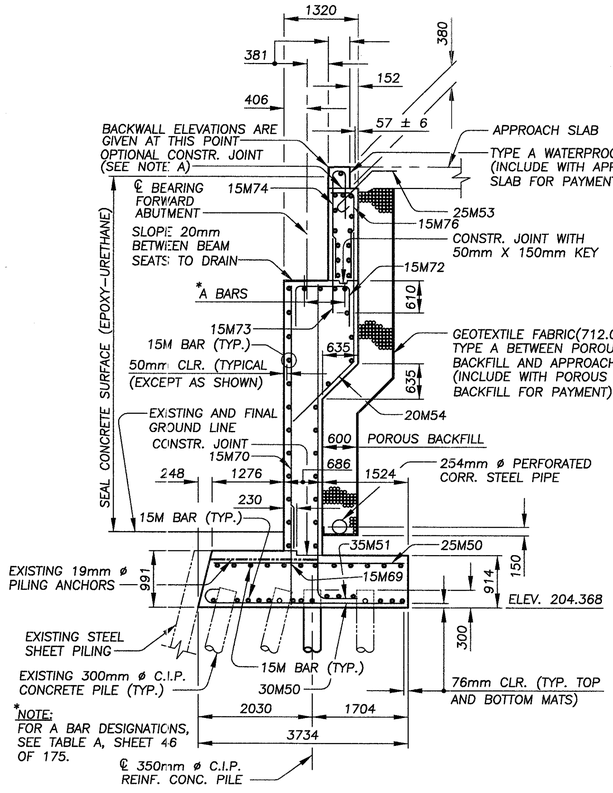
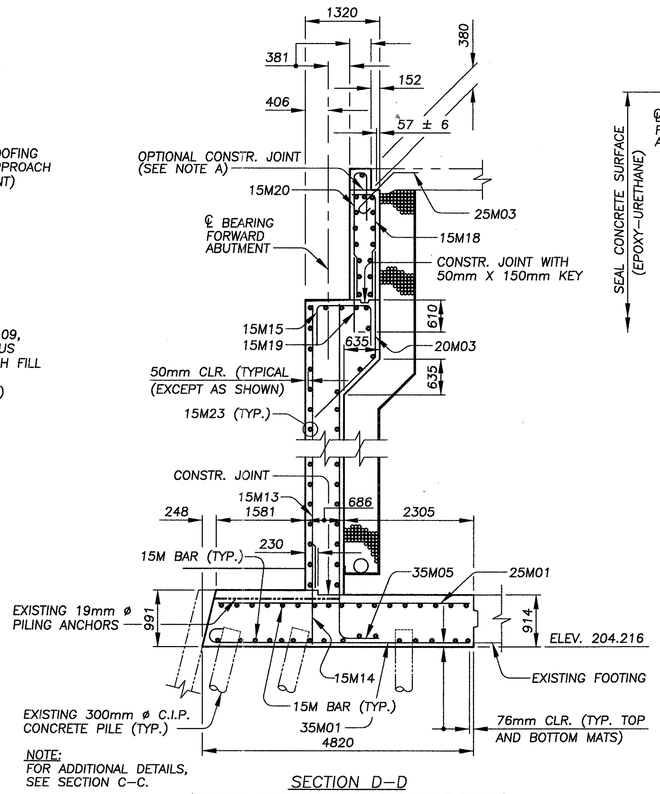
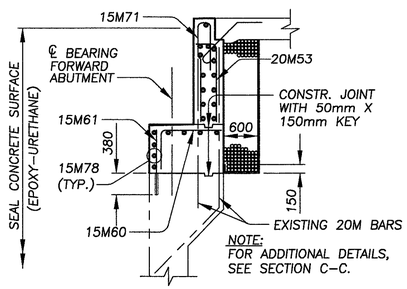


SECTION C–C

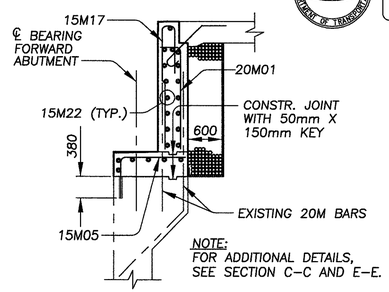


SECTION D–D

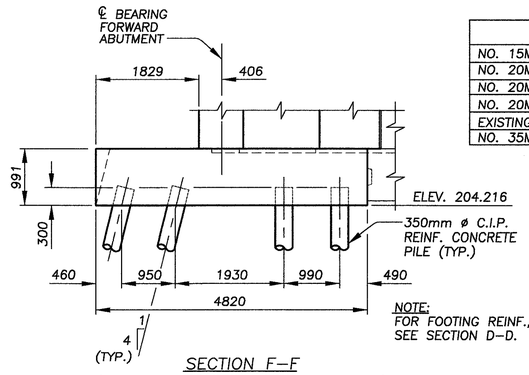
(EXISTING FOOTING REINFORCEMENT NOT SHOWN)



SECTION E–E



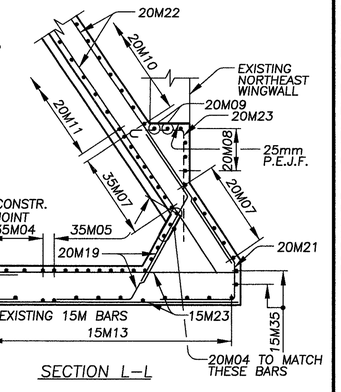
SECTION E'–E'



SECTION F–F

(EXISTING STEEL SHEET PILING NOT SHOWN)

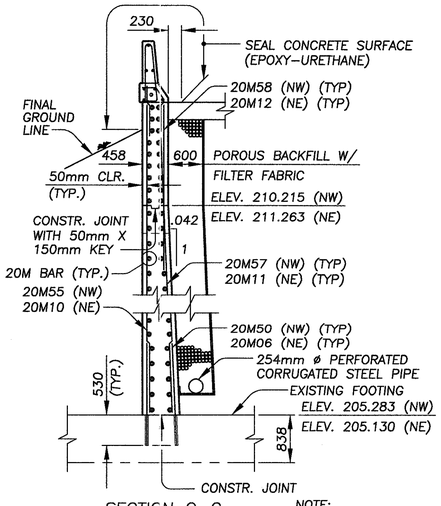
REQUIRED LAP LENGTH	
NO. 15M BARS	720mm MINIMUM
NO. 20M BARS (HORIZONTAL)	1310mm MINIMUM
NO. 20M BARS (VERTICAL)	1150mm MINIMUM
NO. 20M BARS (VERTICAL TO EXISTING 20M BARS)	920mm MINIMUM
NO. 35M BARS (VERTICAL)	3660mm MINIMUM



SECTION K–K

SECTION L–L

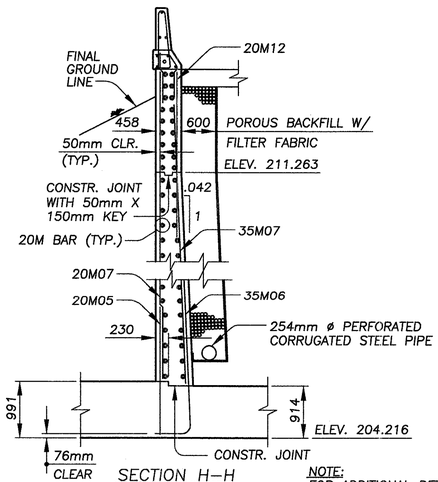
NOTE A:
IN ADDITION TO THE PROVISIONS OF 511.08, BACKWALL CONCRETE ABOVE THE OPTIONAL CONSTRUCTION JOINT AT THE APPROACH SLAB SEAT SHALL NOT BE PLACED UNTIL AFTER THE DECK CONCRETE IN THE SPAN ADJACENT TO THE ABUTMENT HAS BEEN PLACED.



SECTION G–G

(EXISTING FOOTING REINFORCEMENT AND PILES NOT SHOWN)
(NE WINGWALL SHOWN, NW WINGWALL SIMILAR)

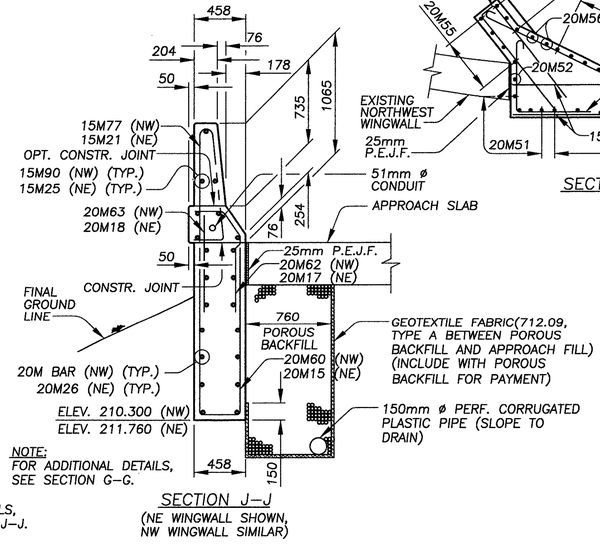
NOTE:
FOR ADDITIONAL DETAILS, SEE SECTION J–J.



SECTION H–H

(HORIZONTAL FOOTING REINFORCEMENT AND PILES NOT SHOWN)

NOTE:
FOR ADDITIONAL DETAILS, SEE SECTION G–G & J–J.



NOTE:
FOR ADDITIONAL DETAILS, SEE SECTION G–G.

SECTION J–J

(NE WINGWALL SHOWN, NW WINGWALL SIMILAR)

NOTES:
ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS AND STATIONS ARE IN METERS.

ALL REINFORCING BAR MARKS FOR THE FORWARD ABUTMENT SHALL BE PREFIXED FA EXCEPT FOR BAR 25M03 AND 25M53 WHICH SHALL BE PREFIXED DFA.

FOR LOCATION OF SECTIONS, SEE SHEET 46 OF 175.
FOR RETAINING WALL DETAILS, SEE SHEET 48 OF 175.
FOR REINFORCEMENT SCHEDULE, SEE SHEET 166 AND 167 OF 175.
FOR ADDITIONAL NOTES, SEE SHEET 45 OF 175.

THE FOLLOWING ABBREVIATIONS ARE USED:
NW = NORTHWEST WINGWALL
NE = NORTHEAST WINGWALL
TYP. = TYPICAL
P.E.J.F. = PREFORMED EXPANSION JOINT FILLER
—— — — —— INDICATES EXISTING STRUCTURE

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
(216) 241-7477
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	JLV	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

FORWARD ABUTMENT DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

47/175

142/295

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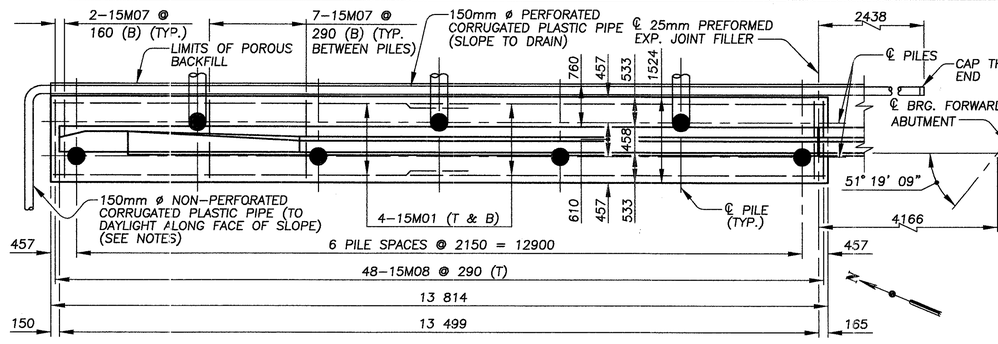
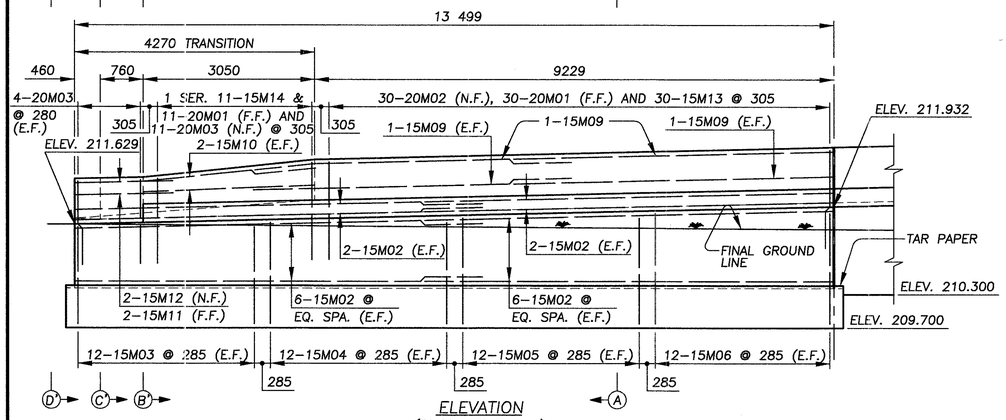
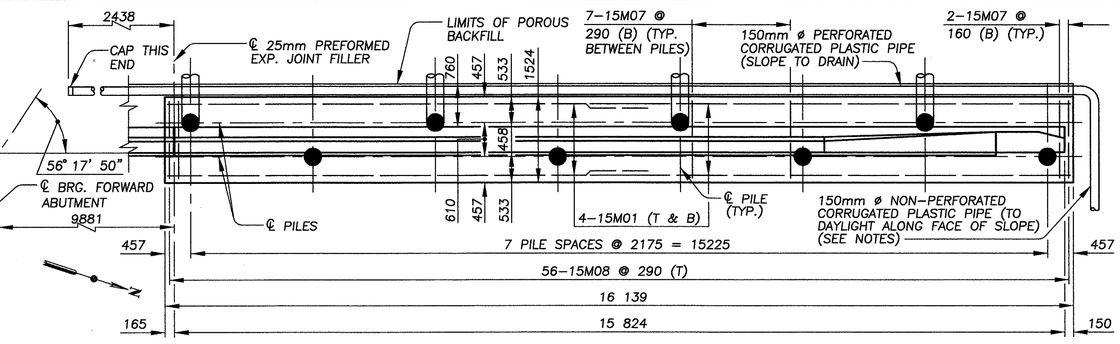


PLAN

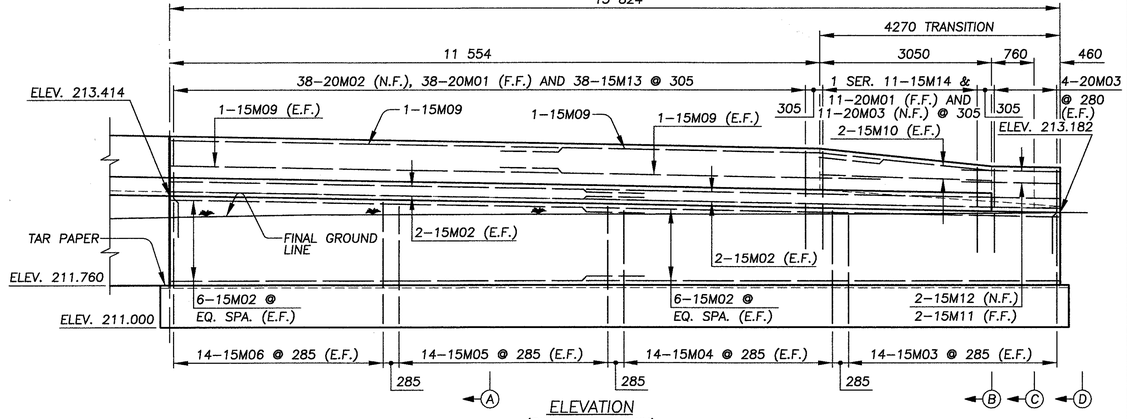


ELEVATION
(PILES NOT SHOWN)
(GUARDRAIL AND TYPE 1 TERMINAL ASSEMBLY NOT SHOWN)

NORTHWEST RETAINING WALL



PLAN



ELEVATION
(PILES NOT SHOWN)
(GUARDRAIL AND TYPE 2 TERMINAL ASSEMBLY NOT SHOWN)

NORTHEAST RETAINING WALL

GUARDRAIL NOTES:

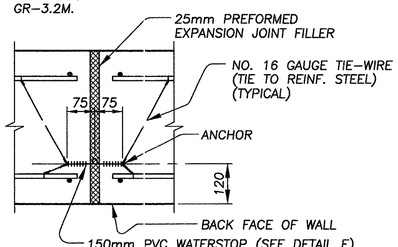
TYPE 1 GUARDRAIL TERMINAL ASSEMBLY SHALL BE USED AT THE NORTHWEST RETAINING WALL, THE REAR ABUTMENT – EAST WINGWALL, AND THE RAMP W–N ABUTMENT – EAST AND WEST WINGWALLS.

TYPE 2 GUARDRAIL TERMINAL ASSEMBLY SHALL BE USED AT THE NORTHEAST RETAINING WALL, AND THE REAR ABUTMENT – WEST WINGWALL.

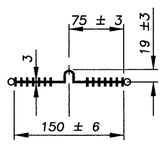
FOR DETAILS OF TYPE 1 GUARDRAIL TERMINAL ASSEMBLY, SEE O.D.O.T. STANDARD DRAWING GR–3.1M.

FOR DETAILS OF TYPE 2 GUARDRAIL TERMINAL ASSEMBLY, SEE O.D.O.T. STANDARD DRAWING GR–3.2M.

REQUIRED LAP LENGTH	
NO. 15M BARS HORIZONTAL	1020mm MINIMUM

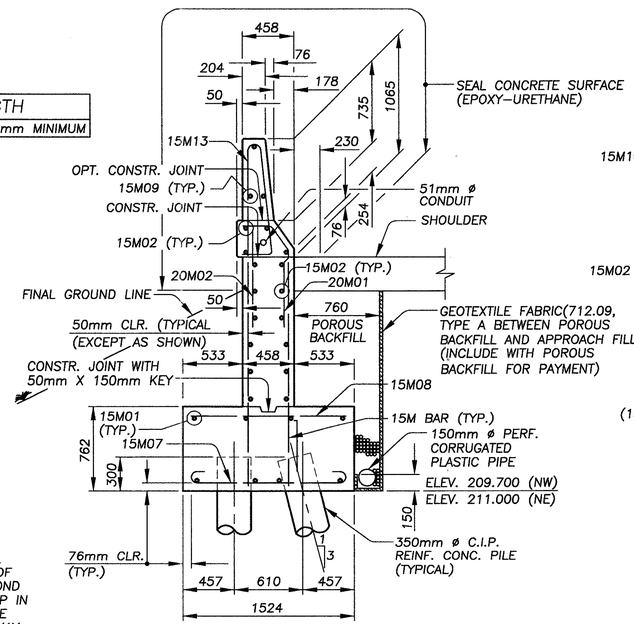


WATERSTOP DETAIL

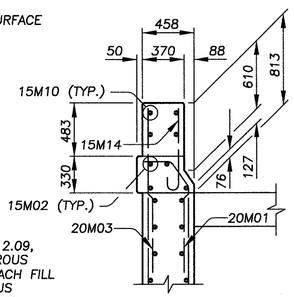


DETAIL E

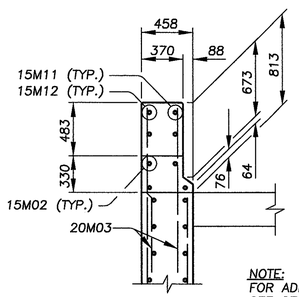
*FOR THE FIRST POUR THE WATERSTOP SHALL BE HELD SECURELY IN PLACE BY THE USE OF SPLIT FORMS AND TIE–WIRES. FOR THE SECOND POUR, SECURE THE FREE END OF WATERSTOP IN PROPER POSITION WITH TIE–WIRES. ALTERNATE METHODS, AS APPROVED BY THE ENGINEER MAY BE USED TO ENSURE THE CORRECT POSITIONING OF THE WATERSTOP.



SECTION A–A

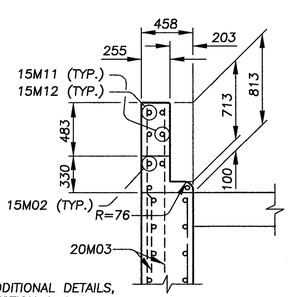


SECTION B–B
(SHOWN)
(15M11 AND 15M12 BARS NOT SHOWN)
SECTION B'–B'
(OPPOSITE HAND)



SECTION C–C
(SHOWN)
SECTION C'–C'
(OPPOSITE HAND)

NOTE:
FOR ADDITIONAL DETAILS, SEE SECTION A–A.



VIEW D–D
(SHOWN)
VIEW D'–D'
(OPPOSITE HAND)

NOTES:

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS AND STATIONS ARE IN METERS.

ALL REINFORCING BAR MARKS FOR THE NORTHWEST RETAINING WALL SHALL BE PREFIXED NW.
ALL REINFORCING BAR MARKS FOR THE NORTHEAST RETAINING WALL SHALL BE PREFIXED NE.

FOR SLOPE TREATMENT AT THE 150mm PIPE OUTLET, SEE SHEET 41 OF 175.

FOR FORWARD ABUTMENT DETAILS, SEE SHEETS 45 THRU 47 OF 175.

FOR PILE NUMBERS, PILE NOTES AND LEGEND, SEE SHEET 37 OF 175.

FOR REINFORCEMENT SCHEDULE, SEE SHEET 167 OF 175.

THE FOLLOWING ABBREVIATIONS ARE USED:

T = TOP	B = BOTTOM
TYP. = TYPICAL	E.F. = EACH FACE
N.F. = NEAR FACE	F.F. = FAR FACE

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	JLV	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

RETAINING WALLS
BRIDGE NO. CUY–77–23.458
OVER KINGSBURY RUN

CUY–77–23.458

48/175

143/295

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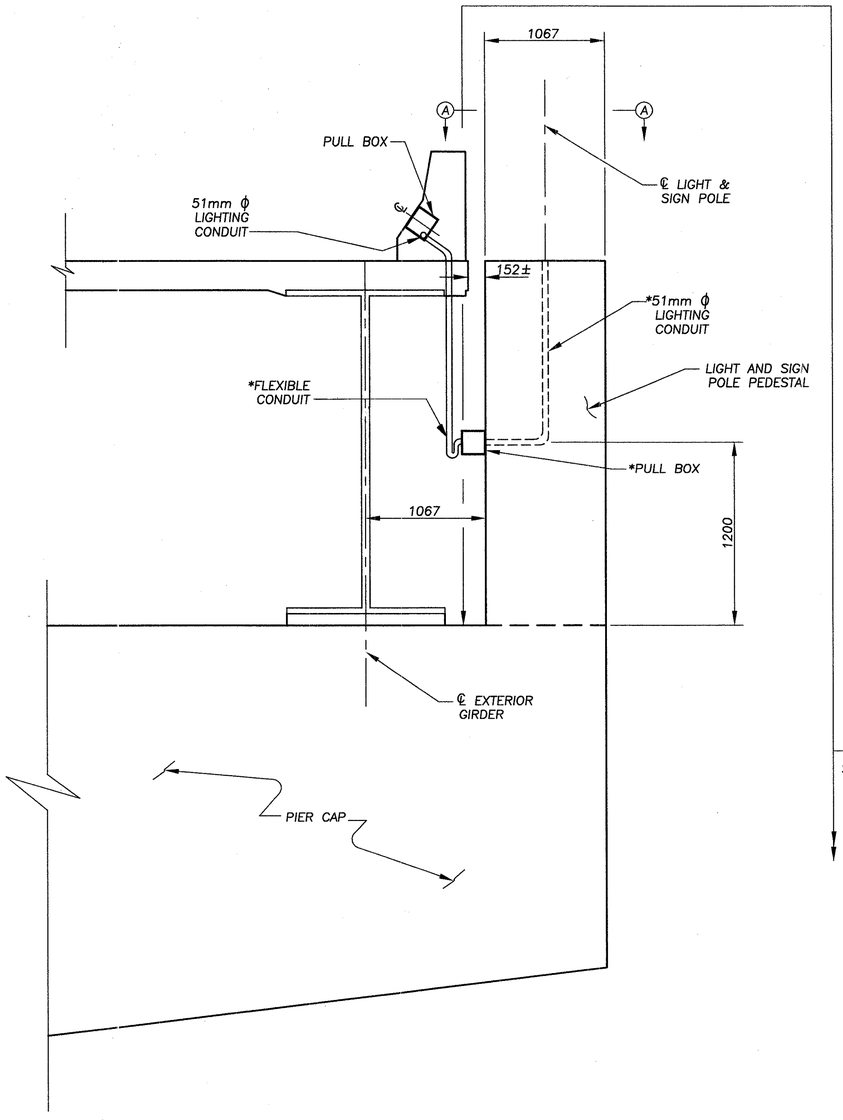
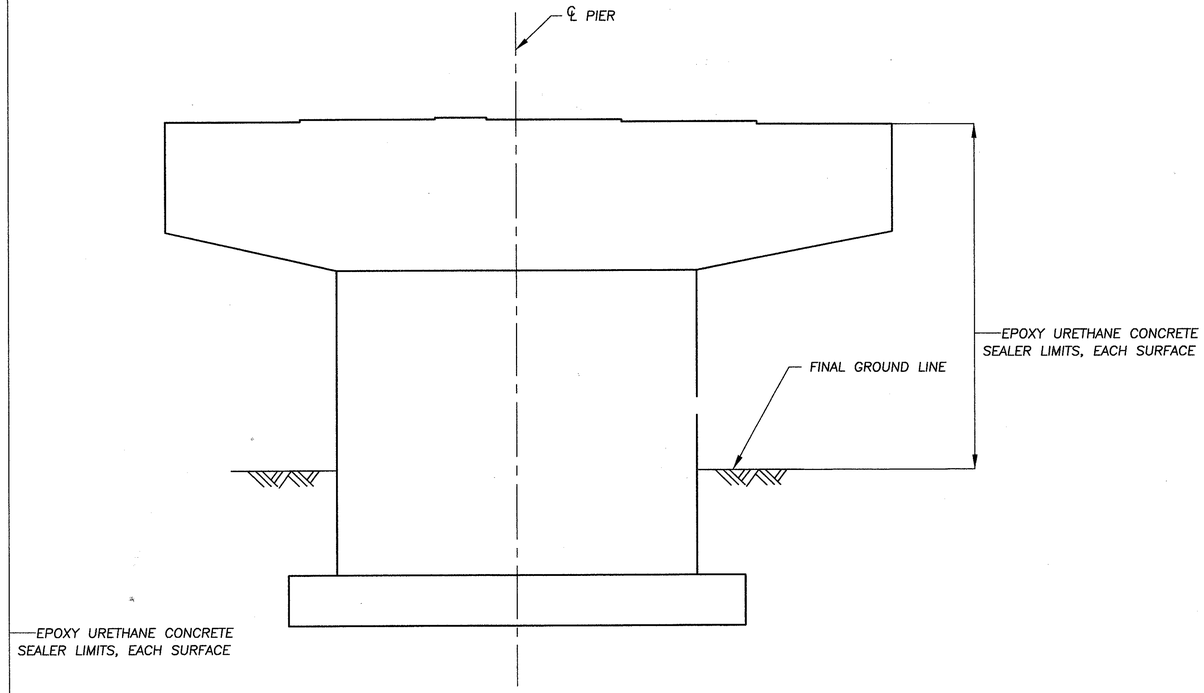


LIGHT AND SIGN POLE PEDESTAL DETAIL AT PIER 8R

(DETAILS AT PIER 8L AND 2L SIMILAR)

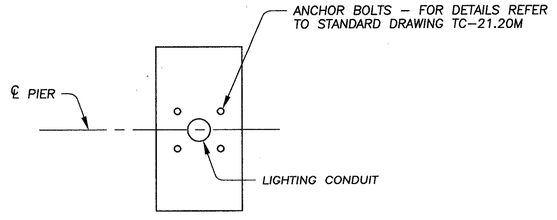
* – INCLUDE WITH ITEM 631 – SIGN SERVICE, AS PER PLAN, SEE TRAFFIC CONTROL GENERAL SUMMARY.

NOTES:
FOR DETAILS OF LIGHT AND SIGN POLE PEDESTAL NOT SHOWN SEE APPROPRIATE PIER SHEETS:
AT PIER 8R, SEE SHEET 64 OF 175.
AT PIER 2L, SEE SHEET 71 OF 175.
AT PIER 8L, SEE SHEET 76D OF 175.
FOR ANCHOR BOLT LAYOUT OF LIGHT AND SIGN POLE, SEE STANDARD DRAWING TC21.20M.



PIER ELEVATION

(THE TOP OF THE PIER CAPS OF PIERS 4, 7, AND 10 (RIGHT AND LEFT) SHALL BE EPOXY–URETHANE COATED AS WELL)



VIEW A–A

(PLAN VIEW OF LIGHT & SIGN POLE PEDESTAL)

PIER NOTES

1. BRIDGE SEAT REINFORCING: REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE–SETTING OF BEARING ANCHORS.

2. REINFORCEMENT WITH MECHANICAL CONNECTORS IN THE TOP LAYERS OF PIER CAPS SHALL BE PLACED SO CONNECTORS ARE STAGGERED BOTH HORIZONTALLY AND VERTICALLY.

3. THE FOLLOWING ABBREVIATIONS ARE USED:

EL. – ELEVATION	T&B – TOP AND BOTTOM
TYP. – TYPICAL	C.I.P. – CAST–IN–PLACE
E.F. – EACH FACE	P.E.J.F. – PREFORMED
C.J. – CONSTRUCTION JOINT	EXPANSION JOINT FILLER
CLR. – CLEAR	EQ. SPA. – EQUAL SPACES

4. FOR PILING PLAN, SEE SHEETS 35 THRU 37 OF 175.

5. FOR POT BEARING DETAILS AND ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

6. FOR LAMINATED ELASTOMERIC BEARING DETAILS, SEE SHEET 125 AND 126 OF 175.

7. FOR DETAILS OF TEMPORARY SHEETING AT PIERS 1R AND 5R, SEE SHEET 20 OF 175.

8. FOR DETAILS OF TEMPORARY SHEETING AT PIER 6R, SEE SHEET 21 AND 22 OF 175.

9. FOR DETAILS OF TEMPORARY SHEETING AT PIER 7R, SEE SHEET 23 AND 24 OF 175.

metric units

DESIGN AGENCY
HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114–1724

DESIGNED	DRAWN	REVIEWED	DATE
JMG	JMG	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

PIER NOTES AND DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

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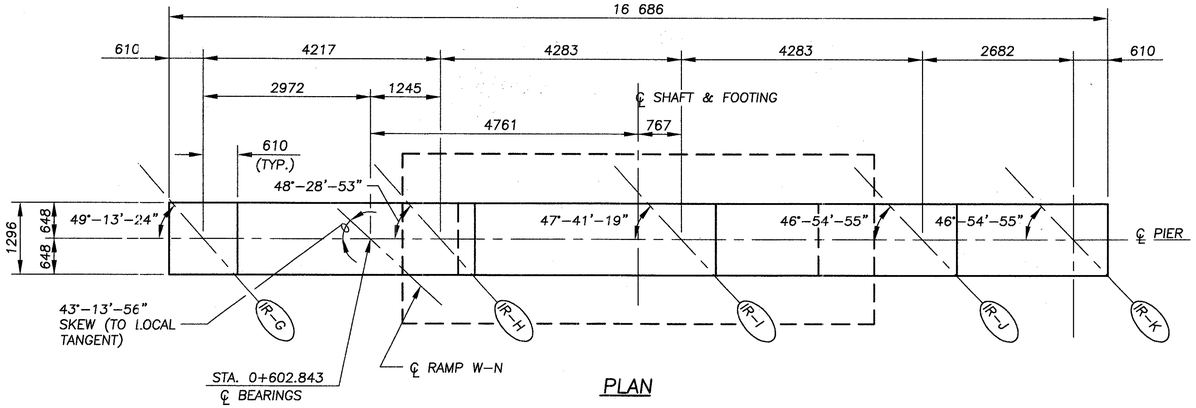
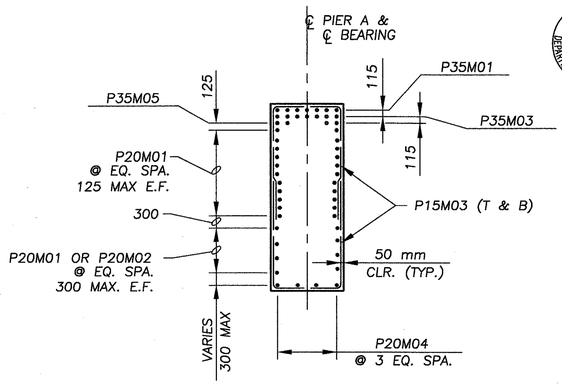
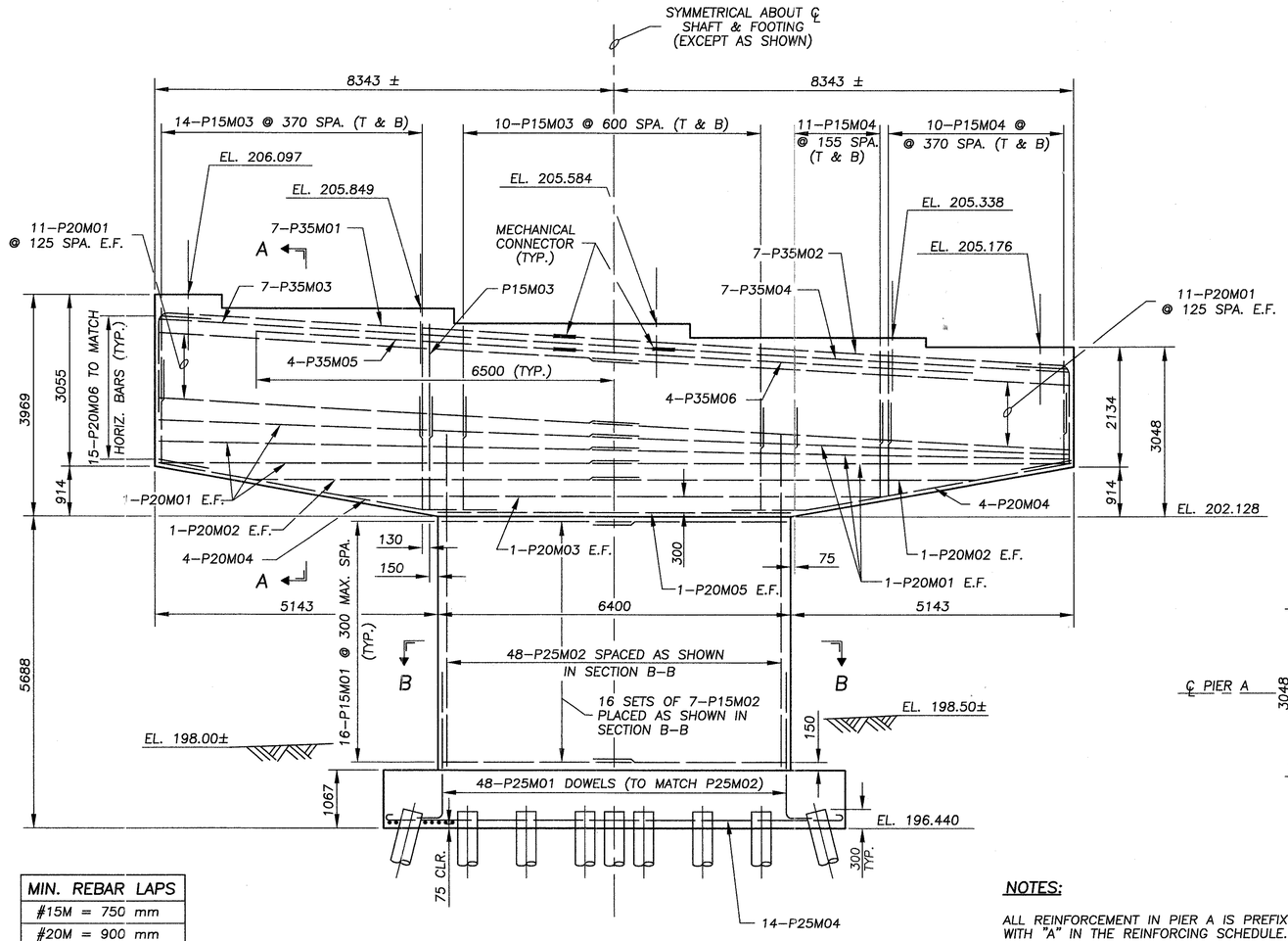


PLAN

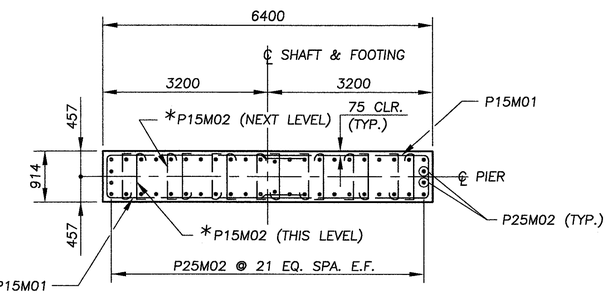


SECTION A–A



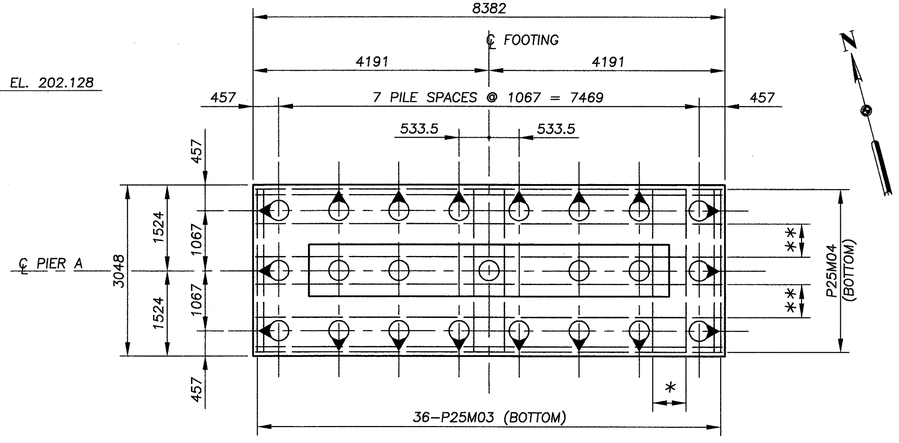
ELEVATION

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm



* SPACED @ 300 mm MAX. VERTICALLY. ALTERNATE HORIZONTAL LOCATIONS OF P15M02 BARS EACH LEVEL. EVERY FOURTH (4TH) VERTICAL BAR IS TIED.

SECTION B–B



FOOTING PLAN

* = 5–P25M03 BETWEEN PILES (TYP. EXCEPT AS SHOWN)

** = 5–P25M04 BETWEEN PILES

NOTES:

ALL REINFORCEMENT IN PIER A IS PREFIXED WITH "A" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

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1375 East 9th Street
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MJL/JV		1806726	

PIER A DETAILS
BRIDGE NO. CUY–77–23458
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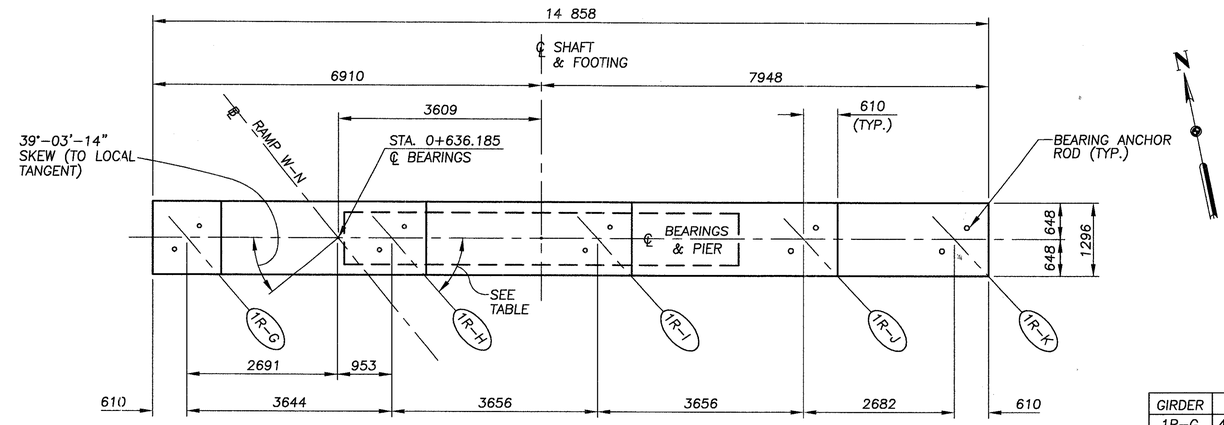
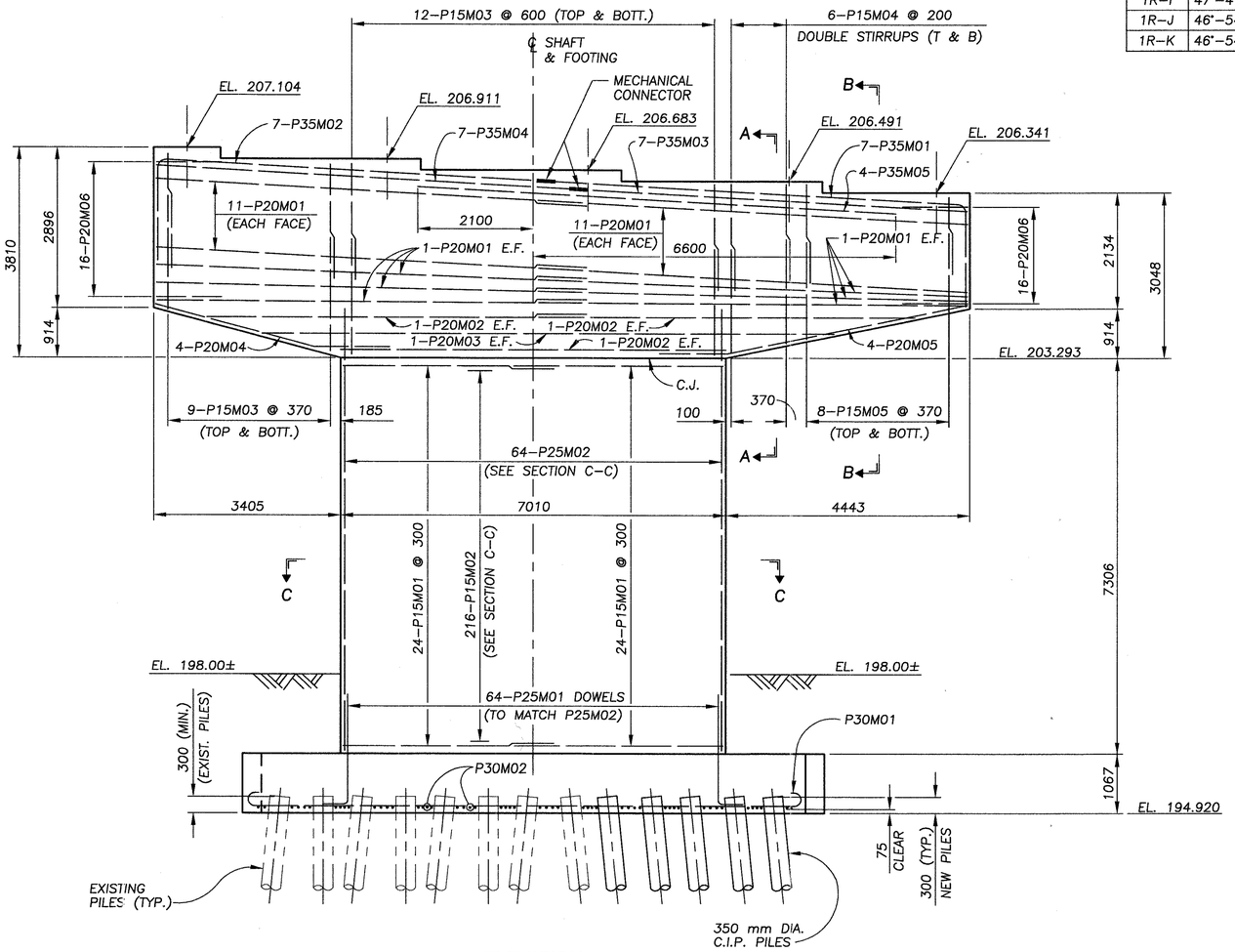
CUY–77–23.458

\\24621\techprod\drawings\bridge\PIER–A.DWG



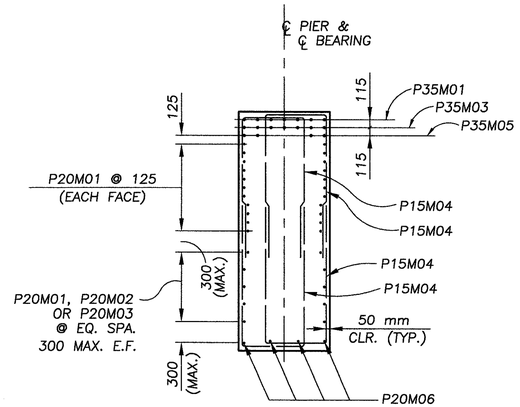
PLAN

GIRDER	ANGLE
1R-G	49°-13'-24"
1R-H	48°-28'-53"
1R-I	47°-41'-19"
1R-J	46°-54'-55"
1R-K	46°-54'-55"

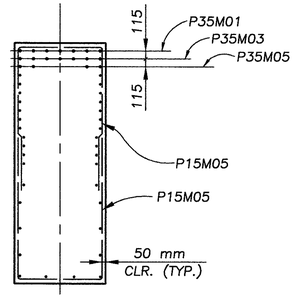


ELEVATION

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm



SECTION A-A



SECTION B-B
(FOR DETAIL NOT SHOWN, SEE SECTION A-A)

NOTES:

ALL REINFORCEMENT IN PIER B IS PREFIXED WITH "B" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR SECTION C-C & FOOTING PLAN, SEE SHEET 52 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

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PIER B DETAILS
BRIDGE NO. CUY-77-23458 OVER KINGSBURY RUN

CUY-77-23.458

51/175

146/295

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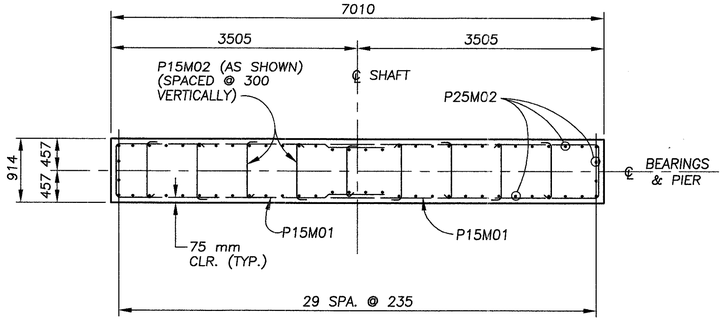
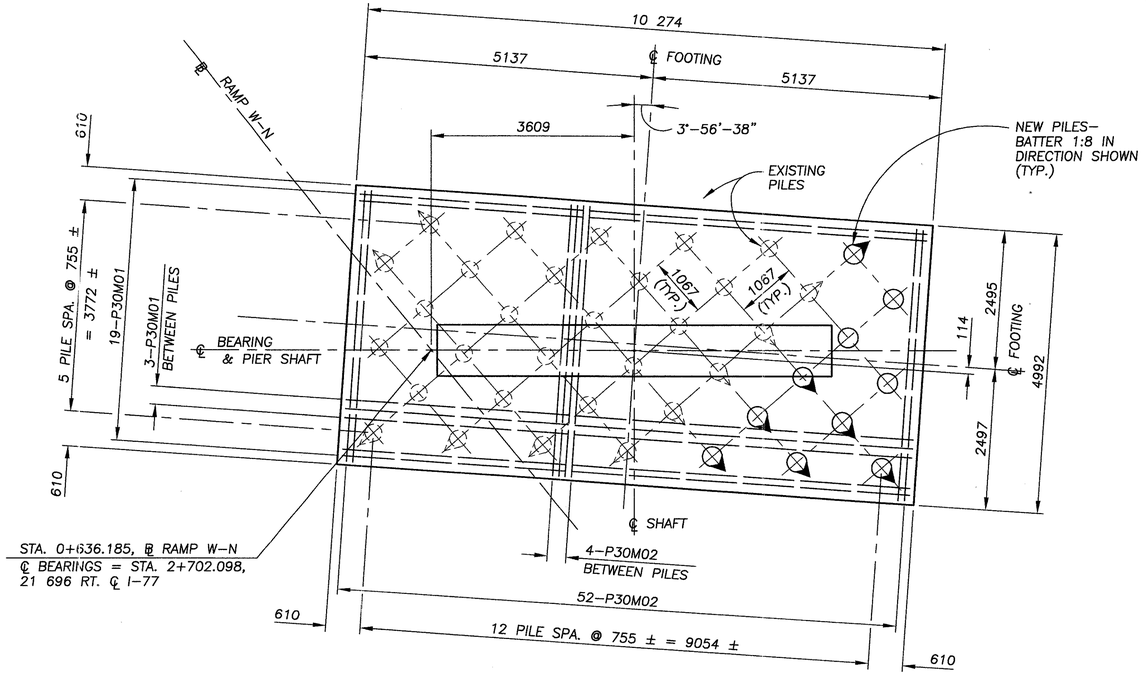
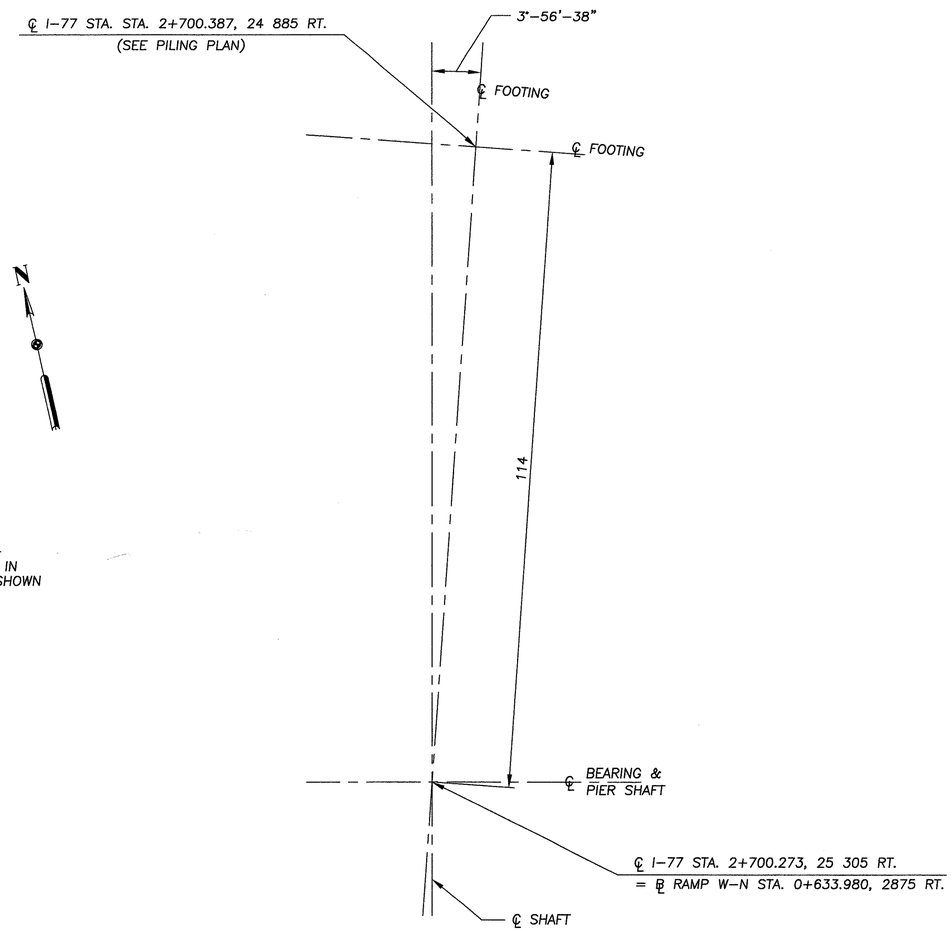


SECTION C–C



FOOTING PLAN



GEOMETRIC PLAN

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

\24621\techprod\drawings\bridge\PIER–B2.DWG

metric units

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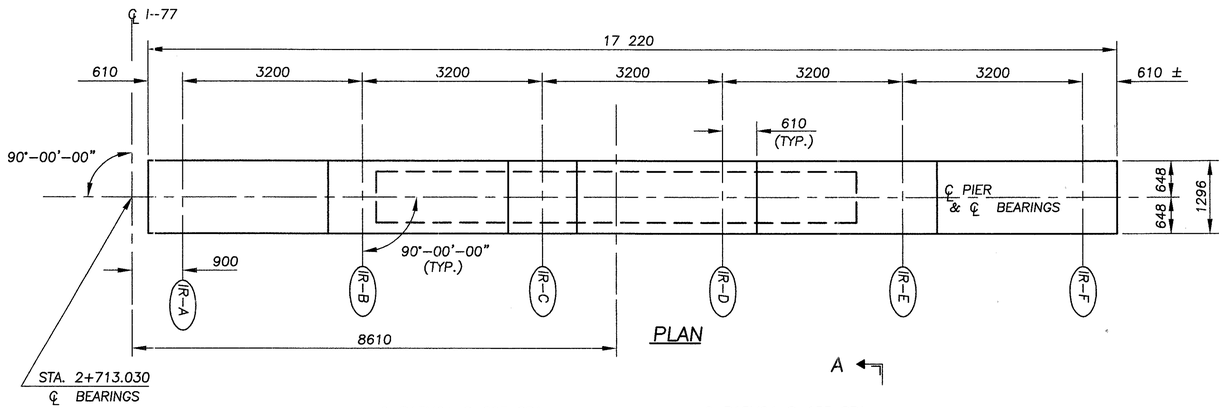
PIER B DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

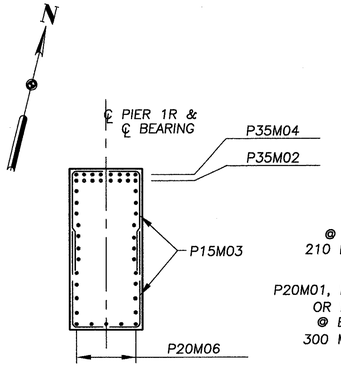
CUY–77–23.458

52/175

147/295

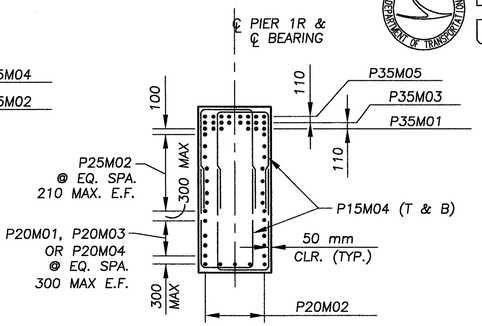


PLAN

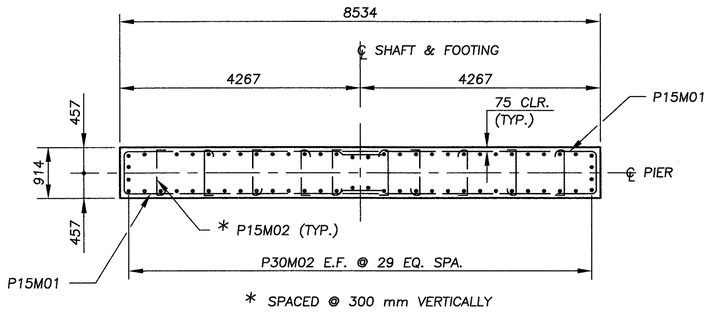


SECTION B–B

(FOR DETAILS NOT SHOWN SEE SECTION A–A)

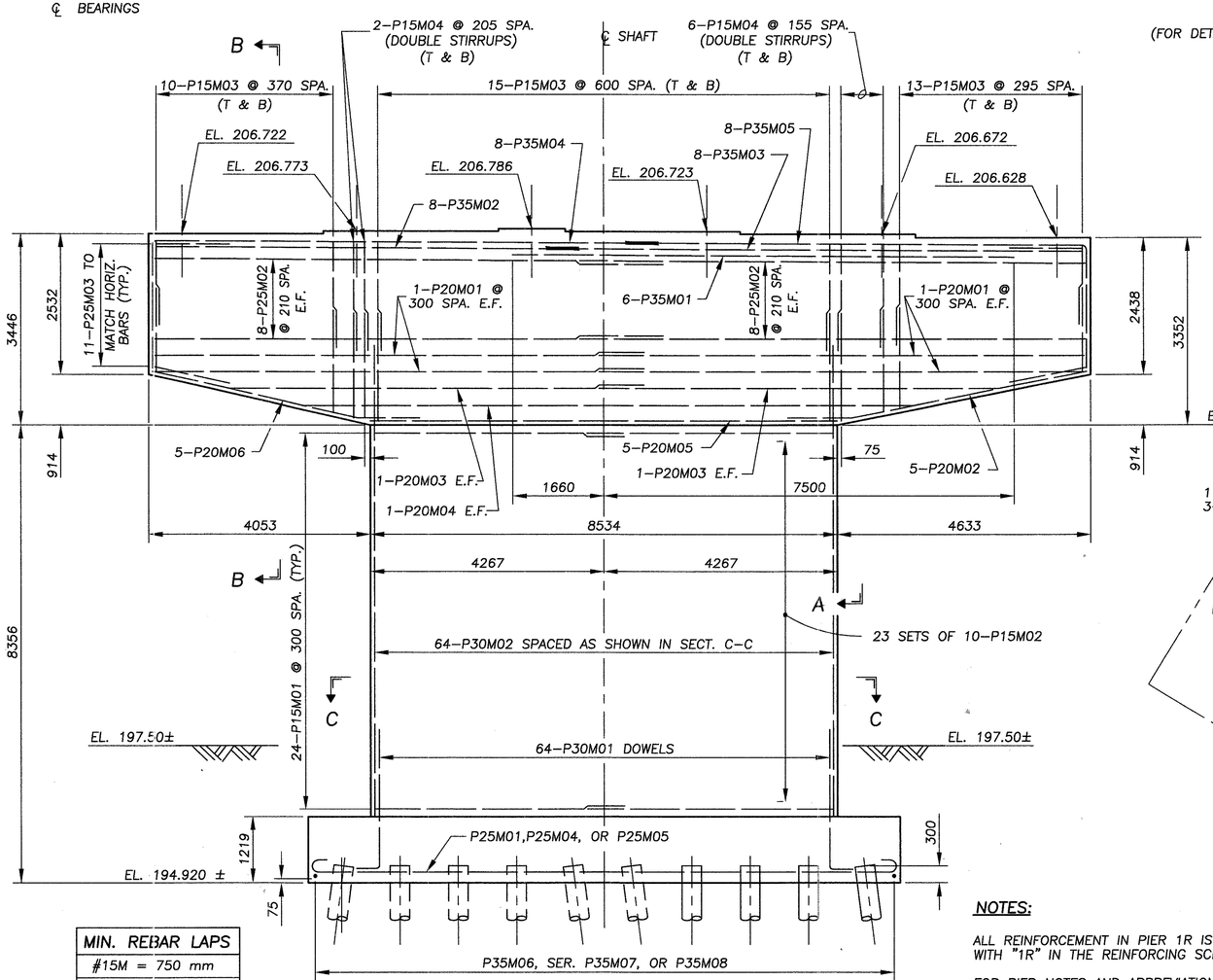


SECTION A–A



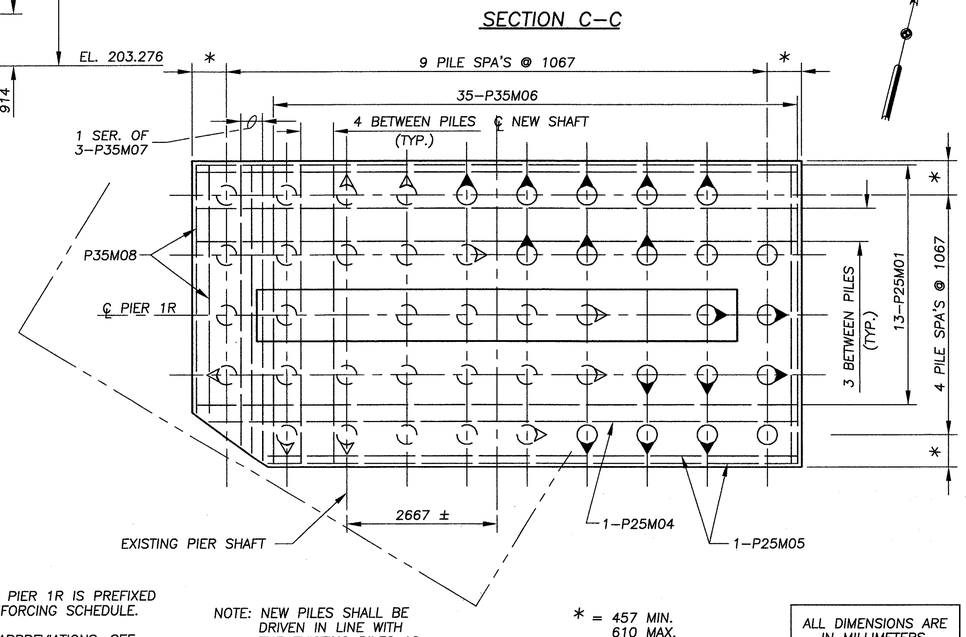
* SPACED @ 300 mm VERTICALLY

SECTION C–C



ELEVATION

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#30M = 2560 mm



NOTE: NEW PILES SHALL BE DRIVEN IN LINE WITH THE EXISTING PILES AS SHOWN.

* = 457 MIN. 610 MAX.

FOOTING AND PILING LAYOUT

NOTES:

ALL REINFORCEMENT IN PIER 1R IS PREFIXED WITH "1R" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

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PIER 1R DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

53/175

148/295

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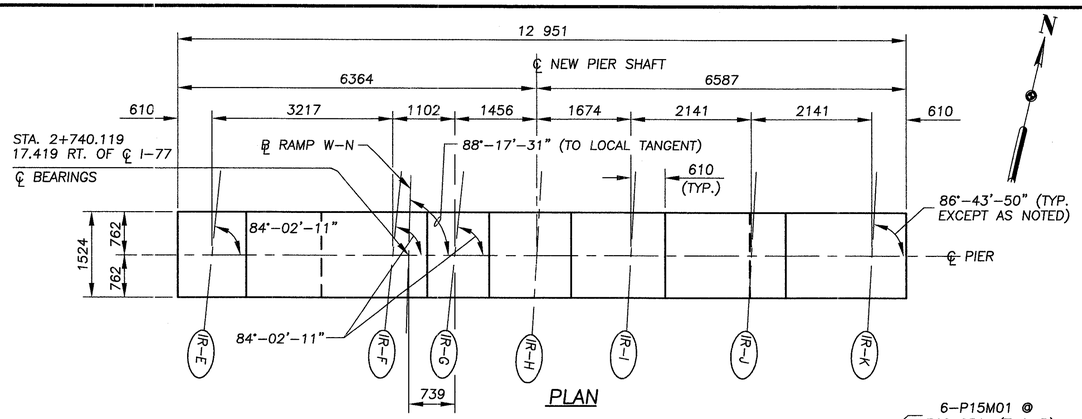
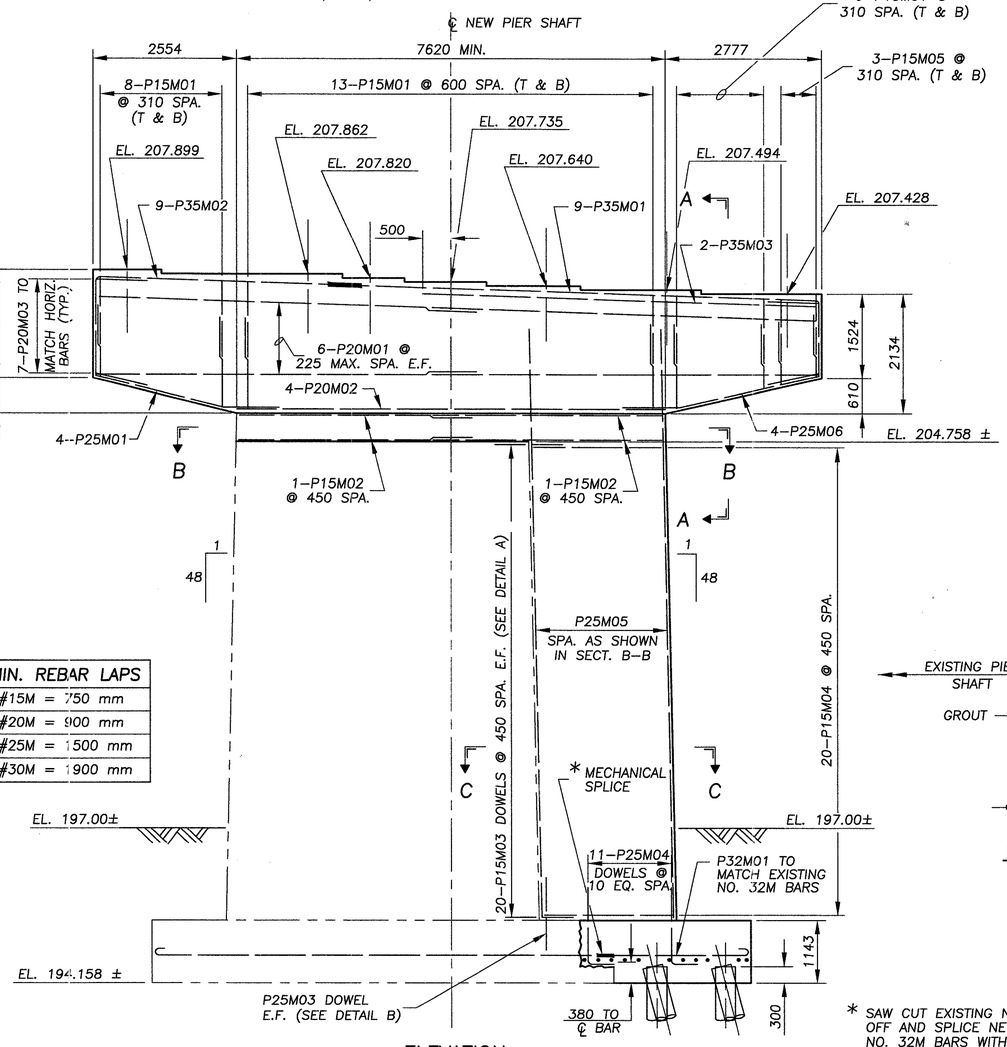
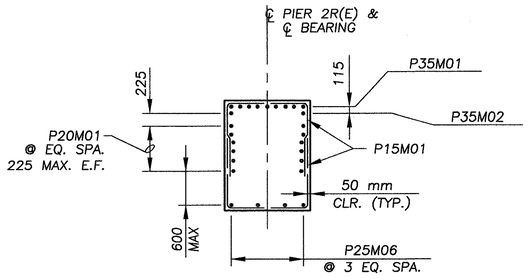


PLAN

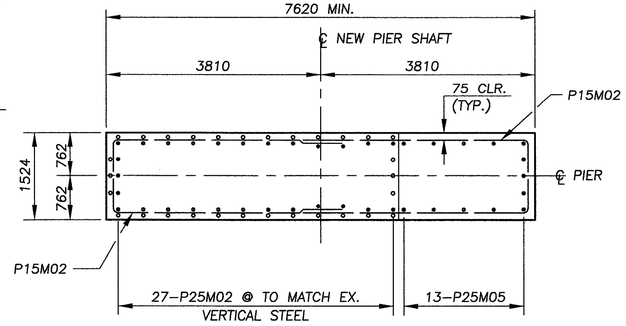


ELEVATION

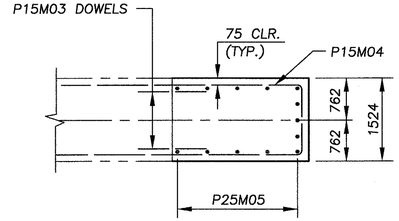
MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#30M = 1900 mm



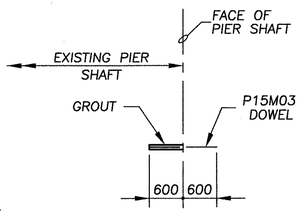
SECTION A–A



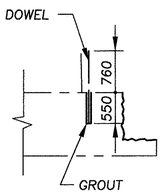
SECTION B–B



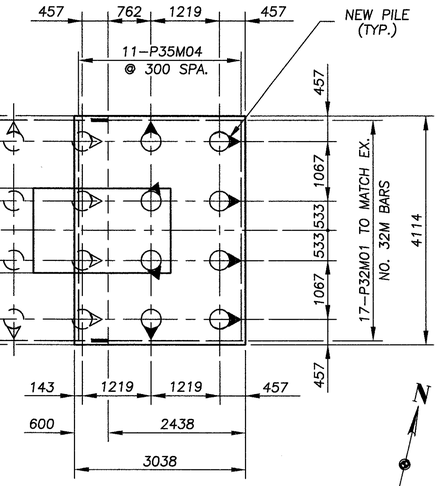
SECTION C–C



DETAIL A



DETAIL B



FOOTING PLAN

* SAW CUT EXISTING NO. 32M BAR 180° HOOK OFF AND SPLICE NEW P32M01 BARS TO EXISTING NO. 32M BARS WITH MECHANICAL SPLICES.

NOTES:

ALL REINFORCEMENT IN PIER 2RE IS PREFIXED WITH "2RE" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street - Suite 2500
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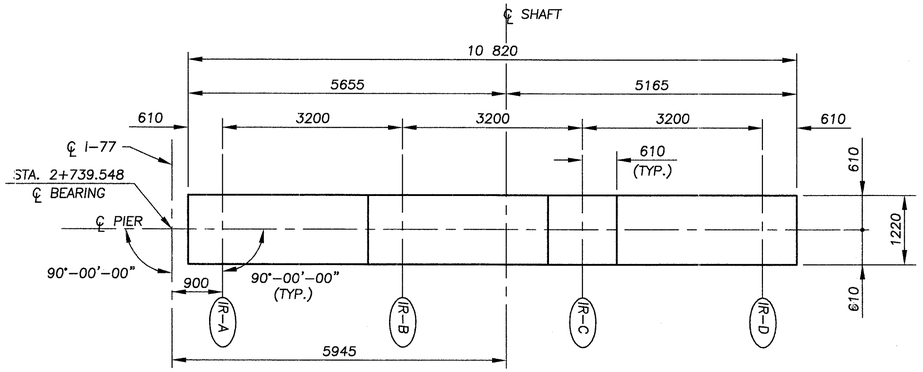
MJL/JV		1806726	

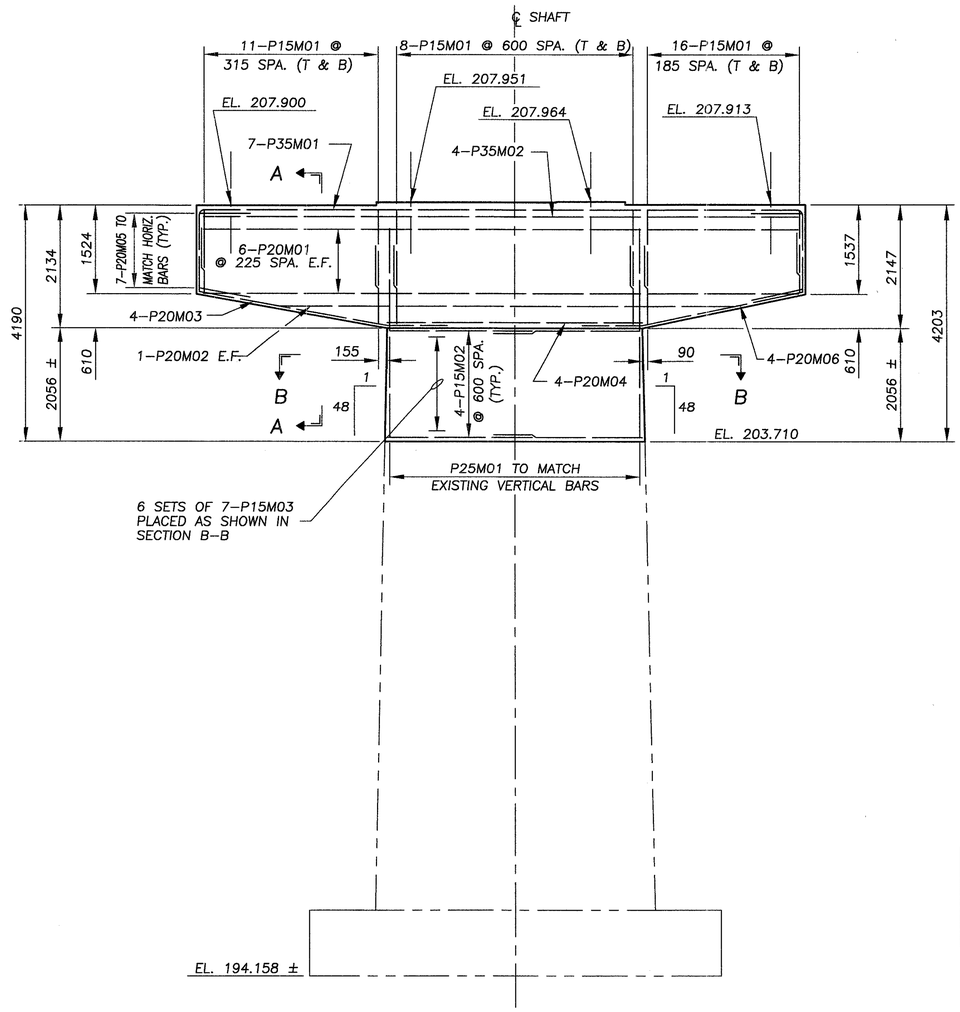
PIER 2RE DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

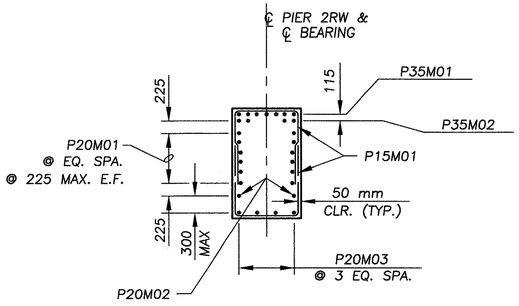
54/175
149/295



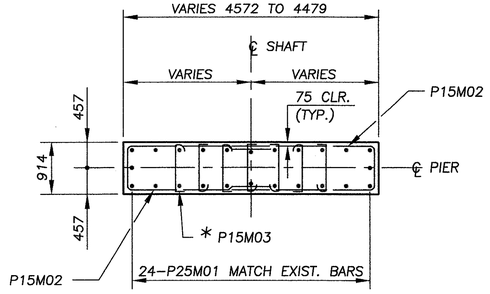
PLAN



ELEVATION



SECTION A–A



SECTION B–B

* SPACED @ 300 mm VERTICALLY

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm

NOTES:

ALL REINFORCEMENT IN PIER 2RW IS PREFIXED WITH "2RW" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

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PIER 2RW DETAILS
BRIDGE NO. CUY-77-23458
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CUY-77-23.458

55/175

150/295

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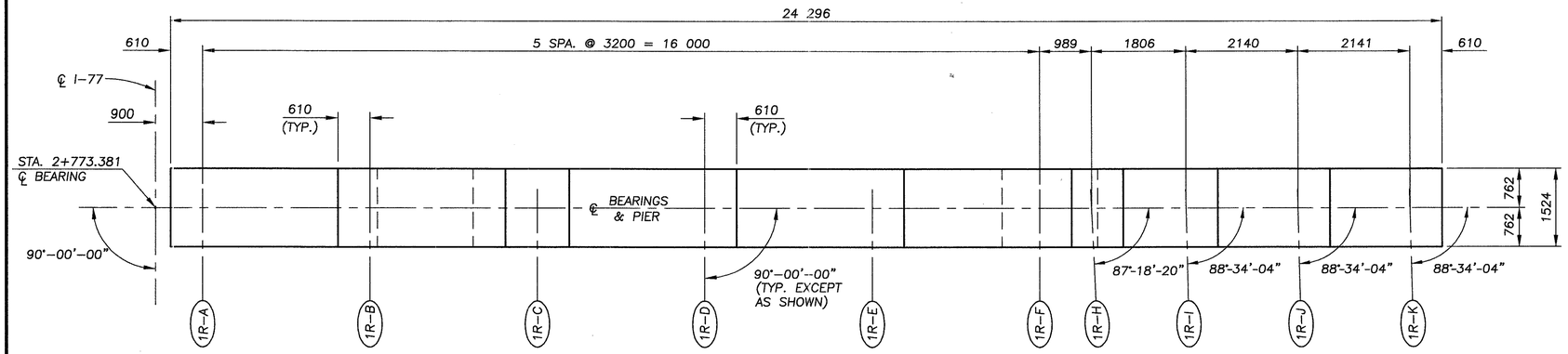
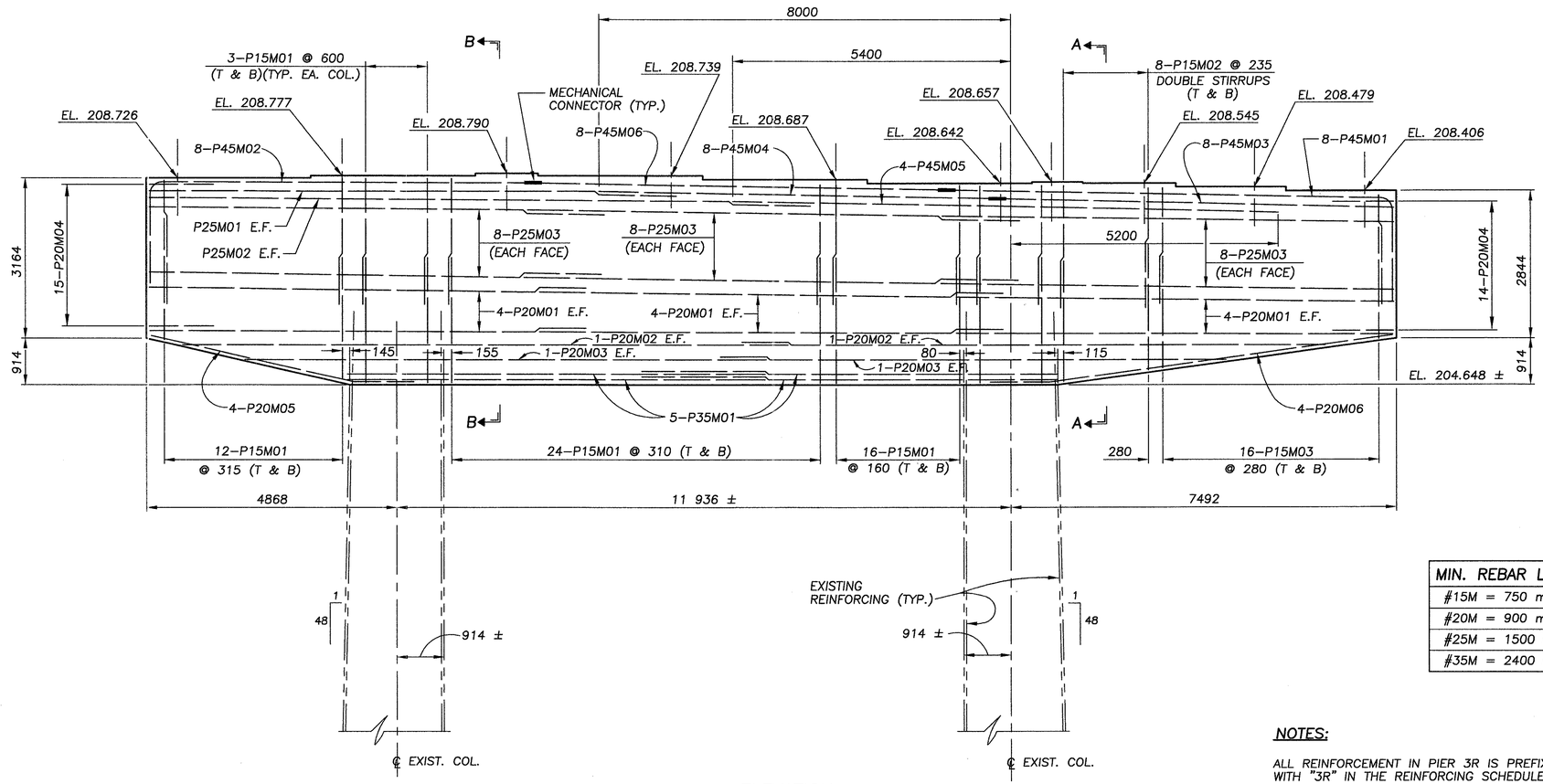
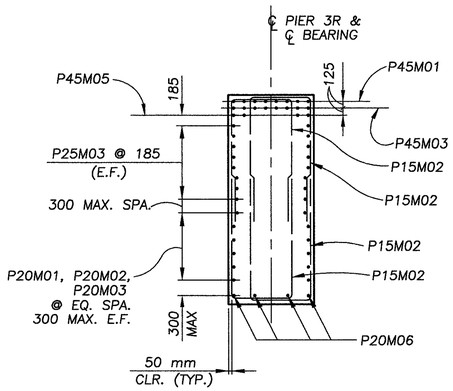


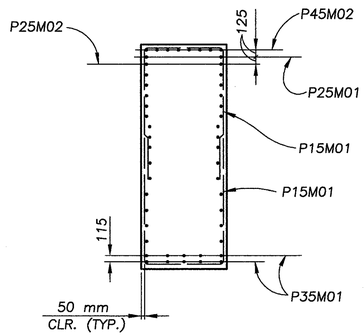
PLAN



ELEVATION



SECTION A-A



SECTION B-B

(FOR DETAILS NOT SHOWN, SEE SECTION A-A)

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#35M = 2400 mm

NOTES:

ALL REINFORCEMENT IN PIER 3R IS PREFIXED WITH "3R" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

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PIER 3R DETAILS
BRIDGE NO. CUY-77-23458
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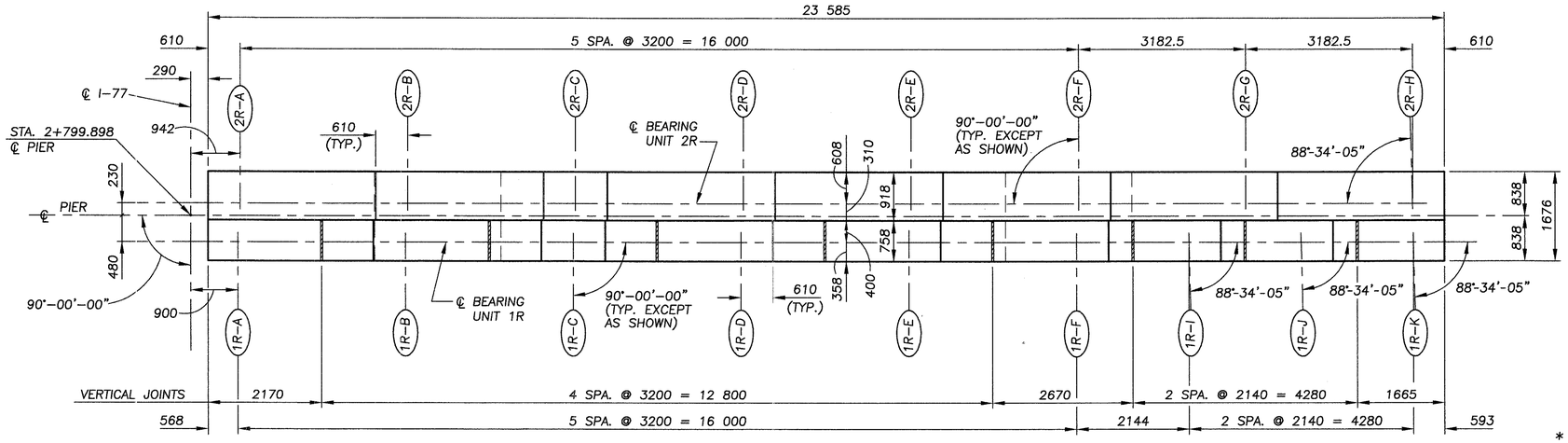
CUY-77-23.458

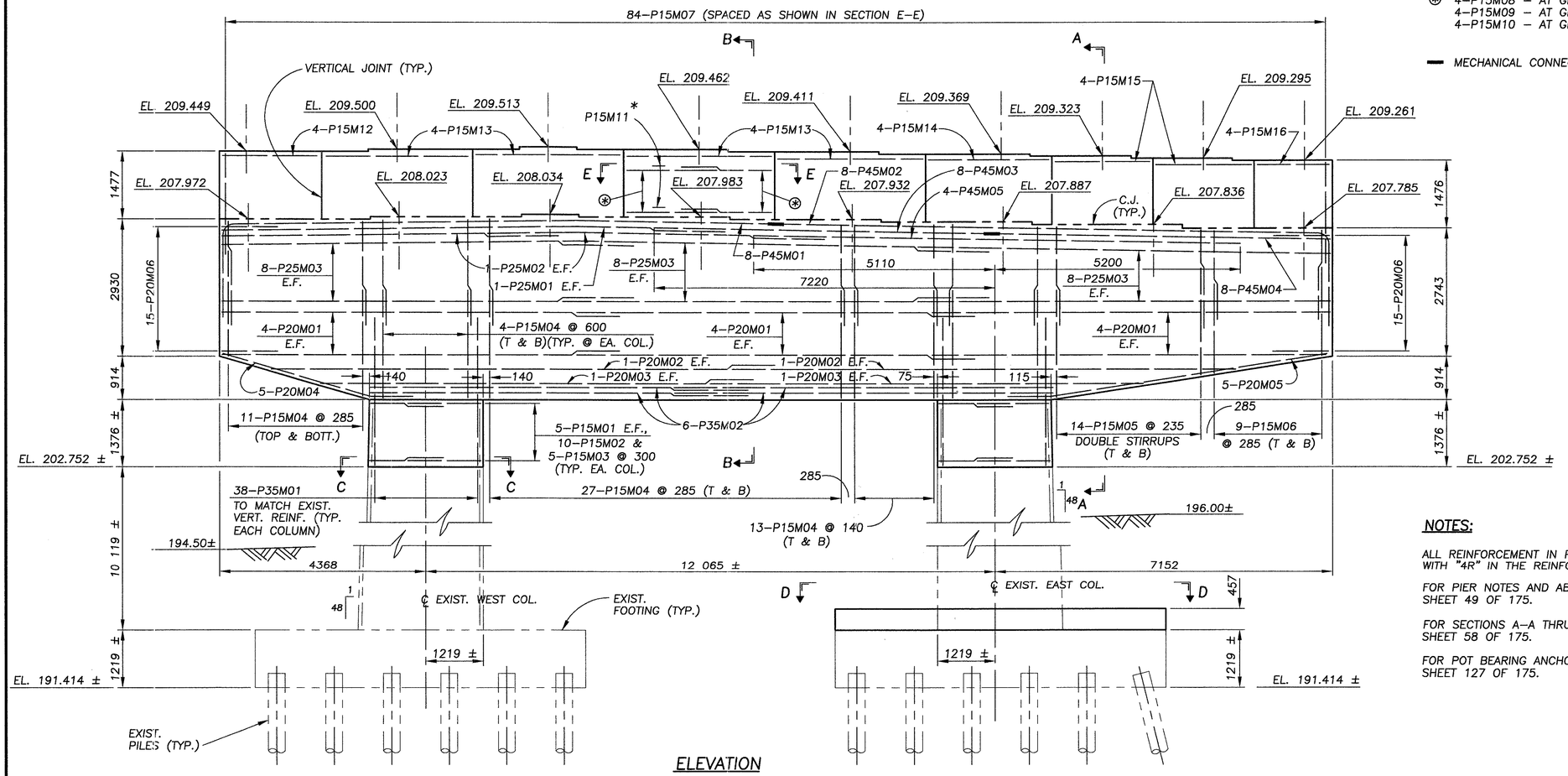
56/175

151/295

\24621\techprod\drawings\bridge\PIER-3R.DWG



PLAN



ELEVATION

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#35M = 2400 mm

* 8–P15M11 – AT GIRDERS 1R–A, IR–F & 1R–I thru 1R–K
12–P15M11 – AT GIRDERS 1R–B thru 1R–E

⊛ 4–P15M08 – AT GIRDERS 1R–A & IR–I thru 1R–K
4–P15M09 – AT GIRDERS 1R–B thru 1R–E
4–P15M10 – AT GIRDER 1R–F

MECHANICAL CONNECTOR

NOTES:

ALL REINFORCEMENT IN PIER 4R IS PREFIXED WITH "4R" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR SECTIONS A–A THRU E–E, SEE SHEET 58 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

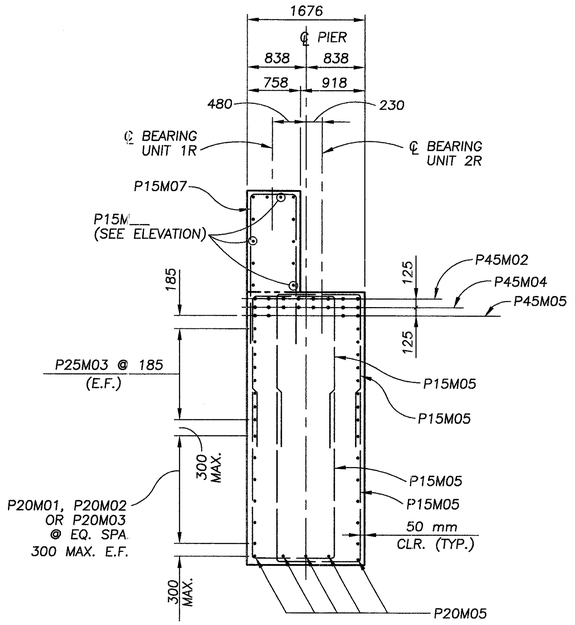
DESIGNED DHS
DRAWN SJR
CHECKED MJL/JV
REVIEWED GT
DATE 9–12–97
REVISED
STRUCTURE FILE NUMBER 1806726

PIER 4R DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

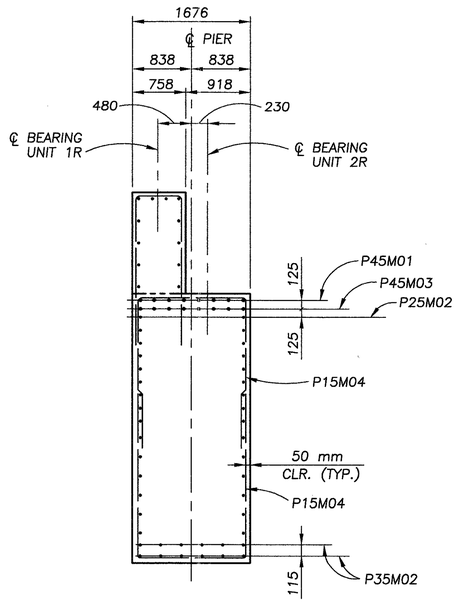
CUY–77–23.458

57/175
152/295

\24621\techprod\drawings\bridge\PIER-4R1.DWG

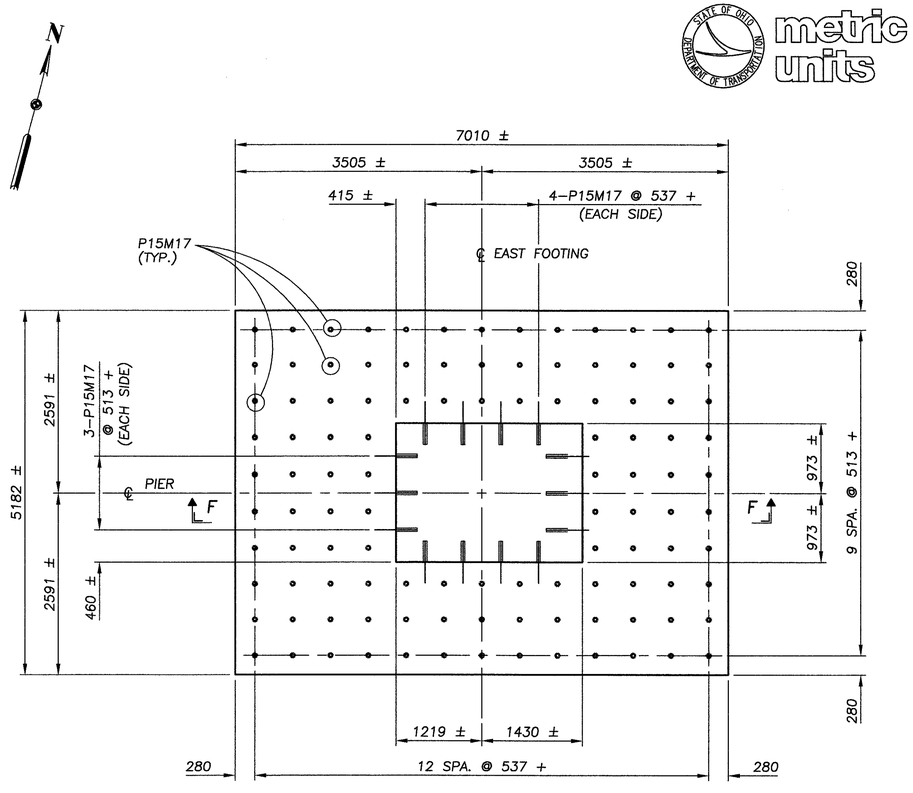


SECTION A–A

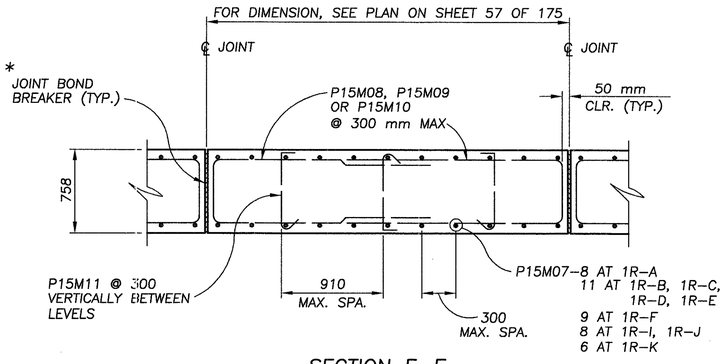


SECTION B–B

(FOR DETAIL NOT SHOWN, SEE SECTION A–A)

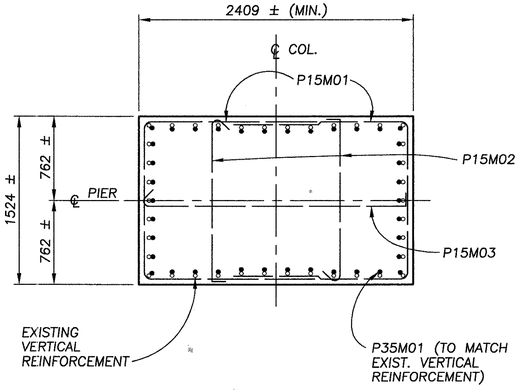


SECTION D–D

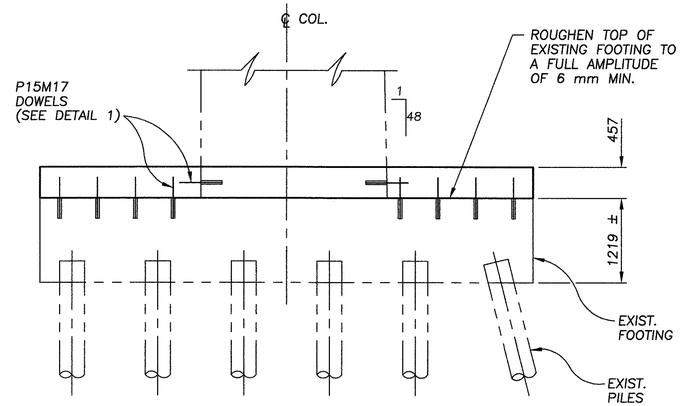


SECTION E–E

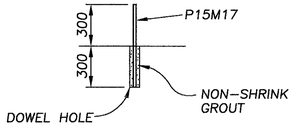
* JOINT BOND BREAKER SHALL BE 13 mm P.E.J.F.



SECTION C–C



SECTION F–F



DETAIL 1

(124 PLACES)

NOTE: ADJUST DOWEL LOCATIONS AS REQUIRED TO MISS EXIST. REBARS.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

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1375 East Ninth Street
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MJL/JV		1806726	

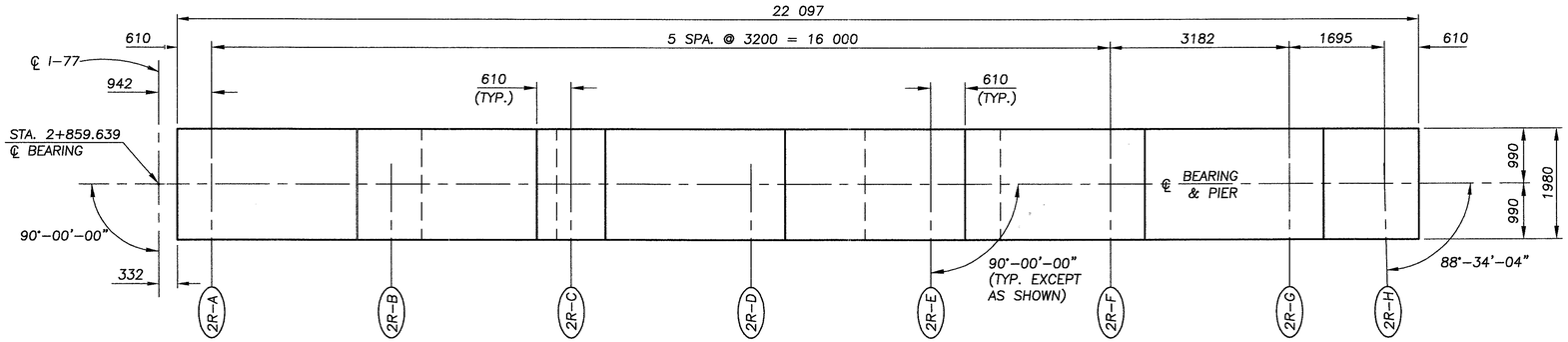
PIER 4R DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

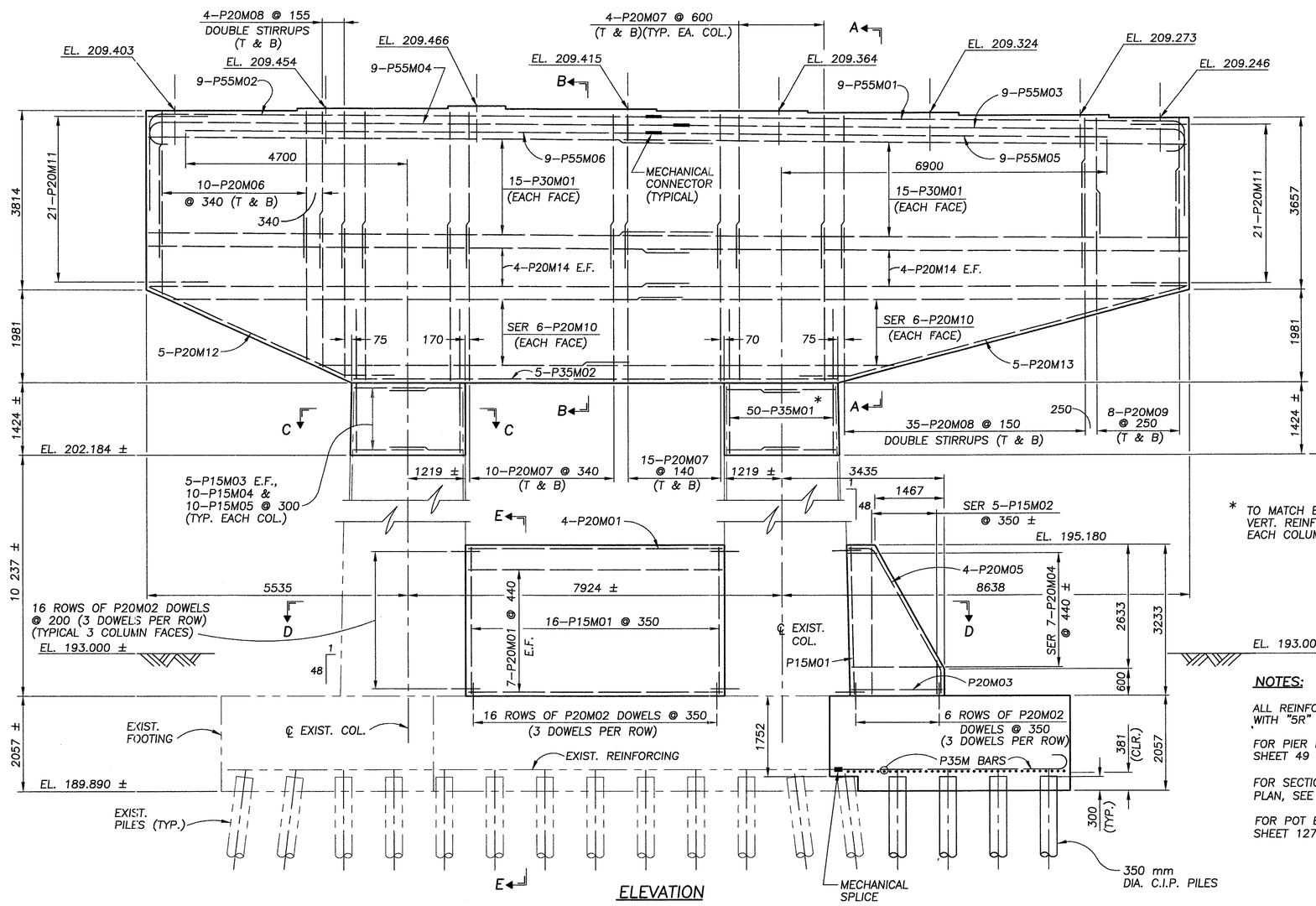
58/175

153/295

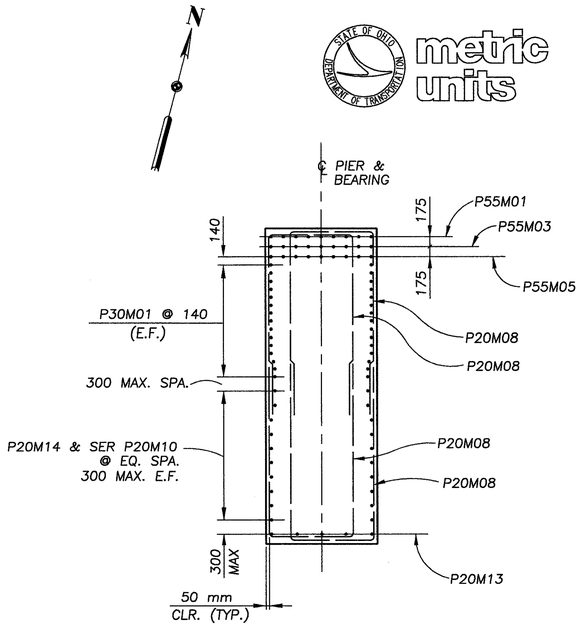
\24621\techprod\drawings\bridge\PIER-4R2.DWG



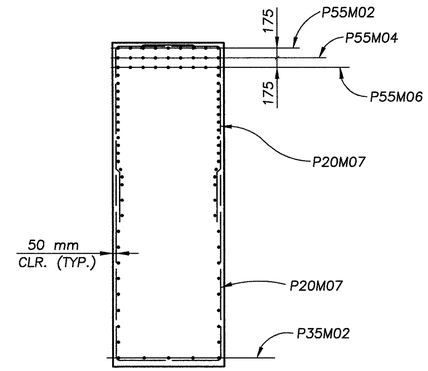
PLAN



ELEVATION



SECTION A-A



SECTION B-B

(FOR DETAILS NOT SHOWN, SEE SECTION A-A)

* TO MATCH EXIST. VERT. REINF. (TYP. EACH COLUMN)

NOTES:

ALL REINFORCEMENT IN PIER 5R IS PREFIXED WITH "5R" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR SECTIONS C-C, D-D, E-E & PARTIAL FOOTING PLAN, SEE SHEET 60 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

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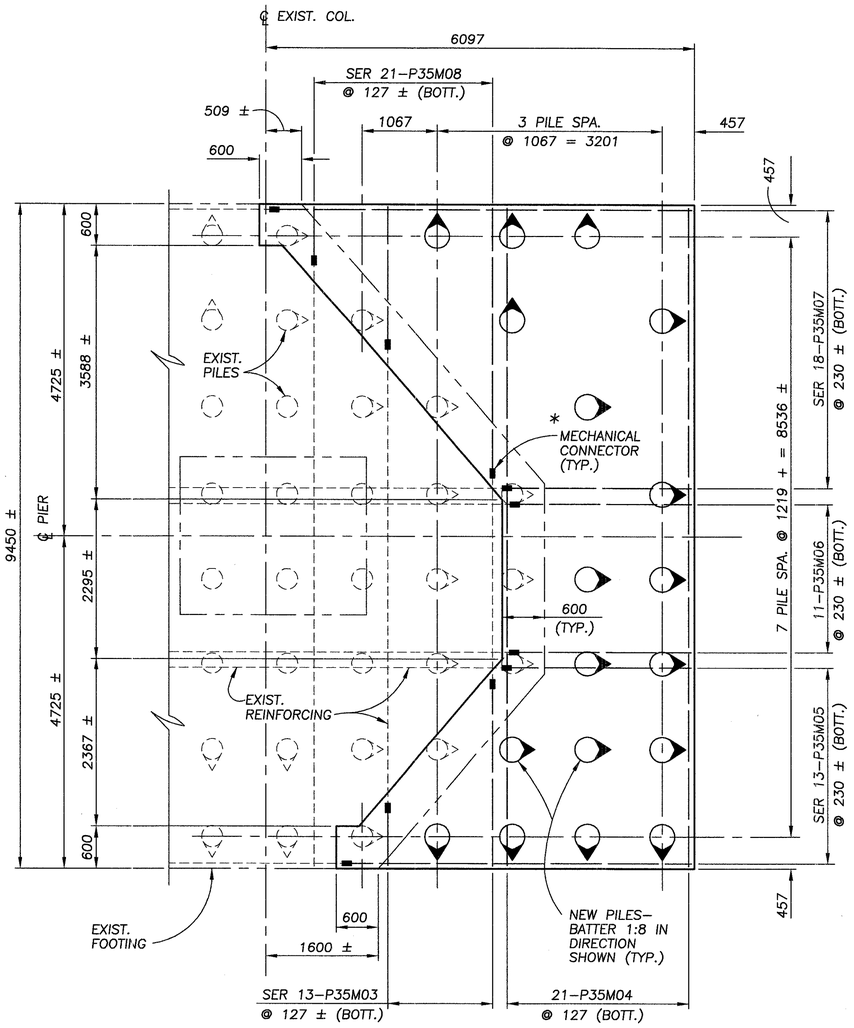
DATE 9-12-97
STRUCTURE FILE NUMBER 1806726

PIER 5R DETAILS

BRIDGE NO. CUY-77-23458 OVER KINGSBURY RUN

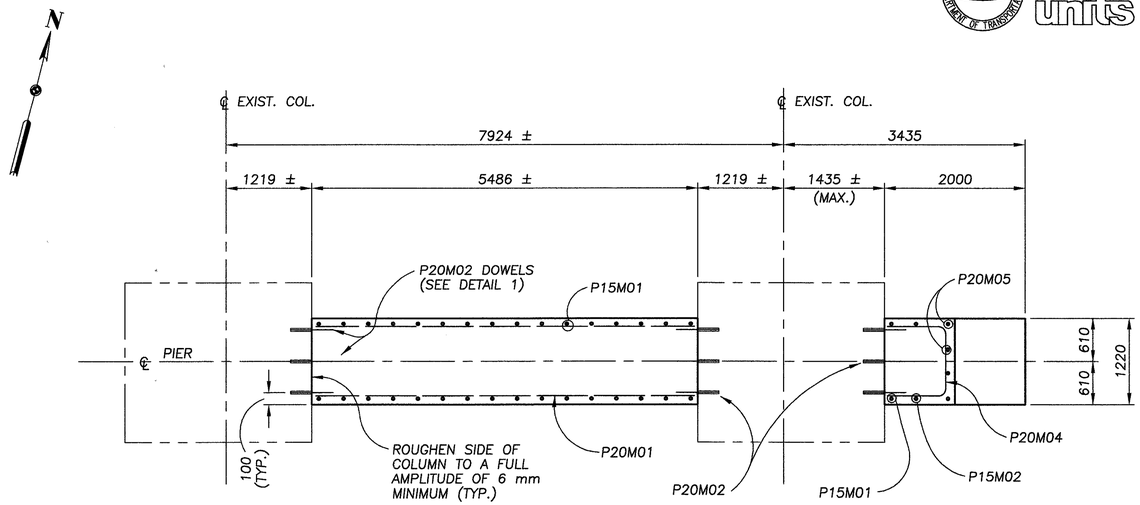
CUY-77-23.458

\24621\techprod\drawings\bridge\PIER-5R1.DWG

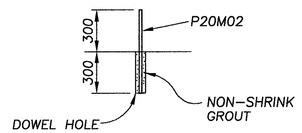


PARTIAL FOOTING PLAN

* SAW CUT EXISTING #35M BAR 180° HOOK OFF AND SPLICE NEW #35M BARS TO EXISTING #35M BARS WITH MECHANICAL SPLICES.

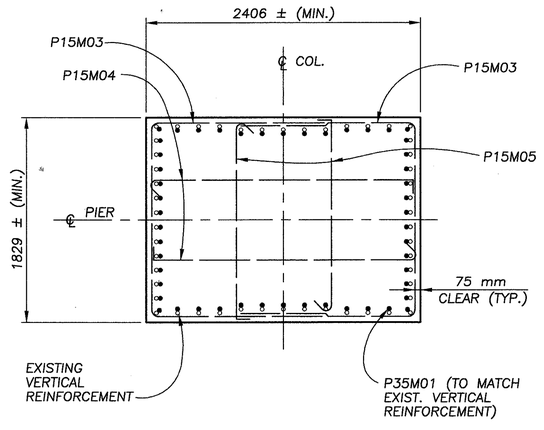


SECTION D–D

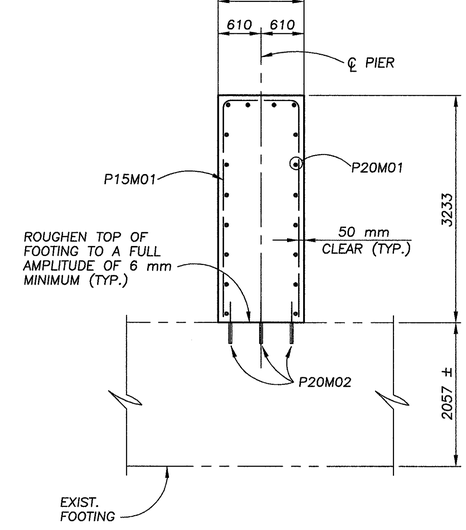


DETAIL 1

(ADJUST DOWEL LOCATIONS AS REQUIRED TO MISS EXISTING REBARS)



SECTION C–C



SECTION E–E

(PILES NOT SHOWN)

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

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HNTB
ARCHITECTS ENGINEERS PLANNERS
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1375 East 9th Street
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REVISED
REVIEWED GT
DATE 9-12-97
STRUCTURE FILE NUMBER 1806726

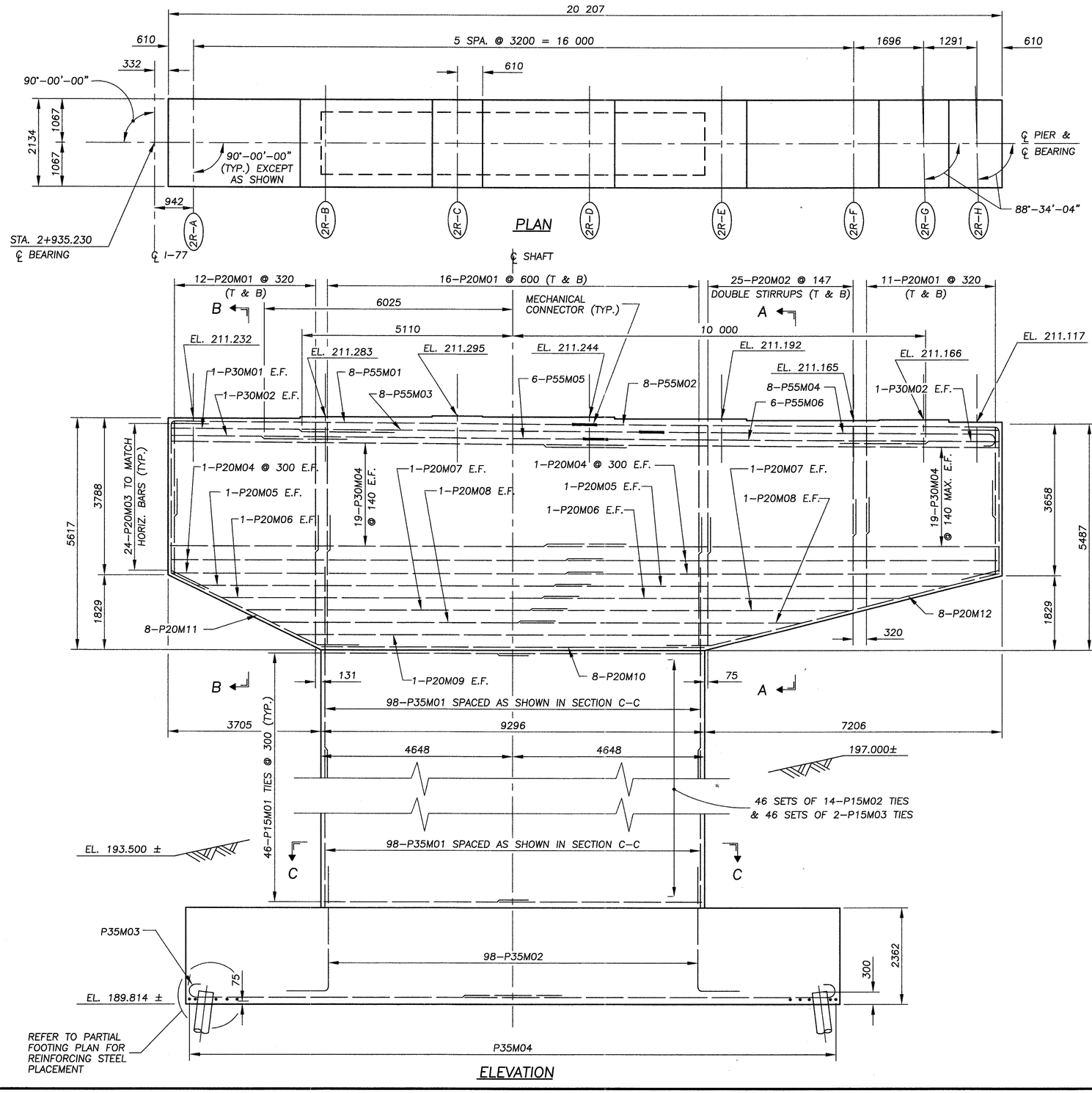
PIER 5R DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

60/175

155/295

\24621\techprod\drawings\bridge\PIER-5R2.DWG



STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

NOTES:

ALL REINFORCEMENT IN PIER 6R IS PREFIXED WITH "6R" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR SECTIONS A–A, B–B & C–C, SEE SHEET 62 OF 175.

FOR PARTIAL FOOTING PLAN, SEE SHEET 62 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#30M = 1900 mm
#35M = 2400 mm

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

DESIGN AGENCY
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REVIEWED GT
DATE 9-12-97
REVISED
STRUCTURE FILE NUMBER 1806726

PIER 6R DETAILS

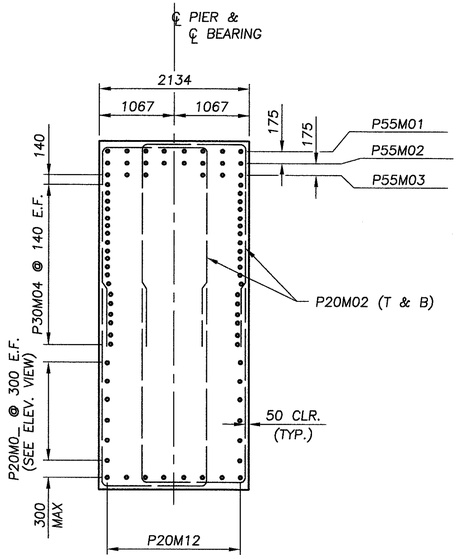
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

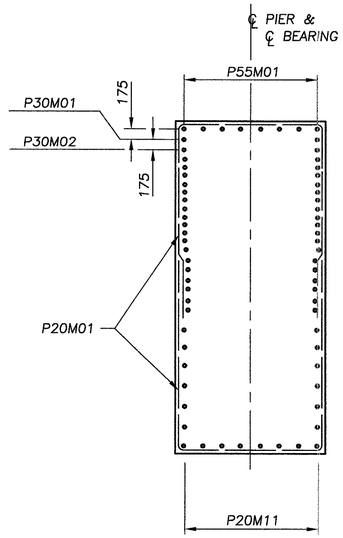
61/175

156/295

\24621\techprod\drawings\bridge\PIER-6R1.DWG

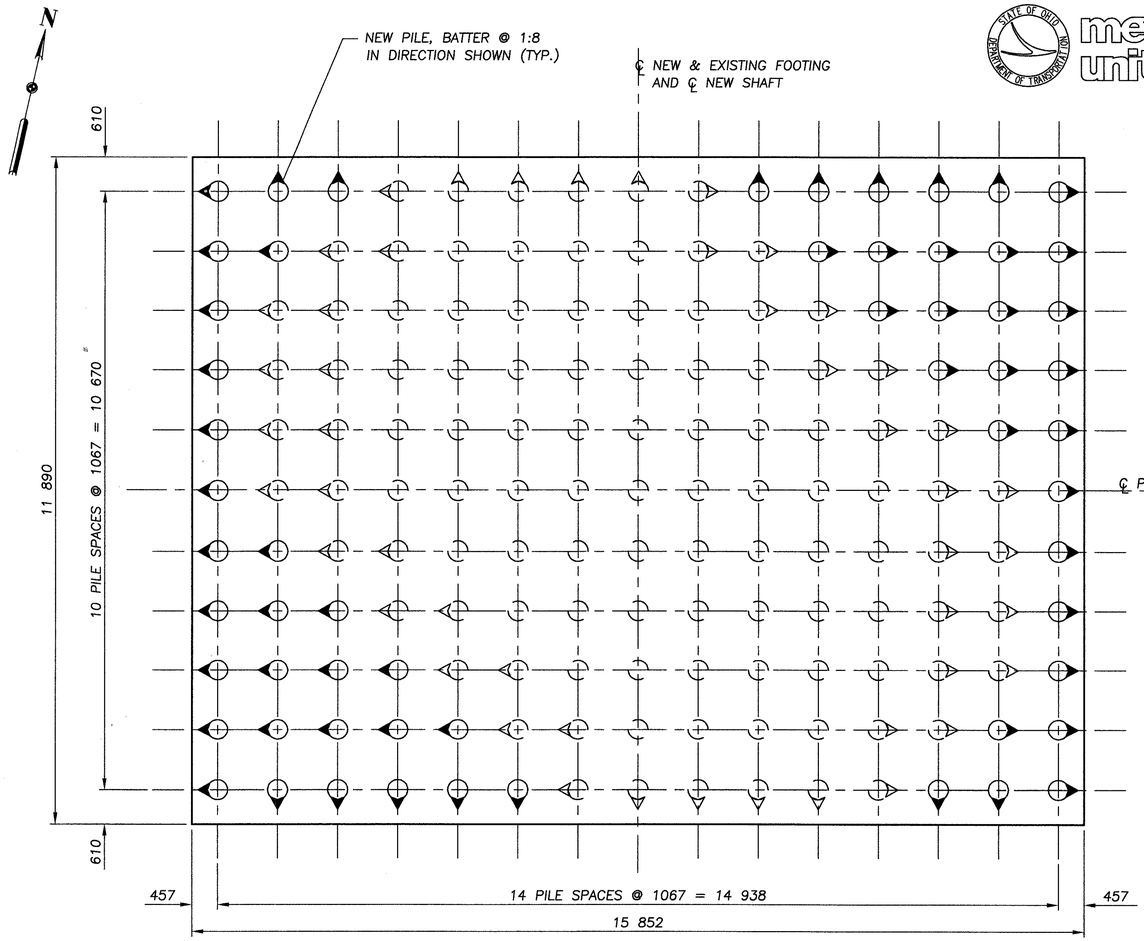


SECTION A–A

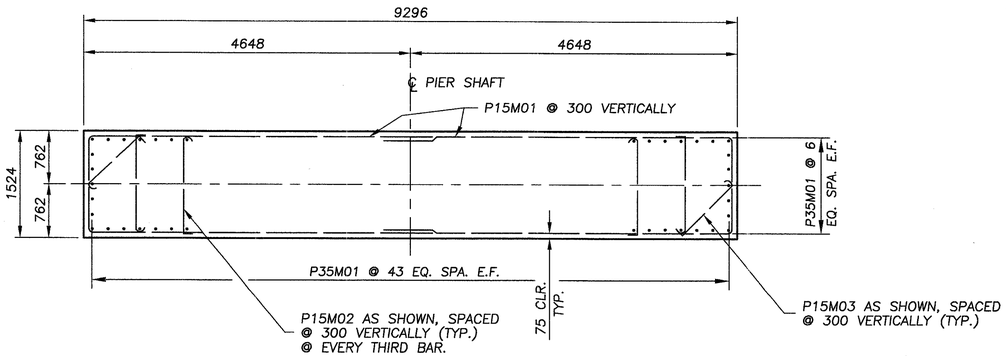


SECTION B–B

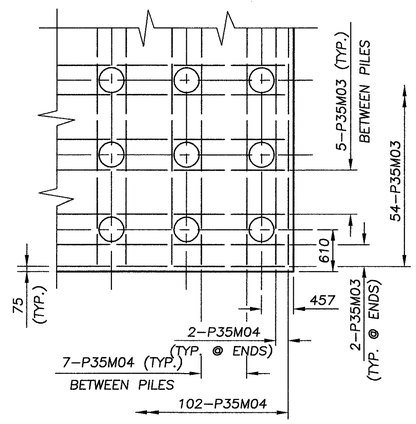
(FOR DETAIL NOT SHOWN, SEE SECTION A–A)



FOOTING AND PILING LAYOUT



SECTION C–C



PARTIAL FOOTING PLAN

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

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MJL	KRM	GT	9–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DSH/JV		1806726	

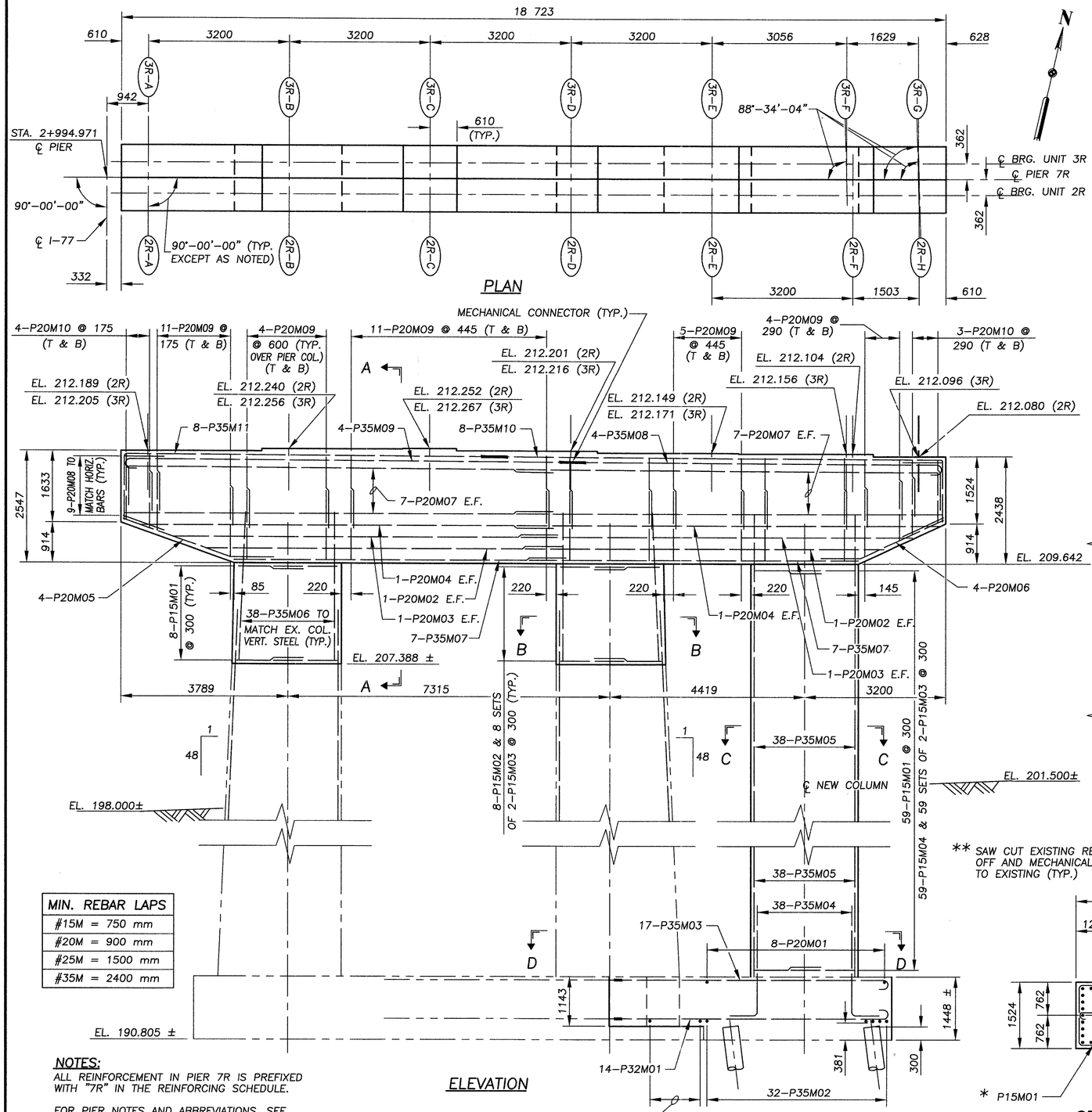
PIER 6R DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

62/175

157/295

\24621\techprod\drawings\bridge\PIER–6R2.DWG



MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#35M = 2400 mm

NOTES:

ALL REINFORCEMENT IN PIER 7R IS PREFIXED WITH "7R" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ELEVATION

SECTION B–B

SECTION C–C

VIEW D–D

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

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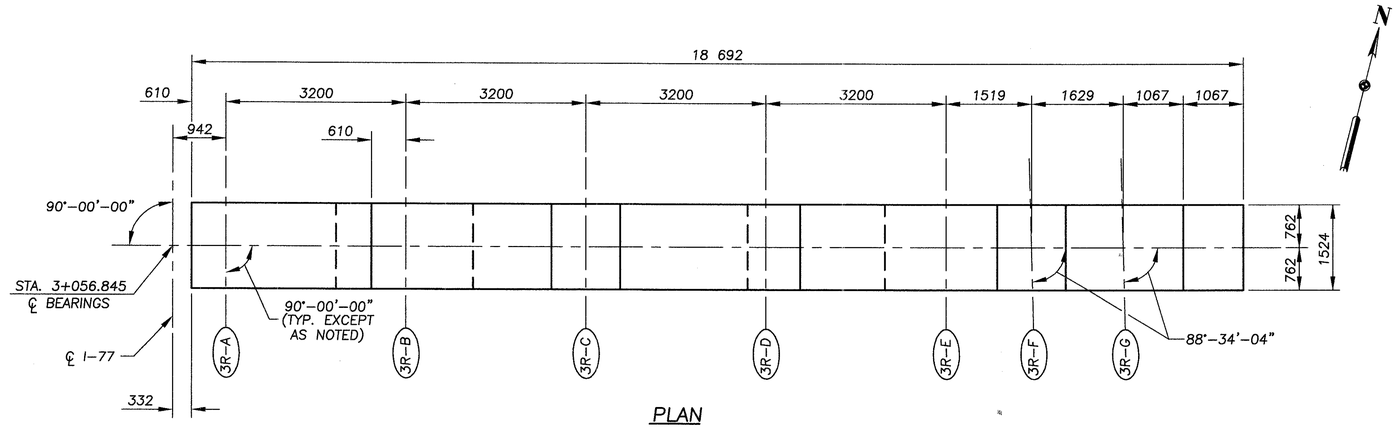
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL/JV		1806726	

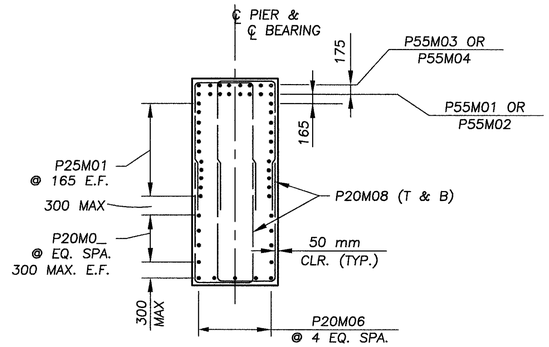
PIER 7R DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

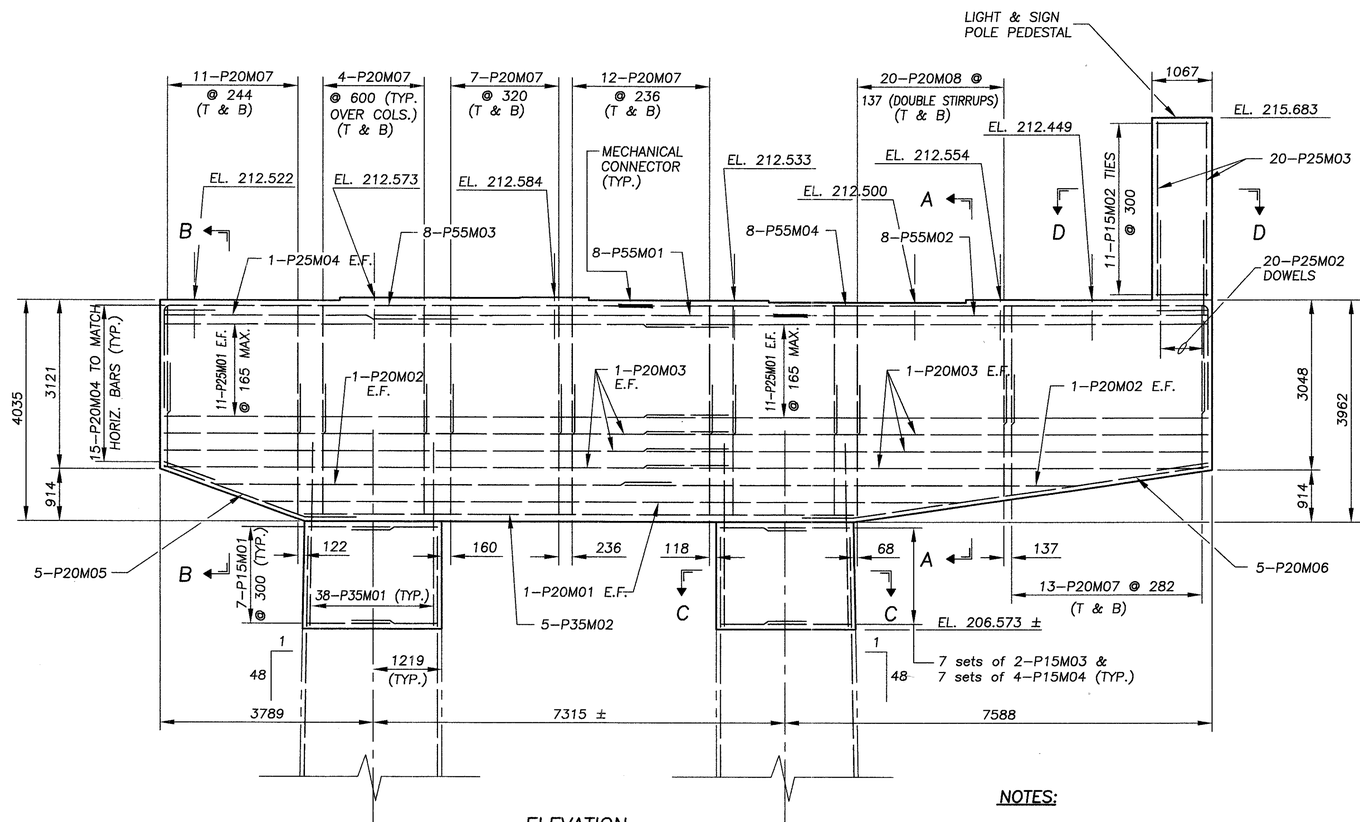
\24621\techprod\drawings\bridge\PIER–7R.DWG



PLAN



SECTION A–A



ELEVATION

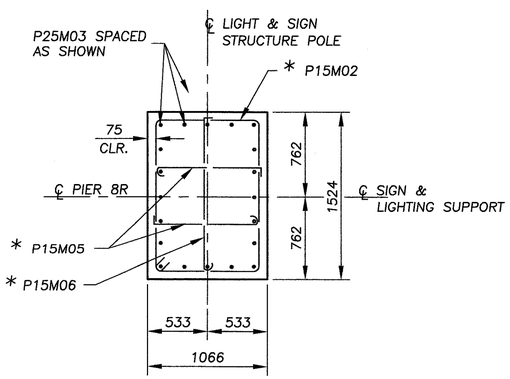
MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#35M = 2400 mm

SECTION B–B

(FOR DETAILS NOT SHOWN SEE SECTION A–A)

SECTION C–C

* SPACED AT 300 mm VERTICALLY



SECTION D–D

(SUPPORT FOR LIGHT & CANTILEVER LIGHT STRUCTURE)

* SPACED AT 300 mm VERTICALLY

NOTES:

ALL REINFORCEMENT IN PIER 8R IS PREFIXED WITH "8R" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR DETAILS OF LIGHT & SIGN POLE PEDESTAL, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

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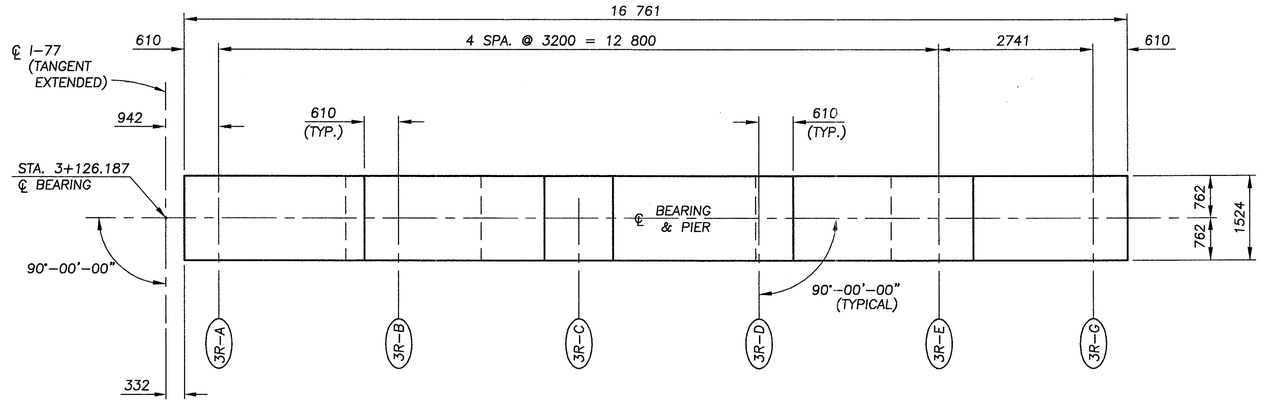
PIER 8R DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

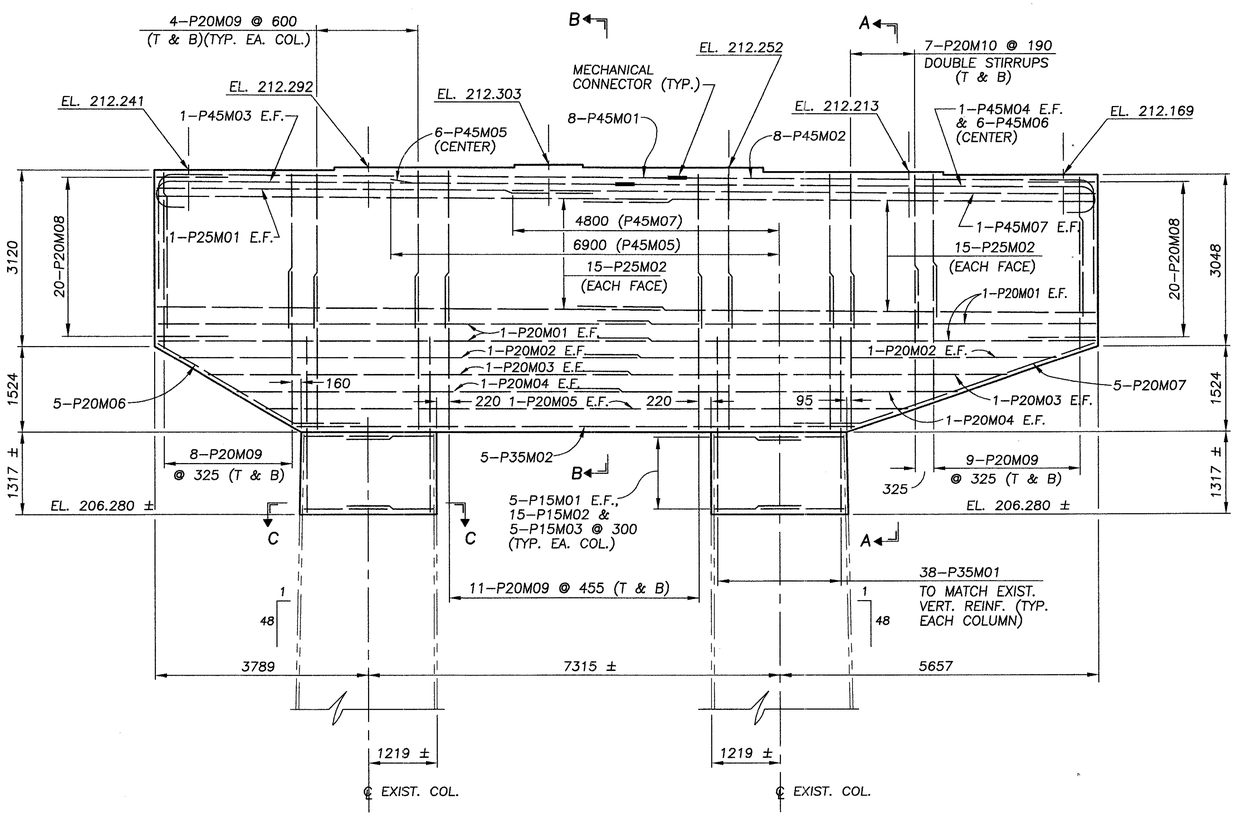
64/175

159/295

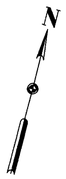
\24621\techprod\drawings\bridge\PIER-8R.DWG



PLAN

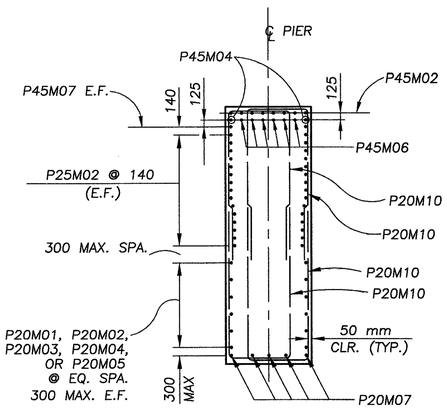


ELEVATION

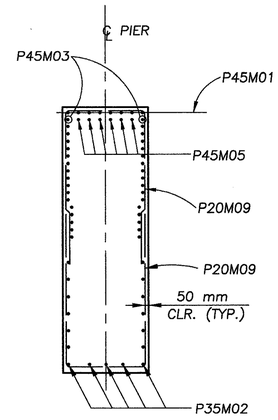


MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#35M = 2400 mm

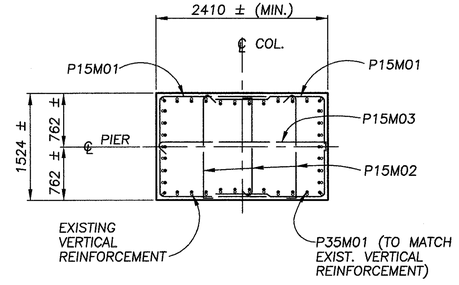
metric units



SECTION A–A



SECTION B–B
(FOR DETAILS NOT SHOWN,
SEE SECTION A–A)



SECTION C–C

NOTES:

ALL REINFORCEMENT IN PIER 9R IS PREFIXED WITH "9R" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

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DRAWN	REVISED
SJR	

REVIEWED	DATE
GT	9–12–97

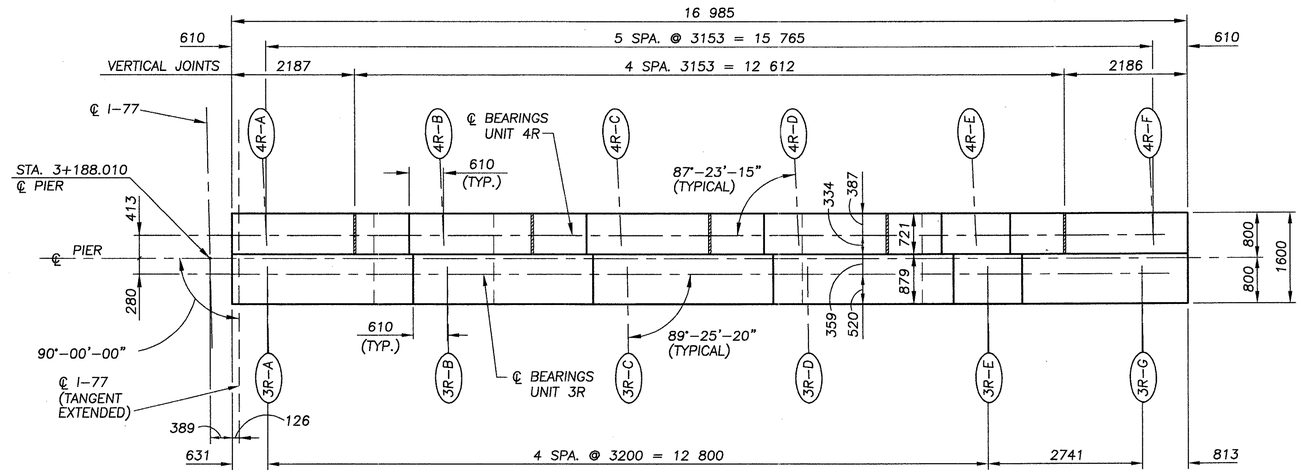
STRUCTURE FILE NUMBER
1806726

PIER 9R DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

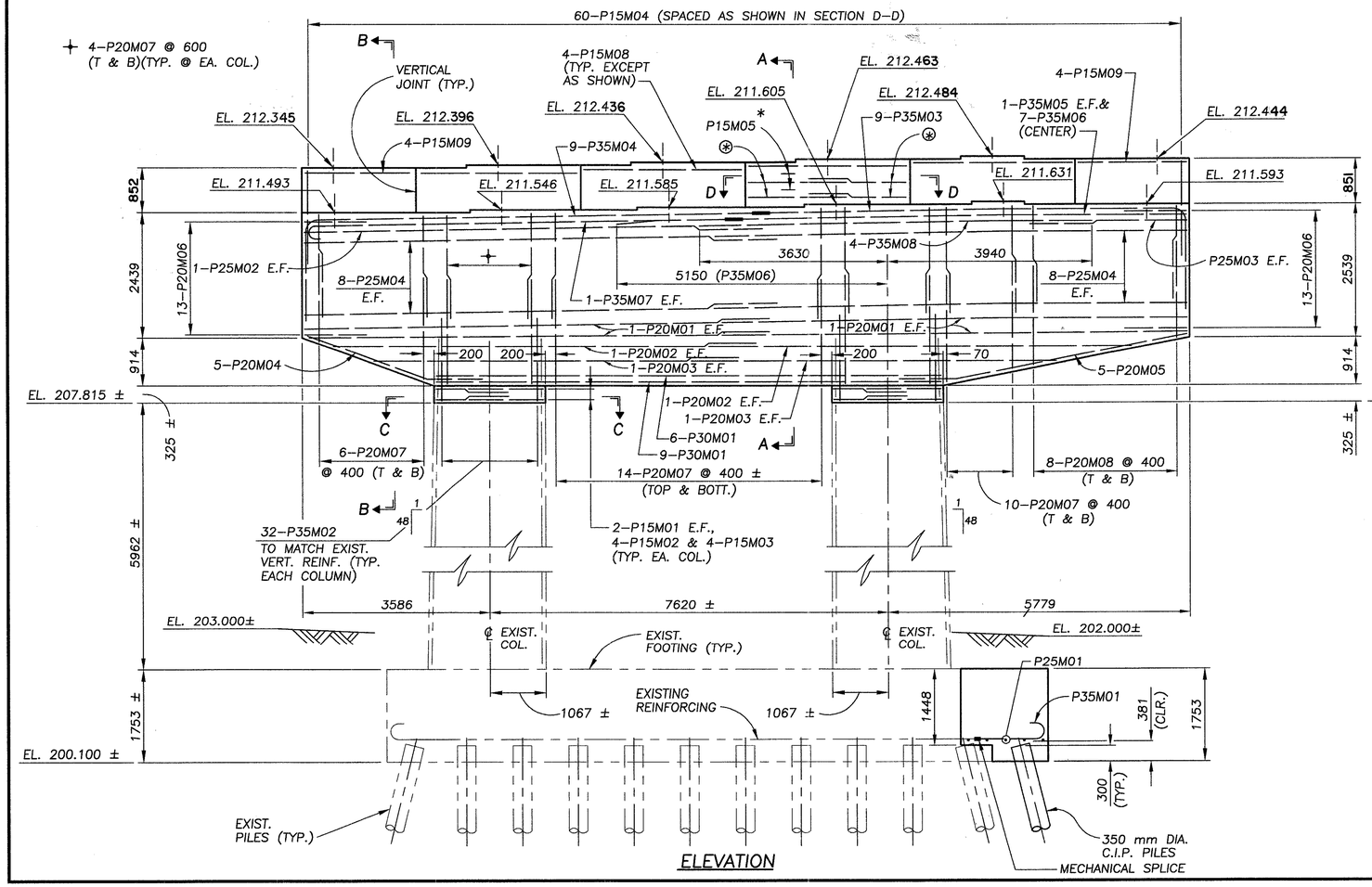
CUY–77–23.458

65/175
160/295

\24621\techprod\drawings\bridge\PIER–9R



PLAN



ELEVATION

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#35M = 2400 mm

* 4–P15M05 – AT GIRDERS 4R–A AND 4R–F
6–P15M05 – AT GIRDERS 4R–B thru 4R–E

⊛ 1–P15M06 – AT GIRDERS 4R–A AND 4R–F
1–P15M07 – AT GIRDERS 4R–B thru 4R–E

▬ MECHANICAL CONNECTOR

NOTES:

ALL REINFORCEMENT IN PIER 10R IS PREFIXED WITH "10R" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR SECTIONS A–A, B–B, C–C, D–D AND PARTIAL FOOTING PLAN, SEE SHEET 67 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

N

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114–1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED MJL
DRAWN SJR
CHECKED DHS/JV
REVISED
DATE 9–12–97
REVIEWED GT
STRUCTURE FILE NUMBER 1806726

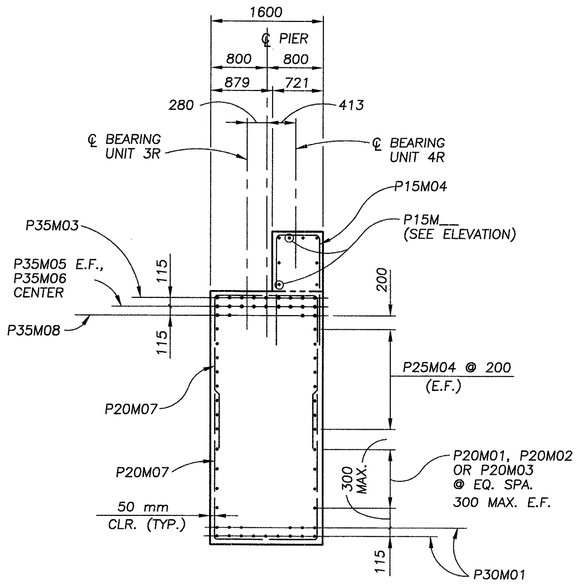
PIER 10R DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

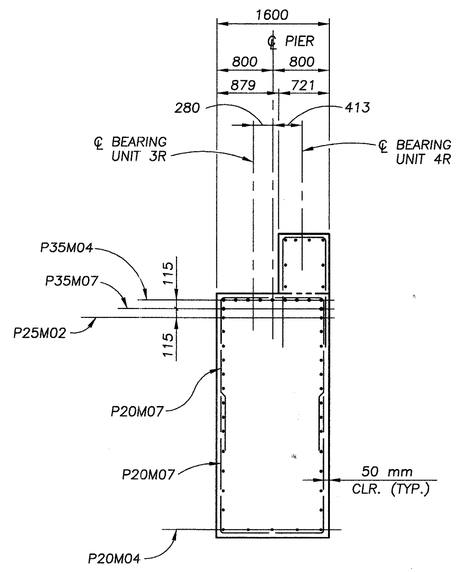
66 / 175

161 / 295

\24621\techprod\drawings\bridge\PR–10R1.DWG

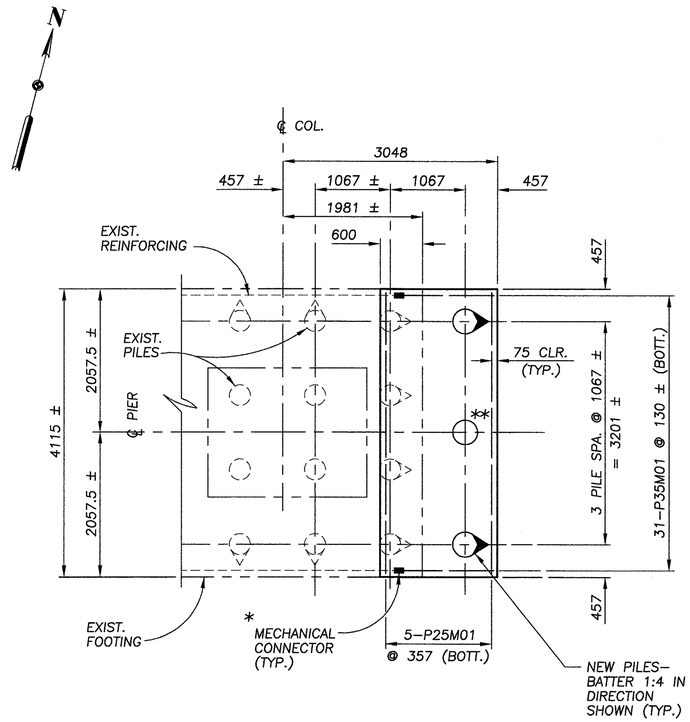


SECTION A–A



SECTION B–B

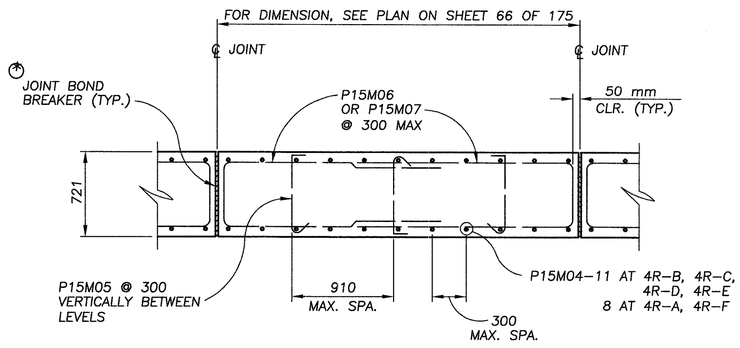
(FOR DETAIL NOT SHOWN, SEE SECTION A–A)



PARTIAL FOOTING PLAN

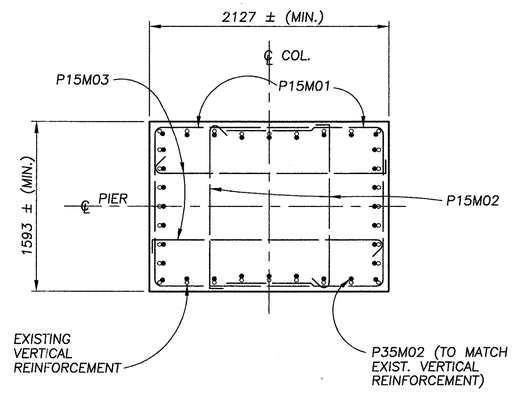
* SAW CUT EXISTING #35M BAR 180° HOOK OFF AND SPLICE NEW #35M BARS TO EXISTING #35M BARS WITH MECHANICAL SPLICES.

** CONTRACTOR SHALL EXERCISE EXTREME CARE IN DRIVING THIS VERTICAL PILE DUE TO CLOSENESS TO THE EXISTING BATERED PILES.



SECTION D–D

Ⓐ JOINT BOND BREAKER SHALL BE 13 mm P.E.J.F.



SECTION C–C

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

DESIGN AGENCY
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1375 East Ninth Street
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ARCHITECTS ENGINEERS PLANNERS

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MJL	SJR	GT	9–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DHS/JV		1806726	

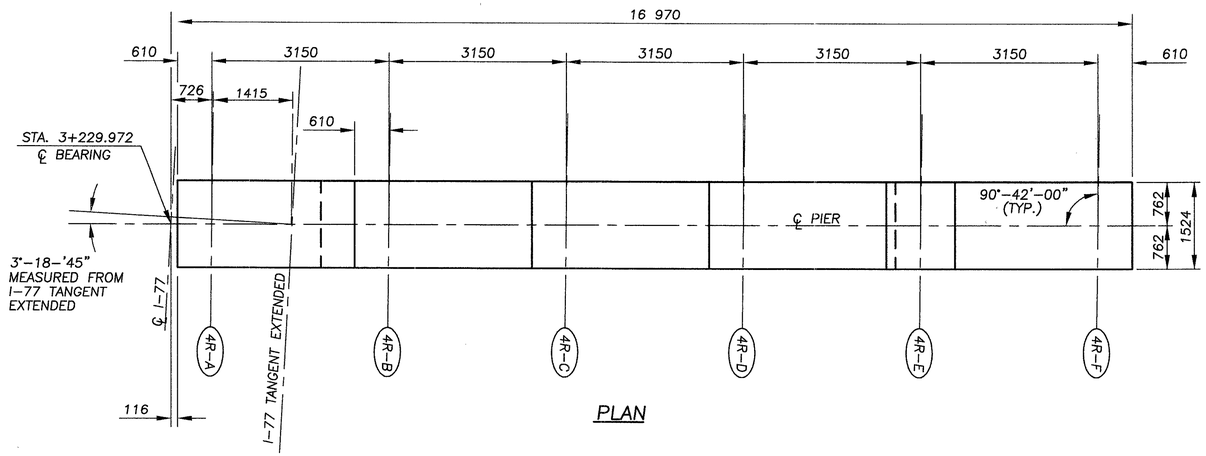
PIER 10R DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

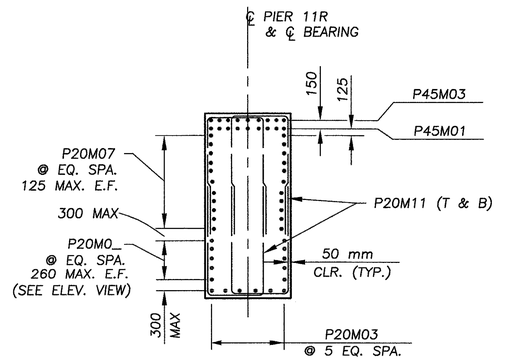
67/175

162/295

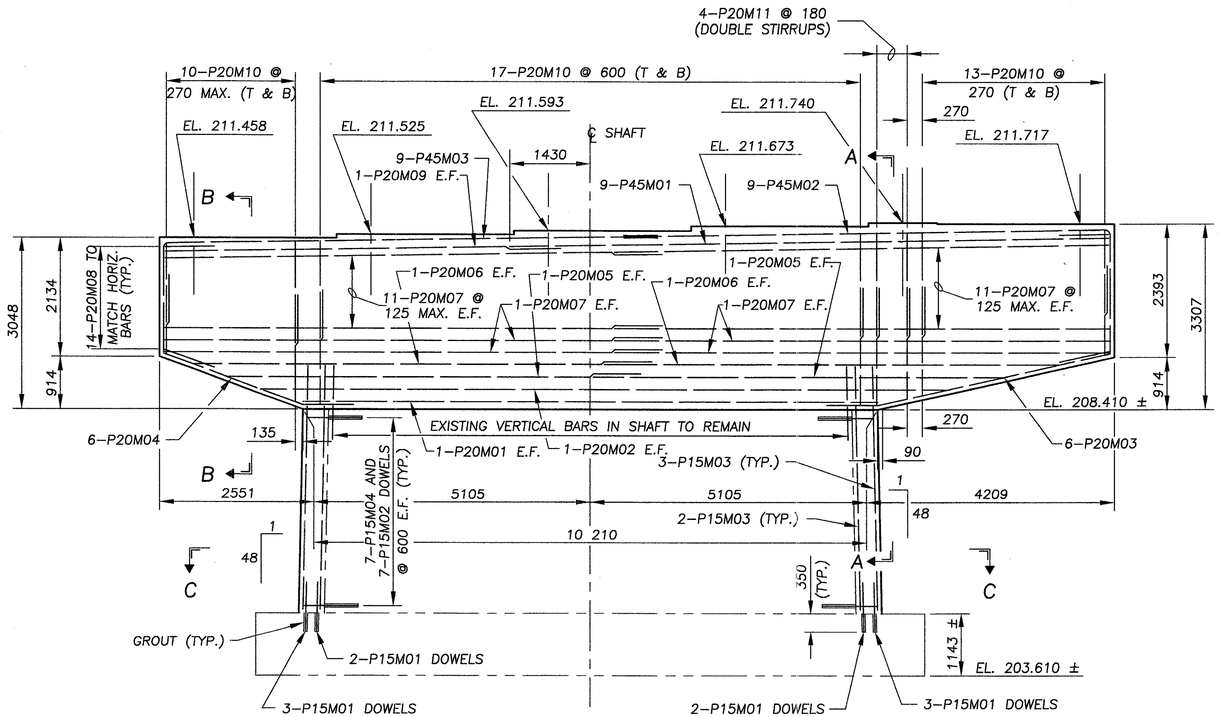
\24621\techprod\drawings\bridge\PR–10R2.DWG



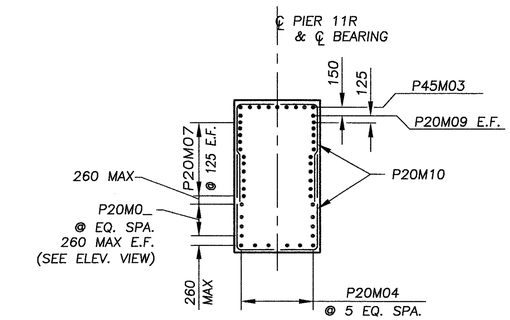
PLAN



SECTION A-A

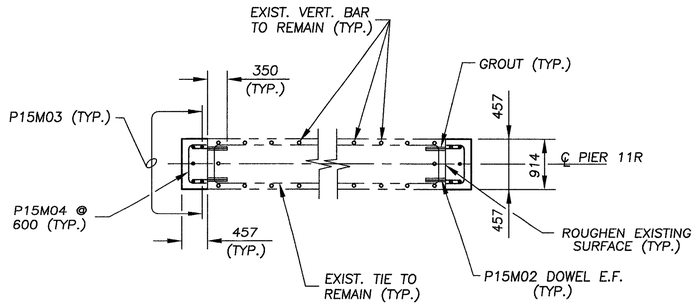


ELEVATION



SECTION B-B

(FOR DETAILS NOT SHOWN SEE SECTION A-A)



SECTION C-C

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm

NOTES:

ALL REINFORCEMENT IN PIER 11R IS PREFIXED WITH "11R" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

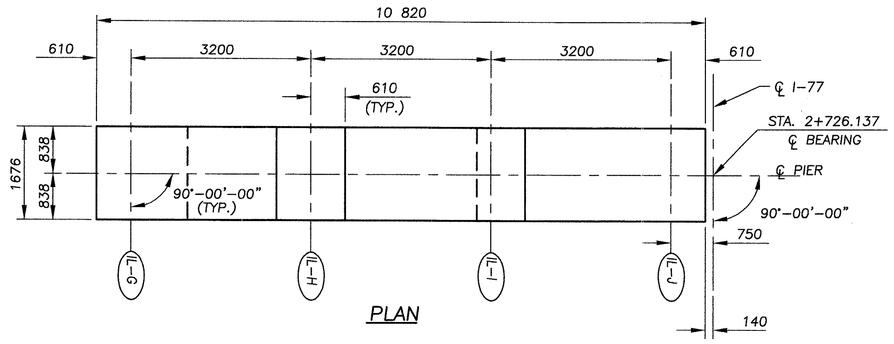
DESIGNED	DRAWN	REVIEWED	DATE
M/L	KYM	GT	9-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DHS/JV		1806726	

PIER 11R DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

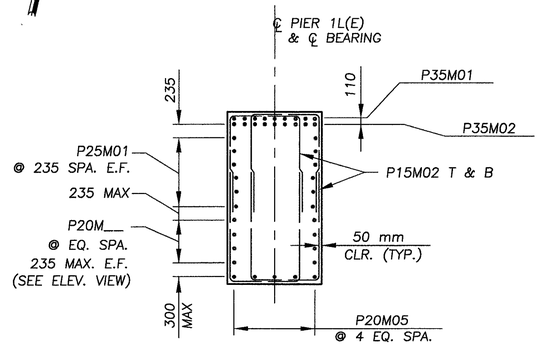
CUY-77-23.458

68/175
163/295

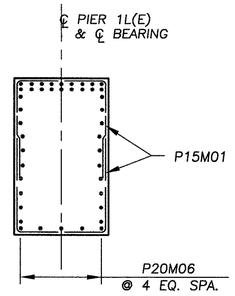
\24621\techprod\drawings\bridge\PIER-11R.DWG



PLAN

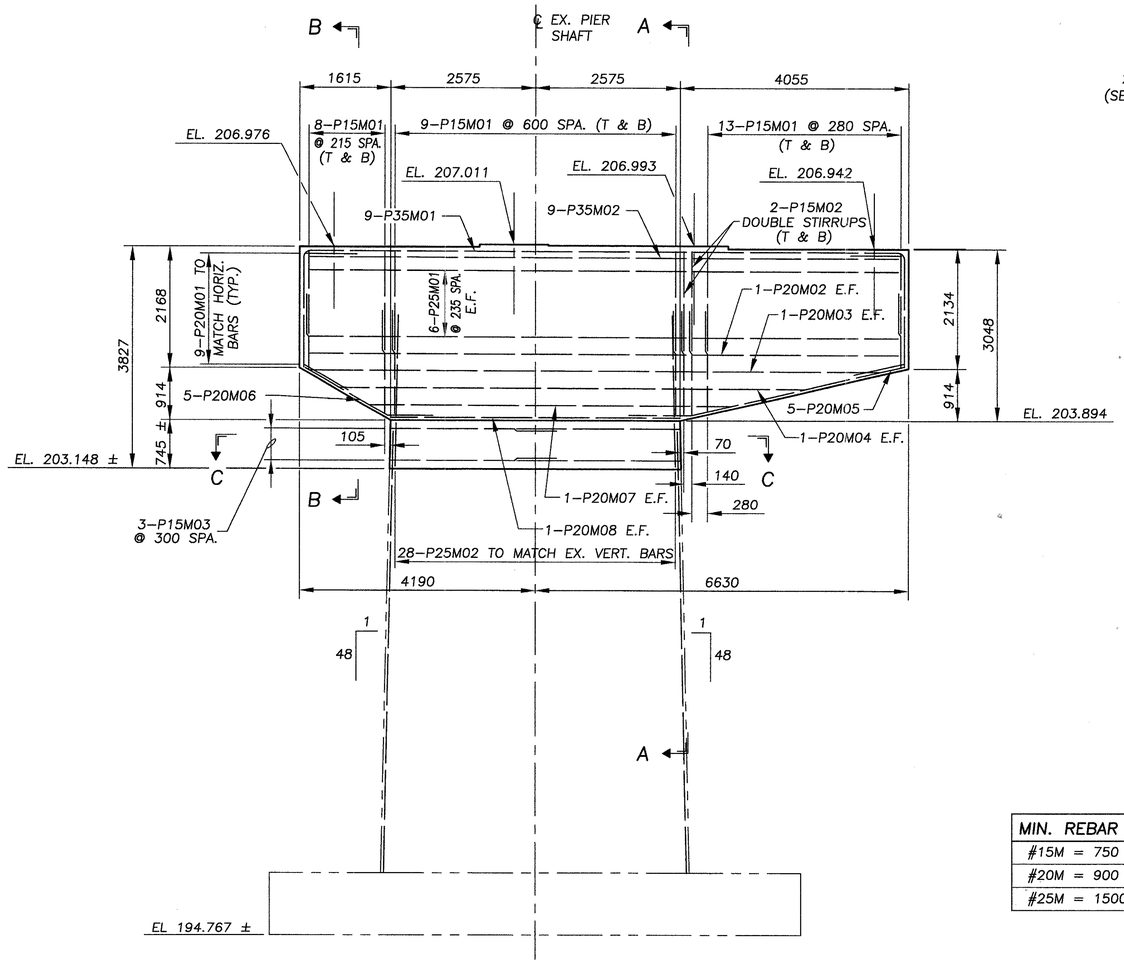


SECTION A–A

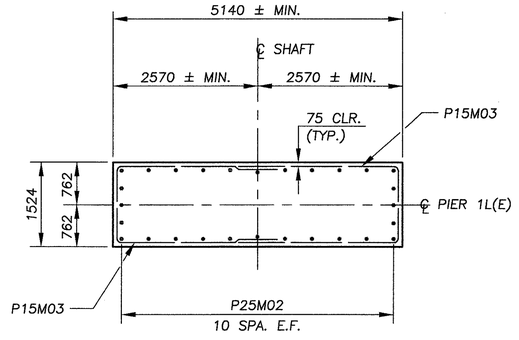


SECTION B–B

(FOR DETAILS NOT SHOWN SEE SECTION A–A)



ELEVATION



SECTION C–C

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm

NOTES:

ALL REINFORCEMENT IN PIER 1L(E) IS PREFIXED WITH "1LE" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	KFM	GT	9-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL/JV		1806726	

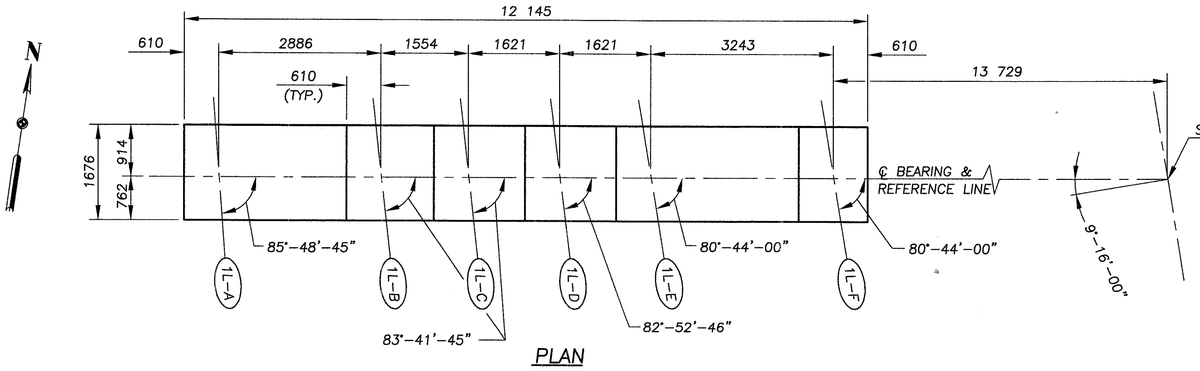
PIER 1L(E) DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

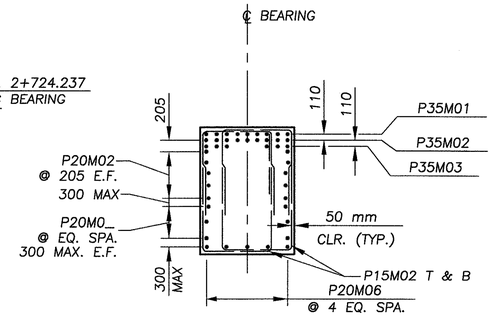
69/175

164/295

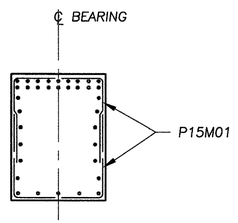
\24621\techprod\drawings\bridge\PIER-1LE.DWG



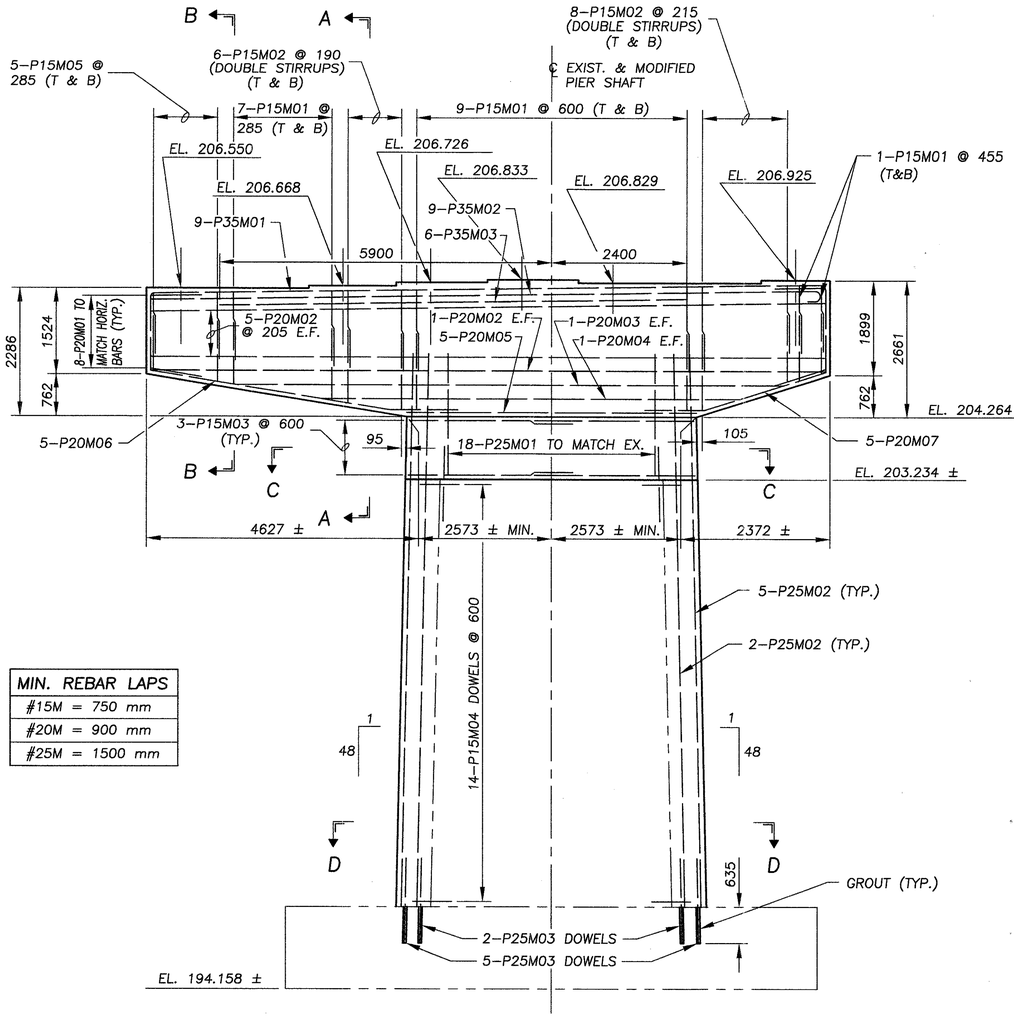
PLAN



SECTION A–A

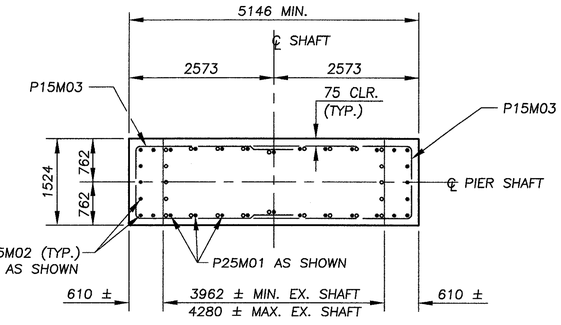


SECTION B–B
(FOR DETAILS NOT SHOWN SEE SECTION A–A)

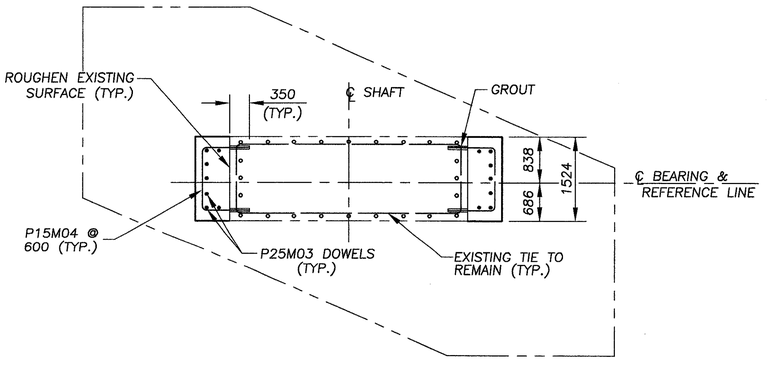


ELEVATION

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm



SECTION C–C



SECTION D–D

NOTES:

ALL REINFORCEMENT IN PIER 1L(W) IS PREFIXED WITH "1LW" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

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HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

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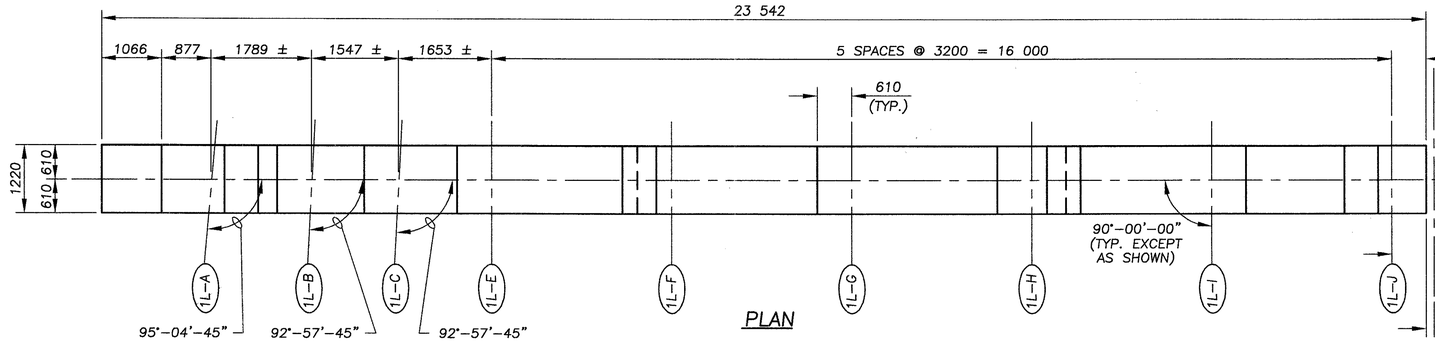
MJL/JV		1806726	

PIER 1L(W) DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

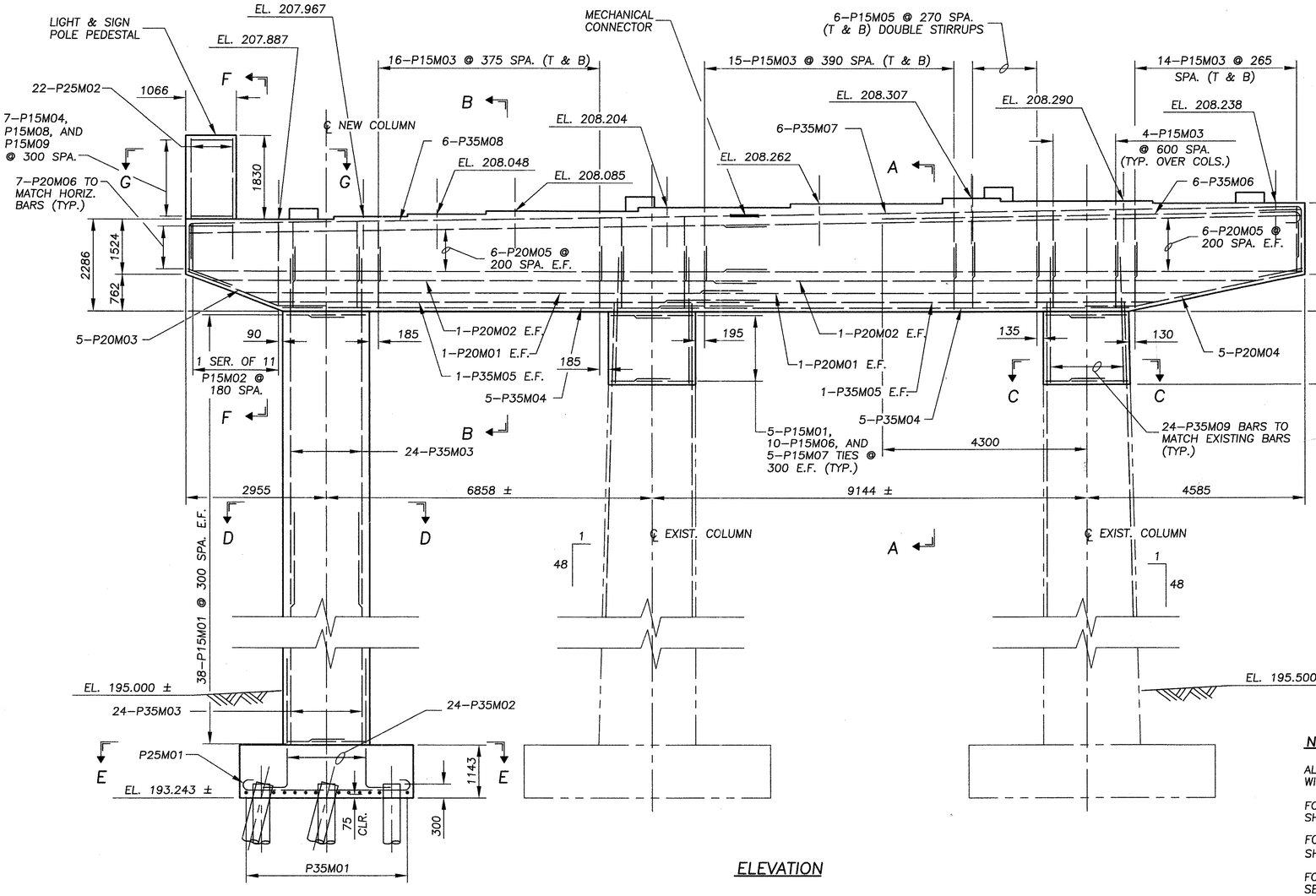
CUY-77-23.458

70/175
165/295

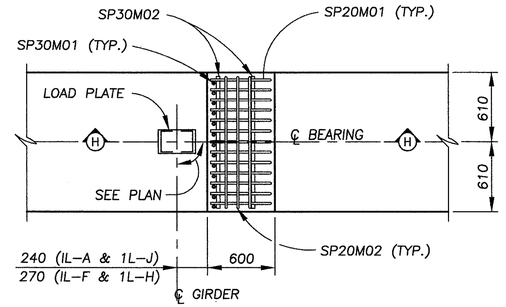
\24621\techprod\drawings\bridge\PIER 1LW.DWG



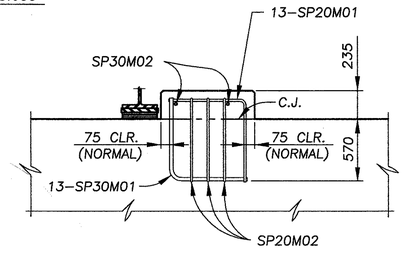
PLAN



ELEVATION



TYPICAL SEISMIC PEDESTAL PLAN



SECTION H–H

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#35M = 2400 mm

NOTES:

ALL REINFORCEMENT IN PIER 2L IS PREFIXED WITH "2L" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR SECTIONS A–A THRU G–G, SEE SHEET 72 OF 175.

FOR DETAILS OF LIGHT & SIGN POLE PEDESTAL, SEE SHEET 49 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
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DHS	KYAM	GT	9–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL/JV		1806726	

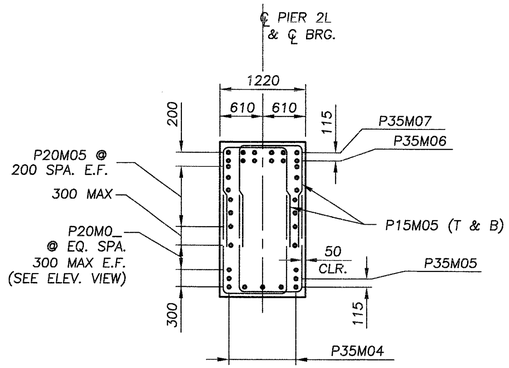
PIER 2L DETAILS
BRIDGE NO. CUY–77–23.458
OVER KINGSBURY RUN

CUY–77–23.458

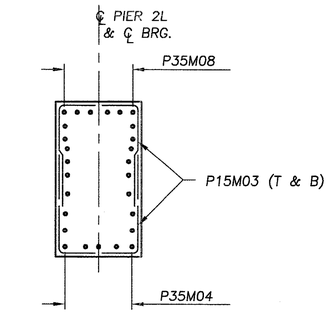
71/175

166/295

\24621\techprod\drawings\bridge\PIER–2L1.DWG

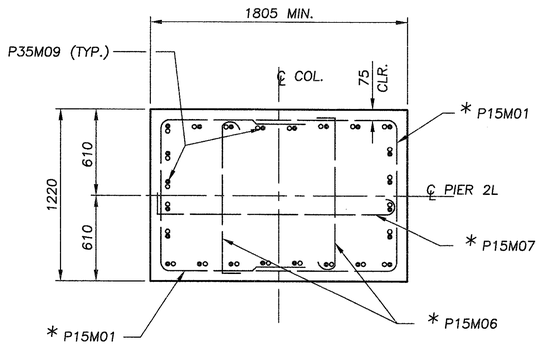


SECTION A–A



SECTION B–B

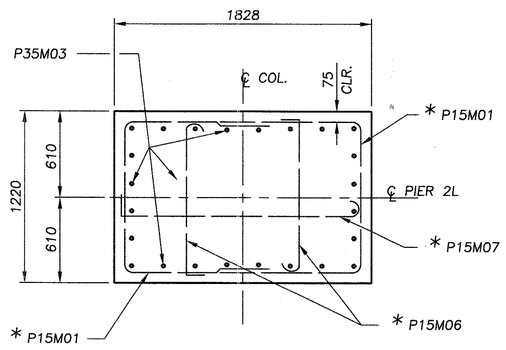
(FOR DETAIL NOT SHOWN, SEE SECTION A–A)



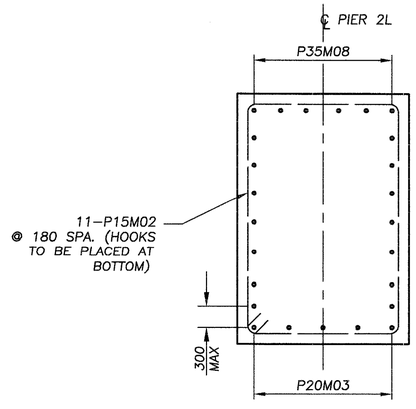
SECTION C–C

(P35M09 BARS TO MATCH EXISTING)

* SPACED @ 300 VERTICALLY

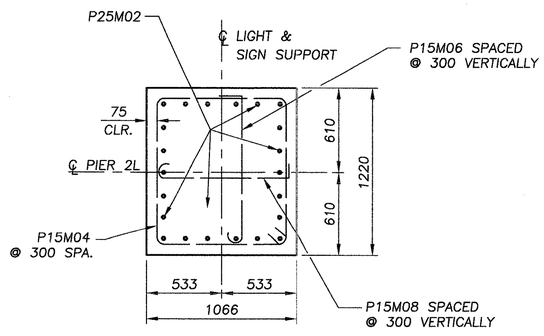


SECTION D–D

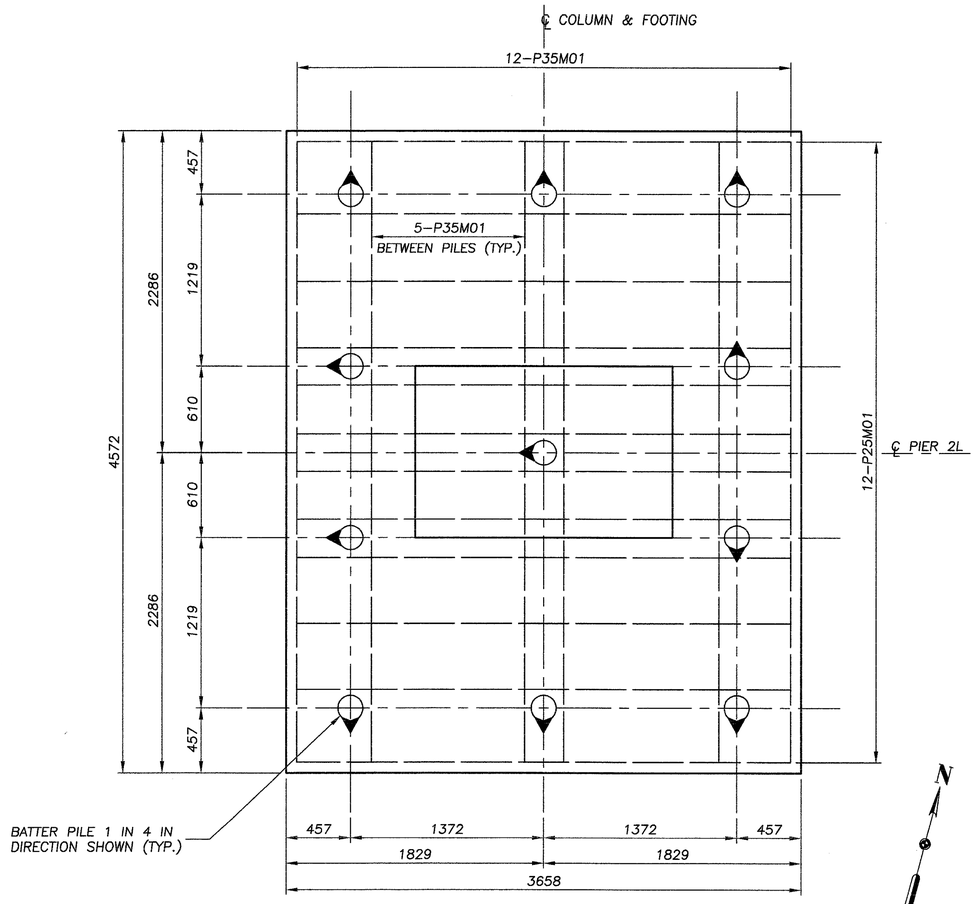


SECTION F–F

(FOR DETAIL NOT SHOWN, SEE SECTION A–A)



SECTION G–G



SECTION E–E

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY

HNTB ARCHITECTS ENGINEERS PLANNERS

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1375 East Ninth Street
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DHS	KRM	GT	9-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL/JV		1806726	

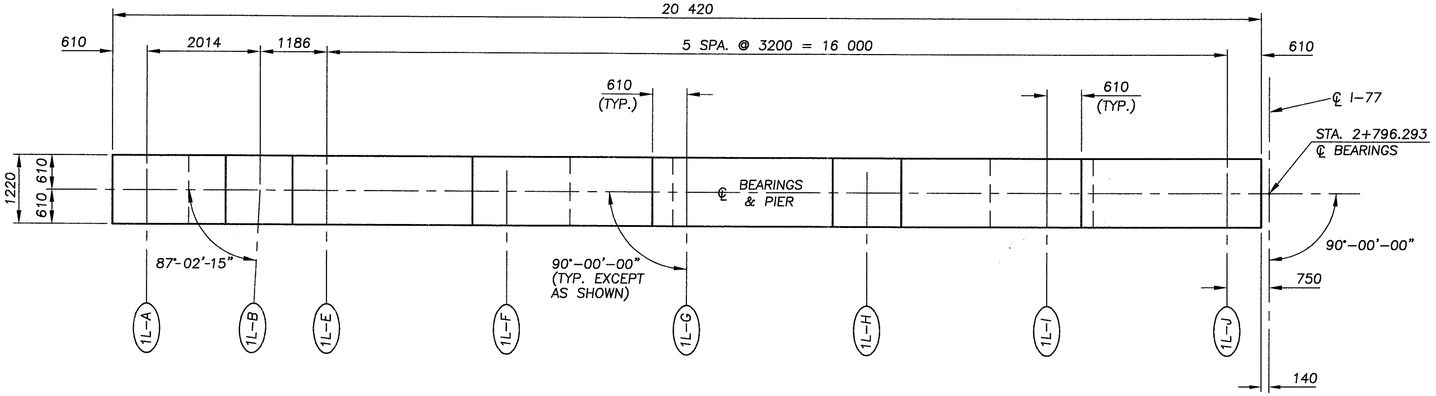
PIER 2L DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

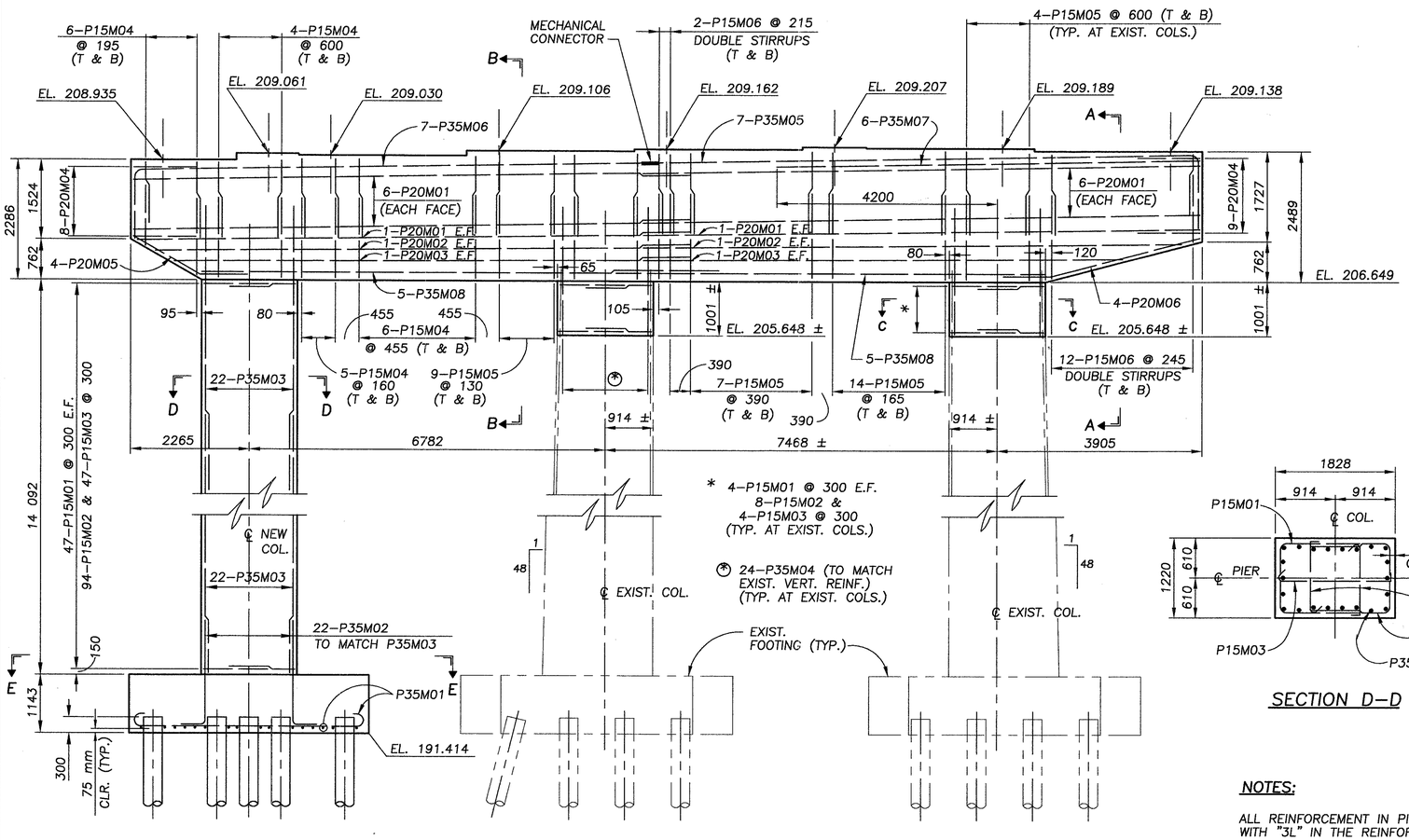
72/175

167/295

\24621\techprod\drawings\bridge\PIER-2L2.DWG



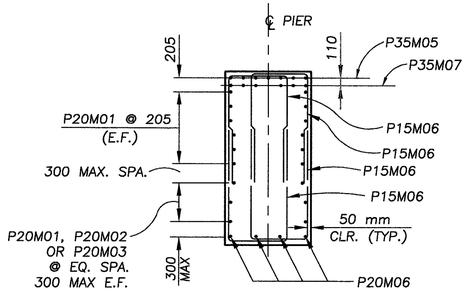
PLAN



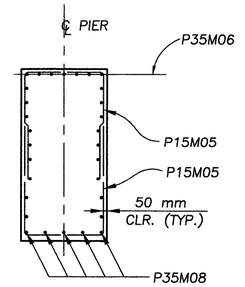
ELEVATION

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#35M = 2400 mm

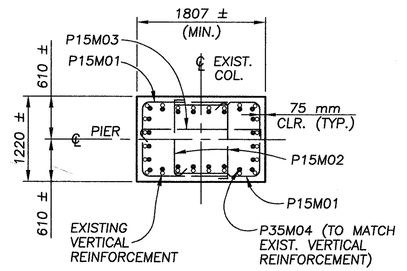
metric units



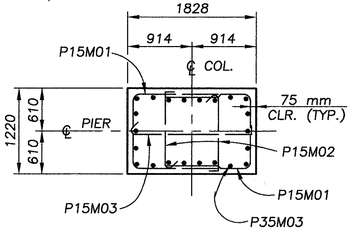
SECTION A-A



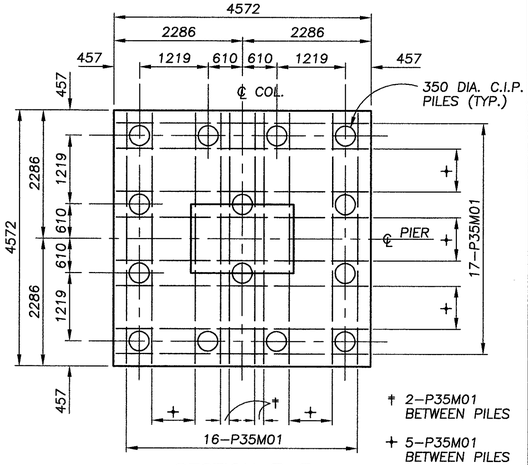
SECTION B-B
(FOR DETAIL NOT SHOWN, SEE SECTION A-A)



SECTION C-C



SECTION D-D



SECTION E-E
(FOOTING PLAN)

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

NOTES:

ALL REINFORCEMENT IN PIER 3L IS PREFIXED WITH "3L" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

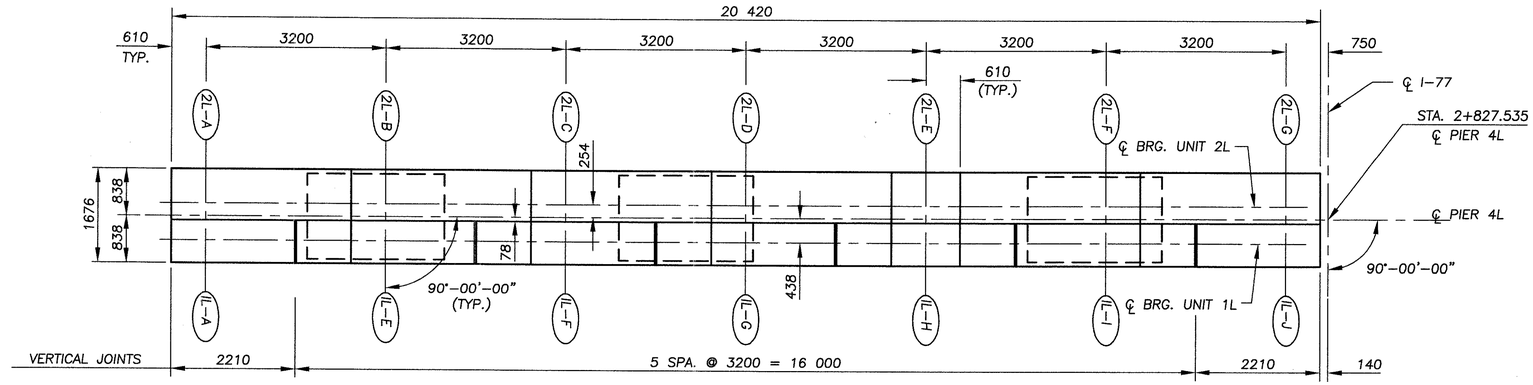
DESIGNED DHS | DRAWN SJR | REVIEWED GT | DATE 9-12-97
CHECKED MJL/JV | REVISED | STRUCTURE FILE NUMBER 1806726

PIER 3L DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

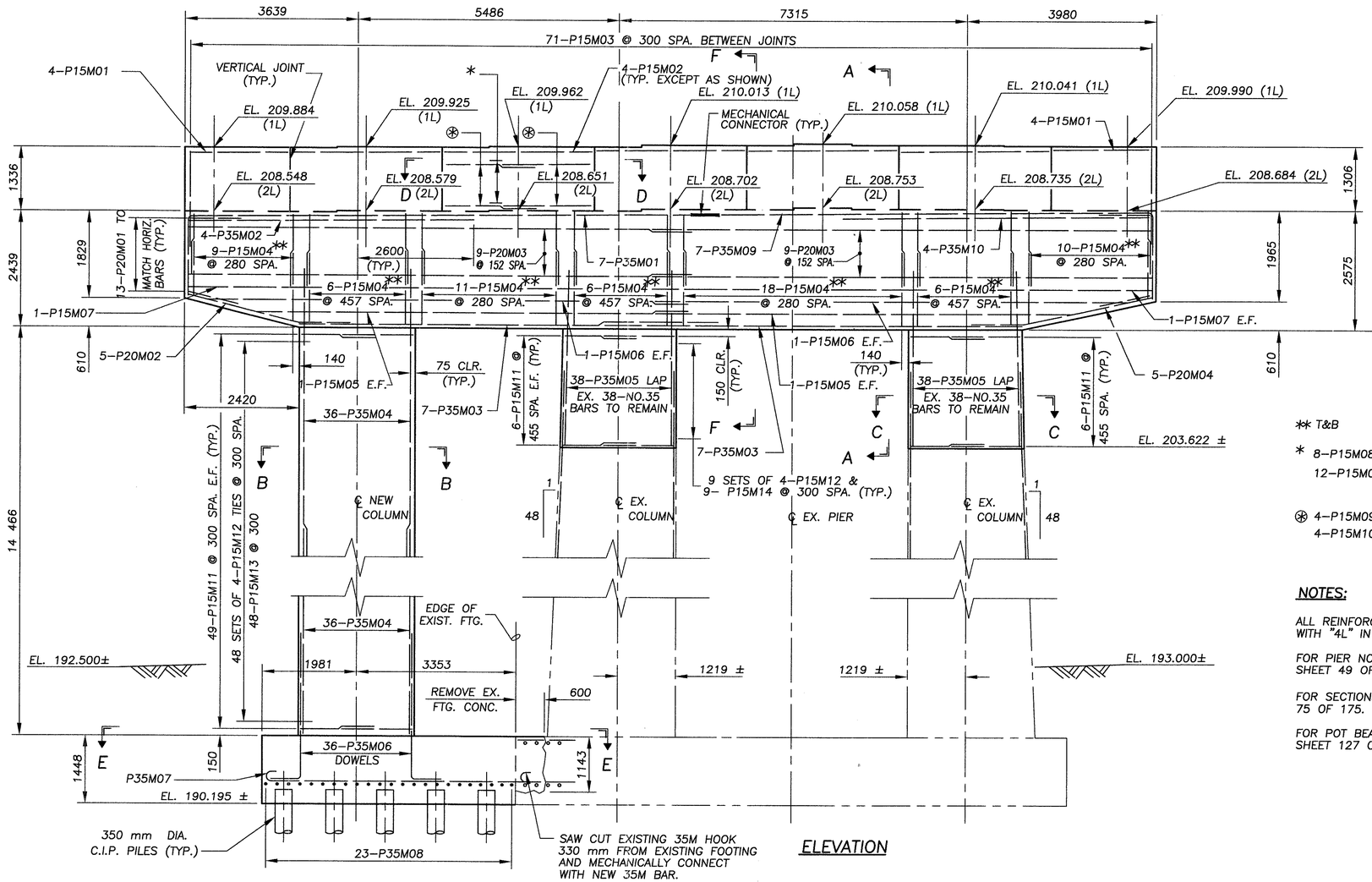
CUY-77-23.458

73/175
168/295

\24621\techprod\drawings\bridge\PIER-3L.DWG



PLAN



ELEVATION

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1200 mm
#35M = 2400 mm

** T&B

* 8-P15M08 – AT GIRDERS 1L-A, AND 1L-J
12-P15M08 – AT GIRDERS 1L-E thru 1L-I

⊛ 4-P15M09 – AT GIRDERS 1L-A, AND 1L-J
4-P15M10 – AT GIRDERS 1L-E thru 1L-I

NOTES:

ALL REINFORCEMENT IN PIER 4L IS PREFIXED WITH "4L" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR SECTIONS A-A THRU F-F SEE SHEET 75 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Suite 1500 Phone 216 344 4724
ARCHITECTS ENGINEERS PLANNERS

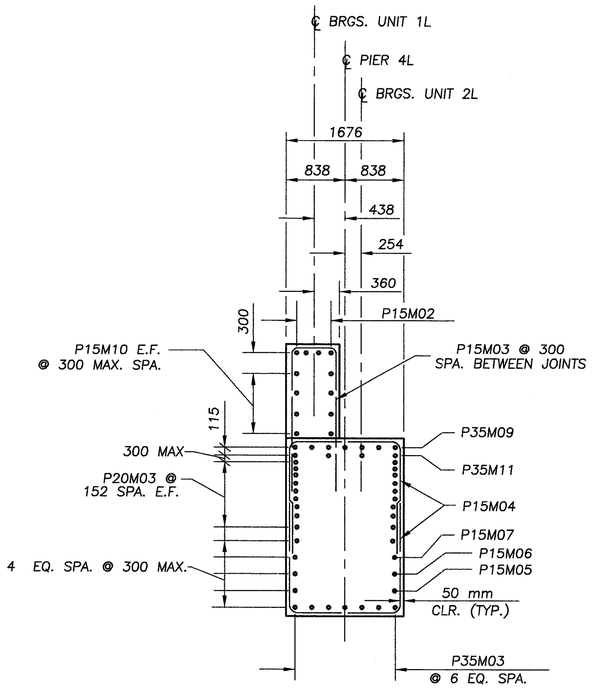
DESIGNED MJL
DRAWN KRM
CHECKED DSH/JV
REVISED
REVIEWED GT
DATE 9-12-97
STRUCTURE FILE NUMBER 1806726

PIER 4L DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

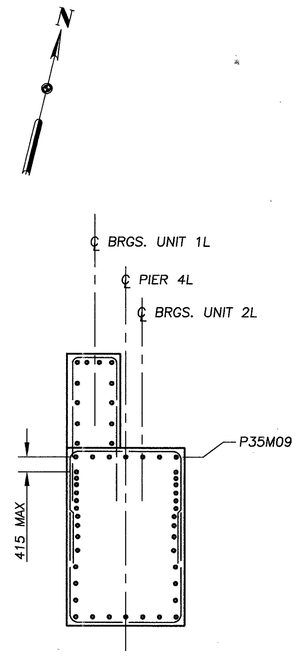
CUY-77-23.458

74/175
169/295

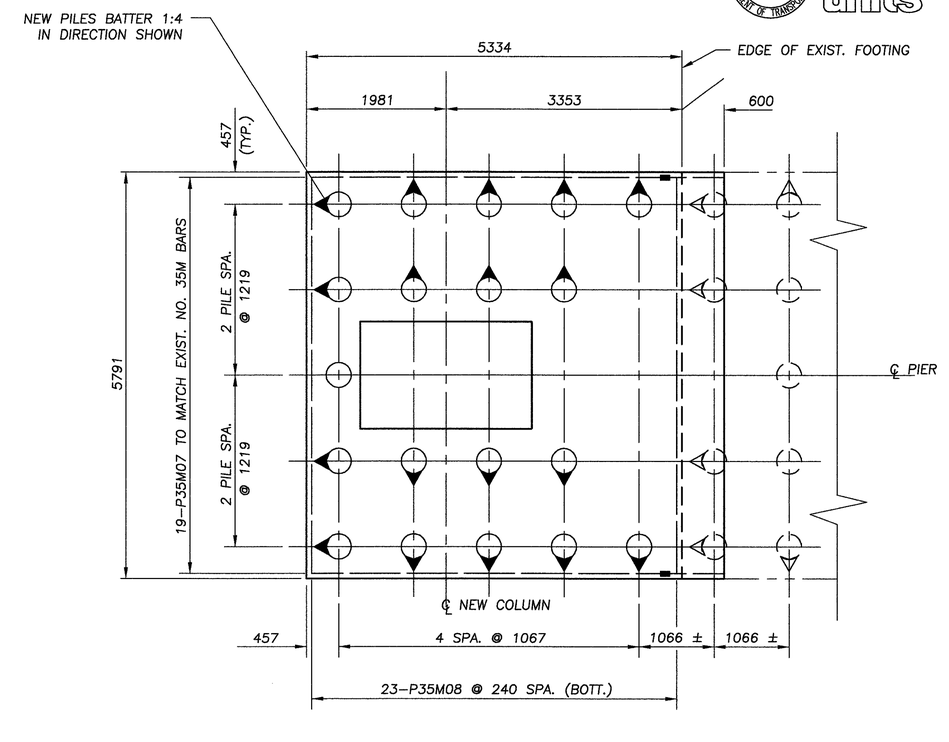
\24621\techprod\drawings\bridge\PIER-4L1.DWG



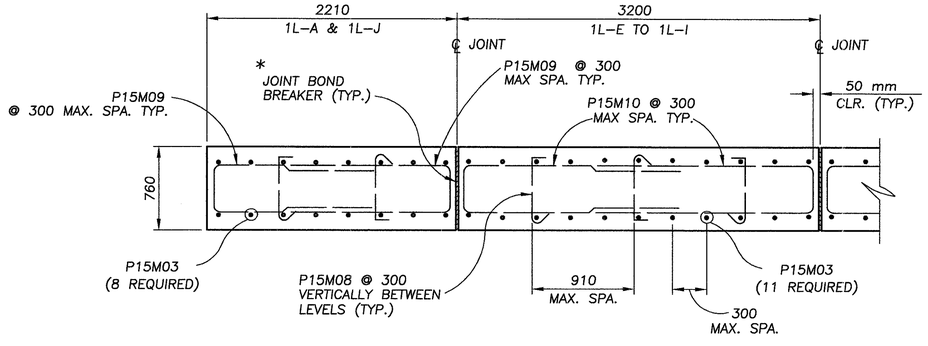
SECTION A–A



SECTION F–F
(FOR DETAILS NOT SHOWN,
SEE SECTION A–A)

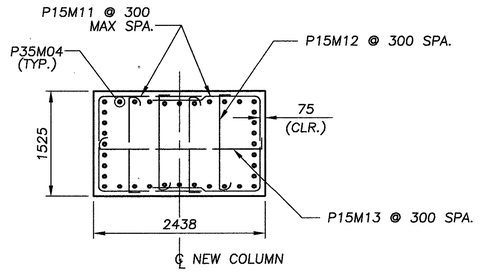


SECTION E–E

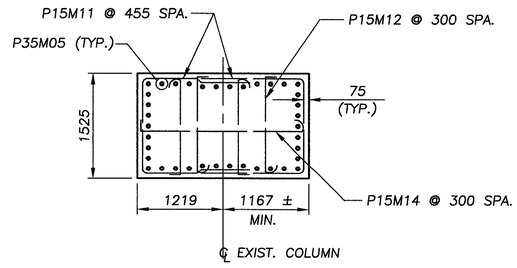


SECTION D–D

* JOINT BOND BREAKER
SHALL BE 13 mm P.E.J.F.



SECTION B–B



SECTION C–C

ALL DIMENSIONS ARE
IN MILLIMETERS.
ALL ELEVATIONS ARE
IN METERS.

metric units

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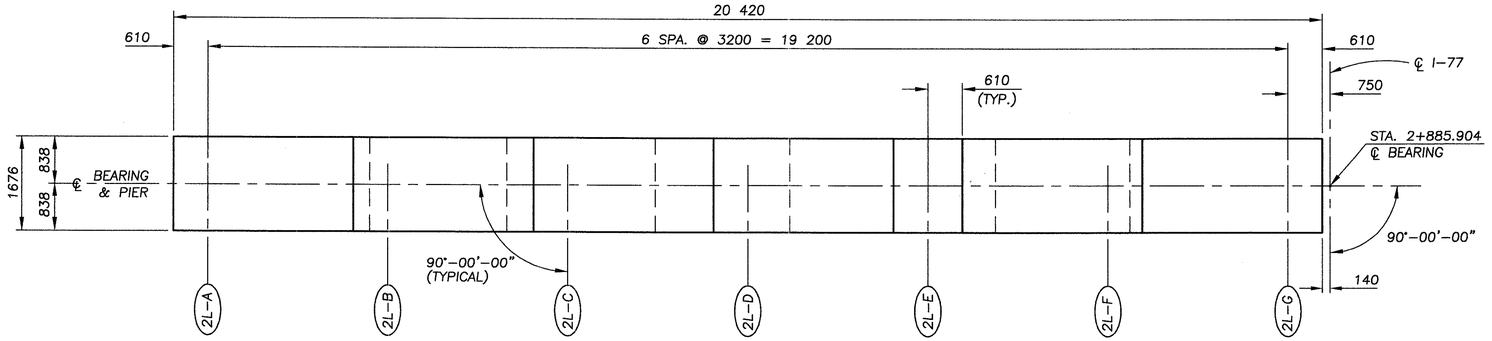
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
MJL	KRM	GT	9-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DHS/JV		1806726	

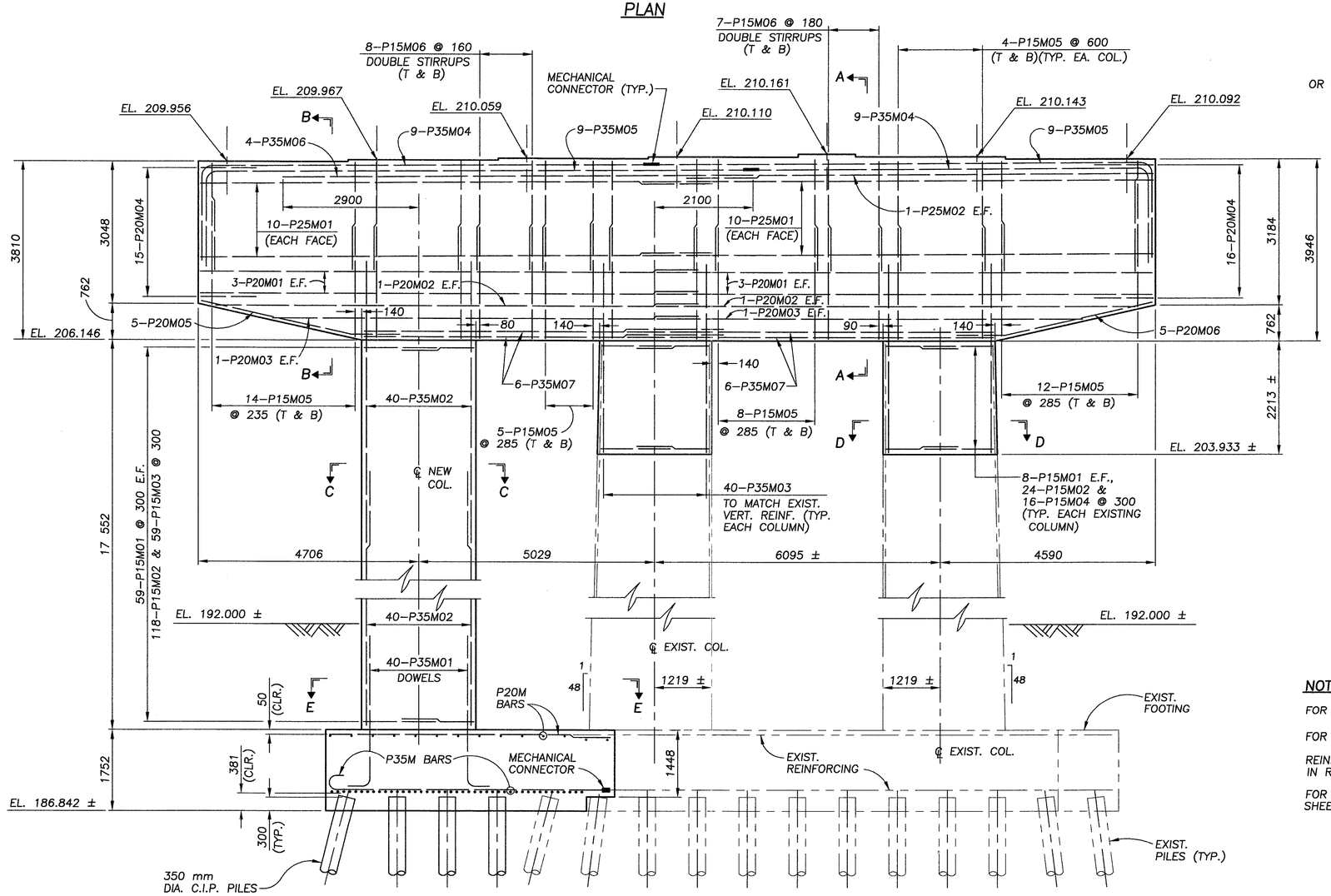
PIER 4L DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

\24621\techprod\drawings\bridge\PIER-4L2.DWG

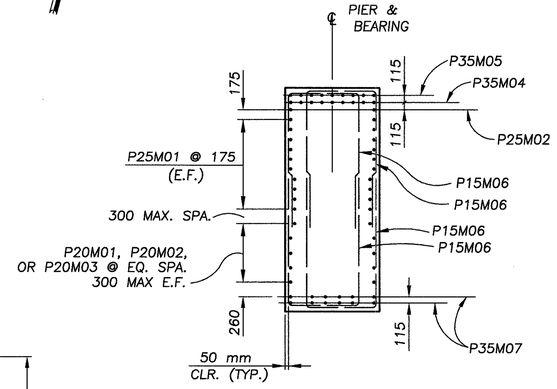


PLAN

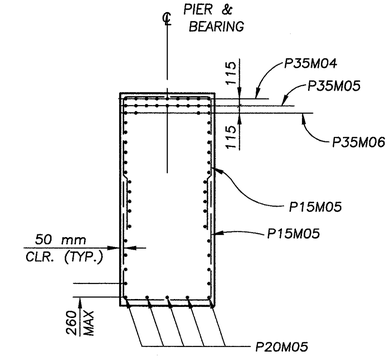


ELEVATION

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#35M = 2400 mm



SECTION A–A



SECTION B–B

(FOR DETAILS NOT SHOWN, SEE SECTION A–A)

NOTES

FOR SECTION C–C, D–D, & E–E, SEE SHEET 76A OF 175.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

REINFORCEMENT IN PIER 5L IS PREFIXED WITH "5L" IN REINFORCING SCHEDULE.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

DESIGN AGENCY
HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East Ninth Street
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DHS	SJR	GT	9–12–97
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MJL/JV		1806726	

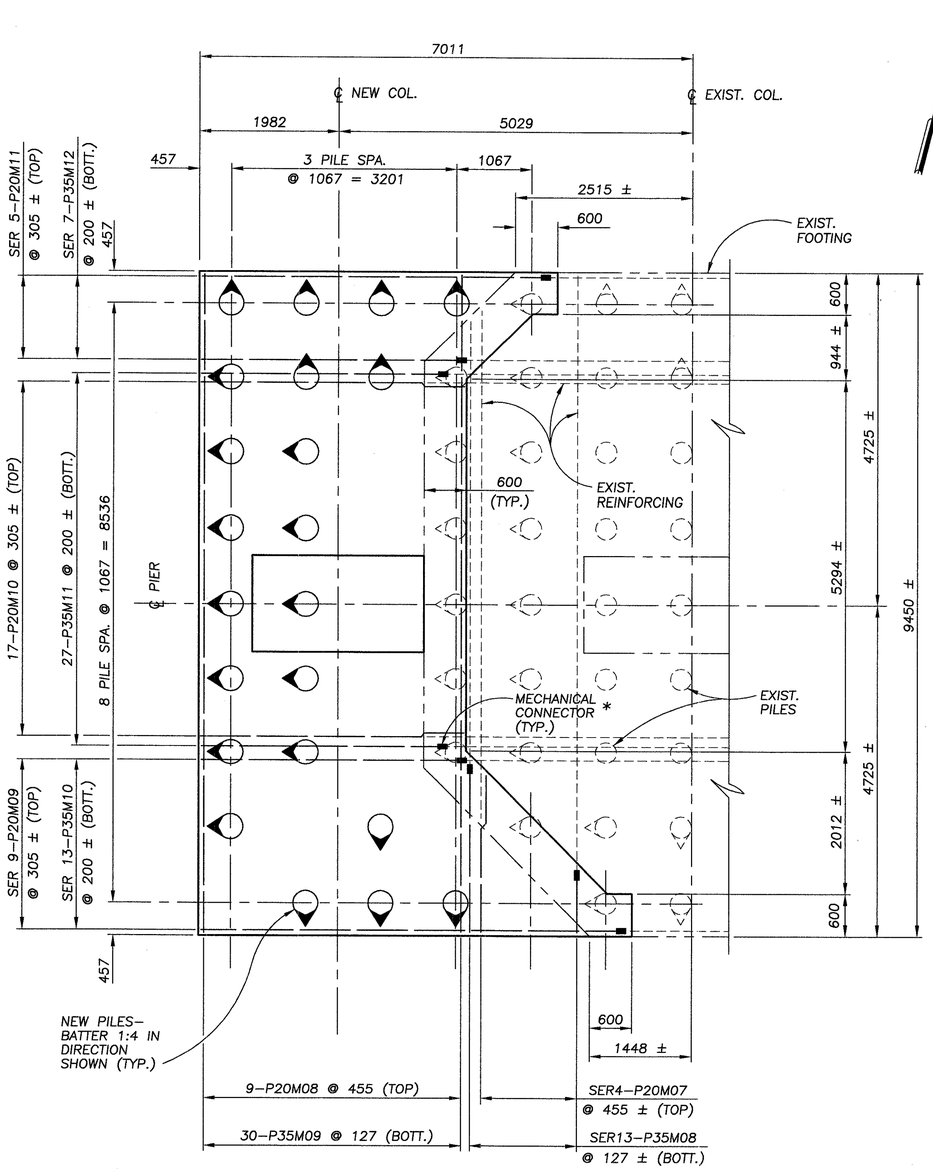
PIER 5L DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

76/175

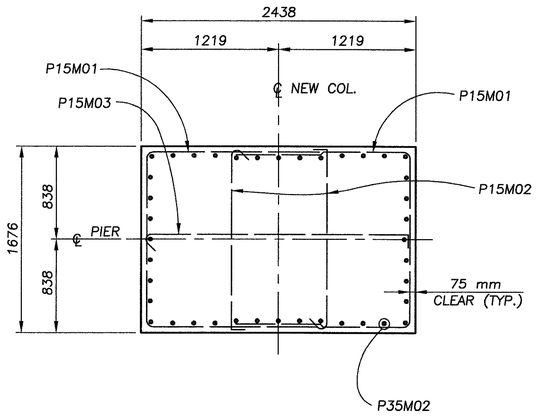
171/295

\24621\techprod\drawings\bridge\PIER–5L1.DWG

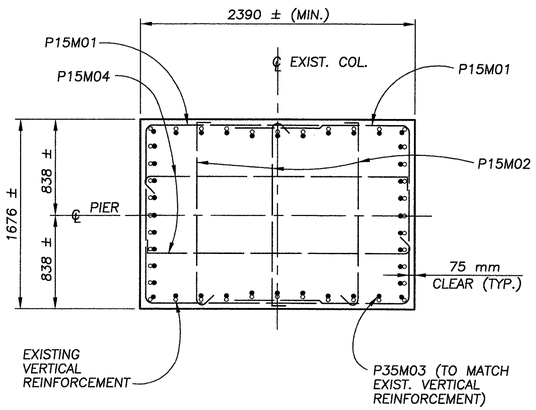


SECTION E–E

* SAW CUT EXISTING #35M BAR 180° HOOK OFF AND SPLICE NEW #35M BARS TO EXISTING #35M BARS WITH MECHANICAL SPLICES. (BOTTOM REINFORCING ONLY)



SECTION C–C



SECTION D–D

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

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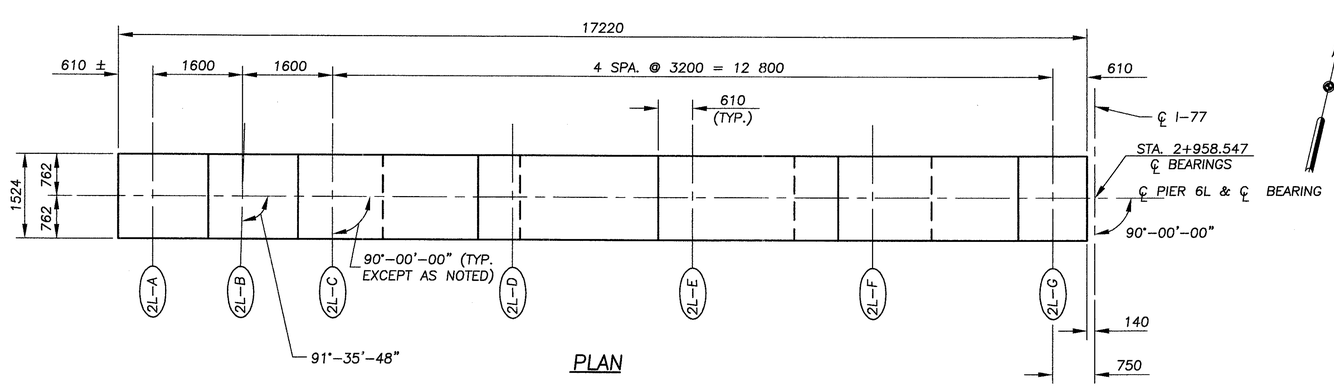
MJL/JV		1806726	

PIER 5L DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

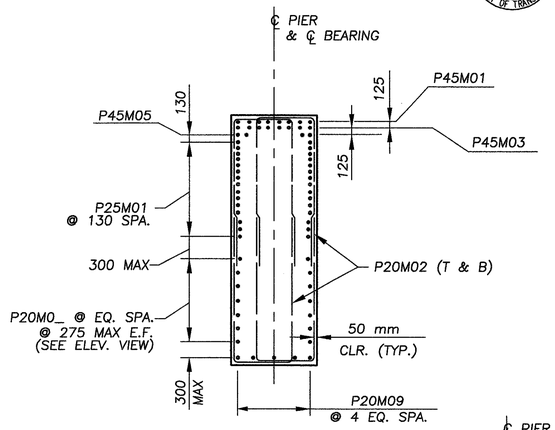
CUY–77–23.458

76A/175
172/295

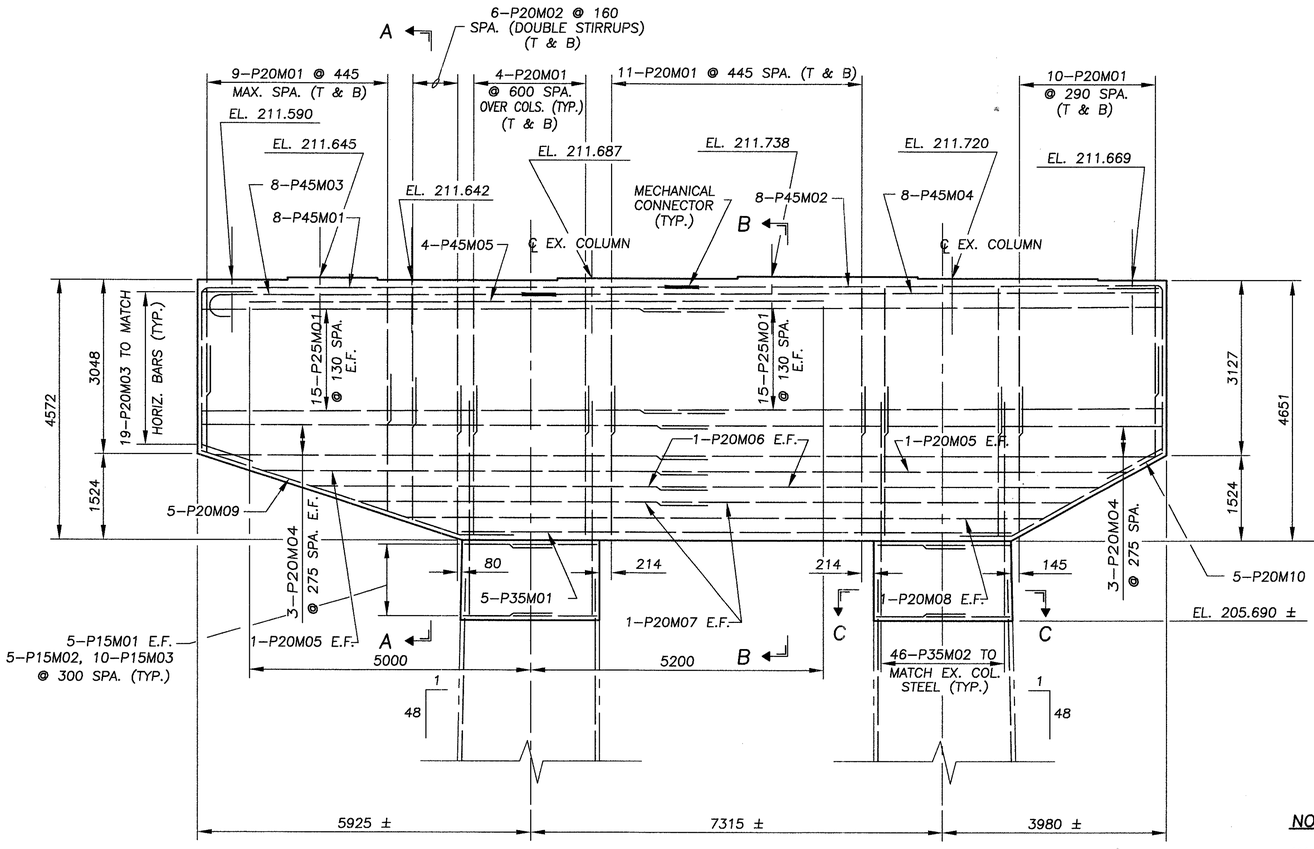
\24621\techprod\drawings\bridge\PIER–5L2.DWG



PLAN

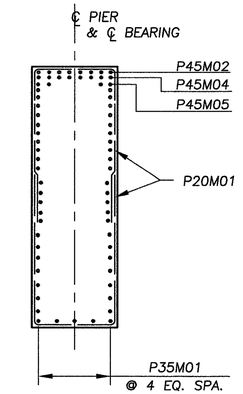


SECTION A-A



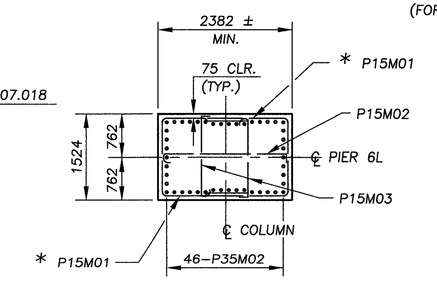
ELEVATION

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#35M = 2400 mm



SECTION B-B

(FOR DETAILS NOT SHOWN SEE SECTION A-A)



SECTION C-C

* SPACED AT 300 mm VERTICALLY

NOTES:

ALL REINFORCEMENT IN PIER 6L IS PREFIXED WITH "6L" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

\24621\techprod\drawings\bridge\PIER-6L.DWG

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

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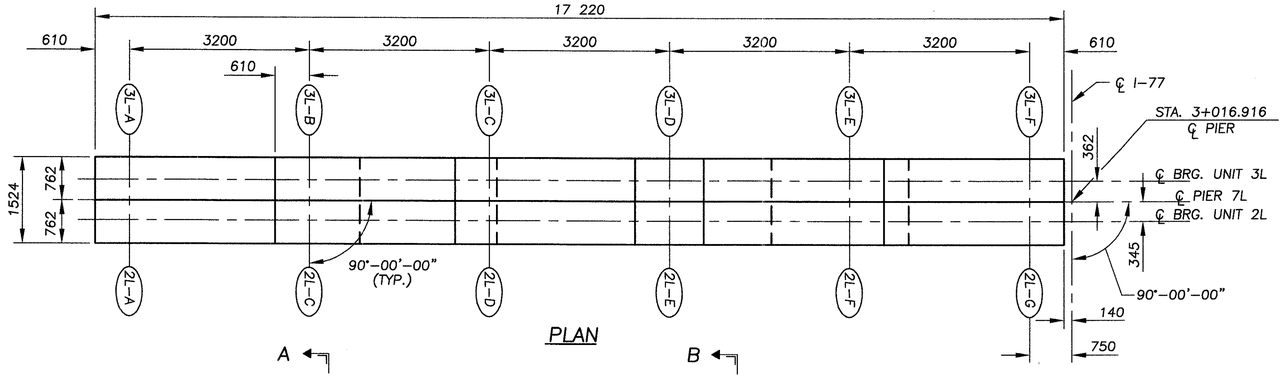
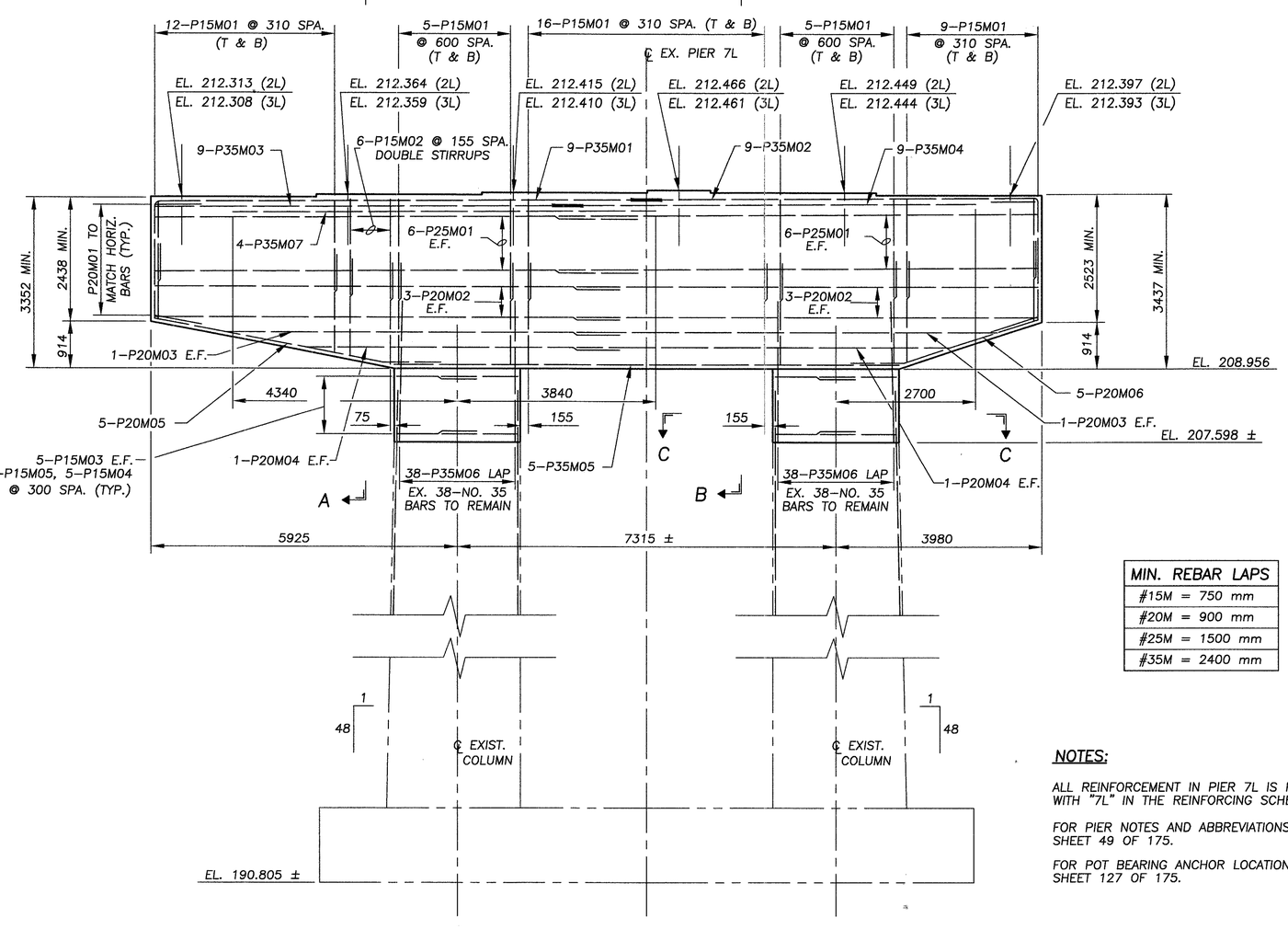
PIER 6L DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458



PLAN



ELEVATION

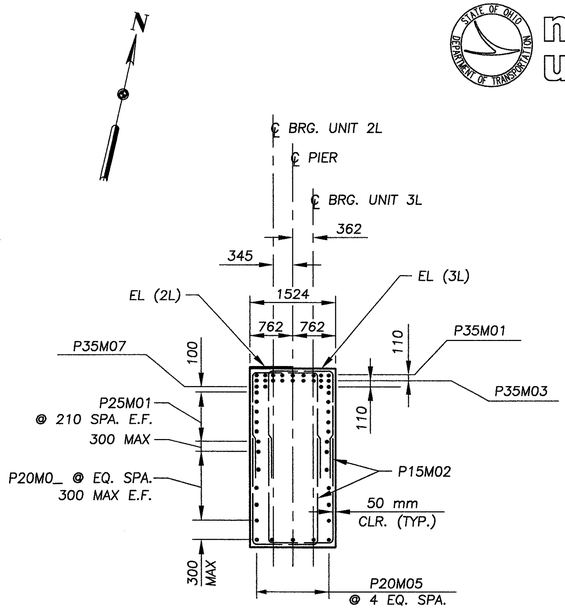
MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm
#35M = 2400 mm

NOTES:

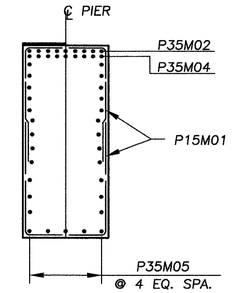
ALL REINFORCEMENT IN PIER 7L IS PREFIXED WITH "7L" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

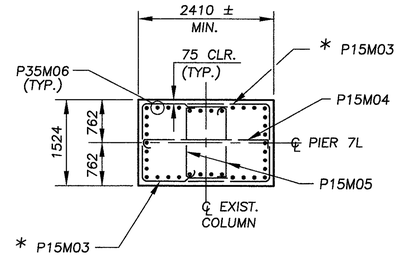


SECTION A-A



SECTION B-B

(FOR DETAILS NOT SHOWN SEE SECTION A-A)



SECTION C-C

* SPACED AT 300 mm VERTICALLY

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

DESIGN AGENCY
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1375 East Ninth Street
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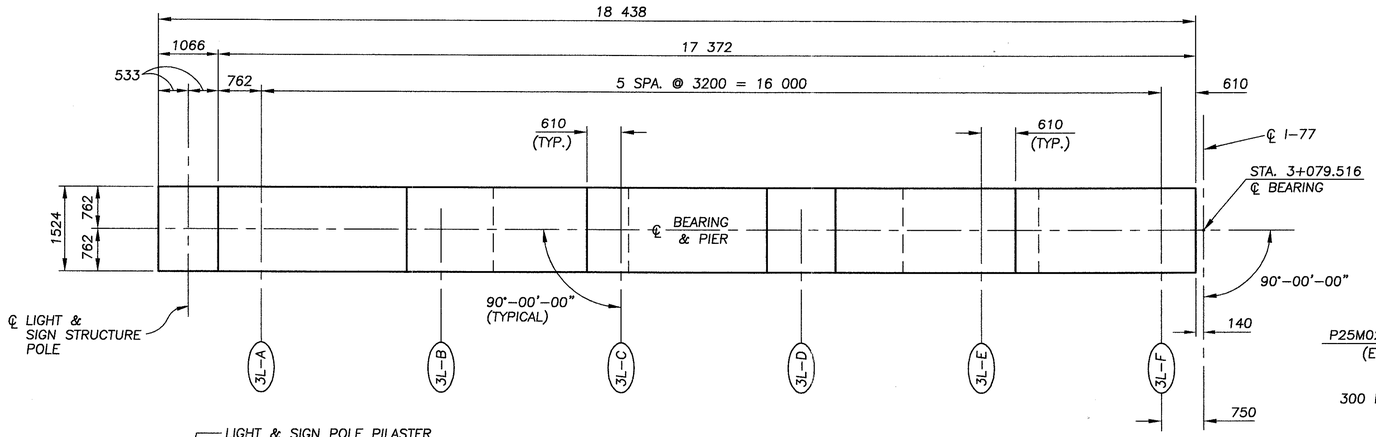
PIER 7L DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

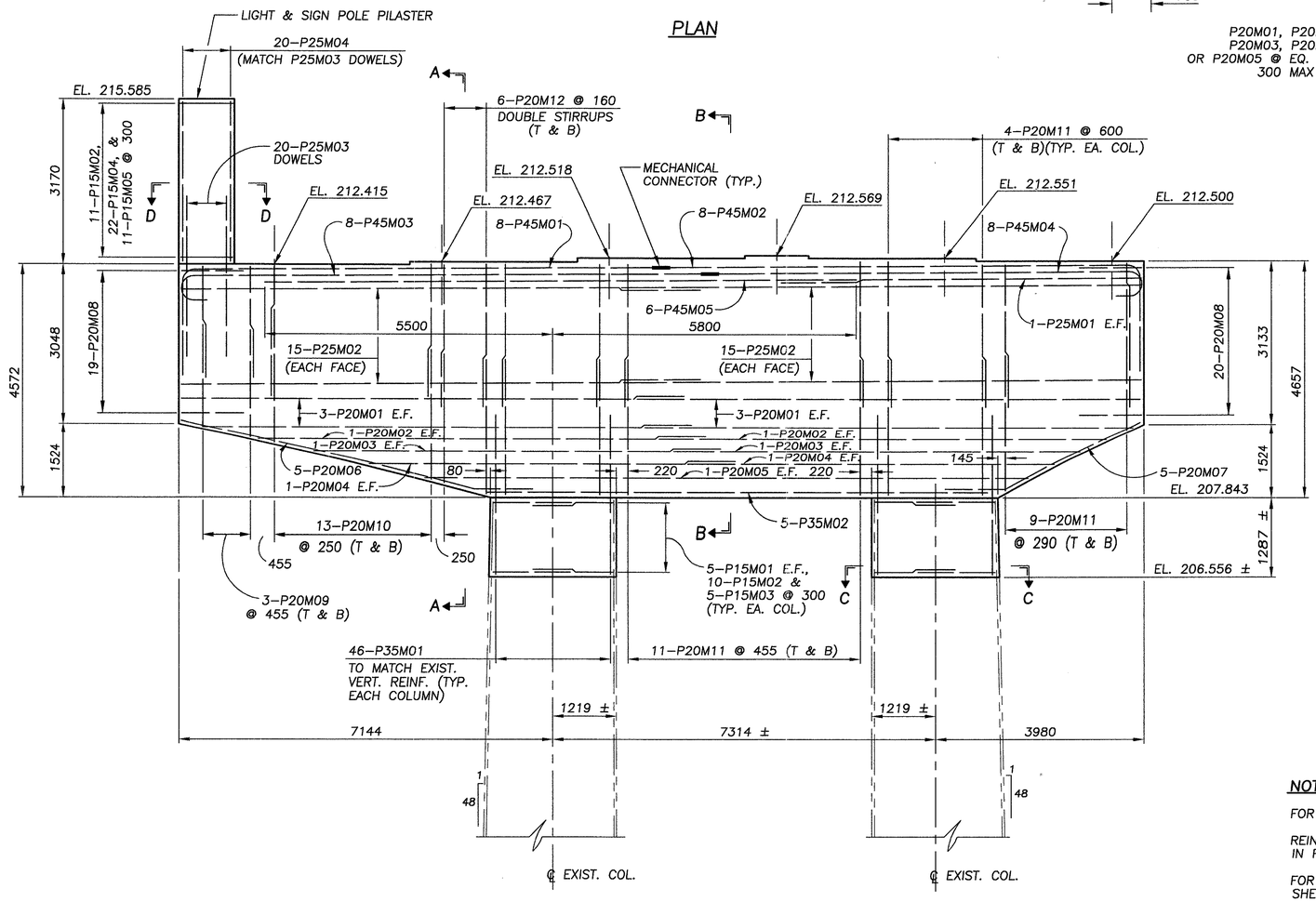
760/175

174/295

\24621\techprod\drawings\bridge\PIER-7L.DWG

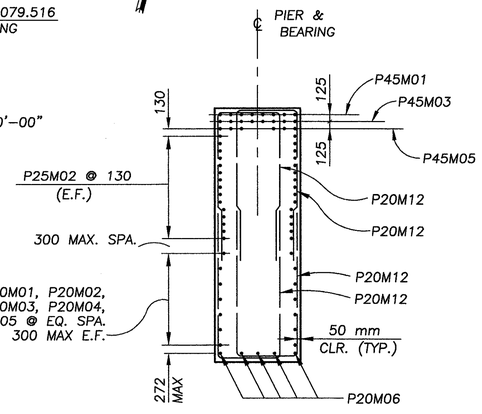


PLAN

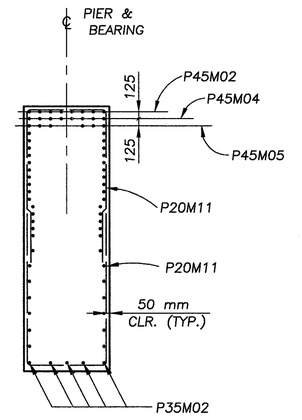


ELEVATION

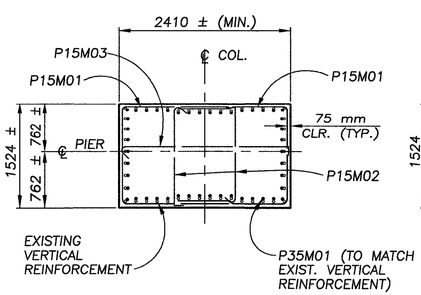
MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm



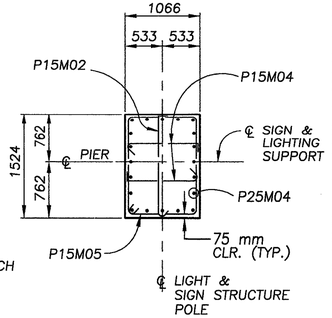
SECTION A-A



SECTION B-B
(FOR DETAILS NOT SHOWN, SEE SECTION A-A)



SECTION C-C



SECTION D-D

NOTES

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

REINFORCEMENT IN PIER 8L IS PREFIXED WITH "8L" IN REINFORCING SCHEDULE.

FOR DETAILS OF LIGHT & SIGN POLE PILASTER, SEE SHEET 49 OF 175.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

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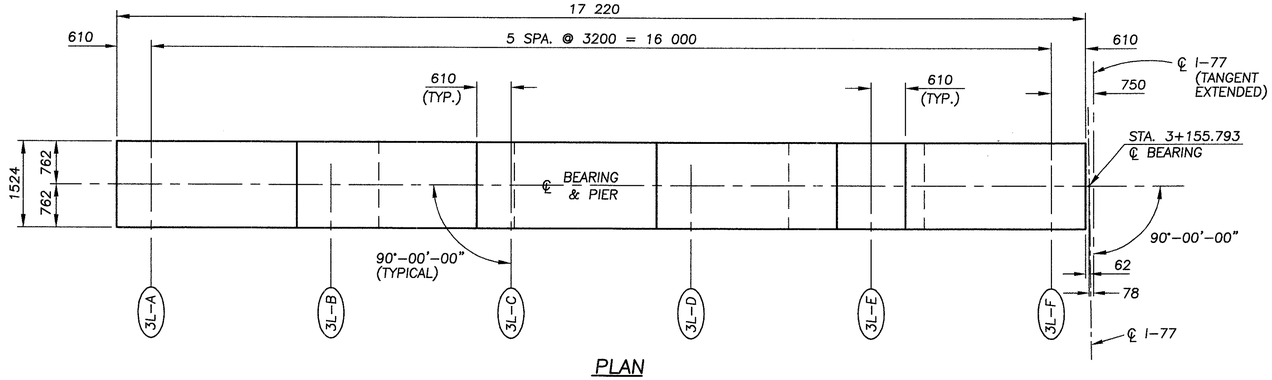
REVISED
REVIEWED GT
DATE 9-12-97
STRUCTURE FILE NUMBER 1806726

PIER 8L DETAILS
BRIDGE NO. CUY-77-23.458
OVER KINGSBURY RUN

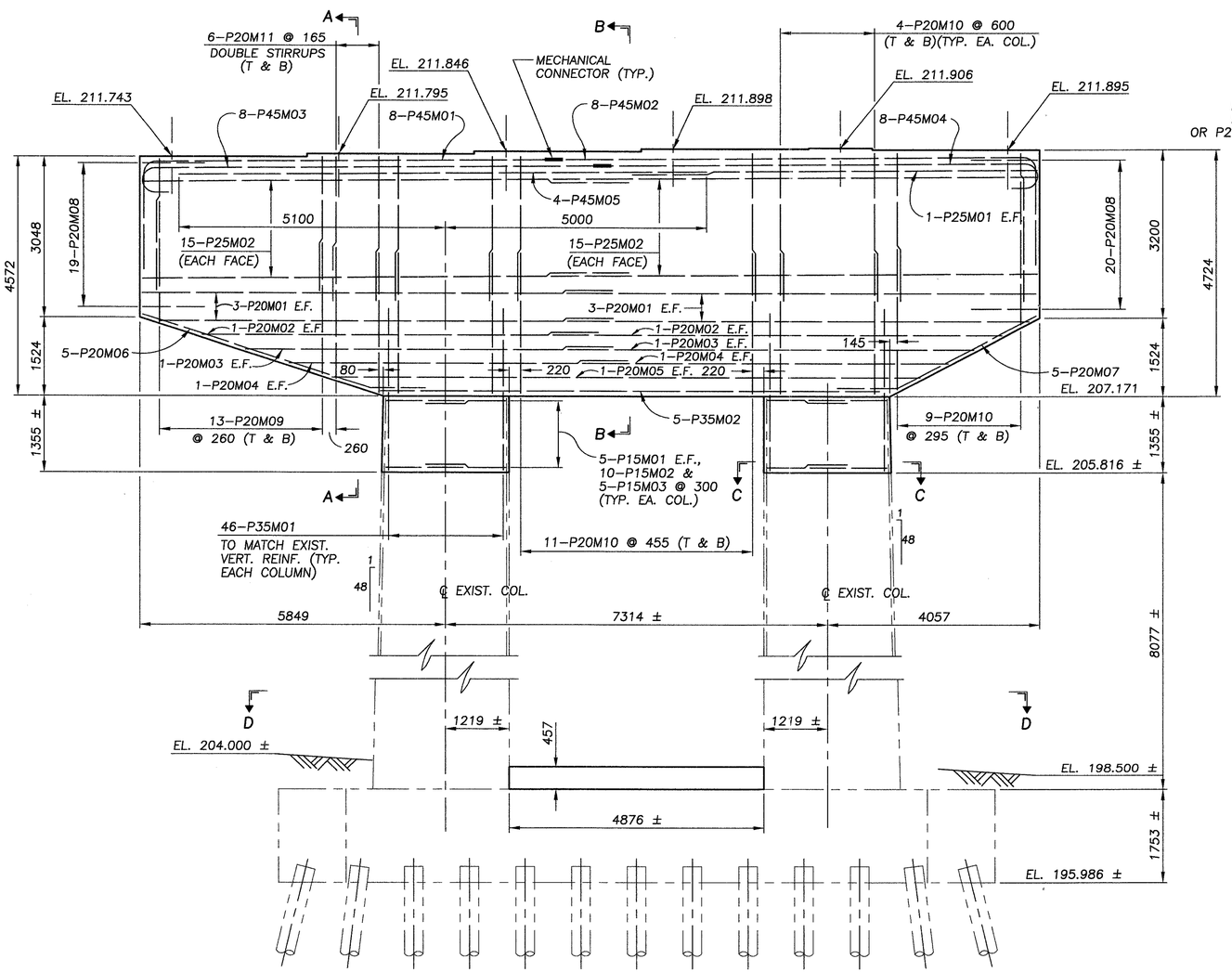
CUY-77-23.458

76D/175
175/295

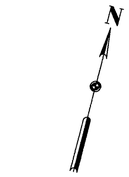
\24621\techprod\drawings\bridge\PIER-8L.DWG



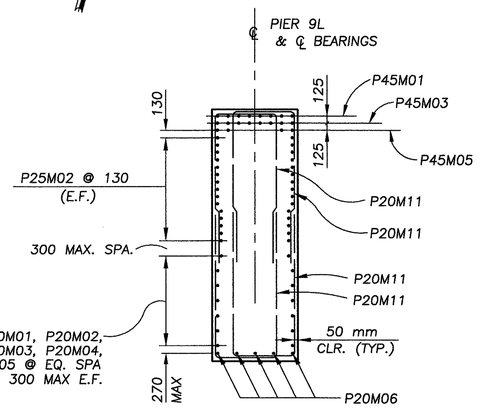
PLAN



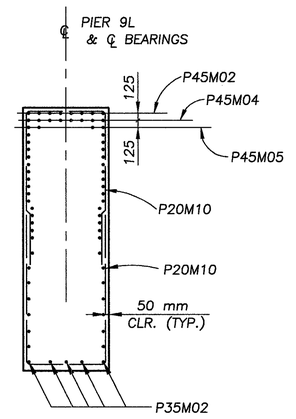
ELEVATION



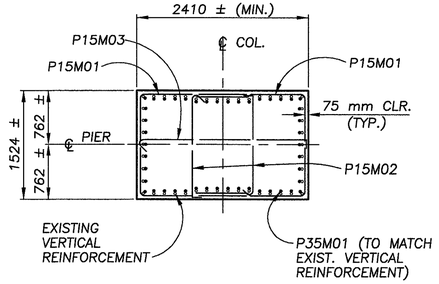
MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm



SECTION A–A



SECTION B–B
(FOR DETAILS NOT SHOWN, SEE SECTION A–A)



SECTION C–C

NOTES

FOR SECTION D–D, SEE SHEET 76F OF 175.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

REINFORCEMENT IN PIER 9L IS PREFIXED WITH "9L" IN REINFORCING SCHEDULE.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

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REVISED
DATE 9–12–97
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PIER 9L DETAILS
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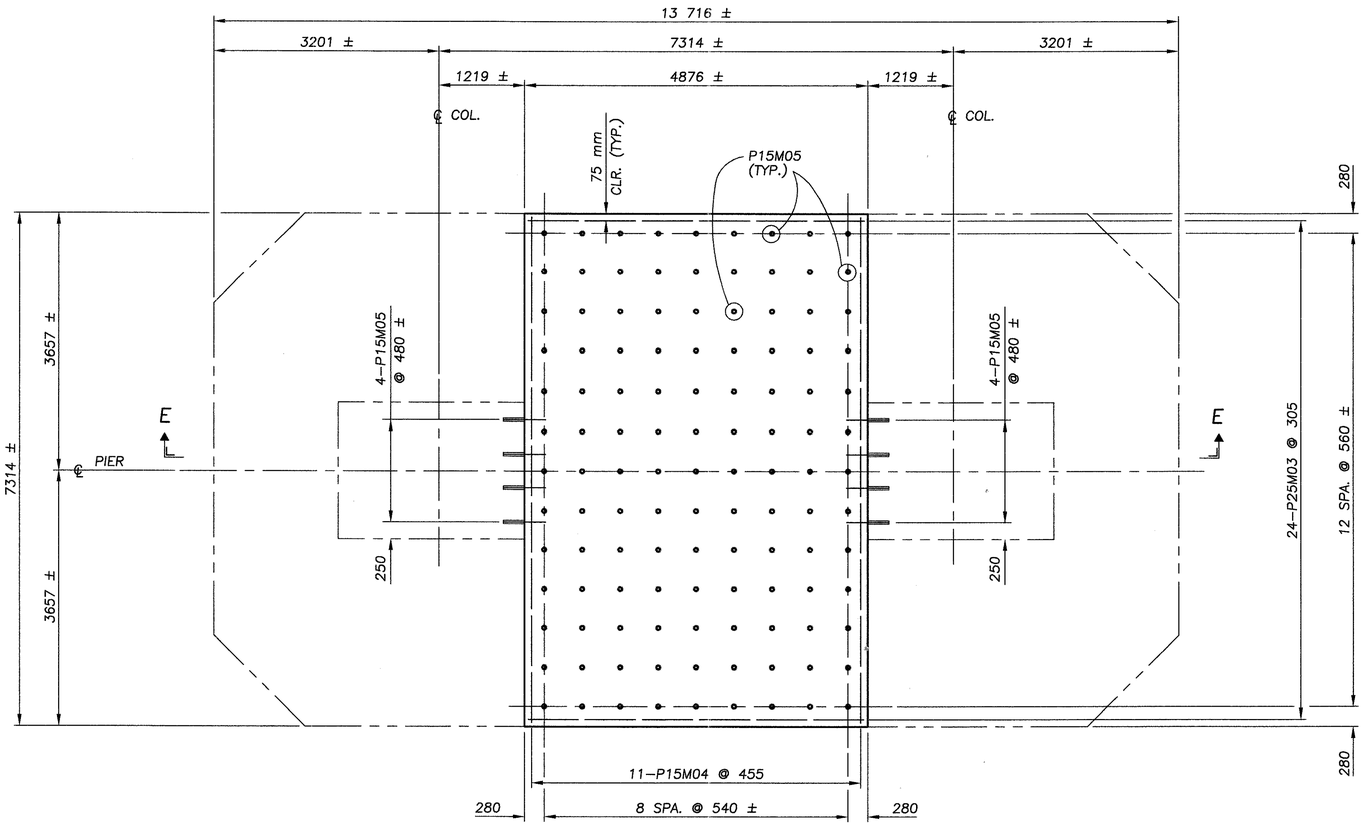
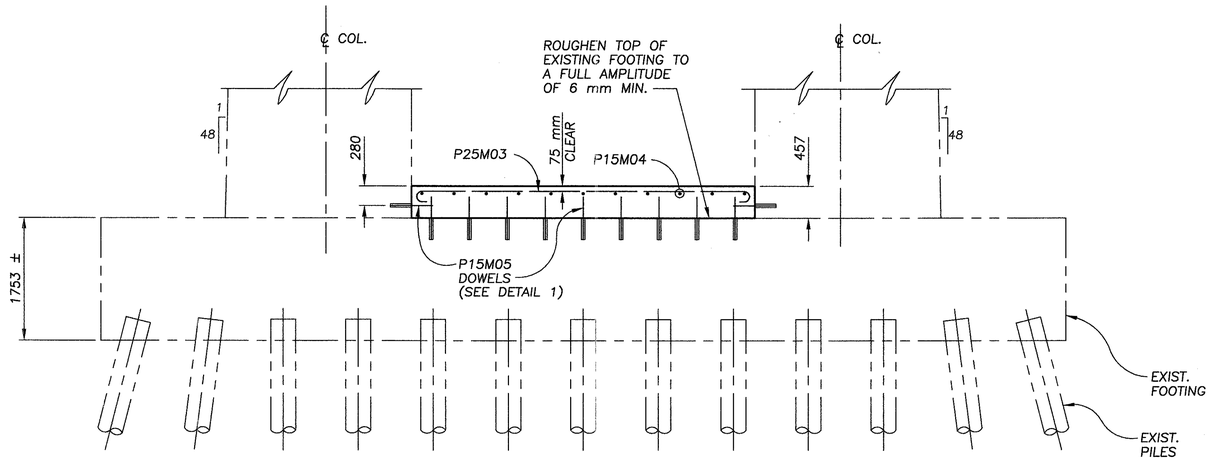
CUY–77–23.458

76E/175
176/295

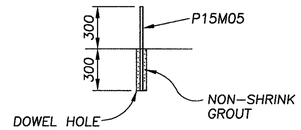
\24621\techprod\drawings\bridge\PIER-9L1.DWG



SECTION D–D



SECTION E–E



DETAIL 1

(125 PLACES)

(ADJUST DOWEL LOCATIONS AS REQUIRED TO MISS EXISTING REBARS)

ALL DIMENSIONS ARE IN MILLIMETERS.

ALL ELEVATIONS ARE IN METERS.

metric units

N

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DHS	SJR	GT	9-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL/JV		1806726	

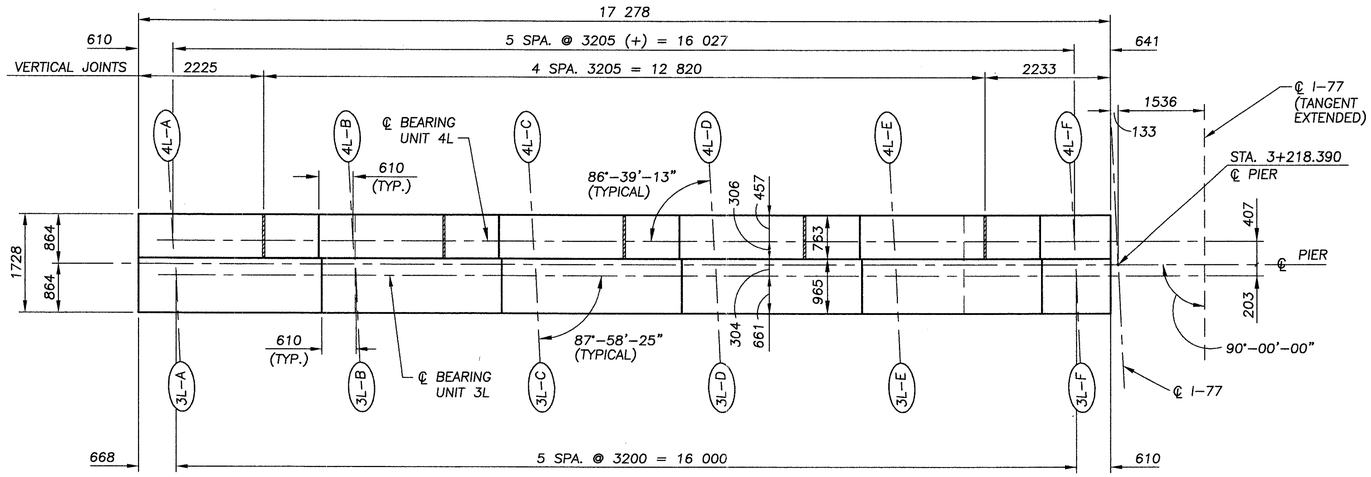
PIER 9L DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

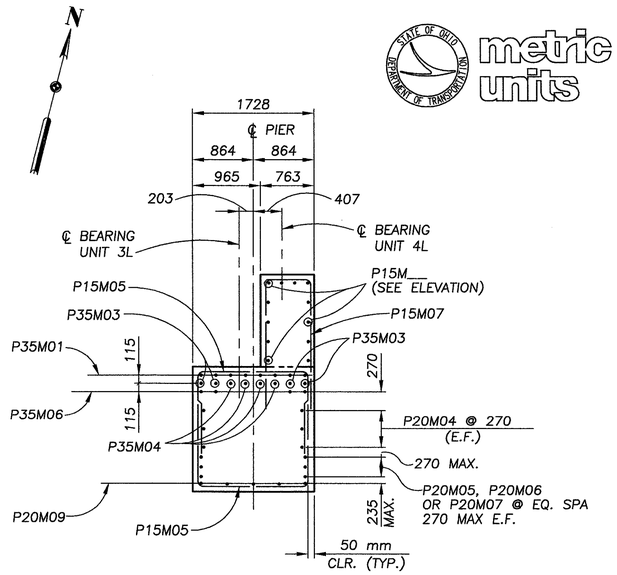
76F/175

177/295

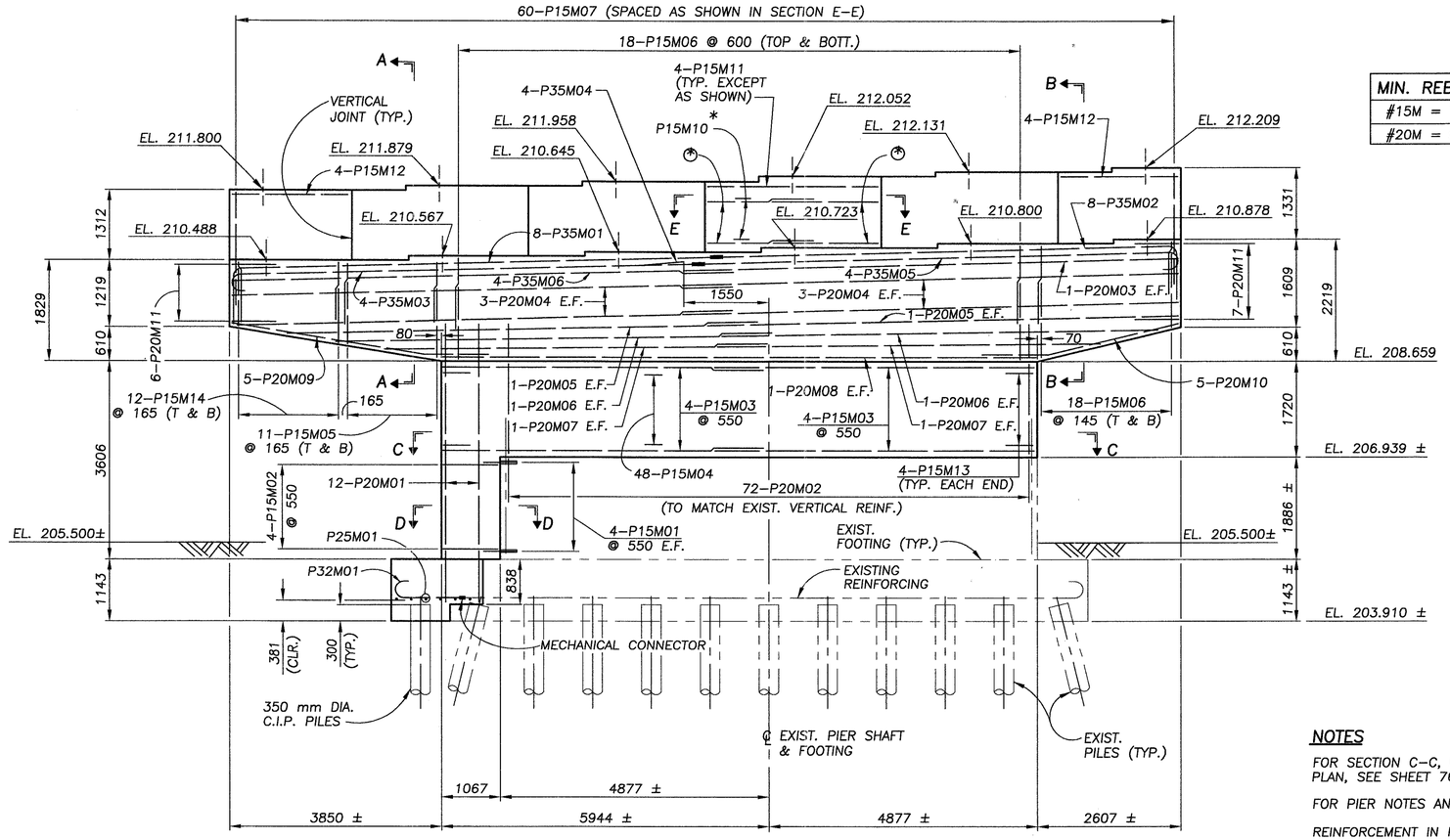
\24621\techprod\drawings\bridge\PIER-9L2.DWG



PLAN

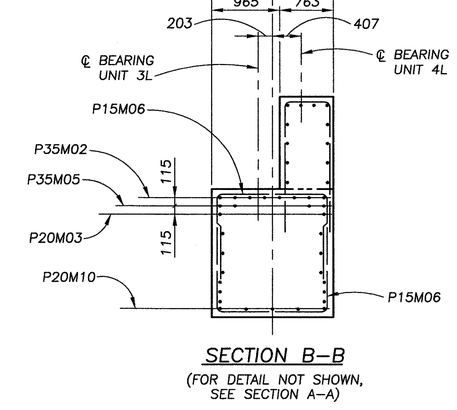


SECTION A-A



ELEVATION

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm



SECTION B-B

(FOR DETAIL NOT SHOWN, SEE SECTION A-A)

* 8-P15M10 - AT GIRDERS 4L-A AND 4L-F
12-P15M10 - AT GIRDERS 4L-B thru 4L-E

⊛ 4-P15M08 - AT GIRDERS 4L-A AND 4L-F
4-P15M09 - AT GIRDERS 4L-B thru 4L-E

■ MECHANICAL CONNECTOR

NOTES

FOR SECTION C-C, D-D, E-E, AND PARTIAL FOOTING PLAN, SEE SHEET 76H OF 175.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.

REINFORCEMENT IN PIER 10L IS PREFIXED WITH "10L" IN REINFORCING SCHEDULE.

FOR POT BEARING ANCHOR LOCATIONS, SEE SHEET 127 OF 175.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

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PIER 10L DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

76G/175
178/295

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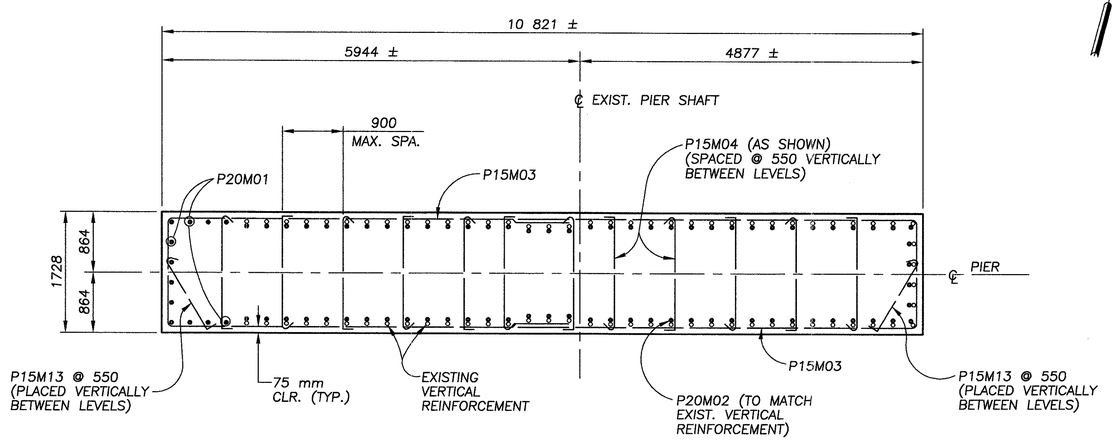
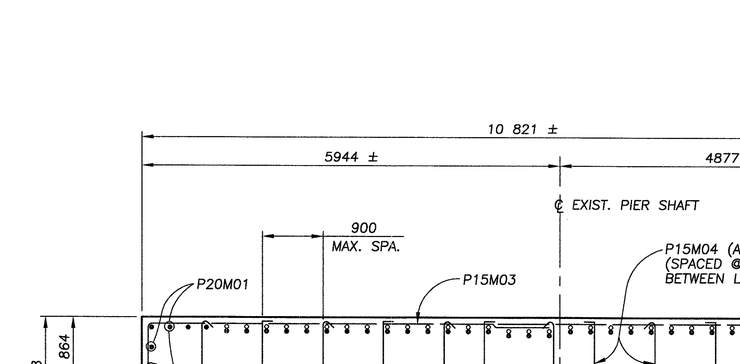
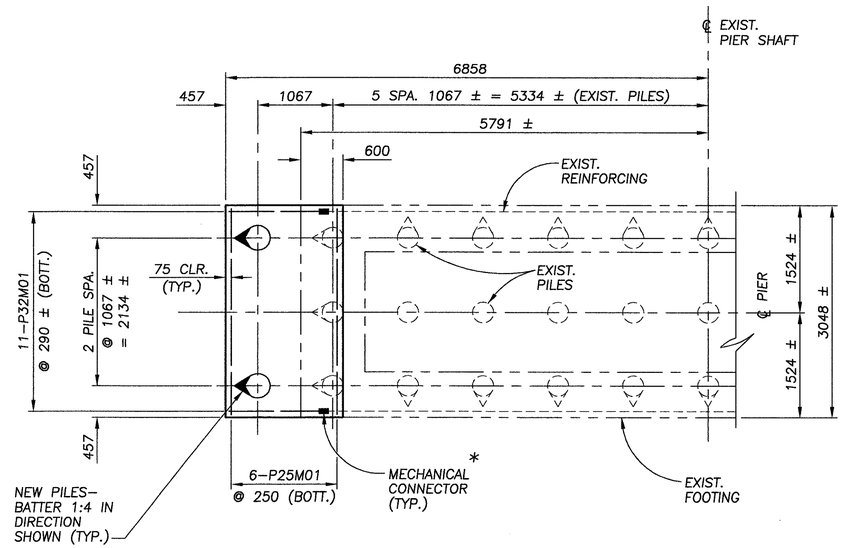


SECTION C–C



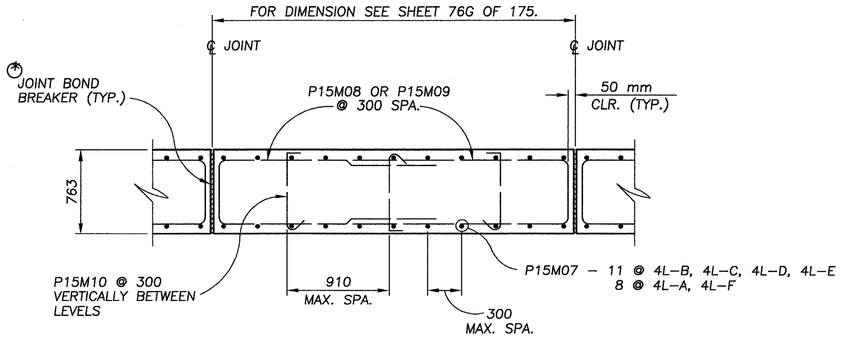
SECTION D–D

NOTE: ADJUST DOWEL LOCATIONS AS REQUIRED TO MISS EXIST. REBARS.



PARTIAL FOOTING PLAN

* SAW CUT EXISTING #32M BAR 180° HOOK 330 mm FROM EXISTING FOOTING AND SPLICE NEW #32M BARS TO EXISTING #32M BARS WITH MECHANICAL CONNECTORS.



SECTION E–E

Ⓙ JOINT BOND BREAKER SHALL BE 13 mm P.E.J.F.

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

metric units

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DHS/JV		1806726	

PIER 10L DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

76H/175

179
295

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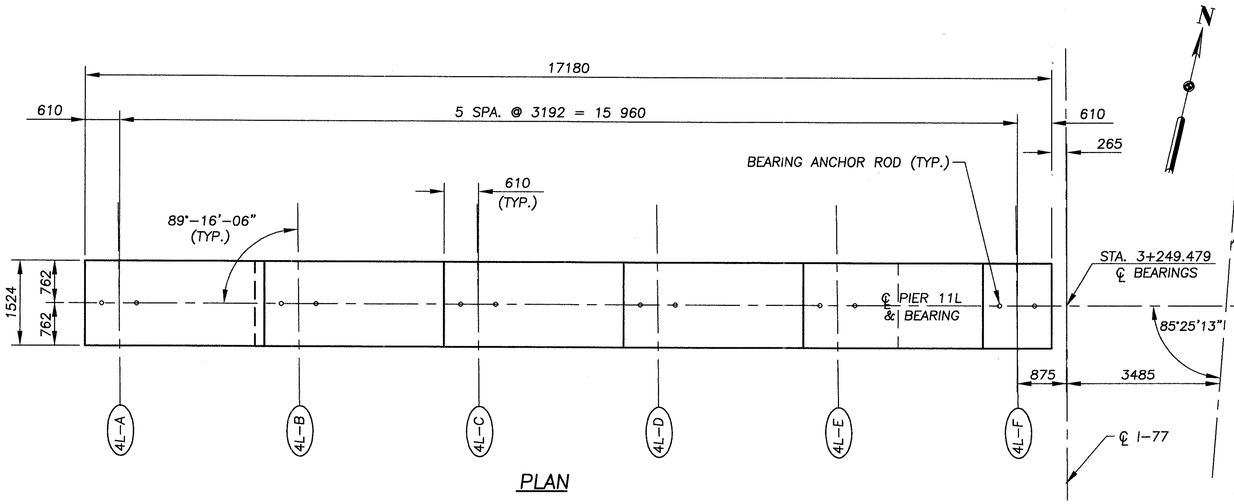
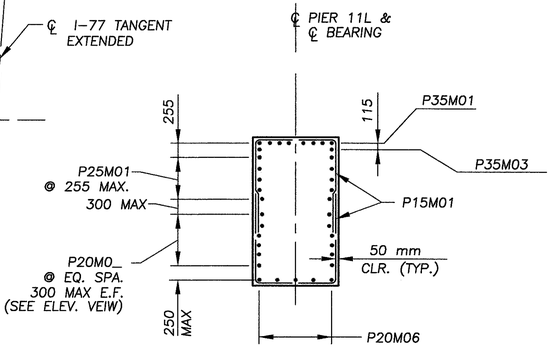
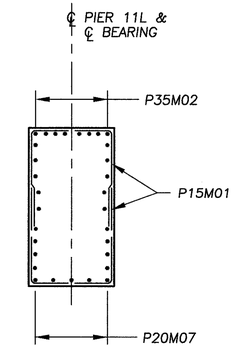


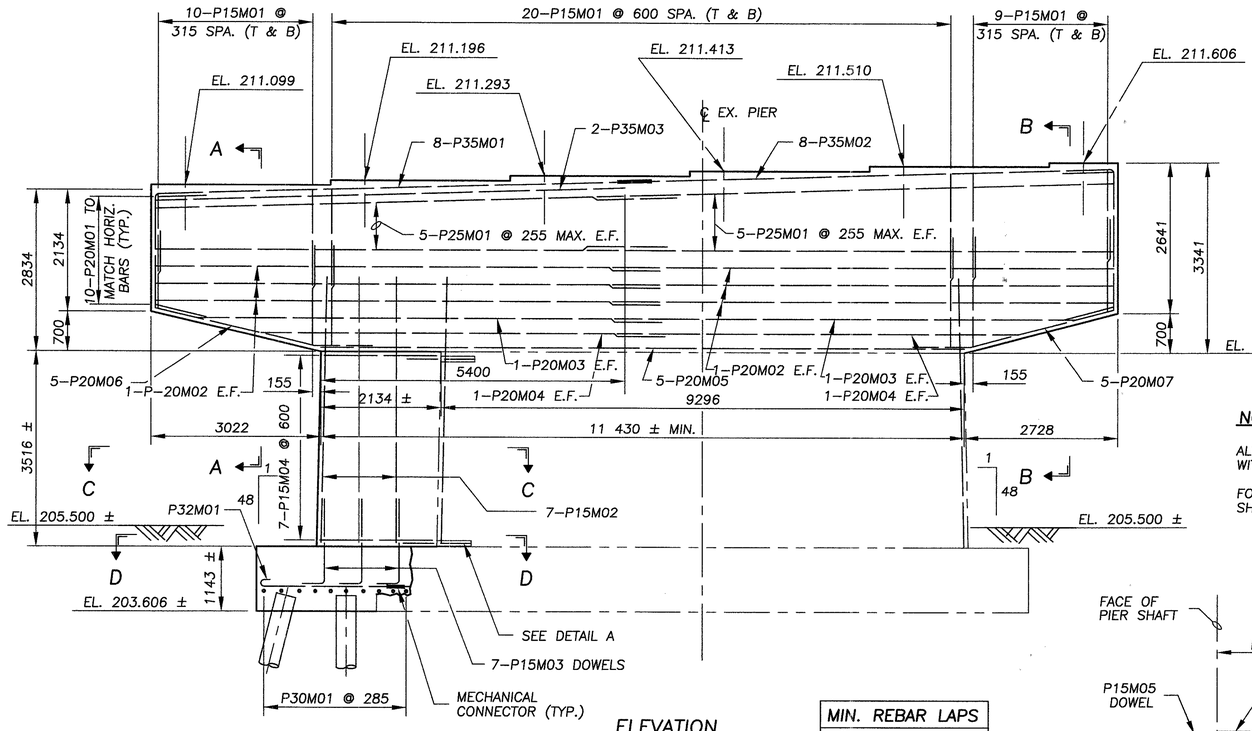
PLAN



SECTION A–A

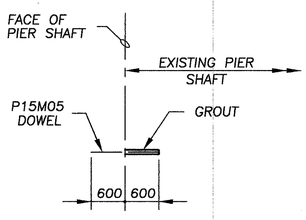


SECTION B–B



ELEVATION

MIN. REBAR LAPS
#15M = 750 mm
#20M = 900 mm
#25M = 1500 mm

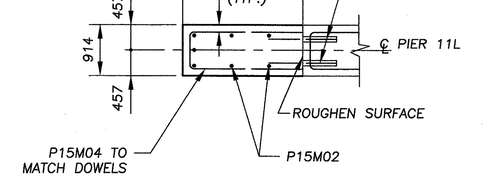


DETAIL A

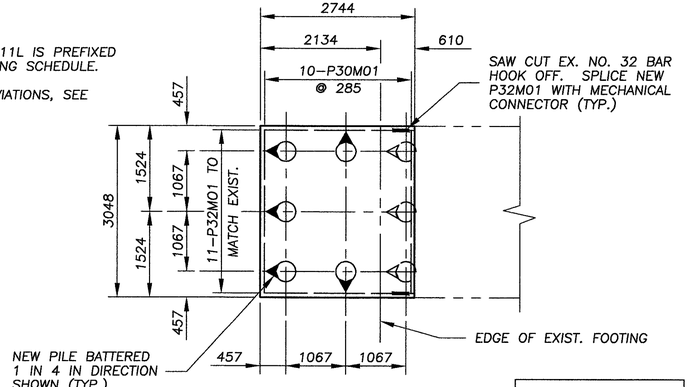
NOTES:

ALL REINFORCEMENT IN PIER 11L IS PREFIXED WITH "11L" IN THE REINFORCING SCHEDULE.

FOR PIER NOTES AND ABBREVIATIONS, SEE SHEET 49 OF 175.



SECTION C–C



SECTION D–D

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL ELEVATIONS ARE IN METERS.

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PIER 11L DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

76J/175
180/295

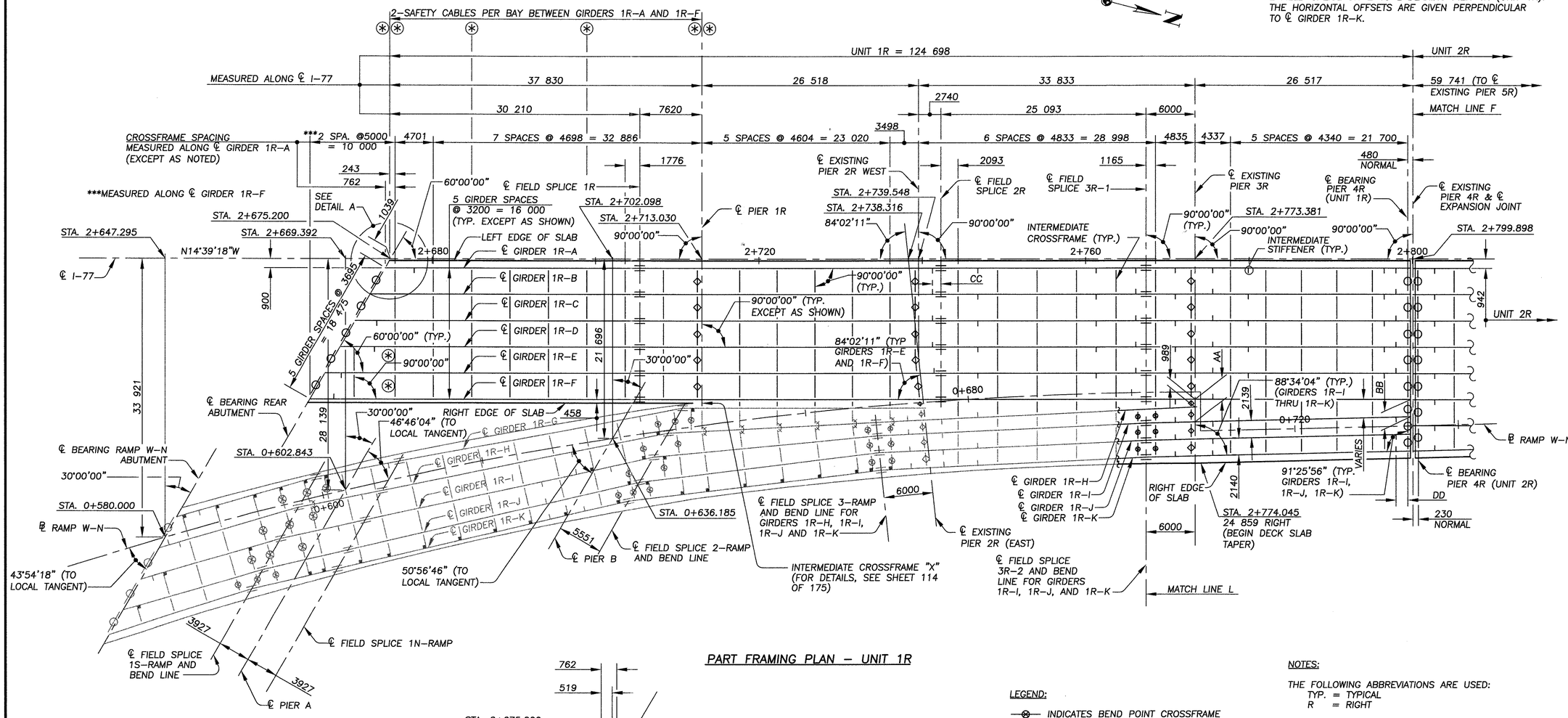
\24621\techprod\drawings\bridge\PIER-11L.DWG

* HORIZONTAL OFFSETS TO EDGE OF SLAB								
LOCATION	℄ BEARING REAR ABUTMENT	℄ FIELD SPLICE 1R	℄ PIER 1R	℄ PIER 2R (WEST)	℄ FIELD SPLICE 2R	℄ FIELD SPLICE 3R–1	℄ PIER 3R	℄ BEARING PIER 4R UNIT 1R
℄ GIRDER 1R–A TO EDGE OF SLAB	991	858	858	858	858	858	858	858
℄ GIRDER 1R–F TO EDGE OF SLAB	529	458	---	---	---	---	---	---
℄ GIRDER 1R–K TO EDGE OF SLAB	---	---	---	---	---	---	883	900

* NOTE:
MEASURED ALONG ℄ BEARING, ℄ PIER, OR ℄ FIELD SPLICE.

**HORIZONTAL OFFSETS TO EDGE OF SLAB AT TENTH POINTS											
LOCATION	℄ FIELD SPLICE 3R–2	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ BRG. PIER 4R (UNIT 1R)
℄ GIRDER 1R–K TO EDGE OF SLAB	783	827	894	900	900	900	900	900	900	900	900

**NOTES:
THE TENTH POINT OFFSETS ARE MEASURED FROM THE ℄ FIELD SPLICE 3R–2 TO ℄ BEARING PIER 4R (UNIT 1R). THE HORIZONTAL OFFSETS ARE GIVEN PERPENDICULAR TO ℄ GIRDER 1R–K.

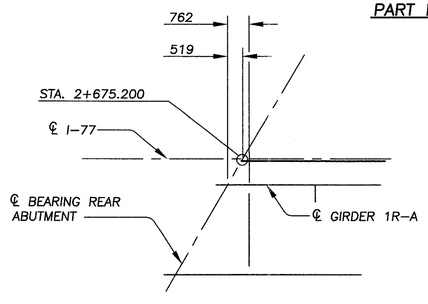


PART FRAMING PLAN – UNIT 1R

TABLE OF DIMENSIONS		
	AA	BB
1R–F TO 1R–I	2795	2144
1R–I TO 1R–J	2139	2139
1R–J TO 1R–K	2141	2141

DIMENSION AA MEASURED ALONG ℄ PIER 3R

DIMENSION BB MEASURED ALONG ℄ BEARING PIER 4R (UNIT 1R)



DETAIL A

TABLE OF DIMENSIONS		
GIRDER	CC	DD
1R–A	1040	———
1R–B	1040	———
1R–C	1040	———
1R–D	1040	———
1R–E	841	———
1R–F	———	———
1R–H	———	———
1R–I	———	1445
1R–J	———	1445
1R–K	———	1445

DIMENSIONS CC AND DD MEASURED ALONG ℄ GIRDER

LEGEND:
- ⊗ INDICATES BEND POINT CROSSFRAME
- ⊖ INDICATES END CROSSFRAME
- INDICATES FIELD SPLICE
- ◇ INDICATES PIER CROSSFRAME
- ⊛ SAFETY CABLE INTERMEDIATE SUPPORT LOCATION
- ⊛⊛ SAFETY CABLE END ATTACHMENT LOCATION

NOTES:

THE FOLLOWING ABBREVIATIONS ARE USED:
TYP. = TYPICAL
R = RIGHT

ALL DIMENSIONS ARE IN MILLIMETERS.

ALL STATIONS ARE IN METERS.

FOR INTERMEDIATE CROSSFRAME, PIER CROSSFRAME AND BEND POINT CROSSFRAME DETAILS, SEE SHEET 114 OF 175.

FOR END CROSSFRAME DETAILS, SEE SHEET 115 OF 175.

FOR ADDITIONAL FRAMING DETAILS, SEE SHEETS 78 AND 79 OF 175.

FOR SAFETY CABLE DETAILS, SEE SHEET 152 OF 175.

REQUIRED INTERMEDIATE STIFFENERS, AS SHOWN IN PART FRAMING PLAN, SHALL BE EQUALLY SPACED BETWEEN ADJACENT CROSSFRAMES OR BETWEEN CROSSFRAMES AND BEARING STIFFENERS EXCEPT AS SHOWN IN FRAMING PLAN AND TABLE OF DIMENSIONS.

metric units

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DESIGNED DHS
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REVIEWED RER
DATE 09-12-97
REVISED
STRUCTURE FILE NUMBER 1806726

FRAMING PLAN – UNIT 1R
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY–77–23.458

77/175

181/295

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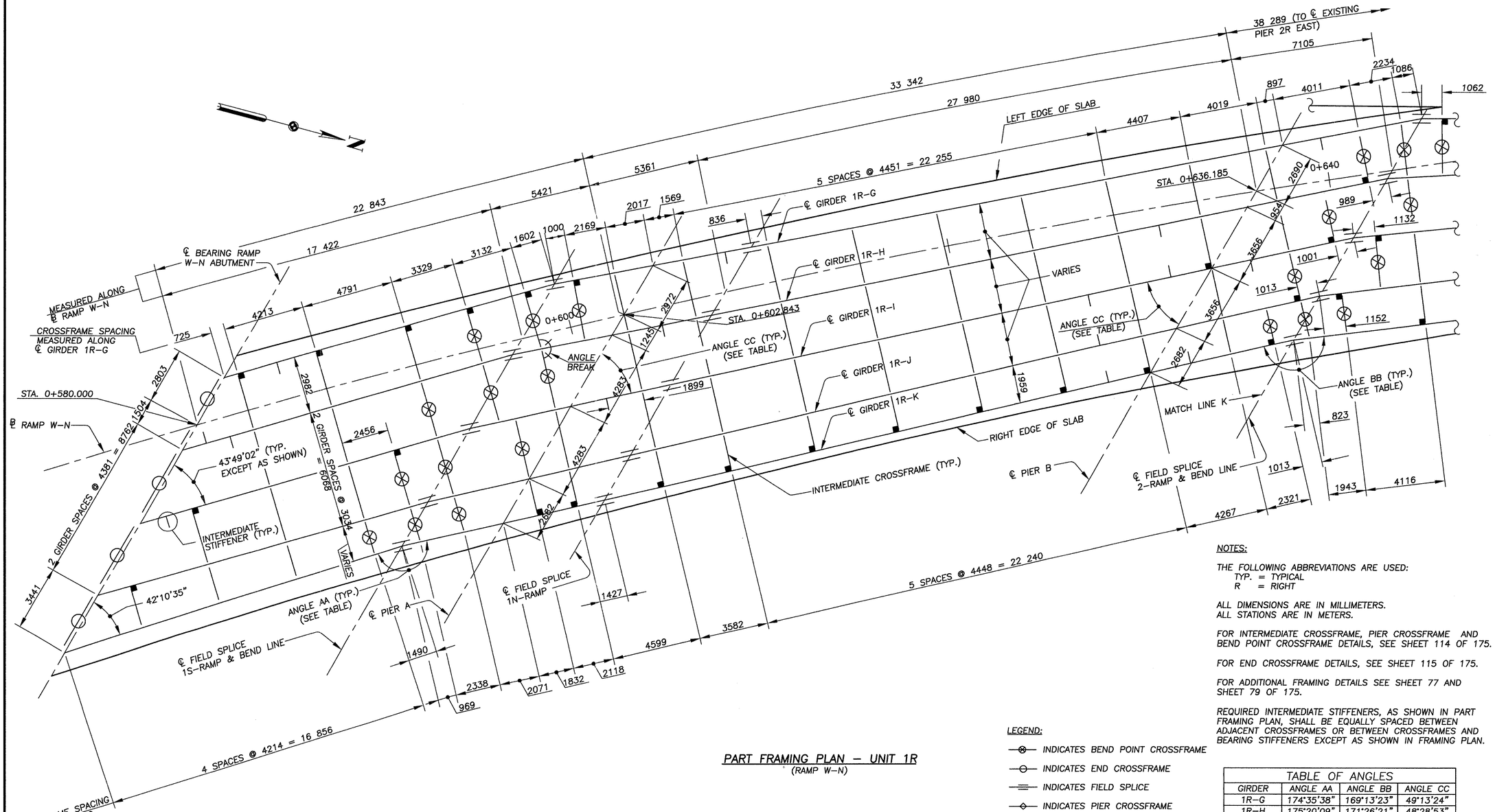
*HORIZONTAL OFFSETS TO EDGE OF SLAB – RAMP W–N			
LOCATION	℄ BEARING RAMP W–N ABUTMENT	℄ PIER A	℄ PIER B
℄ GIRDER 1R–G TO EDGE OF SLAB	1305	940	983
℄ GIRDER 1R–K TO EDGE OF SLAB	1418	1204	959

*NOTE: MEASURED ALONG ℄ BEARING OR ℄ PIER.

**NOTES:

THE TENTH POINT OFFSETS ARE MEASURED FROM THE ℄ BEARING RAMP W–N ABUTMENT TO ℄ FIELD SPLICE 1S–RAMP AND FROM ℄ FIELD SPLICE 1S–RAMP TO ℄ FIELD SPLICE 2–RAMP. THE HORIZONTAL OFFSETS ARE GIVEN PERPENDICULAR TO ℄ GIRDER.

**HORIZONTAL OFFSETS TO EDGE OF SLAB AT TENTH POINTS											
LOCATION	℄ BRG RAMP W–N ABUT.	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 1S–RAMP
℄ GIRDER 1R–G TO EDGE OF SLAB	910	896	875	848	813	772	723	668	606	537	461
℄ GIRDER 1R–K TO EDGE OF SLAB	940	925	914	912	916	927	946	974	1008	1049	1098
LOCATION	℄ FIELD SPLICE 1S–RAMP	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 2–RAMP
℄ GIRDER 1R–G TO EDGE OF SLAB	461	665	824	937	1005	1028	1005	937	824	665	461
℄ GIRDER 1R–K TO EDGE OF SLAB	1099	869	689	559	479	449	469	540	660	830	1050



PART FRAMING PLAN – UNIT 1R
(RAMP W–N)

LEGEND:

- INDICATES BEND POINT CROSSFRAME
- INDICATES END CROSSFRAME
- INDICATES FIELD SPLICE
- INDICATES PIER CROSSFRAME
- INDICATES INTERMEDIATE AND BEND POINT CROSSFRAMES SET PERPENDICULAR TO GIRDER

NOTES:

THE FOLLOWING ABBREVIATIONS ARE USED:
TYP. = TYPICAL
R = RIGHT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL STATIONS ARE IN METERS.

FOR INTERMEDIATE CROSSFRAME, PIER CROSSFRAME AND BEND POINT CROSSFRAME DETAILS, SEE SHEET 114 OF 175.

FOR END CROSSFRAME DETAILS, SEE SHEET 115 OF 175.

FOR ADDITIONAL FRAMING DETAILS SEE SHEET 77 AND SHEET 79 OF 175.

REQUIRED INTERMEDIATE STIFFENERS, AS SHOWN IN PART FRAMING PLAN, SHALL BE EQUALLY SPACED BETWEEN ADJACENT CROSSFRAMES OR BETWEEN CROSSFRAMES AND BEARING STIFFENERS EXCEPT AS SHOWN IN FRAMING PLAN.

TABLE OF ANGLES			
GIRDER	ANGLE AA	ANGLE BB	ANGLE CC
1R–G	174°35'38"	169°13'23"	49°13'24"
1R–H	175°20'09"	171°26'21"	48°28'53"
1R–I	176°07'43"	173°18'37"	47°41'19"
1R–J	176°54'07"	173°55'41"	46°54'55"
1R–K	175°15'40"	173°55'41"	46°54'55"

metric units

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FRAMING PLAN – UNIT 1R
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

78/175
182/295

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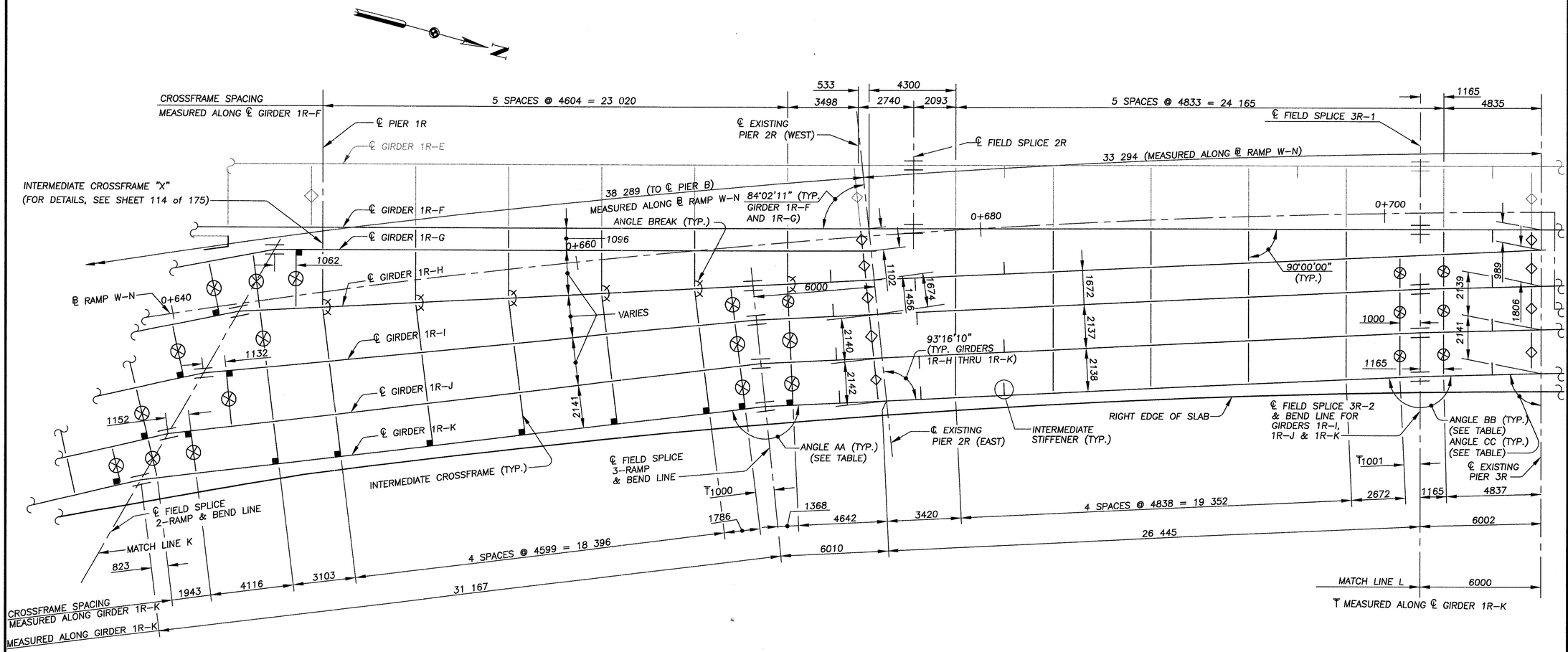
*HORIZONTAL OFFSETS TO EDGE OF SLAB – RAMP W–N		
LOCATION	℄ PIER 2R–EAST	℄ PIER 3R
℄ GIRDER 1R–K TO EDGE OF SLAB	710	883

*NOTE: MEASURED ALONG ℄ PIER

**NOTES:

THE TENTH POINT OFFSETS ARE MEASURED FROM THE ℄ FIELD SPLICE 2–RAMP TO ℄ FIELD SPLICE 3–RAMP, AND FROM ℄ FIELD SPLICE 3–RAMP TO ℄ FIELD SPLICE 3R–2. THE HORIZONTAL OFFSETS ARE GIVEN PERPENDICULAR TO ℄ GIRDER 1R–K.

**HORIZONTAL OFFSETS TO EDGE OF SLAB AT TENTH POINTS											
LOCATION	℄ FIELD SPLICE 2–RAMP	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 3–RAMP
℄ GIRDER 1R–K TO EDGE OF SLAB	1050	892	755	671	640	631	644	678	734	812	911
LOCATION	℄ FIELD SPLICE 3–RAMP	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 3R–2
℄ GIRDER 1R–K TO EDGE OF SLAB	911	793	698	626	578	554	553	575	621	690	783



PART FRAMING PLAN – UNIT 1R

(RAMP W–N)

TABLE OF ANGLES			
GIRDER	ANGLE AA	ANGLE BB	ANGLE CC
1R–H	179°44'12"	-----	87°18'20"
1R–I	177°04'21"	178°44'16"	88°34'04"
1R–J	175°40'54"	178°44'16"	88°34'04"
1R–K	175°40'54"	178°44'16"	88°34'04"

LEGEND:

- ⊗ INDICATES BEND POINT CROSSFRAME
- ⊖ INDICATES END CROSSFRAME
- = INDICATES FIELD SPLICE
- ◇ INDICATES PIER CROSSFRAME
- ■ INDICATES INTERMEDIATE AND BEND POINT CROSSFRAMES SET PERPENDICULAR TO GIRDER

NOTES:

THE FOLLOWING ABBREVIATIONS ARE USED:
TYP. = TYPICAL
R = RIGHT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL STATIONS ARE IN METERS.

FOR INTERMEDIATE CROSSFRAME, PIER CROSSFRAME AND BEND POINT CROSSFRAME DETAILS, SEE SHEET 114 OF 175.

FOR END CROSSFRAME DETAILS, SEE SHEET 115 OF 175.

FOR ADDITIONAL FRAMING DETAILS SEE SHEET 77 AND SHEET 78 OF 175.

REQUIRED INTERMEDIATE STIFFENERS, AS SHOWN IN PART FRAMING PLAN, SHALL BE EQUALLY SPACED BETWEEN ADJACENT CROSSFRAMES OR BETWEEN CROSSFRAMES AND BEARING STIFFENERS.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

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DATE 09-12-97
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STRUCTURE FILE NUMBER 1806726

FRAMING PLAN – UNIT 1R
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

79/175

183/295

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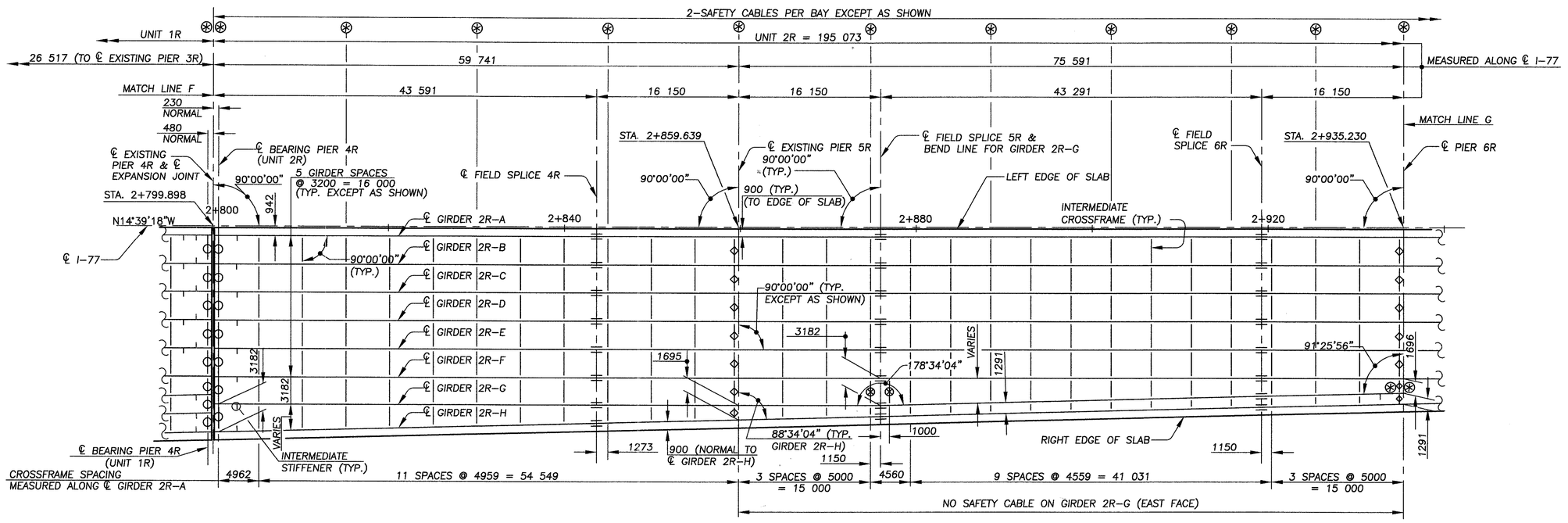
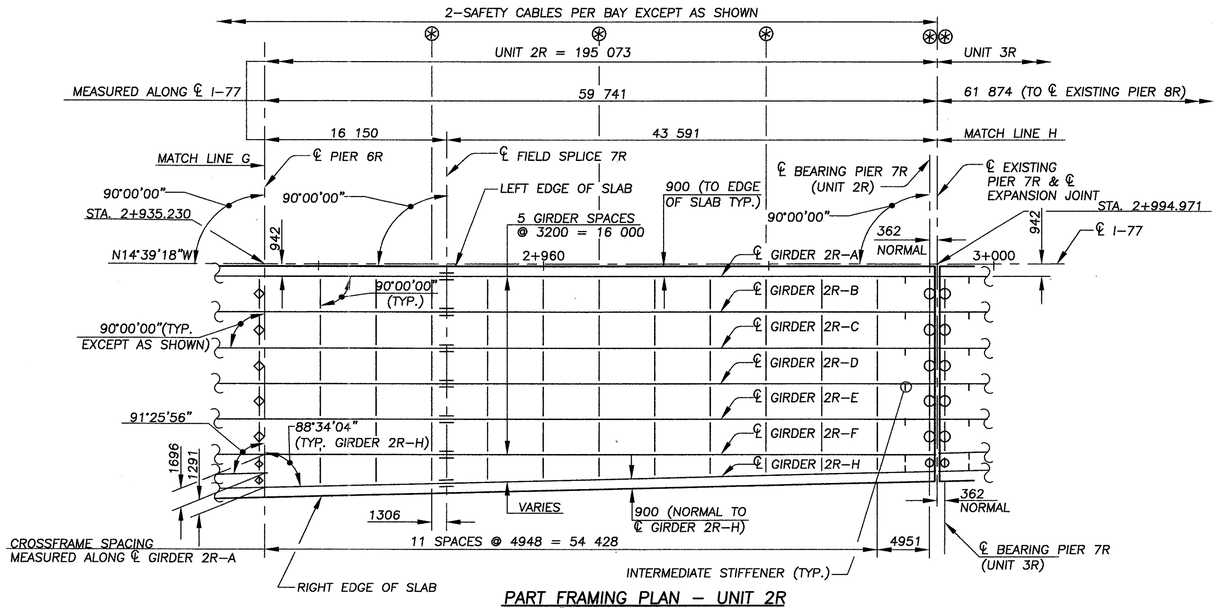


PART FRAMING PLAN – UNIT 2R

(℄ RAMP W–N NOT SHOWN)



PART FRAMING PLAN – UNIT 2R

(℄ RAMP W–N NOT SHOWN)

NOTES:

THE FOLLOWING ABBREVIATIONS ARE USED:
TYP. = TYPICAL
R = RIGHT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL STATIONS ARE IN METERS.

FOR INTERMEDIATE CROSSFRAME, PIER CROSSFRAME AND BEND POINT CROSSFRAME DETAILS, SEE SHEET 114 OF 175.

FOR END CROSSFRAME DETAILS, SEE SHEET 115 OF 175.

FOR SAFETY CABLE DETAILS, SEE SHEET 152 OF 175.

REQUIRED INTERMEDIATE STIFFENERS, AS SHOWN IN PART FRAMING PLAN, SHALL BE EQUALLY SPACED BETWEEN ADJACENT CROSSFRAMES OR BETWEEN CROSSFRAMES AND BEARING STIFFENERS.

LEGEND:

- —⊗— INDICATES BEND POINT CROSSFRAME
- —○— INDICATES END CROSSFRAME
- —=— INDICATES FIELD SPLICE
- —◇— INDICATES PIER CROSSFRAME
- ⊛ SAFETY CABLE INTERMEDIATE SUPPORT LOCATION
- ⊛⊛ SAFETY CABLE END ATTACHMENT LOCATION

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	NDH	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
JLV		1806726	

FRAMING PLAN–UNIT 2R
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

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* HORIZONTAL OFFSETS TO EDGE OF SLAB						
LOCATION	℄ BEARING PIER 7R UNIT 3R	℄ FIELD SPLICE 8R	℄ PIER 8R	℄ FIELD SPLICE 9R	℄ PIER 9R	℄ BEARING PIER 10R UNIT 3R
℄ GIRDER 3R–A TO EDGE OF SLAB	900	900	900	900	901	972
℄ GIRDER 3R–G TO EDGE OF SLAB	900	900	900	900	874	808

* NOTE:

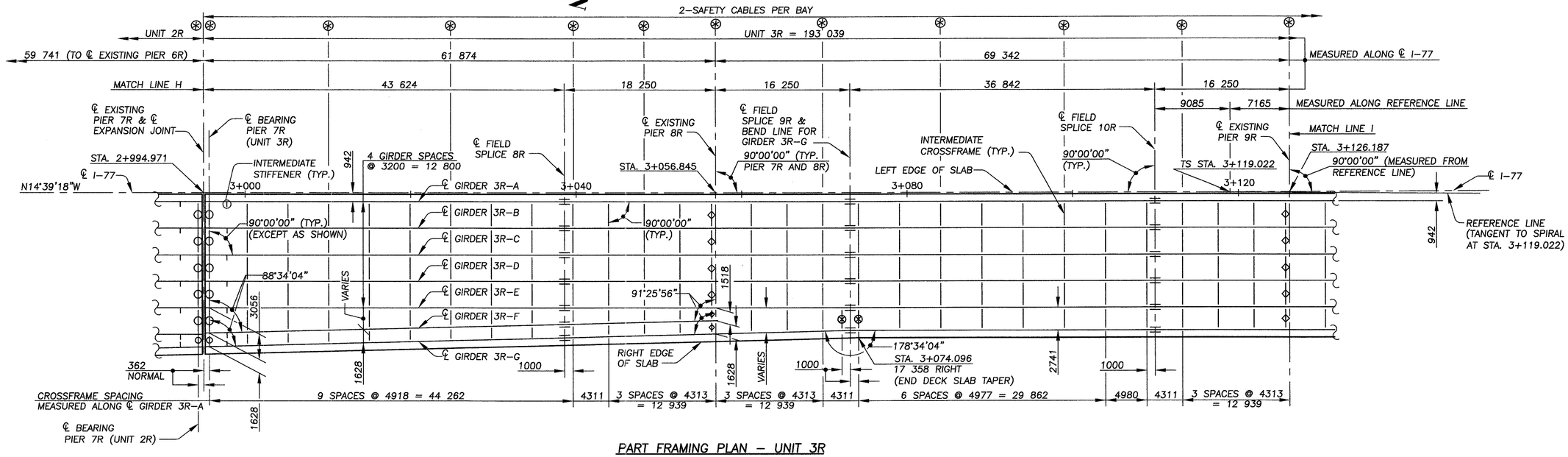
MEASURED ALONG ℄ BEARING ℄ PIER OR ℄ FIELD SPLICE.

**HORIZONTAL OFFSETS TO EDGE OF SLAB AT TENTH POINTS											
LOCATION	℄ FIELD SPLICE 10R	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 11R
℄ GIRDER 3R–A TO EDGE OF SLAB	900	900	900	900	900	901	902	905	910	917	926
℄ GIRDER 3R–G TO EDGE OF SLAB	875	875	875	875	875	874	873	870	865	859	850
LOCATION	℄ FIELD SPLICE 11R	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ BRG. PIER 10R (UNIT 3R)
℄ GIRDER 3R–A TO EDGE OF SLAB	926	898	875	858	847	845	850	865	890	925	971
℄ GIRDER 3R–G TO EDGE OF SLAB	850	878	901	918	928	931	926	912	888	854	808

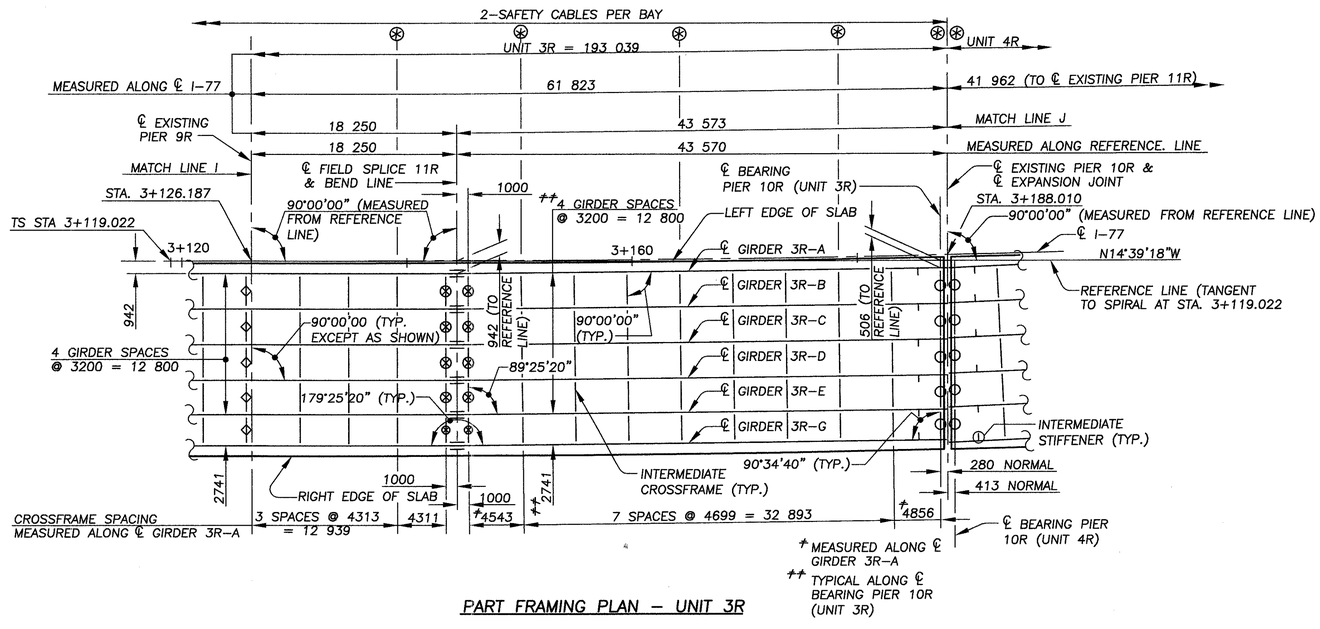
metric units

** NOTES:

THE TENTH POINT OFFSETS ARE MEASURED FROM THE ℄ FIELD SPLICE 10R TO ℄ FIELD SPLICE 11R, AND FROM ℄ FIELD SPLICE 11R TO ℄ BEARING PIER 10R (UNIT 3R). THE HORIZONTAL OFFSETS ARE GIVEN PERPENDICULAR TO ℄ GIRDER.



PART FRAMING PLAN – UNIT 3R



PART FRAMING PLAN – UNIT 3R

NOTES:

THE FOLLOWING ABBREVIATIONS ARE USED:
TYP. = TYPICAL
R = RIGHT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL STATIONS ARE IN METERS.

FOR INTERMEDIATE CROSSFRAME, PIER CROSSFRAME AND BEND POINT CROSSFRAME DETAILS, SEE SHEET 114 OF 175.

FOR END CROSSFRAME DETAILS, SEE SHEET 115 OF 175.

FOR SAFETY CABLE DETAILS, SEE SHEET 152 OF 175.

REQUIRED INTERMEDIATE STIFFENERS, AS SHOWN IN PART FRAMING PLAN, SHALL BE EQUALLY SPACED BETWEEN ADJACENT CROSSFRAMES OR BETWEEN CROSSFRAMES AND BEARING STIFFENERS.

LEGEND:

- ⊗ INDICATES BEND POINT CROSSFRAME
- ⊖ INDICATES END CROSSFRAME
- = INDICATES FIELD SPLICE
- ◇ INDICATES PIER CROSSFRAME
- ⊛ SAFETY CABLE INTERMEDIATE SUPPORT LOCATION
- ⊛⊛ SAFETY CABLE END ATTACHMENT LOCATION

DESIGN AGENCY
HNTB
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Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	NDH	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
JLV		1806726	

FRAMING PLAN – UNIT 3R
BRIDGE NO. CUY–77–23.458
OVER KINGSBURY RUN

CUY–77–23.458

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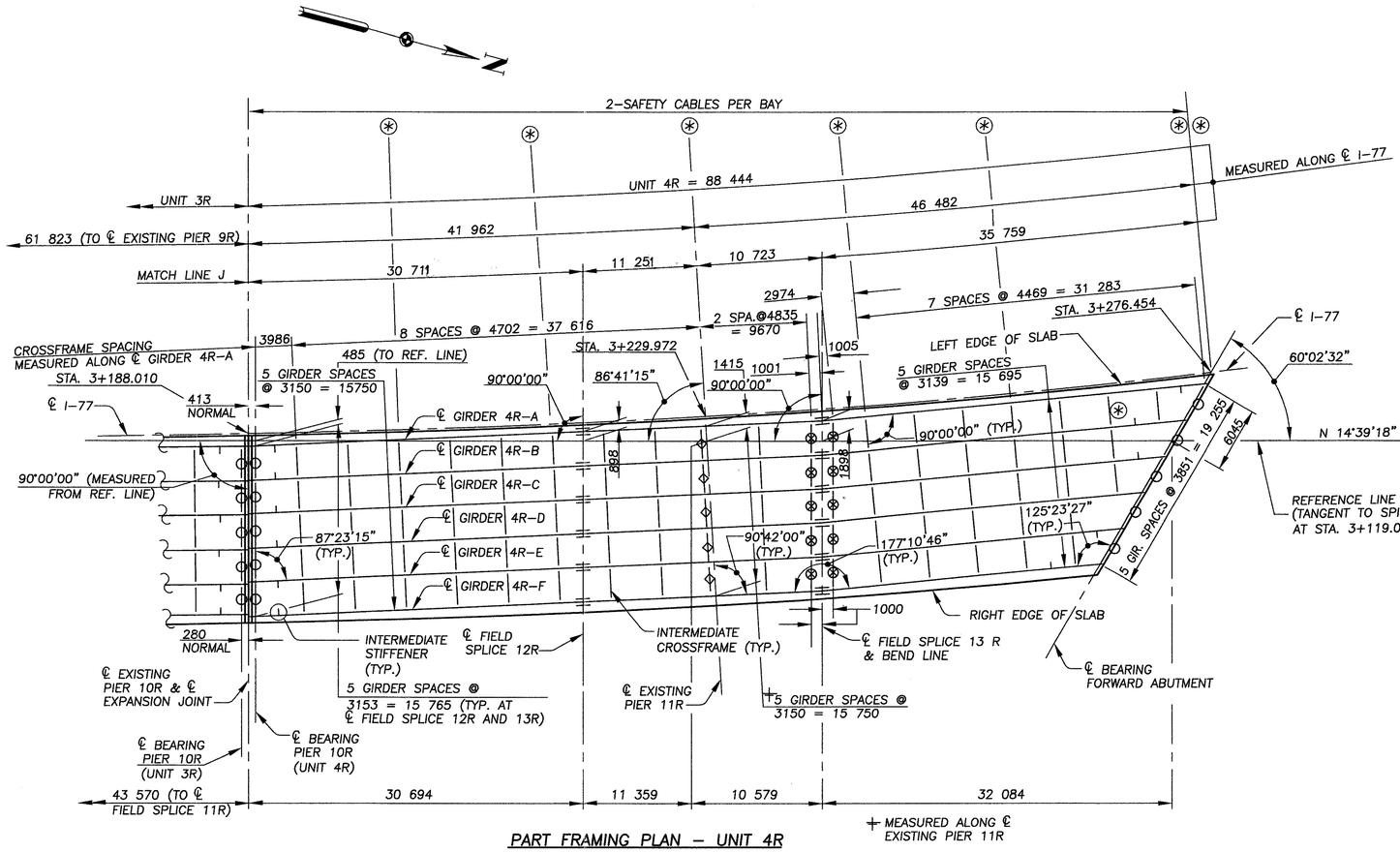
*HORIZONTAL OFFSETS TO EDGE OF SLAB			
LOCATION	℄ BEARING PIER 10R (UNIT 4R)	℄ PIER 11R	℄ BEARING FORWARD ABUTMENT
℄ GIRDER 4R–A TO EDGE OF SLAB	966	684	947
℄ GIRDER 4R–F TO EDGE OF SLAB	588	880	1233

*NOTE: MEASURED ALONG ℄ BEARING OR ℄ PIER

**NOTES:

THE TENTH POINT OFFSETS ARE MEASURED FROM THE ℄ BEARING PIER 10R (UNIT 4R) TO ℄ FIELD SPLICE 12R, FROM ℄ FIELD SPLICE 12R TO ℄ FIELD SPLICE 13R, AND FROM ℄ FIELD SPLICE 13R TO ℄ BEARING FORWARD ABUTMENT. THE HORIZONTAL OFFSETS ARE GIVEN PERPENDICULAR TO ℄ GIRDER.

**HORIZONTAL OFFSETS TO EDGE OF SLAB AT TENTH POINTS											
LOCATION	℄ BRG. PIER 10R (UNIT 4R)	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 12R
℄ GIRDER 4R–A TO EDGE OF SLAB	966	899	838	784	737	697	664	639	622	612	611
℄ GIRDER 4R–F TO EDGE OF SLAB	589	656	717	772	820	861	895	922	941	952	955
LOCATION	℄ FIELD SPLICE 12R	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 13R
℄ GIRDER 4R–A TO EDGE OF SLAB	611	616	625	639	658	681	710	744	783	827	877
℄ GIRDER 4R–F TO EDGE OF SLAB	955	952	945	933	916	894	868	836	799	758	711
LOCATION	℄ FIELD SPLICE 13R	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ BEARING FORWARD ABUT.
℄ GIRDER 4R–A TO EDGE OF SLAB	877	794	727	674	637	615	610	622	650	696	760
℄ GIRDER 4R–F TO EDGE OF SLAB	711	775	832	881	923	957	982	1000	1009	1010	1002



PART FRAMING PLAN – UNIT 4R

NOTES:

THE FOLLOWING ABBREVIATIONS ARE USED:
TYP. = TYPICAL
R = RIGHT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL STATIONS ARE IN METERS.

FOR INTERMEDIATE CROSSFRAME, PIER CROSSFRAME AND BEND POINT CROSSFRAME DETAILS, SEE SHEET 114 OF 175.

FOR END CROSSFRAME DETAILS, SEE SHEET 115 OF 175.

FOR SAFETY CABLE DETAILS, SEE SHEET 152 OF 175.

REQUIRED INTERMEDIATE STIFFENERS, AS SHOWN IN PART FRAMING PLAN, SHALL BE EQUALLY SPACED BETWEEN ADJACENT CROSSFRAMES OR BETWEEN CROSSFRAMES AND BEARING STIFFENERS.

LEGEND:

- INDICATES BEND POINT CROSSFRAME
- INDICATES END CROSSFRAME
- INDICATES FIELD SPLICE
- INDICATES PIER CROSSFRAME
- SAFETY CABLE INTERMEDIATE SUPPORT LOCATION
- SAFETY CABLE END ATTACHMENT LOCATION

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

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REVISED
REVIEWED RER
DATE 09-12-97
STRUCTURE FILE NUMBER 1806726

FRAMING PLAN–UNIT 4R
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

82/175

186/295

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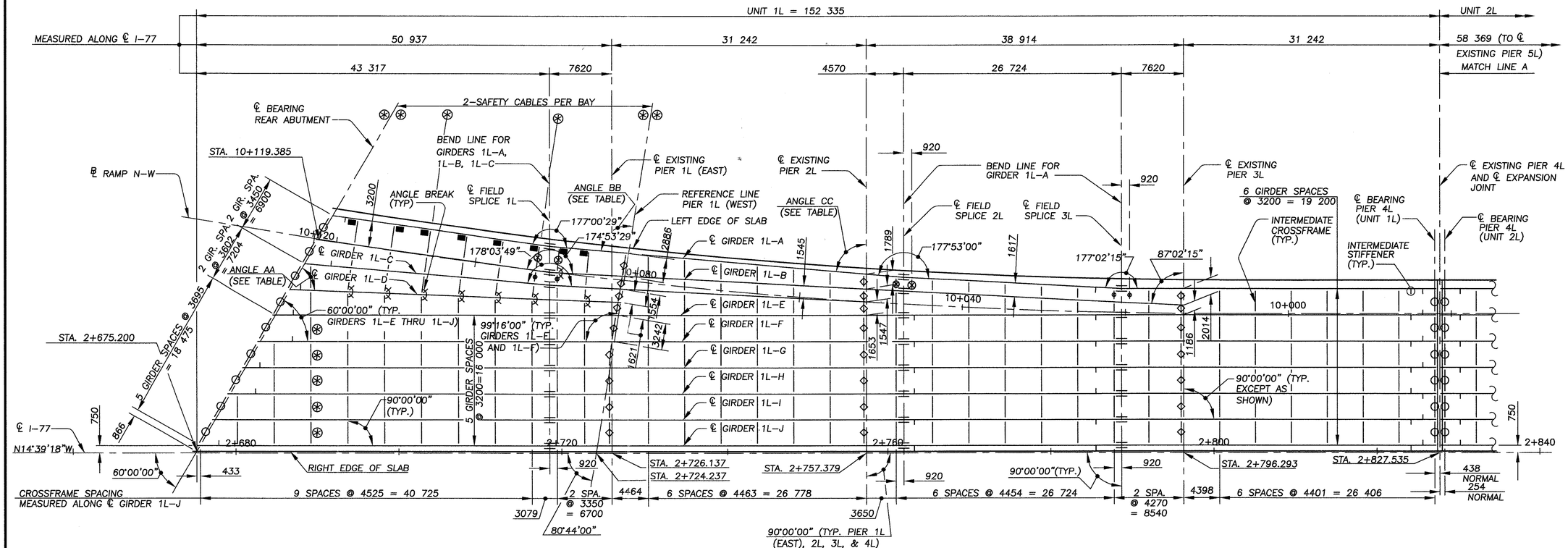
*HORIZONTAL OFFSETS TO EDGE OF SLAB						
LOCATION	℄ BEARING REAR ABUTMENT	REF LINE PIER 1L (WEST)	℄ PIER 1L (EAST)	℄ PIER 2L	℄ PIER 3L	℄ BEARING PIER 4L (UNIT 1L)
℄ GIRDER 1L–A TO EDGE OF SLAB	974	658	——	718	1041	1008
℄ GIRDER 1L–J TO EDGE OF SLAB	818	——	708	708	708	708

*NOTE: MEASURED ALONG ℄ BEARING, ℄ PIER, OR REFERENCE LINE

TABLE OF ANGLES			
GIRDER	ANGLE AA	ANGLE BB	ANGLE CC
1L–A	68°04'16"	94°11'15"	84°55'15"
1L–B	68°04'16"	96°18'15"	87°02'15"
1L–C	64°53'56"	96°18'15"	87°02'15"
1L–D	62°08'46"	97°07'14"	——

metric units



PART FRAMING PLAN – UNIT 1L

**HORIZONTAL OFFSETS TO EDGE OF SLAB											
LOCATION	℄ BEARING REAR ABUT.	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 1L
℄ GIRDER 1L–A TO EDGE OF SLAB	910	864	827	801	786	781	786	801	827	863	910
LOCATION	℄ FIELD SPLICE 1L	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 2L
℄ GIRDER 1L–A TO EDGE OF SLAB	910	780	677	602	554	533	539	573	634	722	838
LOCATION	℄ FIELD SPLICE 2L	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 3L
℄ GIRDER 1L–A TO EDGE OF SLAB	838	823	819	825	842	869	906	953	1010	1078	1157
LOCATION	℄ FIELD SPLICE 3L	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ BRG. PIER 4L (UNIT 1L)
℄ GIRDER 1L–A TO EDGE OF SLAB	1156	1088	1040	1014	1008	1008	1008	1008	1008	1008	1008

**NOTES:

THE TENTH POINT OFFSETS ARE MEASURED FROM THE ℄ BEARING REAR ABUTMENT TO ℄ FIELD SPLICE 1L, FROM ℄ FIELD SPLICE 1L TO ℄ FIELD SPLICE 2L, FROM ℄ FIELD SPLICE 2L TO ℄ FIELD SPLICE 3L, AND FROM ℄ FIELD SPLICE 3L TO ℄ BEARING PIER 4L (UNIT 1L). THE HORIZONTAL OFFSETS ARE GIVEN PERPENDICULAR TO ℄ GIRDER 1L–A

THE HORIZONTAL OFFSET FROM THE ℄ GIRDER 1L–J TO THE EDGE OF SLAB IS 708mm (MEASURED PERPENDICULAR TO THE GIRDER).

LEGEND:

- INDICATES BEND POINT CROSSFRAME
- INDICATES END CROSSFRAME
- INDICATES FIELD SPLICE
- INDICATES PIER CROSSFRAME
- INDICATES INTERMEDIATE AND BEND POINT CROSSFRAMES SET PERPENDICULAR TO GIRDER 1L–A
- SAFETY CABLE INTERMEDIATE SUPPORT LOCATION
- SAFETY CABLE END ATTACHMENT LOCATION

NOTES:

THE FOLLOWING ABBREVIATIONS ARE USED:
TYP. = TYPICAL
L = LEFT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL STATIONS ARE IN METERS.

FOR INTERMEDIATE CROSSFRAME, PIER CROSSFRAME, AND BEND POINT CROSSFRAME DETAILS, SEE SHEET 114 OF 175.

FOR END CROSSFRAME DETAILS, SEE SHEET 115 OF 175.

FOR SAFETY CABLE DETAILS, SEE SHEET 152 OF 175.

REQUIRED INTERMEDIATE STIFFENERS, AS SHOWN IN PART FRAMING PLAN, SHALL BE EQUALLY SPACED BETWEEN ADJACENT CROSSFRAMES OR BETWEEN CROSSFRAMES AND BEARING STIFFENERS.

DESIGN AGENCY
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One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED DHS | DRAWN NDH | CHECKED JLV | REVISED | REVIEWED RER 09-12-97 | DATE | STRUCTURE FILE NUMBER 1806726

FRAMING PLAN – UNIT 1L
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

83/175

187/295

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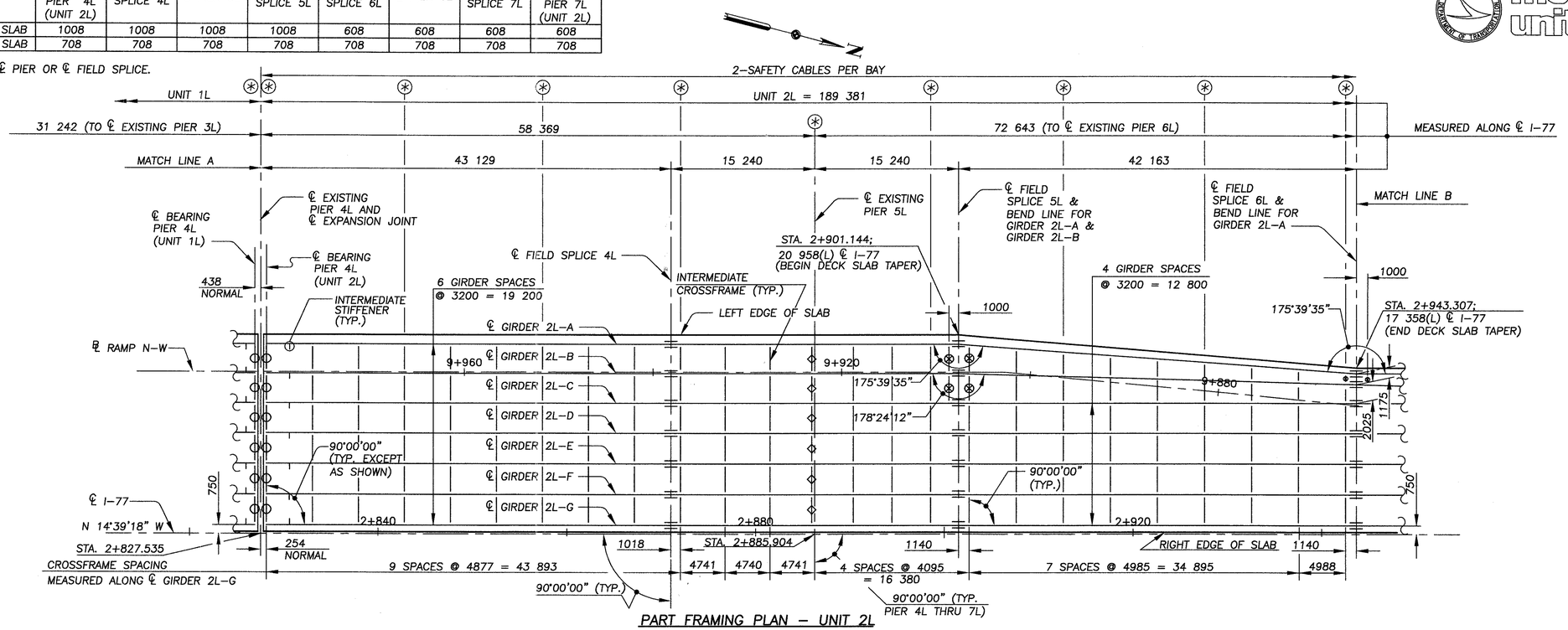
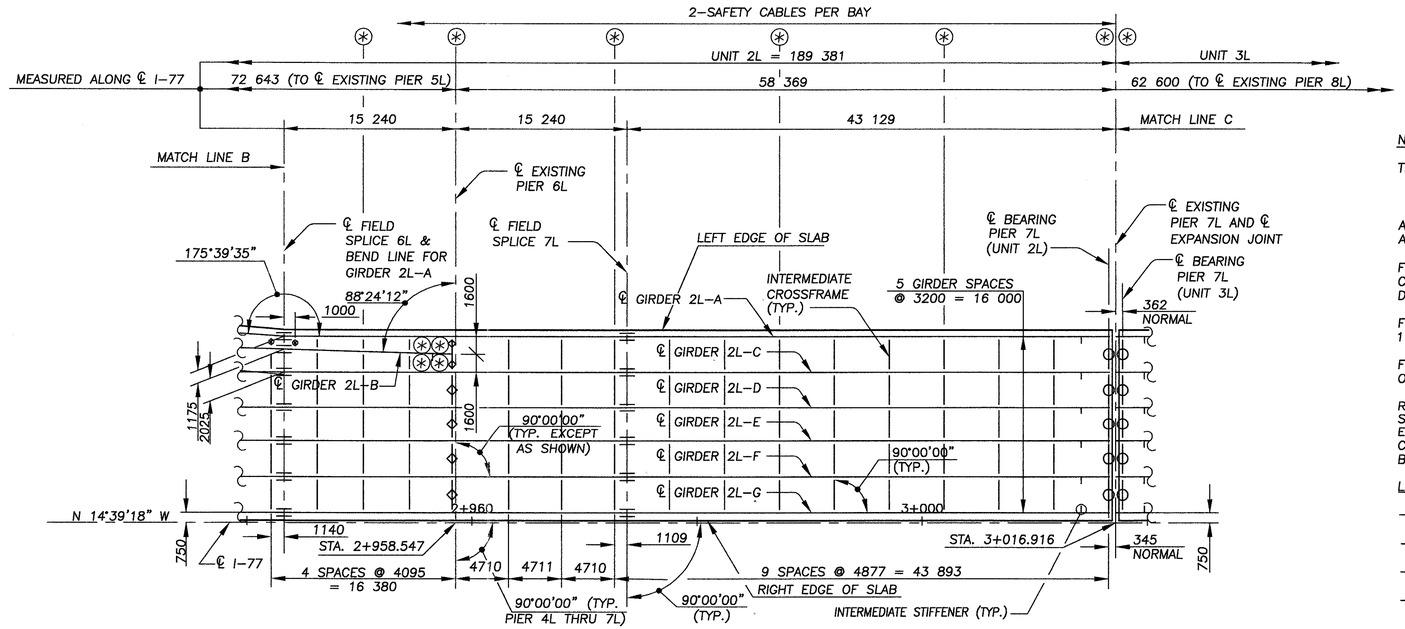
*HORIZONTAL OFFSETS TO EDGE OF SLAB								
LOCATION	℄ BEARING PIER 4L (UNIT 2L)	℄ FIELD SPLICE 4L	℄ PIER 5L	℄ FIELD SPLICE 5L	℄ FIELD SPLICE 6L	℄ PIER 6L	℄ FIELD SPLICE 7L	℄ BEARING PIER 7L (UNIT 2L)
℄ GIRDER 2L–A TO EDGE OF SLAB	1008	1008	1008	1008	608	608	608	608
℄ GIRDER 2L–G TO EDGE OF SLAB	708	708	708	708	708	708	708	708

*NOTE:
MEASURED ALONG ℄ BEARING, ℄ PIER OR ℄ FIELD SPLICE.



PART FRAMING PLAN – UNIT 2L



PART FRAMING PLAN – UNIT 2L

NOTES:

THE FOLLOWING ABBREVIATIONS ARE USED:
TYP. = TYPICAL
L = LEFT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL STATIONS ARE IN METERS.

FOR INTERMEDIATE CROSSFRAME, PIER CROSSFRAME AND BEND POINT CROSSFRAME DETAILS, SEE SHEET 114 OF 175.

FOR END CROSSFRAME DETAILS, SEE SHEET 115 OF 175.

FOR SAFETY CABLE DETAILS, SEE SHEET 152 OF 175.

REQUIRED INTERMEDIATE STIFFENERS, AS SHOWN IN PART FRAMING PLAN, SHALL BE EQUALLY SPACED BETWEEN ADJACENT CROSSFRAMES OR BETWEEN CROSSFRAMES AND BEARING STIFFENERS.

LEGEND:

- INDICATES BEND POINT CROSSFRAME
- INDICATES END CROSSFRAME
- INDICATES FIELD SPLICE
- INDICATES PIER CROSSFRAME
- SAFETY CABLE INTERMEDIATE SUPPORT LOCATION
- SAFETY CABLE END ATTACHMENT LOCATION

metric units

DESIGN AGENCY
HNTB
ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724

DESIGNED DHS | DRAWN NDH | REVIEWED RER | DATE 09-12-97
CHECKED JLV | REVISED | STRUCTURE FILE NUMBER 1806726

FRAMING PLAN–UNIT 2L
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

84/175
188/295

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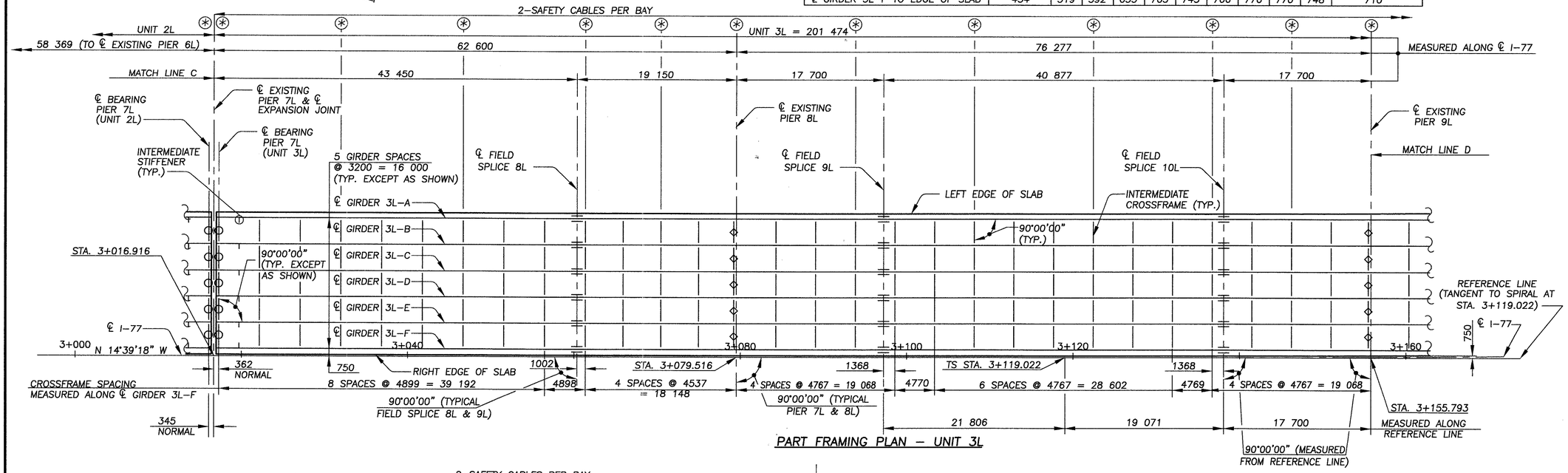
*HORIZONTAL OFFSETS TO EDGE OF SLAB					
LOCATION	℄ BEARING PIER 7L (UNIT 3L)	℄ FIELD SPLICE 8L	℄ PIER 8L	℄ PIER 9L	℄ BEARING PIER 10L (UNIT 3L)
℄ GIRDER 3L–A TO EDGE OF SLAB	608	608	608	686	624
℄ GIRDER 3L–F TO EDGE OF SLAB	708	708	708	630	711

* NOTE: MEASURED ALONG ℄ BEARING, ℄ PIER OR ℄ FIELD SPLICE.

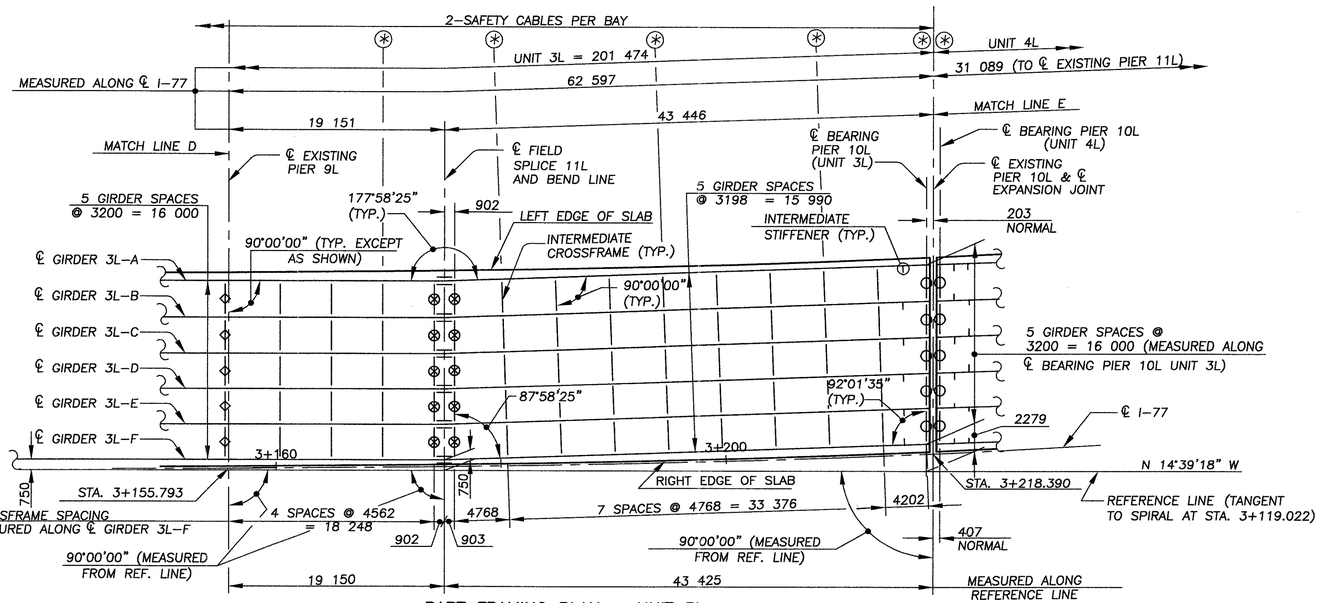
**NOTES:

THE TENTH POINT OFFSETS ARE MEASURED FROM THE ℄ FIELD SPLICE 9L TO ℄ FIELD SPLICE 10L, FROM ℄ FIELD SPLICE 10L TO ℄ FIELD SPLICE 11L, AND FROM ℄ FIELD SPLICE 11L TO ℄ BEARING PIER 10L (UNIT 3L). THE HORIZONTAL OFFSETS ARE GIVEN PERPENDICULAR TO ℄ GIRDER.

**HORIZONTAL OFFSETS TO EDGE OF SLAB AT TENTH POINTS											
LOCATION	℄ FIELD SPLICE 9L	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 10L
℄ GIRDER 3L–A TO EDGE OF SLAB	608	608	608	608	608	608	608	608	610	613	619
℄ GIRDER 3L–F TO EDGE OF SLAB	708	708	708	708	708	708	708	708	706	703	697
LOCATION	℄ FIELD SPLICE 10L	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 11L
℄ GIRDER 3L–A TO EDGE OF SLAB	619	626	637	651	669	691	718	750	788	833	884
℄ GIRDER 3L–F TO EDGE OF SLAB	697	690	679	665	647	625	599	567	529	485	434
LOCATION	℄ FIELD SPLICE 11L	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ BRG. PIER 10L (UNIT 3L)
℄ GIRDER 3L–A TO EDGE OF SLAB	884	800	727	665	616	580	558	550	558	582	623
℄ GIRDER 3L–F TO EDGE OF SLAB	434	519	592	655	705	743	766	776	770	748	710



PART FRAMING PLAN – UNIT 3L



PART FRAMING PLAN – UNIT 3L

NOTES:

THE FOLLOWING ABBREVIATIONS ARE USED:
TYP. = TYPICAL
L = LEFT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL STATIONS ARE IN METERS.

FOR INTERMEDIATE CROSSFRAME,PIER CROSSFRAME AND BEND POINT CROSSFRAME DETAILS, SEE SHEET 114 OF 175.

FOR END CROSSFRAME DETAILS, SEE SHEET 115 OF 175.

FOR SAFETY CABLE DETAILS, SEE SHEET 152 OF 175.

REQUIRED INTERMEDIATE STIFFENERS, AS SHOWN IN PART FRAMING PLAN, SHALL BE EQUALLY SPACED BETWEEN ADJACENT CROSSFRAMES OR BETWEEN CROSSFRAMES AND BEARING STIFFENERS.

LEGEND:

- INDICATES BEND POINT CROSSFRAME
- INDICATES END CROSSFRAME
- INDICATES FIELD SPLICE
- INDICATES PIER CROSSFRAME
- SAFETY CABLE INTERMEDIATE SUPPORT LOCATION
- SAFETY CABLE END ATTACHMENT LOCATION

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	NDH	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
JLV		1806726	

FRAMING PLAN– UNIT 3L
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

85/175

189/295

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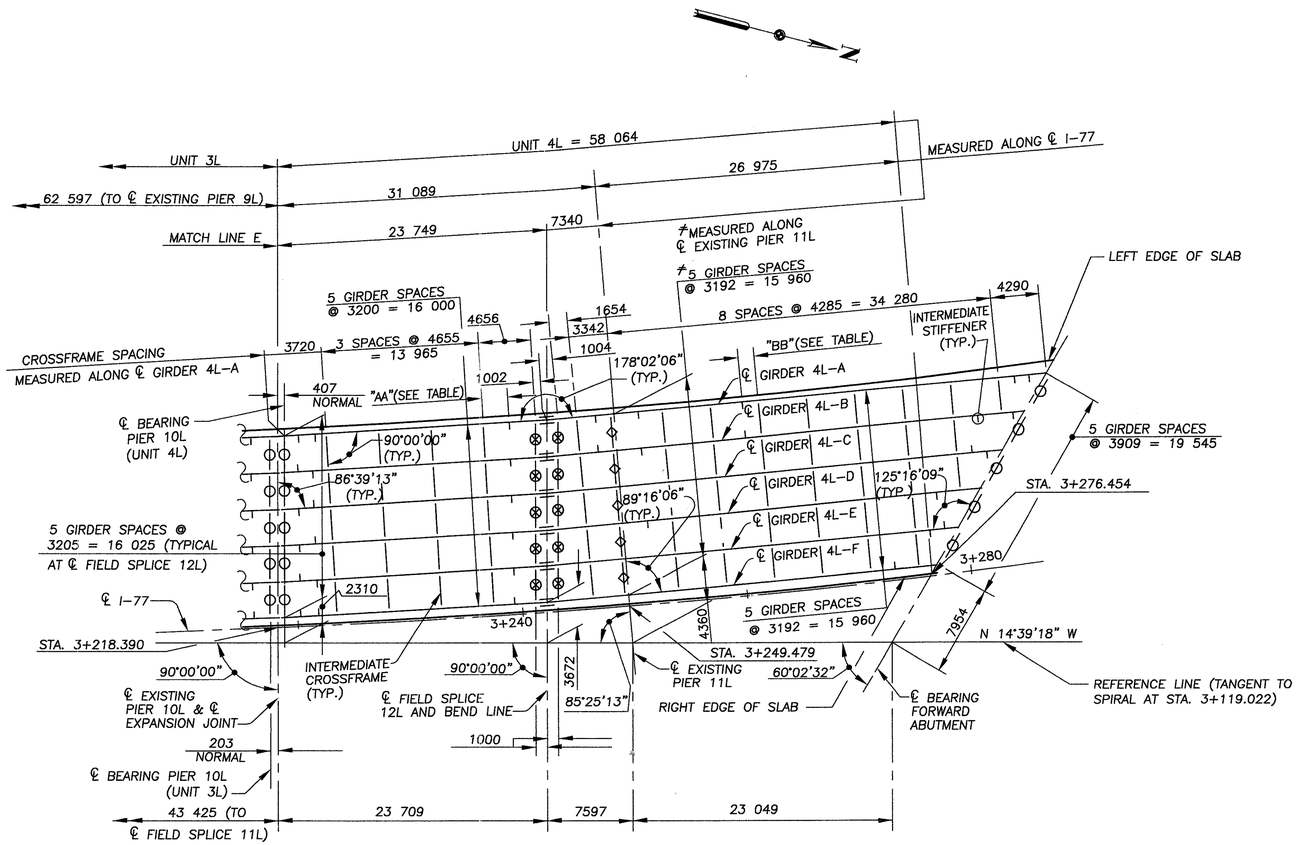
*HORIZONTAL OFFSETS TO EDGE OF SLAB			
LOCATION	℄ BEARING PIER 10L (UNIT 4L)	℄ PIER 11L	℄ BEARING FORWARD ABUTMENT
℄ GIRDER 4L–A TO EDGE OF SLAB	595	523	1336
℄ GIRDER 4L–F TO EDGE OF SLAB	714	833	857

*NOTE: MEASURED ALONG ℄ BEARING, OR ℄ PIER.



PART FRAMING PLAN – UNIT 4L

**HORIZONTAL OFFSETS TO EDGE OF SLAB AT TENTH POINTS											
LOCATION	℄ BRG. PIER 10L (UNIT 4L)	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ FIELD SPLICE 12L
℄ GIRDER 4L–A TO EDGE OF SLAB	594	571	554	542	536	535	540	551	569	592	622
℄ GIRDER 4L–F TO EDGE OF SLAB	712	737	756	770	779	782	779	770	756	735	708
LOCATION	℄ FIELD SPLICE 12L	.1	.2	.3	.4	.5	.6	.7	.8	.9	℄ BEARING FORWARD ABUT.
℄ GIRDER 4L–A TO EDGE OF SLAB	622	545	492	464	463	489	543	626	739	883	1058
℄ GIRDER 4L–F TO EDGE OF SLAB	708	776	829	867	890	898	889	864	823	764	688

**NOTES:

THE TENTH POINT OFFSETS ARE MEASURED FROM THE ℄ BEARING PIER 10L (UNIT 4L) TO ℄ FIELD SPLICE 12L, AND FROM ℄ FIELD SPLICE 12L TO ℄ BEARING FORWARD ABUTMENT. THE HORIZONTAL OFFSETS ARE GIVEN PERPENDICULAR TO ℄ GIRDER.

TABLE OF DIMENSIONS		
GIRDER	AA	BB
4L–A	2317	1428
4L–B	2223	1428
4L–C	2129	——
4L–D	2036	——
4L–E	1942	——
4L–F	1860	——

NOTES:

THE FOLLOWING ABBREVIATIONS ARE USED:
TYP. = TYPICAL
L = LEFT

ALL DIMENSIONS ARE IN MILLIMETERS.
ALL STATIONS ARE IN METERS.

FOR INTERMEDIATE CROSSFRAME, PIER CROSSFRAME AND BEND POINT CROSSFRAME DETAILS SEE SHEET 114 OF 175.

FOR END CROSSFRAME DETAILS, SEE SHEET 115 OF 175.

REQUIRED INTERMEDIATE STIFFENERS, AS SHOWN IN PART FRAMING PLAN, SHALL BE EQUALLY SPACED BETWEEN ADJACENT CROSSFRAMES OR BETWEEN CROSSFRAMES AND BEARING STIFFENERS EXCEPT AS SHOWN IN FRAMING PLAN AND TABLE OF DIMENSIONS.

LEGEND

⊗ INDICATES BEND POINT CROSSFRAME
○ INDICATES END CROSSFRAME
= INDICATES FIELD SPLICE
◇ INDICATES PIER CROSSFRAME

metric units

DESIGN AGENCY
HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724

DESIGNED	DRAWN	REVIEWED	DATE
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JLV		1806726	

FRAMING PLAN – UNIT 4L
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

86/175
190/295

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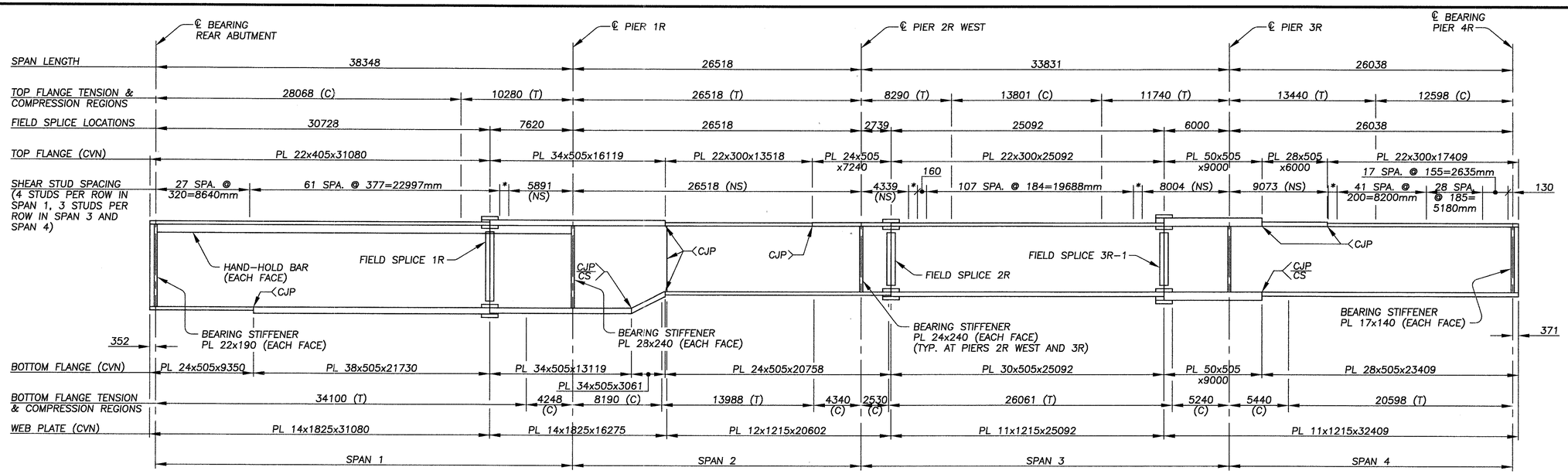
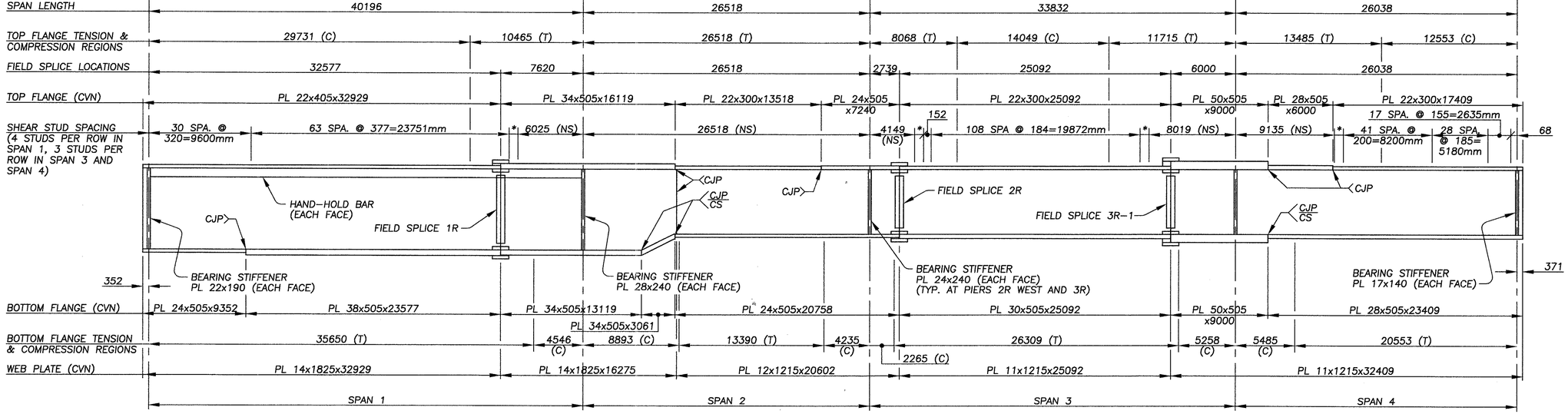


ELEVATION – GIRDER 1R–A



ELEVATION – GIRDER 1R–B

NOTES:

1. MASS OF GIRDER 1R–A = 45 202 kg
2. MASS OF GIRDER 1R–B = 46 326 kg
3. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
4. ALL STRUCTURAL STEEL FOR GIRDER WEBS, FLANGES, AND SPLICE PLATES, SHALL MEET SPECIFIED MINIMUM (CVN) NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.
5. WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECKING FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION." ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION." FILLET WELDS TO COMPRESSION FLANGES SHALL BE NOT CLOSER THAN 25 mm FROM THE EDGE OF THE FLANGE, BE NOT MORE THAN 50 mm LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.
6. ALL STRUCTURAL STEEL SHALL BE A572M, UNLESS NOTED OTHERWISE.
7. FOR LOCATIONS OF INTERMEDIATE STIFFENERS AND CROSSFRAMES, SEE FRAMING PLANS.
8. FOR INTERMEDIATE STIFFENER SIZES, SEE SHEET 114 OF 175.
9. ALL WEB TO FLANGE WELDS SHALL BE 8 mm FILLET WELDS.
10. FOR ALL COMPLETE JOINT PENETRATION GROOVE WELDS, WELD REINFORCEMENT SHALL BE GROUND IN THE DIRECTION PARALLEL TO THE MAIN STRESSES.

LEGEND:

CJP = COMPLETE JOINT PENETRATION GROOVE WELD
CS = BUTT WELD SUBJECT TO COMPRESSIVE STRESSES ONLY
(T) DENOTES AREA OF TENSION IN FLANGE
(C) DENOTES AREA OF COMPRESSION IN FLANGE
(NS) INDICATES NO SHEAR STUDS ARE REQUIRED
SPA. = SPACES
* = 6 SPACES @ ABOUT 137=820 mm FOR SPAN 1
* = 9 SPACES @ ABOUT 91=820 mm FOR SPAN 3 AND 4

metric units

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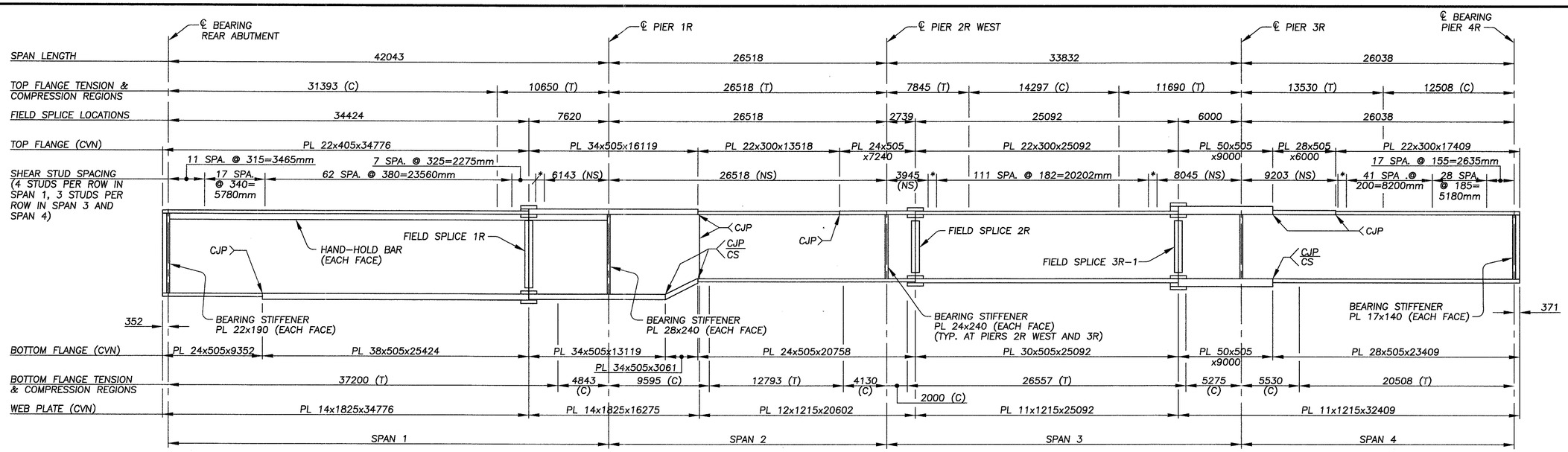
GIRDER ELEVATIONS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

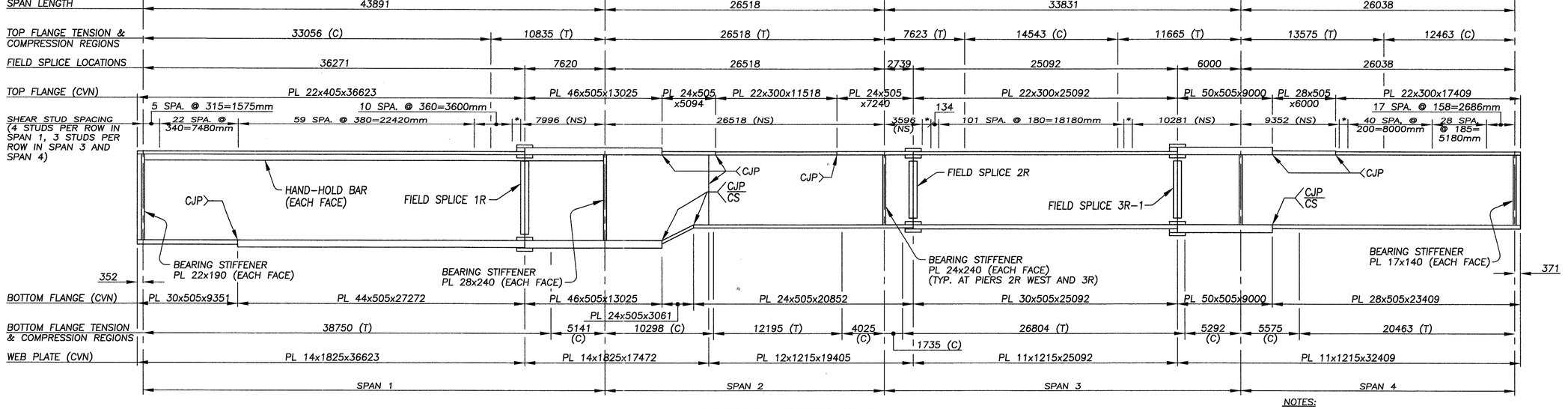
CUY–77–23.458

87/175

191/295



ELEVATION – GIRDER 1R–C



ELEVATION – GIRDER 1R–D

NOTES:

1. MASS OF GIRDER 1R–C = 47 137 kg
2. MASS OF GIRDER 1R–D = 49 898 kg
3. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

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* = 6 SPACES @ ABOUT 137=820 mm FOR SPAN 1
* = 9 SPACES @ ABOUT 91=820 mm FOR SPAN 3 AND 4

metric units

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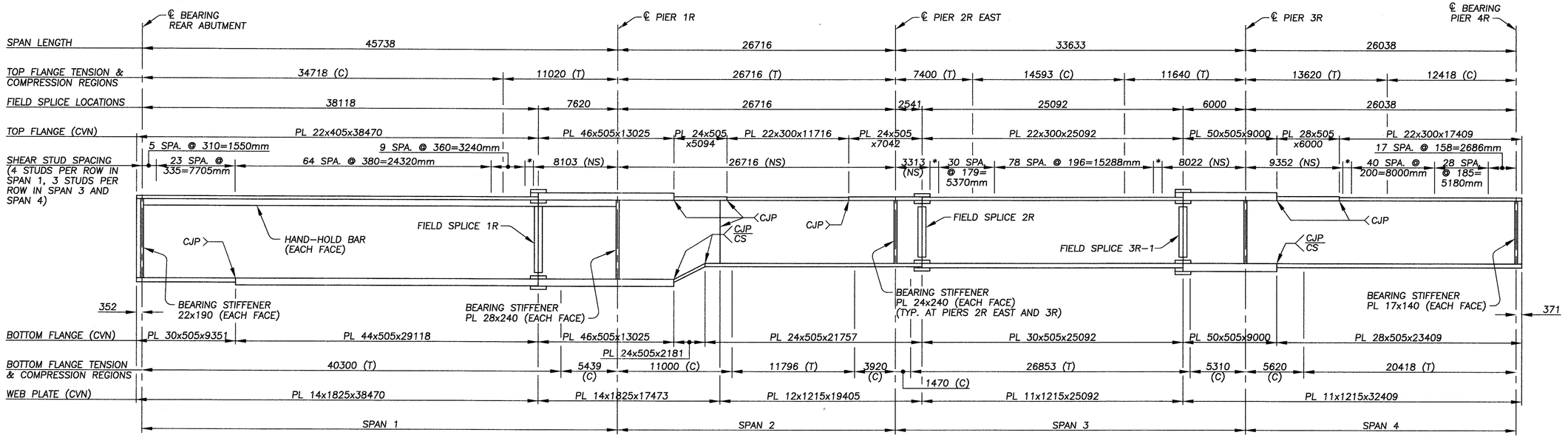
GIRDER ELEVATIONS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

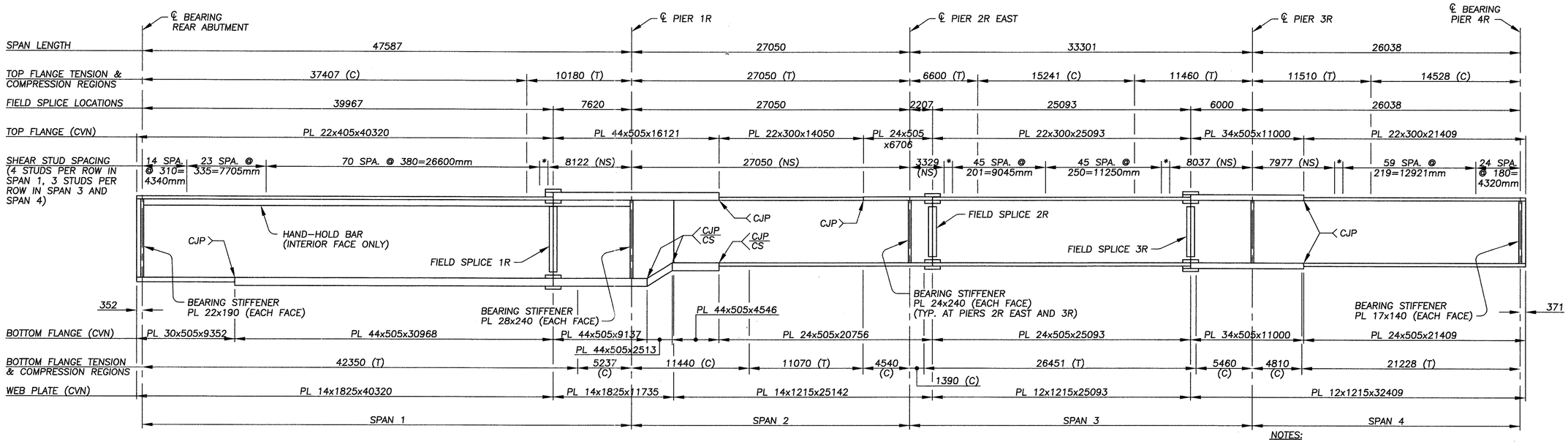
CUY-77-23.458

88/175

192/295



ELEVATION – GIRDER 1R–E



ELEVATION – GIRDER 1R–F

NOTES:

1. MASS OF GIRDER 1R–E = 50 747 kg
2. MASS OF GIRDER 1R–F = 49 738 kg
3. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

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metric units

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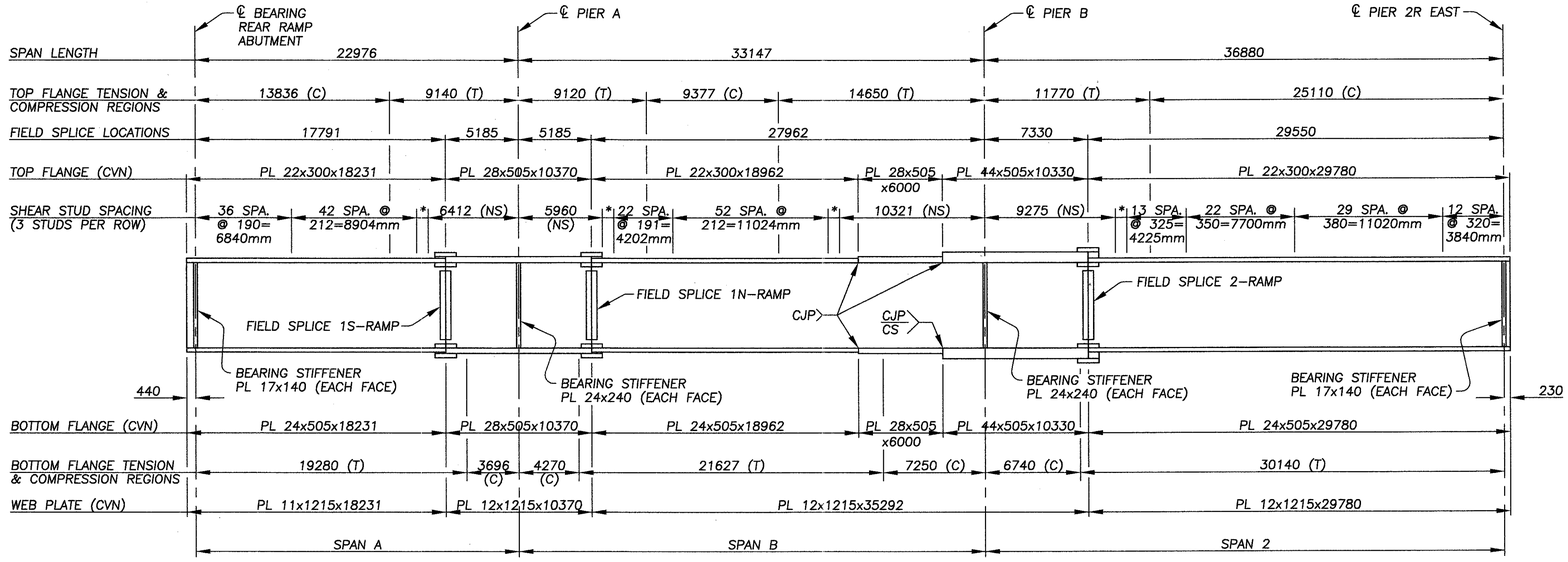
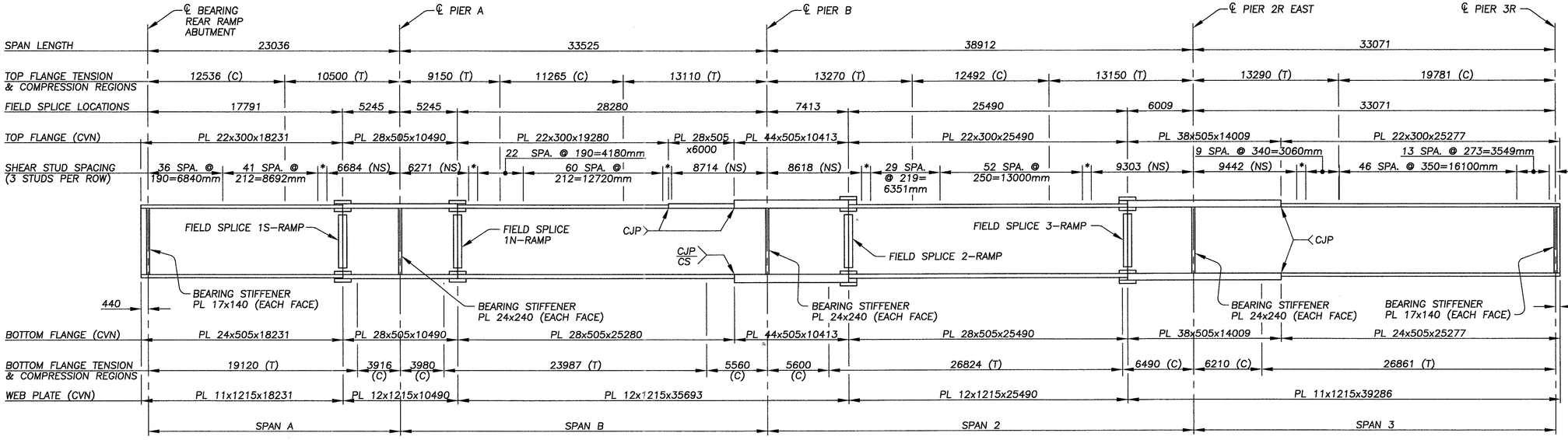
GIRDER ELEVATIONS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458



ELEVATION – GIRDER 1R–G



ELEVATION – GIRDER 1R–H

NOTES:

1. MASS OF GIRDER 1R–G = 28 287 kg
2. MASS OF GIRDER 1R–H = 40 672 kg
3. FOR SHEAR CONNECTOR DETAILS SEE SHEET 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

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GIRDER ELEVATIONS
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OVER KINGSBURY RUN

CUY-77-23.458

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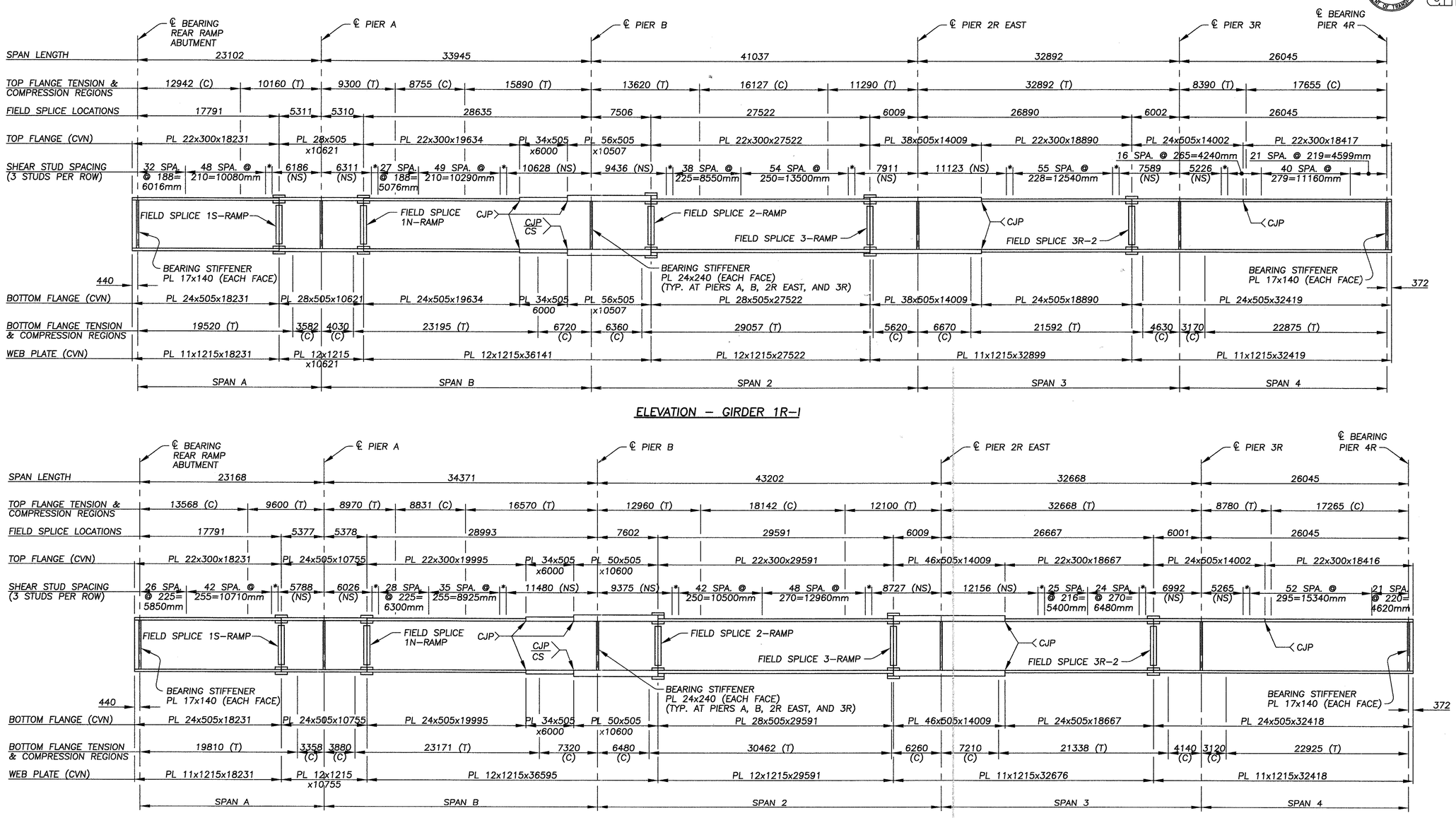

ELEVATION – GIRDER 1R–I

ELEVATION – GIRDER 1R–J

NOTES:

1. MASS OF GIRDER 1R–I = 49 740 kg
2. MASS OF GIRDER 1R–J = 50 531 kg
3. FOR SHEAR CONNECTOR DETAILS SEE SHEET 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

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OVER KINGSBURY RUN

CUY-77-23.458

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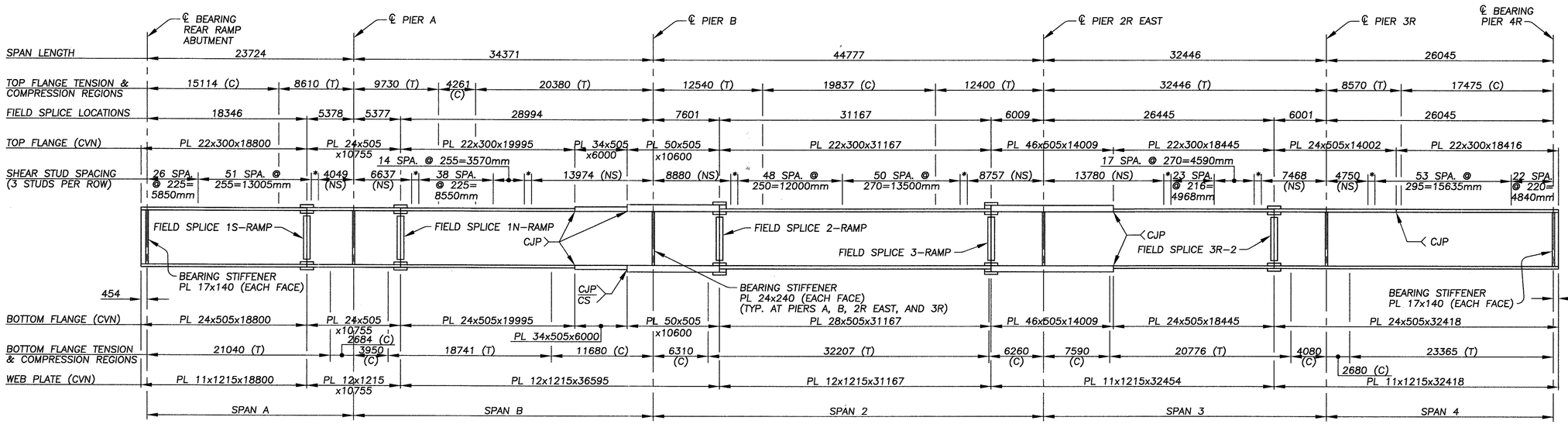
metric units



ELEVATION – GIRDER 1R–K

NOTES:

1. MASS OF GIRDER 1R–K = 50 439 kg
2. FOR SHEAR CONNECTOR DETAILS SEE SHEET 115 OF 175.
3. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

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(T) DENOTES AREA OF TENSION IN FLANGE
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SPA. = SPACES
* = 9 SPACES @ ABOUT 91=820 mm

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GIRDER ELEVATIONS
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CUY-77-23.458

92/175

196/295

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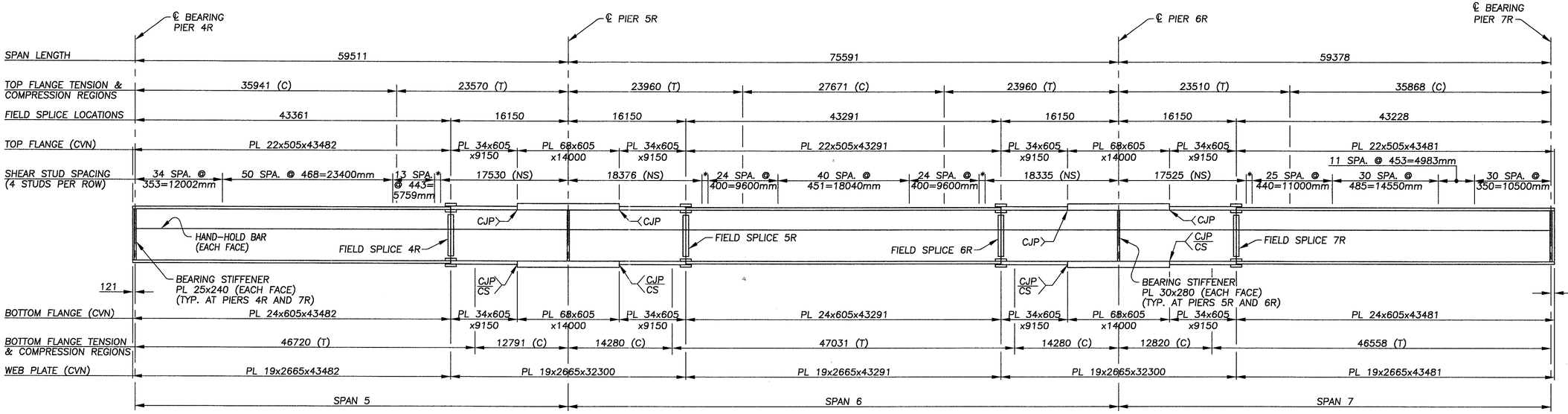
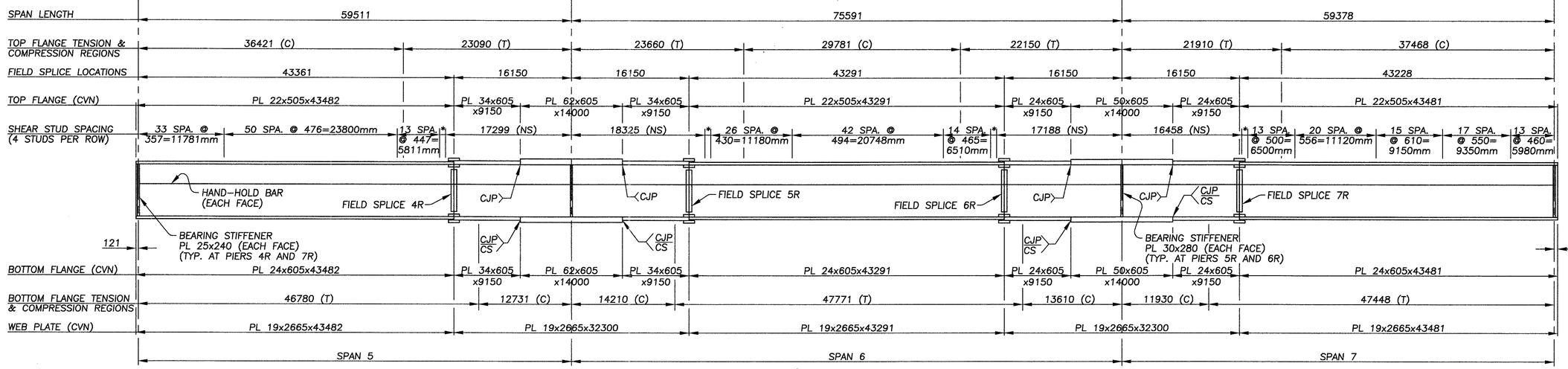


ELEVATION – GIRDER 2R–A, 2R–B, 2R–C, 2R–D, AND 2R–E



ELEVATION – GIRDER 2R–F

NOTES:

1. MASS OF GIRDER 2R–A = 138 155 kg
2. MASS OF GIRDER 2R–B THROUGH 2R–E = 139 887 kg
3. MASS OF GIRDER 2R–F = 134 962 kg
4. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
5. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

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SPA. = SPACES
* = 6 SPACES @ ABOUT 131=820 mm

metric units

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GIRDER ELEVATIONS
BRIDGE NO. CUY-77-23458
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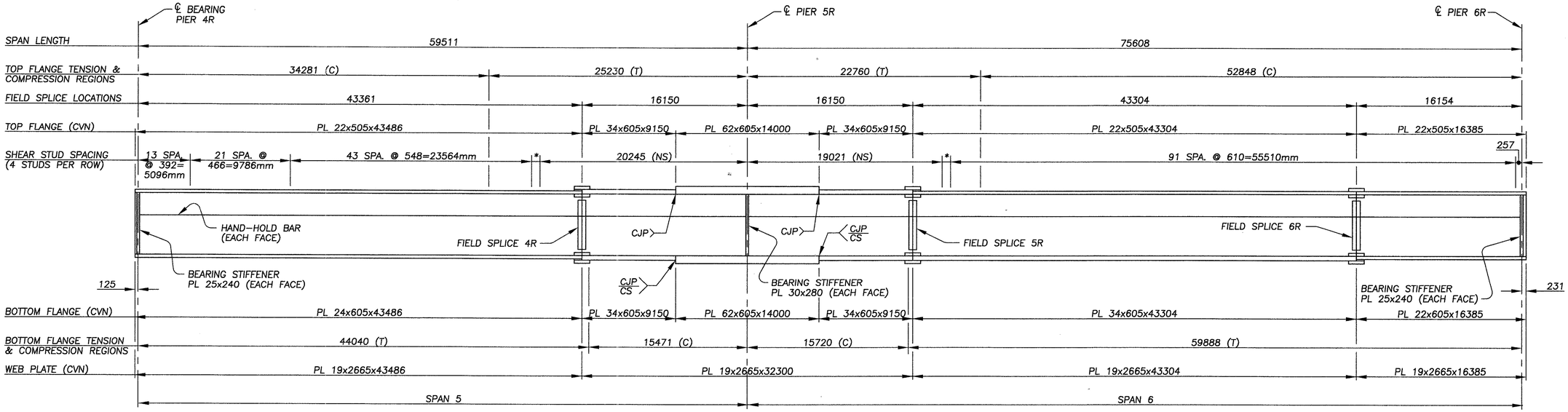
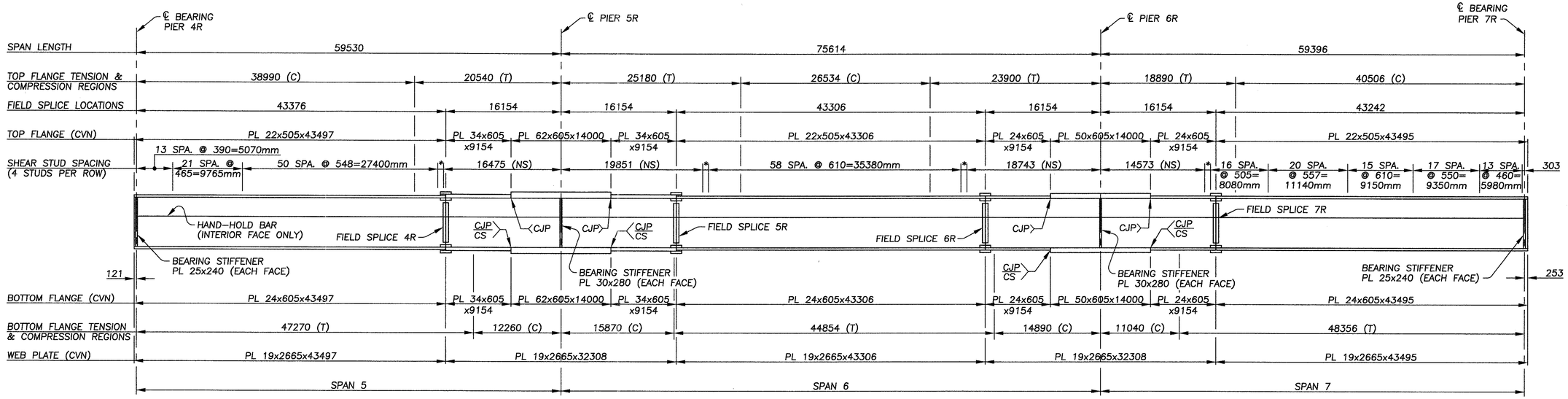


ELEVATION – GIRDER 2R–G



ELEVATION – GIRDER 2R–H

NOTES:

1. MASS OF GIRDER 2R–G = 95 086 kg
2. MASS OF GIRDER 2R–H = 132 423 kg
3. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

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OVER KINGSBURY RUN

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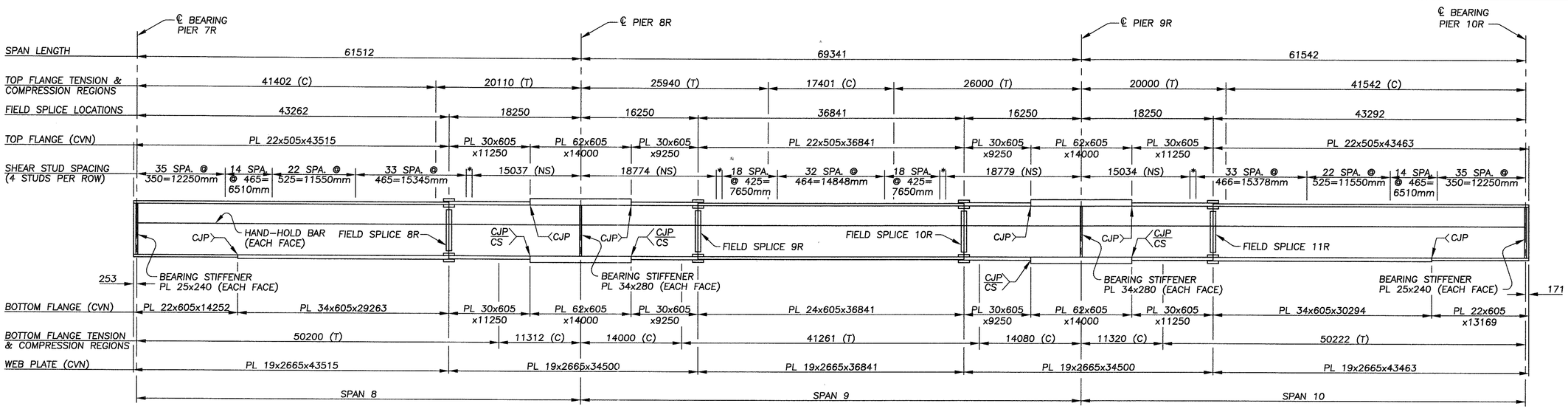
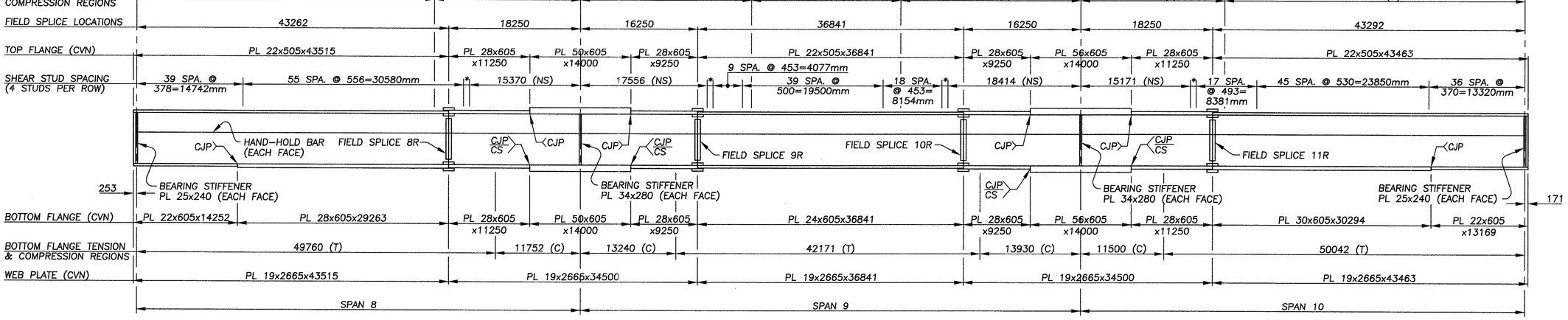


ELEVATION – GIRDERS 3R–A, 3R–B, 3R–C, AND 3R–D



ELEVATION – GIRDER 3R–E

NOTES:

1. MASS OF GIRDER 3R–A = 137 064 kg
2. MASS OF GIRDERS 3R–B THROUGH 3R–D = 138 893 kg
3. MASS OF GIRDER 3R–E = 134 316 kg
4. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
5. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

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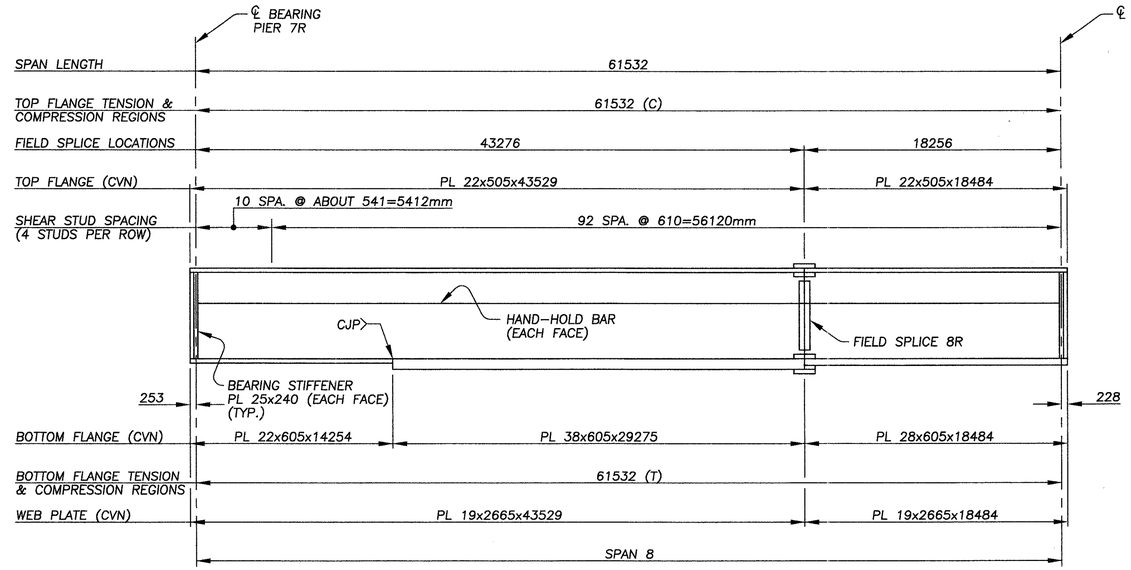
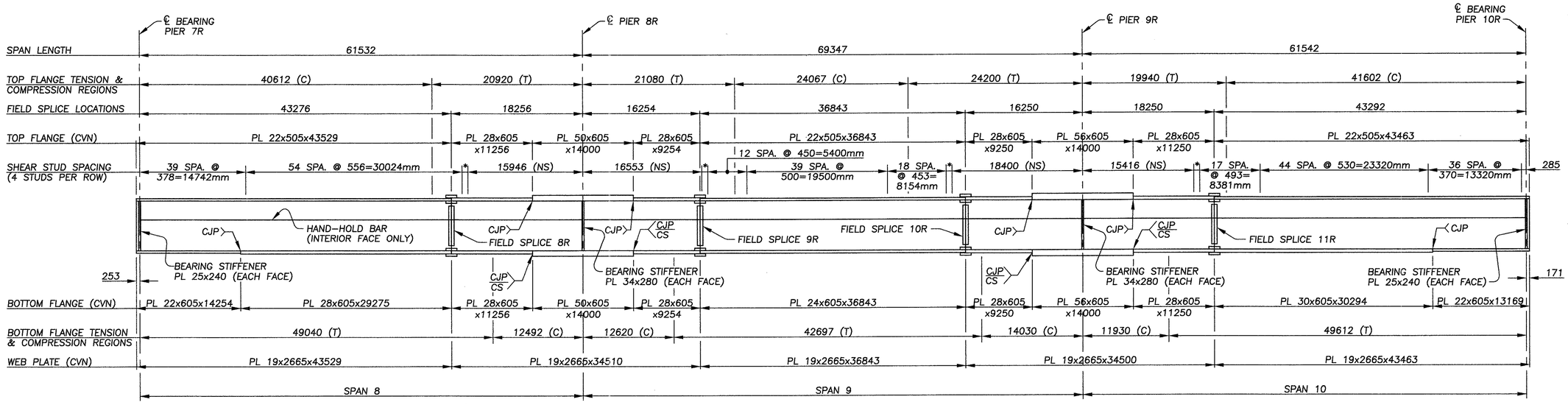


ELEVATION – GIRDER 3R–F



ELEVATION – GIRDER 3R–G

NOTES:

1. MASS OF GIRDER 3R–F = 41 458 kg
2. MASS OF GIRDER 3R–G = 131 663 kg
3. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

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GIRDER ELEVATIONS
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CUY-77-23.458

96/175

200/295

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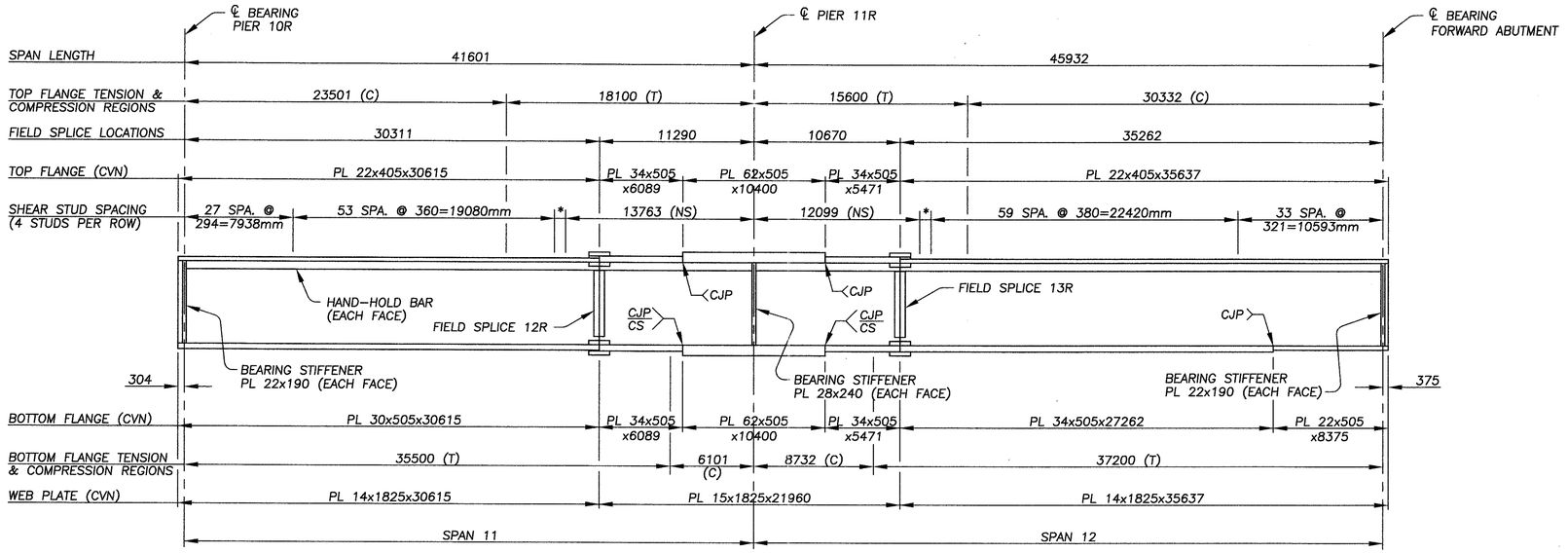
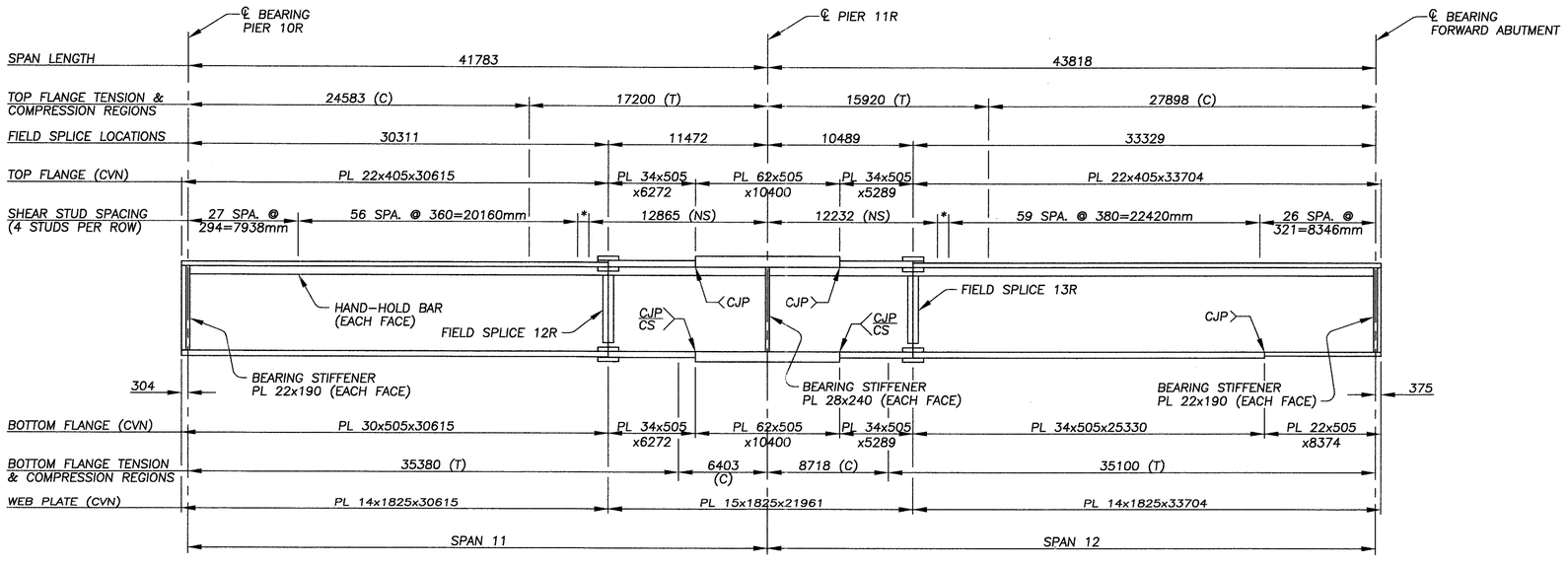


ELEVATION – GIRDER 4R–A



ELEVATION – GIRDER 4R–B

NOTES:

1. MASS OF GIRDER 4R–A = 40 446 kg
2. MASS OF GIRDER 4R–B = 39 983 kg
3. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
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LEGEND:

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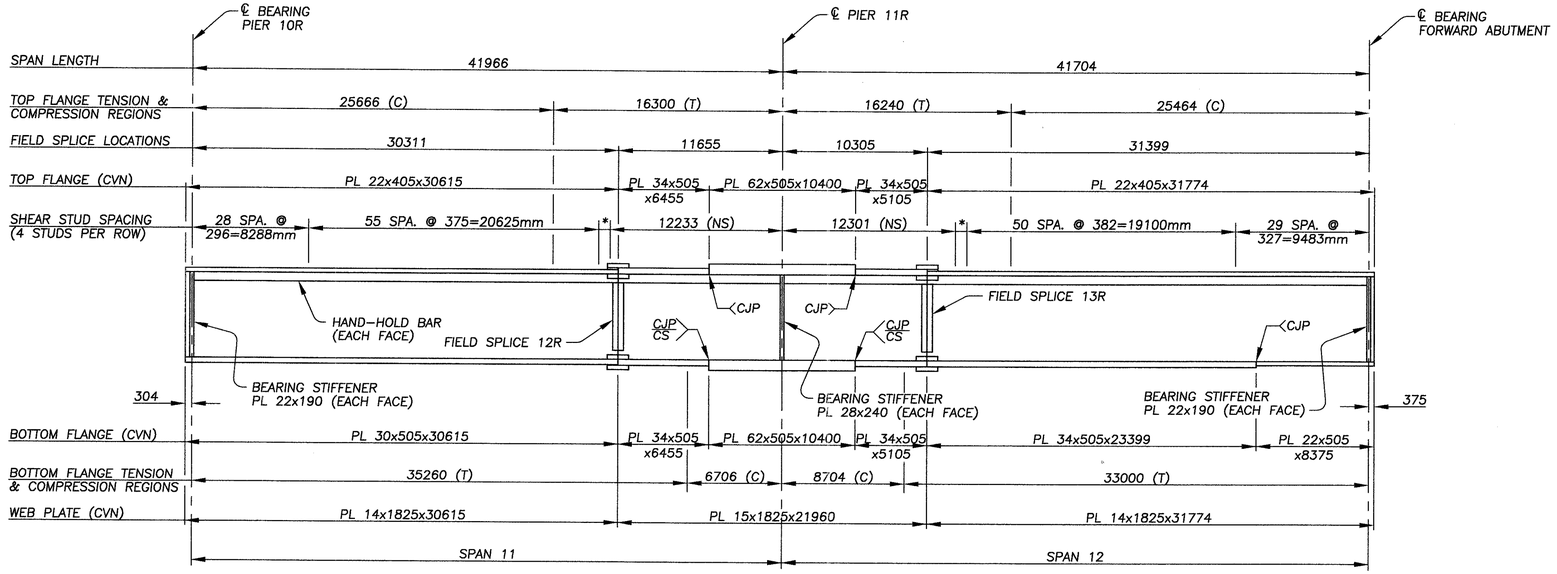
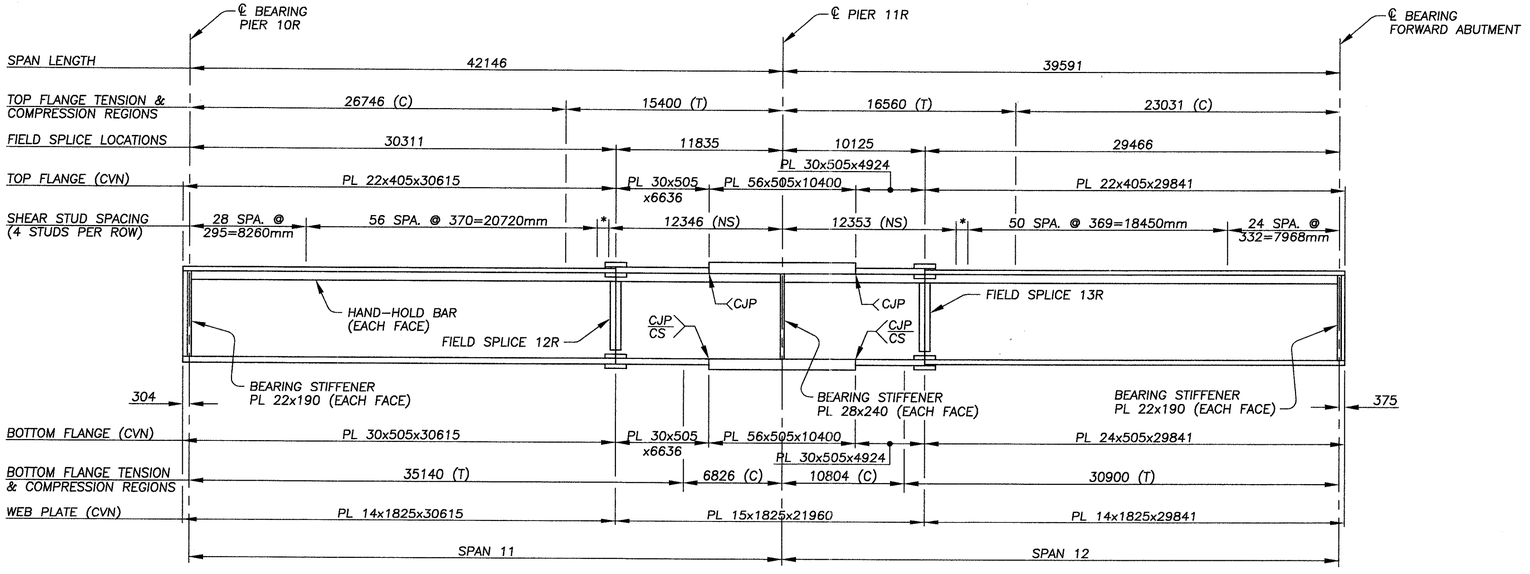


ELEVATION – GIRDER 4R–C



ELEVATION – GIRDER 4R–D

NOTES:

1. MASS OF GIRDER 4R–C = 39 165 kg
2. MASS OF GIRDER 4R–D = 36 680 kg
3. FOR SHEAR CONNECTOR AND HAND–HOLD BAR DETAILS, SEE SHEET 114 AND 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

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CUY-77-23.458

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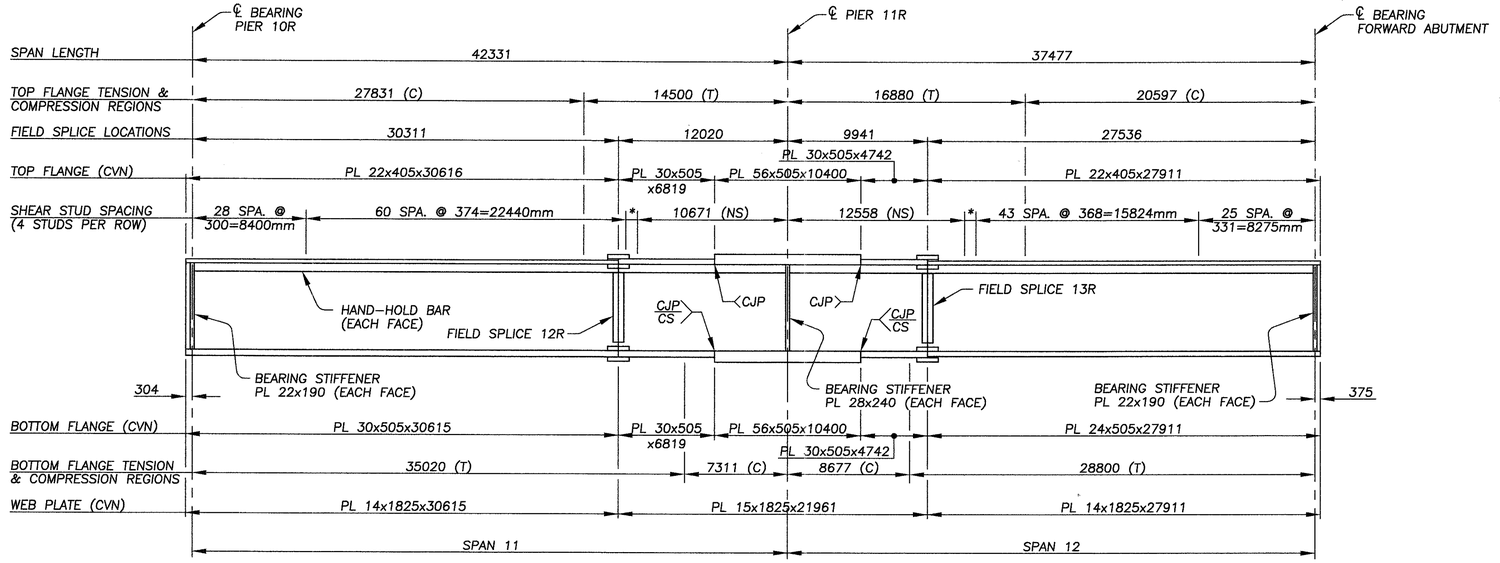
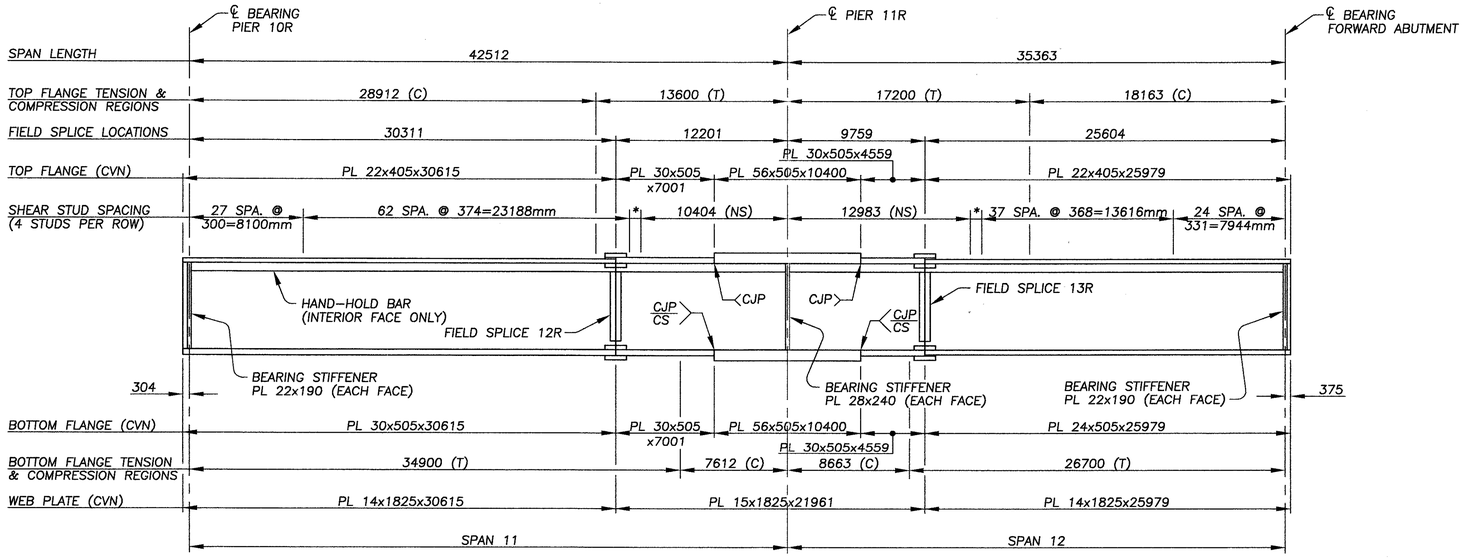


ELEVATION – GIRDER 4R–E



ELEVATION – GIRDER 4R–F

NOTES:

1. MASS OF GIRDER 4R–E = 35 960 kg
2. MASS OF GIRDER 4R–F = 34 594 kg
3. FOR SHEAR CONNECTOR AND HAND–HOLD BAR DETAILS, SEE SHEET 114 AND 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

CJP = COMPLETE JOINT PENETRATION GROOVE WELD
CS = BUTT WELD SUBJECT TO COMPRESSIVE STRESSES ONLY
(T) DENOTES AREA OF TENSION IN FLANGE
(C) DENOTES AREA OF COMPRESSION IN FLANGE
(NS) INDICATES NO SHEAR STUDS ARE REQUIRED
SPA. = SPACES
* = 6 SPACES @ ABOUT 131=820 mm

metric units

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GIRDER ELEVATIONS
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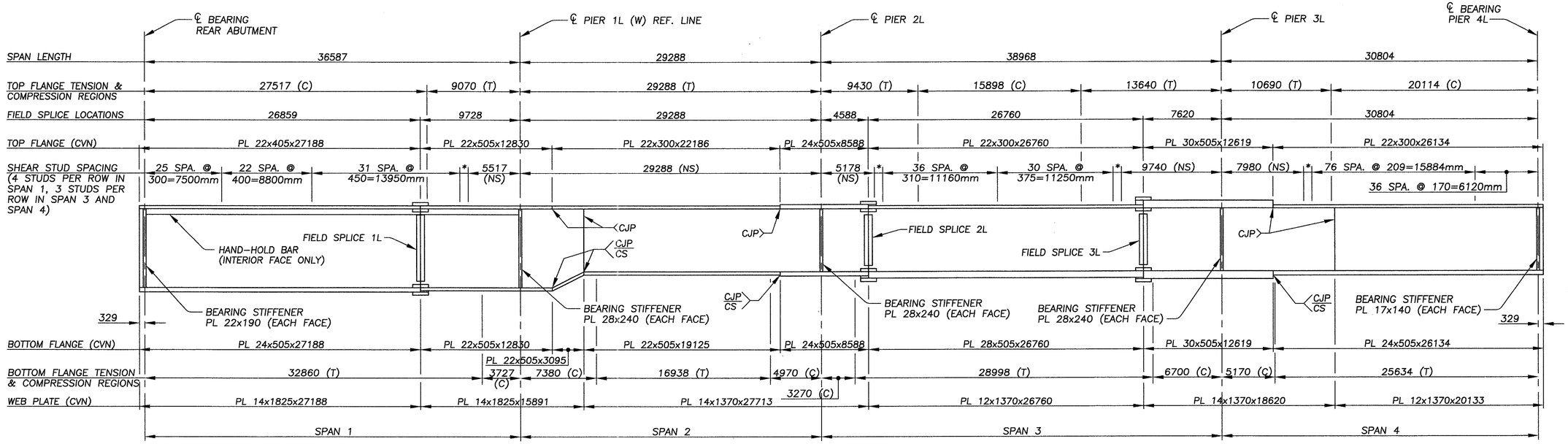
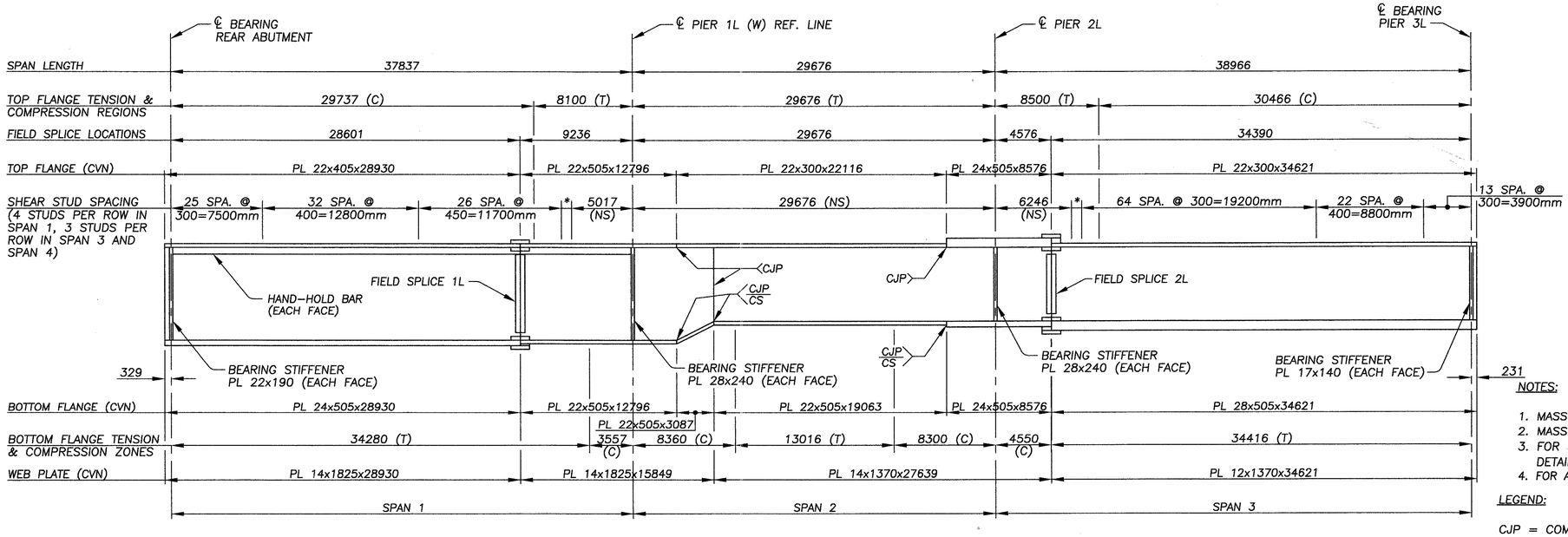


ELEVATION – GIRDER 1L–A



ELEVATION – GIRDER 1L–B

NOTES:

1. MASS OF GIRDER 1L–A = 45 468 kg
2. MASS OF GIRDER 1L–B = 36 371 kg
3. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

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(NS) INDICATES NO SHEAR STUDS ARE REQUIRED.
SPA. = SPACES
* = 6 SPACES @ ABOUT 137=820 mm FOR SPAN 1
* = 9 SPACES @ ABOUT 91=820 mm FOR SPAN 3 AND 4

metric units

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BRIDGE NO. CUY-77-23458
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CUY-77-23.458

100/175

204/295

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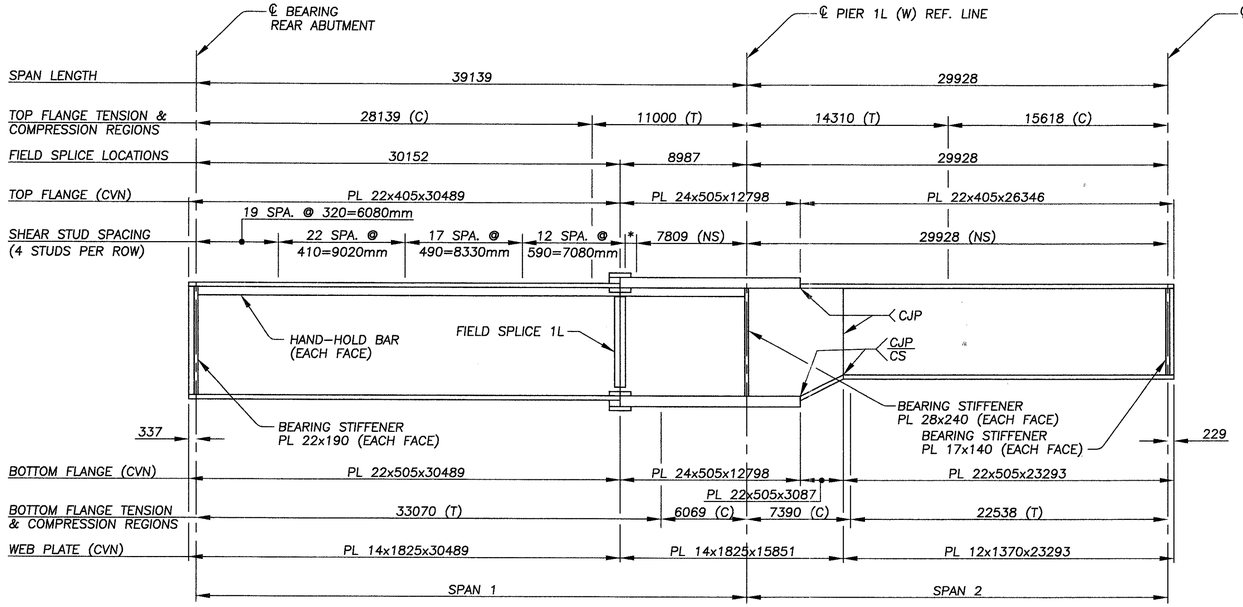
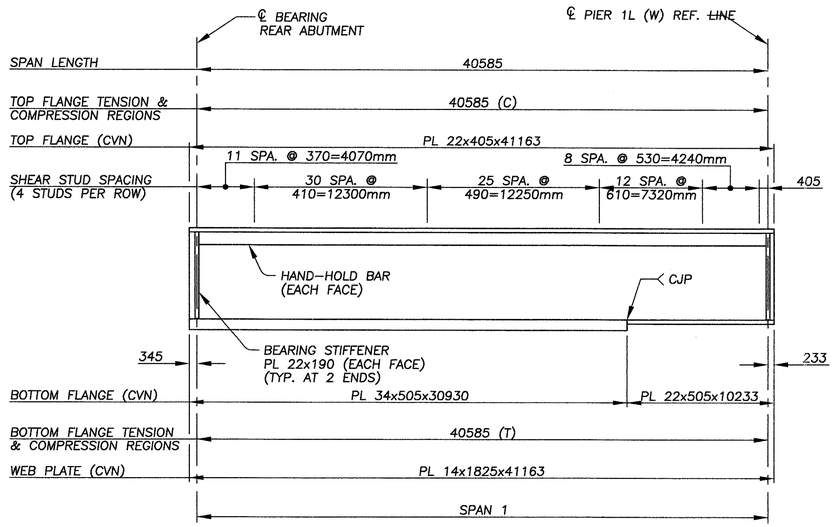


ELEVATION – GIRDER 1L–C



ELEVATION – GIRDER 1L–D

NOTES:

1. MASS OF GIRDER 1L–C = 24 768 kg
2. MASS OF GIRDER 1L–D = 17 229 kg
3. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES SEE SHEET 87 OF 175.

LEGEND:

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SPA. = SPACES
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metric units

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CUY-77-23.458

101/175

205/295

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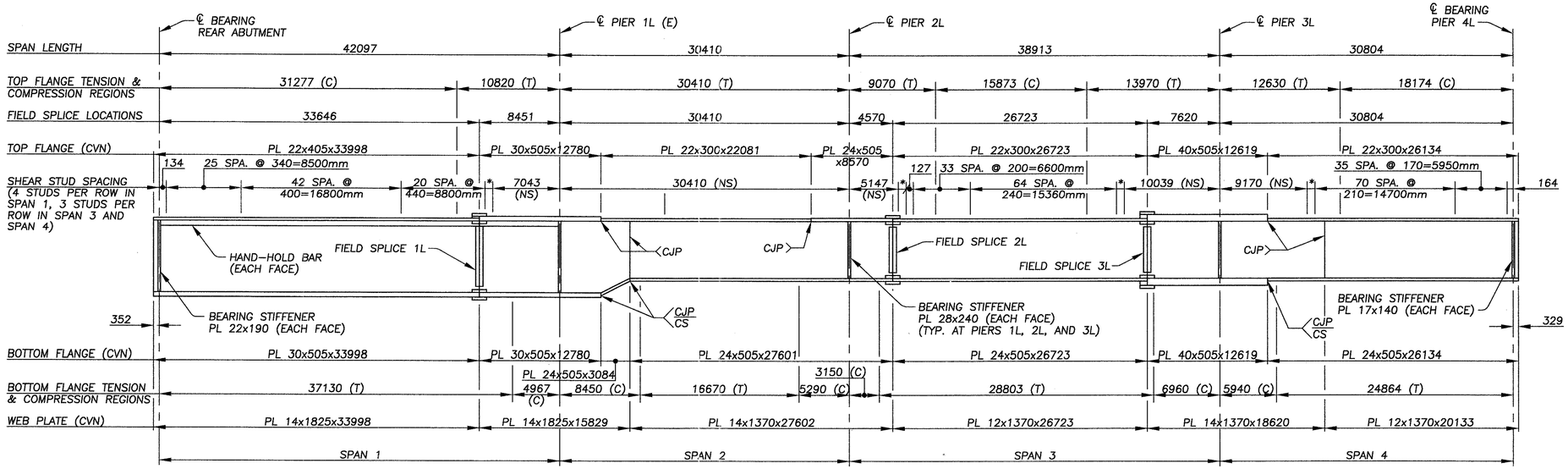
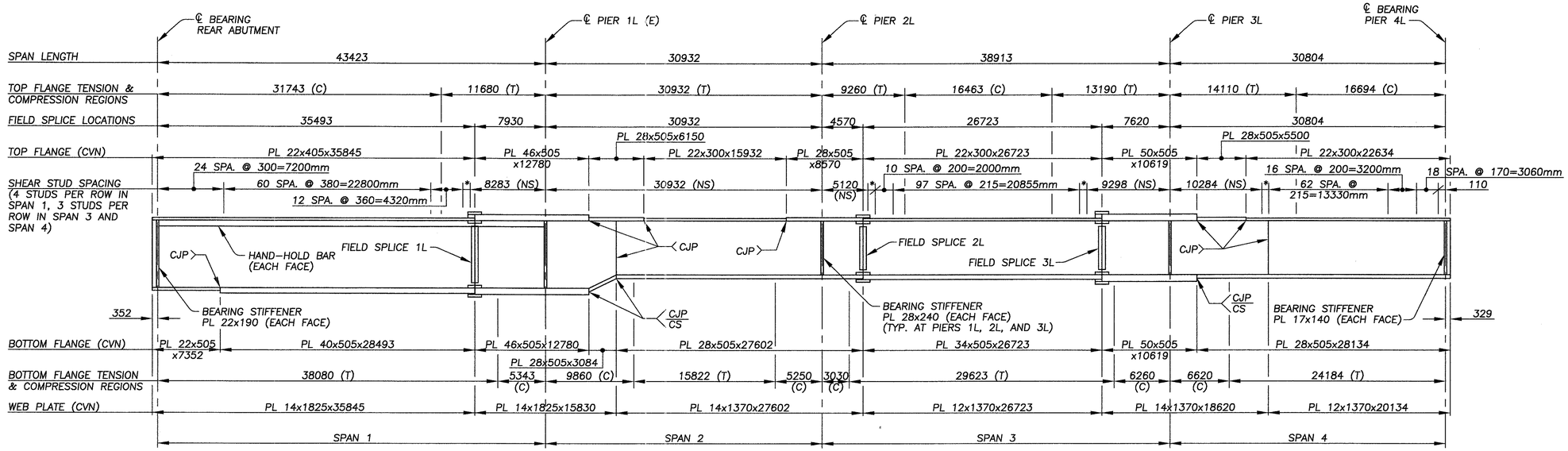


ELEVATION – GIRDER 1L–E



ELEVATION – GIRDER 1L–F

NOTES:

1. MASS OF GIRDER 1L–E = 50 904 kg
2. MASS OF GIRDER 1L–F = 57 472 kg
3. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

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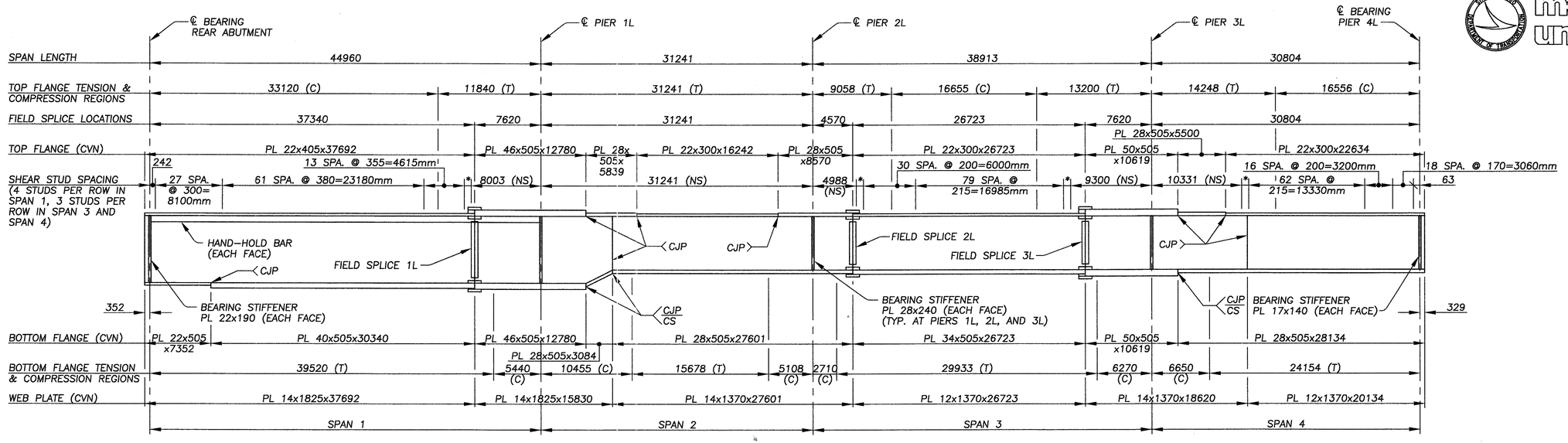
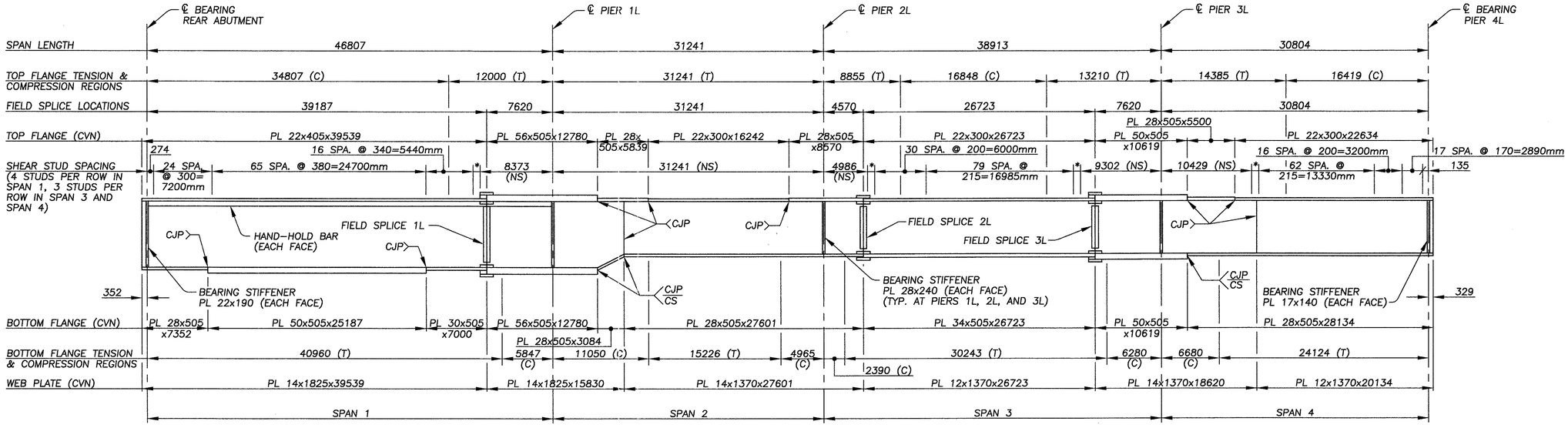


ELEVATION – GIRDER 1L–G



ELEVATION – GIRDER 1L–H

NOTES:

1. MASS OF GIRDER 1L–G = 58 280 kg
2. MASS OF GIRDER 1L–H = 61 014 kg
3. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

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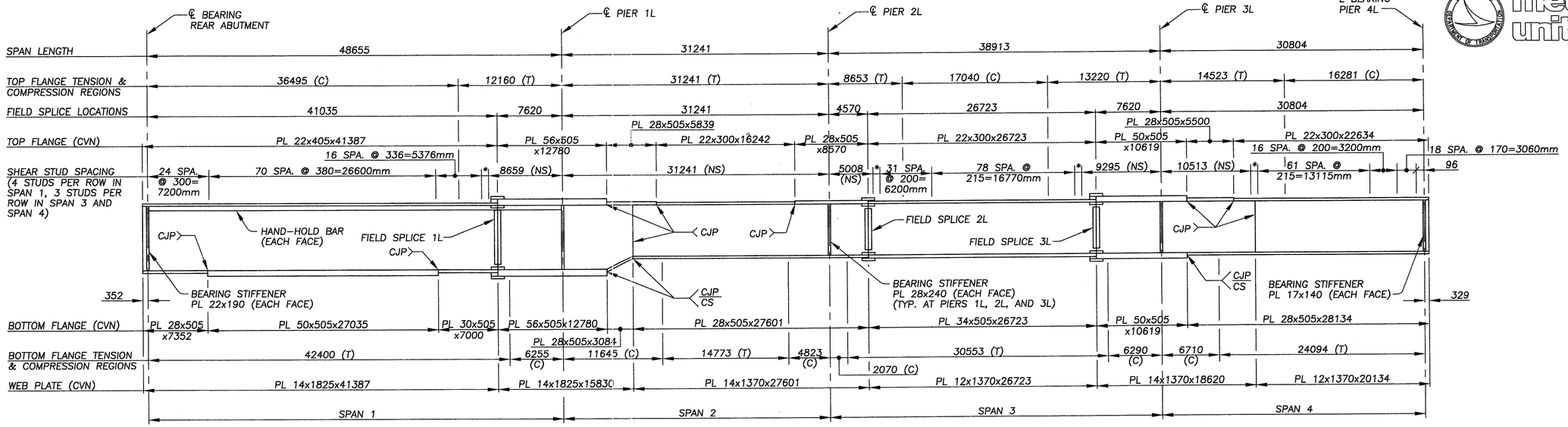
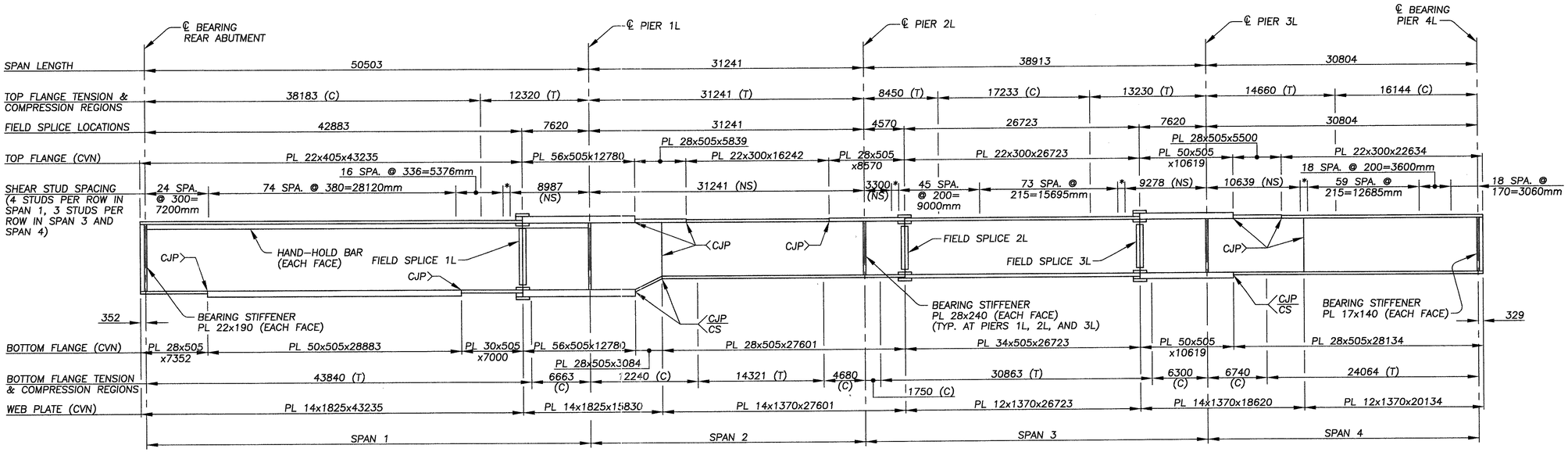


ELEVATION – GIRDER 1L–I



ELEVATION – GIRDER 1L–J

NOTES:

1. MASS OF GIRDER 1L–I = 61 894 kg
2. MASS OF GIRDER 1L–J = 62 343 kg
3. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

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metric units

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GIRDER ELEVATIONS
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OVER KINGSBURY RUN

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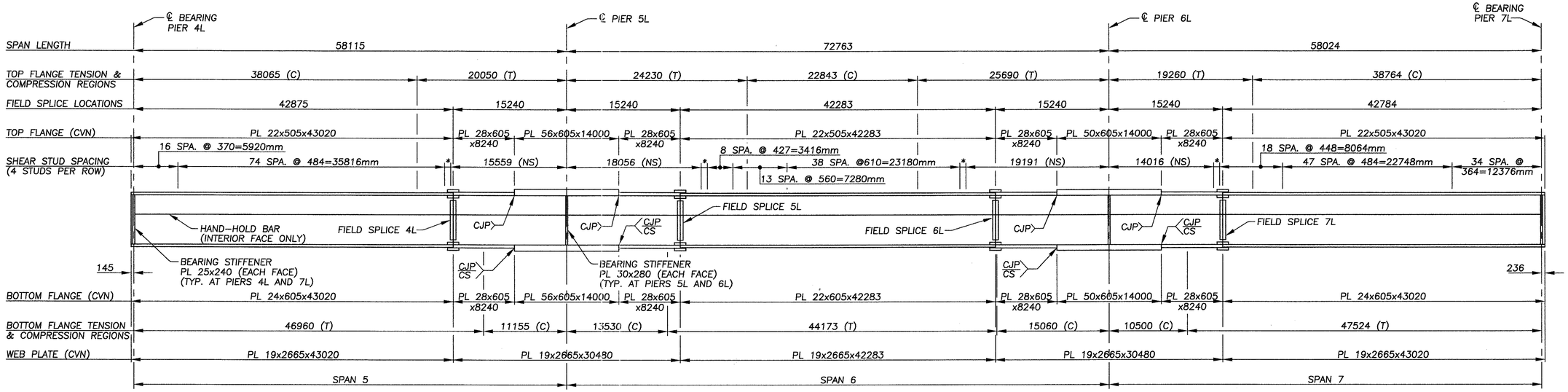
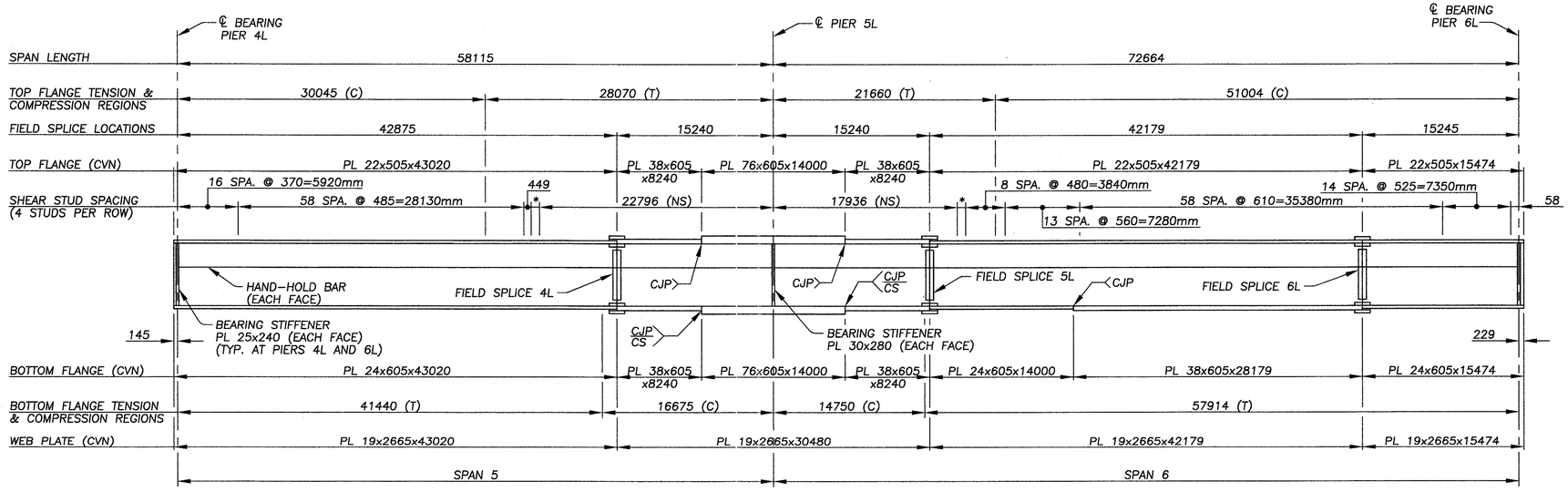
metric units



ELEVATION – GIRDER 2L–A



ELEVATION – GIRDER 2L–B

NOTES:

1. MASS OF GIRDER 2L–A = 127 344 kg
2. MASS OF GIRDER 2L–B = 94 847 kg
3. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

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(NS) INDICATES NO SHEAR STUDS ARE REQUIRED
SPA. = SPACES
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GIRDER ELEVATIONS
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105/175

209/295

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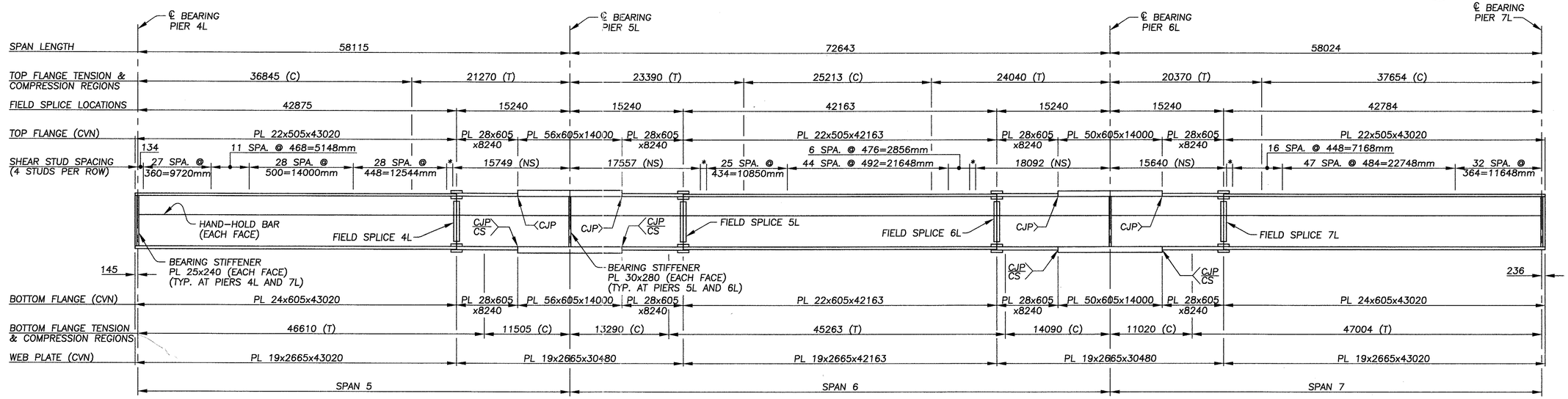
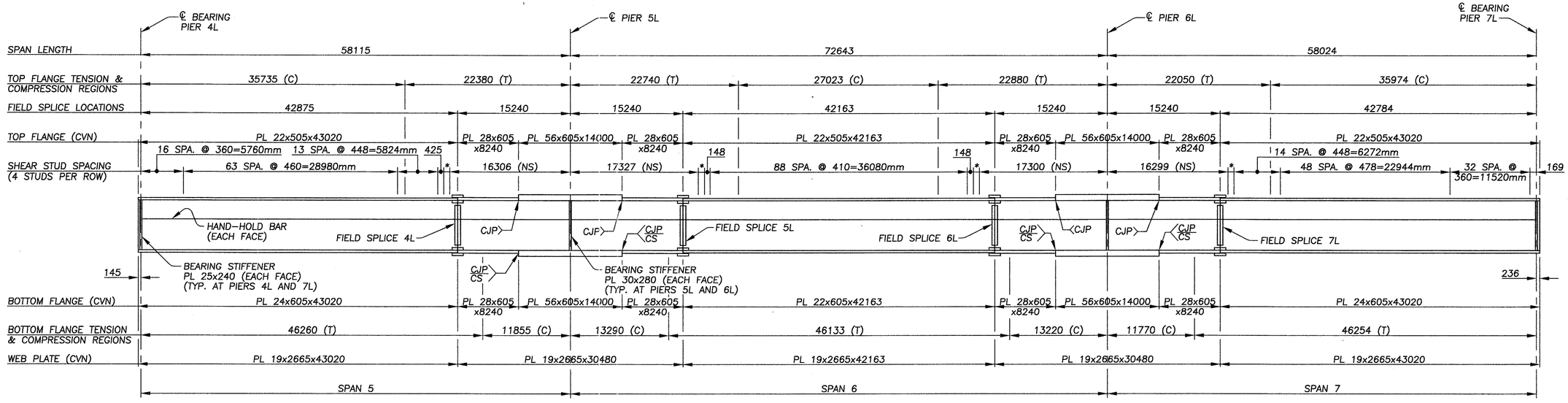


ELEVATION – GIRDER 2L–C



ELEVATION – GIRDERS 2L–D, 2L–E, 2L–F, AND 2L–G

NOTES:

1. MASS OF GIRDER 2L–C = 129 783 kg
2. MASS OF GIRDERS 2L–D THROUGH 2L–F = 130 533 kg
3. MASS OF GIRDER 2L–G = 128 801 kg
4. FOR SHEAR CONNECTOR DETAILS AND HAND–HOLD BAR DETAILS SEE SHEET 114 AND 115 OF 175.
5. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

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metric units

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CUY-77-23.458

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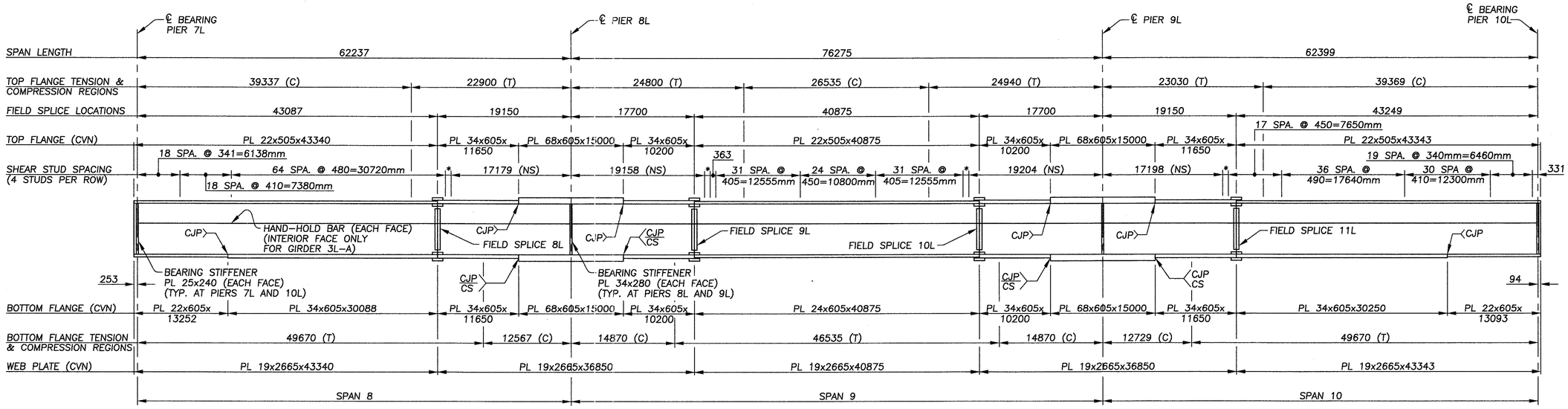
metric units



TYPICAL GIRDER ELEVATION – UNIT 3L

NOTES:

1. MASS OF GIRDERS 3L-A = 145 772 kg
2. MASS OF GIRDER 3L-F = 146 645 kg
3. MASS OF GIRDERS 3L-B THROUGH 3L-E = 148 521 kg EACH
4. FOR SHEAR CONNECTOR DETAILS AND HAND-HOLD BAR DETAIL SEE SHEET 114 AND 115 OF 175.
5. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

LEGEND:

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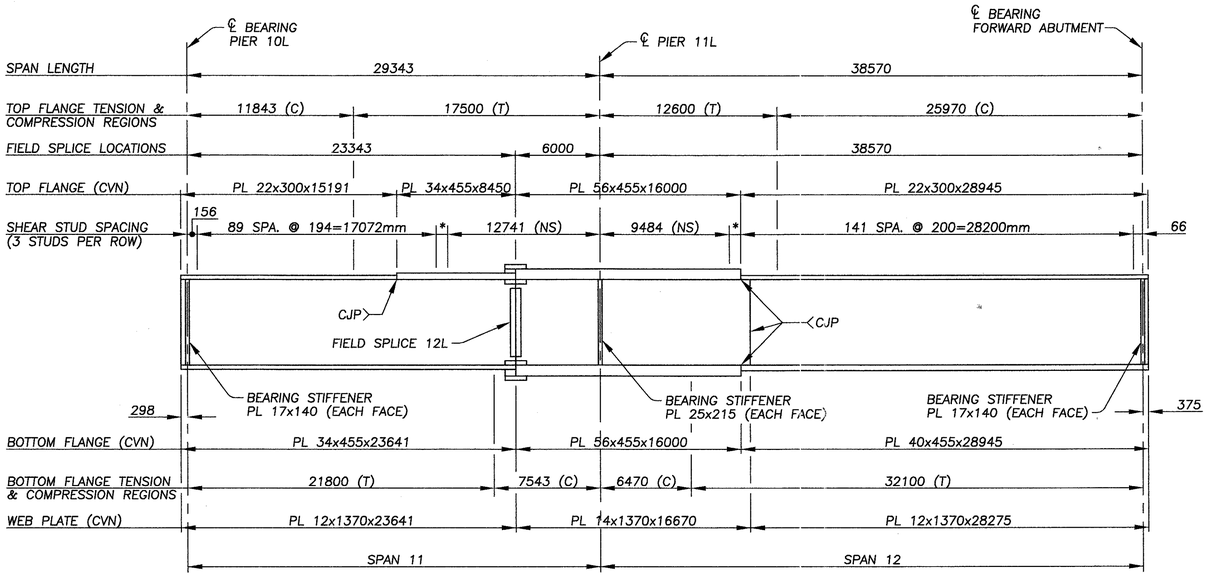
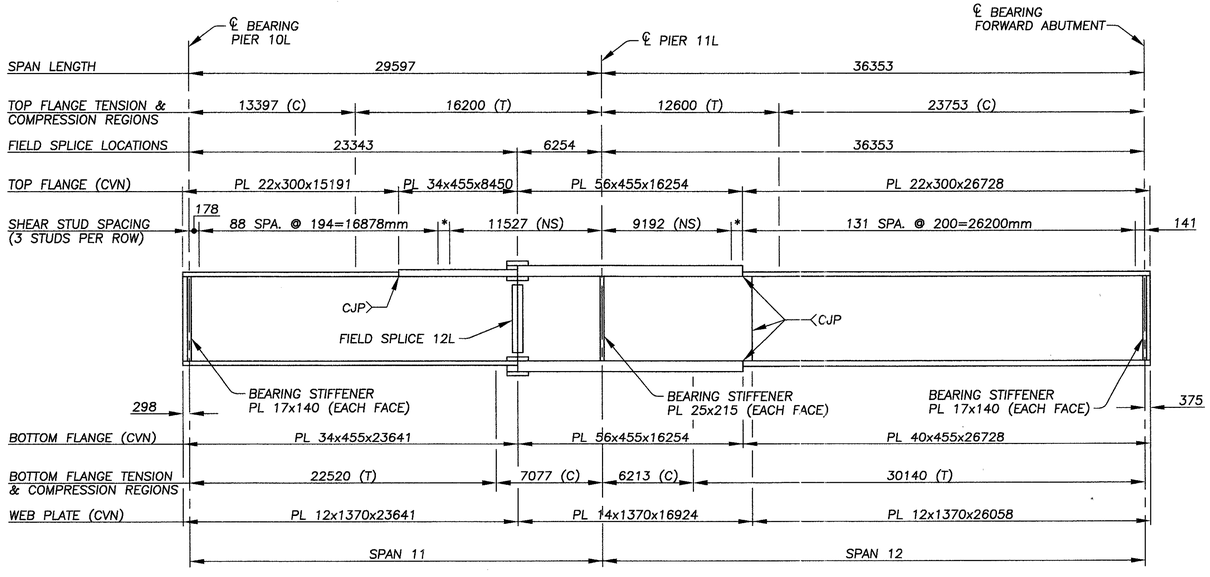


ELEVATION – GIRDER 4L–A



ELEVATION – GIRDER 4L–B

NOTES:

1. MASS OF GIRDER 4L–A = 26 182 kg
2. MASS OF GIRDER 4L–B = 25 974 kg
3. FOR SHEAR CONNECTOR DETAILS SEE SHEET 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES SEE SHEET 87 OF 175.

LEGEND:

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SPA. = SPACES
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metric units

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108/175

212/295

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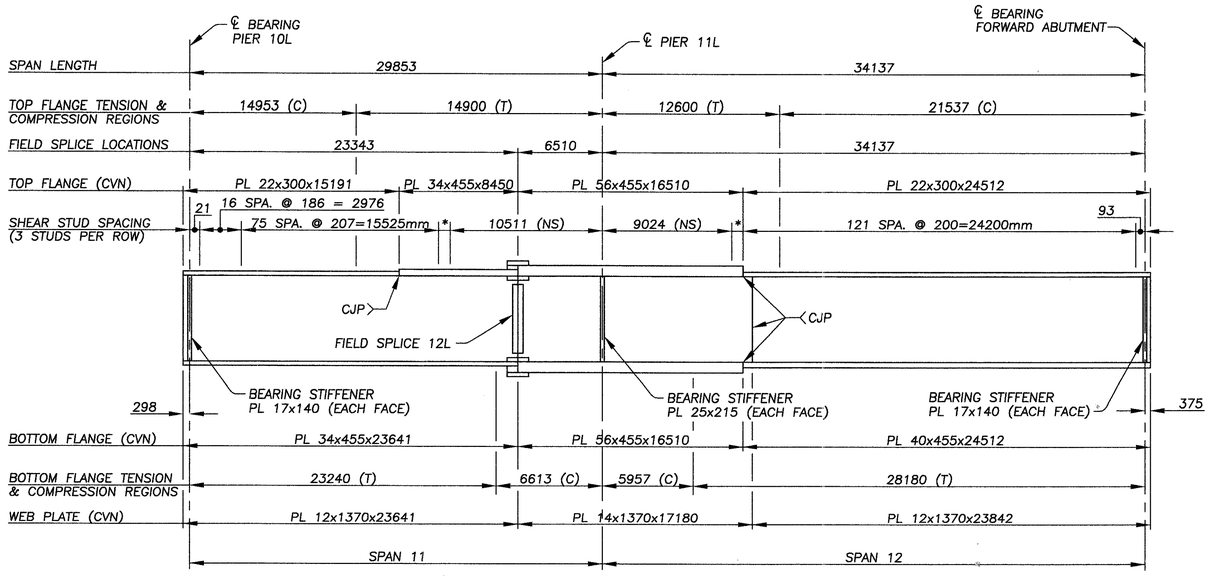
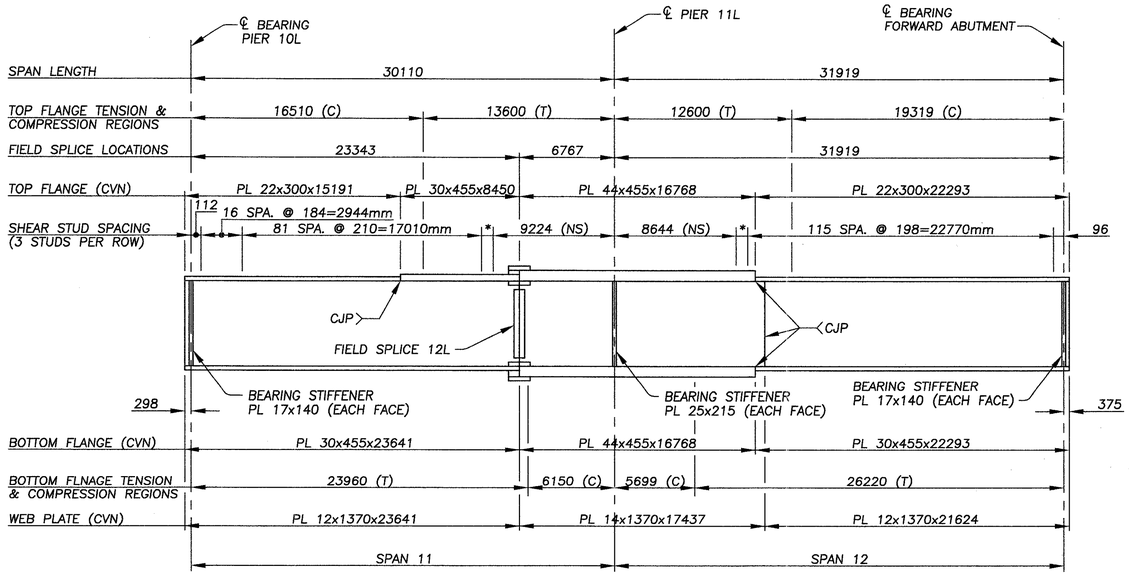


ELEVATION – GIRDER 4L–C



ELEVATION – GIRDER 4L–D

NOTES:

1. MASS OF GIRDER 4L–C = 24 831 kg
2. MASS OF GIRDER 4L–D = 22 073 kg
3. FOR SHEAR CONNECTOR DETAILS SEE SHEET 115 OF 175.
4. FOR ADDITIONAL GIRDER NOTES, SEE SHEET 87 OF 175.

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CUY-77-23458

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213/295

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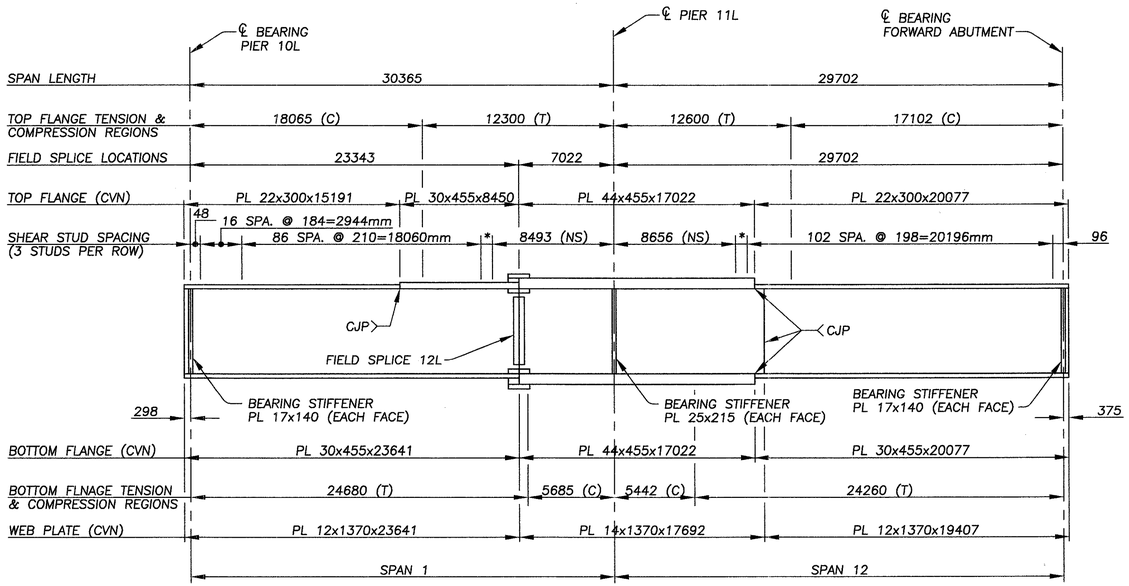
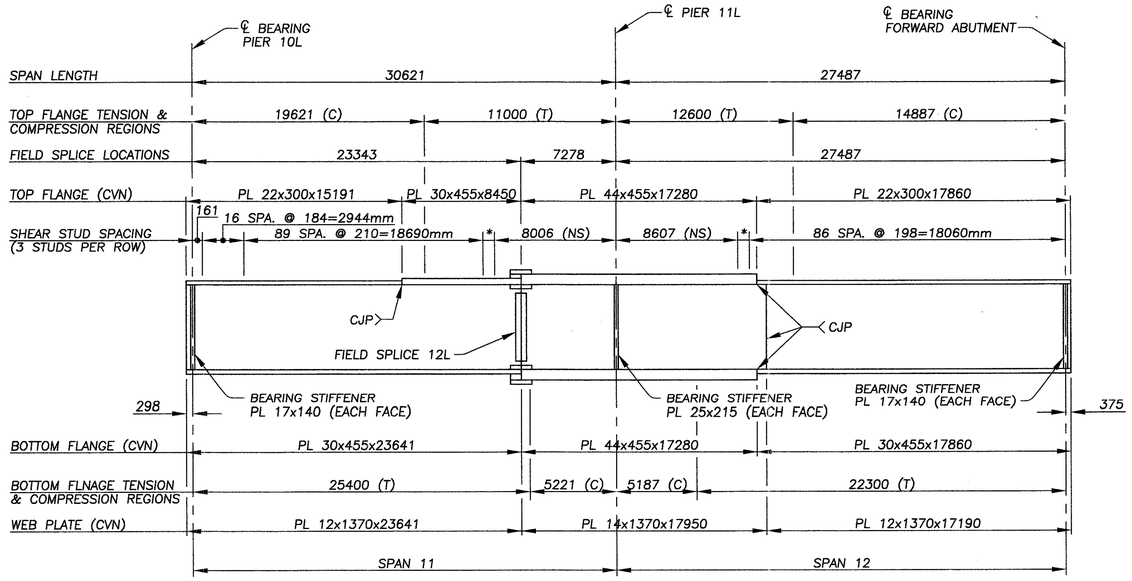


ELEVATION – GIRDER 4L–E



ELEVATION – GIRDER 4L–F

NOTES:

1. MASS OF GIRDER 4L–E = 21 543 kg
2. MASS OF GIRDER 4L–F = 20 862 kg
3. FOR SHEAR CONNECTOR DETAILS, SEE SHEET 115 OF 175.
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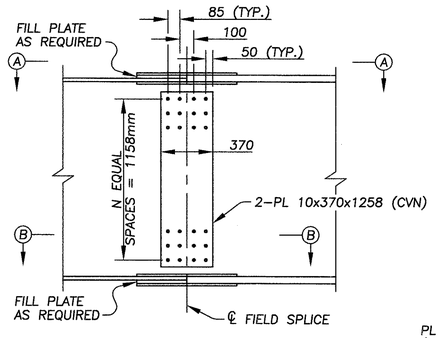
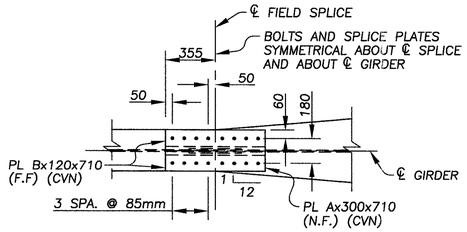


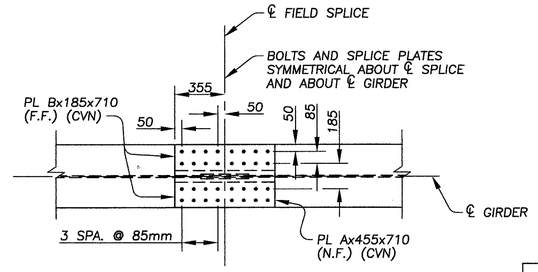
GIRDER WEB SPLICE

FIELD SPLICES 2L, 3L, AND 12L



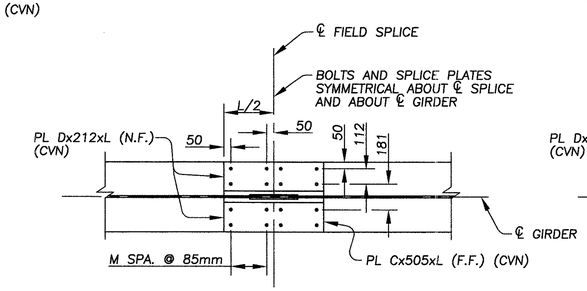
VIEW A–A

FIELD SPLICES 2L AND 3L



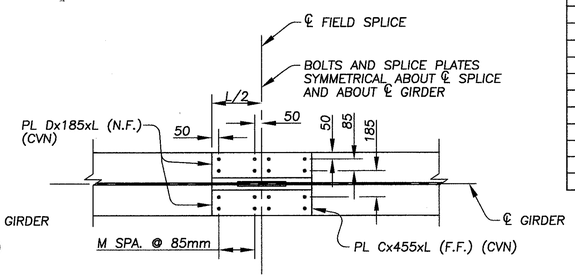
VIEW A–A

FIELD SPLICE 12L



VIEW B–B

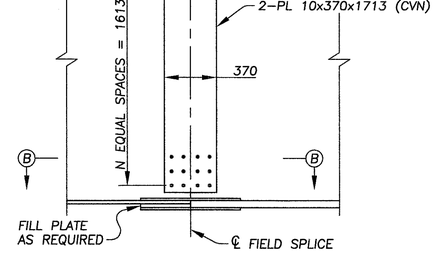
FIELD SPLICES 2L AND 3L



VIEW B–B

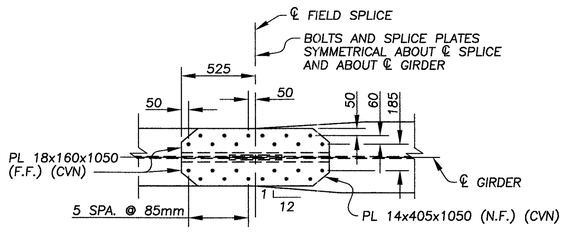
FIELD SPLICE 12L

GIRDER	1L–A TO 1L–J	1L–A	1L–E	1L–F TO 1L–J	4L–A TO 4L–C	4L–D TO 4L–F
SPLICE	2L	3L	3L	3L	12L	12L
WEB SPLICE DIMENSIONS						
N	10	10	10	11	11	11
# BOLTS	44	44	44	48	48	48
TOP FLANGE SPLICE DIMENSIONS						
A	14	14	14	18	16	14
B	18	18	18	25	20	18
# BOLTS	16	16	16	16	32	32
BOTTOM FLANGE SPLICE DIMENSIONS						
M	2	2	2	2	3	3
L	540	540	540	540	710	710
C	14	14	14	14	16	14
D	18	18	18	18	20	18
# BOLTS	24	24	24	24	32	32



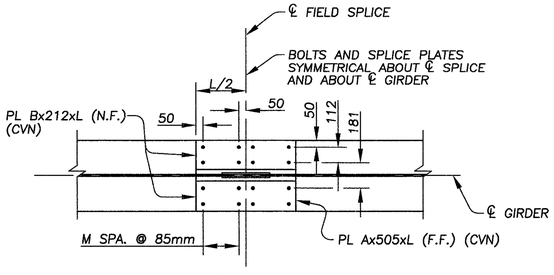
GIRDER WEB SPLICE

FIELD SPLICES 1L, 1R, 12R, AND 13R



VIEW A–A

FIELD SPLICES 1L, 1R, 12R, AND 13R



VIEW B–B

FIELD SPLICES 1L, 1R, 12R, AND 13R

GIRDER	1L–A TO 1L–E	1L–F	1L–G	1L–H TO 1L–J	1R–A	1R–B	1R–C	1R–D TO 1R–F	4R–A TO 4R–C	4R–D TO 4R–F	4R–A TO 4R–F
SPLICE	1L	1L	1L	1L	1R	1R	1R	1R	12R	12R	13R
WEB SPLICE DIMENSIONS											
N	17	15	15	15	15	16	15	15	15	17	16
# BOLTS	72	64	64	64	64	68	64	64	64	72	68
TOP FLANGE SPLICE DIMENSIONS											
# BOLTS	24	24	24	24	24	24	24	24	24	24	24
BOTTOM FLANGE SPLICE DIMENSIONS											
M	2	3	3	2	3	3	3	3	2	2	3
L	540	710	710	540	710	710	710	710	540	540	540
A	14	14	14	14	16	16	16	18	14	14	14
B	18	18	18	18	20	20	20	22	18	18	18
# BOLTS	24	32	32	24	32	32	32	32	24	24	24

NOTES:

1. BOLTS IN ALL FIELD SPLICES SHALL BE 27mm DIAMETER GALVANIZED HIGH–STRENGTH BOLTS IN ACCORDANCE WITH ASTM A 325M
2. THE FOLLOWING ABBREVIATIONS ARE USED:
   SPA. = SPACES
   F.F. = FAR FACE
   N.F. = NEAR FACE
3. FOR TYPICAL BEND POINT SPLICE DETAIL SEE SHEET 113 OF 175.
4. TO DETERMINE BEND POINTS SEE FRAMING PLANS.
5. FOR SPLICE LOCATIONS SEE GIRDER ELEVATION PLANS.
6. WHERE A SHAPE OR PLATE IS LABELED "CVN" THE MATERIAL SHALL MEET THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS IN ACCORDANCE WITH 711.01
7. FOR PARTIAL SECTION DETAIL SEE SHEET 113 OF 175.
8. FOR TABLE OF BENT FIELD SPLICES SEE SHEET 113 OF 175.

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street, Suite 1700, Cleveland, OH 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED GLG
DRAWN GLG
CHECKED TJM
REVISED
REVIEWED RER
DATE 09-12-97
STRUCTURE FILE NUMBER 1806726

FIELD SPLICE DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

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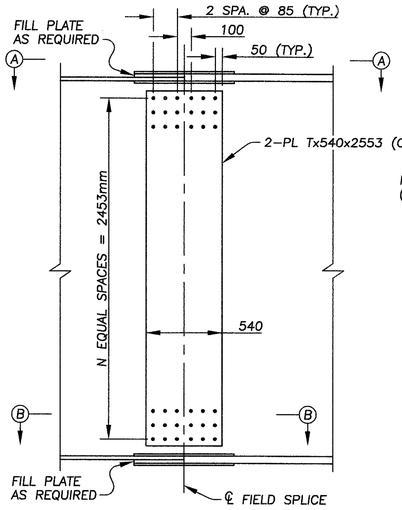
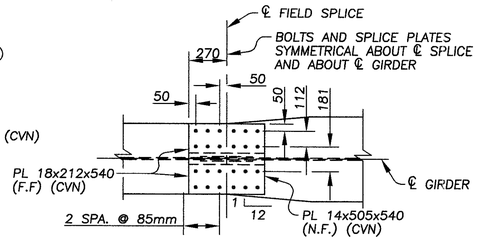


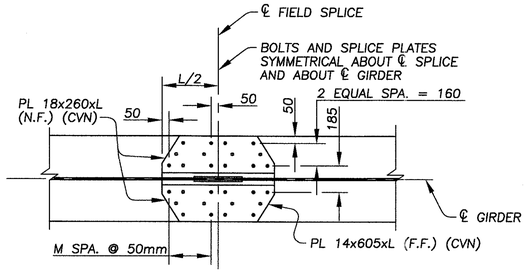
GIRDER WEB SPLICE

FIELD SPLICES 4L THROUGH 11L AND 4R THROUGH 11R EXCEPT AS NOTED



VIEW A–A

FIELD SPLICES 4L THROUGH 11L AND 4R THROUGH 11R EXCEPT AS NOTED

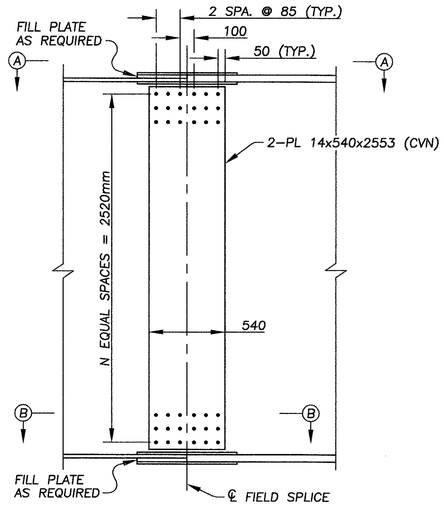


VIEW B–B

FIELD SPLICES 4L THROUGH 11L AND 4R THROUGH 11R EXCEPT AS NOTED

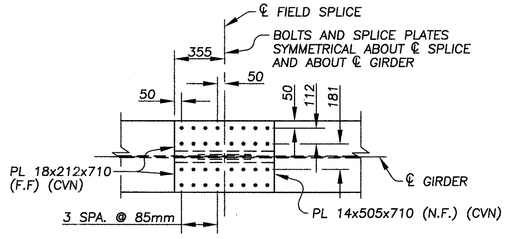
GIRDER	2R–A TO 2R–H	2R–A TO 2R–F	2R–G	2R–H	2R–A TO 2R–F	2R–G	2R–H	2R–A TO 2R–H	3R–A TO 3R–E	3R–G	3R–A TO 3R–G	3R–A TO 3R–G	3R–A TO 3R–G
SPLICE	4R	5R	5R	5R	6R	6R	6R	7R	8R	8R	9R	10R	11R
WEB SPLICE DIMENSIONS													
N	21	21	21	21	21	25	21	21	23	23	21	21	23
T	10	10	10	10	10	12	10	10	10	10	10	10	11
# BOLTS	132	132	132	132	132	156	132	132	144	144	132	132	144
TOP FLANGE SPLICE DIMENSIONS													
# BOLTS	24	24	24	24	24	24	24	24	24	24	24	24	24
BOTTOM FLANGE SPLICE DIMENSIONS													
M	4	4	6	4	4	8	4	4	6	6	4	4	6
L	600	600	800	600	600	800	600	600	800	800	600	600	800
# BOLTS	28	28	40	28	28	40	28	28	40	40	28	28	40

GIRDER	2L–A	2L–B	2L–C TO 2L–G	2L–A TO 2L–G	2L–A	2L–C TO 2L–G	2L–A TO 2L–G	3L–A TO 3L–F	3L–A TO 3L–F	3L–A TO 3L–F	3L–A TO 3L–F
SPLICE	4L	4L	4L	5L	6L	6L	7L	8L	9L	10L	11L
WEB SPLICE DIMENSIONS											
N	21	23	21	21	21	21	21	23	21	21	23
T	10	10	10	10	10	10	10	10	10	10	10
# BOLTS	132	144	132	132	132	132	132	144	132	132	144
TOP FLANGE SPLICE DIMENSIONS											
# BOLTS	24	24	24	24	24	24	24	24	24	24	24
BOTTOM FLANGE SPLICE DIMENSIONS											
M	4	6	4	4	4	4	4	6	4	4	6
L	600	800	600	600	600	600	600	800	600	600	800
# BOLTS	28	40	28	28	28	28	28	40	28	28	40



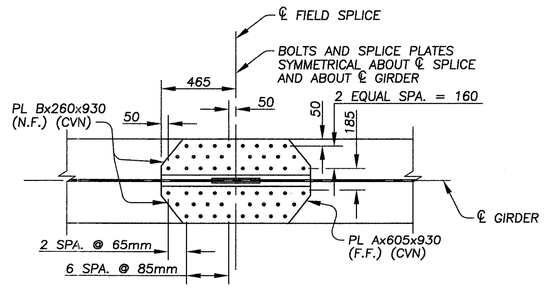
GIRDER WEB SPLICE

FIELD SPLICE 6L OF GIRDER 2L–B AND FIELD SPLICE 8R OF GIRDER 3R–F



VIEW A–A

FIELD SPLICE 6L OF GIRDER 2L–B AND FIELD SPLICE 8R OF GIRDER 3R–F



VIEW B–B

FIELD SPLICE 6L OF GIRDER 2L–B AND FIELD SPLICE 8R OF GIRDER 3R–F

GIRDER	2L–B	3R–F
SPLICE	6L	8R
WEB DIMENSIONS		
N	26	25
# BOLTS	156	150
TOP FLANGE DIMENSIONS		
# BOLTS	32	32
BOTTOM FLANGE DIMENSIONS		
A	14	16
B	18	20
# BOLTS	52	52

NOTES:

1. BOLTS IN ALL FIELD SPLICES SHALL BE 27mm DIAMETER GALVANIZED HIGH–STRENGTH BOLTS IN ACCORDANCE WITH ASTM A 325M
2. THE FOLLOWING ABBREVIATIONS ARE USED:
   SPA. = SPACES
   F.F. = FAR FACE
   N.F. = NEAR FACE
3. FOR TYPICAL BEND POINT SPLICE DETAIL SEE SHEET 113 OF 175.
4. TO DETERMINE BEND POINTS SEE FRAMING PLANS.
5. FOR SPLICE LOCATIONS SEE GIRDER ELEVATION PLANS.
6. WHERE A SHAPE OR PLATE IS LABELED "CVN" THE MATERIAL SHALL MEET THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS IN ACCORDANCE WITH 711.01
6. FOR PARTIAL SECTION DETAIL SEE SHEET 113 OF 175.
7. FOR TABLE OF BENT FIELD SPLICES SEE SHEET 113 OF 175.

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
GLG	GLG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

FIELD SPLICE DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

112/175

216/295

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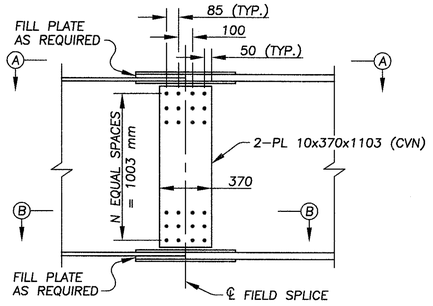
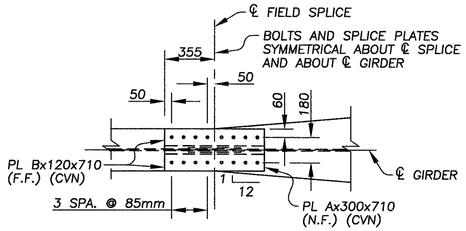


GIRDER WEB SPLICE

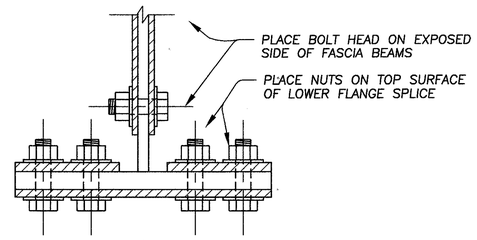
FIELD SPLICES 2R, 3R–1, 1S–RAMP, 1N–RAMP, 2–RAMP, 3–RAMP, AND 3R–2

GIRDER	1R–A TO 1R–F	1R–A TO 1R–F	1R–G TO 1R–H	1R–I	1R–J TO 1R–K	1R–G	1R–H	1R–I TO 1R–K	1R–G	1R–H	1R–I	1R–J	1R–K	1R–H TO 1R–J	1R–K	1R–I TO 1R–K
SPLICE	2R	3R–1	1S–RAMP	1S–RAMP	1S–RAMP	1N–RAMP	1N–RAMP	1N–RAMP	2–RAMP	2–RAMP	2–RAMP	2–RAMP	2–RAMP	3–RAMP	3–RAMP	3R–2
WEB SPLICE DIMENSIONS																
N	9	9	9	9	9	9	9	9	9	9	9	10	9	9	10	9
# BOLTS	40	40	40	40	40	40	40	40	40	40	40	44	40	40	44	40
TOP FLANGE SPLICE DIMENSIONS																
A	16	16	14	16	14	14	14	14	16	16	18	14	14	14	14	14
B	20	20	18	20	18	18	18	18	20	20	25	18	18	18	18	18
# BOLTS	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
BOTTOM FLANGE SPLICE DIMENSIONS																
M	2	2	1	1	1	2	2	1	2	2	2	2	2	2	2	1
L	540	540	370	370	370	540	540	370	540	540	540	540	540	540	540	370
# BOLTS	24	24	16	16	16	24	24	16	24	24	24	24	24	24	24	16



VIEW A–A

FIELD SPLICES 2R, 3R–1, 1S–RAMP, 1N–RAMP, 2–RAMP, 3–RAMP, AND 3R–2

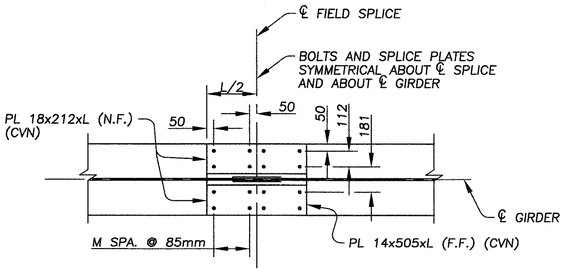


PARTIAL SECTION DETAIL

(AT ℄ GIRDER SPLICE)

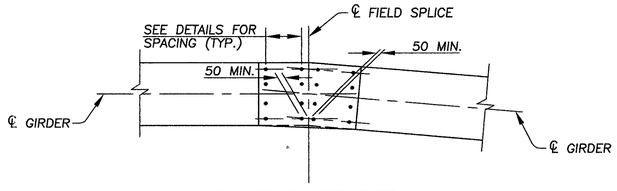
BENT FIELD SPLICES		
SPLICE	GIRDER	ANGLE
1S–RAMP	1R–G	174°35'38"
	1R–H	175°20'09"
	1R–I	176°07'43"
	1R–J	176°54'07"
	1R–K	175°15'40"
2–RAMP	1R–G	169°13'23"
	1R–H	171°26'21"
	1R–I	173°18'37"
	1R–J	173°55'41"
	1R–K	173°55'41"
3–RAMP	1R–H	179°44'12"
	1R–I	177°04'21"
	1R–J	175°40'54"
	1R–K	175°40'54"
3R–2	1R–I	178°44'16"
	1R–J	178°44'16"
	1R–K	178°44'16"
5R	2R–G	178°34'04"
9R	3R–G	178°34'04"
11R	3R–A	179°25'20"
	3R–B	179°25'20"
	3R–C	179°25'20"
	3R–D	179°25'20"
	3R–E	179°25'20"
	3R–G	179°25'20"
13R	4R–A	177°10'46"
	4R–B	177°10'46"
	4R–C	177°10'46"
	4R–D	177°10'46"
	4R–E	177°10'46"
	4R–F	177°10'46"

BENT FIELD SPLICES		
SPLICE	GIRDER	ANGLE
1L	1L–A	177°00'29"
	1L–B	174°53'29"
	1L–C	178°03'49"
2L	1L–A	177°53'00"
3L	1L–A	177°02'15"
5L	2L–A	175°39'35"
	2L–B	178°24'12"
6L	2L–A	175°39'35"
11L	3L–A	177°58'25"
	3L–B	177°58'25"
	3L–C	177°58'25"
	3L–D	177°58'25"
	3L–E	177°58'25"
	3L–F	177°58'25"
12L	4L–A	178°02'06"
	4L–B	178°02'06"
	4L–C	178°02'06"
	4L–D	178°02'06"
	4L–E	178°02'06"
	4L–F	178°02'06"



VIEW B–B

FIELD SPLICES 2R, 3R–1, 1S–RAMP, 1N–RAMP, 2–RAMP, 3–RAMP, AND 3R–2



SPLICE PLATE DETAIL AT BEND POINTS

NOTES:

1. BOLTS IN ALL FIELD SPLICES SHALL BE 27mm DIAMETER GALVANIZED HIGH–STRENGTH BOLTS IN ACCORDANCE WITH ASTM A 325M
2. THE FOLLOWING ABBREVIATIONS ARE USED:
   SPA. = SPACES
   F.F. = FAR FACE
   N.F. = NEAR FACE
3. FOR SPLICE LOCATIONS SEE GIRDER ELEVATION PLANS.
4. WHERE A SHAPE OR PLATE IS LABELED "CVN" THE MATERIAL SHALL MEET THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS IN ACCORDANCE WITH 711.01
5. FOR HAND–HOLD BAR AND INTERMEDIATE STIFFENER DETAILS SEE SHEET 114 OF 175.

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED GLG
DRAWN GLG
CHECKED TJM
REVISED
REVIEWED RER
DATE 09-12-97
STRUCTURE FILE NUMBER 1806726

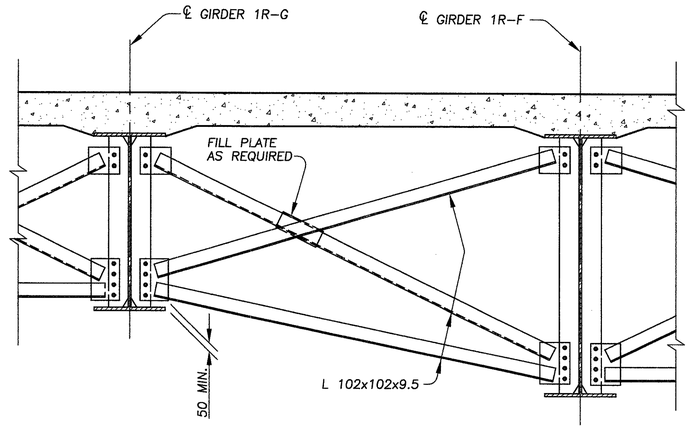
FIELD SPLICE DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

113/175

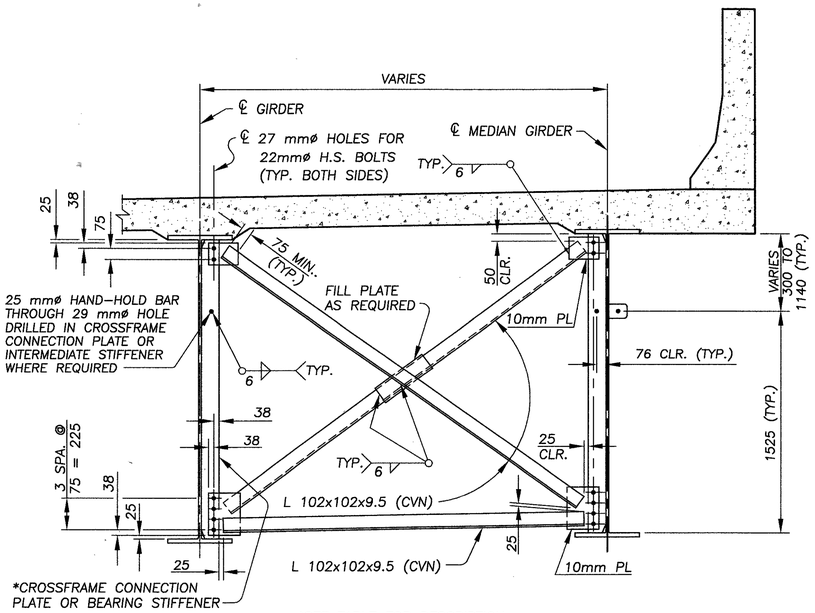
217/295

\24621\techprod\drawings\bridge\Splice3



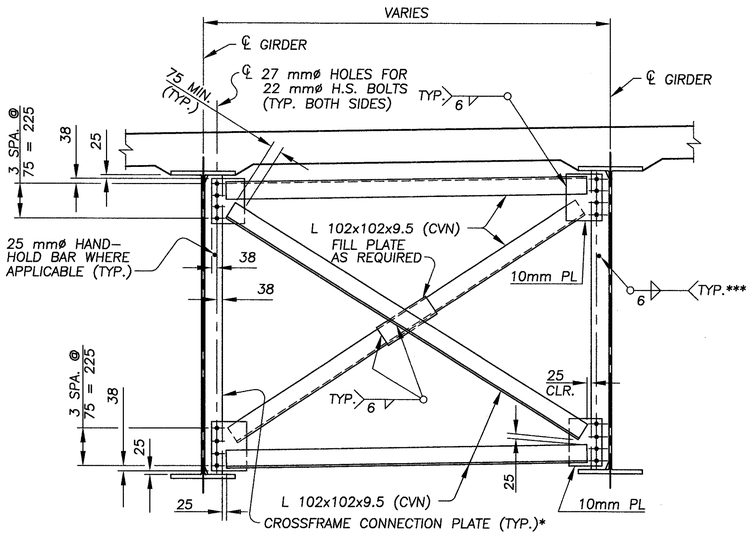
INTERMEDIATE CROSSFRAME "X"
BETWEEN GIRDERS 1R–G AND 1R–F AT PIER 1R

FOR DIMENSIONS NOT SHOWN, SEE INTERMEDIATE AND PIER CROSSFRAME DETAIL



*SEE TABLE FOR DESCRIPTION

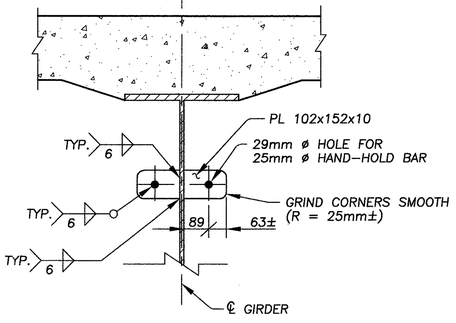
INTERMEDIATE AND PIER CROSSFRAME DETAIL



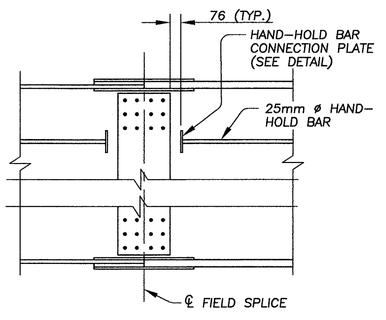
* – SEE TABLE FOR DESCRIPTION

*** – HAND–HOLD BAR SHALL BE FIELD WELDED AT BEND POINTS ON 1825 mm GIRDER WEBS

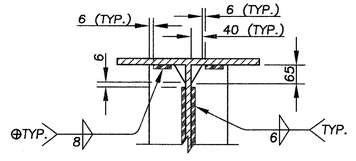
BEND POINT CROSSFRAME DETAIL



HAND–HOLD BAR CONNECTION PLATE DETAIL

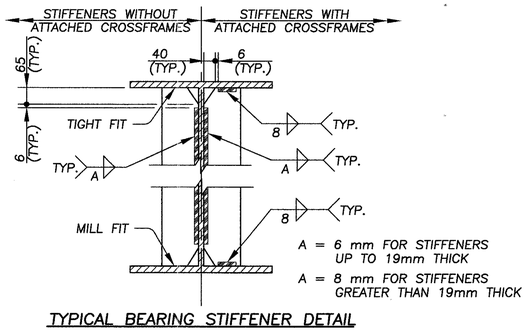


HAND–HOLD BAR DETAIL AT FIELD SPLICE



CLIP DETAIL

⊕ – WELD TO COMPRESSION FLANGE ONLY FOR INTERMEDIATE STIFFENERS.



A = 6 mm FOR STIFFENERS UP TO 19mm THICK

A = 8 mm FOR STIFFENERS GREATER THAN 19mm THICK

TYPICAL BEARING STIFFENER DETAIL

HAND–HOLD BAR NOTES:

HAND–HOLD BAR CONNECTION PLATES FOR EXTERIOR FACE OF MEDIAN GIRDERS SHALL BE PLACED OPPOSITE EVERY INTERMEDIATE STIFFENER LOCATION ON THE INTERIOR OF THE GIRDER. CONNECTION PLATES SHALL ALSO BE PLACED IN INTERMEDIATE LOCATIONS BETWEEN CROSSFRAME CONNECTION PLATES AND/OR STIFFENERS SUCH THAT THE MAXIMUM SPACING DOES NOT EXCEED 2440 mm.

ALL GIRDERS WITH HAND–HOLD BARS SHALL HAVE CONNECTION PLATES LOCATED IN INTERMEDIATE LOCATIONS BETWEEN THE CROSSFRAME CONNECTION PLATES AND\OR STIFFENERS SUCH THAT THE MAXIMUM SPAN OF THE BAR DOES NOT EXCEED 2440 mm. FOR THE NUMBER OF PLATES REQUIRED SEE TABLE.

CROSSFRAME CONNECTION PLATES AND INTERMEDIATE STIFFENERS

UNIT	SIZE
1L (SPAN 1)	PL 11x130
1L (SPANS 2–4)	PL 10x110
2L	PL 14x165
3L	PL 14x165
4L	PL 10x110
1R (SPAN 1**)	PL 11x130
1R	PL 10x110
2R	PL 14x165
3R	PL 14x165
4R	PL 11x130

** – FOR SPAN 1 OF GIRDERS 1R–A THROUGH 1R–F ONLY, ALL REMAINING SPANS SHALL USE PLATE LISTED FOR UNIT 1R

HAND–HOLD BAR CONNECTION PLATES REQUIRED

GIRDER	LEFT FACE	RIGHT FACE	GIRDER	LEFT FACE	RIGHT FACE
1L–A	0	9	1R–A	18	9
1L–B	9	10	1R–B	11	11
1L–C	7	8	1R–C	11	10
1L–D	10	11	1R–D	11	10
1L–E	10	11	1R–E	12	11
1L–F	10	11	1R–F	11	0
1L–G	11	12			
1L–H	11	12	2R–A	85	46
1L–I	12	12	2R–B	48	46
1L–J	12	24	2R–C	48	46
			2R–D	48	46
2L–A	0	44	2R–E	48	46
2L–B	32	31	2R–F	48	46
2L–C	47	46	2R–G	34	33
2L–D	48	46	2R–H	46	0
2L–E	48	46			
2L–F	48	46	3R–A	86	47
2L–G	46	84	3R–B	49	47
			3R–C	49	47
3L–A	0	48	3R–D	49	47
3L–B	50	48	3R–E	49	47
3L–C	50	48	3R–F	15	14
3L–D	50	48	3R–G	47	0
3L–E	50	48			
3L–F	48	88	4R–A	39	21
			4R–B	20	23
			4R–C	20	22
			4R–D	19	21
			4R–E	21	19
			4R–F	21	0

NOTES:

1. FOR HAND–HOLD BAR LOCATIONS SEE GIRDER ELEVATIONS, SHEETS 87 TO 89 AND 93 TO 107 OF 175.
2. HAND–HOLD BARS SHALL NOT BE PLACED ON THE EXTERIOR FACE OF ANY FASCIA GIRDER.
3. FOR CROSSFRAME AND INTERMEDIATE STIFFENER LOCATIONS, REFER TO FRAMING PLAN, SHEETS 77 THROUGH 86 OF 175.
4. FOR BEND POINT LOCATIONS, REFER TO FRAMING PLANS.
5. FOR SAFETY CABLE DETAILS AT INTERMEDIATE AND PIER CROSSFRAMES, SEE SHEET 152 OF 175.
6. MILL FIT SHALL BE DEFINED AS THE BEARING ENDS OF THE BEARING STIFFENER SHALL BE FLUSH AND SQUARE WITH THE WEB AND SHALL HAVE AT LEAST 75 PERCENT OF THIS AREA IN CONTACT WITH THE INNER SURFACE OF THE FLANGE.
7. TIGHT FIT SHALL BE DEFINED AS ONE IN WHICH THE STIFFENER AND FLANGE ARE IN PHYSICAL CONTACT OVER SOME PORTION OF THE END OF THE STIFFENER AND HAVING NO GAP IN EXCESS OF 2 mm.
8. HIGH STRENGTH BOLTS SHALL BE 22 mm DIAMETER A325M, GALVANIZED, UNLESS OTHERWISE NOTED.

metric units

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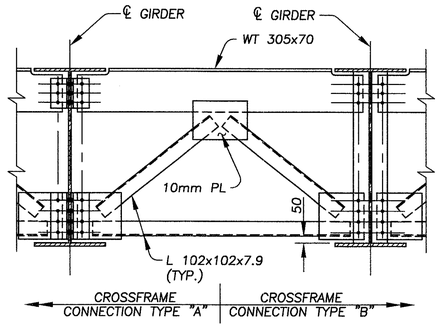
DESIGNED GLG
DRAWN GLG
CHECKED TJM
REVISED
DATE REVIEWED 09-12-97 RER
STRUCTURE FILE NUMBER 1806726

SUPERSTRUCTURE DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

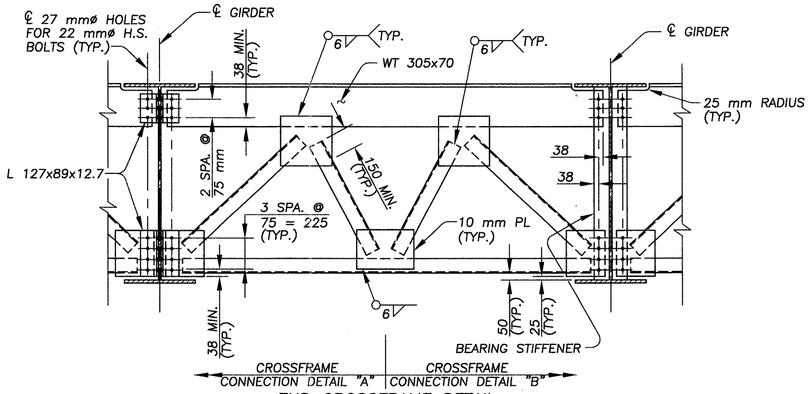
114/175
218/295

metric units

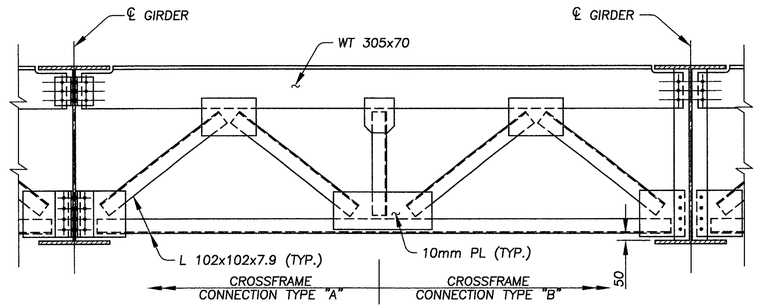


END CROSSFRAME DETAIL
(FOR GIRDER SPACES LESS THAN 2400 mm)

NOTE: FOR DIMENSIONS NOT SHOWN, SEE END CROSSFRAME DETAIL FOR GIRDER SPACES GREATER THAN 2400 mm BUT LESS THAN 3600 mm.



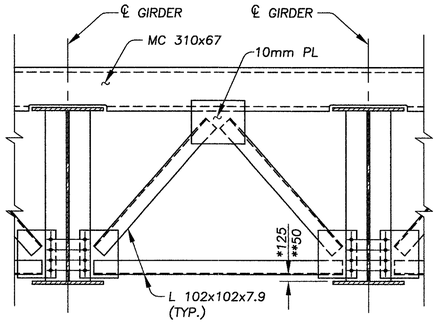
END CROSSFRAME DETAIL
(FOR GIRDER SPACES GREATER THAN 2400 mm BUT LESS THAN 3600 mm)



END CROSSFRAME DETAIL
(FOR GIRDER SPACES GREATER THAN 3600 mm)

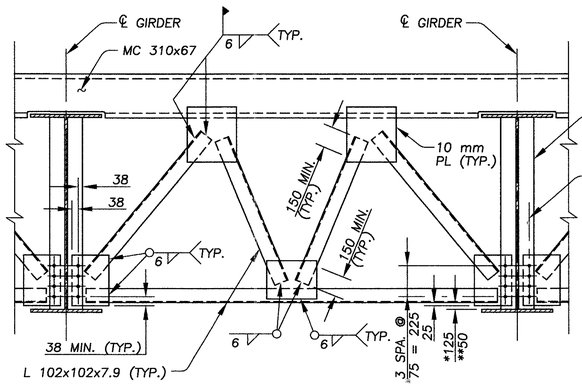
NOTE: FOR DIMENSIONS NOT SHOWN, SEE END CROSSFRAME DETAIL FOR GIRDER SPACES GREATER THAN 2400 mm BUT LESS THAN 3600 mm.

END CROSSFRAME DETAILS AT PIERS 4R, 7R, 10R, 4L, 7L AND 10L



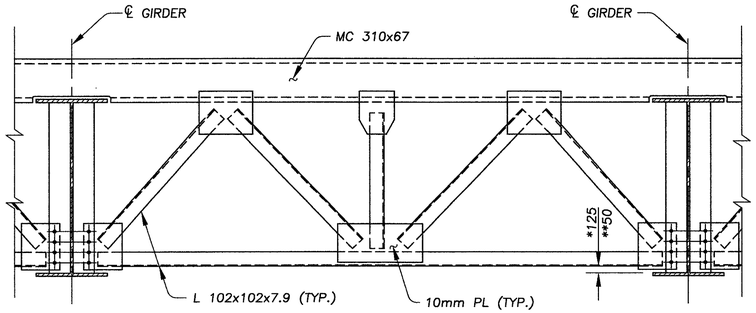
END CROSSFRAME DETAIL
(FOR GIRDER SPACES LESS THAN 2400 mm)

NOTE: FOR DIMENSIONS NOT SHOWN, SEE END CROSSFRAME DETAIL FOR GIRDER SPACES GREATER THAN 2400 mm BUT LESS THAN 3600 mm.



END CROSSFRAME DETAIL
(FOR GIRDER SPACES GREATER THAN 2400 mm BUT LESS THAN 3600 mm)

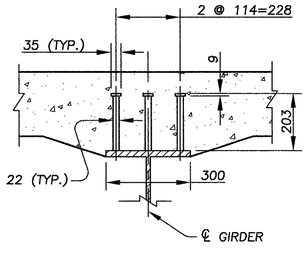
* – FOR REAR AND FORWARD ABUTMENT
** – FOR REAR ABUTMENT – RAMP W–N



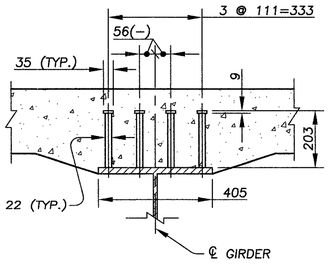
END CROSSFRAME DETAIL
(FOR GIRDER SPACES GREATER THAN 3600 mm)

NOTE: FOR DIMENSIONS NOT SHOWN, SEE END CROSSFRAME DETAIL FOR GIRDER SPACES GREATER THAN 2400 mm BUT LESS THAN 3600 mm.

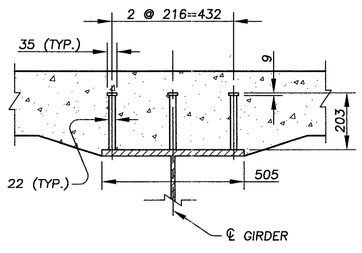
END CROSSFRAME DETAILS AT ABUTMENTS



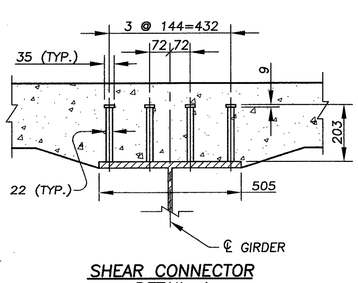
SHEAR CONNECTOR DETAIL 1



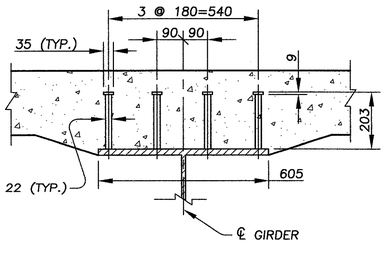
SHEAR CONNECTOR DETAIL 2



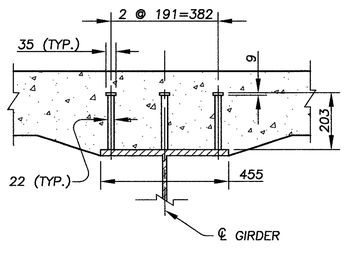
SHEAR CONNECTOR DETAIL 3



SHEAR CONNECTOR DETAIL 4



SHEAR CONNECTOR DETAIL 5



SHEAR CONNECTOR DETAIL 6

NOTES:

1. FOR ADDITIONAL END CROSSFRAME DETAILS, REFER TO ODOT STANDARD DRAWING EXJ–4–87M.
2. FOR SHEAR STUD LOCATIONS SEE GIRDER ELEVATIONS.
3. FOR SAFETY CABLE DETAILS AT END CROSSFRAMES, SEE SHEET 152 OF 175.
4. FOR DETAIL OF END CROSSFRAME INTERFERENCE WITH BEARING STIFFENERS SEE SHEET 115A OF 175.
5. HIGH STRENGTH BOLTS SHALL BE 22 mm DIAMETER A325M, GALVANIZED, UNLESS OTHERWISE NOTED.
6. FOR LOCATIONS OF END CROSSFRAME CONNECTION TYPES, SEE SHEET 115A OF 175.

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DATE 09-12-97
REVIEWED RER
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DRAWN GLG
REVISED
DESIGNED GLG
CHECKED TJM

SUPERSTRUCTURE DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

115/175
219/295

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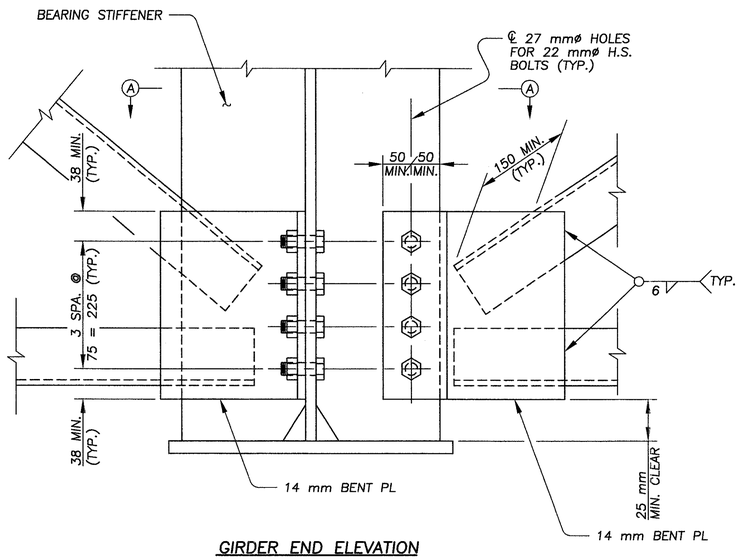
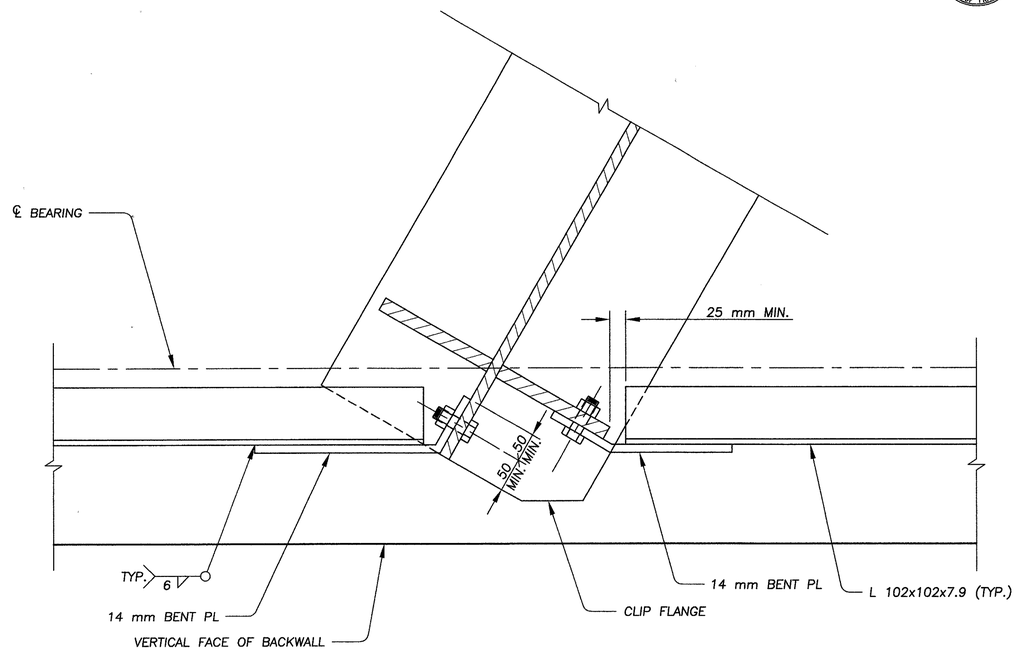


GIRDER END ELEVATION

END CROSSFRAME FOR ABUTMENTS WHERE BEARING STIFFENERS INTERFERE WITH END CROSSFRAMES



SECTION A–A

END CROSSFRAME CONNECTION TYPE		
PIER	UNIT	TYPE
4R	1R	A
	2R	B
7R	2R	A
	3R	A
10R	3R	B
	4R	A
4L	1L	A
	2L	B
7L	2L	A
	3L	A
10L	3L	B
	4L	A

NOTES:

FOR ADDITIONAL END CROSSFRAME NOTES AND DETAILS, SEE SHEET 115 OF 175.

HIGH STRENGTH BOLTS SHALL BE 22 mm DIAMETER A325M, GALVANIZED, UNLESS OTHERWISE NOTED.

metric units

DESIGN AGENCY
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DESIGNED	DRAWN	REVIEWED	DATE
GLG	GLG	RER	11-13-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

SUPERSTRUCTURE DETAILS
BRIDGE NO. CUY-77-23458
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CUY-77-23.458

115A/175

219A/295

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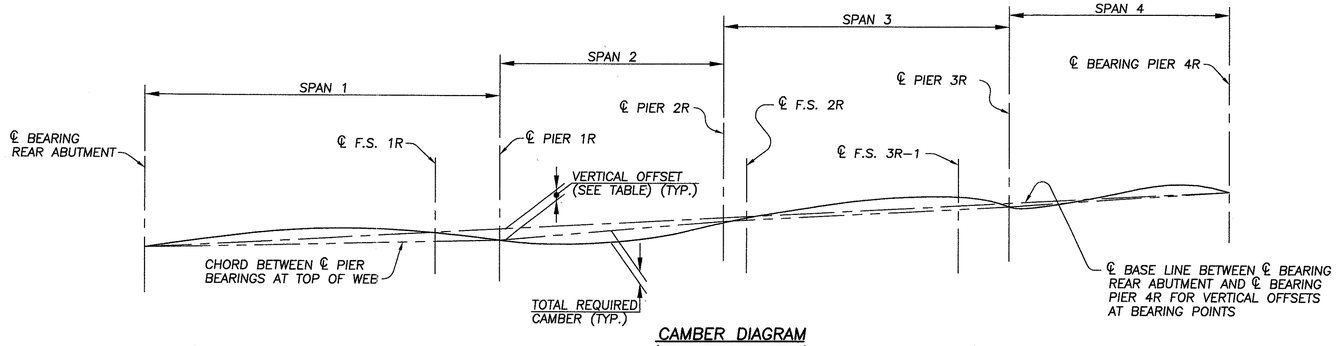
VERTICAL OFFSETS AT BEARING POINTS						
BEARING POINT	GIRDER					
	1R–A	1R–B	1R–C	1R–D	1R–E	1R–F
REAR ABUT.	0	0	0	0	0	0
PIER 1R	–306	–323	–340	–357	–373	–391
PIER 2R	–293	–306	–316	–328	–339	–348
PIER 3R	–128	–133	–138	–143	–149	–170
PIER 4R	0	0	0	0	0	0



CAMBER DIAGRAM
(1R–A THROUGH 1R–F)

GIRDER 1R–A

	SPAN 1										SPAN 2										SPAN 3										SPAN 4									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 1R	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	F.S. 2R	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3R–1	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	4	8	11	12	12	11	9	6	6	3	–1	–3	–3	–4	–4	–3	–3	–2	–1	2	2	4	6	7	7	7	5	3	3	1	0	0	0	1	1	2	2	1	1
DEFLECTION DUE TO REMAINING DEAD LOAD	17	31	41	46	46	42	33	22	22	10	–5	–8	–11	–12	–12	–11	–10	–8	–5	8	10	21	30	35	36	32	23	14	12	6	–1	0	3	6	9	11	11	9	5
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–17	–30	–40	–46	–48	–46	–40	–30	–30	–17	–8	–14	–19	–22	–22	–22	–19	–14	–8	–1	–1	–1	–1	–1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED SHOP CAMBER	4	9	12	12	10	7	2	–2	–2	–4	–14	–25	–33	–38	–38	–36	–32	–24	–14	9	11	24	35	41	43	39	28	17	15	7	–1	0	3	7	10	13	13	10	6

GIRDER 1R–B

	SPAN 1										SPAN 2										SPAN 3										SPAN 4									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 1R	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	F.S. 2R	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3R–1	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	6	10	13	15	15	14	11	8	7	4	–2	–3	–4	–5	–4	–4	–3	–3	–1	2	2	5	7	8	8	7	5	3	3	1	0	0	0	1	1	2	2	2	1
DEFLECTION DUE TO REMAINING DEAD LOAD	25	46	61	69	69	63	50	33	31	15	–7	–12	–16	–18	–18	–16	–14	–11	–7	10	13	27	39	46	46	41	30	18	15	7	–2	–1	3	8	11	14	13	11	6
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–19	–33	–44	–50	–52	–50	–44	–33	–32	–19	–8	–14	–19	–22	–22	–22	–19	–14	–8	–1	–1	–1	–1	–1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED SHOP CAMBER	12	23	30	34	32	27	17	8	6	0	–17	–29	–39	–45	–44	–42	–36	–28	–16	11	14	31	45	53	54	48	35	21	18	8	–2	–1	3	9	12	16	15	13	7

GIRDER 1R–C

	SPAN 1										SPAN 2										SPAN 3										SPAN 4									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 1R	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	F.S. 2R	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3R–1	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	7	12	16	18	18	17	13	9	8	4	–2	–4	–5	–5	–5	–5	–4	–3	–2	2	3	5	7	8	8	7	6	3	3	1	0	0	0	1	1	2	2	1	1
DEFLECTION DUE TO REMAINING DEAD LOAD	30	55	73	83	83	75	60	40	36	19	–8	–15	–19	–22	–21	–19	–17	–13	–7	11	13	28	40	47	48	42	31	18	16	7	–2	–1	3	7	11	13	13	11	6
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–20	–37	–48	–55	–57	–55	–48	–37	–34	–20	–8	–14	–19	–22	–22	–22	–19	–14	–8	–1	–1	–1	–1	–1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED SHOP CAMBER	17	30	41	46	44	37	25	12	10	3	–18	–33	–43	–49	–48	–46	–40	–30	–17	12	15	32	46	54	56	49	37	21	19	8	–2	–1	3	8	12	15	15	12	7

GIRDER 1R–D

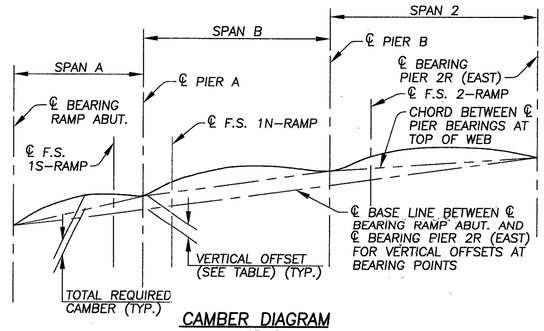
	SPAN 1										SPAN 2										SPAN 3										SPAN 4									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 1R	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	F.S. 2R	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3R–1	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	8	14	19	22	22	20	16	11	9	5	–2	–5	–6	–7	–7	–6	–5	–4	–2	2	3	6	8	9	9	8	6	4	3	2	–1	–1	0	1	1	1	2	1	1
DEFLECTION DUE TO REMAINING DEAD LOAD	33	61	81	92	92	83	66	44	38	21	–10	–17	–23	–26	–26	–23	–20	–15	–8	11	14	30	42	49	49	43	32	19	16	8	–2	–1	2	7	11	13	13	10	6
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–22	–40	–52	–60	–63	–60	–52	–40	–35	–22	–8	–14	–19	–22	–22	–22	–19	–14	–8	–1	–1	–1	–1	–1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED SHOP CAMBER	19	35	48	54	51	43	30	15	12	4	–20	–36	–48	–55	–55	–51	–44	–33	–18	12	16	35	49	57	58	51	38	23	19	10	–3	–2	2	8	12	14	15	11	7

GIRDER 1R–E

	SPAN 1										SPAN 2										SPAN 3										SPAN 4									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 1R	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	F.S. 2R	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3R–1	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	9	17	22	25	26	23	19	13	10	6	–3	–5	–7	–8	–8	–7	–6	–4	–2	2	3	6	8	9	9	8	6	4	3	2	–1	–1	0	0	1	1	2	1	1
DEFLECTION DUE TO REMAINING DEAD LOAD	39	72	95	108	109	98	78	52	43	25	–11	–20	–27	–30	–29	–26	–22	–16	–9	11	15	30	42	49	49	43	32	19	16	8	–2	–1	2	7	10	13	13	10	6
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–24	–43	–57	–65	–68	–65	–57	–43	–37	–24	–8	–14	–19	–22	–23	–22	–19	–14	–8	–1	–1	–1	–1	–1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED SHOP CAMBER	24	46	60	68	67	56	40	22	16	7	–22	–39	–53	–60	–60	–55	–47	–34	–19	12	17	35	49	58	58	51	38	23	19	10	–3	–2	2	7	11	14	15	11	7

GIRDER 1R–F

	SPAN 1										SPAN 2										SPAN 3										SPAN 4									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 1R	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	F.S. 2R	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3R–1	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	10	19	26	29	30	27	22	15	12	7	–3	–6	–7	–8	–8	–7	–6	–4	–2	2	3	6	8	9	9	8	6	4	3	2	0	0	0	1	2	2	2	2	1
DEFLECTION DUE TO REMAINING DEAD LOAD	33	61	81	92	93	85	68	46	36	22	–10	–18	–22	–25	–24	–22	–18	–14	–8	8	12	25	35	40	40	34	25	14	12	5	0	3	8	12	16	18	17	13	7
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–26	–47	–62	–71	–74	–71	–62	–47	–39	–26	–8	–15	–20	–22	–23	–22	–20	–15	–8	0	0	–1	–6	–10	–12	–10	–9	–7	–6	–4	0	0	1	2	2	2	2	3	2
REQUIRED SHOP CAMBER	17	33	45	50	49	41	28	14	9	3	–21	–39	–49	–55	–55	–51	–44	–33	–18	10	15	30	37	39	37	32	22	11	9	3	0	3	9	15	20	22	21	18	10



CAMBER DIAGRAM
1R–G

VERTICAL OFFSETS AT BEARING POINTS	
BEARING POINT	GIRDER 1R–G
REAR ABUT.	0
PIER A	200
PIER B	255
PIER 2R EAST	0

GIRDER 1R–G

	SPAN A										SPAN B										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 1S–RAMP	0.8	0.9	0.1	F.S. 1N–RAMP	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.1	F.S. 2–RAMP	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	1	2	2	2	2	2	2	1	1	0	0	0	0	1	1	0	0	–1	–2	–1	3	7	7	11	14	17	17	15	12	6
DEFLECTION DUE TO REMAINING DEAD LOAD	4	7	10	10	9	7	5	3	2	0	4	7	9	15	18	18	14	8	2	–1	8	21	21	36	49	58	60	54	41	22
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	6	12	18	23	26	27	27	24	23	12	5	7	9	12	15	16	16	16	14	11	9	16	16	2	–8	–16	–14	–10	–5	–5
REQUIRED SHOP CAMBER	11	21	30	35	37	36	34	28	26	12	9	14	18	28	34	34	30	23	14	9	20	44	44	49	55	59	63	59	48	23

NOTES:

NEGATIVE VALUES FOR DEFLECTIONS INDICATE DEFLECTIONS ABOVE THE CHORD LINE. NEGATIVE VALUES OF VERTICAL AND HORIZONTAL CURVE ADJUSTEMENT AND TOTAL REQUIRED CAMBER INDICATE VALUES BELOW THE CHORD LINE.

DEFLECTIONS AND CONVEXITIES OR CONCAVITIES ARE GIVEN TO THE NEAREST MILLIMETER.

THE FOLLOWING ABBREVIATION IS USED:
F.S. = FIELD SPLICE

metric units

DESIGN AGENCY
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ARCHITECTS ENGINEERS PLANNERS

REVISED	DATE	STRUCTURE FILE NUMBER
RER	09–12–97	1806726

DESIGNED	DRAWN	REVISED
DHS	GLG	
CHECKED	TJM	

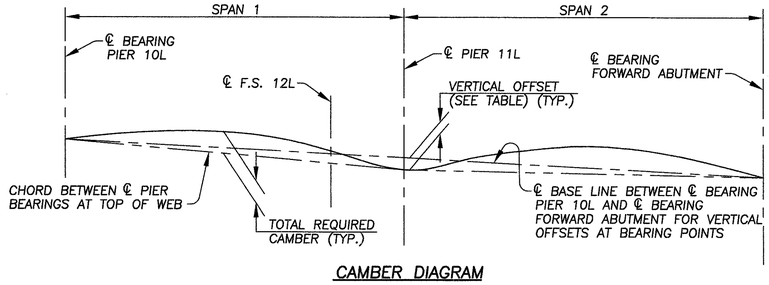
CAMBER DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

116/175

220/295

\24621\techprod\drawings\bridge\Camber6



CAMBER DIAGRAM
(4L–A THROUGH 4L–F)

VERTICAL OFFSETS AT BEARING POINTS						
BEARING POINT	GIRDER					
	4L–A	4L–B	4L–C	4L–D	4L–E	4L–F
PIER 10L	0	0	0	0	0	0
PIER 11L	–8	–7	–6	–5	–5	–5
FWD. ABUT.	0	0	0	0	0	0

GIRDER 4L–A

	SPAN 1									SPAN 2								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 12L	0.8	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	1	1	1	1	0	–1	–1	–1	–1	–1	3	6	10	13	15	15	14	11	6
DEFLECTION DUE TO REMAINING DEAD LOAD	3	5	5	4	2	–1	–4	–5	–5	–4	11	26	42	57	66	68	62	47	26
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	1	2	2	1	–3	–5	–7	–9	–9	–9	–8	–7	–4
REQUIRED SHOP CAMBER	4	6	6	5	2	–2	–4	–4	–4	–4	11	27	45	61	72	74	68	51	28

GIRDER 4L–B

	SPAN 1									SPAN 2								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 12L	0.8	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	1	2	2	2	1	1	0	–1	–1	–1	2	5	8	11	13	13	12	9	5
DEFLECTION DUE TO REMAINING DEAD LOAD	6	11	13	12	9	5	0	–3	–3	–3	10	26	42	57	67	69	62	48	26
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	1	2	2	1	–2	–4	–6	–8	–8	–8	–7	–6	–3
REQUIRED SHOP CAMBER	7	12	15	14	10	6	1	–2	–2	–3	10	27	44	60	72	74	67	51	28

GIRDER 4L–C

	SPAN 1									SPAN 2								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 12L	0.8	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	1	2	3	3	2	2	1	0	0	0	1	3	5	7	8	9	8	6	3
DEFLECTION DUE TO REMAINING DEAD LOAD	8	14	17	17	14	10	4	1	0	–2	7	18	31	43	51	53	48	37	20
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	1	2	2	1	–2	–4	–5	–6	–7	–7	–6	–5	–3
REQUIRED SHOP CAMBER	9	16	20	20	16	12	6	3	2	–1	6	17	31	44	52	55	50	38	20

GIRDER 4L–D

	SPAN 1									SPAN 2								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 12L	0.8	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	2	3	4	4	4	3	2	1	1	0	1	2	4	6	7	7	6	5	3
DEFLECTION DUE TO REMAINING DEAD LOAD	10	19	24	25	23	18	11	6	5	1	5	13	24	33	40	42	38	29	16
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	1	2	2	1	–2	–3	–5	–5	–6	–6	–5	–4	–2
REQUIRED SHOP CAMBER	12	22	28	29	27	21	14	9	8	2	4	12	23	34	41	43	39	30	17

GIRDER 4L–E

	SPAN 1									SPAN 2								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 12L	0.8	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	4	7	9	9	9	7	5	3	3	1	1	2	4	6	8	8	8	6	3
DEFLECTION DUE TO REMAINING DEAD LOAD	15	28	35	38	36	29	20	14	11	3	3	9	18	26	32	34	31	24	13
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	1	2	2	1	–1	–3	–4	–5	–5	–5	–4	–3	–2
REQUIRED SHOP CAMBER	19	35	44	47	45	36	26	19	16	5	3	8	18	27	35	37	35	27	14

GIRDER 4L–F

	SPAN 1									SPAN 2								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 12L	0.8	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	2	4	5	6	5	4	3	2	2	1	0	1	1	2	3	3	3	2	1
DEFLECTION DUE TO REMAINING DEAD LOAD	10	19	25	27	25	21	15	11	8	3	0	3	6	10	13	14	13	10	6
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	2	2	2	1	–1	–2	–3	–4	–4	–4	–3	–3	–1
REQUIRED SHOP CAMBER	13	23	30	32	30	25	20	15	12	5	–1	2	4	8	12	13	13	9	6

GIRDER 1R–I

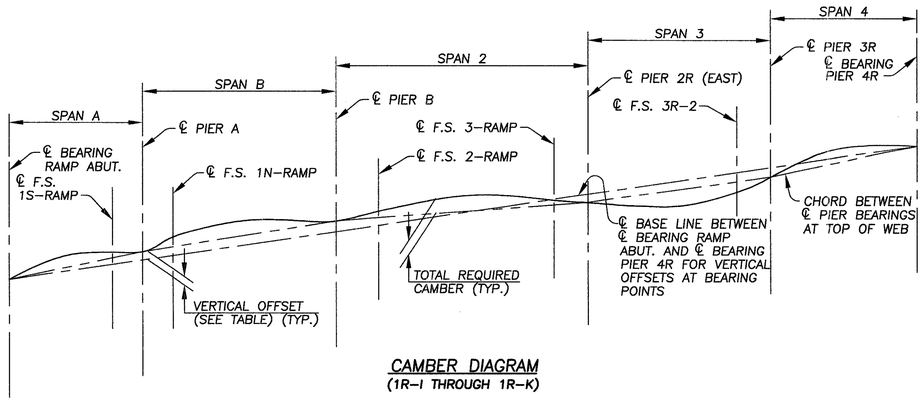
	SPAN A										SPAN B										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 1S–RAMP	0.8	0.9	0.1	F.S. 1N–RAMP	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.1	F.S. 2–RAMP	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S 3–RAMP	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	1	2	2	2	2	2	1	1	1	0	0	1	1	2	2	2	1	0	–1	–1	2	5	6	9	12	13	12	9	6	4	2
DEFLECTION DUE TO REMAINING DEAD LOAD	6	10	14	15	14	11	8	5	4	1	4	7	10	17	21	20	16	9	2	–1	9	21	23	40	53	58	55	44	28	19	12
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	2	3	4	4	4	3	2	4	5	2	4	6	8	11	13	13	13	11	8	4	21	34	37	32	25	17	6	0	0	0	0
REQUIRED SHOP CAMBER	9	15	20	21	20	16	11	10	10	3	8	14	19	30	36	35	30	20	9	2	32	60	66	81	90	88	73	53	34	23	14

GIRDER 1R–J

	SPAN A										SPAN B										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 1S–RAMP	0.8	0.9	0.1	F.S. 1N–RAMP	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.1	F.S. 2–RAMP	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3–RAMP	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	1	2	2	2	2	2	1	1	1	0	0	1	1	2	2	2	1	0	–1	–1	3	6	7	11	15	16	15	11	7	5	3
DEFLECTION DUE TO REMAINING DEAD LOAD	5	10	13	14	13	11	8	5	4	1	3	6	9	14	16	15	11	5	–1	–3	13	27	32	52	67	73	68	54	34	21	14
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	2	3	4	4	3	2	1	–1	–2	–4	5	7	9	12	13	14	13	12	9	5	22	33	37	34	28	21	12	5	4	4	4
REQUIRED SHOP CAMBER	8	15	19	20	18	15	10	5	3	–3	8	14	19	28	31	31	25	17	7	1	38	66	76	97	110	110	95	70	45	30	21

GIRDER 1R–K

	SPAN A										SPAN B										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 1S–RAMP	0.8	0.9	0.1	F.S. 1N–RAMP	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.1	F.S. 2–RAMP	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3–RAMP	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	1	2	3	3	3	2	2	1	1	0	0	0	1	1	1	1	0	–1	–2	–1	4	7	8	13	17	18	17	13	8	5	4
DEFLECTION DUE TO REMAINING DEAD LOAD	6	11	15	17	17	15	11	8	7	3	–1	–1	0	1	1	–1	–4	–7	–9	–7	16	31	38	59	74	79	74	58	37	23	16
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	2	4	6	8	9	9	10	8	7	–2	5	7	9	12	14	14	14	12	9	5	24	35	39	35	30	23	13	5	4	4	4
REQUIRED SHOP CAMBER	9	17	24	28	29	26	23	17	15	1	4	6	10	14	16	14	10	4	–2	–3	44	73	85	107	121	120	104	76	49	32	24



CAMBER DIAGRAM
(1R–I THROUGH 1R–K)

GIRDER 1R–I

	SPAN 3										SPAN 4								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3R–2	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	–1	0	0	1	1	2	1	1	1	0	1	2	3	4	4	5	4	3	2
	–4	–4	–2	1	3	3	2	0	–1	–2	4	11	17	22	25	25	23	17	9
	–9	–18	–25	–30	–25	–19	–13	–7	–5	–3	3	4	6	7	8	9	10	10	7
	–14	–22	–27	–28	–21	–14	–10	–6	–5	–5	8	17	26	33	37	39	37	30	18

GIRDER 1R–J

	SPAN 3										SPAN 4								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3R–2	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	–1	–1	–1	0	0	0	0	0	0	0	1	2	3	4	5	5	4	3	2
	–5	–6	–5	–2	1	2	2	0	0	–1	4	10	16	21	23	24	21	16	9
	–13	–24	–35	–43	–36	–28	–20	–11	–7	–5	3	6	8	9	11	13	14	14	11
	–19	–31	–41	–45	–35	–26	–18	–11	–7	–6	8	18	27	34	39	42	39	33	22

GIRDER 1R–K

	SPAN 3										SPAN 4								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3R–2	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	–1	–2	–2	–1	–1	0	0	0	0	0	1	2	3	4	5	5	4	3	2
	–6	–9	–10	–8	–6	–4	–4	–4	–3	–3	5	11	17	22	24	24	22	16	9
	–16	–31	–45	–56	–47	–36	–26	–16	–10	–7	4	7	10	13	15	16	18	19	14
	–23	–42	–57	–65	–54	–40	–30	–20	–13	–10	10	20	30	39	44	45	44	38	25

VERTICAL OFFSETS AT BEARING POINTS			
BEARING POINT	GIRDER		
	1R–I	1R–J	1R–K
RAMP ABUT.	0	0	0
PIER A	124	66	37
PIER B	206	163	132
PIER 2R (EAST)	12	–24	–76
PIER 3R	4	–16	–43
PIER 4R	0	0	0

NOTES:

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F.S. = FIELD SPLICE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION — metric units

DESIGN AGENCY
HNTB
One Cleveland Center
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Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	GLG	RER	09-12-97
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TJM		1806726	

CAMBER DETAILS
BRIDGE NO. CUY-77-23458
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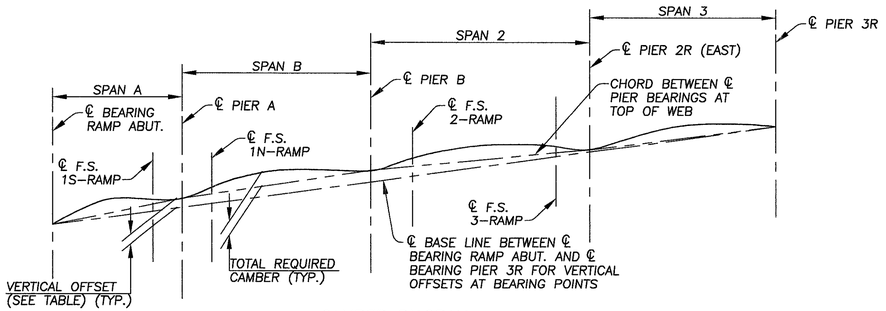
CUY-77-23.458

117/175

221/295

\24621\techprod\drawings\bridge\Camber5

metric units

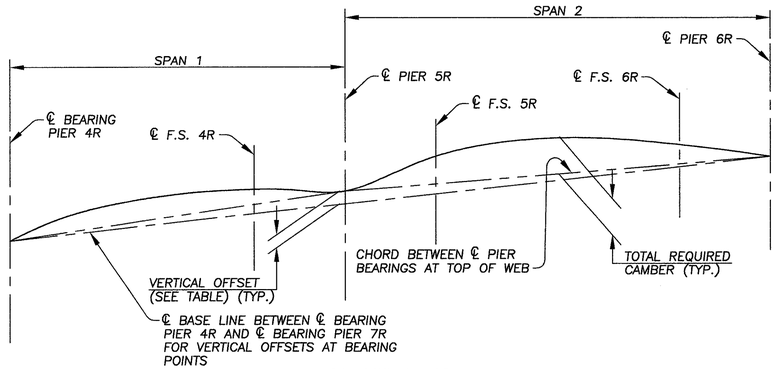


CAMBER DIAGRAM
(1R–H)

VERTICAL OFFSETS AT BEARING POINTS	
BEARING POINT	GIRDER 1R–H
RAMP ABUT.	0
PIER A	167
PIER B	235
PIER 2R (EAST)	11
PIER 3R	0

GIRDER 1R–H	SPAN A										SPAN B									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 1S–RAMP	0.8	0.9	0.1	F.S. 1N–RAMP	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	1	1	2	2	2	1	1	1	0	0	1	1	2	3	4	4	3	2	1	0
DEFLECTION DUE TO REMAINING DEAD LOAD	5	9	12	13	12	9	6	3	3	0	5	9	13	21	26	27	24	17	8	2
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	3	6	9	11	12	14	17	16	16	8	4	6	8	10	12	12	12	10	8	4
REQUIRED SHOP CAMBER	9	16	23	26	26	24	24	20	19	8	10	16	23	34	42	43	39	29	17	6

GIRDER 1R–H	SPAN 2											SPAN 3									
	0.1	F.S. 2–RAMP	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3–RAMP	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	1	3	3	6	7	7	6	5	2	1	1	1	3	5	7	9	9	8	7	4
DEFLECTION DUE TO REMAINING DEAD LOAD	5	13	14	25	33	35	31	23	12	8	4	3	10	18	27	32	34	32	24	13
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	23	40	42	34	24	13	0	−6	−8	−7	−6	−7	−13	−18	−22	−19	−15	−11	−7	−3
REQUIRED SHOP CAMBER	29	56	59	65	64	55	37	22	6	2	−1	−3	0	5	12	22	28	29	24	14

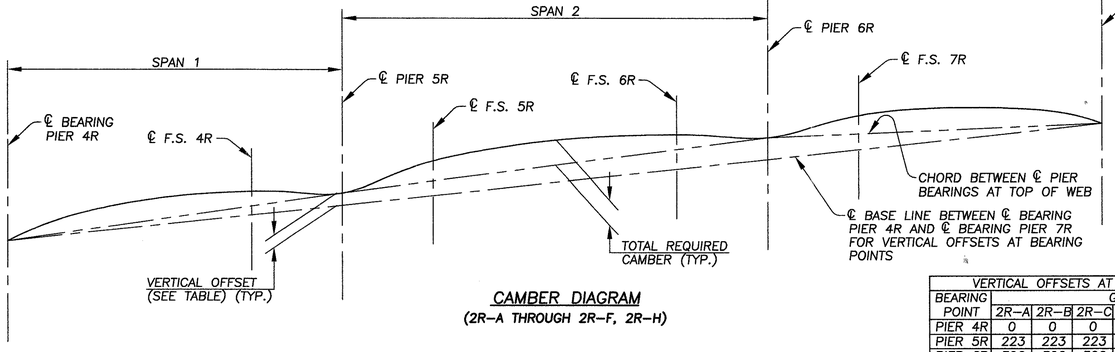


CAMBER DIAGRAM
(2R–G)

VERTICAL OFFSETS AT BEARING POINTS	
BEARING POINT	GIRDER 2R–G
PIER 4R	0
PIER 5R	41
PIER 6R	0

GIRDER 2R–G	SPAN 1									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 4R	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	5	8	9	8	6	1	−3	−4	−5	−4
DEFLECTION DUE TO REMAINING DEAD LOAD	22	41	51	54	48	36	21	17	7	−1
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0
REQUIRED SHOP CAMBER	27	49	60	62	54	37	18	13	2	−5

GIRDER 2R–G	SPAN 2										
	0.1	0.2	F.S. 5R	0.3	0.4	0.5	0.6	0.7	F.S. 6R	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	11	28	30	46	62	71	73	66	53	50	27
DEFLECTION DUE TO REMAINING DEAD LOAD	15	42	46	75	105	124	129	118	95	91	50
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	9	18	20	30	42	54	60	58	49	47	27
REQUIRED SHOP CAMBER	35	88	96	151	209	249	262	242	197	188	104



CAMBER DIAGRAM
(2R–A THROUGH 2R–F, 2R–H)

VERTICAL OFFSETS AT BEARING POINTS							
BEARING POINT	GIRDER 2R–A	2R–B	2R–C	2R–D	2R–E	2R–F	2R–H
PIER 4R	0	0	0	0	0	0	0
PIER 5R	223	223	223	223	224	223	223
PIER 6R	390	390	390	390	390	390	389
PIER 7R	0	0	0	0	0	0	0

GIRDER 2R–A	SPAN 1										SPAN 2											SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 4R	0.8	0.9	0.1	0.2	F.S. 5R	0.3	0.4	0.5	0.6	0.7	F.S. 6R	0.8	0.9	0.1	0.2	F.S. 7R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	8	15	20	21	20	16	11	9	5	2	2	8	9	15	20	22	20	15	9	8	2	2	5	9	11	16	20	21	20	15	8
DEFLECTION DUE TO REMAINING DEAD LOAD	23	41	54	58	54	44	29	25	15	4	5	20	23	38	53	59	53	38	22	20	5	4	15	25	30	44	55	58	54	42	23
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	11	23	25	35	46	58	63	60	50	48	28	23	41	51	55	62	65	62	55	41	23
REQUIRED SHOP CAMBER	31	56	74	79	74	60	40	34	20	6	18	51	57	88	119	139	136	113	81	76	35	29	61	85	96	122	140	141	129	98	54

GIRDER 2R–B TO 2R–E	SPAN 1										SPAN 2											SPAN 3									
	0.1	0.2	3.0	0.4	0.5	0.6	0.7	F.S. 4R	0.8	0.9	0.1	0.2	F.S. 5R	0.3	0.4	0.5	0.6	0.7	F.S. 6R	0.8	0.9	0.1	0.2	F.S. 7R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	9	16	20	22	20	16	11	9	6	2	2	8	9	15	20	23	20	15	9	8	2	2	6	9	11	16	20	22	20	16	9
DEFLECTION DUE TO REMAINING DEAD LOAD	28	51	66	71	66	53	36	30	18	5	6	25	28	47	65	72	65	47	27	24	6	5	18	31	36	54	67	71	66	51	28
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	11	23	25	35	46	58	63	60	50	48	28	23	41	51	55	62	65	62	55	41	23
REQUIRED SHOP CAMBER	37	67	86	93	86	69	47	39	24	7	19	56	62	97	131	153	148	122	86	80	36	30	65	91	102	132	152	155	141	108	60

GIRDER 2R–F	SPAN 1										SPAN 2											SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 4R	0.8	0.9	0.1	0.2	F.S. 5R	0.3	0.4	0.5	0.6	0.7	F.S. 6R	0.8	0.9	0.1	0.2	F.S. 7R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	9	16	20	22	20	16	11	9	5	1	3	9	10	17	23	25	23	17	10	9	3	2	6	10	12	18	22	23	21	16	9
DEFLECTION DUE TO REMAINING DEAD LOAD	28	52	67	73	68	55	38	32	19	6	6	25	28	48	66	73	67	50	30	27	7	5	18	30	35	52	63	66	61	47	25
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	11	23	25	35	46	58	63	60	50	48	28	23	41	51	55	62	65	62	55	41	23
REQUIRED SHOP CAMBER	37	68	87	95	88	71	49	41	24	7	20	57	63	100	135	156	153	127	90	84	38	30	65	91	102	132	150	151	137	104	57

GIRDER 2R–H	SPAN 1										SPAN 2											SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 4R	0.8	0.9	0.1	0.2	F.S. 5R	0.3	0.4	0.5	0.6	0.7	F.S. 6R	0.8	0.9	0.1	0.2	F.S. 7R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	8	15	20	21	20	16	11	9	5	1	2	9	10	16	22	24	22	16	10	9	2	2	6	10	12	18	21	23	21	16	9
DEFLECTION DUE TO REMAINING DEAD LOAD	24	44	58	64	61	52	38	33	22	9	−2	4	5	13	22	25	22	14	5	4	−3	10	24	36	40	54	63	64	58	44	24
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	11	23	25	35	46	58	63	60	50	48	28	23	41	51	55	62	65	62	55	41	23
REQUIRED SHOP CAMBER	32	59	78	85	81	68	49	42	27	10	11	36	40	64	90	107	107	90	65	61	27	35	71	97	107	134	149	149	134	101	56

NOTES:

NEGATIVE VALUES FOR DEFLECTIONS INDICATE DEFLECTIONS ABOVE THE CHORD LINE. NEGATIVE VALUES OF VERTICAL AND HORIZONTAL CURVE ADJUSTMENT AND TOTAL REQUIRED CAMBER INDICATE VALUES BELOW THE CHORD LINE.

DEFLECTIONS AND CONVEXITIES OR CONCAVITIES ARE GIVEN TO THE NEAREST MILLIMETER.

THE FOLLOWING ABBREVIATION IS USED:
F.S. = FIELD SPLICE

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DATE 09-12-97
STRUCTURE FILE NUMBER 1806726

DRAWN GLG
REVISED

DESIGNED DHS
CHECKED TJM

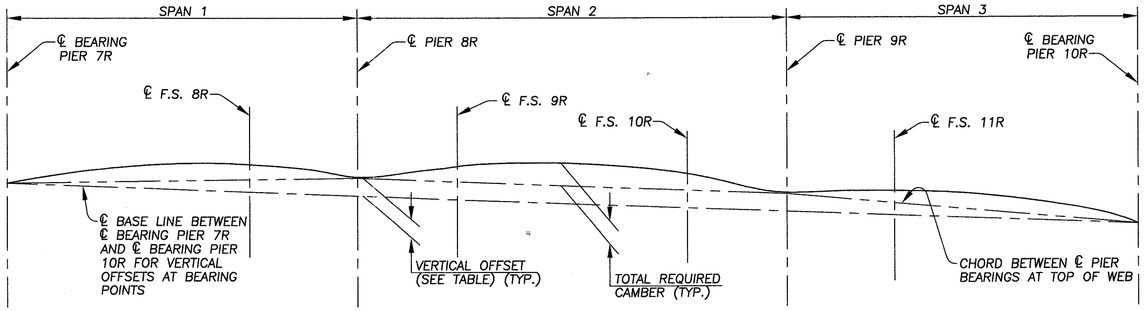
CAMBER DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

118/175

222/295

\24621\techprod\drawings\bridge\Camber7



VERTICAL OFFSETS AT BEARING POINTS						
BEARING POINT	GIRDER					
	3R–A	3R–B	3R–C	3R–D	3R–E	3R–G
PIER 7R	0	0	0	0	0	0
PIER 8R	599	598	589	566	544	556
PIER 9R	598	597	578	530	481	487
PIER 10R	0	0	0	0	0	0

CAMBER DIAGRAM
(3R–A THROUGH 3R–E, 3R–G)

GIRDER 3R–A	SPAN 1										SPAN 2										SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 8R	0.8	0.9	0.1	0.2	F.S. 9R	0.3	0.4	0.5	0.6	0.7	F.S. 10R	0.8	0.9	0.1	0.2	F.S. 11R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	12	21	28	31	30	26	19	19	12	5	−2	0	1	3	5	6	5	3	1	0	−2	5	12	19	19	26	30	31	28	21	12
DEFLECTION DUE TO REMAINING DEAD LOAD	29	53	70	76	74	63	46	45	27	10	−2	4	7	14	22	26	22	14	7	4	−2	10	27	46	46	64	75	77	70	54	30
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	45	59	67	70	67	59	59	45	25	32	57	63	75	85	89	85	75	63	57	32	25	44	59	59	66	69	65	57	43	24
REQUIRED SHOP CAMBER	66	119	157	174	174	156	124	123	84	40	28	61	71	92	112	121	112	92	71	61	28	40	83	124	124	156	174	173	155	118	66

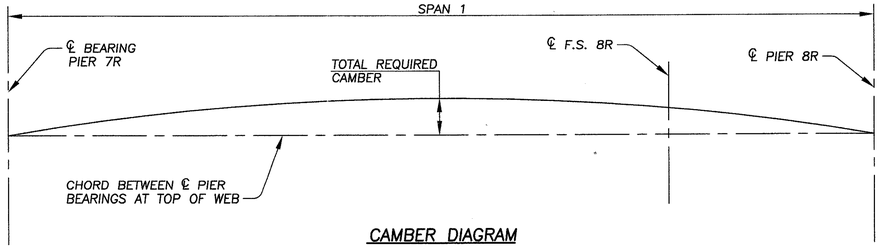
GIRDER 3R–B	SPAN 1										SPAN 2										SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 8R	0.8	0.9	0.1	0.2	F.S. 9R	0.3	0.4	0.5	0.6	0.7	F.S. 10R	0.8	0.9	0.1	0.2	F.S. 11R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	12	22	29	32	31	26	20	19	12	5	−2	0	1	3	6	7	6	3	1	0	−2	5	12	19	20	27	31	32	29	22	12
DEFLECTION DUE TO REMAINING DEAD LOAD	36	66	85	94	91	77	56	55	33	13	−3	4	8	16	27	30	26	16	8	4	−3	13	34	57	57	79	92	95	87	67	36
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	45	59	67	70	67	59	59	45	25	32	57	63	75	85	89	85	75	63	57	32	25	44	59	59	66	69	65	57	43	24
REQUIRED SHOP CAMBER	73	133	173	193	192	170	135	133	90	43	27	61	72	94	118	126	117	94	72	61	27	43	90	135	136	172	192	192	173	132	72

GIRDER 3R–C	SPAN 1										SPAN 2										SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 8R	0.8	0.9	0.1	0.2	F.S. 9R	0.3	0.4	0.5	0.6	0.7	F.S. 10R	0.8	0.9	0.1	0.2	F.S. 11R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	12	22	29	32	31	26	20	19	12	5	−2	0	1	3	6	7	6	3	1	0	−2	5	12	19	20	27	31	32	29	22	12
DEFLECTION DUE TO REMAINING DEAD LOAD	36	66	85	94	91	77	56	55	33	13	−3	4	8	16	27	30	26	16	8	4	−3	13	34	57	57	79	92	95	87	67	36
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	45	59	67	70	67	59	59	45	25	32	57	63	75	85	89	85	75	63	57	32	22	39	54	54	63	66	64	56	42	24
REQUIRED SHOP CAMBER	73	133	173	193	192	170	135	133	90	43	27	61	72	94	118	126	117	94	72	61	27	40	85	130	131	169	189	191	172	131	72

GIRDER 3R–D	SPAN 1										SPAN 2										SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 8R	0.8	0.9	0.1	0.2	F.S. 9R	0.3	0.4	0.5	0.6	0.7	F.S. 10R	0.8	0.9	0.1	0.2	F.S. 11R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	12	22	29	32	31	26	20	19	12	5	−2	0	1	3	6	7	6	3	1	0	−2	5	12	19	20	27	31	32	29	22	12
DEFLECTION DUE TO REMAINING DEAD LOAD	36	66	85	94	91	77	56	55	33	13	−3	4	8	16	27	30	26	16	8	4	−3	13	34	57	57	79	92	95	87	67	36
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	45	59	67	70	67	59	59	45	25	32	57	63	75	85	89	85	75	63	57	32	15	27	43	43	54	59	58	51	39	22
REQUIRED SHOP CAMBER	73	133	173	193	192	170	135	133	90	43	27	61	72	94	118	126	117	94	72	61	27	33	73	119	120	160	182	185	167	128	70

GIRDER 3R–E	SPAN 1										SPAN 2										SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 8R	0.8	0.9	0.1	0.2	F.S. 9R	0.3	0.4	0.5	0.6	0.7	F.S. 10R	0.8	0.9	0.1	0.2	F.S. 11R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	12	22	29	32	32	27	20	20	12	5	−1	1	2	4	7	8	7	4	2	1	−1	5	12	19	20	26	31	32	29	22	12
DEFLECTION DUE TO REMAINING DEAD LOAD	33	61	79	87	83	70	51	50	29	11	0	10	14	23	33	37	32	20	11	7	−2	12	32	54	55	76	89	92	84	64	35
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	45	59	67	70	67	59	59	45	25	32	57	63	75	85	89	85	75	63	57	32	8	15	32	32	45	51	52	47	36	20
REQUIRED SHOP CAMBER	70	128	167	186	185	164	130	129	86	41	31	68	79	102	125	134	124	99	76	65	29	25	59	105	107	147	171	176	160	122	67

GIRDER 3R–G	SPAN 1										SPAN 2										SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 8R	0.8	0.9	0.1	0.2	F.S. 9R	0.3	0.4	0.5	0.6	0.7	F.S. 10R	0.8	0.9	0.1	0.2	F.S. 11R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	12	22	28	31	30	26	19	19	11	5	−1	1	2	4	7	8	7	4	2	1	−1	5	11	19	19	26	30	31	28	21	12
DEFLECTION DUE TO REMAINING DEAD LOAD	21	39	50	54	52	43	30	29	16	5	3	13	18	25	34	36	31	20	12	8	0	9	24	42	43	59	70	73	66	51	28
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	45	59	67	70	67	59	59	45	25	34	61	67	79	89	92	88	77	64	58	32	7	14	32	32	44	51	52	48	37	21
REQUIRED SHOP CAMBER	58	106	137	152	152	136	108	107	72	35	36	75	87	108	130	136	126	101	78	67	31	21	49	93	94	129	151	156	142	109	61



CAMBER DIAGRAM
(3R–F)

GIRDER 3R–F	SPAN 1									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 8R	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	23	43	58	68	71	68	58	58	43	23
DEFLECTION DUE TO REMAINING DEAD LOAD	48	89	121	140	147	140	119	119	88	46
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	45	59	67	70	67	59	59	45	25
REQUIRED SHOP CAMBER	95	177	237	275	287	274	236	235	175	94

NOTES:

NEGATIVE VALUES FOR DEFLECTIONS INDICATE DEFLECTIONS ABOVE THE CHORD LINE. NEGATIVE VALUES OF VERTICAL AND HORIZONTAL CURVE ADJUSTMENT AND TOTAL REQUIRED CAMBER INDICATE VALUES BELOW THE CHORD LINE.

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THE FOLLOWING ABBREVIATION IS USED:
F.S. = FIELD SPLICE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED DHS
DRAWN GLC
CHECKED TJM
REVIEWED RER
DATE 09-12-97
REVISED
STRUCTURE FILE NUMBER 1806726

CAMBER DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

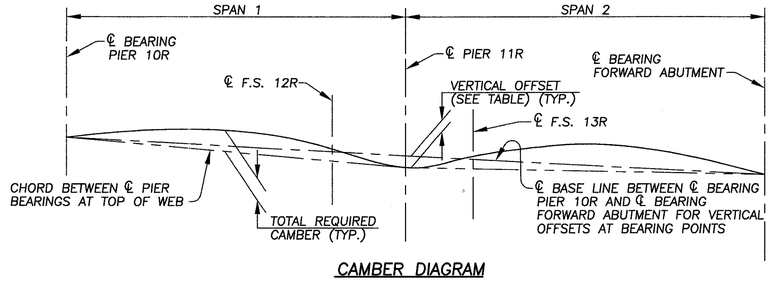
CUY-77-23.458

119/175

223/295

\24621\techprod\drawings\bridge\Camber8

metric units



CAMBER DIAGRAM
(4R–A THROUGH 4R–F)

VERTICAL OFFSETS AT BEARING POINTS						
BEARING POINT	GIRDER					
	4R–A	4R–B	4R–C	4R–D	4R–E	4R–F
PIER 10R	0	0	0	0	0	0
PIER 11R	1	–9	–13	–6	–1	0
FWD. ABUT.	0	0	0	0	0	0

GIRDER 4R–A	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 12R	0.8	0.9	0.1	0.2	F.S. 13R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	3	6	7	7	6	5	3	2	1	0	2	5	7	9	13	16	16	15	11	6
DEFLECTION DUE TO REMAINING DEAD LOAD	12	22	28	29	25	19	11	8	3	–1	7	19	24	34	48	57	59	54	42	23
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	3	5	4	3	1	0	0	0	0	0	1	3	3	2	0	–2	–3	–4	–3	–2
REQUIRED SHOP CAMBER	18	33	39	39	32	24	14	10	4	–1	10	27	34	45	61	71	72	65	50	27

GIRDER 4R–B	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 12R	0.8	0.9	0.1	0.2	F.S. 13R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	4	7	8	9	8	6	4	3	2	0	1	4	5	7	10	12	13	12	9	5
DEFLECTION DUE TO REMAINING DEAD LOAD	18	33	41	44	40	32	20	17	9	2	5	17	22	32	46	56	59	55	43	24
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	2	2	0	–3	–6	–7	–6	–6	–4	–2	1	3	3	2	0	–1	–2	–3	–3	–2
REQUIRED SHOP CAMBER	24	42	49	50	42	31	18	14	7	0	7	24	30	41	56	67	70	64	49	27

GIRDER 4R–C	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 12R	0.8	0.9	0.1	0.2	F.S. 13R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	4	7	9	10	9	8	5	4	3	1	1	2	4	5	7	9	10	9	7	4
DEFLECTION DUE TO REMAINING DEAD LOAD	20	36	46	49	46	37	25	22	13	4	3	10	15	22	33	41	45	42	33	18
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	2	1	–1	–5	–10	–10	–8	–8	–6	–3	1	3	3	3	1	0	–1	–2	–2	–1
REQUIRED SHOP CAMBER	26	44	54	54	45	35	22	18	10	2	5	15	22	30	41	50	54	49	38	21

GIRDER 4R–D	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 12R	0.8	0.9	0.1	0.2	F.S. 13R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	5	8	11	12	11	10	7	6	4	1	0	1	2	3	5	6	7	7	5	3
DEFLECTION DUE TO REMAINING DEAD LOAD	22	39	51	55	52	43	30	28	16	6	1	7	12	16	26	34	37	35	27	15
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	3	3	1	–2	–5	–6	–5	–5	–4	–2	1	3	3	3	1	0	0	–1	–1	–1
REQUIRED SHOP CAMBER	30	50	63	65	58	47	32	29	16	5	2	11	17	22	32	40	44	41	31	17

GIRDER 4R–E	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 12R	0.8	0.9	0.1	0.2	F.S. 13R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	5	9	12	13	12	11	8	7	4	2	0	0	1	1	3	4	5	5	4	2
DEFLECTION DUE TO REMAINING DEAD LOAD	23	42	55	60	58	49	35	33	20	7	–1	2	6	9	16	22	25	24	19	11
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	4	5	3	1	–1	–2	–2	–2	–2	–1	1	3	3	4	2	0	0	0	–1	0
REQUIRED SHOP CAMBER	32	56	70	74	69	58	41	38	22	8	0	5	10	14	21	26	30	29	22	13

GIRDER 4R–F	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 12R	0.8	0.9	0.1	0.2	F.S. 13R	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	5	9	12	13	13	11	8	8	5	2	–1	–1	0	0	1	2	3	3	2	1
DEFLECTION DUE TO REMAINING DEAD LOAD	20	37	48	53	51	44	32	30	19	8	–2	–2	1	2	6	10	13	13	10	6
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	5	7	7	5	4	3	2	2	2	1	–1	–2	–2	–3	–2	–1	0	0	0	0
REQUIRED SHOP CAMBER	30	53	67	71	68	58	42	40	26	11	–4	–5	–1	–1	5	11	16	16	12	7

NOTES:

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DESIGNED DHS | DRAWN GLG | CHECKED TJM | REVISED

DATE REVIEWED 09-12-97 RER

STRUCTURE FILE NUMBER 1806726

CAMBER DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

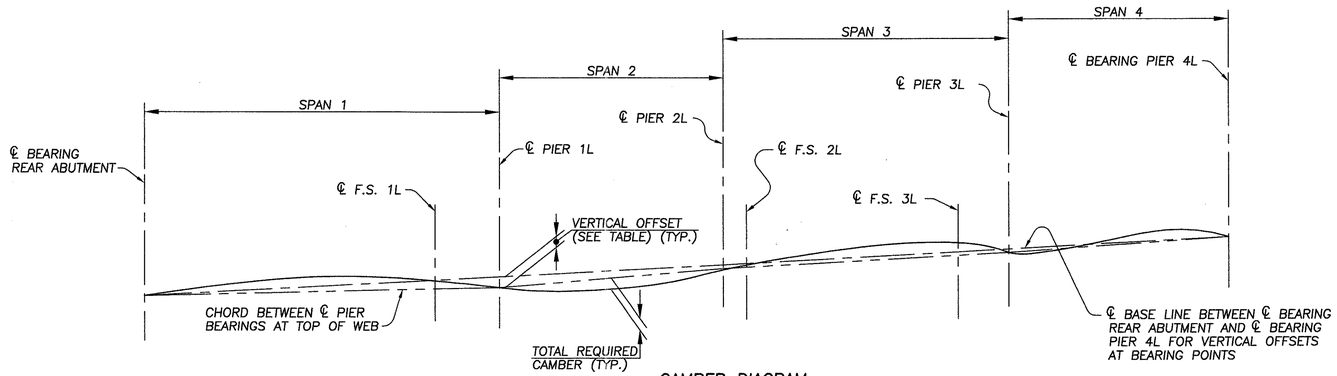
CUY-77-23.458

120/175

224/295

\24621\techprod\drawings\bridge\Camber9

metric units



CAMBER DIAGRAM
(1L–A, 1L–E THROUGH 1L–J)

VERTICAL OFFSETS AT BEARING POINTS							
BEARING POINT	GIRDER						
	1L–A	1L–E	1L–F	1L–G	1L–H	1L–I	1L–J
REAR ABUT.	0	0	0	0	0	0	0
PIER 1L	–235	–289	–295	–309	–326	–344	–360
PIER 2L	–181	–253	–231	–240	–252	–263	–276
PIER 3L	–85	–122	–104	–106	–111	–117	–122
PIER 4L	0	0	0	0	0	0	0

GIRDER 1L–A

	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 1L	0.8	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
DEFLECTION DUE TO WEIGHT OF STEEL	4	7	10	11	11	10	8	7	5	3	–1	–2	–3	–3	–3	–3	–2	–2	–1	
DEFLECTION DUE TO REMAINING DEAD LOAD	14	27	36	41	42	38	31	27	20	10	–5	–8	–9	–9	–8	–8	–7	–6	–4	
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–14	–28	–39	–49	–57	–48	–38	–35	–29	–14	–8	–12	–16	–18	–16	–14	–10	–7	–4	
REQUIRED SHOP CAMBER	4	6	7	3	–4	0	1	–1	–4	–1	–14	–22	–28	–30	–27	–25	–19	–15	–9	

	SPAN 3											SPAN 4									
	0.1	F.S. 2L	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3L	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	3	3	6	8	10	10	9	7	4	4	2	0	0	2	3	4	4	4	3	2
DEFLECTION DUE TO REMAINING DEAD LOAD	8	10	17	25	29	29	25	17	9	8	2	4	11	19	26	31	33	30	23	12
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	1	1	–1	–5	–9	–12	–14	–12	–10	–10	–12	11	21	30	46	56	45	34	22	11
REQUIRED SHOP CAMBER	12	14	22	28	30	27	20	12	3	2	–8	15	32	51	75	91	82	68	48	25

GIRDER 1L–E

	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 1L	0.8	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
DEFLECTION DUE TO WEIGHT OF STEEL	7	12	17	19	19	17	14	9	9	4	–2	–4	–5	–5	–5	–4	–3	–3	–2	
DEFLECTION DUE TO REMAINING DEAD LOAD	27	50	67	76	76	69	54	36	36	16	–8	–13	–15	–15	–14	–13	–11	–10	–6	
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–23	–40	–50	–54	–41	–24	–33	–30	–30	–16	–9	–13	–17	–21	–18	–15	–12	–8	–4	
REQUIRED SHOP CAMBER	11	22	34	41	54	62	35	15	15	4	–19	–30	–37	–41	–37	–32	–26	–21	–12	

	SPAN 3											SPAN 4									
	0.1	F.S. 2L	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3L	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	3	3	6	9	10	11	9	7	4	4	2	0	0	1	2	3	4	4	3	2
DEFLECTION DUE TO REMAINING DEAD LOAD	14	16	29	42	49	49	42	30	16	16	5	2	7	16	24	30	33	31	24	13
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–3	–4	–8	–11	–15	–18	–18	–17	–14	–14	–7	5	7	9	18	24	19	15	10	4
REQUIRED SHOP CAMBER	14	15	27	40	44	42	33	20	6	6	0	7	14	26	44	57	56	50	37	19

GIRDER 1L–F

	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 1L	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
DEFLECTION DUE TO WEIGHT OF STEEL	7	13	18	20	20	18	14	10	9	5	–2	–4	–5	–6	–6	–5	–4	–3	–2	
DEFLECTION DUE TO REMAINING DEAD LOAD	30	56	74	83	83	75	59	39	35	18	–9	–16	–19	–20	–19	–17	–15	–12	–8	
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–22	–39	–52	–59	–61	–58	–51	–39	–36	–22	–8	–14	–18	–19	–18	–14	–11	–7	–3	
REQUIRED SHOP CAMBER	15	30	40	44	42	35	22	10	8	1	–19	–34	–42	–45	–43	–36	–30	–22	–13	

	SPAN 3											SPAN 4									
	0.1	F.S. 2L	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3L	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	3	4	7	9	11	11	10	8	5	5	2	–1	0	0	2	2	3	3	3	1
DEFLECTION DUE TO REMAINING DEAD LOAD	15	18	32	47	55	56	49	37	22	21	8	–1	2	8	15	21	24	23	18	10
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	1	1	0	0
REQUIRED SHOP CAMBER	18	22	39	56	66	67	59	45	27	26	10	–2	3	9	19	25	28	27	21	11

GIRDER 1L–G

	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 1L	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
DEFLECTION DUE TO WEIGHT OF STEEL	8	15	20	23	23	21	16	11	9	5	–3	–5	–6	–6	–6	–6	–5	–4	–2	
DEFLECTION DUE TO REMAINING DEAD LOAD	35	64	85	95	96	86	68	44	37	20	–10	–18	–22	–23	–22	–20	–17	–14	–8	
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–23	–42	–55	–63	–66	–63	–55	–42	–36	–23	–8	–15	–18	–20	–18	–15	–11	–7	–3	
REQUIRED SHOP CAMBER	20	37	50	55	53	44	29	13	10	2	–21	–38	–46	–49	–46	–41	–33	–25	–13	

	SPAN 3											SPAN 4									
	0.1	F.S. 2L	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3L	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	3	4	7	10	11	12	10	8	5	5	2	–1	–1	0	1	2	3	3	2	1
DEFLECTION DUE TO REMAINING DEAD LOAD	16	19	33	48	56	57	50	37	22	21	9	–1	2	8	15	21	24	23	18	10
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED SHOP CAMBER	19	23	40	58	67	69	60	45	27	26	11	–2	1	8	16	23	27	26	20	11

GIRDER 1L–H

	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 1L	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
DEFLECTION DUE TO WEIGHT OF STEEL	10	18	23	26	27	24	19	13	10	6	–3	–6	–7	–8	–8	–7	–6	–4	–2	
DEFLECTION DUE TO REMAINING DEAD LOAD	38	69	92	104	105	94	75	50	40	23	–12	–21	–26	–28	–26	–24	–20	–16	–9	
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–25	–45	–60	–68	–71	–68	–60	–45	–38	–25	–8	–15	–18	–20	–18	–15	–11	–7	–3	
REQUIRED SHOP CAMBER	22	42	55	62	61	50	34	18	12	4	–23	–42	–51	–56	–52	–46	–37	–27	–14	

	SPAN 3											SPAN 4									
	0.1	F.S. 2L	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3L	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	4	4	7	10	12	12	11	8	5	5	2	–1	–1	0	1	2	3	3	2	1
DEFLECTION DUE TO REMAINING DEAD LOAD	17	20	35	49	58	59	51	38	23	22	9	–2	1	7	15	20	23	23	18	10
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED SHOP CAMBER	21	24	42	59	70	71	62	46	28	27	11	–3	0	7	16	22	26	26	20	11

GIRDER 1L–I

	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 1L	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
DEFLECTION DUE TO WEIGHT OF STEEL	11	20	27	31	31	28	23	15	12	7	–4	–7	–8	–9	–9	–8	–7	–5	–3	
DEFLECTION DUE TO REMAINING DEAD LOAD	44	81	107	122	122	110	87	58	44	27	–13	–23	–30	–32	–30	–27	–23	–18	–10	
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–27	–49	–65	–74	–77	–74	–65	–49	–39	–27	–8	–15	–18	–20	–18	–15	–11	–7	–3	
REQUIRED SHOP CAMBER	28	52	69	79	76	64	45	24	17	7	–25	–45	–56	–61	–57	–50	–41	–30	–16	

	SPAN 3											SPAN 4									
	0.1	F.S. 2L	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3L	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	4	5	8	11	12	13	11	8	5	5	2	–1	–1	0	1	2	3	3	2	1
DEFLECTION DUE TO REMAINING DEAD LOAD	17	21	36	51	60	60	53	39	23	23	9	–2	1	7	14	20	23	22	18	10
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED SHOP CAMBER	21	26	44	62	72	73	64	47	28	28	11	–3	0	7	15	22	26	25	20	11

GIRDER 1L–J

	SPAN 1										SPAN 2									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 1L	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
DEFLECTION DUE TO WEIGHT OF STEEL	13	24	32	36	36	33	26	17	13	8	–4	–7	–9	–10	–10	–9	–7	–5	–3	
DEFLECTION DUE TO REMAINING DEAD LOAD	39	71	95	107	107	97	77	51	37	24	–11	–20	–26	–27	–26	–24	–20	–15	–8	
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–30	–53	–70	–80	–83	–80	–70	–53	–42	–30	–8	–15	–18	–20	–18	–15	–11	–7	–3	
REQUIRED SHOP CAMBER	22	42	57	63	60	50	33	15	8	2	–23	–42	–53	–57	–54	–48	–38	–27	–14	

	SPAN 3											SPAN 4									
	0.1	F.S. 2L	0.2	0.3	0.4	0.5	0.6	0.7	0.8	F.S. 3L	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	4	5	8	11	13	13	11	9	5	5	2	–1	–1	0	1	2	3	3	2	1
DEFLECTION DUE TO REMAINING DEAD LOAD	14	16	29	40	47	47	41	31	18	18	7	–2	1	5	10	15	17	17	13	7
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED SHOP CAMBER	18	21	37	51	60	60	52	40	23	23	9	–3	0	5	11	17	20	20	15	8

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121/175

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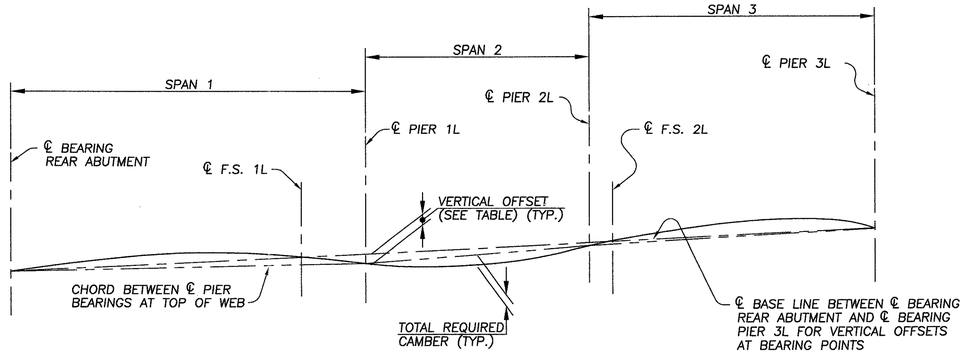
\24621\techprod\drawings\bridge\Camber1

metric units

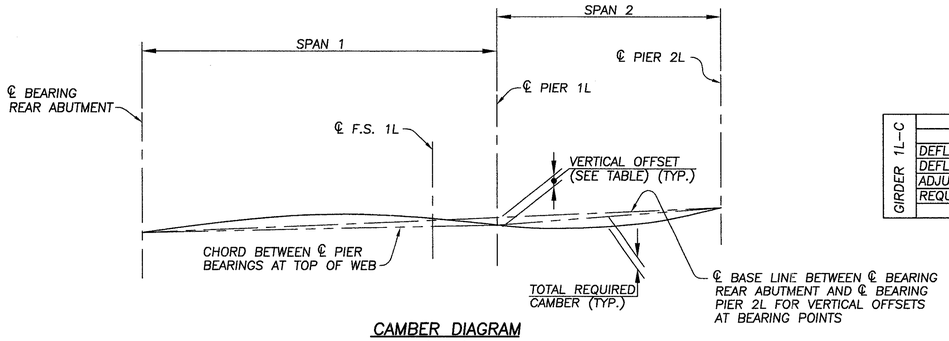


CAMBER DIAGRAM
(1L–B)

VERTICAL OFFSETS AT BEARING POINTS			
BEARING POINT	GIRDER 1L–B	1L–C	1L–D
REAR ABUT.	0	0	0
PIER 1L	–178	–114	0
PIER 2L	–137	0	
PIER 3L	0		

GIRDER 1L–B

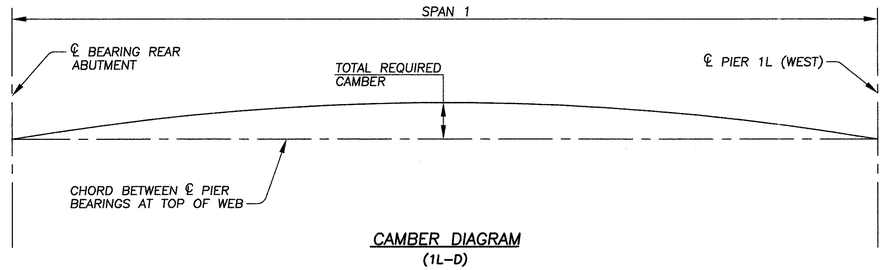
	SPAN 1										SPAN 2									SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 1L	0.8	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.1	F.S. 2L	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	5	9	12	14	14	13	10	9	7	3	–2	–4	–4	–5	–5	–5	–5	–4	–3	5	6	11	16	21	23	23	20	15	8
DEFLECTION DUE TO REMAINING DEAD LOAD	20	38	51	58	59	54	44	36	30	14	–8	–15	–19	–21	–22	–22	–21	–17	–11	21	25	45	67	84	93	91	80	60	32
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	–9	–17	–24	–28	–32	–26	–18	–15	–13	–7	–8	–13	–16	–19	–17	–14	–11	–8	–4	–3	–4	–8	–12	–16	–19	–21	–19	–17	–11
REQUIRED SHOP CAMBER	16	30	39	44	41	41	36	30	24	10	–18	–32	–39	–45	–44	–41	–37	–29	–18	23	27	48	71	89	97	93	81	58	29



CAMBER DIAGRAM
(1L–C)

GIRDER 1L–C

	SPAN 1										SPAN 2								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 1L	0.8	0.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	5	9	11	13	13	11	9	7	6	3	–1	–1	–1	0	1	1	2	1	1
DEFLECTION DUE TO REMAINING DEAD LOAD	17	32	42	47	46	40	30	22	19	8	–2	–2	0	4	7	9	10	8	4
ADJUSTMENT DUE TO VERT. AND HORIZ. CURVE	–4	–10	–15	–19	–22	–23	–21	–20	–19	–9	–8	–13	–17	–20	–17	–14	–11	–8	–4
REQUIRED SHOP CAMBER	18	31	38	41	37	28	18	9	6	2	–11	–16	–18	–16	–9	–4	1	1	1



CAMBER DIAGRAM
(1L–D)

GIRDER 1L–D

	SPAN 1								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	8	16	22	25	27	25	22	16	9
DEFLECTION DUE TO REMAINING DEAD LOAD	30	56	76	89	93	89	76	56	30
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	–3	–5	–7	–11	–16	–19	–10
REQUIRED SHOP CAMBER	38	72	95	109	113	103	82	53	29

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CAMBER DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

122/175
226/295

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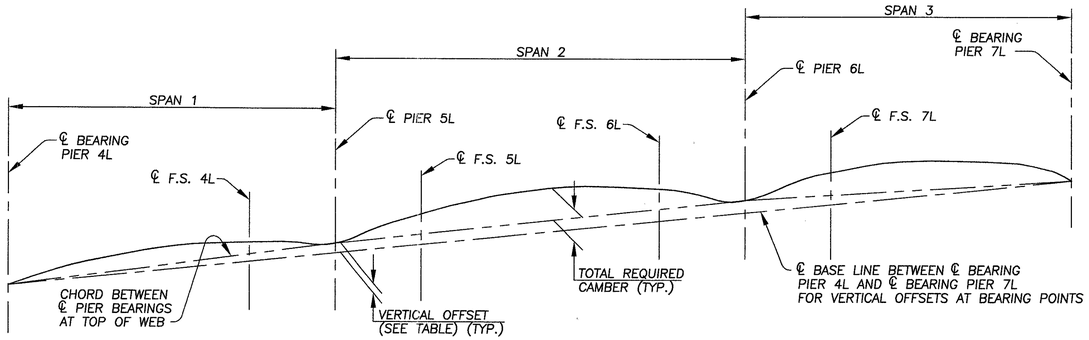


CAMBER DIAGRAM

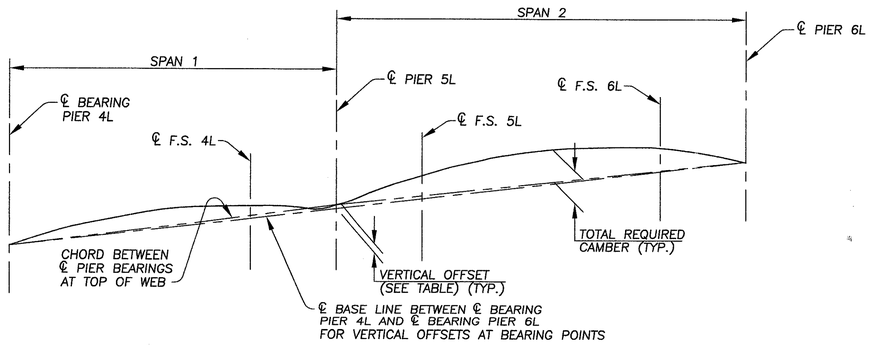
(2L–A, 2L–C THROUGH 2L–G)

		SPAN 1										SPAN 2										SPAN 3									
GIRDER 2L–A		0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 4L	0.8	0.9	0.1	0.2	F.S. 5L	0.3	0.4	0.5	0.6	0.7	F.S. 6L	0.8	0.9	0.1	0.2	F.S. 7L	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	DEFLECTION DUE TO WEIGHT OF STEEL	8	15	19	21	20	16	11	9	6	2	2	7	8	13	18	20	18	14	8	7	2	2	6	9	11	16	20	21	19	15	8
	DEFLECTION DUE TO REMAINING DEAD LOAD	24	45	59	65	63	53	39	33	23	9	−2	5	6	15	23	25	21	12	3	3	−3	9	23	32	38	51	59	61	55	42	22
	ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	24	47	49	70	86	94	94	87	72	71	39	22	40	48	52	60	62	60	52	40	22
	REQUIRED SHOP CAMBER	32	60	78	86	83	69	50	42	29	11	24	59	63	98	127	139	133	113	83	81	38	33	69	89	101	127	141	142	126	97	52

		SPAN 1										SPAN 2										SPAN 3									
GIRDER 2L–C		0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 4L	0.8	0.9	0.1	0.2	F.S. 5L	0.3	0.4	0.5	0.6	0.7	F.S. 6L	0.8	0.9	0.1	0.2	F.S. 7L	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	DEFLECTION DUE TO WEIGHT OF STEEL	8	15	20	21	20	17	11	9	6	2	2	7	8	13	19	20	19	14	8	7	2	2	6	10	12	17	21	22	20	15	8
	DEFLECTION DUE TO REMAINING DEAD LOAD	27	50	65	71	68	56	40	33	22	8	3	15	17	32	45	49	44	30	15	13	1	9	25	37	45	62	73	76	69	53	29
	ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	29	57	59	77	89	94	91	80	63	61	34	22	40	48	52	60	62	60	52	40	22
	REQUIRED SHOP CAMBER	35	65	85	92	88	73	51	42	28	10	34	79	84	122	153	163	154	124	86	81	37	33	71	95	109	139	156	158	141	108	59

		SPAN 1										SPAN 2										SPAN 3									
GIRDER 2L–D TO 2L–F		0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 4L	0.8	0.9	0.1	0.2	F.S. 5L	0.3	0.4	0.5	0.6	0.7	F.S. 6L	0.8	0.9	0.1	0.2	F.S. 7L	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	DEFLECTION DUE TO WEIGHT OF STEEL	8	15	20	21	20	17	11	9	6	2	2	7	7	13	18	20	18	13	7	7	2	2	6	9	11	17	20	21	20	15	8
	DEFLECTION DUE TO REMAINING DEAD LOAD	26	47	61	66	62	51	35	28	18	5	6	22	24	42	58	64	58	42	24	22	5	6	19	29	36	52	63	67	62	48	26
	ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	29	57	59	77	89	94	91	80	63	61	34	22	40	48	52	60	62	60	52	40	22
	REQUIRED SHOP CAMBER	34	62	81	87	82	68	46	37	24	7	37	86	90	132	165	178	167	135	94	90	41	29	65	86	99	129	145	148	134	103	56

		SPAN 1										SPAN 2										SPAN 3									
GIRDER 2L–G		0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 4L	0.8	0.9	0.1	0.2	F.S. 5L	0.3	0.4	0.5	0.6	0.7	F.S. 6L	0.8	0.9	0.1	0.2	F.S. 7L	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	DEFLECTION DUE TO WEIGHT OF STEEL	8	15	19	21	20	16	11	9	6	2	2	7	7	13	18	19	18	13	7	7	2	2	6	9	11	16	20	21	19	15	8
	DEFLECTION DUE TO REMAINING DEAD LOAD	19	36	46	50	47	39	26	21	14	4	4	17	18	32	44	48	44	32	18	16	4	4	14	22	27	40	48	51	47	36	20
	ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	29	57	59	77	89	94	91	80	63	61	34	22	40	48	52	60	62	60	52	40	22
	REQUIRED SHOP CAMBER	27	51	65	71	67	55	37	30	20	6	35	81	84	122	151	161	153	125	88	84	40	28	60	79	90	116	130	132	118	91	50



CAMBER DIAGRAM

(2L–B)

		SPAN 1										SPAN 2										
GIRDER 2L–B		0.1	0.2	0.3	0.4	0.5	0.6	0.7	F.S. 4L	0.8	0.9	0.1	0.2	F.S. 5L	0.3	0.4	0.5	0.6	0.7	F.S. 6L	0.8	0.9
	DEFLECTION DUE TO WEIGHT OF STEEL	4	7	8	7	5	1	−3	−4	−5	−4	9	23	24	38	51	59	60	54	43	42	23
	DEFLECTION DUE TO REMAINING DEAD LOAD	14	25	29	28	20	9	−3	−6	−10	−10	25	63	67	106	143	167	171	155	124	119	65
	ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	0	0	0	0	0	0	0	0	0	0	26	52	54	72	85	91	88	78	62	60	33
	REQUIRED SHOP CAMBER	18	32	37	35	25	10	−6	−10	−15	−14	60	138	145	216	279	317	319	287	229	221	121

VERTICAL OFFSETS AT BEARING POINTS							
BEARING POINT	GIRDER						
	2L–A	2L–B	2L–C	2L–D	2L–E	2L–F	2L–G
PIER 4L	0	0	0	0	0	0	0
PIER 5L	320	120	335	335	335	335	335
PIER 6L	473	0	459	459	459	459	459
PIER 7L	0	–	0	0	0	0	0

NOTES:

NEGATIVE VALUES FOR DEFLECTIONS INDICATE DEFLECTIONS ABOVE THE CHORD LINE. NEGATIVE VALUES OF VERTICAL AND HORIZONTAL CURVE ADJUSTMENT AND TOTAL REQUIRED CAMBER INDICATE VALUES BELOW THE CHORD LINE.

DEFLECTIONS AND CONVEXITIES OR CONCAVITIES ARE GIVEN TO THE NEAREST MILLIMETER.

THE FOLLOWING ABBREVIATION IS USED:
F.S. = FIELD SPLICE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	GLG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

CAMBER DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

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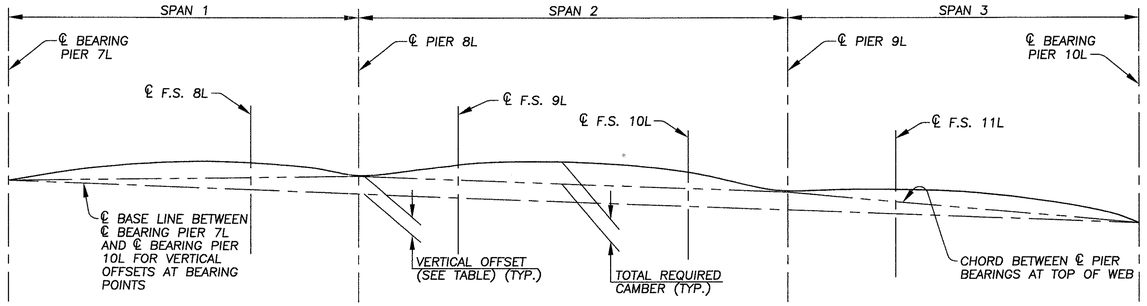

CAMBER DIAGRAM
(3L–A THROUGH 3L–F)

VERTICAL OFFSETS AT BEARING POINTS						
BEARING POINT	GIRDER					
	3L–A	3L–B	3L–C	3L–D	3L–E	3L–F
PIER 7L	0	0	0	0	0	0
PIER 8L	732	724	716	707	677	637
PIER 9L	774	755	737	719	679	630
PIER 10L	0	0	0	0	0	0

GIRDER 3L–A

	SPAN 1										SPAN 2												SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	F.S. 8L	0.7	0.8	0.9	0.1	0.2	F.S. 9L	0.3	0.4	0.5	0.6	0.7	F.S. 10L	0.8	0.9	0.1	0.2	0.3	F.S. 11L	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	11	20	26	28	27	22	16	16	9	3	1	5	7	11	16	18	16	11	7	5	0	3	9	16	17	23	27	29	26	20	11
DEFLECTION DUE TO REMAINING DEAD LOAD	25	46	59	64	61	50	36	35	19	6	3	16	21	32	45	50	45	31	20	15	3	7	20	37	38	53	64	67	62	48	26
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	46	60	69	72	69	61	60	46	25	45	83	91	111	131	143	145	139	119	111	60	25	44	58	58	63	62	56	44	28	14
REQUIRED SHOP CAMBER	61	112	145	161	160	141	113	111	74	34	49	104	119	154	192	211	206	181	146	131	63	35	73	111	113	139	153	152	132	96	51

GIRDER 3L–B

	SPAN 1										SPAN 2												SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	F.S. 8L	0.7	0.8	0.9	0.1	0.2	F.S. 9L	0.3	0.4	0.5	0.6	0.7	F.S. 10L	0.8	0.9	0.1	0.2	0.3	F.S. 11L	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	11	20	27	29	28	23	17	16	9	3	1	5	7	11	16	18	16	11	7	5	1	3	9	17	17	23	28	29	27	21	11
DEFLECTION DUE TO REMAINING DEAD LOAD	34	61	79	85	81	66	47	46	24	8	5	22	29	45	63	69	62	44	29	22	5	8	25	46	48	67	82	86	80	62	34
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	46	60	69	72	69	61	60	46	25	45	83	91	111	131	142	145	139	119	111	59	22	39	51	51	53	51	47	37	24	11
REQUIRED SHOP CAMBER	70	127	166	183	181	158	125	122	79	36	51	110	127	167	210	229	223	194	155	138	65	33	73	114	116	143	161	162	144	107	56

GIRDER 3L–C

	SPAN 1										SPAN 2												SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	F.S. 8L	0.7	0.8	0.9	0.1	0.2	F.S. 9L	0.3	0.4	0.5	0.6	0.7	F.S. 10L	0.8	0.9	0.1	0.2	0.3	F.S. 11L	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	11	20	27	29	28	23	17	16	9	3	1	5	7	11	16	18	16	11	7	5	1	3	9	17	17	23	28	29	27	21	11
DEFLECTION DUE TO REMAINING DEAD LOAD	34	61	79	85	81	66	47	46	24	8	5	22	29	45	63	69	62	44	29	22	5	8	25	46	48	67	82	86	80	62	34
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	46	60	69	72	69	61	60	46	25	45	83	91	111	131	142	145	139	119	111	59	20	34	43	43	43	40	38	30	19	9
REQUIRED SHOP CAMBER	70	127	166	183	181	158	125	122	79	36	51	110	127	167	210	229	223	194	155	138	65	31	68	106	108	133	150	153	137	102	54

GIRDER 3L–D

	SPAN 1										SPAN 2												SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	F.S. 8L	0.7	0.8	0.9	0.1	0.2	F.S. 9L	0.3	0.4	0.5	0.6	0.7	F.S. 10L	0.8	0.9	0.1	0.2	0.3	F.S. 11L	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	11	20	27	29	28	23	17	16	9	3	1	5	7	11	16	18	16	11	7	5	1	3	9	17	17	23	28	29	27	21	11
DEFLECTION DUE TO REMAINING DEAD LOAD	34	61	79	85	81	66	47	46	24	8	5	22	29	45	63	69	62	44	29	22	5	8	25	46	48	67	82	86	80	62	34
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	46	60	69	72	69	61	60	46	25	45	82	91	111	131	142	145	139	119	110	59	17	29	36	36	34	29	29	23	15	7
REQUIRED SHOP CAMBER	70	127	166	183	181	158	125	122	79	36	51	109	127	167	210	229	223	194	155	137	65	28	63	99	101	124	139	144	130	98	52

GIRDER 3L–E

	SPAN 1										SPAN 2												SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	F.S. 8L	0.7	0.8	0.9	0.1	0.2	F.S. 9L	0.3	0.4	0.5	0.6	0.7	F.S. 10L	0.8	0.9	0.1	0.2	0.3	F.S. 11L	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	11	20	27	29	28	23	17	16	9	3	1	5	7	11	16	18	16	11	7	5	1	3	9	17	17	23	28	29	27	21	11
DEFLECTION DUE TO REMAINING DEAD LOAD	34	61	79	85	81	66	47	46	24	8	5	22	29	45	63	69	62	44	29	22	5	8	25	46	48	67	82	86	80	62	34
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	46	60	69	72	69	61	60	46	25	43	77	85	103	121	129	129	121	103	95	51	19	33	42	42	43	40	38	30	19	9
REQUIRED SHOP CAMBER	70	127	166	183	181	158	125	122	79	36	49	104	121	159	200	216	207	176	139	122	57	30	67	105	107	133	150	153	137	102	54

GIRDER 3L–F

	SPAN 1										SPAN 2												SPAN 3									
	0.1	0.2	0.3	0.4	0.5	0.6	F.S. 8L	0.7	0.8	0.9	0.1	0.2	F.S. 9L	0.3	0.4	0.5	0.6	0.7	F.S. 10L	0.8	0.9	0.1	0.2	0.3	F.S. 11L	0.4	0.5	0.6	0.7	0.8	0.9
DEFLECTION DUE TO WEIGHT OF STEEL	11	20	26	28	27	22	16	16	9	3	1	5	7	11	16	18	16	11	7	5	0	3	9	16	17	23	27	29	26	20	11
DEFLECTION DUE TO REMAINING DEAD LOAD	26	47	61	65	62	51	36	35	18	6	4	18	23	36	50	55	50	36	24	18	4	5	17	34	35	49	60	64	60	47	26
ADJUSTMENT REQUIRED FOR VERT. AND HORIZ. CURVE	25	46	60	69	72	69	61	60	46	25	39	69	76	91	105	109	105	93	78	71	39	23	42	55	55	61	60	54	42	27	13
REQUIRED SHOP CAMBER	62	113	147	162	161	142	113	111	73	34	44	92	106	138	171	182	171	140	109	94	43	32	68	105	107	133	147	147	128	94	50

NOTES:

NEGATIVE VALUES FOR DEFLECTIONS INDICATE DEFLECTIONS ABOVE THE CHORD LINE. NEGATIVE VALUES OF VERTICAL AND HORIZONTAL CURVE ADJUSTMENT AND TOTAL REQUIRED CAMBER INDICATE VALUES BELOW THE CHORD LINE.

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THE FOLLOWING ABBREVIATION IS USED:
F.S. = FIELD SPLICE

FOR UNIT 4L CAMBERS, SEE SHEET 117 OF 175.

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	GLC	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

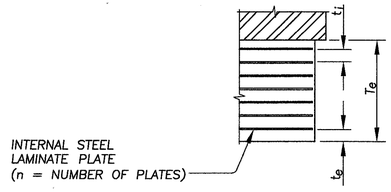
CAMBER DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

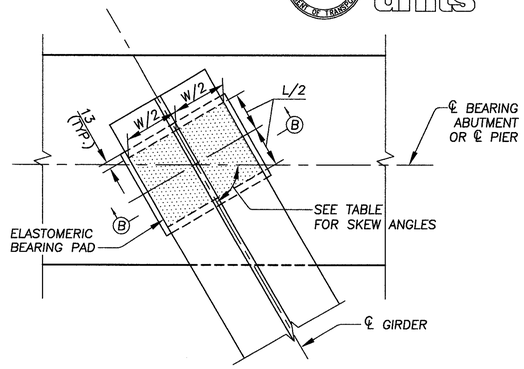
\24821\techprod\drawings\bridge\Camber4

SKEW ANGLES									
UNIT 1R		UNIT 4R		UNIT 1L				UNIT 4L	
PIER B		FORWARD ABUTMENT		REAR ABUTMENT		PIER 2L		PIER 11L	
GIRDER	ANGLE	GIRDER	ANGLE	GIRDER	ANGLE	GIRDER	ANGLE	GIRDER	ANGLE
1R–G	49°13'24"	4R–A	55°15'49"	1L–A	67°16'31"	1L–A	95°04'45"	ALL	89°16'06"
1R–H	48°28'53"	4R–B	55°16'59"	1L–B	66°49'25"	1L–B	92°57'45"	FORWARD ABUTMENT	
1R–I	47°41'19"	4R–C	55°18'25"	1L–C	64°27'14"	1L–C	92°57'45"	ALL	54°43'51"
1R–J	46°54'55"	4R–D	55°19'50"	1L–D	62°08'46"	1L–E	90°00'00"		
1R–K	46°54'55"	4R–E	55°21'28"	1L–E	60°00'00"	1L–F	90°00'00"		
REAR ABUTMENT		4R–F	55°23'17"	1L–F	60°00'00"	1L–G	90°00'00"		
ALL	60°00'00"			1L–G	60°00'00"	1L–H	90°00'00"		
				1L–H	60°00'00"	1L–I	90°00'00"		
				1L–I	60°00'00"	1L–J	90°00'00"		
				1L–J	60°00'00"				

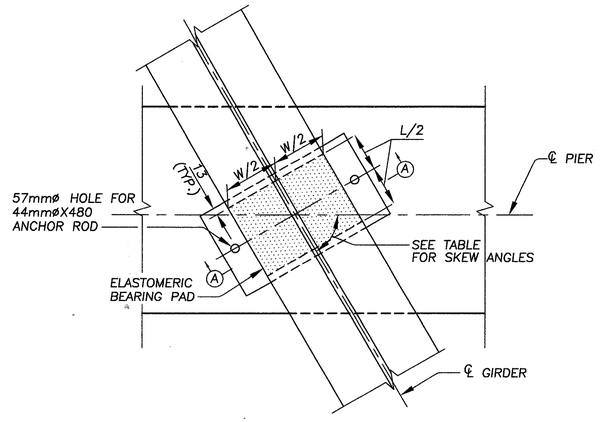
ELASTOMERIC BEARING DATA												
				LL (kN)	L	W	te	ti	n	Te	H	WELD
UNIT 1R	LOCATION	TYPE	DL (kN)	W/O IMPACT	(mm)	(mm)	(mm)	(mm)		(mm)	(mm)	(mm)
REAR ABUT.	1R–A	EXPANSION	512.7	260.1	305	485	7	10	6	75	113	8
	1R–F										113	
	1R–B	EXPANSION	658.4	316.7	320	505	7	10	6	75	126	10
	1R–C										126	
	1R–D										126	
	1R–E										126	
PIER B	1R–G	FIXED	1040.6	564.9	450	505	8	11	5	69	113	12
	1R–H										113	
	1R–I										114	
	1R–J										114	
	1R–K										114	
UNIT 4R												
FORWARD ABUTMENT	4R–A	EXPANSION	530.3	291.0	305	485	7	10	7	87	128	8
	4R–B										128	
	4R–C										128	
	4R–D										128	
	4R–E										128	
	4R–F	EXPANSION	336.8	227.8	270	390	7	10	6	75	119	8
UNIT 1L												
REAR ABUT.	TEMP. GIRDER	EXPANSION	680.6	302.5	305	485	7	10	6	75	126	10
	1L–A	EXPANSION	504.9	281.0	295	460	7	10	6	75	121	8
	1L–B										115	
	1L–C										115	
	1L–D	EXPANSION	613.0	268.1	305	485	7	10	6	75	128	8
	1L–E										128	
	1L–J										128	
	1L–F	EXPANSION	680.1	327.7	320	505	7	10	6	75	127	10
	1L–G										126	
	1L–H										126	
	1L–I										126	
PIER 2L	1L–B	EXPANSION	935.8	459.4	430	490	8	12	5	73	130	12
	1L–E										130	
	1L–F										130	
	1L–G										130	
	1L–H										130	
	1L–I										130	
	1L–A	EXPANSION	719.9	372.2	400	430	8	11	6	82	129	10
	1L–J										130	
	1L–C	EXPANSION	219.1	165.9	250	340	8	11	6	82	115	8
UNIT 4L												
PIER 11L	4L–A	FIXED	1425.2	486.0	500	515	8	11	5	69	125	12
	4L–B										125	
	4L–C										125	
	4L–D										125	
	4L–E										125	
	4L–F										125	
FORWARD ABUTMENT	4L–A	EXPANSION	455.6	291.7	295	460	7	10	6	75	116	8
	4L–B										116	
	4L–C										116	
	4L–D										116	
	4L–E										116	
	4L–F	EXPANSION	267.0	224.3	250	400	7	10	6	75	116	8



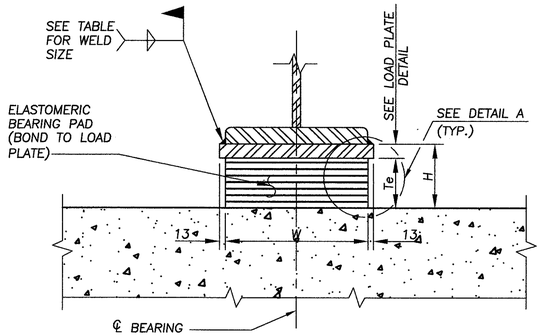
DETAIL A



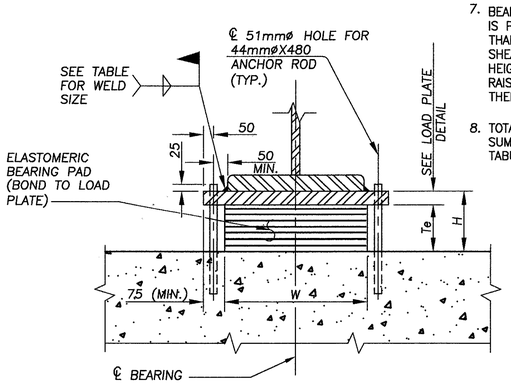
PLAN – EXPANSION BEARING



PLAN – FIXED BEARING



SECTION B–B



SECTION A–A

NOTES:

1. ELASTOMERIC BEARINGS SHALL COMPLY WITH ITEM 516 AND ARTICLES 18.2.5 THROUGH 18.2.8 OF SECTION 18, BEARING DEVICES, DIVISION II, CONSTRUCTION OF THE AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES. BEARINGS SHALL BE GRADE 3, 50 DUROMETER ELASTOMER, AND SHALL BE SUBJECTED TO THE LOAD TESTING REQUIREMENTS CORRESPONDING TO DESIGN METHOD A.
2. ELASTOMER: 50 DUROMETER

   LOAD PLATE: THE LOAD PLATE SHALL BE ASTM A–36M, AND SHALL BE FIELD PAINTED IN ACCORDANCE WITH ITEM 514, SYSTEM IZEU.
3. INTERNAL STEEL LAMINATE THICKNESS = 1.89mm
4. THE STEEL LOAD PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS. WELDING OF THE LOAD PLATE TO THE SUPERSTRUCTURE SHALL BE CONTROLLED SO THAT THE PLATE TEMPERATURE AT THE ELASTOMER BONDED SURFACE SHALL NOT EXCEED 148° C AS DETERMINED BY THE USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES, WHICH SHALL BE SUPPLIED BY THE CONTRACTOR.
5. BASIS OF PAYMENT: THE UNIT BID PRICE SHALL INCLUDE ALL MATERIALS, LABOR, TESTING, ANCHOR RODS, AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS. PAYMENT WILL BE MADE AT THE PER EACH OF ITEM 516, LAMINATED ELASTOMERIC BEARING.
6. FOR DETAILS OF STEEL LOAD PLATE, SEE SHEET 126 OF 175.
7. BEARING REPOSITIONING: IF THE DECK CONCRETE IS PLACED AT AN AMBIENT TEMPERATURE HIGHER THAN 27°C OR LOWER THAN 4°C AND THE BEARING SHEAR DEFLECTION EXCEEDS 1/6 OF THE BEARING HEIGHT AT 15°C ± 5°C THE GIRDERS SHALL BE RAISED TO ALLOW THE BEARINGS TO RETURN TO THEIR UNDEFORMED SHAPE AT 15°C ± 5°C.
8. TOTAL DESIGN LOAD FOR BEARINGS EQUALS THE SUM OF THE DEAD LOADS AND LIVE LOADS TABULATED IN THE BEARING TABLE.

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

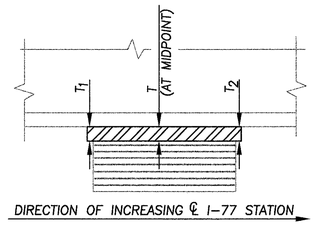
DESIGNED	DRAWN	REVIEWED	DATE
AEH	NDH	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

ELASTOMERIC BEARINGS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

\24621\techprod\drawings\bridge\Bearings.dwg

metric units



LOAD PLATE

LOAD PLATE DIMENSIONS

UNIT 1R						UNIT 4R						UNIT 1L						UNIT 4L					
REAR ABUT.	L	W	T1	T	T2	FWD ABUT.	L	W	T1	T	T2	REAR ABUT.	L	W	T1	T	T2	PIER 11L	L	W	T1	T	T2
GIRDER	mm	mm	mm	mm	mm	GIRDER	mm	mm	mm	mm	mm	GIRDER	mm	mm	mm	mm	mm	GIRDER	mm	mm	mm	mm	mm
1R-A	331	511	--	38.1	--	4R-A	331	511	44.7	41.4	38.1	TEMP. GIRDER	331	511	--	50.8	--	4L-A	526	655	61.2	56.1	50.8
1R-B	346	531	--	50.8	--	4R-B	331	511	44.7	41.4	38.1	1L-A	321	486	38.1	45.7	41.9	4L-B	526	655	61.2	56.1	50.8
1R-C	346	531	--	50.8	--	4R-C	331	511	44.7	41.4	38.1	1L-B	321	486	38.1	39.9	41.9	4L-C	526	655	61.2	56.1	50.8
1R-D	346	531	--	50.8	--	4R-D	331	511	44.7	41.4	38.1	1L-C	321	486	38.1	39.9	41.7	4L-D	526	655	61.2	56.1	50.8
1R-E	346	531	--	50.8	--	4R-E	331	511	44.7	41.4	38.1	1L-D	331	511	50.8	52.6	54.1	4L-E	526	655	61.2	56.1	50.8
1R-F	331	511	--	38.1	--	4R-F	296	416	43.9	41.1	38.1	1L-E	331	511	50.8	52.6	54.1	4L-F	526	655	61.2	56.1	50.8
												1L-F	346	531	50.8	52.6	54.1						
PIER B												1L-G	346	531	50.8	52.3	54.1	FORWARD ABUTMENT					
1R-G	476	705	38.1	44.2	50.3							1L-H	346	531	--	50.8	--	4L-A	321	486	44.5	41.4	38.1
1R-H	476	705	38.1	44.2	50.5							1L-I	346	531	--	50.8	--	4L-B	321	486	44.5	41.4	38.1
1R-I	476	705	38.1	44.5	50.8							1L-J	331	511	--	50.8	--	4L-C	321	486	44.5	41.4	38.1
1R-J	476	705	38.1	44.5	51.1													4L-D	321	486	44.5	41.4	38.1
1R-K	476	705	38.1	44.7	51.3							PIER 2L						4L-E	321	486	44.5	41.4	38.1
												1L-A	426	456	50.8	56.1	61.7	4L-F	276	426	43.7	40.9	38.1
												1L-B	456	516	50.8	56.6	62.5						
												1L-C	276	366	38.1	41.7	45.2						
												1L-E	456	516	50.8	56.6	62.5						
												1L-F	456	516	50.8	56.6	62.5						
												1L-G	456	516	50.8	56.6	62.5						
												1L-H	456	516	50.8	56.6	62.5						
												1L-I	456	516	50.8	56.6	62.5						
												1L-J	426	456	50.8	56.6	62.5						

NOTES:

LOAD PLATE: THE LOAD PLATE SHALL BE ASTM A-36M.

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MJL/AEH		1806726	

ELASTOMERIC BEARING DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

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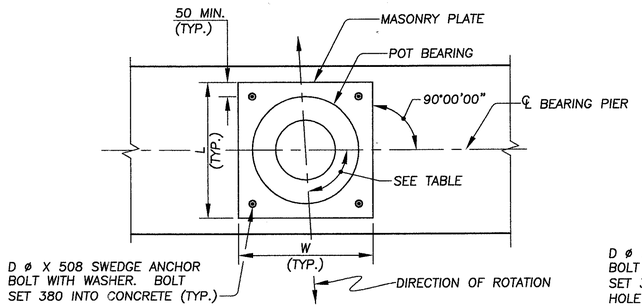
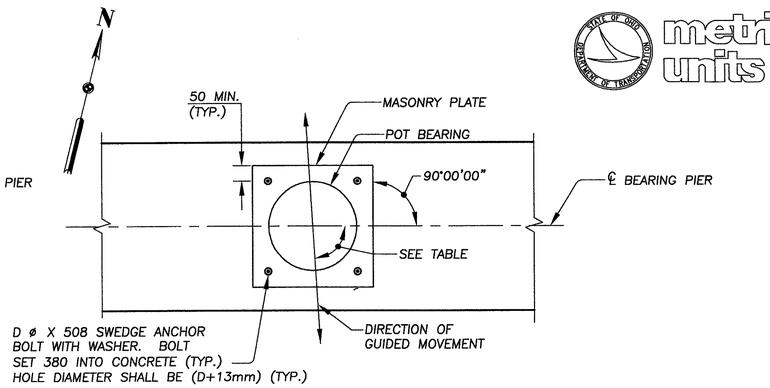
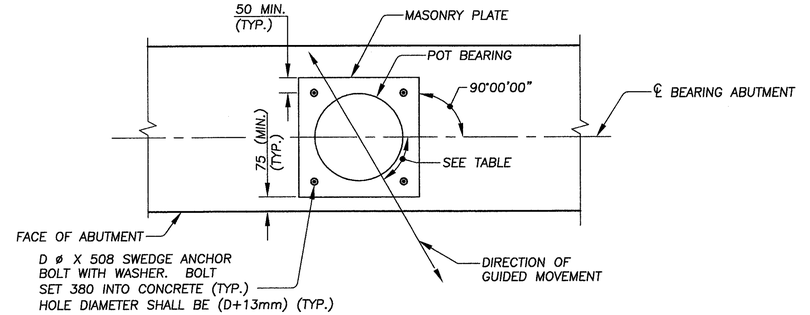
SKEW ANGLES							
UNIT 1L		UNIT 2L		UNIT 3L		UNIT 4L	
PIER 1L (EAST)		PIER 4L		PIER 7L		PIER 10L	
GIRDER	ANGLE	GIRDER	ANGLE	GIRDER	ANGLE	GIRDER	ANGLE
ALL	90°00'00"	2L–A	91°24'08"	ALL	90°00'00"	4L–A	86°15'03"
PIER 1L (WEST)		2L–B	90°42'05"	PIER 8L		4L–B	86°14'18"
1L–A	85°48'45"	2L–C	90°00'00"	ALL	90°00'00"	4L–C	86°13'34"
1L–B	83°41'45"	2L–D	90°00'00"	PIER 9L		4L–D	86°12'48"
1L–C	83°41'45"	2L–E	90°00'00"	ALL	90°00'00"	4L–E	86°11'53"
1L–D	82°52'46"	2L–F	90°00'00"	PIER 10L		4L–F	86°11'08"
1L–E	80°44'00"	2L–G	90°00'00"	ALL	89°22'05"		
1L–F	80°44'00"	PIER 5L					
PIER 3L		2L–A	92°31'22"				
1L–A	93°40'58"	2L–B	91°15'44"				
1L–B	92°57'45"	2L–C	90°00'00"				
1L–E	90°00'00"	2L–D	90°00'00"				
1L–F	90°00'00"	2L–E	90°00'00"				
1L–G	90°00'00"	2L–F	90°00'00"				
1L–H	90°00'00"	2L–G	90°00'00"				
1L–I	90°00'00"	PIER 6L					
1L–J	90°00'00"	2L–A	90°00'00"				
PIER 4L		2L–B	91°35'48"				
1L–A	92°32'13"	2L–C	90°00'00"				
1L–E	90°00'00"	2L–D	90°00'00"				
1L–F	90°00'00"	2L–E	90°00'00"				
1L–G	90°00'00"	2L–F	90°00'00"				
1L–H	90°00'00"	2L–G	90°00'00"				
1L–I	90°00'00"	PIER 7L					
1L–J	90°00'00"	ALL	90°00'00"				



PLAN – FIXED POT BEARING





PLAN – UNI–DIRECTIONAL POT BEARING

POT BEARING REQUIREMENTS											
LOCATION	NUMBER REQUIRED	TYPE	AXIAL DEAD LOAD (kN)	AXIAL LIVE LOAD + IMPACT (kN)	AXIAL TOTAL LOAD (kN)	MASONRY PLATE (L x W x T) (mm x mm x mm)	TOTAL TEMP. MOVEMENT (mm)	BEARING HEIGHT (SEE NOTE) (mm)	SLOPE DUE TO VERTICAL CURVE AT CL. BRG. (%)	SWEDGE ANCHOR "D" DIAM. (mm)	MAX. DESIGN ROTATION (DEGREES)
PIER 1R	6	*FIXED	1485.200	636.9	2122.100	(580 x 580 x 51)	X	185	1.75	44	.01
RAMP WN ABUT.	5	UNI	270.479	334.9	605.379	(540 x 490 x 38)	66	152	3.81	32	.01
PIER A	5	UNI	771.048	693.1	1464.148	(650 x 650 x 51)	38	191	3.23	32	.00
PIER 2RE	4	UNI	290.323	183.0	473.323	(540 x 540 x 38)	44	152	2.47	32	.01
1R–J (Pier 2RE)	1	UNI	1005.707	433.5	1439.207	(650 x 650 x 51)	50	191	2.48	32	.01
PIER 2RW	6	UNI	752.475	501.7	1254.175	(600 x 600 x 51)	32	184	2.45	32	.01
PIER 3R	9	UNI	1139.905	549.1	1689.005	(650 x 650 x 51)	70	191	2.54	32	.01
1R–H (Pier 3R)	1	UNI	256.051	203.9	459.951	(540 x 540 x 38)	84	152	2.54	32	.01
PIER 4R (UNIT 1R)	9	UNI	274.694	351.1	625.794	(540 x 540 x 38)	102	152	2.54	32	.01
PIER 4R (UNIT 2R)	8	UNI	744.341	440.7	1185.041	(600 x 600 x 51)	158	184	2.54	32	.01
PIER 5R	8	UNI	2718.647	956.4	3675.047	(840 x 840 x 51)	88	222	2.54	47	.00
PIER 6R	8	*FIXED	2713.599	954.3	3667.899	(710 x 710 x 51)	X	199	1.95	51	.00
PIER 7R (UNIT 2R)	7	UNI	742.820	441.9	1184.720	(600 x 600 x 51)	70	184	1.07	32	.01
PIER 7R (UNIT 3R)	7	UNI	810.982	452.8	1263.782	(600 x 600 x 51)	72	184	1.07	32	.01
PIER 8R	6	*FIXED	2614.175	926.6	3540.775	(680 x 680 x 51)	X	198	0.15	51	.01
3R–F (Pier 8R)	1	*FIXED	843.950	280.5	1124.450	(500 x 500 x 51)	X	175	0.15	51	.02
PIER 9R	6	UNI	2662.503	928.4	3590.903	(840 x 840 x 51)	82	222	−0.89	44	.01
PIER 10R (UNIT 3R)	6	UNI	836.677	452.6	1289.277	(580 x 600 x 51)	154	184	−1.81	32	.01
PIER 10R (UNIT 4R)	6	UNI	528.544	353.9	882.444	(530 x 540 x 38)	50	152	−1.81	32	.01
PIER 11R	6	*FIXED	1853.035	694.6	2547.635	(620 x 620 x 51)	X	187	−1.99	44	.00
PIER 1L	9	*FIXED	1553.790	678.9	2232.690	(620 x 620 x 51)	X	187	2.10	44	.01
1L–D (Pier 1L)	1	*FIXED	523.517	236.9	760.417	(450 x 450 x 38)	X	146	2.13	44	.01
PIER 3L	7	UNI	1367.942	606.2	1974.142	(700 x 700 x 51)	82	198	2.54	32	.01
1L–B (Pier 3L)	1	UNI	383.676	210.7	594.376	(540 x 540 x 38)	80	152	2.54	32	.02
PIER 4L (UNIT 1L)	7	UNI	358.567	352.6	711.167	(540 x 540 x 38)	118	152	2.54	32	.01
PIER 4L (UNIT 2L)	7	UNI	733.166	436.1	1169.266	(600 x 600 x 51)	152	184	2.54	32	.01
PIER 5L	7	UNI	3025.503	911.8	3937.303	(840 x 840 x 51)	86	222	2.54	44	.01
PIER 6L	6	*FIXED	2540.513	926.7	3467.213	(680 x 680 x 51)	X	198	1.61	51	.00
2L–B (Pier 6L)	1	*FIXED	926.742	301.0	1227.742	(500 x 500 x 51)	X	175	1.61	51	.02
PIER 7L (UNIT 2L)	6	UNI	745.933	438.0	1183.933	(600 x 600 x 51)	68	184	0.74	32	.01
PIER 7L (UNIT 3L)	6	UNI	813.960	436.7	1250.660	(600 x 600 x 51)	72	184	0.74	32	.01
PIER 8L	6	*FIXED	2855.255	972.2	3827.455	(710 x 710 x 51)	X	199	−0.19	57	.00
PIER 9L	6	UNI	2859.581	971.1	3830.681	(840 x 840 x 51)	90	222	−1.33	47	.00
PIER 10L (UNIT 3L)	6	UNI	814.741	435.6	1250.341	(500 x 600 x 51)	162	184	−1.99	32	.01
PIER 10L (UNIT 4L)	6	UNI	350.821	351.2	702.021	(460 x 540 x 38)	36	152	−1.99	32	.01

SKEW ANGLES											
UNIT 1R				UNIT 2R				UNIT 3R		UNIT 4R	
RAMP WN ABUTMENT		PIER 3R		PIER 4R		PIER 6R		PIER 7R		GIRDER	ANGLE
GIRDER	ANGLE	GIRDER	ANGLE	GIRDER	ANGLE	GIRDER	ANGLE	GIRDER	ANGLE	PIER 10R	
1R–G	47°30'36"	1R–A	90°00'00"	2R–A	90°00'00"	2R–A	90°00'00"	3R–A	90°00'00"	3R–A	89°48'32"
1R–H	47°00'54"	1R–B	90°00'00"	2R–B	90°00'00"	2R–B	90°00'00"	3R–B	90°00'00"	3R–B	89°48'32"
1R–I	46°28'56"	1R–C	90°00'00"	2R–C	90°00'00"	2R–C	90°00'00"	3R–C	90°00'00"	3R–C	89°48'32"
1R–J	45°57'25"	1R–D	90°00'00"	2R–D	90°00'00"	2R–D	90°00'00"	3R–D	90°00'00"	3R–D	89°48'32"
1R–K	45°25'10"	1R–E	90°00'00"	2R–E	90°00'00"	2R–E	90°00'00"	3R–E	90°00'00"	3R–E	89°48'32"
PIER A		1R–F	90°00'00"	2R–F	90°00'00"	2R–F	88°34'05"	3R–F	88°34'05"	3R–G	89°37'52"
1R–G	49°13'24"	1R–H	86°18'21"	2R–G	90°00'00"	2R–H	88°34'05"	3R–G	88°34'05"	PIER 10R	
1R–H	48°28'53"	1R–I	85°20'37"	2R–H	88°34'05"	PIER 7R		PIER 8R		ALL	87°23'15"
1R–I	47°41'19"	1R–J	84°40'57"	PIER 5R		GIRDER	ANGLE	3R–A	90°00'00"	PIER 11R	
1R–J	46°54'55"	1R–K	84°38'22"	2R–A	90°00'00"	2R–A	90°00'00"	3R–B	90°00'00"	ALL	89°18'00"
1R–K	46°54'55"	PIER 4R		2R–B	90°00'00"	2R–B	90°00'00"	3R–C	90°00'00"		
REF. LINE PIER 1R		1R–A	90°00'00"	2R–C	90°00'00"	2R–C	90°00'00"	3R–D	90°00'00"		
ALL	90°00'00"	1R–B	90°00'00"	2R–D	90°00'00"	2R–D	90°00'00"	3R–E	90°00'00"		
PIER 2R (WEST)		1R–C	90°00'00"	2R–E	90°00'00"	2R–E	90°00'00"	3R–F	88°34'05"		
ALL	90°00'00"	1R–D	90°00'00"	2R–F	90°00'00"	2R–F	90°00'00"	3R–G	88°34'05"		
PIER 2R (EAST)		1R–E	90°00'00"	2R–G	87°25'34"	2R–H	88°34'05"	PIER 9R			
1R–E	95°57'50"	1R–F	90°00'00"	2R–H	88°34'05"			3R–A	90°00'00"		
1R–F	95°57'50"	1R–I	86°11'04"					3R–B	90°00'00"		
1R–G	93°49'41"	1R–J	85°40'35"					3R–C	90°00'00"		
1R–H	91°25'05"	1R–K	85°37'53"					3R–D	90°00'00"		
1R–I	89°32'54"							3R–E	90°00'00"		
1R–J	88°29'02"							3R–G	89°39'52"		
1R–K	88°30'02"										

NOTES:

THE BEARING HEIGHT SPECIFIED IS THE DISTANCE FROM THE TOP OF MASONRY TO THE BOTTOM FLANGE OF THE GIRDER (INCLUDES 3mm LEAD SHEET OR NEOPRENE). SMALL DEVIATIONS FROM THE SPECIFIED HEIGHT WILL BE PERMITTED SUBJECT TO THE DIRECTOR'S APPROVAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PLAN CHANGES RESULTING THEREFROM. SOLE PLATES SHALL BE TAPERED TO PROVIDE A LEVEL BEARING SURFACE ACCORDING TO THE SLOPE SHOWN.

POT BEARINGS SHALL BE CAPABLE OF RESISTING TRANSVERSE HORIZONTAL LOADS EQUAL TO 20% OF THE DEAD LOAD.

FOR ADDITIONAL POT BEARING REQUIREMENTS, SEE STRUCTURAL GENERAL NOTES.

TOP LOAD PLATES AND MASONRY PLATES SHALL BE A572M STEEL.

POT BEARING TYPES:

UNI: UNI–DIRECTIONAL EDGE GUIDED BEARINGS ARE RESTRAINED TRANSVERSLY AND ALLOW FOR LONGITUDINAL MOVEMENT AND ROTATION.

FIXED: FIXED BEARINGS ARE RESTRAINED TRANSVERSLY AND HORIZONTALLY AND ALLOW FOR ROTATION.

ANCHORS FOR POT BEARINGS SHALL BE SET BY USE OF A STEEL TEMPLATE WITH A MINIMUM THICKNESS OF 6MM.

* THE FOLLOWING BEARINGS AT THE FOLLOWING FIXED PIERS SHALL BE UNI–DIRECTIONAL EDGE GUIDED BUT ROTATED 90° TO DIRECTION OF MOVEMENT TO ALLOW FOR TRANSVERSE THERMAL MOVEMENT:

PIER	GIRDER	PIER	GIRDER
1R	1R–A & F	1L (W)	1L–A & B
6R	2R–A & H	1L (E)	1L–I & J
8R	3R–A & G	6L	2L–A & G
11R	4R–A & F	8L	3L–A & F

metric units

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ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
NDH	NDH	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL/AEH		1806726	

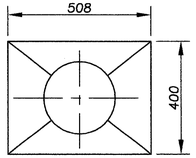
POT BEARINGS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

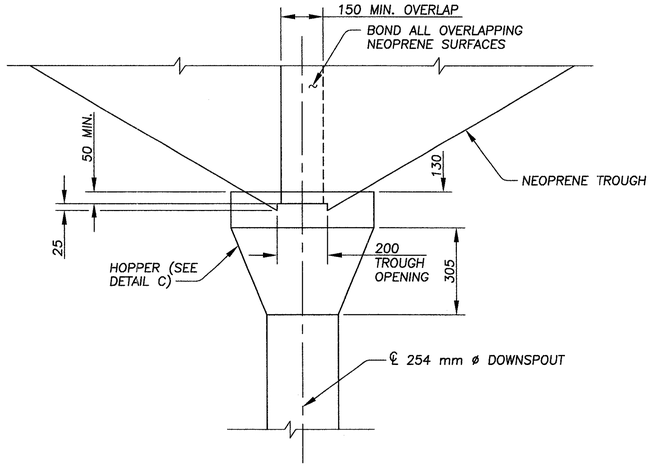
127/175

231/295

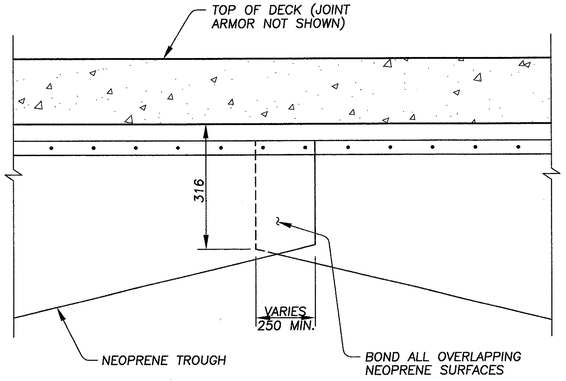
\24621\techproa\drawings\bridge\brngpot



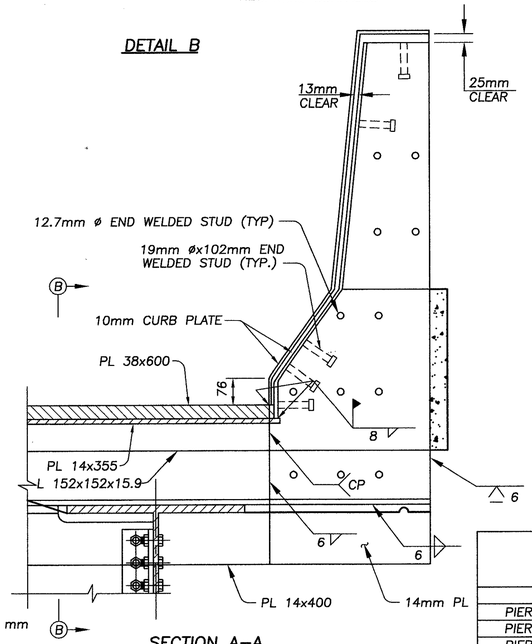
DETAIL C



DETAIL A

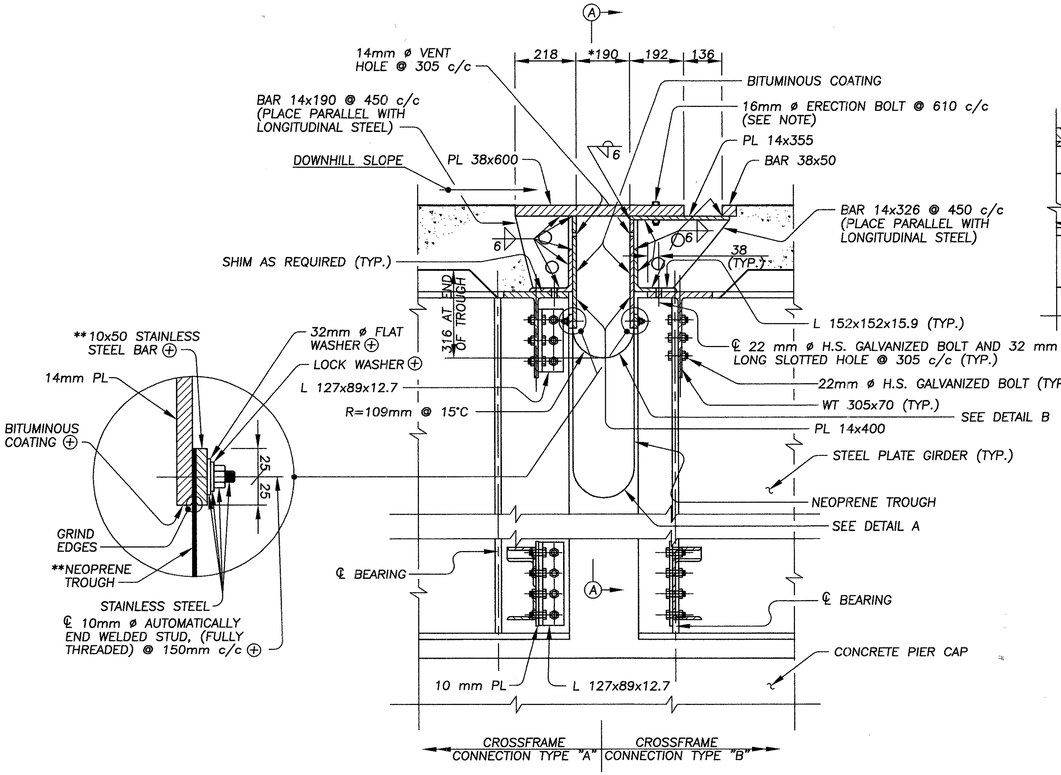


DETAIL B



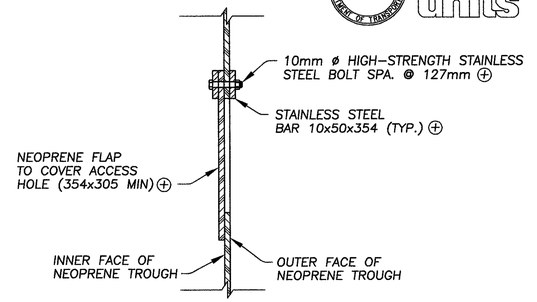
SECTION A–A

(SECTION AT MEDIAN BARRIER SIMILAR)

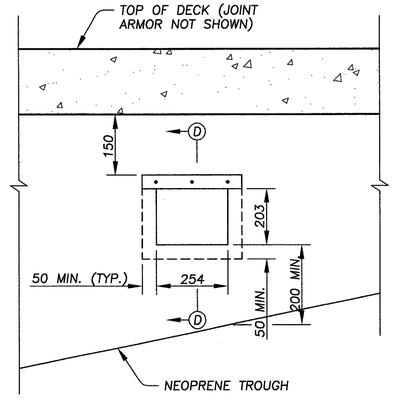


SECTION AT PIER JOINT

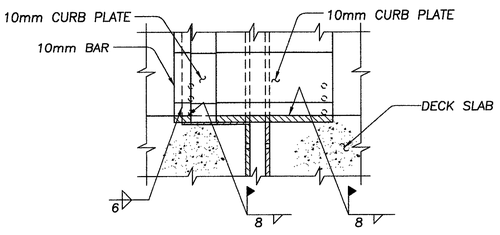
PIERS 4R, 7R, 10R, 4L, 7L, AND 10L



SECTION D–D



TROUGH ACCESS HOLE



SECTION B–B

TEMPERATURE ADJUSTMENT TABLE*
(BASED ON RANGE OF –34°C TO 49°C)

	0°C	5°C	10°C	15°C	20°C	25°C	30°C	MIN.	MAX.
PIER 4L	231	217	204	190	176	163	149	97	325
PIER 4R	232	218	204	190	176	162	148	94	328
PIER 7L	211	204	197	190	183	176	169	141	260
PIER 7R	212	204	197	190	183	176	168	141	260
PIER 10L	220	210	200	190	180	170	160	123	288
PIER 10R	221	211	200	190	180	169	159	120	291

NOTES:

⊕ – TO BE PAID FOR WITH NEOPRENE TROUGH.

* DIMENSION MEASURED NORMAL TO EXPANSION JOINT AT 15° C. SEE TEMPERATURE ADJUSTMENT TABLE.

** PROVIDE 19 mm ø HOLES IN BAR 10x50 AND NEOPRENE TROUGH.

ALL STEEL SHOWN SHALL BE PAID FOR WITH SLIDING PLATE EXPANSION JOINT EXCEPT AS SHOWN.

ALL STEEL FOR SLIDING PLATE EXPANSION JOINT SHALL BE ASTM A–36M.

HIGH STRENGTH BOLTS SHALL BE 22 mm DIAMETER A325M, GALVANIZED, THROUGH 27 mm DIAMETER HOLES, UNLESS OTHERWISE NOTED.

ERECTION BOLTS ARE 16mm ø BOLTS @ 610mm CENTERS WITH CAP NUTS TACK WELDED TO THE UNDER SIDE PLATE. CENTER 16 mm ø BOLTS IN 27 mm ø HOLES IN TOP PLATE. APPLY FLAKE GRAPHITE BETWEEN WASHERS AND PLATE. TURN BOLTS TIGHT AND RELEASE ONE HALF TURN. REMOVE BOLTS AS SOON AS CONCRETE HAS SET, PREFERABLY WITHIN TWO HOURS AFTER PLACING. FILL HOLES WITH BITUMINOUS MATERIAL.

FOR DRAINAGE TROUGH ELEVATION VIEWS, SEE SHEETS 158 TO 163 OF 175.

FOR BARRIER DIMENSIONS, SEE SHEET 138 OF 175.

FOR LOCATIONS OF END CROSSFRAME CONNECTION TYPES, SEE SHEET 115A OF 175.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY

HNTB One Cleveland Center 1375 East 9th Street Cleveland, Ohio 44114–1724

ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
GLC	GLC	RER	09–12–97
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M.JL		1906726	

SLIDING PLATE EXPANSION JOINT DETAILS

BRIDGE NO. CUY–77–23458

OVER KINGSBURY RUN

CUY–77–23.458

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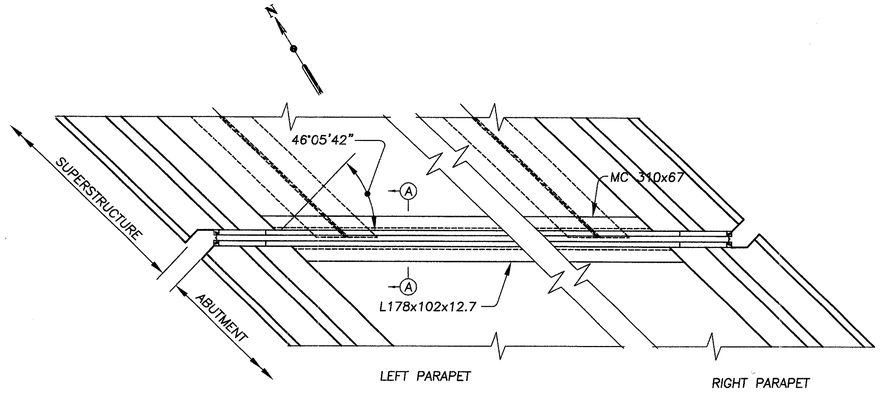
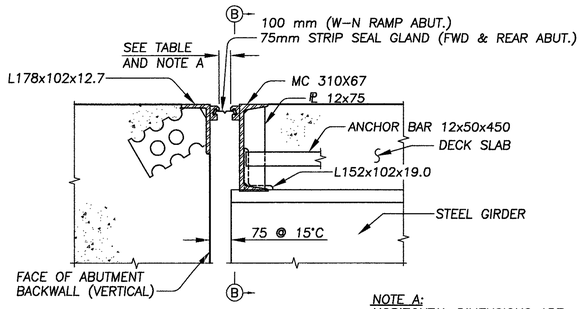
metric units

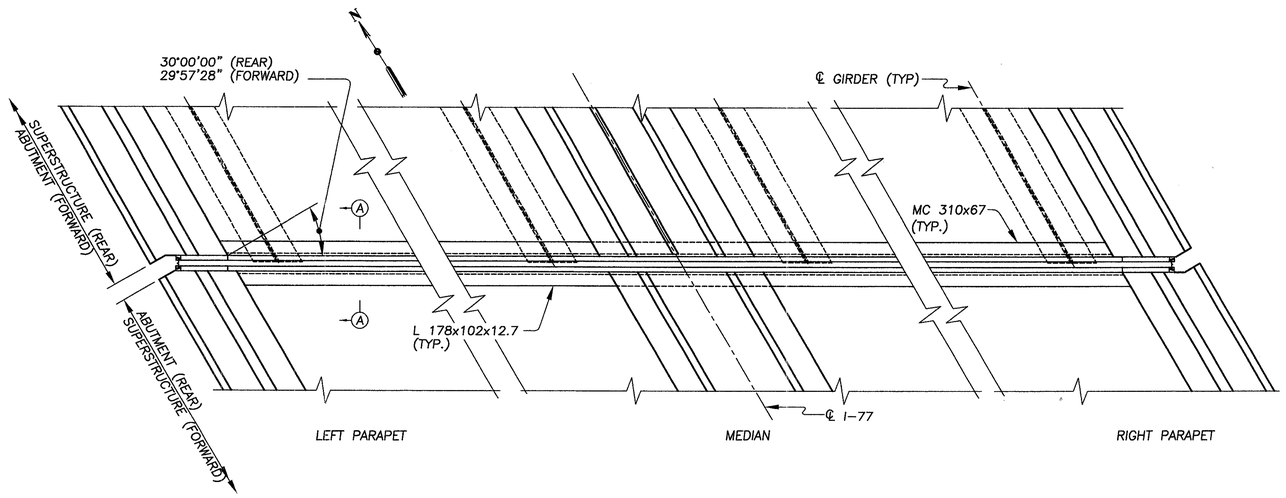


PART PLAN
W–N RAMP

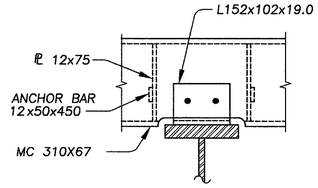


SECTION A–A

NOTE A:
HORIZONTAL DIMENSIONS ARE PERPENDICULAR TO JOINT.



PART PLAN
REAR ABUTMENT
(FORWARD ABUTMENT SIMILAR)



SECTION B–B

EXPANSION JOINT OPENINGS @ ABUTMENTS (mm)					
	REAR		FORWARD		
TEMPERATURE	LEFT	RIGHT	LEFT	RIGHT	WN RAMP
0°C	48	47	46	47	60
5°C	45	45	44	45	58
10°C	43	43	43	43	55
15°C	40	41	42	40	53
20°C	37	39	40	38	51
25°C	35	37	39	36	48
30°C	32	35	38	33	45
35°C	30	34	36	31	43

NOTE:
THE MINIMUM JOINT OPENING AT THE TIME OF THE SEAL GLAND INSTALLATION SHALL NOT BE LESS THAN 40mm. IF THE JOINT OPENING IS LESS, THE INSTALLATION SHALL BE POSTPONED UNTIL THE TEMPERATURE DROPS A SUFFICIENT AMOUNT TO ALLOW THE MINIMUM 40mm OPENING.

NOTES:
FOR ADDITIONAL DETAILS, SEE STANDARD DRAWING NO. EXJ–4–87M, SHEETS 1 THRU 5 OF 5.

ALL DIMENSIONS ARE IN MILLIMETERS.

STRIP SEALS SHALL BE INSTALLED IN ONE PIECE AFTER BACKWALL AND ADJACENT SUPERSTRUCTURE CONCRETE HAS CURED.

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

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CHECKED	REVISED	STRUCTURE FILE NUMBER	
JMG		1806726	

EXPANSION JOINT
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

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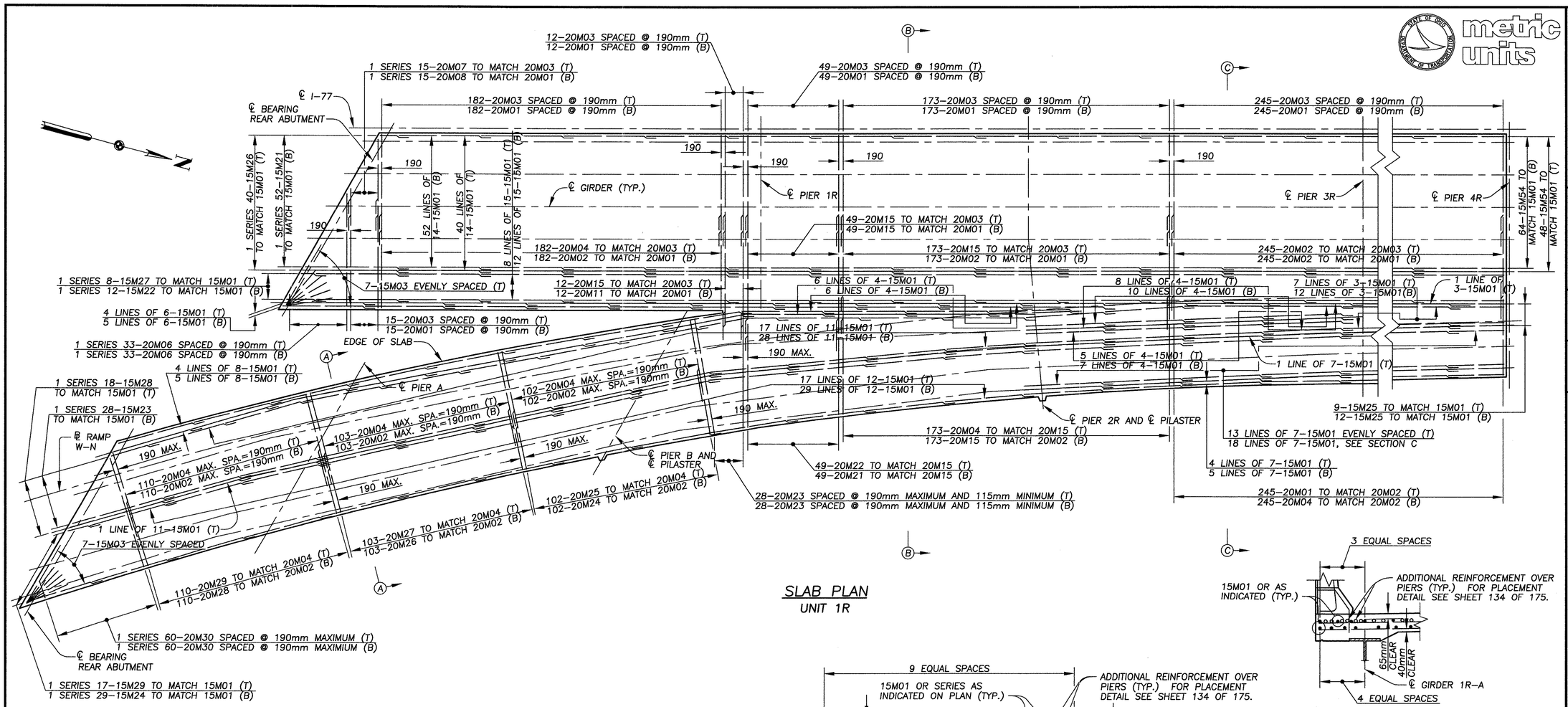
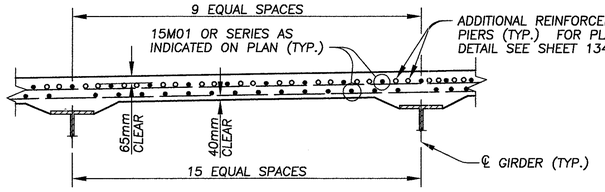
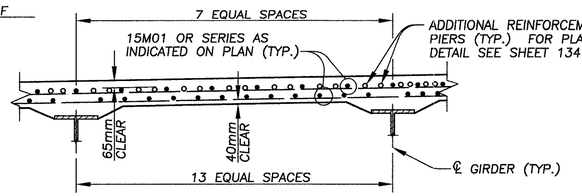


SLAB PLAN
UNIT 1R

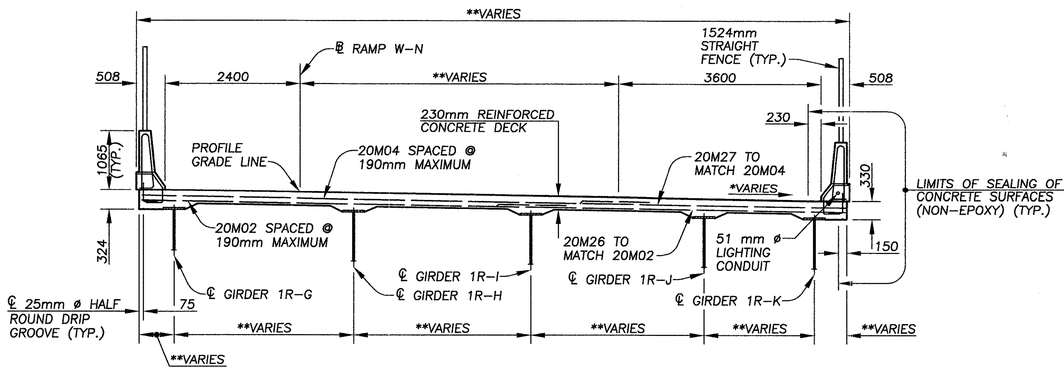
TYPICAL REINFORCEMENT DETAIL
OUTSIDE GIRDER 1R–A



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1R–G AND 1R–I



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1R–I AND 1R–K
SECTIONS A–A AND B–B



* – SEE SUPERELEVATION TRANSITION DIAGRAM
** – SEE FRAMING PLAN

SECTION A–A

NOTES

1. ALL DECK SLAB REINFORCING BARS SHALL BE PREFIXED ES.
2. FOR PARAPET JOINT SPACING AND PARAPET REINFORCEMENT SEE SHEET 139 OF 175.
3. FOR DECK JOINT DETAILS SEE SHEET 128 AND 129 OF 175.
4. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
5. FOR SCREED ELEVATION TABLES SEE SHEET 144 OF 175.
6. FOR FRAMING PLAN SEE SHEET 77 THRU 79 OF 175.
7. FOR SUPERELEVATION TRANSITION DIAGRAM SEE SHEET 146 OF 175.
8. FOR DECK CROSS SECTIONS B–B AND C–C SEE SHEET 131 OF 175.
9. FOR LIGHT POLE PILASTER NOTES AND DETAILS, SEE SHEET 138 OF 175.
10. FOR ADDITIONAL NOTES AND DETAILS, SEE SHEET 138 OF 175.
11. THE FOLLOWING ABBREVIATIONS ARE USED:

T = TOP B = BOTTOM

metric units

DESIGN AGENCY: HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724

DATE: 09-12-97
REVIEWED: RER
STRUCTURE FILE NUMBER: 1806726
DRAWN: GLG
REVISED:
DESIGNED: DHS
CHECKED: TJM

SLAB PLAN (RAMP W–N AND UNIT 1R)
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

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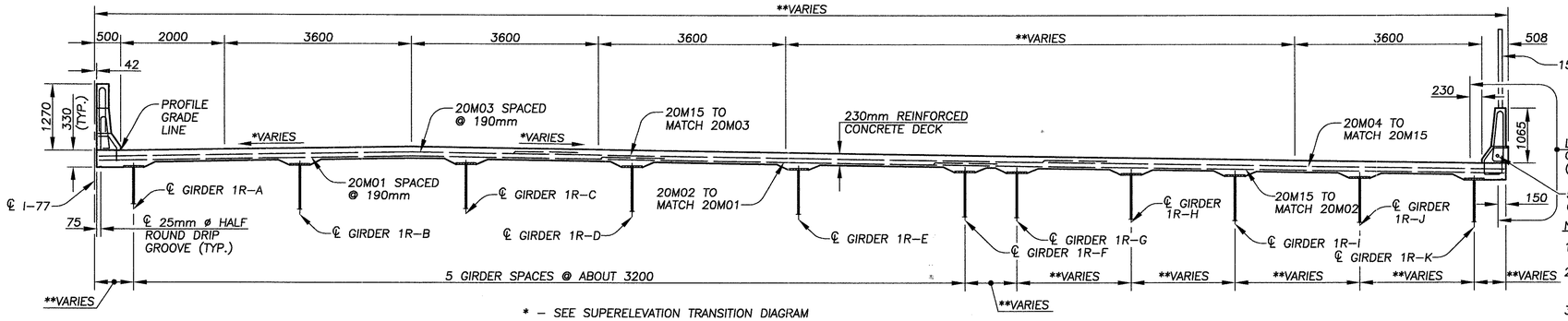
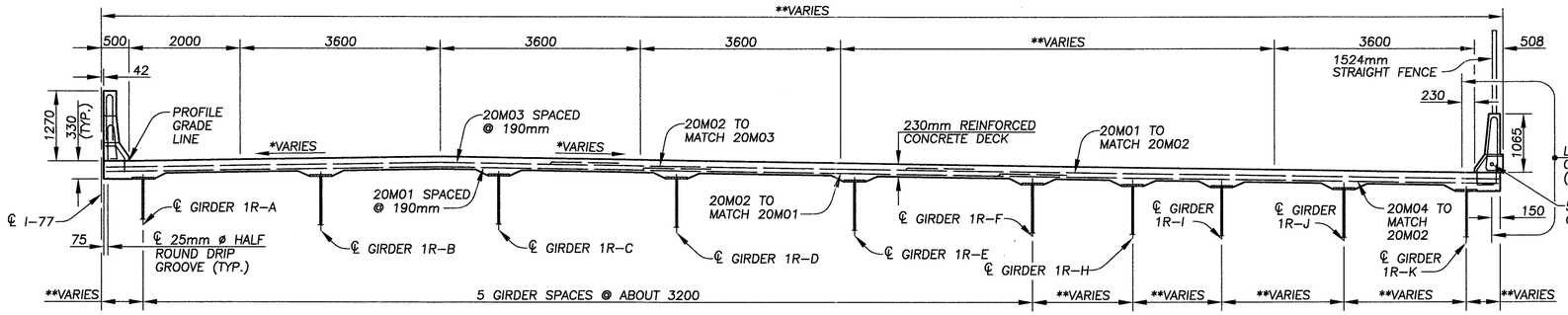


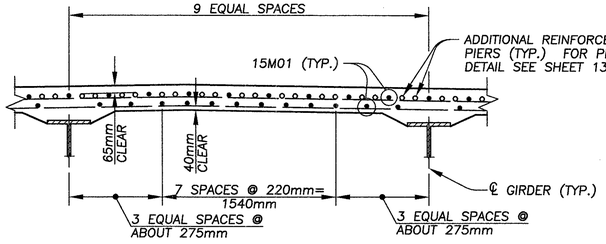
* – SEE SUPERELEVATION TRANSITION DIAGRAM
** – SEE FRAMING PLAN

SECTION B–B

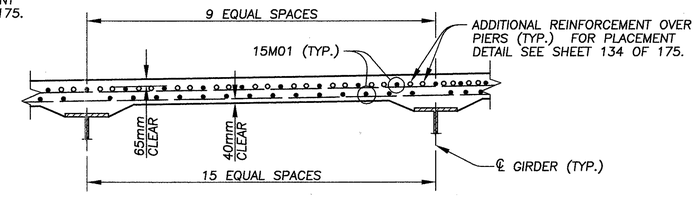


* – SEE SUPERELEVATION TRANSITION DIAGRAM
** – SEE FRAMING PLAN

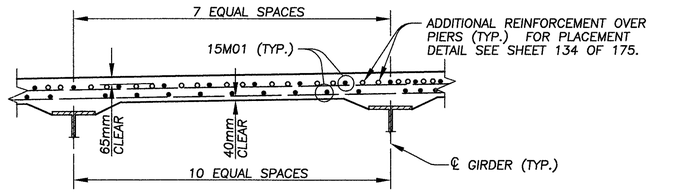
SECTION C–C



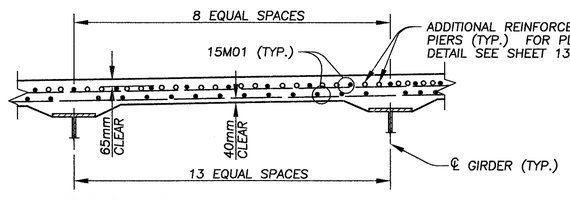
TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1R–A AND 1R–F



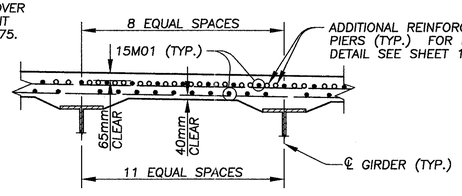
TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1R–G AND 1R–I



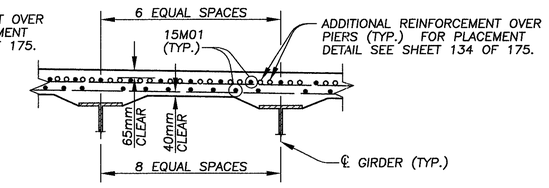
TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1R–I AND 1R–K, SECTION C–C



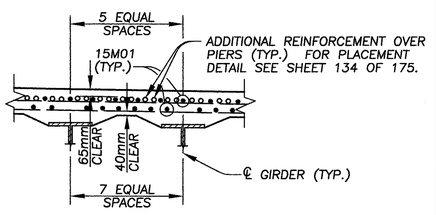
TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1R–F AND 1R–I, NORTH END



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1R–F AND 1R–H, SECTION C–C



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1R–H AND 1R–I, SECTION C–C



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1R–F AND 1R–G

metric units

1. ALL DECK SLAB REINFORCING BARS SHALL BE PREFIXED ES.
2. FOR PARAPET JOINT SPACING AND PARAPET REINFORCEMENT SEE SHEET 139 OF 175.
3. FOR DECK JOINT DETAILS SEE SHEET 128 AND 129 OF 175.
4. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
5. FOR SCREED ELEVATION TABLES SEE SHEET 144 OF 175.
6. FOR FRAMING PLAN SEE SHEET 77 THRU 79 OF 175.
7. FOR SUPERELEVATION TRANSITION DIAGRAM SEE SHEET 146 OF 175.
8. FOR LOCATIONS OF SECTIONS B–B AND C–C SEE SHEET 130 OF 175.
9. FOR ADDITIONAL NOTES AND DETAILS SEE SHEET 138 OF 175.
10. THE FOLLOWING ABBREVIATIONS ARE USED:

T = TOP B = BOTTOM

DESIGN AGENCY
HNTB
ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724

DESIGNED	DRAWN	REVIEWED	DATE
DHS	GLG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

DECK CROSS SECTIONS (RAMP W-N AND UNIT 1R)
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

131/175

235/295

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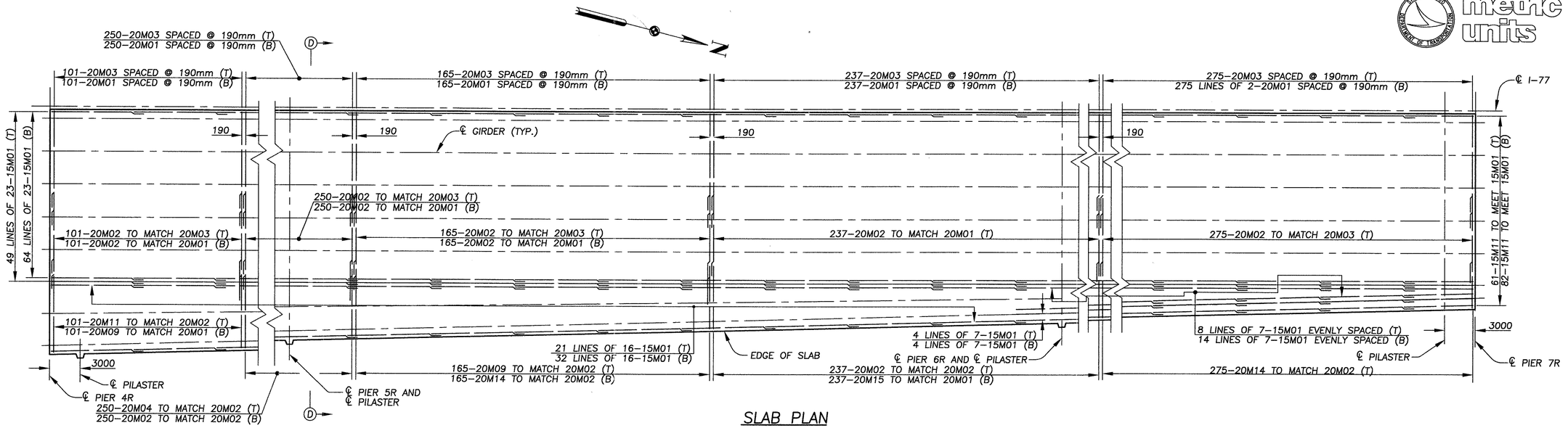
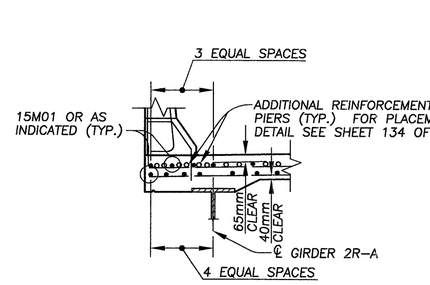
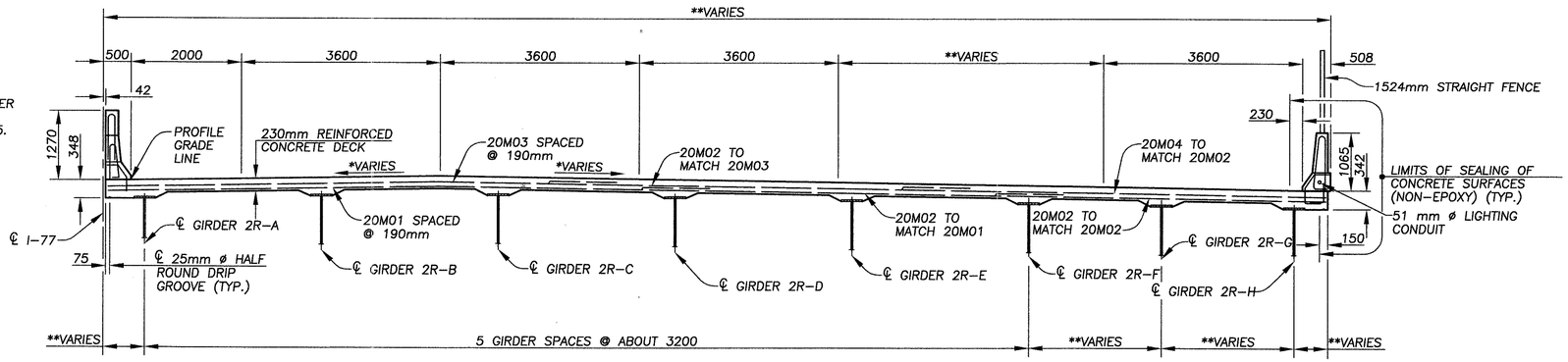


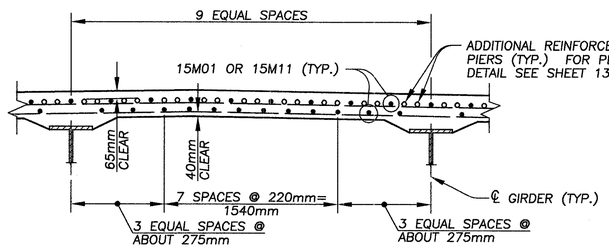
SLAB PLAN
UNIT 2R



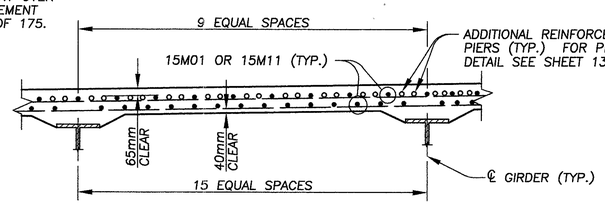
TYPICAL REINFORCEMENT DETAIL
OUTSIDE GIRDER 2R–A



* – SEE SUPERELEVATION TRANSITION DIAGRAM
** – SEE FRAMING PLAN

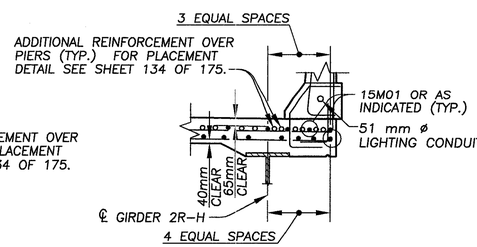


TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 2R–A AND 2R–F



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 2R–F AND 2R–H

SECTION D–D



TYPICAL REINFORCEMENT DETAIL
OUTSIDE GIRDER 2R–H

NOTES

1. ALL DECK SLAB REINFORCING BARS SHALL BE PREFIXED ES.
2. FOR PARAPET JOINT SPACING AND PARAPET REINFORCEMENT SEE SHEET 140 OF 175.
3. FOR DECK JOINT DETAILS SEE SHEET 128 OF 175.
4. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
5. FOR SCREED ELEVATION TABLES SEE SHEET 145 OF 175.
6. FOR FRAMING PLAN SEE SHEET 80 OF 175.
7. FOR SUPERELEVATION TRANSITION DIAGRAM SEE SHEET 146 OF 175.
8. FOR LIGHT POLE PILASTER NOTES AND DETAILS, SEE SHEET 138 OF 175.
9. FOR ADDITIONAL NOTES AND DETAILS SEE SHEET 138 OF 175.
10. THE FOLLOWING ABBREVIATIONS ARE USED:

T = TOP B = BOTTOM

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	GLG	RER	09–12–97
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TJM		1806726	

SLAB PLAN (UNIT 2R)
BRIDGE NO. CUY–77–23.458
OVER KINGSBURY RUN

CUY–77–23.458

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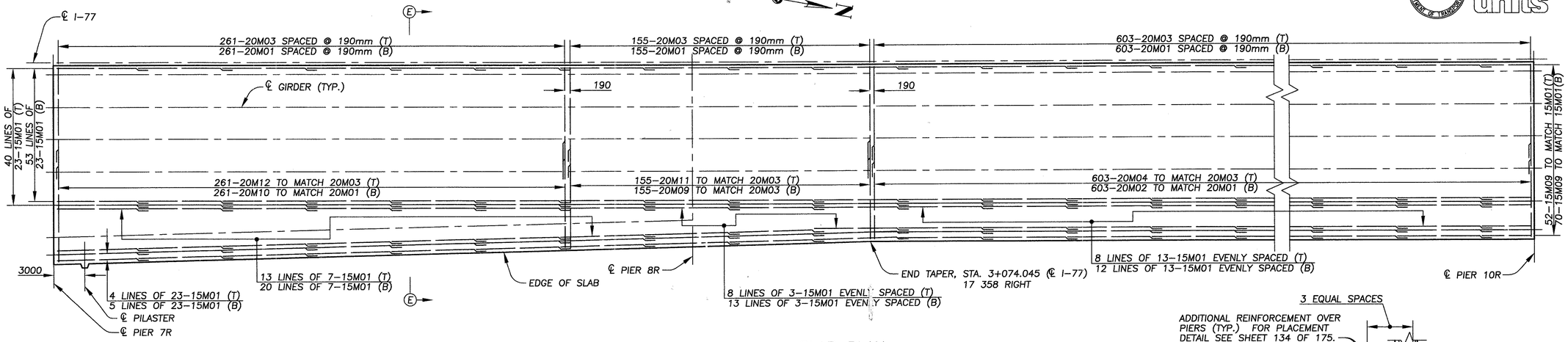
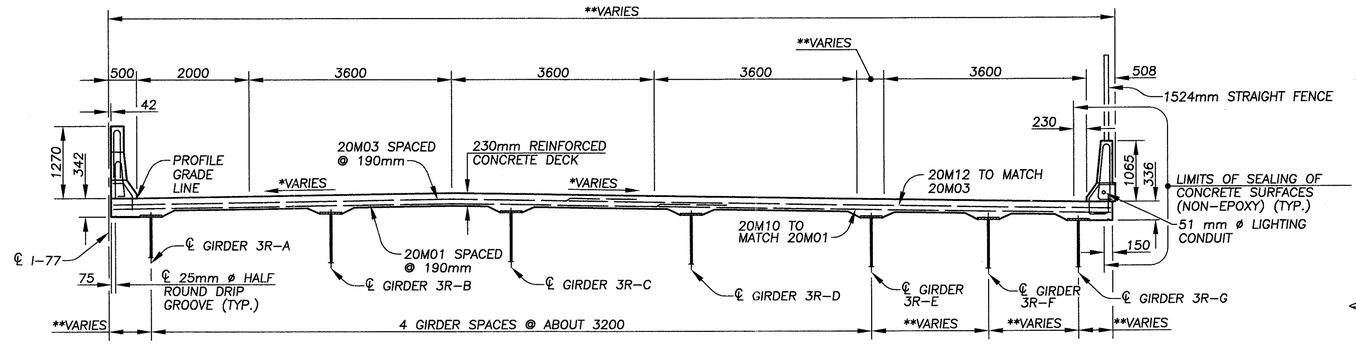
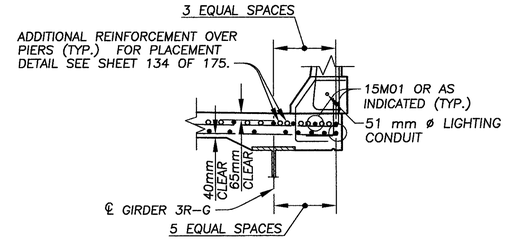


SLAB PLAN
UNIT 3R

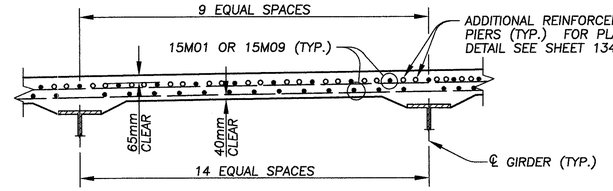


* - SEE SUPERELEVATION TRANSITION DIAGRAM
** - SEE FRAMING PLAN

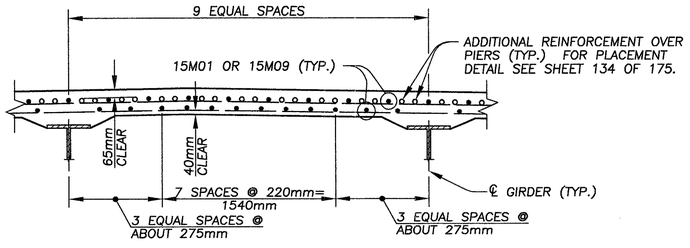
SECTION E-E



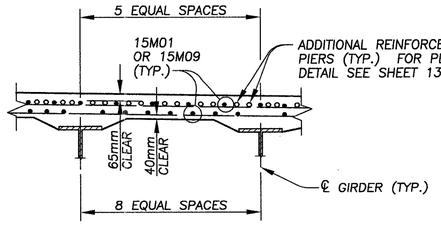
TYPICAL REINFORCEMENT DETAIL
OUTSIDE GIRDER 3R-G



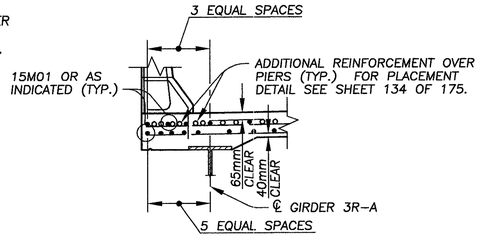
TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 3R-E AND 3R-F
BETWEEN GIRDERS 3R-E AND 3R-G



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 3R-A AND 3R-E
AND 3R-E AND 3R-G NORTH OF END OF TAPER



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 3R-F AND 3R-G



TYPICAL REINFORCEMENT DETAIL
OUTSIDE GIRDER 3R-A

NOTES

1. ALL DECK SLAB REINFORCING BARS SHALL BE PREFIXED ES.
2. FOR PARAPET JOINT SPACING AND PARAPET REINFORCEMENT SEE SHEET 140 OF 175.
3. FOR DECK JOINT DETAILS SEE SHEET 128 OF 175.
4. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
5. FOR SCREED ELEVATION TABLES SEE SHEET 145 OF 175.
6. FOR FRAMING PLAN SEE SHEET 81 OF 175.
7. FOR SUPERELEVATION TRANSITION DIAGRAM SEE SHEET 146 OF 175.
8. FOR LIGHT POLE PILASTER NOTES AND DETAILS, SEE SHEET 138 OF 175.
9. FOR ADDITIONAL NOTES AND DETAILS SEE SHEET 138 OF 175.
10. THE FOLLOWING ABBREVIATIONS ARE USED:

T = TOP B = BOTTOM

metric units

DESIGN AGENCY
HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724

REVIEWED RER
DATE 09-12-97
STRUCTURE FILE NUMBER 1806726
DRAWN GLG
REVISED
DESIGNED DHS
CHECKED TJM

SLAB PLAN (UNIT 3R)
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

133/175

237/295

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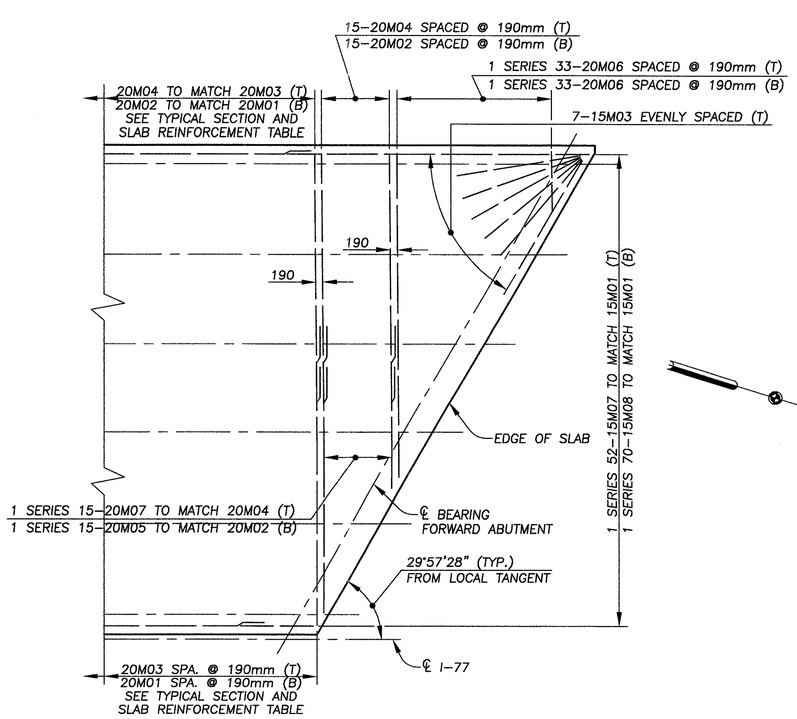
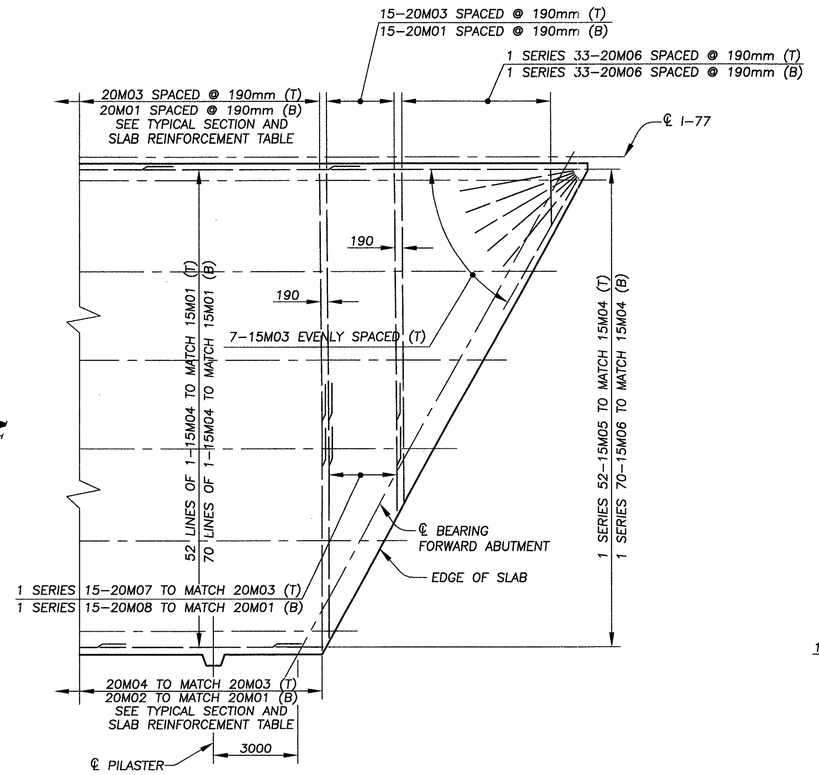
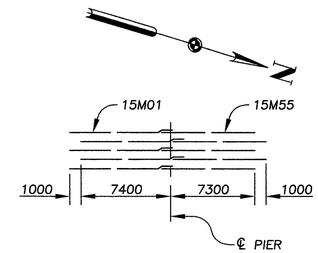


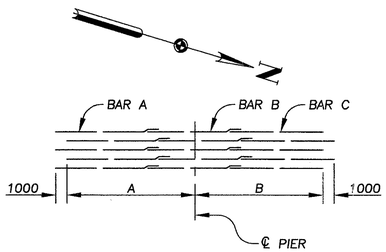
UNIT 4L END DETAIL



UNIT 4R END DETAIL

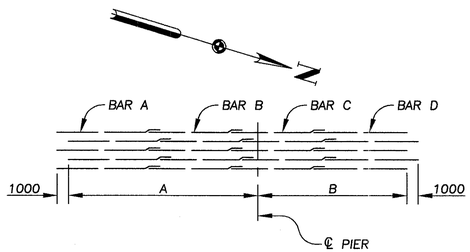


PLACEMENT OF ADDITIONAL REINFORCEMENT OVER PIER A



PLACEMENT OF ADDITIONAL REINFORCEMENT OVER PIERS

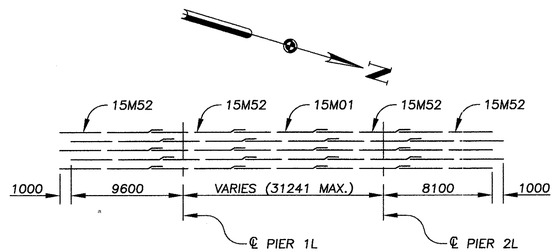
ADDITIONAL REINFORCEMENT OVER PIERS					
PIER	A	B	BAR A	BAR B	BAR C
11L	13900	10700	15M10	15M51	15M16
2R (E)	10000	14500	15M01	15M47	15M01
B	14700	10100	15M51	15M16	15M51
3R	8700	10000	15M30	15M30	15M30
11R	14400	13600	15M32	15M32	15M32
3L	10700	11300	15M38	15M01	15M38



PLACEMENT OF ADDITIONAL REINFORCEMENT OVER PIERS

ADDITIONAL REINFORCEMENT OVER PIERS						
PIER	A	B	BAR A	BAR B	BAR C	BAR D
5L	17000	18600	15M01	15M46	15M46	15M01
6L	19900	17000	15M10	15M50	15M50	15M10
8L	17900	20400	15M36	15M39	15M36	15M36
9L	20400	17900	15M36	15M36	15M39	15M36
1R*	8200	31518	15M45	15M45	15M45	15M45
5R	21000	20500	15M49	15M49	15M49	15M49
6R	19400	18200	15M01	15M48	15M48	15M01
8R	16100	20500	15M01	15M36	15M36	15M01
9R	19000	16600	15M01	15M46	15M46	15M01

* – THE ADDITIONAL BARS OVER THIS PIER ARE CONTINUOUS OVER PIER 2R WEST, DIMENSIONS GIVEN ARE ABOUT PIER 1R



PLACEMENT OF ADDITIONAL REINFORCEMENT OVER PIERS 1L AND 2L

NOTES

1. ALL DECK SLAB REINFORCING BARS SHALL BE PREFIXED ES.
2. FOR PARAPET JOINT SPACING AND PARAPET REINFORCEMENT SEE SHEETS 141 AND 143 OF 175.
3. FOR DECK JOINT DETAILS SEE SHEETS 141 AND 143 OF 175.
4. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
5. FOR SCREED ELEVATION TABLES SEE SHEETS 146 AND 149 OF 175.
6. FOR FRAMING PLANS SEE SHEETS 82 AND 86 OF 175.
7. FOR SUPERELEVATION TRANSITION DIAGRAMS SEE SHEETS 146 AND 149 OF 175.
8. FOR LIGHT POLE PILASTER NOTES AND DETAILS, SEE SHEET 138 OF 175.
9. FOR TYPICAL SECTION AND SLAB REINFORCEMENT TABLE SEE SHEET 138 OF 175.
10. FOR ADDITIONAL NOTES AND DETAILS SEE SHEET 138 OF 175.
11. THE FOLLOWING ABBREVIATIONS ARE USED:

T = TOP B = BOTTOM

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114–1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	GLG	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

SLAB DETAILS (UNIT 4R AND 4L)
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

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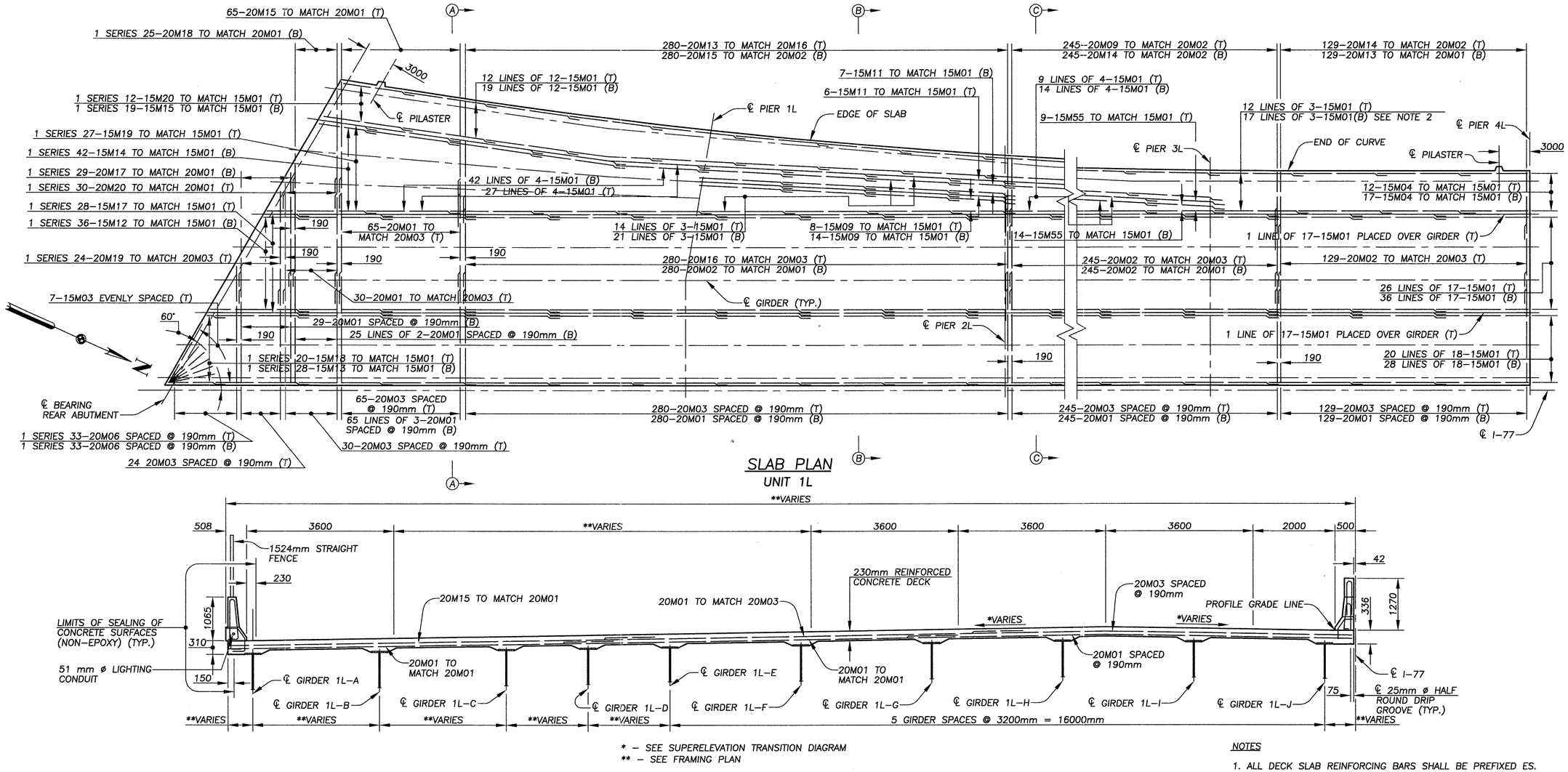
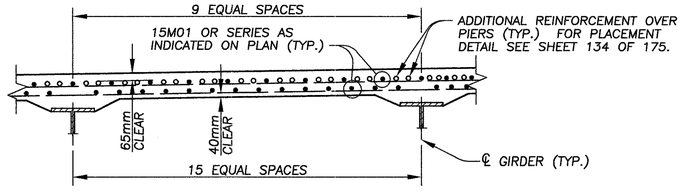


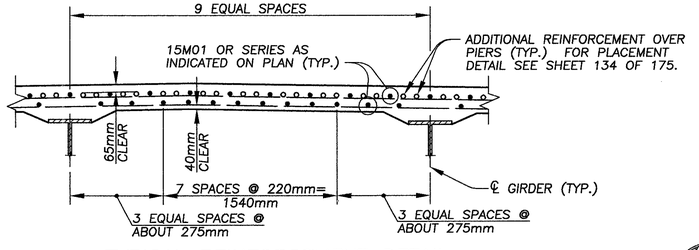
SLAB PLAN
UNIT 1L

* – SEE SUPERELEVATION TRANSITION DIAGRAM
** – SEE FRAMING PLAN

SECTION A–A



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1L–A AND 1L–E



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1L–E AND 1L–J

NOTES

1. ALL DECK SLAB REINFORCING BARS SHALL BE PREFIXED ES.
2. WHERE GIRDERS 1L–A AND 1L–E ARE PARALLEL AND ADJACENT, THE BOTTOM LAYER OF REINFORCEMENT SHALL BE PLACED IN THE SAME SPACING PATTERN AS THAT IN THE GIRDER SPACES BETWEEN GIRDERS 1L–E AND 1L–J.
3. FOR SECTIONS B–B AND C–C, AND REINFORCEMENT OUTSIDE EXTERIOR GIRDERS SEE SHEET 136 OF 175.
4. FOR PARAPET JOINT SPACING AND PARAPET REINFORCEMENT SEE SHEET 142 OF 175.
5. FOR DECK JOINT DETAILS SEE SHEETS 128 AND 129 OF 175.
6. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
7. FOR SCREED ELEVATION TABLES SEE SHEET 147 OF 175.
8. FOR FRAMING PLAN SEE SHEET 83 OF 175.
9. FOR SUPERELEVATION TRANSITION DIAGRAM SEE SHEET 149 OF 175.
10. FOR LIGHT POLE PILASTER NOTES AND DETAILS, SEE SHEET 138 OF 175.
11. FOR ADDITIONAL NOTES AND DETAILS SEE SHEET 138 OF 175.
12. THE FOLLOWING ABBREVIATIONS ARE USED:

T = TOP B = BOTTOM

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED DHS
DRAWN GLG
CHECKED TJM
DATE 09-12-97
REVIEWED RER
REVISED
STRUCTURE FILE NUMBER 18067726

SLAB PLAN (UNIT 1L)
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

135/175
239/295

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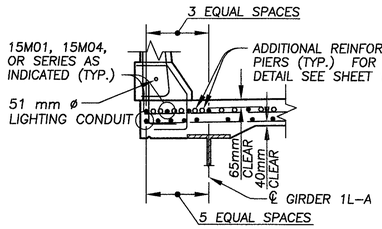
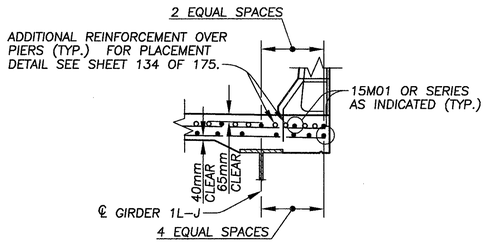
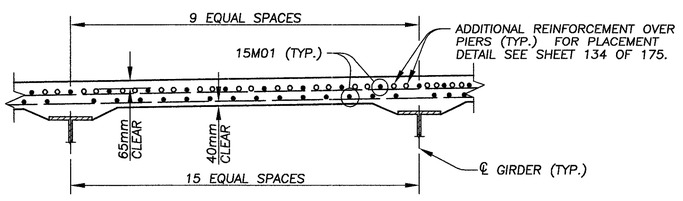


TYPICAL REINFORCEMENT DETAIL
OUTSIDE GIRDER 1L-A

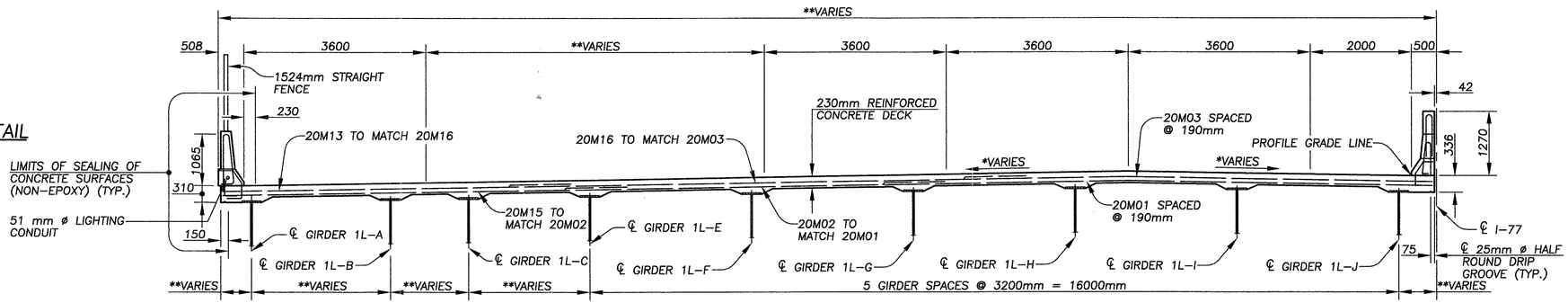


TYPICAL REINFORCEMENT DETAIL
OUTSIDE GIRDER 1L-J

TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1L-B AND 1L-C, SECTION E-E

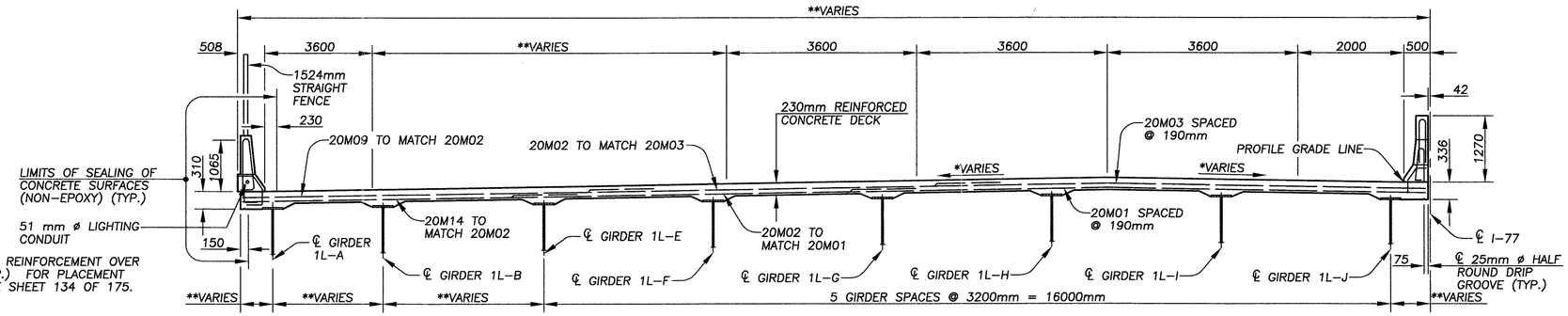


TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1L-A AND 1L-B, 1L-C AND 1L-E, SECTION E-E
AND BETWEEN GIRDERS 1L-A AND 1L-E, SECTION F-F



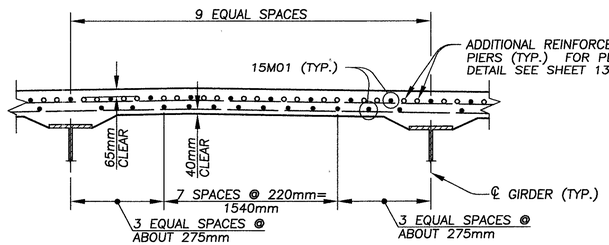
* - SEE SUPERELEVATION TRANSITION DIAGRAM
** - SEE FRAMING PLAN

SECTION B-B



* - SEE SUPERELEVATION TRANSITION DIAGRAM
** - SEE FRAMING PLAN

SECTION C-C



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 1L-E AND 1L-J

NOTES

1. ALL DECK SLAB REINFORCING BARS SHALL BE PREFIXED ES.
2. FOR PLAN OF UNIT 1L SHOWING LOCATIONS OF SECTIONS B-B AND C-C SEE SHEET 135 OF 175.
3. FOR PARAPET JOINT SPACING AND PARAPET REINFORCEMENT SEE SHEET 142 OF 175.
4. FOR DECK JOINT DETAILS SEE SHEETS 128 AND 129 OF 175.
5. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
6. FOR SCREED ELEVATION TABLES SEE SHEET 147 OF 175.
7. FOR FRAMING PLAN SEE SHEET 83 OF 175.
8. FOR SUPERELEVATION TRANSITION DIAGRAM SEE SHEET 149 OF 175.
9. FOR ADDITIONAL NOTES AND DETAILS SEE SHEET 138 OF 175.

metric units

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

DESIGN AGENCY
HNTB
ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724

DATE 09-12-97
RENEWED RER
STRUCTURE FILE NUMBER 1806726
DRAWN GLG
REVISED
DESIGNED DHS
CHECKED TJM

DECK CROSS SECTIONS (UNIT 1L)
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

136/175

240/295

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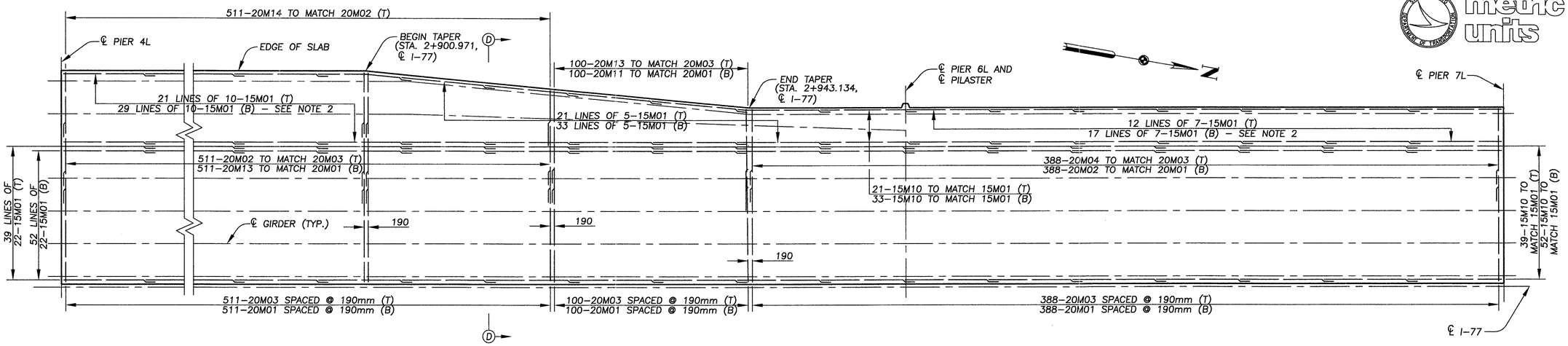
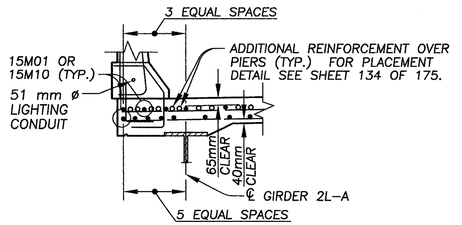
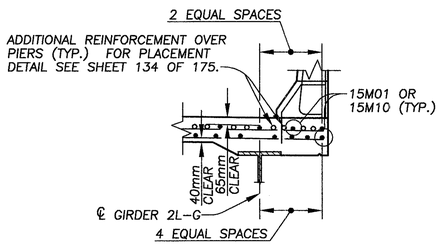


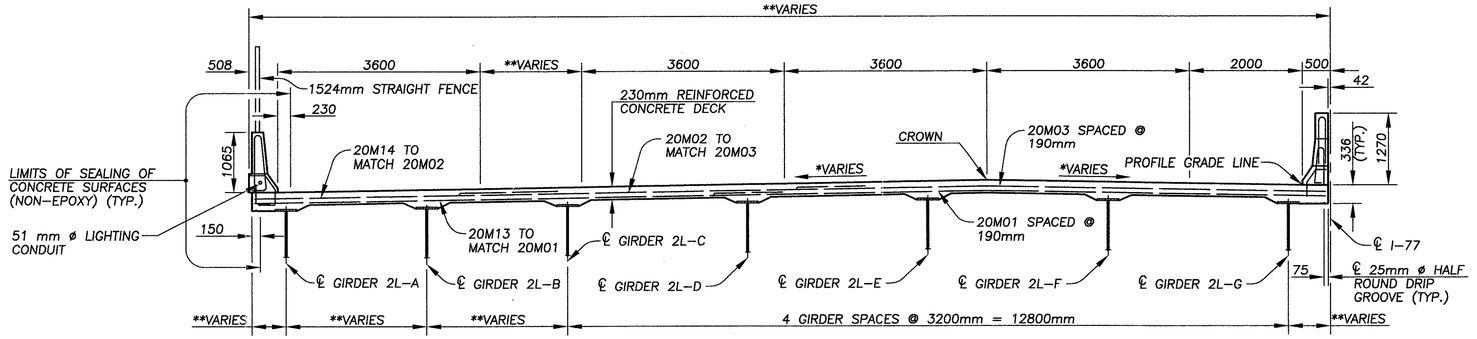
SLAB PLAN
UNIT 2L



TYPICAL REINFORCEMENT DETAIL
OUTSIDE GIRDER 2L–A

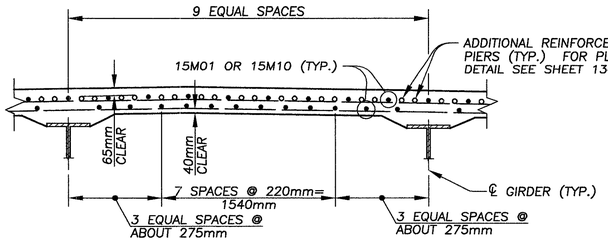


TYPICAL REINFORCEMENT DETAIL
OUTSIDE GIRDER 2L–G

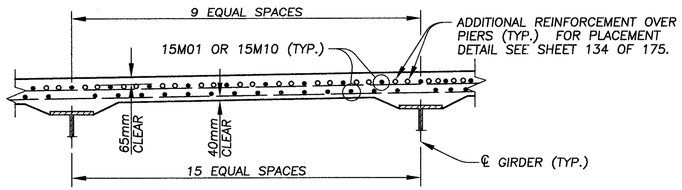


* – SEE SUPERELEVATION TRANSITION DIAGRAM
** – SEE FRAMING PLAN

SECTION D–D



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 2L–C AND 2L–G



TYPICAL REINFORCEMENT DETAIL
BETWEEN GIRDERS 2L–A AND 2L–C, SECTION H–H

NOTES

1. ALL REINFORCING BARS SHALL BE PREFIXED ES.
2. WHERE GIRDERS ARE PARALLEL AND SPACED AT 3200mm, THE BOTTOM LAYER OF REINFORCEMENT SHALL BE PLACED IN THE SAME SPACING PATTERN AS THAT IN THE 4 GIRDER SPACES CLOSEST TO THE I–77 CENTERLINE.
3. FOR PARAPET JOINT SPACING AND PARAPET REINFORCEMENT SEE SHEET 142 OF 175.
4. FOR DECK JOINT DETAILS SEE SHEET 128 OF 175.
5. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
6. FOR SCREED ELEVATION TABLES SEE SHEET 148 OF 175.
7. FOR FRAMING PLAN SEE SHEET 84 OF 175.
8. FOR SUPERELEVATION TRANSITION DIAGRAM SEE SHEET 149 OF 175.
9. FOR LIGHT POLE PILASTER NOTES AND DETAILS, SEE SHEET 138 OF 175.
10. FOR ADDITIONAL NOTES AND DETAILS SEE SHEET 138 OF 175.
11. SLAB PLAN FOR UNIT 3L NOT SHOWN. ℄ BEARINGS ARE AT NO SKEW. REFER TO TYPICAL CROSS SECTION AND SLAB REINFORCEMENT TABLE, SHEET 138 OF 175.
12. THE FOLLOWING ABBREVIATIONS ARE USED:

T = TOP B = BOTTOM

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114–1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	GLG	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

SLAB PLAN (UNIT 2L)
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

137/175

241/295

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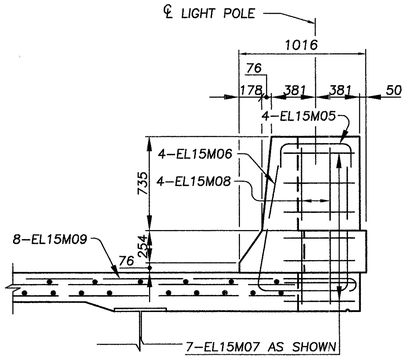
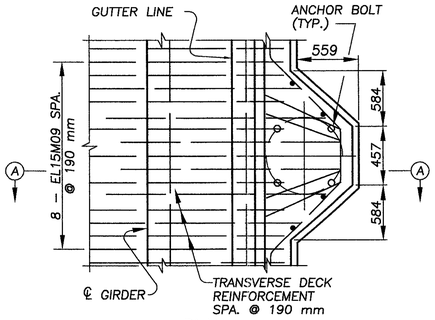


SECTION A–A
(LIGHTING CONDUIT NOT SHOWN)



PLAN
(LIGHTING CONDUIT NOT SHOWN)

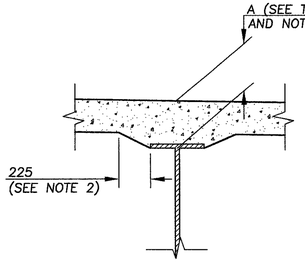
SLAB REINFORCEMENT*			
UNIT 3L	LONGITUDINAL REINFORCEMENT	52 LINES OF	24–15M01
		70 LINES OF	24–15M01
			52–15M02 TO MEET 15M01
			70–15M02 TO MEET 15M01
	TRANSVERSE REINFORCEMENT		1061–20M03 SPA. @ 190mm
			1061–20M04 TO MEET 20M03
			1061–20M01 SPA. @ 190mm
			1061–20M02 TO MEET 20M01
UNIT 4R	LONGITUDINAL REINFORCEMENT	52 LINES OF	9–15M01
		70 LINES OF	9–15M01
	TRANSVERSE REINFORCEMENT		415–20M03 SPA. @ 190mm
			415–20M04 TO MEET 20M03
			415–20M01 SPA. @ 190mm
			415–20M02 TO MEET 20M01
UNIT 4L	LONGITUDINAL REINFORCEMENT	52 LINES OF	7–15M01
		70 LINES OF	7–15M01
	TRANSVERSE REINFORCEMENT		315–20M03 SPA. @ 190mm
			315–20M04 TO MEET 20M03
			315–20M01 SPA. @ 190mm
			315–20M02 TO MEET 20M01

* – FOR REINFORCEMENT DETAIL NEAR ACUTE CORNERS SEE SHEET 134 OF 175.

NOTES:

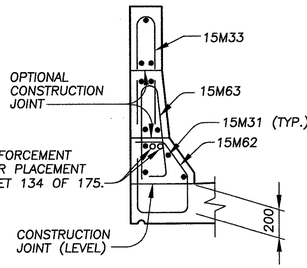
1. *DECK SLAB DEPTH: THE DISTANCE SHOWN FROM THE TOP OF THE DECK SLAB TO THE BOTTOM OF THE TOP FLANGE IS THE THEORETICAL DESIGN DIMENSION INCLUDING THE DESIGN HAUNCH THICKNESS OF 50 mm. THE QUANTITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED UPON THIS DIMENSION, MINUS THE DESIGN HAUNCH THICKNESS, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE GIRDER MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE. DEDUCTION SHALL BE MADE FOR VOLUME OF ENCASED STEEL PLATES AS PER 511.18.
2. A HAUNCH WIDTH OF 225mm SHALL BE USED FOR COMPUTING QUANTITY OF CONCRETE. HOWEVER, THE HAUNCH WIDTH MAY VARY BETWEEN 150 mm AND 300 mm.
3. ALL LONGITUDINAL REINFORCEMENT SHALL BE PLACED PARALLEL TO THE BEAMS, WITH THE EXCEPTION OF OUTSIDE THE FASCIA WHERE THE BARS SHALL BE PLACED CONCENTRIC TO THE EDGE OF THE SLAB. BETWEEN GIRDERS WITH FLARED SPACING, BARS SHALL BE PLACED TO MAINTAIN EVEN SPACES BETWEEN THE BARS FOR THE ENTIRE LENGTH OF THE FLARE.
4. ALL TRANSVERSE BARS SHALL BE PLACED NORMAL TO THE CONTINUOUS GIRDERS, EXCEPT IN CURVED SECTIONS AND THE TRANSITION AREA TO RAMP W–N, WHERE BARS SHALL BE PLACED RADIALLY WITH THE SPACING INDICATED AS THE MAXIMUM SPACING.
5. FANNED BARS PLACED AT ACUTE CORNERS OF THE DECK SLAB SHALL BE PLACED DIRECTLY BELOW THE TOP LAYER OF BARS.
6. ALL REINFORCING BARS SHALL BE PREFIXED ES.
7. FOR PARAPET JOINT SPACING AND PARAPET REINFORCEMENT SEE SHEET 139 TO 143 OF 175.
8. FOR DECK JOINT DETAILS SEE SHEET 128 AND 129 OF 175.
9. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
10. FOR SCREED ELEVATION TABLES AND SUPERELEVATION TRANSITION DIAGRAMS SEE SHEETS 144 TO 149 OF 175.
11. FOR FRAMING PLANS SEE SHEETS 77 TO 86 OF 175.
12. FOR LIGHT POLE PILASTER DETAILS, REFER TO ODOT STANDARD CONSTRUCTION DRAWING HL–20.14M.
13. FOR TABLE OF TOP BARS OVER PIERS SEE SHEET 134 OF 175.

LOCATIONS OF LIGHT POLE PILASTERS			
POLE LOCATION	OFFSET FROM PIER OR ℄ BEARINGS	STATION	FACE
REAR LEFT ABUTMENT	3000 mm NORTH	2+695.583	LEFT
PIER 4L	3000 mm SOUTH	2+824.535	LEFT
PIER 5L	0	2+885.904	LEFT
PIER 6L	0	2+958.547	LEFT
PIER 7L	3000 mm NORTH	3+019.916	LEFT
PIER 9L	0	3+155.900	LEFT
PIER 10L	3000 mm NORTH	3+222.264	LEFT
PIER B	0	2+696.136	RIGHT
PIER 2R	0	2+741.039	RIGHT
PIER 4R	3000 mm NORTH	2+802.898	RIGHT
PIER 5R	0	2+859.639	RIGHT
PIER 6R	0	2+935.230	RIGHT
PIER 7R	3000 mm NORTH	2+997.971	RIGHT
PIER 9R	0	3+126.180	RIGHT
PIER 10R	3000 mm NORTH	3+192.174	RIGHT
FORWARD RIGHT ABUTMENT	3000 mm SOUTH	3+261.012	RIGHT

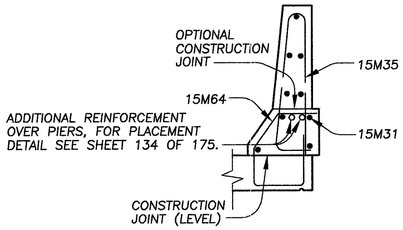


HAUNCH DETAIL

HAUNCH DIMENSION TABLE	
UNIT	A
1R	VARIES 324 TO 336
2R	VARIES 342 TO 348
3R	VARIES 302 TO 342
4R	VARIES 336 TO 342
1L	VARIES 302 TO 336
2L	VARIES 336 TO 356
3L	348
4L	VARIES 324 TO 336



DETAIL A

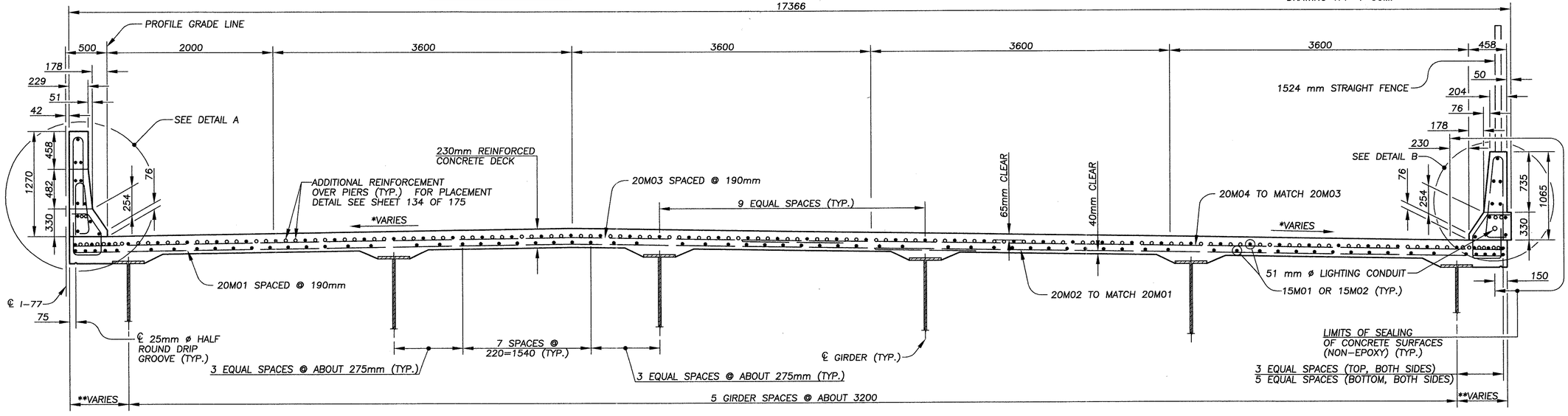


DETAIL B
(LIGHTING CONDUIT NOT SHOWN)

BAR	REQUIRED LAP LENGTH
NO. 15M	980 MM
NO. 20M	1220 MM

FENCE POST DATA		
FENCE HEIGHT	BASE PLATE	POST SECTION
1524mm STRAIGHT	BP–5	PS–4

NOTE: FOR ADDITIONAL FENCE DETAILS SEE STANDARD DRAWING VPF–1–90M.



* – SEE SUPERELEVATION TRANSITION DIAGRAM
** – SEE FRAMING PLAN

TYPICAL CROSS SECTION
UNIT 4R AND UNIT 3L AND 4L (SHOWN OPPOSITE HAND)

metric units

\\24621\techprod\drawings\bridge\Deck1

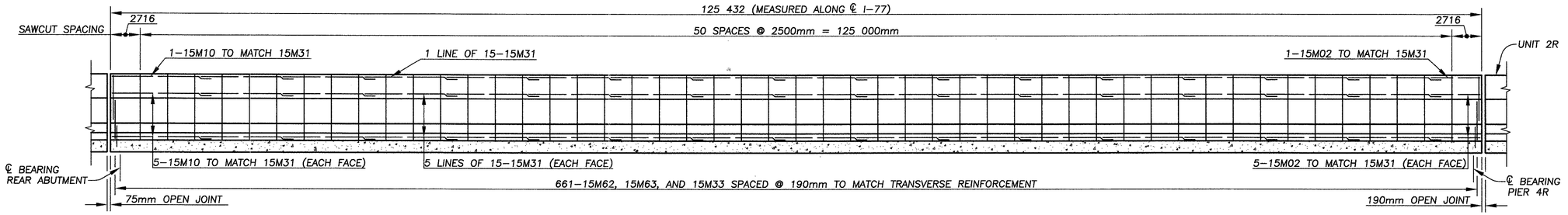
DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114–1724
ARCHITECTS ENGINEERS PLANNERS

DATE 09–12–97
REVIEWED RER
STRUCTURE FILE NUMBER 1806726
DRAWN GLG
REVISED
DESIGNED DHS
CHECKED TJM

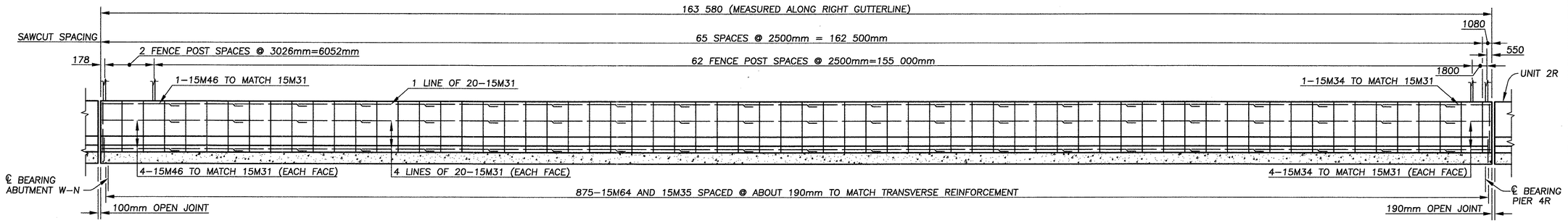
DECK CROSS SECTION AND DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

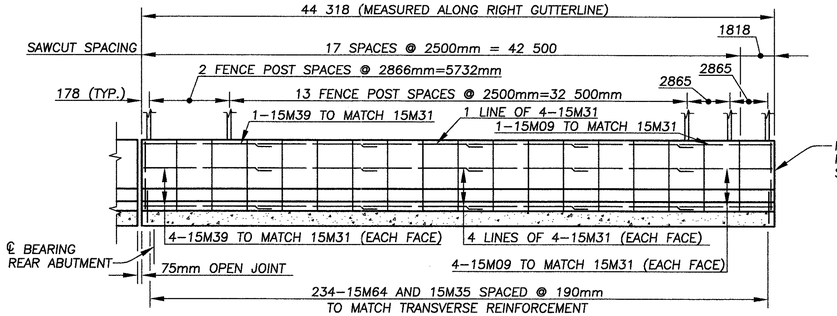
138/175
242/295



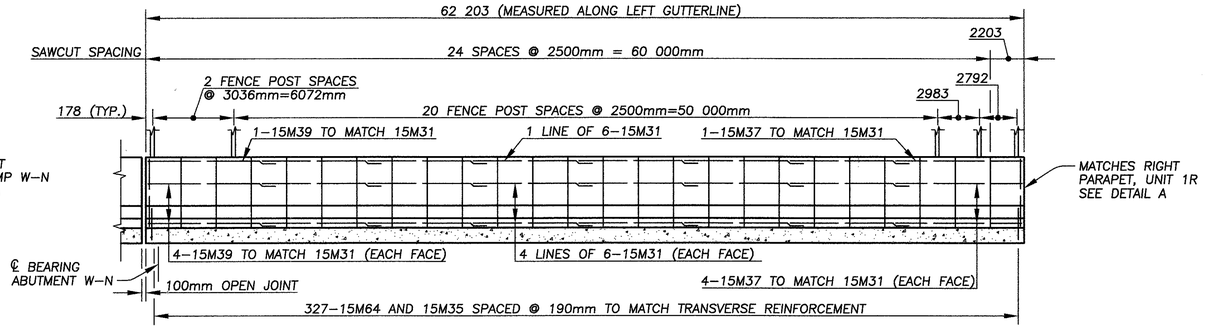
MEDIAN ELEVATION
UNIT 1R



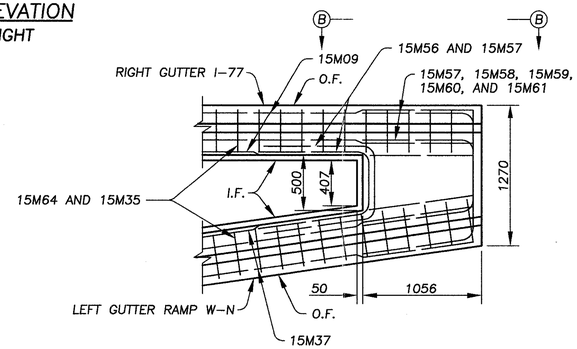
PARAPET ELEVATION
RAMP W–N AND UNIT 1R, RIGHT



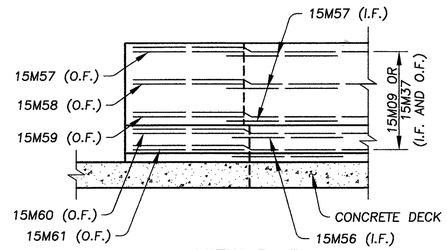
PARAPET ELEVATION
UNIT 1R, RIGHT



PARAPET ELEVATION
RAMP W–N, LEFT



DETAIL A



VIEW B–B
(VERTICAL BARS NOT SHOWN)

NOTES:

1. ALL REINFORCING BARS SHALL BE PREFIXED ES.
2. FOR DECK SLAB DETAILS OF UNIT 1R SEE SHEET 130 OF 175 AND 131 OF 175.
3. FOR TYPICAL CROSS SECTION, BARRIER DETAILS, AND ADDITIONAL NOTES SEE SHEET 138 OF 175.
4. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
5. FOR LIGHT POLE PILASTER LOCATIONS, SEE SHEET 138 OF 175.

DESIGN AGENCY
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ARCHITECTS ENGINEERS PLANNERS
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Cleveland, Ohio 44114-1724

DATE	DRAWN	DESIGNED
REVIEWED RER 09-12-97	GLG	GLG
STRUCTURE FILE NUMBER 1806726	REVISED	CHECKED TJM

BARRIER DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

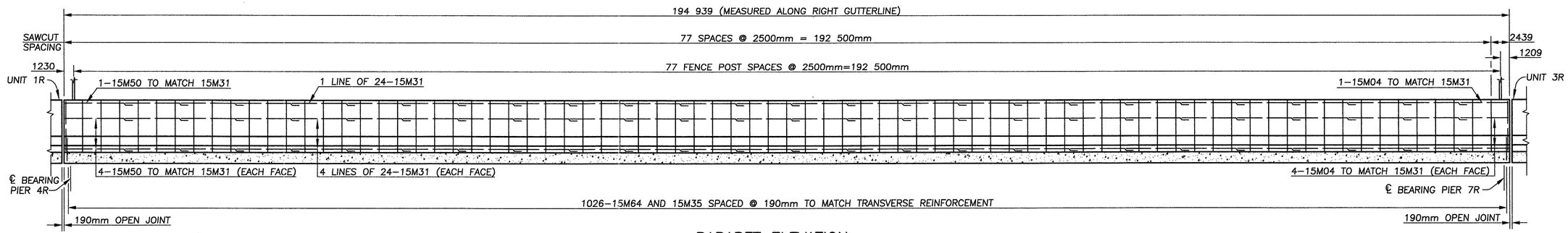
CUY-77-23.458

139/175

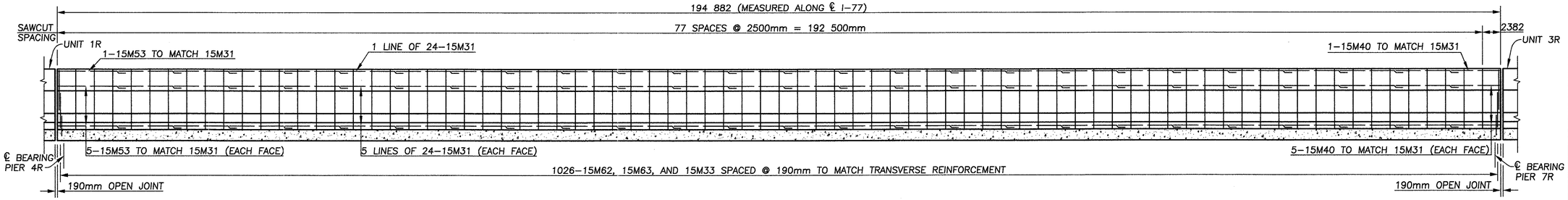
243/295

\24621\techprod\drawings\bridge\Barrier1

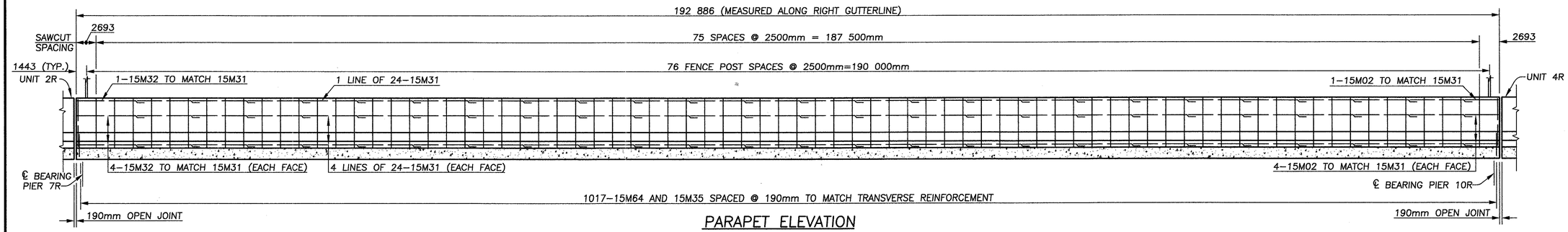
metric units



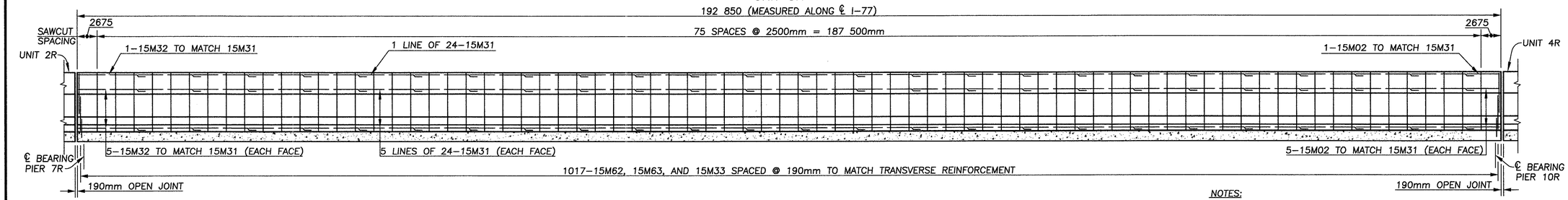
PARAPET ELEVATION
UNIT 2R



MEDIAN ELEVATION
UNIT 2R



PARAPET ELEVATION
UNIT 3R



MEDIAN ELEVATION
UNIT 3R

NOTES:

1. ALL REINFORCING BARS SHALL BE PREFIXED ES.
2. FOR DECK SLAB DETAILS OF UNIT 2R SEE SHEET 132 OF 175.
   FOR DECK SLAB DETAILS OF UNIT 3R SEE SHEET 133 OF 175.
3. FOR TYPICAL CROSS SECTION, BARRIER DETAILS AND ADDITIONAL NOTES AND DETAILS SEE SHEET 138 OF 175.
4. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
5. FOR LIGHT POLE PILASTER LOCATIONS, SEE SHEET 138 OF 175.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

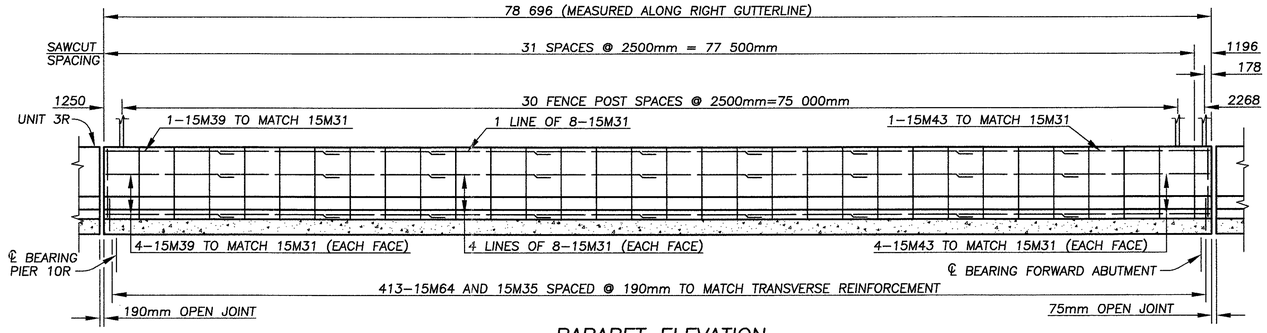
\24621\techprod\drawings\bridge\Barrier2

DESIGN AGENCY
HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724

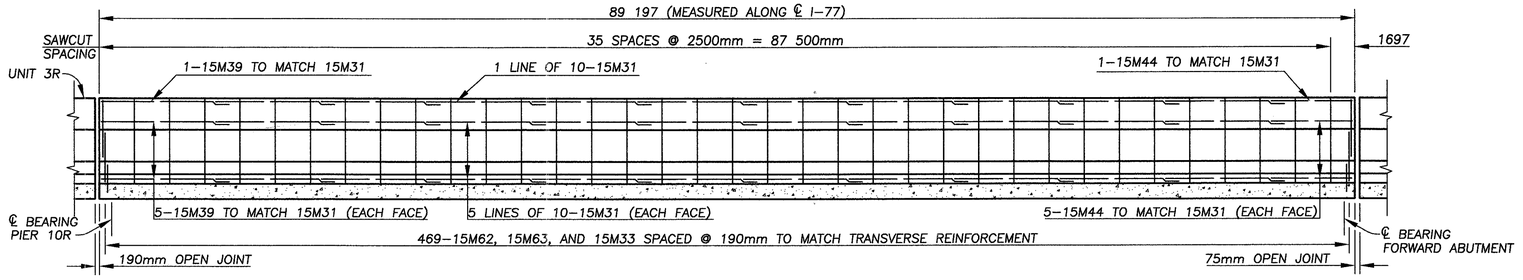
DESIGNED	DRAWN	REVIEWED	DATE
GLC	GLC	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

BARRIER DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458



PARAPET ELEVATION
UNIT 4R



MEDIAN ELEVATION
UNIT 4R

NOTES:

1. ALL REINFORCING BARS SHALL BE PREFIXED ES.
2. FOR DECK SLAB DETAILS OF UNIT 4R SEE SHEET 134 OF 175.
3. FOR TYPICAL CROSS SECTION, BARRIER DETAILS AND ADDITIONAL NOTES AND DETAILS SEE SHEET 138 OF 175.
4. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
5. FOR LIGHT POLE PILASTER LOCATIONS, SEE SHEET 138 OF 175.

metric units

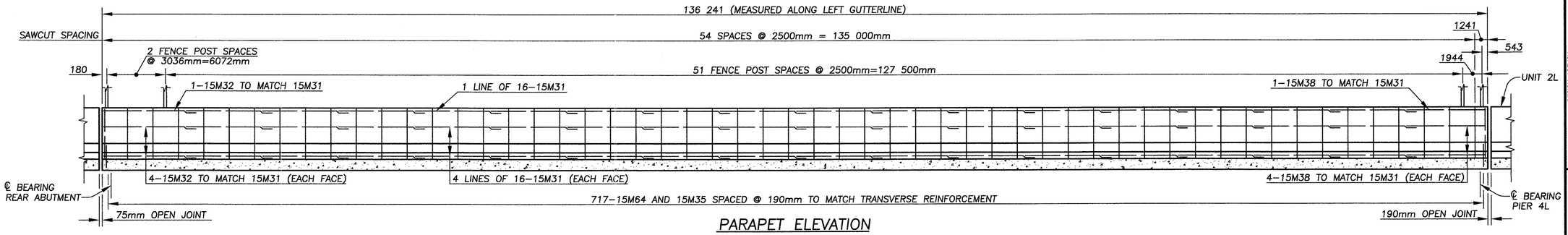
DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street, Suite 1724
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED GLG
DRAWN GLG
CHECKED TJM
REVISED
DATE 09-12-97
REVIEWED RER
STRUCTURE FILE NUMBER 1806726

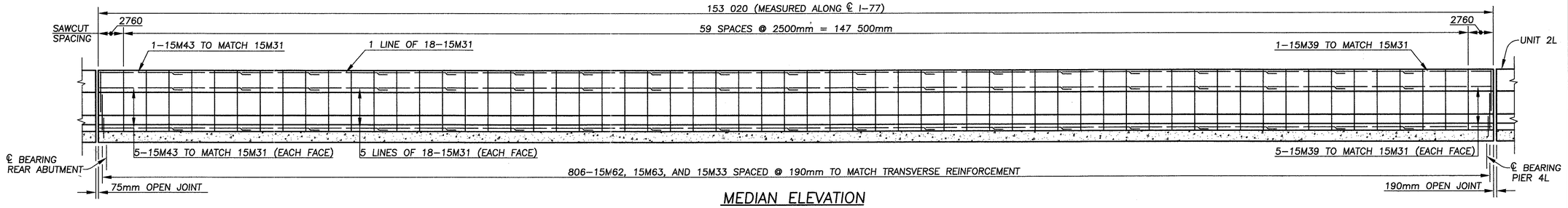
BARRIER DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

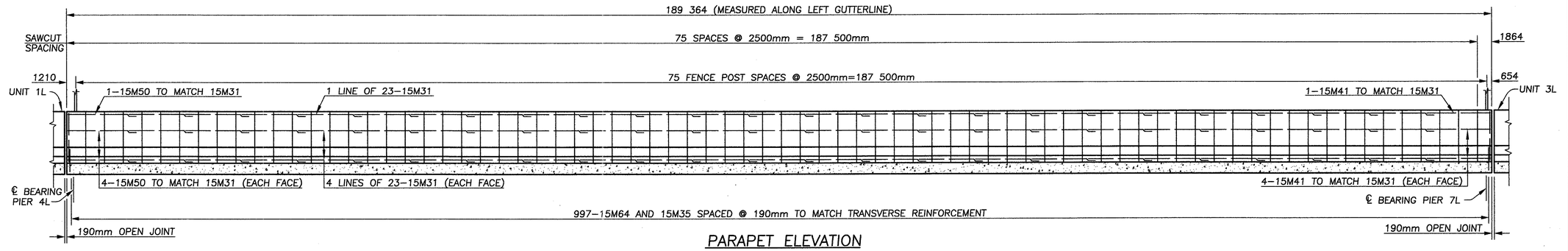
\24621\techprod\drawings\bridge\Barrier3



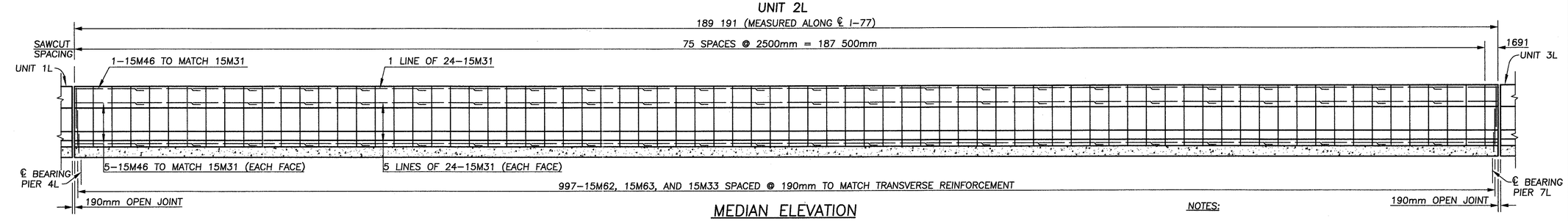
PARAPET ELEVATION
UNIT 1L



MEDIAN ELEVATION
UNIT 1L



PARAPET ELEVATION
UNIT 2L



MEDIAN ELEVATION
UNIT 2L

NOTES:

1. ALL REINFORCING BARS SHALL BE PREFIXED ES.
2. FOR DECK SLAB DETAILS OF UNIT 1L SEE SHEET 135 AND 136 OF 175. FOR DECK SLAB DETAILS OF UNIT 2L SEE SHEET 137 OF 175.
3. FOR TYPICAL CROSS SECTION, BARRIER DETAILS AND ADDITIONAL NOTES AND DETAILS SEE SHEET 138 OF 175.
4. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
5. FOR LIGHT POLE PILASTER LOCATIONS, SEE SHEET 138 OF 175.

metric units

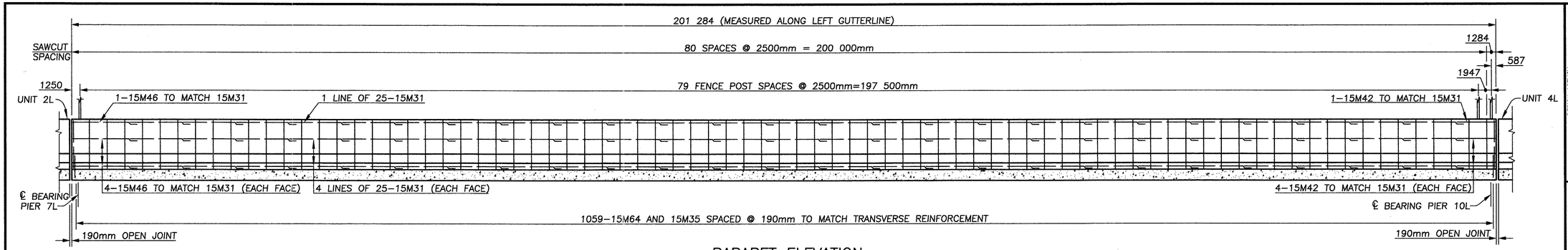
\24621\techprod\drawings\bridge\Barrier4

DESIGN AGENCY
HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724

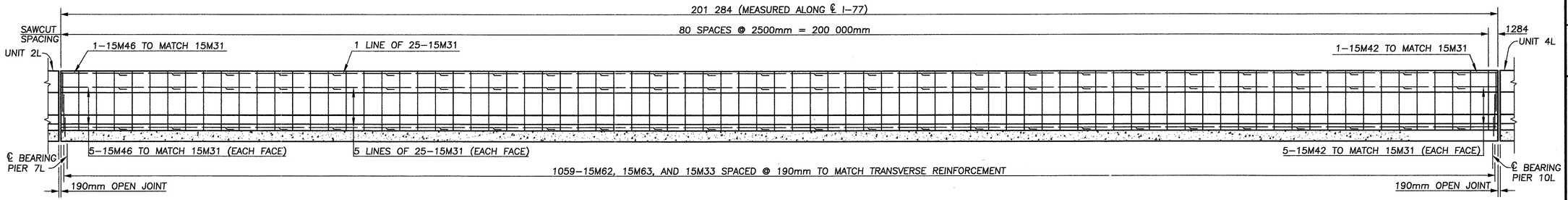
DESIGNED	DRAWN	REVIEWED	DATE
GLG	GLG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

BARRIER DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

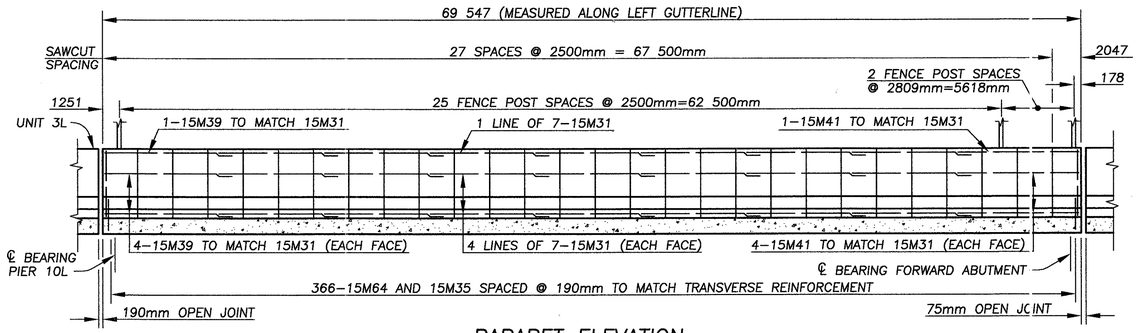
CUY-77-23.458



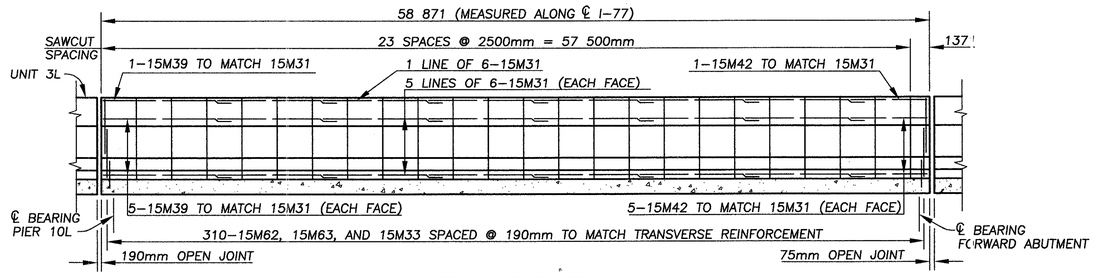
PARAPET ELEVATION
UNIT 3L



MEDIAN ELEVATION
UNIT 3L



PARAPET ELEVATION
UNIT 4L



MEDIAN ELEVATION
UNIT 4L

NOTES:

1. ALL REINFORCING BARS SHALL BE PREFIXED ES.
2. FOR DECK SLAB DETAILS OF UNIT 3L SEE SHEET 138 OF 175. FOR DECK SLAB DETAILS OF UNIT 4L SEE SHEET 134 OF 175 .
3. FOR TYPICAL CROSS SECTION, BARRIER DETAILS AND ADDITIONAL NOTES AND DETAILS SEE SHEET 138 OF 175.
4. FOR REINFORCEMENT SCHEDULE SEE SHEET 175 OF 175.
5. FOR LIGHT POLE PILASTER LOCATIONS, SEE SHEET 138 OF 175.

DESIGN AGENCY
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DESIGNED GLG
DRAWN GLG
CHECKED TJM
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DATE REVISED 09-12-97
STRUCTURE FILE NUMBER 1806726

BARRIER DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

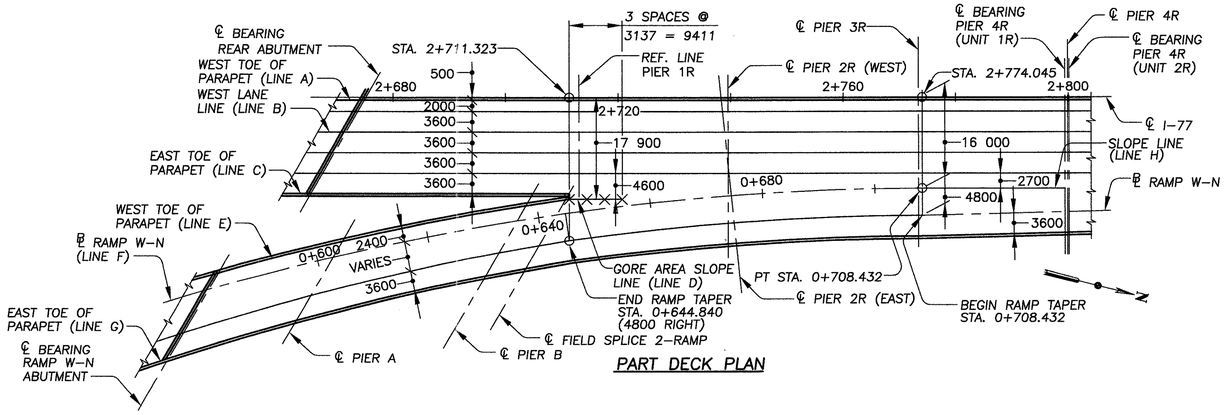
CUY-77-23.458

143/175

247/295

\24621\techprod\drawings\bridge\Barrier5

metric units



PART DECK PLAN

NOTES:

IN LINE B THE DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE USED TO DETERMINE THE SCREED ELEVATIONS ARE INTERPOLATED VALUES FROM THE REAR ABUTMENT TO PIER 1R.

IN LINE D THE DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE USED TO DETERMINE THE SCREED ELEVATIONS ARE INTERPOLATED VALUES.

IN LINE E THE DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE USED TO DETERMINE THE SCREED ELEVATIONS ARE INTERPOLATED VALUES FROM PIER B TO FIELD SPLICE 2–RAMP.

IN LINE F THE DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE USED TO DETERMINE THE SCREED ELEVATIONS ARE INTERPOLATED VALUES.

SCREED ELEVATIONS						
	℄ GIRDER 1R–A	℄ GIRDER 1R–B	℄ GIRDER 1R–C	℄ GIRDER 1R–D	℄ GIRDER 1R–E	℄ GIRDER 1R–F
℄ BEARING REAR ABUT.	208.616	208.654	208.654	208.591	208.529	208.468
0.1	208.664	208.709	208.714	208.653	208.596	208.528
0.2	208.712	208.765	208.773	208.715	208.663	208.589
0.3	208.761	208.818	208.830	208.774	208.725	208.648
0.4	208.808	208.869	208.884	208.830	208.783	208.704
0.5	208.854	208.917	208.932	208.879	208.834	208.756
0.6	208.900	208.962	208.977	208.924	208.879	208.805
0.7	208.945	209.005	209.020	208.967	208.920	208.851
0.8	208.991	209.048	209.062	209.009	208.960	208.897
0.9	209.041	209.094	209.108	209.055	209.005	208.948
REF. LINE PIER 1R	209.096	209.147	209.160	209.109	209.058	209.006
0.1	209.138	209.188	209.199	209.146	209.094	209.045
0.2	209.185	209.232	209.242	209.189	209.135	209.088
0.3	209.233	209.279	209.289	209.234	209.180	209.135
0.4	209.285	209.330	209.340	209.284	209.230	209.187
0.5	209.340	209.385	209.395	209.338	209.286	209.244
0.6	209.397	209.443	209.453	209.398	209.346	209.304
0.7	209.458	209.504	209.515	209.459	209.409	209.367
0.8	209.519	209.567	209.578	209.525	209.476	209.434
0.9	209.584	209.633	209.646	209.594	209.546	209.503
℄ PIER 2R (W)	209.653	209.704	209.717	209.666		
℄ PIER 2R (E)					209.620	209.577
0.1	209.747	209.802	209.814	209.764	209.719	209.672
0.2	209.844	209.902	209.915	209.866	209.819	209.767
0.3	209.939	210.000	210.013	209.964	209.917	209.855
0.4	210.031	210.093	210.107	210.057	210.009	209.939
0.5	210.118	210.179	210.194	210.143	210.095	210.020
0.6	210.200	210.260	210.274	210.223	210.174	210.098
0.7	210.277	210.335	210.349	210.298	210.249	210.173
0.8	210.354	210.409	210.422	210.372	210.321	210.247
0.9	210.432	210.484	210.497	210.447	210.396	210.324
℄ PIER 3R	210.512	210.563	210.576	210.525	210.473	210.406
0.1	210.577	210.627	210.640	210.589	210.538	210.474
0.2	210.644	210.695	210.707	210.656	210.605	210.545
0.3	210.713	210.765	210.777	210.725	210.674	210.618
0.4	210.783	210.836	210.848	210.796	210.745	210.691
0.5	210.852	210.905	210.918	210.867	210.815	210.763
0.6	210.920	210.974	210.986	210.935	210.884	210.833
0.7	210.986	211.040	211.052	211.001	210.950	210.900
0.8	211.051	211.104	211.117	211.064	211.013	210.964
0.9	211.113	211.165	211.178	211.127	211.075	211.025
℄ BRG. PIER 4R (UNIT 1R)	211.174	211.225	211.238	211.187	211.136	211.084

SCREED ELEVATIONS						
	℄ GIRDER 1R–G	℄ GIRDER 1R–H	℄ GIRDER 1R–I	℄ GIRDER 1R–J	℄ GIRDER 1R–K	
℄ BEARING RAMP W–N ABUT.	207.037	206.800	206.571	206.354	206.194	
0.1	207.129	206.889	206.657	206.436	206.277	
0.2	207.220	206.977	206.741	206.516	206.358	
0.3	207.311	207.063	206.824	206.594	206.439	
0.4	207.398	207.147	206.903	206.670	206.516	
0.5	207.481	207.228	206.980	206.743	206.591	
0.6	207.562	207.308	207.055	206.814	206.664	
0.7	207.642	207.388	207.129	206.884	206.735	
0.8	207.717	207.465	207.206	206.950	206.803	
0.9	207.785	207.535	207.279	207.020	206.863	
℄ PIER A	207.855	207.607	207.354	207.098	206.936	
0.1	207.959	207.717	207.468	207.216	207.052	
0.2	208.062	207.828	207.582	207.336	207.168	
0.3	208.166	207.939	207.697	207.455	207.284	
0.4	208.266	208.046	207.808	207.569	207.397	
0.5	208.362	208.147	207.913	207.678	207.507	
0.6	208.453	208.244	208.013	207.784	207.614	
0.7	208.540	208.335	208.110	207.887	207.721	
0.8	208.627	208.423	208.205	207.988	207.827	
0.9	208.716	208.514	208.303	208.092	207.937	
℄ PIER B	208.800	208.607	208.404	208.200	208.050	
0.1	208.891	208.721	208.533	208.343	208.202	
0.2	208.984	208.835	208.660	208.485	208.351	
0.3	209.059	208.923	208.770	208.609	208.481	
0.4	209.135	209.007	208.874	208.726	208.602	
0.5	209.210	209.084	208.968	208.833	208.712	
0.6	209.287	209.153	209.052	208.926	208.810	
0.7	209.359	209.223	209.133	209.012	208.898	
0.8	209.424	209.296	209.214	209.099	208.988	
0.9	209.479	209.375	209.296	209.187	209.079	
℄ PIER 2R (E)	209.535	209.464	209.381	209.276	209.171	
0.1		209.550	209.461	209.354	209.248	
0.2		209.642	209.545	209.438	209.329	
0.3		209.735	209.633	209.524	209.413	
0.4		209.832	209.723	209.615	209.504	
0.5		209.931	209.824	209.722	209.615	
0.6		210.027	209.922	209.827	209.727	
0.7		210.120	210.020	209.932	209.837	
0.8		210.207	210.118	210.034	209.948	
0.9		210.291	210.214	210.136	210.056	
℄ PIER 3R		210.372	210.311	210.239	210.166	
0.1			210.392	210.324	210.257	
0.2			210.474	210.410	210.347	
0.3			210.556	210.496	210.438	
0.4			210.636	210.580	210.527	
0.5			210.714	210.662	210.613	
0.6			210.788	210.742	210.696	
0.7			210.861	210.818	210.777	
0.8			210.929	210.891	210.854	
0.9			210.992	210.958	210.923	
℄ BRG. PIER 4R (UNIT 1R)			211.050	211.016	210.982	

SCREED ELEVATIONS			
	LINE A	LINE B	LINE C
℄ BEARING REAR ABUT.	208.611	208.678	208.468
0.1	208.659	208.736	208.528
0.2	208.707	208.794	208.589
0.3	208.756	208.850	208.648
0.4	208.803	208.903	208.704
0.5	208.849	208.951	208.756
0.6	208.895	208.996	208.805
0.7	208.939	209.038	208.851
0.8	208.986	209.080	208.897
0.9	209.035	209.127	208.948
REF. LINE PIER 1R	209.090	209.179	209.006
0.1	209.132	209.219	
0.2	209.178	209.261	
0.3	209.226	209.308	
0.4	209.278	209.359	
0.5	209.333	209.414	
0.6	209.391	209.472	
0.7	209.451	209.534	
0.8	209.513	209.597	
0.9	209.578	209.665	
℄ PIER 2R (W)	209.647	209.736	
0.1	209.741	209.834	
0.2	209.838	209.935	
0.3	209.933	210.033	
0.4	210.024	210.126	
0.5	210.111	210.213	
0.6	210.193	210.293	
0.7	210.270	210.368	
0.8	210.347	210.441	
0.9	210.425	210.516	
℄ PIER 3R	210.505	210.595	
0.1	210.571	210.659	
0.2	210.638	210.726	
0.3	210.707	210.797	
0.4	210.776	210.867	
0.5	210.846	210.937	
0.6	210.914	211.005	
0.7	210.980	211.072	
0.8	211.044	211.136	
0.9	211.106	211.197	
℄ BRG. PIER 4R (UNIT 1R)	211.168	211.257	

SCREED ELEVATIONS	
	*LINE D
STA 2+711.323	209.001
STA 2+714.460	209.063
STA 2+717.597	209.125
STA 2+720.734	209.189

*OFFSET = 17 900mm

SCREED ELEVATIONS	
	LINE E
℄ BEARING RAMP W–N ABUT.	207.074
0.1	207.165
0.2	207.254
0.3	207.342
0.4	207.426
0.5	207.505
0.6	207.580
0.7	207.655
0.8	207.727
0.9	207.800
℄ PIER A	207.873
0.1	207.983
0.2	208.091
0.3	208.198
0.4	208.300
0.5	208.397
0.6	208.487
0.7	208.574
0.8	208.658
0.9	208.743
℄ PIER B	208.819
0.25	208.860
0.50	208.900
0.75	208.942
℄ FIELD SPLICE 2–RAMP	208.983

SCREED ELEVATIONS	
	LINE H
℄ PIER 3R	210.437
0.1	210.503
0.2	210.572
0.3	210.643
0.4	210.713
0.5	210.784
0.6	210.852
0.7	210.917
0.8	210.979
0.9	211.040
℄ BRG. PIER 4R (UNIT 1R)	211.099

SCREED ELEVATIONS		
	LINE F	LINE G
℄ BEARING RAMP W–N ABUT.	206.881	206.162
0.1	206.971	206.244
0.2	207.057	206.326
0.3	207.143	206.406
0.4	207.226	206.483
0.5	207.305	206.556
0.6	207.381	206.627
0.7	207.458	206.695
0.8	207.532	206.762
0.9	207.605	206.827
℄ PIER A	207.681	206.903
0.1	207.794	207.026
0.2	207.906	207.149
0.3	208.017	207.269
0.4	208.122	207.385
0.5	208.222	207.497
0.6	208.316	207.605
0.7	208.403	207.711
0.8	208.488	207.816
0.9	208.573	207.921
℄ PIER B	208.660	208.030
0.1	208.764	208.174
0.2	208.868	208.320
0.3	208.974	208.461
0.4	209.074	208.590
0.5	209.168	208.701
0.6	209.254	208.799
0.7	209.338	208.884
0.8	209.423	208.969
0.9	209.490	209.059
℄ PIER 2R (E)	209.572	209.158
0.1	209.671	209.239
0.2	209.772	209.323
0.3	209.870	209.409
0.4	209.962	209.500
0.5	210.050	209.610
0.6	210.131	209.720
0.7	210.208	209.828
0.8	210.281	209.936
0.9	210.358	210.043
℄ PIER 3R	210.436	210.152
0.1		210.243
0.2		210.334
0.3		210.425
0.4		210.515
0.5		210.602
0.6		210.687
0.7		210.769
0.8		210.847
0.9		210.916
℄ BRG. PIER 4R (UNIT 1R)		210.975

NOTES:

THE SCREED ELEVATIONS HAVE BEEN ADJUSTED FOR DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE AND ARE THE TOP OF DECK ELEVATIONS REQUIRED BEFORE THE CONCRETE DECK IS PLACED.

ALL SCREED ELEVATIONS ARE IN METERS.

FOR SUBSTRUCTURE STATIONS, SEE SHEET 3 OF 175.
FOR I–77 PROFILE, SEE SHEET 2 OF 175.
FOR RAMP W–N PROFILE, SEE SHEET 1 OF 175.
FOR LOCATION OF GIRDERS, SEE SHEETS 77 TO 79 OF 175.
FOR RAMP W–N HORIZONTAL CURVE DATA, SEE SHEET 1 OF 175.
FOR SUPERELEVATION TRANSITION DIAGRAM, SEE SHEET 146 OF 175.

metric units

DESIGN AGENCY
HNTB
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1375 East 9th Street
Cleveland, Ohio 44114–1724
ARCHITECTS ENGINEERS PLANNERS

DATE 09–12–97
REVIEWED RER
STRUCTURE FILE NUMBER 1806726
DRAWN JLV
REVISED
DESIGNED JLV
CHECKED NDH

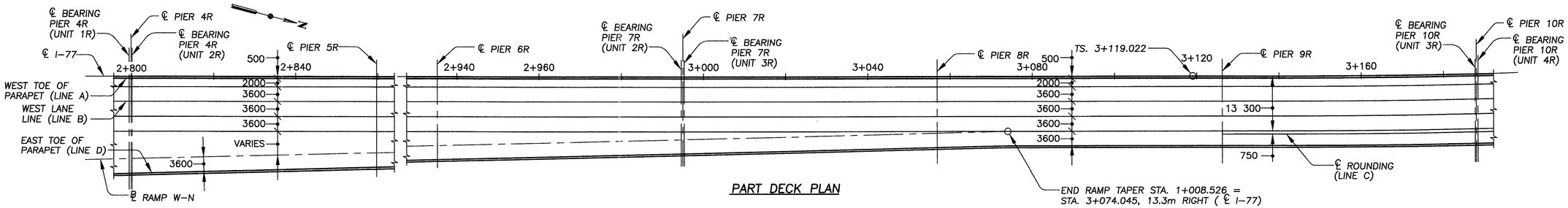
SCREED ELEVATIONS – UNIT 1R
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

144/175
248/295

\24621\techprod\drawings\bridge\SE1R.DWG

metric units



PART DECK PLAN

SCREED ELEVATIONS								
	℄ GIRDER 2R–A	℄ GIRDER 2R–B	℄ GIRDER 2R–C	℄ GIRDER 2R–D	℄ GIRDER 2R–E	℄ GIRDER 2R–F	℄ GIRDER 2R–G	℄ GIRDER 2R–H
℄ BRG. PIER 4R (UNIT 2R)	211.193	211.244	211.255	211.204	211.153	211.102	211.051	211.000
0.1	211.367	211.423	211.435	211.384	211.332	211.281	211.224	211.178
0.2	211.536	211.598	211.609	211.558	211.507	211.457	211.395	211.351
0.3	211.701	211.764	211.775	211.724	211.673	211.623	211.556	211.519
0.4	211.856	211.920	211.932	211.881	211.829	211.780	211.710	211.679
0.5	212.004	212.067	212.078	212.027	211.976	211.927	211.856	211.830
0.6	212.145	212.205	212.217	212.165	212.114	212.065	211.995	211.974
0.7	212.281	212.339	212.351	212.300	212.248	212.199	212.131	212.114
0.8	212.419	212.473	212.484	212.433	212.382	212.332	212.269	212.252
0.9	212.559	212.611	212.623	212.571	212.520	212.470	212.413	212.393
℄ PIER 5R	212.706	212.757	212.769	212.718	212.667	212.615	212.564	212.537
0.1	212.904	212.956	212.967	212.916	212.865	212.814	212.772	212.731
0.2	213.111	213.167	213.178	213.127	213.076	213.025	212.991	212.932
0.3	213.321	213.381	213.393	213.342	213.290	213.240	213.219	213.136
0.4	213.528	213.591	213.603	213.552	213.501	213.450	213.444	213.340
0.5	213.726	213.791	213.802	213.751	213.700	213.649	213.658	213.538
0.6	213.906	213.969	213.981	213.930	213.879	213.829	213.852	213.724
0.7	214.069	214.129	214.140	214.089	214.038	213.990	214.022	213.897
0.8	214.220	214.275	214.286	214.235	214.184	214.136	214.167	214.059
0.9	214.365	214.417	214.429	214.378	214.326	214.276	214.289	214.215
℄ PIER 6R	214.512	214.563	214.575	214.524	214.472	214.421	214.394	214.373
0.1	214.629	214.682	214.693	214.642	214.591	214.540		214.499
0.2	214.749	214.803	214.814	214.763	214.712	214.661		214.624
0.3	214.867	214.924	214.935	214.884	214.833	214.781		214.745
0.4	214.978	215.039	215.051	215.000	214.948	214.895		214.859
0.5	215.082	215.145	215.156	215.105	215.054	214.999		214.963
0.6	215.172	215.236	215.247	215.196	215.145	215.089		215.053
0.7	215.250	215.313	215.324	215.273	215.222	215.166		215.132
0.8	215.314	215.375	215.386	215.335	215.284	215.229		215.197
0.9	215.367	215.423	215.435	215.383	215.332	215.278		215.251
℄ BRG. PIER 7R (UNIT 2R)	215.410	215.461	215.473	215.422	215.370	215.319		215.295

SCREED ELEVATIONS			
	LINE A	LINE B	LINE D
℄ BRG. PIER 4R (UNIT 2R)	211.186	211.275	210.993
0.1	211.360	211.455	211.171
0.2	211.529	211.629	211.344
0.3	211.694	211.795	211.512
0.4	211.849	211.952	211.672
0.5	211.996	212.098	211.823
0.6	212.138	212.236	211.967
0.7	212.274	212.371	212.107
0.8	212.412	212.504	212.245
0.9	212.552	212.642	212.386
℄ PIER 5R	212.699	212.789	212.530
0.1	212.896	212.987	212.724
0.2	213.104	213.198	212.925
0.3	213.314	213.413	213.129
0.4	213.521	213.623	213.333
0.5	213.719	213.822	213.531
0.6	213.899	214.001	213.717
0.7	214.062	214.160	213.890
0.8	214.213	214.306	214.052
0.9	214.358	214.449	214.208
℄ PIER 6R	214.505	214.595	214.366
0.1	214.622	214.713	214.492
0.2	214.742	214.834	214.617
0.3	214.859	214.955	214.738
0.4	214.971	215.071	214.852
0.5	215.075	215.176	214.956
0.6	215.165	215.267	215.046
0.7	215.243	215.344	215.125
0.8	215.307	215.406	215.190
0.9	215.360	215.454	215.243
℄ BRG. PIER 7R (UNIT 2R)	215.403	215.493	215.288

SCREED ELEVATIONS							
	℄ GIRDER 3R–A	℄ GIRDER 3R–B	℄ GIRDER 3R–C	℄ GIRDER 3R–D	℄ GIRDER 3R–E	℄ GIRDER 3R–F	℄ GIRDER 3R–G
℄ BRG. PIER 7R (UNIT 3R)	215.418	215.469	215.480	215.429	215.378	215.329	215.303
0.1	215.509	215.567	215.579	215.528	215.473	215.442	215.389
0.2	215.590	215.654	215.666	215.614	215.558	215.542	215.466
0.3	215.658	215.724	215.736	215.685	215.627	215.628	215.531
0.4	215.710	215.779	215.790	215.739	215.681	215.695	215.583
0.5	215.748	215.816	215.827	215.776	215.717	215.744	215.623
0.6	215.771	215.836	215.847	215.796	215.738	215.774	215.651
0.7	215.782	215.844	215.855	215.804	215.748	215.784	215.669
0.8	215.786	215.844	215.855	215.804	215.749	215.778	215.680
0.9	215.787	215.841	215.852	215.801	215.748	215.756	215.689
℄ PIER 8R	215.789	215.840	215.851	215.800	215.749	215.724	215.698
0.1	215.793	215.843	215.855	215.803	215.755		215.711
0.2	215.798	215.850	215.861	215.810	215.765		215.723
0.3	215.801	215.854	215.865	215.814	215.770		215.728
0.4	215.794	215.850	215.861	215.810	215.765		215.722
0.5	215.775	215.831	215.842	215.791	215.747		215.702
0.6	215.742	215.797	215.809	215.758	215.712		215.668
0.7	215.698	215.751	215.762	215.711	215.664		215.620
0.8	215.644	215.695	215.707	215.656	215.607		215.565
0.9	215.588	215.638	215.649	215.598	215.548		215.506
℄ PIER 9R	215.532	215.583	215.594	215.543	215.492		215.448
0.1	215.484	215.539	215.550	215.499	215.447		215.400
0.2	215.439	215.497	215.509	215.460	215.409		215.357
0.3	215.389	215.451	215.466	215.426	215.384		215.329
0.4	215.332	215.399	215.418	215.386	215.351		215.293
0.5	215.263	215.331	215.355	215.332	215.305		215.246
0.6	215.179	215.249	215.276	215.261	215.244		215.185
0.7	215.081	215.150	215.180	215.174	215.165		215.109
0.8	214.969	215.034	215.067	215.070	215.069		215.019
0.9	214.843	214.901	214.938	214.949	214.959		214.915
℄ BRG. PIER 10R (UNIT 3R)	214.706	214.759	214.798	214.818	214.838		214.800

SCREED ELEVATIONS					
	LINE A	LINE B	LINE C	LINE D	
℄ BRG. PIER 7R (UNIT 3R)	215.411	215.500		215.296	
0.1	215.502	215.599		215.382	
0.2	215.583	215.686		215.459	
0.3	215.651	215.756		215.524	
0.4	215.703	215.810		215.576	
0.5	215.740	215.847		215.616	
0.6	215.764	215.867		215.644	
0.7	215.775	215.875		215.662	
0.8	215.779	215.875		215.673	
0.9	215.780	215.872		215.682	
℄ PIER 8R	215.781	215.871		215.691	
0.1	215.786	215.875		215.704	
0.2	215.791	215.881		215.716	
0.3	215.793	215.885		215.721	
0.4	215.787	215.881		215.715	
0.5	215.768	215.862		215.695	
0.6	215.735	215.829		215.661	
0.7	215.691	215.782		215.614	
0.8	215.637	215.727		215.558	
0.9	215.580	215.669		215.499	
℄ PIER 9R	215.525	215.614	215.487	215.441	
0.1	215.477	215.570	215.442	215.393	
0.2	215.431	215.528	215.404	215.351	
0.3	215.382	215.482	215.380	215.323	
0.4	215.325	215.430	215.348	215.286	
0.5	215.257	215.364	215.303	215.238	
0.6	215.173	215.281	215.242	215.178	
0.7	215.075	215.183	215.165	215.101	
0.8	214.962	215.066	215.070	215.012	
0.9	214.836	214.933	214.960	214.908	
℄ BRG. PIER 10R (UNIT 3R)	214.698	214.790	214.840	214.795	

NOTES:

THE SCREED ELEVATIONS HAVE BEEN ADJUSTED FOR DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE AND ARE THE TOP OF DECK ELEVATIONS REQUIRED BEFORE THE CONCRETE DECK IS PLACED.

ALL SCREED ELEVATIONS ARE IN METERS.

FOR SUBSTRUCTURE STATIONS, SEE SHEET 3 OF 175.
FOR I–77 PROFILE, SEE SHEET 2 OF 175.
FOR LOCATION OF GIRDERS, SEE SHEET 80 AND 81 OF 175.
FOR I–77 HORIZONTAL CURVE DATA, SEE SHEET 2 OF 175.
FOR SUPERELEVATION TRANSITION DIAGRAM, SEE SHEET 146 OF 175.

DESIGN AGENCY
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1375 East 9th Street, Suite 1500
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ARCHITECTS ENGINEERS PLANNERS

DESIGNED JLV
DRAWN JLV
CHECKED NDH
REVIEWED RER
DATE 09-12-97
REVISED
STRUCTURE FILE NUMBER 1806726

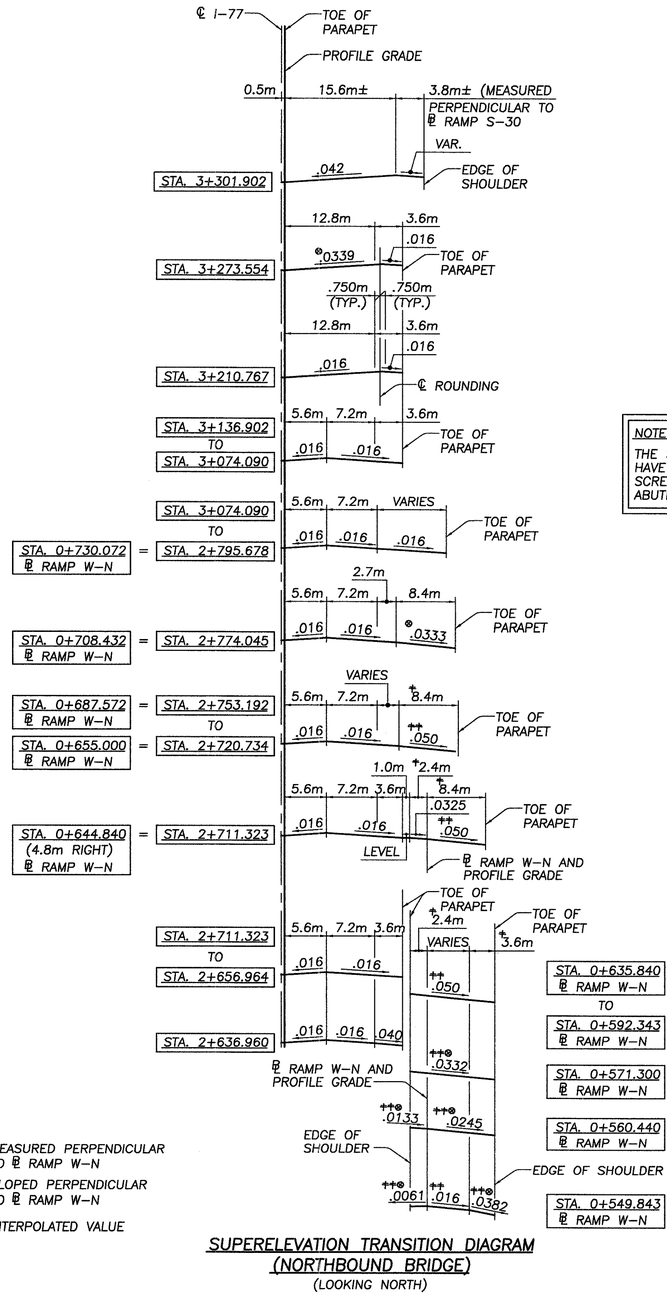
SCREED ELEVATIONS – UNITS 2R AND 3R
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

145/175

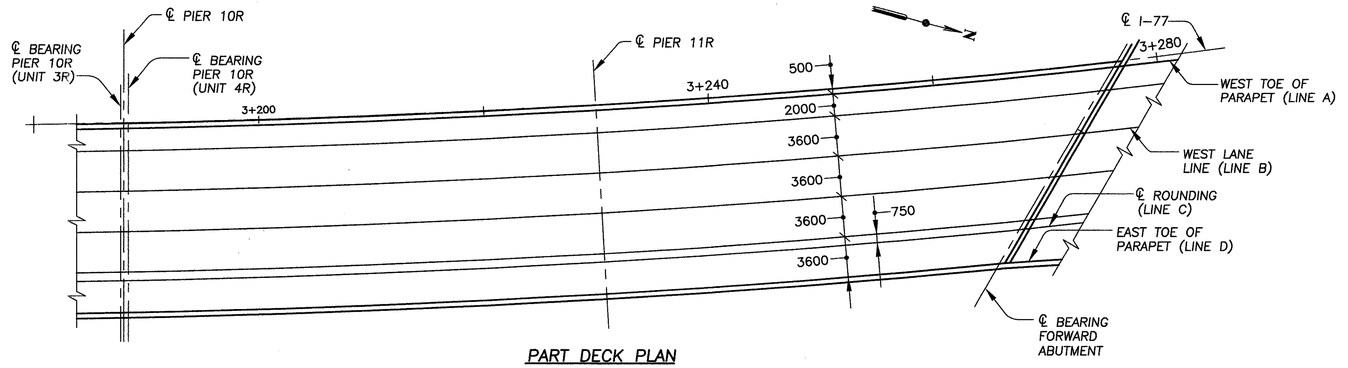
249/295

\24621\techprod\drawings\bridge\SE2R3R.DWG



SUPERELEVATION TRANSITION DIAGRAM (NORTHBOUND BRIDGE)

(LOOKING NORTH)



PART DECK PLAN

NOTE:

THE SCREED ELEVATIONS SHOWN FOR LINE "C" (℄ ROUNDING) HAVE NOT BEEN ADJUSTED FOR ROUNDING. ADJUST THE LINE "C" SCREED ELEVATIONS FROM ℄ PIER 9 TO ℄ BEARING FORWARD ABUTMENT AS REQUIRED TO ACCOMMODATE ROUNDING.

SCREED ELEVATIONS

	℄ GIRDER 4R–A	℄ GIRDER 4R–B	℄ GIRDER 4R–C	℄ GIRDER 4R–D	℄ GIRDER 4R–E	℄ GIRDER 4R–F
℄ BRG. PIER 10R (UNIT 4R)	214.694	214.745	214.785	214.806	214.827	214.787
0.1	214.628	214.685	214.730	214.758	214.785	214.746
0.2	214.557	214.620	214.668	214.703	214.737	214.699
0.3	214.480	214.545	214.597	214.639	214.681	214.643
0.4	214.398	214.464	214.518	214.567	214.615	214.579
0.5	214.310	214.376	214.433	214.488	214.542	214.509
0.6	214.221	214.288	214.346	214.405	214.464	214.435
0.7	214.131	214.197	214.258	214.320	214.382	214.356
0.8	214.040	214.107	214.171	214.234	214.299	214.275
0.9	213.954	214.021	214.087	214.153	214.218	214.197
℄ PIER 11R	213.874	213.941	214.009	214.077	214.144	214.121
0.1	213.791	213.865	213.939	214.012	214.085	214.063
0.2	213.715	213.797	213.873	213.953	214.029	214.006
0.3	213.638	213.729	213.810	213.895	213.977	213.954
0.4	213.559	213.658	213.745	213.836	213.922	213.903
0.5	213.475	213.584	213.676	213.775	213.866	213.853
0.6	213.385	213.503	213.604	213.709	213.808	213.801
0.7	213.288	213.416	213.526	213.640	213.746	213.746
0.8	213.186	213.321	213.442	213.564	213.681	213.688
0.9	213.077	213.221	213.354	213.485	213.613	213.629
℄ BRG. FORWARD ABUTMENT	212.966	213.116	213.263	213.404	213.542	213.567

SCREED ELEVATIONS

	LINE A	LINE B	LINE C	LINE D
℄ BRG. PIER 10R (UNIT 4R)	214.685	214.777	214.829	214.785
0.1	214.621	214.720	214.790	214.742
0.2	214.551	214.657	214.744	214.694
0.3	214.476	214.585	214.689	214.637
0.4	214.394	214.505	214.625	214.573
0.5	214.307	214.419	214.554	214.502
0.6	214.219	214.331	214.477	214.427
0.7	214.128	214.243	214.396	214.348
0.8	214.037	214.155	214.314	214.267
0.9	213.951	214.069	214.234	214.189
℄ PIER 11R	213.869	213.989	214.160	214.114
0.1	213.784	213.916	214.101	214.057
0.2	213.704	213.847	214.045	214.002
0.3	213.628	213.783	213.994	213.951
0.4	213.550	213.718	213.943	213.900
0.5	213.467	213.650	213.891	213.849
0.6	213.377	213.577	213.835	213.797
0.7	213.281	213.497	213.776	213.742
0.8	213.177	213.410	213.713	213.684
0.9	213.066	213.317	213.647	213.625
℄ BRG. FORWARD ABUTMENT	212.951	213.221	213.578	213.564

NOTE:

IN LINE B THE DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE USED TO DETERMINE THE SCREED ELEVATIONS ARE INTERPOLATED VALUES FROM PIER 11R TO THE FORWARD ABUTMENT.

NOTES:

THE SCREED ELEVATIONS HAVE BEEN ADJUSTED FOR DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE AND ARE THE TOP OF DECK ELEVATIONS REQUIRED BEFORE THE CONCRETE DECK IS PLACED.

ALL SCREED ELEVATIONS ARE IN METERS.

FOR SUBSTRUCTURE STATIONS, SEE SHEET 3 OF 175.
FOR I–77 PROFILE, SEE SHEET 2 OF 175.
FOR LOCATION OF GIRDERS, SEE SHEET 82 OF 175.
FOR I–77 HORIZONTAL CURVE DATA, SEE SHEET 2 OF 175.

metric units

DESIGN AGENCY
HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724

DESIGNED	DRAWN	REVIEWED	DATE
JLV	JLV	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
NDH		1806726	

SCREED ELEVATIONS – UNIT 4R
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

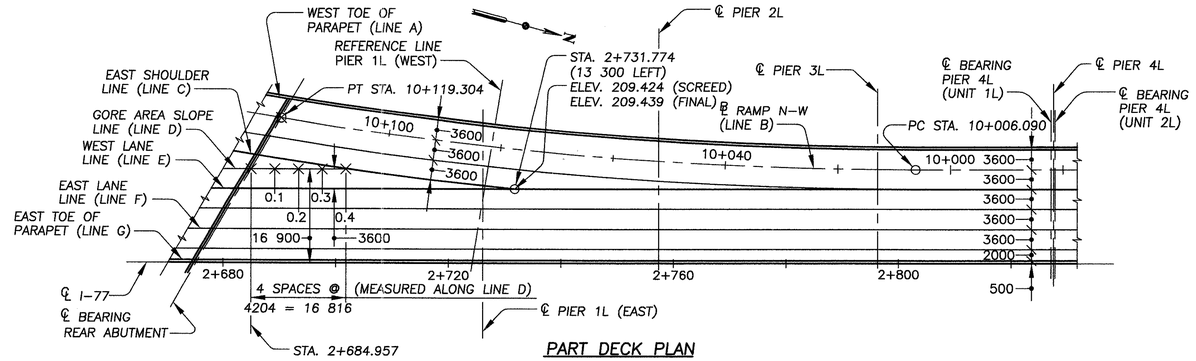
CUY-77-23458

146/175

250/295

\24621\techprod\drawings\bridge\SE4R.DWG

metric units



PART DECK PLAN

*LINE D ELEVATIONS ARE SPACED AS SHOWN IN PART DECK PLAN.

SCREED ELEVATIONS

	℄ GIRDER 1L–A	℄ GIRDER 1L–B	℄ GIRDER 1L–C	℄ GIRDER 1L–D	℄ GIRDER 1L–E	℄ GIRDER 1L–F	℄ GIRDER 1L–G	℄ GIRDER 1L–H	℄ GIRDER 1L–I	℄ GIRDER 1L–J
℄ BEARING REAR ABUT.	208.164	208.230	208.290	208.348	208.508	208.644	208.685	208.720	208.687	208.621
0.1	208.237	208.318	208.380	208.457	208.580	208.718	208.764	208.802	208.774	208.702
0.2	208.309	208.405	208.467	208.559	208.655	208.794	208.843	208.882	208.860	208.783
0.3	208.380	208.489	208.549	208.654	208.730	208.866	208.918	208.960	208.942	208.863
0.4	208.448	208.570	208.628	208.744	208.803	208.935	208.988	209.033	209.019	208.938
0.5	208.514	208.645	208.701	208.823	208.885	209.000	209.054	209.101	209.087	209.007
0.6	208.592	208.723	208.772	208.893	208.953	209.062	209.115	209.162	209.149	209.073
0.7	208.668	208.798	208.842	208.954	209.007	209.120	209.173	209.221	209.206	209.135
0.8	208.739	208.867	208.911	209.009	209.060	209.179	209.230	209.280	209.264	209.199
0.9	208.816	208.935	208.986	209.070	209.123	209.242	209.292	209.342	209.325	209.267
REF. LINE PIER 1L (W)	208.894	209.006	209.066	209.128	209.191	209.313				
℄ PIER 1L (E)							209.364	209.415	209.397	209.346
0.1	208.964	209.068	209.134		209.247	209.370	209.420	209.470	209.451	209.402
0.2	209.039	209.136	209.209		209.312	209.432	209.482	209.530	209.510	209.462
0.3	209.117	209.207	209.287		209.379	209.500	209.550	209.597	209.575	209.528
0.4	209.197	209.281	209.367		209.450	209.573	209.623	209.670	209.648	209.601
0.5	209.283	209.361	209.452		209.527	209.651	209.701	209.748	209.727	209.679
0.6	209.368	209.443	209.536		209.605	209.731	209.782	209.829	209.809	209.761
0.7	209.455	209.527	209.620		209.684	209.812	209.865	209.913	209.892	209.844
0.8	209.541	209.612	209.701		209.762	209.894	209.948	209.996	209.978	209.929
0.9	209.629	209.701	209.780		209.844	209.976	210.033	210.083	210.064	210.015
℄ PIER 2L	209.720	209.795	209.859		209.929	210.062	210.120	210.171	210.154	210.102
0.1	209.842	209.924			210.042	210.177	210.235	210.287	210.270	210.215
0.2	209.960	210.055			210.155	210.293	210.351	210.404	210.388	210.329
0.3	210.076	210.186			210.268	210.407	210.465	210.517	210.502	210.439
0.4	210.189	210.311			210.374	210.514	210.572	210.625	210.610	210.545
0.5	210.298	210.428			210.474	210.614	210.672	210.725	210.708	210.644
0.6	210.405	210.537			210.569	210.706	210.764	210.816	210.800	210.737
0.7	210.510	210.639			210.662	210.793	210.850	210.902	210.885	210.826
0.8	210.616	210.733			210.754	210.877	210.934	210.986	210.968	210.912
0.9	210.720	210.823			210.853	210.962	211.020	211.071	211.053	211.000
℄ PIER 3L	210.843	210.915			210.958	211.054	211.110	211.161	211.143	211.092
0.1	210.948				211.048	211.132	211.187	211.237	211.220	211.168
0.2	211.054				211.139	211.214	211.268	211.319	211.301	211.250
0.3	211.161				211.233	211.300	211.353	211.403	211.385	211.332
0.4	211.274				211.333	211.386	211.438	211.489	211.471	211.416
0.5	211.379				211.429	211.471	211.522	211.573	211.555	211.499
0.6	211.459				211.510	211.553	211.604	211.654	211.636	211.579
0.7	211.535				211.587	211.630	211.681	211.732	211.714	211.658
0.8	211.606				211.658	211.703	211.754	211.806	211.788	211.732
0.9	211.673				211.725	211.774	211.825	211.876	211.858	211.804
℄ BRG. PIER 4L (UNIT 1L)	211.740				211.791	211.842	211.893	211.944	211.927	211.876

SCREED ELEVATIONS

	LINE A	LINE B	LINE C	*LINE D	LINE E	LINE F	LINE G
℄ BEARING REAR ABUT.	208.155	208.228	208.357	208.502	208.654	208.732	208.616
0.1	208.228	208.319	208.480	208.574	208.728	208.815	208.697
0.2	208.300	208.407	208.599	208.649	208.803	208.897	208.778
0.3	208.370	208.492	208.709	208.724	208.875	208.977	208.858
0.4	208.438	208.573	208.815	208.797	208.943	209.051	208.933
0.5	208.502	208.647	208.914		209.007	209.119	209.002
0.6	208.579	208.724	209.000		209.068	209.180	209.068
0.7	208.652	208.797	209.073		209.125	209.239	209.131
0.8	208.725	208.869	209.144		209.184	209.298	209.194
0.9	208.806	208.946	209.223		209.246	209.359	209.263
REF. LINE PIER 1L (W)	208.887	209.026	209.304				
℄ PIER 1L (E)					209.316	209.432	209.342
0.1	208.958	209.098			209.374	209.486	209.398
0.2	209.035	209.176			209.436	209.547	209.458
0.3	209.113	209.258			209.505	209.614	209.524
0.4	209.194	209.342			209.579	209.687	209.597
0.5	209.279	209.432			209.657	209.765	209.675
0.6	209.364	209.522			209.738	209.846	209.757
0.7	209.450	209.611			209.819	209.930	209.840
0.8	209.535	209.695			209.902	210.013	209.925
0.9	209.621	209.779			209.985	210.100	210.011
℄ PIER 2L	209.709	209.860			210.073	210.188	210.098
0.1	209.827	209.986			210.187	210.304	210.211
0.2	209.945	210.113			210.303	210.421	210.325
0.3	210.061	210.236			210.417	210.534	210.435
0.4	210.173	210.353			210.524	210.642	210.541
0.5	210.280	210.461			210.624	210.742	210.640
0.6	210.384	210.561			210.716	210.833	210.733
0.7	210.486	210.657			210.803	210.919	210.822
0.8	210.588	210.749			210.887	211.003	210.908
0.9	210.694	210.848			210.972	211.088	210.996
℄ PIER 3L	210.822	210.951			211.063	211.178	211.088
0.1	210.930	211.043			211.140	211.254	211.164
0.2	211.039	211.134			211.221	211.335	211.246
0.3	211.148	211.229			211.306	211.420	211.328
0.4	211.263	211.331			211.391	211.506	211.412
0.5	211.370	211.427			211.475	211.589	211.495
0.6	211.450	211.508			211.557	211.671	211.575
0.7	211.526	211.584			211.634	211.749	211.654
0.8	211.597	211.656			211.707	211.822	211.728
0.9	211.664	211.723			211.778	211.893	211.800
℄ BRG. PIER 4L (UNIT 1L)	211.731	211.788			211.846	211.961	211.872

NOTES:

IN LINE B THE DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE USED TO DETERMINE THE SCREED ELEVATIONS ARE INTERPOLATED VALUES FROM PIER 1L(W) TO PIER 3L.

IN LINE C THE DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE USED TO DETERMINE THE SCREED ELEVATIONS ARE INTERPOLATED VALUES.

IN LINE F THE DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE USED TO DETERMINE THE SCREED ELEVATIONS ARE INTERPOLATED VALUES FROM THE REAR ABUT. TO PIER 1L(E).

NOTES:

THE SCREED ELEVATIONS HAVE BEEN ADJUSTED FOR DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE AND ARE THE TOP OF DECK ELEVATIONS REQUIRED BEFORE THE CONCRETE DECK IS PLACED.

ALL SCREED ELEVATIONS ARE IN METERS.

FOR SUBSTRUCTURE STATIONS, SEE SHEET 3 OF 175.
FOR I–77 PROFILE, SEE SHEET 2 OF 175.
FOR LOCATION OF GIRDERS, SEE SHEET 83 OF 175.
FOR RAMP N–W HORIZONTAL CURVE DATA, SEE SHEET 1 OF 175.
FOR SUPERELEVATION TRANSITION DIAGRAM, SEE SHEET 149 OF 175.

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

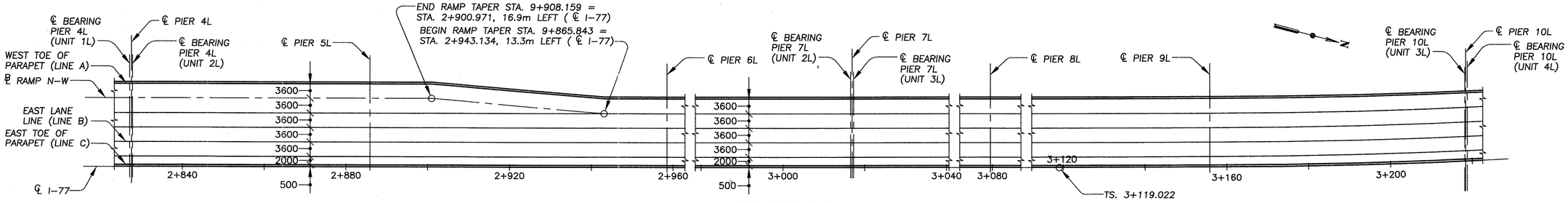
DESIGNED JLV
DRAWN JLV
REVIEWED RER
DATE 09-12-97
CHECKED NDH
REVISED
STRUCTURE FILE NUMBER 1806726

SCREED ELEVATIONS – UNIT 1L
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

\24621\techprod\drawings\bridge\SE1L.DWG

metric units



PART DECK PLAN

SCREED ELEVATIONS							
	℄ GIRDER 2L–A	℄ GIRDER 2L–B	℄ GIRDER 2L–C	℄ GIRDER 2L–D	℄ GIRDER 2L–E	℄ GIRDER 2L–F	℄ GIRDER 2L–G
℄ BRG. PIER 4L (UNIT 2L)	211.757	211.808	211.860	211.911	211.962	211.944	211.893
0.1	211.929	211.970	212.034	212.085	212.136	212.118	212.060
0.2	212.098	212.129	212.205	212.253	212.305	212.287	212.225
0.3	212.260	212.281	212.368	212.415	212.466	212.449	212.383
0.4	212.413	212.428	212.522	212.568	212.619	212.602	212.534
0.5	212.559	212.567	212.667	212.712	212.763	212.745	212.679
0.6	212.697	212.704	212.802	212.849	212.900	212.882	212.819
0.7	212.831	212.840	212.934	212.980	213.032	213.014	212.954
0.8	212.963	212.981	213.064	213.111	213.162	213.145	213.090
0.9	213.096	213.130	213.198	213.246	213.297	213.280	213.227
℄ PIER 5L	213.235	213.286	213.338	213.389	213.440	213.422	213.371
0.1	213.418	213.496	213.525	213.580	213.631	213.613	213.560
0.2	213.609	213.717	213.720	213.779	213.830	213.812	213.756
0.3	213.802	213.939	213.913	213.974	214.025	214.008	213.947
0.4	213.986	214.147	214.094	214.158	214.209	214.192	214.126
0.5	214.157	214.334	214.258	214.324	214.375	214.357	214.290
0.6	214.314	214.493	214.405	214.470	214.521	214.504	214.438
0.7	214.457	214.625	214.535	214.598	214.649	214.632	214.571
0.8	214.593	214.728	214.654	214.715	214.766	214.748	214.691
0.9	214.715	214.806	214.771	214.826	214.877	214.860	214.807
℄ PIER 6L	214.839	214.865	214.891	214.942	214.993	214.975	214.924
0.1	214.939		214.990	215.039	215.090	215.072	215.019
0.2	215.039		215.092	215.137	215.188	215.171	215.115
0.3	215.135		215.193	215.235	215.286	215.269	215.208
0.4	215.223		215.286	215.327	215.378	215.360	215.297
0.5	215.302		215.367	215.408	215.460	215.442	215.376
0.6	215.370		215.436	215.478	215.529	215.512	215.445
0.7	215.424		215.490	215.534	215.585	215.567	215.501
0.8	215.467		215.529	215.576	215.627	215.609	215.546
0.9	215.498		215.556	215.604	215.655	215.638	215.581
℄ BRG. PIER 7L (UNIT 2L)	215.522		215.573	215.624	215.675	215.658	215.606

SCREED ELEVATIONS			
	LINE A	LINE B	LINE C
℄ BRG. PIER 4L (UNIT 2L)	211.748	211.979	211.889
0.1	211.920	212.153	212.056
0.2	212.089	212.321	212.221
0.3	212.251	212.483	212.379
0.4	212.405	212.636	212.530
0.5	212.550	212.780	212.675
0.6	212.688	212.917	212.815
0.7	212.822	213.048	212.950
0.8	212.954	213.179	213.086
0.9	213.088	213.314	213.223
℄ PIER 5L	213.226	213.457	213.367
0.1	213.410	213.648	213.556
0.2	213.600	213.847	213.752
0.3	213.794	214.042	213.943
0.4	213.980	214.226	214.122
0.5	214.151	214.392	214.286
0.6	214.309	214.538	214.434
0.7	214.454	214.666	214.567
0.8	214.590	214.783	214.687
0.9	214.713	214.894	214.803
℄ PIER 6L	214.837	215.010	214.920
0.1	214.937	215.107	215.015
0.2	215.036	215.205	215.111
0.3	215.132	215.303	215.204
0.4	215.221	215.395	215.293
0.5	215.300	215.476	215.372
0.6	215.367	215.546	215.441
0.7	215.422	215.602	215.497
0.8	215.465	215.644	215.542
0.9	215.495	215.672	215.577
℄ BRG. PIER 7L (UNIT 2L)	215.519	215.692	215.602

SCREED ELEVATIONS						
	℄ GIRDER 3L–A	℄ GIRDER 3L–B	℄ GIRDER 3L–C	℄ GIRDER 3L–D	℄ GIRDER 3L–E	℄ GIRDER 3L–F
℄ BRG. PIER 7L (UNIT 3L)	215.527	215.578	215.629	215.680	215.663	215.612
0.1	215.595	215.655	215.706	215.757	215.740	215.680
0.2	215.653	215.719	215.770	215.821	215.804	215.738
0.3	215.697	215.768	215.819	215.870	215.853	215.784
0.4	215.727	215.800	215.851	215.902	215.884	215.813
0.5	215.744	215.815	215.866	215.918	215.900	215.830
0.6	215.747	215.814	215.865	215.917	215.899	215.833
0.7	215.740	215.802	215.854	215.905	215.887	215.825
0.8	215.727	215.783	215.834	215.885	215.868	215.811
0.9	215.710	215.764	215.815	215.866	215.848	215.795
℄ PIER 8L	215.695	215.747	215.798	215.849	215.831	215.780
0.1	215.679	215.733	215.784	215.835	215.817	215.765
0.2	215.665	215.722	215.773	215.824	215.807	215.752
0.3	215.644	215.709	215.760	215.811	215.793	215.733
0.4	215.613	215.682	215.733	215.784	215.767	215.702
0.5	215.564	215.634	215.685	215.737	215.719	215.654
0.6	215.497	215.565	215.616	215.667	215.650	215.587
0.7	215.412	215.476	215.527	215.578	215.561	215.502
0.8	215.303	215.361	215.412	215.464	215.451	215.403
0.9	215.174	215.228	215.279	215.331	215.328	215.300
℄ PIER 9L	215.046	215.098	215.149	215.201	215.209	215.198
0.1	214.945	214.997	215.049	215.101	215.117	215.116
0.2	214.843	214.900	214.952	215.004	215.029	215.037
0.3	214.740	214.802	214.854	214.906	214.940	214.957
0.4	214.627	214.694	214.746	214.799	214.844	214.867
0.5	214.504	214.575	214.629	214.683	214.736	214.768
0.6	214.366	214.444	214.502	214.561	214.619	214.655
0.7	214.215	214.297	214.360	214.423	214.487	214.530
0.8	214.052	214.134	214.203	214.271	214.339	214.392
0.9	213.881	213.963	214.036	214.109	214.182	214.246
℄ BRG. PIER 10L (UNIT 3L)	213.707	213.786	213.864	213.942	214.019	214.097

SCREED ELEVATIONS			
	LINE A	LINE B	LINE C
℄ BRG. PIER 7L (UNIT 3L)	215.524	215.697	215.608
0.1	215.592	215.774	215.676
0.2	215.650	215.838	215.734
0.3	215.694	215.887	215.780
0.4	215.725	215.919	215.809
0.5	215.742	215.934	215.826
0.6	215.745	215.933	215.829
0.7	215.738	215.922	215.821
0.8	215.724	215.902	215.807
0.9	215.708	215.883	215.791
℄ PIER 8L	215.693	215.866	215.776
0.1	215.677	215.852	215.761
0.2	215.662	215.841	215.748
0.3	215.642	215.828	215.729
0.4	215.610	215.801	215.698
0.5	215.562	215.753	215.650
0.6	215.494	215.684	215.583
0.7	215.409	215.595	215.498
0.8	215.300	215.480	215.400
0.9	215.171	215.347	215.298
℄ PIER 9L	215.043	215.217	215.197
0.1	214.940	215.116	215.116
0.2	214.838	215.018	215.037
0.3	214.734	214.919	214.957
0.4	214.622	214.813	214.869
0.5	214.500	214.699	214.771
0.6	214.363	214.580	214.660
0.7	214.213	214.445	214.536
0.8	214.050	214.295	214.398
0.9	213.879	214.134	214.253
℄ BRG. PIER 10L (UNIT 3L)	213.703	213.967	214.103

NOTES:

THE SCREED ELEVATIONS HAVE BEEN ADJUSTED FOR DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE AND ARE THE TOP OF DECK ELEVATIONS REQUIRED BEFORE THE CONCRETE DECK IS PLACED.

ALL SCREED ELEVATIONS ARE IN METERS.

FOR SUBSTRUCTURE STATIONS, SEE SHEET 3 OF 175.
FOR I–77 PROFILE, SEE SHEET 2 OF 175.
FOR LOCATION OF GIRDERS, SEE SHEET 84 AND 85 OF 175.
FOR I–77 HORIZONTAL CURVE DATA, SEE SHEET 2 OF 175.
FOR SUPERELEVATION TRANSITION DIAGRAM, SEE SHEET 149 OF 175.

DESIGN AGENCY
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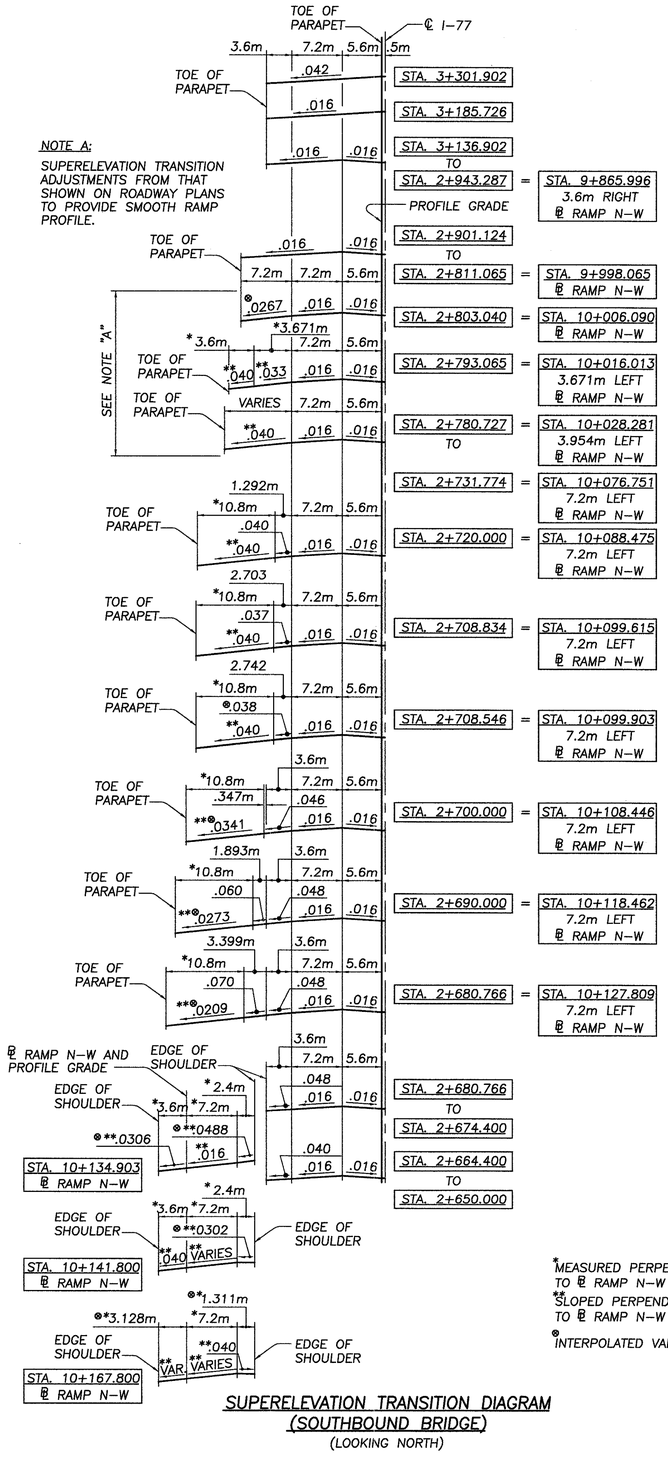
One Cleveland Center
1375 East 9th Street, Suite 1400
Cleveland, Ohio 44114–1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
JLV	JLV	RER	09–12–97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
NDH		1806726	

SCREED ELEVATIONS – UNITS 2L AND 3L
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

\24621\techprod\drawings\bridge\SE2L3L.DWG

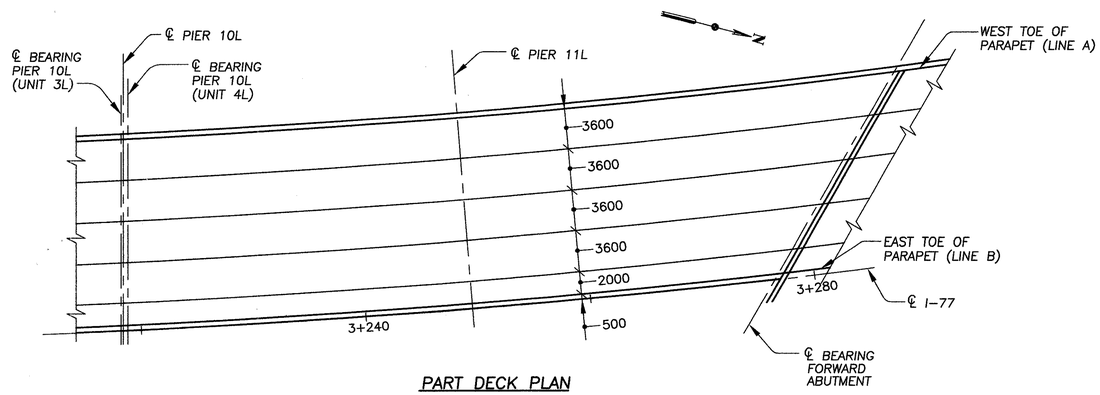


*MEASURED PERPENDICULAR TO ℄ RAMP N-W
**SLOPED PERPENDICULAR TO ℄ RAMP N-W
⊗INTERPOLATED VALUE

SUPERELEVATION TRANSITION DIAGRAM (SOUTHBOUND BRIDGE)

(LOOKING NORTH)

NOTE A:
SUPERELEVATION TRANSITION ADJUSTMENTS FROM THAT SHOWN ON ROADWAY PLANS TO PROVIDE SMOOTH RAMP PROFILE.



PART DECK PLAN

SCREED ELEVATIONS						
	℄ GIRDER 4L-A	℄ GIRDER 4L-B	℄ GIRDER 4L-C	℄ GIRDER 4L-D	℄ GIRDER 4L-E	℄ GIRDER 4L-F
℄ BRG. PIER 10L (UNIT 4L)	213.692	213.771	213.850	213.928	214.007	214.085
0.1	213.624	213.708	213.790	213.873	213.958	214.033
0.2	213.555	213.644	213.729	213.816	213.907	213.980
0.3	213.485	213.577	213.665	213.756	213.851	213.924
0.4	213.413	213.507	213.598	213.692	213.791	213.865
0.5	213.341	213.436	213.529	213.625	213.726	213.802
0.6	213.268	213.364	213.458	213.556	213.656	213.737
0.7	213.196	213.291	213.386	213.485	213.585	213.671
0.8	213.125	213.220	213.316	213.414	213.513	213.603
0.9	213.054	213.150	213.247	213.343	213.440	213.535
℄ PIER 11L	212.986	213.083	213.180	213.276	213.373	213.469
0.1	212.903	213.007	213.109	213.211	213.313	213.413
0.2	212.825	212.938	213.043	213.149	213.256	213.361
0.3	212.748	212.869	212.979	213.091	213.203	213.308
0.4	212.670	212.800	212.914	213.031	213.149	213.257
0.5	212.588	212.727	212.847	212.970	213.094	213.206
0.6	212.499	212.646	212.773	212.904	213.035	213.152
0.7	212.403	212.557	212.694	212.832	212.972	213.097
0.8	212.299	212.461	212.609	212.757	212.905	213.041
0.9	212.190	212.359	212.519	212.678	212.834	212.983
℄ BRG. FORWARD ABUTMENT	212.077	212.254	212.427	212.596	212.762	212.925

SCREED ELEVATIONS		
	LINE A	LINE B
℄ BRG. PIER 10L (UNIT 4L)	213.689	214.091
0.1	213.621	214.040
0.2	213.553	213.988
0.3	213.483	213.933
0.4	213.411	213.874
0.5	213.339	213.811
0.6	213.265	213.746
0.7	213.192	213.679
0.8	213.120	213.611
0.9	213.051	213.545
℄ PIER 11L	212.984	213.481
0.1	212.901	213.426
0.2	212.822	213.375
0.3	212.744	213.323
0.4	212.665	213.273
0.5	212.580	213.222
0.6	212.488	213.168
0.7	212.387	213.113
0.8	212.278	213.055
0.9	212.163	212.997
℄ BRG. FORWARD ABUTMENT	212.042	212.937

NOTES:

THE SCREED ELEVATIONS HAVE BEEN ADJUSTED FOR DEAD LOAD DEFLECTIONS DUE TO THE WEIGHT OF DECK CONCRETE AND ARE THE TOP OF DECK ELEVATIONS REQUIRED BEFORE THE CONCRETE DECK IS PLACED.

ALL SCREED ELEVATIONS ARE IN METERS.

FOR SUBSTRUCTURE STATIONS, SEE SHEET 3 OF 175.
FOR I-77 PROFILE, SEE SHEET 2 OF 175.
FOR LOCATION OF GIRDERS, SEE SHEET 86 OF 175.
FOR I-77 HORIZONTAL CURVE DATA, SEE SHEET 2 OF 175.

metric units

DESIGN AGENCY
HNTB
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1375 East 9th Street, Suite 1444
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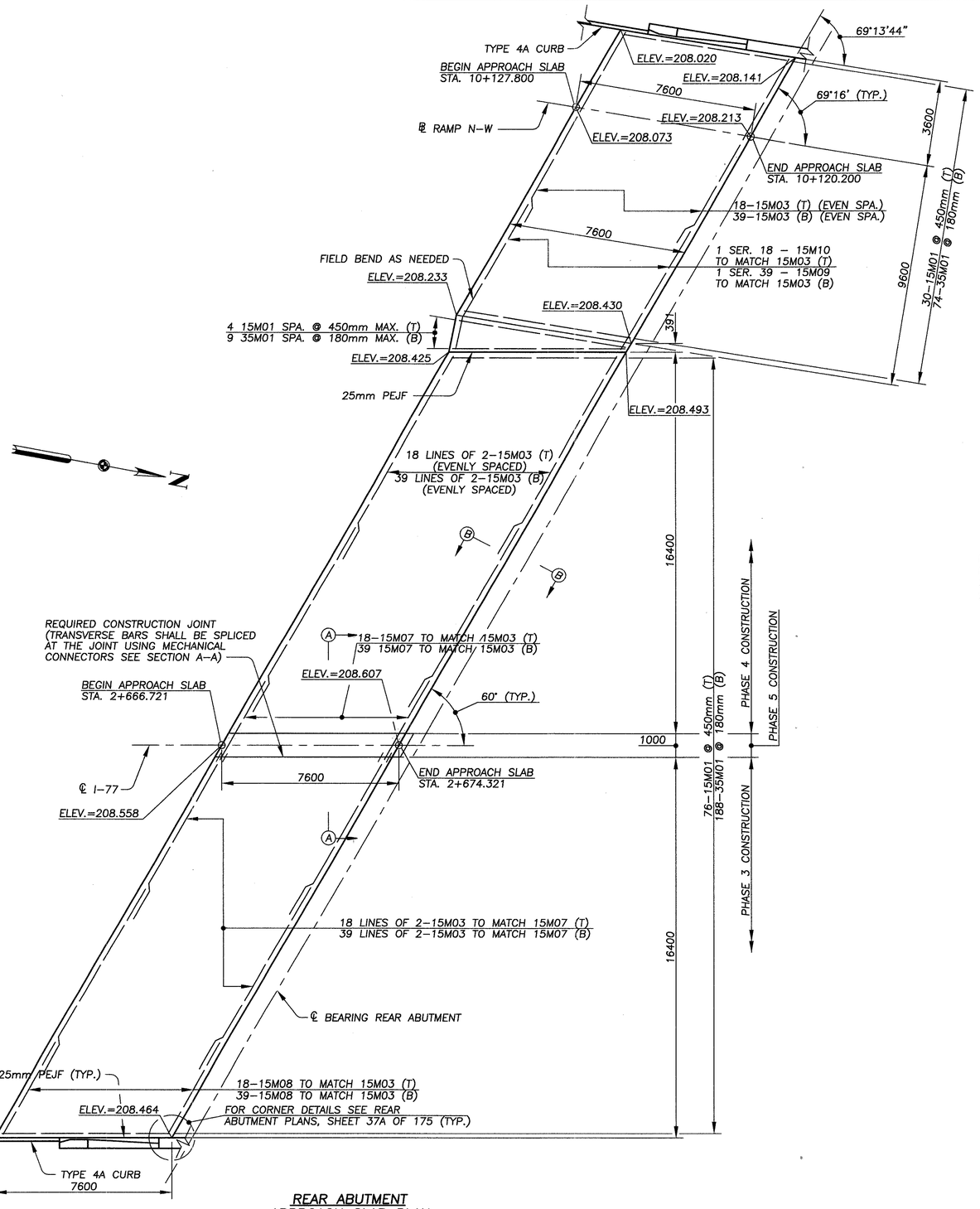
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVISED	DATE
JLV	JLV	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
NDH		1806726	

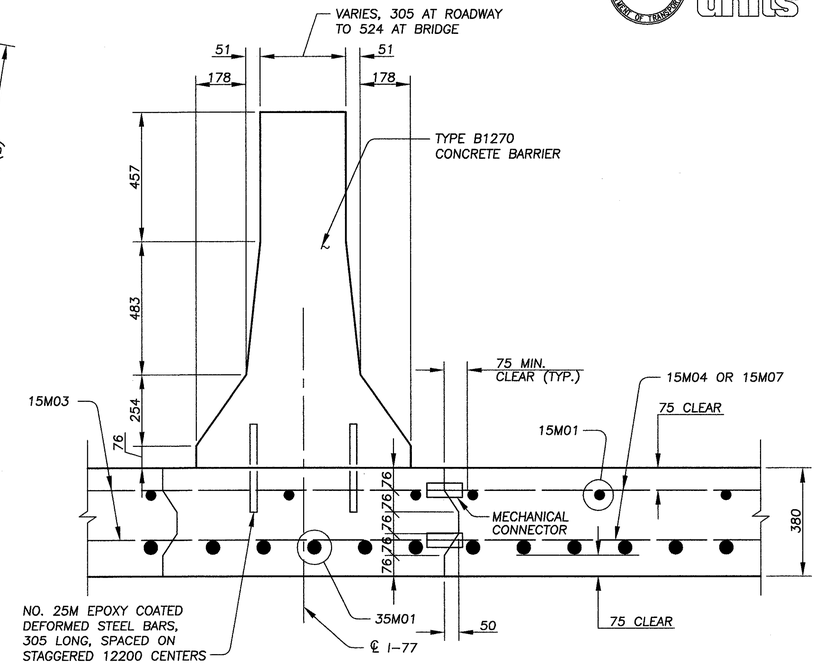
SCREED ELEVATIONS - UNIT 4L
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

\24621\techprod\drawings\bridge\SE4L.DWG

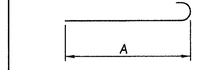


REAR ABUTMENT APPROACH SLAB PLAN



SECTION A-A
FORWARD ABUTMENT SIMILAR

BAR BENDING DIAGRAM



REINFORCEMENT SCHEDULE

MARK	NUMBER	LENGTH	TYPE	A	B	INC.
REAR APPROACH SLAB EPOXY COATED BARS						
EAPS15M01	110	7450	STR			
EAPS15M03	285	9150	STR			
EAPS15M07	57	2050	STR			
EAPS15M08	57	3200	STR			
EAPS15M09	1 SER. 39	6000	STR			32
		7200				
EAPS15M10	1 SER. 18	6000	STR			71
		7200				
EAPS35M01	271	7880	101	7450		

NOTES:

1. MINIMUM LAP SPLICE LENGTH FOR NUMBER 15M BARS = 720mm
2. FOR ADDITIONAL NOTES AND DETAILS SEE ODOT STANDARD DRAWINGS AS-1-81M
3. ALL BARS SHALL BE PREFIXED EAPS
4. THE FOLLOWING ABBREVIATIONS ARE USED:
   T=TOP B=BOTTOM
   SPA.=SPACED PEJF=PREFORMED EXPANSION JOINT FILLER
5. APPROACH SLABS AND MEDIAN BARRIER ARE PAID PER ITEM 611 - REINFORCED CONCRETE APPROACH SLAB (T=380mm), AS PER PLAN AND ITEM 622 - COCNCRETE BARRIER, TYPE B1270, AS PER PLAN IN THE ROADWAY PLANS.
6. FOR SECTION B-B, SEE SHEET 151 OF 175.

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
GLC	GLC	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

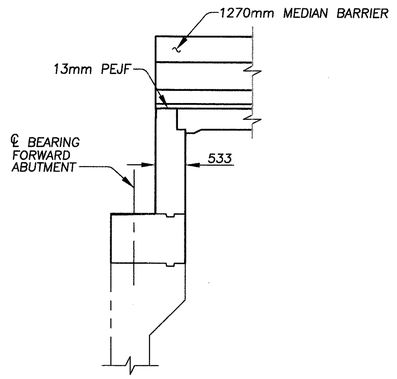
APPROACH SLAB
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

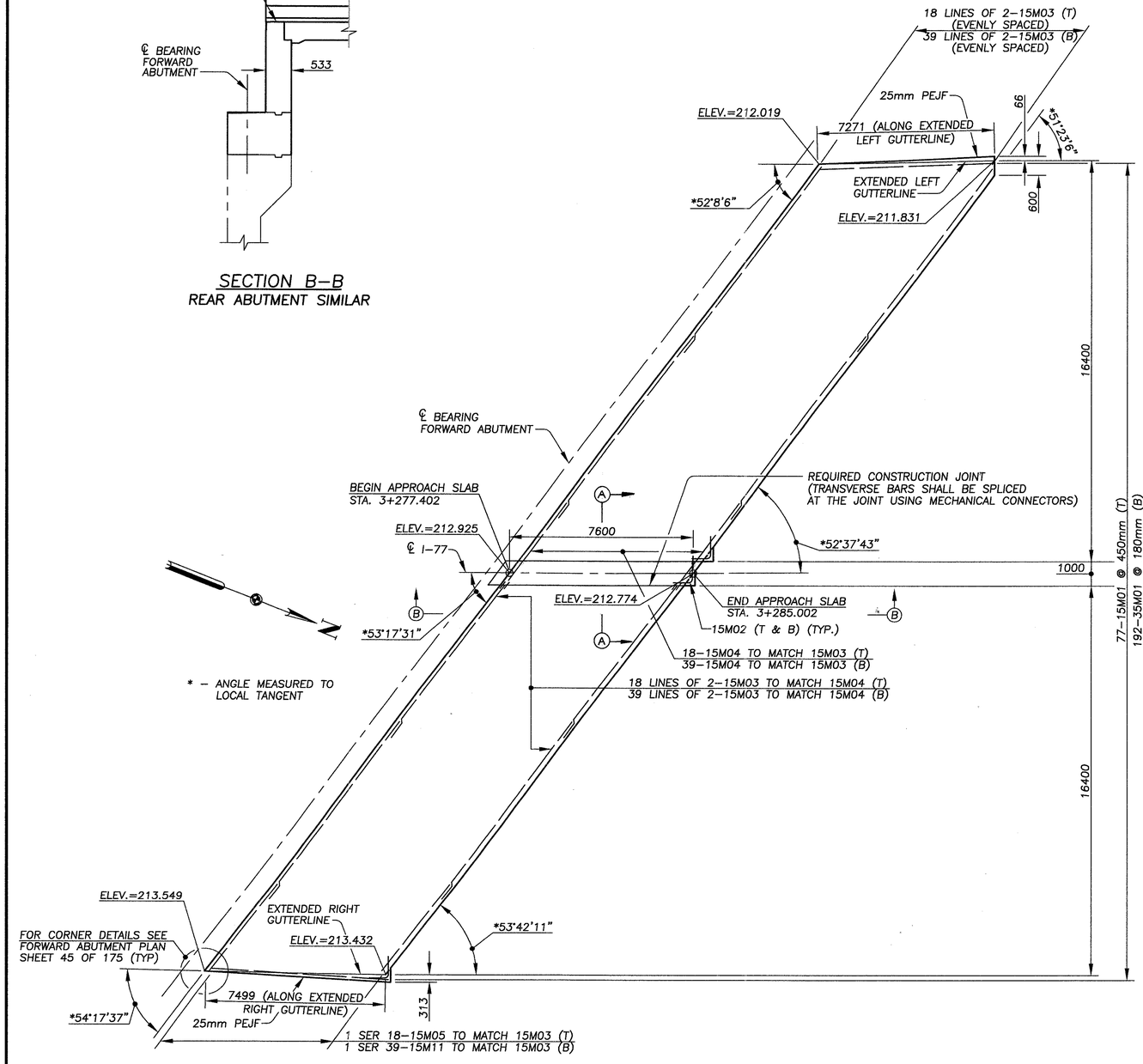
150/175

254/295

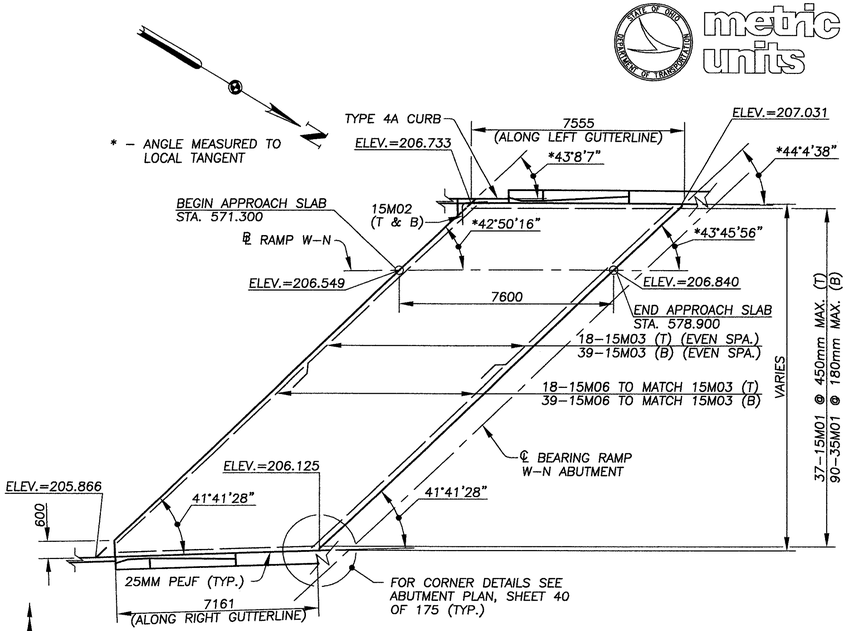
\24621\techprod\drawings\bridge\Apslab2



SECTION B–B
REAR ABUTMENT SIMILAR

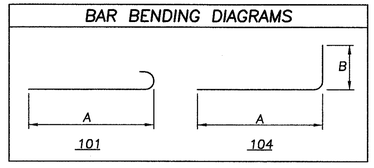


FORWARD ABUTMENT
APPROACH SLAB PLAN



RAMP W–N ABUTMENT
APPROACH SLAB PLAN

BAR BENDING DIAGRAMS



REINFORCEMENT SCHEDULE

MARK	NUMBER	LENGTH	TYPE	A	B	INC.
FORWARD APPROACH SLAB EPOXY COATED BARS						
EAPS15M01	77	7450	STR			
EAPS15M02	8	1775	104	915	900	
EAPS15M03	228	9150	STR			
EAPS15M04	57	3600	STR			
EAPS15M05	1 SER 18	4800	STR			22
		5175				
EAPS15M11	1 SER 39	4800	STR			10
		5175				
EAPS35M01	192	7880	101	7450		

REINFORCEMENT SCHEDULE

MARK	NUMBER	LENGTH	TYPE	A	B
RAMP W–N APPROACH SLAB EPOXY COATED BARS					
EAPS15M01	37	7450	STR		
EAPS15M02	6	1775	104	915	900
EAPS15M03	57	9150	STR		
EAPS15M06	57	9900	STR		
EAPS35M01	90	7880	101	7450	

NOTES:

1. MINIMUM LAP SPLICE LENGTH FOR NUMBER 15M BARS = 720mm
2. FOR ADDITIONAL NOTES AND DETAILS SEE ODOT STANDARD DRAWINGS AS–1–81M
3. SHOULD THE CONTRACTOR NOT USE AN OPTIONAL CONSTRUCTION JOINT, THE "EAR" AT THAT CORNER MAY BE ELIMINATED
4. ALL BARS SHALL BE PREFIXED EAPS
5. FOR MEDIAN BARRIER DETAILS SEE STANDARD DRAWING RM–4.3M
6. THE FOLLOWING ABBREVIATIONS ARE USED:
   T=TOP B=BOTTOM
   SPA.=SPACED PEJF=PREFORMED EXPANSION JOINT FILLER
6. APPROACH SLABS AND MEDIAN BARRIER ARE PAID PER ITEM 611 – REINFORCED CONCRETE APPROACH SLAB (T=380mm), AS PER PLAN AND ITEM 622 – COCNCRETE BARRIER, TYPE B1270, AS PER PLAN IN THE ROADWAY PLANS.

metric units

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Cleveland, Ohio 44114-1724
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GLG	GLG	RER	09–12–97
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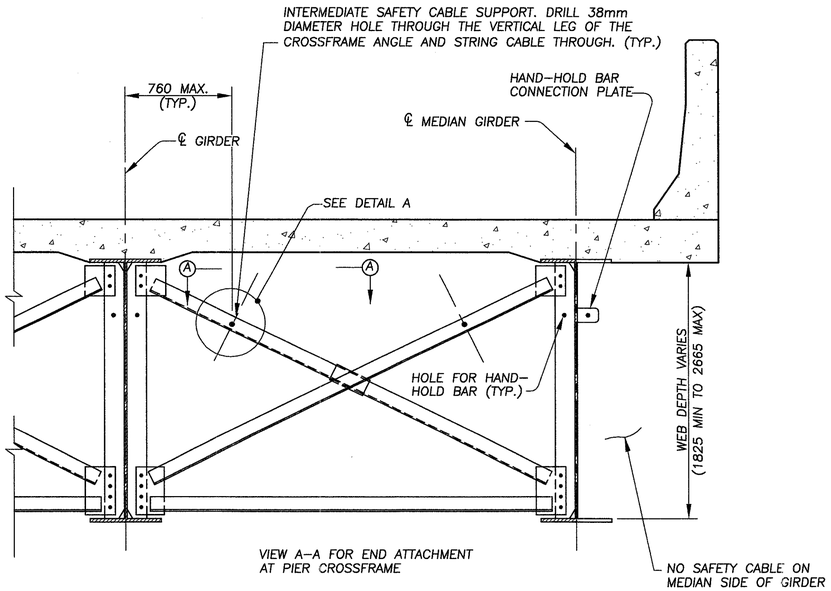
TJM		1806726	

APPROACH SLAB
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

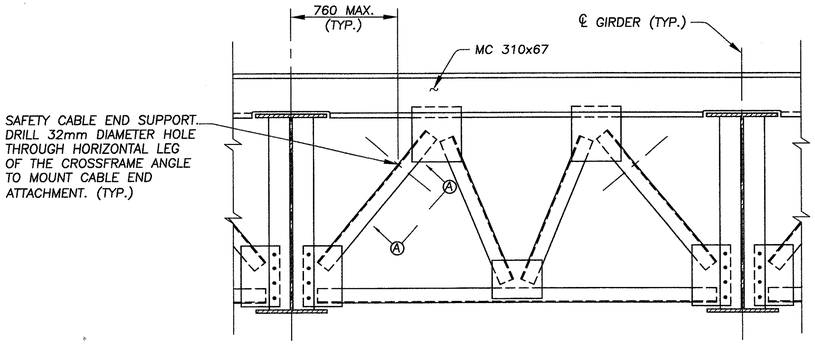
CUY–77–23.458

\24621\techprod\drawings\bridge\Apslab1

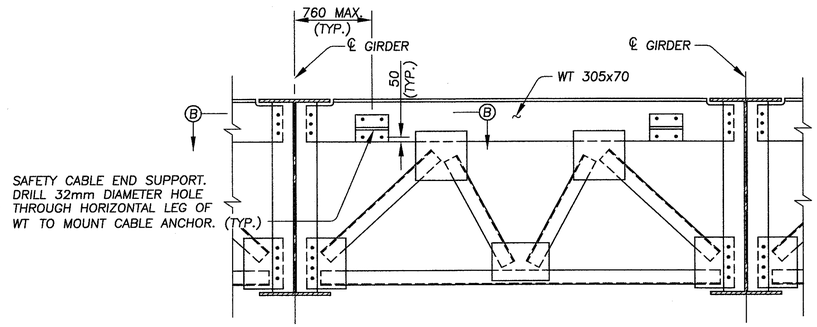


TYPICAL SAFETY CABLE INTERMEDIATE ATTACHMENT DETAIL

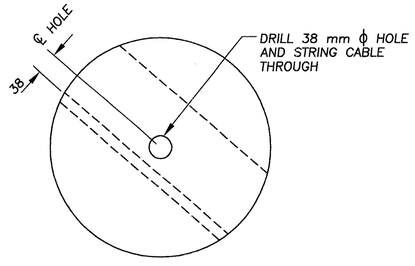
(DETAIL AT BEND POINT CROSSFRAME SIMILAR)



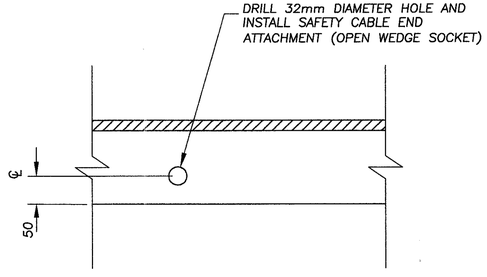
SAFETY CABLE END ATTACHMENTS AT ABUTMENTS



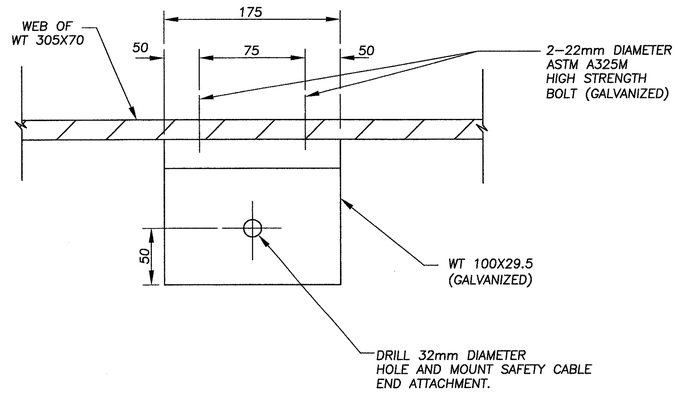
SAFETY CABLE END ATTACHMENT AT PIERS 4L, 7L, 10L, 4R, 7R, AND 10R



DETAIL A



VIEW A-A



SECTION B-B

NOTE:

FOR LOCATION OF SAFETY CABLES, SEE FRAMING PLANS.

FOR HAND-HOLD BAR DETAILS AND NOTES, SEE SHEET 114 OF 175.

metric units

DESIGN AGENCY
HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724

DESIGNED	DRAWN	REVIEWED	DATE
JMG	JMG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

SAFETY CABLE DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

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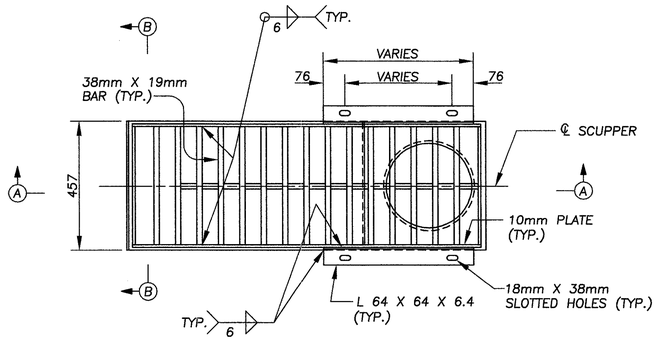
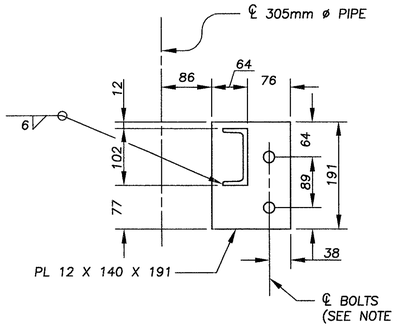
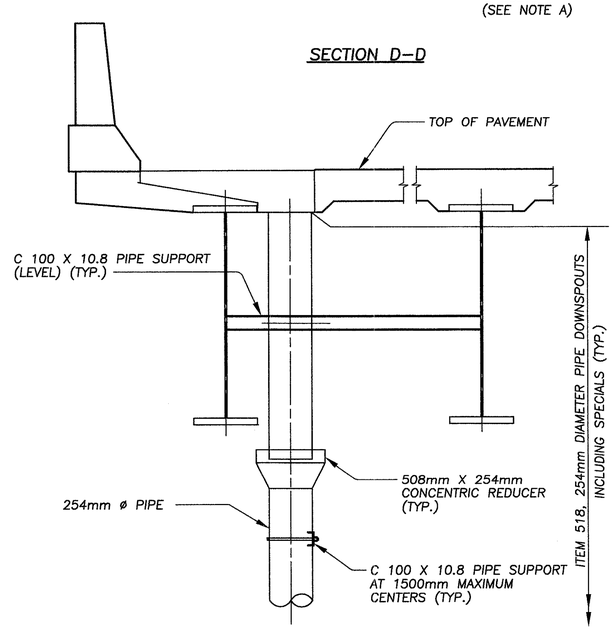


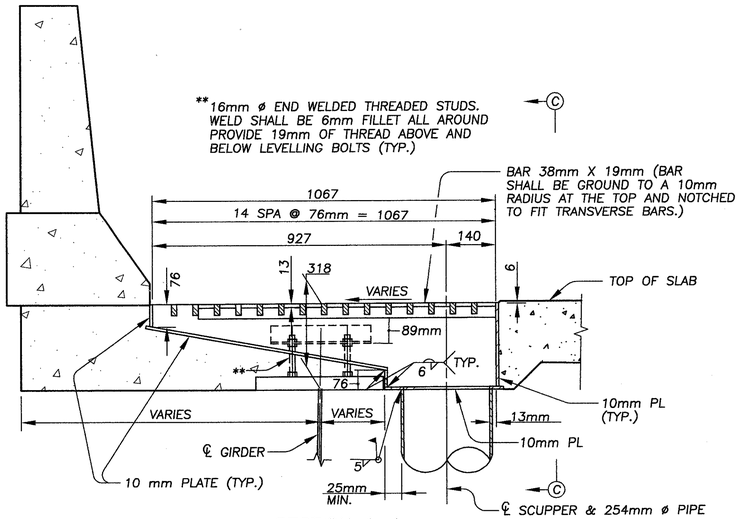
PLAN
(DOWNSPOUT INSIDE OF GIRDER)



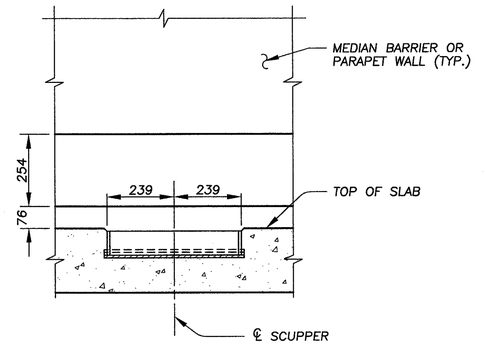
SECTION D–D



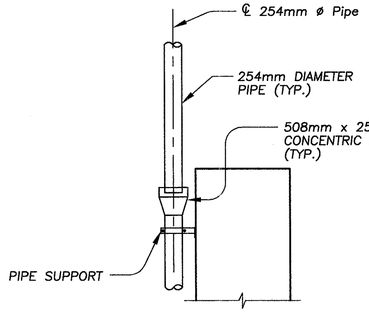
ELEVATION
(DOWNSPOUT INSIDE OF GIRDER)



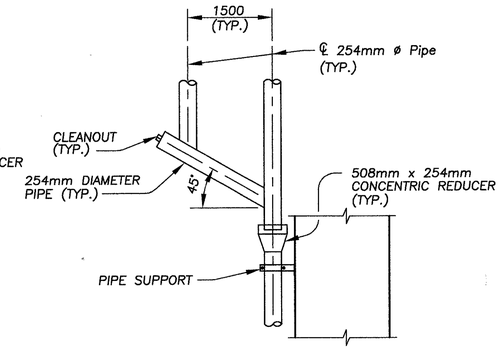
SECTION A–A
(DOWNSPOUT INSIDE OF GIRDER)



SECTION B–B

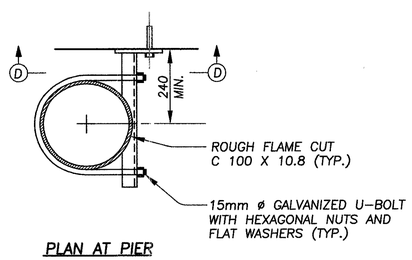


FOR 1 SCUPPER

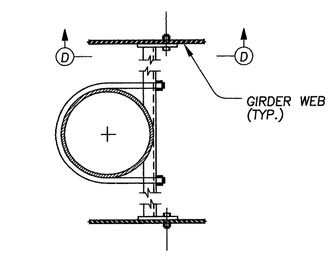


FOR 2 SCUPPERS
TYPICAL AT ALL LOCATION
EXCEPT AT PIER 9L

VIEW C–C



PLAN AT PIER



PLAN AT GIRDER
(DOWNSPOUT INSIDE OF GIRDER)

TABLE OF SCUPPER LOCATIONS				DOWNSPOUT
STATION	PIER	BRIDGE	GUTTER	LOCATIONS
2+729.311	1L (W)*	SOUTHBOUND	LEFT	INSIDE OF GIRDER
2+727.215	1L (E)	SOUTHBOUND	RIGHT	INSIDE OF GIRDER
2+828.613	4L	SOUTHBOUND	LEFT	OUTSIDE OF GIRDER
2+830.113	4L*	SOUTHBOUND	LEFT	OUTSIDE OF GIRDER
2+828.613	4L	SOUTHBOUND	RIGHT	INSIDE OF GIRDER
2+830.113	4L*	SOUTHBOUND	RIGHT	INSIDE OF GIRDER
3+017.918	7L*	SOUTHBOUND	LEFT	INSIDE OF GIRDER
3+017.918	7L*	SOUTHBOUND	RIGHT	INSIDE OF GIRDER
3+154.293	9L	SOUTHBOUND	RIGHT	INSIDE OF GIRDER
3+156.793	9L	SOUTHBOUND	RIGHT	INSIDE OF GIRDER
3+218.066	10L*	SOUTHBOUND	LEFT	INSIDE OF GIRDER
2+713.918	1R	NORTHBOUND	LEFT	INSIDE OF GIRDER
2+800.976	4R	NORTHBOUND	LEFT	OUTSIDE OF GIRDER
2+802.476	4R*	NORTHBOUND	LEFT	OUTSIDE OF GIRDER
2+800.976	4R	NORTHBOUND	RIGHT	OUTSIDE OF GIRDER
2+802.476	4R*	NORTHBOUND	RIGHT	OUTSIDE OF GIRDER
2+995.973	7R*	NORTHBOUND	LEFT	INSIDE OF GIRDER
2+995.973	7R*	NORTHBOUND	RIGHT	INSIDE OF GIRDER
3+185.459	10R*	NORTHBOUND	LEFT	INSIDE OF GIRDER
3+186.959	10R*	NORTHBOUND	LEFT	INSIDE OF GIRDER
3+186.606	10R*	NORTHBOUND	RIGHT	INSIDE OF GIRDER
3+275.278	FWD.ABUT.*	NORTHBOUND	LEFT	INSIDE OF GIRDER

* SCUPPERS TO BE PLUGGED AT THE END OF THE PROJECT.

NOTES:

THE SCUPPERS AND SCUPPER SUPPORTS SHALL BE HOT–DIPPED GALVANIZED LOW OR MILD CARBON STEEL AVAILABLE COMMERCIALLY.

ALL PIPES SHALL BE 254mm DIAMETER STANDARD HOT–DIPPED GALVANIZED STEEL PIPE. JOINTS SHALL BE MADE BY WELDING OR BY USE OF CLAMP–TYPE COUPLINGS HAVING A RING GASKET. ALL WELDING SHALL BE DONE BEFORE GALVANIZING. SUPPORT MATERIAL FOR ATTACHING PIPES SHALL BE ASTM A36M AND SHALL BE GALVANIZED AFTER FABRICATION. THE BOLTS SHALL BE GALVANIZED AS SPECIFIED IN CMS 711.09.

THE SCUPPER SUPPORT ANGLES AND ACCESSORIES ARE INCLUDED WITH ITEM 518, SCUPPER, INCLUDING SUPPORTS, AS PER PLAN, FOR PAYMENT.

THE 254mm DIAMETER PIPE INCLUDING FITTINGS, SUPPORTS AND ACCESSORIES SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM 518, 254mm PIPE DOWNSPOUT, INCLUDING SPECIALS.

FOR SCUPPER AND DOWNSPOUT DETAILS OUTSIDE OF FASCIA GIRDER, SEE SHEET 153A OF 175.

NOTE A:

FOR ATTACHMENT TO PIERS, BOLTS SHALL 19mm DIAMETER EXPANSION BOLT ANCHORS DRILLED–IN–PLACE AND CAPABLE OF DEVELOPING A PULLOUT RESISTANCE OF NOT LESS THAN 53,376 NEWTONS.

FOR ATTACHMENT TO GIRDERS, BOLTS SHALL BE GALVANIZED PER CMS 711.09 22mm DIAMETER ASTM A325M HIGH STRENGTH STEEL BOLTS.

PIPE SUPPORT DETAIL ON STRUCTURE

\24621\techprod\drawings\bridge\scupp

metric units

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1375 East 9th Street
Cleveland, Ohio 44114–1724
ARCHITECTS ENGINEERS PLANNERS

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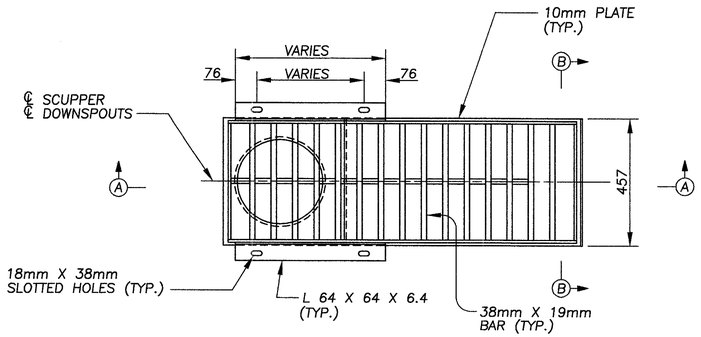
M.J.L		1806726	

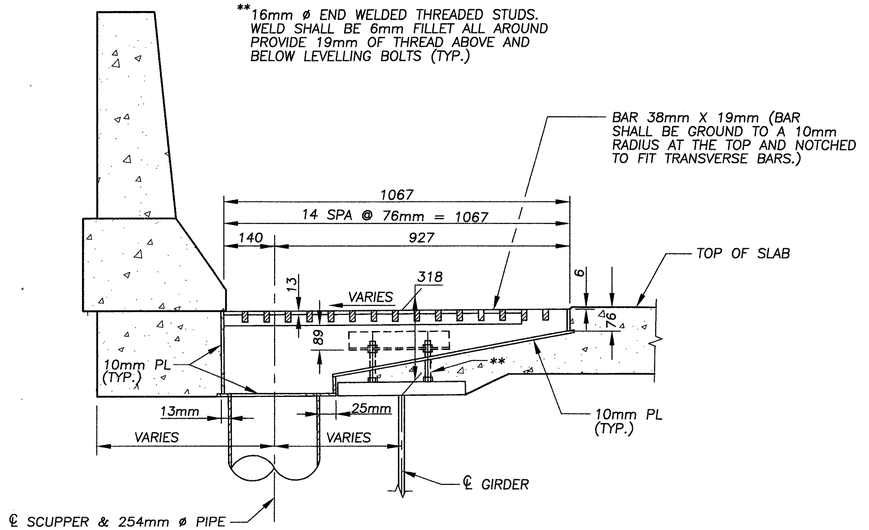
SCUPPERS AND DOWNSPOUTS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

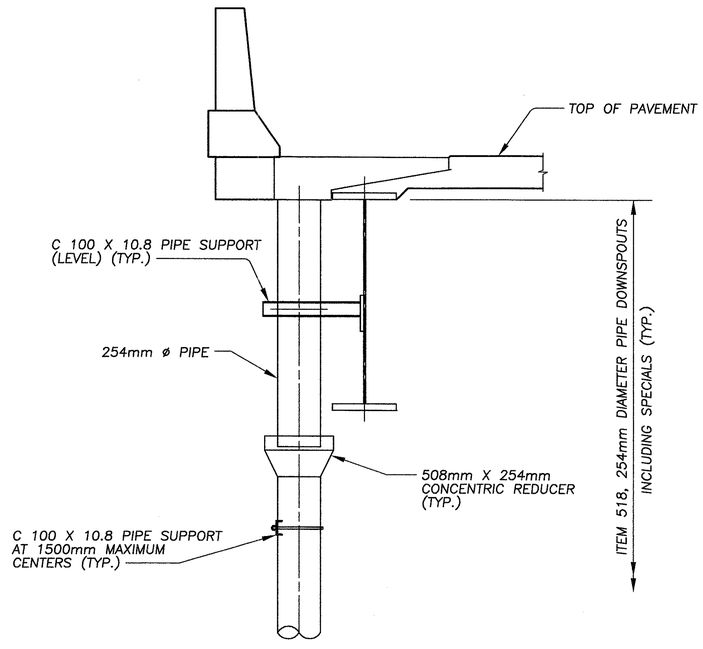
153/175
257/295



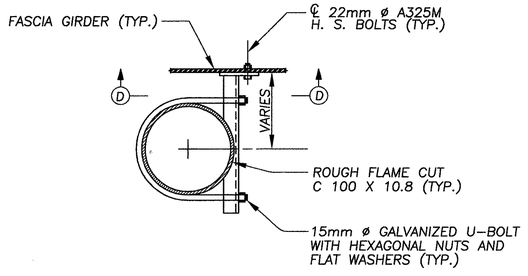
PLAN
(DOWNSPOUT OUTSIDE OF GIRDER)



SECTION A–A
(DOWNSPOUT OUTSIDE OF GIRDER)



ELEVATION
(DOWNSPOUT OUTSIDE OF GIRDER)



PLAN AT GIRDER
PIPE SUPPORT DETAIL ON STRUCTURE
(DOWNSPOUT OUTSIDE OF GIRDER)

NOTES:

FOR ADDITIONAL SCUPPER AND DOWNSPOUT DETAILS AND NOTES SEE SHEET 153 OF 175.

FOR SECTION B–B AND D–D, SEE SHEET 153 OF 175.

metric units

DESIGN AGENCY
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One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724

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AEH	AEH	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

SCUPPERS AND DOWNSPOUTS
BRIDGE NO. CUY-77-23.458
OVER KINGSBURY RUN

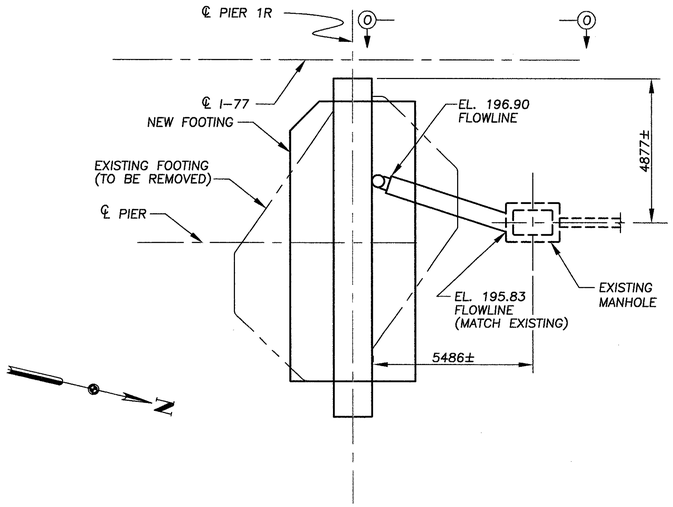
CUY-77-23.458

153A/175

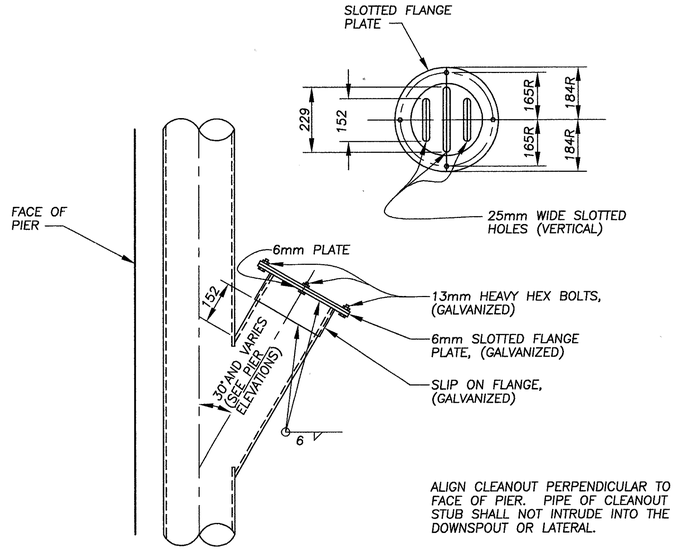
257A/295

\24621\techprod\drawings\bridge\scupp1a

metric units

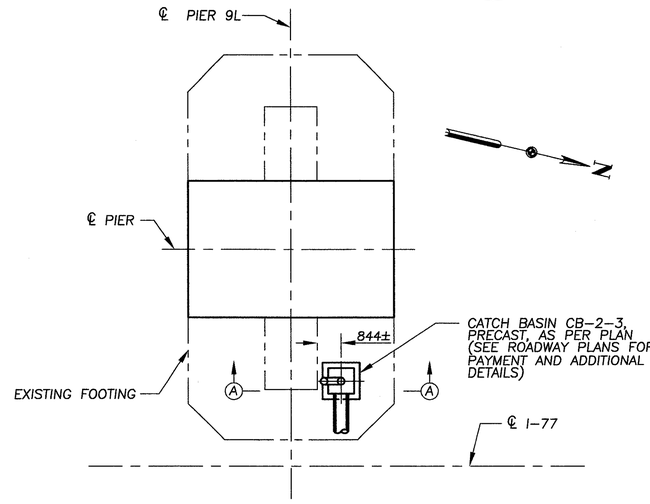


PLAN AT PIER-1R



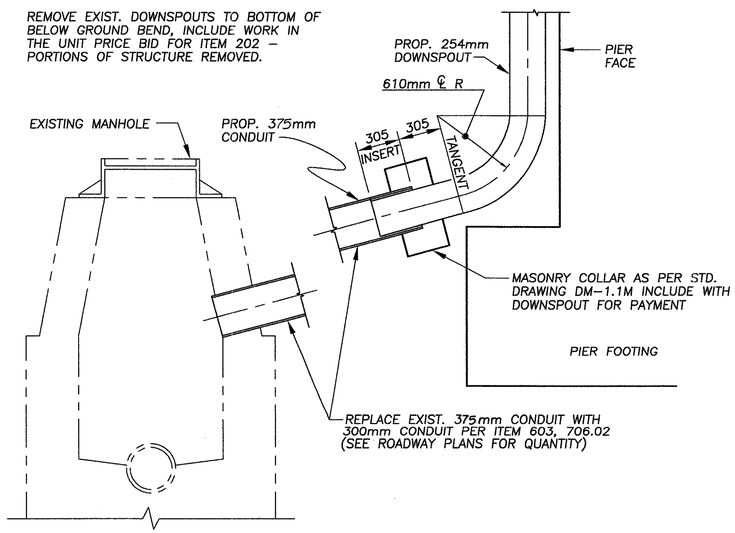
ALIGN CLEANOUT PERPENDICULAR TO FACE OF PIER. PIPE OF CLEANOUT STUB SHALL NOT INTRUDE INTO THE DOWNSPOUT OR LATERAL.

CLEANOUT DETAIL

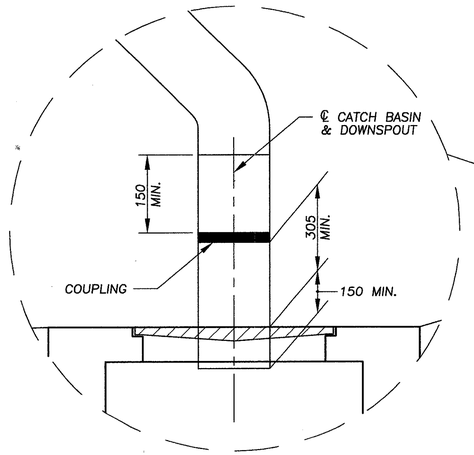


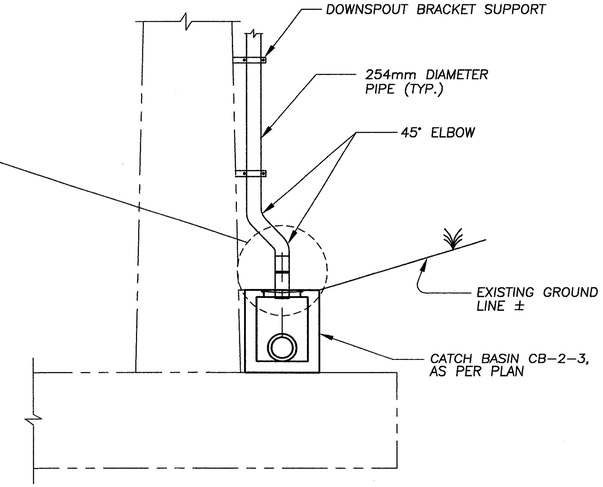
PLAN AT PIER-9L

REMOVE EXIST. DOWNSPOUTS TO BOTTOM OF BELOW GROUND BEND, INCLUDE WORK IN THE UNIT PRICE BID FOR ITEM 202 – PORTIONS OF STRUCTURE REMOVED.



VIEW O-O





SECTION A-A

NOTES:

FOR ADDITIONAL NOTES AND DETAILS SEE SHEET 153 OF 175.

FOR PIER 1R DOWNSPOUT ELEVATION VIEW SEE SHEET 157 OF 175.

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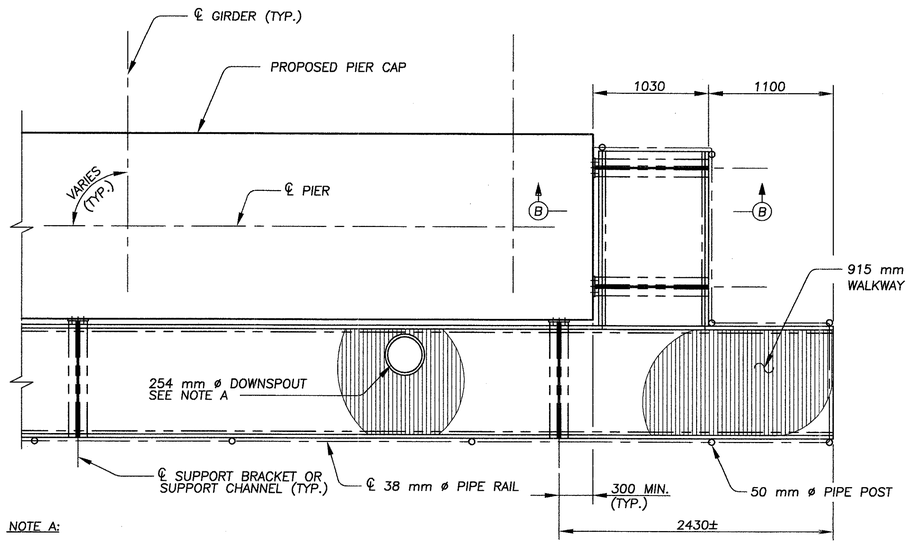
MISCELLANEOUS DOWNSPOUT DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

154/175

258/295

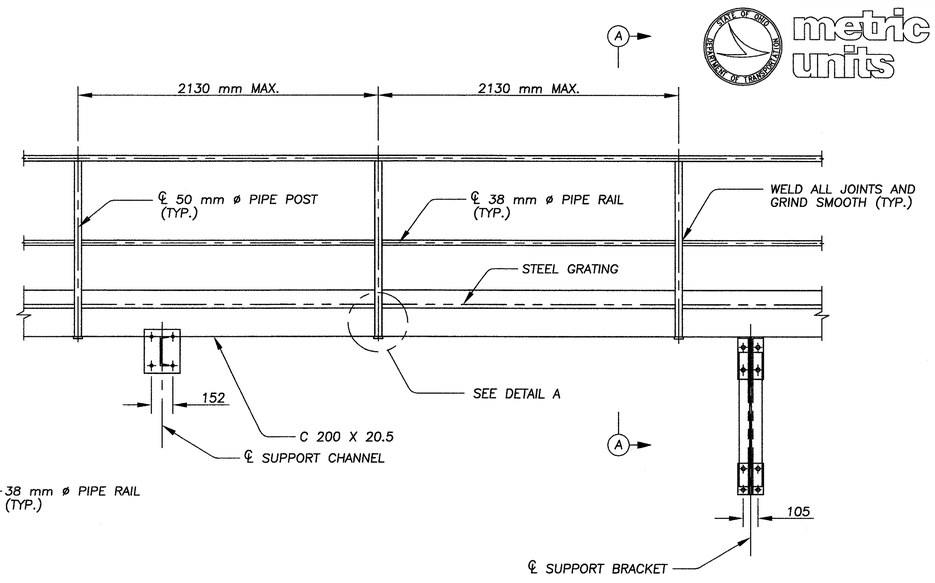
\24621\techprod\drawings\bridge\dwnspout.dwg



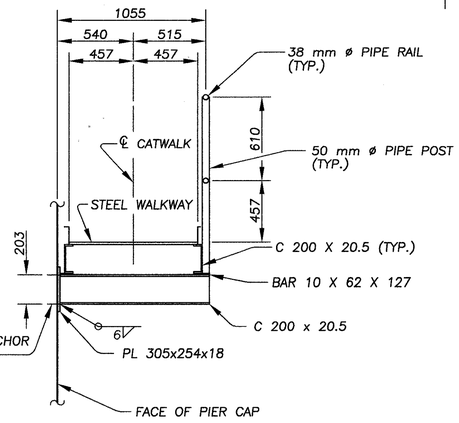
NOTE A:

PROVIDE OPENING IN THE STEEL WALKWAY GRATING FOR THE 254 mm DOWNSPOUT.

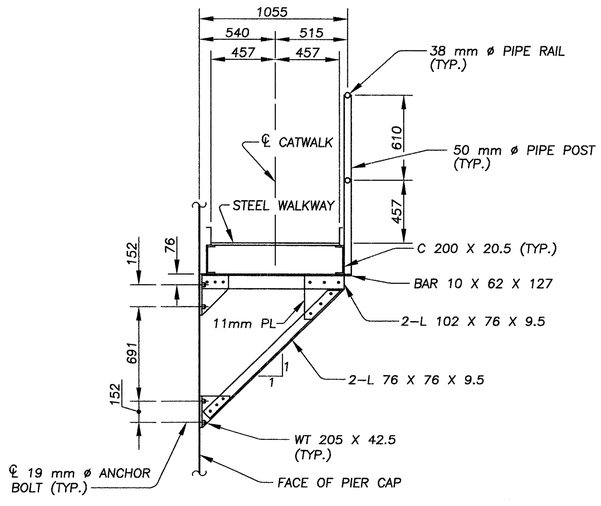
PLAN



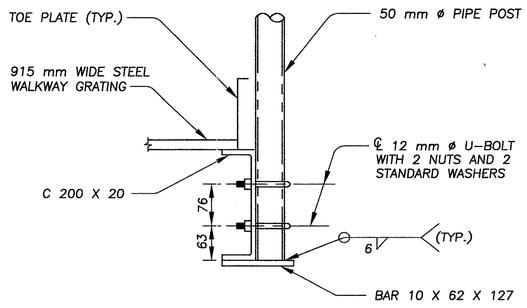
ELEVATION



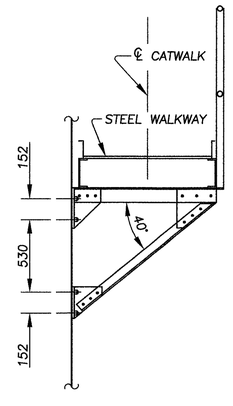
SECTION A–A
FOR CHANNEL SUPPORT
SECTION B–B SIMILAR



SECTION A–A
FOR BRACKET SUPPORT



DETAIL A
POST CONNECTION



SECTION B–B
EAST & WEST FACE OF PIER CAP, EXCEPT AS SHOWN FOR BRACKET SUPPORT

NOTES:

ALL STRUCTURAL STEEL SHALL BE ASTM A36M.

UNLESS INDICATED OTHERWISE, ALL BOLTS SHALL BE GALVANIZED 20mm ø ASTM DESIGNATION A–325M.

ALL RAILS AND POSTS SHALL BE ASTM A53, GRADE B.
38 mm ø RAILS AND 50 mm ø POSTS SHALL BE SCHEDULE 40.

ALL WALKWAY MATERIAL, INCLUDING GRATING, HANDRAILS, POSTS, RAILS AND HANGERS SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR METER OF ITEM 863–STRUCTURAL STEEL MEMBER, MISC.: INSPECTION CATWALK, MEASURED ALONG THE ℄ OF THE CATWALK.

STEEL GRATING SHALL BE SAFETY GRATING WITH ANTI–SKID SURFACES AS MANUFACTURED BY UNITED INTERLOCK, GRATE X OR GRIP STRUT AND SHALL BE DESIGNED TO SUPPORT A LIVE LOAD OF 732 KG. PER SQ. METER

DETAILS AS SHOWN HAVE BEEN DEVELOPED FOR THE GRIP STRUT ALTERNATE.

GRATING SHALL BE CONNECTED TO THE SUPPORTS AS PER THE MANUFACTURER'S RECOMMENDATION.

ALL WALKWAY MATERIAL, INCLUDING GRATING, HANDRAILS AND POSTS, AND OTHER INCIDENTALS SHALL BE GALVANIZED IN ACCORDANCE WITH 711.02.

STEEL AND FIELD REPAIR OF DAMAGED COATING.

ANCHOR BOLTS SHALL HAVE THE FOLLOWING SAFE WORKING ALLOWABLES:
SHEAR = 2670 NEWTON
PULLOUT = 15,568 NEWTON

FOR ACCESS LADDER DETAILS, SEE SHEET 156 OF 175.

metric units

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

DESIGN AGENCY
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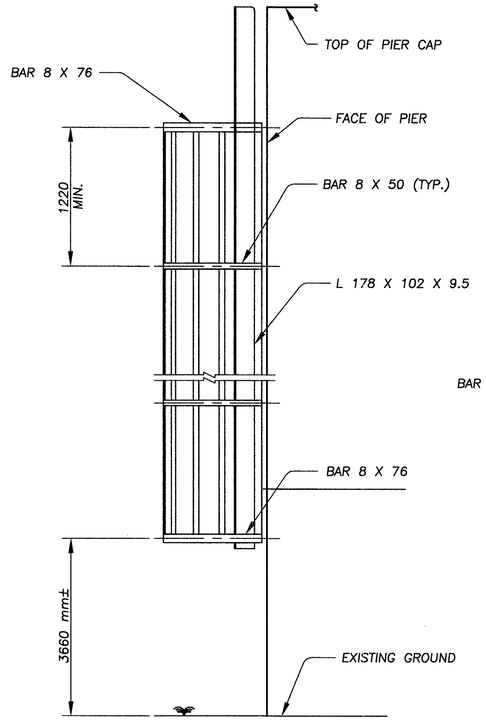
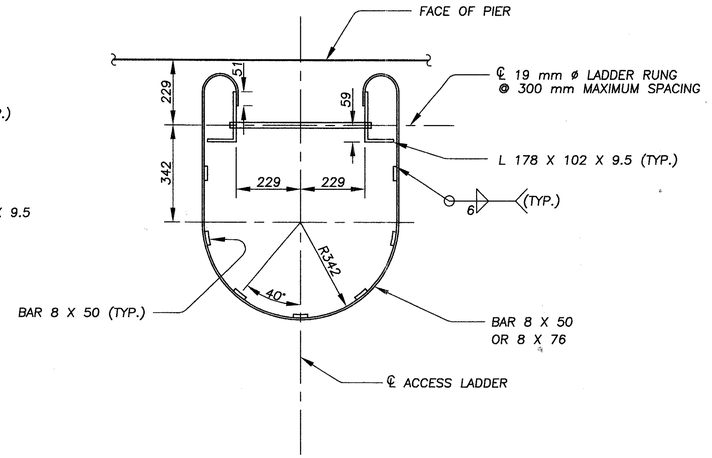
MJL		1806726	

CATWALK AND ACCESS DETAILS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

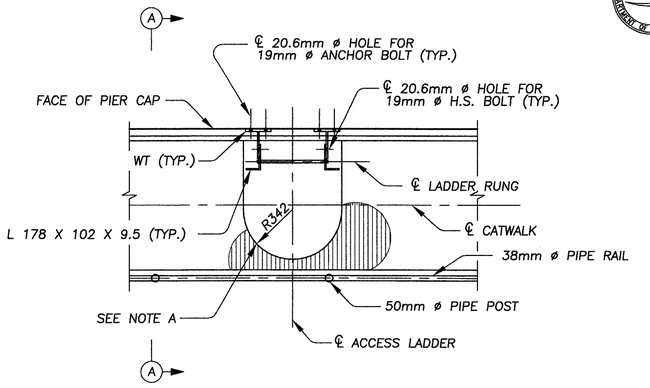
CUY–77–23.458



ELEVATION
(WALKWAY NOT SHOWN)

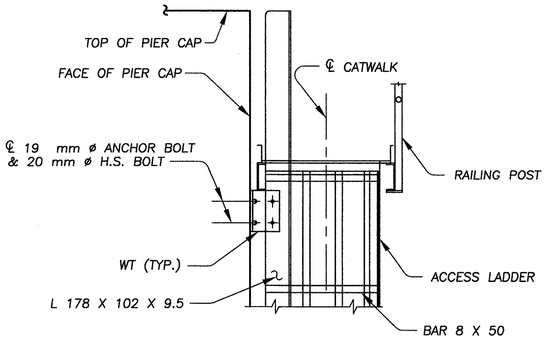


TYPICAL SECTION



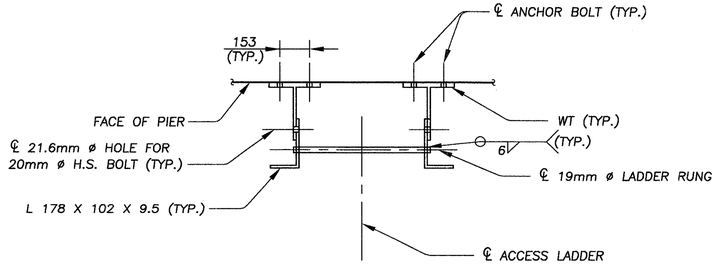
WALKWAY PLAN AT ACCESS LADDER

NOTE A:
PROVIDE OPENING IN THE STEEL WALKWAY GRATING FOR ACCESS LADDER. PROVIDE TRIM STRIP OF METAL ALONG CUT EGES OF WALKWAY GRATING.

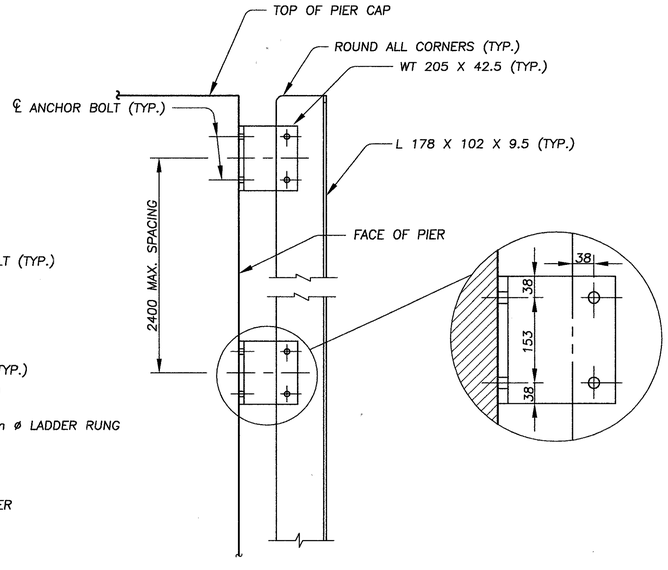


SECTION A–A

ACCESS LADDER DETAILS



SECTION



ELEVATION

NOTES:
FOR ADDITIONAL NOTES, SEE SHEET 155 OF 175.

ACCESS LADDER, LADDER SUPPORTS, SAFETY CAGE, AND OTHER LADDER INCIDENTALS SHALL BE GALVANIZED IN ACCORDANCE WITH 711.02 AND PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR METER OF ITEM 863–STRUCTURAL STEEL MEMBER, MISC.: ACCESS LADDER, MEASURED ALONG THE ℄ OF THE LADDER.

CONNECTION OF ACCESS LADDER TO PIER

metric units

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CATWALK AND ACCESS DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

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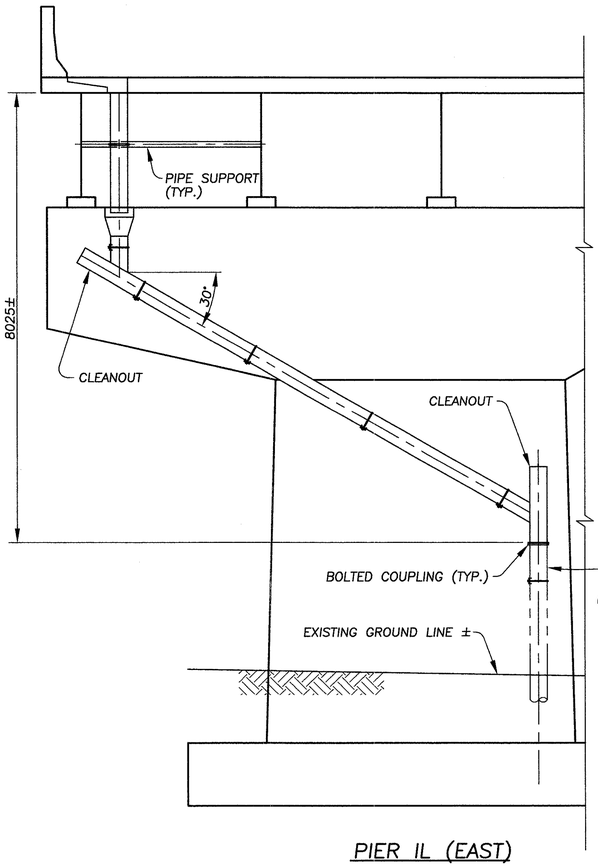
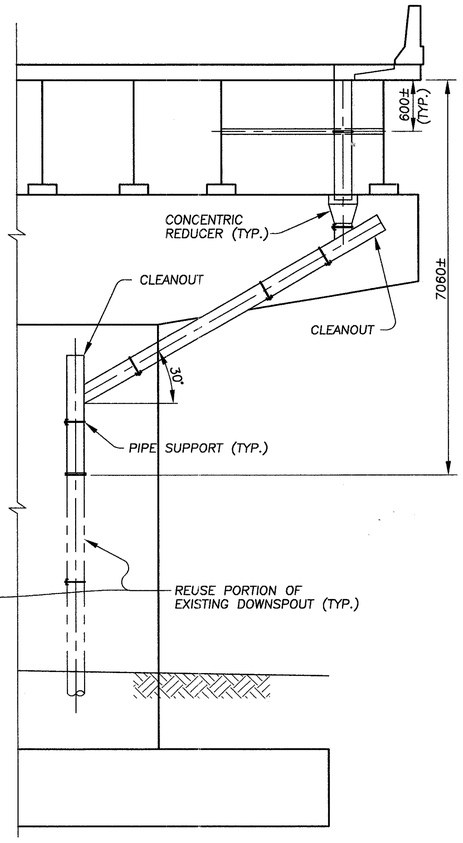
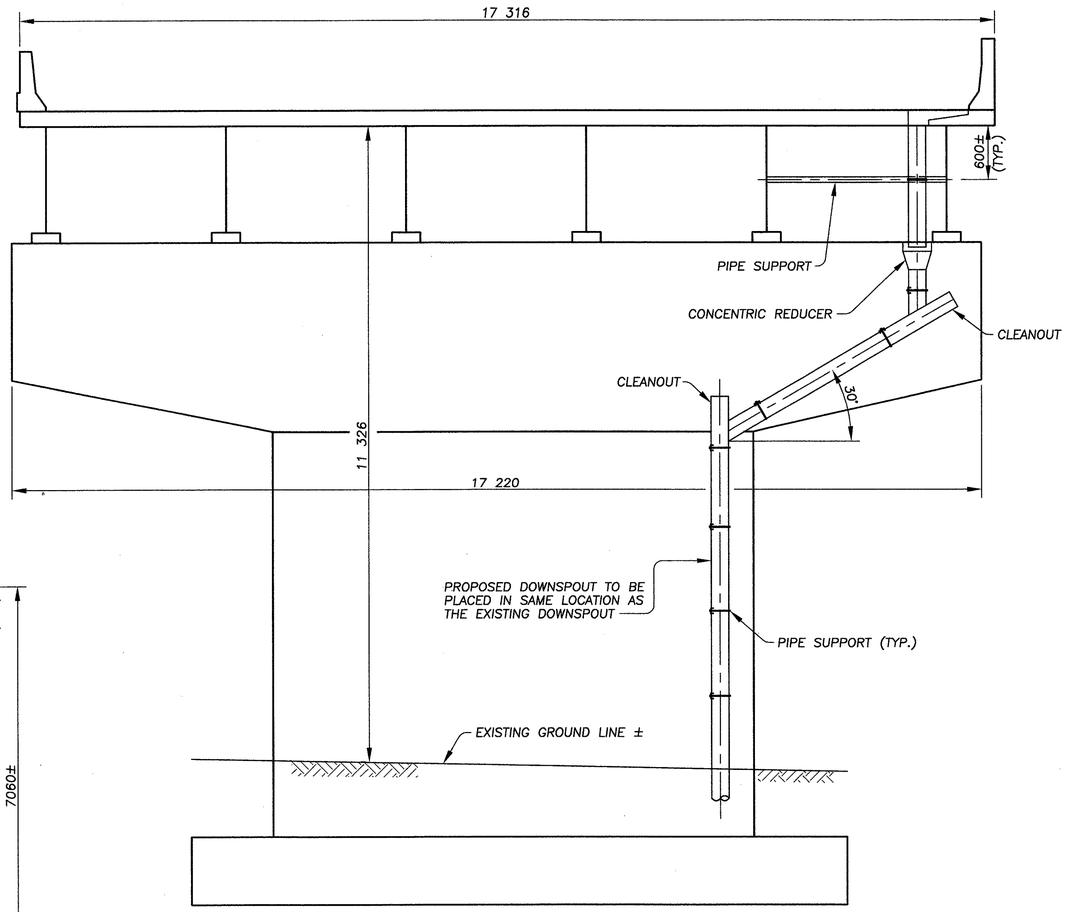


PIER IL (EAST)
LOOKING SOUTH



PIER IL (WEST)
LOOKING SOUTH



PIER 1R
LOOKING SOUTH

metric units

NOTES:

FOR ADDITIONAL DOWNSPOUT AND SCUPPER NOTES AND DETAILS, SEE SHEET 153 AND 154 OF 175.

FOR SCUPPER LOCATIONS, SEE SHEET 153 OF 175.

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MJL		1906726	

DOWNSPOUTS AND CATWALKS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

157/175

261/295

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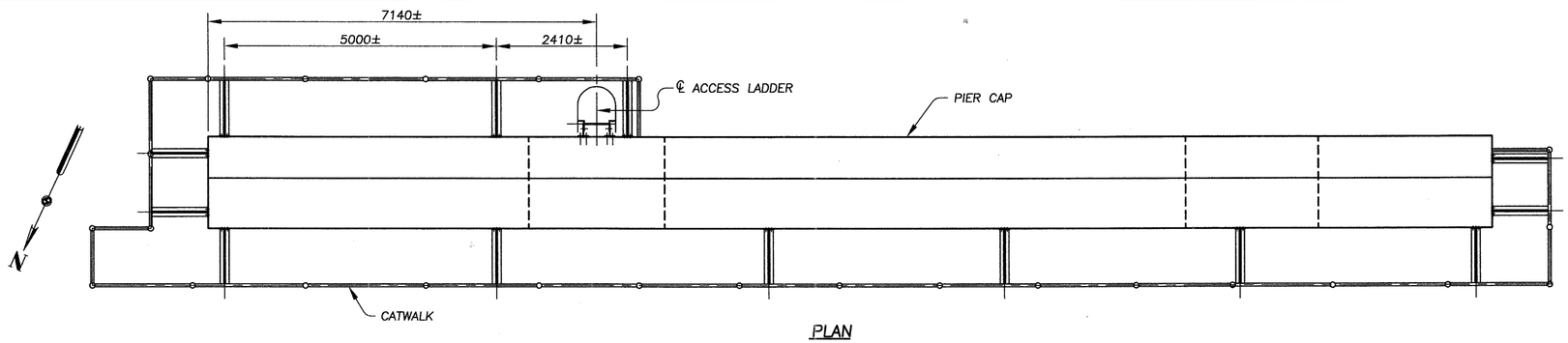
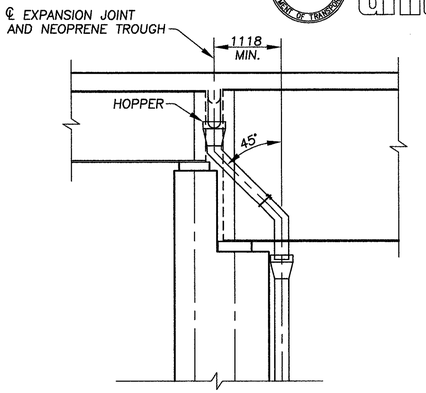
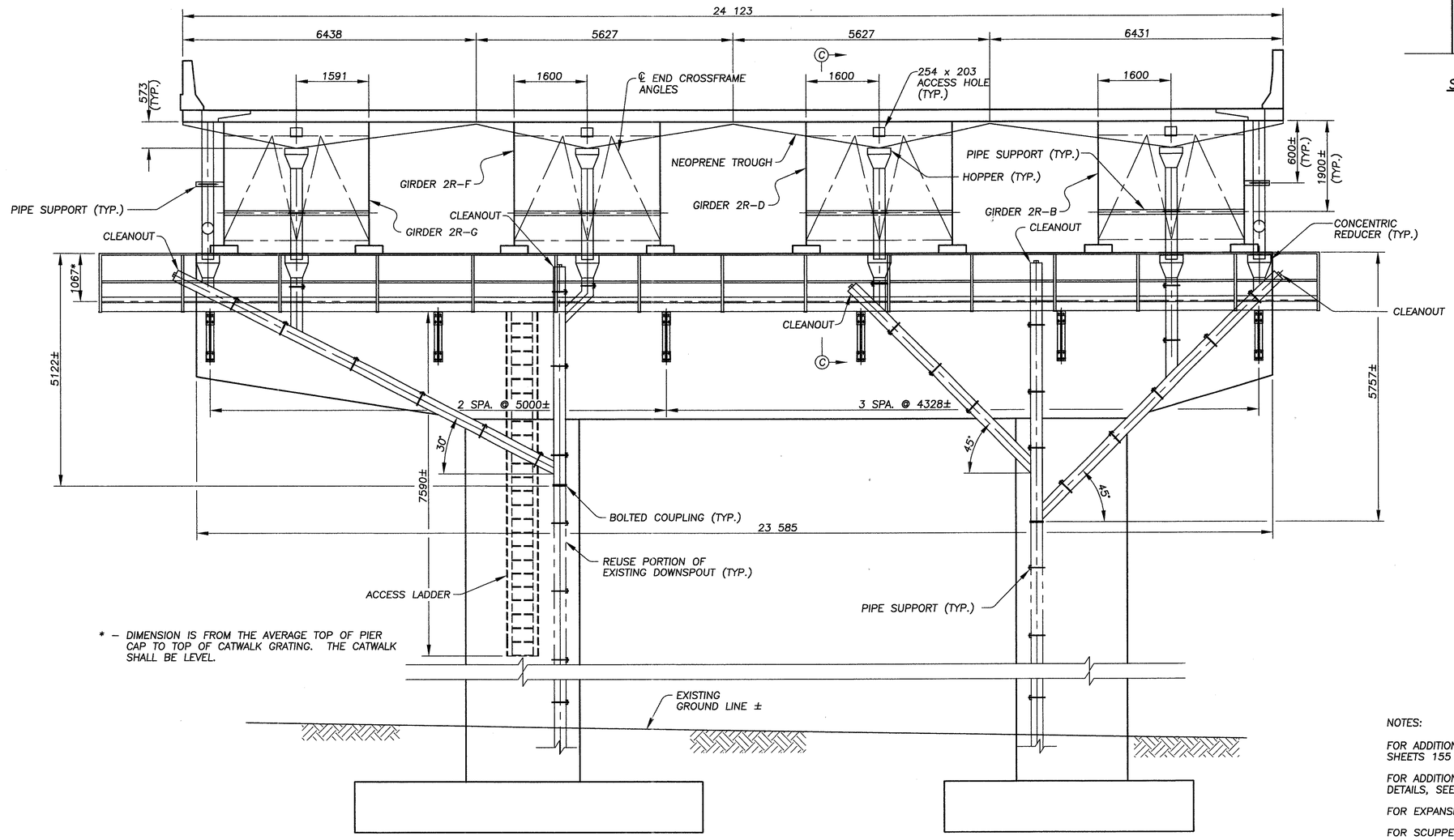


PLAN



SECTION C–C



* – DIMENSION IS FROM THE AVERAGE TOP OF PIER CAP TO TOP OF CATWALK GRATING. THE CATWALK SHALL BE LEVEL.

PIER 4R
LOOKING SOUTH

NOTES:

FOR ADDITIONAL CATWALK NOTES AND DETAILS, SEE SHEETS 155 AND 156 OF 175.

FOR ADDITIONAL DOWNSPOUT AND SCUPPER NOTES AND DETAILS, SEE SHEET 153, 153A AND 154 OF 175.

FOR EXPANSION JOINT DETAILS, SEE SHEET 128 OF 175.

FOR SCUPPER LOCATIONS, SEE SHEET 153 OF 175.

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metric units

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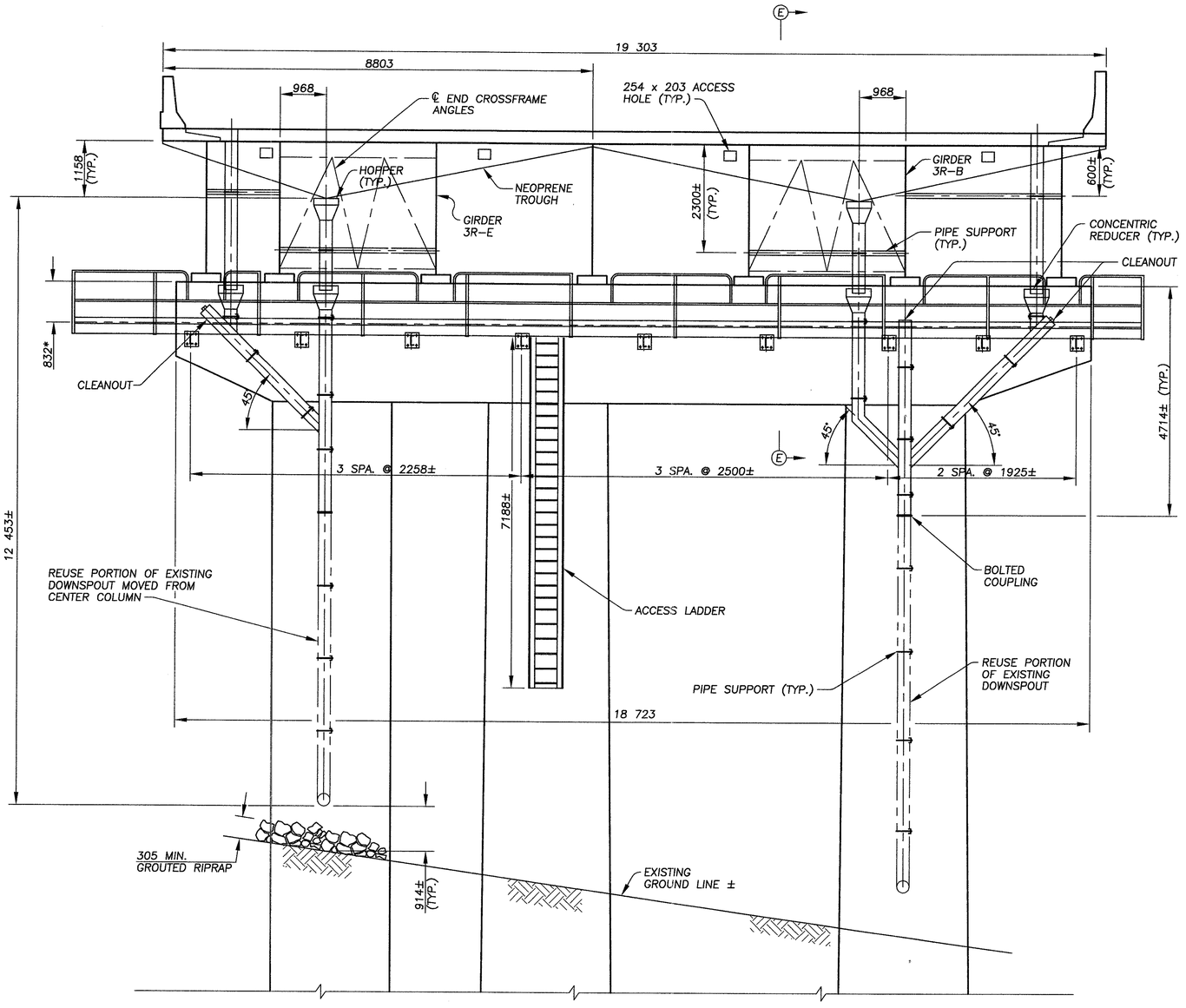
DOWNSPOUTS AND CATWALKS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

158/175

262/295

metric units



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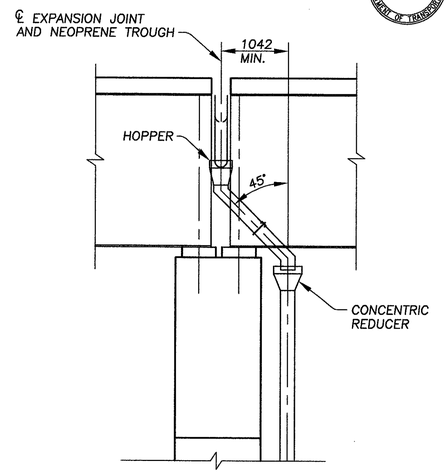
* – DIMENSION IS FROM AVERAGE TOP OF PIER CAP TO TOP OF CATWALK GRATING. THE CATWALK SHALL BE LEVEL.

PIER 7R
LOOKING SOUTH



SECTION E–E

NOTES:

FOR ADDITIONAL CATWALK NOTES AND DETAILS, SEE SHEETS 155 AND 156 OF 175.

FOR ADDITIONAL DOWNSPOUT AND SCUPPER NOTES AND DETAILS, SEE SHEET 153 AND 154 OF 175.

FOR EXPANSION JOINT DETAILS SEE SHEET 128 OF 175.

FOR SCUPPER DETAILS, SEE SHEET 153 OF 175.

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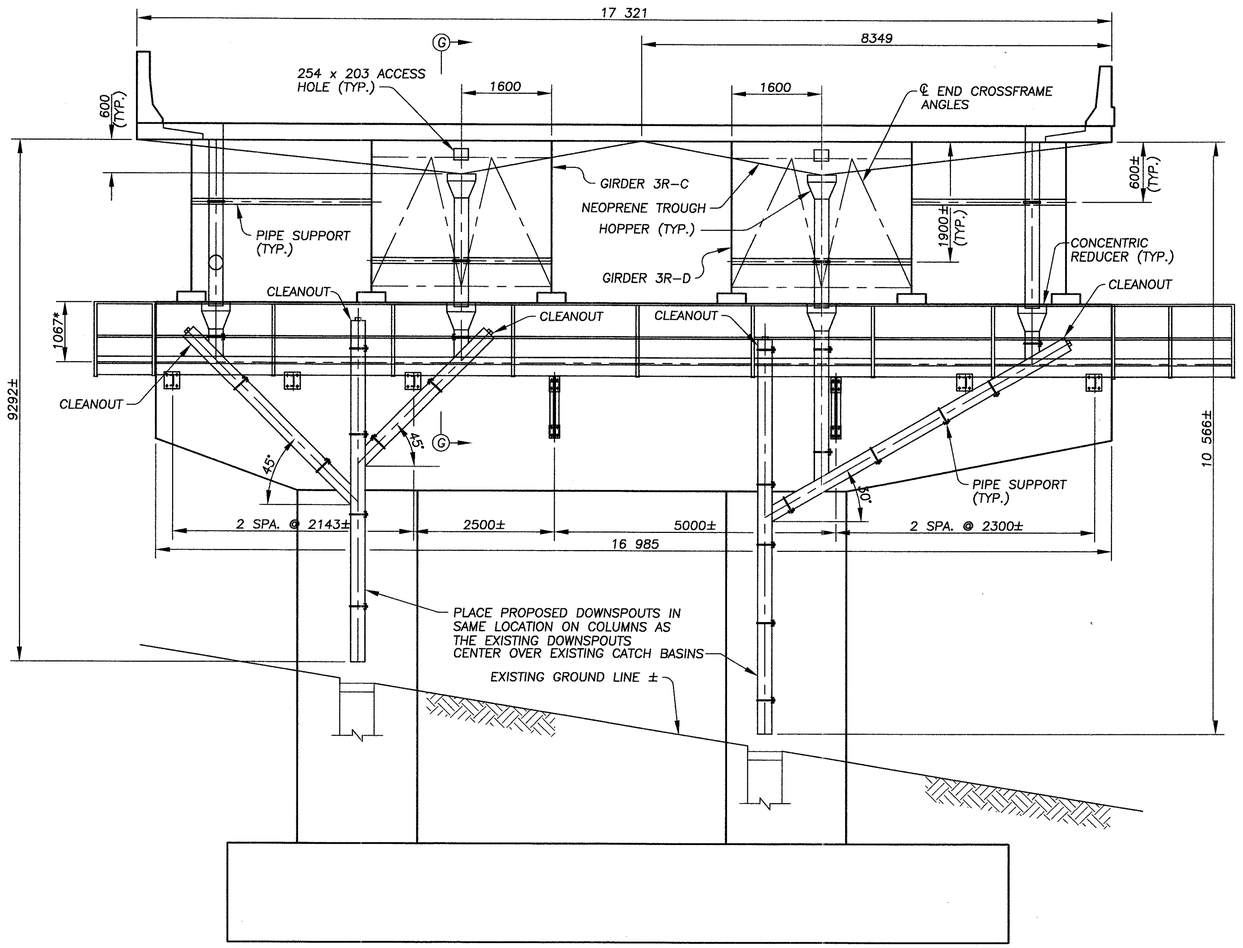
DOWNSPOUTS AND CATWALKS
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

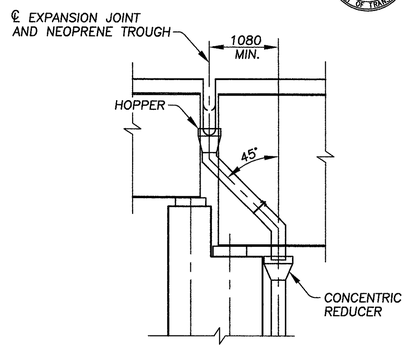
159/175

263/295

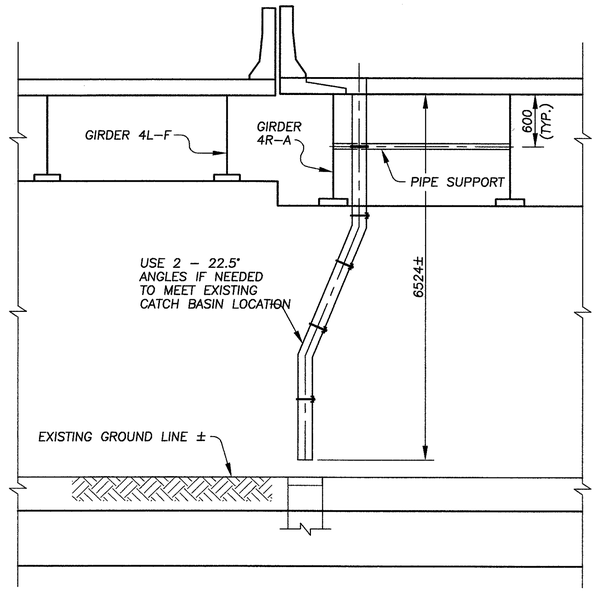


* – DIMENSION IS FROM AVERAGE TOP OF PIER CAP TO TOP OF CATWALK GRATING. THE CATWALK SHALL BE LEVEL.

PIER 10R
LOOKING NORTH



SECTION G–G



FORWARD ABUTMENT
LOOKING NORTH

NOTES:

FOR ADDITIONAL CATWALK NOTES AND DETAILS, SEE SHEETS 155 AND 156 OF 175.

FOR ADDITIONAL DOWNSPOUT AND SCUPPER NOTES AND DETAILS, SEE SHEET 153 AND 154 OF 175.

FOR EXPANSION JOINT DETAILS, SEE SHEET 128 OF 175.

FOR SCUPPER LOCATIONS, SEE SHEET 153 OF 175.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION
metric units

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DOWNSPOUTS AND CATWALKS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

160/175

264/295

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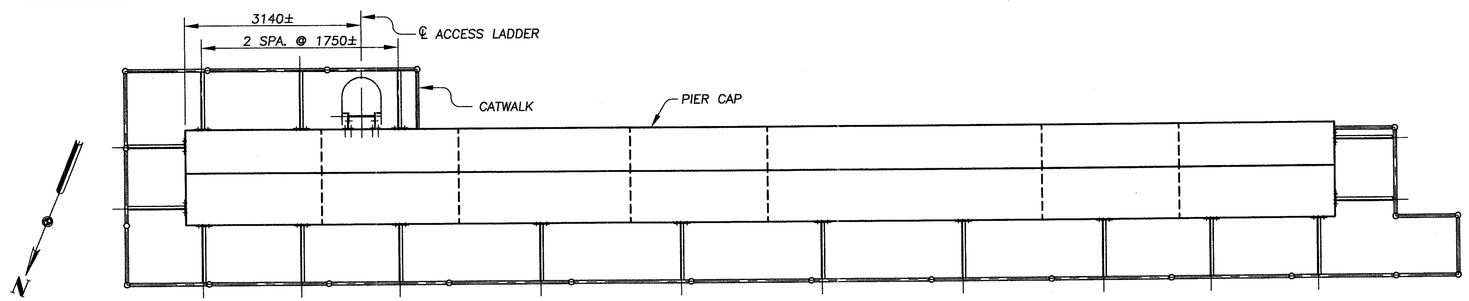
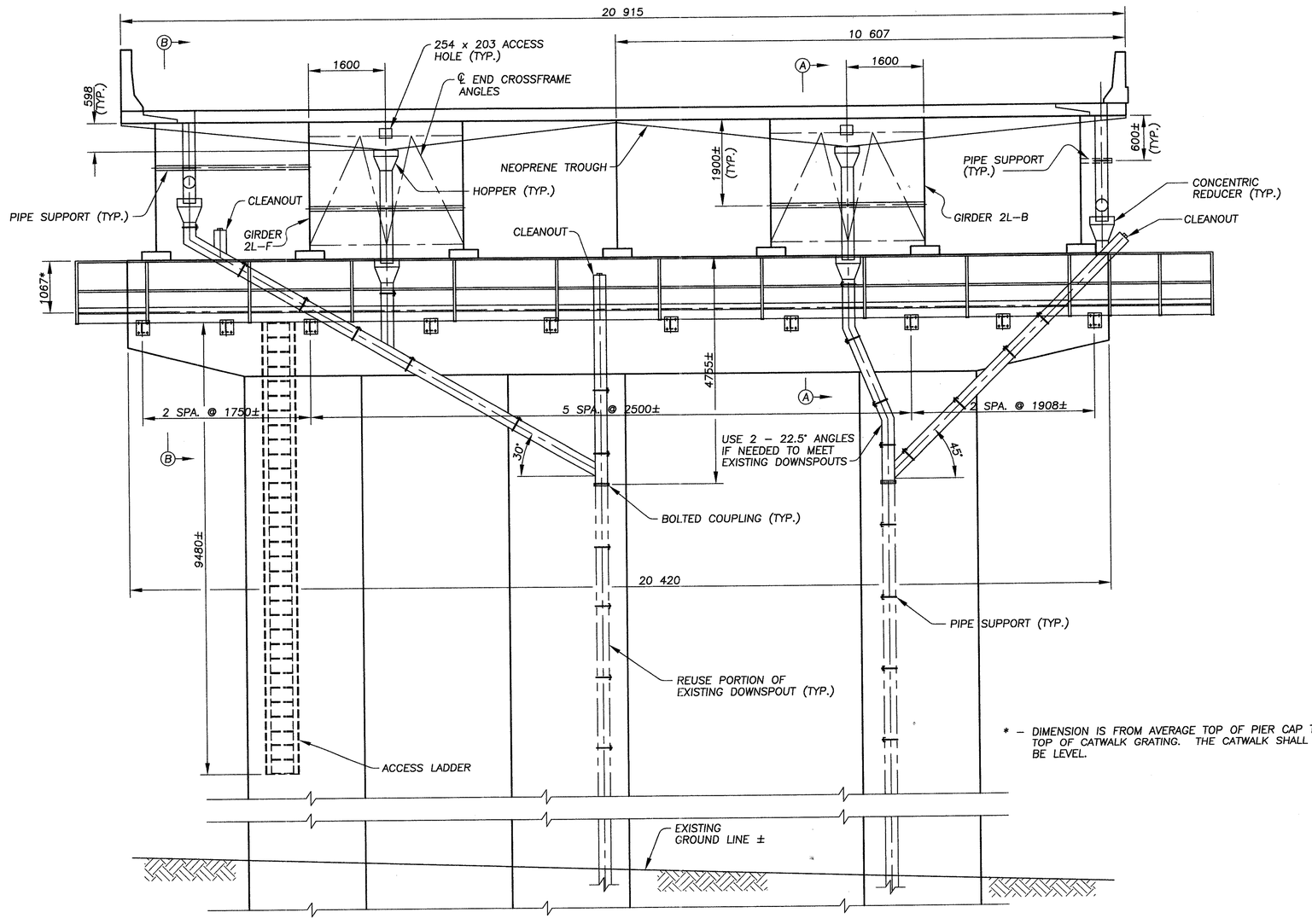
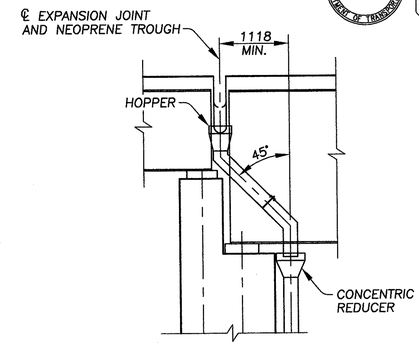


PLAN

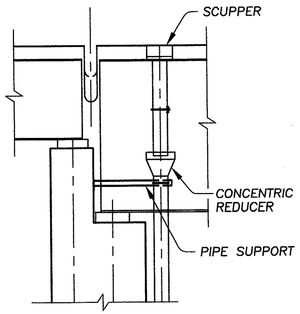


PIER 4L
LOOKING SOUTH

* – DIMENSION IS FROM AVERAGE TOP OF PIER CAP TO TOP OF CATWALK GRATING. THE CATWALK SHALL BE LEVEL.



SECTION A–A



SECTION B–B

NOTES:

FOR ADDITIONAL CATWALK NOTES AND DETAILS, SEE SHEETS 155 AND 156 OF 175.

FOR ADDITIONAL DOWNSPOUT AND SCUPPER NOTES AND DETAILS, SEE SHEET 153, 153A AND 154 OF 175.

FOR EXPANSION JOINT DETAILS, SEE SHEET 128 OF 175.

FOR SCUPPER LOCATIONS, SEE SHEET 153 OF 175.

metric units

DESIGN AGENCY
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DOWNSPOUTS AND CATWALKS
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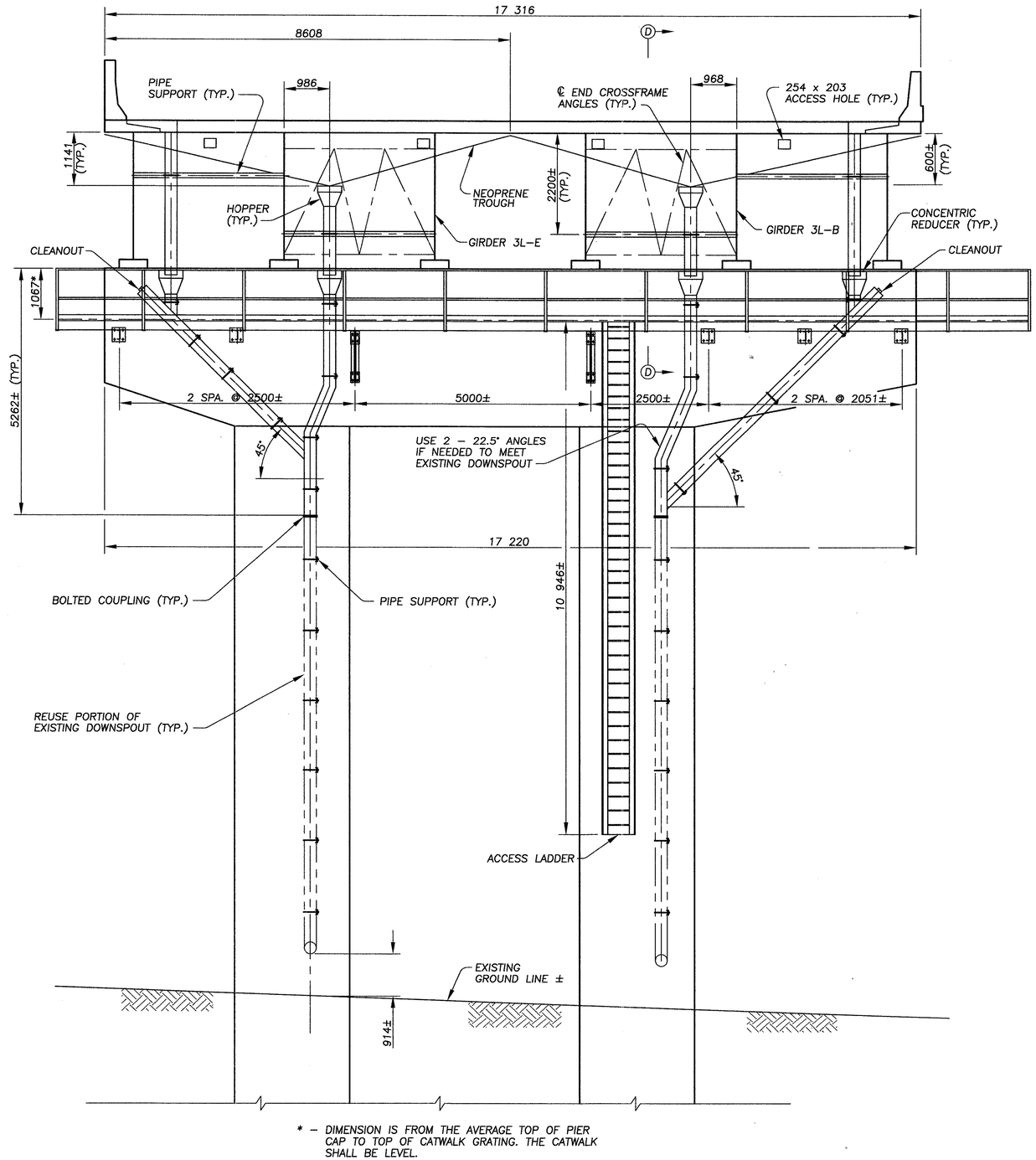
161/175

265/295

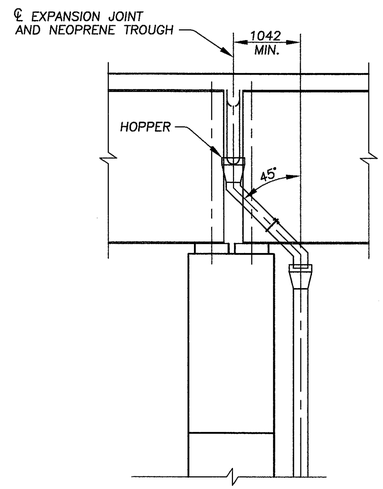
\24621\techprod\drawings\bridge\Scupp4



* – DIMENSION IS FROM THE AVERAGE TOP OF PIER CAP TO TOP OF CATWALK GRATING. THE CATWALK SHALL BE LEVEL.

PIER 7L

LOOKING SOUTH



SECTION D–D

NOTES:

FOR ADDITIONAL CATWALK NOTES AND DETAILS, SEE SHEETS 155 AND 156 OF 175.

FOR ADDITIONAL DOWNSPOUT AND SCUPPER NOTES AND DETAILS, SEE SHEET 153 AND 154 OF 175.

FOR EXPANSION JOINT DETAILS, SEE SHEET 128 OF 175.

FOR SCUPPER LOCATIONS, SEE SHEET 153 OF 175.

metric units

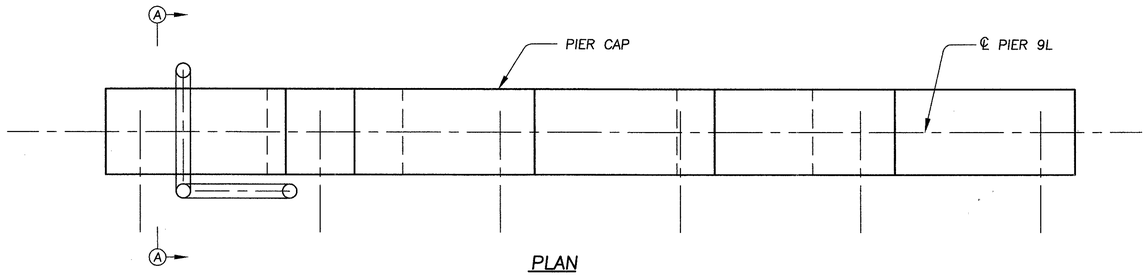
DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
AEH	GLG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

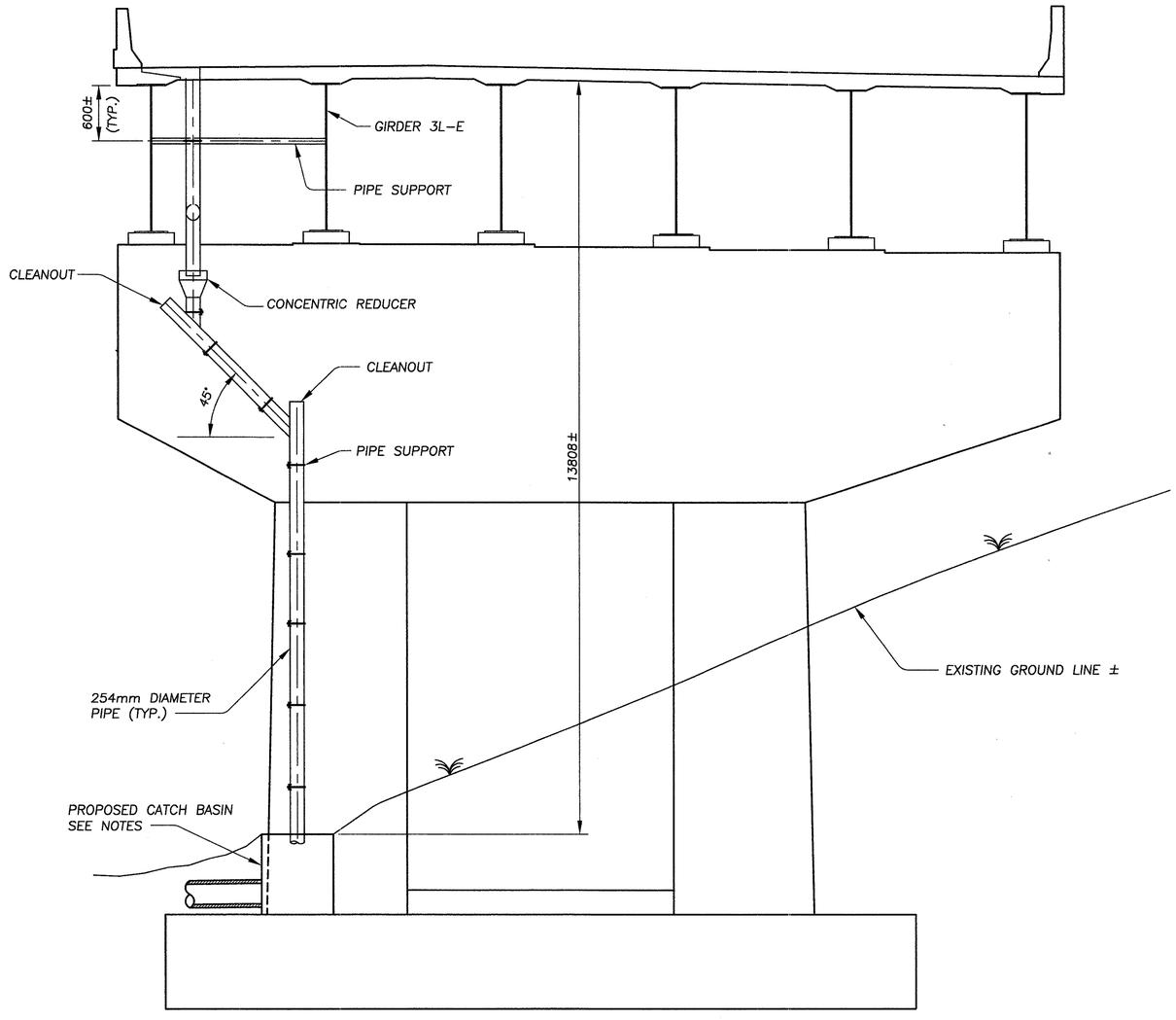
DOWNSPOUTS AND CATWALKS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

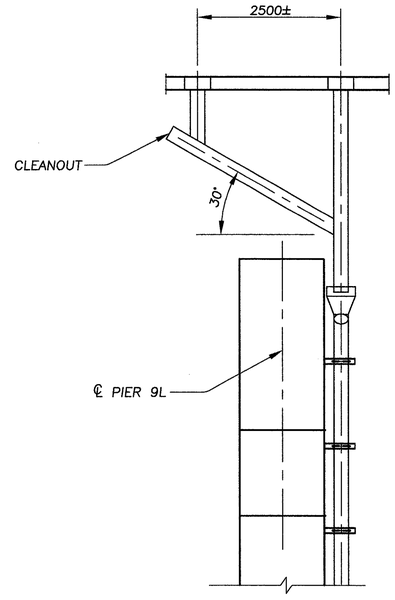
\24621\techprod\drawings\bridge\Scupp6



PLAN



PIER 9L
LOOKING SOUTH



SECTION A–A

NOTES:

FOR ADDITIONAL DOWNSPOUT AND SCUPPER NOTES AND DETAILS, SEE SHEET 153 AND 154 OF 175.

FOR SCUPPER LOCATIONS, SEE SHEET 153 OF 175.

FOR CATCH BASIN ELEVATION AND DETAILS, SEE SHEET 154 OF 175.

\24621\techprod\drawings\bridge\Scupp10

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY
HNTB
ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724

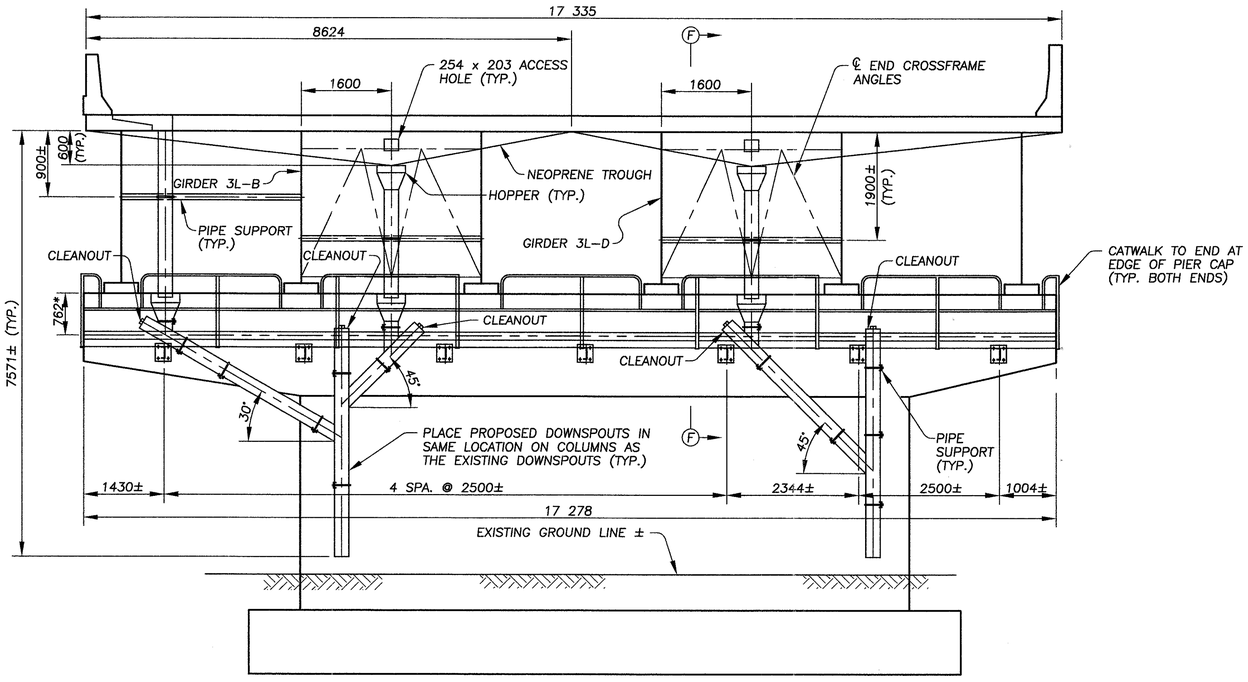
DESIGNED	DRAWN	REVIEWED	DATE
AEH	AEH	RER	11-18-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

DOWNSPOUTS AND CATWALKS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

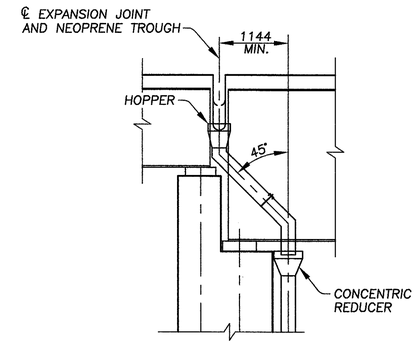
162A/175

266A/295



* – DIMENSION IS FROM AVERAGE TOP OF PIER CAP TO TOP OF CATWALK GRATING. THE CATWALK SHALL BE LEVEL.

PIER 10L
LOOKING NORTH



SECTION F–F

NOTES:

FOR ADDITIONAL CATWALK NOTES AND DETAILS. SEE SHEETS 155 AND 156 OF 175.

FOR ADDITIONAL DOWNSPOUT AND SCUPPER NOTES AND DETAILS, SEE SHEET 153 AND 154 OF 175.

FOR EXPANSION JOINT DETAILS, SEE SHEET 128 OF 175.

FOR SCUPPER LOCATIONS, SEE SHEET 153 OF 175.

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
AEH	GLG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL		1806726	

DOWNSPOUTS AND CATWALKS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

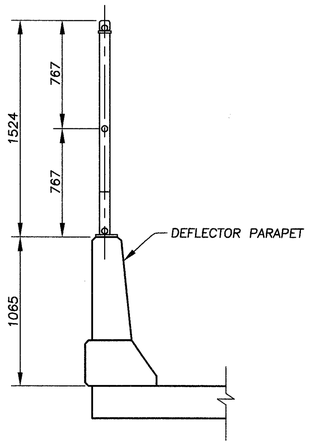
CUY-77-23.458

163/175

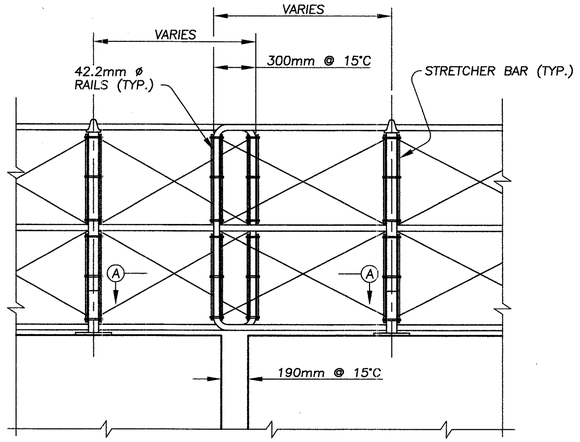
267/295

\24621\techprod\drawings\bridge\Scupp8

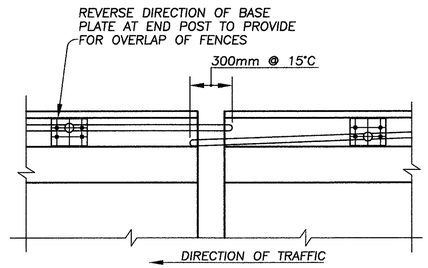
metric units



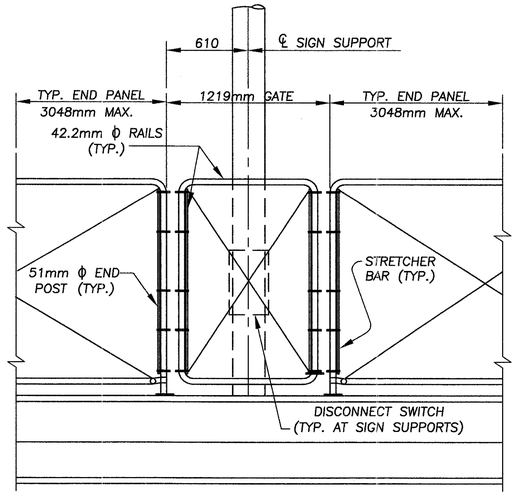
TYPICAL FENCE SECTION



ELEVATION AT EXPANSION JOINTS



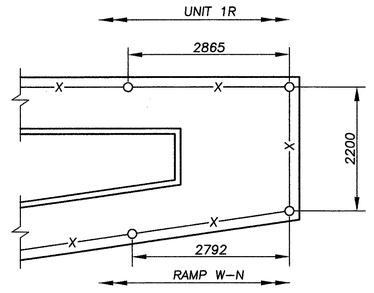
SECTION A–A



DETAIL AT SIGN SUPPORT

(TYPICAL AT PIERS 2L, 8L, & 8R)

NOTE: PAYMENT INCLUDED IN THE UNIT PRICE BID FOR ITEM SPECIAL – VANDAL PROTECTION FENCE



FENCE DETAIL AT RAMP W–N GORE

NOTES:

1. PROVIDE ACCESS OPENINGS AT LIGHT POLES. FOR LIGHT POLE LOCATIONS SEE LIGHTING PLANS.
2. FOR ADDITIONAL FENCE NOTES AND DETAILS SEE STANDARD DRAWING VPF–1–90M
3. FOR FENCE POST SPACES SEE BARRIER DETAILS SHEETS 139 TO 143 OF 175.
4. USE BASE PLATE BP–5.
5. ANCHOR BOLTS SHALL BE CAST IN PLACE.

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
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ARCHITECTS ENGINEERS PLANNERS

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MJL		1806726	

FENCE DETAILS
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

164/175

268/295

\24621\techprod\drawings\bridge\Fence

RAMP W–N ABUTMENT

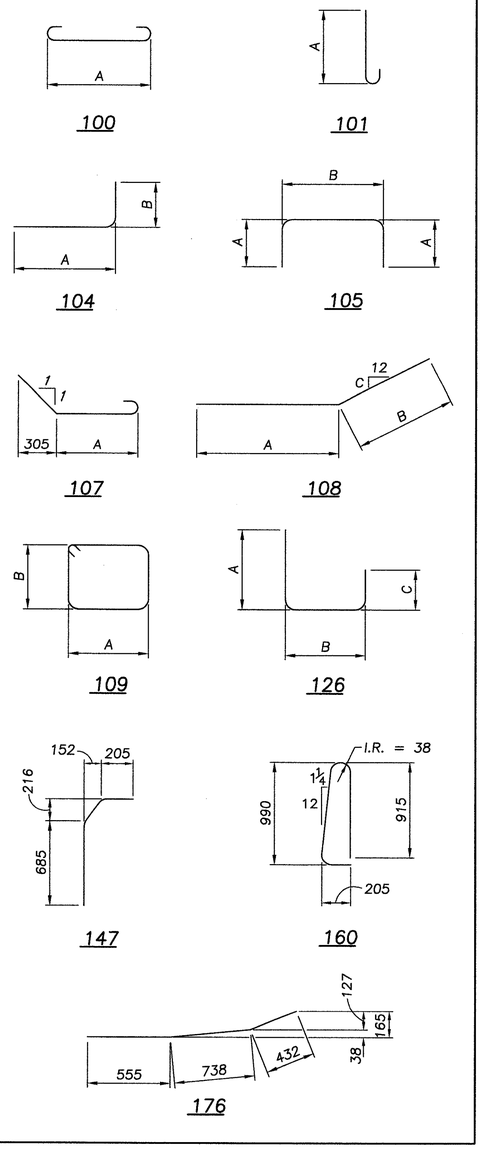
MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
WNA15M01	40	3120	105	750	1700		
WNA15M02	9	2580	104	2170	450		
WNA15M03	41	2240	105	600	1120		
WNA15M04	36	10 000	ST				
WNA15M05	15	5100	ST				
WNA15M06	5	5200	ST				
WNA15M07	5	1450	ST				
WNA15M08	10	2740	104	2330	450		
WNA15M09	9	2950	104	2540	450		
WNA15M10	10	3190	104	2780	450		
WNA15M11	3	3430	104	3020	450		
WNA15M12	18	1910	100	1550			
WNA15M13	40	1100	105	300	580		
WNA15M14	35	3280	109	900	660		
WNA15M15	10	4050	ST				
WNA15M16	12	5000	ST				
WNA15M17	2	5090	108	3250	1840	3 1/2	
WNA15M18	6	1900	ST				
WNA15M19	8	3050	ST				
WNA15M20	4	1725	ST				
WNA15M21	4	1725	176				
WNA15M22	2 SER. OF 11	920 to 1170	101	740 to 990			25 mm
WNA15M23	5	2130	160				
WNA15M24	10	4450	ST				
WNA15M25	10	5400	ST				
WNA15M26	2	5400	108	3600	1800	3 1/8	
WNA15M27	2	4700	ST				
WNA20M01	8	4560	126	2170	1700	790	
WNA20M02	60	3420	105	1540	440		
WNA20M03	60	2340	105	1000	440		
WNA20M04	60	1990	105	900	290		
WNA20M05	10	4720	126	2330	1700	790	
WNA20M06	9	4930	126	2540	1700	790	
WNA20M07	10	5170	126	2780	1700	790	
WNA20M08	3	5410	126	3020	1700	790	
WNA20M09	8	8350	105	4050	350		
WNA20M10	2	6050	105	2900	350		
WNA20M11	34	1500	ST				
WNA20M12	4	1320	ST				
WNA20M13	4	1200	ST				
WNA20M14	4 SER. OF 4	1630 to 1930	ST				100 mm
WNA20M15	22	1375	ST				
WNA20M16	27	1135	147				
WNA20M17	5	865	ST				
WNA20M18	9	6650	105	3200	350		
WNA20M19	2	4350	105	2050	350		
WNA25M01	28	1850	107	1140			
WNA30M01	14	11 000	ST				
WNA30M02	6	4950	ST				
WNA30M03	6	5300	ST				

REAR ABUTMENT

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
RA15M01	114	3120	105	750	1700		
RA15M02	83	2810	104	2400	450		
RA15M03	114	2740	105	850	1120		
RA15M04	100	10 500	ST				
RA15M05	46	7900	ST				
RA15M06	31	2510	104	2100	450		
RA15M07	10	1660	100	1300			
RA15M08	9	2110	100	1750			
RA15M09	128	1100	105	300	580		
RA15M10	35	3280	109	900	660		
RA15M11	12	4250	ST				
RA15M12	4	5100	ST				
RA15M13	2	6200	108	3500	2700	6 9/16	
RA15M14	10	5900	ST				
RA15M15	2	6000	108	3400	2600	6	
RA15M16	2	4200	ST				
RA15M17	10	5750	ST				
RA15M18	6	2600	ST				
RA15M19	8	3050	ST				
RA15M20	4	1725	ST				
RA15M21	4	1725	176				
RA15M22	2 SER. OF 11	920 to 1170	101	740 to 990			25 mm
RA15M23	10	2130	160				
RA15M24	8	4075	ST				
RA20M01	83	4790	126	2400	1700	790	
RA20M02	178	4740	105	2200	440		
RA20M03	178	2340	105	1000	440		
RA20M04	178	1990	105	900	290		
RA20M05	NOT USED						
RA20M06	31	4490	126	2100	1700	790	
RA20M07	9	6850	105	3300	350		
RA20M08	2	4850	105	2300	350		
RA20M09	18	2150	ST				
RA20M10	4	1930	ST				
RA20M11	4	1690	ST				
RA20M12	4	1450	ST				
RA20M13	9	6350	105	3050	350		
RA20M14	4 SER. OF 4	1675 to 2095	ST				140 mm
RA20M15	22	1375	ST				
RA20M16	32	1135	147				
RA20M17	10	865	ST				
RA20M18	2	4250	105	2000	350		
RA25M01	78	1620	107	910			
RA25M02	29	1550	107	840			
RA30M01	42	9100	ST				
RA30M02	7	7800	ST				
RA30M03	7	6500	ST				
RA30M04	6	5075	ST				
RA30M05	6	4925	ST				
RSP20M01	18	2000	105	750	600		
RSP20M02	42	1175	104	475	750		
RSP30M01	42	1160	104	500	750		
RSP30M02	12	1180	ST				

metric units

BAR BENDING DIAGRAMS



ALL DIMENSIONS ARE IN MILLIMETERS.

NOTES:

1. BAR SIZE: THE BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST LETTER IDENTIFIES THE BAR LOCATION; NEXT TWO DIGITS AND LETTER INDICATES THE METRIC BAR SIZE DESIGNATION; AND THE REMAINING DIGITS IT'S SEQUENCE NUMBER.
   EXAMPLE: A15M01
   A) A = LOCATION OF THE BAR IN THE STRUCTURE.
   B) 15M = METRIC BAR SIZE DESIGNATION
   C) 01 = SEQUENCE NUMBER
2. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED.
3. ALL BARS ARE EPOXY COATED.
4. ST = STRAIGHT
5. REFER TO CMS SECTIONS 106.03, 700, 709.01 THROUGH 709.05 AND 709.08. SUFFICIENT ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED FOR SAMPLING. RANDOM SAMPLES SHALL BE REPLACED IN THE STRUCTURES BY THE ADDITIONAL STEEL, SPLICED IN ACCORDANCE WITH 509.08.
6. PAYMENT FOR ALL REINFORCING BARS, MECHANICAL CONNECTORS AND DOWEL HOLES IS INCORPORATED INTO THE APPROPRIATE ITEM SPECIAL–HIGH PERFORMANCE CONCRETE PAY ITEMS.

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	S/R	GT	9-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
JOL/JV		1806726	

RAMP W–N AND REAR ABUTMENT REINFORCING SCHEDULE
BRIDGE NO. CUY–77–23458
OVER KINGSBURY RUN

CUY–77–23.458

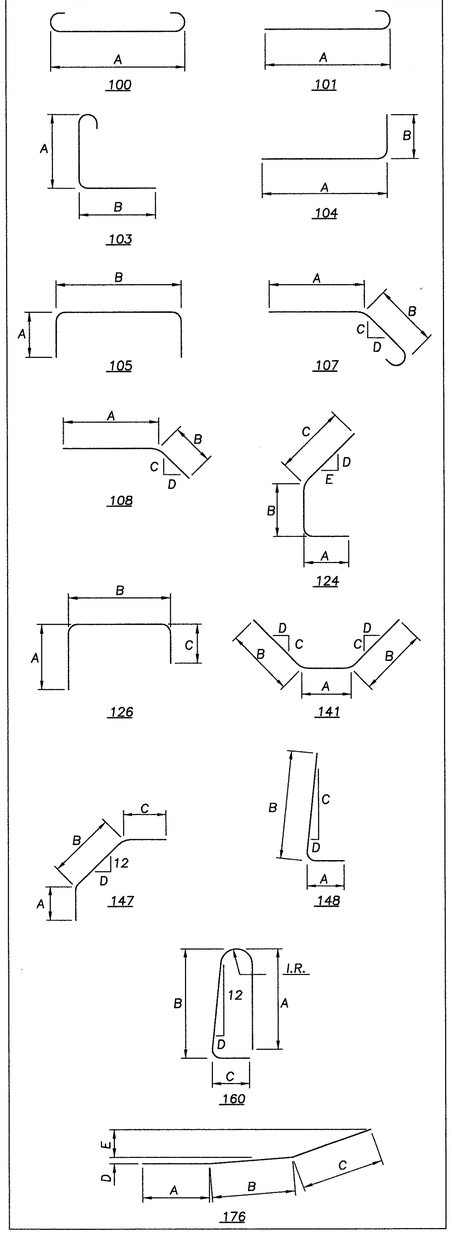
BAR SCHEDULE

MARK	NUMBER REQ'D	LENGTH	TYPE	A	B	C	D	E	SER. INCR.
FORWARD ABUTMENT – EPOXY COATED BARS									
FA15M01	30	3975	STR						
FA15M02	1	3275	STR						
FA15M03	1	3150	STR						
FA15M04	1	2100	STR						
FA15M05	11	1950	104	1204	786				
FA15M06	7	1975	104	1204	811				
FA15M07	1	1850	104	1204	686				
FA15M08	7	2000	104	1204	836				
FA15M09	2	1825	104	1204	661				
FA15M10	5	1975	104	1204	811				
FA15M11	4	1850	104	1204	686				
FA15M12	1	1975	104	1204	811				
FA15M13	12	5925	STR						
FA15M14	11	1750	STR						
FA15M15	15	2775	105	825	1204				
FA15M16	1	2425	105	822	861				
FA15M17	56	3225	126	839	281	2185			
FA15M18	11	2200	104	1807	433				
FA15M19	15	1500	STR						
FA15M20	15	3225	126	838	281	2186			
FA15M21	32	2130	160	915	990	205	1.25	I.R.=38	
FA15M22	36	5450	STR						
FA15M23	50	4475	STR						
FA15M24	18	8025	STR						
FA15M25	14	5100	STR						
FA15M26	18	1275	105	270	816				
FA15M27	3	5325	STR						
FA15M28	1	5625	STR						
FA15M29	8	4500	STR						
FA15M30	4	1125	STR						
FA15M31	4	3275	STR						
FA15M32	3	5150	STR						
FA15M33	1	4875	STR						
FA15M34	36	1375	105	268	920				
FA15M35	2	5975	STR						
FA15M50	1 SER 12	3900	STR						27
		3600							
FA15M51	2	3600	STR						
FA15M52	1	2575	STR						
FA15M53	1	2375	STR						
FA15M54	3	3700	STR						
FA15M55	1	2425	STR						
FA15M56	2	3775	STR						
FA15M57	1	3125	STR						
FA15M58	2	3800	STR						
FA15M59	4	1250	STR						
FA15M60	33	1925	104	1204	761				
FA15M61	8	1225	STR						
FA15M62	7	1200	STR						
FA15M63	2	1325	STR						
FA15M64	6	2275	104	1204	1111				
FA15M65	3	1325	STR						
FA15M66	4	1150	STR						
FA15M67	5	1350	STR						
FA15M68	1	1175	STR						
FA15M69	10	1750	STR						
FA15M70	10	4775	STR						
FA15M71	58	2775	126	852	281	1722			
FA15M72	17	2775	105	826	1204				
FA15M73	15	1650	STR						
FA15M74	15	2775	126	858	281	1716			
FA15M75	2	2375	STR						
FA15M76	15	1725	104	1332	433				
FA15M77	32	2130	160	915	990	205	1.25	I.R.=38	
FA15M78	36	5275	STR						
FA15M79	20	4600	STR						
FA15M80	18	8325	STR						
FA15M81	18	4825	STR						
FA15M82	2	1525	STR						
FA15M83	1	1700	STR						
FA15M84	12	4550	STR						

BAR SCHEDULE

MARK	NUMBER REQ'D	LENGTH	TYPE	A	B	C	D	E	SER. INCR.
FORWARD ABUTMENT – EPOXY COATED BARS (CONTINUED)									
FA15M85	4	1475	STR						
FA15M86	4	2975	STR						
FA15M87	3	5875	STR						
FA15M88	1	6000	STR						
FA15M89	1	1750	STR						
FA15M90	14	2400	STR						
FA15M91	8	1350	STR						
FA15M92	6	1850	STR						
FA15M93	18	1275	105	270	816				
FA15M94	36	1375	105	268	920				
FA15M95	1	1825	STR						
FA15M96	2	3900	STR						
FA15M97	1	1725	STR						
FA20M01	56	2200	104	1817	433				
FA20M02	1	1800	STR						
FA20M03	11	3675	108	1958	1727	12	12		
FA20M04	3	3100	STR						
FA20M05	9	2250	STR						
FA20M06	25	1850	STR						
FA20M07	6	8250	STR						
FA20M08	4	7750	STR						
FA20M09	2	7825	STR						
FA20M10	12	8250	STR						
FA20M11	11	7350	STR						
FA20M12	19	3500	STR						
FA20M13	3	1325	STR						
FA20M14	1	3925	105	1833	358				
FA20M15	6	3375	105	1559	358				
FA20M16	2	2475	STR						
FA20M17	32	1250	147	800	264	205	8.44		
FA20M18	32	975	STR						
FA20M19	42	3175	108	1860	1325	12	6.42		
FA20M20	7	3700	141	1100	1310	12	6.42		
FA20M21	21	3425	124	1361	762	1360	12	8	
FA20M22	42	6900	STR						
FA20M23	26	3275	103	962	2143				
FA20M24	8	3050	124	1361	388	1361	12	8	
FA20M25	8	4450	STR						
FA20M26	28	5400	STR						
FA20M27	1 SER. 21	3100	105	1316	568				12
		2850		1316	318				
FA20M28	2	3000	141	400	1310	12	6.42		
FA20M29	3	2018	105	652	814				
FA20M30	6	1281	104	690	632				
FA20M31	3	2186	105	736	814				
FA20M32	6	1218	104	552	716				
FA20M50	14	1850	STR						
FA20M51	4	4750	STR						
FA20M52	1	4850	STR						
FA20M53	58	1725	104	1342	433				
FA20M54	15	4325	108	2608	1727	12	12		
FA20M55	4	6625	STR						
FA20M56	2	6300	STR						
FA20M57	3	6150	STR						
FA20M58	3	3050	STR						
FA20M59	1	3600	105	1671	358				
FA20M60	5	3325	105	1533	358				
FA20M61	1	3000	105	1371	358				
FA20M62	13	1250	147	800	264	205	8.44		
FA20M63	13	975	STR						
FA20M64	17	2775	103	1247	1358				
FA20M65	17	3725	100	3285					
FA20M66	6	2765	100	2325					
FA20M67	1 SER. 16	4537	105	2060	517				13
		4340		2060	320				
FA20M68	1	5200	105	2491	318				
FA20M69	1	3400	108	1705	1705	12	9.61		
FA20M70	1	1975	STR						
FA20M71	1	3450	STR						
FA20M72	1	3700	STR						

BAR BENDING DIAGRAMS



NOTE:
ALL REINFORCING STEEL SHALL BE EPOXY COATED.

NOTES:
ALL DIMENSIONS ARE IN MILLIMETERS.
FOR ADDITIONAL NOTES, SEE SHEET 165 OF 175.

metric units

DESIGN AGENCY
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One Cleveland Center
1375 East 9th Street
Cleveland, Ohio 44114-1724

DATE 09-12-97
REVIEWED RER
STRUCTURE FILE NUMBER 1806726
DRAWN JLV
REVISED
DESIGNED JLV
CHECKED TJM

FORWARD ABUTMENT REINFORCEMENT SCHEDULE
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

166/175

270/295

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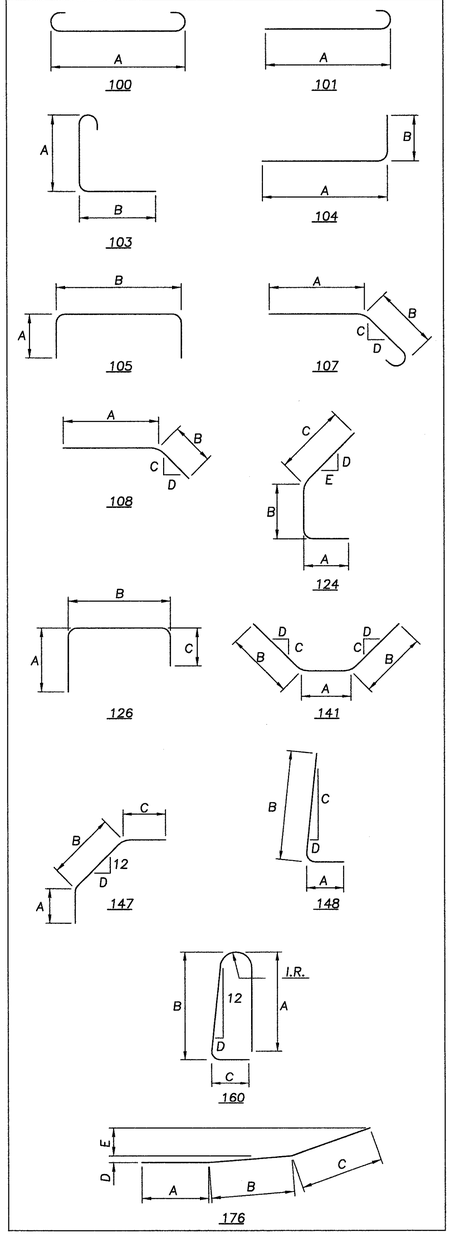
BAR SCHEDULE

MARK	NUMBER REQ'D	LENGTH	TYPE	A	B	C	D	E	SER. INCR.
FORWARD ABUTMENT – EPOXY COATED BARS (CONTINUED)									
FA20M73	5	3625	STR						
FA20M74	5	3875	STR						
FA20M75	7	2650	108	1330	1330	12	9.61		
FA20M76	2	2350	STR						
FA20M77	6	2185	105	736	813				
FA20M78	12	1217	104	542	716				
FA25M01	9	4675	STR						
FA25M02	4	4450	STR						
DFA25M03	45	1686	107	432	984	12	12		
FA25M50	4	3375	STR						
FA25M51	5	3200	STR						
FA25M52	3	3175	STR						
DFA25M53	42	1686	107	432	984	12	12		
FA30M01	4	1475	STR						
FA30M02	6	1262	104	700	652				
FA30M03	6	1246	104	600	736				
FA30M50	4	3925	101	3525					
FA30M51	1	2950	101	2550					
FA30M52	4	3650	101	3250					
FA30M53	2	3600	101	3200					
FA30M54	1	2975	101	2575					
FA30M55	1	3575	101	3175					
FA30M56	3	3550	101	3150					
FA30M57	4	1475	STR						
FA30M58	12	1246	104	600	736				
FA35M01	14	5125	101	4665					
FA35M02	1	3700	101	3240					
FA35M03	6	5050	101	4590					
FA35M04	4	6025	STR						
FA35M05	14	7425	104	637	6888				
FA35M06	8	5225	148	650	4675	12	.042		
FA35M07	8	7350	STR						
FA35M50	1	4850	STR						
FA35M51	15	6250	104	630	5720				
NORTHEAST RETAINING WALL – EPOXY COATED BARS									
NE15M01	16	8600	STR						
NE15M02	32	8450	STR						
NE15M03	28	2050	STR						
NE15M04	28	2125	STR						
NE15M05	28	2175	STR						
NE15M06	28	2250	STR						
NE15M07	53	1732	100	1372					
NE15M08	56	1375	STR						
NE15M09	6	6850	STR						
NE15M10	4	3050	STR						
NE15M11	2	1725	176	555	738	432	38	127	
NE15M12	2	1725	STR						
NE15M13	38	2130	160	915	990	205	1.25	I.R.=38	
NE15M14	1 SER. 11	1170	101	990					25
		920		740					
NE20M01	49	1250	147	800	264	205	8.44		
NE20M02	38	975	STR						
NE20M03	19	1475	STR						
NORTHWEST RETAINING WALL – EPOXY COATED BARS									
NW15M01	16	7450	STR						
NW15M02	32	7300	STR						
NW15M03	24	1800	STR						
NW15M04	24	1875	STR						
NW15M05	24	1950	STR						
NW15M06	24	2025	STR						
NW15M07	46	1732	100	1372					

BAR SCHEDULE

MARK	NUMBER REQ'D	LENGTH	TYPE	A	B	C	D	E	SER. INCR.
NORTHWEST RETAINING WALL – EPOXY COATED BARS (CONTINUED)									
NW15M08	48	1375	STR						
NW15M09	6	5725	STR						
NW15M10	4	3050	STR						
NW15M11	2	1725	176	555	738	432	38	127	
NW15M12	2	1725	STR						
NW15M13	30	2130	160	915	990	205	1.25	I.R.=38	
NW15M14	1 SER. 11	1170	101	990					25
		920		740					
NW20M01	41	1250	147	800	264	205	8.44		
NW20M02	30	975	STR						
NW20M03	19	1475	STR						

BAR BENDING DIAGRAMS



NOTE:
ALL REINFORCING STEEL SHALL BE EPOXY COATED.

NOTES:
ALL DIMENSIONS ARE IN MILLIMETERS.
FOR ADDITIONAL NOTES, SEE SHEET 165 OF 175.

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Telephone (216) 241-7334
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
JLV	JLV	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

FORWARD ABUTMENT REINFORCEMENT SCHEDULE
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

\24621\techprod\drawings\bridge\Rebarfo2

PIER A

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS			INCRM.
				A	B	C	
AP15M01	32	7690	105	3500	765		
AP15M02	112	1120	180	765			
AP15M03	50	5420	105	2150	1195		
AP15M04	42	5080	105	1980	1195		
AP20M01	56	8740	ST				
AP20M02	4	7020	ST				
AP20M03	2	9760	ST				
AP20M04	8	6000	108	5100	900	2 1/8	
AP20M05	2	6400	ST				
AP20M06	30	2865	105	900	1165		
AP25M01	48	2990	104	610	2440		
AP25M02	48	6120	ST				
AP25M03	36	3460	100	2900			
AP25M04	14	8790	100	8230			
AP35M01	7	9500	173	8600	1000		
AP35M02	7	8845	174	7945	1000		
AP35M03	7	8600	170				
AP35M04	7	7945	171				
AP35M05	4	6900	170				
AP35M06	4	6100	171				

PIER B

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS			INCRM.
				A	B	C	
BP15M01	48	8280	105	3800	760		
BP15M02	216	1115	180	760			
BP15M03	42	5310	105	2100	1190		
BP15M04	24	4620	105	1900	900		
BP15M05	16	4710	105	1800	1190		
BP20M01	56	7850	ST				
BP20M02	6	7000	ST				
BP20M03	2	10 400	ST				
BP20M04	4	4350	108	900	3450	3 1/4	
BP20M05	4	5350	108	900	4450	2 1/2	
BP20M06	32	2860	105	900	1160		
BP25M01	64	3040	104	2500	600		
BP25M02	64	7250	ST				
BP30M01	19	10 900	100	10 100			
BP30M02	52	5600	100	4800			
BP35M01	7	8600	173	7700	1000		
BP35M02	7	7915	174	7015	1000		
BP35M03	7	7015	170				
BP35M04	7	7700	171				
BP35M05	4	8700	ST				

PIER 1R

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS			INCRM.
				A	B	C	
1RP15M01	48	9815	105	4565	765		
1RP15M02	230	1120	180	765			
1RP15M03	76	5315	105	2100	1195		
1RP15M04	32	5020	105	2100	900		
1RP20M01	8	9010	ST				
1RP20M02	5	5545	108	4375	1170	2 3/8	
1RP20M03	4	7490	ST				
1RP20M04	2	11 170	ST				
1RP20M05	5	8535	ST				
1RP20M06	5	4970	108	3840	1130	2 11/16	
1RP25M01	13	10 925	100	10 365			
1RP25M02	32	9310	ST				
1RP25M03	22	4045	105	1500	1165		
1RP25M04	1	11 010	100	10 450			
1RP25M05	2	9960	100	9400			
1RP30M01	64	4210	104	3700	600		
1RP30M02	64	8600	ST				
1RP35M01	6	9160	ST				
1RP35M02	8	8170	170				
1RP35M03	8	8900	171				
1RP35M04	8	9800	173	8900	1000		
1RP35M05	8	9070	174	8170	1000		
1RP35M06	35	5990	100	5030			
1RP35M07	1 SER. OF 3	5680 TO	100	4720 TO			175
		6030		5070			
1RP35M08	2	4960	100	4000			

PIER 2RE

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS			INCRM.
				A	B	C	
2REP15M01	54	4530	105	1590	1425		
2REP15M02	4	9520	105	4110	1375		
2REP15M03	40	1200	ST				
2REP15M04	20	5980	105	2340	1375		
2REP15M05	6	3630	105	1140	1425		
2REP20M01	24	6875	ST				
2REP20M02	4	7615	ST				
2REP20M03	14	3095	105	900	1395		
2REP25M01	4	3465	108	2335	1130	2 13/16	
2REP25M03	2	1310	ST				
2REP25M04	11	2830	104	2295	600		
2REP25M05	13	10 900	ST				
2REP25M06	4	3685	108	2535	1150	2 19/32	
2REP32M01	17	3245	101	2845			
2REP35M01	9	7600	174	6700	1000		
2REP35M02	9	7010	173	6110	1000		
2REP35M03	2	7040	ST				
2REP35M04	11	4920	100	3960			

ALL DIMENSIONS ARE IN MILLIMETERS.

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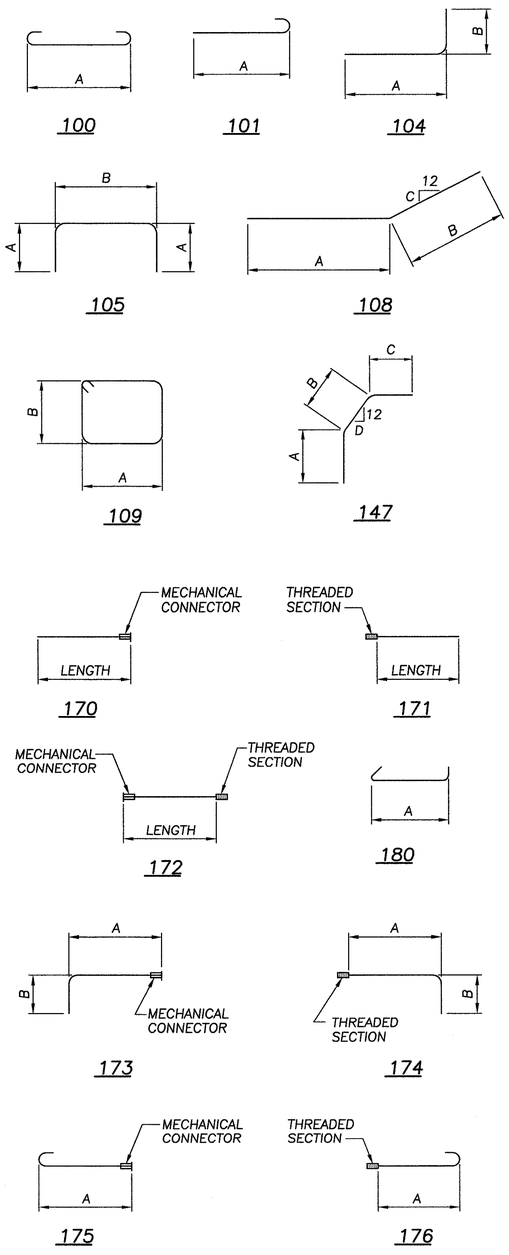
FOR ADDITIONAL NOTES, SEE SHEET 165 OF 175.

BAR BENDING DIAGRAMS



metric units

DESIGN AGENCY
HNTB
ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East 9th Street, Suite
Cleveland, Ohio 44114-1724

DESIGNED	DRAWN	REVIEWED	DATE
DHS	SJR	RER	9-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL/JV		1806726	

PIER A, B, 1R AND 2R(E) REINFORCING SCHEDULE
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

PIER 2RW

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	B	C	INCRM.
2RWP15M01	70	3820	105	1390	1120		
2RWP15M02	8	5910	105	2610	765		
2RWP15M03	42	1120	180	765			
2RWP20M01	12	10 720	ST				
2RWP20M02	2	8070	ST				
2RWP20M03	4	4465	108	3400	1065	2 1/8	
2RWP20M04	4	4450	ST				
2RWP20M05	14	2790	105	900	1090		
2RWP20M06	4	3985	108	2920	1065	2 19/32	
2RWP25M01	24	3000	ST				
2RWP35M01	7	12 475	105	1000	10 680		
2RWP35M02	4	10 720	ST				

PIER 5R

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	B	C	D	INCRM.
5RP15M01	17	7400	105	3180	1120			
5RP15M02	1 SER. OF 5	2520 to 7400	105	740 to 3180	1120			1220 mm
5RP15M03	20	4700	105	1550	1680			
5RP15M04	20	2605	180	2250				
5RP15M05	20	2035	180	1680				
5RP20M01	18	5380	ST					
5RP20M02	210	600	ST					
5RP20M03	1	4790	105	1900	1090			
5RP20M04	1 SER. OF 7	1990 to 4690	105	500 to 1850	1090			450 mm
5RP20M05	4	4040	147	640	2900	500	6 11/16	
5RP20M06	20	7980	105	3100	1880			
5RP20M07	66	8380	105	3300	1880			
5RP20M08	156	8000	105	3300	1500			
5RP20M09	16	6780	105	2500	1880			
5RP20M10	4 SER. OF 6	6600 to 10 800	ST					840 mm
5RP20M11	42	3540	105	900	1840			
5RP20M12	5	5600	108	900	4700	5 1/2		
5RP20M13	5	8500	108	900	7600	3 3/16		
5RP20M14	16	11 500	ST					
5RP30M01	60	12 000	ST					
5RP35M01	100	3200	ST					
5RP35M02	5	10 300	ST					
5RP35M03	1 SER. OF 13	1260 to 3000	101	780 to 2520				145 mm
5RP35M04	21	10 260	100	9300				
5RP35M05	1 SER. OF 13	3060 to 5340	101	2580 to 4860				190 mm
5RP35M06	11	2960	101	2480				
5RP35M07	1 SER. OF 18	3060 to 6375	101	2580 to 5895				195 mm
5RP35M08	1 SER. OF 21	1230 to 4230	101	750 to 3750				150 mm
5RP55M01	9	12 300	173	11 300	1200			
5RP55M02	9	11 650	174	10 650	1200			
5RP55M03	9	11 550	175	10 650				
5RP55M04	9	12 200	176	11 300				
5RP55M05	9	9650	170					
5RP55M06	9	9880	171					

PIER 4R

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	B	C	INCRM.
4RP15M01	20	4390	105	1550	1370		
4RP15M02	20	1725	180	1370			
4RP15M03	10	2615	180	2260			
4RP15M04	118	5995	105	2250	1575		
4RP15M05	56	5520	105	2200	1200		
4RP15M06	18	5295	105	1900	1575		
4RP15M07	84	4945	105	2200	625		
4RP15M08	32	3365	105	1425	595		
4RP15M09	32	4365	105	1925	595		
4RP15M10	8	3865	105	1675	595		
4RP15M11	88	1010	180	655			
4RP15M12	4	2060	ST				
4RP15M13	16	3080	ST				
4RP15M14	4	2550	ST				
4RP15M15	8	2020	ST				
4RP15M16	4	1550	ST				
4RP15M17	124	600	ST				
4RP20M01	24	8450	ST				
4RP20M02	4	10 700	ST				
4RP20M03	4	9200	ST				
4RP20M04	5	4150	108	900	3250	3 7/16	
4RP20M05	5	6900	108	900	6000	1 13/16	
4RP20M06	30	3245	105	900	1545		
4RP25M01	2	10 700	ST				
4RP25M02	4	7200	ST				
4RP25M03	48	8850	ST				
4RP35M01	76	3100	ST				
4RP35M02	24	8500	ST				
4RP45M01	8	12 850	173	12 000	1000		
4RP45M02	8	12 295	174	11 445	1000		
4RP45M03	8	7500	170				
4RP45M04	8	6800	171				
4RP45M05	4	10 310	ST				

PIER 3R

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	B	C	INCRM.
3RP15M01	116	6140	105	2400	1420		
3RP15M02	32	5620	105	2300	1100		
3RP15M03	32	5540	105	2100	1420		
3RP20M01	24	8700	ST				
3RP20M02	4	11 550	ST				
3RP20M03	4	9950	ST				
3RP20M04	29	3090	105	900	1390		
3RP20M05	4	4900	108	900	4000	2 3/4	
3RP20M06	4	7500	108	900	6600	1 11/16	
3RP25M01	2	10 250	ST				
3RP25M02	2	12 000	ST				
3RP25M03	48	9100	ST				
3RP35M01	20	8100	ST				
3RP45M01	8	9250	173	8400	1000		
3RP45M02	8	8550	174	7700	1000		
3RP45M03	8	7000	171				
3RP45M04	8	8400	170				
3RP45M05	4	11 200	ST				
3RP45M06	8	8050	172				

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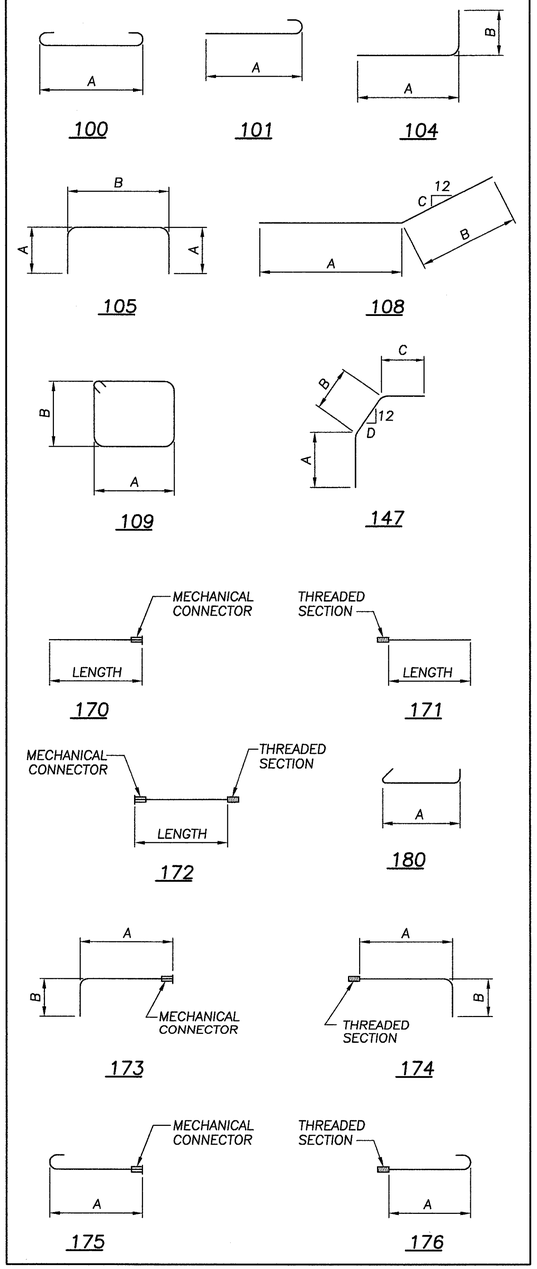
FOR ADDITIONAL NOTES, SEE SHEET 165 OF 175.

BAR BENDING DIAGRAMS



metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DATE 9-12-97
REVIEWED GT
STRUCTURE FILE NUMBER 1806726
DRAWN SJR
REVISED
DESIGNED DHS
CHECKED MJL/JV

PIER 2R(W), 3R, 4R AND 5R REINFORCING SCHEDULE
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

169/175

273/295

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PIER 6R

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
6RP15M01	92	11 200	105	4950	1375		
6RP15M02	644	1730	180	1375			
6RP15M03	92	1350	180	995			
6RP20M01	78	8355	105	3210	2035		
6RP20M02	100	7870	105	3210	1550		
6RP20M03	48	3695	105	900	1995		
6RP20M04	8	10 505	ST				
6RP20M05	4	9560	ST				
6RP20M06	4	8665	ST				
6RP20M07	4	7770	ST				
6RP20M08	4	6875	ST				
6RP20M09	2	11 060	ST				
6RP20M10	8	9270	ST				
6RP20M11	8	4960	108	3970	990	5 29/32	
6RP20M12	8	8270	108	7190	1080	3 3/32	
6RP30M01	2	5070	ST				
6RP30M02	2	4155	ST				
6RP30M03	2	3680	ST				
6RP30M04	76	11 005	ST				
6RP35M01	196	9130	ST				
6RP35M02	98	5120	104	4620	600		
6RP35M03	108	9555	101	9075			
6RP35M04	102	12 700	100	11 740			
6RP55M01	8	11 300	173	10 300	1200		
6RP55M02	8	10 765	174	9765	1200		
6RP55M03	8	8800	170				
6RP55M04	8	9000	176	8100			
6RP55M05	6	8300	170				
6RP55M06	6	7725	171				

PIER 7R

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
7RP15M01	150	4335	105	1520	1375		
7RP15M02	16	2595	180	2240			
7RP15M03	150	1730	180	1375			
7RP15M04	59	2645	180	2290			
7RP20M01	8	7160	ST				
7RP20M02	4	8140	ST				
7RP20M03	4	8840	ST				
7RP20M04	4	9530	ST				
7RP20M05	4	3565	108	2585	980	4 3/16	
7RP20M06	4	2965	108	2065	900	5 1/2	
7RP20M07	28	9735	ST				
7RP20M08	18	3085	105	900	1385		
7RP20M09	86	4715	105	1695	1425		
7RP20M10	14	3925	105	1300	1425		
7RP32M01	14	5050	101	4650			
7RP32M02	2 SER. OF 4	5460 TO	101	5060 TO			375
		6585		6185			
7RP35M01	2 SER. OF 5	1140 TO	101	660 TO			155
		1760		1280			
7RP35M02	31	8120	100	7160			
7RP35M03	17	5130	101	4650			
7RP35M04	38	3860	104	610	3350		
7RP35M05	76	10 800	ST				
7RP35M06	76	4000	ST				
7RP35M07	14	8285	ST				
7RP35M08	4	10 180	176	9700			
7RP35M09	4	9365	175	8885			
7RP35M10	8	9785	174	8885	1000		
7RP35M11	8	10 600	173	9700	1000		
7RP35M12	2 SER. OF 4	5540 TO	101	5060 TO			375
		6665		6185			
7RP35M13	2	825	ST				

PIER 8R

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
8RP15M01	28	4140	105	1500	1215		
8RP15M02	11	4740	109	915	1375		
8RP15M03	28	2605	180	2250			
8RP15M04	56	1570	180	1215			
8RP15M05	22	1270	180	915			
8RP15M06	11	1730	180	1375			
8RP20M01	2	12 200	ST				
8RP20M02	4	8105	ST				
8RP20M03	12	9745	ST				
8RP20M04	30	3085	105	900	1385		
8RP20M05	5	3560	108	2660	900	4 3/16	
8RP20M06	5	7265	108	6365	900	1 11/16	
8RP20M07	102	6165	105	2420	1425		
8RP20M08	80	5805	105	2420	1065		
8RP25M01	44	10 045	ST				
8RP25M02	20	2400	ST				
8RP25M03	20	3135	ST				
8RP25M04	2	5190	ST				
8RP35M01	76	3700	ST				
8RP55M01	8	7700	170				
8RP55M02	8	7150	171				
8RP55M03	8	10 000	173	9000	1200		
8RP55M04	8	10 550	174	9550	1200		

PIER 9R

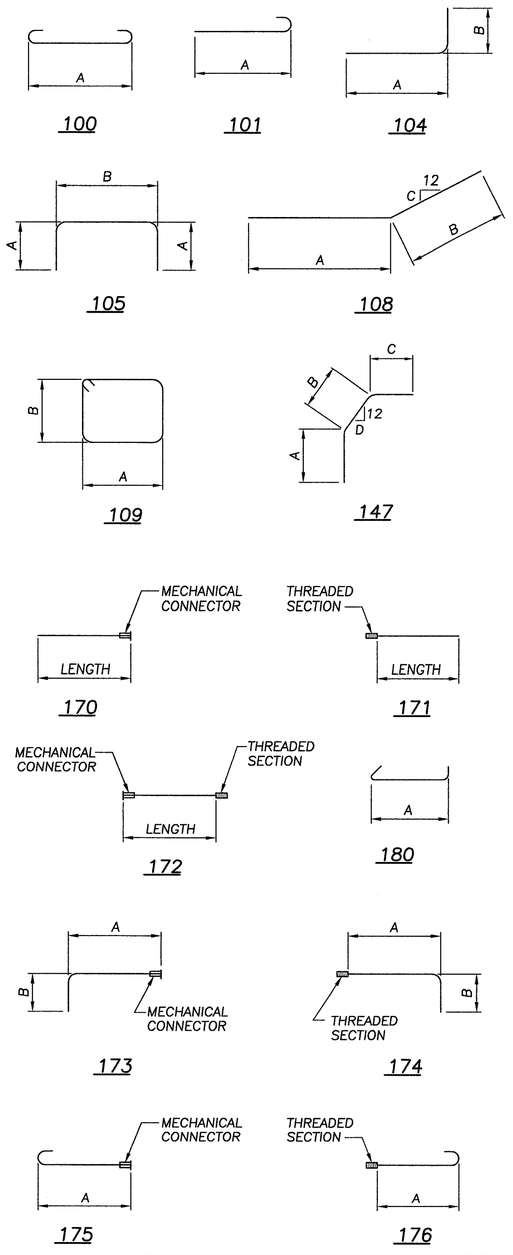
MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
9RP15M01	20	4390	105	1550	1370		
9RP15M02	30	1725	180	1370			
9RP15M03	10	2615	180	2260			
9RP20M01	8	8800	ST				
9RP20M02	4	8300	ST				
9RP20M03	4	7600	ST				
9RP20M04	4	6900	ST				
9RP20M05	2	11 400	ST				
9RP20M06	5	3850	108	900	2950	7	
9RP20M07	5	5550	108	900	4650	4 1/8	
9RP20M08	40	3080	105	900	1380		
9RP20M09	72	6920	105	2800	1420		
9RP20M10	28	6600	105	2800	1100		
9RP25M01	2	7800	ST				
9RP25M02	60	9100	ST				
9RP35M01	76	3100	ST				
9RP35M02	5	9700	ST				
9RP45M01	8	9450	173	8600	1000		
9RP45M02	8	8870	174	8020	1000		
9RP45M03	2	8700	175	8020			
9RP45M04	2	9280	176	8600			
9RP45M05	6	6500	171				
9RP45M06	6	6680	175	6000			
9RP45M07	2	10 400	ST				

ALL DIMENSIONS ARE IN MILLIMETERS.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

FOR ADDITIONAL NOTES, SEE SHEET 165 OF 175.

BAR BENDING DIAGRAMS



STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Phone: 441-621-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED DHS
DRAWN SJR
CHECKED MJL/JV
REVISED
REVIEWED RER
DATE 9-12-97
STRUCTURE FILE NUMBER 1806726

PIER 6R, 7R, 8R AND 9R REINFORCING SCHEDULE
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

170/175

274/295

\24621\techprod\drawings\bridge\FREBAR4.DWG

metric units

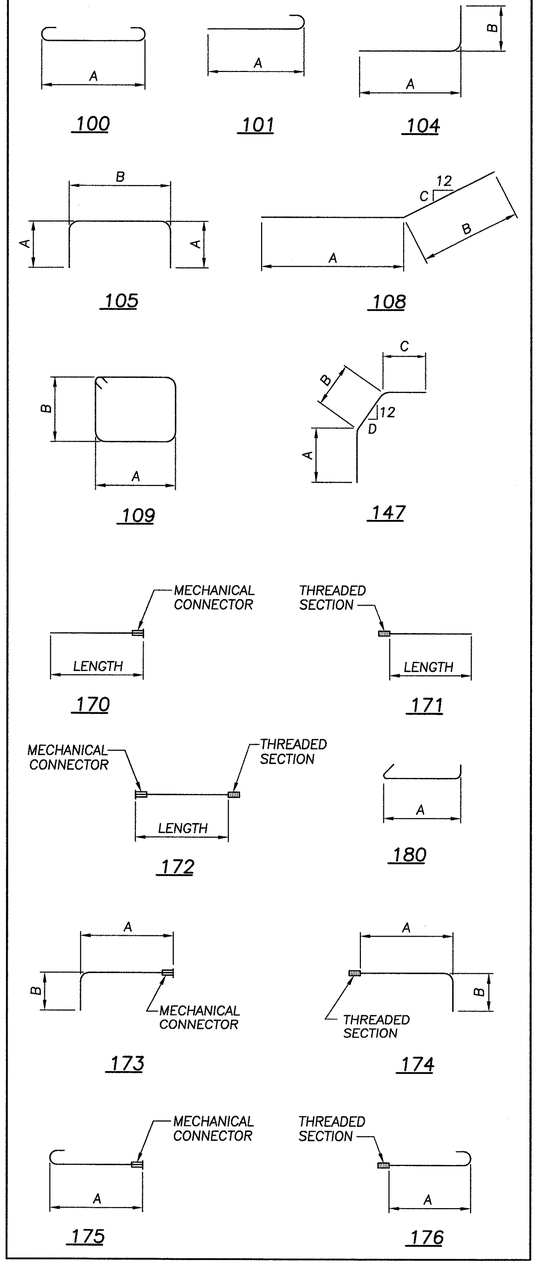
PIER 10R

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
10RP15M01	8	4100	105	1370	1440		
10RP15M02	8	1845	180	1490			
10RP15M03	8	2380	180	2025			
10RP15M04	60	3710	105	1600	590		
10RP15M05	32	975	180	620			
10RP15M06	8	3330	105	1425	560		
10RP15M07	16	4280	105	1900	560		
10RP15M08	16	3080	ST				
10RP15M09	8	2080	ST				
10RP20M01	8	8900	ST				
10RP20M02	4	8100	ST				
10RP20M03	4	7000	ST				
10RP20M04	5	3530	108	900	2630	4 3/8	
10RP20M05	5	5650	108	900	4750	2 5/16	
10RP20M06	26	3160	105	900	1460		
10RP20M07	76	5600	105	2100	1500		
10RP20M08	16	5300	105	1950	1500		
10RP25M01	5	4510	100	3950			
10RP25M02	2	10 000	ST				
10RP25M03	2	4200	ST				
10RP25M04	32	9200	ST				
10RP30M01	15	9700	ST				
10RP35M01	8	1880	101	1400			
10RP35M02	64	2100	ST				
10RP35M03	9	8995	173	8095	1000		
10RP35M04	9	9650	174	8750	1000		
10RP35M05	2	8750	170				
10RP35M06	7	10 900	ST				
10RP35M07	2	8575	176	8095			
10RP35M08	4	7570	ST				

PIER 11R

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
11RP15M01	10	1100	ST				
11RP15M02	28	730	ST				
11RP15M03	10	4600	ST				
11RP15M04	14	1440	105	380	760		
11RP20M01	2	10 205	ST				
11RP20M02	2	12 200	ST				
11RP20M03	6	5130	108	4230	900	2 19/32	
11RP20M04	6	3530	108	2630	900	4 5/16	
11RP20M05	4	7355	ST				
11RP20M06	4	8150	ST				
11RP20M07	52	8885	ST				
11RP20M08	28	3085	105	900	1385		
11RP20M09	2	7075	ST				
11RP20M10	80	5365	105	2020	1425		
11RP20M11	16	4920	105	2020	980		
11RP45M01	9	10 695	ST				
11RP45M02	9	9550	174	8700	1000		
11RP45M03	9	8980	173	8130	1000		

BAR BENDING DIAGRAMS



ALL DIMENSIONS ARE IN MILLIMETERS.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

FOR ADDITIONAL NOTES, SEE SHEET 165 OF 175.

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DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED DHS
DRAWN SJR
CHECKED MJL/JV
REVIEWED RER
DATE 9-12-97
REVISED
STRUCTURE FILE NUMBER 1806726

PIER 10R AND 11R REINFORCING SCHEDULE

BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

PIER 1LE

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	B	C	INCRM.
1LEP15M01	60	5220	105	1860	1575		
1LEP15M02	8	4895	105	1860	1250		
1LEP15M03	6	7040	105	2870	1375		
1LEP20M01	18	3245	105	900	1545		
1LEP20M02	2	10 720	ST				
1LEP20M03	2	10 145	ST				
1LEP20M04	2	8300	ST				
1LEP20M05	5	4880	108	3780	1100	2 11/16	
1LEP20M06	5	2635	108	1685	950	6 25/32	
1LEP20M07	2	6445	ST				
1LEP20M08	2	5145	ST				
1LEP25M01	12	10 720	ST				
1LEP25M02	28	1700	ST				
1LEP35M01	9	12 480	105	1000	10 680		
1LEP35M02	9	10 720	ST				

PIER 1LW

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	B	C	INCRM.
1LWP15M01	36	4760	105	1630	1575		
1LWP15M02	56	4430	105	1630	1250		
1LWP15M03	6	7050	105	2875	1375		
1LWP15M04	28	3080	105	890	1375		
1LWP15M05	10	3900	105	1200	1575		
1LWP20M01	16	3245	105	900	1545		
1LWP20M02	12	12 000	ST				
1LWP20M03	2	9740	ST				
1LWP20M04	2	7445	ST				
1LWP20M05	5	5145	ST				
1LWP20M06	5	5515	108	4310	1205	2	
1LWP20M07	5	3315	108	2260	1055	3 27/32	
1LWP25M01	18	2000	ST				
1LWP25M02	14	9600	ST				
1LWP25M03	14	2135	ST				
1LWP35M01	9	13 800	105	1000	12 000		
1LWP35M02	9	12 480	101	12 000			
1LWP35M03	6	8300	ST				

PIER 2L

MARK	NO. REQD.	* LENGTH	TYPE	DIMENSIONS A	B	C	INCRM.
2LP15M01	96	3420	105	1215	1070		
2LP15M02	1 SER. OF 11	5250 TO	109	1120	1425 TO		152
		6770			2185		
2LP15M03	114	4300	105	1630	1120		
2LP15M04	7	4130	109	915	1070		
2LP15M05	24	4160	105	1630	980		
2LP15M06	103	1425	180	1070			
2LP15M07	48	2010	180	1655			
2LP15M08	7	1270	180	915			
2LP20M01	4	10 470	ST				
2LP20M02	4	11 445	ST				
2LP20M03	5	3035	108	2030	1005	4 1/2	
2LP20M04	5	4630	108	3565	1065	2 1/2	
2LP20M05	24	12 170	ST				
2LP20M06	14	2790	105	900	1090		
2LSP20M01	52	1155	104	450	755		
2LSP20M02	12	2530	105	755	1120		
2LP25M01	12	4070	100	3510			
2LP25M02	22	3180	ST				
2LSP30M01	52	1115	104	450	755		
2LSP30M02	8	1070	ST				
2LP35M01	12	5380	100	4420			
2LP35M02	24	3870	104	600	3370		
2LP35M03	48	7700	ST				
2LP35M04	10	10 100	ST				
2LP35M05	4	10 520	ST				
2LP35M06	6	9300	101	8815			
2LP35M07	6	12 900	174	12 000	1000		
2LP35M08	6	12 300	173	11 400	1000		
2LP35M09	48	2900	ST				

PIER 3L

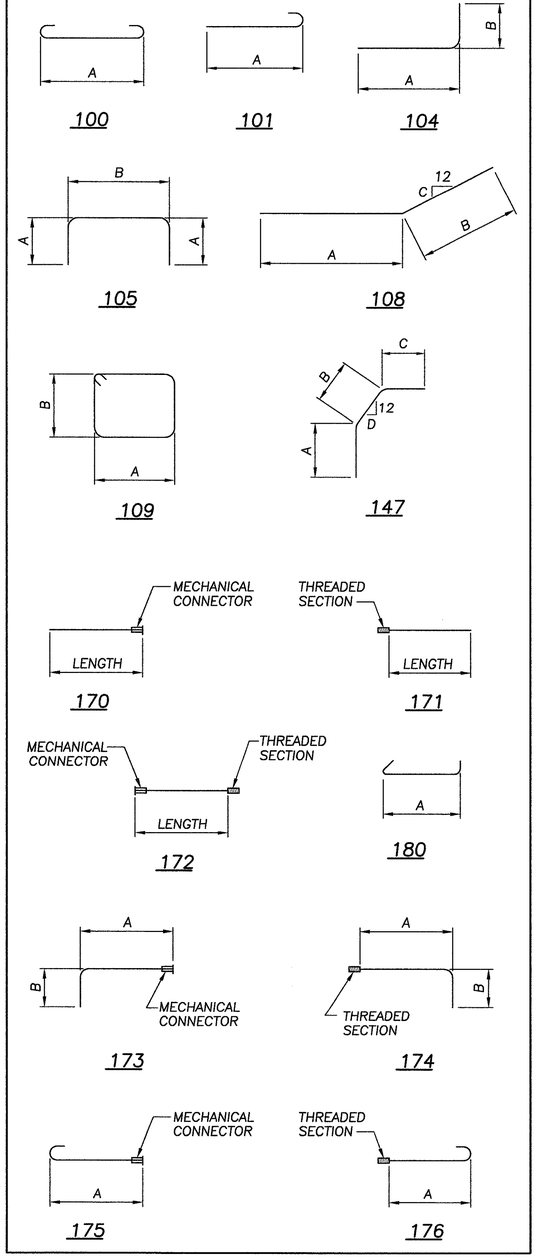
MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	B	C	INCRM.
3LP15M01	110	3430	105	1220	1070		
3LP15M02	110	1425	180	1070			
3LP15M03	55	2030	180	1675			
3LP15M04	42	4040	105	1500	1120		
3LP15M05	76	4240	105	1600	1120		
3LP15M06	56	3920	105	1600	800		
3LP20M01	28	10 650	ST				
3LP20M02	4	10 225	ST				
3LP20M03	4	9500	ST				
3LP20M04	17	2790	105	900	1090		
3LP20M05	4	2400	108	900	1500	6 3/4	
3LP20M06	4	3900	108	900	3000	3 1/16	
3LP35M01	33	5380	100	4420			
3LP35M02	22	3900	104	3400	600		
3LP35M03	44	9100	ST				
3LP35M04	48	2700	ST				
3LP35M05	7	11 400	173	10 500	1000		
3LP35M06	7	10 680	174	9780	1000		
3LP35M07	6	8050	ST				
3LP35M08	10	9250	ST				

ALL DIMENSIONS ARE IN MILLIMETERS.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

FOR ADDITIONAL NOTES, SEE SHEET 165 OF 175.

BAR BENDING DIAGRAMS



STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
DHS	SJR	RER	9-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MJL/JV		1806726	

REINFORCING SCHEDULE

PIER 1L(E), 1L(W), 2L AND 3L REINFORCING SCHEDULE
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

\24621\techprod\drawings\bridge\FREBAR6.DWG

PIER 4L

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
4LP15M01	8	2100	ST				
4LP15M02	20	3080	ST				
4LP15M03	71	4950	105	2200	630		
4LP15M04	132	4795	105	1650	1575		
4LP15M05	4	9200	ST				
4LP15M06	4	10 300	ST				
4LP15M07	4	10 535	ST				
4LP15M08	76	1015	180	660			
4LP15M09	16	3370	105	1425	600		
4LP15M10	40	4370	105	1925	600		
4LP15M11	122	4340	105	1520	1375		
4LP15M12	264	1730	180	1375			
4LP15M13	48	2640	180	2285			
4LP15M14	18	2590	180	2235			
4LP20M01	26	3245	105	900	1545		
4LP20M02	5	3480	108	2405	1075	3	
4LP20M03	36	10 610	ST				
4LP20M04	5	3860	108	2765	1095	2 19/32	
4LP35M01	7	11 400	173	10 500	1000		
4LP35M02	4	6140	ST				
4LP35M03	14	8800	ST				
4LP35M04	72	9330	ST				
4LP35M05	76	4275	ST				
4LP35M06	36	3910	104	3400	610		
4LP35M07	19	6180	101	5700			
4LP35M08	23	6600	100	5640			
4LP35M09	7	10 680	174	9780	1000		
4LP35M10	4	6480	ST				

PIER 6L

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
6LP15M01	20	4280	105	1490	1375		
6LP15M02	10	2585	180	2230			
6LP15M03	20	1730	180	1375			
6LP20M01	76	6725	105	2700	1425		
6LP20M02	24	6400	105	2700	1100		
6LP20M03	38	3085	105	900	1385		
6LP20M04	12	9010	ST				
6LP20M05	4	8200	ST				
6LP20M06	4	7500	ST				
6LP20M07	4	6800	ST				
6LP20M08	2	11 315	ST				
6LP20M09	5	5780	108	4825	955	3 29/32	
6LP20M10	5	3965	108	3060	905	6 19/32	
6LP25M01	60	9310	ST				
6LP35M01	5	9750	ST				
6LP35M02	92	3720	ST				
6LP45M01	8	9750	173	8900	1000		
6LP45M02	8	9030	174	8180	1000		
6LP45M03	8	8860	175	8180			
6LP45M04	8	8900	171				
6LP45M05	4	10 200	ST				

ALL DIMENSIONS ARE IN MILLIMETERS.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

FOR ADDITIONAL NOTES, SEE SHEET 165 OF 175.

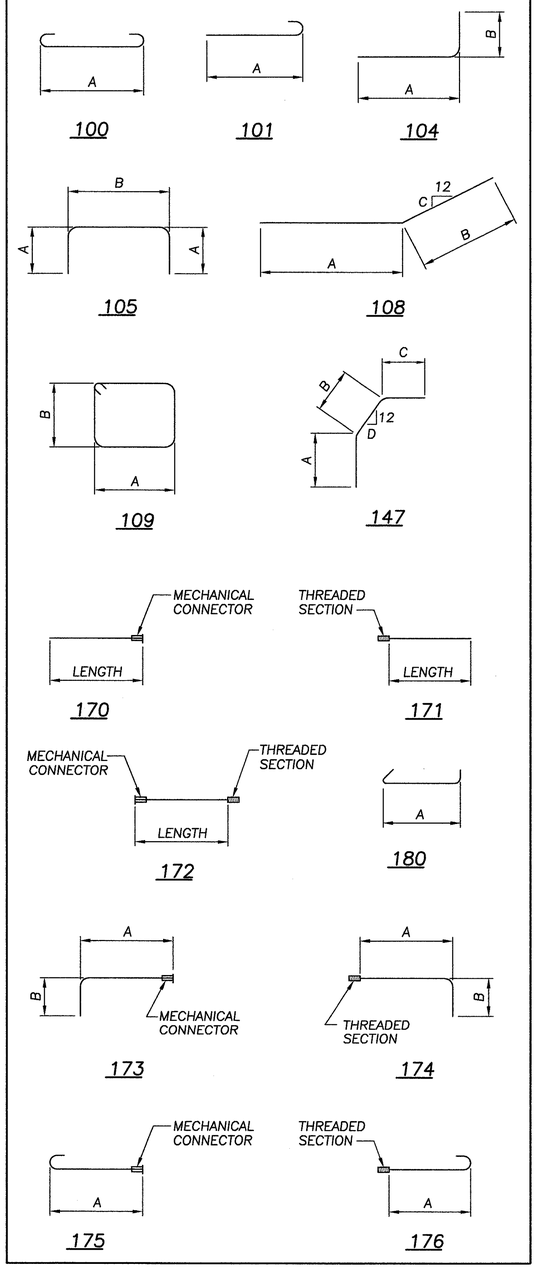
PIER 5L

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
5LP15M01	150	4540	105	1550	1520		
5LP15M02	166	1875	180	1520			
5LP15M03	59	2640	180	2285			
5LP15M04	32	2595	180	2240			
5LP15M05	102	6090	105	2300	1570		
5LP15M06	60	5770	105	2300	1250		
5LP20M01	12	10 600	ST				
5LP20M02	4	10 300	ST				
5LP20M03	4	9100	ST				
5LP20M04	31	3240	105	900	1540		
5LP20M05	5	4400	108	900	3500	2 5/8	
5LP20M06	5	4300	108	900	3400	2 11/16	
5LP20M07	1 SER. OF 4	850 to 2200	ST				450 mm
5LP20M08	9	9300	ST				
5LP20M09	1 SER. OF 9	3760 to 6000	ST				280 mm
5LP20M10	17	3650	ST				
5LP20M11	1 SER. OF 5	3850 to 4950	ST				275 mm
5LP25M01	40	10 900	ST				
5LP25M02	2	10 000	ST				
5LP35M01	40	4300	104	3800	600		
5LP35M02	80	10 900	ST				
5LP35M03	80	4000	ST				
5LP35M04	18	10 680	173	9780	1000		
5LP35M05	18	11 400	174	10 500	1000		
5LP35M06	4	10 030	ST				
5LP35M07	24	8000	ST				
5LP35M08	1 SER. OF 13	1255 to 2755	101	775 to 2275			125 mm
5LP35M09	30	10 260	100	9300			
5LP35M10	1 SER. OF 13	4130 to 6410	101	3650 to 5930			190 mm
5LP35M11	27	4130	101	3650			
5LP35M12	1 SER. OF 7	4180 to 5350	101	3700 to 4870			195 mm

PIER 7L

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
7LP15M01	94	5460	105	2055	1425		
7LP15M02	24	5185	105	2055	1150		
7LP15M03	20	4305	105	1505	1375		
7LP15M04	10	2615	180	2260			
7LP15M05	20	1730	180	1375			
7LP20M01	20	3100	105	900	1395		
7LP20M02	12	9010	ST				
7LP20M03	4	7900	ST				
7LP20M04	4	6675	ST				
7LP20M05	5	5615	108	4500	1115	2 5/16	
7LP20M06	5	3750	108	2730	1020	4	
7LP25M01	24	9310	ST				
7LP35M01	9	9800	173	8900	1000		
7LP35M02	9	9080	174	8180	1000		
7LP35M03	9	8180	170				
7LP35M04	9	8900	171				
7LP35M05	5	9755	ST				
7LP35M06	76	3760	ST				
7LP35M07	4	8180	ST				

BAR BENDING DIAGRAMS



metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED DHS
DRAWN SJR
CHECKED MJL/JN
REVIEWED RER
DATE 9-12-97
REVISED
STRUCTURE FILE NUMBER 1806726

PIER 4L, 5L, 6L AND 7L REINFORCING SCHEDULE
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

173/175

277/295

\24621\techprod\drawings\bridge\FREBAR7.DWG

PIER 8L

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
8LP15M01	20	4390	105	1550	1370		
8LP15M02	31	1725	180	1370			
8LP15M03	10	2615	180	2260			
8LP15M04	22	1270	180	915			
8LP15M05	11	4730	109	1370	915		
8LP20M01	12	9650	ST				
8LP20M02	4	8600	ST				
8LP20M03	4	7800	ST				
8LP20M04	4	7000	ST				
8LP20M05	2	11 500	ST				
8LP20M06	5	7000	108	900	6100	3 1/16	
8LP20M07	5	4000	108	900	3100	6 9/16	
8LP20M08	39	3080	105	900	1380		
8LP20M09	6	5520	105	2100	1420		
8LP20M10	26	6520	105	2600	1420		
8LP20M11	56	6920	105	2800	1420		
8LP20M12	24	6400	105	2700	1100		
8LP25M01	2	6950	ST				
8LP25M02	60	9950	ST				
8LP25M03	20	2400	ST				
8LP25M04	20	3100	ST				
8LP35M01	92	3000	ST				
8LP35M02	5	9700	ST				
8LP45M01	8	9640	173	8790	1000		
8LP45M02	8	10 350	174	9500	1000		
8LP45M03	8	10 180	175	9500			
8LP45M04	8	9470	176	8790			
8LP45M05	6	11 300	ST				

PIER 9L

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
9LP15M01	20	4390	105	1550	1370		
9LP15M02	20	1725	180	1370			
9LP15M03	10	2615	180	2260			
9LP15M04	11	7150	ST				
9LP15M05	125	600	ST				
9LP20M01	12	9050	ST				
9LP20M02	4	8100	ST				
9LP20M03	4	7500	ST				
9LP20M04	4	6800	ST				
9LP20M05	2	11 250	ST				
9LP20M06	7	5700	108	900	4800	3 15/16	
9LP20M07	7	4100	108	900	3200	6 3/8	
9LP20M08	39	3080	105	900	1380		
9LP20M09	26	6320	105	2500	1420		
9LP20M10	56	6920	105	2800	1420		
9LP20M11	24	6400	105	2700	1100		
9LP25M01	2	7850	ST				
9LP25M02	60	9350	ST				
9LP25M03	24	5260	100	4700			
9LP35M01	92	3100	ST				
9LP35M02	5	9700	ST				
9LP45M01	8	9130	173	8280	1000		
9LP45M02	8	9650	174	8800	1000		
9LP45M03	8	9480	175	8800			
9LP45M04	8	8960	176	8280			
9LP45M05	4	10 100	ST				

PIER 10L

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
10LP15M01	8	900	ST				
10LP15M02	4	3475	105	990	1575		
10LP15M03	8	12 995	105	5750	1575		
10LP15M04	48	1930	180	1575			
10LP15M05	22	4045	105	1250	1625		
10LP15M06	72	4285	105	1370	1625		
10LP15M07	60	4610	105	2030	630		
10LP15M08	16	3400	105	1440	600		
10LP15M09	32	4380	105	1930	600		
10LP15M10	64	1015	180	660			
10LP15M11	16	3080	ST				
10LP15M12	8	2100	ST				
10LP15M13	8	1480	180	1125			
10LP15M14	24	3645	105	1050	1625		
10LP20M01	12	5350	ST				
10LP20M02	72	2650	ST				
10LP20M03	2	9800	ST				
10LP20M04	12	9050	ST				
10LP20M05	4	8550	ST				
10LP20M06	4	7950	ST				
10LP20M07	4	6950	ST				
10LP20M08	2	10 800	ST				
10LP20M09	5	4750	108	900	3850	1 7/8	
10LP20M10	5	3525	108	900	2625	2 13/16	
10LP20M11	13	3295	105	900	1595		
10LP25M01	6	3460	100	2900			
10LP30M01	11	1800	101	1400			
10LP35M01	8	9800	173	8900	1000		
10LP35M02	8	9135	174	8235	1000		
10LP35M03	4	8755	175	8275			
10LP35M04	4	8200	ST				
10LP35M05	4	9380	176	8900			
10LP35M06	4	9800	ST				

PIER 11L

MARK	NO. REQD.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	INCRM.
11LP15M01	78	5220	105	1935	1425		
11LP15M02	7	4500	ST				
11LP15M03	7	2090	104	1530	600		
11LP15M04	7	4805	105	2060	765		
11LP15M05	14	1200	ST				
11LP20M01	20	3095	105	900	1395		
11LP20M02	12	8990	ST				
11LP20M03	4	8260	ST				
11LP20M04	4	7180	ST				
11LP20M05	5	11 430	ST				
11LP20M06	5	3930	108	2900	1030	2 13/16	
11LP20M07	5	3645	108	2630	1015	3 1/8	
11LP25M01	20	9290	ST				
11LP30M01	10	3700	100	2900			
11LP32M01	11	2940	101	2540			
11LP35M01	8	9700	173	8800	1000		
11LP35M02	8	9140	174	8240	1000		
11LP35M03	2	8370	ST				

ALL DIMENSIONS ARE IN MILLIMETERS.

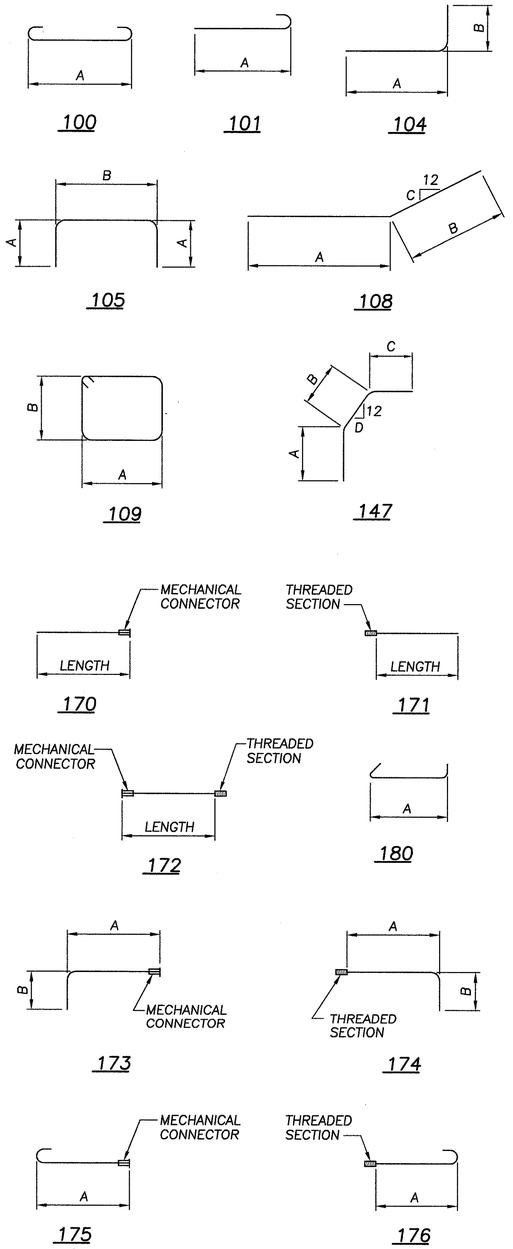
ALL REINFORCING STEEL SHALL BE EPOXY COATED.

FOR ADDITIONAL NOTES, SEE SHEET 165 OF 175.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

BAR BENDING DIAGRAMS



DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED DHS
DRAWN SJR
CHECKED MJL/JN
REVIEWED RER
DATE 9-12-97
REVISED
STRUCTURE FILE NUMBER 1806726

PIER 8L, 9L, 10L AND 11L REINFORCING SCHEDULE
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23458

174/175

278/295

\24621\techprod\drawings\bridge\FREBAR8.DWG

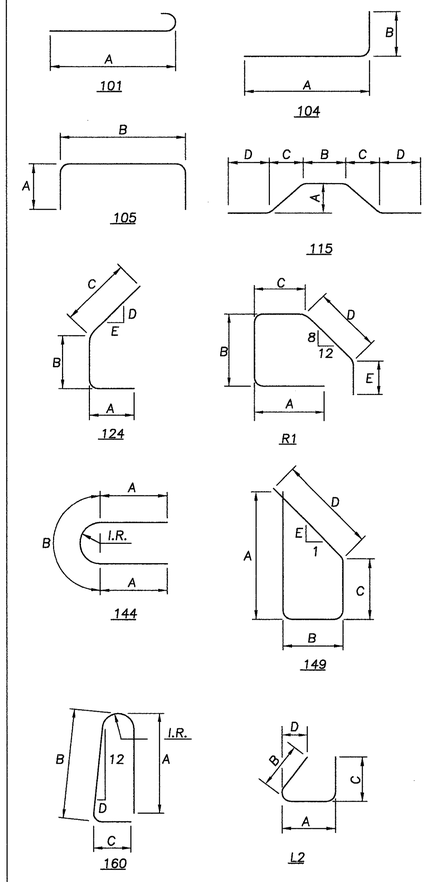
BAR SCHEDULE

MARK	NUMBER REQ'D	LENGTH	TYPE	A	B	C	D	E	SER. INCR.
SUPERSTRUCTURE – EPOXY COATED BARS									
ES15M01	22 025	9150	STR						
ES15M02	153	5000	STR						
ES15M03	35	4500	STR						
ES15M04	160	6825	STR						
ES15M05	1 SER 52	1850	STR						173
		10 650							
ES15M06	1 SER 70	1850	STR						128
		10 650							
ES15M07	1 SER 52	2275	STR						173
		11 075							
ES15M08	1 SER 70	2275	STR						128
		11 075							
ES15M09	153	6100	STR						
ES15M10	470	9700	STR						
ES15M11	156	7300	STR						
ES15M12	1 SER 36	5075	STR						159
		10 625							
ES15M13	1 SER 28	2450	STR						154
		6600							
ES15M14	1 SER 42	6125	STR						129
		11 425							
ES15M15	1 SER 19	7675	STR						129
		10 000							
ES15M16	186	8250	STR						
ES15M17	1 SER 28	5075	STR						206
		10 625							
ES15M18	1 SER 20	2450	STR						218
		6600							
ES15M19	1 SER 27	6125	STR						204
		11 425							
ES15M20	1 SER 12	7675	STR						211
		10 000							
ES15M21	1 SER 52	3275	STR						151
		10 975							
ES15M22	1 SER 12	3100	STR						166
		4925							
ES15M23	1 SER 28	4050	STR						228
		10 200							
ES15M24	1 SER 29	3175	STR						185
		8350							
ES15M25	21	3200	STR						
ES15M26	1 SER 40	3275	STR						201
		11 125							
ES15M27	1 SER 8	3025	STR						261
		4850							
ES15M28	1 SER 18	4225	STR						362
		10 375							
ES15M29	1 SER 19	3175	STR						288
		8350							
ES15M30	450	7225	STR						
ES15M31	3019	8425	STR						
ES15M32	347	10 325	STR						
ES15M33	6345	1875	144	840	195	I.R.=46			
ES15M34	9	5300	STR						
ES15M35	7031	2130	160	915	990	205	1.25	I.R.=38	
ES15M36	848	11 150	STR						
ES15M37	9	9000	STR						
ES15M38	253	7925	STR						
ES15M39	281	9700	STR						
ES15M40	11	6625	STR						
ES15M41	18	8750	STR						
ES15M42	31	5550	STR						
ES15M43	20	10 375	STR						
ES15M44	11	6000	STR						
ES15M45	392	11 375	STR						
ES15M46	496	10 675	STR						
ES15M47	84	9275	STR						
ES15M48	248	11 675	STR						
ES15M49	568	11 575	STR						
ES15M50	226	10 475	STR						
ES15M51	266	9825	STR						
ES15M52	600	11 200	STR						

BAR SCHEDULE

MARK	NUMBER REQ'D	LENGTH	TYPE	A	B	C	D	E	SER. INCR.
SUPERSTRUCTURE – EPOXY COATED BARS (CONTINUED)									
ES15M53	11	10 850	STR						
ES15M54	112	9500	STR						
ES15M55	103	7600	STR						
ES15M56	2	2450	124	982	550	982	1.7	12	
ES15M57	4	2550	124	986	642	986	1.7	12	
ES15M58	1	2600	124	985	693	985	1.7	12	
ES15M59	1	2650	124	980	754	980	1.7	12	
ES15M60	1	2850	124	985	925	985	1.7	12	
ES15M61	1	3025	124	980	1128	980	1.7	12	
ES15M62	6345	600	R1	430	358	290	268	204	
ES15M63	6345	1635	160	685	742	190	1.25	I.R.=50	
ES15M64	7031	825	R1	430	358	290	268	254	
ES20M01	7071	10 900	STR						
ES20M02	7398	7600	STR						
ES20M03	6301	9300	STR						
ES20M04	3962	9200	STR						
ES20M05	1 SER 15	5975	STR						329
		10 575							
ES20M06	8 SER 33	1475	STR						329
		12 000							
ES20M07	3 SER 15	4375	STR						329
		8975							
ES20M08	2 SER 15	2675	STR						329
		7275							
ES20M09	666	8075	STR						
ES20M10	261	8350	STR						
ES20M11	368	9675	STR						
ES20M12	261	9950	STR						
ES20M13	1020	11 200	STR						
ES20M14	1325	6425	STR						
ES20M15	1038	12 000	STR						
ES20M16	280	10 075	STR						
ES20M17	1 SER 29	2675	STR						329
		11 875							
ES20M18	1 SER 25	2525	STR						329
		10 425							
ES20M19	1 SER 24	4275	STR						329
		11 825							
ES20M20	1 SER 30	2500	STR						329
		12 000							
ES20M21	49	8800	STR						
ES20M22	49	10 400	STR						
ES20M23	56	11 750	STR						
ES20M24	102	5775	STR						
ES20M25	102	4175	STR						
ES20M26	103	6150	STR						
ES20M27	103	4550	STR						
ES20M28	110	6550	STR						
ES20M29	110	4950	STR						
ES20M30	2 SER 60	1675	STR						174
		11 950							
LIGHT POLE PILASTERS – EPOXY COATED BARS									
EL15M05	64	860	105	180	550				
EL15M06	64	2600	L2	710	980	970	170		
EL15M07	96	1800	115	550	410	560	150		
EL15M08	16	960	STR						
EL15M09	128	2675	101	2495					

BAR BENDING DIAGRAMS



SEE SHEET 165 OF 175 FOR ADDITIONAL NOTES.

NOTE:
ALL DIMENSIONS ARE IN MILLIMETERS.

NOTE:
ALL REINFORCING STEEL SHALL BE EPOXY COATED.

metric units

DESIGN AGENCY
HNTB
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114-1724
ARCHITECTS ENGINEERS PLANNERS

DESIGNED	DRAWN	REVIEWED	DATE
GLG	GLG	RER	09-12-97
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJM		1806726	

SUPERSTRUCTURE REINFORCEMENT SCHEDULE
BRIDGE NO. CUY-77-23458
OVER KINGSBURY RUN

CUY-77-23.458

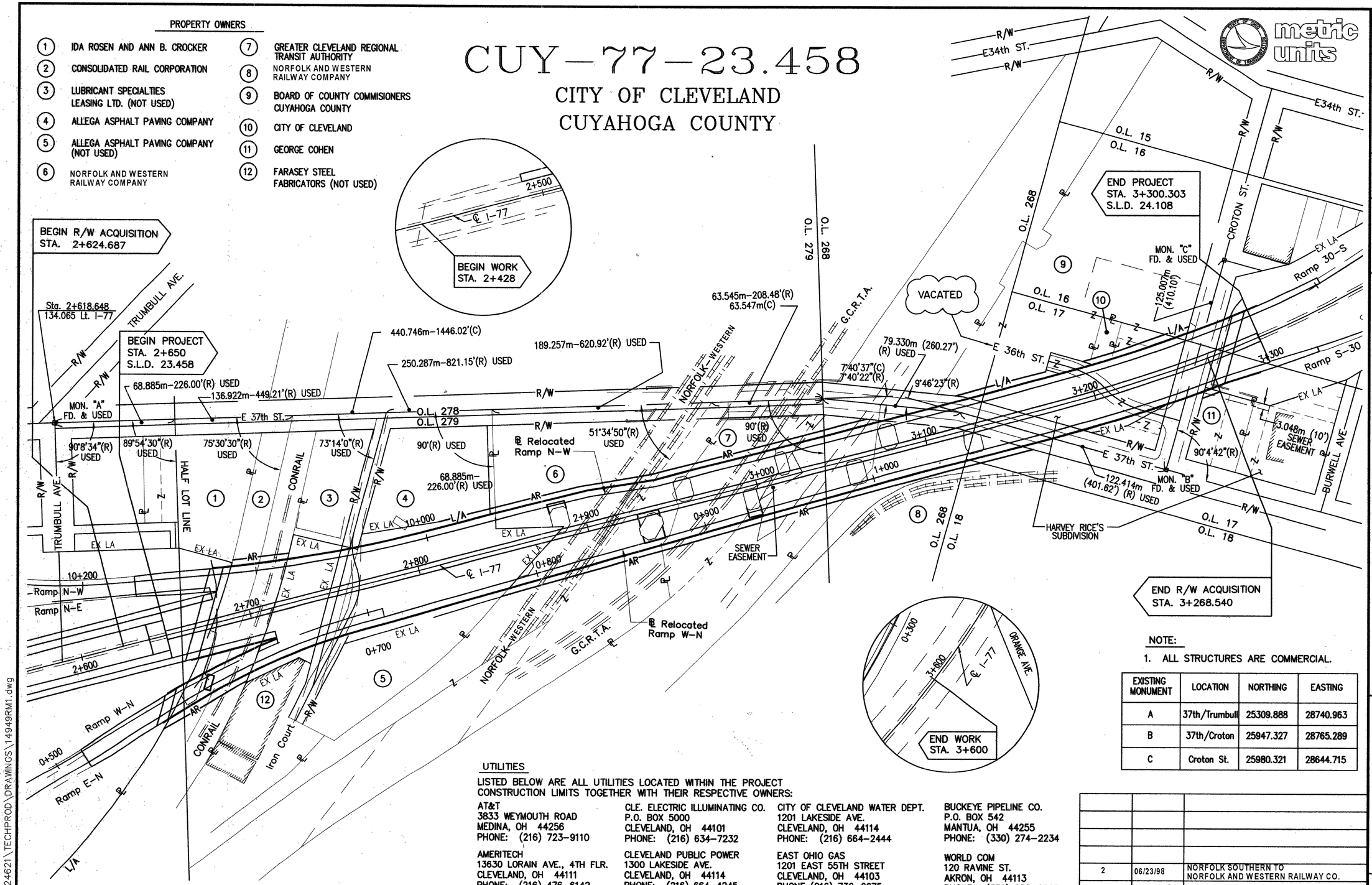
\24621\techprod\drawings\bridge\SSRebar1

CUY-77-23.458

CITY OF CLEVELAND
CUYAHOGA COUNTY

PROPERTY OWNERS

1. IDA ROSEN AND ANN B. CROCKER
2. CONSOLIDATED RAIL CORPORATION
3. LUBRICANT SPECIALTIES LEASING LTD. (NOT USED)
4. ALLEGA ASPHALT PAVING COMPANY
5. ALLEGA ASPHALT PAVING COMPANY (NOT USED)
6. NORFOLK AND WESTERN RAILWAY COMPANY
7. GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY
8. NORFOLK AND WESTERN RAILWAY COMPANY
9. BOARD OF COUNTY COMMISIONERS CUYAHOGA COUNTY
10. CITY OF CLEVELAND
11. GEORGE COHEN
12. FARASEY STEEL FABRICATORS (NOT USED)



UTILITIES

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

AT&T
3833 WEYMOUTH ROAD
MEDINA, OH 44256
PHONE: (216) 723-9110

AMERITECH
13630 LORAIN AVE., 4TH FLR.
CLEVELAND, OH 44111
PHONE: (216) 476-6142

CLE. ELECTRIC ILLUMINATING CO.
P.O. BOX 5000
CLEVELAND, OH 44101
PHONE: (216) 634-7232

CLEVELAND PUBLIC POWER
1300 LAKESIDE AVE.
CLEVELAND, OH 44114
PHONE: (216) 664-4245

CITY OF CLEVELAND WATER DEPT.
1201 LAKESIDE AVE.
CLEVELAND, OH 44114
PHONE: (216) 664-2444

EAST OHIO GAS
1201 EAST 55TH STREET
CLEVELAND, OH 44103
PHONE (216) 736-6675

BUCKEYE PIPELINE CO.
P.O. BOX 542
MANTUA, OH 44255
PHONE: (330) 274-2234

WORLD COM
120 RAVINE ST.
AKRON, OH 44113
PHONE: (330) 253-8267

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

NOTE:

1. ALL STRUCTURES ARE COMMERCIAL.

EXISTING MONUMENT	LOCATION	NORTHING	EASTING
A	37th/Trumbull	25309.888	28740.963
B	37th/Croton	25947.327	28765.289
C	Croton St.	25980.321	28644.715

REV.	DATE	DESCRIPTION
2	06/23/98	NORFOLK SOUTHERN TO NORFOLK AND WESTERN RAILWAY CO.
1	12/15/97	CHANGED PROPOSED VACATION TO VACATED

DATE OF COMPLETION

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949RM1.dwg

metric units

HORIZONTAL SCALE 1 : 1000

CALCULATED M.JW CHECKED JMG

P.I.D. 14949

PROPERTY MAP

CUY-77-23.458

1/16

280/295

TOTAL NUMBER OF :
9 OWNERSHIPS
0 TOTAL TAKES
0 OWNERSHIPS WITH STRUCTURES INVOLVED
0 OWNERSHIPS WITH "P" ITEMS

NET RESIDUE = RECORD AREA – TOTAL PRO – NET TAKE

metric units

GRANTEE:
ALL RIGHT OF WAY ACQUIRED IN THE NAME OF
STATE OF OHIO UNLESS OTHERWISE SHOWN.

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD BOOK	OWNERS RECORD PAGE	AUDITOR'S PARCEL	RECORD AREA(AC.)	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUC-TURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND FED/STATE	REMARKS AND PERSONALTY	AS ACQUIRED BOOK	AS ACQUIRED PAGE
1SL	IDA ROSEN AND ANN B. CROCKER	11	14289	121	12316001	0.3356		0.0336		0.0336				80/20	FOR ABUTMENT SLOPE		
						(0.829)		(0.083)		(0.083)							
					12316002	0.0520		0.0		0.0							
						(0.128)											
	GRAND TOTAL					0.3876		0.0336		0.0336		0.3540					
						(0.957)		(0.083)		(0.083)		(0.874)					
2SL	CONSOLIDATED RAIL CORPORATION	6,11	15004	865	12311005			0.1144		0.1144					FOR ABUTMENT SLOPE		
		12,13						(0.283)		(0.283)							
2R							0.2657	0.2757	0.2657	0.0100					FOR WIDENING OF THE BRIDGE		
							(0.657)	(0.681)	(0.657)	(0.024)							
2T								0.2757		0.2757							
								(0.681)		(0.681)							
2								3.9m²		3.9m²					FOR NEW ABUTMENT		
								(42 sf)		(42 sf)							
2–1								32.9m²		32.9m²					FOR NEW PIER		
								(354 sf)		(354 sf)							
3	LUBRICANT SPECIALTIES LEASING LTD.	7	96–05792	50	12311001			NO TAKE							NOT USED		
4WL	ALLEGA ASPHALT PAVING COMPANY	7	97–04874	44	12311011	0.3580	0.0	42.7m²	0.0	42.7m²		0.3537			FOR WIDENING OF THE BRIDGE		
						(0.885)		(460 sf)		(460 sf)		(0.874)					
5	ALLEGA ASPHALT PAVING COMPANY	7	97–04874	44	12311012			NO TAKE							NOT USED		
6R	NORFOLK AND WESTERN RAILWAY COMPANY	7,8,14	4637	495	12311007		0.3433	0.4256	0.3433	0.0823					FOR WIDENING OF THE BRIDGE		
					12311006		(0.848)	(1.052)	(0.848)	(0.204)							
6T								0.5299		0.5299							
								(1.309)		(1.309)							
6								36.4m²		36.4m²					FOR WIDENING OF THE PIERS		
								(392 sf)		(392 sf)							
6–1								28.3m²		28.3m²					FOR WIDENING OF THE PIERS		
								(305 sf)		(305 sf)							
6–2								36.3m²		36.3m²					FOR WIDENING OF THE PIERS		
								(391 sf)		(391 sf)							
6–3								36.3m²		36.3m²					FOR WIDENING OF THE PIERS		
								(391 sf)		(391 sf)							
7R	GREATER CLEVELAND REGIONAL	8,9,15	15169	245	12311008*		0.2139	0.2465	0.2139	0.0326					FOR WIDENING OF THE BRIDGE		
	TRANSIT AUTHORITY				12311009*		(0.5286)	(0.6090)	(0.5286)	(0.0804)							
					12312001		0.2124	0.2443	0.2124	0.0319							
							(0.5249)	(0.6036)	(0.5249)	(0.0787)							
	TOTAL 7R						0.4263	0.4908	0.4263	0.0645				80/20			
							(1.0535)	(1.2126)	(1.0535)	(0.1591)							

* PARCELS 12311008 AND 12311009 ARE COMBINED

NOTE: UNLESS SPECIFIED OTHERWISE, AREAS ARE STATED IN HECTARES WITH ENGLISH EQUVALENTS IN (ACRES).

1 HECTARE = 2.471 ACRES

NOTE: ALL TEMPORARY PARCELS TO BE OF 36 MONTHS DURATION.

HNTB ARCHITECTS ENGINEERS PLANNERS

REV.	DATE	DESCRIPTION
2	06/23/98	NORFOLK SOUTHERN CORPORATION TO NORFOLK AND WESTERN RAILWAY CO.
1	5–14–98	PCL 6T REVISED TO COVER CONSTRUCTION OF TEMPORARY SHEETING

CALCULATED JMG CHECKED MJW

FEDERAL PROJECT NO. STP 1M 77(5)46

PID NO. 14949

STATE JOB NO. CUY–77–23.458

SUMMARY OF ADDITIONAL RIGHT OF WAY
PARCELS 1SL– 7R

J: \JOBS\24621\TECHPROD\DRAWINGS\14949RG.dwg VIEW = PLOT1

TOTAL NUMBER OF :
9 OWNERSHIPS
0 TOTAL TAKES
0 OWNERSHIPS WITH STRUCTURES INVOLVED
0 OWNERSHIPS WITH "P" ITEMS

NET RESIDUE = RECORD AREA – TOTAL PRO – NET TAKE

metric units

GRANTEE:
ALL RIGHT OF WAY ACQUIRED IN THE NAME OF
STATE OF OHIO UNLESS OTHERWISE SHOWN.

CALCULATED JMG CHECKED MJW

FEDERAL PROJECT NO. STP 1M 77(5)46

PID NO. 14949

STATE JOB NO.

SUMMARY OF ADDITIONAL RIGHT OF WAY
PARCELS 7T – 12

CUY-77-23.458

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD BOOK	OWNERS RECORD PAGE	AUDITOR'S PARCEL	RECORD AREA(AC.)	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUC-TURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND FED/STATE	REMARKS AND PERSONALTY	AS ACQUIRED BOOK	AS ACQUIRED PAGE
7T	GREATER CLEVELAND REGIONAL							0.5059		0.5059				80/20			
	TRANSIT AUTHORITY							(1.250)		(1.250)							
7WD					12311008*			3.6m²		3.6m²					FOR WIDENING OF THE BRIDGE		
					12311009*			(39 sf)		(39 sf)							
					12312001			32.6m²		32.6m²							
								(351 sf)		(351 sf)							
	TOTAL 7WD							36.2m²		36.2m²							
								(390 sf)		(390 sf)							
8R	NORFOLK AND WESTERN RAILWAY COMPANY	9,16	4637	495	12312002		0.1900	0.2139	0.1900	0.0239					FOR WIDENING OF THE BRIDGE		
					12312006		(0.469)	(0.529)	(0.469)	(0.060)							
8T								0.2139		0.2139							
								(0.529)		(0.529)							
9WL	BOARD OF COUNTY COMMISSIONERS OF	9,10	95–07373	5	12225001	1.6651	0.0	0.0104	0.0	0.0104					FOR WIDENING OF THE BRIDGE		
	CUYAHOGA COUNTY					(4.115)		(0.026)		(0.026)							
9WL–1					12225001		0.0	4.8m²	0.0	4.8m²					FOR WIDENING OF THE BRIDGE		
								(52 sf)		(52 sf)							
9WL–2					12225001		0.0	0.0105	0.0	0.0105					FOR WIDENING OF THE BRIDGE		
					12215037			(0.026)		(0.026)							
					12215038												
	GRAND TOTAL					1.6651		0.0214		0.0214		1.6437					
						(4.115)		(0.053)		(0.053)		(4.062)					
10WL	CITY OF CLEVELAND	10	91–4500	33	12215036	0.0272	0.0	26.7m²	0.0	26.7m²		0.0246			FOR WIDENING OF THE BRIDGE		
						(0.067)		(287 sf)		(287 sf)		(0.061)					
11WL	GEORGE COHEN	10	15695	935	12215032	0.3705	0.0	28.0m²	0.0	28.0m²			0.3677		FOR WIDENING OF THE BRIDGE		
						(0.916)		(301 sf)		(301 sf)			(0.909)	80/20			
12	FARASEY STEEL FABRICATORS	6	12121	967	12311003			NO TAKE							NOT USED		

* PARCELS 12311008 AND 12311009 ARE COMBINED

NOTE: UNLESS SPECIFIED OTHERWISE, AREAS ARE STATED IN HECTARES WITH ENGLISH EQUVALENTS IN (ACRES).

1 HECTARE = 2.471 ACRES

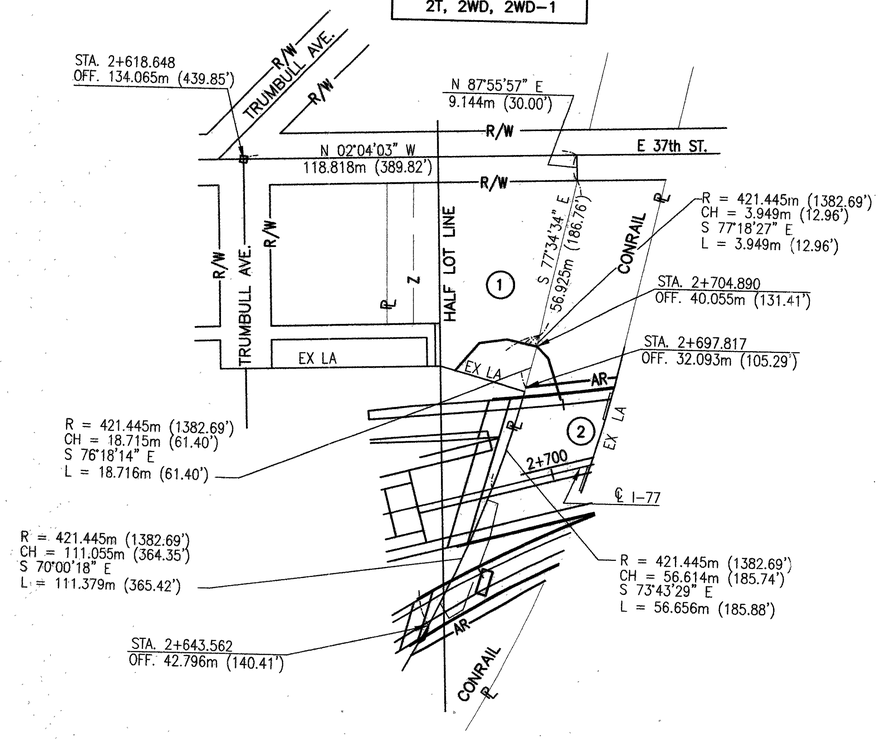
NOTE: ALL TEMPORARY PARCELS TO BE OF 36 MONTHS DURATION.

HNTB ARCHITECTS ENGINEERS PLANNERS

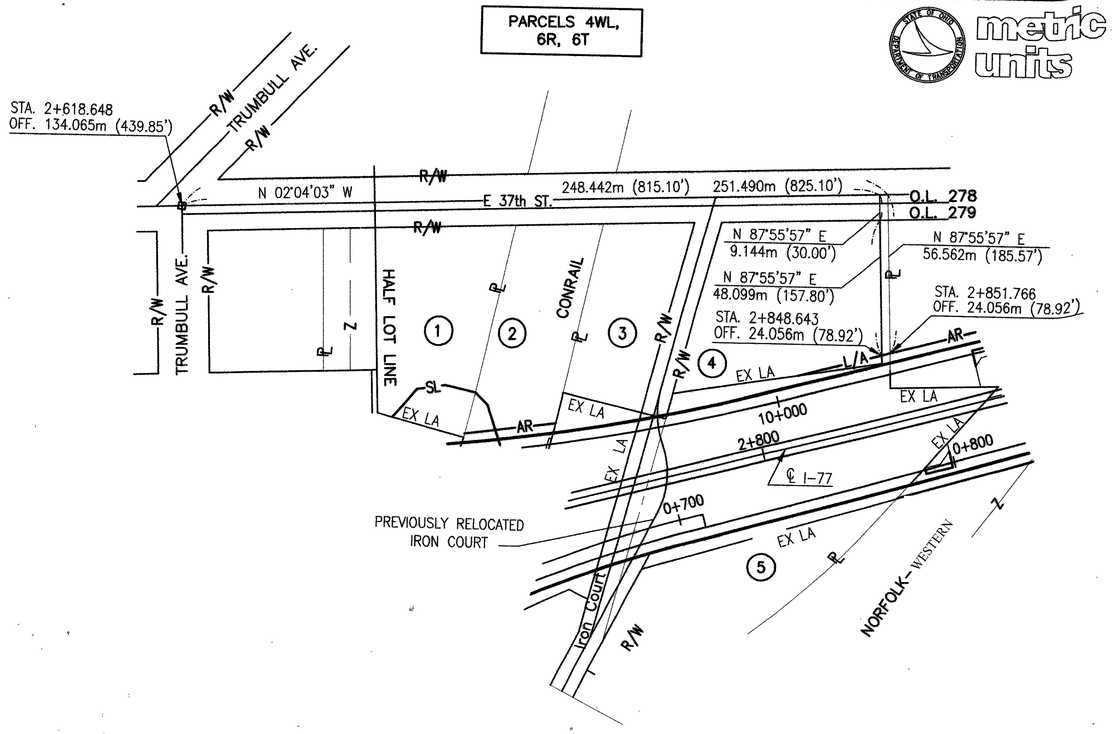
REV.	DATE	DESCRIPTION
1	06/23/98	NORFOLK SOUTHERN CORPORATION TO NORFOLK AND WESTERN RAILWAY CO.

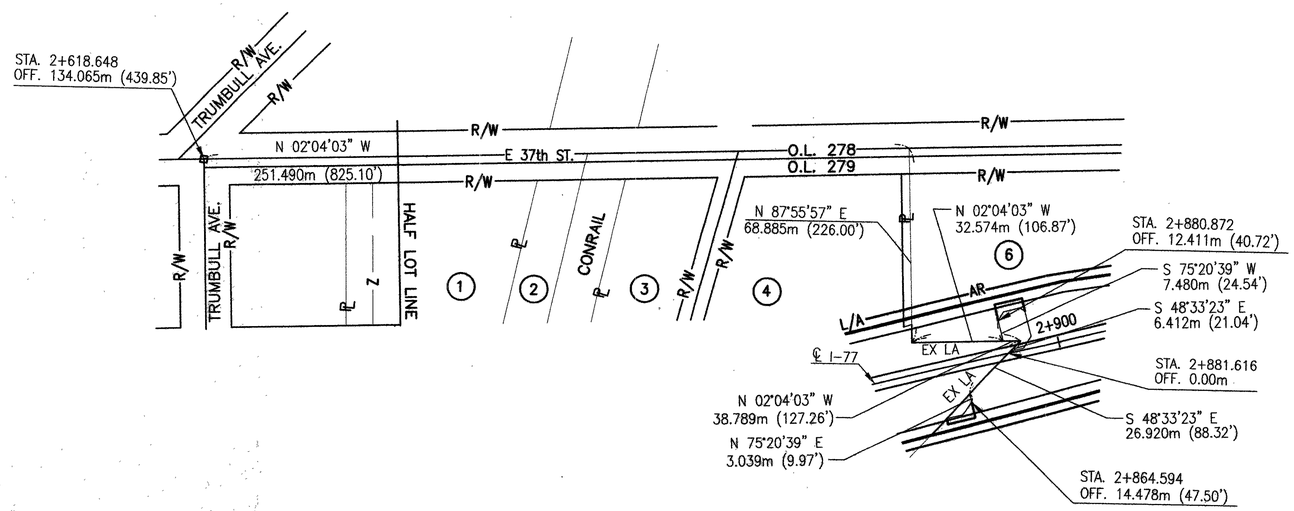
J:\JOBS\24621\TECHPROD\DRAWINGS\14949RG.dwg VIEW = PLOT2

PARCELS 1SL, 2SL, 2R 2T, 2WD, 2WD–1



PARCELS 4WL, 6R, 6T





PARCELS 6WD, 6WD–1 6WD–2, 6WD–3

CROSS REFERENCE	
ITEM	SHEET NO.
R/W PLAN SHEETS	6–8,11,12
RAILROAD PLATS	13,14

HNTB ARCHITECTS ENGINEERS PLANNERS

J:/JOBS/24627/TECHPROD/DRAWINGS/149-ERBDX.dwg VIEW = PLOT1

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

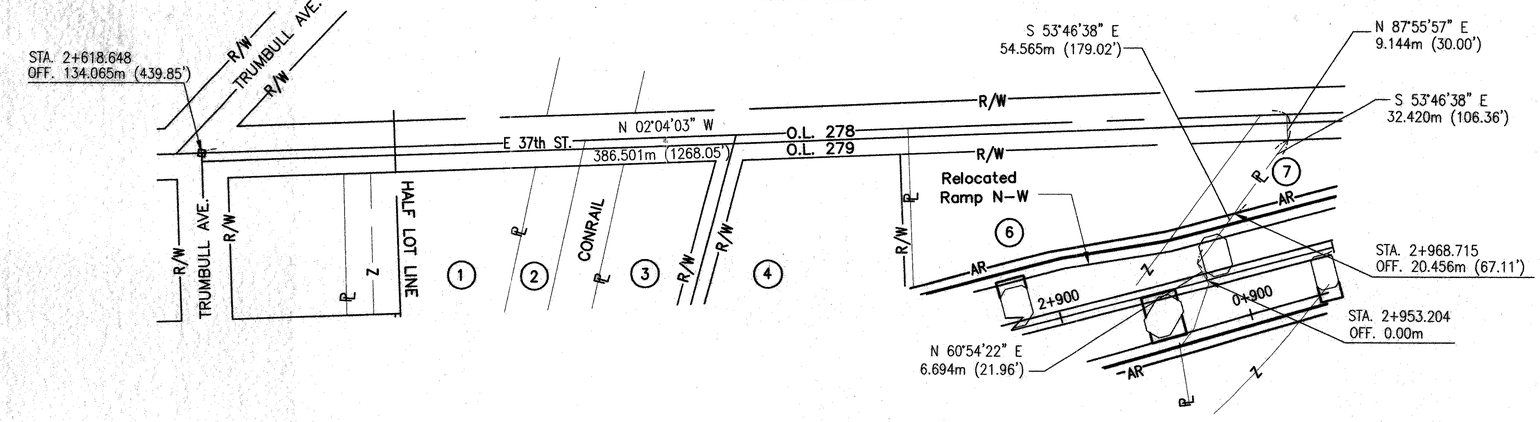
HORIZONTAL SCALE 1 : 1000

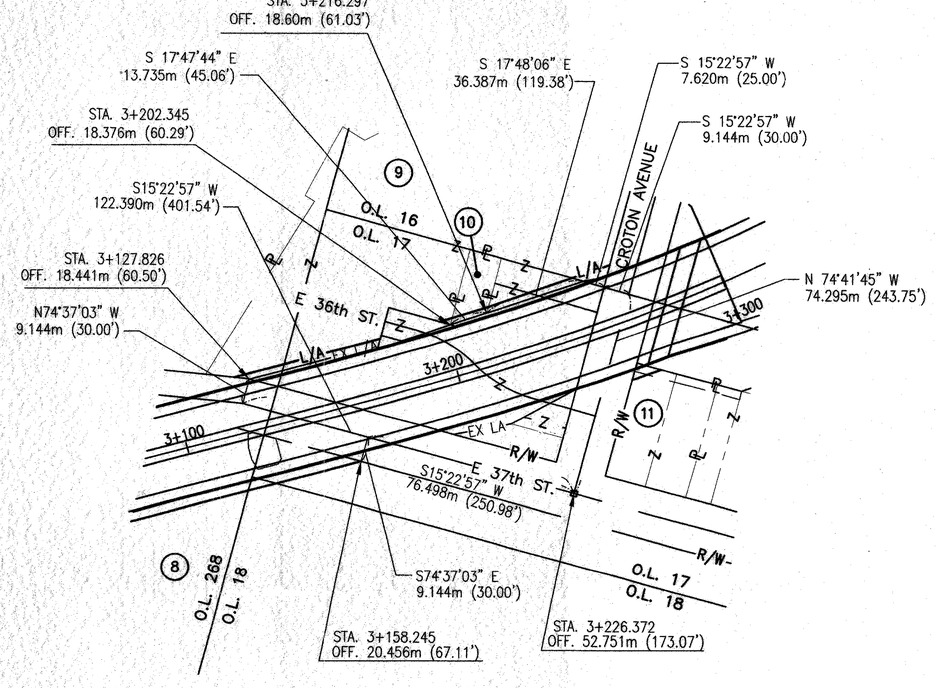
CALCULATED JMG CHECKED MJW

PARCEL LEAD–IN DATA

CUY–77–23.458

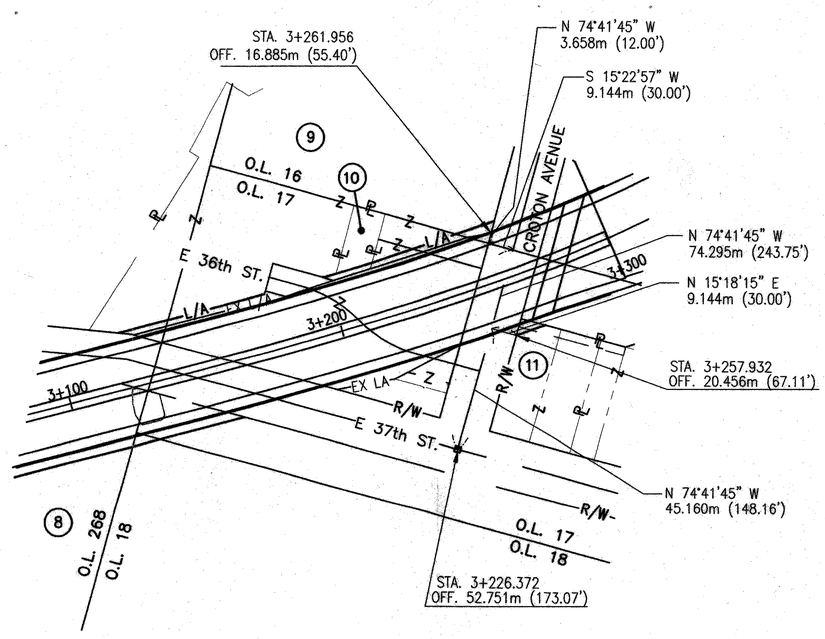
PARCELS 7R, 7T, 7WD





PARCELS 8R, 8T, 9WL
9WL-1, 10WL

CROSS REFERENCE	
ITEM	SHEET NO.
R/W PLAN SHEETS	8-10
RAILROAD PLATS	15,16



PARCELS 9WL-2, 11WL

HNTB ARCHITECTS ENGINEERS PLANNERS

metric units

HORIZONTAL SCALE
1 : 1000

CALCULATED JMG
CHECKED MJW

PARCEL LEAD-IN DATA

CUY-77-23.458

J:/SBS/24821/TECHPROD/DRAWINGS/1494ROW.dwg VIEW = PLOT2

	ROADWAY		PERMANENT EASEMENTS FOR PIER FOOTERS			
POINTS	STATION	OFFSET	PARCEL	COURSE	DISTANCE	BEARING
1	2+667.675	27.454m Rt.	2–1	1–2	3.658m [12.00']	N15°20'42"E
2	2+670.842	29.283m Rt.		2–3	8.992m [29.50']	S74°39'18"E
3	2+666.347	37.070m Rt.		3–4	3.658m [12.00']	S15°20'42"W
4	2+663.179	35.241m Rt.		4–1	8.992m [29.50']	N74°39'18"W

CURVE	RADIUS	LENGTH	CHORD	BEARING
A	421.445m [1382.69']	38.688m [126.93']	38.674m [126.88']	N74°24'34"W
B	451.925m [1482.69']	77.132m [253.06']	77.039m [252.75']	S71°42'50"E
C	421.445m [1382.69']	104.974m [344.40']	104.703m [343.51']	N67°53'45"W
D	421.445m [1382.69']	7.036m [23.08']	7.036m [23.08']	N61°57'21"W

CROSS REFERENCE	
ITEM	SHEET NO.
LEAD-IN DATA	4
RAILROAD PLAT	13

SEE SHEET 11.

metric units

S14°54'19"W 25.957m [85.16']
N07°16'25"W 32.747m [107.44']
+730.292 27.886m Lt.
+709.000 25.000m Lt.
+685.409 11.645m Lt.
N20°42'23"E 2.13m [7.00']
+678.383 5.787m Rt.
N88°50'39"W 19.402m [63.66']
+680.123 7.022m Rt.
N78°07'05"W 13.106m [43.00']
S76°45'28"E 57.706m [189.32']
+672.528 17.513m Rt.
N70°26'49"W 27.173m [89.15']
S74°39'18"E 5.127m [16.82']
+643.562 42.796m Rt.
+638.791 47.967m Rt.
S32°57'47"E 2.325m [7.63']
+635.157 51.791m Rt.
N60°36'31"W 59m [153.67']
S30°24'45"E 55.322m [181.50']
+657.251 39.985m Rt.
S68°22'01"E 30.716m [100.77']
+668.428 33.464m Rt.
+688.400 36.767m Rt.
+682.000 26.000m Rt.
S43°27'57"E 15.489m [50.82']
N74°39'18"W 4.828m [15.84']

RAMP N–W
SCUPPER
CONC. WALL
10+120
10+080
0+720
0+680
0+640
0+600
0+560
2+600
2+640
2+680
2+720
GAS LINE MKR.
VENT
EOI
CONSOLIDATED RAIL CORPORATION
123–11–005
123–11–002
123–11–003
FARASEY STEEL FABRICATORS
(NOT USED)
TWO STY. BLOCK/METAL COMM.
CONSTRUCTION LIMIT
EX R/W
EX SL
EX AR
EX L/A
EX PIER
PIER 1L (W)
PIER 1L (E)
PIER 2R
PIER 2R (W)
MH (FROM RECORD PLANS)
305mm STM
381mm STM
102mm W
400 mm WILLOW
150 mm APPLE
500 mm POPLAR
GUARDRAIL
CURB
EXIT SIGN
SIGN
CB
℄ I–77 N14°39'18"W
℄ RAMP W–N
HALF LOT LINE
THH (DATUR)
T(DATUR)(FO)
E(DATUR)
UNK
CONC.
(FO)

BEGIN R/W AQUISITION STA. 2+624.687

BEGIN PROJECT STA. 2+650.000

SEE SHEET 12.

MATCH LINE STA. 2+740 SEE SHEET 7.

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\1494RDB.dwg

HORIZONTAL SCALE 1:200

CALCULATED JMG CHECKED MJW

PID NO. 14949

RIGHT OF WAY PLAN – INTERSTATE ROUTE 77
STA. 2+590 TO STA. 2+740

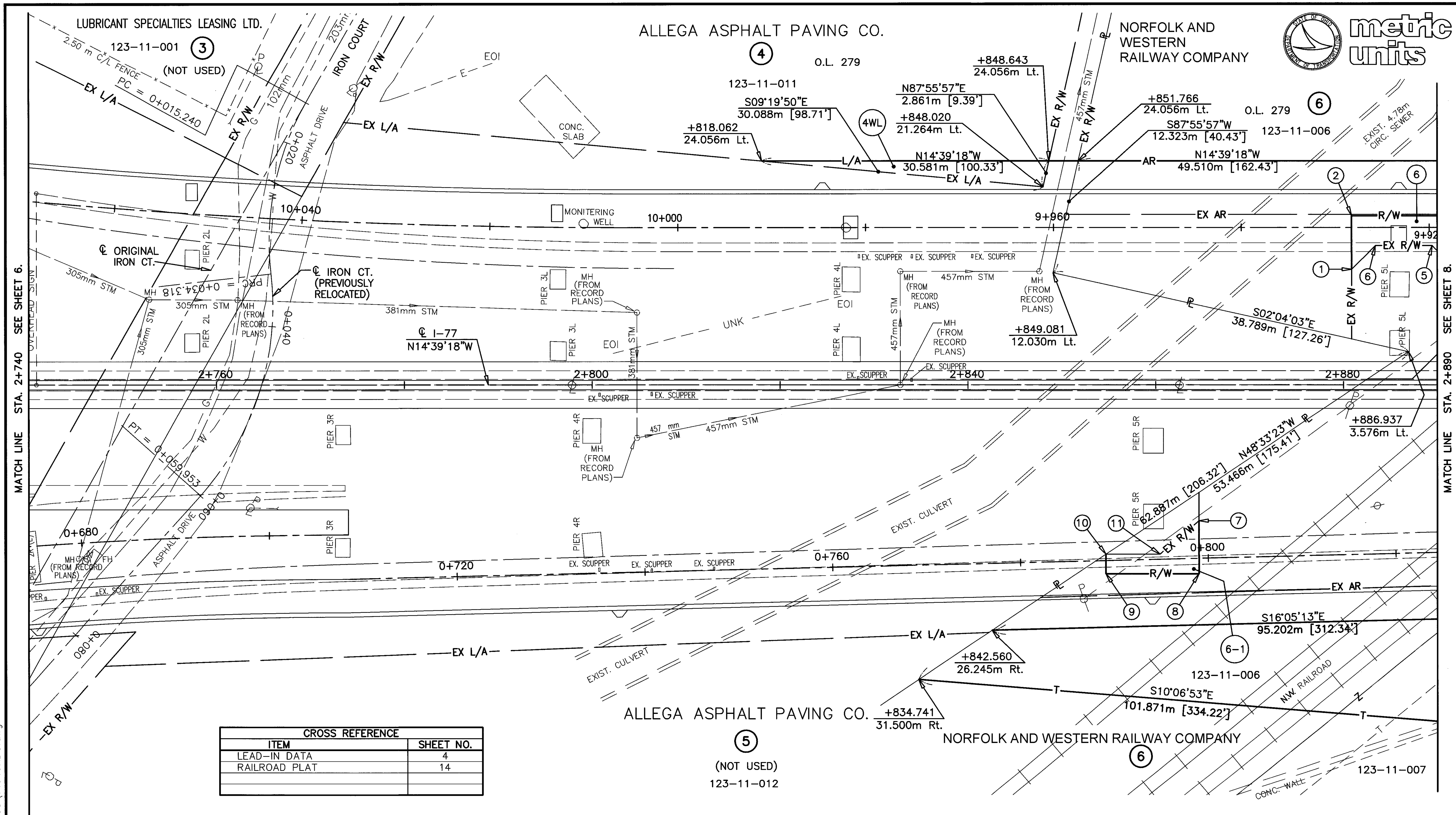
CUY-77-23.458

REV.	DATE	DESCRIPTION

DATE OF COMPLETION

6 / 16

285
295



LUBRICANT SPECIALTIES LEASING LTD.
123-11-001 (3)
(NOT USED)
2.50 m C/L FENCE
PC = 0+015.240
EX L/A
EX R/W
IRON COURT
ASPHALT DRIVE
EOI
CONC. SLAB
ALLEGA ASPHALT PAVING CO.
(4)
O.L. 279
123-11-011
S09°19'50"E
30.088m [98.71']
+818.062
24.056m Lt.
(4WL)
N87°55'57"E
2.861m [9.39']
+848.020
21.264m Lt.
+848.643
24.056m Lt.
N14°39'18"W
30.581m [100.33']
NORFOLK AND WESTERN RAILWAY COMPANY
+851.766
24.056m Lt.
S87°55'57"W
12.323m [40.43']
O.L. 279
(6)
123-11-006
N14°39'18"W
49.510m [162.43']
EXIST. 4.78m CIRC. SEWER
EX AR
MONITERING WELL
10+040
10+000
9+960
℄ ORIGINAL IRON CT.
℄ IRON CT. (PREVIOUSLY RELOCATED)
PRC = 0+034.318
305mm STM
381mm STM
457mm STM
MH (FROM RECORD PLANS)
℄ I-77
N14°39'18"W
UNK
EX. SCUPPER
+849.081
12.030m Lt.
S02°04'03"E
38.789m [127.26']
2+760
2+800
2+840
2+880
+886.937
3.576m Lt.
PIER 2L
PIER 3L
PIER 4L
PIER 5L
PIER 3R
PIER 4R
PIER 5R
PT = 0+059.953
N48°33'23"W
53.466m [175.41']
62.887m [206.32']
EXIST. CULVERT
0+680
0+720
0+760
0+800
R/W
S16°05'13"E
95.202m [312.34']
(6-1)
+842.560
26.245m Rt.
123-11-006
S10°06'53"E
101.871m [334.22']
N.W. RAILROAD
ALLEGA ASPHALT PAVING CO.
(5)
(NOT USED)
123-11-012
+834.741
31.500m Rt.
NORFOLK AND WESTERN RAILWAY COMPANY
(6)
123-11-007
CONC. WALL
MATCH LINE STA. 2+740 SEE SHEET 6.
MATCH LINE STA. 2+890 SEE SHEET 8.

CROSS REFERENCE	
ITEM	SHEET NO.
LEAD-IN DATA	4
RAILROAD PLAT	14

	ROADWAY		PERMANENT EASEMENTS FOR PIER FOOTERS								ROADWAY		
POINTS	STATION	OFFSET	PARCEL	COURSE	DISTANCE	BEARING	PARCEL	COURSE	DISTANCE	BEARING	STATION	OFFSET	POINTS
1	2+880.872	12.411m Lt.	6	1-2	5.733m [18.81']	S75°20'39"W	6-1	7-8	5.715m [18.75']	N75°20'39"E	2+864.594	14.478m Rt.	7
2	2+880.872	18.144m Lt.		2-3	10.057m [32.99']	N14°39'18"W		8-9	9.911m [32.52']	S14°39'18"E	2+864.594	20.193m Rt.	8
3	2+890.928	18.144m Lt.		3-4	4.666m [15.31']	N75°20'39"E		9-10	2.094m [6.87']	S75°20'42"W	2+854.683	20.193m Rt.	9
4	2+890.928	13.478m Lt.		4-5	2.085m [6.84']	S30°20'39"W		10-11	5.756m [18.88']	N14°39'21"W	2+854.683	18.099m Rt.	10
5	2+889.454	14.952m Lt.		5-6	6.041m [19.82']	S14°39'21"E		11-7	5.511m [18.08']	N55°43'45"W	2+860.439	18.099m Rt.	11
6	2+883.413	14.952m Lt.		6-1	3.594m [11.79']	S59°39'21"E							

HNTB ARCHITECTS ENGINEERS PLANNERS

REV.	DATE	DESCRIPTION
3	6-23-98	NORFOLK SOUTHERN CORP. TO NORFOLK AND WESTERN RAILWAY COMPANY
2	5-14-98	PCL 6T REVISED TO COVER CONSTRUCTION OF TEMPORARY SHEETING
1	4-27-98	PCL 4WL CHANGED (100.49') TO (100.33')
	DATE OF COMPLETION	

metric units

HORIZONTAL SCALE 1:200

CALCULATED JMG CHECKED MJW

PID NO. 14949

RIGHT OF WAY PLAN - INTERSTATE ROUTE 77
STA. 2+740 TO STA. 2+890

CUY-77-23.458

7/16

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	ROADWAY		PERMANENT EASEMENTS FOR PIER FOOTERS								ROADWAY		
POINTS	STATION	OFFSET	PARCEL	COURSE	DISTANCE	BEARING	PARCEL	COURSE	DISTANCE	BEARING	STATION	OFFSET	POINTS
12	2+928.980	0.300m Rt.	6–2	12–13	12.500m [41.01']	N14°39'18"W	6–3	18–19	7.119m [23.36']	N75°20'42"E	2+941.479	9.949m Rt.	18
13	2+941.479	0.300m Rt.		13–14	3.917m [12.85']	N75°20'42"E		19–20	12.500m [41.01']	S14°39'18"E	2+941.479	17.067m Rt.	19
14	2+941.479	4.217m Rt.		14–15	3.812m [12.51']	S30°20'42"W		20–21	3.918m [12.86']	S75°20'42"W	2+928.980	17.067m Rt.	20
15	2+938.784	1.521m Rt.		15–16	3.908m [12.82']	S14°39'18"E		21–22	3.813m [12.51']	N30°20'42"E	2+928.980	13.149m Rt.	21
16	2+934.876	1.521m Rt.		16–17	8.339m [27.36']	S59°39'18"E		22–23	3.908m [12.82']	N14°39'18"W	2+931.676	15.845m Rt.	22
17	2+928.980	7.417m Rt.		17–12	7.118m [23.35']	S75°20'42"W		23–18	8.338m [27.36']	N59°39'18"W	2+935.583	15.845m Rt.	23

metric units

NORFOLK AND WESTERN RAILWAY COMPANY

123–11–006

+901.276
24.056m Lt.

EXIST. 2.74m x 3.05m BOX CULVERT

+943.439
20.456m Lt.

N09°46'29"W
42.316m [138.83']

123–11–007

N14°39'18"W
25.276m [82.93']

+968.715
20.456m Lt.

N14°39'18"W
101.243m [332.16']

O.L. 279

G.C.R.T.A.

EXISTING SEWER EASEMENT – STATE OF OHIO (VOL. 11816 PAGES 299 & 307

EX S

EX AR

AR

9+880

EX R/W

6T

6R

7R

7T

C/L 1.5 M DITCH

+951.535
6.483m Lt.

N60°54'22"E
8.007m [26.27']

S53°46'38"E
22.145m [72.65']

PIER 6L

PIER 7L

EX. SCUPPER

℄ I–77
N14°39'18"W

2+920

3+000

MATCH LINE STA. 2+890 SEE SHEET 7.

MATCH LINE STA. 3+040 SEE SHEET 9.

+953.531
1.271m Rt.

S72°22'38"E
17.176m [56.35']

PIER 6R

PIER 7R

6–2

6–3

0+840

0+880

0+920

0+960

CONSTRUCTION LIMIT

GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY

7 WD

SLAG

OVERHEAD SIGN

S16°05'13"E
95.202m [312.34']

S16°05'13"E
52.284m [171.53']

S16°05'13"E
17.005m [55.79']

S16°05'13"E
39.902m [130.91']

(COMM)

CONC. WALL

(FO)

123–11–007

S61°48'57"W
1.308m [4.29']

+938.152
19.298m Rt.

N80°35'09"E
4.587m [15.05']

EXIST. 2.74m x 3.05m BOX CULVERT

S10°06'53"E
101.871m [334.22']

+944.359
15.793m Rt.

+938.457
20.570m Rt.

S53°38'33"E
7.593m [24.91']

+937.733
23.866m Rt.

123–11–008,009

N80°35'09"E
20.351m [66.77']

+936.293
39.564m Rt.

+990.000
22.559m Rt.

N75°54'50"W
12.478m [40.94']

+984.000
33.500m Rt.

S30°20'42"W
2.828m [9.28']

+986.000
35.500m Rt.

+007.000
22.134m Rt.

S53°43'33"E
18.033m [59.16']

+993.000
33.500m Rt.

S30°36'01"E
7.280m [23.88']

123–12–001

O.L. 279

O.L. 268

ASPHALT DRIVE

CROSS REFERENCE	
ITEM	SHEET NO.
LEAD–IN DATA	4,5
RAILROAD PLATS	14,15

	ROADWAY		PERMANENT EASEMENTS FOR PIER FOOTERS			
POINTS	STATION	OFFSET	PARCEL	COURSE	DISTANCE	BEARING
1	2+991.013	12.372m Rt.	7WD	1–2	2.085m [6.84']	N30°20'42"E
2	2+992.487	13.846m Rt.		2–3	4.972m [16.31']	N14°39'18"W
3	2+997.459	13.846m Rt.		3–4	2.085m [6.84']	N59°39'18"W
4	2+998.933	12.372m Rt.		4–5	5.772m [18.94']	N75°20'42"E
5	2+998.933	18.144m Rt.		5–6	7.920m [25.98']	S14°39'18"E
6	2+991.013	18.144m Rt.		6–1	5.772m [18.94']	S75°20'42"W

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE 1:200

CALCULATED JMG CHECKED MJW

PID NO. 14949

RIGHT OF WAY PLAN – INTERSTATE ROUTE 77 STA. 2+890 TO STA. 3+040

CUY–77–23.458

REV.	DATE	DESCRIPTION
2	06/23/98	NORFOLK SOUTHERN TO NORFOLK AND WESTERN RAILWAY CO.
1	5–14–98	PCL 6T REVISED TO COVER CONSTRUCTION OF TEMPORARY SHEETING
DATE OF COMPLETION		

8 / 16

287
295

BOARD OF COUNTY COMMISSIONERS
CUYAHOGA COUNTY

GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY

NORFOLK AND WESTERN RAILWAY COMPANY

MATCH LINE STA. 3+040 SEE SHEET 8.

MATCH LINE STA. 3+190 SEE SHEET 10.

CROSS REFERENCE	
ITEM	SHEET NO.
LEAD-IN DATA	5
RAILROAD PLATS	15,16

℄ CURVE DATA
P.I. Sta. = 3+547.857
Δ = 60°00'00" Lt.
R = 582.126m
L_S = 182.880m
θ_S = 09°00'00"
LT = 122.078m
ST = 61.104m
L_C = 426.720m
T_S = 428.835m
E_S = 92.812m
$e_{max.}$ = 0.042 (NDC 0.0510)

REV.	DATE	DESCRIPTION
2	06/23/98	NORFOLK SOUTHERN TO NORFOLK AND WESTERN RAILWAY CO.
1	12/15/97	CHANGED PROPOSED VACATION TO VACATED

DATE OF COMPLETION

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949RDE.dwg

metric units

HORIZONTAL SCALE 1:200

CALCULATED JMG CHECKED MJW

PID NO. 14949

RIGHT OF WAY PLAN – INTERSTATE ROUTE 77 STA. 3+040 TO STA. 3+190

CUY-77-23.458

9 / 16

288
295

RIGHT OF WAY PLAN – INTERSTATE ROUTE 77
STA. 3+190 TO STA. 3+340

MATCH LINE STA. 3+190 SEE SHEET 9.

MATCH LINE STA. 3+340 SEE SHEET 11.

HORIZONTAL SCALE 1:200

CALCULATED JMG CHECKED MJW

PID NO. 14949

metric units

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

CUY-77-23.458

10 / 16

289 / 295

CITY OF CLEVELAND (10)

BOARD OF COUNTY COMMISSIONERS CUYAHOGA COUNTY (9)

CITY OF CLEVELAND

GEORGE COHEN (11)

SUBLOT 34 · SUBLOT 35 · SUBLOT 38 · SUBLOT 39

122-15-37 · 122-15-36 · 122-15-38

122-15-032 SUBLOT 5 · 122-15-031 SUBLOT 4 · 122-15-030 SUBLOT 3 · 122-15-029 · 122-15-105 SUBLOT 8 · 122-15-106 SUBLOT 6 & 7

9WL · 10WL · 11WL · 9WL-2

+203.658 · 20.456m Lt.

N16°29'03"W 4.639M [15.22'] · S15°22'57"W 3.939m [12.92'] · +198.945 20.456m Lt.

S74°41'45"E 2.449m [8.03'] · S17°47'44"E 13.735m [45.06'] · N16°54'45"W 13.600m [44.62']

+217.502 20.456m Lt. · S74°41'45"E 2.199m [7.22'] · S17°48'06"E 36.387m [119.38'] · N18°42'33"W 45.964m [150.80']

+264.575 20.456m Lt. · S74°41'45"E 4.391m [14.41']

+253.430 18.288m Lt. · S10°16'24"E 8.448m [27.72']

+216.297 18.602m Lt. · +261.956 16.885m Lt.

+202.345 18.376m Lt.

+261.466 15.344m Rt. · N15°22'57"E 8.934m [29.31']

+268.540 20.566m Rt.

+257.932 20.456m Rt.

S19°40'23"E 10.903m [35.77'] · N74°41'45"W 6.263m [20.55']

SC = Sta. 3+301.902

END PROJECT STA. 3+300.303

END R/W AQUISITION STA. 3+268.540

3.048m [10.00'] SEWER EASEMENT (STATE OF OHIO VOL. 10624, PG. 723)

1.333294

0+000 · 0+020 · 0+040 · 0+060 · 0+034.769

3+200 · 3+240 · 3+280 · 3+320 · 3+261.200

VACATED

E. 36th St. · E. 37th St. · N15°22'57"E

CROTON AVE. (AATUR) · ℄ CROTON AVE.

℄ I-77

EX L/A · EX R/W · 18.288m [60.00'] · 9.144m [30.00'] · 1.6 M CHAIN LINK FENCE · 1.7 M CHAIN LINK FENCE · 1.9 M CHAIN LINK FENCE · 1.83 m C/L FENCE · 1.40 m C/L FENCE · 1.85 m C/L FENCE

305mm STM · 457mm STM · 762mm WATER · 203mm W (DATUR) · 305mm (4) STD · (1) STD T (DATUR) · 152mm · 102mm

MH (FROM RECORD PLANS) · CB (FROM RECORD PLANS) · CB · MH · UP · EOI · SCUPPER · GATE · PIER 10L · PIER 11L · PIER 11R

1.8 M CHAIN LINK FENCE · U'DGRD. TELE. MARKER · U'DGRD. TELE. MANH. · U'DGRD. CABLE · W/ 11731.000 U'DGRD. CABLE · W/ 11730.000 U'DGRD. CABLE · CONC. APPRO. · CONC. WALK · ASPHALT · CONCRETE · UNK · WATER · GUARDRAIL · MILE 162 SIGN · OVERHEAD SIGN · OVERHEAD SIGN POLE · ONE STY. BLOCK COMM.

O.L. 16 · O.L. 17 · O.L. 18

CROSS REFERENCE	
ITEM	SHEET NO.
LEAD-IN DATA	5

℄ CURVE DATA

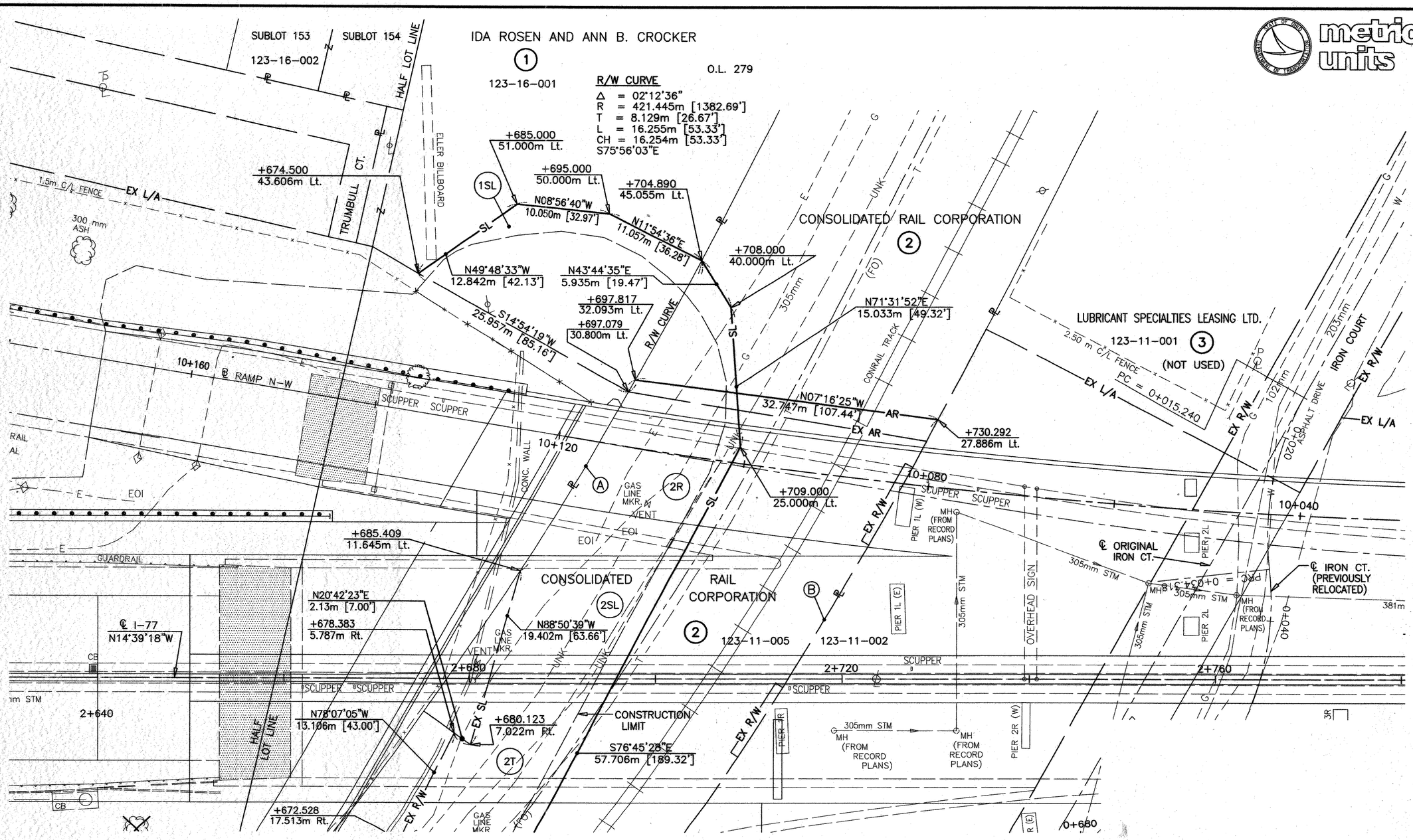
P.I. Sta. = 3+547.857
Δ = 60°00'00" Lt.
R = 582.126m
Ls = 182.880m
Θs = 09°00'00"
LT = 122.078m
ST = 61.104m
Lc = 426.720m
Ts = 428.835m
Es = 92.812m
emax. = 0.042 (NDC 0.0510)

REV.	DATE	DESCRIPTION
1	12/15/97	CHANGED PROPOSED VACATION TO VACATED

DATE OF COMPLETION

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949RDF.dwg



SEE SHEET 6.

CURVE	RADIUS	LENGTH	CHORD	BEARING
A	421.445m [1382.69']	38.688m [126.93']	38.674m [126.88']	N74°24'34"W
B	451.925m [1482.69']	77.132m [253.06']	77.039m [252.75']	S71°42'50"E

CROSS REFERENCE	
ITEM	SHEET NO.
LEAD-IN DATA	4
RAILROAD PLAT	13

REV.	DATE	DESCRIPTION

DATE OF COMPLETION

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949RDG.dwg

metric units

HORIZONTAL SCALE 1:200

CALCULATED JMG CHECKED MJW

PID NO. 14949

RIGHT OF WAY PLAN - INTERSTATE ROUTE 77 RAMP N-W

CUY-77-23.458

11 / 16

290 / 295

SEE SHEET 6.

metric units

BEGIN R/W AQUISITION
STA. 2+624.687

2+560 2+600 2+640 2+680

CB CB CB

305mm STM

381mm STM

GUARDRAIL

CURB

EXIT SIGN

HALF LOT LINE

SCUPPER SCUPPER

N78°07'05"W
13.106m [43.00']

+680.123
7.022m Rt.

CONSTRUCTION LIMIT

S76°45'28"E
57.706m [189.32']

2T

+672.528
17.513m Rt.

EX R/W

GAS LINE MKR.

UNK

T(DATUR)(FO)

SL

400 mm WILLOW

N70°26'49"W
27.173m [89.15']

CONC. WALL

THH (DATUR)

150 mm APPLE

200 mm APPLE

200 mm PINE

150 mm APPLE

150 mm APPLE

S74°39'18"E
5.127m [16.82']

+643.562
42.796m Rt.

0+600

EX PIER

EX AR

AR

FARASEY STEEL I

+688.400
36.767m Rt.

(NOT

+682.000
26.000m Rt.

S43°27'57"E
15.489m [50.82']

+668.428
33.464m Rt.

N74°39'18"W
4.828m [15.84']

TWO STY. BLOCK/METAL COMM.

S30°24'45"E
55.322m [181.50']

+657.251
39.985m Rt.

S68°22'01"E
30.716m [100.77']

+640.999
47.236m Rt.

+645.000
60.000m Rt.

CONSOLIDATED RAIL CORPORATION

2

0+560

+638.791
47.967m Rt.

S32°57'47"E
2.325m [7.63']

SIGN

200 mm APPLE

GUARDRAIL

B RAMP W-N

0+520

E(DATUR)

GUARDRAIL

+635.157
51.791m Rt.

500 mm POPLAR

MH

SIGN

N60°36'31"W
46.839m [153.67']

705mm

LINK

MARKER POST

1.50 m C/L FENCE

EX SL

S48°33'31"E
24.474m [80.30']

+624.687
73.652m Rt.

GUARDRAIL

EXIT SIGN

300 mm

CURVE	RADIUS	LENGTH	CHORD	BEARING
B	451.925m [1482.69']	77.132m [253.06']	77.039m [252.75']	S71°42'50"E
C	421.445m [1382.69']	104.974m [344.40']	104.703m [343.51']	N67°53'45"W
D	421.445m [1382.69']	7.036m [23.08']	7.036m [23.08']	N61°57'21"W

CROSS REFERENCE	
ITEM	SHEET NO.
LEAD-IN DATA	4
RAILROAD PLAT	13

REV.	DATE	DESCRIPTION

DATE OF COMPLETION

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE 1:200

CALCULATED JMG CHECKED MJW

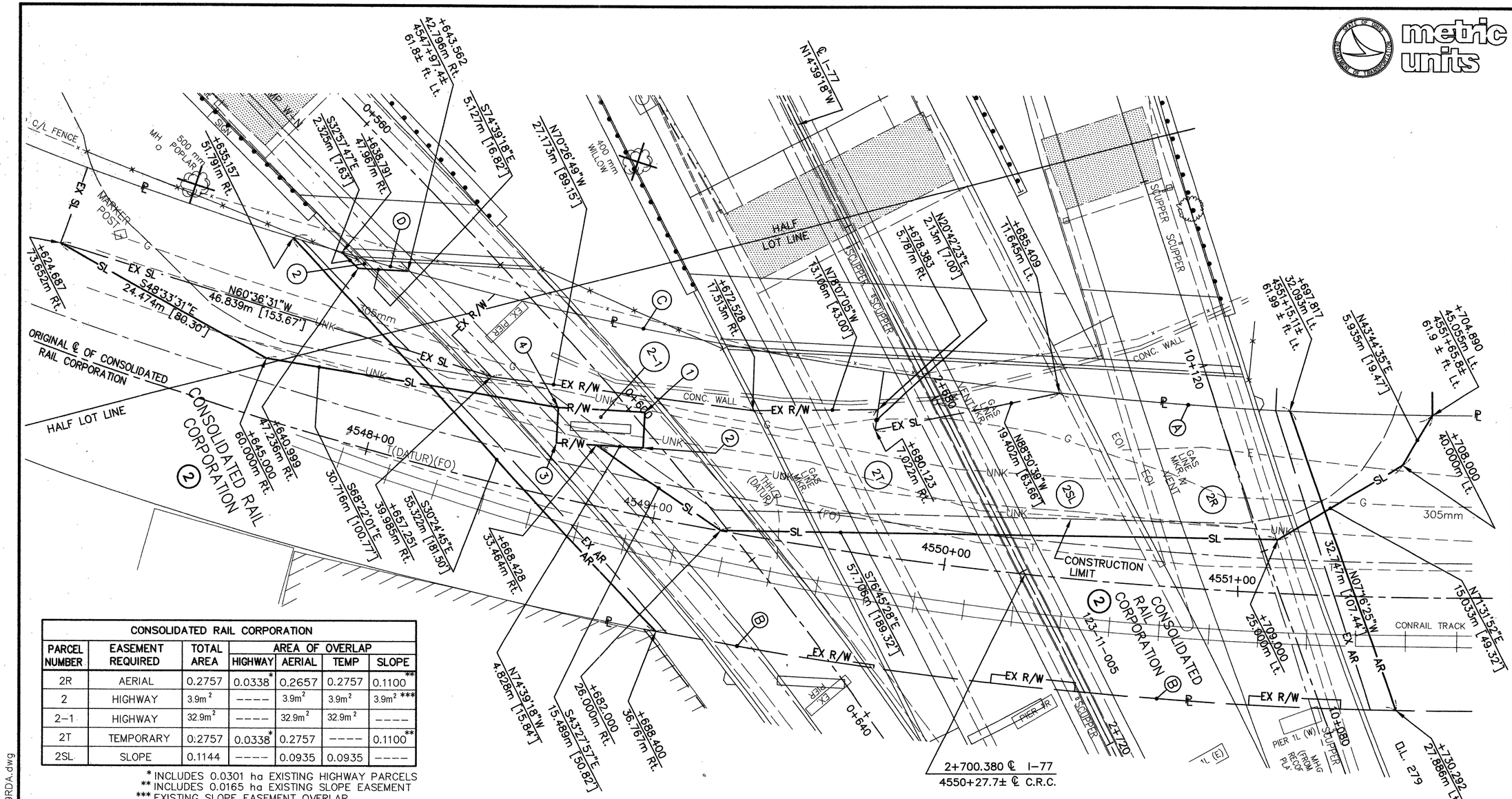
PID NO. 14949

RIGHT OF WAY PLAN – INTERSTATE ROUTE 77
RAMP W-N

CUY-77-23.458

12/16

291
295



CONSOLIDATED RAIL CORPORATION						
PARCEL NUMBER	EASEMENT REQUIRED	TOTAL AREA	AREA OF OVERLAP			
			HIGHWAY	AERIAL	TEMP	SLOPE
2R	AERIAL	0.2757	0.0338*	0.2657	0.2757	0.1100**
2	HIGHWAY	3.9m²	-----	3.9m²	3.9m²	3.9m² ***
2-1	HIGHWAY	32.9m²	-----	32.9m²	32.9m²	-----
2T	TEMPORARY	0.2757	0.0338*	0.2757	-----	0.1100**
2SL	SLOPE	0.1144	-----	0.0935	0.0935	-----

* INCLUDES 0.0301 ha EXISTING HIGHWAY PARCELS
** INCLUDES 0.0165 ha EXISTING SLOPE EASEMENT
*** EXISTING SLOPE EASEMENT OVERLAP
* ALSO INCLUDED 36.8m² OF PROPOSED HIGHWAY PARCELS

CURVE	RADIUS	LENGTH	CHORD	BEARING
A	421.445m [1382.69']	38.688m [126.93']	38.674m [126.88']	N74°24'34"W
B	451.925m [1482.69']	77.132m [253.06']	77.039m [252.75']	S71°42'50"E
C	421.445m [1382.69']	104.974m [344.40']	104.703m [343.51']	N67°53'45"W
D	421.445m [1382.69']	7.036m [23.08']	7.036m [23.08']	N61°57'21"W

NOTE:
RAILROAD STATIONING AND BEARINGS OBTAINED FROM THE VALUATION MAP FOR CONSOLIDATED RAIL CORPORATION SECTION V-10, V-10A AND V-8, OHIO 12 AND THE ORIGINAL CONSTRUCTION PLANS FOR I-77 (CUY-21-14.55)

HNTB ARCHITECTS ENGINEERS PLANNERS

	ROADWAY		PERMANENT EASEMENTS FOR PIER FOOTERS			
POINTS	STATION	OFFSET	PARCEL	COURSE	DISTANCE	BEARING
1	2+667.675	27.454m Rt.	2-1	1-2	3.658m [12.00']	N15°20'42"E
2	2+670.842	29.283m Rt.		2-3	8.992m [29.50']	S74°39'18"E
3	2+666.347	37.070m Rt.		3-4	3.658m [12.00']	S15°20'42"W
4	2+663.179	35.241m Rt.		4-1	8.992m [29.50']	N74°39'18"W

CROSS REFERENCE	
ITEM	SHEET NO.
LEAD-IN DATA	4
MAINLINE R/W PLAN	6,11,12

REV.	DATE	DESCRIPTION
2	04/02/98	ADJUSTED OVERLAP TABLE TO REFLECT THE SUMMARY SHEET INFORMATION
1	12/22/97	ADDED EXISTING AERIAL/PRO TO THE OVERLAP TABLE.

DATE OF COMPLETION

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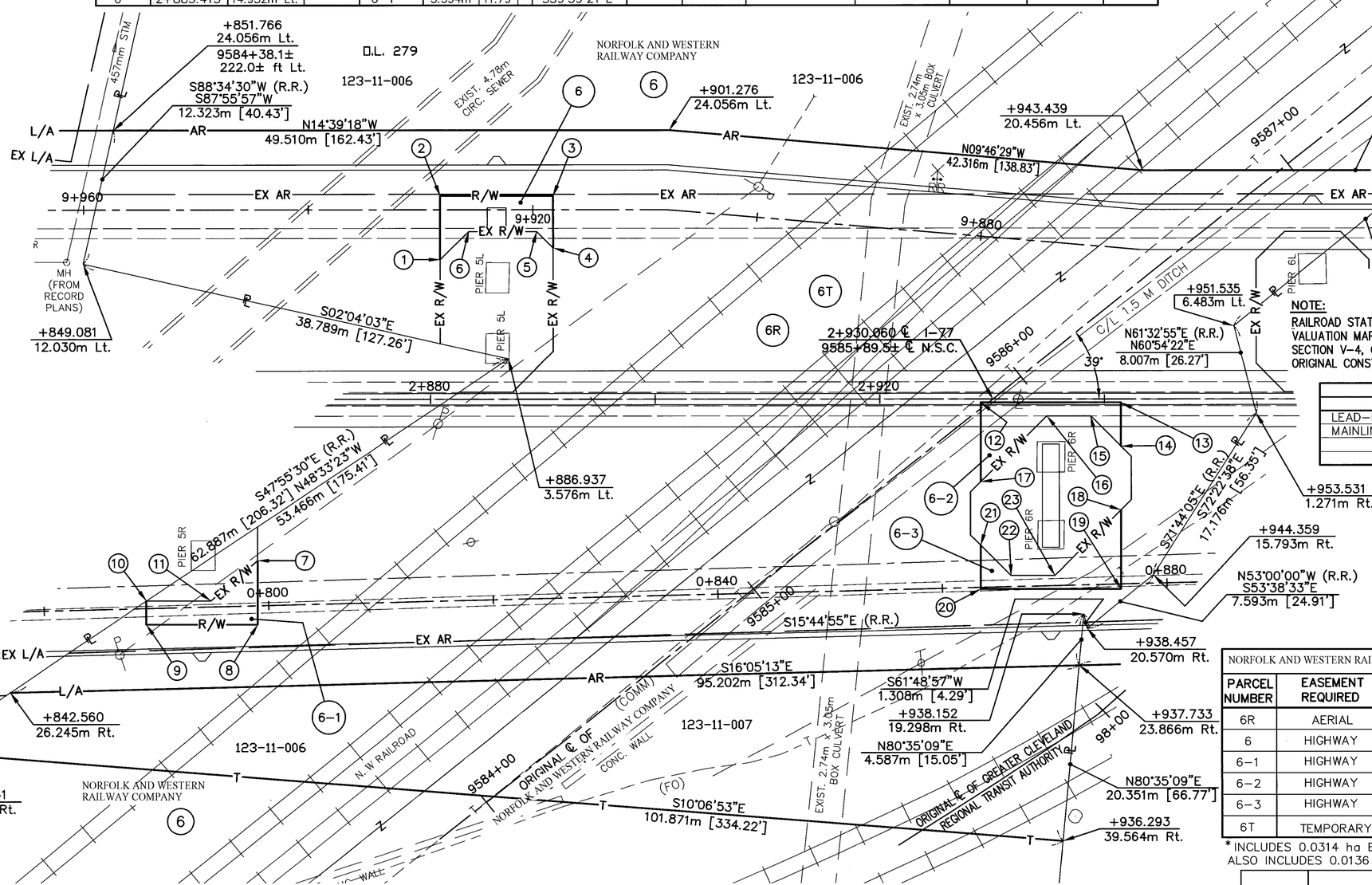
ALLEGA ASPHALT PAVING CO.

O.L. 279

	ROADWAY		PERMANENT EASEMENTS FOR PIER FOOTERS								ROADWAY		
POINTS	STATION	OFFSET	PARCEL	COURSE	DISTANCE	BEARING	PARCEL	COURSE	DISTANCE	BEARING	STATION	OFFSET	POINTS
1	2+880.872	12.411m Lt.	6	1–2	5.733m [18.81']	S75°20'39"W	6–1	7–8	5.715m [18.75']	N75°20'39"E	2+864.594	14.478m Rt.	7
2	2+880.872	18.144m Lt.		2–3	10.057m [32.99']	N14°39'18"W		8–9	9.911m [32.52']	S14°39'18"E	2+864.594	20.193m Rt.	8
3	2+890.928	18.144m Lt.		3–4	4.666m [15.31']	N75°20'39"E		9–10	2.094m [6.87']	S75°20'42"W	2+854.683	20.193m Rt.	9
4	2+890.928	13.478m Lt.		4–5	2.085m [6.84']	S30°20'39"W		10–11	5.756m [18.88']	N14°39'21"W	2+854.683	18.099m Rt.	10
5	2+889.454	14.952m Lt.		5–6	6.041m [19.82']	S14°39'21"E		11–7	5.511m [18.08']	N55°43'45"W	2+860.439	18.099m Rt.	11
6	2+883.413	14.952m Lt.		6–1	3.594m [11.79']	S59°39'21"E							



NOTE:
RAILROAD STATIONING AND BEARINGS OBTAINED FROM THE VALUATION MAP FOR NORFOLK SOUTHERN CORPORATION SECTION V-4, OHIO MAP SL-12A & SL-12B AND THE ORIGINAL CONSTRUCTION PLANS FOR I-77 (CUY-21-14.55)

CROSS REFERENCE	
ITEM	SHEET NO.
LEAD-IN DATA	4,5
MAINLINE R/W PLAN	7,8

	ROADWAY		PERMANENT EASEMENTS FOR PIER FOOTERS								ROADWAY		
POINTS	STATION	OFFSET	PARCEL	COURSE	DISTANCE	BEARING	PARCEL	COURSE	DISTANCE	BEARING	STATION	OFFSET	POINTS
12	2+928.980	0.300m Rt.	6-2	12–13	12.500m [41.01']	N14°39'18"W	6-3	18–19	7.119m [23.36']	N75°20'42"E	2+941.479	9.949m Rt.	18
13	2+941.479	0.300m Rt.		13–14	3.917m [12.85']	N75°20'42"E		19–20	12.500m [41.01']	S14°39'18"E	2+941.479	17.067m Rt.	19
14	2+941.479	4.217m Rt.		14–15	3.812m [12.51']	S30°20'42"W		20–21	3.918m [12.86']	S75°20'42"W	2+928.980	17.067m Rt.	20
15	2+938.784	1.521m Rt.		15–16	3.908m [12.82']	S14°39'18"E		21–22	3.813m [12.51']	N30°20'42"E	2+928.980	13.149m Rt.	21
16	2+934.876	1.521m Rt.		16–17	8.339m [27.36']	S59°39'18"E		22–23	3.908m [12.82']	N14°39'18"W	2+931.676	15.845m Rt.	22
17	2+928.980	7.417m Rt.		17–12	7.118m [23.35']	S75°20'42"W		23–18	8.338m [27.36']	N59°39'18"W	2+935.583	15.845m Rt.	23

NORFOLK AND WESTERN RAILWAY COMPANY

PARCEL NUMBER	EASEMENT REQUIRED	TOTAL AREA	AREA OF OVERLAP		
			HIGHWAY	AERIAL	TEMP
6R	AERIAL	0.4256	0.0450*	0.3433	0.4256
6	HIGHWAY	0.0036	----	0.0036	0.0036
6-1	HIGHWAY	0.0028	----	0.0028	0.0028
6-2	HIGHWAY	0.0036	----	0.0036	0.0036
6-3	HIGHWAY	0.0036	----	0.0036	0.0036
6T	TEMPORARY	0.5299	0.0450*	0.4256	----

* INCLUDES 0.0314 ha EXISTING HIGHWAY PARCELS
ALSO INCLUDES 0.0136 ha OF PROPOSED HIGHWAY PARCELS

REV.	DATE	DESCRIPTION
3	06/23/98	NORFOLK SOUTHERN TO NORFOLK AND WESTERN RAILWAY COMPANY
2	5/14/98	PCL 6T REVISED TO COVER CONSTRUCTION OF TEMPORARY SHEETING
1	12/22/97	ADDED EXISTING AERIAL/PRO TO THE OVERLAP TABLE
		DATE OF COMPLETION

HNTB ARCHITECTS ENGINEERS PLANNERS

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STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

HORIZONTAL SCALE 1:200

CALCULATED JMG CHECKED MJW

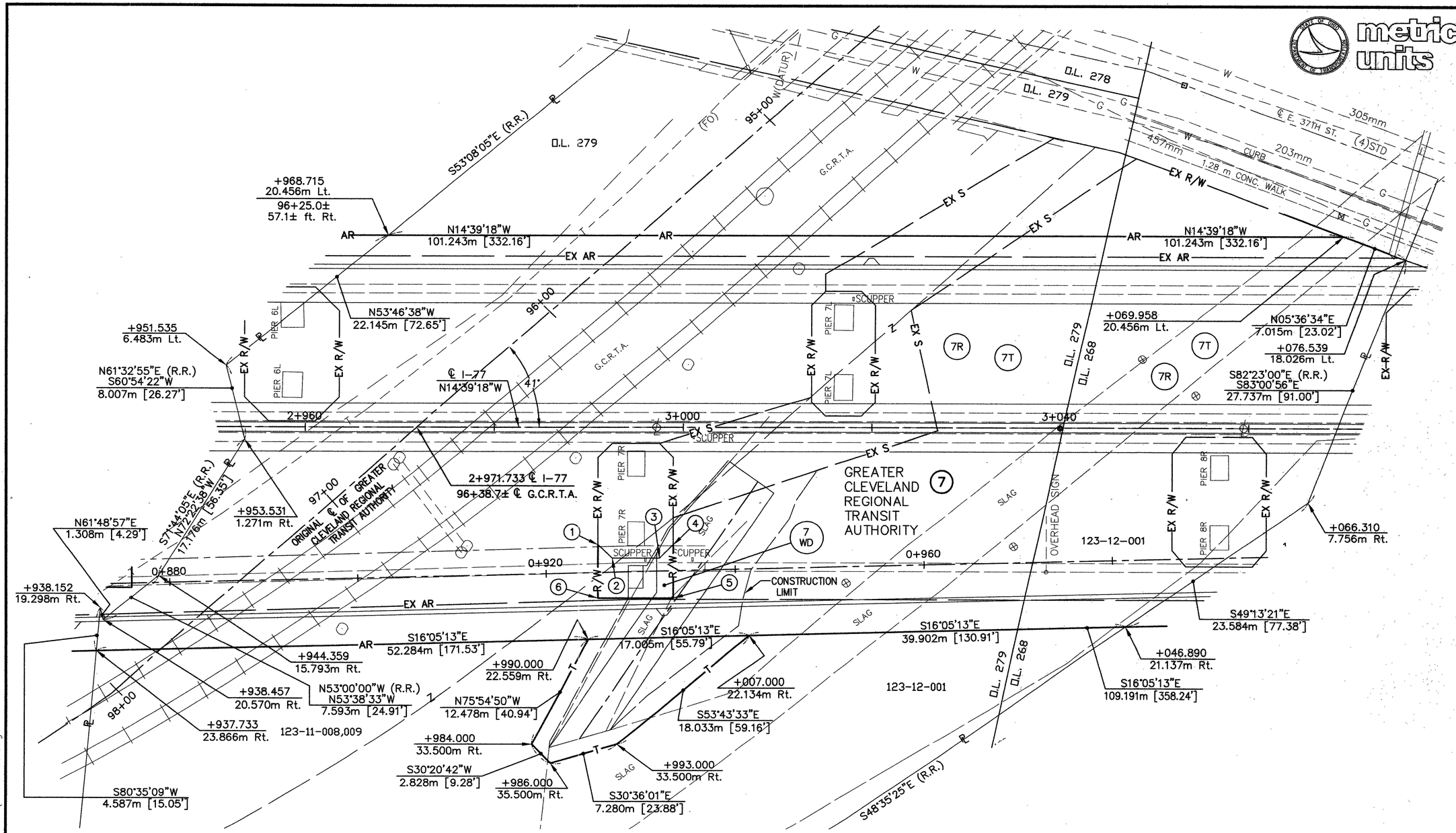
PID NO. 14949

RAILROAD PLAT FOR
NORFOLK AND WESTERN RAILWAY COMPANY

CUY-77-23.458

14/16

293
295



	ROADWAY		PERMANENT EASEMENTS FOR PIER FOOTERS			
POINTS	STATION	OFFSET	PARCEL	COURSE	DISTANCE	BEARING
1	2+991.013	12.372m Rt.	7WD	1–2	2.085m [6.84']	N30°20'42"E
2	2+992.487	13.846m Rt.		2–3	4.972m [16.31']	N14°39'18"W
3	2+997.459	13.846m Rt.		3–4	2.085m [6.84']	N59°39'18"W
4	2+998.933	12.372m Rt.		4–5	5.772m [18.94']	N75°20'42"E
5	2+998.933	18.144m Rt.		5–6	7.920m [25.98']	S14°39'18"E
6	2+991.013	18.144m Rt.		6–1	5.772m [18.94']	S75°20'42"W

HNTB ARCHITECTS ENGINEERS PLANNERS

GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY						
PARCEL NUMBER	EASEMENT REQUIRED	TOTAL AREA	AREA OF OVERLAP			
			HIGHWAY	AERIAL	TEMP	SEWER
7R	AERIAL	0.4908	0.0444*	0.4263	0.4908	0.0322**
7WD	HIGHWAY	3.6m²	----	3.6m²	3.6m²	----
7T	TEMPORARY	0.5059	0.0444*	0.4908	----	0.0322**

*INCLUDES 0.0408 ha EXISTING HIGHWAY PARCELS
**EXISTING SEWER EASEMENT
*ALSO INCLUDES 3.6m² OF PROPOSED HIGHWAY PARCEL

NOTE:
RAILROAD STATIONING AND BEARINGS OBTAINED FROM THE ORIGINAL CONSTRUCTION PLANS FOR I-77 (CUY-21-14.55)

CROSS REFERENCE	
ITEM	SHEET NO.
LEAD-IN DATA	5
MAINLINE R/W PLAN	8,9

REV.	DATE	DESCRIPTION
2	04/02/99	ADJUSTED OVERLAP TABLE TO REFLECT THE SUMMARY SHEET INFORMATION
1	12/22/97	ADDED EXISTING AERIAL/PRO TO THE OVERLAP TABLE.

DATE OF COMPLETION

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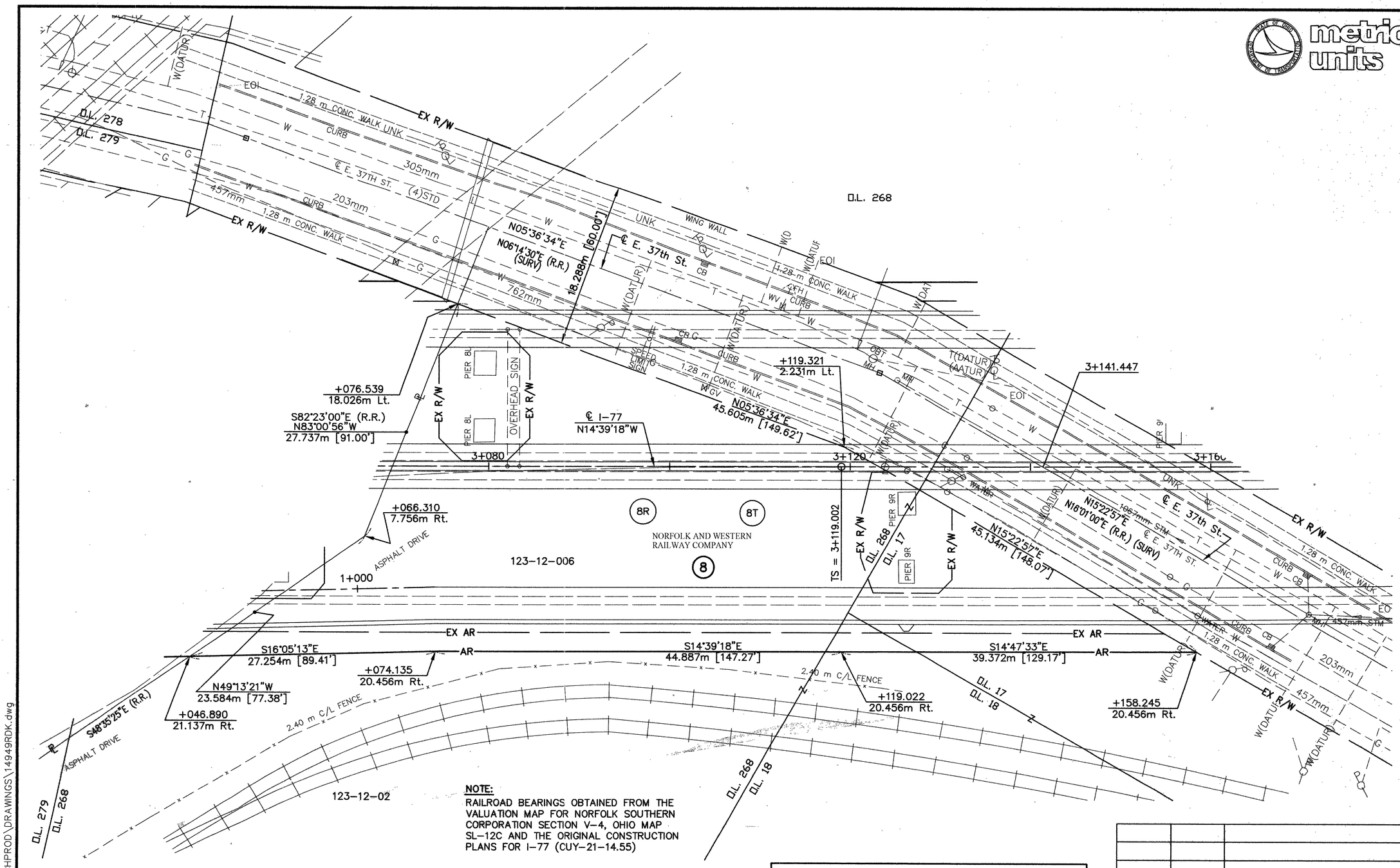

NOTE:
RAILROAD BEARINGS OBTAINED FROM THE VALUATION MAP FOR NORFOLK SOUTHERN CORPORATION SECTION V-4, OHIO MAP SL-12C AND THE ORIGINAL CONSTRUCTION PLANS FOR I-77 (CUY-21-14.55)

CROSS REFERENCE	
ITEM	SHEET NO.
LEAD-IN DATA	5
MAINLINE R/W PLAN	9

NORFOLK AND WESTERN RAILWAY COMPANY

PARCEL NUMBER	EASEMENT REQUIRED	TOTAL AREA	AREA OF OVERLAP		
			HIGHWAY	AERIAL	TEMP
8R	AERIAL	0.2139	0.0254*	0.1900	0.2139
8T	TEMPORARY	0.2139	0.0254*	0.2139	----

* EXISTING HIGHWAY PARCELS

REV.	DATE	DESCRIPTION
2	06/23/98	NORFOLK SOUTHERN TO NORFOLK AND WESTERN RAILWAY COMPANY
1	12/22/97	ADDED EXISTING AERIAL /PRO TO THE OVERLAP TABLE.

DATE OF COMPLETION

HNTB ARCHITECTS ENGINEERS PLANNERS

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STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

HORIZONTAL SCALE 1:200

CALCULATED JMG CHECKED MJW

PID NO. 14949

RAILROAD PLAT FOR

NORFOLK AND WESTERN RAILWAY COMPANY

CUY-77-23.458

16/16

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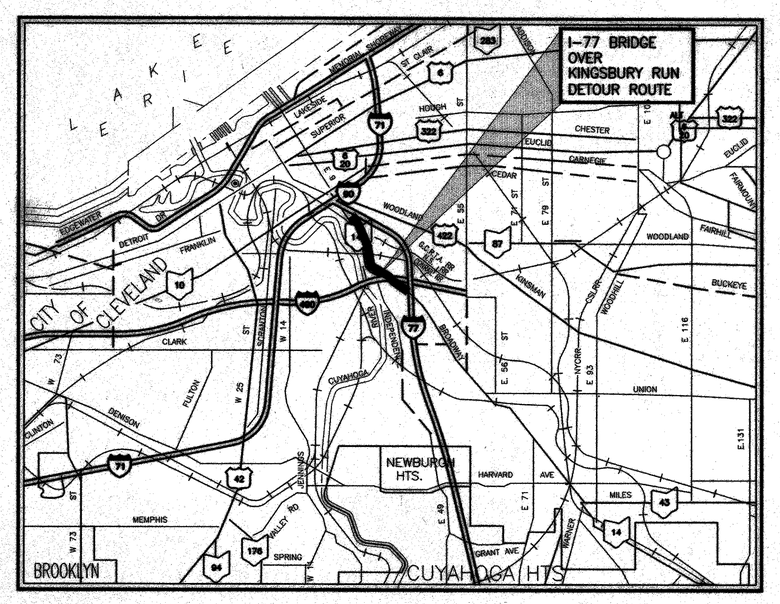
295

14949 A



LOCATION MAP

Latitude: N 41°29'05"
Longitude: W 81°39'50"

SCALE IN KILOMETERS
0.5 0 0.5 1 1.5

Portion to be improved
U.S. Routes — 77
U.S. Routes — 422
State Routes — 14
Other Roads — 63

DESIGN DESIGNATION

	Broadway Ave.	E. 30th St.
Current ADT (1996)	8,700	8,100
Design Year ADT (DETOUR)	16,500	14,700
Design Hourly Volume (DETOUR)	2,900	2,550
Directional Distribution	80%	75%
Trucks (24 Hour B&C)	15%	15%
Design Speed	50 km/h	50 km/h
Legal Speed (MPH)	25	25
Design Functional Classification	URBAN ARTERIAL	URBAN ARTERIAL

Design Exceptions

Design Feature	Approval Dates	Sheet Numbers
NONE		

UNDERGROUND UTILITIES
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BEFORE YOU DIG
CALL 800-362-2764 (Toll Free)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

STATE OF OHIO
MICHAEL J SCHIPPER
E-61408
REGISTERED PROFESSIONAL ENGINEER

MICHAEL J. SCHIPPER PE

Plans Prepared By: HNTB ARCHITECTS ENGINEERS PLANNERS
One Cleveland Center
1375 East Ninth Street
Cleveland, Ohio 44114

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STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
CUY-77-23.458
PART 2

DETOUR ROUTE IMPROVEMENTS
CITY OF CLEVELAND
CUYAHOGA COUNTY

(FOR PART 1, SEE CUY-77-23.458, PART 1)

INDEX OF SHEETS

Title Sheet	1
Typical Sections	2
Detour Location Map	3
General Notes	4,5
M.O.T. Plans	6,7
General Summary	8-10
Subsummary	11-14
Pavement Widening Plans	16,17
Pavement Details	18,19
Miscellaneous Details	20
Cross Sections	21-23
Sewer Profiles	24
Resurfacing Plans	25-27
Traffic Control Plan	28-55
R/W Plans	56-58

[Sheet 15 not used]

STANDARD CONSTRUCTION DRAWINGS	SUPPLEMENTAL SPECIFICATIONS
SEE PART 1	SEE PART 1

metric units

PROJECT DESCRIPTION

Construction of detour route improvements for I-77 over Kingsbury Run, including the widening of East 30th Street between Broadway Avenue and Woodland Avenue, the addition of a right turn lane on Broadway Avenue at the intersection of East 30th Street, and the resurfacing and signal improvements along the detour Route.

1997 SPECIFICATIONS

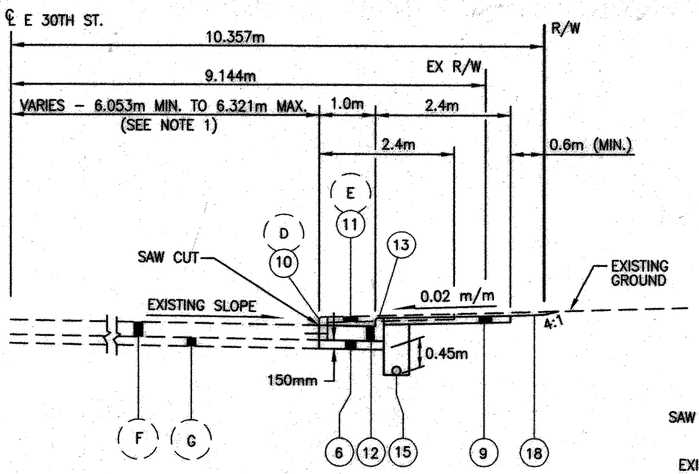
The standard specifications of the State of Ohio, Department of Transportation, including changes and supplemental specifications listed in the proposal shall govern this improvement.

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 provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

APPROVED: _____
DATE: _____ DISTRICT DEPUTY DIRECTOR

APPROVED: _____
DATE: _____ DIRECTOR, DEPARTMENT OF TRANSPORTATION

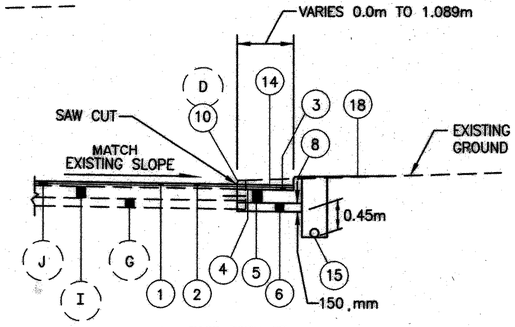
FEDERAL PROJECT NO. IM-77-5(46)
PID NO. 14949
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT NONE
CUY-77-23.458 PART 2
1 / 58



EAST 30TH ST.

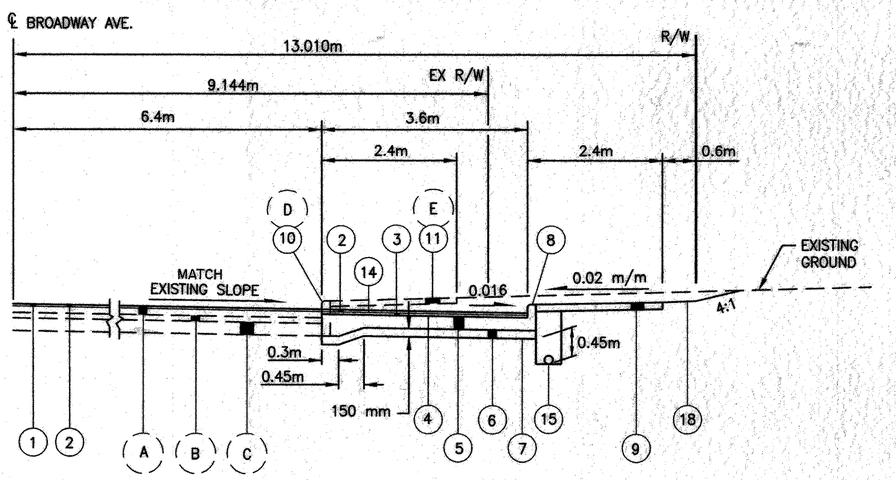
STA. 1+030.897 TO STA. 1+224.761 = 193.864m
INTERSECTION STA 2+091.766 (BROADWAY) TO
STA. 1+030.897 (EAST 30TH) - SEE SHT. 16 FOR
WIDENING DETAILS.

NOTE 1 – EXISTING OVERALL PAVEMENT WIDTH = 12.8m
PROPOSED OVERALL PAVEMENT WIDTH – 13.8m
SEE TRAFFIC CONTROL PLANS, SHEETS 53 & 56
FOR LANE CONFIGURATION.



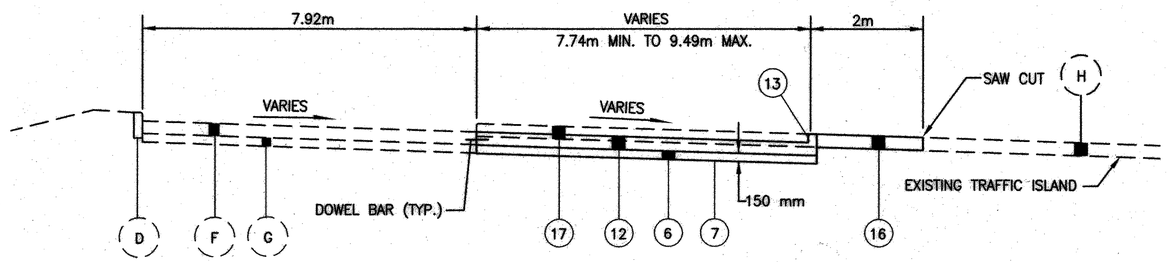
EAST 30TH ST.

STA. 1+224.761 TO STA. 1+231.757 = 11.548m
STA. 1+249.711 TO STA. 1+263.143 = 13.432m
24.980m



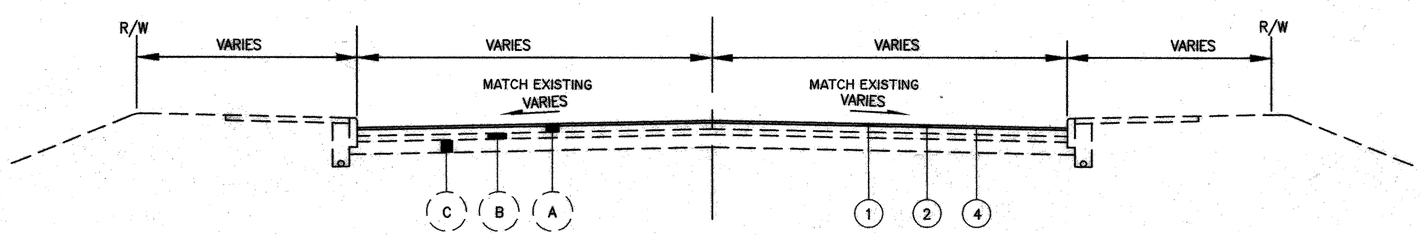
BROADWAY AVE.

STA. 1+965.000 TO STA. 2+091.766 = 126.766m



EB I–490 EXIT RAMP WIDENING DETAIL

NO SCALE



RESURFACING TYPICAL SECTION

NO SCALE

EXISTING LEGEND

- (A) 150 mm ± ASPHALT SURFACE
- (B) DREST MEDINA BLOCK
- (C) 230 mm ± SAND BASE
- (D) CONCRETE CURB
- (E) CONCRETE WALK
- (F) 225 mm ± REINFORCED CONCRETE PAVEMENT
- (G) 150 mm ± SUBBASE
- (H) 225 mm ± CONCRETE ISLAND
- (I) 203 mm ± REINFORCED CONCRETE PAVEMENT

PROPOSED LEGEND

1. ITEM 254 – PAVEMENT PLANING BITUMINOUS, T= 38mm
2. ITEM 446 – ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64–28, T=38mm
3. ITEM 446 – ASHPALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64–28, T=45mm
4. ITEM 407 – TACK COAT
5. ITEM 305 – 230mm CONCRETE BASE
6. ITEM 304 – AGGREGATE BASE
7. ITEM 203 – SUBGRADE COMPACTION
8. ITEM 609 – CURB, TYPE 2B
9. ITEM 608 – 100mm CONCRETE WALK
10. ITEM 202 – CURB REMOVED
11. ITEM 202 – WALK REMOVED
12. ITEM 451 – 230mm REINFORCED CONCRETE PAVEMENT
13. ITEM 609 – CURB, TYPE 2A
14. ITEM 407 – TACK COAT FOR INTERMEDIATE COURSE
15. ITEM 605 – 100mm SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP
16. ITEM 612 – 225mm CONCRETE TRAFFIC ISLAND
17. ITEM 202 – PORTION OF TRAFFIC ISLAND REMOVED
18. ITEM 660 – SODDING, UNSTAKED

CALCULATED M/S
CHECKED MJW

TYPICAL SECTIONS

CUY–77–23.458 – PART 2

2
58

HNTB ARCHITECTS ENGINEERS PLANNERS

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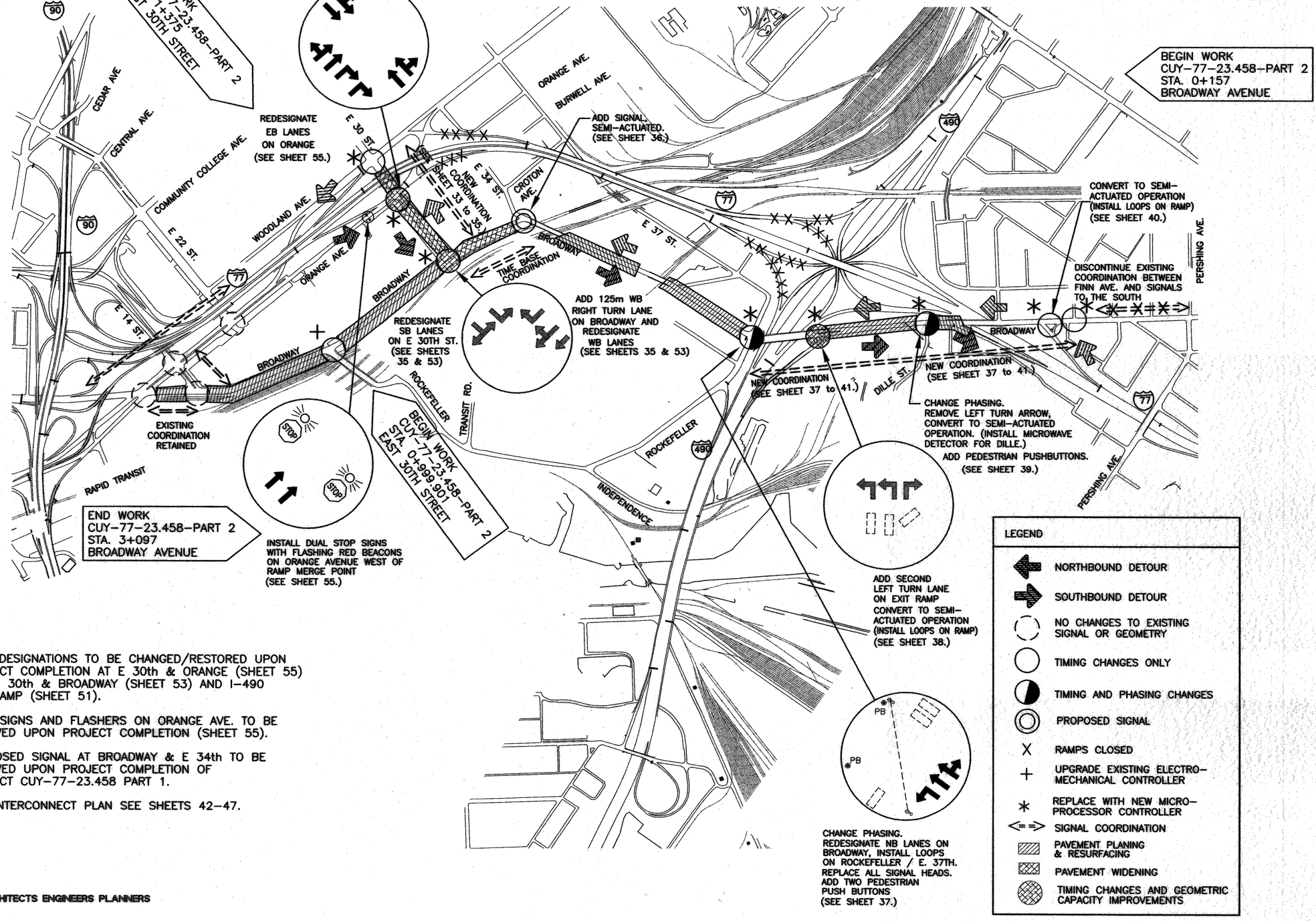

NOTES:

1.) LANE DESIGNATIONS TO BE CHANGED/RESTORED UPON PROJECT COMPLETION AT E 30th & ORANGE (SHEET 55) AND E 30th & BROADWAY (SHEET 53) AND I-490 OFF RAMP (SHEET 51).

2.) STOP SIGNS AND FLASHERS ON ORANGE AVE. TO BE REMOVED UPON PROJECT COMPLETION (SHEET 55).

3.) PROPOSED SIGNAL AT BROADWAY & E 34th TO BE REMOVED UPON PROJECT COMPLETION OF PROJECT CUY-77-23.458 PART 1.

4.) FOR INTERCONNECT PLAN SEE SHEETS 42-47.

HNTB ARCHITECTS ENGINEERS PLANNERS

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NO SCALE

CALCULATED MS CHECKED MH

DETOUR LOCATION MAP

CUY-77-23.458 - PART 2

3
58

CALCULATED MS CHECKED ZSS

GENERAL

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:

AT&T
3833 WEYMOUTH ROAD
MEDINA, OH 44256
PHONE: (216) 723-9110

AMERITECH
13630 LORAIN AVE., 4TH FLR.
CLEVELAND, OH 44111
PHONE: (216) 476-6142

CLE. ELECTRIC ILLUMINATING CO.
P.O. BOX 5000
CLEVELAND, OH 44101
PHONE: (216) 634-7232

CLEVELAND PUBLIC POWER
1300 LAKESIDE AVE.
CLEVELAND, OH 44114
PHONE: (216) 664-4245

CITY OF CLEVELAND
DIVISION OF HEAT AND WATER
1201 LAKESIDE AVE.
CLEVELAND, OH 44114
PHONE: (216) 664-2444

CITY OF CLEVELAND
DIVISION OF WATER POLLUTION CONTROL
12302 KIRBY AVE.
CLEVELAND, OH 44108
PHONE: (216) 664-3785

EAST OHIO GAS
1201 EAST 55TH STREET
CLEVELAND, OH 44103
PHONE (216) 736-6675

CITY OF CLEVELAND
DIVISION OF ENGINEERING & PARKING
4150 E. 49TH BUILDING 1
CLEVELAND, OH 44105
PHONE: (216) 664-3194

WORLDCOM
120 RAVINE ST.
AKRON, OH 44303
PHONE: (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.

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 U.S.G.S. DATUM.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS 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 WORK LIMITS.

COOPERATION BETWEEN CONTRACTORS

THE CONTRACTOR SHALL COOPERATE AND COORDINATE HIS OPERATIONS WITH THE CONTRACTOR'S ON OTHER PROJECTS THAT MAY BE IN FORCE DURING THE LIFE OF THIS CONTRACT. NO WAIVER OF ANY PROVISIONS OF 105.07 OF THE CONSTRUCTION AND MATERIAL SPECIFICATION IS INTENDED.

PROJECT PROGRESS MEETINGS

REFER TO SHEET 8/295 OF CUY-77-23.458 PART 1.

ADJUSTMENTS IN CONTRACT TIME

REFER TO SHEET 8/295 OF CUY-77-23.458 PART 1.

PROGRESS SCHEDULE (CRITICAL PATH METHOD)

REFER TO SHEET 9A/295 OF CUY-77-23.458 PART 1.

INTERIM COMPLETION DATES/LIQUIDATED DAMAGES

REFER TO SHEET 9A/295 OF CUY-77-23.458 PART 1.

ROADWAY

ADDITIONAL SOIL INFORMATION

THE SOIL PROFILE AND/OR STRUCTURE FOUNDATION INVESTIGATION SHEETS FROM THE ORIGINAL CONSTRUCTION PLANS FOR I-77 AT EAST 30th STREET (CUY-21-13.77(14.94)) MAY BE OBTAINED IN DISTRICT 12, THE OFFICE OF MATERIALS MANAGEMENT OR THE OFFICE OF STRUCTURAL ENGINEERING.

FIELD OFFICE, TYPE C, AS PER PLAN
COMPUTER EQUIPMENT FOR FIELD OFFICE

THE FIELD OFFICE, TYPE C, AS PER PLAN AND COMPUTER EQUIPMENT FOR FIELD OFFICE SHALL BE PAID FOR IN PART 1. THESE ITEMS SHALL BE USED FOR PART 1 AND PART 2. NO FIELD OFFICE OR COMPUTER EQUIPMENT PAY ITEMS WILL BE INCLUDED IN PART 2.

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES:

ITEM 207 - STRAW OR HAY BALES	120	EACH
ITEM 207 - FILTER FABRIC FENCE	524	METER

DRAINAGE

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.

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 THE 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 INSPECTIONS 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 BID FOR THE PERTINENT 603 CONDUIT ITEMS.

MANHOLES, CATCH BASINS, AND INLETS REMOVED OR ABANDONED

ALL CASTINGS SHALL BE CAREFULLY REMOVED AND STORED WITHIN THE RIGHT-OF-WAY FOR SALVAGE BY THE CITY OF CLEVELAND FORCES.

PAYMENT FOR ALL OF THE ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 202 ITEM.

CASTINGS ADJUSTED TO GRADE, AS PER PLAN

ALL CASTINGS AS TABULATED IN THESE PLANS SHALL BE ADJUSTED BY THE CONTRACTOR UNLESS DETERMINED OTHERWISE BY THE ENGINEER. THE TIME BETWEEN ADJUSTING THE CASTINGS AND RESURFACING SHALL BE KEPT TO AN ABSOLUTE MINIMUM. ADJUSTING RINGS SHALL NOT BE USED.

THE CONTRACTOR SHALL NOTIFY PRIVATE COMPANIES ONE WEEK IN ADVANCE OF BEGINNING WORK THAT WOULD AFFECT ANY OF THEIR CASTINGS SO THAT THEY MAY PROVIDE INSPECTION PRIOR TO RESURFACING OPERATIONS.

ITEM SPECIAL, MISCELLANEOUS METAL

EXISTING CASTINGS MAY PROVE TO BE UNSUITABLE FOR REUSE, AS DETERMINED BY THE ENGINEER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE CASTINGS OF THE REQUIRED TYPE, SIZE AND STRENGTH (HEAVY DUTY) FOR THE PARTICULAR STRUCTURE IN QUESTION. ALL MATERIALS SHALL MEET ITEM 604 OF THE SPECIFICATIONS AND SHALL HAVE THE PRIOR APPROVAL OF THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

SPECIAL, MISCELLANEOUS METAL 2500 KILOGRAMS

THE CONTRACTOR IS CAUTIONED TO USE EXTREME CARE IN THE REMOVAL, STORAGE AND REPLACEMENT OF ALL EXISTING CASTINGS. CASTINGS DAMAGED BY THE NEGLIGENCE OF THE CONTRACTOR, AS DETERMINED BY THE ENGINGEER, SHALL BE REPLACED WITH THE PROPER NEW CASTINGS AT THE EXPENSE OF THE CONTRACTOR.

PAVEMENT

EXISTING TYPICAL SECTIONS

EXISTING TYPICAL SECTIONS HAVE BEEN TAKEN FROM THE RECORDS AND ARE BELIEVED TO REPRESENT THE EXISTING PAVEMENT, BUT THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THE SAME.

FOR FURTHER INFORMATION IN REGARD TO THE EXISTING TYPICAL SECTIONS, THE CONTRACTOR SHALL REFER TO THE PREVIOUS CONSTRUCTION PLANS. THESE PLANS MAY BE REVIEWED AT THE CITY OF CLEVELAND, DIVISION OF ENGINEERING, 601 LAKESIDE AVENUE, CLEVELAND, OHIO, 44114.

PROFILE AND ALIGNMENT

THE PROPOSED PAVEMENT RESURFACING SHALL FOLLOW THE ALIGNMENT AND PROFILE OF THE EXISTING PAVEMENT. PREVIOUS CONSTRUCTION PLANS SHOWING THE ORIGINAL ALIGNMENT AND PROFILE, ARE AVAILABLE FOR INSPECTION AT THE CITY OF CLEVELAND, DIVISION OF ENGINEERING, 601 LAKESIDE AVENUE, CLEVELAND, OHIO, 44114. THE PROPOSED ASPHALT CONCRETE OVERLAY SHALL BE SHOWN ON THE TYPICAL SECTION.

CONTRACTION AND/OR EXPANSION JOINTS

ALTHOUGH SPECIFIC LOCATIONS OF CERTAIN CONTRACTION AND EXPANSION JOINTS HAVE BEEN DETAILED ON THIS PLAN, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. PROVISION OF EXPANSION JOINTS AT ALL MAJOR STRUCTURES AND THE MAXIMUM SPACING BETWEEN CONTRACTION JOINTS SHALL, IN ALL CASES, BE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING BP-2.2M AND THE SPECIFICATIONS.

CONTRACTION JOINTS IN CONCRETE PAVEMENT OR BASE WIDENING

WHERE NEW CONCRETE IS PLACED ADJACENT TO EXISTING CONCRETE, CONTRACTION JOINTS SHALL BE PROVIDED IN THE NEW CONCRETE SO AS TO FORM CONTINUOUS JOINTS WITH THOSE IN THE EXISTING CONCRETE.

THE MAXIMUM DISTANCE BETWEEN THE JOINTS IN THE NEW CONCRETE SHALL BE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING BP-2.2M. IF NECESSARY, ADDITIONAL JOINTS SHALL BE PROVIDED IN THE NEW CONCRETE AT APPROXIMATELY EQUAL INTERVALS BETWEEN EXISTING JOINTS THAT EXCEED THE MAXIMUM SPACING.

ITEM 407, TACK COAT

THE RATE OF APPLICATION OF THE 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. PLAN QUANITITES INDICATE AN AVERAGE APPLICATION RATE OF 0.45 LITERS PER SQUARE METER OF TACK COAT FOR ESTIMATING PURPOSES ONLY.

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. PLAN QUANITITES INDICATE AN AVERAGE APPLICATION RATE OF 0.23 LITERS PER SQUARE METER OF TACK COAT FOR ESTIMATING PURPOSES ONLY.

PROFILE AND ALIGNMENT FOR RESURFACING PROJECTS

THE PROPOSED PAVEMENT RESURFACING SHALL FOLLOW THE ALIGNMENT AND PROFILE OF THE EXISTING PAVEMENT. THE PAVEMENT PLANING AND PROPOSED ASPHALT CONCRETE OVERLAY SHALL BE AS SHOWN ON THE TYPICAL SECTIONS.

IN AREAS WHERE PORTIONS OF THE EXISTING PAVEMENT HAS DETERIORATED IN EXCESS OF THE 38MM PAVEMENT PLANING, ADDITIONAL PLANING SHALL BE PERFORMED AS DIRECTED BY THE ENGINEER, AND THE AREA LEVELED AND RESURFACED. THE FORLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY TO PERFORM THIS WORK:

ITEM	DESCRIPTION	QUANTITY	UNIT
254	PAVEMENT PLANING BITUMINOUS	8200	SQ. METERS
407	TACK COAT FOR INTERMEDIATE COURSE	1886	LITERS
446	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-28	310	CU. METERS

RESURFACING EAST 30th STREET

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER TO RESURFACE EAST 30TH STREET BETWEEN BROADWAY AVENUE AND ORANGE AVENUE(STA. 1+030.897 TO STA. 1+2224.761). THE TYPICAL ON SHEET 2 DOES NOT REFLECT ANY RESURFACING QUANTIITES. IF RESURFACING IS DEEMED NECESSARY BY THE ENGINEER, THEN ITEM 609 CURB, TYPE 2B SHOULD BE USED INSTEAD OF ITEM 609 CURB TYPE 2A SHOWN ON THE TYPICAL SECTION. THE NEW DRAINAGE FACILITIES IN THE WIDENENED SECTION SHALL ACCOMODATE THE ADDITIONAL 38MM OF ITEM 446 ASPHALT CONCRETE.

ITEM 446 - ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-28 (T=38MM) = 107 CU. M.

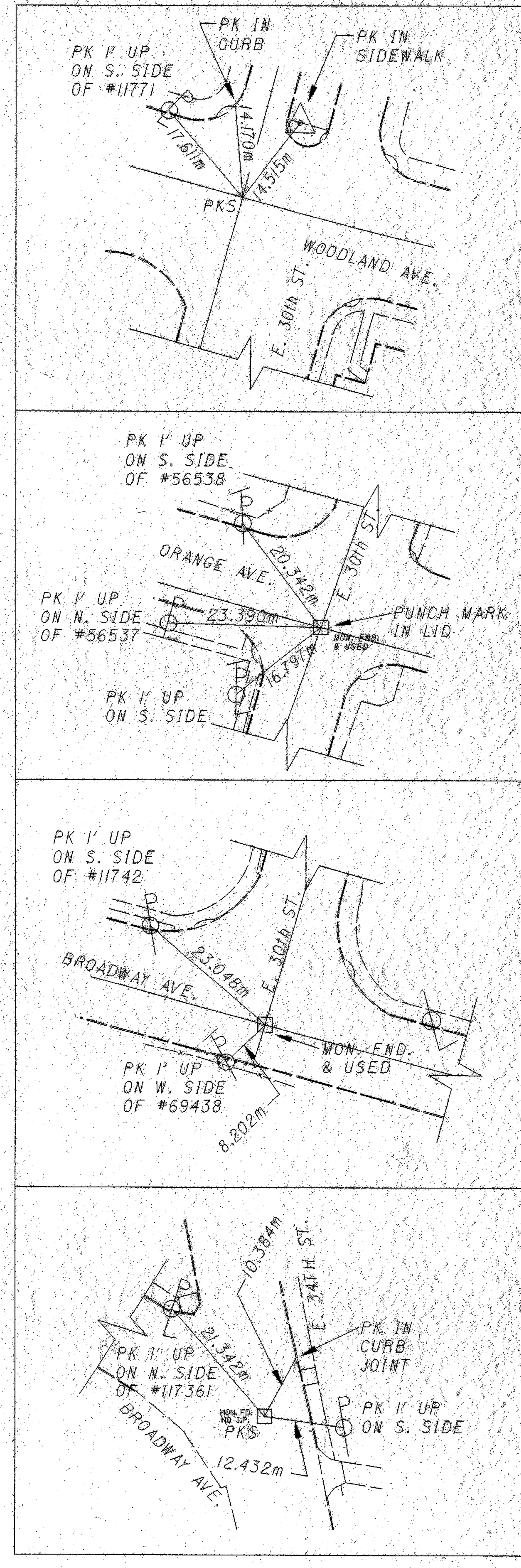
ITEM 407 - TACK COAT = 1262 LITERS

ITEM 638 - VALVE BOX ADJUSTED TO GRADE, AS PER PLAN = 2 EACH

ITEM 604 - MAHOLE ADJUSTED TO GRADE, AS PER PLAN = 6 EACH

ITEM 604 - CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN = 3 EACH

CONTROL DATA



CALCULATED MS CHECKED ZSS

GENERAL

BEFORE WORK BEGINS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE NAMES AND TELEPHONE NUMBERS OF AT LEAST TWO PERSONS WHO CAN BE CONTACTED 24 HOURS PER DAY BY THE OHIO DEPARTMENT OF TRANSPORTATION AND ALL INTERESTED POLICE AGENCIES. THESE PERSONS SHALL BE RESPONSIBLE FOR PLACING OR REPLACING NECESSARY TRAFFIC CONTROL DEVICES TO MAINTAIN THE TRAVELED PAVEMENT SAFELY.

THE CONTRACTOR SHALL DIVERT TRAFFIC FROM NORMAL CHANNELS BY USING PLASTIC DRUMS, PORTABLE CONCRETE BARRIER, FLASHING ARROW PANELS COMPLYING WITH TC-35.10, AND TRAFFIC SIGNS AND PAVEMENT MARKINGS.

ALL CONSTRUCTION TRAFFIC CONTROL DEVICES USED FOR THIS PROJECT SHALL CONFORM TO THE OHIO MANUAL ON TRAFFIC CONTROL DEVICES, ALSO KNOWN AS THE "MANUAL", AND SHALL BE FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR, EXCEPT AS NOTED BELOW.

THE CONTRACTOR SHALL FURNISH AND MAINTAIN ALL NECESSARY SAFEGUARDS, SUCH AS BARRICADES, LIGHTING, FLAGGERS, AND SUCH OTHER TRAFFIC CONTROL AS PROVIDED IN ITEM 614, MAINTAINING TRAFFIC, SO AS TO AVOID DAMAGE AND/OR INJURY TO VEHICLES AND PERSONS USING THE ROADWAY DURING CONSTRUCTION.

NOTIFICATION

THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF OPERATION, IN WRITING, TO THE PROJECT ENGINEER FOR HIS APPROVAL AT LEAST 14 DAYS PRIOR TO ANY TRAFFIC RESTRICTION. THE CONTRACTOR SHALL ALSO NOTIFY THE FOLLOWING AGENCIES 7 DAYS PRIOR TO ANY PHASE CHANGES:

GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY	566-5100
METRO REGIONAL TRANSIT AUTHORITY	(330) 762-0341
CUYAHOGA COUNTY BOARD OF MENTAL RETARDATION	241-8230
CLEVELAND BOARD OF EDUCATION	574-8500
CITY OF CLEVELAND :	
-COMMISIONER OF TRAFFIC ENGINEERING	664-3194
-POLICE TRAFFIC COMMISIONER	623-5188
-FIRE DEPARTMENT HEADQUARTERS	664-6800
-COMMISSIONER OF ENGINEERING AND CONSTRUCTION	664-2381

PHASING OF CONSTRUCTION

PHASING OF CONSTRUCTION AS IT APPEARS IN THESE PLANS IS INTENDED TO PROVIDE FOR THE COMPLETION OF ALL WORK REQUIRED TO COMPLETE THE GEOMETRIC IMPROVEMENTS, SIGNAL IMPROVEMENTS AND PAVEMENT RESURFACING NECESSARY FOR THE DETOUR FOR THE REHABILITATION OF I-77 OVER KINGSBURY RUN, AS DETAILED IN THE "CONSTRUCTION SEQUENCE" ON SHEET 7.

ITEMS IA-IE ON PAGE 7 SHALL BE COMPLETED PRIOR TO THE IMPLEMENTATION OF THE DETOUR IN CUY-77-23.458 - PART I, PHASE 2.

THE CONTRACTOR SHALL COMPLETE ALL WORK IN A GIVEN CONSTRUCTION PHASE BEFORE BEGINNING ANY WORK IN A SUBSEQUENT PHASE, UNLESS OTHERWISE APPROVED BY THE ENGINEER. NORMAL VEHICULAR TRAFFIC SHALL BE MAINTAINED AT ALL TIMES BEYOND THE WORK LIMITS OF THE SECTION CURRENTLY UNDER CONSTRUCTION.

ITEM 614 - MAINTAINING TRAFFIC

LENGTH AND DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS 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.

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

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE LATEST EDITION OF 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 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE INSTALLATION, AND OPERATION (INCLUDING ERECTION, MAINTENANCE AND REMOVAL) OF ALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS, EXCEPT WHERE OTHERWISE NOTED, SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

FAILURE TO COMPLY

IF THERE IS ANY FAILURE TO COMPLY WITH PROVISIONS FOR TRAFFIC CONTROL SET OUT IN THESE PLANS AND NOTES, OR WITH THE PROVISIONS OF THE "MANUAL", THE HIGHWAY IN THE VICINITY OF THE WORK AREA SHALL NOT BE CONSIDERED IN A CONDITION FOR THE SAFE AND CONVENIENT USE BY THE TRAVELING PUBLIC. ANY FAILURE TO KEEP THE HIGHWAY IN THE VICINITY OF THE WORK AREA IN A CONDITION FOR THE SAFE AND CONVENIENT USE BY THE TRAVELING PUBLIC SHALL BE CONSIDERED A BREACH OF THIS CONTRACT. WORK SHALL BE SUSPENDED UNTIL THE CONTRACTOR COMPLIES WITH THE PROVISIONS OF THE AFOREMENTIONED ITEMS.

UTILITIES

EXISTING UNDERGROUND UTILITIES ARE SHOWN ON ROADWAY PLAN SHEETS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING TYPE AND LOCATION OF OVERHEAD AND UNDERGROUND UTILITIES AND, AS NECESSARY, ADJUST LOCATION OF TEMPORARY TRAFFIC SIGNAL OR SIGN INSTALLATIONS, AS APPROVED BY THE ENGINEER, TO AVOID INTERFERENCE OR DAMAGE THERETO.

ABUTTING PROPERTIES

THE CONTRACTOR SHALL MAINTAIN SAFE AND SATISFACTORY ACCESS TO ALL ABUTTING PROPERTIES. COMMERCIAL DRIVES MAY ONLY BE CLOSED IF OTHER ACCESS DRIVES ARE AVAILABLE. THE CONTRACTOR MUST NOTIFY ALL PROPERTY OWNERS OF ACCESS RESTRICTIONS ONE WEEK IN ADVANCE. ALL RESTRICTIONS AND CLOSURES SHALL BE PROPERLY SIGNED AND/OR BARRICADED.

CONSTRUCTION TRAFFIC

ALL CONSTRUCTION TRAFFIC SHALL USE ACCEPTABLE TRUCK ROUTES TO ACCESS THE CONSTRUCTION AREA. USE OF LOCAL RESIDENTIAL STREETS IS STRICTLY PROHIBITED UNLESS ALLOWED IN WRITING BY THE LOCAL ENFORCEMENT AGENCY.

EQUIPMENT AND MATERIAL STORAGE

IN ORDER TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC THE CONTRACTORS ATTENTION IS DIRECTED TO 614.03. IN ADDITION THE FOLLOWING PROVISIONS SHALL APPLY:

1. CONSTRUCTION EQUIPMENT, MATERIALS AND VEHICLES IN USE DURING THE WORKING DAY SHALL NOT BE PARKED OR STORED ANY CLOSER THAN 9.1 METERS TO THE EDGE OF ROADWAY PAVEMENT, UNLESS BEHIND PERMANENT GUARDRAIL, WHEN THE EQUIPMENT AND/OR VEHICLES ARE NOT IN OPERATION.
2. PRIVATE VEHICLES BELONGING TO CONTRACTOR'S EMPLOYEES SHALL NOT BE PARKED WITHIN THE EXISTING RIGHT OF WAY LIMITS OF THIS PROJECT AT ANY TIME EXCEPT IN SPECIFIED AREAS DESIGNATED BY THE ENGINEER.
3. ANY REMOVED ITEMS SHALL NOT BE STORED ON THE RIGHT OF WAY FOR MORE THAN 30 DAYS.
4. ALL DISTURBED AREAS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE STATE.

TRAFFIC CONTROL MATERIALS

A. SIGNS

SIGN DIMENSIONS AND SPECIFICATIONS, INCLUDING LETTER SIZES, SHALL BE AS PROVIDED IN THE "MANUAL", OR IN SIGN DESIGN DRAWINGS PROVIDED BY THE DEPARTMENT OF TRANSPORTATION. THE SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER PRIOR TO THE START OF THE PROJECT. ADVANCE WARNING SIGNS ARE TO BE PROVIDED AS SHOWN IN THE PLANS. ORANGE CONSTRUCTION SIGNS SHALL BE REFLECTORIZED WITH FLOURESCENT ORANGE SHEETING.

B. SIGN SUPPORTS

SUPPORTS SHALL BE ADEQUATE IN MASS AND STABILITY TO PREVENT THE SIGNS FROM BEING BLOWN OVER BY WIND OR VEHICULAR GENERATED AIR TURBULENCE. SEE STANDARD CONSTRUCTION DRAWINGS MT-105.10M AND MT-105.11M

C. DRUMS

DRUMS SHALL BE IN ACCORDANCE WITH PERTINENT SECTIONS OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. ALL PERMANENT LANE CLOSURES SHALL BE DELINEATED WITH DRUMS SPACED AS SHOWN IN THE PLANS. ALL COSTS FOR INSTALLING, MAINTAINING AND SUBSEQUENT REMOVAL OF SAID DRUMS SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 - MAINTAINING TRAFFIC.

TRENCH FOR WIDENING

TRENCH EXCAVATION FOR BASE WIDENING SHALL BE ONLY ON ONE SIDE OF THE PAVEMENT AT A TIME. THE OPEN TRENCH SHALL BE ADEQUATELY MAINTAINED AND PROTECTED WITH DRUMS OF BARRICADES AT ALL TIMES. PLACEMENT OF PROPOSED SUBBASE AND 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.

ITEM SPECIAL-LAW ENFORCEMENT OFFICER
ITEM 614-LAW ENFORCEMENT OFFICER WITH PATROL CAR

IN ADDITION TO THE REQUIREMENTS OF 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:

1. 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.
2. DURING THE ENTIRE ADVANCE PREPARATION AND CLOSURE SEQUENCE WHERE COMPLETE BLOCKAGE OF TRAFFIC IS REQUIRED.

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 THE CITY OF CLEVELAND POLICE DEPARTMENT, 1300 ONTARIO STREET, 623-5000.

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 QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

SPECIAL - LAW ENFORCEMENT OFFICER ____ 100 HOURS

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR ____ 40 HOURS

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.

TEMPORARY PAVEMENT MARKING

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER. THE QUANTIES ARE TO BE USED FOR LANE CLOSURES DURING WIDENING:

614 - TEMPORARY PAVEMENT MARKINGS		TOTAL
TEMPORARY EDGE LINE, CLASS I, 642 PAINT		0.6km
TEMPORARY EDGE LINE, CLASS I, 740.06 TYPE I (WHITE)	155m	0.2km
TEMPORARY EDGE LINE, CLASS I, 740.06 TYPE I (YELLOW)	45m	

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER. THE QUANTITIES, IF REQUIRED, ARE INTENDED TO BE USED AFTER PLANING OPERATIONS AND PRIOR TO RESURFACING OPERATIONS.

614 - TEMPORARY PAVEMENT MARKINGS	TOTAL
TEMPORARY CENTER LINE, CLASS II, 642 PAINT	2.3km
TEMPORARY STOP LINE, CLASS I, 642 PAINT	237m
TEMPORARY CROSSWALK, CLASS I, 642 PAINT	469m

ITEM 614 - BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC

THE FOLLOWING QUANTITY HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER:

ITEM 614 -BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC - 500 CU METER

DETOUR CONSTRUCTION SEQUENCE

THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE USED TO PERFORM ALL WORK REQUIRED TO CONSTRUCT THE GEOMETRIC IMPROVEMENTS, RESURFACING, AND TRAFFIC SIGNAL IMPROVEMENTS FOR THE I-77 BRIDGE OVER KINGSBURY RUN DETOUR. REHABILITATION OF BRIDGE OVER KINGSBURY RUN WILL BE PERFORMED UNDER A SEPARATE PART OF THIS CONSTRUCTION PROJECT CUY-77-23.458 (PART I).

PHASE 1. WORK TO BE PERFORMED PRIOR TO REHABILITATION OF THE I-77 BRIDGE OVER KINGSBURY RUN:

A. GEOMETRIC IMPROVEMENTS

1. CONSTRUCT THE PAVEMENT WIDENING ON BROADWAY EAST OF THE E. 30TH STREET INTERSECTION AS DETAILED. ONE LANE OF TRAFFIC SHALL BE MAINTAINED WESTBOUND ON BROADWAY WITH A SINGLE LANE CLOSURE IN ACCORDANCE WITH MT-95.31M. NO LANE RESTRICTIONS EASTBOUND.
2. CONSTRUCT THE PAVEMENT WIDENING ON E. 30TH STREET BETWEEN BROADWAY AND ORANGE AVENUE AS DETAILED. ONE LANE OF TRAFFIC SHALL BE MAINTAINED NORTHBOUND ON E. 30TH STREET WITH A SINGLE LANE CLOSURE IN ACCORDANCE WITH MT-95.31M. NO LANE RESTRICTION SOUTHBOUND.
3. CONSTRUCT THE PAVEMENT WIDENING IN THE NORTHWEST QUARDRANT OF THE E. 30TH STREET AND ORANGE AVENUE INTERSECTION. ONE LANE OF TRAFFIC SHALL BE MAINTAINED SOUTHBOUND ON E. 30TH STREET WITH A SINGLE LANE CLOSURE IN ACCORDANCE WITH MT-95.31M. NO LANE RESTRICTIONS NORTHBOUND ON E. 30TH STREET OR ON ORANGE AVENUE.
4. CONSTRUCT THE PAVEMENT WIDENING ON THE I-490 OFF RAMP TO BROADWAY AS DETAILED. ONE LANE OF TRAFFIC SHALL BE MAINTAINED EASTBOUND ON BROADWAY AVENUE WITH A SINGLE LANE CLOSURE IN ACCORDANCE WITH MT-95.30M. THE LEFT AND RIGHT TURN LANES FROM THE I-490 OFF RAMP TO BROADWAY SHALL BE REDUCED IN WIDTH AS DETAILED BELOW. NO LANE RESTRICTIONS WESTBOUND ON BROADWAY AVENUE.

B. REPAVING

PLANE AND REPAVE BROADWAY AVENUE AND EAST 30TH STREET USING THE LIMITS SHOWN ON THE RESURFACING PLANS, SHEETS 25 - 27. MAINTAIN TRAFFIC IN ACCORDANCE WITH MT-95.31M AND MT-95.32M.

C. TRAFFIC SIGNALS

1. INSTALL NEW MICROPROCESSOR CONTROLLERS AND REWIRE AS SHOWN ON THE SIGNAL PLANS AT THE FOLLOWING INTERSECTIONS:
   - i. EAST 30TH / WOODLAND
   - ii. EAST 30TH / ORANGE
   - iii. EAST 30TH / BROADWAY
   - iv. BROADWAY / EAST 37TH-ROCKEFELLER
   - v. BROADWAY / I-490 OFF RAMP
   - vi. BROADWAY / DILLE
   - vii. BROADWAY / I-77 OFF RAMP
   - viii. BROADWAY / FINN
2. INSTALL TRAFFIC SIGNAL AT BROADWAY AND E. 34TH STREET AS SHOWN ON THE SIGNAL PLANS. THIS SIGNAL SHALL BE REMOVED AT THE END OF THE PROJECT AND THE INTERSECTION RESTORED TO ALL-WAY STOP CONTROL.
3. REPLACE ALL VEHICLE AND PEDESTRIAN SIGNAL HEADS AT BROADWAY AND E. 37TH / ROCKEFELLER AS SHOWN ON THE SIGNAL PLANS. NOTE THAT PHASING IS BEING PERMANENTLY MODIFIED.
4. THE PHASING, AS SHOWN ON THE SIGNAL PLANS, SHALL BE ACTIVATED IMMEDIATELY. ANY FINE TUNING PRIOR TO THE IMPLEMENTATION OF THE DETOUR SHALL BE COORDINATED WITH THE CITY OF CLEVELAND DIVISION OF TRAFFIC ENGINEERING BASED ON ACTUAL TRAFFIC PATTERNS.
5. THE NEW CONTROLLERS SHALL BE WIRED AND PROGRAMMED TO PROVIDE THE DETOUR PHASING AND TIMING. COORDINATE THIS WITH THE CITY OF CLEVELAND DIVISION OF TRAFFIC ENGINEERING. THE PHASING AND TIMING SHOWN ON THE SIGNAL PLANS AND THE SYSTEM TIMING PARAMETERS SHOWN ARE INTENDED FOR OPERATION OF THE SIGNALS DURING THE DETOUR. THESE TIMING PLANS SHALL BE PROVIDED TO THE CITY OF CLEVELAND DIVISION OF TRAFFIC ENGINEERING SO THEY MAY BE PROGRAMMED INTO THE "SMARTWAYS" DOWNTOWN CLOSED LOOP SIGNAL SYSTEM FOR INSTANT IMPLEMENTATION. THE TIMING CAN BE MODIFIED AS NECESSARY PRIOR TO THE ACTIVATION OF THE DETOUR BY COORDINATING WITH THE CITY OF CLEVELAND.
6. UPGRADE EXISTING ELECTROMECHANICAL CONTROLLER AT BROADWAY AND ROCKEFELLER TO A THREE DIAL UNIT SALVAGED FROM 1 ABOVE.

ALL TRAFFIC SIGNAL WORK SHALL BE PERFORMED DURING OFF PEAK HOURS. EXISTING SIGNALS SHALL BE PUT INTO FLASH MODE DURING THE PERFORMANCE OF THIS WORK. TWO (2) LAW ENFORCEMENT OFFICERS SHALL BE PROVIDED AT EACH INTERSECTION WHILE THE CONTROLLER IS BEING REPLACED. PEAK HOURS ARE 6AM TO 9AM AND 3PM TO 6PM WEEKDAYS. LAW ENFORCEMENT OFFICIALS USED FOR THIS WORK SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 - MAINTAINING TRAFFIC.

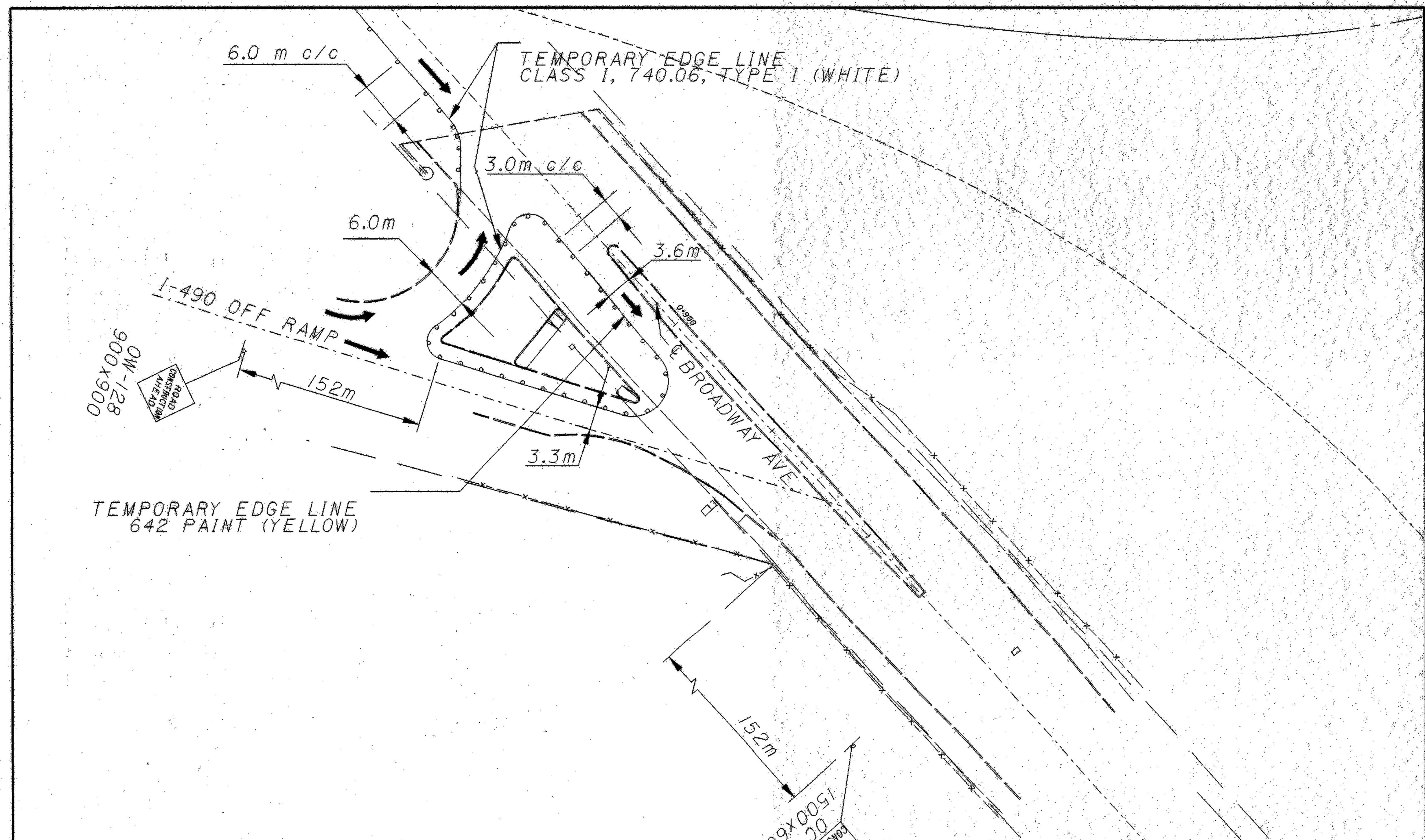
D. PAVEMENT MARKINGS

1. STRIPE BROADWAY ON REPAVED SECTIONS AS SHOWN. (PAVEMENT ARROWS TO BE REPLACED AT THE END OF THE PROJECT AT BROADWAY, EAST 30TH AND THE I-490 OFF RAMP AS SHOWN.)
2. STRIPE EAST 30TH ON REPAVED SECTIONS AS SHOWN.
3. STRIPE I-490 OFF RAMP TO BROADWAY AS SHOWN.

E. INSTALL TEMPORARY STOP SIGNS WITH FLASHING BEACONS ON ORANGE AVENUE WEST OF E. 30TH STREET AS SHOWN ON THE DETAIL IN THE PAVEMENT MARKING PLANS. THE STOP SIGNS AND BEACONS SHALL BE REMOVED AT THE END OF THE PROJECT. (PAVEMENT ARROWS TO BE REPLACED AT END OF PROJECT AS SHOWN ON THE DETAIL.)

PHASE 2. MAINTAIN TRAFFIC SIGNALS ALONG CUY-77-23.458 PART 2 DETOUR ROUTE DURING PART I CONSTRUCTION AS INDICATED IN THE TRAFFIC CONTROL PLANS.

PHASE 3. REVISE TRAFFIC CONTROL FOR POST-CONSTRUCTION CONDITIONS INCLUDING ALL SIGNING, SIGNAL AND PAVEMENT MARKING CHANGES AS CALLED FOR IN THE PLANS AFTER COMPLETION OF CUY-77-23.458 PART I, PHASE 5.



MAINTENANCE OF TRAFFIC DETAIL
BROADWAY AT I-490
(NO SCALE)

HNTB ARCHITECTS ENGINEERS PLANNERS

SEQUENCE OF CONSTRUCTION, MAINTENANCE OF TRAFFIC DETAILS

CUY-77-23.458 - PART 2

SHEET NUMBER																		COST PARTICIPATION		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	AS PER PLAN REFERENCE SHT.#
		4		5			11	12	14		18		21	22	23	25										
																								ROADWAY	
																				201	M11000	LUMP		CLEARING AND GRUBBING	
							49													202	M23000	49	SQ METER	PAVEMENT REMOVED	
							844													202	M30000	844	SQ METER	WALK REMOVED	
											137									202	M30900	137	SQ METER	PORTION OF TRAFFIC ISLAND REMOVED	
							386													202	M32000	386	METER	CURB REMOVED	
								40												202	M35100	40	METER	PIPE REMOVED, 600 mm AND UNDER	
								7												202	M58100	7	EACH	CATCH BASIN REMOVED	
													419	151	42					203	M12000	612	CU METER	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION	
													198	35	7					203	M20000	240	CU METER	EMBANKMENT	
							599				117									203	M50000	716	SQ METER	SUBGRADE COMPACTION	
							808													608	M10000	808	SQ METER	100 mm CONCRETE WALK	
							2													608	M50000	2	EACH	CURB RAMP, TYPE 1	
											1									608	M51000	1	EACH	CURB RAMP, TYPE 2	
											18									612	M18000	18	SQ METER	225 mm CONCRETE TRAFFIC ISLAND	
																								EROSION CONTROL	
		524																		207	M30000	524	METER	FILTER FABRIC FENCE	
		120																		207	M70000	120	EACH	STRAW OR HAY BALES	
													341	467	83					660	M30000	891	SQ METER	SODDING, UNSTAKED	
																								DRAINAGE	
								30												603	M00406	30	METER	100 mm CONDUIT, TYPE F, 707.42	
								69												603	M04400	69	METER	300 mm CONDUIT, TYPE B, 706.08	
								2												603	M10400	2	METER	600 mm CONDUIT, TYPE B, 706.08	
								10												604	M00300	10	EACH	CATCH BASIN, CITY OF CLEVELAND NO. 1	
				3					51											604	M09001	54	EACH	CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN	4
								1												604	M10100	1	EACH	INLET, SIDE DITCH	
								1												604	M31500	1	EACH	MANHOLE, NO. 3	
				6					65											604	M34501	71	EACH	MANHOLE ADJUSTED TO GRADE, AS PER PLAN	4
								1												604	M35500	1	EACH	MANHOLE RECONSTRUCTED TO GRADE	
									14											604	M39501	14	EACH	MONUMENT BOX ADJUSTED TO GRADE, AS PER PLAN	4
				2500																SPECIAL	604M50000	2500	KILOGRAM	MISCELLANEOUS METAL	5
								287												605	M05110	287	METER	100 mm SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP	
								56												605	M05210	56	METER	100 mm UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP	
																								PAVEMENT	
				8200												33266				254	M01000	41466	SQ METER	PAVEMENT PLANING, BITUMINOUS	
							127				18									304	M20000	145	CU METER	AGGREGATE BASE	
							470													305	M13000	470	SQ METER	230 mm CONCRETE BASE	
				1262			201									14971				407	M10000	16434	LITER	TACK COAT	
				1886			103													407	M14000	1989	LITER	TACK COAT FOR INTERMEDIATE COURSE	
				310			21													446	M46040	331	CU METER	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-28	
				107			17									1264				446	M47010	1388	CU METER	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-28	
							376				117									451	M14000	493	SQ METER	230 mm REINFORCED CONCRETE PAVEMENT	
							32													452	M11500	32	SQ METER	200 mm PLAIN CONCRETE PAVEMENT	
							226				14									609	M14000	240	METER	CURB, TYPE 2-A	
							154													609	M16000	154	METER	CURB, TYPE 2-B	
																								WATER WORK	
				2					43											638	M10801	45	EACH	VALVE BOX ADJUSTED TO GRADE, AS PER PLAN	4

CALCULATED M.JW CHECKED AKL

GENERAL SUMMARY

CUY-77-23.458 - PART 2

8
58

HNTB ARCHITECTS ENGINEERS PLANNERS

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SHEET NUMBER 48	SHEET NUMBER 49	COST PARTICIPATION	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	AS PER PLAN
							TRAFFIC CONTROL	
	61		630	M03100	61	METER	GROUND MOUNTED SUPPORT, NO. 3 POST	
	2		630	M79000	2	EACH	SIGN HANGER ASSEMBLY, SPAN WIRE	
	10		630	M80100	10	SQ METER	SIGN, FLAT SHEET	
	2		630	M80102	2	SQ METER	SIGN, FLAT SHEET, TYPE G	
	1		630	M84900	1	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	
	5		630	M85100	5	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
	3		630	M86002	3	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
	1		630	M87400	1	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	
	1		630	M87520	1	EACH	REMOVAL OF POLE MOUNTED SIGN AND REERECTION	
	5.44		642	M00202	5.44	KILOMETER	LANE LINE, TYPE 2	
	2.72		642	M00302	2.72	KILOMETER	CENTER LINE, TYPE 2	
	560		644	M00400	560	METER	CHANNELIZING LINE	
	237		644	M00500	237	METER	STOP LINE	
	469		644	M00600	469	METER	CROSSWALK LINE	
	100		644	M00700	100	METER	TRANSVERSE LINE	
	5		644	M00900	5	SQ METER	ISLAND MARKING	
	57		644	M01300	57	EACH	LANE ARROW	
	2		644	M01301	2	EACH	LANE ARROW, AS PER PLAN	51
	11		644	M01400	11	EACH	WORD ON PAVEMENT, 1800mm	
	257		644	M01500	257	METER	DOTTED LINE, 100mm	
	14		644	M30020	14	EACH	REMOVAL OF PAVEMENT MARKING	
							TRAFFIC SIGNAL	
22			603	M00400	22	METER	100 MM CONDUIT, TYPE E	
332			625	M25802	332	METER	CONDUIT, CONCRETE ENCASED, 75 MM	
68			625	M25900	68	METER	CONDUIT, JACKED OR DRILLED, 75 MM	
380			625	M25910	380	METER	CONDUIT CLEANED AND CABLES REMOVED	
330			625	M29000	330	METER	TRENCH	
11			625	M31600	11	EACH	PULL BOX, MISC.	29
11			625	M32000	11	EACH	GROUND ROD	
4			632	M00301	4	EACH	VEHICULAR SIGNAL HEAD, 3 SECTION, 300 MM LENS, 1-WAY, AS PER PLAN	29
3			632	M01101	3	EACH	VEHICULAR SIGNAL HEAD, 3 SECTION, 300 MM LENS, 2-WAY, AS PER PLAN	29
1			632	M01711	1	EACH	VEHICULAR SIGNAL HEAD, 5 SECTION, 300 MM LENS, 2-WAY, AS PER PLAN	29
1			632	M02201	1	EACH	VEHICULAR SIGNAL HEAD, 3 SECTION, 300 MM LENS, 3-WAY, AS PER PLAN	29
12			632	M20601	12	EACH	PEDESTRIAN SIGNAL HEAD, TYPE D2, AS PER PLAN	29
8			632	M26000	8	EACH	PEDESTRIAN PUSHBUTTON	
10			632	M26500	10	EACH	DETECTOR LOOP	
13			632	M26501	13	EACH	DETECTOR LOOP, AS PER PLAN	29
25			632	M27009	25	EACH	LOOP DETECTOR UNIT, DELAY AND EXTENSION TYPE, AS PER PLAN	29
50			632	M30200	50	METER	MESSENGER WIRE, 7 STRAND, 9mm DIAMETER WITH ACCESSORIES	
97			632	M40200	97	METER	SIGNAL CABLE, 2 CONDUCTOR, NO. 14 AWG	
97			632	M40500	97	METER	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG	
71			632	M40700	71	METER	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	
707			632	M53202	707	METER	INTERCONNECT CABLE, 6 PAIR, NO. 19 AWG, SOLID, REA (PE-39)	
838			632	M62803	838	METER	INTERCONNECT CABLE, INTEGRAL MESSENGER WIRE TYPE, 6 PAIR, NO. 19 AWG, SOLID, REA (PE-38), AS PER PLAN	30
2			632	M63000	2	EACH	PHONE DROP	
584			632	M65200	584	METER	LOOP DETECTOR LEAD-IN CABLE	
45			632	M68300	45	METER	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG	
1			632	M70000	1	EACH	POWER SERVICE	
9			632	M70400	9	EACH	CONDUIT RISER, 51 MM DIAMETER	
1			632	M89300	1	EACH	WOOD POLE, CLASS 1, 12 M	
2			632	M89900	2	EACH	PEDESTAL, 2.4 M, TRANSFORMER BASE	
10			632	M90020	10	EACH	REMOVAL OF MISCELLANEOUS TRAFFIC SIGNAL ITEM; SIGNAL HEAD	29
9			632	M90020	9	EACH	REMOVAL OF MISCELLANEOUS TRAFFIC SIGNAL ITEM; ELECTROMECHANICAL TRAFFIC SIGNAL CONTROLLER AND STORAGE	29

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GENERAL SUMMARY

CUY-77-23.458 - PART 2

HNTB ARCHITECTS ENGINEERS PLANNERS

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SHEET NUMBER			COST PARTICIPATION	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	AS PER PLAN REFERENCE SHT.#
6	31	48							
		1		632	M90100	1	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	
		1		632	M90104	1	EACH	REUSE OF ELECTROMECHANICAL CONTROLLER, AS PER PLAN	29
		LUMP		632	M90300	LUMP		SIGNALIZATION, MISC.: REWIRE INTERSECTION	29
	LUMP			632	M90300	LUMP		SIGNALIZATION, MISC.: SYSTEMS TIMING AND ANALYSIS	30,31
		2		632	M90400	2	EACH	SIGNALIZATION, MISC.: MICROWAVE VEHICLE DETECTOR	29
		7		633	M34001	7	EACH	CONTROLLER, ACTUATED, 4 PHASE, SOLID STATE DIGITAL MICROPROCESSOR, AS PER PLAN	31
		2		633	M39001	2	EACH	CONTROLLER, MASTER, TRAFFIC RESPONSIVE, AS PER PLAN	31
		2.3		633	M70500	2.3	SQ METER	CONTROLLER WORK PAD	
								MAINTENANCE OF TRAFFIC	
40				614	M11100	40	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR	
100				SPECIAL	614M11200	100	HOUR	LAW ENFORCEMENT OFFICER	6
500				614	M13000	500	CU METER	BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC	
2.3				614	M21500	2.3	KILOMETER	TEMPORARY CENTER LINE, CLASS II, 642 PAINT	
0.6				614	M22100	0.6	KILOMETER	TEMPORARY EDGE LINE, CLASS I, 642 PAINT	
0.2				614	M22200	0.2	KILOMETER	TEMPORARY EDGE LINE, CLASS I, 740.06, TYPE I	
237				614	M26200	237	METER	TEMPORARY STOP LINE, CLASS I, 642 PAINT	
469				614	M27200	469	METER	TEMPORARY CROSSWALK, CLASS I, 642 PAINT	
				614	M11000	LUMP		MAINTAINING TRAFFIC	
				623	M10000	LUMP		CONSTRUCTION LAYOUT STAKES	
				624	M10000	LUMP		MOBILIZATION	

CALCULATED M.J.W
CHECKED A.K.L.

GENERAL SUMMARY

CUY-77-23.458 - PART 2

HNTB ARCHITECTS ENGINEERS PLANNERS

PAVEMENT

STATION FROM	STATION TO	SIDE	LENGTH METER	AVERAGE WIDTH METER	SURFACE AREA SQ. METER	203 SUBGRADE COMPACTION SQ. METER	304 (150mm) AGGREGATE BASE CU. METER	305 (230mm) CONCRETE BASE SQ. METER	407 TACK COAT (.45L/m²) LITER	407 TACK COAT INTERMEDIATE COURSE (.23L/m²) LITER	446 (38mm) ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-28 CU. METER	446 (45mm) ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-28 CU. METER	451 (230mm) REINFORCED CONCRETE PAVEMENT SQ. METER
BROADWAY													
1+965	1+980	RT	15	1.8	27.000				12.15	6.21	1.03	1.22	
1+965	1+980	RT	15	1.95	29.250	29.25	4.39	29.25					
1+980	2+091.766	RT	111.766	3.6	402.358				181.06	92.54	15.29	18.11	
1+980	2+091.766	RT	111.766	3.75	419.123	419.12	62.87	419.12					
BROADWAY/E. 30TH RETURN		RT	PLANIMETERED		149.148	149.15	22.37						149.15
E. 30TH													
1+030.897	1+224.761	RT	193.864	1.15	222.944		33.44						222.94
E. 30TH/ORANGE RETURN		RT	PLANIMETERED		8.047				3.62	1.85	0.31	0.36	
E. 30TH/ORANGE RETURN		RT	PLANIMETERED		10.562		1.58	10.56					
E. 30TH													
1+249.711	1+263.143	LT	PLANIMETERED		7.538				3.39	1.73	0.29	0.34	
1+249.711	1+263.143	LT	PLANIMETERED		9.786		1.47	9.79					
PAVEMENT REPAIR AT CATCH BASIN REMOVED LOCATIONS		RT	3 @ 1.25 m²		3.75		0.56						3.75
			1 @ 1.25 m²		1.25	1.25	0.19	1.25	0.56	0.29	0.05	0.06	
					TOTAL	599	127	470	201	103	17	21	376

FOR CURB LOCATIONS, SEE TABLE BELOW.

CURB

STATION FROM	STATION TO	SIDE	609 CURB TYPE 2A METER	609 CURB TYPE 2B METER
BROADWAY				
1+965	1+980	RT		15.43
1+980	2+091.766	RT		111.77
BROADWAY/E. 30TH RETURN		RT	32.99	
E. 30TH				
1+030.897	1+224.761	RT	192.86	
E. 30TH/ORANGE RETURN		RT		12.54
E. 30TH				
1+249.711	1+263.143	LT		13.50
		TOTAL	226	154

DRIVE AND WALK, CURB RAMPS

STATION FROM	STATION TO	SIDE	LENGTH METER	AVERAGE WIDTH METER	452 (200mm) PLAIN CONCRETE PAVEMENT SQ. METER	608 (100mm) CONCRETE WALK SQ. METER	608 CURB RAMP TYPE 1 EACH
E. 30TH DRIVE							
1+135.916		RT	2.250	14.221	32.00		
BROADWAY							
1+965	2+091.766	RT	126.766	2.25		285.22	
BROADWAY/E. 30TH RETURN		RT	30.986	2.25		69.719	
E. 30TH							
1+013.175	–	RT	–	–			1
1+030.897	1+128.855	RT	97.958	2.25		220.41	
1+143.076	1+223.769	RT	80.693	2.25		181.56	
1+141.842	1+151.310	RT	PLANIMETERED			27.30	
1+229.433	–	RT	–	–			1
E. 30TH/ORANGE RETURN		RT	10.543	2.25		23.72	
				TOTAL	32	808	2

** INCLUDES INTEGRAL CURB

REMOVAL QUANTITIES

STATION FROM	STATION TO	SIDE	LENGTH METER	AVERAGE WIDTH METER	202 PAVEMENT REMOVED SQ. METER	202 WALK REMOVED SQ. METER	202 CURB REMOVED METER
BROADWAY							
1+965.0	2+101.8	RT	136.8	2.25		307.8	136.8
BROADWAY/E. 30TH RETURN		RT	19.7	PLANIMETERED		48.5	19.7
E. 30TH							
1+021.5	1+128.5	RT	107.0	2.25		240.8	
1+021.5	1+224.7	RT	203.2				203.2
1+141.842	1+151.310	RT	PLANIMETERED			27.3	
1+143.4	1+224.7	RT	81.3	2.25		182.9	
E. 30TH DRIVE							
1+128.0	1+143.9	RT	PLANIMETERED		48.3		
E. 30TH/ORANGE RETURN		RT	12.7	PLANIMETERED		36.0	12.7
E. 30TH							
1+249.7	1+263.1	LT	13.4	PLANIMETERED			13.4
		TOTAL			49	844	386

HNTB ARCHITECTS ENGINEERS PLANNERS

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PAVEMENT QUANTITIES

CUY-77-23.458 - PART 2

DRAINAGE

SHEET NO.	STRUCTURE NO.	PIPE NO.	STATION FROM	STATION TO	ROADWAY	SIDE	202 PIPE REMOVED 600mm AND UNDER METER	202 CATCH BASIN REMOVED EACH	603 300mm CONDUIT, TYPE B, 706.08 METER	603 600mm CONDUIT, TYPE B, 706.08 METER	604 INLET, SIDE DITCH EACH	604 CATCH BASIN, CITY OF CLEVELAND, No. 1 EACH	604 MANHOLE, NO. 3 EACH	604 MANHOLE RECON-STRUCTED TO GRADE EACH
16	D20	P20	1+969.2	1+980.5	BROADWAY	RT.			11.4		1			
16	R20		1+994.2		BROADWAY	RT.		1						
16	D21	P21	1+980.5	2+000.0	BROADWAY	RT.			19.5			1		
16	D22	P22	2+000.0	2+000.0	BROADWAY	RT.			2.3			1 ø		
16	D23		2+000.0		BROADWAY	RT.				2			1	
16	D24	P23	2+055.2	2+060.8	BROADWAY	RT.			6.2			1 ø		
16	R21		2+055.2	2+060.8	BROADWAY	RT.	6.5	1						
16	D25		2+060.8		BROADWAY	RT.								1
16	R22		2+092.9	2+060.8	BROADWAY	RT.	33.2	1						
16	D26	P24	1+051.6	1+061.1	E. 30TH	RT.			9.5			1		
16	R23		1+056.0		E. 30TH	RT.		1						
16	R24		1+059.8		E. 30TH	RT.		1						
16	R25		1+061.3		E. 30TH	RT.		1						
16	D27	P24A	1+061.1	1+062.9	E. 30TH	RT.			1.8			1 ø		
16	D27A	P25	1+062.9	1+071.1	E. 30TH	RT.			8.2			1		
16	D28	P25A	1+071.1	1+072.9	E. 30TH	RT.			1.8			1		
16	D28A		1+072.9		E. 30TH	RT.						1		
16		P26	1+061.6	1+059.8	E. 30TH	RT.			2.5					
17	R26		1+145.3		E. 30TH	RT.		1						
17	D29	P27	1+148.6	1+145.3	E. 30TH	RT.			3.9			1 ø		
17	D29A	P27A	1+148.6	1+150.4	E. 30TH	RT.			1.8			1		
					TOTAL		40	7	69	2	1	10	1	1

△△ – EXISTING T/C=*, PROPOSED T/C=*
ø – CB-1 WITH TRAP

UNDERDRAIN

SHEET NO.	REF. NO.	STATION FROM	STATION TO	SIDE	ELEVATIONS UPPER	ELEVATIONS LOWER	603 100mm CONDUIT TYPE F 707.42 ** METER	605 100mm UNCLASSIFIED PIPE UNDER-DRAIN WITH FABRIC WRAP METER	605 100mm SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP METER
16	U30	1+965	1+980.5	RT.	201.273	201.225	3	13	
16	U31	1+981.5	2+000	RT.	201.299	201.239	3	16	
16	U32	2+000	2+040	RT.	201.428	201.264	3		37
16	U33	2+040	2+055.2	RT.	201.428	201.380	3	13	
16	U34	2+055.2	2+100	RT.	201.547	201.407	3		44
16	U35	2+100	1+051.6 *	RT.	201.547	200.737	3		42
16	U36	1+052.6 *	1+061.1 *	RT.	200.737	200.703	3		6
16	U37	1+062.9 *	1+070.1 *	RT.	200.829	200.723	3		5
16/17	U38	1+072.9 *	1+147.6 *	RT.	203.030	200.870	3		72
17	U39	1+150.4 *	1+231.8 *	RT.	205.780	203.089	3		81
17	U40	1+249.7 *	1+263.1 *	RT.	***	***		14	
						TOTALS	30	56	287

* ℄ EAST 30TH STREET *** – MATCH EXISTING ELEV.
** – NON-PERFORATED

HNTB ARCHITECTS ENGINEERS PLANNERS

CALCULATED AKE CHECKED MJW

DRAINAGE QUANTITIES

CUY-77-23.458 – PART 2

LOCATION	SIDE	CASTINGS ADJUSTED TO GRADE								LOCATION	SIDE	CASTINGS ADJUSTED TO GRADE							
		638	604									638	604						
		VALVE BOX ADJUSTED TO GRADE AS PER PLAN	MANHOLE ADJUSTED TO GRADE AS PER PLAN	CATCH BASIN ADJUSTED TO GRADE AS PER PLAN	MONUMENT BOX ADJUSTED TO GRADE AS PER PLAN							VALVE BOX ADJUSTED TO GRADE AS PER PLAN	MANHOLE ADJUSTED TO GRADE AS PER PLAN	CATCH BASIN ADJUSTED TO GRADE AS PER PLAN	MONUMENT BOX ADJUSTED TO GRADE AS PER PLAN				
		EACH	EACH	EACH	EACH							EACH	EACH	EACH	EACH				
BROADWAY																			
STA. 0+705.0	RT.	1								STA. 1+376.5	RT.			1					
STA. 0+706.0	RT.		1							STA. 1+380.0	℄				1				
STA. 0+744.0	LT.		1							STA. 1+393.5	LT.			1					
STA. 0+748.0	RT.			1						STA. 1+394.0	℄		1						
STA. 0+749.0	LT.		1							STA. 1+397.0	RT.			1					
STA. 0+749.5	LT.			1						STA. 1+471.5	RT.			1					
STA. 0+752.0	RT.		1							STA. 1+471.5	LT.			1					
STA. 0+757.0	RT.		1							STA. 1+475.0	℄		1						
STA. 0+797.0	RT.		1							STA. 1+525.0	℄		1						
STA. 0+797.0	RT.		1							STA. 1+527.5	RT.			1					
STA. 0+801.0	RT.		1							STA. 1+529.0	LT.			1					
STA. 0+801.0	RT.		1							STA. 1+582.0	℄		1						
STA. 0+805.0	RT.	1								STA. 1+585.5	RT.			1					
STA. 0+806.0	LT.		1							STA. 1+585.5	LT.			1					
STA. 0+809.5	RT.			1						STA. 1+642.5	℄		1						
STA. 0+809.5	LT.			1						STA. 1+645.0	LT.			1					
STA. 0+812.5	RT.		1							STA. 1+645.5	RT.			1					
STA. 0+834.5	RT.		1							STA. 1+670.5	℄		1						
STA. 0+843.0	LT.	1								STA. 1+674.5	RT.			1					
STA. 0+861.5	RT.	1								STA. 1+675.5	LT.			1					
STA. 0+867.0	LT.		1							STA. 1+862.5	℄				1				
STA. 0+894.0	RT.	1								STA. 1+862.5	RT.		1						
STA. 0+909.5	RT.	1								STA. 1+866.0	RT.		1						
STA. 0+910.0	RT.	1								STA. 1+878.0	RT.		1						
STA. 1+124.0	RT.			1						STA. 1+879.0	RT.		1						
STA. 1+124.5	LT.			1						STA. 1+885.0	RT.			1					
STA. 1+125.5	RT.			1						STA. 1+887.0	RT.			1					
STA. 1+128.0	RT.	1								STA. 1+893.5	LT.			1					
STA. 1+137.0	RT.	1								STA. 1+949.0	RT.		1						
STA. 1+140.0	RT.	1								STA. 1+959.0	RT.			1					
STA. 1+141.0	RT.	1								STA. 1+959.0	LT.			1					
STA. 1+160.0	RT.	1								STA. 1+968.0	RT.		1						
STA. 1+187.5	℄		1							STA. 2+053.5	RT.			1					
STA. 1+220.5	RT.	1								STA. 2+053.5	LT.			1					
STA. 1+245.5	RT.	1								STA. 2+057.0	RT.				1				
STA. 1+248.5	RT.	1								STA. 2+058.0	RT.		1						
STA. 1+250.5	RT.			1						STA. 2+058.5	℄				1				
STA. 1+296.5	RT.	1								STA. 2+109.0	LT.			1					
STA. 1+302.0	LT.	1								STA. 2+115.5	RT.		1						
STA. 1+309.0	℄		1							STA. 2+115.5	RT.		1						
STA. 1+316.0	LT.			1						STA. 2+118.0	RT.		1						
STA. 1+339.5	RT.	1								STA. 2+119.5	℄				1				
STA. 1+356.0	RT.			1						STA. 2+119.5	RT.				1				
STA. 1+366.0	RT.	1								STA. 2+121.5	RT.	1							
STA. 1+372.5	RT.		1							STA. 2+126.0	RT.		1						
										SHEET SUB-TOTAL :		20	33	31	6				

NOTE: LOCATIONS OF CASTINGS WERE BASED ON FIELD MEASUREMENTS AND ARE ONLY CONSIDERED APPROXIMATE.

HNTB ARCHITECTS ENGINEERS PLANNERS

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CALCULATED JE CHECKED JMG

SUBSUMMARY

CUY-77-23.458 - PART 2

LOCATION	SIDE	CASTINGS ADJUSTED TO GRADE								LOCATION	SIDE	CASTINGS ADJUSTED TO GRADE							
		638	604									638	604						
		VALVE BOX ADJUSTED TO GRADE AS PER PLAN	MANHOLE ADJUSTED TO GRADE AS PER PLAN	CATCH BASIN ADJUSTED TO GRADE AS PER PLAN	MONUMENT BOX ADJUSTED TO GRADE AS PER PLAN							VALVE BOX ADJUSTED TO GRADE AS PER PLAN	MANHOLE ADJUSTED TO GRADE AS PER PLAN	CATCH BASIN ADJUSTED TO GRADE AS PER PLAN	MONUMENT BOX ADJUSTED TO GRADE AS PER PLAN				
		EACH	EACH	EACH	EACH							EACH	EACH	EACH	EACH				
STA. 2+129.0	RT.			1						STA. 2+567.5	RT.		1						
STA. 2+132.5	RT.		1							STA. 2+571.0	℄		1						
STA. 2+154.0	LT.	1								STA. 2+584.5	LT.			1					
STA. 2+193.0	℄		1							STA. 2+584.5	RT.			1					
STA. 2+195.5	RT.			1						STA. 2+627.0	RT.			1					
STA. 2+195.5	LT.			1						STA. 2+632.0	RT.		1						
STA. 2+221.0	RT.		1							STA. 2+643.0	RT.	1							
STA. 2+235.5	℄			1						STA. 2+643.5	℄			1					
STA. 2+246.5	LT.	1								STA. 2+659.0	LT.			1					
STA. 2+311.5	LT.	1								STA. 2+725.5	RT.	1							
STA. 2+311.5	℄	1								STA. 2+726.0	℄		1						
STA. 2+316.5	RT.		1							STA. 2+738.0	℄				1				
STA. 2+319.5	℄				1					STA. 2+738.5	RT.	1							
STA. 2+327.0	℄		1							STA. 2+742.0	RT.		1						
STA. 2+327.0	RT.		1							STA. 2+745.5	LT.	1							
STA. 2+330.0	RT.			1						STA. 2+747.5	RT.			1					
STA. 2+330.0	LT.			1						STA. 2+751.5	RT.	1							
STA. 2+351.5	LT.	1								STA. 2+753.0	℄		1						
STA. 2+356.0	LT.	1								STA. 2+796.5	℄			1					
STA. 2+431.0	LT.	1								STA. 2+799.0	RT.		1						
STA. 2+432.0	℄				1					STA. 2+812.0	LT.	1							
STA. 2+432.5	RT.		1							STA. 2+840.5	LT.				1				
STA. 2+435.0	℄	1								STA. 2+844.0	LT.		1						
STA. 2+437.0	LT.			1						STA. 2+853.5	RT.			1					
STA. 2+441.5	℄		1							STA. 2+859.0	RT.		1						
STA. 2+443.5	RT.			1						STA. 2+860.5	℄		1						
STA. 2+456.5	LT.	1								STA. 2+861.5	LT.	1							
STA. 2+461.5	℄	1								STA. 2+863.5	LT.		1						
STA. 2+506.0	LT.	1								STA. 2+870.0	LT.	1							
STA. 2+512.0	℄	1								STA. 2+890.0	LT.	1							
STA. 2+512.5	LT.				1					STA. 2+913.0	RT.			1					
STA. 2+515.5	RT.		1							STA. 2+917.0	℄				1				
STA. 2+518.5	RT.		1							STA. 2+917.0	LT.		1						
STA. 2+521.5	RT.			1						STA. 2+919.0	LT.		1						
STA. 2+525.0	RT.	1								STA. 2+933.5	LT.			1					
STA. 2+527.0	LT.			1						STA. 2+938.5	℄		1						
STA. 2+529.0	℄				1					STA. 2+954.5	LT.		1						
STA. 2+529.0	RT.		1							STA. 1+225.5	LT.		1						
STA. 2+543.5	LT.		1							STA. 1+235.0	RT.		1						
STA. 2+546.0	LT.		1							STA. 1+251.0	RT.	1							
STA. 2+548.0	LT.		1																
STA. 2+561.0	RT.		1																
STA. 2+565.5	℄				1														
										SHEET SUB-TOTAL :		23	32	20	8				
										SHEET SUB-TOTAL FROM SHEET 13 :		20	33	31	6				
										TOTAL CARRIED TO GENERAL SUMMARY :		43	65	51	14				

NOTE: LOCATIONS OF CASTINGS WERE BASED ON FIELD MEASUREMENTS AND ARE ONLY CONSIDERED APPROXIMATE.

HNTB ARCHITECTS ENGINEERS PLANNERS

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CALCULATED JE CHECKED JMG

SUBSUMMARY

CUY-77-23.458 - PART 2

CROSS REFERENCE	
ITEM	SHEET NO.
ROADWAY QUANTITIES	11
DRAINAGE QUANTITIES	12
UNDERDRAIN ELEVATIONS	12
CROSS SECTIONS	21–22
SEWER PROFILES	24
CONTROL DATA	5

℄ CURVE DATA
Δ = 15°48'30"
R = 100.584m [330.00']
T = 13.965m [45.82']
L = 27.752m [91.05']
CH = 27.664m [90.76']
CH BRG. = N66°46'37"W

BENCHMARKS

B.M.	222.357	NAILS IN N.W. CORNER OF E. 34th AND BROADWAY
B.M. EST.	203.286	CHISELED SQUARE AT END OF PARAPET AT S.W. CORNER OF E. 34th AND BROADWAY
B.M.	202.652	I.P./MON. AT CENTERLINE OF E. 30th AND BROADWAY
B.M. EST.	207.255	STONE IN MON. AT CENTERLINE OF ROCKEFELLER AND BROADWAY
B.M. EST.	207.977	CHISELED SQUARE ON TOP OF WINGWALL AT S.E. CORNER OF ROCKEFELLER AND BROADWAY

BEGIN WORK
CUY–77–23.458 – PART 2
STA. 0+157.000
BROADWAY AVENUE

BEGIN WIDENING
BEGIN TAPER
STA. 1+965.000
6.400m RT.
℄ BROADWAY AVE.

END TAPER
STA. 1+980.000
10.000m RT.
℄ BROADWAY AVE.

ABANDON
(PLUG END)
EXISTING CHAIN LINK
FENCE (DO NOT DISTURB)

PC STA. 2+044.442
PT STA. 2+072.194
PC STA. 2+091.766
10.000m RT.
N74°40'52"W
℄ CURVE
MON. FND. & USED

CURVE 1 DATA
Δ= 90°00'23"
R = 21.000m [68.90']
L = 32.989m [108.23']
CH = 29.700m [97.44']

Legend:
– PROPOSED WIDENING

MATCHLINE STA. 2+100 SEE BELOW.

END WORK
CUY–77–23.458 – PART 2
STA. 3+097
BROADWAY AVENUE

BEGIN WORK
CUY–77–23.458 – PART 2
STA. 0+999.901
EAST 30TH STREET

STA. 2+119.847 ℄ BROADWAY AVE. =
STA. 0+999.901 ℄ E. 30TH ST.

PT STA. 1+030.897
7.115m RT.
℄ E. 30TH ST.
N74°34'46"W
N74°40'52"W
N15°15'23"E
89°50'09"
90°03'45"
1+000
1+100
12.802m
1.000m
152mm
533mm VCP (STM)
914mm RCP (SAN)
381mm VCP (STM)
1372mm RCP (SAN)
610mm VCP (STM)
305mm VCP (STM)
CONCRETE
ASPHALT
MON. FND.
MON. FND. & USED
ABANDON
(PLUG END)
CURVE 1
21.000m RADIUS
PROPOSED SIDEWALK
CONSTRUCTION LIMIT
EXISTING CHAIN LINK
FENCE (DO NOT DISTURB)
STA. 1+135.9
COMMERCIAL
DRIVE

MATCHLINE STA. 2+100 SEE ABOVE.
MATCHLINE STA. 1+140 SEE SHEET 17.

Legend:
– PROPOSED WIDENING

HNTB ARCHITECTS ENGINEERS PLANNERS

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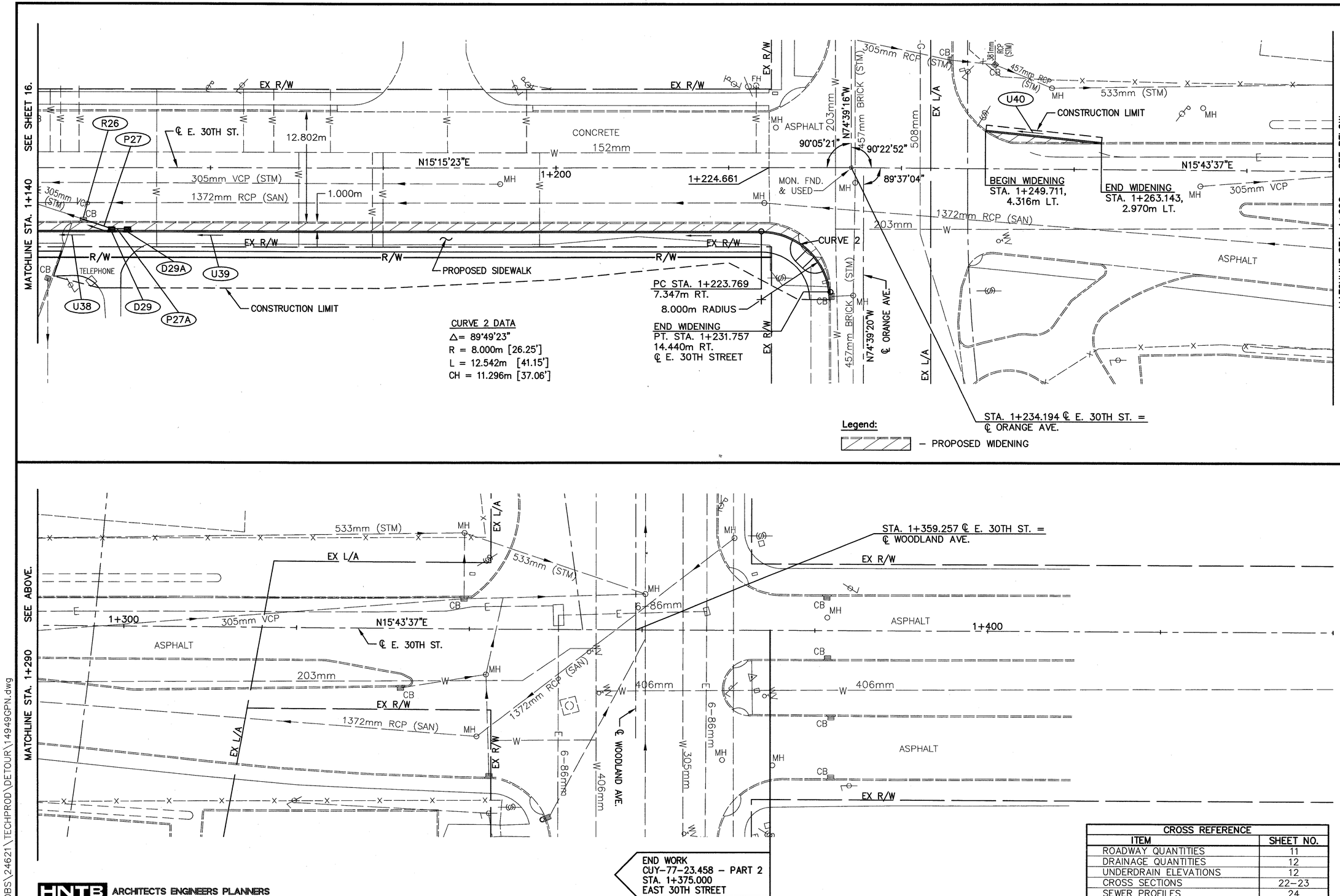
HORIZONTAL SCALE
1:200

CALCULATED MJW
CHECKED ZSS

PLAN – BROADWAY AVE. & E. 30th ST.
STA. 1+965.000 ℄ BROADWAY AVE. TO STA. 1+140 ℄ E.30th ST.

CUY–77–23.458 – PART 2

16
58



CROSS REFERENCE	
ITEM	SHEET NO.
ROADWAY QUANTITIES	11
DRAINAGE QUANTITIES	12
UNDERDRAIN ELEVATIONS	12
CROSS SECTIONS	22–23
SEWER PROFILES	24
CONTROL DATA	5

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE 1:200

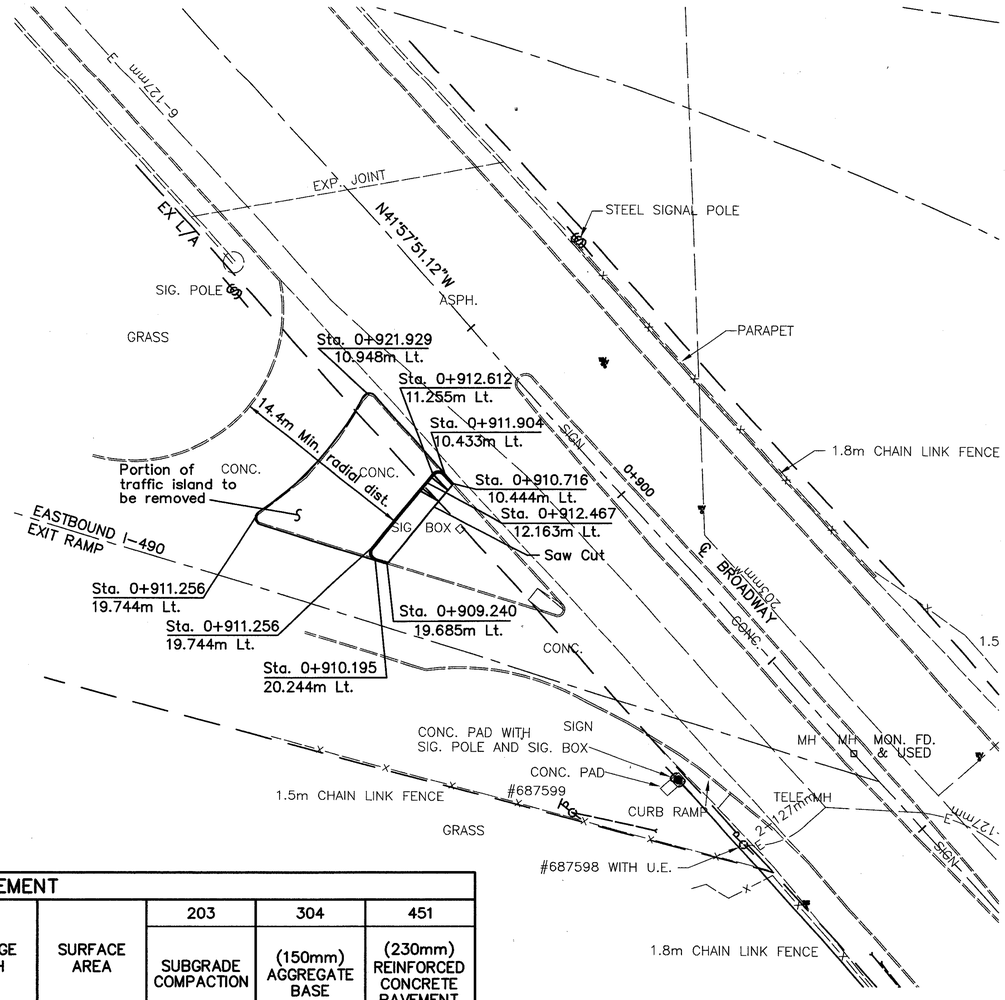
CALCULATED MJW CHECKED ZSS

PLAN – E. 30th ST.
STA. 1+140 TO STA. 1+263.143

CUY-77-23.458 – PART 2

17
58

REMOVAL QUANTITIES			
			202
STATION		SIDE	PORTION OF TRAFFIC ISLAND REMOVED
FROM	TO		SQ. METER
0+909.240	0+921.929	LT	137
		TOTAL	137



PAVEMENT								
						203	304	451
STATION		SIDE	LENGTH	AVERAGE WIDTH	SURFACE AREA	SUBGRADE COMPACTION	(150mm) AGGREGATE BASE	(230mm) REINFORCED CONCRETE PAVEMENT
FROM	TO		METER	METER	SQ. METER	SQ. METER	CU. METER	SQ. METER
0+910.195	0+921.929	LT	PLANIMETERED		116.983	116.98	17.55	116.98
				TOTAL		117	18	117

** INCLUDES INTEGRAL CURB

CURB RAMP, CURB AND TRAFFIC ISLAND					
			608	609	612
STATION		SIDE	CURB RAMP, TYPE 2	CURB TYPE 2A	225 mm CONCRETE TRAFFIC ISLAND
FROM	TO		EACH	METER	SQ. METER
0+910.195	0+912.612	LT		14	18
0+912.467		LT	1		
		TOTAL	1	14	18

NOTE: SEE SHEET 2 FOR TYPICAL SECTION.

HNTB ARCHITECTS ENGINEERS PLANNERS

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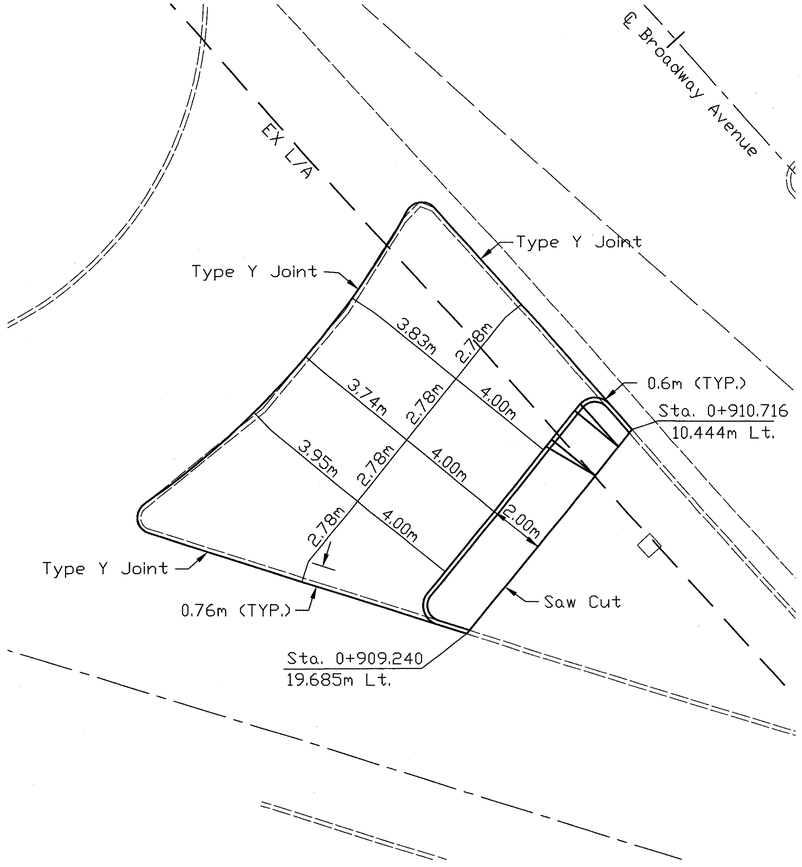
HORIZONTAL SCALE 1:250

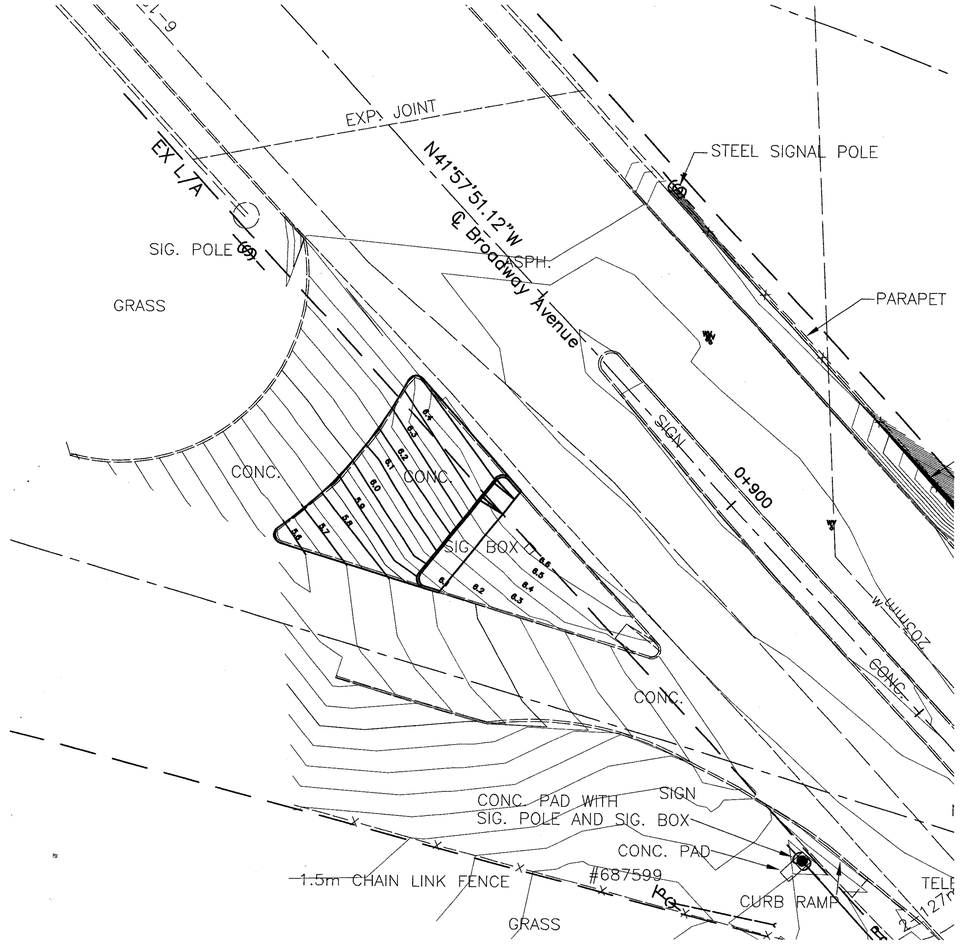
CALCULATED MS CHECKED ZSS

INTERSECTION IMPROVEMENTS - PLAN
BROADWAY & EB I-490 EXIT RAMP

CUY-77-23.458 PART 2



PAVEMENT JOINT DETAIL
1 : 100



PAVEMENT CONTOURS
1 : 200

HNTB ARCHITECTS ENGINEERS PLANNERS

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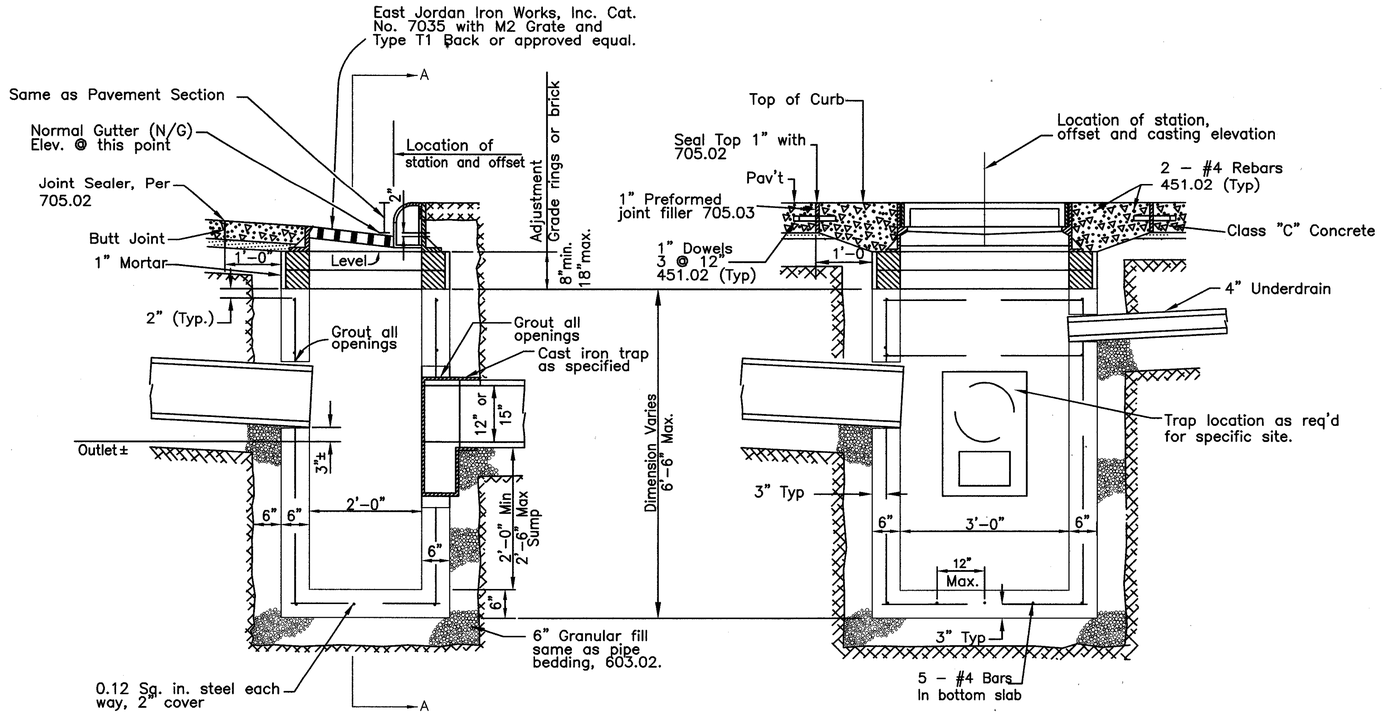
CALCULATED MS
CHECKED ZSS

HORIZONTAL SCALE
AS SHOWN

INTERSECTION IMPROVEMENTS - DETAILS
BROADWAY & EB I-490 EXIT RAMP

CUY-77-23.458 - PART 2



CATCH BASIN, CITY OF CLEVELAND, NO. 1

Not to Scale

CONVERSION OF ENGLISH UNITS

THE ENGLISH UNITS CONTAINED IN THIS PLAN SHALL BE CONVERTED TO METRIC UNITS USING THE ENGLISH TO SI (METRIC) CONVERSION FACTORS PROVIDED IN SECTION 109.011 OF THE 1997 CONSTRUCTION AND MATERIAL SPECIFICATIONS. THE APPENDIX OF ASTM E 380 SHALL BE UTILIZED FOR ANY ADDITIONAL CONVERSION FACTORS REQUIRED. CONVERSIONS SHALL BE APPROPRIATELY PRECISE AND SHALL REFLECT STANDARD INDUSTRY METRIC VALUES WHERE SUITABLE.

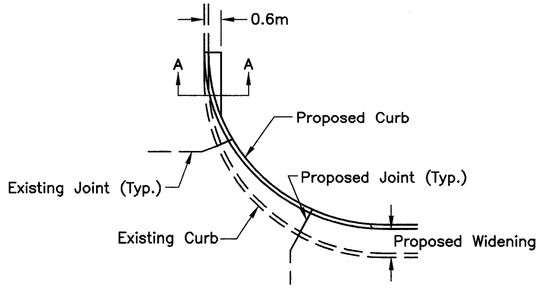
Alternate:
If approved by the engineer 8" thick masonry walls may be used in lieu of precast units.

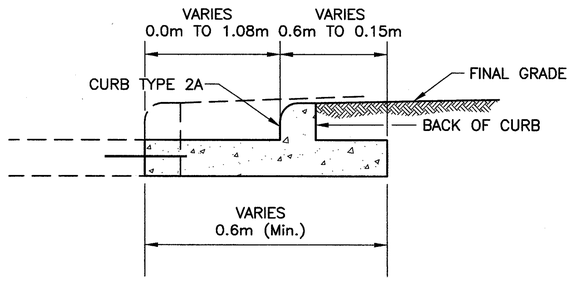
Trap:
East Jordan Ironworks, Inc. Cat. No. 5964-12 or 15, Neenah Foundry Co. Cat. No. R-3707-12 or 15 or approved equal.

Notes:
1. All reinforcing shall be 709 #4 deformed bars and sufficient to permit snipping and placement without damage for rectangular shape.

2. Concrete shall be ODOT 499 Class "C" 4000 psi in 28 days.

3. Box-out paid for as pav't in Portland Cement Concrete (PCC) pav't and a part of the catch basin in asphaltic concrete pav't (ACP) - no deduction in pav't or curb quantity because of castings.
For full width ACP construct a PCC apron the size of the "box-out" and delete dowels. When used with a PCC curb and gutter maintain gutter width.





SECTION A-A

Not to Scale

CALCULATED MS CHECKED MJW

MISC. DETAILS

CUY-77-23.458 - PART 2

20
58

HNTB ARCHITECTS ENGINEERS PLANNERS

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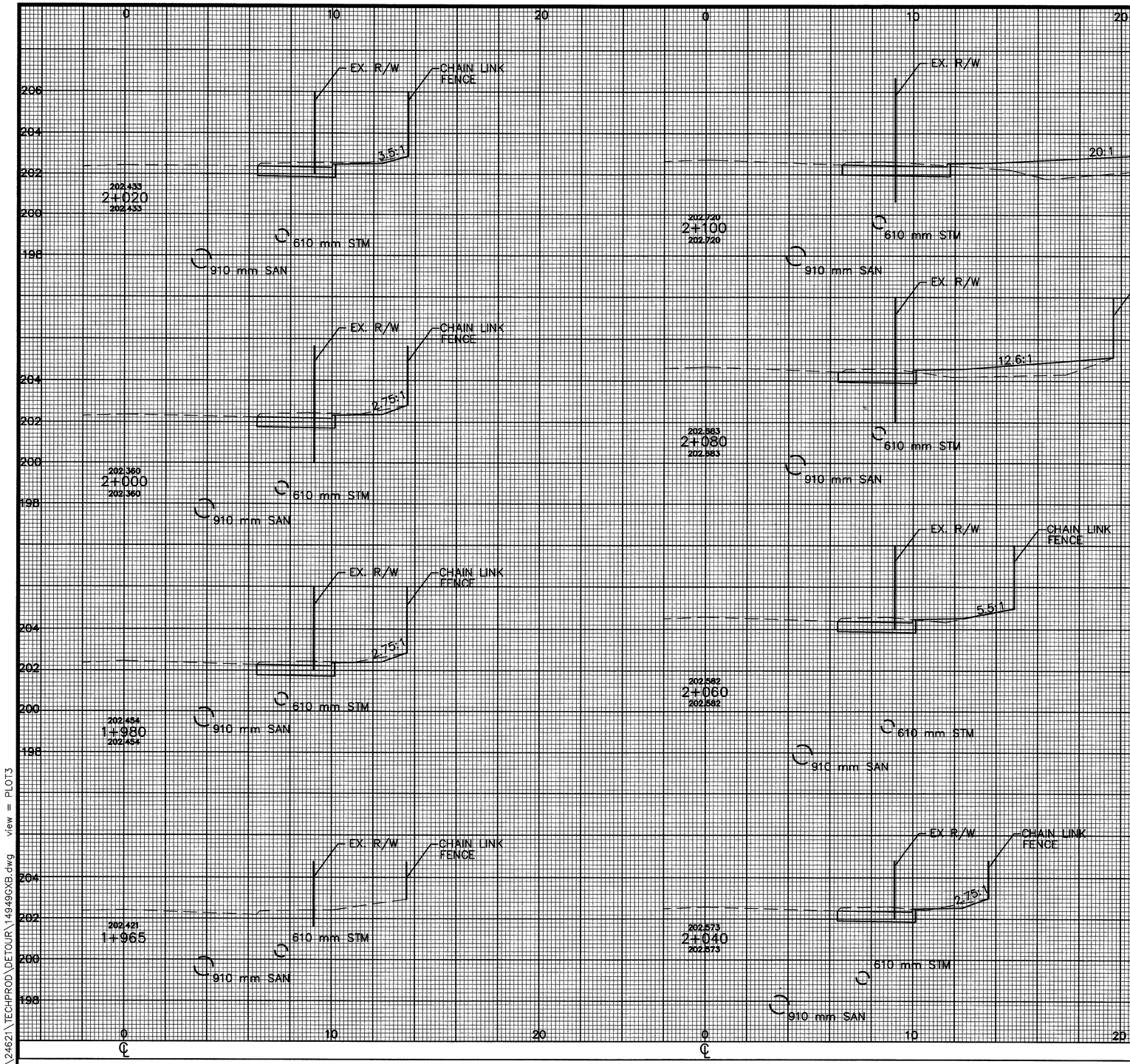

SODDING		END AREA		VOLUME	
END WIDTH	SQ.METERS	CUT	FILL	CUT	FILL
	35			71	27
12.1		3.3	8.3		
	137			56	123
1.6		2.3	4.0		
	41			48	43
2.5		2.5	0.3		
	39			53	4
1.4		2.8	0.1		
	27			55	1
1.3		2.7	0		
	26			57	0
1.3		3.0	0		
	26			58	0
1.3		2.8	0		
	10			21	0
0		0	0		
SHEET TOTAL	341			419	198

2+100
2+080
2+060
2+040
2+020
2+000
1+980
1+965

CALCULATED JMG
CHECKED ZSS

CROSS SECTIONS – BROADWAY AVENUE STA. 1+965 TO 2+100

CUY-77-23.458 – PART 2

21
58

HNTB ARCHITECTS ENGINEERS PLANNERS

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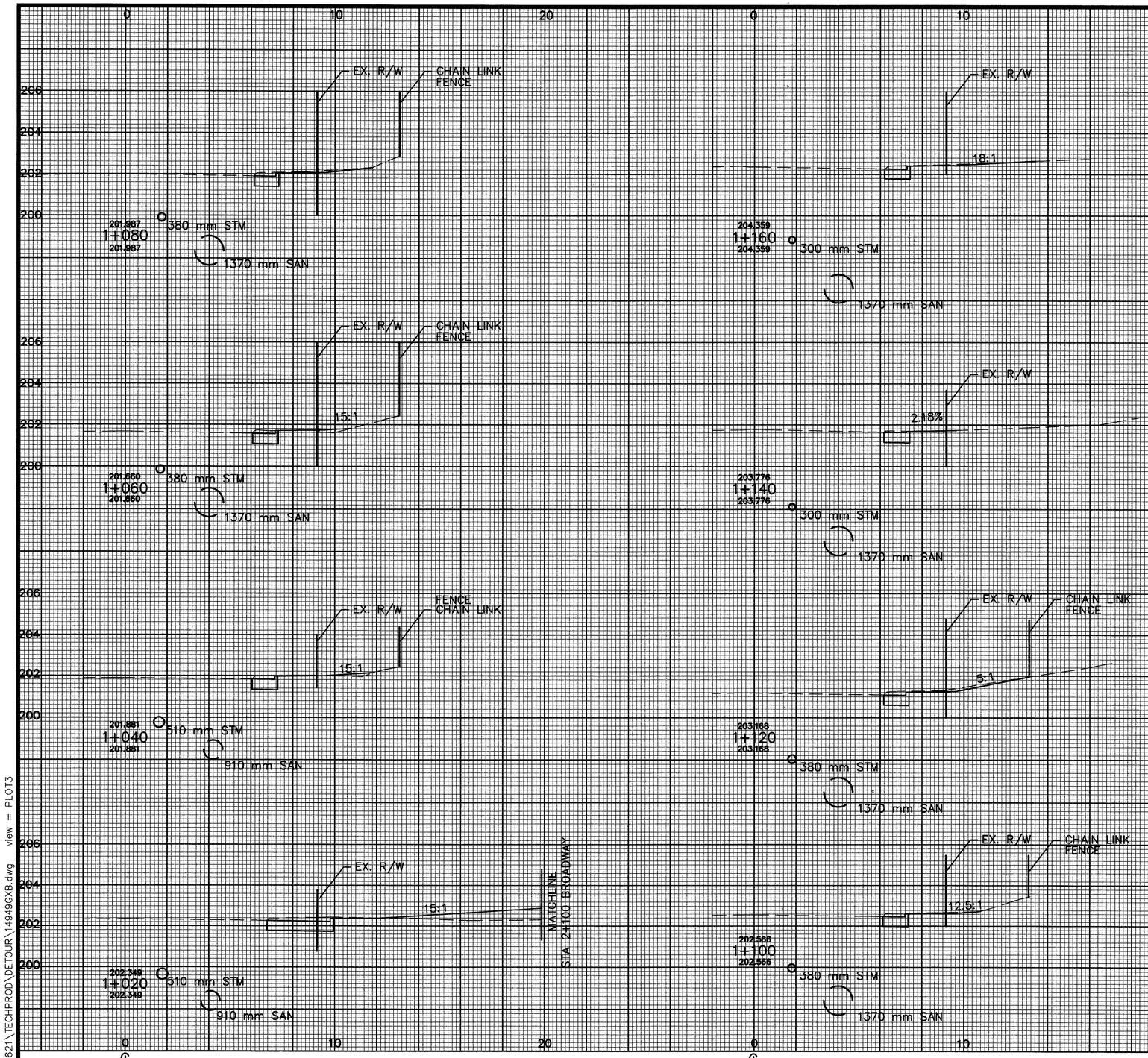

	SODDING		END AREA		VOLUME	
	END WIDTH	SQ. METERS	CUT	FILL	CUT	FILL
		66			18	0
1+160	3.8		0.9	0		
		75			16	0
1+140	3.7		0.7	0		
		73			18	0
1+120	3.6		1.1	0		
		48			20	0
1+100	1.2		0.9	0		
		34			16	1
1+080	2.2		0.7	0.1		
		34			15	3
1+060	1.2		0.8	0.2		
		36			17	4
1+040	2.4		0.9	0.2		
		101			31	27
1+020	7.7		2.2	2.5		
SHEET TOTAL		467			151	35

CALCULATED JMG
CHECKED ZSS

CROSS SECTIONS – E. 30TH STREET STA. 1+020 TO STA 1+160

CUY-77-23.458 – PART 2

HNTB ARCHITECTS ENGINEERS PLANNERS

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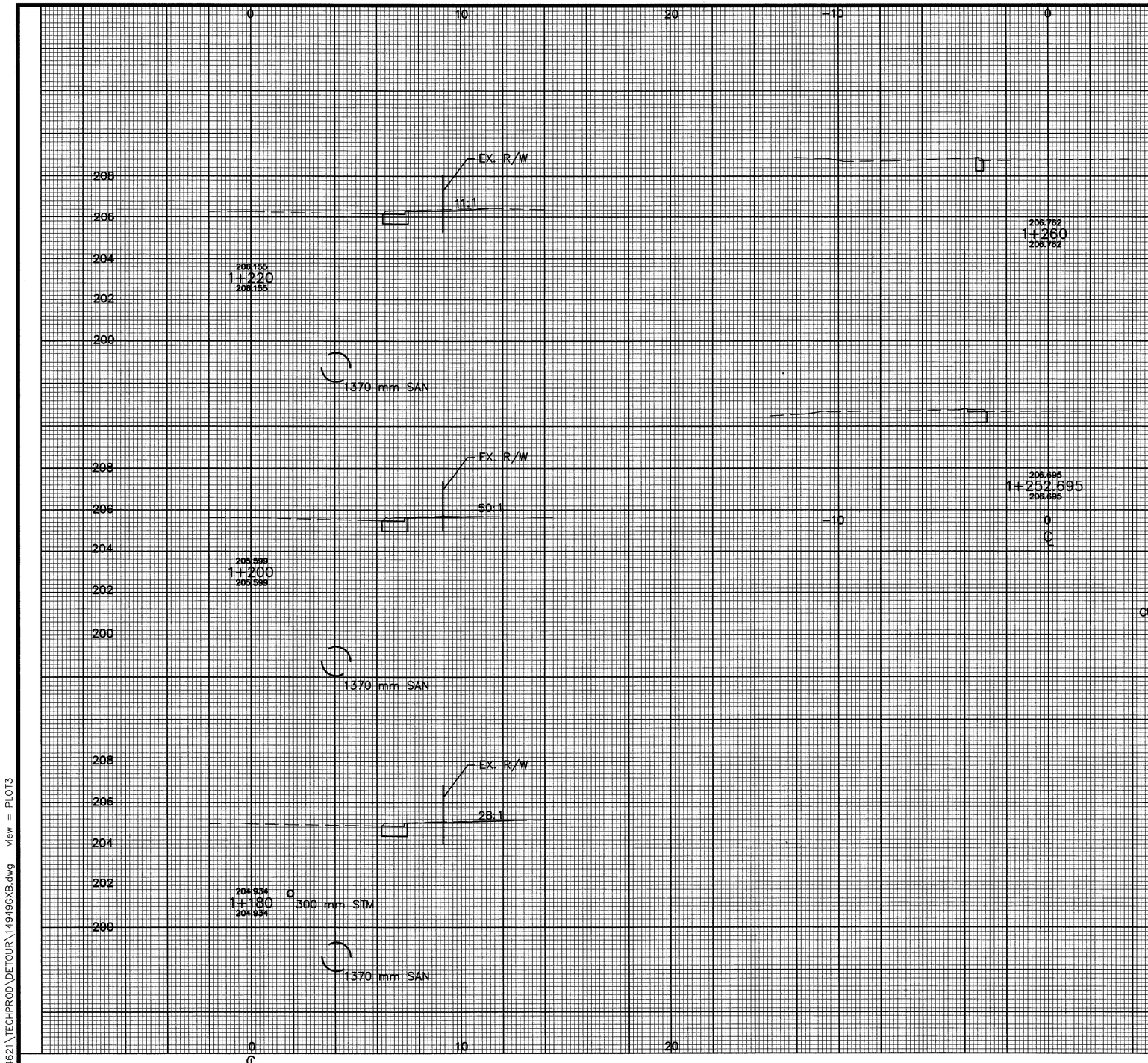


	SODDING		END AREA		VOLUME	
	END WIDTH	SQ. METERS	CUT	FILL	CUT	FILL
1+263.143 LT.	0		0	0		
		0			0	0
1+260 LT.	0.1		0.2	0		
		1			3	0
1+252.695 LT.	0.3		0.6	0		
		0			1	0
1+249.711 LT.	0		0	0		
CURB RETURN AREA E. 30TH STREET AND ORANGE AVENUE		12				7
1+220	1.6		1.1	0		
		29			20	0
1+200	1.3		0.9	0		
		41			18	0
1+180	2.8		0.9	0		
		83			42	7

CALCULATED JMG
CHECKED ZSS

CROSS SECTIONS – E. 30TH STREET STA. 1+180 TO STA 1+220, 1+260

CUY-77-23.458 – PART 2

23
58

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\14949GXB.dwg view = PLOT3

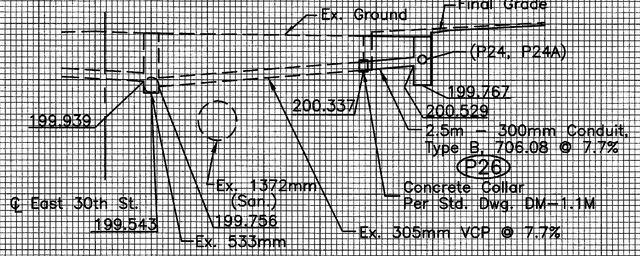
CALCULATED AKL
CHECKED MJW

SEWER PROFILES

D27 — Catch Basin, City of Cleveland, No. 1, With Trap
Sta. 1+061.6, 7.15m Rt.
N/G = 201.553

Existing Catch Basin To Be Removed
Sta. 1+059.8, 5.80m Rt.

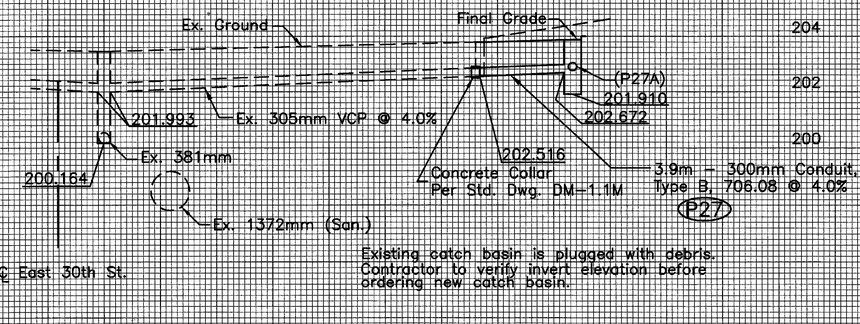
Existing Manhole
Sta. 1=053.3, 1.65m Rt.
Existing T/C = 201.646



D29 — Catch Basin, City of Cleveland, No. 1, With Trap
Sta. 1+148.6, 7.26m Rt.
N/G = 203.880

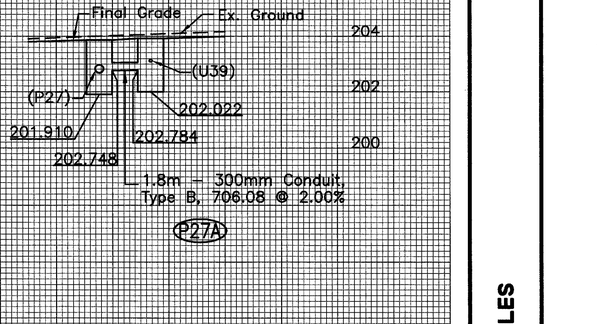
Existing Manhole
Sta. 1+132.6, 1.73m Rt.
Existing T/C = 203.456

Existing Catch Basin To Be Removed
Sta. 1+145.3, 5.95m Rt.



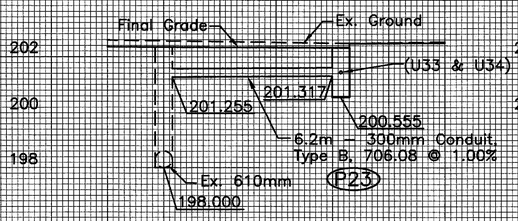
Existing catch basin is plugged with debris. Contractor to verify invert elevation before ordering new catch basin.

D29A — Catch Basin, City of Cleveland, No. 1
Sta. 1+150.4, 7.26m Rt.
N/G = 203.939



D25 — Manhole Reconstructed to Grade
Sta. 2+060.8, 9.0m Rt.
Existing T/C = 202.557
Proposed T/C = 202.339

D24 — Catch Basin, City of Cleveland, No. 1, With Trap
Sta. 2+055.2, 10.0m Rt.
N/G = 202.320



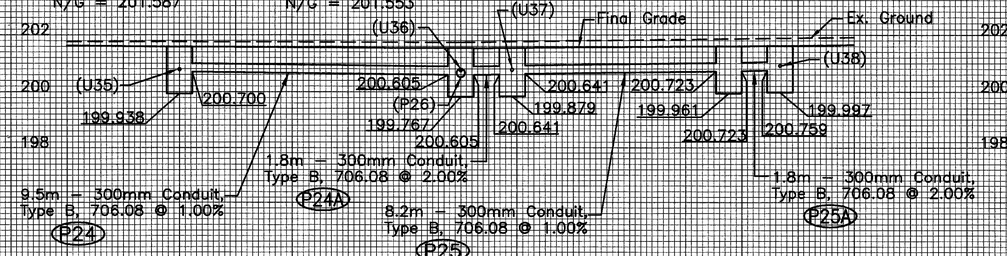
D26 — Catch Basin, City of Cleveland, No. 1
Sta. 1+051.6, 7.14m Rt.
N/G = 201.587

D27A — Catch Basin, City of Cleveland, No. 1
Sta. 1+062.9, 7.15m Rt.
N/G = 201.573

D27 — Catch Basin, City of Cleveland, No. 1, With Trap
Sta. 1+061.1, 7.15m Rt.
N/G = 201.553

D28 — Catch Basin, City of Cleveland, No. 1
Sta. 1+071.1, 7.16m Rt.
N/G = 201.679

D28A — Catch Basin, City of Cleveland, No. 1
Sta. 1+072.9, 7.16m Rt.
N/G = 201.720



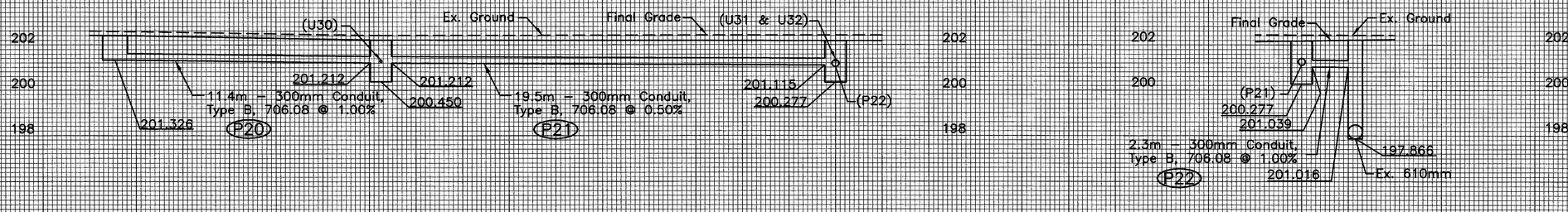
D20 — Inlet, Side Ditch
Sta. 1+969.2, 11.45m Rt.
N/G = 202.400

D21 — Catch Basin, City of Cleveland, No. 1
Sta. 1+980.5, 10.0m Rt.
N/G = 202.212

D22 — Catch Basin, City of Cleveland, No.1, With Trap
Sta. 2+000.0, 10.0m Rt.
N/G = 202.177

D22 — Catch Basin, City of Cleveland, No. 1, With Trap
Sta. 2+000.0, 10.0m Rt.
N/G = 202.177

D23 — Manhole, No. 3
Sta. 2+000.0, 7.59m Rt.
T/G = 202.216



HNTB ARCHITECTS ENGINEERS PLANNERS

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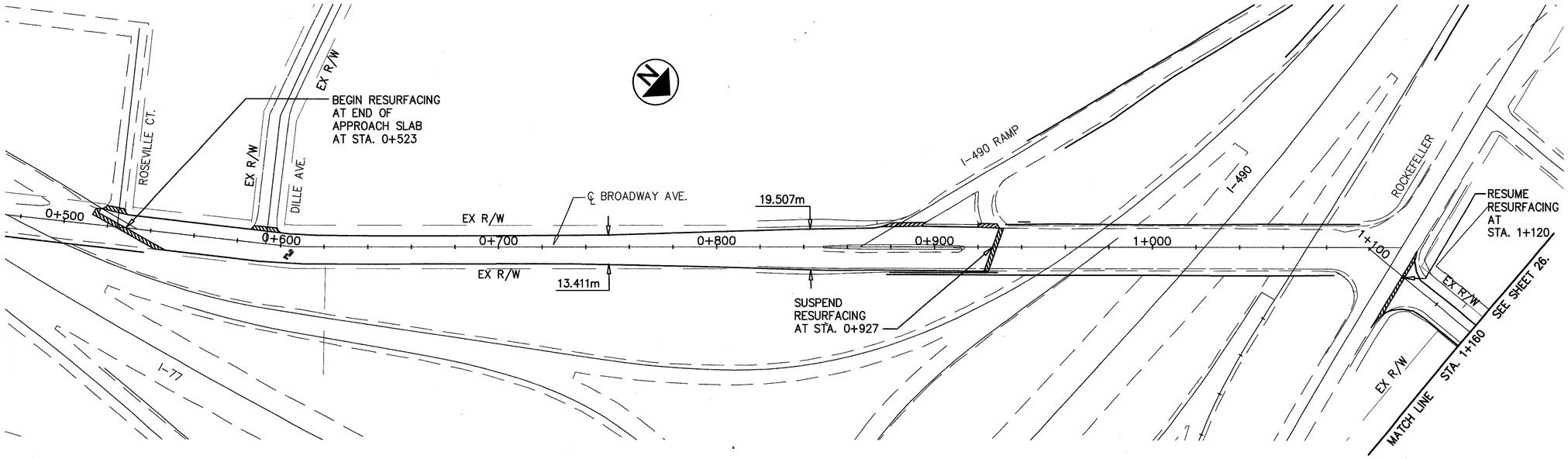
CUY-77-23.458 – PART 2



▨ – BUTT JOINT AND LIMITS OF PAVEMENT PLANING AND RESURFACING

RESURFACING QUANTITIES								
						254	407	446
LOCATION	STATION		LENGTH	WIDTH	AREA	(38 mm) PAVEMENT PLANING BITUMINOUS	TACK COAT	(38 mm) ASPHALT CONCRETE SURFACE COURSE TYPE 1, PG64-28
	FROM	TO	METER	METER	SQ. METER	SQ. METER	LITER	CU. METER
BROADWAY	0+523	0+751	228	13.411	3058	3058	1376	116
BROADWAY	0+751	0+843	92	16.459	1514	1514	681	58
BROADWAY	0+843	0+927	84	19.507	1639	1639	738	62
BROADWAY	1+120	1+398	278	12.802	3559	3559	1602	135
BROADWAY	1+466	1+728	262	12.802	3354	3354	1509	127
BROADWAY	1+861	2+565	704	12.802	9013	9013	4056	342
BROADWAY	2+565	2+731	166	13.716	2277	2277	1025	87
BROADWAY	2+731	3+097	366	17.069	6247	6247	2811	237
E. 30TH ST.	1+225	1+348	123	18.492	2275	2275	1024	87
ORANGE AVE	1+225 6.400 LEFT OF ℄ E 30TH		15	22.000	330	330	149	13
				TOTAL		33,266	14,971	1264

CENTERLINE REFERENCE DATA			
STATION	NORTHING	EASTING	DESCRIPTION
0+187.819 (BROADWAY)	24449.865	29190.354	MONUMENT
0+605.642	24785.641	28941.798	MONUMENT
0+869.084	24981.524	28765.641	MONUMENT
1+098.904	25152.410	28611.968	ANGLE POINT
1+112.314	25165.812	28611.488	MONUMENT
1+379.342	25432.669	28601.937	MONUMENT
1+404.555	25457.866	28601.035	ANGLE POINT
1+862.528	25907.643	28514,782	ANGLE POINT
2+058.406 (BACK)	26008.901	28347.106	MONUMENT AT PI
2+321.882	26078.901	28092.916	MONUMENT
2+529.048	26133.166	27892.983	MONUMENT
2+565.360	26151.905	27861.880	MONUMENT
2+877.152 (BACK)	26312.863	27594.828	MONUMENT AT PI
3+096.853	26491.540	27466.008	MONUMENT
1+000.000 (E. 30TH)	26025.275	28287.704	MONUMENT
1+234.194 (E. 30TH)	26251.215	28349.329	MONUMENT

NOTE: FOR RESURFACING TYPICAL SECTION, SEE SHEET 2.

HNTB ARCHITECTS ENGINEERS PLANNERS

HORIZONTAL SCALAE
1 : 1000

CALCULATED JMG
CHECKED JE

DETOUR ROUTE
RESURFACING PLAN

CUY-77-23.458 - PART 2

25
58

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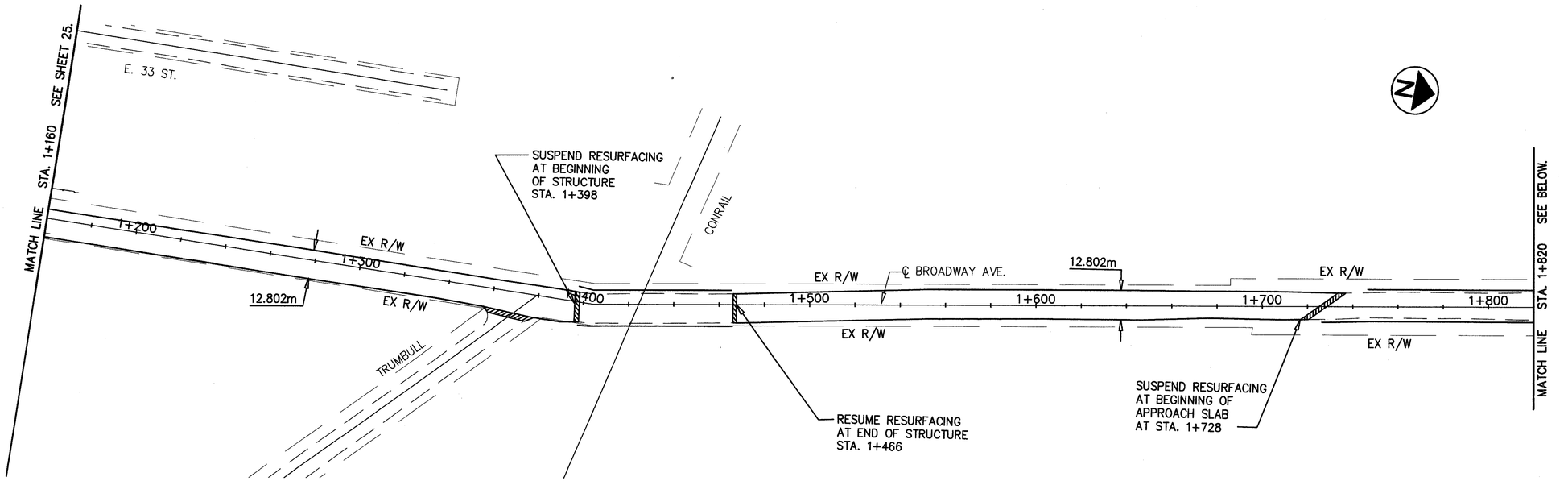

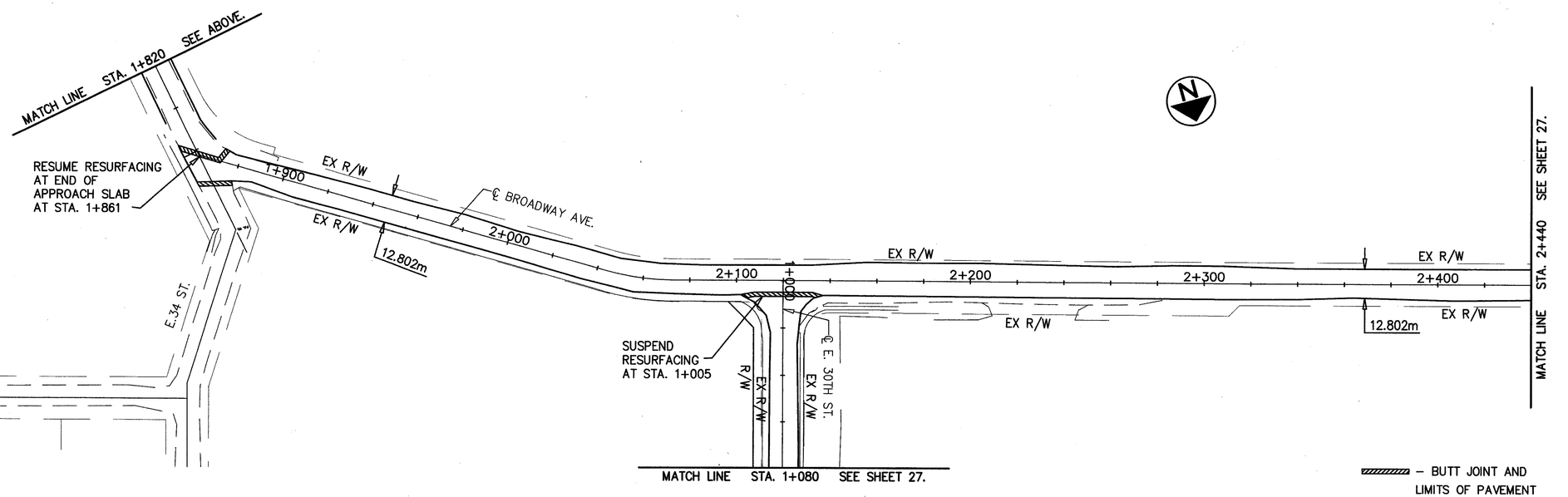

HNTB ARCHITECTS ENGINEERS PLANNERS

NOTE: FOR RESURFACING TYPICAL SECTION, SEE SHEET 2.

HORIZONTAL SCALAE 1 : 1000

CALCULATED JMG CHECKED JE

DETOUR ROUTE RESURFACING PLAN

CUY-77-23.458 – PART 2

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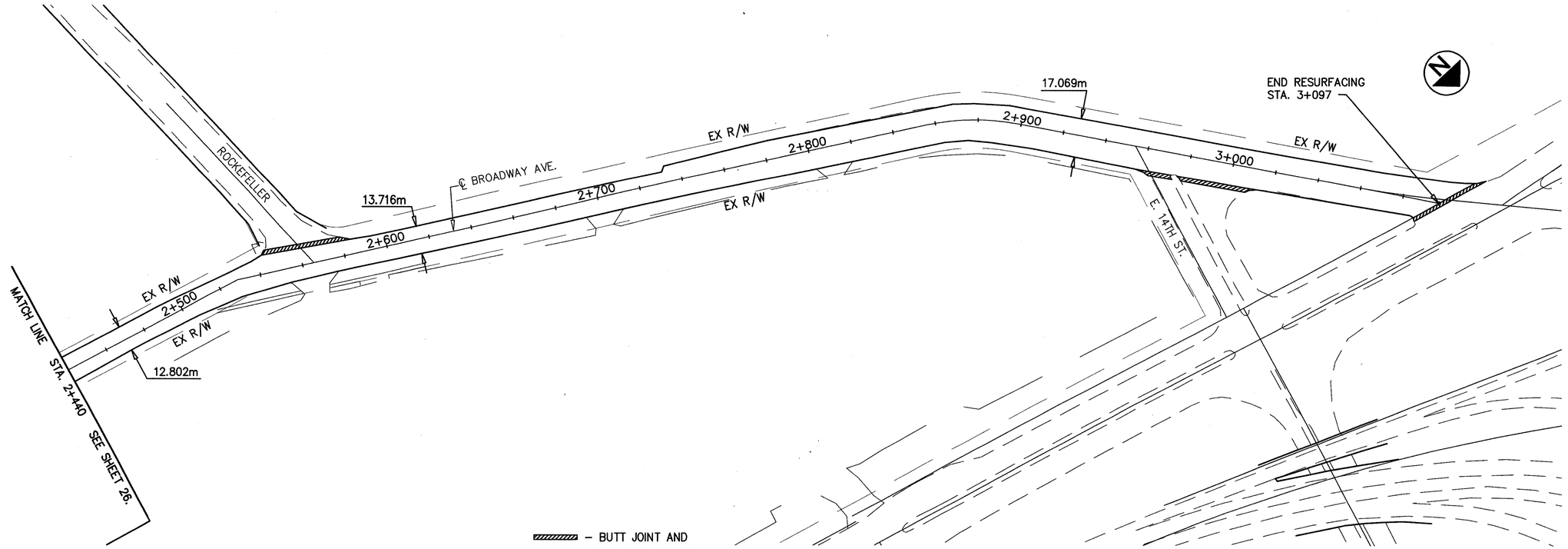
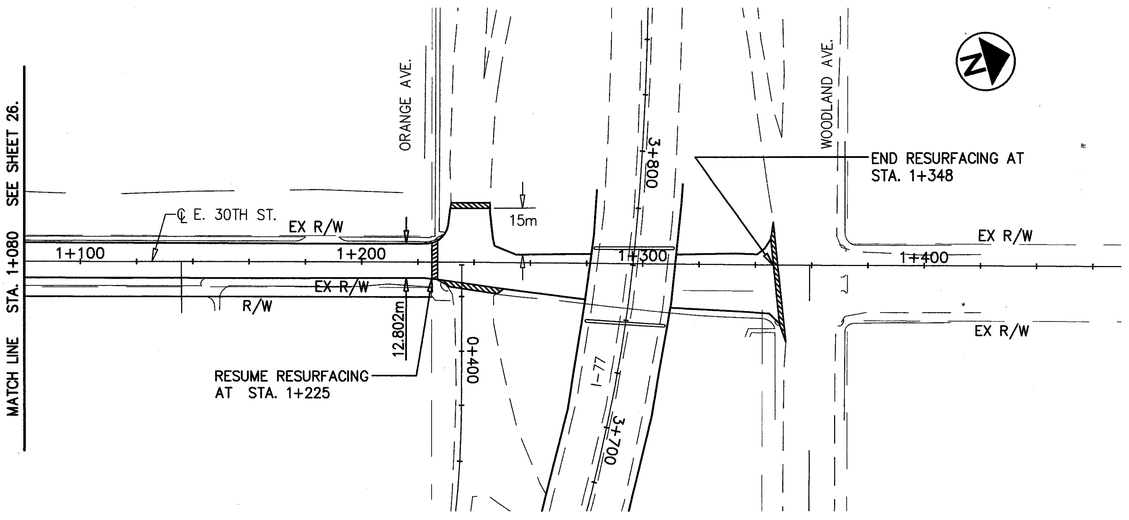




HNTB ARCHITECTS ENGINEERS PLANNERS

NOTE: FOR RESURFACING TYPICAL SECTION, SEE SHEET 2.

HORIZONTAL SCALAE
1 : 1000

CALCULATED JMG
CHECKED JE

DETOUR ROUTE RESURFACING PLAN

CUY-77-23.458 - PART 2

J:\JOBS\24621\TECHPROD\DETOUR\14949GZJ.dwg view = HALF3

GENERAL

THESE PROVISIONS SHALL BE IN EFFECT FROM THE COMMENCEMENT OF THIS PROJECT THROUGH ITS COMPLETION WHICH INCLUDES THE DURATION OF PROJECT CUY-77-23.458 PART 1.

IT IS THE INTENT OF THIS PROJECT TO MAKE THE FOLLOWING IMPROVEMENTS TO THE TRAFFIC SIGNALS AT THE LOCATIONS SHOWN BELOW:

BROADWAY & ROCKEFELLER	REPLACE EXISTING SINGLE DIAL ELECTROMECHANICAL CONTROLLER & CABINET WITH A THREE DIAL ELECTROMECHANICAL CONTROLLER WITH TIME CLOCK & CABINET SALVAGED FROM ONE OF THE OTHER INTERSECTIONS, AS DIRECTED BY THE ENGINEER. THIS SIGNAL WILL NOT BE INTERCONNECTED.
WOODLAND & E 30th	REPLACE EXISTING THREE DIAL ELECTROMECHANICAL CONTROLLER & CABINET WITH A NEW SOLID-STATE DIGITAL MICROPROCESSOR CONTROLLER, INTERCONNECTED AS SHOWN ON THE PLANS.
ORANGE & E 30th	REPLACE EXISTING THREE DIAL ELECTROMECHANICAL CONTROLLER & CABINET WITH A NEW SOLID-STATE DIGITAL MICROPROCESSOR CONTROLLER, INTERCONNECTED AS SHOWN ON THE PLANS.
BROADWAY & E 30th	REPLACE EXISTING THREE DIAL ELECTROMECHANICAL CONTROLLER & CABINET WITH A NEW SOLID-STATE DIGITAL MICROPROCESSOR CONTROLLER, INTERCONNECTED AS SHOWN ON THE PLANS.
BROADWAY & E 34th	SIGNAL TO BE ADDED AS PART OF THIS PLAN AND REMOVED AT THE END OF THE PROJECT. THIS SIGNAL SHALL BE SEMI-ACTUATED AND WILL NOT BE INTERCONNECTED. HOWEVER, INTERNAL TBC SHALL BE ESTABLISHED AND MAINTAINED AS SHOWN IN THE PLANS.
BROADWAY & E 37th/ROCKEFELLER	REPLACE EXISTING SINGLE DIAL ELECTROMECHANICAL CONTROLLER & CABINET WITH A NEW SOLID-STATE DIGITAL MICROPROCESSOR CONTROLLER, INTERCONNECTED AS SHOWN ON THE PLANS. MODIFY PHASING TO PROVIDE A LEADING N.B. LEFT, ADD LOOPS ON ROCKEFELLER & E 37th ST. FOR SEMI-ACTUATED OPERATION. REPLACE SIGNAL HEADS AS SHOWN. ADD PEDESTRIAN PUSHBUTTONS.
BROADWAY & I-490 OFF RAMP	REPLACE EXISTING THREE DIAL ELECTROMECHANICAL CONTROLLER & CABINET WITH A NEW SOLID-STATE DIGITAL MICROPROCESSOR CONTROLLER, INTERCONNECTED AS SHOWN ON THE PLANS. ADD LOOPS ON RAMP FOR SEMI-ACTUATED OPERATION.
BROADWAY & DILLE	REPLACE EXISTING SINGLE DIAL ELECTROMECHANICAL CONTROLLER & CABINET WITH A NEW SOLID-STATE DIGITAL MICROPROCESSOR CONTROLLER, INTERCONNECTED AS SHOWN ON THE PLANS. MODIFY PHASING TO REMOVE LEFT TURN ARROW, ADD MICROWAVE VEHICLE DETECTOR ON DILLE FOR SEMI-ACTUATED OPERATION, REMOVE SIGNAL SECTION AS SHOWN, ADD PEDESTRIAN PUSHBUTTONS AND SIGNS AS SHOWN.
BROADWAY & I-77 OFF RAMP	REPLACE EXISTING SINGLE DIAL ELECTROMECHANICAL CONTROLLER & CABINET WITH A NEW SOLID-STATE DIGITAL MICROPROCESSOR CONTROLLER, INTER-CONNECTED AS SHOWN ON THE PLANS. ADD LOOPS FOR SEMI-ACTUATED OPERATION.
BROADWAY & FINN	REPLACE EXISTING SINGLE DIAL ELECTROMECHANICAL CONTROLLER & CABINET WITH A NEW SOLID-STATE DIGITAL MICROPROCESSOR CONTROLLER, INTER-CONNECTED AS SHOWN ON THE PLANS.

THE CONTRACTOR SHALL FURNISH AND INSTALL TRAFFIC SIGNAL EQUIPMENT IN CONFORMANCE TO THESE PLANS AND SPECIFICATIONS AND THE 1997 STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS. HE SHALL INSTALL ALL TRAFFIC SIGNAL EQUIPMENT IN CONFORMANCE TO THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, AND IN CONFORMANCE TO THE OHIO DEPARTMENT OF TRANSPORTATION BUREAU OF DESIGN SERVICES STANDARD CONSTRUCTION DRAWINGS.

BEFORE ANY EQUIPMENT IS ORDERED OR INSTALLATION IS BEGUN, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THREE (3) COMPLETE SETS OF CATALOG CUTS, DIAGRAMS, BROCHURES, OR OTHER DESCRIPTIVE DATA FOR THE ITEMS HE INTENDS TO FURNISH. ONE COPY SHALL BE RETURNED MARKED "APPROVED" IF FOUND SATISFACTORY. WORK MAY BEGIN WHEN THE APPROVED COPY IS RECEIVED BY THE CONTRACTOR.

THE CONTRACTOR SHALL SUBMIT A WRITTEN SCHEDULE OF WORK FOR THE PROJECT TO THE ENGINEER. THIS SCHEDULE SHALL BE SUBMITTED NOT LESS THAN TWO (2) WEEKS BEFORE THE WORK IS TO START.

THE SIGNAL CONTROLLERS, CONFLICT MONITORS, TERMINAL FACILITIES, FLASHERS, AND LOAD SWITCHES SHALL PREFERABLY BE OF THE SAME MANUFACTURER. ALL LOAD SWITCHES AND INTERFACE RELAYS SHALL BE FURNISHED WITH INPUT SIDE LED'S.

WITH EXCEPTION TO CONTROLLER ITEMS, REFERENCE TO A PARTICULAR TRADE NAME, MANUFACTURER, OR MODEL NUMBER ARE TO INDICATE EQUIPMENT REQUIREMENTS. ANY SUBSTITUTIONS SHALL BE APPROVED BY THE ENGINEER.

ITEM 614 - MAINTENANCE OF TRAFFIC SIGNAL INSTALLATIONS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC SIGNAL INSTALLATIONS WITHIN THE PROJECT UNDER THE FOLLOWING CONDITIONS:

A) EXISTING SIGNAL/FLASHER INSTALLATIONS WHICH THE PLANS REQUIRE THE CONTRACTOR TO ACTUALLY ADJUST, MODIFY OR OTHERWISE DISTURB: THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ENTIRE INSTALLATION (AT AN INTERSECTION) FROM THE TIME HIS OPERATION FIRST DISTURBS THE INSTALLATION UNTIL THE INSTALLATION HAS BEEN SUBSEQUENTLY REMOVED OR MODIFIED AND THE WORK IS ACCEPTED.

B) NEW OR REUSED SIGNAL INSTALLATIONS OR DEVICES, INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THESE FROM THE TIME OF INSTALLATION UNTIL THE WORK IS ACCEPTED, INCLUDING THE TEN (10) DAY PERFORMANCE TEST.

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE ENGINEER SUCH ADDRESSES AND TELEPHONE NUMBERS WHERE HIS MAINTENANCE FORCES CAN BE CONTACTED. THE CONTRACTOR SHALL PROVIDE ONE OR MORE PERSONS TO RECEIVE ALL CALLS AND DISPATCH THE NECESSARY MAINTENANCE FORCES TO CORRECT OUTAGES OR MALFUNCTIONS. SUCH A PERSON OR PERSONS MAY BE USED TO PERFORM OTHER DUTIES AS LONG AS PROMPT ATTENTION IS GIVEN TO THESE CALLS AND A PERSON IS READILY AVAILABLE 24 HOURS A DAY, 7 DAYS A WEEK. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAILURES, EQUIPMENT MALFUNCTIONS, AND MISALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN FOUR HOURS AFTER THE CONTRACTOR HAS BEEN NOTIFIED OF THE OUTAGE OR MALFUNCTION.

IN THE EVENT NEW SIGNALS ARE DAMAGED PRIOR TO ACCEPTANCE, ALL DAMAGED EQUIPMENT EXCEPT POLES AND CONTROL EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN 8 HOURS OF THE CONTRACTOR'S NOTIFICATION OF THE OUTAGE OR MALFUNCTION.

IF POLES AND/OR CONTROL EQUIPMENT ARE DAMAGED AND MUST BE REPLACED, THE CONTRACTOR SHALL MAKE TEMPORARY REPAIRS AS NECESSARY TO BRING THE SIGNAL BACK INTO FULL OPERATION WITHIN THE ALLOWED 8 HOUR PERIOD, AND SHALL MAKE PERMANENT REPAIRS AS SOON THEREAFTER AS POSSIBLE.

NONE OF THE ABOVE SHALL BE CONSTRUED AS COLLECTIVE OR CONSECUTIVE OUTAGE TIME PERIODS AT ANY ONE LOCATION. THAT IS, WHERE MORE THAN ONE OUTAGE OR MALFUNCTION OCCURS AT ANY ONE LOCATION, THEN THE ALLOTTED TIME LIMIT SHALL BE FOR THE WORST SINGLE OUTAGE OR MALFUNCTION.

WHERE OUTAGES ARE THE DIRECT RESULT OF A VEHICLE ACCIDENT, THE RESPONSE OF THE CONTRACTOR SHALL BE AS OUTLINED ABOVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTING ANY COMPENSATION FOR THIS WORK FROM THOSE PARTIES RESPONSIBLE FOR THE DAMAGE.

WHERE THE CONTRACTOR HAS FAILED TO OR CANNOT RESPOND TO AN OUTAGE OR MALFUNCTION AT THOSE LOCATIONS WITHIN HIS RESPONSIBILITY, WITHIN PERIODS AS SPECIFIED ABOVE, THE ENGINEER MAY INVOKE THE PROVISIONS OF SECTION 105.15 AND BILL THE CONTRACTOR FOR ANY POLICE SERVICE AND MAINTENANCE SERVICE PROVIDED BY THE CITY OF CLEVELAND.

THE CONTRACTOR SHALL PROVIDE THE MAINTENANCE SERVICE ENTIRELY WITH HIS OWN FORCES DURING THE LIFE OF THIS CONTRACT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY TRAFFIC SIGNAL COMPONENTS REQUIRED TO BE HANDLED DURING THE RELOCATION OF POLES AND REVISIONS TO THE SIGNAL SYSTEM.

WHEN A TRAFFIC SIGNAL MUST BE TAKEN OUT OF SERVICE BY THE CONTRACTOR DUE TO CONSTRUCTION PROCEDURES, THIS OUTAGE SHALL NOT EXCEED 4 HOURS AND SHALL NOT INCLUDE THE HOURS OF 6:00 AM TO 9:00 AM AND 3:00 PM TO 6:00 PM. ANY SIGNALIZED INTERSECTION WHERE THE SIGNAL IS OUT OF SERVICE DUE TO CONSTRUCTION PROCEDURES, OR DUE TO AN OUTAGE OR MALFUNCTION OF EQUIPMENT AS DESCRIBED ABOVE, SHALL BE PROTECTED BY TWO OFF-DUTY CITY OF CLEVELAND UNIFORMED POLICE OFFICERS, HIRED BY THE CONTRACTOR.

ANY VEHICULAR TRAFFIC SIGNAL HEAD, EITHER NEW OR EXISTING, WHICH WILL BE OUT OF OPERATION SHALL BE COVERED IN THE MANNER DESCRIBED IN 632.24.

ALL COSTS RESULTING FROM THE ABOVE REQUIREMENTS INCLUDING THE COST OF LAW ENFORCEMENT OFFICERS HIRED BY THE CONTRACTOR FOR THIS ITEM OF WORK, SHALL BE CONSIDERED TO BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614, MAINTAINING TRAFFIC.

ITEM 614 - MAINTAINING TRAFFIC

ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR CONSTRUCTION AND MAINTENANCE OPERATIONS (CURRENT EDITION), COPIES OF WHICH ARE AVAILABLE FROM THE OHIO DEPARTMENT OF TRANSPORTATION, OFFICE OF TRAFFIC ENGINEERING, 1980 WEST BROAD STREET, COLUMBUS, OHIO 43223 (614-466-3601)

THE INTERSECTIONS MAY BE CLOSED FOR A MAXIMUM OF TEN (10) MINUTES FOR THE PURPOSE OF ERECTING THE SIGNAL SPAN. SUCH CLOSURES SHALL BE APPROVED IN ADVANCE BY THE ENGINEER. WHEN THE INTERSECTION IS CLOSED, TRAFFIC SHALL BE CONTROLLED BY TWO (2) UNIFORMED CITY OF CLEVELAND POLICE OFFICERS.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE ARRANGEMENTS WITH THE CITY FOR THE OFFICERS. THE COST OF HIRING THE POLICE OFFICERS IS THE RESPONSIBILITY OF THE CONTRACTOR.

ALL COSTS RESULTING FROM THE ABOVE REQUIREMENTS SHALL BE CONSIDERED TO BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614, MAINTAINING TRAFFIC.

WIRING DIAGRAMS

THE CONTRACTOR SHALL PROVIDE TWO (2) EACH WIRING DIAGRAMS AND TWO (2) EACH SERVICE/OPERATION MANUALS FOR EACH DIFFERENT PIECE OF EQUIPMENT. A HEAVY CLEAR PLASTIC ENVELOPE ATTACHED TO THE INSIDE OF THE CABINET DOOR SHALL BE PROVIDED FOR STORING WIRING DIAGRAMS (MINIMUM 23 x 30 CM (9 x 12 IN)). AS BUILT DRAWING SHALL BE FURNISHED.

SIGNAL STARTUP AT BROADWAY & E 34th

THE NEW TRAFFIC SIGNAL AT BROADWAY & E 34th SHALL BE PLACED ON FLASH FOR ONE WEEK PRIOR TO STARTUP AND TESTING. START UP DAY SHALL BE A MONDAY, ALL PAVEMENT MARKINGS MUST BE INSTALLED DURING THE "FLASH" PERIOD.

CALCULATED IMH | CHECKED MJW

TRAFFIC CONTROL NOTES

CUY-77-23.458 - PART 2

HNTB ARCHITECTS ENGINEERS PLANNERS

REMOVAL OF EXISTING ITEMS

REMOVALS COVERED UNDER ITEM 632 AND 633, WHICH ARE NOT SPECIFIED TO BE STORED OR REERECTED, SHALL BECOME PROPERTY OF THE CITY OF CLEVELAND THE CONTRACTOR SHALL NOTIFY THE CITY (MR. DON KELCH, CHIEF OF TRAFFIC SIGNAL UNIT, 430-8273) WHEN ITEMS ARE AVAILABLE FOR PICKUP.

ITEM 625 - PULL BOX, MISC.

THIS ITEM SHALL CONSIST OF A 430mm (W) x 760mm (L) x 610mm (D) BOX, TAPERED OUTWARD FROM TOP TO AN OPEN BOTTOM. ALL BOLTS AND THREADED INSERTS SHALL BE STAINLESS STEEL. LOAD CAPACITY SHALL BE 6,820 kg ON A 250mm x 250mm AREA TESTED IN ACCORDANCE WITH WESTERN UNDERGROUND COMMITTEE GUIDE 3.6. COVER DEFLECTION SHALL BE LESS THAN 13mm AT THE DESIGN LOAD AND SHOW NO SIGNS OF DAMAGE AFTER TEN (!0) CYCLES AT DESIGN LOAD.

THE BODY SHALL BE MADE OF FIBERGLASS REINFORCED POLYMER (FRP) WITH ISOPTHALIT POLYESTER USING THE SPRAY-UP AND ROLL CONSTRUCTION METHOD OR MADE OF HIGH DENSITY POLYETHYLENE (HDPE). THE MATERIAL SHALL HAVE STABILIZERS TO RESIST UV DEGRADATION IN ACCORDANCE WITH ASTM D-790 AND ASTM D-1501-71, SECTION 6, PROCEDURE B. THE TOP RING OF THE BOX SHALL BE MADE OF POLYMER CONCRETE USING A POLYESTER BINDER WITH AGGREGATE FILLERS AND CHOPPED FIBERGLASS WITH A MINIMUM TENSILE STRENGTH OF 13,100,000 PASCALS (1900 PSI) THE RING SHALL HAVE THE SAME UV RESISTANCE AS THE FRP MATERIAL.

THE COVER SHALL BE MADE WITH A THICK MOLDING COMPOUND (TMC) USING THE COMPRESSION MOLDING METHOD. THE TMC SHALL CONSIST OF A MINIMUM OF 10% FIBERGLASS IN A CALCIUM CARBONATE AND POLYESTER RESIN MATRIX. THE COVER SHALL BE MARKED "TRAFFIC" EMBOSSED INTO THE TMC, HAVE A NON-SKID SURFACE AND HAVE THE SAME UV RESISTANCE AS THE FRP MATERIAL. TWO (2) RECESSED HEX HEAD STAINLESS STEEL BOLTS AND WASHERS SHALL BE USED TO SECURE THE COVER TO THE BOX.

OPENINGS IN THE SIDE OF THE PULL BOX WHICH ARE REQUIRED IN ORDER TO INSERT CONDUIT(S) SHALL BE DRILLED OR SAWED IN THE FIELD ONCE THEIR LOCATIONS HAVE BEEN DETERMINED. THE OPENINGS SHALL NOT EXCEED THE CONDUIT OUTSIDE DIAMETER BY MORE THAN 5%. ALL OPENINGS SHALL BE THOROUGHLY GROUTED WITH CEMENT MORTAR AFTER PLACEMENT OF THE CONDUIT(S). THE CONTRACTOR SHALL NOT SAW THROUGH THICKENED EDGES OF THE BOTTOM OF THE PULL BOX.

PAYMENT FOR "ITEM 625 - PULL BOX, MISC." SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR EACH. PAYMENT SHALL BE FULL COMPEN-SATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCI-DENTALS NECESSARY TO INSTALL ONE PULL BOX.

ITEM 632 - VEHICULAR SIGNAL HEAD, (BY TYPE), AS PER PLAN

SECTION 732.01 OF THE SPECIFICATIONS IS MODIFIED FOR THE PROJECT AS FOLLOWS:

A) SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF INJECTION MOLDED, UV STABILIZED, POLYCARBONATE PLASTIC AND MEET I.T.E. SPECIFICATIONS.

B) GLASS LENSES SHALL BE USED.

C) PIPE, SPACERS AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.

D) PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.

ITEM 632 - PEDESTRIAN SIGNAL HEAD, TYPE D2, AS PER PLAN

SECTION 732.05 OF THE SPECIFICATIONS IS MODIFIED FOR THE PROJECT AS FOLLOWS:

A) PEDESTRIAN SIGNAL HOUSINGS MAY BE CONSTRUCTED OF POLYCARBONATE PLASTIC. IF POLYCARBONATE IS SUPPLIED, THEN IT SHALL BE INJECTION MOLDED, UV STABILIZED, POLYCARBONATE PLASTIC AND MEET I.T.E. SPECIFICATIONS.

B) VISORS SHALL BE CONSTRUCTED OF POLYCARBONATE PLASTIC AND MEET I.T.E. SPECIFICATIONS.

C) PLASTIC LENSES SHALL BE USED.

D) PIPE, SPACERS AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.

E) SIGNALS SHALL DISPLAY THE INTERNATIONAL SYMBOLS OF THE UPRAISED PALM AND WALKING PERSON IN LIEU OF WORD MESSAGES.

ITEM 632 - LOOP DETECTOR UNITS, BY TYPE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 632 AND 732.01 OR 732.08, LOOP DETECTOR UNITS SHALL HAVE THE FOLLOWING REQUIREMENTS OR FEATURES:

THE OUTPUT DEVICE SHALL BE A RELAY, AND ALL CONTACTS SHALL BE INCLUDED IN THE WIRING HARNESS.

THE UNIT SHALL BE SELF TUNING.

THE UNIT'S ELECTRICAL CONNECTION PLUGS OR WIRING HARNESS SHALL ALLOW READY REPLACEMENT WITH A SINGLE CHANNEL AMPLIFIER AS DESCRIBED IN THE FINAL PARAGRAPH OF 732.07.

THE LOOP DETECTOR UNITS FOR NON-SYSTEM LOOPS SHALL HAVE TWO (2) OUTPUTS. ONE OUTPUT TO BE PRESENCE AND THE OTHER TO BE PULSE TO ENABLE ACCURATE COUNTING OF VEHICLES ENTERING THE LOOP EVEN WHEN PRECEDING VEHICLES REMAIN PRESENT OVER THE LOOP. THE COUNT OUTPUT SHALL BE WIRED TO THE SYSTEM INPUT OF THE TRANSCEIVER MODULE. THE PRESENCE OUTPUT SHALL BE WIRED TO THE CONTROLLER'S DETECTOR INPUT AND THE TRANSCEIVER MODULE'S GRAPHICS DETECTOR UNIT.

EACH AMPLIFIER SHALL BE NUMBERED TO CORRESPOND WITH IT'S LOOP NUMBER. THE LOOP NUMBERS ARE SHOWN ON EACH PLAN SHEET.

ITEM 632 - SIGNALIZATION, MISC. REWIRE INTERSECTION

THE CONTRACTOR SHALL REPLACE ALL EXISTING SIGNAL CABLE (AERIAL AND UNDERGROUND) WITH NEW SIGNAL CABLE, AT ALL LOCATIONS WHERE A MICROPROCESSOR CONTROLLER IS INSTALLED AS PER 632.22. THIS ITEM SHALL BE PAID FOR AS A LUMP SUM ITEM. THE CONTRACTOR SHALL REFER TO THE WIRING DIAGRAM AT EACH INTERSECTION FOR LAYOUT AND NUMBER OF CONDUCTORS REQUIRED. ALL SIGNAL CABLE SHALL BE A NO. 14 AWG UNLESS OTHERWISE NOTED. ALL LASHING RODS SHALL BE REPLACED, AS PER 632.21 OF THE C.M.S. AND SHALL BE INCLUDED IN THE LUMP SUM BID FOR THIS ITEM OF WORK, INCLUDING MATERIALS, LABOR AND EQUIPMENT.

ITEM 632 - REUSE OF ELECTROMECHANICAL CONTROLLER, AS PER PLAN

THE CONTRACTOR SHALL RE-USE ONE OF THE EXISTING THREE-DIAL ELECTROMECHANICAL CONTROLLERS BEING REPLACED BY DIGITAL MICROPROCESSOR UNITS. THIS UNIT SHALL BE INSTALLED AT BROADWAY AND ROCKEFELLER AND SHALL INCLUDE A TIME CLOCK TO TO CHANGE DIALS IN ACCORDANCE WITH THE TIMING PLAN ON SHEETS 33-41.

THE CONDITION OF THE REMOVED UNITS SHALL BE EVALUATED BY THE ENGINEER AND ONLY FULLY A FUNCTIONAL ELECTROMECHANICAL CONTROLLER WILL BE APPROVED FOR RE-USE AT THE LOCATION DESCRIBED ABOVE.

ITEM 632 - DETECTOR LOOP, AS PER PLAN

ANY SIDEWALK DISRUPTED BY PULLBOX AND CONDUIT INSTALLATION SHALL BE RESTORED BY MEANS OF FULL SLAB REMOVAL, INCLUDING SAW CUTTING OF EXISTING SIDEWALK, AND REPLACEMENT WITH 100mm THICK CONCRETE SIDEWALK AS PER SECTION 608 OF THE C.M.S.. ALL COSTS ASSOCIATED WITH THE WALK REMOVED AND PROPOSED WALK SHALL BE INCLUDED WITH ITEM 632 - DETECTOR LOOP, AS PER PLAN.

ITEM 632 - SIGNALIZATION, MISC.: MICROWAVE VEHICLE DETECTOR

THE CONTRACTOR SHALL FURNISH AND INSTALL A MICROWAVE VEHICLE DETECTOR THAT CAN DISTINGUISH THE DIRECTION OF TRAVEL OF A VEHICLE. THE DETECTOR SHALL BE PROGRAMMED TO ONLY DETECT VEHICLES AS THEY APPROACH THE INTERSECTION. VEHICLES MOVING AWAY FROM THE INTERSECTION WILL NOT CAUSE AN ACTUATION. THE DETECTOR SHALL BE SELF-TUNING, MODEL TC-20 AS MANUFACTURED BY MICROWAVE SENSORS, 7885 JACKSON RD., ANN ARBOR, MI. 48103 (800-521-0418), OR APPROVED EQUAL.

THE CONTRACT UNIT PRICE BID FOR THIS ITEM SHALL INCLUDE THE COST OF FURNISHING AND INSTALLING THE DETECTOR IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS, UNDER THE SUPERVISION OF THE ENGINEER, INCLUDING ALL MOUNTING AND WIRING FROM THE DETECTOR TO THE DETECTOR UNIT.

ITEM 632 - PHONE DROP

THIS ITEM OF WORK SHALL CONSIST OF SUPPLYING A TELEPHONE DROP TO THE TRAFFIC SIGNAL CONTROLLER AT THE INTERSECTION(S) SHOWN IN THE PLANS, INCLUDING ANY REQUIRED CONDUIT, CONDUIT RISER, TRENCH, SHIELDED 2/C CABLE, LIGHTNING ARRESTOR AND TERMINAL CONNECTIONS IN THE CABINET NECESSARY TO CONNECT TELEPHONE SERVICE TO A MODEM. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ARRANGEMENTS WITH THE LOCAL TELEPHONE COMPANY TO HAVE TELEPHONE SERVICE DROP INSTALLED AT THE LOCATION(S) SHOWN IN THE PLANS. THE CONTRACTOR SHALL ASSUME ALL BILLING RESPONSIBILITIES FOR THE PHONE DROP UNTIL COMPLETION OF THE 10 DAY PERFORMANCE TEST.

PAYMENT FOR "ITEM 632 - PHONE DROP" WILL BE AT THE CONTRACT UNIT PRICE BID FOR EACH, COMPLETE AND IN PLACE.

CALCULATED IMH | CHECKED MJW

TRAFFIC CONTROL NOTES

CUY-77-23.458 - PART 2

ITEM 632 – INTERCONNECT CABLE INTEGRAL MESSENGER WIRE TYPE, 6 PAIR NO. 19 AWG. SOLID, REA (PE–38), AS PER PLAN.

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING INTERCONNECT CABLE, ON EXISTING POLES OWNED BY THE CLEVELAND ELECTRIC ILLUMINATING COMPANY OR CLEVELAND PUBLIC POWER AS FOLLOWS:

1.) INTEGRAL MESSENGER TYPE INTERCONNECT CABLE MEETING THE REQUIREMENTS OF 732.19 AND REA (PE–38). UNDER THIS METHOD ANY SELECTION OF CABLE SHOWN IN THE PLANS TO BE CONTAINED IN CONTROLLERS, POLES, CONDUITS OR SUPPORTED ON MESSENGER WIRE INSTALLED FOR OTHER PURPOSES SHALL HAVE THE SUPPORTING MESSENGER AND JACKET WEB NEATLY REMOVED BY THE USE OF A TOOL SPECIFICALLY DESIGNED AND SIZED FOR THE PURPOSE.
DEVIATIONS FROM THE CABLE ROUTING SHOWN IN THE PLAN, FOR THE SOLE PURPOSE OF REDUCING THE MESSENGER TO BE REMOVED, WILL NOT BE PERMITTED. THE CABLE SHALL BE INSTALLED WITH APPROXIMATELY ONE TWIST FOR EACH 4.5 M OF SPAN LENGTH.

2.) THE NUMBER OF SPLICE LOCATIONS SHALL BE KEPT TO A MINIMUM.

3.) PRUNING OF TREES IN ACCORDANCE WITH STANDARD DRAWING LA–1.1M TO PREVENT CONTACT WITH THE INTERCONNECT CABLE SHALL BE INCIDENTAL TO THE COST OF THE BID ITEM.

4.) THE CONTRACTOR SHALL REMOVE THE EXISTING HARD WIRE INTERCONNECT LOCATED ON THE EXISTING UTILITY POLES. COST OF THE REMOVAL SHALL BE INCIDENTAL TO THE COST OF THE INTERCONNECT CABLE.

ITEM 632 – REMOVAL OF TRAFFIC SIGNAL INSTALLATION

THE TRAFFIC SIGNAL INSTALLATION AT BROADWAY & E 34th ST. INCLUDING SIGNAL HEADS, CABLE MESSENGER WIRE, WOOD POLE, CABINET, CONTROLLER, MICROWAVE DETECTOR, ETC. SHALL BE REMOVED IN ACCORDANCE WITH 632.25 AND AS INDICATED ON THE PLANS. REMOVED ITEMS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE REMOVED FROM THE PROJECT IN ACCORDANCE WITH ITEM #632. THE SIGNAL SHALL NOT BE REMOVED UNTIL ALL WORK IS COMPLETED ON IR–77 AND ALL LANES RESTORED AND OPEN TO TRAFFIC. THE SIGNAL SHALL BE PLACED ON FLASH FOR SEVEN DAYS, ALL TEMPORARY MARKINGS REMOVED, AND STOP SIGNS RE–INSTALLED PRIOR TO REMOVING THIS SIGNAL.

ITEM 632 – SIGNALIZATION, MISC.: SYSTEMS TIMING AND ANALYSES

A. GENERAL DESCRIPTION

THE PURPOSE OF THIS ITEM OF WORK IS TO FURNISH ALL MATERIALS, LABOR, TOOLS AND EQUIPMENT NECESSARY TO PERFORM TIMING AND OPERATION ANALYSES (AS DESCRIBED IN THIS NOTE) ON EITHER AN ISOLATED SIGNALIZED INTERSECTION OR A TRAFFIC RESPONSIVE, CLOSED LOOP COORDINATED TRAFFIC SIGNAL SYSTEM(S), AND IMPLEMENT THE REQUIRED CHANGES TO THE SIGNAL OPERATION IN ORDER TO OPTIMIZE TRAFFIC FLOW ALONG THE OFFICIAL DETOUR ROUTE. **THIS WORK SHALL BE PERFORMED AS DIRECTED BY THE ENGINEER FOR THE ENTIRE DURATION OF THIS PROJECT.**

THE FOLLOWING SIGNALIZED INTERSECTIONS ARE INCLUDED IN THIS ITEM OF WORK AND ARE IDENTIFIED AS EITHER PART OF A SIGNAL SYSTEM OR AS AN ISOLATED INTERSECTION:

I. SYSTEM 1:

II. BROADWAY & ROCKEFELLER/E. 37TH STREET
III. BROADWAY & IR–490 EASTBOUND EXIT RAMP
IV. BROADWAY & DILLE STREET
V. BROADWAY & IR–77 NORTHBOUND EXIT RAMP
VI. BROADWAY & FINN AVENUE

I. SYSTEM 2:

II. E. 30TH STREET & BROADWAY
III. E. 30TH STREET & ORANGE AVENUE
IV. E. 30TH STREET & WOODLAND AVENUE

I. ISOLATED INTERSECTION:

II. BROADWAY & ROCKEFELLER
III. BROADWAY & E. 34TH STREET

THIS WORK SHALL CONSIST OF PREPARING SIGNAL TIMING AND TRAFFIC PROGRESSION PROGRAMS, LOADING THE PROGRAMS INTO THE LOCAL SIGNAL CONTROLLER OR SIGNAL SYSTEMS (UPLOAD AND DOWNLOAD FROM A MASTER CONTROLLER OR CENTRAL OFFICE MONITOR), EVALUATING THE PERFORMANCE OF THE SYSTEM AND REFINING THE PROGRAMS AS NECESSARY TO OPTIMIZE TRAFFIC FLOW AND OPERATION DURING ALL PHASES OF CONSTRUCTION. THE WORK SHALL INCLUDE TRAFFIC DATA COLLECTION AND EVALUATION, TRAFFIC SIGNAL PROGRESSION AND TIMING ANALYSES, DEVELOPMENT OF TRAFFIC ADJUSTED PATTERN SELECTION PARAMETERS, PERFORMING THE SYSTEM EVALUATION AND REFINEMENT OF THE SYSTEM OPERATION.

IF REQUIRED, SIGNAL "SYSTEMS" SHALL BE ANALYZED TOGETHER AND TRAFFIC PROGRESSION PROGRAMS SHALL BE COORDINATED TO OPTIMIZE THE OVERALL TRAFFIC FLOW BETWEEN THE TWO (2) SYSTEMS.

IT IS THE INTENT OF THIS ITEM OF WORK TO OPTIMIZE ONLY CYCLE LENGTHS, PHASE SPLITS, PERMISSIVES AND OFFSETS AND NOT TO CHANGE THE ACTUAL PHASING THAT IS PROVIDED IN THE PLAN.

AS PART OF THIS ITEM OF WORK, TRAFFIC COUNTS AND TURNING MOVEMENT COUNTS SHALL BE REQUIRED AT EACH INTERSECTION (NOTED ABOVE) FOR THE FOUR (4) TIME PERIODS AND THREE (3) FIELD CONDITIONS LISTED UNDER PART D – "SYSTEM TRAVEL STUDIES".

B. SYSTEMS ENGINEER OR TECHNICIAN:

THE WORK SHALL BE PERFORMED BY A PERSON EXPERIENCED IN TRAFFIC ENGINEERING OR TRAFFIC ENGINEERING TECHNOLOGY. THE SYSTEMS ENGINEER OR TECHNICIAN SHALL HAVE A MINIMUM OF FIVE (5) YEARS EXPERIENCE IN TRAFFIC ENGINEERING OR TRAFFIC ENGINEERING TECHNOLOGY AND SHALL BE KNOWLEDGEABLE WITH THE DESIGN AND OPERATION OF "CLOSED LOOP" TRAFFIC CONTROL AND SURVEILLANCE SYSTEMS. THE SYSTEMS ENGINEER OR TECHNICIAN SHALL BE FAMILIAR WITH THE TYPE OF "CLOSED LOOP" SYSTEM INSTALLED AS PART OF THIS PROJECT AND SHALL HAVE PREVIOUSLY SET–UP AND FINE–TUNED A SYSTEM OF THIS TYPE.

THREE (3) COPIES OF A RESUME DOCUMENTING THE FOLLOWING SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL:

THE SYSTEM ENGINEER OR TECHNICIAN'S EDUCATION INCLUDING TRAINING IN TRAFFIC ENGINEERING TECHNOLOGY AND SIGNAL SYSTEM DESIGN.

THE SYSTEM ENGINEER OR TECHNICIAN'S FAMILIARITY WITH THE "CLOSED LOOP" TYPE SYSTEM TO BE USED ON THIS PROJECT AND EXPERIENCE IN SETTING UP AND FINE TUNING A SYSTEM OF THIS TYPE. A LISTING OF OTHER CLOSED LOOP SYSTEMS THAT THE SYSTEM ENGINEER OR TECHNICIAN HAS PROGRAMMED INTO THE TRAFFIC RESPONSIVE MODE SHALL BE PROVIDED TO THE ENGINEER FOR DOCUMENTATION PURPOSES.

A BRIEF DESCRIPTION OF PROPOSED METHODOLOGY OF DATA COLLECTION AND ANALYSIS, OF SYSTEM PARAMETER USAGE IN SYSTEM EVALUATION, OF FREQUENCY AND MEASUREMENT OF TRAVEL TIME AND DELAY, AND COMPARING ACTUAL VERSES SYSTEM MEASUREMENTS OF DELAYS – LEVEL OF SERVICE.

THE SYSTEMS ENGINEER OR TECHNICIAN UNDER AUTHORITY OF THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE OPERATION OF THE TWO SIGNAL SYSTEMS AND ISOLATED SIGNALIZED INTERSECTIONS (AS NOTED IN PART A), FROM THE START OF THE TEN (10) DAY PERFORMANCE TEST UNTIL COMPLETION AND ACCEPTANCE OF THIS PROJECT. THE SYSTEMS ENGINEER OR TECHNICIAN SHALL PROVIDE A TWENTY FOUR (24) HOUR EMERGENCY PHONE NUMBER AND SHALL RESPOND TO SYSTEM OR SIGNAL OPERATION RELATED PROBLEMS AS DEEMED NECESSARY BY THE ENGINEER TWENTY FOUR (24) HOURS A DAY, SEVEN DAYS A WEEK. THE ENGINEER RESERVES THE RIGHT TO REQUEST A SIGNAL OR SYSTEMS ANALYSIS AT ANY TIME THROUGHOUT THE ENTIRE DURATION OF THE PROJECT, SHOULD NEW OR CONTINUING PROBLEMS OCCUR WITH THE OPERATION OF THE TRAFFIC SIGNAL SYSTEM(S).

THE ENGINEER RESERVES THE RIGHT TO REQUEST THAT THE CONTRACTOR PROVIDE A NEW SYSTEMS ENGINEER OR TECHNICIAN SHOULD THE CURRENT SYSTEMS ENGINEER OR TECHNICIAN FAIL TO PERFORM THE REQUIRED DUTIES IN A TIMELY AND PROFESSIONAL MANNER OR FAIL TO HAVE A FIRM UNDERSTANDING OF THE OPERATION AND PROGRAMMING OF THE CLOSED LOOP SYSTEM CONSTRUCTED UNDER THIS PROJECT.

THE SYSTEMS ENGINEER OR TECHNICIAN MAY DELEGATE NONTECHNICAL TASKS (i.e. TRAVEL TIME RUNS, INTERSECTION TRAFFIC COUNTS, ETC....) TO PERSONNEL UNDER HIS/HER DIRECT SUPERVISION, PROVIDED THAT APPROVAL IS RECEIVED BY THE ENGINEER PRIOR TO COMMENCING THIS WORK. THE SYSTEMS ENGINEER OR TECHNICIAN SHALL SUBMIT TO THE ENGINEER IN WRITING A LIST OF THOSE TASKS WHICH ARE TO BE PERFORMED BY OTHER PERSONNEL. THE ENGINEER RESERVES THE RIGHT TO DENY PART OF ALL OF THE REQUEST FOR WORK TO BE PERFORMED BY PERSONNEL OTHER THAN THE SYSTEMS ENGINEER OR TECHNICIAN.

CALCULATED IMH CHECKED MJW

TRAFFIC CONTROL NOTES

CUY–77–23.458 – PART 2

C. TRAFFIC PROGRAMS:

SIGNAL PROGRESSION AND TIMING PROGRAMS SHALL BE DEVELOPED BY THE SYSTEMS ENGINEER OR TECHNICIAN FROM COUNT AND OCCUPANCY DATA OBTAINED FROM THE LOCAL INTERSECTION AND SYSTEM LOOP DETECTORS, SUPPLEMENTED BY FIELD COUNTS AND MEASUREMENTS AS REQUIRED OR AS DIRECTED BY THE ENGINEER. THE SIGNAL PROGRESSION PROGRAMS TO BE DEVELOPED SHALL BE AS FOLLOWS:

THREE (3) INBOUND PREFERENTIAL (A.M. PEAK)

THREE (3) OUTBOUND PREFERENTIAL (P.M. PEAK)

THREE (3) AVERAGE (OFF PEAK)

NOTE: THE THREE AVERAGE PROGRAMS SHOULD UTILIZE VARYING CYCLE LENGTHS BASED ON TRAFFIC VOLUME, DENSITY AND OCCUPANCY TO MINIMIZE OVERALL INTERSECTION APPROACH DELAY TIME.

TWO (2) SPECIAL PROGRAMS FOR EITHER HIGH CONGESTION OR QUEUE BACKUP.

TWO (2) SPECIAL "INCIDENT MANAGEMENT" TYPE PROGRAMS TO ADDRESS ADDITIONAL TRAFFIC DEMANDS PLACED ON THE TWO SYSTEMS IN THE EVENT OF AN ACCIDENT OR LANE BLOCKAGE ON IR-77 WITHIN THE CONSTRUCTION ZONE LOCATED ON THIS PROJECT. ONE PROGRAM SHALL BE DEVELOPED FOR INBOUND (A.M.) PEAK TRAFFIC FLOW, THE OTHER PROGRAM SHALL BE DEVELOPED FOR OUTBOUND (P.M.) PEAK TRAFFIC FLOW. IT IS IMPORTANT TO NOTE THAT THESE PROGRAMS SHOULD BE DESIGNED TO OPTIMIZE TRAFFIC FLOWS OFF OF THE IR-77 N.B./BROADWAY RAMP AND/OR IR-77 S.B./E. 30TH STREET RAMPS, THROUGH THE TWO (2) SYSTEMS AND ALONG THE OFFICIAL DETOUR ROUTE. THE ENGINEER SHALL BE ABLE TO CONTACT THE SYSTEMS ENGINEER OR TECHNICIAN ON SHORT NOTICE AND REQUEST THAT ONE OF THESE PROGRAMS BE IMMEDIATELY IMPLEMENTED IN THE EVENT OF AN "INCIDENT" WITHIN THE CONSTRUCTION ZONE ON IR-77. RESPONSE TIME TO IMPLEMENT THE PROGRAM SHALL NOT EXCEED FIFTEEN (15) MINUTES FROM THE TIME THE CALL IS PLACED BY THE ENGINEER.

A MINIMUM OF THREE (3) TIMING PLANS FOR A BACK UP TIME BASE COORDINATED SYSTEM SHALL BE DEVELOPED AND PROGRAMMED INTO THE SYSTEM, TO REPLACE OR SUPPLEMENT THE TIMING PLANS SHOWN IN THE PLANS.

DEFINE SYSTEM PARAMETERS WHICH WILL ENABLE THE SYSTEM TO AUTOMATICALLY TRANSFER INTO A "FREE OPERATION" MODE DURING LIGHT TRAFFIC VOLUME PERIODS AND TO AUTOMATICALLY TRANSFER TO A COMPUTER SELECTED COORDINATED MODE DURING HEAVY TRAFFIC VOLUME PERIODS.

THE FOLLOWING SYSTEM PARAMETERS SHALL BE ESTABLISHED:

VOLUME, OCCUPANCY AND DIRECTIONALITY THRESHOLDS

TRANSITION SMOOTHING FACTORS

SYSTEM DETECTOR ASSIGNMENT

SYSTEM DETECTOR WEIGHING

THE SYSTEMS ENGINEER OR TECHNICIAN MAY USE COMPUTER SOFTWARE (I.E. TRANSYT-7F, PASSER II-90, ETC.) TO HELP ASSIST IN HIS/HER ANALYSIS OF THE OPERATION OF THE CLOSED LOOP SYSTEM. THIS SOFTWARE, ALONG WITH A CENTRAL OFFICE MONITOR, LAP TOP COMPUTER, ETC., SHALL BE PROVIDED BY THE CONTRACTOR AS HIS OWN EXPENSE.

D. SYSTEM TRAVEL TIME STUDIES:

THE SYSTEMS ENGINEER OR TECHNICIAN SHALL CONDUCT A SERIES OF TRAVEL TIME STUDIES FOR EACH SYSTEM, TO MEASURE THE TIME IT TAKES TO TRAVEL FROM THE BEGINNING OF EACH SYSTEM TO THE END OF THAT SYSTEM, IN EACH DIRECTION. THE TRAVEL TIME STUDY PARAMETERS SHOULD BE BASED ON THE POSTED SPEED LIMIT; HOWEVER, DURING PEAK PERIODS IT MAY NOT BE POSSIBLE TO OBTAIN THE POSTED SPEED DUE TO LARGER TRAFFIC VOLUMES.

EACH SET OF TRAVEL TIME STUDIES SHALL INCLUDE A MINIMUM OF THREE (3) RUNS THROUGH THE SYSTEM PER DIRECTION. TRAVEL TIME STUDIES SHALL BE CONDUCTED DURING "IDEAL" WEATHER CONDITIONS (I.E. NO SNOW, RAIN OR FOG, ETC.).

TRAVEL TIME STUDIES SHALL BE CONDUCTED FOR THE FOLLOWING FOUR (4) TIME PERIODS:

1. THE FIRST SET OF TRAVEL TIME STUDIES SHALL BE CONDUCTED BETWEEN THE HOURS OF 7:00 A.M. AND 9:00 A.M. ON WEEKDAYS.
2. THE SECOND SET OF TRAVEL TIME STUDIES SHALL BE CONDUCTED BETWEEN THE HOURS OF 11:30 A.M. AND 1:00 P.M. WEEKDAYS.

3. THE THIRD SET OF TRAVEL TIME STUDIES SHALL BE CONDUCTED BETWEEN THE HOURS OF 4:00 P.M. AND 6:00 P.M. WEEKDAYS.

4. THE FOURTH SET OF TRAVEL TIME STUDIES SHALL BE CONDUCTED DURING ANY OF THE FOLLOWING NON-PEAK HOUR PERIODS:

a. 9:00 A.M. TO 11:00 A.M. MONDAY THROUGH SATURDAY

b. 7:00 P.M. TO 10:00 P.M. MONDAY THROUGH SATURDAY

c. 7:00 A.M. TO 10:00 P.M. SUNDAY

A WRITTEN REPORT SHALL BE PROVIDED TO THE ENGINEER DOCUMENTING, AT A MINIMUM: THE NAME OF THE PERSON PERFORMING THE STUDY, THE DATE OF THE TRAVEL TIME STUDY, DAY OF WEEK, TIME OF DAY, TOTAL TIME OF TRAVEL AND TOTAL TIME THE VEHICLE WAS STOPPED FOR EACH TRIP.

IN ADDITION, THE SYSTEMS ENGINEER OR TECHNICIAN SHALL CONDUCT THESE FOUR (4) SEPARATE SETS OF TRAVEL TIME STUDIES FOR EACH OF THE FOLLOWING FIELD CONDITIONS:

I. PRIOR TO THE BEGINNING OF CONSTRUCTION, WITH THE EXISTING SIGNAL SYSTEM IN OPERATION (NO LANE CLOSURES ON BROADWAY OR IR-77 SHALL BE IN EFFECT DURING THIS ANALYSIS).

II. AFTER ANY SUBSTANTIAL CHANGE IN MAINTENANCE OF TRAFFIC PATTERN IS INITIATED AS PART OF THIS PROJECT, INCLUDING LONG TERM INDIVIDUAL RAMP CLOSURES AND SUBSEQUENT OPENINGS ON IR-77.

III. AFTER THE PROJECT IS COMPLETE WHEN ALL NORMAL LANES OF TRAFFIC AND ALL RAMPS ARE REOPENED ON IR-77. THIS STUDY WILL DETERMINE THE FINAL SIGNAL TIMING PATTERN TO BE IMPLEMENTED PRIOR TO O.D.O.T. ACCEPTING THIS PROJECT AND OFFICIALLY TURNING THE SIGNAL SYSTEMS OVER TO THE CITY OF CLEVELAND.

THE REPORTS PROVIDED FROM EACH OF THE THREE FIELD CONDITIONS FOR WHICH SYSTEM TRAVEL TIME STUDIES ARE PREPARED SHALL BE USED AS ONE MEANS OF MEASURING THE EFFICIENCY OF THE SYSTEMS. THESE REPORTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AND DOCUMENTATION.

F. THE COST OF PERFORMING THIS ITEM OF WORK, INCLUDING ALL LABOR, MATERIALS, EQUIPMENT, TOOLS AND OTHER INCIDENTALS NECESSARY TO PERFORM THE WORK AS OUTLINED ABOVE SHALL BE INCLUDED IN THE LUMP SUM UNIT PRICE BID FOR ITEM 632 - SIGNALIZATION, MISC.: SYSTEMS TIMING AND ANALYSES.

ITEM 633 - CONTROLLER, ACTUATED, 4 PHASE SOLID STATE DIGITAL MICROPROCESSOR, AS PER PLAN.

THE CONTROLLERS SUPPLIED SHALL BE TRANSYT MODEL 1880 EL WITH INTERNAL COMMUNICATIONS AND INTERNAL TIME BASED COORDINATION (TBC). THE CONTROLLER SHALL BE COMPLETELY COMPATIBLE WITH THE CITY OF CLEVELAND'S DOWNTOWN CLOSED LOOP SIGNAL SYSTEM AND SHALL PROVIDE FULL SYSTEM CAPABILITIES.
ALL LOAD SWITCHES AND INTERFACE RELAYS SHALL BE FURNISHED WITH INDICATOR LIGHTS.

THE CONFLICT MONITOR SHALL BE THE REPORTING TYPE.

PAYMENT FOR ITEM 633. CONTROLLER, ACTUATED, 4 PHASE SOLID STATE DIGITAL MICROPROCESSOR, AS PER PLAN, SHALL BE AT THE CONTRACT BID PRICE PER EACH, COMPLETE AND IN PLACE, INCLUDING ALL CONNECTORS TESTED AND ACCEPTED.

ITEM 633 - CONTROLLER, MASTER, TRAFFIC RESPONSIVE, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A SOLID-STATE DIGITAL MICROPROCESSOR TYPE TRAFFIC RESPONSIVE MASTER CONTROLLER WITH MENU DRIVEN PROMPTS, INTERNAL TBC, TELEMETRY UNIT, IN THE LOCAL CONTROLLER CABINET, AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE MASTER COMPLETELY FUNCTIONAL AND OPERATIONAL AS SHOWN IN THE PLANS AND AS NOTED ON SHEETS 34 & 37.
THE MASTER CONTROLLER IS TO BE INSTALLED IN THE SAME CABINET AS THE LOCAL CONTROLLER AT THE INTERSECTION(S) IN THE PLANS. THE CABINET SPECIFIED FOR THE LOCAL CONTROLLER SHALL BE REPLACED WITH A LARGER CABINET, AS REQUIRED, TO HOUSE THE MASTER CONTROLLER. THE COST OF THE LARGER CABINET ABOVE AND BEYOND THE COST OF THE STANDARD CABINET SHALL BE INCLUDED IN THE COST OF THE MASTER CONTROLLER.

CALCULATED IMH | CHECKED MJW

TRAFFIC CONTROL NOTES

CUY-77-23.458 - PART 2

THE MASTER CONTROLLER SHALL CONFORM TO O.D.O.T. SPECIFICATION 633 AND SHALL HAVE THE FOLLOWING FEATURES:

1.) IT SHALL GENERATE SYSTEM PATTERN COMMANDS TO LOCAL INTERSECTION CONTROLLERS WITHIN ITS CONTROL AREA IN RESPONSE TO PREVAILING TRAFFIC CONDITIONS AS INDICATED BY THE SAMPLING SENSORS STRATEGICALLY PLACED IN THE CONTROL AREA. THE MASTER SHALL ALSO ALLOW PREPROGRAMMED TIME OF DAY SELECTION OF PATTERNS.

2.) IT SHALL MONITOR THE OPERATION OF THE LOCAL INTERSECTION CONTROLLERS AND SHALL INITIATE FAILURE REPORTS IF MALFUNCTIONS ARE DETECTED. THE MASTER SHALL GENERATE SYSTEM OPERATION STATUS REPORTS FOR PRINTING AT THE CENTRAL OFFICE MONITOR.

3.) IT SHALL BE CAPABLE OF OPERATING IN ANY OF THE FOLLOWING MODES:

A. TRAFFIC RESPONSE WHEREBY PATTERN SELECTION IS BASED ON DYNAMIC TRAFFIC CONDITIONS AS MEASURED BY THE SYSTEM SENSORS LOCATED IN THE CONTROL AREA.

B. TIME OF DAY/DAY OF WEEK WHEREBY PATTERN SELECTION IS BASED ON A PRE–PROGRAMMED BASIS WITH THE AUTOMATIC ADJUSTMENTS FOR SEASONAL CHANGES.

C. MANUAL OVERRIDE WHEREBY PATTERN SELECTION IS BASED ON OPERATOR COMMAND AT THE CENTRAL OFFICE MONITOR OR TRAFFIC RESPONSIVE MASTER CONTROLLER SITE.

4.) IT SHALL BE A PEEK CORP. (TRANSYT) MODEL NO. 3800EL.

MASTER CONTROLLER SHALL HAVE THE FOLLOWING CAPACITIES:

1.) TOTAL LOCAL INTERSECTION CONTROLLERS: 30

2.) SYSTEM DETECTOR UNITS: 48

3.) THERE SHALL BE A MINIMUM OF 30 SELECTABLE PATTERNS INCLUDING AN ADDITIONAL 4 SPECIAL PATTERNS. EACH PATTERN SHALL CONSIST OF A COMBINATION OF CYCLE, OFFSET AND SPLIT NUMBERS FOR EACH INTERSECTION IN THE SYSTEM. THE MASTER SHALL BE CAPABLE OF DIRECTING THE SYSTEM INTO FREE OPERATION. PATTERNS SELECTABLE FROM THE FOLLOWING PARAMETER RANGES:

A. CYCLES: SIX (6)

B. OFFSETS: FIVE (5)

C. SPLITS: SIXTEEN (16)

4.) SYSTEM SENSORS SHALL BE DISTRIBUTED TO A MINIMUM CAPACITY OF EIGHT (8) PER INTERSECTION, BUT NOT TO EXCEED THE TOTAL SENSOR CAPACITY.

THE MASTER CONTROLLER SHALL HAVE THE FOLLOWING FUNCTIONAL REQUIREMENTS:

1.) PATTERN SELECTION DURING NORMAL TRAFFIC RESPONSIVE OPERATION SHALL BE BASED ON THE FOLLOWING QUANTITATIVE TRAFFIC FLOW PARAMETERS:

A. VOLUME LEVEL OF ARTERIAL TRAFFIC FLOW

B. DIRECTIONALITY OF ARTERIAL TRAFFIC FLOW

C. RATIO OF ARTERIAL TRAFFIC FLOW TO NON–ARTERIAL FLOW

2.) PATTERN SELECTION DURING SPECIAL TRAFFIC RESPONSIVE OPERATION SHALL BE BASED ON THE FOLLOWING PARAMETERS:

A. NORMAL RESPONSIVE OPERATION OVERRIDE BY DETECTION OF HIGH OCCUPANCY ON SELECTED SYSTEM SENSORS.

B. NORMAL RESPONSIVE OPERATION OVERRIDE BY DETECTION OF QUEUE LENGTH OR DURATION ON SELECTED SYSTEM SENSORS.

3.) PREFERENTIAL TRANSFER OF PATTERNS SHALL BE ACCOMPLISHED BY PROGRAMMABLE THRESHOLD VALUES. PROGRAMMABLE THRESHOLD VALUES SHALL ALSO BE PROVIDED FOR SPECIAL PATTERNS.

4.) THE FOLLOWING SYSTEM SENSOR DATA SHALL FORM THE BASIS FOR ALL RESPONSIVE PATTERNS INITIATED BY THE MASTER:

A. VOLUME, OCCUPANCY AND QUEUE DATA.

B. EACH SYSTEM SENSOR SHALL BE CAPABLE OF SELECTIVE WEIGHTING.

C. SYSTEM SENSOR DATA SHALL BE AVERAGED ON A MOVING BASIS, UTILIZING A USER PROGRAMMABLE TIME FACTOR.

D. EACH SYSTEM SENSOR SHALL BE MONITORED FOR CONSTANT CALL, ABSENCE OF CALL AND ERRATIC OUTPUT. THERE SHALL BE AN OPTION TO ELIMINATE THE MONITORING OF ABSENCE OF CALLS DURING LIGHT TRAFFIC PERIODS ON A TIME OF DAY BASIS. SENSORS WHICH FAIL ANY MONITORING TEST SHALL BE AUTOMATICALLY DELETED FROM VOLUME AND OCCUPANCY CALCULATIONS. UPON RESUMPTION OF SATISFACTORY OPERATION, SENSORS SHALL RESUME INPUT TO OCCUPANCY AND VOLUME CALCULATIONS. A USER PRESCRIBED MINIMUM NUMBER OF DESIGNATED SENSORS SHALL BE REQUIRED TO MAINTAIN RESPONSIVE OPERATION. THE MINIMUM NUMBER OF OPERATIONAL SENSORS SHALL BE PROGRAMMABLE FOR EACH COMPUTATIONAL CHANNEL. IF FEWER THAN THE PRESCRIBED NUMBER OF SYSTEM SENSORS ARE OPERATIONAL, THEN THE MASTER SHALL REVERT TO TIME OF DAY, DAY OF WEEK MODE.

E. EACH COMPUTATIONAL CHANNEL SHALL BE ASSIGNED FROM UP TO TWELVE (12) DIFFERENT SYSTEM SENSORS FROM THE TOTAL OF 48.

5.) IT SHALL BE POSSIBLE TO SELECT ANY SYSTEM PATTERN FROM THE MASTER ON A PRE–PROGRAMMED TIME OF DAY, DAY OF WEEK BASIS. THERE SHALL BE TIME OF DAY OVERRIDE OF RESPONSIVE OPERATION. TIME OF DAY OPERATION SHALL UTILIZE A 99 YEAR CALENDAR – CLOCK WITH AUTOMATIC DAYLIGHT SAVINGS TIME CHANGE.

6.) MEANS SHALL BE PROVIDED TO ALLOW INTER–MASTER LINKING IN ORDER TO AFFORD COORDINATION BETWEEN CONTIGUOUS SYSTEM CONTROL AREAS. THIS SHALL INCLUDE SYNCHRONIZATION OF MASTER REFERENCE CLOCKS.

7.) PATTERN CHANGES FOR EACH LOCAL CONTROLLER IN THE SYSTEM SHALL BE IMPLEMENTED SMOOTHLY AND IN THE SHORTEST TIME FRAME POSSIBLE WITHOUT VIOLATING MINIMUM INTERVAL VALUES.

8.) THE MASTER CONTROLLER SHALL STORE AND FORMAT MONITORED FUNCTION DATA FOR EITHER IMMEDIATE OUTPUT TO THE CENTRAL OFFICE MONITOR OR SHALL STORE DATA FOR FUTURE OUTPUT FOR A MINIMUM STORAGE PERIOD OF FORTY–EIGHT HOURS. AS A MINIMUM THE FOLLOWING REPORTS SHALL BE INCLUDED.

A. AN ACTIVITY LOG WHICH INCLUDES TIME, INTERSECTION AND ACTIVITY TYPE OF ALL MONITORED LOCAL INTERSECTION FAILURE CONDITIONS.

B. A SYSTEM SENSOR FAILURE LOG WHICH INCLUDES TIME SENSOR LOCATION AND TYPE OF FAILURE.

C. A PATTERN CHANGE LOG WHICH INCLUDES THE OPERATING PATTERN AND TIME OF CHANGE WHILE IN RESPONSIVE MODE.

D. A SYSTEM STATUS REPORT WHICH SHOWS THE CURRENT OPERATING MODE AND PATTERN FOR ALL LOCAL INTERSECTION CONTROLLERS ON LINE.

E. A SYSTEM SENSOR DATA REPORT WHICH INCLUDES VOLUME, OCCUPANCY, AND AVERAGE SPEED FOR ALL SYSTEM SENSORS.

PAYMENT FOR 633 CONTROLLER, MASTER , TRAFFIC RESPONSIVE, AS PER PLAN SHALL BE MADE AT THE CONTRACT PRICE BID. PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TESTING, CERTIFICATIONS AND OTHER INCIDENTALS NECESSARY TO FURNISH THE CONTROLLER, COMPLETE AND IN PLACE, INCLUDING ALL CONNECTIONS MADE AND WIRING COMPLETE, TESTED AND ACCEPTED.

GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEM INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SUCCESSFULLY FOR A PERIOD OF 180 DAYS FOLLOWING COMPLETION OF THE 10–DAY PERFORMANCE TEST. IN THE EVENT OF UNSATISFACTORY OPERATION THE CONTRACTOR SHALL CORRECT FAULTY INSTALLATIONS, MAKE REPAIRS AND REPLACE DEFECTIVE PARTS WITH NEW PARTS OF EQUAL OR BETTER QUALITY. EQUIPMENT, MATERIAL AND LABOR COSTS INCURRED IN CORRECTING AN UNSATISFACTORY OPERATION SHALL BE BORNE BY THE CONTRACTOR.

THE GUARANTEE SHALL COVER THE FOLLOWING ITEMS OF THE TRAFFIC CONTROL SYSTEM: CONTROLLERS AND ASSOCIATED EQUIPMENT, DETECTOR UNITS, INTERCONNECTION ITEMS AND MASTER CONTROL EQUIPMENT.

CUSTOMARY MANUFACTURER'S GUARANTEES FOR THE FOREGOING ITEMS SHALL BE TURNED OVER TO THE STATE OR THE MAINTAINING AGENCY FOLLOWING ACCEPTANCE OF THE EQUIPMENT.

THE COST OF GUARANTEEING THE TRAFFIC CONTROL SYSTEM WILL BE INCIDENTAL TO AND INCLUDED IN THE CONTRACT UNIT PRICE OF THE VARIOUS ITEMS MAKING UP THE SYSTEM.

CALCULATED IMH | CHECKED MJW

TRAFFIC CONTROL NOTES

CUY–77–23.458 – PART 2

TRAFFIC SIGNAL TIMING AND DISPLAY – PRE-TIMED CONTROLLER

EAST 30TH & WOODLAND	START IN: FLASH 8 SEC.		FIRST PHASE: ϕ4 GREEN
MOVEMENT	ϕ2 EAST 30TH	ϕ3 EAST 30TH N.B. LT. + THRU	ϕ4 WOODLAND
INITIAL (MINIMUM)	27	5	23
EXTENSION	2.0	2.0	2.0
WALK	7	–	5
PEDESTRIAN CLEARANCE (FDW)	20	–	18
MAXIMUM I	30	7	26
MAXIMUM II	30	7	26
YELLOW	3.0	3.0	3.6
ALL RED	2.0	2.0	2.0

STREET	DIR-ECTION	SIGNAL	LENS	EMERG-ENCY FLASH	PRE-EMPT	INTERVAL COLORS ϕ2 1	ϕ2 2	ϕ2 3	ϕ3 4	ϕ3 5	ϕ3 6	ϕ4 7	ϕ4 8	ϕ4 9
EAST 30TH	NB	3	R	R							R	R	R	R
			Y							Y				
			G			G	G	G	G					
			G						G					
		4	R	R							R	R	R	R
			Y							Y				
			G			G	G	G	G					
	SB	5	R	R					R	R	R	R	R	R
			Y				Y							
			G			G								
		6	R	R					R	R	R	R	R	R
			Y				Y							
			G			G								
EAST CROSSWALK	SB	A	DW	DARK			FDW*	DW	DW	DW	DW	DW	DW	DW
			W	DARK		W*								
	NB	B	DW	DARK			FDW*	DW	DW	DW	DW	DW	DW	DW
			W	DARK		W*								
WOODLAND	WB	1	R			R	R	R	R	R	R			R
			Y	Y									Y	
			G									G		
		2	R			R	R	R	R	R	R			R
			Y	Y									Y	
			G									G		
NORTH CROSSWALK	EB	C	DW	DARK		DW	DW	DW	DW	DW	DW		FDW*	DW
			W	DARK								W*		
	WB	D	DW	DARK		DW	DW	DW	DW	DW	DW		FDW*	DW
			W	DARK								W*		

RECALL	ϕ2	ϕ3	ϕ4
VEH/MEM/OFF	□	□	□
VEH/MEM/ON	■	■	■
VEH/MIN	■	■	■
VEH/MAX	□	□	□
PED/RECALL	■	□	■
NON-ACT	□	□	□

COORDINATION TIMING	DIAL 1	DIAL 2	DIAL 3
CYCLE LENGTH	100 SEC.	75 SEC.	90 SEC.
PHASE 2 SPLIT	58%	44%	53%
PHASE 3 SPLIT	12%	16%	14%
PHASE 4 SPLIT	30%	40%	33%
OFFSET	0%	0%	0%
TIME OF DAY	6:30 AM–9:00 AM MON.–SAT.	ALL OTHER TIMES	3:00 PM–6:00 PM MON.–SAT.

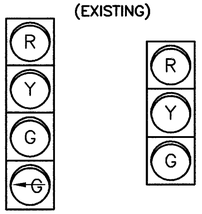
*ONLY UPON PEDESTRIAN PUSHBUTTON ACTUATION

PHASING & TIMING NOTES :
1.) PHASE SPLITS INCLUDE GREEN PLUS YELLOW AND ALL RED.
2.) PERMISSIVES START AT THE ZERO POINT OF THE CYCLE.
3.) OFFSETS SHALL BE REFERENCED TO THE BEGINNING OF PHASE 2 YELLOW.

PEDESTRIAN (EXISTING)

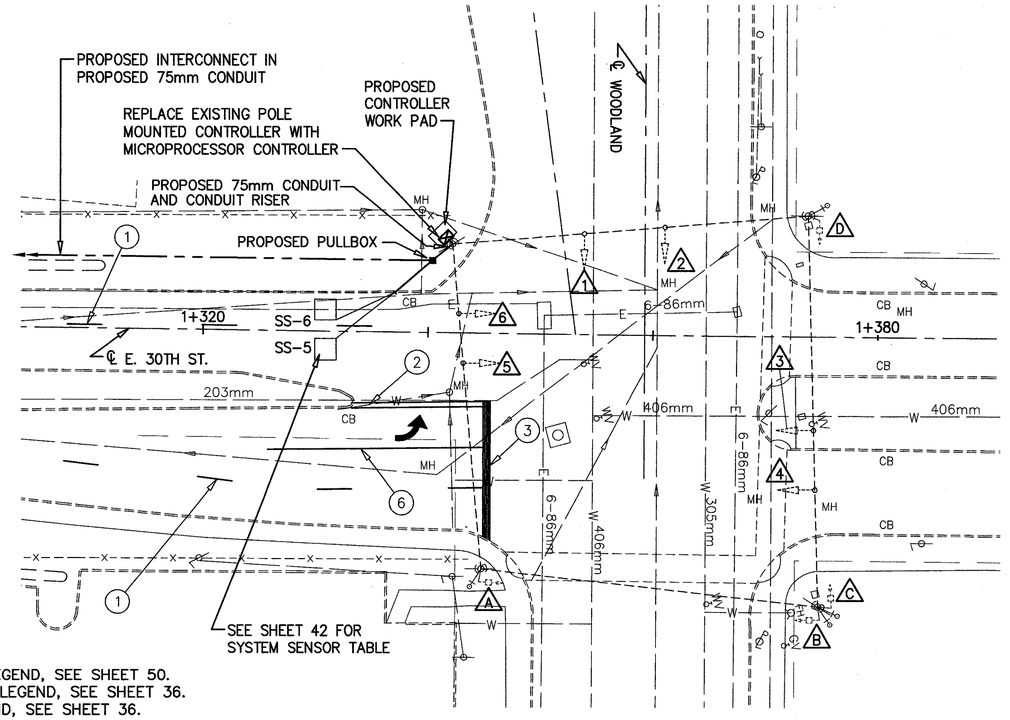
A,B,C,D

VEHICULAR (EXISTING)

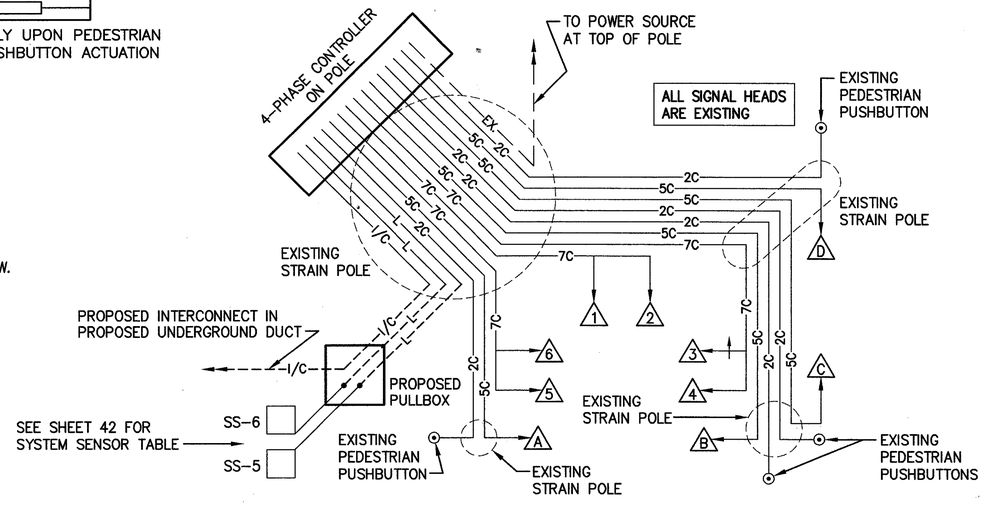


3 1,2,4,5,6

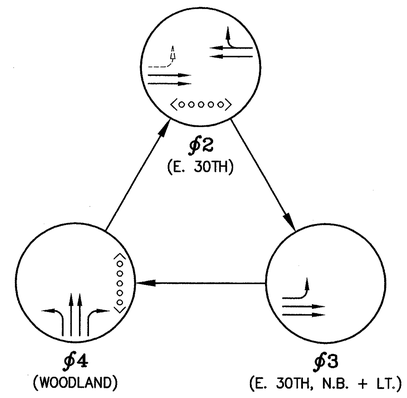
SIGNAL HEAD DETAILS



NOTES:
1.) FOR PAVEMENT MARKING LEGEND, SEE SHEET 50.
2.) FOR TRAFFIC SIGNAL PLAN LEGEND, SEE SHEET 36.
3.) FOR WIRING DIAGRAM LEGEND, SEE SHEET 36.
4.) FOR INTERCONNECT PLAN SEE SHEETS 42–47.



WIRING DIAGRAM



PHASING DIAGRAM
(PRE-TIMED)

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\14949TDC.dwg VIEW = 4

HORIZONTAL SCALE 1 : 250

CALCULATED IMH CHECKED MJW

TRAFFIC SIGNAL PLAN
EAST 30TH ST. & WOODLAND AVE.

CUY-77-23.458 – PART 2

33
58

TRAFFIC SIGNAL TIMING AND DISPLAY – PRE-TIMED CONTROLLER

EAST 30TH & ORANGE — START IN: FLASH 8 SEC. — FIRST PHASE: ϕ4 GREEN

MOVEMENT	ϕ2 EAST 30TH	ϕ3 EAST 30TH S.B. LT. + THRU	ϕ4 ORANGE
INITIAL (MINIMUM)	21	5	22
EXTENSION	2.0	2.0	2.0
WALK	5	–	5
PEDESTRIAN CLEARANCE (FDW)	15	–	16
MAXIMUM I	28	7	25
MAXIMUM II	28	7	25
YELLOW	3.0	3.0	3.6
ALL RED	2.0	2.0	2.0

STREET	DIR-ECTION	SIGNAL	LENS	ENERG-IZED	PRE-EMPT	INTERVAL COLORS ϕ2 1	2	3	ϕ3 4	5	6	ϕ4 7	8	9
EAST 30TH	NB	1	R	R				R	R	R	R	R	R	R
			Y				Y							
			G			G								
		2	R	R				R	R	R	R	R	R	R
			Y				Y							
			G			G								
	SB	5	R	R							R	R	R	R
			Y							Y				
			G			G	G	G	G					
			G						G					
		6	R	R							R	R	R	R
			Y							Y				
			G			G	G	G	G					
SOUTH CROSSWALK	EB	B	DW	DARK		DW	DW	DW	DW	DW	DW		FDW*	DW
			W	DARK								W*		
	WB	A	DW	DARK		DW	DW	DW	DW	DW	DW		FDW*	DW
			W	DARK								W*		
ORANGE	EB	3	R			R	R	R	R	R	R			R
			Y	Y									Y	
			G									G		
		4	R			R	R	R	R	R	R			R
			Y	Y									Y	
			G									G		
EAST CROSSWALK	NB	D	DW	DARK			FDW*	DW	DW	DW	DW	DW	DW	DW
			W	DARK		W*								
	SB	C	DW	DARK			FDW*	DW	DW	DW	DW	DW	DW	DW
			W	DARK		W*								

RECALL	ϕ2	ϕ3	ϕ4
VEH/MEM/OFF	□	□	□
VEH/MEM/ON	■	■	■
VEH/MIN	■	■	■
VEH/MAX	□	□	□
PED/RECALL	■	■	■
NON-ACT	□	□	□

COORDINATION TIMING	DIAL 1	DIAL 2	DIAL 3
CYCLE LENGTH	100 SEC.	75 SEC.	90 SEC.
PHASE 2 SPLIT	60%	39%	32%
PHASE 3 SPLIT	12%	16%	14%
PHASE 4 SPLIT	28%	45%	54%
OFFSET	94%	3%	88%
TIME OF DAY	6:30 AM-9:00 AM MON.-SAT.	ALL OTHER TIMES	3:00 PM-6:00 PM MON.-SAT.

*ONLY UPON PEDESTRIAN PUSHBUTTON ACTUATION

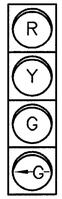
PHASING & TIMING NOTES:
1.) PHASE SPLITS INCLUDE GREEN PLUS YELLOW AND ALL RED.
2.) PERMISSIVES START AT THE ZERO POINT OF THE CYCLE.
3.) OFFSETS SHALL BE REFERENCED TO THE BEGINNING OF PHASE 2 YELLOW.

VIEW = 5

J:\JOBS\24621\TECHPROD\DETOUR\14949TDC.dwg

HNTB ARCHITECTS ENGINEERS PLANNERS

VEHICULAR (EXISTING)



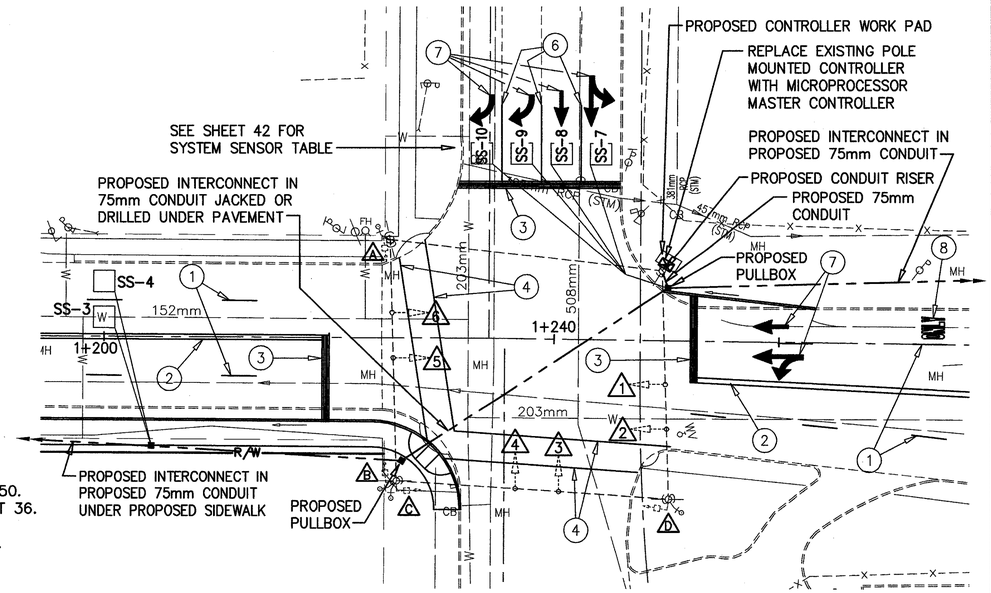
5 1,2,3,4,6

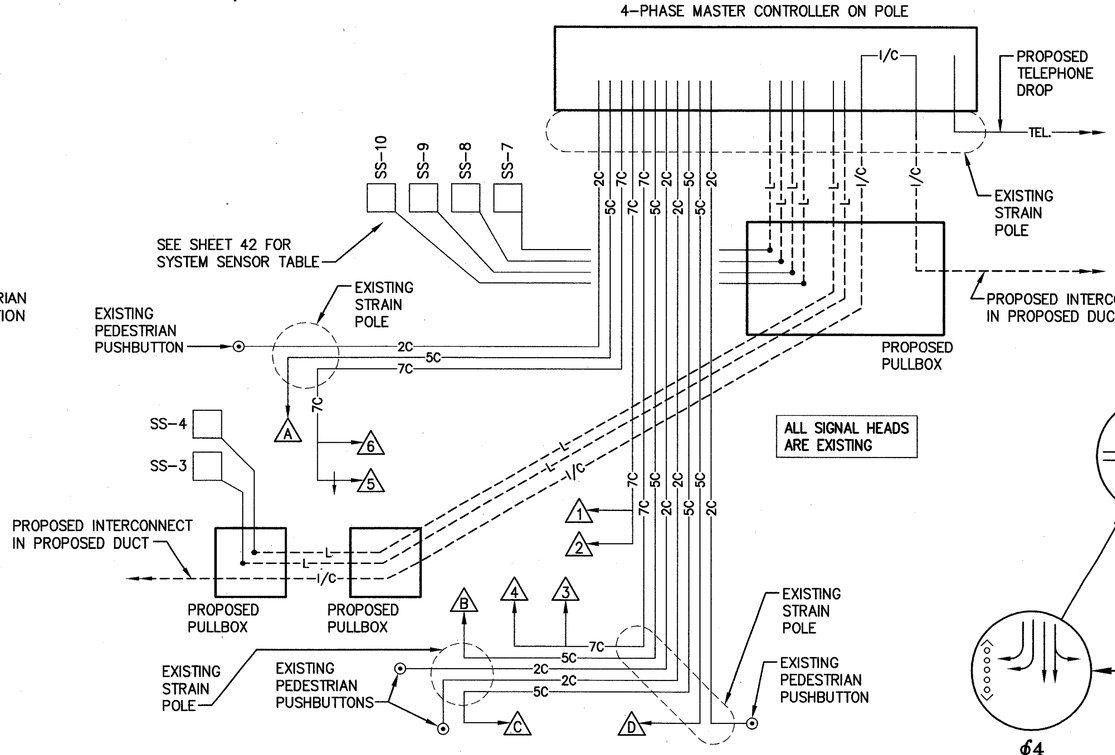
PEDESTRIAN (EXISTING)

A,B,C,D

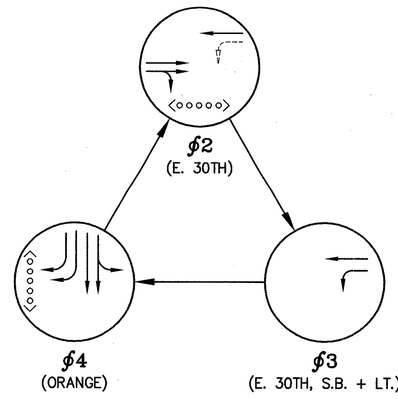
SIGNAL HEAD DETAILS

NOTES:
1.) FOR PAVEMENT MARKING LEGEND, SEE SHEET 50.
2.) FOR TRAFFIC SIGNAL PLAN LEGEND, SEE SHEET 36.
3.) FOR WIRING DIAGRAM LEGEND, SEE SHEET 36.
4.) FOR INTERCONNECT PLAN, SEE SHEETS 42-47.





WIRING DIAGRAM



PHASING DIAGRAM
(PRE-TIMED)

HORIZONTAL SCALE 1 : 250

CALCULATED IMH CHECKED MJW

TRAFFIC SIGNAL PLAN
EAST 30TH STREET & ORANGE AVE.

CUY-77-23.458 - PART 2

TRAFFIC SIGNAL TIMING AND DISPLAY – SEMI-ACTUATED CONTROLLER

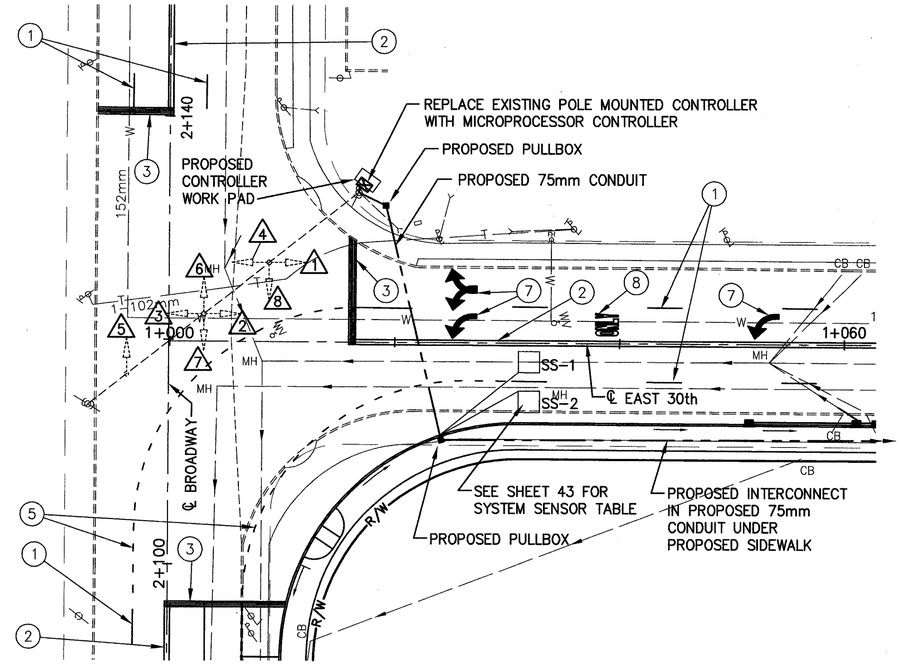
E. 30TH & BROADWAY	START IN: FLASH 8 SEC.	FIRST PHASE: ϕ2 GREEN
MOVEMENT	ϕ2 EAST 30TH	ϕ4 BROADWAY
INITIAL (MINIMUM)	22	29
EXTENSION	2.0	2.0
WALK	5	5
PEDESTRIAN CLEARANCE (FDW)	16	23
MAXIMUM I	25	31
MAXIMUM II	25	31
YELLOW	3.6	3.6
ALL RED	2.0	2.0

STREET	DIR-ECTION	SIGNAL	LENS	EMERG-FLASH PRE-EMPT	INTERVAL COLORS ϕ2 1	ϕ2 2	ϕ2 3	ϕ4 4	ϕ4 5	ϕ4 6
EAST 30TH	SB	1	R	R			R	R	R	R
			Y			Y				
			G		G					
		2	R	R			R	R	R	R
			Y			Y				
			G		G					
	NB	3	R	R			R	R	R	R
			Y			Y				
			G		G					
		4	R	R			R	R	R	R
			Y			Y				
			G		G					
BROADWAY	EB	5	R	R	R	R	R			R
			Y						Y	
			G					G		
		6	R	R	R	R	R			R
			Y						Y	
			G					G		
	WB	7	R	R	R	R	R			R
			Y						Y	
			G					G		
		8	R	R	R	R	R			R
			Y						Y	
			G					G		

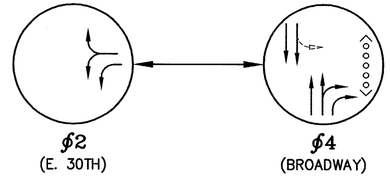
RECALL	ϕ2	ϕ4
VEH/MEM/OFF	☐	☐
VEH/MEM/ON	■	■
VEH/MIN	■	■
VEH/MAX	☐	☐
PED/RECALL	☐	☐
NON-ACT	☐	☐

COORDINATION TIMING	DIAL 1	DIAL 2	DIAL 3
CYCLE LENGTH	100 SEC.	75 SEC.	90 SEC.
PHASE 2 SPLIT	37%	37%	61%
PHASE 4 SPLIT	63%	63%	39%
OFFSET	94%	21%	39%
TIME OF DAY	6:30 AM-9:00 AM MON.-SAT.	9:00 AM-3:00 PM 6:00 PM-11:00 PM MON.-SAT. 9:00 AM-11:00 PM SUN.	3:00 PM-6:00 PM MON.-SAT.

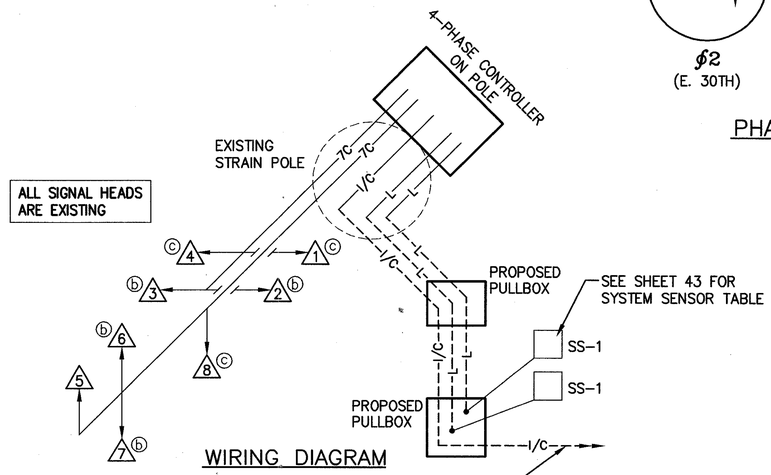
PHASING & TIMING NOTES :
1.) PHASE SPLITS INCLUDE GREEN PLUS YELLOW AND ALL RED.
2.) PERMISSIVES START AT THE ZERO POINT OF THE CYCLE.
3.) OFFSETS SHALL BE REFERENCED TO THE BEGINNING OF PHASE 2 YELLOW.
4.) SIGNAL SHALL OPERATE IN "FREE" MODE AT ALL OTHER TIMES.



NOTES:
1.) FOR PAVEMENT MARKING LEGEND, SEE SHEET 50.
2.) FOR TRAFFIC SIGNAL PLAN LEGEND, SEE SHEET 36.
3.) FOR WIRING DIAGRAM LEGEND, SEE SHEET 36.
4.) FOR INTERCONNECT PLAN, SEE SHEETS 42-47.

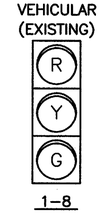


PHASING DIAGRAM
(PRE-TIMED)



WIRING DIAGRAM

ⓑ DENOTES A 4-WAY ASSEMBLY
ⓒ DENOTES A 3-WAY ASSEMBLY



SIGNAL HEAD DETAILS

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\14949TDC.dwg VIEW = 3

HORIZONTAL SCALE 1 : 250

CALCULATED IMH CHECKED MJW

TRAFFIC SIGNAL PLAN
EAST 30TH STREET & BROADWAY

CUY-77-23.458 - PART 2

TRAFFIC SIGNAL TIMING AND DISPLAY – SEMI-ACTUATED CONTROLLER

BROADWAY & E. 34TH ST.	START IN: FLASH 8 SEC.	FIRST PHASE: ϕ2 GREEN

MOVEMENT	ϕ2 BROADWAY	ϕ3 E. 34TH ST.	ϕ4 EXCLUSIVE PEDESTRIAN
INITIAL (MINIMUM)	40	6	8
EXTENSION	2.0	3.0	2.0
WALK	–	–	5
PEDESTRIAN CLEARANCE (FDW)	–	–	13
MAXIMUM I	52	10	19
MAXIMUM II	52	10	19
YELLOW	3.0	3.0	3.0
ALL RED	3.0	2.0	1.0

STREET	DIR-ECTION	SIGNAL	LENS	EMERG-FLASH	PRE-EMPT	INTERVAL COLORS ϕ2 1	2	3	ϕ3 4	5	6	ϕ4 7	8	9
BROADWAY	NB	1	R	R				R	R	R	R	R	R	R
			Y				Y							
			G			G								
		2	R	R				R	R	R	R	R	R	R
			Y				Y							
			G			G								
	EB	3	R	R				R	R	R	R	R	R	R
			Y				Y							
			G			G								
		4	R	R				R	R	R	R	R	R	R
			Y				Y							
			G			G								
WEST CROSSWALK	SB	A	DW	DARK		DW	DW	DW	DW	DW	DW		FDW *	DW
			W	DARK								W *		
	NB	B	DW	DARK		DW	DW	DW	DW	DW	DW		FDW *	DW
			W	DARK								W *		
NORTH CROSSWALK	WB	C	DW	DARK		DW	DW	DW	DW	DW	DW		FDW *	DW
			W	DARK								W *		
	EB	D	DW	DARK		DW	DW	DW	DW	DW	DW		FDW *	DW
			W	DARK								W *		
EAST 34TH STREET	SB	5	R	R		R	R	R			R	R	R	R
			Y							Y				
			G						G					
		6	R	R		R	R	R			R	R	R	R
			Y							Y				
			G						G					

RECALL	ϕ2	ϕ3	ϕ4
VEH/MEM/OFF	□	□	■
VEH/MEM/ON	■	■	□
VEH/MIN	■	□	□
VEH/MAX	□	□	□
PED/RECALL	□	□	□
NON-ACT	□	□	□

* ONLY UPON PEDESTRIAN PUSHBUTTON ACTUATION

COORDINATION TIMING	DIAL 1	DIAL 2	DIAL 3
CYCLE LENGTH	100 SEC.	75 SEC.	90 SEC.
PHASE 2 SPLIT	63%	50%	58%
PHASE 3 SPLIT	15%	20%	17%
PHASE 4 SPLIT	22%	30%	25%
OFFSET	18%	54%	50%
TIME OF DAY	6:30 AM–9:00 AM MON.–SAT.	9:00 AM–3:00 PM 6:00 PM–11:00 PM MON.–SAT. 9:00 AM–11:00 PM SUN.	3:00 PM–6:00 PM MON.–SAT.

5.) INTERNAL TIME BASED COORDINATION SHALL BE ESTABLISHED WITH THE EAST 30TH STREET SYSTEM.

PHASING & TIMING NOTES :
1.) PHASE SPLITS INCLUDE GREEN PLUS YELLOW AND ALL RED.
2.) PERMISSIVES START AT THE ZERO POINT OF THE CYCLE.
3.) OFFSETS SHALL BE REFERENCED TO THE BEGINNING OF PHASE 2 YELLOW.
4.) SIGNAL SHALL OPERATE IN "FREE" MODE AT ALL OTHER TIMES.

TRAFFIC SIGNAL LEGEND

- MICROWAVE VEHICLE DETECTOR
- TRAFFIC SIGNAL HEAD
- PEDESTRIAN SIGNAL HEAD
- PEDESTRIAN PUSHBUTTON AND SIGN
- NEW WOOD OR PEDESTAL POLE
- UNDERGROUND CONDUIT
- TRAFFIC CONTROLLER
- PULL BOX

WIRING DIAGRAM LEGEND

- OVERHEAD OR LOOP WIRE
- SPLICE POINT
- WIRE IN UNDERGROUND CONDUIT
- VEHICLE SIGNAL HEAD
- PEDESTRIAN SIGNAL HEAD
- MICROVAVE VEHICLE DETECTOR
- PEDESTRIAN PUSH BUTTON
- NC — SIGNAL CABLE ("N" DENOTES NUMBER OF CONDUCTORS)

HNTB ARCHITECTS ENGINEERS PLANNERS

VEHICULAR (PROPOSED) — R, Y, G — 1–6

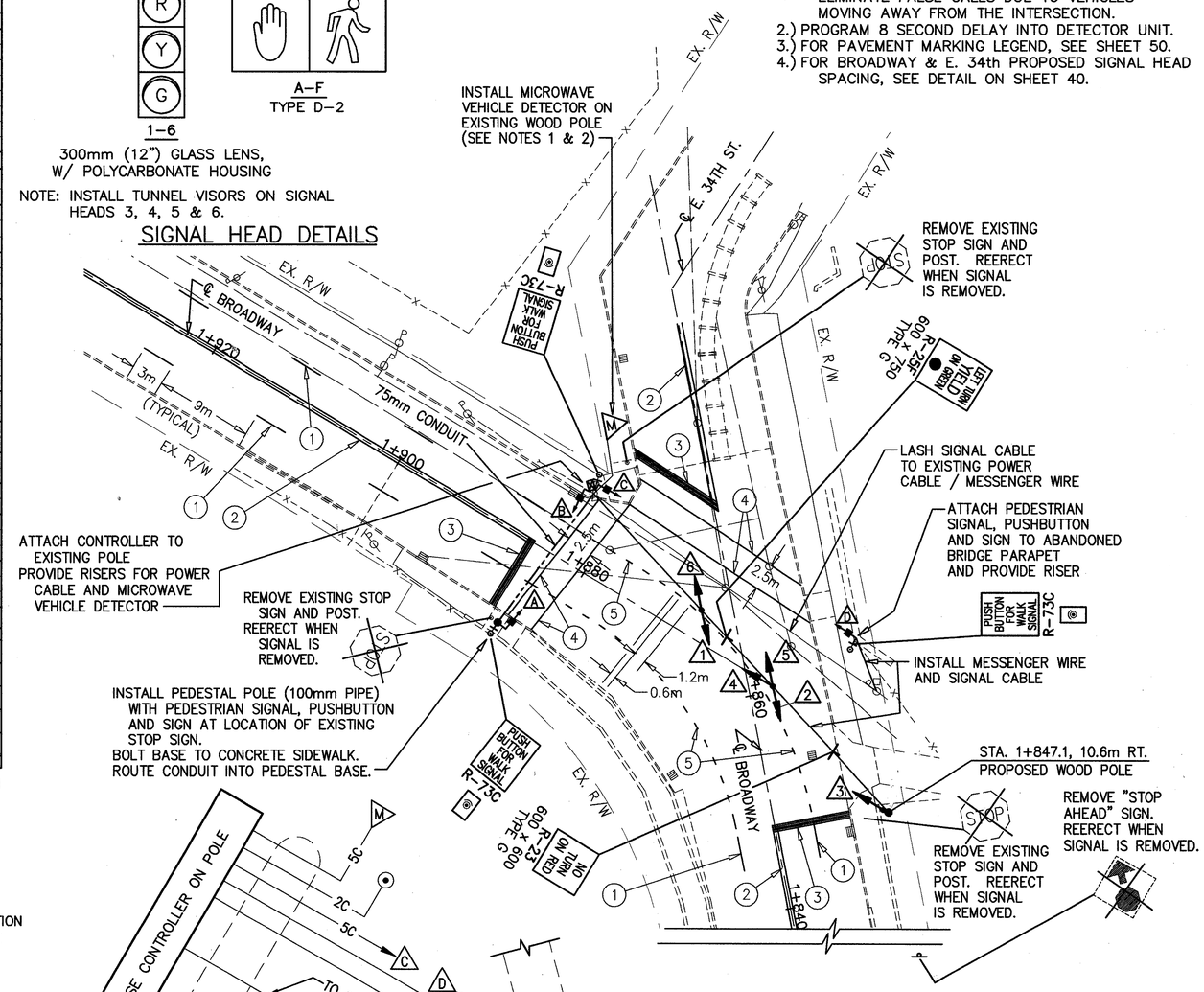
PEDESTRIAN (PROPOSED) — A–F, TYPE D–2

300mm (12") GLASS LENS, W/ POLYCARBONATE HOUSING

NOTE: INSTALL TUNNEL VISORS ON SIGNAL HEADS 3, 4, 5 & 6.

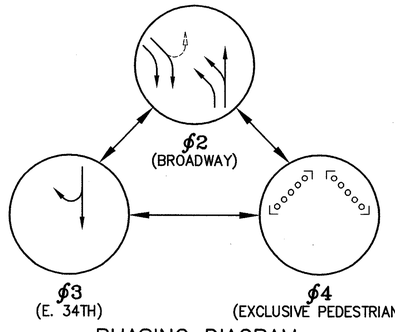
SIGNAL HEAD DETAILS

NOTES:
1.) ADJUST MICROWAVE VEHICLE DETECTOR TO ELIMINATE FALSE CALLS DUE TO VEHICLES MOVING AWAY FROM THE INTERSECTION.
2.) PROGRAM 8 SECOND DELAY INTO DETECTOR UNIT.
3.) FOR PAVEMENT MARKING LEGEND, SEE SHEET 50.
4.) FOR BROADWAY & E. 34th PROPOSED SIGNAL HEAD SPACING, SEE DETAIL ON SHEET 40.



WIRING DIAGRAM

ⓑ DENOTES A 2-WAY ASSEMBLY
ⓒ DENOTES A 3-WAY ASSEMBLY



PHASING DIAGRAM

HORIZONTAL SCALE 1 : 250

CALCULATED IMH CHECKED MJW

TRAFFIC SIGNAL PLAN E. 34TH ST. & BROADWAY

CUY-77-23.458 – PART 2

36
58

J:\JOBS\24821\TECHPROD\DETOUR\14949TDC.dwg view = PLOT1

TRAFFIC SIGNAL TIMING AND DISPLAY – SEMI-ACTUATED CONTROLLER

BROADWAY & E. 37TH ST./ ROCKEFELLER

START IN: FLASH 8 SEC.

FIRST PHASE: ϕ2 GREEN

MOVEMENT	ϕ1 BROADWAY NBLT	ϕ2 BROADWAY	ϕ4 E 37th/ROCKEFELLER
INITIAL (MINIMUM)	6	30	8
EXTENSION	3.5	3.0	3.0
WALK	–	7	5
PEDESTRIAN CLEARANCE (FDW)	–	16	14
MAXIMUM I	20	70	22
MAXIMUM II	20	70	22
YELLOW	3.5	3.5	3.5
ALL RED	2.0	2.0	2.0

STREET	DIR-ECTION	SIGNAL	LENS	EMERG-FLASH PRE-EMPT	INTERVAL COLORS ϕ1 1	2	3	4	ϕ2 5	6	7	8	ϕ4 9	10	11	12
BROADWAY	NB	1	R	R								R	R	R	R	R
			Y								Y					
			G		G	G	G	G	G	G						
		2	R	R								R	R	R	R	R
			Y								Y					
			G		G	G	G	G	G	G						
		3	R	R								R	R	R	R	R
			Y								Y					
			G		G	G	G	G	G	G						
			✱				✱									
			✱		✱	✱										
	SB	4	R	R	R	R	R	R				R	R	R	R	R
			Y								Y					
			G						G	G						
		5	R	R	R	R	R	R				R	R	R	R	R
			Y								Y					
			G						G	G						
EAST CROSSWALK	NB	A	DW	DARK	DW	DW	DW	DW		FDW	DW	DW	DW	DW	DW	DW
			W	DARK					W							
	SB	B	DW	DARK	DW	DW	DW	DW		FDW	DW	DW	DW	DW	DW	DW
			W	DARK					W							
WEST CROSSWALK	SB	C	DW	DARK	DW	DW	DW	DW		FDW	DW	DW	DW	DW	DW	DW
			W	DARK					W							
	NB	D	DW	DARK	DW	DW	DW	DW		FDW	DW	DW	DW	DW	DW	DW
			W	DARK					W							
NORTH CROSSWALK	WB	E	DW	DARK	DW	DW	DW	DW	DW	DW	DW	DW		FDW ✱	DW	DW
			W	DARK									W ✱			
	SB	F	DW	DARK	DW	DW	DW	DW	DW	DW	DW	DW		FDW ✱	DW	DW
			W	DARK									W ✱			
EAST 37th ST.	WB	6	R	R	R	R	R	R	R	R	R	R				R
			Y												Y	
			G										G	G		
		7	R	R	R	R	R	R	R	R	R	R				R
			Y												Y	
			G										G	G		
ROCKEFELLER	EB	8	R	R	R	R	R	R	R	R	R	R				R
			Y												Y	
			G										G	G		
			✱				✱									
			✱		✱	✱										
		9	R	R	R	R	R	R	R	R	R	R				R
			Y												Y	
			G										G	G		

RECALL	ϕ1	ϕ2	ϕ4
VEH/MEM/OFF	▭	▭	▭
VEH/MEM/ON	▭	■	■
VEH/MIN	■	■	▭
VEH/MAX	▭	▭	▭
PED/RECALL	▭	■	▭
NON-ACT	▭	▭	▭

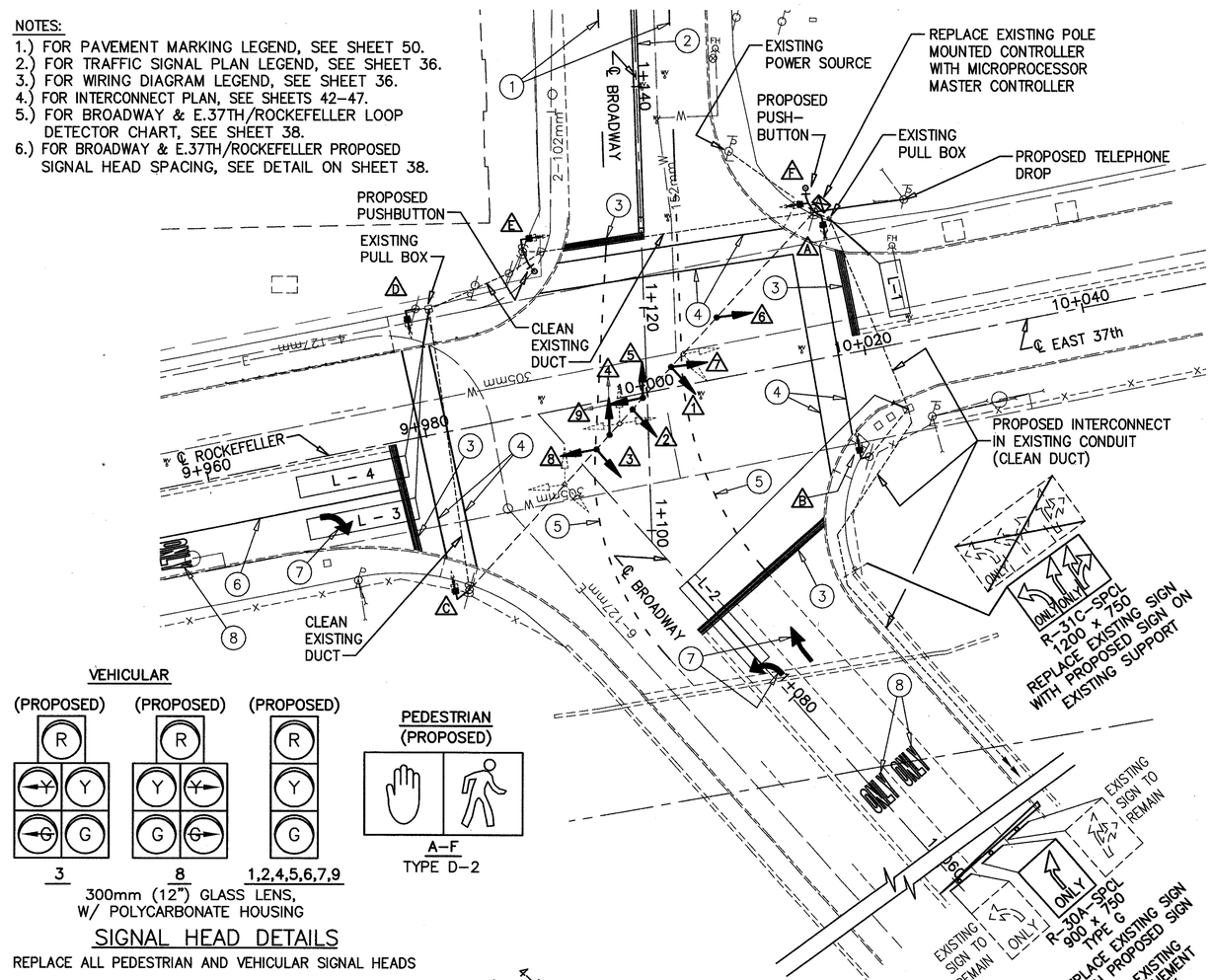
* ONLY UPON PEDESTRIAN PUSHBUTTON ACTUATION

COORDINATION TIMING	DIAL 1	DIAL 2	DIAL 3
CYCLE LENGTH	115 SEC.	75 SEC.	90 SEC.
PHASE 1 SPLIT	20%	15%	15%
PHASE 2 SPLIT	63%	60%	64%
PHASE 4 SPLIT	17%	25%	21%
OFFSET	0%	0%	0%
TIME OF DAY	6:30 AM–9:00 AM MON.–SAT.	9:00 AM–3:00 PM 6:00 PM–11:00 PM MON.–SAT. 9:00 AM–11:00 PM SUN.	3:00 PM–6:00 PM MON.–SAT.

PHASING & TIMING NOTES :
1.) PHASE SPLITS INCLUDE GREEN PLUS YELLOW AND ALL RED.
2.) PERMISSIVES START AT THE ZERO POINT OF THE CYCLE.
3.) OFFSETS SHALL BE REFERENCED TO THE BEGINNING OF PHASE 2 YELLOW.
4.) SIGNAL SHALL OPERATE IN "FREE" MODE AT ALL OTHER TIMES.
5.) FOR SIGN R-31C-SPCL. AND LANE ARROW DETAILS SEE SHEET 51.

HNTB ARCHITECTS ENGINEERS PLANNERS

NOTES:
1.) FOR PAVEMENT MARKING LEGEND, SEE SHEET 50.
2.) FOR TRAFFIC SIGNAL PLAN LEGEND, SEE SHEET 36.
3.) FOR WIRING DIAGRAM LEGEND, SEE SHEET 36.
4.) FOR INTERCONNECT PLAN, SEE SHEETS 42–47.
5.) FOR BROADWAY & E.37TH/ROCKEFELLER LOOP DETECTOR CHART, SEE SHEET 38.
6.) FOR BROADWAY & E.37TH/ROCKEFELLER PROPOSED SIGNAL HEAD SPACING, SEE DETAIL ON SHEET 38.

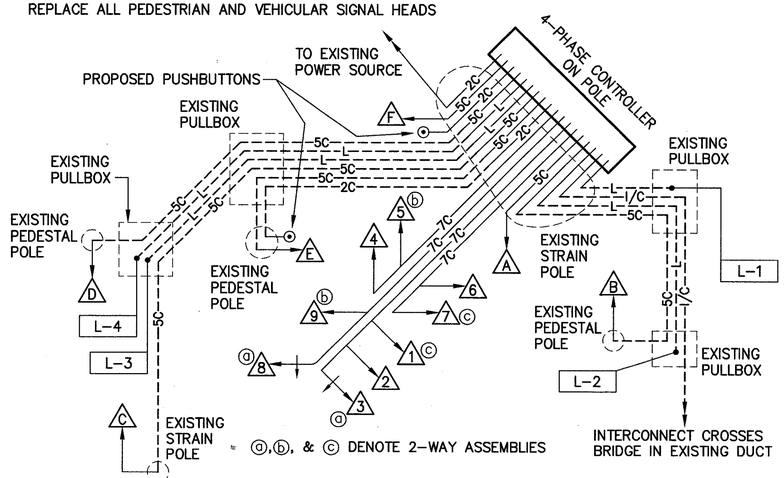


VEHICULAR

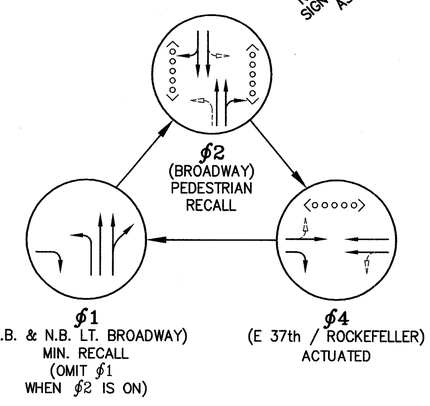
PEDESTRIAN (PROPOSED)

SIGNAL HEAD DETAILS

REPLACE ALL PEDESTRIAN AND VEHICULAR SIGNAL HEADS



WIRING DIAGRAM



PHASING DIAGRAM

HORIZONTAL SCALE 1 : 250

CALCULATED IMH CHECKED MJW

TRAFFIC SIGNAL PLAN
BROADWAY & EAST 37TH / ROCKEFELLER

CUY-77-23.458 – PART 2

37
58

J: \JOBS\24621\TECHPROD\DETOUR\14949TDC.dwg view = PLOT2

TRAFFIC SIGNAL TIMING AND DISPLAY – SEMI-ACTUATED CONTROLLER

BROADWAY & I–490 OFF RAMP	START IN: FLASH 8 SEC.	FIRST PHASE: ϕ2 GREEN

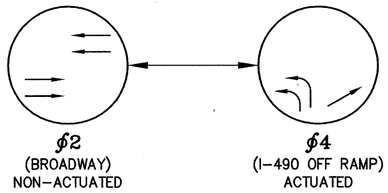
MOVEMENT	ϕ2 BROADWAY	ϕ4 I–490 OFF RAMP
INITIAL (MINIMUM)	25	10
EXTENSION	2.0	4.0
WALK	7	7
PEDESTRIAN CLEARANCE (FDW)	14	14
MAXIMUM I	40	40
MAXIMUM II	40	40
YELLOW	3.6	4.5
ALL RED	3.0	2.5

STREET	DIR–ECTION	SIGNAL	LENS	EMERG–FLASH	PRE–EMPT	INTERVAL COLORS ϕ1 1	ϕ1 2	ϕ1 3	ϕ1 4	ϕ2 5	ϕ2 6	ϕ2 7
BROADWAY	SB	1	R	R				R	R	R	R	R
			Y				Y					
			G			G						
		2	R	R				R	R	R	R	R
			Y				Y					
			G			G						
	NB	5	R	R					R	R	R	R
			Y					Y				
			G			G	G					
		6	R	R					R	R	R	R
			Y					Y				
			G			G	G					
I–490 OFF RAMP	EB (SPAN)	3	R	R		R	R	R	R			R
			Y								Y	
			G							G		
		4	R	R		R	R	R	R			R
			Y								Y	
			G							G		
	EB (ARM)	7	R	R		R	R	R	R			R
			Y								Y	
			G							G		
		8	R	R		R	R	R	R			R
			Y								Y	
			G							G		

RECALL	ϕ2	ϕ4
VEH/MEM/OFF	☐	☐
VEH/MEM/ON	■	■
VEH/MIN	■	☐
VEH/MAX	☐	☐
PED/RECALL	☐	☐
NON–ACT	■	☐

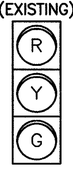
COORDINATION TIMING	DIAL 1	DIAL 2	DIAL 3
CYCLE LENGTH	115 SEC.	75 SEC.	90 SEC.
PHASE 2 SPLIT	59%	60%	70%
PHASE 4 SPLIT	41%	40%	30%
OFFSET	10%	7%	94%
TIME OF DAY	6:30 AM–9:00 AM MON.–SAT.	9:00 AM–3:00 PM 6:00 PM–11:00 PM MON.–SAT. 9:00 AM–11:00 PM SUN.	3:00 PM–6:00 PM MON.–SAT.

PHASING & TIMING NOTES :
1.) PHASE SPLITS INCLUDE GREEN PLUS YELLOW AND ALL RED.
2.) PERMISSIVES START AT THE ZERO POINT OF THE CYCLE.
3.) OFFSETS SHALL BE REFERENCED TO THE BEGINNING OF PHASE 2 YELLOW.
4.) SIGNAL SHALL OPERATE IN "FREE" MODE AT ALL OTHER TIMES.



PHASING DIAGRAM

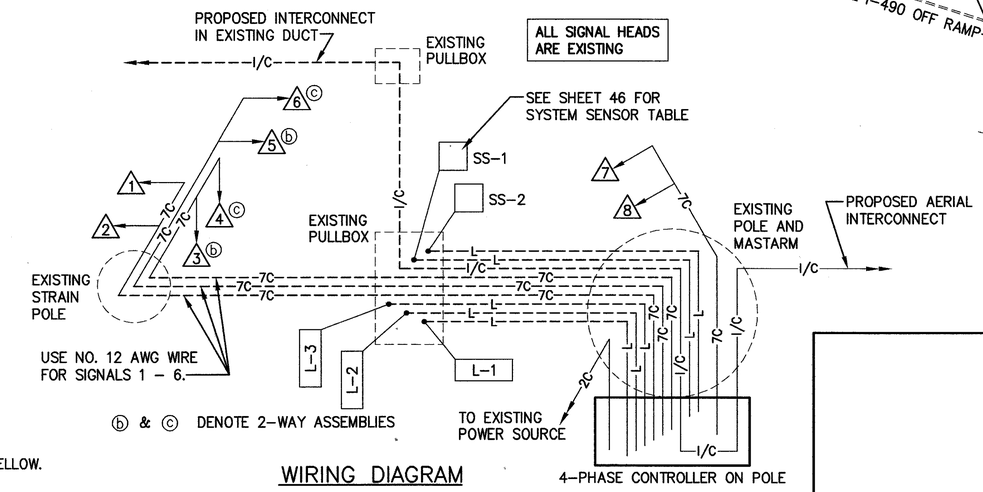
VEHICULAR (EXISTING)



1–8

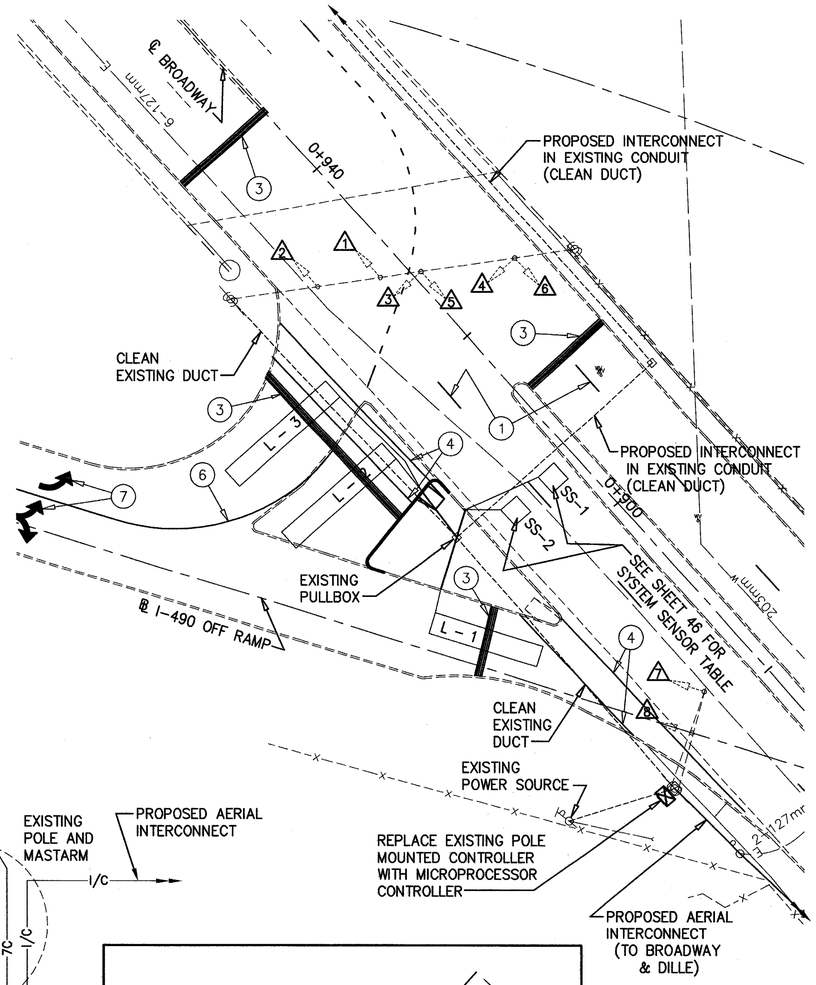
SIGNAL HEAD DETAILS

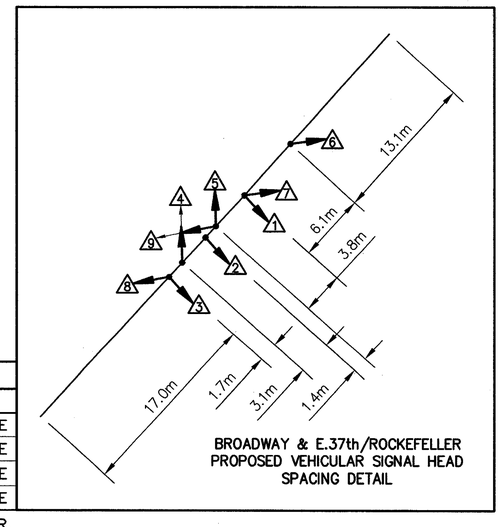
NOTES:
1.) FOR PAVEMENT MARKING LEGEND, SEE SHEET 50.
2.) FOR TRAFFIC SIGNAL PLAN LEGEND, SEE SHEET 36.
3.) FOR WIRING DIAGRAM LEGEND, SEE SHEET 36.
4.) INSTALL NEW INTERCONNECT CABLE IN EXISTING DUCT. SEE SHEETS 42–47.



ⓑ & ⓒ DENOTE 2–WAY ASSEMBLIES

WIRING DIAGRAM





BROADWAY & E.37th/ROCKEFELLER PROPOSED VEHICULAR SIGNAL HEAD SPACING DETAIL

LOOP DETECTOR CHART

LOOP	SIZE (M)	# TURNS	STATION **	OFFSET **	REFERENCE	HOOK–UP	CALL/DELAY/EXTEND	TYPE
L–1	2.5 x 10	2	0+894.9	13.5m LT.	℄ BRDWAY.	ϕ4	8 sec.	PRESENCE
L–2	2.5 x 12	2	0+918.0	12.0m LT.	℄ BRDWAY.	ϕ4	2 sec.	PRESENCE
L–3	2.5 x 12	2	0+925.5	12.0m LT.	℄ BRDWAY.	ϕ4	–	PRESENCE

** – LOCATION SUBJECT TO FINAL APPROVAL IN THE FIELD BY THE ENGINEER.

LOOP DETECTOR CHART – BROADWAY & E. 37TH/ROCKEFELLER SEE SHEET 37.

LOOP	SIZE (M)	# TURNS	STATION **	OFFSET **	REFERENCE	HOOK–UP	DELAY	TYPE
L–1	1.9 x 5	2	10+022.8	2.5m Lt.	℄ E 37th ST.	ϕ4	–	PRESENCE
L–2	1.9 x 10	2–4–2	1+094.2	0.9m Lt.	℄ BRDWAY.	ϕ1	3 sec.	PRESENCE
L–3	1.9 x 10	2	9+977.8	5.2m Rt.	℄ ROCKEF.	ϕ4	8 sec.	PRESENCE
L–4	1.9 x 10	2	9+977.8	1.3m Rt.	℄ ROCKEF.	ϕ4	3 sec.	PRESENCE

** – LOCATION SUBJECT TO FINAL APPROVAL IN THE FIELD BY THE ENGINEER.

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\14949TDC.dwg view = 1

HORIZONTAL SCALE 1 : 250

CALCULATED IMH CHECKED MJW

TRAFFIC SIGNAL PLAN
BROADWAY & EB I–490 OFF RAMP

CUY–77–23.458 – PART 2

TRAFFIC SIGNAL TIMING AND DISPLAY – SEMI-ACTUATED CONTROLLER

BROADWAY & DILLE — START IN: FLASH 8 SEC. — FIRST PHASE: ϕ2 GREEN

MOVEMENT	ϕ2 BROADWAY	ϕ4 DILLE
INITIAL (MINIMUM)	40	6
EXTENSION	–	3.0
WALK	7	5
PEDESTRIAN CLEARANCE (FDW)	8	12
MAXIMUM I	52	18
MAXIMUM II	52	18
YELLOW	3.6	3.0
ALL RED	2.0	2.0

STREET	DIR-ECTION	SIGNAL	LENS	ENERG-IZED	FLASH	PRE-EMPT	INTERVAL COLORS ϕ2 1	2	3	4	ϕ4 5	6	7	8
BROADWAY	SB	1	R							R	R	R	R	R
			Y	Y					Y					
			G				G	G						
		2	R							R	R	R	R	R
			Y	Y					Y					
			G				G	G						
	NB	3	R							R	R	R	R	R
			Y	Y					Y					
			G				G	G						
		4	R							R	R	R	R	R
			Y	Y					Y					
			G				G	G						
DILLE	EB	5	R	R			R	R	R	R				R
			Y										Y	
			G								G	G		
		6	R	R			R	R	R	R				R
			Y										Y	
			G								G	G		
	WB	7	R	R			R	R	R	R				R
			Y										Y	
			G								G	G		
SOUTH CROSSWALK	WB	A	DW	DARK			DW	DW	DW	DW		FDW	DW	DW
			W	DARK							W*			
	EB	B	DW	DARK			DW	DW	DW	DW		FDW	DW	DW
			W	DARK							W*			

RECALL — ϕ2 — ϕ4

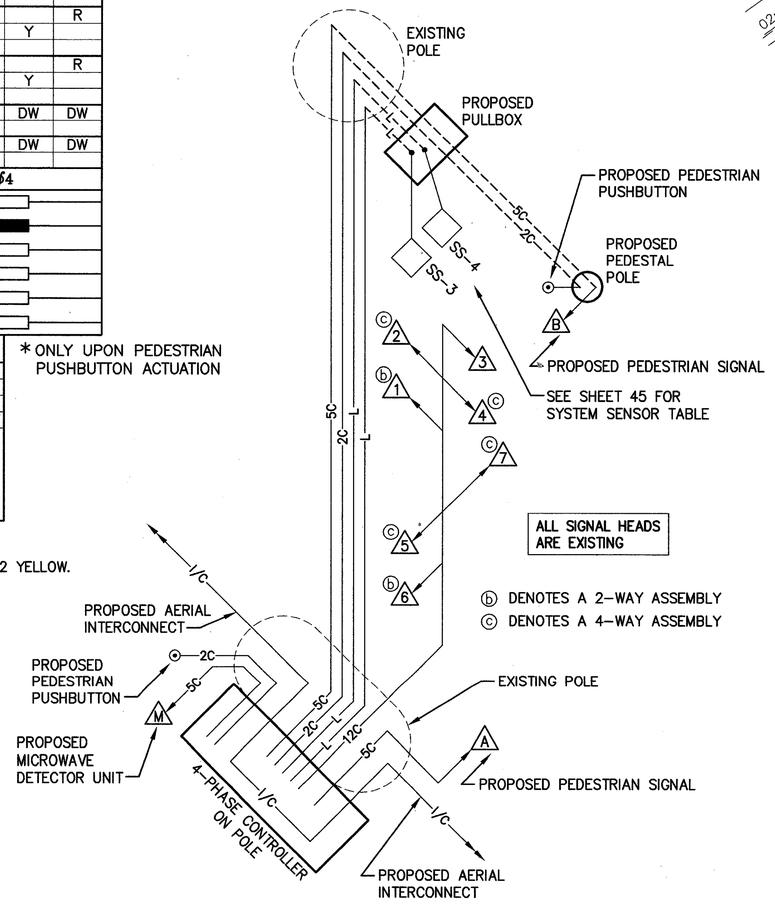
- VEH/MEM/OFF
- VEH/MEM/ON
- VEH/MIN
- VEH/MAX
- PED/RECALL
- NON-ACT

COORDINATION TIMING	DIAL 1	DIAL 2	DIAL 3
CYCLE LENGTH	115 SEC.	75 SEC.	90 SEC.
PHASE 2 SPLIT	79%	68%	73%
PHASE 4 SPLIT	21%	32%	27%
OFFSET	2%	44%	54%
TIME OF DAY	6:30 AM–9:00 AM MON.–SAT.	9:00 AM–3:00 PM 6:00 PM–11:00 PM MON.–SAT. 9:00 AM–11:00 PM SUN.	3:00 PM–6:00 PM MON.–SAT.

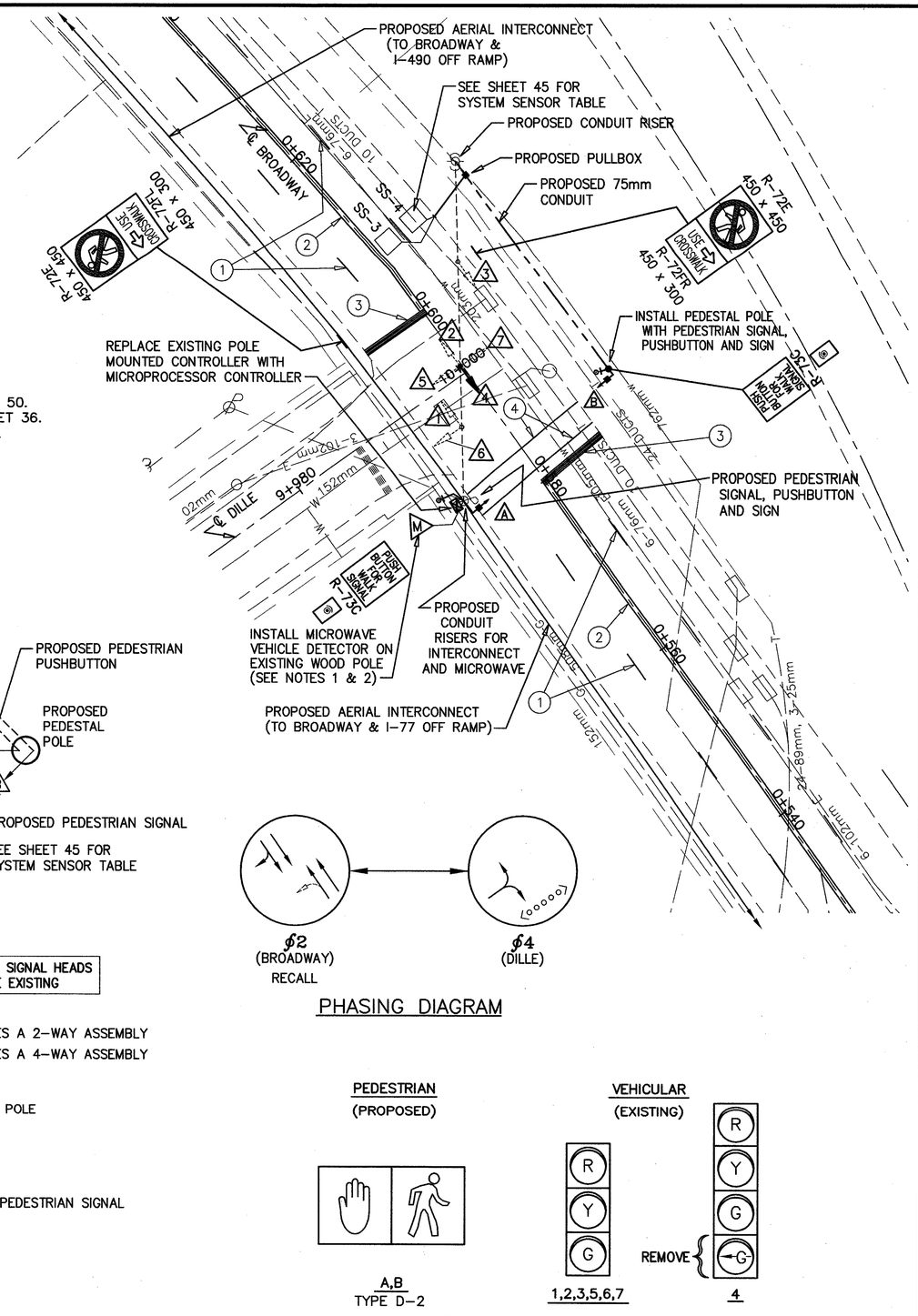
*ONLY UPON PEDESTRIAN PUSHBUTTON ACTUATION

PHASING & TIMING NOTES :
1.) PHASE SPLITS INCLUDE GREEN PLUS YELLOW AND ALL RED.
2.) PERMISSIVES START AT THE ZERO POINT OF THE CYCLE.
3.) OFFSETS SHALL BE REFERENCED TO THE BEGINNING OF PHASE 2 YELLOW.
4.) SIGNAL SHALL OPERATE IN "FREE" MODE AT ALL OTHER TIMES.

NOTES:
1.) ADJUST MICROWAVE VEHICLE DETECTOR TO ELIMINATE FALSE CALLS DUE TO VEHICLES MOVING AWAY FROM THE INTERSECTION.
2.) PROGRAM 8 SECOND DELAY INTO DETECTOR UNIT.
3.) FOR PAVEMENT MARKING LEGEND, SEE SHEET 50.
4.) FOR TRAFFIC SIGNAL PLAN LEGEND, SEE SHEET 36.
5.) FOR WIRING DIAGRAM LEGEND, SEE SHEET 36.



WIRING DIAGRAM



PHASING DIAGRAM

SIGNAL HEAD DETAILS

HNTB ARCHITECTS ENGINEERS PLANNERS

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HORIZONTAL SCALE 1 : 250

CALCULATED IMH CHECKED MJW

TRAFFIC SIGNAL PLAN BROADWAY & DILLE

CUY-77-23.458 – PART 2

TRAFFIC SIGNAL TIMING AND DISPLAY – SEMI-ACTUATED CONTROLLER

BROADWAY & I–77 OFF RAMP	START IN: FLASH 8 SEC.	FIRST PHASE: ϕ2 GREEN
MOVEMENT	ϕ2 BROADWAY	ϕ4 I–77 OFF RAMP
INITIAL (MINIMUM)	25	15
EXTENSION	3.0	4.0
WALK	7	7
PEDESTRIAN CLEARANCE (FDW)	7	12
MAXIMUM I	40	40
MAXIMUM II	40	40
YELLOW	3.6	4.5
ALL RED	2.0	2.0

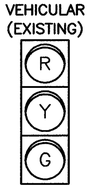
STREET	DIR-ECTION	SIGNAL	LENS	EMERG-ENCY PREEMPT	PED PREEMPT	INTERVAL COLORS ϕ2 1	ϕ2 2	ϕ2 3	ϕ4 4	ϕ4 5	ϕ4 6
BROADWAY	WB	4	R					R	R	R	R
			Y	Y			Y				
			G			G					
		5	R					R	R	R	R
			Y	Y			Y				
			G			G					
	EB	6	R					R	R	R	R
			Y	Y			Y				
			G			G					
		7	R					R	R	R	R
			Y	Y			Y				
			G			G					
I–77 OFF RAMP	NB	1	R	R		R	R	R			R
			Y							Y	
			G						G		
		2	R	R		R	R	R			R
			Y							Y	
			G						G		
	SB	3	R	R		R	R	R			R
			Y							Y	
			G						G		

RECALL	ϕ2	ϕ4
VEH/MEM/OFF	☐	☐
VEH/MEM/ON	■	■
VEH/MIN	■	☐
VEH/MAX	☐	☐
PED/RECALL	☐	☐
NON–ACT	☐	☐

COORDINATION TIMING	DIAL 1	DIAL 2	DIAL 3
CYCLE LENGTH	115 SEC.	75 SEC.	90 SEC.
PHASE 2 SPLIT	45%	50%	61%
PHASE 4 SPLIT	55%	50%	39%
OFFSET	38%	9%	94%
TIME OF DAY	6:30 AM–9:00 AM MON.–SAT.	9:00 AM–3:00 PM 6:00 PM–11:00 PM MON.–SAT. 9:00 AM–11:00 PM SUN.	3:00 PM–6:00 PM MON.–SAT.

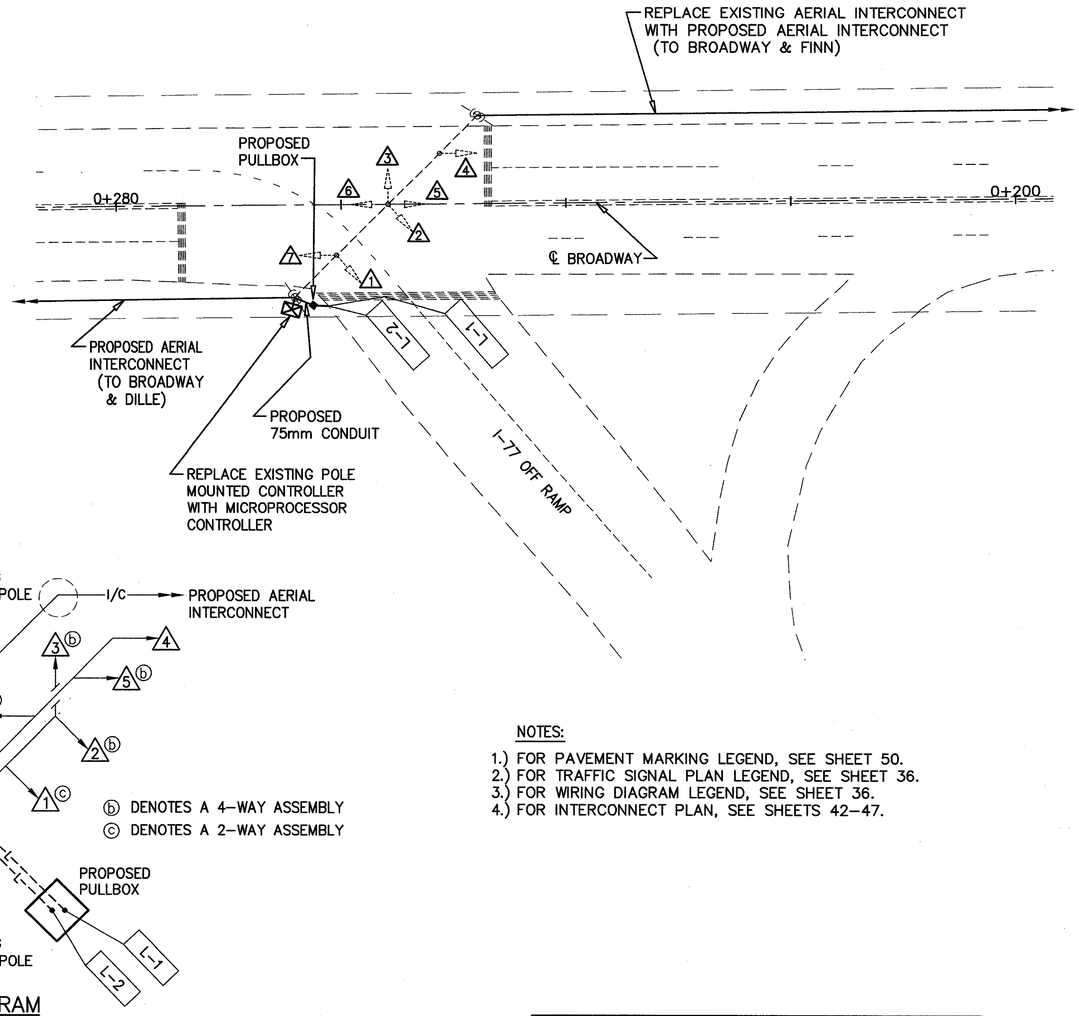
PHASING & TIMING NOTES :
1.) PHASE SPLITS INCLUDE GREEN PLUS YELLOW AND ALL RED.
2.) PERMISSIVES START AT THE ZERO POINT OF THE CYCLE.
3.) OFFSETS SHALL BE REFERENCED TO THE BEGINNING OF PHASE 2 YELLOW.
4.) SIGNAL SHALL OPERATE IN "FREE" MODE AT ALL OTHER TIMES.

VEHICULAR (EXISTING)



1–7

SIGNAL HEAD DETAILS

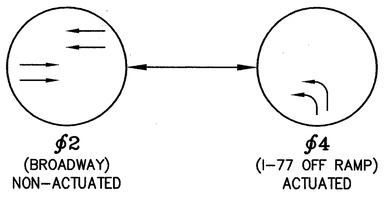


WIRING DIAGRAM

NOTES:
1.) FOR PAVEMENT MARKING LEGEND, SEE SHEET 50.
2.) FOR TRAFFIC SIGNAL PLAN LEGEND, SEE SHEET 36.
3.) FOR WIRING DIAGRAM LEGEND, SEE SHEET 36.
4.) FOR INTERCONNECT PLAN, SEE SHEETS 42–47.

LOOP DETECTOR CHART								
LOOP	SIZE (M)	# TURNS	STATION **	OFFSET **	REFERENCE	HOOK–UP	CALL/DELAY/EXTEND	TYPE
L–1	1.9 x 9.2	3	0+249.4	8.6m LT.	℄ BRDWAY.	ϕ4	–	PRESENCE
L–2	1.9 x 9.2	3	0+256.4	8.6m LT.	℄ BRDWAY.	ϕ4	–	PRESENCE

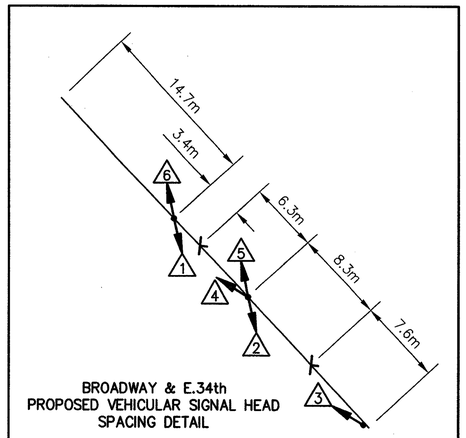
** – LOCATION SUBJECT TO FINAL APPROVAL IN THE FIELD BY THE ENGINEER. (MEASURED FROM TOP RIGHT CORNER OF LOOP)



ϕ2 (BROADWAY) NON–ACTUATED

ϕ4 (I–77 OFF RAMP) ACTUATED

PHASING DIAGRAM



BROADWAY & E.34th
PROPOSED VEHICULAR SIGNAL HEAD SPACING DETAIL

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\14949TDC.dwg view = 2

HORIZONTAL SCALE 1 : 250

CALCULATED IMH CHECKED MJW

TRAFFIC SIGNAL PLAN BROADWAY & I–77 N.B. EXIT RAMP

CUY–77–23.458 – PART 2

TRAFFIC SIGNAL TIMING AND DISPLAY – PRE-TIMED CONTROLLER

BROADWAY & FINN	START IN: FLASH 8 SEC.	FIRST PHASE: ϕ2 GREEN

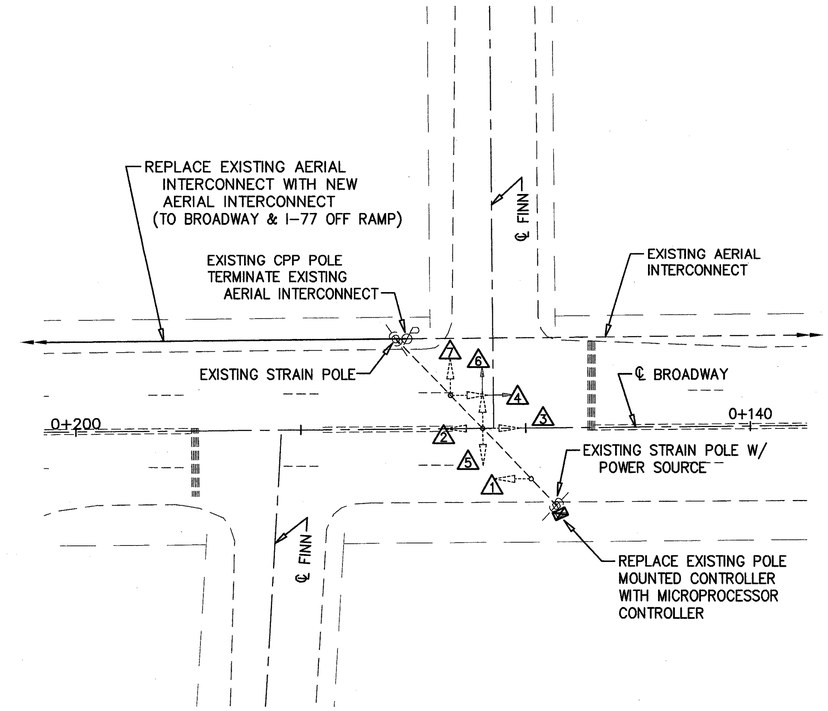
MOVEMENT	ϕ2 BROADWAY	ϕ4 FINN
INITIAL (MINIMUM)	35	20
EXTENSION	2.0	2.0
WALK	7	7
PEDESTRIAN CLEARANCE (FDW)	9	12
MAXIMUM I	88	25
MAXIMUM II	88	25
YELLOW	3.0	3.0
ALL RED	1.5	2.0

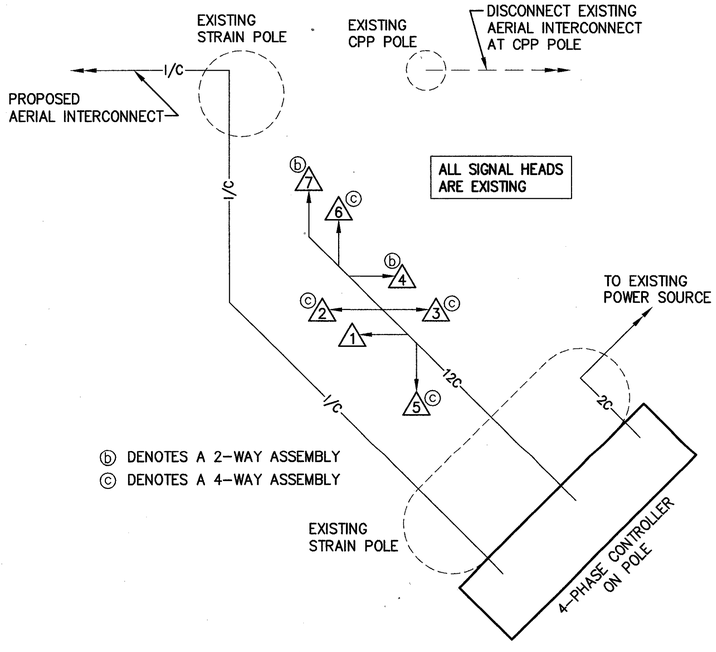
STREET	DIR-ECTION	SIGNAL	LENS	EMERG-FLASH	PRE-EMPT	INTERVAL COLORS ϕ2 1	2	3	ϕ4 4	5	6
BROADWAY	SB	1	R					R	R	R	R
			Y	Y			Y				
			G			G					
		2	R					R	R	R	R
			Y	Y			Y				
			G			G					
	NB	3	R					R	R	R	R
			Y	Y			Y				
			G			G					
		4	R					R	R	R	R
			Y	Y			Y				
			G			G					
I-77 OFF RAMP	EB	5	R	R		R	R	R			R
			Y							Y	
			G						G		
	WB	6	R	R		R	R	R			R
			Y							Y	
			G						G		
		7	R	R		R	R	R			R
			Y							Y	
			G						G		

RECALL	ϕ2	ϕ4
VEH/MEM/OFF	▭	▭
VEH/MEM/ON	▬	▬
VEH/MIN	▬	▬
VEH/MAX	▭	▭
PED/RECALL	▭	▭
NON-ACT	▭	▭

COORDINATION TIMING	DIAL 1	DIAL 2	DIAL 3
CYCLE LENGTH	115 SEC.	75 SEC.	90 SEC.
PHASE 2 SPLIT	78%	66%	72%
PHASE 4 SPLIT	22%	34%	28%
OFFSET	44%	9%	2%
TIME OF DAY	6:30 AM-9:00 AM MON.-SAT.	9:00 AM-3:00 PM 6:00 PM-11:00 PM MON.-SAT. 9:00 AM-11:00 PM SUN.	3:00 PM-6:00 PM MON.-SAT.

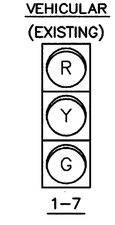
PHASING & TIMING NOTES :
1.) PHASE SPLITS INCLUDE GREEN PLUS YELLOW AND ALL RED.
2.) PERMISSIVES START AT THE ZERO POINT OF THE CYCLE.
3.) OFFSETS SHALL BE REFERENCED TO THE BEGINNING OF PHASE 2 YELLOW.
4.) SIGNAL SHALL OPERATE IN "FREE" MODE AT ALL OTHER TIMES.



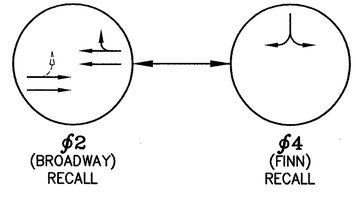


WIRING DIAGRAM

NOTES:
1.) FOR PAVEMENT MARKING LEGEND, SEE SHEET 50.
2.) FOR TRAFFIC SIGNAL PLAN LEGEND, SEE SHEET 36.
3.) FOR WIRING DIAGRAM LEGEND, SEE SHEET 36.
4.) FOR INTERCONNECT PLAN, SEE SHEETS 42-47.



SIGNAL HEAD DETAILS



PHASING DIAGRAM

HNTB ARCHITECTS ENGINEERS PLANNERS

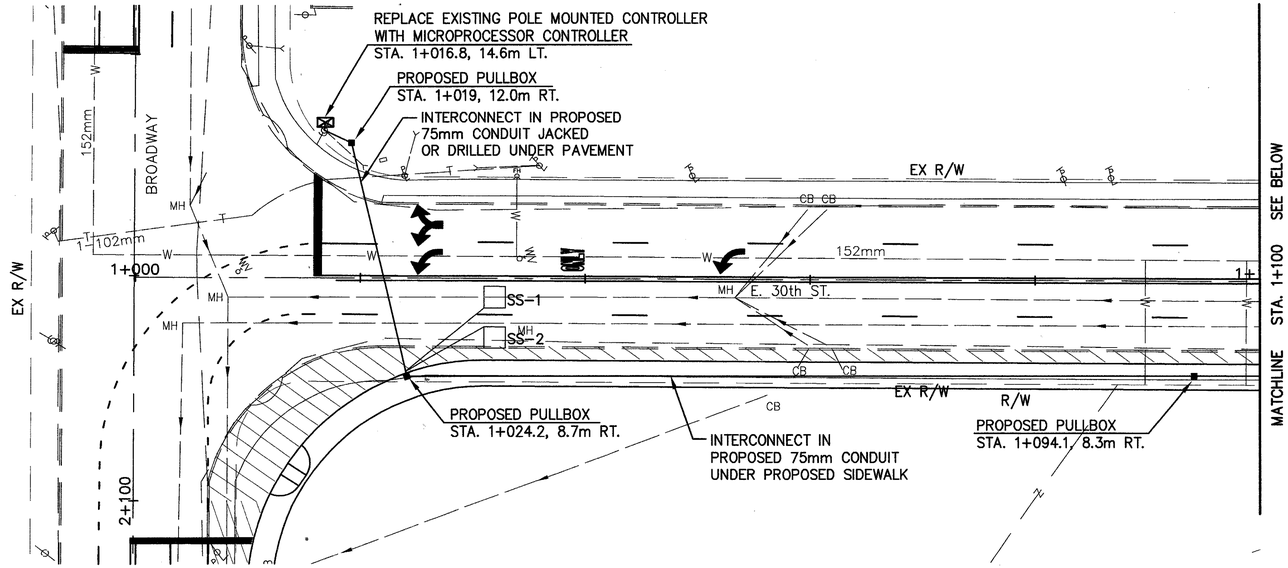
J:\JOBS\24621\TECHPROD\DETOUR\14949TDC.dwg view = 7

HORIZONTAL SCALE 1 : 250

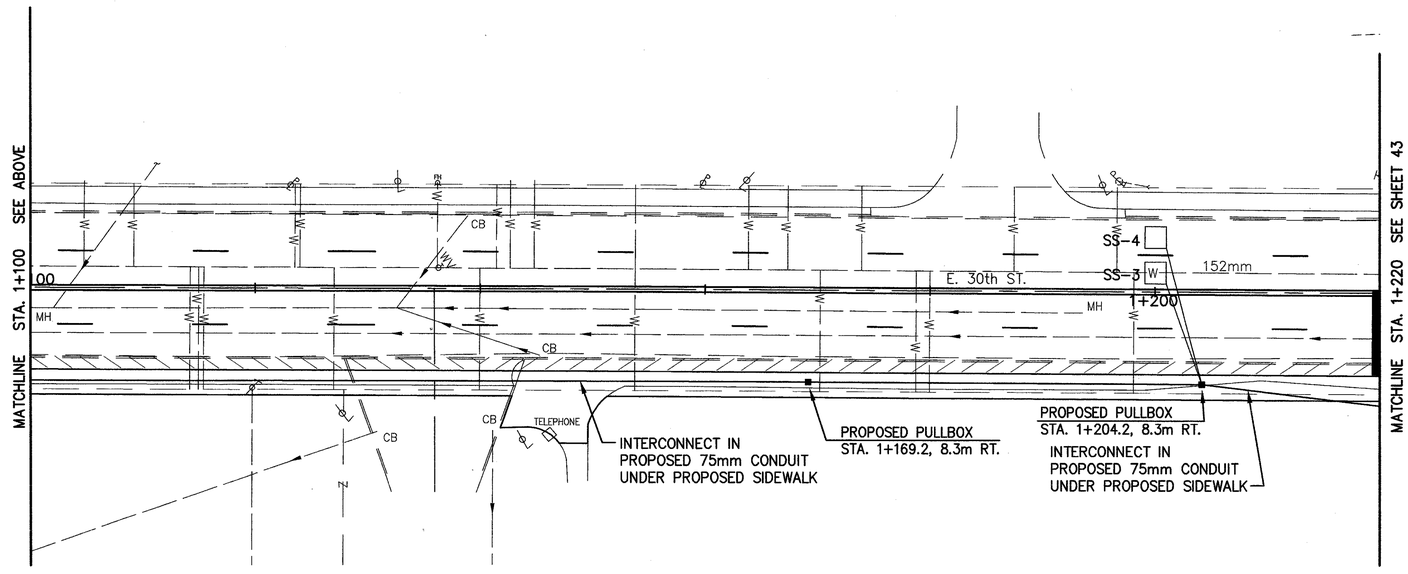
CALCULATED IMH CHECKED MJW

TRAFFIC SIGNAL PLAN BROADWAY & FINN

CUY-77-23.458 - PART 2



LOOP DETECTOR CHART								
LOOP	SIZE (M)	# TURNS	STATION	OFFSET	REFERENCE	HOOK–UP	CALL/DELAY/EXTEND	TYPE
SS–1	1.9 x 1.9	3	1+032.9	2.6 Rt.	℄ E 30th	INTO CABINET E 30th & BROADWAY	–	SYSTEM DETECTOR
SS–2	1.9 x 1.9	3	1+032.9	6.2 Rt.	℄ E 30th		–	SYSTEM DETECTOR
SS–3	1.9 x 1.9	3	1+199.1	2.6 Lt.	℄ E 30th	INTO CABINET E 30th & ORANGE	–	SYSTEM DETECTOR
SS–4	1.9 x 1.9	3	1+199.1	5.7 Lt.	℄ E 30th		–	SYSTEM DETECTOR



HNTB ARCHITECTS ENGINEERS PLANNERS

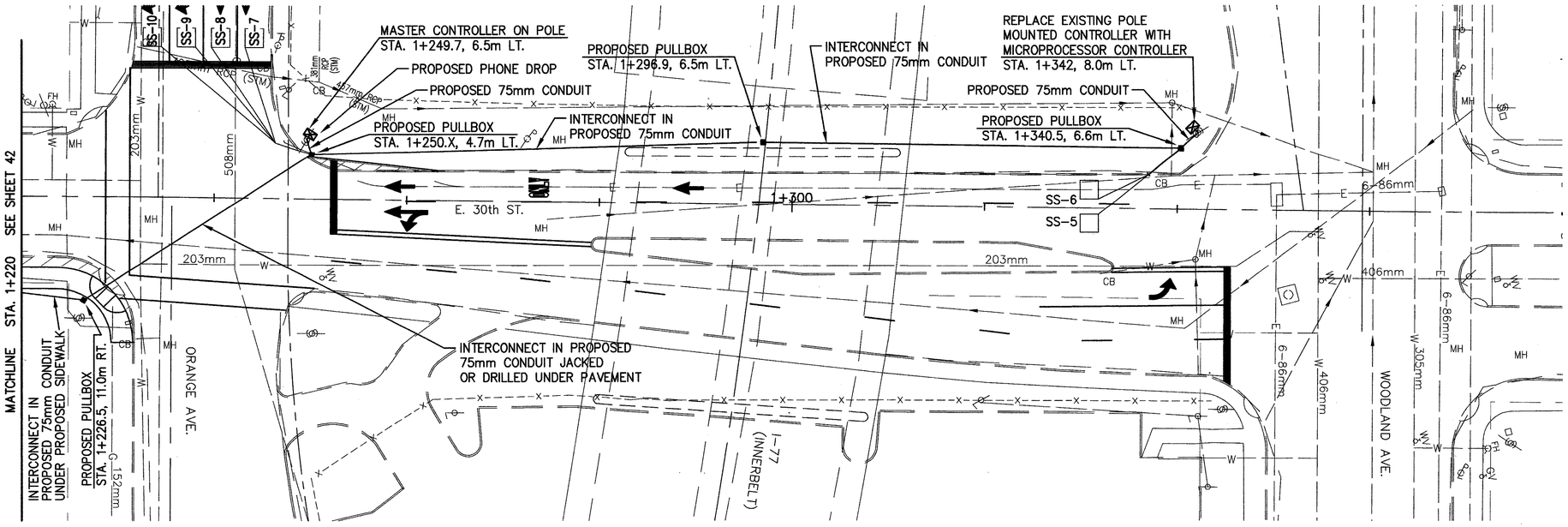
J:\JOBS\24621\TECHPROD\DETOUR\14949TD0.dwg view = PLOT1

HORIZONTAL SCALE
1 : 250

CALCULATED IMH
CHECKED MJW

INTERCONNECT PLAN
EAST 30TH STREET STA. 1+000 TO STA 1+220

CUY-77-23.458 – PART 2



LOOP DETECTOR CHART								
LOOP	SIZE (M)	# TURNS	STATION	OFFSET	REFERENCE	HOOK-UP	CALL/DELAY/EXTEND	TYPE
SS-5	1.9 x 1.9	3	1+329.8	0.6 Rt.	℄ E 30th	INTO CABINET E 30th & WOODLAND	-	SYSTEM DETECTOR
SS-6	1.9 x 1.9	3	1+329.8	2.8 Rt.	℄ E 30th		-	SYSTEM DETECTOR
SS-7	1.9 x 1.9	3	1+243.0	15.5m Rt.	℄ E 30th	INTO CABINET E 30th & ORANGE	-	SYSTEM DETECTOR
SS-8	1.9 x 1.9	3	1+239.5	15.5m Rt.	℄ E 30th		-	SYSTEM DETECTOR
SS-9	1.9 x 1.9	3	1+236.0	15.5m Rt.	℄ E 30th		-	SYSTEM DETECTOR
SS-10	1.9 x 1.9	3	1+232.6	15.5m Rt.	℄ E 30th		-	SYSTEM DETECTOR

HORIZONTAL SCALE 1 : 250

CALCULATED IMH CHECKED MJW

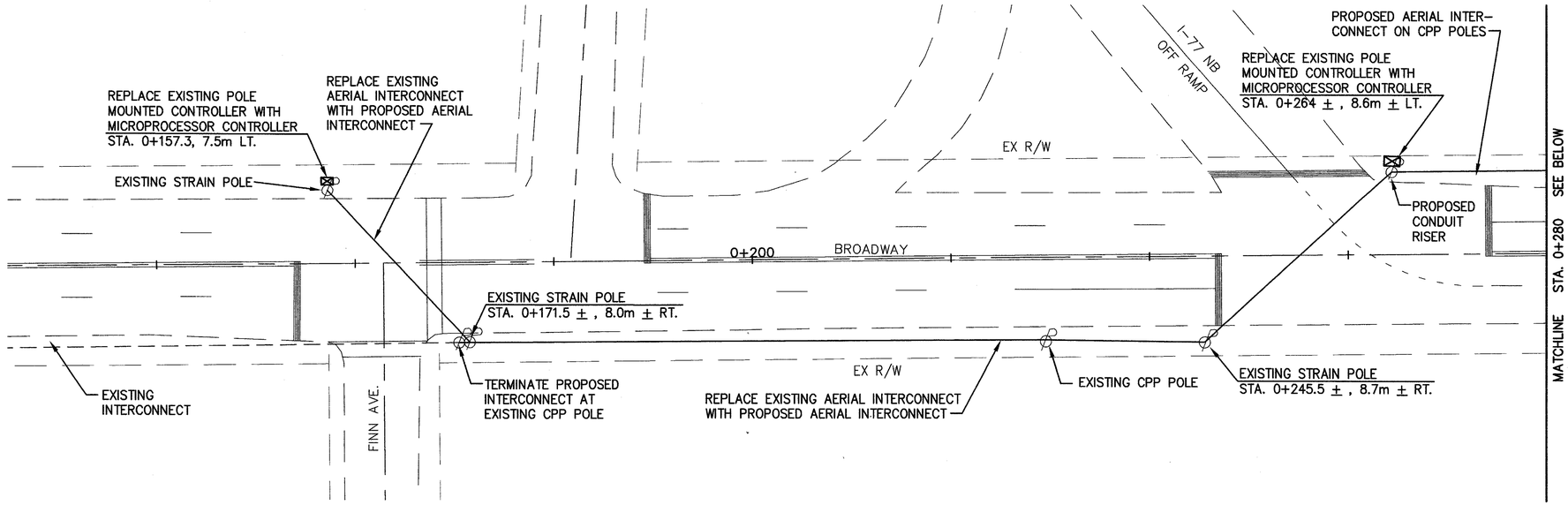
INTERCONNECT PLAN
EAST 30TH STREET STA. 1+220 TO STA. 1+400

CUY-77-23.458 - PART 2

43
58

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\14949TDD.dwg view = PLOT2



HNTB ARCHITECTS ENGINEERS PLANNERS

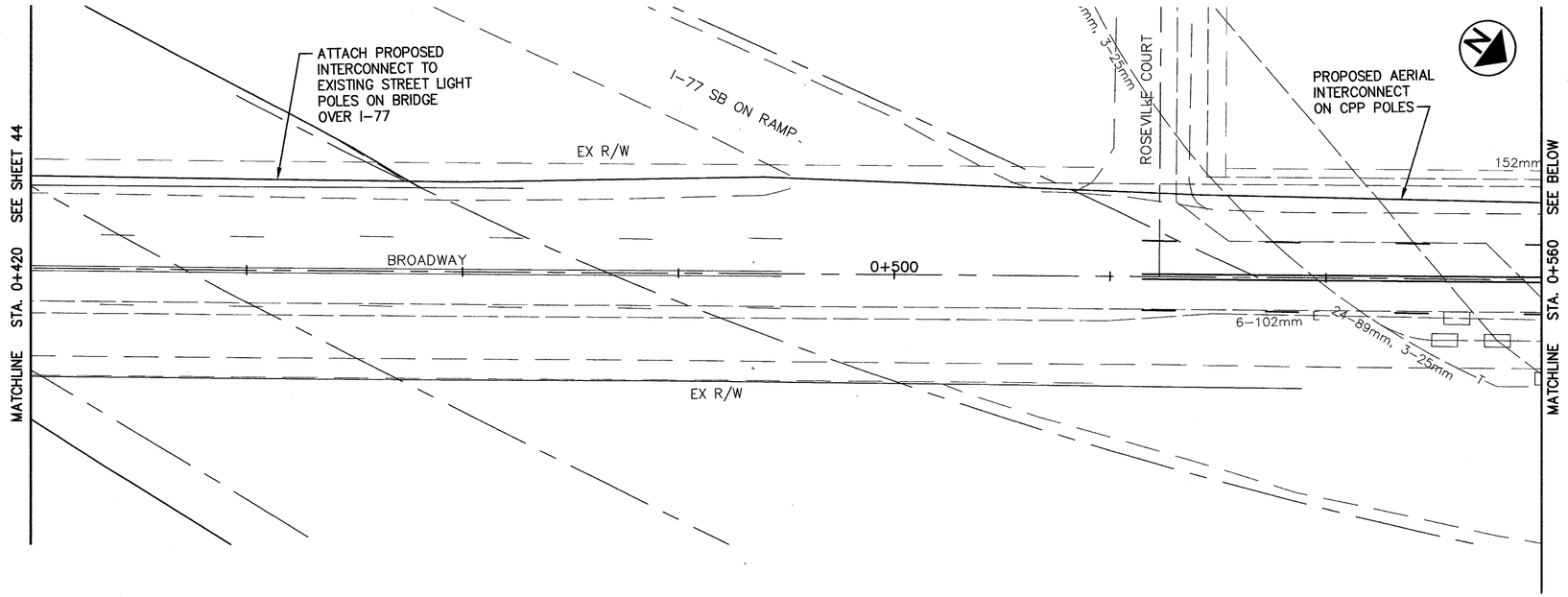
J:\JOBS\24621\TECHPROD\DETOUR\14949TDD.dwg view = PLOT3

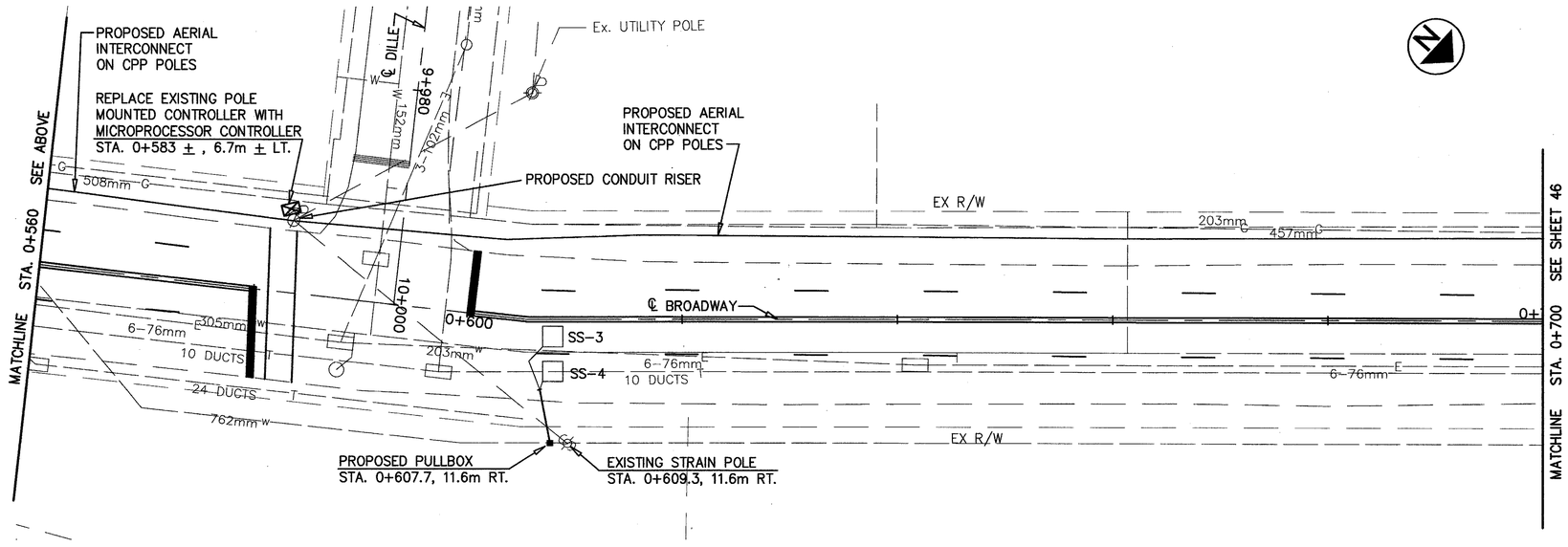
HORIZONTAL SCALE 1 : 250

CALCULATED IMH CHECKED MJW

INTERCONNECT PLAN
BROADWAY AVENUE STA. 0+120 TO STA 0+420

CUY-77-23.458 - PART 2





LOOP DETECTOR CHART								
LOOP	SIZE (M)	# TURNS	STATION	OFFSET	REFERENCE	HOOK-UP	CALL/DELAY/EXTEND	TYPE
SS-3	1.9 x 1.9	3	0+608.9	2.5m Rt.	℄ E 30th	INTO CABINET	–	SYSTEM DETECTOR
SS-4	1.9 x 1.9	3	0+608.9	4.9m Rt.	℄ E 30th	BROADWAY & DILLE	–	SYSTEM DETECTOR

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\14949TD0.dwg view = PLOT4

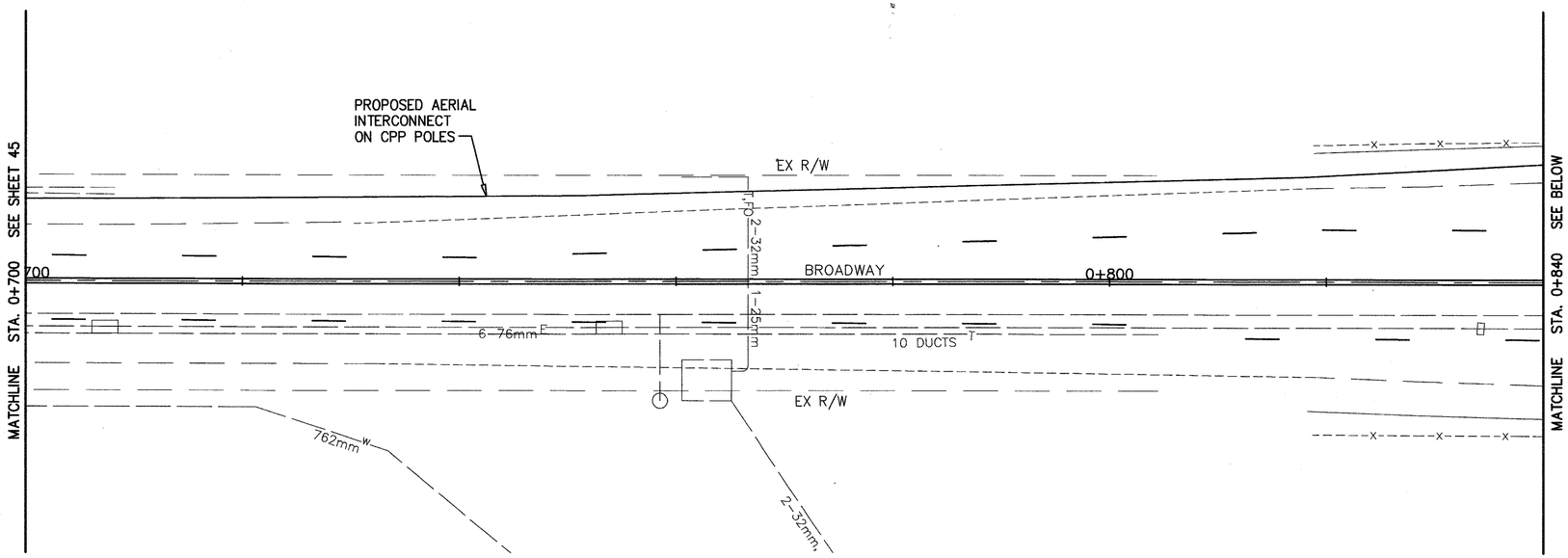
HORIZONTAL SCALE 1 : 250

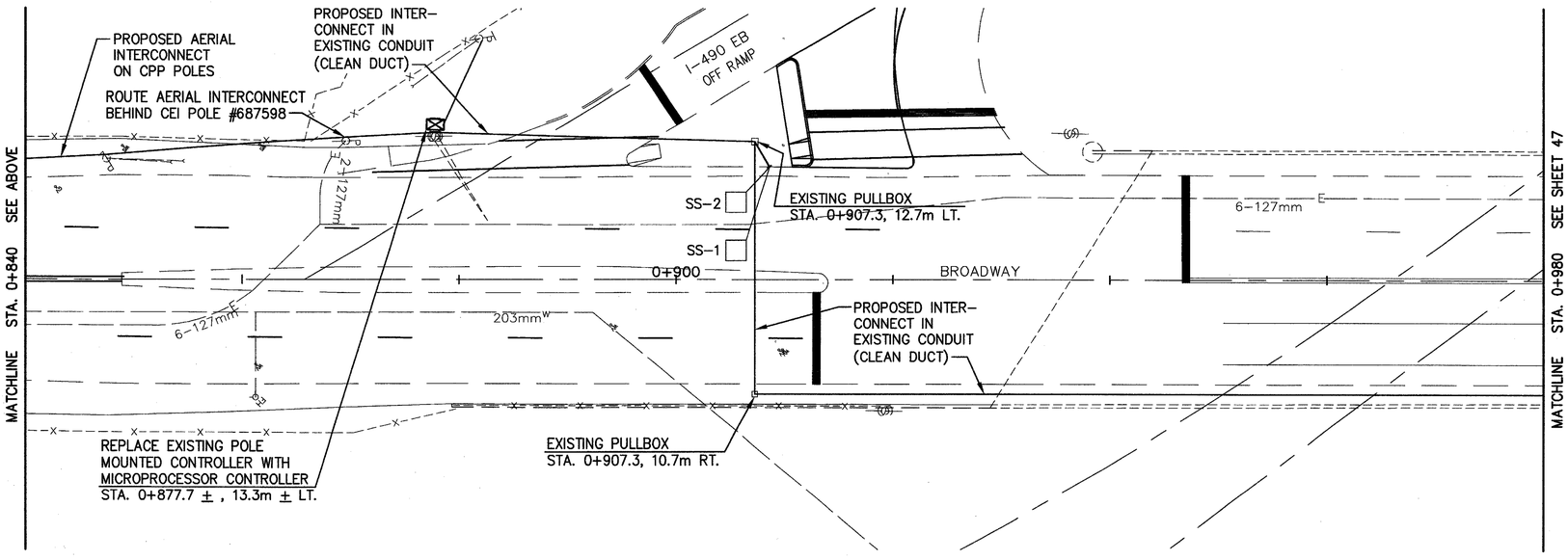
CALCULATED IMH CHECKED MJW

INTERCONNECT PLAN
BROADWAY AVENUE STA. 0+420 TO STA. 0+700

CUY-77-23.458 - PART 2

45
58





LOOP DETECTOR CHART								
LOOP	SIZE (M)	# TURNS	STATION	OFFSET	REFERENCE	HOOK-UP	CALL/DELAY/EXTEND	TYPE
SS-1	1.9 x 1.9	3	0+904.5	3.7 Lt.	℄ E 30th	INTO CABINET	–	SYSTEM DETECTOR
SS-2	1.9 x 1.9	3	0+904.5	8.2 Lt	℄ E 30th	BROADWAY & I-490	–	SYSTEM DETECTOR

NOTE:
ROUTE INTERCONNECT CABLE FROM CONTROLLER TO TOP OF MASTARM POLE, BEGIN AERIAL INTERCONNECT TO DILLE AT THIS POINT.

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\14949TDD.dwg view = PLOT5

HORIZONTAL SCALE 1 : 250

CALCULATED IMH CHECKED MJW

INTERCONNECT PLAN
BROADWAY AVENUE STA. 0+700 TO STA. 0+980

CUY-77-23.458 - PART 2

MATCHLINE STA. 0+980 SEE SHEET 46

1+000

I-490

PROPOSED INTER-CONNECT IN EXISTING CONDUIT (CLEAN DUCT)

PROPOSED INTER-CONNECT IN EXISTING CONDUIT (CLEAN DUCT)

EXISTING PULLBOX
STA. 10+022.9, 5.9m RT.

℄ EAST 37th

10+040

PROPOSED PHONE DROP

EXISTING PULLBOX
STA. 10+019.2, 12.5m LT.

6-127mm E

℄ BROADWAY

1+100

305mm W

℄ ROCKEFELLER

305mm

10+000

2-102mm E

℄ BROADWAY

152mm W

REPLACE EXISTING POLE MOUNTED CONTROLLER WITH MICROPROCESSOR MASTER CONTROLLER
STA. 10+018, 13.3m LT.

HNTB ARCHITECTS ENGINEERS PLANNERS

J:_JOBS_24621\TECHPROD\DETOUR\149497D0.dwg view = PLOT6

HORIZONTAL SCALE
1 : 250

CALCULATED IMH
CHECKED MJW

INTERCONNECT PLAN
BROADWAY AVENUE STA. 0+980 TO STA. 1+140

CUY-77-23.458 - PART 2

SUMMARY OF TRAFFIC SIGNAL QUANTITIES

SHEET NO.	LOCATION	603	625	625	625	625	625	625	632	632	632	632	632	632	632	632	632	632	632	632	632	632	632	632	632	632	632	632	632	632	632	633	633	633
		100mm CONDUIT, TYPE E	CONDUIT, CONCRETE ENCASED, 75mm	CONDUIT CLEANED AND CABLE REMOVED	TRENCH	CONDUIT, JACKED OR DRILLED, 75mm	PULL BOX, MISC.	GROUND ROD	REMOVAL MISC.: ELECTRO-MECHANICAL TRAFFIC SIGNAL CONTROLLER AND STORAGE	VEHICULAR SIGNAL HEAD, 3 SECTION, 300mm LENS, 1-WAY, AS PER PLAN	VEHICULAR SIGNAL HEAD, 3 SECTION, 300mm LENS, 2-WAY, AS PER PLAN	VEHICULAR SIGNAL HEAD, 5 SECTION, 300mm LENS, 2-WAY, AS PER PLAN	VEHICULAR SIGNAL HEAD, 3 SECTION, 300mm LENS, 3-WAY, AS PER PLAN	PEDESTRIAN SIGNAL HEAD, TYPE D2, AS PER PLAN	PEDESTRIAN PUSHBUTTON	DETECTOR LOOP	DETECTOR LOOP, AS PER PLAN	LOOP DETECTOR UNIT, DELAY AND EXTENSION TYPE, AS PER PLAN	MESSENGER WIRE, 7 STRAND, 9mm DIA. WITH ACCESSORIES	SIGNAL CABLE, 2 CONDUCTOR, NO. 14 AWG	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	INTERCONNECT CABLE, 6 PAIR, NO. 19 AWG, SOLID, REA (PE-39)	INTERCONNECT CABLE, INTEGRAL MESSENGER WIRE TYPE, 6 PAIR, NO. 19 AWG, SOLID, REA (PE-38), AS PER PLAN	LOOP DETECTOR LEAD-IN CABLE	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG	POWER SERVICE	CONDUIT RISER, 51mm DIA.	PEDESTAL, 2.4 M, TRANSFORMER BASE	REMOVAL MISC.: SIGNAL HEAD	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	REUSE OF ELECTROMECHANICAL CONTROLLER, AS PER PLAN	SIGNALIZATION, MISC.: MICROWAVE VEHICLE DETECTOR	PHONE DROP	WOOD POLE, CLASS 1, 12M	SIGNALIZATION, MISC.: REWIRE INTERSECTION	CONTROLLER, ACTUATED, 4 PHASE SOLID STATE DIGITAL MICROPROCESSOR, AS PER PLAN	CONTROLLER, MASTER, TRAFFIC RESPONSIVE, AS PER PLAN	CONTROLLER WORK PAD
		M	M	M	M	M	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	M	M	M	M	M	M	M	M	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	LUMP	EA.	EA.	SQ. M
28	BROADWAY & ROCKEFELLER								1																						1						
33	WOODLAND & E. 30TH		2		2			1	1																		5		1						LUMP	1		0.76
34	ORANGE & E. 30TH		2		2			1	1																		5		1				1		LUMP		1	0.76
35	BROADWAY & E. 30TH		2					1	1																		5								LUMP	1		0.76
36	BROADWAY & E. 34TH					15		2		1	1		1	4	4		1	50	97	97	71					5	1	4	1		1		1		1			
37	BRDWY. & E. 37TH/ROCKEFELLER			65				1	1	3	2	1		6	2		4	4								116	5				9			1	LUMP		1	
38	BROADWAY & I-490 OFF RAMP			30				1	1								3	3								99	5								LUMP	1		
39	BROADWAY & DILLE	2	26		26		1	2	1					2	2			1									5		3	1	1		1		LUMP	1		
40	BROADWAY & I-77 OFF RAMP	2	2		2		1	1	1								2	2								7	5								LUMP	1		
41	BROADWAY & FINN							1	1																		5								LUMP	1		
43	E. 30TH, WOODLAND TO ORANGE	6	96		96		3									6#		6#						112		46#												
42,43	E. 30TH, ORANGE TO BROADWAY	12	202		202	53	6									4#		4#						289		110#												
46,47	BRDWY., E. 37TH TO I-490 OFF			285													2#	2#						306		86#												
45,46	BROADWAY, I-490 TO DILLE																2#	2#							332	120#												
44,45	BROADWAY, DILLE TO I-77 OFF																								360													
44	BROADWAY, I-77 OFF TO FINN																								146*													
	TOTAL	22	332	380	330	68	11	11	9	4	3	1	1	12	8	10	13	25	50	97	97	71	707	838	584	45	1	9	2	10	1	1	2	2	1	LUMP	7	2	2.3

\# CLOSED LOOP SYSTEM SENSORS. SEE SHEETS 42-47

* CONTRACTOR SHALL REMOVE EXISTING HIGH VOLTAGE INTERCONNECT CABLE AND PLACE PROPOSED INTERCONNECT CABLE ON EXISTING POLES AT SAME ATTACHMENT POINTS. COST OF REMOVING AND DISPOSING EXISTING CABLE IS CONSIDERED INCIDENTAL TO THIS ITEM OF WORK.

HNTB ARCHITECTS ENGINEERS PLANNERS

CALCULATED IMH CHECKED MJW

SUMMARY OF TRAFFIC SIGNAL QUANTITIES

CUY-77-23.458 - PART 2

SUMMARY OF PAVEMENT MARKING QUANTITIES

SHEET NO.	LOCATION	642		644									
		LANE LINE, TYPE 2	CENTER LINE, TYPE 2	STOP LINE	CROSSWALK LINE	CHANNELIZING LINE	TRANSVERSE LINE	ISLAND MARKING	LANE ARROW	LANE ARROW, AS PER PLAN	WORD ON PAVEMENT, 1800mm	DOTTED LINE, 100mm	REMOVAL OF PAVEMENT MARKING
		Km	Km	M	M	M	M	SQ. M	EA.	EA.	EA.	M	EA.
54	BROADWAY & ORANGE			10		85			7		1		
54	BROADWAY & E. 14TH			16	37								
54	BROADWAY & ROCKEFELLER			16									
55	WOODLAND & E. 30TH			12		20			1				
55	ORANGE & E. 30TH			31	78	42			11		1		5
53	BROADWAY & E. 30TH			25	60	230			23		5	68	6
52	BROADWAY & E. 34TH			24	66							69	
51	BROADWAY & E. 37TH/ROCKEFELLER			40	120	43			4	2	3	80	
51	BROADWAY & I-490 OFF RAMP			43	78	140	76		11		1	40	3
50	BROADWAY & DILLE			20	30								
50, 51	BROADWAY, 0+530 TO 0+947	0.834	0.417										
51-54	BROADWAY, 1+126 TO 3+085	3.918	1.959										
54	BROADWAY, 2+902 TO 2+951						24	5					
53, 55	E. 30TH, 1+000 TO 1+345	0.690	0.345										
TOTAL CARRIED TO GENERAL SUMMARY :		5.44	2.72	237	469	560	100	5	57	2	11	257	14

SUMMARY OF SIGNING QUANTITIES

SHEET NO.	LOCATION	630								
		GROUND MOUNTED SUPPORT, NO. 3 POST	SIGN, FLAT SHEET	SIGN, FLAT SHEET, TYPE G	SIGN HANGER ASSEMBLY, SPAN WIRE	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	REMOVAL OF POLE MOUNTED SIGN AND REERECTION
		M	SQ. M	SQ. M	EA.	EA.	EA.	EA.	EA.	EA.
55	ORANGE & E. 30TH						2			
53	BROADWAY & E. 30TH	40	8.00							
36	BROADWAY & E. 34TH	12		0.81	2		3		3	1
37	BROADWAY & E. 37TH/ROCKEFELLER		0.9	0.68		1		1		
39	BROADWAY & DILLE	9	0.68							
TOTAL CARRIED TO GENERAL SUMMARY :		61	10	2	2	1	5	1	3	1

CALCULATED IMH CHECKED MJW

SUMMARY OF PAVEMENT MARKING AND SIGNING QUANTITIES

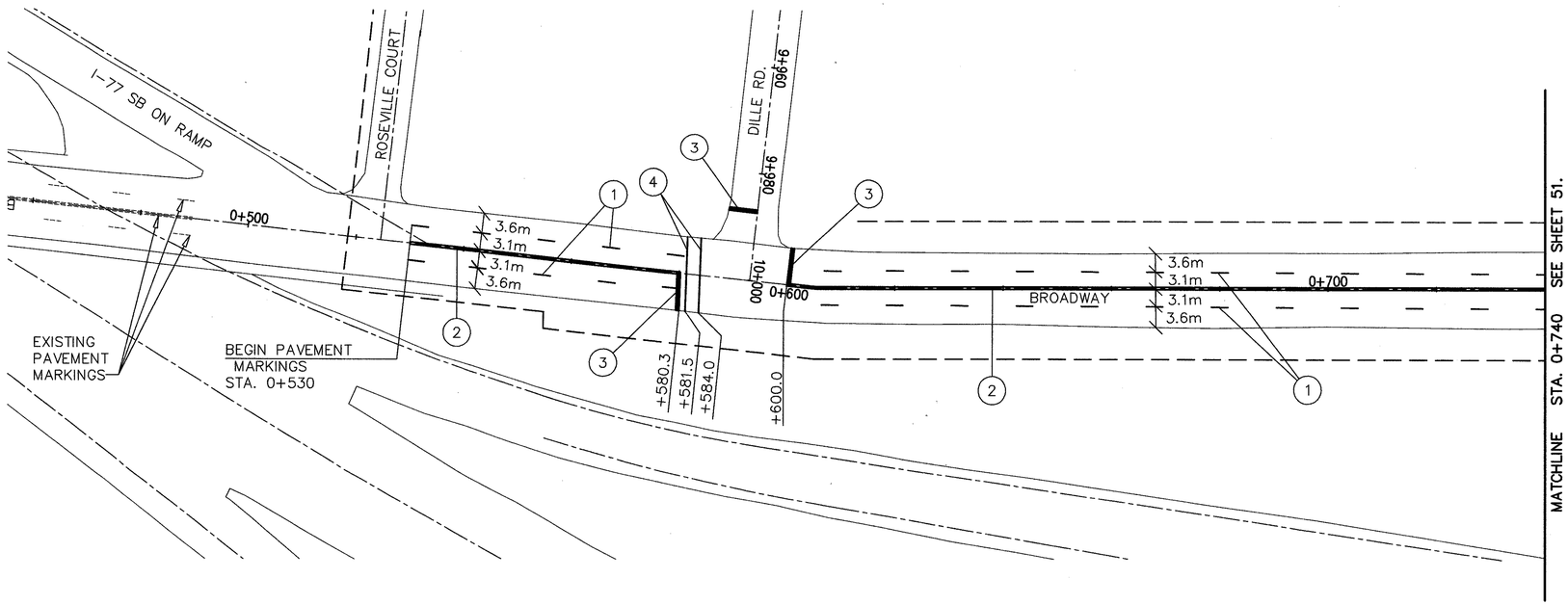
CUY 77-23.458 - PART 2

SUMMARY OF PAVEMENT MARKING AND SIGNING QUANTITIES

49
58

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\1494975E.dwg View = PLOT2



NOTES :

1.) FOR TYPICAL SECTION, SEE SHEET 2.
2.) FOR DILLE SIGNAL PLAN SEE SHEET 39.

PAVEMENT MARKING LEGEND	
(1)	ITEM 642 – LANE LINE – (100mm) , TYPE 2
(2)	ITEM 642 – CENTER LIINE – DOUBLE SOLID, TYPE 2
(3)	ITEM 644 – STOP LINE – (600mm)
(4)	ITEM 644 – CROSSWALK LINE – (300mm)
(5)	ITEM 644 – DOTTED LINE – WHITE (100mm)
(6)	ITEM 644 – CHANNELIZING LINE – (150mm)
(7)	ITEM 644 – LANE ARROW
(7A)	ITEM 644 – LANE ARROWS, AS PER PLAN
(8)	ITEM 644 – WORD ON PAVEMENT – (1800mm)
(9)	ITEM 644 – TRANSVERSE LINE (YELLOW) – (600mm)
(10)	ITEM 644 – ISLAND MARKING (YELLOW)

HNTB ARCHITECTS ENGINEERS PLANNERS

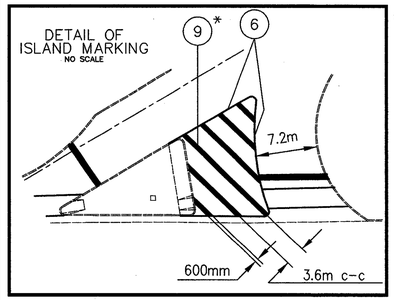
J:\JOBS\24621\TECHPROD\DETOUR\V14949TPD.dwg View = P6

HORIZONTAL SCALE
1 : 500

CALCULATED IMH
CHECKED MJS

TRAFFIC CONTROL PLAN
BROADWAY AVE. STA. 0+500 TO STA 0+740

CUY-77-23.458 – PART 2

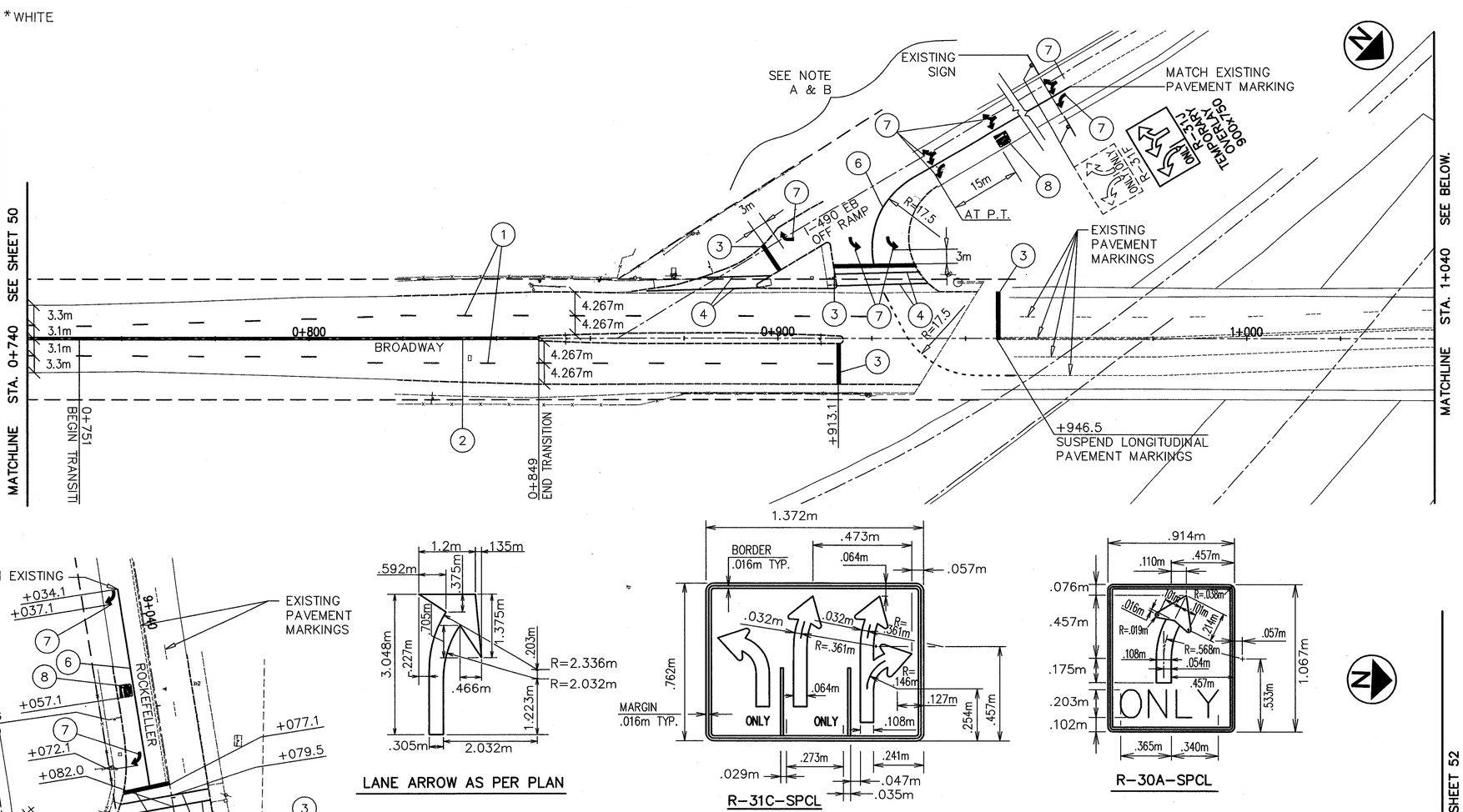


* WHITE

NOTES:

A) RIGHT AND LEFT ARROWS TO BE REPLACED BY RIGHT TURN ARROWS AT END OF CUY-77-23.458 PART 1 PROJECT

B) REMOVE ARROW AND STRIPE OUT WIDENING NEXT TO ISLAND AT THE END OF CUY-77-23.458 PART 1 PROJECT. PER DETAIL.



NOTES :

1.) FOR LEGEND, SEE SHEET 50.
2.) FOR TYPICAL SECTION, SEE SHEET 2.
3.) FOR ROCKEFELLER/E. 37th SIGNAL PLAN SEE SHEET 37.
4.) FOR I-490 SIGNAL PLAN SEE SHEET 38.
5.) SEE SHEET 37 FOR SIGN R-30A-SPCL AND R-31C-SPCL LOCATIONS

HNTB ARCHITECTS ENGINEERS PLANNERS

J:_JOBS\2462\1\TECH\PROD\DETOUR\14949TPD.dwg view = P5

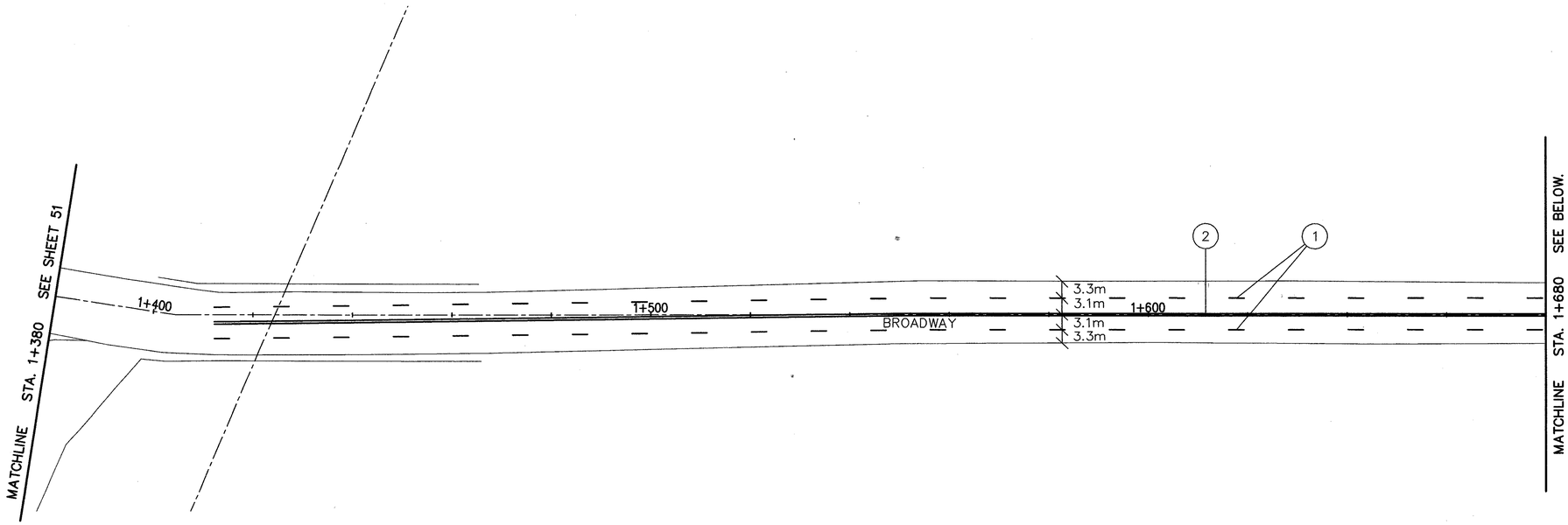
NORTH VARIES

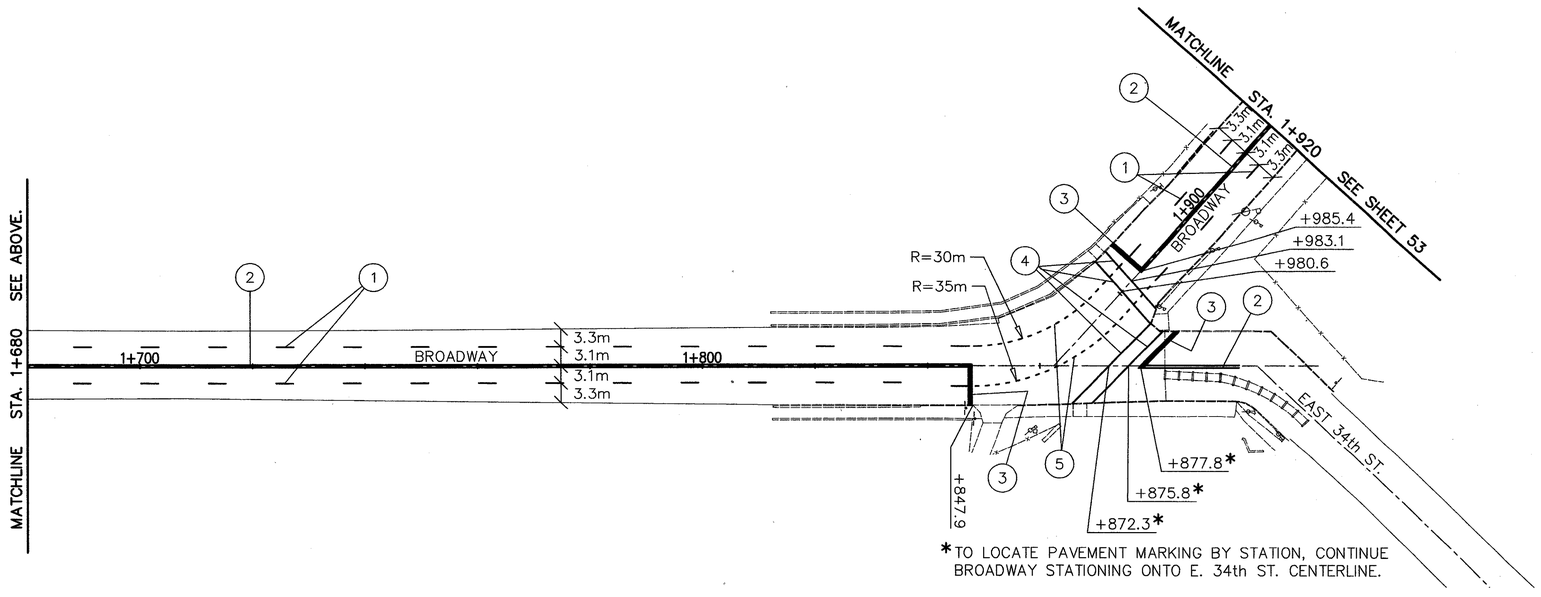
HORIZONTAL SCALE 1 : 500

CALCULATED IMH CHECKED MJS

TRAFFIC CONTROL PLAN
BROADWAY AVE. STA. 1+380 TO STA. 1+040

CUY-77-23.458 - PART 2





*TO LOCATE PAVEMENT MARKING BY STATION, CONTINUE BROADWAY STATIONING ONTO E. 34th ST. CENTERLINE.

NOTES :

1.) FOR LEGEND, SEE SHEET 50.
2.) FOR TYPICAL SECTION, SEE SHEET 2.
3.) FOR E. 34th ST. SIGNAL PLAN SEE SHEET 36.

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\149497PD.dwg view = P4

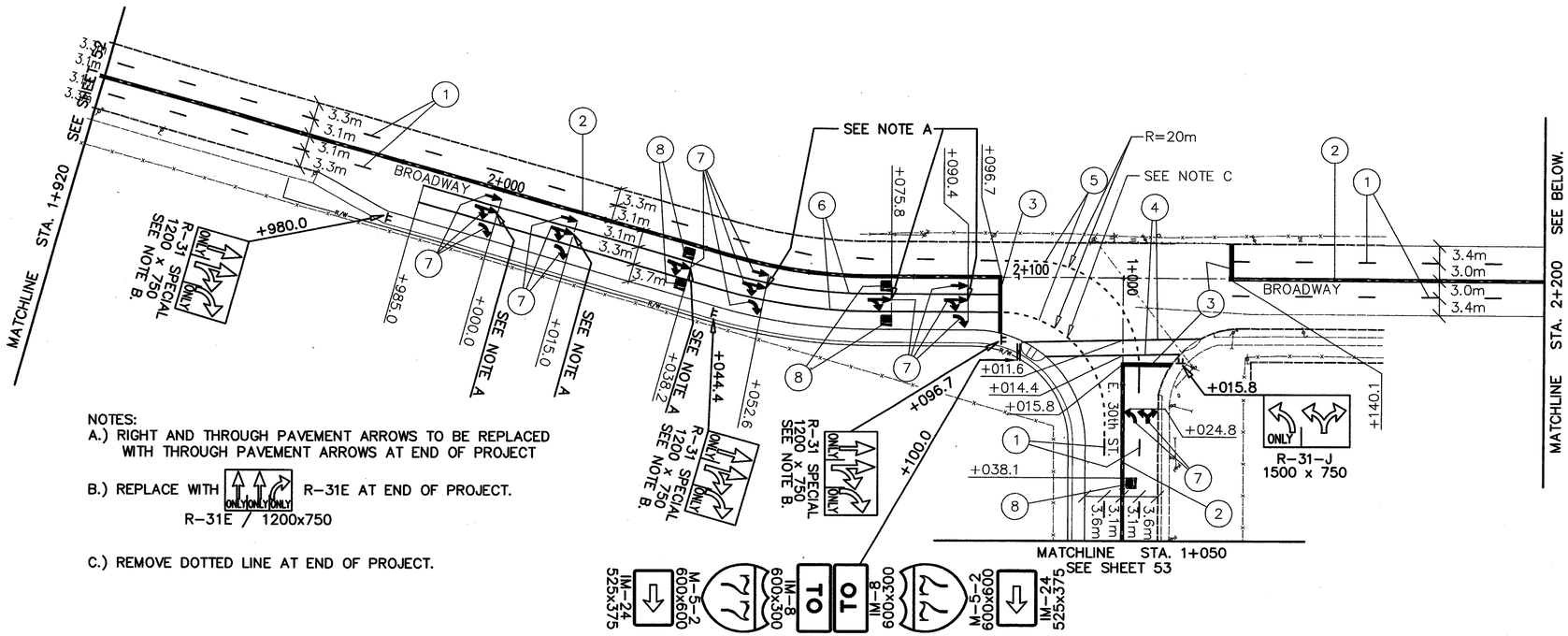
HORIZONTAL SCALE 1 : 500

CALCULATED IMH CHECKED MJS

TRAFFIC CONTROL PLAN
BROADWAY AVE. STA 1+940 TO STA. 1+380

CUY-77-23.458 - PART 2

52
58

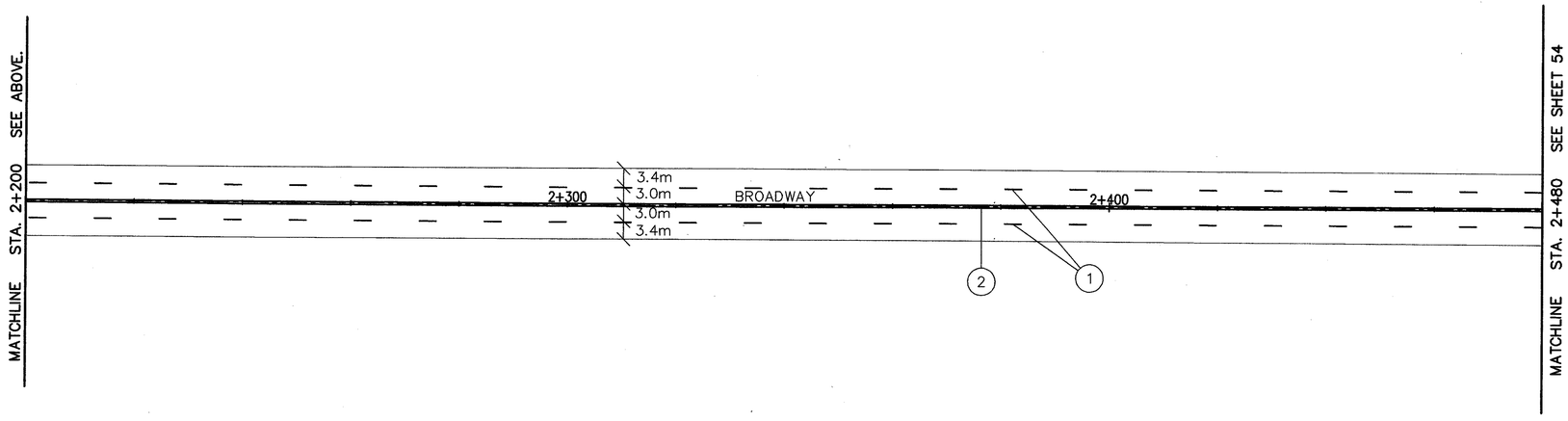


NOTES:

A.) RIGHT AND THROUGH PAVEMENT ARROWS TO BE REPLACED WITH THROUGH PAVEMENT ARROWS AT END OF PROJECT

B.) REPLACE WITH R-31E AT END OF PROJECT.
R-31E / 1200x750

C.) REMOVE DOTTED LINE AT END OF PROJECT.



NOTES :

1.) FOR LEGEND, SEE SHEET 50.
2.) FOR TYPICAL SECTION, SEE SHEET 2.
3.) FOR BROADWAY & E 30th SIGNAL PLAN, SEE SHEET 35.

HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\149481TP0.dwg View = P2

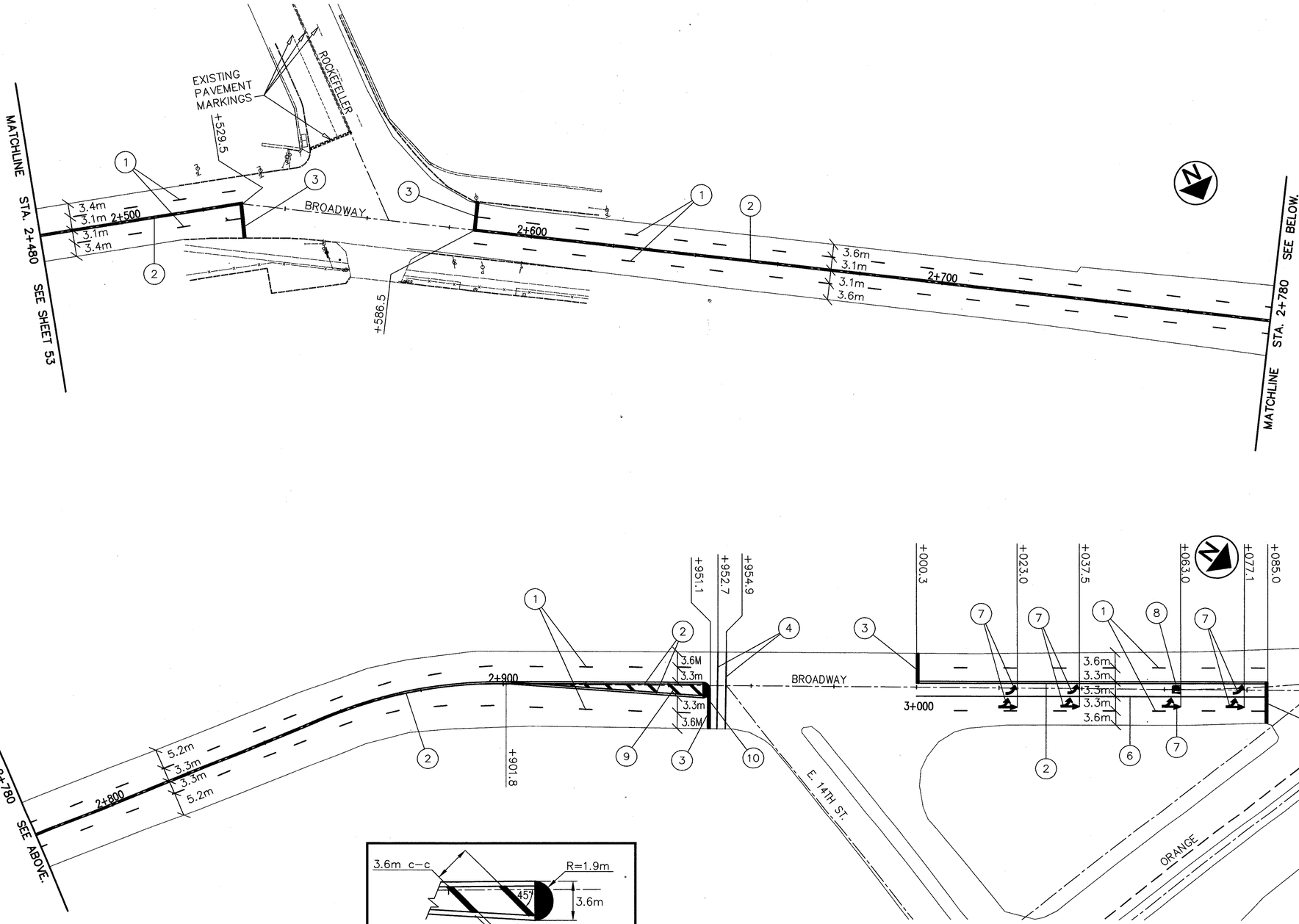
HORIZONTAL SCALE 1 : 500

CALCULATED IMH CHECKED MJS

TRAFFIC CONTROL PLAN
BROADWAY AVE. STA 2+480 TO STA. 1+940

CUY-77-23.458 - PART 2

53
58



HNTB ARCHITECTS ENGINEERS PLANNERS

NOTES :
1.) FOR LEGEND, SEE SHEET 50.
2.) FOR TYPICAL SECTION, SEE SHEET 2.

NORTH VARIES

HORIZONTAL SCALE 1 : : 500

CALCULATED IMH
CHECKED MJS

TRAFFIC CONTROL PLAN
BROADWAY AVE. STA. 2+480 TO STA. 4+000

CUY-77-23.458 - PART 2

54
58

J:\CVR\S\24621\TECHPROD\DETOUR\14943TPD.dwg view = PI

TRAFFIC CONTROL PLAN
E. 30th ST. \ ORANGE AVE. DETAILS

NORTH VARIES | HORIZONTAL SCALE AS SHOWN | CALCULATED IMH | CHECKED MJS

CUY-77-23.458 - PART 2

SEE NOTE A.

REMOVE & REERECT R-2 ON EXISTING SUPPORTS

YIELD

3 SEE NOTE B.

EXISTING PAVEMENT MARKINGS

750 X 900 (TEMPORARY OVERLAY) R-27A

900 X 750 (TEMPORARY OVERLAY) R-31V

SEE NOTE E

EX L/A

SEE NOTE C.

R=12m

ORANGE AVE.

SEE NOTE D.

CONDUIT JACKED OR DRILLED UNDER PAVEMENT

7 SEE NOTE C

REPLACE EXISTING PAVEMENT MARKING

E 30th ST.

+523.9

+487.9

+452.3

+446.1

(TEMPORARY OVERLAY) 900 X 1050 TYPE G

(NEW) OC-29R 750 X 600 (TYPE G)

DETOUR

SOUTH

STOP

R-1 900x900 (TYPE G) WITH BEACON ALL COSTS INCLUDED IN ITEM 614 - MAINTAINING TRAFFIC

SEE NOTE B.

NOTES:

A.) TO BE REERECTED AT THE END OF CUY -77-23.458 PART 1 PROJECT.

B.) TO BE REMOVED AT THE END OF CUY-77-23.458 PART 1 PROJECT.

C.) RIGHT TURN PAVEMENT ARROWS TO BE REPLACED WITH STRAIGHT PAVEMENT ARROWS AT THE END OF CUY-77-23.458 PART 1 PROJECT.

D.) POSITION SIGN AND BEACON AT AN ANGLE SO THAT THEY ARE NOT VISIBLE TO RAMP TRAFFIC. PROVIDE HOOD TO SHIELD BEACON.

E.) THRU AND LEFT PAVEMENT ARROW TO BE REPLACED WITH LEFT PAVEMENT ARROW AT THE END OF CUY-77-23.458 PART 1 PROJECT

HORIZONTAL SCALE 1 : 250

750 X 900 (TEMPORARY OVERLAY) R-27A

INCLUDED FOR PAYMENT IN ITEM 614 - MAINTAINING TRAFFIC

SEE SHEET 53

MATCHLINE STA. 1+050

+051.4

E. 30th ST.

3.6m 3.3m 3.3m 3.6m

1+100

1+200

+220.0 +227.3 +229.3 R=12m

+252.5

ORANGE AVE.

SEE PLAN VIEW ABOVE FOR DETAILS OF THIS AREA.

+259.3 +273.2 +287.7 +340.0 +345.5

WOODLAND

1+300

3.5m 3.5m

3.3m 3.6m

3.6m 3.7m

3.3m 3.6m 3.6m

HORIZONTAL SCALE 1 : 500

NOTES :

1.) FOR LEGEND, SEE SHEET 50.
2.) FOR TYPICAL SECTION, SEE SHEET 2.
3.) FOR E 30th & WOODLAND SIGNAL PLAN, SEE SHEET 33.
4.) FOR E 30th & ORANGE SIGNAL PLAN, SEE SHEET 34.

HNTB ARCHITECTS ENGINEERS PLANNERS

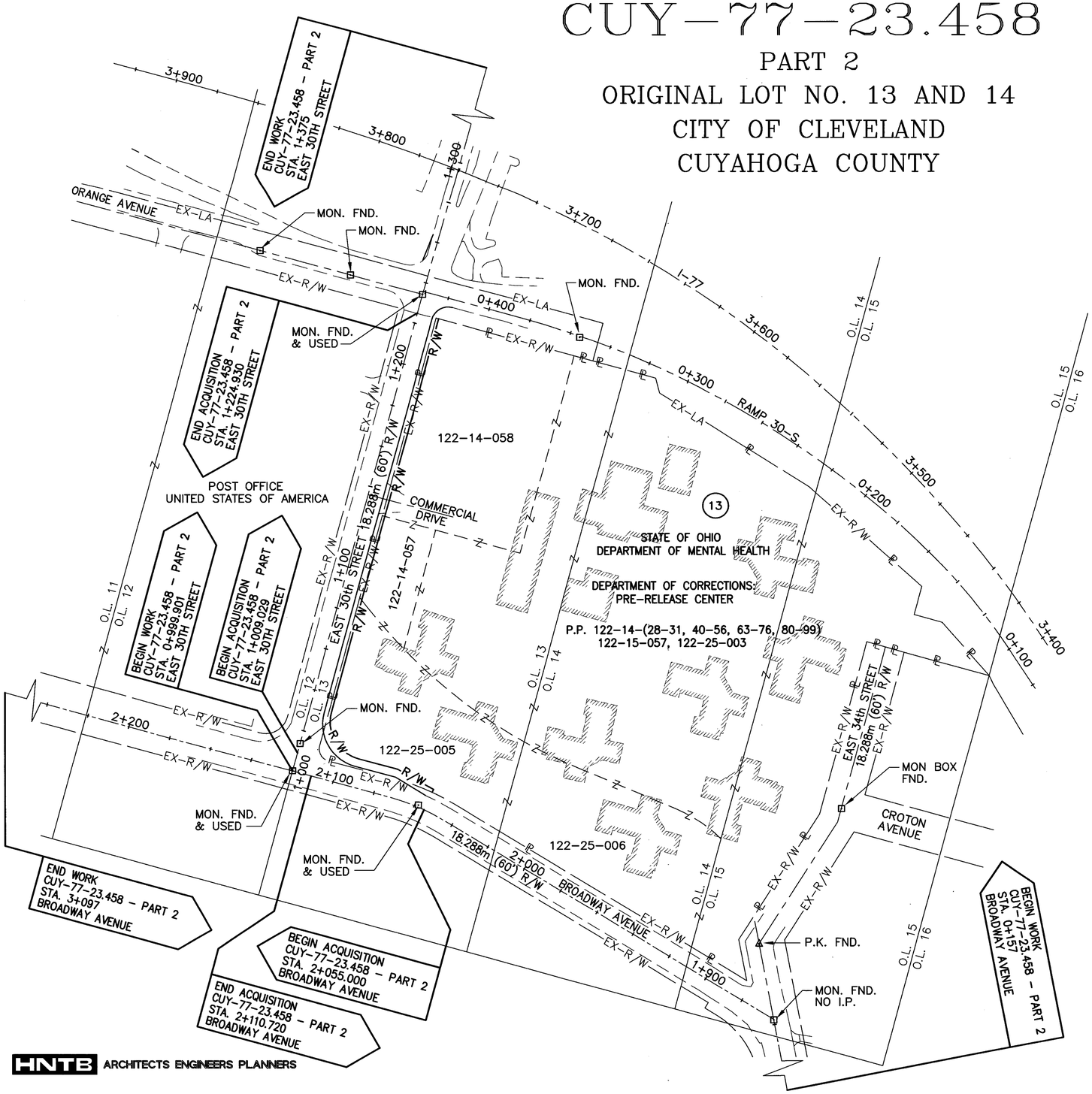
J:\VOL5\24621\TECH\PROD\DETOUR\14949TPD.dwg view = P3

CUY-77-23.458

PART 2

ORIGINAL LOT NO. 13 AND 14
CITY OF CLEVELAND
CUYAHOGA COUNTY

metric units



HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DRAWINGS\14949RM2.dwg

UTILITIES

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

AT&T
3833 WEYMOUTH ROAD
MEDINA, OH 44256
PHONE: (216) 723-9110

AMERITECH
13630 LORAIN AVE., 4TH FLR.
CLEVELAND, OH 44111
PHONE: (216) 476-6142

CLE. ELECTRIC ILLUMINATING CO.
P.O. BOX 5000
CLEVELAND, OH 44101
PHONE: (216) 634-7232

CITY OF CLEVELAND
WATER DEPARTMENT
1201 LAKESIDE AVE.
CLEVELAND, OH 44114
PHONE: (216) 664-2444

CITY OF CLEVELAND
DIVISION OF TRAFFIC
2001 PAYNE AVE.,
3rd FLOOR
CLEVELAND, OH 44111
PHONE: (216) 664-3194

CLEVELAND PUBLIC POWER
1300 LAKESIDE AVE.
CLEVELAND, OH 44114
PHONE: (216) 664-4245

WORLD COM
120 RAVINE ST.
AKRON, OH 44303
PHONE: (330) 253-8267

EAST OHIO GAS
1201 EAST 55TH STREET
CLEVELAND, OH 44103
PHONE (216) 736-6675

CITY OF CLEVELAND
DIV. OF WATER POLLUTION CONTROL
12302 KIRBY AVE.
CLEVELAND, OH 44108
PHONE: (216) 664-3785

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.

NOTE:

1.) ALL STRUCTURES ARE COMMERCIAL

REV.	DATE	DESCRIPTION
1	8/5/98	REVISED PARCELS 13 AND 13T
DATE OF COMPLETION		

HORIZONTAL SCALE 1 : 1000

CALCULATED ZSS CHECKED MJW

P.I.D. NO. 14949

PROPERTY MAP

CUY-77-23.458 - PART 2

1 / 3

56
58

ORIGINAL LOT NO. 14
CITY OF CLEVELAND
CUYAHOGA COUNTY

ORIGINAL LOT NO. 13
CITY OF CLEVELAND
CUYAHOGA COUNTY

EXISTING RIGHT OF WAY LOCATION AND WIDTH DETERMINED FROM :
1.) PRIOR RIGHT OF WAY PLAN (CUY–21–13.77)
2.) LOT CONSOLIDATION FOR THE OHIO DEPARTMENT OF MENTAL HEALTH.
3.) SURVEY BY MS CONSULTANTS CONDUCTED 1997

metric units

HORIZONTAL SCALE 1:200

CALCULATED MJW | CHECKED JMG

PID NO. 14949

RIGHT OF WAY PLAN – BROADWAY AVE. & E. 30th ST.
CUY–77–23.458 – PART 2
STA. 1+965.000 TO STA. 1+140

REV.	DATE	DESCRIPTION
1	8/05/98	REVISED PARCELS 13 AND 13T

BEGIN WORK
CUY–77–23.458 – PART 2
STA. 0+157.000
BROADWAY AVENUE

BEGIN ACQUISITION
CUY–77–23.458 – PART 2
STA. 2+055.000
BROADWAY AVENUE

℄ CURVE DATA
Δ = 15°48'30"
R = 100.584m [330.00']
T = 13.965m [45.82']
L = 27.752m [91.05']
CH = 27.664m [90.76']
CH BRG. = N66°46'37"W

Δ = 09°47'39"
R = 109.728m [360.00']
T = 9.401m [30.84']
L = 18.757m [61.54']
CH BRG = N69°47'02"W
CH = 18.734m [61.46']

PC STA. 2+044.442
PT STA. 2+072.194
℄ CURVE
MON. FND. & USED

EX R/W
℄ BROADWAY AVE. (18.288m–60.00')
2+000
N58°52'22"W
ASPHALT
MH
610mm VCP
CB
914mm RCP (SAN)
610mm VCP (STM)
305mm (STM)
N74°40'52"W 32.430m [106.40']
2+055.000 9.144 RT.
2+072.194 9.144 RT.
PROPOSED SIDEWALK
S25°06'47"W 1.524m [5.00']
2+055.000 10.668 RT.
S25°06'47"W 3.650m [11.98']
2+055.000 14.318 RT.
R/W S60°13'36"E 19.543m [64.12']
R/W S74°40'52"E 19.044m [62.48']
2+072.194 13.925 RT.
EXISTING CHAIN LINK FENCE (DO NOT DISTURB)
S58°44'44"E 56.230m [184.48']
Δ = 89°56'15"
R = 18.288m [60.00']
T = 18.268m [59.93']
L = 28.707m [94.18']
CH BRG =S29°42'44"E
CH = 25.849m [84.81']
2+091.238 13.925 RT.
CONSTRUCTION LIMIT
13
13T
122–25–006
STATE OF OHIO
DEPARTMENT OF MENTAL HEALTH
DEPARTMENT OF CORRECTIONS: PRE–RELEASE CENTER
122–25–005
SEE BELOW.
MATCHLINE STA. 2+100
SEE ABOVE.

BEGIN WORK
CUY–77–23.458 – PART 2
STA. 0+999.901
EAST 30TH STREET

BEGIN ACQUISITION
CUY–77–23.458 – PART 2
STA. 1+009.029
EAST 30TH STREET

END WORK
CUY–77–23.458 – PART 2
STA. 3+097
BROADWAY AVENUE

END ACQUISITION
CUY–77–23.458 – PART 2
STA. 2+110.720
BROADWAY AVENUE

STA. 2+119.847 ℄ BROADWAY AVE. = STA. 0+999.901 ℄ E. 30TH ST.
Δ = 89°56'15"
R = 6.096m [20.00']
T = 6.089m [19.98']
L = 9.569m [31.39']
CH BRG = N29°42'44"W
CH = 8.616m [28.27']

POST OFFICE – UNITED STATES OF AMERICA
ORIGINAL LOT NO. 12
CITY OF CLEVELAND
CUYAHOGA COUNTY
N15°15'23"E 209.805m [688.34']
℄ E. 30TH ST. (18.288m–60.00')
N74°34'46"W
152mm
CONCRETE
ASPHALT
610mm VCP (STM)
533mm VCP (STM)
914mm RCP (SAN)
1372mm RCP (SAN)
381mm VCP (STM)
305mm VCP (STM)
89°50'09"
90°03'45"
MON. FND. & USED
0.L. 12
0.L. 13
1+000
1+100
1+015.125 9.144 RT.
1+032.083 10.357 RT.
1+027.969 13.160 RT.
2+104.624 9.144 RT.
N74°40'52"W
S15°14'23"W 102.031m [334.75']
S15°15'23"W 192.846m [632.70']
CONSTRUCTION LIMIT
S28°00'03"W 10.253m [33.64']
1+130.000 13.131 RT.
1+140.000 15.392 RT.
122–14–057
122–14–058
EXISTING CHAIN LINK FENCE (DO NOT DISTURB)
DEPARTMENT OF CORRECTIONS: PRE–RELEASE CENTER
STA. 1+135.9 COMMERCIAL DRIVE
SEE SHEET 58
MATCHLINE STA. 1+140
MATCHLINE STA. 2+100
SEE ABOVE.

Legend:
– PROPOSED WIDENING

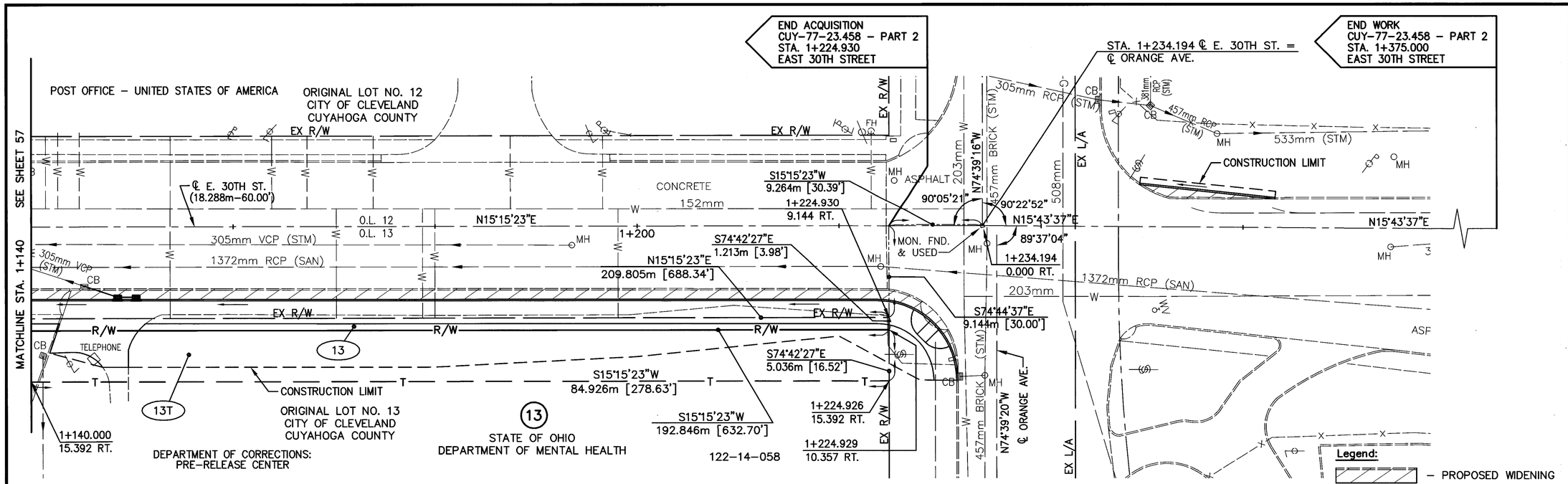
HNTB ARCHITECTS ENGINEERS PLANNERS

J:\JOBS\24621\TECHPROD\DETOUR\14949RDY.DWG

CUY–77–23.458 – PART 2

2 / 3

57
58



TOTAL NUMBER OF :

1 - OWNERSHIPS

0 - TOTAL TAKES

0 - OWNERSHIPS WITH STRUCTURES INVOLVED

0 - OWNERSHIPS WITH "P" ITEMS

NET RESIDUE = RECORD AREA - TOTAL PRO - NET TAKE

ALL RIGHT OF WAY ACQUIRED IN THE NAME OF STATE OF OHIO UNLESS OTHERWISE SHOWN.

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD BOOK	OWNERS RECORD PAGE	AUDITOR'S PARCEL	RECORD AREA(AC.)	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUC-TURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND FED/STATE	REMARKS AND PERSONALTY	AS ACQUIRED BOOK	AS ACQUIRED PAGE
13	STATE OF OHIO DEPARTMENT OF	57, 58	238	93-94	12214057	0.1305	0.0	0.0050	0.0	0.0050			0.1255	80/20	FOR WIDENING OF EAST 30TH STREET AND		
	MENTAL HEALTH					(0.323)		(0.012)		(0.012)			(0.311)		BROADWAY AVENUE		
					12214058	0.6556	0.0	0.0118	0.0	0.0118			0.6438	80/20			
						(1.620)		(0.029)		(0.029)			(1.591)				
					12225005	0.5037	0.0	0.0390	0.0	0.0390			0.4647	80/20			
						(1.245)		(0.096)		(0.096)			(1.149)				
					12214028-031	3.9679	0.0	0.0	0.0	0.0			3.9679	80/20			
					12214040-056	(9.804)							(9.804)				
					12214063-076												
					12214080-099												
					12215057												
					12225003												
					12225006												
			GRAND TOTAL			5.2577	0.0	0.0558	0.0	0.0558			5.2019	80/20			
						(12.992)		(0.138)		(0.138)			(12.854)				
13T		57, 58					0.0	0.1115	0.0	0.1115				80/20			
								(0.276)		(0.276)							

NOTES :

1.) UNLESS SPECIFIED OTHERWISE, AREAS ARE STATED IN HECTARES WITH ENGLISH EQUIVALENTS IN (ACRES). 1 HECTARE = 2.471 ACRES.

2.) ALL TEMPORARY PARCELS ARE TO BE OF 6 MONTHS DURATION.

3.) UNDER NO CIRCUMSTANCES ARE TEMPORARY EASEMENTS ACQUIRED FOR THE PURPOSE OF STRUCTURE REMOVAL TO BE USED FOR STORAGE OF MATERIAL OR EQUIPMENT BY THE CONTRACTOR. UPON COMPLETION OF THE WORK REQUIRED FOR SUCH REMOVAL AND SUBSEQUENT RECLAMATION, THE EASEMENT SHALL BE VACATED IMMEDIATELY.

HNTB ARCHITECTS ENGINEERS PLANNERS

REV.	DATE	DESCRIPTION
1	8/5/98	REVISED PARCELS 13 AND 13T

HORIZONTAL SCALE 1:200

CALCULATED M.J.W. CHECKED J.M.G.

PID NO. 14949

RIGHT OF WAY PLAN, SUMMARY, & PROPERTY MAP - E. 30th ST. STA. 1+140 TO STA. 1+234.194

CUY-77-23.458 - PART 2

3 / 3

58 / 58

J:\JOBS\24621\TECHPROD\DETOUR\14949RDZ.DWG