


SHEET NUM.										PART.	ITEM	ITEM	GRAND	UNIT	DESCRIPTION	SEE SHEET NO.
7		40		41			49			01/NFA/ BR	EXT	TOTAL				
															TRAFFIC CONTROL	
		24								24	621	00100	24	EACH	RPM	
		18								18	621	54000	18	EACH	RAISED PAVEMENT MARKER REMOVED	
		11								11	626	00112	11	EACH	BARRIER REFLECTOR, TYPE 3 (BIDIRECTIONAL)	
		74.5								74.5	630	03100	74.5	FT	GROUND MOUNTED SUPPORT, NO. 3 POST	
		3								3	630	08600	3	EACH	SIGN POST REFLECTOR	
		22.6								22.6	630	80100	22.6	SF	SIGN, FLAT SHEET	
		8								8	630	85100	8	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
		4								4	630	86002	4	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
		0.31								0.31	642	00104	0.31	MILE	EDGE LINE, 6", TYPE 1	
		0.14								0.14	642	00300	0.14	MILE	CENTER LINE, TYPE 1	
		10								10	642	00500	10	FT	STOP LINE, TYPE 1	
															RETAINING WALLS	
				LS						LS	202	11200	LS		PORTIONS OF STRUCTURE REMOVED	
				LS						LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
				LS						LS	503	21300	LS		UNCLASSIFIED EXCAVATION	
				72						72	503	31100	72	CY	ROCK EXCAVATION	
				706						706	507	00400	706	FT	STEEL PILES, MISC.: W18X76 STEEL BEAM, FURNISHED	41
				141						141	507	00400	141	FT	STEEL PILES, MISC.: W16X31 STEEL BEAM, FURNISHED	41
				87						87	511	53010	87	CY	CLASS QC1 CONCRETE, MISC.: LEVELING PAD	41
				2,601						2,601	511	71200	2,601	SF	CONCRETE, MISC.: PRECAST REINFORCED CONCRETE LAGGING PANEL	41
				142						142	518	21200	142	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
				208						208	518	40000	208	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	
				12						12	518	40012	12	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE	
				54						54	524	94602	54	FT	DRILLED SHAFTS, 30" DIAMETER, ABOVE BEDROCK	
				384						384	524	94605	384	FT	DRILLED SHAFTS, 30" DIAMETER INTO BEDROCK, AS PER PLAN	41
				28						28	613	41200	28	CY	LOW STRENGTH MORTAR BACKFILL	
															STRUCTURE 20 FOOT SPAN AND UNDER (BRO-763-0151)	
				LS						LS	202	11000	LS		STRUCTURE REMOVED	
				LS						LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
				LS						LS	503	21300	LS		UNCLASSIFIED EXCAVATION	
				177						177	503	31100	177	CY	ROCK EXCAVATION	
				11,853						11,853	509	10000	11,853	LB	EPOXY COATED REINFORCING STEEL	
				37						37	511	46010	37	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING	
				81						81	511	46510	81	CY	CLASS QC1 CONCRETE, FOOTING	
				3						3	511	46610	3	CY	CLASS QC1 CONCRETE, HEADWALL	
				114						114	512	10100	114	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
				90						90	512	33000	90	SY	TYPE 2 WATERPROOFING	
				63						63	512	33010	63	SY	TYPE 3 WATERPROOFING	
				65						65	516	13600	65	SF	1" PREFORMED EXPANSION JOINT FILLER	
				31						31	518	21200	31	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
				38						38	611	70000	38	FT	CONDUIT, TYPE A, PRECAST REINFORCED CONCRETE THREE SIDED FLAT TOPPED CULVERT (15'-0" SPAN X 10'-0" RISE)	
															MAINTENANCE OF TRAFFIC	
100										100	253	02000	100	CY	PAVEMENT REPAIR	
48										48	614	11110	48	HR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
LS										LS	614	12420	LS		DETOUR SIGNING	
5										5	616	10000	5	MGAL	WATER	
															INCIDENTALS	
				LS						LS	614	11000	LS		MAINTAINING TRAFFIC	
				3						3	619	16000	3	MNTH	FIELD OFFICE, TYPE A	
				LS						LS	623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
				LS						LS	624	10000	LS		MOBILIZATION	

DESIGN AGENCY

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DESIGNER
JEP

REVIEWER
RG 10-01-21

PROJECT ID
100896

SHEET TOTAL
 12 | 70

ITEM 511 - CONCRETE, MISC.: PRECAST REINFORCED CONCRETE LAGGING PANEL

THIS WORK CONSISTS OF FURNISHING AND PLACING PRECAST REINFORCED CONCRETE PANELS BETWEEN THE SOLDIER PILES TO FUNCTION AS LAGGING FOR THE RETAINING WALL. PROVIDE PRECAST CONCRETE LAGGING FROM A PRECAST CONCRETE MANUFACTURER CERTIFIED UNDER SUPPLEMENT 1073. PROVIDE CLASS QC 1 CONCRETE ACCORDING TO CMS 499. PROVIDE EPOXY COATED REINFORCING STEEL ACCORDING TO CMS 709.00. IN LIEU OF EPOXY COATING, A CORROSION INHIBITING CONCRETE ADMIXTURE MAY BE USED AT THE SPECIFIED DOSAGE RATE. A QUALIFIED PRODUCT LIST OF CORROSION INHIBITING ADMIXTURES IS ON FILE AT THE LABORATORY. MANUFACTURERS SHOULD RECOGNIZE THAT THE CORROSION INHIBITOR MAY AFFECT THE STRENGTH, ENTRAINED AIR CONTENT, WORKABILITY, ETC. OF THEIR CONCRETE MIXES. THE MANUFACTURER'S CHOICE TO USE ONE OF THESE CORROSION INHIBITORS DOES NOT ALLEVIATE MEETING ALL DESIGN REQUIREMENTS. DO NOT ALLOW THE DIMENSIONS OF THE REINFORCING STEEL TO VARY BY MORE THAN 1/4". THREADED INSERTS SHALL BE CAST INTO THE TOP OF THE SECTIONS FOR LIFTING AND PLACING.

THE FRONT FACE, SIDES, TOPS, AND 3" MINIMUM OF THE BACK FACE (SEE PLANS FOR BACK FACE LIMITS) OF THE CONCRETE PANEL SHALL BE SEALED WITH ITEM 512, SEALING OF CONCRETE SURFACES (EPOXY-URETHANE). THE COLOR OF THE URETHANE SHALL BE FEDERAL COLOR NUMBER 17778 (LIGHT NEUTRAL). COST OF SEALING SHALL BE INCIDENTAL AND INCLUDED WITH THE PRECAST REINFORCED CONCRETE PANELS FOR PAYMENT.

REJECT PANELS HAVING ANY OF THE FOLLOWING:

- * DEFECTS THAT INDICATE IMPERFECT MOLDING
- * DEFECTS THAT INDICATE HONEYCOMBED OR OPEN TEXTURE CONCRETE
- * DEFECTS IN THE PHYSICAL CHARACTERISTICS OF THE CONCRETE, OR DAMAGE TO THE SEALING OF CONCRETE SURFACE TREATMENT
- * CONCRETE CHIPS OR SPALLS THAT EXCEED 4 INCHES WIDE AND 2 INCHES DEEP. (**REPAIR ALL CHIPS AND SPALLS OF ANY DIMENSION)
- * STAINED FORM FACE, DUE TO FORM OIL, CURING OR OTHER CONTAMINANTS
- * SIGNS OF AGGREGATE SEGREGATION
- * CRACKS WIDER THAN 0.01 INCHES, PENETRATING MORE THAN AN INCH OR LONGER THAN 12 INCHES. (UREPAIR ALL CRACKS OF ANY DIMENSION.
- * FACE PANELS THAT DO NOT MEET SPECIFIED TOLERANCES
- * EXPOSED REINFORCING STEEL
- * INSUFFICIENT CONCRETE COMPRESSIVE STRENGTH.

NOTE: **THE MANUFACTURER SHALL SUBMIT REPAIR METHODS TO THE ENGINEER

PERMANENTLY MARK EACH PANEL TO INDICATE THE FACE TO BE PLACED AGAINST THE SOIL. PLACE THE PANEL BETWEEN THE FLANGES OF THE SOLDIER PILES AND BEARING AGAINST THE FLANGES ON THE EXPOSED SIDE OF THE WALL.

DO NOT SHIP PANELS UNTIL CONCRETE HAS ATTAINED A 3000 PSI COMPRESSIVE STRENGTH.

SUBMIT SHIPPING DOCUMENTATION TO THE ENGINEER AS THE FACING PANELS ARE DELIVERED TO THE PROJECT. REQUIRED DOCUMENTATION SHALL INCLUDE THE PRECASTER'S RECORD OF FINAL INSPECTION OF ALL PRECAST COMPONENTS, THE MEASUREMENTS OF TOLERANCES, STRENGTH, DIMENSIONS, AND THE TE-24 SHIPPING DOCUMENT.

PANELS DAMAGED BY IMPROPER HANDLING, STORING, TRANSPORTATION OR ERECTION SHALL BE REPAIRED OR REPLACED AT THE DISCRETION OF THE ENGINEER

WHEN INSTALLING THE PRECAST CONCRETE LAGGING PANELS, PLACE HARDWOOD WEDGES NEAR THE TOP AND BOTTOM ON EACH SIDE TO HOLD THE LAGGING PANELS AGAINST THE FRONT INSIDE FLANGE OF THE STEEL PILES.

PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIAL REQUIRED TO FABRICATE TRANSPORT AND INSTALL THE PRECAST CONCRETE LAGGING SECTIONS SHALL BE MADE UNDER ITEM 511 - CONCRETE, MISC.: PRECAST REINFORCED CONCRETE LAGGING PANEL.

ITEM 511 - CLASS QC1 CONCRETE, MISC.: LEVELING PAD

LEVELING PAD CONCRETE SHALL BE CLASS QC1 PER SECTION 511 OF THE CMS.

CONSTRUCT THE CONCRETE LEVELING PAD USING NON-REINFORCED, CAST-IN-PLACE CONCRETE. THE LEVELING PAD SHALL BE 24 INCHES DEEP AS SHOWN IN DRAWING. CURE THE CONCRETE FOR AT LEAST 12 HOURS. UNLESS THE SPECIMEN BEAMS HAVE ATTAINED A MODULUS OF RUPTURE OF 400 POUNDS PER SQUARE INCH DO NOT START WALL ERECTION.

CONSTRUCT ALL LEVELING PADS SO THE TOP OF THE PAD IS WITHIN 1/8 INCH OF THE ELEVATION SHOWN ON THE WORKING DRAWINGS. CONSTRUCT THE PADS SO THAT THE SURFACE DOES NOT VARY MORE THAN 1/8 INCH IN 5 FEET. CHECK THE LEVELING PAD CONSTRUCTION BEFORE WALL ERECTION AND REPORT THE ELEVATIONS AND SURFACE VARIATION TO THE ENGINEER.

PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS FOR THE ABOVE SHALL BE INCLUDED IN THE CUBIC YARD CONTRACT PRICE FOR ITEM 511, CLASS QC1 CONCRETE, MISC.: LEVELING PAD.

ITEM 507 - STEEL PILES, MISC.: W18X76 STEEL BEAM, FURNISHED

THIS WORK SHALL CONSIST OF FURNISHING STRUCTURAL STEEL MEMBERS THAT CONFORM TO ASTM A572, GRADE 50 AND CMS 711.01. DO NOT FIELD WELD OR SPLICE THOSE PARTS OF THE STRUCTURAL STEEL MEMBERS THAT WILL BE ABOVE GROUND.

THE DEPARTMENT WILL MEASURE STEEL BEAMS ALONG THE AXIS OF THE STEEL BEAM FROM THE TOP OF THE WALL TO THE BOTTOM OF THE DRILLED SHAFT, AS DETERMINED BY THE ENGINEER. THE DEPARTMENT WILL PAY FOR STEEL BEAMS AT THE CONTRACT UNIT PRICE PER FOOT ITEM 507, STEEL PILE, MISC.: W18X76 STEEL BEAM, FURNISHED.

ITEM 524 - DRILLED SHAFTS, 30" DIAMETER, INTO BEDROCK, AS PER PLAN

SEQUENCE OF INSTALLATION: THE INSTALLATION SEQUENCE SHALL BE SUCH THAT NO DRILLED SHAFT IS INSTALLED ADJACENT TO EITHER AN OPEN DRILLED SHAFT EXCAVATION OR A DRILLED SHAFT IN WHICH THE CONCRETE HAS LESS THAN A 48-HOUR CURE. INSTALLING THE SHAFTS IN AN ALTERNATING SEQUENCE OR ANY SEQUENCE THAT MEETS THIS CRITERION IS PERMISSIBLE.

PROTECTION OF UNATTENDED OPEN SHAFTS: CARE SHALL BE EXERCISED AS TO COVER UNATTENDED OPEN SHAFTS. TEMPORARY COVERS SHALL BE OF ADEQUATE STRENGTH TO PROTECT A PERSON OR ANIMAL FROM FALLING IN.

LOADING OF PILES: THE PILES SHALL NOT BE LOADED NOR ANY EXCAVATION PERFORMED IN FRONT OF THE WALL FOR 14 DAYS AFTER THE PLACING OF CONCRETE.

ANY TEMPORARY GRADING/EMBANKMENT, AGGREGATE, DRAINAGE, SHEETING, ETC., NEEDED FOR ACCESS TO THE WORK AREA SHALL BE INCLUDED IN THE BID PRICE FOR DRILLED SHAFTS.

THIS WORK CONSISTS OF INSTALLING DRILLED SHAFTS FOR SLOPE STABILIZATION. THE INSTALLATION SHALL BE PER ITEM 524 EXCEPT THE DRILLED SHAFTS ARE TO BE REINFORCED WITH STRUCTURAL STEEL MEMBERS INSTEAD OF REINFORCING CAGES.

PLACE THE STRUCTURAL MEMBERS IN THE PRE-BORED SHAFTS. ORIENTATE THE STRUCTURAL MEMBER SO THAT THE FLANGES ARE PARALLEL TO THE CENTERLINE OF ROADWAY. DO NOT ALLOW THE ORIENTATION OF THE FLANGES TO VARY BY MORE THAN 10 DEGREES. PLUMB THE STRUCTURAL MEMBERS SO THEY ARE VERTICAL AND NOT INCLINED MORE THAN 1/8 INCH PER FOOT FROM VERTICAL. EACH STRUCTURAL MEMBER SHALL BE CENTERED WITHIN THE SHAFT. SUPPORT THE STRUCTURAL MEMBER SO THAT IT DOES NOT MOVE DURING CONCRETE PLACEMENT.

PLACE ITEM 511 CLASS QC1 CONCRETE IN EACH HOLE AS BACKFILL MATERIAL.

CHECK THE POSITION, THE VERTICAL ALIGNMENT AND ORIENTATION OF THE STRUCTURAL MEMBER IMMEDIATELY AFTER CONCRETE PLACEMENT. MAKE CORRECTIONS AS NECESSARY TO MEET ABOVE TOLERANCES.

PAYMENT FOR LABOR, EQUIPMENT AND MATERIALS FOR THE ABOVE SHALL BE INCLUDED IN THE FOOT CONTRACT PRICE FOR ITEM 524, DRILLED SHAFTS, 30" DIAMETER, INTO BEDROCK, AS PER PLAN

ITEM 507 - STEEL PILES, MISC.: W16X31 STEEL BEAM, FURNISHED

THIS WORK SHALL CONSIST OF FURNISHING STRUCTURAL STEEL MEMBERS THAT CONFORM TO ASTM A572, GRADE 50 AND CMS 711.01. DO NOT FIELD WELD OR SPLICE THOSE PARTS OF THE STRUCTURAL STEEL MEMBERS THAT WILL BE ABOVE GROUND.


SAWCUT EXISTING STEEL BEAM AS SHOWN ON SHEET 45.

FIELD WELD PROPOSED W16X31 BEAM AS SHOWN ON SHEET 45.

PAYMENT FOR LABOR, EQUIPMENT AND MATERIALS FOR THE ABOVE SHALL BE INCLUDED IN EACH CONTRACT PRICE FOR ITEM 507, STEEL PILE, MISC.: W16X31 STEEL BEAM, FURNISHED.

RETAINING WALL ESTIMATED QUANTITIES							DESIGNED:	RG	CHECKED:	CCJ
ITEM	ITEM EXT.	UNIT	TOTAL	EXISTING RETAINING WALL 2 & WALL 4	RETAINING WALL 3	RETAINING WALL 5	DATE:	9/22/2021	DATE:	9/29/2021
202	11200		LUMP		LUMP					
503	11100		LUMP		LUMP	LUMP				
503	21300		LUMP	LUMP	LUMP	LUMP				
503	31100	CU. YD.	72		9	62				
507	00400	FT.	706		110	596				
507	00400	FT.	141	141						
511	53010	CU. YD.	87	16	9	62				
511	71200	SQ. FT.	2601	1066	251	1285				
518	21200	CU. YD.	142	43	17	82				
518	40000	FT.	208		32	208				
518	40012	FT.	12		6	6				
524	94602	FT.	54			54				
524	94605	FT.	384		60	324				
613	41200	CU. YD.	28	28						

TOTAL QUANTITIES ARE CARRIED TO GENERAL SUMMARY ON SHEET 12

DESIGN AGENCY

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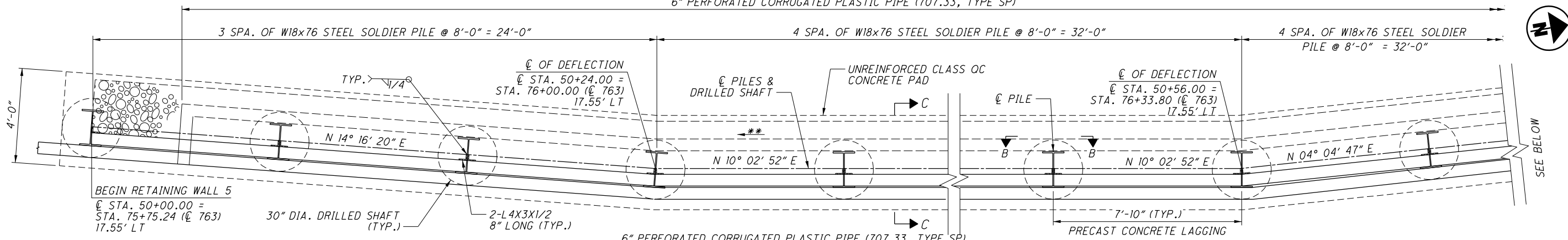
DESIGNER
 JEP

REVIEWER
 RG 10-01-21

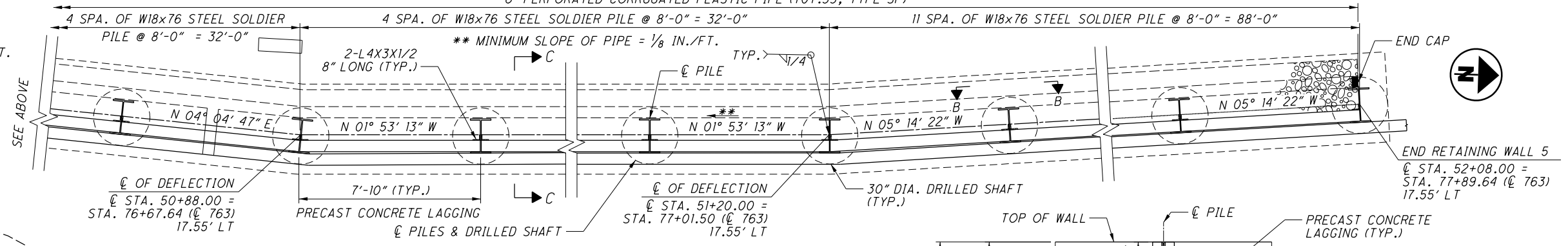
PROJECT ID
 100896

SHEET TOTAL
 41 70

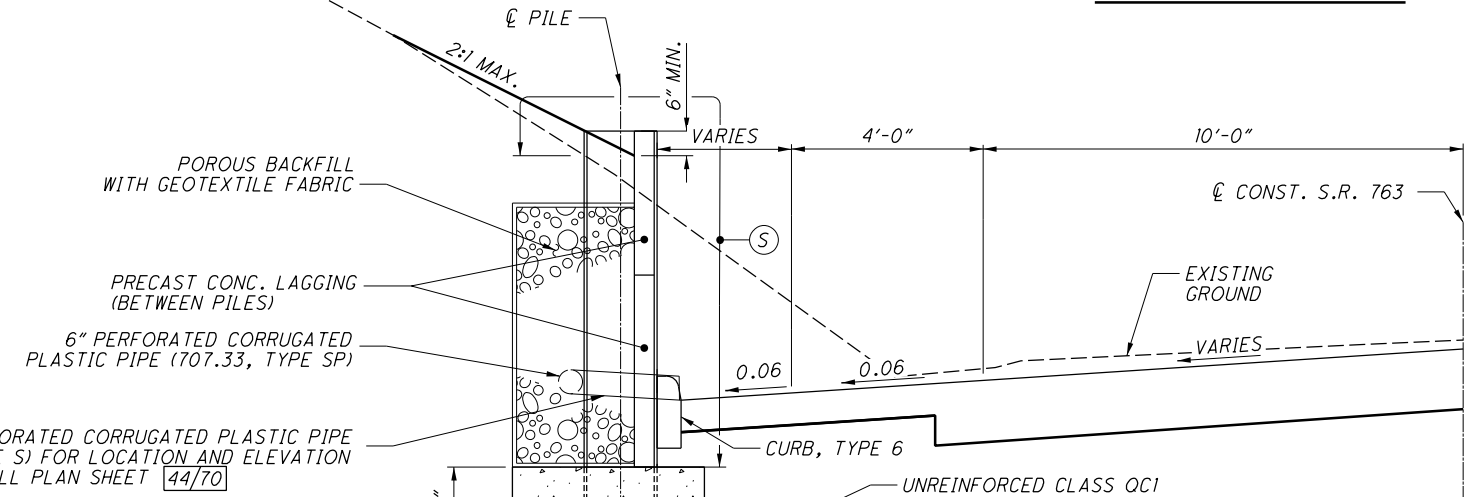
6" PERFORATED CORRUGATED PLASTIC PIPE (707.33, TYPE SP)



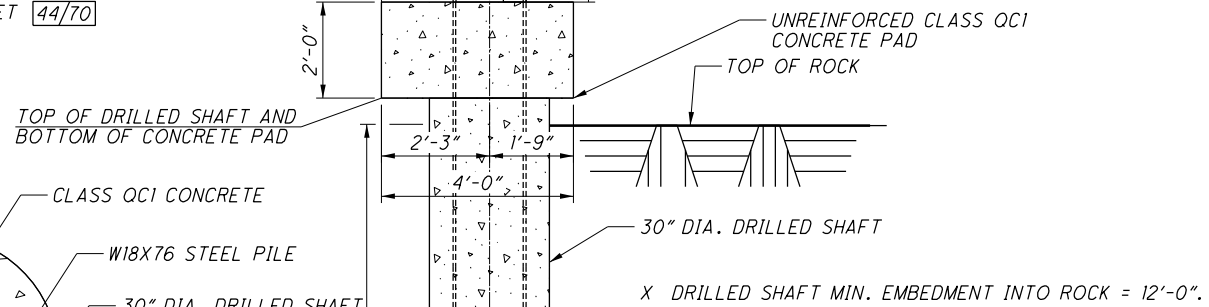
- * = 6" NON-PERFORATED CORRUGATED PLASTIC PIPE (707.33, TYPE S)
- ** MINIMUM SLOPE OF PIPE = 1/8 IN./FT.
- (S) = SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)



RETAINING WALL PLAN



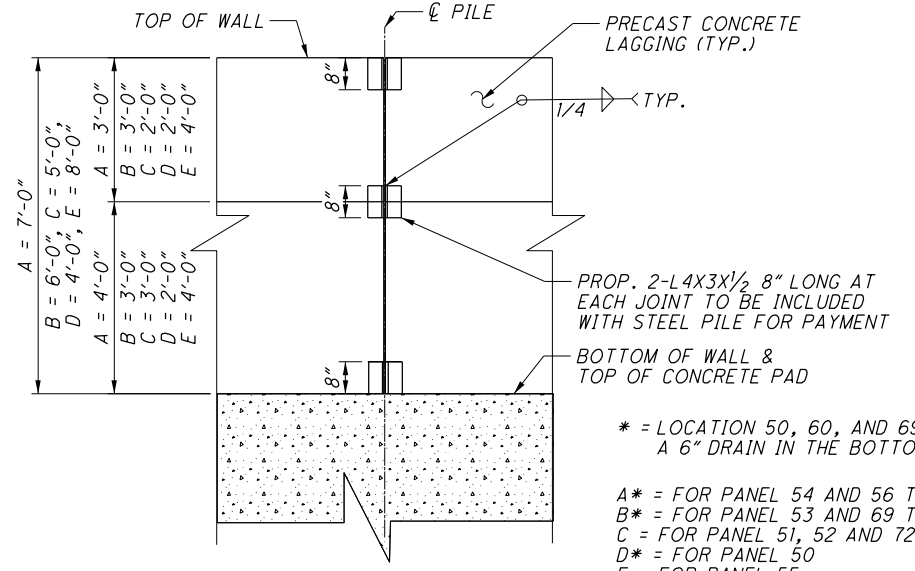
6" NON-PERFORATED CORRUGATED PLASTIC PIPE (707.33, TYPE S) FOR LOCATION AND ELEVATION RETAINING WALL PLAN SHEET 44/70



SECTION A-A

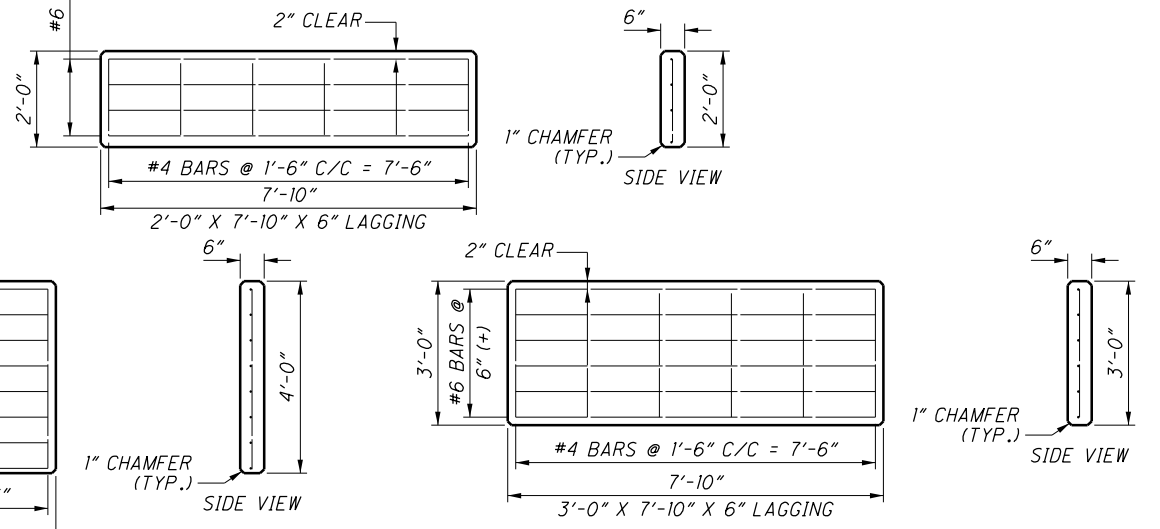
SECTION C-C

- NOTES:**
- FOR RETAINING WALL LOCATION SEE SHEET 44/70.
 - FOR RETAINING WALL GENERAL NOTES SEE SHEET 41/70.



SECTION B-B

- * = LOCATION 50, 60, AND 69 REQUIRES A 6" DRAIN IN THE BOTTOM PANEL
- A* = FOR PANEL 54 AND 56 TO 68
- B* = FOR PANEL 53 AND 69 TO 71
- C = FOR PANEL 51, 52 AND 72 TO 75
- D* = FOR PANEL 50
- E = FOR PANEL 55



PRECAST CONCRETE LAGGING PANEL DETAIL



SEE BELOW

RETAINING WALL 5 DETAILS

DESIGN AGENCY	BG
DESIGNER	JEP
REVIEWER	RG
PROJECT ID	100896
SHEET	47
TOTAL	70