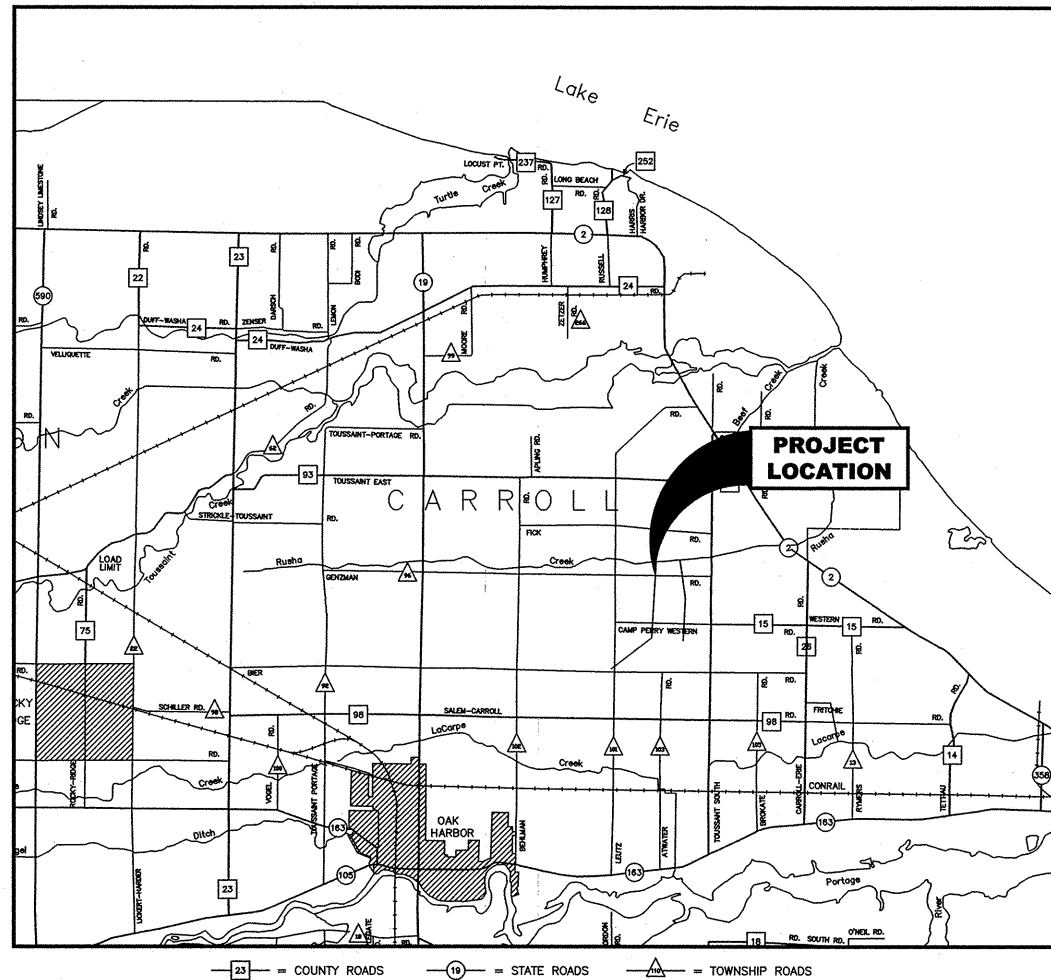


BRIDGE REPLACEMENT FOR BRIDGE CAR-TR96-3.45 ON GENZMAN ROAD, T.R. 96, LOCATED IN SECTION 23, T7N, R15E, CARROLL TOWNSHIP, OTTAWA COUNTY, OHIO ~2013~

PROJECT DESCRIPTION

REPLACE SINGLE SPAN (27'-6") BRIDGE WITH REINFORCED CONCRETE BOX CULVERT. WORK WILL INCLUDE EARTHWORK TO PROVIDE SAFETY GRADING, MINIMAL ROADWAY RECONSTRUCTION.



SCALE: 1" = 1 MILE

INDEX OF SHEETS

TITLE SHEET	1
TYPICAL SECTION	2
GENERAL NOTES	3
GENERAL SUMMARY	4
PLAN AND PROFILE	5
DETOUR PLAN	6
CROSS SECTIONS	7-8
CULVERT DETAILS	9-10

APPROVALS

WE THE COMMISSIONERS OF OTTAWA COUNTY, IN FORMAL SESSION HEREBY APPROVE THESE PLANS AND CERTIFY THAT THE NECESSARY RIGHT-OF-WAY IS AVAILABLE

J. Ellen Regal
JO ELLEN REGAL, COMMISSIONER 2/19/13
DATE

James M. Sass
JAMES M. SASS, COMMISSIONER 2/19/13
DATE

Steven M. Arndt
STEVEN M. ARNDT, COMMISSIONER 2/19/13
DATE

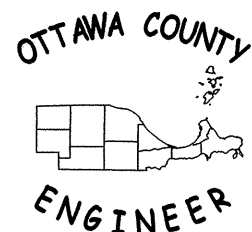
I HEREBY APPROVE THESE PLANS.

David A. Brunkhorst
DAVID A. BRUNKHORST, P.E., R.S.
OTTAWA COUNTY ENGINEER 2/19/13
DATE



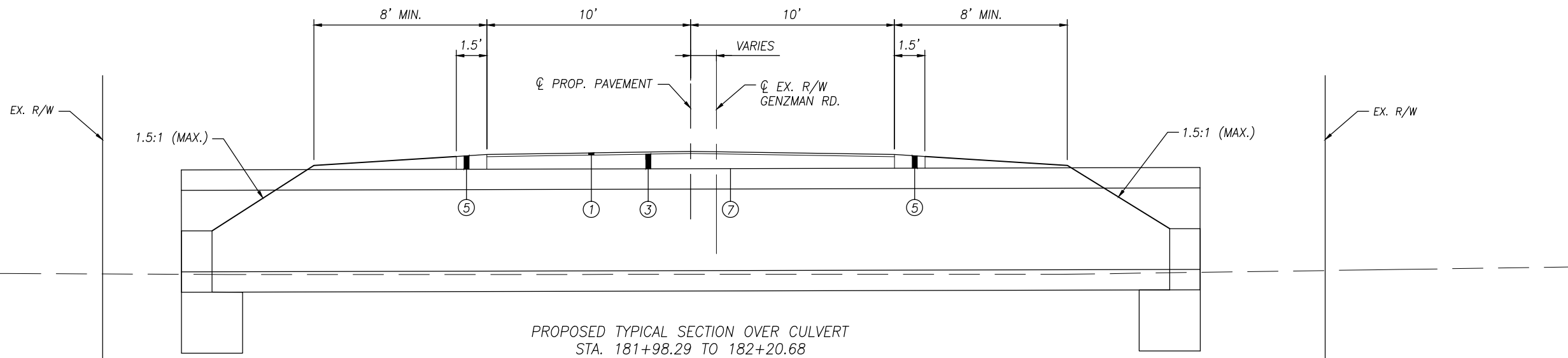
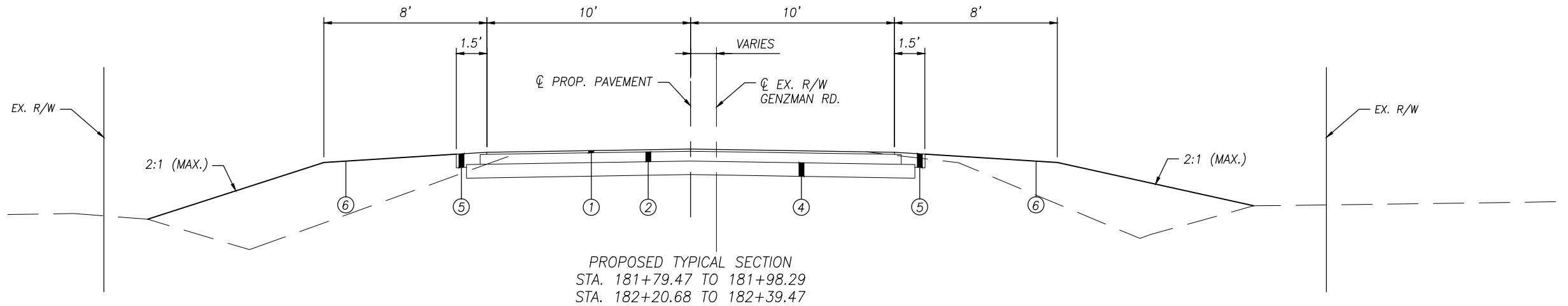
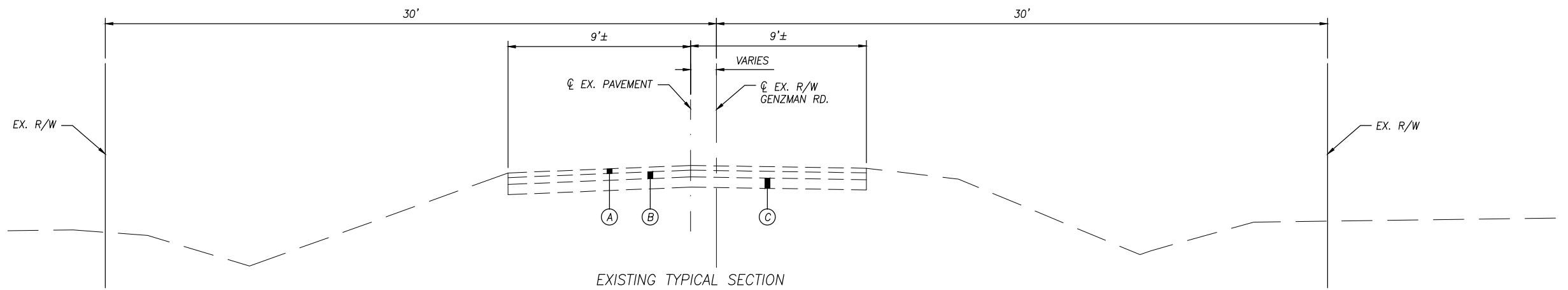
2010 SPECIFICATIONS

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

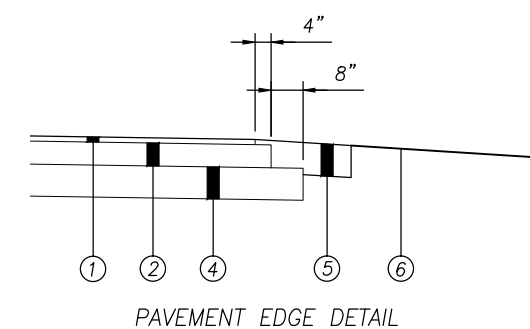
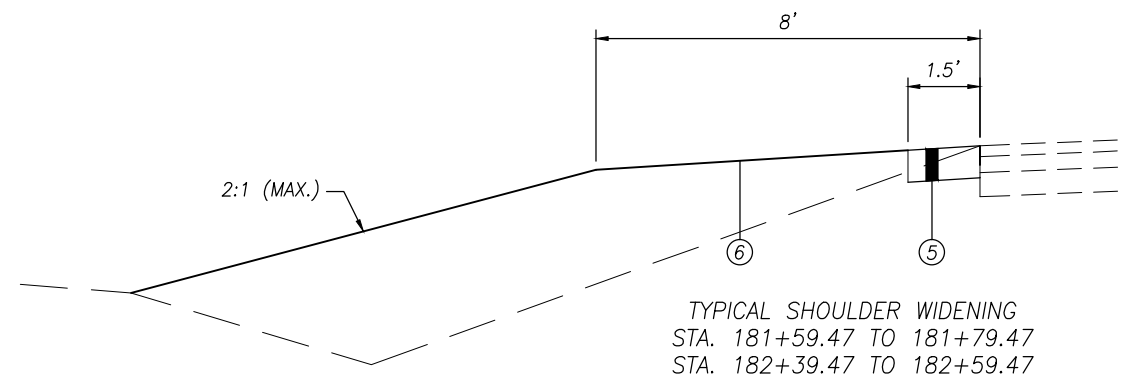


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- LEGEND:
- (A) 2 3/4" ASPHALT CONCRETE
 - (B) 3" ± BITUMINOUS MATERIAL
 - (C) 6" STONE BASE



- LEGEND:
- (1) ITEM 448 - 1 1/4" ASPHALT CONCRETE, SURFACE COURSE, TYPE 1, PG64-22
 - (2) ITEM 301 - 6" ASPHALT CONCRETE BASE, PG64-22
 - (3) ITEM 301 - VARIABLE DEPTH ASPHALT CONCRETE BASE, PG64-22, AS PER PLAN
 - (4) ITEM 304 - 8" AGGREGATE BASE
 - (5) ITEM 411 - 8" STABILIZED AGGREGATE
 - (6) ITEM 659 - SEEDING AND MULCHING
 - (7) ITEM 512 - TYPE 3 WATERPROOFING (UNDER PAVEMENT)



UTILITY OWNERSHIP:

THE FOLLOWING UTILITIES AND OWNERS ARE LOCATED WITHIN THE WORK LIMITS OF THE PROJECT:

TOLEDO EDISON COMPANY
6099 ANGOLA ROAD
HOLLAND, OH 43528
419-249-5817

CARROLL WATER & SEWER
10340 S.R. 2
OAK HARBOR, OH 43449
419-898-5028

FRONTIER
550 LEADER STREET
MARION, OH 43302
740-383-0686

TIME WARNER
119 NORTH MAIN STREET
FOSTORIA, OH 44830
419-429-7484

OTTAWA COUNTY ENGINEER
315 MADISON STREET
PORT CLINTON, OH 43452
419-734-6777

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS DIRECTED BY SECTION 153.64 O.R.C.

UTILITY LINES:

THE UTILITY(IES) SHALL BEAR ALL EXPENSE INVOLVED IN RELOCATING (INSTALLING) 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.

CONSTRUCTION NOISE:

ACTIVITIES AND LAND USE ADJACENT TO THE PROJECT MAY BE AFFECTED BY CONSTRUCTION NOISE. IN ORDER TO MINIMIZE ANY ADVERSE CONSTRUCTION NOISE IMPACTS, DO NOT OPERATE POWER-OPERATED CONSTRUCTION TYPE DEVICES BETWEEN THE HOURS OF 9 P.M. AND 6 A.M. IN ADDITION, DO NOT OPERATE AT ANY TIME ANY DEVICE IN SUCH A MANNER THAT THE NOISE CREATED SUBSTANTIALLY EXCEEDS THE NOISE CUSTOMARILY AND NECESSARILY ATTENDANT TO THE REASONABLE AND EFFICIENT PERFORMANCE OF SUCH EQUIPMENT.

ELEVATION DATUM:

ALL ELEVATIONS ARE BASED UPON NATIONAL GEODETIC VERTICAL DATUM OF 1988. AT THE REQUEST OF THE CONTRACTOR, THE COUNTY WILL PROVIDE SURVEY CONTROL ONSITE FOR THE BASIS OF THE REQUIRED CONSTRUCTION LAYOUT.

SEEDING AND MULCHING:

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

659	SEEDING AND MULCHING	249	SQ. YD.
659	COMMERCIAL FERTILIZER	0.03	TON
659	LIME	0.05	ACRE
659	WATER	0.7	M. GAL

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

TEMPORARY EROSION AND SOIL CONTROL:

THE CONTRACTOR SHALL TAKE ANY AND ALL APPROPRIATE MEASURES TO LIMIT SOIL EROSION PRIOR TO EXCAVATING DURING AND AFTER CONSTRUCTION AUTHORIZED HEREIN. AS SUCH, HE/SHE SHALL BE FULLY ACCOUNTABLE TO THE EPA, SOIL CONSERVATION SERVICE, AND OTHER APPROPRIATE AGENCIES FOR ANY VIOLATION OR DISREGARD OF THE APPLICABLE GOVERNING STANDARDS AND REGULATIONS RELATED TO THE PROTECTION AND CONSERVATION OF SOILS THAT ARE AFFECTED BY THE PERMIT WORK, INCLUDING ODOT STANDARD CONSTRUCTION DRAWINGS DM-4.3 AND DM-4.4.

REVIEW OF DRAINAGE FACILITIES:

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE THE FINAL ACCEPTANCE BY THE COUNTY, REPRESENTATIVES OF THE COUNTY AND THE CONTRACTOR, ALONG WITH LOCAL REPRESENTATIVES, SHALL MAKE AN INSPECTION OF ALL EXISTING DRAINAGE FACILITIES WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCE SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION SHALL BE KEPT IN WRITING BY THE COUNTY.

ALL EXISTING DRAINAGE FACILITIES INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

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

MAINTENANCE OF TRAFFIC AND DETOUR ROUTE:

TWO WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES, EXCEPT FOR A PERIOD NOT TO EXCEED 45 CONSECUTIVE CALENDAR DAYS, WHEN THROUGH TRAFFIC MAY BE DETOURED AS INDICATED IN THESE PLANS. LOCAL ACCESS TO RESIDENCES AND BUSINESSES SHALL BE MAINTAINED AT ALL TIMES. LIQUIDATED DAMAGES SHALL BE ASSESSED IN ACCORDANCE WITH SECTION 108.07 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR EACH CALENDAR DAY THAT THE ROADWAY REMAINS CLOSED TO TRAFFIC BEYOND THE SPECIFIED LIMIT.

THE CONTRACTOR SHALL PROVIDE, ERECT, MAINTAIN, AND SUBSEQUENTLY REMOVE SIGNS, BARRICADES, GATES, AND LIGHTS AS REQUIRED AT THE PROJECT SITE AND FOR THE DESIGNATED DETOUR ROUTE.

TRAFFIC CONTROL:

THE FOLLOWING ESTIMATED QUANTITIES ARE INCLUDED IN THE PLANS FOR TRAFFIC CONTROL:

642	EDGE LINE	0.03	MILE
642	CENTER LINE	0.02	MILE

PROJECT MATERIALS:

ALL MATERIAL SUPPLIED FOR THIS PROJECT SHALL BE OBTAINED FROM AN ODOT APPROVED SOURCE OR LISTED AS AN ODOT PREQUALIFIED PRODUCT.

ITEM 202 - PAVEMENT REMOVED:

PRIOR TO FINAL PAVEMENT REMOVAL NEAR THE PAVEMENT REMOVAL LIMITS, THE EXISTING ASPHALT PAVEMENT SHALL BE SAW CUT AT THE REMOVAL LIMITS AS INDICATED IN THE PLANS TO PROVIDE A NEAT JOINT AT THE LIMITS OF PROPOSED PAVEMENT.

PAVEMENT JOINTS:

THE RESULTING JOINT BETWEEN EXISTING AND PROPOSED PAVEMENT SHALL BE SEALED WITH MATERIAL MEETING THE REQUIREMENTS OF CMS 705.04. THE COST SHALL BE INCLUDED WITH ITEM 448.

DESIGN SPECIFICATIONS:

THE PREFABRICATED BOX CULVERT STRUCTURE SHALL CONFORM TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS, 5TH EDITION" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2010, INCLUDING THE 2011 INTERIM REVISIONS TO THE SPECIFICATION AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

DESIGN DATA:

DESIGN LOADING	-	HL93
FUTURE WEARING SURFACE	-	60 POUNDS PER SQUARE FOOT
PRECAST BOX CULVERT	-	4,500 PSI COMPRESSIVE STRENGTH
REINFORCING STEEL	-	A615 (GRADE 60)

ITEM 202 - STRUCTURE REMOVED:

WHEN NO LONGER REQUIRED TO MAINTAIN TRAFFIC, THE EXISTING STRUCTURE SHALL BE REMOVED. REMOVAL OF THE EXISTING STRUCTURE SHALL INCLUDE THE DECK SLAB, ABUTMENTS, AND FOOTINGS. IF DEEP FOUNDATIONS ARE PRESENT, THEY SHALL BE REMOVED TO A MINIMUM DEPTH OF 1 FOOT BELOW THE BOTTOM OF THE PROPOSED BOX CULVERT.

ITEM 603 - 20' X 4' CONDUIT, TYPE A, 706.05, AS PER PLAN:

THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AS WELL AS DESIGN AND LOAD RATING CALCULATIONS, PREPARED, STAMPED, AND SIGNED BY AN ENGINEER LICENSED IN THE STATE OF OHIO, FOR THE PREFABRICATED BOX CULVERT TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE MANUFACTURING OF THE BOX CULVERT SECTIONS.

THE LOAD RATING DOCUMENT SHALL CONFORM TO THE REQUIREMENTS OF SECTION 900 OF THE ODOT BRIDGE DESIGN MANUAL, 2004. THE LOAD RATING SHALL PROVIDE BOTH OPERATING AND SERVICE LOAD FACTORS FOR THE HL-93 VEHICLE AS WELL AS OPERATING RATING FACTORS FOR THE FOUR (4) OHIO LEGAL LOAD VEHICLES.

THE BOX CULVERT SHALL BE PROPERLY BACKFILLED USING GRANULAR MATERIALS AND COMPACTED TO THE REQUIRED PAVEMENT SUBGRADE ELEVATION, BUT NO LOWER THAN THE TOP OF THE CULVERT, PER CMS ITEM 304. BACKFILL AGAINST A WATERPROOFED SURFACE SHALL BE PLACED CAREFULLY TO AVOID DAMAGE TO THE WATERPROOFING MATERIAL. IN NO CASE SHALL EQUIPMENT OPERATING IN EXCESS OF THE DESIGN LOAD CAPACITY OF THE STRUCTURE BE PERMITTED OVER THE STRUCTURE UNLESS APPROVED BY THE DESIGN ENGINEER. THE COST OF THE BACKFILL SHALL BE INCLUDED WITH ITEM 603 - 20' X 4' CONDUIT, TYPE A, 706.05, AS PER PLAN.

ALTERNATE BID ITEM -- ITEM 603 - CONDUIT, MISC.: 20' X 4' CAST-IN-PLACE REINFORCED CONCRETE BOX CULVERT:

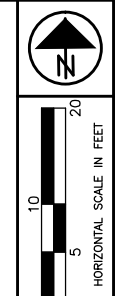
1. GENERAL:
 - A. THIS WORK SHALL CONSIST OF CONSTRUCTING A CAST-IN-PLACE REINFORCED CONCRETE FOUR-SIDED BOX CULVERT IN LIEU OF ITEM 603 - 20' X 4' CONDUIT, TYPE A, 706.05, AS PER PLAN.
 - B. THE CONTRACTOR SHALL SUPPLY STRUCTURAL CALCULATIONS DEVELOPED BY A PROFESSIONAL ENGINEER IN THE STATE OF OHIO ALONG WITH STAMPED SHOP DRAWINGS FOR APPROVAL PRIOR TO INSTALLATION OF THE CAST-IN-PLACE CONCRETE STRUCTURE.
2. DESIGN DATA:
 - A. STANDARD: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 5TH EDITION (2010) AND 2011 INTERIM REVISIONS
 - C. DESIGN LOADING: HL-93 AND 60 PSF FUTURE WEARING SURFACE
 - D. CONCRETE STRENGTH: 4500 PSI AT 28 DAYS
 - E. REINFORCING STEEL: ASTM A615 (GRADE 60), EPOXY COATED
3. QUALITY ASSURANCE:
 - A. THE INSTALLER SHALL BE EXPERIENCED AT INSTALLING CAST-IN-PLACE CONCRETE STRUCTURES WITH A MINIMUM OF FIVE (5) SIMILAR CONCRETE STRUCTURE INSTALLATIONS WITHIN A FIVE (5) YEAR TIME PERIOD IMMEDIATELY PRECEDING THE PROJECT DATE.
4. FOUNDATIONS:
 - A. FOUNDATION DESIGNS FOR THE FOUR-SIDED BOX CULVERT ASSUME A NET ALLOWABLE BEARING PRESSURE OF 2500 PSF.
 - B. SUBGRADE MATERIAL THAT DOES NOT PROVIDE ADEQUATE SOIL BEARING CAPACITY MUST BE REMEDIATED AT THE DIRECTION OF THE ENGINEER.
5. BACKFILL REQUIREMENTS:
 - A. THE BOX CULVERT SHALL BE PROPERLY BACKFILLED USING GRANULAR MATERIALS AND COMPACTED TO THE REQUIRED PAVEMENT SUBGRADE ELEVATION, BUT NO LOWER THAN THE TOP OF THE CULVERT, PER CMS ITEM 304.
 - B. NO BACKFILL SHALL BE PLACED AGAINST THE CAST-IN-PLACE STRUCTURE UNTIL THE STRUCTURE'S CONCRETE HAS ACHIEVED 75% OF DESIGN STRENGTH.
 - C. BACKFILL AGAINST A WATERPROOFED SURFACE SHALL BE PLACED CAREFULLY TO AVOID DAMAGE TO THE WATERPROOFING MATERIAL.
 - D. IN NO CASE SHALL EQUIPMENT OPERATING IN EXCESS OF THE DESIGN LOAD CAPACITY OF THE STRUCTURE BE PERMITTED OVER THE STRUCTURE UNLESS APPROVED BY THE DESIGN ENGINEER.
6. SUBMITTALS:
 - A. ALL STRUCTURAL DRAWINGS AND CALCULATIONS SHALL BE DESIGNED, SIGNED, AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF OHIO.
 - B. CONCRETE MIX DESIGNS AND REINFORCING STEEL SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO PLACEMENT OF THE CONCRETE AND REINFORCING STEEL.
 - C. CONCRETE TESTING SHALL BE IN ACCORDANCE WITH ODOT CMS (2010) SECTION 511. IF THE OWNER REQUIRES TESTING, TEST DATA SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. TESTING COST SHALL BE PAID FOR BY THE OWNER.
7. ADDITIONAL NOTES ON STRUCTURE:
 - A. DESIGN AND INSTALLATION OF CONCRETE STRUCTURES SHALL CONFORM TO ACI 301 AND 318 WHEN NOT IN CONFLICT WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 5TH EDITION (2010) AND 2011 INTERIM REVISIONS.
 - B. CONCRETE MIXES SHALL CONFORM TO ODOT CMS (2010) SECTION 499.
 - C. DIMENSIONS OF STRUCTURES SHOWN IN THESE PLANS MUST BE FOLLOWED. DIMENSIONS FOR CONCRETE THICKNESSES MAY BE ADJUSTED AS NECESSARY TO PROVIDE A PROPER DESIGN BUT ARE SUBJECT TO REVIEW AND REVISION BY THE ENGINEER TO ASSURE THE STRUCTURE WILL NOT BE IN CONFLICT WITH OTHER ELEMENTS OF DESIGN.
 - D. TRANSVERSE JOINTS ON CAST-IN-PLACE STRUCTURES SHALL BE SEALED WITH A 3'-0" WIDE STRIP OF TYPE 2 MEMBRANE WATERPROOFING. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION.
8. STRUCTURE LOAD RATING:
 - A. A LOAD RATING FOR THE AS-BUILT CAST-IN-PLACE STRUCTURE SHALL BE PREPARED BY AN ENGINEER LICENSED IN THE STATE OF OHIO AND SHALL CONFORM TO THE LRFR PROCEDURES AS OUTLINED IN THE ODOT BRIDGE DESIGN MANUAL (2004) SECTION 900.
 - B. THE LOAD RATING SHALL PROVIDE BOTH OPERATING AND SERVICE LOAD FACTORS FOR THE HL-93 VEHICLE AS WELL AS OPERATING RATING FACTORS FOR THE FOUR (4) OHIO LEGAL LOAD VEHICLES.
 - C. THE CONTRACTOR SHALL SUPPLY A COPY OF THE COMPLETED LOAD RATING CALCULATIONS, ALONG WITH ANY SUPPORTING DATA, TO THE ENGINEER FOR ACCEPTANCE. THE DOCUMENT SHALL BE STAMPED AND SIGNED BY THE ENGINEER WHO PREPARED THE DOCUMENTS. THE LOAD RATING DOCUMENT SHALL BE SUBMITTED WITHIN TEN (10) WORKING DAYS FOLLOWING THE COMPLETION OF THE CAST-IN-PLACE STRUCTURE.

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SHEET NUMBER													ITEM	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
							6	7	8	9	10	OFFICE CALCS					
																ROADWAY	
																CLEARING AND GRUBBING	
																STRUCTURE REMOVED	
																PAVEMENT REMOVED	
																EXCAVATION	
																EMBANKMENT	
																EROSION CONTROL	
																SEEDING AND MULCHING	
																COMMERCIAL FERTILIZER	
																LIME	
																WATER	
																ROCK CHANNEL PROTECTION, TYPE C WITH FABRIC FILTER	
																PAVEMENT	
																ASPHALT CONCRETE BASE, PG64-22	
																AGGREGATE BASE	
																STABILIZED CRUSHED AGGREGATE	
																ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22	
																DRAINAGE	
																COFFERDAMS AND EXCAVATION BRACING	
																TYPE 2 WATERPROOFING	
																TYPE 3 WATERPROOFING	
																CONCRETE MASONRY	
																12" CONDUIT, TYPE C, 706.02	
																20' X 4' CONDUIT, TYPE A, 706.05, AS PER PLAN	3
																TRAFFIC CONTROL	
																EDGE LINE	
																CENTER LINE	
																INCIDENTALS	
																MAINTAINING TRAFFIC	
																DETOUR SIGNING	
																CONSTRUCTION LAYOUT STAKING	
																MOBILIZATION	
																ALTERNATE BID ITEM	
																CONDUIT, MISC.: 20' X 4' CAST-IN-PLACE REINFORCED CONCRETE BOX CULVERT	3

CALCULATED	JFM	CHECKED	RPL
GENERAL SUMMARY			
CAR-TR96-3.45			
4 10			

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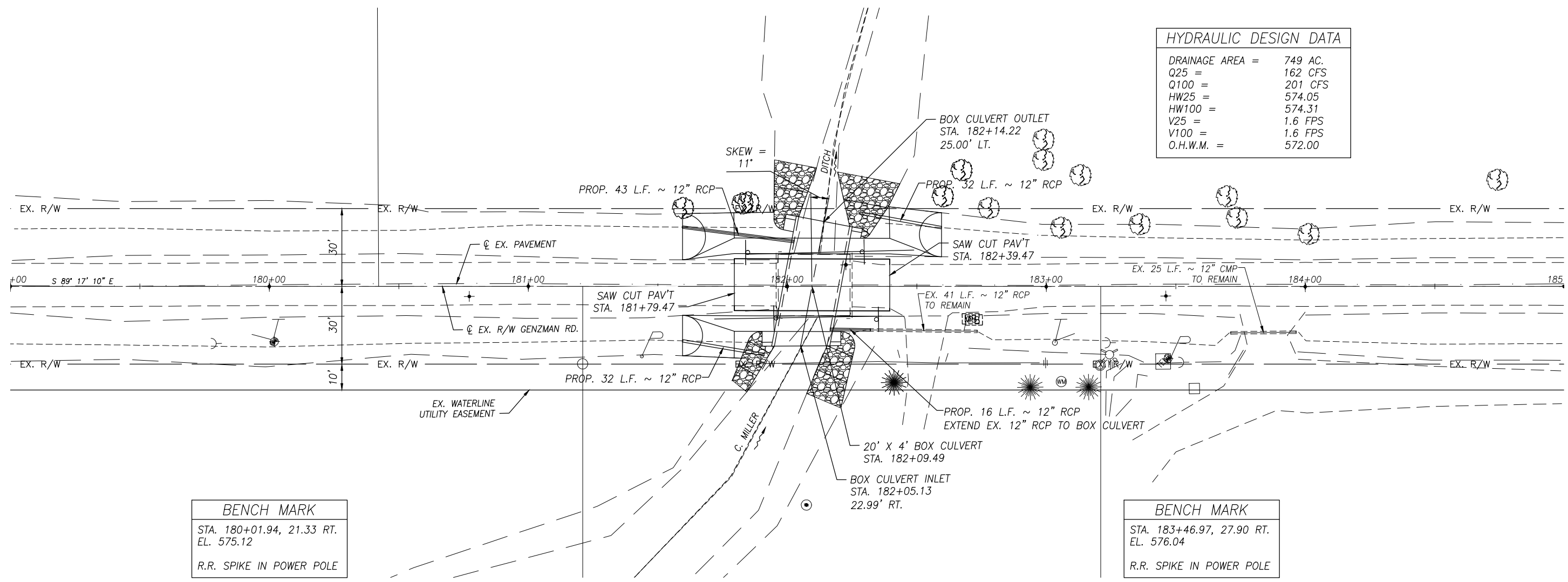
CALCULATED JPM
CHECKED RPL

PLAN AND PROFILE - T.R. 96
STA. 179+50 TO 184+50

CAR-TR96-3.45

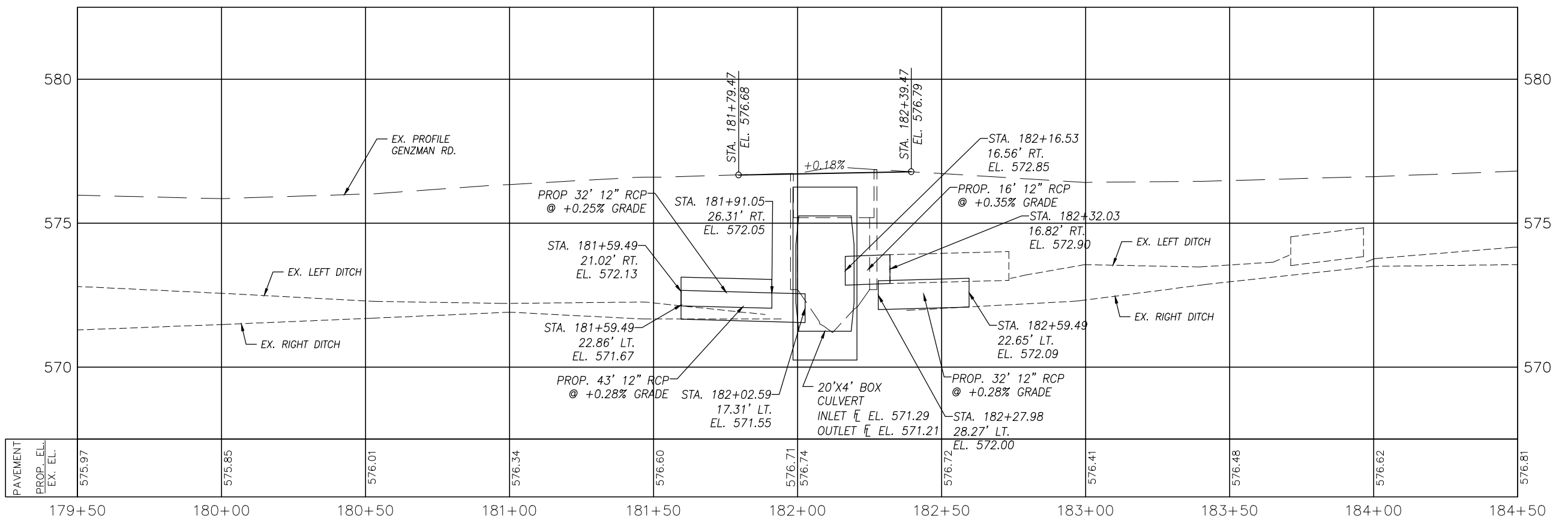
5/10

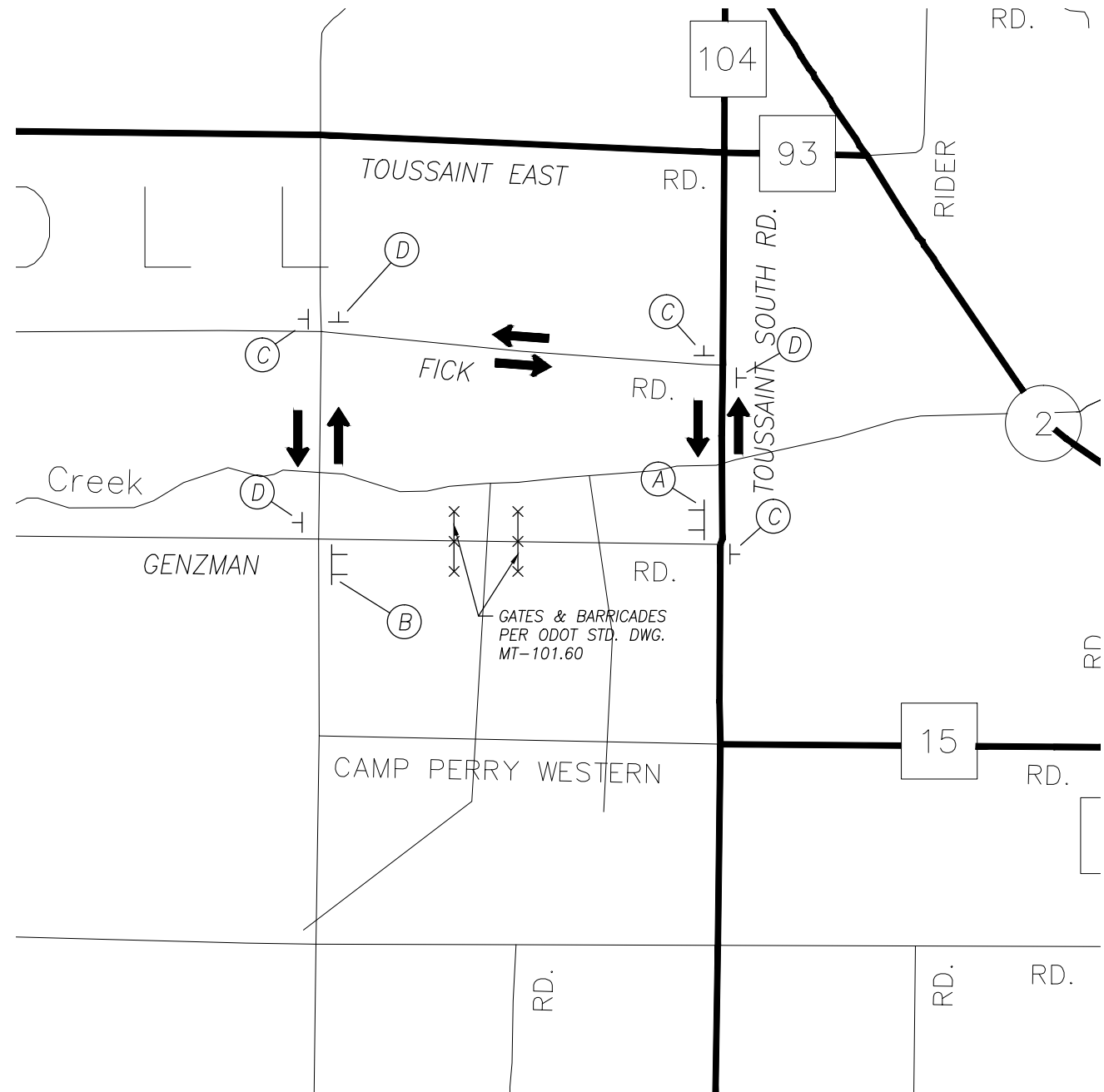
HYDRAULIC DESIGN DATA	
DRAINAGE AREA =	749 AC.
Q25 =	162 CFS
Q100 =	201 CFS
HW25 =	574.05
HW100 =	574.31
V25 =	1.6 FPS
V100 =	1.6 FPS
O.H.W.M. =	572.00



BENCH MARK
STA. 180+01.94, 21.33 RT.
EL. 575.12
R.R. SPIKE IN POWER POLE

BENCH MARK
STA. 183+46.97, 27.90 RT.
EL. 576.04
R.R. SPIKE IN POWER POLE





BRIDGE OUT
 [] MILES AHEAD
 LOCAL TRAFFIC ONLY

R11-3B

DETOUR []

M4-10R

MOUNTED ON TYPE III
 PORTABLE BARRICADE

(A)

BRIDGE OUT
 [] MILES AHEAD
 LOCAL TRAFFIC ONLY

R11-3B

DETOUR []

M4-10L

MOUNTED ON TYPE III
 PORTABLE BARRICADE

(B)

GENZMAN ROAD D-3

DETOUR []

M4-9

(C)

GENZMAN ROAD D-3

DETOUR []

M4-9

(D)

GENZMAN ROAD D-3

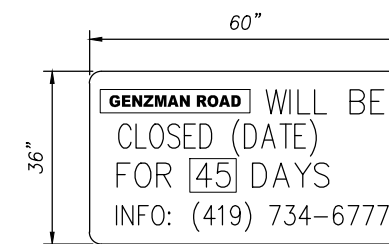
DETOUR []

M4-9

(E)

NOTICE OF CLOSURE SIGNS

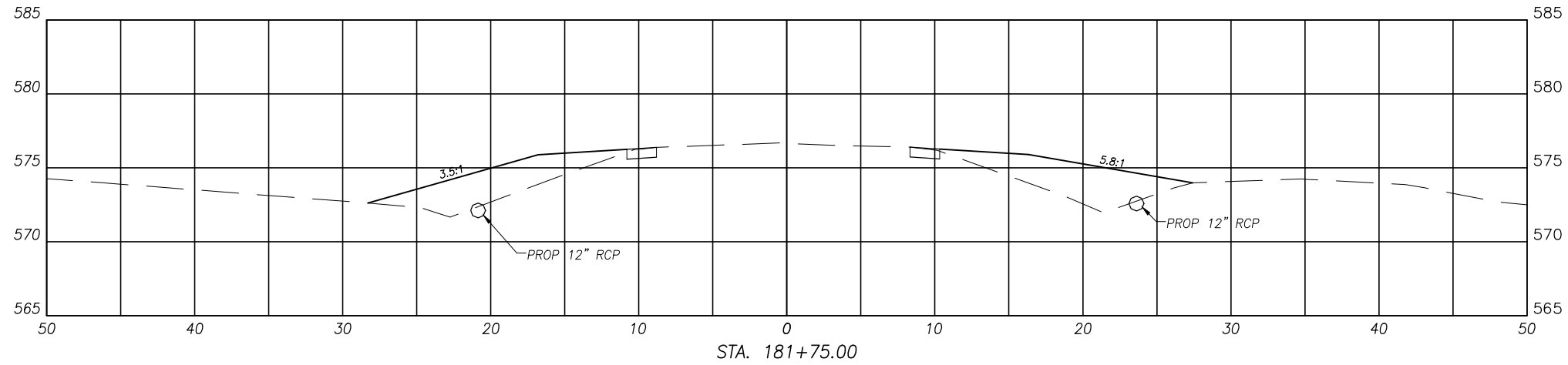
NOTICE OF CLOSURE SIGNS, AS DETAILED BELOW, SHALL BE ERECTED BY THE CONTRACTOR AT LEAST ONE WEEK IN ADVANCE OF THE SCHEDULED ROAD CLOSURE. THE SIGNS SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF OTHER TRAFFIC CONTROL SIGNS ON THE ROADWAY. THEY SHOULD BE ERECTED AT THE POINT OF CLOSURE.



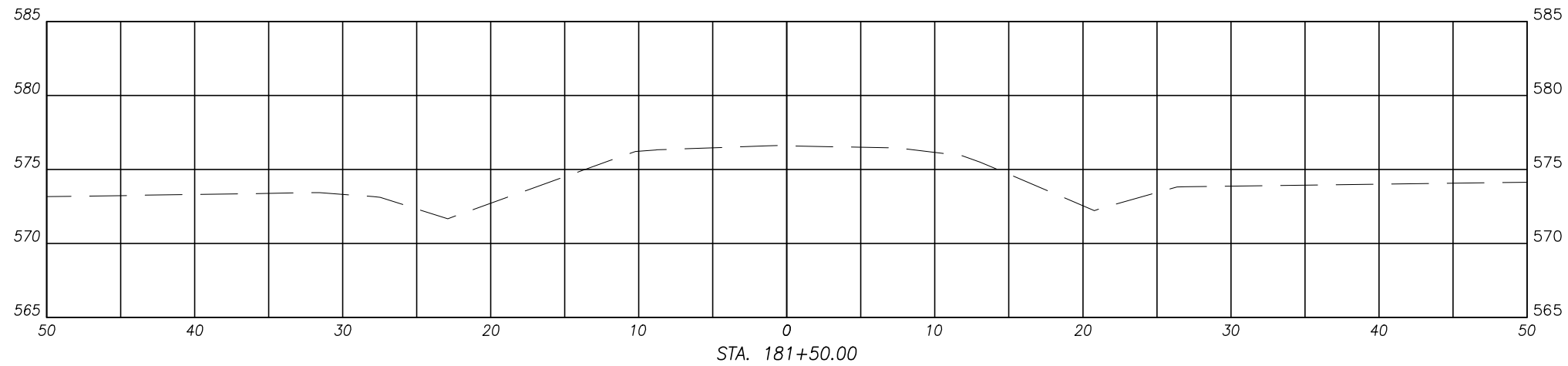
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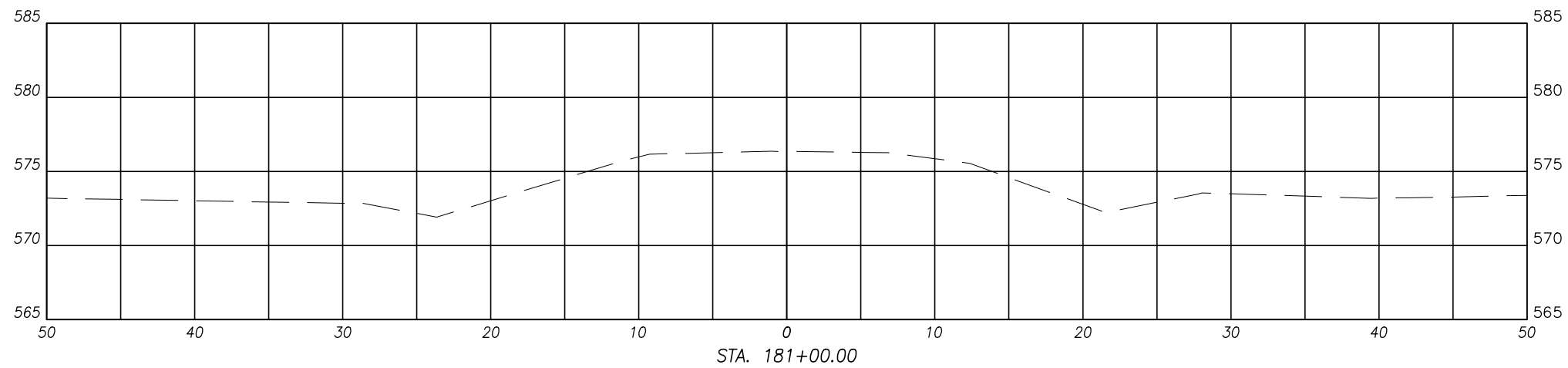
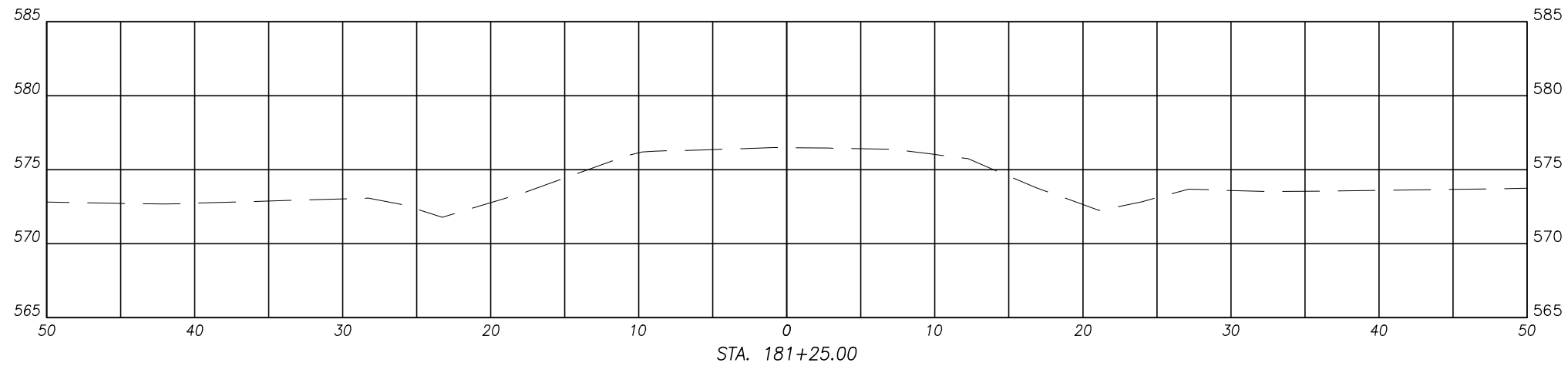
SEEDING	SQ.
END WIDTH	YDS
	75
	36
	50
	0
TOTAL	125



STA. 181+75			
EARTHWORK	AREA	VOLUME	CUMULATIVE VOLUME
CUT	0	0	0
FILL	54.1	25.0	25.0



STA. 181+50			
EARTHWORK	AREA	VOLUME	CUMULATIVE VOLUME
CUT	0	0	0
FILL	0	0	0



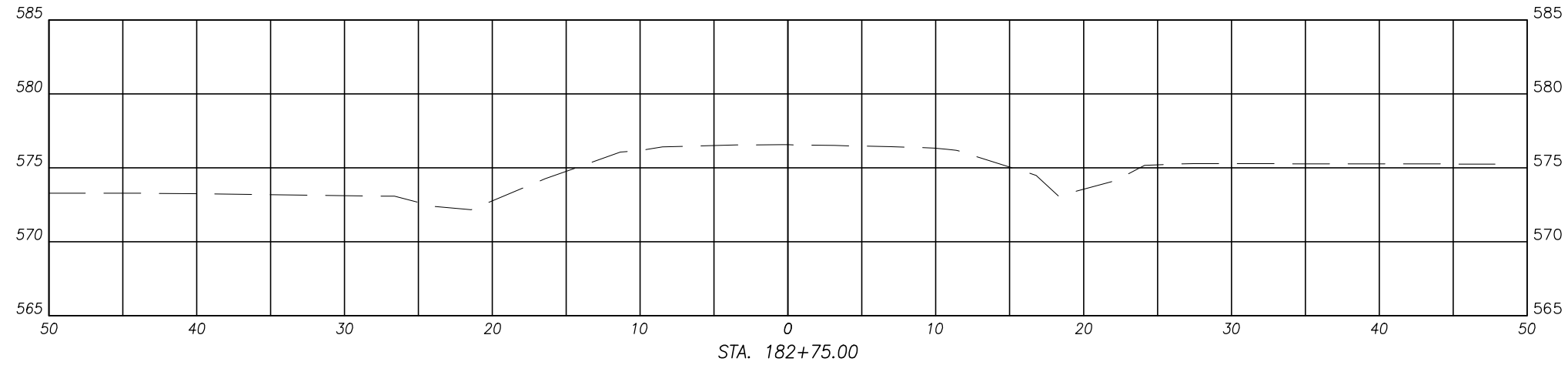
CROSS SECTIONS
STA. 181+00 TO 181+75

CALCULATED JFM
CHECKED RPL

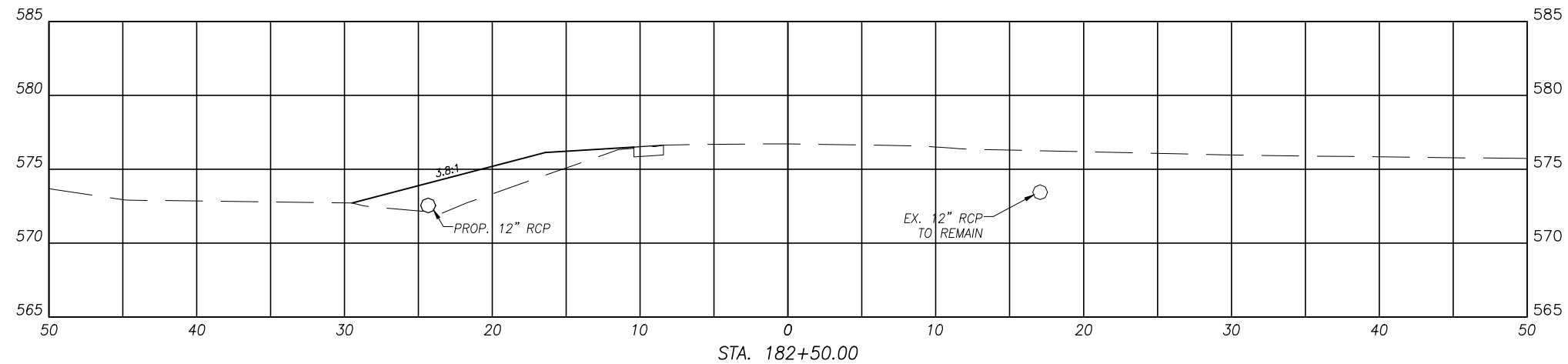
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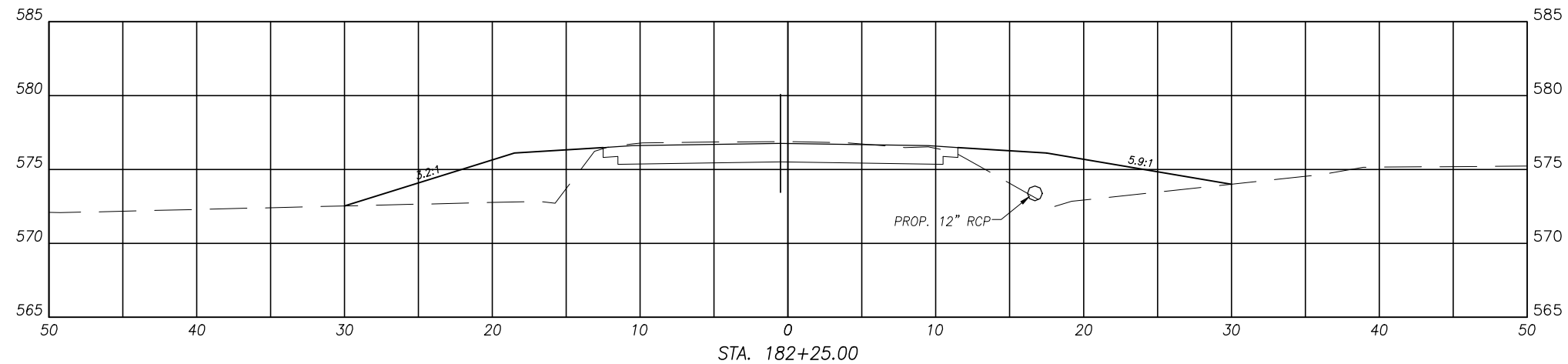
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 SEEDING
 END SQ. WIDTH YDS
 0
 28
 20
 79
 37
 17
 23
 TOTAL
 124



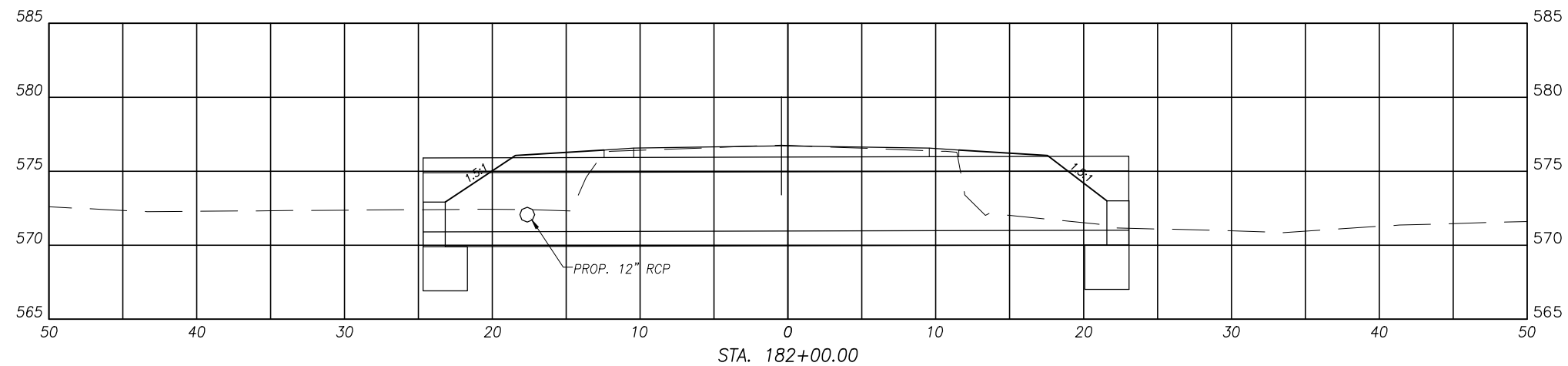
STA. 182+75			
EARTHWORK	AREA	VOLUME	CUMULATIVE VOLUME
CUT	0	0	0
FILL	0	11.3	141.1



STA. 182+50			
EARTHWORK	AREA	VOLUME	CUMULATIVE VOLUME
CUT	0	0	0
FILL	24.5	42.4	129.8



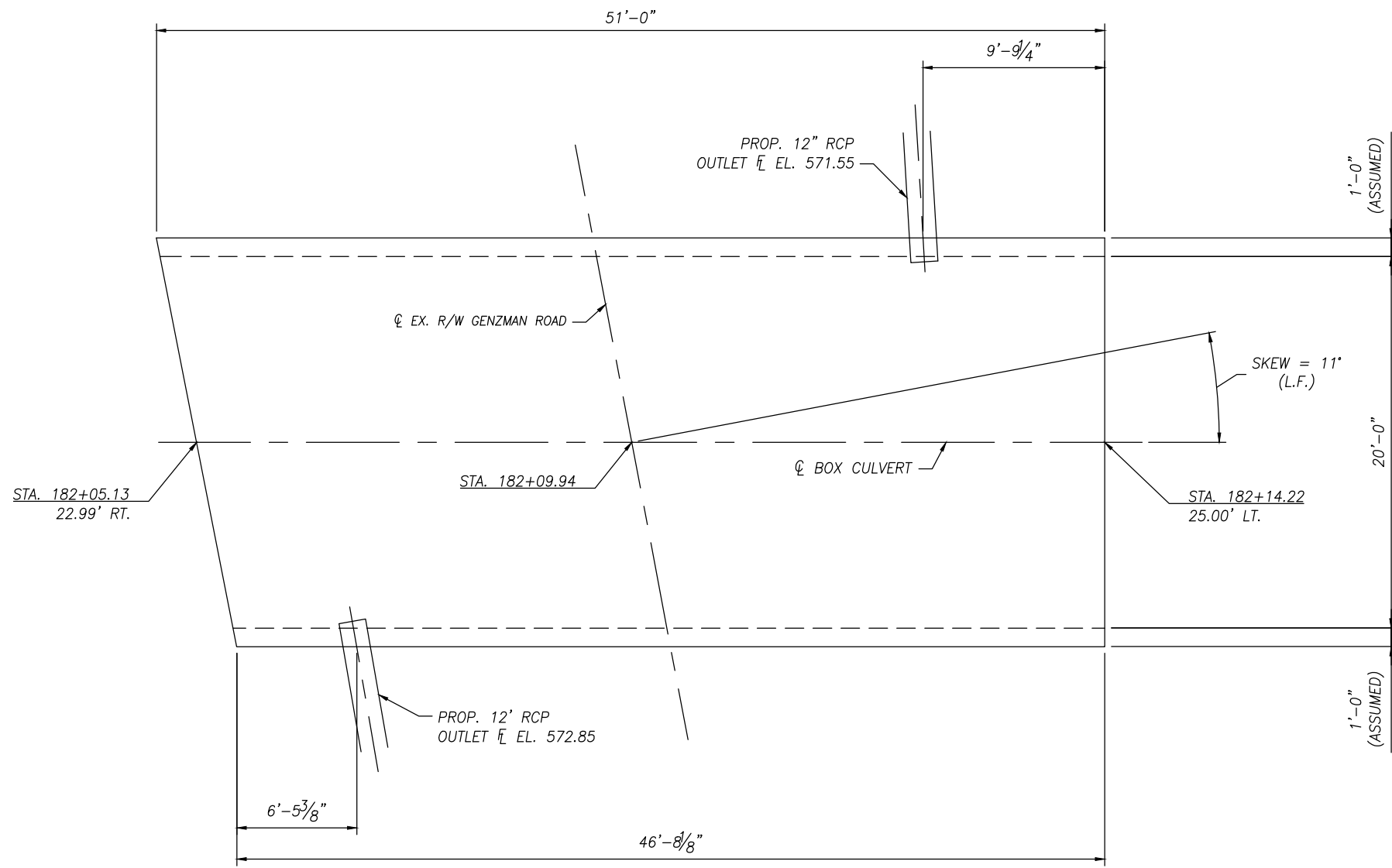
STA. 182+25			
EARTHWORK	AREA	VOLUME	CUMULATIVE VOLUME
CUT	0	0	0
FILL	67.0	12.1	87.4



STA. 182+21 (END CULVERT)			
EARTHWORK	AREA	VOLUME	CUMULATIVE VOLUME
CUT	0	0	0
FILL	63.9	0	75.3
STA. 181+98 (BEGIN CULVERT)			
EARTHWORK	AREA	VOLUME	CUMULATIVE VOLUME
CUT	0	0	0
FILL	63.9	50.3	75.3

CALCULATED JFM
 CHECKED RPL
 CROSS SECTIONS
 STA. 182+00 TO 182+75
 CAR-TR96-3.45
 8
 10

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NOTES:

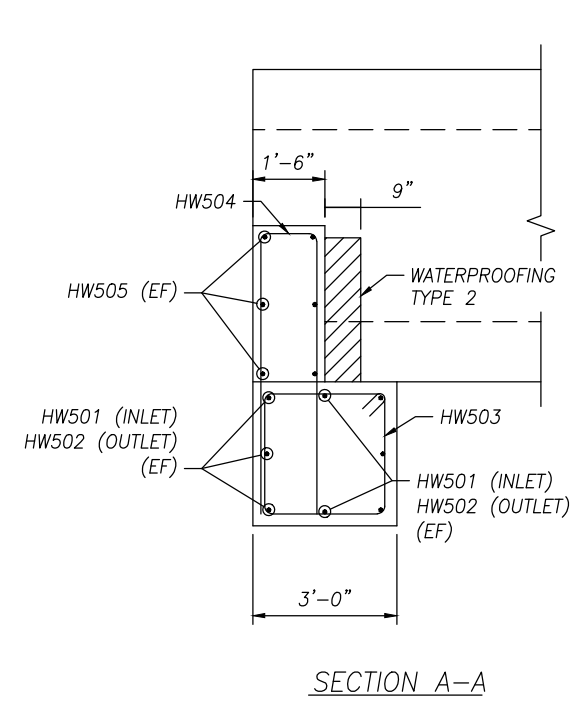
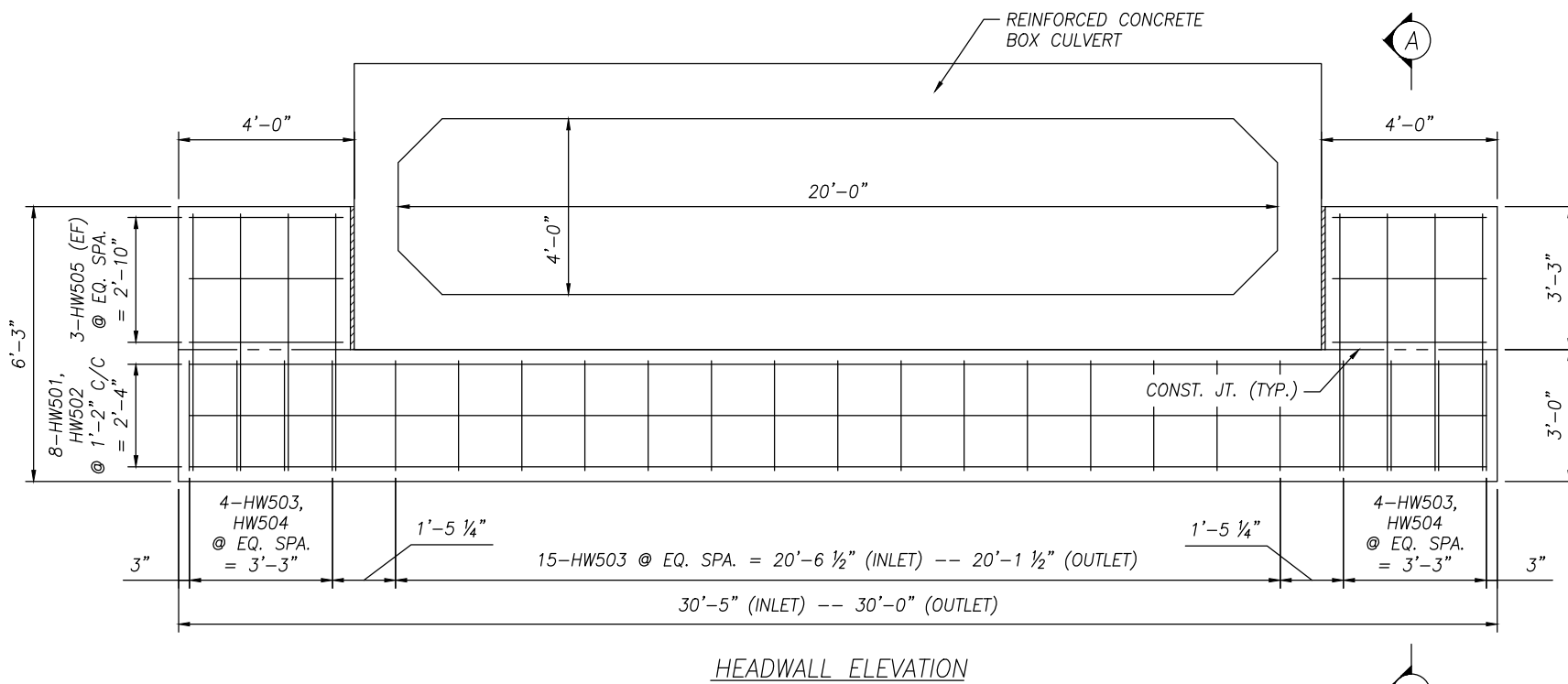
1. THE INLET AND OUTLET FACE OF THE CULVERT SHALL NOT PROVIDE EITHER MALE OR FEMALE PALLET GROOVES AND SHALL BE CAST FLUSH WITH THE FACE TO PROVIDE A RECTANGULAR FINISHED FACE.

CALCULATED	JPM	CHECKED	RPL
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CULVERT LAYOUT

CAR-TR96-3.45

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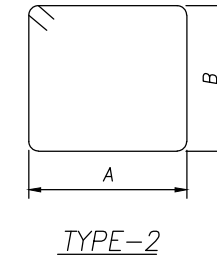
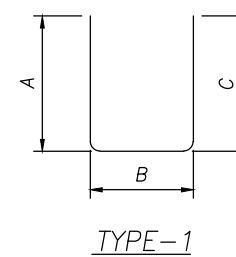


HEADWALL ELEVATION

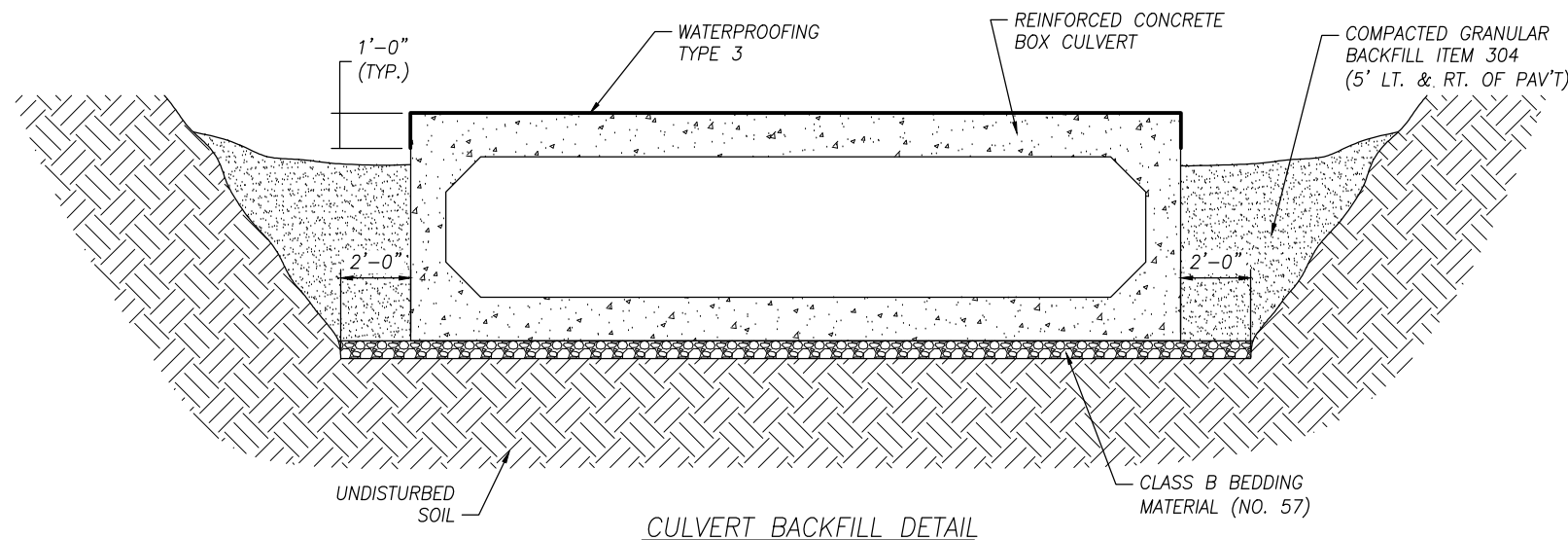
SECTION A-A

REINFORCING STEEL LIST												
MARK	NUMBER			LENGTH	WEIGHT	TYPE	DIMENSIONS					
	INLET	OUTLET	TOTAL				A	B	C	D	E	R
HW501	8	0	8	29'-11"	250	STR						
HW502	0	8	8	29'-6"	246	STR						
HW503	23	23	46	10'-5 1/2"	502	2	2'-6"	2'-6"				
HW504	8	8	16	12'-3"	204	1	5'-9"	1'-0"	5'-9"			
HW505	12	12	24	3'-6"	88	STR						
TOTAL					1,290	LBS.						

NOTE: THE COST OF FURNISHING AND INSTALLING REINFORCING STEEL SHALL BE INCLUDED IN THE COST BID FOR ITEM 602- CONCRETE MASONRY.



CONCRETE MASONRY	
DESCRIPTION	C.Y.
INLET HEADWALL	
FOOTING	10.2
WINGWALLS	1.5
OUTLET HEADWALL	
FOOTING	10.0
WINGWALLS	1.5
TOTAL TO GENERAL SUMMARY	23.2



CULVERT BACKFILL DETAIL

NOTES:

1. WINGWALL ENDS MAY BE ADJUSTED TO MEET EXISTING GROUND CONDITIONS AS DIRECTED BY THE ENGINEER.
2. MINIMUM CONCRETE COVER OVER REINFORCING STEEL SHALL BE 3".

LEGEND:

(NF) = NEAR FACE
 (FF) = FAR FACE
 (EF) = EACH FACE