

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
MAD - 40 - 0.92
(NATIONAL ROAD)
SOMERFORD TOWNSHIP
MADISON COUNTY

PROJECT DESCRIPTION:

IMPROVEMENT OF 0.06 MILE \diamond OF U.S. 40 (NATIONAL ROAD)
BY REPLACEMENT OF TWO STRUCTURES (MAD-40-0092)
OVER DEER CREEK WITH PRECAST CONCRETE ARCH,
INCLUDING APPROACH RECONSTRUCTION.

PROJECT EDA = 3.4 ACRES
CONTRACTOR EDA = 0.3 ACRES
NOI EDA = 4.9 ACRES

2005 SPECIFICATIONS

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

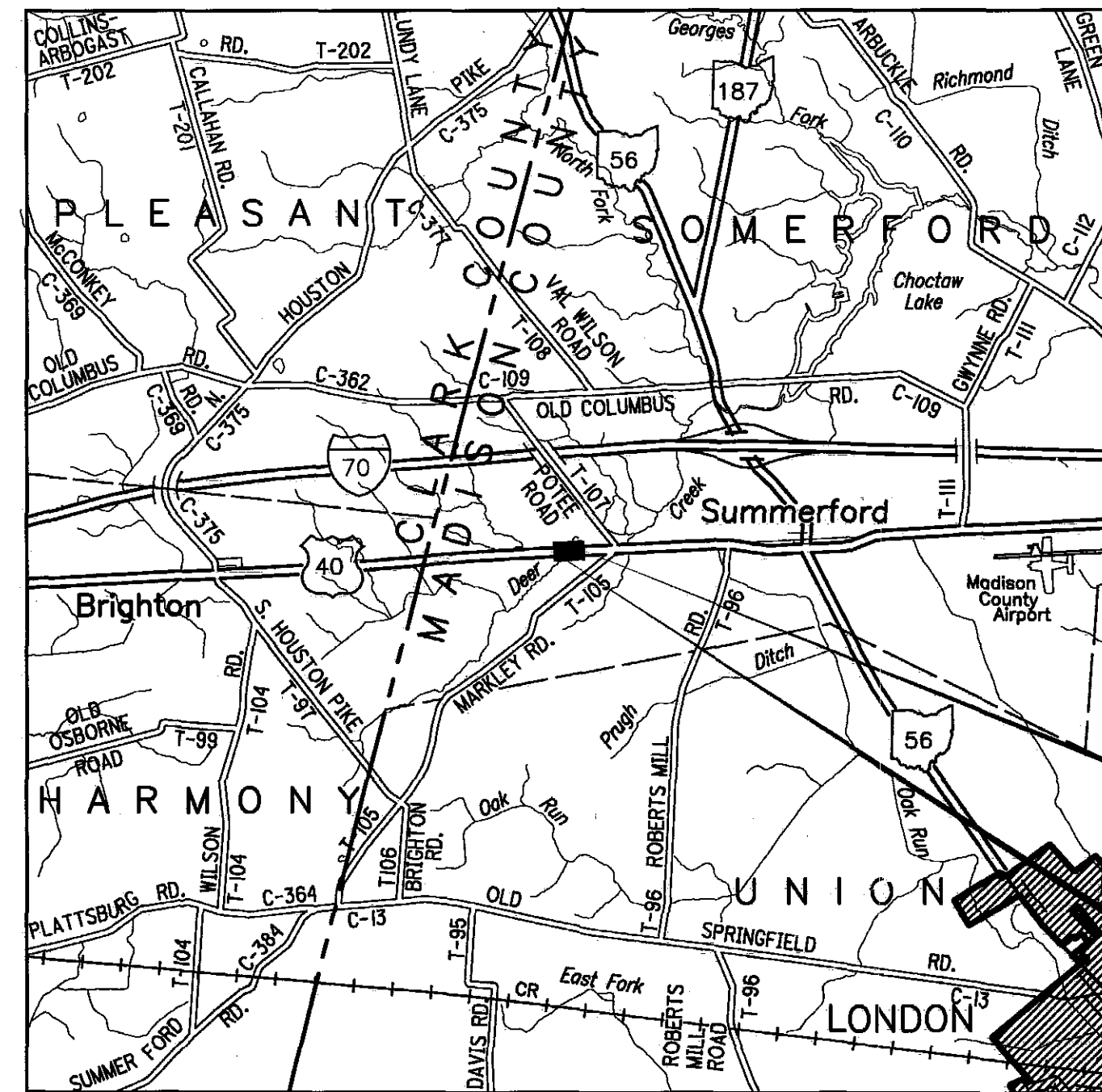
I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE
MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING
TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE
MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH
ON THE PLANS AND ESTIMATES.

PLANS CERTIFIED BY:

Holly G. Opines 12-28-05
NAME DATE
OHIO DEPARTMENT OF TRANSPORTATION, DISTRICT 6

APPROVED *Jack R. Marchbanks*
DATE 12-28-2005
DISTRICT DEPUTY DIRECTOR

APPROVED *Deborah Proctor TSM*
DATE 2/1/06
DIRECTOR, DEPARTMENT OF TRANSPORTATION



END PROJECT
STA. 50+50
S.L.M. 0.96

BEGIN PROJECT
STA. 47+50
S.L.M. 0.90

LOCATION MAP

LATITUDE: N 39° 55' 59" LONGITUDE: W 83° 31' 15"

SCALE IN MILES



PORTION TO BE IMPROVED _____
U.S., STATE ROUTES, INTERSTATES, _____
OTHER ROADS _____

DESIGN DESIGNATION

CURRENT ADT (2006) 3970
DESIGN ADT (2026) 6040
DESIGN HOURLY VOLUME (2026) 604
DIRECTIONAL DISTRIBUTION 60%
TRUCKS (24 HOUR B&C) 4%
DESIGN SPEED 60 mph
LEGAL SPEED 55 mph
DESIGN FUNCTIONAL CLASSIFICATION
RURAL MAJOR COLLECTOR

UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
CALL ...800-362-2764
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS MUST
BE CALLED DIRECTLY

DESIGN EXCEPTIONS

NONE REQUIRED

PLANS PREPARED BY:
COLUMBUS ENGINEERING CONSULTANTS INCORPORATED
CONSULTING CIVIL ENGINEERS AND SURVEYORS
840 MICHIGAN AVENUE
COLUMBUS, OHIO 43215
(614) 228-3500



E-44907 12/27/05

Jack Jang
Registered Engineer

No. Date

INDEX OF SHEETS

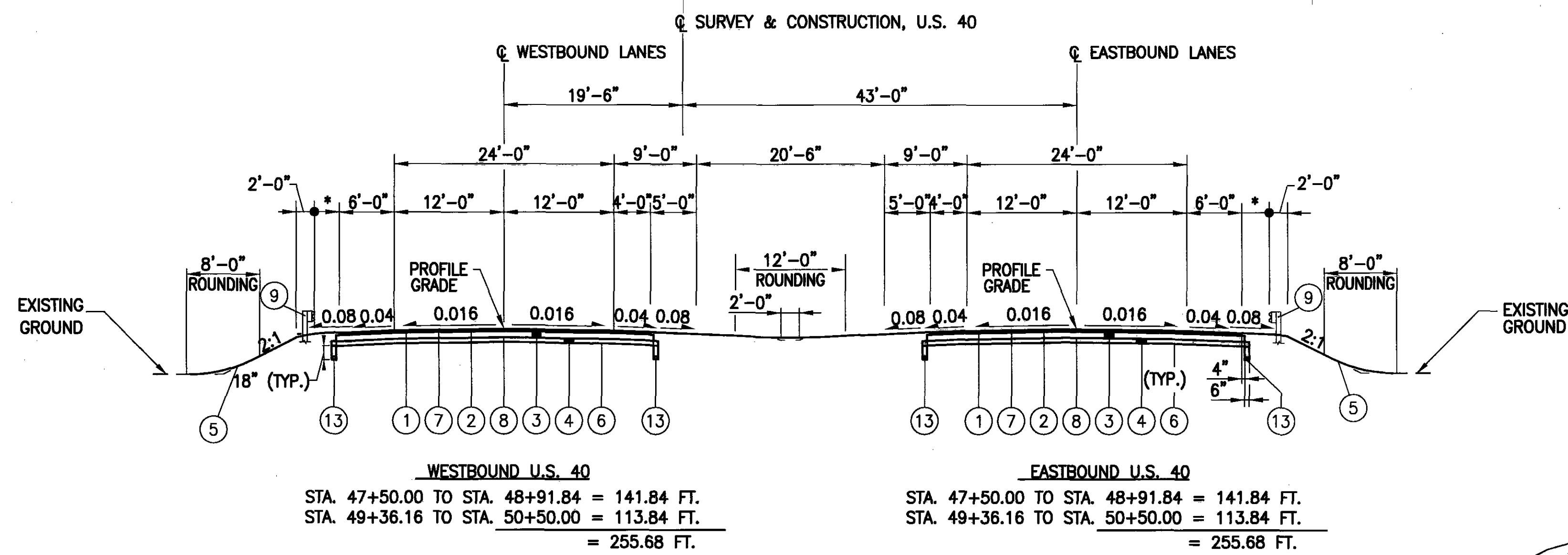
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STANDARD DRAWINGS				SUPPLEMENTAL SPECIFICATIONS			
BP-3.1	7/16/04	MT-35.10	4/20/01	PCB-91	7/19/02	SS 800	10/20/06
		MT-95.40	7/16/04			SS 802	4/15/05
		MT-95.70	4/19/02			SS 832	4/17/04
GR-1.1	7/16/04	MT-99.31	4/19/02			SS 833	2/12/03
GR-2.1	1/16/04	MT-100.00	4/19/02				
GR-2.2	4/18/03	MT-101.60	10/18/02				
GR-3.4	4/18/03	MT-101.70	10/18/02				
GR-3.6	1/16/03	MT-105.10	10/18/02				
GR-4.2	4/15/05	MT-105.11	10/18/02				
GR-5.2	1/16/03						
RM-4.6	1/16/04						
		TC-41.10	1/19/01				
CB-3.3	7/15/05	TC-42.20	7/16/04				
		TC-52.10	4/20/01				
DM-1.1	10/20/05	TC-52.20	4/20/01				
DM-1.2	10/20/05	TC-65.10	1/21/05				
DM-1.4	1/21/05	TC-65.11	1/21/05				
DM-4.4	7/19/02	TC-71.10	1/21/05				
		TC-73.10	1/19/01				
						NWP#3	11/23/05

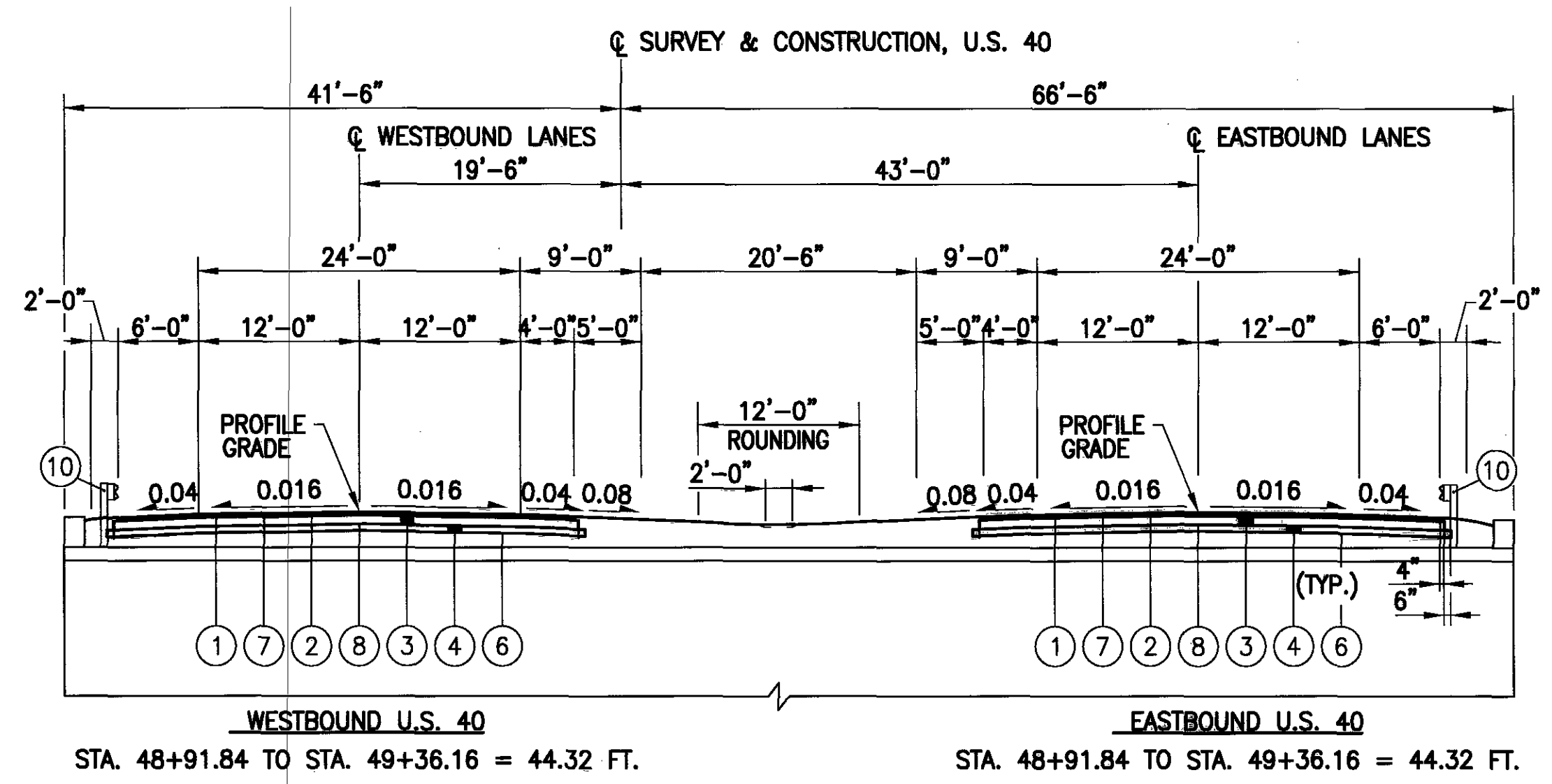
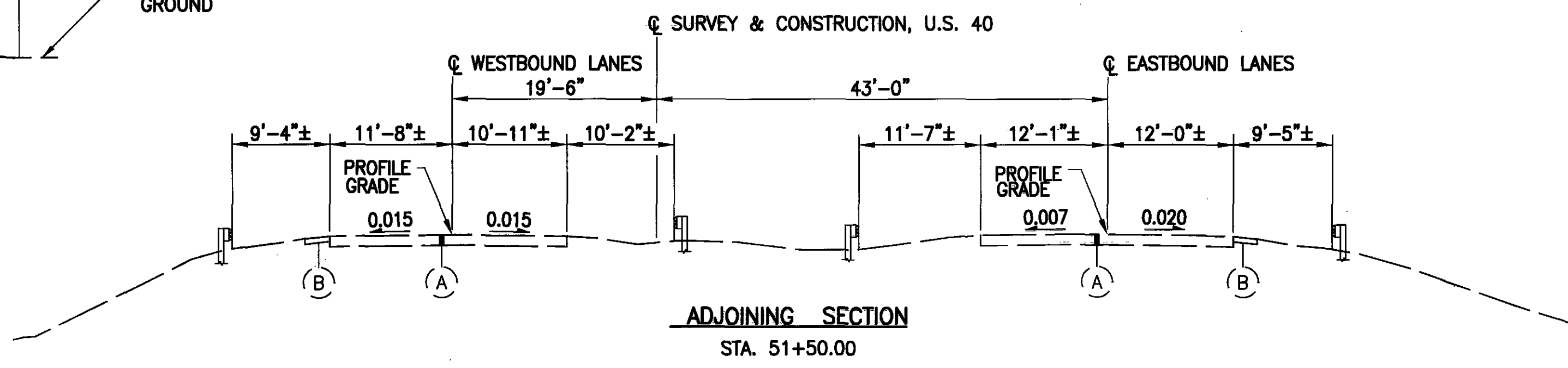
SPECIAL PROVISIONS

NWP#3 11/23/05

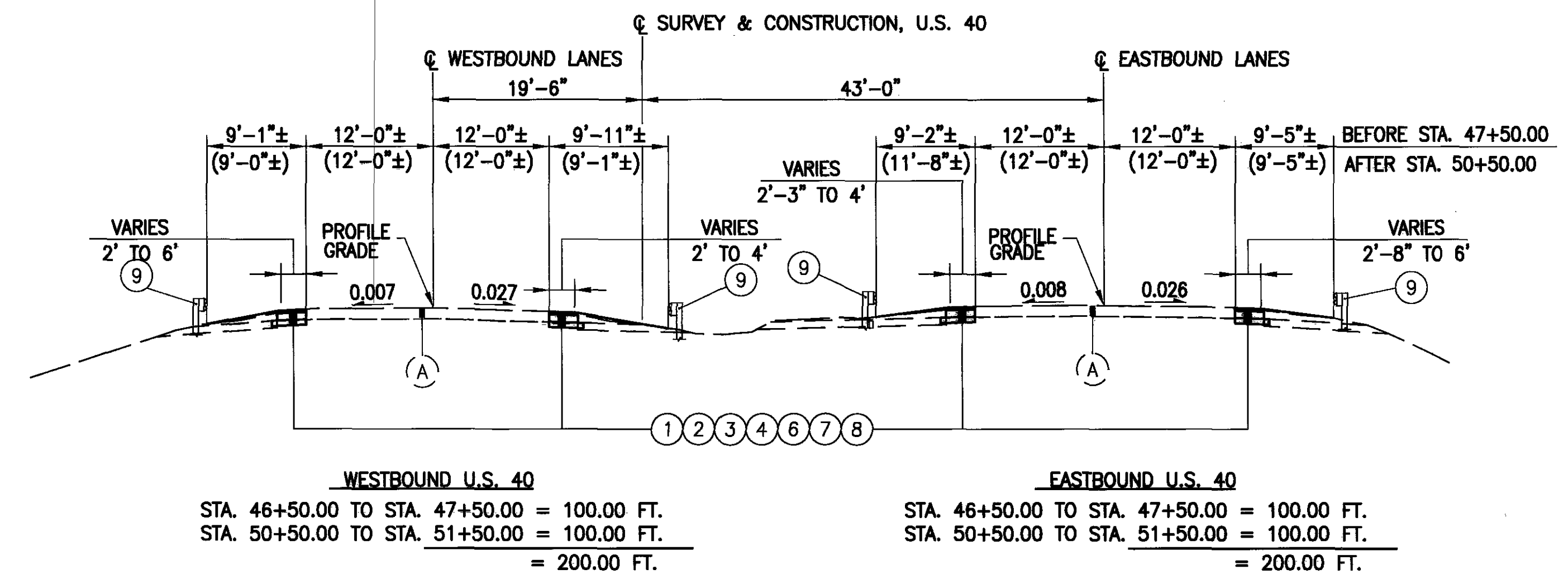
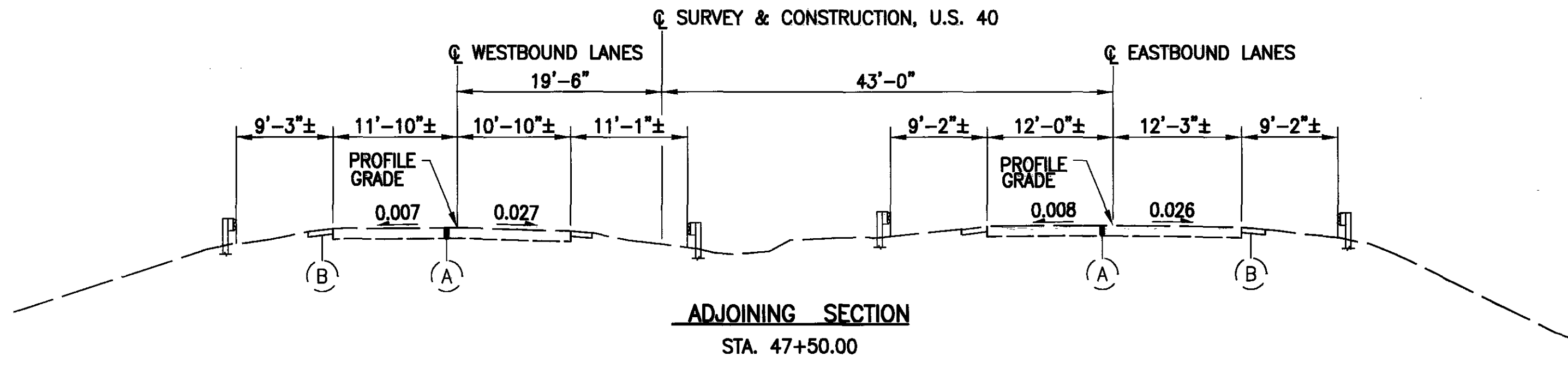
FEDERAL PROJECT NO. E051(243)
PID NO. 25722
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT NONE
MAD - 40 - 0.92
1/46



NORMAL SECTION
* VARIES FROM 0' TO 4'-0"



CULVERT SECTION



SHOULDER TAPER SECTION

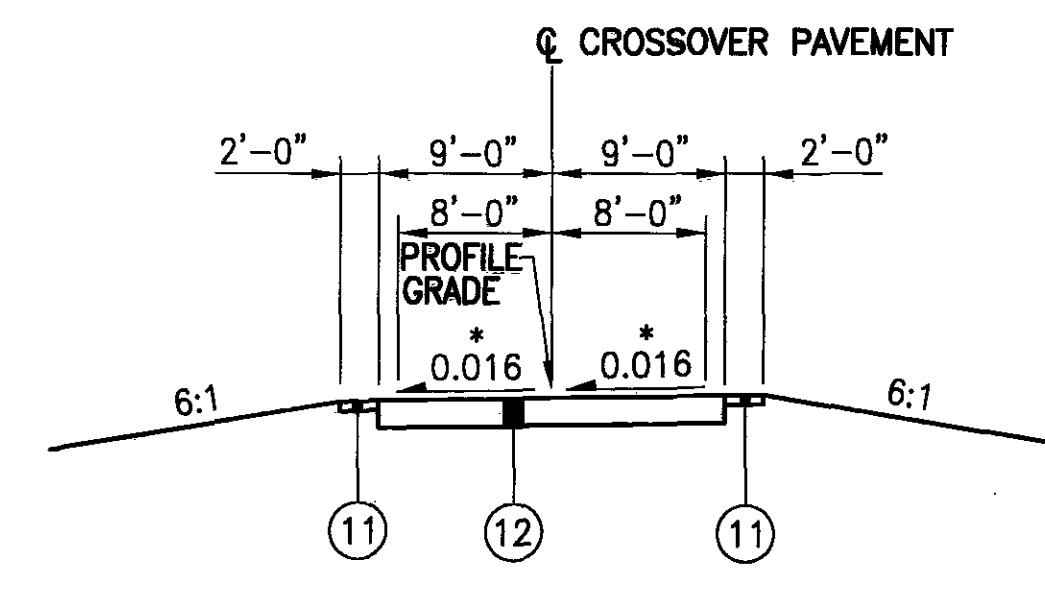
- LEGEND**
- (1) ITEM 448 1 1/4" ASPHALT CONCRETE, SURFACE COURSE, TYPE 1, PG64-22
 - (2) ITEM 448 1 3/4" ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 2, PG64-22
 - (3) ITEM 301 8" ASPHALT CONCRETE BASE, PG64-22
 - (4) ITEM 304 6" AGGREGATE BASE
 - (5) ITEM 659 SEEDING AND MULCHING
 - (6) ITEM 204 SUBGRADE COMPACTION
 - (7) ITEM 407 TACK COAT FOR INTERMEDIATE COURSE (SEE GENERAL NOTES FOR RATE)
 - (8) ITEM 408 PRIME COAT @ 0.4 GAL/YD²
 - (9) ITEM 606 GUARDRAIL, TYPE 5
 - (10) ITEM 606 GUARDRAIL, TYPE 5 WITH TUBULAR BACKUP
 - (11) ITEM 411 6" AGGREGATE
 - (12) ITEM 615 PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A
 - (13) ITEM 605 4" BASE PIPE UNDERDRAIN
- (A) EXISTING ASPHALT PAVEMENT
(B) EXISTING SHOULDER

TYPICAL SECTIONS

MAD - 40 - 0.92

EASTBOUND CROSSOVER SUPERELEVATION TABLE								
DESCRIPTION	STATION	LEFT E/P ELEV.	SLOPE	PROFILE GRADE	SLOPE	RIGHT E/P ELEV.	PAVEMENT WIDTH	
							LT.	RT.
EASTBOUND CROSSOVER NO.1								
MEET EX. PVMT. LT.	41+34.53	1097.38	-0.018	1097.55				9'
	41+50	1097.34	-0.016	1097.48				9'
	41+75	1097.22	-0.016	1097.36				9'
	42+00	1097.09	-0.01576	1097.23	EXIST.	EXIST.		9'
MEET EX. PVMT. C.	42+14.42	1097.02	-0.01337	1097.13				9'
	42+25	1096.93	-0.01176	1097.08				9'
	42+50	1096.71	-0.00776	1096.92				9'
MEET EX. PVMT. RT.	42+73.97	1096.50	-0.00392	1096.78	+0.020	1096.96		9'
	42+75	1096.50	-0.00376	1096.77	+0.010	1096.86		9'
P.R.C.	42+98.48	1095.29	0.0000	1096.49	0.0000	1096.49		9'
	43+00	1096.47	+0.00024	1096.47	-0.00024	1096.47		9'
	43+25	1096.21	+0.00424	1096.17	-0.00424	1096.13		9'
	43+50	1095.95	+0.00824	1095.88	-0.00824	1095.81		9'
	43+75	1095.77	+0.01224	1095.66	-0.01224	1095.55		9'
	44+00	1095.61	+0.0122	1095.50	-0.016	1095.36		9'
MEET EX. PVMT. LT.	44+22.79	1095.65	+0.0267	1095.41	-0.016	1095.27		9'
	44+25			1095.41	-0.016	1095.27		9'
	44+50			1095.38	-0.016	1095.24		9'
	44+75			1095.42	-0.016	1095.28		9'
	45+00			1095.52	-0.016	1095.38		9'
MEET EX. PVMT. C.	45+22.45			1095.68	-0.016	1095.54		9'
	45+25	EXIST.	EXIST.	1095.64	-0.016	1095.50		9'
	45+50			1095.69	-0.016	1095.55		9'
	45+75			1095.65	-0.016	1095.51		9'
	46+00			1095.60	-0.016	1095.46		9'
	46+25			1095.57	-0.016	1095.43		9'
MEET EX. PVMT. RT.	46+43.34			1095.55	-0.016	1095.41		9'
EASTBOUND CROSSOVER NO.2								
MEET EX. PVMT. RT.	51+81.66			1094.33	-0.016	1094.19		9'
	52+00			1094.32	-0.016	1094.18		9'
	52+25			1094.34	-0.016	1094.20		9'
	52+50			1094.39	-0.016	1094.25		9'
	52+75			1094.46	-0.016	1094.32		9'
	53+00	EXIST.	EXIST.	1094.47	-0.016	1094.33		9'
MEET EX. PVMT. C.	53+08.00			1094.48	-0.016	1094.34		9'
	53+25			1094.44	-0.016	1094.30		9'
	53+50			1094.39	-0.016	1094.25		9'
	53+75			1094.34	-0.016	1094.20		9'
	54+00			1094.28	-0.0151	1094.14		9'
MEET EX. PVMT. LT.	54+07.54	1094.51	+0.0267	1094.27	-0.0133	1094.15		9'
	54+25	1094.42	+0.0213	1094.23	-0.0111	1094.13		9'
	54+50	1094.25	+0.0136	1094.13	-0.0071	1094.07		9'
	54+75	1094.14	+0.0059	1094.09	-0.0031	1094.06		9'
P.R.C.	54+94.22	1094.12	0.0000	1094.12	0.0000	1094.12		9'
	55+00	1094.13	-0.0009	1094.14	+0.0017	1094.16		9'
	55+25	1094.25	-0.0049	1094.29	+0.0091	1094.37		9'
	55+50	1094.39	-0.0089	1094.47	+0.0089	1094.55		9'
MEET EX. PVMT. RT.	55+65.67	1094.43	-0.0111	1094.53	-0.0010	1094.52		9'
	55+75	1094.41	-0.0129	1094.53				9'
	56+00	1094.30	-0.016	1094.44				9'
	56+25	1094.08	-0.016	1094.22				9'
	56+50	1093.84	-0.016	1093.98				9'
MEET EX. PVMT. C.	56+54.91	1093.79	-0.016	1093.93				9'
	56+75	1093.60	-0.016	1093.74				9'
	57+00	1093.36	-0.016	1093.50	EXIST.	EXIST.		9'
	57+25	1093.31	-0.016	1093.45				9'
	57+50	1093.25	-0.016	1093.39				9'
	57+75	1093.18	-0.0132	1093.30				9'
	58+00	1093.21	-0.0088	1093.29				9'
MEET EX. PVMT. LT.	58+06.77	1093.25	-0.0044	1093.29				9'

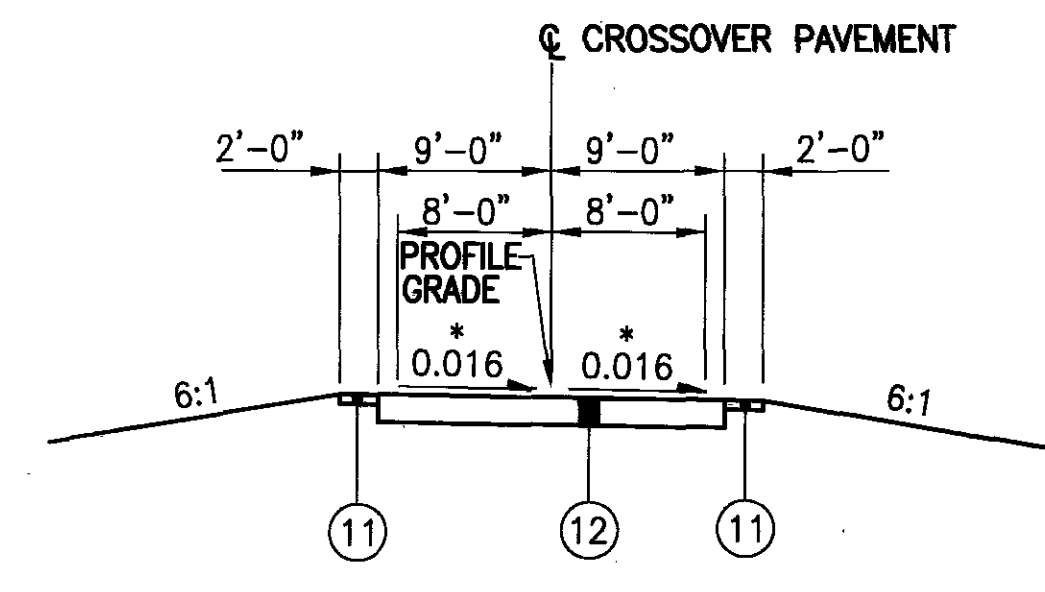
WESTBOUND CROSSOVER SUPERELEVATION TABLE								
DESCRIPTION	STATION	LEFT E/P ELEV.	SLOPE	PROFILE GRADE	SLOPE	RIGHT E/P ELEV.	PAVEMENT WIDTH	
							LT.	RT.
WESTBOUND CROSSOVER NO.1								
MEET EX. PVMT. RT.	40+20.85			1096.37	-0.016	1096.23		9'
	40+25			1096.35	-0.016	1096.21		9'
	40+50			1096.23	-0.016	1096.09		9'
	40+75			1096.12	-0.016	1095.98		9'
	41+00			1096.02	-0.016	1095.88		9'
	41+25	EXIST.	EXIST.	1095.96	-0.016	1095.82		9'
MEET EX. PVMT. C.	41+43.72			1095.96	-0.016	1095.82		9'
	41+50			1095.97	-0.016	1095.83		9'
MEET EX. PVMT. LT.	41+75	1095.95	+0.016	1096.09	-0.016	1095.95		9'
	42+00	1096.19	+0.0122	1096.25	-0.016	1096.11		9'
	42+25	1096.31	+0.0122	1096.34	-0.016	1096.20		9'
	42+50	1096.47	+0.0133	1096.35	-0.0133	1096.23		9'
	42+75	1096.38	+0.0093	1096.30	-0.0093	1096.22		9'
	43+00	1096.22	+0.0053	1096.17	-0.0053	1096.12		9'
	43+25	1095.98	+0.0013	1095.97	-0.0013	1095.96		9'
P.R.C.	43+33.40	1095.90	0.0000	1095.90	0.0000	1095.90		9'
	43+50	1095.76	-0.0027	1095.78	+0.0027	1095.80		9'
	43+75	1095.63	-0.0067	1095.69	+0.0067	1095.75		9'
	44+00	1095.60	-0.0107	1095.70	+0.0107	1095.80		9'
MEET EX. PVMT. RT.	44+07.93	1095.62	-0.0120	1095.73	+0.0144	1095.86		9'
	44+25	1095.67	-0.0147	1095.81				9'
	44+50	1095.87	-0.016	1096.01				9'
	44+75	1096.13	-0.016	1096.27				9'
MEET EX. PVMT. C.	44+99.32	1096.39	-0.016	1096.52				9'
	45+00	1096.39	-0.016	1096.53				9'
	45+25	1096.35	-0.016	1096.49				9'
	45+50	1096.29	-0.016	1096.43	EXIST.	EXIST.		9'
	45+75	1096.22	-0.016	1096.36				9'
	46+00	1096.15	-0.016	1096.29				9'
	46+25	1096.09	-0.014	1096.22				9'
MEET EX. PVMT. LT.	46+43.34	1096.06	-0.010	1096.15				9'
WESTBOUND CROSSOVER NO.2								
MEET EX. PVMT. LT.	51+81.66	1094.73	-0.0044	1094.77				9'
	52+00	1094.68	-0.0088	1094.76				9'
	52+25	1094.60	-0.0132	1094.72				9'
	52+50	1094.51	-0.016	1094.65				9'
	52+75	1094.45	-0.016	1094.59				9'
	53+00	1094.37	-0.016	1094.51	EXIST.	EXIST.		9'
	53+25	1094.28	-0.016	1094.42				9'
MEET EX. PVMT. C.	53+32.26	1094.25	-0.016	1094.39				9'
	53+50	1094.23	-0.016	1094.37				9'
	53+75	1094.19	-0.016	1094.33				9'
	54+00	1094.16	-0.016	1094.30				9'
MEET EX. PVMT. RT.	54+22.05	1094.13	-0.016	1094.27	+0.016	1094.41		9'
	54+25	1094.12	-0.016	1094.26	+0.016	1094.40		9'
	54+50	1094.11	-0.0128	1094.23	+0.0128	1094.35		9'
	54+75	1094.12	-0.0088	1094.20	+0.0088	1094.28		9'
	55+00	1094.16	-0.0048	1094.20	+0.0048	1094.24		9'
	55+25	1094.31	-0.0008	1094.32	+0.0008	1094.39		9'
P.R.C.	55+30.15	1094.34	0.0000	1094.34	0.0000	1094.34		9'
	55+50	1094.46	+0.0032	1094.43	-0.0032	1094.40		9'
MEET EX. PVMT. LT.	55+59.78	1094.48	+0.0033	1094.45	-0.0033	1094.42		9'
	55+75			1094.49	-0.0072	1094.43		9'
	56+00			1094.50	-0.0112	1094.40		9'
MEET EX. PVMT. C.	56+22.42			1094.52	-0.0148	1094.39		9'
	56+25			1094.52	-0.0152	1094.38		9'
	56+50	EXIST.	EXIST.	1094.61	-0.016	1094.47		9'
	56+75			1094.67	-0.016	1094.53		9'
	57+00			1094.68	-0.0211	1094.49		9'
MEET EX. PVMT. RT.	57+03.19			1094.67	-0.0256	1094.47		9'



SUPERELEVATED SECTION, CROSSOVER

STA. 41+34.53 TO STA. 42+98.48 (EASTBOUND CROSSOVER) = 163.95 FT.
 STA. 54+94.22 TO STA. 58+06.77 (EASTBOUND CROSSOVER) = 312.55 FT.
 STA. 43+33.40 TO STA. 46+43.34 (WESTBOUND CROSSOVER) = 309.94 FT.
 STA. 51+81.66 TO STA. 55+30.15 (WESTBOUND CROSSOVER) = 348.49 FT.
 TOTAL = 1134.93 FT.

* VARIES, SEE SUPERELEVATION TABLE



SUPERELEVATED SECTION, CROSSOVER

STA. 42+98.48 TO STA. 46+43.34 (EASTBOUND CROSSOVER) = 344.86 FT.
 STA. 51+81.66 TO STA. 54+94.22 (EASTBOUND CROSSOVER) = 312.56 FT.
 STA. 40+20.85 TO STA. 43+33.40 (WESTBOUND CROSSOVER) = 312.55 FT.
 STA. 55+30.15 TO STA. 57+03.19 (WESTBOUND CROSSOVER) = 173.04 FT.
 TOTAL = 1143.01 FT.

LEGEND
 SEE SHEET 2.

TYPICAL SECTIONS

MAD - 40 - 092

GENERAL NOTES

CALC. BY: EW
CHK. BY: TH

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:

<p>GAS: MARATHON ASHLAND PETROLEUM LLC 359 SOUTH MAIN STREET FINDLAY, OH 45840-3295 PHONE: (419)-422-2121</p>	<p>PHONE: SBC INCORPORATED 111 N. FOURTH ST. 8TH FLOOR COLUMBUS, OHIO 43215 PHONE: (614)-223-7162</p>
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ELECTRIC: OHIO EDISON
420 SOUTH YORK ST.
SPRINGFIELD, OHIO 45505
PHONE: 1-800-633-4766

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 COORDINATES ARE GRID OHIO SOUTH NAD 1986 (ODOT V.R.S. AND GEOD 99) ELEVATION FOR CLARK COUNTY FROM GPS OBSERVATION.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS SHALL BE PROVIDED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

CLEARING AND GRUBBING

REMOVE ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS 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
	0	3	3

CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL

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

INDIANA BAT HABITAT

CLEARING OF ANY TREES THAT HAVE SUITABLE SUMMER BROOD REARING OR ROOSTING HABITAT FOR THE FEDERALLY ENDANGERED INDIANA BAT (LIVING OR STANDING DEAD TREES OR SNAGS WITH EXFOLIATING, PEELING, OR LOOSE BARK, SPLIT TRUNKS AND/OR BRANCHES, OR CAVITIES), SHALL OCCUR ONLY DURING THE PERIOD BEFORE APRIL 15 AND AFTER SEPTEMBER 15, WHEN THIS SPECIES WOULD NOT BE USING SUCH HABITAT.

WATER QUALITY PROTECTION

TO MINIMIZE POTENTIAL TO CONTAMINATE THE PUBLIC DRINKING WATER SUPPLY, PROJECT-RELATED REFUELING AND MAINTENANCE ACTIVITIES SHALL BE PERFORMED IN AN ENVIRONMENTALLY RESPONSIBLE MANNER. THE CONTRACTOR IS RESPONSIBLE FOR THE CLEAN UP AND REMEDIATION OF ANY SPILLS.

NO TOXIC OR HAZARDOUS MATERIALS SUCH AS SEALANTS, PAINT, SOLVENTS, CLEANING AGENTS, EARTHEN MATERIALS, WASTE-WATER, FUELS OR DEBRIS OF ANY KIND SHALL BE DISCHARGED TO ANY STREAMS, DRAINAGE COURSES, OR BODIES OF WATER.

THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT LIQUIDS USED TO REPAIR, CLEAN, SEAL, OR TREAT ANY BRIDGE STRUCTURE (I.E. PAINT, SEALER, SOLVENT) FROM ENTERING STREAMS, WETLANDS OR OTHER WATERS OF THE UNITED STATES AND TAKE THE APPROPRIATE ACTIONS IN THE EVENT OF A RELEASE.

ITEM 659 - SEEDING AND MULCHING

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

659, TOPSOIL	239	CU. YD.
659, SEEDING AND MULCHING	2,154	SQ. YD.
659, COMMERCIAL FERTILIZER	0.29	TON
659, LIME	0.45	ACRE
659, WATER	12	M GAL.

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

EROSION CONTROL

ITEM 601 HAS BEEN PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE ANY OF THIS ITEM AND TURF OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE 660. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES OF THIS ITEM WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION. IN ADDITION, THIS ITEM SHALL MEET THE REQUIREMENT OF 108.04.

FARM DRAINS

ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS, AND WHICH CROSS THE ROADWAY, SHALL BE REPLACED WITHIN THE RIGHT-OF-WAY OR CONSTRUCTION LIMITS BY ITEM 603 CONDUIT, TYPE B, ONE COMMERCIAL SIZE LARGER THAN THE EXISTING CONDUIT.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS, WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF ROADWAY DITCHES, SHALL BE OUTLETTED INTO THE ROADWAY DITCH BY 603 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE 1 FOOT ABOVE THE FLOW LINE ELEVATION OF THE DITCH. LATERAL FIELD TILES WHICH CROSS THE ROADWAY SHALL BE INTERCEPTED BY 603, TYPE E CONDUIT, AND CARRIED IN A LONGITUDINAL DIRECTION TO AN ADEQUATE OUTLET OR ROADWAY CROSSING.

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

EROSION CONTROL PADS AND ANIMAL GUARDS SHALL BE PROVIDED AT THE OUTLET END OF ALL FARM DRAINS AS PER STANDARD CONSTRUCTION DRAWING DM-11, EXCEPT WHEN THEY OUTLET INTO A DRAINAGE STRUCTURE. PAYMENT FOR THE EROSION CONTROL PADS AND ANIMAL GUARDS AND ANY NECESSARY BENDS OR BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEM.

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

603, 6" CONDUIT TYPE B	50 FT.
603, 6" CONDUIT TYPE E	50 FT.
603, 6" CONDUIT TYPE F	50 FT.

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

THE RATE OF APPLICATION OF THE 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT AS AN AVERAGE APPLICATION RATE OF:

407, TACK COAT FOR INTERMEDIATE COURSE 0.04 GAL. PER SQUARE YARD

ITEM 203 - EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION

IF UNSUITABLE FOUNDATION SOILS ARE ENCOUNTERED IN THE AREAS OF THE PROPOSED ROAD BED, THEY SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL MEETING THE REQUIREMENTS OF 203.08. THE LOCATIONS AND DIMENSIONS WILL BE AS DETERMINED BY THE ENGINEER.

203, 570 CU. YD. EMBANKMENT
203, 1,465 CU. YD. EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION

ITEM 203 GRANULAR MATERIAL, TYPE B, AS PER PLAN

NO BACKFILL SHALL BE PLACED AGAINST ANY STRUCTURAL ELEMENTS UNTIL THEY HAVE BEEN APPROVED BY THE ENGINEER.

BACKFILL AGAINST A WATERPROOFED SURFACE SHALL BE PLACED CAREFULLY TO AVOID DAMAGE TO THE WATERPROOFING MATERIAL.

MECHANICAL TAMPERS OR APPROVED COMPACTING EQUIPMENT SHALL BE USED TO COMPACT ALL BACKFILL AND EMBANKMENT IMMEDIATELY ADJACENT TO EACH SIDE AND OVER THE TOP OF EACH BRIDGE UNIT UNTIL IT IS COVERED TO A MINIMUM DEPTH OF ONE FOOT, UNLESS THE DESIGN FILL HEIGHT IS LESS THAN 1'-0". THE BACKFILL WITHIN THE CRITICAL BACKFILL ZONE (SHOWN IN THE DIAGRAM ON SHEET 37) SHALL BE PLACED IN LIFTS OF SIX INCHES OR LESS (LOOSE DEPTH). HEAVY COMPACTION EQUIPMENT SHALL NOT BE OPERATED IN THIS AREA OR OVER THE BRIDGE UNTIL IT IS COVERED TO A DEPTH OF ONE FOOT, UNLESS THE DESIGN FILL IS LESS THAN 1'-0".

LIGHTWEIGHT DOZERS AND GRADERS MAY BE OPERATED OVER BRIDGE UNITS HAVING ONE FOOT OF COMPACTED COVER, BUT HEAVY EARTH MOVING EQUIPMENT (LARGER THAN A D-4 DOZER WEIGHING IN EXCESS OF 12 TONS AND HAVING TRACK PRESSURES OF EIGHT PSI OR GREATER) SHALL REQUIRE TWO FEET OF COVER UNLESS THE DESIGN COVER IS LESS THAN TWO FEET. IN NO CASE SHALL EQUIPMENT OPERATING IN EXCESS OF THE DESIGN LOAD (HS25) BE PERMITTED OVER THE BRIDGE UNITS UNLESS APPROVED BY THE ARCH SECTION MANUFACTURER.

ANY ADDITIONAL FILL AND SUBSEQUENT EXCAVATION REQUIRED TO PROVIDE THIS MINIMUM COVER SHALL BE MADE AT NO ADDITIONAL COST TO THE PROJECT.

AS A PRECAUTION AGAINST INTRODUCING UNBALANCED STRESSES IN THE BRIDGE, WHEN PLACING BACKFILL AT NO TIME SHALL THE DIFFERENCE BETWEEN THE HEIGHTS OF FILL ON OPPOSITE SIDES OF THE BRIDGE EXCEED 24".

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE (FOR ADDITIONAL DETAILS SEE SHEET 37):

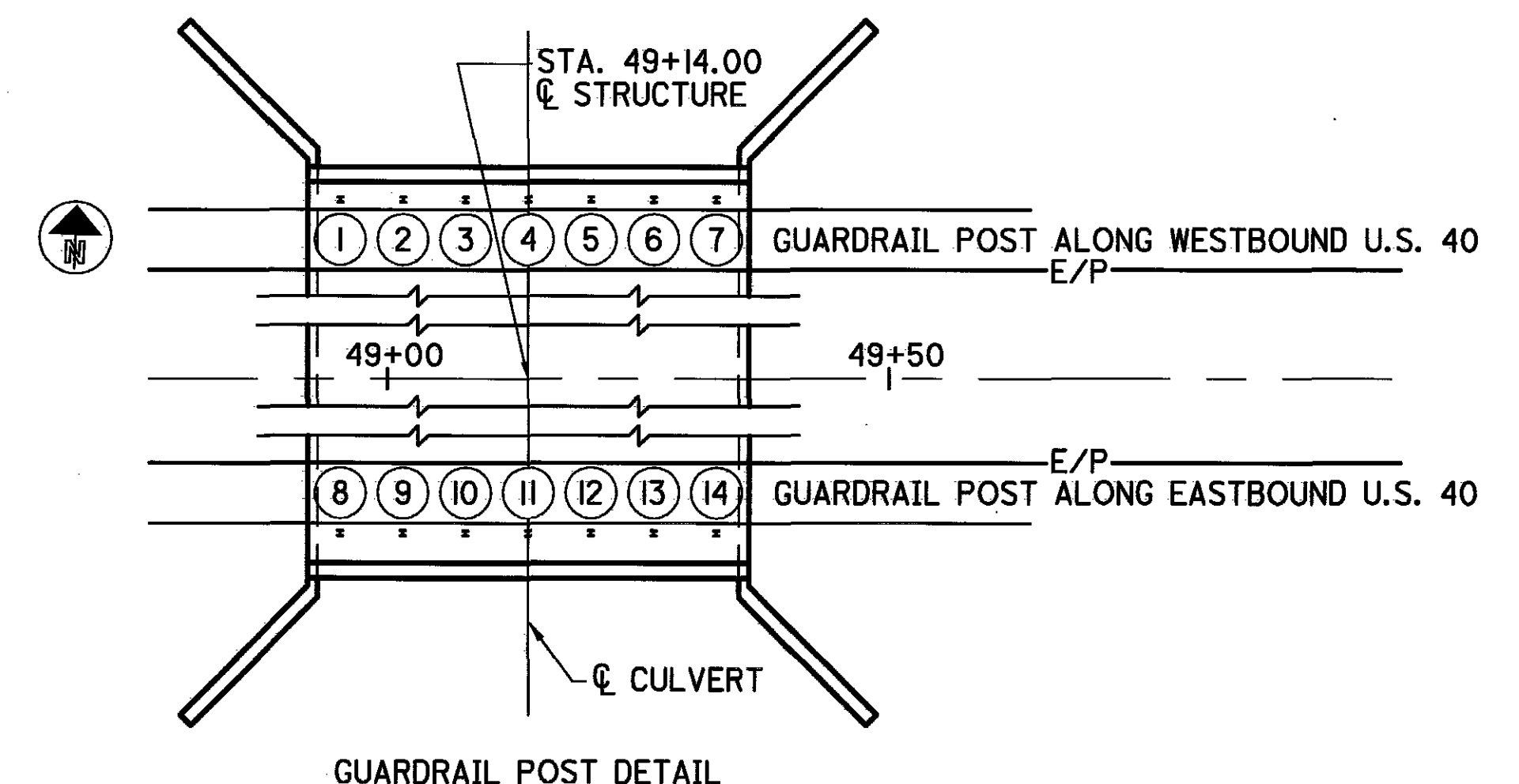
203, GRANULAR MATERIAL, TYPE B, AS PER PLAN 1,045 CU. YD.

CONSTRUCTION NOISE

OPERATION OF CONSTRUCTION EQUIPMENT WILL CONFORM TO LOCAL NOISE ORDINANCES.

ITEM 606 GUARDRAIL, TYPE 5 WITH TUBULAR BACKUP, AS PER PLAN

REFER TO SHEETS 45A, 45B AND 45C OF 46 FOR ADDITIONAL DETAILS. POST NUMBERS 2, 3, 5, 6, 9, 10, 12 AND 13 SHALL USE CONCRETE ENCASEMENT ANCHORING. POST NUMBERS 4 AND 11 SHALL USE PARTIAL DEPTH ANCHORING WITH NON-SHRINK, NON METALLIC GROUT AS SPECIFIED IN CMS 705.02. NO THROUGH-BOLT ANCHORING SHALL BE USED.



GENERAL NOTES

MAD - 40 - 0.92

MAINTENANCE OF TRAFFIC NOTES

ITEM 614 - MAINTAINING TRAFFIC

A MINIMUM OF 1 LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES BY USE OF THE EXISTING PAVEMENT, THE COMPLETED PAVEMENT, 615 PAVEMENT FOR MAINTAINING TRAFFIC, 615 ROADS FOR MAINTAINING TRAFFIC AND TEMPORARY SURFACES USING ITEM 614.

THE 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.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER FOR THE MAINTENANCE OF TRAFFIC.

615, PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A 4,590 SQ. YD.

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

TRENCHING 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 OR 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 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR

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

FOR LANE CLOSURES:

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

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

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 100 HOURS

LOCAL LAW ENFORCEMENT OFFICER CAN BE CONTACTED AT:
MADISON COUNTY SHERIFF'S OFFICE
23 N. HIGH ST., P.O. BOX 558
LONDON, OHIO 43140

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

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

DUST CONTROL

THE CONTRACTOR SHALL FURNISH AND APPLY WATER FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. THE FOLLOWING CONTINGENCY QUANTITY HAS BEEN INCLUDED FOR DUST CONTROL PURPOSES:

616, WATER 4 M. GAL.

WORK ZONE MARKINGS AND SIGNS

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AT LOCATIONS IDENTIFIED BY THE ENGINEER FOR WORK ZONE PAVEMENT MARKINGS AND SIGNS PER THE REQUIREMENTS OF CMS 614.04 AND 614.11.

614, WORK ZONE MARKING SIGN 60 EACH

ITEM 614 - BARRIER REFLECTORS AND/OR OBJECT MARKERS

BARRIER REFLECTORS AND/OR OBJECT MARKERS SHALL BE INSTALLED ON ALL PORTABLE CONCRETE BARRIER USED FOR TRAFFIC CONTROL. BARRIER REFLECTORS, OBJECT MARKERS AND THEIR INSTALLATION SHALL CONFORM TO CMS 626, EXCEPT THAT THE SPACING SHALL BE 50 FEET. AN ESTIMATED QUANTITY OF 78 EACH OF ITEM 614 BARRIER REFLECTOR, TYPE B AND 78 EACH OF ITEM 614 OBJECT MARKER, 2-WAY, HAVE BEEN PROVIDED AND CARRIED TO THE GENERAL SUMMARY.

ITEM 614, WORK ZONE CROSSOVER LIGHTING SYSTEM

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

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

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

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AT LOCATIONS IDENTIFIED ON THE PLANS.

614, WORK ZONE CROSSOVER LIGHTING SYSTEM 2 EACH

ADVANCE WORK ZONE INFORMATION

ADVANCE WORK ZONE INFORMATION SIGNS, AS USED IN THIS NOTE, ARE FIXED MESSAGE TYPES. THE SIGNS ARE TO BE LOCATED AT EXTREME DISTANCE FROM THE WORK AREA, AS SHOWN IN THE PLANS.

THE SIGNS SHALL BE BLACK ON ORANGE (INCLUDING A BLACK BORDER). THE LAYOUT SHALL BE IN CONFORMANCE WITH TEM SECTION 211.

WHEN REGULATORY INFORMATION IS PROVIDED, IT SHALL BE DISPLAYED SEPARATELY AS A STANDARD BLACK-ON-WHITE SIGN. MIXING OF BLACK-ON-WHITE REGULATORY INFORMATION ON A BLACK-ON-ORANGE INFORMATION SIGN IS PROHIBITED.

IF THE MOTORIST IS BEING DETOURED OR IF AN ALTERNATE ROUTE IS PROVIDED, THE ROUTE SHOULD BE SIGNED WITH ASSEMBLIES CONSISTING OF THE APPROPRIATE BLACK-ON-ORANGE DETOUR OR ALT MARKER WITH A STANDARD ROUTE MARKER AND ARROW PLATE. IF MORE TARGET VALUE IS DESIRED, THIS TRAIL BLAZER INFORMATION MAY BE SHOWN ON AN ORANGE PANEL (OMUTCD SECTION 2D.32).

ROUTE MARKER ASSEMBLIES SHALL BE SIZED ACCORDING TO THE TYPE OF ROAD ON WHICH THEY ARE LOCATED IN ACCORDANCE WITH THE OMUTCD.

SUPPORTS FOR SIGN INSTALLATIONS SHALL CONFORM TO ALL EXISTING STANDARDS FOR PERMANENT SIGNS. THESE SIGNS SHOULD NOT BE ATTACHED TO EXISTING SUPPORTS.

WHERE THE PLANS CALL FOR AN OVERLAY TO COVER A PORTION OF AN EXISTING SIGN, THE OVERLAY SHALL BE BLACK-ON-ORANGE. LETTER SIZES SHOULD BE THE SAME AS ON THE EXISTING SIGNS. WHEN LANE ARROWS ARE TO BE COVERED, RATHER THAN USING A BLANK OVERLAY, THE LEGEND "LANE CLOSED" SHALL BE USED. WHEN A RAMP IS BEING CLOSED, RATHER THAN USING A BLANK OVERLAY TO COVER THE ENTIRE SIGN, THE LEGEND "CLOSED" SHALL BE USED ON A DIAGONAL OVERLAY (LOWER LEFT TO UPPER RIGHT) ON THE SIGN. THE SIZE OF LETTERING ON OVERLAYS AND THE SIZE OF THE OVERLAY ARE INDICATED IN THE PLANS. THE MINIMUM LETTER SIZE FOR "LANE CLOSED" SHALL BE 10" E. THE MINIMUM LETTER SIZE FOR THE DIAGONAL "CLOSED" OVER-LAY SHALL BE 12" E.

ALL ADVANCE WORK ZONE INFORMATION SIGN INSTALLATIONS LOCATED OUTSIDE OF THE PROJECT WORK LIMITS SHALL BE PAID FOR UNDER APPROPRIATE 630 ITEMS (SIGNS, SUPPORTS, CONCRETE, BREAKAWAY CONNECTION, OVERLAYS, REMOVALS, ETC.)

CALC. BY:
EW

CHK. BY:
TH

MAINTENANCE OF TRAFFIC NOTES

MAD - 40 - 0.92

5
46

MAINTENANCE OF TRAFFIC NOTES

WORK ZONE DELINEATION

IN TRANSITION AREAS FOR LANE SHIFTS EQUAL TO OR GREATER THAN 4 FEET AND FOR CROSSOVERS, THE CONTRACTOR SHALL PROVIDE DELINEATION AS FOLLOWS:

1. ON ASPHALT SURFACES, DELINEATION SHALL BE BY USE OF 642 TYPE 2 ALKYD PAINT OR 643 POLYESTER, WITH 621 PERMANENT RAISED PAVEMENT MARKERS. THIS MARKING SHALL CONSIST OF 4 INCH EDGE LINES, 8 INCH CHANNELIZING LINES, AND RAISED PAVEMENT MARKERS. IN THE TRANSITION AREA, THE RAISED PAVEMENT MARKERS SHALL BE LOCATED AT 20 FT. SPACING ALONG THE EDGE LINES AND THE CHANNELIZING LINES. IN THE TANGENT AREAS, THE RAISED PAVEMENT MARKERS SHALL BE LOCATED AT 120 FT. SPACING ALONG THE LANE LINES.

REMOVAL OF RAISED PAVEMENT MARKERS, WHEN NO LONGER NEEDED, SHALL BE AS PER 202.10. REMOVAL OF THE EXISTING SURFACE COURSE WITHIN THE TRANSITION AREA SHALL BE MADE AS PER 202.05, TO A DEPTH NECESSARY TO MATCH THE LEVEL OF THE INTERMEDIATE COURSE OF THE PROPOSED PAVEMENT. THE TRANSITION AREA SHALL BE RESURFACED AT THE TIME THAT THE SURFACE COURSE IS BEING APPLIED, USING THE SAME MATERIAL USED FOR THE SURFACE COURSE FOR THE PROJECT. FOR DETAILS ON THIS DELINEATION SCHEME SEE PLAN INSERT SHEET 209930.

2. ON CONCRETE PAVEMENT, DELINEATION IN THE TRANSITION AREA DURING THE CONSTRUCTION SEASON SHALL BE BY USE OF 873 WET REFLECTIVE REMOVABLE TAPE. DURING THE WINTER SEASON (DECEMBER 1 THROUGH MARCH 31) DELINEATION IN THE TRANSITION AREA SHALL BE BY USE OF 643 POLYESTER. IN THE WINTER, PIECES (4 X 12 INCHES) OF 873 WET REFLECTIVE REMOVABLE TAPE SHALL ALSO BE PROVIDED AT 20 FOOT INCREMENTS, OFFSET FROM EACH OF THE CHANNELIZING LINES.

IN THE TANGENT AREA, DELINEATION SHALL BE PROVIDED BY USE OF 643 POLYESTER FOR LONG LINE MARKING, WITH PIECES OF 873 WET REFLECTIVE REMOVABLE TAPE (4" X 12") TO BE PROVIDED AT 80 FOOT INCREMENTS, ALONG THE LANE LINES. FOR DETAILS SEE PLAN INSERT SHEET 209931.

ALL MATERIAL FURNISHED FOR 873 WET REFLECTIVE TAPE SHALL BE LISTED ON THE DEPARTMENT'S PREQUALIFIED LISTS. THE INSTALLATION OF ALL MATERIALS SHALL MEET OR EXCEED THE MANUFACTURER'S RECOMMENDATIONS.

AFTER REMOVABLE PAVEMENT MARKINGS HAVE BEEN INSTALLED, THEY SHALL BE CUT AT 10 FOOT OR SHORTER INTERVALS.

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

PAYMENT FOR ALL WORK ZONE DELINEATION SHALL BE MADE AS TRANSITION AREA DELINEATION. PAYMENT SHALL BE MADE AT THE CONTRACT BID PRICE PER FOOT OF TRANSITION AREA AND SHALL INCLUDE THE COST OF FURNISHING, INSTALLING, MAINTAINING AND REMOVING, IF NECESSARY, THE APPROPRIATE DELINEATION SCHEME SPECIFIED ABOVE. PAYMENT SHALL ALSO INCLUDE THE COST OF REMOVAL OF THE SURFACE COURSE WITHIN THE TRANSITION AREA AND RESURFACING OF THE AREA.

PAYMENT FOR ITEM 614 TANGENT AREA DELINEATION SHALL BE MADE AT THE CONTRACT BID PRICE PER FOOT OF TANGENT AREA AND SHALL INCLUDE THE COST OF FURNISHING, INSTALLING, MAINTAINING AND REMOVING, IF NECESSARY, THE APPROPRIATE DELINEATION SCHEME SPECIFIED ABOVE.

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

THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE AS FOLLOWS:

ITEM UNIT DESCRIPTION

614 3,804 FT. TRANSITION AREA DELINEATION
614 1,078 FT. TANGENT AREA DELINEATION

ESTIMATED QUANTITIES

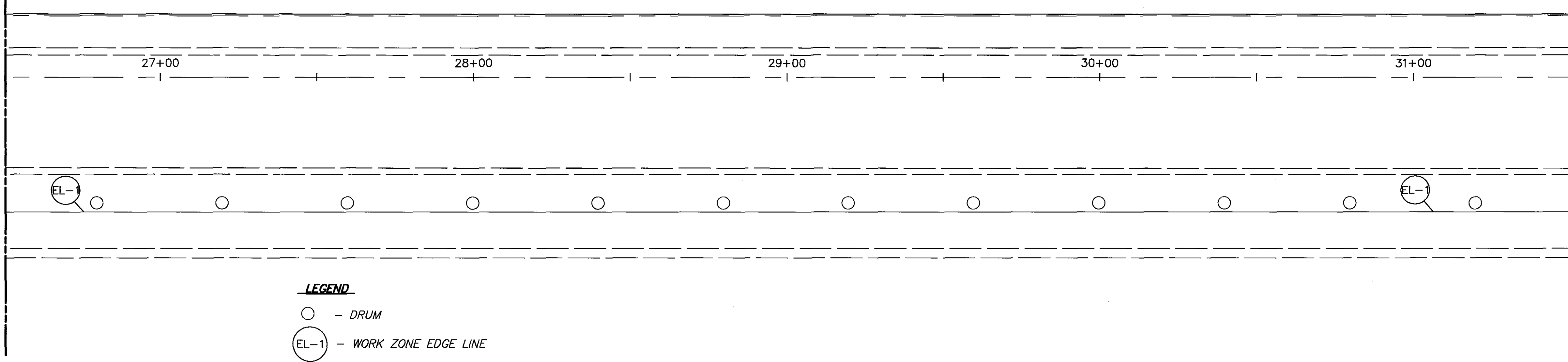
REF. NO.	SHEET NO.	STATION TO STATION	SIDE	614	614	622
				WORK ZONE EDGE LINE, CLASS 1, 740.06, TYPE 1 MILE	WORK ZONE RAISED PAVEMENT MARKERS EACH	PORTABLE CONCRETE BARRIER, 32" FT.
PHASE 1 EASTBOUND						
EL-1	7-13	23+00 - 58+06	RT.	0.65	77	
EL-2	9-13	39+50 - 58+06	RT.	0.35	70	
PHASE 1 WESTBOUND						
PCB-1	10-12	43+67 - 51+81	LT.			1,280
EL-3	10-12	43+67.88 - 55+80	LT.	0.23		
EL-4	10-12	43+67.88 - 55+80	LT.	0.23		
PHASE 2 EASTBOUND						
PCB-2	18-20	42+67 - 51+81	RT.			1,120
PCB-3	19-20	48+82 - 51+82	RT.			410
EL-7	18-19	41+50-51+50	RT.	0.13		
EL-8	18-19	41+50-51+50	RT.	0.13		
PHASE 2 WESTBOUND						
EL-5	17-21	40+20 - 58+75	LT.	0.31	46	
EL-6	17-23	40+20 - 77+50	LT.	0.67	37	
TOTALS TO GENERAL SUMMARY				2.70	230	2,810

CALC. BY: EW
CHK. BY: TH

MAINTENANCE OF TRAFFIC NOTES

MAD - 40 - 0.92

MATCHLINE STA. 26+50, SEE SHEET 7

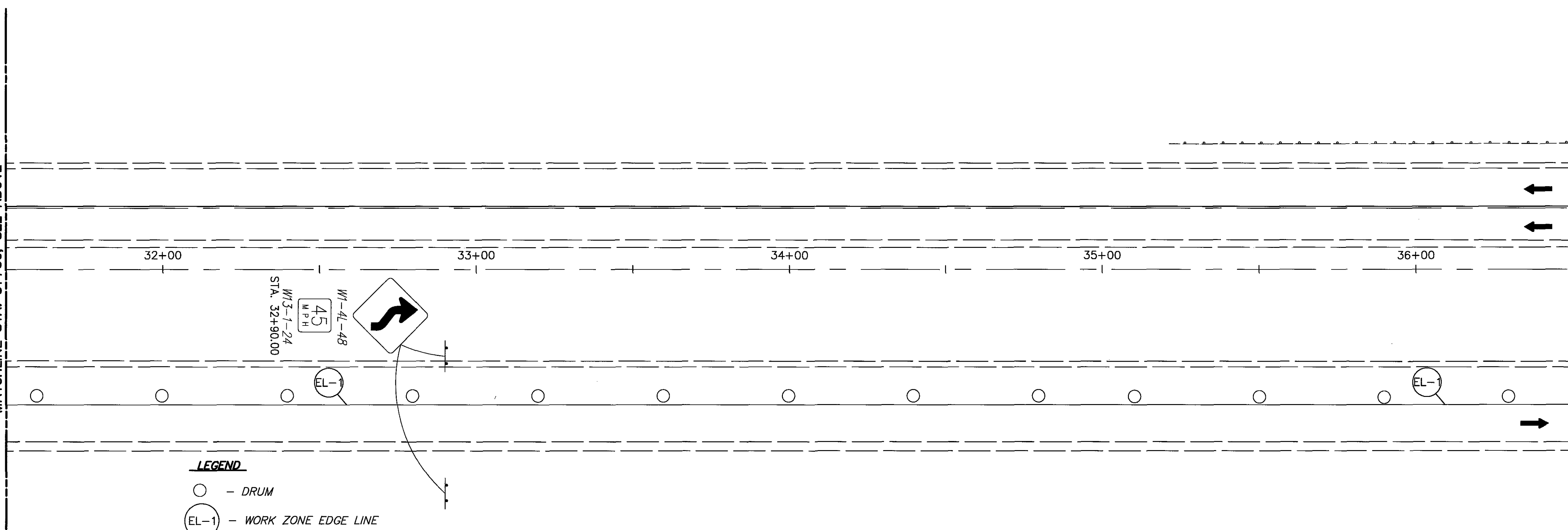


LEGEND

- - DRUM
- EL-1 - WORK ZONE EDGE LINE

PLAN (PHASE 1 MAINTENANCE OF TRAFFIC)

MATCHLINE STA. 31+50, SEE ABOVE



LEGEND

- - DRUM
- EL-1 - WORK ZONE EDGE LINE

MATCHLINE STA. 31+50, SEE BELOW

MATCHLINE STA. 36+50, SEE SHEET 9

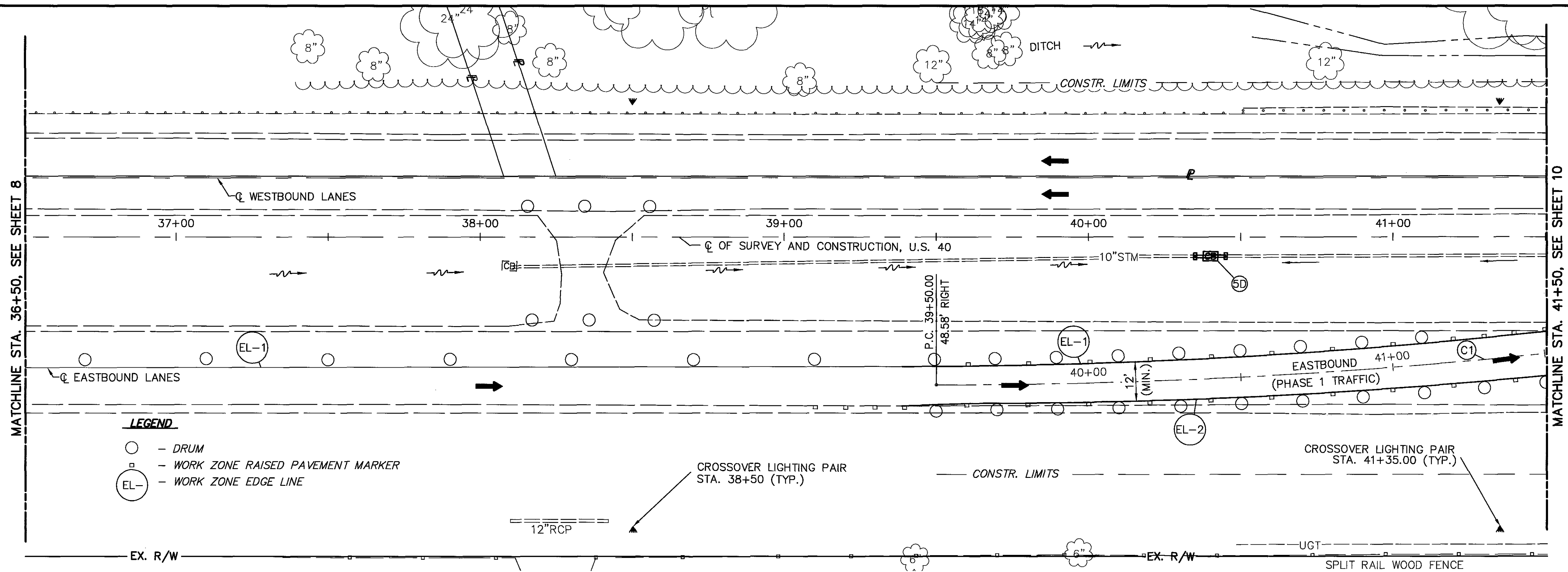
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HORIZONTAL SCALE IN FEET

0 20 40

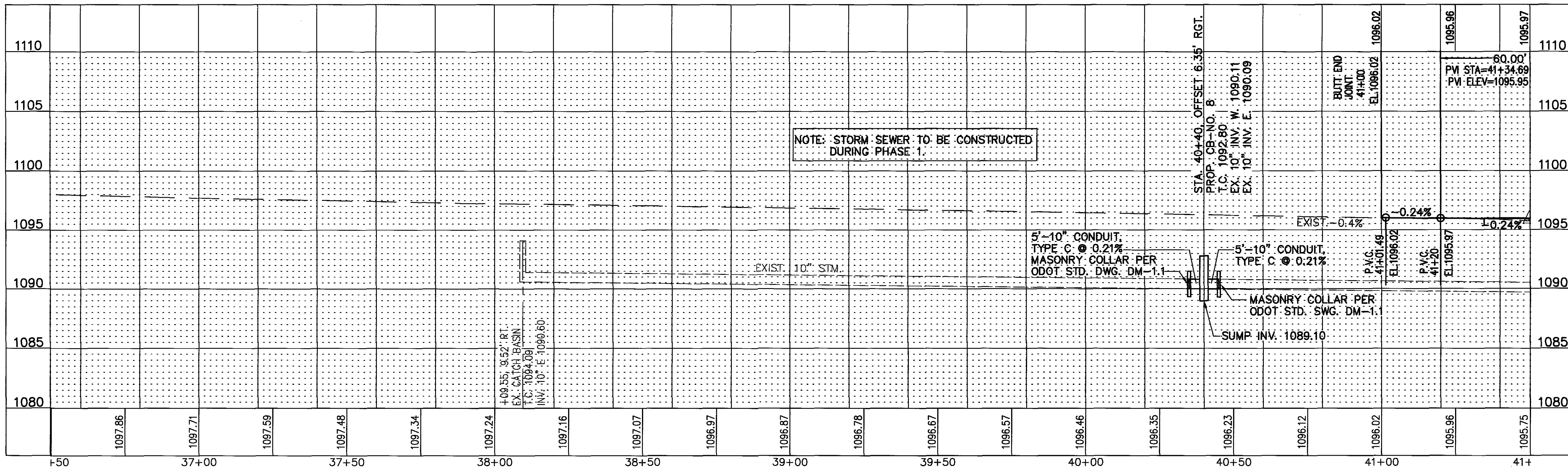
PHASE 1 MAINTENANCE OF TRAFFIC
STA. 26+50.00 TO STA. 36+50.00.00

MAD - 40 - 0.92

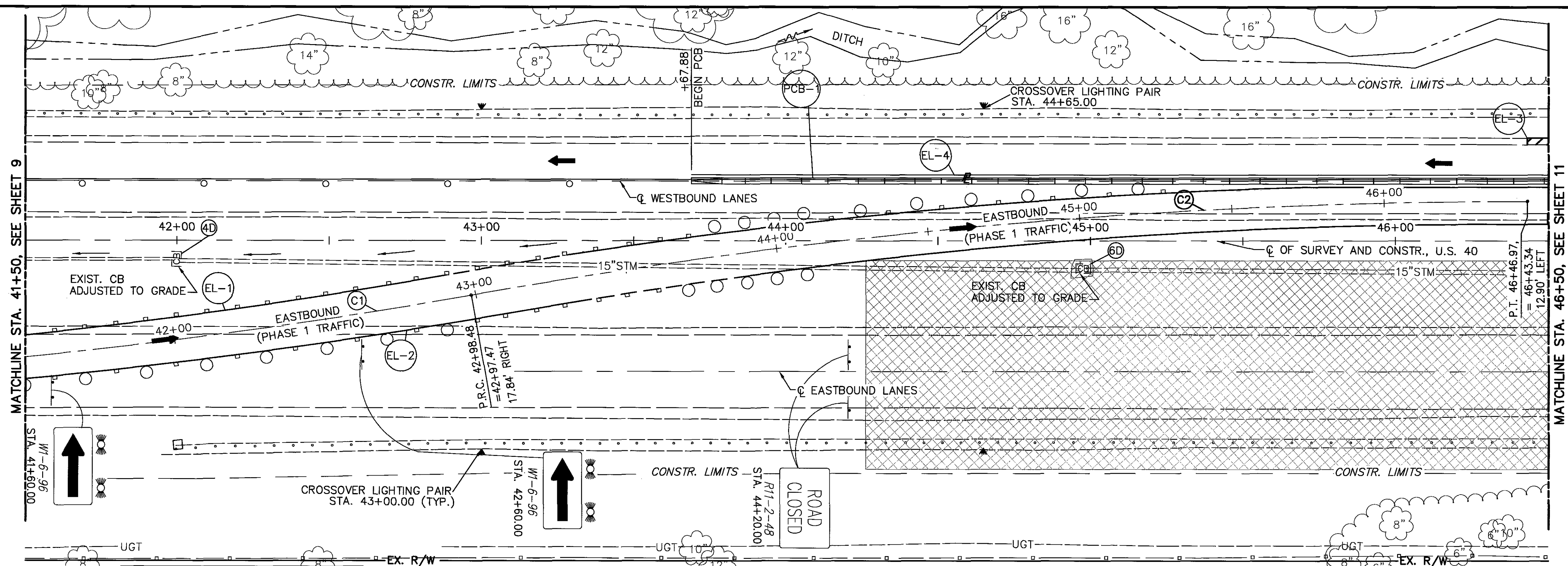


PLAN (PHASE 1 MAINTENANCE OF TRAFFIC)

C1	
Q CONSTRUCTION, CROSS OVER	
CURVE DATA	
Δ	$10^{\circ} 08' 07''$
D_c	$2' 54' 30''$
R	$1970.00'$
L	$348.48'$
T	$174.70'$
E	$7.73'$
e_{max}	0.016
P.I.	STA. $41+24.70$
	$48.58'$ RT.



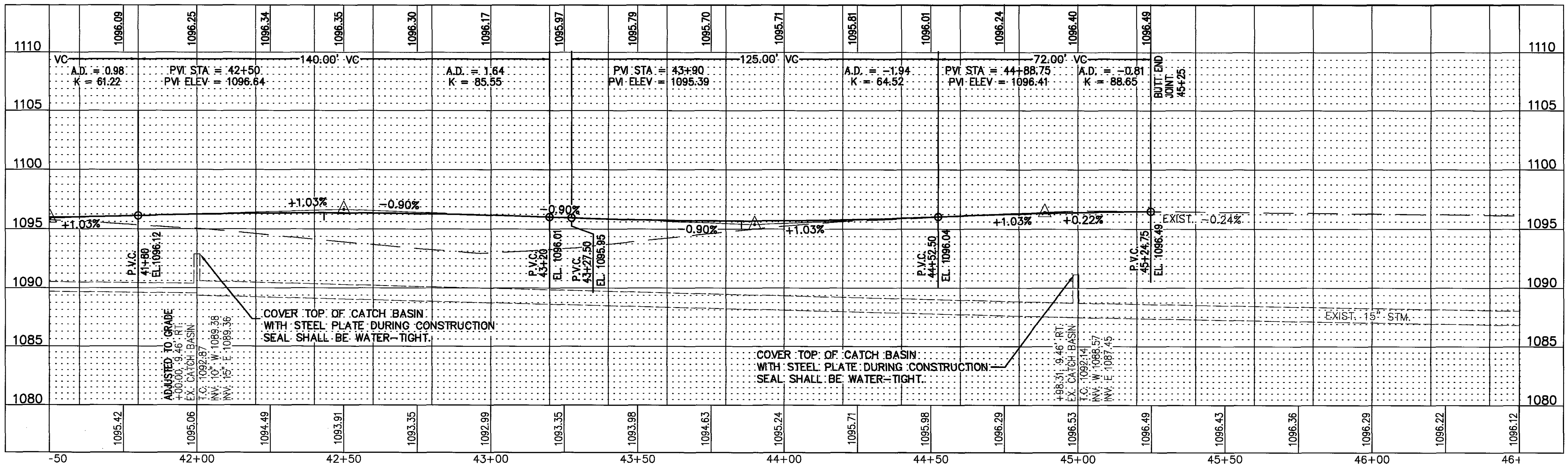
PROFILE ALONG Q WESTBOUND CROSS-OVER (PHASE 1 MAINTENANCE OF TRAFFIC)



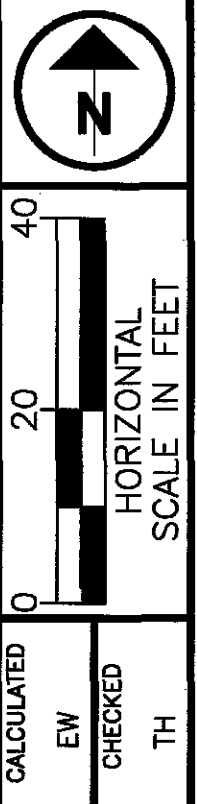
(C1)	(C2)
C CONSTRUCTION, CROSS OVER CURVE DATA $\Delta = 10^{\circ} 08' 07''$ $D_c = 2' 54' 30''$ $R = 1970.00'$ $L = 348.48'$ $T = 174.70'$ $E = 7.73'$ $e_{max} = 0.016$ P.I. = STA. 41+24.70 48.58' RT.	C CONSTRUCTION, CROSS OVER CURVE DATA $\Delta = 10^{\circ} 08' 07''$ $D_c = 2' 54' 30''$ $R = 1970.00'$ $L = 348.48'$ $T = 174.70'$ $E = 7.73'$ $e_{max} = 0.016$ P.I. = STA. 44+68.64 19.20' LT.

PLAN (PHASE 1 MAINTENANCE OF TRAFFIC)

- LEGEND**
- - DRUM
 - - WORK ZONE RAISED PAVEMENT MARKER
 - ▨ - TEMPORARY PAVEMENT
 - ▭ - PORTABLE CONCRETE BARRIER
 - ⊖ - WORK ZONE EDGE LINE
 - ▩ - PHASE 1 CONSTRUCTION LIMITS



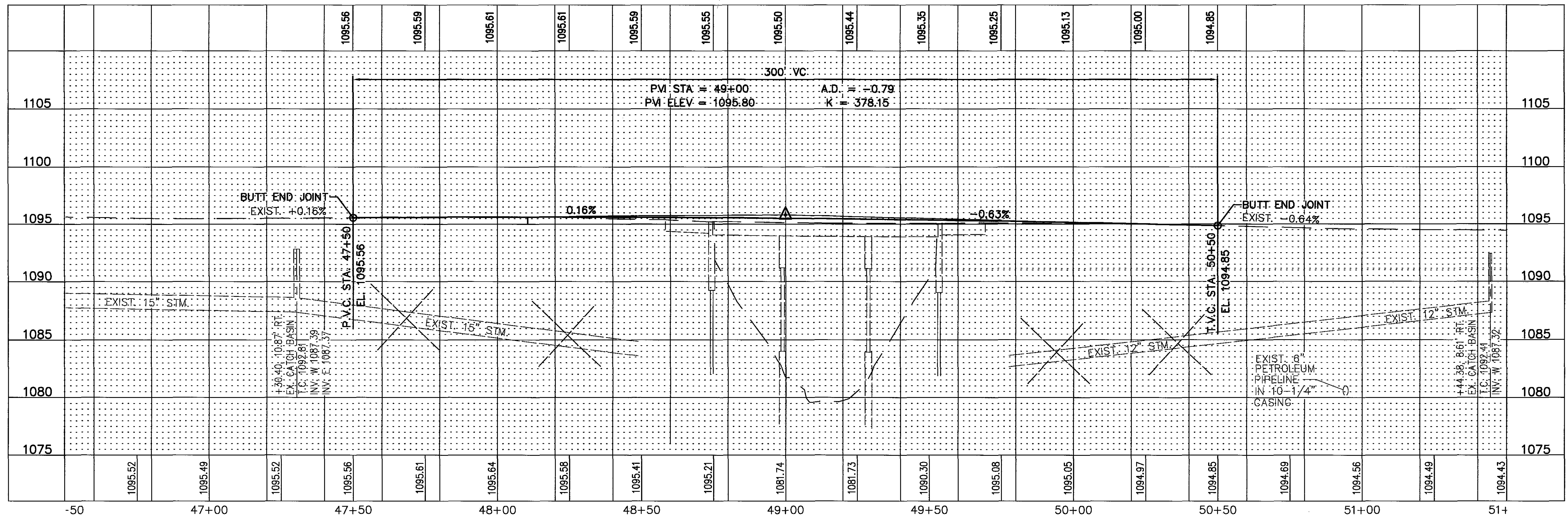
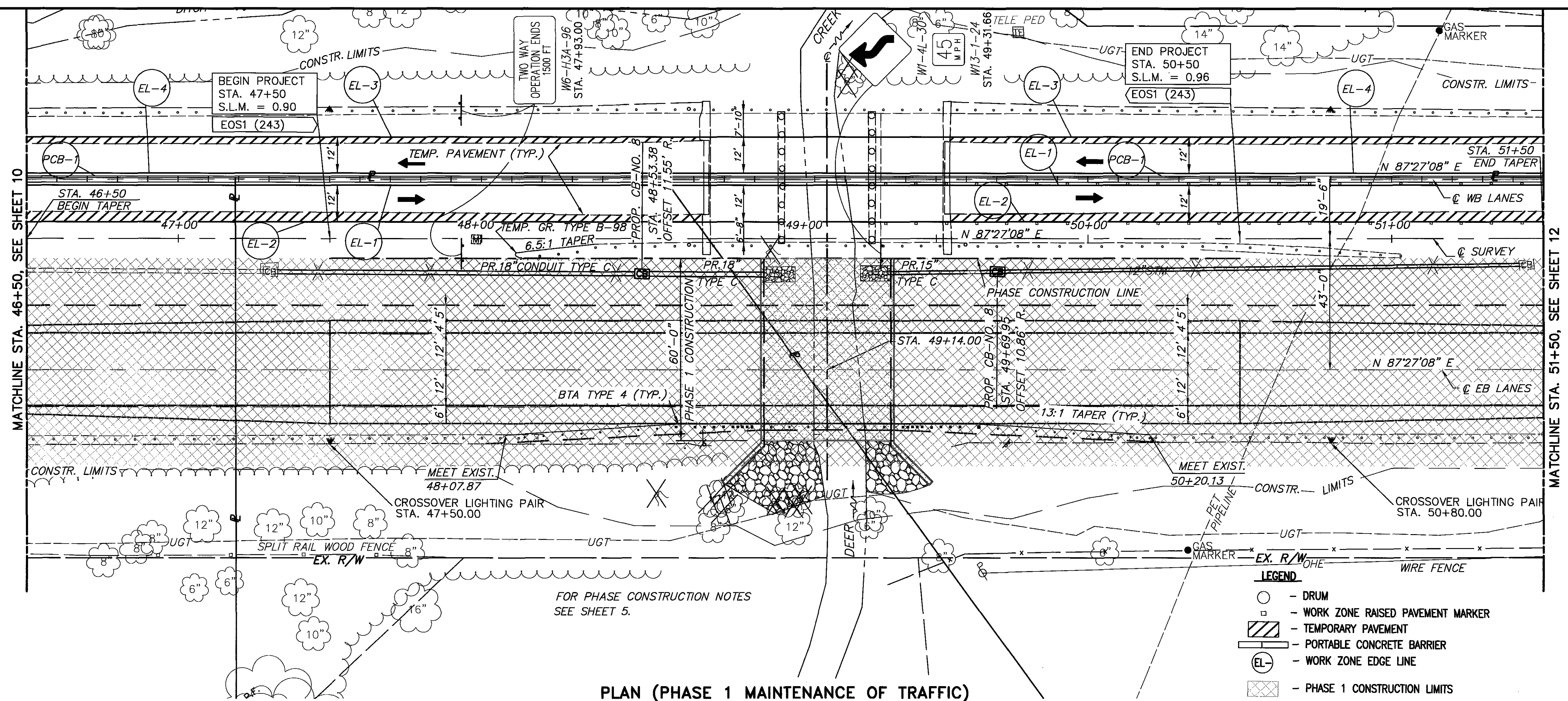
PROFILE ALONG C WESTBOUND CROSS-OVER (PHASE 1 MAINTENANCE OF TRAFFIC)



PHASE 1 MAINTENANCE OF TRAFFIC
 STA. 41+50.00 TO STA. 46+50.00

MAD - 40 - 092

10
46



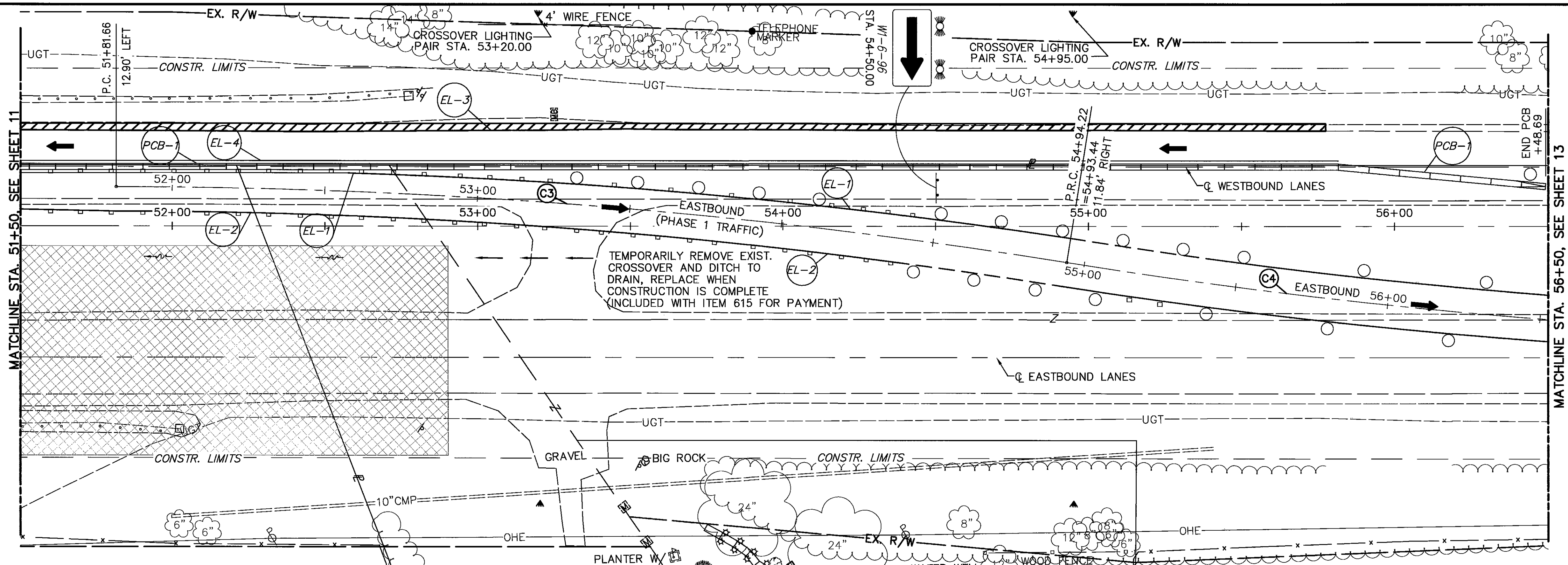
PHASE 1 MAINTENANCE OF TRAFFIC
STA. 46+50.00 TO STA. 51+50.00

MAD - 40 - 0.92

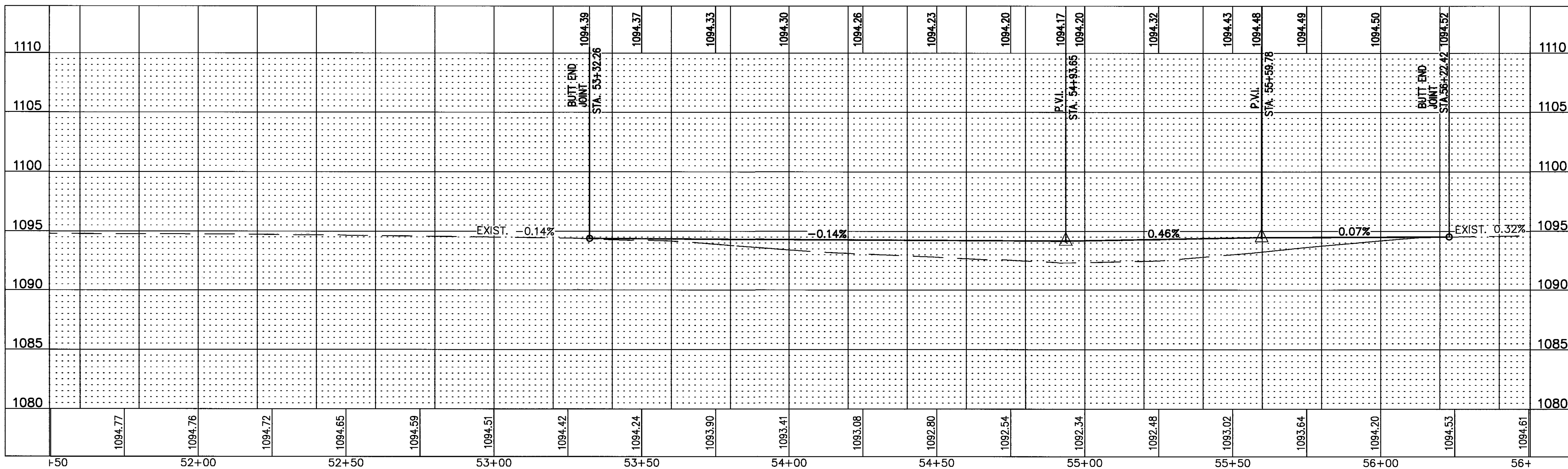
11
46

CALCULATED
EW
CHECKED
TH

40
20
0
HORIZONTAL
SCALE IN FEET

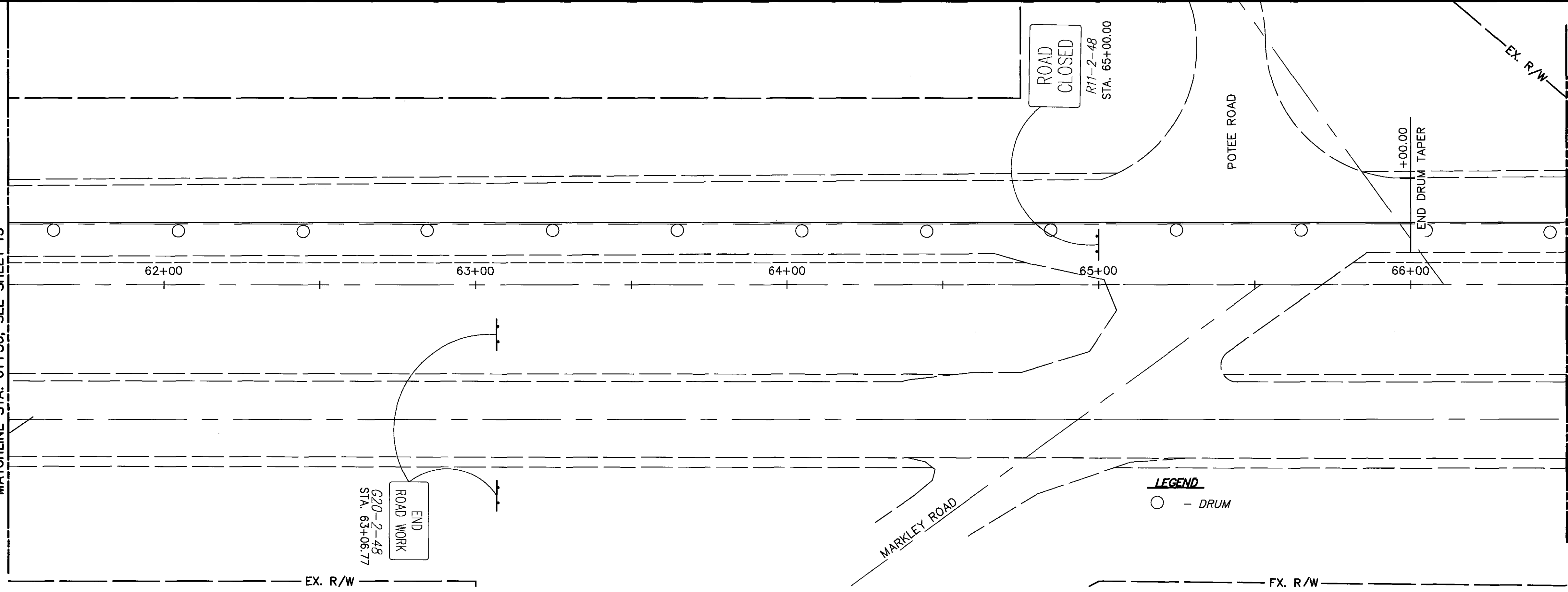


(C3)	(C4)
Q CONSTRUCTION, CROSS OVER CURVE DATA $\Delta = 9^{\circ} 05' 25''$ $D_c = 2^{\circ} 54' 30''$ $R = 1970.00'$ $L = 312.55'$ $T = 156.61'$ $E = 6.21'$ $e_{max} = 0.016$ P.I. = STA. 53+38.27 36.40' RT.	Q CONSTRUCTION, CROSS OVER CURVE DATA $\Delta = 9^{\circ} 05' 25''$ $D_c = 2^{\circ} 54' 30''$ $R = 1970.00'$ $L = 312.55'$ $T = 156.61'$ $E = 6.21'$ $e_{max} = 0.016$ P.I. = STA. 57+18.39 25.08' LT.



MATCHLINE STA. 61+50, SEE SHEET 13

MATCHLINE STA. 66+50, SEE ABOVE



PLAN (PHASE 1 MAINTENANCE OF TRAFFIC)

EX. R/W

EX. R/W

67+00

68+00

69+00

70+00

71+00

MATCHLINE STA. 71+50, SEE SHEET 15

LEGEND

○ - DRUM

LEGEND

○ - DRUM

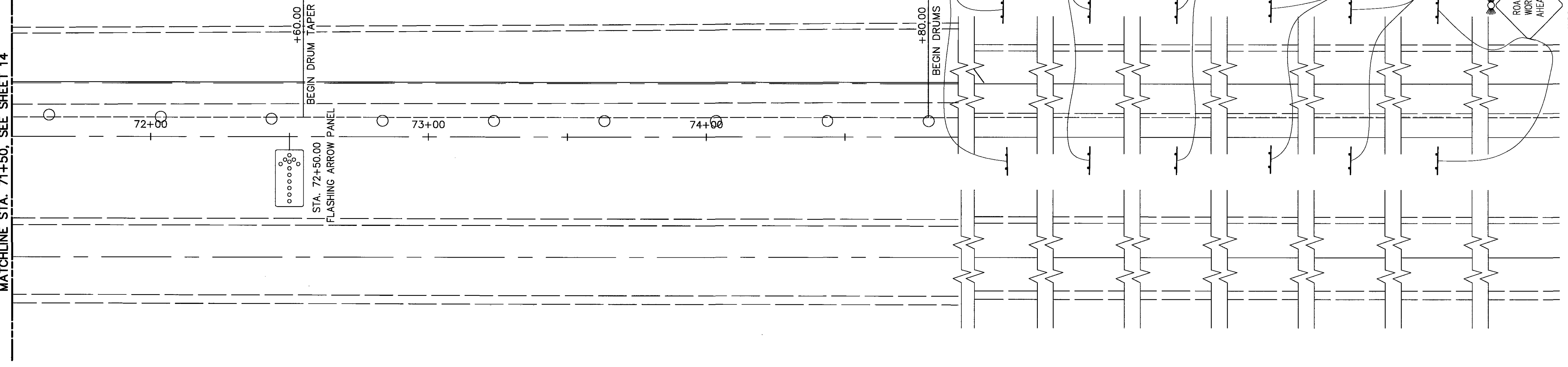


CALCULATED	EW	TH
	CHECKED	

PHASE 1 MAINTENANCE OF TRAFFIC
STA. 61+50.00 TO STA. 71+50.00

MAD - 40 - 092

MATCHLINE STA. 71+50, SEE SHEET 14



PLAN (PHASE 1 MAINTENANCE OF TRAFFIC)

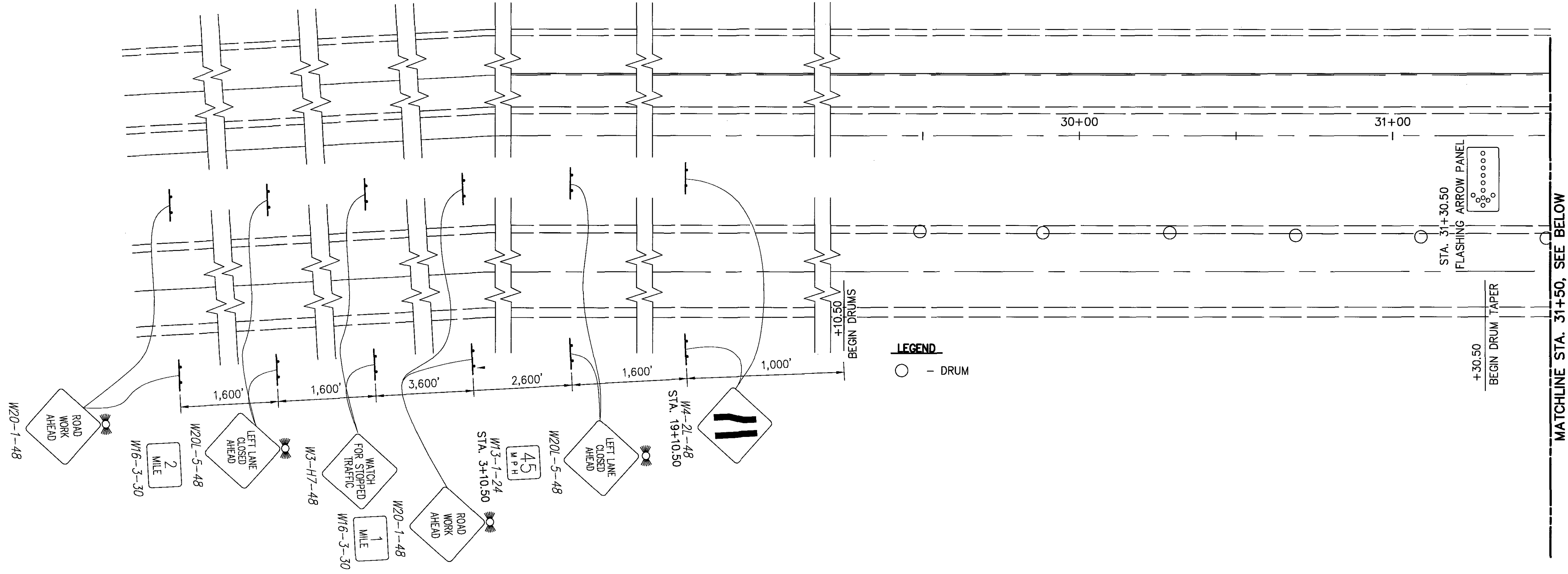
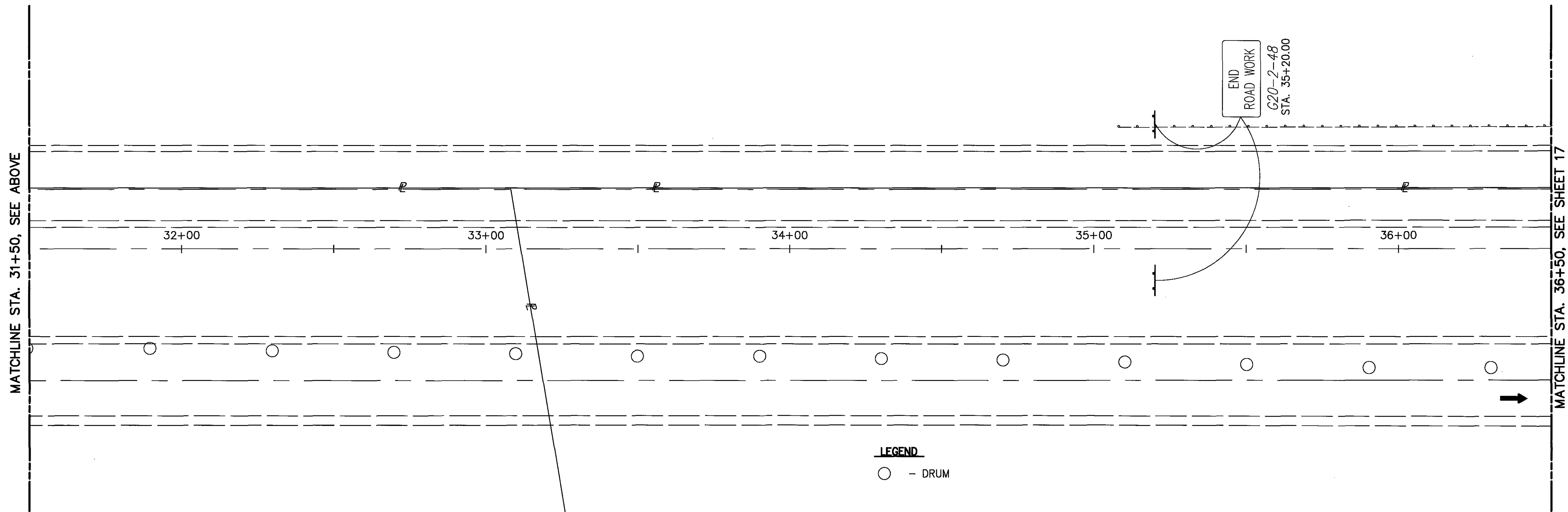
CALCULATED
EW
CHECKED
TH

0 20 40
HORIZONTAL
SCALE IN FEET

↑
N

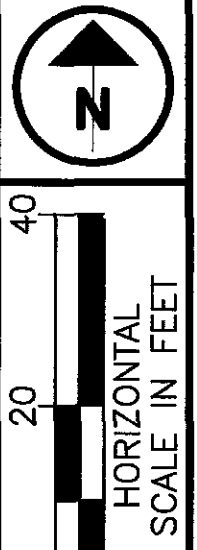
PHASE 1 MAINTENANCE OF TRAFFIC
STA. 71+50.00 TO END

MAD - 40 - 0.92



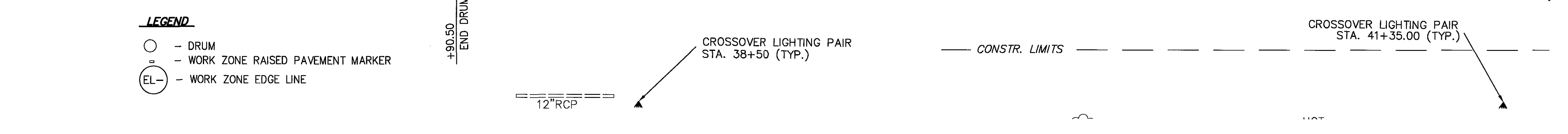
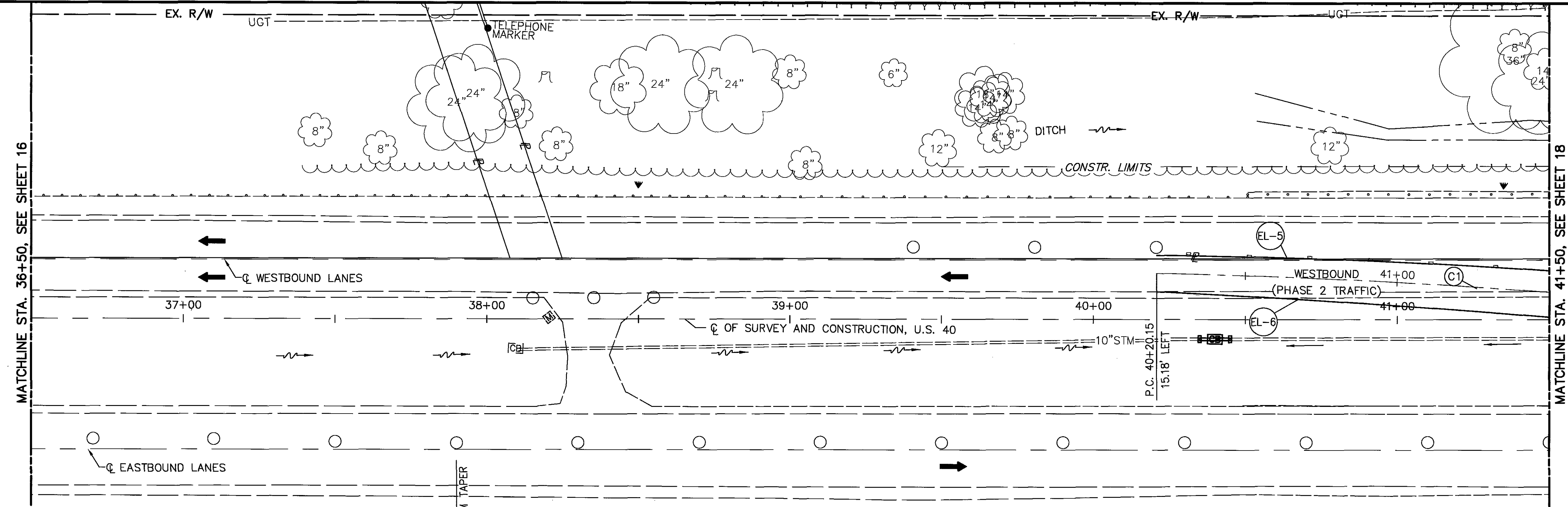
PLAN (PHASE 2 MAINTENANCE OF TRAFFIC)

CALCULATED	EW	TH
	CHECKED	



PHASE 2 MAINTENANCE OF TRAFFIC
BEGIN TO STA. 36+50.00

MAD - 40 - 0.92



PLAN (PHASE 2 MAINTENANCE OF TRAFFIC)

PROFILE ALONG \bar{C} EASTBOUND CROSS-OVER (PHASE 2 MAINTENANCE OF TRAFFIC)

(C1)
 \bar{C} CONSTRUCTION,
 CROSS OVER
 CURVE DATA
 $\Delta = 10^\circ 08' 07''$
 $D_c = 2' 54' 30''$
 $R = 1970.00'$
 $L = 348.48'$
 $T = 174.70'$
 $E = 7.73'$
 $e_{max} = 0.016$
 P.I. = STA. 41+95.55
 13.08' RT.

LEGEND
 ○ - DRUM
 = - WORK ZONE RAISED PAVEMENT MARKER
 (EL-) - WORK ZONE EDGE LINE

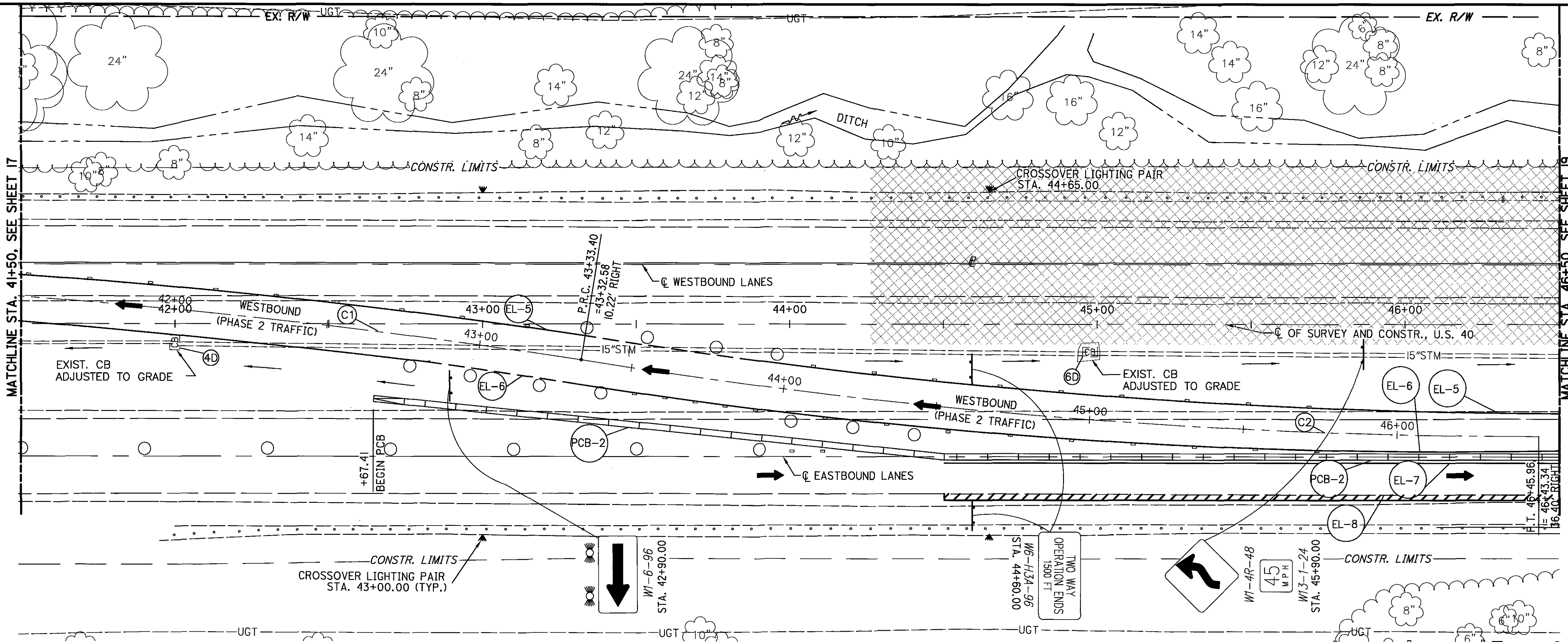
NOTE: STORM SEWER TO BE CONSTRUCTED DURING PHASE 1.

5'-10" CONDUIT, TYPE C @ 0.21%
 MASONRY COLLAR PER ODOT STD. DWG. DM-1.1
 5'-10" CONDUIT, TYPE C @ 0.21%
 MASONRY COLLAR PER ODOT STD. SWG. DM-1.1
 SUMP INV. 1089.10

+90.50
 END DRUM TAPER

CROSSOVER LIGHTING PAIR
 STA. 38+50 (TYP.)

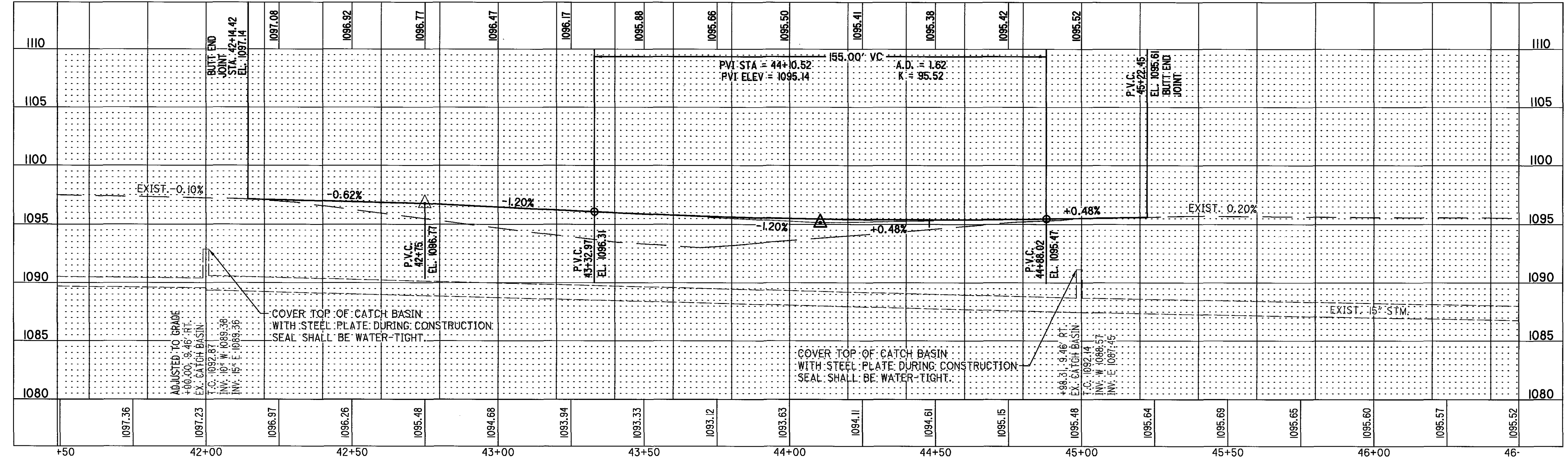
CROSSOVER LIGHTING PAIR
 STA. 41+35.00 (TYP.)



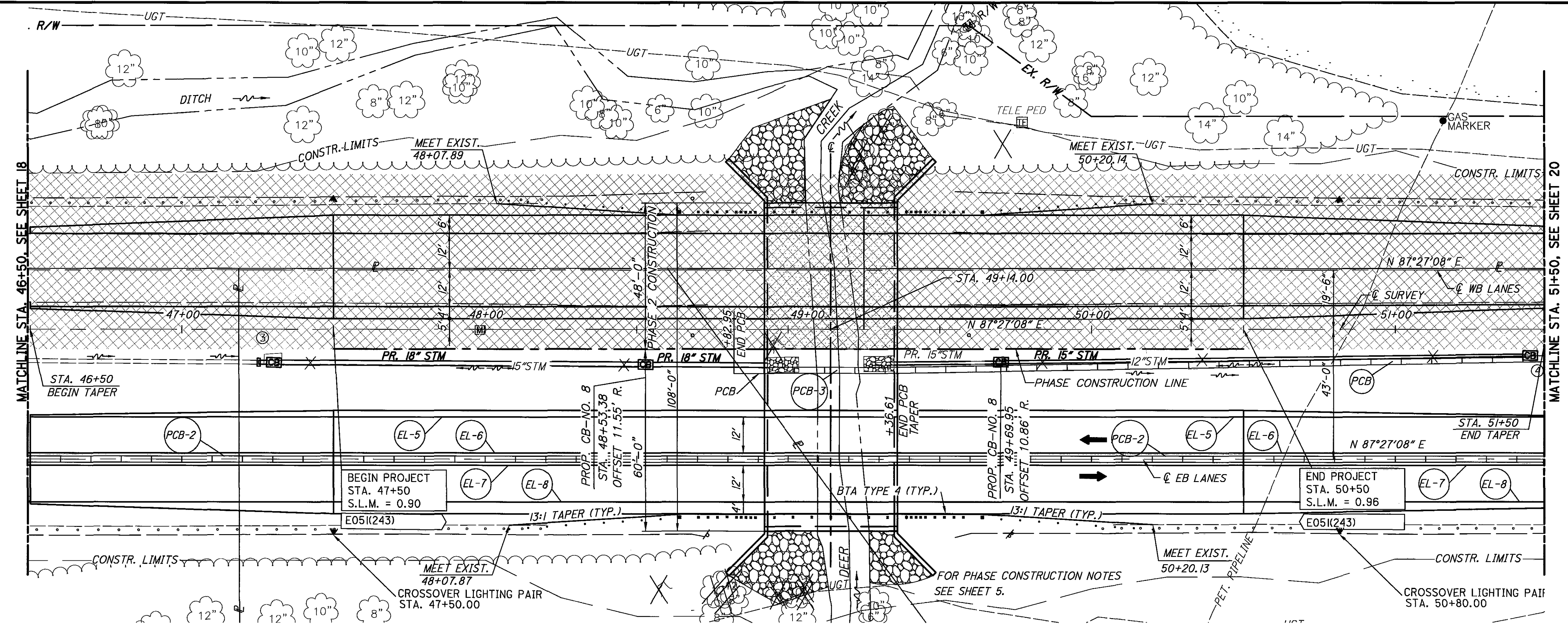
PLAN (PHASE 2 MAINTENANCE OF TRAFFIC)

- LEGEND**
- - DRUM
 - - WORK ZONE RAISED PAVEMENT MARKER
 - ▨ - TEMPORARY PAVEMENT
 - ▭ - PORTABLE CONCRETE BARRIER
 - EL - WORK ZONE EDGE LINE
 - ▩ - PHASE 1 CONSTRUCTION LIMITS

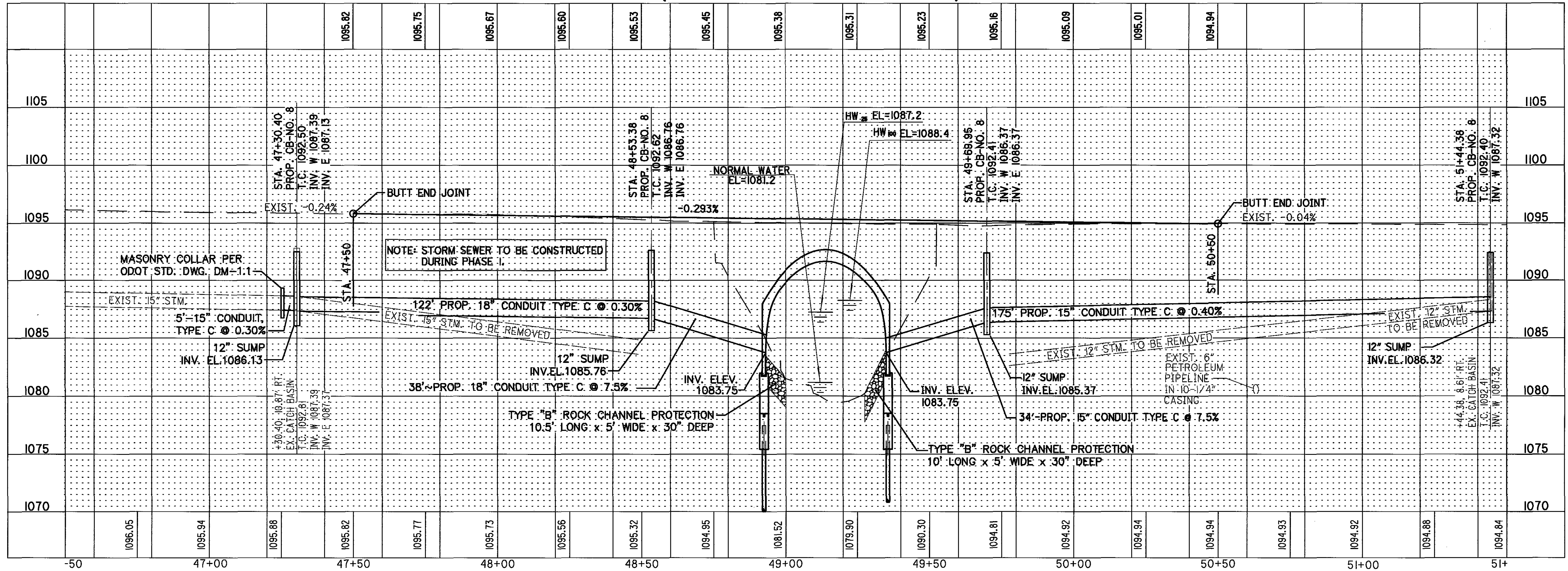
(C1)
@ CONSTRUCTION, CROSS OVER CURVE DATA $\Delta = 10^{\circ} 08' 07''$ $D_c = 2' 54' 30''$ $R = 1970.00'$ $L = 348.48'$ $T = 174.70'$ $E = 7.73'$ $e_{max} = 0.016$ P.I. = STA. 41+95.55 13.08' RT.
(C2)
@ CONSTRUCTION, CROSS OVER CURVE DATA $\Delta = 10^{\circ} 08' 07''$ $D_c = 2' 54' 30''$ $R = 1970.00'$ $L = 348.48'$ $T = 174.70'$ $E = 7.73'$ $e_{max} = 0.016$ P.I. = STA. 44+68.64 36.40' RT.



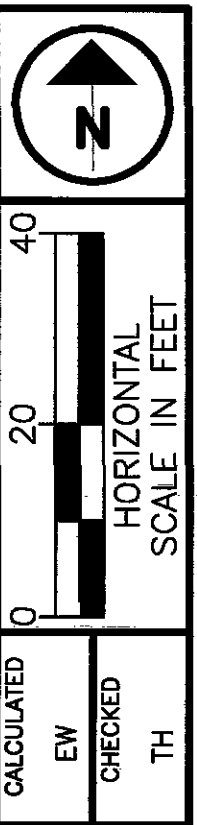
PROFILE ALONG @ EASTBOUND CROSS-OVER (PHASE 2 MAINTENANCE OF TRAFFIC)



PLAN (PHASE 2 MAINTENANCE OF TRAFFIC)



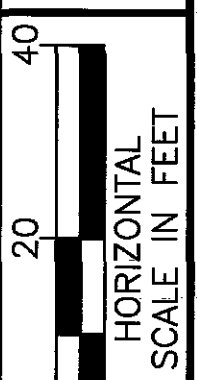
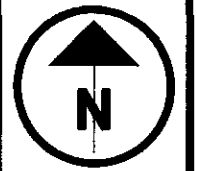
PROFILE ALONG $\text{\textcircled{C}}$ EASTBOUND CROSS-OVER (PHASE 2 MAINTENANCE OF TRAFFIC)



CALCULATED	EW	TH
	CHECKED	

PHASE 2 MAINTENANCE OF TRAFFIC
STA. 46+50 TO STA. 51+50

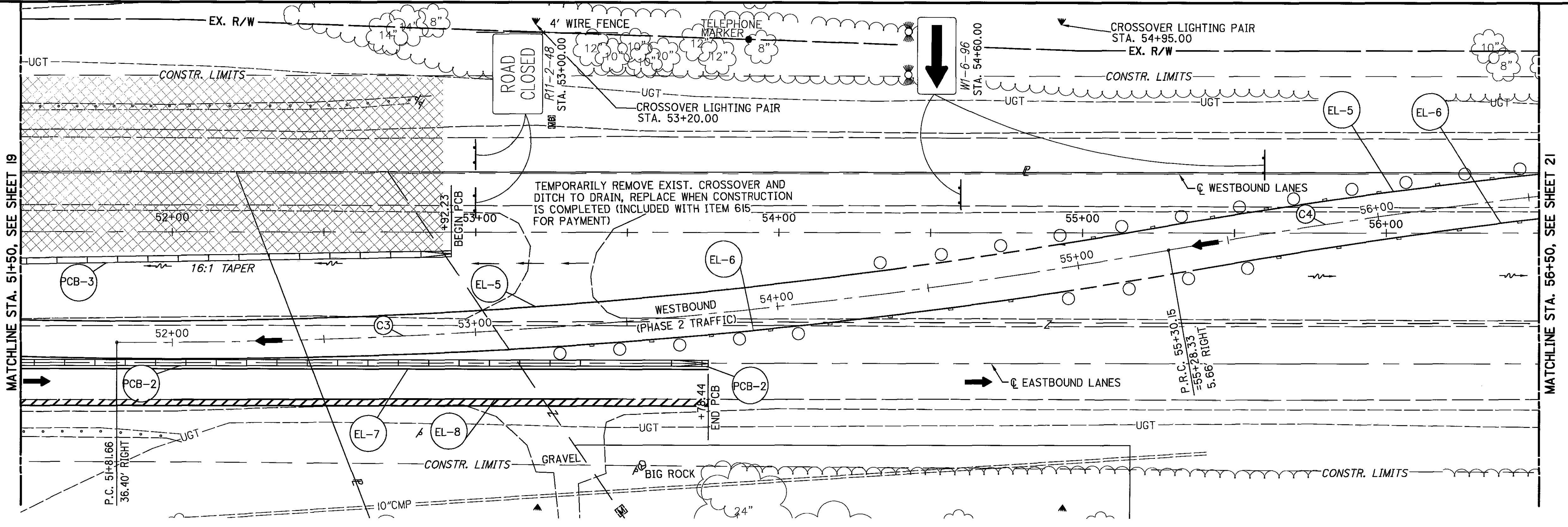
MAD - 40 - 0.92



CALCULATED
EW
CHECKED
TH

PHASE 2 MAINTENANCE OF TRAFFIC
STA. 51+50.00 TO STA. 56+50.00

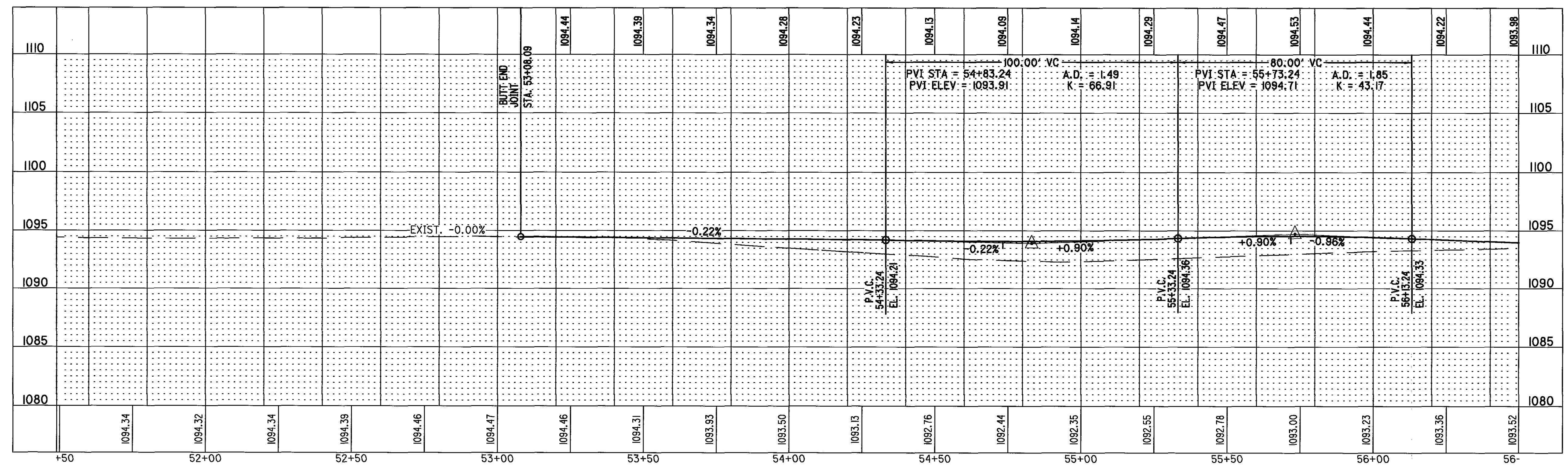
MAD - 40 - 0.92



(C3)
<p>Q CONSTRUCTION, CROSS OVER CURVE DATA $\Delta = 10^{\circ} 08' 07''$ $D_c = 2^{\circ} 54' 30''$ $R = 1970.00'$ $L = 348.48'$ $T = 174.70'$ $E = 7.73'$ $e_{max} = 0.016$ P.I. = STA. 53+38.27 12.90' RT.</p>
(C4)
<p>Q CONSTRUCTION, CROSS OVER CURVE DATA $\Delta = 10^{\circ} 08' 07''$ $D_c = 2^{\circ} 54' 30''$ $R = 1970.00'$ $L = 348.48'$ $T = 174.70'$ $E = 7.73'$ $e_{max} = 0.016$ P.I. = STA. 56+47.54 36.58' RT.</p>

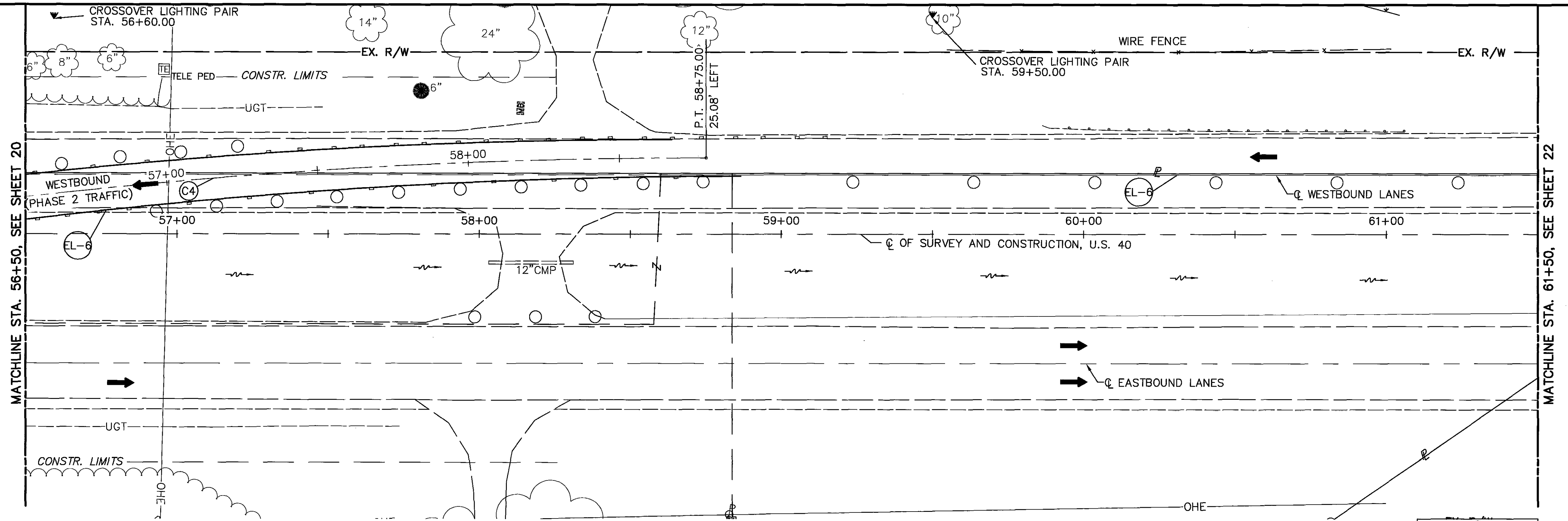
- LEGEND**
- DRUM
 - WORK ZONE RAISED PAVEMENT MARKER
 - TEMPORARY PAVEMENT
 - PORTABLE CONCRETE BARRIER
 - WORK ZONE EDGE LINE
 - PHASE 1 CONSTRUCTION LIMITS

PLAN (PHASE 2 MAINTENANCE OF TRAFFIC)



PROFILE ALONG Q EASTBOUND CROSS-OVER (PHASE 2 MAINTENANCE OF TRAFFIC)

Drawn by: P:\B\PROJ\50393\B\ENGINEERING\50393\PNP\51G2.DWG

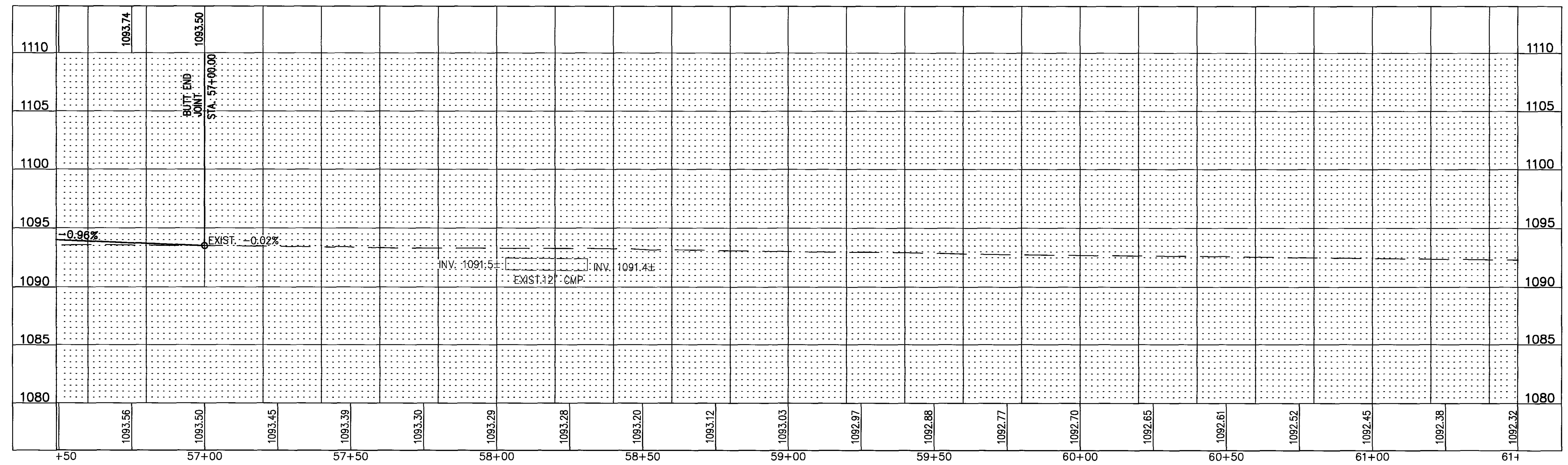


CALCULATED
BY
CHECKED
DATE

- LEGEND**
- - DRUM
 - - WORK ZONE RAISED PAVEMENT MARKER
 - - WORK ZONE EDGE LINE

PLAN (PHASE 2 MAINTENANCE OF TRAFFIC)

(C4)
 Q CONSTRUCTION,
 CROSS OVER
 CURVE DATA
 $\Delta = 9^{\circ} 05' 25''$
 $D_c = 2' 54' 30''$
 $R = 1970.00'$
 $L = 312.55'$
 $T = 156.61'$
 $E = 6.21'$
 P.I. = STA. 56+47.54
 36.58' RT.



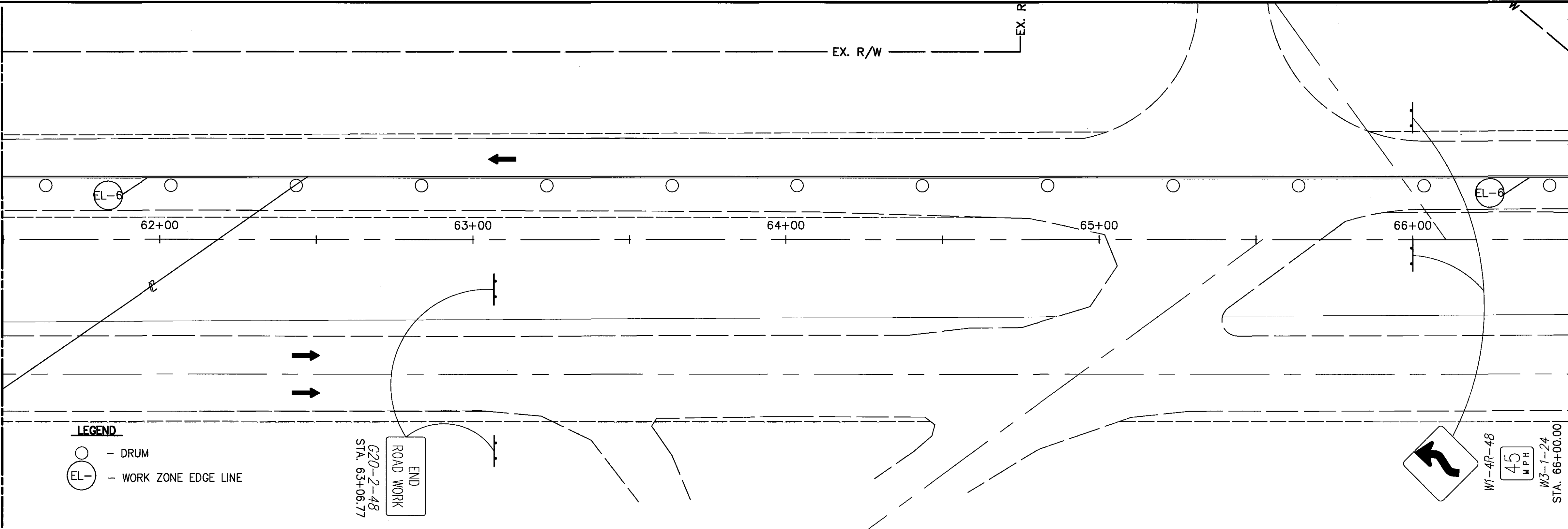
PROFILE ALONG Q EASTBOUND CROSS-OVER (PHASE 2 MAINTENANCE OF TRAFFIC)

PHASE 2 MAINTENANCE OF TRAFFIC
 STA. 56+50.00 TO STA. 61+50.00

MAD - 40 - 0.92

MATCHLINE STA. 61+50, SEE SHEET 21

MATCHLINE STA. 66+50, SEE ABOVE



LEGEND
 ○ - DRUM
 (EL-) - WORK ZONE EDGE LINE

END
 ROAD WORK
 G20-2-48
 STA. 63+06.77

W1-4R-48
 45
 MPH
 M3-1-24
 STA. 66+00.00

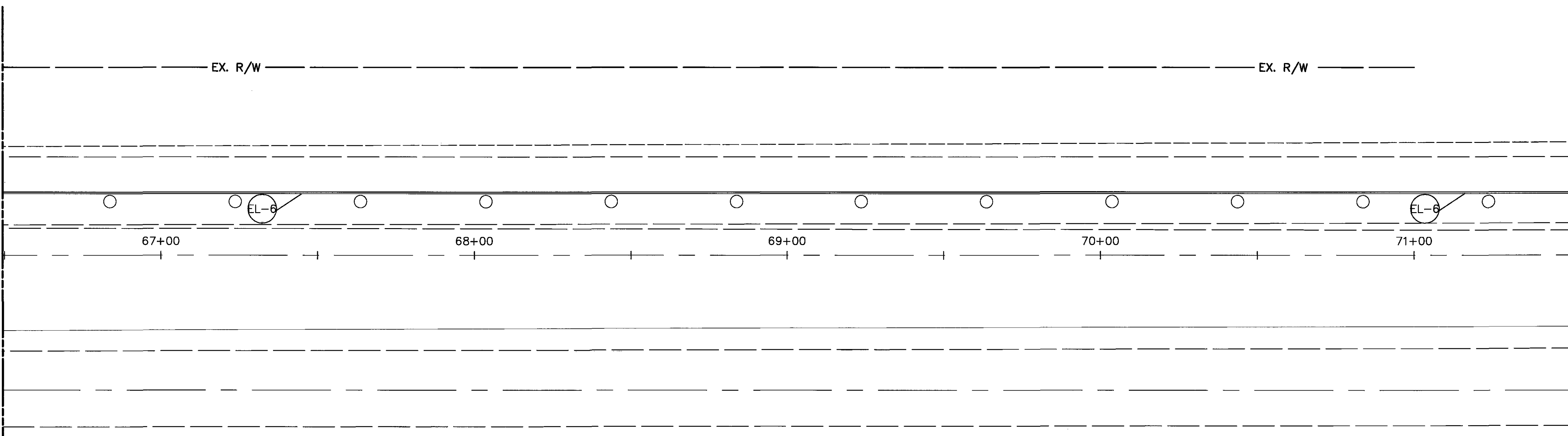
PLAN (PHASE 2 MAINTENANCE OF TRAFFIC)

EX. R/W

EX. R/W

MATCHLINE STA. 66+50, SEE ABOVE

MATCHLINE STA. 71+50, SEE SHEET 23



LEGEND
 ○ - DRUM
 (EL-) - WORK ZONE EDGE LINE

CALCULATED
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 CHECKED
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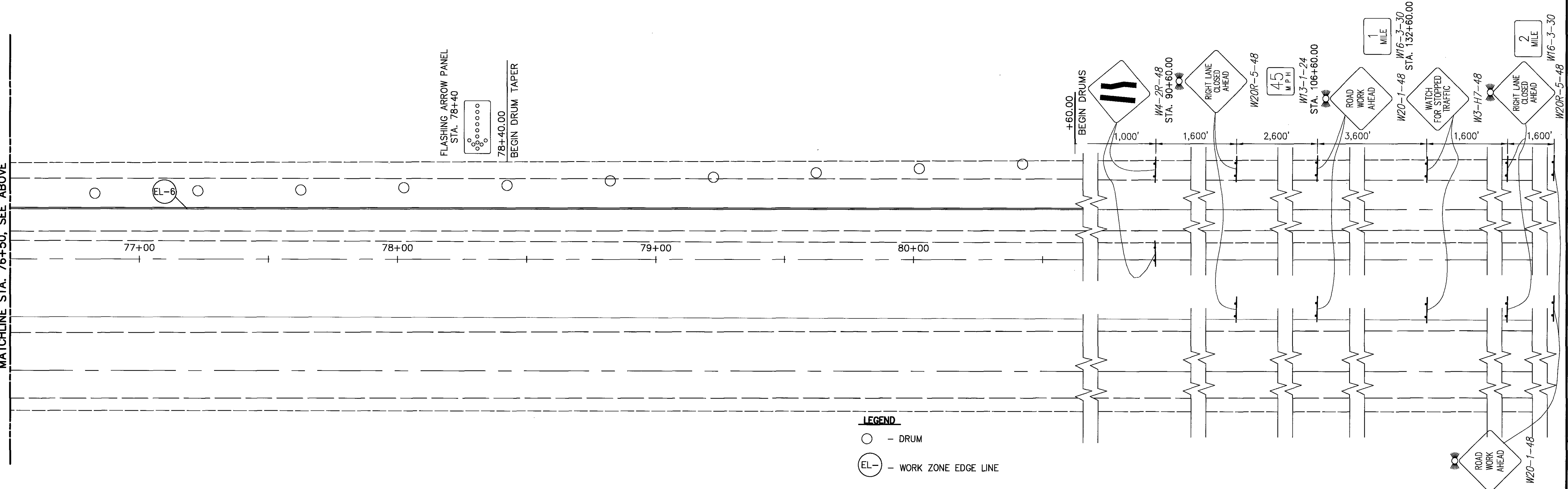
0 20 40
 HORIZONTAL
 SCALE IN FEET

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 N

PHASE 2 MAINTENANCE OF TRAFFIC
 STA. 61+50.00 TO 71+50.00

MAD - 40 - 0.92

MATCHLINE STA. 76+50, SEE ABOVE



LEGEND

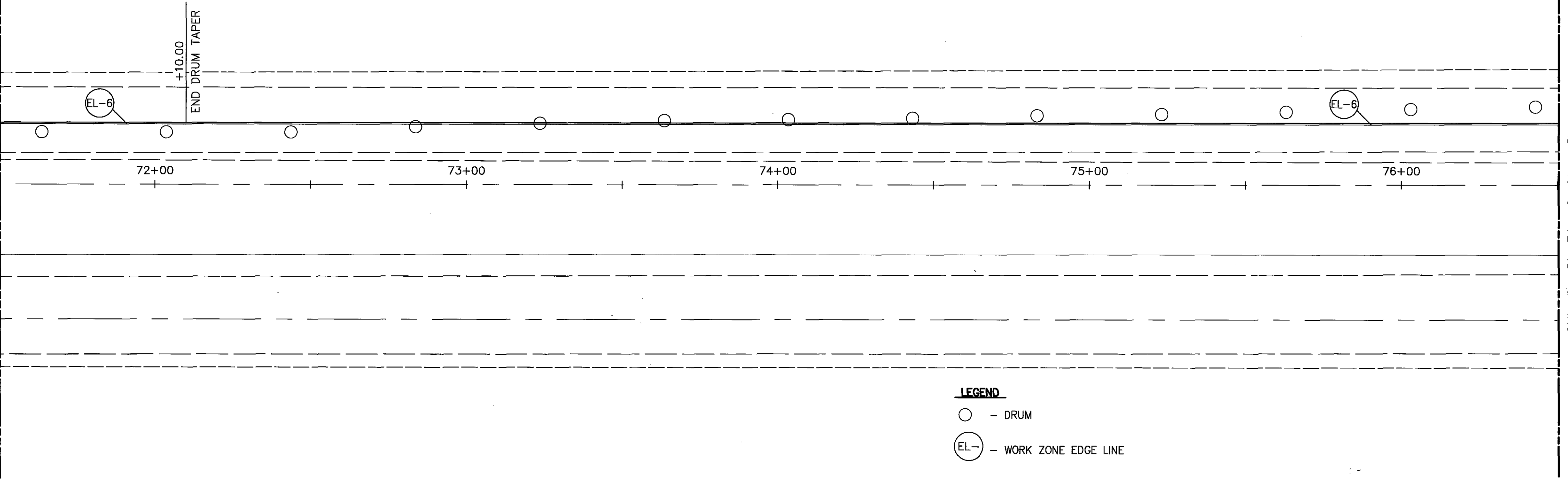
- - DRUM
- EL-6 - WORK ZONE EDGE LINE

PLAN (PHASE 2 MAINTENANCE OF TRAFFIC)

LEGEND

- - DRUM
- EL-6 - WORK ZONE EDGE LINE

MATCHLINE STA. 71+50, SEE SHEET 22



MATCHLINE STA. 76+50, SEE BELOW

MAD - 40 - 0.92

PHASE 2 MAINTENANCE OF TRAFFIC
STA. 71+50.00 TO END

CALCULATED
EW
CHECKED
TH

HORIZONTAL
SCALE IN FEET

SHEET NUMBER							ITEM	ITEM EXT.	QUAN.	UNIT	DESCRIPTION	SEE SHT. NO.
4	5	6	25	OFFICE CALC'S.	31	35						
ROADWAY												
LUMP							201	11000	LUMP		CLEARING AND GRUBBING	
			384				202	35100	384	FT.	PIPE REMOVED, 24" AND UNDER	
			1,085				202	38000	1,085	FT.	GUARDRAIL REMOVED	
						37	202	54000	37	EACH	RAISED PAVEMENT MARKER REMOVED	
							203	10000	1,465	CU. YD.	EXCAVATION	
						570	203	20000	570	CU. YD.	EMBANKMENT	
1,045							203	35111	1,045	CU. YD.	GRANULAR MATERIAL, TYPE B, AS PER PLAN	4/46 & 37/46
				2,956			204	10000	2,956	SQ. YD.	SUBGRADE COMPACTION	
			250				606	13000	250	FT.	GUARDRAIL, TYPE 5	
			100				606	13010	100	FT.	GUARDRAIL, TYPE 5 WITH TUBULAR BACKUP	
			4				606	35140	4	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 4	
EROSION CONTROL												
			214				601	32100	214	CU. YD.	ROCK CHANNEL PROTECTION, TYPE B WITH FABRIC FILTER	
239							659	00300	239	CU. YD.	TOPSOIL	
						2,154	659	10000	2,154	SQ. YD.	SEEDING AND MULCHING	
0.29							659	20000	0.29	TON	COMMERCIAL FERTILIZER	
0.45							659	31000	0.45	ACRE	LIME	
12							659	35000	12	M.GAL.	WATER	
							832	10000	1	EACH	STORM WATER POLLUTION PREVENTION PLAN	
							832	30000	10,225	EACH	EROSION CONTROL	
DRAINAGE												
50							603	00900	50	FT.	6" CONDUIT, TYPE B	
50							603	01400	50	FT.	6" CONDUIT, TYPE E	
50			90				603	01500	140	FT.	6" CONDUIT, TYPE F	
			10				603	03300	10	FT.	10" CONDUIT, TYPE C	
			336				603	06100	336	FT.	15" CONDUIT, TYPE C	
			38				603	07600	38	FT.	18" CONDUIT TYPE C	
			5				604	02850	5	EACH	CATCH BASIN, NO. 8 WITH SUMP (12" SUMP)	
			2				604	09000	2	EACH	CATCH BASIN ADJUSTED TO GRADE	
			4				604	36800	4	EACH	PRECAST REINFORCED CONCRETE OUTLET	
			594				605	06000	594	FT.	4" BASE PIPE UNDERDRAINS	
PAVEMENT												
			594				301	46000	594	CU. YD.	ASPHALT CONCRETE BASE, PG64-22	
			464				304	20000	464	CU. YD.	AGGREGATE BASE	
			104				407	14000	104	GAL.	TACK COAT FOR INTERMEDIATE COURSE	
			1,039				408	10000	1,039	GAL.	PRIME COAT	
			127				448	46050	127	CU. YD.	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22	
			91				448	47020	91	CU. YD.	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22	
TRAFFIC CONTROL												
						37	621	00100	37	EACH	RPM	
			6				626	00300	6	EACH	BARRIER REFLECTOR, TYPE A2	
			2				630	85100	2	EACH	REMOVAL OF GROUND MOUNTED SIGN AND RE-ERECTION	
			2				630	85100	2	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND RE-ERECTION	
						0.53	642	00100	0.53	MILE	EDGE LINE, TYPE I	
						0.49	642	00200	0.49	MILE	LANE LINE, TYPE I	
MAINTENANCE OF TRAFFIC												
100							614	11100	100	HR.	LAW ENFORCEMENT OFFICER WITH PATROL CAR	
			3,804				614	11600	3,804	FT.	TRANSITION AREA DELINEATION	
			1,078				614	11610	1,078	FT.	TANGENT AREA DELINEATION	
60							614	12460	60	EACH	WORK ZONE MARKING SIGN	
2							614	12756	2	EACH	WORK ZONE CROSSOVER LIGHTING SYSTEM	
			230				614	12800	230	EACH	WORK ZONE RAISED PAVEMENT MARKER	
78							614	13300	78	EACH	BARRIER REFLECTOR, TYPE B	
78							614	13360	78	EACH	OBJECT MARKER, 2-WAY	
			2.70				614	22200	2.70	MILE	WORK ZONE EDGE LINE, CLASS 1, 740.06, TYPE I	
4,590							615	20000	4,590	SQ. YD.	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	
4							616	10000	4	M.GAL.	WATER	
			2,810				622	40020	2,810	FT.	PORTABLE CONCRETE BARRIER, 32"	
STRUCTURE OVER 20 FOOT												
MAD-40-0092												
LUMP							614	11000	LUMP		MAINTAINING TRAFFIC	
							618	16000	2	MONTH	FIELD OFFICE, TYPE A	
							623	10000	LUMP		CONSTRUCTION LAYOUT STAKES	
							624	10000	LUMP		MOBILIZATION	

CALCULATED
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 GENERAL SUMMARY
 MAD - 40 - 0.92
 24
 46

**ROCK CHANNEL PROTECTION, TYPE B,
2'-6" THICK WITH FABRIC FILTER.**

- ①E - 579.22 SQ. FT. x 1.1 x 2'-6" THICK/27 = 58.99 CU. YD.
- ②E - 643.79 SQ. FT. x 1.1 x 2'-6" THICK/27 = 65.57 CU. YD.
- ③E - 531.06 SQ. FT. x 1.1 x 2'-6" THICK/27 = 54.09 CU. YD.
- ④E - 246.73 SQ. FT. x 1.1 x 2'-6" THICK/27 = 25.13 CU. YD.

**ROCK CHANNEL PROTECTION
STATION/OFFSET FROM SHEET 27**

- | | |
|-----------------------|-----------------------|
| Ⓐ - 49+09.61/66.50 RT | Ⓜ - 49+35.00/41.46 LT |
| Ⓑ - 49+13.18/84.75 RT | Ⓝ - 49+34.73/73.36 LT |
| Ⓒ - 48+96.73/90.44 RT | Ⓛ - 49+47.70/56.04 LT |
| Ⓓ - 48+80.33/81.04 RT | Ⓞ - 49+35.00/41.46 LT |
| Ⓔ - 48+93.00/66.50 RT | Ⓟ - 49+17.16/41.50 LT |
| Ⓕ - 48+93.00/41.43 LT | Ⓠ - 49+35.00/66.50 RT |
| Ⓖ - 48+80.33/56.04 LT | Ⓡ - 49+47.67/81.04 RT |
| Ⓗ - 48+88.63/66.25 LT | Ⓢ - 49+26.89/83.22 RT |
| Ⓘ - 49+14.33/75.90 LT | Ⓣ - 49+26.67/66.49 RT |

ITEM 626 BARRIER REFLECTOR, TYPE A2	
L1 = STA. 48+07.89 - STA. 50+20.14 (WESTBOUND) = 175.00' L2 = STA. 48+07.89 - STA. 50+20.14 (EASTBOUND) = 175.00'	
NO. OF BARRIER REFLECTORS (N)=(L1/100+1)+(L2/100+1) =	
TOTAL TO GENERAL SUMMARY	6
ITEM 659 COMMERCIAL FERTILIZER	
2154 SQ. YD. x 9 S.F./1 S.Y. x 30 #/1000 S.F. x 1 TON/2000#	
TOTAL TO GENERAL NOTES	0.29 TON
ITEM 659 WATER	
2154 SQ. YD. x 9 S.F./1 S.Y. x 300 GAL./1000 S.F. x 2/1000 GAL.	
TOTAL TO GENERAL NOTES	12 MGAL.
ITEM 659 LIME	
2154 SQ. YD. x 9 S.F./1 S.Y. x 92 #/1000 S.F. x 1 TON/2000#/2	
TOTAL TO GENERAL NOTES	0.45 ACRE
ITEM 659 TOPSOIL	
2154 SQ. YD. x 111 CU. YD. / 1,000 SQ. YD.	
TOTAL TO GENERAL NOTES	239 CU. YD.

ESTIMATED QUANTITIES

REF. NO.	SHT. NO.	STATION TO STATION	SIDE	202 GUARDRAIL REMOVED FT.	202 PIPE REMOVED 24" & UNDER FT.	601 ROCK CHANNEL PROTECTION TYPE B, 2.5" THICK W/ FABRIC FILTER CU.YD.	603 6" CONDUIT, TYPE F FT.	603 10" CONDUIT, TYPE C FT.	603 15" CONDUIT, TYPE C FT.	603 18" CONDUIT, TYPE C FT.	603 PRECAST REINF. CONCRETE OUTLET EACH	604 CATCH BASIN, NO. 8 EACH	604 CATCH BASIN ADJUSTED TO GRADE EACH	605 4" BASE PIPE UNDERDRAINS FT.	606 GUARDRAIL, TYPE 5 FT.	606 GUARDRAIL TYPE 5, WITH TUBULAR BACKUP FT.	606 BRIDGE TERMINAL ASSEMBLY, TYPE 4 EACH	630 REMOVAL OF GROUND MOUNTED SIGN & RE-ERECTION EACH	630 REMOVAL OF GROUND MOUNTED POST SUPPORT & RE-ERECTION EACH	BENDS & BRANCHES FOR INFORMATION ONLY		
																				4" x 6" TEE		
1R	27	48+07.89 TO 50+20.14 (WESTBOUND)	LT.	212																		
2R	27	48+38.00 TO 51+03.00 (WESTBOUND)	RT.	330																		
3R	27	47+30.40 TO 48+99.40 (WESTBOUND)	RT.		169																	
4R	27	49+29.38 TO 51+44.38 (WESTBOUND)	RT.		215																	
5R	28	47+25.00 TO 49+91.00 (EASTBOUND)	RT.	331																		
6R	28	48+07.87 TO 50+20.13 (EASTBOUND)	RT.	212																		
7R	28	48+73.00 (EASTBOUND)	RT.																1	1		
8R	28	49+73.00 (EASTBOUND)	RT.																1	1		
1G	27	48+07.89 TO 48+89.00 (WESTBOUND)	LT.												62.50			1				
2G	27	49+39.00 TO 50+20.14 (WESTBOUND)	LT.												62.50			1				
3G	28	48+07.89 TO 48+89.01 (EASTBOUND)	RT.												62.50			1				
4G	28	49+39.00 TO 50+20.14 (EASTBOUND)	RT.												62.50			1				
5G	27	48+89.00 TO 49+39.00 (WESTBOUND)	LT.													50						
6G	28	48+89.00 TO 49+39.00 (EASTBOUND)	RT.													50						
1D	28	47+25.40 TO 48+94.00 (WESTBOUND)	LT.			5			5	160		2										
2D	28	49+35.00 TO 51+44.38 (WESTBOUND)	LT.			5			209			2										
3D	9	40+40.00 (WESTBOUND)	RT.									1										
4D	10	42+00.00 (EASTBOUND)	RT.										1									
5D	9	40+35.00 TO 40+45.00 (EASTBOUND)	RT.					10														
6D	10	44+98.31 (EASTBOUND)	RT.										1									
1UD	27	47+50.00 TO 48+42.00 (WESTBOUND)	L&R				23				1			184							2	
2UD	27	49+37.00 TO 50+50.00 (WESTBOUND)	L&R				21				1			113							2	
3UD	28	47+50.00 TO 48+42.00 (EASTBOUND)	RT.				25				1			184							2	
4UD	28	47+50.00 TO 48+42.00 (EASTBOUND)	RT.				21				1			113							2	
1E	27	48+80.00 TO 49+15.00 (WESTBOUND)	LT.			58.99																
2E	27	49+17.00 TO 49+48.00 (WESTBOUND)	LT.			65.57																
3E	28	48+80.00 TO 49+13.00 (EASTBOUND)	RT.			54.09																
4E	28	49+27.00 TO 49+48.00 (EASTBOUND)	RT.			25.13																
TOTALS TO GENERAL SUMMARY				1085	384	214	90	10	214	160	4	5	2	594	250	100	4	2	2	2	8	

CALCULATED BY: []
 CHECKED BY: []
 SUBSUMMARIES AND CALCULATIONS
 MAD - 40 - 0.92
 25
 46

PROJECT DATA	
TOTAL AREA (RIGHT-OF-WAY)	8.288 Ac.
AREA TO UNDERGO EXCAVATION FILLING OR GRADING	3.420 Ac.
DRAINAGE AREA	3.800 Sq. Mi.
EXISTING PAVED AREA	1,596 Sq. Yd.
PROPOSED PAVED AREA	2,267 Sq. Yd.
% INCREASE IN IMPERVIOUS AREA	42.0%
RUNOFF COEFFICIENT FOR PRE-CONSTRUCTION SITE	0.5
RUNOFF COEFFICIENT FOR POST CONSTRUCTION SITE	0.55
IMMEDIATE RECEIVING WATERS	DEER CREEK
SUBSEQUENT RECEIVING WATERS	SCIOTO RIVER

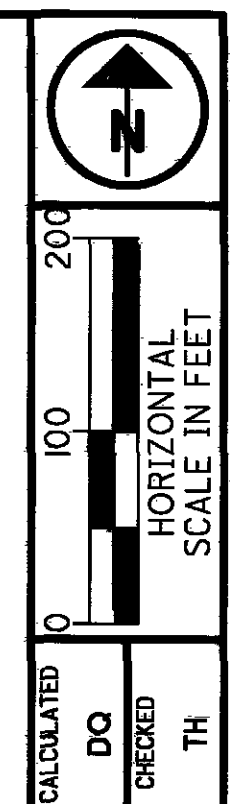
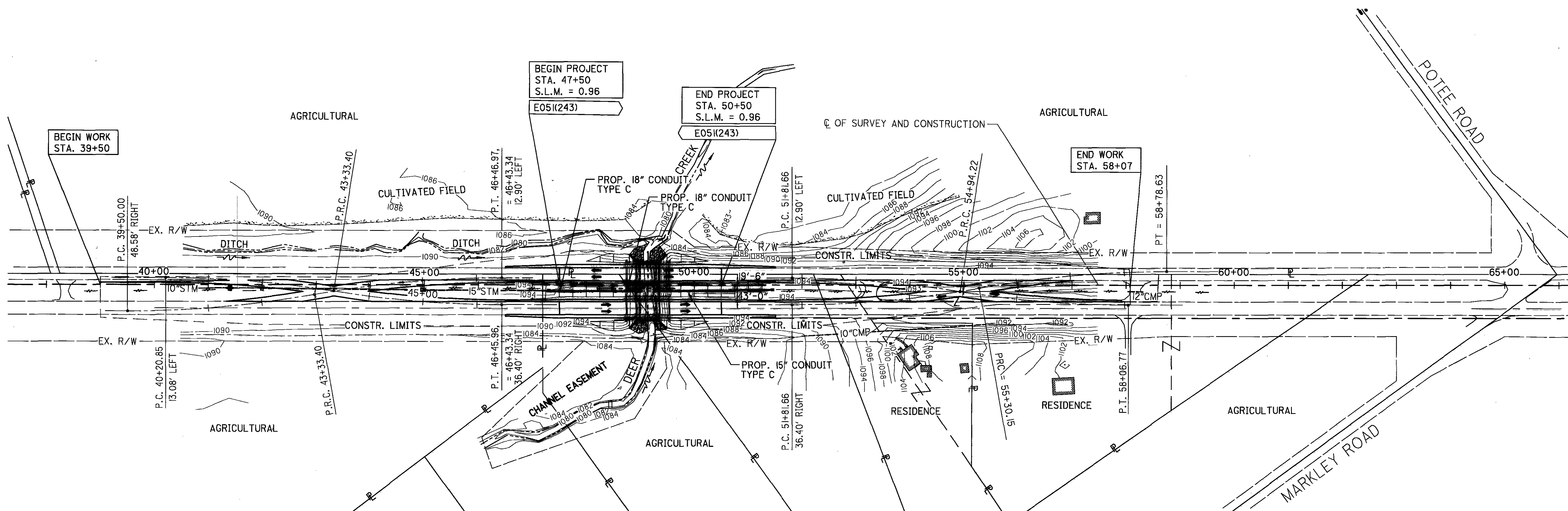
PROJECT DESCRIPTION:

IMPROVEMENT OF 0.06 MILE ± OF U.S. 40 (NATIONAL ROAD)
BY REPLACEMENT OF TWO STRUCTURES (MAD-40-0092)
OVER DEER CREEK, INCLUDING APPROACH RECONSTRUCTION.

USGS QUADRANT NO. 39083-H5-TF-024
VIENNA, OHIO

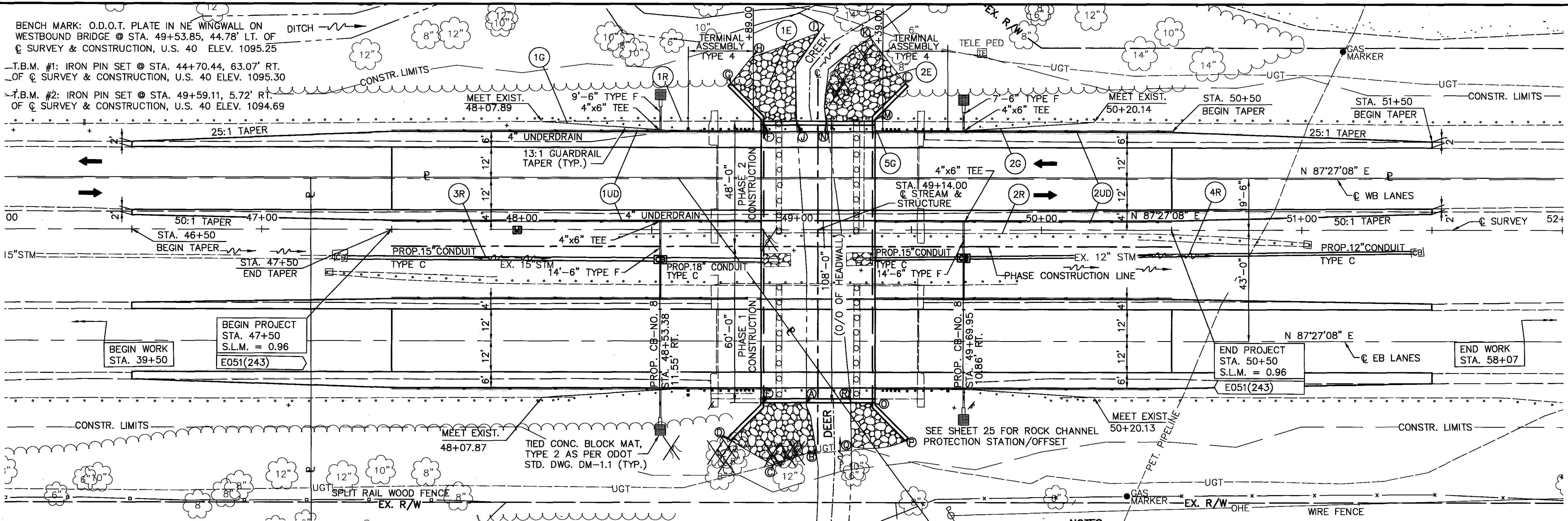
LATITUDE: N 39° 55' 59" * LONGITUDE: W 83° 31' 15" *
*LONGITUDE AND LATITUDE TO APPROX. CENTER OF PROJECT

PROJECT EDA	= 3.4 ACRES
CONTRACTOR EDA	= 0.3 ACRES
NOI EDA	= 4.9 ACRES



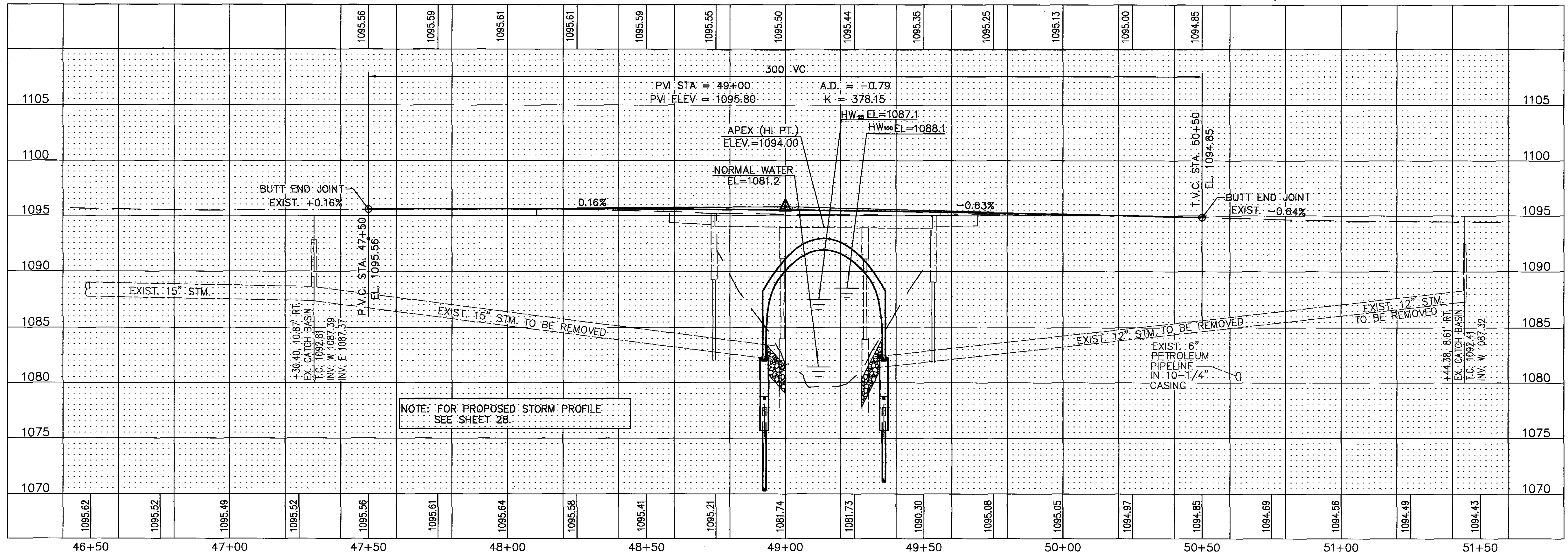
PROJECT SITE PLAN

MAD - 40 - 092

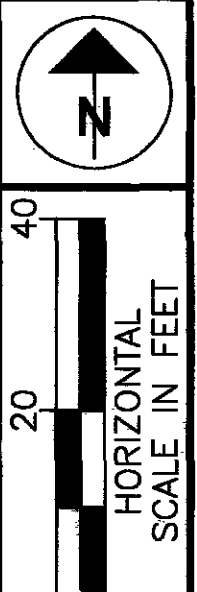


PLAN

- NOTES:
 1. FOR EASTBOUND U.S. 40 DETAILS, SEE SHEET 28
 2. FOR ESTIMATED QUANTITIES, SEE SHEET 25



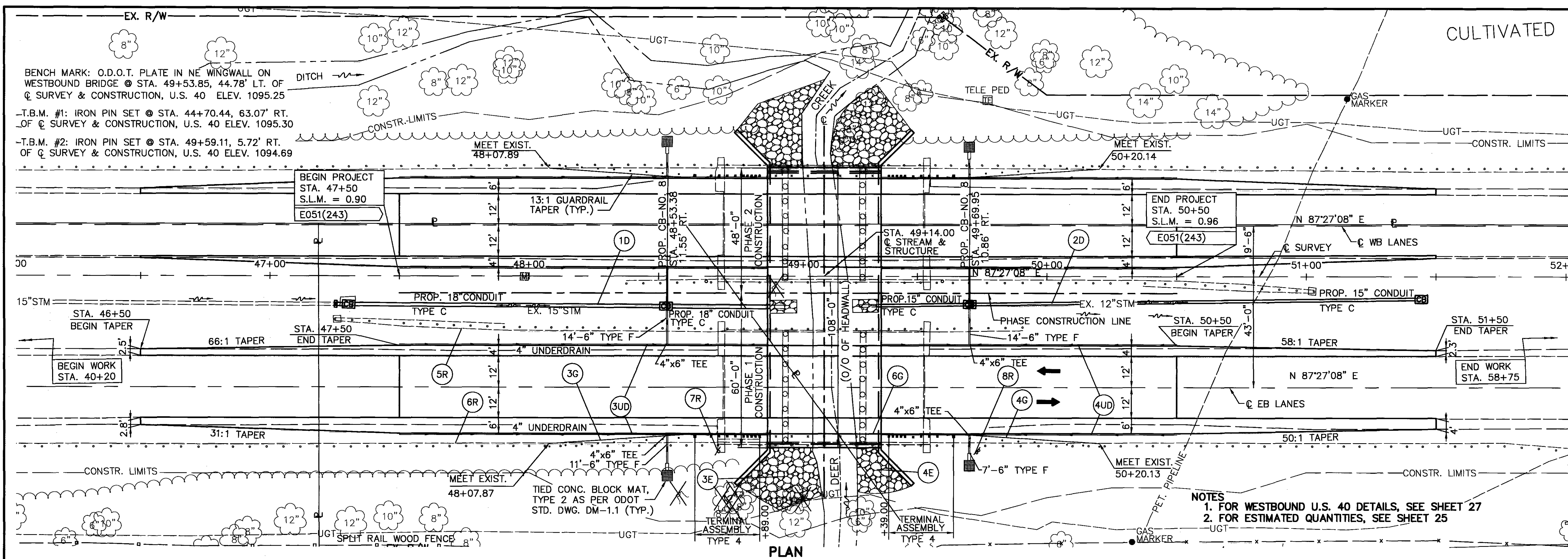
PROFILE ALONG \bar{C} WB LANES



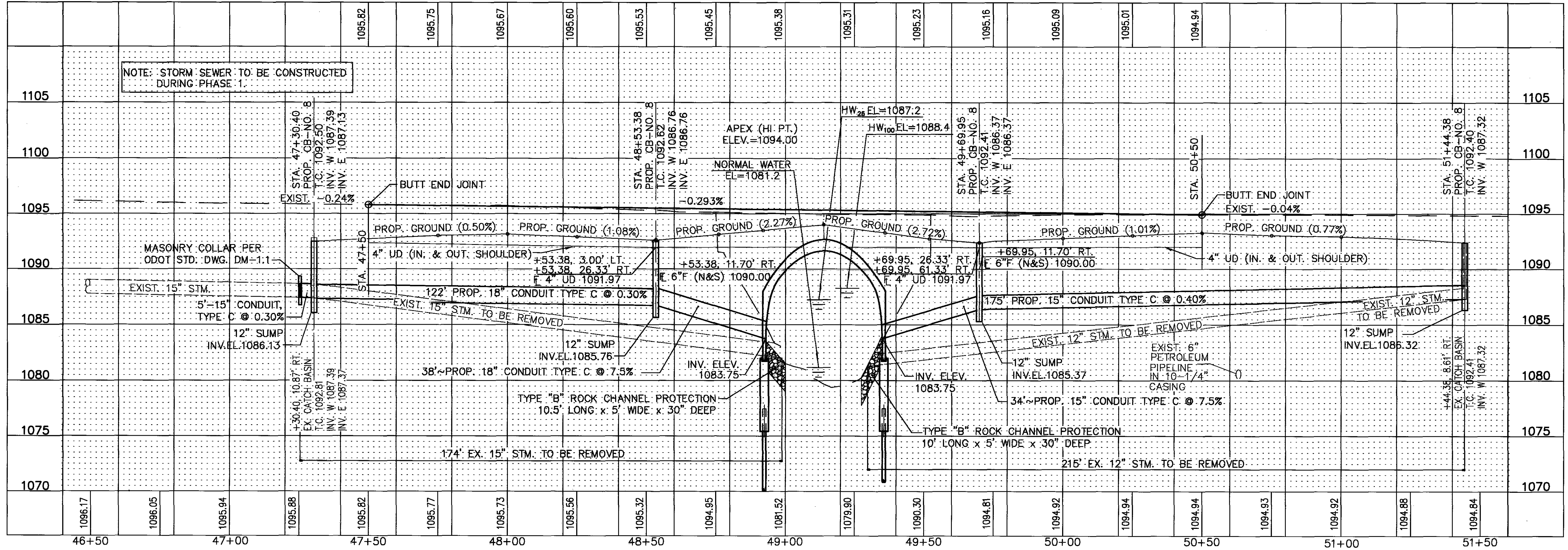
CALCULATED
 EW
 CHECKED
 TH

PLAN AND PROFILE WB LANES

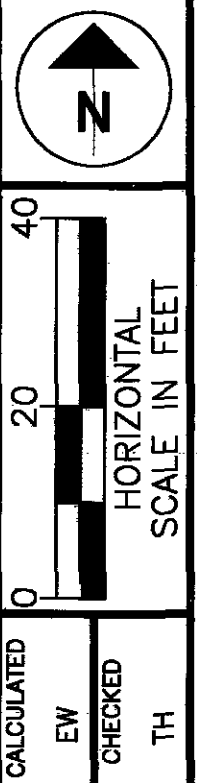
MAD - 40 - 0.92



- NOTES**
1. FOR WESTBOUND U.S. 40 DETAILS, SEE SHEET 27
 2. FOR ESTIMATED QUANTITIES, SEE SHEET 25



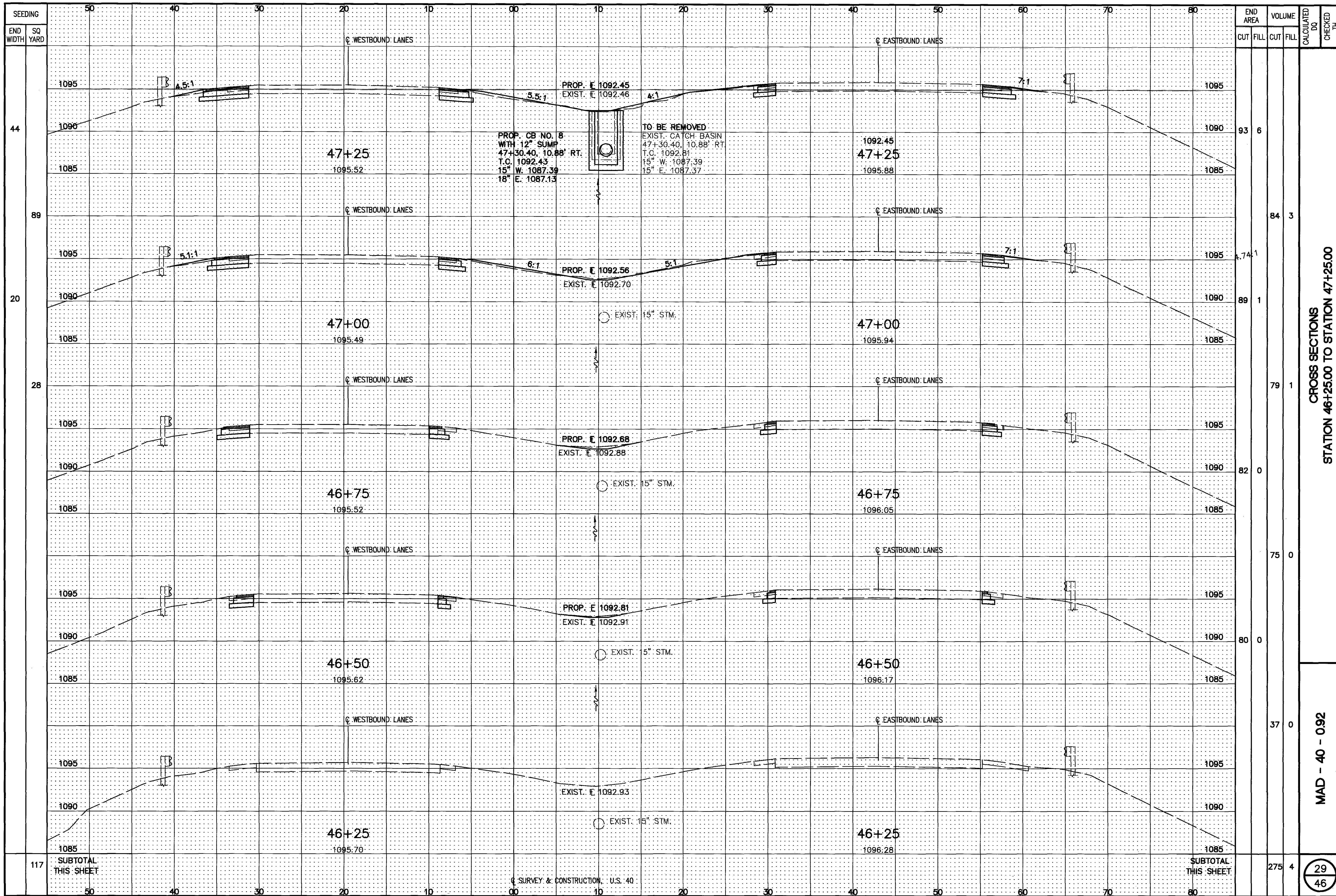
PROFILE ALONG C. EB LANES



PLAN AND PROFILE EB LANES

MAD - 40 - 092

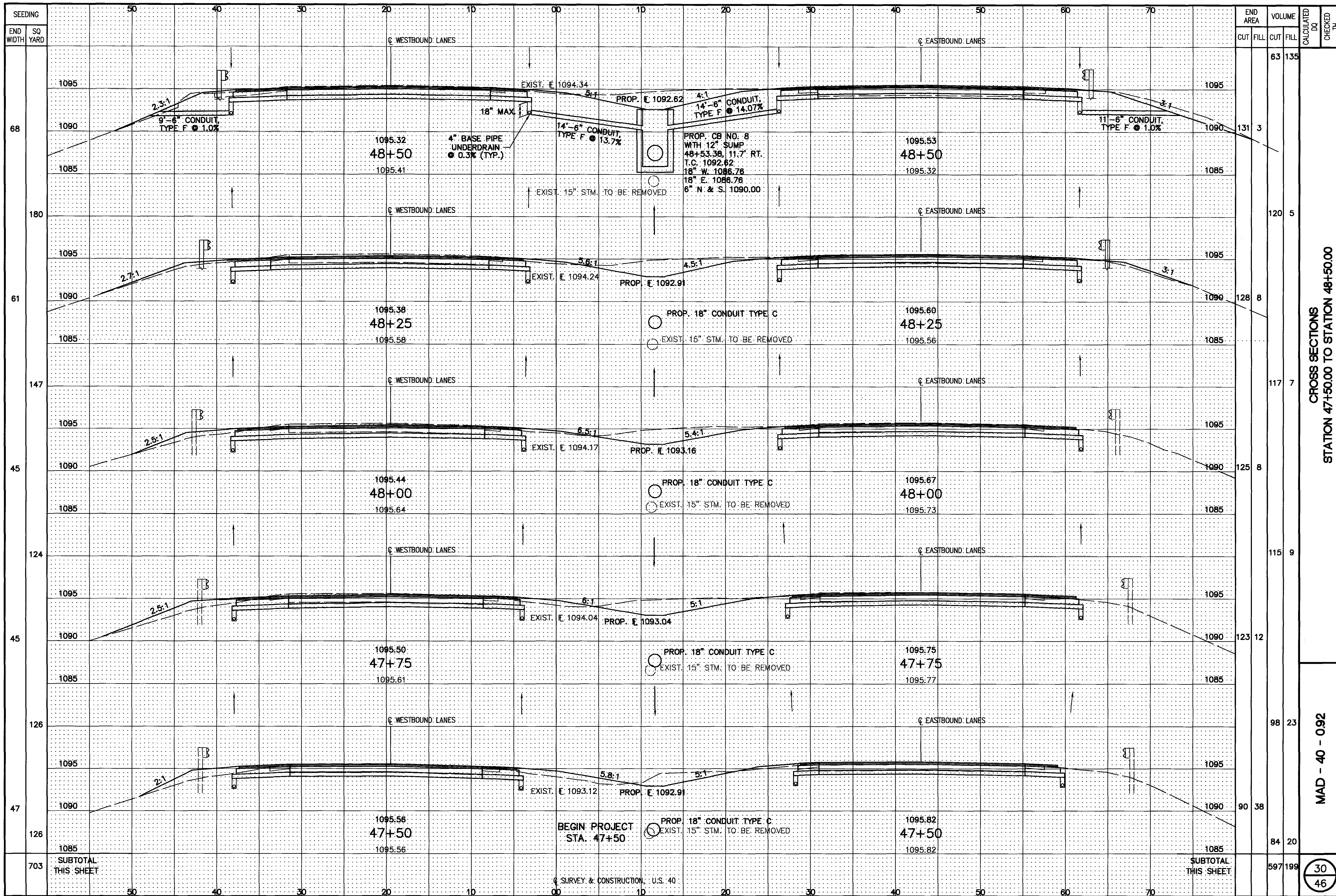
28
46



CROSS SECTIONS
STATION 46+25.00 TO STATION 47+25.00

MAD - 40 - 0.92

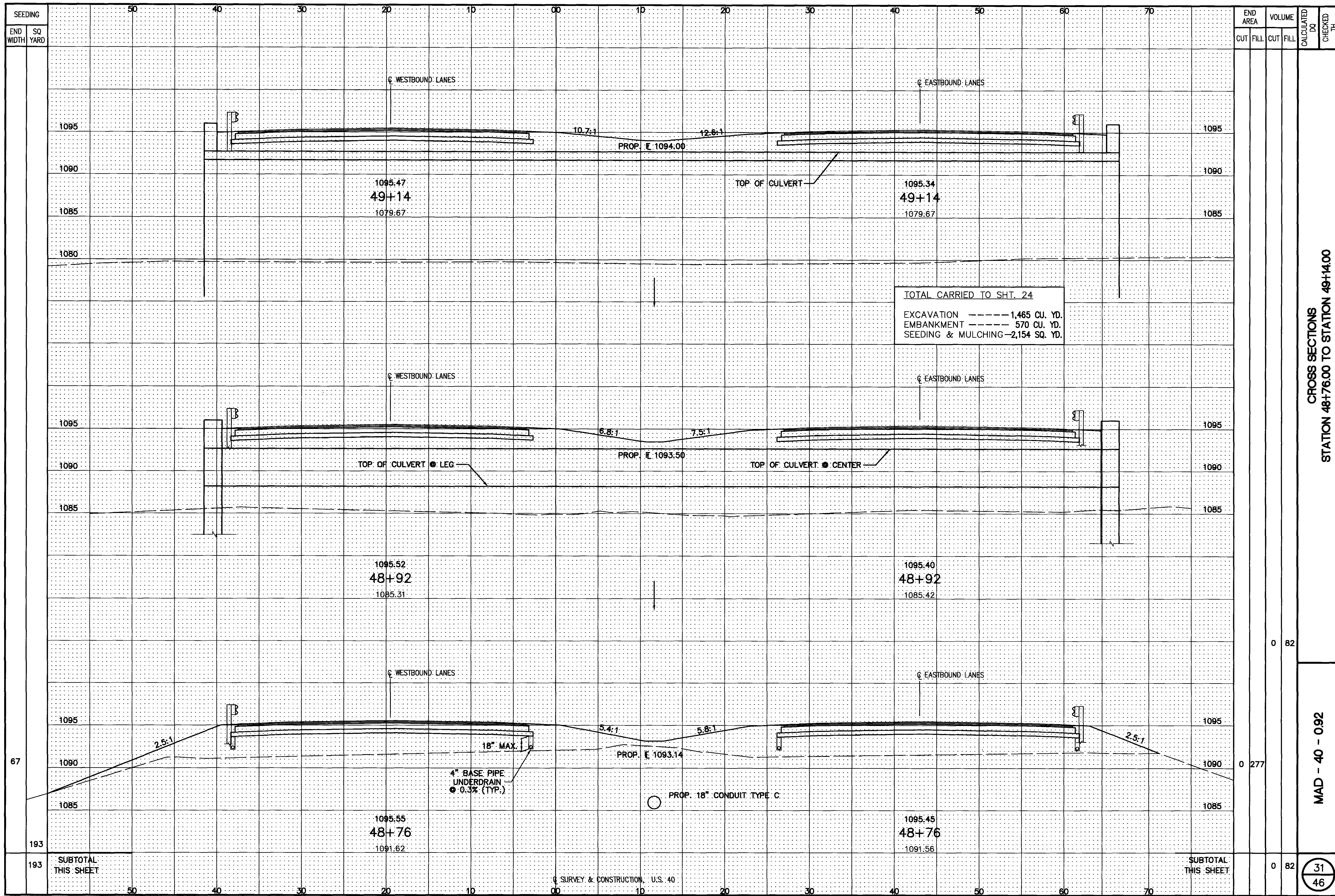
29
46



CROSS SECTIONS
STATION 47+50.00 TO STATION 48+50.00

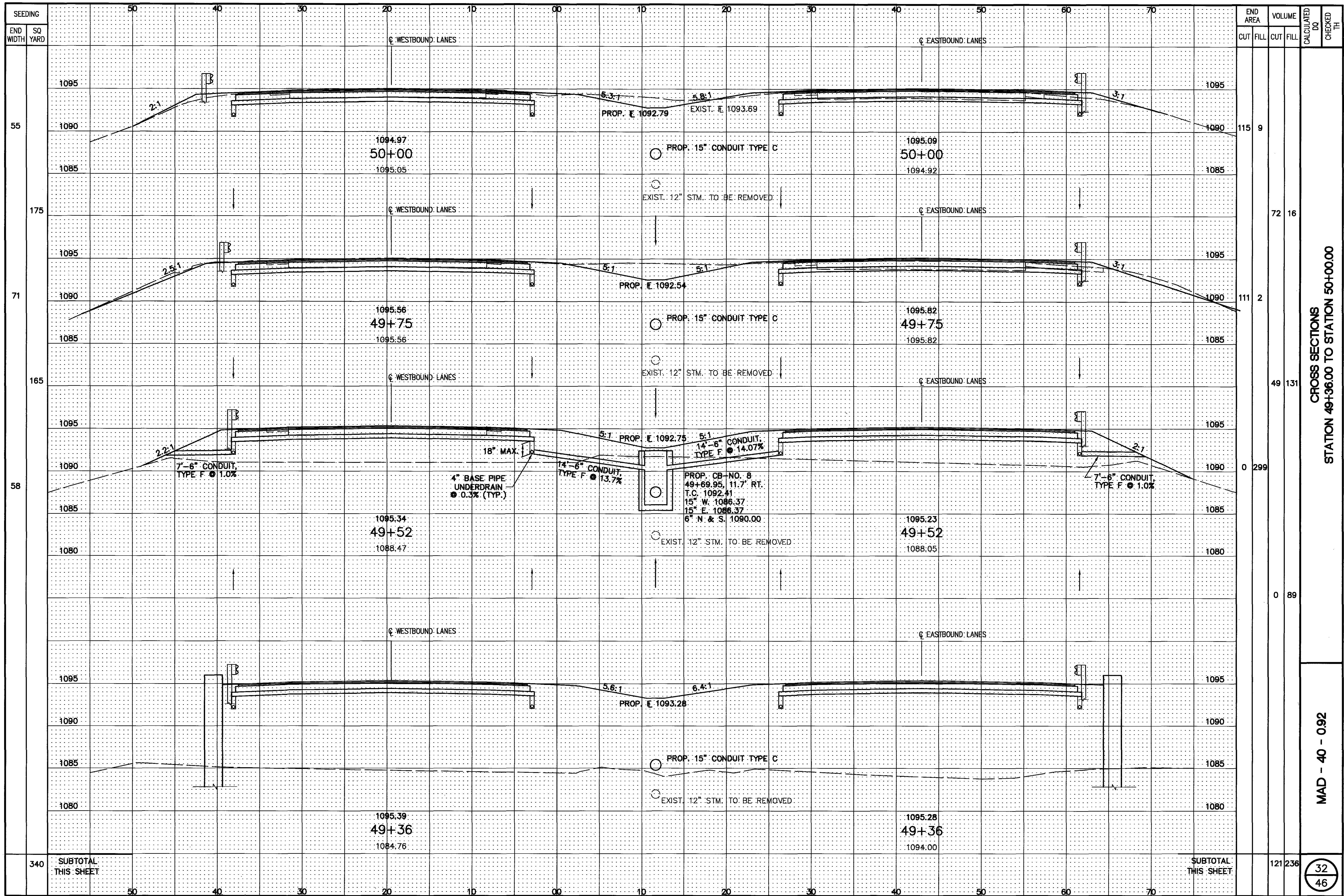
MAD - 40 - 0.92

30
46



CROSS SECTIONS
STATION 48+76.00 TO STATION 49+14.00

MAD - 40 - 0.92



END AREA	VOLUME	CALCULATED	CHECKED		
				CUT	FILL
115	9				
72	16				
111	2				
49	131				
0	299				
0	89				
		121	236		

CROSS SECTIONS
 STATION 49+36.00 TO STATION 50+00.00

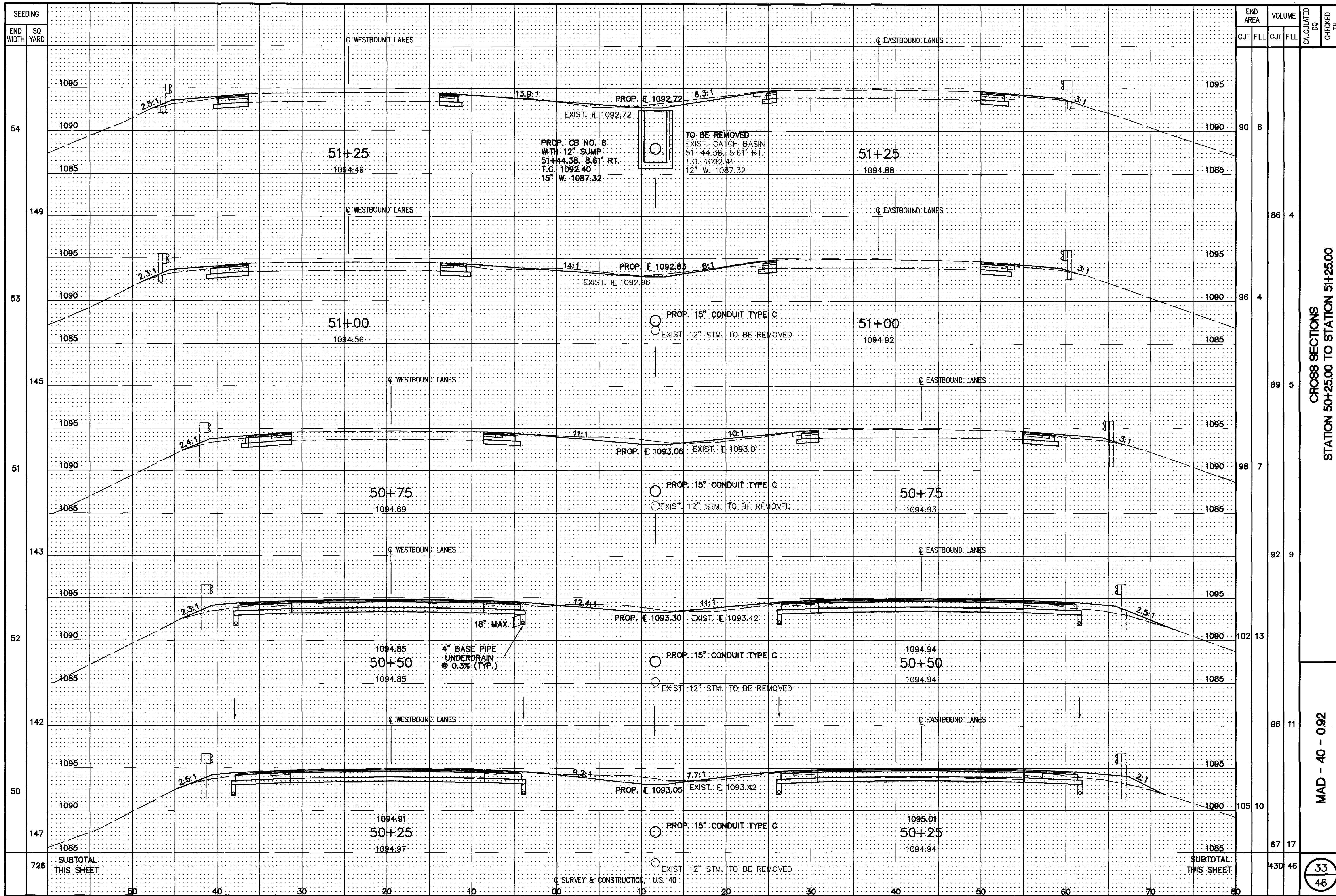
MAD - 40 - 0.92

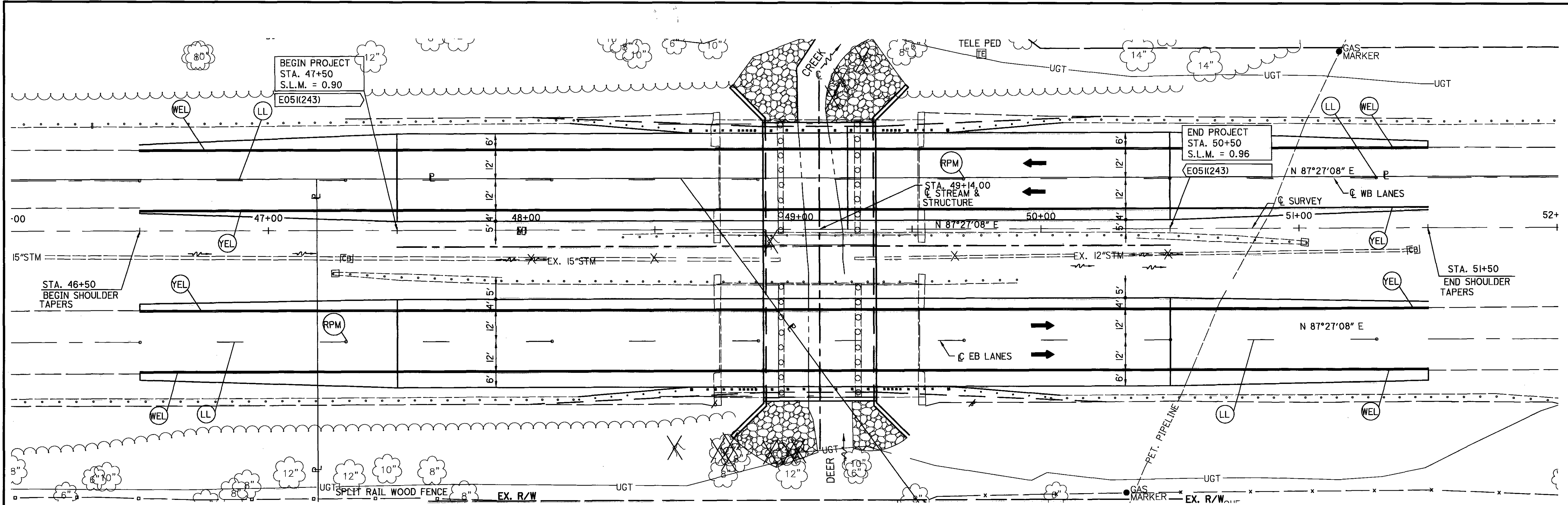
32
46

55
 175
 71
 165
 58

340 SUBTOTAL THIS SHEET

SUBTOTAL THIS SHEET





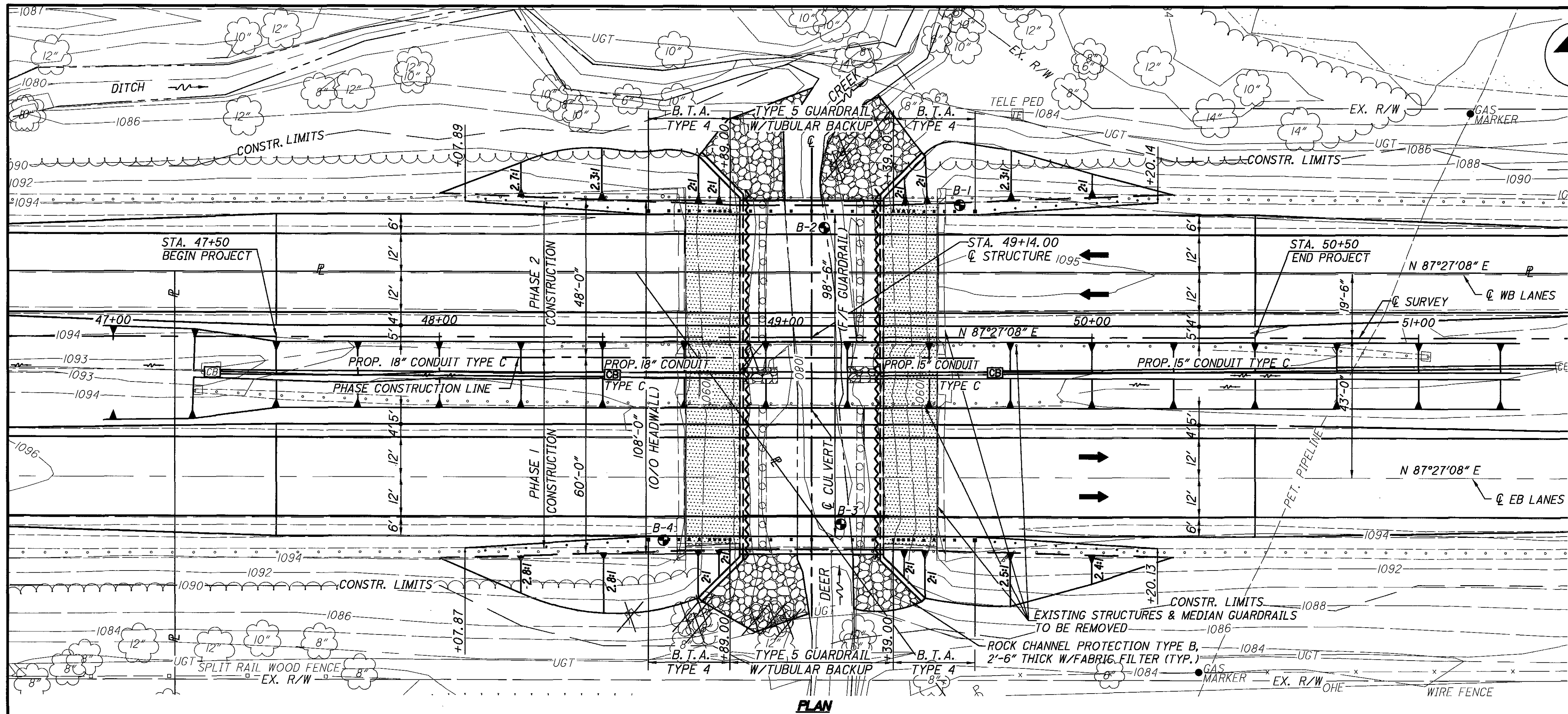
PAVEMENT MARKING & SIGNING PLAN

LEGEND

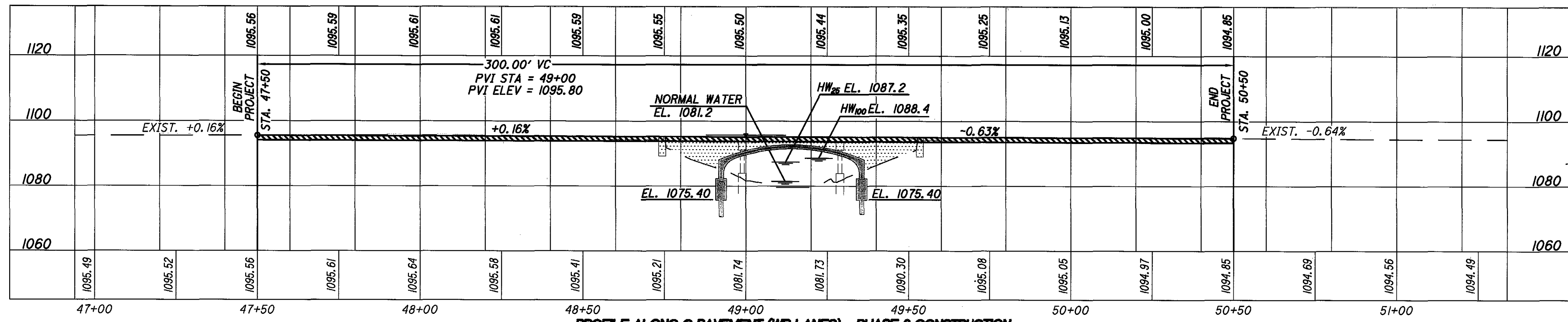
- (YEL) - YELLOW EDGE LINE
- (WEL) - WHITE EDGE LINE
- (RPM) - RAISED PAVEMENT MARKERS
- (LL) - LANE LINE

ESTIMATED QUANTITIES

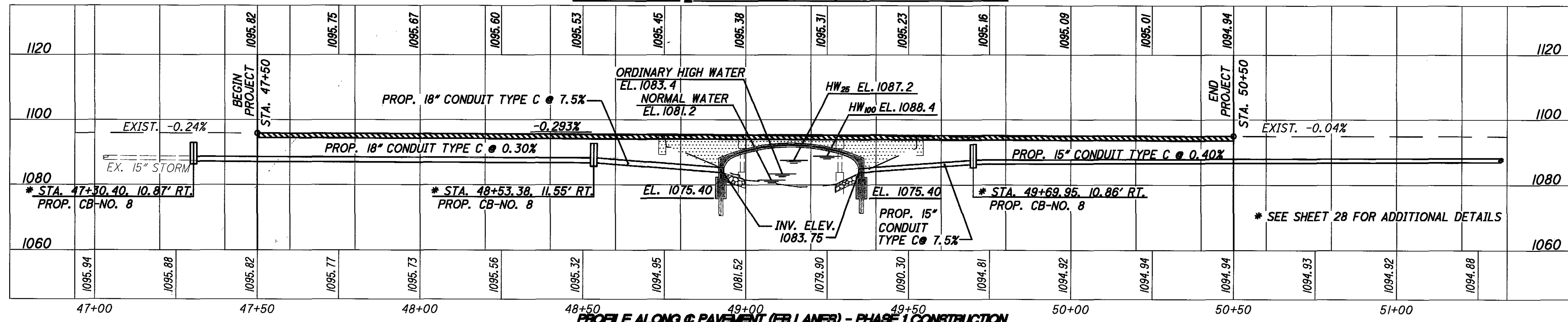
REF. NO.	SHEET NO.	STATION TO STATION	SIDE	202	621	642	642
				RAISED PAVEMENT MARKER REMOVED EACH	RMP INSTALLATION ONLY EACH	EDGE LINE, TYPE 1 MILE	LANE LINE, TYPE 1 MILE
EASTBOUND LANES							
LL	9-10	39+50 - 42+00	L&R				0.05
LL	18-20	44+50 - 53+80	L&R				0.18
WEL	10	41+50 - 42+35	RT			0.02	
WEL	19-20	46+50 - 53+80	RT			0.15	
YEL	13	55+75 - 58+00	LT			0.01	
YEL	18-19	44+20 - 51+50	LT			0.11	
RPM	9-10	39+50 - 42+00	L&R	4	4		
RPM	13	55+75 - 58+00	L&R	3	3		
RPM	18-20	44+50 - 53+80	L&R	12	12		
WESTBOUND LANES							
LL	10-12	44+40 - 55+40	L&R				0.21
LL	17	40+20 - 40+85	L&R				0.01
LL	21	56+50 - 58+75	L&R				0.04
YEL	10-12	44+40 - 53+40	RT			0.18	
YEL	17-18	40+20 - 42+30	RT			0.04	
YEL	20-21	55+70 - 56+80	RT			0.02	
RPM	10-12	44+40 - 55+40	L&R	13	13		
RPM	17	40+20 - 40+85	L&R	1	1		
RPM	21	56+50 - 58+75	L&R	4	4		
TOTALS TO GENERAL SUMMARY				37	37	0.53	0.49



PLAN



PROFILE ALONG CENTERLINE OF PAVEMENT (WB LANES) - PHASE 2 CONSTRUCTION



PROFILE ALONG CENTERLINE OF PAVEMENT (EB LANES) - PHASE 1 CONSTRUCTION

- LEGEND:**
- * PLUS FIT-UP
 - FILL
 - XX TO BE REMOVED
 - PROPOSED PAVEMENT BUILDUP
 - APPROXIMATE SOIL BORING LOCATION
 - TEMPORARY SHORING

- NOTES:**
1. EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS-SECTIONS.
 2. FOR ROADWAY GRADINGS, REFER TO ROADWAY PLANS.

BENCH MARK: O.D.O.T. PLATE IN NE WINGWALL ON WESTBOUND BRIDGE @ STA. 49+53.85, 44.78' LT. OF CENTERLINE OF SURVEY & CONSTRUCTION, U.S. 40 ELEV. 1095.25

T.B.M. #1: IRON PIN SET @ STA. 44+70.44, 63.07' RT. OF CENTERLINE OF SURVEY & CONSTRUCTION, U.S. 40 ELEV. 1095.30

T.B.M. #2: IRON PIN SET @ STA. 49+59.11, 5.72' RT. OF CENTERLINE OF SURVEY & CONSTRUCTION, U.S. 40 ELEV. 1094.69

TRAFFIC DATA

CURRENT A.D.T. (2006)	= 3970
DESIGN YEAR A.D.T. (2026)	= 6040
CURRENT AVERAGE DAILY TRUCK TRAFFIC	= 160

PILE DATA

LOCATION	LOCATION	ESTIMATED AVERAGE PILE LENGTH
REAR FOOTING	16" DIA. CIP CONCRETE PILE	75 FEET
FORWARD FOOTING	16" DIA. CIP CONCRETE PILE	75 FEET
REAR WINGWALL FOOTING	12" DIA. CIP CONCRETE PILE	75 FEET
FWD. WINGWALL FOOTING	12" DIA. CIP CONCRETE PILE	75 FEET

HYDRAULIC DATA

DRAINAGE AREA: 3.86 SQUARE MILES

$Q_{25} = 836$ C.F.S. $Q_{100} = 1150$ C.F.S.

$V_{25} = 6.8$ FT./SEC. $V_{100} = 6.9$ FT./SEC.

$HW_{25} = 1087.2$ $HW_{100} = 1088.4$

HW_{25} CLEARS CROWN OF STRUCTURE BY 4.2 FEET

EXISTING STRUCTURES

TYPE: 3-SPAN CONTINUOUS CONCRETE SLAB WITH CAPPED-PILE ABUTMENTS AND CAPPED-PILE PIERS

ROADWAY: 2 @ 44'± F/F RAILS

SPAN: 24'-30'-24'

ALIGNMENT: TANGENT

SKEW: NONE

LOADING: UNKNOWN

APPROACH SLABS: 15' LONG

WEARING SURFACE: BITUMINOUS

STRUCTURE FILE NUMBER: 4900723L/4900758R

DATE BUILT: 1950

PROPOSED STRUCTURES

TYPE: PRECAST THREE-SIDED REINFORCED CONCRETE CULVERT, 42' SPAN x 10' RISE x 108' LONG

ROADWAY: 101'-0" FACE TO FACE GUARDRAILS

ALIGNMENT: TANGENT

SKEW: NONE

LOADING: HS25 & THE ALTERNATE MILITARY LOADING PLUS 60 PSF FUTURE WEARING SURFACE

CROWN: 0.016

LATITUDE: N 39°55'59" LONGITUDE: W 83°31'15"

DESIGN AGENCY: COLUMBIUS ENGINEERING CONSULTANTS, INC. 840 MICHIGAN AVE., COLUMBUS, OH 43215
 TEL: 614/228-3519 FAX: 614/228-3500
 DATE: 06/05
 DRAWN: CEC
 CHECKED: YSJ
 DESIGNED: YSJ
 STRUCTURE FILE NUMBER: 490073L
 MADISON COUNTY
 CENTERLINE OF SURVEY & CONSTRUCTION, U.S. 40 @ STA. 49+14.00
 SITE PLAN
 BRIDGE NO. MAD-40-0092
 OVER DEER CREEK
 MAD - 40 - 0.92
 PID 25722
 36
 46

GENERAL NOTES

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2002 AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN LOADING:

HS25 AND THE ALTERNATE MILITARY LOADING PLUS 60 PSF FUTURE WEARING SURFACE.

DESIGN STRESSES:

CAST-IN-PLACE STRUCTURES
 CONCRETE CLASS C - $f'_c = 4,000$ PSI SUBSTRUCTURE
 REINFORCING STEEL - ASTM A615 OR A996
 $F_y = 60$ KSI.

SHEET PILING STEEL - ASTM A328/A328M, $F_y = 38.5$ KSI.

PRECAST STRUCTURES: FOR PRECAST REINFORCED ARCH SECTIONS, SEE CMS SECTION 603.

STEEL SHEET PILING LEFT IN PLACE:

THIS WORK SHALL CONSIST OF FURNISHING AND DRIVING STEEL SHEET PILING TO BE LEFT IN PLACE CONFORMING TO 504.01 THROUGH 504.05. FURNISH STEEL FOR SHEET PILING ACCORDING TO ASTM A328/A328M. STEEL SHEET PILING LEFT IN PLACE SHALL HAVE A MINIMUM SECTION MODULUS OF 5.3 IN³ PER FOOT OF WALL AND A MINIMUM EMBEDMENT LENGTH OF 20 FEET.

STRUCTURE REMOVED, OVER 20 FOOT SPAN:

WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC, THE EXISTING STRUCTURE SHALL BE REMOVED UPON RECEIVING PERMISSION FROM THE ENGINEER.

PRECAST REINFORCED CONCRETE ARCH SECTIONS

SHOWN ON THE PLANS WERE OBTAINED FROM THE MANUFACTURERS AT THE TIME THE PLANS WERE PREPARED. IF THE WALL AND/OR TOP SLAB THICKNESS OF THE ARCH SECTIONS PROPOSED ARE DIFFERENT FROM WHAT IS SHOWN ON THE PLANS, A MARKED COPY OF THE PROJECT PLANS, INCLUDING ALL PLAN NOTES AND DETAILS SHOWING ALL ITEMS AFFECTED BY THE DIFFERENT ARCH SECTION DIMENSIONS, SHALL BE SUBMITTED FOR APPROVAL WITH THE SHOP DRAWINGS. ALL WORK REQUIRED TO ACCOMMODATE ANY REVISED DIMENSIONS SHALL BE AT NO EXTRA COST TO THE STATE.

PILE DESIGN LOADS (ULTIMATE BEARING VALUE):

THE ULTIMATE BEARING VALUE IS 175 TONS PER PILE FOR THE 16" CAST-IN-PLACE (CIP) CULVERT FOOTING PILES AND 94 TONS FOR THE WINGWALL FOOTING PILES.

REAR CULVERT FOOTING PILES - 16" DIA. CIP CONCRETE PILES
 18 PILES 80 FEET LONG, ORDER LENGTH
 1 DYNAMIC LOAD TESTING ITEM

FORWARD CULVERT FOOTING PILES - 16" DIA. CIP CONCRETE PILES
 18 PILES 80 FEET LONG, ORDER LENGTH

REAR WINGWALL FOOTING PILES - 12" DIA. CIP CONCRETE PILES
 10 PILES 80 FEET LONG, ORDER LENGTH
 1 DYNAMIC LOAD TESTING ITEM

FORWARD WINGWALL FOOTING PILES - 12" DIA. CIP CONCRETE PILES
 10 PILES 80 FEET LONG, ORDER LENGTH

BATTERED PILES:

THE BLOW COUNT FOR BATTERED PILES SHALL BE THE BLOW COUNT DETERMINED FOR VERTICAL PILES OF THE SAME ULTIMATE BEARING VALUE DIVIDED BY AN EFFICIENCY FACTOR (D). COMPUTE THE EFFICIENCY FACTOR (D) AS FOLLOWS:

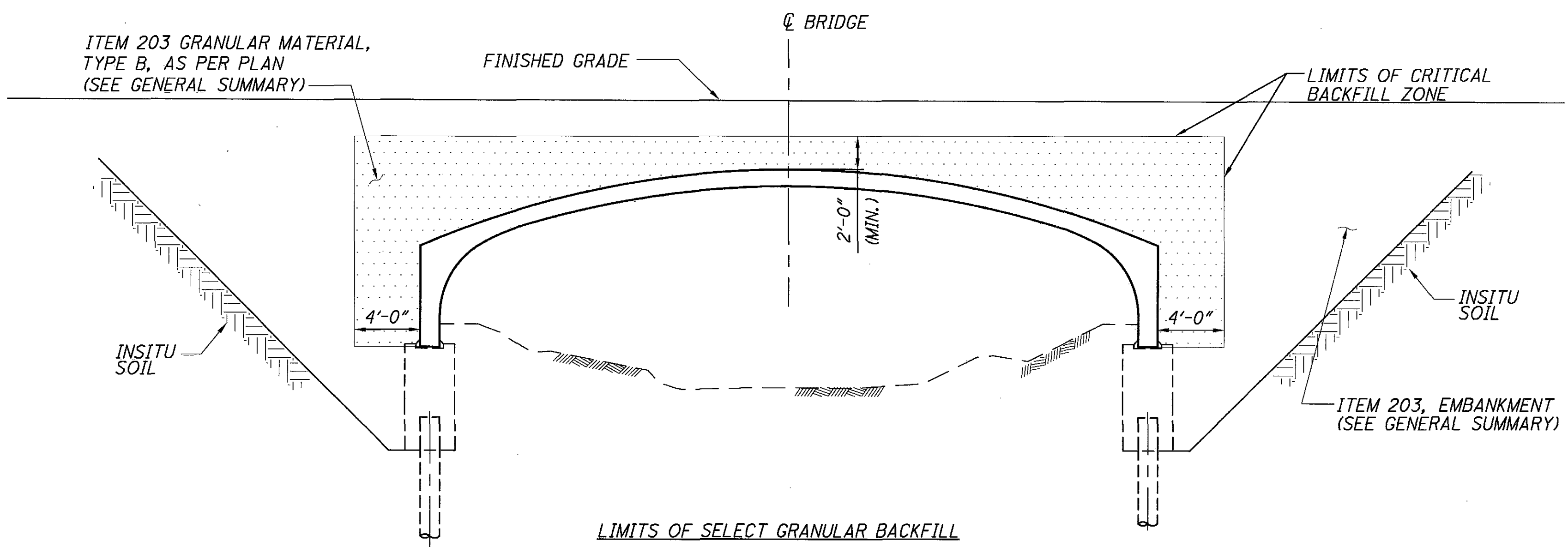
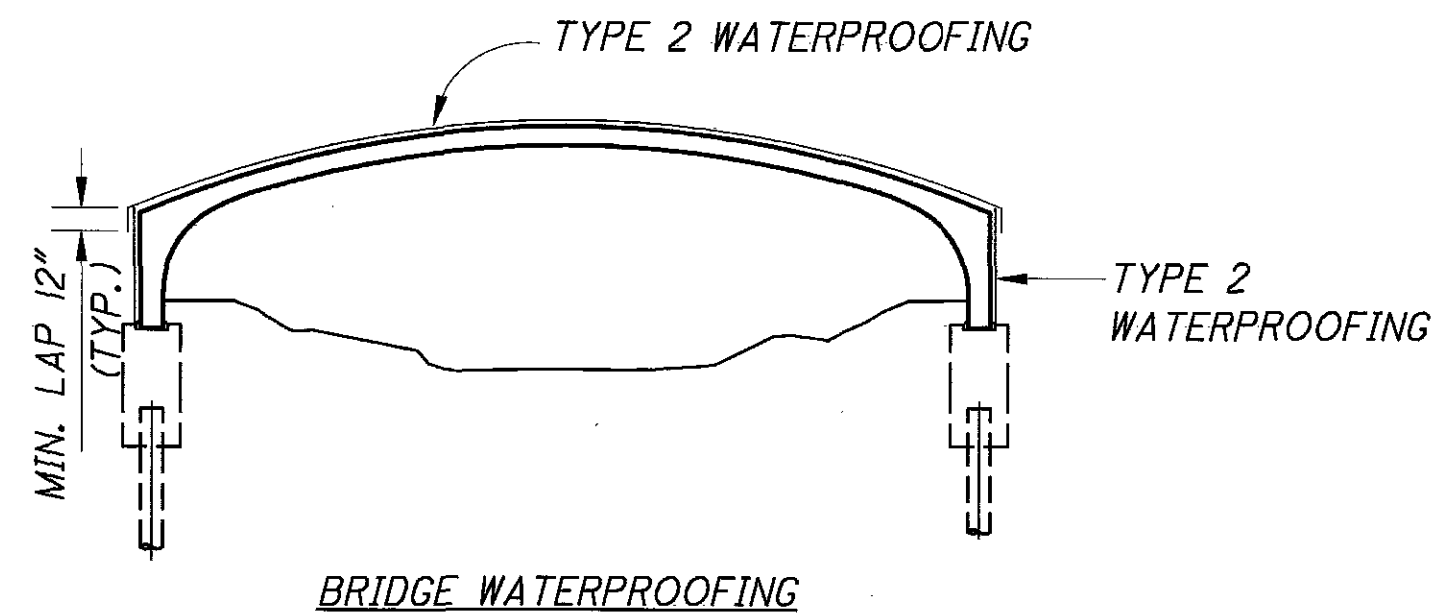
$$D = \frac{1-U}{\sqrt{1+G^2}}$$

U=COEFFICIENT OF FRICTION, WHICH IS ESTIMATED AT 0.05 FOR DOUBLE ACTING AIR OPERATED OR DIESEL HAMMERS; 0.1 FOR SINGLE ACTING AIR OPERATED OR DIESEL HAMMERS; AND 0.2 FOR DROP HAMMERS.

G=RATE OF BATTER (1/3, 1/4, ETC.)

ITEM 603 CONDUIT, TYPE A, PRECAST REINFORCED CONCRETE ARCH SECTIONS, 42'-0" SPAN X 10'-0" RISE, AS PER PLAN

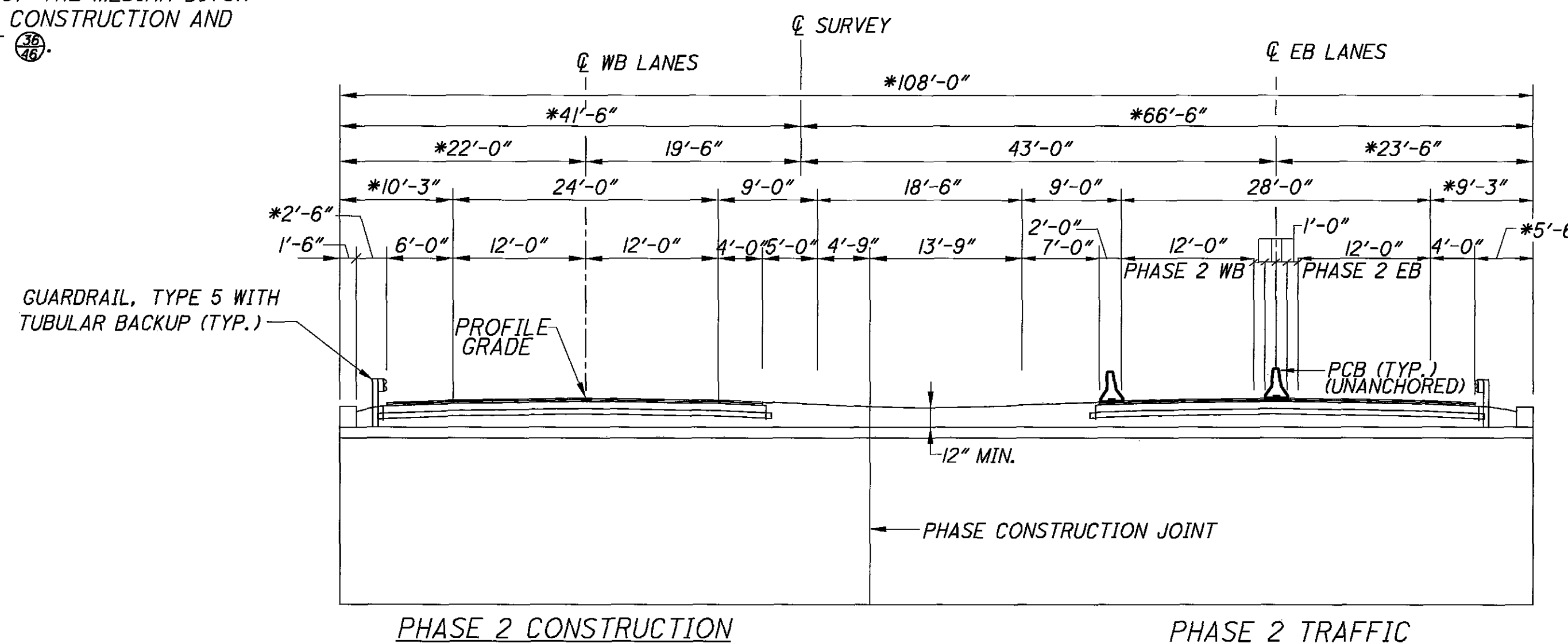
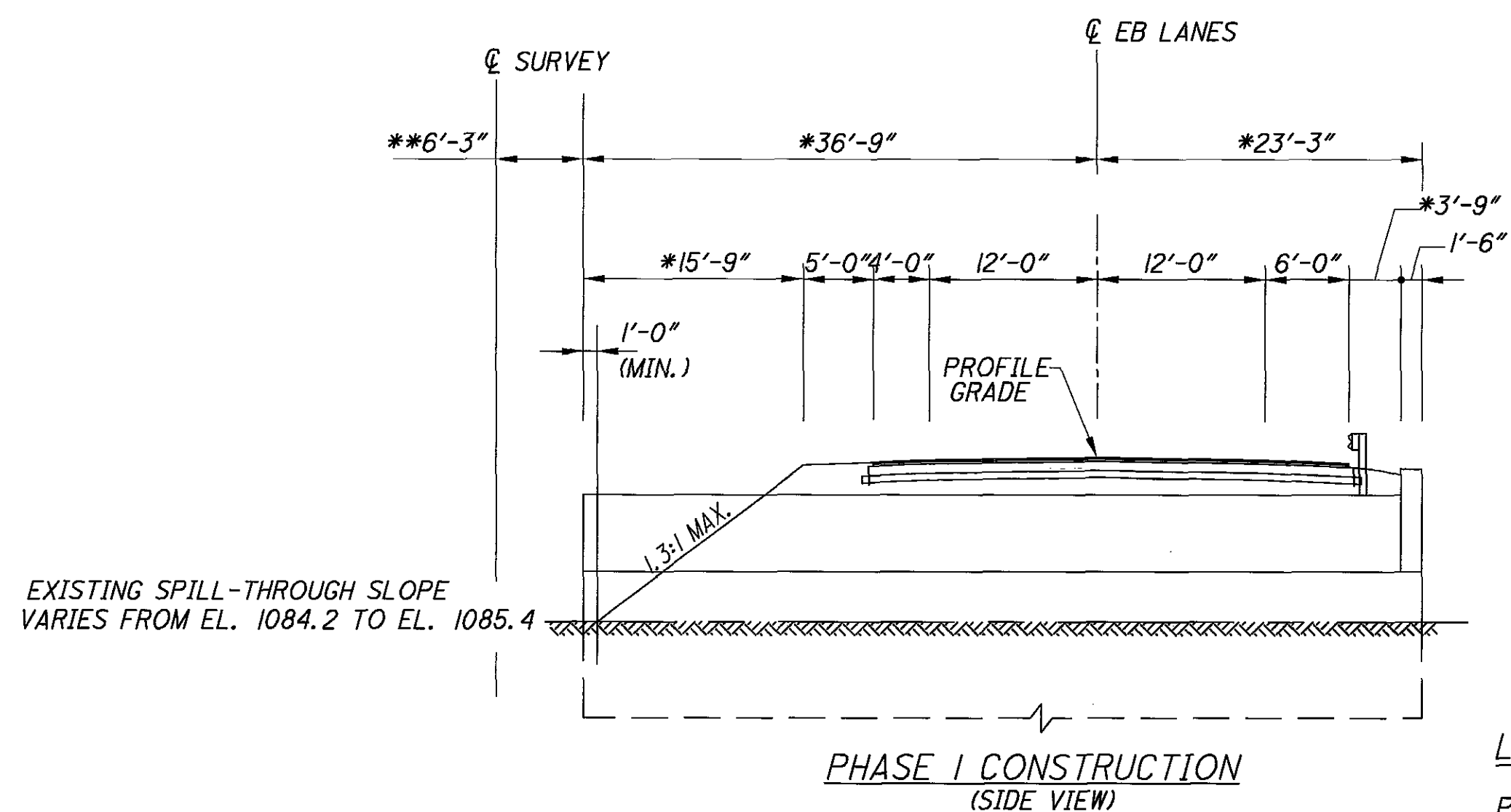
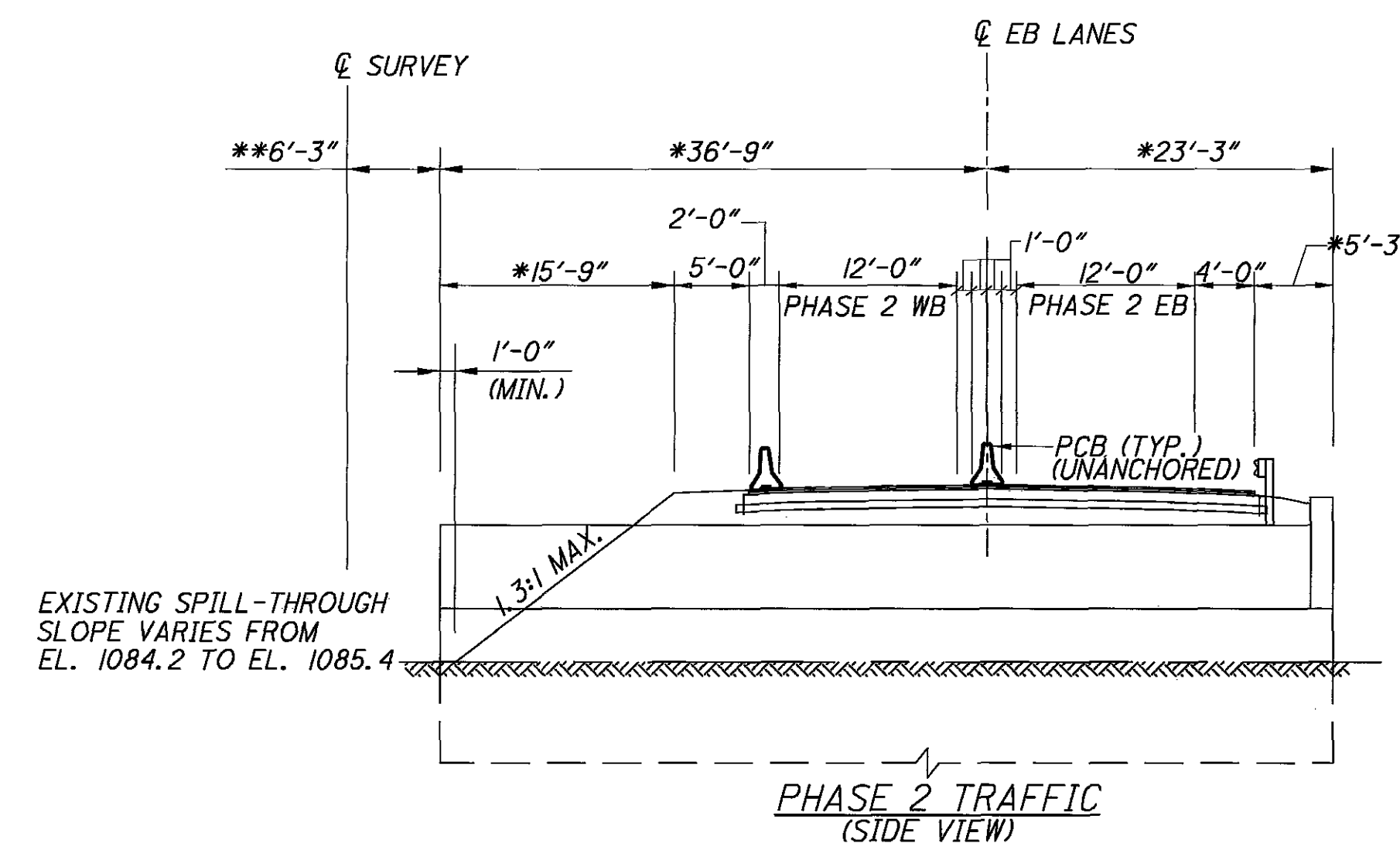
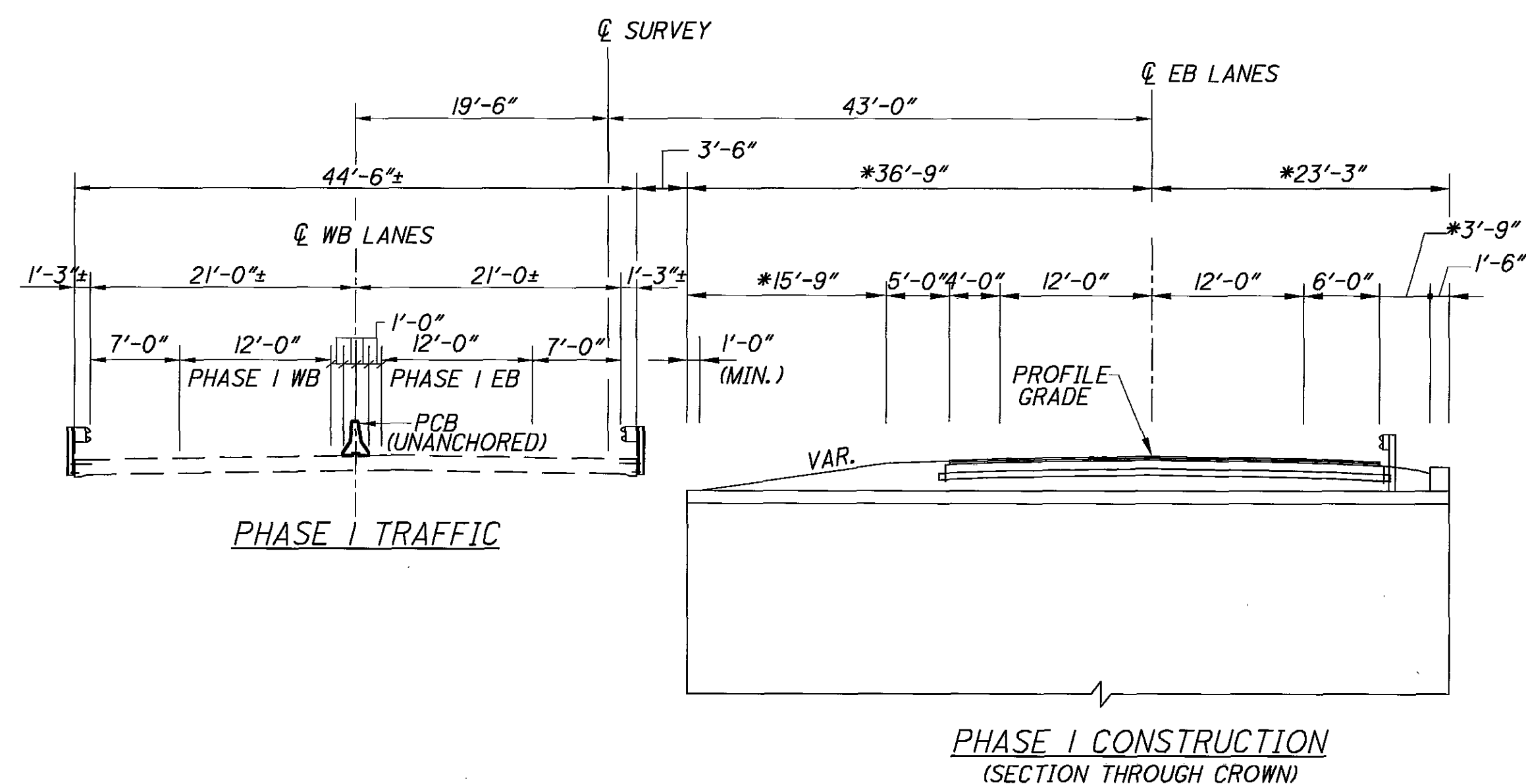
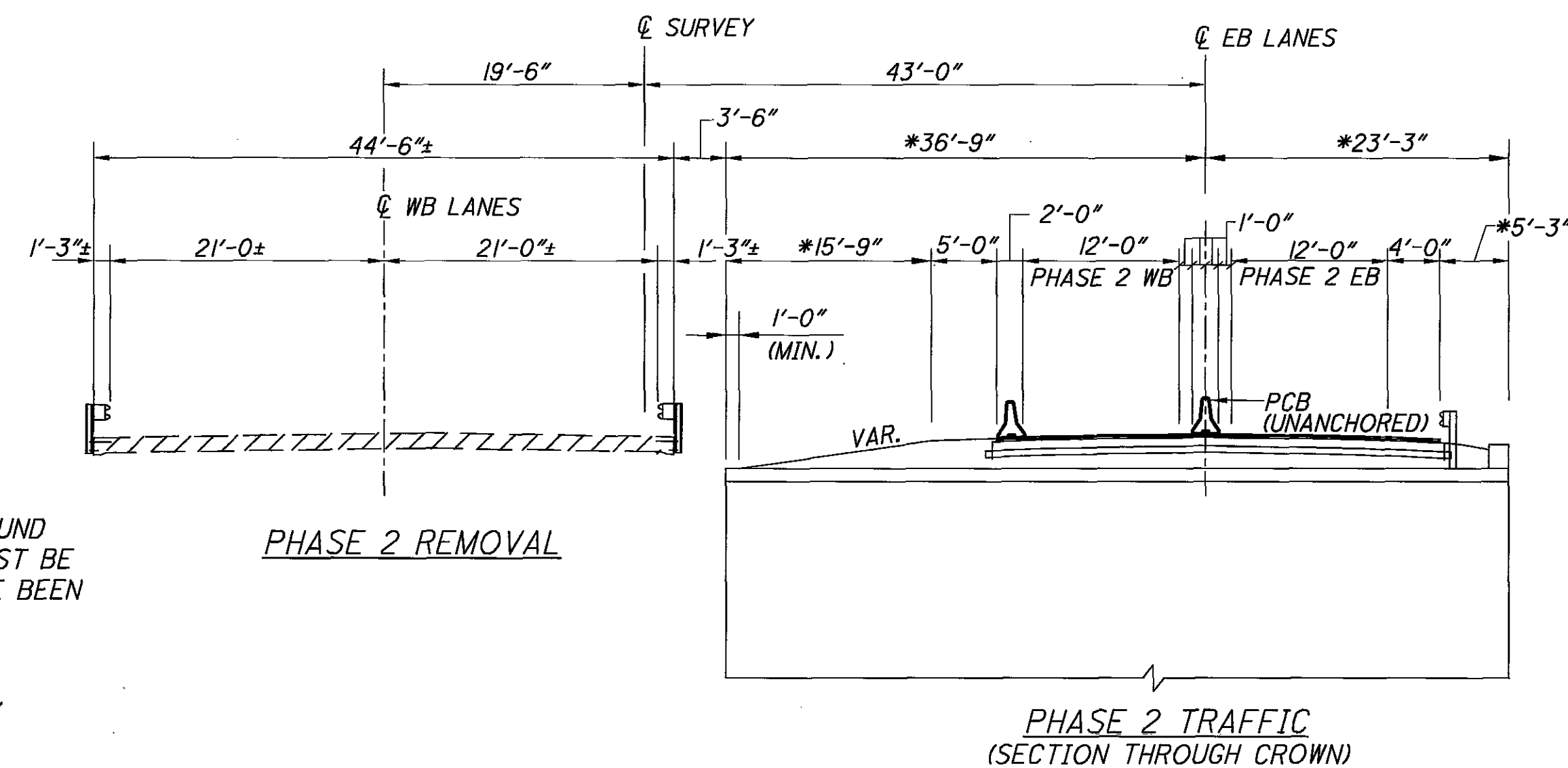
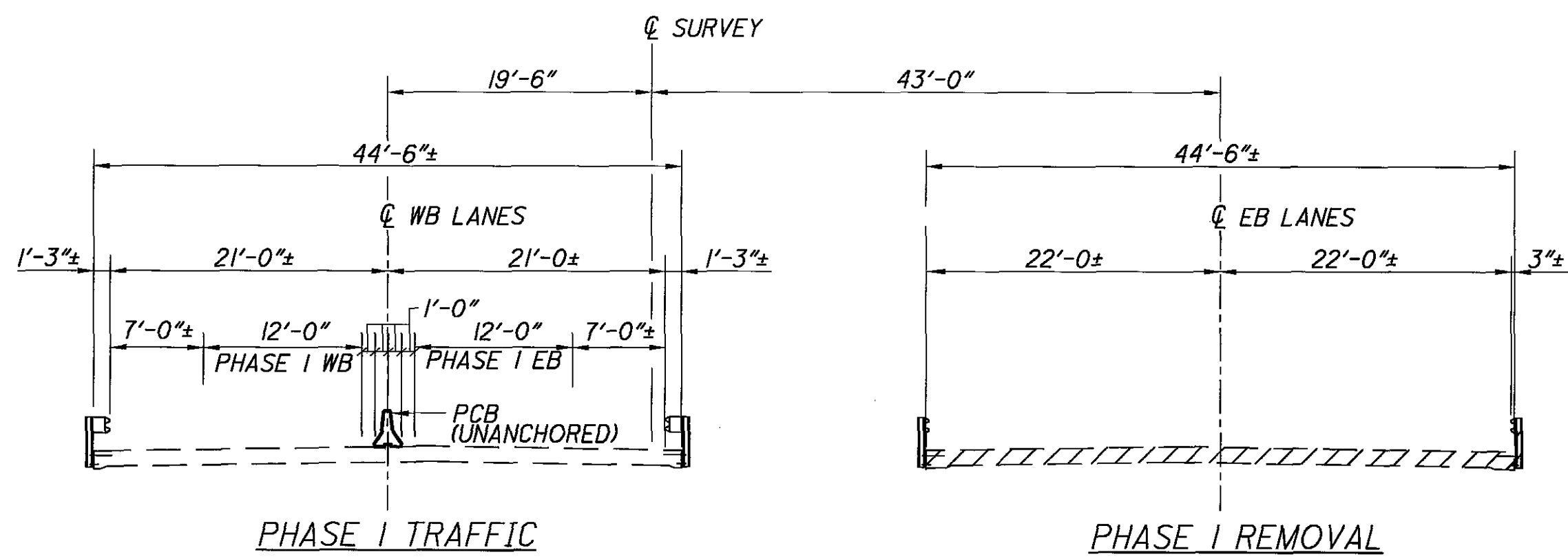
SHALL INCLUDE COST OF MATERIALS, LABOR, AND INSTALLATION OF TWO OPENINGS FOR CONDUITS AND MECHANICAL CONNECTORS FOR CIP CONCRETE HEADWALLS (SEE SHEET 8A/II) FOR PAYMENT.



ESTIMATED QUANTITIES

ITEM	ITEM EXT	TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
202	11002	LUMP		STRUCTURE REMOVED, OVER 20 FOOT SPAN	
202	22900	153	SQ. YD.	APPROACH SLAB REMOVED	
503	21300	LUMP		UNCLASSIFIED EXCAVATION	
504	11100	4160	SQ. FT.	STEEL SHEET PILING LEFT IN PLACE, MINIMUM SECTION MODULUS = 5.3 CUBIC INCHES PER FOOT	
505	11100	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION	
507	00500	1500	FT.	12" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	
507	00550	1600	FT.	12" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	
507	00700	2700	FT.	16" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	
507	00750	2880	FT.	16" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	
509	10000	24976	LB.	EPOXY COATED REINFORCING STEEL	
511	46000	60	CU. YD.	CLASS C CONCRETE, RETAINING WALL OR WINGWALL	
511	46500	221	CU. YD.	CLASS C CONCRETE, FOOTING	
511	46600	24	CU. YD.	CLASS C CONCRETE, HEADWALL	
512	10100	189	SQ. YD.	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
512	33000	799	SQ. YD.	TYPE 2 WATERPROOFING	
516	13600	76	SQ. FT.	1" PREFORMED EXPANSION JOINT FILLER	
518	21230	LUMP		POROUS BACKFILL WITH FILTER FABRIC	
518	40000	68	FT.	6" PERFORATED CORRUGATED PLASTIC PIPE	
518	40010	52	FT.	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	
523	20000	2	EACH	DYNAMIC LOAD TESTING	
603	71001	108	FT.	CONDUIT, TYPE A, PRECAST REINFORCED CONCRETE ARCH SECTIONS, 42'-0" SPAN X 10'-0" RISE, AS PER PLAN	2/II

DESIGN AGENCY: COLUMBUS ENGINEERING CONSULTANTS, INC. 840 MICHIGAN AVENUE, COLUMBUS, OH 43215 TEL: 614/228-3500
 DATE: 06/05
 REVIEWED: JU
 STRUCTURE FILE NUMBER: 4900731
 DRAWN: CEC
 DESIGNED: JU
 CHECKED: YSU
GENERAL NOTES & ESTIMATED QUANTITIES
 MAD-40-0.92
 PID 25722
 2 / 11
 37
 46

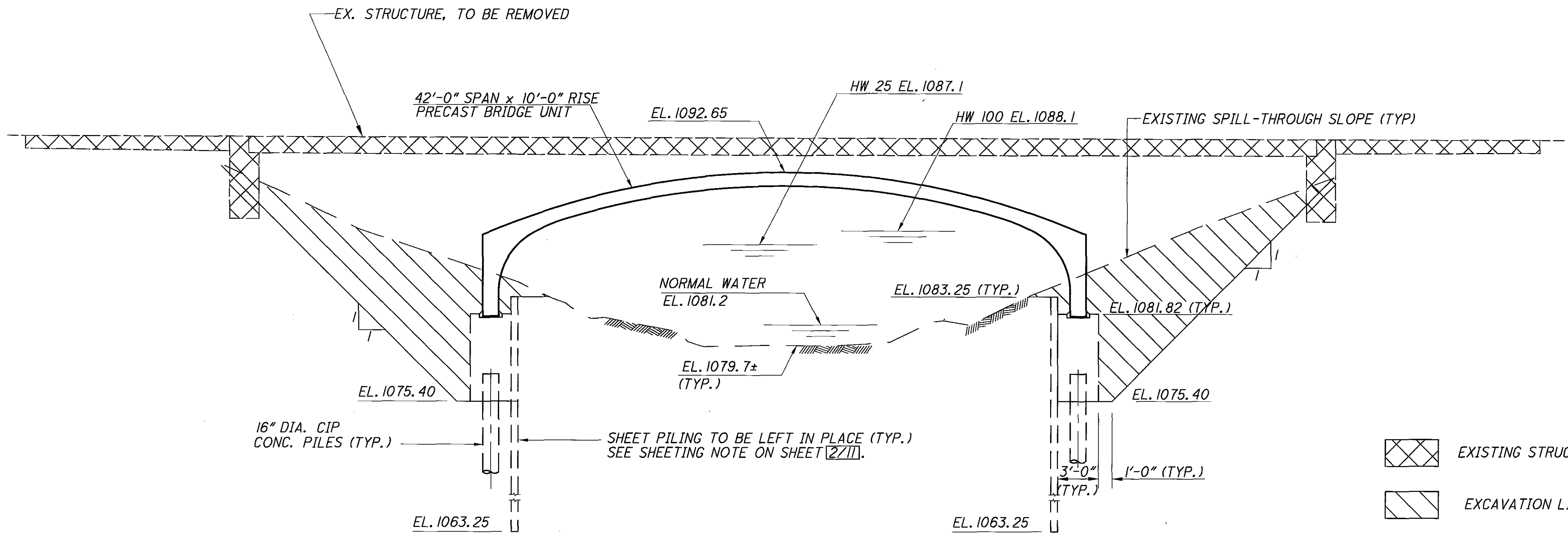


PROPOSED WORK:

1. PHASE 1 TRAFFIC - BEFORE REMOVING THE EASTBOUND BRIDGE, THE CROSSOVER FOR PHASE 1 TRAFFIC MUST BE CONSTRUCTED. MEDIAN BARRIERS SHALL ALSO HAVE BEEN INSTALLED ON THE WESTBOUND BRIDGE AND ITS APPROACH ROADWAY, AS SHOWN ON SHEETS 46 THROUGH 48. THE PLACEMENT OF REQUIRED TEMPORARY PAVEMENT ON THE APPROACH ROADWAY SHALL BE PER SHEETS 49 THROUGH 51.
2. PHASE 1 REMOVAL - AFTER THE PREPARATORY WORK FOR PHASE 1 TRAFFIC IS COMPLETED, THE REMOVAL OF THE EASTBOUND BRIDGE AND PHASE 1 CONSTRUCTION SHALL BEGIN.
3. PHASE 1 CONSTRUCTION - BEFORE EXCAVATION FOR THE CULVERT AND WINGWALL FOOTINGS COMMENCES, THE SHEET PILING SHALL BE COMPLETED FIRST, AS SHOWN ON SHEET 48. ALL SUBSEQUENT CONSTRUCTION ACTIVITIES SHALL BE PER THE DESIGN PLANS.
4. PHASE 2 TRAFFIC - BEFORE REMOVING THE WESTBOUND BRIDGE, THE CROSSOVER FOR PHASE 2 TRAFFIC MUST BE CONSTRUCTED. MEDIAN BARRIERS MUST ALSO BE INSTALLED ON THE NEWLY CONSTRUCTED PORTION OF THE PROPOSED STRUCTURE AND ITS APPROACH ROADWAY, AS SHOWN ON SHEETS 49 THROUGH 51. THE PLACEMENT OF REQUIRED TEMPORARY PAVEMENT ON THE APPROACH ROADWAY SHALL BE PER SHEETS 52 THROUGH 54.
5. PHASE 2 REMOVAL - AFTER THE PREPARATORY WORK FOR PHASE 2 TRAFFIC IS COMPLETED, THE REMOVAL OF THE WESTBOUND BRIDGE AND PHASE 2 CONSTRUCTION SHALL BEGIN.
6. PHASE 2 CONSTRUCTION - SAME AS IN PHASE 1 CONSTRUCTION.
7. MEDIAN DITCH - THE GRADING OF THE MEDIAN DITCH SHALL BE A PART OF PHASE 2 CONSTRUCTION AND PER DETAILS SHOWN ON SHEET 55.

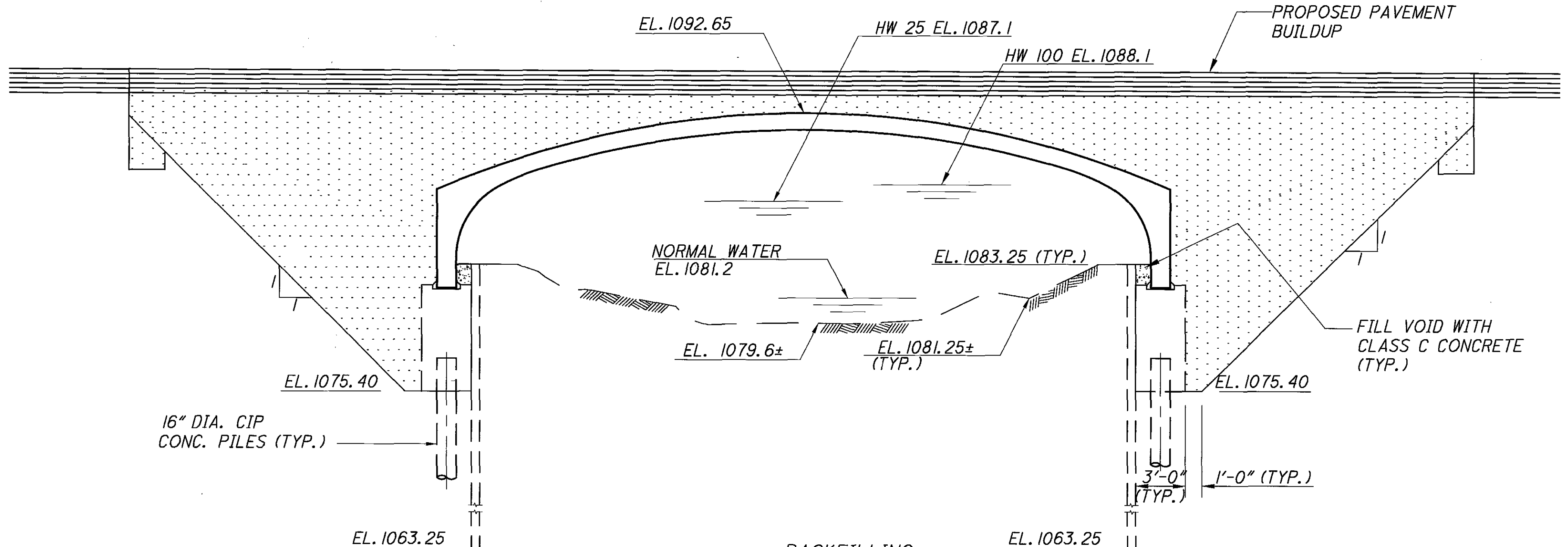
LEGEND

- PCB = PORTABLE CONCRETE BARRIER
- ▨ INDICATES AREA TO BE REMOVED DURING PHASE CONSTRUCTION PER ITEM 202 - STRUCTURE REMOVED
- * - PLUS FIT-UP
- ** - MINUS FIT-UP



EXCAVATION
EXISTING PIERS NOT SHOWN
(FOR BOTH PHASES)

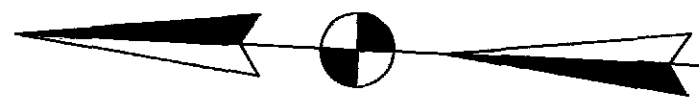
- EXISTING STRUCTURE REMOVAL LIMITS
- EXCAVATION LIMITS
- BACKFILL LIMITS



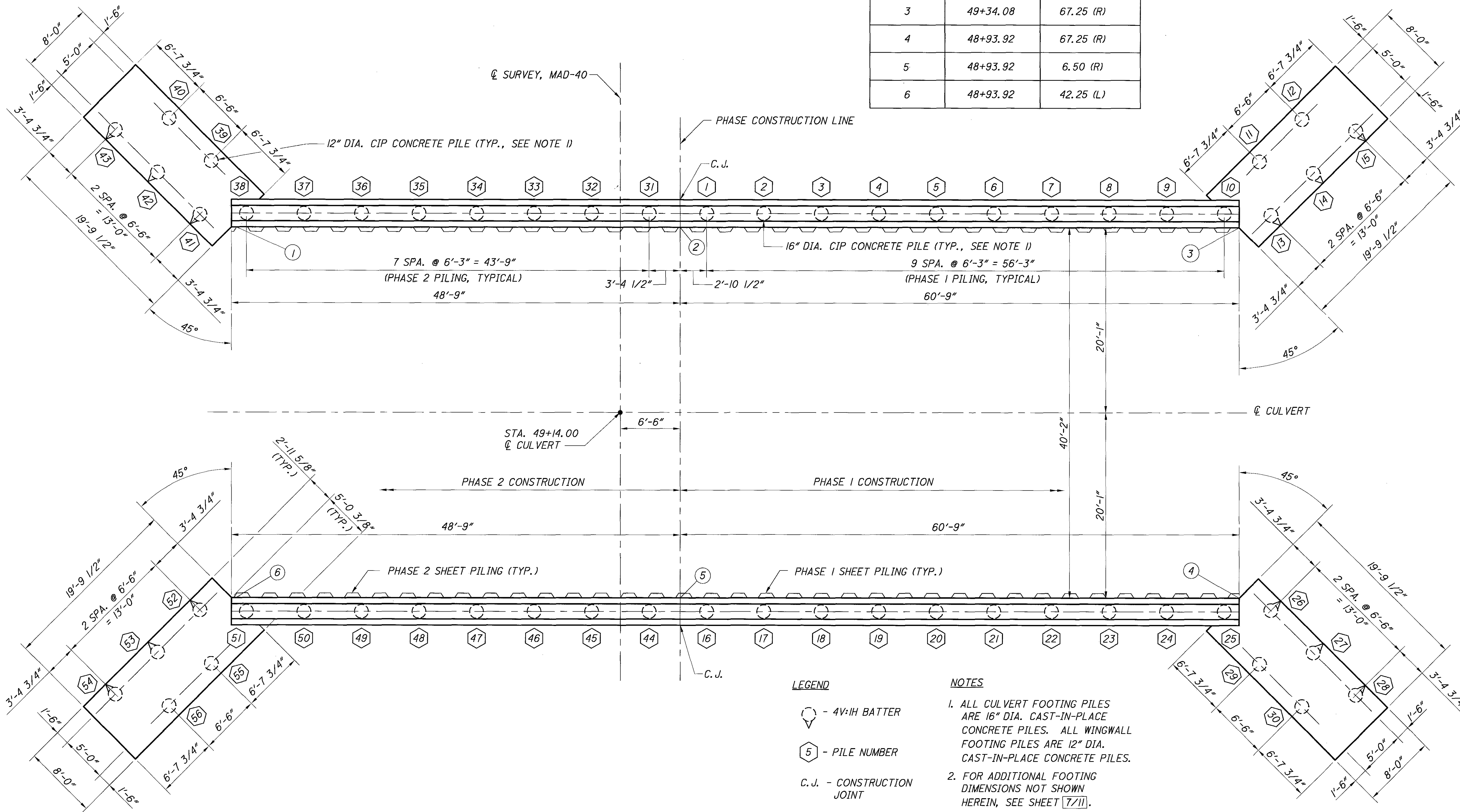
BACKFILLING
(FOR BOTH PHASES)

NOTE:
THE SHEET PILING SHALL BE OF A328 STEEL, DRIVEN TO EL. 1063.25. THE RECOMMENDED SECTION INDEX IS PMA22 WITH A SECTION MODULUS OF 5.4 CU. IN. PER FOOT OF WALL. THE CONTRACTOR MAY USE SOME OTHER DESIGN PROVIDED THAT THE DESIGN IS PERFORMED BY AN ENGINEER REGISTERED IN OHIO, AND IS APPROVED BY THE ENGINEER.

DESIGN AGENCY COLUMBUS ENGINEERING CONSULTANTS, INC. <small>840 MICHIGAN AVENUE, COLUMBUS, OH 43215 TEL: 614/228-3500</small>	
DATE 05/13	STRUCTURE FILE NUMBER 4900731
REVIEWED JJ	REVISION 4900731
DRAWN CEC	REVISION REVISION
DESIGNED JJ	CHECKED YSJ
EXCAVATION & BACKFILLING DETAILS	
MAD-40-0.92 PID 25722	
4 / 11	39 / 46



WORK POINTS		
LOCATION	STATION	OFFSET
1	49+34.08	42.25 (L)
2	49+34.08	6.50 (R)
3	49+34.08	67.25 (R)
4	48+93.92	67.25 (R)
5	48+93.92	6.50 (R)
6	48+93.92	42.25 (L)



- LEGEND**
- 4V:1H BATTER
 - PILE NUMBER
 - C.J. - CONSTRUCTION JOINT

- NOTES**
1. ALL CULVERT FOOTING PILES ARE 16" DIA. CAST-IN-PLACE CONCRETE PILES. ALL WINGWALL FOOTING PILES ARE 12" DIA. CAST-IN-PLACE CONCRETE PILES.
 2. FOR ADDITIONAL FOOTING DIMENSIONS NOT SHOWN HEREIN, SEE SHEET 7/11.
 3. FOR EXCAVATION AND BACKFILLING DETAILS SEE SHEET 4/11.

FOOTING PILING & SHEETING DETAILS

FOOTING LAYOUT & SHEETING DETAILS

DESIGNED	J.J.	CHECKED	Y.S.U.
DRAWN	CEC	REVISED	
REVIEWED	J.J.	STRUCTURE FILE NUMBER	4900731
DATE	06/05		

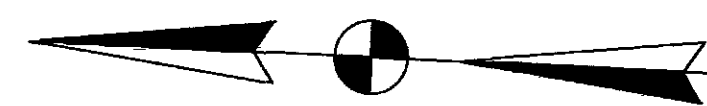
DESIGN AGENCY
 COLUMBUS ENGINEERING
 CONSULTANTS, INC.
 840 MICHIGAN AVENUE, COLUMBUS, OH 43215
 TEL: 614/228-5500

MAD-40-0.92
 PID 25722

5 / 11

NOTES:

FOR CROSS SECTION OF WINGWALL FOOTING, SEE SHEETS 9211 & 10711.

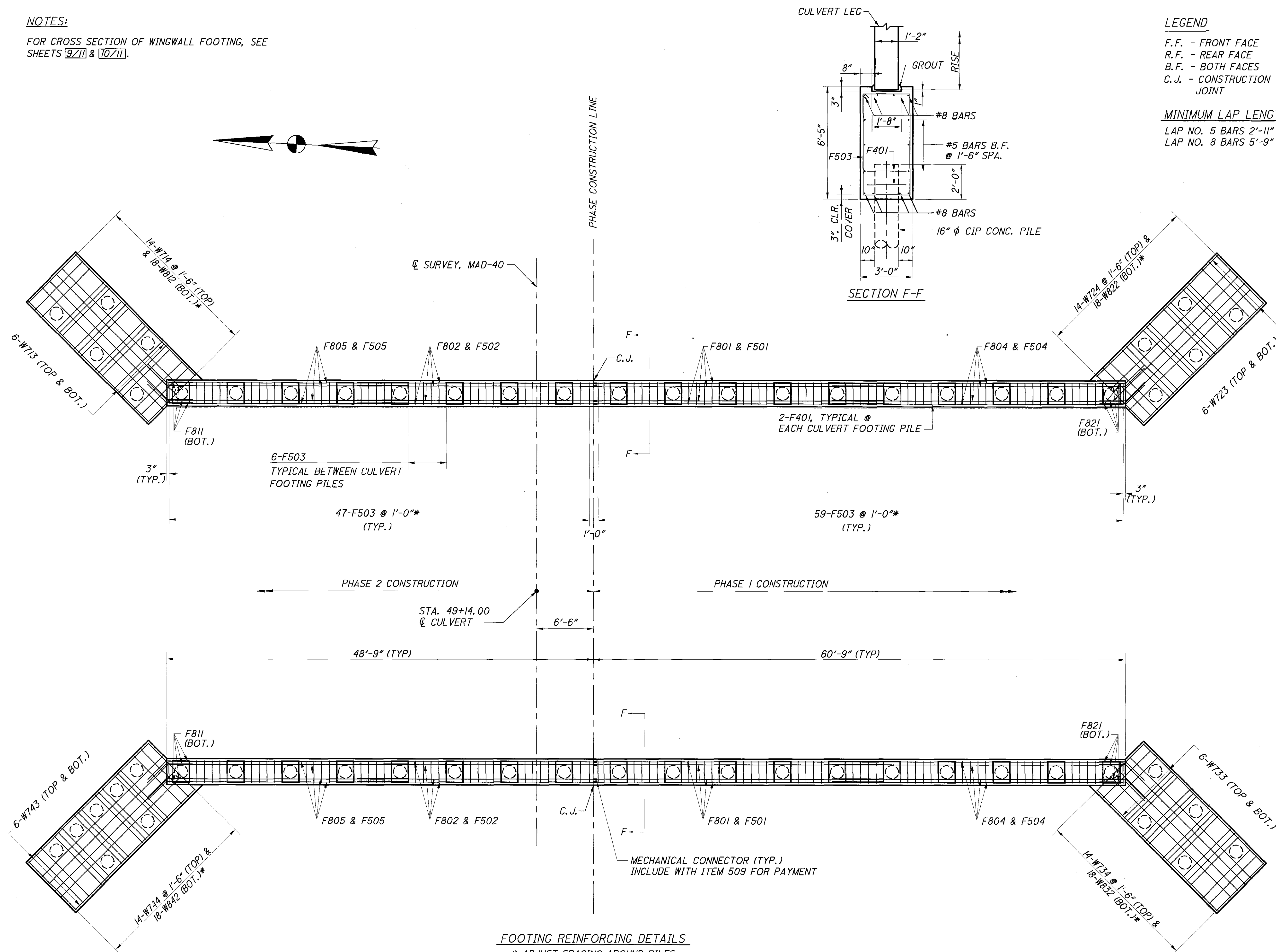


LEGEND

F.F. - FRONT FACE
 R.F. - REAR FACE
 B.F. - BOTH FACES
 C.J. - CONSTRUCTION JOINT

MINIMUM LAP LENGTH

LAP NO. 5 BARS 2'-11"
 LAP NO. 8 BARS 5'-9"



FOOTING REINFORCING DETAILS
 * ADJUST SPACING AROUND PILES

DESIGN AGENCY
 COLUMBUS ENGINEERING
 CONSULTANTS, INC.
 840 MICHIGAN AVENUE, COLUMBUS, OH 43215
 TEL: 614/228-3500

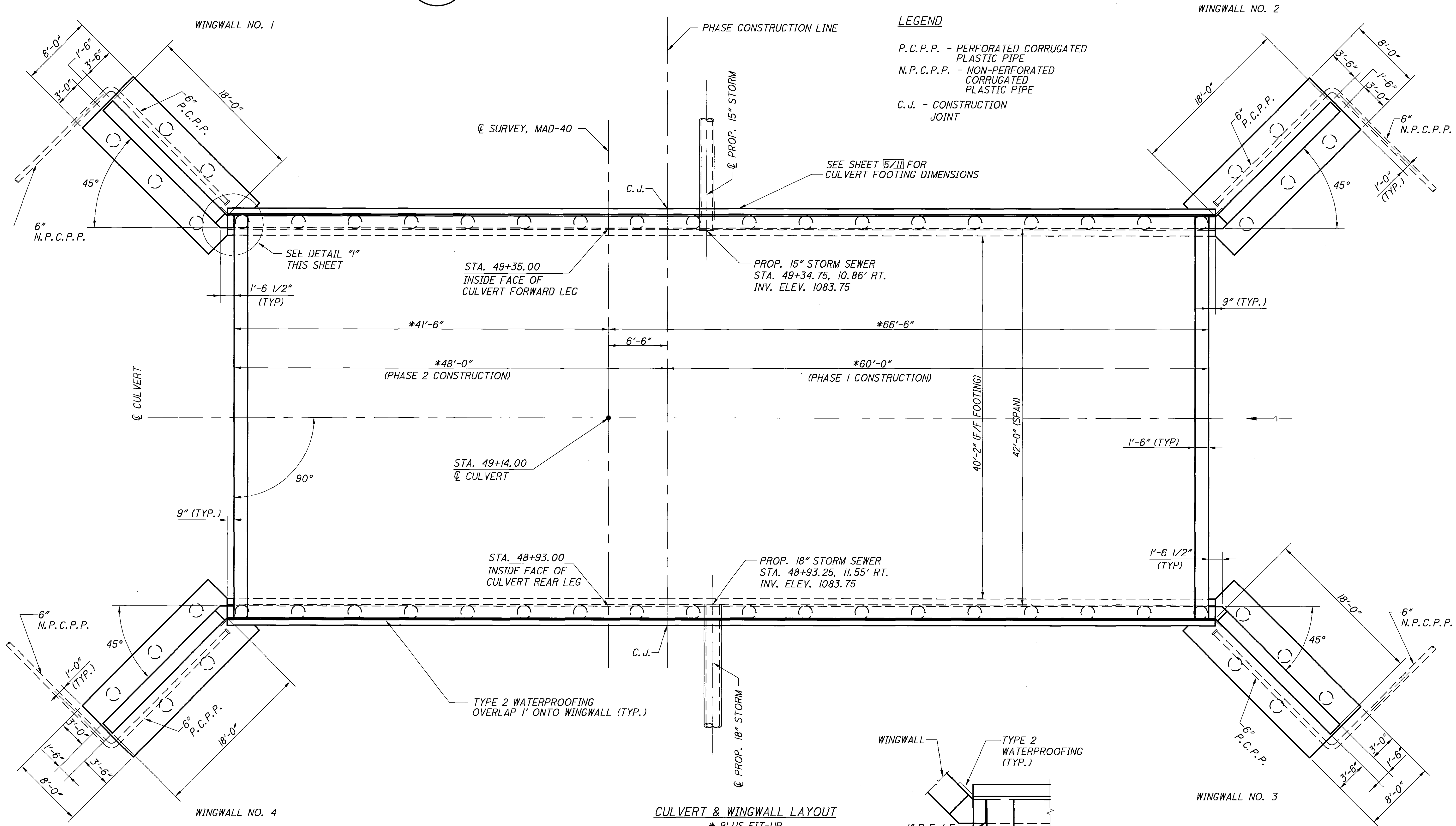
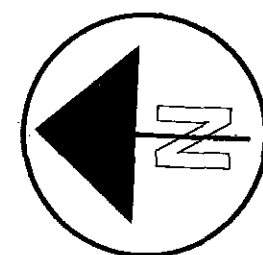
DATE	06/05
REVIEWED	JJ
DESIGNED	JJ
CHECKED	YSJ
DRAWN	CEC
REVISION	
STRUCTURE FILE NUMBER	4900731

FOOTING REINFORCING DETAILS

MAD-40-0.92
 PID 25722

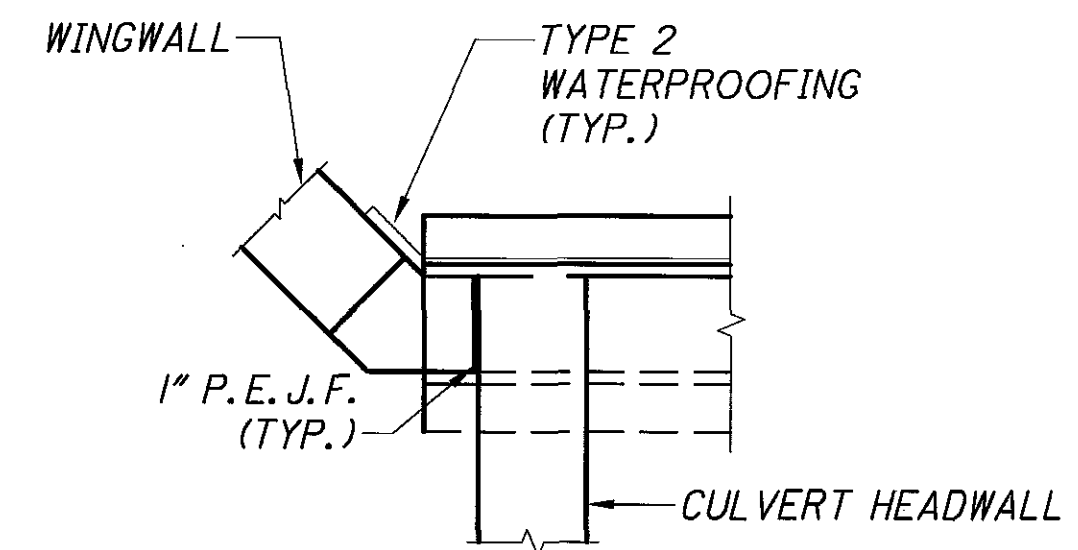
6 / 11

41
 46



LEGEND
 P.C.P.P. - PERFORATED CORRUGATED PLASTIC PIPE
 N.P.C.P.P. - NON-PERFORATED CORRUGATED PLASTIC PIPE
 C.J. - CONSTRUCTION JOINT

NOTES
 1. 6" DIA. N.P.C.P.P. AT ENDS SPLICED TO PERFORATED PIPE AND OUTLET AS SHOWN IN PIPE TERMINATION DETAIL ON SHEET 9711.
 2. SEE SHEET 8A711 FOR ADDITIONAL TAPPING DETAILS OF STORM SEWERS.



DETAIL "1"

DESIGN AGENCY COLUMBUS ENGINEERING CONSULTANTS, INC. 840 MICHIGAN AVENUE, COLUMBUS, OH 43215 TEL: 614/228-3500	
DATE 06/05	DESIGNED JU
REVIEWED JU	CHECKED YSU
STRUCTURE FILE NUMBER 4900731	DESIGNED YSU
CULVERT AND WINGWALL LAYOUT	
MAD-40-0.92 PID 25722	
7 / 11	
42 46	

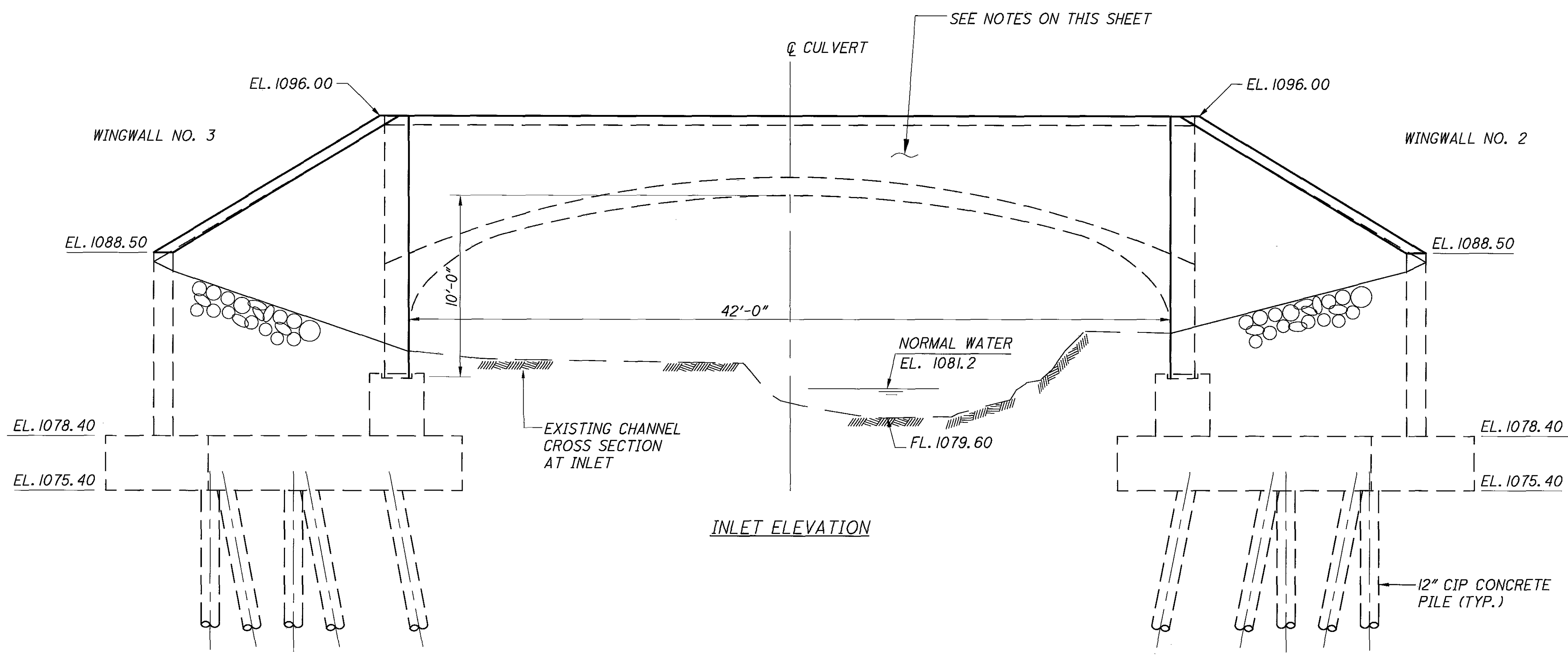
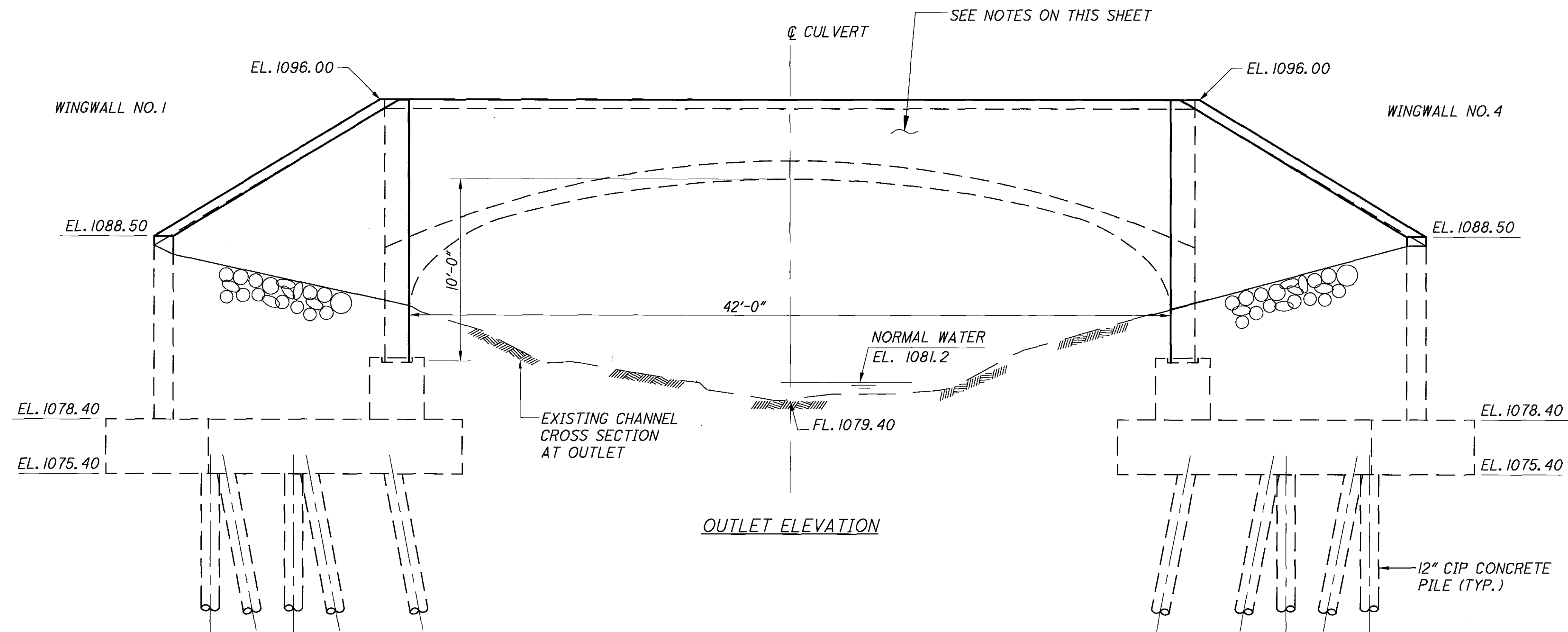
DATE	05/13
REVIEWED	JJ
STRUCTURE FILE NUMBER	4900731
DRAWN	CEC
DESIGNED	JJ
CHECKED	YSJ
REVISED	

INLET & OUTLET ELEVATION VIEWS

MAD-40-0-92
 PID 25722

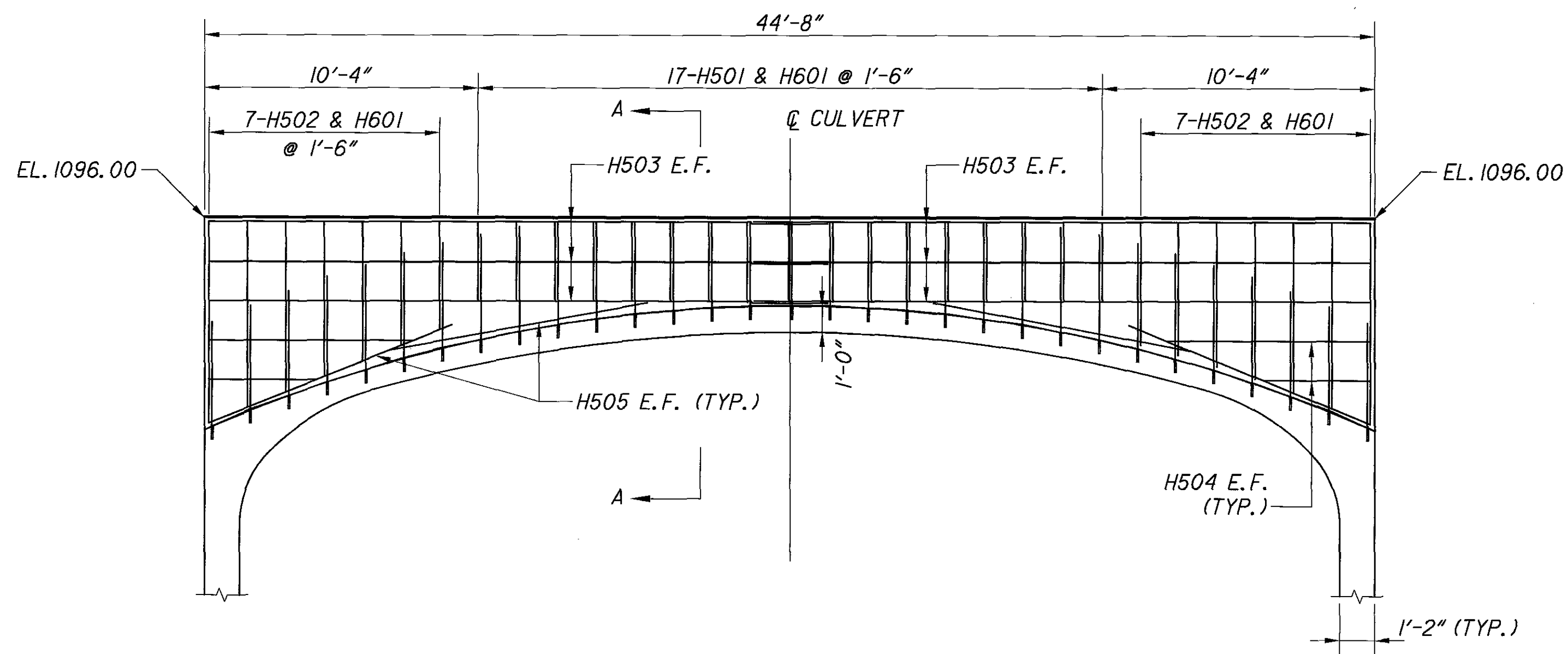
8 / 11

43
 46

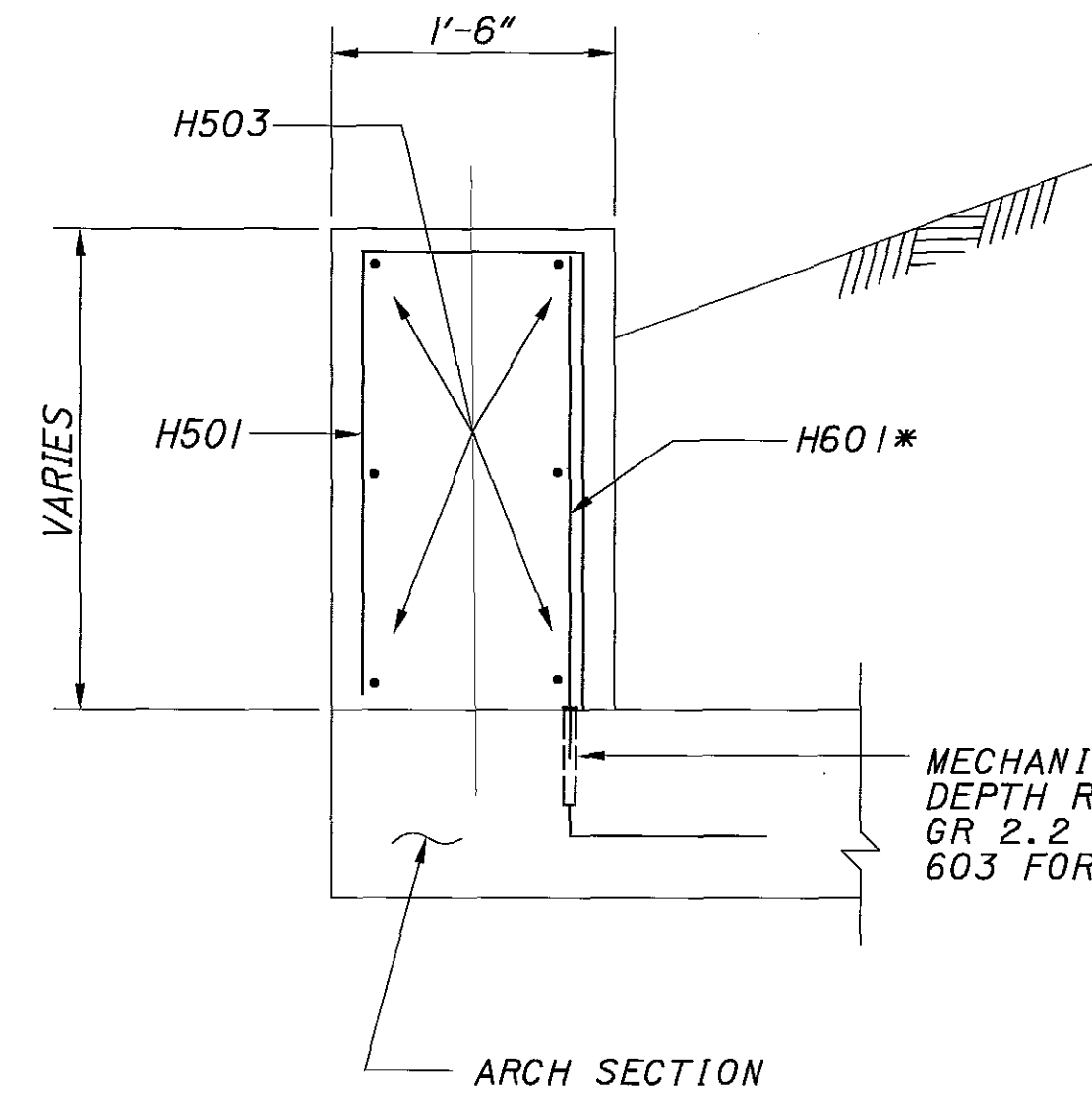


NOTES:

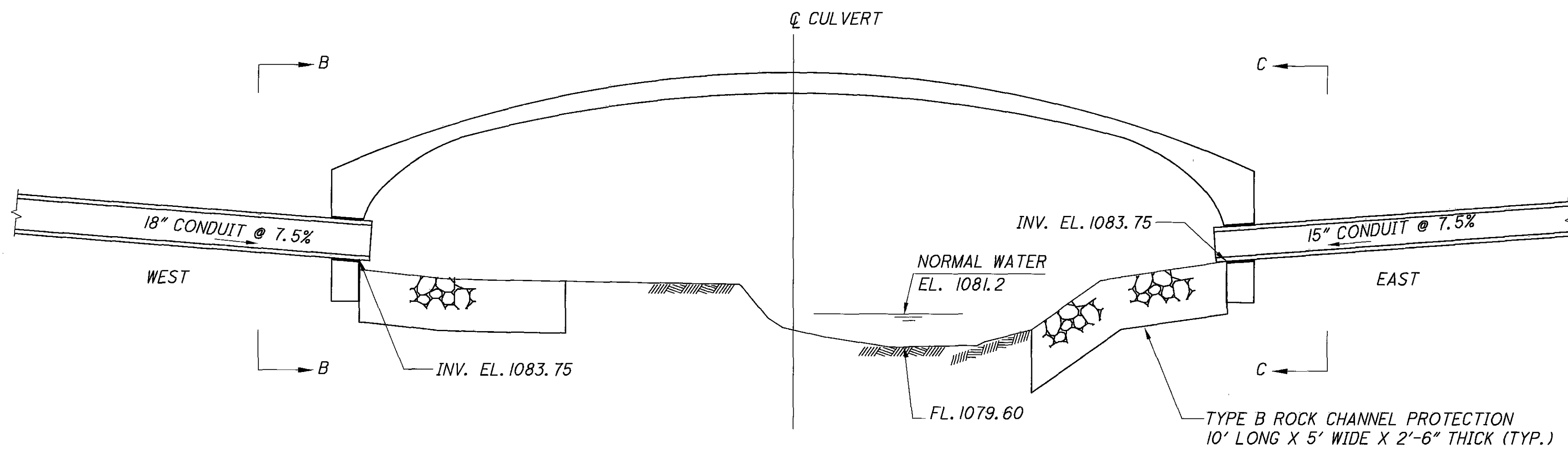
1. SEE CAST-IN-PLACE HEADWALL DETAILS ON SHEET 8A711.
2. THE CONTRACTOR CAN OPT TO HAVE THE HEADWALLS PRECAST WITH THE ARCH SECTIONS. IN THIS CASE, THE CONTRACTOR SHALL INCLUDE THE PRECAST HEADWALL DESIGN DETAILS WITH THE SHOP DRAWINGS FOR THE ARCH SECTIONS FOR THE ENGINEER'S APPROVAL.



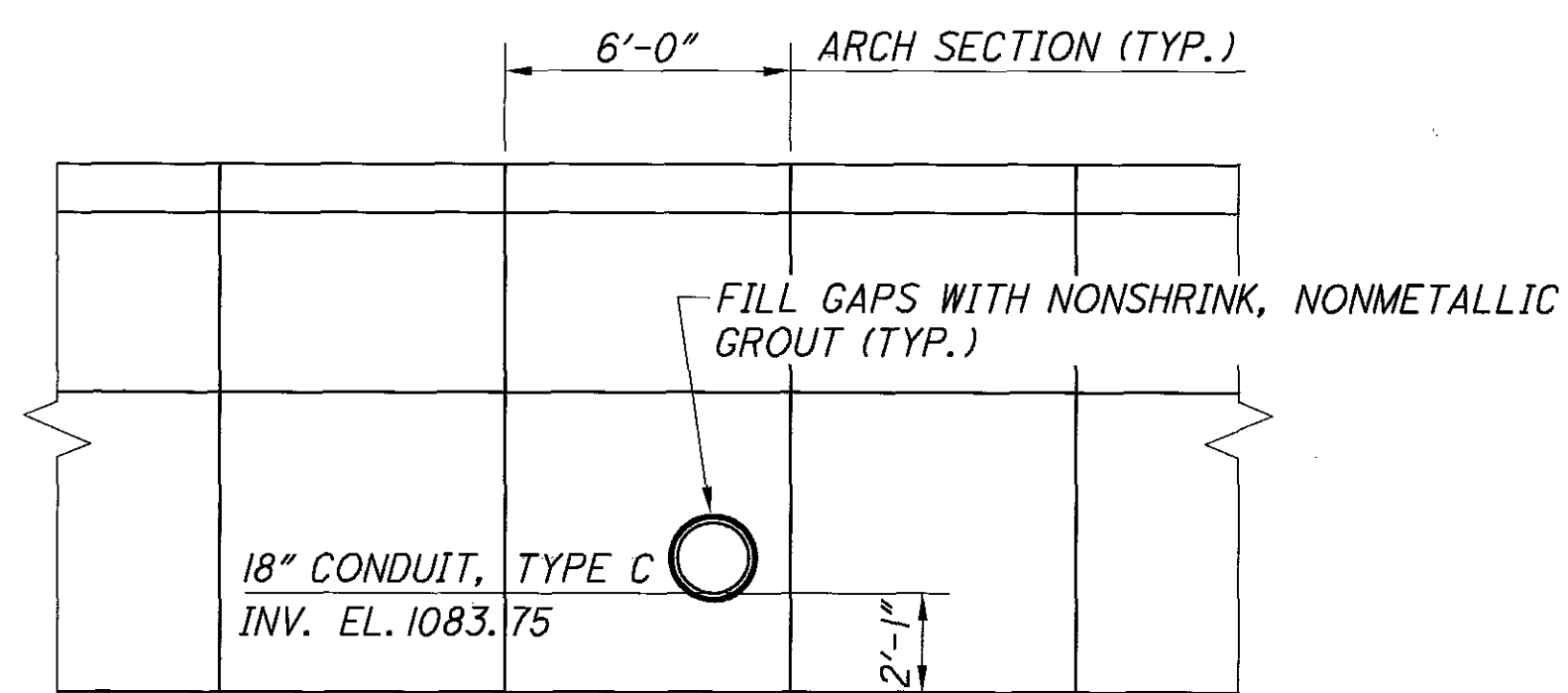
OUTLET HEADWALL REINFORCING
OUTLET SHOWN, INLET IDENTICAL.



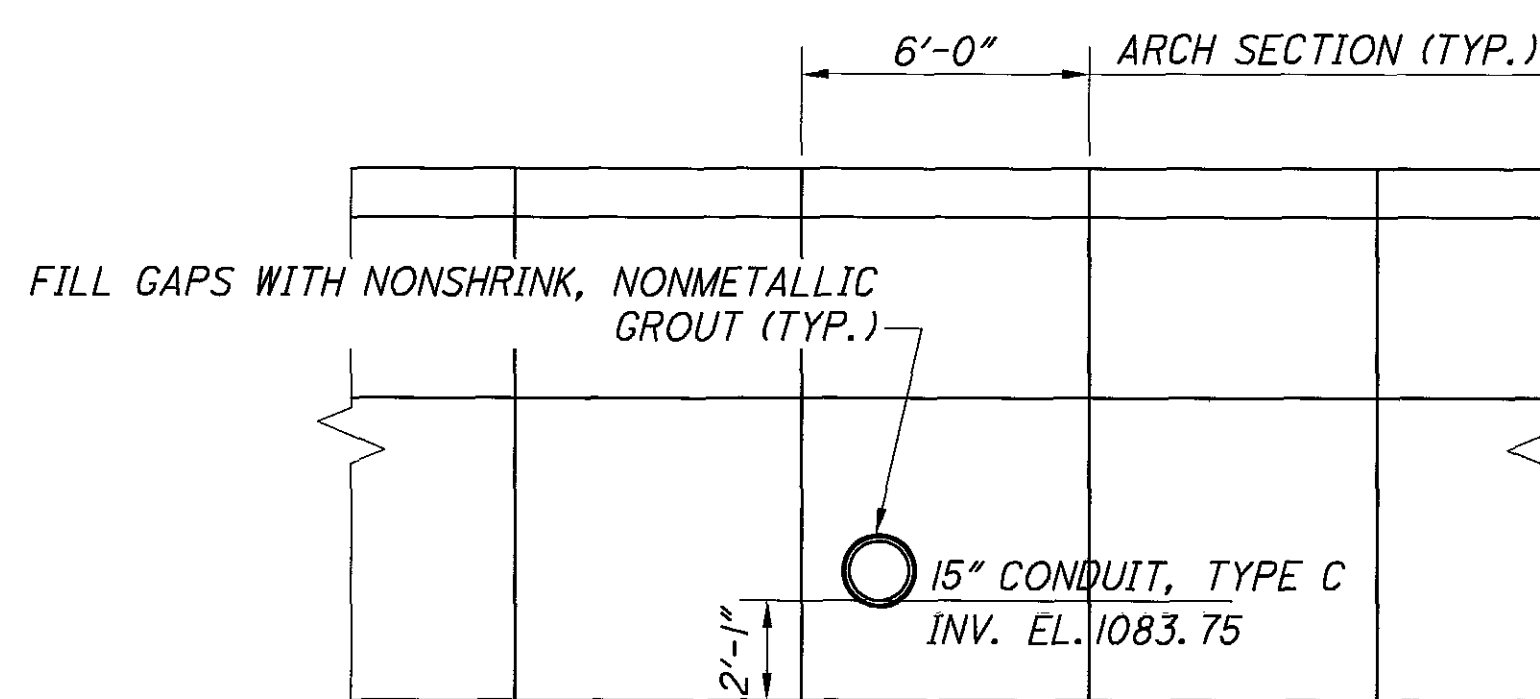
SECTION A-A
* FIELD CUT AS NEEDED



STORM SEWER ELEVATION



VIEW B-B (WEST SIDE)
18" STORM



VIEW C-C (EAST SIDE)
15" STORM

NOTES

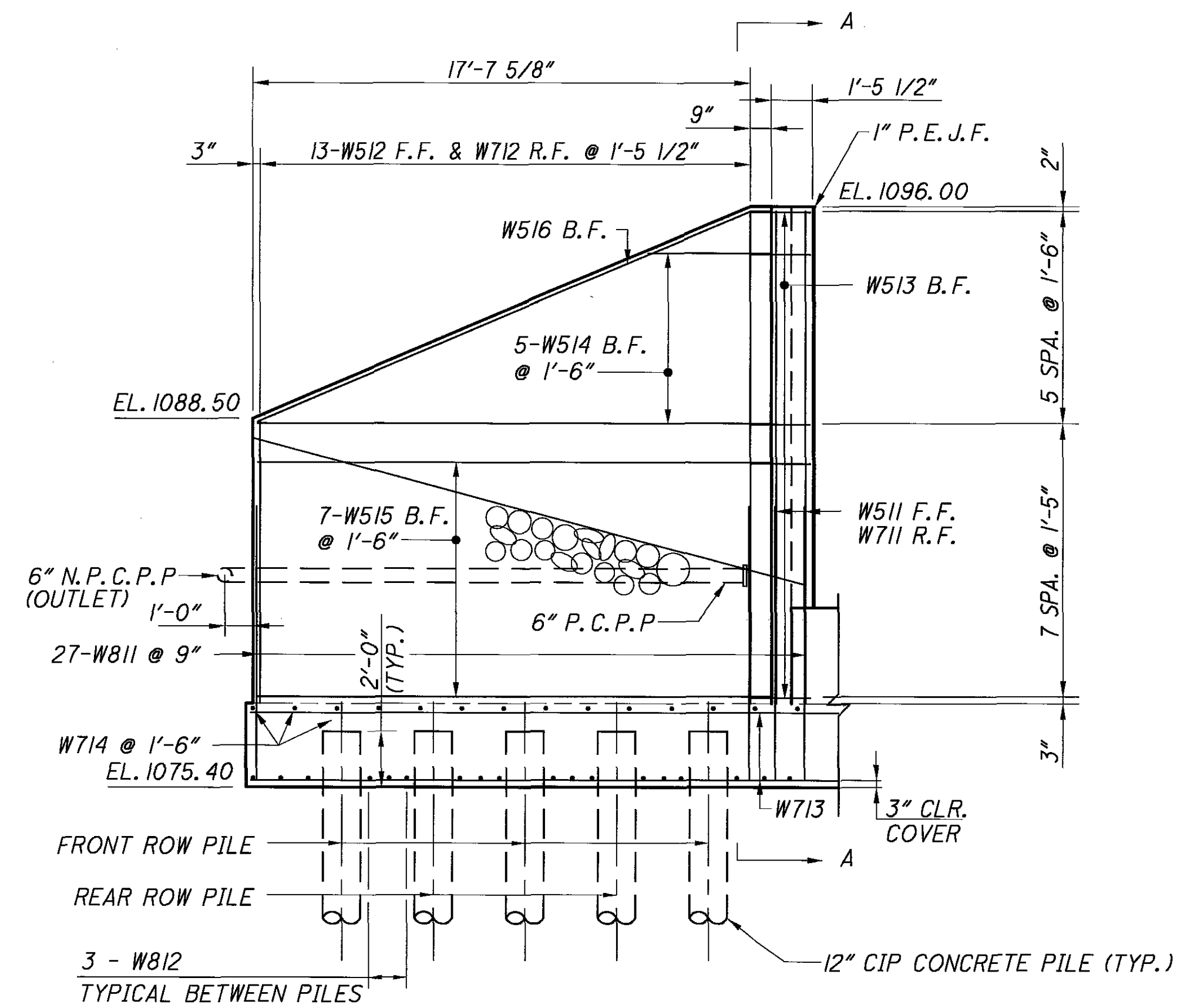
- OPENINGS FOR CONDUITS SHALL BE PRECAST OR FIELD CUT. INCLUDE COST OF MATERIALS, LABOR, AND INSTALLATION WITH ITEM 603 FOR PAYMENT.

DESIGNED	JJ	CHECKED	YSJ
DRAWN	CEC	REVIEWED	JJ
DATE	05/13	STRUCTURE FILE NUMBER	4900731

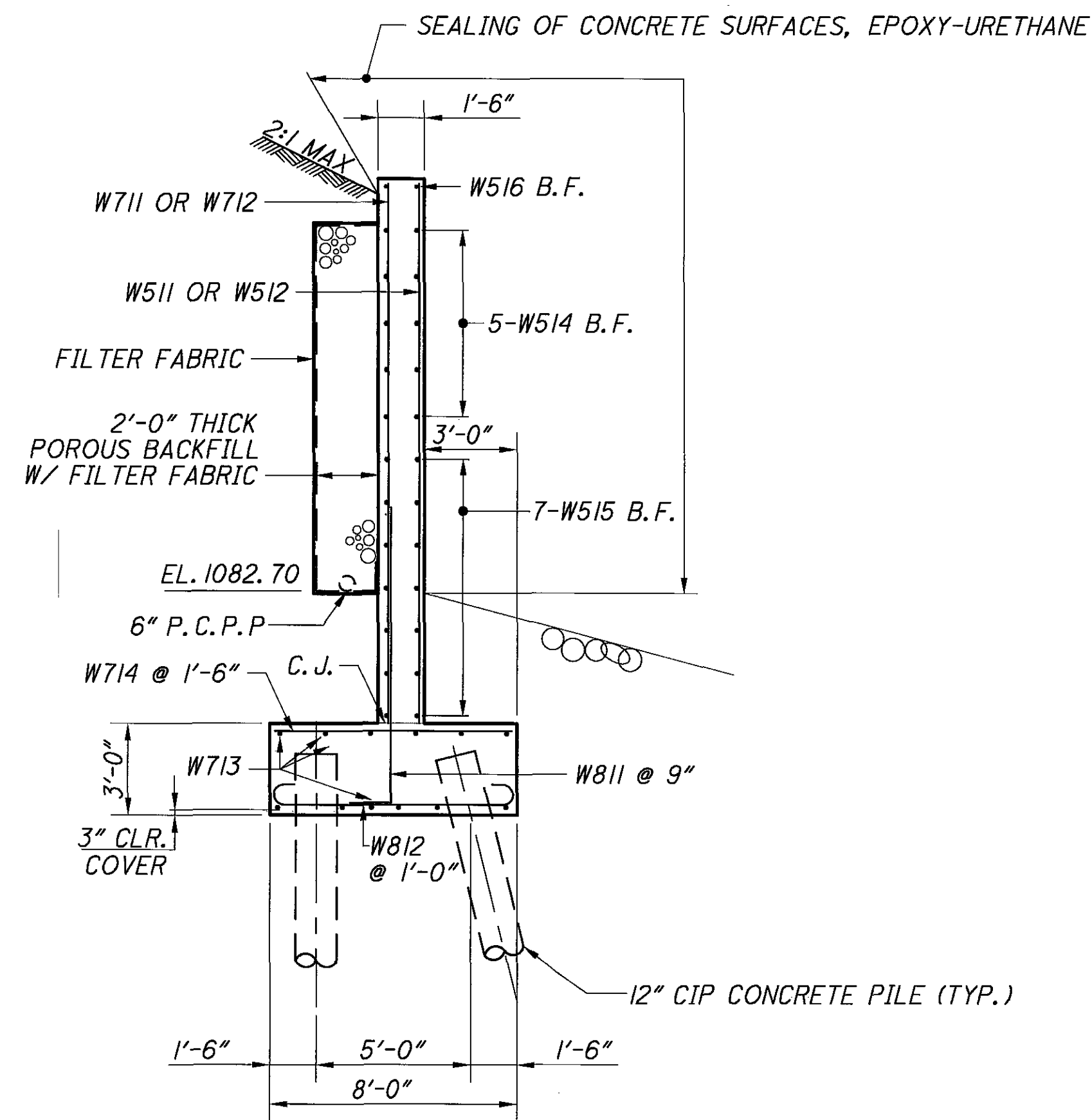
CONCRETE HEADWALL & STORM SEWER TAPPING DETAILS

MAD-40-0.92
PID 25722

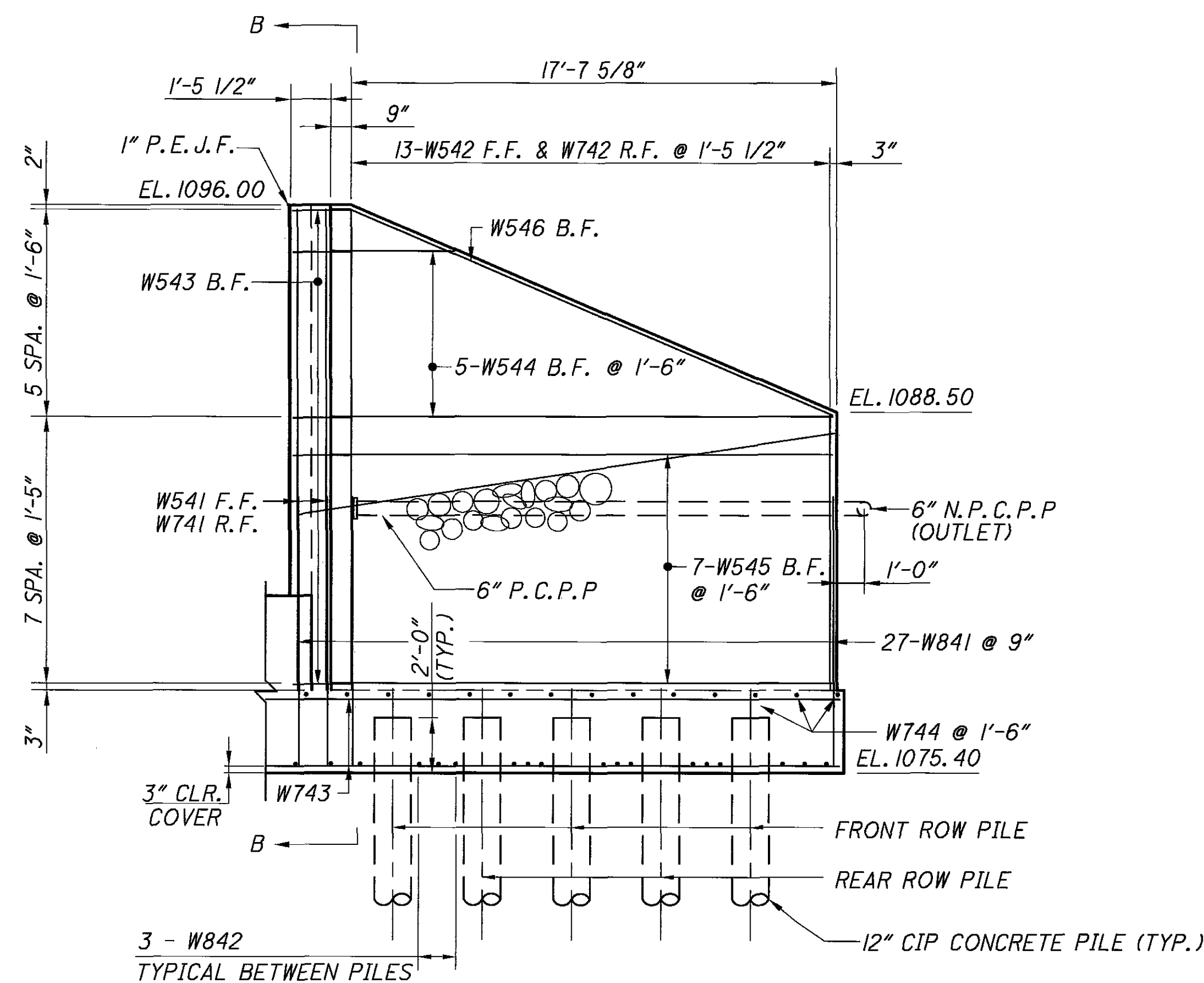
8A / 11



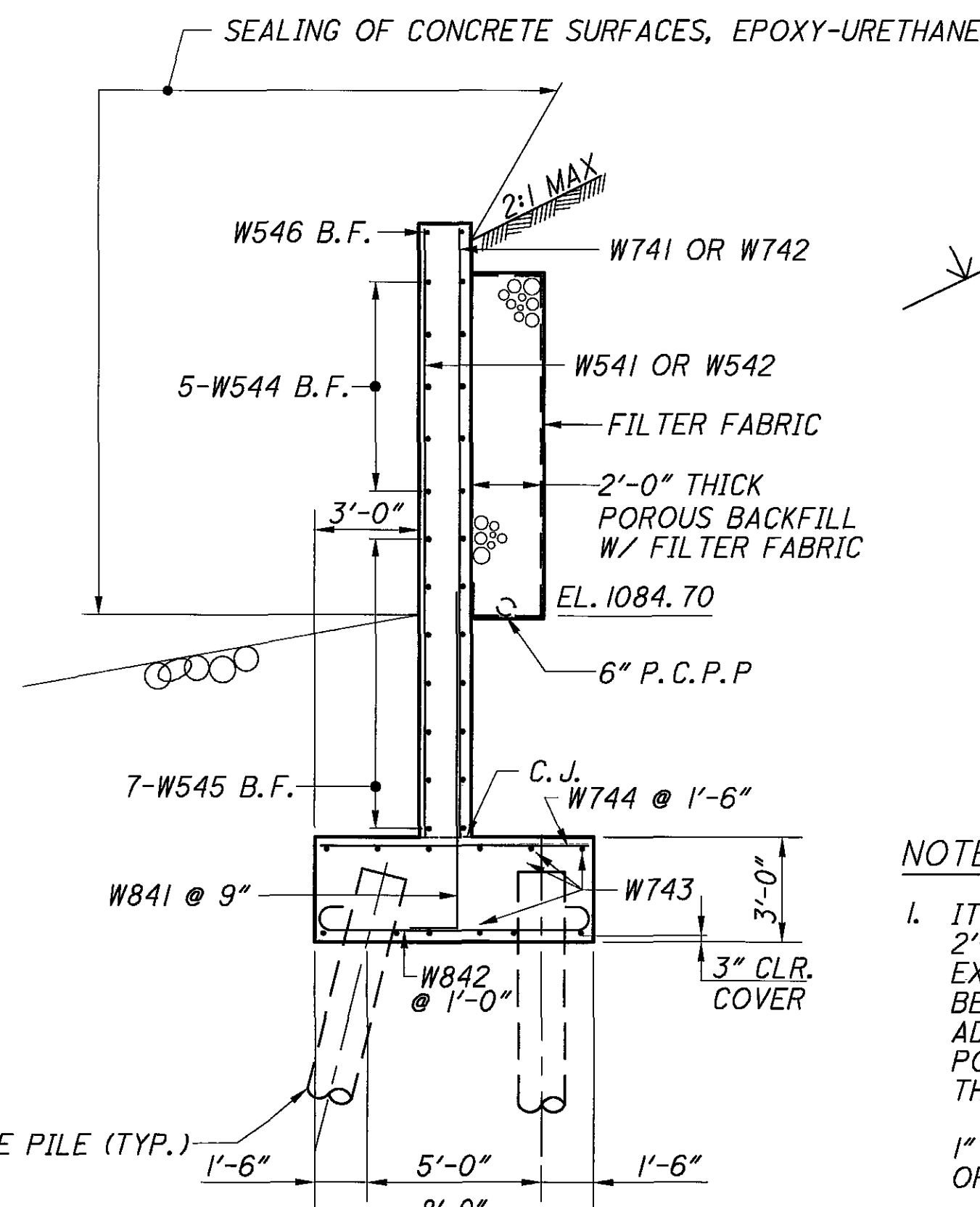
WINGWALL 1 ELEVATION



SECTION A-A



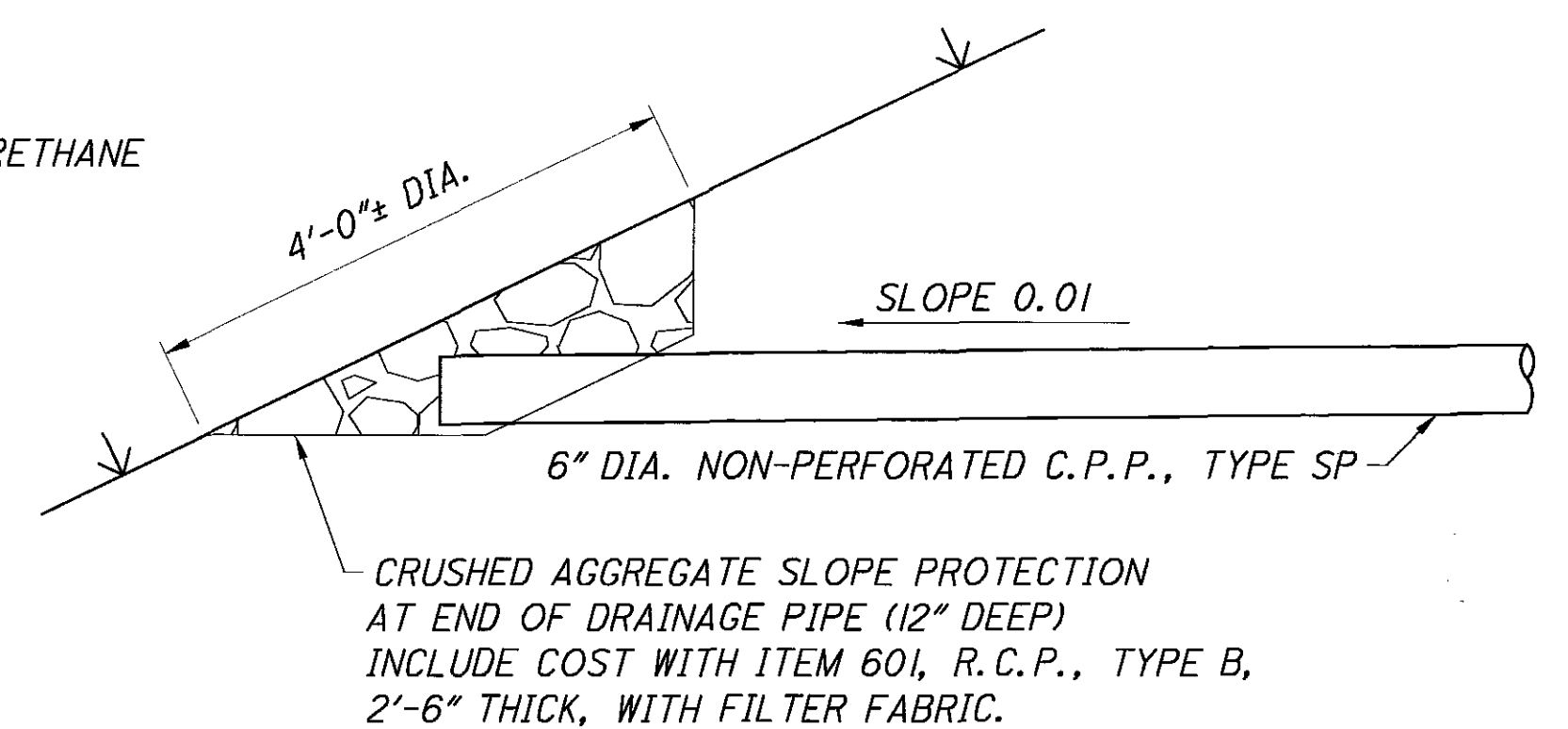
WINGWALL 4 ELEVATION



SECTION B-B

LEGEND

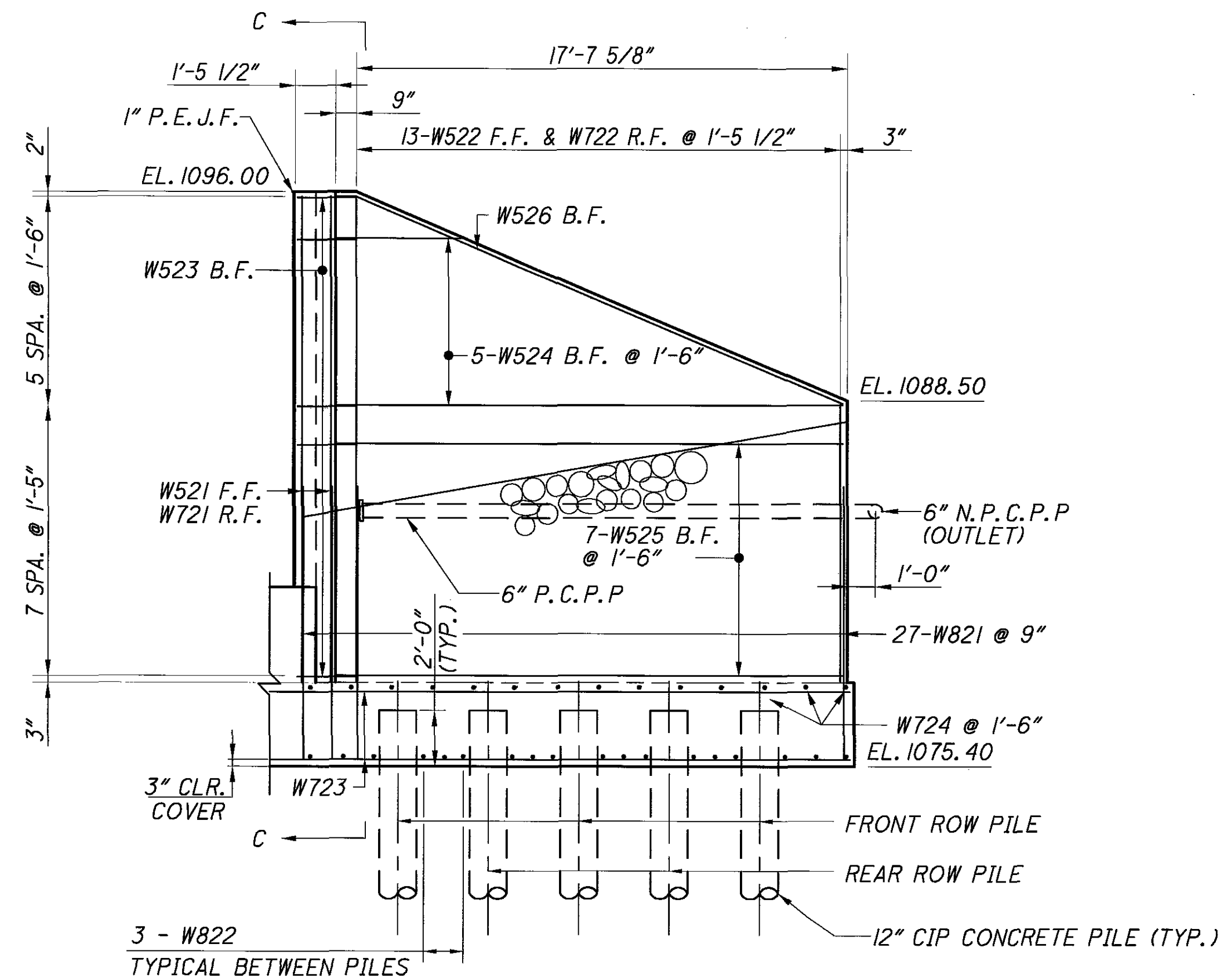
- F.F. - FRONT FACE
- R.F. - REAR FACE
- B.F. - BOTH FACES
- P.C.P.P. - PERFORATED CORRUGATED PLASTIC PIPE
- N.P.C.P.P. - NON-PERFORATED CORRUGATED PLASTIC PIPE
- C.J. - CONSTRUCTION JOINT



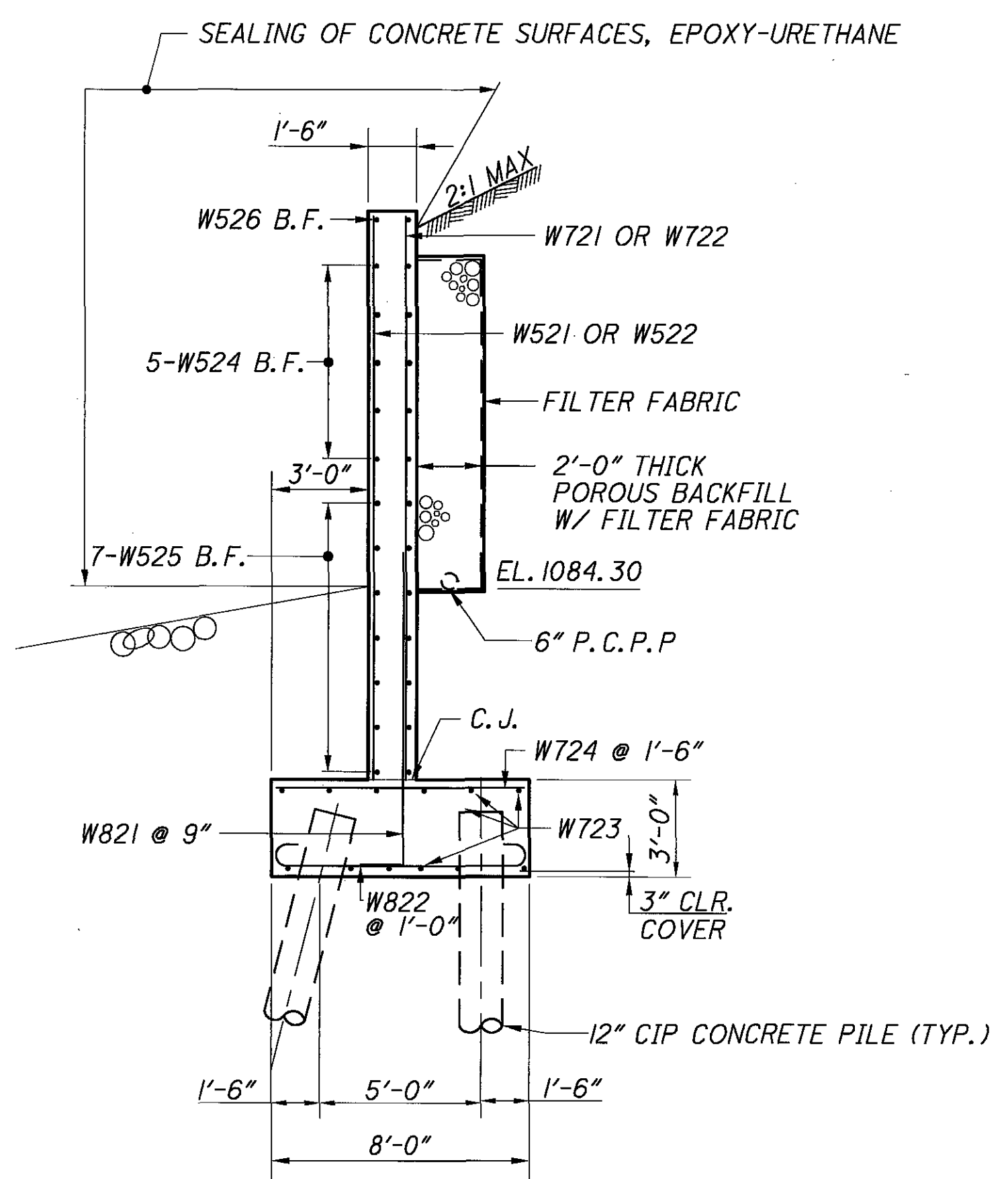
TERMINATION OF 6" N.P.C.P.P. DETAIL

NOTES:

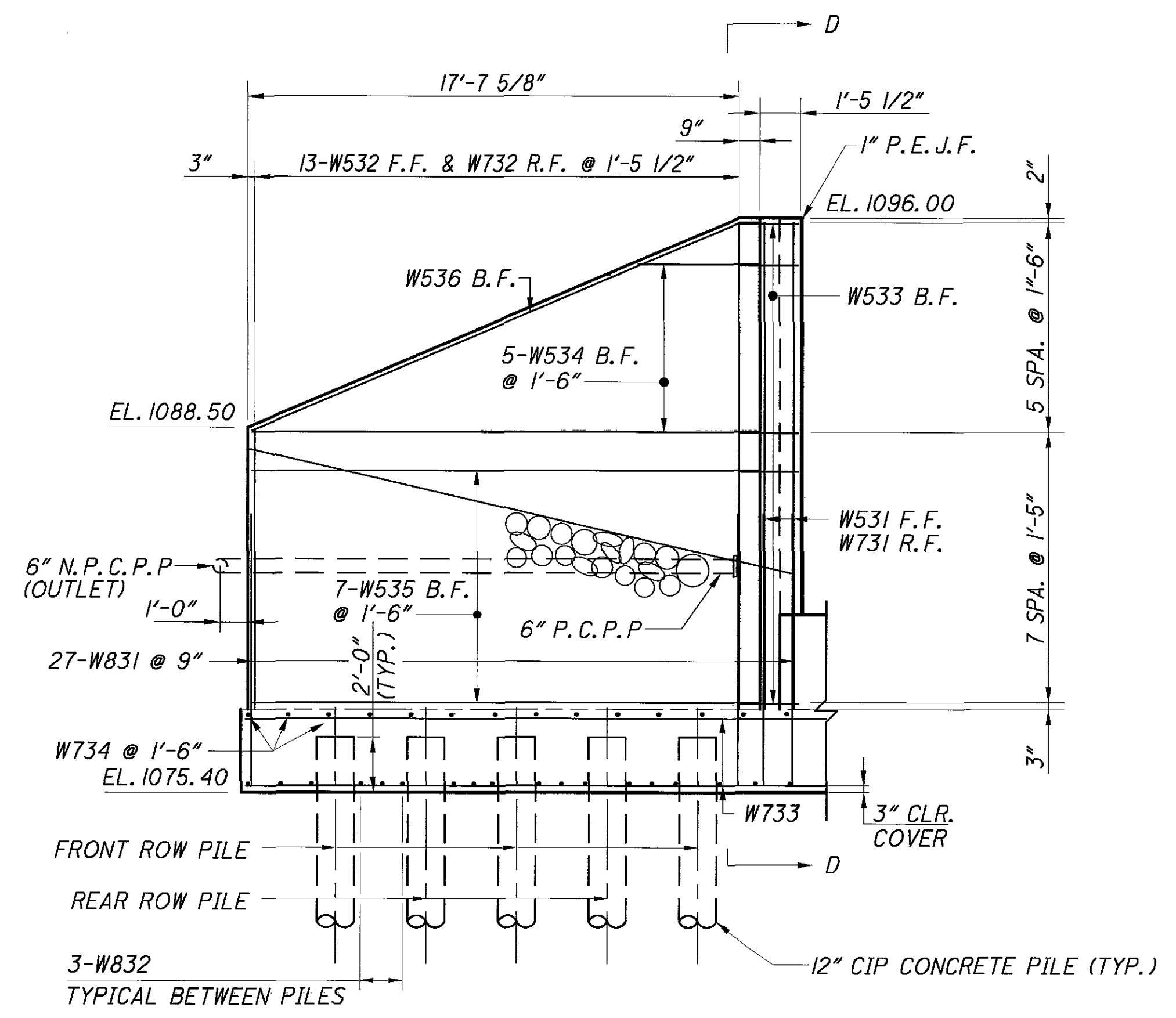
1. ITEM 518, POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN 2'-0" THICK SHALL BE PLACED BEHIND THE WINGWALLS ONLY AND SHALL EXTEND 12" BELOW THE EMBANKMENT SURFACE. GEOTEXTILE FABRIC SHALL BE PLACED BETWEEN THE POROUS BACKFILL AND REPLACED EXCAVATION ADJACENT TO THE STRUCTURE. IT SHALL TURN UNDER THE BOTTOM OF THE POROUS BACKFILL AND RETURN 6" ABOVE THE TOP ELEVATION OF THE WEEPHOLE.
- 1" PREFORMED EXPANSION JOINT FILLER SHALL BE EXTENDED FROM TOP OF FOOTING TO TOP OF WALL.
2. THE CONTRACTOR CAN OPT TO HAVE THE WINGWALLS PRECAST WITH THE ARCH SECTIONS. IN THIS CASE, THE CONTRACTOR SHALL INCLUDE THE PRECAST WINGWALL DESIGN DETAILS WITH THE SHOP DRAWINGS FOR THE ARCH SECTIONS FOR THE ENGINEER'S APPROVAL.



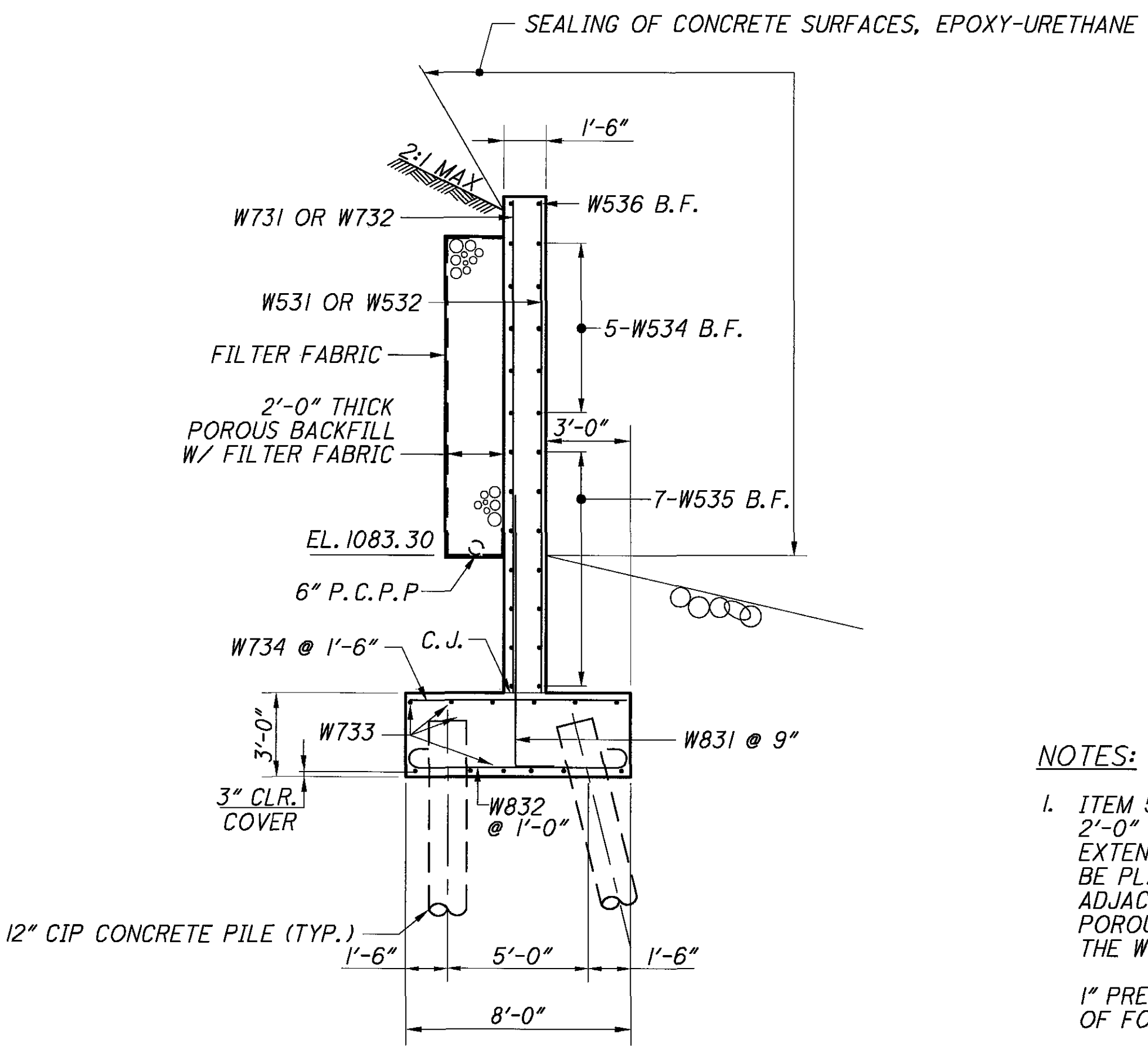
WINGWALL 2 ELEVATION



SECTION C-C



WINGWALL 3 ELEVATION



SECTION D-D

LEGEND
 F.F. - FRONT FACE
 R.F. - REAR FACE
 B.F. - BOTH FACES
 P.C.P.P. - PERFORATED CORRUGATED PLASTIC PIPE
 N.P.C.P.P. - NON-PERFORATED CORRUGATED PLASTIC PIPE
 C.J. - CONSTRUCTION JOINT

NOTES:

- ITEM 518, POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN 2'-0" THICK SHALL BE PLACED BEHIND THE WINGWALLS ONLY AND SHALL EXTEND 12" BELOW THE EMBANKMENT SURFACE. GEOTEXTILE FABRIC SHALL BE PLACED BETWEEN THE POROUS BACKFILL AND REPLACED EXCAVATION ADJACENT TO THE STRUCTURE. IT SHALL TURN UNDER THE BOTTOM OF THE POROUS BACKFILL AND RETURN 6" ABOVE THE TOP ELEVATION OF THE WEEPHOLE.
- 1" PREFORMED EXPANSION JOINT FILLER SHALL BE EXTENDED FROM TOP OF FOOTING TO TOP OF WALL.
- THE CONTRACTOR CAN OPT TO HAVE THE WINGWALLS PRECAST WITH THE ARCH SECTIONS. IN THIS CASE, THE CONTRACTOR SHALL INCLUDE THE PRECAST WINGWALL DESIGN DETAILS WITH THE SHOP DRAWINGS FOR THE ARCH SECTIONS FOR THE ENGINEER'S APPROVAL.

DESIGN AGENCY: COLUMBUS ENGINEERING CONSULTANTS, INC. 840 MICHIGAN AVENUE, COLUMBUS, OH 43261 TEL: 614/228-3500
 DATE: 06/05
 REVIEWED: JU
 DRAWN: CEC
 DESIGNED: JU
 CHECKED: YSJ
 STRUCTURE FILE NUMBER: 4900731
WINGWALL 2 & 3 REINFORCING DETAILS
 MAD-40-0.92
 PID 25722
 10 / 11
 45
 46

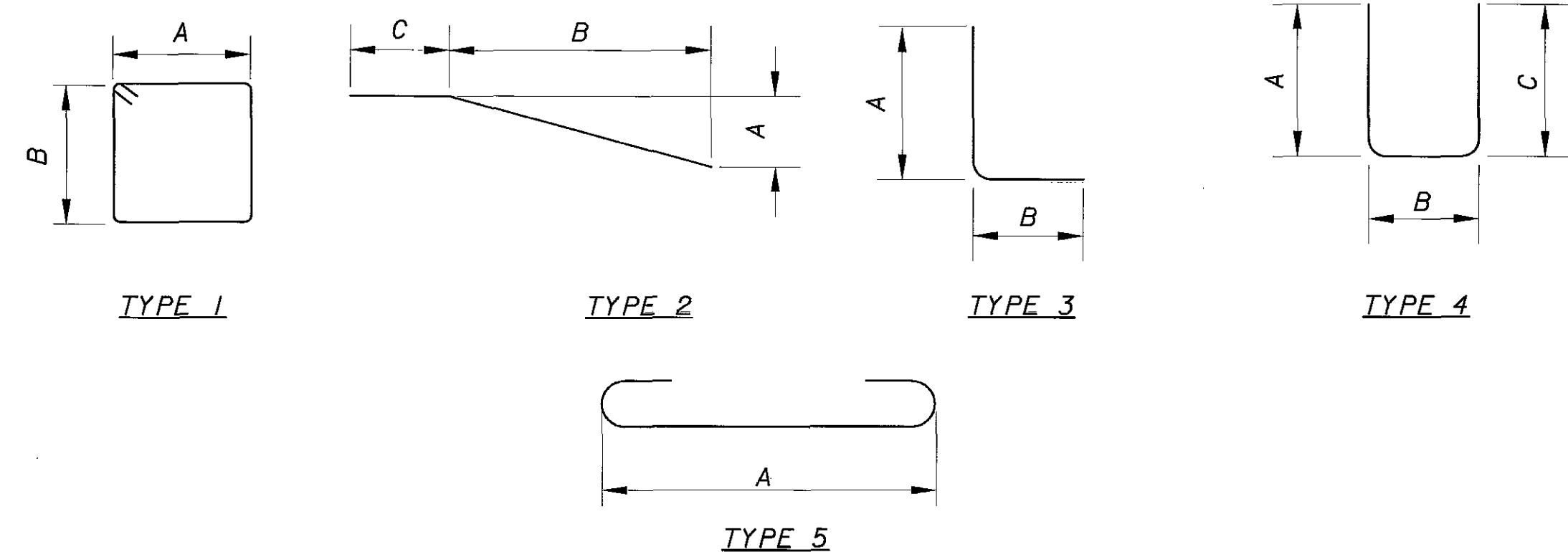
REINFORCING STEEL LIST

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	INCR.
PHASE I CONSTRUCTION								
WINGWALL 2								
W521	2	17'-5"	36	STR.				
W522	1	9'-11"	185	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W523	26	1'-11"	52	2	6"	6"	1'-3"	
W524	2	4'-0"	115	STR.				3'-6"
	S.O.	TO						
	5	18'-1"						
W525	14	18'-1"	264	STR.				
W526	2	19'-9"	41	2	7'-4"	17'-6"	9"	
W721	2	17'-5"	71	STR.				
W722	1	9'-11"	363	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W723	12	19'-5"	476	STR.				
W724	14	7'-8"	219	STR.				
W821	27	9'-10"	709	3	8'-9"	1'-4"		
W822	18	9'-4"	449	5	7'-6"			
SUBTOTAL = 2980 LBS.								
WINGWALL 3								
W531	2	17'-5"	36	STR.				
W532	1	9'-11"	185	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W533	26	1'-11"	52	2	6"	6"	1'-3"	
W534	2	4'-0"	115	STR.				3'-6"
	S.O.	TO						
	5	18'-1"						
W535	14	18'-1"	264	STR.				
W536	2	19'-9"	41	2	7'-4"	17'-6"	9"	
W731	2	17'-5"	71	STR.				
W732	1	9'-11"	363	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W733	12	19'-5"	476	STR.				
W734	14	7'-8"	219	STR.				
W831	27	9'-10"	709	3	8'-9"	1'-4"		
W832	18	9'-4"	449	5	7'-6"			
SUBTOTAL = 2980 LBS.								
INLET HEADWALL								
H501	17	7'-0"	124	4	3'-0"	1'-2"	3'-0"	
H502	2	9'-2"	186	4	4'-1"	1'-2"	4'-1"	1'-2"
	S.O.	TO			TO		TO	
	7	16'-4"			7'-8"		7'-8"	
H503	12	23'-8"	296	STR.				
H504	4	4'-1"	49	STR.				3'-7"
	S.O.	TO						
	2	7'-8"						
H505	8	10'-0"	83	STR.				

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	INCR.
*H601	31	4'-6"	210	STR.				
SUBTOTAL = 948 LBS.								
CULVERT FOOTING								
F401	40	8'-11"	239	1	2'-6"	2'-0"		
*F501	12	31'-9"	398	STR.				
F503	118	17'-2"	2113	1	2'-8"	5'-10"		
F504	12	31'-9"	398	STR.				
*F801	16	33'-1"	1413	STR.				
F804	16	33'-1"	1413	STR.				
F821	8	7'-9"	166	2	2'-2"	4'-4"	3'-1"	
SUBTOTAL = 6140 LBS.								
PHASE II CONSTRUCTION								
WINGWALL 1								
W511	2	17'-5"	36	STR.				
W512	1	9'-11"	185	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W513	26	1'-11"	52	2	6"	6"	1'-3"	
W514	2	4'-0"	115	STR.				3'-6"
	S.O.	TO						
	5	18'-1"						
W515	14	18'-1"	264	STR.				
W516	2	19'-9"	41	2	7'-4"	17'-6"	9"	
W711	2	17'-5"	71	STR.				
W712	1	9'-11"	363	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W713	12	19'-5"	476	STR.				
W714	14	7'-8"	219	STR.				
W811	27	9'-10"	709	3	8'-9"	1'-4"		
W812	18	9'-4"	449	5	7'-6"			
SUBTOTAL = 2980 LBS.								
WINGWALL 4								
W541	2	17'-5"	36	STR.				
W542	1	9'-11"	185	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W543	26	1'-11"	52	2	6"	6"	1'-3"	
W544	2	4'-0"	115	STR.				3'-6"
	S.O.	TO						
	5	18'-1"						
W545	14	18'-1"	264	STR.				
W546	2	19'-9"	41	2	7'-4"	17'-6"	9"	
W741	2	17'-5"	71	STR.				
W742	1	9'-11"	363	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	INCR.
W743	12	19'-5"	476	STR.				
W744	14	7'-8"	219	STR.				
W841	27	9'-10"	709	3	8'-9"	1'-4"		
W842	18	9'-4"	449	5	7'-6"			
SUBTOTAL = 2980 LBS.								
OUTLET HEADWALL								
H501	17	7'-0"	124	4	3'-0"	1'-2"	3'-0"	
H502	2	9'-2"	185	4	4'-1"	1'-2"	4'-1"	1'-2"
	S.O.	TO			TO		TO	
	7	16'-2"			7'-8"		7'-8"	
H503	12	23'-8"	296	STR.				
H504	4	4'-1"	49	STR.				3'-7"
	S.O.	TO						
	2	7'-8"						
H505	8	10'-0"	83	STR.				
H601	31	4'-6"	210	STR.				
SUBTOTAL = 948 LBS.								
CULVERT FOOTING								
F401	32	8'-11"	191	1	2'-6"	2'-0"		
*F502	12	25'-9"	322	STR.				
F503	94	17'-2"	1683	1	2'-8"	5'-10"		
F505	12	25'-9"	322	STR.				
*F802	16	27'-4"	1168	STR.				
F805	16	27'-4"	1168	STR.				
F811	8	7'-9"	166	2	2'-2"	4'-4"	3'-1"	
SUBTOTAL = 5020 LBS.								
GRAND TOTAL = 24,976 LBS.								

BENDING DIAGRAMS



THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED, AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, W601 IS A NO. 6 BAR. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED. R INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED. "STD." WRITTEN IN PLACE OF A DIMENSION INDICATES A STANDARD BEND AT THE END OF THE BAR.

ALL REINFORCING STEEL TO BE EPOXY COATED.

S.O. - SERIES OF

* REINFORCING STEEL WITH MECHANICAL CONNECTORS. SEE SHEET 6/11 FOR DETAILS.

DESIGN AGENCY: COLUMBUS ENGINEERING CONSULTANTS, INC. 840 MICHIGAN AVENUE, COLUMBUS, OH 43261 TEL: 614/298-5600

DATE: 06/05

REVIEWED: JJ

STRUCTURE FILE NUMBER: 4900731

DRAWN: CEC

DESIGNED: JJ

CHECKED: YSU

REINFORCING STEEL LIST

MAD-40-0-92
PID 25722

46

NOTES

APPLICATION: Nested Type 5 Guardrail with Tubular Backup is accepted to NCHRP 350 Test Level 3. The only Bridge Terminal Assembly that is permitted to be used with this system is detailed on SCD GR-3.4. This system cannot be used with any other BTA.

GALVANIZING: Rails, posts, base plates, bolts, nuts, washers and all tubular steel are to be galvanized as specified in CMS 711.02.

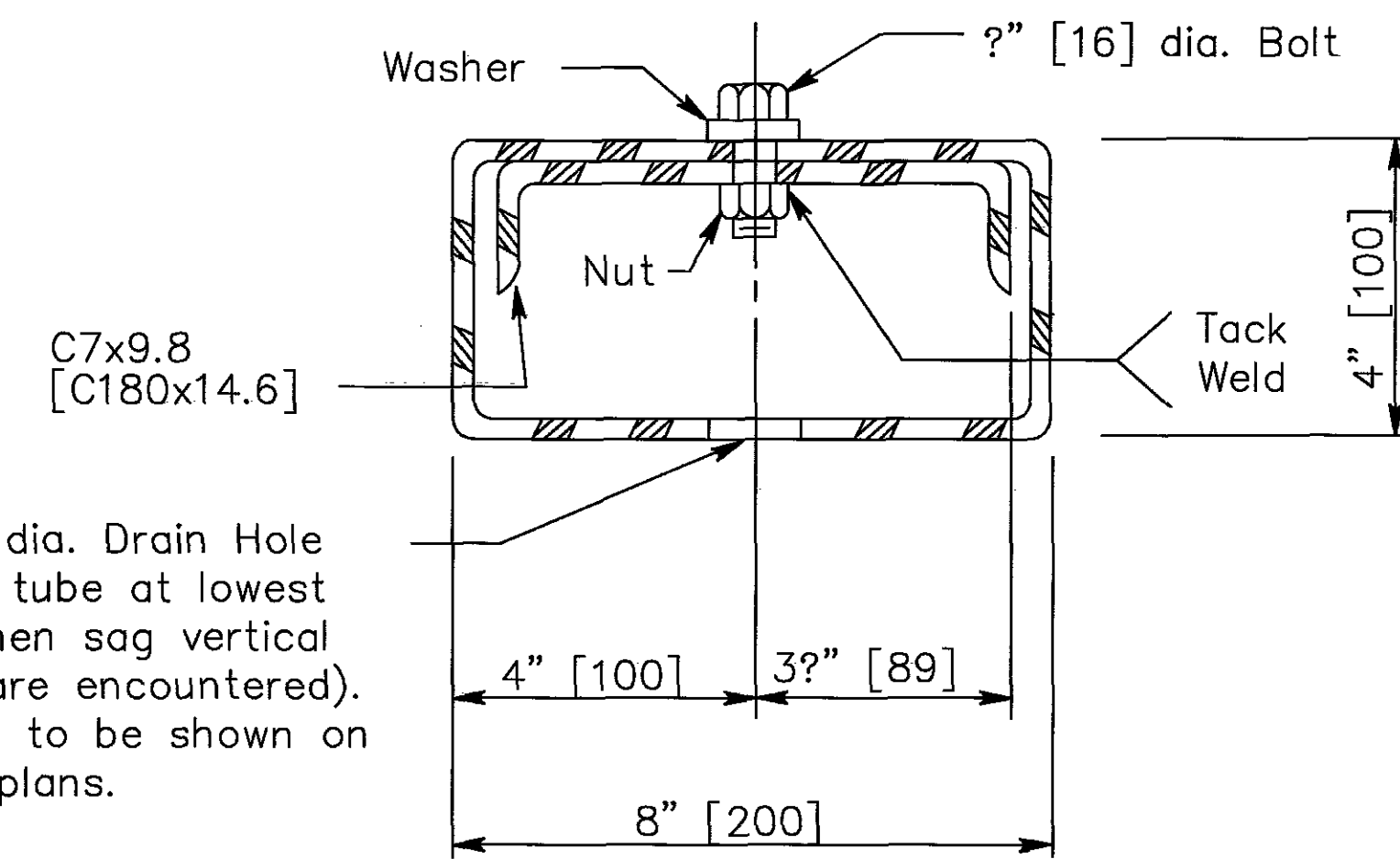
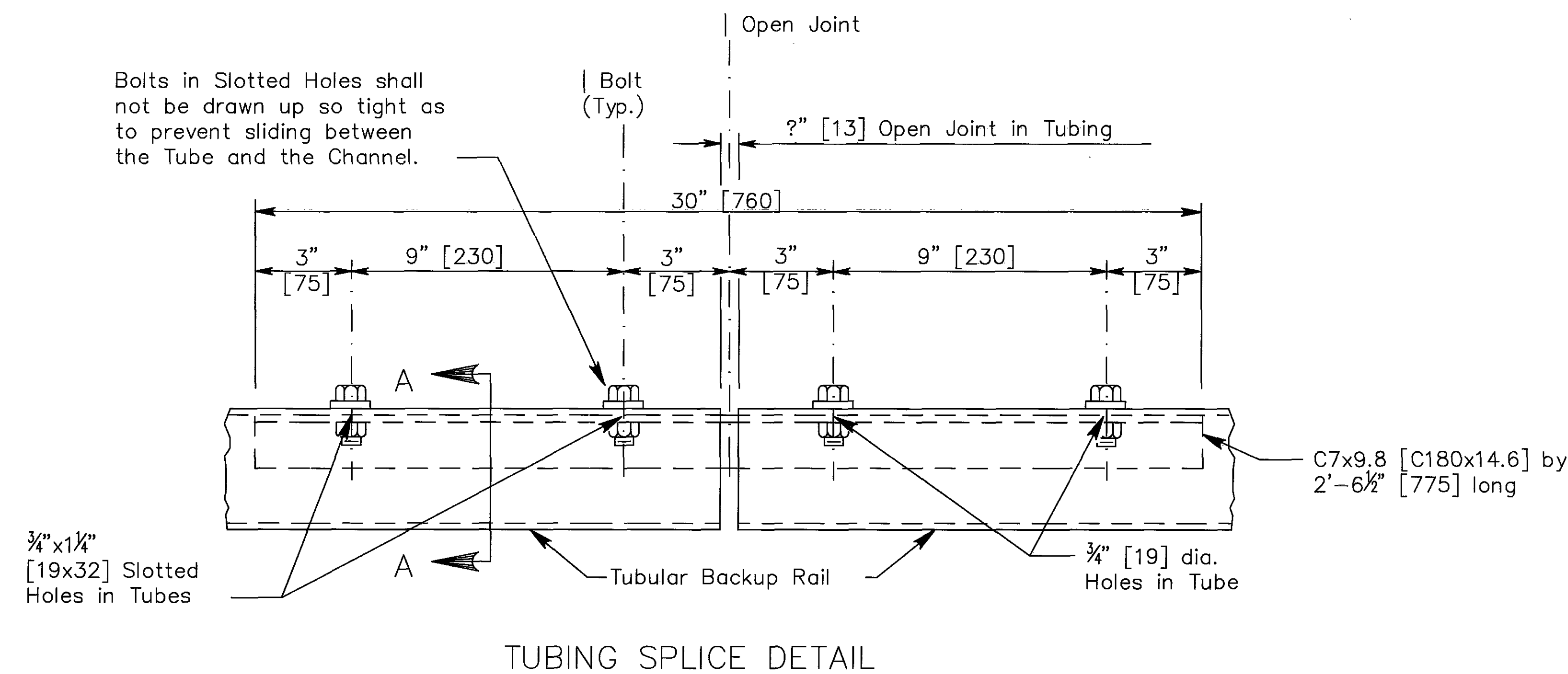
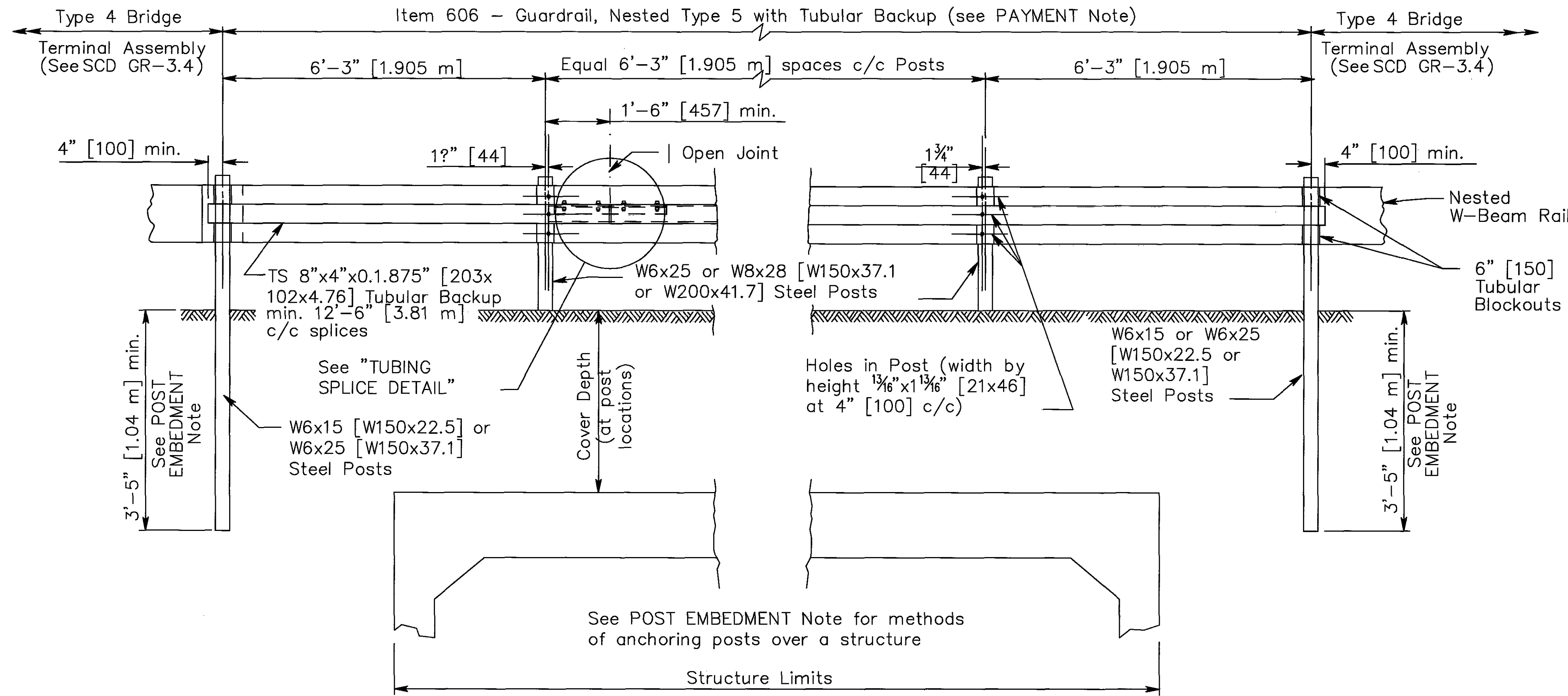
POST EMBEDMENT: Normal embedment depth is 3'-5" [1.04 m] (See SCD GR-1.1). For installation methods for posts of various cover over structures, see Sheet 2.

ANCHORING: Partial-depth anchoring is preferred to through-bolting. For partial depth anchoring use non-shrink, non-metallic grout as specified in CMS 705.20. Minimum embedment depths are 9" [225] for 7/8" [22] bolts and 10" [250] for 1 1/4" [32] bolts.

THROUGH-BOLTING: Drilling methods that cause spalling of the concrete where the bit passes through the underside of the slab is not permitted. In haunches 6:1 or flatter, use beveled plate washers on the bottom surface to compensate for the slope. Through-bolting is not permitted in haunch areas with a slope greater than 6:1.

SIDE-MOUNTED POST ANCHORAGES TO STRUCTURES: Install anchorages according to Structural Engineering's Standard Drawing DBR-2-73 and is paid under Item 517 - Railing.

PAYMENT: Item 606 - Guardrail, Nested Type 5 w/Tubular Backup is paid in Feet [Meters] for the length specified in the plans and shall include tubular backup as per Item 707.10, rails, posts and all other hardware, material and labor required to construct the guardrail as shown. The specified lengths should be for full W-Beam panels, i.e. evenly divisible by 12'-6" [3.81 m].



1" [25] dia. Drain Hole (only in tube at lowest point when sag vertical curves are encountered). Location to be shown on project plans.

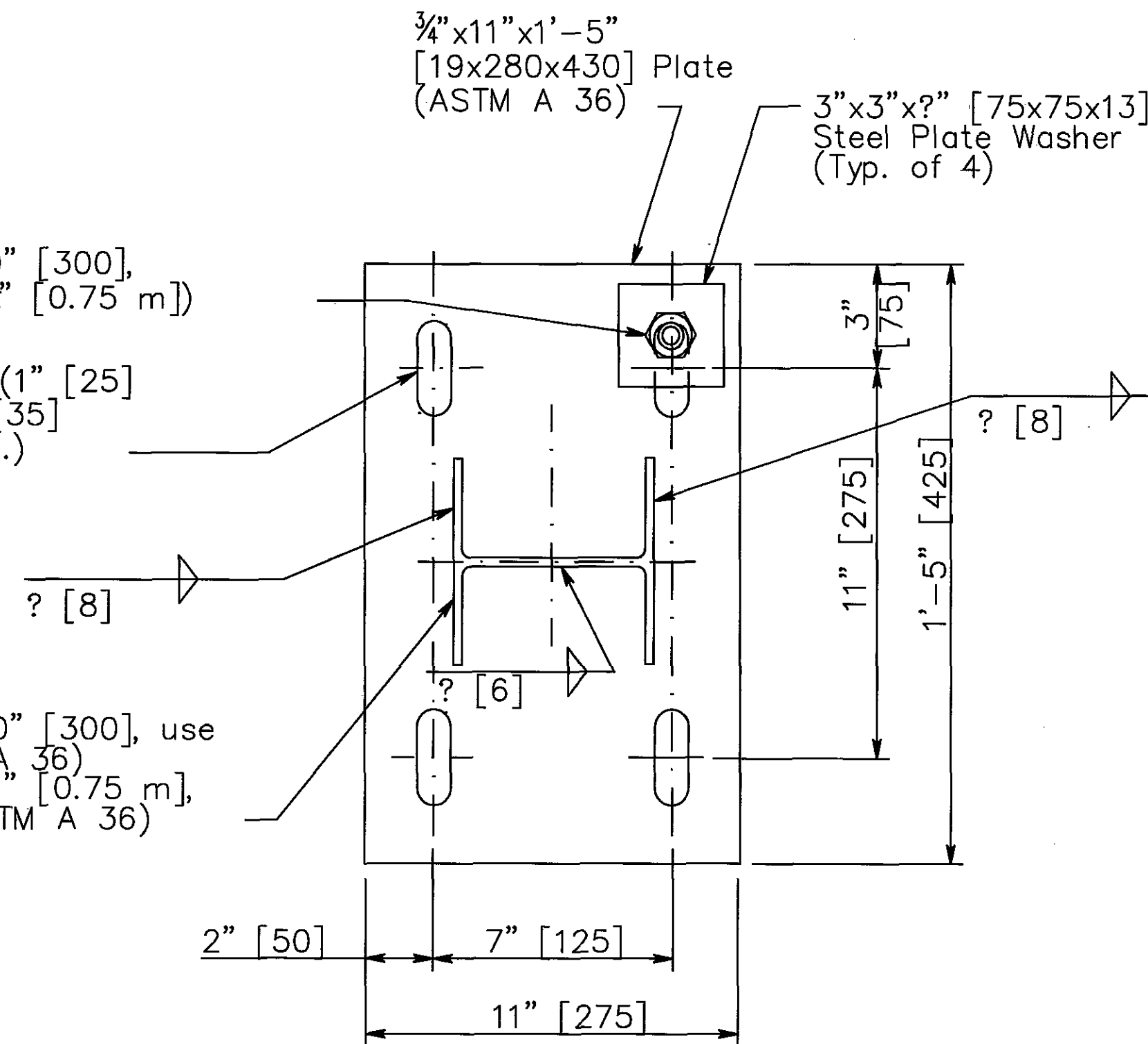
SECTION A-A

DATE	X-XX-XX
	ROADWAY DESIGN ENGINEER
OHIO DEPARTMENT OF TRANSPORTATION	STDS. ENGR. D. Focke
	ROADWAY ENGINEERING SERVICES
ROADWAY CONSTRUCTION DRAWING	NUMBER GR-2.2
	THIS DRAWING REPLACES GR-2.2 DATED 4-18-03.
458	46

ASTM A 325 Bolt with Nut (Typ. of 4)
 (?") [22] dia. for Cover Depth "A" 1'-0" [300],
 1?" [32] dia. for 1'-0" [300] "A" < 2'-6" [0.75 m]

3" [76] Slotted Hole x (1" [25]
 for 1/8" [22] Bolts, 1 1/8" [35]
 for 1/4" [32] Bolts) (Typ.)

For Cover Depth "A" 4'-0" [300], use
 W6x25 [W150x37.1] (ASTM A 36)
 For 1'-0" [300] < "A" < 2'-6" [0.75 m],
 use W8x28 [W200x41.7] (ASTM A 36)



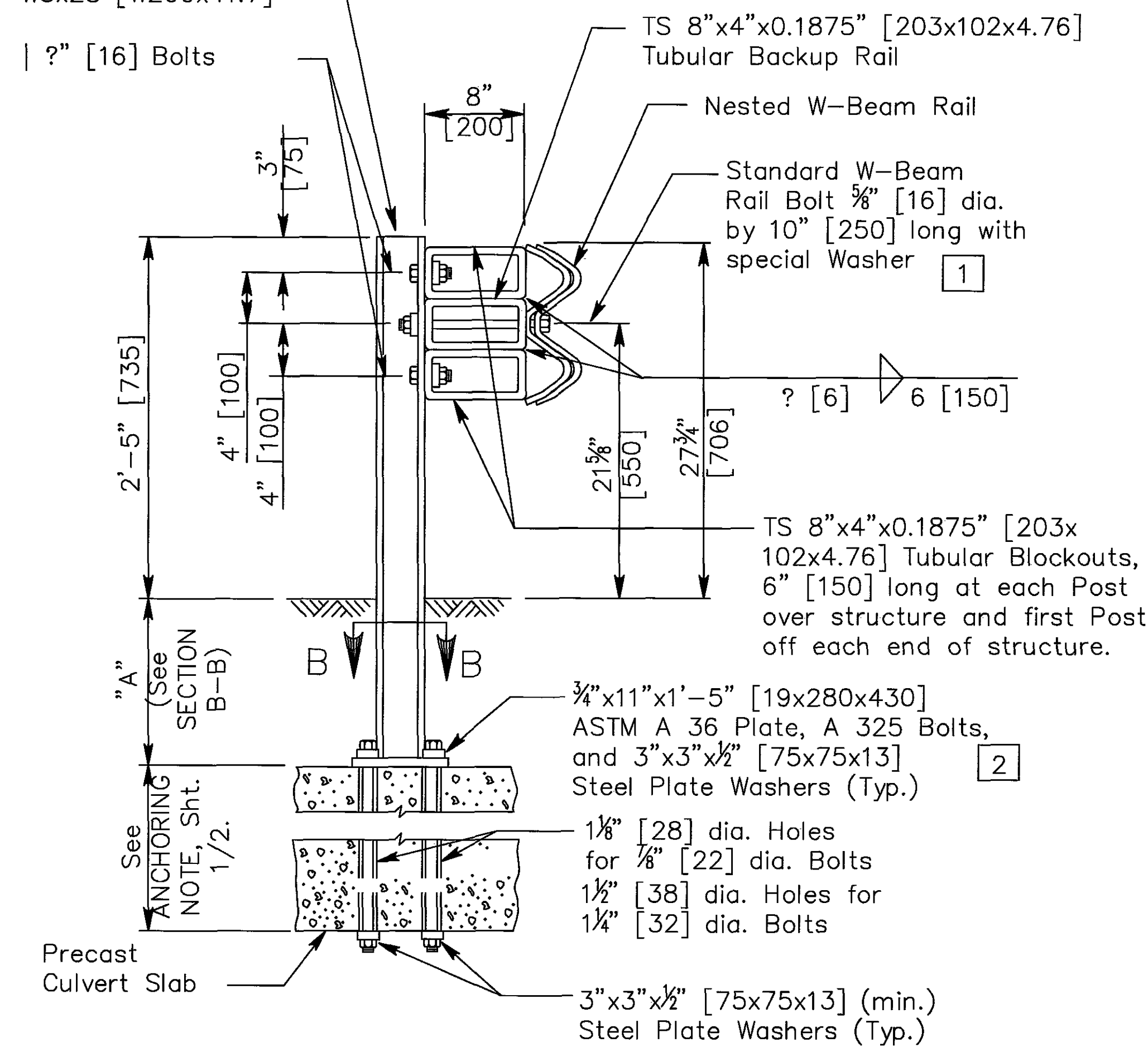
SECTION B-B

LEGEND

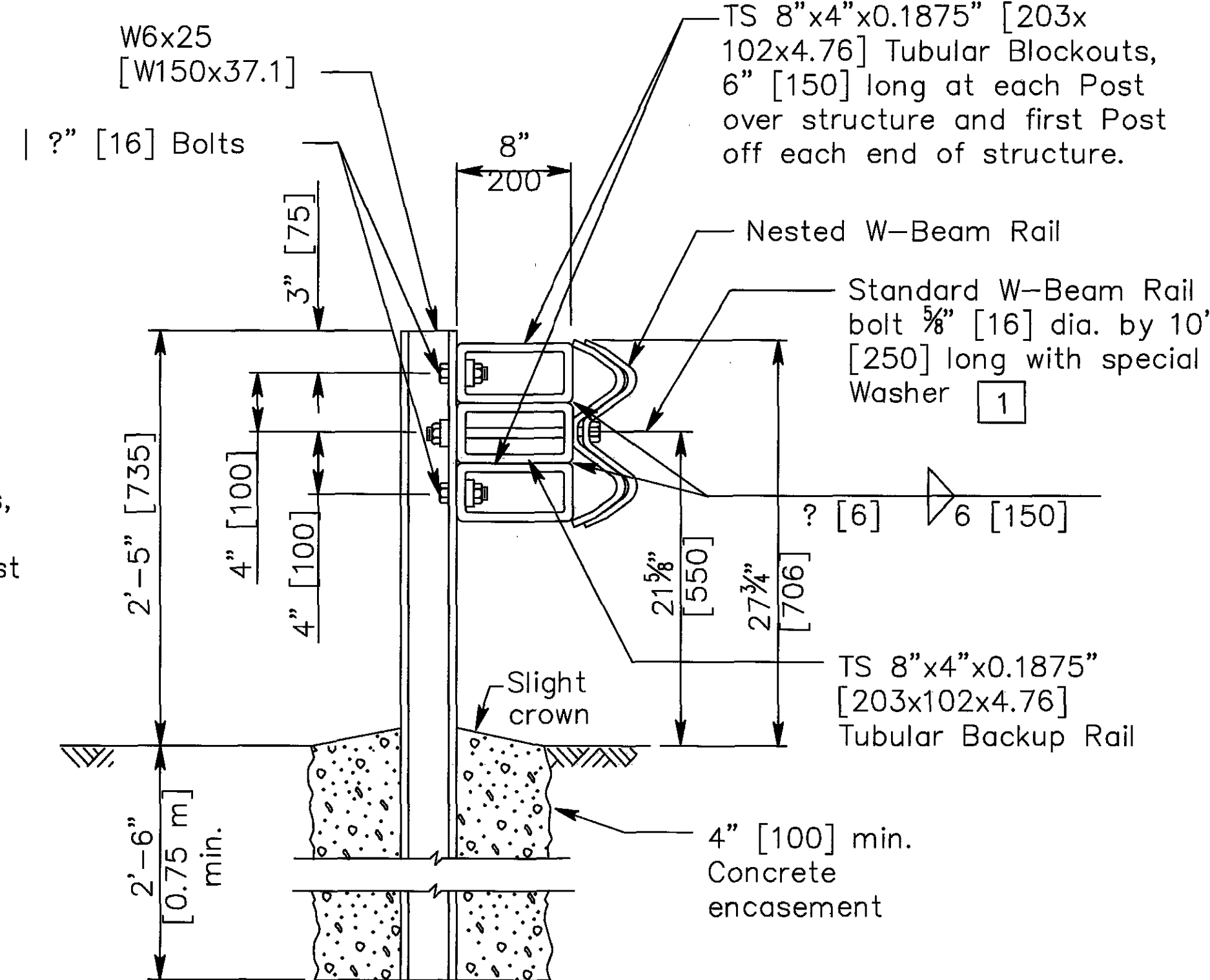
- 1 For details of special washer, see AASHTO M 180.
- 2 Embed plate in sealant as per Federal Specification TT-S-00230C, Type II.

W6x25 [W150x37.1] or
 W8x28 [W200x41.7]

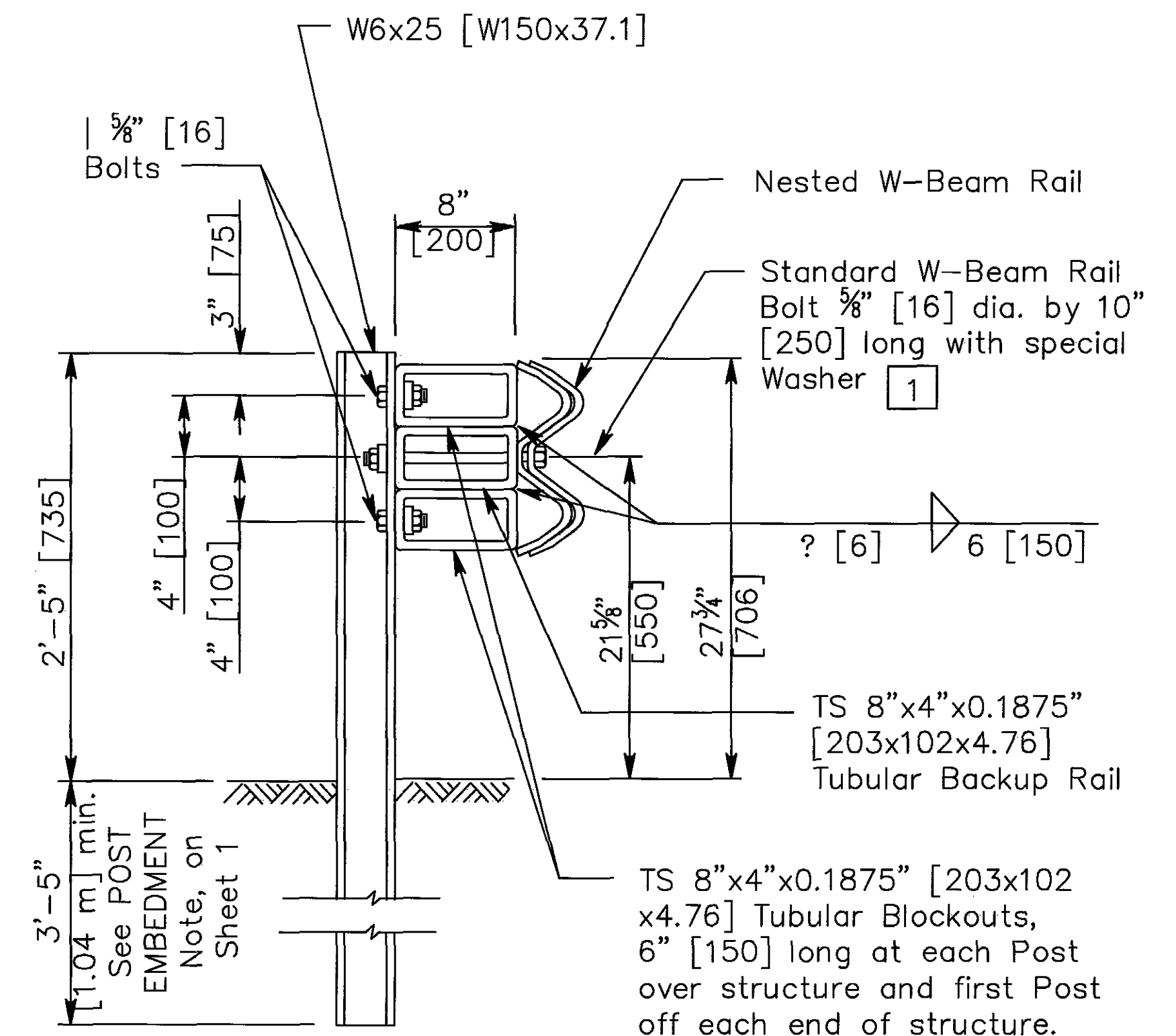
| ?" [16] Bolts



COVER DEPTH LESS THAN 2'-6" [0.75 m]



COVER DEPTH EQUAL TO OR GREATER THAN 2'-6" [0.75 m], BUT LESS THAN 3'-5" [1.04 m]



COVER DEPTH GREATER THAN OR EQUAL TO 3'-5" [1.04 m]

METHODS FOR ANCHORING POSTS

THIS DRAWING REPLACES GR-2.2 DATED 4-18-03.

NUMBER
 GR-2.2

STANDARD ROADWAY CONSTRUCTION DRAWING
 NESTED TYPE 5 GUARDRAIL
 WITH TUBULAR BACKUP

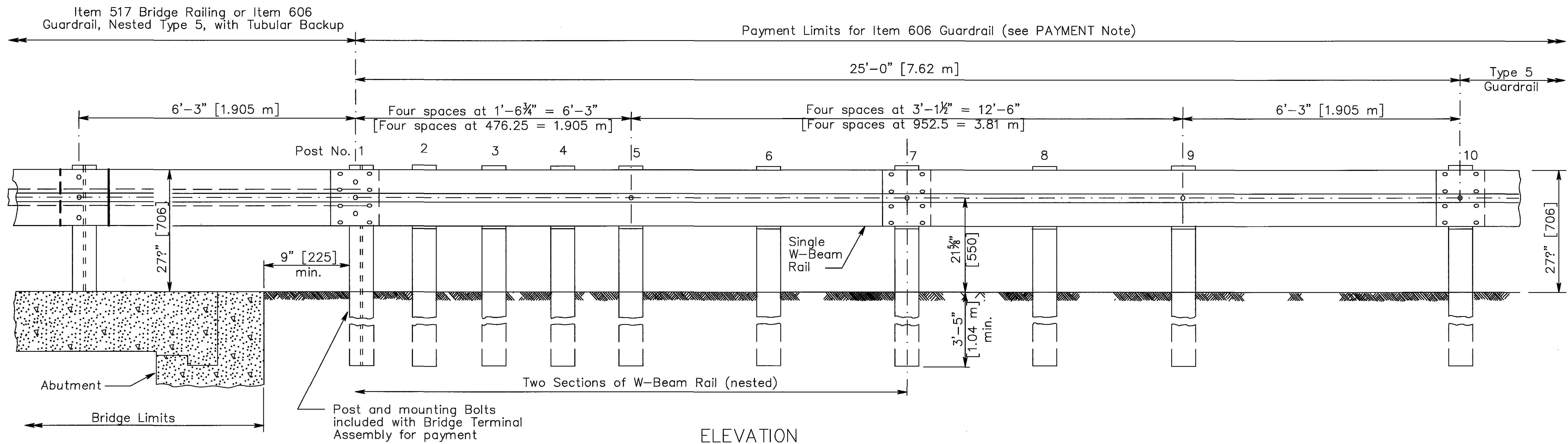
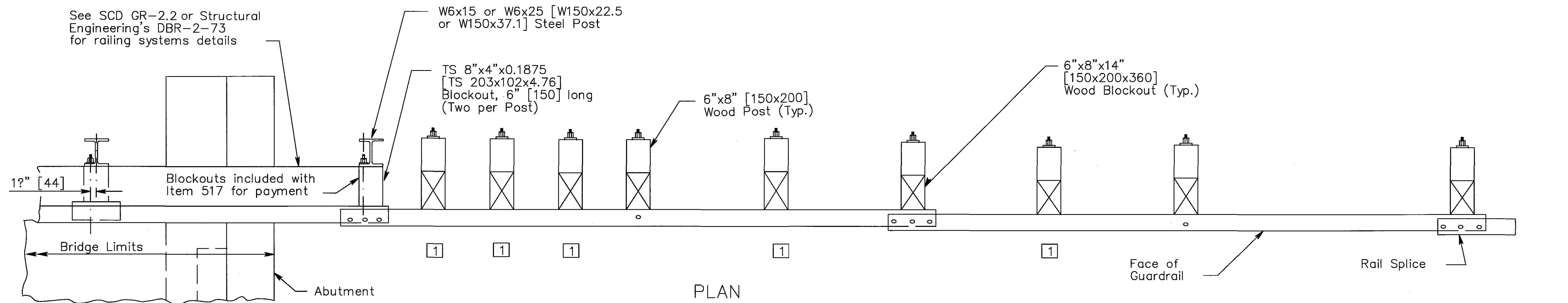
ROADWAY
 ENGINEERING
 SERVICES

All metric dimensions
 (in brackets []) are
 in millimeters unless
 otherwise noted.

STDs. ENGR.
 D. Focke

OHIO DEPARTMENT OF TRANSPORTATION
 ROADWAY DESIGN ENGINEER

X-XX-XX
 DATE



NOTES

GENERAL: For additional details, see SCD GR-1.1.

APPLICATION: The Type 4 Bridge Terminal Assembly shall connect Type 5 Guardrail runs to Type 5 Guardrail with Tubular Backup or to Deep Beam Bridge Guardrail (as shown on Structural Engineering SCD DBR-2-73). Do not use on the NHS.

DETAIL INFORMATION: The first post off the bridge shall be steel (W6x15 or W6x25 [W150x22.5 or W150x37.1]). All holes in the off-structure end of the approach panel rail section spanning the abutment are slotted 1/4"x2 1/2" [19x64]. Tighten the bolts as specified for expansion joints in Item 606.05.

POSTS: Posts may be set in drilled holes or driven to grade. See SCD GR-1.1 for additional Post embedment details. Guardrail is not attached to certain posts (see LEGEND).

WOOD POSTS - Use square sawed pressure treated wood as specified in CMS 710.14 and fabricated with square ends. Bore bolt holes and trim the tops of posts, if required, after the posts are set.

STEEL POSTS - are allowed as an alternate. Use W6x9 [W150x13.5] or W6x8.6 [W150x12.6] in lieu of the 6"x8" [150x200] wood post. Use same post material throughout assembly.

BLOCKOUTS: Use wood blockouts only. Steel or plastic blockouts are not permitted. Notched wood blockouts are used with steel posts.

FLARED GUARDRAIL: Start Standard Guardrail Flares as shown on SCD GR-5.1 at or beyond Post No. 10; however, the flare may begin at Post No. 7.

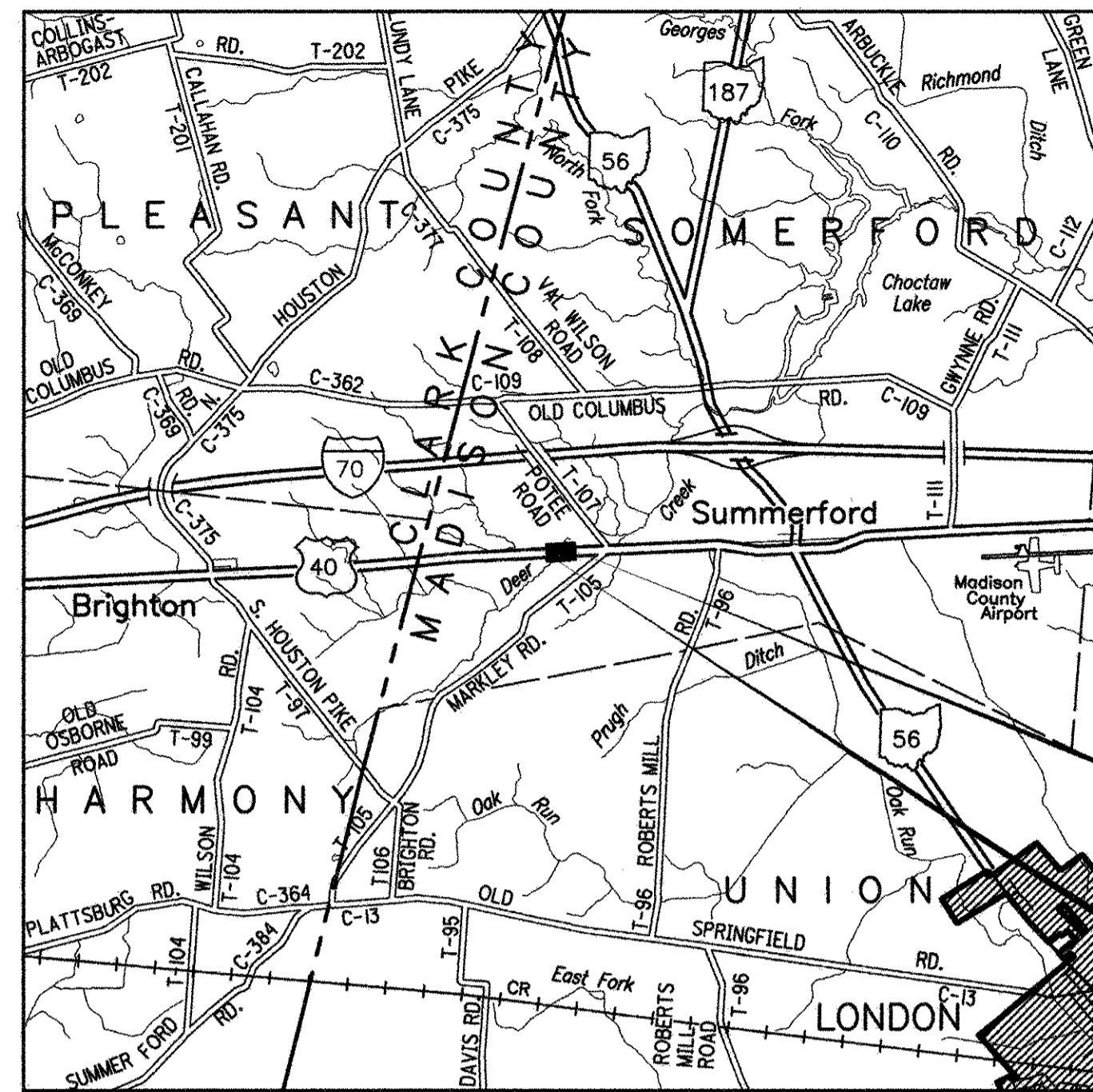
PAYMENT: Item 606 - Bridge Terminal Assembly, Type 4, Each, includes the cost of extra components, in excess of normal guardrail, for additional posts and other hardware. The TS 8"x4" [200x100] spacers and tubular backup rail extending to the first post off the bridge is included with Item 517 - Railing, or Item 606 - Guardrail, Nested Type 5, with Tubular Backup, for payment.

LEGEND

- ① Guardrail is not attached to posts at Posts 2, 3, 4, 6, and 8. Blockout is fastened to post with standard Post Bolt.

THIS DRAWING REPLACES GR-3.4 DATED 4-18-03.

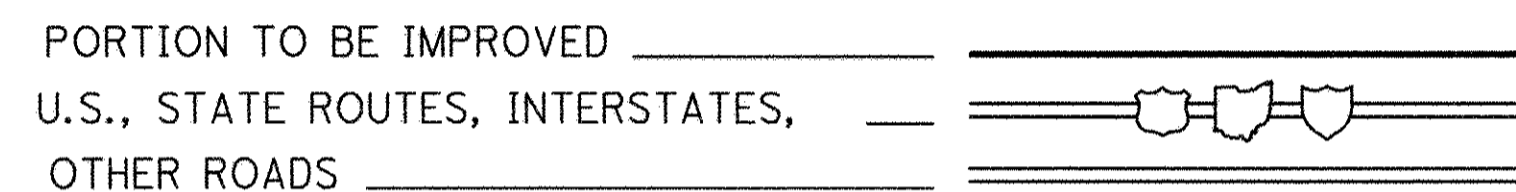
NUMBER GR-3.4	STANDARD ROADWAY CONSTRUCTION DRAWING BRIDGE TERMINAL ASSEMBLY, TYPE 4	ROADWAY DESIGN ENGINEER D. Focke	OHIO DEPARTMENT OF TRANSPORTATION DATE X-XX-XX
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LOCATION MAP

LATITUDE: N 39° 55' 59" LONGITUDE: W 83° 31' 15"

SCALE IN MILES



DESIGN DESIGNATION

CURRENT ADT (2006)	3970
DESIGN ADT (2026)	6040
DESIGN HOURLY VOLUME (2026)	604
DIRECTIONAL DISTRIBUTION TRUCKS (24 HOUR B&C)	60%
DESIGN SPEED	4%
LEGAL SPEED	60 mph
DESIGN FUNCTIONAL CLASSIFICATION	55 mph
RURAL MAJOR COLLECTOR	

UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
CALL ...800-362-2764
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS MUST
BE CALLED DIRECTLY

DESIGN EXCEPTIONS

NONE REQUIRED

PLANS PREPARED BY:
COLUMBUS ENGINEERING CONSULTANTS INCORPORATED
CONSULTING CIVIL ENGINEERS AND SURVEYORS
840 MICHIGAN AVENUE
COLUMBUS, OHIO 43215
(614) 228-3500



E-44907 12/27/05
No. Date

Jack Jang
Registered Engineer

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
MAD - 40 - 0.92
(NATIONAL ROAD)
SOMERFORD TOWNSHIP
MADISON COUNTY

PROJECT DESCRIPTION:

IMPROVEMENT OF 0.06 MILE OF U.S. 40 (NATIONAL ROAD) BY REPLACEMENT OF TWO STRUCTURES (MAD-40-0092) OVER DEER CREEK WITH PRECAST CONCRETE ARCH, INCLUDING APPROACH RECONSTRUCTION.

PROJECT EDA	= 3.4	ACRES
CONTRACTOR EDA	= 0.3	ACRES
NOI EDA	= 4.9	ACRES

2005 SPECIFICATIONS

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

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

INDEX OF SHEETS

TITLE SHEET	_____	1
TYPICAL SECTIONS	_____	2-3
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MAINTENANCE OF TRAFFIC NOTES	_____	5-6
MAINTENANCE OF TRAFFIC	_____	7-23
GENERAL SUMMARY	_____	24
SUBSUMMARIES AND CALCULATIONS	_____	25
PROJECT SITE PLAN	_____	26
PLAN AND PROFILES	_____	27-28
CROSS SECTIONS	_____	29-34
PAVEMENT MARKING & SIGNING PLAN	_____	35
STRUCTURE DETAILS	_____	36-46, 43A, 45A, 45B, 45C

PLANS CERTIFIED BY:

Holly G. Jones 12-28-05
NAME DATE
OHIO DEPARTMENT OF TRANSPORTATION, DISTRICT 6

APPROVED *Jack R. Marchbanks*
DATE 12-28-2005
DISTRICT DEPUTY DIRECTOR

APPROVED _____
DATE _____
DIRECTOR, DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS				SUPPLEMENTAL SPECIFICATIONS	
BP-3.1	7/16/04	MT-35.10	4/20/01	PCB-91	7/19/02
		MT-95.40	7/16/04	SS 800	1/20/06
		MT-95.70	4/19/02	SS 802	4/15/05
GR-1.1	7/16/04	MT-99.31	4/19/02	SS 832	4/17/04
GR-2.1	1/16/04	MT-100.00	4/19/02	SS 833	2/12/03
GR-2.2	4/18/03	MT-101.60	10/18/02		
GR-3.4	4/18/03	MT-101.70	10/18/02		
GR-3.6	1/16/03	MT-105.10	10/18/02		
GR-4.2	4/15/05	MT-105.11	10/18/02		
GR-5.2	1/16/03				
RM-4.6	1/16/04				
		TC-41.10	1/19/01		
CB-3.3	7/15/05	TC-42.20	7/16/04		
		TC-52.10	4/20/01		
DM-1.1	10/20/05	TC-52.20	4/20/01		
DM-1.2	10/20/05	TC-65.10	1/21/05		
DM-1.4	1/21/05	TC-65.11	1/21/05		
DM-4.4	7/19/02	TC-71.10	1/21/05		
		TC-73.10	1/19/01		
				NWP#3	11/23/05

SPECIAL PROVISIONS

NWP#3 11/23/05

FEDERAL PROJECT NO. E051(243)
PID NO. 25722
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT NONE
MAD - 40 - 0.92
46

GENERAL NOTES

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:

GAS: MARATHON ASHLAND PETROLEUM LLC 359 SOUTH MAIN STREET FINDLAY, OH 45840-3295 PHONE: (419)-422-2121	PHONE: SBC INCORPORATED 111 N. FOURTH ST. 8TH FLOOR COLUMBUS, OHIO 43215 PHONE: (614)-223-7162
---	--

ELECTRIC: OHIO EDISON
 420 SOUTH YORK ST.
 SPRINGFIELD, OHIO 45505
 PHONE: 1-800-633-4766

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 COORDINATES ARE GRID OHIO SOUTH NAD 1986 (ODOT V.R.S. AND GEOD 99) ELEVATION FOR CLARK COUNTY FROM GPS OBSERVATION.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS SHALL BE PROVIDED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

CLEARING AND GRUBBING

REMOVE ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS 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
	0	3	3

CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL

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

INDIANA BAT HABITAT

CLEARING OF ANY TREES THAT HAVE SUITABLE SUMMER BROOD REARING OR ROOSTING HABITAT FOR THE FEDERALLY ENDANGERED INDIANA BAT (LIVING OR STANDING DEAD TREES OR SNAGS WITH EXFOLIATING, PEELING, OR LOOSE BARK, SPLIT TRUNKS AND/OR BRANCHES, OR CAVITIES), SHALL OCCUR ONLY DURING THE PERIOD BEFORE APRIL 15 AND AFTER SEPTEMBER 15, WHEN THIS SPECIES WOULD NOT BE USING SUCH HABITAT.

WATER QUALITY PROTECTION

TO MINIMIZE POTENTIAL TO CONTAMINATE THE PUBLIC DRINKING WATER SUPPLY, PROJECT-RELATED REFUELING AND MAINTENANCE ACTIVITIES SHALL BE PERFORMED IN AN ENVIRONMENTALLY RESPONSIBLE MANNER. THE CONTRACTOR IS RESPONSIBLE FOR THE CLEAN UP AND REMEDIATION OF ANY SPILLS.

NO TOXIC OR HAZARDOUS MATERIALS SUCH AS SEALANTS, PAINT, SOLVENTS, CLEANING AGENTS, EARTHEN MATERIALS, WASTE-WATER, FUELS OR DEBRIS OF ANY KIND SHALL BE DISCHARGED TO ANY STREAMS, DRAINAGE COURSES, OR BODIES OF WATER.

THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT LIQUIDS USED TO REPAIR, CLEAN, SEAL, OR TREAT ANY BRIDGE STRUCTURE (I.E. PAINT, SEALER, SOLVENT) FROM ENTERING STREAMS, WETLANDS OR OTHER WATERS OF THE UNITED STATES AND TAKE THE APPROPRIATE ACTIONS IN THE EVENT OF A RELEASE.

ITEM 659 - SEEDING AND MULCHING

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

659, TOPSOIL	239	CU. YD.
659, SEEDING AND MULCHING	2,154	SQ. YD.
659, COMMERCIAL FERTILIZER	0.29	TON
659, LIME	0.45	ACRE
659, WATER	12	M GAL.

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

EROSION CONTROL

ITEM 601 HAS BEEN PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE ANY OF THIS ITEM AND TURF OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE 660. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES OF THIS ITEM WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION. IN ADDITION, THIS ITEM SHALL MEET THE REQUIREMENT OF 108.04.

FARM DRAINS

ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS, AND WHICH CROSS THE ROADWAY, SHALL BE REPLACED WITHIN THE RIGHT-OF-WAY OR CONSTRUCTION LIMITS BY ITEM 603 CONDUIT, TYPE B, ONE COMMERCIAL SIZE LARGER THAN THE EXISTING CONDUIT.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS, WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF ROADWAY DITCHES, SHALL BE OUTLETTED INTO THE ROADWAY DITCH BY 603 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE 1 FOOT ABOVE THE FLOW LINE ELEVATION OF THE DITCH. LATERAL FIELD TILES WHICH CROSS THE ROADWAY SHALL BE INTERCEPTED BY 603, TYPE E CONDUIT, AND CARRIED IN A LONGITUDINAL DIRECTION TO AN ADEQUATE OUTLET OR ROADWAY CROSSING.

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

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

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

603, 6" CONDUIT TYPE B	50 FT.
603, 6" CONDUIT TYPE E	50 FT.
603, 6" CONDUIT TYPE F	50 FT.

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

THE RATE OF APPLICATION OF THE 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT AS AN AVERAGE APPLICATION RATE OF:

407, TACK COAT FOR INTERMEDIATE COURSE 0.04 GAL. PER SQUARE YARD

ITEM 203 - EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION

IF UNSUITABLE FOUNDATION SOILS ARE ENCOUNTERED IN THE AREAS OF THE PROPOSED ROAD BED, THEY SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL MEETING THE REQUIREMENTS OF 203.08. THE LOCATIONS AND DIMENSIONS WILL BE AS DETERMINED BY THE ENGINEER.

203, 570 CU. YD. EMBANKMENT
 203, 1,465 CU. YD. EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION

ITEM 203 GRANULAR MATERIAL, TYPE B, AS PER PLAN

NO BACKFILL SHALL BE PLACED AGAINST ANY STRUCTURAL ELEMENTS UNTIL THEY HAVE BEEN APPROVED BY THE ENGINEER.

BACKFILL AGAINST A WATERPROOFED SURFACE SHALL BE PLACED CAREFULLY TO AVOID DAMAGE TO THE WATERPROOFING MATERIAL.

MECHANICAL TAMPERS OR APPROVED COMPACTING EQUIPMENT SHALL BE USED TO COMPACT ALL BACKFILL AND EMBANKMENT IMMEDIATELY ADJACENT TO EACH SIDE AND OVER THE TOP OF EACH BRIDGE UNIT UNTIL IT IS COVERED TO A MINIMUM DEPTH OF ONE FOOT, UNLESS THE DESIGN FILL HEIGHT IS LESS THAN 1'-0". THE BACKFILL WITHIN THE CRITICAL BACKFILL ZONE (SHOWN IN THE DIAGRAM ON SHEET 37) SHALL BE PLACED IN LIFTS OF SIX INCHES OR LESS (LOOSE DEPTH). HEAVY COMPACTION EQUIPMENT SHALL NOT BE OPERATED IN THIS AREA OR OVER THE BRIDGE UNTIL IT IS COVERED TO A DEPTH OF ONE FOOT, UNLESS THE DESIGN FILL IS LESS THAN 1'-0".

LIGHTWEIGHT DOZERS AND GRADERS MAY BE OPERATED OVER BRIDGE UNITS HAVING ONE FOOT OF COMPACTED COVER, BUT HEAVY EARTH MOVING EQUIPMENT (LARGER THAN A D-4 DOZER WEIGHING IN EXCESS OF 12 TONS AND HAVING TRACK PRESSURES OF EIGHT PSI OR GREATER) SHALL REQUIRE TWO FEET OF COVER UNLESS THE DESIGN COVER IS LESS THAN TWO FEET. IN NO CASE SHALL EQUIPMENT OPERATING IN EXCESS OF THE DESIGN LOAD (HS25) BE PERMITTED OVER THE BRIDGE UNITS UNLESS APPROVED BY THE ARCH SECTION MANUFACTURER.

ANY ADDITIONAL FILL AND SUBSEQUENT EXCAVATION REQUIRED TO PROVIDE THIS MINIMUM COVER SHALL BE MADE AT NO ADDITIONAL COST TO THE PROJECT.

AS A PRECAUTION AGAINST INTRODUCING UNBALANCED STRESSES IN THE BRIDGE, WHEN PLACING BACKFILL AT NO TIME SHALL THE DIFFERENCE BETWEEN THE HEIGHTS OF FILL ON OPPOSITE SIDES OF THE BRIDGE EXCEED 24".

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE (FOR ADDITIONAL DETAILS SEE SHEET 37):

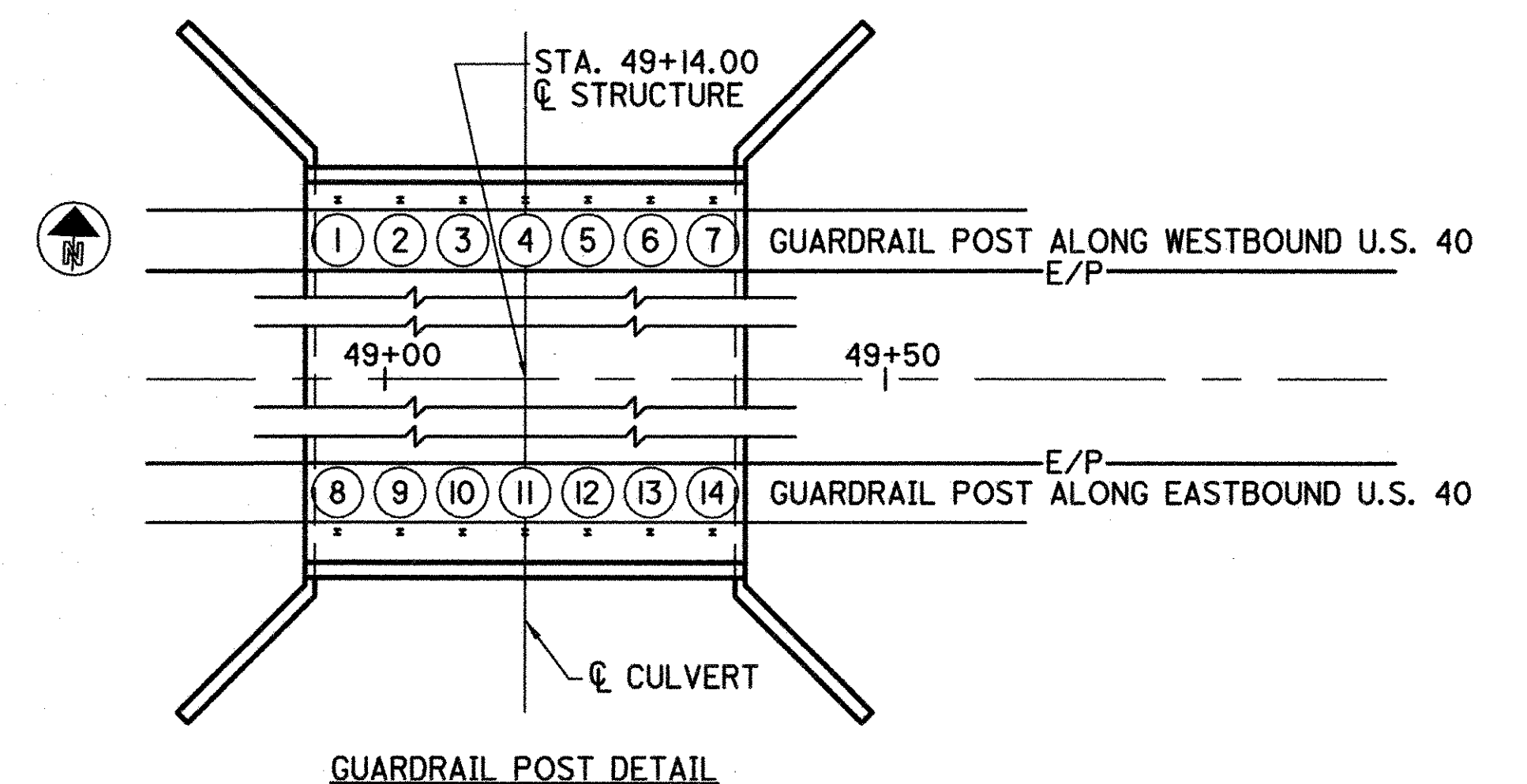
203, GRANULAR MATERIAL, TYPE B, AS PER PLAN 1,045 CU. YD.

CONSTRUCTION NOISE

OPERATION OF CONSTRUCTION EQUIPMENT WILL CONFORM TO LOCAL NOISE ORDINANCES.

ITEM 606 GUARDRAIL, TYPE 5 WITH TUBULAR BACKUP, AS PER PLAN

REFER TO SHEETS 45A, 45B AND 45C OF 46 FOR ADDITIONAL DETAILS. POST NUMBERS 2, 3, 5, 6, 9, 10, 12 AND 13 SHALL USE CONCRETE ENCASEMENT ANCHORING. POST NUMBERS 4 AND 11 SHALL USE PARTIAL DEPTH ANCHORING WITH NON-SHRINK, NON METALLIC GROUT AS SPECIFIED IN CMS 705.02. NO THROUGH-BOLT ANCHORING SHALL BE USED.



CALC. BY: EW
CHK. BY: TH

GENERAL NOTES

MAD - 40 - 0.92

4
46

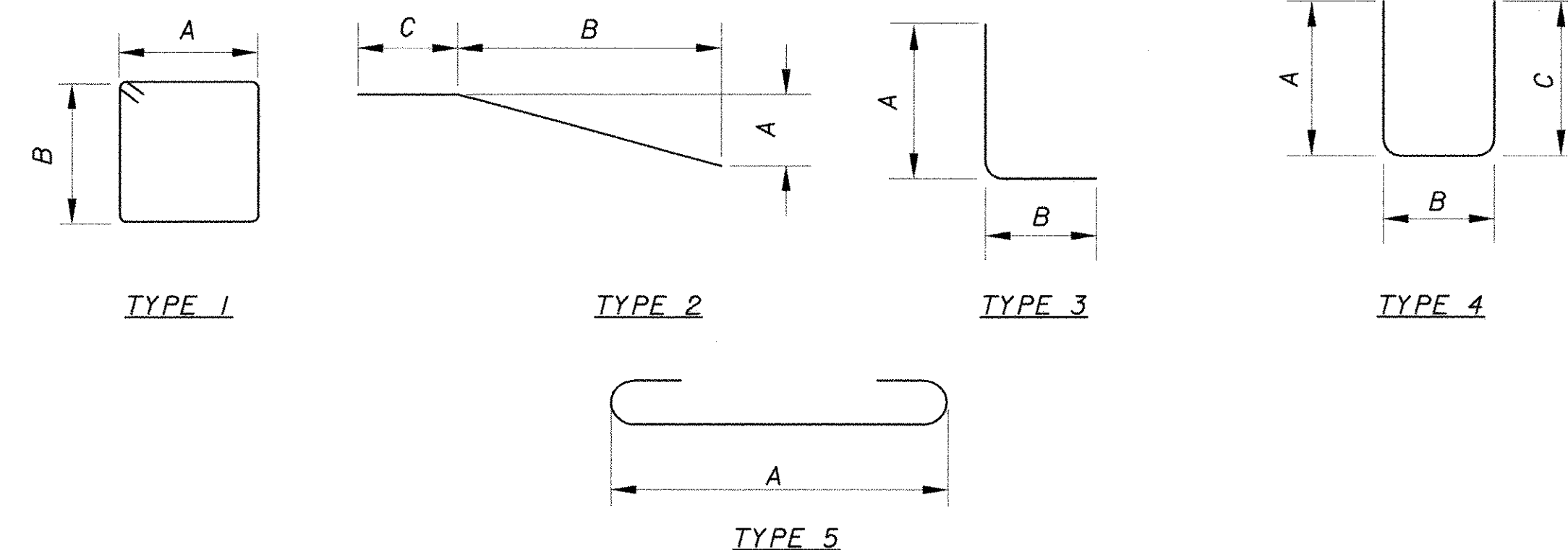
REINFORCING STEEL LIST

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	INCR.
PHASE I CONSTRUCTION								
WINGWALL 2								
W521	2	17'-5"	36	STR.				
W522	1	9'-11"	185	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W523	26	1'-11"	52	2	6"	6"	1'-3"	
W524	2	4'-0"	115	STR.				3'-6"
	S.O.	TO						
	5	18'-1"						
W525	14	18'-1"	264	STR.				
W526	2	19'-9"	41	2	7'-4"	17'-6"	9"	
W721	2	17'-5"	71	STR.				
W722	1	9'-11"	363	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W723	12	19'-5"	476	STR.				
W724	14	7'-8"	219	STR.				
W821	27	9'-10"	709	3	8'-9"	1'-4"		
W822	18	9'-4"	449	5	7'-6"			
SUBTOTAL = 2980 LBS.								
WINGWALL 3								
W531	2	17'-5"	36	STR.				
W532	1	9'-11"	185	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W533	26	1'-11"	52	2	6"	6"	1'-3"	
W534	2	4'-0"	115	STR.				3'-6"
	S.O.	TO						
	5	18'-1"						
W535	14	18'-1"	264	STR.				
W536	2	19'-9"	41	2	7'-4"	17'-6"	9"	
W731	2	17'-5"	71	STR.				
W732	1	9'-11"	363	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W733	12	19'-5"	476	STR.				
W734	14	7'-8"	219	STR.				
W831	27	9'-10"	709	3	8'-9"	1'-4"		
W832	18	9'-4"	449	5	7'-6"			
SUBTOTAL = 2980 LBS.								
INLET HEADWALL								
H501	17	7'-0"	124	4	3'-0"	1'-2"	3'-0"	
H502	2	9'-2"	186	4	4'-1"	1'-2"	4'-1"	1'-2"
	S.O.	TO			TO	TO	TO	
	7	16'-4"			7'-8"	7'-8"		
H503	12	23'-8"	296	STR.				
H504	4	4'-1"	49	STR.				3'-7"
	S.O.	TO						
	2	7'-8"						
H505	8	10'-0"	83	STR.				

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	INCR.
*H601	31	4'-6"	210	STR.				
SUBTOTAL = 948 LBS.								
CULVERT FOOTING								
F401	40	8'-11"	239	1	2'-6"	2'-0"		
*F501	12	31'-9"	398	STR.				
F503	118	17'-2"	2113	1	2'-8"	5'-10"		
F504	12	31'-9"	398	STR.				
*F801	16	33'-1"	1413	STR.				
F804	16	33'-1"	1413	STR.				
F821	8	7'-9"	166	2	2'-2"	4'-4"	3'-1"	
SUBTOTAL = 6140 LBS.								
PHASE II CONSTRUCTION								
WINGWALL 1								
W511	2	17'-5"	36	STR.				
W512	1	9'-11"	185	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W513	26	1'-11"	52	2	6"	6"	1'-3"	
W514	2	4'-0"	115	STR.				3'-6"
	S.O.	TO						
	5	18'-1"						
W515	14	18'-1"	264	STR.				
W516	2	19'-9"	41	2	7'-4"	17'-6"	9"	
W711	2	17'-5"	71	STR.				
W712	1	9'-11"	363	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W713	12	19'-5"	476	STR.				
W714	14	7'-8"	219	STR.				
W811	27	9'-10"	709	3	8'-9"	1'-4"		
W812	18	9'-4"	449	5	7'-6"			
SUBTOTAL = 2980 LBS.								
WINGWALL 4								
W541	2	17'-5"	36	STR.				
W542	1	9'-11"	185	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						
W543	26	1'-11"	52	2	6"	6"	1'-3"	
W544	2	4'-0"	115	STR.				3'-6"
	S.O.	TO						
	5	18'-1"						
W545	14	18'-1"	264	STR.				
W546	2	19'-9"	41	2	7'-4"	17'-6"	9"	
W741	2	17'-5"	71	STR.				
W742	1	9'-11"	363	STR.				7 1/2"
	S.O.	TO						
	13	17'-5"						

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	INCR.
W743	12	19'-5"	476	STR.				
W744	14	7'-8"	219	STR.				
W841	27	9'-10"	709	3	8'-9"	1'-4"		
W842	18	9'-4"	449	5	7'-6"			
SUBTOTAL = 2980 LBS.								
OUTLET HEADWALL								
H501	17	7'-0"	124	4	3'-0"	1'-2"	3'-0"	
H502	2	9'-2"	185	4	4'-1"	1'-2"	4'-1"	1'-2"
	S.O.	TO			TO	TO	TO	
	7	16'-2"			7'-8"	7'-8"		
H503	12	23'-8"	296	STR.				
H504	4	4'-1"	49	STR.				3'-7"
	S.O.	TO						
	2	7'-8"						
H505	8	10'-0"	83	STR.				
H601	31	4'-6"	210	STR.				
SUBTOTAL = 948 LBS.								
CULVERT FOOTING								
F401	32	8'-11"	191	1	2'-6"	2'-0"		
*F502	12	25'-9"	322	STR.				
F503	94	17'-2"	1683	1	2'-8"	5'-10"		
F505	12	25'-9"	322	STR.				
*F802	16	27'-4"	1168	STR.				
F805	16	27'-4"	1168	STR.				
F811	8	7'-9"	166	2	2'-2"	4'-4"	3'-1"	
SUBTOTAL = 5020 LBS.								
GRAND TOTAL = 24,976 LBS.								

BENDING DIAGRAMS

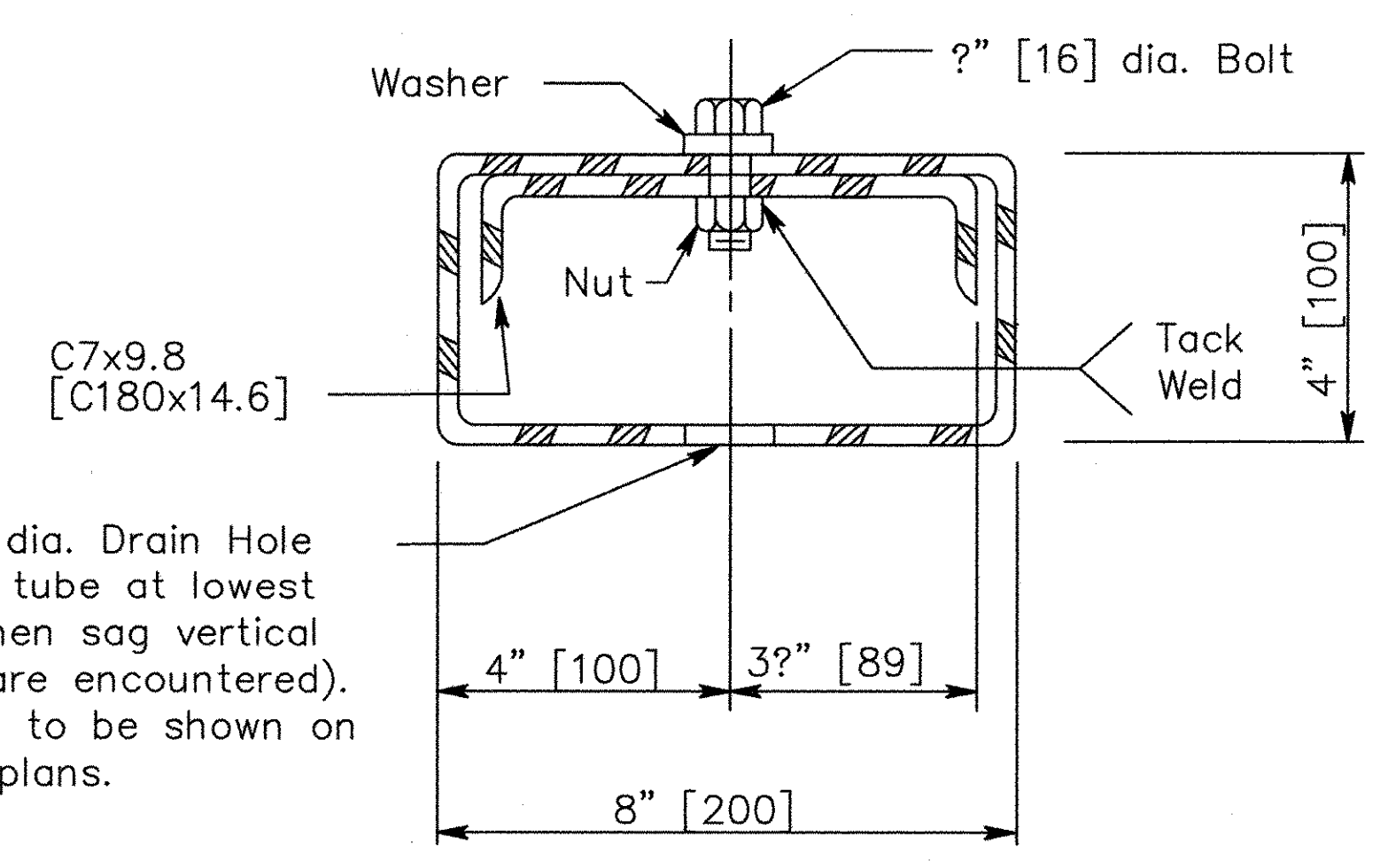
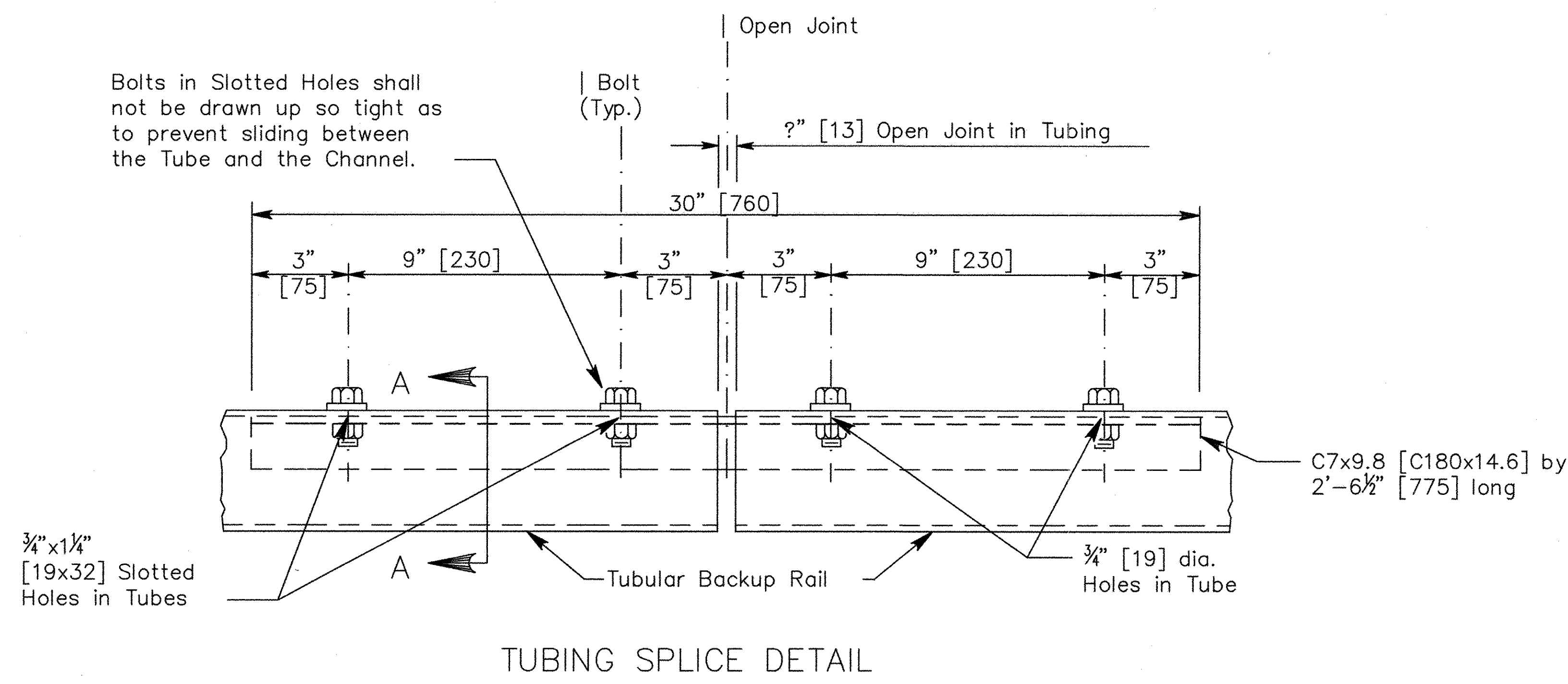
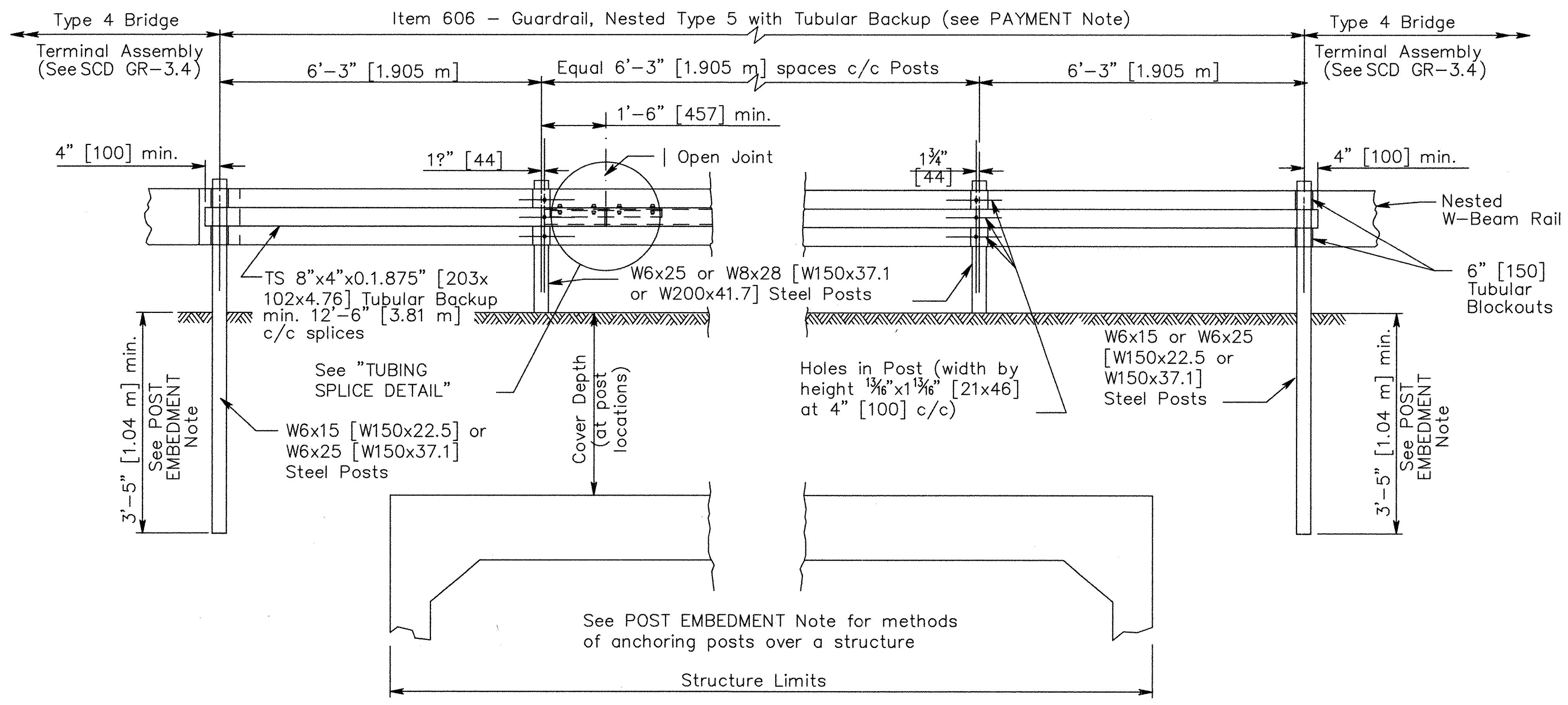


THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED, AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, W601 IS A NO. 6 BAR. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED. R INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED. "STD." WRITTEN IN PLACE OF A DIMENSION INDICATES A STANDARD BEND AT THE END OF THE BAR.

ALL REINFORCING STEEL TO BE EPOXY COATED.

S.O. - SERIES OF

* REINFORCING STEEL WITH MECHANICAL CONNECTORS. SEE SHEET 6/11 FOR DETAILS.



1" [25] dia. Drain Hole (only in tube at lowest point when sag vertical curves are encountered). Location to be shown on project plans.

NOTES

APPLICATION: Nested Type 5 Guardrail with Tubular Backup is accepted to NCHRP 350 Test Level 3. The only Bridge Terminal Assembly that is permitted to be used with this system is detailed on SCD GR-3.4. This system cannot be used with any other BTA.

GALVANIZING: Rails, posts, base plates, bolts, nuts, washers and all tubular steel are to be galvanized as specified in CMS 711.02.

POST EMBEDMENT: Normal embedment depth is 3'-5" [1.04 m] (See SCD GR-1.1). For installation methods for posts of various cover over structures, see Sheet 2.

ANCHORING: Partial-depth anchoring is preferred to through-bolting. For partial depth anchoring use non-shrink, non-metallic grout as specified in CMS 705.20. Minimum embedment depths are 9" [225] for 1/8" [22] bolts and 10" [250] for 1/4" [32] bolts.

THROUGH-BOLTING: Drilling methods that cause spalling of the concrete where the bit passes through the underside of the slab is not permitted. In haunches 6:1 or flatter, use beveled plate washers on the bottom surface to compensate for the slope. Through-bolting is not permitted in haunch areas with a slope greater than 6:1.

SIDE-MOUNTED POST ANCHORAGES TO STRUCTURES: Install anchorages according to Structural Engineering's Standard Drawing DBR-2-73 and is paid under Item 517 - Railing.

PAYMENT: Item 606 - Guardrail, Nested Type 5 w/Tubular Backup is paid in Feet [Meters] for the length specified in the plans and shall include tubular backup as per Item 707.10, rails, posts and all other hardware, material and labor required to construct the guardrail as shown. The specified lengths should be for full W-Beam panels, i.e. evenly divisible by 12'-6" [3.81 m].

THIS DRAWING REPLACES GR-2.2 DATED 4-18-03.

STANDARD ROADWAY CONSTRUCTION DRAWING
NESTED TYPE 5 GUARDRAIL
WITH TUBULAR BACKUP

NUMBER
GR-2.2

All metric dimensions
(in brackets []) are
in millimeters unless
otherwise noted.

STDS. ENGR.
D. Focke

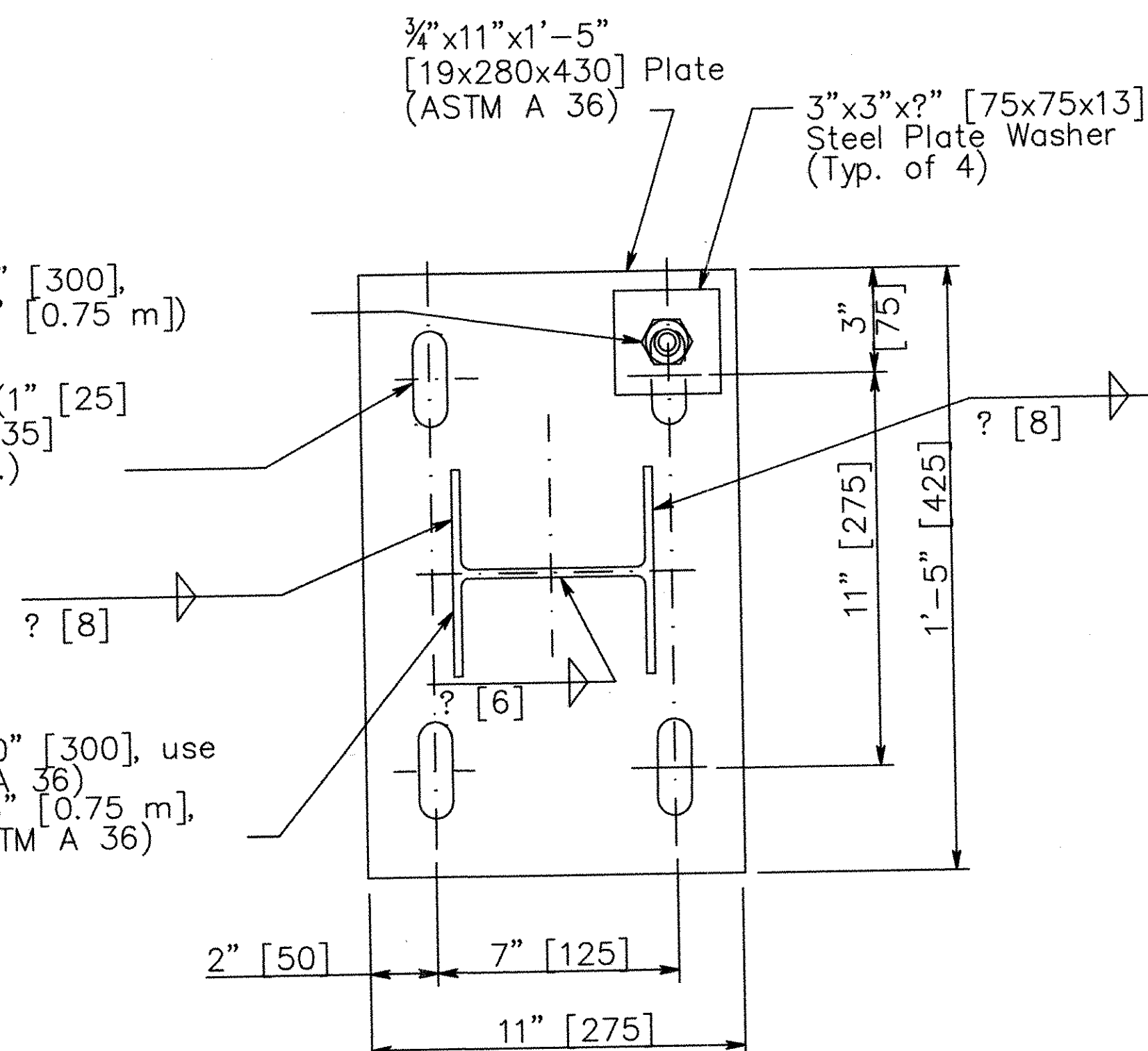
OHIO DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN ENGINEER

X-XX-XX
DATE

ASTM A 325 Bolt with Nut (Typ. of 4)
 (?") [22] dia. for Cover Depth "A" 1'-0" [300],
 1 1/2" [38] dia. for 1'-0" [300] "A" < 2'-6" [0.75 m]

3" [76] Slotted Hole x (1" [25])
 for 1/8" [22] Bolts, 1 1/8" [35]
 for 1/4" [32] Bolts (Typ.)

For Cover Depth "A" 4'-0" [300], use
 W6x25 [W150x37.1] (ASTM A 36)
 For 1'-0" [300] < "A" < 2'-6" [0.75 m],
 use W8x28 [W200x41.7] (ASTM A 36)



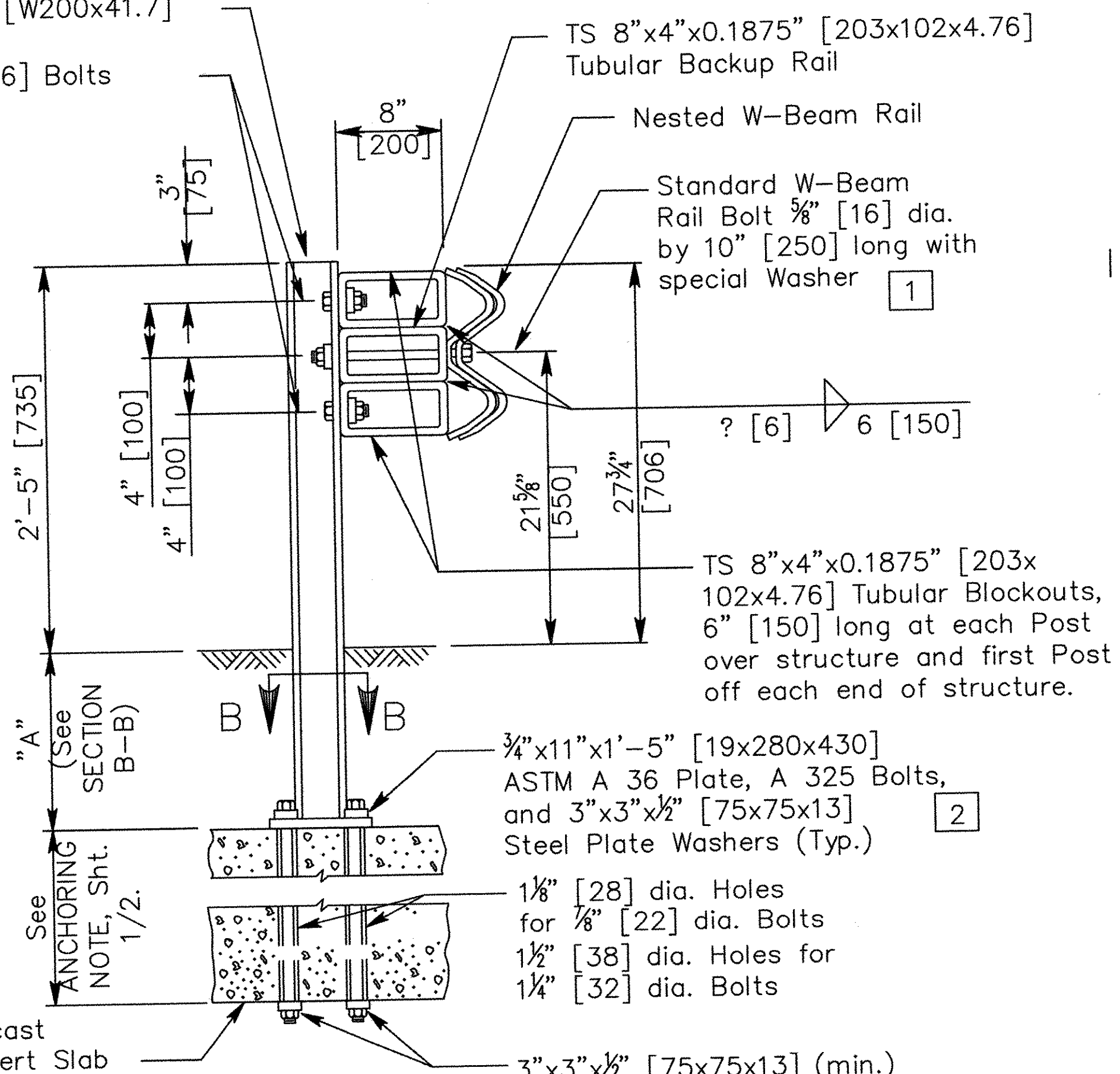
SECTION B-B

LEGEND

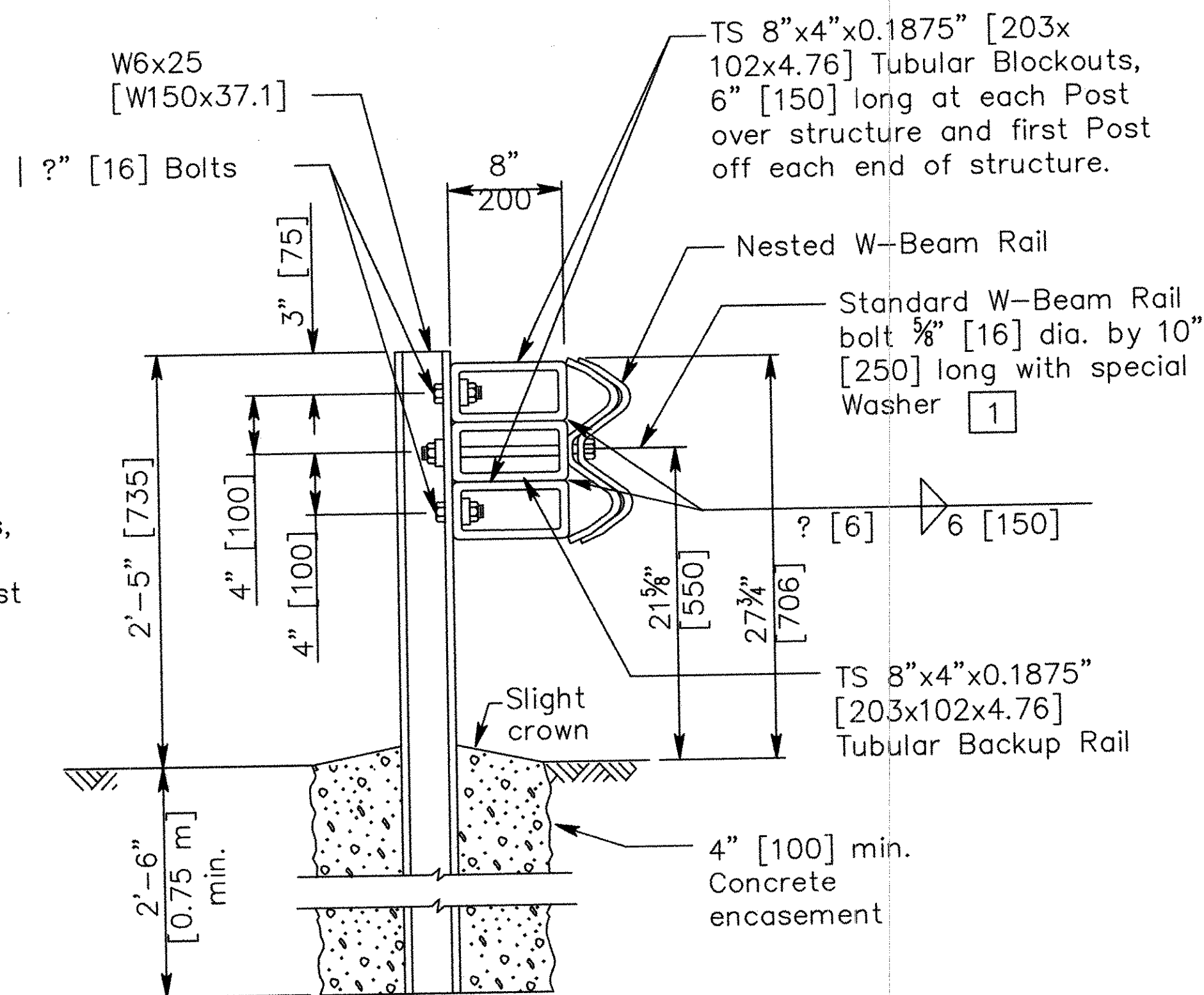
- [1] For details of special washer, see AASHTO M 180.
- [2] Embed plate in sealant as per Federal Specification TT-S-00230C, Type II.

W6x25 [W150x37.1] or
 W8x28 [W200x41.7]

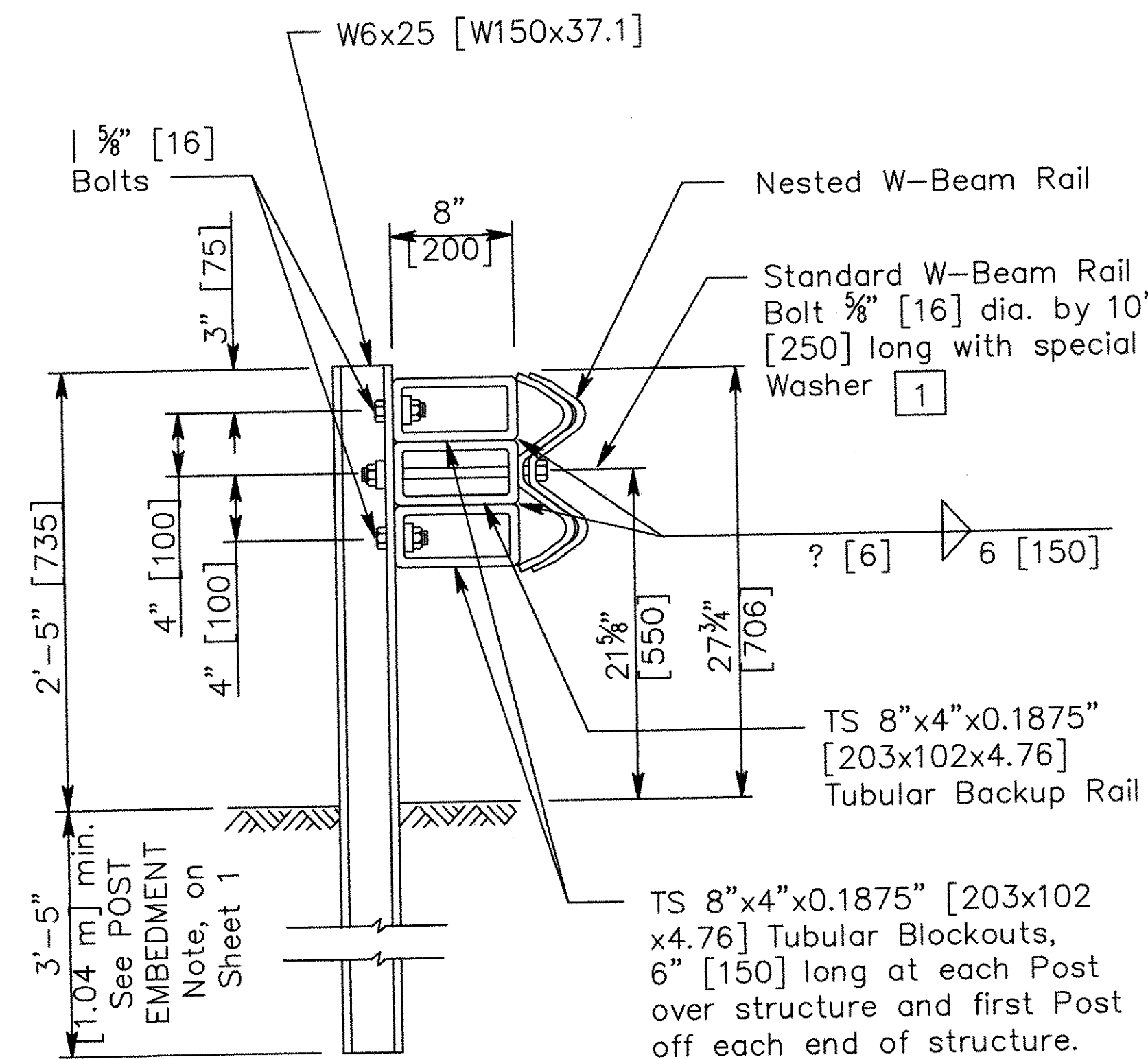
| ?" [16] Bolts



COVER DEPTH LESS THAN 2'-6" [0.75 m]



COVER DEPTH EQUAL TO OR GREATER THAN 2'-6" [0.75 m], BUT LESS THAN 3'-5" [1.04 m]



COVER DEPTH GREATER THAN OR EQUAL TO 3'-5" [1.04 m]

METHODS FOR ANCHORING POSTS

THIS DRAWING REPLACES GR-2.2 DATED 4-18-03.

NUMBER GR-2.2

STANDARD ROADWAY CONSTRUCTION DRAWING
 NESTED TYPE 5 GUARDRAIL
 WITH TUBULAR BACKUP

ROADWAY ENGINEERING SERVICES

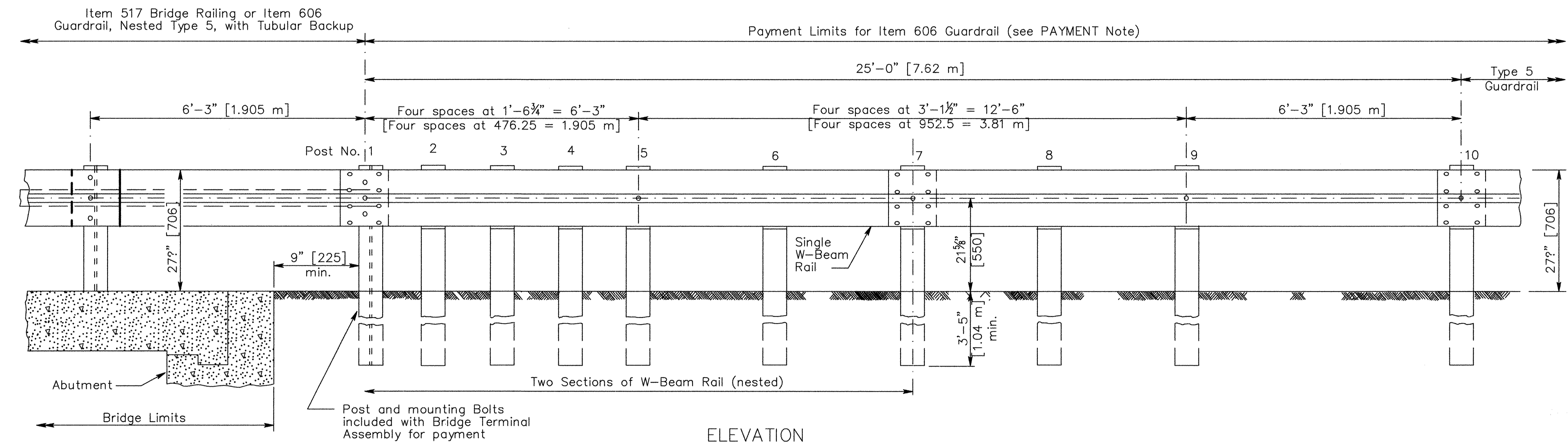
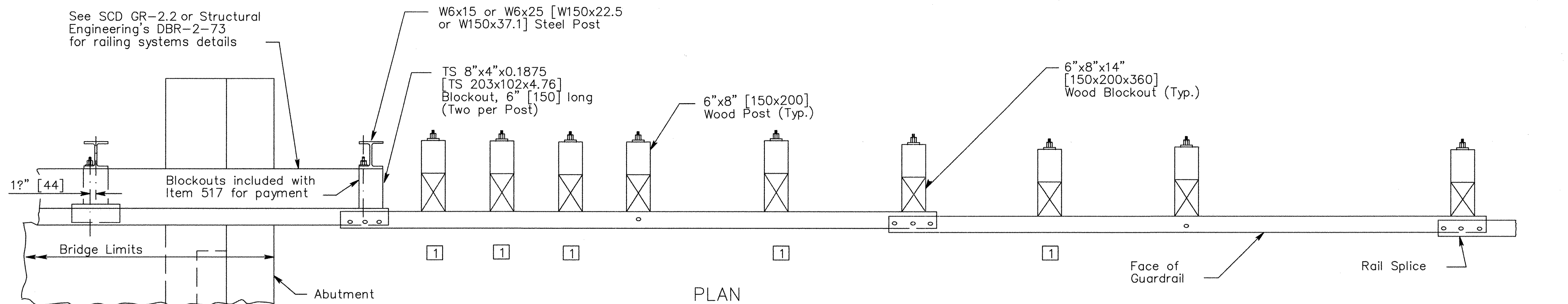
All metric dimensions (in brackets) are in millimeters unless otherwise noted.

STDS. ENGR. D. Focke

OHIO DEPARTMENT OF TRANSPORTATION

ROADWAY DESIGN ENGINEER

X-XX-XX
 DATE



NOTES

GENERAL: For additional details, see SCD GR-1.1.

APPLICATION: The Type 4 Bridge Terminal Assembly shall connect Type 5 Guardrail runs to Type 5 Guardrail with Tubular Backup or to Deep Beam Bridge Guardrail (as shown on Structural Engineering SCD DBR-2-73). Do not use on the NHS.

DETAIL INFORMATION: The first post off the bridge shall be steel (W6x15 or W6x25 [W150x22.5 or W150x37.1]). All holes in the off-structure end of the approach panel rail section spanning the abutment are slotted 1/4"x2 1/2" [19x64]. Tighten the bolts as specified for expansion joints in Item 606.05.

POSTS: Posts may be set in drilled holes or driven to grade. See SCD GR-1.1 for additional Post embedment details. Guardrail is not attached to certain posts (see LEGEND).

WOOD POSTS - Use square sawed pressure treated wood as specified in CMS 710.14 and fabricated with square ends. Bore bolt holes and trim the tops of posts, if required, after the posts are set.

STEEL POSTS - are allowed as an alternate. Use W6x9 [W150x13.5] or W6x8.6 [W150x12.6] in lieu of the 6"x8" [150x200] wood post. Use same post material throughout assembly.

BLOCKOUTS: Use wood blockouts only. Steel or plastic blockouts are not permitted. Notched wood blockouts are used with steel posts.

FLARED GUARDRAIL: Start Standard Guardrail Flares as shown on SCD GR-5.1 at or beyond Post No. 10; however, the flare may begin at Post No. 7.

PAYMENT: Item 606 - Bridge Terminal Assembly, Type 4, Each, includes the cost of extra components, in excess of normal guardrail, for additional posts and other hardware. The TS 8"x4" [200x100] spacers and tubular backup rail extending to the first post off the bridge is included with Item 517 - Railing, or Item 606 - Guardrail, Nested Type 5, with Tubular Backup, for payment.

LEGEND

- Guardrail is not attached to posts at Posts 2, 3, 4, 6, and 8. Blockout is fastened to post with standard Post Bolt.

THIS DRAWING REPLACES GR-3.4 DATED 4-18-03.

46	46	GR-3.4	BRIDGE TERMINAL ASSEMBLY, TYPE 4	STANDARD ROADWAY CONSTRUCTION DRAWING	ROADWAY ENGINEERING SERVICES	All metric dimensions (in brackets) are in millimeters unless otherwise noted.	STDS. ENGR. D. Focke	OHIO DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN ENGINEER	X-XX-XX DATE
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