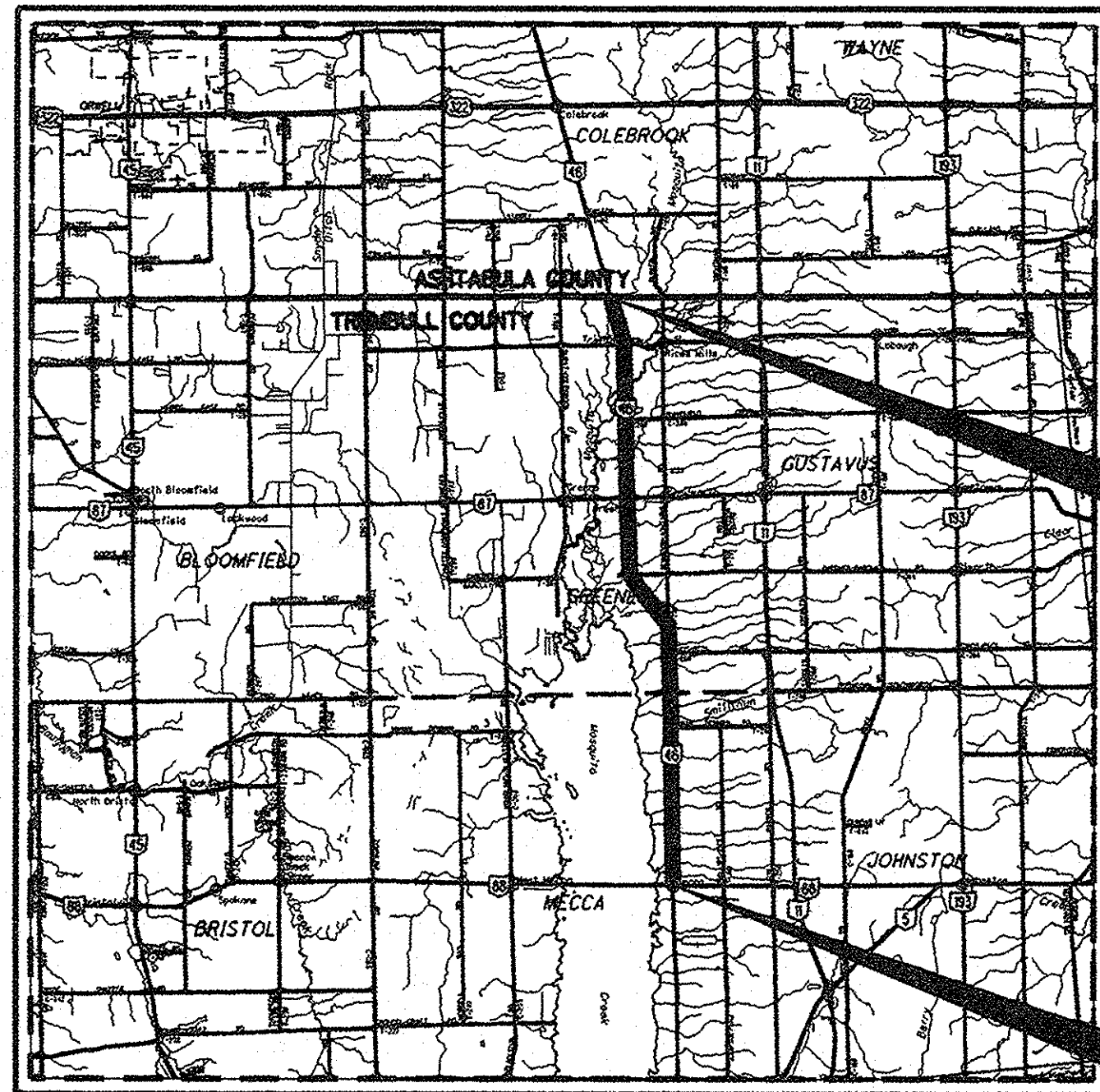


STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION

# TRU-46-18.49

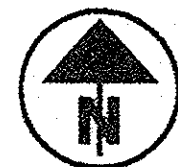
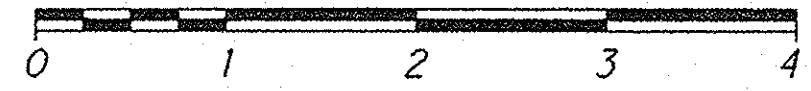
## GREENE TOWNSHIP MECCA TOWNSHIP TRUMBULL COUNTY



LOCATION MAP

LATITUDE: N41°26'32" LONGITUDE: W80°44'29"

SCALE IN MILES



PORTION TO BE IMPROVED	-----
INTERSTATE HIGHWAY	=====
FEDERAL ROUTES	===== -----
STATE ROUTES	=====
COUNTY & TOWNSHIP ROADS	-----
OTHER ROADS	-----

DESIGN DESIGNATION	SLM: 20.81/21.80	SLM: 26.27
CURRENT ADT (2013)	1700	930
DESIGN YEAR ADT (2033)	2,200	1,200
DESIGN HOURLY VOLUME (2033)	242	132
DIRECTIONAL DISTRIBUTION	0.60	0.60
TRUCKS (24 HOUR B&C)	0.04	0.04
DESIGN SPEED	60 MPH	60 MPH
LEGAL SPEED	55 MPH	55 MPH
DESIGN FUNCTIONAL CLASSIFICATION:		
RURAL MAJOR COLLECTOR		
NHS PROJECT	NO	

DESIGN EXCEPTIONS

NONE

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PROJECT DESCRIPTION

IMPROVEMENT OF 7.85 MILES OF SR46 BY PLANING AND AND RESURFACING, MINOR STRUCTURE WORK, GUARDRAIL REPLACEMENT, TWO CULVERT REPLACEMENTS, AND ONE STRUCTURE REPLACEMENT.

TRU-46-2081

PROJECT EARTH DISTURBED AREA: 0.26 ACRES  
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.25 ACRES  
NOTICE OF INTENT EDA: N/A (NOI NOT REQUIRED)

TRU-46-21.80

PROJECT EARTH DISTURBED AREA: 0.31 ACRES  
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.00 ACRES  
NOTICE OF INTENT EDA: N/A (NOI NOT REQUIRED)

TRU-46-2627

PROJECT EARTH DISTURBED AREA: 0.89 ACRES  
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.00 ACRES  
NOTICE OF INTENT EDA: N/A (NOI NOT REQUIRED)

2010 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 REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT DE-TOURS WILL BE PROVIDED AS INDICATED ON SHEETS 12-16.

**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 UNDERGROUND  
PROTECTION SERVICE CALL: **1-800-925-0988**

PLAN PREPARED BY:  
ODOT --- DISTRICT 4 PLANNING & ENGINEERING  
2088 SOUTH ARLINGTON STREET  
AKRON, OHIO 44306

ENGINEERS SEAL:  
  
SIGNED: *Rebecca Bisesi*  
DATE: 1-28-13

STANDARD CONSTRUCTION DRAWINGS				SUPPLEMENTAL SPECIFICATIONS		SPECIAL PROVISIONS	
BP-1.1	7/28/00			800-2010	1/18/13	WPC	1/22/13
BP-3.1	4/20/12			821	4/20/12		
BP-4.1	7/16/04			832	5/5/09		
HW-2.2	1/18/13	MT-97.10	7/20/12				
		MT-97.12	7/20/12				
DM-1.1	7/20/12	MT-99.20	7/20/12				
DM-1.4	7/15/11	MT-101.90	10/19/12				
DM-3.1	7/20/12						
DM-4.3	7/20/12	MT-101.60	7/20/12	TC-41.20	1/19/01	TC-65.10	4/20/12
DM-4.4	7/20/12	MT-105.10	7/20/12	TC-41.30	1/19/07	TC-65.11	4/20/12
				TC-42.10	1/19/07	TC-71.10	10/19/12
				TC-42.20	1/21/11	TC-73.10	4/20/12
				TC-52.10	1/18/13		
				TC-52.20	1/18/13		

APPROVED: *[Signature]*  
DATE: 1-25-13 DISTRICT DEPUTY DIRECTOR

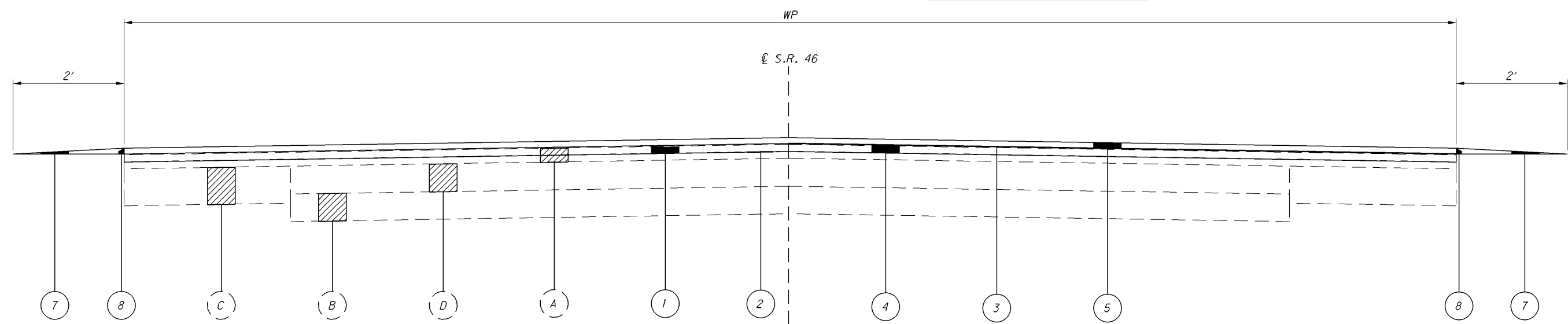
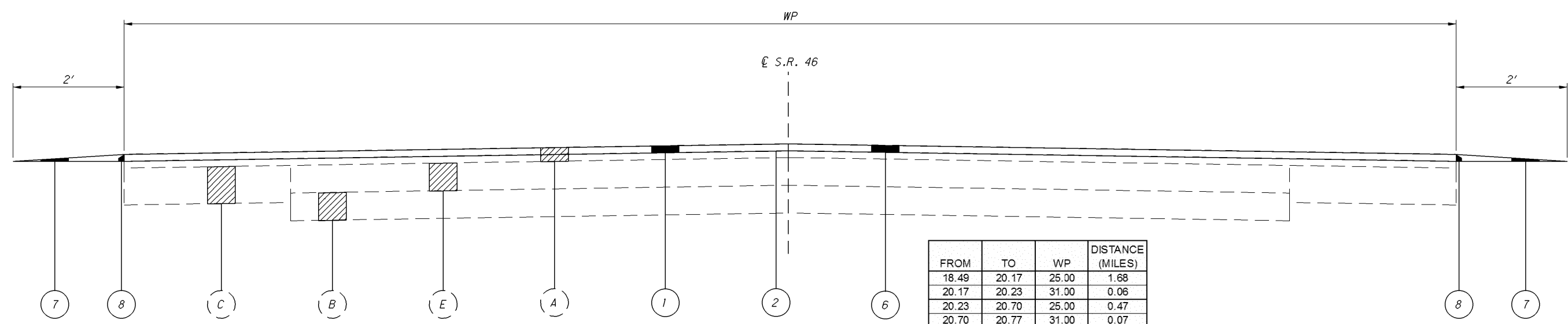
APPROVED: *[Signature]*  
DATE: 1/31/13 DIRECTOR, DEPARTMENT OF TRANSPORTATION

TRU - SR-46-18.49  
130277 PID - 85202  
Dist 4 4/25/2013

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

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FEDERAL PROJECT NO. E090(129)  
PID NO. 85202  
CONSTRUCTION PROJECT NO. NONE  
RAILROAD INVOLVEMENT NONE  
TRU-46-18.49  
1/66

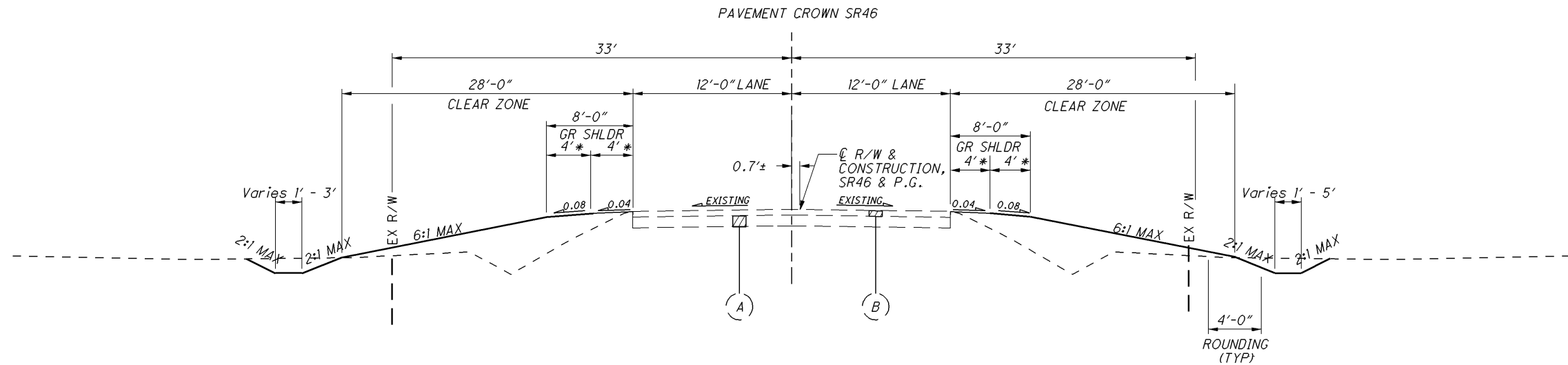


LEGEND

- (A) EXISTING ASPHALT CONCRETE PAVEMENT
- (B) EXISTING SUBBASE
- (C) EXISTING SHOULDER SUBBASE
- (D) EXISTING REINFORCED CONCRETE BASE
- (E) EXISTING WATERBOUND MACADAM
- (1) ITEM 254, PAVEMENT PLANING (T=1 1/2")
- (2) ITEM 407, TACK COAT @ 0.15 GAL/SY
- (3) ITEM 407, TACK COAT FOR INTERMEDIATE COURSE @ 0.04 GAL SY
- (4) ITEM 448, ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2 PG64-22 (T= 1 3/4")
- (5) ITEM 448, ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M, AS PER PLAN (T= 1 1/4")
- (6) ITEM 448, ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 70-22M, AS PER PLAN (T= 1 1/2")
- (7) ITEM 617, COMPACTED AGGREGATE AS PER PLAN
- (8) SAFETY EDGE DETAIL, SEE SHEET 5 FOR DETAILS

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**GRADED SHOULDER WIDENING SECTION (TRU-46-2081)**

STA 1097+50.00 TO STA 1098+58.00 (SLM: 20.79 TO 20.81)

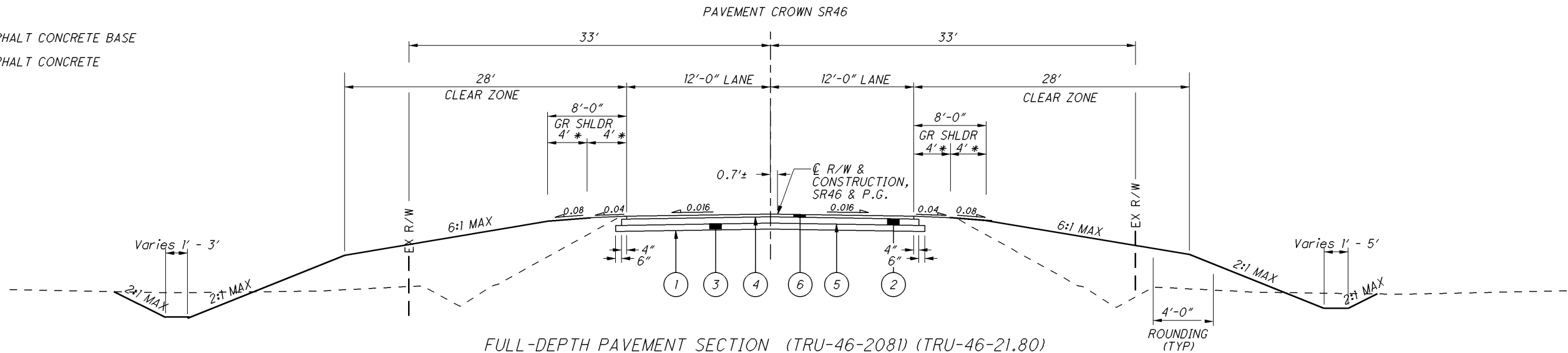
STA 1099+14.00 TO STA 1100+50.00 (SLM: 20.82 TO 20.85)

\* VARIES 0' TO 4' STATION 1097+50 TO 1098+00 & VARIES 4' TO 0 STA 1099+75 TO 1100+25

**LEGEND**

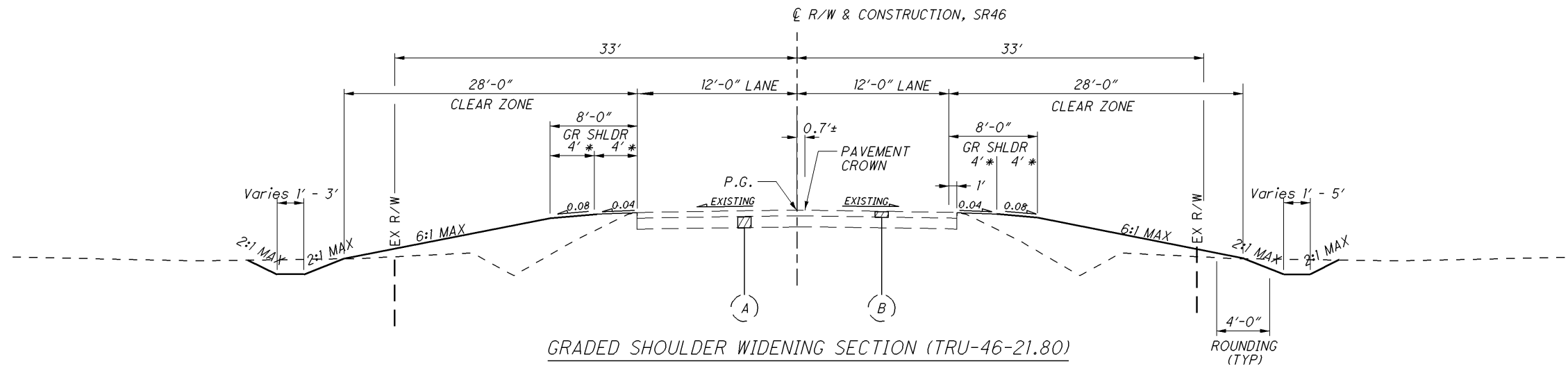
- ① ITEM 204, SUBGRADE COMPACTION
- ② ITEM 301, ASPHALT CONCRETE BASE, PG64-22 (T = 6")
- ③ ITEM 304, AGGREGATE BASE, AS PER PLAN (T = 6")
- ④ ITEM SPECIAL, TRACKLESS TACK COAT
- ⑤ ITEM 408, PRIME COAT @ 0.40 GAL/SY
- ⑥ ITEM 448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22 (T= 1 3/4")

- (A) EXISTING ASPHALT CONCRETE BASE
- (B) EXISTING ASPHALT CONCRETE



**FULL-DEPTH PAVEMENT SECTION (TRU-46-2081) (TRU-46-21.80)**

STA 1098+58.00 TO STA 1099+14.00 (SLM: 20.81 TO 20.82) (OMIT ITEMS 204 & 304 AND USE ITEM 301 TO TOP OF BOX FROM STA. 1098+80.22 TO 1098+92.56)



GRADED SHOULDER WIDENING SECTION (TRU-46-21.80)

STA 1149+54.00 TO STA 1150+65.50 (SLM: 21.77 TO 21.79)

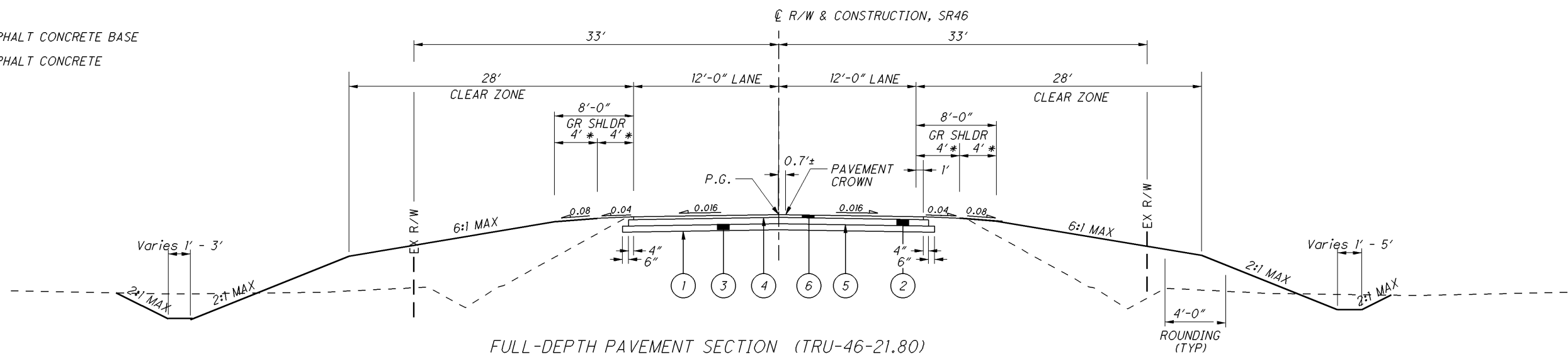
STA 1151+14.10 TO STA 1152+50.00 (SLM: 21.80 TO 21.83)

\* VARIES 0' TO 4' STATION 1149+54 TO 1150+00 & VARIES 4' TO 0 STA 1152+00 TO 1152+50

LEGEND

- ① ITEM 204, SUBGRADE COMPACTION
- ② ITEM 301, ASPHALT CONCRETE BASE, PG64-22 (T = 6")
- ③ ITEM 304, AGGREGATE BASE, AS PER PLAN (T = 6")
- ④ ITEM SPECIAL, TRACKLESS TACK COAT
- ⑤ ITEM 408, PRIME COAT @ 0.40 GAL/SY
- ⑥ ITEM 448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22 (T= 1 3/4")

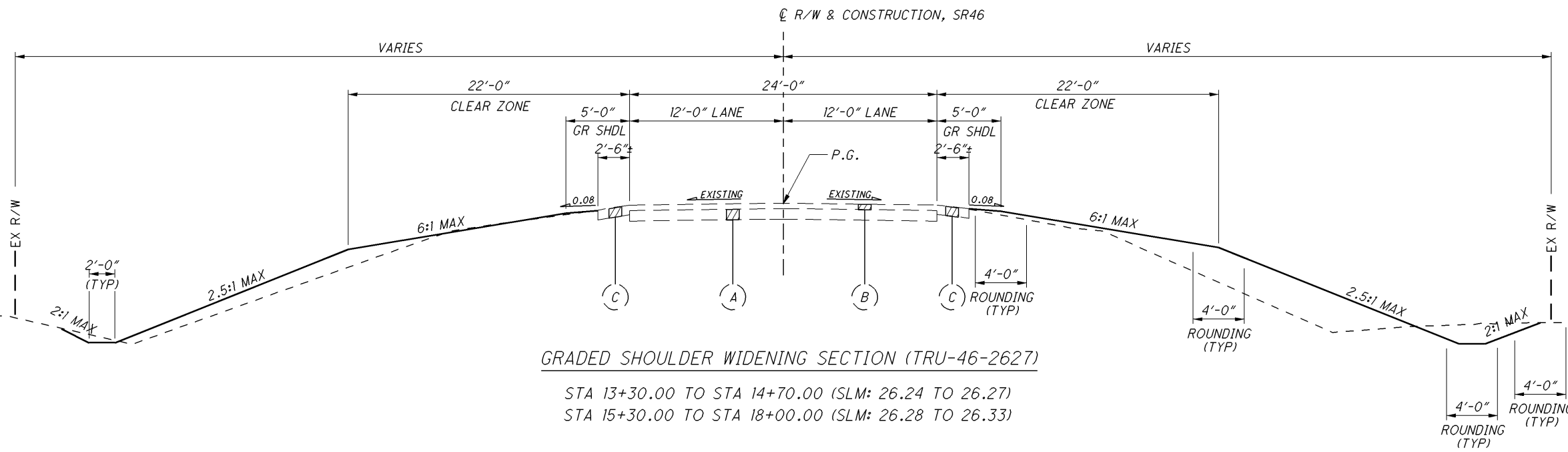
- (A) EXISTING ASPHALT CONCRETE BASE
- (B) EXISTING ASPHALT CONCRETE



FULL-DEPTH PAVEMENT SECTION (TRU-46-21.80)

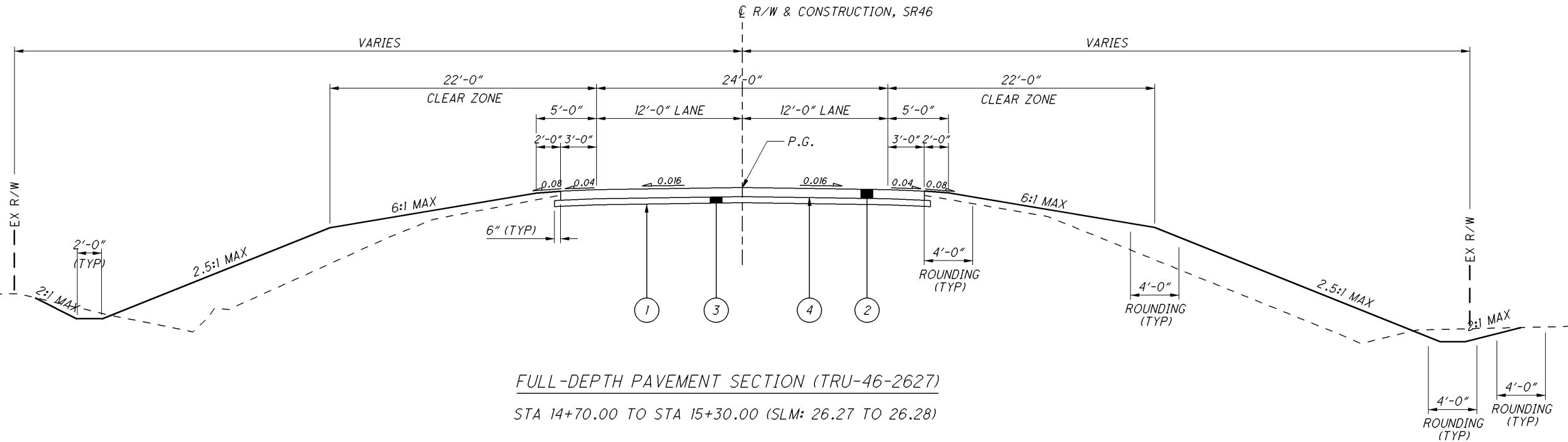
STA 1150+65.50 TO STA 1151+14.00 (SLM: 21.79 TO 21.80) (OMIT ITEMS 204 & 304 AND USE ITEM 301 TO TOP OF BOX FROM STA. 1150+88.50 TO 1150+96.00)

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**GRADED SHOULDER WIDENING SECTION (TRU-46-2627)**

STA 13+30.00 TO STA 14+70.00 (SLM: 26.24 TO 26.27)  
 STA 15+30.00 TO STA 18+00.00 (SLM: 26.28 TO 26.33)



**FULL-DEPTH PAVEMENT SECTION (TRU-46-2627)**

STA 14+70.00 TO STA 15+30.00 (SLM: 26.27 TO 26.28)

**LEGEND**

- |   |                                       |
|---|---------------------------------------|
| ① ITEM 204, SUBGRADE COMPACTION                     | Ⓐ EXISTING ASPHALT CONCRETE BASE      |
| ② ITEM 301, ASPHALT CONCRETE BASE, PG64-22 (T = 9") | Ⓑ EXISTING ASPHALT CONCRETE           |
| ③ ITEM 304, AGGREGATE BASE, AS PER PLAN (T = 6")    | Ⓒ EXISTING ASPHALT CONCRETE SHOULDERS |
| ④ ITEM 408, PRIME COAT @ 0.40 GAL/SY                |                                       |

**SAFETY EDGE (ASPHALT CONCRETE)**

IN ADDITION TO THE REQUIREMENTS OF 401.12, ATTACH A DEVICE TO THE SCREED OF THE PAVER THAT CONFINES THE MATERIAL AT THE END GATE AND EXTRUDES THE ASPHALT MATERIAL IN SUCH A WAY THAT RESULTS IN A COMPACTED WEDGE SHAPE PAVEMENT EDGE OF APPROXIMATELY 30 DEGREES (NOT STEEPER THAN 40 DEGREES). ENSURE THE DEVICE MAINTAINS CONTACT WITH THE EXISTING SURFACE, AND ALLOW FOR AUTOMATIC TRANSITION TO CROSS ROADS, DRIVEWAYS AND OBSTRUCTIONS. DO NOT USE CONVENTIONAL SINGLE PLATE STRIKE OFF.

CONSTRUCTION OF SAFETY EDGE CAN BE OMITTED AT LOCATIONS WHERE EXISTING WIDTH OF GRADED SHOULDER OR BERM IS LESS THAN 12". PROJECTS WITH VARYING CONDITIONS SHOULD USE SAFETY EDGE WHERE POSSIBLE. PLAN PREPARATION HAS MADE EVERY REASONABLE ATTEMPT TO IDENTIFY POSSIBLE SAFETY EDGE LOCATIONS.

USE THE TRANSTECH SHOULDER WEDGE MAKER, THE CARLSON SAFETY EDGE END GATE, THE ADVANT-EDGER, THE TROXLER SAFETY SLOPE OR A SIMILAR APPROVED-EQUAL DEVICE THAT PRODUCES THE SAME WEDGE CONSOLIDATION RESULTS. CONTACT INFORMATION FOR THESE WEDGE SHAPE COMPACTION DEVICES IS THE FOLLOWING:

TRANSTECH SYSTEMS, INC.  
1594 STATE STREET  
SCHENECTADY, NY 12304  
1-800-724-6306  
WWW.TRANSTECHSYS.COM

ADVANT-EDGE PAVING EQUIPMENT LLC  
P.O. BOX 9163  
NISKAYUNA, NY 12309-0163  
518-280-6090  
WWW.ADVANTAEDGEPAVING.COM

CARLSON SAFETY EDGE END GATE  
18425 50TH AVENUE EAST  
TACOMA, WA 98446  
253-875-8000

TROXLER ELECTRONIC LABORATORIES, INC.  
3008 E. CORNWALLIS RD.  
RESEARCH TRIANGLE PARK, NC 27709  
1-877-TROXLER  
WWW.TROXLERLABS.COM

IF ELECTING TO USE A SIMILAR DEVICE, PROVIDE PROOF THAT THE DEVICE HAS BEEN USED ON PREVIOUS PROJECTS WITH ACCEPTABLE RESULTS OR CONSTRUCT A TEST SECTION PRIOR TO THE BEGINNING OF WORK AND DEMONSTRATE WEDGE COMPACTION TO THE SATISFACTION OF THE ENGINEER. SHORT SECTIONS OF HANDWORK WILL BE ALLOWED WHEN NECESSARY FOR TRANSITIONS AND TURNOUTS OR OTHERWISE AUTHORIZED BY THE ENGINEER.

IN ADDITION TO THE REQUIREMENTS OF 401.16, MAKE THE FIRST ROLLER PASS 8 TO 12 INCHES AWAY FROM TAPERED EDGE. DO NOT ROLL THE TAPER.

**ITEM 209, PREPARING SUBGRADE FOR SHOULDER PAVING, AS PER PLAN.**

PREPARE THE SHOULDER FOR PAVING A CONSISTENT SAFETY EDGE IN BOTH THICKNESS AND WIDTH.

PRIOR TO PAVING THE SAFETY EDGE, GRADE AN AREA 10 INCHES WIDE, BEGINNING AT THE EDGE OF THE PAVED ROADWAY, TO PROVIDE A LEVEL SURFACE FREE OF VEGETATION FOR CONSTRUCTION OF THE SAFETY EDGE. IF NECESSARY, EXCAVATE THE GRADED AREA TO THE DEPTH NECESSARY TO CONSTRUCT THE SAFETY EDGE. COMPACT THE GRADED SHOULDER ACCORDING TO 617.05, OR AS DIRECTED BY THE ENGINEER.

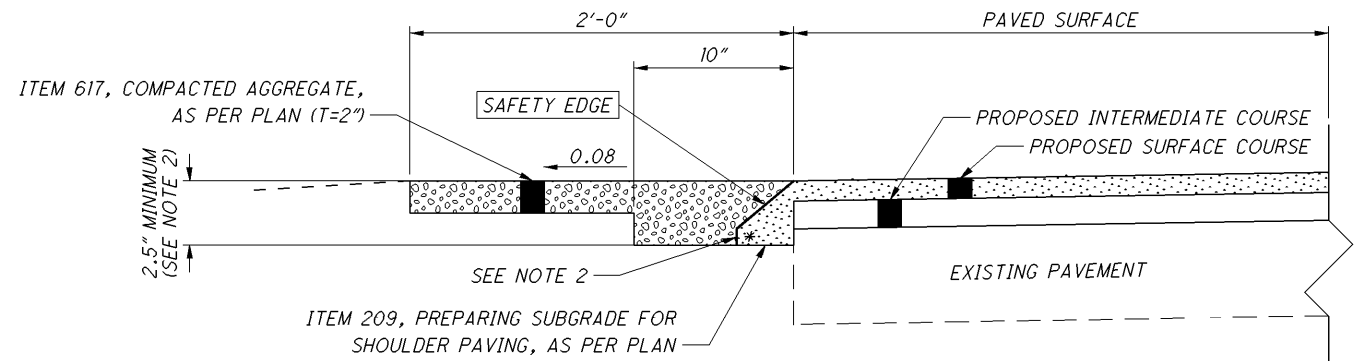
**NOTES:**

1.) SAFETY EDGES ARE REQUIRED AT THE OUTSIDE EDGES OF THE PAVED ROADWAY (EDGE OF TRAVEL LANE OR EDGE OF PAVED SHOULDER).

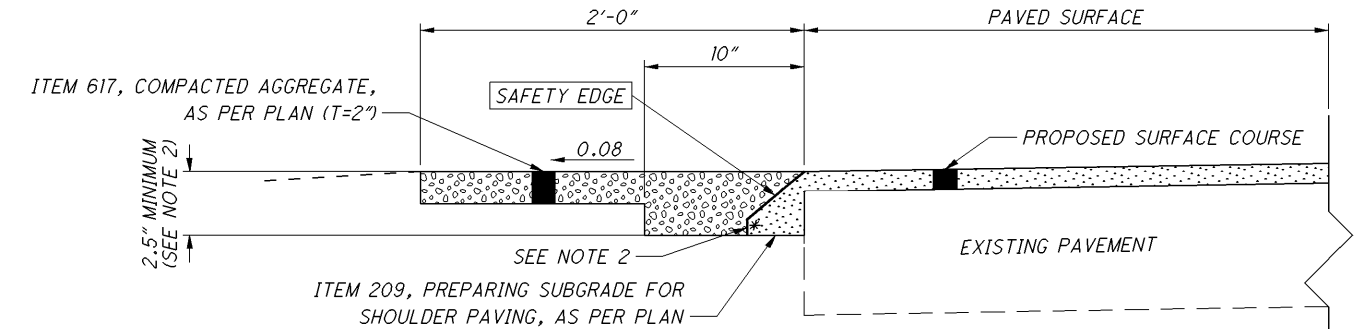
2.) CONSTRUCT THE SAFETY EDGE THE FULL ASPHALT CONCRETE OVERLAY THICKNESS OR 2.5" WHICHEVER IS GREATER, NOT TO EXCEED THE MAXIMUM SAFETY EDGE THICKNESS OF 6". CONSTRUCT A NEAR-VERTICAL FACE BELOW THE SAFETY EDGE FOR THICKNESS GREATER THAN 6".

3.) BLADE AND SHAPE EXISTING SHOULDER MATERIAL TO FORM A UNIFORM SURFACE UNDER THE SAFETY EDGE PRIOR TO PLACEMENT OF THE ASPHALT CONCRETE OVERLAY.

\* 40° MAX



**SAFETY EDGE DETAIL FOR 2 COURSE OVERLAY**



**SAFETY EDGE DETAIL FOR 1 COURSE OVERLAY**

**ESTIMATED QUANTITIES**

ROUTE	SAFETY EDGE THICKNESS (IN.)	S.L.M TO S.L.M.		SIDE	209		448	
		STATION	CU YD		PREPARING SUBGRADE FOR SHOULDER PAVING, AS PER PLAN	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M		
46	2.5	18.49	TO	22.14	L/R	385.4	37.12	
46	2.5	22.15	TO	22.72	L/R	60.2	5.80	
46	2.5	22.73	TO	23.25	L/R	54.9	5.29	
46	2.5	23.27	TO	24.37	L/R	116.2	11.19	
46	2.5	24.38	TO	25.15	L/R	81.3	7.83	
46	2.5	25.17	TO	26.34	L/R	123.6	11.90	
TOTALS CARRIED TO GENERAL SUMMARY						822	80	

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**UTILITIES**

THE CONTRACTOR SHALL USE THE FOLLOWING PROCEDURE AT EACH LOCATION WHERE WORK IS PERFORMED, IN ACCORDANCE WITH SECTIONS 105.07 AND 107.16 IN THE CONSTRUCTION AND MATERIALS SPECIFICATIONS:

THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER, THE OHIO UTILITIES PROTECTION SERVICE (OUPS), THE OHIO & GAS PROCEDURES UNDERGROUND PROTECTION SERVICE (OGPUPS), THE OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 4 HEAD-QUARTERS AND ALL NON REGISTERED UTILITY OWNERS AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS IN ALL AREAS.

OUPS 1-800-362-2764 (CONTACT LIMITED BASIS PARTICIPANTS DIRECTLY)  
OGPUPS 1-800-925-0988  
ODOT 330-786-3145 KEN GREENE

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.

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

CENTURYLINK TIME WARNER CABLE  
ATTN: ROD HARRIS ATTN: DOUG LAWRENTZ  
3801 ELM ROAD 4352 YOUNGSTOWN ROAD SE  
WARREN, OH 44502 WARREN, OH 44484  
330-841-1404 330-369-7107 EXT 7179  
330-372-6970 FAX

OHIO EDISON TRUMBULL COUNTY SANITARY ENGINEER  
ATTN: BILL SPEECE ATTN: SCOTT VERNER  
730 SOUTH AVENUE 842 YOUNGSTOWN-KINGSVILLE ROAD  
YOUNGSTOWN, OH 44502 VIENNA, OHIO 44473  
330-740-7635 330-675-7787  
330-740-7655 FAX

THE UNDERGROUND UTILITIES ON THIS PLAN HAVE BEEN LOCATED BY USING A SUBSURFACE UTILITY ENGINEERING COMPANY [SUE]. IF THERE ARE ANY DISCREPANCIES BETWEEN FIELD MARKINGS AND WHAT THE PLAN INDICATES, PLEASE CONTACT STEVE JONES, DISTRICT UTILITY COORDINATOR 330-786-4818, PRIOR TO ANY SUBSURFACE WORK BEING INITIATED.

**ROUNDING**

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

**PROFILE AND ALIGNMENT**

PLACE THE PROPOSED PAVEMENT TO FOLLOW THE ALIGNMENT AND PROFILE OF THE EXISTING PAVEMENT. PLACE THE PROPOSED ASPHALT CONCRETE OVERLAY AS SHOWN ON THE TYPICAL SECTIONS.

**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.

**INTERSECTIONS - (S.R. 46, SLM 18.49 TO 23.70)**

INTERSECTIONS WILL BE RESURFACED 2 FT. BEYOND THE EDGE LINE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR INDICATED IN THE PLAN. INTERSECTIONS SHALL BE PAVED AFTER COMPLETION OF THE SURFACE COURSE OR WITH THE MAINLINE PAVEMENT IF THIS CAN BE ACCOMPLISHED WITHOUT CHANGING THE VELOCITY AND DIRECTION OF THE PAVER. USE THE SAME ASPHALT CONCRETE AS THE MAINLINE PAVEMENT. PROVIDE A SMOOTH TRANSITION TO THE EXISTING PAVEMENT. ANY GRADING OR PRIME NECESSARY TO ACCOMPLISH THIS WORK SHALL BE INCLUDED IN THE COST OF THE PERTINENT BID ITEM.

**INTERSECTIONS - (S.R. 46, SLM 23.70 TO 26.34)**

INTERSECTIONS WILL BE RESURFACED 25 FT. BEYOND THE EDGE LINE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR INDICATED IN THE PLAN. INTERSECTIONS SHALL BE PAVED AFTER COMPLETION OF THE SURFACE COURSE. A BUTT JOINT, AS PER STANDARD CONSTRUCTION DRAWING BP-3.1, SHALL BE USED TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING PAVEMENT. USE THE SAME ASPHALT CONCRETE AS THE MAINLINE PAVEMENT UNLESS SHOWN OTHERWISE ON THE ASPHALT CONCRETE CALCULATIONS SHEET. ANY GRADING OR PRIME NECESSARY TO ACCOMPLISH THIS WORK SHALL BE INCLUDED IN THE COST OF THE PERTINENT BID ITEM.

**DRIVEWAYS - (S.R. 46, SLM 18.49 TO 23.70)**

THE CONTRACTOR WILL NOT BE PERMITTED TO LEAVE A DIFFERENCE IN ELEVATION BETWEEN THE MAINLINE ASPHALT SURFACE COURSE AND THE EXISTING DRIVEWAYS. IF APPROVED BY THE ENGINEER, AN ASPHALT WEDGE WITH A WIDTH OF APPROX 2' MAY BE PLACED EITHER ON THE ROADWAY SHOULDER OR DRIVEWAY DEPENDENT UPON WHICH SIDE IS HIGH. A QUANTITY OF MAINLINE SURFACE COURSE ASPHALT HAS BEEN PROVIDED IN THE CALCULATIONS AND GENERAL SUMMARY TO PERFORM THIS ITEM OF WORK.

**ITEM 448 - ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22 (DRIVEWAYS), AS PER PLAN (S.R. 46, SLM 23.70 TO 26.34)**

THIS ITEM OF WORK SHALL CONSIST OF PAVING ALL EXISTING DRIVEWAYS THAT DO NOT HAVE A CURB CUT OR ARE NOT PAVED AS AN INTERSECTION AS SHOWN ON THE ASPHALT CONCRETE PLAN SHEET. DRIVEWAYS ARE TO BE PAVED A DISTANCE OF 10 FT. FROM THE EDGE OF PAVED SHOULDER UNLESS OTHERWISE DIRECTED BY THE ENGINEER. DRIVEWAYS SHALL BE PAVED AFTER COMPLETION OF THE SURFACE COURSE. ASPHALT CONCRETE AVERAGE THICKNESSES SHALL BE 2 IN. FOR AGGREGATE DRIVEWAYS (UNIMPROVED) AND 1 IN. FOR IMPROVED DRIVEWAYS. AGGREGATE DRIVEWAYS SHALL BE GRADED PRIOR TO PAVING SUCH THAT SURFACE DRAINAGE DOES NOT ENCROACH UPON THE PAVED SHOULDER. THE MAXIMUM PAVED WIDTH SHALL NOT EXCEED THAT ALLOWED FOR THROAT AND RADIUS FOR UNCURBED DRIVEWAYS AS PER STANDARD DRIVE DESIGN MANUAL. ALL GRADING, TOOLS, EQUIPMENT, MATERIAL AND INCIDENTALS REQUIRED TO LAYOUT AND CONSTRUCT THE DRIVEWAYS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 448 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22 (DRIVEWAYS), AS PER PLAN.

**ITEM 448 - ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M, AS PER PLAN**

703.05 DO NOT USE ANY FINE OR COARSE AGGREGATE WITH A 'SR' OR 'SRH' DESIGNATION ACCORDING TO THE OFFICE OF MATERIALS MANAGEMENT (OMM) IN ANY JOB MIX FORMULA (JMF) FOR THIS ITEM.

**PAVEMENT MARKING LANE WIDTHS**

THE NORMAL LANE WIDTH FOR THE PAVEMENT MARKINGS ON THIS PROJECT SHALL BE AS FOLLOWS [AT LEAST 3 DAYS PRIOR TO PERFORMING THE WORK CONTACT THE TRAFFIC OFFICE AT 330-786-3147 TO CONFIRM THE WIDTHS]:

ROUTE	S.L.M. TO S.L.M.	LANE WIDTH
S.R. 46	18.49 TO 26.34	12'

**PAVEMENT MARKING DETAILS**

THE PAVEMENT MARKING DETAIL SHEETS WILL BE SUPPLIED TO THE CONTRACTOR AT THE PRE-CONSTRUCTION MEETING.

**FIELD DRIVEWAYS**

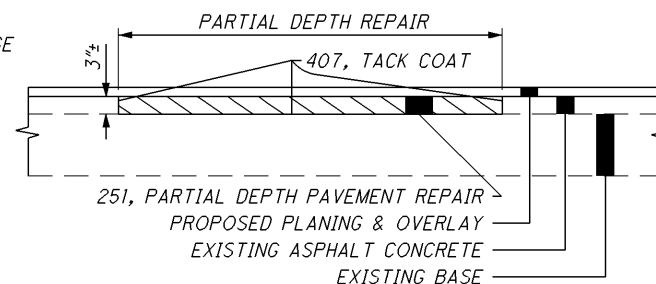
THIS ITEM OF WORK WILL CONSIST OF PLACING ITEM 304, AGGREGATE BASE FOR ALL FIELD DRIVES. FIELD DRIVES ARE TO BE PLACED A DISTANCE OF 10 FT FROM THE EDGE OF THE PAVED SHOULDERS UNLESS OTHERWISE DIRECTED BY THE ENGINEER. FIELD DRIVES WILL BE PLACED AFTER THE COMPLETION OF THE SURFACE COURSE. AVERAGE THICKNESS WILL BE 2 IN. ALL GRADING, TOOLS, EQUIPMENT, MATERIAL, AND INCIDENTALS REQUIRED TO LAYOUT AND CONSTRUCT THE FIELD DRIVES WILL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 304, AGGREGATE BASE.

AN ESTIMATED QUANTITY OF 15 CU. YD. HAS BEEN CARRIED TO THE GENERAL SUMMARY

**ITEM 251 - PARTIAL DEPTH PAVEMENT REPAIR**

A QUANTITY OF THIS ITEM SHALL BE PROVIDED FOR USE AS DIRECTED BY THE ENGINEER. THE ITEM SHALL CONSIST OF REPAIRING EXISTING LOCATIONS EXHIBITING SURFACE DETERIORATION AND PLACING ITEM 448 ASPHALT CONCRETE, TYPE 2. THE ASPHALT CONCRETE SHALL BE COMPACTED WITH A TYPE I PNEUMATIC TIRE ROLLER AND A STEEL WHEEL ROLLER AS PER 401.13. IT IS NOT THE INTENT TO REPAIR EVERY DETERIORATED AREA WITHIN THE PROJECT. THE ENGINEER SHALL DETERMINE WHICH AREAS ARE TO BE REPAIRED. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THIS ITEM SHALL BE PERFORMED AFTER THE COMPLETION OF MAINLINE PAVEMENT PLANING. ALSO, THIS ITEM SHALL COMMENCE WITHIN 7 DAYS OF THE COMPLETION OF MAINLINE PAVEMENT PLANING. PAYMENT SHALL BE BASED ON THE ACTUAL NUMBER OF SQUARE YARDS OF PAVEMENT REPAIR. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

251, PARTIAL DEPTH PAVEMENT REPAIR, 1,000 SQ. YD.



**ITEM 203 - EXCAVATION (FOR PAVEMENT REPAIR)**

THIS ITEM OF WORK SHALL CONSIST OF REMOVING AND DISPOSING OF ALL UNSUITABLE MATERIAL BY EXCAVATING THE EXISTING SUBGRADE AND SUBBASE TO AN AVERAGE DEPTH OF 6 INCHES OR AS DIRECTED BY THE ENGINEER. EXACT LIMITS OF REMOVAL SHALL BE DETERMINED BY THE ENGINEER. ALL EQUIPMENT, LABOR, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 203 EXCAVATION (FOR PAVEMENT REPAIR). THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

203, EXCAVATION (FOR PAVEMENT REPAIR) 9 CU YD

**ITEM 252 - FULL DEPTH RIGID PAVEMENT REMOVAL & FLEXIBLE REPLACEMENT (SLM 23.70 TO 26.34)**

A QUANTITY OF THIS ITEM SHALL BE PROVIDED FOR USE AS DIRECTED BY THE ENGINEER. THIS ITEM SHALL CONSIST OF CUTTING AND REMOVING DETERIORATED PAVEMENT FULL DEPTH AND PLACING 12"± 301 ASPHALT CONCRETE BASE, PG64-22. THE MAXIMUM COMPACTED DEPTH OF ANY ONE LAYER SHALL BE 6 INCHES. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THIS ITEM SHALL BE PERFORMED AFTER THE COMPLETION OF MAINLINE PAVEMENT PLANING. ALSO, THIS ITEM SHALL COMMENCE WITHIN 7 DAYS OF THE COMPLETION OF MAINLINE PAVEMENT PLANING. IT IS NOT THE INTENT TO REPAIR EVERY DETERIORATED AREA WITHIN THE PROJECT. THE ENGINEER SHALL DETERMINE WHICH AREAS ARE TO BE REPAIRED. PAYMENT SHALL BE BASED ON THE ACTUAL NUMBER OF SQUARE YARDS OF PAVEMENT REMOVED AND REPLACED TO THE LIMITS DESIGNATED BY THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

252, FULL DEPTH RIGID PAVEMENT REMOVAL & FLEXIBLE REPLACEMENT, 17 SQ YD  
252, FULL DEPTH PAVEMENT SAWING, 149 FT

**ITEM 253 - PAVEMENT REPAIR (SLM 18.49 TO 23.70)**

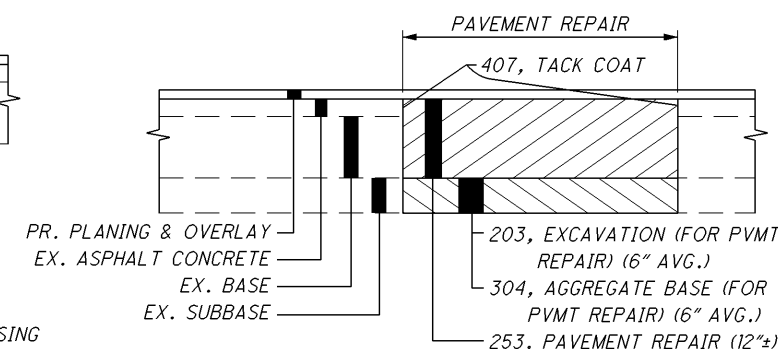
A QUANTITY OF THIS ITEM SHALL BE PROVIDED FOR USE AS DIRECTED BY THE ENGINEER. THIS ITEM SHALL CONSIST OF CUTTING AND REMOVING DETERIORATED PAVEMENT FULL DEPTH AND PLACING 12"± 301 ASPHALT CONCRETE BASE, PG64-22. THE MAXIMUM COMPACTED DEPTH OF ANY ONE LAYER SHALL BE 6 INCHES. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THIS ITEM SHALL BE PERFORMED AFTER THE COMPLETION OF MAINLINE PAVEMENT PLANING. ALSO, THIS ITEM SHALL COMMENCE WITHIN 7 DAYS OF THE COMPLETION OF MAINLINE PAVEMENT PLANING. IT IS NOT THE INTENT TO REPAIR EVERY DETERIORATED AREA WITHIN THE PROJECT. THE ENGINEER SHALL DETERMINE WHICH AREAS ARE TO BE REPAIRED. PAYMENT SHALL BE BASED ON THE ACTUAL NUMBER OF SQUARE YARDS OF PAVEMENT REMOVED AND REPLACED TO THE LIMITS DESIGNATED BY THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

253, PAVEMENT REPAIR, 33 SQ YD

**ITEM 304 - AGGREGATE BASE (FOR PAVEMENT REPAIR)**

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN PROVIDED AND SHALL BE USED AS DIRECTED BY THE ENGINEER TO BACKFILL AREAS WHICH WERE EXCAVATED UNDER ITEM 203 EXCAVATION (FOR PAVEMENT REPAIR). THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

304, AGGREGATE BASE (FOR PAVEMENT REPAIR) 9 CU YD



**ITEM 304 - AGGREGATE BASE, AS PER PLAN**

GRANULATED SLAG (GS) SHALL NOT BE PERMITTED FOR THIS ITEM. ALL OTHER REQUIREMENTS OF SECTIONS 304 AND 703.17 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS SHALL STILL BE APPLICABLE.

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GENERAL NOTES

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**ITEM 606 - ANCHOR ASSEMBLY, TYPE B**

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.

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.

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

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

**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.

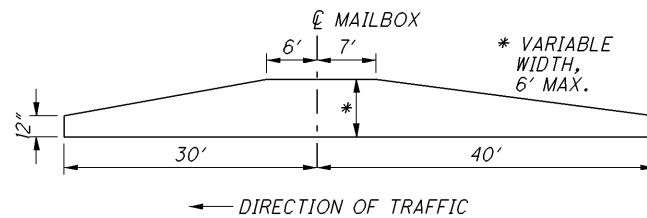
PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, ANCHOR ASSEMBLY, TYPE E, EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL RELATED TRANSITIONS, REFLECTIVE SHEETING, HARDWARE,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

**PAVED MAILBOX APPROACHES**

ALL EXISTING MAIL BOX APPROACHES WILL BE PAVED WITH ASPHALT CONCRETE AS PER TYPICAL SHOWN OR AS NEAR AS PRACTICAL. AGGREGATE APPROACHES SHALL HAVE A 2 IN. MIN. THICKNESS; IMPROVED APPROACHES SHALL HAVE A 2 IN. MIN. THICKNESS. THE CONTRACTOR SHALL HAVE THE OPTION OF PAVING THE MAILBOX APPROACHES WITH EITHER THE PAVING OF THE DRIVEWAYS OR THE PAVING OF THE MAINLINE AND SHOULDERS. PAYMENT SHALL BE AS FOLLOWS:

1. SHOULD THE CONTRACTOR ELECT TO PAVE THE MAILBOX APPROACHES WITH THE DRIVEWAYS THEN ALL GRADING, TACK, TOOLS, EQUIPMENT, MATERIAL AND INCIDENTALS REQUIRED FOR THE CONTRACTOR TO LAYOUT AND CONSTRUCT THE MAILBOX APPROACHES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 448 - ASPHALT CONCRETE SURFACE COURSE TYPE 1, PG70-22M, AS PER PLAN.

2. SHOULD THE CONTRACTOR ELECT TO PAVE THE MAILBOX APPROACHES WITH THE MAINLINE AND SHOULDERS, THEN ALL GRADING, TACK, TOOLS, EQUIPMENT, MATERIAL AND INCIDENTALS REQUIRED TO LAYOUT AND CONSTRUCT THE MAILBOX APPROACHES SHALL BE INCLUDED IN THE UNIT BID FOR ITEM 448 - ASPHALT CONCRETE SURFACE COURSE TYPE 1, PG70-22M, AS PER PLAN.



**SURVEYING PARAMETERS (TRU-46-2081)**

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

**PROJECT CONTROL**

POSITIONING METHOD: ODOT VRS  
MONUMENT TYPE: B

**VERTICAL POSITIONING**

ORTHOMETRIC HEIGHT DATUM: NAVD88  
GEOID: 2009

**HORIZONTAL POSITIONING**

REFERENCE FRAME: NAD83(CORS96)(EPOCH:2002.000)  
ELLIPSOID: GRS80  
MAP PROJECTION: LAMBERT CONIC CONFORMAL  
COORDINATE SYSTEM: OHIO NORTH ZONE (3401)  
COMBINED SCALE FACTOR: 0.999919826  
ORIGIN OF COORDINATE SYSTEM: 0,0

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 823.

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

**ITEM SPECIAL - MAILBOX SUPPORT**

THIS WORK SHALL CONSIST OF FURNISHING AND ERECTING MAILBOX SUPPORTS AND ANY ASSOCIATED MOUNTING HARDWARE IN ACCORDANCE WITH PLAN DETAILS, AND ATTACHING AN OWNER-SUPPLIED MAILBOX AT LOCATIONS SPECIFIED IN THE PLAN, OR OTHERWISE ESTABLISHED BY THE ENGINEER.

WOOD POSTS SHALL BE NOMINAL 4 INCHES BY 4 INCHES SQUARE OR 4.5 INCHES DIAMETER ROUND, AND CONFORM TO 710.14.

STEEL POSTS SHALL BE NOMINAL PIPE SIZE 2 INCHES I.D., AND CONFORM TO AASHTO M 181.

ALL HARDWARE INCLUDING BUT NOT LIMITED TO PLATES, SCREWS, BOLTS, AND ETC. SHALL BE COMMERCIAL-GRADE GALVANIZED STEEL.

POSTS SHALL BE SET PER THE FIRST PARAGRAPH OF 606.03, AND SHALL IN NO INSTANCE BE ENCASED IN CONCRETE.

SUPPORT HARDWARE SHALL ACCOMMODATE EITHER A SINGLE OR A DOUBLE MAILBOX INSTALLATION, AND NO MORE THAN TWO BOXES MAY BE MOUNTED ON A SINGLE POST.

THE MAILBOX SHALL BE SECURELY AND NEATLY ATTACHED BY THE CONTRACTOR TO THE NEW SUPPORT. THE CONTRACTOR SHALL FURNISH ALL NECESSARY ATTACHMENT HARDWARE (NUTS, BOLTS, PLATES, SPACERS, AND WASHERS) AS NECESSARY TO ACCOMMODATE THE COMPLETE INSTALLATION.

IN THE ABSENCE OF A NEW BOX SUPPLIED BY THE OWNER, THE CONTRACTOR SHALL SALVAGE THE EXISTING BOX AND PLACE IT ON THE NEW SUPPORT. DUE CARE SHALL BE EXERCISED IN SUCH AN OPERATION, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ANY BOX DAMAGED BY IMPROPER HANDLING ON HIS PART, AS JUDGED AND DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE LOCAL POST MASTER REGARDING THE TIMING OF THE MOVEMENT OF ANY MAILBOX TO A NEW LOCATION.

PAYMENT UNDER THIS ITEM SHALL BE LIMITED TO FINAL PERMANENT INSTALLATIONS. TEMPORARY INSTALLATIONS SHALL BE IN ACCORDANCE WITH 107.10. HOWEVER, THE SAME MATERIAL AND SIZE LIMITATIONS AS FOR PERMANENT INSTALLATIONS SHALL APPLY.

MAILBOX SUPPORTS, COMPLETE IN PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH, FOR ITEM SPECIAL MAILBOX SUPPORT SYSTEM, (SINGLE) (DOUBLE).

690, MAILBOX SUPPORT SYSTEM, SINGLE 5 EACH  
690, MAILBOX SUPPORT SYSTEM, DOUBLE 5 EACH

**ITEM 617 - COMPACTED AGGREGATE, AS PER PLAN**

IN LOW SHOULDER AREAS EXCEEDING 1", AND ADJACENT TO THE SAFETY EDGE, OR AS DIRECTED BY THE ENGINEER, RECYCLED ASPHALT PAVEMENT (RAP) SHALL BE USED IN AREAS ADJACENT TO THE PAVED BERM. THE RAP SHALL HAVE A MINIMUM PG CONTENT OF 4.5% AND MEET THE FOLLOWING GRADATION. ONCE THE STOCKPILE MEETS THE GRADATION, THE PG CONTENT OF THE RAP SHALL BE DETERMINED PER 441.03. THE RAP ANALYSIS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL 2 WEEKS PRIOR TO USE. METHOD OF MEASUREMENT SHALL BE AS PER 617.06. PLACEMENT AND COMPACTION SHALL MEET THE REQUIREMENTS OF ITEM 617. ALL MATERIALS, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 617 COMPACTED AGGREGATE, AS PER PLAN.

MODIFIED GRADATION SHALL APPLY:

SIEVE	TOTAL PERCENT PASSING
1-1/2"	100
3/4"	50-100
NO. 4	35-70
NO. 30	9-33
NO. 200	0-13

**SURVEYING PARAMETERS (TRU-46-21.80)**

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

**PROJECT CONTROL**

POSITIONING METHOD: ODOT VRS  
MONUMENT TYPE: B

**VERTICAL POSITIONING**

ORTHOMETRIC HEIGHT DATUM: NAVD88  
GEOID: 2009

**HORIZONTAL POSITIONING**

REFERENCE FRAME: NAD83(CORS96)(EPOCH:2002.000)  
ELLIPSOID: GRS80  
MAP PROJECTION: LAMBERT CONIC CONFORMAL  
COORDINATE SYSTEM: OHIO NORTH ZONE (3401)  
COMBINED SCALE FACTOR: 0.999920857  
ORIGIN OF COORDINATE SYSTEM: 0,0

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 823.

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

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**SURVEYING PARAMETERS (TRU-46-2627)**

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

**PROJECT CONTROL**

POSITIONING METHOD: ODOT VRS  
MONUMENT TYPE: B

**VERTICAL POSITIONING**

ORTHOMETRIC HEIGHT DATUM: NAVD88  
GEOID: 2009

**HORIZONTAL POSITIONING**

REFERENCE FRAME: NAD83(CORS96)EPOCH:2002.000  
ELLIPSOID: GRS80  
MAP PROJECTION: LAMBERT CONIC CONFORMAL  
COORDINATE SYSTEM: OHIO NORTH ZONE (3401)  
COMBINED SCALE FACTOR: 0.999926819  
ORIGIN OF COORDINATE SYSTEM: 0,0

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 823.

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

**CLEARING AND GRUBBING (TRU-46-2627)**

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
18"	1		1
30"	1		1

**UNRECORDED UNTREATED NON-STORMWATER DRAINAGE**

FURNISH NO CONTINUANCE FOR ANY UNRECORDED UNTREATED NON-STORMWATER DRAINAGE SUCH AS UNTREATED SEPTIC, UNTREATED WASTEWATER, UNTREATED CURTAIN/GRADIENT DRAINS, AND UNTREATED FOUNDATION FLOOR DRAINS DISTURBED BY THE WORK. PLUG ANY UNRECORDED UNTREATED NON-STORMWATER DRAINAGE WITH CLASS C CONCRETE AT THE RIGHT OF WAY LINE. PAYMENT FOR PLUGGING SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 202 OR 203 ITEM.

**CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES**

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

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

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

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

**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) (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 ONE FOOT ABOVE THE FLOWLINE 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 ITEMS.

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

- 603, 6" CONDUIT, TYPE B 60 FT
- 603, 6" CONDUIT, TYPE E 60 FT
- 603, 6" CONDUIT, TYPE F 60 FT
- 601, ROCK CHANNEL PROTECTION TYPE C WITH FILTER 3 CU YD

**UNRECORDED TREATED NON-STORMWATER DRAINAGE**

FURNISH A CONTINUANCE FOR ALL UNRECORDED TREATED NON-STORMWATER DRAINAGE, SUCH AS TREATED SEPTIC, TREATED WASTEWATER, TREATED CURTAIN/GRADIENT DRAINS, AND TREATED FOUNDATION FLOOR DRAINS DISTURBED BY THE WORK. FURNISH EITHER AN OPEN CONTINUANCE OR AN UNOBSTRUCTED CONTINUANCE BY CONNECTING A CONDUIT THROUGH THE CURB OR INTO A DRAINAGE STRUCTURE. THE LOCATION, TYPE, SIZE AND GRADE OF THE NEEDED CONDUIT TO REPLACE OR EXTEND AN EXISTING DRAIN WILL BE DETERMINED BY THE ENGINEER. ALL SUCH CONTINUANCE REQUIRES A RIGHT OF WAY USE PERMIT. A CONTINUANCE MAY ALSO REQUIRE A NPDES PERMIT FROM THE OHIO ENVIRONMENTAL PROTECTION AGENCY. REPORT ALL CONTINUANCE TO THE LOCAL HEALTH DEPARTMENT.

WHERE MAKING A CONNECTION INTO A HIGHWAY DRAINAGE CONDUIT, AN INSPECTION WELL SHALL BE PROVIDED IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING DM-3.1.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER IN MAKING THE ABOVE CONTINUANCE:

- 603, 6" CONDUIT, TYPE C 60 FT
- 604, INSPECTION WELL 3 EACH

**UNRECORDED STORM WATER DRAINAGE**

FURNISH A CONTINUANCE FOR ALL UNRECORDED STORM WATER DRAINAGE, SUCH AS ROOF DRAINS, FOOTER DRAINS, OR YARD DRAINS, DISTURBED BY THE WORK. FURNISH EITHER AN OPEN CONTINUANCE OR AN UNOBSTRUCTED CONTINUANCE BY CONNECTING A CONDUIT THROUGH THE CURB OR INTO A DRAINAGE STRUCTURE. THE LOCATION, TYPE, SIZE AND GRADE OF THE NEEDED CONDUIT TO REPLACE OR EXTEND AN EXISTING DRAIN WILL BE DETERMINED BY THE ENGINEER. ALL SUCH CONTINUANCE REQUIRES A RIGHT OF WAY USE PERMIT.

THE FOLLOWING CONDUIT TYPES MAY BE USED: 707.33, 707.41 NON-PERFORATED, 707.42, 707.43, 707.45, 707.46, 707.47, 707.51, 707.52 SDR35.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR THE WORK NOTED ABOVE:

- 603, 6" CONDUIT, TYPE B, FOR DRAINAGE CONNECTION 60 FT
- 603, 6" CONDUIT, TYPE C, FOR DRAINAGE CONNECTION 60 FT
- 603, 6" CONDUIT, TYPE E, FOR DRAINAGE CONNECTION 60 FT
- 603, 6" CONDUIT, TYPE F, FOR DRAINAGE CONNECTION 60 FT

**EARTHWORK**

THE FOLLOWING QUANTITIES ARE TAKEN FROM THE ROADWAY CROSS SECTIONS AND WILL BE CARRIED TO THE GENERAL SUMMARY.

	ITEM 203	ITEM 203
	EXCAVATION	EMBANKMENT
TRU-46-2081	64	483
TRU-46-21.80	108	626
TRU-46-2627	258	870
GRAND TOTAL	430	1979

**SEEDING AND MULCHING**

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

	ITEM 659	ITEM 659	ITEM 659	ITEM 659	ITEM 659	ITEM 659	ITEM 659
	SOIL ANALYSIS TEST EACH	TOPSOIL CU YD	SEEDING & MULCHING SQ YD	REPAIR SEEDING & MULCHING SQ YD	COMMERCIAL FERTILIZER TON	LIME ACRES	WATER MGAL
TRU-46-2081	1	140	1256	63	0.17	0.26	7
TRU-46-21.80	1	166	1494	75	0.21	0.31	9
TRU-46-2627	1	464	4175	209	0.57	0.87	23
GRAND TOTAL	3	770	6925	347	0.95	1.44	39

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.

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**GENERAL NOTES**

**TRU-46-18.49**

**RIPARIAN HABITAT**

EXISTING RIPARIAN HABITAT ZONES ALONG THE STREAM CHANNELS SHALL BE MAINTAINED TO THE MAXIMUM EXTENT PRACTICABLE DURING PROJECT CONSTRUCTION.

**EASTERN MASSASAUGA**

THIS PROJECT IS WITHIN THE RANGE OF THE EASTERN MASSASAUGA RATTLESNAKE (SISTRURUS CATENATUS) A STATE ENDANGERED AND FEDERAL CANDIDATE SPECIES. IF EASTERN MASSASAUGA RATTLESNAKES ARE ENCOUNTERED IN THE WORK AREA DURING CONSTRUCTION, NO PERSON SHALL HARM OR KILL THE SNAKES OR ATTEMPT TO HANDLE THE EASTERN MASSASAUGA RATTLESNAKE. ALL CONSTRUCTION OPERATIONS AT THE WORK AREA SHALL TEMPORARILY CEASE AND ODOT OFFICE OF ENVIRONMENTAL SERVICES \* ECOLOGICAL SECTION (614-466-7100) AND THE OHIO DEPARTMENT OF NATURAL RESOURCES DIVISION OF WILDLIFE (614-265-6300) WILL BE IMMEDIATELY CONTACTED.

BEFORE INITIATING EARTHMOVING AND/OR CONSTRUCTION WITHIN THE AREA OF POTENTIAL HABITAT (WETLAND 2 ON SHEET 22), THE AREA OF WETLAND TO BE IMPACTED WILL BE ENCIRCLED WITH A SNAKE-PROOF BARRIER (SILT FENCING OR METAL FLASHING, AT LEAST 30 INCHES HIGH ABOVE THE GROUND) THAT PREVENTS SNAKES FROM CROSSING OVER OR UNDER THE BARRIER. "CURLEX" (OR SIMILAR MATERIAL) SHALL NOT BE USED IN CONSTRUCTION OF THE SNAKE-PROOF BARRIER. THE BARRIER WILL BE BURIED AT LEAST 6 INCHES BELOW THE SURFACE AND THE TRENCH BACKFILLED (WHERE POSSIBLE IN THE WETLAND) TO SUPPORT THE BARRIER AND PREVENT ANIMALS FROM BURROWING UNDER THE BARRIER. THE INTEGRITY OF THE BARRIER WILL BE MAINTAINED FOR THREE DAYS PRIOR TO ANY ACTIVITIES OCCURRING WITHIN THE WETLAND, AND WILL BE COMPLETED BETWEEN APRIL 15 AND SEPTEMBER 15. THE CONTRACTOR WILL USE A HANDHELD MOWING DEVICE (WEED-EATER, STRING TRIMMER, ETC..) TO TRIM THE WETLAND VEGETATION PRIOR TO INSTALLATION OF THE FENCE. THE WEED-EATING WILL BE COMPLETED WHEN THE DAYTIME CONDITIONS ARE OVERCAST AND THE AIR TEMPERATURE IS LESS THAN 65 DEGREES FAHRENHEIT OR AFTER DARK WHEN THE AIR TEMPERATURE IS LESS THAN 65 DEGREES FAHRENHEIT. THE VEGETATION HEIGHT SHALL NOT BE LESS THAN 12 INCHES.

DURING THE THREE DAYS, SNAKES WITHIN THE AREA ENCLOSED BY THE SNAKE-POOF BARRIER WILL BE CAPTURED USING COVER BOARDS (3'X5'SHEET METAL) PLACED WITHIN THE ENCLOSED AREA AND/OR FUNNEL TRAPS PLACED ALONG THE FENCING. CAPTURED SNAKES WILL BE MOVED TO THE OUTSIDE OF THE PROJECT LIMITS, BUT NO FURTHER THAN 1,000 FEET FROM THEIR POINT OF CAPTURE. THE CAPTURE-REMOVAL OF SNAKES WILL BE CONDUCTED ONCE A DAY FOR A MINIMUM OF THREE DAYS PRIOR TO WORKING WITHIN THE WETLAND. AFTER THREE DAYS, THE BARRIER WILL BE REMOVED AND ACTIVITIES WILL BEGIN IN THE WETLAND AREA PREVIOUSLY ENCLOSED BY THE SNAKE-PROOF BARRIER.

THE CAPTURE AND REMOVAL OF SNAKES DESCRIBED ABOVE WILL BE PERFORMED BY ODOT-OES OR A PRE-QUALIFIED ECOLOGICAL CONSULTANT. IF AN EASTERN MASSASAUGA IS FOUND, ODOT-OES WILL CONTACT ODNR TO CONFIRM THE IDENTIFICATION AND HAVE ODNR RELOCATE EASTERN MASSASAUGA'S, OR ONE OF THE FOLLOWING PROFESSIONALS APPROVED BY THE U.S. FISH AND WILDLIFE SERVICE AND THE ODNR DIVISION OF WILDLIFE LISTED BELOW WILL BE ON TASK BY THE ECOLOGICAL CONSULTANT TO CONFIRM THE IDENTIFICATION AND RELOCATE THE EASTERN MASSASAUGAS. CAPTURE OF ANY EASTERN MASSASAUGAS WILL BE REPORTED TO ODNR BY TELEPHONE AT (614) 265-6300.

JEFF DAVIS  
625 CRESENT ROAD  
HAMILTON, OH 45013  
ANURA@FUSE.NET

GREG LIPPS  
1473 COUNTY ROAD 5-2  
DELTA, OH 43515  
GregLipps@aol.com

DOUG WYNN  
241 CHASE ST.  
RUSSELLS POINT, OH 43347  
Sistrurus@aol.com

TIM MATSON  
5696 MATSON ROAD  
GENEVA, OH 44041  
tmatson@cmnh.org

THE FOLLOWING ITEMS HAVE BEEN CARRIED TO THE GENERAL SUMMARY. WEED EATING WILL BE PAID FOR UNDER ITEM 690, MISC.: SNAKE FENCE SILT FENCE TYPE C 712.90:

- 690, MISC.: 3 X 5 METAL SHEETS 730.11, 2 EACH
- 690, MISC.: SNAKE FENCE SILT FENCE TYPE C 712.90, 300 LF

**ENDANGERED SPECIES/BLACK BEAR, SNUFFBOX MUSSEL, CLUBSHELL MUSSEL AND TRUMPETER SWAN**

THIS PROJECT IS WITHIN THE KNOWN RANGE OF THE STATE ENDANGERED BLACK BEAR (URSUS AMERICANUS), THE PROPOSED FEDERAL ENDANGERED SNUFFBOX MUSSEL (EPIOBLASMA TRIQUETRA), THE FEDERAL ENDANGERED CLUBSHELL MUSSEL (PLEUROBEMA CLAVA) AND STATE ENDANGERED TRUMPETER SWAN (CYGNUS BUCCINATOR). IF THESE SPECIES ARE ENCOUNTERED DURING CONSTRUCTION OF THE PROJECT, WORK SHALL IMMEDIATELY STOP AND THE OHIO DEPARTMENT OF NATURAL RESOURCES, DIVISION OF WILDLIFE, THE ODOT OFFICE OF ENVIRONMENTAL SERVICES AND ODOT DISTRICT 4 ENVIRONMENTAL SECTION SHALL BE CONTACTED TO PROVIDE THIS INFORMATION

**STREAM CHANNEL EXCAVATION/IN STREAM WORK**

THE CONTRACTOR SHALL 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 OPERATION SUCH AS, FOUNDATION PIER OR ABUTMENT EXCAVATION, CHANNEL CLEAN OUT, EXCAVATION FOR ROCK CHANNEL PROTECTION AND REMOVAL OF ANY TEMPORARY FILL ASSOCIATED WITH CONSTRUCTION OPERATIONS.

ALL MATERIALS REMOVED FROM THE DITCHES, STREAMS OR WETLANDS MUST BE IMMEDIATELY REMOVED TO AN UPLAND SITE AND STABILIZED (I.E., SEEDED) TO PREVENT REDISTRIBUTION INTO ANY WATERS OF THE UNITED STATES. IMMEDIATE REMOVAL IS DEFINED BY THE UNITED STATES ARMY CORPS OF ENGINEERS AS DEPOSITING THE REMOVED MATERIALS DIRECTLY INTO A TRUCK AND REMOVING THE MATERIAL FROM THE SITE; PLACEMENT OF REMOVED MATERIALS INTO A WETLAND OR ON THE BANKS OF A STREAM EVEN TEMPORARILY IS CONSIDERED A FILL AND REQUIRES A PERMIT ACTION.

THE PROPOSED NEW CULVERTS AT TRU-46-20.81, TRU-21.80 AND TRU-46-26.27 WILL BE PLACED TO ALLOW FREE MOVEMENT OF AQUATIC FAUNA.

**STREAM AVOIDANCE**

UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR IMPACT MOSQUITO CREEK AT TRU-46-25.15. NO EXCAVATION, GRADING, OR FILLING OPERATIONS SHALL BE PERFORMED IN THIS STREAM CHANNEL. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR STORE CONSTRUCTION EQUIPMENT AND/OR MATERIALS IN THIS STREAM.

**CONSTRUCTION AND DEMOLITION DEBRIS**

THE CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID AND/OR LIMIT CONSTRUCTION AND DEMOLITION DEBRIS FROM ENTERING THE STREAM(S). ANY DEBRIS THAT DOES FALL INTO THE STREAM(S) SHALL BE REMOVED AS SOON AS POSSIBLE.

**PAINTING AND SEALING OPERATIONS**

THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT EPOXY-URETHANE SEALER, PAINT, OR OTHER MATERIALS USED TO REPAIR, CLEAN, SEAL, OR TREAT ANY STRUCTURE FROM ENTERING ANY STREAMS, WETLANDS OR OTHER WATERS OF THE UNITED STATES AND TAKE THE APPROPRIATE ACTIONS IN THE EVENT OF A RELEASE.

**MECHANICAL EQUIPMENT OPERATION AT STREAM CHANNELS**

THE MECHANICAL EQUIPMENT USED TO EXECUTE THE WORK AUTHORIZED HEREIN SHALL BE OPERATED IN A MANNER TO MINIMIZE TURBIDITY THAT COULD DEGRADE WATER QUALITY AND ADVERSELY AFFECT AQUATIC PLANT AND ANIMAL LIFE.

**WETLAND IMPACTS/AVOIDANCE**

THIS PROJECT WILL IMPACT AN ESTIMATED 0.037 ACRE OF WETLANDS ABUTTING AN UNNAMED TRIBUTARY TO SMITH RUN AND IMMEDIATELY ADJACENT TO THE TRU-46-20.81 STRUCTURE. THE FOLLOWING WETLANDS WILL BE IMPACTED BY THIS PROJECT: WETLAND 2; (EAST SIDE)-TRU-46-20.81 (CFN 780460740): 0.037 ACRE

UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR IMPACT THE WETLANDS ADJACENT TO THE STRUCTURES AT TRU-46-20.20 (EAST SIDE), TRU-46-22.14 (EAST SIDE), TRU-46-22.72 (EAST SIDE) AND TRU-46-26.27 (WEST SIDE). UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR IMPACT THE REMAINING AREA OF WETLAND 2 BEYOND THE PROJECT CONSTRUCTION LIMITS. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR STORE EQUIPMENT AND/OR MATERIALS WITHIN THESE WETLAND AREAS. TO PROTECT AND DELINEATE THE BOUNDARY OF THE EXISTING REMAINING WETLANDS, A FILTER FABRIC FENCE AND TEMPORARY CONSTRUCTION FENCE, PER SUPPLEMENTAL SPECIFICATION 832, SHALL BE INSTALLED AT THE PROPOSED CONSTRUCTION LIMITS WITHIN THE WETLANDS AREAS BY THE CONTRACTOR PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES WITHIN THESE LIMITS AND ADJACENT AREA, INCLUDING ANY NECESSARY CLEARING AND GRUBBING ACTIVITIES AND MAINTAINED BY THE CONTRACTOR THROUGHOUT PROJECT CONSTRUCTION.

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

ALL MATERIALS REMOVED FROM THE DITCHES, STREAMS OR WETLANDS MUST BE IMMEDIATELY REMOVED TO AN UPLAND SITE AND STABILIZED (I.E., SEEDED) TO PREVENT REDISTRIBUTION INTO ANY WATERS OF THE UNITED STATES. IMMEDIATE REMOVAL IS DEFINED BY THE UNITED STATES ARMY CORPS OF ENGINEERS AS DEPOSITING THE REMOVED MATERIALS DIRECTLY INTO A TRUCK AND REMOVING THE MATERIAL FROM THE SITE; PLACEMENT OF REMOVED MATERIALS INTO A WETLAND OR ON THE BANKS OF A STREAM EVEN TEMPORARILY IS CONSIDERED A FILL AND REQUIRES A PERMIT ACTION. ANY AREAS DISTURBED BY EQUIPMENT ACTIVITIES MUST BE SEEDED WITH NATIVE SPECIES TO PREVENT EROSION OF SEDIMENTS INTO WATERS OF THE UNITED STATES.

**ENDANGERED SPECIES/INDIANA BAT**

THIS PROJECT IS WITHIN THE KNOWN RANGE OF THE FEDERALLY ENDANGERED INDIANA BAT (MYOTIS SODALIS), 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.

**DRINKING WATER RESOURCES**

CAUTION WILL BE EXERCISED DURING REFUELING OPERATIONS AND DURING CONSTRUCTION EQUIPMENT MAINTENANCE ACTIVITIES WITHIN THE WARREN CITY DRINKING WATER SOURCE PROTECTION (SWAP) AREA FOR PUBLIC WATER SYSTEM WELLS AND INTAKE. IN CASE OF AN INCIDENT AND/OR SPILL, THE CONTRACTOR SHALL, AS SOON AS POSSIBLE, NOTIFY THE ENGINEER/SUPERVISOR AND CONTACT THE OHIO EPA:

OHIO EPA SPILL REPORTING  
24 HOUR EMERGENCY SERVICE  
CALL: 1 800 282 9378 OR NEDO (330) 963-1200

PROVIDE AS MUCH OF THE FOLLOWING INFORMATION AS POSSIBLE:

- 1. TIME OBSERVED
- 2. LOCATION
- 3. MATERIAL RELEASED
- 4. PROBABLE SOURCE
- 5. VOLUME & DURATION
- 6. PRESENT & ANTICIPATED MOVEMENT OF CONTAMINANT
- 7. PERSONNEL ON SCENE
- 8. ACTIONS ALREADY INITIATED
- 9. PERSON(S) ON THE SCENE TO CONTACT

**COMMUNITY NOTIFICATION**

THE ODOT, DISTRICT 4 OFFICE OF PUBLIC INFORMATION WILL NOTIFY THE LOCAL EMERGENCY SERVICES AND COMMUNITIES FOURTEEN (14) DAYS IN ADVANCE OF PROJECT CONSTRUCTION. INCLUDED IN THE NOTIFICATION WILL BE THE PROJECTED DATES OF THE SR 46 ROADWAY CLOSURES AND DETOUR ROUTES.

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GENERAL NOTES

TRU-46-18.49

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**MAINTENANCE OF TRAFFIC**

THIS ITEM SHALL CONSIST OF MAINTENANCE OF TRAFFIC ON EXISTING ROADWAYS AND RAMPS IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, CURRENT EDITION, LATEST REVISION, THE SPECIFICATIONS AND THE FOLLOWING:

1. A MINIMUM OF ONE TEN FOOT BIDIRECTIONAL LANE SHALL BE MAINTAINED AT ALL TIMES ON THE EXISTING PAVEMENT OR COMPLETED PAVEMENT DURING CONSTRUCTION OF THE WORK.

2. THE CONTRACTOR SHALL INFORM THE DISTRICT OFFICE (330) 786-2208, EIGHTEEN (18) DAYS PRIOR TO THE BEGINNING OF WORK.

3. CONES SHALL NOT BE ACCEPTABLE TRAFFIC CONTROL DEVICES FOR LANE RESTRICTIONS OR LANE REDUCTIONS THAT ARE IN OPERATION ONE-HALF HOUR AFTER SUNSET OR ONE HALF-HOUR BEFORE SUNRISE. ALL NIGHTTIME LANE RESTRICTIONS SHALL REQUIRE DRUMS OR BARRICADES AT A MAXIMUM SPACING OF FIFTY (50) FEET. WEIGHTED CHANNELIZERS MAY BE USED IN ACCORDANCE WITH THE STANDARD CONSTRUCTION DRAWINGS.

4. LANE RESTRICTIONS OR LANE REDUCTIONS SHALL NOT BE PERMITTED AFTER NORMAL WORKING HOURS. NORMAL WORKING HOURS SHALL BE THOSE HOURS DURING WHICH THE CONTRACTOR HAS A FULL COMPLEMENT OF EMPLOYEES AND EQUIPMENT ACTIVELY REMOVING AND/OR PLACING PAVEMENT MATERIALS.

5. THE CONTRACTOR SHALL FURNISH, ERECT, MAINTAIN AND SUBSEQUENTLY REMOVE ALL FLAGS, BARRICADES, SIGNS, SIGN SUPPORTS AND FURNISH AND MAINTAIN ALL FLAGGERS, WATCHERS AND INCIDENTALS RELATED THERETO.

6. ALL FULL DEPTH PAVEMENT REMOVAL AND REPLACEMENT OPERATIONS SHALL BE COMPLETED THE SAME DAY THE EXCAVATION IS MADE. IF THE CONTRACTOR CANNOT COMPLETE THE WORK, THE EXCAVATION SHALL BE BACKFILLED.

7. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR BE PERMITTED TO HAVE SUCCESSIVE WORK ZONES UNLESS THE DISTANCE BETWEEN THE DRUMS, BARRICADES OR CONES EXCEEDS TWO (2) MILES RURAL.

8. IN ADDITION TO THE REQUIREMENTS OF 614.11 WORK ZONE PAVEMENT MARKINGS, AT THE END OF EACH DAY OF WORK, THE CONTRACTOR SHALL REPLACE (WITH WORK ZONE MARKINGS) ALL CENTER OR STOP LINES THAT WERE REMOVED OR COVERED DURING THE PAVEMENT REMOVAL OR PLACEMENT OPERATIONS. QUANTITIES FOR SUCH PLACEMENT ARE CARRIED AS PART OF THE ITEMS LISTED UNDER 614 WORK ZONE PAVEMENT MARKINGS.

9. TRUCK MOUNTED ATTENUATORS [TMA'S] SHALL BE USED AS SHOWN IN THE STANDARD CONSTRUCTION DRAWINGS.

10. RESIDENTIAL AREAS: NO WORK SHALL BE PERMITTED FROM 10:00 PM TO 6:00 AM DAILY.

11. A QUANTITY OF 20 CU. YDS. OF 614 ASPHALT CONCRETE FOR MAINTAINING TRAFFIC SHALL BE PROVIDED FOR USE IN MAINTAINING PAVEMENT, SHOULDERS AND OTHER LOCATIONS AS DIRECTED BY THE ENGINEER.

12. PRIOR TO OPENING TO TRAFFIC EACH LANE SHALL BE IN A SAFE, PASSABLE CONDITION. ALL TRANSVERSE JOINTS SHALL EXTEND ACROSS THE FULL LANE AND SHOULDER WIDTH AND EACH LANE SHALL BE FREE FROM UNEVEN LONGITUDINAL JOINTS. THE CONTRACTOR SHALL PROVIDE ASPHALT WEDGES FOR TRANSVERSE JOINTS WHEREVER THERE ARE PAVEMENT ELEVATION DIFFERENCES.

13. A QUANTITY OF ITEM 614 WORK ZONE MARKING SIGN HAS BEEN INCLUDED IN THE PLAN. THIS QUANTITY SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING SIGNS: W8-1 [BUMP], W6-3 [TWO-WAY TRAFFIC], W8-H13 [NO EDGE LINES], R4-1 [DO NOT PASS], R4-2 [PASS WITH CARE], W8-II [UNEVEN LANES]. THESE QUANTITIES SHALL BE AS PER 614.04.

THE FOLLOWING QUANTITIES SHALL BE USED FOR THE MAINTENANCE OF TRAFFIC ON THIS PROJECT:

614, WORK ZONE MARKING SIGNS (ALL PHASES), 48 EACH

SLM 18.49 TO 23.70

PHASE I - PLANED SURFACE:

614, WORK ZONE STOP LINE, CLASS I, 72 FT

614, WORK ZONE CENTERLINE, CLASS II, 5.21 MILE

PHASE II - SURFACE COURSE:

614, WORK ZONE CENTERLINE, CLASS III, 642 PAINT 5.21 MILE

SLM 23.70 TO 26.34

PHASE I & II - PLANED & INTERMEDIATE SURFACE:

614, WORK ZONE CENTERLINE, CLASS II, 5.28 MILE

PHASE III - SURFACE COURSE:

614, WORK ZONE CENTERLINE, CLASS III, 642 PAINT 2.64 MILE

TO BE USED AS DIRECTED BY THE ENGINEER

614, WORK ZONE EDGE LINE, CLASS III, 642 PAINT 15.70 MILE

**WINTER TRAFFIC LIMITATIONS**

ALL EXISTING LANES SHALL BE OPEN TO TRAFFIC BETWEEN NOVEMBER 15 AND APRIL 1. NOVEMBER 14 SHALL BE CONSIDERED TO CONSTITUTE AN INTERIM COMPLETION DATE AND DISINCENTIVES OF \$1400 SHALL BE ASSESSED FOR EACH CALENDAR DAY THAT THE ROADWAY REMAINS CLOSED TO TRAFFIC BEYOND THE SPECIFIED LIMIT. THE CONTRACTOR MAY CLOSE LANES PRIOR TO APRIL 1 WITH WRITTEN APPROVAL FROM THE DISTRICT CONSTRUCTION ENGINEER.

**ADVANCED NOTICE TO PAVE**

THE CONTRACTOR SHALL SUBMIT FOR APPROVAL TO THE DISTRICT CONSTRUCTION ENGINEER A DETAILED SCHEDULE 15 DAYS PRIOR TO THE PLACEMENT OF THE OVERLAY COURSES, ON HOW THEY PROPOSE TO PROSECUTE THE PAVING OPERATIONS. THE DETAILS SHALL SHOW THE ORDER OF PERFORMANCE OF EACH STAGE (START TO FINISH) OF THE WORK INCLUDING THE MAINTENANCE OF TRAFFIC THAT WILL BE USED.

**CONTRACTOR'S EQUIPMENT - OPERATION AND STORAGE**

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

**ITEM 614, MAINTAINING TRAFFIC (LANES OPEN DURING HOLIDAYS OR SPECIAL EVENTS)**

NO WORK SHALL BE PERFORMED AND ALL EXISTING LANES SHALL BE OPEN TO TRAFFIC DURING THE FOLLOWING DESIGNATED HOLIDAYS OR EVENTS:

CHRISTMAS	FOURTH OF JULY
NEW YEARS	LABOR DAY
MEMORIAL DAY	THANKSGIVING

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

DAY OF HOLIDAY OR EVENT	TIME ALL LANES MUST BE OPEN TO TRAFFIC
SUNDAY	12:00N FRIDAY THROUGH 6:00 AM MONDAY
MONDAY	12:00N FRIDAY THROUGH 6:00 AM TUESDAY
TUESDAY	12:00N MONDAY THROUGH 6:00 AM WEDNESDAY
WEDNESDAY	12:00N TUESDAY THROUGH 6:00 AM THURSDAY
THURSDAY	12:00N WEDNESDAY THROUGH 6:00 AM FRIDAY
THURSDAY (THANKSGIVING ONLY)	12:00N WEDNESDAY THROUGH 6:00 AM MONDAY
FRIDAY	12:00N THURSDAY THROUGH 6:00 AM MONDAY
SATURDAY	12:00N FRIDAY THROUGH 6:00 AM MONDAY

NO EXTENSIONS OF TIME SHALL BE GRANTED FOR DELAYS IN MATERIAL DELIVERIES, UNLESS SUCH DELAYS ARE INDUSTRY-WIDE, OR FOR LABOR STRIKES, UNLESS SUCH STRIKES ARE AREA-WIDE.

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED A DISINCENTIVE IN THE AMOUNT OF \$3000 FOR EACH HOUR THE ABOVE DESCRIBED LANE CLOSURE RESTRICTIONS ARE VIOLATED.

**DESIGNATED LOCAL DETOUR ROUTE**

IN ADDITION TO THE OFFICIAL, SIGNED DETOUR ROUTE, A LOCAL ROUTE HAS BEEN DETERMINED TO BE THE SECONDARY, UNSIGNED DETOUR ROUTE OR "DESIGNATED LOCAL DETOUR ROUTE." THIS ROUTE IS SHOWN ON SHEET NO. 12-16. 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. ALL SUCH WORK SHALL BE PERFORMED WHEN AND AS DETERMINED BY THE ENGINEER.

**DETOUR NOTIFICATION [ODOT]**

THE CONTRACTOR SHALL ADVISE THE ODOT DISTRICT OFFICE (330-786-3148) EIGHTEEN (18) DAYS IN ADVANCE OF WHEN THE DETOUR ROUTE SHOULD BE IN EFFECT. ALL WORK ZONE DEVICES REQUIRED SHALL BE FURNISHED, ERECTED, MAINTAINED, AND SUBSEQUENTLY REMOVED BY THE CONTRACTOR. PAYMENT FOR ALL WORK ASSOCIATED WITH THE DETOUR SHALL BE INCLUDED UNDER THE LUMP SUM BID FOR ITEM 614, DETOUR SIGNING.

**TRAFFIC CONTROL INSPECTOR**

THE CONTRACTOR SHALL DESIGNATE AN INDIVIDUAL OTHER THAN THE SUPERINTENDENT AND SUBJECT TO THE APPROVAL OF THE ENGINEER, TO CONTINUOUSLY INSPECT ALL TRAFFIC CONTROL DEVICES WHENEVER CONSTRUCTION WORK IS BEING PERFORMED WITHIN THE WORK LIMITS OF THE PROJECT. THE DESIGNATED INDIVIDUAL SHALL ALSO INSPECT ALL TRAFFIC DEVICES AT THE BEGINNING AND AT THE END OF EACH WORK DAY. THE DESIGNATED INDIVIDUAL OR A QUALIFIED REPRESENTATIVE SHALL ALSO BE AVAILABLE ON AN AROUND THE CLOCK BASIS TO REPAIR AND/OR REPLACE DAMAGED OR MISSING TRAFFIC CONTROL DEVICES. THESE INDIVIDUALS SHALL BE EQUIPPED WITH CELLULAR PHONES AND THEIR NAMES AND PHONE NUMBERS SHALL BE GIVEN TO THE PROJECT ENGINEER AT THE PRE-CONSTRUCTION MEETING. THE DESIGNATED INDIVIDUAL MAY HAVE OTHER CONSTRUCTION RELATED DUTIES AS LONG AS IMMEDIATE ATTENTION IS GIVEN TO TRAFFIC CONTROL. PAYMENT FOR THE SERVICES OF THE TRAFFIC CONTROL INSPECTOR SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC.

**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 5 M. GAL

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MAINTENANCE OF TRAFFIC GENERAL NOTES

TRU-46-18.49

**ITEM 614, MAINTAINING TRAFFIC (TIME LIMITATION ON A DETOUR)  
(STRUCTURE: TRU-46-2081)**

A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES, EXCEPT FOR A PERIOD NOT TO EXCEED 30 CONSECUTIVE CALENDAR DAYS, WHEN THROUGH TRAFFIC MAY BE DETOURED AS SHOWN ON SHEET 12. A DISINCENTIVE SHALL BE ASSESSED IN THE AMOUNT OF \$1,000 FOR EACH CALENDAR DAY THE ROADWAY REMAINS CLOSED TO TRAFFIC BEYOND THE SPECIFIED LIMIT.

**ITEM 614, MAINTAINING TRAFFIC (TIME LIMITATION ON A DETOUR)  
(STRUCTURE: TRU-46-21.80)**

A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES, EXCEPT FOR A PERIOD NOT TO EXCEED 21 CONSECUTIVE CALENDAR DAYS, WHEN THROUGH TRAFFIC MAY BE DETOURED AS SHOWN ON SHEET 12. A DISINCENTIVE SHALL BE ASSESSED IN THE AMOUNT OF \$1,000 FOR EACH CALENDAR DAY THE ROADWAY REMAINS CLOSED TO TRAFFIC BEYOND THE SPECIFIED LIMIT.

**ITEM 614, MAINTAINING TRAFFIC (TIME LIMITATION ON A DETOUR)  
(STRUCTURE: TRU-46-2627)**

A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES, EXCEPT FOR A PERIOD NOT TO EXCEED 30 CONSECUTIVE CALENDAR DAYS, WHEN THROUGH TRAFFIC MAY BE DETOURED AS SHOWN ON SHEETS 14-16. A DISINCENTIVE SHALL BE ASSESSED IN THE AMOUNT OF \$1,000 FOR EACH CALENDAR DAY THE ROADWAY REMAINS CLOSED TO TRAFFIC BEYOND THE SPECIFIED LIMIT.

**DETOUR COORDINATION**

STRUCTURES TRU-46-2081 AND TRU-46-21.80 SHALL NOT BE CONSTRUCTED CONCURRENTLY. STRUCTURES TRU-46-2081 AND TRU-46-2627 MAY BE CONSTRUCTED SIMULTANEOUSLY. TRU-46-21.80 IS TO BE COMPLETED LAST.

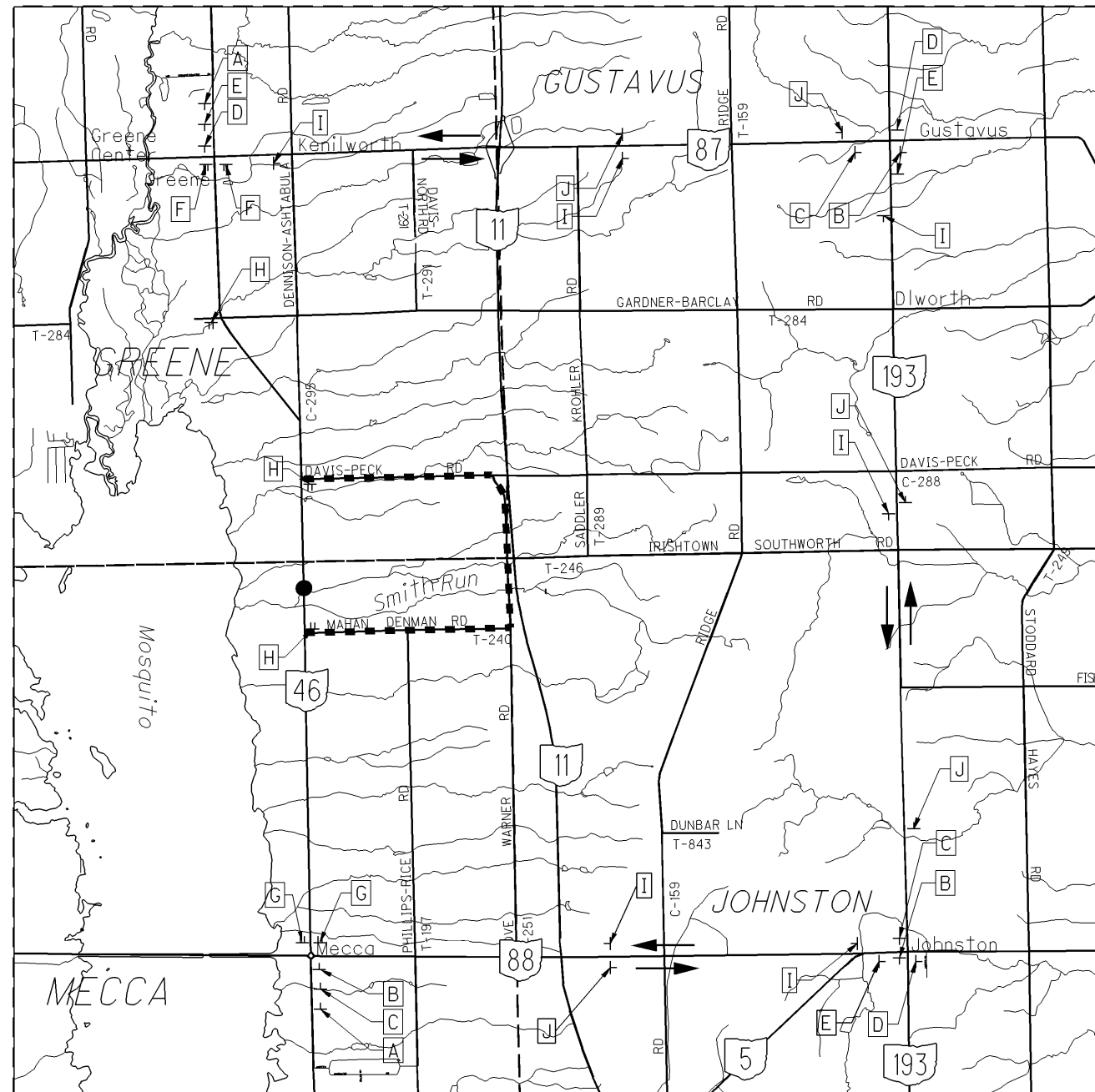
**ITEM 614, MAINTAINING TRAFFIC (NOTICE OF CLOSURE SIGN)**

NOTICE OF CLOSURE SIGNS, AS DETAILED IN THESE PLANS, SHALL BE ERECTED BY THE CONTRACTOR AT LEAST 5 WORKING DAYS IN ADVANCE OF THE SCHEDULED ROAD OR RAMP CLOSURE. THE SIGNS SHALL BE ERECTED ON THE RIGHT-HAND SIDE OF THE ROAD/RAMP FACING TRAFFIC. THEY SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF ANY OTHER TRAFFIC CONTROL SIGNS. ON ROADWAYS, THEY SHOULD BE ERECTED AT THE POINT OF CLOSURE. THE SIGNS MAY BE ERECTED ANYWHERE ON RAMPS AS LONG AS THEY ARE VISIBLE TO THE MOTORISTS USING THE RAMP. ON ENTRANCE RAMPS, THE SIGN SHALL BE ERECTED WELL IN ADVANCE OF THE MERGE AREA TO AVOID DISTRACTING MOTORISTS.

SR-46 WILL BE  
CLOSED (DATE)  
FOR \_\_ DAYS  
INFO: 330-786-2211

W20-H13-60

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DETOUR PLAN FOR TRU-46-2081 (S.R. 46)

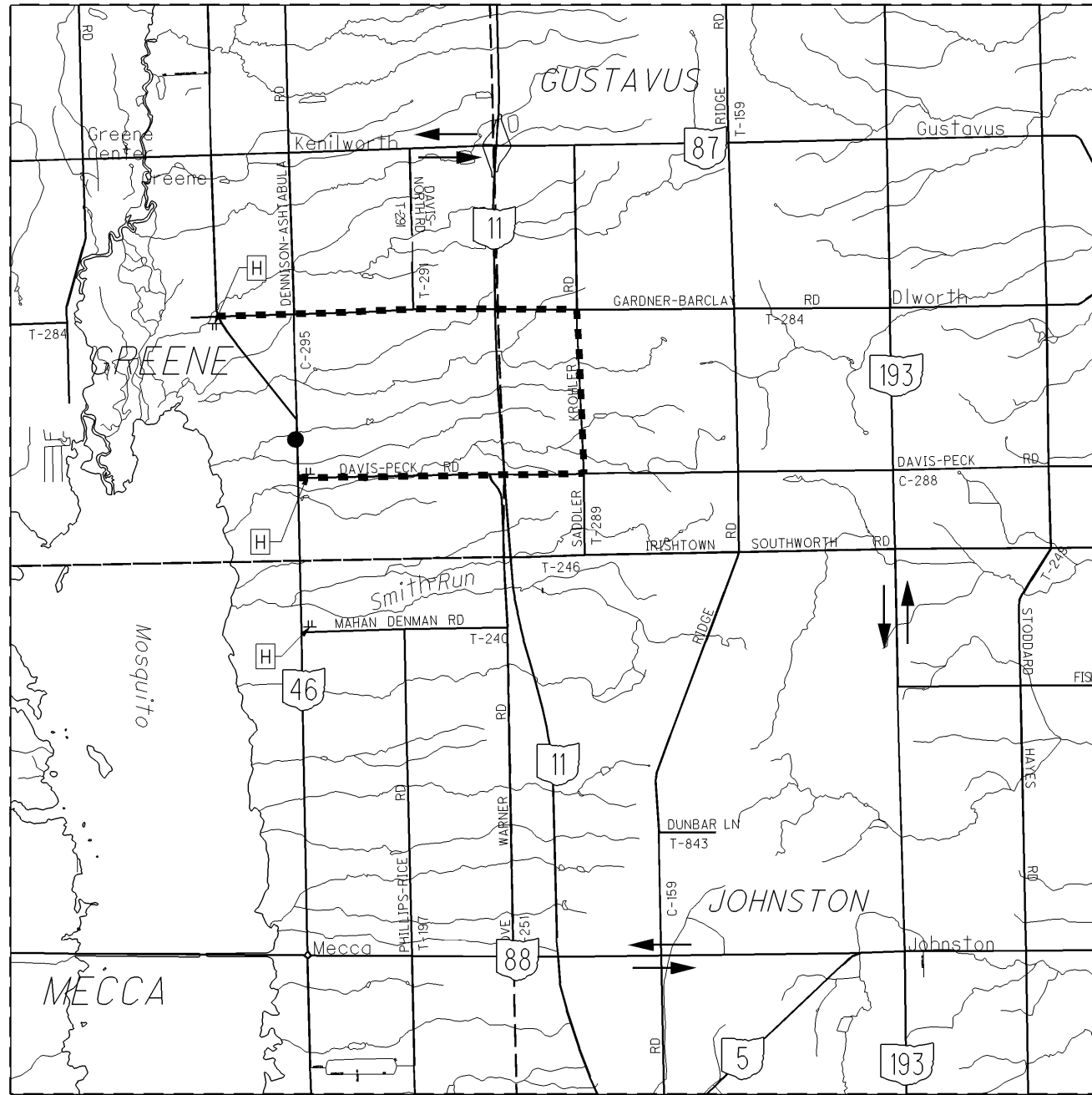
- CLOSE TRU-46-2081, USE MT-101.60
- ← OFFICIAL DETOUR ROUTE: SR 88 / SR 193 / SR 87
- LOCAL DETOUR ROUTE: MEHAN DENMAN RD. / LOVE WARNER RD. / DAVIS-PECK RD.

# ON TYPE III BARRICADE  
WITH TYPE B FLASHERS  
MOUNTED AS PER SCD MT-101.60

NOTE: REFER TO THE OHIO MANUAL OF UNIFORM  
TRAFFIC CONTROL DEVICES, FIGURE 6H-8 (TYPICAL  
APPLICATION 8), FOR SIGN SPACING.

LEGEND

<p><b>A</b></p> <p><b>E</b></p> <p><b>H#</b></p>	<p><b>B</b></p> <p><b>F#</b></p>	<p><b>C</b></p> <p><b>G#</b></p>	<p><b>D</b></p> <p><b>I</b></p>	<p><b>J</b></p>
--	----------------------------------	----------------------------------	---------------------------------	-----------------



DETOUR PLAN FOR TRU-46-21.80 (S.R. 46)

- CLOSE TRU-46-21.80, USE MT-101.60
- ← OFFICIAL DETOUR ROUTE: SR 88 / SR 193 / SR 87
- LOCAL DETOUR ROUTE: DAVIS-PECK RD. / SADDLER KHOLER RD. / GARDNER-BARCLAY RD.

**LEGEND**

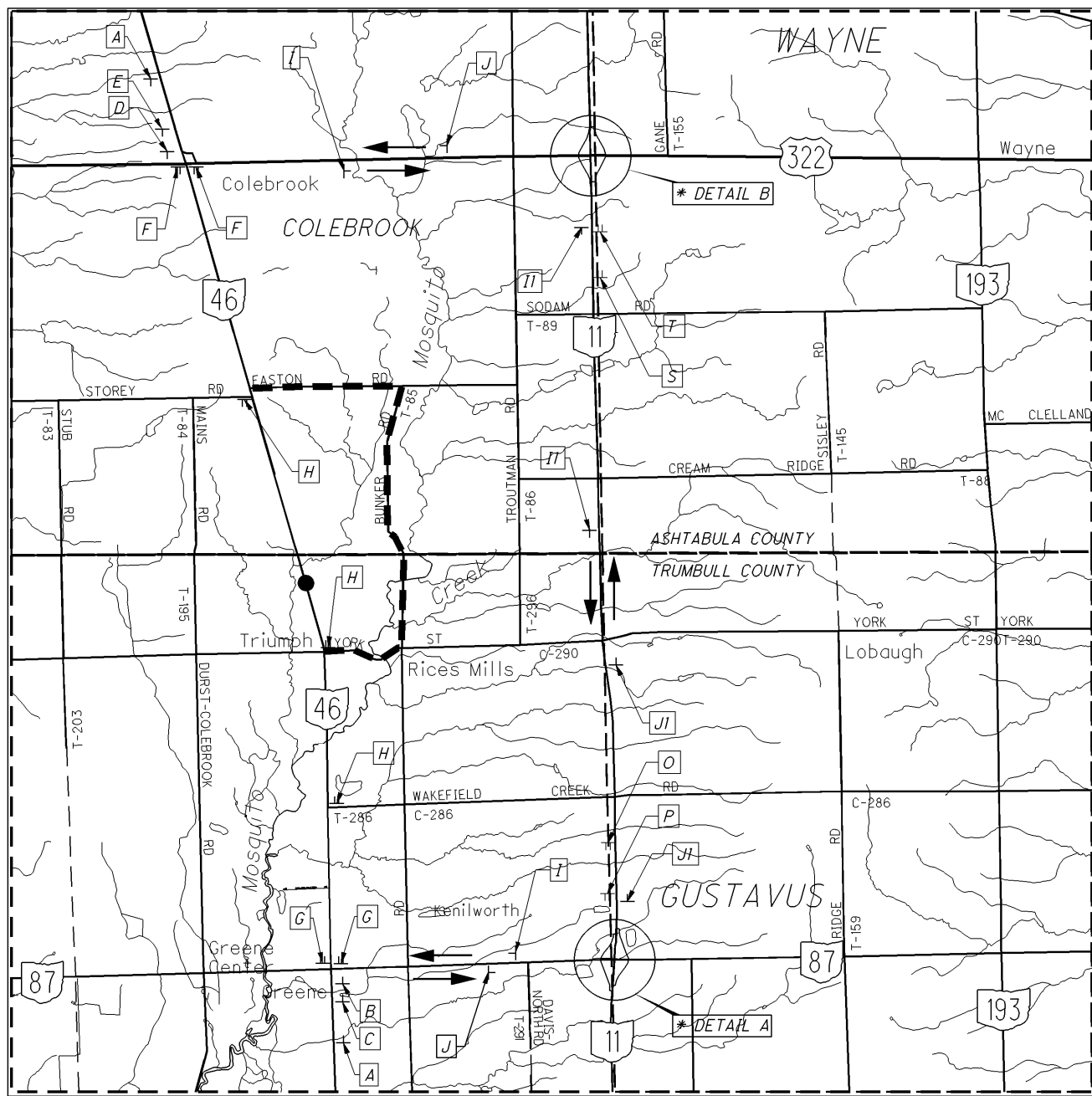
DETOUR NOTE:  
 OFFICIAL DETOUR FOR THIS CULVERT IS THE SAME  
 AS FOR TRU-46-2081. SEE PREVIOUS SHEET FOR  
 SIGNING DETAILS.

CALCULATED	
NRC	
CHECKED	
MJH	

**DETOUR PLAN**  
**TRU-46-21.80 (S.R. 46)**

**TRU-46-18.49**

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DETOUR PLAN FOR TRU-46-2627 (S.R. 46)

- CLOSE TRU-46-2627, USE MT-101.60
- ← OFFICIAL DETOUR ROUTE: SR 87 / SR 11 / US 322
- ▬ LOCAL DETOUR ROUTE: YORK ST / BUNKER RD. / EASTON RD.
- \* SEE SHEET 16 FOR DETAILS A AND B

# ON TYPE III BARRICADE WITH TYPE B FLASHERS MOUNTED AS PER SCD MT-101.60

NOTE: REFER TO THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 6H-8 (TYPICAL APPLICATION 8), FOR SIGN SPACING.

LEGEND

<p><b>A</b></p> <p>W20-2-36</p>	<p><b>B</b></p> <p>M1-5-24-2</p> <p>M6-1R-21</p>	<p><b>C</b></p> <p>M1-5-24-2</p> <p>M5-1R-21</p>	<p><b>D</b></p> <p>M1-5-24-2</p> <p>M6-1L-21</p>
<p><b>E</b></p> <p>M1-5-24-2</p> <p>M5-1L-21</p>	<p><b>F #</b></p> <p>R11-3A-60</p> <p>M4-10L-48</p>	<p><b>G #</b></p> <p>R11-3A-60</p> <p>M4-10R-48</p>	
<p><b>H #</b></p> <p>R11-3A-60</p>	<p><b>I</b></p> <p>M4-8-24</p> <p>M3-3-24</p> <p>M1-5-24-2</p>	<p><b>J</b></p> <p>M4-8-24</p> <p>M3-1-24</p> <p>M1-5-24-2</p>	
<p><b>I1</b></p> <p>M4-8-30</p> <p>M3-3-36</p> <p>M1-5-36-2</p>	<p><b>J1</b></p> <p>M4-8-30</p> <p>M3-1-36</p> <p>M1-5-36-2</p>		

# LEGEND

CALCULATED  
NRC  
CHECKED  
MJH

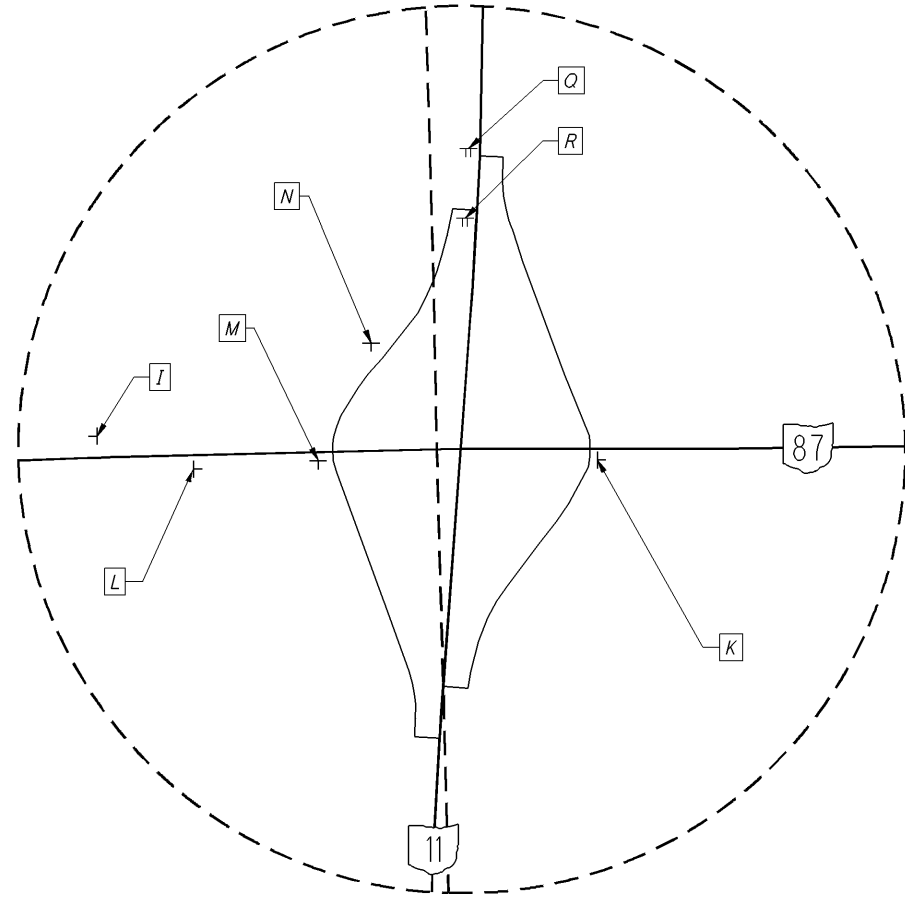
<p>Q</p> <p>DETOUR M4-8-30</p> <p>46</p> <p>MI-5-36-2</p> <p>87</p> <p>Kinsman Middlefield EXIT 1 MILE</p>	<p>Q</p> <p>DETOUR M4-8-30</p> <p>46</p> <p>MI-5-36-2</p> <p>M6-2R-24</p> <p>87</p> <p>Kinsman Middlefield</p>	<p>S</p> <p>DETOUR M4-8-30</p> <p>46</p> <p>MI-5-36-2</p> <p>322</p> <p>Orwell Jamestown Pa EXIT 1 MILE</p>	<p>U</p> <p>DETOUR M4-8-30</p> <p>46</p> <p>MI-5-36-2</p> <p>M6-2R-24</p> <p>322</p> <p>Orwell Jamestown Pa</p>
<p>P</p> <p>DETOUR M4-8-30</p> <p>46</p> <p>MI-5-36-2</p> <p>87</p> <p>Kinsman Middlefield EXIT 1/2 MILE</p>	<p>R</p> <p>DETOUR M4-8-30</p> <p>46</p> <p>MI-5-36-2</p> <p>M6-2R-24</p> <p>EXIT</p>	<p>T</p> <p>DETOUR M4-8-30</p> <p>46</p> <p>MI-5-36-2</p> <p>322</p> <p>Orwell Jamestown Pa EXIT 1/2 MILE</p>	

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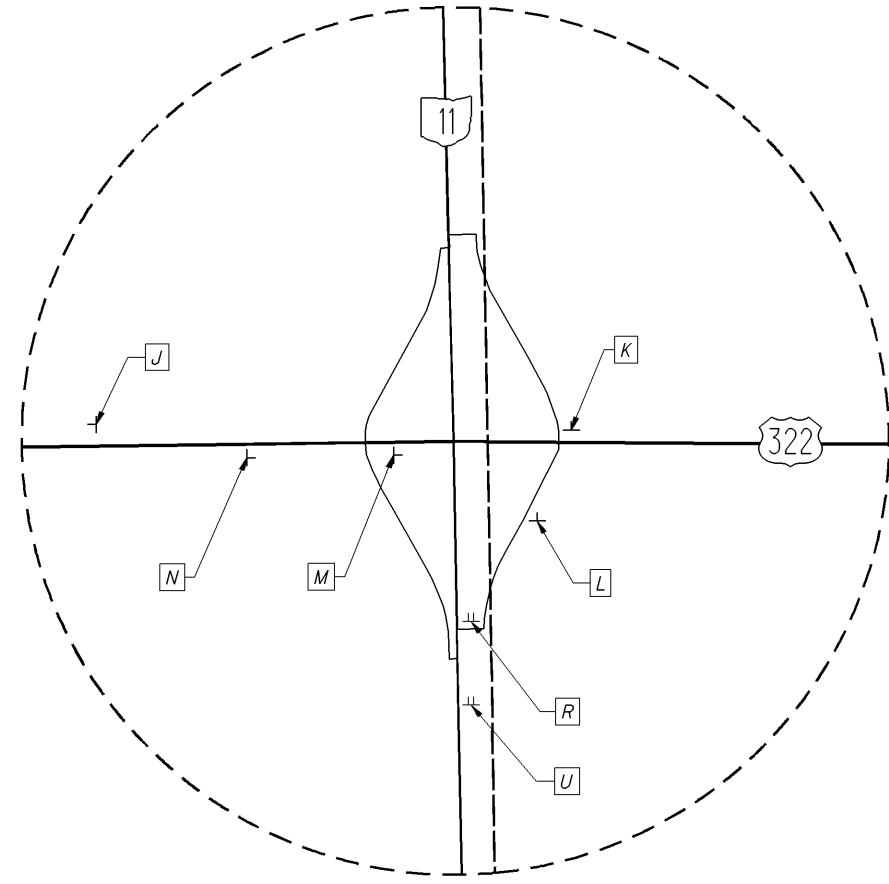
DETOUR PLAN  
TRU-46-2627 (S.R. 46)

TRU-46-18.49





DETAIL A

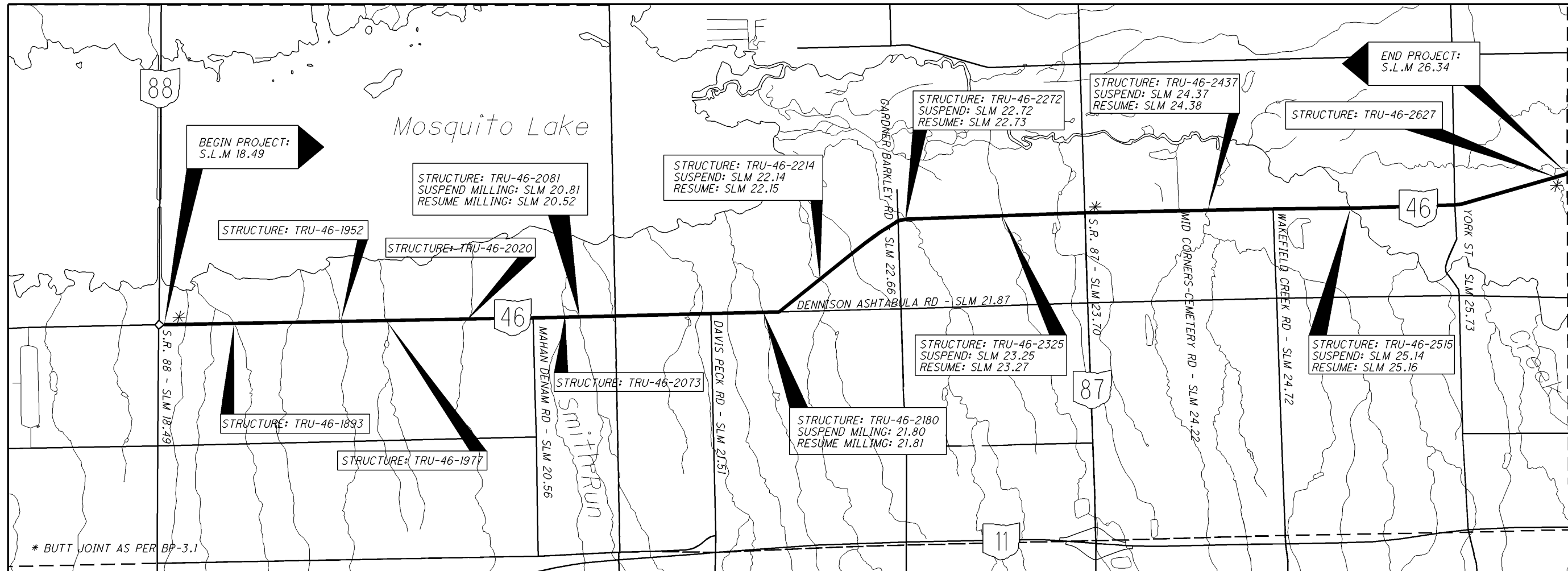


DETAIL B





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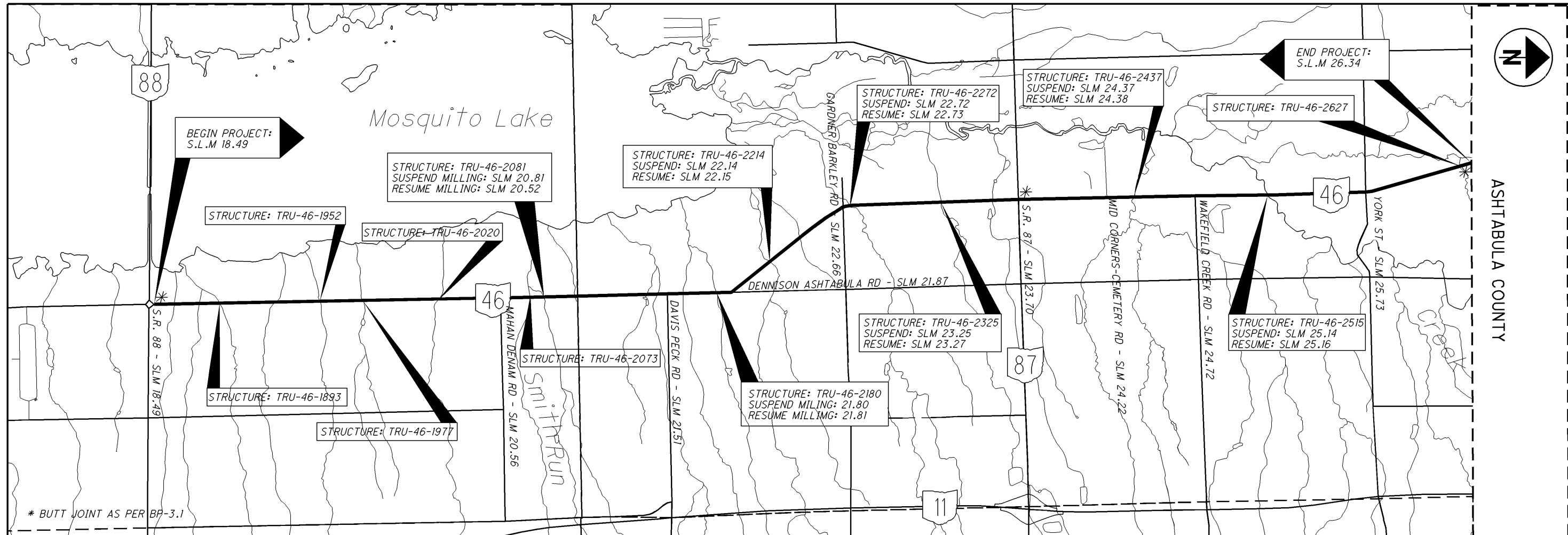


ASHTABULA COUNTY

CALCULATED  
 NRC  
 CHECKED  
 TRU-46-18.49  
 19  
 66

SLM RANGE			TYPICAL SECTION	SIDE	DISTANCE (D) FT	AVERAGE WIDTH (W) FT	SURFACE AREA (A) SQ YD A=DxW/9	CADD GENERATED AREA SQ YD	WEARING COURSE REMOVED SQ YD	PAVEMENT PLANING, ASPHALT CONCRETE SQ YD	TACK COAT@ 0.15 GAL/SY GALLON	TACK COAT FOR INTERMEDIATE COURSE@ 0.04 GAL/SY GALLON	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22 (T=1 3/4") CU YD	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M, AS PER PLAN (T=1 1/4") CU YD	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M, AS PER PLAN (T=1 1/2") CU YD	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22 (DRIVEWAYS), AS PER PLAN CU YD	COMPACTED AGGREGATE (T = 2") CU YD											
18.49	TO	20.17	1	L/R	8870.40	25.00	24640.00		138.89	24640.00	3696.00				1026.67		218.15											
20.17	TO	20.23	1	L/R	316.80	31.00	1091.20			1091.20	163.68				45.47		7.79											
20.23	TO	20.70	1	L/R	2481.60	25.00	6893.33			6893.33	1034.00				287.22		61.03											
20.70	TO	20.77	1	L/R	369.60	31.00	1273.07			1273.07	190.96				53.04		9.09											
20.77	TO	21.45	1	L/R	3590.40	25.00	9973.33			9973.33	1496.00				415.56		88.30											
21.45	TO	21.50	1	L/R	264.00	31.00	909.33			909.33	136.40				37.89		6.49											
21.50	TO	22.14	1	L/R	3379.20	25.00	9386.67			9386.67	1408.00				391.11		83.10											
22.14	TO	22.72	1	L/R	3009.60	25.00	8360.00		277.78	8360.00	1254.00				348.33		74.01											
22.72	TO	23.22	1	L/R	2587.20	25.00	7186.67		277.78	7186.67	1078.00				299.44		63.63											
23.22	TO	23.25	1	L/R	158.40	31.00	545.60			545.60	81.84				22.73		3.90											
23.25	TO	23.28	1	L/R	52.80	31.00	181.87			181.87	27.28				7.58		1.30											
23.28	TO	23.70	1	L/R	2217.60	25.00	6160.00		138.89	6160.00	924.00				256.67		54.54											
23.70	TO	24.37	2	L/R	3537.60	25.00	9826.67		555.56	9826.67	1474.00	393.07	478.23	340.66			87.00											
24.37	TO	25.14	2	L/R	4012.80	25.00	11146.67		950.00	11146.67	1672.00	445.87	542.47	386.42			98.69											
25.14	TO	26.24	2	L/R	5702.40	25.00	15840.00		394.44	15840.00	2376.00	633.60	770.88	549.12			140.24											
26.24	TO	26.34		L/R	528.00	29.00	1701.33			1701.33	255.20	68.05	82.80	58.98			12.98											
SUBTOTALS									0.00	2733.33	0.00	115115.73	0.00	17267.36	0.00	1540.59	0.00	1874.38	0.00	1335.18	0.00	3191.71	0.00	0.00	0.00	1010.22		
TOTALS CARRIED TO GENERAL SUMMARY									0	2734	0	115116	0	17268	0	1541	0	1875	0	1336	0	3192	0	0	0	0	0	1011

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SLM RANGE	TYPICAL SECTION	SIDE	DISTANCE (D) FT	AVERAGE WIDTH (W) FT	SURFACE AREA (A) A=DxW/9 SQ YD	CADD GENERATED AREA SQ YD	202		254		407		448		448		448		617					
							WEARING COURSE REMOVED SQ YD		PAVEMENT PLANING, ASPHALT CONCRETE SQ YD		TACK COAT @ 0.15 GAL/SY GALLON		TACK COAT FOR INTERMEDIATE COURSE @ 0.04 GAL/SY GALLON		ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22 (T=1 3/4") CU YD		ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M, AS PER PLAN (T=1 1/4") CU YD		ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M, AS PER PLAN (T=1 1/2") CU YD		ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22 (DRIVEWAYS), AS PER PLAN CU YD		COMPACTED AGGREGATE (T = 2") CU YD	
INTERSECTIONS																								
18.49	TO	23.70	2.00		VARIES		201.46			30.32		31.21		37.97		27.06		10.56						
23.70		26.34	25.00		VARIES		780.58			117.09														
DRIVEWAYS																								
18.49	TO	23.70																11.50						
23.70	TO	26.34																	81.66					
MAILBOX APPROACHES																								
18.49	TO	23.70	VARIES	VARIES														111.64						
23.70	TO	26.34	VARIES	VARIES											27.98									
SUBTOTALS							0.00	982.04	0.00	0.00	0.00	147.41	0.00	31.21	0.00	37.97	0.00	55.04	0.00	133.70	0.00	81.66	0.00	0.00
TOTALS CARRIED TO GENERAL SUMMARY							0	983	0	0	0	148	0	32	0	38	0	56	0	134	0	82	0	0

ASHTABULA COUNTY

PAVEMENT CALCULATIONS

TRU-46 - 18.49

20  
66

CALCULATED  
NRC  
CHECKED

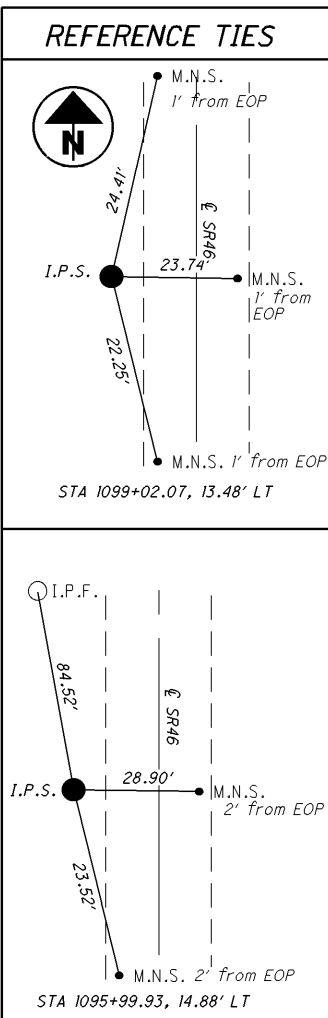
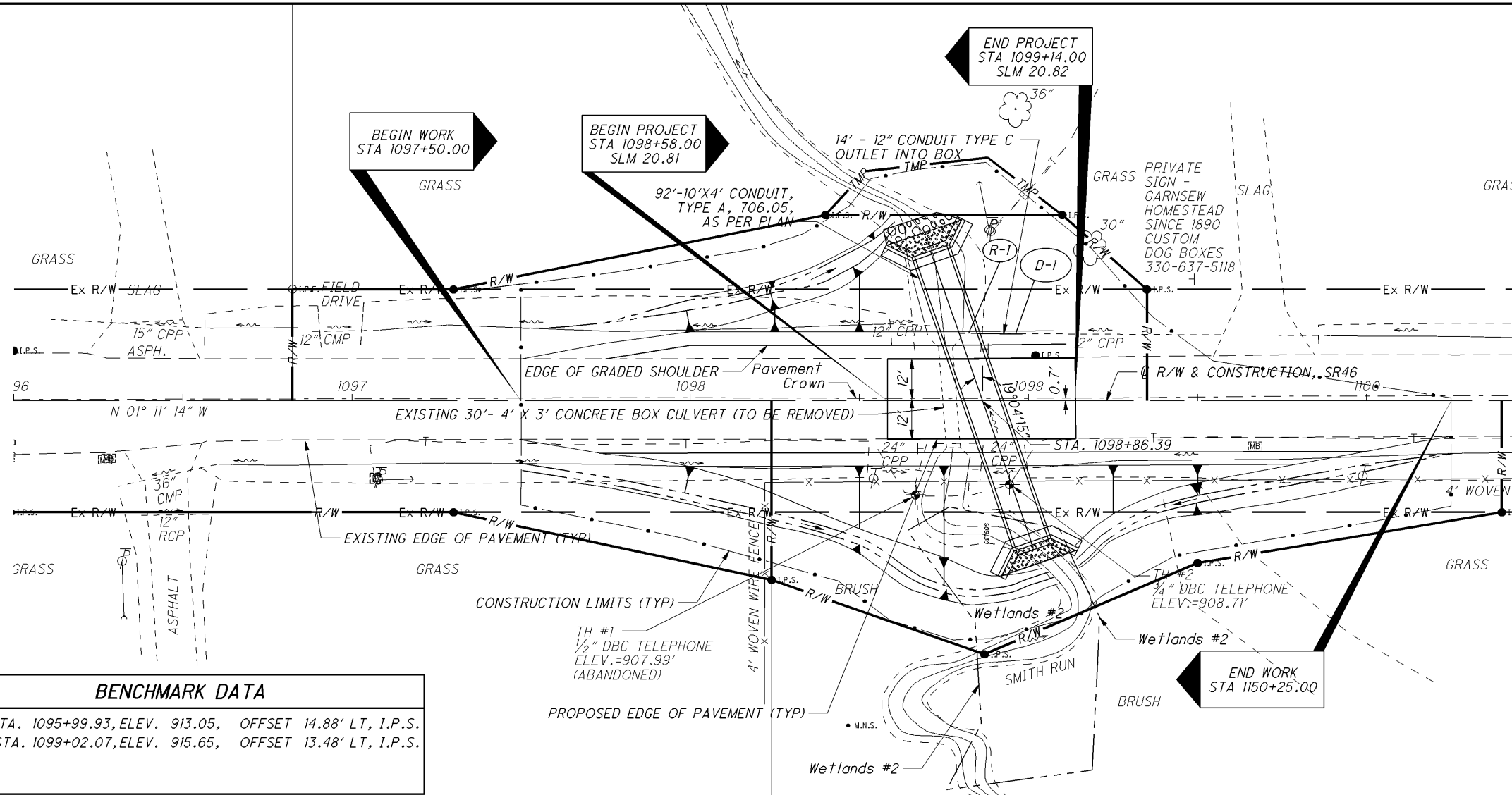


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REF NO.	ROUTE	SLM TO SLM					202	606	606	606	606	606	606	606	626	COMMENTS									
							GUARDRAIL REMOVED	GUARDRAIL, TYPE 5	GUARDRAIL, TYPE 5, LONG-SPAN	ANCHOR ASSEMBLY, TYPE B	ANCHOR ASSEMBLY, TYPE E	ANCHOR ASSEMBLY, TYPE T	BRIDGE TERMINAL ASSEMBLY TYPE 4	BARRIER REFLECTOR											
						FT	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH											
GR43	SR 46	25.10	RT	TO	25.13	RT	112.5	62.5		1		1		3	DO NOT REMOVE GUARDRAIL AT STRUCTURE										
GR44	SR 46	25.14	RT	TO	25.18	RT	200	150		1		1		3											
GR45	SR 46	25.10	LT	TO	25.13	LT	175	125		1		1		3	DO NOT REMOVE GUARDRAIL AT STRUCTURE										
GR46	SR 46	25.14	LT	TO	25.17	LT	100	50		1		1		2											
GR47	SR 46	26.24	RT	TO	26.31	RT	400	300		2				5											
GR48	SR 46	26.24	LT	TO	26.30	LT	312.5	212.5		2				4											
TOTALS CARRIED TO GENERAL SUMMARY							1300	900	0	0	8	0	4	20	0	0	0	0	0	0	0	0	0	0	0

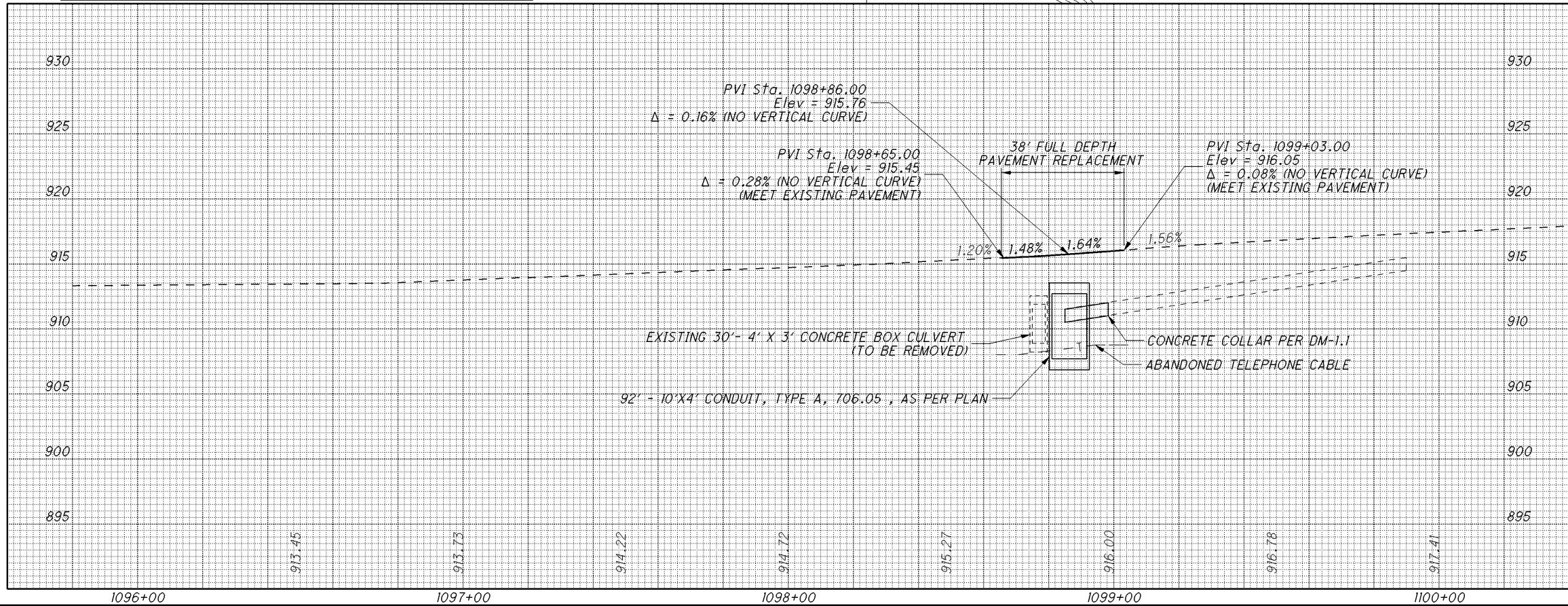
CALCULATED	
NRC	
CHECKED	
<b>GUARDRAIL SUBSUMMARY</b>	
<b>TRU-46 - 18.49</b>	
21A	66

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**BENCHMARK DATA**

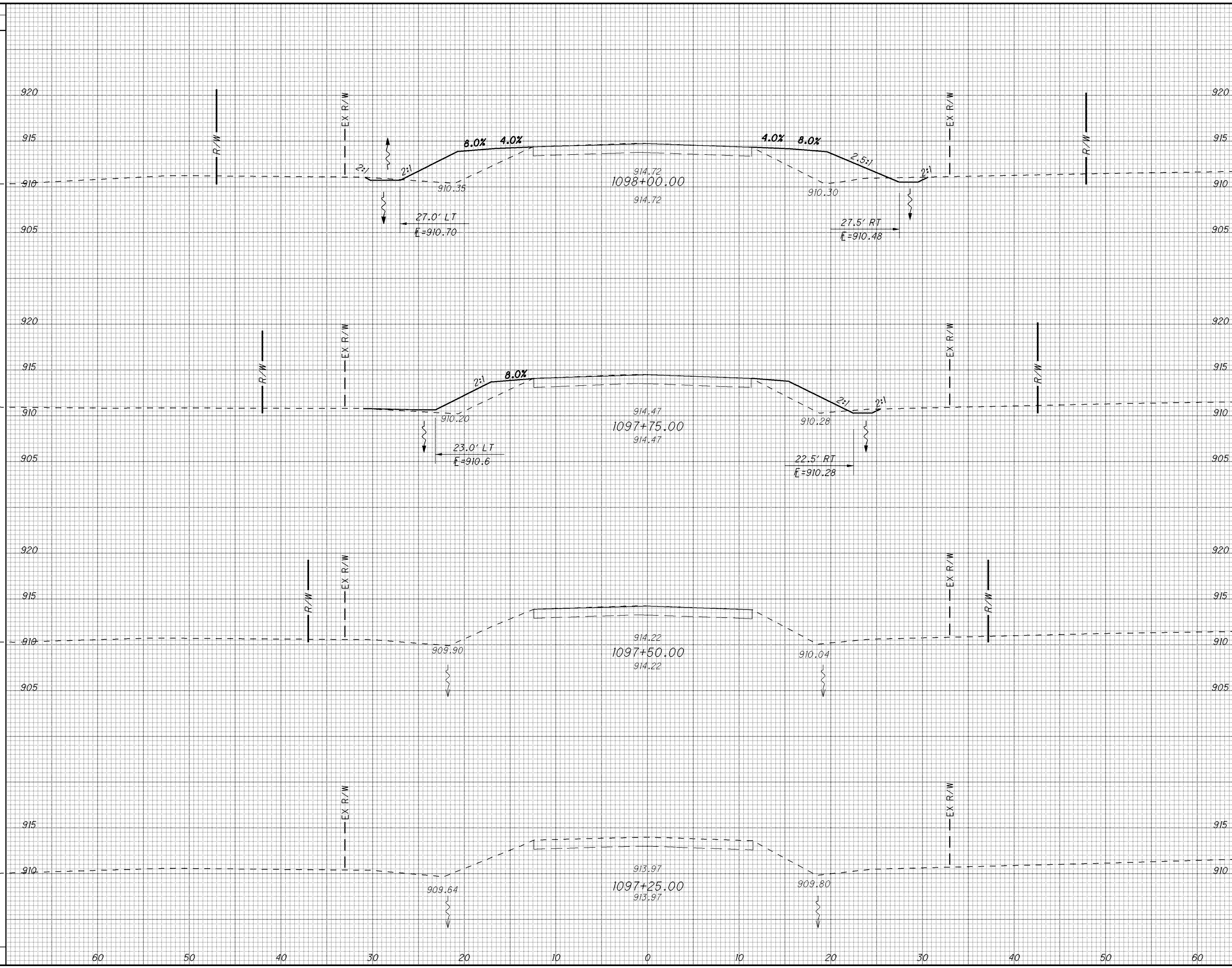
BM #1 STA. 1095+99.93, ELEV. 913.05, OFFSET 14.88' LT, I.P.S.  
 BM #2 STA. 1099+02.07, ELEV. 915.65, OFFSET 13.48' LT, I.P.S.



REF. NO.	STATION TO STATION		UNIT	TOTAL	TOTALS CARRIED TO GENERAL SUMMARY
	TO	LI			
D-1	1098+84.70	20.0' LI	14	14	0
R-1	1996+80.00	20.0' LI	18	18	0
TOTALS CARRIED TO GENERAL SUMMARY				18	0



SEEDING  
 END SO.  
 WIDTH YDS.  
 39.3  
 102  
 34.4  
 48  
 150



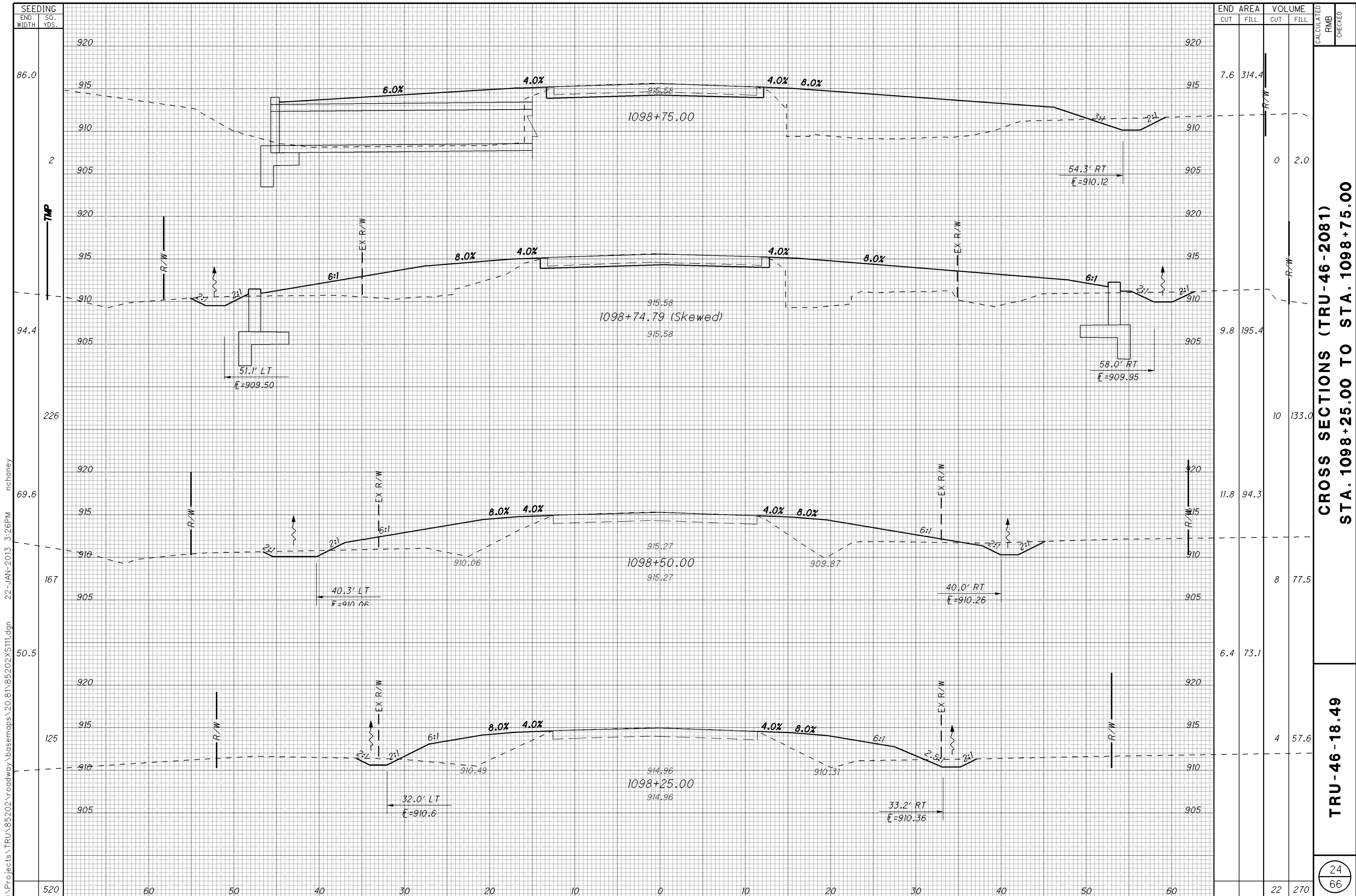
END	AREA		VOLUME		CALCULATED	RMB	CHECKED
	CUT	FILL	CUT	FILL			
39.3	2.3	51.4					
102			2	36			
34.4	1.1	26.4					
48			1	12			
150			3	48			

**CROSS SECTIONS (TRU-46-2081)**  
**STA. 1097+25.00 TO STA. 1098+00.00**

**TRU-46-18.49**

23  
66

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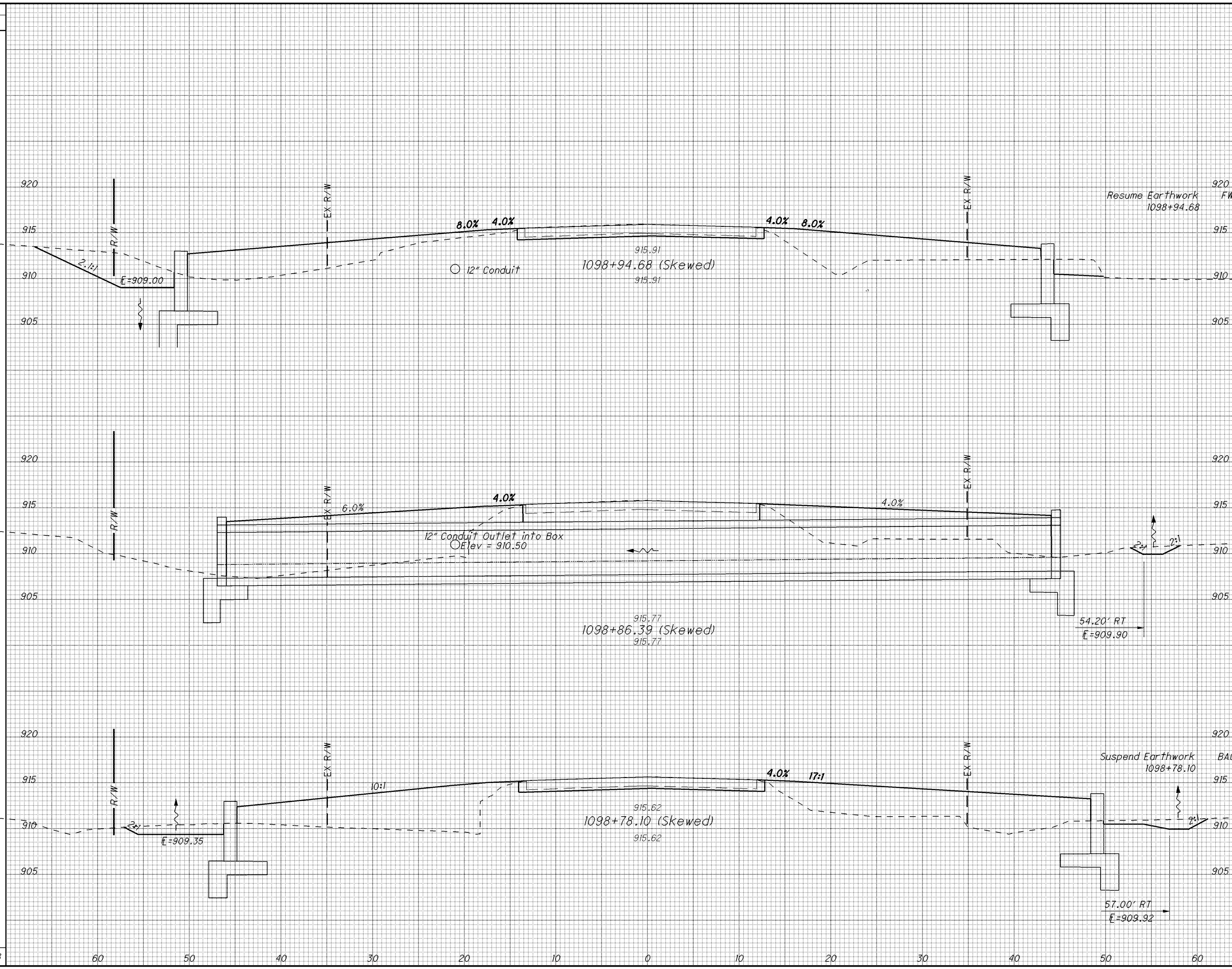
END STA.	END AREA		VOLUME		CALCULATED RMB	CHECKED
	CUT	FILL	CUT	FILL		
1098+75.00	7.6	314.4	0	2.0		
1098+74.79 (Skewed)	9.8	195.4	10	133.0		
1098+50.00	11.8	94.3	8	77.5		
1098+25.00	6.4	73.1	4	57.6		
<b>TOTAL</b>	<b>22</b>	<b>270</b>				

**CROSS SECTIONS (TRU-46-2081)  
STA. 1098+25.00 TO STA. 1098+75.00**

**TRU-46-18.49**

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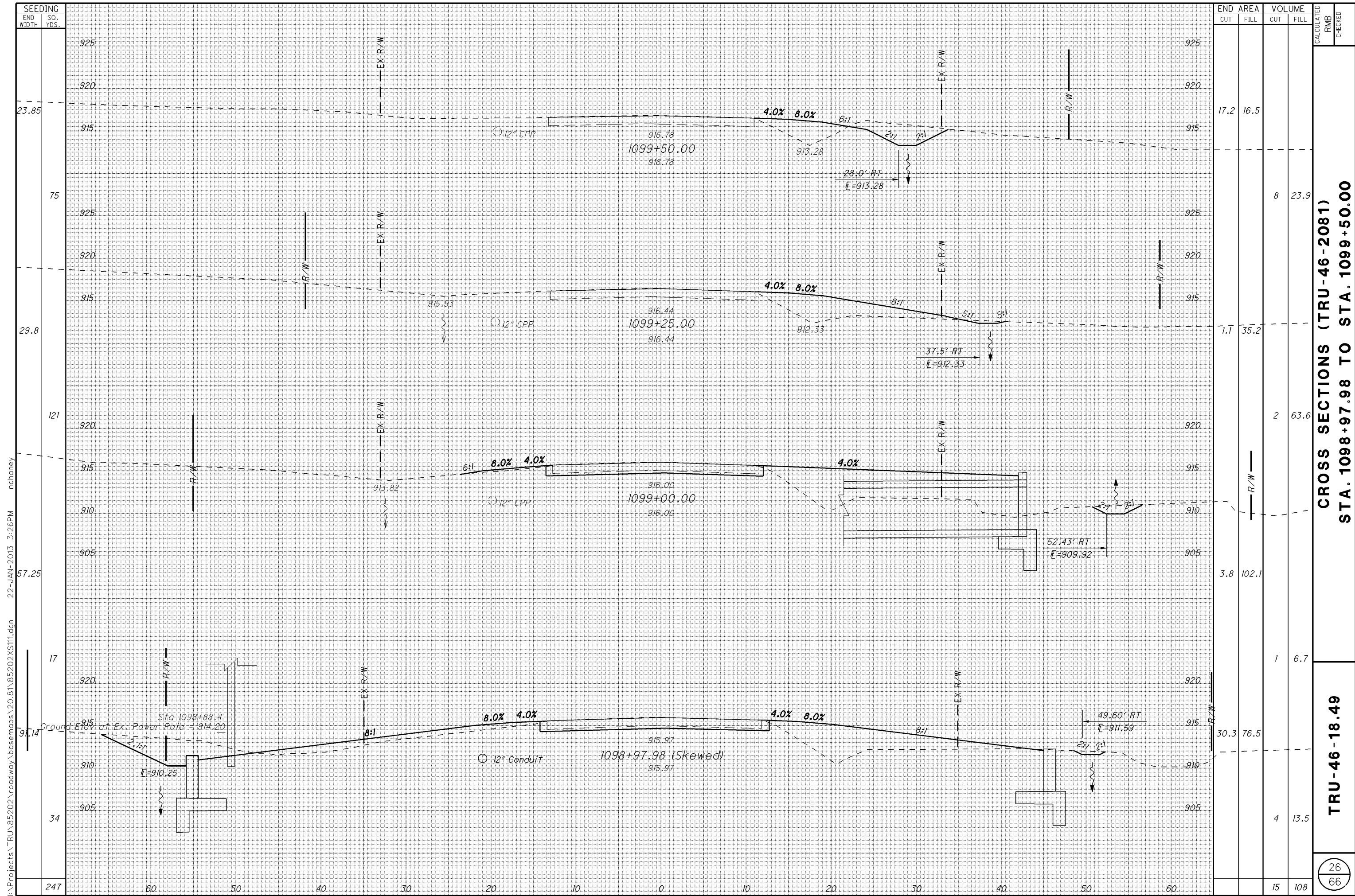
SEEDING  
END SO.  
WIDTH YDS.  
87  
89  
93.89  
94.28  
98.75  
208



END STA.	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
1098+94.68	42.0	143.6		
1098+78.10	17.9	211.5		
1098+78.10	1	30.2	1	31

CROSS SECTIONS (TRU-46-2081)  
STA. 1098+78.10 TO STA. 1098+94.68  
TRU-46-18.49  
CALCULATED RMB CHECKED  
25  
66

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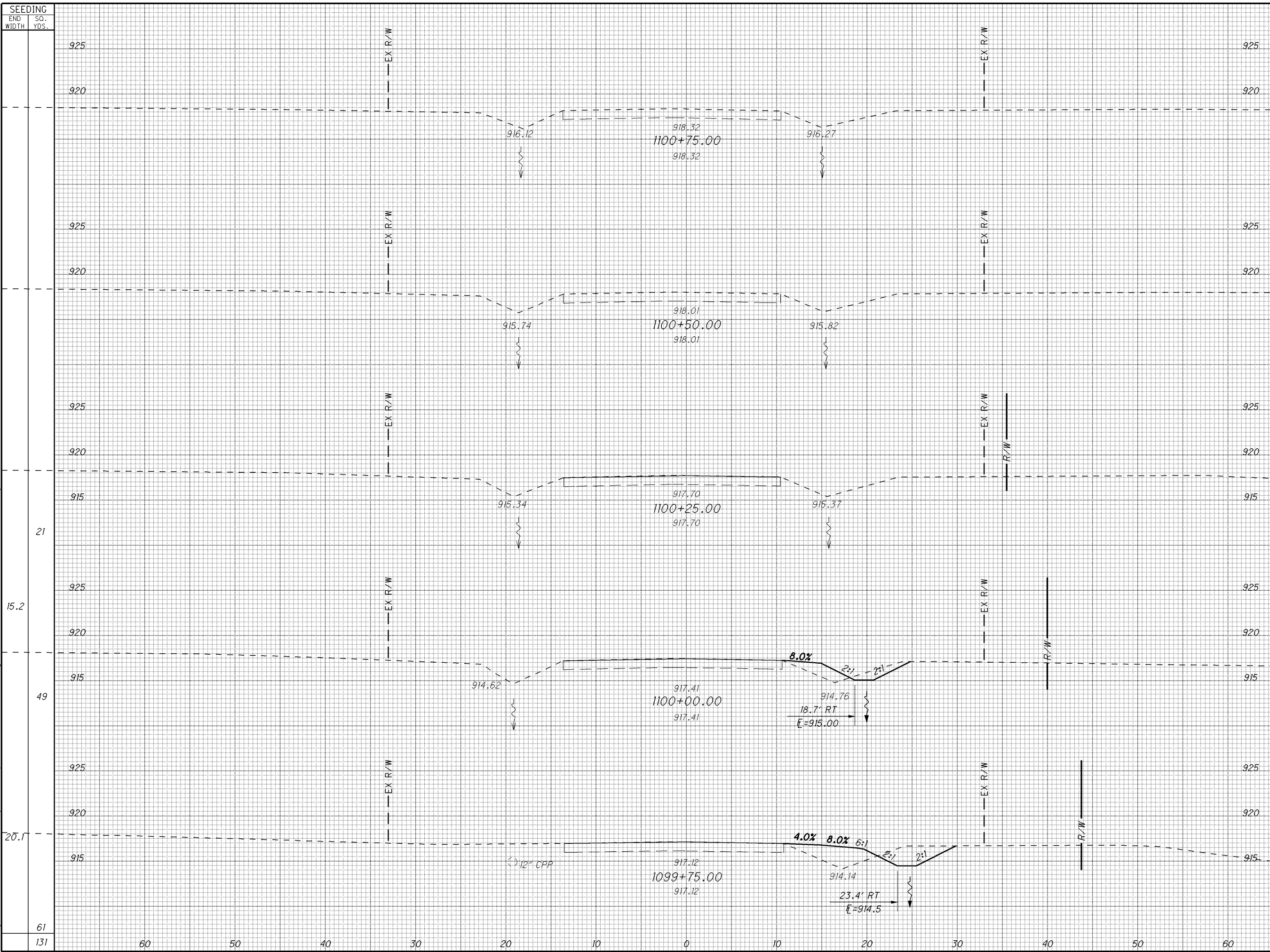


**CROSS SECTIONS (TRU-46-2081)**  
**STA. 1098+97.98 TO STA. 1099+50.00**

**TRU-46-18.49**

26  
 66

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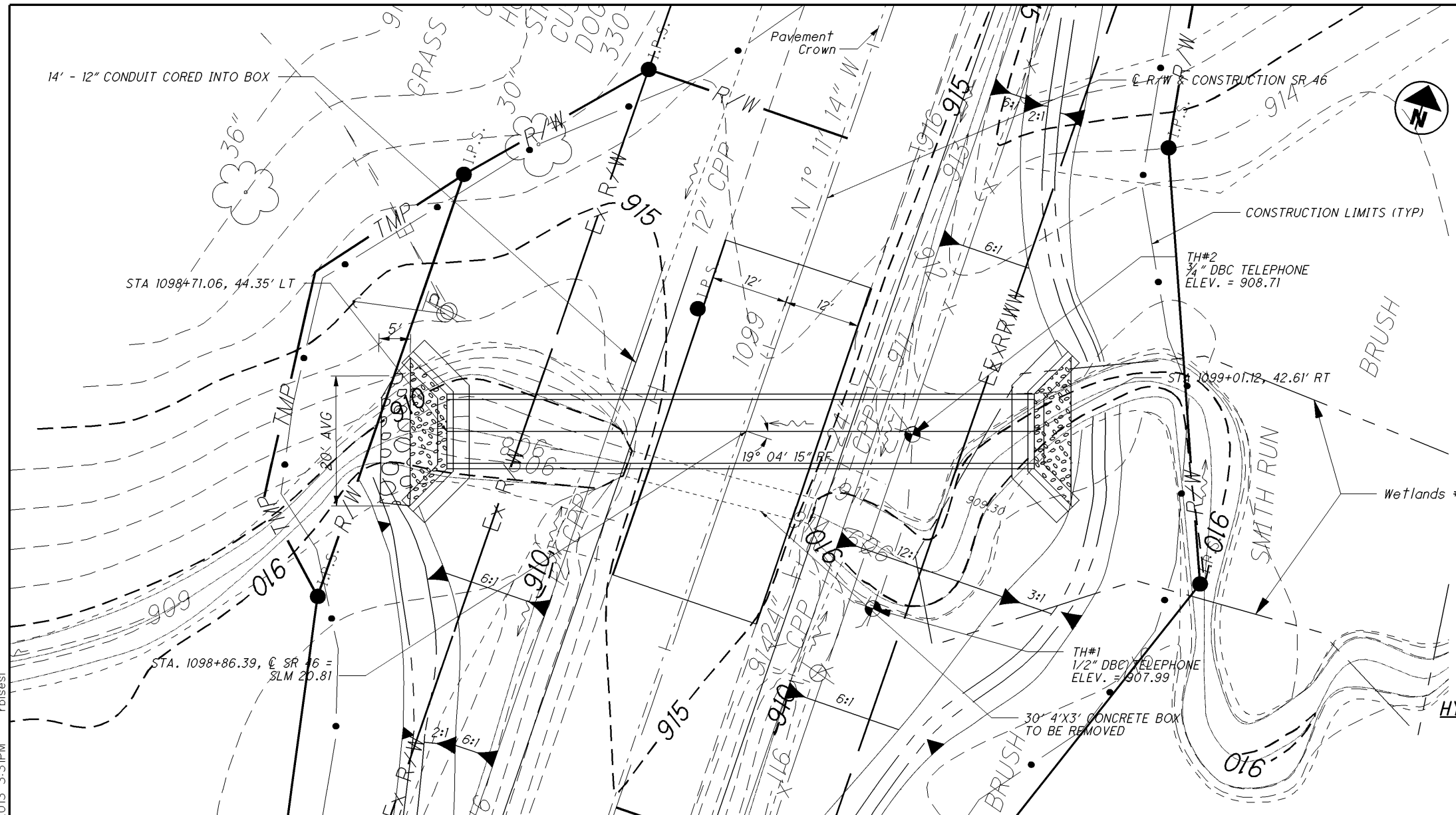


SEEDING END WIDTH SO. YDS.	END AREA		VOLUME		CALCULATED RMB CHECKED
	CUT	FILL	CUT	FILL	
925					
920					
925					
920					
915					
21			3	3	
925					
920	4.3	6.6			
915					
49			7	9.4	
925					
920					
915					
20.7					
925					
920	11.4	13.6			
915					
61			13	13.9	
131			23	26	

**CROSS SECTIONS (TRU-46-2081)  
STA. 1099+75.00 TO STA. 1100+75.00**

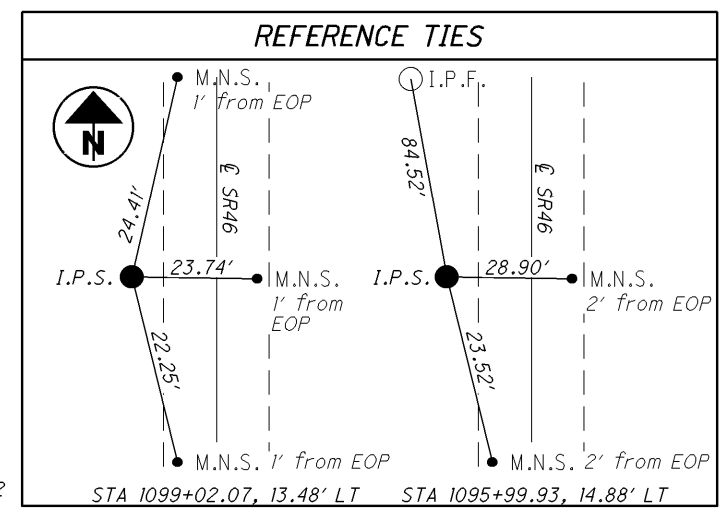
**TRU-46-18.49**

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### BENCHMARK DATA

BM #1 STA. 1095+99.93, ELEV. 913.05, OFFSET 14.88' LT, I.P.S.
BM #2 STA. 1099+02.07, ELEV. 915.65, OFFSET 13.48' LT, I.P.S.



**NOTES**  
 EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

**DESIGN TRAFFIC**  
 2013 ADT = 1700      2011 ADTT = 68  
 2033 ADT = 2200      2033 ADTT = 88  
 DIRECTIONAL DISTRIBUTION = 0.60

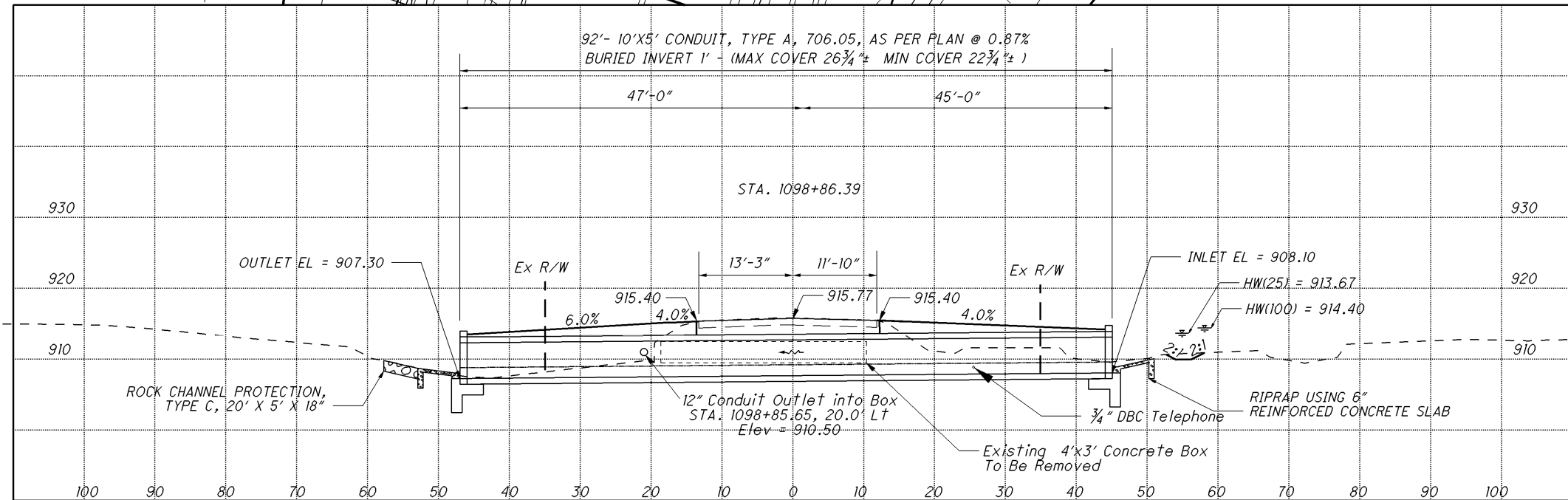
**HYDRAULIC DATA**  
 DRAINAGE AREA = 0.95 SQ. MILES  
 Q (25) = 266 CFS      V (25) = 6.01 FT/S  
 Q (100) = 359 CFS      V (100) = 8.13 FT/S

### EXISTING CULVERT

TYPE: CONCRETE BOX CULVERT
SPANS: 4'    RISE: 3'
ROADWAY: 24.7'    EOP/EOP
SKEW: 0°
ALIGNMENT: TANGENT
CROWN: 3/16"/FT
DATE BUILT: 1900
DISPOSITION: TO BE REMOVED
CULVERT FILE NUMBER: 780460740

### PROPOSED STRUCTURE

TYPE: CONCRETE BOX CULVERT
SPANS: 10'    RISE: 5'
ROADWAY: 23.8'    EOP/EOP
LOADING: AS PER CMS 706.05 & ASTM C1577
SKEW: 19° 04' 15" RF
ALIGNMENT: TANGENT
CROWN: 0.0156 FT/FT
COORDINATES: LATITUDE 41° 25' 21"
LONGITUDE 80° 44' 13"
STRUCTURE FILE NUMBER: 7802803



DESIGN AGENCY: ODOT - DISTRICT 4  
 PLANNING AND ENGINEERING  
 DATE: 7802803  
 REVIEWED: STRUCTURE FILE NUMBER  
 DRAWN: RMB  
 DESIGNED: RMB  
 CHECKED: RMB  
 TRUMBULL COUNTY  
 STA. 1098+80.22  
 STA. 1098+92.56  
**SITE PLAN**  
 TRU-46-2081  
 SR 46 OVER SMITH RUN  
**TRU-46-18.49**  
**PID No. 85202**  
 1/6  
 28  
 66

**DESIGN SPECIFICATIONS**

THIS STRUCTURE CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 4TH EDITION, INCLUDING THE 2007 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

**DESIGN LOADING**

SPANS < OR = 12'  
AS PER CMS 706.05 AND ASTM C1577

**DESIGN DATA**

INTERNAL ANGLE OF FRICTION ( $\phi$ ) = 30 DEGREES  
 COEFFICIENT OF FRICTION ( $\mu$ ) = 0.30  
 UNIT WEIGHT OF SOIL = 120 PCF  
 UNIT WEIGHT OF CONCRETE = 150 PCF  
 SLOPE OF BACKFILL = 2:1 (TYPE A & B HEADWALLS ONLY)  
 MAXIMUM FOUNDATION BEARING PRESSURE = 2000 P.S.F.  
 CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 PSI (FOOTING, WINGWALL AND FORESLOPE WALL)  
 REINFORCING STEEL - ASTM A615, A616, OR A617  
 GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI (ALL REINFORCING SHALL BE EPOXY COATED)

**FORESLOPE WALL ANCHOR DOWELS**

ANCHOR PER CMS 510 WITH NONSHRINK, NONMETALLIC GROUT CONFORMING TO CMS 705.20 AND TO A DEPTH OF 5". PAYMENT FOR DOWEL HOLES, GROUT AND INSTALLATION SHALL BE INCLUDED WITH ITEM 511.

AS AN ALTERNATIVE TO RESIN BONDING, THREADED INSERTS OR NONPROTRUDING MECHANICAL CONNECTORS CAST INTO THE CULVERT BY THE MANUFACTURER MAY BE USED PROVIDED THEY CAN RESIST AN ULTIMATE PULL-OUT STRENGTH OF 12 KIPS AND MAINTAIN A MINIMUM COVER OF 3 INCHES AT THE BOTTOM OF THE CULVERT SLAB. MECHANICAL CONNECTORS MUST PROVIDE AN "L-SHAPED" BAR INSIDE THE CULVERT WITH A MINIMUM HORIZONTAL LENGTH OF 12 INCHES. PAYMENT FOR INSERTS OR MECHANICAL CONNECTORS SHALL BE INCLUDED WITH ITEM 603.

**POROUS BACKFILL**

POROUS BACKFILL WITH FILTER FABRIC 1'-6" THICK SHALL BE PLACED BEHIND THE WINGWALLS ONLY AND SHALL EXTEND TO 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. WEEPHOLES SHALL BE PLACED 6" TO 12" ABOVE THE NORMAL WATER ELEVATION OR GROUND LINE AND SHALL HAVE A MAXIMUM SPACING OF 10'-0". A MINIMUM OF ONE WEEPHOLE SHALL BE PROVIDED PER WINGWALL.

**UNSUITABLE SOILS**

THE FOLLOWING ITEMS AND QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER TO ADDRESS UNSUITABLE SOILS ENCOUNTERED IN THE AREA UNDER THE PROPOSED BOX CULVERT.

- ITEM 203 - EXCAVATION, 60 CU YD
- ITEM 203 - GRANULAR MATERIAL, TYPE C (703.16), 60 CU YD
- ITEM 204 - GEOTEXTILE FABRIC, TYPE D, 120 SQ YD

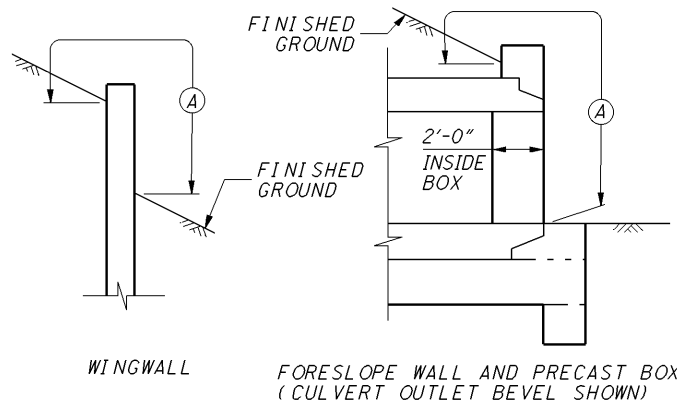
**ITEM 511 WINGWALLS, HEADWALLS, AND FOOTERS FOR 603 ITEMS**

FOR ITEMS 706.05, 706.051, 706.052 AND 706.053 WITH A CAST-IN-PLACE WINGWALL, HEADWALL, OR FOOTER, A PRECAST ALTERNATIVE MAY BE FURNISHED PER 602.03. THE PRECAST ALTERNATIVE WILL MEET THE CAST-IN-PLACE STRUCTURAL DESIGN LOADINGS, DESIGN HEIGHT & DESIGN LENGTH DIMENSIONS.

FULL COMPENSATION FOR THE PRECAST WINGWALL, HEADWALL, OR FOOTER IS THE NUMBER OF CUBIC YARDS OF ITEM 511 OR SUPPLEMENTAL SPECIFICATION 898, AND POUNDS OF ITEM 509 FOR THE CORRESPONDING CAST-IN-PLACE STRUCTURE

**SEALING OF FORESLOPE WALL AND WINGWALLS**

ALL EXPOSED FORESLOPE WALL AND WINGWALL CONCRETE SHALL BE SEALED WITH EPOXY-URETHANE SEALER. THE LIMITS SHALL BE AS SHOWN IN THE DIAGRAMS BELOW. PAYMENT FOR THE EPOXY-URETHANE SEALER SHALL BE PER ITEM 512, SEALING OF CONCRETE SURFACES (EPOXY-URETHANE).



(A) - SEAL ENTIRE CONCRETE SURFACE AREA (INCLUDING ENDS)

**PAVEMENT RESTORATION FOR CULVERT INSTALLATIONS AND/OR REMOVALS**

THE FOLLOWING QUANTITY HAS BEEN PROVIDED FOR PAVEMENT RESTORATION FOLLOWING CULVERT INSTALLATION AND/OR REMOVAL OF BOX CULVERTS.

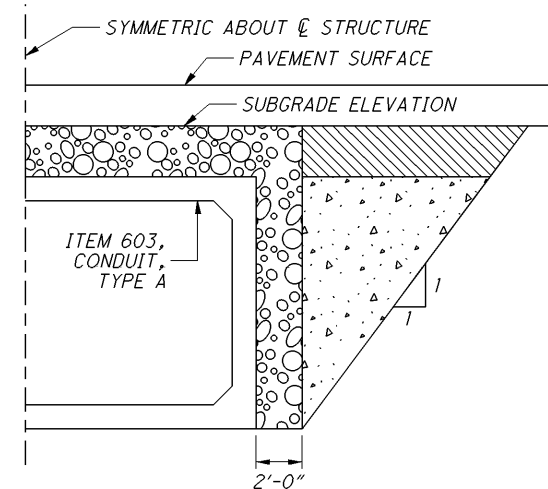
- ITEM 202 PAVEMENT REMOVED, ASPHALT 150 SQ. YD.
- ITEM 204 SUBGRADE COMPACTION 125 SQ. YDS.
- ITEM 301 ASPHALT CONCRETE BASE, PG64-22 71 CU. YDS.
- ITEM 304 AGGREGATE BASE, AS PER PLAN 21 CU. YDS.
- ITEM 408 PRIME COAT 50 GAL
- ITEM 448 ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 2 PG64-22 8 CU. YDS.
- ITEM SPECIAL MISC.: TRACKLESS TACK COAT @ 0.15 GAL/SQ YD 23 GAL
- ITEM SPECIAL MISC.: TRACKLESS TACK COAT @ 0.04 GAL/SQ YD 6 GAL

THE ABOVE QUANTITIES ARE BASED ON A 301 THICKNESS OF 20 INCHES ALONG WITH A PAVEMENT RESTORATION WIDTH OF 24' X 56' FOR THE STRUCTURE TRU-46-2081. PROVIDE ANY MATERIALS USED OUTSIDE THE LIMITS STATED ABOVE AT NO ADDITIONAL COST.

**CONDUIT BACKFILL REQUIREMENTS**

LOW STRENGTH MORTAR BACKFILL AND EMBANKMENT (EMBANKMENT WILL BE OMITTED IF THE SUBGRADE ELEVATION IS AT THE TOP OF THE CONDUIT) WILL BE PLACED AS SHOWN (IN THE DETAIL) AND LATERALLY TO THE EDGE OF THE SHOULDER. PAYMENT FOR THIS WORK WILL BE MADE ONLY FOR MATERIAL PLACED TO THE LIMITS SHOWN. ADDITIONAL PAYMENT WILL NOT BE MADE FOR WORK PERFORMED AND MATERIAL PLACED OUTSIDE OF THESE LIMITS. THE EXCAVATION REQUIRED FOR THIS WORK WILL BE INCLUDED IN ITEM 603 FOR PAYMENT. THE FOLLOWING ITEMS HAVE BEEN INCLUDED IN THE ESTIMATED QUANTITIES FOR THIS WORK:

- ITEM 613 - LOW STRENGTH MORTAR BACKFILL, 152 CU YD



- BACKFILL AS PER CMS 603 PAYMENT INCLUDED IN ITEM 603, CONDUIT, TYPE A
- ITEM 613, LOW STRENGTH MORTAR BACKFILL
- ITEM 203, EMBANKMENT

**ITEM 603, 10' X 5' CONDUIT, TYPE A, 706.05, AS PER PLAN**

INCLUDED WITH THIS ITEM IS THE OPENING FOR THE STORM SEWER OUTLET CONDUIT. REFER TO THE SITE PLAN SHEET FOR THE LOCATION. THE OPENING WILL BE FORMED AND CONSTRUCTED IN THE SHOP AND INCLUDE DIAGONAL #5 REINFORCING STEEL FRAMING THE OPENING ON BOTH FACES. PROVIDE A MINIMUM OF 1/2" OF CLEARANCE FROM THE EDGE OF THE OPENING TO THE OUTSIDE OF THE STORM SEWER OUTLET PIPES. AFTER PLACING THE STORM SEWER OUTLET CONDUIT, GROUT ALL OPENINGS BETWEEN THE PIPE AND STRUCTURE LESS THAN 4 INCHES WITH MORTAR AND GROUT (CMS 602). ALL OPENINGS BETWEEN THE PIPE AND STRUCTURE GREATER THAN 4 INCHES WITH NONSHRINK MORTAR (CMS 705.22).

**PREFORMED EXPANSION JOINT FILLER**

PREFORMED EXPANSION JOINT FILLER (PEJF) CONFORMING TO CMS 705.03, 1 INCH THICK, SHALL BE PLACED ABOVE THE FOOTING BETWEEN THE SIDES OF THE BOX CULVERT AND THE ENDS OF THE WINGWALLS. PAYMENT FOR MATERIALS AND INSTALLATION SHALL BE INCLUDED WITH ITEM 516, 1" PREFORMED EXPANSION JOINT FILLER.

**STRUCTURE IDENTIFICATION SIGNS**

STRUCTURE IDENTIFICATION SIGNS (I-H250) WILL BE PLACED ON EACH APPROACH OFF THE RIGHT SHOULDER, FACING TRAFFIC, AND BEHIND THE GUARDRAIL IF APPLICABLE. A QUANTITY OF ONE SIGN PER APPROACH WILL BE INSTALLED. THE SIGNS WILL HAVE A NON-REFLECTIVE WHITE SHEETING BACKGROUND.

THE SIGNS WILL BE MOUNTED ON NEW NO. 2 POSTS AND WILL BE INSTALLED AS PER STANDARD CONSTRUCTION DRAWING TC-41.20, MOST CURRENT REVISION. EACH POST WILL BE 7.5' IN LENGTH.

INSTALL SIGNS FOR THE FOLLOWING STRUCTURES:  
TRU-46-2081

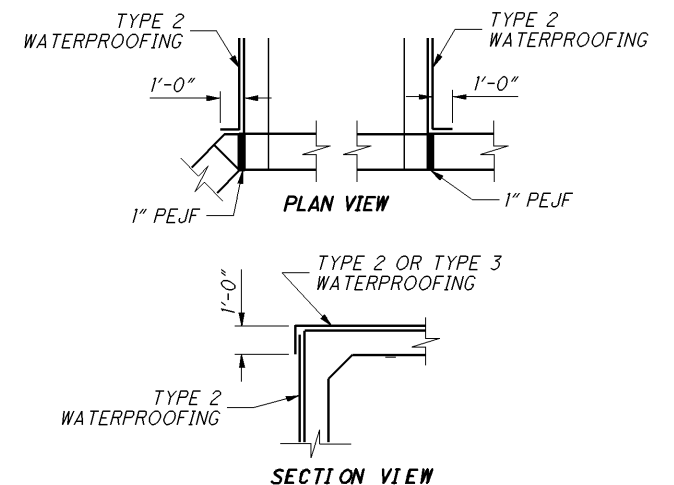
- THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED FOR EACH APPROACH:
- ITEM 630 - SIGN, FLAT SHEET, 730.20, 1 SQ FT
  - ITEM 630 - GROUND MOUNTED SUPPORT, NO. 2 POST, 7.5 FT
  - ITEM 630 - REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL, 1 EACH
  - ITEM 630 - REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL, 1 EACH

**WATERPROOFING**

TYPE 2 WATERPROOFING, PER CMS 512.08 AND 711.25, SHALL EXTEND VERTICALLY DOWN THE ENTIRE SIDES OF THE PRECAST CULVERT SECTIONS FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512, TYPE 2 WATERPROOFING.

IF PAVEMENT IS NOT PLACED DIRECTLY ON TOP OF THE CULVERT, TYPE 2 WATERPROOFING, PER CMS 512.08 AND 711.25 SHALL BE APPLIED TO THE ENTIRE TOP SURFACE OF THE PRECAST CULVERT SECTIONS AND SHALL EXTEND ONE FOOT VERTICALLY DOWN THE SIDES FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512, TYPE 2 WATERPROOFING.

IF PAVEMENT IS TO BE USED DIRECTLY ON TOP OF THE CULVERT, TYPE 3 WATERPROOFING, PER CMS 512.08 AND 711.29 SHALL BE APPLIED TO THE ENTIRE TOP SURFACE OF THE PRECAST CULVERT SECTIONS AND SHALL EXTEND ONE FOOT VERTICALLY DOWN THE SIDES FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE PAVEMENT. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512, TYPE 3 WATERPROOFING.



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<b>DESIGN AGENCY</b>	ODOT - - DISTRICT 4	<b>DATE</b>	7802803
<b>DESIGNED</b>	RMB	<b>CHECKED</b>	RMB
<b>DRAWN</b>	RMB	<b>REVIEWED</b>	RMB
<b>TRUMBULL COUNTY</b>	STA. 1098+80.22	<b>STRUCTURE FILE NUMBER</b>	7802803
<b>STRUCTURE GENERAL NOTES</b>	TRU-46-2081	<b>PLANNING AND ENGINEERING</b>	SR 46 OVER SMITH RUN
<b>TRU-46-18-49</b>	<b>PID No. 85202</b>	<b>2 / 6</b>	<b>29 / 66</b>

CALC: RMB DATE: 11/1/2012  
 CHECKED: DATE:

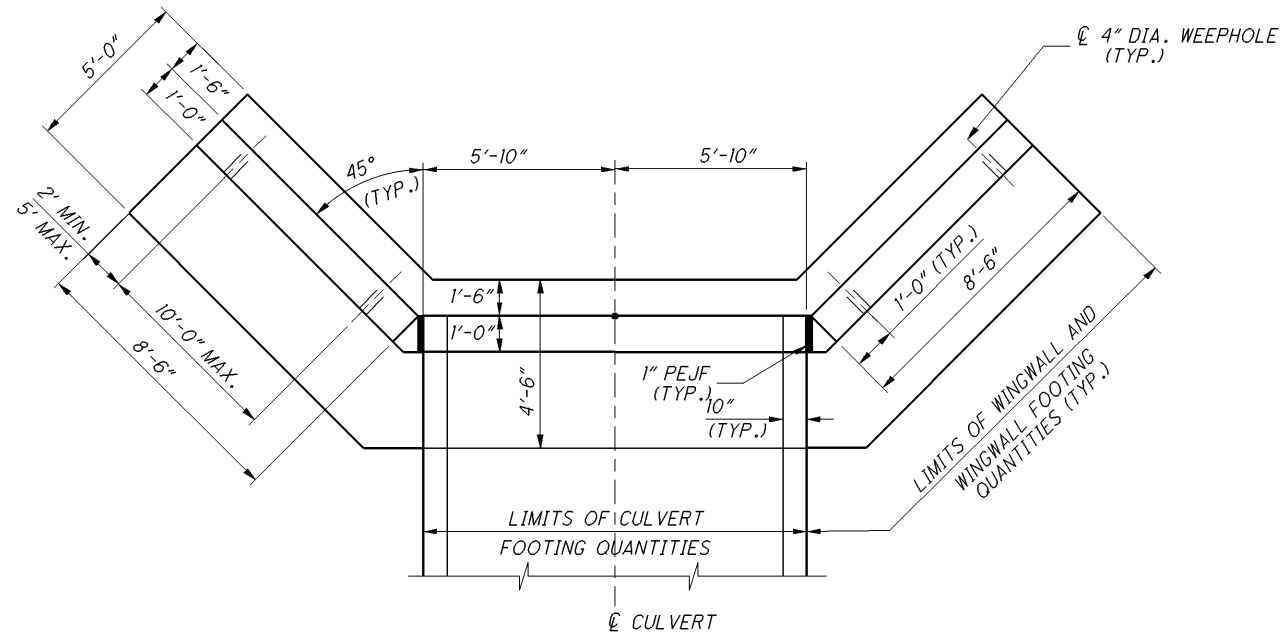
**ESTIMATED QUANTITIES (02/STR/BR)**

ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUT.	PIERS	SUPER.	GEN.	SEE SHEET
202	11000	LUMP		STRUCTURE REMOVED					
202	23010	150	SQ YD	PAVEMENT REMOVED, ASPHALT				150	
203	10000	60	CU YD	EXCAVATION				60	
203	35120	60	CU YD	GRANULAR MATERIAL, TYPE C				60	
204	10000	125	SQ YD	SUBGRADE COMPACTION				125	
204	50000	120	SQ YD	GEOTEXTILE FABRIC				120	
301	46000	71	CU YD	ASPHALT CONCRETE BASE, PG64-22				71	
304	20001	21	CU YD	AGGREGATE BASE, AS PER PLAN				21	
408	10000	50	GALLON	PRIME COAT				50	
448	46050	8	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22				8	
503	11100	LUMP		COFFERDAMS AND EXCAVATION BRACING					
503	21300	LUMP		UNCLASSIFIED EXCAVATION					
509	10000	3316	POUND	EPOXY COATED REINFORCING STEEL				3316	
511	46000	9	CU YD	CLASS C CONCRETE, RET WALL/WINGWALL, ABOVE FTG				9	
511	46500	26	CU YD	CLASS C CONCRETE, FOOTING				26	
511	46600	1	CU YD	CLASS C CONCRETE, HEADWALL				1	
512	10100	16	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)				16	
512	33000	137	SQ YD	TYPE 2 WATERPROOFING				137	
512	33010	140	SQ YD	TYPE 3 WATERPROOFING				140	
516	13600	30	SQ FT	1" PREFORMED EXPANSION JOINT FILLER				30	
601	11000	23	SQ YD	RIPRAP USING 6" REINFORCED CONCRETE SLAB				23	
601	32204	6	CU YD	ROCK CHANNEL PROTECTION, TYPE C WITH FABRIC FILTER				6	
603	95001	92	FT	10' X 5' CONDUIT, TYPE A, 706.05, AS PER PLAN				92	29
613	41200	152	CU YD	LOW STRENGTH MORTAR BACKFILL				152	
630	02100	15	FT	GROUND MOUNTED SUPPORT, NO. 2 POST				15	
630	80100	2	SQ FT	SIGN, FLAT SHEET, 730.20				2	
630	84900	2	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL				2	
630	86002	2	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL				2	
SPEC	69098900	29	GALLON	MISC.: TRACKLESS TACK COAT				29	56

DESIGN AGENCY: ODOT - - - DISTRICT 4  
 PLANNING AND ENGINEERING  
 DATE: 7802803  
 REVIEWED: STRUCTURE FILE NUMBER  
 DRAWN: RMB  
 DESIGNED: RMB  
 TRUMBULL COUNTY  
 STA. 1098+80.22  
 STA. 1098+92.56  
**STRUCTURE ESTIMATED QUANTITIES**  
 TRU-46-2081  
 SR 46 OVER SMITH RUN  
**TRU-46-18.49**  
**PID No. 85202**  
 3 / 6  
 30 / 66

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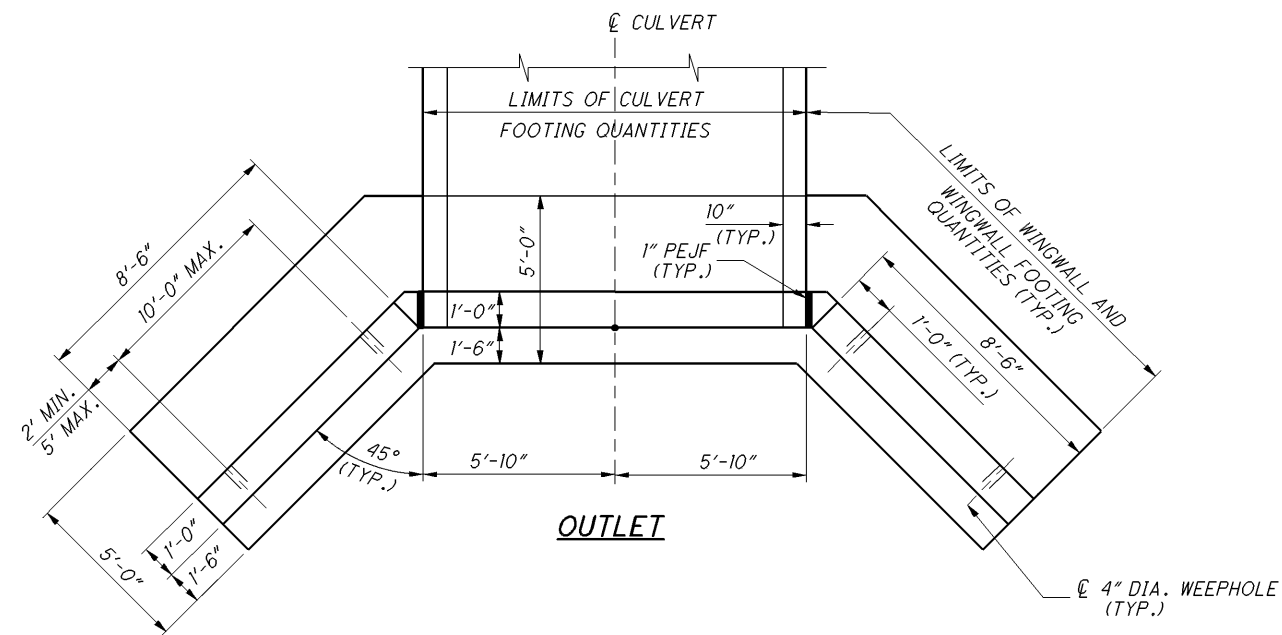




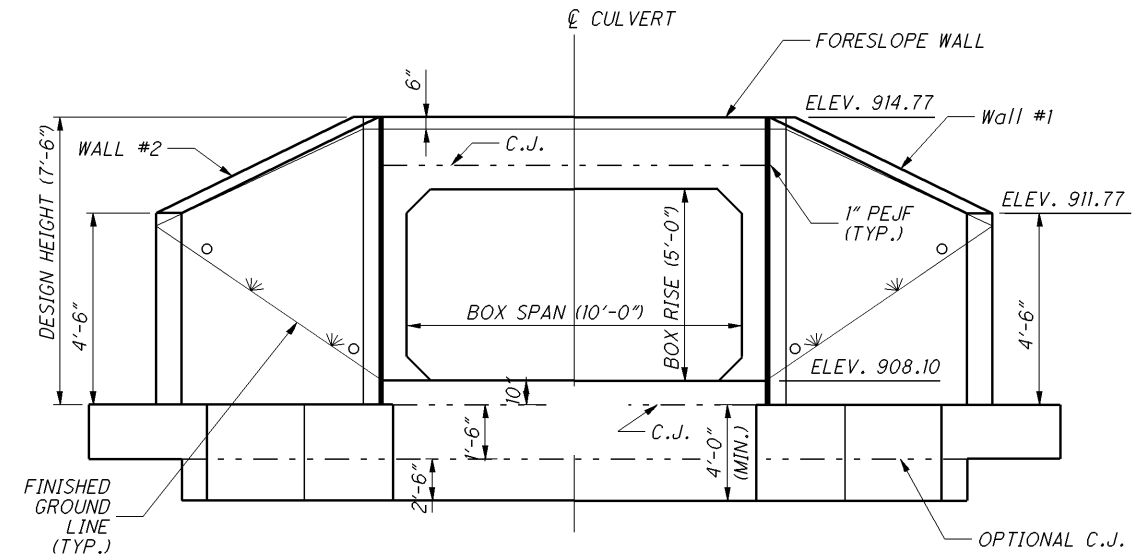
**INLET**

**PLAN**  
TYPE A HEADWALL

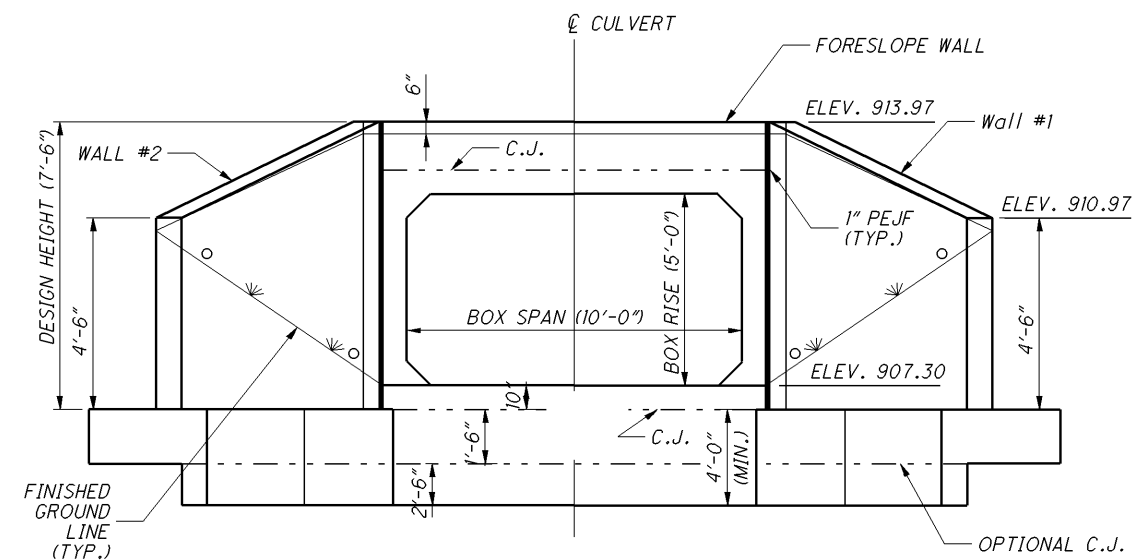
**CULVERT & WINGWALL LAYOUT**



**OUTLET**



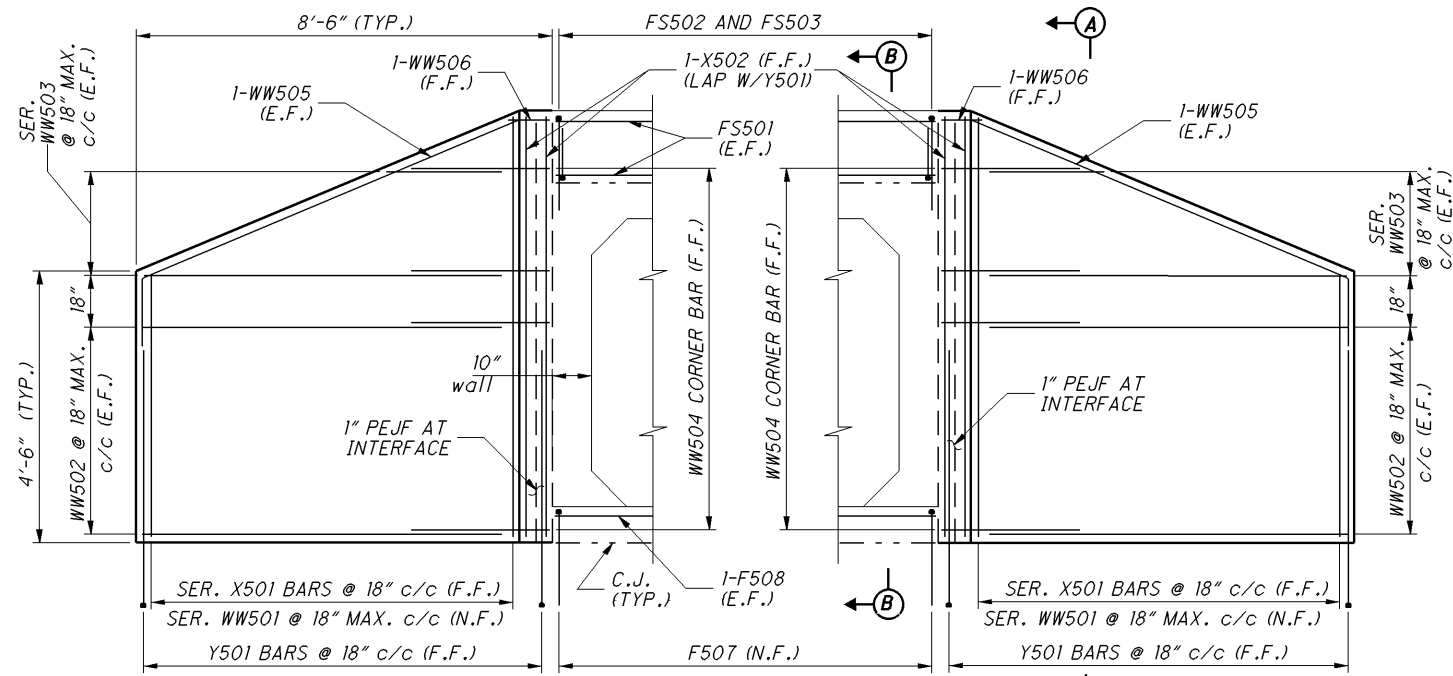
**INLET ELEVATION**



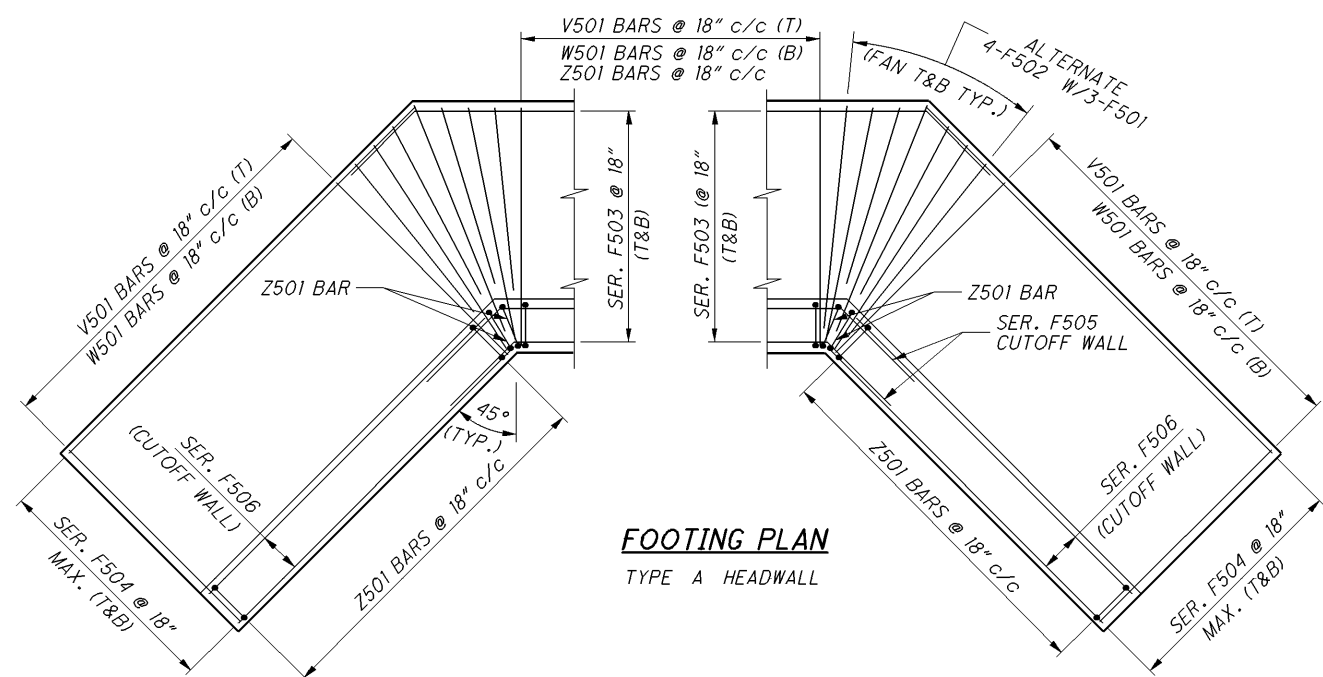
**OUTLET ELEVATION**

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<b>TRU-46-18.49</b> <b>PID No. 85202</b>	<b>STRUCTURE DETAILS</b> TRU-46-2081 SR 46 OVER SMITH RUN		TRUMBULL COUNTY STA. 1098+80.22 STA. 1098+92.56	DESIGNED RMB CHECKED	DRAWN RMB REVISED	REVIEWED STRUCTURE FILE NUMBER 7802803	DATE 7802803	DESIGN AGENCY ODOT - - - DISTRICT 4 PLANNING AND ENGINEERING
	4 / 6	31 / 66						



**WINGWALL ELEVATION**  
(FOOTING NOT SHOWN)



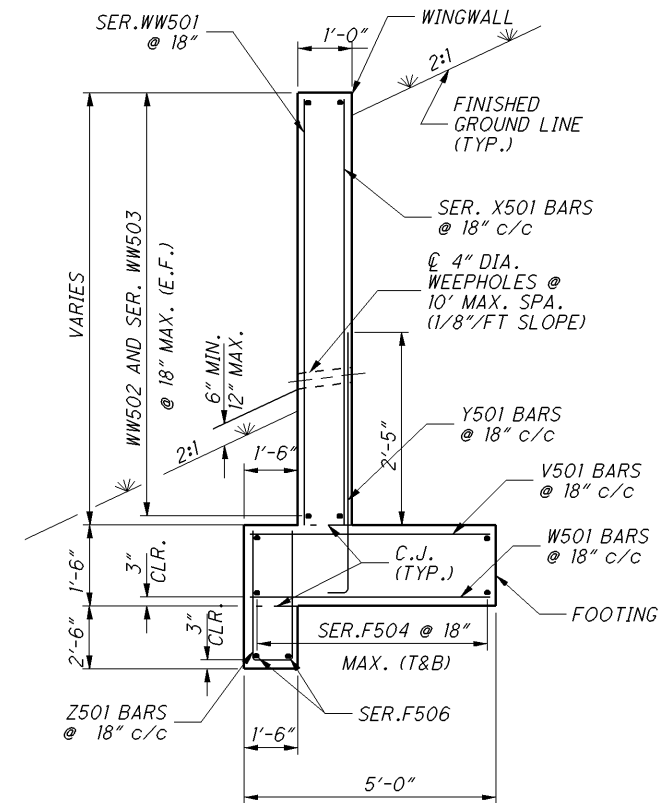
**FOOTING PLAN**  
TYPE A HEADWALL

**NOTES**

1. FOR CULVERT LOCATION PLAN, SEE SHEET 28/66.
2. THE PLANS SPECIFY THE BAR SIZE NUMBER IN THE BAR MARK COLUMN. THE FIRST DIGIT INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, WW501 IS A NO.5 BAR. BAR DIMENSIONS SHOWN ARE OUT TO OUT. PROVIDE EPOXY COATED REINFORCING STEEL.
3. THE LAP SPLICE LENGTHS USED IN THESE DETAILS ARE AS FOLLOWS: 2'-5" FOR #5 BARS; 2'-11" FOR #6 BARS.

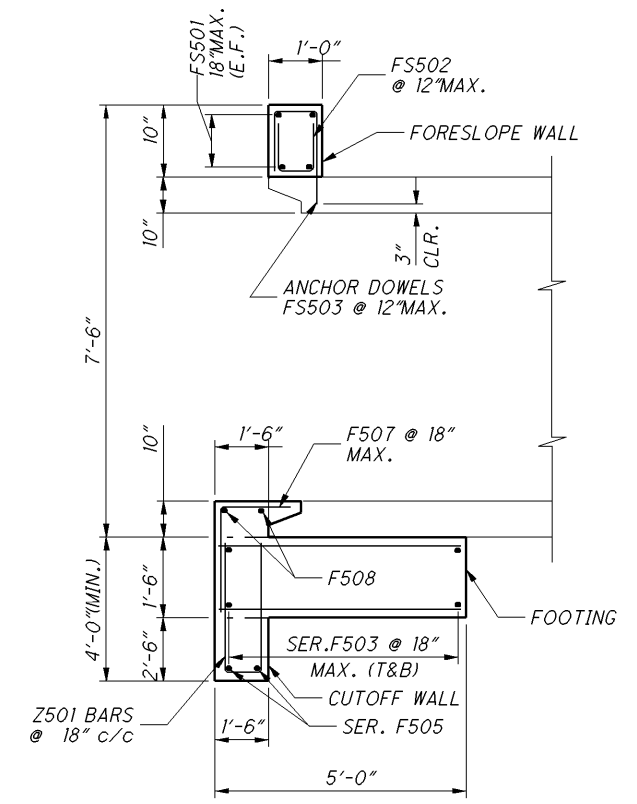
**LEGEND:**

C.J.	CONSTRUCTION JOINT	N.F.	NEAR FACE
CLR.	CLEAR	SER.	SERIES
DIA.	DIAMETER	STR.	STRAIGHT
E.F.	EACH FACE	(T)	TOP
F.F.	FAR FACE	(B)	BOTTOM
MAX.	MAXIMUM	T&B	TOP AND BOTTOM
MIN.	MINIMUM	TYP.	TYPICAL
PEJF	PREFORMED EXPANSION JOINT FILLER	INC.	INCREMENT



**SECTION A-A**

(POROUS BACKFILL NOT SHOWN FOR CLARITY)



**SECTION B-B**

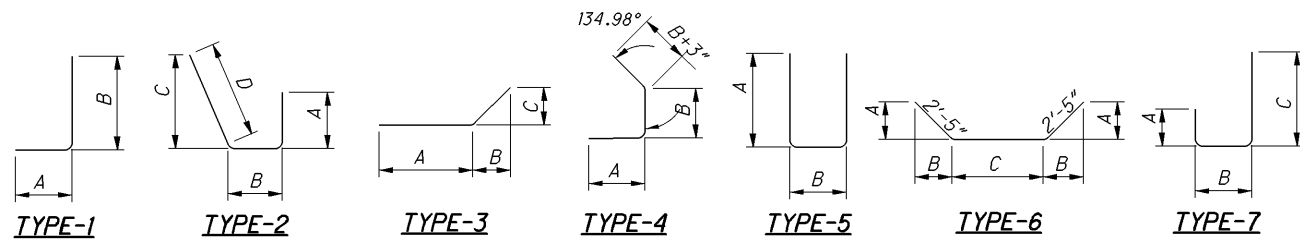
(CULVERT INLET BEVEL SHOWN)

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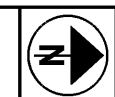
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TYPE A HEADWALL REINFORCING SCHEDULE									
BAR MARK	NUMBER	LENGTH	WEIGHT (LBS.)	TYPE	BAR TYPE DIMENSIONS				INC.
					A	B	C	D	
<b>WINGWALLS</b>									
X501	2	4'- 4"							
	<b>SERIES</b>	<b>TO</b>	86	STR.					0'- 6 "
	of 7	7'- 4"							
X502	4	7'- 4"	31	STR.					
Y501	18	4'- 0"	76	1	0'- 6"	3'- 8"			
WW501	2	4'- 4"							
	<b>SERIES</b>	<b>TO</b>	86	STR.					0'- 6 "
	of 7	7'- 4"							
WW502	12	8'- 2"	103	STR.					
	4	4'- 1"							
WW503	<b>SERIES</b>	<b>TO</b>	52	STR.					4'- 1 "
	of 2	8'- 2"							
WW504	10	3'- 6"	37	2	0'- 7"	0'- 2 "	2'- 1/4"	2'- 10 "	
WW505	4	11'- 1"	47	3	2'- 5"	2'- 10"	8'- 2"		
WW506	2	1'- 1"	3	4	0'- 7"	0'- 2 "			
<b>FOOTING &amp; CUTOFF WALL</b>									
V501	22	4'- 8"	108	STR.					
W501	22	4'- 8"	108	STR.					
Z501	26	8'- 2"	222	5	3'- 7"	1'- 2"			
F501	12	4'- 3"	54	STR.					
F502	16	3'- 4"	56	STR.					
	2	15'- 8"					10'- 8 3/4"		
F503	<b>SERIES</b>	<b>TO</b>	184	6	1'- 9"	1'- 9"	<b>TO</b>		0'- 11 5/8"
	of 5	19'- 6"					14'- 7 1/4"		
	4	7'- 9"							
F504	<b>SERIES</b>	<b>TO</b>	182	STR.					0'- 5 3/4"
	of 5	9'- 8"							
	1	15'- 8"					10'- 8 3/4"		
F505	<b>SERIES</b>	<b>TO</b>	34	6	1'- 9"	1'- 9"	<b>TO</b>		0'- 11 7/8"
	2	16'- 8"					11'- 8 1/2"		
	2	7'- 9"							
F506	<b>SERIES</b>	<b>TO</b>	34	STR.					0'- 5 "
	2	8'- 2"							
F507	9	3'- 5"	33	1	1'- 6"	2'- 0"			
F508	2	11'- 4"	24	STR.					
<b>FORESLOPE WALL</b>									
FS501	4	11'- 4"	48	STR.					
FS502	13	1'- 5"	20	5	0'- 6"	0'- 8"			
FS503	13	2'- 2"	30	7	0'- 6"	0'- 8"	1'- 3"		
		<b>TOTAL</b>	1,658						

THE ABOVE TABLE APPLIES TO BOTH HEADWALLS.



<b>TRU-46-18.49</b>	<b>PID No. 85202</b>	6 / 6	33 66
<b>STRUCTURE DETAILS</b>			
TRU-46-2081 SR 46 OVER SMITH RUN			
TRUMBULL COUNTY STA. 1098+80.22 STA. 1098+92.56			
DESIGNED RMB CHECKED	DRAWN RMB REVISED	REVIEWED DATE	DESIGN AGENCY ODOT - - DISTRICT 4 PLANNING AND ENGINEERING
			STRUCTURE FILE NUMBER 7802803

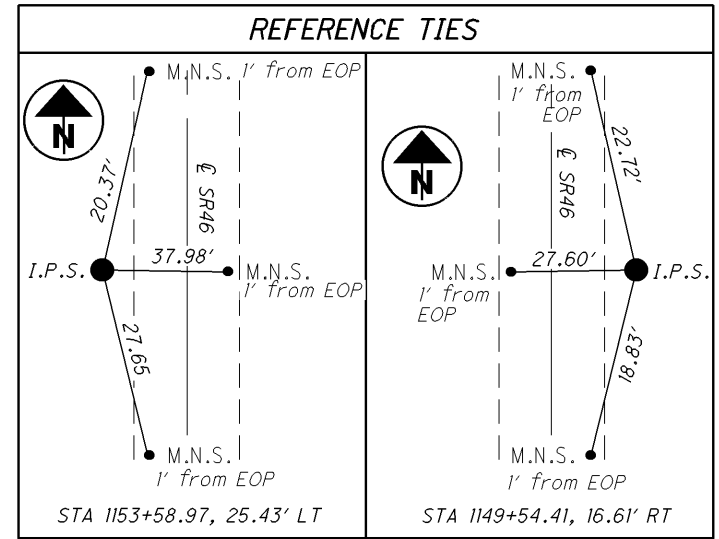
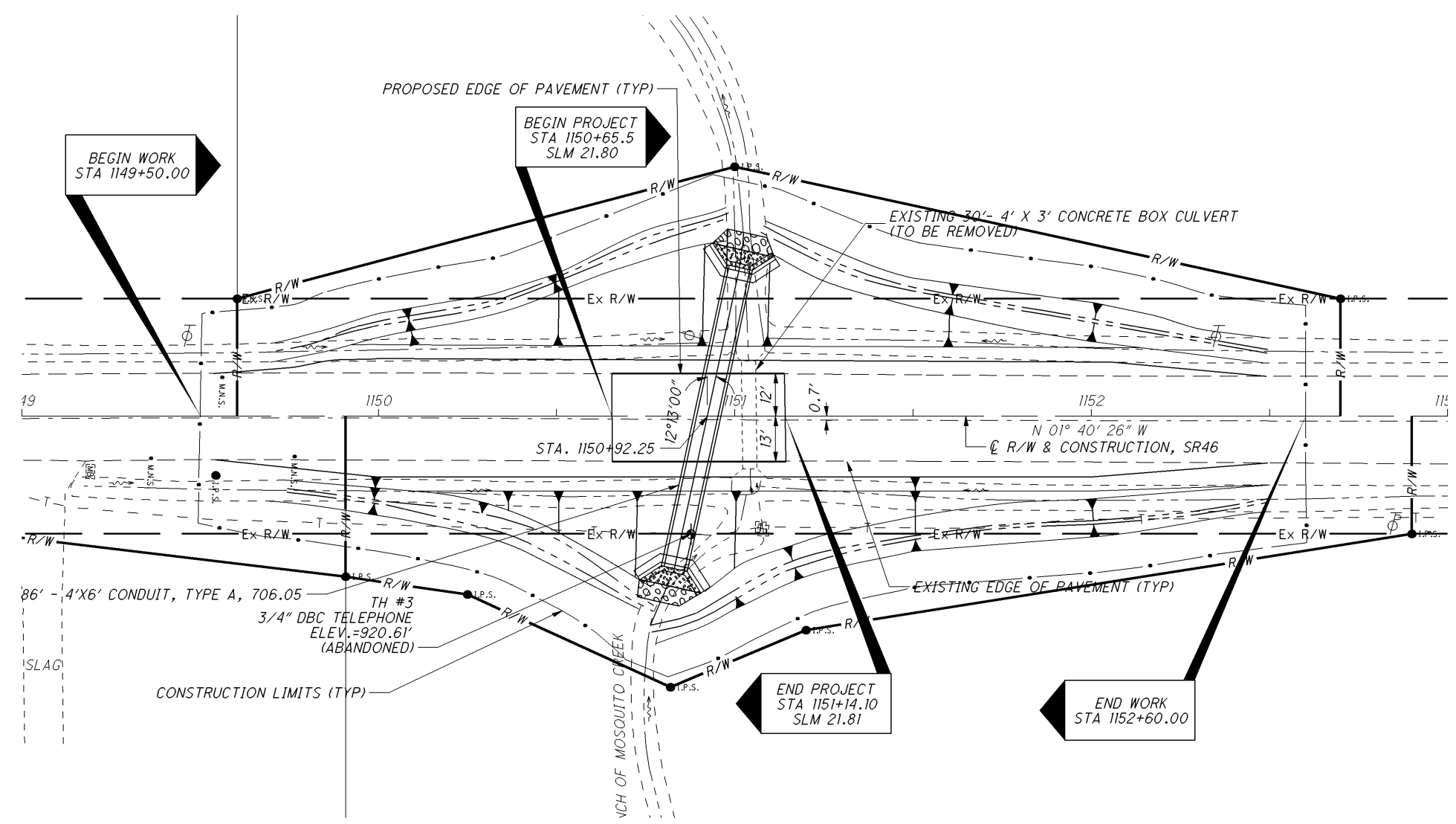


CALCULATED  
RMB  
CHECKED

**PLAN AND PROFILE**  
**TRU-46-21.80**

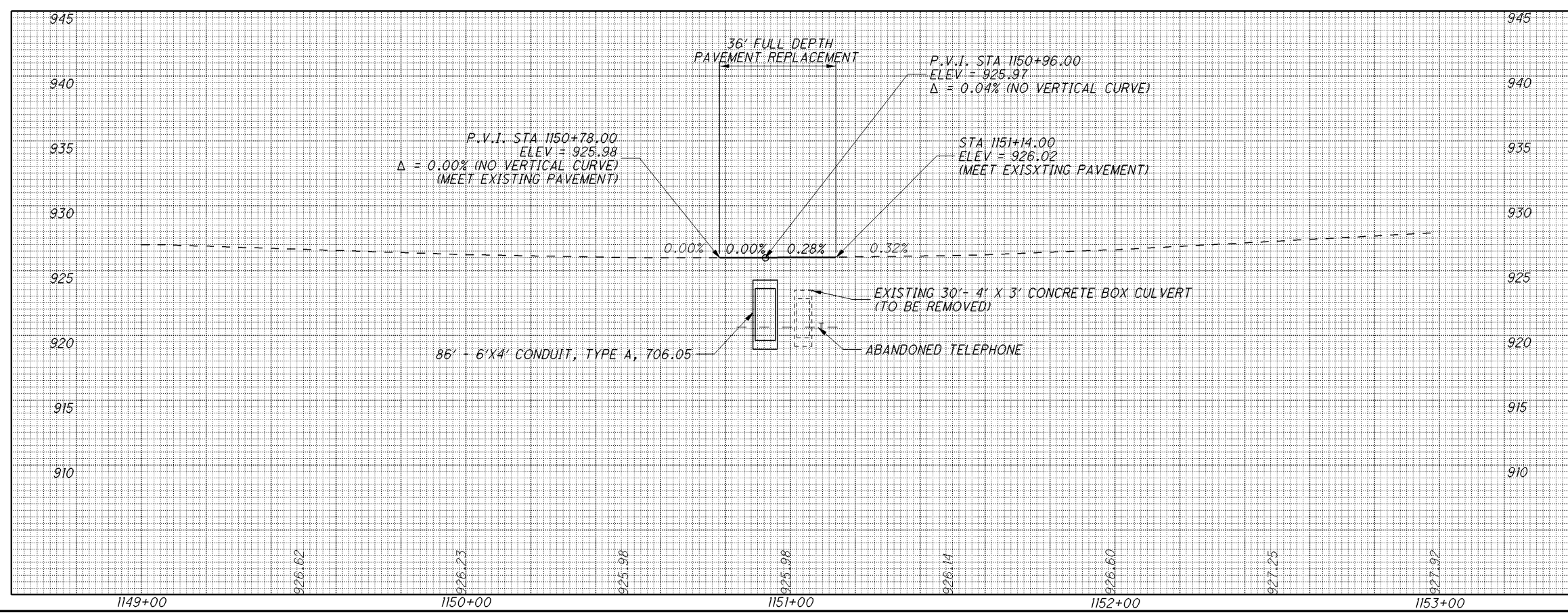
**TRU-46-18.49**

34  
66



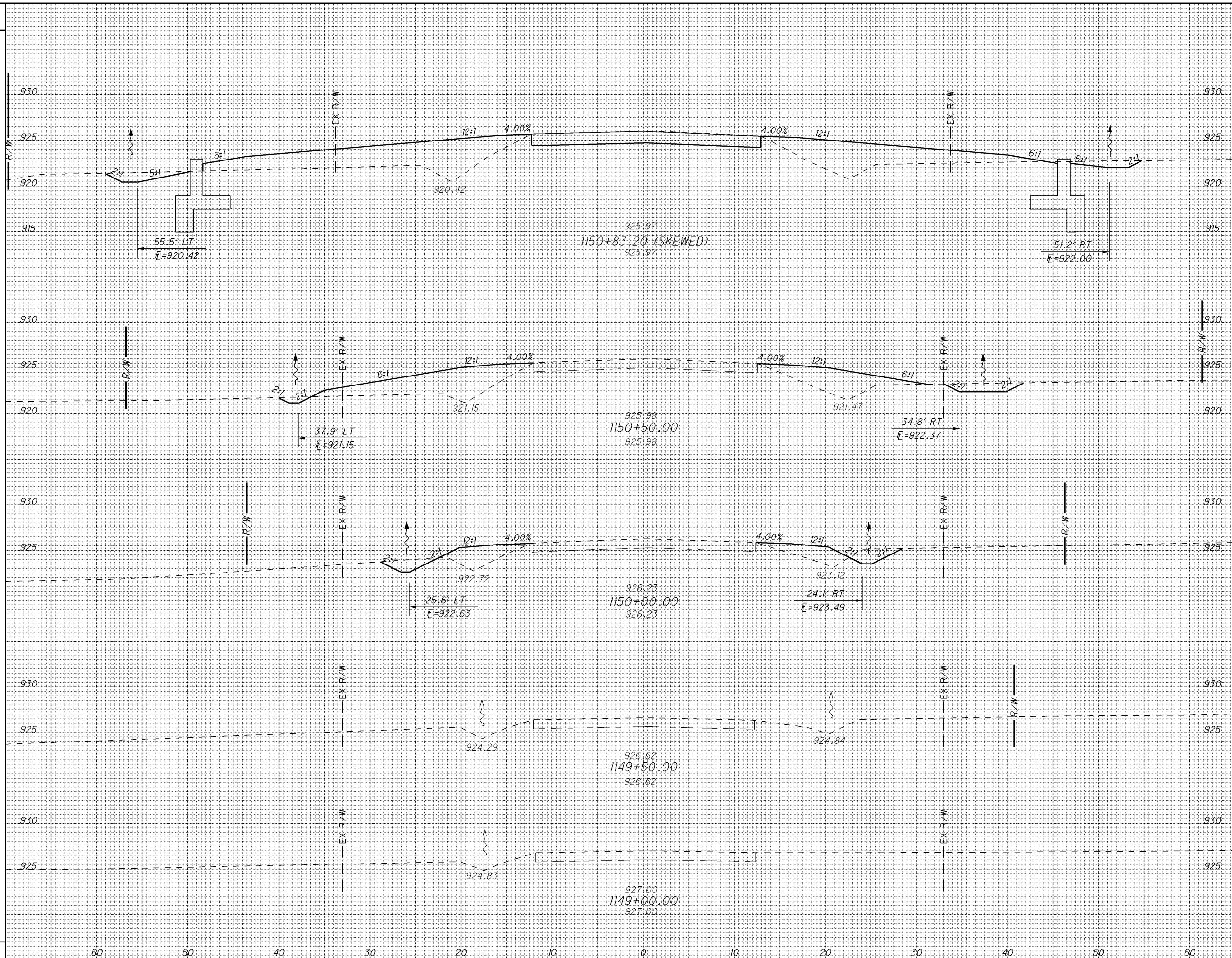
**BENCHMARK DATA**

BM #1	STA. 1149+54.41,	ELEV. 925.52,	OFFSET 16.61' RT, I.P.S.
BM #2	STA. 1149+56.24,	ELEV. 926.43,	OFFSET 10.93' LT, M.N.S.
BM #3	STA. 1153+58.97,	ELEV. 928.70,	OFFSET 25.43' LT, I.P.S.
BM #4	STA. 1153+59.47,	ELEV. 928.58,	OFFSET 12.55' RT, M.N.S.



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SEEDING  
 END WIDTH SO. YDS.  
 84.3  
 185  
 58.8  
 261  
 35.0  
 97  
 543



END AREA	VOLUME	CALCULATED	RMB	CHECKED
9.1	130.1			
7.8	71.7			
10.4	24.6			
37	236			

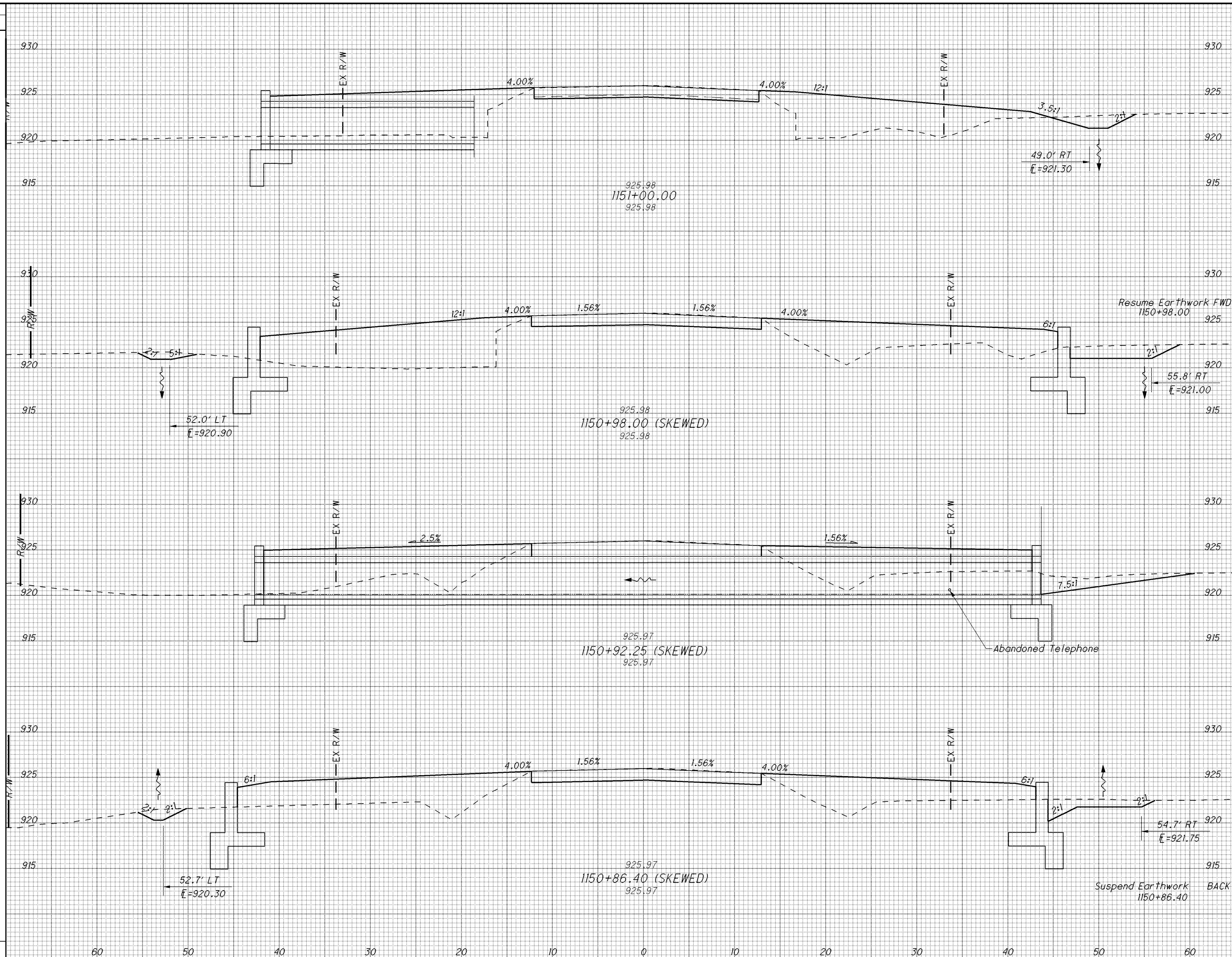
**CROSS SECTIONS (TRU-46-21.80)  
 STA. 1149+00.00 STA. 1150+83.20**

**TRU-46-18.49**

35  
66

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SEEDING  
END SO.  
WIDTH YDS.  
120.7  
22  
80.6  
53  
85.6  
56  
86.2  
30  
161



END AREA	VOLUME		CALCULATED	RMB	CHECKED
	CUT	FILL			
13.2		70.1			
14.8		202.4			
14.7		158.3			
	2	27	1	17	

CROSS SECTIONS (TRU-46-21.80)  
STA. 1150+86.40 TO STA. 1151+00.00

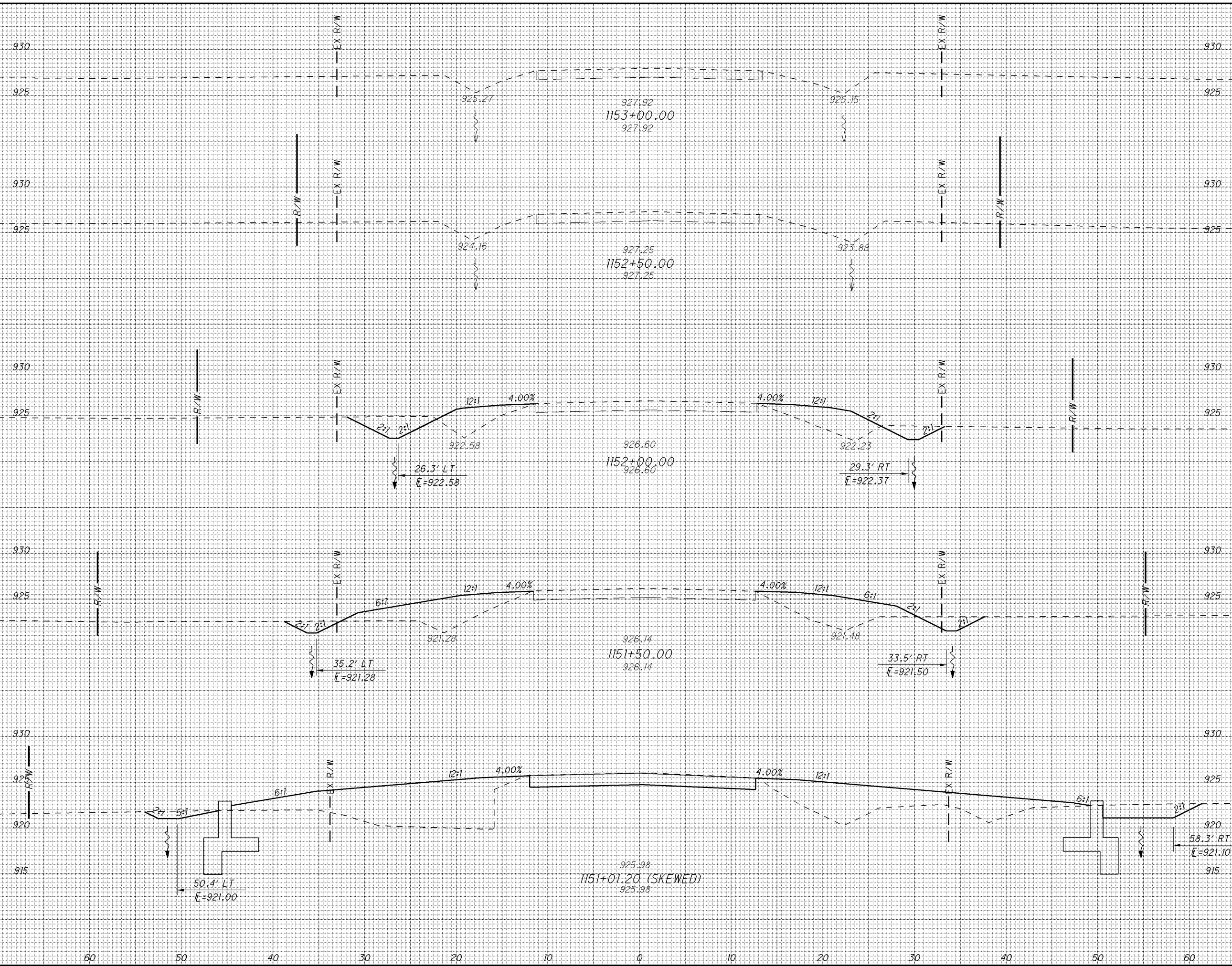
TRU-46-18.49

36  
66

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SEEDING	
END WIDTH	SO. YDS.
790	14
60	50
50	50
40	50
30	50
20	50
10	50
0	50
10	50
20	50
30	50
40	50
50	50
60	50

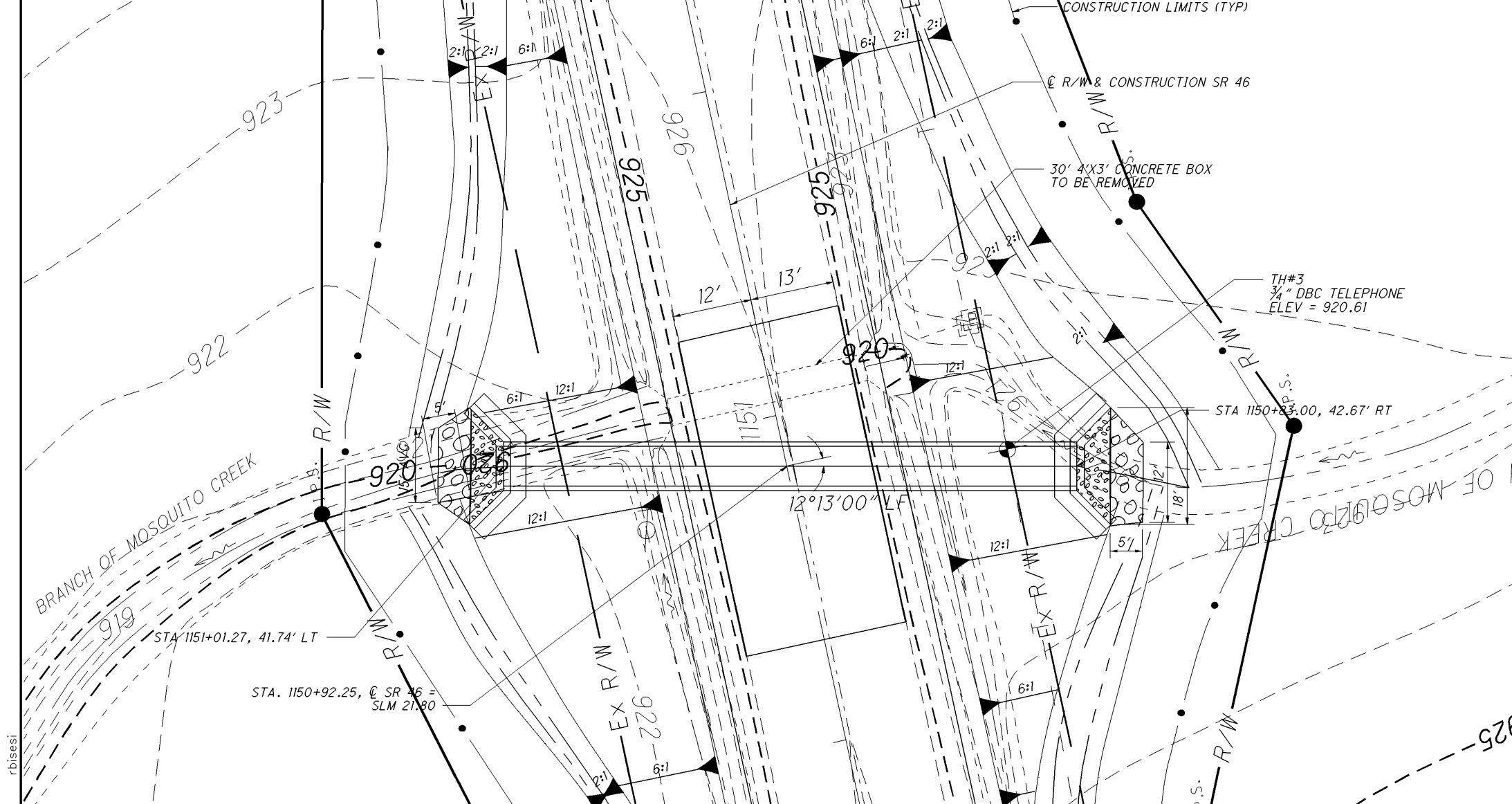


END AREA	VOLUME	CUT		FILL	
		AREA	VOLUME	AREA	VOLUME
930	18	19.3	38.7	28	102
925	28	11.2	71.6	22	220
930	22	12.6	171.7	1	5
925	1	69	363		

CROSS SECTIONS (TRU-46-21.80)  
 STA. 1151+01.20 TO STA. 1153+00.00

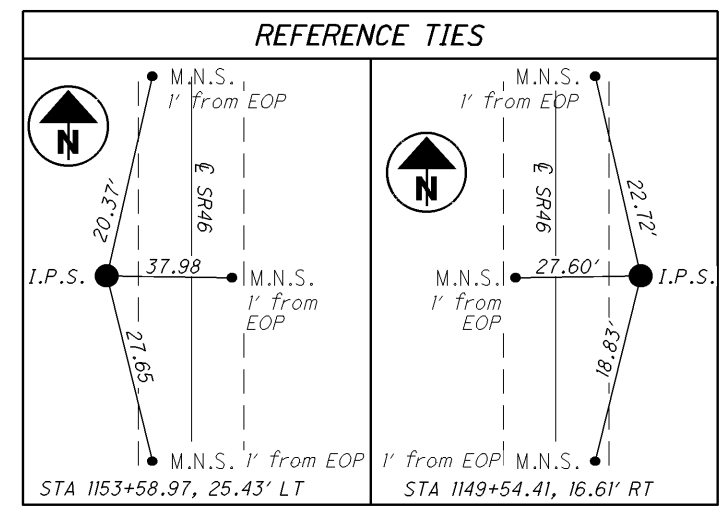
TRU-46-18.49

37  
66



### BENCHMARK DATA

BM #1	STA. 1149+54.41	ELEV. 925.52	OFFSET 16.61' RT, I.P.S.
BM #2	STA. 1149+56.24	ELEV. 926.43	OFFSET 10.93' LT, M.N.S.
BM #3	STA. 1153+58.97	ELEV. 928.70	OFFSET 25.43' LT, I.P.S.
BM #4	STA. 1153+59.47	ELEV. 928.58	OFFSET 12.55' RT, M.N.S.



### NOTES

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

### DESIGN TRAFFIC

2013 ADT = 1700      2011 ADTT = 68  
 2033 ADT = 2200      2033 ADTT = 88  
 DIRECTIONAL DISTRIBUTION = 0.60

### HYDRAULIC DATA

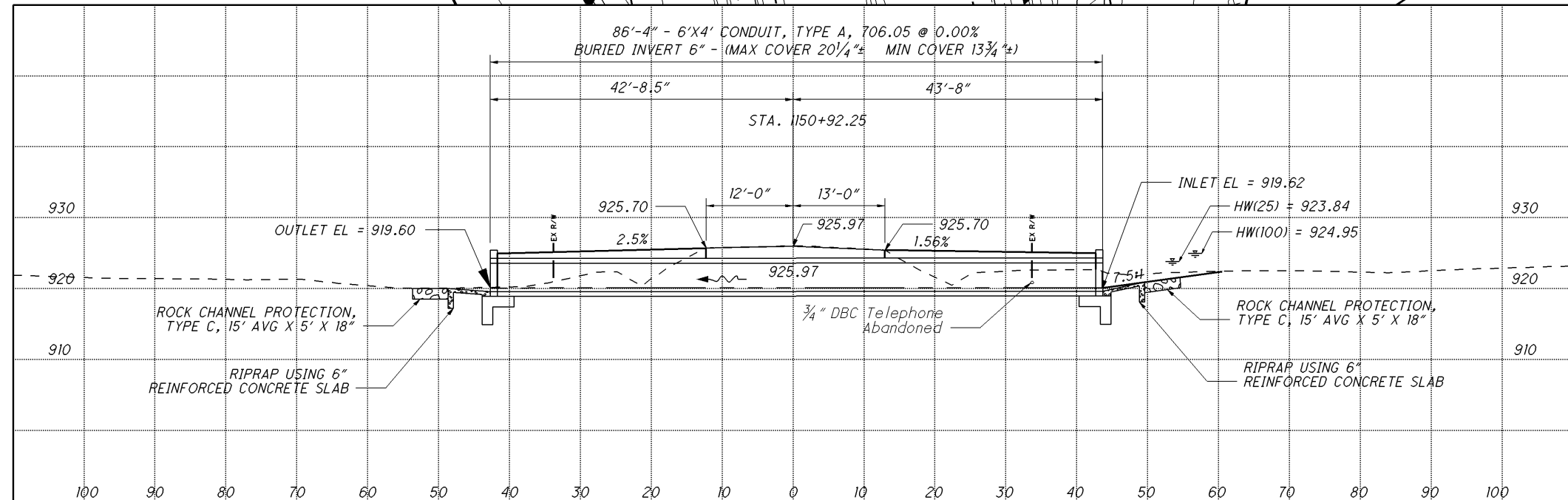
DRAINAGE AREA = 0.33 SQ. MILES  
 Q (25) = 123 CFS      V (25) = 8.71 FT/S  
 Q (100) = 166 CFS      V (100) = 7.93 FT/S

### EXISTING STRUCTURE

TYPE:	CONCRETE BOX CULVERT
SPANS:	4' RISE: 3'
ROADWAY:	24.7' EOP/EOP
SKREW:	0°
ALIGNMENT:	TANGENT
CROWN:	3/16"/FT
DATE BUILT:	1900
DISPOSITION:	TO BE REMOVED
CULVERT FILE NUMBER:	780460790

### PROPOSED STRUCTURE

TYPE:	CONCRETE BOX CULVERT
SPANS:	6' RISE: 4'
ROADWAY:	24.7' EOP/EOP
LOADING:	AS PER CMS 706.05 AND ASTM C1577
SKREW:	12° 13' 00" LF
ALIGNMENT:	TANGENT
CROWN:	0.0156 FT/FT
COORDINATES:	LATITUDE 41° 26' 13" LONGITUDE 80° 44' 14"
CULVERT FILE NUMBER:	780460790



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HORIZONTAL SCALE IN FEET

CULVERT DETAILS

TRU-46-21.80

TRU-46-18.49

1

6

38

66



**DESIGN SPECIFICATIONS**

THIS STRUCTURE CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 4TH EDITION, INCLUDING THE 2007 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

**DESIGN LOADING**

SPANS < OR = 12'  
AS PER CMS 706.05 AND ASTM C1577

**DESIGN DATA**

INTERNAL ANGLE OF FRICTION ( $\phi$ ) = 30 DEGREES  
COEFFICIENT OF FRICTION ( $\mu$ ) = 0.30  
UNIT WEIGHT OF SOIL = 120 PCF  
UNIT WEIGHT OF CONCRETE = 150 PCF  
SLOPE OF BACKFILL = 2:1 (TYPE A & B HEADWALLS ONLY)

MAXIMUM FOUNDATION BEARING PRESSURE = 2000 P.S.F.

CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 PSI (FOOTING, WINGWALL AND FORESLOPE WALL)

REINFORCING STEEL - ASTM A615, A616, OR A617  
GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI (ALL REINFORCING SHALL BE EPOXY COATED)

**FORESLOPE WALL ANCHOR DOWELS**

ANCHOR PER CMS 510 WITH NONSHRINK, NONMETALLIC GROUT CONFORMING TO CMS 705.20 AND TO A DEPTH OF 5". PAYMENT FOR DOWEL HOLES, GROUT AND INSTALLATION SHALL BE INCLUDED WITH ITEM 511.

AS AN ALTERNATIVE TO RESIN BONDING, THREADED INSERTS OR NONPROTRUDING MECHANICAL CONNECTORS CAST INTO THE CULVERT BY THE MANUFACTURER MAY BE USED PROVIDED THEY CAN RESIST AN ULTIMATE PULL-OUT STRENGTH OF 12 KIPS AND MAINTAIN A MINIMUM COVER OF 3 INCHES AT THE BOTTOM OF THE CULVERT SLAB. MECHANICAL CONNECTORS MUST PROVIDE AN "L-SHAPED" BAR INSIDE THE CULVERT WITH A MINIMUM HORIZONTAL LENGTH OF 12 INCHES. PAYMENT FOR INSERTS OR MECHANICAL CONNECTORS SHALL BE INCLUDED WITH ITEM 603.

**POROUS BACKFILL**

POROUS BACKFILL WITH FILTER FABRIC 1'-6" THICK SHALL BE PLACED BEHIND THE WINGWALLS ONLY AND SHALL EXTEND TO 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. WEEPHOLES SHALL BE PLACED 6" TO 12" ABOVE THE NORMAL WATER ELEVATION OR GROUND LINE AND SHALL HAVE A MAXIMUM SPACING OF 10'-0". A MINIMUM OF ONE WEEPHOLE SHALL BE PROVIDED PER WINGWALL.

**UNSUITABLE SOILS**

THE FOLLOWING ITEMS AND QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER TO ADDRESS UNSUITABLE SOILS ENCOUNTERED IN THE AREA UNDER THE PROPOSED BOX CULVERT.

- ITEM 203 - EXCAVATION, 36 CU YD
- ITEM 203 - GRANULAR MATERIAL, TYPE C (703.16), 36 CU YD
- ITEM 204 - GEOTEXTILE FABRIC, TYPE D, 71 SQ YD

**PREFORMED EXPANSION JOINT FILLER**

PREFORMED EXPANSION JOINT FILLER (PEJF) CONFORMING TO CMS 705.03, 1 INCH THICK, SHALL BE PLACED ABOVE THE FOOTING BETWEEN THE SIDES OF THE BOX CULVERT AND THE ENDS OF THE WINGWALLS. PAYMENT FOR MATERIALS AND INSTALLATION SHALL BE INCLUDED WITH ITEM 516, 1" PREFORMED EXPANSION JOINT FILLER.

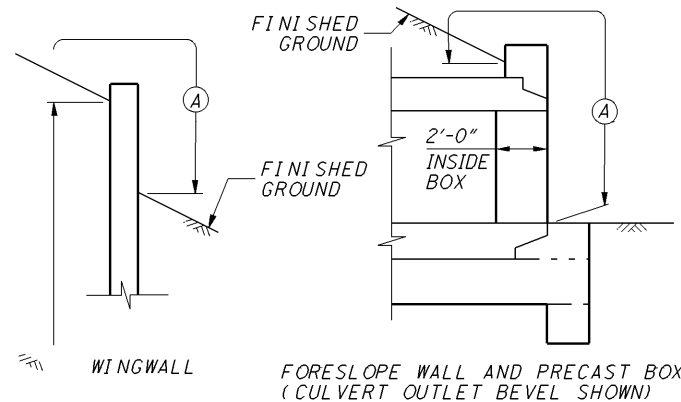
**ITEM 511 WINGWALLS, HEADWALLS, AND FOOTERS FOR 603 ITEMS**

FOR ITEMS 706.05, 706.051, 706.052 AND 706.053 WITH A CAST-IN-PLACE WINGWALL, HEADWALL, OR FOOTER, A PRECAST ALTERNATIVE MAY BE FURNISHED PER 602.03. THE PRECAST ALTERNATIVE WILL MEET THE CAST-IN-PLACE STRUCTURAL DESIGN LOADINGS, DESIGN HEIGHT & DESIGN LENGTH DIMENSIONS.

FULL COMPENSATION FOR THE PRECAST WINGWALL, HEADWALL, OR FOOTER IS THE NUMBER OF CUBIC YARDS OF ITEM 511 OR SUPPLEMENTAL SPECIFICATION 898, AND POUNDS OF ITEM 509 FOR THE CORRESPONDING CAST-IN-PLACE STRUCTURE

**SEALING OF FORESLOPE WALL AND WINGWALLS**

ALL EXPOSED FORESLOPE WALL AND WINGWALL CONCRETE SHALL BE SEALED WITH EPOXY-URETHANE SEALER. THE LIMITS SHALL BE AS SHOWN IN THE DIAGRAMS BELOW. PAYMENT FOR THE EPOXY-URETHANE SEALER SHALL BE PER ITEM 512, SEALING OF CONCRETE SURFACES (EPOXY-URETHANE).



(A) - SEAL ENTIRE CONCRETE SURFACE AREA (INCLUDING ENDS)

**PAVEMENT RESTORATION FOR CULVERT INSTALLATIONS AND/OR REMOVALS**

THE FOLLOWING QUANTITY HAS BEEN PROVIDED FOR PAVEMENT RESTORATION FOLLOWING CULVERT INSTALLATION AND/OR REMOVAL OF BOX CULVERTS.

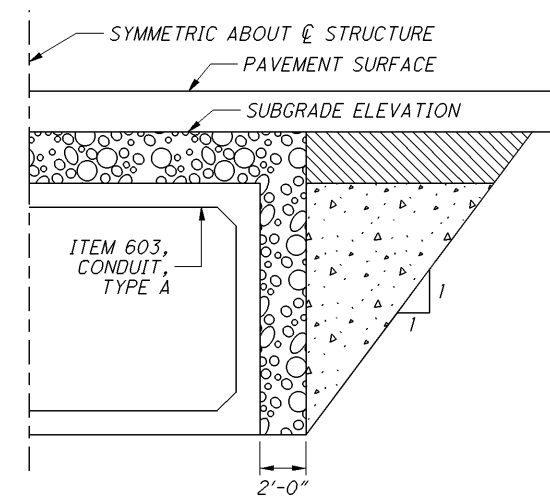
- ITEM 202 PAVEMENT REMOVED, ASPHALT 135 SQ. YD.
- ITEM 254 SUBGRADE COMPACTION 125 SQ. YD.
- ITEM 301 ASPHALT CONCRETE BASE, PG64-22 46 CU. YDS.
- ITEM 304 AGGREGATE BASE, AS PER PLAN 21 CU. YDS.
- ITEM 408 PRIME COAT 50 GAL.
- ITEM 448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2 PG 64-22 7 CU. YDS.
- ITEM SPECIAL MISC.: TRACKLESS TACK COAT @ 0.15 GAL/SQ YD 21 GAL
- ITEM SPECIAL MISC.: TRACKLESS TACK COAT @ 0.04 GAL/SQ YD 6 GAL

THE ABOVE QUANTITY IS BASED ON A 301 THICKNESS OF 17 INCHES ALONG WITH A WIDTH OF 25' X 50' FOR CULVERT TRU-46-21.80. PROVIDE ANY MATERIALS USED OUTSIDE THE LIMITS STATED ABOVE AT NO ADDITIONAL COST.

**CONDUIT BACKFILL REQUIREMENTS**

LOW STRENGTH MORTAR BACKFILL AND EMBANKMENT (EMBANKMENT WILL BE OMITTED IF THE SUBGRADE ELEVATION IS AT THE TOP OF THE CONDUIT) WILL BE PLACED AS SHOWN (IN THE DETAIL) AND LATERALLY TO THE EDGE OF THE SHOULDER. PAYMENT FOR THIS WORK WILL BE MADE ONLY FOR MATERIAL PLACED TO THE LIMITS SHOWN. ADDITIONAL PAYMENT WILL NOT BE MADE FOR WORK PERFORMED AND MATERIAL PLACED OUTSIDE OF THESE LIMITS. THE EXCAVATION REQUIRED FOR THIS WORK WILL BE INCLUDED IN ITEM 603 FOR PAYMENT. THE FOLLOWING ITEMS HAVE BEEN INCLUDED IN THE ESTIMATED QUANTITIES FOR THIS

**ITEM 613 - LOW STRENGTH MORTAR BACKFILL, 91 CU YD**



- BACKFILL AS PER CMS 603 PAYMENT INCLUDED IN ITEM 603, CONDUIT, TYPE A
- ITEM 613, LOW STRENGTH MORTAR BACKFILL
- ITEM 203, EMBANKMENT

**CULVERT IDENTIFICATION SIGNS**

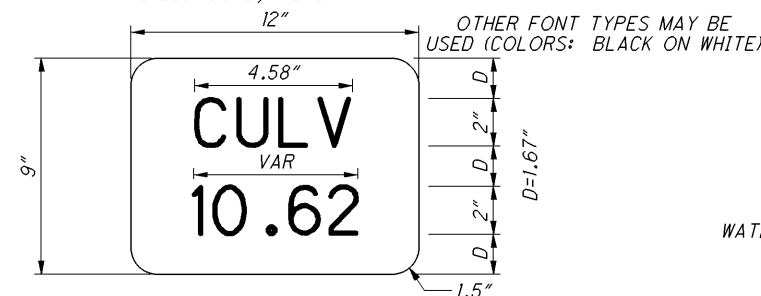
CULVERT IDENTIFICATION SIGNS SHOWN BELOW WILL BE PLACED ON EACH APPROACH OFF THE RIGHT SHOULDER, FACING TRAFFIC, AND BEHIND THE GUARDRAIL IF APPLICABLE. A QUANTITY OF ONE SIGN PER APPROACH WILL BE INSTALLED. THE SIGNS WILL HAVE A NON-REFLECTIVE WHITE SHEETING BACKGROUND & ONLY THE SLM OF THE CULVERT.

THE SIGNS WILL BE MOUNTED ON NEW NO. 2 POSTS AND WILL BE INSTALLED AS PER STANDARD CONSTRUCTION DRAWING TC-41.20, MOST CURRENT REVISION. EACH POST WILL BE 7.5' IN LENGTH.

INSTALL SIGNS FOR THE FOLLOWING CULVERT: TRU-46-21.80

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED FOR EACH APPROACH:

- ITEM 630 - SIGN, FLAT SHEET, 730.20, 0.75 SQ FT
- ITEM 630 - GROUND MOUNTED SUPPORT, NO. 2 POST, 7.5 FT
- ITEM 630 - REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL, 1 EACH
- ITEM 630 - REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL, 1 EACH

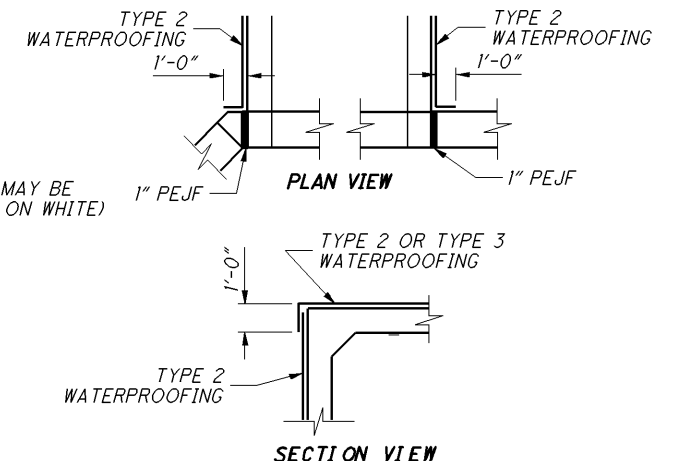


**WATERPROOFING**

TYPE 2 WATERPROOFING, PER CMS 512.08 AND 711.25, SHALL EXTEND VERTICALLY DOWN THE ENTIRE SIDES OF THE PRECAST CULVERT SECTIONS FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512, TYPE 2 WATERPROOFING.

IF PAVEMENT IS NOT PLACED DIRECTLY ON TOP OF THE CULVERT, TYPE 2 WATERPROOFING, PER CMS 512.08 AND 711.25 SHALL BE APPLIED TO THE ENTIRE TOP SURFACE OF THE PRECAST CULVERT SECTIONS AND SHALL EXTEND ONE FOOT VERTICALLY DOWN THE SIDES FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512, TYPE 2 WATERPROOFING.

IF PAVEMENT IS TO BE USED DIRECTLY ON TOP OF THE CULVERT, TYPE 3 WATERPROOFING, PER CMS 512.08 AND 711.29 SHALL BE APPLIED TO THE ENTIRE TOP SURFACE OF THE PRECAST CULVERT SECTIONS AND SHALL EXTEND ONE FOOT VERTICALLY DOWN THE SIDES FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE PAVEMENT. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512, TYPE 3 WATERPROOFING.



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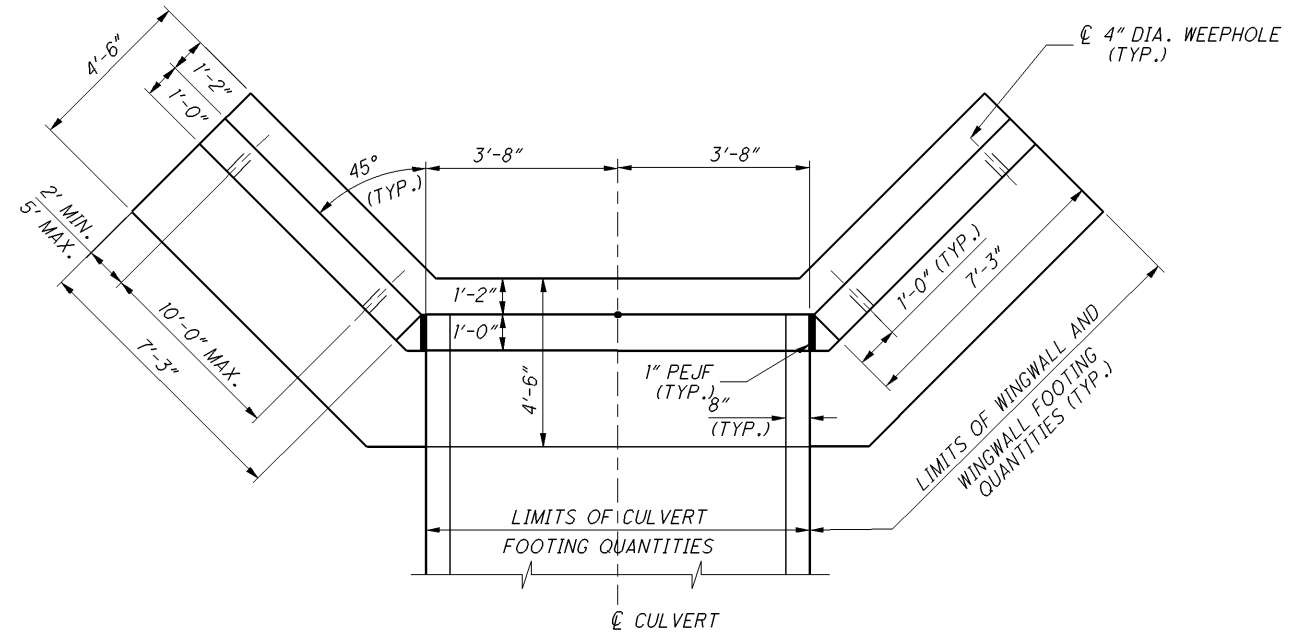
CALC: RMB DATE: 10/11/2012  
CHECKED: DATE:

**ESTIMATED QUANTITIES (01/STR/PV)**

ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUT.	PIERS	SUPER.	GEN.	SEE SHEET
202	11000	LUMP		STRUCTURE REMOVED					
202	23010	135	SQ YD	PAVEMENT REMOVED, ASPHALT				135	
203	10000	36	CU YD	EXCAVATION				36	
203	35120	36	CU YD	GRANULAR MATERIAL, TYPE C				36	
204	10000	125	SQ YD	SUBGRADE COMPACTION				125	
204	50000	71	SQ YD	GEOTEXTILE FABRIC				71	
301	46000	46	CU YD	ASPHALT CONCRETE BASE, PG64-22				46	
304	20001	21	CU YD	AGGREGATE BASE, AS PER PLAN				21	
408	10000	50	GALLON	PRIME COAT				50	
448	46050	7	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22				7	
503	11100	LUMP		COFFERDAMS AND EXCAVATION BRACING					
503	21300	LUMP		UNCLASSIFIED EXCAVATION					
509	10000	2552	POUND	EPOXY COATED REINFORCING STEEL				2552	
511	46000	7	CU YD	CLASS C CONCRETE, RET WALL/WINGWALL, ABOVE FTG				7	
511	46500	19	CU YD	CLASS C CONCRETE, FOOTING				19	
511	46600	1	CU YD	CLASS C CONCRETE, HEADWALL				1	
512	10100	30	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)				30	
512	33000	103	SQ YD	TYPE 2 WATERPROOFING				103	
512	33010	90	SQ YD	TYPE 3 WATERPROOFING				90	
516	13600	26	SQ FT	1" PREFORMED EXPANSION JOINT FILLER				26	
601	11000	17	SQ YD	RIPRAP USING 6" REINFORCED CONCRETE SLAB				17	
601	32204	8	CU YD	ROCK CHANNEL PROTECTION, TYPE C WITH FABRIC FILTER				8	
603	94700	87	FT	6' X 4' CONDUIT, TYPE A, 706.05				87	
613	41200	91	CU YD	LOW STRENGTH MORTAR BACKFILL				91	
630	02100	15	FT	GROUND MOUNTED SUPPORT, NO. 2 POST				15	
630	80100	2	SQ FT	SIGN, FLAT SHEET ,730.20				2	
630	84900	2	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL				2	
630	86002	2	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL				2	
SPEC	69098900	27	GALLON	MISC.: TRACKLESS TACK COAT				27	56

CULVERT ESTIMATED QUANTITIES  
TRU-46-21.80

TRU-46-18.49

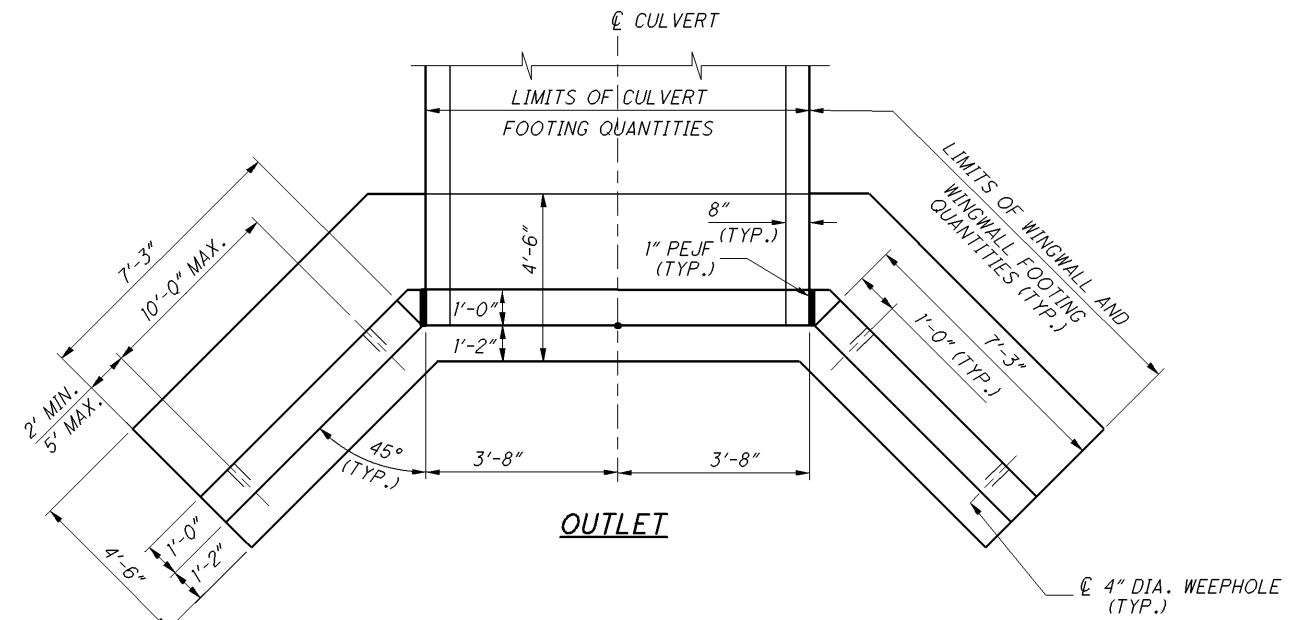


**INLET**

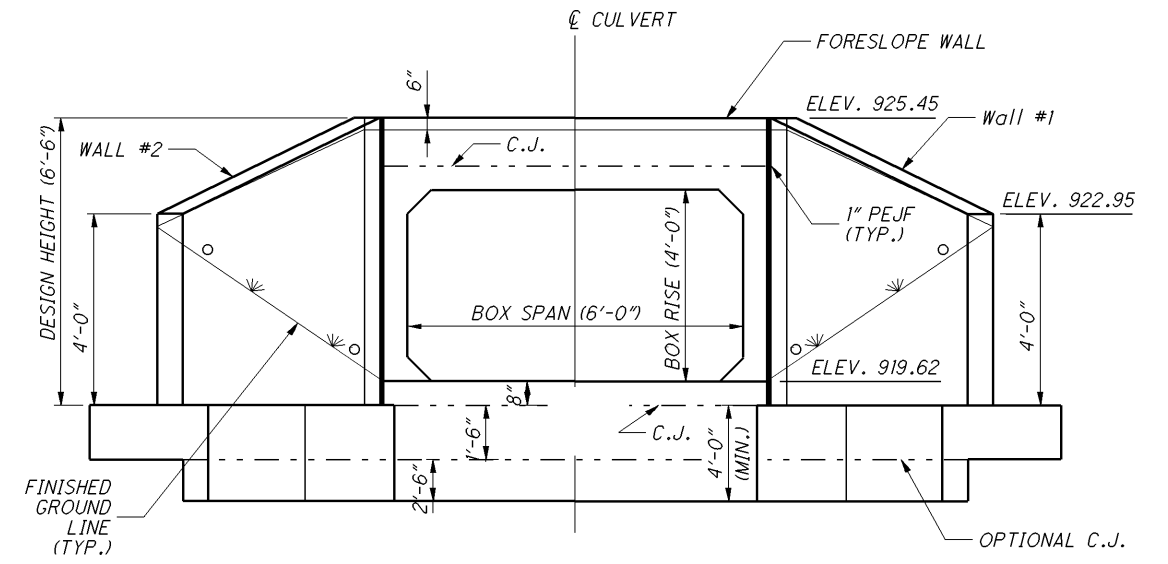
**PLAN**

TYPE A HEADWALL

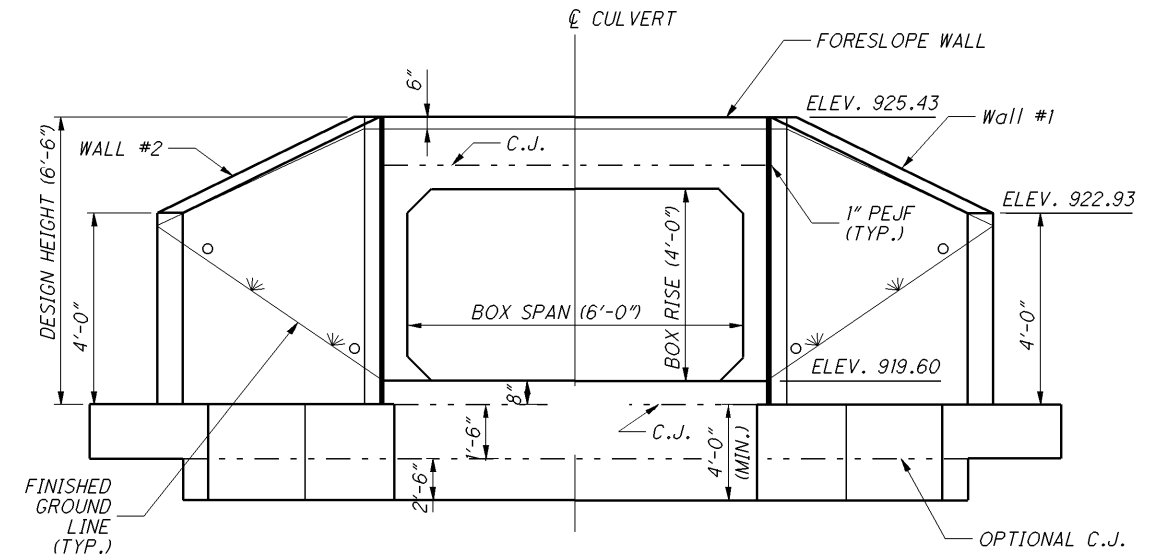
**CULVERT & WINGWALL LAYOUT**



**OUTLET**



**INLET ELEVATION**



**OUTLET ELEVATION**

CALCULATED  
RMB  
CHECKED

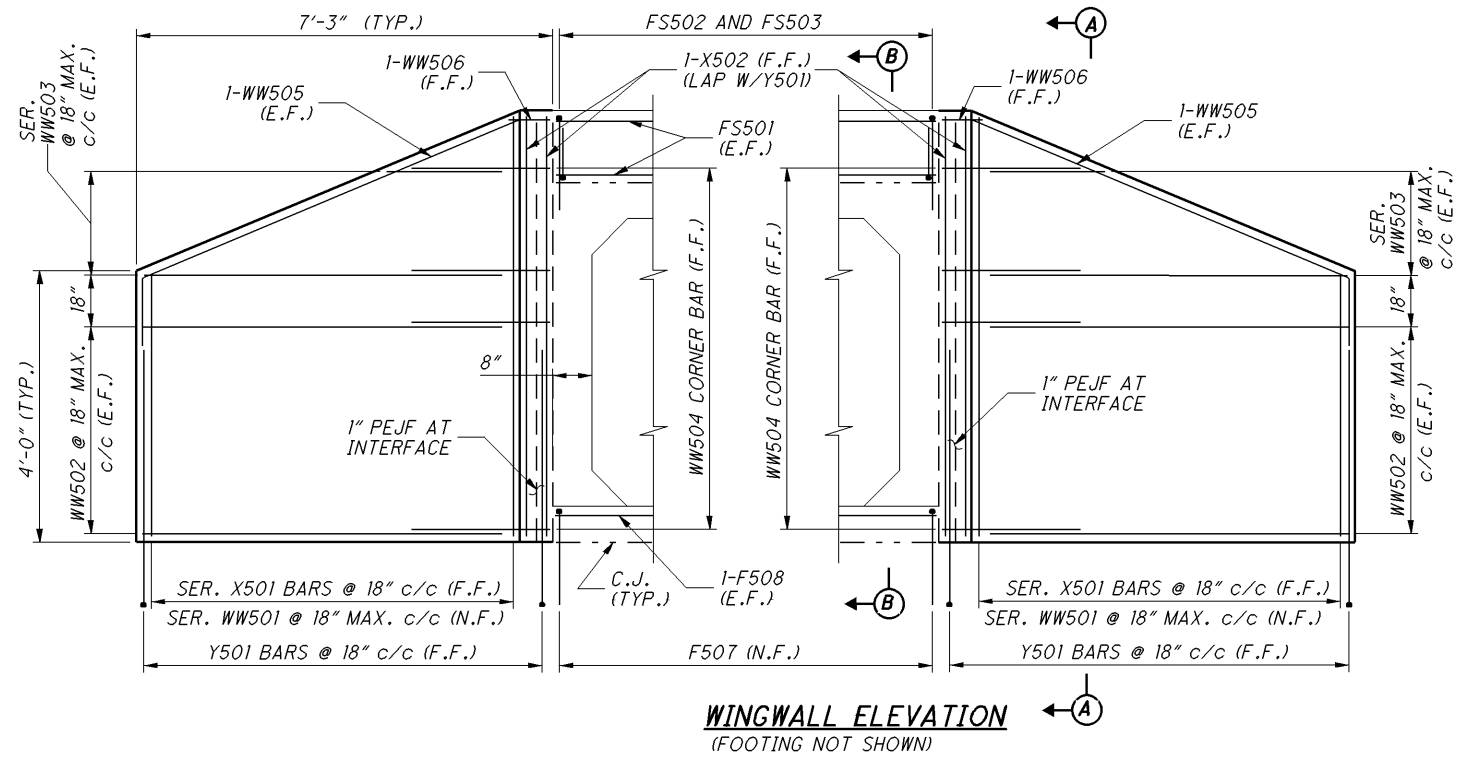
**CULVERT DETAILS  
TRU-21.80**

**TRU-46-18.49**

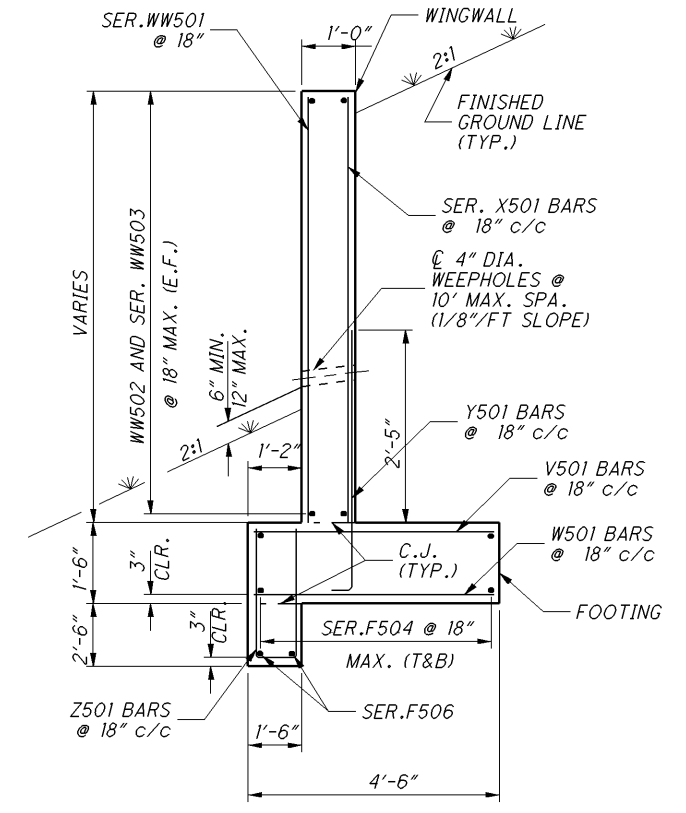
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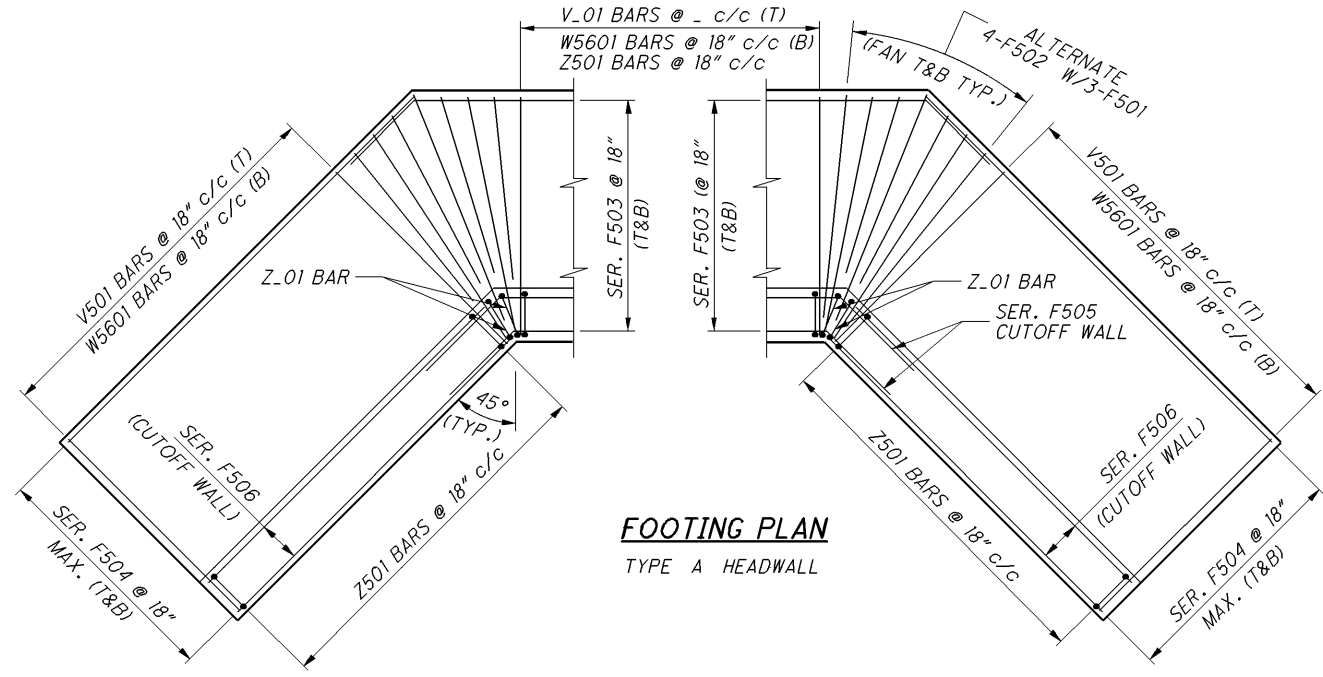
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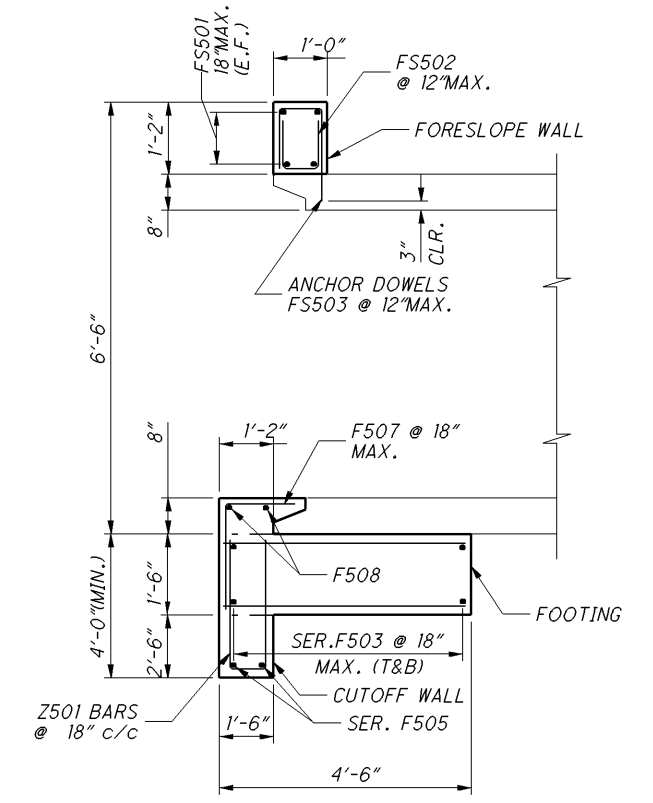
**WINGWALL ELEVATION**  
(FOOTING NOT SHOWN)



**SECTION A-A**  
(POROUS BACKFILL NOT SHOWN FOR CLARITY)



**FOOTING PLAN**  
TYPE A HEADWALL



**SECTION B-B**  
(CULVERT INLET BEVEL SHOWN)

**NOTES**

1. FOR CULVERT LOCATION PLAN, SEE SHEET 38/66.
2. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, WW501 IS A NO.5 BAR. BAR DIMENSIONS SHOWN ARE OUT TO OUT. ALL REINFORCING STEEL SHALL BE EPOXY COATED.
3. THE LAP SPLICE LENGTHS USED IN THESE DETAILS ARE AS FOLLOWS: 2'-5" FOR #5 BARS; 2'-11" FOR #6 BARS.

**LEGEND:**

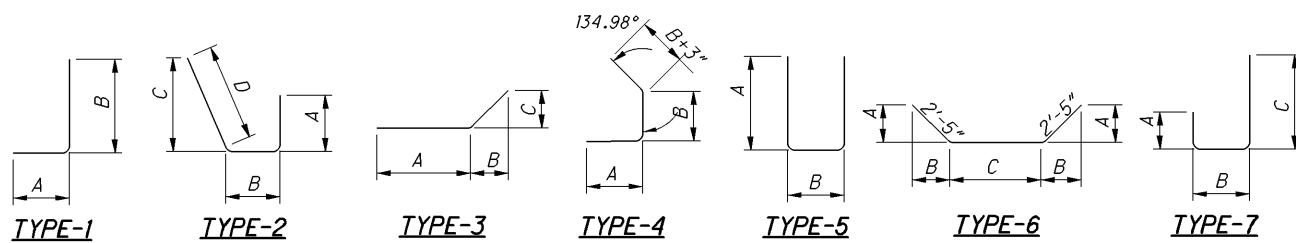
C.J.	CONSTRUCTION JOINT	N.F.	NEAR FACE
CLR.	CLEAR	SER.	SERIES
DIA.	DIAMETER	STR.	STRAIGHT
E.F.	EACH FACE	(T)	TOP
F.F.	FAR FACE	(B)	BOTTOM
MAX.	MAXIMUM	T&B	TOP AND BOTTOM
MIN.	MINIMUM	TYP.	TYPICAL
PEJF	PREFORMED EXPANSION JOINT FILLER	INC.	INCREMENT

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TYPE A HEADWALL REINFORCING SCHEDULE

BAR MARK	NUMBER	LENGTH	WEIGHT (LBS.)	TYPE	BAR TYPE DIMENSIONS				INC.
					A	B	C	D	
<b>WINGWALLS</b>									
X501	2	3'- 10"							
	SERIES	TO	64	STR.					0'- 6 "
	of 6	6'- 4"							
X502	4	6'- 4"	27	STR.					
Y501	16	4'- 0"	68	1	0'- 6"	3'- 8"			
WW501	2	3'- 10"							
	SERIES	TO	64	STR.					0'- 6 "
	of 6	6'- 4"							
WW502	12	6'- 11"	87	STR.					
	4	3'- 6"							
WW503	SERIES	TO	44	STR.					3'- 5 "
	of 2	6'- 11"							
WW504	10	3'- 6"	37	2	0'- 7"	0'- 2 "	2'- 1/4"	2'- 10 "	
WW505	4	9'- 9"	41	3	2'- 5"	2'- 4"	6'- 11"		
WW506	2	1'- 1"	3	4	0'- 7"	0'- 2 "			
<b>FOOTING &amp; CUTOFF WALL</b>									
V501	18	4'- 2"	79	STR.					
W501	18	4'- 2"	79	STR.					
Z501	22	8'- 2"	188	5	3'- 7"	1'- 2"			
F501	12	3'- 10"	48	STR.					
F502	16	2'- 11"	49	STR.					
	2	11'- 7"					6'- 8 1/4"		
F503	SERIES	TO	112	6	1'- 9"	1'- 9"	TO		1'- 1 3/4"
	of 4	15'- 1"					10'- 1 1/2"		
	4	6'- 8"							
F504	SERIES	TO	126	STR.					0'- 6 3/4"
	of 4	8'- 4"							
	1	11'- 7"					6'- 8 1/4"		
F505	SERIES	TO	26	6	1'- 9"	1'- 9"	TO		0'- 11 1/2"
	2	12'- 7"					7'- 7 3/4"		
	2	6'- 8"							
F506	SERIES	TO	29	STR.					0'- 5 "
	2	7'- 1"							
F507	6	2'- 11"	19	1	1'- 2"	1'- 10"			
F508	2	7'- 0"	15	STR.					
<b>FORESLOPE WALL</b>									
FS501	4	7'- 0"	30	STR.					
FS502	8	2'- 1"	18	5	0'- 10"	0'- 8"			
FS503	8	2'- 8"	23	7	0'- 10"	0'- 8"	1'- 5"		
		<b>TOTAL</b>	<b>1,276</b>						

THE ABOVE TABLE APPLIES TO BOTH HEADWALLS.



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REF NO.	SHEET NO.	STATION TO STATION				202	204	301	304	408																																
						GUARDRAIL REMOVED FT	SUBGRADE COMPACTION (31' X 60') / 9 SQ YD	ASPHALT CONCRETE BASE, PG64-22 (30' X 0.75' X 60') / 27 CU YD	AGGREGATE BASE, AS PER PLAN (31' X 0.5' X 60') / 27 CU YD	PRIME COAT (30' X 60' X 0.40) / 9 GALLON																																
R1		13+47.04	LT	TO	16+68.53	LT																																				
R2		13+45.74	RT	TO	17+48.76	RT																																				
P1		14+70		TO	15+30.00		206.67	50.00	34.44	80.00																																
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>						<b>725</b>	<b>0</b>	<b>207</b>	<b>50</b>	<b>35</b>	<b>80</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

**SUBSUMMARY (TRU-46-2627)**

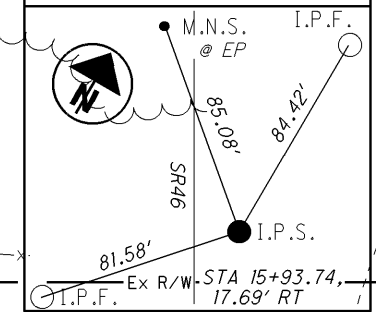
**TRU-46-18.49**

CALCULATED  
LMP  
CHECKED

**BENCHMARK DATA**

BM #1 STA. 13+93.61, ELEV. 959.03, OFFSET 17.61', RT  
 BM #2 STA. 15+68.18, ELEV. 954.63, OFFSET 59.79', LT  
 BM #3 STA. 15+93.74, ELEV. 961.09, OFFSET 17.69', RT  
 BM #4 STA. 16+66.63, ELEV. 954.02, OFFSET 60.27', RT

**REFERENCE TIES**



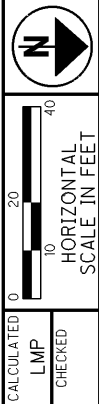
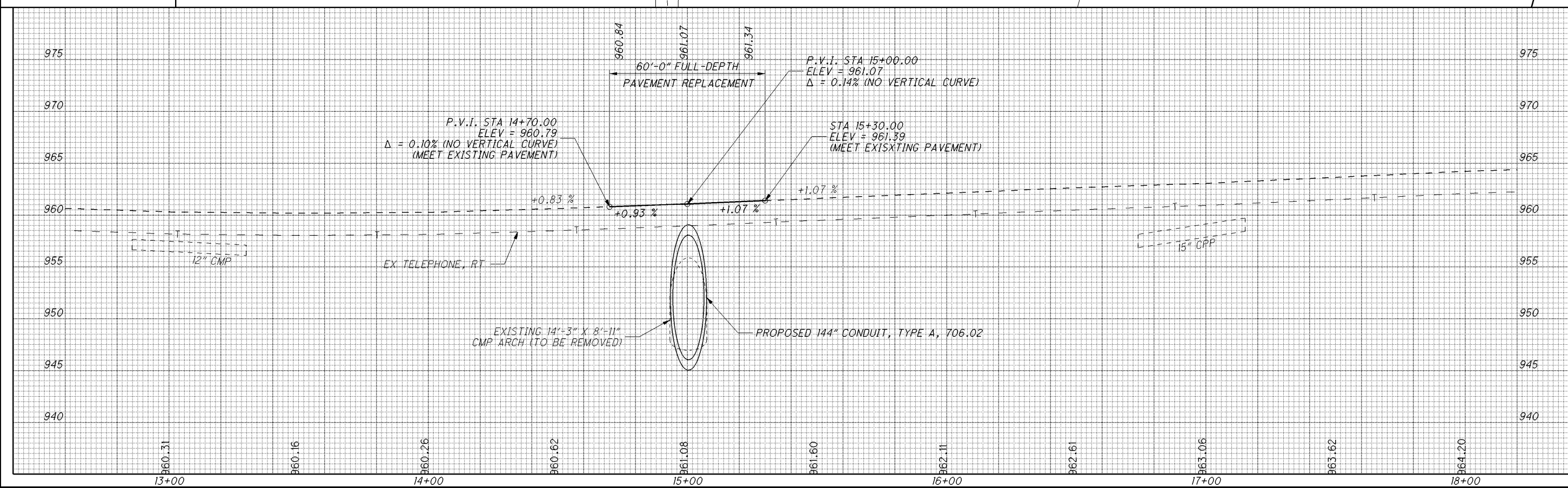
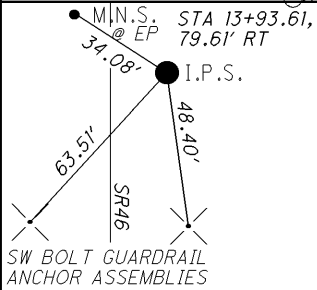
**BEGIN WORK**  
 STA 13+30.00  
 SLM: 26.24

**BEGIN PROJECT**  
 STA 14+70.00  
 SLM: 26.27

**END PROJECT**  
 STA 15+30.00  
 SLM: 26.28

**END WORK**  
 STA 18+00.00  
 SLM: 26.33

**REFERENCE TIES**



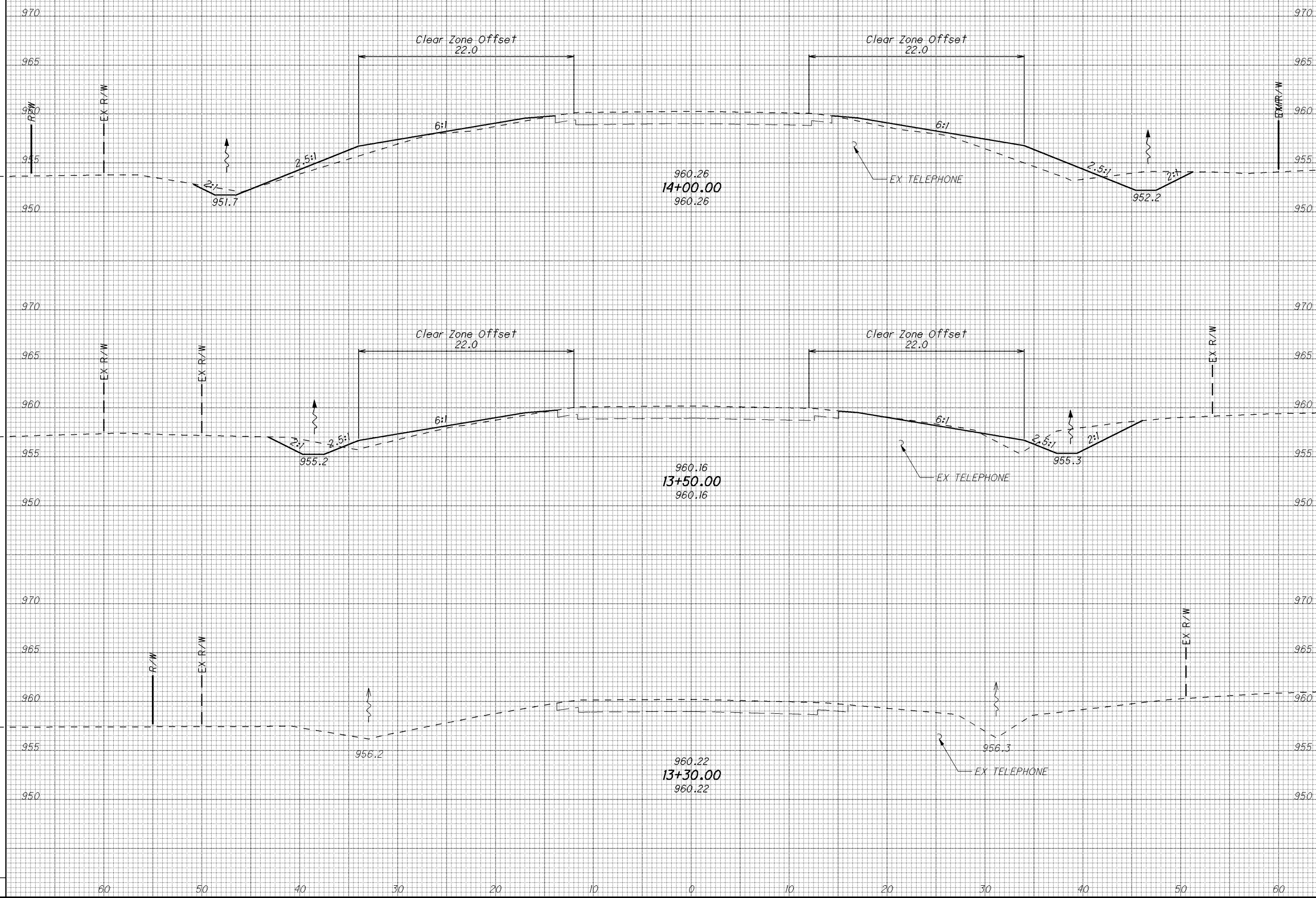
**PLAN AND PROFILE**  
**TRU-46-2627**

**TRU-46-18.49**  
 44  
 66

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SEEDING  
END SO.  
WIDTH YDS.



END AREA	VOLUME		CALCULATED LMP	CHECKED
	CUT	FILL		
13	36			
		35	45	
25	13			
		9	5	
0	0			
		44	50	

CROSS SECTIONS (TRU-46-2627)  
STA. 13+30.00 TO STA. 14+00.00

TRU-46-18.49

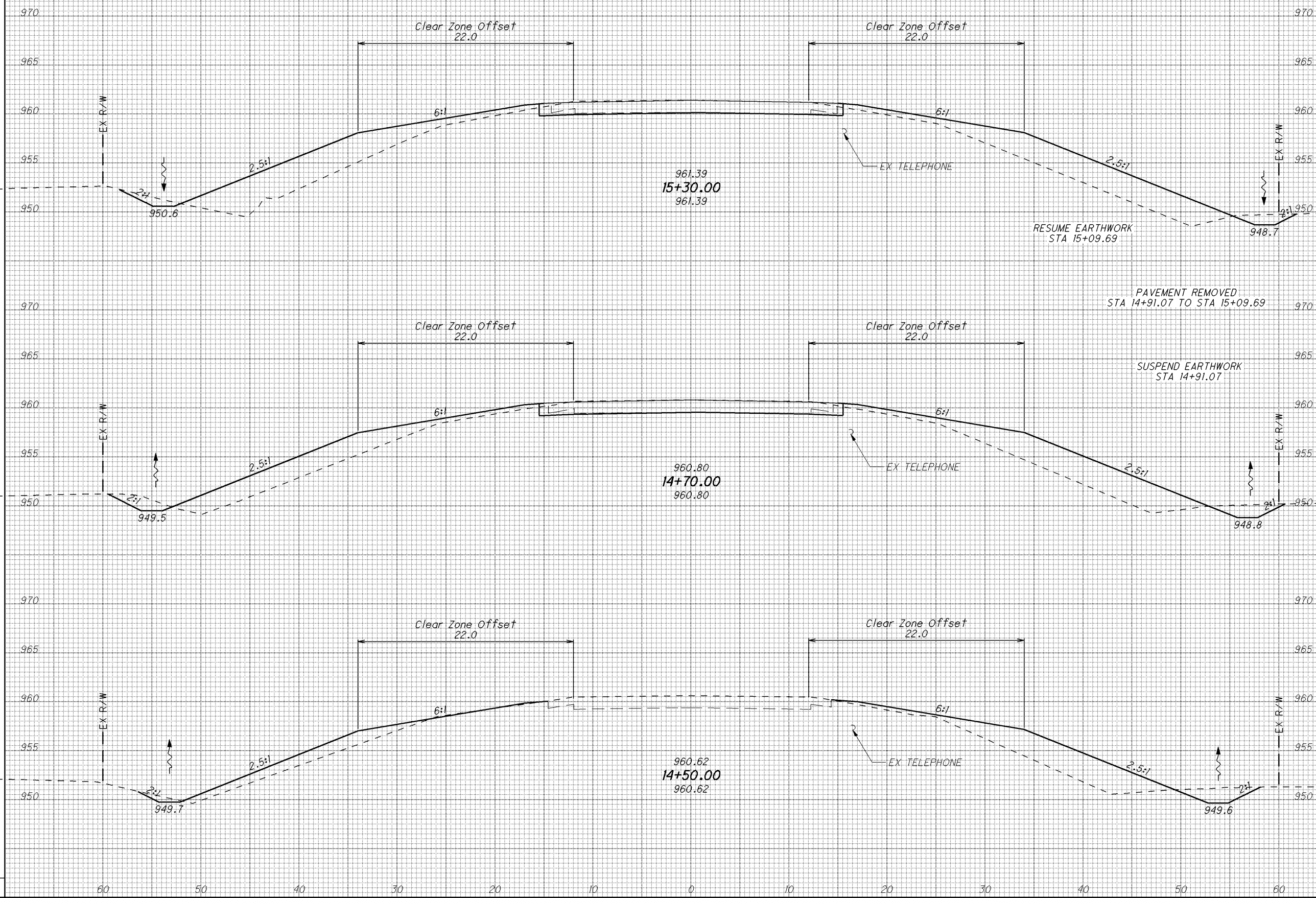
45  
66



SEEDING  
END SO.  
WIDTH YDS.

END AREA  
CUT FILL  
VOLUME  
CUT FILL  
CALCULATED  
LMP  
CHECKED

PROJECT: TRU\_85202\_Roadway\sheets\85202XS003.dgn 22-JAN-2013 3:27PM nchaney



END AREA	VOLUME	CALCULATED	CHECKED
CUT	FILL	CUT	FILL
FWD 8	144		
BACK 45	108		
TMP			
FWD 50	121		
BACK 12	94		
TMP			
10	76		
TMP			
	21	104	
	128	400	

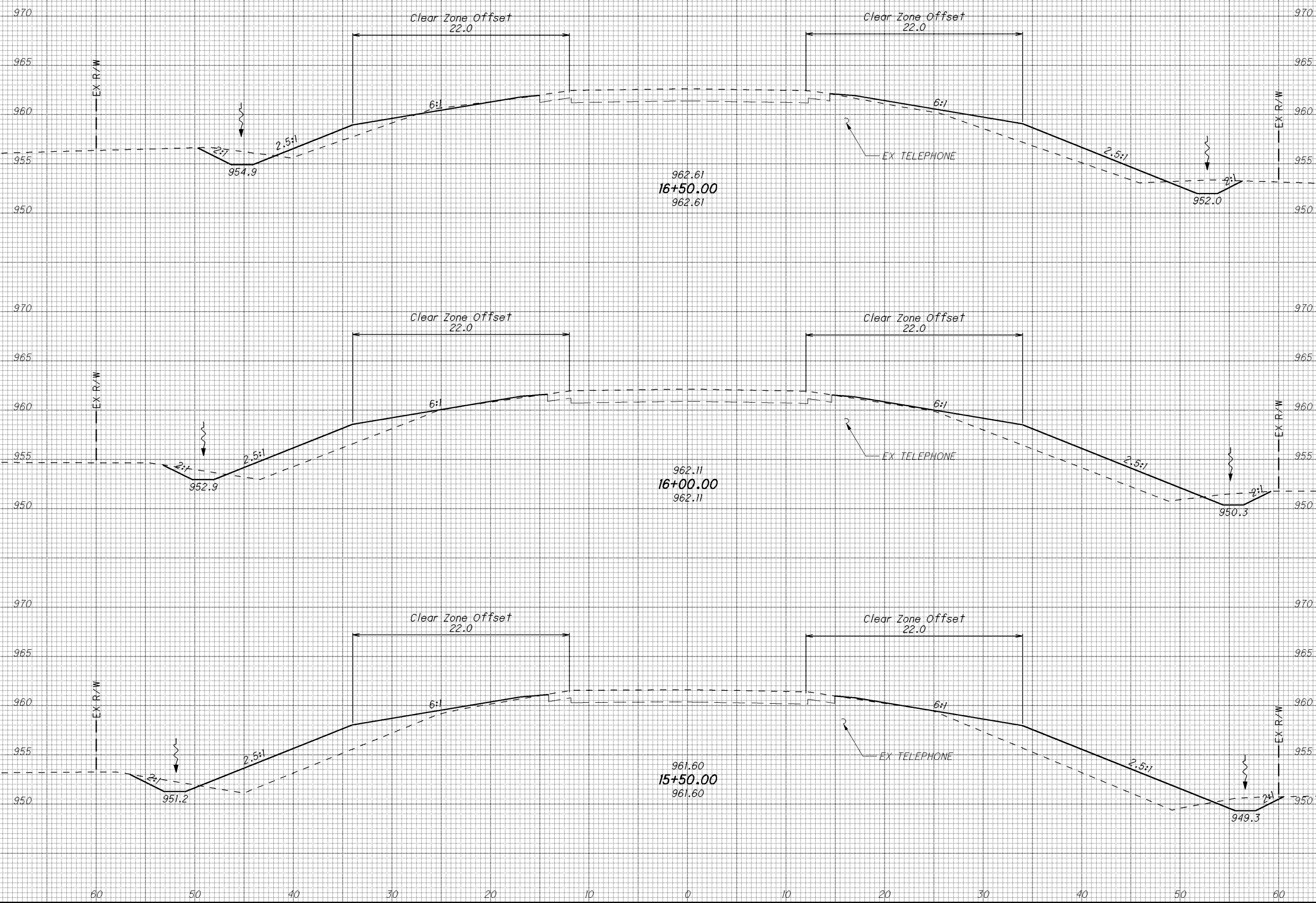
**CROSS SECTIONS (TRU-46-2627)  
STA. 14+50.00 TO STA. 15+30.00**

**TRU-46-18.49**

46  
66

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SEEDING  
END SO.  
WIDTH YDS.



END AREA	VOLUME	CALCULATED	
		CUT	FILL
14	45		
		21	110
9	74		
		19	162
11	101		
		7	91
		47	363

CROSS SECTIONS (TRU-46-2627)  
STA. 15+50.00 TO STA. 16+50.00

TRU-46-18.49

47  
66

SEEDING

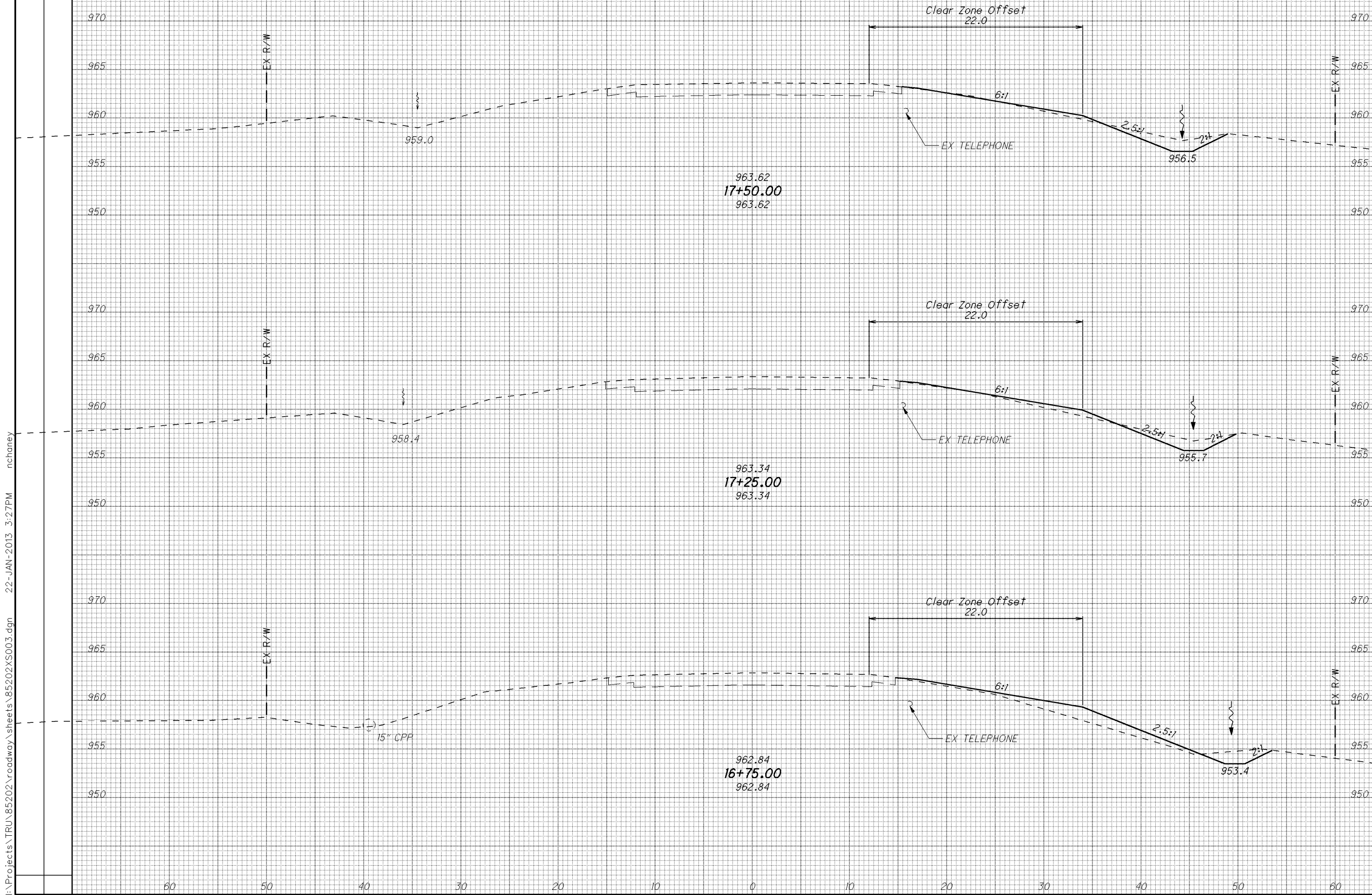
END SO. END SO. WIDTH YDS. WIDTH YDS.

END AREA		VOLUME		CALCULATED LMP	CHECKED
CUT	FILL	CUT	FILL		
10	2				
		8	3		
8	5				
		13	22		
6	19				
		9	30		
		30	55		

CROSS SECTIONS (TRU-46-2627)  
STA. 16+75.00 TO STA. 17+50.00

TRU-46-18.49

48  
66



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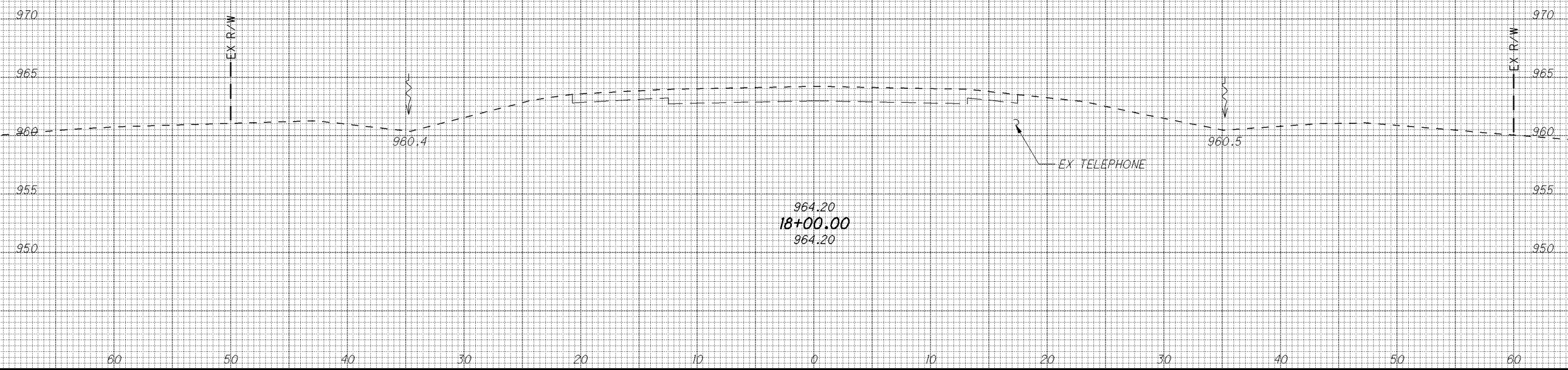
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SEEDING

END WIDTH	SO. YDS.

END AREA VOLUME

END AREA		VOLUME		CALCULATED LMP	CHECKED
CUT	FILL	CUT	FILL		

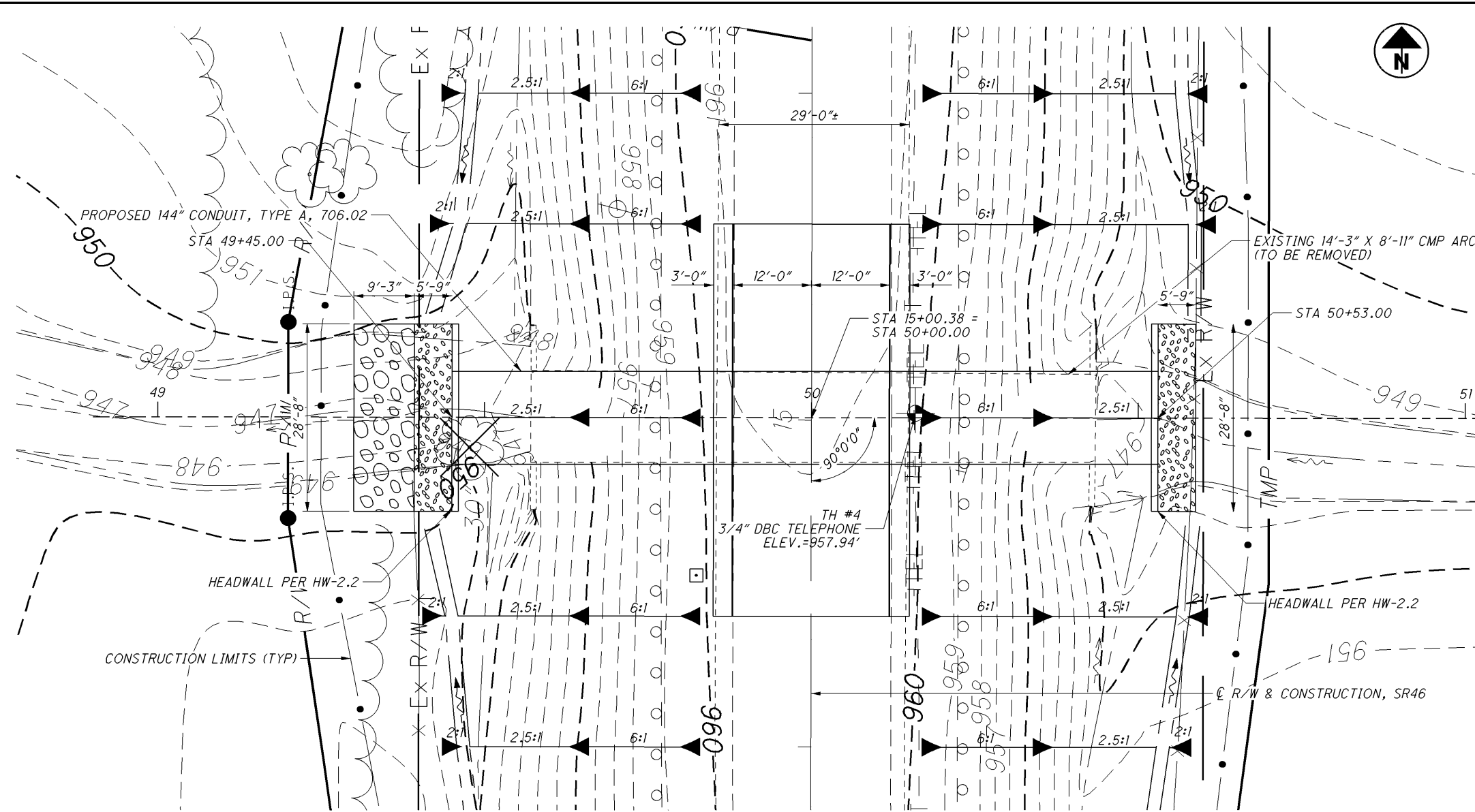


**CROSS SECTIONS (TRU-46-2627)**  
**STA. 18+00.00**

**TRU-46-18.49**

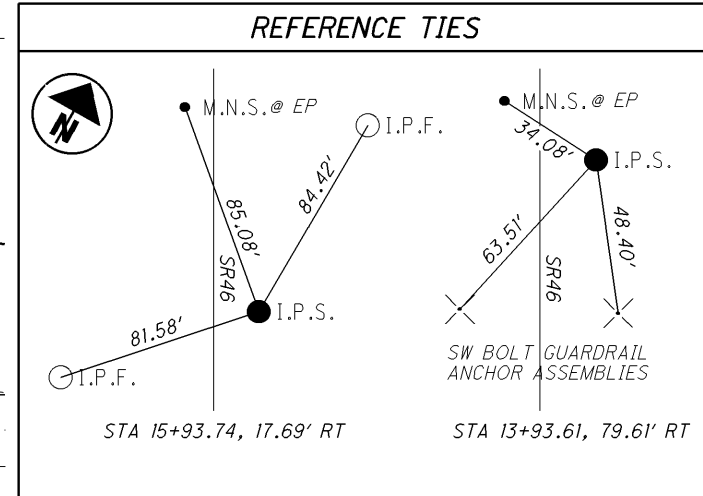
49  
66

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**BENCHMARK DATA**

BM #1 STA. 13+93.61,	ELEV. 959.03,	OFFSET 17.61',	RT
BM #2 STA. 15+68.18,	ELEV. 954.63,	OFFSET 59.79',	LT
BM #3 STA. 15+93.74,	ELEV. 961.09,	OFFSET 17.69',	RT
BM #4 STA. 16+66.63,	ELEV. 954.02,	OFFSET 60.27',	RT



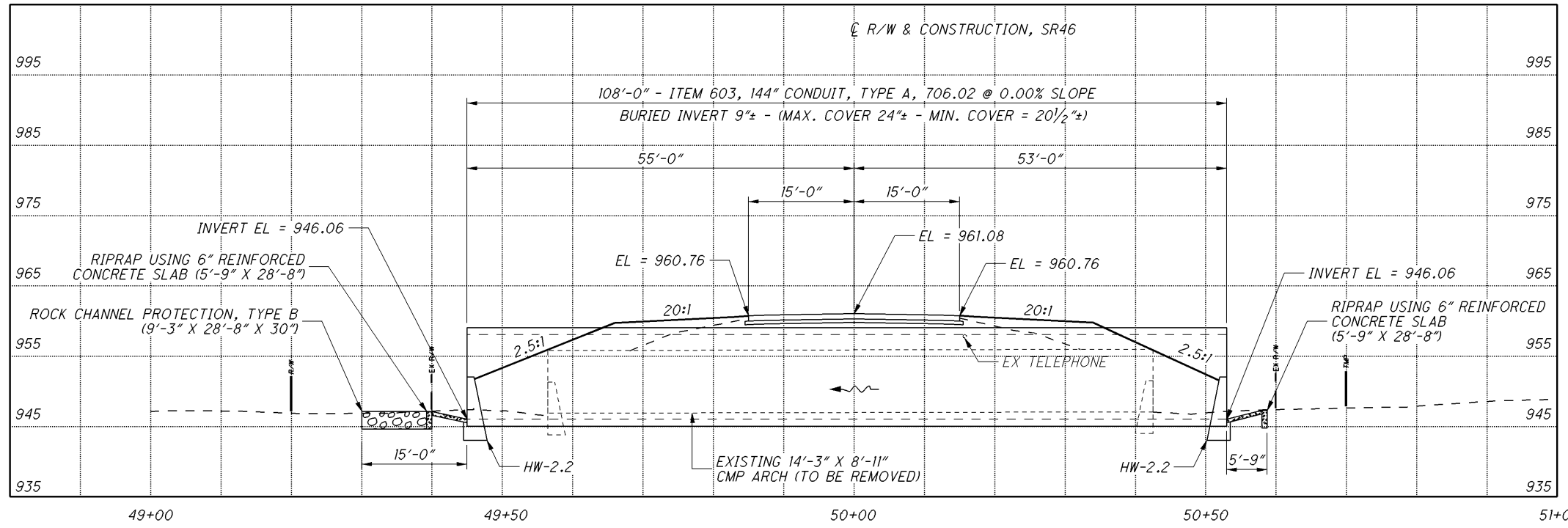
**NOTES**  
 EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

**DESIGN TRAFFIC**  
 2013 ADT = 930      2013 ADTT = 38  
 2033 ADT = 1200    2033 ADTT = 48  
 DIRECTIONAL DISTRIBUTION = 0.60

**HYDRAULIC DATA**  
 DRAINAGE AREA = 2.02 SQ. MILES  
 Q (10) = 187 CFS      V (10) = 10.0 FT/S  
 Q (100) = 289 CFS     V (100) = 13.5 FT/S

**EXISTING STRUCTURE**  
 TYPE: 14'-3" X 8'-11" SECTIONAL CORRUGATED METAL PIPE ARCH STRUCTURE  
 LENGTH: 86'-0"±  
 ROADWAY: 44'-0"± F/F GUARDRAIL  
 LOADING: H-20  
 SKEW: NONE  
 ALIGNMENT: TANGENT  
 STRUCTURAL FILE NUMBER: 7803036  
 DATE BUILT: 1961  
 DISPOSITION: TO BE REPLACED

**PROPOSED STRUCTURE**  
 TYPE: 144" REINFORCED CONCRETE PIPE  
 LENGTH: 108'-0"  
 ROADWAY: 30'-0"  
 LOADING: AS PER CMS 706.02 AND ASTM C 655  
 SKEW: NONE  
 ALIGNMENT: TANGENT  
 NEW STRUCTURAL FILE NUMBER: 7803044  
 COORDINATES: LATITUDE N41°29'56"  
 LONGITUDE W80°44'57"



DESIGN AGENCY: ODOT --- DISTRICT 4  
 PLANNING AND ENGINEERING  
 DATE: \_\_\_\_\_  
 REVIEWED: \_\_\_\_\_  
 STRUCTURE FILE NUMBER: 7803044  
 DRAWN: \_\_\_\_\_  
 REVISED: \_\_\_\_\_  
 DESIGNED: LMP  
 CHECKED: \_\_\_\_\_  
**STRUCTURE SITE PLAN**  
 BRIDGE NO.: TRU-46-2627  
 SR46 OVER BRANCH MOSQUITO CREEK  
**TRU-46-18.49**  
**PID No. 85202**  
 1 / 2  
 50  
 66

**STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS**

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWING(S):

- HW-2.2 DATED/REVISED 7/20/12
- DM-1.1 DATED/REVISED 7/20/12
- DM-1.4 DATED/REVISED 7/15/11

**DESIGN LOADING**

DESIGN LOADING: AS PER CMS 706.02 AND ASTM C 655 (1000 D-LOAD)

**UTILITY LINES**

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

**STRUCTURE IDENTIFICATION SIGNS**

STRUCTURE IDENTIFICATION SIGNS (I-H250) WILL BE PLACED ON EACH APPROACH OFF THE RIGHT SHOULDER, FACING TRAFFIC, AND BEHIND THE GUARDRAIL IF APPLICABLE. A QUANTITY OF ONE SIGN PER APPROACH WILL BE INSTALLED. THE SIGNS WILL HAVE A NON-REFLECTIVE WHITE SHEETING BACKGROUND.

THE SIGNS WILL BE MOUNTED ON NEW NO. 2 POSTS AND WILL BE INSTALLED AS PER STANDARD CONSTRUCTION DRAWING TC-41.20, MOST CURRENT REVISION. EACH POST WILL BE 7.5' IN LENGTH.

INSTALL SIGNS FOR THE FOLLOWING STRUCTURES:  
TRU-46-2627

- THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED FOR EACH APPROACH:
- ITEM 630 - SIGN, FLAT SHEET, 730.20, 1 SQ FT
  - ITEM 630 - GROUND MOUNTED SUPPORT, NO. 2 POST, 7.5 FT
  - ITEM 630 - REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL, 1 EACH
  - ITEM 630 - REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL, 1 EACH

CALC: LMP DATE: 10/31/2012  
CHECKED: DATE:

**ESTIMATED QUANTITIES (02/STR/BR/)**

ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUT.	PIERS	SUPER.	GEN.	SEE SHEET
202	11000	LUMP		STRUCTURE REMOVED					
503	11100	LUMP		COFFERDAMS AND EXCAVATION BRACING					
601	11000	37	SQ YD	RIPRAP USING 6" REINFORCED CONCRETE SLAB				37	
601	32104	25	CU YD	ROCK CHANNEL PROTECTION, TYPE B WITH FABRIC FILTER				25	
602	20000	26	CU YD	CONCRETE MASONRY				26	
603	38000	108	FT	144" CONDUIT, TYPE A, 706.02				108	
630	02100	15	FT	GROUND MOUNTED SUPPORT, NO. 2 POST				15	
630	80100	2	SQ FT	SIGN, FLAT SHEET, 730.20				2	
630	84900	2	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL				2	
630	86002	2	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL				2	

<b>TRU-46-18.49</b>	<b>PID No. 85202</b>	2 / 2	STRUCTURE NOTES AND ESTIMATED QUANTITIES BRIDGE NO.: TRU-46-2627 SR46 OVER BRANCH MOSQUITO CREEK
DESIGNED LMP CHECKED	DRAWN REVISED	REVIEWED STRUCTURE FILE NUMBER 7803044	DATE 7803044
			DESIGN AGENCY ODOT --- DISTRICT 4 PLANNING AND ENGINEERING

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CENTER LINE														GENERAL SPEC: 640				
MATERIAL TYPE:																		
CTY	ROUTE	TRUE LOG	FROM	TRUE LOG	TO	TOTAL MLES	EQUIVALENT SOLID LINE		COMMENTS									
TRU	46	18.49	JCT. SR 88	26.34	ASHTABULA COUNTY LINE	7.85	4.95											
TOTAL						7.85	4.95											
LANE LINE																		
CTY	ROUTE	TRUE LOG	FROM	TRUE LOG	TO	TOTAL MLES	4" LANE LINE		COMMENTS									
							DASHED	SOLID										
TOTAL																		
EDGE LINE																		
CTY	ROUTE	TRUE LOG	FROM	TRUE LOG	TO	WHITE EDGE LINE			YELLOW EDGE LINE			COMMENTS						
						TOTAL	HIGHWAY	RAMP	TOTAL	HIGHWAY	RAMP							
TRU	46	18.49	JCT. SR 88	26.34	ASHTABULA COUNTY LINE	15.70	15.70											
TOTAL						15.70	15.70											
AUXILIARY																		
CTY	ROUTE LOCATION	TRUE LOG	CHANNEL LINE	STOP LINE	TRANSVERSE DIAGONAL LINES		CROSS WALK LINES	WORD ON PVMT ONLY		LANE ARROWS				SYMBOL MARKINGS SCHOOL		ISLAND MARKING	DOTTED LINES	COMMENTS
					WHITE	YELLOW		72"	96"	TURN LEFT	TURN RIGHT	THRU	COMB.	R&R	72"			
			FT	FT	FT	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	SQ FT	FT	
TRU	SR 46 @ SR 88	18.490		72														
TRU	SR 46 @ DENNISON	21.870															100	
TOTAL				72													100	

PAVEMENT MARKING SUBSUMMARY

TRU-46-18.49



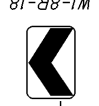


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REF NO.	ROUTE NO.	SLM	SIDE	CODE * PLYWOOD # YELLOW/GREEN ## WHITE ON BROWN	SIZE (INCHES)	630																															
						GROUND MOUNTED SUPPORT, NO. 3 POST																															
						FT	EACH	SQ FT																													
1	46	21.86	RT	W1-8L-18	18 X 24	11	1	3																													
	46	21.86	RT	W1-8R-18	18 X 24		1	3																													
2	46	21.88	RT	W1-8L-18	18 X 24	11	1	3																													
	46	21.88	RT	W1-8R-18	18 X 24		1	3																													
3	46	21.89	RT	W1-8R-18	18 X 24	11	1	3																													
<b>TOTALS CARRIED TO SHEET 18</b>						0	33	5	15	0																											



46



W1-8R-18

46



W1-8L-18

DENNISON-ASHTABULA

SIGNS SHALL BE PLACED AT 80' SPACING

CALCULATED  
NRC  
CHECKED

**SIGNING SUBSUMMARY**

**TRU-46-18.49**

53A  
66

**STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS**

REFER TO THE FOLLOWING SUPPLEMENTAL SPECIFICATION(S):

843 DATED 4/18/2003

**DESIGN SPECIFICATIONS**

DESIGN SPECIFICATIONS: THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 17TH , INCLUDING THE 2002 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL.

**EXISTING STRUCTURE VERIFICATION**

EXISTING STRUCTURE VERIFICATION: DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02 AND 513.04.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS WHICH HAVE BEEN VERIFIED IN THE FIELD.

**PROPOSED WORK - TRU-46-1893 (OVER TRIBUTARY MOSQUITO CR) (SFN 7802676)**

- SEE ROADWAY FOR PAVING DETAILS
- CHANNEL CLEANOUT 12' OUT EACH SIDE
- CLEARING AND GRUBBING 15' WITHIN THE STRUCTURE
- PROVIDE NEW STRUCTURE IDENTIFICATION SIGNS AND OBJECT MARKERS

**PROPOSED WORK - TRU-46-1952 (OVER TRIBUTARY MOSQUITO CR) (SFN 7802692)**

- SEE ROADWAY FOR PAVING DETAILS
- CHANNEL CLEANOUT 14' OUT EACH SIDE
- CLEARING AND GRUBBING 15' WITHIN THE STRUCTURE
- PROVIDE NEW STRUCTURE IDENTIFICATION SIGNS AND OBJECT MARKERS

**PROPOSED WORK - TRU-46-1977 (OVER SMITH RUN) (SFN 7802714)**

- SEE ROADWAY FOR PAVING DETAILS
- CHANNEL CLEANOUT 12' OUT EACH SIDE
- CLEARING AND GRUBBING 15' WITHIN THE STRUCTURE
- PROVIDE NEW STRUCTURE IDENTIFICATION SIGNS AND OBJECT MARKERS

**PROPOSED WORK - TRU-46-2020 (OVER BRANCH MUD CREEK) (SFN 7802749)**

- SEE ROADWAY FOR PAVING DETAILS
- PATCH ALL UNSOUND AREAS OF THE CONCRETE SURFACES AT THE INLET AND OUTLET END WINGWALLS AND THE EDGES OF THE BOXES
- CHANNEL CLEANOUT 8' AT THE OUTLET AND 10' AT THE INLET
- CLEARING AND GRUBBING 15' WITHIN THE STRUCTURE
- PROVIDE NEW STRUCTURE IDENTIFICATION SIGNS

**PROPOSED WORK - TRU-46-2073 (OVER BRANCH MUD CREEK) (SFN 7802773)**

- SEE ROADWAY FOR PAVING DETAILS
- CHANNEL CLEANOUT 14' OUT EACH SIDE
- CLEARING AND GRUBBING 15' WITHIN THE STRUCTURE
- PROVIDE NEW STRUCTURE IDENTIFICATION SIGNS

**PROPOSED WORK - TRU-46-2214 (OVER BRANCH MUD CREEK) (SFN 7802889)**

- PATCH ALL UNSOUND AREAS OF THE EXISTING CONCRETE WEARING SURFACE ON THE BRIDGE DECK
- REMOVE THE EXISTING ASPHALT CONCRETE OVERLAY ON THE APPROACH SLABS
- PLACE NEW ASPHALT CONCRETE OVERLAY AND WATERPROOFING ON THE BRIDGE DECK AND APPROACH SLABS
- PATCH ALL UNSOUND AREAS OF THE CONCRETE SUBSTRUCTURE AND DECK EDGES
- REMOVE ALL SPALLED AREAS OF THE BOTTOM DECK FLOOR AND SEAL WITH EPOXY-URETHANE
- REPAIR THE AGGREGATE SLOPE PROTECTION AT THE FORWARD AND REAR ABUTMENT FOOTERS
- CHANNEL CLEANOUT 20' OUT EACH SIDE
- CLEARING AND GRUBBING 15' WITHIN THE STRUCTURE
- PROVIDE NEW STRUCTURE IDENTIFICATION SIGNS

**PROPOSED WORK - TRU-46-2272 (OVER BRANCH MUD CREEK) (SFN 7802919)**

- REMOVE AND REPLACE EXISTING WATERPROOFING AND ASPHALT CONCRETE OVERLAY
- REMOVE AND REPLACE EXISTING STEEL DRIP STRIP
- PATCH ALL UNSOUND AREAS OF THE CONCRETE SUBSTRUCTURE AND DECK EDGES
- REMOVE ALL SPALLED AREAS OF THE BOTTOM DECK FLOOR AND SEAL WITH EPOXY-URETHANE
- CHANNEL CLEANOUT 15' OUT EACH SIDE
- CLEARING AND GRUBBING 15' WITHIN THE STRUCTURE
- PROVIDE NEW STRUCTURE IDENTIFICATION SIGNS AND OBJECT MARKERS

**PROPOSED WORK - TRU-46-2325 (OVER BRANCH MUD CREEK) (SFN 7802943)**

- PATCH ALL UNSOUND AREAS OF THE EXISTING CONCRETE WEARING SURFACE ON THE BRIDGE DECK
- REMOVE THE EXISTING ASPHALT CONCRETE OVERLAY ON THE APPROACH SLABS
- PLACE NEW ASPHALT CONCRETE OVERLAY AND WATERPROOFING ON THE BRIDGE DECK AND APPROACH SLABS
- PATCH ALL UNSOUND AREAS OF THE CONCRETE SUBSTRUCTURE AND DECK EDGES
- REMOVE ALL SPALLED AREAS OF THE BOTTOM DECK FLOOR AND SEAL WITH EPOXY-URETHANE
- REPAIR THE AGGREGATE SLOPE PROTECTION AT THE FORWARD AND REAR ABUTMENT FOOTERS
- CHANNEL CLEANOUT 20' OUT EACH SIDE
- CLEARING AND GRUBBING 15' WITHIN THE STRUCTURE
- PROVIDE NEW STRUCTURE IDENTIFICATION SIGNS

**PROPOSED WORK - TRU-46-2437 (OVER MOSQUITO CREEK) (SFN 7802986)**

- REMOVE EXISTING WATERPROOFING AND ASPHALT CONCRETE OVERLAY
- PLACE NEW WATERPROOFING AND ASPHALT CONCRETE OVERLAY
- INSTALL NEW POLYMER MODIFIED ASPHALT BINDER EXPANSION JOINT
- REMOVE AND REPLACE EXISTING STEEL DRIP STRIP
- PATCH ALL UNSOUND AREAS OF THE CONCRETE SUBSTRUCTURE
- CHANNEL CLEANOUT 15' OUT EACH SIDE
- CLEARING AND GRUBBING 15' WITHIN THE STRUCTURE
- PROVIDE NEW STRUCTURE IDENTIFICATION SIGNS

**PROPOSED WORK - TRU-46-2515 (OVER MOSQUITO CREEK) (SFN 7802994)**

- REMOVE EXISTING WATERPROOFING AND ASPHALT CONCRETE OVERLAY
- PLACE NEW WATERPROOFING AND ASPHALT CONCRETE OVERLAY
- INSTALL NEW POLYMER MODIFIED ASPHALT BINDER EXPANSION JOINT
- REMOVE AND REPLACE EXISTING STEEL DRIP STRIP
- PATCH ALL UNSOUND AREAS OF THE CONCRETE SUBSTRUCTURE
- REMOVE ALL SPALLED AREAS OF THE BOTTOM DECK FLOOR
- CLEARING AND GRUBBING 15' WITHIN THE STRUCTURE
- PROVIDE NEW STRUCTURE IDENTIFICATION SIGNS

**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.

**ITEM 202 - REMOVAL MISC.: CHANNEL CLEANOUT**

THIS WORK SHALL CONSIST OF REMOVING SEDIMENT BUILD-UP, VEGETATION, AND DEBRIS FROM THE EXISTING CHANNEL WITHIN STATE RIGHT-OF-WAY LIMITS AS SPECIFIED IN THE PLANS FOR STRUCTURES TRU-46-1893, TRU-46-1952, TRU-46-1977, TRU-46-2020, TRU-46-2073, TRU-46-2214, TRU-2272, TRU-46-2325 AND TRU-46-2437. ANY TREES WITHIN THE CHANNEL OR BANK LIMITS SHALL BE INCLUDED UNDER ITEM 201 CLEARING AND GRUBBING. NO AREAS OF EXISTING CHANNEL PROTECTION SHALL BE REMOVED IN ORDER TO RESTORE THE ORIGINAL CHANNEL PROFILE. EQUIPMENT IS NOT TO ENTER THE WATERWAY, BUT STAGED ON THE BANK OR BRIDGE. WHEN USING A BUCKET-TYPE EXCAVATOR, NO MORE THAN INCIDENTAL FALLBACK FROM THE BUCKET IS AUTHORIZED. NO BANK SHAPING, STREAM RELOCATION OR CHANNELIZATION IS AUTHORIZED WITHOUT A 404 & 401 PERMIT. WORK SHALL NOT CHANGE THE EXISTING CONTOURS OF THE STREAM BOTTOM AND BANK, AND ALL DEBRIS MUST BE DISPOSED OF IN AN UPLAND LOCATION.

CHANNEL CLEANOUT SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM 202 REMOVAL MISC.: CHANNEL CLEANOUT. THIS PRICE SHALL INCLUDE THE COST FOR LABOR, EQUIPMENT, AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CHANNEL CLEANOUT.

**ITEM 202 - WEARING COURSE REMOVED, AS PER PLAN**

REMOVE ALL OF THE ASPHALT CONCRETE ON STRUCTURE TRU-46-2437 THICKNESS VARIES WITH A MINIMUM THICKNESS OF 9" AND STRUCTURE TRU-46-2515 THICKNESS VARIES WITH A MINIMUM THICKNESS OF 6". MILLING OR OTHER MECHANICAL METHOD OF ASPHALT DECK REMOVAL MAY BE PERFORMED TO WITHIN 1/2 "± OF THE TOP OF THE EXISTING PRESTRESSED CONCRETE BOX BEAMS. THE LAST 1/2 "± OF ASPHALT CONCRETE TO BE REMOVED AND THE WATERPROOFING WILL BE REMOVED USING A NONDESTRUCTIVE METHOD SUCH AS HAND SCRAPING. THE CONTRACTOR WILL USE CAUTION IN REMOVING THE REMAINING ASPHALT AND WATERPROOFING TO ENSURE NO DAMAGE OCCURS TO THE PRESTRESSED CONCRETE BOX BEAMS. ANY DAMAGE TO THE BOX BEAMS WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

PAYMENT FOR THIS ITEM WILL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, AND ANY INCIDENTALS REQUIRED TO PERFORM THIS WORK. PAYMENT WILL BE MADE AT THE UNIT BID PRICE PER SQUARE YARD FOR ITEM 202, WEARING COURSE REMOVED, AS PER PLAN.

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DATE  
12-21-12  
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LMP  
STRUCTURE FILE NUMBER

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AAG  
REVISIONS  
DESIGNED  
AAG  
CHECKED

STRUCTURE GENERAL NOTES  
BRIDGE NO.: TRU-46-1893, TRU-46-1952, TRU-46-1977, TRU-46-2020, TRU-46-2073, TRU-46-2214, TRU-46-2272, TRU-46-2325, TRU-46-2437 & TRU-46-2515

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**ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN**

ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN: PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH-PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING.

**SPECIAL - STRUCTURE MISC.: CONCRETE SPALL REMOVAL**

THIS WORK WILL CONSIST OF REMOVING ALL VISIBLY SPALLED AREAS OF THE BOTTOM DECK FLOOR OF STRUCTURES TRU-46-2214, TRU-46-2272, TRU-46-2325 AND TRU-46-2515 WITHOUT SOUNDING. AFTER SPALLED CONCRETE AREAS HAVE BEEN REMOVED, REMOVAL AREAS WILL BE SEALED WITH ITEM 512, SEALING OF CONCRETE SURFACES (EPOXY-URETHANE).

CONCRETE SPALL REMOVAL WILL BE PAID FOR AT THE UNIT BID PRICE FOR SPECIAL - STRUCTURE MISC.: CONCRETE SPALL REMOVAL. THIS PRICE WILL INCLUDE THE COST OF LABOR, EQUIPMENT, AND ALL INCIDENTALS REQUIRED TO COMPLETE THIS WORK.

TRU-46-2214:  
SPEC, STRUCTURE MISC.: CONCRETE SPALL REMOVAL, 50 SQ YD  
512, SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), 50 SQ YD

TRU-46-2272:  
SPEC, STRUCTURE MISC.: CONCRETE SPALL REMOVAL, 50 SQ YD  
512, SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), 50 SQ YD

TRU-46-2325:  
SPEC, STRUCTURE MISC.: CONCRETE SPALL REMOVAL, 50 SQ YD  
512, SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), 50 SQ YD

TRU-46-2515:  
SPEC, STRUCTURE MISC.: CONCRETE SPALL REMOVAL, 50 SQ YD  
512, SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), 50 SQ YD

**ITEM 601, DUMP ROCK FILL, TYPE B**

THIS ITEM WILL BE USED AS DIRECTED BY THE ENGINEER TO REPAIR ALL EROSION AT THE FORWARD AND REAR ABUTMENT FOOTER SLOPE PROTECTION UNDER STRUCTURES TRU-46-2214 AND TRU-46-2325.

EROSION REPAIR WILL BE PAID FOR IN CUBIC YARDS AT THE UNIT BID PRICE UNDER ITEM 601, DUMPED ROCK FILL, TYPE B. THIS PRICE WILL INCLUDE THE COST OF LABOR, EQUIPMENT, AND ALL INCIDENTALS REQUIRED TO COMPLETE THIS WORK.

**STRUCTURE IDENTIFICATION SIGNS**

STRUCTURE IDENTIFICATION SIGNS (I-H25a) WILL BE PLACED ON EACH APPROACH OFF THE RIGHT SHOULDER, FACING TRAFFIC, AND BEHIND THE GUARDRAIL IF APPLICABLE. A QUANTITY OF ONE SIGN PER APPROACH WILL BE INSTALLED. THE SIGNS WILL HAVE A NON-REFLECTIVE WHITE SHEETING BACKGROUND.

THE SIGNS WILL BE MOUNTED ON NEW NO. 2 POSTS AND WILL BE INSTALLED AS PER STANDARD CONSTRUCTION DRAWING TC-41.20, MOST CURRENT REVISION. EACH POST WILL BE 7.5' IN LENGTH.

**INSTALL SIGNS FOR THE FOLLOWING STRUCTURES:**

- TRU-46-2020 (2 APPROACHES)
- TRU-46-2073 (2 APPROACHES)
- TRU-46-2214 (2 APPROACHES)
- TRU-46-2325 (2 APPROACHES)
- TRU-46-2437 (2 APPROACHES)
- TRU-46-2515 (2 APPROACHES)

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED FOR EACH APPROACH:

- ITEM 630 - SIGN, FLAT SHEET, 730.20, 1 SQ FT
- ITEM 630 - GROUND MOUNTED SUPPORT, NO. 2 POST, 7.5 FT
- ITEM 630 - REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL, 1 EACH
- ITEM 630 - REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL, 1 EACH

**OBJECT MARKERS AND STRUCTURE IDENTIFICATION SIGNS**

OBJECT MARKERS WILL BE PLACED ON EACH APPROACH OFF THE LEFT AND RIGHT SHOULDER, FACING TRAFFIC, AND BEHIND THE GUARDRAIL IF APPLICABLE. ONE OM-3L AND ONE OM-3R WILL BE INSTALLED AT EACH APPROACH. THE SIGNS WILL BE MOUNTED ON NEW NO. 2 POSTS AND SHALL BE INSTALLED AS PER STANDARD CONSTRUCTION DRAWING TC-41.20, MOST CURRENT REVISION. EACH POST WILL BE 10.5 FT IN LENGTH.

STRUCTURE IDENTIFICATION SIGNS (I-H25a) WILL BE INSTALLED ON THE SAME POST AND DIRECTLY BELOW THE OBJECT MARKER OFF THE RIGHT SHOULDER ON EACH APPROACH. A QUANTITY OF ONE SIGN WILL BE INSTALLED AT EACH APPROACH. THE SIGNS WILL HAVE A NON-REFLECTIVE WHITE SHEETING BACKGROUND.

**INSTALL SIGNS FOR THE FOLLOWING STRUCTURES:**

- TRU-46-1893 (2 APPROACHES)
- TRU-46-1952 (2 APPROACHES)
- TRU-46-1977 (2 APPROACHES)
- TRU-46-2272 (2 APPROACHES)

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED FOR EACH APPROACH:

- ITEM 630 - SIGN, FLAT SHEET, 730.20, 1 SQ FT
- ITEM 630 - SIGN, FLAT SHEET, 6 SQ FT
- ITEM 630 - GROUND MOUNTED SUPPORT, NO. 2 POST, 21 FT
- ITEM 630 - REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL, 3 EACH
- ITEM 630 - REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL, 2 EACH

**CORRECTING BRIDGE IDENTIFICATION SIGN NUMBERS:**

SOME OF THE EXISTING BRIDGE NUMBER SIGNS HAVE INCORRECT BRIDGE NUMBERS ON THEM. THE FOLLOWING BRIDGE NUMBERS ARE THE CORRECT ONES AND WILL BE USED ON THE NEW BRIDGE IDENTIFICATION SIGNS.

STRUCTURE TRU-46-1893 (SFN:7802676) THE EXISTING SIGN SHOWS 18.94. THE CORRECT BRIDGE IDENTIFICATION NUMBER IS 1893.

STRUCTURE TRU-46-2214 (SFN:7802889) THE EXISTING SIGN SHOWS 22.15. THE CORRECT BRIDGE IDENTIFICATION NUMBER IS 2214.

STRUCTURE TRU-46-2272 (SFN:7802919) THE EXISTING SIGN SHOWS 22.73. THE CORRECT BRIDGE IDENTIFICATION NUMBER IS 2272.

STRUCTURE TRU-46-2515 (SFN:7802994) THE EXISTING SIGN SHOWS 25.14. THE CORRECT BRIDGE IDENTIFICATION NUMBER IS 2515.

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**STRUCTURE GENERAL NOTES**  
BRIDGE NO.: TRU-46-1893, TRU-46-1952, TRU-46-1977, TRU-46-2020, TRU-46-2073, TRU-46-2214, TRU-46-2272, TRU-46-2325, TRU-46-2437 & TRU-46-2515

**TRU-46-18.49**  
**PID No. 85202**

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**ITEM 690 SPECIAL-MISC.: TRACKLESS TACK COAT**

**DESCRIPTION:** THIS WORK CONSISTS OF PREPARING AND TREATING A PAVED SURFACE WITH A TRACKLESS TACK ASPHALT EMULSION.

ALTERNATE PRODUCTS TO BE USED MUST BE ON FILE WITH THE NEW PRODUCT ENGINEER AT THE TIME OF THE ADVERTISEMENT DATE OF THE PROJECT PLANS. PLEASE CONTACT BRAD YOUNG, ODOT NEW PRODUCT ENGINEER, 614-351-2882.

THIS WORK IS CONSIDERED AN EXPERIMENTAL CONSTRUCTION FEATURE FOR EVALUATION OF PRODUCTS THAT ARE ON FILE WITH THE NEW PRODUCT ENGINEER.

MEET ALL REQUIREMENTS OF ODOT 407 TACK COAT IN THE CONSTRUCTION AND MATERIALS SPECIFICATIONS REQUIRED BY THE CONTRACT, EXCEPT AS NOTED BELOW.

A MANUFACTURER'S REPRESENTATIVE MUST BE AT THE PROJECT SITE DURING THE FIRST TWO DAYS OF APPLICATION OF TRACKLESS TACK.

**MATERIAL:** IF USING BLACKLIDGE TRACKLESS TACK THE MATERIAL WILL CONFORM TO THE FOLLOWING TYPICAL PHYSICAL PROPERTIES:

PARAMETER	TEST METHOD	MIN.	MAX
SAYBOLT FUROL VISCOSITY, SFS @ 25°C	AASHTO T59	15	100
STORAGE STABILITY, 24 HRS, %	AASHTO T59	--	1
STORAGE STABILITY, 5 DAYS, %	AASHTO T59	--	5
RESIDUE BY DISTILLATION, %	AASHTO T59	50	--
OIL DISTILLATE, %	AASHTO T59	--	1
SIEVE TEST, %	AASHTO T59	--	0.30
TEST ON RESIDUE			
PENETRATION, @ 25°C,	AASHTO T49	--	20
SOFTENING POINT RANGE DEG C	AASHTO T53	65	--
SOLUBILITY, %	AASHTO T44	97.5	--
ORIGINAL BINDER DSR@82°C G*/SIN δ,10 RAD/SEC	AASHTO T315	1.00	--

FOR TRACKLESS TACK OTHER THAN BLACKLIDGE TRACKLESS TACK, THE MATERIAL WILL CONFORM TO THE PHYSICAL PROPERTIES SUPPLIED BY THE NEW PRODUCT ENGINEER FOR THE TESTS LISTED BELOW:

PARAMETER	TEST METHOD
SAYBOLT FUROL VISCOSITY, SFS @ 25°C	AASHTO T59
STORAGE STABILITY, 24 HRS, %	AASHTO T59
STORAGE STABILITY, 5 DAYS, %	AASHTO T59
RESIDUE BY DISTILLATION, %	AASHTO T59
OIL DISTILLATE, %	AASHTO T59
SIEVE TEST, %	AASHTO T59
TEST ON RESIDUE	
PENETRATION, @ 25°C,	AASHTO T49
SOFTENING POINT RANGE DEG C	AASHTO T53
SOLUBILITY, %	AASHTO T44
ORIGINAL BINDER DSR@82°C G*/SIN δ,10 RAD/SEC	AASHTO T315

NOTE: TRACKLESS TACK SHOULD NOT CONTAIN FILLER SUCH AS CLAY, ETC.

**ACCEPTANCE AND SAMPLING OF MATERIALS:** FOR ALL TRACKLESS TACK SUPPLY CERTIFIED TEST DATA FROM AN INDEPENDENT LABORATORY TO THE ENGINEER AND TO THE DISTRICT LABORATORY SHOWING THE TRACKLESS TACK SUPPLIED WAS TESTED FOR AND MEETS THE PROPERTIES SUPPLIED BY THE NEW PRODUCT ENGINEER.

DURING CONSTRUCTION, ODOT PERSONNEL WILL SAMPLE AND SUPPLY TO THE DISTRICT TEST LAB A MINIMUM OF 2 QUARTS OF TRACKLESS TACK SAMPLED FROM THE DISTRIBUTOR ON THE FIRST DAY OF APPLICATION. CLEARLY MARK ON THE SAMPLES THE MANUFACTURER'S NAME, PROJECT NUMBER, AND THE WORDS "TRACKLESS TACK".

ADDITIONAL SAMPLING OF BLACKLIDGE TRACKLESS TACK WILL FOLLOW THE REQUIREMENTS OF ITEM 407. FOR ALTERNATE TRACKLESS TACK MATERIAL, 2 QUARTS OF MATERIAL WILL BE SAMPLED EACH DAY THE MATERIAL IS USED.

**EQUIPMENT:** SEE MANUFACTURER'S REPRESENTATIVE FOR CORRECT DISTRIBUTOR SETTINGS. THOROUGHLY CLEAN ALL EQUIPMENT IF PREVIOUSLY USED MATERIAL CHARGE IS DIFFERENT THAN THE PROPOSED MATERIAL.

**APPLICATION OF ASPHALT MATERIAL:** UNIFORMLY APPLY THE TRACKLESS TACK WITH A DISTRIBUTOR. IF TRACKLESS TACK IS STORED FOR AN EXTENDED PERIOD OF TIME, PRIOR TO

APPLICATION, AGITATE OR GENTLY CIRCULATE THE MATERIAL.

ENSURE ALL NOZZLES AND SPRAY PATTERNS ARE IDENTICAL TO ONE ANOTHER ALONG THE DISTRIBUTOR SPRAY BAR. PLACE THE ANGLE OF THE NOZZLE AT A 15 TO 30 DEGREE ANGLE TO THE SPRAY BAR AXIS TO MAXIMIZE OVERLAP OR AS RECOMMENDED BY THE NOZZLE MANUFACTURER. CONTACT THE MANUFACTURER'S REPRESENTATIVE FOR REQUIRED SPRAY NOZZLE SIZE AND DISTRIBUTOR AND NOZZLE SETTINGS.

APPLY AT A RATE OF 0.04 TO 0.1 GALLONS PER SQUARE YARD. DO NOT DILUTE TRACKLESS TACK. RECOMMENDED APPLICATION TEMPERATURE IS 160°F TO 180° F. DO NOT EXCEED 180°F. THE ENGINEER AND MANUFACTURER'S REPRESENTATIVE WILL APPROVE THE QUANTITY, RATE OF APPLICATION, TEMPERATURE, DISTRIBUTOR SETTINGS, AND AREAS TO BE TREATED BEFORE APPLICATION OF THE TRACKLESS TACK COAT. THE ENGINEER WILL DETERMINE THE ACTUAL APPLICATION IN GALLONS PER SQUARE YARD BY A CHECK ON THE PROJECT.

**PERFORMANCE OF TRACKLESS TACK:** FOR ANY TRACKLESS TACK USED SUPPLY DATA FOR SHEAR AND TENSILE BOND STRENGTH ACCORDING TO METHODS DESCRIBED IN VIRGINIA TRANSPORTATION RESEARCH COUNCIL REPORT VTRC 09-R21. RANDOMLY TAKE 6-4 INCH DIAMETER CORES FROM THE PROJECT AND PERFORM 3 SHEAR AND 3 TENSILE BOND STRENGTH TESTS. BE SURE CORES TAKEN INCLUDE BOTH AN ASPHALT LAYER ABOVE AND ASPHALT LAYER BELOW THE TRACKLESS TACK LAYER.

DETERMINE THE TIME TO SET FOR THE MATERIAL TO BECOME TRACKLESS. THE ENGINEER WILL REPORT ANY ISSUES WITH EXCESSIVE TIME TO SET, OR AFTER SET ISSUES WITH STICKINESS, OR PICKUP OF THE TACK TO THE DET AND NEW PRODUCT ENGINEER, BRAD YOUNG 614-351-2882.

IF THE CERTIFIED TEST DATA FAILS TO MEET THE LAB TESTING CRITERIA, OR FIELD SAMPLES FAIL TO MEET THE LAB TEST CRITERIA, OR THE TRACKLESS TACK FAILS TO PERFORM SATISFACTORILY IN THE FIELD, AS NOTED ABOVE, THE CONTRACTOR WILL BE REQUIRED TO REPLACE AND SUPPLY BLACKLIDGE TRACKLESS TACK FOR THE REMAINDER OF THE PROJECT AT NO COST TO THE DEPARTMENT.

ANY FAILING EXPERIMENTAL TRACKLESS TACK PRODUCT WILL BE REMOVED FROM THE NEW PRODUCT ENGINEER'S LIST.

IN THE EVENT THE PRODUCT FAILS TO PERFORM TO THE SATISFACTION OF THE DEPARTMENT, THE MANUFACTURER MAY PERFORM THE FOLLOWING ITEMS IN ORDER TO BE CONSIDERED FOR FUTURE EXPERIMENTAL CONSTRUCTION FEATURE PROJECTS:

1. SUBMIT IN WRITING TO THE DEPARTMENT THE REASON(S) WHY PRODUCT FAILED TO PERFORM AND DETAIL CHANGES THAT WILL BE MADE TO ELIMINATE THE CAUSE(S) OF FAILURE, AND

2. PROPOSE CHANGES TO THE PRODUCT'S SPECIFICATIONS, AND
3. SUBMIT SAMPLES OF THE REDEVELOPED PRODUCT TO THE LABORATORY FOR TESTING TO THE NEW SPECIFICATIONS, AND
4. DEMONSTRATE TO THE DEPARTMENT SUCCESSFUL USE OF THE MATERIAL ON AT LEAST ONE NON-ODOT PROJECT.

WHEN THE ABOVE ITEMS ARE COMPLETED TO THE DEPARTMENT'S SATISFACTION, THE REDEVELOPED AND FIELD TESTED PRODUCT MAY BE PUT BACK ON FILE WITH THE NEW PRODUCT ENGINEER AND EVALUATED ON FUTURE ODOT PROJECTS USING THE EXPERIMENTAL CONSTRUCTION FEATURE PROCESS.

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<b>TRU-46-18-49</b> <b>PID No. 85202</b>	<b>STRUCTURE GENERAL NOTES</b> BRIDGE NO.: TRU-46-1893, TRU-46-1952, TRU-46-1977, TRU-46-2020, TRU-46-2073, TRU-46-2214, TRU-46-2272, TRU-46-2325, TRU-46-2437 & TRU-46-2515	DESIGNED AAG CHECKED	DRAWN AAG REVISED	REVIEWED LMP STRUCTURE FILE NUMBER	DATE 12-21-12	DESIGN AGENCY ODOT --- DISTRICT 4 PLANNING & ENGINEERING
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CALC: AAG DATE: 8/16/2012  
 CHECKED: LMP DATE: 12/21/2012

ESTIMATED QUANTITIES

BRIDGE NO. / STRUCTURE FILE NO. / PLAN SPLIT										ITEM	EXTENSION	UNIT	DESCRIPTION	SEE SHEET	
TRU-46-1893 SFN 7802676 02/STR/BR/	TRU-46-1952 SFN 7802692 02/STR/BR/	TRU-46-1977 SFN 7802714 02/STR/BR/	TRU-46-2020 SFN 7802749 02/STR/BR/	TRU-46-2073 SFN 7802773 02/STR/BR/	TRU-46-2214 SFN 7802889 02/STR/BR/	TRU-46-2272 SFN 7802919 02/STR/BR/	TRU-46-2325 SFN 7802943 02/STR/BR/	TRU-46-2437 SFN 7802986 02/STR/BR/	TRU-46-2515 SFN 7802994 02/STR/BR/						
LUMP	LUMP	LUMP	LUMP	LUMP	LUMP	LUMP	LUMP	LUMP	LUMP	201	11000		CLEARING AND GRUBBING		
					245	75	245	143	167	202	23500	SQ YD	WEARING COURSE REMOVED		
								182	254	202	23501	SQ YD	WEARING COURSE REMOVED, AS PER PLAN	1 / 6	
24	28	24	18	28	40	30	40	30		202	98200	FT	REMOVAL MISC.: CHANNEL CLEANOUT	1 / 6	
					26	4	25	21	26	448	46050	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22		
					23	4	22	14	18	448	46905	CU YD	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M, AS PER PLAN		
					50	50	50		50	512	10100	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)		
					314	75	282	197	268	512	33010	SQ YD	TYPE 3 WATERPROOFING		
								64	70	SPEC	51631300	FT	POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM	6 / 6	
								56	127	189	SPEC	51822300	FT	STEEL DRIP STRIP	
					6		6			SPEC	51912304	SQ YD	PATCHING CONCRETE BRIDGE DECK - TYPE C		
			100		150	150		100	100	519	11101	SQ FT	PATCHING CONCRETE STRUCTURE, AS PER PLAN	2 / 6	
					50	50	50		50	SPEC	53000800	SQ YD	STRUCTURE, MISC.: CONCRETE SPALL REMOVAL	2 / 6	
					10		15			601	26000	CU YD	DUMPED ROCK FILL, TYPE B		
42	42	42	15	15	15	42	15	15	15	630	02100	FT	GROUND MOUNTED SUPPORT, NO. 2 POST		
2	2	2	2	2	2	2	2	2	2	630	80100	SQ FT	SIGN, FLAT SHEET, 730.20		
12	12	12				12				630	80100	SQ FT	SIGN, FLAT SHEET		
6	6	6	2	2	2	6	2	2	2	630	84900	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL		
4	4	4	2	2	2	4	2	2	2	630	86002	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL		
					108	15	102	65	85	SPEC	69098900	GALLON	MISC.: TRACKLESS TACK COAT	3 / 6	
			75		100	100		75	75	843	50000	SQ FT	PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR		

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 PID No. 85202

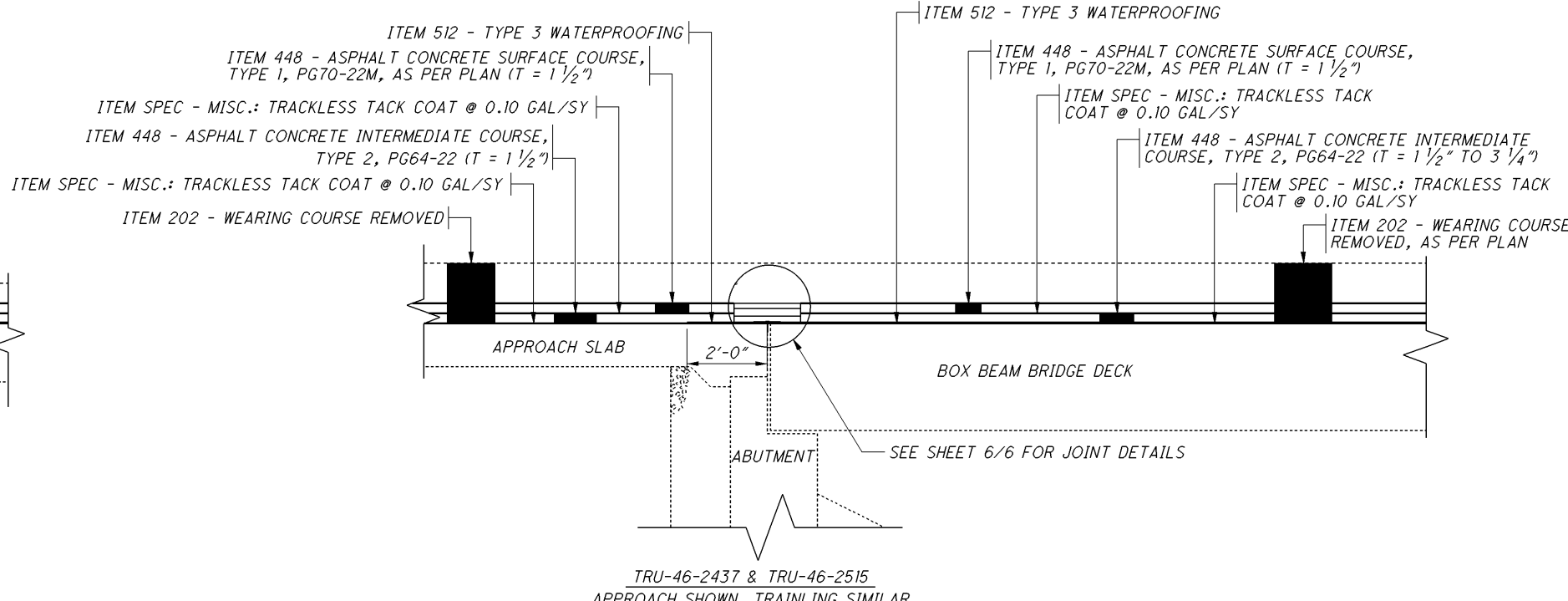
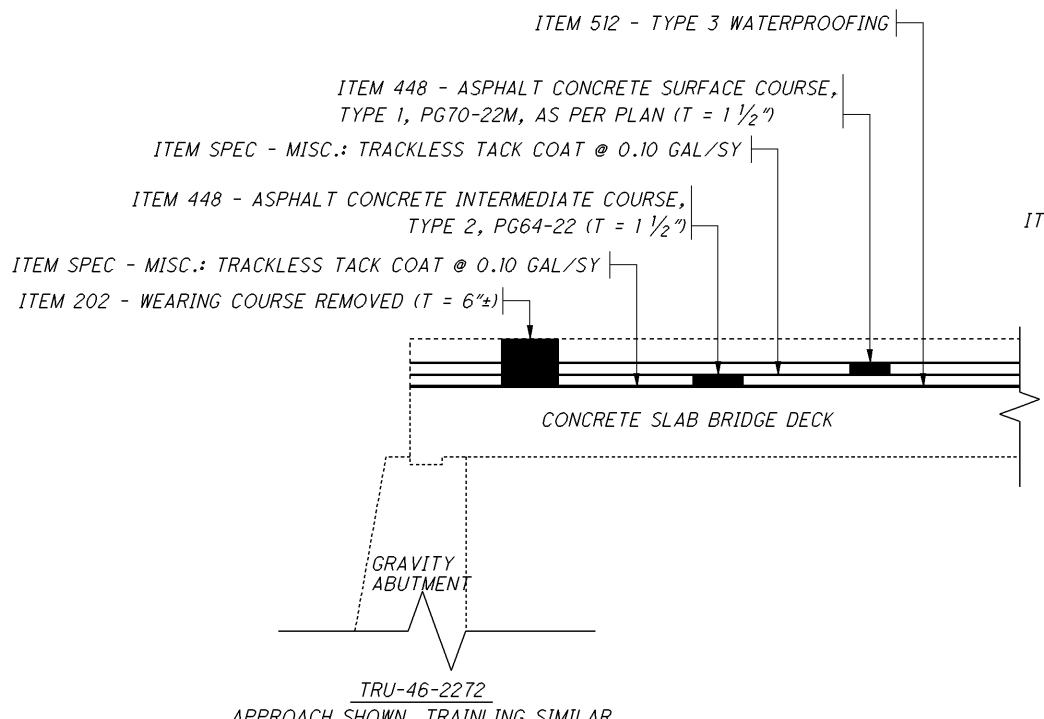
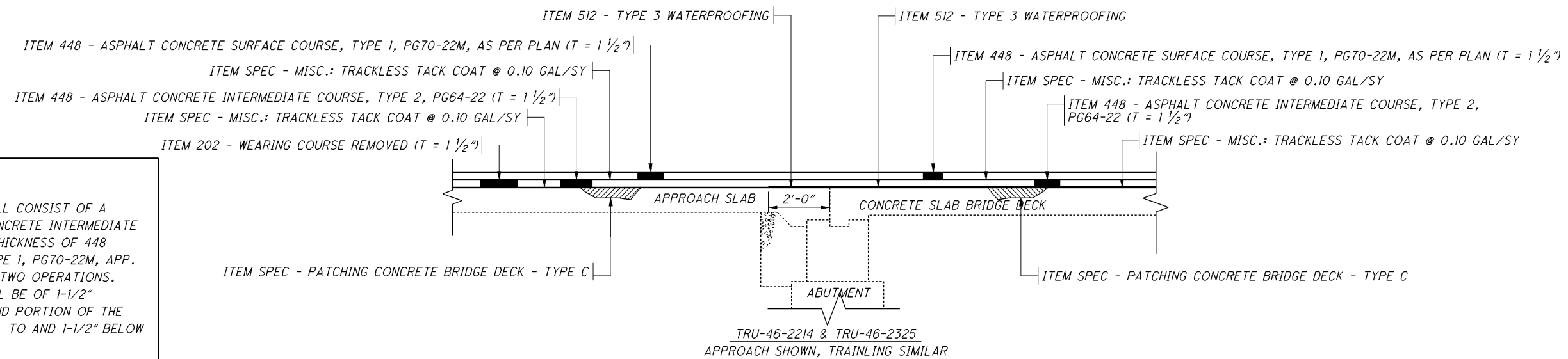
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**ASPHALT CONCRETE WEARING COURSE**

ASPHALT CONCRETE WEARING COURSE SHALL CONSIST OF A VARIABLE THICKNESS OF 448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22 AND A 1-1/2" THICKNESS OF 448 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M, APP. PLACE THE 448 INTERMEDIATE COURSE IN TWO OPERATIONS. THE FIRST PORTION OF THE COURSE SHALL BE OF 1-1/2" UNIFORM THICKNESS. FEATHER THE SECOND PORTION OF THE COURSE TO PLACE THE SURFACE PARALLEL TO AND 1-1/2" BELOW FINAL PAVEMENT SURFACE ELEVATION.



BRIDGE NUMBER	BRIDGE DECK														APPROACH SLABS										
	LENGTH (BRIDGE LIMITS) FT	BRIDGE WIDTH FT	DECK AREA SQ YD	WEARING COURSE REMOVED (T = 6"±) SQ YD	WEARING COURSE REMOVED, AS PER PLAN (T = 6"±) SQ YD	WEARING COURSE REMOVED, AS PER PLAN (T = 9"±) SQ YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22 (T = 1 1/2") CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22 (VAR. T = 1 1/2" TO 3/4") CU YD	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M, AS PER PLAN (T = 1 1/2") CU YD	TYPE 3 WATERPROOFING SQ YD	POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM FT	STEEL DRIP STRIP FT	PATCHING CONCRETE BRIDGE DECK - TYPE C SQ YD	MISC.: TRACKLESS TACK COAT @ 0.10 GAL/SY GALLON	LENGTH (APPROACH SLABS) FT	APPROACH SLAB WIDTH FT	APPROACH SLAB AREA SQ YD	APPROACH (FORWARD / REAR)	WEARING COURSE REMOVED (T = 1/2"±) SQ YD	WEARING COURSE REMOVED (T = 6"±) SQ YD	WEARING COURSE REMOVED (T = 9"±) SQ YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22 (T = 2") CU YD	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M, AS PER PLAN (T = 1 1/2") CU YD	TYPE 3 WATERPROOFING SQ YD	MISC.: TRACKLESS TACK COAT @ 0.10 GAL/SY GALLON
TRU-46-2214	60.04	44.00	293.53				12.23	12.23	293.53			5.87	58.71	25.00	44.00	122.22	FWD	122.22				6.79	5.09	9.98	24.44
TRU-46-2272	23.50	28.67	74.86	74.86			3.12	3.12	74.86		56.00		14.97	25.00	44.00	122.22	REAR	122.22				6.79	5.09	9.98	24.44
TRU-46-2325	53.50	44.00	261.56				10.90	10.90	261.56			5.23	52.31	25.00	44.00	122.22	FWD	122.22				6.79	5.09	9.98	24.44
TRU-46-2437	51.17	32.00	181.94		181.94		12.11	7.58	181.94	64.00	126.34		36.39	20.00	32.00	71.11	FWD			71.11	3.95	2.96	7.26	14.22	
TRU-46-2515	76.19	30.00	253.97		253.97		16.39	10.58	253.97	69.28	188.38		50.79	25.00	30.00	83.33	FWD		83.33			4.63	3.47	6.81	16.67
														25.00	30.00	83.33	REAR		83.33			4.63	3.47	6.81	16.67

DESIGN AGENCY: ODOT --- DISTRICT 4  
 PLANNING & ENGINEERING  
 DATE: 12-21-12  
 STRUCTURE FILE NUMBER:  
 REVIEWED: LMP  
 DRAWN: AAG  
 DESIGNED: AAG  
 CHECKED:  
 BRIDGE NO.: TRU-46-1893, TRU-46-1952, TRU-46-1977, TRU-46-2020, TRU-46-2073, TRU-46-2214, TRU-46-2272, TRU-46-2325, TRU-46-2437 & TRU-46-2515  
 STRUCTURE DETAILS  
 TRU-46-18-49  
 PID No. 85202  
 5/6  
 58  
 66

GENERAL NOTES AND DETAILS FOR POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM

ITEM SPECIAL - POLYMER-MODIFIED ASPHALT EXPANSION JOINT SYSTEM

THIS ITEM WILL BE USED TO SEAL THE EXPANSION/CONTRACTION JOINTS AS PER THESE DETAILS AND THE MANUFACTURER'S REQUIREMENTS USING A POLYMER-MODIFIED ASPHALT SYSTEM. THE PRIME CONTRACTOR WILL OBTAIN THE SERVICES OF ONE OF THE FOLLOWING APPROVED APPLICATORS WHO WILL FURNISH AND INSTALL THE NEW BRIDGE EXPANSION JOINT SYSTEM AFTER ALL PAVING ON THE AFFECTED BRIDGE(S) HAS BEEN COMPLETED.

PRODUCT NAME	SUPPLIER	ADDRESS	PHONE NO.
THORMA-JOINT	DYNAMIC SURFACE APPLICATIONS, LTD	373 VILLAGE RD. PENNSDALE, PA 17756	(570)546-6041
MATRIX 502	CRAFCO INC.	420 N. ROOSEVELT AVE. CHANDLER, AZ 85226	(800)528-8242
EXPANDEX JOINT SYSTEM	WATSON-BOWMAN ACME	95 PINEVIEW DR. AMHERST, NY 14228	(716)691-7566
APJ ASPHALTIC PLUG EXPANSION JOINT	WYOMING EQUIPMENT SALES	281 SIXTH STREET P.O. BOX 287 WEST WYOMING, PA 18644	(570)693-2810

MATERIALS:

BRIDGING PLATE:

MILD STEEL 1/8" OR 1/4" THICK PLATE, 8" WIDE OR 18 GAUGE ALUMINUM, 8" WIDE.

BINDER:

TYPE: POLYMER MODIFIED ASPHALT  
 SOFTENING POINT: 180 DEGREES F. MIN.  
 FLOW: 3 mm. MAX. AT 140 DEGREES F.  
 PENETRATION: 9 mm. MAX. AT 77 DEGREES F.  
 1 mm. MIN AT 0 DEGREES F.  
 ASTM D 3407  
 DUCTILITY: 40 cm. MIN. ASTM D 113  
 RESILIENCE: 60% MIN. AT 77 DEGREES F.  
 TENSILE ADHESION: 700% MIN.  
 SPECIFIC GRAVITY: 1.10 \* 0.05  
 POURING TEMP: 350 - 390 DEGREES F.

AGGREGATE:

TYPE: CRUSHED, DOUBLE WASHED, AND DRIED GRANITE OR BASALT

GRADATION: THE GRADATION OF THE AGGREGATE VARIES BY MANUFACTURER AND WILL BE AS PER THE MANUFACTURER'S RECOMMENDATIONS FOR THE SYSTEM BEING USED ON THIS PROJECT.

BACKER ROD:

THE BACKER SHALL BE A CLOSED CELL FOAM EXPANSION JOINT FILLER CAPABLE OF WITHSTANDING THE PLACEMENT TEMPERATURE OF THE POLYMER MODIFIED ASPHALT.

NOTE: PRIOR TO PLACEMENT OF ANY PORTION OF THE JOINT SYSTEM, THE PROJECT ENGINEER MUST HAVE CERTIFIED TEST DATA MEETING ALL THE MINIMUM REQUIREMENTS OF ALL THE MATERIALS OF THE JOINT SYSTEM.

INSTALLATION PROCEDURES:

SAWING AND SURFACE PREPARATION:

AFTER ALL PAVING OPERATIONS ARE COMPLETE, THE OVERLAY IS TO BE TRANSVERSELY SAW CUT FULL DEPTH NO LESS THAN TWO INCHES DEEP (20" CENTERED OVER JOINT OPENING, UNLESS OTHERWISE NOTED). REMOVE ALL MATERIAL, INCLUDING WATER-PROOFING MATERIAL, BETWEEN SAW CUTS. THOROUGHLY CLEAN AND DRY EXPOSED CONCRETE, STEEL, AND CUT SURFACES USING COMPRESSED AIR AND A HOT COMPRESSED AIR (HCA) LANCE. THE LANCE MUST PRODUCE A FLAME RETARDED AIR STREAM TEMPERATURE OF 3000 DEGREES F. AT A VELOCITY OF 3,000 FEET PER

SECOND WITH 15 PSIG CHAMBER PRESSURE. IF THERE IS AN INTERRUPTION DUE TO WEATHER OR OTHER CAUSES, THE OPERATION WILL BE REPEATED WITH THE HCA LANCE IMMEDIATELY BEFORE THE BINDER COAT OPERATION. ALSO, 6 INCHES OF THE ROAD SURFACE ON EITHER SIDE OF THE JOINT WILL BE DRIED SO THAT A SUITABLE SURFACE FOR BITUMEN ADHESION IS OBTAINED.

SEALING OF EXPANSION JOINT: (PRE-STRESSED BOX OR CONCRETE SLAB)

THE EXPANSION JOINT GAP IS TO BE SEALED AND A BRIDGING PLATE CENTERED ALONG IT. A VERY NARROW GAP WILL BE SEALED BY POURING HOT BINDER INTO THE GAP. GAPS OF 1/8" OR MORE WILL FIRST BE FILLED WITH AN APPROPRIATELY SIZED BACKER ROD. THE BACKER ROD WILL BE INSTALLED SO THAT IT IS BETWEEN 1/8" AND 1/8" BELOW THE TOP OF THE EXISTING GAP. THE GAP WILL THEN BE FILLED WITH BINDER.

BOND BREAKER:

SPREAD BINDER OVER SURFACE AREA WHERE THE METAL BRIDGING PLATE WILL BE PLACED. CENTER THE BRIDGING PLATE OVER THE EXISTING JOINT AND BED INTO THE HOT BINDER. BUTT JOINT THE BRIDGING PLATES TO ACCOMMODATE THE ENTIRE JOINT LENGTH. SPIKE HOLES WILL BE DRILLED AT 1 FOOT INTERVALS ALONG THE LONGITUDINAL CENTERLINE OF THE PLATES. SECURE BRIDGING PLATE WITH NAILS OR SPIKES. SEAL BUTT JOINTS WITH HOT BINDER AND ALLOW BINDER TO SETUP BEFORE NEXT OPERATION. WHEN ALUMINUM BRIDGING PLATES ARE USED, ONLY THE BINDER IS REQUIRED TO SECURE THE INDIVIDUAL PLATES.

BINDER COAT:

SEAL ALL PREPARED, EXPOSED SURFACES OF THE JOINT WITH BINDER. POUR THE HOT BINDER OVER THE FLOOR AREA OF THE JOINT AND SPREAD TO COAT ALL EXPOSED SURFACES. THE BINDER WILL BE A MINIMUM OF 1/32" THICK ON THE BOTTOM OF THE JOINT CAVITY, WITH POOLS OF GREATER THICKNESS WHERE SURFACE IRREGULARITIES EXIST. THE BINDER APPLICATION TEMPERATURE WILL BE BETWEEN 350 AND 390 DEGREES F. THE BINDER WILL NOT BE ALLOWED TO BE HEATED ABOVE 410 DEGREES F. NOR ALLOWED TO EXCEED 390 DEGREES F. FOR MORE THAN 1 HOUR. A DOUBLE JACKETED OIL MELTER WILL BE USED TO HEAT THE BINDER. THE MELTER WILL BE EQUIPPED WITH A CONTINUOUS AGITATION SYSTEM, TEMPERATURE CONTROLS, AND A CALIBRATED THERMOMETER. ALSO A SYSTEM FOR ACCURATELY MEASURING THE WEIGHTS OF THE BINDER AND THE AGGREGATE WILL BE REQUIRED.

BUILD-UP OF JOINT LAYERS:

AGGREGATE PREPARATION:

HEAT THE AGGREGATE TO A TEMPERATURE OF 275 TO 325 DEGREES F., WITH A SUITABLE ROTATING DRUM WITH ATTACHED HEAT SOURCE OR A HOT COMPRESSED AIR LANCE, TO REMOVE DUST AND MOISTURE.

AGGREGATE PROPORTION AND LAYER THICKNESS:

MIX THE AGGREGATE WITH THE BINDER SUCH THAT THE MINIMUM AGGREGATE CONTENT BY WEIGHT WILL BE 68%. THE HEATED AGGREGATE AND BINDER WILL BE COMBINED IN LAYERS, UNLESS PATENTED INSTALLATION REQUIRES DIFFERENTLY, NOT LESS THAN 3/4 OF AN INCH NOR EXCEEDING 2-1/2 INCHES. THE THICKNESS OF EACH LAYER CAN BE VARIED WITHIN THESE LIMITS, TO ACHIEVE THE REQUIRED JOINT THICKNESS (MIN. 2 INCHES). THE OBJECTIVE IS TO COAT EACH STONE AND FILL THE VOIDS WHILE AVOIDING AN EXCESS OF BINDER. THIS WILL ACHIEVE THE MAXIMUM CONTENT OF STONE CONSISTENT WITH ALL STONES BEING COATED WITH BINDER. RAKE THE MIXTURE TO MIX AND LEVEL.

THE TOP LAYER THICKNESS WILL VARY BETWEEN 1/2 INCH AND ONE (1) INCH. IN PREPARING THE TOP LAYER, THE RATIO OF AGGREGATE TO BINDER WILL BE APPROXIMATELY 6:1 BY WEIGHT. OVERFILL THE TOP LAYER AND COMPACT TO THE LEVEL OF THE ADJACENT SURFACES USING A ROLLER OR VIBRATORY PLATE COMPACTOR. IMMEDIATELY AFTER COMPLETION OF THE COMPACTION, POUR SUFFICIENT BINDER OVER THE JOINT TO FILL THE SURFACE VOIDS AND COAT THE SURFACE STONE. DUST THE FINISHED JOINT WITH A FINE, DRY AGGREGATE TO PREVENT TACKINESS.

MAINTENANCE OF TRAFFIC:

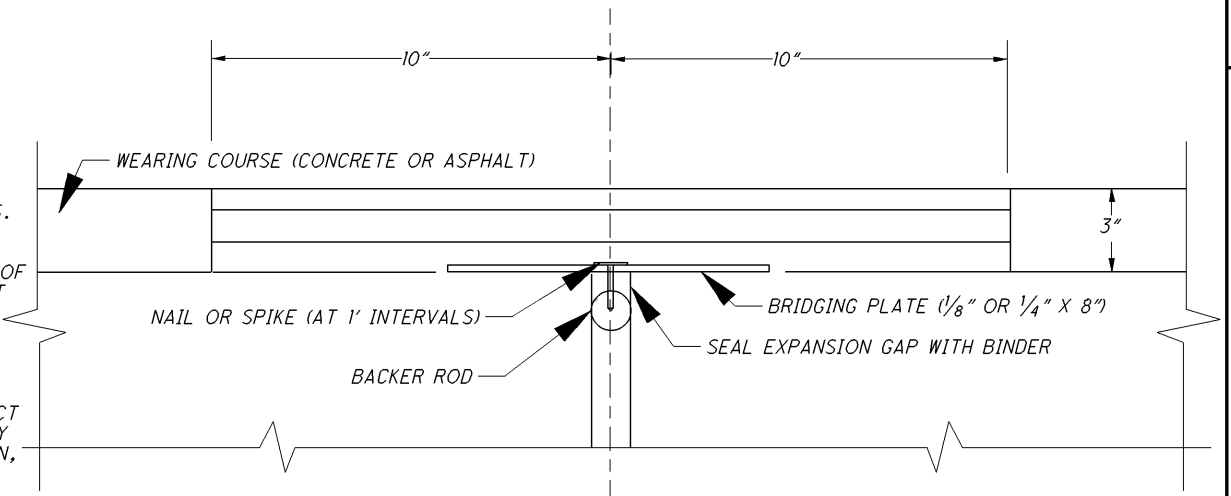
IF NECESSARY TO FACILITATE TRAFFIC MAINTENANCE, THE JOINT WILL BE INSTALLED IN TWO (2) HALF-WIDTH PHASES. DURING PHASE 1 APPROXIMATELY HALF OF THE TOTAL JOINT WILL BE INSTALLED. DURING PHASE 2, A MINIMUM OF TWO (2) INCHES OF THE PHASE 1 JOINT WILL BE REMOVED, AT OR NEAR THE CENTERLINE, WITH THE REMAINDER OF THE JOINT INSTALLED. IN ALL CASES, OPERATIONS WILL BE SCHEDULED SO THAT ALL LANES CAN BE OPEN TO TRAFFIC DURING ALL NON-WORKING HOURS.

TESTING:

CERTIFICATION WILL BE SUPPLIED FOR EACH PROJECT SHOWING BINDER COMPLIANCE WITH REQUIRED PROPERTIES. A ONE QUART SAMPLE OF BINDER WILL BE RETRIEVED FROM EACH BRIDGE FOR FURTHER TESTING BY THE O.D.O.T OFFICE OF MATERIALS MANAGEMENT.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

THE DEPARTMENT WILL MEASURE THE JOINT BY THE NUMBER OF FEET AND WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE AS: ITEM SPECIAL, FEET, POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM.



TYPICAL PRESTRESSED BOX BEAM

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**NOTES**

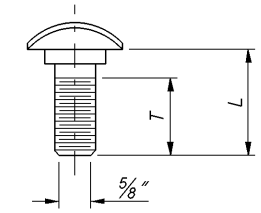
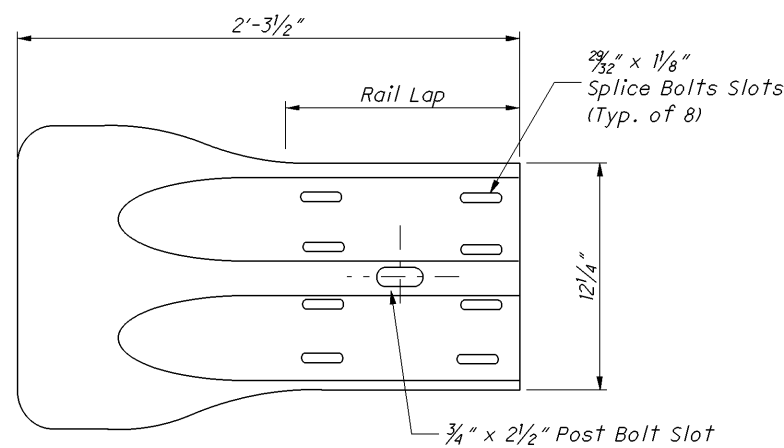
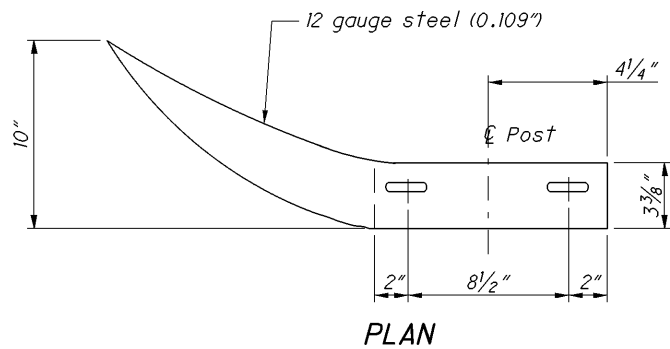
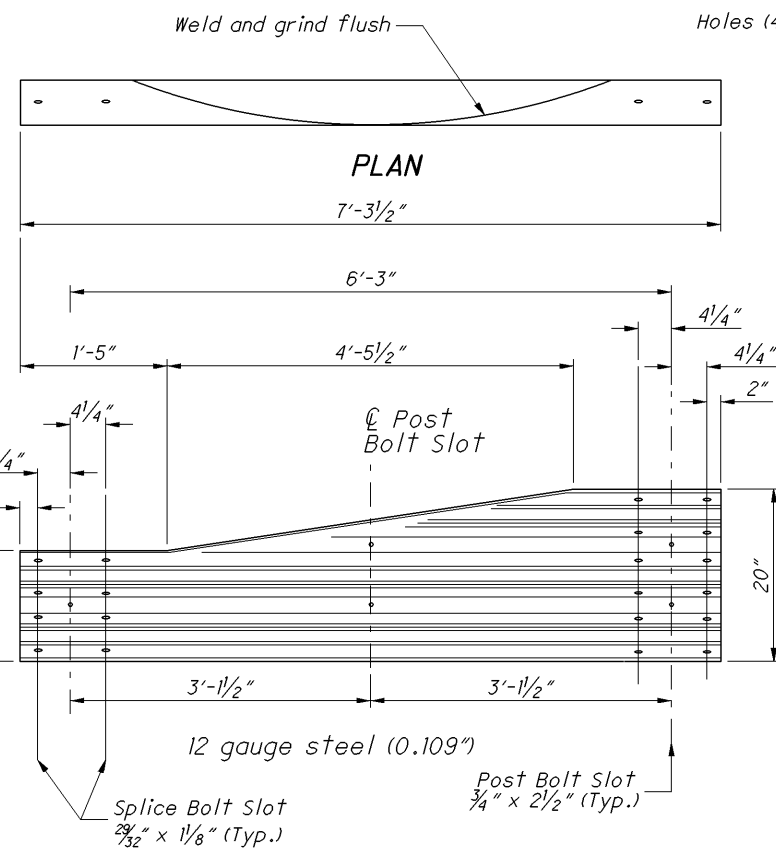
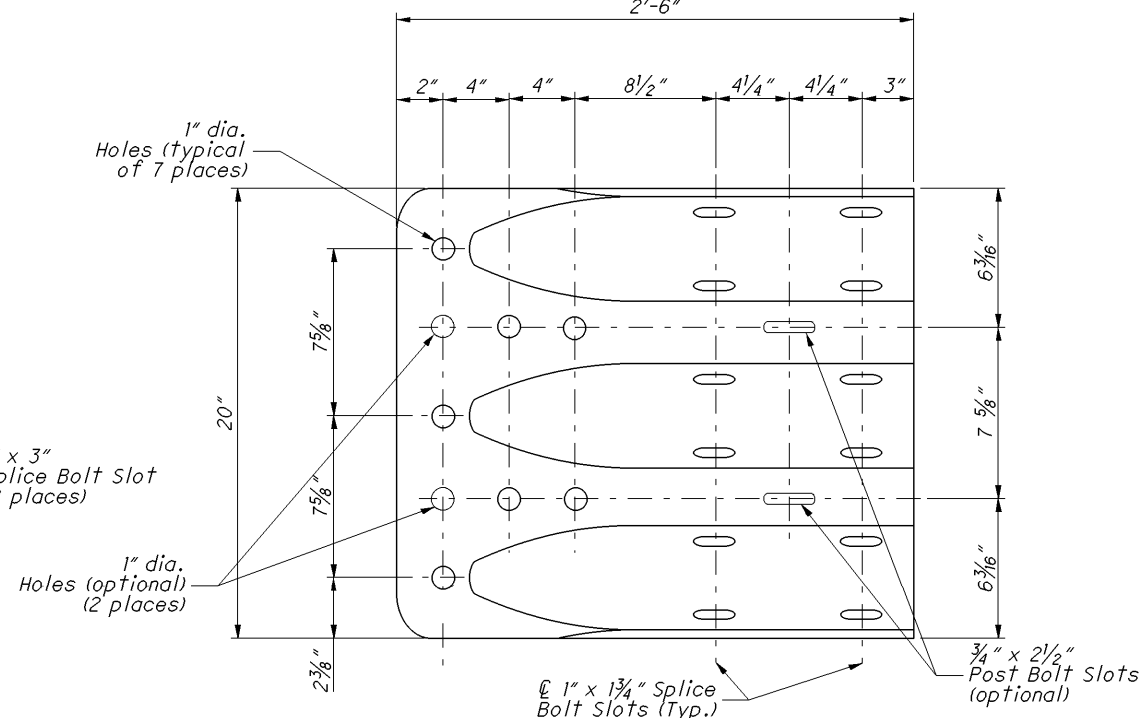
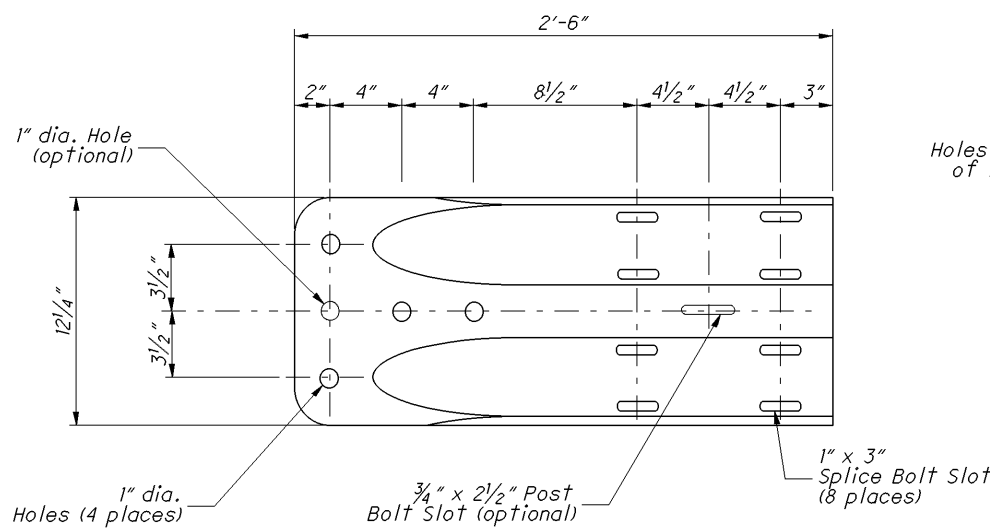
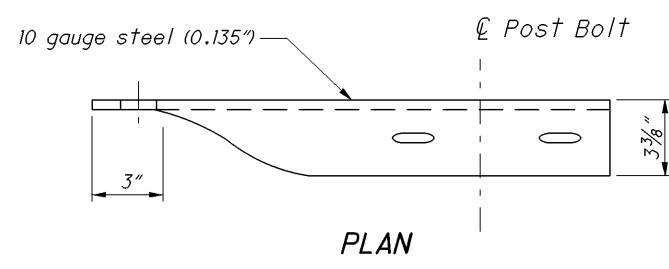
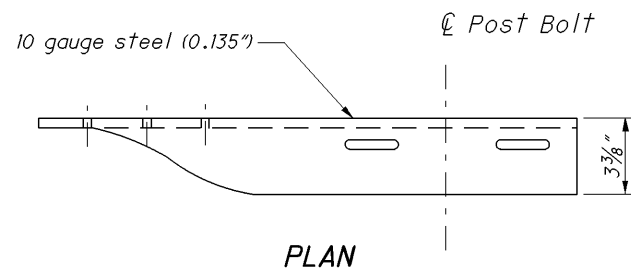
**GENERAL:** Components shown on this drawing are used in a variety of guardrail systems. See individual guardrail drawing for specific applications.

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.



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

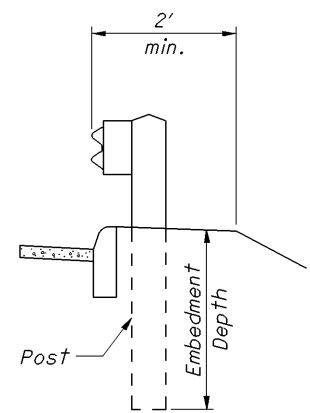
Longer Bolt may be needed for round Wood Post larger than 8" dia.

**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.

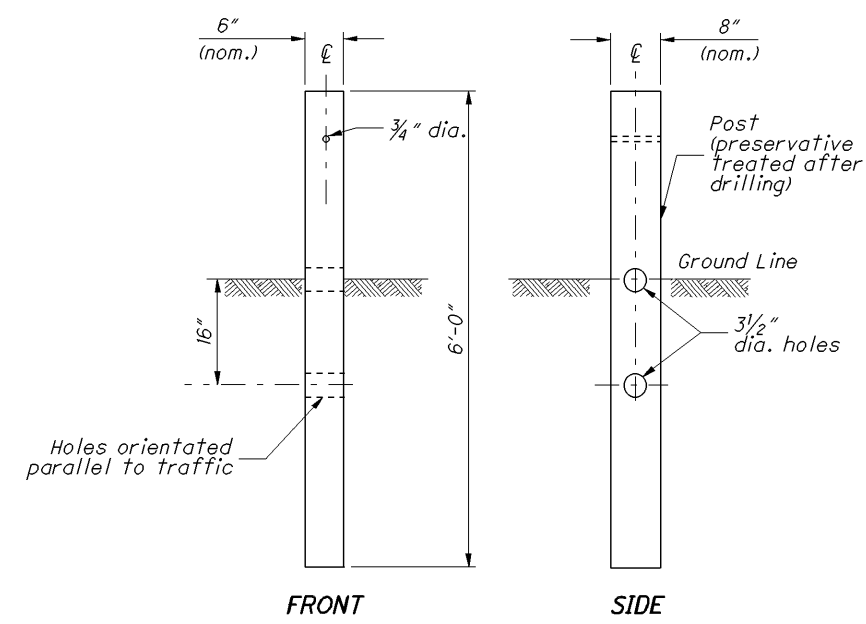
**ELEVATION  
W-BEAM FLARED END SECTION**



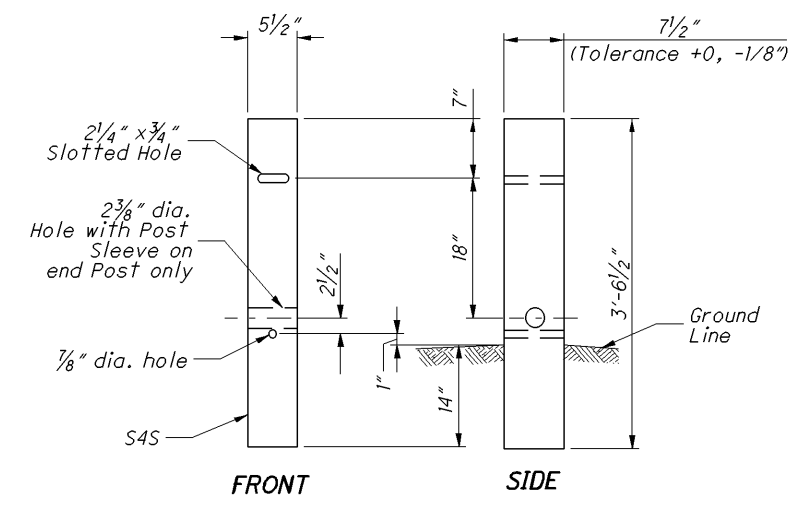


**DETAIL A**

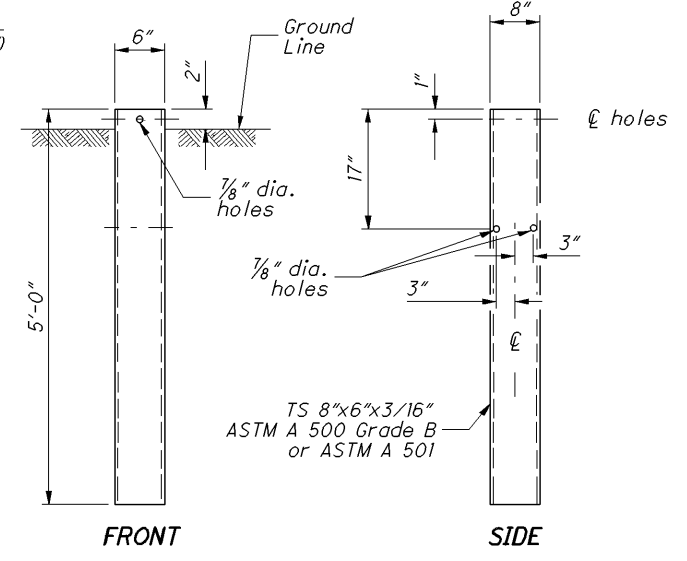
See POST EMBEDMENT DEPTH Note



**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.

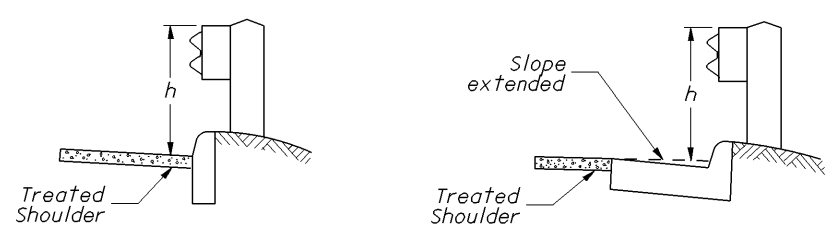
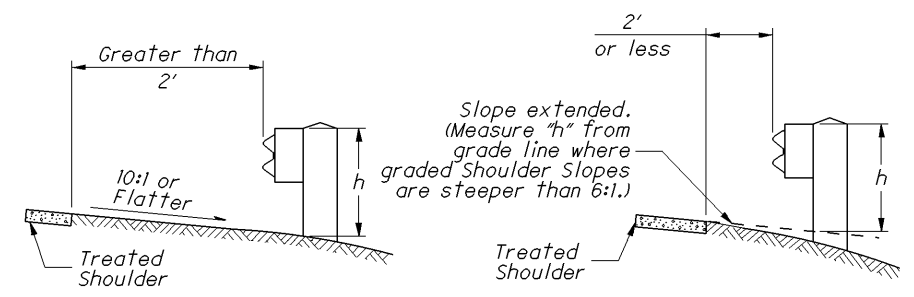
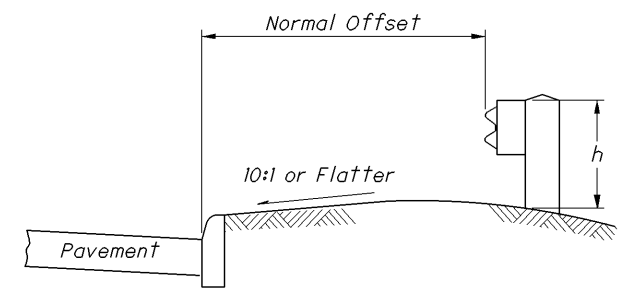
Do not drive posts located over a culvert with less than 4'-3" of cover; instead set in drilled or dug holes. Where the available post embedment depth is less than 3'-5", encase the post with a minimum of 4" concrete.

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.

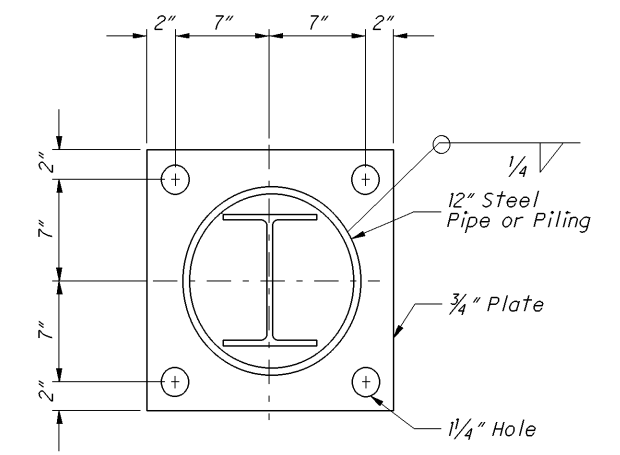
Expansion shield anchors as specified in CMS 712.01 may be substituted except where concrete deterioration has occurred, as determined by the Engineer. Where self-drilling anchors are used, drill the holes with the expansion shield (not by a drill bit) and install the shield flush with the concrete surface.

**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.)



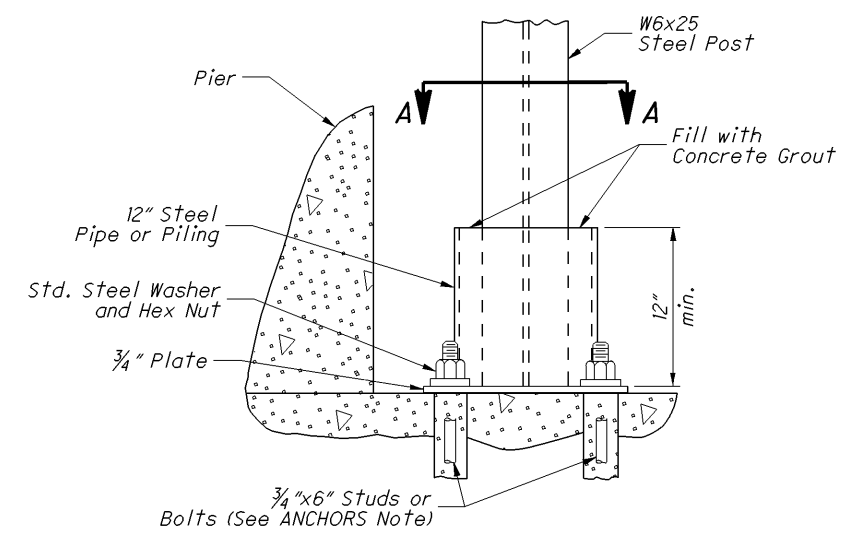
$h$  = Standard Height (See GUARDRAIL HEIGHT Note)

**MEASURING GUARDRAIL HEIGHT**



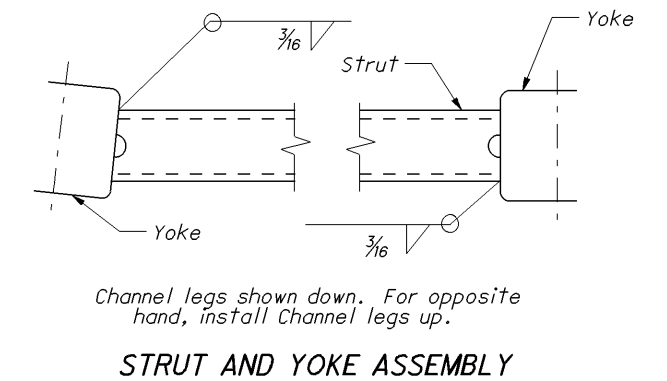
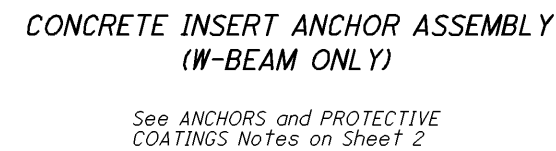
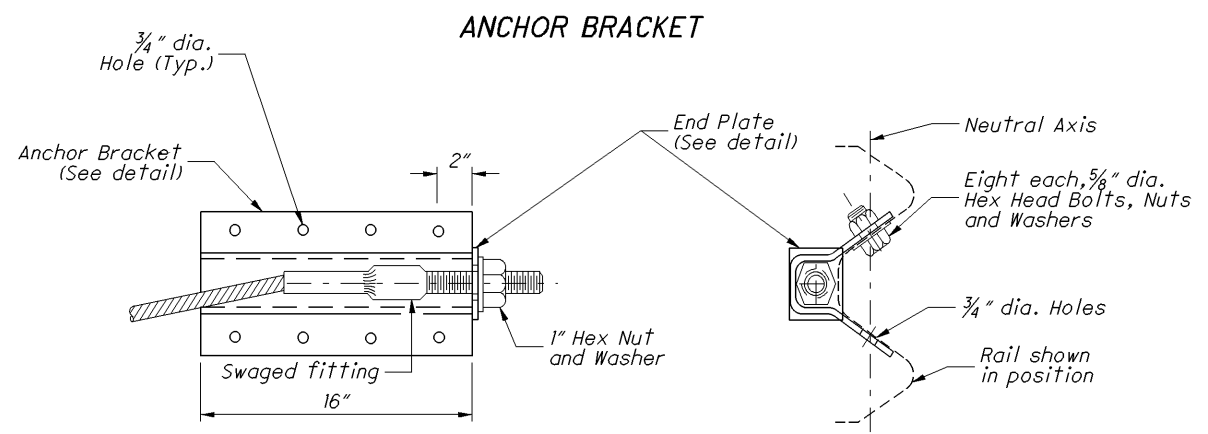
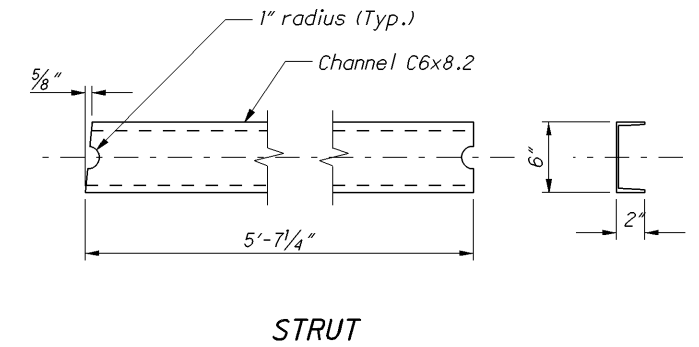
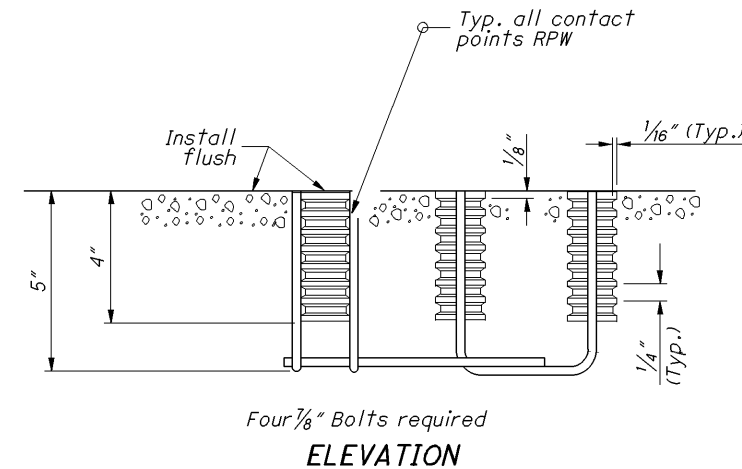
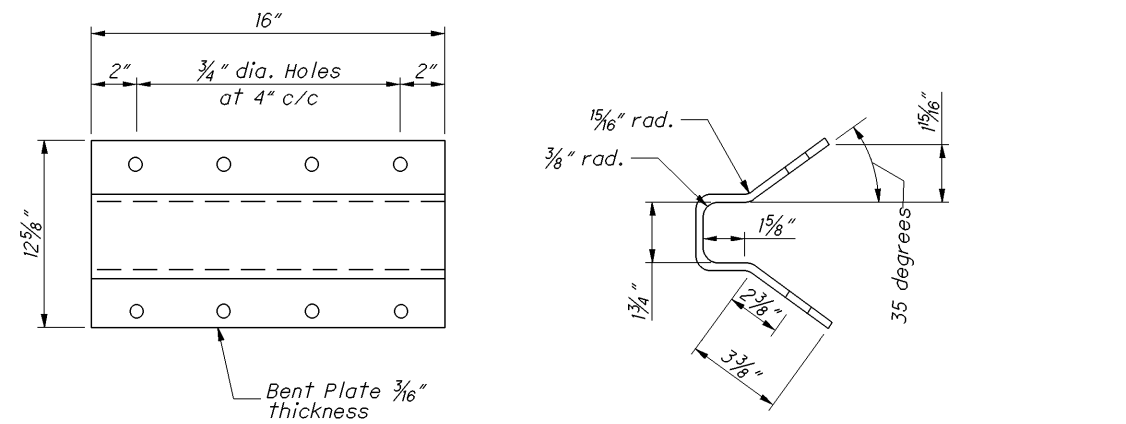
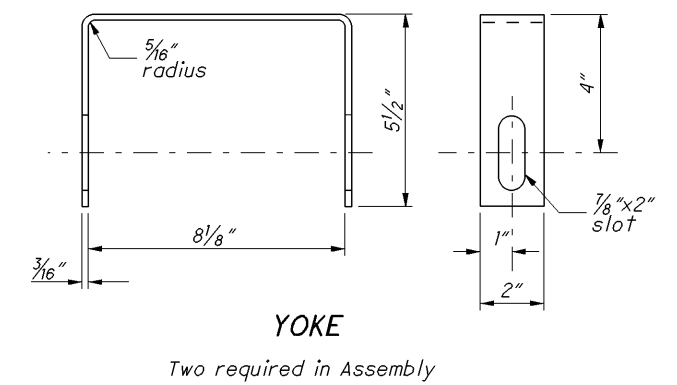
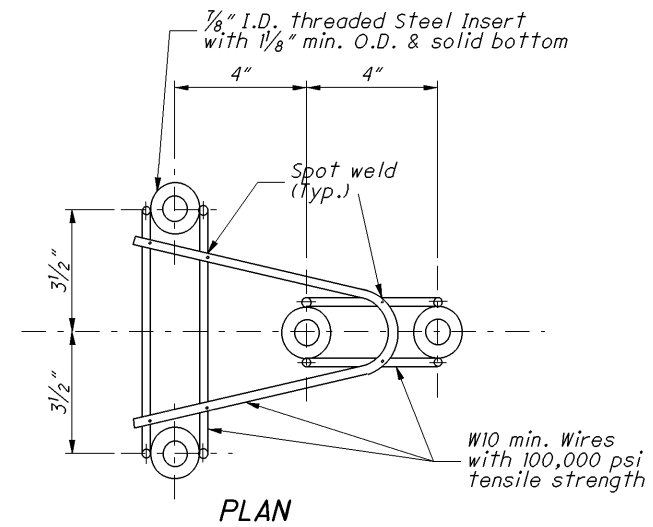
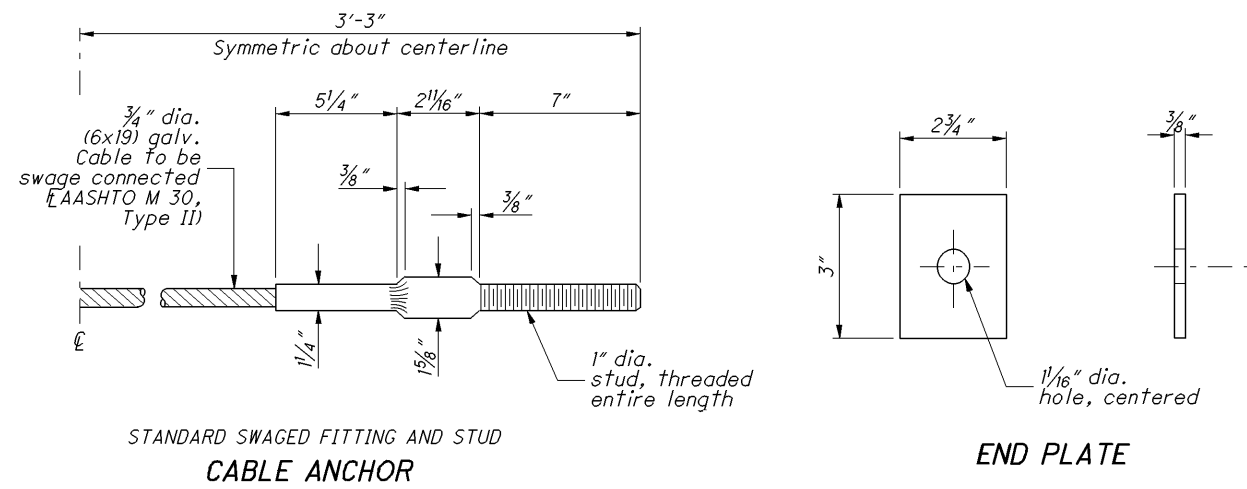
Footing Anchor and hardware need not be galvanized

**SECTION A-A**

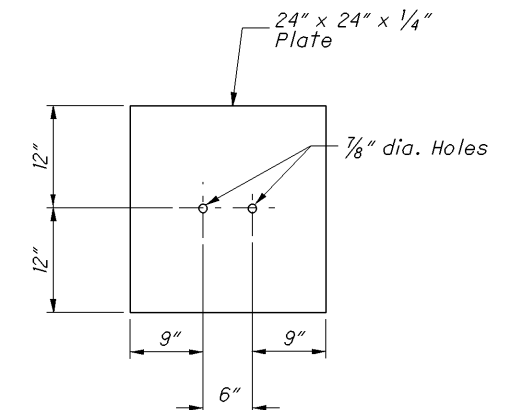
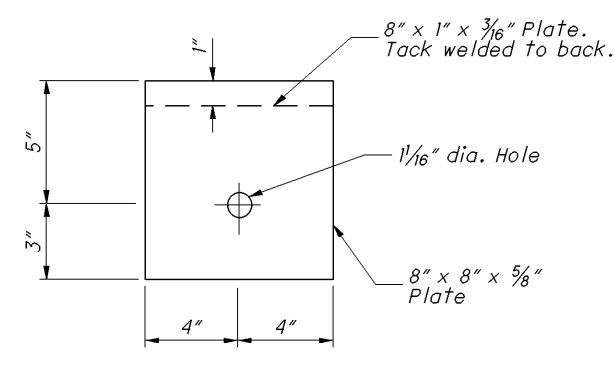
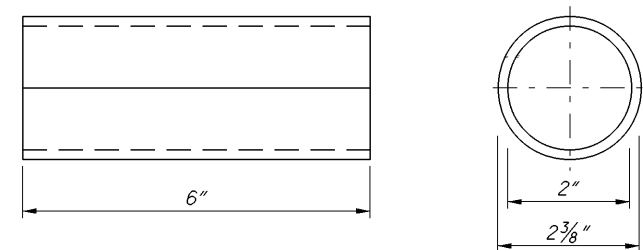


**ELEVATION FOOTING ANCHOR**

See SPECIAL POST MOUNTINGS Note.



**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.

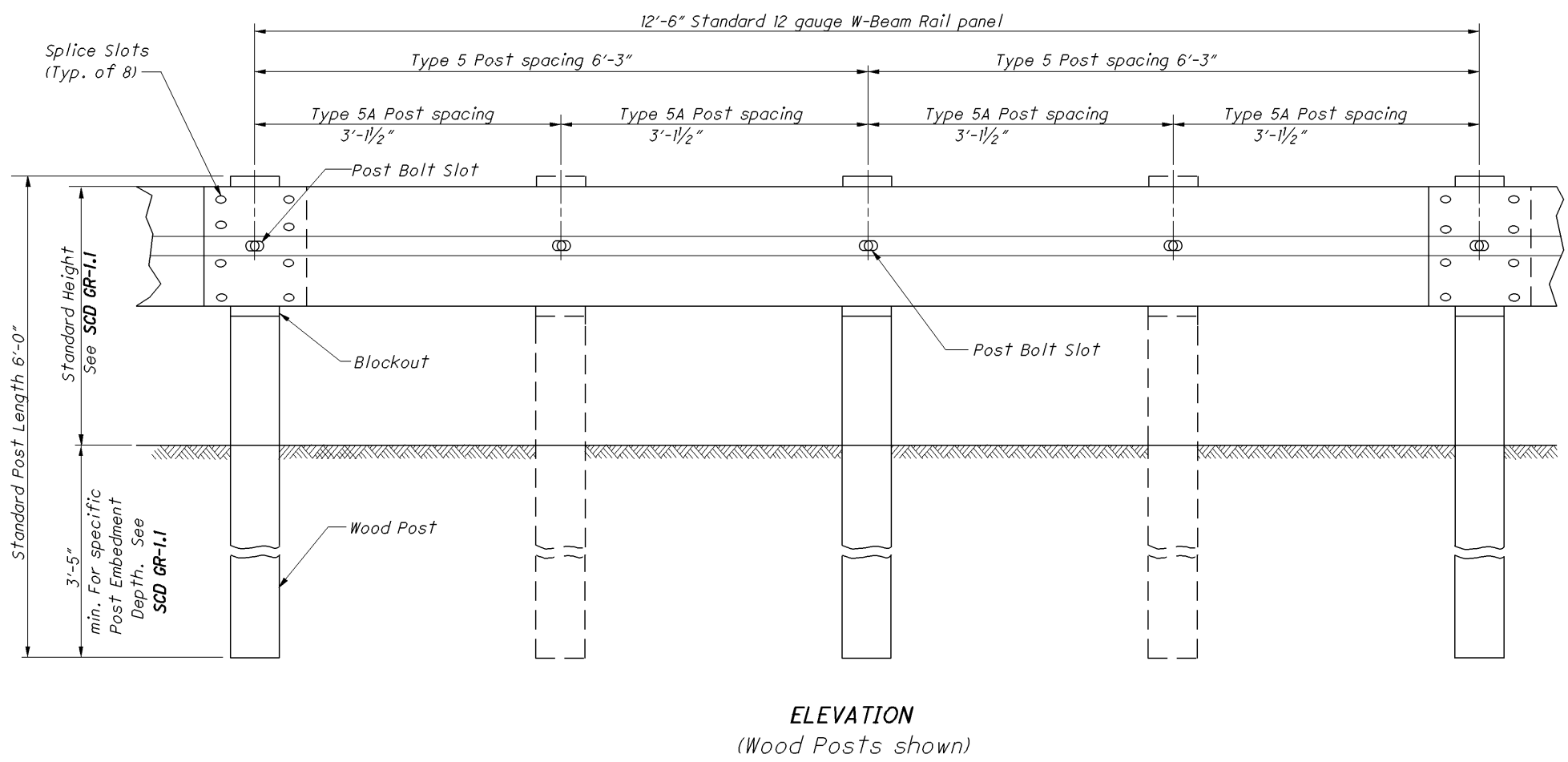
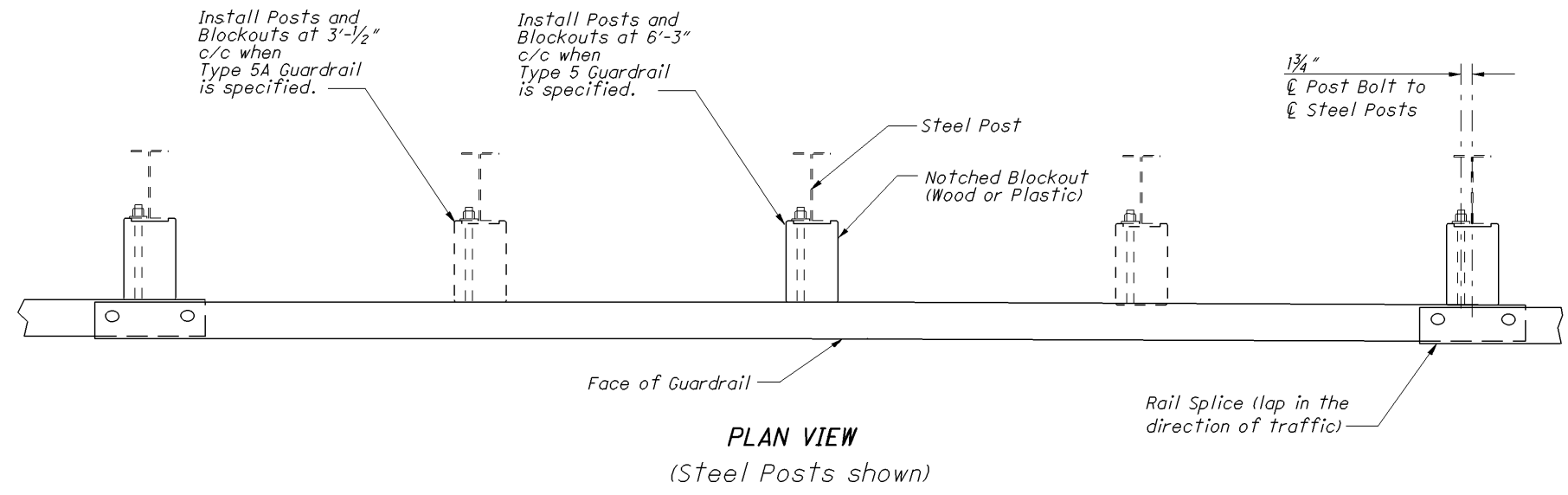
**BLOCKOUTS:** Blockout dimensions are dependent on post used. Wood Blockouts are to be pressure treated as specified in CMS 710.14. Bore bolt holes. Approved alternate blockouts may be used in lieu of the wood blockouts shown. The approved list is maintained by the **Office of Roadway Engineering**.

**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.

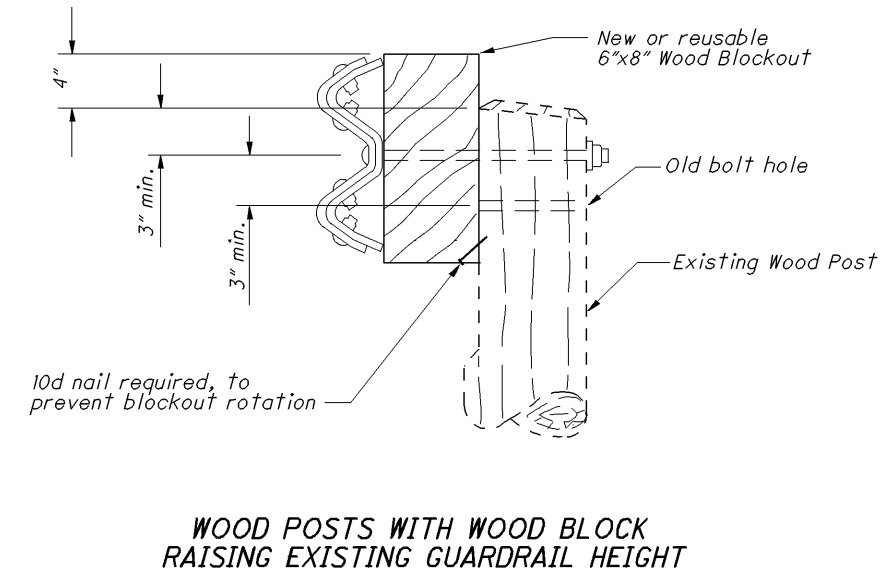
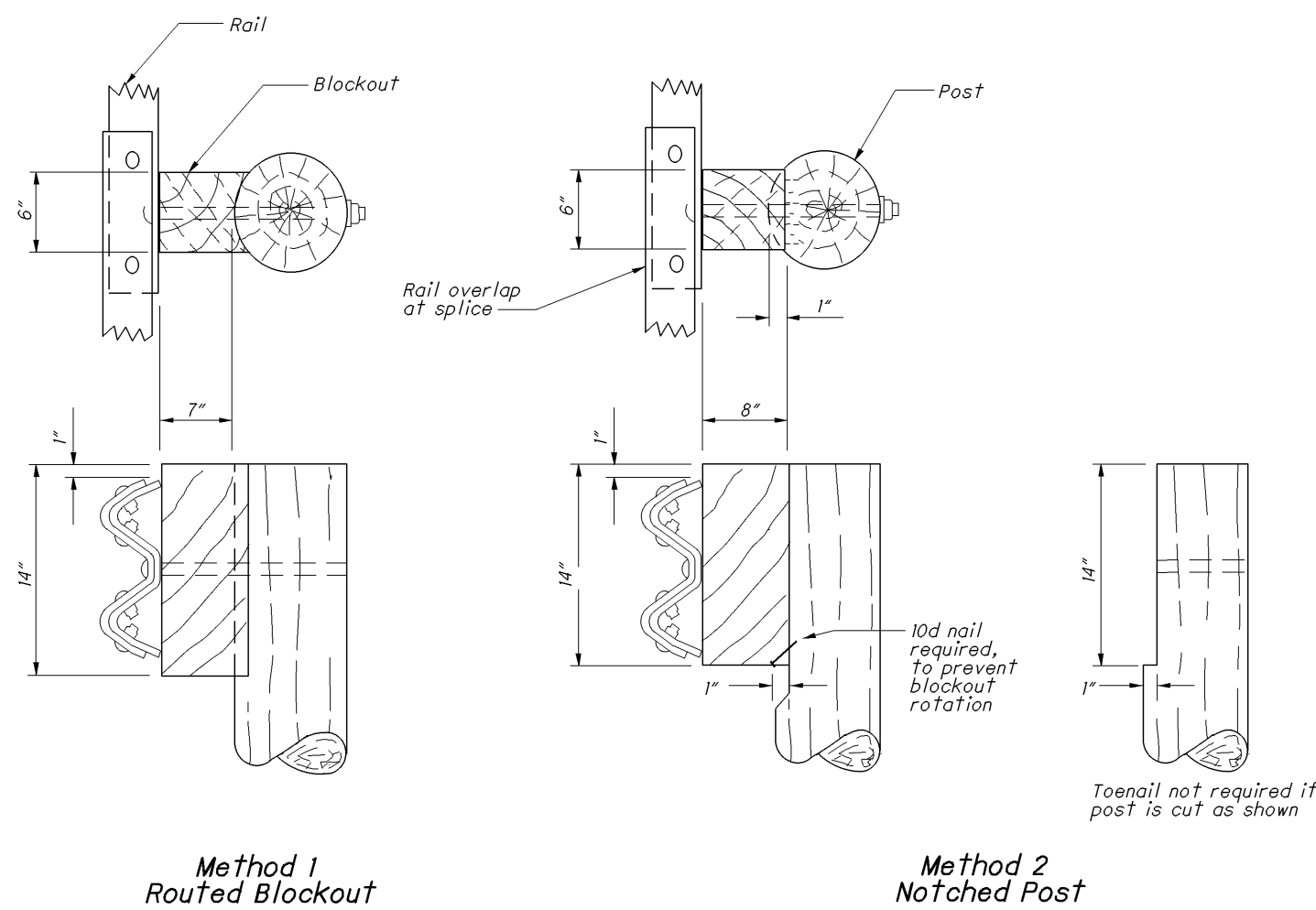
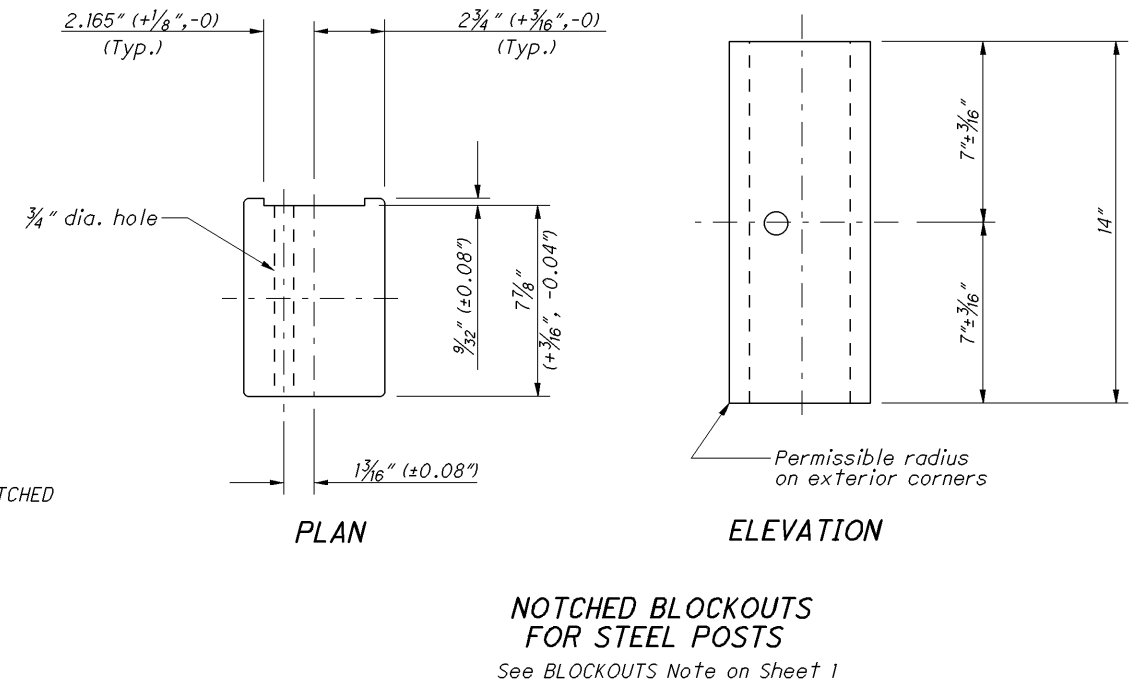
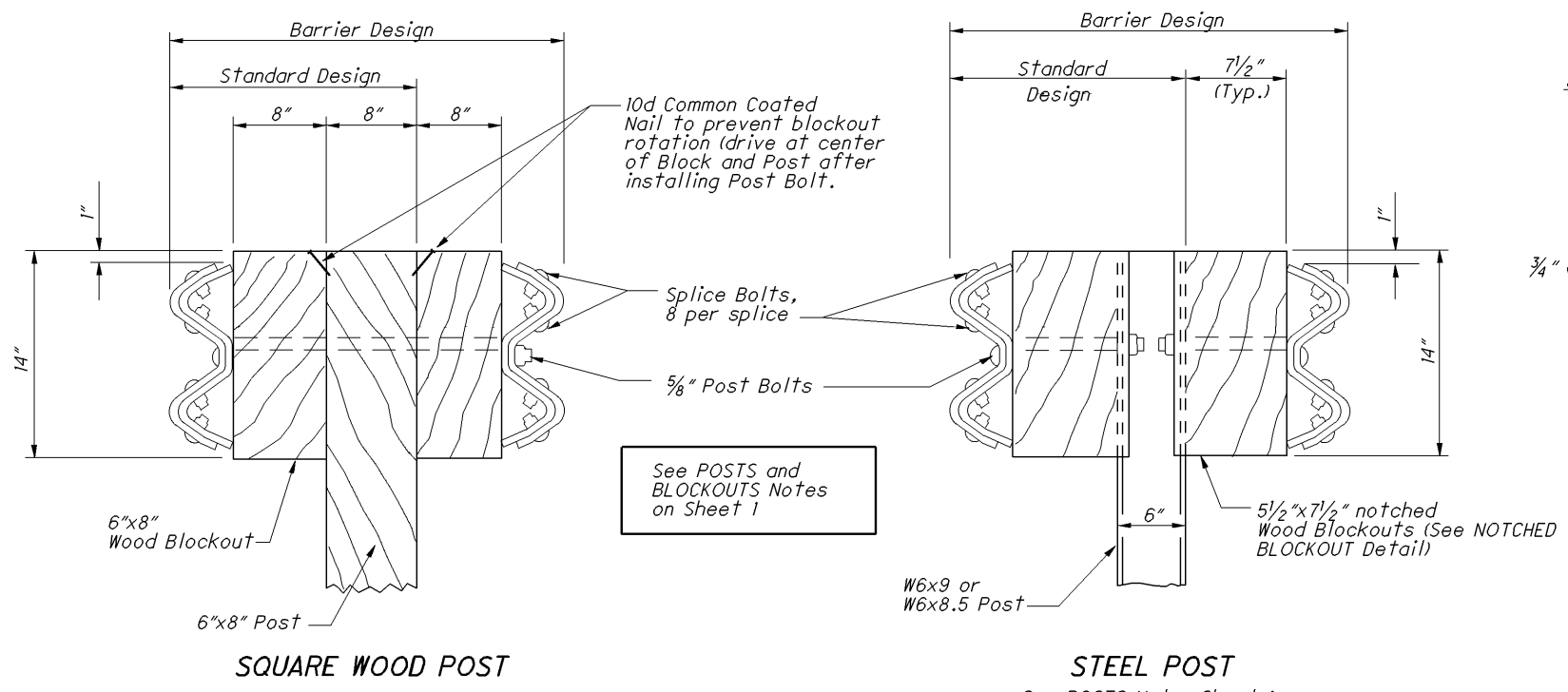
**MISCELLANEOUS:** For other guardrail details, see SCD GR-1.1.

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"



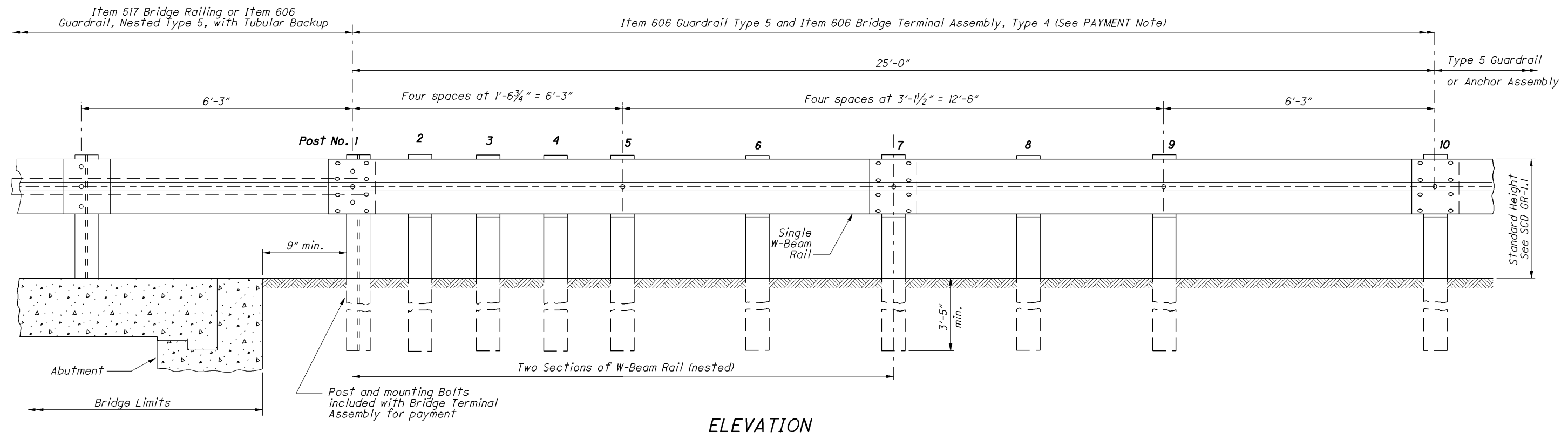
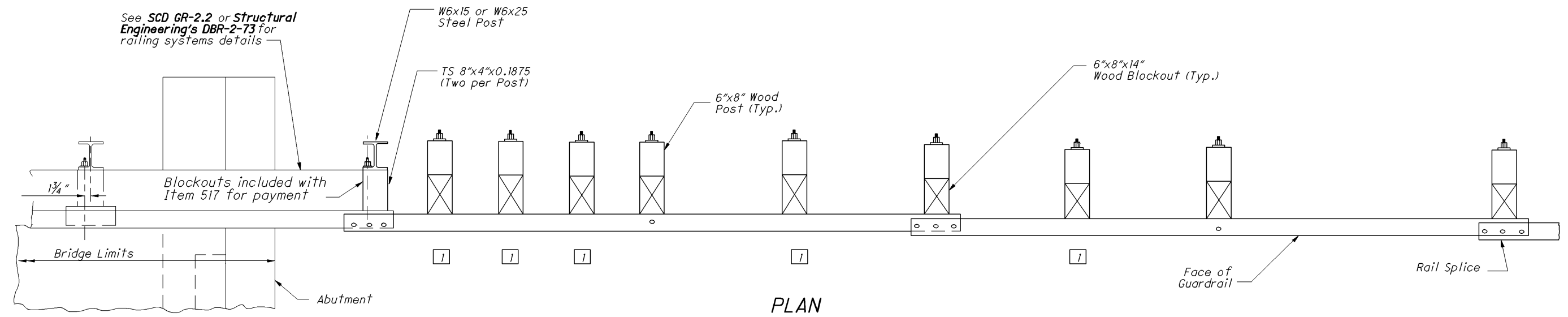
**ELEVATION**  
(Wood Posts shown)

DESIGNED	REVISION DATE
	CHECKED
PIS 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)



**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).

**DETAIL INFORMATION:** The first post off the bridge shall be steel (W6x15 or W6x25). All holes in the off-structure end of the approach panel rail section spanning the abutment are slotted 3/4"x2 1/2". 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 or W6x8.5 in lieu of the 6"x8" wood post. Use same post material through-out 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, such as additional posts and other hardware. The TS 8"x4" 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.

**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.

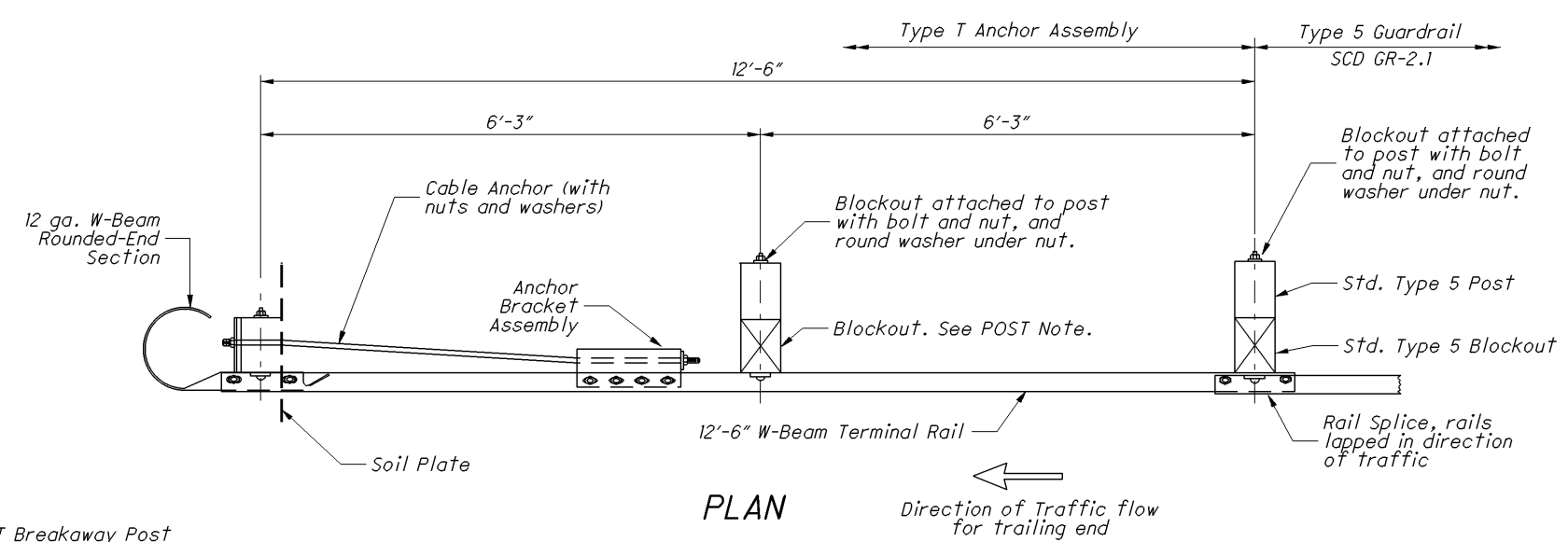
Concrete shall be class C.

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.

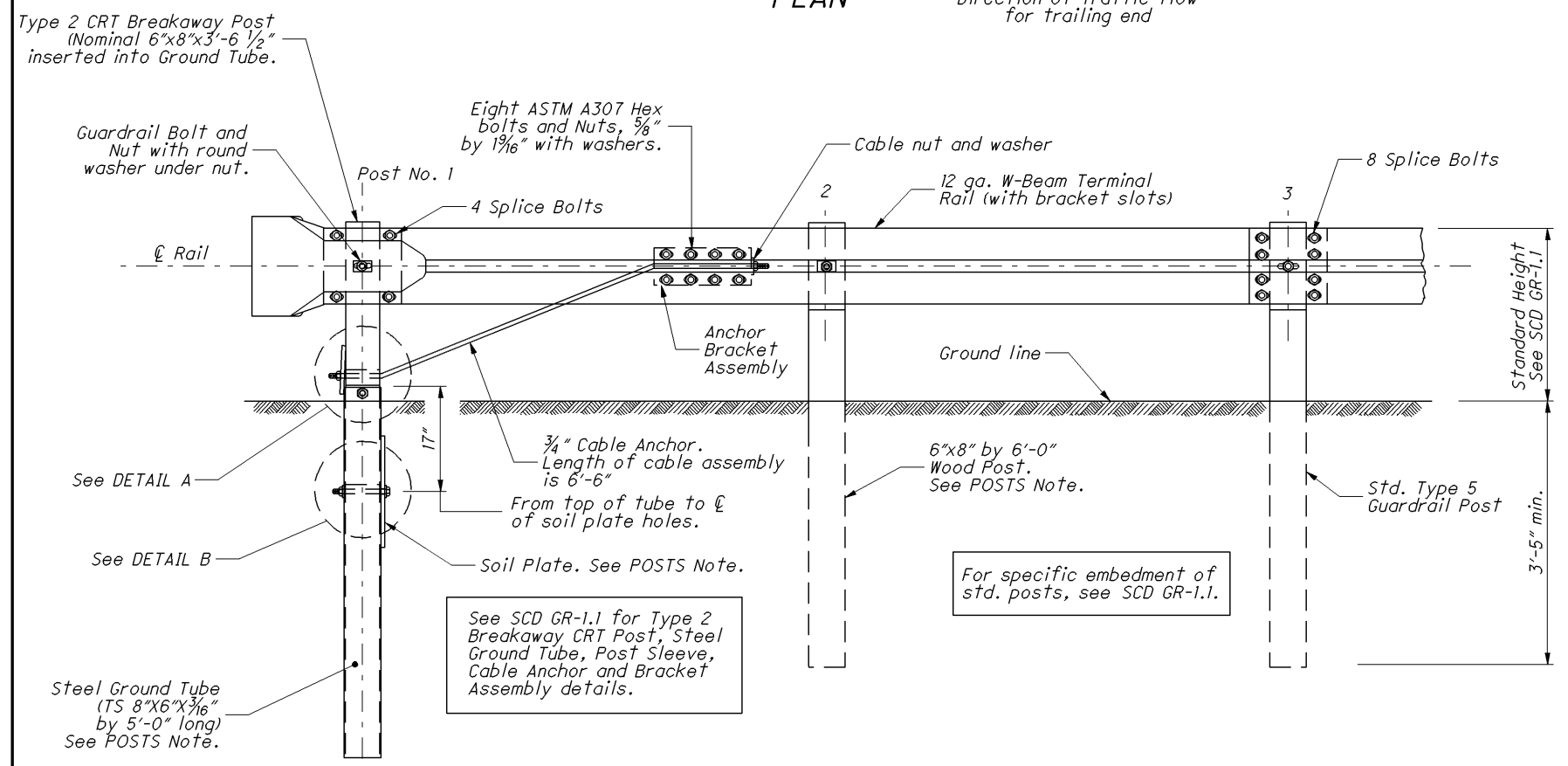
**POSTS:** Post No. 1 may be an 8'-0" long Steel Ground Tube without a Soil Plate in lieu of the 5'-0" tube with Soil Plate.

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.

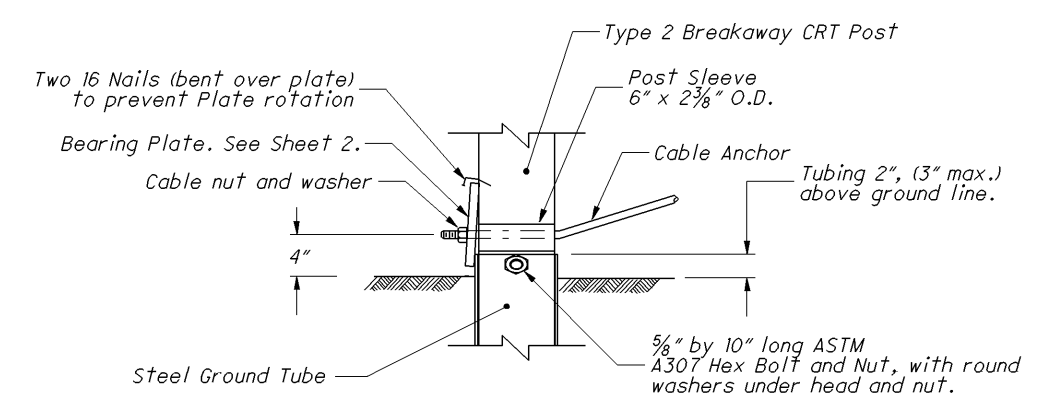
**PAYMENT:** All labor and materials, including the W-Beam Rounded End Section and the W-Beam Terminal Rail for the 12'-6" anchor assembly shall be included in the unit price bid for Item 606 - Anchor Assembly, Type T, Each.



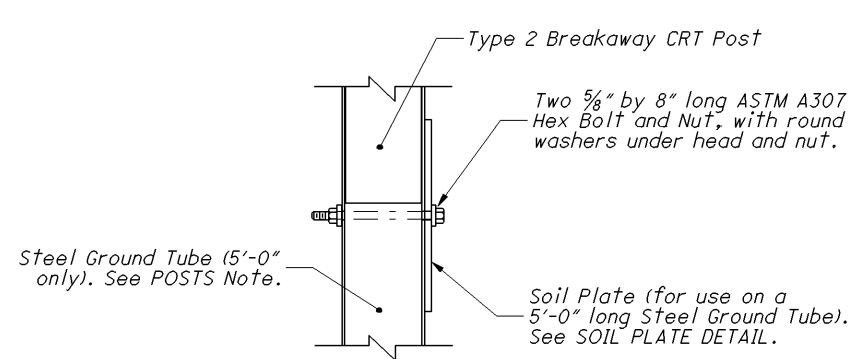
**PLAN**  
Direction of Traffic flow for trailing end



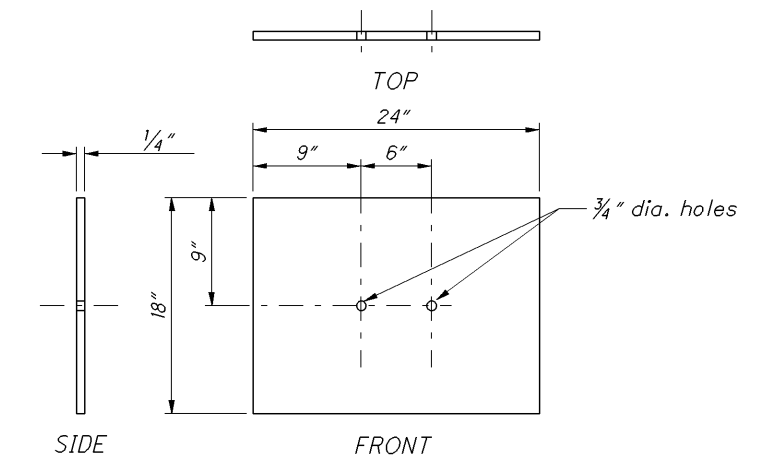
**ELEVATION - FOUNDATION TUBE**



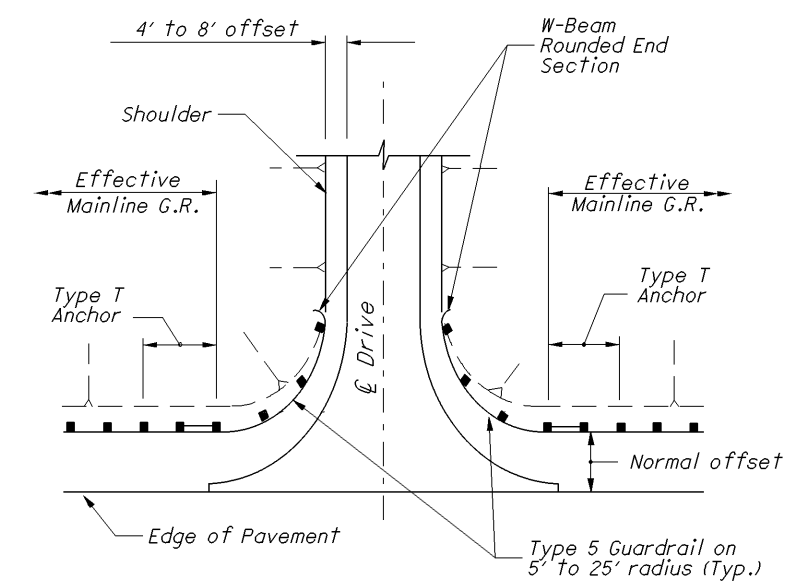
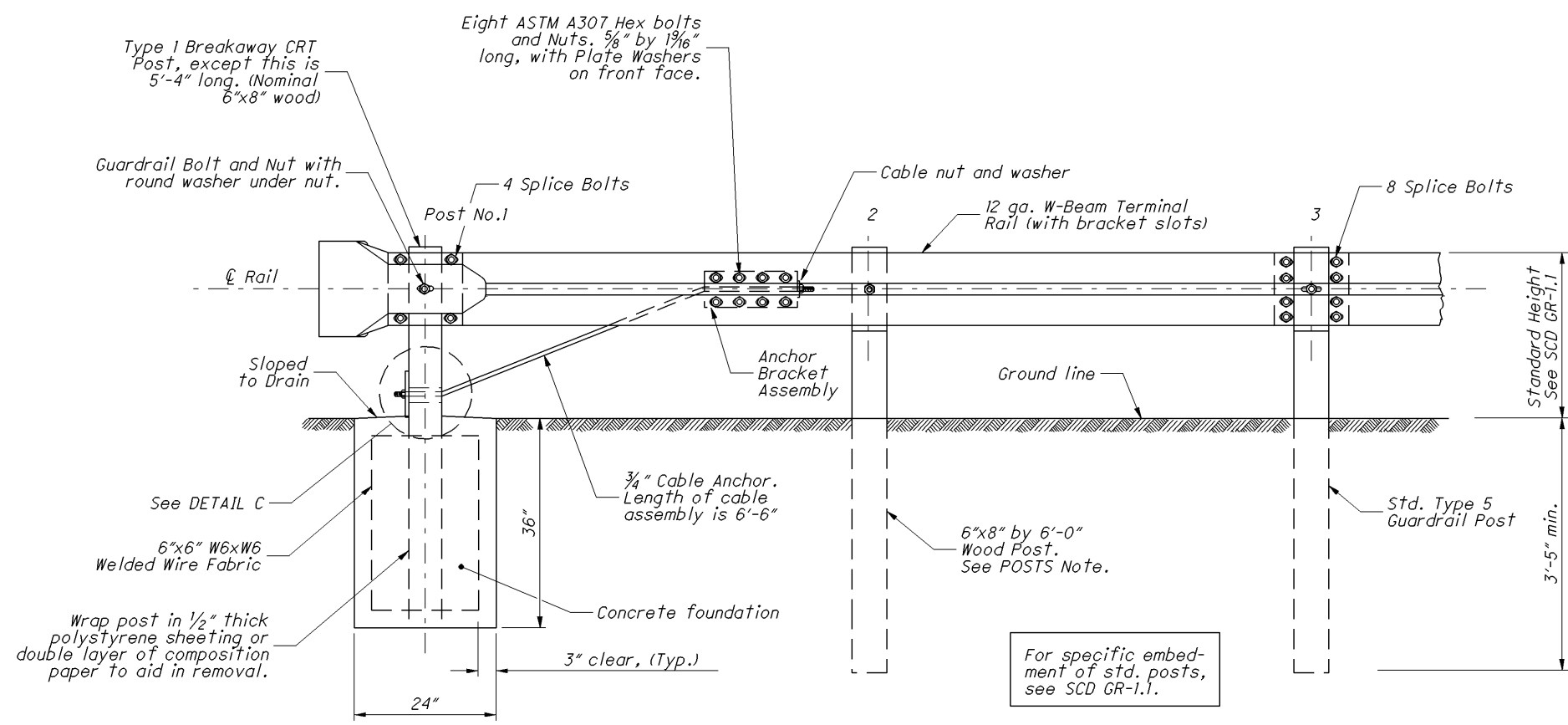
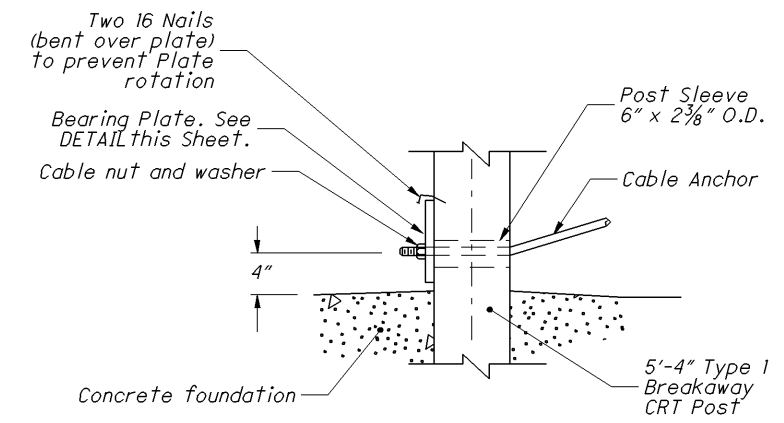
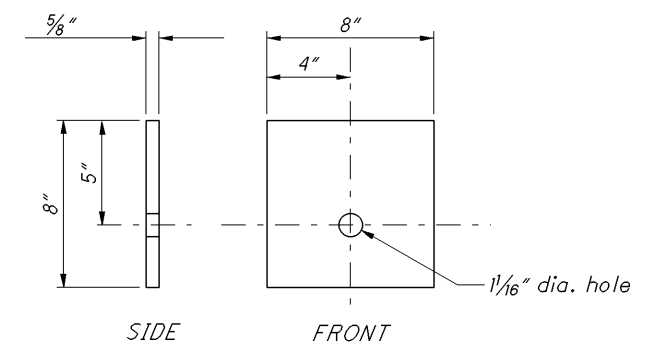
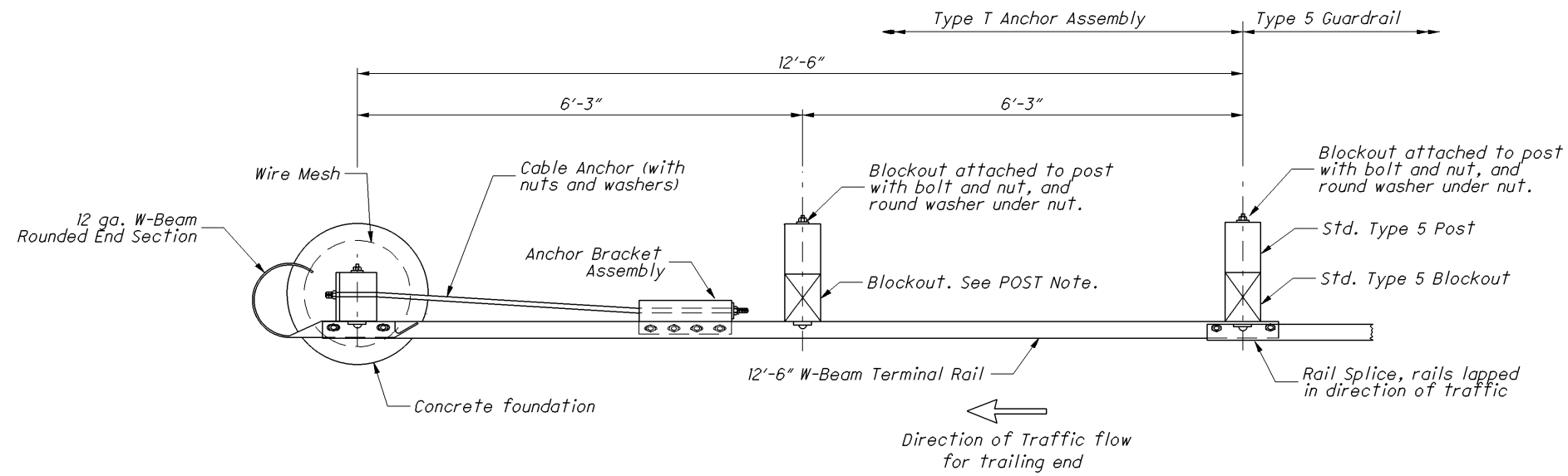
**DETAIL A**



**DETAIL B**



**SOIL PLATE DETAIL**



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

For specific embedment of std. posts, see SCD GR-1.1.

NOTES

**APPLICATION:** Utilize details shown here only where approach foreslopes are 6:1 or flatter.

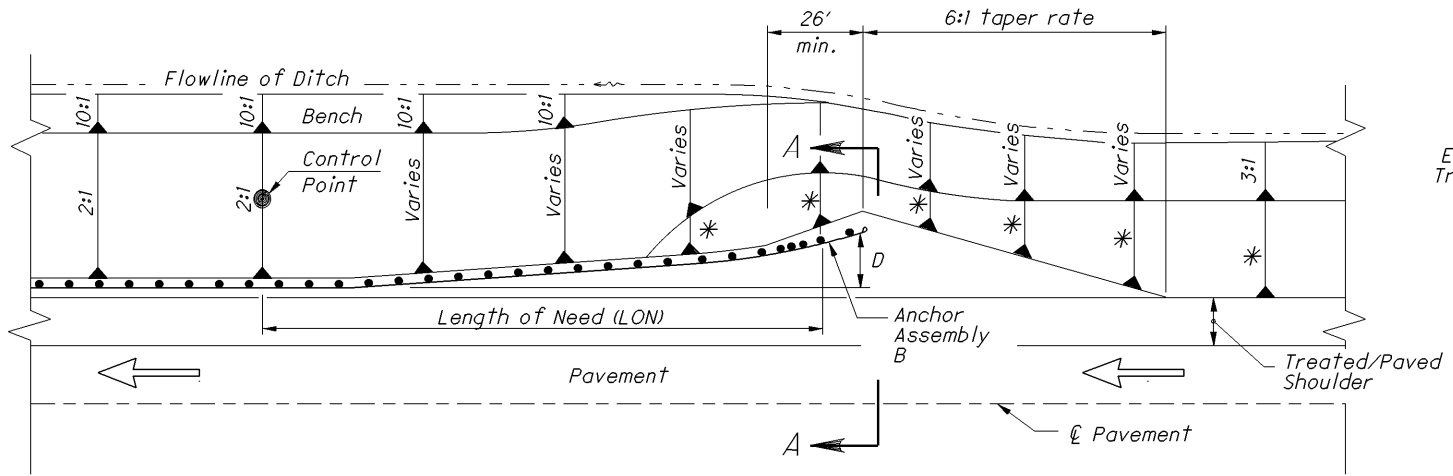
**SLOPES:** Slopes designated by \* are 6:1 or flatter. Construct slopes labeled "A" or "B" as specified in the plans.

**DISTANCES:** The Length of Need, LON, represents the distance from the control point to the beginning of the end treatment. "D" is the lateral offset of the flare.

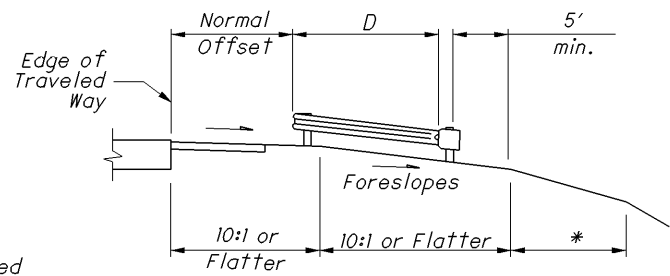
See **SCD GR-5.1** for additional details on guard-rail flares. The control point shown designates the extent of the hazard being shielded and is shown for design use only. See **Location & Design Manual, Volume 1**, Section 602, for more information.

**GRADING:** The Anchor Assembly shown requires proper grading to function properly. See **GRADING PLAN FOR FLARED ANCHOR ASSEMBLIES** for more information.

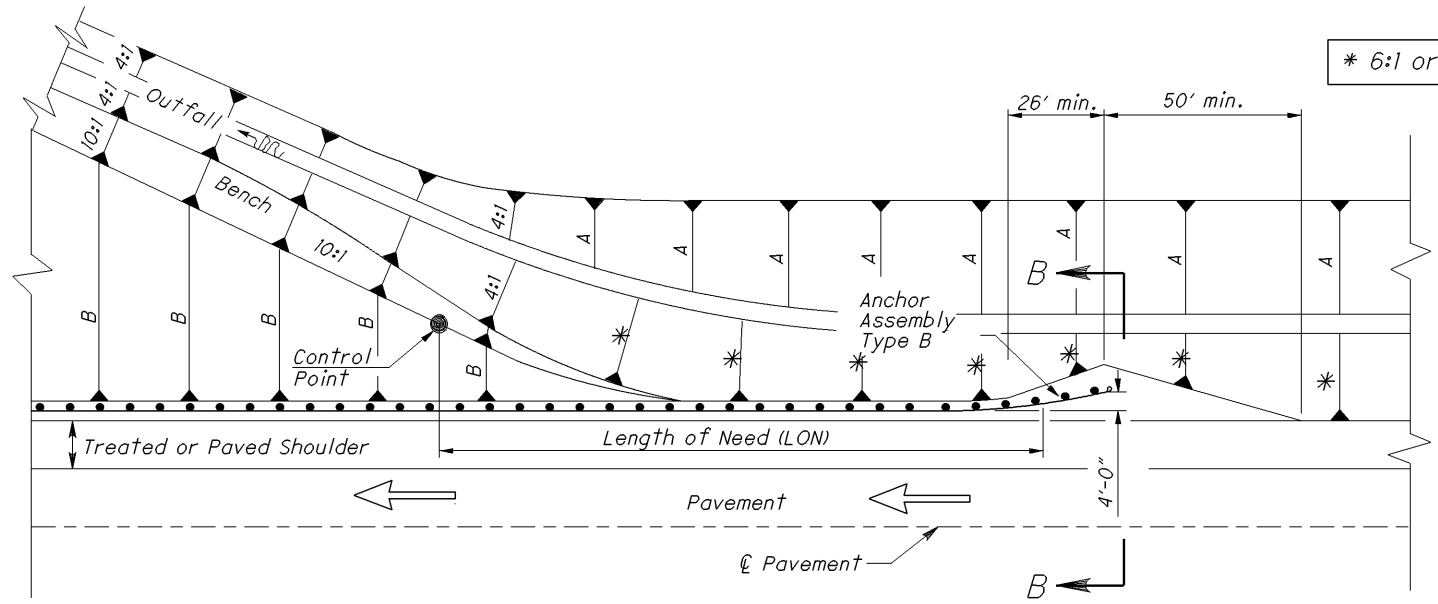
**ANCHOR ASSEMBLY:** Install Type B Anchor Assemblies according to the Manufacturer's instructions. Products are install either on a curved flare or straight flare.



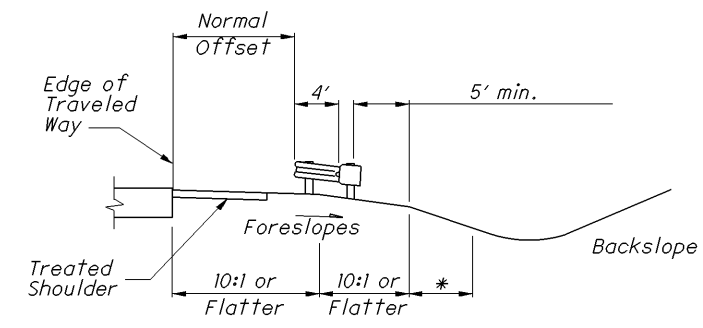
FILL TO FILL



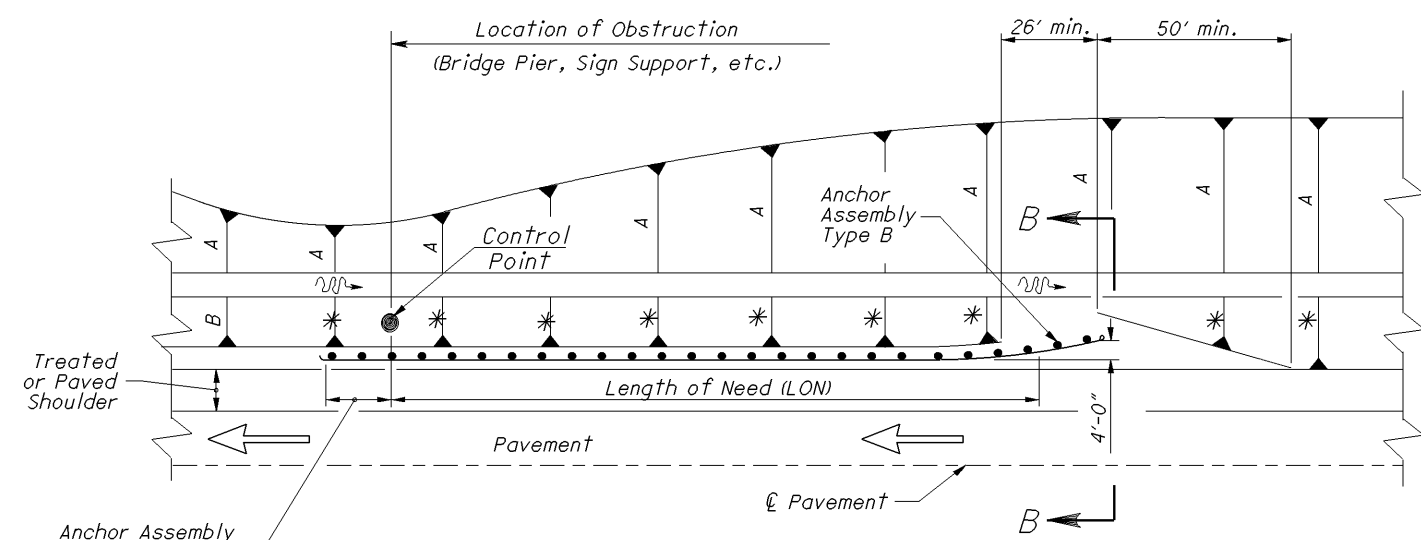
SECTION A-A



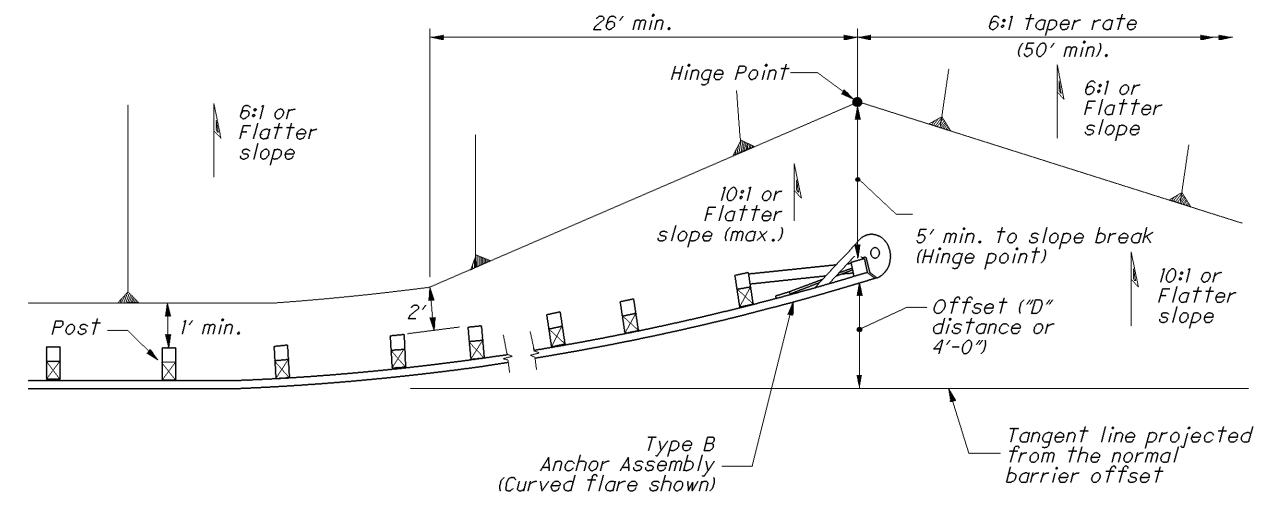
CUT TO FILL



SECTION B-B



OBSTRUCTION



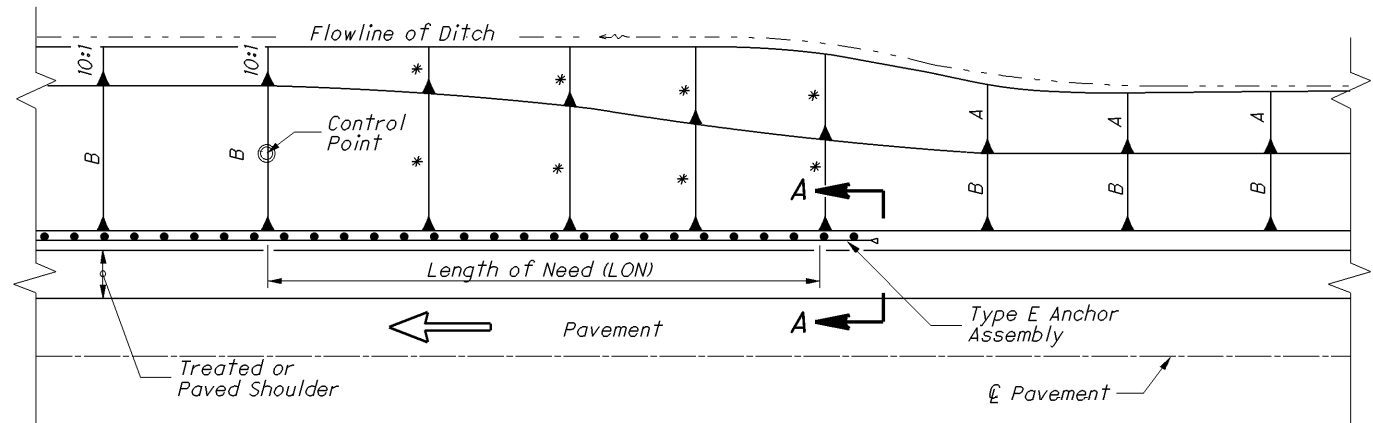
GRADING PLAN FOR  
FLARED ANCHOR ASSEMBLIES

Flared Anchor Assemblies are considered gating terminals, and thus, an area 20' by 75' behind and beyond should be reasonably traversable and free from fixed objects hazards.

(For Obstructions in Fill Conditions, use above details)

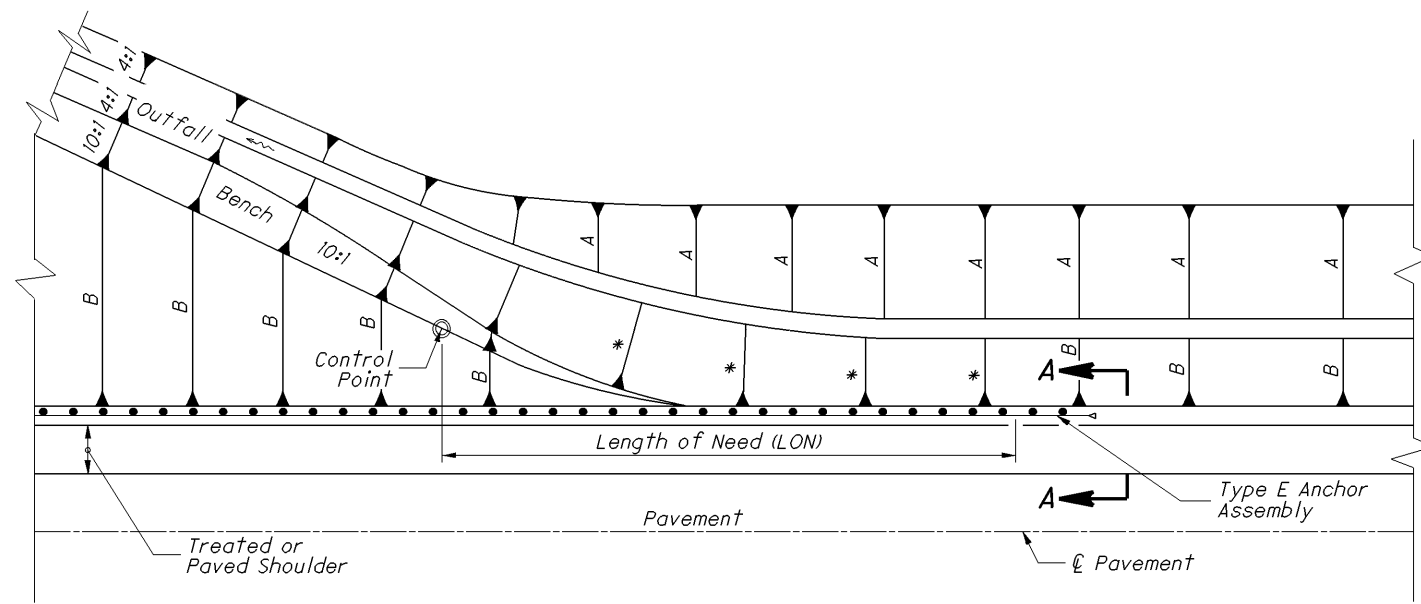
Anchor Assembly Type T, See SCD GR-4.2.



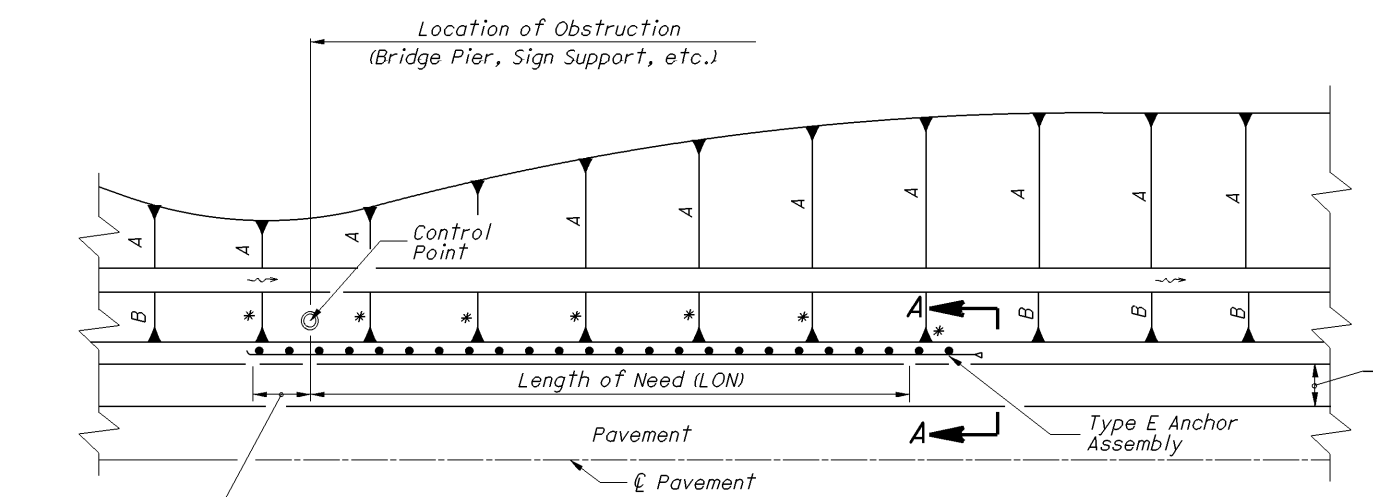


**FILL TO FILL**

\* 3:1 or Flatter

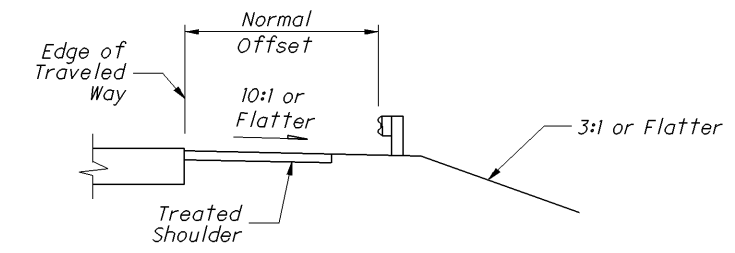


**CUT TO FILL**



Type T Anchor Assembly. See SCD GR-4.2.

**OBSTRUCTION**



**SECTION A-A**

**NOTES**

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

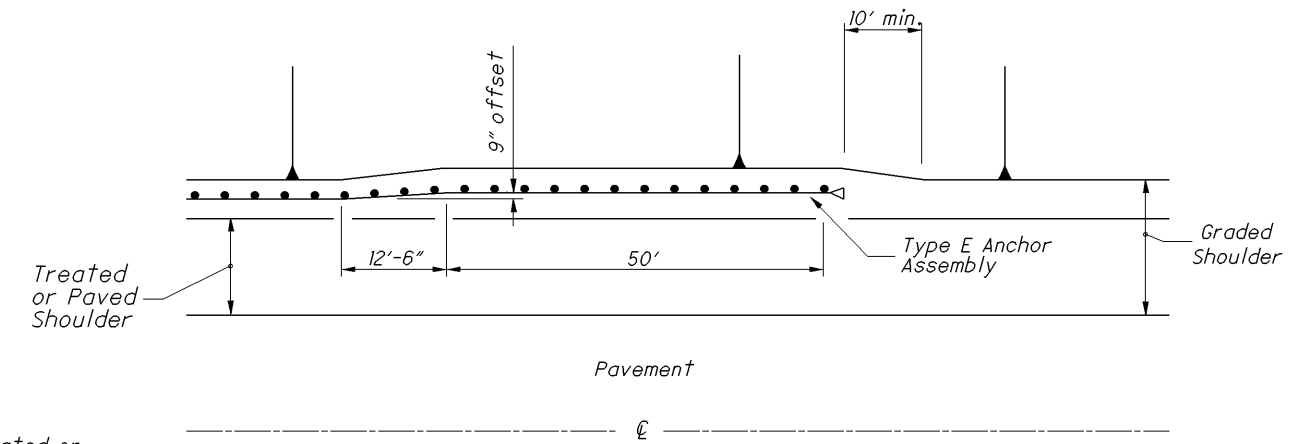
**SLOPES:** Slopes designated by \* shall be 3:1 or flatter. Slopes labeled "A" and "B" shall be constructed as specified in the plans.

**"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.*

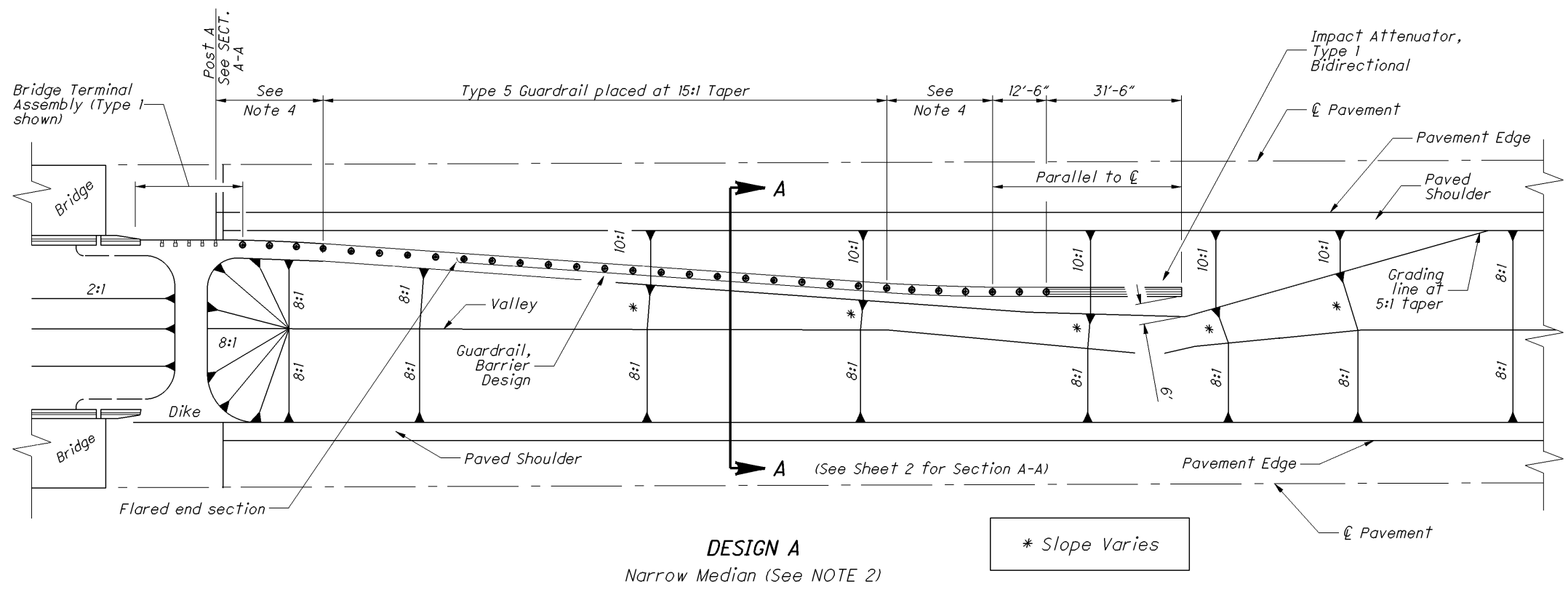
**GUARDRAIL END TERMINALS:** Terminals utilized for the situations shown here shall be Type E Anchor Assemblies unless otherwise specified in the plans.

**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.



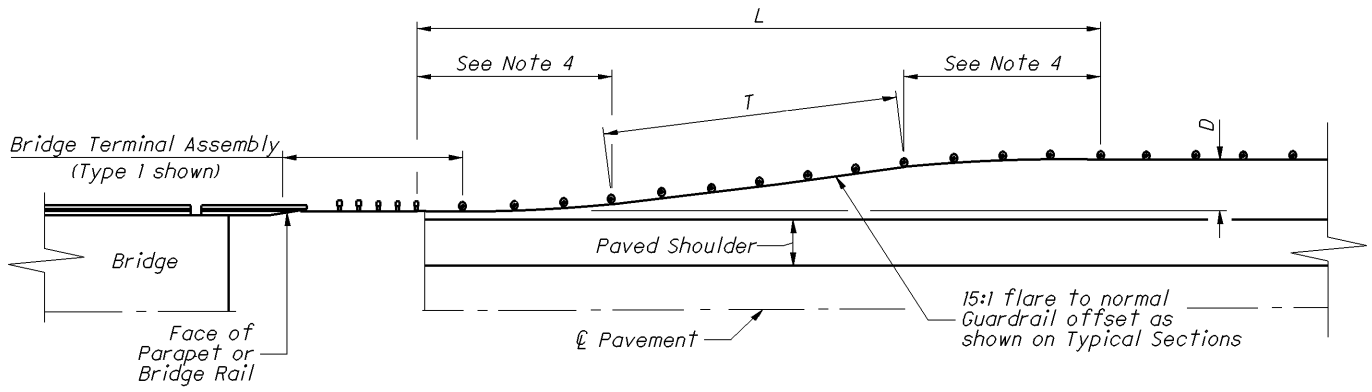
**OFFSET DESIGN**  
(Plan View)



**DESIGN A**  
Narrow Median (See NOTE 2)

\* Slope Varies

**INTRODUCED GUARDRAIL APPROACH INSTALLATIONS**



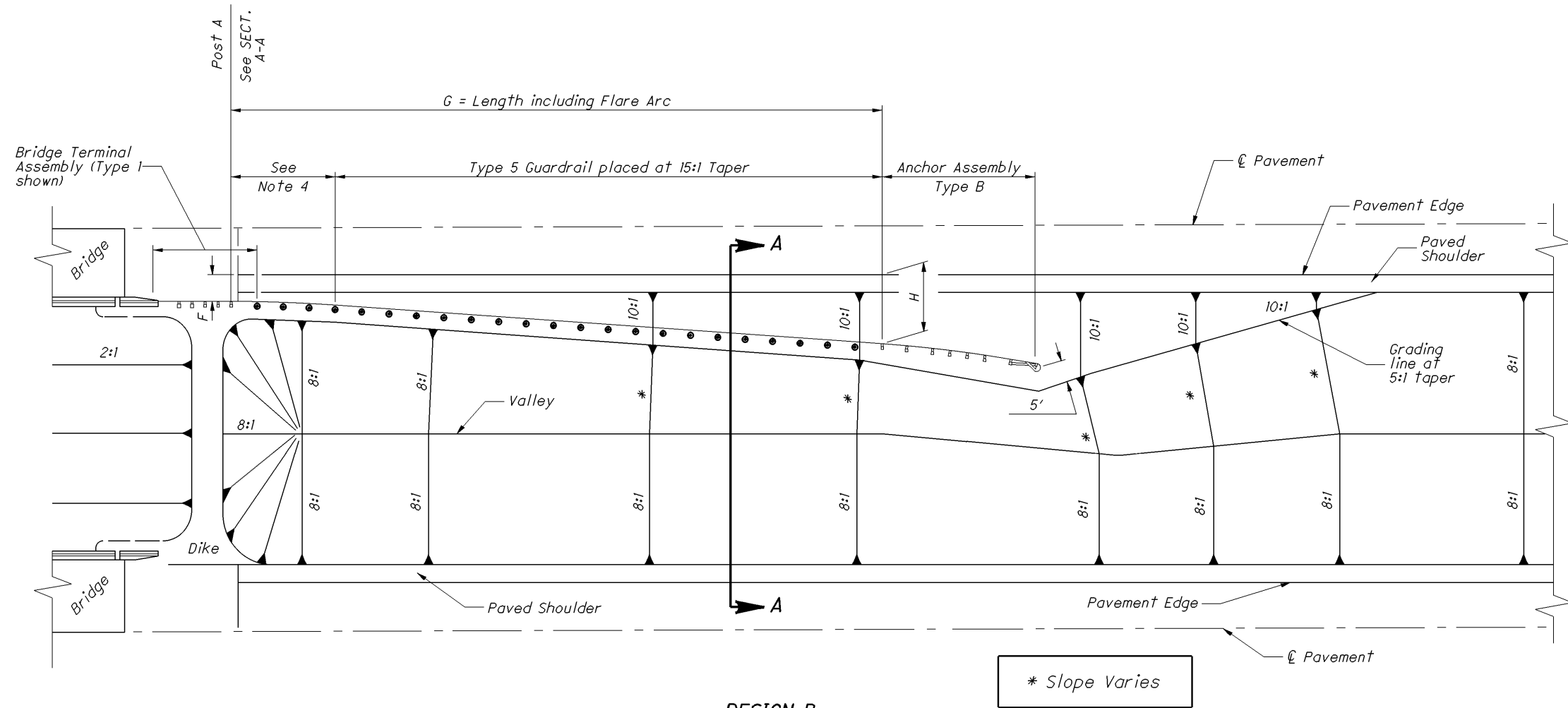
**RECOMMENDED LENGTHS FOR  
GUARDRAIL OFFSET TRANSITIONS**

English (ft)		
D Difference in Offset	L Total Length	T Tangent Length on Flares
2	62.5	12.5
4	87.5	37.5
6	125.0	75.0
8	150.0	100.0
10	175.0	125.0

**GUARDRAIL OFFSET TRANSITION**

**NOTES**

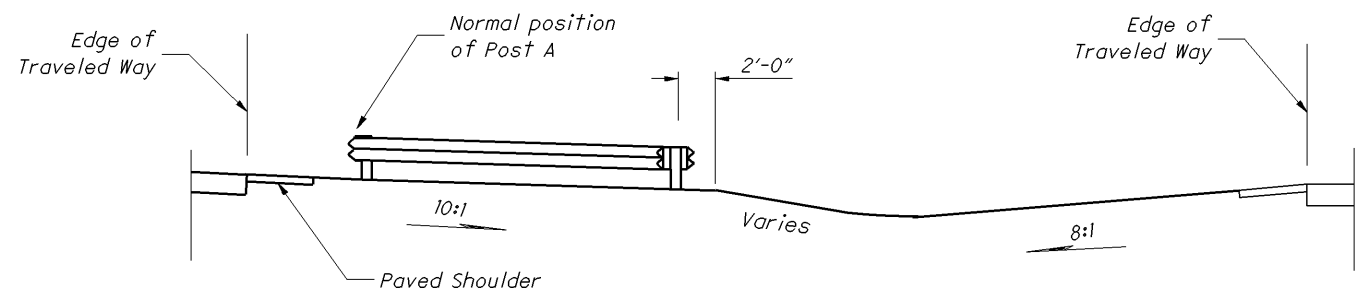
- 1) The length of guardrail needed shall be determined according to methods contained in the **Location and design Manual, Volume 1, Section 602**. Quantities shown on this sheet are based on these methods, using a lateral offset of 30' for the area of concern, a runout length of 472', and a guardrail flare rate of 15:1.
- 2) Use **DESIGN "A"** in narrow medians where the end of the guardrail run extends into the clear zone of the opposite side traffic. In medians where the guardrail run would otherwise extend beyond the centerline of the median, turn the guardrail run to follow the centerline using a standard flare arc. The plans shall clearly indicate what portion of the flared guardrail run is to be constructed using barrier guardrail.
- 3) Use **DESIGN "B"** (see Sheet 2 of 2) where the guardrail run lies outside of the Clear Zone of the opposite side traffic. In this case, the design of the guardrail flare in the median would be similar to that of the guardrail approach on the outside shoulder. Estimated quantities are provided in the box below.
- 4) Use a 25'-0" Standard Flare Arc per **SCD GR-5.1**.
- 5) Provide 10:1 or flatter cross-slopes in front of guardrail. The 8:1 slopes shown in the median at other locations are the recommended practice, although other slopes may be designated in the plans.



**DESIGN B**

Wide Median (See NOTE 3 on Sheet 1)

**INTRODUCED GUARDRAIL APPROACH INSTALLATIONS**



**SECTION A-A**

RECOMMENDED LENGTHS FOR <sup>(1)</sup> GUARDRAIL FLARES AT BRIDGE APPROACHES <sup>(2)</sup>		
English (ft)		
F Guardrail Offset At Bridge	G Length of Need (3)	H Offset At End of Run
4	212.5	17.3
6	200.0	18.4
8	175.0	18.7
10	162.5	19.8
12	150.0	21.0
14	137.5	22.1
16	125.0	23.3

1. Including the 25'-0" Standard Flare Arc coming off the Bridge, but excluding the Anchor Assembly/Attenuator device.
2. For use with a DESIGN "B" Median (see this sheet) or on the outside Shoulder approach to the Bridge.
3. Lengths are based on using whole numbers of Guardrail panels (12'-6" long).

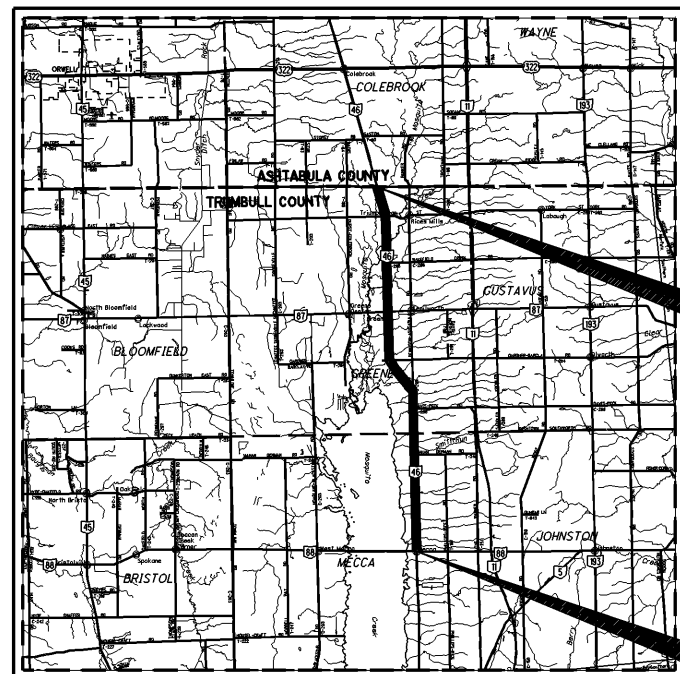
# RIGHT OF WAY LEGEND SHEET TRU-46-18.49

## PROJECT DESCRIPTION

IMPROVEMENT OF 7.85 MILES OF SR46 BY PLANING AND RESURFACING, MINOR STRUCTURE WORK, GUARDRAIL REPLACEMENT, TWO CULVERT REPLACEMENTS, AND ONE STRUCTURE REPLACEMENT.

UTILITY OWNERS	
TYPE	NAME & ADDRESS
ELECTRIC	Ohio Edison ATTN: Bill Speece 730 South Avenue Youngstown, OH 44502 330-740-7635 330-740-7655 Fax
TELEPHONE	CenturyLink ATTN: Rod Harris 3801 Elm Road Warren, Ohio 44502 330-841-1404 330-372-6970 Fax
CATV	Time Warner Cable ATTN: Doug Lawrentz 4352 Youngstown Road SE Warren, OH 44484 330-369-7107 ext 7179
SANITARY	Trumbull County Sanitary Engineer ATTN: Scott Verner 842 Youngstown-Kingsville Road Vienna, Ohio 44473 330-675-7787

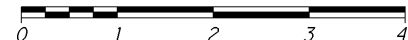
NOTES: THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE OBTAINED FROM THE OWNER OF THE UTILITIES AS REQUIRED BY SECTION 153.64 O.R.C.



LOCATION MAP

LATITUDE: N41°26'32" LONGITUDE: W80°44'29"

SCALE IN MILES



END PROJECT  
SLM 26.34

BEGIN PROJECT  
SLM 18.49

TRUMBULL COUNTY  
MECCA TOWNSHIP GREENE TOWNSHIP  
SECTION 6 & 7 SECTION 44; SECTION 4  
T. 6 N., R. 3 W. T. 7 N., R. 3 W.

## INDEX OF SHEETS:

LEGEND SHEET	1
PROPERTY MAP / SUMMARY OF ADDITIONAL R/W	2-4
R/W DETAIL PLAN SHEET	5-7

## PLANS PREPARED BY:

FIRM NAME : THOMAS FOK & ASSOCIATES, INC.  
R/W DESIGNER: JOSEPH P. SLIFKA  
R/W REVIEWER: WILLIAM J. SALA  
FIELD REVIEWER: WILLIAM J. SALA  
PRELIMINARY FIELD REVIEW DATE: 4/20/2012  
TRACINGS FIELD REVIEW DATE: 5/30/2012  
OWNERSHIP UPDATED BY: MICHAEL A. CULVER  
DATE COMPLETED: 5/22/2012  
PLAN COMPLETION DATE: 6/1/2012

## CONVENTIONAL SYMBOLS

County Line	-----	Ditch / Creek (Ex)	-----
Township Line	-----	Ditch / Creek (Pr)	-----
Section Line	-----	Tree Line (Ex)	~~~~~
Corporation Line	----- or -----	Ownership Hook Symbol	∟
Fence Line (Ex)	-----	Property Line Symbol	∟
Center Line	-----	Break Line Symbol	∟
Right of Way (Ex)	----- Ex R/W	Tree (Pr)	☼
Right of Way (Pr)	----- R/W	Tree (Ex)	☼
Standard Highway Ease.(Ex)	----- Ex SH	Shrub (Ex)	☼
Temporary Right of Way	----- TMP	Tree (Remove)	☼
Channel Ease. (Pr)	----- CH	Shrub (Remove)	☼
Utility Ease. (Ex)	----- Ex U	Evergreen (Ex)	☼
Railroad	----- or -----	Evergreen (Remove)	☼
Guardrail (Ex)	----- (Pr)	Stump (Remove)	☼
Construction Limits	-----	Wetland (Pr)	☼
Edge of Pavement (Ex)	-----	Grass (Pr)	☼
Edge of Pavement (Pr)	-----	Aerial Target	☼
Edge of Shoulder (Ex)	-----	Post (Ex)	☼
Edge of Shoulder (Pr)	-----	Mailbox (Ex)	☼
		Mailbox (Pr)	☼
		Light (Ex)	☼
		Telephone Marker (Ex)+TEL	☼
		Fire Hydrant (Ex)	☼
		Water Meter (Ex)	☼
		Water Valve (Ex)	☼
		Utility Valve Unknown (Ex.)	☼
		Telephone Pole (Ex)	☼
		Power Pole (Ex)	☼
		Light Pole (Ex)	☼

I, William J. Sala, P. S. have conducted a survey of the existing conditions for the Ohio Department of Transportation on April-May 2011 for projects TRU-46-20.81, TRU-46-21.80, and TRU-46-26.27. The results of that survey are contained herein.

Underground utility locations are shown for information purposes only. Though they are believed to be accurate, their location is marked on the ground by the utility company per OUPS and OGPUPS Confirmation Number for projects TRU-46-20.81, TRU-46-21.80, and TRU-46-26.27 are A113002260, A113002277, and A113002296 respectively.

For projects TRU-46-20.81, TRU-46-21.80, and TRU-46-26.27, the horizontal coordinates expressed herein are based on the Ohio State Plane Coordinate System, North Zone (3401) on NAD 83 (CORS96) & NAVD 88 (GEOID09) datum. The Project Coordinates (US Survey feet) are relative to State Plane Grid Coordinates (US Survey feet) by a Project Adjustment Factor multiplier of 1.000080180, 1.000079149, and 1.000073186 respectively.

As a part of this project I have reestablished the locations of the existing property lines and centerline of existing Right of Way for property takes contained herein.

As a part of this project I have established the proposed property lines, calculated the Gross Take, present road occupied (PRO), Net Take and Net Residue; as well as prepared the legal descriptions necessary to acquire the parcels as shown herein.

As a part of this work I have set right of way monuments at property corners, property line intersections, points along the right of way and/or angle points on the right of way, Section Corners and other points shown herein.

All of my work contained herein was conducted in accordance with Ohio Administrative Code 4733-37 commonly known as "A Minimum Standards for Boundary Surveys in the State of Ohio" unless noted.

The words I and my as used herein are to mean either myself or someone working under my direct supervision.

William J. Sala, Professional Land Surveyor No. 6542,

Date:

TYPES OF TITLE LEGEND:  
WD = WARRANTY DEED  
T = TEMPORARY EASEMENT

## STRUCTURE KEY

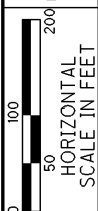
□	RESIDENTIAL
■	COMMERCIAL
▨	OUT-BUILDING

SURVEYORS SEAL



FEDERAL PROJECT NO. E090(129)  
PID NO. 85202  
CALCULATED JPS CHECKED WJS  
RIGHT OF WAY LEGEND SHEET  
TRU-46-18.49  
1/7  
60/66

DATE: 30-MAY-12 12:55  
FILE: J:\JOB\1102-06 TRU-46-20.81\PLAN SHEETS\PLAN24\_RIGHT\_OF\_WAY\01\_TITLE\85202RL001.DGN  
SCALE: 1"=1/4"



FEDERAL PROJECT NO. **E090(129)**

PID NO. **85202**

STATE JOB NO. **440343**

R/W DESIGNER: JFS  
R/W REVIEWER: WJS

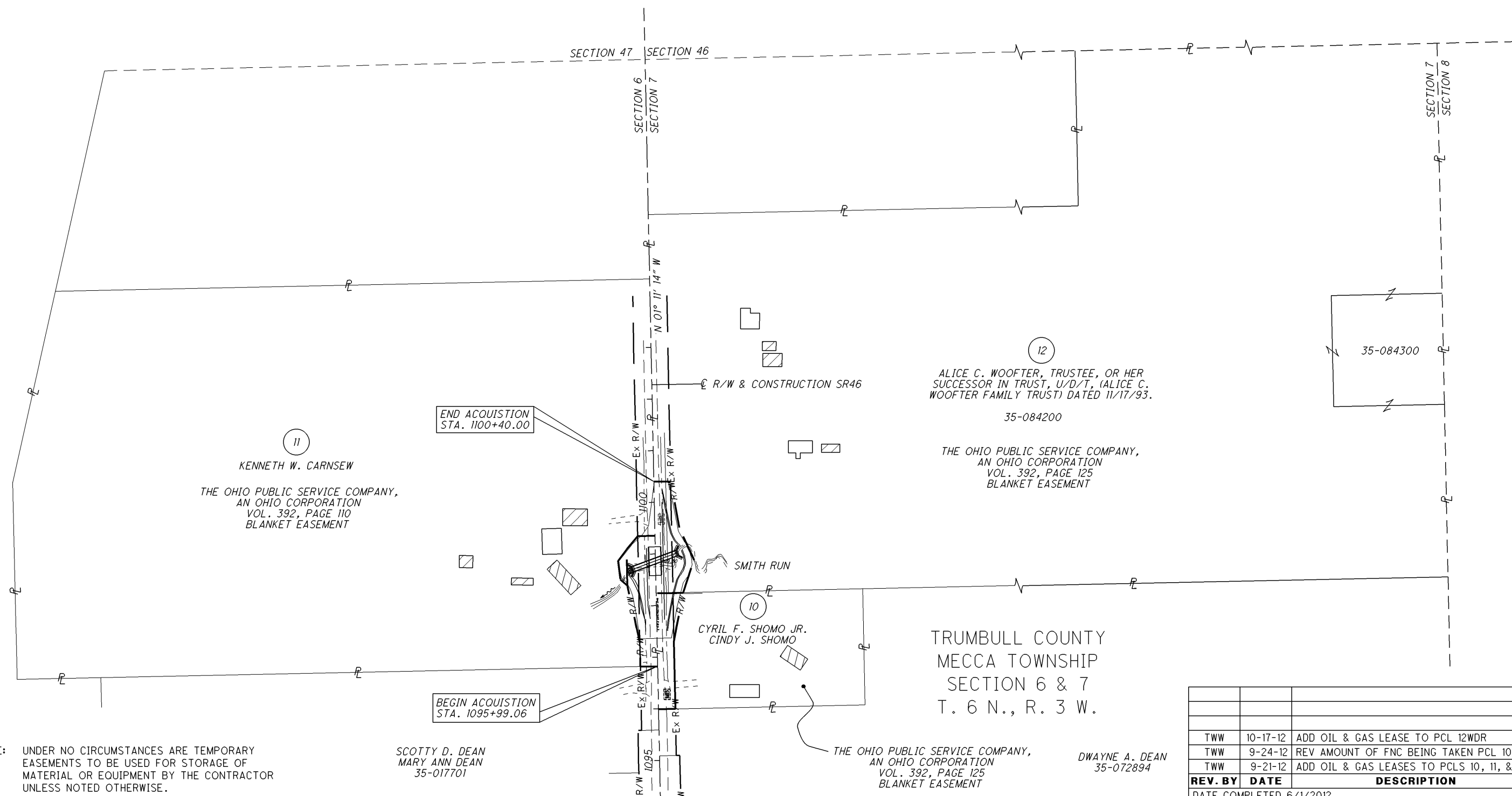
**PROPERTY MAP**  
**TRU-46-20.81**

**TRU-46-18.49**

2 / 7

61  
66

DATE: 30-MAY-12 11:05  
FILE: J:\JOB\102-06 TRU-46-20.81\PLAN\_SHEETS\PLAN24\_RIGHT\_OF\_WAY\03\_PR\_MAP\85202RM001.DGN  
SCALE: 1:1000



NOTE: UNDER NO CIRCUMSTANCES ARE TEMPORARY EASEMENTS TO BE USED FOR STORAGE OF MATERIAL OR EQUIPMENT BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

11  
KENNETH W. CARNSEW  
THE OHIO PUBLIC SERVICE COMPANY,  
AN OHIO CORPORATION  
VOL. 392, PAGE 110  
BLANKET EASEMENT

END ACQUISITION  
STA. 1100+40.00

BEGIN ACQUISITION  
STA. 1095+99.06

SCOTTY D. DEAN  
MARY ANN DEAN  
35-017701

10  
CYRIL F. SHOMO JR.  
CINDY J. SHOMO

THE OHIO PUBLIC SERVICE COMPANY,  
AN OHIO CORPORATION  
VOL. 392, PAGE 125  
BLANKET EASEMENT  
DWAYNE A. DEAN  
35-072894

12  
ALICE C. WOOFER, TRUSTEE, OR HER  
SUCCESSOR IN TRUST, U/D/T, (ALICE C.  
WOOFER FAMILY TRUST) DATED 11/17/93.  
35-084200  
THE OHIO PUBLIC SERVICE COMPANY,  
AN OHIO CORPORATION  
VOL. 392, PAGE 125  
BLANKET EASEMENT

TRUMBULL COUNTY  
MECCA TOWNSHIP  
SECTION 6 & 7  
T. 6 N., R. 3 W.

REV. BY	DATE	DESCRIPTION
TWW	10-17-12	ADD OIL & GAS LEASE TO PCL 12WDR
TWW	9-24-12	REV AMOUNT OF FNC BEING TAKEN PCL 10
TWW	9-21-12	ADD OIL & GAS LEASES TO PCLS 10, 11, & 12
DATE COMPLETED 6/1/2012		

**GRAND TOTAL NUMBER OF :**

9 OWNERSHIPS	0 TOTAL TAKES	TYPES OF TITLE LEGEND: WD = WARRANTY DEED T = TEMPORARY EASEMENT
10 PARCELS	0 OWNERSHIPS W/ STRUCTURES INVOLVED	

NET RESIDUE = RECORD AREA - TOTAL PRO - NET TAKE

NOTE: ALL TEMPORARY PARCELS TO BE OF 12 MONTH DURATION.

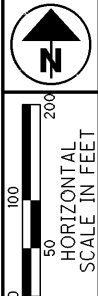
**GRANTEE:**  
ALL RIGHT OF WAY ACQUIRED IN THE NAME OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION UNLESS OTHERWISE SHOWN.

\* DENOTES RIGHT OF WAY ENCROACHMENT (C) = CALCULATED AREA

**ALL AREAS IN ACRES**

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD		AUDITOR'S PARCEL	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUC-TURE	NET RESIDUE		TYPE FUND	REMARKS	AS ACQUIRED	
			BOOK	PAGE								LEFT	RIGHT			BOOK	PAGE
10-WDR	CYRIL F. SHOMO JR., CINDY J. SHOMO	5	#200003060007717		35-065725	2.066	0.170	0.192	0.170	0.022			1.874		REMOVE 20 L.F. OF WOVEN WIRE FENCE, * 11 L.F. ENCROACHING OIL & GAS LEASE VOL. 76, PG. 985 & VOL. 84, PG. 1078		
11-WDR	KENNETH W. CARNSEW	5	OR 509 OR 406	398 628	35-010000	20.554	0.568	0.261	0.191	0.070			19.916		OIL & GAS LEASE I.N. 201204120007740		
11-T								0.018	0.000	0.018					TO CONSTRUCT GRADING		
12-WDR	ALICE C. WOOFER, TRUSTEE, OR HER SUCCESSOR IN TRUST, U/D/T, (ALICE C. WOOFER FAMILY TRUST) DATED 11/17/93,	5	OR 834	1081	35-084200 35-084300	69.811	0.553	0.265	0.164	0.101					* REMOVE 226 L.F. OF WOVEN WIRE FENCE, OIL & GAS LEASE VOL. 76, PG. 985 & I.N. 201205300013991; NO TAKE		
	<b>TOTAL:</b>					70.311	0.553	0.265	0.164	0.101			69.657				
13-19	NUMBER NOT USED																

100% STATE



FEDERAL PROJECT NO. **E090(129)**

PID NO. **85202**

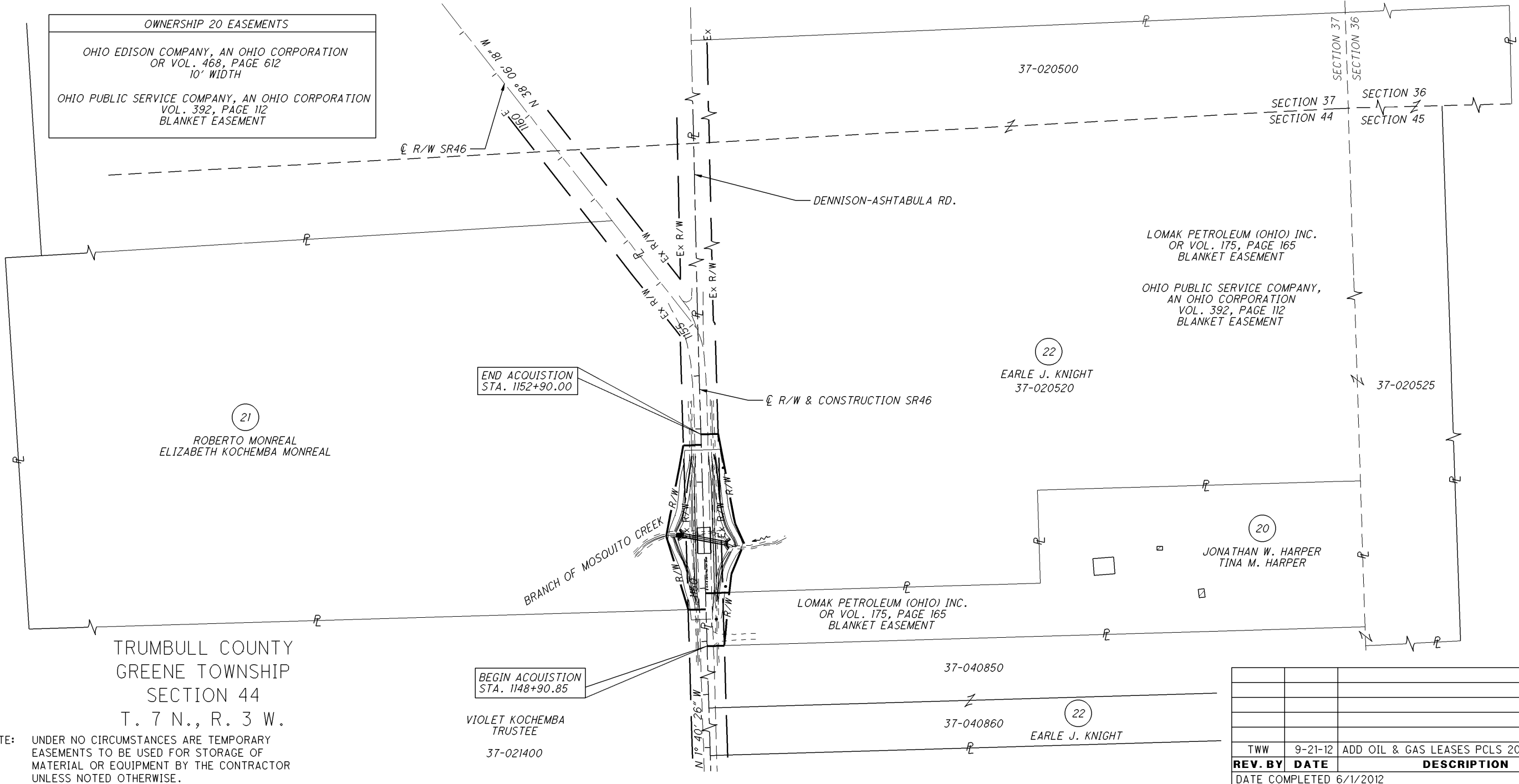
STATE JOB NO. **440343**

R/W DESIGNER: JFS  
R/W REVIEWER: WJS

**PROPERTY MAP**  
**TRU-46-21.80**

**TRU-46-18.49**  
3 / 7  
62  
66

**OWNERSHIP 20 EASEMENTS**  
OHIO EDISON COMPANY, AN OHIO CORPORATION  
OR VOL. 468, PAGE 612  
10' WIDTH  
  
OHIO PUBLIC SERVICE COMPANY, AN OHIO CORPORATION  
VOL. 392, PAGE 112  
BLANKET EASEMENT



NOTE: UNDER NO CIRCUMSTANCES ARE TEMPORARY EASEMENTS TO BE USED FOR STORAGE OF MATERIAL OR EQUIPMENT BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

TYPES OF TITLE LEGEND:  
WD = WARRANTY DEED  
T = TEMPORARY EASEMENT

NET RESIDUE = RECORD AREA - TOTAL PRO - NET TAKE

NOTE: ALL TEMPORARY PARCELS TO BE OF 12 MONTH DURATION.

**GRANTEE:**  
ALL RIGHT OF WAY ACQUIRED IN THE NAME OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION UNLESS OTHERWISE SHOWN.

\* DENOTES RIGHT OF WAY ENCROACHMENT  
(c) = CALCULATED AREA

**ALL AREAS IN ACRES**

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD		AUDITOR'S RECORD PARCEL	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUC-TURE	NET RESIDUE		TYPE FUND	REMARKS	AS ACQUIRED	
			BOOK	PAGE								LEFT	RIGHT			BOOK	PAGE
20-WDR	JONATHAN W. HARPER TINA M. HARPER	6	OR 450	664	37-046488	5.240	0.076	0.090	0.076	0.014			5.150	↑	OIL & GAS LEASES VOL. 109, PG. 449 & VOL. 175, PG. 182		
21-WDR	ROBERTO MONREAL ELIZABETH KOHEMBA MONREAL	6	OR 26	887	37-002700	42.640	0.596	0.366	0.235	0.131			41.913		OIL & GAS LEASE I.N. 201206110015034		
22-WDR	EARLE J. KNIGHT	6	#200011140041609		37-020520	33.960	0.968	0.360	0.227	0.133				100% STATE	OIL & GAS LEASES VOL. 175, PG. 182, I.N. 201101240001459,		
			#200009130033511		37-020500	14.420	0.244	0.000	0.000	0.000					VOL. 109, PG. 449 & VOL. 1279, PG. 843, NO TAKE		
			979	502	37-040850	12.990	0.349	0.000	0.000	0.000					NO TAKE		
					37-040860	7.790	0.208	0.000	0.000	0.000					NO TAKE		
					37-020525	13.380	0.000	0.000	0.000	0.000					NO TAKE		
	TOTAL:					82.540	1.769	0.360	0.227	0.133			80.638				
23-29	NUMBER NOT USED																

DATE: 30-MAY-12 11:07  
FILE: J:\JOB\1102-06 TRU-46-21.80\PLAN SHEETS\PLAN24\_RIGHT\_OF\_WAY\03\_PP\_MAP\85202RM002.DGN  
SCALE: 1"=100'



HORIZONTAL SCALE IN FEET

FEDERAL PROJECT NO. E090(129)

PID NO. 85202

STATE JOB NO. 440343

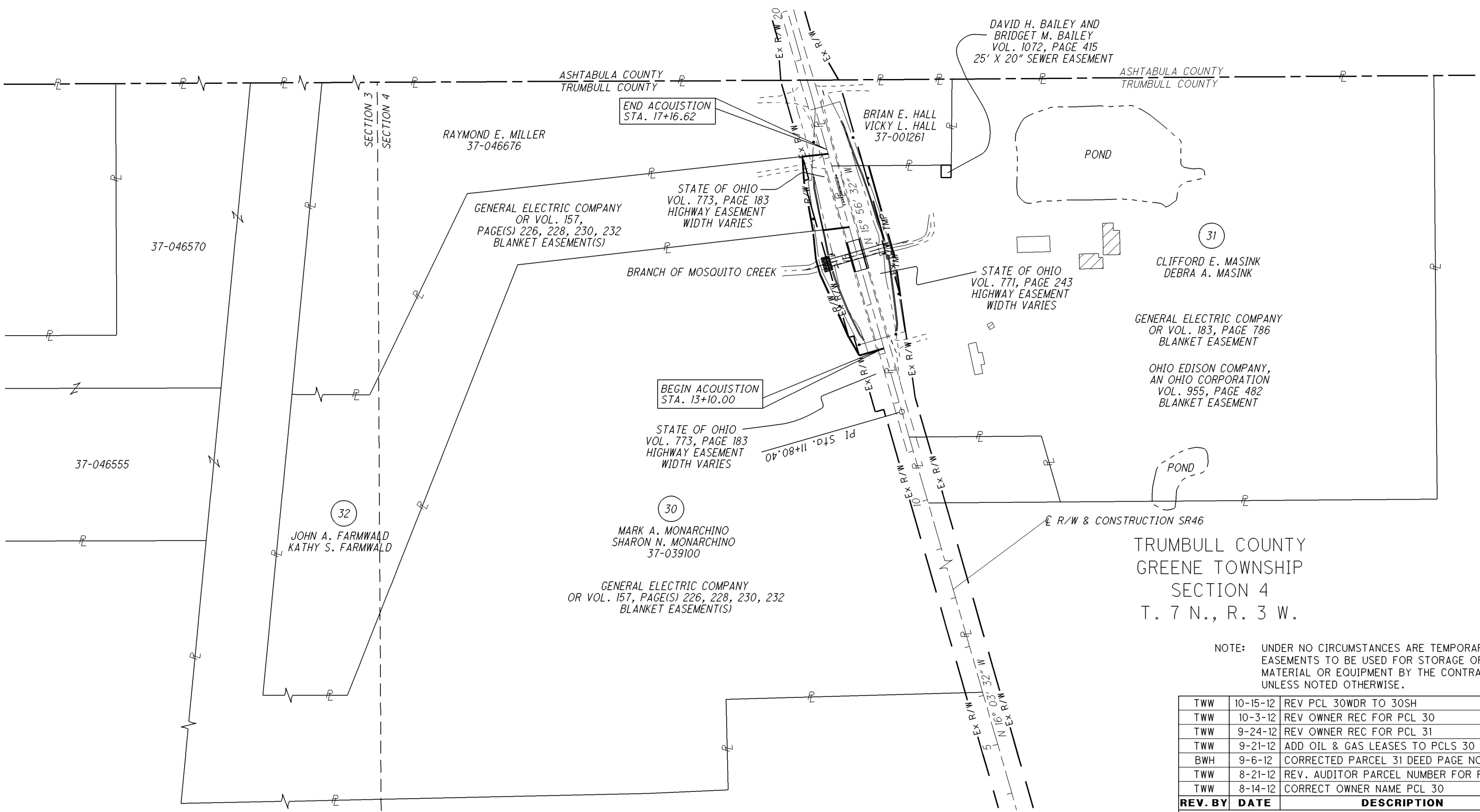
R/W DESIGNER JPS  
R/W REVIEWER WJS

PROPERTY MAP TRU-46-26.27

TRU-46-18.49

4 / 7

63  
66



NOTE: UNDER NO CIRCUMSTANCES ARE TEMPORARY EASEMENTS TO BE USED FOR STORAGE OF MATERIAL OR EQUIPMENT BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

REV. BY	DATE	DESCRIPTION
TWW	10-15-12	REV PCL 30WDR TO 30SH
TWW	10-3-12	REV OWNER REC FOR PCL 30
TWW	9-24-12	REV OWNER REC FOR PCL 31
TWW	9-21-12	ADD OIL & GAS LEASES TO PCLS 30 & 32
BWH	9-6-12	CORRECTED PARCEL 31 DEED PAGE NO.
TWW	8-21-12	REV. AUDITOR PARCEL NUMBER FOR PCL 32
TWW	8-14-12	CORRECT OWNER NAME PCL 30

DATE COMPLETED 6/1/2012

TYPES OF TITLE LEGEND:  
WD = WARRANTY DEED  
T = TEMPORARY EASEMENT

NET RESIDUE = RECORD AREA - TOTAL PRO - NET TAKE

NOTE: ALL TEMPORARY PARCELS TO BE OF 12 MONTH DURATION.

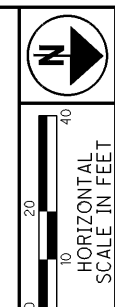
**GRANTEE:**  
ALL RIGHT OF WAY ACQUIRED IN THE NAME OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION UNLESS OTHERWISE SHOWN.

\* DENOTES RIGHT OF WAY ENCROACHMENT  
(c) = CALCULATED AREA

**ALL AREAS IN ACRES**

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD		AUDITOR'S PARCEL	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUC-TURE	NET RESIDUE		TYPE FUND	REMARKS	AS ACQUIRED	
			BOOK	PAGE								LEFT	RIGHT			BOOK	PAGE
30-SH	MARK A. MONARCHINO SHARON N. MONARCHINO	7	#20000627	0023562	37-039100	52.560	1.113	0.408	0.339	0.069				↑	* 143 L.F. OF WIRE FENCE TO BE REMOVED, OIL & GAS LEASE VOL. 164, PGS. 1005, 1008, 1011, & 1014, NO TAKE		
					37-046555	9.170	0.000	0.000	0.000	0.000							
					37-046570	10.110	0.000	0.000	0.000	0.000							
	<b>TOTAL:</b>					71.840	1.113	0.408	0.339	0.069			70.658				
31-T	CLIFFORD E. MASINK DEBRA A. MASINK	7	OR 933	26	37-001284	28.248	0.638	0.052	0.000	0.052				↑	TO CONSTRUCT GRADING * 337 L.F. OF WIRE FENCE TO BE REMOVED		
32-WDR	JOHN A. FARMWALD KATHY S. FARMWALD	7	#20051102	0033507	37-046674	17.504	0.196	0.213	0.196	0.017			17.291	↓	OIL & GAS LEASE VOL. 164, PGS. 1005, 1008, 1011, & 1014		

DATE: 30-MAY-12 13:47  
FILE: J:\JOB\1102-06 TRU-46-26.27\PLAN SHEETS\PLAN24\_RIGHT\_OF\_WAY\03\_PR\_MAP\85202RM003.DGN  
SCALE: 1" = 40'



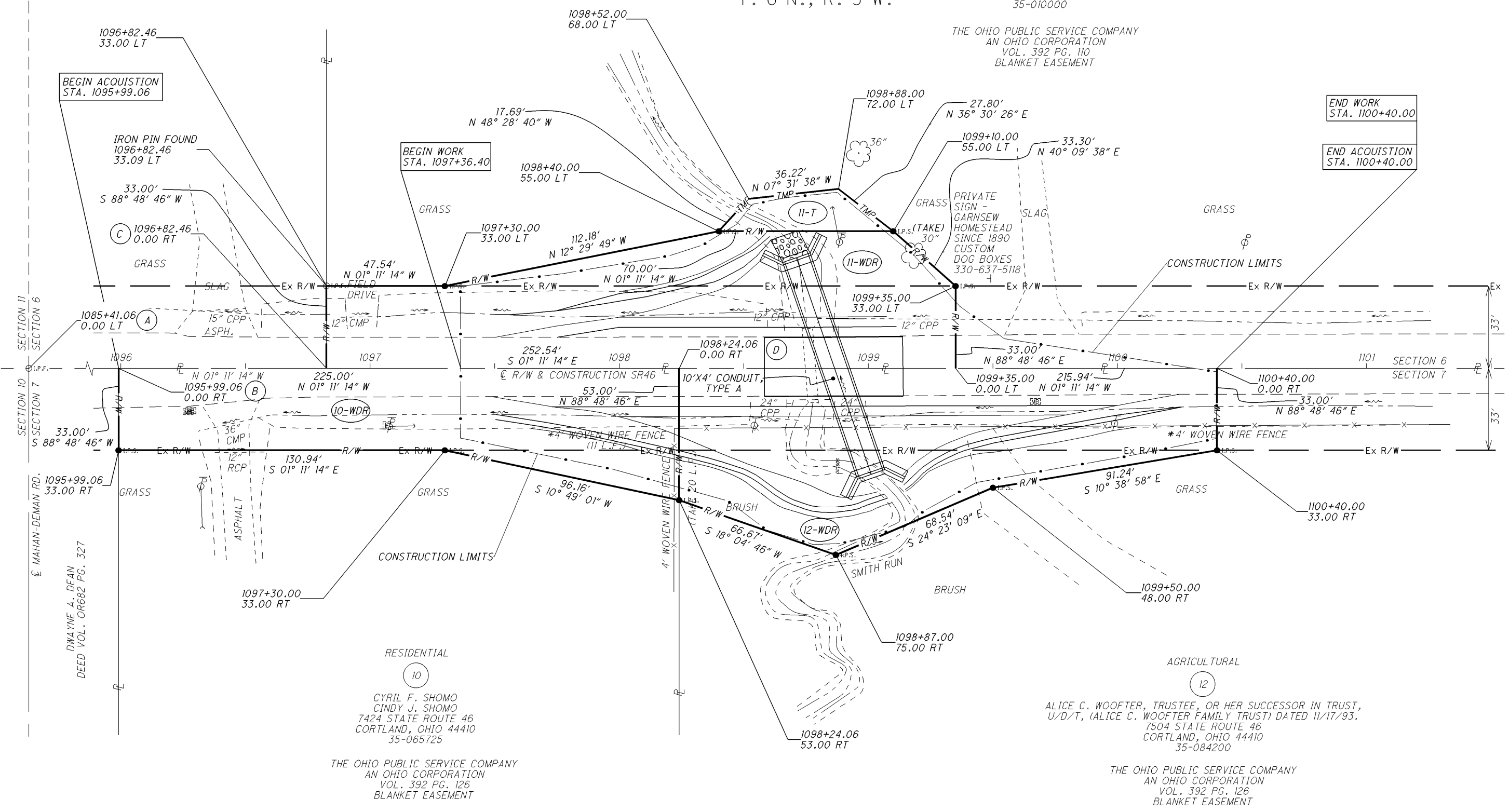
TRUMBULL COUNTY  
MECCA TOWNSHIP  
SECTION 6 & 7  
T. 6 N., R. 3 W.

AGRICULTURAL  
(11)

KENNETH W. CARNSEW  
7461 STATE ROUTE 46  
CORTLAND, OHIO 44410  
35-010000

THE OHIO PUBLIC SERVICE COMPANY  
AN OHIO CORPORATION  
VOL. 392 PG. 110  
BLANKET EASEMENT

SCOTTY D. DEAN  
MARY ANN DEAN  
DEED VOL. OR690 PG. 798



DATE: 30-MAY-12 11:05  
FILE: J:\JOB\1102-06 TRU-46-20.81\PLAN\_SHEETS\PLAN24\_RIGHT\_OF\_WAY\05\_PLAN\_SHEETS\85202R0001.DGN  
SCALE: 1" = 20'

**OWNERSHIP 10:**  
\* 20 L.F. OF WOVEN WIRE FENCE TO BE REMOVED,  
11 L.F. OF WOVEN WIRE FENCE IS ENCROACHING  
**OWNERSHIP 12:**  
\* 226 L.F. OF WOVEN WIRE FENCE TO BE REMOVED,  
OF WHICH 226 L.F. IS ENCROACHING

RESIDENTIAL  
(10)  
CYRIL F. SHOMO  
CINDY J. SHOMO  
7424 STATE ROUTE 46  
CORTLAND, OHIO 44410  
35-065725  
THE OHIO PUBLIC SERVICE COMPANY  
AN OHIO CORPORATION  
VOL. 392 PG. 126  
BLANKET EASEMENT

AGRICULTURAL  
(12)  
ALICE C. WOOFER, TRUSTEE, OR HER SUCCESSOR IN TRUST,  
U/D/T, (ALICE C. WOOFER FAMILY TRUST) DATED 11/17/93.  
7504 STATE ROUTE 46  
CORTLAND, OHIO 44410  
35-084200  
THE OHIO PUBLIC SERVICE COMPANY  
AN OHIO CORPORATION  
VOL. 392 PG. 126  
BLANKET EASEMENT

● I.P.S. — 3/4" X 30" REINFORCING ROD WITH 2" DIAM.  
ALUMINIUM CAP STAMPED "ODOT R/W, SALA S-6542".

LEAD IN COURSES

(A) - (B)	N 01° 11' 14" W	1058.00'
(A) - (C)	N 01° 11' 14" W	1141.40'
(A) - (D)	N 01° 11' 14" W	1283.00'

REV. BY	DATE	DESCRIPTION
TWW	9-24-12	REV AMOUNT OF FENCE BEING REMOVED FOR PCL 10
TWW	9-21-12	REV PCLS 10, 11, & 12 TO WDR PCLS
DATE COMPLETED 6/1/2012		

PID NO.  
**85202**

R/W DESIGNER  
JPS

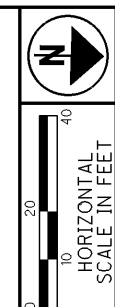
R/W REVIEWER  
WJS

**RIGHT OF WAY DETAIL SHEET**  
**TRU-46-20.81**

**TRU-46-18.49**



TRUMBULL COUNTY  
GREENE TOWNSHIP  
SECTION 44  
T. 7 N., R 3 W.



PID NO.  
**85202**

R/W DESIGNER  
JPS  
R/W REVIEWER  
WJS

**RIGHT OF WAY PLAN**  
**TRU-46-21.80**

**TRU-46-18.49**

6 / 7  
65  
66

AGRICULTURAL

(21)  
ROBERTO MONREAL  
ELIZABETH KOHEMBA MONREAL  
STATE ROUTE 45  
CORTLAND, OHIO 44410  
37-002700

VIOLET KOHEMBA, TRUSTEE

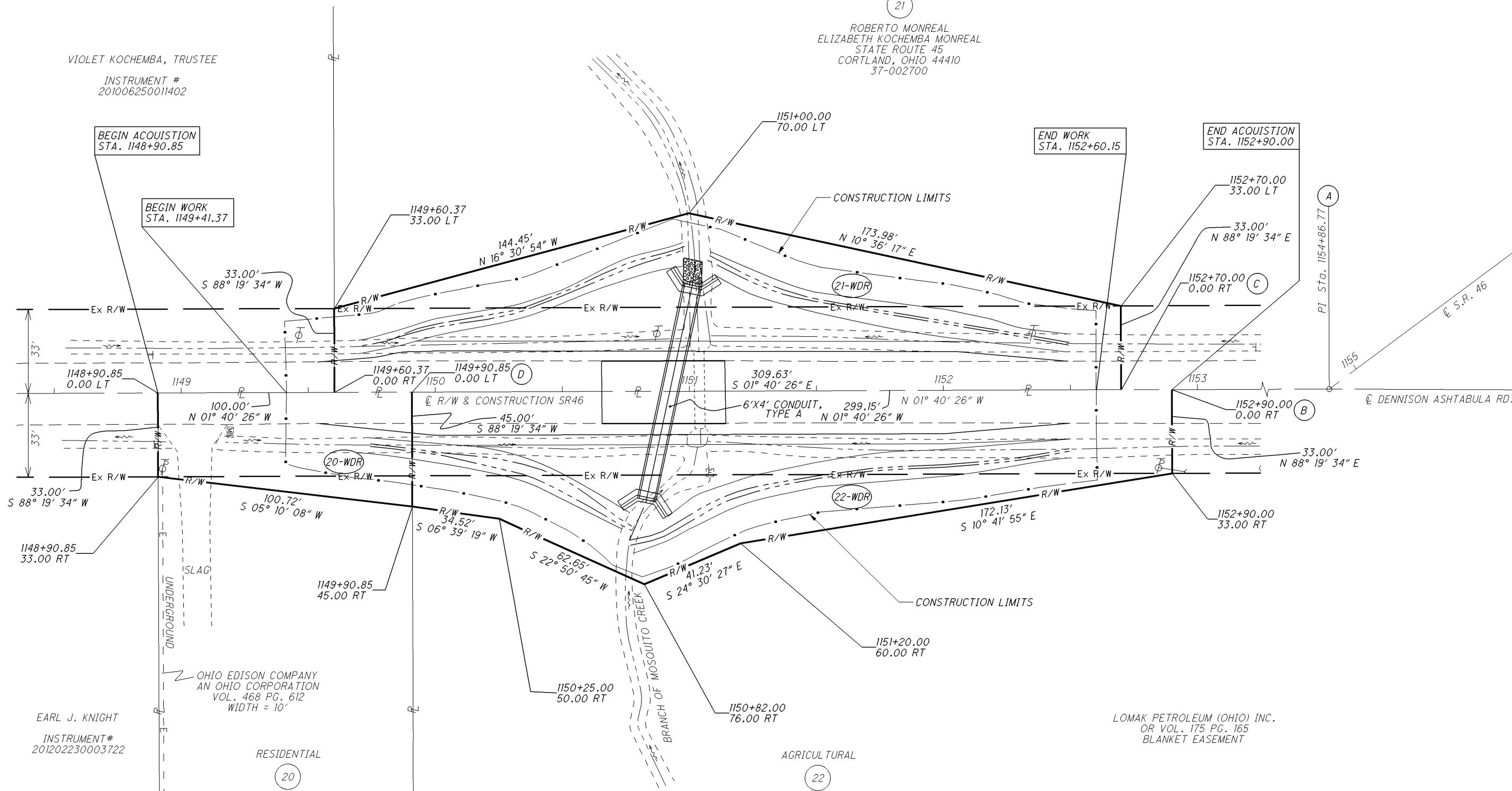
INSTRUMENT #  
201006250011402

BEGIN ACQUISITION  
STA. 1148+90.85

BEGIN WORK  
STA. 1149+41.37

END WORK  
STA. 1152+60.15

END ACQUISITION  
STA. 1152+90.00



OHIO EDISON COMPANY  
AN OHIO CORPORATION  
VOL. 468 PG. 612  
WIDTH = 10'

RESIDENTIAL  
(20)  
JONATHAN W. HARPER AND  
TINA M. HARPER  
7928 STATE ROUTE 46  
CORTLAND, OHIO 44410  
37-046488  
THE OHIO PUBLIC SERVICE COMPANY  
AN OHIO CORPORATION  
VOL. 392 PG. 126  
BLANKET EASEMENT

AGRICULTURAL  
(22)  
EARLE J. KNIGHT  
8060 DENNISON ASHTABULA ROAD  
CORTLAND, OHIO 44410  
37-020520

THE OHIO PUBLIC SERVICE COMPANY  
AN OHIO CORPORATION  
VOL. 392 PG. 126  
BLANKET EASEMENT

LOMAK PETROLEUM (OHIO) INC.  
OR VOL. 175 PG. 165  
BLANKET EASEMENT

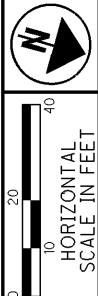
LEAD IN COURSES

(A) - (B)	S01°40'26"E	196.77'
(A) - (C)	S01°40'26"E	216.77'
(A) - (D)	S01°40'26"E	495.92'

REV. BY	DATE	DESCRIPTION
TWW	9-21-12	REV PCLS 20, 21, & 22 TO WDR PCLS
DATE COMPLETED 6/1/2012		

DATE: 30-MAY-12 11:15  
FILE: J:\JOB\1102-06 TRU-46-21.80\PLAN\_SHEETS\PLAN24\_RIGHT\_OF\_WAY\05\_PLAN\_SHEETS\85202R0002.DGN  
SCALE: 1" = 20'

EARL J. KNIGHT  
INSTRUMENT #  
201202230003722



PID NO. **85202**

R/W DESIGNER: JPS  
R/W REVIEWER: WJS

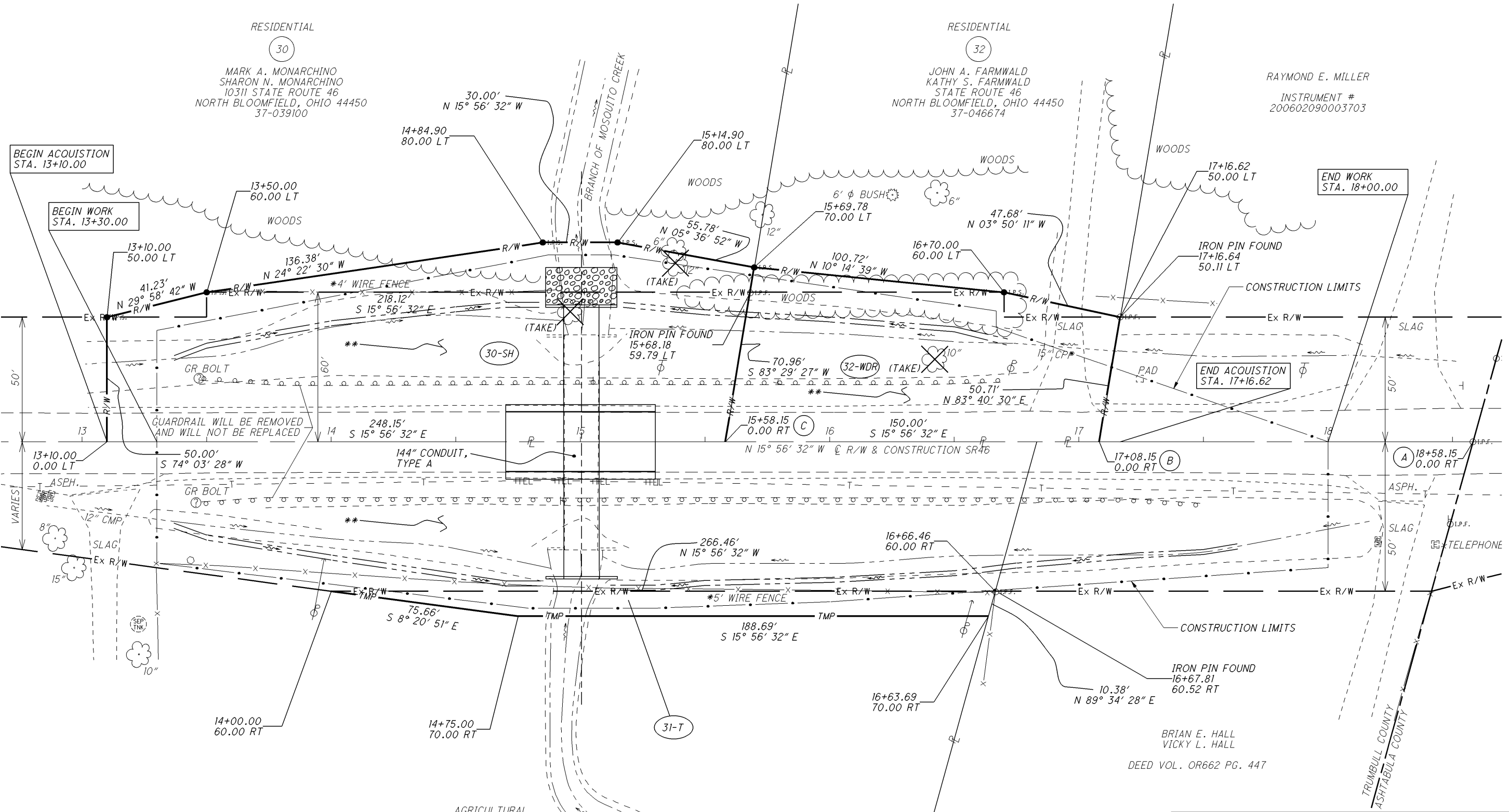
**RIGHT OF WAY DETAIL SHEET**  
**TRU-46-26.27**

**TRU-46-18.49**

7 / 7  
66  
66

TRUMBULL COUNTY  
GREENE TOWNSHIP  
SECTION 4  
T. 7 N., R. 3 W.

** OWNERSHIP 30 & 32	OWNERSHIP 31
STATE OF OHIO VOL. 773 PG. 183 HIGHWAY EASEMENT WIDTH VARIES	STATE OF OHIO VOL. 771 PG. 243 HIGHWAY EASEMENT WIDTH VARIES



OWNERSHIP 30:  
\* 143 L.F. OF WIRE FENCE TO BE REMOVED

OWNERSHIP 31:  
\* 337 L.F. OF WOVEN WIRE FENCE TO BE REMOVED,  
OF WHICH 337 L.F. IS ENCROACHING

AGRICULTURAL  
(31)  
CLIFFORD E. MASINK  
DEBRA A. MASINK  
10284 STATE ROUTE 46  
NORTH BLOOMFIELD, OHIO 44450  
37-001284

GENERAL ELECTRIC COMPANY  
OR VOL. 183 PG. 786  
BLANKET EASEMENT

OHIO EDISON COMPANY  
AN OHIO CORPORATION  
VOL. 995 PG. 482  
BLANKET EASEMENT

LEAD IN COURSES

(A) - (B)	S15°56'32"E	150.00'
(A) - (C)	S15°56'32"E	300.00'

REV. BY	DATE	DESCRIPTION
TWW	10-15-12	REV PCL 30WDR TO 30SH, ADD GUARDRAIL NOTE
TWW	9-21-12	REV PCLS 30 & 32 TO WDR PCLS

DATE COMPLETED 6/1/2012

DATE: 30-MAY-12 12:43  
FILE: J:\JOB\1102-06 TRU-46-26.27\PLAN SHEETS\PLAN24\_RIGHT\_OF\_WAY\05\_PLAN\_SHEETS\85202R0003.DGN  
SCALE: 1" = 20'





# SPECIAL PROVISIONS

# WATERWAY PERMITS CONDITIONS

C-R-S: TRU – 46 – 18.49

PID: 85202

Date: 01/22/2013

## 1. Waterway Permit Time Restrictions:

Complete all work in streams and wetlands depicted in the plans, Special Provisions, and/or working drawings for temporary fill by 10-23-2014.

For work on streams and wetlands, the Department will consider the Contractor's submission of an extension to the waterway permit end date based on project constraints. In order to be considered, the Contractor must submit a justification to the Engineer at least two months prior to the waterway permit end date.

The Engineer will submit the request for a time extension to ODOT- Office of Environmental Services- Waterway Permits Unit (614-466-7100) for consideration and coordination with the USACE and/or Ohio EPA.

## 2. Deviations from Permitted Construction Activities

No deviation from the requirements for work in streams and wetlands depicted in the plans, Special Provisions, and/or working drawings may be made unless a modification has been submitted to ODOT and approved by the appropriate agencies (i.e., USACE, Ohio EPA, USCG, ODNR, and USFWS).

For emergency situations resulting in unanticipated impacts to streams or wetlands, provide notification (verbal or written) to the Engineer as soon as possible following discovery of the situation. Written notification to the Engineer and notification to the ODOT- Office of Environmental Services- Waterway Permits Unit must be made within 24 hours.

For non-emergency situations, notify the Engineer in writing for submission to the ODOT- Office of Environmental Services- Waterway Permits Unit (614-466-7100) for consideration and coordination with the appropriate agencies. Notification must be made at least two months prior to planned non-permitted activities. Consideration of the requested deviation is at the discretion of the Director and must be coordinated with the appropriate regulatory agencies.

## 3. In-Stream Work Restrictions

Work in the following sensitive streams is further restricted as follows

Stream Name /Description	Location	Work restriction dates (No in-stream work permitted)
UT of Mosquito Creek, (Stream 1)	TRU-46-18.93	None
UT of Mosquito Creek, (Stream 2)	TRU-46-19.52	None
UT of Mosquito Creek, (Stream 3)	TRU-46-19.77	None
UT of Mosquito Creek, (Stream 4)	TRU-46-20.20	None
Smith Run, (Stream 5)	TRU-46-20.73	None
UT of Smith Run, (Stream 6)	TRU-46-20.81	None
UT of Mosquito Creek, (Stream 7)	TRU-46-21.80	None
UT of Mosquito Creek, (Stream 8)	TRU-46-22.14	None
UT of Mosquito Creek, (Stream 9)	TRU-46-22.72	None
UT of Mosquito Creek, (Stream 10)	TRU-46-23.25	None
UT of Mosquito Creek, (Stream 11)	TRU-46-24.37	None
UT of Mosquito Creek, (Stream 14)	TRU-46-26.27	None

In-stream work has been defined as the placement and/or removal of fill materials (temporary or permanent) below ordinary high water of a stream. Examples of "fill" include (but are not limited to) bridge piers, abutments, culverts, rock channel protection, scour protection, and temporary work pads.

Fills (such as temporary work pads) placed within a stream identified in the above table outside of the work restriction dates can continue to be worked from during the work restriction dates, but cannot be expanded, removed, or otherwise modified (below ordinary high water) until once again outside of the work restriction dates.

The Engineer will submit the request for a time extension to ODOT, Office of Environmental Services, Waterway Permits Unit (614-466-7100) for consideration and coordination with the USACE and/or Ohio EPA.

**4. Materials:**

Materials utilized in or adjacent to streams and wetlands on this project for temporary or permanent fill or bank protection shall consist of suitable material free from toxic contaminants in other than trace quantities. Broken asphalt is specifically excluded.

Cadmium, chromium, arsenate (CCA), creosote, and other pressure treated lumber shall not be used in structures that are placed in streams and wetlands.

**5. Cultural Resources**

If archeological sites or human remains are discovered, cease all work in the immediate area and notify the Engineer who will immediately contact the Office of Environmental Services – Cultural Resource Section (614-466-7100) and the Ohio Historic Preservation Office.

In the event of human remains are discovered the Engineer shall also contact the Trumbull County Sheriff's Office (330-675-2508).

**6. Water Resource Demarcation:**

A total of 0.037 acres of Wetland 2 (located to the northeast and southeast of Sta. 1099+00) are authorized to be impacted on this project. The remaining areas of Wetlands 2 are not to be disturbed and require demarcation. All streams, wetlands, lakes, and ponds indicated on the plans shall be demarcated in the field as per SS 832 prior to site disturbance. The fence shall remain in place and be maintained throughout the construction process. Following the completion of the project, the fence and posts shall be removed.

**7. Spill containment:**

Provide and Maintain an Oil Spill Kit with a minimum capacity of 65 gallons. The Spill Kit shall contain:

- 6 - 3 in. X 8 ft. Oil only socks
- 4 - 18 in. X 18 in. Oil only pillows
- 2 - 5 in. X 10ft. Booms
- 50 - 16in. X 20 in. Oil only pads
- 10 - Disposable Bags
- 1 - 65 Gallon drum with lid
- 25 pounds of Granular Oil Absorbent

The Oil Spill Kit shall be located within 150 feet of any equipment working in a stream or wetland. The oil Spill Kit shall be maintained for the life of the contract. Any materials utilized during the project will be replaced within 48 hours.

All costs associated with furnishing and maintaining the above referenced spill containment kit is incidental to work.

**8. Blasting:**

State law requires notification to the Ohio Department of Natural Resources should blasting be required within or near stream channels (See ORC 1533.58 & CMS 107.09).

Notify Engineer, in writing, for submission to ODOT Office of Environmental Services – Waterway Permits Unit (614-466-7100) for coordination with the Ohio Department of Natural Resources.

**9. Waterway Permits:**

Regional General Permit Section B (Maintenance) and Section C (Temporary Construction, Access, and Dewatering) are authorized for TRU – 46 – 18.49, PID 85202. A copy of the RGP shall be kept at the work site at all times and made available to all contractors and subcontractors. The Permit is effective starting: 01-22-2013 . The Permit expires: 10-23-2014 .

**10. Bridge Inspection:**

Prior to the removal of bridge structures, the underside must be carefully examined for the presence of birds and bats. Should any birds or bats be found roosting on the underside of the bridge, the Contractor is required to notify the Engineer for coordination with ODOT – Office of Environmental Services (614-466-7100).

**11. Project Inspection:**

Inspection of Work may include inspection by representatives of other government agencies or railroad corporations that pay a portion of the cost of the Work or regulate the Work through State and Federal law. Comments from the representatives of these agencies shall be directed to the Engineer. Please forward a copy to ODOT Office of Environmental Services. Waterway Permits Unit (614-466-7100).

**12. Temporary Access Fills (Stream and River Crossings and Fills)**

**Special Provisions Notes:**

**Regional General Permit (RGP) for the State of Ohio Department of Transportation**

**Definitions:**

**Hydraulic Opening**

The cross sectional area allowing an unimpeded discharge equal to twice the highest monthly flow without producing a rise in the backwater above the Ordinary High Water Mark (OHWM)\*.

**Standard Temporary Discharge**

The hydraulic opening providing a capacity for a discharge equal to twice the *highest monthly flow* without producing a rise in the backwater above the OHWM shall be known as the Standard Temporary Discharge. The U.S. Geologic Service publication "Techniques for estimating Selected Streamflow Characteristics of Rural Unregulated Streams in Ohio" provides equations that estimate monthly flow for Ohio Waterways. These flows are also available in a web application by USGS StreamStats, (<http://water.usgs.gov/osw/streamstat/ohi.html>).

**Average Monthly Flow**

The average monthly flow represents the estimated "normal" flow.

**Temporary Access Fills (TAFs)**

In Streams and Rivers may include, but are not limited to, causeways, cofferdams (as described by other items of work), access pads, temporary bridges, etc. The Contractor will make every attempt minimize disturbance to water bodies, stream banks, stream beds, and approach sections during the construction, maintenance, and removal of the TAFs. Forging of streams and rivers is prohibited.

Construct TAFs in such a manner that will maintain flows, minimize upstream flooding, and avoid overtopping the TAF on a regular basis. ***TAFs shall be designed and constructed so that the hydraulic opening provides capacity for a discharge equal to twice the highest monthly flow without producing a rise in the backwater above the Ordinary High Water Mark (OHWM)\*.***

Do not exceed an overall length of 250 feet measured linearly upstream to downstream.

**Requirements**

21 calendar days prior to the initiation of any in-stream work, provide the Engineer with working drawings that include:

- Plan view drawing (200 scale or less) showing the location of all jurisdictional temporary fill proposed for use on the project
- Scaled Cross section and profile drawing showing the OHWM and the proposed compliant hydraulic opening.
- A description of the installation and staging of all temporary jurisdictional fill over the life of the contract.
- A description of the removal of all jurisdictional temporary fill and restoration of the channel and all areas impacted by the jurisdictional temporary fill.
- A schedule outlining the timing of the placement and removal of all TAF.
- Have an Ohio Registered Engineer prepare, sign, seal and date the working drawings. Have a second Ohio Registered Engineer check, sign, seal and date the working drawings. The preparer and checker are two different Engineers. Include the following statement on the working drawings: "These working drawings were prepared in compliance with the terms of the Regional General Permit and all contract documents."
- Include supporting hydraulic calculations developed by the engineer(s) who sealed the working drawings.
- Do not begin in-stream work until the Engineer has accepted the working drawings.

If the OHWM is not shown on the plans, the Department will establish the OHWM based on the definition of OHWM (as defined in SS 832) or the peak discharge from the 2 year event, using the method described in the most current version of the Department's Location and Design Manual Volume II.

If the Contractor proposes a TAF which does not provide for the Standard Temporary Discharge (discharge equal to twice the highest monthly flow without producing a rise in the backwater), the Contractor is required to coordinate the request for the contractor's proposed TAF with the Engineer and the ODOT Office of Environmental Services (OES). The Department makes no guarantee to grant the request. The contractor's proposed TAF request will be coordinated by OES with the U.S. Army Corps of Engineers and the Ohio Environmental Protection Agency, as appropriate.

In addition to the requirements described in SS 832, supply the Engineer/OES with the following:

1. A plan and Profile showing the temporary access fill(s) with the OHWM.
2. Cross section showing the hydraulic opening and the anticipated discharge flow.
3. A restoration plan for the area affected by the temporary access fill(s).
4. A schedule outlining the timing of the placement and removal of the temporary access fill(s).

The time frame allowed for the coordination of the contractor's proposed TAF will be a minimum of 60 days. Installation of any jurisdictional fill without a 404 Permit authorized by the USACE is strictly prohibited. All direct coordination with the USACE and/or OEPA will be performed through OES.

**Temporary Access Fills Construction and Payment**

Begin planning and installing causeways and access fills as early in construction as possible to avoid conflicts with 404/401 permits or other environmental commitments that have been included in the construction plans.

Temporary Access Fills (TAFs) in Streams and Rivers may include, but are not limited to, causeways, cofferdams, access pads, temporary bridges, etc. Make every attempt minimize disturbance to water bodies, stream banks, stream beds, and approach sections during the construction, maintenance, and removal of the TAFs. Make every attempt to minimize disturbance to water bodies during construction, maintenance and removal of the causeway and access fills. Construct the causeway and access fills as narrow as practical. Install in-stream conduits parallel to the stream banks. Make the causeway and access fills in shallow areas rather than deep pools where possible. Minimize clearing, grubbing, and excavation of stream banks, bed, and approach sections. Construct the causeway and access fills as to not erode stream banks or allow sediment deposits in the channel.

Prior to the initiation of any in-stream work, establish a monument upstream of proposed temporary crossing or temporary construction access fill to visually monitor the water elevation in the waterway where the fill is permitted. Maintain the monument throughout the project. Provide a visual mark on the monument that identifies the elevation 1 foot above the OHWM. If the OHWM is not shown on the plans, the Department will establish the OHWM based on the definition of OHWM (SS 832.02) or the peak discharge from the 2 year event, using the method described in the most current version of the Department's Location and Design Manual Volume II.

Ensure that the monument can be read from the bank of the waterway. Have this elevation set and certified by an Ohio Registered Surveyor.

Temporary access fills placed by the contractor above the OHWM are not subject to the 404/401 permit constraints. All costs associated with furnishing and maintaining the above referenced monument is incidental to the work.

Should the water elevation of the waterway, exceed the elevation 1 foot above OHWM, the Department will compensate the Contractor for repair of any resulting damage to the permitted temporary access fill up to the elevation of 1 foot above the OHWM, except as noted. Follow the requirements in Item 502 for Structures for Maintaining Traffic and in Item 503 for Cofferdams and any modifications to these items as shown in the plans. The Department will not pay for repair and maintenance of temporary access structures that are related to the construction access fill.

Should the water elevation of the waterway exceed the elevation shown on the monument, the Department will recognize this event as an excusable, non-compensable delay in accordance with Section 108.06 of the Construction & Materials Specifications.

Construct the causeway and fills, not including cofferdams and temporary bridges, to a water elevation at least 1 foot (0.3 m) above the OHWM. If more than one-third the width of the stream is filled, then use culvert pipes to allow the movement of aquatic life. Ensure that any ponding of water behind the causeway and access fills will not damage property or threaten human health and safety.

The following minimum requirements apply to TAFs where culverts are used:

- Furnish culverts on the existing stream bottom.
- Avoid a drop in water elevation at the downstream end of the culvert.
- Furnish a sufficient number of culverts in addition to stream openings to providing a discharge equal to twice the highest monthly flow without producing a rise in the backwater above the OHWM.
- Furnish culverts with a minimum diameter of 18 inches (0.5 m).

For all fill and surface material placed in the channel, around the culverts, or on the surface of the causeway and access fills furnish clean, non-erodible, nontoxic dumped rock fill, Type B, C, or D, as specified in C&MS 703.19.B. Extend rock fill up the slope from original stream bank for 50 feet (10 m) to catch and remove erodible material from equipment.

When the work requiring the TAFs is complete all portions of the TAF (including all rock and culverts) will be removed in its entirety. The material will not be disposed in other waters of the US or isolated wetland. The stream bottom affected by the causeway and access fills will be restored to its pre-construction elevations. The TAF will not be paid as a separate item but will be included by the Contractor as part of the total project cost.

Unless specific Temporary Access Fill compensation is included in the plans, all environmental protection and control associated with the 404/401 permit activities, including but not limited to Temporary Access Fills, are incidental to the work within the boundaries of the 404/401 permit or as otherwise identified in the 404/401 permit application.

### 13. Excavation Activities:

The following must be abided by when conducting stream and/or jurisdictional ditch clean out:

- Equipment must be staged on the bank or bridge (no equipment in the stream, wetland, or jurisdictional ditch); nor is any equipment or causeways allowed in the water to conduct the work.
- No widening, deepening, or relocation of the jurisdictional ditch beyond the original design.
- No widening, deepening, channelization, or relocation of any stream or captured stream is allowed.
- No mechanized land clearing (i.e. pushing/moving soil with a bulldozer blade, or the movement of equipment, in waterways/wetlands) is allowed.
- Excavated material will be placed at the upland site and disposed of in such a manner that sediment and runoff to streams is controlled and minimized; excavated material is not to be placed into another stream, ditch, or wetland (temporarily or permanently).
- No more than incidental fallback into jurisdictional waters of the U.S. is permitted during the excavation process.
- Removed materials must be stabilized to prevent erosion.

If any changes to the proposed work are deemed necessary, you must notify and coordinate with the Office of Environmental Services - Waterway Permits Unit (614-466-7100).