

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

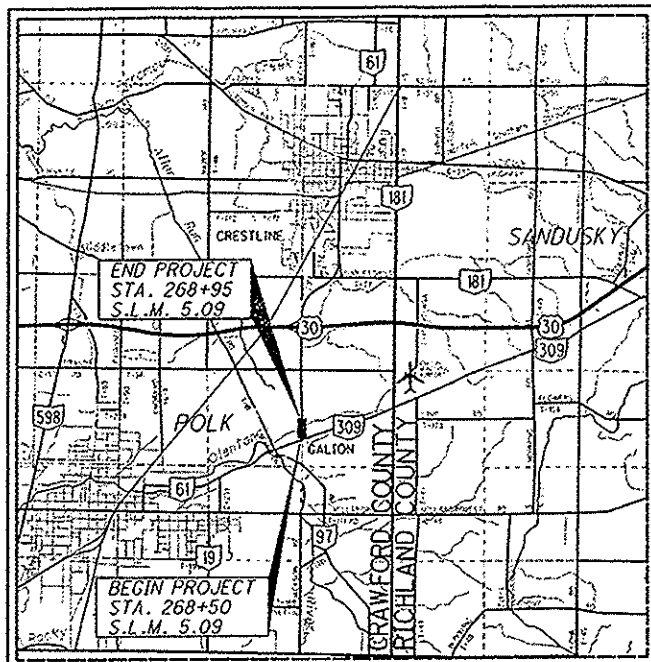
CRA-61-5.09

CITY OF GALION
POLK TOWNSHIP
CRAWFORD COUNTY

PROJECT DESCRIPTION

REPLACEMENT OF EXISTING CULVERT AT AN OLENTANGY RIVER TRIBUTARY WITH A PRECAST CONCRETE BOX CULVERT AND APPROACH GUARDRAIL/PAVEMENT.

PROJECT EARTH DISTURBED AREA: 0.37 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.27 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: N/A
(NOI NOT REQUIRED)



LOCATION MAP

LATITUDE: 40°44'47" LONGITUDE: 82°44'44"



PORTION TO BE IMPROVED.....	—————
INTERSTATE HIGHWAY.....	—————
FEDERAL ROUTES.....	—————
STATE ROUTES.....	—————
COUNTY & TOWNSHIP ROADS.....	—————
OTHER ROADS.....	—————

DESIGN DESIGNATION

CURRENT ADT (2014).....	3100
DESIGN YEAR ADT (2034).....	3420
DESIGN HOURLY VOLUME (2034).....	380
DIRECTIONAL DISTRIBUTION.....	0.52
TRUCKS (24 HOUR B&C).....	0.06
Td.....	0.08
DESIGN SPEED.....	50 MPH
LEGAL SPEED.....	50 MPH
DESIGN FUNCTIONAL CLASSIFICATION:	
URBAN MAJOR COLLECTOR.....	
NHS PROJECT.....	NO

DESIGN EXCEPTIONS..... NONE

UNDERGROUND UTILITIES
CONTACT BOTH SERVICES
CALL TWO WORKING DAYS
BEFORE YOU DIG

CALL
1-800-362-2764
(TOLL FREE)

OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

OIL & GAS PRODUCERS PROTECTIVE
SERVICE CALL: 1-800-925-0988

PLAN PREPARED BY:
OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF PRODUCTION
1980 WEST BROAD STREET
COLUMBUS, OHIO 43223

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ENGINEERS SEAL:
(2013 SPECIFICATIONS UPDATE)
SHEETS: 1, 3, 4, 4A, 7, 8, 15, 18, 19,
21A-21I, 22, 23



SIGNED: [Signature]
DATE: 6-10-13

ENGINEERS SEAL:



SIGNED: [Signature]
DATE: May-21-2012

ENGINEERS SEAL:



SIGNED: [Signature]
DATE: May-21-2012

STANDARD CONSTRUCTION DRAWINGS

BP-3.1	4/20/12	TC-42.10	1/19/07
DM-1.1	1/18/13	TC-52.20	1/19/07
DM-4.4	7/20/12	TC-61.30	4/20/12
		TC-73.10	4/20/12

MT-97.10	7/20/12
MT-101.60	7/20/12
MT-105.10	7/20/12

SUPPLEMENTAL SPECIFICATIONS		SPECIAL PROVISIONS
800	10/18/13	WATERWAY
832	5/5/09	PERMIT-
902	12/31/12	9/13/13

Received
ODOT

JUN 10 2013

District Three
Planning & Engineering Dept.

APPROVED: [Signature]
DATE: 8-13-13 DISTRICT DEPUTY DIRECTOR

APPROVED: [Signature]
DATE: 8-19-13 DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO.
E100718

PID NO.
83443

CONSTRUCTION PROJECT NO.

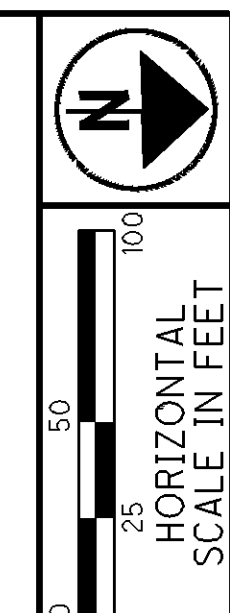
RAILROAD INVOLVEMENT
NONE

CRA-61-5.09

CRA - SR-61-5.09
130602 PID - 83443
Dist 3 12/12/2013

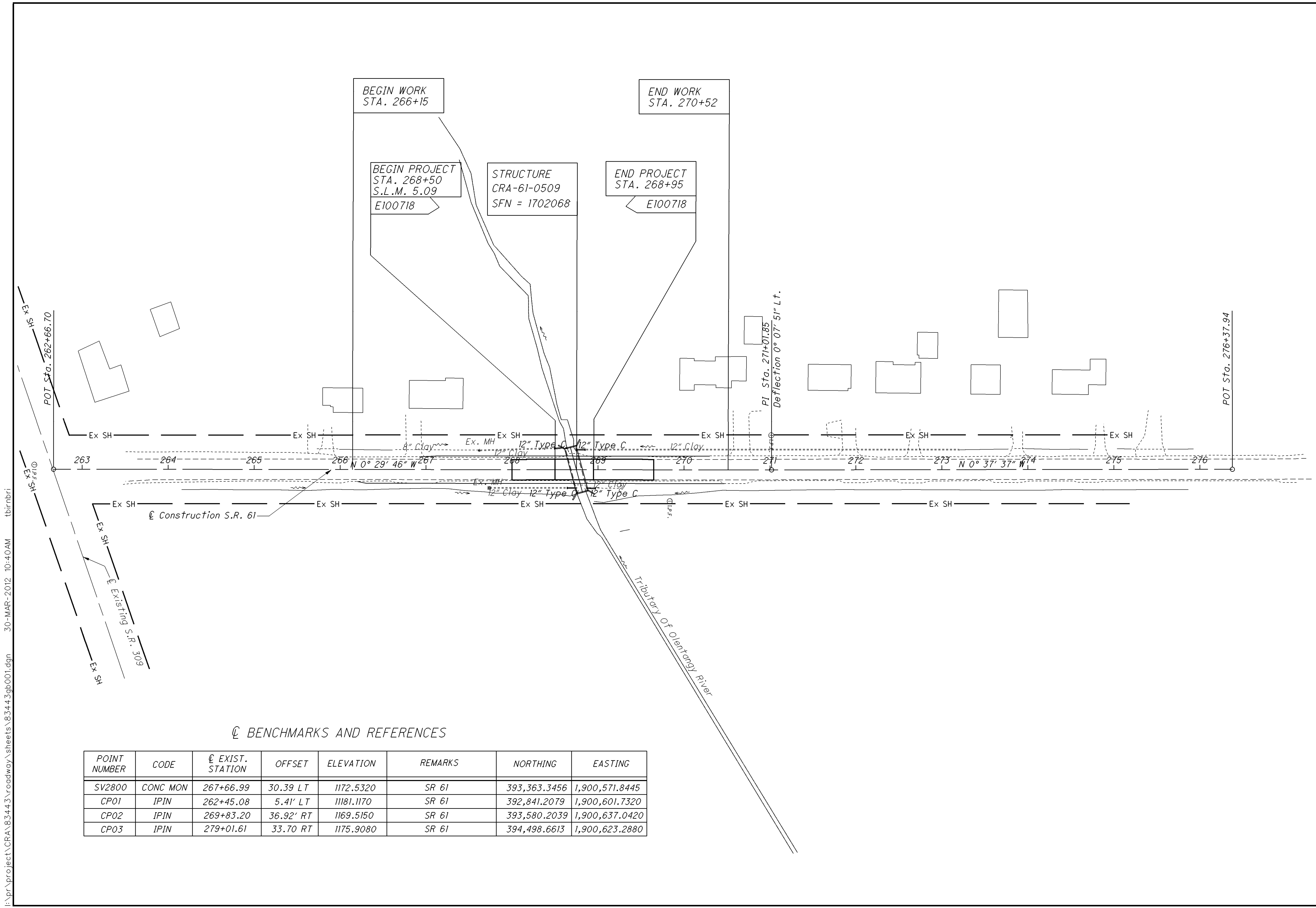
Contract Proposal Available @ www.
contracts.dot.state.oh.us/home

2013/12/20 12:06:06 District Three CES\112066-618-83



SCHEMATIC PLAN

CRA-61-5.09

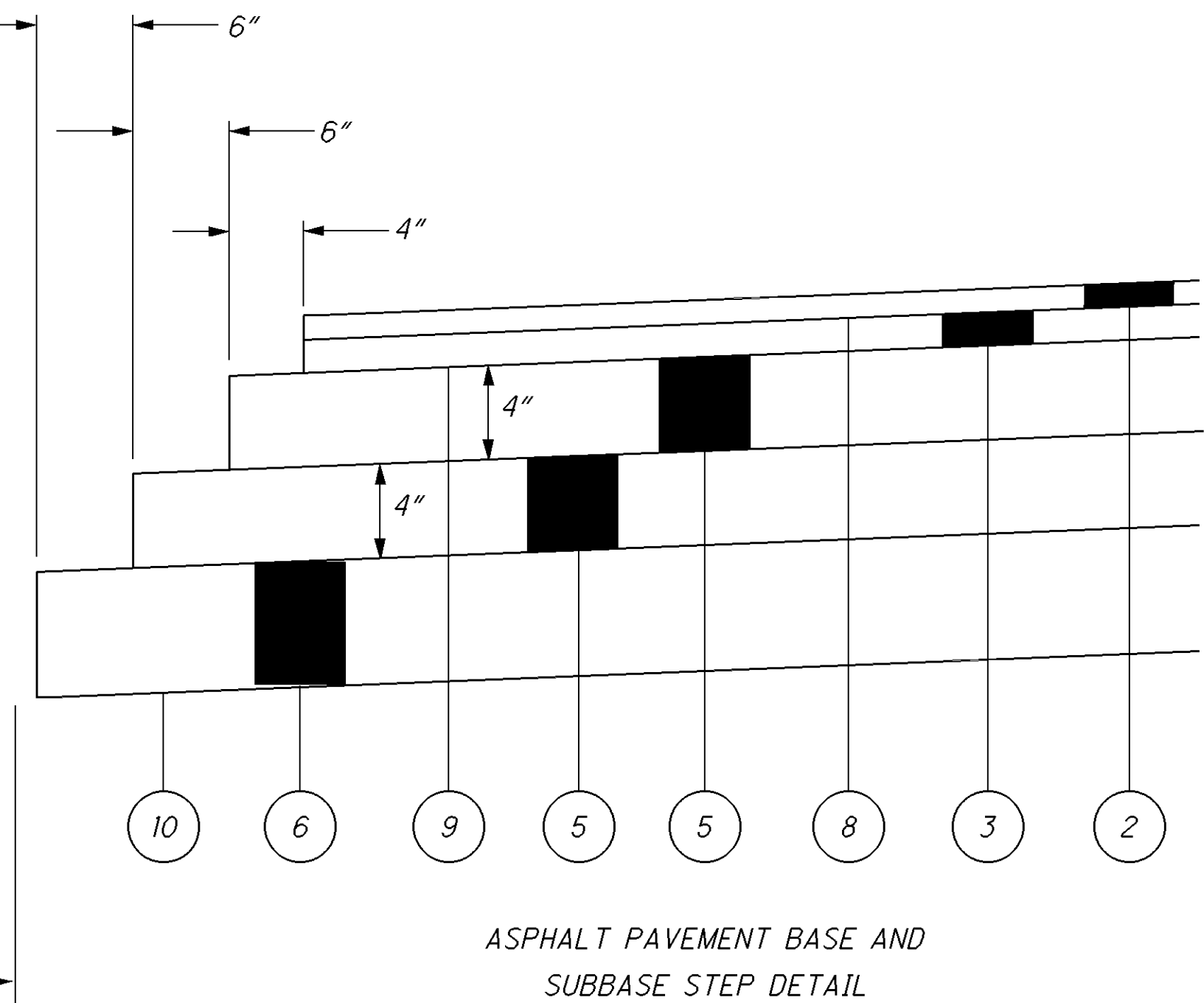
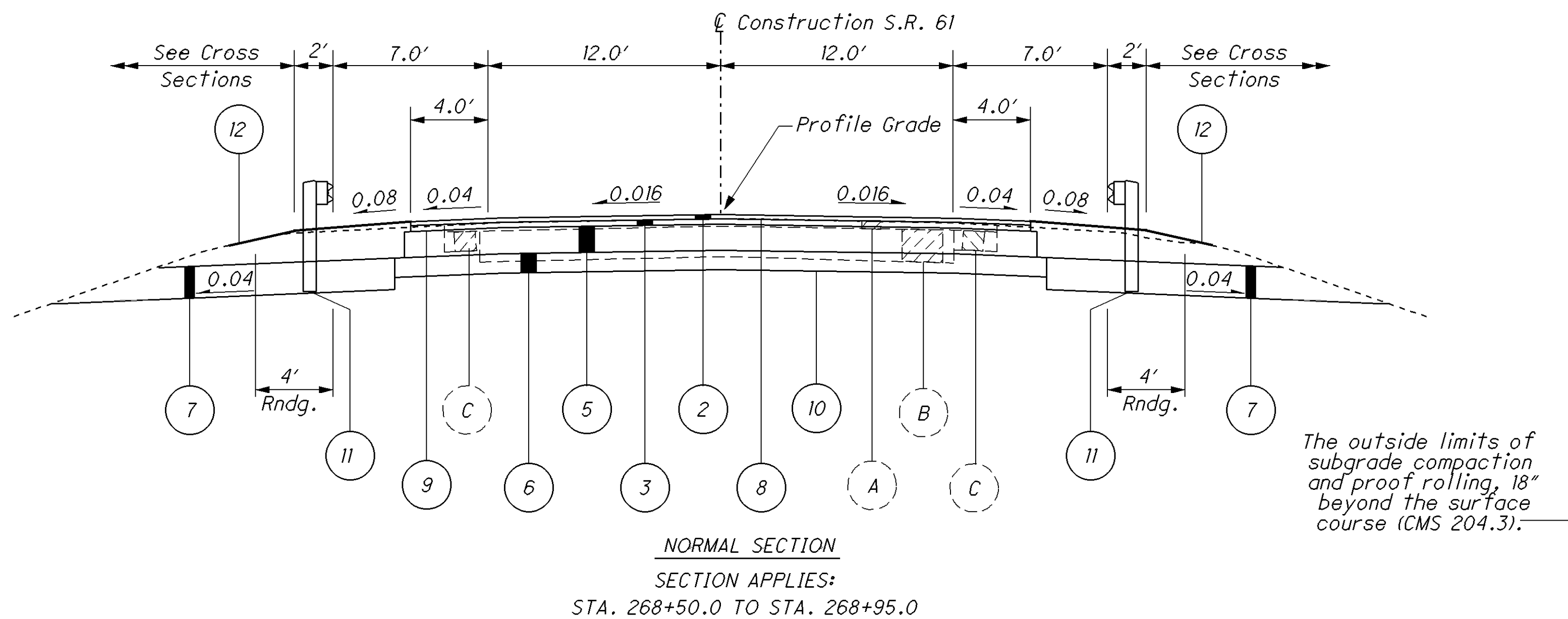
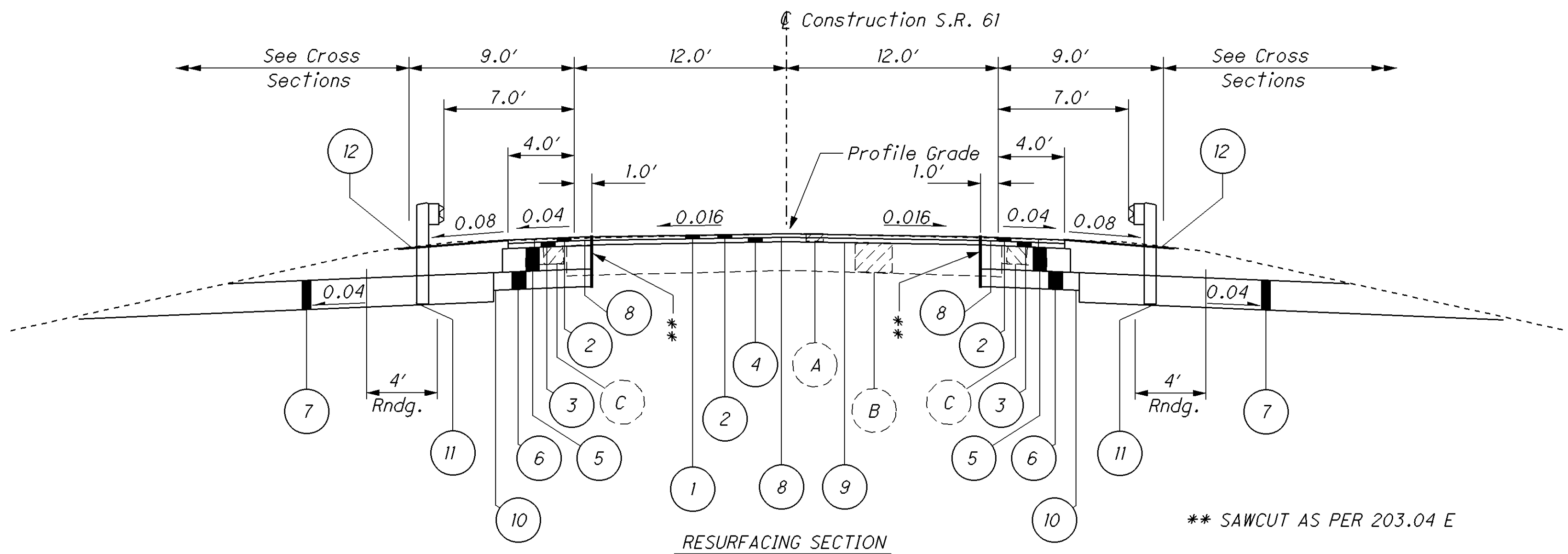
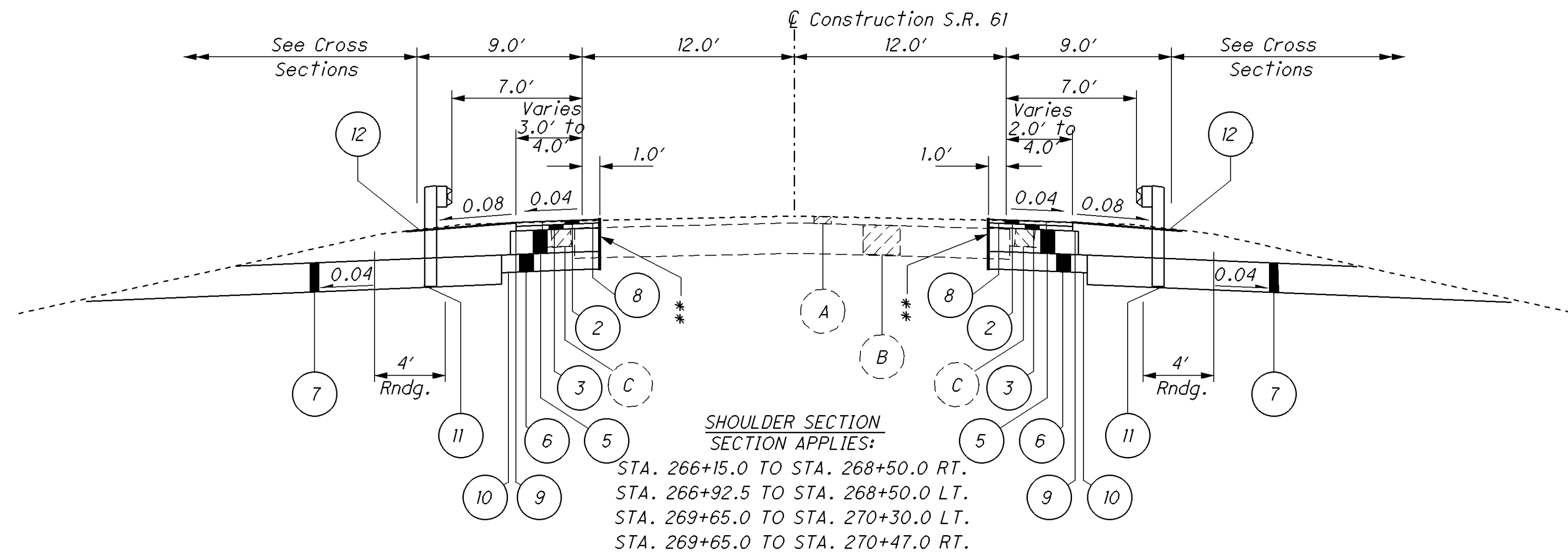


Ⓞ BENCHMARKS AND REFERENCES

POINT NUMBER	CODE	Ⓞ EXIST. STATION	OFFSET	ELEVATION	REMARKS	NORTHING	EASTING
SV2800	CONC MON	267+66.99	30.39 LT	1172.5320	SR 61	393,363.3456	1,900,571.8445
CP01	IPIN	262+45.08	5.41' LT	11181.1170	SR 61	392,841.2079	1,900,601.7320
CP02	IPIN	269+83.20	36.92' RT	1169.5150	SR 61	393,580.2039	1,900,637.0420
CP03	IPIN	279+01.61	33.70 RT	1175.9080	SR 61	394,498.6613	1,900,623.2880

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LEGEND

- ① ITEM 254 - 1 1/4" PAVEMENT PLANING, ASPHALT CONCRETE
 - ② ITEM 442 - 1 1/4" ASPHALT CONCRETE SURFACE COURSE, 9.5 MM, TYPE A (448), AS PER PLAN
 - ③ ITEM 442 - 1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A (448), AS PER PLAN
 - ④ ITEM 442 - VARIES MIN 0" TO MAX 1 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A (448), AS PER PLAN
 - ⑤ ITEM 301 - 8" ASPHALT CONCRETE BASE, PG64-22
 - ⑥ ITEM 304 - 6" AGGREGATE BASE
 - ⑦ ITEM 605 - AGGREGATE DRAINS
 - ⑧ ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE (APPLIED AT A RATE OF 0.04 GAL./SQ.YD.)
 - ⑨ ITEM 407 - TACK COAT (APPLIED AT A RATE OF 0.075 GAL./SQ. YD.)
 - ⑩ ITEM 204 - SUBGRADE COMPACTION
 - ⑪ ITEM 606 - GUARDRAIL, TYPE 5 OR GUARDRAIL, TYPE 5, LONG-SPAN
 - ⑫ ITEM 659 - SEEDING AND MULCHING
- Ⓐ EXISTING ±2" ASPHALT CONCRETE
 - Ⓑ EXISTING ±11" BITUMINOUS AGGREGATE
 - Ⓒ EXISTING ±7" ASPHALT CONCRETE

ROUNDING

THE ROUNDING AT SLOPE BREAK POINTS 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.

OHIO EDISON COMPANY
RICH HAAS
1717 ASHLAND ROAD
MANSFIELD, OHIO 44905
419-521-6275

OHIO EDISON TRANSMISSION
CARLOS A. MUNOZ
76 SOUTH MAIN STREET
AKRON, OHIO 44308
330-384-4835

CITY OF GALION
JEFF PRICE, ELECTRIC SUPERINTENDENT
MARK TRIPLETT, ASSISTANT SUPERINTENDENT
301 HARDING WAY EAST
GALION, OHIO 44833
419-468-5520

CITY OF GALION
DOUG BEUGLY, WATER & SEWER ASSISTANT SUPERINTENDANT
6374 HOSBORD ROAD
GALION, OHIO 44833
419-468-1393

FRONTIER
JIM SAUBER
1534 S.R. 511 SOUTH
ASHLAND, OHIO 44805
419-282-6551

TIME WARNER CABLE
TERRY ALLEN
1266 DUBLIN ROAD
COLUMBUS, OHIO 43215
614-255-6449

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.

SURVEYING PARAMETERS

USE THE FOLLOWING VERTICAL POSITIONING AND HORIZONTAL POSITIONING PARAMETERS FOR ALL SURVEYING:

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD 88
GEOID: GEOID 03

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD 83 (CORS 96)
ELLIPSOID: GRS 80
MAP PROJECTION: LAMBERT CONFORMAL CONIC
COORDINATE SYSTEM: SPC 3402 (OH S)
COMBINED SCALE FACTOR: 0.999937391

UNITS ARE IN U.S. SURVEY FEET. USE THE FOLLOWING CONVERSION FACTOR: 1 METER = 3.280833333 U.S. SURVEY FEET.

CLEARING AND GRUBBING

ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT, A LUMP SUM QUANTITY IS INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201, CLEARING AND GRUBBING. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM ARE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING.

SEEDING AND MULCHING

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

659, SOIL ANALYSIS TEST	2 EACH
659, SEEDING AND MULCHING	1313 SQ.YD.
659, TOPSOIL (1236 SQ.YD./1000 SQ.YD.) X 111 CU.YD. = 137 CU.YD.	
659, REPAIR SEEDING AND MULCHING 1236 SQ.YD. X 5% = 62 SQ.YD.	62 SQ.YD.
659, COMMERCIAL FERTILIZER (1236 SQ.YD.)(9 SQ.FT./SQ.YD.) X (30 LB./1000 SQ.FT.)(1 TON/2000 LB.) = 0.17 TON	0.17 TON
659, LIME (1236 SQ.YD.) X (1 ACRE/4840 SQ.YD.) = 0.26 ACRES	0.26 ACRES
659, WATER (1236 SQ.YD.)(9 SQ.FT./SQ.YD.) X (300 GAL./1000 SQ.FT.)(1 M. GAL./1000 GAL.) X 2 APPLICATIONS = 6.7 M. GAL.	6.7 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.

SHEET NO.	203	203	659
	EXCAVATION	EMBANKMENT	SEEDING AND MULCHING
	CU YD	CU YD	SQ YD
10	34	11	239
11	58	27	441
12	122	102	477
13	30	15	156
	244 *	155 *	1313 **

* TOTALS CARRIED TO GENERAL SUMMARY.
** TOTAL CARRIED TO SEEDING AND MULCHING NOTE ON THIS SHEET.

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 WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

ITEM 204 - PROOF ROLLING

THE FOLLOWING QUANTITY IS PROVIDED IN THE GENERAL SUMMARY TO ADDRESS LOCATIONS REQUIRING PROOF ROLLING.

ITEM 204 - PROOF ROLLING	4 HOUR.
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ITEM 442 - ASPHALT CONCRETE SURFACE COURSE, 9.5 MM, TYPE A (448), AS PER PLAN

ALL OPEN TRANSVERSE JOINTS SHALL BE TAPERED TO MEET EXISTING PAVEMENT BEFORE INTRODUCING TRAFFIC. A "BUMP" SIGN (W8-1-36) SHALL BE ERECTED ON EACH SIDE OF TRANSVERSE JOINTS LEFT OPEN OVER NIGHT, INCLUDING A SPEED ADVISORY SIGN. THESE SIGNS SHALL BE REMOVED IMMEDIATELY AFTER JOINT HAS BEEN CLOSED. PLACEMENT OF SIGNS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC.

CARE SHALL BE TAKEN TO MATCH EXISTING PAVEMENT ELEVATIONS AT EXISTING PAVED BERMS, DRIVES, INTERSECTIONS, ETC.

REQUIREMENTS OF 442 APPLY EXCEPT AS FOLLOWS: MIX DESIGN: FOR Ndes USE 50 GYRATIONS, FOR Nmax USE 75 GYRATIONS. MINIMUM TOTAL PG BINDER CONTENT IS 6.0 PERCENT.

USE A PG 64-22 BINDER.
MAXIMUM RECLAIMED ASPHALT CONCRETE PAVEMENT IS 20 PERCENT. WHEN AN AGGREGATE SOURCE IS SPECIALLY DESIGNATED WITH AN SR ON THE AGGREGATE SOURCE GROUP LIST DO NOT USE THE AGGREGATE EXCEPT AS ALLOWED FOR MEDIUM TRAFFIC IN THE GUIDELINES FOR MAINTAINING ADEQUATE PAVEMENT FRICTION IN SURFACE PAVEMENT.

QUALITY CONTROL: DO NOT PERFORM Nmax IN QUALITY CONTROL TESTING.

DO NOT TAKE EXTRA ASPHALT BINDER SAMPLES AS OUTLINED IN CMS 442.05.

ITEM 442, ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE A (448), AS PER PLAN

THIS ITEM SHALL BE USED FOR CORRECTION OF CROWN, PROFILE AND ANY OTHER IRREGULARITIES.

ALL OPEN TRANSVERSE JOINTS SHALL BE TAPERED TO MEET EXISTING PAVEMENT BEFORE INTRODUCING TRAFFIC. A "BUMP" SIGN (W8-1-36) SHALL BE ERECTED ON EACH SIDE OF TRANSVERSE JOINTS LEFT OPEN OVER NIGHT, INCLUDING A SPEED ADVISORY SIGN. THESE SIGNS SHALL BE REMOVED IMMEDIATELY AFTER JOINT HAS BEEN CLOSED. PLACEMENT OF SIGNS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC.

REQUIREMENTS OF 442 APPLY EXCEPT AS FOLLOWS: MIX DESIGN: FOR Ndes USE 50 GYRATIONS, FOR Nmax USE 75 GYRATIONS. USE A PG 64-22 BINDER.

MAXIMUM RECLAIMED ASPHALT CONCRETE PAVEMENT IS 30 PERCENT. DO NOT APPLY TABLE 442.02-1 EXCEPT SAND EQUIVALENT OF 45 APPLIES. APPLY 703.05 FOR COARSE AND FINE AGGREGATE EXCEPT GRADATION FOR FINE AGGREGATE DOES NOT APPLY. QUALITY CONTROL: DO NOT PERFORM Nmax IN QUALITY CONTROL TESTING. DO NOT TAKE EXTRA ASPHALT BINDER SAMPLES AS OUTLINED IN CMS 442.05.

ITEM 605 - AGGREGATE DRAINS

AGGREGATE DRAINS SHALL BE PLACED AT 50 FOOT INTERVALS ON EACH SIDE OF NORMAL CROWNED SECTIONS, STAGGERED SO THAT EACH DRAIN IS 25 FEET FROM THE ADJACENT DRAIN ON THE OPPOSITE SIDE, AND AT 25 FOOT INTERVALS ON THE LOW SIDE ONLY OF SUPERELEVATED SECTIONS. AN AGGREGATE DRAIN SHALL BE PLACED AT THE LOW POINT OF EACH SAG VERTICAL CURVE.

ITEM 605 - AGGREGATE DRAINS	200 FT
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STREAM CHANNEL EXCAVATION

STREAM CHANNEL EXCAVATION WITHIN "WATERS OF THE US" IS SUBJECT TO US ARMY CORPS OF ENGINEERS (USACE) REGULATORY JURISDICTION AND WILL REQUIRE AUTHORIZATION BY THE USACE VIA THE WATERWAY PERMITTING PROCESS (404/401). IN ACCORDANCE WITH THE APPLICABLE WATERWAY PERMITS (404/401) STREAM CHANNEL EXCAVATION CAN NOT EXCEED THE QUANTITIES AND/OR SURFACE AREA THAT HAS BEEN PERMITTED. THE WATERWAY PERMITS ARE ATTACHED TO THE CONSTRUCTION PLANS AS SPECIAL PROVISIONS AND WILL BE AVAILABLE IN THE PROJECT CONSTRUCTION OFFICE.

TAKE ALL PRECAUTIONS NECESSARY TO PREVENT ANY INCIDENTAL DISCHARGES ASSOCIATED WITH THE EXCAVATION AND HAULING OF MATERIAL FROM THE STREAM CHANNEL. THIS PERTAINS TO ANY EXCAVATION OPERATIONS SUCH AS, FOUNDATION PIER OR ABUTMENT EXCAVATION, CHANNEL CLEANOUT, EXCAVATION FOR ROCK CHANNEL PROTECTION AND REMOVAL OF ANY TEMPORARY FILL ASSOCIATED WITH CONSTRUCTION OPERATIONS.

ITEM 606 - ANCHOR ASSEMBLY, TYPE E

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY OF THE GUARDRAIL END TERMINALS AS LISTED ON ROADWAY ENGINEERING'S WEB PAGE UNDER ROADSIDE SAFETY DEVICES FOR APPROVED GUARDRAIL END TREATMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE FACE OF THE TYPE E IMPACT HEAD SHALL BE COVERED WITH A SHEET OF TYPE G REFLECTIVE SHEETING, PER CMS 730.19.

REFER TO THE MANUFACTURER'S INSTRUCTIONS REGARDING THE INSTALLATION OF, AND THE GRADING AROUND THE FOUNDATION TUBES AND GROUND STRUT. THE TOP OF ANY FOUNDATION TUBE SHOULD BE LESS THAN 4 INCHES ABOVE THE GROUND. THE PLACEMENT OF THE FOUNDATION TUBES SHOULD BE AN APPROPRIATE DEPTH BELOW THE LEVEL LINE IN ORDER TO MAINTAIN THE FINISHED GUARDRAIL HEIGHT OF 27.75 INCHES FROM THE EDGE OF THE SHOULDER.

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

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

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ENVIRONMENTAL NOTES

ENVIRONMENTAL COMMITMENTS

ANY UNAVOIDABLE CUTTING OF TREES WITH SUITABLE ROOSTING AND BROOD-REARING HABITAT FOR THE INDIANA BAT (LIVING OR STANDING DEAD TREES OR SNAGS WITH EXFOLIATING, PEELING OR LOOSE BARK, SPLIT TRUNKS AND/OR BRANCHES, OR CAVITIES) WILL BE PERFORMED ONLY BEFORE APRIL 1 OR AFTER SEPTEMBER 30 WHEN THE SPECIES WOULD NOT BE USING SUCH HABITAT.

NO TREE REMOVAL SHOULD BE DONE PRIOR TO ODOT OBTAINING ALL THE NEPA PERMITS.

ALL DISTURBED AREAS WILL BE MULCHED AND PLANTED WITH NATIVE VEGETATION TO CONTROL EROSION.

STAGING AREAS WILL BE KEPT WELL AWAY FROM THE STREAM.

THE RIPARIAN HABITAT ZONE WILL BE MAINTAINED TO THE MAXIMUM EXTENT POSSIBLE.

THE UNDERSIDE OF THE BRIDGE WILL BE CAREFULLY EXAMINED FOR THE PRESENCE OF BATS, ESPECIALLY FROM APRIL 1 TO SEPTEMBER 30. IF ANY BATS ARE FOUND ON THE UNDERSIDE OF THE BRIDGE, U.S. FISH AND WILDLIFE SERVICE WILL BE CONTACTED IMMEDIATELY.

ODOT'S CONTRACTOR WILL ALSO NOTIFY IN WRITING 14 DAYS PRIOR TO THE DETOUR THE FOLLOWING AGENCIES: POLK TOWNSHIP TRUSTEES, GALION FIRE DEPARTMENT, GALION CITY SCHOOL DISTRICT, AND THE CRAWFORD COUNTY SHERIFF'S DEPARTMENT.

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CALCULATED	CHECKED	GENERAL NOTES	CRA -61 -5.09	4A
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MAINTAINING TRAFFIC

DETOUR LIMITATION

TWO WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES, EXCEPT FOR A PERIOD NOT TO EXCEED TWENTY-ONE (21) CONSECUTIVE CALENDAR DAYS. THROUGH TRAFFIC WILL BE DETOURED AS SHOWN ON SHEET 6.

INTERIM COMPLETION DATE

THE TWENTY-ONE (21) CONSECUTIVE CALENDAR DAYS SHALL BE CONSIDERED AN INTERIM COMPLETION DATE. FAILURE OF THE CONTRACTOR TO MEET THIS REQUIREMENT WILL RESULT IN A DISINCENTIVE OF \$1000 PER CALENDAR DAY THAT THE ROADWAY REMAINS CLOSED TO TRAFFIC.

DETOUR SIGNING SHALL BE INSTALLED, MAINTAINED, AND REMOVED BY THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE ODOT DISTRICT 3 ROADWAY SERVICES MANAGER, IN WRITING, A MINIMUM OF FOURTEEN (14) DAYS IN ADVANCE OF THE DETOUR BEING PLACED.

THE CONTRACTOR SHALL ALSO NOTIFY, IN WRITING, THE FOLLOWING AGENCIES AT LEAST TEN (10) DAYS PRIOR TO THE TIME WHEN THE S.R. 61 DETOUR WILL BE IMPLEMENTED:

- TOWNSHIP TRUSTEES (TWP. ROADS ONLY)
- LOCAL FIRE DEPARTMENT(S)
- LOCAL SCHOOL DISTRICT(S)
- COUNTY SHERIFF

THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING THE GATES AND BARRICADES AT THE APPROXIMATE WORK LIMITS OF THE PROJECT, AND THE ADVANCE WARNING SIGNS AS SHOWN ON STANDARD CONSTRUCTION DRAWING MT-101.60.

ACCESS TO ADJACENT PROPERTIES SHALL BE MAINTAINED AT ALL TIMES, AS PER SECTION 614.02 (A).

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

PROJECT DETOUR LIMITATIONS

THE ROADWAY SHALL NOT BE CLOSED TO TRAFFIC FOR THE REMOVAL OR MODIFICATION OF THE EXISTING STRUCTURE OR CONDUIT UNTIL PRECAST STRUCTURE MATERIAL (E.G.: BOX CULVERTS, ETC.) NECESSARY TO PLACE THE ROADWAY BACK INTO SERVICE HAVE BEEN TESTED AND APPROVED AND ARE READY FOR DELIVERY TO THE PROJECT SITE.

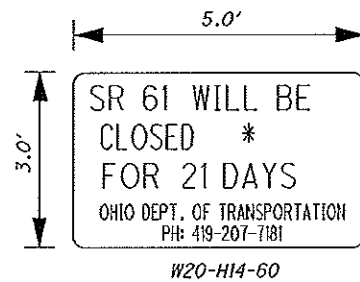
THE ROADWAY SHALL RE-OPEN TO TRAFFIC AND THE DETOUR REMOVED BY MAY 18, 2014 OR EARLIER.

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

NOTICE OF CLOSURE SIGNS

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

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



* CONTRACTOR TO SUPPLY DATE

MAINTENANCE OF LOCAL DETOUR ROUTE

A LOCAL DETOUR ROUTE, OTHER THAN THE OFFICIAL SIGNED ODOT DETOUR ROUTE, WILL BE SELECTED BY AGREEMENT BETWEEN ODOT AND LOCAL GOVERNMENTAL AGENCIES PRIOR TO THE HIGHWAY CLOSURE.

DURING THE TIME THAT TRAFFIC IS DETOURED, THE CONTRACTOR SHALL MAINTAIN THIS ROUTE IN A CONDITION WHICH IS REASONABLY SMOOTH AND FREE FROM HOLES, RUTS, RIDGES, BUMPS, DUST AND STANDING WATER, ONCE THE DETOUR IS REMOVED AND TRAFFIC RETURNED TO ITS NORMAL PATTERN, THE DESIGNATED LOCAL DETOUR ROUTE SHALL BE RESTORED TO A CONDITION THAT IS EQUIVALENT TO THAT WHICH EXISTED PRIOR TO ITS USE FOR THIS PURPOSE. ALL SUCH WORK SHALL BE PERFORMED WHEN AND AS DIRECTED BY THE ENGINEER. THE DESIGNATED LOCAL DETOUR ROUTE IS TO BE REVIEWED AND REPAIRED PRIOR TO THE ASPHALT CONTRACTOR OR SUBCONTRACTOR LEAVING THE PROJECT.

PAYMENT FOR THE WORK NECESSARY TO REPAIR THESE LOCAL ROADS WILL BE PERFORMED BY CHANGE ORDER.

DUST CONTROL

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

ITEM 616, WATER 2 M. GAL

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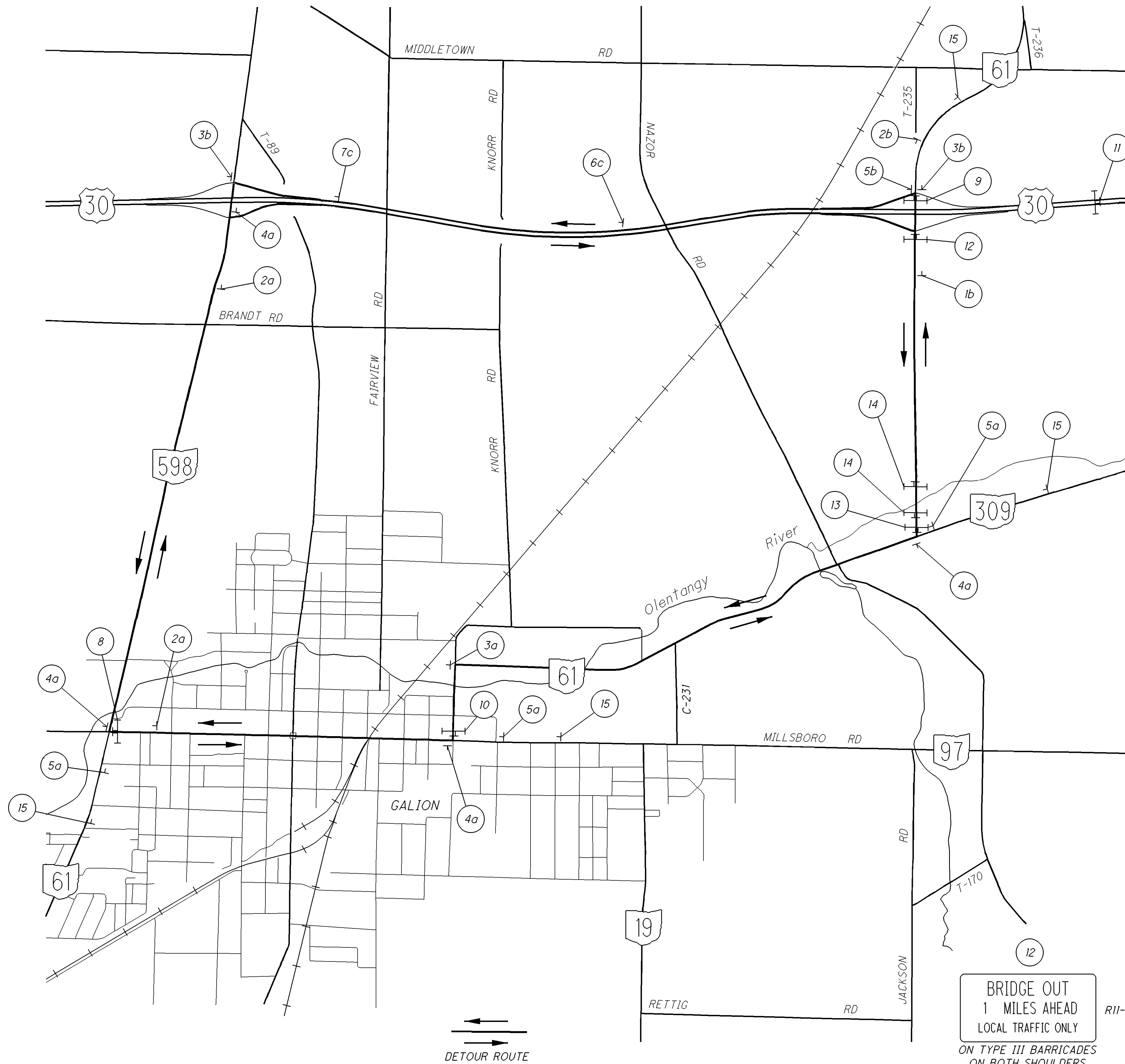
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MAINTENANCE OF TRAFFIC GENERAL NOTES

CRA-61-5.09

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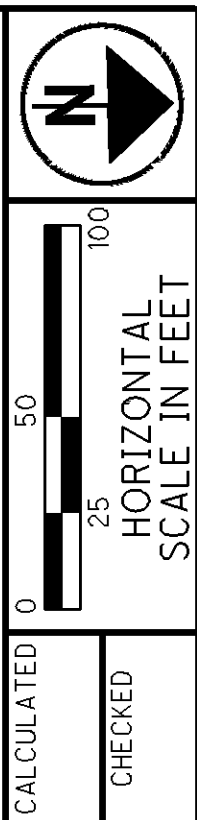
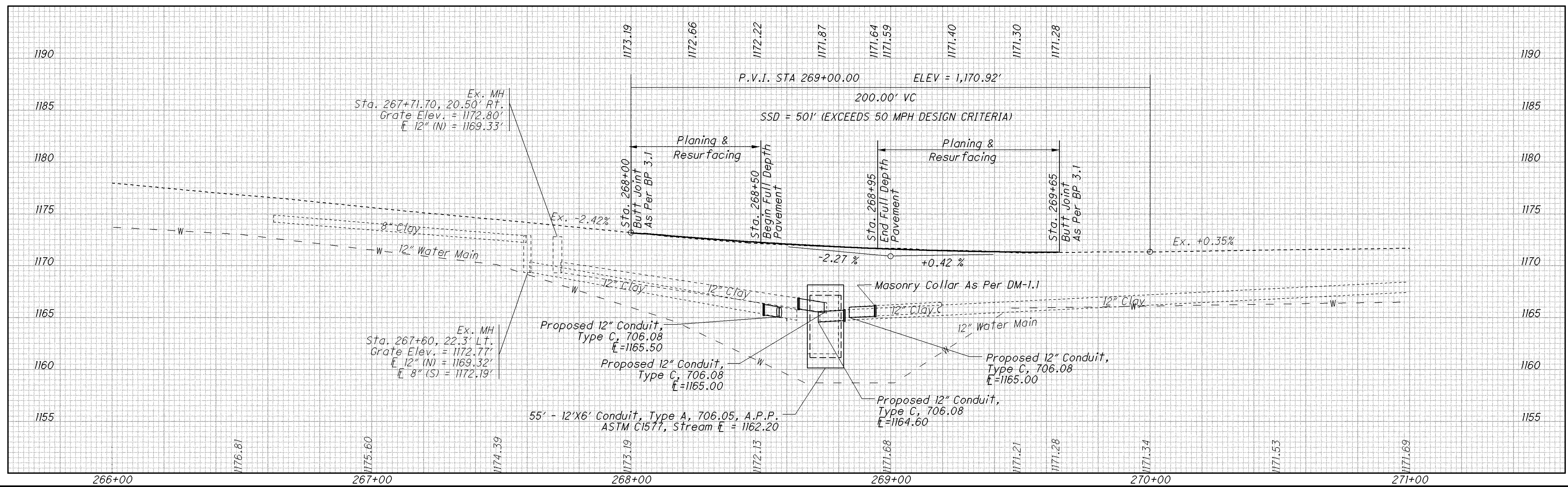
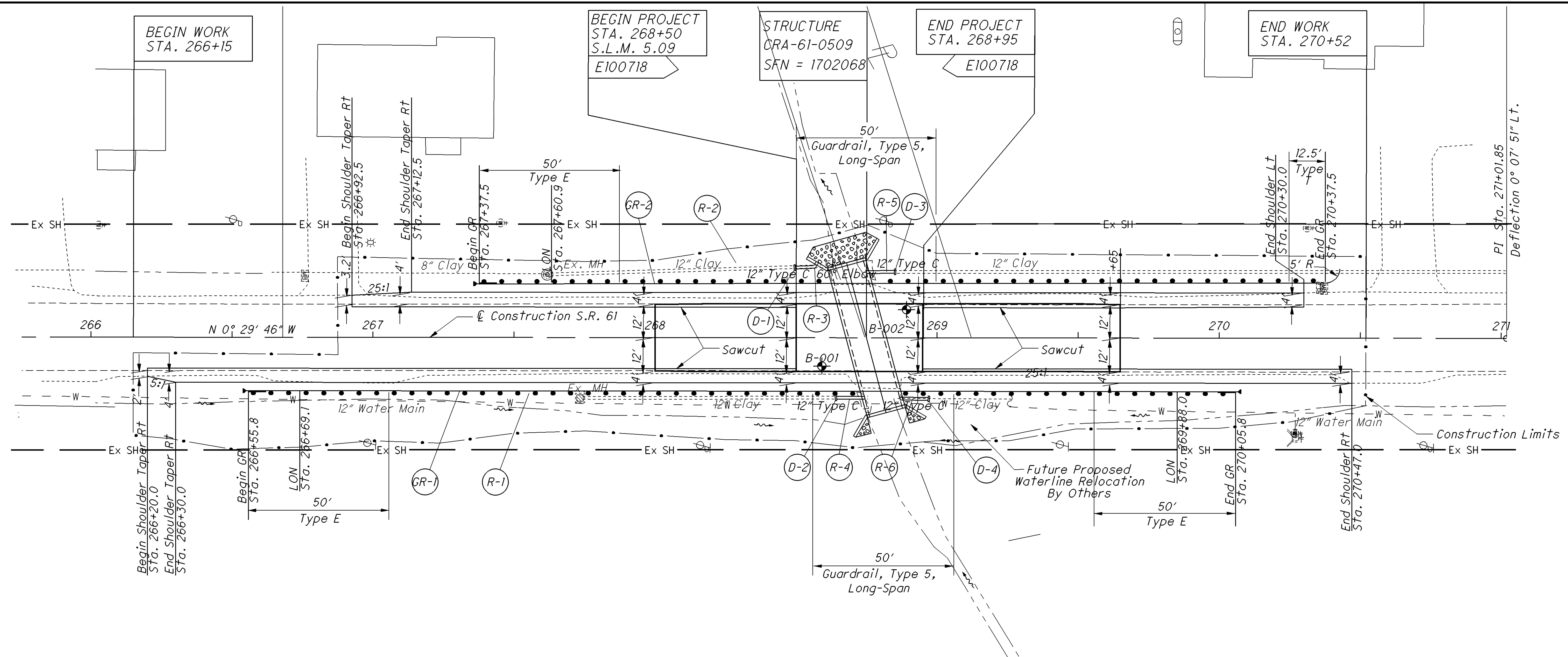


1	DETOUR M4-8-24 61 MI-5-24-2 M5-1L-24	2	DETOUR M4-8-24 61 MI-5-24-2 M5-1R-24	3	DETOUR M4-8-24 61 MI-5-24-2 M6-1L-24
4	DETOUR M4-8-24 61 MI-5-24-2 M6-1R-24	5	DETOUR M4-8-24 61 MI-5-24-2 M6-3-24	a	NORTH M3-1-24
6	DETOUR M4-8-30 61 MI-5-36-2 M6-3-36	7	DETOUR M4-8-30 61 MI-5-36-2 M6-2R-36	b	SOUTH M3-3-24
8	SR 61 BRIDGE OUT 3 1/2 MILES AHEAD LOCAL TRAFFIC ONLY R11-3B-60 DETOUR M4-10L-48 ON TYPE III BARRICADES ON BOTH SHOULDERS	9	BRIDGE OUT 1 1/4 MILES AHEAD LOCAL TRAFFIC ONLY R11-3B-60 DETOUR M4-10R-48 ON TYPE III BARRICADES ON BOTH SHOULDERS	c	SOUTH M3-3-36
10	SR 61 BRIDGE OUT 2 1/4 MILES AHEAD LOCAL TRAFFIC ONLY R11-3B-60 DETOUR M4-10L-48 ON TYPE III BARRICADES ON BOTH SHOULDERS	11	SR 61 CLOSED 1 MILE SOUTH OF US 30 LOCAL TRAFFIC ONLY R11-3A-60 MODIFIED ON TYPE III BARRICADES ON BOTH SHOULDERS		
12	BRIDGE OUT 1 MILES AHEAD LOCAL TRAFFIC ONLY R11-3B-60 DETOUR M4-10L-48 ON TYPE III BARRICADES ON BOTH SHOULDERS	13	BRIDGE OUT 1/4 MILES AHEAD LOCAL TRAFFIC ONLY R11-3B-60 DETOUR M4-10L-48 ON TYPE III BARRICADES ON BOTH SHOULDERS	14	ROAD CLOSED AND ADVANCED SIGNING AS PER MT-101.60 R11-2-48
		15	DETOUR AHEAD W20-2-36		

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REF SHEET NO.	SHEET NO.	STATION TO STATION		SIDE	202	202	602	603	606	606	606	606	626	BENDS AND BRANCHES FOR INFORMATION ONLY		
					PIPE REMOVED, 24" AND UNDER FT	GUARDRAIL REMOVED FT	CONCRETE MASONRY CY	12" CONDUIT, TYPE C FT	GUARDRAIL, TYPE 5 FT	GUARDRAIL, TYPE 5, LONG-SPAN FT	ANCHOR ASSEMBLY, TYPE E EACH	ANCHOR ASSEMBLY, TYPE T EACH	BARRIER REFLECTOR EACH	60° Elbow No.		
R-1	9	267+40	270+15	RT		275										
R-2	9	268+28	268+89	LT		75										
R-3	9	268+49	268+64	LT	15											
R-4	9	268+64	268+75	RT	11											
R-5	9	268+75	268+85	LT	10											
R-6	9	268+85	268+97	RT	12											
D-1	9	268+49	268+58	LT			0.1	10							1	
D-2	9	268+64	268+74	RT			0.1	10								
D-3	9	268+75	268+85	LT			0.1	10								
D-4	9	268+87	268+97	RT			0.1	10								
GR-1	9	266+55.8	270+05.8	RT					200	50	2		8			
GR-2	9	267+37.5	270+37.5	LT					187.5	50	1	1	7			
TOTALS CARRIED TO GENERAL SUMMARY					48.0	350.0	0.4	40.0	387.5	100.0	3.0	1.0	15.0			

CALCULATED TLS	CHECKED MDC	ROADWAY & DRAINAGE SUBSUMMARY



PLAN AND PROFILE
STA. 266+00 TO STA. 271+00

CRA-61-5.09

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SEEDING	
END WIDTH	SO. YDS.
24	81
69	
26	
63	
19	
26	
0	
239	



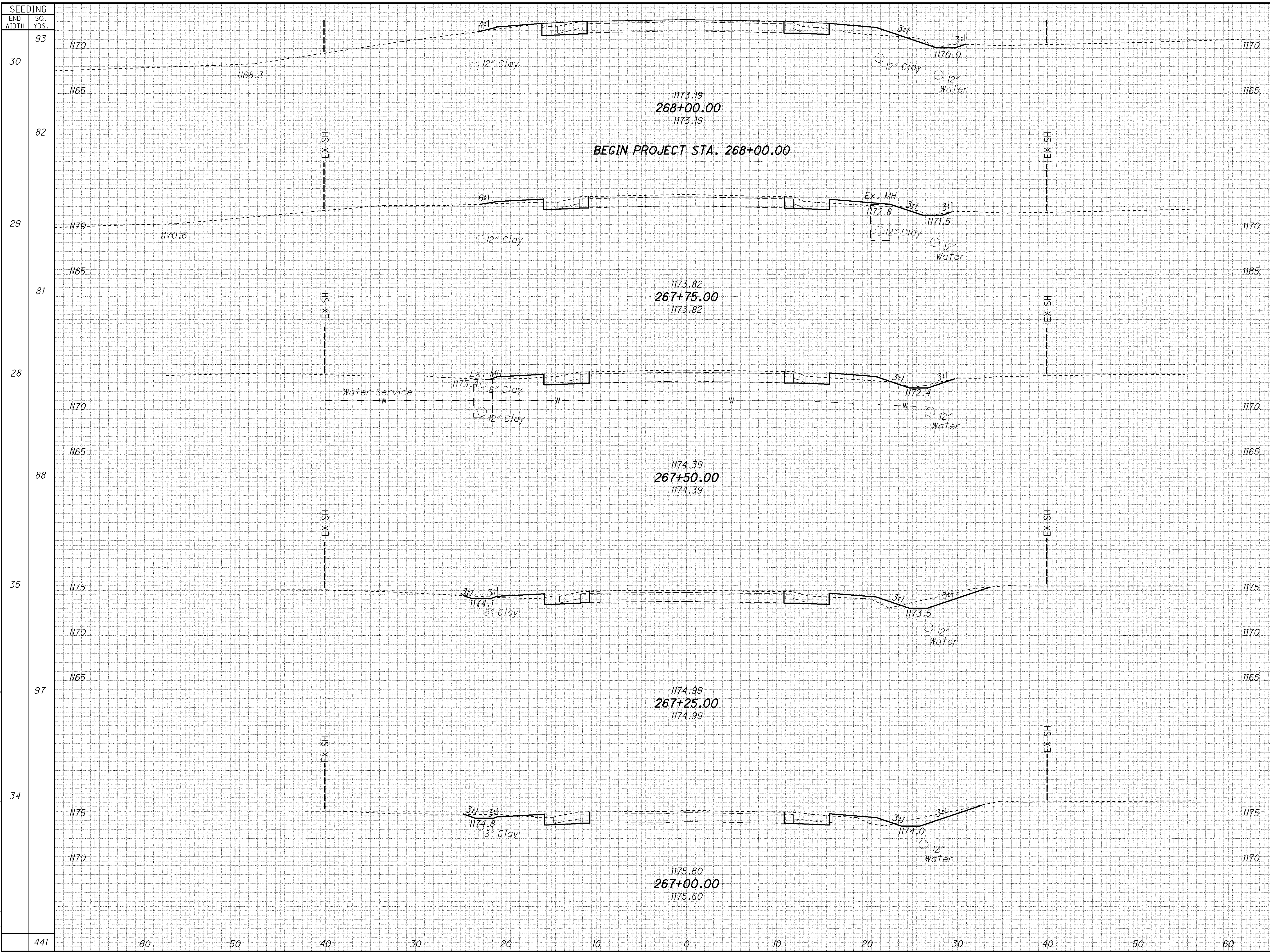
END AREA		VOLUME		CALCULATED	CHECKED
CUT	FILL	CUT	FILL		
12	4	13	4		
		11	3		
12	3				
		9	3		
7	3				
		1	1		
0	0				
		34	11		

**CROSS SECTIONS
STA. 265+75.00 TO STA. 266+75.00**

CRA-61-5.09

10
23

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SEEDING	END AREA		VOLUME		CALCULATED	CHECKED
	CUT	FILL	CUT	FILL		
93	11	6	10	10		
30						
82			10	5		
29	11	4				
81			10	4		
28	11	5				
88			13	4		
35	16	4				
97			15	4		
34	17	4				
441			58	27		

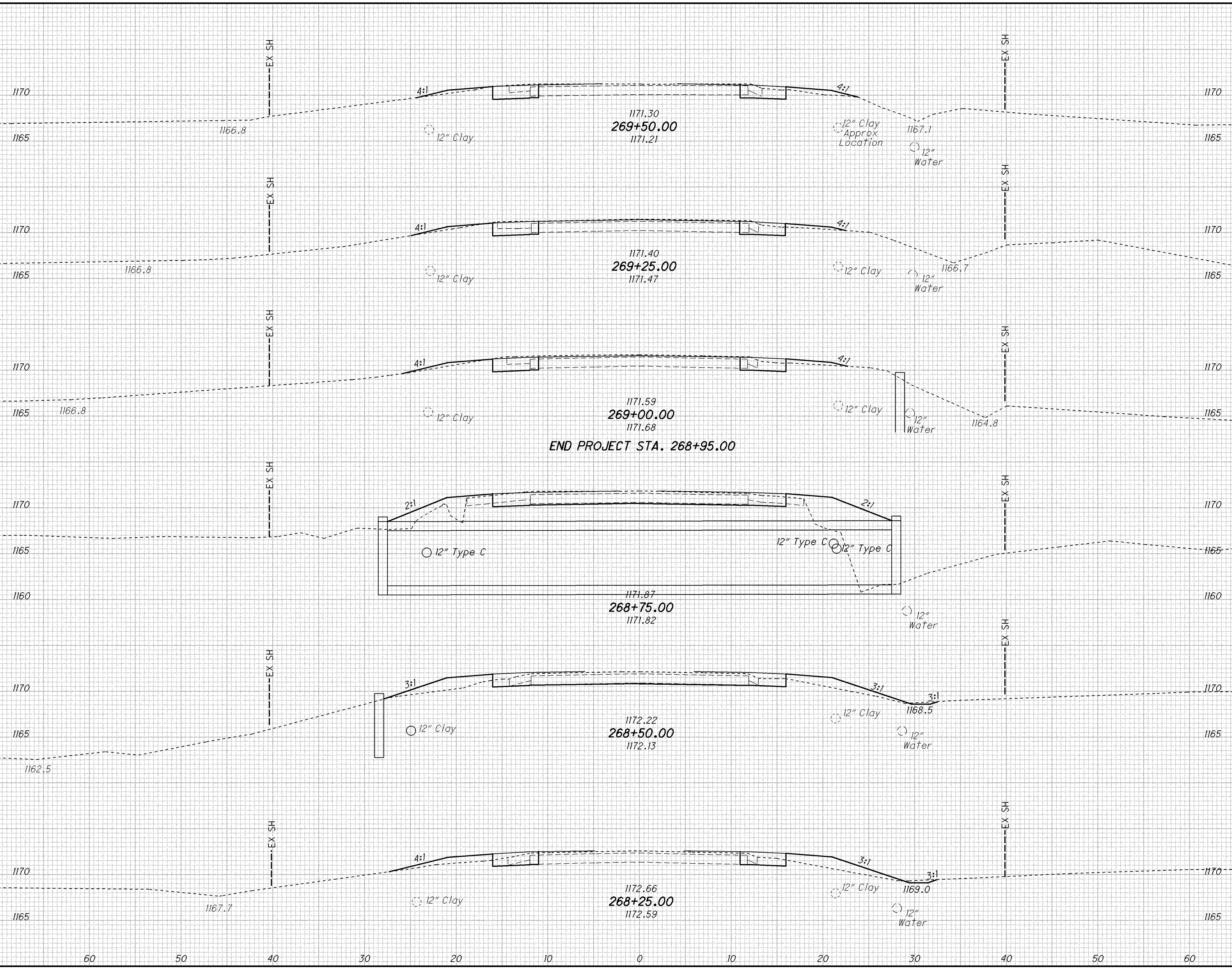
CROSS SECTIONS STA. 267+00.00 TO STA. 268+00.00

CRA -61-5.09

11
23

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SEEDING	
END WIDTH	SO. YDS.
63	63
25	68
24	68
25	79
32	96
37	103
37	477



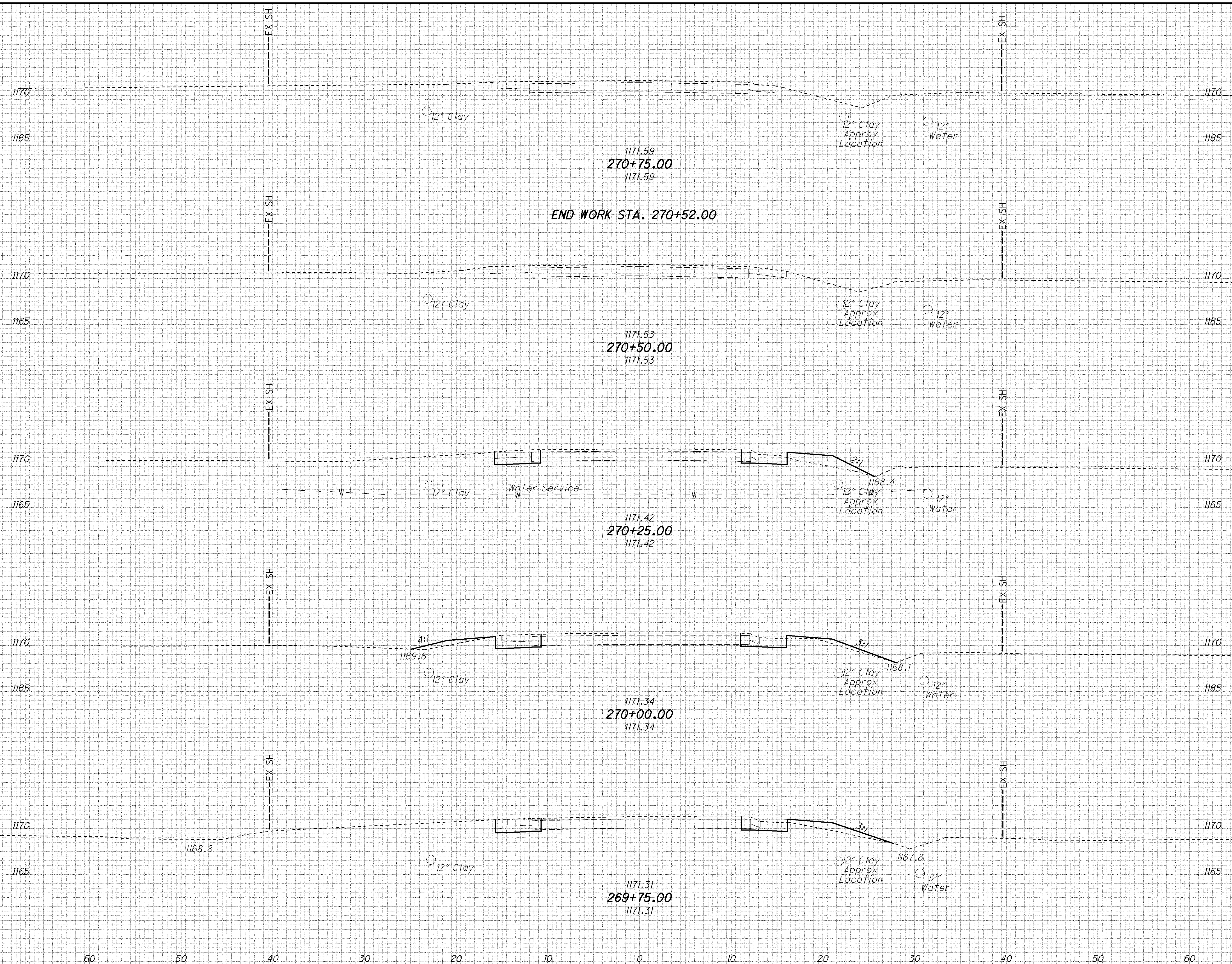
END AREA		VOLUME	
CUT	FILL	CUT	FILL
13	6	12	6
13	4	12	4
13	4	12	4
13	4	12	4
43	66	26	32
38	40	38	40
38	19	22	16
10	16	122	102

CROSS SECTIONS
STA. 268+25.00 TO STA. 269+50.00
CRA-61-5.09

CALCULATED	CHECKED
12	23

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SEEDING	
END WIDTH	SO. YDS.
156	
60	
50	
40	
30	
20	
10	
0	
10	
20	
30	
40	
50	
60	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
13	6	12	6
13	6	12	6
13	7	12	6
0	0	6	3
0	0	0	0

CRA -61-5.09
CROSS SECTIONS
STA. 269+75.00 TO STA. 270+75.00
 CALCULATED
 CHECKED

EXISTING STRUCTURE

TYPE: SINGLE SPAN, CONCRETE SLAB BRIDGE ON SPREAD FOOTINGS
 SPAN: 12' F/F ABUTMENT
 ROADWAY: 37'-3" F/F GUARDRAIL
 SKEW: 15° R.F.
 APPROACH SLABS: NONE
 ALIGNMENT: TANGENT
 CROWN: NORMAL
 SFN: 1702068
 DATE BUILT: 1935
 DISPOSITION: 4A(POOR CONDITION)

PROPOSED STRUCTURE

TYPE: PRECAST REINFORCED CONCRETE BOX
 SPAN: 12'
 RISE: 6' (5.25' WATERWAY OPENING)
 ROADWAY: 40'-0" F/F GUARDRAIL
 LOADING: HL-93
 SKEW: 15° R.F.
 ALIGNMENT: TANGENT
 SFN: 1702076
 COORDINATES:
 LATITUDE: 40°44'47"
 LONGITUDE: 82°44'44"

Rock Channel Protection,
Type B With Filter
(9'X24'X2.5')

Rock Channel Protection,
Type B With Filter
(6'X6'X2.5')

Future Proposed
Waterline Relocation
By Others

Sta. 268+74.90
€ Constr. S.R. 61

Construction Limits

HYDRAULIC DESIGN DATA

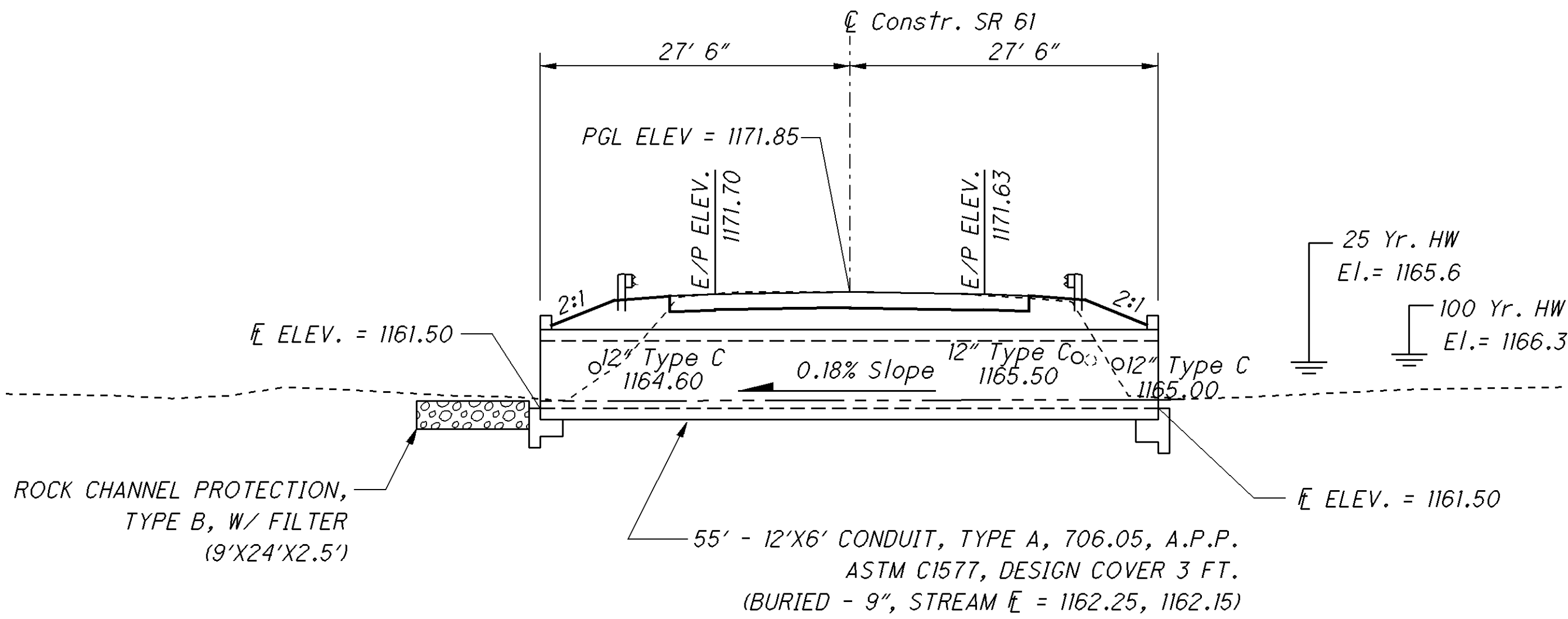
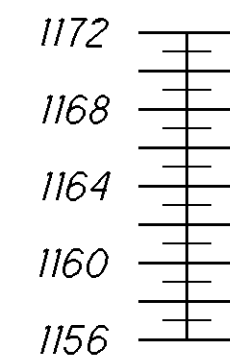
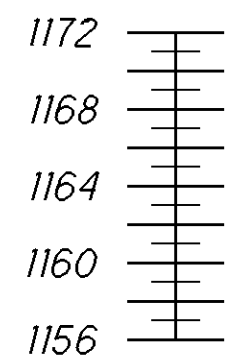
DRAINAGE AREA : 344 ACRES

Q(25): 185 CFS	Q(100): 255 CFS
HW(25): 1165.6 FT	HW(100): 1166.3 FT
V(25): 6 FT/S	V(100): 7 FT/S
OHW: 1163.95 FT	NORMAL: 1162.85 FT

ESTIMATED QUANTITIES

(CARRIED TO GENERAL SUMMARY)

601 ROCK CHANNEL PROTECTION, TYPE B WITH FILTER (OUTLET END)	20 CU.YD.
601 ROCK CHANNEL PROTECTION, TYPE B WITH FILTER (INLET END)	3 CU.YD.
TOTAL	23 CU.YD.



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DESIGN AGENCY: ODOT, CENTRAL OFFICE
 OFFICE OF PRODUCTION

REVIEWED: MDC
 DATE: 1702076

DRAWN: MLC
 CHECKED: MLC

DESIGNED: TLS

HORIZONTAL SCALE IN FEET: 1" = 20'

SITE PLAN
 BRIDGE NO. CRA-61-0509
 TRIBUTARY OF OLENTANGY RIVER

CRA-61-5.09
PID No. 83443

1 / 8

14 / 23

GENERAL NOTES

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2007, INCLUDING THE INTERIM SPECIFICATIONS THROUGH 2008 AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN LOADING:

HS20-44 AND THE ALTERNATE MILITARY LOADING.

DESIGN STRESSES:

CAST-IN-PLACE STRUCTURES
 CONCRETE CLASS OC1 - $f'_c = 4,000$ psi SUBSTRUCTURE
 REINFORCING STEEL - ASTM A615, A616, OR A617
 $F_y = 60,000$ psi.

PRECAST STRUCTURES: FOR BOX CULVERTS SEE CMS SECTION 611.

REMOVAL OF EXISTING STRUCTURE:

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

FOUNDATION BEARING PRESSURE:

WINGWALL AND CULVERT FOOTINGS, AS DESIGNED PRODUCE A MAXIMUM BEARING PRESSURE OF 1.7 KIPS PER SQUARE FEET. THE ALLOWABLE MAXIMUM BEARING PRESSURE IS 2.9 KIPS PER SQUARE FEET.

UTILITY LINES

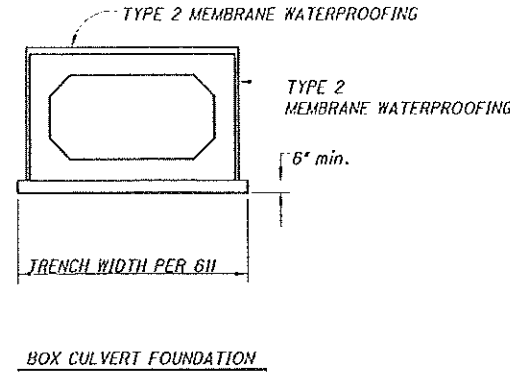
ALL EXPENSES INVOLVED IN RELOCATING (INSTALLING) THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER(S). THE CONTRACTOR AND OWNER(S) ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

UNCLASSIFIED EXCAVATION

EXCAVATION LIMITS FOR THE PROPOSED STRUCTURE IS DEFINED IN 503.09. EXCAVATION OUTSIDE THESE LIMITS NECESSARY TO REMOVE THE EXISTING STRUCTURE SHALL BE INCLUDED IN ITEM 202 FOR PAYMENT.

ITEM 611 - 12' X 6' CONDUIT, TYPE A, 706.05, AS PER PLAN

SEE SHEETS 3/8 AND 6/8.



ESTIMATED QUANTITIES				
ITEM	ITEM EXT	TOTAL	UNIT	DESCRIPTION
202	11000	LUMP		STRUCTURE REMOVED
503	11100	LUMP		COFFERDAMS AND EXCAVATION BRACING
503	21301	LUMP		UNCLASSIFIED EXCAVATION, A.P.P
509	10000	4485	POUNDS	EPOXY COATED REINFORCING STEEL
511	46010	12	CU. YD.	CLASS OC1 CONCRETE, (WINGWALL ABOVE FOOTING)
511	46510	32	CU. YD.	CLASS OC1 CONCRETE, FOOTING
511	46610	1	CU. YD.	CLASS OC1 CONCRETE, HEADWALL
512	10100	39	SQ. YD.	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)
512	33000	196	SQ. YD.	TYPE 2 WATERPROOFING
516	13600	26	SQ. FT.	1" PREFORMED EXPANSION JOINT FILLER
518	21231	LUMP		POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN
611	95801	55	FT.	12' X 6' CONDUIT, TYPE A, 706.05, AS PER PLAN, ASTM C1577, DESIGN COVER 3 FT.

ASBESTOS NOTIFICATION

An asbestos survey of the bridge scheduled for demolition was conducted by a certified asbestos hazard evaluation specialist. The survey determined that no asbestos is present on the bridge.

The bridge which was surveyed and contained no asbestos is: CRA-61-5.08 (SFN 1702068) over tributary of Olentangy River.

A copy of the Ohio Environmental Protection Agency (OEPA) Notification of Demolition and Renovation form, partially completed and signed by the bridge owner, will be provided to the successful bidder at the preconstruction meeting. The contractor shall complete the form and return it to the District Construction Engineer along with the permit fee if applicable. The completion of this form may be performed at the preconstruction meeting. The District Construction Engineer shall submit the form and contractors fee to the OEPA Northwest District Office at least ten (10) working days prior to the start of the demolition of the bridge. The District Construction Engineer shall provide a copy of the completed form to the contractor. The contractor shall not commence demolition of the structure until the above requirements are met.

- Information on the form will include:
- The contractors name and address.
 - The scheduled dates for the start and completion of the bridge removal.
 - A description of the planned demolition work and the method(s) to be used.

A copy of the OEPA form is available for inspection at the ODOT, District 3 Office, at 906 Clark Avenue, Ashland, Ohio 44805.

Basis for Payment

The contractor shall furnish all fees, labor, and material necessary to complete and submit the OEPA Notification form. Payment for this work shall be included in the bid item 202 for Structure Removal.

GENERAL NOTES & ESTIMATED QUANTITIES

BRIDGE NO. CRA-61-5.08

TRIBUTARY OF OLENTANGY RIVER

CRA - 61 - 5.09

PID No. 83443

2 / 8

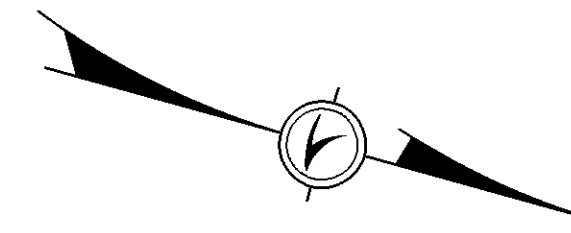
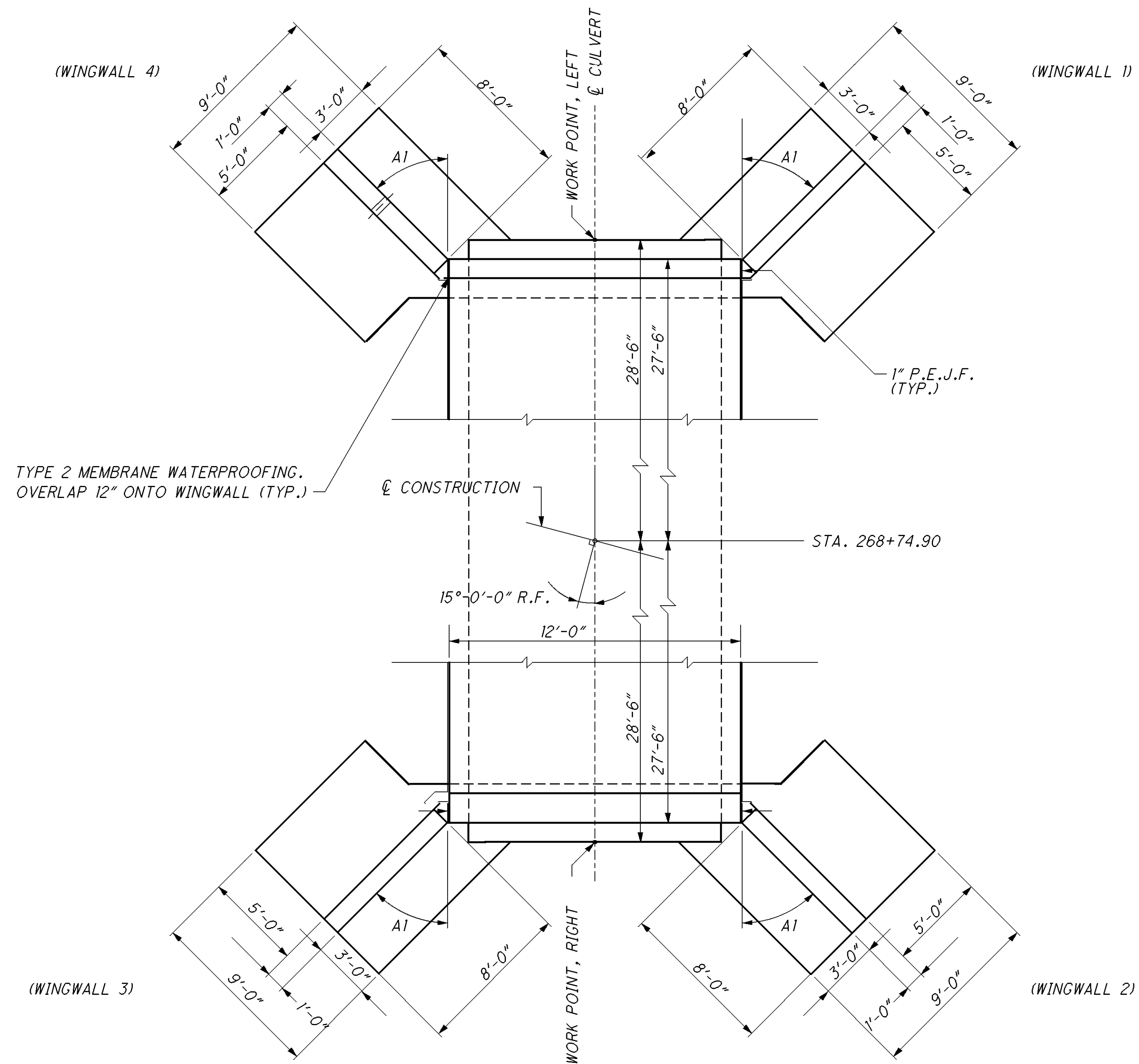
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ODOT CENTRAL OFFICE
 OFFICE OF PRODUCTION

DATE: 02/08/12
 MDC
 PROJECT: 1102016

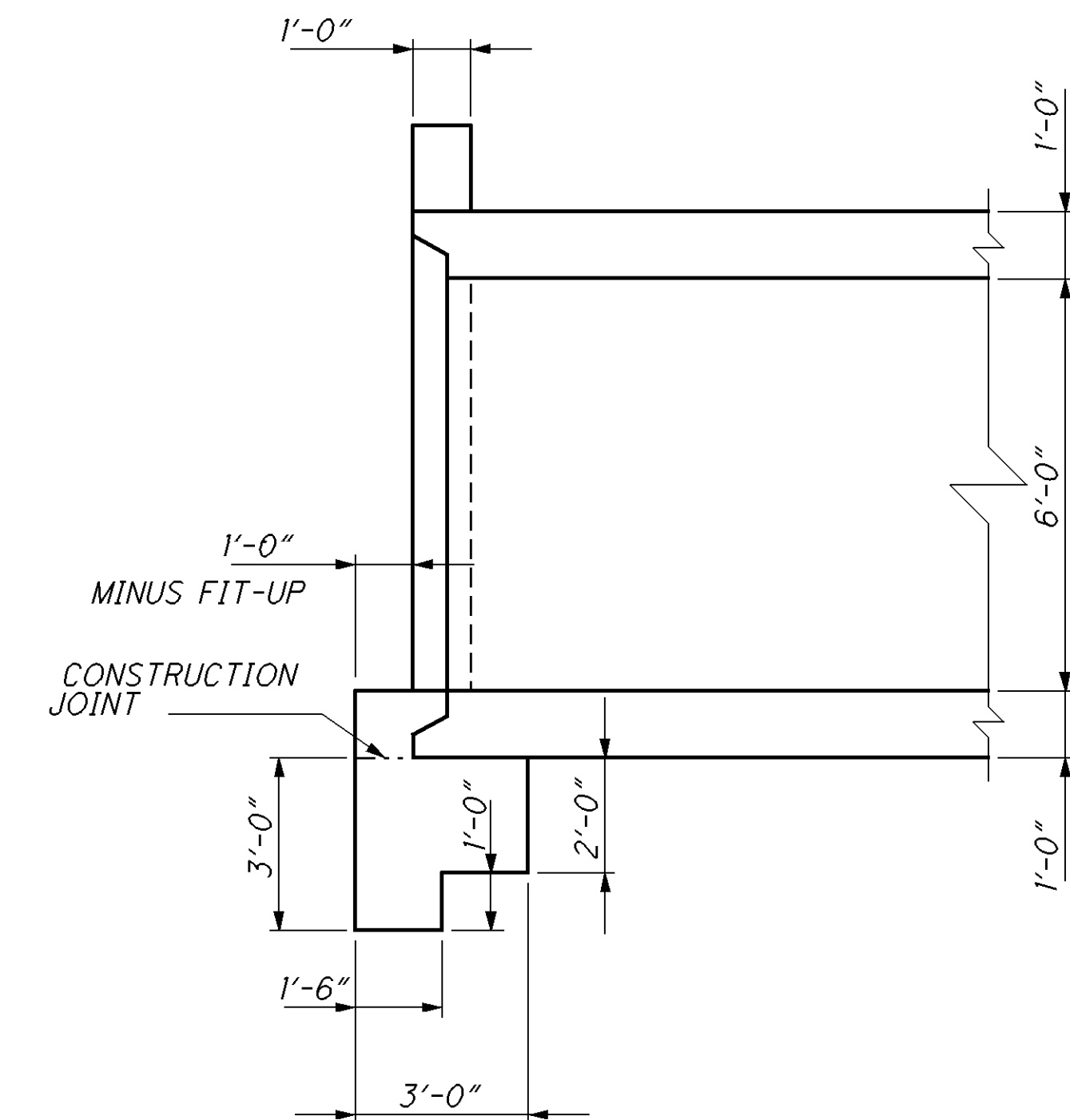
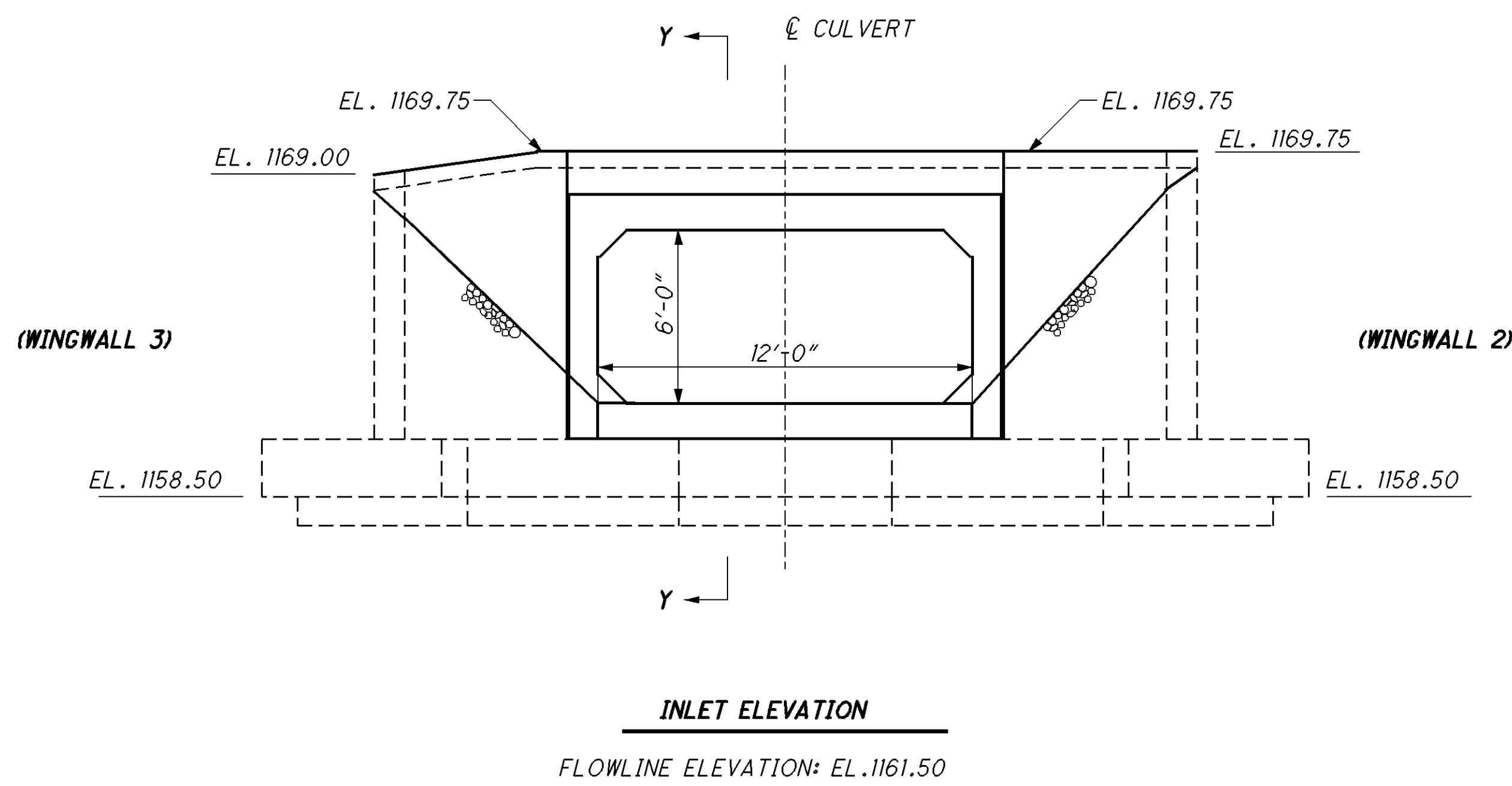
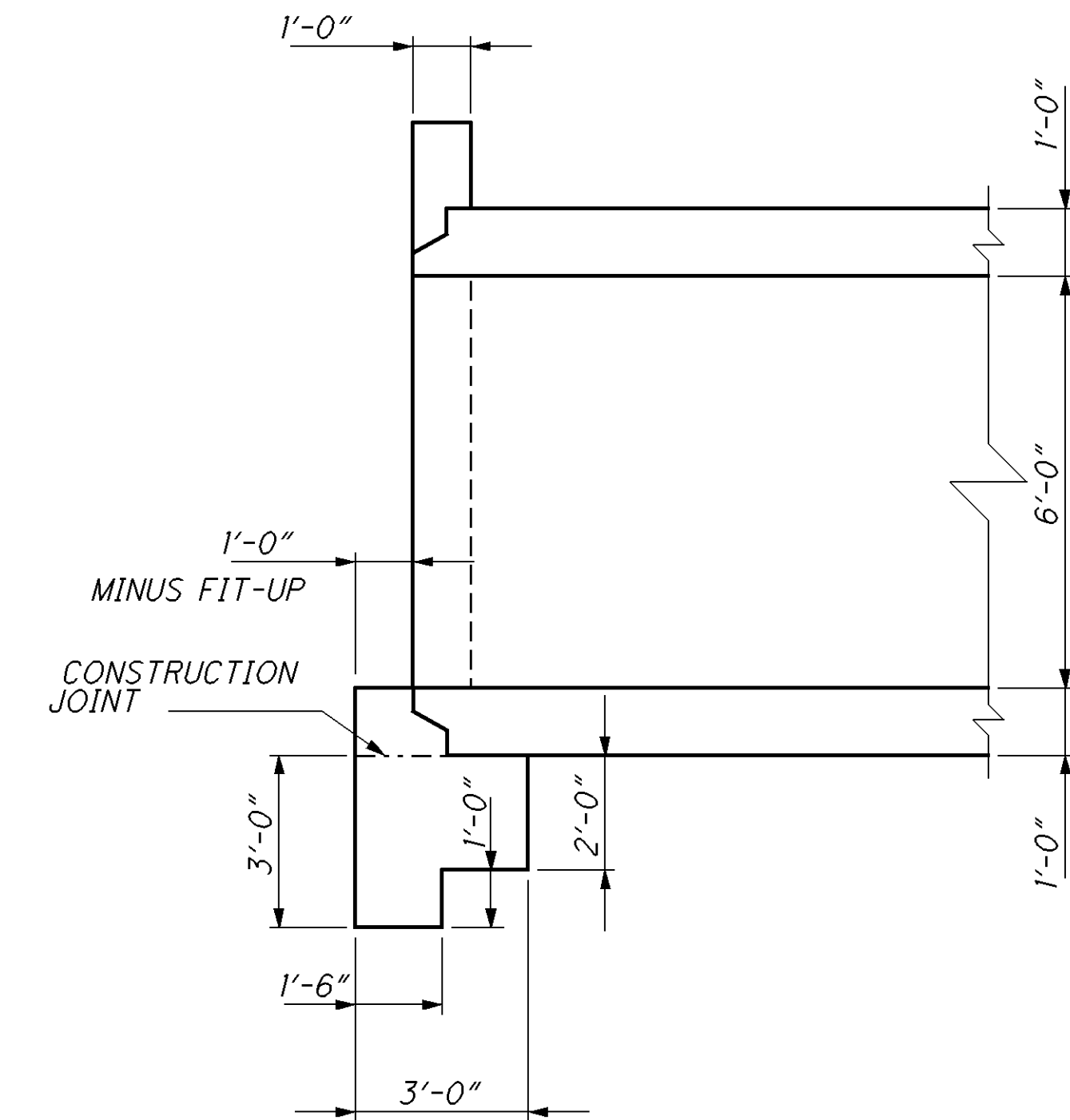
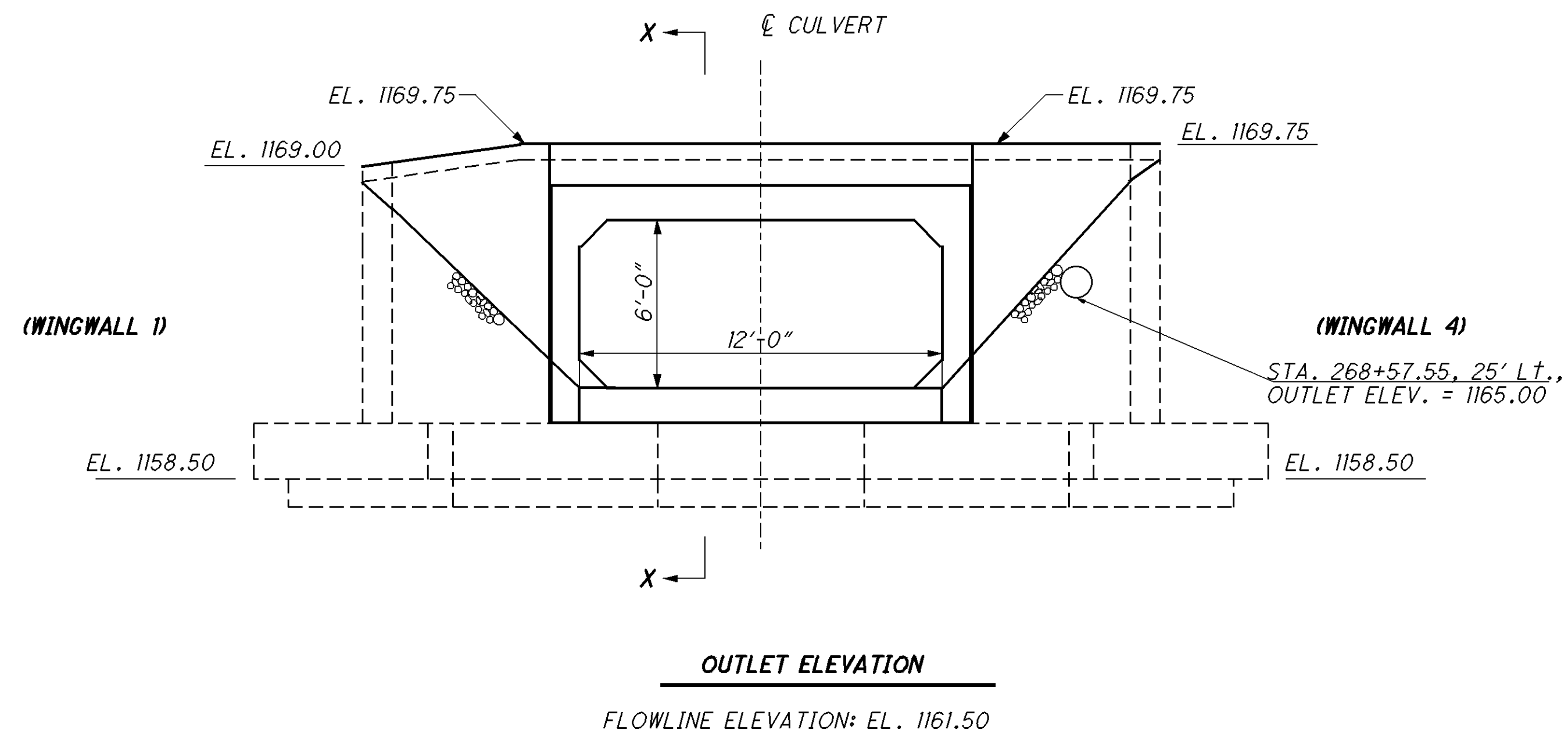
UNANS. TLS
 TLS
 MLC



WINGWALL ANGLES	
A1	45°0'0"
A2	45°0'0"
A3	45°0'0"
A4	45°0'0"

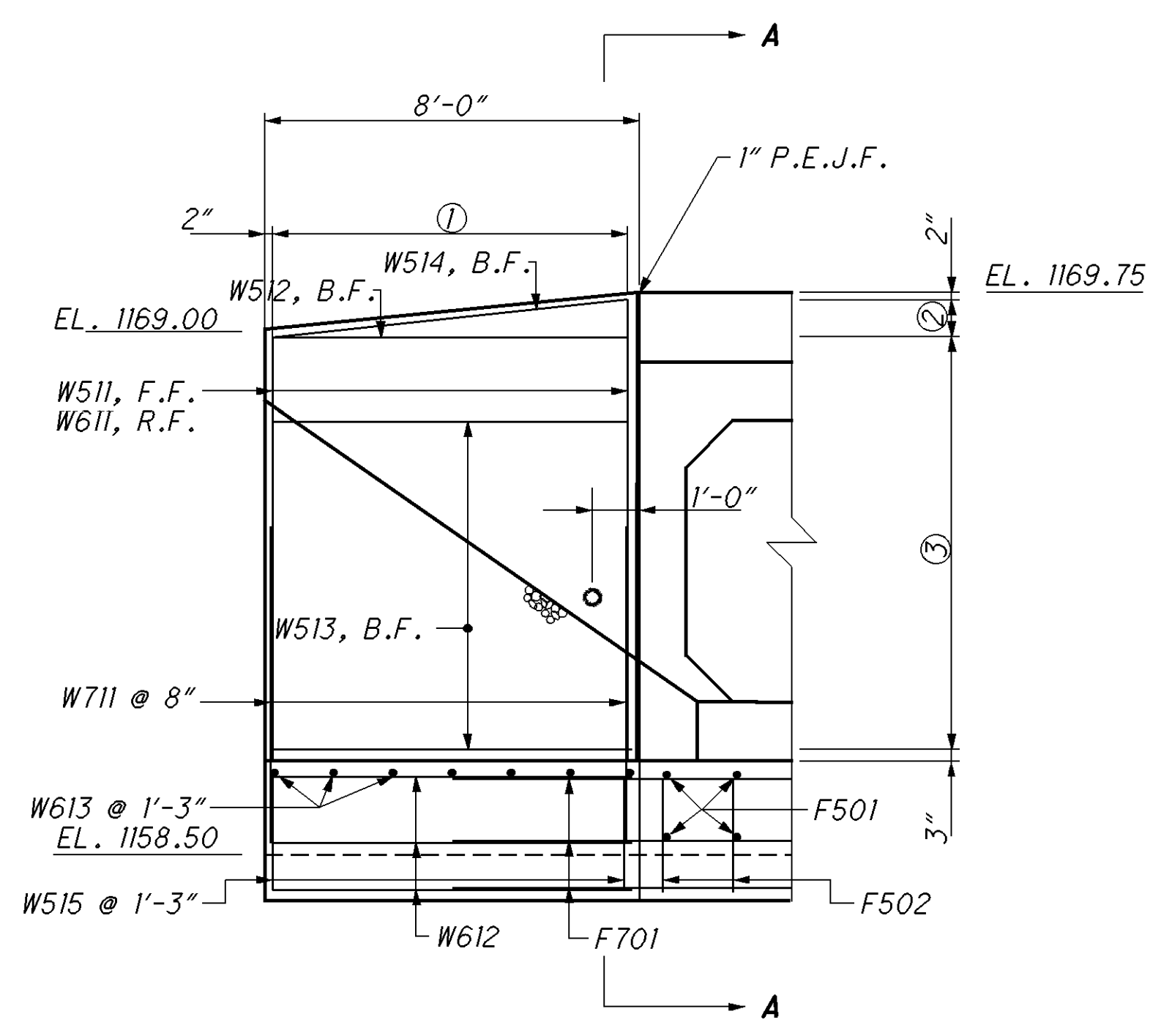
WORK POINTS		
LOCATION	STATION	OFFSET
LEFT	268+67.77	27'-6 1/2"
RIGHT	268+82.00	27'-6 1/2"

CULVERT & WINGWALL LAYOUT



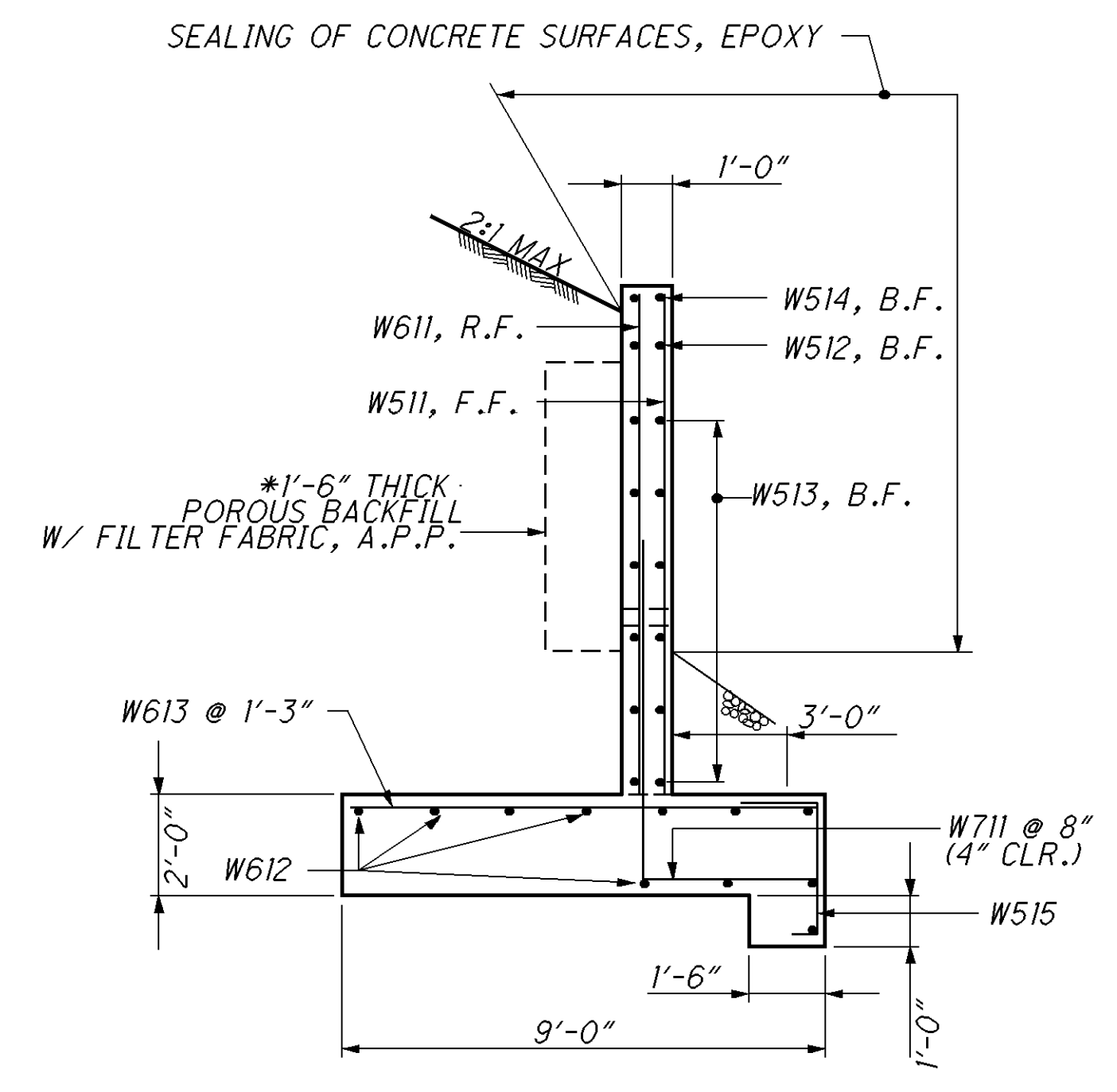
CRA -61-5.09 PID No. 83443	STRUCTURE DETAILS BRIDGE NO. CRA-61-0509 TRIBUTARY OF OLENTANGY RIVER	DESIGN AGENCY ODOT, CENTRAL OFFICE OFFICE OF PRODUCTION	DATE 02/08/12 REVIEWED MDC DRAWN TLS DESIGNED TLS CHECKED MLC
4 / 8	17 23	STRUCTURE FILE NUMBER 1702076	

LEGEND
 F.F. - FRONT FACE
 R.F. - REAR FACE
 B.F. - BOTH FACES



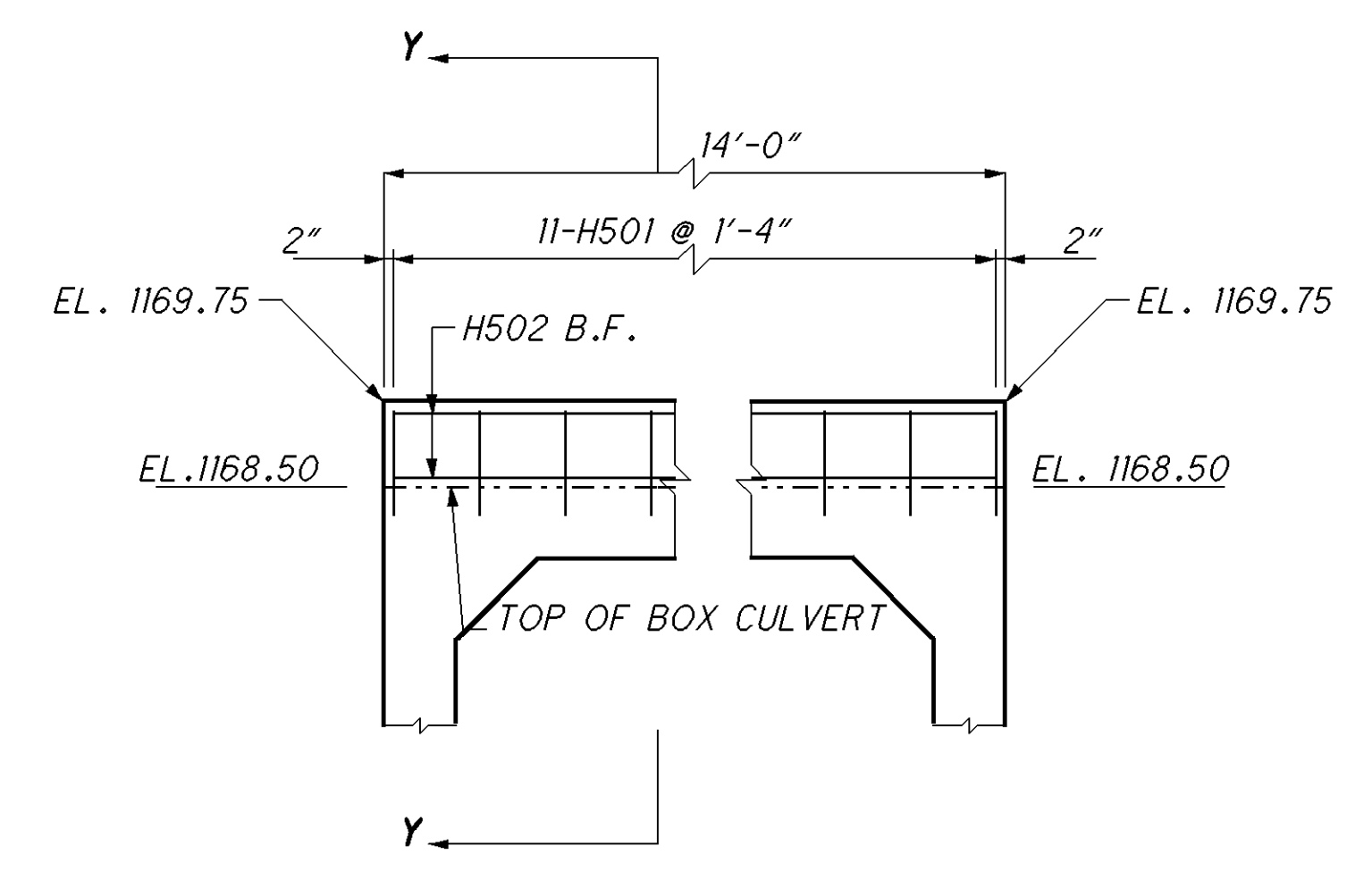
WINGWALL 1 ELEVATION
 NOTE: 4" DIA. WEEPHOLE
 ELEV. = 1163.440

- ① SER. OF 7 @ 1'-3"
- ② 9"
- ③ 6 SPACES @ 1'-4"

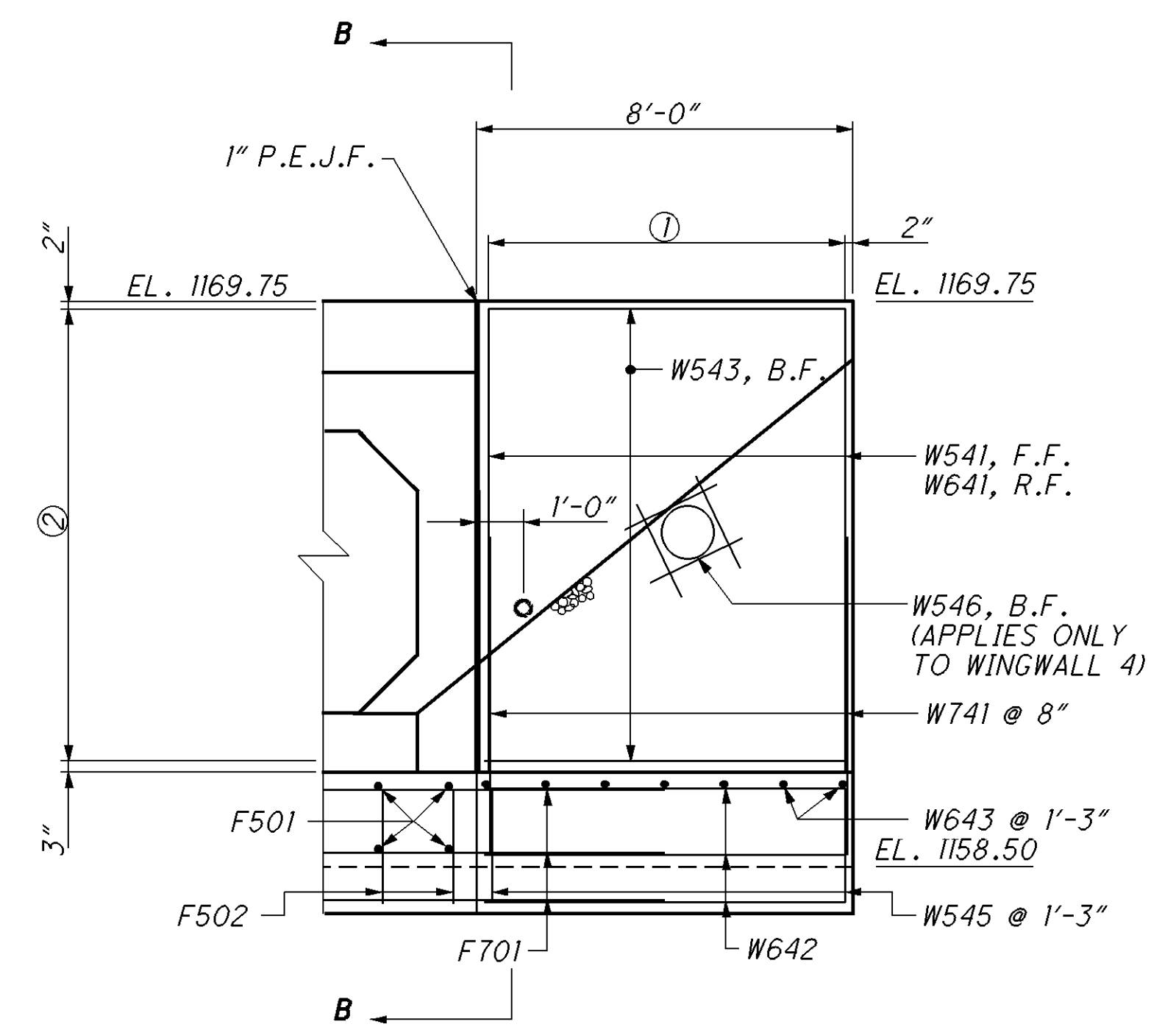


SECTION A-A

*SEE NOTES, THIS SHEET

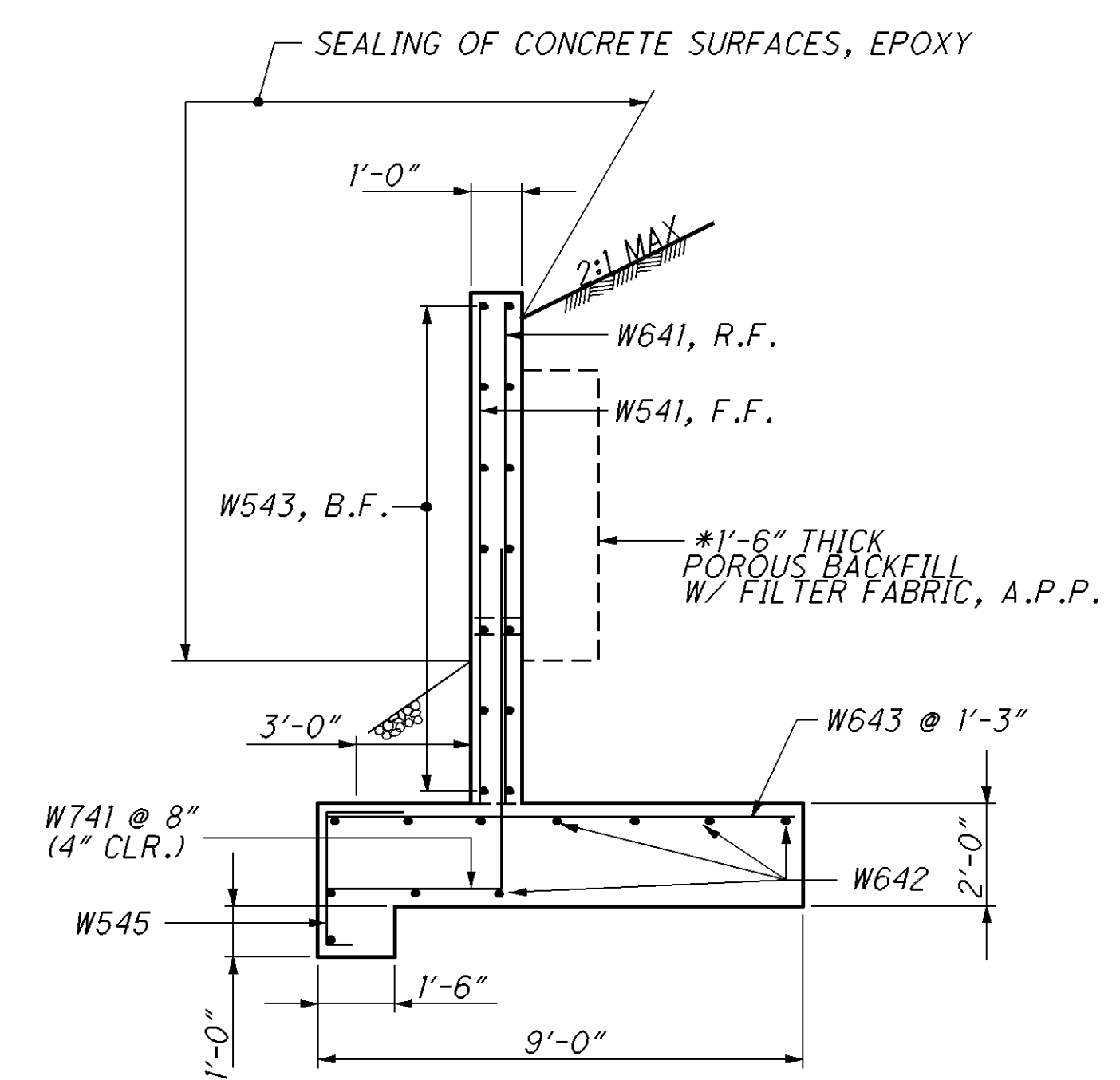


OUTLET HEADWALL REINFORCING DETAIL
 SEE SHEET 6/8 FOR SECTION Y-Y

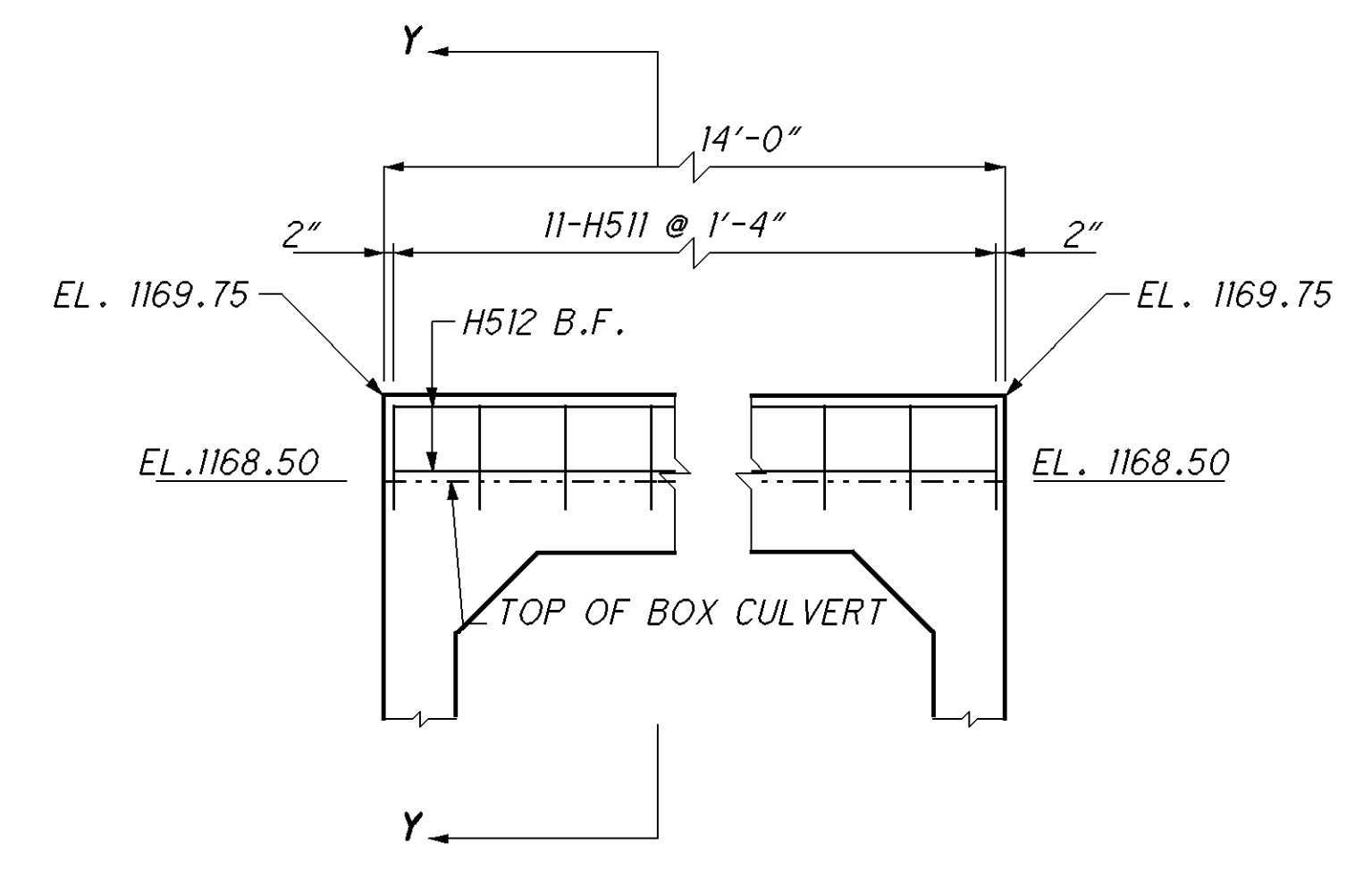


WINGWALL 4 ELEVATION
 NOTE: 4" DIA. WEEPHOLE
 ELEV. = 1163.610

- ① 6 SPACES @ 1'-3"
- ② 6 SPACES @ 1'-6"



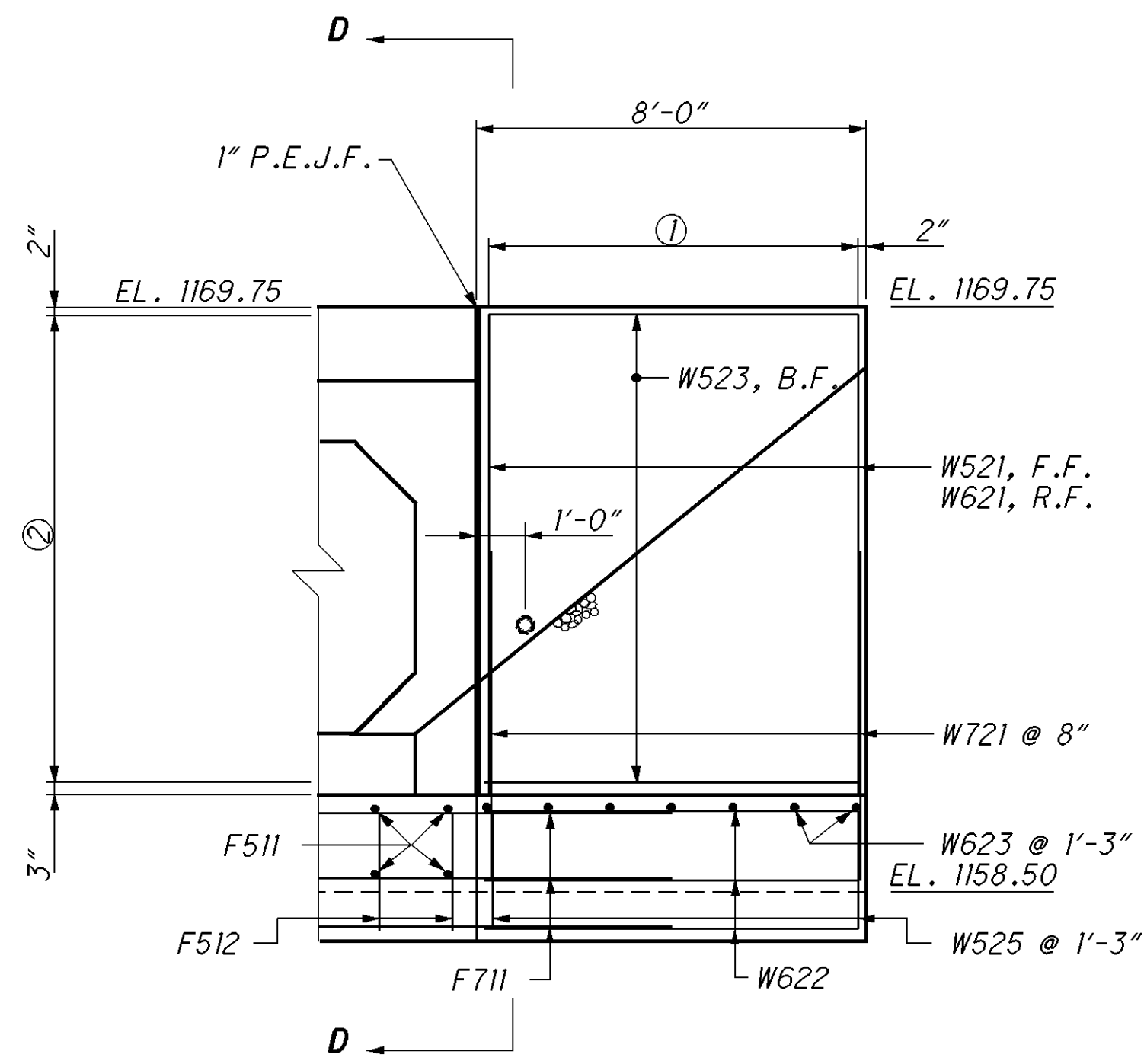
SECTION B-B



INLET HEADWALL REINFORCING DETAIL
 SEE SHEET 6/8 FOR SECTION Y-Y

NOTES:
 ITEM 518, POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN
 1'-6" 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.

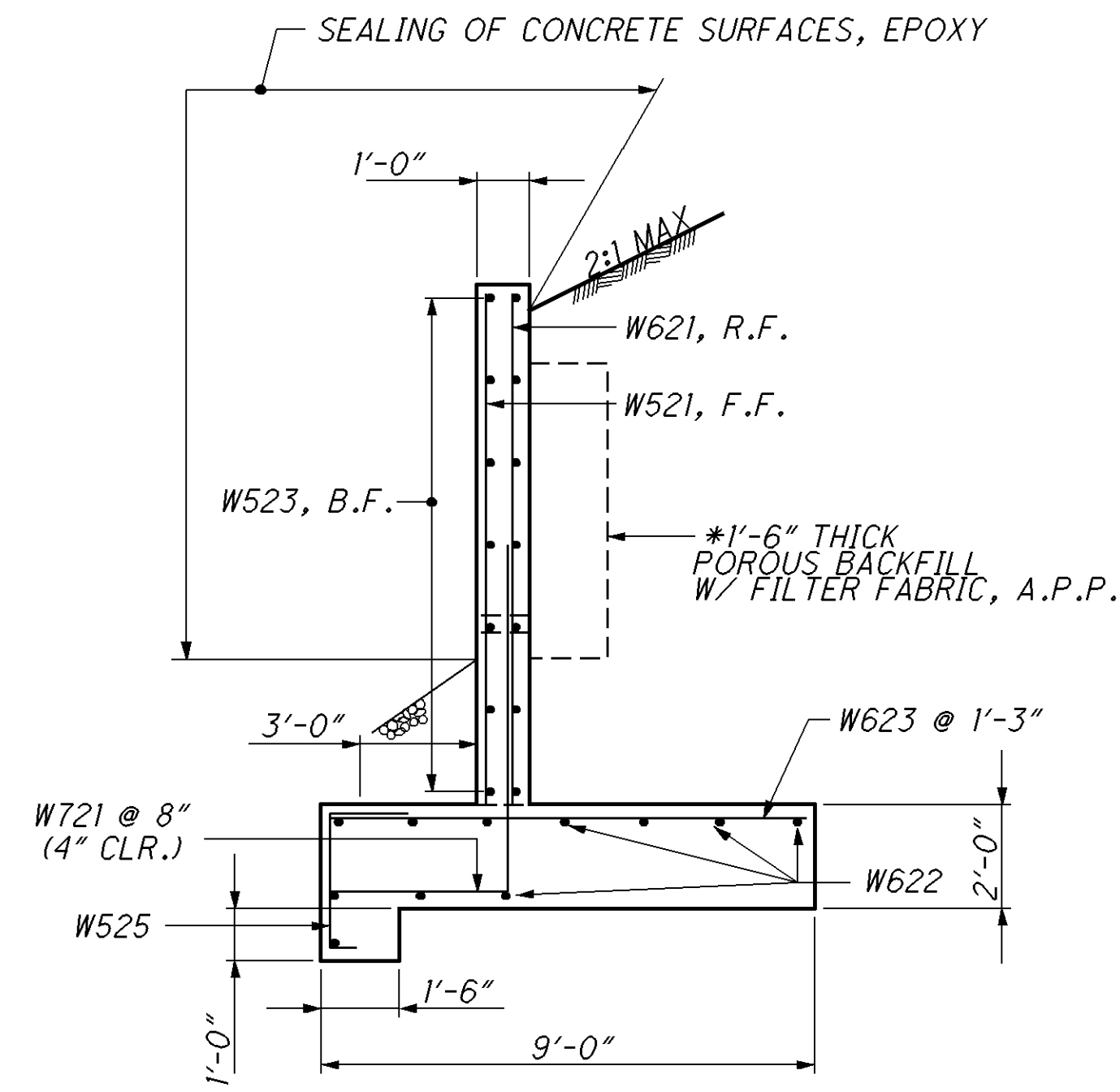
DESIGN AGENCY ODOT, CENTRAL OFFICE OFFICE OF PRODUCTION	DATE	02/08/12
	REVIEWED	MDC
	DRAWN	TLS
	DESIGNED	TLS
STRUCTURE DETAILS BRIDGE NO. CRA-61-0509 TRIBUTARY OF OLENTANGY RIVER	STRUCTURE FILE NUMBER	1702076
	CHECKED	MLC
	REVISIONS	
	REVISIONS	
CRA-61-5.09 PID No. 83443	5	8
	18	23



WINGWALL 2 ELEVATION

NOTE: 4" DIA. WEEPHOLE
ELEV. = 1163.610

- ① 6 SPACES @ 1'-3"
- ② 6 SPACES @ 1'-6"

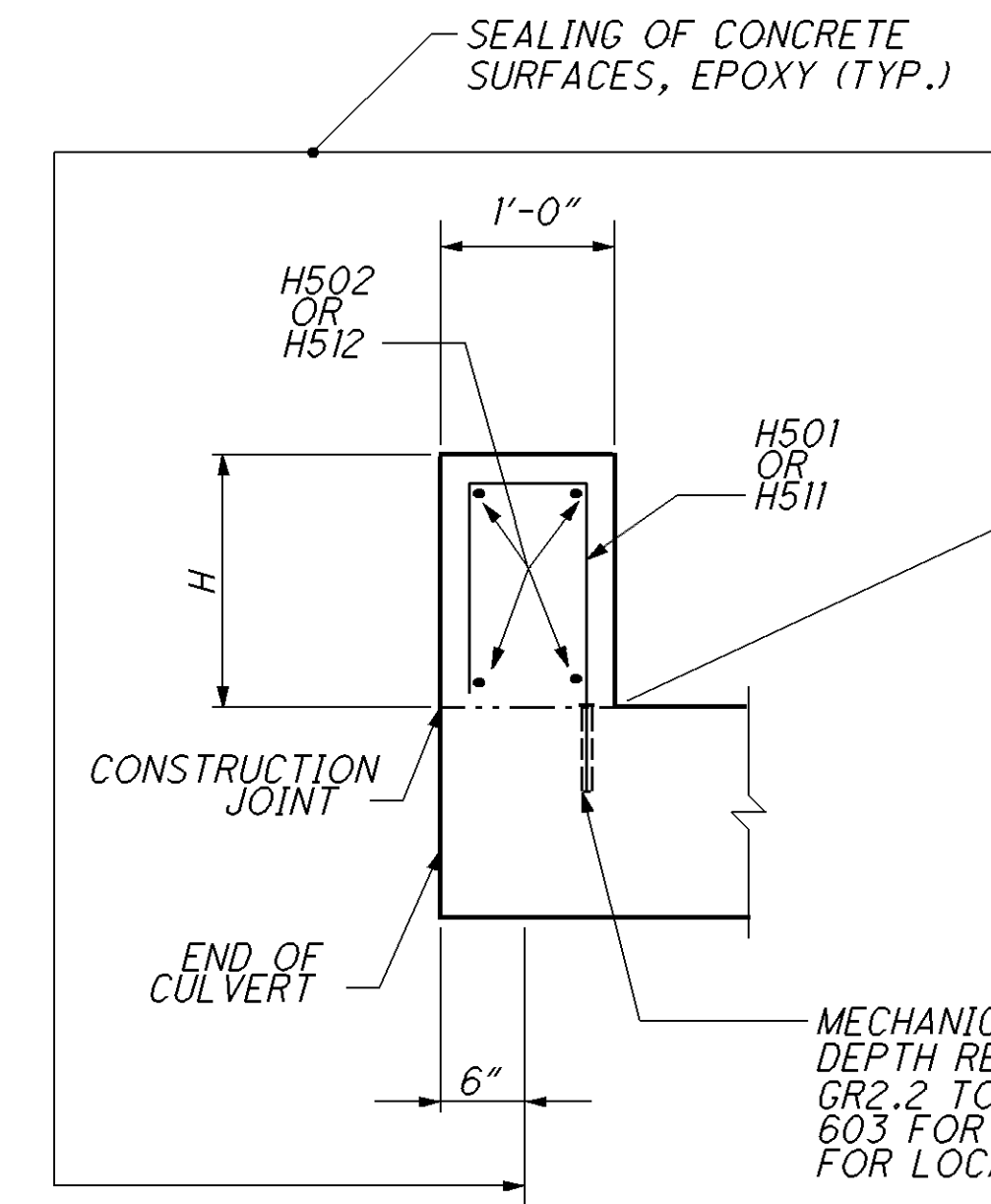


SECTION D-D

*SEE NOTES ON SHEET 5/8

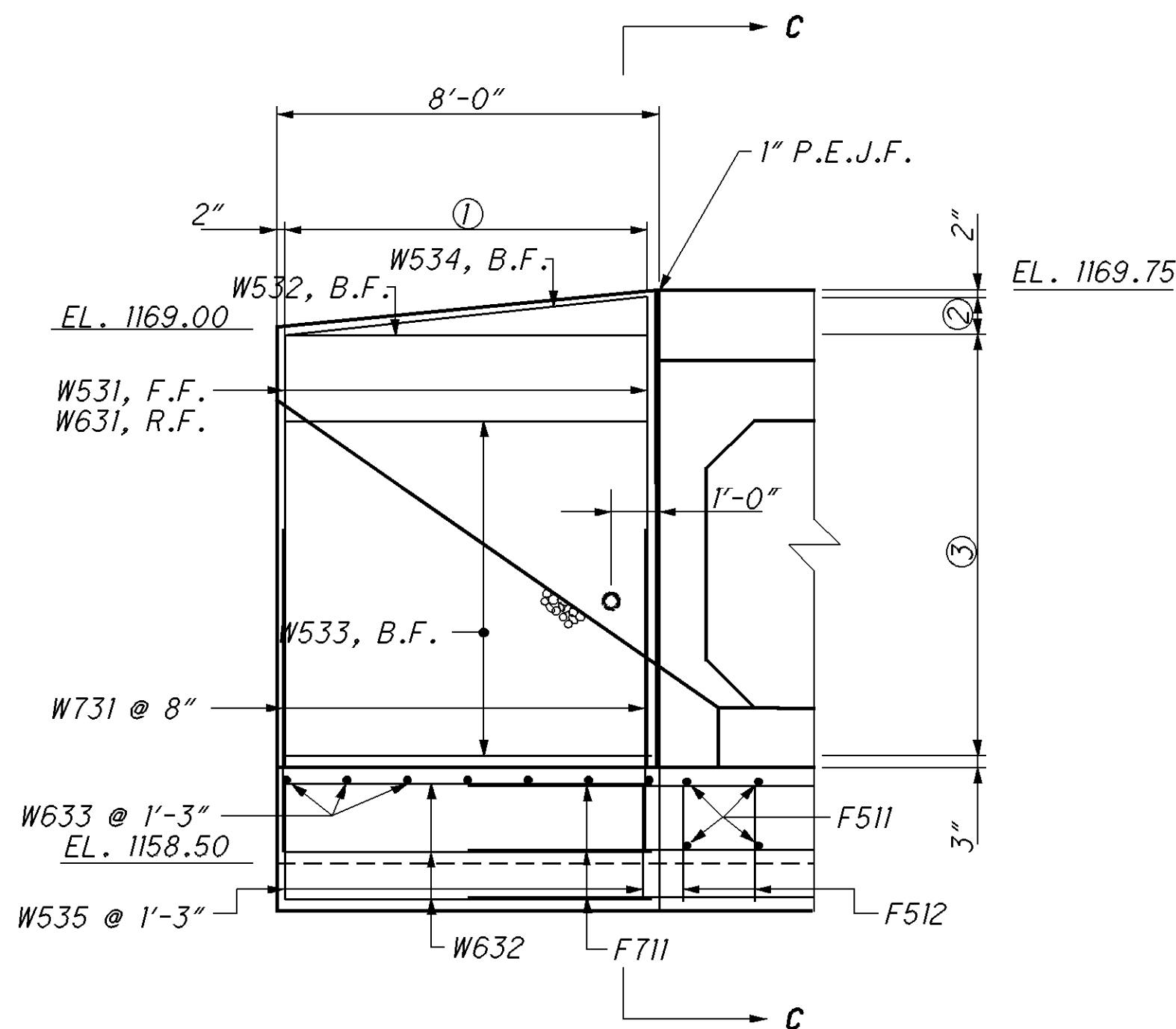
LEGEND

F.F. - FRONT FACE
R.F. - REAR FACE
B.F. - BOTH FACES



SECTION Y-Y

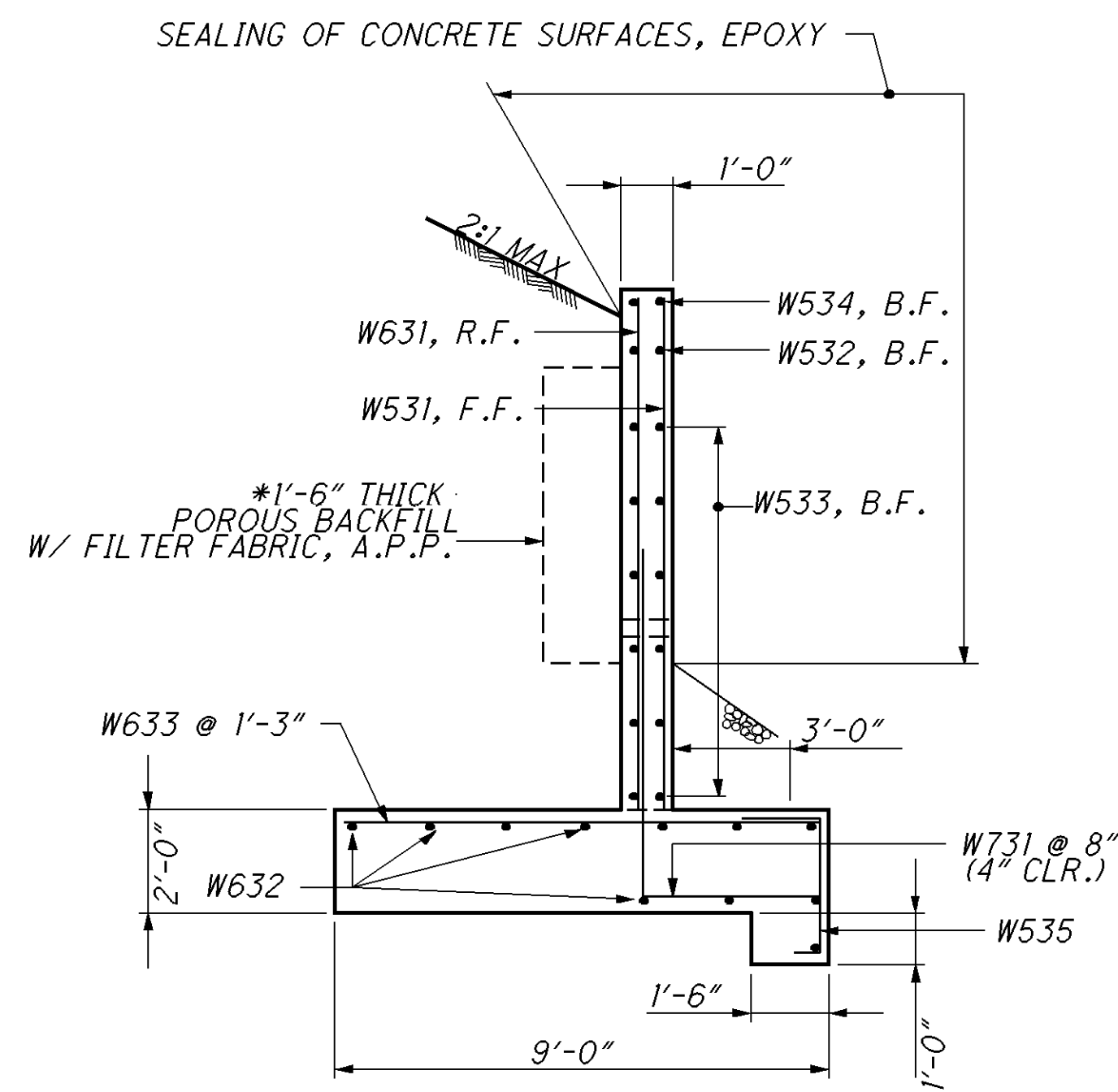
H = 1'-3" OUTLET HEADWALL
H = 1'-3" INLET HEADWALL



WINGWALL 3 ELEVATION

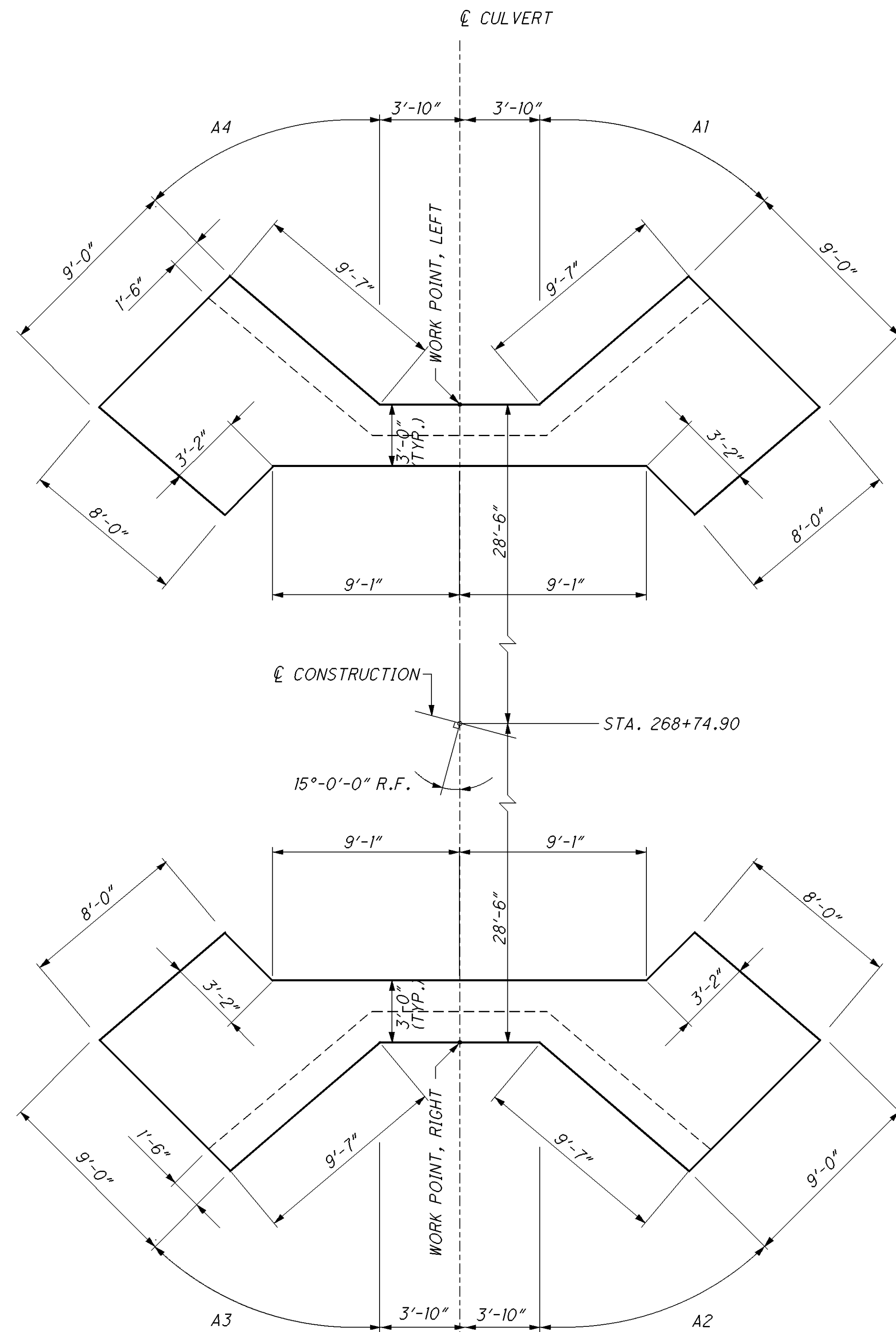
NOTE: 4" DIA. WEEPHOLE
ELEV. = 1163.440

- ① SER. OF 7 @ 1'-3"
- ② 9"
- ③ 6 SPACES @ 1'-4"



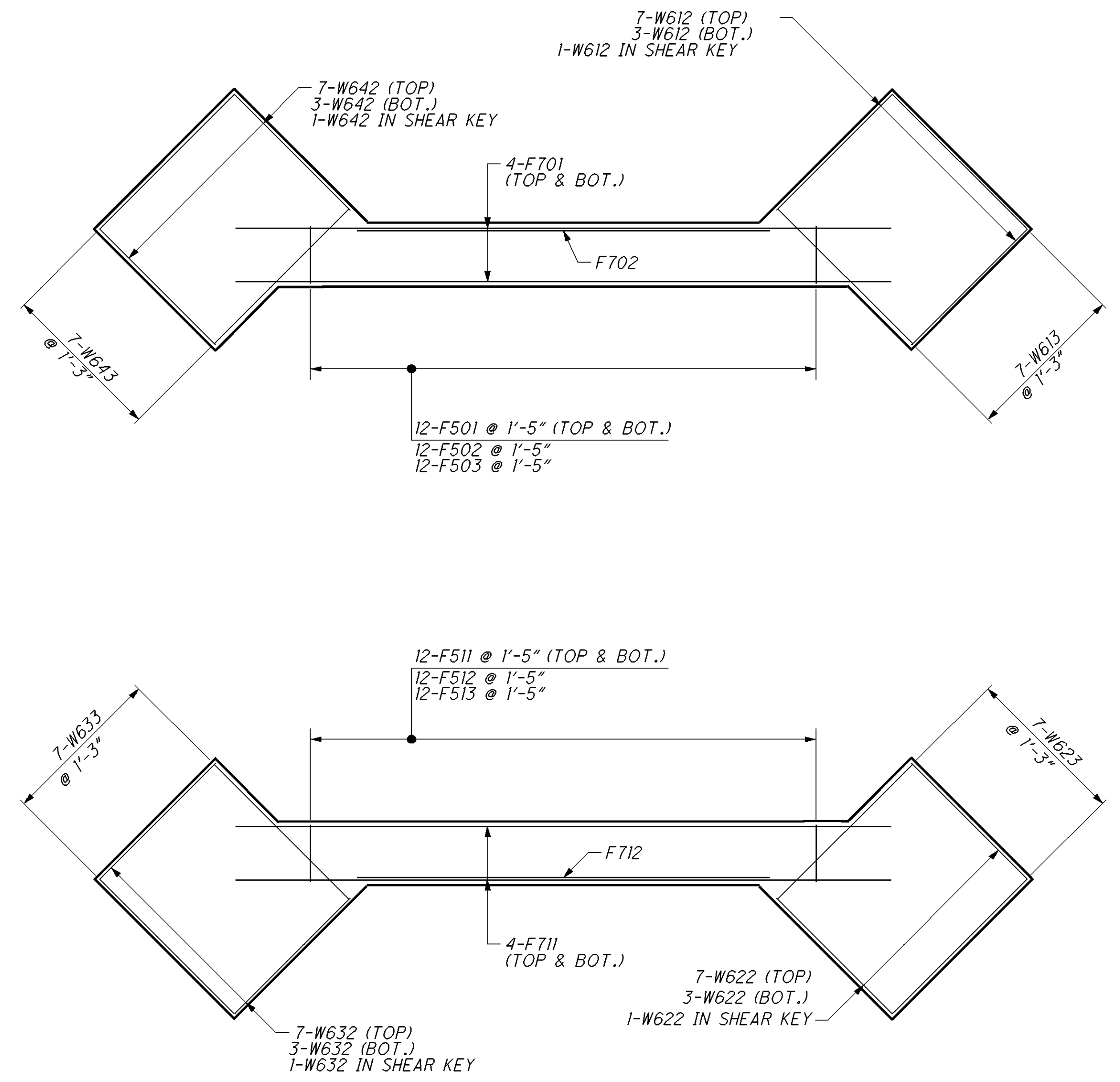
SECTION C-C

DESIGN AGENCY		ODOT, CENTRAL OFFICE	
OFFICE OF PRODUCTION			
DATE	02/08/12	DESIGNED	MLC
REVIEWED	MDC	DRAWN	TLS
STRUCTURE FILE NUMBER	1702076	CHECKED	MLC
STRUCTURE DETAILS			
BRIDGE NO. CRA-61-0509			
TRIBUTARY OF OLENTANGY RIVER			
CRA-61-5.09		PID No. 83443	
6 / 8		19 / 23	

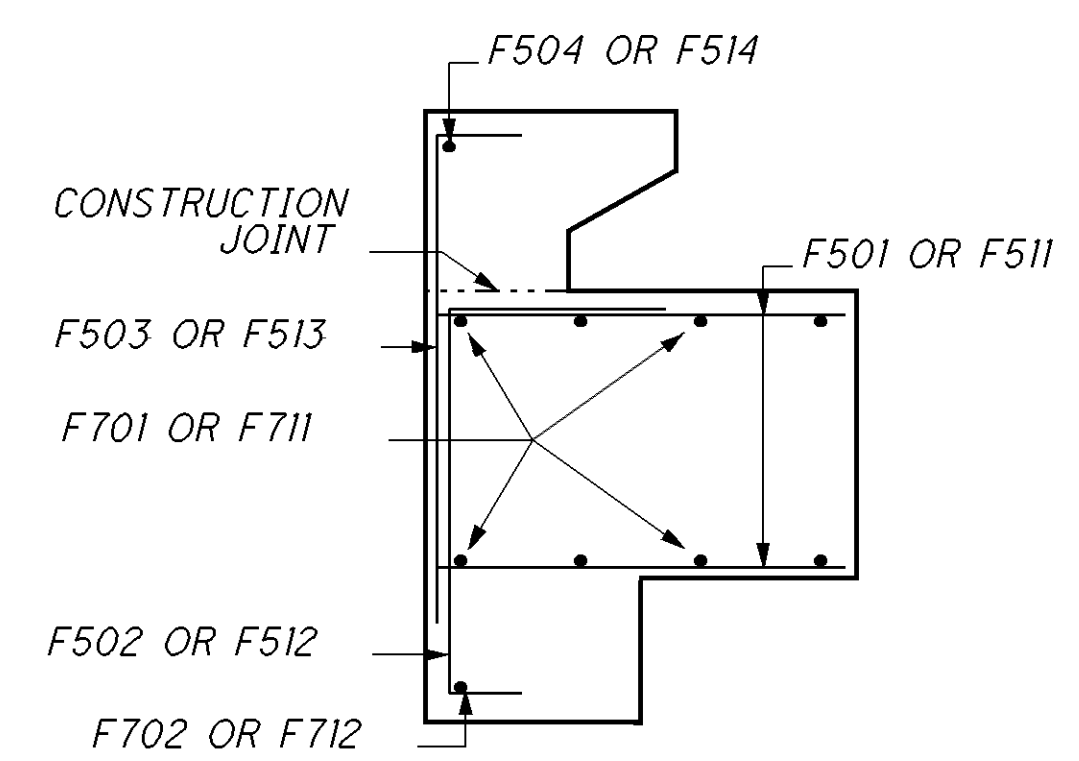


FOOTING LAYOUT

SEE TABLE ON SHEET 3/8 FOR VALUES OF A1 THRU A4
FOR WORKPOINT STATIONS AND OFFSETS SEE SHEET 3/8



FOOTING REINFORCING



FOOTING REINFORCING DETAIL

DESIGN AGENCY ODOT, CENTRAL OFFICE OFFICE OF PRODUCTION	
DATE 02/08/12	STRUCTURE FILE NUMBER 1702076
REVIEWED MDC	DRAWN TLS
CHECKED MLC	DESIGNED TLS
STRUCTURE DETAILS BRIDGE NO. CRA-61-0509 TRIBUTARY OF OLENTANGY RIVER	
CRA-61-5.09 PID No. 83443	
7 / 8	
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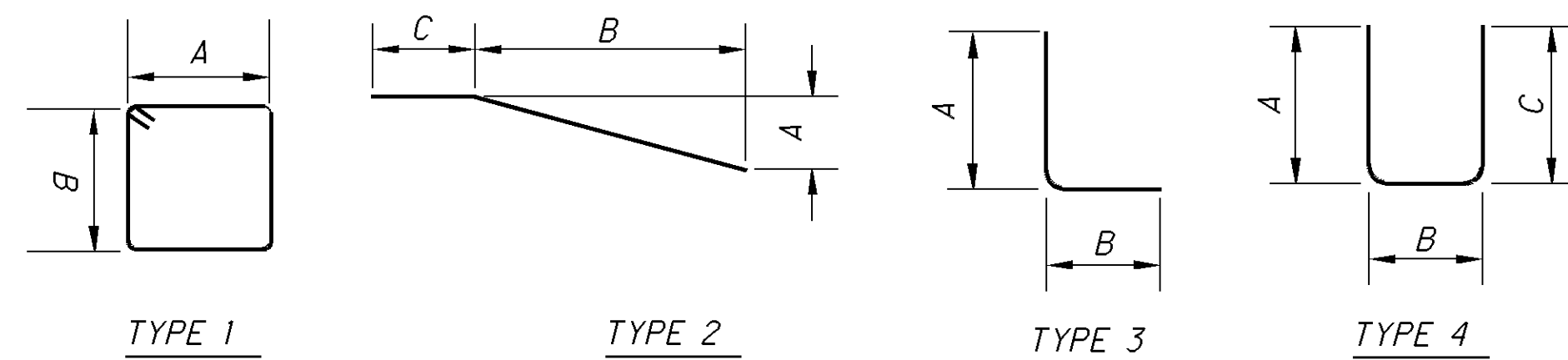
EPOXY COATED REINFORCING STEEL LIST

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	INCR
WINGWALL 1								
W511	1	8'-4"	64	STR				1 1/2"
	S.O.	TO						
	7	9'-1"						
W512	2	7'-7"	16	STR				
W513	12	7'-7"	95	STR				
W514	2	7'-7"	16	STR				
W515	7	4'-4"	32	4	1'-6"	2'-7"	6"	
W611	1	8'-4"	92	STR				1 1/2"
	S.O.	TO						
	7	9'-1"						
W612	11	7'-8"	127	STR				
W613	7	8'-8"	91	STR				
W711	13	9'-6"	252	3	6'-2"	3'-6"		
SUBTOTAL = 785 LBS								
WINGWALL 2								
W521	7	9'-1"	66	STR				
W523	14	7'-7"	111	STR				
W525	7	4'-4"	32	4	1'-6"	2'-7"	6"	
W621	7	9'-1"	96	STR				
W622	11	7'-8"	127	STR				
W623	7	8'-8"	91	STR				
W721	13	9'-6"	252	3	6'-2"	3'-6"		
SUBTOTAL = 775 LBS								
WINGWALL 3								
W531	1	8'-4"	64	STR				1 1/2"
	S.O.	TO						
	7	9'-1"						
W532	2	7'-7"	16	STR				
W533	12	7'-7"	95	STR				
W534	2	7'-7"	16	STR				
W535	7	4'-4"	32	4	1'-6"	2'-7"	6"	
W631	1	8'-4"	92	STR				1 1/2"
	S.O.	TO						
	7	9'-1"						
W632	11	7'-8"	127	STR				
W633	7	8'-8"	91	STR				
W731	13	9'-6"	252	3	6'-2"	3'-6"		
SUBTOTAL = 785 LBS								

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	INCR
WINGWALL 4								
W541	7	9'-1"	66	STR				
W543	14	7'-7"	111	STR				
W545	7	4'-4"	32	4	1'-6"	2'-7"	6"	
W546	8	8'-0"	68	STR				
W641	7	9'-1"	96	STR				
W642	11	7'-8"	127	STR				
W643	7	8'-8"	91	STR				
W741	13	9'-6"	252	3	6'-2"	3'-6"		
SUBTOTAL = 843 LBS								
CULVERT FOOTING								
F501	24	2'-8"	67	STR				
F502	12	4'-5"	55	4	6"	2'-8"	1'-6"	
F503	12	3'-7"	45	3	3'-0"	9"		
F504	1	11'-8"	12	STR				
F511	24	2'-8"	67	STR				
F512	12	4'-5"	55	4	6"	2'-8"	1'-6"	
F513	12	3'-7"	45	3	3'-0"	9"		
F514	1	11'-8"	12	STR				
F701	8	22'-2"	362	STR				
F702	1	8'-8"	18	STR				
F711	8	22'-2"	362	STR				
F712	1	8'-8"	18	STR				
SUBTOTAL = 1118 LBS								
HEADWALL								
H501	11	2'-11"	33	4	1'-7"	8"	11"	
H502	4	13'-8"	57	STR				
H511	11	2'-11"	33	4	1'-7"	8"	11"	
H512	4	13'-8"	57	STR				
SUBTOTAL = 180 LBS								
TOTAL = 4485 LBS								

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 PER ITEM 509.



BENDING DIAGRAMS

S.O. - SERIES OF

DESIGN AGENCY ODOT, CENTRAL OFFICE OFFICE OF PRODUCTION
DATE 02/08/12 MDC STRUCTURE FILE NUMBER 1702076
DESIGNED TLS CHECKED MLC
DRAWN TLS REVISED
REVIEWED MDC
REINFORCING STEEL LIST BRIDGE NO. CRA-61-0509 TRIBUTARY OF OLENTANGY RIVER
CRA-61-5.09 PID No. 83443
8 / 8
21 23

NOTES

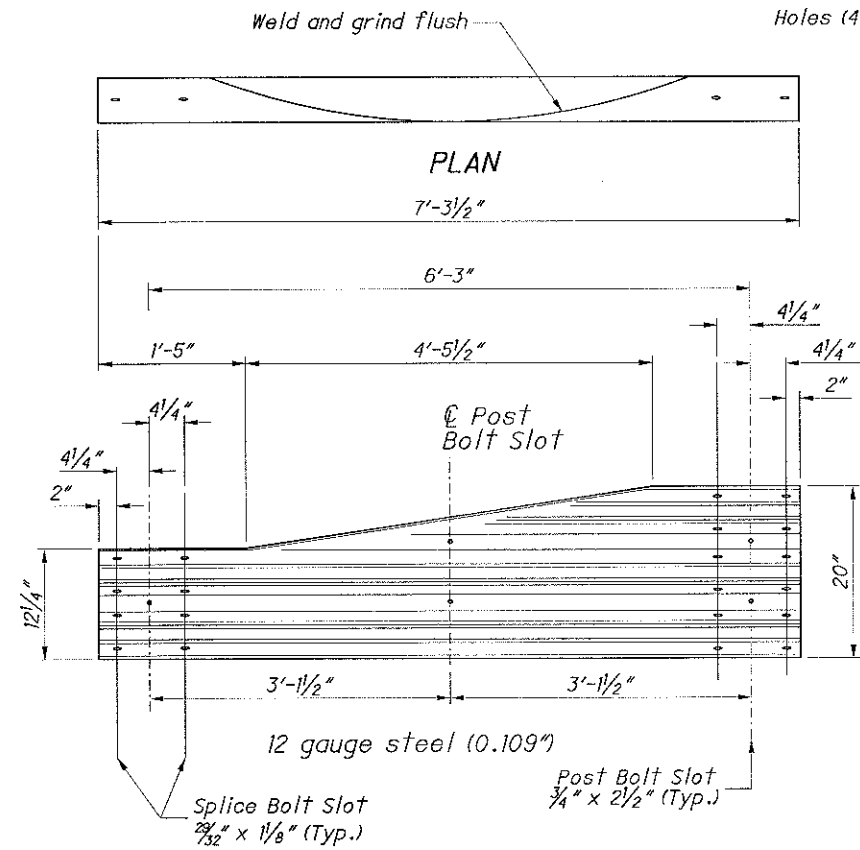
GENERAL: Components shown on this drawing are used in a variety of guardrail systems. See individual guardrail drawing for specific applications.

See CMS 606 for guardrail specifications not covered on these drawings.

Refer to AASHTO M 180 for dimensional details of W-Beam and Thrie-Beam rail elements, related buffer and end sections, beam splices, post and splice bolts, nuts, and Type 1 W-Beam to Thrie-Beam Transition sections.

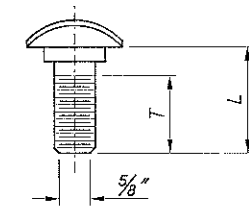
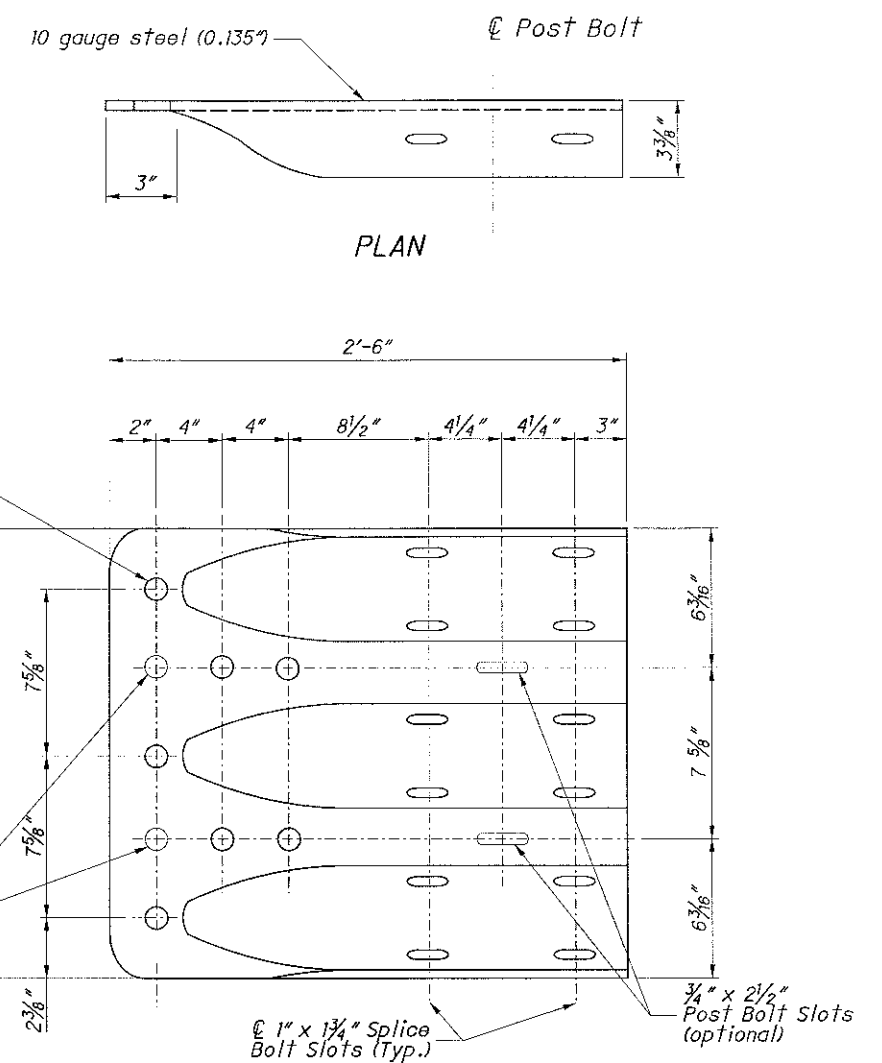
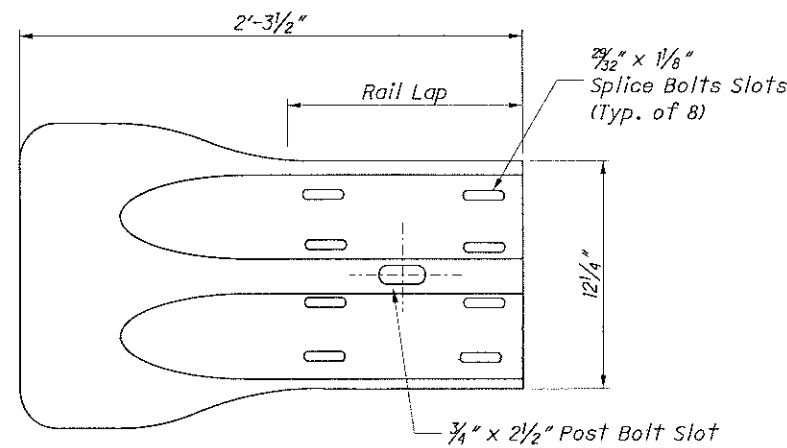
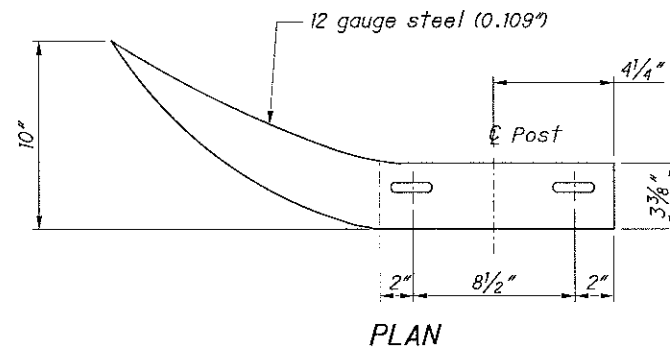
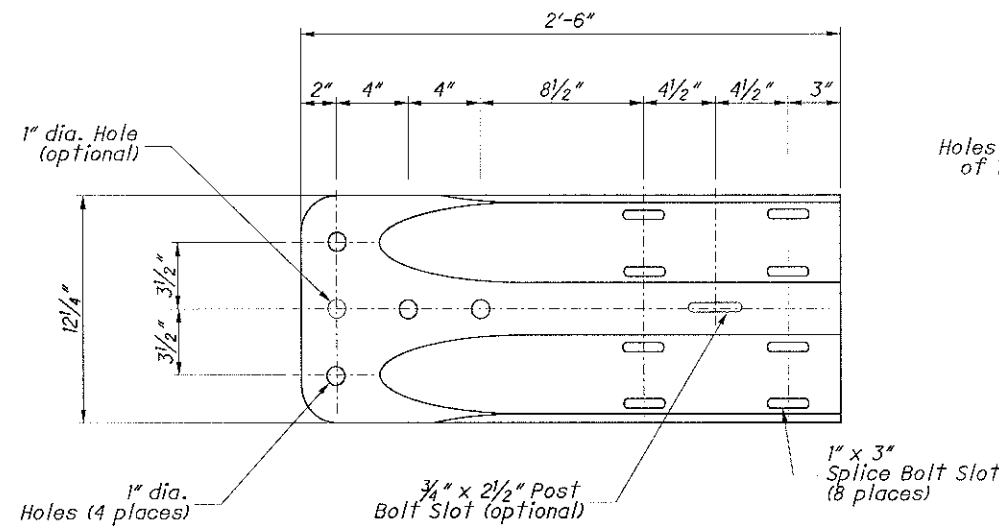
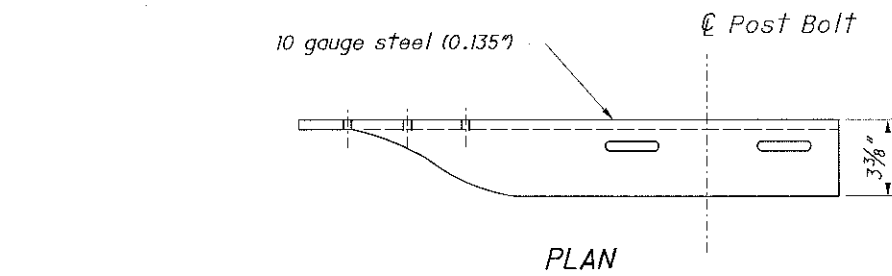
RAIL ELEMENTS: W-Beam Rail has an effective length of 12'-6" unless otherwise specified, with 3/4" x 2 1/2" post bolt slots on 6'-3" centers regardless of post spacing. Field punch or drill bolt holes or slots for irregularly spaced posts as specified in CMS 606.04.

RAIL SPLICES: Lap splices between two rail elements or between a rail and terminal connector in the direction of traffic. Lap the buffer or flared end sections in the direction of traffic.



**ELEVATION
TYPE 2 TRANSITION SECTION
(Asymmetric W to Thrie-Beam)**

For details of Type 1 Transition Section (Symmetric), refer to AASHTO M 180, Figure 4.

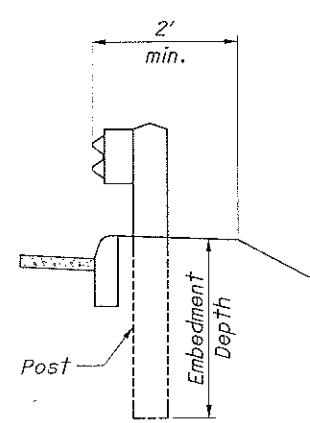


GUARDRAIL BOLT (For Post and Splice Bolts)		
L	T min.	Bolt Use
18" (Standard Rail)	4"	Type 5: WP/WB, PB
26" (Barrier Rail)		Type 5: SP/WB, PB
10"	4"	Type 5: SP/WB, PB
1 1/4"	1 1/8"	Splice Bolt

WP = Wood Post WB = Wood Blockout
SP = Steel Post PB = Plastic Blockout

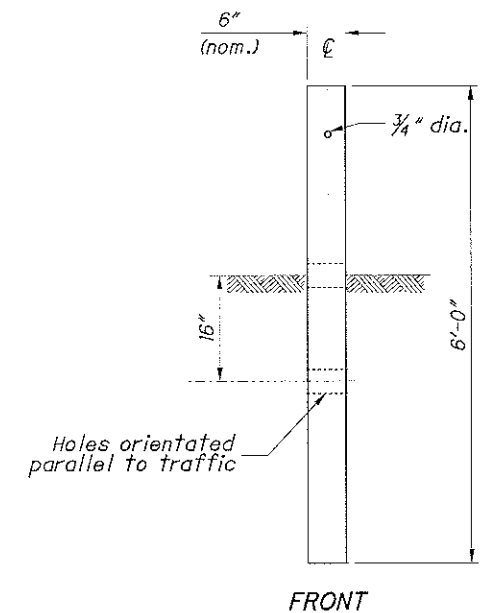
Longer Bolt may be needed for round Wood Post larger than 8" dia.

DESIGNED	REVIEWED
REVISION DATE	CHECKED
PIS NUMBER	

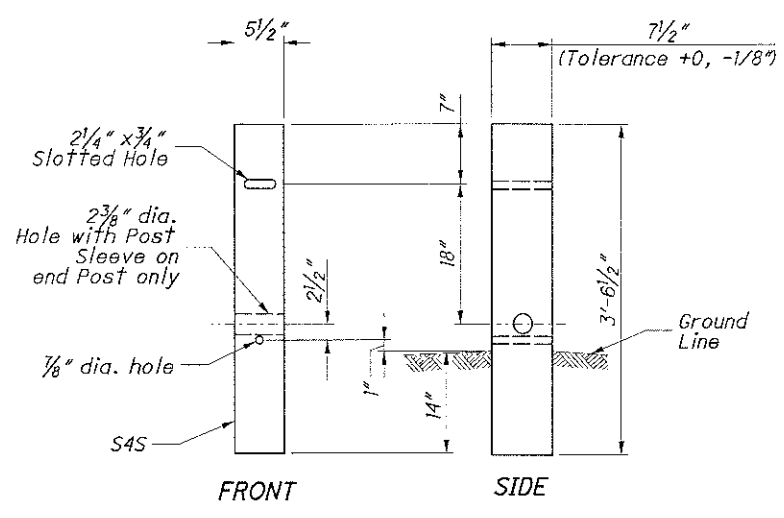


DETAIL A

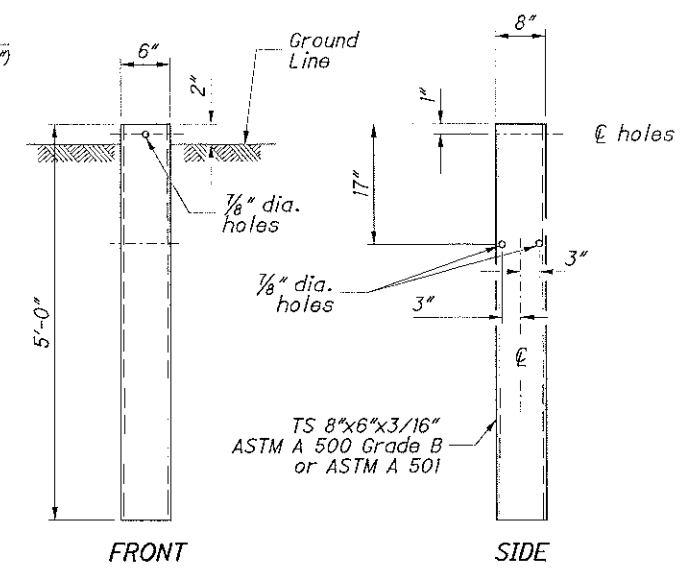
See POST EMBEDMENT DEPTH Note



TYPE 1 BREAKAWAY CRT POST



TYPE 2 BREAKAWAY CRT POST



STEEL GROUND TUBE

NOTES

GUARDRAIL HEIGHT: For initial installation, construct the guardrail within $\pm 1"$ of the standard height, h , or 29" to the top of W-Beam rail. (See MEASURING GUARDRAIL HEIGHT Detail.)
When subsequent projects, such as resurfacings, affect the height of existing guardrail, the finished height is to be within $\pm 2.5"$ of the standard height.

POST EMBEDMENT DEPTH: Standard embedment is 3'-5" min. Where less than 2' of graded shoulder width (10:1 or flatter) exists, measured from the face of the guardrail (see DETAIL "A"), use longer posts so that a minimum of 5'-5" embedment depth is provided. Payment for the longer posts will be made at the unit price bid for ITEM 606 - GUARDRAIL POST, 9', Each.

SPECIAL POST MOUNTINGS: Install posts located over a drainage inlet or structure as shown in the FOOTING ANCHOR Detail, or anchor per the details shown on SCD GR-2.2.

Install posts located over a footing with a cover of less than 2'-6" with a footing anchor as detailed here. (A plate, as detailed on SECTION B-B of SCD GR-2.2, may be used as an alternative attachment method.) Where the cover is between 2'-6" and 3'-5", the footing anchor may be omitted and the post encased instead with 4" (min.) of concrete.

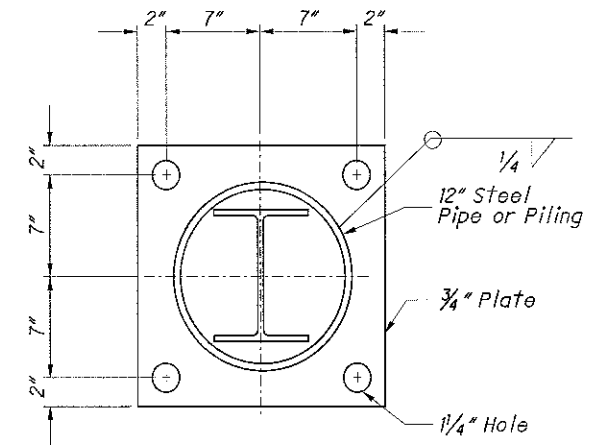
Do not drive posts located over a culvert with less than 4'-3" of cover; instead set in drilled or dug holes. Where the available post embedment depth is less than 3'-5", encase the post with a minimum of 4" concrete.

All costs associated with special post mountings are included in the unit price bid of Item 606 Guardrail of the Type specified in the plans.

ANCHORS: Holes and grouting shall comply with CMS 510. Use either cement or non-shrink, nonmetallic grout.

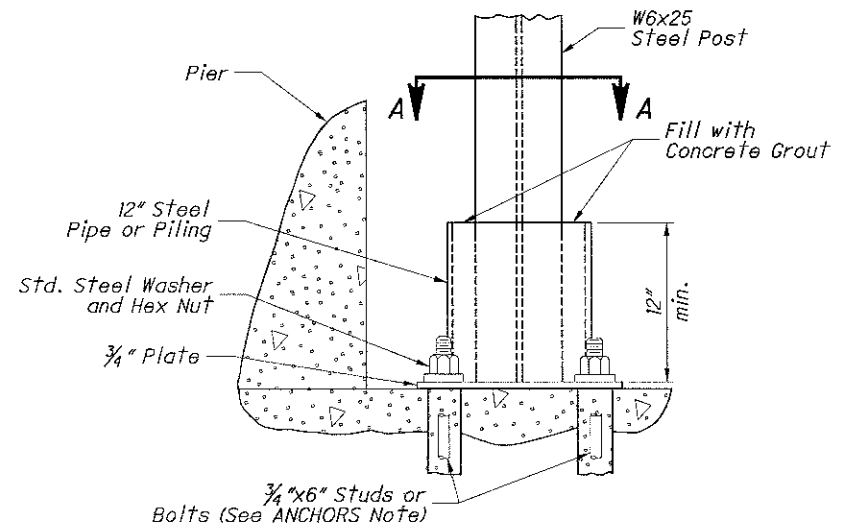
Expansion shield anchors as specified in CMS 712.01 may be substituted except where concrete deterioration has occurred, as determined by the Engineer. Where self-drilling anchors are used, drill the holes with the expansion shield (not by a drill bit) and install the shield flush with the concrete surface.

PROTECTIVE COATING: In lieu of the complying with CMS 710.06, coat expansion shields, anchors and concrete insert anchor assemblies embedded in concrete in accordance with ASTM A 153 or be of stainless steel. Any bolts screwed into these devices shall meet CMS 710.06. (See sheet 3 for Concrete Insert Anchor Assembly Detail.)



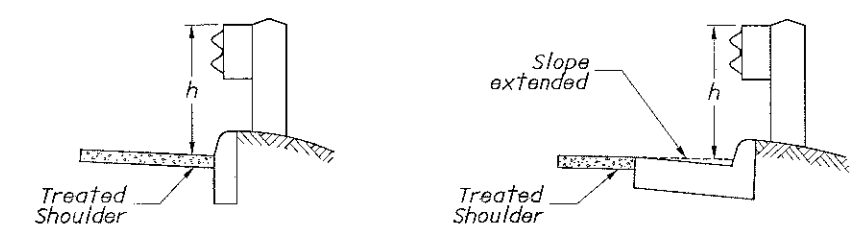
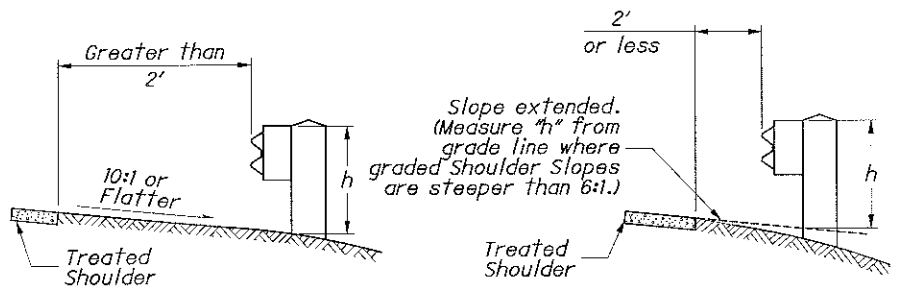
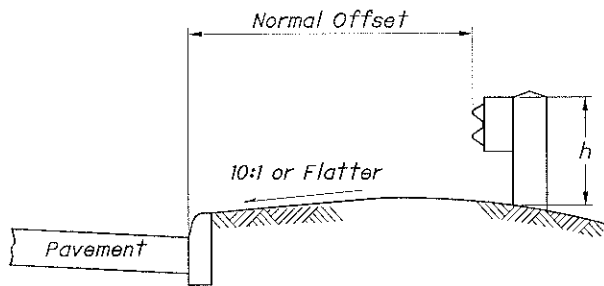
Footing Anchor and hardware need not be galvanized

SECTION A-A



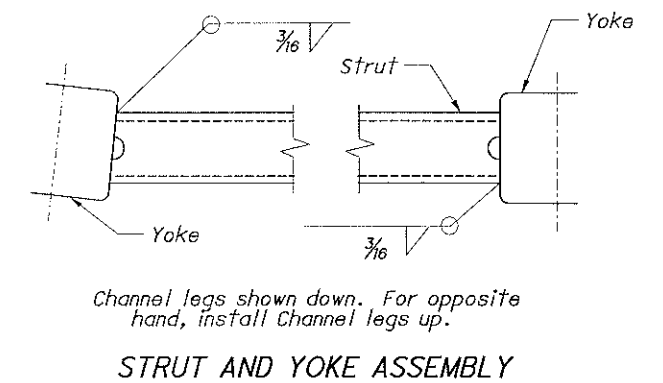
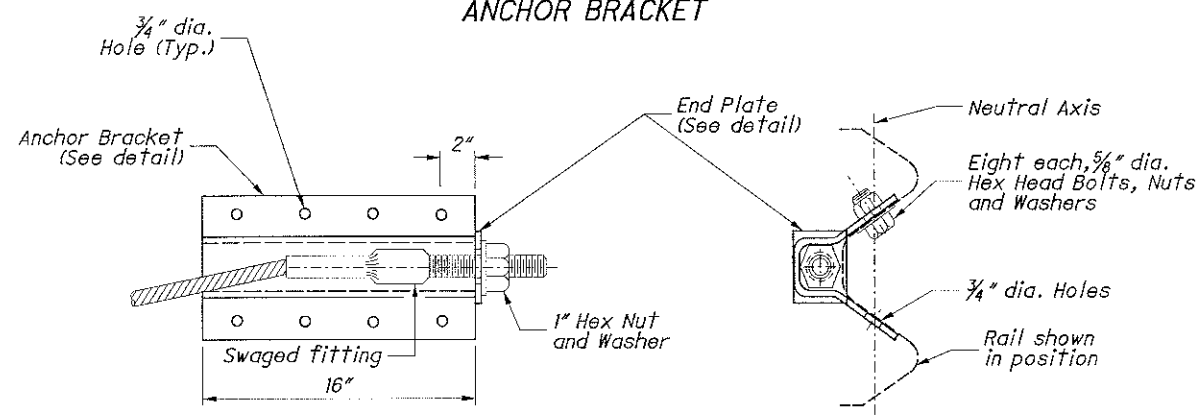
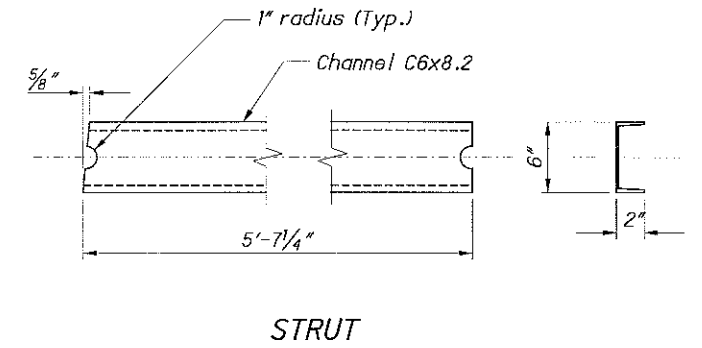
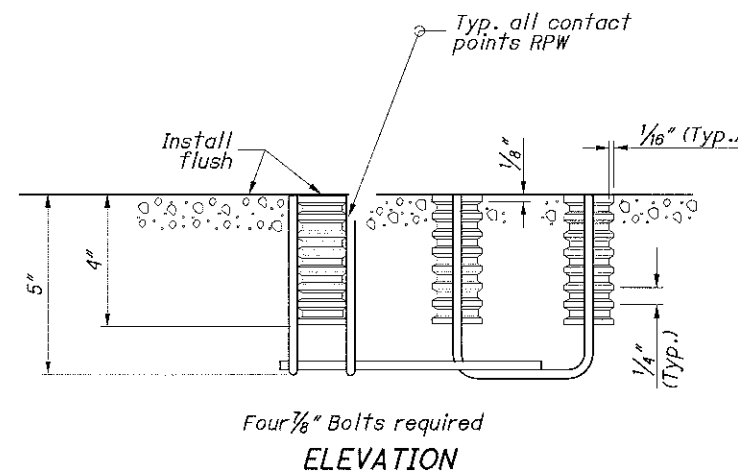
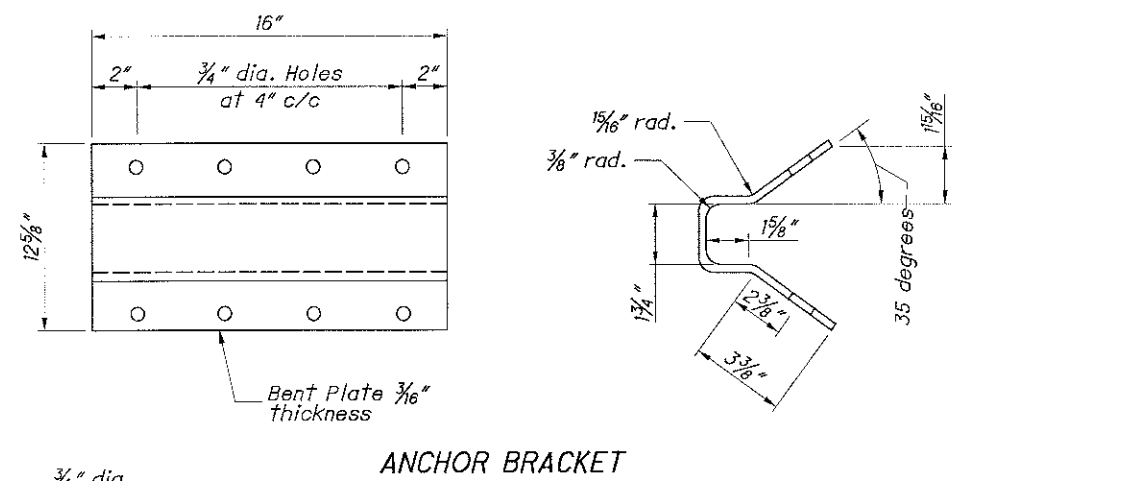
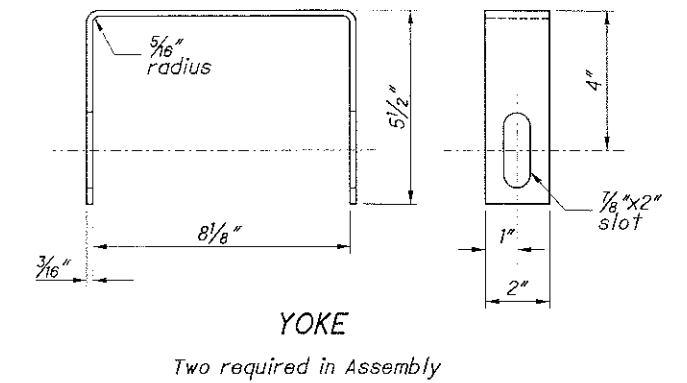
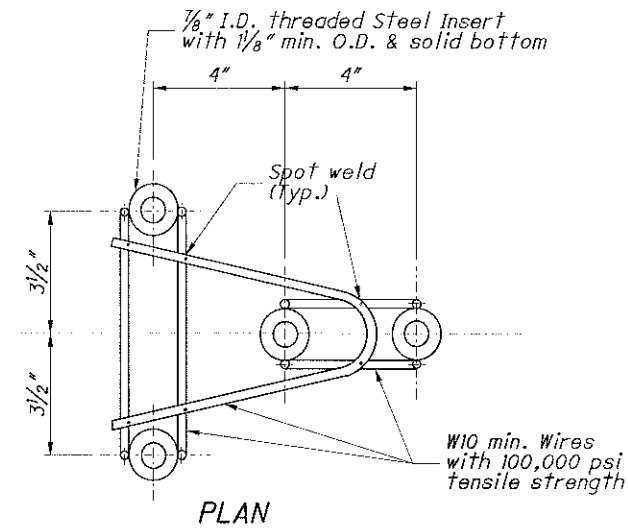
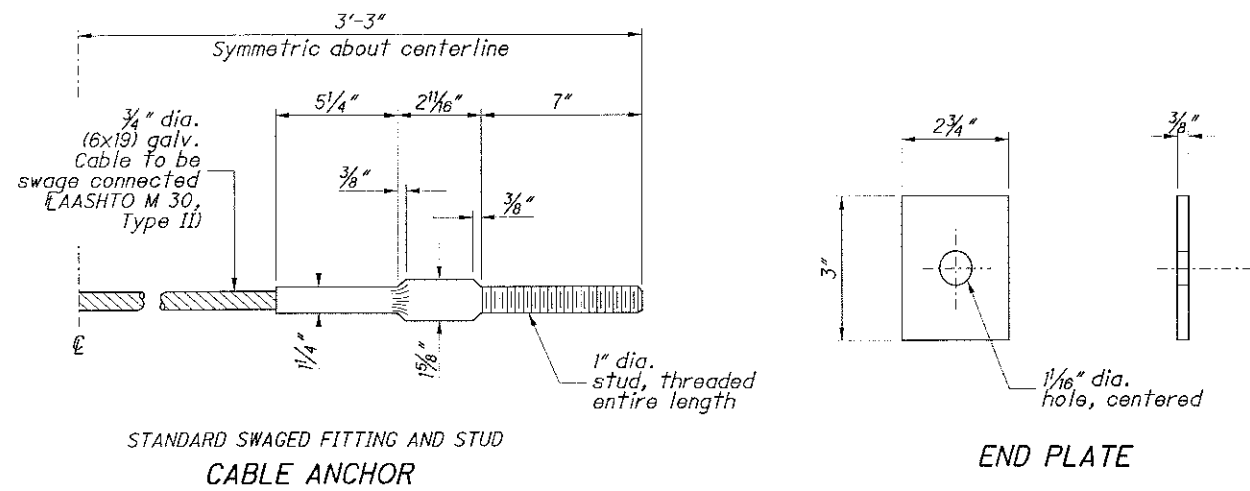
ELEVATION FOOTING ANCHOR

See SPECIAL POST MOUNTINGS Note.

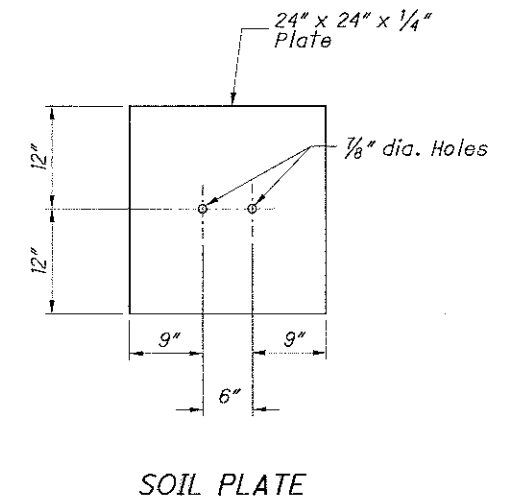
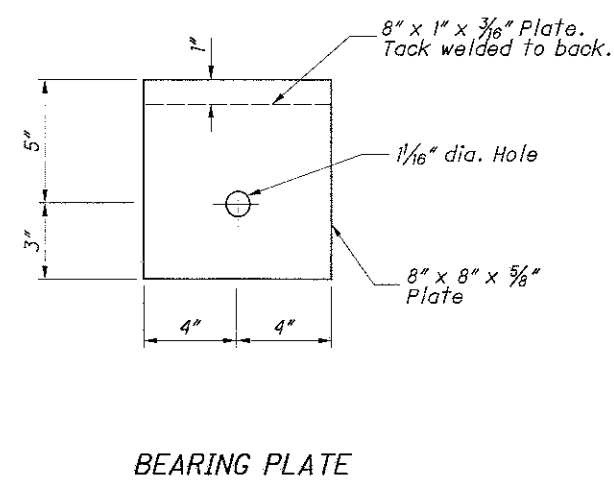
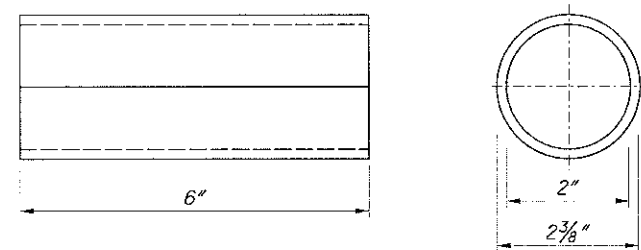


h = Standard Height (See GUARDRAIL HEIGHT Note)

MEASURING GUARDRAIL HEIGHT



ANCHOR BRACKET ASSEMBLY DETAILS



NOTES

RAIL: Use W-Beam rail meeting AASHTO M 180 Type II Class A, as specified in CMS 606.

POSTS: Posts may be constructed of wood or steel. Wood posts may be round or 6"x8" square-sawed.

Use round wood posts on runs of single-sided rail. The round posts shall be 8"±1 in diameter at the top and not more than 3" larger at the butt with a uniform taper.

Fabricated wood posts with square ends. Posts shall be pressure-treated as per CMS 710.14. Bore bolt holes and, if required, trim the tops of posts after the posts are set.

Steel posts are to be W6x9 or W6x8.5 galvanized steel. Use the same type of post throughout the length of the project unless otherwise specified in the plans or permitted by the Engineer.

All posts are 6'-0" long unless specified otherwise in the Contract Document. Posts may be set in drilled holes or may be driven to grade.

WELDED BEAM POSTS: Welded beam guardrail posts may be used for Item 606, Guardrail, provided the web and flange sizes are as shown here. Welding of the web to the flanges must comply with ASTM A 769, Class 1, using Grade 36 steel [250 MPa yield point] with the following exceptions:

- Sec. 7.2 Test reports of tensile properties for each lot shall accompany each shipment.
- Sec. 12 Beams that have imperfections repaired by welding shall not be accepted for use in Item 606.
- Sec. 13 Random samples shall be tested by the Department from materials delivered to the project site, or other locations designated by the Laboratory.

ALTERNATE POSTS: Engineered guardrail posts having met NCHRP 350 criteria, and listed on the Office of Materials Management's Approved List are permitted as an equal alternate when installed according to the Manufacturer's instructions and within the limitations shown on the Approved List.

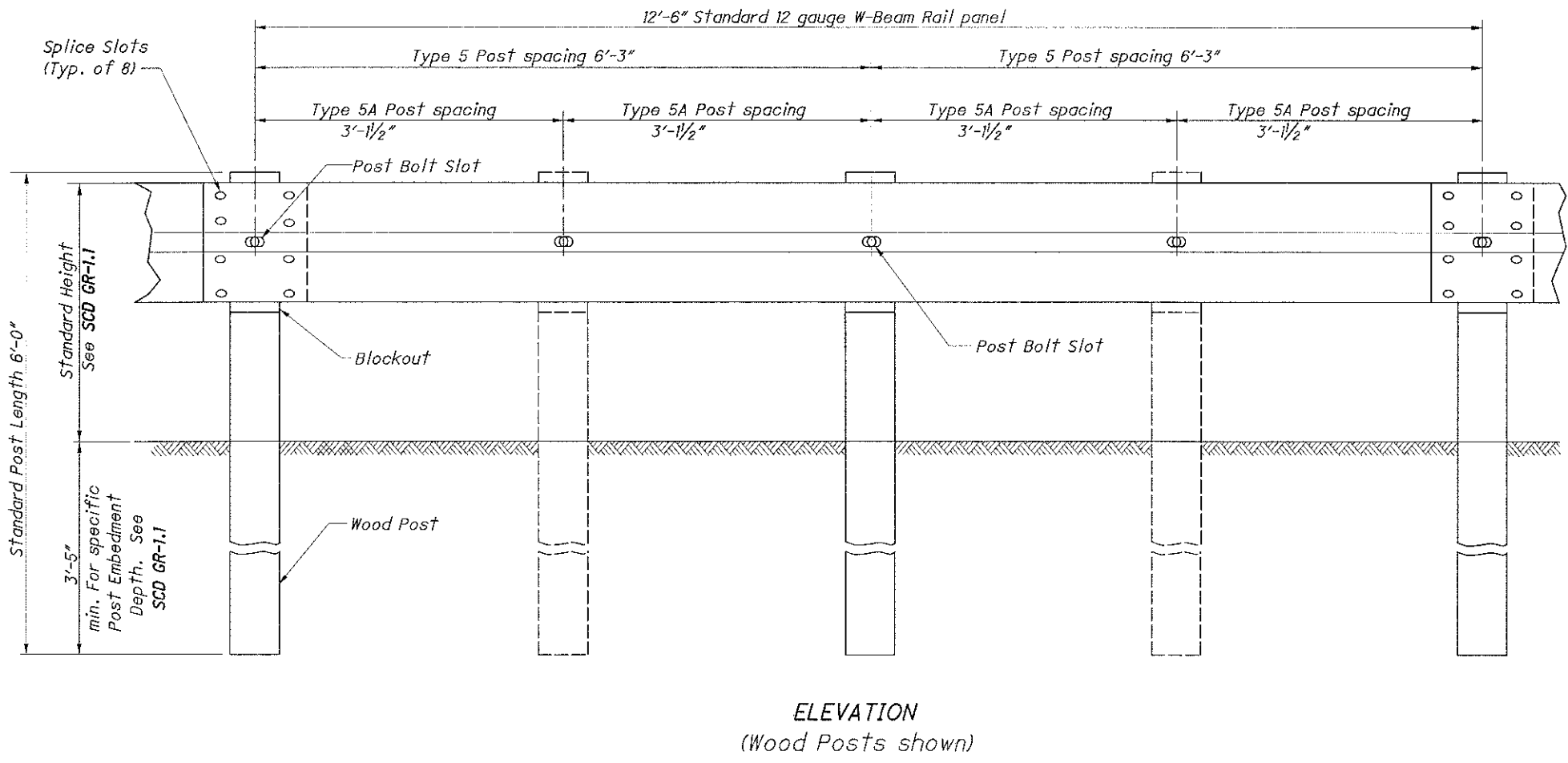
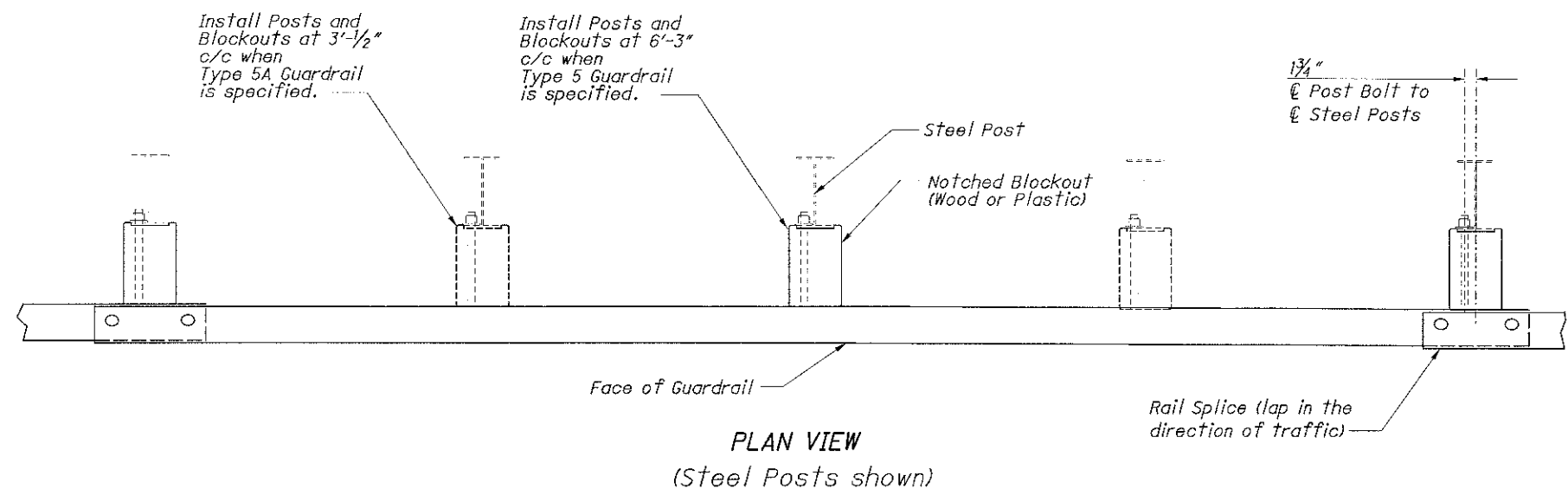
BLOCKOUTS: Blockout dimensions are dependent on post used. Wood blockouts are to be pressure treated as specified in CMS 710.14. Bore bolt holes. Approved alternate blockouts may be used in lieu of the wood blockouts shown. The approved list is maintained by the Office of Roadway Engineering.

WASHERS: Install appropriate sized standard galvanized steel washers on the nut side of bolts installed on wood posts.

DELINEATION: For barrier reflectors, see CMS 626.

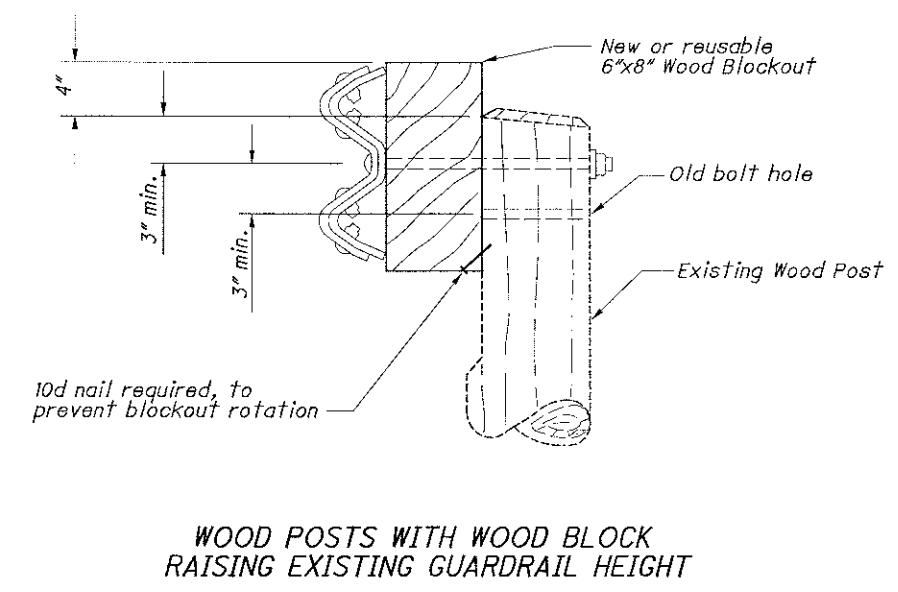
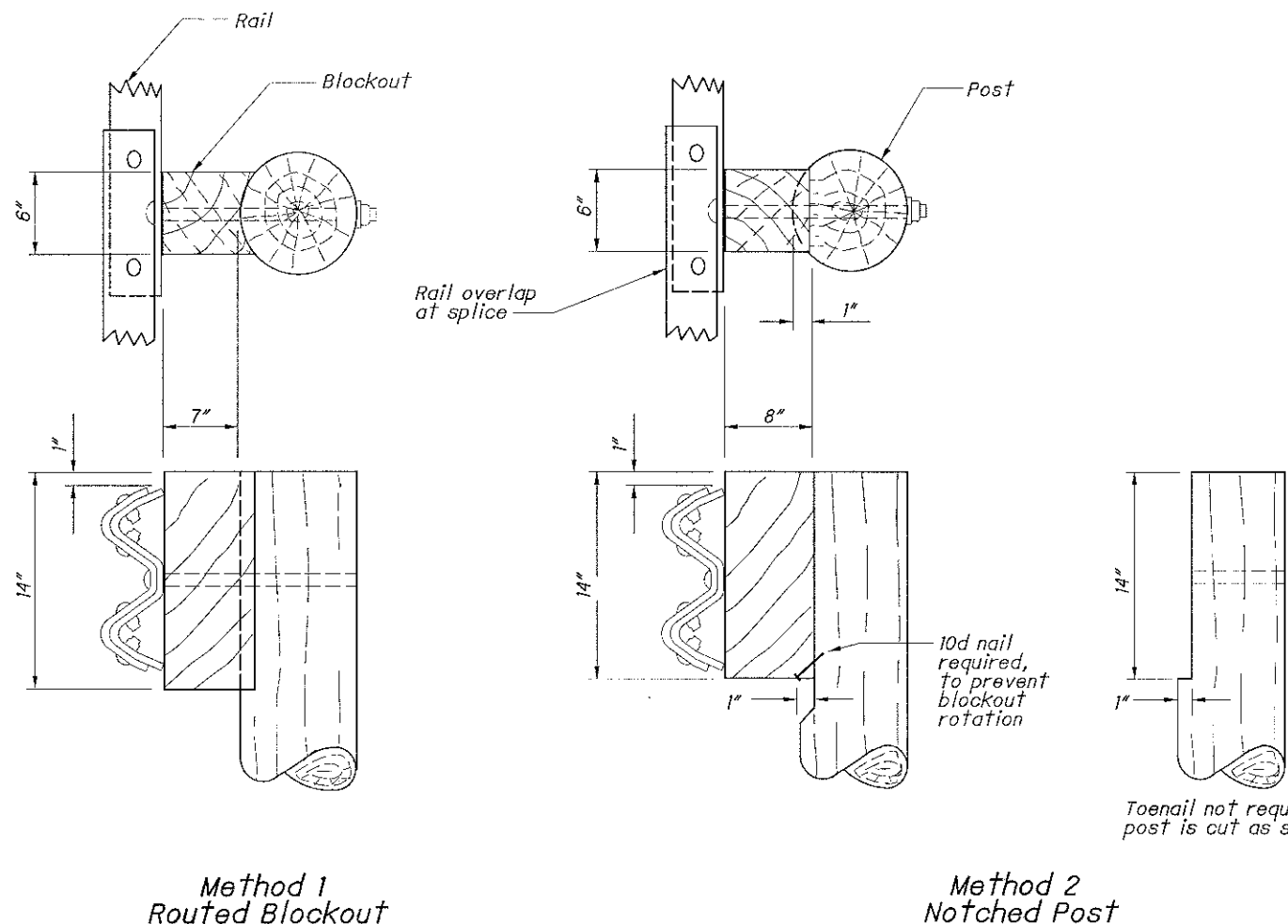
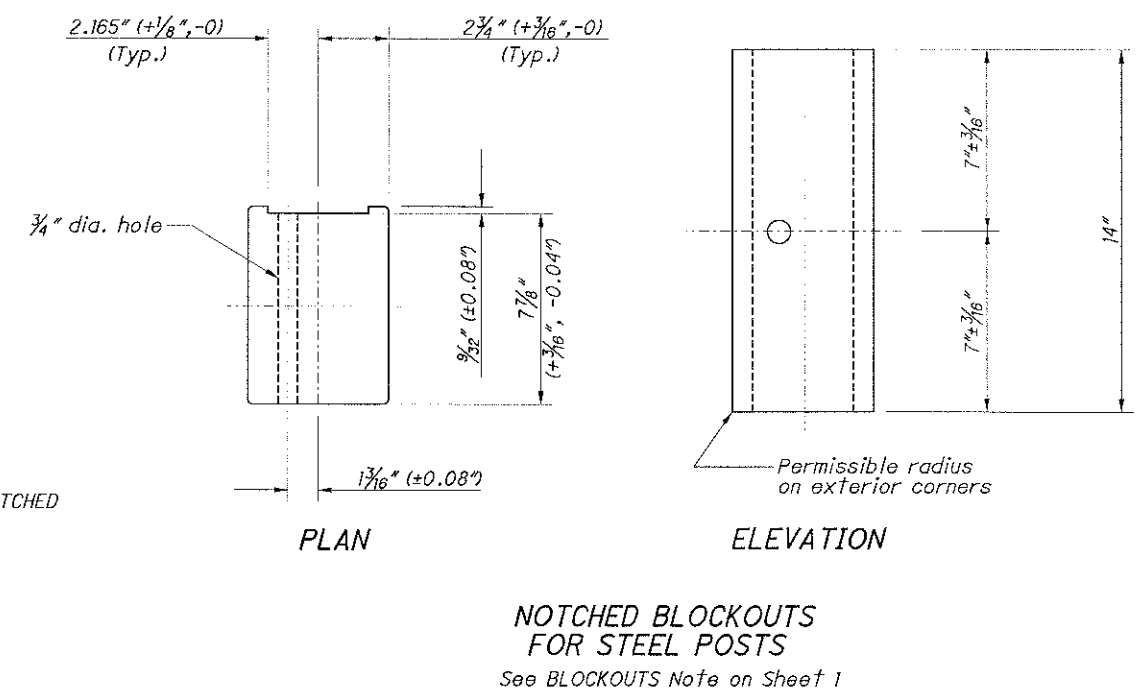
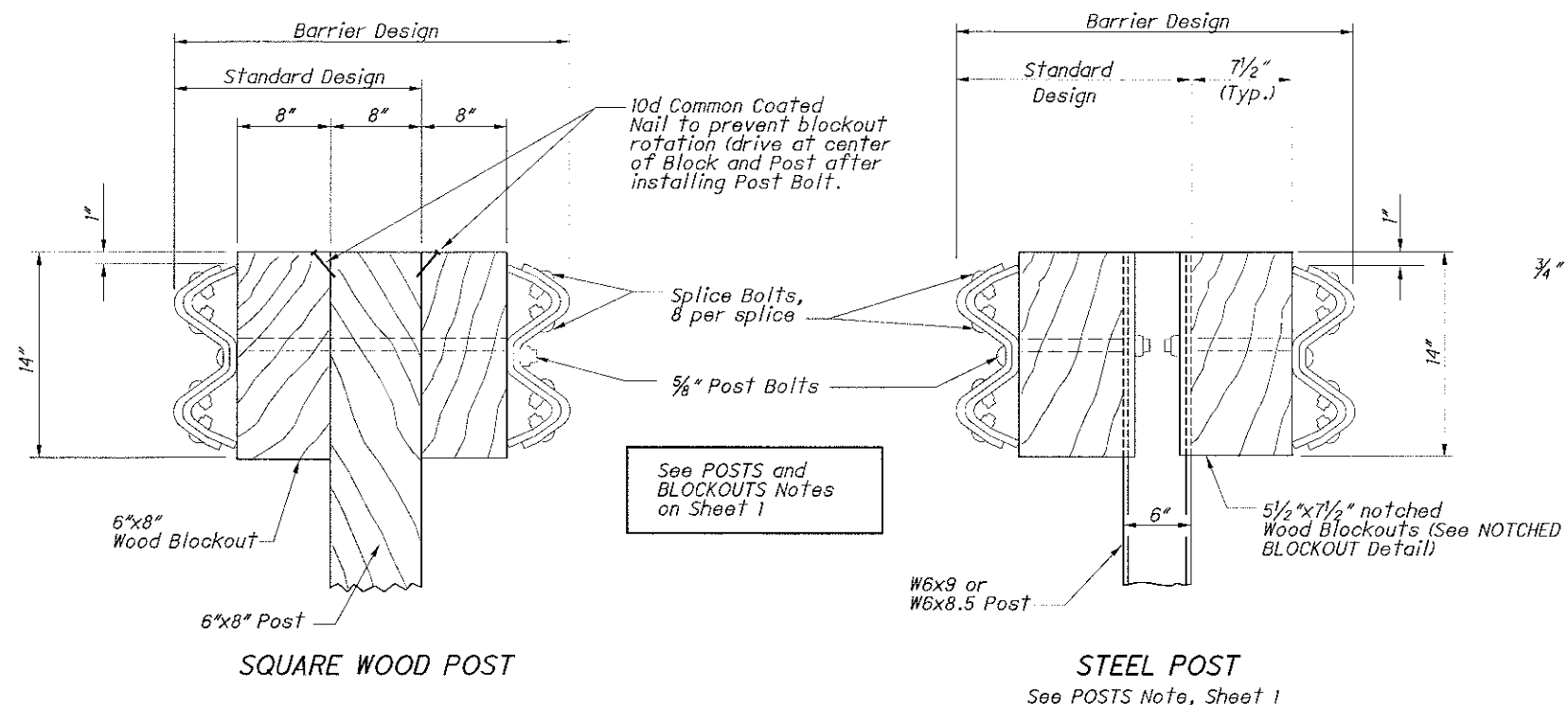
MISCELLANEOUS: For other guardrail details, see SCD GR-1.1.

STEEL BEAM POSTS (English)				
Size	Beam depth	Flange width	Flange thickness	Web thickness
Rolled W6x8.5	5.8"	3.94"	0.193"	0.170"
Rolled W6x9	5.9"	3.94"	0.215"	0.170"
Welded 6x8.5	6.0"	3.94"	0.193"	0.170"
Welded 6x9	6.0"	3.94"	0.215"	0.170"



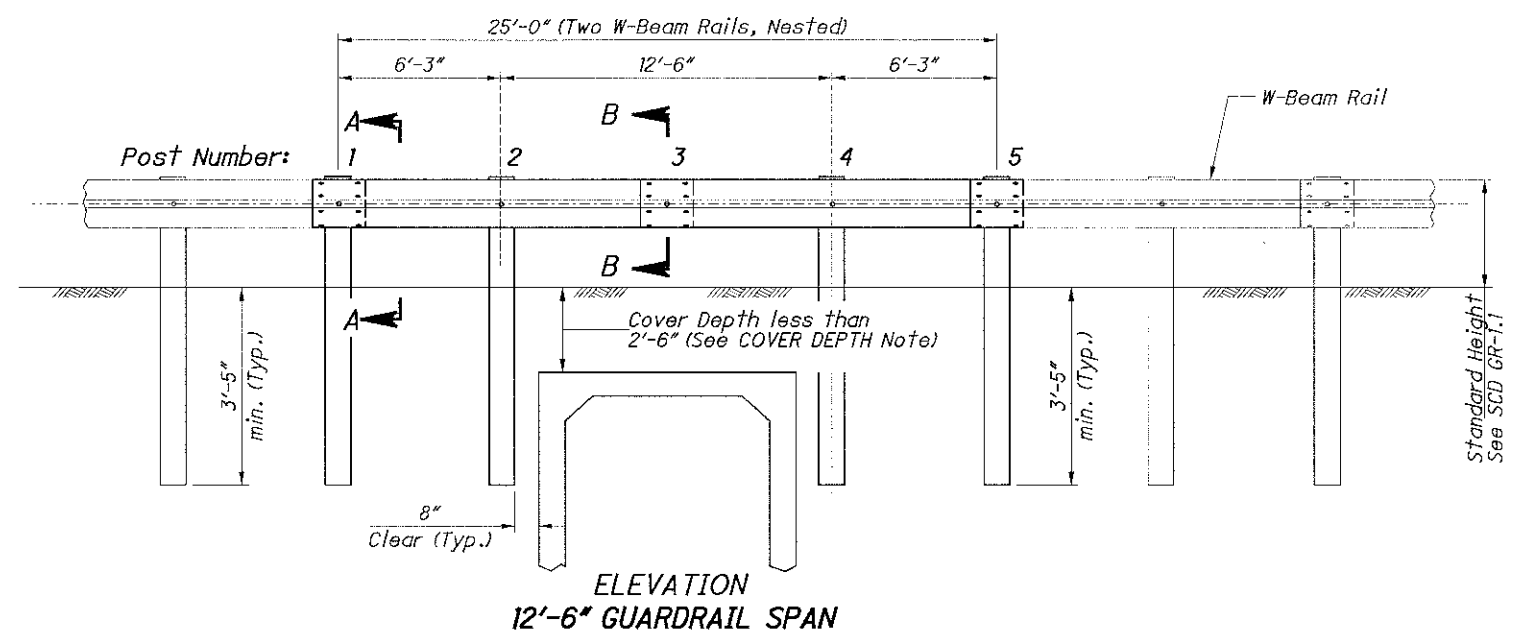
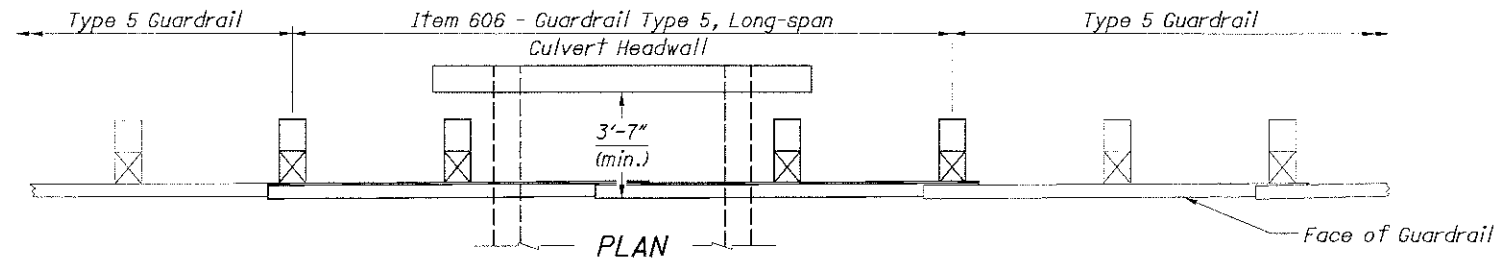
ELEVATION
(Wood Posts shown)

DESIGNED	DESIGNED
	REVIEWED
REVISION DATE	CHECKED
P/S NUMBER	

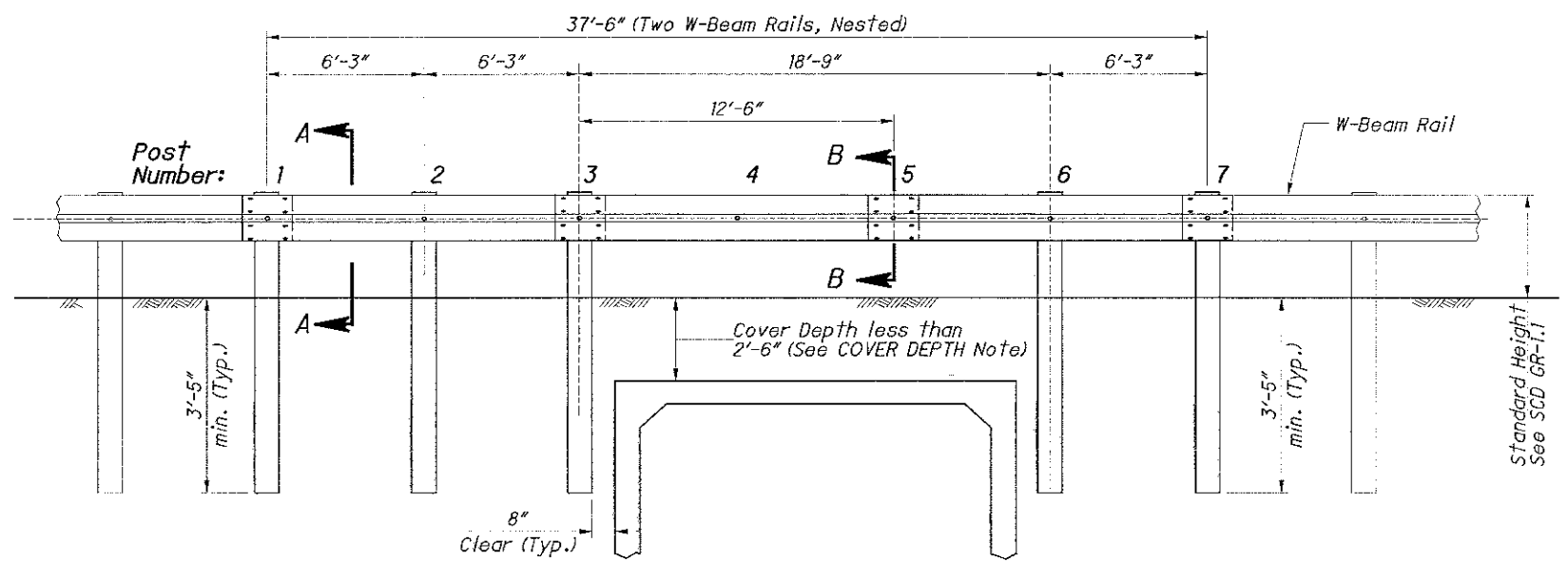
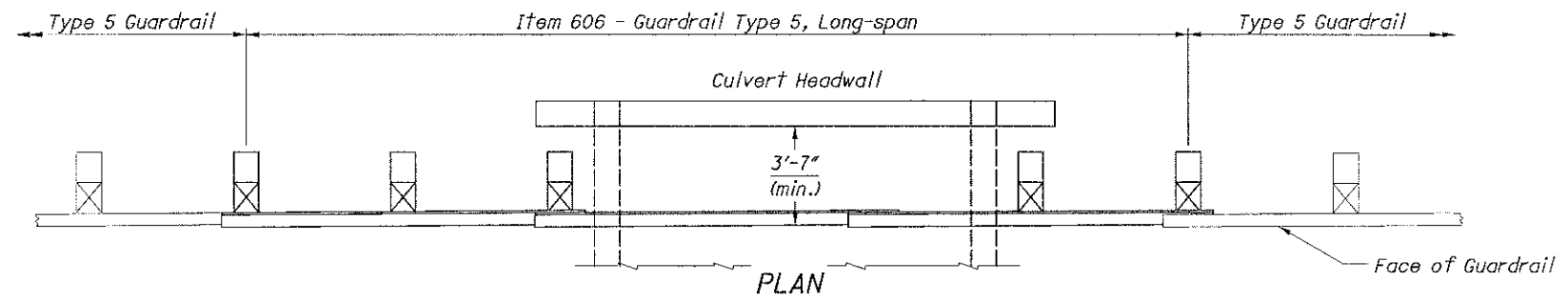


Alternate methods of placing the Blockouts on round Posts may be submitted for consideration and approved by the Engineer.

ROUND WOOD POSTS
Single Sided runs only (Standard Design)



ELEVATION
12'-6" GUARDRAIL SPAN



ELEVATION
18'-9" GUARDRAIL SPAN

NOTES

APPLICATION: This drawing covers two span lengths, 12'-6" to 18'-9". Do not use on the NHS. (See SCD GR-2.3 for NCHRP 350 Test Level 3 design.)

12'-6" SPAN: The post to be eliminated must be at a rail splice location, as shown at Post No. 3. If conditions are such that the post to be eliminated would occur at a non-splice location, then the 18'-9" span design should be used, eliminating Post No. 4.

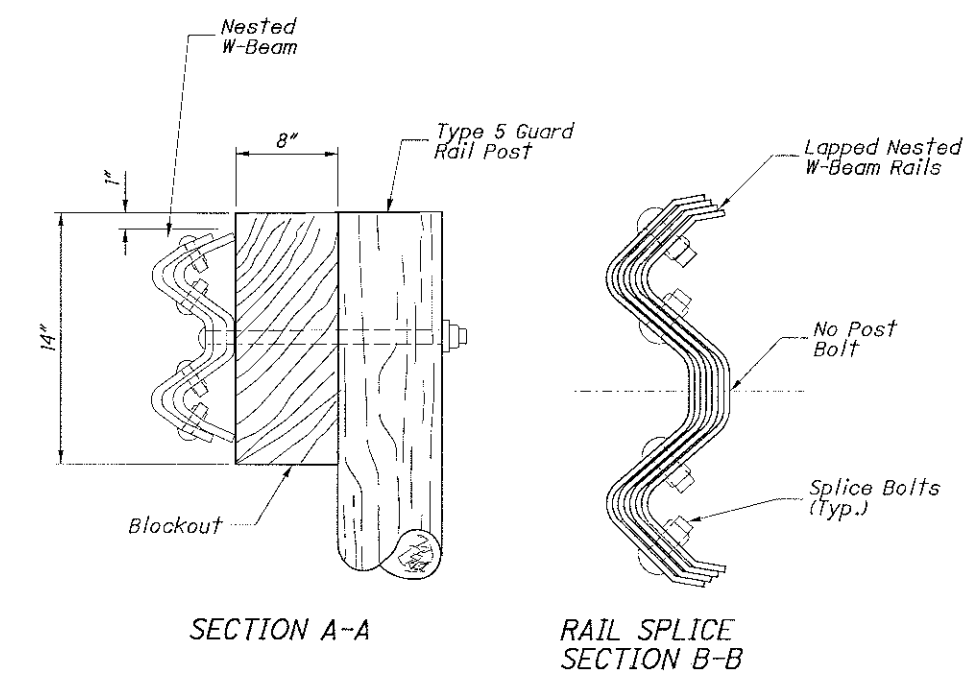
18'-9" SPAN: The posts to be eliminated may be at Post No. 4 and No. 5 (as shown) or at Post No. 3 and No. 4.

COVER DEPTH: This depth is measured at the locations of the missing posts. For cover depths greater than or equal to 2'-6", see SCD GR-2.2.

FLARED ENDS: Install these systems with either one or both ends flared away from the traveled way. For locations where a guardrail flare will be used, the minimum recommended length of tangent section adjacent to the unsupported length is 25'. Taper rates should be as shown on SCD GR-5.1.

MATERIALS: All posts, blockouts, rails, and hardware shall comply with Item 606, Guardrail Type 5 as detailed on SCD GR-2.1. For other details not shown, see SCD GR-1.1.

PAYMENT: Item 606 - Guardrail, Type 5, Long-span is paid for in feet for the length specified in the plans and includes the double rail elements, blockouts, posts, and the other hardware, materials and labor required to construct the guardrail as shown.



SECTION A-A

RAIL SPLICE
SECTION B-B

NOTES

APPLICATION: Use Type T Anchor Assemblies on the trailing end of guardrail runs, located outside of the clear zone of opposing traffic. The assembly is 12'-6" long, none of which can be considered the Length of Need for the guardrail run.

For termination requirements at driveways, see DRIVEWAY OPENING Detail on Sheet 2. For side road approaches and Terminals at Structures, see Location & Design Manual, Volume 1, Figure 603-3.

ANCHORING OPTIONS: Contractor may choose either the foundation tube (shown on this Sheet) or the concrete footing option (Sheet 2) to construct this anchor assembly.

If the foundation tube option is chosen, the contractor will take proper care to insure that the Soil Plate fasteners are not broken during the driving process.

Concrete footings may be cast-in-place or precast. Compact fill after placing precast unit.

MATERIALS: See SCD GR-1.1 for parts used on this anchor, including the CRT Breakaway Posts, Steel Ground Tube, Post Sleeve, Cable Anchor and Bracket Assembly.

Bearing Plate and Soil Plate is ASTM A709 Grade 36. Steel Ground Tube shall be ASTM A500, Grade B, and meet CMS 707.10. All angles, channels and plates shall meet CMS 711.01. All structural steel shall be galvanized as specified in CMS 711.02. All bolt washers indicated are standard galvanized steel of the appropriate size.

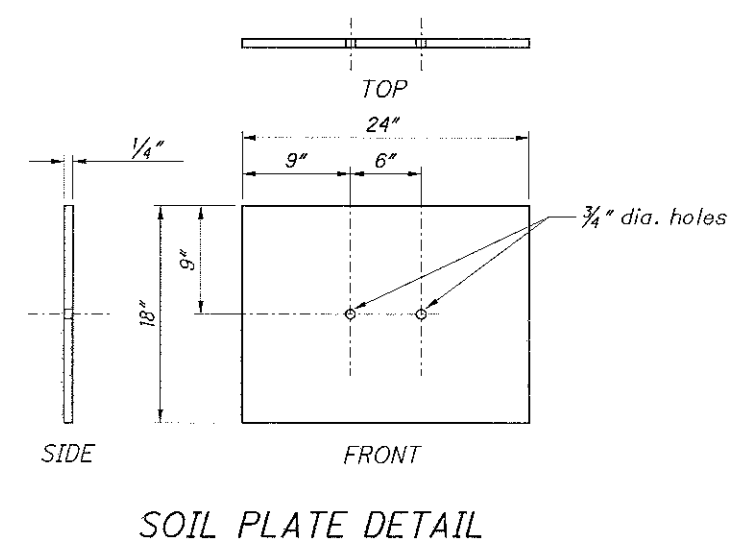
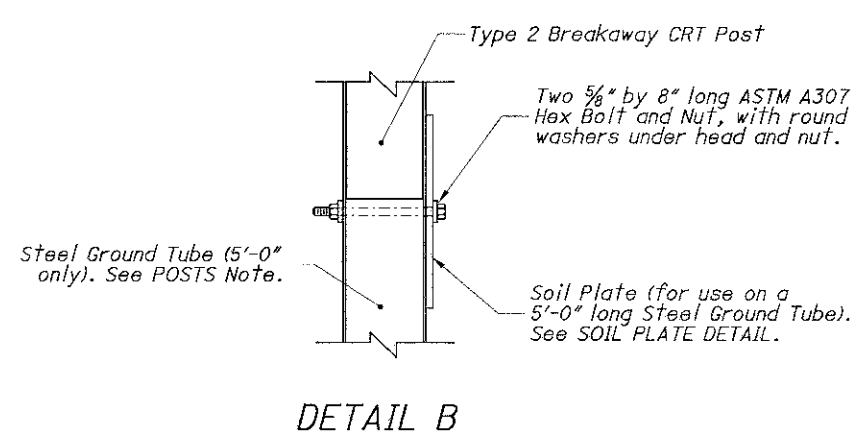
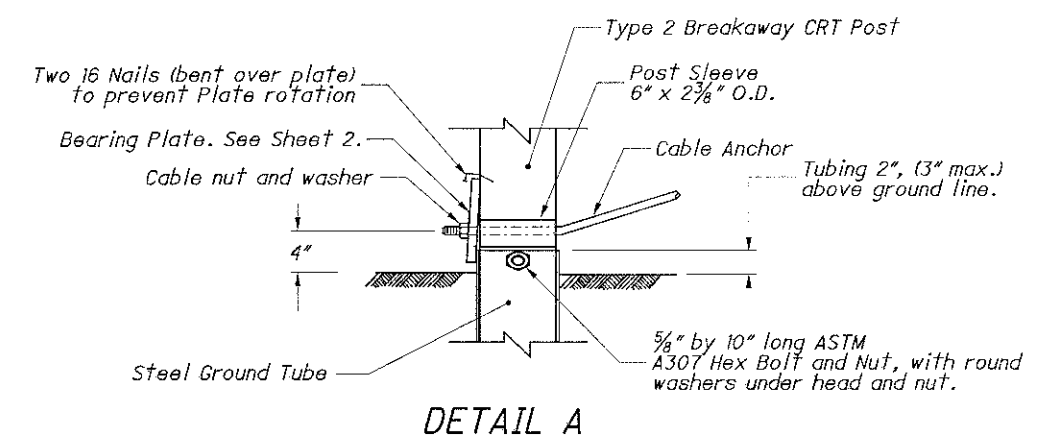
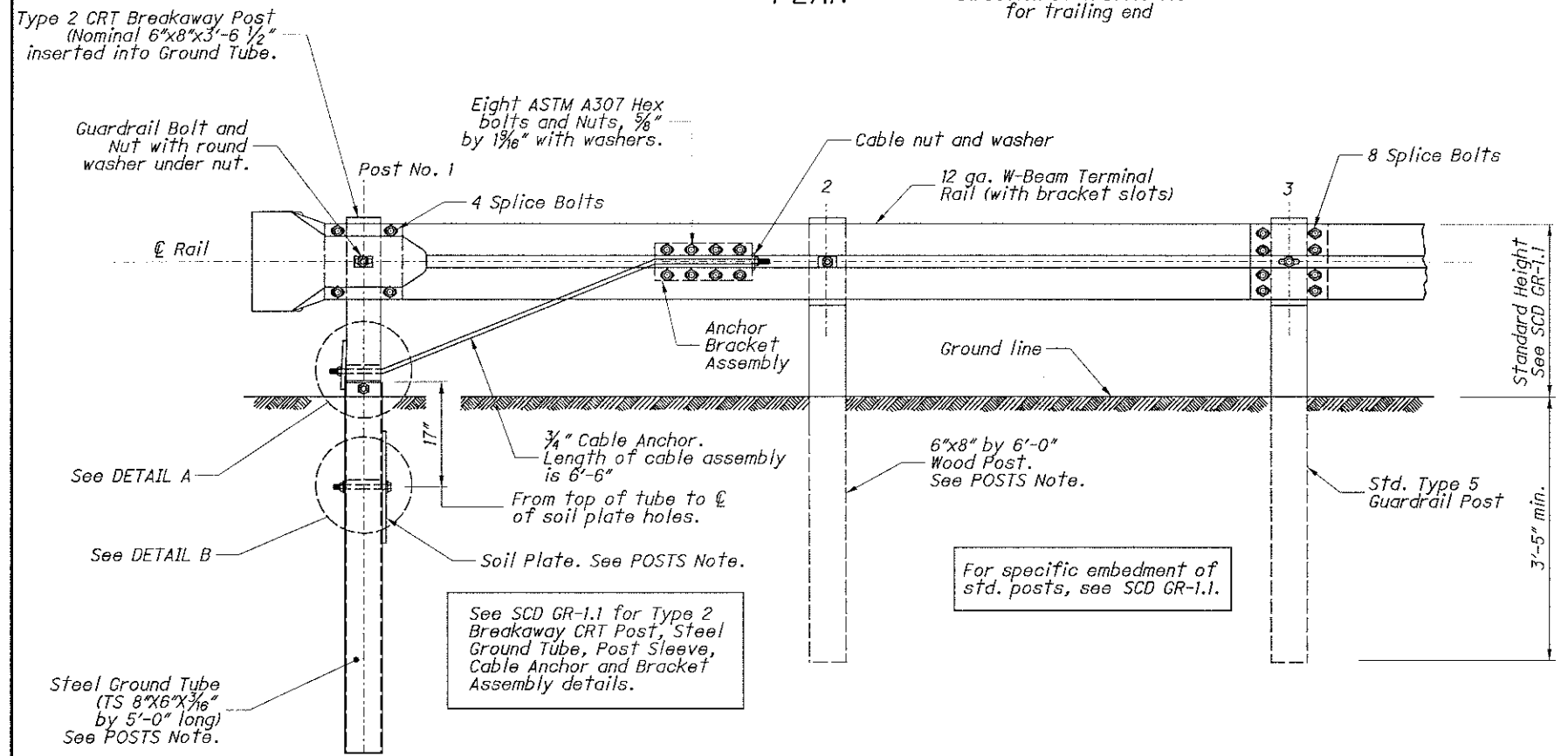
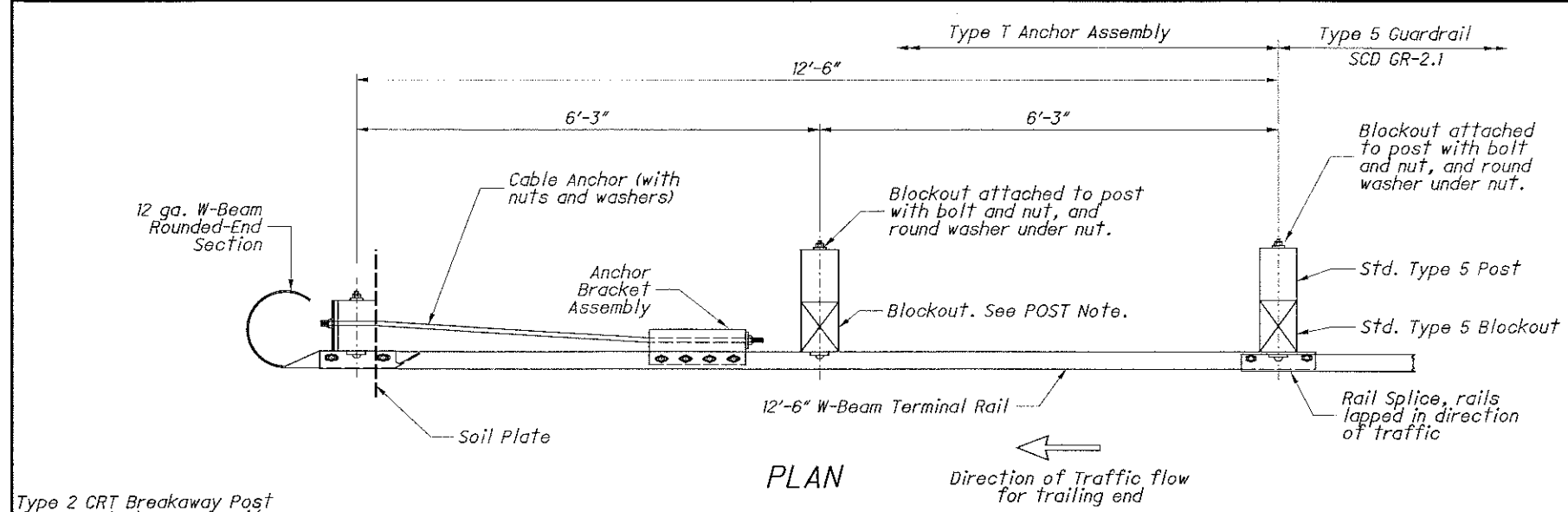
Concrete shall be class C.

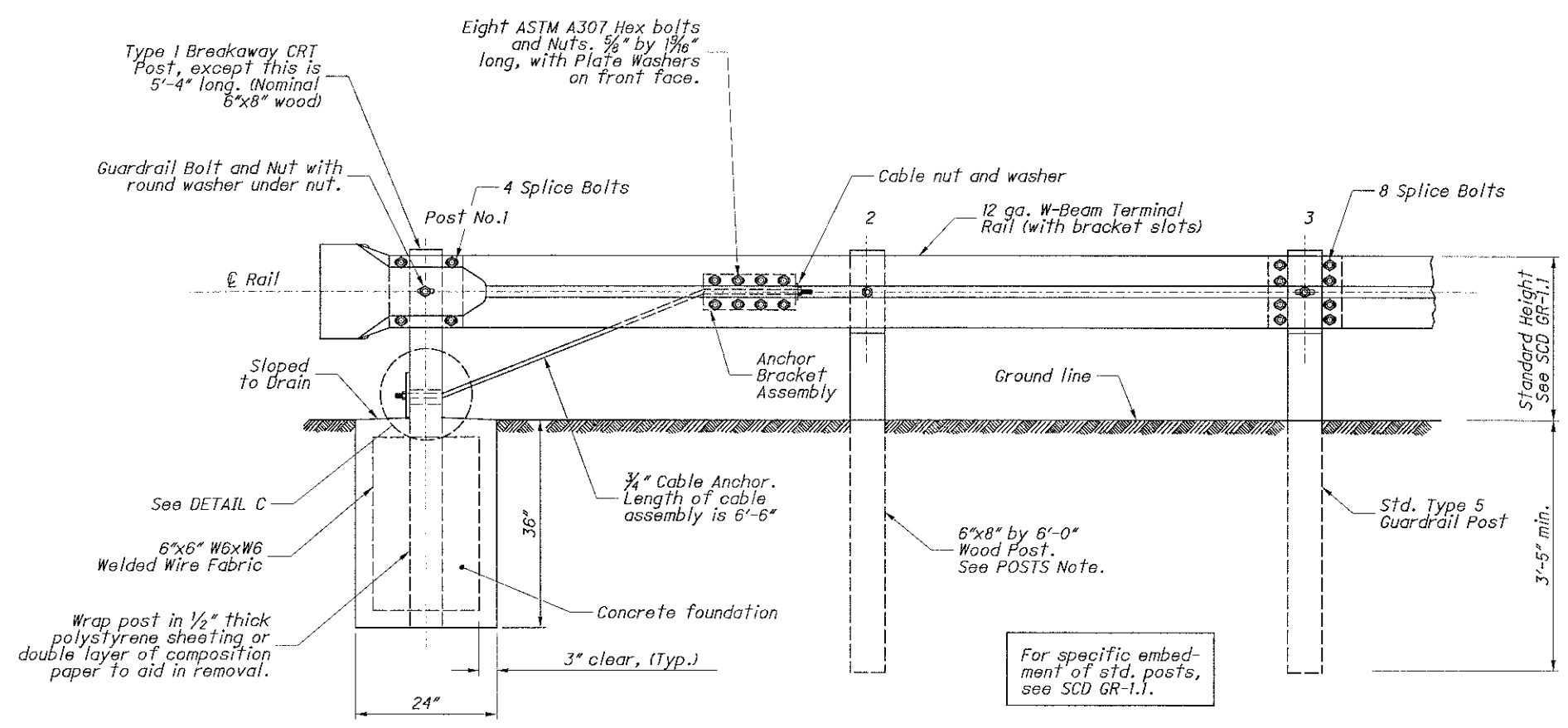
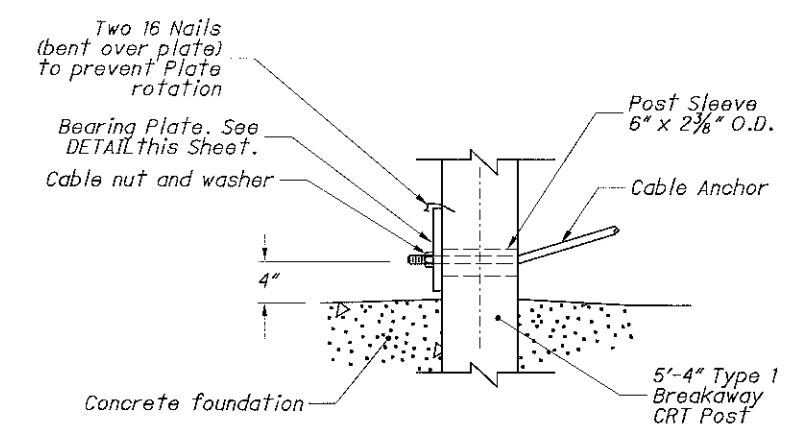
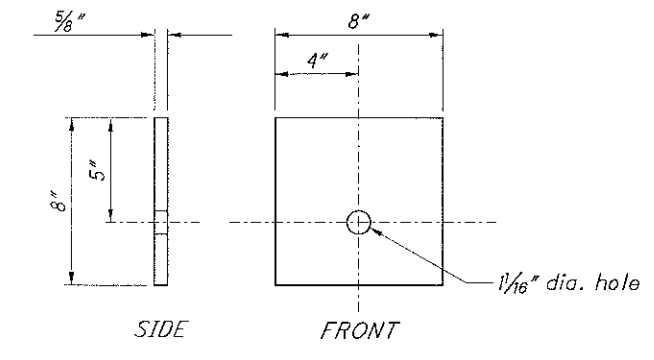
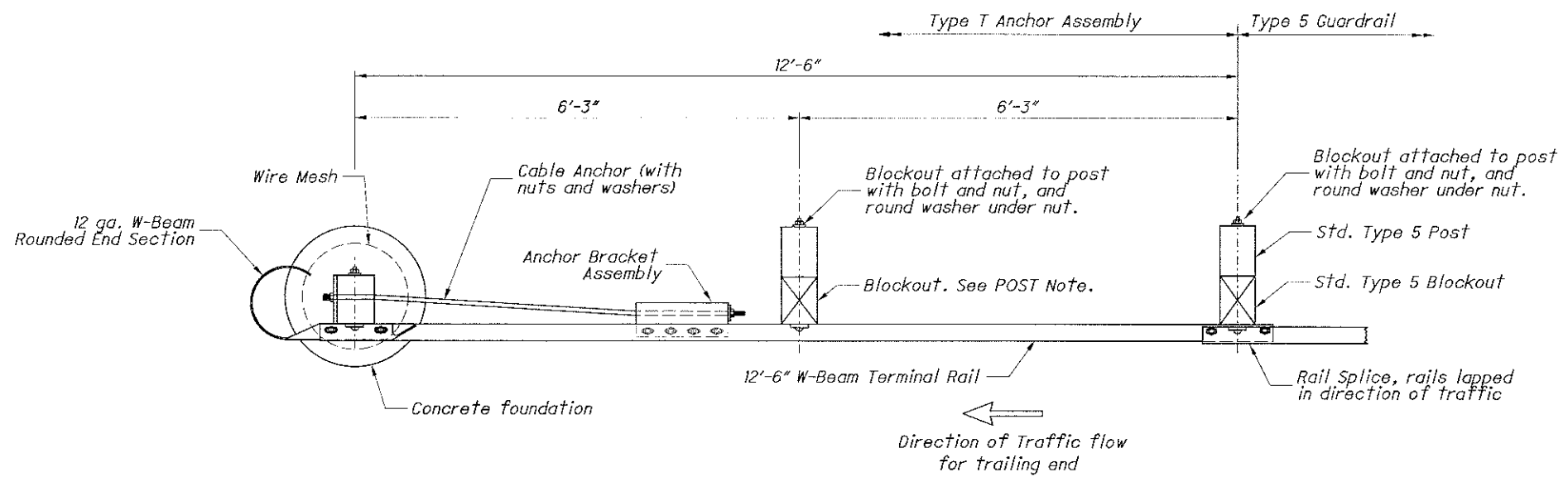
Components on this anchor that are not detailed on SCD GR-1.1 include: 1) 12'-6" W-Beam Terminal Rail (standard part RWM14a), and 2) W-Beam Rounded End Section (RWE03a). For complete details and specifications, see part descriptions in the AASHTO/AGC/ARTBA Standardized Hardware Guide.

POSTS: Post No. 1 may be an 8'-0" long Steel Ground Tube without a Soil Plate in lieu of the 5'-0" tube with Soil Plate.

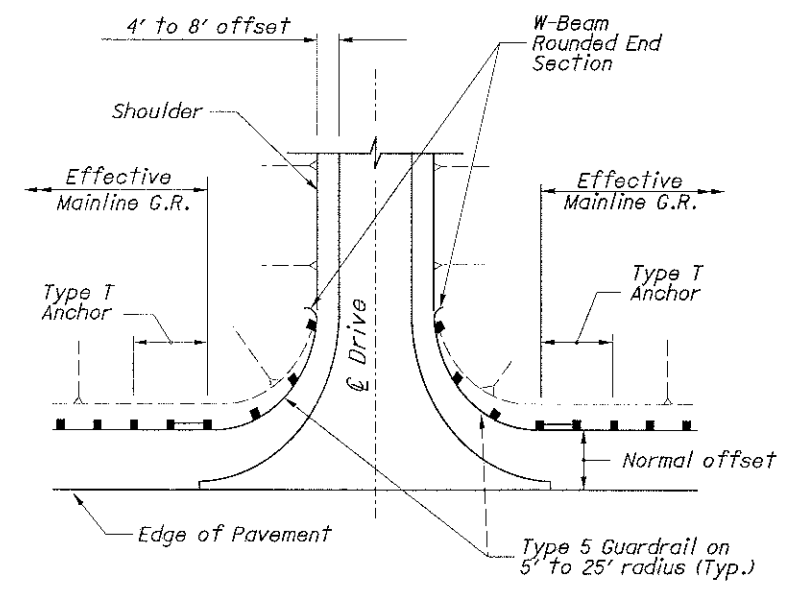
Post No. 2 can be W6x9 (or W6x8.5) with notched wood blockouts or a standard Type 5 post and blockout. Recycled plastic blockouts are permitted.

PAYMENT: All labor and materials, including the W-Beam Rounded End Section and the W-Beam Terminal Rail for the 12'-6" anchor assembly shall be included in the unit price bid for Item 606 - Anchor Assembly, Type T, Each.



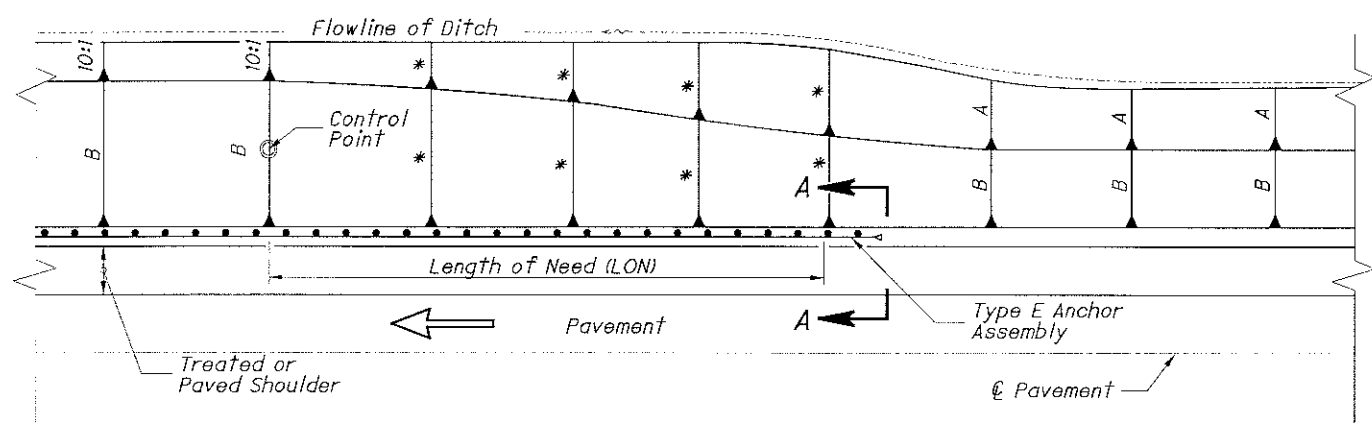


See SCD GR-1.1 for Type 1 Breakaway CRT Post, Steel Ground Tube, Post Sleeve, Cable Anchor and Bracket Assembly details.



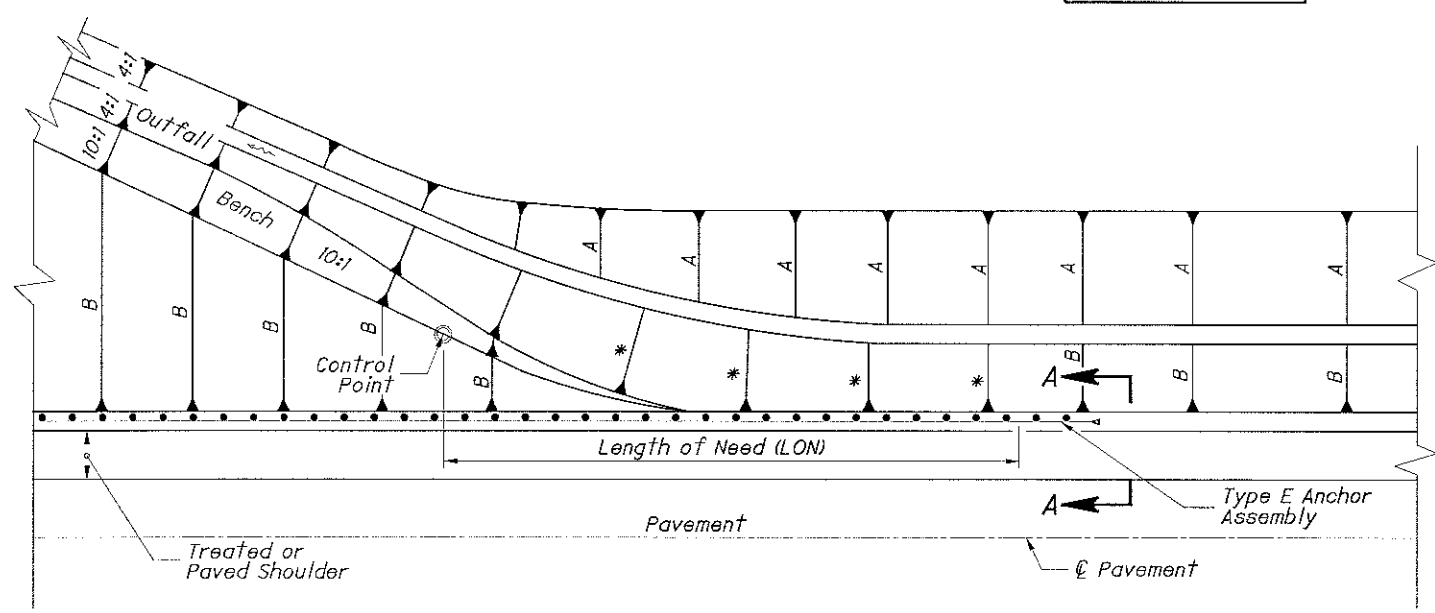
ELEVATION - CONCRETE FOOTER

DRIVEWAY OPENING

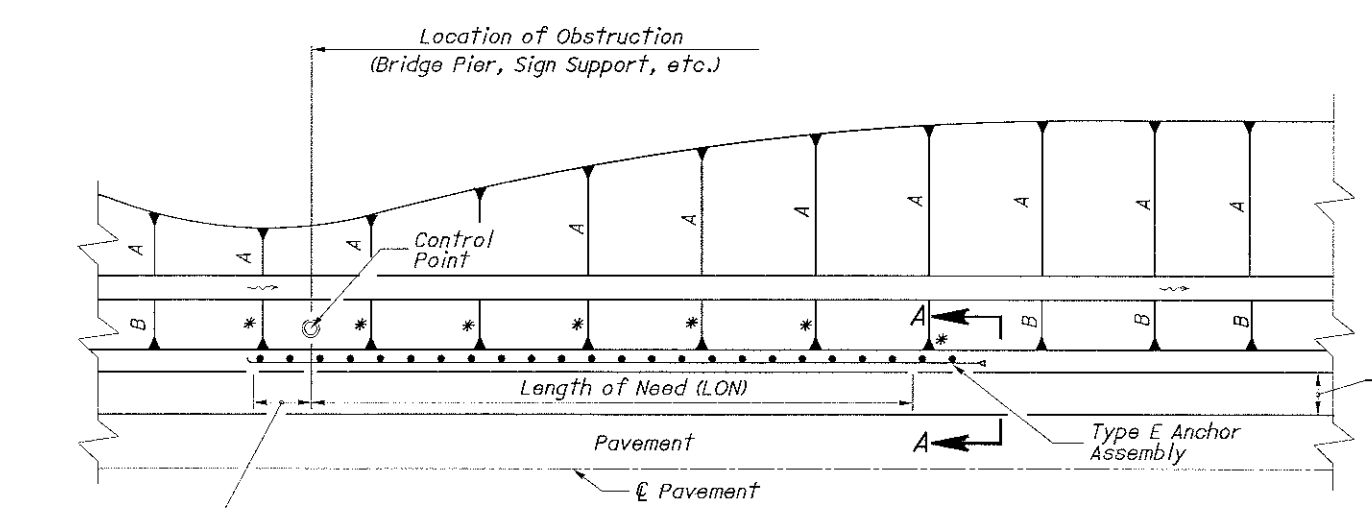


FILL TO FILL

* 3:1 or Flatter

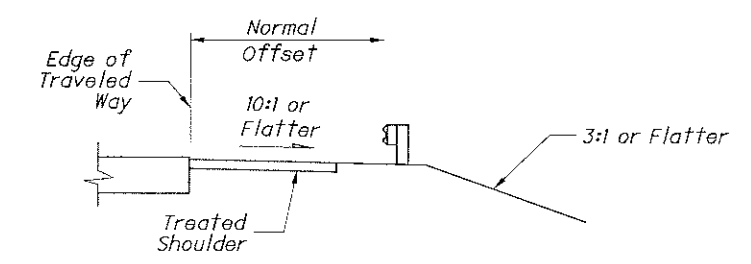


CUT TO FILL



OBSTRUCTION

Type T Anchor Assembly. See SCD GR-4.2.



SECTION A-A

NOTES

APPLICATION: Utilize details shown here only where approach foreslopes are steeper than 6:1, but not steeper than 3:1.

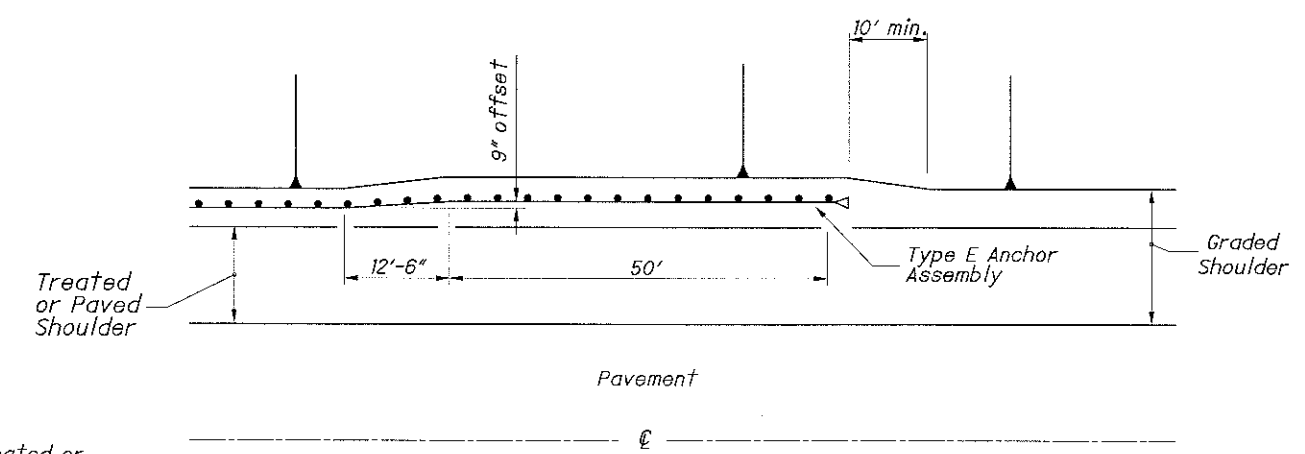
SLOPES: Slopes designated by * shall be 3:1 or flatter. Slopes labeled "A" and "B" shall be constructed as specified in the plans.

"LON" DISTANCE: The Length of Need, LON, represents the distance from the control point to the beginning of the end treatment. The control point shown designates the extent of the hazard being shielded and is shown for design use only. See Location & Design Manual, Volume 1, Section 602.

GUARDRAIL END TERMINALS: Terminals utilized for the situations shown here shall be Type E Anchor Assemblies unless otherwise specified in the plans.

OBSTRUCTION INSTALLATION: Use this installation for one-directional roadways only.

OFFSET DESIGN: The design shown may be specified on the plans where it is deemed detrimental to lose effective shoulder width due to the dimensions of the Type E Anchor Assembly. The Type E which represents the final 50' of guardrail is to be offset an additional 9" from the normal guardrail offset by tapering within the 12'-6" shown below. The graded shoulder width shall be increased 9" and tapered back to the normal width to 10' as shown.



OFFSET DESIGN
(Plan View)

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REF SHEET NO.	SHEET NO.	STATION TO STATION		SIDE	630	642	642														
					REMOVAL OF GROUND MOUNTED SIGN AND REEJECTION	EDGE LINE, TYPE 1 (WHITE)	CENTER LINE, TYPE 1 (DASHED)														
					EACH	FT	FT														
S-1	tpl	268+47		LT	1																
S-2		268+70		RT	1																
S-3		269+21		LT	1																
EL-1		266+15	270+47	RT		432															
EL-2		266+92	270+30	LT		338															
CL-1		268+00	269+65	¢			165														
TOTALS CARRIED TO GENERAL SUMMARY					3	0.15	0.03														

770 FT=0.15 MI 165 FT=0.03 MI

TRAFFIC CONTROL SUBSUMMARY	CALCULATED	TLS
	CHECKED	MDC
CRA - 61 - 5.09	22	23

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SOUTH
61
- Existing

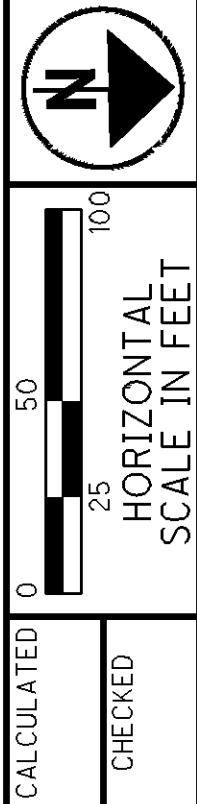
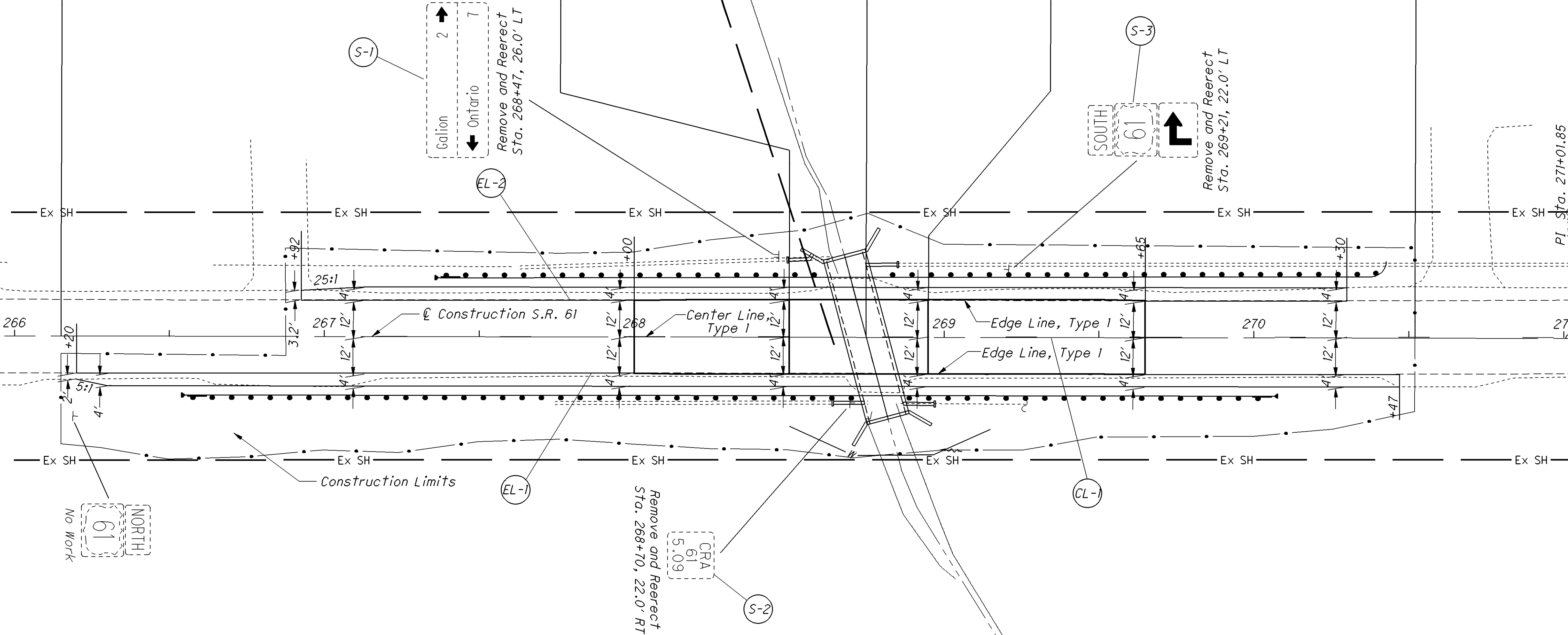
BEGIN WORK
STA. 266+15

BEGIN PROJECT
STA. 268+50
S.L.M. 5.09
E100718

STRUCTURE
CRA-61-0509
SFN = 1702068

END PROJECT
STA. 268+95
E100718

END WORK
STA. 270+52



SIGNING AND PAVEMENT MARKING PLAN
STA. 266+00 TO STA. 271+00

CRA-61-5.09

PROJECT DESCRIPTION

REPLACEMENT OF EXISTING STRUCTURE AT AN OLENTANGY RIVER TRIBUTARY WITH A PRECAST CONCRETE BOX CULVERT.

HISTORIC RECORDS

NO HISTORIC RECORDS WERE FOUND FOR THIS PROJECT.

GEOLOGY

THE PROJECT IS LOCATED WITHIN THE GALION GLACIATED LOW PLATEAU. TYPICALLY, THE AREA IS CHARACTERIZED BY ROLLING TERRAIN WITH MODERATE RELIEF. GLACIAL TILLS VARY FROM THIN TO THICK UNDERLAIN BY MISSISSIPPIAN AGED SHALE AND SANDSTONE.

RECONNAISSANCE

FIELD RECONNAISSANCE WAS COMPLETED ON MARCH 16, 2011 BY BRIAN LOGSTON FROM THE OFFICE OF GEOTECHNICAL ENGINEERING. THE SURROUNDING LAND USAGE WAS NOTED AS BEING PRIMARILY RURAL WITH AGRICULTURAL, RESIDENTIAL AND COMMERCIAL AREAS. THE STREAM CHANNEL WAS NOTED AS HAVING EROSION OF THE BANKS AND SEDIMENT BUILDUP WITH THE CHANNEL.

SUBSURFACE EXPLORATION

TWO (2) BORINGS, B-001 AND B-002, WERE COMPLETED AS PART OF THE SUBSURFACE EXPLORATION BETWEEN SEPTEMBER 6 AND 13, 2011. THE BORINGS WERE DRILLED WITH A TRUCK MOUNTED ROTARY DRILL RIG, USING 3 1/4-INCH I.D. HOLLOW STEM AUGERS TO ADVANCE THE BORINGS. DISTURBED SAMPLES WERE COLLECTED IN ACCORDANCE WITH THE STANDARD PENETRATION TEST (AASHTO T206) AT CONTINUOUS INTERVALS AT THE STREAM LEVEL AND 2.5 AND 5.0 FOOT INTERVALS TO TOP OF ROCK. THE HAMMER SYSTEM USED WAS LAST CALIBRATED IN MARCH 10, 2009, AND THE AVERAGE DRILL ROD ENERGY RATIO (ER) IS 78.5%. THE BORINGS WERE ADVANCED INTO BEDROCK AND SAMPLED (AASHTO T225) USING AN N SERIES WIRELINE CORE BARREL, WATER METHOD.

EXPLORATION FINDINGS

SUBSURFACE CONDITIONS REVEALED BY THE BORINGS DRILLED INDICATED THAT THE SITE IS PREDOMINATELY UNDERLAIN BY COHESIVE SOILS WITH GRANULAR SOILS ABOVE BEDROCK. COHESIVE SOILS ENCOUNTERED RANGING FROM SANDY SILT (A-4a) TO SILT AND CLAY (A-6a). TYPICALLY THE MATERIAL ENCOUNTERED RANGED FROM MEDIUM STIFF TO STIFF IN CONSISTENCY AND WAS TYPICALLY DAMP TO MOIST WITH LAYERS WHICH WERE WET. GRANULAR SOILS ENCOUNTERED RANGED FROM GRAVEL WITH SAND (A-1-b) TO STONE FRAGMENTS WITH SAND AND SILT (A-2-4) TYPICALLY IN DENSE COMPACTNESS. SHALE WAS ENCOUNTERED BETWEEN ELEVATION 1131.2 AND 1131.8 FEET AT B-001 AND B-002, RESPECTIVELY. UNIT ROD VALUES RANGING FROM 25% TO 32% AND UNIT RECOVERY RANGING FROM 83% TO 100%.

FREE WATER WAS NOTED AT ELEVATION 1163.3 AND 1152.8 FEET IN B-001 AND B-002, RESPECTIVELY, WITH A STATIC WATER LEVEL WAS NOTED IN B-003 AT ELEVATION 1155.8 FEET.

SPECIFICATIONS

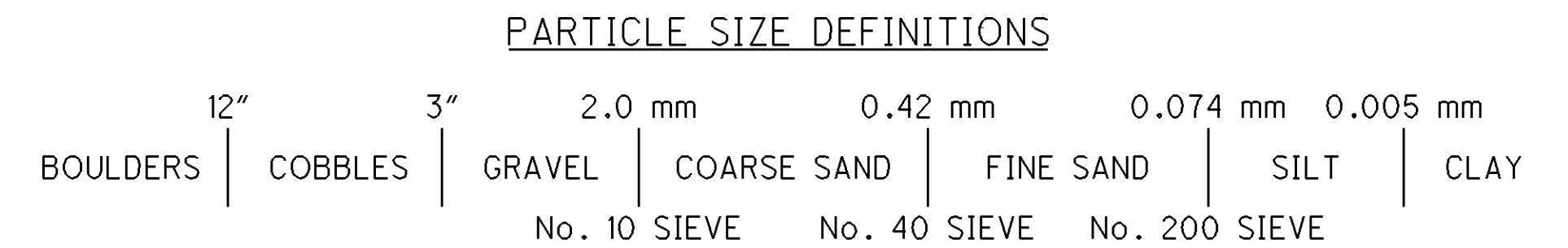
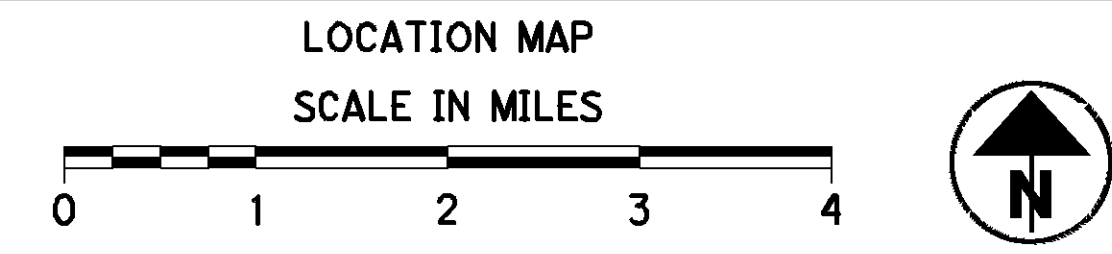
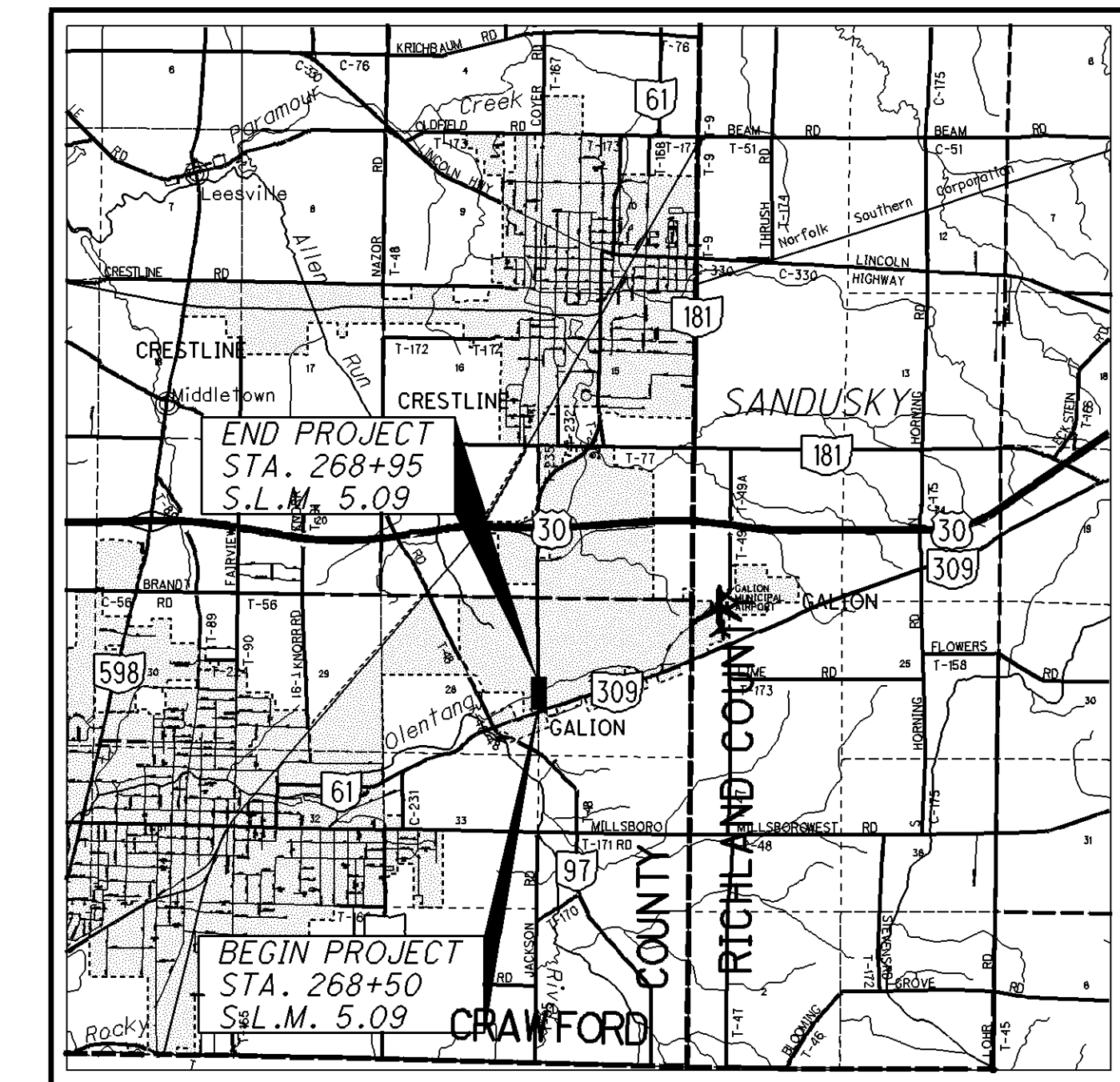
THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED JANUARY 2011.

AVAILABLE INFORMATION

ALL AVAILABLE SOIL AND BEDROCK INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE GEOTECHNICAL EXPLORATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL EXPLORATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF GEOTECHNICAL ENGINEERING AT 1600 WEST BROAD STREET OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET.

LEGEND		ODOT CLASS	CLASSIFIED MECH./VISUAL	
	GRAVEL AND/OR STONE FRAGMENTS WITH SAND	A-1-b	1	4
	GRAVEL AND/OR STONE FRAGS. WITH SAND & SILT	A-2-4	-	1
	SANDY SILT	A-4a	8	3
	SILT AND CLAY	A-6a	6	8
		TOTAL	15	16
	WEATHERED SHALE	VISUAL		
	PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	VISUAL		
	BORING LOCATION - PLAN VIEW.			
	DRIVE SAMPLE AND/OR ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.			
<i>WC</i>	INDICATES WATER CONTENT IN PERCENT.			
<i>N₆₀</i>	INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.			
<i>X/Y/D"</i>	NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (SPT): X= NUMBER OF BLOWS FOR 6 INCHES (UNCORRECTED). Y/D"= NUMBER OF BLOWS (UNCORRECTED) FOR D" OF PENETRATION AT REFUSAL.			
	INDICATES FREE WATER ELEVATION.			
	INDICATES STATIC WATER ELEVATION.			
	INDICATES A PLASTIC MATERIAL WITH A MOISTURE CONTENT EQUAL TO OR GREATER THAN THE LIQUID LIMIT MINUS 3.			
<i>SS</i>	INDICATES A SPLIT SPOON SAMPLE.			

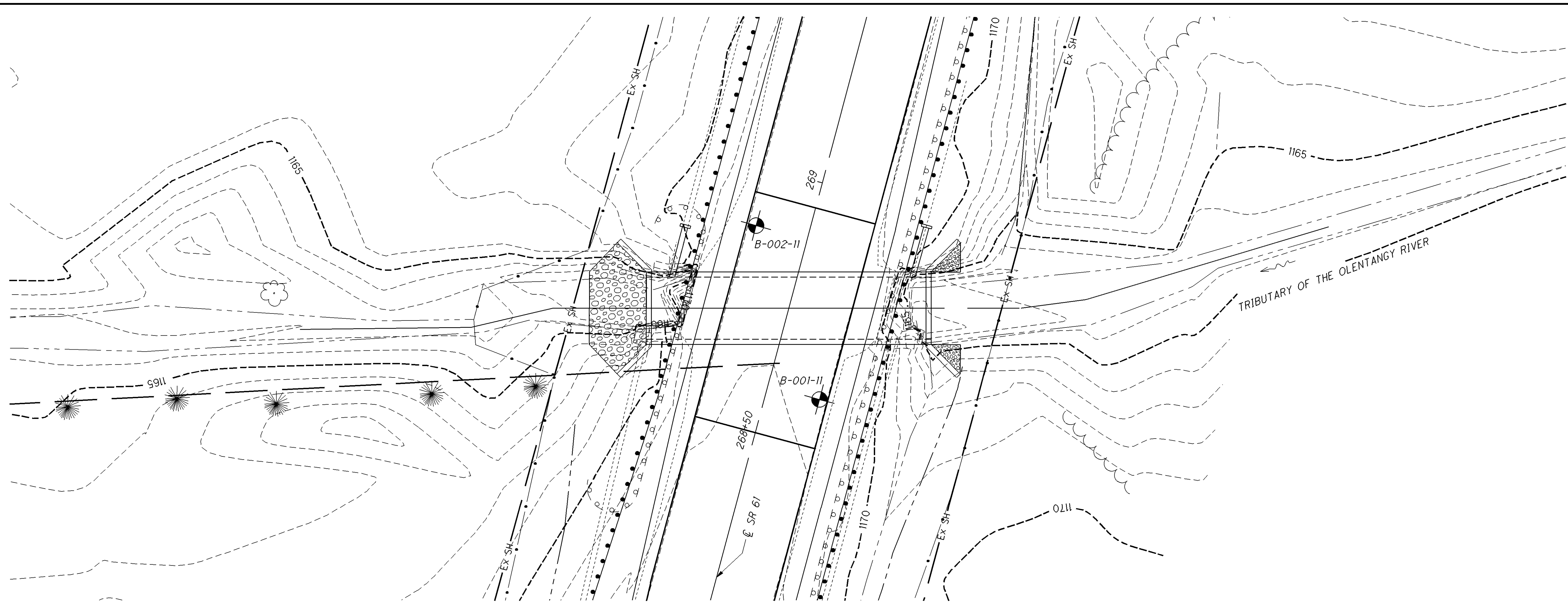
BORING NO.	SAMPLE NO.	ELEVATION	D ₅₀ VALUE (mm)	D ₉₅ VALUE (mm)
B-001-11	SS-6	1160.3 - 1158.8	0.0051	1.7167
	SS-7	1158.8 - 1157.3	0.0123	1.844
	SS-8	1157.3 - 1155.8	0.016	3.6071
	SS-9	1155.8 - 1154.3	0.1173	14.0093
B-002-11	SS-10	1154.3 - 1152.8	0.0237	5.2192
	SS-5	1161.1 - 1159.6	0.0132	2.8875
	SS-8A	1156.6 - 1156.1	0.0428	6.1383
	SS-8B	1156.1 - 1155.1	0.0306	6.9484
	SS-9	1155.1 - 1153.6	0.044	14.4748



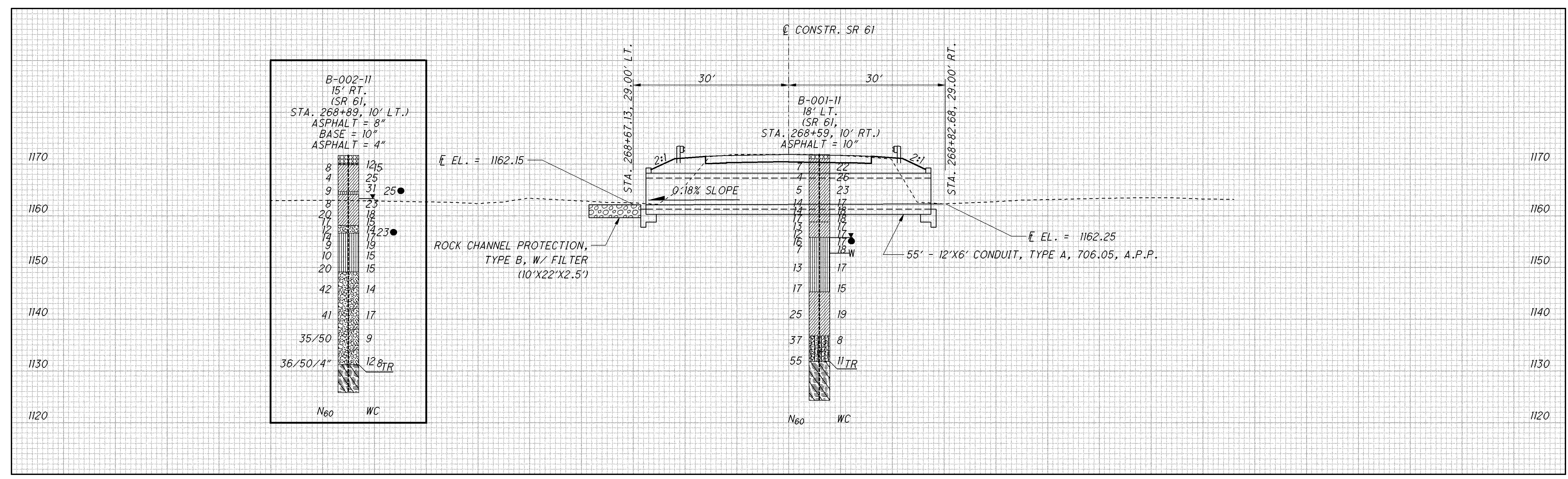
RECON. - BKL 03/16/11
 DRILLING - DML 09/06/11 - 09/13/11
 DRAWN - BKL 11/11
 REVIEWED - MRS 11/11

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I:\gt\Projects\003\Crawford\CRA-61-5.08\geotechnical\sheets\8344.32P001.dgn 18-NOV-2011 11:23AM blogston



STRUCTURE FOUNDATION EXPLORATION
BR. NO. CRA-61-0509



CAR-61-5.09
2 / 4

PROJECT: CRA-61-05.08
 TYPE: CULVERT REPLACEMENT
 PID: 83443 BR ID: CRA-61-0509
 START: 9/6/11 END: 9/12/11

DRILLING FIRM / OPERATOR: ODOT / PROCTOR
 SAMPLING FIRM / LOGGER: ODOT / LEWIS
 DRILLING METHOD: 3.25" HSA / NQ2
 SAMPLING METHOD: SPT / NQ2

DRILL RIG: CME 75 TRUCK
 HAMMER: CME AUTOMATIC
 CALIBRATION DATE: 3/10/09
 ENERGY RATIO (%): 78.5

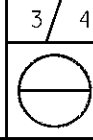
STATION / OFFSET: 268+59, 10' RT.
 ALIGNMENT: CL SR 61
 ELEVATION: 1171.8 (MSL) EOB: 47.5 ft.
 COORD: 393421.186 N, 1900431.539 E

EXPLORATION ID: B-001-11
 PAGE: 1 OF 1

DEPTH (ft)	SPT/ROD	REC N ₆₀ (%)	SPT/ROD	HP (tsf)	GRADATION (%)				ATTERBERG				WC	HOLE CLASS (C)	HOLE SEALED	
					GR	CS	FS	SI	CL	LL	PL	PI				
1																
2	2	7	78	SS-1	-	8	17	14	35	26	27	16	11	22	A-6a (6)	
3	3															
4	1	4	78	SS-2	-	-	-	-	-	-	-	-	-	26	A-6a (V)	
5	2															
6	1	5	100	SS-3	-	-	-	-	-	-	-	-	-	23	A-6a (V)	
7	2															
8	2															
9	2	14	83	SS-4	4.50	-	-	-	-	-	-	-	-	17	A-6a (V)	
10	4	14	100	SS-5	4.50	-	-	-	-	-	-	-	-	18	A-6a (V)	
11	5															
12	4	17	100	SS-6	2.50	5	7	7	32	49	35	20	15	18	A-6a (10)	
13	4	13	100	SS-7	1.75	4	10	11	39	36	26	17	9	17	A-4a (8)	
14	5															
15	2	12	50	SS-8	1.75	10	9	10	36	35	28	17	11	17	A-6a (8)	
16	4	16	67	SS-9	1.25	23	17	13	28	19	20	15	5	17	A-4a (2)	
17	6															
18	4	7	56	SS-10	1.25	11	13	11	36	29	26	17	9	18	A-4a (6)	
19	3															
20	2															
21	2	13	78	SS-11	1.25	-	-	-	-	-	-	-	-	17	A-4a (V)	
22	4															
23	6															
24	4															
25	4	17	33	SS-12	0.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
26	6															
27	7															
28																
29																
30	4	25	89	SS-13	1.75	8	7	5	39	41	30	17	13	19	A-6a (9)	
31	9															
32	10															
33																
34																
35	8	37	67	SS-14	-	-	-	-	-	-	-	-	-	8	A-2-4 (V)	
36	12															
37	16															
38																
39																
40	55	-	100	SS-15	-	-	-	-	-	-	-	-	-	11	Rock (V)	
41																
42																
43																
44	25	83	NQ2-1													CORE
45																
46																
47																

ASPHALT (10')
 MEDIUM STIFF, BROWN, SILT AND CLAY, SOME SAND, TRACE GRAVEL, MOIST
 @3.0' - 5.0': SOFT, WET
 @7.5': HARD, BROWNISH GRAY
 @11.5': VERY STIFF, LITTLE SAND, DAMP
 STIFF, BROWNISH GRAY, SILT AND CLAY, SOME TO LITTLE SAND, TRACE GRAVEL, DAMP
 STIFF, BROWNISH GRAY, SANDY SILT, SOME GRAVEL, LITTLE CLAY, MOIST
 @17.5': SOME CLAY, LITTLE GRAVEL
 @22.5': MEDIUM STIFF
 STIFF GRAY, SILT AND CLAY, LITTLE SAND, TRACE GRAVEL, MOIST
 DENSE, DARK GRAY, STONE FRAGMENTS WITH SAND AND SILT, DAMP
 SHALE, GRAY, MODERATELY TO HIGHLY WEATHERED, WEAK, LAMINATED, HIGHLY FRACTURED; RQD 25%, REC 83%
 TR
 EOB

NOTES: NONE
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 400 LB. BENTONITE CHIPS



CRA - 61 - 5.09

STRUCTURE FOUNDATION EXPLORATION
 BR. NO. CRA-61-0509 AT A TRIB. OF THE OLENTANGY RIVER
 BORING LOG B-001-11

DRAWN: BKL
 CHECKED: MRS

PROJECT: CRA-61-05.08 TYPE: CULVERT REPLACEMENT PID: 83443 BR ID: CRA-61-0509 START: 9/12/11 END: 9/13/11	DRILLING FIRM / OPERATOR: ODOT / LEWIS SAMPLING FIRM / LOGGER: ODOT / CRONIN DRILLING METHOD: 3.25" HSA / NQ2 SAMPLING METHOD: SPT / NQ2	DRILL RIG: CME 75 TRUCK HAMMER: CME AUTOMATIC CALIBRATION DATE: 3/10/09 ENERGY RATIO (%): 78.5	STATION / OFFSET: 268+89, 10' LT. ALIGNMENT: CL SR 61 ELEVATION: 1171.6 (MSL) EOB: 45.8 ft. COORD: 393453.773 N, 1900410.236 E										EXPLOSION ID B-002-11 PAGE 1 OF 1			
			SPT/ RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL		LL	PL	PI
MATERIAL DESCRIPTION AND NOTES		ELEV.	DEPTHS													
ASPHALT (8') AND AGGREGATE BASE (10') AND ASPHALT (4')		1171.6	1-4													
STIFF, BROWN, SILT AND CLAY, SOME SAND, TRACE GRAVEL, DAMP TO MOIST @3.0' - 5.0'; SOFT		1169.8	5-8													
@5.0'; MOTTLED GRAY AND BROWN			9-10													
STIFF, GRAY, SANDY SILT, SOME CLAY, WET STIFF TO VERY STIFF, GRAY, SILT AND CLAY, SOME SAND, TRACE GRAVEL, MOIST		1164.6 1164.1	11-14													
@12.0'; DAMP			15-18													
MEDIUM DENSE, BROWN, GRAVEL WITH SAND, WET			19-22													
STIFF TO VERY STIFF, GRAY, SANDY SILT, SOME CLAY, LITTLE GRAVEL, WET @15.5'; DAMP TO MOIST			23-26													
DENSE, GRAY, GRAVEL WITH SAND, LITTLE SILT, TRACE CLAY, WET		1149.1	27-30													
			31-34													
			35-36													
			37-40													
SHALE, GRAY, HIGHLY TO MODERATELY WEATHERED, WEAK, LAMINATED, HIGHLY FRACTURED; RQD 32%, REC 100%.		1131.2	41-44													
			45													

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 400 LB. BENTONITE CHIPS



CRA - 61 - 5.09

STRUCTURE FOUNDATION EXPLORATION
BR. NO. CRA-61-0509 AT A TRIB. OF THE OLENTANGY RIVER
BORING LOG B-002-11

DRAWN
BKL
CHECKED
MRS