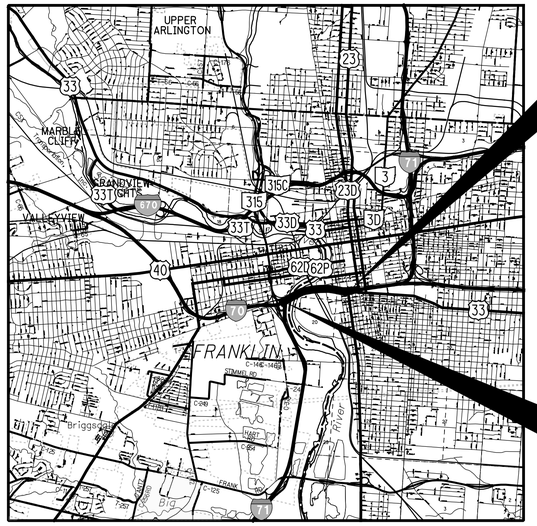

LOCATION MAP

LATITUDE: 39° 57′ 08″ N LONGITUDE: 83° 00′ 44″ W

SCALE IN MILES

0 1 2 3 4

N

END PROJECT
STA. 193+21.67
I-70 EASTBOUND
S.L.M. 14.05

BEGIN PROJECT
STA. 145+00.00
I-70 EASTBOUND
S.L.M. 13.15

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

DESIGN DESIGNATION

FOR DESIGN DESIGNATIONS, SEE SHEET 3

DESIGN EXCEPTIONS

DESIGN FEATURE	APPROVAL DATES	SHEET NUMBERS
STOPPING SIGHT DISTANCE (I-71 HORZ.)	4/16/14	10
HORIZONTAL ALIGNMENT (I-71)	4/16/14	10
STOPPING SIGHT DISTANCE (I-71 HORZ.)	1/13/14	10
LANE WIDTH (RAMP C6)	12/23/13	23

UNDERGROUND UTILITIES
Contact Two Working Days Before You Dig
OHIO811.org Before You Dig
OHIO811, 8-1-1, or 1-800-362-2764
(Non-members must be called directly)

PLAN PREPARED BY:

GPD GROUP®
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210
Columbus, OH 43215
614.210.0751 Fax 614.210.0752

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STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

FRA-70-13.11
PROJECT 4A PART 1

RECONSTRUCTION OF EXISTING SEPARATED CROSSING WITH THE NORFOLK SOUTHERN & CSX RAILROADS

CITY OF COLUMBUS
FRANKLIN COUNTY

FOR PART 2, SEE FRA-70-1405C (4H)
FOR PART 3, SEE FRA-70-13.10 (6A)
FOR PART 4, SEE FRA-70-1405 (4B)
FOR PART 5, SEE FRA-70-1301

FOR SHEET INDEX, SEE SHEET 2
FOR ENGINEERS SEALS, SEE SHEET 2
FOR CITY OF COLUMBUS SIGNATURES, SEE SEPARATE SIGNATURE PAGE

STANDARD CONSTRUCTION DRAWINGS

BP-1.1	7/28/00	MGS-1.1	7/16/21	HL-10.11	7/15/22	MT-95.30	7/19/19	TC-12.31	4/15/22		
BP-2.1	1/21/22	MGS-2.1	1/19/18	HL-10.12	1/20/23	MT-95.31	7/19/19	TC-15.116	7/16/21		
BP-2.2	1/15/21	MGS-3.1	1/19/18	HL-10.13	1/20/23	MT-95.32	4/19/19	TC-16.22	7/16/21		
BP-2.3	7/18/14	MGS-3.2	1/18/13	HL-20.11	10/21/22	MT-95.40	1/17/20	TC-21.11	7/16/21		
BP-2.5	1/21/22	MGS-4.2	7/19/13	HL-20.13	7/15/22	MT-95.41	1/17/20	TC-21.21	1/20/23		
BP-3.1	1/21/22	MGS-4.3	1/18/13	HL-20.14	4/17/20	MT-95.45	1/17/20	TC-21.50	4/17/20		
BP-3.2	1/18/19	MGS-5.2	7/15/16	HL-30.11	1/15/21	MT-95.50	7/21/17	TC-22.10	4/17/20		
BP-4.1	7/19/13	MGS-5.3	7/15/16	HL-30.21	4/17/20	MT-95.70	1/17/20	TC-22.20	1/17/14		
BP-5.1	7/15/22	MGS-6.1	1/19/18	HL-30.22	1/15/21	MT-95.71	1/17/20	TC-41.10	7/19/13		
BP-7.1	1/20/23			HL-30.31	4/17/20	MT-97.10	4/19/19	TC-41.20	10/18/13		
		MH-1	7/15/22	HL-30.32	4/17/20	MT-97.12	1/20/17	TC-41.30	10/18/13		
CB-2-2A,		MH-3	7/16/21	HL-30.33	1/21/22	MT-98.10	1/17/20	TC-41.40	10/18/13		
2-2B,2-2C	1/20/23			HL-30.41	1/21/22	MT-98.20	4/19/19	TC-41.50	10/18/13		
CB-3	7/16/21	RM-1.1	1/20/23	HL-40.10	7/17/20	MT-98.21	1/17/20	TC-42.10	10/18/13		
CB-3A	7/16/21	RM-2.1	7/19/13	HL-40.20	7/15/22	MT-98.28	1/17/20	TC-42.20	10/18/13		
CB-4	7/16/21	RM-3.1	7/20/18	HL-50.11	1/16/15	MT-98.29	1/17/20	TC-51.11	1/15/16		
CB-6	1/21/22	RM-4.1	1/17/20	HL-50.21	7/15/22	MT-98.30	7/16/21	TC-51.12	1/15/16		
CB-8	7/16/21	RM-4.2	4/17/20	HL-60.11	7/21/17	MT-99.20	4/19/19	TC-52.10	10/18/13		
		RM-4.3	1/21/22	HL-60.12	7/16/21	MT-99.30	1/17/20	TC-52.20	1/15/21		
DM-1.1	7/17/20	RM-4.4	7/19/19	HL-60.31	1/17/20	MT-99.50	1/17/20	TC-61.30	7/19/19		
DM-1.2	7/16/21	RM-4.5	7/21/17			MT-99.60	7/15/16	TC-65.10	1/17/14		
DM-1.3	7/18/14	RM-4.6	7/19/13			MT-100.00	7/16/21	TC-65.11	7/15/22		
DM-2.1	1/18/13	RM-5.2	1/20/23	ITS-10.10	1/20/23	MT-101.60	1/17/20	TC-71.10	7/15/22		
DM-4.1	7/17/20			ITS-10.11	1/20/23	MT-101.70	1/17/20	TC-72.20	7/20/18		
DM-4.2	7/20/12	A-1-20	1/21/22	ITS-12.10	7/15/22	MT-101.75	1/17/20	TC-81.11	1/20/23		
DM-4.3	1/15/16	AS-1-15	7/17/15	ITS-12.50	7/16/21	MT-101.80	1/17/20	TC-81.22	7/15/22		
DM-4.4	1/15/16	AS-2-15	1/18/19	ITS-13.10	1/15/21	MT-101.90	7/17/20	TC-82.10	7/19/19		
		EXJ-4-87	1/19/18	ITS-14.10	1/20/23	MT-102.10	1/17/20	TC-83.20	7/15/22		
F-1.1	7/19/13	GSD-1-19	1/15/21	ITS-14.11	1/20/23	MT-102.20	4/19/19	TC-85.10	10/21/22		
F-3.1	7/19/13	HW-2.1	7/20/18	ITS-14.20	1/20/23	MT-102.30	10/16/15	TC-85.20	7/20/18		
F-3.3	7/19/13	HW-2.2	7/20/18	ITS-14.50	1/20/23	MT-103.10	1/21/22				
F-3.4	7/19/13	PCB-91	7/17/20	ITS-15.10	1/20/23	MT-104.10	10/16/15				
		PSID-1-13	1/15/21	ITS-18.00	7/16/21	MT-105.10	1/17/20				
I-2A	7/16/21	SICD-1-96	7/18/14	ITS-50.10	1/20/23	MT-110.10	7/19/13				
I-3B,3B1	7/15/22	SICD-2-14	1/15/21	ITS-50.12	7/15/22	MT-120.00	1/20/23				
I-3C,3C1	7/15/22	VPF-1-90	7/20/18	ITS-76.10	7/15/22						
I-3D	7/15/22										

SUPPLEMENTAL SPECIFICATIONS

800-2019	SEE PROPOSAL	867	4/15/22
		869	10/17/14
804	1/20/23	872	1/21/22
807	1/21/22	878	1/21/22
808	1/18/19	894	4/16/21
809	1/20/23	896	7/21/17
813	10/19/18	904	7/15/22
816	10/18/19	905	4/17/20
821	4/20/12	907	10/18/19
825	1/17/20	908	10/20/17
826	1/21/22	909	10/21/22
829	1/20/17	913	4/16/21
832	7/21/23	916	7/15/22
836	1/18/18	921	4/20/12
839	7/16/21	929	1/20/17
840	4/15/22	939	1/17/20
846	4/17/15	992	4/18/14
850	4/15/22	996	7/15/16
866	4/21/17		

SPECIAL PROVISIONS

WATERWAY PERMIT 11/10/22	PHASE II ESA 5/09
408 PERMIT 7/2/21	PHASE II ESA ADDENDUM 9/09
4A EAP 8/22/22	CNS #09NFA330 6/14/10
6A EAP 8/22/22	CNS #14NFA592 12/30/15
CSX	CNS #08NFA308 4/22/10
NS	CSL TESTING 6/11/19

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF THE CONSTRUCTION OF 0.90 MILES OF I-70 EB IN THE CITY OF COLUMBUS. WORK INCLUDES THE RECONSTRUCTION OF I-71 NB. WORK ALSO INCLUDES THE CONSTRUCTION OF 2 BRIDGES WITHIN THE INTERCHANGE, CONSTRUCTION OF RETAINING WALLS, DRAINAGE IMPROVEMENTS, REPLACEMENT OF THE FREEWAY LIGHTING SYSTEMS AND TRAFFIC CONTROL UPGRADES.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA:	27.1 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	1.0 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA:	28.1 ACRES

LIMITED ACCESS

THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 OF THE OHIO REVISED CODE.

2019 SPECIFICATIONS

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

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY EXCEPT FOR THE SIDE ROADS AND RAMPS AS DESCRIBED ON SHEETS 54 - 76 AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

FEMA

PROJECT SITE LOCATED WITHIN FIRM 39049C0309K
EFFECTIVE DATE: 6/17/2008
FEMA SPECIAL FLOOD HAZARD AREA, ZONE AE WITH FLOODWAY
BFE=716.00

BMP'S

THIS PLAN UTILIZES STRUCTURAL BEST MANAGEMENT PRACTICES (BMP'S) FOR POST CONSTRUCTION STORM WATER TREATMENT (INCLUDED AS PART OF ODOT PROJECT FRA-70-13.62 PROJECT 2B PID 94303/3171-E). PORTIONS OF THIS PROJECT LIE WITHIN THE CORPORATION LIMITS OF THE CITY OF COLUMBUS AND THE CITY IS ABSOLVED IN THE FUTURE OF ANY RESPONSIBILITIES FOR THE SWPPP, POST CONSTRUCTION BMP MAINTENANCE AND DOCUMENTATION TO THE OEPA.

NO.	DESCRIPTION	REV. BY	DATE
6	REVISED SS832	CWL	11-9-23

DISTRICT DEPUTY DIRECTOR
Anthony C. Turowski, P.E.
06

DIRECTOR, DEPARTMENT OF TRANSPORTATION

3084 Dr. E

FEDERAL PROJECT NO. E040 (634)
PID NO. 77372
CONSTRUCTION PROJECT NO. FRA-70-13.11
RAILROAD INVOLVEMENT NORFOLK SOUTHERN CSX

WORK ZONE SPEED ZONES (WZSZS)

THE FOLLOWING WORK ZONE SPEED ZONE (WZSZ) SPEED LIMIT REVISION(S) HAVE BEEN APPROVED FOR USE ON THIS PROJECT WHEN WORK ZONE CONDITIONS AND FACTORS ARE MET AS DESCRIBED BELOW:

WZSZ REVISION NUMBER(S)	COUNTY-ROUTE-SECTIONS(S)	DIRECTIONS(S)
WZ-35728	FRA-70-(11.21-14.72)	EB/WB
WZ-35728	FRA-71-(14.00-16.97)	NB
WZ-35728	FRA-315-(0.00-0.58)	SB

POTENTIAL WZSZ LOCATIONS SHALL HAVE AN ORIGINAL (PRE-CONSTRUCTION) POSTED SPEED LIMIT OF 55 MPH OR GREATER, A QUALIFYING WORK ZONE CONDITION OF AT LEAST 0.5 MILE IN LENGTH, AN EXPECTED WORK DURATION OF AT LEAST THREE HOURS, AND A WORK ZONE CONDITION IN PLACE THAT REDUCES THE EXISTING FUNCTIONALITY OF THE TRAVEL LANES OR SHOULDERS (I.E., LANE CLOSURE, LANE SHIFT, CROSSOVER, CONTRAFLOW AND/OR SHOULDER CLOSURE). THE LENGTH OF THE WORK ZONE CONDITION IS MEASURED FROM THE BEGINNING OF THE TAPER FOR THE SUBJECT WORK ZONE CONDITION IMPACTING THE TRAVEL LANES AND/OR SHOULDER TO THE END OF THE DOWNSTREAM TAPER, WHERE DRIVERS ARE RETURNED TO TYPICAL ALIGNMENT. AN EXPECTED WORK DURATION OF AT LEAST THREE HOURS IS REQUIRED TO BALANCE THE ADDITIONAL EXPOSURE CREATED BY INSTALLING AND REMOVING WZSZ SIGNING WITH THE TIME NEEDED TO COMPLETE THE WORK.

IF THE WORK ZONE MEETS THESE MINIMUM CRITERIA, IT SHALL BE ANALYZED FURTHER USING TABLE 1 BELOW TO DETERMINE IF AND WHEN IT QUALIFIES FOR A SPEED LIMIT REDUCTION. DEPENDING ON THE ORIGINAL POSTED SPEED LIMIT, THE TYPE OF TEMPORARY TRAFFIC CONTROL USED, AND WHETHER OR NOT WORKERS ARE PRESENT, A WARRANTED WZSZ WILL VARY IN THE APPROVED SPEED LIMIT TO BE POSTED OVER TIME.

C&MS ITEM 614, PARAGRAPH 614.02(B), INDICATES THAT TWO DIRECTIONS OF A DIVIDED HIGHWAY ARE CONSIDERED SEPARATE HIGHWAY SECTIONS. THEREFORE, IF THE WORK ON A MULTI-LANE DIVIDED HIGHWAY IS LIMITED TO ONLY ONE DIRECTION, A SPEED LIMIT REDUCTION IN THE DIRECTION OF THE WORK DOES NOT AUTOMATICALLY CONSTITUTE A SPEED LIMIT REDUCTION IN THE OPPOSITE DIRECTION. EACH DIRECTION SHALL BE ANALYZED INDEPENDENTLY FROM EACH OTHER.

ALL WZSZS FLUCTUATE BETWEEN TWO APPROVED REDUCED SPEED LIMITS OR BETWEEN AN APPROVED REDUCED SPEED LIMIT AND THE ORIGINAL POSTED SPEED LIMIT. ONLY ONE OF TWO SIGNING STRATEGIES SHALL BE USED TO IMPLEMENT A WZSZ.

WZSZS USING DSL SIGN ASSEMBLIES SHALL BE IN ACCORDANCE WITH THIS NOTE, APPROVED LIST, SUPPLEMENTAL SPECIFICATIONS (SS) 808 AND 908, AND TRAFFIC SCD MT-104.10.

ONLY ONE WARRANTED SPEED LIMIT APPLIES AT ANY ONE TIME; SPEED LIMIT REDUCTIONS ARE NOT CUMULATIVE. WZSZS SHALL NOT BE USED FOR MOVING/MOBILE ACTIVITIES, AS DEFINED IN OMUTCD PART 6.

WHEN LOOKING UP THE WARRANTED WORK ZONE SPEED LIMITS, ALWAYS USE THE ORIGINAL, PRECONSTRUCTION, POSTED SPEED LIMIT. DO NOT USE A PRIOR OR CURRENT WORK ZONE SPEED LIMIT AS A LOOK UP VALUE IN THE TABLE. POSITIVE PROTECTION IS GENERALLY REGARDED AS PORTABLE BARRIER OR OTHER RIGID BARRIER IN USE ALONG THE WORK AREA WITHIN THE SUBJECT WARRANTED WORK ZONE CONDITION. WITHOUT POSITIVE PROTECTION IS GENERALLY REGARDED AS USING DRUMS, CONES, SHADOW VEHICLE, ETC., ALONG THE WORK AREA WITHIN THE SUBJECT WARRANTED WORK ZONE CONDITION. WORKERS ARE CONSIDERED AS BEING PRESENT WHEN ON-SITE, WORKING WITHIN THE SUBJECT WARRANTED WORK ZONE CONDITION. WHEN THE WORK ZONE CONDITION REDUCING THE EXISTING FUNCTIONALITY OF THE TRAVEL LANES OR SHOULDERS IS REMOVED, THE SPEED LIMIT DISPLAYED SHALL RETURN TO THE ORIGINAL POSTED SPEED LIMIT.

WORK ZONE SPEED ZONES (WZSZS) CONT'D

ORIGINAL POSTED SPEED LIMIT	WITH POSITIVE PROTECTION		WITHOUT POSITIVE PROTECTION	
	WORKERS PRESENT	WORKERS NOT PRESENT	WORKERS PRESENT	WORKERS NOT PRESENT
70	60	65	55	65
65	55	60	50	60
60	55	60	50	60
55	50	55	45	55

THE FOLLOWING ESIMATED QUANTITY'S HAVE BEEN CARRIED TO THE SUBSUMMARY.

ITEM 808, DIGITAL SPEEL LIMIT (DSL) SIGN ASSEMBLY 72 SNMT ASSUMING 4 DSL SIGN ASSEMBLIES FOR 18 MONTHS

WORK ZONE EGRESS WARNING SYSTEM

THE CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN AN APPROVED WORK ZONE EGRESS WARNING SYSTEM (WZEWS) AS PER SUPPLEMENTAL SPECIFICATION 829.

THE PROBABLE INITIAL LOCATIONS OF THE WZEWS DEVICES WILL BE DETERMINED IN THE PRE-CONSTRUCTION MEETING. IT IS EXPECTED THAT THESE LOCATIONS WILL VARY BASED ON PLANNED OR UNPLANNED PHASE AND TRAFFIC PATTERN CHANGES. PLACEMENT, OPERATION, AND MAINTENANCE AND ALL ACTIVATION OF THE DEVICES BY THE CONTRACTOR SHALL BE DIRECTED BY THE ENGINEER.

WZEWS SHALL BE USED IN ACCORDANCE WITH MT-103.10.THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 829, WORK ZONE EGRESS WARNING SYSTEM 32 SNMT ASSUMING 2 WORK ZONE EGRESS WARNING SYSTEMS FOR 16 MONTHS

6

ITEM 614 - WORK ZONE INCREASED PENALTIES SIGN (R11-H5A)

R11-H5A-48 SIGNS SHALL BE FURNISHED, ERECTED, AND MAINTAINED IN GOOD CONDITION AND/OR REPLACED AS NECESSARY AND SUBSEQUENTLY REMOVED BY THE CONTRACTOR. SIGNS SHALL BE MOUNTED AT THE APPROPRIATE OFFSETS AND ELEVATIONS AS PRESCRIBED BY THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. THEY SHALL BE MAINTAINED ON SUPPORTS MEETING CURRENT SAFETY CRITERIA.

THE SIGNS MAY BE ERECTED OR UNCOVERED NO MORE THAN FOUR HOURS BEFORE THE ACTUAL START OF WORK. THE SIGNS SHALL BE REMOVED OR COVERED NO LATER THAN FOUR HOURS FOLLOWING RESTORATION OF ALL LANES TO TRAFFIC WITH NO RESTRICTIONS, OR SOONER AS DIRECTED BY THE ENGINEER. TEMPORARY SIGN COVERING AND UNCOVERING DUE TO TEMPORARY LANE RESTORATIONS SHALL BE GUIDED BY THE FOUR-HOUR LIMITATIONS STATED ABOVE. SUCH LANE RESTORATIONS SHOULD BE EXPECTED TO REMAIN IN EFFECT FOR 30 OR MORE CONSECUTIVE CALENDAR DAYS, SUCH AS DURING WINTER SHUT-DOWNS.

THE SIGNS ON THE MAINLINE SHALL BE DUAL MOUNTED UNLESS NOT PHYSICALLY POSSIBLE. THE FIRST SIGN SHALL BE PLACED BETWEEN THE ROAD WORK AHEAD (W20-1) SIGN AND THE NEXT SIGN IN THE SEQUENCE. SIGNS SHALL BE ERECTED ON EACH ENTRANCE RAMP AND EVERY 2 MILES THROUGH THE CONSTRUCTION WORK LIMITS. SIGNS ON THE MAINLINE SHALL BE R11-H5A-48. SIGNS USED ON THE RAMPS SHALL BE R11-H5A-24. R11-H5A-24 SIGNS MAY BE USED IN THE MEDIAN IN LIEU OF R11-H5A-48 SIGNS IF IT IS NOT PHYSICALLY POSSIBLE TO PROVIDE R11-H5A-48 SIGNS IN THE MEDIAN.

THE R11-H5A-48 SIGNS SHALL BE MOUNTED ON 2 NO. 3 POSTS WHEN LOCATED WITHIN CLEAR ZONES.

THE CONTRACTOR MAY USE SIGNS AND SUPPORTS IN USED, BUT GOOD, CONDITION PROVIDED THE SIGNS MEET CURRENT ODOT SPECIFICATIONS. SIGN FACES SHALL BE RETROREFLECTORIZED WITH TYPE G SHEETING COMPLYING WITH THE REQUIREMENTS OF C&MS 730.19.

WORK ZONE INCREASED PENALTIES SIGNS AND SUPPORTS WILL BE MEASURED AS THE NUMBER OF SIGN INSTALLATIONS, INCLUDING THE SIGN AND NECESSARY SUPPORTS. IF A SIGN AND SUPPORT COMBINATION IS REMOVED AND REERECTED AT ANOTHER LOCATION AS DIRECTED BY THE ENGINEER, IT SHALL BE CONSIDERED ANOTHER UNIT.

PAYMENT FOR ACCEPTED QUANTITIES, COMPLETE, IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR FURNISHING, ERECTING, MAINTAINING, COVERING DURING SUSPENSION OF WORK, AND REMOVAL OF THE SIGN AND SUPPORT.

ITEM 614, WORK ZONE INCREASED PENALTIES SIGN 6 EACH

ITEM 614 - DETOUR SIGNING

SIZE AND PLACEMENT OF DETOUR SIGNS (M4-9) SHOULD FOLLOW THE REQUIREMENTS OF THE OMUTCD SECTION 6F.03, SECTION 2A.11 AND TABLE 6F.01 UNLESS OTHERWISE SPECIFIED IN THE PLANS.

DETOUR SIGNING SHALL PROVIDED DRIVERS ADEQUATE TIME TO CLEARLY READ THE SIGNS AND MAKE THE PROPER DECISIONS AT EACH REQUIRED TURNING MOVEMENT. THE DESIGNATED DETOUR ROUTE SHALL BE SIGNED IN ACCORDANCE WITH THE REQUIREMENTS BELOW:

- APPROXIMATELY 1500 FEET PRIOR TO TIP OF THE PAINTED GORE AT AN INTERCHANGE WHEN EXITING A HIGH SPEED (45 MPH OR HIGHER) FACILITY.

- AT OR NEAR THE EXISTING SIGN IN THE GORE OF AN INTERCHANGE RAMP.

- AT OR NEAR THE FIRST EXISTING LANE ASSIGNMENT SIGN ON AN INTERCHANGE EXIT RAMP.

- AT OR NEAR THE EXISTING LANE ASSIGNMENT SIGN OR EXISTING ROUTE MARKER AT THE END OF AN EXIT RAMP.

- APPROXIMATELY 500 FEET PRIOR TO A REQUIRED TURN AT AN INTERSECTION NOT CONTROLLED BY A STOP SIGN (FOR 45 MPH OR HIGHER ONLY).

- AT OR NEAR THE EXISTING LANE ASSIGNMENT SIGN OR EXISTING ROUTE MARKER AT AN INTERSECTION.

- EVERY TWO MILES ALONG A TANGENT SECTION BETWEEN TURNING MOVEMENTS OUTSIDE A CITY.

- EVERY TWO BLOCKS ALONG A TANGENT SECTION BETWEEN TURNING MOVEMENTS WITHIN A CITY.

- AT ANY OTHER INTERSECTION OR DECISION POINT WHERE THE DETOUR ROUTE IS CONTRARY TO THE NORMAL, EXPECTED TURNING MANEUVER OR OTHERWISE UNCLEAR.

DETOUR SIGNS SHALL BE PLACED, WHEN POSSIBLE, NEXT TO BUT NOT BLOCKING EXISTING ROUTE MARKERS OR LANE ASSIGNMENT SIGNS. DETOUR SIGNS SHALL NOT OBSCURE OR BE OBSCURED BY OTHER EXISTING OR TEMPORARY SIGNS.

DETOUR SIGNS SHALL BE ERECTED AND/OR UNCOVERED PRIOR TO THE ROAD OR RAMP BEING CLOSED TO TRAFFIC BUT NO EARLIER THAN FOUR HOURS PRIOR TO THE CLOSURE. DETOUR SIGNS SHALL BE COVERED AND/OR REMOVED NO LATER THAN FOUR HOURS FOLLOWING THE ROAD OR RAMP RE-OPENING TO TRAFFIC.

PAYMENT FOR ACCEPTED QUANTITIES WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FOR ALL MATERIALS, LABOR, INCIDENTALS, AND EQUIPMENT FOR FURNISHING, PROPER SIGN PLACEMENT AND SIZING, TIMELY ERECTING AND/OR UNCOVERING OF SIGNS, MAINTAINING SIGNS, AND TIMELY COVERING AND/OR REMOVING SIGNS AND SUPPORTS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 614 - DETOUR SIGNING LUMP SUM

NO.	DESCRIPTION	REV. BY	DATE
6	QUANTITY CHANGES	EMK	11-6-2023

CALCULATED EMW CHECKED RMK

MAINTENANCE OF TRAFFIC NOTES

FRA-70-13.11

60
1151

ITEM	EXTENSION	FUNDING SPLIT 01/IMS/PV	TOTAL	UNIT	DESCRIPTION	SEE SHEET
254	01000	6000	6000	SY	PAVEMENT PLANING, ASPHALT CONCRETE, 1.5"	59
410	12000	200	200	CY	TRAFFIC COMPACTED SURFACE, TYPE A OR B	54
607	30001	1000	1000	FT	FENCE, SNOW, AS PER PLAN	58
611	05900	174	174	FT	15" CONDUIT, TYPE B	
611	97010	1405	1405	FT	SLOTTED DRAIN, TYPE 2, 12"	
611	98150	1	1	EACH	CATCH BASIN, NO. 3	
611	98370	3	3	EACH	CATCH BASIN, NO. 6	
611	99500	5	5	EACH	INLET, MISC.: INLET, CAPPED BELOW GRADE	63
614	11000		LS		MAINTAINING TRAFFIC	54
614	11110	2400	2400	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	58
614	11630	17120	17120	FT	INCREASED BARRIER DELINEATION	59
614	12380	12	12	EACH	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)	58
614	12420		LS		DETOUR SIGNING	60
614	12484	6	6	EACH	WORK ZONE INCREASED PENALTIES SIGN	60
614	12500	50	50	EACH	REPLACEMENT SIGN	59
614	12600	300	300	EACH	REPLACEMENT DRUM	59
614	12801	193	193	EACH	WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN	59
614	13310	352	352	EACH	BARRIER REFLECTOR, TYPE 1, ONE-WAY	59
614	13350	352	352	EACH	OBJECT MARKER, ONE WAY	59
614	18000	50000	50000	EACH	MAINTAINING TRAFFIC, MISC.: BRIDGE DECK AND PAVEMENT PATCHING	62
614	18030	1000	1000	FT	MAINTAINING TRAFFIC, MISC.: CONSTRUCTION FENCE	62
614	18601	144	144	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	59
614	20011	2.21	2.21	MILE	WORK ZONE LANE LINE, CLASS I, 6" SPRAY THERMOPLASTIC, AS PER PLAN	59
614	20056	4.30	4.30	MILE	WORK ZONE LANE LINE, CLASS I, 6", 807 PAINT	
614	20560	1.69	1.69	MILE	WORK ZONE LANE LINE, CLASS III, 6", 642 PAINT	
614	21100	0.51	0.51	MILE	WORK ZONE CENTER LINE, CLASS I, 642 PAINT	
614	22011	5.98	5.98	MILE	WORK ZONE EDGE LINE, CLASS I, 6" SPRAY THERMOPLASTIC, AS PER PLAN	59
614	22056	9.22	9.22	MILE	WORK ZONE EDGE LINE, CLASS I, 6", 807 PAINT	
614	22360	1.22	1.22	MILE	WORK ZONE EDGE LINE, CLASS III, 6", 642 PAINT	
614	23011	11491	11491	FT	WORK ZONE CHANNELIZING LINE, CLASS I, 12" SPRAY THERMOPLASTIC, AS PER PLAN	59
614	23110	12539	12539	FT	WORK ZONE CHANNELIZING LINE, CLASS I, 12", 807 PAINT	
614	23690	3126	3126	FT	WORK ZONE CHANNELIZING LINE, CLASS III, 12", 642 PAINT	
614	24001	3302	3302	FT	WORK ZONE DOTTED LINE, CLASS I SPRAY THERMOPLASTIC, AS PER PLAN	59
614	24100	1525	1525	FT	WORK ZONE DOTTED LINE, CLASS I, 4", 807 PAINT	
614	24612	2409	2409	FT	WORK ZONE DOTTED LINE, CLASS III, 6", 642 PAINT	
614	26200	95	95	FT	WORK ZONE STOP LINE, CLASS I, 642 PAINT	
614	30200	6	6	EACH	WORK ZONE ARROW, CLASS I, 642 PAINT	
615	10000		LS		ROADS FOR MAINTAINING TRAFFIC	
615	25000	1545	1545	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B	
615	25001	100	100	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B, AS PER PLAN, TYPE 1	62
615	25001	50	50	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B, AS PER PLAN, TYPE 2	62
615	25001	20	20	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B, AS PER PLAN, TYPE 3	62
615	25001	20	20	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B, AS PER PLAN, TYPE 4	62
616	10000	325	325	MGAL	WATER	59
622	41100	16790	16790	FT	PORTABLE BARRIER, UNANCHORED	
622	41110	1030	1030	FT	PORTABLE BARRIER, ANCHORED	
622	41050	1	1	EACH	PORTABLE BARRIER, "Y" CONNECTOR	
808	18700	72	72	SNMT	DIGITAL SPEED LIMIT (DSL) SIGN ASSEMBLY	60
829	00100	32	32	SNMT	WORK ZONE EGRESS WARNING SYSTEM	60
896	00010	108	108	SNMT	PORTABLE NON-INTRUSIVE TRAFFIC SENSOR, CLASS I	62
896	00021	36	36	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	62

6

NO.	DESCRIPTION	REV. BY	DATE
6	QUANTITY CHANGES	EMK	11-6-2023

CALCULATED EMW
CHECKED RMK

MAINTENANCE OF TRAFFIC GENERAL SUMMARY

FRA-70-13.11

MAINTENANCE OF TRAFFIC PHASE	614 WORK ZONE IMPACT ATTENUATOR (UNIDIRECTIONAL), 24" WIDE HAZARDS	614 WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN	614 BARRIER REFLECTOR, TYPE 1, ONE WAY	614 OBJECT MARKER, ONE WAY	614 INCREASED BARRIER DELINEATION	614 WORK ZONE LANE LINE, CLASS I, 6", 807 PAINT	614 WORK ZONE LANE LINE, CLASS III, 6", 642 PAINT	614 WORK ZONE CENTER LINE, CLASS I, 642 PAINT	614 WORK ZONE EDGE LINE, CLASS I, 6", 807 PAINT	614 WORK ZONE EDGE LINE, CLASS III, 6", 642 PAINT	614 WORK ZONE CHANNELIZING LINE, CLASS I, 12", 807 PAINT	614 WORK ZONE CHANNELIZING LINE, CLASS III, (12", 642 PAINT) 6	614 WORK ZONE DOTTED LINE, CLASS I, 4", 807 PAINT	614 WORK ZONE DOTTED LINE, CLASS III, 6", 642 PAINT	614 WORK ZONE STOP LINE, CLASS I, 642 PAINT	614 WORK ZONE ARROW, CLASS I, 642 PAINT	615 PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B	622 PORTABLE BARRIER, UNANCHORED	622 PORTABLE BARRIER, ANCHORED	622 PORTABLE BARRIER, "Y" CONNECTOR
	EACH	EACH	EACH	EACH	FT	MILE	MILE	MILE	MILE	MILE	FT	FT	FT	FT	FT	EACH	SY	FT	FT	EACH
PHASE 1	3	139	95	95	4720	1.51			4.44		7958		1110				1545	4720		1
PHASE 2	2	54	74	74	3990	0.70			1.14									3390	600	
PHASE 2A	2		7	7				0.26	0.32		193		198		34	3		130	230	
PHASE 2B	2		7	7				0.24	0.25		326		217		61	3		140	200	
PHASE 3A	2		129	129	6430	1.10			1.69		2139							6430		
PHASE 3B	1		40	40	1980	1.41			1.64		1923							1980		
PHASE 3C							1.69	6		1.22		3126		2409						
TOTALS	12	193	352	352	17120	4.73	1.69	0.51	9.48	1.22	12539	3126	1525	2409	95	6	1545	16790	1030	1

NO.	DESCRIPTION	REV. BY	DATE
6	QUANTITY CHANGES	EMK	11-6-2023

CALCULATED EMW
CHECKED RMK

MAINTENANCE OF TRAFFIC SUBSUMMARY

FRA-70-13.11

SHEET NUMBER								PARTICIPATION						ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
P1/161	P2/39	P3/191	P4/156	P5/14				01/IMS/04	02/IMS/11	05/IMS/14	06/MPO/04		08/ENH/04/COL						
																		PAVEMENT	
150								150						251	01020	150	SY	PARTIAL DEPTH PAVEMENT REPAIR (442)	P1
		1791						1791						252	01500	1791	FT	FULL DEPTH PAVEMENT SAWING	
		121						121						253	01001	121	SY	PAVEMENT REPAIR, AS PER PLAN	P3
				464	Δ1					464	Δ1			254	01000	464	SY	PAVEMENT PLANING, ASPHALT CONCRETE, AVERAGE DEPTH 4.33"	
		170						170						254	01000	170	SY	PAVEMENT PLANING, ASPHALT CONCRETE, 0.25" DEPTH	
		827						827						254	01000	827	SY	PAVEMENT PLANING, ASPHALT CONCRETE, 1.25" DEPTH	
	410							370			40			254	01000	410	SY	PAVEMENT PLANING, ASPHALT CONCRETE, 1.25" AVG DEPTH	
4717								4717						254	01000	4717	SY	PAVEMENT PLANING, ASPHALT CONCRETE, 1.5" AVG DEPTH	
938								938						254	01000	938	SY	PAVEMENT PLANING, ASPHALT CONCRETE, 3.25" AVG DEPTH	
		1406						1406						254	01000	1406	SY	PAVEMENT PLANING, ASPHALT CONCRETE, VARIABLE DEPTH	
		238						238						254	01010	238	SY	PAVEMENT PLANING, PORTLAND CEMENT CONCRETE, 1.25" DEPTH	
				11000					11000					256	10000	11000	SF	BONDED PATCHING OF PORTLAND CEMENT CONCRETE PAVEMENT, TYPE A	
10392		11503	15017	2272	Δ1			36912	2215	57	Δ1			302	56000	39184	CY	ASPHALT CONCRETE BASE, PG64-22, (449)	
6591	759		9740	1327	Δ1			17048	1298	29	42			304	20000	18417	CY	AGGREGATE BASE	
		87						87			Δ1			304	20000	87	CY	AGGREGATE BASE, 4"	
		7154						7154						304	20000	7154	CY	AGGREGATE BASE, 6"	
		7						7						304	20000	7	CY	AGGREGATE BASE, 8"	
		331						331						304	20001	331	CY	AGGREGATE BASE, AS PER PLAN, 12"	P3
		36						36						304	20001	36	CY	AGGREGATE BASE, AS PER PLAN, 6"	P3
		781						781						305	10010	781	SY	6" CONCRETE BASE, CLASS QC 1P	
		176	5					181						305	11010	181	SY	7" CONCRETE BASE, CLASS QC 1P	
		947	293					1240						305	12010	1240	SY	8" CONCRETE BASE, CLASS QC 1P	
	1709	805	4095					6360			249			305	13010	6609	SY	9" CONCRETE BASE, CLASS QC 1P	
20	149	172	317					637			21			407	13900	658	GAL	TACK COAT, 702.13	
6291	101	7695	8726	1426	Δ1			22796	1344	82	17			407	20000	24239	GAL	NON-TRACKING TACK COAT	
											Δ1								
		83						83						441	50000	83	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	
	75		154					218			11			441	50101	229	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), AS PER PLAN, PG64-22	P2,P4
		9						9						441	50200	9	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448)	
	88	46	215					336			13			441	50300	349	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)	
95								95		Δ1				441	70801	95	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (449), (UNDER GUARDRAIL), AS PER PLAN	P1
2482		3551	2977	442				9010	398	44				442	00100	9452	CY	ANTI-SEGREGATION EQUIPMENT	
1732		2215	2054	342				6001	305	37				442	10001	6343	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A, (446), AS PER PLAN, PG70-22M	P1,P3,P4,P5
		325						325						442	10001	325	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A, (446), AS PER PLAN "B", PG76-22M	P3
2174		2114	2496	409	Δ1			6784	366	43				442	10080	7193	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 12.5 MM, TYPE A (446)	
71								71						442	22300 Δ6	71	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 12.5 MM, TYPE A (449)	
		163						163						451	13010	163	SY	8" REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	
	274		215					489						SPECIAL	45130000	489	FT	PRESSURE RELIEF JOINT, TYPE A	P2,P4
242		977						1219						452	09010	1219	SY	4" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	
			113					113						452	12050	113	SY	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC MS	
	167		12					179						452	14011	179	SY	10" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P, AS PER PLAN	P2,P4
	1247		862					2109						452	15010	2109	SY	12" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	
										Δ1									
1748		439		1491	Δ1			2187	1070	421				609	24510	3678	FT	CURB, TYPE 4-C	
167								167						609	50000	167	SY	4" CONCRETE TRAFFIC ISLAND	
	497		406					903						609	98000	903	FT	CURB, MISC.: COLUMBUS 18" CONCRETE CURB	P2,P4
	402		1222										1624	609	98000	1624 Δ2	FT	CURB, MISC.: COLUMBUS 18" GRANITE CURB "A"	P2,P4
			462										462	609	98000	462	FT	CURB, MISC.: COLUMBUS 18" GRANITE CURB "B"	P4
			Δ2										Δ2						
	168												168	609	98000	168	FT	CURB, MISC.: COLUMBUS 18" GRANITE CURB "C"	P2
		68						68						609	98000	68	FT	CURB, MISC.: COMBINATION CURB & GUTTER, TYPE MOUNTABLE, AS PER PLAN	P3
		318						318						609	98000	318	FT	CURB, MISC.: COMBINATION CURB & GUTTER, TYPE SPECIAL 8", AS PER PLAN	P3
		555						555						609	98000	555	FT	CURB, MISC.: STRAIGHT 18" CONCRETE CURB, AS PER PLAN	P3
	468		900					1368						SPECIAL	69098100	1368	FT	SAWING AND SEALING CONCRETE JOINTS	P2,P4
		3						3						826	10600	3	CY	ASPHALT CONCRETE SURFACE COURSE, 442 12.5MM, (448), FIBER TYPE A	
14107		23840	22749	587				60696		587				872	10000	61283	FT	VOID REDUCING ASPHALT MEMBRANE (VRAM)	P3

NO.	DESCRIPTION	REV. BY	DATE
1	REVISED PART 5	CWL	10-2-23
2	REVISED PART 4 609 "B"	CWL	10-12-23
6	REVISED PART 1 ITEM EXT.	CWL	11-10-23

CALCULATED CJC
CHECKED CWL

BIG BUILD MASTER GENERAL SUMMARY

FRA-70-13.11

SHEET NUMBER								PARTICIPATION					ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
P1/65	P1/163	P2/40	P3/197B	P4/49	P4/158			01/IMS/04	02/IMS/11	03/NHS/10	04/NHS/10	⚠1						
																	MAINTENANCE OF TRAFFIC (CONTINUED)	
LS				LS				LS					615	10000	LS		ROADS FOR MAINTAINING TRAFFIC	
				4600				4600					615	20000	4600	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	
			4032					4032					615	20001	4032	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN	P3
1545		695		629				2869					615	25000	2869	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B	
100			100	200				400					615	25001	400	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B, AS PER PLAN, TYPE 1	P1,P3,P4
50			50	200				300					615	25001	300	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B, AS PER PLAN, TYPE 2	P1,P3,P4
20			20	200				240					615	25001	240	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B, AS PER PLAN, TYPE 3	P1,P3,P4
20				200				220					615	25001	220	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B, AS PER PLAN, TYPE 4	P1,P4
325				550				875					616	10000	875	MGAL	WATER	P1
			4					4					622	10201	4	EACH	BARRIER TRANSITION, AS PER PLAN	P3
			7279					7279					622	41011	7279	FT	PORTABLE BARRIER, 50", AS PER PLAN	P3
1				2				3					622	41050	3	EACH	PORTABLE BARRIER, "Y" CONNECTOR	
16790			11575					28365				⚠5	622	41100	28365	FT	PORTABLE BARRIER, UNANCHORED	
				28884				28884					622	41101	28884	FT	PORTABLE BARRIER, UNANCHORED, AS PER PLAN	P4
1030								1030					622	41110	1030	FT	PORTABLE BARRIER, ANCHORED	
72			288	48				408					808	18700	408	SNMT	DIGITAL SPEED LIMIT (DSL) SIGN ASSEMBLY	P1
32								32					829	00100	32	SNMT	WORK ZONE EGRESS WARNING SYSTEM	P1
108				48				156					896	00010	156	SNMT	PORTABLE NON-INTRUSIVE TRAFFIC SENSOR, CLASS I	P1
				48				48					896	00020	48	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN	
36								36					896	00021	36	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	P1
																	INCIDENTALS	
143000								143000					100	51100	143000	EACH	DEPARTMENT'S SHARE OF THE DISPUTE RESOLUTION BOARD	
LS								LS					108	10000	LS		CPM PROGRESS SCHEDULE	
32000								32000				⚠6	SPECIAL	11110100	32000	EACH	DEPARTMENTS SHARE FACILITATED PARTNERING COSTS	P1
LS		LS		LS				LS					614	11000	LS		MAINTAINING TRAFFIC	
LS	LS	LS		LS				LS					623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
LS	LS	LS		LS				LS					624	10000	LS		MOBILIZATION	
675000	⚠2								225000	225000	225000	⚠2	900	00100	675000	⚠2 EACH	RAILROAD FLAGGING SERVICES ⚠1	

NO.	DESCRIPTION	REV. BY	DATE
1	ADDED RR FLAGGING	CWL	10-2-23
2	BRICK X-WALK/REV. RR FLAGGING	CWL	10-16-23
5	REVISED PB	CWL	11-6-23
6	REVISED 111E10100	CWL	11-9-23

CALCULATED CJC
CHECKED CWL

BIG BUILD MASTER GENERAL SUMMARY

FRA-70-13.11

SHEET NUMBER								PARTICIPATION						ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
OFFICE CALCS	51		165		304			01/IMS/04											
																		PAVEMENT	
	150							150						251	01020	150	SY	PARTIAL DEPTH PAVEMENT REPAIR (442)	37
4717								4717						254	01000	4717	SY	PAVEMENT PLANING, ASPHALT CONCRETE, 1.5" AVG DEPTH	
938								938						254	01000	938	SY	PAVEMENT PLANING, ASPHALT CONCRETE, 3.25" AVG DEPTH	
10384	8							10392						302	56000	10392	CY	ASPHALT CONCRETE BASE, PG64-22, (449)	
6333	5		132		121			6591						304	20000	6591	CY	AGGREGATE BASE	
20								20						407	13900	20	GAL	TACK COAT, 702.13	
6289	2							6291						407	20000	6291	GAL	NON-TRACKING TACK COAT	
95								95						441	70801	95	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (449), (UNDER GUARDRAIL), AS PER PLAN	38
2482								2482						442	00100	2482	CY	ANTI-SEGREGATION EQUIPMENT	
1730	2							1732						442	10001	1732	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A, (446), AS PER PLAN, PG70-22M	37
2172	2							2174						442	10080	2174	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 12.5 MM, TYPE A (446)	
71								71						442	22300 6	71	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 12.5 MM, TYPE A (449)	
242								242						452	09010	242	SY	4" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	
1748								1748						609	24510	1748	FT	CURB, TYPE 4-C	
167								167						609	50000	167	SY	4" CONCRETE TRAFFIC ISLAND	
14107								14107						872	10000	14107	FT	VOID REDUCING ASPHALT MEMBRANE (VRAM)	

NO.	DESCRIPTION	REV. BY	DATE
6	REVISED ITEM EXTENSION	CWL	11-10-23

CALCULATED CJC
CHECKED CWL

4A PART 1 GENERAL SUMMARY

FRA-70-13.11

SHEET NUMBER				PARTICIPATION												ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
OFFICE CALCS	52			01/IMS/ 04	02/IMS/ 11	03/NHS/ 10	04/NHS/ 10	05/IMS/ 14	06/MPO/ 04	07/NHS/ 04/COL	08/ENH/ 04/COL	09/IMS/ 17/COL									
																				LANDSCAPING	
	5			5												661	40081	5	EACH	DECIDUOUS TREE, 2" CALIPER, AS PER PLAN, CERCIS CANADENSIS - RED BUD	46
	8			8												661	40101	8	EACH	DECIDUOUS TREE, 2-1/2" CALIPER, AS PER PLAN, CELTIS OCCIDENTALIS - HACKBERRY	46
	12			12												661	40101	12	EACH	DECIDUOUS TREE, 2-1/2" CALIPER, AS PER PLAN, PLATANUS OCCIDENTALIS - SYCAMORE	46
	5			5												661	40101	5	EACH	DECIDUOUS TREE, 2-1/2" CALIPER, AS PER PLAN, QUERCUS BICOLOR - SWAMP WHITE OAK	46
	20			20												661	99900	20	EACH	PLANTING, MISC.: DECIDUOUS SHRUB, 24" - 36" HEIGHT, VIBURNUM DENTATUM - ARROWWOOD	46
	20			20												661	99900	20	EACH	PLANTING, MISC.: DECIDUOUS SHRUB, 24" - 36" HEIGHT, PHYSOCARPUS OPULIFOLIUS - NINEBARK	46
																				RETAINING WALLS	
																				FOR RETAINING WALL 4W3 GENERAL SUMMARY	327
																				FOR RETAINING WALL 4W8 GENERAL SUMMARY	340
																				FOR RETAINING WALL 4W10 GENERAL SUMMARY	345
																				FOR TEMPORARY SHORING AND WALL GENERAL SUMMARY	349
																				STRUCTURE OVER 20 FOOT SPAN	
																				FOR FRA-70-1321R GENERAL SUMMARY	436
																				FOR FRA-70-1358R GENERAL SUMMARY	530
																				MISCELLANEOUS STRUCTURE	
69				69												511	50211	69	CY	CLASS QC1 CONCRETE, SUBSTRUCTURE, AS PER PLAN	37
																				MAINTENANCE OF TRAFFIC	
																				FOR MAINTENANCE OF TRAFFIC GENERAL SUMMARY	65
																				INCIDENTALS	
				143000												100	51100	143000	EACH	DEPARTMENT'S SHARE OF THE DISPUTE RESOLUTION BOARD	
				LS												108	10000	LS		CPM PROGRESS SCHEDULE	
				32000	6											SPECIAL	11110100	32000	6 EACH	DEPARTMENTS SHARE FACILITATED PARTNERING COSTS	33
				LS												614	11000	LS		MAINTAINING TRAFFIC	
				LS												623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
				LS												624	10000	LS		MOBILIZATION	
				225000	225000	225000	2									900	00100	675000	2 EACH	RAILROAD FLAGGING SERVICES	

NO.	DESCRIPTION	REV. BY	DATE
1	ADDED RR FLAGGING	CWL	10-2-23
2	REVISED RR FLAGGING	CWL	10-16-23
6	REVISED 11IE10100	CWL	11-9-23

CALCULATED CJC
CHECKED CWL

4A PART 1 GENERAL SUMMARY

FRA-70-13.11

UNLESS NOTED OTHERWISE, THE FOLLOWING NOTES PERTAIN TO RETAINING WALLS 4W3, 4W8 & 4W10 AND/OR TEMPORARY RETAINING WALLS T1 & T3A AND/OR TEMPORARY SHORING WALLS TS1 & TS3, WHICH ARE ALL PART OF THIS PROJECT.

SUPPLEMENTAL SPECIFICATIONS

REFER TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

800	DATED	1-20-23	
840	DATED	4-15-22	(4W8, 4W10)
867	DATED	4-15-22	(T1, T3A)

DESIGN SPECIFICATIONS

THESE STRUCTURES CONFORM TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 7TH EDITION, 2014 AND THE ODOT BRIDGE DESIGN MANUAL, 2007 EDITION, INCLUDING REVISIONS THROUGH JULY 2015.

DESIGN STRESSES:

CONCRETE CLASS QC1:
COMPRESSIVE STRENGTH - 4.0 KSI (ALL COMPONENTS OF ALL WALLS WITH CLASS QC1 CONCRETE SPECIFIED)

REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

DESIGN LOADING

LIVE LOAD SURCHARGE OF 0.240 KSF

CONSTRUCTION SEQUENCING

WHERE WALL CONSTRUCTION IS PHASED AND A TEMPORARY RETAINING SYSTEM IS REQUIRED, SHOP DRAWINGS OF BOTH PERMANENT AND TEMPORARY WALLS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE COST OF THESE SUBMITTALS SHALL BE INCLUDED FOR PAYMENT WITH THE COST OF THE TEMPORARY WALLS.

ITEM 203 - GRANULAR EMBANKMENT, AS PER PLAN (4W8)

PLACE AND COMPACT GRANULAR EMBANKMENT MATERIAL IN 6 INCH LIFTS FOR THE CONSTRUCTION OF THE APPROACH EMBANKMENT.

ITEM 503 - COFFERDAMS AND EXCAVATION BRACING (4W8)
ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN (TS1, TS3)

THE DESIGN SHOWN ON THE PLANS FOR TEMPORARY SUPPORT OF EXCAVATION IS ONE REPRESENTATIVE DESIGN THAT MAY BE USED TO CONSTRUCT THE PROJECT. THE CONTRACTOR MAY CONSTRUCT THE DESIGN SHOWN ON THE PLANS OR PREPARE AN ALTERNATE DESIGN TO SUPPORT THE SIDES OF EXCAVATIONS. IF CONSTRUCTING AN ALTERNATE DESIGN FOR TEMPORARY SUPPORT OF EXCAVATION, PREPARE AND PROVIDE PLANS IN ACCORDANCE WITH C&MS 501.05. THE DEPARTMENT WILL PAY FOR THE TEMPORARY SUPPORT OF EXCAVATION AT THE CONTRACT LUMP SUM PRICE FOR COFFERDAMS AND EXCAVATION BRACING. NO ADDITIONAL PAYMENT WILL BE MADE FOR PROVIDING AN ALTERNATE DESIGN.

FOUNDATION BEARING RESISTANCE

FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LIMIT STATE BEARING PRESSURE OF 2.30 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LIMIT STATE BEARING PRESSURE OF 3.20 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 15.05 KIPS PER SQUARE FOOT.

PROPRIETARY RETAINING WALL DATA (4W8, 4W10)

FOR ALL MSE WALL PORTIONS BELOW A BRIDGE ABUTMENT, THE PROPRIETARY WALL SUPPLIER SHALL DESIGN THE INTERNAL STABILITY OF A MECHANICALLY STABILIZED EARTH (MSE) WALL IN ACCORDANCE WITH SS840 TO SUPPORT THE ABUTMENT. THE DESIGN FOR INTERNAL STABILITY SHALL INCLUDE A NOMINAL (I.E. UNFACTORED) HORIZONTAL STRIP LOAD DUE TO FRICTION (FR) FROM THE SUPERSTRUCTURE APPLIED PERPENDICULAR TO THE FACE OF WALL AT THE BASE OF THE CONCRETE FOOTING. SEE BELOW FOR STRIP LOADS AT INDIVIDUAL WALLS/BRIDGES. THIS STRIP LOAD DOES NOT INCLUDE EARTH PRESSURE LOADS FROM THE ABUTMENT BACKFILL. HOWEVER, THE PROPRIETARY WALL SUPPLIER SHALL INCLUDE EARTH PRESSURE LOADS FROM THE ABUTMENT BACKFILL IN THE DESIGN CALCULATIONS.

MSE WALL	BRIDGE	NOMINAL HORIZONTAL STRIP LOAD DUE TO FRICTION
4W8	FRA-70-1358R	1.8 K/FT
4W10	FRA-70-1358R	1.8 K/FT

ITEM 840 - MECHANICALLY STABILIZED EARTH WALL AS PER PLAN (4W10)

CONSTRUCTION AND PAYMENT FOR THE MECHANICALLY STABILIZED EARTH (MSE) WALLS SHALL BE IN ACCORDANCE WITH SS840 EXCEPT AS MODIFIED BELOW.

FOR EACH WALL, PROVIDE SOIL REINFORCEMENT LENGTHS AS LISTED IN THE PLAN NOTES.

THE DEPARTMENT WILL NOT ADJUST PAY QUANTITIES FOR VARIATIONS IN THE CONCRETE LEVELING PAD ELEVATIONS AND OR OTHER PAY QUANTITIES ASSOCIATED WITH ADDITIONAL SOIL REINFORCEMENT LENGTH BEYOND THE LISTED LENGTH IN THE PLANS. ANY DEVIATIONS DUE TO THE CHANGE OF SITE CONDITIONS OR FROM THE RESULT OF THE INTERNAL STABILITY ANALYSIS FOR THE FINAL CONDITION (NOT FOR CONDITIONS DURING CONSTRUCTION) MUST HAVE AN APPROVAL FROM ODOT IN ORDER TO BE ELIGIBLE FOR ADDITIONAL PAYMENT. CONTRACTOR SHALL INFORM THE ENGINEER OF ANY SITE CONDITION DEVIATIONS PRIOR TO THE PREPARATION OF SHOP DRAWINGS. THE EXTERNAL STABILITY ANALYSIS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

ITEM 840 - MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN: (4W8)

THE CONTRACTOR AND MANUFACTURER SHALL COMPLY WITH THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 840, EXCEPT REFERENCES, MATERIALS, AND PAY ITEMS ASSOCIATED WITH FOUNDATION PREPARATION SHALL BE REPLACED WITH ITEM 203 - ROADWAY, MISC.: COLUMN SUPPORTED WALLS.

FOR EACH WALL, PROVIDE SOIL REINFORCEMENT LENGTHS AS LISTED IN THE PLAN NOTES.

ITEM 840 - 6" DRAINAGE PIPE, PERFORATED (4W8, 4W10)

CONNECT THE 6" PERFORATED DRAINAGE PIPE TO THE PIPE AT THE TEMPORARY WALL INSTALLED FROM PROJECT 4R.

ITEM 867 - TEMPORARY WIRE FACED MECHANICALLY STABILIZED EARTH WALL (T1, T3A)

THE CONTRACTOR SHALL DESIGN, PREPARE ENGINEERING DRAWINGS FOR, FABRICATE, AND CONSTRUCT A TEMPORARY WIRE FACED MSE WALL IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 867.

BASIS OF PAYMENT: ALL WORK UNDER SUPPLEMENTAL SPECIFICATION 867 SHALL BE PAID FOR AT THE LUMP SUM CONTRACT BID PRICE UNDER ITEM 867 - TEMPORARY WIRE FACED MECHANICALLY STABILIZED EARTH WALL.

MSE WALL DESIGN CRITERIA:

THE FACTORED BEARING RESISTANCE FOR EACH MSE WALL IS LISTED IN THE TABLE BELOW:

FACTORED BEARING RESISTANCE (KSF)						
MSE LOCATION	DESCRIPTION	WALL LIMITS			BEFORE GROUND IMPROVEMENT	REQUIRED AFTER GROUND IMPROVEMENT
		ALIGNMENT	FROM STA.	TO STA.		
4W8	WALL SECTION SUPPORTING FWD ABUTMENT OF BRIDGE NO. FRA-70-1358R (RR BRIDGE)	B/L WALL 4W8	0+10.03	0+97.52	5.38	9.52
4W10*	WALL SUPPORTING REAR ABUTMENT OF BRIDGE NO. FRA-70-1358R (RR BRIDGE)	B/L WALL 4W10	1+45.00	2+36.25	14.75	N/A

THE FOUNDATION SOIL SHALL BE EVALUATED BY THE GEOTECHNICAL ENGINEER OF RECORD DURING CONSTRUCTION TO DETERMINE SUITABILITY FOR SUPPORT OF THE APPLIED BEARING STRESSES.

* FACTORED BEARING RESISTANCE BASED ON UNDERCUT OF THE SOIL AS OUTLINED IN PLANS.

MINIMUM SOIL REINFORCEMENT LENGTHS:

PROVIDE A MINIMUM SOIL REINFORCEMENT LENGTHS EQUAL TO THE GREATER OF 8 FEET OR THE VALUE SPECIFIED IN THE FOLLOWING TABLE ACCORDING TO SUPPLEMENTAL SPECIFICATION 840.04 EXCEPT AS FOLLOWS: 6

SOIL REINFORCEMENT LENGTHS					
MSE LOCATION	DESCRIPTION	WALL LIMITS			REINF. LENGTH
		ALIGNMENT	FROM STA.	TO STA.	
4W8	WALL SECTION SUPPORTING FWD ABUTMENT OF BRIDGE NO. FRA-70-1358R (RR BRIDGE)	B/L WALL 4W8	0+10.03	0+97.52	0.70 X H
4W10	WALL SUPPORTING REAR ABUTMENT OF BRIDGE NO. FRA-70-1358R (RR BRIDGE)	B/L WALL 4W10	1+45.00	2+36.25	0.70 X H

H = THE WALL HEIGHT AS DEFINED ACCORDING TO SUPPLEMENTAL SPECIFICATION 840.04.

6 BASED ON THE SOIL REINFORCEMENT LENGTHS IDENTIFIED ABOVE, THE REINFORCED SOIL MASS PRODUCES THE FOLLOWING MAXIMUM BEARING PRESSURES:

WALL 4W8: 6.74 KIPS PER SQUARE FOOT SERVICE LIMIT STATE, 9.52 KIPS PER SQUARE FOOT STRENGTH LIMIT STATE.
WALL 4W10: 6.68 KIPS PER SQUARE FOOT SERVICE LIMIT STATE, 9.46 KIPS PER SQUARE FOOT STRENGTH LIMIT STATE.

TEMPORARY WIRE FACED MECHANICALLY STABILIZED EARTH WALL DESIGN CRITERIA							
WALL LOCATION	WALL LIMITS			NOMINAL BEARING RESISTANCE	RESISTANCE FACTOR	FACTORED RESISTANCE	B
	ALIGNMENT	FROM STA.	TO STA.				
T1	B/L CONST. WALL T1	BEGIN	6+85	7.44	0.65	4.84	0.7H > 8.0 FT
T1	B/L CONST. WALL T1	6+85	7+15	9.69	0.65	6.30	1.05H
T1	B/L CONST. WALL T1	7+15	END	22.69	0.65	14.75	0.7H
T3A	B/L CONST. WALL T3	BEGIN	0+42	8.27	0.65	*9.52	0.7H
T3A	B/L CONST. WALL T3	0+42	0+72	8.96	0.65	5.82	0.75H
T3A	B/L CONST. WALL T3	0+72	END	9.40	0.65	6.11	8.0 FT

* 5.38 BEFORE IMPROVEMENT, 9.52 REQUIRED AFTER IMPROVEMENT

ABBREVIATIONS

ABUT.	ABUTMENT
BRG.	BEARING
BOT.	BOTTOM
BTWN.	BETWEEN
CONST. JT., C.J.	CONSTRUCTION JOINT
B.S.	BOTH SIDES
N.S.	NEAR SIDE
F.S.	FAR SIDE
SER.	SERIES
TYP.	TYPICAL
EQ.	EQUAL
DIM.	DIMENSION
SPA.	SPACES
EA.	EACH
P.E.J.F.	PREFORMED EXPANSION JOINT FILLER
MIN.	MINIMUM
ADDIT.	ADDITIONAL
FRWD.	FORWARD
SPL.	SPLICE
CLR.	CLEAR
P.C.P.P.	PERFORATED CORRUGATED PLASTIC PIPE
N.P.C.P.P.	NON-PERFORATED CORRUGATED PLASTIC PIPE

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	RSN	11-6-23

DESIGN AGENCY
GPD GROUP
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DESIGNED DGN | CHECKED RHC
DRAWN MOJ | REVISED
REVIEWED TJW | DATE 4-21-23 | STRUCTURE FILE NUMBER

RETAINING WALL NOTES

FRA-70-13.11
PID No. 77372

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ITEM 203 - ROADWAY, MISC.: COLUMN SUPPORTED WALLS (4W8) (CONTINUED)

7.4 CSW COLUMN TOLERANCES

A. THE CSW DESIGNER SHALL SPECIFY IN THE CONTRACTOR'S SUBMITTAL THE ALLOWABLE TOLERANCES FOR:

1. COLUMN VERTICALITY
2. HORIZONTAL TOLERANCE FROM PLAN LOCATION.
3. VERTICAL TOLERANCE FROM COLUMN TOP.
4. ACCEPTABLE CONDITION OF COLUMN TOPS PRIOR TO INSTALLATION OF LOAD TRANSFER PLATFORM.
5. MINIMUM COLUMN DIMENSIONS.
6. COLUMN OVERLAP REQUIREMENTS, IF APPLICABLE.
7. MINIMUM STRENGTH REQUIREMENTS OF COLUMN MATERIALS.
8. MATERIAL PROPERTIES, AS INCORPORATED INTO THE COLUMNS.
9. OTHER ITEMS, AS REQUIRED PER ODOT CMS.

B. BEFORE BEGINNING INSTALLATION, THE CONTRACTOR SHOULD ACCURATELY STAKE THE LOCATION OF THE CSW COLUMNS USING A LICENSED SURVEYOR. THE CONTRACTOR SHOULD PROVIDE AN ADEQUATE METHOD FOR LOCATING ELEMENTS TO ALLOW THE ENGINEER TO VERIFY THE AS-BUILT LOCATION OF THE ELEMENTS DURING CONSTRUCTION. THE CONTRACTOR WILL NOT BE COMPENSATED FOR ELEMENTS THAT ARE LOCATED OUTSIDE OF THE SPECIFIED TOLERANCES. IF THE ENGINEER DETERMINES THAT MISALIGNED ELEMENTS WILL INTERFERE WITH CONSTRUCTION, A METHOD OF CORRECTION SHOULD BE PREPARED BY THE CSW DESIGNER AND SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND ACCEPTANCE.

C. COLUMN ELEMENTS INSTALLED BEYOND THE MAXIMUM ALLOWABLE TOLERANCES SHALL BE ABANDONED AND REPLACED WITH NEW COLUMNS, UNLESS THE DESIGNER APPROVES THE CONDITION OR PRESCRIBES OTHER REMEDIAL MEASURES TO BE COMPLETED BY CONTRACTOR AND CSW DESIGNER. ALL MATERIAL AND LABOR REQUIRED TO REPLACE OR REMEDY REJECTED COLUMNS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE DEPARTMENT. REMEDIAL MEASURES MUST BE SUBMITTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE.

7.5 AS-BUILT COLUMN INSTALLATION RECORDS: THE CONTRACTOR MUST SUBMIT AS-BUILT FIELD MEASUREMENT DATA INDICATING SURVEYED AS-BUILT PLAN LOCATIONS OF EACH CSW ELEMENT, INCLUDING THE ELEMENT CENTER (PER SITE SPECIFIC COORDINATES), THE ELEMENT DIMENSION, THE COLUMN VERTICALITY, AND THE TOP AND BOTTOM ELEVATIONS OF EACH ELEMENT TO THE ACCURACY REQUIRED BY THE PROJECT SPECIFICATIONS. THE AS-BUILT DOCUMENTATION MUST BE APPROVED BY THE DESIGNER AND SUBMITTED TO THE ENGINEER NO LATER THAN 90 DAYS AFTER THE COMPLETION OF EACH CSW-STABILIZED ZONE. A DISINCENTIVE OF $300.00 PER DAY WILL BE ASSESSED FOR EACH DAY BEYOND 90 DAYS THAT THE COMPLETED AS-BUILT DRAWINGS ARE NOT SUBMITTED TO THE ENGINEER.

7.6 SELECT FILL PLACEMENT AND QA/QC REQUIREMENTS (LOAD TRANSFER PLATFORMS)

A. NO GEOSYNTHETIC REINFORCEMENT OR FILL MATERIALS SHALL BE PLACED PRIOR TO SATISFYING THE COLUMN PERFORMANCE CRITERIA, UNLESS THE FILL MATERIAL IS REQUIRED AS A WORKING PLATFORM FOR COLUMN INSTALLATION.

B. INSTRUMENTATION FOR PERFORMANCE MEASUREMENTS AND INSTRUMENTATON FOR MONITORING OF EXISTING STRUCTURES AND EMBANKMENTS SHALL BE INSTALLED PRIOR TO PLACEMENT OF ANY SELECT FILL OR GEOSYNTHETIC REINFORCEMENT.

C. PRIOR TO CONSTRUCTION OF THE LOAD TRANSFER PLATFORM, THE CONTRACTOR SHALL PREPARE SUBGRADE, AND REMOVE ANY DELETERIOUS MATERIALS SUCH AS TREE ROOTS. THE FOUNDATION SOIL SHALL BE OBSERVED AND APPROVED BY THE ENGINEER PRIOR TO PLACEMENT OF SELECT REINFORCED FILL.

D. IF CEMENTITIOUS GROUND IMPROVEMENT METHODS ARE USED, PLACEMENT OF FILL MATERIAL SHALL NOT START UNTIL THE COLUMNS HAVE GAINED ADEQUATE STRENGTH TO SUPPORT THE FILL MATERIALS AND FILL INSTALLATION AND CONSTRUCTION EQUIPMENT.

E. SELECT REINFORCED FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 10 IN. IN UNCOMPACTED THICKNESS FOR HEAVY COMPACTION EQUIPMENT. FOR ZONES WHERE COMPACTION IS ACCOMPLISHED WITH HAND-OPERATED COMPACTION EQUIPMENT, FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 6 IN. IN UNCOMPACTED THICKNESS.

F. SELECT REINFORCED FILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH ITEM 203. THIS MAY NOT BE ACHIEVABLE FOR THE FIRST LIFT OF FILL BECAUSE OF THE WEAK SUBGRADE BETWEEN COLUMNS, HOWEVER, SUBSEQUENT LIFTS SHOULD MEET THE MINIMUM REQUIREMENTS.

G. TEST METHODS AND FREQUENCY, AND VERIFICATION OF MATERIAL SPECIFICATIONS AND COMPACTION, SHALL BE THE RESPONSIBILITY OF THE STATE.

7.7 GEOSYNTHETIC REINFORCEMENT PLACEMENT AND QA/QC REQUIREMENTS

A. PLACE REINFORCEMENT AT THE LOCATIONS AND ELEVATION SHOWN ON THE CONTRACTORS WORKING DRAWINGS. NO CHANGES TO THE GEOSYNTHETIC REINFORCEMENT LAYOUT, INCLUDING, BUT NOT LIMITED TO LENGTH, REINFORCEMENT TYPE (I.E., STRENGTH), DIRECTION OF REINFORCEMENT, OR ELEVATION SHALL BE MADE WITHOUT THE EXPLICIT WRITTEN APPROVAL OF THE DESIGNER. CONTRACTOR SHALL SUBMIT THE CHANGES TO THE ENGINEER FOR ACCEPTANCE.

B. CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOSYNTHETIC REINFORCEMENT. A MINIMUM FILL THICKNESS OF 150 MM (6 IN.) IS REQUIRED FOR OPERATION OF VEHICLES OVER THE REINFORCEMENT. TURNING OF VEHICLES SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS OR TIRES FROM DISPLACING THE FILL AND/OR GEOSYNTHETIC REINFORCEMENT.

C. MINIMUM OVERLAP OF ADJACENT ROLLS OF REINFORCEMENT SHALL BE AS INDICATED BY THE DESIGNER OF THE CONTRACTOR'S WORKING DRAWINGS.

D. EACH ROLE OF GEOSYNTHETIC REINFORCEMENT SHOULD BE INSPECTED BY THE CONTRACTOR TO ENSURE THAT IT IS UNDAMAGED PRIOR TO COVERING WITH FILL MATERIAL.

E. CARE SHALL BE TAKEN TO PREVENT EXCESSIVE MUD, WET CONCRETE, EPOXY, OR OTHER DELETERIOUS MATERIALS FROM COMING IN CONTACT WITH AND AFFIXING TO THE GEOGRID MATERIALS.

F. GEOSYNTHETIC REINFORCEMENT SHALL BE STORED AT TEMPERATURES ABOVE -20 DEGREES F (- 29 DEGREES C).

G. GEOSYNTHETIC REINFORCEMENT SHALL NOT BE LEFT DIRECTLY EXPOSED TO SUNLIGHT FOR A PERIOD LONGER THAN RECOMMENED BY THE MANUFACTURER OR ONE MONTH WHICHEVER IS SHORTER.

H. ANY ROLL OR PORTION OF A ROLL OF GEOSYNTHETIC DAMAGED BEFORE, DURING, AND/OR AFTER INSTALLATION SHALL BE REPLACED BY THE CONTRACTOR.

I. LARGE PILES OF FILL MATERIAL SHALL NOT BE PLACED ON THE GEOSYNTHETIC REINFORCEMENT.

J. IF GEOTEXTILE SEAMS ARE SPECIFIED, THE SEAMS SHOULD BE PLACED UP AND EVERY STITCH SHOULD BE INSPECTED.

K. THE CONTRACTOR SHALL REMOVE SLACK AND WRINKLES FROM THE GEOSYNTHETIC PRIOR TO PLACING FILL.

L. THE CONTRACTOR SHALL SUBMIT THE LOT NUMBERS AND ROLL NUMBERS ALONG WITH THEIR LOCATIONS WITHIN THE EMBANKMENT FOR ALL GEOSYNTHETIC REINFORCEMENT.

PART 8 POST-INSTALLATION PERFORMANCE MONITORING INSTRUMENTATION

6

8.1 POST-INSTALLATION PERFORMANCE MONITORING INSTRUMENTATION: FOUR (4) SETS OF CSW PERFORMANCE MONITORING INSRUMENTATION SHALL BE INSTALLED. THIS INSTRUMENTATION WILL BE PLACED TO MONITOR THE PERFORMANCE OF THE CSW SYSTEM AFTER IT HAS BEEN SUCCESSFULLY CONSTRUCTED AND IS SUBJECTED TO THE CONSTRUCTION LOADING AND SUBSEQUENT SERVICE LOADING. THE INSTALLATION MAY BE PERFORMED BY THE PRIME CONTRACTOR, THE CONTRACTOR, OR AN INSTRUMENTATION SUBCONTRACTOR OR CONSULTANT (OR IN WHOLE OR IN PART BY COMBINATIONS THEREOF). IMPORTANT NOTE: IN THE EVENT THAT THIS QA MONITORING WORK IS NOT TO BE COORDINATED OR PERFORMED BY THE CSW CONTRACTOR, THE CSW CONTRACTOR SHALL BE REQUIRED TO SPECIFICALLY COORDINATE THIS WORK AND SUBMIT A WORK PLAN TO THE ENGINEER PRIOR TO INITIATING THE CSW WORK.

6

A. THE INSTRUMENTATION SHALL BE INSTALLED AS DESCRIBED IN THE FOLLOWING SUBSECTIONS AT THE APPROXIMATE LOCATIONS IN THE TABLE ON SHEET 5/5, THE SPECIFIC LOCATIONS TO BE DETERMINED BY THE CONTRACTOR AS ACCEPTED BY THE ENGINEER, SUCH THAT CONSTRUCTION INTERFERENCE AND THE POTENTIAL FOR DAMAGE IS MINIMIZED. THE INSTALLATIONS SHALL ALSO BE PLACED SUCH THAT DATA MAY CONTINUE TO BE ACQUIRED ONCE THE FACILITY HAS BEEN PLACED IN SERVICE. DETAILS OF THE EXACT INSTALLATION LOCATIONS WILL BE DETERMINED AT THE PRE-CONSTRUCTION MEETING.

B. MINIMUM INSTRUMENTATION PROVIDED BY THE CONTRACTOR IS TO CONSIST OF:

6

1. SETTLEMENT PLATES, TO BE INSTALLED ON TOP OF THE LOAD/TRANSFER PLATFORM.
2. PIEZOMETERS TO MONITOR PORE PRESSURES BENEATH THE MSE WALLS AND EMBANKMENTS IN THE STABILIZED ZONE. 6

C. CONTRACTOR SHALL RECORD INSTRUMENTATION DATA FROM THE TIME OF INSTALLATION (END OF CSW CONSTRUCTION) UNTIL 30 DAYS AFTER THE WALLS REACH THEIR FINAL PLAN ELEVATION (LESS COPING AND PAVEMENTS). READINGS SHALL BE TAKEN TWICE WEEKLY DURING WALL AND EMBANKMENT FILL PLACEMENT AND AT INTERVALS NOT TO EXCEED 15 CALENDAR DAYS AT OTHER TIMES. DATA FROM ALL SENSORS SHALL BE READ IN A UNIFORM MANNER, SUCH THAT ALL DATA IS TAKEN WITHIN A 2-DAY PERIOD AT THE 15 (OR 30) DAY INTERVALS TO AID IN THE EVALUATION OF THE DATA AND SUBSEQUENT PRESENTATION OF RESULTS.

6

D. IF THE WALLS SUPPORTED OVER THE CSW ELEMENTS HAVE COMPLETED SETTLEMENT IN ACCORDANCE WITH THE PERFORMANCE CRITERIA WITHIN 30 DAYS OF SUBSTANTIAL WALL COMPLETION AS DEFINED IN 1.1.A.6, THE CONTRACTOR MAY TURN OVER FURTHER MONITORING OF THE DATA TO THE DEPARTMENT. IF THE WALLS HAVE NOT COMPLETED SETTLEMENT IN ACCORDANCE WITH THE DESIGN CRITERIA, THE CONTRACTOR SHALL CONTINUE MONITORING EFFORTS (AT NO ADDITIONAL COST TO THE DEPARTMENT) AS DIRECTED BY THE ENGINEER.

E. INSTRUMENTATION SHALL BE INSTALLED AFTER THE CONSTRUCTION OF THE CSW ELEMENTS WITHIN THE IN-SITU SOILS AND PRIOR TO MSE WALL CONSTRUCTION OR EMBANKMENT FILL PLACEMENT. A MINIMUM OF 2 SETS OF BASELINE READINGS SHALL BE TAKEN AND CONFIRMED PRIOR TO THE CONSTRUCTION OF ELEMENTS ABOVE THE INSTALLED CSW CONSTRUCTION.

F. INSTRUMENTATION SHALL BE ELECTRONIC AND SELF-RECORDING, WHERE PRACTICAL. READINGS FROM SENSORS SHALL BE TAKEN WITH AUTOMATED DATA COLLECTION SYSTEMS. ANY PARTICULAR INSTRUMENT TYPE SHALL BE OBTAINED FROM THE SAME MANUFACTURER TO MINIMIZE POTENTIAL INCOMPATIBILITIES AND ERRORS. DATA ACQUISITION DEVISES (DATA LOGGERS) SHALL BE OF A TYPE COMPATIBLE WITH EACH TYPE OF INSTRUMENTATION AND RECOMMENDED BY THE MANUFACTURER.

G. INSTRUMENTATION SHALL BE PROVIDED WITH CALIBRATION CERTIFICATES FROM THE MANUFACTURER, AS APPROPRIATE.

H. ALL INSTRUMENTATION AND ASSOCIATED MONITORING AND DATA COLLECTION DEVICES (PROBES, CABLES, DATA COLLECTORS, ETC.) BECOME THE PROPERTY OF THE DEPARTMENT AT THE END OF THE MONITORING PERIOD. ELECTRONIC FILES AND ALL DATA REPORTS SHALL BE PROVIDED TO THE DEPARTMENT AT THE END OF THE MONITORING PERIOD.

I. THE DEPARTMENT RESERVES THE RIGHT TO PUBLISH THE INFORMATION FROM THE MONITORING INVESTIGATION IN INTERNAL AND EXTERNAL TECHNICAL PUBLICATIONS.

J. THE PERFORMANCE MONITORING INSTRUMENTATION AND ASSOCIATED DATA COLLECTION AND ANALYSIS SHALL NEITHER BE USED AS A BASIS OF PAYMENT NOR AS A PERFORMANCE CRITERIA FOR THE DETERMINATION OF SUCCESSFUL INSTALLATION OF THE CSW APPLICATION.

K. INSTRUMENTS SHALL MEET ACCEPTED INDUSTRY STANDARDS AND HAVE AN ACCURACY OF +/- 0.5% WITH A MINIMUM PRECISION OF +/- 0.5% OF FULL SCALE (SPAN).

L. INSTRUMENTS SHALL HAVE APPROPRIATE RUGGEDNESS TO SURVIVE INSTALLATION AND CONSTRUCTION PROCESSES SUCH THAT THEY READ WITH THE MINIMUM PRECISION AND ACCURACY OVER THE DURATION OF CONSTRUCTION AND A MINIMUM OF EIGHTEEN (18) MONTHS OF SERVICE FOLLOWING CONSTRUCTION.

M. INSTRUMENTATION SHALL HAVE AN OPERATING TEMPERATURE RANGE AS APPROPRIATE FOR CONDITIONS ANTICIPATED WHERE INSTALLED (I.E. WITHIN OR ABOVE A CSW ELEMENT).

N. CABLING TO EACH SENSOR (REQUIRING CABLING) SHALL BE INCLUDED SUCH THAT DATA MAY BE OBTAINED AT ALL PHASES OF CONSTRUCTION AND WHEN THE NEW CONSTRUCTION IS IN SERVICE. THE DISTANCE FROM THE DATA ACQUISITION SYSTEM TO ANY GIVEN SENSOR SHALL BE A MINIMUM HORIZONTAL DISTANCE FROM THE SENSOR TO THE OUTSIDE OF THE NEAREST RETAINING WALL OR ABUTMENT FACE, PLUS A MINIMUM CABLING AMOUNT TO PROVIDE FOR ANY NECESSARY VERTICAL TRAVEL TO THE GROUND SURFACE, PLUS 6 FT.

O. THE INSTRUMENTATION INSTALLATIONS SHALL BE ADEQUATELY PROTECTED FROM CONSTRUCTION IMPACTS, DURING CONSTRUCTION, AS WELL AS WEATHER EFFECTS, AND VANDALISM. APPROPRIATE LOCKED CASINGS AND/OR REMOVABLE CABLING AND PLASTIC CONNECTOR CAPS AND RELATED PROTECTIVE DEVICES SHALL BE PROVIDED TO ENSURE THE INTEGRITY OF THE INSTRUMENTATION OVER THE PROPOSED MONITORING DURATION.

P. THE PLAN FOR INSTALLATION OF INSTRUMENTATION SHALL BE APPROVED BY THE DESIGNER AND SUBMITTED TO THE ENGINEER FOR ACCEPTANCE PRIOR TO PLACEMENT.

PART 9 ACCEPTANCE CRITERIA

9.1 ACCEPTANCE CRITERIA: THE COLUMN-SUPPORTED EMBANKMENT IS CONSIDERED ACCEPTABLE WHEN THE EMBANKMENT CONSTRUCTION AND QC/QA REQUIREMENTS ARE COMPLETED IN ACCORDANCE WITH SECTION 6, COMPLIANCE WITH THE PERFORMANCE CRITERIA FROM PARAGRAPH 1.1 IS DEMONSTRATED, AND NO DAMAGE TO ADJACENET FACILITIES IS FOUND OR COMPENSATION IS MADE FOR DAMAGED CAUSED OR DAMAGE IS REPAIRED AT CONTRACTOR'S EXPENSE.

PART 10 CSW PAYMENT

10.1 ALL COST IN CONNECTION WITH MOBILIZATION AND DEMOBILIZATION OF MATERIALS, EQUIPMENT AND LABOR FOR THE CONSTRUCTION OF COLUMN-SUPPORTED WALLS (CSW) AS REQUIRED IN THIS SPECIFICATION, SHALL BE PAID FOR UNDER ITEM 203 - ROADWAY MISC; COLUMN SUPPORTED WALLS.

10.2 ALL COST IN CONNECTION WITH DESIGN, EQUIPMENT, MATERIAL, AND LABOR FOR THE INSTALLATION OF COLUMN-SUPPORTED WALLS (CSW), INCLUDING COLUMN MATERIALS AND CONSTRUCTION, QC MONITORING, INSTRUMENTATION, WORKING AND LOAD TRANSFER PLATFORM MATERIALS, WICK DRAINS IF NECESSARY TO MEET SETTLEMENT REQUIREMENTS, AND THE GEOSYNTHETIC REINFORCEMENTS AS REQUIRED IN THIS SPECIFICATION, SHALL BE INCIDENTAL TO ITEM 203. SEPARATE PAYMENT WILL NOT BE MADE FOR SITE PREPARATION, DEWATERING, TEMPORARY WORKS TO FACILITATE CONSTRUCTION, ETC. INCLUDE ALL THE ANTICIPATED COSTS IN PRICE BID FOR ITEM 203 - ROADWAY, MISC.: COLUMN SUPPORTED WALLS. GROUND IMPROVEMENT AREAS HAVE BEEN DEFINED IN THE PLANS FOR BIDDING PURPOSES. ADDITIONAL COLUMN SUPPORTS SHALL BE PROVIDED AS NECESSARY BEYOND THE DEFINED AREAS TO SATISFY GLOBAL STABILITY AND SHALL BE INCIDENTAL TO THIS ITEM.

10.3 ALL COSTS ASSOCIATED WITH THE INSTALLATION OF TEST COLUMNS, REACTION FRAMES, INSTRUMENTATION, PERFORMANCE, ANALYSIS, AND REPORTING OF TEST RESULTS TO ENGINEER SHALL BE INCLUDED IN UNIT BID FOR ITEM 203 - ROADWAY, MISC.: COLUMN SUPPOPRTED WALLS.

10.4 THE TERMS CSW AND COLUMN SUPPORTED WALLS SHALL BE USED INTERCHANGEABLY THROUGHOUT THE PLANS.

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	RSN	11-6-23

DESIGN AGENCY
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DESIGNED	DRAWN	REVIEWED	DATE
MOJ	MOJ	CTL	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DGN			

RETAINING WALL NOTES

FRA-70-13.11
PID No. 77372

ITEM SPECIAL - SETTLEMENT PLATFORM

SETTLEMENT PLATFORMS SHALL BE PLACED AT THE BOTTOM OF THE MSE WALL AT THE LOCATIONS INDICATED BELOW, UNLESS OTHERWISE DIRECTED BY ODOT.

CONTRACTOR HAS THE OPTION OF USING EITHER STEEL OR PLYWOOD PLATFORM BASE.

CONTRACTOR SHALL FURNISH MATERIALS AND LABOR TO EXTEND PIPE THROUGH ENTIRE FILL.

SETTLEMENT PLATFORMS SHALL BE ANCHORED BY STAKES DRIVEN AT EACH CORNER TO PREVENT OVERTURNING.

SPECIFICATIONS:

DESCRIPTION:
THIS ITEM CONSISTS OF FURNISHING, CONSTRUCTING, AND MAINTAINING SETTLEMENT PLATFORMS AND OBTAINING SETTLEMENT READINGS AS REQUIRED BY THE PLANS OR AS DIRECTED BY THE ENGINEER. AT THE OPTION AND EXPENSE OF THE CONTRACTOR, ADDITIONAL SETTLEMENT PLATFORMS MAY BE INSTALLED AT ADDITIONAL LOCATIONS.

SETTLEMENT READINGS SHALL BE TAKEN WEEKLY DURING CONSTRUCTION AND DURING ANY SPECIFIED WAITING PERIOD. THE READINGS SHALL BE PLOTTED UTILIZING THE SETTLEMENT PLATFORM READINGS EXCEL SPREADSHEET AS DEVELOPED BY ODOT'S OFFICE OF GEOTECHNICAL ENGINEERING. A COPY OF EACH CUMULATIVE PLOT SHALL BE SENT TO ODOT, AFTER EACH SETTLEMENT READING IS RECORDED.

VIBRATING WIRE SETTLEMENT MONITORING PLATFORMS MAY BE CONSIDERED IN LIEU OF THE CONVENTIONAL SETTLEMENT PLATFORMS. THE CONTRACTOR SHOULD PROVIDE DETAILS OF THE PROPOSED VIBRATING WIRE SETTLEMENT PLATFORMS AS WELL AS DESIGN DRAWINGS OF THE PROPOSED PLATFORM AND CABLING LAYOUT TO ODOT AT LEAST 14 DAYS PRIOR TO CONSTRUCTION.

THE DESIGN DRAWINGS SHOULD ILLUSTRATE THE PROPOSED SETTLEMENT VIBRATING WIRE SETTLEMENT PLATFORM LOCATIONS WITH ALL EXISTING AND PROPOSED SITE FEATURES TO VERIFY THE PROPOSED CABLING WILL NOT CONFLICT WITH EXISTING FACILITIES, PROPOSED FACILITIES OR UTILITIES.

THE CONTRACTOR SHALL IDENTIFY, SET AND MAINTAIN AN APPROPRIATE NUMBER OF FIXED BENCHMARKS, REFERENCE POINTS, ETC. TO FACILITATE THE SURVEYING OF THE SETTLEMENT PLATFORMS.

MATERIALS:
SOUND LUMBER SUCH AS ¾" EXTERIOR GRADE PLYWOOD SHALL BE USED FOR THE BASE. THE PIPE SHALL BE 2-½" STANDARD BLACK PIPE WITH THREADED FITTINGS AS SHOWN ON THE PLANS. A STEEL PLATE 3'-0"x 3'-0"x⅛" MAY BE SUBSTITUTED FOR THE LUMBER, AT THE CONTRACTOR'S OPTION.

CONSTRUCTION METHODS: THE PLATFORM SHALL CONFORM TO THE DETAILS SHOWN ON THE PLANS. IF EXISTING PAVEMENT IS ENCOUNTERED AT THE SPECIFIED LOCATIONS, THE PAVEMENT (INCLUDING ANY BASE MATERIAL) SHALL BE REMOVED AND THE SETTLEMENT PLATFORM SHALL BE SET ON THE EXPOSED SUBGRADE. THE PLATFORM SHALL BE SET ON A LEVEL SURFACE. THE PIPE SHALL BE FIRMLY SECURED TO THE PLATFORM AND SHALL BE MAINTAINED IN A PLUMB POSITION DURING CONSTRUCTION OF THE MSE WALL. THE PIPE SHALL BE MARKED AT INTERVALS TO FACILITATE MEASUREMENT OF THE DEPTH OF FILL.

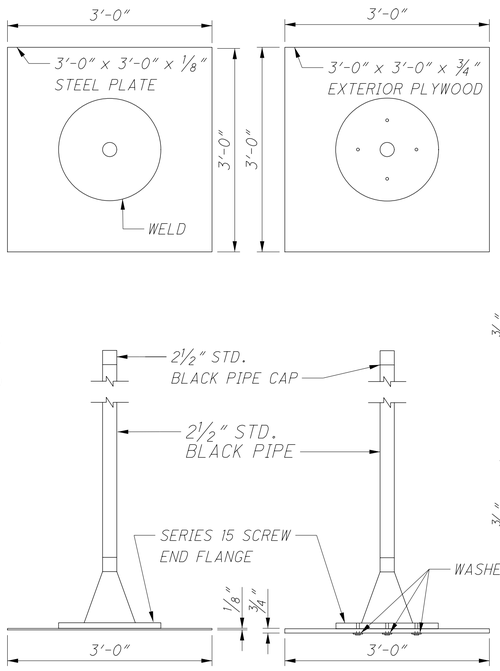
THE CONTRACTOR SHALL PROTECT SETTLEMENT PLATFORMS FROM CONSTRUCTION TRAFFIC/ACTIVITIES USING APPROPRIATE METHODS SUCH AS BARRICADES, CONES, GUARD-STAKES WITH HIGH VISIBILITY RIBBON, ETC. THE CONTRACTOR SHALL STOP WORK IN ANY LOCATION WHERE THE SETTLEMENT PLATFORM HAS BEEN DISTURBED OR DAMAGED. PLATFORMS OR PIPES DAMAGED OR DISPLACED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR PROPER CONDITION.

PRIOR TO PAVING: THE TOP OF THE SETTLEMENT PLATFORM PIPE SHALL BE CUT OFF TWO FEET BELOW THE FINISHED SURFACE OF THE SUBGRADE OR FINISHED GROUND SURFACE. WHICHEVER IS APPLICABLE.

WAITING PERIOD:
SEE PILE DRIVING CONSTRAINTS NOTES FROM STRUCTURE GENERAL NOTES SHEET FOR MORE INFORMATION REGARDING WAITING PERIOD.AS SOON AS THE SETTLEMENT INDICATORS ARE INSTALLED, THE ELEVATION OF EACH SETTLEMENT INDICATOR SHALL BE SURVEYED AND THIS MEASUREMENT WILL SERVE AS THE BASELINE FOR FUTURE SETTLEMENT READINGS. THE ELEVATION OF THE SETTLEMENT INDICATORS AS WELL AS THE FILL HEIGHT BEHIND THE ABUTMENT SHALL BE RECORDED AT LEAST TWICE WEEKLY UNTIL THE FULL EMBANKMENT HEIGHT IS ACHIEVED. THE SETTLEMENT MONITORING FREQUENCY MAY THEN BE ADJUSTED TO ONCE WEEKLY AND CONTINUE AT THIS FREQUENCY UNTIL THE WAITING PERIOD IS COMPLETE.THE ENGINEER WILL CONSIDER THE WAITING PERIOD COMPLETE WHEN CONSECUTIVE SETTLEMENT READINGS, RECORDED AFTER THE FULL EMBANKMENT HEIGHT IS ACHIEVED, AND AT LEAST ONE WEEK (168 HOURS) APART, RESULT IN ELEVATION DIFFERENCES EQUAL TO OR LESS THAN 1/8 INCH. SEE PILE DRIVING CONSTRAINTS NOTE FROM STRUCTURE GENERAL NOTES FOR MORE INFORMATION REGARDING WAITING PERIOD. THE GEOTECHNICAL ENGINEER MAY CHANGE FREQUENCY OF THE SETTLEMENT READINGS AS DATA BECOMES AVAILABLE. SURVEY READINGS SHALL BE PROVIDED TO THE ENGINEER FOR EVALUATION AND DISPOSITION WITHIN 24 HOURS OF THE READINGS BEING TAKEN.NO ABUTMENT PILE DRIVING, CONSTRUCTION OF SUBGRADE, APPROACH SLAB, OR PAVING OF ROADWAYS SHALL BEGIN UNTIL CONFIRMATION HAS BEEN MADE FROM THE ENGINEER THAT THE WAITING PERIOD IS COMPLETE.

METHOD OF MEASUREMENT:
THE DEPARTMENT WILL MEASURE SETTLEMENT PLATFORMS BY THE NUMBER EACH, COMPLETE IN PLACE.

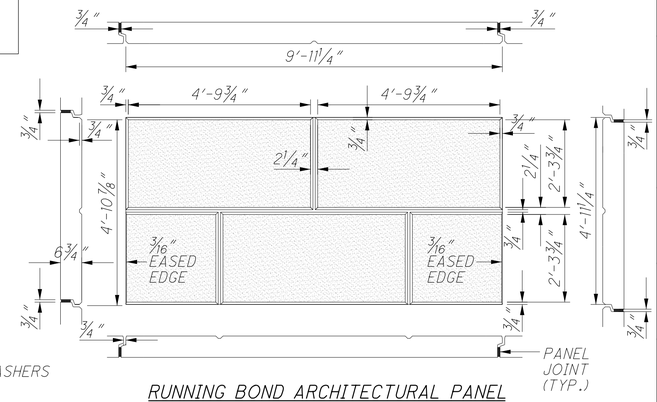
BASIS OF PAYMENT:
THE UNIT PRICE BID FOR ITEM SPECIAL - SETTLEMENT PLATFORM SHALL INCLUDE FURNISHING, CONSTRUCTING, AND MAINTAINING SETTLEMENT PLATFORMS AND OBTAINING SETTLEMENT READINGS AS REQUIRED BY THE PLANS OR AS DIRECTED BY THE ENGINEER.



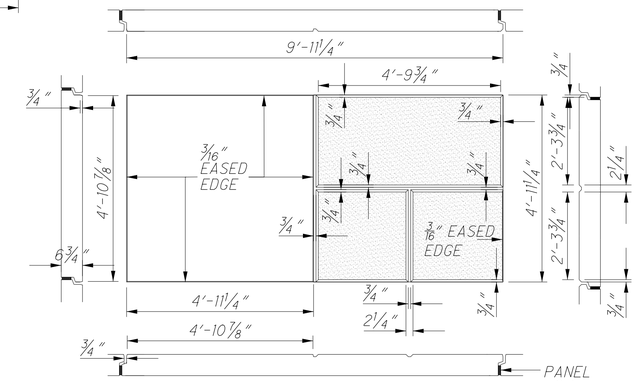
POST-INSTALLATION PERFORMANCE MONITORING INSTRUMENTATION LOCATIONS							
LOCATION /WALL	SETTLEMENT PLATFORM DESIGNATION	ALIGNMENT/ B/L	STATION	OFFSET		SETTLEMENT PLATFORM	PIEZOMETER
				FT	LT / RT		
4W10	P1	℄ CONST. I-70 EB	166+55.00	0.00	--	PLATFORM AT EL. 707.85	N/A
	P2	℄ CONST. I-70 EB	166+65.00	31.00	RT.	PLATFORM AT EL. 707.85	N/A
4W8	P3	℄ CONST. I-70 EB	169+15.00	4.00	LT.	PLATFORM AT EL. 711.00	PIEZOMETER AT EL. 705
	P4	℄ CONST. I-70 EB	169+37.00	37.00	RT.	PLATFORM AT EL. 711.00	PIEZOMETER AT EL. 705

ITEM 840 AESTHETIC SURFACE TREATMENT: (4W8, 4W10)

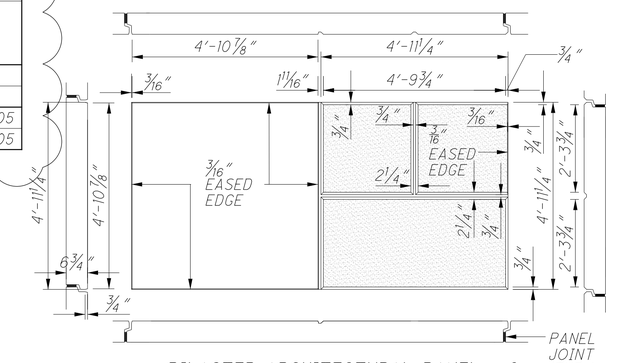
THE ITEM OF WORK SHALL CONSIST OF PROVIDING AESTHETIC TREATMENTS TO THE CONCRETE MSE WALL PANEL SURFACES. THE SURFACE FINISH SHALL BE EITHER A RUNNING BOND AESTHETIC PATTERN & TEXTURE OR A RUNNING BOND AESTHETIC PATTERN & TEXTURE WITH PILASTERS. SEE BELOW FOR DETAILS OF EACH, AND SEE INDIVIDUAL WALL PLANS FOR LOCATION OF VARIOUS SURFACE FINISHES.



RUNNING BOND ARCHITECTURAL PANEL



PILASTER ARCHITECTURAL PANEL - 1



PILASTER ARCHITECTURAL PANEL - 2

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	RSN	11-6-23

DESIGN AGENCY
GPD GROUP
Gbaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215
Copyright GBAs, Pyle, Schomer, Burns & DeHaven, Inc. ©2023
614.2100751

DESIGNED	DRAWN	REVIEWED	DATE
DGN	MOJ	TJW	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RHC			

RETAINING WALL NOTES

FRA-70-13.11
PID No. 77372

5 / 5

326
1151

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ESTIMATED QUANTITIES

ITEM	EXTENSION	TOTAL	PARTICIPATION	01/IMS/04	UNIT	DESCRIPTION	REFERENCE SHEET NO.
203	35001	465		465	CY	GRANULAR EMBANKMENT, AS PER PLAN	322
203	35110	680		680	CY	GRANULAR MATERIAL, TYPE B	
203	98100	231		231	SY	ROADWAY MISC.: COLUMN SUPPORTED WALLS	323 - 325
503	11100	LS		LS		COFFERDAMS AND EXCAVATION BRACING	
512	10100	254		254	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
516	13200	6		6	SF	1/2" PREFORMED EXPANSION JOINT FILLER	
516	13900	91		91	SF	2" PREFORMED EXPANSION JOINT FILLER	
601	21000	73		73	SY	CONCRETE SLOPE PROTECTION	
840	20001	2434		2434	SF	MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN	322
840	21000	451		451	CY	WALL EXCAVATION	
840	23000	1848		1848	CY	SELECT GRANULAR BACKFILL	
840	25010	177		177	FT	6" DRAINAGE PIPE, PERFORATED, AS PER PLAN	322
840	26000	91		91	FT	CONCRETE COPING	
840	26050	2434		2434	SF	AESTHETIC SURFACE TREATMENT	
840	27000	1		1	DAY	ON-SITE ASSISTANCE	
SPECIAL	203E07500	2		2	EACH	PNEUMATIC PIEZOMETER	326
SPECIAL	203E65000	2		2	EACH	SETTLEMENT PLATFORM	326

NO.	DESCRIPTION	REV. BY	DATE
2	ADDED CONCRETE SLOPE PROTECTION	WCB	10/16/2023
6	ADDED PNEUMATIC PIEZOMETER	WCB	11/10/2023

DESIGN AGENCY
DYNOTEC, INC.
2931 E. DUBLIN-GRANVILLE RD COLUMBUS, OH 43231
614.880.7320 T * WWW.DYNOTECINC.COM

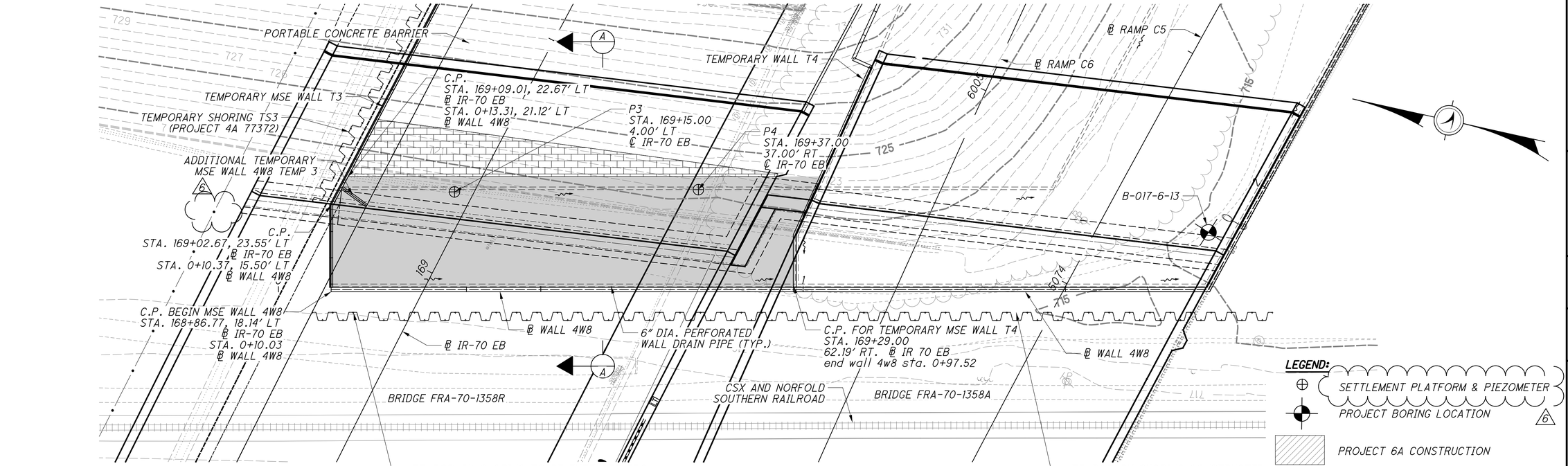
DESIGNED	DRAWN	REVIEWED	DATE
RA	DMK	EC	3/11/2105
CHECKED	REVISED	STRUCTURE FILE NUMBER	
OHK			

ESITMATED QUANTITIES
MSE WALL 4W8
SOUTH SIDE BETWEEN FRA-70-1358A ANDFRA-70-1373A

FRA-70-13.11
PID No. 77372

1 / 5

340
1151



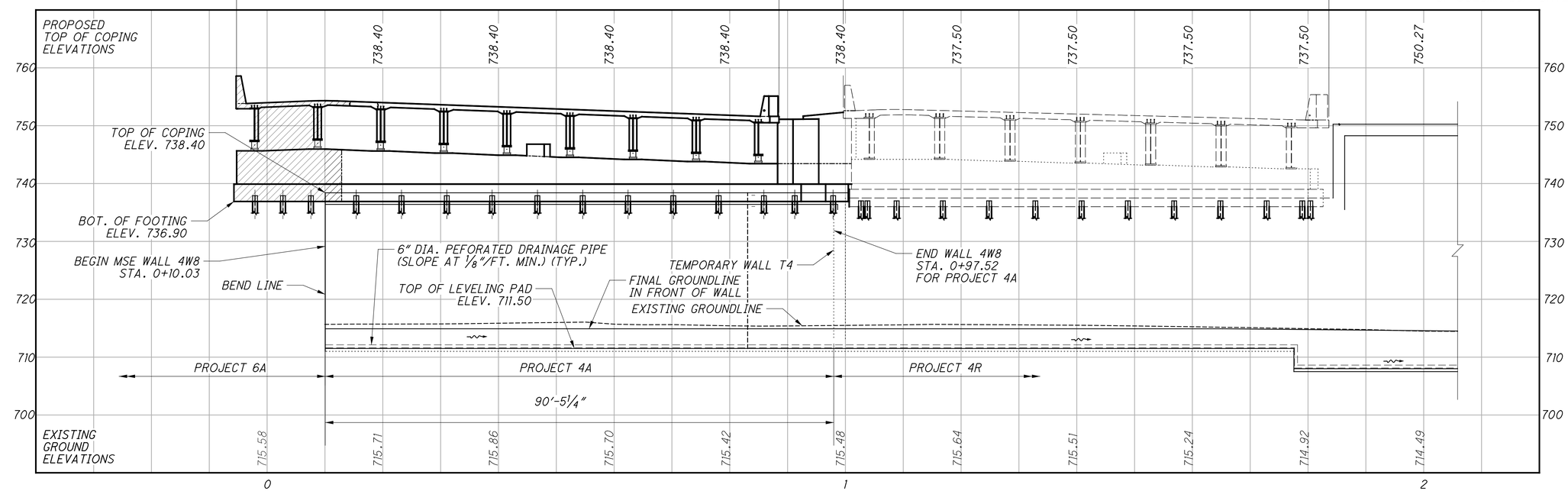
WALL 4W8 PROJECT LIMITS
4A (77372) STA. 0+10.03 TO 0+97.52
4R (105523) STA. 0+97.52 TO 9+78.77

TEMPORARY SHORING TO BE EXTENDED FROM PROJECT 4R SHORING AND CONTINUE PARALLEL TO WALL 4W8 AND OFFSET 4'. CONTRACTOR TO DESIGN AND SUBMIT SHORING PLAN TO RAILROAD FOR APPROVAL.

PLAN

LEGEND:

- SETTLEMENT PLATFORM & PIEZOMETER
- PROJECT BORING LOCATION 6
- PROJECT 6A CONSTRUCTION
- LIMITS OF SELECT GRANULAR FILL
- LIMITS OF ADDITIONAL EXCAVATION AND/OR EMBANKMENT. SELECT GRANULAR BACKFILL, AND GRANULAR MATERIAL FOR FOOTING STRAP BEYOND THE FOOTPRINT OF COLUMN SUPPORTED WALLS.



PROFILE

(ALONG ℄ WALL 4W8)

NO.	DESCRIPTION	REV. BY	DATE
6	REVISED LEGEND AND REMOVED SYMBOL	WCB	11/10/2023

DESIGN AGENCY
DYNOTEC, INC.
2931 E. DUBLIN-GRANVILLE RD COLUMBUS, OH 43231
614.880.7320 T ★ WWW.DJYNOTECINC.COM

DESIGNED	DRAWN	REVIEWED	DATE
RA	DMK	EC	3/11/2015
CHECKED	REVISED	STRUCTURE FILE NUMBER	
OHK			

STA. 168+86.77
STA. 5074+11.62

PLAN AND ELEVATION
MSE WALL 4W8
SOUTH SIDE BETWEEN FRA-70-1358A AND FRA-70-1373A

FRA-70-13.11
PID No. 77372

2 / 5

341
1151

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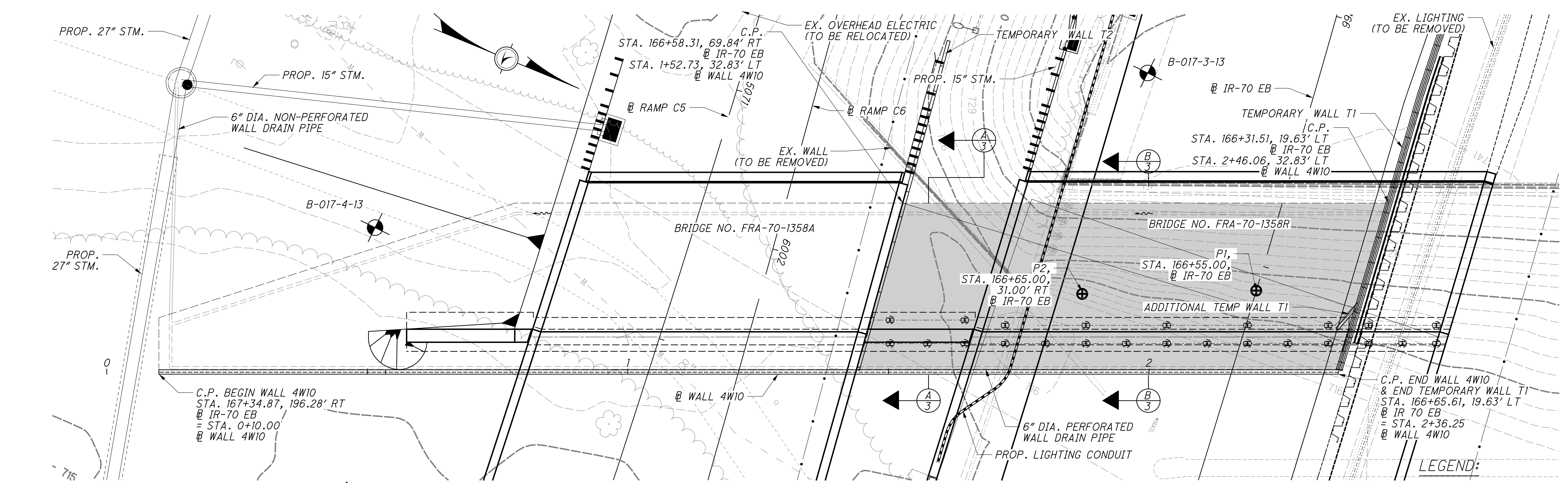


PLAN

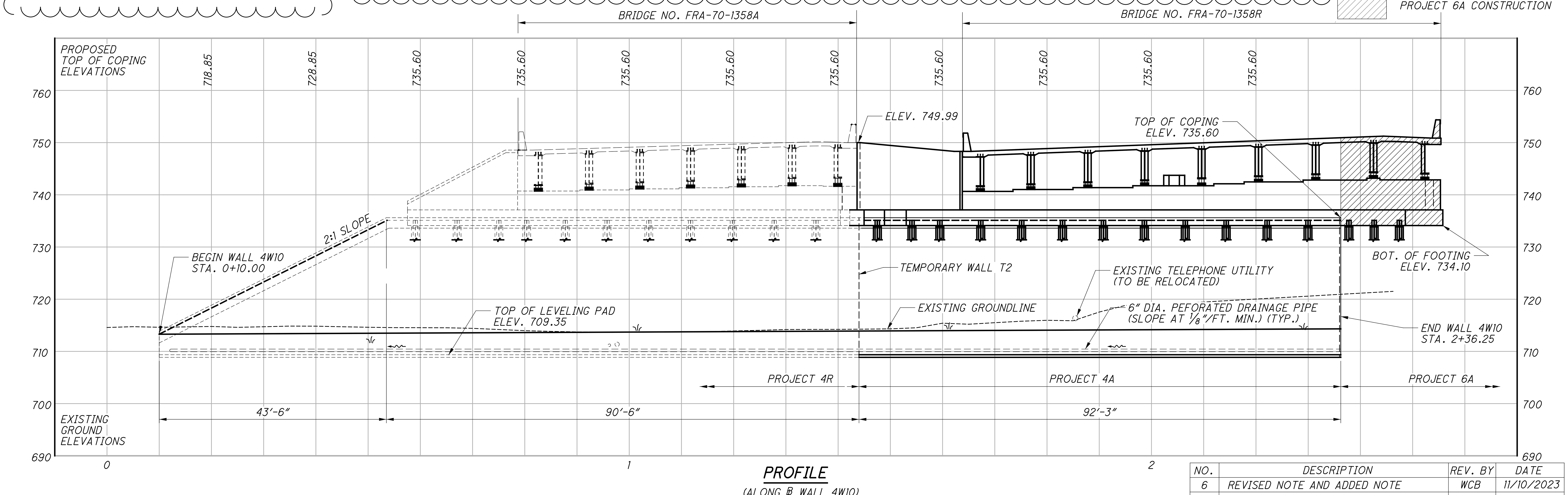
NOTES:

6 THE LIMITS OF WALL 4W10 CONSTRUCTED AS PART OF PROJECT 4R ARE FROM STA. 0+10.00 TO A POINT BETWEEN TEMPORARY WALL T2 AND TEMPORARY SHORING TS2 AT STA. 1+45. THE REMAINDER OF WALL 4W10 TO BE CONSTRUCTED IN PROJECT 4A.

6 DUE TO MISALIGNMENT OF TEMPORARY WALL T2 CONSTRUCTED WITHIN PROJECT 4R, A CAST-IN-PLACE SLIP JOINT WAS CONSTRUCTED WITHIN PROJECT 4R AT THE NORTHERLY PHASE LINE OF WALL 4W10. THE SLIP JOINT IS INTENDED TO ACCOMMODATE AN ADJUSTMENT IN THE ALIGNMENT OF THE FACE FOR THE REMAINING PORTION OF WALL 4W10 TO BE CONSTRUCTED IN PROJECT 4A. THE PROJECT 4A/6A CONTRACTOR SHALL BE AWARE OF THIS AND MAKE ALL NECESSARY ADJUSTMENTS AS PART OF THE SUBMITTAL PROCESS AND WHEN CONSTRUCTING REMAINING PORTIONS OF WALL 4W10 AND ADDITIONAL CONNECTED WALLS WITHIN PROJECT 6A.

LEGEND:

- SETTLEMENT PLATFORM
- PROJECT BORING LOCATION
- LIMITS OF SELECT GRANULAR FILL
- PROJECT 6A CONSTRUCTION



PROFILE

(ALONG ℄ WALL 4W10)

NO.	DESCRIPTION	REV. BY	DATE
6	REVISED NOTE AND ADDED NOTE	WCB	11/10/2023

DESIGN AGENCY
DYNOTEC, INC.
2931 E. DUBLIN-GRANVILLE RD COLUMBUS, OH 43231
614.880.7320 T * WWW.DYNOTECINC.COM

DESIGNED	DRAWN	REVIEWED	DATE
OHK	DMK	OHK	3/11/2015
CHECKED	REVISED	STRUCTURE FILE NUMBER	
EC			

FRANKLIN COUNTY
STA. 5071+75.83
STA. 166+64.74

PLAN AND ELEVATON
MSE WALL 4W10
WEST SIDE OF FRA-70-1358R AND FRA-70-1358A

FRA-70-13.11
PID No. 77372

2 / 4

346 / 1151

DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO THE 8TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATION" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2017, AND THE ODOT BRIDGE DESIGN MANUAL, 2019.

STANDARD DRAWINGS

REFER TO THE FOLLOWING ODOT STANDARD BRIDGE DRAWINGS:

AS-1-15	REVISED: 7-17-15
AS-2-15	REVISED: 1-18-19
EXJ-4-87	REVISED: 1-19-18
GSD-1-19	REVISED: 1-15-21
PCB-91	REVISED: 7-17-20

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

800	DATED 1-20-23
867	DATED 4-15-22
894	DATED 4-16-21

DESIGN DATA

OPERATIONAL IMPORTANCE: A LOAD MODIFIER OF 1.00 HAS BEEN ASSUMED FOR THE DESIGN OF THIS STRUCTURE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, ARTICLE 1.3.5 AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

DESIGN LOADING

HL-93
FUTURE WEARING SURFACE (FWS) OF 60 POUNDS PER SQUARE FOOT

DESIGN STRESSES

6 MASS CONCRETE CLASS QC4 - COMPRESSIVE STRENGTH 4.5 KSI (DRILLED SHAFTS)

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (SUPERSTRUCTURE)

CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI (SUBSTRUCTURE)

REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

STRUCTURAL STEEL - ASTM A709 GRADE 50 - YIELD STRENGTH 50 KSI

DECK PROTECTION METHOD

EPOXY COATED REINFORCING STEEL
2½" CONCRETE COVER
CLASS QC2 CONCRETE

MONOLITHIC WEARING SURFACE

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

EXISTING STRUCTURE VERIFICATION:

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING 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 UNCERTANTIES 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 THAT HAVE BEEN VERIFIED IN THE FIELD.

CONSTRUCTION CONSTRAINTS:

FILL THE VOID CREATED BY EXCAVATION FOR THE ABUTMENT FOOTING WITH TYPE B GRANULAR MATERIAL, 703.16.C. AFTER THE FOOTING AND THE BREASTWALL HAVE BEEN CONSTRUCTED, FILL THE VOID BEHIND EACH ABUTMENT UP TO THE BEAM SEAT ELEVATION AND FROM THE BEAM SEAT UP ON A 1:1 SLOPE TO THE SUBGRADE ELEVATION PRIOR TO CONSTRUCTING THE BACK WALL AND SETTING THE GIRDERS ON THE ABUTMENT.

STRUCTURE GROUNDING

GROUND THE PROPOSED BRIDGE ACCORDING TO THE REQUIREMENTS OF ODOT STD. DWG. HL-50.21 - STRUCTURE GROUNDING. THE FOLLOWING BRIDGE COMPONENTS SHALL BE CONNECTED TO THE GROUNDING SYSTEM: ALL STRUCTURAL STEEL, UTILITY SUPPORTS, AND LIGHT POLES.

DECK PLACEMENT DESIGN ASSUMPTIONS

THE FOLLOWING ASSUMPTION OF CONSTRUCTION MEANS AND METHODS WERE MADE FOR THE ANALYSIS AND DESIGN OF THE SUPERSTRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE FALSEWORK SUPPORT SYSTEM WITHIN THESE PARAMETERS AND WILL ASSUME RESPONSIBILITY FOR SUPERSTRUCTURE ANALYSIS FOR DEVIATION FROM THESE DESIGN ASSUMPTIONS.

AN EIGHT WHEEL FINISHING MACHINE WITH A MAXIMUM WHEEL LOAD OF 1.05 KIPS FOR A TOTAL MACHINE LOAD OF 8.4 KIPS.

A MINIMUM OUT-TO-OUT WHEEL SPACING AT EACH END OF THE MACHINE OF 103 IN.

A MAXIMUM SPACING OF OVERHANG FALSEWORK OF 48 IN.

A MAXIMUM DISTANCE FROM THE CENTERLINE OF THE FASCIA GIRDER TO THE FACE OF THE SAFETY HANDLE OF 65 IN.

FOUNDATION BEARING RESISTANCE

REAR ABUTMENT FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 5.24 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 7.41 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 18.09 KIPS PER SQUARE FOOT.

PIER FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 3.93 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 5.26 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 16.42 KIPS PER SQUARE FOOT.

6 FORWARD ABUTMENT FOUNDATION, AS DESIGNED PRODUCE A MAXIMUM FACTORED LOAD OF 620 KIPS AT EACH DRILLED SHAFT. THIS LOAD IS RESISTED BY TIP RESISTANCE ONLY. THE FACTORED RESISTANCE DEVELOPED BY THE DRILLED SHAFT TIP IS 1,023 KIPS.

ITEM 503-COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN

THE DESIGN SHOWN ON THE HIGH STREET PLANS FOR TEMPORARY SUPPORT OF EXCAVATION IS ONE REPRESENTATIVE DESIGN THAT MAY BE USED. THE CONTRACTOR MAY CONSTRUCT THE DESIGN SHOWN ON THE PLANS OR PREPARE AN ALTERNATE DESIGN TO SUPPORT THE SIDES OF EXCAVATION. IF CONSTRUCTING AN ALTERNATE DESIGN FOR TEMPORARY SUPPORT OF EXCAVATION, PREPARE AND PROVIDE PLANS IN ACCORDANCE WITH CMS 501.05. THE DEPARTMENT WILL PAY FOR THE TEMPORARY SUPPORT OF EXCAVATION AT THE CONTRACT LUMP SUM PRICE FOR COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN. NO ADDITIONAL PAYMENT WILL BE MADE FOR PROVIDING AN ALTERNATE DESIGN. ALL SHORING BEYOND THE LATERAL LIMITS OF THE HIGHT STREET BRIDGE SHALL BE INCLUDED FOR PAYMENT WITH THE CAPS.

ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN

FINISH TOP OF BACKWALL IN LOCATIONS ADJACENT TO SIDEWALKS WITH A BUFF WASH FINISH PER THE STRUCTURE AESTHETIC PLANS.

AFTER CONDUITS ARE PLACED THROUGH THE UTILITY BLOCKOUTS IN THE ABUTMENT BACKWALLS, FILL THE VOIDS USING NON-SHRINK MORTAR CONFORMING TO CMS 705.22.

ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, SIDEWALK, AS PER PLAN:
ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)
ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)

SEE STRUCTURE AESTHETIC PLANS FOR DETAILS.

ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT

THE COLOR FOR THE IZEU FINISH COAT FOR ALL STRUCTURAL STEEL SHALL BE FEDERAL COLOR No. 17038 (BLACK)

6 ITEM 524 - DRILLED SHAFTS, 96" DIAMETER, ABOVE BEDROCK, AS PER PLAN

THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS PER ITEM 524 EXCEPT THE FOLLOWING: THE COARSE AGGREGATE SIZE FOR ALL DRILLED SHAFTS SHALL BE A MAXIMUM OF NO. 8.

ALL DRILLED SHAFTS SHALL BE CONSTRUCTED FULL DEPTH FROM THE REQUIRED BOTTOM ELEVATION TO THE PROPOSED TOP PLAN ELEVATION USING THE TEMPORARY CASING CONSTRUCTION METHOD OF HOLE EXCAVATION AS DETAILED IN C&MS 524.04.C. NO OTHER METHODS OF HOLE EXCAVATION SHALL BE PERMITTED.

THE CONSTRUCTION TOLERANCE FOR TANGET SHAFT INSTALLATION UNDER SECTION 524.14 SHALL BE WITHIN ½" OF THE PLAN LOCATION IN THE HORIZONTAL PLANE AT THE PLAN ELEVATION FOR THE TOP OF THE SHAFT.

THE DRILLED SHAFT CAP AND P.E.J.F. JOINTS SHALL BE ACCURATELY PLACED ACCORDING TO THE DESIGN PLAN. IF THE LOCATIONS OF THE INSTALLED DRILLED SHAFTS VARY FROM THE DESIGN PLAN AND RESULT IN THE P.E.J.F. IN THE DRILLED SHAFT CAP FALLING OVER A DRILLED SHAFT INSTEAD OF BETWEEN SHAFTS, ALL VERTICAL SHAFT BARS INTERFERING WITH, OR CROSSING, THE CAP JOINT SHALL BE CUT FLUSH WITH THE TOP OF THE DRILLED SHAFT SO THAT BOTH SIDES OF THE CAP ARE NOT TIED TOGETHER BY SHAFT REINFORCING STEEL. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO CUTTING ANY REINFORCING STEEL. THE DEPARTMENT WILL CONSIDER THIS WORK AS INCIDENTAL AND SHALL BE INCLUDED WITH ITEM 524 FOR PAYMENT.

ITEM 524-DRILLED SHAFTS, MISC.: CSL TESTING, 96" DIAMETER SHAFT

PERFORM INTEGRITY TESTING ON ONE OF THE DRILLED SHAFTS AT THE FORWARD ABUTMENT BY CROSSHOLE SONIC LOGGING (CSL). PERFORM CSL TESTING PER ASTM D6760, "STANDARD TEST METHOD FOR INTEGRITY TESTING OF CONCRETE DEEP FOUNDATIONS BY ULTRASONIC CROSSHOLE TESTING," AND PER THE PROJECT SPECIAL PROVISIONS

ITEM 894 - THERMAL INTEGRITY PROFILER (T.I.P.) TEST

PERFORM INTEGRITY TESTING ON ALL OF THE DRILLED SHAFTS AT THE FORWARD ABUTMENT BY THERMAL INTEGRITY PROFILING (TIP). PERFORM TIP TESTING PER ASTM D7949, "STANDARD TEST METHODS FOR THERMAL INTEGRITY PROFILING OF CONCRETE DEEP FOUNDATIONS," METHOD B, AND PER SUPPLEMENTAL SPECIFICATION 894

ABBREVIATIONS

ABUT.	ABUTMENT	MIN.	MINIMUM
BRG.	BEARING	ADDIT.	ADDITIONAL
BOT.	BOTTOM	FRWD.	FORWARD
BTWN.	BETWEEN	SPL.	SPLICE
CONST. JT., C.J.	CONSTRUCTION JOINT	CLR.	CLEAR
B.S.	BOTH SIDES	P.C.P.P.	PERFORATED CORRUGATED PLASTIC PIPE
N.S.	NEAR SIDE	N.P.C.P.P.	NON-PERFORATED CORRUGATED PLASTIC PIPE
F.S.	FAR SIDE		
SER.	SERIES		
TYP.	TYPICAL		
EQ.	EQUAL		
DIM.	DIMENSION		
SPA.	SPACES		
EA.	EACH		
P.E.J.F.	PREFORMED EXPANSION JOINT FILLER		

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	RSN	11-5-23

DESIGN AGENCY: GPD GROUP® Glaus, Pyle, Schomer, Burns & DeHaven, Inc. 1801 Watermark Drive, Suite 210, Columbus, OH 43215 614.210.0751

DESIGNED	DRAWN	REVIEWED	DATE
DGN	RPR	TJW	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RHC		2510024	

GENERAL NOTES
BRIDGE NO. FRA-70-1405C
S. HIGH STREET (U.S. 23D) OVER I-70/71

FRA-70-14.05C
PID No. 105596

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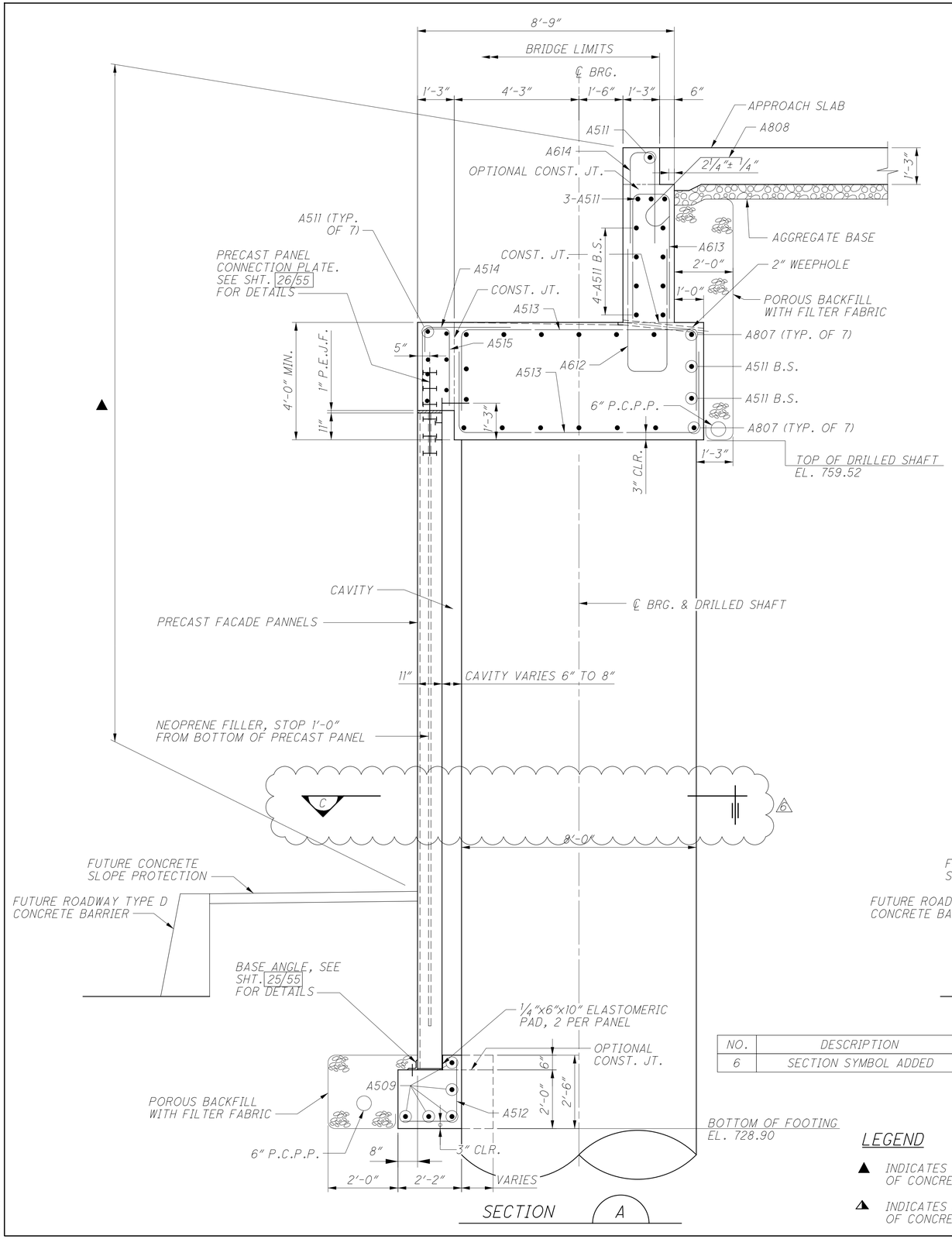

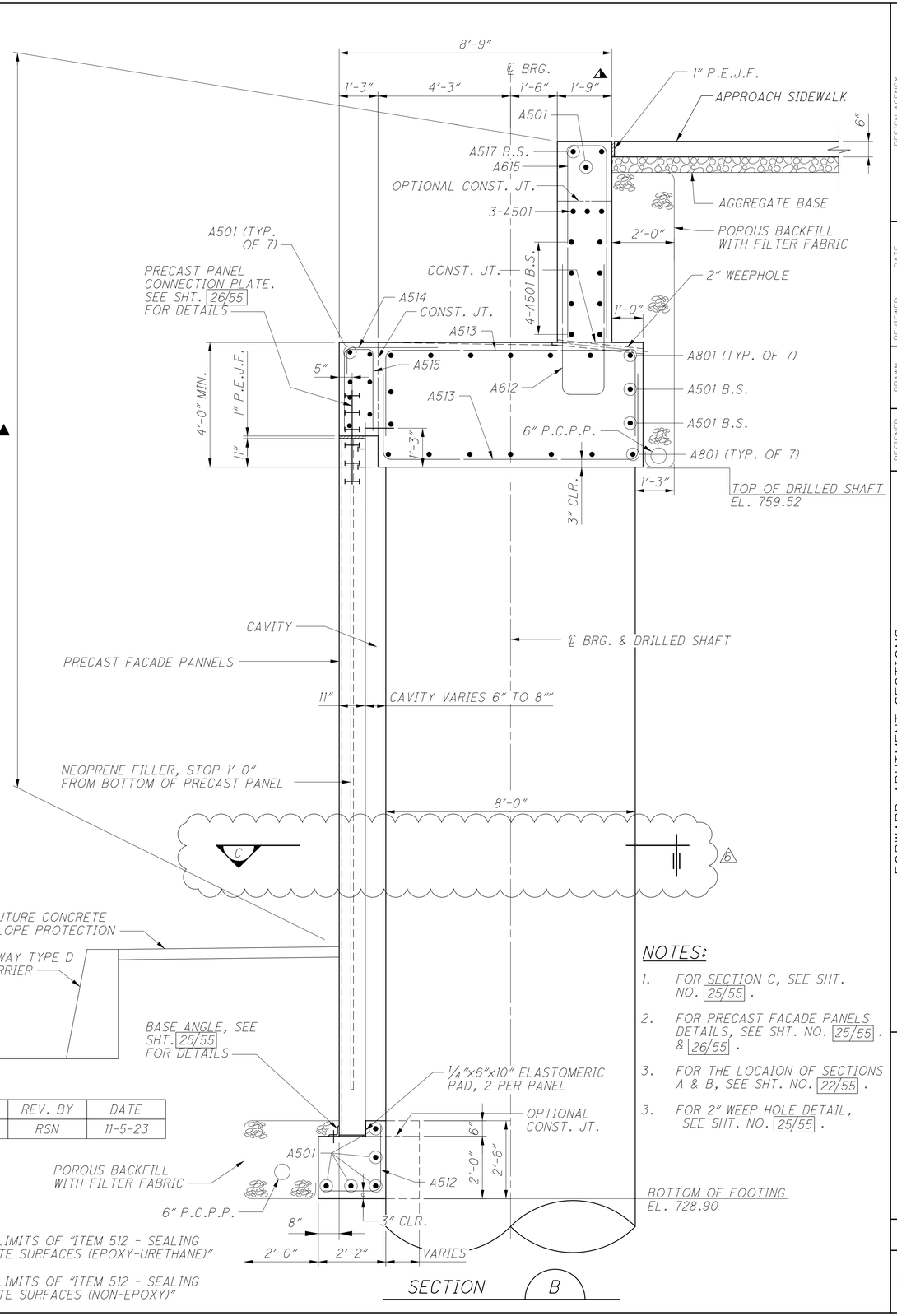

NO.	DESCRIPTION	REV. BY	DATE
6	SECTION SYMBOL ADDED	RSN	11-5-23

LEGEND

▲ INDICATES LIMITS OF "ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)"

⚠ INDICATES LIMITS OF "ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)"

NOTES:

1. FOR SECTION C, SEE SHT. NO. 25/55 .
2. FOR PRECAST FACADE PANELS DETAILS, SEE SHT. NO. 25/55 . & 26/55 .
3. FOR THE LOCAION OF SECTIONS A & B, SEE SHT. NO. 22/55 .
3. FOR 2" WEEP HOLE DETAIL, SEE SHT. NO. 25/55 .

DESIGN AGENCY
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
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614.210.1591
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DESIGNED	DRAWN	REVIEWED	DATE
RHC/RSN	RPR	TJW	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DGN		2510024	

FORWARD ABUTMENT SECTIONS
BRIDGE NO. FRA-70-1405C
S. HIGH STREET (U.S. 23D) OVER I-70/71

FRA-70-14.05C
PID No. 105596

24/55

225/395

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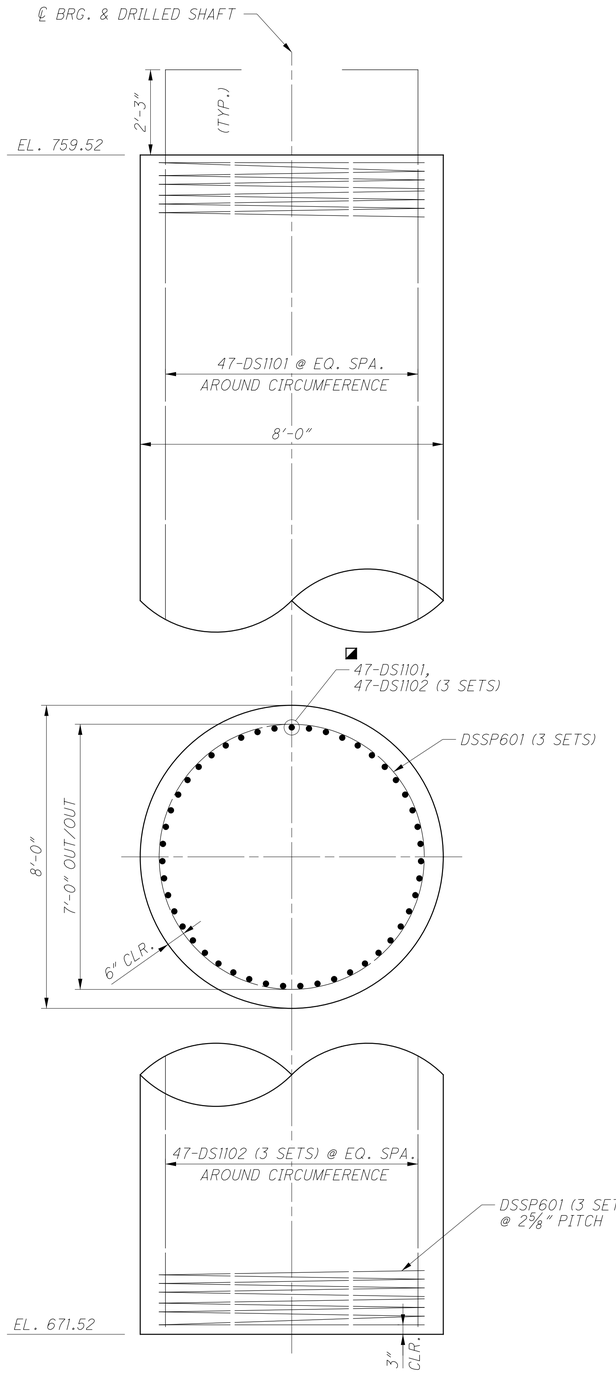
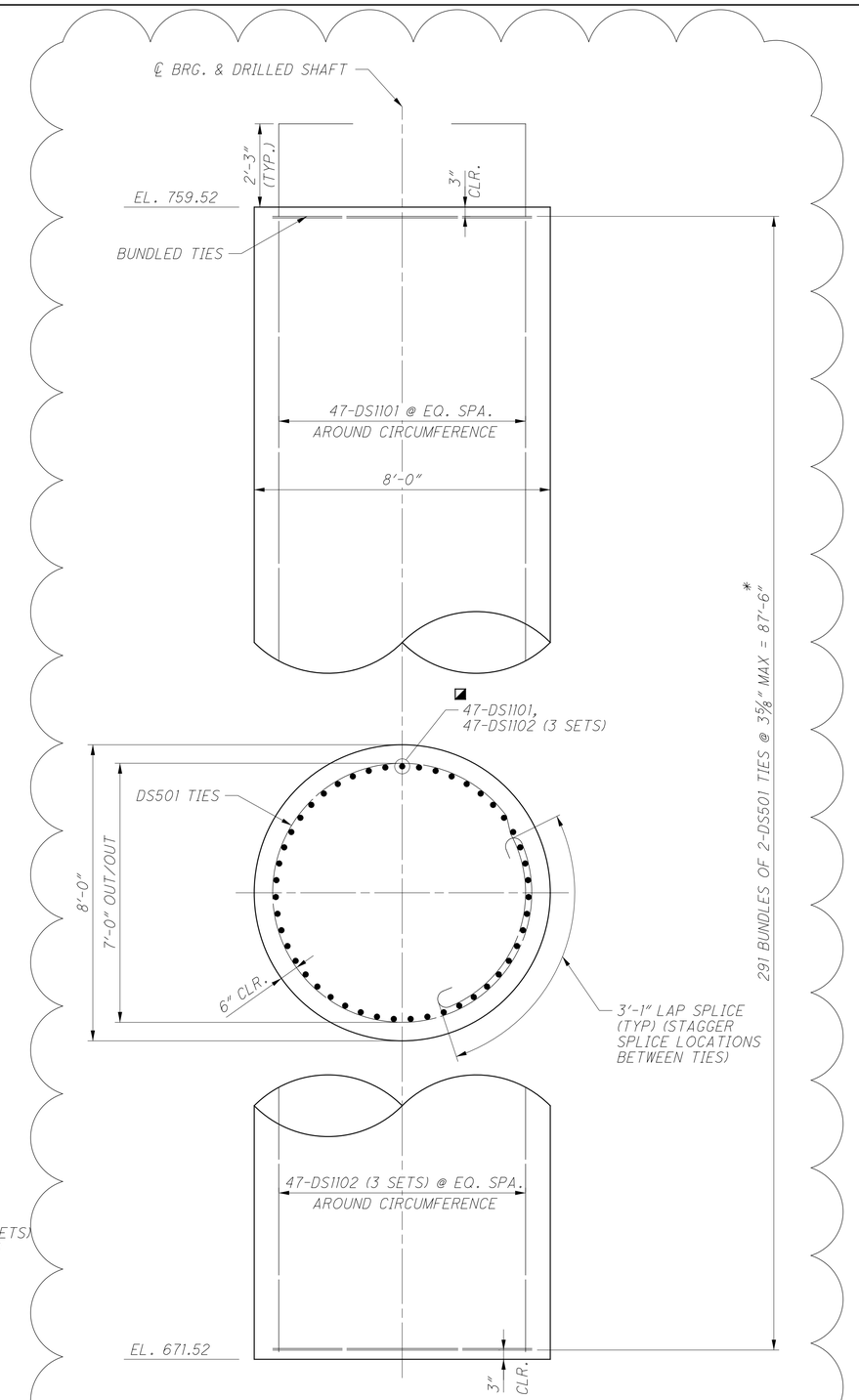


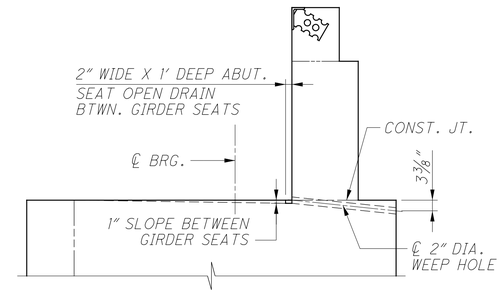
SECTION C

DRILLED SHAFT REINFORCING - OPTION 1



SECTION C

DRILLED SHAFT REINFORCING - OPTION 2



FORWARD ABUTMENT DRAINAGE DETAIL

NO.	DESCRIPTION	REV. BY	DATE
6	DRILLED SHAFT REINFORCING OPTION-2 ADDED	RSN	11-5-23

LEGEND:

■ MINIMUM LAP LENGTH OF 8'-7" LENGTH FOR NO. 11 VERTICAL BARS IN DRILLED SHAFT.

⚠6 * THE DS501 TIES MUST BE A MINIMUM OF 3.125" SPACING

DESIGN AGENCY

GPD GROUP

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DESIGNED	DRAWN	REVIEWED	DATE
DGN/RSN	JMH	TJW	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RHC		2510024	

FORWARD ABUTMENT DRILLED SHAFT DETAILS

BRIDGE NO. FRA-70-1405C

S. HIGH STREET (U.S. 23D) OVER I-70/71

FRA-70-14.05C

PID No. 105596

25/55

226/395

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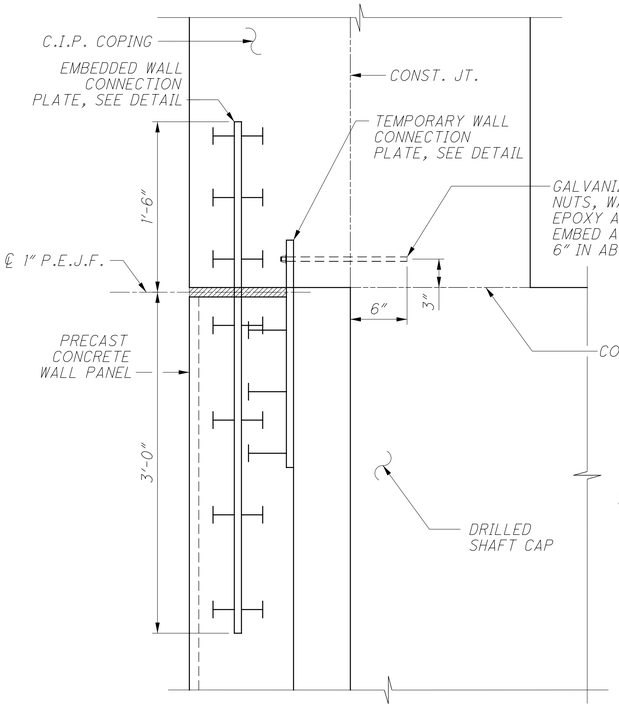
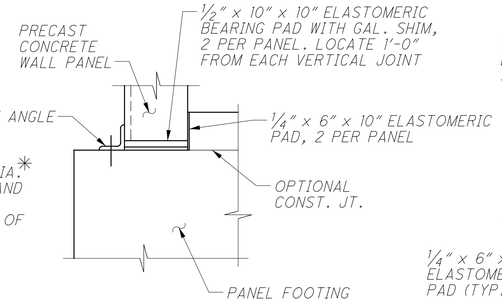
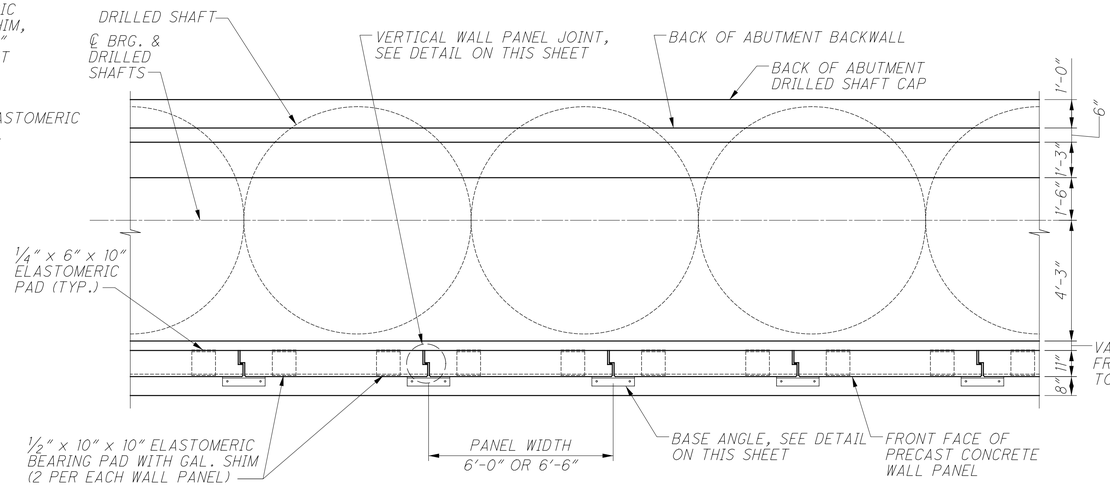


TOP WALL PANEL CONNECTION DETAIL

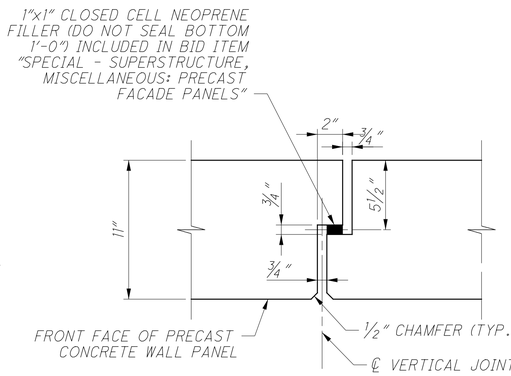
* - INSTALL ¾" EPOXY ANCHOR PRIOR TO THE CONSTRCTION OF THE C.I.P. COPING

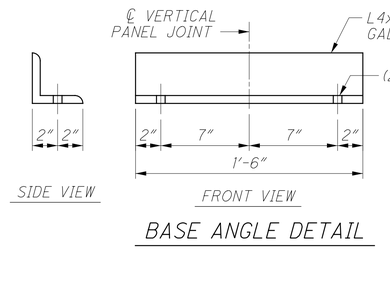


WALL BASE DETAILS

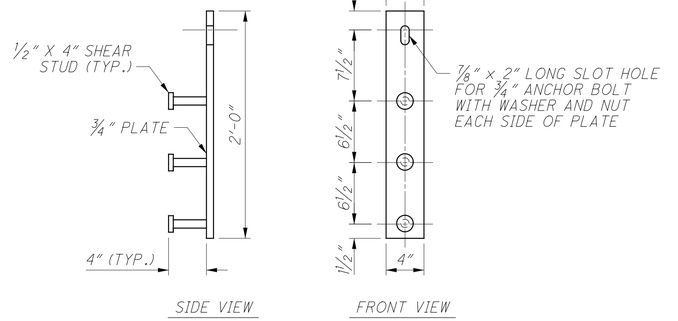


TYPICAL DRILLED SHAFT AND FOOTING PLAN

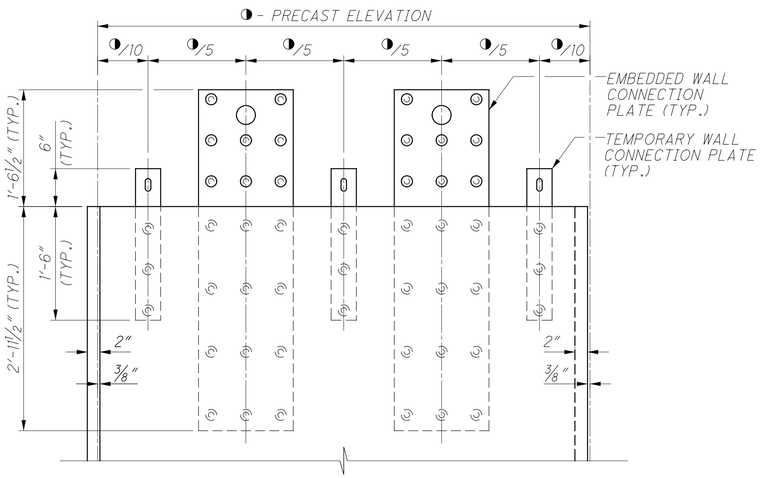




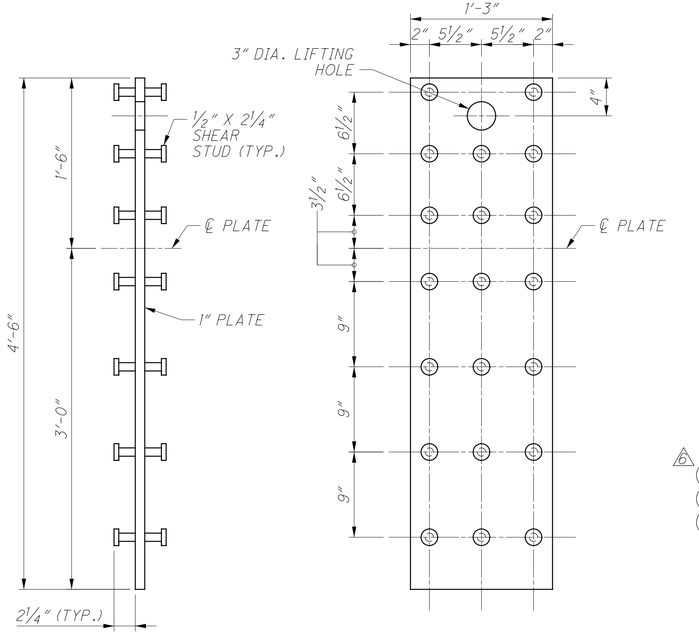
BASE ANGLE DETAIL



TEMPORARY WALL CONNECTION PLATE



PRECAST WALL PLATE ELEVATION



EMBEDDED WALL CONNECTION PLATE

NOTES:

1. THE CONTRACTOR OR PRECAST PANEL MANUFACTURER IS RESPONSIBLE FOR DESIGNING OF THE LIFTING DEVICE. A MODIFICATION TO THE CONNECTION PLATE AS SHOWN MAY BE REQUIRED TO RESIST TEMPORARY CONSTRUCTION LOADS INCLUDING BUT NOT LIMITED TO WIND LOAD DURING ERECTION.
2. ALL PANEL RELATED CONNECTION HARDWARE: PLATES, EPOXY ANCHORS, EXPANDED POLYSTYRENE, NEOPRENE FILLER, ELASTOMERIC BEARING PADS, CONCRETE FOUNDATION, AND REINFORCEMENT ARE INCIDENTAL TO BID ITEM "SPECIAL - STRUCTURE, MISC.: PRECAST FACADE PANELS". (6)
3. ALL ATTACHMENT PLATES, ANCHOR BOLTS, NUTS, WASHERS, AND OTHER STEEL APPURTENANCE ARE TO BE GALVANIZED, UNLESS NOTED OTHERWISE.

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	RSN	11-9-23

DESIGN AGENCY
GPD GROUP
Gbala, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215
Corporate Gbala, Pyle, Schomer, Burns & DeHaven, Inc. 1933

DESIGNED	DRAWN	REVIEWED	DATE
DGN/RSN	JMH	TJW	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RHC		2510024	

PRECAST FACADE PANEL CONNECTION DETAILS
BRIDGE NO. FRA-70-1405C
S. HIGH STREET (U.S. 23D) OVER I-70/71

FRA-70-14.05C
PID No. 105596

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MARK	NUMBER			LENGTH	WEIGHT	TYPE	DIMENSIONS						INC.
	REAR	FORWARD	TOTAL				A	B	C	D	E	R	
ABUTMENTS													
A501	112	54	166	30'-0"	5194	STR							
* A502	56		56	20'-8"	1207	STR							
* A503	56		56	19'-9"	1154	STR							
A504	2		2	11'-7"	24	19	9'-8"	0'-4"	2'-0"				
A505	2		2	19'-7"	41	19	17'-8"	0'-4"	2'-0"				
A506	4	4	8	7'-5"	62	13	2'-9"	1'-5"	1'-5"	2'-9"			
A507	4	4	8	7'-4"	61	13	2'-7"	1'-7"	1'-7"	2'-7"			
A508		5	5	24'-8"	129	STR							
A509		5	5	21'-4"	111	STR							
* A510		23	23	19'-11"	478	STR							
* A511		23	23	22'-11"	550	STR							
A512		98	98	3'-10"	392	1	1'-11"	2'-1"					
A513		194	194	14'-9"	2985	2	3'-5"	8'-2"	3'-5"				
A514		97	97	3'-8"	371	1	0'-10"	3'-0"					
A515		97	97	6'-2"	624	2	2'-9"	0'-11"	2'-9"				
A516		2	2	16'-6"	34	19	14'-7"	0'-4"	2'-0"				
A517		2	2	19'-6"	41	19	17'-7"	0'-4"	2'-0"				
A518	252		252	10'-0"	2628	2	3'-1"	4'-1"	3'-1"				
A519	2		2	10'-5"	22	STR							
A520	10		10	7'-7"	79	2	3'-4"	1'-2"	3'-4"				
A521	4	4	8	7'-6"	63	13	2'-6"	1'-10"	1'-10"	2'-6"			
A601	92		92	30'-0"	4146	STR							
A602	46		46	21'-8"	1497	STR							
A603	46		46	20'-6"	1416	STR							
A604	96		96	23'-5"	3376	STR							
A605	96		96	11'-11"	1718	2	4'-3"	3'-8 1/2"	4'-3"				
A606	95		95	12'-5"	1772	2	5'-8"	1'-5"	5'-8"				
A607	67		67	8'-11"	897	2	3'-11"	1'-5"	3'-11"				
A608	67		67	6'-9"	679	2	3'-1"	0'-11"	3'-1"				
A609	28		28	13'-1"	550	2	6'-0"	1'-5"	6'-0"				
A610	6	6	12	11'-1"	200	33	2'-1 1/2"	2'-10"					
A611	8	8	16	4'-2"	100	1	1'-7"	2'-9"					
A612		97	97	12'-7"	1833	2	5'-9"	1'-5"	5'-9"				
A613		64	64	9'-1"	873	2	4'-0"	1'-5"	4'-0"				
A614		64	64	6'-9"	649	2	3'-1"	0'-11"	3'-1"				
A615		33	33	10'-1"	500	2	4'-6"	1'-5"	4'-6"				
A616	96		96	8'-11"	1286	1	1'-0"	8'-1"					
A801	314		314	22'-8"	19003	STR							
A802	45		45	5'-0"	601	18	2'-10"	1'-0"	1'-0"				
A803	8	28	36	30'-0"	2884	STR							
* A804	4		4	23'-0"	246	STR							
* A805	4		4	21'-10"	233	STR							
* A806		14	14	22'-2"	829	STR							
* A807		14	14	25'-2"	941	STR							
A808		44	44	4'-9"	558	18	2'-7"	1'-0"	1'-0"				
A901	189		189	11'-5"	7336	1	1'-7"	10'-1"					
A902	189		189	23'-8"	15208	STR							
A903	4	4	8	3'-11"	107	STR							
A904	14	10	24	4'-1"	333	1	1'-7"	2'-9"					
				TOTAL	86,021	LBS							

LEGEND:

* BAR LENGTH IS MEASURED TO CONSTRUCTION JOINT AND NEEDS TO BE ADJUSTED ACCORDINGLY TO ACCOMMODATE MECHANICAL CONNECTOR

MARK	NUMBER	LENGTH	WEIGHT	TYPE	DIMENSIONS						INC.
					A	B	C	D	E	R	
DRILLED SHAFTS **											
● DSSP601	99	2986'-0"	444018	27	0'-2 5/8"	7'-0"	29'-3"				
●● DS501	19206	26'-0"	520828	200	7'-0"	3'-1"					
DS1101	1551	27'-0"	222493	1	2'-0"	25'-4"					
DS1102	4653	30'-0"	741642	STR							
		● TOTAL	1,408,153	LBS							
	6	●● TOTAL	1,484,963	LBS							

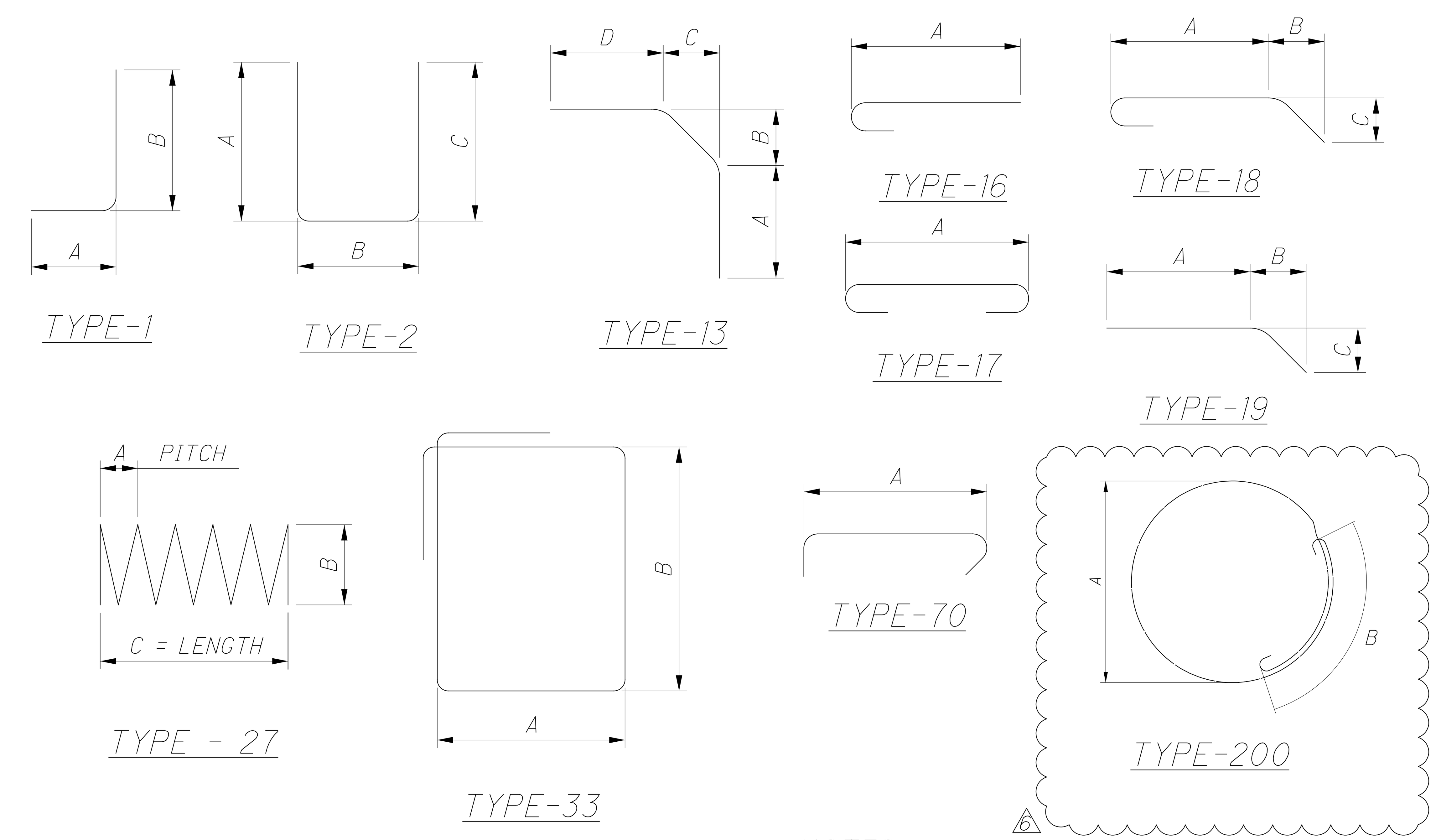
** DRILLED SHAFT REINFORCING IS SHOWN FOR INFORMATION ONLY AND SHALL BE INCLUDED WITH ITEM 524 FOR PAYMENT.

6

● USING SPIRAL CAGE - OPTION 1

●● USING TIES - OPTION 2

BAR BENDING DIAGRAM



NOTES:

1. BAR DIMENSIONS ARE OUT TO OUT UNLESS NOTED OTHERWISE.
2. ALL BARS ARE EPOXY COATED.
3. WHEN NO BAR LEG DIMENSIONS ARE SHOWN, IT INDICATES STANDARD BEND.
4. BAR SIZE AND LOCATION ARE INDICATED IN THE BAR MARK. THE FIRST ALPHABETICAL LETTER INDICATES LOCATION. THE NEXT DIGIT OF THE THREE DIGIT SERIES AND THE NEXT TWO DIGITS OF THE FOUR DIGIT SERIES INDICATE BAR SIZE NUMBER.

EXAMPLES: S 501 — NO. 5 SIZE BAR, SLAB

A 801 — NO. 8 SIZE BAR, ABUTMENT

NO.	DESCRIPTION	REV. BY	DATE
6	DRILLED SHAFT REINFORCING OPTION-2 ADDED	RSN	11-5-23

DESIGN AGENCY
GPD GROUP®
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215 614.210.0751

DESIGNED	DRAWN	REVIEWED	DATE
RPR	RPR	TJW	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DGN		2510024	

REINFORCING STEEL LIST
BRIDGE NO. FRA-70-1405C
S. HIGH STREET (U.S. 23D) OVER I-70/71

FRA-70-14.05C
PID No. 105596

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DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO THE 8TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2017 AND THE ODOT BRIDGE DESIGN MANUAL, 2019.

SPECIAL DESIGN SPECIFICATIONS

THIS BRIDGE REQUIRED THE USE OF A TWO-DIMENSIONAL MODEL USING THE GRILLAGE DESIGN METHOD TO ANALYZE THE STRUCTURE. THE COMPUTER PROGRAM USED FOR STRUCTURAL ANALYSIS WAS MDX. THE BRIDGE COMPONENTS DESIGNED BY THIS METHOD WERE THE STEEL GIRDERS AND CROSSFRAMES. THE LOADS WERE DISTRIBUTED AS FOLLOWS:

DEAD LOAD DISTRIBUTION: ALL DEAD LOADS (COPOSITE AND NON-COMPOSITE) INCLUDING WEIGHT OF GIRDERS, CROSSFRAMES, DECK, PARAPETS, PLANTER WALLS, SIDEWALKS, BENCHES, SOIL, TRELLIS, AND OTHER LANDSCAPING FEATURES WERE DISTRIBUTED TO TENTH POINTS ON EACH GIRDER USING THE TRIBUTARY AREA METHOD.

LIVE LOAD DISTRIBUTION: DISTRIBUTION FACTORS FOR LIVE LOAD MOMENT AND SHEAR AT INTERIOR AND EXTERIOR MEMBERS VARIED ACROSS THE STRUCTURE AND WERE BASED ON AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 4.

PEDESTRIAN LOAD DISTRIBUTION: A PEDESTRIAN LOAD WAS APPLIED TO THE ENTIRE DECK SURFACE EXCEPT FOR THE AREA UNDER THE PARAPET PLANTERS AND A FICTICIOUS 12-FOOT WIDE SINGLE LANE ON EACH CAP.

STANDARD DRAWINGS

REFER TO THE FOLLOWING ODOT STANDARD BRIDGE DRAWINGS:

EXJ-4-87	REVISED:	1-19-18
GSD-1-19	REVISED:	1-15-21

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

800	DATED:	1-20-23
867	DATED:	4-15-22
894	DATED:	4-16-21

LRFD LOAD MODIFIERS

OPERATIONAL IMPORTANCE: A LOAD MODIFIER OF 1.00 HAS BEEN ASSUMED FOR THE DESIGN OF THIS STRUCTURE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, ARTICLE 1.3.5 AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

DESIGN LOADING

LIVE LOAD MAINTENANCE VEHICLE H-10 TRUCK
NO FUTURE WEARING SURFACE (FWS)
SATURATED SOIL UNIT WEIGHT OF 0.200 KIPS/CU.FT.
PRECAST AND CAST-IN-PLACE CONCRETE UNIT WEIGHT OF 0.150 KIPS/CU.FT.
TRELLIS COLUMN WEIGHT OF 2.2 KIPS.
SCREEN WALL UNIT WEIGHT OF 0.180 KIPS/FT.
MATURE ELM TREE UNIT WEIGHT OF 3.3 KIPS/EACH
MATURE SPRUCE TREE UNIT WEIGHT OF 1.0 KIPS/EACH
PEDESTRIAN LIVE LOAD OF 0.065 KIPS/SQ.FT.

DESIGN STRESSES

CONCRETE CLASS QC4 - COMPRESSIVE STRENGTH 4.5 KSI (DRILLED SHAFTS)
CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (SUPERSTRUCTURE)
CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI (SUBSTRUCTURE)
REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI
STRUCTURAL STEEL - ASTM A709 GRADE 50 - YIELD STRENGTH 50 KSI

DECK PROTECTION METHOD

EPOXY COATED REINFORCING STEEL
2½" CONCRETE COVER
CLASS QC2 CONCRETE

MONOLITHIC WEARING SURFACE

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

CONSTRUCTION CONSTRAINTS

FILL THE VOID CREATED BY EXCAVATION FOR THE ABUTMENT FOOTING WITH TYPE B GRANULAR MATERIAL, 703.16.C. AFTER THE FOOTING AND THE BREASTWALL HAVE BEEN CONSTRUCTED, FILL THE VOID BEHIND EACH ABUTMENT UP TO THE BEAM SEAT ELEVATION AND FROM THE BEAM SEAT UP ON A 1:1 SLOPE TO THE SUBGRADE ELEVATION PRIOR TO CONSTRUCTING THE BACK WALL AND SETTING THE GIRDERS ON THE ABUTMENT.

FOUNDATION BEARING RESISTANCE

REAR ABUTMENT FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 5.57 (WEST CAP) AND 4.97 (EAST CAP) KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 7.71 (WEST CAP) AND 6.80 (EAST CAP) KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 18.09 KIPS PER SQUARE FOOT.

PIER FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 6.78 (WEST CAP) AND 6.66 (EAST CAP) KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 9.26 (WEST CAP) & 9.10 (EAST CAP) KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 16.42 KIPS PER SQUARE FOOT.

6 FORWARD ABUTMENT FOUNDATION, AS DESIGNED PRODUCE A MAXIMUM FACTORED LOAD OF 724 KIPS AT THE WEST CAP OF EACH DRILLED SHAFT AND 718 KIPS AT THE EAST CAP OF EACH DRILLED SHAFT. THIS LOAD IS RESISTED BY TIP RESISTANCE ONLY. THE FACTORED RESISTANCE PROVIDED BY THE DRILLED SHAFT TIP IS 1,023 KIPS.

DECK PLACEMENT DESIGN ASSUMPTIONS

THE FOLLOWING ASSUMPTIONS OF CONSTRUCTION MEANS AND METHODS WERE MADE FOR THE ANALYSIS AND DESIGN OF THE SUPERSTRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE FALSEWORK SUPPORT SYSTEM WITHIN THESE PARAMETERS AND WILL ASSUME RESPONSIBILITY FOR SUPERSTRUCTURE ANALYSIS FOR DEVIATION FROM THESE DESIGN ASSUMPTIONS.
AN EIGHT WHEEL FINISHING MACHINE WITH A MAXIMUM WHEEL LOAD OF 2.5 KIPS.
A MINIMUM OUT-TO-OUT WHEEL SPACING AT EACH END OF THE MACHINE OF 103".
A MAXIMUM SPACING OF OVERHANG FALSEWORK BRACKETS OF 48".
A MAXIMUM DISTANCE FROM THE CENTERLINE OF THE FASCIA GIRDER TO THE FACE OF THE SAFETY HANDRAIL OF 65".

STRUCTURE GROUNDING

GROUND THE PROPOSED BRIDGE ACCORDING TO THE REQUIREMENTS OF ODOT STD. DWG. HL-50.21 - STRUCTURE GROUNDING. THE FOLLOWING BRIDGE COMPONENTS SHALL BE CONNECTED TO THE GROUNDING SYSTEM: ALL STRUCTURAL STEEL, UTILITY SUPPORTS, STEEL SCREEN WALL COMPONENTS, STEEL TRELLISES, STEEL FIN WALLS, METAL BENCHES, ALUMINUM PLANTERS, AND LIGHT POLES.

ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN

THE DESIGN SHOWN ON THE HIGHT STREET BRIDGE PLANS FOR TEMPORARY SUPPORT OF EXCAVATION IS ONE REPRESENTATIVE DESIGN THAT MAY BE USED TO CONSTRUCT THE PROJECT. THE CONTRACTOR MAY CONSTRUCT THE DESIGN SHOWN ON THE PLANS OR PREPARE AN ALTERNATE DESIGN TO SUPPORT THE SIDES OF EXCAVATIONS. IF CONSTRUCTING AN ALTERNATE DESIGN FOR TEMPORARY SUPPORT OF EXCAVATION, PREPARE AND PROVIDE PLANS IN ACCORDANCE WITH CMS 501.05. THE DEPARTMENT WILL PAY FOR THE TEMPORARY SUPPORT OF EXCAVATION AT THE CONTRACT LUMP SUM PRICE FOR COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN. NO ADDITIONAL PAYMENT WILL BE MADE FOR PROVIDING AN ALTERNATE DESIGN. ALL SHORING BEYOND THE THE LATERAL LIMITS OF THE HIGH STREET BRIDGE SHALL BE INCLUDED FOR PAYMENT WITH THE CAPS.

ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK, AS PER PLAN

PROVIDE BUFF WASH FINISH ON EDGES AND BOTTOM OF DECK OVERHANGS AS DETAILED IN THE PLANS.

ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN
ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)
ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)
ITEM 607 - FENCE, MISC.: WALL MOUNTED TYPE A (W/ VANDAL MESH)

SEE STRUCTURE AESTHETIC PLANS FOR DETAILS.

ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN

FINISH TOP OF BACKWALL IN LOCATIONS ADJACENT TO SIDEWALKS WITH A BUFF WASH FINISH PER THE STRUCTURE AESTHETIC PLANS.

AFTER CONDUITS ARE PLACED THROUGH THE UTILITY BLOCKOUTS IN THE ABUTMENT BACKWALLS, FILL THE VOIDS USING NON-SHRINK MORTAR CONFORMING TO CMS 705.22.

ITEM 511 - CLASS QC2 CONCRETE, MISC.: EXPANSION DEVICE SLAB

THIS ITEM SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY TO INSTALL EXPANSION DEVICE SLABS AROUND EACH CAP AND AS DETAILED IN THE PLANS. CONCRETE FOR THIS ITEM REQUIRES QC/QA. FINISH TOP OF EXPANSION DEVICE SLAB WITH A BUFF WASH FINISH AND PLACE CONTROL JOINTS PER THE AESTHETIC ENHANCEMENT PLANS. ALL WORK SHALL BE IN ACCORDANCE WITH CMS 511. MEASUREMENT FOR ALL WORK DESCRIBED ABOVE SHALL BE CUBIC YARDS OF CONCRETE, AND PAYMENT SHALL BE INCLUDED AT THE CONTRACT UNIT BID PRICE FOR ITEM 511 - CLASS QC2 CONCRETE, MISC.: EXPANSION DEVICE SLAB.

ITEM 511 - CLASS QC2 CONCRETE, MISC.: TRELLIS & STAIR BASES

THIS ITEM SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY TO INSTALL CAST-IN-PLACE TRELLIS & STAIR BASES AS DETAILED IN THE PLANS. TRELLIS & STAIR BASE REINFORCING STEEL IS INCLUDED WITH THIS ITEM FOR PAYMENT, AND CONCRETE FOR THIS ITEM REQUIRES QC/QA. ALL WORK SHALL BE IN ACCORDANCE WITH CMS 509 & 511. MEASUREMENT FOR ALL WORK DESCRIBED ABOVE SHALL BE CUBIC YARDS OF CONCRETE, AND PAYMENT SHALL BE INCLUDED AT THE CONTRACT UNIT BID PRICE FOR ITEM 511 - TRELLIS & STAIR BASES.

ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT

ALL NEW STRUCTURAL STEEL SHALL BE PAINTED USING THE IZEU COATING SYSTEM. THE URETHANE TOP COAT SHALL BE TINTED TO MEET FEDERAL COLOR No. 17038 (BLACK).

ITEM 524 - DRILLED SHAFTS, 96" DIAMETER, ABOVE BEDROCK, AS PER PLAN

THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS PER ITEM 524 EXCEPT THE FOLLOWING:
THE COARSE AGGREGATE SIZE FOR ALL DRILLED SHAFTS SHALL BE A MAXIMUM OF NO. 8.

ALL DRILLED SHAFTS SHALL BE CONSTRUCTED FULL DEPTH FROM THE REQUIRED BOTTOM ELEVATION TO THE PROPOSED TOP PLAN ELEVATION USING THE TEMPORARY CASING CONSTRUCTION METHOD OF HOLE EXCAVATION AS DETAILED IN C&MS 524.04.C. NO OTHER METHODS OF HOLE EXCAVATION SHALL BE PERMITTED.

THE CONSTRUCTION TOLERANCES FOR TANGENT SHAFT INSTALLATION UNDER SECTION 524.14 SHALL WITHIN ½" OF THE PLAN LOCATION IN THE HORIZONTAL PLANE AT THE PLAN ELEVATION FOR THE TOP OF THE SHAFT.

6 THE DRILLED SHAFT CAP AND P.E.J.F. JOINTS SHALL BE ACCURATELY PLACED ACCORDING TO THE DESIGN PLAN. IF THE LOCATIONS OF THE INSTALLED DRILLED SHAFTS VARY FROM THE DESIGN PLAN AND RESULT IN THE P.E.J.F. IN THE DRILLED SHAFT CAP FALLING OVER A DRILLED SHAFT INSTEAD OF BETWEEN SHAFTS, ALL VERTICAL SHAFT BARS INTERFERING WITH, OR CROSSING, THE CAP JOINT SHALL BE CUT FLUSH WITH THE TOP OF THE DRILLED SHAFT SO THAT BOTH SIDES OF THE CAP ARE NOT TIED TOGETHER BY SHAFT REINFORCING STEEL. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO CUTTING ANY REINFORCING STEEL. THE DEPARTMENT WILL CONSIDER THIS WORK AS INCIDENTAL AND SHALL BE INCLUDED WITH ITEM 524 FOR PAYMENT.

ITEM 524 - DRILLED SHAFTS, MISC.: CSL TESTING, 96" DIAMETER SHAFT

PERFORM INTEGRITY TESTING ON ONE OF THE DRILLED SHAFTS AT THE FORWARD ABUTMENT ON BOTH THE EAST AND WEST CAP, BY CROSSHOLE SONIC LOGGING (CSL). PERFORM CSL TESTING PER ASTM D6760, "STANDARD TEST METHOD FOR INTEGRITY TESTING OF CONCRETE DEEP FOUNDATIONS BY ULTRASONIC CROSSHOLE TESTING," AND PER THE PROJECT SPECIAL PROVISIONS

ITEM 894 - THERMAL INTEGRITY PROFILER (T.I.P.) TEST

PERFORM INTEGRITY TESTING ON ALL OF THE DRILLED SHAFTS AT THE FORWARD ABUTMENT BY THERMAL INTEGRITY PROFILING (TIP). PERFORM TIP TESTING PER ASTM D7949, "STANDARD TEST METHODS FOR THERMAL INTEGRITY PROFILING OF CONCRETE DEEP FOUNDATIONS," METHOD B, AND PER SUPPLEMENTAL SPECIFICATION 894

ABBREVIATIONS:

ABUT.	ABUTMENT
BRG.	BEARING
B.S.	BOTH SIDES
C.I.P.	CAST-IN-PLACE
CLR.	CLEAR
CONC.	CONCRETE
CONST.	CONSTRUCTION
DIA.	DIAMETER
DIM.	DIMENSION
EL.	ELEVATION
EXIST.	EXISTING
EXP.	EXPANSION
FIX.	FIXED
FRWD.	FORWARD
F.S.	FAR SIDE OR FIELD SPLICE
JT.	JOINT
N.P.C.P.P.	NON-PERFORATED CORRUGATED PLASTIC PIPE
N.S.	NEAR SIDE
P.C.P.P.	PERFORATED CORRUGATED PLASTIC PIPE
P.E.J.F.	PREFORMED EXPANSION JOINT FILLER
PT.	POINT
SPA.	SPACED OR SPACES
STD. DWG.	STANDARD DRAWING
TYP.	TYPICAL
W/	WITH
W.P.	WORKING POINT

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	RSN	11-5-23

DESIGN AGENCY
GPD GROUP
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DESIGNED	DRAWN	REVIEWED	DATE
MOJ	MOJ	DGN	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RHC		2510032/2510034	

GENERAL NOTES
BRIDGE NO. FRA-70-1405E/W - CAPS
S. HIGH STREET (U.S. 23D) OVER I-70/71

FRA-70-14.05C
PID No. 105596

2 / 52

258
395

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11/9/2023
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ODOTCHAD

ESTIMATED QUANTITIES

CALCULATED BY: RHC DATE: 6-25-20
CHECKED BY: MOJ DATE: 6-29-20

ITEM	EXT.	TOTAL	PARTICIPATION		UNITS	DESCRIPTION	ABUTMENT	PIER	SUPER-STRUCTURE	GENERAL	REFERENCE SHEET NO.
			02/IMS/11	07/NHS/04/COL							
503	11100	LS	LS			COFFERDAMS AND EXCAVATION BRACING					
503	21100	2,872	2,048	824	CY	UNCLASSIFIED EXCAVATION	2,048	824			
509	10000	455,505	142,506	312,999	LB	EPOXY COATED REINFORCING STEEL	142,506	101,063	211,936		
511	34447	728		728	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK, AS PER PLAN			728		2
511	34451	118		118	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN			118		2
511	41012	320		320	CY	CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS		320			
511	44113	873	873		CY	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN	873				2
511	46512	722	521	201	CY	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	521	201			
511	53012	18		18	CY	CLASS QC2 CONCRETE, MISC.: EXPANSION DEVICE SLAB			18		
511	53012	33		33	CY	CLASS QC2 CONCRETE, MISC.: TRELLIS BASE AND STAIR BASE			33		
512	10050	608	85	523	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)	85		523		
512	10100	1,669	1,093	576	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	1,093	576			
512	33000	25	25		SY	TYPE 2 WATERPROOFING	25				
513	10200	14,970		14,970	LB	STRUCTURAL STEEL MEMBERS, LEVEL UF (CITY OF COLUMBUS DUCT BANK SUPPORT)			14,970		
513	10280	1,928,660 3	3	1,928,660	LB	STRUCTURAL STEEL MEMBERS, LEVEL 4		3	1,928,660		
513	20000	8,460		8,460	EACH	WELDED STUD SHEAR CONNECTORS			8,460		
514	00060	69,100		69,100	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT			69,100		
514	00066	69,100		69,100	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT			69,100		
516	11210	639		639	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL			639		
516	13600	327	327		SF	1" PREFORMED EXPANSION JOINT FILLER	327				
516	44101	20		20	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 11 1/2" x 1'-6" x 2.36" PAD WITH 1'-0 1/2" x 2'-1" BEVELED PLATE, AS PER PLAN			20		21
516	44101	20		20	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 1'-1" x 1'-8" x 2.59" PAD WITH 1'-2" x 2'-1" BEVELED PLATE, AS PER PLAN			20		21
516	44301	20		20	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 1'-9" x 2'-2" x 4.36" PAD WITH 1'-10" x 2'-11" BEVELED PLATE, AS PER PLAN			20		21
518	21200	140	140		CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	140				
518	40000	470	470		FT	6" PERFORATED CORRUGATED PLASTIC PIPE	470				
524	94997	1,848	1,848		FT	DRILLED SHAFTS, 96" DIAMETER, ABOVE BEDROCK, AS PER PLAN	1,848				2
524	95100	2	2		EACH	DRILLED SHAFTS,MISC.: CSL TESTING, 96" DIAMETER SHAFT	2				2 6
SPECIAL	53000200	LS		LS		STRUCTURES: CITY OF COLUMBUS DUCT BANK COMPLETE					3
SPECIAL	53000600	7,809	7,809		SF	STRUCTURES: PRECAST FACADE PANELS	7,809				3
607	98000	60	60		FT	FENCE, MISC.: WALL MOUNTED TYPE A (W/ VANDAL MESH)	60				
894	10000	21 6	21 6		EACH	THERMAL INTEGRITY PROFILING (TIP) TEST	21 6				2 6

NO.	DESCRIPTION	REV. BY	DATE
3	QUANTITY REVISED	DJC	10-23-23
6	QUANTITY REVISED	RSN	11-9-23

DESIGN AGENCY
GPD GROUP
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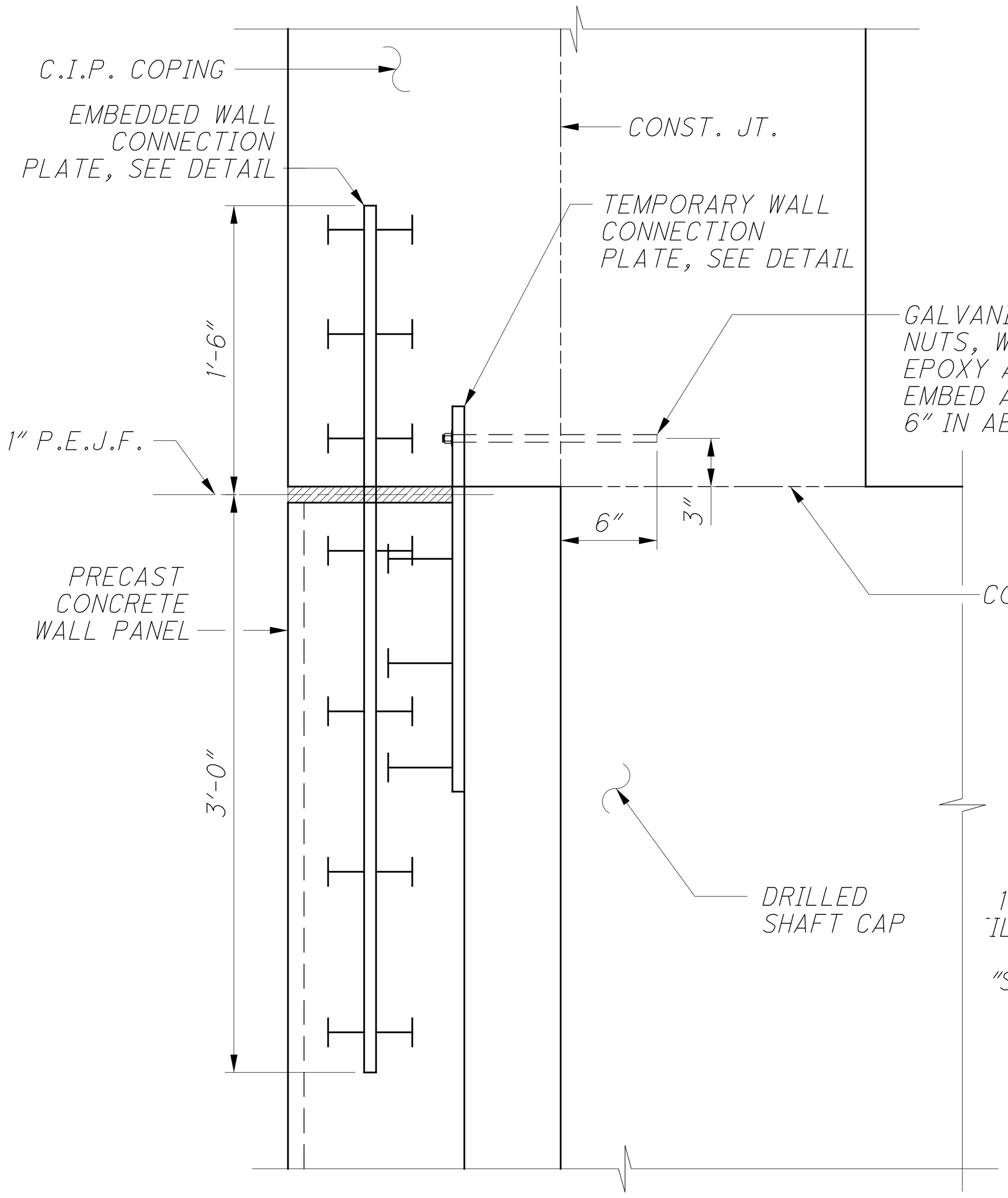
DESIGNED MOJ | CHECKED RHC
DRAWN MOJ | REVISED
REVIEWED TJW | DATE 4-21-23
STRUCTURE FILE NUMBER 2510032/2510034

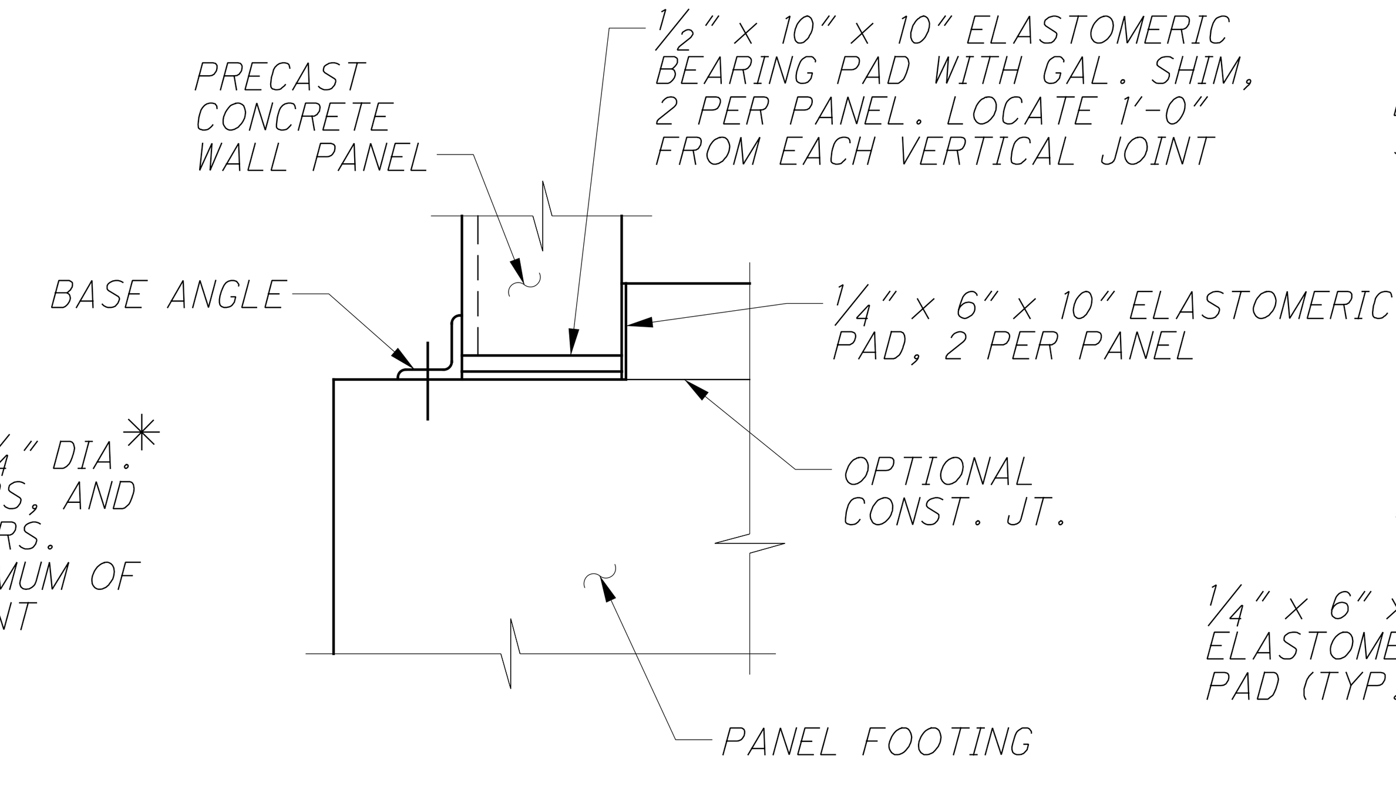
ESTIMATED QUANTITIES
BRIDGE NO. FRA-70-1405E/W - CAPS
S. HIGH STREET (U.S. 23D) OVER I-70/71

FRA-70-14.05C
PID No. 105596

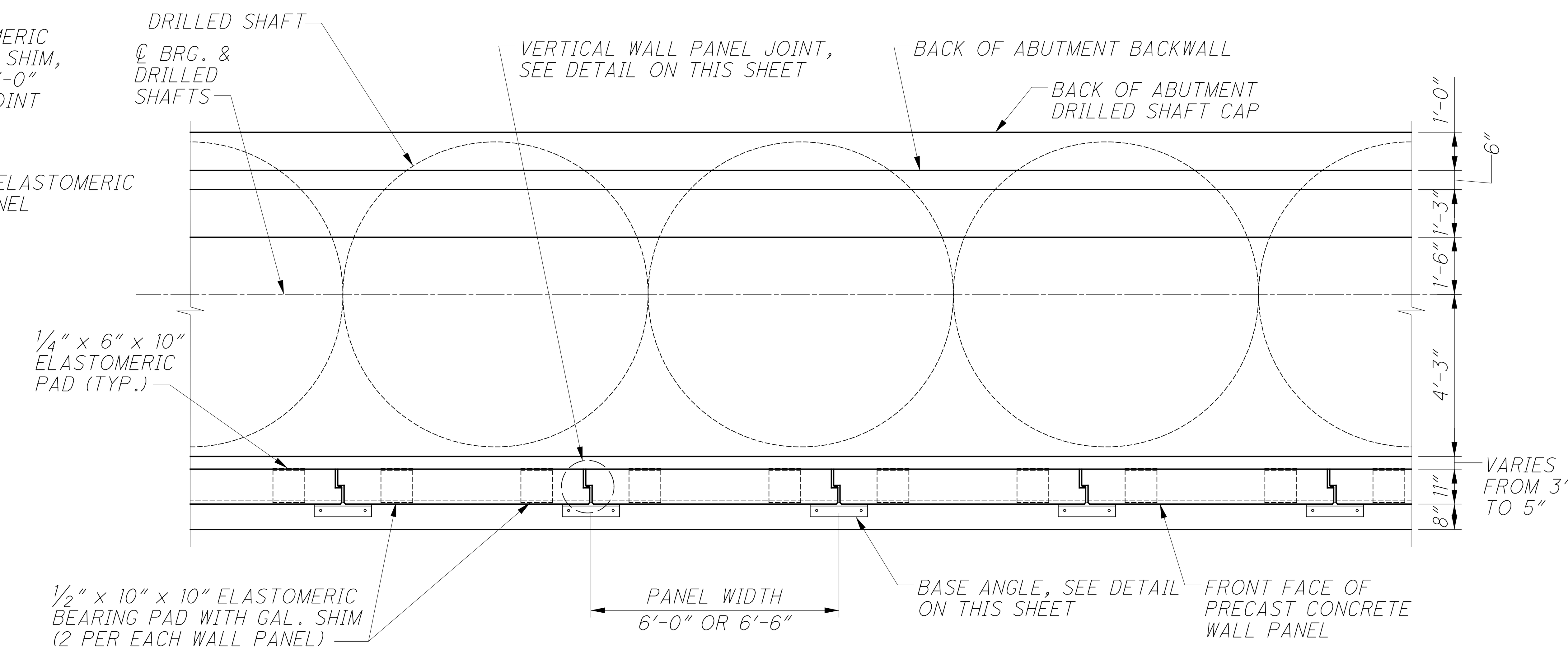


TOP WALL PANEL CONNECTION DETAIL

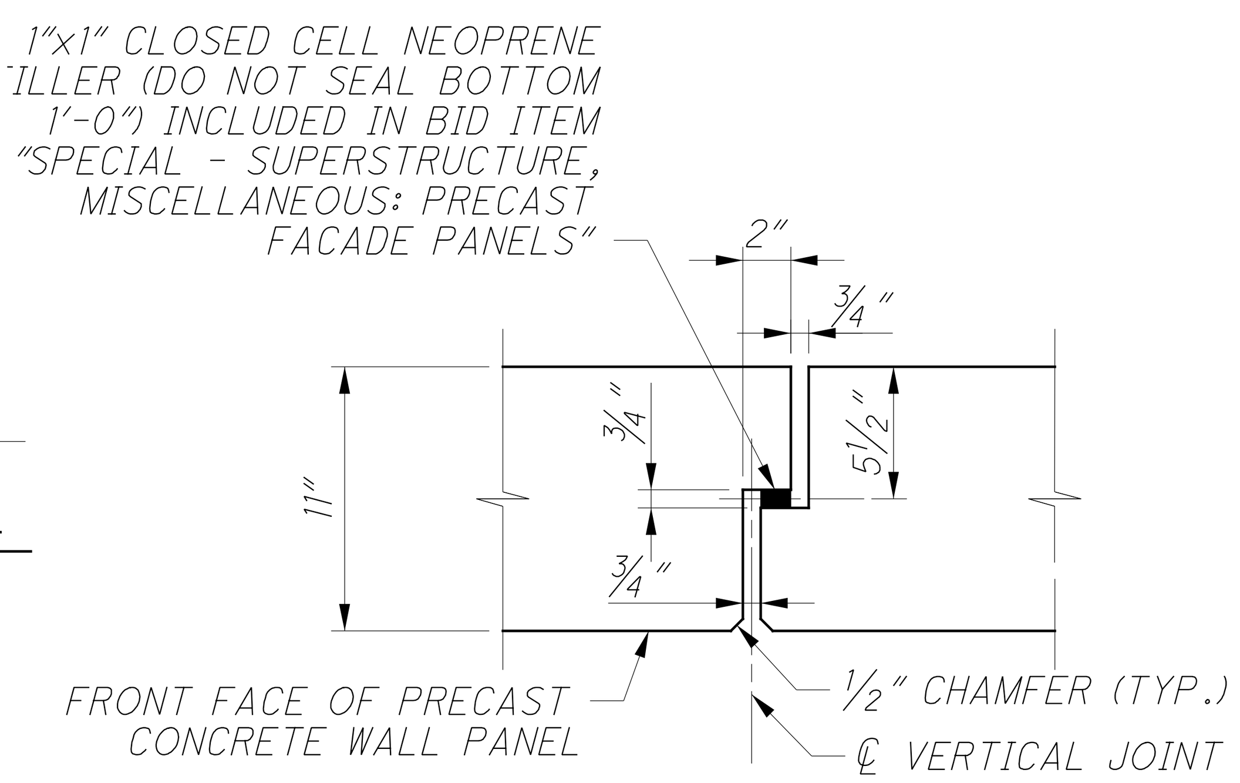
* - INSTALL ¾" EPOXY ANCHOR PRIOR TO THE CONSTRCTION OF THE C.I.P. COPING



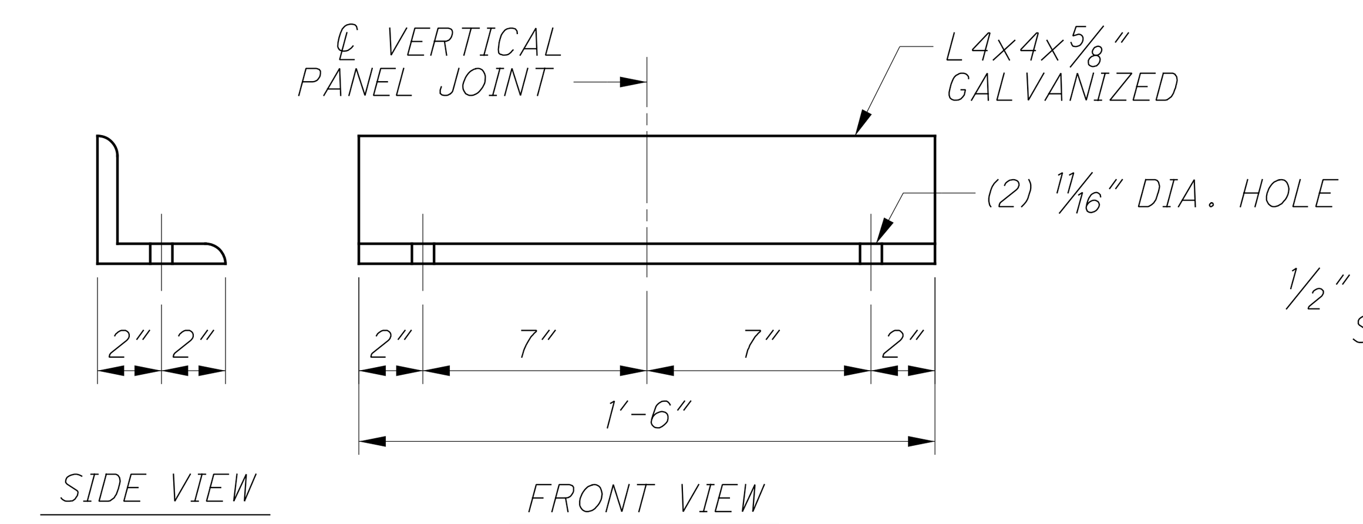
WALL BASE DETAILS



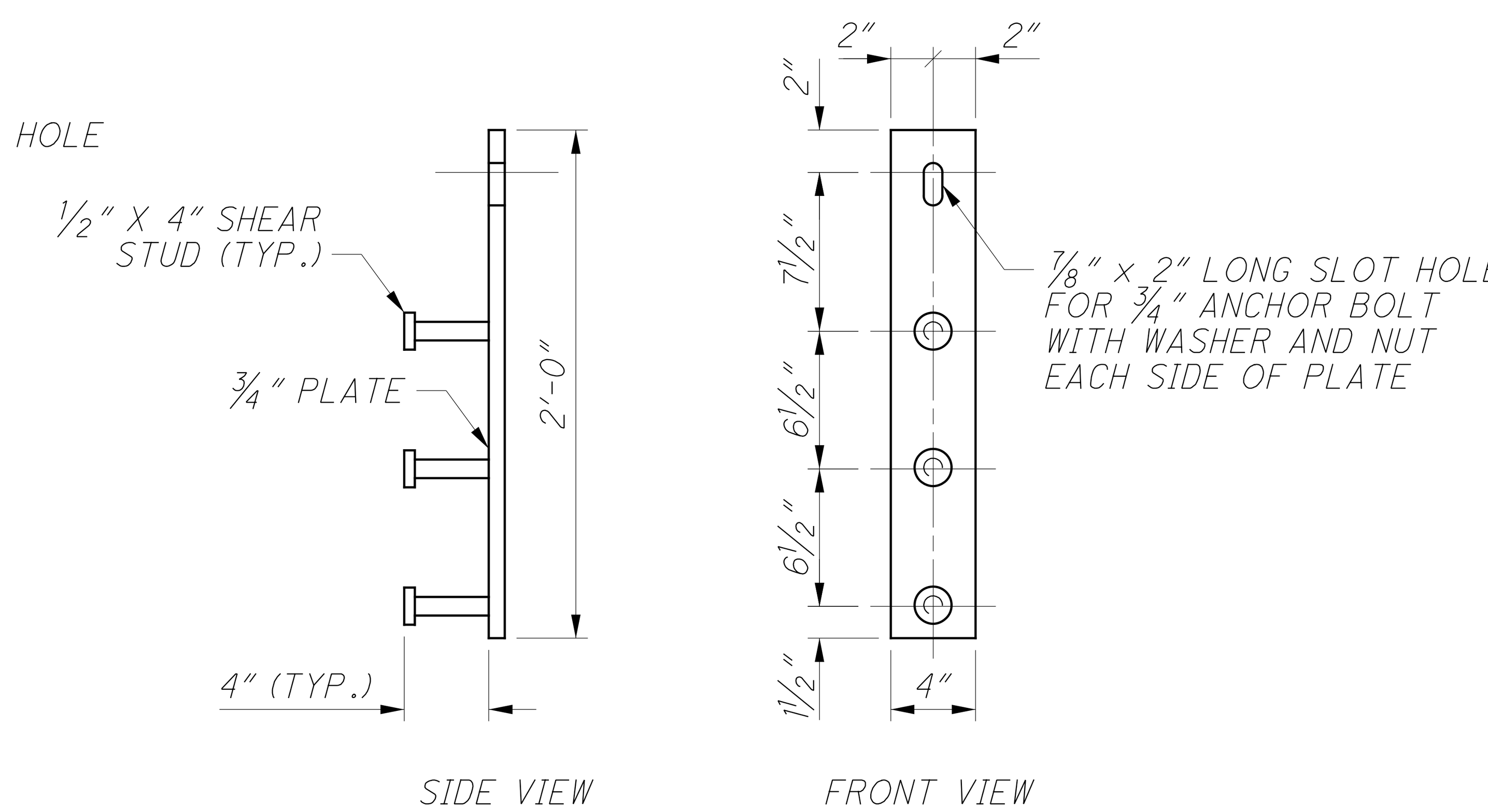
TYPICAL DRILLED SHAFT AND FOOTING PLAN



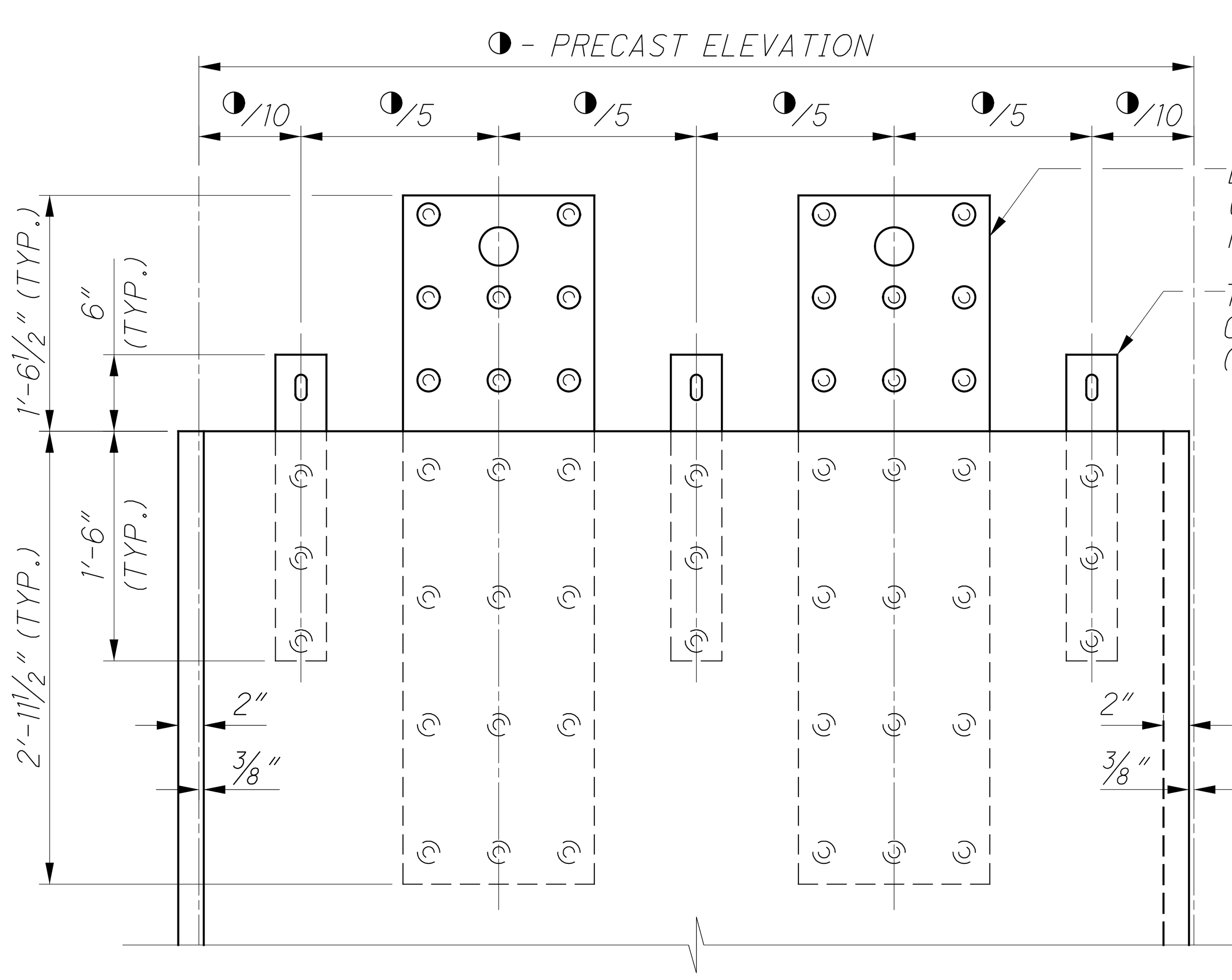
VERTICAL WALL PANEL JOINT DETAIL



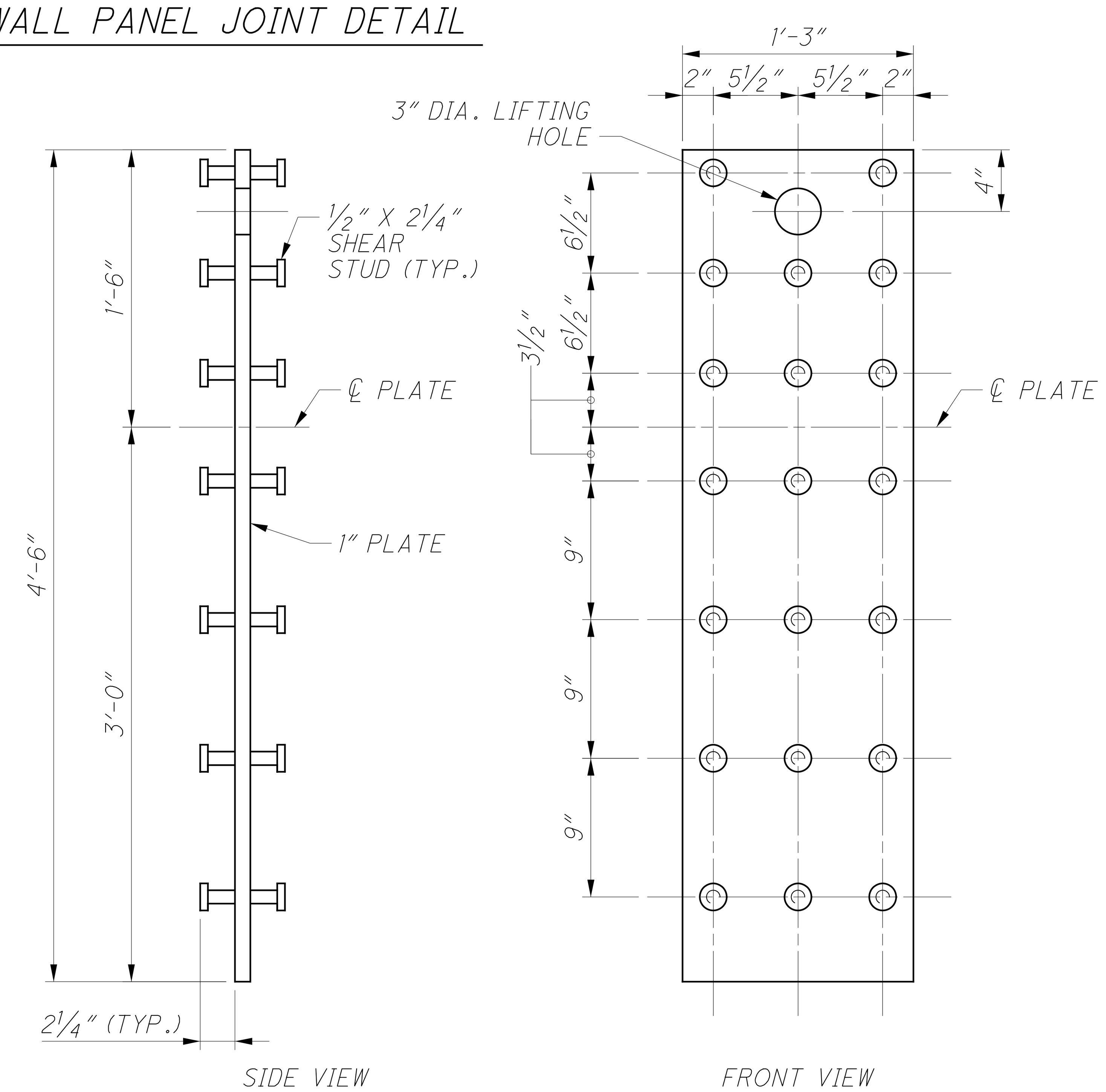
BASE ANGLE DETAIL



TEMPORARY WALL CONNECTION PLATE



PRECAST WALL PLATE ELEVATION



EMBEDDED WALL CONNECTION PLATE

NOTES:

1. THE CONTRACTOR OR PRECAST PANEL MANUFACTURER IS RESPONSIBLE FOR DESIGNING OF THE LIFTING DEVICE. A MODIFICATION TO THE CONNECTION PLATE AS SHOWN MAY BE REQUIRED TO RESIST TEMPORARY CONSTRUCTION LOADS INCLUDING BUT NOT LIMITED TO WIND LOAD DURING ERECTION.
2. ALL PANEL RELATED CONNECTION HARDWARE: PLATES, EPOXY ANCHORS, EXPANDED POLYSTYRENE, NEOPRENE FILLER, ELASTOMERIC BEARING PADS, CONCRETE FOUNDATION, AND REINFORCEMENT ARE INCIDENTAL TO BID ITEM "SPECIAL - STRUCTURE, MISC.: PRECAST FACADE PANELS". (6)
3. ALL ATTACHMENT PLATES, ANCHOR BOLTS, NUTS, WASHERS, AND OTHER STEEL APPURTENANCE ARE TO BE GALVANIZED, UNLESS NOTED OTHERWISE.

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	RSN	11-9-23

DESIGN AGENCY: GPD GROUP®
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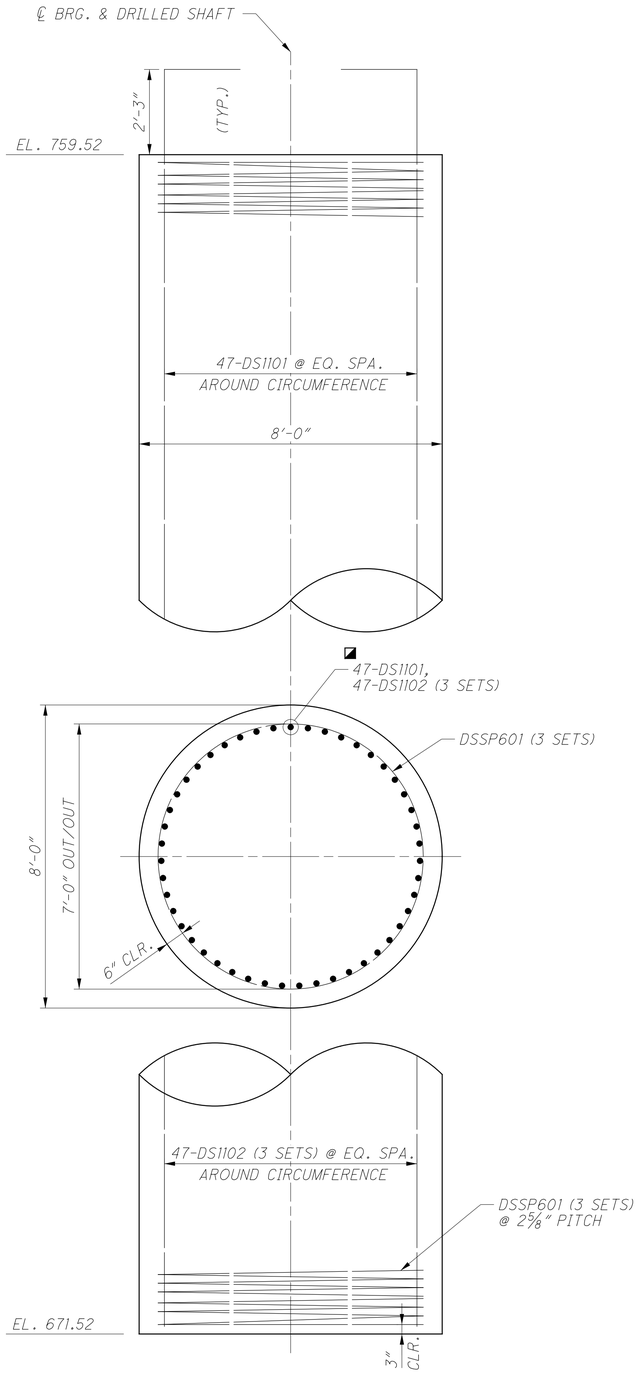
DESIGNED	DRAWN	REVIEWED	DATE
MOJ/RFV	MOJ	TJW	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RHC		2510032/2510034	

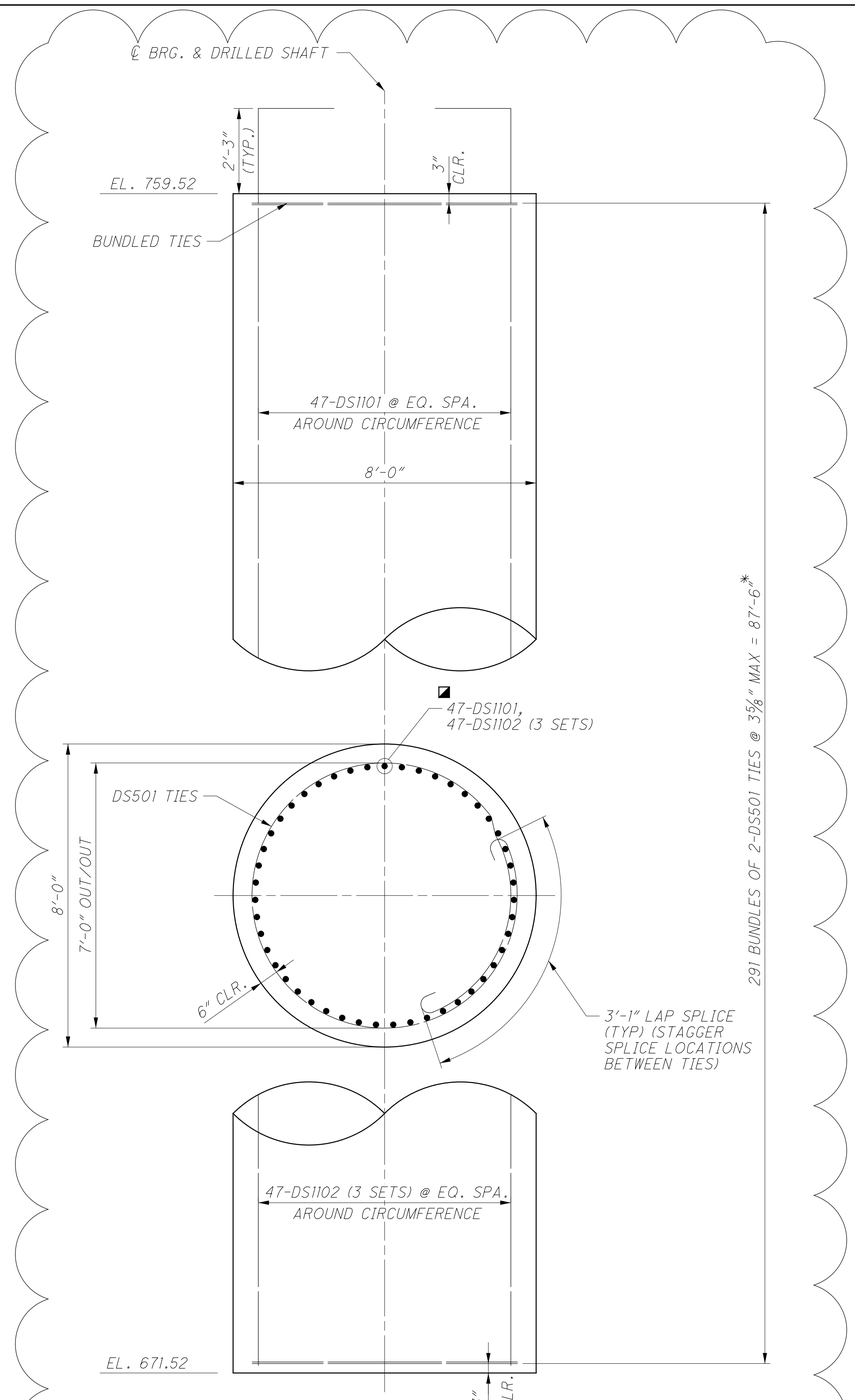
FORWARD ABUTMENT DETAILS
BRIDGE NO. FRA-70-1405E/W - CAPS
S. HIGH STREET (U.S. 23D) OVER I-70/71

FRA-70-14.05C
PID No. 105596



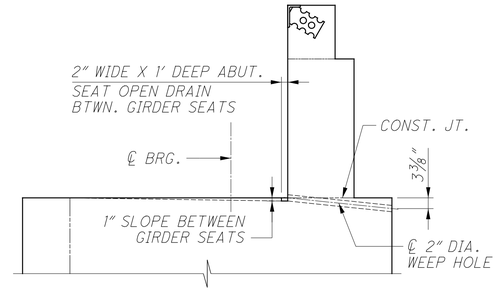
SECTION F

DRILLED SHAFT REINFORCING - OPTION 1



SECTION F

DRILLED SHAFT REINFORCING - OPTION 2



FORWARD ABUTMENT DRAINAGE DETAIL

NO.	DESCRIPTION	REV. BY	DATE
6	DRILLED SHAFT REINFORCING OPTION-2 ADDED	RSN	11-5-23

LEGEND:

◪ MINIMUM LAP LENGTH OF 8'-7" LENGTH FOR NO. 11 VERTICAL BARS IN DRILLED SHAFT.

6 * THE DS501 SPACING MUST BE A MINIMUM OF 3.125" SPACING

NOTE:

FOR DRILLED SHAFT REINFORCING SCHEDULE, SEE HIGH STREET BRIDGE REINFORCING SCHEDULE.

DESIGN AGENCY
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MOJ/RFV	JMH	TWJ	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RHC		25I0032/2510034	

FORWARD ABUTMENT DRILLED SHAFT DETAILS
BRIDGE NO. FRA-70-1405E/W - CAPS
S. HIGH STREET (U.S. 23D) OVER I-70/71

FRA-70-14.05C
PID No. 105596

16 / 52

272 / 395

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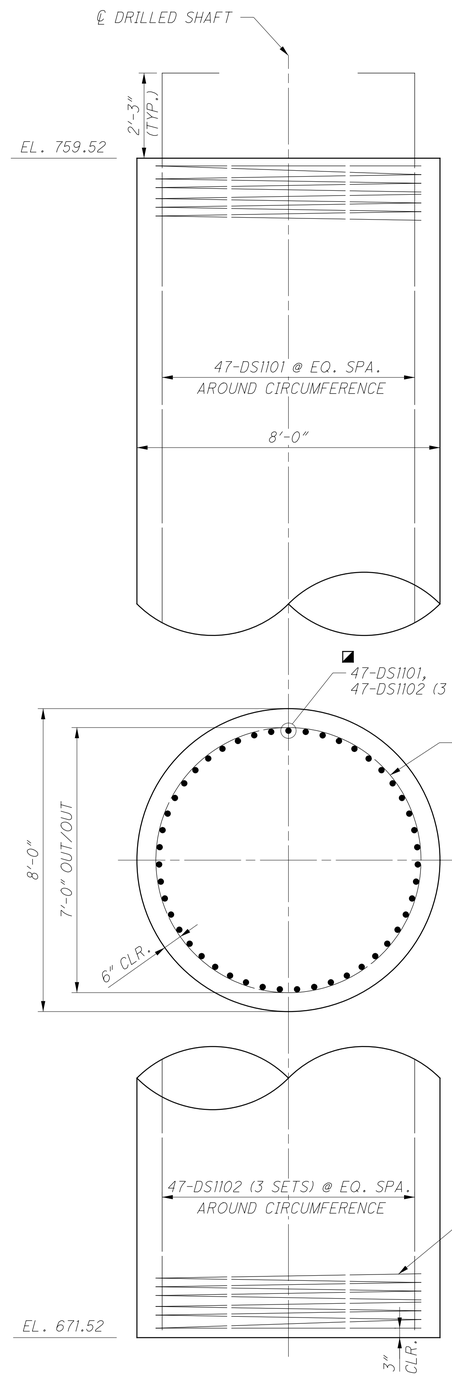
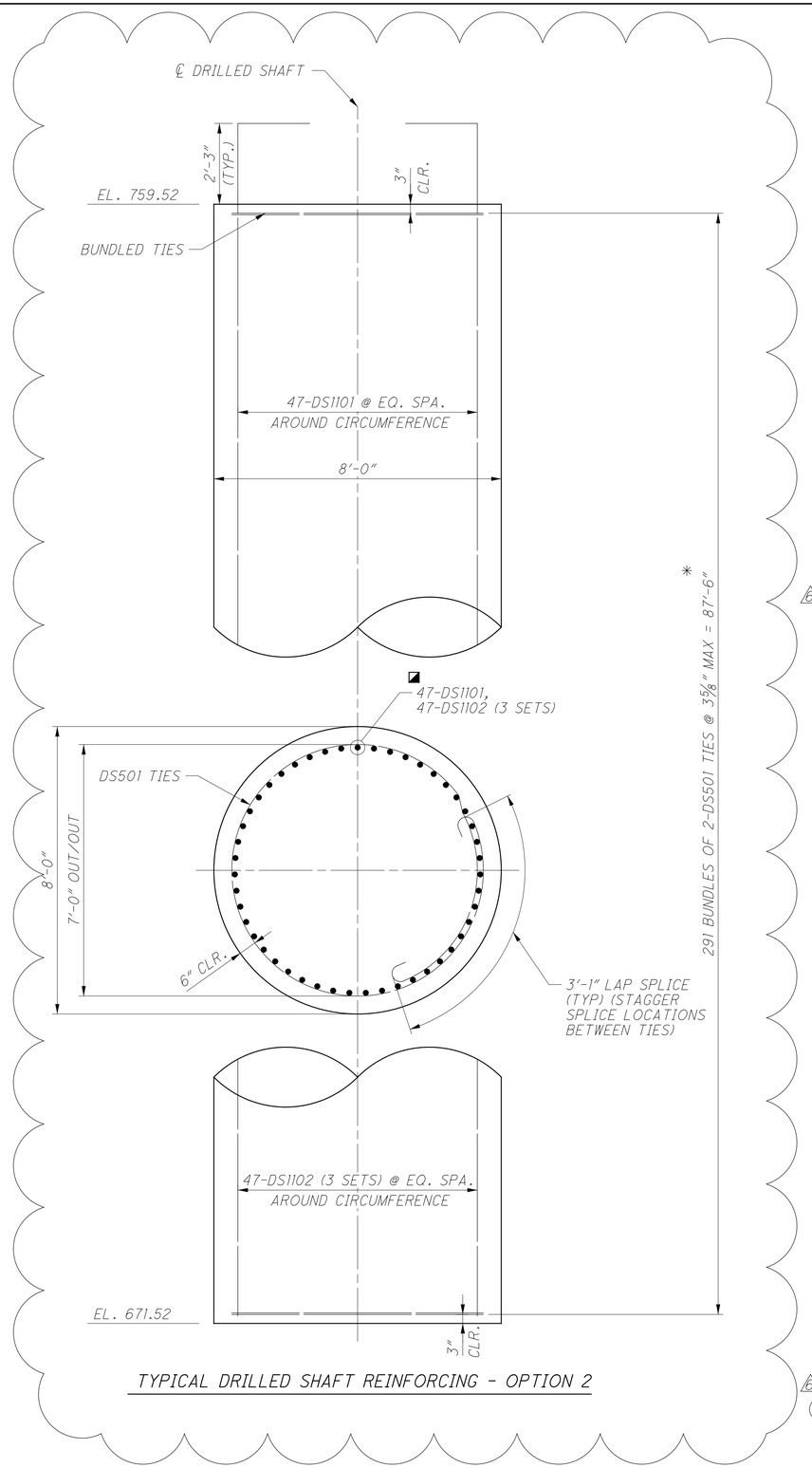


TYPICAL DRILLED SHAFT REINFORCING - OPTION 1



TYPICAL DRILLED SHAFT REINFORCING - OPTION 2

NO.	DESCRIPTION	REV. BY	DATE
6	DRILLED SHAFT REINFORCING OPTION-2 ADDED	RSN	11-5-23

LEGEND:

◪ MINIMUM LAP LENGTH OF 8'-7" LENGTH FOR NO. 11 VERTICAL BARS IN DRILLED SHAFT.

6 * THE DS501 TIES MUST BE A MINIMUM OF 3.125" SPACING

NOTE:

FOR DRILLED SHAFT REINFORCING SCHEDULE, SEE HIGH STREET BRIDGE REINFORCING SCHEDULE.

DESIGN AGENCY
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DESIGNED	DRAWN	REVIEWED	DATE
MOJ/RSN	MOJ/RSN	DGN	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RHC		25100 32/25100 34	

NORTHEAST WINGWALL DRILLED SHAFT DETAIL
BRIDGE NO. FRA-70-1405E/W - CAPS
S. HIGH STREET (U.S. 23D) OVER I-70/71

FRA-70-14.05C
PID No. 105596

MISC.: DETAILS - CITY OF COLUMBUS STANDARD DRAWINGS

ANY MISCELLANEOUS DETAILS LOCATED WITHIN THIS CONSTRUCTION DOCUMENT THAT REFER TO THE CITY OF COLUMBUS STANDARD DRAWINGS, SHALL BE USED IN CONJUNCTION WITH THE 2018 CITY OF COLUMBUS SPECIFICATIONS FOR CONSTRUCTION INCLUDING ALL REVISIONS, CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL.

CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL

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

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 611 CONDUIT ITEM.

REVIEW OF DRAINAGE FACILITIES (ODOT) FREEWAY SYSTEM

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE AND THE CONTRACTOR, ALONG WITH LOCAL REPRESENTATIVES, SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS 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 STATE.

ALL NEW CONDUITS, INLETS, CATCH BASINS, AND MANHOLES CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE STATE.

ALL EXISTING SEWERS 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 611 CONDUIT ITEMS.

ROUNDING

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

TYING INTO EXISTING DRAINAGE STRUCTURES

WHEN A PROPOSED CONDUIT IS BEING TIED INTO AN EXISTING DRAINAGE STRUCTURE, THE HOLE BEING MADE IN THE EXISTING STRUCTURE TO RECEIVE THE PROPOSED CONDUIT SHALL BE A CORED HOLE. FOR CONDUITS OVER 24", THE HOLE CAN BE NEATLY SAWED INSTEAD OF CORED.

THE COST OF TYING INTO AN EXISTING DRAINAGE STRUCTURE SHALL BE INCLUDED IN THE COST OF INSTALLING ITEM 611 CONDUIT.

PROPOSED MANHOLES IN THE FREEWAY AND RAMP PAVEMENT

ANY PROPOSED MANHOLES LOCATED IN THE FREEWAY AND RAMPS PROPOSED PAVEMENT SHALL BE CONSTRUCTED 2.0' BELOW THE PAVEMENTS SUBGRADE TO THE TOP OF COVER WITH FRAME SETTING ON A SOLID FLAT SLAB TOP. THE COVER SHALL NOT HAVE VENT HOLES. THE FRAME SHALL BE BOLTED DOWN ONTO THE FLAT SLAB TOP.

ALL MATERIALS AND LABOR, INCLUDING EXCAVATION AND BACKFILL ARE PAID FOR AT THE CONTRACT PRICE FOR ITEM 611 - MANHOLE, NO. 3, AS PER PLAN.

ITEM 611 - MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN

ANY EXISTING MANHOLE THAT IS TO REMAIN AND IS LOCATED IN THE PROPOSED PAVEMENT LIMITS, AND IS CALLED OUT AS MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN, SHALL BE RECONSTRUCTED 2.0' BELOW THE PAVEMENT'S SUBGRADE. THE EXISTING MANHOLE SHALL BE RECONSTRUCTED 2.0' BELOW THE PAVEMENT'S SUBGRADE TO THE TOP OF A COVER WITH FRAME SETTING ON A SOLID FLAT SLAB TOP. THE COVER SHALL NOT HAVE VENT HOLES. THE FRAME SHALL BE BOLTED DOWN ONTO THE FLAT SLAB TOP. THE EXISTING MANHOLE SHALL BE RECONSTRUCTED DOWN TO THE OUTLET PIPES SPRING LINE OR THE TOP OF THE EXISTING VAULT IF THERE IS ONE, UNLESS OTHERWISE STATED IN THE STORM SEWER PROFILES.

6 THE CONTRACTOR SHALL VERIFY EXISTING MANHOLE TYPE AND CONSTRUCTION MATERIAL PRIOR TO BEGINNING WORK.

ALL MATERIALS AND LABOR, INCLUDING EXCAVATION AND BACKFILL ARE PAID FOR AT THE CONTRACT PRICE OF ITEM 611 - MANHOLE RECONSTRUCT TO GRADE, AS PER PLAN.

ITEM 690 SPECIAL - SIZE" CONDUIT, TYPE ?

ALL PROPOSED STORM SEWER CONDUITS AS SHOWN IN THIS CONSTRUCTION DOCUMENT THAT ARE WITHIN THE CITY STREET'S RIGHT OF WAY SHALL BE FURNISHED AND INSTALLED PER ITEM 603 AND ITEM 901 FROM THE 2018 CITY OF COLUMBUS CONSTRUCTION & MATERIAL SPECIFICATIONS INCLUDING ALL REVISIONS AND CHANGES. CONDUIT EVALUATION WILL BE PERFORMED POST CONSTRUCTION PER CITY OF COLUMBUS SPECIFICATIONS. ITEM 911 COMPACTED BACKFILL SHALL BE PERFORMED PER CITY'S STANDARD CONSTRUCTION DRAWING 2179, AND INCLUDED IN THE COST OF INSTALLING THE PROPOSED STORM SEWER.

THE CONDUIT MATERIAL TYPES CALLED OUT IN THE QUANTITY DESCRIPTION WILL CROSS REFERENCE OVER TO THE CITY'S ITEM 603 AND 901 SPECIFICATIONS.

ITEM 690 SPECIAL - STORM STRUCTURE TYPE

ALL PROPOSED STORM SEWER STRUCTURES AS SHOWN IN THIS CONSTRUCTION DOCUMENT THAT ARE WITHIN THE CITY STREET'S RIGHT OF WAY SHALL BE FURNISHED AND INSTALLED PER ITEM 604 FROM THE 2018 CITY OF COLUMBUS SPECIFICATION FOR CONSTRUCTION INCLUDING ALL REVISIONS AND CHANGES. STRUCTURE EVALUATION WILL BE PERFORMED POST CONSTRUCTION PER CITY OF COLUMBUS SPECIFICATIONS.

THE CITY STANDARD STRUCTURE DRAWINGS ARE REFERENCE/SHOWN IN THIS CONSTRUCTION DOCUMENT. THE NAME OF THE STRUCTURES IN THE CONSTRUCTION DOCUMENT WILL REFLECT THE NAMES IN THE CITY'S STANDARD CONSTRUCTION DRAWINGS.

CASTING STRUCTURES

ALL MANHOLES, WATERVALVES, TRAFFIC PULL BOXES, ELECTRIC VAULTS OR ANY OTHER CASTING STRUCTURES SHALL HAVE A TOLERANCE OF NO MORE THAN 1/4 INCH DOWN FROM THE TOP OF THE SURFACE COURSE.

DRAINAGE DISCHARGE CONTINUANCE

FURNISH A DRAINAGE DISCHARGE CONTINUANCE FOR ANY DRAINAGE DISCHARGE DISTURBED BY THE WORK AND NOT SHOWN IN THE PLANS. THE LOCATION, TYPE (CONDUIT OR SWALE), SIZE AND GRADE OF THE DRAINAGE DISCHARGE CONTINUANCE WILL BE AGREED TO BY THE ENGINEER.
FURNISH AN INSPECTION WELL AT THE RIGHT OF WAY LINE IN ACCORDANCE WITH SCD DM-3.1 FOR EACH DRAINAGE DISCHARGE THAT OUTLETS THROUGH A CURB OPENING, OR INTO A STORM SEWER OR DRAINAGE STRUCTURE. THE COST IS INCLUDED IN ITEM 611, INSPECTION WELL.
FURNISH A WELL GRADED TRANSITION BETWEEN THE DITCH AND THE SWALE WHEN OUTLETTING A SWALE TO A DITCH. THE COST FOR THE GRADED TRANSITION IS INCLUDED IN ITEM 203, EMBANKMENT AS PER PLAN.
FURNISH AN EROSION CONTROL PAD AS SHOWN IN SCD DM-1.1 WHEN OUTLETTING A CONDUIT TO A DITCH. THE COST FOR THE EROSION CONTROL PAD IS INCLUDED IN ITEM 611, CONDUIT, MISC TYPE _ FOR DRAINAGE DISCHARGE CONTINUANCE.
FURNISH A DRILLED HOLE OR A CURB SECTION WITH A HOLE WHEN OUTLETTING A CONDUIT THROUGH A CURB OPENING. THE COST OF DRILLING, OR FURNISHING THE CURB SECTION WITH HOLE IS INCLUDED IN ITEM 611, CONDUIT, MISC TYPE _ FOR DRAINAGE DISCHARGE CONTINUANCE. FOR A CONDUIT THROUGH A CURB ON A CITY STREET, REFER TO THE MISC. DETAIL SHEET 408 FOR THE (COC SCD 2320) PIPE ROOF DRAIN.

FURNISH A DRILLED CORE HOLE WHEN OUTLETTING INTO A STORM SEWER OR DRAINAGE STRUCTURE. THE COST OF THE DRILLED CORE HOLE IS INCLUDED IN ITEM 611, CONDUIT, MISC TYPE _ FOR DRAINAGE DISCHARGE CONTINUANCE.

DOCUMENTATION
THE CONTRACTOR SHALL FURNISH WRITTEN DOCUMENTATION TO THE ENGINEER AND TO THE DISTRICT R/W PERMIT OFFICE. THE DOCUMENTATION INCLUDES THE CONSTRUCTION PROJECT NUMBER, PID, COUNTY, ROUTE, SECTION, LATITUDE AND LONGITUDE OF THE DRAINAGE DISCHARGE AT THE R/W, THE NAME OF PROPERTY OWNER WITH ADDRESS, THE DATE THE DRAINAGE DISCHARGE WAS LOCATED, THE DATE THE DRAINAGE DISCHARGE CONTINUANCE WAS FURNISHED, A DETAILED DESCRIPTION OF THE WORK AND PICTURES OF THE DRAINAGE DISCHARGE CONTINUANCE (IN PDF OR JPEG FORMAT). THE DOCUMENTATION IS INCLUDED IN ITEM 611, CONDUIT, MISC TYPE _ FOR DRAINAGE DISCHARGE CONTINUANCE OR ITEM 203, EMBANKMENT AS PER PLAN.

DRAINAGE DISCHARGE CONTINUANCE REMOVAL
THE ENGINEER MAY REQUIRE THE NEWLY INSTALLED DRAINAGE DISCHARGE CONTINUANCE TO BE REMOVED.

DRAINAGE DISCHARGE CONTINUANCE (CONTINUED)

REMOVE THE NEWLY INSTALLED CONDUIT AND ANY EXISTING CONDUIT TO THE RIGHT OF WAY LINE. FOR CONDUIT THAT OUTLETS THROUGH THE CURB RESTORE THE CURB BY FILLING THE HOLE WITH CLASS QC 1 CONCRETE OR REPLACE THE CURB SECTION. FOR CONDUIT THAT OUTLETS TO A STORM SEWER OR DRAINAGE STRUCTURE LEAVE 6 INCHES PROTRUDING OUTSIDE OF THE CONDUIT . PLUG THE PROTRUDING CONDUIT WITH EITHER A MANUFACTURED CAP OR CLASS QC 1 CONCRETE. FOR CONDUIT THAT OUTLETS TO THE DITCH REMOVE THE EROSION CONTROL PAD. RESTORE ALL AREAS AS REQUIRED. PLUG THE EXISTING CONDUIT REGARDLESS OF SIZE AT THE RIGHT OF WAY LINE WITH CLASS QC 1 CONCRETE AND RESTORE ALL AREAS AS REQUIRED. ALL COSTS ARE INCLUDED IN ITEM 202, REMOVAL MISC. CONDUIT. DAM THE SWALE THAT OUTLETS TO THE DITCH AT THE R/W AS DIRECTED BY THE ENGINEER. ALL COSTS ARE INCLUDED IN ITEM 203, EMBANKMENT AS PER PLAN
REMOVE THE INSPECTION WELL AND RESTORE ALL AREAS AS REQUIRED. THE COST IS INCLUDED IN ITEM 202, REMOVAL MISC. INSPECTION WELL.

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

PAY ITEMS
EACH OF THE PAY ITEMS LISTED BELOW FOR CONDUIT MISCELLANEOUS TYPES B, C, E AND F FOR DRAINAGE DISCHARGE CONTINUANCE INCLUDE CONDUIT SIZES 2 INCH TO 10 INCH. THERE IS NO COST DIFFERENTIATION FOR SIZE IN THESE PAY ITEMS.
THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER IN MAKING THE ABOVE DRAINAGE DISCHARGE CONTINUANCE:

ITEM 611, 20 EACH INSPECTION WELL
ITEM 611, 100 FT. 8" CONDUIT, MISC TYPE B FOR DRAINAGE DISCHARGE CONTINUANCE
ITEM 611, 100 FT. 8" CONDUIT, MISC TYPE C FOR DRAINAGE DISCHARGE CONTINUANCE
ITEM 611, 100 FT. 4" CONDUIT, MISC TYPE E FOR DRAINAGE DISCHARGE CONTINUANCE
ITEM 611, 100 FT. 4" CONDUIT, MISC TYPE F FOR DRAINAGE DISCHARGE CONTINUANCE
ITEM 202, 100 FT. REMOVAL MISC CONDUIT
ITEM 202, 2 EACH REMOVAL MISC INSPECTION WELL
ITEM 203, 50 CUBIC YARD EMBANKMENT AS PER PLAN

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE EDITED	ACW	11/13/23

GENERAL NOTES

FRA-70-13.10

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SHEET NUM.													PART.	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
668	671	680											01/IMS/04						
																		RETAINING WALLS (E2)	
261													261	203	20000	261	CY	EMBANKMENT	
1,112													1,112	203	35110	1,112	CY	GRANULAR MATERIAL, TYPE B	
2	3												2	SPECIAL	20365000	2	EACH	SETTLEMENT PLATFORM	
273													273	203	98100	273	SY	ROADWAY, MISC.: COLUMN SUPPORTED WALLS	
45													45	601	21000	45	SY	CONCRETE SLOPE PROTECTION	
LUMP													LUMP	503	11101	LS		COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	
129													129	512	10001	129	SY	SEALING OF CONCRETE SURFACES, AS PER PLAN (PERMANENT GRAFFITI PROTECTION)	660
168													168	512	10100	168	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	660
121													121	516	13200	121	SF	1/2" PREFORMED EXPANSION JOINT FILLER	
2,115	6												2,115	840	20001	2,115	SF	MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN	660
1													1	SPECIAL	20307500	1	EACH	PNEUMATIC PIEZOMETER	667
298													298	840	21000	298	CY	WALL EXCAVATION	
368													368	840	22000	368	SY	FOUNDATION PREPARATION	
1,851													1,851	840	23000	1,851	CY	SELECT GRANULAR BACKFILL	
312													312	840	25010	312	FT	6" DRAINAGE PIPE, PERFORATED	
135													135	840	26000	135	FT	CONCRETE COPING	
2,115	3												3 2,115	840	26050	2,115	3 SF	AESTHETIC SURFACE TREATMENT	
5													5	840	27000	5	DAY	ON-SITE ASSISTANCE	
																		RETAINING WALLS (E3)	
	73												73	203	20000	73	CY	EMBANKMENT	
	LUMP												LUMP	503	11101	LS		COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	660
	27,989												27,989	509	10001	27,989	LB	EPOXY COATED REINFORCING STEEL, AS PER PLAN	660
	196												196	511	53012	196	CY	CLASS QC2 CONCRETE, MISC.: PARAPET INCLUDING SLEEPER SLAB WITH QC/QA	
	618												618	512	10100	618	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
	670												670	516	13900	670	SF	2" PREFORMED EXPANSION JOINT FILLER	
	3,854												3,854	840	20001	3,854	SF	MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN	660
	443												443	840	22000	443	SY	FOUNDATION PREPARATION	
	1,097												1,097	840	23000	1,097	CY	SELECT GRANULAR BACKFILL	
	709												709	840	25010	709	FT	6" DRAINAGE PIPE, PERFORATED	
	335												335	840	26000	335	FT	CONCRETE COPING	
	3,854												3,854	840	26050	3,854	SF	AESTHETIC SURFACE TREATMENT	
	5												5	840	27000	5	DAY	ON-SITE ASSISTANCE	
																		RETAINING WALLS (E4)	
		1,334											1,334	203	20000	1,334	CY	EMBANKMENT	
		919											919	203	35110	919	CY	GRANULAR MATERIAL, TYPE B	
		3 6											6 3	SPECIAL	20365000	3 6	EACH	SETTLEMENT PLATFORM	661
		1,393											1,393	203	98100	1,393	SY	ROADWAY, MISC.: COLUMN SUPPORTED WALLS	664
		LUMP			6								LUMP	503	11101	LS		COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	660
		3											3	SPECIAL	20307500	3	EACH	PNEUMATIC PIEZOMETER	667
		49,546											49,546	509	10001	49,546	LB	EPOXY COATED REINFORCING STEEL, AS PER PLAN	660
		332											332	511	53012	332	CY	CLASS QC2 CONCRETE, MISC.:PARAPET INCLUDING SLEEPER SLAB WITH QC/QA	
		216											216	512	10001	216	SY	SEALING OF CONCRETE SURFACES, AS PER PLAN (PERMANENT GRAFFITI PROTECTION)	660
		1,841											1,841	512	10100	1,841	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
		70	3										70	516	13200	70	SF	1/2" PREFORMED EXPANSION JOINT FILLER	
		35											35	601	21000	35	SY	CONCRETE SLOPE PROTECTION	
		1,241											1,241	516	13900	1,241	SF	2" PREFORMED EXPANSION JOINT FILLER	
		14,829											14,829	840	20001	14,829	SF	MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN	660
		1,098											1,098	840	21000	1,098	CY	WALL EXCAVATION	
		6																	
		7,391											7,391	840	23000	7,391	CY	SELECT GRANULAR BACKFILL	
		1,172											1,172	840	25010	1,172	FT	6" DRAINAGE PIPE, PERFORATED	
		707											707	840	26000	707	FT	CONCRETE COPING	
		123											123	840	26001	123	FT	CONCRETE COPING, AS PER PLAN	686
		14,829	3										3 14,829	840	26050	14,829	3 SF	AESTHETIC SURFACE TREATMENT	
		5											5	840	27000	5	DAY	ON-SITE ASSISTANCE	

NO.	DESCRIPTION	REV. BY	DATE
3	QUANTITY CHANGES	ACW	10/20/23
6	ITEM ADDITIONS/REMOVALS QUANTITY CHANGES	ACW	11/13/23

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GENERAL SUMMARY

FRA-70-13.10

SHEET NUM.											PART.		ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
480	693	696									01/IMS/04	04/NHS/10						
																	RETAINING WALLS (E7)	
	12,305										12,305		SPECIAL	20302000	12,305	CY	ENGINEERED FILL: LIGHTWEIGHT CELLULAR CONCRETE FILL, CLASS II	
	758										758		SPECIAL	20302000	758	CY	ENGINEERED FILL: LIGHTWEIGHT CELLULAR CONCRETE FILL, CLASS III	
	18		6								18		203	20000	18	CY	EMBANKMENT	
	691		6								691		203	35110	691	CY	GRANULAR MATERIAL, TYPE B	
	2										2		SPECIAL	20307500	2	EACH	PNEUMATIC PIEZOMETER	667
	2										2		SPECIAL	20365000	2	EACH	SETTLEMENT PLATFORM	
	3,117										3,117		203	98000	3,117	CY	ROADWAY, MISC.: EPS GEOFOAM FILL	
	LUMP										LUMP		503	11101	LS		COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	660
	87		3								87		511	53012	87	CY	CLASS QC2 CONCRETE, MISC.: LOAD DISTRIBUTION SLAB	
	281		3								281		512	10100	281	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
	16										16		601	21000	16	SY	CONCRETE SLOPE PROTECTION	
	68										68		516	13200	68	SF	1/2" PREFORMED EXPANSION JOINT FILLER	
	59										59		516	13900	59	SF	2" PREFORMED EXPANSION JOINT FILLER	
	2,906										2,906		840	20001	2,906	SF	MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN	660
	1,300										1,300		840	21000	1,300	CY	WALL EXCAVATION	
	315										315		840	22000	315	SY	FOUNDATION PREPARATION	
6																		
	97									3	97		840	26000	97	FT	CONCRETE COPING	
	2,906	3								3	2,906		840	26050	2,906	SF	AESTHETIC SURFACE TREATMENT	
	5										5		840	27000	5	DAY	ON-SITE ASSISTANCE	
																	RETAINING WALLS (E9)	
		1,523									1,523		203	20000	1,523	CY	EMBANKMENT	
		1,229									1,229		203	35110	1,229	CY	GRANULAR MATERIAL, TYPE B	
		LUMP									LUMP		503	11101	LS		COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	660
		3,766									3,766		509	10001	3,766	LB	EPOXY COATED REINFORCING STEEL, AS PER PLANPARAPET INCLUDING SLEEPER SLAB WITH QC/QA	660
		24									24		511	53012	24	CY	CLASS QC2 CONCRETE, MISC.: (PERMANENT GRAFFITI PROTECTION)	
		41									41		512	10001	41	SY	SEALING OF CONCRETE SURFACES, AS PER PLAN	660
		500									500		512	10100	500	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
		70									70		516	13200	70	SF	1/2" PREFORMED EXPANSION JOINT FILLER	
		195									195		516	13900	195	SF	2" PREFORMED EXPANSION JOINT FILLER	
		17	3							3	17		601	21000	17	SY	CONCRETE SLOPE PROTECTION	
		5,574									5,574		840	20001	5,574	SF	MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN	660
		2,754									2,754		840	21000	2,754	CY	WALL EXCAVATION	
		502									502		840	22000	502	SY	FOUNDATION PREPARATION	
		4,381	6							6	4,381		840	23000	4,381	CY	SELECT GRANULAR BACKFILL	
		334									334		840	25010	334	FT	6" DRAINAGE PIPE, PERFORATED	
		169									169		840	26000	169	FT	CONCRETE COPING	
		5,574	3							3	5,574		840	26050	5,574	SF	AESTHETIC SURFACE TREATMENT	
		5									5		840	27000	5	DAY	ON-SITE ASSISTANCE	
																	STRUCTURE OVER 20 FOOT SPAN (FRA-070-1322L)	
565												565	503	21101	565	CY	UNCLASSIFIED EXCAVATION, AS PER PLAN	477
LUMP												LUMP	505	11100	LS		PILE DRIVING EQUIPMENT MOBILIZATION	
3,300												3,300	507	00100	3,300	FT	STEEL PILES HP10X42, FURNISHED	
3,055												3,055	507	00150	3,055	FT	STEEL PILES HP10X42, DRIVEN	
49												49	507	93300	49	EACH	STEEL POINTS OR SHOES	
618,934												618,934	509	10001	618,934	LB	EPOXY COATED REINFORCING STEEL, AS PER PLAN	477
1,328												1,328	511	34447	1,328	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK, AS PER PLAN	477
325												325	511	34450	325	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	
253												253	511	44112	253	CY	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING	
477												477	511	45602	477	CY	CLASS QC4 MASS CONCRETE, SUBSTRUCTURE WITH QC/QA	
22												22	511	46012	22	CY	CLASS QC1 CONCRETE WITH QC/QA, RETAINING/WINGWALL NOT INCLUDING FOOTING	
146												146	511	46512	146	CY	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	
254												254	512	10001	254	SY	SEALING OF CONCRETE SURFACES, AS PER PLAN (PERMANENT GRAFFITI PROTECTION)	477
2,927												2,927	512	10100	2,927	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
248,946	4										4	248,946	513	10280	248,946	LB	STRUCTURAL STEEL MEMBERS, LEVEL 4	
1,712,826	4										4	1,712,826	513	10401	1,712,826	LB	STRUCTURAL STEEL MEMBERS, HYBRID GIRDER, LEVEL SIX (6) FABRICATION, AS PER PLAN	479
9,471												9,471	513	20000	9,471	EACH	WELDED STUD SHEAR CONNECTORS	
27,528												27,528	514	00060	27,528	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	
27,528												27,528	514	00066	27,528	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	
111												111	SPECIAL	51612400	111	FT	MODULAR EXPANSION JOINT	478

NO.	DESCRIPTION	REV. BY	DATE
4	QUANTITY CHANGES	ACW	10/30/23
6	ITEM ADDITIONS/REMOVALS QUANTITY CHANGES	ACW	11/13/23

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GENERAL SUMMARY

FRA-70-13.10

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DCF: 60-06634_6A_Columbus

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SHEET NUM.		PART. 04/NHS/10	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
480	538							
							STRUCTURE OVER 20 FOOT SPAN (FRA-070-1322L) (CONT.)	
16		16	516	13600	16	SF	1" PREFORMED EXPANSION JOINT FILLER	
238		238	516	13900	238	SF	2" PREFORMED EXPANSION JOINT FILLER	
5		5	518	12200	5	EACH	SCUPPERS, INCLUDING SUPPORTS	
120		120	518	21200	120	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
129		129	518	40000	129	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	
39		39	518	40010	39	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	
130		130	518	51200	130	FT	PIPE DOWNSPOUT, INCLUDING SPECIALS, (10")	
180		180	524	94919	180	FT	DRILLED SHAFTS, 60" DIAMETER, INTO BEDROCK, AS PER PLAN	479
537		537	524	94931	537	FT	DRILLED SHAFTS, 66" DIAMETER, ABOVE BEDROCK, AS PER PLAN	479
290		290	526	30010	290	SY	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=17")	
115		115	526	90010	115	FT	TYPE A INSTALLATION	
48		48	846	00110	48	CF	POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM	
24		24	869	00101	24	EACH	HIGH LOAD MULTI-ROTATIONAL (HLMR) BEARINGS, AS PER PLAN	479
12		12	894	10000	12	EACH	THERMAL INTEGRITY PROFILING (TIP) TEST	479
							STRUCTURE OVER 20 FOOT SPAN (FRA-070-1323C)	
	LUMP	LUMP	202	11003	LS		STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	535
	745	745	202	22900	745	SY	APPROACH SLAB REMOVED	
	10,500	10,500	202	23500	10,500	SY	WEARING COURSE REMOVED	
	278	278	202	32800	278	SY	CONCRETE SLOPE PROTECTION REMOVED	
	14	14	202	98100	14	EACH	REMOVAL MISC.:PILE REMOVED, EXISTING STRUCTURE	535
	3,242	3,242	503	21101	3,242	CY	UNCLASSIFIED EXCAVATION, AS PER PLAN	535
	LUMP	LUMP	505	11100	LS		PILE DRIVING EQUIPMENT MOBILIZATION	
	5,830 (6)	5,830 (6)	507	00100	5,830 (6)	FT	STEEL PILES HP10X42, FURNISHED	
	5,370 (6)	5,370 (6)	507	00150	5,370 (6)	FT	STEEL PILES HP10X42, DRIVEN	
	92	92	507	93300	92	EACH	STEEL POINTS OR SHOES	
	881,328	881,328	509	10001	881,328	LB	EPOXY COATED REINFORCING STEEL, AS PER PLAN	536
	1,710	1,710	511	34447	1,710	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK, AS PER PLAN	536
	360	360	511	34450	360	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	
	394	394	511	44112	394	CY	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING	
	596	596	511	45602	596	CY	CLASS QC4 MASS CONCRETE, SUBSTRUCTURE WITH QC/QA	
	277	277	511	46012	277	CY	CLASS QC1 CONCRETE WITH QC/QA, RETAINING/WINGWALL NOT INCLUDING FOOTING	
	579	579	511	46512	579	CY	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	
	843	843	512	10001	843	SY	SEALING OF CONCRETE SURFACES, AS PER PLAN (PERMANENT GRAFFITI PROTECTION)	536
	2,389	2,389	512	10100	2,389	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
	51	51	512	33000	51	SY	TYPE 2 WATERPROOFING	
	355,667 (4)	355,667 (4)	513	10300	355,667 (4)	LB	STRUCTURAL STEEL MEMBERS, LEVEL 5	
	2,213,561	2,213,561	513	10401	2,213,561	LB	STRUCTURAL STEEL MEMBERS, HYBRID GIRDER, LEVEL SIX(6) FABRICATION, AS PER PLAN	536
	12,801	12,801	513	20000	12,801	EACH	WELDED STUD SHEAR CONNECTORS	
	29,490	29,490	514	00060	29,490	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	
	29,490	29,490	514	00066	29,490	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	
	134	134	SPECIAL	51612400	134	FT	MODULAR EXPANSION JOINT	536
	377	377	516	13600	377	SF	1" PREFORMED EXPANSION JOINT FILLER	
	216	216	516	13900	216	SF	2" PREFORMED EXPANSION JOINT FILLER	
	5	5	518	12200	5	EACH	SCUPPERS, INCLUDING SUPPORTS	
	481	481	518	21200	481	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
	361	361	518	40000	361	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	
	45	45	518	40010	45	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	
	49	49	518	51200	49	FT	PIPE DOWNSPOUT, INCLUDING SPECIALS (10")	
	156 (5)	156 (5)	524	94919	156 (5)	FT	DRILLED SHAFTS, 60" DIAMETER, INTO BEDROCK, AS PER PLAN	537
	496	496	524	94931	496	FT	DRILLED SHAFTS, 66" DIAMETER, ABOVE BEDROCK, AS PER PLAN	537
	351	351	526	30010	351	SY	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=17")	
	134	134	526	90010	134	FT	TYPE A INSTALLATION	
	56	56	846	00110	56	CF	POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM	
	30	30	869	00101	30	EACH	HIGH LOAD MULTI-ROTATIONAL (HLMR) BEARINGS, AS PER PLAN	537
	12	12	894	10000	12	EACH	THERMAL INTEGRITY PROFILING (TIP) TEST	537

NO.	DESCRIPTION	REV. BY	DATE
4	QUANTITY CHANGES	ACW	10/30/23
5	QUANTITY CHANGES	ACW	11/6/23
6	QUANTITY CHANGES	ACW	11/13/23

CALCULATED TAZ
CHECKED DEA

GENERAL SUMMARY

FRA-70-13.10

196
702

ms consultants, inc.

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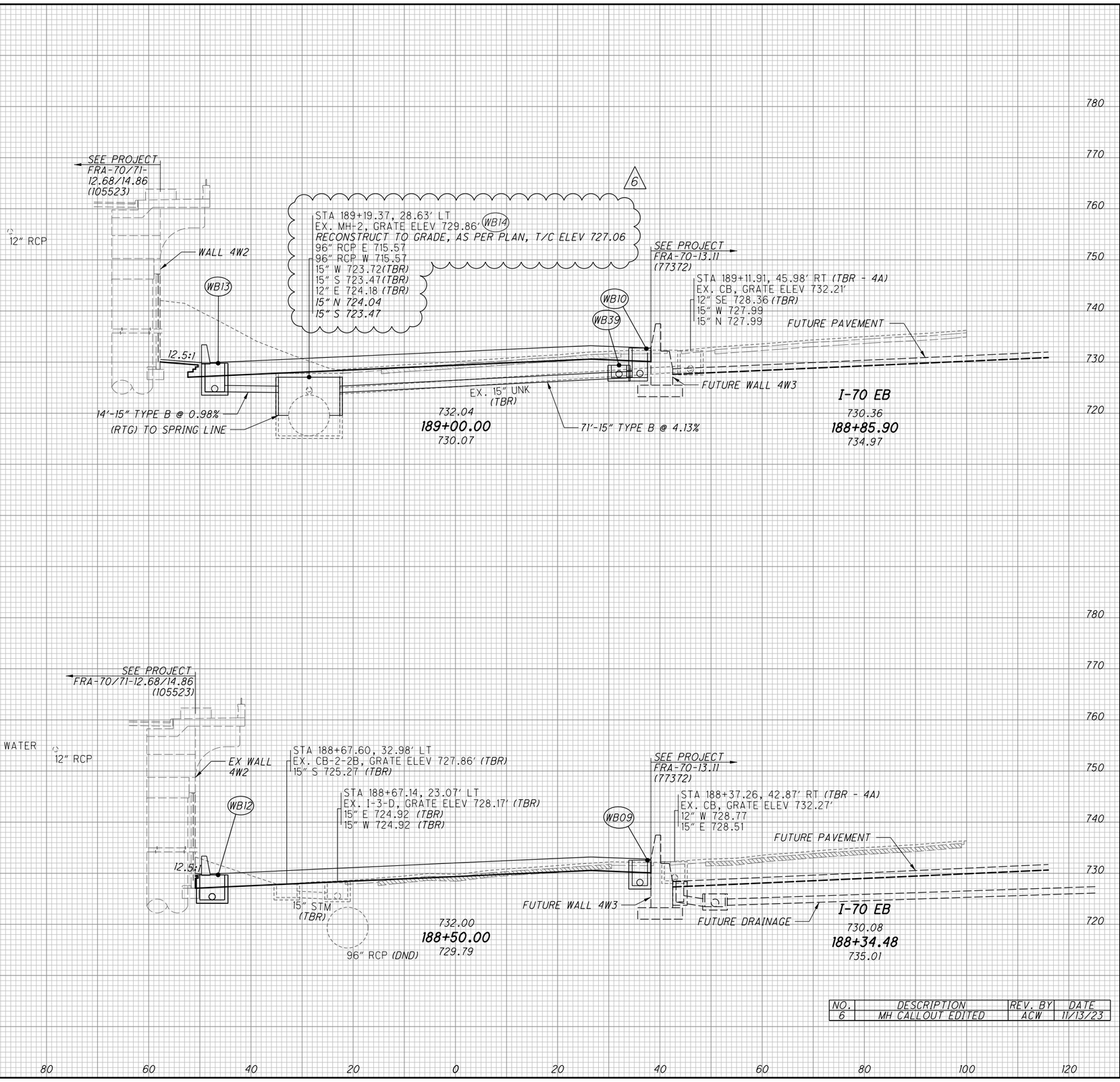

NO.	DESCRIPTION	REV. BY	DATE
6	MH CALLOUT EDITED	ACW	11/13/23

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED GAN
CHECKED TAZ

SEE DESIGN CALCULATIONS FOR EARTHWORK QUANTITIES

CROSS SECTIONS I-70 WB
STA. 188+50.00 TO STA. 189+00.00

FRA-70-13.10

298
702

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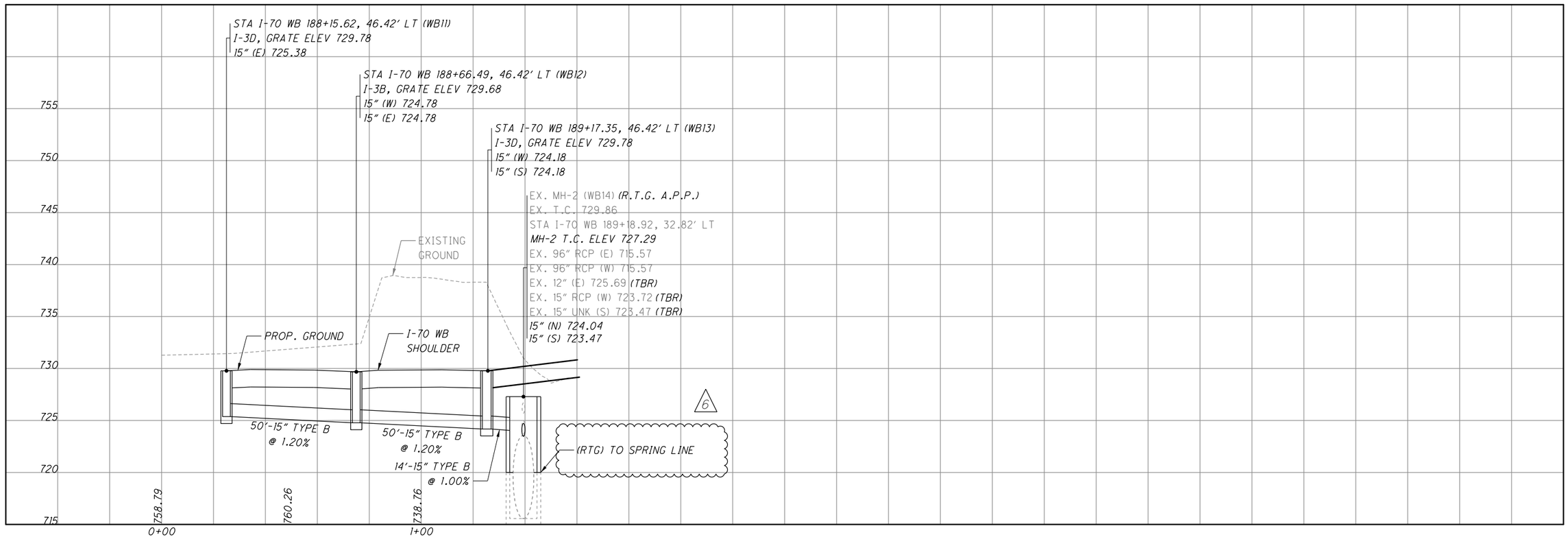
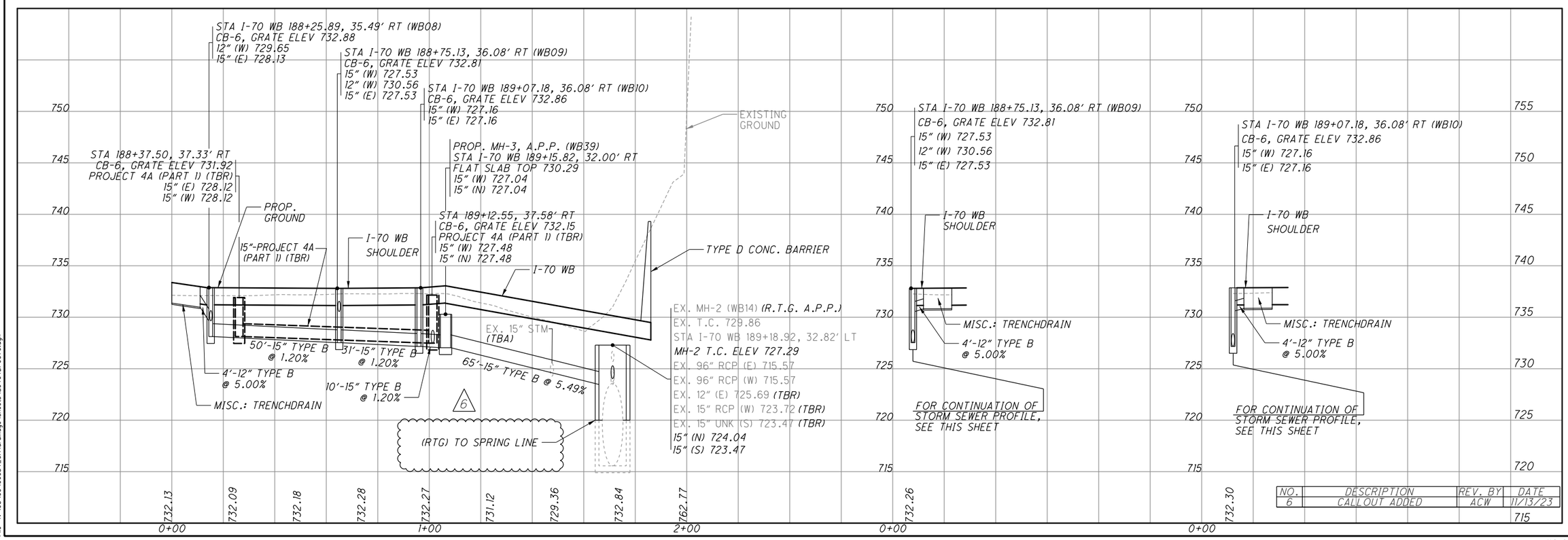




NO.	DESCRIPTION	REV. BY	DATE
6	CALLOUT ADDED	ACW	11/13/23

CALCULATED | CHECKED

LONGITUDINAL SEWER PROFILES
I-70 WB AND TRANS. I-70 WB

FRA-70-13.10

413
702

ESTIMATED QUANTITIES

CALC:	ELS/DBL	DATE:	12/07/21
CHECK:	ATM	DATE:	12/07/21

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	ABUT.	PIERS	SUPER.	GEN.	SHEET REF.
202	11003	LS		STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				1	5/70
202	22900	745	SY	APPROACH SLAB REMOVED				745	
202	23500	10,500	SY	WEARING COURSE REMOVED				10,500	
202	32800	278	SY	CONCRETE SLOPE PROTECTION REMOVED	278				
202	98100	14	EACH	REMOVAL MISC.: PILE REMOVED, EXISTING STRUCTURE	14				
503	21101	3,242	CY	UNCLASSIFIED EXCAVATION, AS PER PLAN	3,242				6/70
505	11100	LS		PILE DRIVING EQUIPMENT MOBILIZATION				1	
507	00100	5,830	FT	STEEL PILES HP10X42, FURNISHED	5,830				
507	00150	5,370	FT	STEEL PILES HP10X42, DRIVEN	5,370				
507	93300	92	EACH	STEEL POINTS OR SHOES	92				
509	10001	881,328	LB	EPOXY COATED REINFORCING STEEL, AS PER PLAN	106,589	191,582	581,813	1,344	6/70 25/70 67/70
511	34447	1,710	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK, AS PER PLAN			1,710		6/70
511	34450	360	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)			360		
511	44112	394	CY	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING	394				
511	45602	596	CY	CLASS QC4 MASS CONCRETE, SUBSTRUCTURE WITH QC/QA		596			
511	46012	277	CY	CLASS QC1 CONCRETE WITH QC/QA, RETAINING/WINGWALL NOT INCLUDING FOOTING	277				
511	46512	579	CY	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	579				
512	10001	843	SY	SEALING OF CONCRETE SURFACES, AS PER PLAN (PERMANENT GRAFFITI PROTECTION)	751	92			6/70
512	10100	2,389	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)		320	2,069		
512	33000	51	SY	TYPE 2 WATERPROOFING	51				
513	10300	355,667	LB	STRUCTURAL STEEL MEMBERS, LEVEL FIVE			355,667		
513	10401	2,213,561	LB	STRUCTURAL STEEL MEMBERS, HYBRID GIRDER, LEVEL SIX (6) FABRICATION, AS PER PLAN			2,213,561		6/70 32/70
513	20000	12,801	EACH	WELDED STUD SHEAR CONNECTORS			12,801		
514	00060	29,490	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT			29,490		
514	00066	29,490	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT			29,490		
516	12400	134	FT	SPECIAL - MODULAR EXPANSION JOINT				134	6/70 7/70
516	13600	377	SF	1" PREFORMED EXPANSION JOINT FILLER				377	
516	13900	216	SF	2" PREFORMED EXPANSION JOINT FILLER				216	
518	12200	5	EACH	SCUPPERS, INCLUDING SUPPORTS			5		
518	21200	481	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	481				
518	40000	361	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	361				
518	40010	45	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	45				
518	51200	49	FT	PIPE DOWNSPOUT, INCLUDING SPECIALS (10")			49		
524	94919	156	FT	DRILLED SHAFTS, 60" DIAMETER, INTO BEDROCK, AS PER PLAN		156			7/70
524	94931	496	FT	DRILLED SHAFTS, 66" DIAMETER, ABOVE BEDROCK, AS PER PLAN		496			7/70
526	30010	351	SY	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=17")				351	61/70 62/70
526	90010	134	FT	TYPE A INSTALLATION				134	
601	21000	280	SY	CONCRETE SLOPE PROTECTION *	280				
601	32104	4,358	CY	ROCK CHANNEL PROTECTION, TYPE B WITH GEOTEXTILE FABRIC *	995	3,363			
SPECIAL	690E98400	LS		SPECIAL - EMERGENCY ACTION PLAN COORDINATION **				1	5/70
846	00110	56	CF	POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM				56	
869	00101	30	EACH	HIGH LOAD MULTI-ROTATIONAL (HLMR) BEARINGS, AS PER PLAN	10	20			7/70
894	10000	12	EACH	THERMAL INTEGRITY PROFILING (TIP) TEST		12			7/70

LEGEND:

* QUANTITY CARRIED TO EROSION CONTROL IN THE GENERAL SUMMARY.

** QUANTITY CARRIED TO ROADWAY IN THE GENERAL SUMMARY.

NO.	DESCRIPTION	REV. BY	DATE
4	QUANTITY CHANGES	ACW	10/30/23
5	QUANTITY CHANGES	ACW	11/6/23
6	QUANTITY CHANGES	ACW	11/13/23

DESIGN AGENCY: ms consultants, inc. 2221 Schrock Road Columbus, Ohio 43229

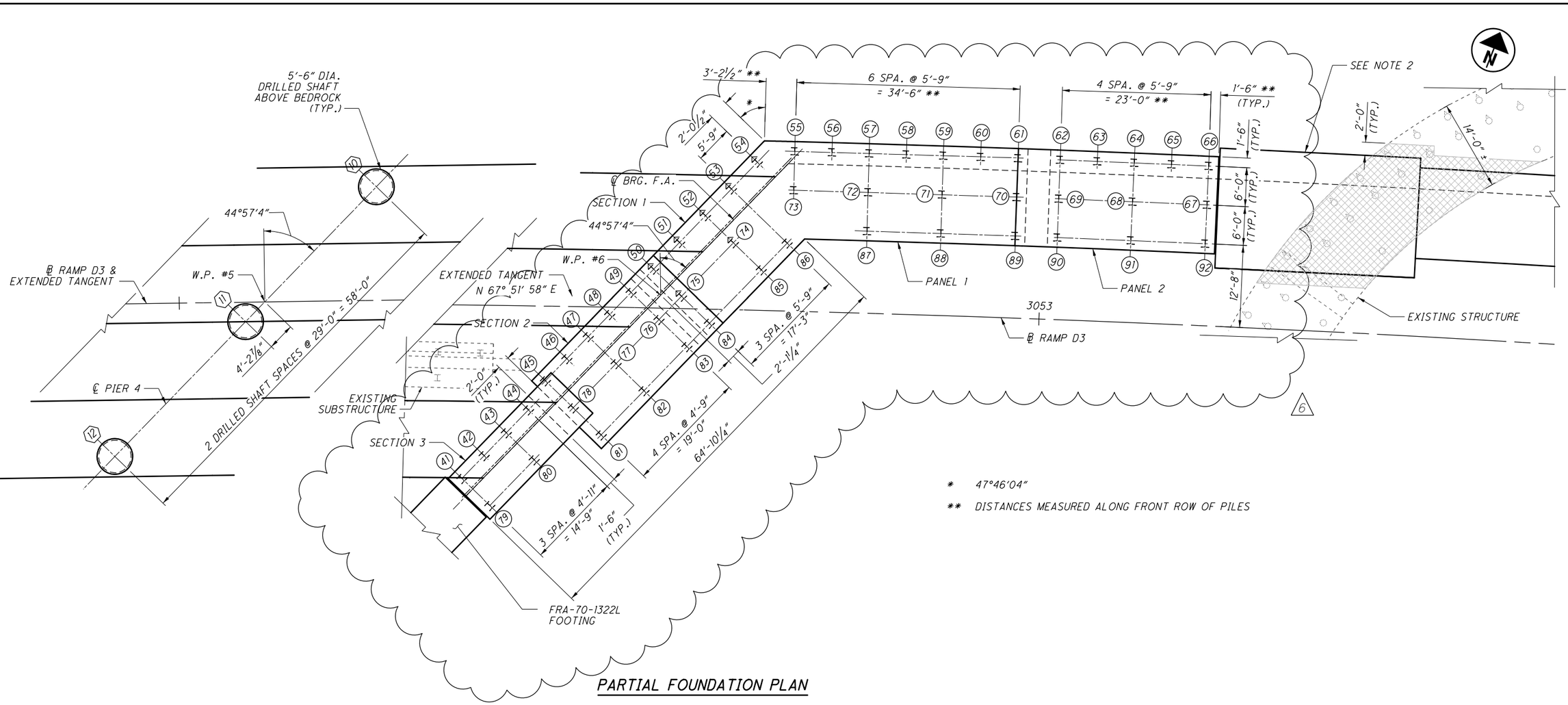
REVIEWED GLG/YSJ DATE 03/08/23 STRUCTURE FILE NUMBER 2510026

DRAWN ELS REVISED

DESIGNED ELS CHECKED ABD

ESTIMATED QUANTITIES
BRIDGE NO. FRA-70-1323C
RAMP D3 OVER SCIOTO RIVER

FRA-70-13.10
PID No. 77372



PARTIAL FOUNDATION PLAN

PILE DATA						
	REAR ABUT.	FWD. ABUT. SECTION 1	FWD. ABUT. SECTION 2	FWD. ABUT. SECTION 3	FWD. WW PANEL 1	FWD. WW PANEL 2
PILE NO.	1-40	50-54, 74-75 & 84-86	45-49, 76-78 & 81-83	41-44 & 79-80	55-61, 70-73 & 87-89	62-66, 67-69 & 90-92
CUT-OFF ELEV.	715.50	710.00	715.00	720.00	710.00	714.50
ESTIMATED LENGTH	65'	50'	55'	60'	50'	55'

6

NOTES:

1. FOR ADDITIONAL NOTES, SEE SHEET 9/70.
2. SPREAD FOOTING PORTION OF FORWARD WINGWALL NOT SHOWN. FOR SPREAD FOOTING DETAILS, SEE SHEET 21/70.

- EXISTING VERTICAL PILE
- EXISTING BATTERED PILE
- EXISTING PILE TO BE COMPLETELY REMOVED
- VERTICAL PILE
- BATTERED PILE
- INDICATES THE APPROXIMATE LIMITS OF REMOVAL OF THE EXISTING FOOTING. EXISTING PILES WITHIN THESE LIMITS NOT SPECIFIED SHALL BE CUT A MIN. OF 1 FOOT BELOW PROPOSED BOTTOM OF FOOTING. THE ACTUAL LIMITS OF REMOVAL WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- INDICATES PILE NUMBER
- INDICATES DRILLED SHAFT NUMBER

NO.	DESCRIPTION	REV. BY	DATE
6	PILES INFO CHANGED	ACW	11/13/23

DESIGN AGENCY
ms consultants, inc.
2221 Schrock Road
Columbus, Ohio 43229

DESIGNED	DRAWN	REVIEWED	DATE
ELS	ELS	GLG/YSJ	03/08/23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
AKS		2510026	

FOUNDATION PLAN (2 OF 2)

BRIDGE NO. FRA-70-1323C
RAMP D3 OVER SCIOTO RIVER

FRA-70-13.10
PID No. 77372

GENERAL NOTES

PROPOSED WORK:
THE PROPOSED WORK CONSISTS OF BUILDING RETAINING WALLS E2, E3, E4, E7 & E9 WITHIN THE I-70/I-71 WEST INTERCHANGE.

STANDARD DRAWING AND SUPPLEMENTAL SPECIFICATIONS:

REFER TO THE FOLLOWING SUPPLEMENTAL SPECIFICATONS:

840 DATED 4-16-21
867 DATED 1-15-21

DESIGN SPECIFICATIONS:
THESE STRUCTURES CONFORM TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 9TH EDITION, 2020, AND THE ODOT BRIDGE DESIGN MANUAL, 2021 EDITION, INCLUDING REVISIONS THROUGH JANUARY 2021.

DESIGN LOADING:
HL-93 AND
250 PSF LIVE LOAD SURCHARGE

DESIGN DATA:
CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI (COPING & LEVELING PAD)

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (PARAPET & MOMENT SLAB)

REINFORCING STEEL - ASTM A615 OR A996 GRADE 60, MINIMUM YIELD STRENGTH 60 KSI

MAINTENANCE OF TRAFFIC:
FOR MAINTENANCE OF TRAFFIC DETAILS, SEE THE ROADWAY PLANS.

UTILITIES:
THE LOCATION OF UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE OBTAINED THROUGH UTILITY OWNERS AS REQUIRED BY SECTION 153.64 O.R.C.

PROPRIETARY RETAINING WALL DATA:
FOR ALL MSE WALL PORTIONS BELOW A BRIDGE ABUTMENT, THE PROPRIETARY WALL SUPPLIER SHALL DESIGN THE INTERNAL STABILITY OF A MECHANICALLY STABILIZED EARTH (MSE) WALL IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 840 TO SUPPORT THE ABUTMENT. THE DESIGN FOR INTERNAL STABILITY SHALL INCLUDE A NOMINAL (I.E. UNFACTORED) HORIZONTAL STRIP LOAD DUE TO FRICTION (FR) FROM THE SUPERSTRUCTURE APPLIED PERPENDICULAR TO THE FACE OF WALL AT THE BASE OF THE CONCRETE FOOTING. SEE BELOW FOR STRIP LOADS AT INDIVIDUAL WALLS/BRIDGES. THIS STRIP LOAD DOES NOT INCLUDE EARTH PRESSURE LOADS FROM THE ABUTMENT BACKFILL. HOWEVER, THE PROPRIETARY WALL SUPPLIER SHALL INCLUDE EARTH PRESSURE LOADS FROM THE ABUTMENT BACKFILL IN THE DESIGN CALCULATIONS.

MSE WALL	BRIDGE	NOMINAL HORIZONTAL STRIP LOAD DUE TO FRICTION
E2	FRA-70-1358L	2.5 K/FT
E4	FRA-70-1358L	2.4 K/FT
E7	FRA-70-1373L	1.7 K/FT
E9	FRA-70-1373L	1.7 K/FT

CONSTRUCTION SEQUENCING:
WHERE WALL CONSTRUCTION IS PHASED AND A TEMPORARY RETAINING SYSTEM IS REQUIRED, SHOP DRAWINGS OF BOTH PERMANENT AND TEMPORARY WALLS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE COST OF THESE SUBMITTALS SHALL BE INCLUDED FOR PAYMENT WITH THE COST OF THE TEMPORARY WALLS.

ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN

EXCAVATION ENVELOPES AS DETAILED IN THE PLANS SHALL BE PROTECTED FROM CAVING AND SLOUGHING. WHERE CLEARANCES AND CONSTRUCTION SEQUENCING WILL NOT ALLOW FOR SLOPED EXCAVATIONS, APPROPRIATE SHEETING OR BRACING METHODS SHALL BE EMPLOYED BY THE CONTRACTOR. THIS TEMPORARY SHEETING OR BRACING IS CONSIDERED INCIDENTAL TO ITEM 503 - COFFERDAMS AND EXCAVATION BRACING.

ITEM 509 - EPOXY COATED REINFORCING STEEL, AS PER PLAN

GLASS FIBER REINFORCED POLYMER (GFRP) BARS SHALL BE USED FOR DIAGONAL REINFORCEMENT AS SHOWN IN THE PLANS. PAYMENT FOR GFRP BARS SHALL BE INCIDENTAL TO THE COST OF ITEM 509 - EPOXY COATED REINFORCING STEEL, AS PER PLAN.

ITEM 512 - SEALING OF CONCRETE SURFACES, AS PER PLAN, (PERMANENT GRAFFITI PROTECTIN) (WALL E2 & E4):

APPLY A PERMANENT GRAFFITI COATING QUALIFIED ACCORDING TO SUPPLEMENT 1083 THAT IS COMPATIBLE WITH THE CONCRETE SEALER OVER WHICH IT IS APPLIED. APPLY THE GRAFFITI COATING IN ACCORDNACE WITH MANUFACTURER'S PRINTED INSTRUCTIONS. APPLY PERMANENT GRAFFITI COATING TO THE WALL E4 TO THE RAILROAD.

ITEM 840 - MECHANICALLY STABLIZED EARTH WALL, AS PER PLAN: (6)

THE CONTRACTOR AND MANUFACTURER SHALL COMPLY WITH THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 840, EXCEPT AS MODIFIED BELOW.

REFERENCES, MATERIALS, AND PAY ITEMS ASSOCIATED WITH FOUNDATION PREPARATION SHALL BE REPLACED WITH ITEM 203 - ROADWAY, MISC.: COLUMN SUPPORTED WALLS.

FOR EACH WALL, PROVIDE MINIMUM SOIL REINFORCEMENT LENGTHS AS LISTED IN THE PLAN NOTES ON SHEET 8 / 8

THE DEPARTMENT WILL NOT ADJUST PAY QUANTITIES FOR VARIATIONS IN THE CONCRETE LEVELING PAD ELEVATIONS AND OR OTHER PAY QUANTITIES ASSOCIATED WITH ADDITIONAL SOIL REINFORCEMENT LENGTH BEYOND THE LISTED LENGTHS IN THE PLANS. ANY DEVIATION DUE TO THE CHANGE OF SITE CONDITIONS OR FROM THE RESULT OF THE INTERNAL STABILITY ANALYSIS FOR THE FINAL CONDITION (NOT FOR CONDITIONS DURING CONSTRUCTION) MUST HAVE AN APPROVAL FROM ODOT IN ORDER TO BE ELIGIBLE FOR ADDITIONAL PAYMENT. CONTRACTOR SHALL INFORM THE ENGINEER OF ANY SITE CONDITION DEVIATIONS PRIOR TO PREPARATION OF SHOP DRAWINGS. THE EXTERNAL STABILITY ANALYSIS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

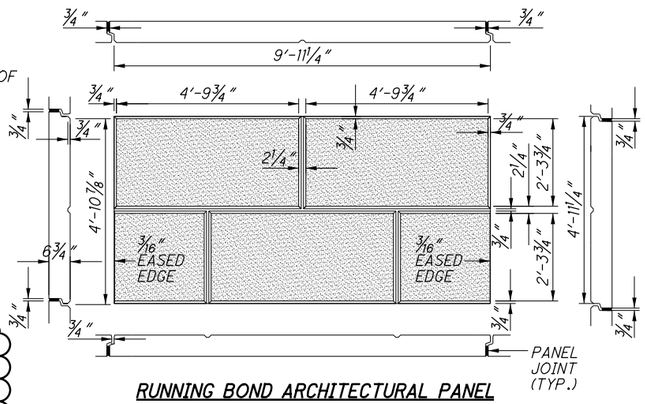
ITEM 840 - DRAINAGE PIPE:
PROVIDE A MINIMUM SLOPE OF 1.00% ON ALL MSE WALL DRAINS UNLESS NOTED OTHERWISE.

PIPE LOCATED OUTSIDE THE FACE OF THE MSE WALL PANEL SHALL BE INCLUDED WITH THE ROADWAY QUANTITIES FOR PAYMENT.

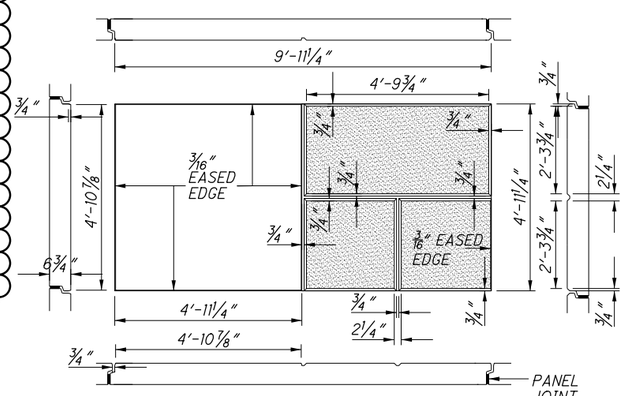
LOCATE THE PIPE AS CLOSE AS POSSIBLE TO THE TOP OF THE LEVELING PAD. IT MAY BE LOCATED ABOVE THE BOTTOM ROW OF REINFORCING STRAPS. HOWEVER, AT NO TIME SHALL THE PIPE BE LOCATED WITHIN 1 FOOT OF THE PROPOSED GROUND LINE.

ITEM 840 - MECHANICALLY STABLIZED EARTH WALL, AS PER PLAN:
DO NOT FABRICATE WALL TOP PANELS OR INSTALL COPINGS, BARRIER MOMENT SLABS, OR RAILINGS LOCATED ON TOP OF MSE WALLS UNTIL AFTER THE MSE WALL EMBANKMENT HAS BEEN CONSTRUCTED TO WITHIN 1 FOOT OF THE PROPOSED FINISHED GRADE AND THE SETTLEMENT REQUIREMENTS HAVE BEEN MET. THE CONTRACTOR SHALL FABRICATE THE TOP PANEL TO ACCOUNT FOR THE ACTUAL SETTLEMENT. NO SEPARATE PAYMENT WILL BE MADE TO EXCAVATE AND RE-COMPACT MATERIAL NECESSARY TO PLACE THE TOP PANEL, BUT THE COST THEREOF SHALL BE INCLUDED WITH ITEM 840 - MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN FOR PAYMENT.

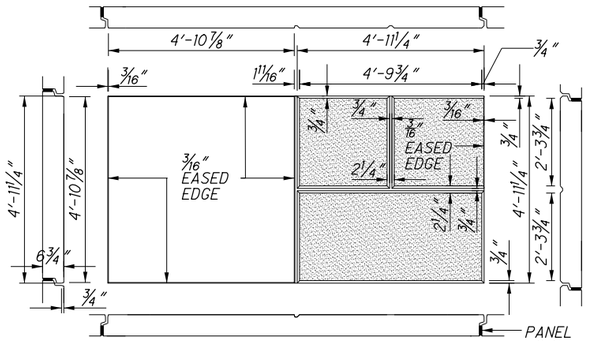
ITEM 840 - AESTHETIC SURFACE TREATMENT:
THE ITEM OF WORK SHALL CONSIST OF PROVIDING AESTHETIC TREATMENTS TO THE CONCRETE MSE WALL PANEL SURFACES. THE SURFACE FINISH SHALL BE EITHER A RUNNING BOND AESTHETIC PATTERN & TEXTURE OR A RUNNING BOND AESTHETIC PSTTERN & TEXTURE WITH PILASTERS. SEE BELOW FOR DETAILS OF EACH, AND SEE INDIVIDUAL WALL PLANS FOR LOCATION OF VARIOUS SURFACE FINISHES.



RUNNING BOND ARCHITECTURAL PANEL



PILASTER ARCHITECTURAL PANEL - 1



PILASTER ARCHITECTURAL PANEL - 2

ITEM 511 CLASS QC2 CONCRETE MISC.: LOAD DISTRIBUTION SLAB (WALLS E7) (6)

THIS ITEM SHALL INCLUDE THE CONCRETE CONSTRUCTION AS DETAILED IN THE PLANS INCLUDING THE WORK NECESSARY TO FURNISH & PLACE THE REINFORCING STEEL. A SINGLE LAYER OF #5 BARS SPACED AT 12" (IN BOTH DIRECTIONS) SHALL BE PLACED 3" FROM THE BOTTOM OF THE 6" THICK SLAB. CONCRETE FOR THE PROPOSED WORK SHALL BE CLASS QC2 AS PER CMS 511.

METHOD OF MEASUREMENT: THE DEPARTMENT WILL MEASURE THE CONCRETE CONSTRUCTION BY THE NUMBER OF CUBIC YARDS.

PAYMENT: ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK SHALL BE INCLUDED WITH WALL E7 IN THE CONTRACT BID PRICE FOR ITEM 511 CLASS QC2 CONCRETE MISC.: LOAD DISTRIBUTION SLAB.

ABBREVIATIONS:

CCF - CELLULAR CONCRETE FILL
CJ - CONSTRUCTION JOINT
C/C - CENTER TO CENTER
CLR - CLEAR
CONST - CONSTRUCTION
CSW - COLUMN SUPPORTED WALLS
DIA - DIAMETER
EF - EACH FACE
ELEV - ELEVATION
EOP - EDGE OF PAVEMENT
EPS- EXPANDED POLYSTYRENE
EX - EXISTING
FF - FAR FACE
I.R. 75 - INTERSTATE ROUTE 75
INC - INCREMENT
LT - LEFT
LDS - LOAD DISTRIBUTION SLAB
MAX - MAXIMUM
MIN - MINIMUM
MISC - MISCELLANEOUS
MSE - MECHANICALLY STABILIZED EARTH
NF - NEAR FACE
PEJF - PREFORMED EXPANSION JOINT FILLER
PERF CPP - PERFORATED CORRUGATED PLASTIC PIPE
PROP - PROPOSED
RT - RIGHT
SB - SOUTHBOUND
SER - SERIES
SGB - SELECT GRANULAR BACKFILL
SPA - SPACING
STA - STATION
ST - STRAIGHT
TBA - TO BE ABANDONED
TBR - TO BE REMOVED
TBRL - TO BE RELOCATED
TYP - TYPICAL
VPF - VANDAL PROTECTION FENCE

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	MMS	11-9-2023

RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
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DESIGNED	DRAWN	REVIEWED	DATE
MMS	MMS	NCK	11/18/2021
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JGM			

RETAINING WALL NOTES 1 OF 8
RETAINING WALLS
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

1 / 8

660
702

ITEM SPECIAL - SETTLEMENT PLATFORMS:

SPECIFICATIONS:

DESCRIPTION:
THIS ITEM CONSISTS OF FURNISHING, CONSTRUCTING, AND MAINTAINING SETTLEMENT PLATFORMS AND OBTAINING SETTLEMENT READINGS AS REQUIRED BY THE PLANS OR AS DIRECTED BY THE ENGINEER. AT THE OPTION AND EXPENSE OF THE CONTRACTOR, ADDITIONAL SETTLEMENT PLATFORMS MAY BE INSTALLED AT ADDITIONAL LOCATIONS ACCEPTED BY ENGINEER.

SETTLEMENT READINGS SHALL BE TAKEN WEEKLY DURING CONSTRUCTION AND DURING ANY SPECIFIED WAITING PERIOD. THE READINGS SHALL BE PLOTTED UTILIZING THE SETTLEMENT PLATFORM READINGS EXCEL SPREADSHEET AS DEVELOPED BY ODOT'S OFFICE OF GEOTECHNICAL ENGINEERING. A COPY OF EACH CUMULATIVE PLOT SHALL BE SENT TO ODOT, AFTER EACH SETTLEMENT READING IS RECORDED.

VIBRATING WIRE SETTLEMENT MONITORING PLATFORMS MAY BE CONSIDERED IN LIEU OF THE CONVENTIONAL SETTLEMENT PLATFORMS. THE CONTRACTOR SHALL PROVIDE DETAILS OF THE PROPOSED VIBRATING WIRE SETTLEMENT PLATFORMS AS WELL AS DESIGN DRAWINGS OF THE PROPOSED PLATFORM AND CABLING LAYOUT TO ODOT AT LEAST 14 DAYS PRIOR TO CONSTRUCTION.

THE DESIGN DRAWINGS SHALL ILLUSTRATE THE PROPOSED SETTLEMENT VIBRATING WIRE SETTLEMENT PLATFORM LOCATIONS WITH ALL EXISTING AND PROPOSED SITE FEATURES TO VERIFY THE PROPOSED CABLING SHALL NOT CONFLICT WITH EXISTING FACILITIES, PROPOSED FACILITIES OR UTILITIES.

THE CONTRACTOR SHALL IDENTIFY, SET AND MAINTAIN AN APPROPRIATE NUMBER OF FIXED BENCHMARKS, REFERENCE POINTS, ETC. TO FACILITATE THE SURVEYING OF THE SETTLEMENT PLATFORMS.

MATERIALS:
SOUND LUMBER SUCH AS ¾" EXTERIOR GRADE PLYWOOD SHALL BE USED FOR THE BASE. THE PIPE SHALL BE 2-½" STANDARD BLACK PIPE WITH THREADED FITTINGS AS SHOWN ON THE PLANS. A STEEL PLATE 3'-0"x 3'-0"x⅛" MAY BE SUBSTITUTED FOR THE LUMBER, AT THE CONTRACTOR'S OPTION.

CONSTRUCTION METHODS: THE PLATFORM SHALL CONFORM TO THE DETAILS SHOWN ON THE PLANS. SETTLEMENT PLATFORMS SHALL BE PLACED AT THE BOTTOM OF THE MSE WALL FILL AT THE LOCATION INDICATED BELOW, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. IF EXISTING PAVEMENT IS ENCOUNTERED AT THE SPECIFIED LOCATIONS, THE PAVEMENT (INCLUDING ANY BASE MATERIAL) SHALL BE REMOVED AND THE SETTLEMENT PLATFORM SHALL BE SET ON THE EXPOSED SUBGRADE. THE PLATFORM SHALL BE SET ON A LEVEL SURFACE. THE PIPE SHALL BE FIRMLY SECURED TO THE PLATFORM AND SHALL BE MAINTAINED IN A PLUMB POSITION DURING CONSTRUCTION OF THE MSE WALL. THE PIPE SHALL BE MARKED AT INTERVALS TO FACILITATE MEASUREMENT OF THE DEPTH OF FILL. SETTLEMENT PLATFORMS SHALL BE ANCHORED BY STAKES DRIVEN AT EACH CORNER TO PREVENT OVERTURNING.

THE CONTRACTOR SHALL PROTECT SETTLEMENT PLATFORMS FROM CONSTRUCTION TRAFFIC/ACTIVITIES USING APPROPRIATE METHODS SUCH AS BARRICADES, CONES, GUARD-STAKES WITH HIGH VISIBILITY RIBBON, ETC. THE CONTRACTOR SHALL STOP WORK IN ANY LOCATION WHERE THE SETTLEMENT PLATFORM HAS BEEN DISTURBED OR DAMAGED. PLATFORMS OR PIPES DAMAGED OR DISPLACED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR PROPER CONDITION AT CONTRACTOR'S EXPENSE.

PRIOR TO PAVING: THE TOP OF THE SETTLEMENT PLATFORM PIPE SHALL BE CUT OFF TWO FEET BELOW THE FINISHED SURFACE OF THE SUBGRADE OR FINISHED GROUND SURFACE. WHICHEVER IS APPLICABLE.

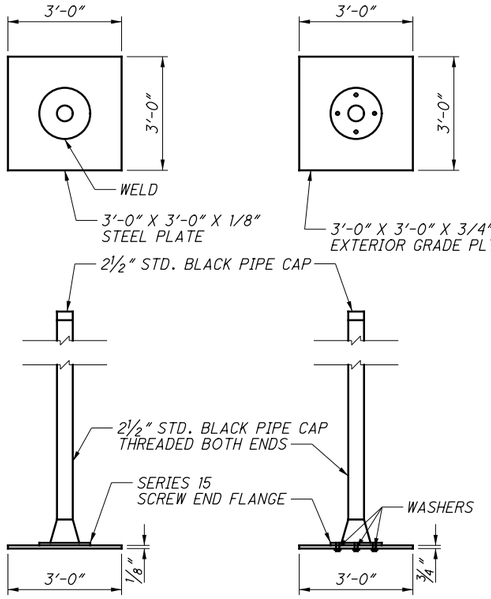
ITEM SPECIAL - SETTLEMENT PLATFORMS (CONTINUED):

WAITING PERIOD:
THE ENGINEER WILL CONSIDER THE WAITING PERIOD COMPLETE WHEN CONSECUTIVE SETTLEMENT READINGS, RECORDED AFTER WALL CONSTRUCTION IS COMPLETE AND AT LEAST ONE WEEK (168 HOURS) APART, RESULT IN ELEVATION DIFFERENCES EQUAL TO OR LESS THAN 1/8 INCH.

SEE PILE DRIVING CONSTRAINTS NOTES FROM STRUCTURE GENERAL NOTES SHEET FOR MORE INFORMATION REGARDING WAITING PERIOD.

METHOD OF MEASUREMENT:
THE DEPARTMENT WILL MEASURE SETTLEMENT PLATFORMS BY THE NUMBER EACH, COMPLETE IN PLACE.

BASIS OF PAYMENT:
THE UNIT PRICE BID FOR ITEM SPECIAL - SETTLEMENT PLATFORM SHALL INCLUDE FURNISHING, CONSTRUCTING, AND MAINTAINING SETTLEMENT PLATFORMS AND OBTAINING SETTLEMENT READINGS AS REQUIRED BY THE PLANS OR AS DIRECTED BY THE ENGINEER. PAYMENT SHALL NOT BE MADE FOR SETTLEMENT PLATFORMS WHICH BECOME USELESS DUE TO DAMAGE CAUSED BY THE CONTRACTOR'S OPERATIONS.



SETTLEMENT PLATFORM
NOT TO SCALE

6

SETTLEMENT PLATFORM TABLE

WALL	ALIGNMENT	SETTLEMENT PLATE DESIGNATION	STATION	OFFSET	CALCULATED ESTIMATED SETTLEMENTS	
					GROUND IMPROVEMENTS	NO GROUND IMPROVEMENTS
E2	WALL E2	S.P. 1	201+09.16	13.35 L	2.0"	
	WALL E2	S.P. 2	201+99.02	11.40 L		6.70"
E4	WALL E4	S.P. 3	408+25	15.00 L	2.0"	
	WALL E4	S.P. 4	409+99.19	14.76 L	2.0"	
	WALL E4	S.P. 5	410+51.02	15.98 L	2.0"	
E7	WALL E7	S.P. 6	705+68.45	9.86 L		2.93"
	WALL E7	S.P. 7	706+26.07	9.95 L		2.93"
E9	WALL E9	S.P. 8	901+69.68	11.23 L		3.35"
	WALL E9	S.P. 9	902+37.73	3.78 L		3.35"

ITEM SPECIAL STRUCTURE MISC.: PRECONSTRUCTION CONDITION SURVEY: WALL E4

BEFORE GROUND IMPROVEMENT WORK BEGINS, CONDUCT A CONDITION SURVEY OF ANY EXISTING BUILDINGS, STRUCTURES, OR UTILITIES WITHIN 400 FEET OF THE WORK. THE PURPOSE OF THE SURVEY IS TO DOCUMENT THE CONDITION OF THE BUILDINGS, STRUCTURES, OR UTILITIES PRIOR TO STONE COLUMN INSTALLATION, SO THAT ANY CLAIMS OF DAMAGE CAUSED BY THE GROUND IMPROVEMENT WORK CAN BE VERIFIED.

RETAIN AN EXPERIENCED VIBRATION SPECIALIST TO PERFORM OR SUPERVISE THE CONDITION SURVEY. USE A VIBRATION SPECIALIST THAT MEETS THE QUALIFICATION REQUIREMENTS LISTED BELOW FOR VIBRATION MONITORING.

RECORD THE CONDITION OF EXISTING STRUCTURES AND BUILDING MATERIALS, USING WRITTEN TEXT, PHOTOGRAPHS, AND VIDEO RECORDINGS. INSPECT INTERIOR WALLS, CEILINGS, AND FLOORS THAT ARE ACCESSIBLE. INSPECT THE EXTERIOR OF THE BUILDING THAT IS VISIBLE FROM GROUND LEVEL. ALSO RECORD THE LOCATION, SIZE, AND TYPE OF ALL CRACKS AND OTHER STRUCTURAL DEFICIENCIES.

IF OWNERS OR OCCUPANTS FAIL TO ALLOW ACCESS TO THE PROPERTY FOR THE PRECONSTRUCTION CONDITION SURVEY, SEND A CERTIFIED LETTER TO THE OWNER OR OCCUPANT. DOCUMENT THE NOTIFICATION EFFORT AND THE CERTIFIED LETTER IN THE REPORT.

SUBMIT A REPORT TO THE ENGINEER THAT SUMMARIZES THE PRECONSTRUCTION CONDITION OF THE BUILDINGS, STRUCTURES, AND UTILITIES, AND THAT IDENTIFIES AREAS OF CONCERN. SUBMIT THREE COPIES OF THE REPORT.

THE DEPARTMENT WILL PAY FOR THIS ITEM AT THE CONTRACT LUMP SUM PRICE FOR ITEM SPECIAL STRUCTURE MISC.: PRECONSTRUCTION CONDITION SURVEY.

ITEM SPECIAL STRUCTURE MISC.: VIBRATION MONITORING: WALL E4

MONITOR GROUND VIBRATIONS CAUSED DURING CONTROLLED MODULUS COLUMN INSTALLATION SO THAT THE PILE DRIVING WORK CAN BE CONTROLLED IN ORDER TO MINIMIZE THE POTENTIAL DAMAGE TO EXISTING STRUCTURES.

RETAIN AN EXPERIENCED VIBRATION SPECIALIST TO ESTABLISH THE ACCEPTABLE VIBRATION LIMITS AND TO PERFORM THE VIBRATION MONITORING. USE A VIBRATION SPECIALIST THAT IS AN EXPERT IN THE INTERPRETATION OF VIBRATION DATA AND WHO MEETS ONE OF THE FOLLOWING CRITERIA:

1) IS A REGISTERED ENGINEER WITH AT LEAST TWO YEARS OF PROVEN EXPERIENCE IN MONITORING VIBRATIONS ON SIMILAR CONSTRUCTION PROJECTS, OR
2) HAS AT LEAST FIVE YEARS OF PROVEN EXPERIENCE IN MONITORING VIBRATIONS ON SIMILAR CONSTRUCTION PROJECTS. DO NOT USE A VIBRATION SPECIALIST THAT IS AN EMPLOYEE OF THE CONTRACTOR.

SUBMIT A RESUME OF THE CREDENTIALS OF THE PROPOSED VIBRATION SPECIALIST AT OR BEFORE THE PRECONSTRUCTION CONFERENCE. INCLUDE IN THE RESUME A LIST OF CONSTRUCTION PROJECTS ON WHICH THE VIBRATION SPECIALIST WAS RESPONSIBLY IN CHARGE OF MONITORING THE VIBRATIONS. LIST A DESCRIPTION OF THE PROJECTS, WITH DETAILS OF THE VIBRATION INTERPRETATIONS MADE ON THE PROJECT. LIST THE NAMES AND TELEPHONE NUMBERS OF PROJECT OWNERS WITH SUFFICIENT KNOWLEDGE OF THE PROJECTS TO VERIFY THE SUBMITTED INFORMATION. OBTAIN APPROVAL OF THE VIBRATION SPECIALIST BEFORE BEGINNING ANY GROUND IMPROVEMENT WORK. ALLOW 30 DAYS FOR THE REVIEW OF THIS DOCUMENTATION.

USE SEISMOGRAPHS CAPABLE OF CONTINUOUSLY RECORDING THE PEAK PARTICLE VELOCITY FOR THREE MUTUALLY PERPENDICULAR COMPONENTS OF VIBRATION, AND PROVIDING A PERMANENT RECORD OF THE ENTIRE VIBRATION EVENT. USE A SUFFICIENT NUMBER OF SEISMOGRAPHS TO PROVIDE REDUNDANCY IN CASE ONE DEVICE SHOULD FAIL. SUBMIT A PLAN OF THE PROPOSED SEISMOGRAPH LOCATIONS TO THE ENGINEER FOR REVIEW.

THE VIBRATION SPECIALIST SHALL PERFORM THE FOLLOWING:

1. MEASURE THE AMBIENT GROUND VIBRATIONS NEAR EXISTING STRUCTURES BEFORE GROUND IMPROVEMENT WORK BEGINS.
2. ESTABLISH VIBRATION LIMITS TO MINIMIZE POTENTIAL DAMAGE TO EXISTING STRUCTURES AND EXPLAIN WHY THEY ARE BEING USED TO THE ENGINEER BEFORE INSTALLING STONE COLUMNS NEAR EXISTING STRUCTURES.
3. MONITOR GROUND VIBRATIONS DURING STONE COLUMN INSTALLATION.
4. IMMEDIATELY INFORM THE CONTRACTOR AND ENGINEER IF THE VIBRATION LIMITS ARE REACHED OR EXCEEDED.
5. FURNISH THE DATA RECORDED AND INCLUDE THE FOLLOWING:
   A. IDENTIFICATION OF SEISMOGRAPH.
   B. DISTANCE AND DIRECTION OF SEISMOGRAPH FROM STONE COLUMN INSTALLATION.
   C. START TIME AND DURATION OF GROUND IMPROVEMENT WORK.
   D. LIST OF STONE COLUMNS INSTALLED DURING EACH MONITORING INTERVAL.

THE CONTRACTOR SHALL IMMEDIATELY SUSPEND ALL GROUND IMPROVEMENT WORK IF THE VIBRATION LIMITS ARE REACHED OR EXCEEDED. EVALUATE ALTERNATIVE CONSTRUCTION PROCEDURES TO REDUCE THE VIBRATIONS.

SUBMIT A FINAL REPORT WHICH CONTAINS ALL MEASUREMENTS, INTERPRETATIONS, AND RECOMMENDATIONS TO THE ENGINEER. SUBMIT THREE COPIES OF THE REPORT.

THE DEPARTMENT WILL PAY FOR THIS ITEM AT THE CONTRACT LUMP SUM PRICE FOR ITEM SPECIAL, STRUCTURE MISC.: VIBRATION MONITORING. THE DEPARTMENT WILL PAY THE FINAL TWENTY PERCENT AFTER THE ENGINEER RECEIVES THE FINAL REPORT.

THE DEPARTMENT WILL PAY ACCORDING TO CMS 109.05 FOR ALTERNATIVE CONSTRUCTION PROCEDURES THAT THE ENGINEER DETERMINES ARE NECESSARY TO REDUCE VIBRATIONS.

NO.	DESCRIPTION	REV. BY	DATE
6	UPDATED TABLE	MMS	11-7-2023

RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
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DESIGNED MMS | DRAWN MMS | REVIEWED NCK 11/18/2021 | DATE
CHECKED JGM | REVISED | STRUCTURE FILE NUMBER

RETAINING WALL NOTES 2 OF 8
RETAINING WALLS
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

2 / 8

661
702

ITEM 203, SPECIAL - ENGINEERED FILL (LIGHTWEIGHT CELLULAR CONCRETE FILL): (WALL E7)

A. DESCRIPTION.
THIS WORK CONSISTS OF FURNISHING AND PLACING A LOW DENSITY, LIGHTWEIGHT, FLOWABLE, LOW ABSORBABILITY, CEMENTITIOUS FILL MATERIAL, HEREIN REFERRED TO AS CELLULAR CONCRETE FILL (CCF).

6 ALL LIGHTWEIGHT CELLULAR CONCRETE FILL INSTALLATIONS SHALL BE SUBJECT TO FINAL ACCEPTANCE BY THE ENGINEER,

B. QUALIFICATIONS.
1. SUPPLIER/PRODUCER.
PROVIDE CCF FROM A SUPPLIER/PRODUCER REGULARLY ENGAGED IN THE PLACEMENT OF CCF MATERIAL, WHO HAS IN THE PAST THREE YEARS COMPLETED MASS FILLS HAVING A COMBINED QUANTITY OF AT LEAST 10,000 TOTAL CUBIC YARDS (7650 CUBIC METERS).

DOCUMENTATION FOR THE ABOVE QUALIFICATIONS SHALL BE SUBMITTED AT OR BEFORE THE PRECONSTRUCTION CONFERENCE ACCORDING TO C&MS 108.02.

2. CCF MATERIAL.
PROVIDE CCF MATERIAL, MEETING THE REQUIREMENT OF SECTION C OF THIS SPECIFICATION, WHICH HAS BEEN SUCCESSFULLY PLACED ON AT LEAST 5 PROJECTS THAT HAVE PERFORMED SATISFACTORY FOR AT LEAST FIVE YEARS.

PREAPPROVAL OF THE CCF MATERIAL WILL BE BASED ON DOCUMENTATION FOR THE ABVE QUALIFICATIONS. THIS DOCUMENTATION SHALL BE SUBMITTED TO THE LABORATORY. PREAPPROVED CCF MATERIALS WILL BE LISTED ON THE DEPARTMENT'S QUALIFIED PROJECT LIST AND WILL NEED TO BE REAPPROVED YEARLY.

C. MATERIALS
1. FOAM.
USE A FOAMING AGENT CONFORMING TO ASTM C796. 6

6 THE CONTRACTOR SHALL PROVIDE A PLAN FOR PROTECTION AND STORAGE OF FOAMING AGENTS PREPARED BY THE MANUFACTURER FOR THE ENGINEER TO REVIEW,

2. CEMENT.
USE PORTLAND CEMENT CONFORMING TO C&MS 701.04 OR C&MS 701.05

3. WATER.
USE WATER ACCORDING TO C&MS 499.02. POTABLE WATER IS SATISFACTORY FOR USE IN CCF.

4. ADMIXTURES.
USE ADMIXTURES CONFORMING TO C&MS 499.02 FOR WATER REDUCING, RETARDING, ACCELERATING, IMPROVING THE BOND, OR FOR OTHER SPECIFIC PROPERTIES, WHEN SPECIFICALLY APPROVED BY THE SUPPLIER/PRODUCER OF THE CCF.

D. MIX DESIGN.
DESIGN OF THE PROPOSED CCF MIX WILL BE PROVIDED BY THE SUPPLIER/PRODUCER. THE PROPOSED MIX DESIGN MUST MEET THE PROPERTIES OF TABLE A.

MIX DESIGNS MUST BE APPROVED BY THE LABORATORY PRIOR TO USE. A MINIMUM OF 30 DAYS PRIOR TO PLACING CCF, SUBMIT A PROPOSED MIX DESIGN, WITH CERTIFIED TEST DATA FROM THE SUPPLIER/PRODUCER, TO THE LABORATORY, WITH A COPY TO THE ENGINEER.

E. QUALITY CONTROL.
PERFORM CAST DENSITY MEASUREMENTS ON A MINIMUM OF 8 BATCHES PER PRODUCTION DAY. MAINTAIN A LOG OF THE CAST DENSITY MEASUREMENTS.

F. QUALITY ASSURANCE.
QUALITY ASSURANCE WILL BE BASED ON THE CAST DENSITY AND COMPRESSIVE STRENGTH AT THE POINT OF PLACEMENT. ANY MIXES NOT MEETING THE TABLE A PROPERTIES WILL BE REJECTED.

1. CAST DENSITY
AT A MINIMUM, THE DEPARTMENT WILL CHECK ONE OF THE BATCHES EACH DAY AS FOLLOWS:

A) WEIGH THE CONTAINER OF KNOWN VOLUME AND RECORD THE WEIGHT. A STANDARD CONCRETE CYLINDER MOLD MAY BE USED AS THE CONTAINER.

B) FILL THE CONTAINER WITH CCF, TAPPING THE CONTAINER SIDES BRISKLY WITH A RUBBER HAMMER DURING THE FILLING.

C) OVERFILL THE CONTAINER, STRIKING OFF THE EXCESS CCF. WIPE OFF THE OUTSIDE SURFACE OF THE CONTAINER.

D) WEIGH THE FULL CONTAINER.

E) SUBTRACT THE WEIGHT OF THE EMPTY CONTAINER FROM THE FULL CONTAINER.

F) CALCULATE THE CAST DENSITY AND COMPARE IT TO THE MAXIMUM DENSITY FOR THE CLASS OF CCF.

IF THE CCF MATERIAL EXCEEDS THE MAXIMUM DENSITY FOR THE CLASS OF CCF, ADJUST THE MIX AND RECHECK THE CAST DENSITY.

2. COMPRESSIVE STRENGTH.
TAKE AT LEAST FOUR (4) TEST SPECIMENS FOR EACH 300 CUBIC YARDS (230 CUBIC METERS) OF CCF PLACED OR FOR EACH DAY'S PRODUCTION, PREPARE, CURE, AND TEST THE SPECIMENS IN ACCORDANCE WITH ASTM C796 EXCEPT AS FOLLOWS:

A) FILL AN APPROPRIATE 3-INCH BY 6-INCH (75 MM BY 150 MM) CYLINDER MOLD ACCORDING TO ASTM C796, EXCEPT STRIKE OFF THE EXCESS CCF WITH A TROWEL.

B) CURE THE MOLDS IN A CURING BOX.

C) AFTER CURING, DO NOT OVEN DRY THE SPECIMENS THAT ARE TO BE LOAD TESTED. AIR DRY THE SPECIMENS FOR 1 TO 3 DAYS PRIOR TO TESTING.

D) WHILE SPECIMENS MAY BE TESTED AT ANY AGE TO MONITOR COMPRESSIVE STRENGTH OF THE CCF, TEST A MINIMUM OF TWO SPECIMENS AT 28 DAYS FOR ACCEPTANCE.

E) PROVIDE THE 28 DAY TEST RESULTS TO THE ENGINEER.

REVIEW THE STATUS OF THE CCF MATERIAL THAT FAILS TO MEET THE MINIMUM COMPRESSIVE STRENGTH FOR THE CLASS OF CCF TO DETERMINE IF IT IS ACCEPTABLE AT THAT LOCATION.

6 3. PRE CONSTRUCTION TRIAL POUR
AT LEAST 4 DAYS PRIOR TO PRODUCTION POURS TAKING PLACE, THE CONTRACTOR SHALL MAKE AN ON-SITE TRIAL POUR OUTSIDE THE PRODUCTION AREA USING THE APPROVED PROPOSED MIX. THE TRIAL POUR SHALL HAVE VOLUME NOT LESS THAN 3 CUBIC YARDS. THE CONTRACTOR SHALL CONSTRUCT NECESSARY WATERTIGHT FORMWORK WITH A BOTTOM AND SIDES TO PROVIDE A 4 FOOT DEEP FINISHED POUR DEPTH. THE ENGINEER WILL PERFORM CAST DENSITY TESTS USING THREE (3) TEST SPECIMEN CORES OF THE TRIAL POUR COLLECTED BY THE CONTRACTOR AFTER NOT LESS THAN 24 HOURS CURE. THE ENGINEER WILL ALSO EVALUATE ANY RESULTING VOLUME LOSS WITHIN THE CELLULAR CONCRETE MATERIAL AFTER IT HAS CURED FOR A PERIOD OF NOT LESS THAN 24 HOURS. TRIAL POURS NOT MEETING THE CAST DENSITY REQUIREMENTS OR EXHIBITING VOLUME LOSS SHALL BE CAUSE FOR REJECTION OF THE MIX. IN THE EVENT THAT AN INITIAL TRIAL POUR IS REJECTED, THE CONTRACTOR SHALL CONSTRUCT ADDITIONAL FORMS FOR SUBSEQUENT TRIAL POUR(S). THE CONTRACTOR SHALL DISPOSE OFF ALL TRIAL POUR MATERIAL, FORMS, ETC. THE COST TO PERFORM TRIAL POURS SHALL BE INCIDENTAL TO THE WORK AND NO ADDITIONAL COMPENSATION WILL BE MADE.

G. CONSTRUCTION METHODS.
PLACEMENT OF CCF SHALL BE ACCORDING TO PROCEDURES PROVIDED BY THE SUPPLIER/PRODUCER.

1. PREPARATION.
THE ENGINEER WILL EXAMINE THE SUBSOIL CONDITIONS IN THE PLACEMENT AREAS. CORRECT UNSUITABLE SOIL CONDITIONS PRIOR TO PLACING THE CCF. PROPERTY FIX IN PLAN POSITION ITEMS TO BE ENCASED IN THE CCF. COAT ANY ALUMINUM TO PREVENT OXIDATION FROM THE FRESH CONCRETE.

2. WEATHER.
DO NOT PLACE CCF IF THE SUBSOIL IS FROZEN. WHEN THE AMBIENT TEMPERATURE IS LESS THAN 32°F (0°C), FOLLOW THE MANUFACTURER'S RECOMMENDATIONS SUCH AS HEATED MIX WATER OR TYP III CEMENT.

TAKE PRECAUTIONS TO AVOID DAMAGE TO THE CCF FROM FREEZING TEMPERATURES PER THE MANUFACTURER'S RECOMMENDATIONS.

3. MIXING AND CONVEYING.
USE JOB SITE MIXING AND CONVEYING EQUIPMENT FOR PROPORTIONING, MIXING AND PLACING THE CCF APPROVED BY THE SUPPLIER/PRODUCER. MIX THE MATERIALS ACCORDING TO THE SUPPLIER/PRODUCER MIX DESIGN PROCEDURES AND, PROMPTLY AFTER MIXING, CONVEY THE CCF TO ITS FINAL POSITION. AVOID EXCESSIVE HANDLING OF THE CCF.

4. PLACEMENT.
1) TOP OF THE CLASS III CCF SHALL NOT BE LESS THAN 2'-0" BELOW THE TOP OF PAVEMENT.

2) THE TOP OF THE CLASS II CCF SHALL NOT BE LESS THAN 4'-0" FROM THE TOP OF PAVEMENT.

DO NOT PLACE CCF INTO AN AREA OF STANDING WATER. PROVIDE AN INVERTED CROWN IN THE CLASS III CCF, AND PIPE UNDERDRAINS, AS SHOWN IN THE DETAILS.

CONTRACTOR SHALL PROVIDE WORKING DRAWINGS SHOWING THE FINAL WEIGHT TO BE USED IN THE FIELD, PLAN AND SECTIONS LOCATING THE CROWNS, AND LOCATIONS OF THE STEPS IN THE CLASS III CCF LIFT.

DO NOT PLACE REINFORCEMENTS AT COLD JOINTS. SUPPORT REINFORCEMENTS IN A LEVEL POSITION THROUGHOUT THEIR LENGTH AND KEEP THEM AT LEAST 6 INCHES ABOVE THE PREVIOUS DAY'S COLD JOINT.

FINISHING THE CCF:
THE TOP SURFACE OF THE CCF SHALL BE FINISHED TO DRAIN AS SHOWN ON THE PLANS. THE FINISHING MAY BE EXECUTED DURING PLACEMENT, OR GRADED AFTERWARDS, AT THE CONTRACTOR'S DISCRETION. THE FINISHED SURFACE SHALL NOT EXHIBIT EXCESSIVE CRACKING SUBJECT TO THE APPROVAL OF THE ENGINEER.

5. LOADING.
DO NOT APPLY ANY LOAD ONTO THE CCF UNTIL IT HAS ATTAINED A COMPRESSIVE STRENGTH OF AT LEAST 20 PSI (0.14 MPA).

TABLE A - CELLULAR CONCRETE FILL PROPERTIES

PROPERTY	CLASS II	CLASS III
*-CAST DENSITY, MAX	30 LB/FT^3 (481 KG/M^3)	36 LB/FT^3 (577 KG/M^3)
**-COMPRESSIVE STRENGTH, MIN. @ 28 DAYS	40 PSI (0.28 MPA)	80 PSI (0.55 MPA)
***-WATER ABSORPTION, ASTM C796, MAX.	20 PERCENT	16 PERCENT

* - SPECIFIED IN SECTION F.1 OF THIS SPECIFICATION
** - SPECIFIED IN SECTION F.2 OF THIS CLASSIFICATION
*** - EXPRESSED AS PERCENT OF CAST DENSITY

H. METHOD OF MEASUREMENT.
THE DEPARTMENT WILL MEASURE EACH CLASS OF CCF BY THE NUMBER OF CUBIC YARDS COMPLETE IN PLACE.

I. BASIS OF PAYMENT.
THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE AS FOLLOWS:

ITEM	UNIT	DESCRIPTION
SPECIAL	CUBIC YARD	ENGINEERED FILL: LIGHTWEIGHT CELLULAR CONCRETE FILL, CLASS II
SPECIAL	CUBIC YARD	ENGINEERED FILL: LIGHTWEIGHT CELLULAR CONCRETE FILL, CLASS III

ALL QUANTITIES AND COSTS ASSOCIATED WITH THIS ITEM BETWEEN STA. 176+75.48 AND STA. 179+00.00 (@ I-70 WB) SHALL BE INCLUDED IN THE ESTIMATED QUANTITIES AND COST ESTIMATE FOR WALL E7.

NO.	DESCRIPTION	REV. BY	DATE
6	ADDED NOTE	MMS	11-9-2023

RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949

DESIGNED MMS | DRAWN MMS | REVIEWED NCK 11/18/2021 | DATE
CHECKED JGM | REVISED | STRUCTURE FILE NUMBER

RETAINING WALL NOTES 4 OF 8
RETAINING WALLS
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

ITEM 203 - ROADWAY, MISC.: COLUMN SUPPORTED WALLS (WALL E2, E4)

7.4 CSW COLUMN TOLERANCES

A. THE CSW DESIGNER SHALL SPECIFY IN THE CONTRACTOR'S SUBMITTAL THE ALLOWABLE TOLERANCES FOR:

1. COLUMN VERTICALITY
2. HORIZONTAL TOLERANCE FROM PLAN LOCATION.
3. VERTICAL TOLERANCE FROM COLUMN TOP.
4. ACCEPTABLE CONDITION OF COLUMN TOPS PRIOR TO INSTALLATION OF LOAD TRANSFER PLATFORM.
5. MINIMUM COLUMN DIMENSIONS.
6. COLUMN OVERLAP REQUIREMENTS, IF APPLICABLE.
7. MINIMUM STRENGTH REQUIREMENTS OF COLUMN MATERIALS.
8. MATERIAL PROPERTIES, AS INCORPORATED INTO THE COLUMNS.
9. OTHER ITEMS, AS REQUIRED PER ODOT CMS.

B. BEFORE BEGINNING INSTALLATION, THE CONTRACTOR SHOULD ACCURATELY STAKE THE LOCATION OF THE CSW COLUMNS USING A LICENSED SURVEYOR. THE CONTRACTOR SHOULD PROVIDE AN ADEQUATE METHOD FOR LOCATING ELEMENTS TO ALLOW THE ENGINEER TO VERIFY THE AS-BUILT LOCATION OF THE ELEMENTS DURING CONSTRUCTION. THE CONTRACTOR WILL NOT BE COMPENSATED FOR ELEMENTS THAT ARE LOCATED OUTSIDE OF THE SPECIFIED TOLERANCES. IF THE ENGINEER DETERMINES THAT MISALIGNED ELEMENTS WILL INTERFERE WITH CONSTRUCTION, A METHOD OF CORRECTION SHOULD BE PREPARED BY THE CSW DESIGNER AND SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND ACCEPTANCE.

C. COLUMN ELEMENTS INSTALLED BEYOND THE MAXIMUM ALLOWABLE TOLERANCES SHALL BE ABANDONED AND REPLACED WITH NEW COLUMNS, UNLESS THE DESIGNER APPROVES THE CONDITION OR PRESCRIBES OTHER REMEDIAL MEASURES TO BE COMPLETED BY CONTRACTOR AND CSW DESIGNER. ALL MATERIAL AND LABOR REQUIRED TO REPLACE OR REMEDY REJECTED COLUMNS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE DEPARTMENT. REMEDIAL MEASURES MUST BE SUBMITTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE.

7.5 AS-BUILT COLUMN INSTALLATION RECORDS: THE CONTRACTOR MUST SUBMIT AS-BUILT FIELD MEASUREMENT DATA INDICATING SURVEYED AS-BUILT PLAN LOCATIONS OF EACH CSW ELEMENT, INCLUDING THE ELEMENT CENTER (PER SITE SPECIFIC COORDINATES), THE ELEMENT DIMENSION, THE COLUMN VERTICALITY, AND THE TOP AND BOTTOM ELEVATIONS OF EACH ELEMENT TO THE ACCURACY REQUIRED BY THE PROJECT SPECIFICATIONS. THE AS-BUILT DOCUMENTATION MUST BE APPROVED BY THE DESIGNER AND SUBMITTED TO THE ENGINEER NO LATER THAN 90 DAYS AFTER THE COMPLETION OF EACH CSW-STABILIZED ZONE. A DISINCETIVE OF $300.00 PER DAY WILL BE ASSESSED FOR EACH DAY BEYOND 90 DAYS THAT THE COMPLETED AS-BUILT DRAWINGS ARE NOT SUBMITTED TO THE ENGINEER.

7.6 SELECT FILL PLACEMENT AND QA/QC REQUIREMENTS (LOAD TRANSFER PLATFORMS)

A. NO GEOSYNTHETIC REINFORCEMENT OR FILL MATERIALS SHALL BE PLACED PRIOR TO SATISFYING THE COLUMN PERFORMANCE CRITERIA, UNLESS THE FILL MATERIAL IS REQUIRED AS A WORKING PLATFORM FOR COLUMN INSTALLATION.

B. INSTRUMENTATION FOR PERFORMANCE MEASUREMENTS AND INSTRUMENTATON FOR MONITORING OF EXISTING STRUCTURES AND EMBANKMENTS SHALL BE INSTALLED PRIOR TO PLACEMENT OF ANY SELECT FILL OR GEOSYNTHETIC REINFORCEMENT.

C. PRIOR TO CONSTRUCTION OF THE LOAD TRANSFER PLATFORM, THE CONTRACTOR SHALL PREPARE SUBGRADE, AND REMOVE ANY DELETERIOUS MATERIALS SUCH AS TREE ROOTS. THE FOUNDATION SOIL SHALL BE OBSERVED AND APPROVED BY THE ENGINEER PRIOR TO PLACEMENT OF SELECT REINFORCED FILL.

D. IF CEMENTITIOUS GROUND IMPROVEMENT METHODS ARE USED, PLACEMENT OF FILL MATERIAL SHALL NOT START UNTIL THE COLUMNS HAVE GAINED ADEQUATE STRENGTH TO SUPPORT THE FILL MATERIALS AND FILL INSTALLATION AND CONSTRUCTION EQUIPMENT.

E. SELECT REINFORCED FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 10 IN. IN UNCOMPACTED THICKNESS FOR HEAVY COMPACTION EQUIPMENT. FOR ZONES WHERE COMPACTION IS ACCOMPLISHED WITH HAND-OPERATED COMPACTION EQUIPMENT, FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 6 IN. IN UNCOMPACTED THICKNESS.

F. SELECT REINFORCED FILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH ITEM 203. THIS MAY NOT BE ACHIEVABLE FOR THE FIRST LIFT OF FILL BECAUSE OF THE WEAK SUBGRADE BETWEEN COLUMNS, HOWEVER, SUBSEQUENT LIFTS SHOULD MEET THE MINIMUM REQUIREMENTS.

G. TEST METHODS AND FREQUENCY, AND VERIFICATION OF MATERIAL SPECIFICATIONS AND COMPACTION, SHALL BE THE RESPONSIBILITY OF THE STATE.

7.7 GEOSYNTHETIC REINFORCEMENT PLACEMENT AND QA/QC REQUIREMENTS

A. PLACE REINFORCEMENT AT THE LOCATIONS AND ELEVATION SHOWN ON THE CONTRACTORS ENGINEERED DRAWINGS. NO CHANGES TO THE GEOSYNTHETIC REINFORCEMENT LAYOUT, INCLUDING, BUT NOT LIMITED TO LENGTH, REINFORCEMENT TYPE (I.E., STRENGTH), DIRECTION OF REINFORCEMENT, OR ELEVATION SHALL BE MADE WITHOUT THE EXPLICIT WRITTEN APPROVAL OF THE DESIGNER. CONTRACTOR SHALL SUBMIT THE CHANGES TO THE ENGINEER FOR ACCEPTANCE.

B. CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOSYNTHETIC REINFORCEMENT. A MINIMUM FILL THICKNESS OF 150 MM (6 IN.) IS REQUIRED FOR OPERATION OF VEHICLES OVER THE REINFORCEMENT. TURNING OF VEHICLES SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS OR TIRES FROM DISPLACING THE FILL AND/OR GEOSYNTHETIC REINFORCEMENT.

C. MINIMUM OVERLAP OF ADJACENT ROLLS OF REINFORCEMENT SHALL BE AS INDICATED BY THE DESIGNER OF THE CONTRACTOR'S ENGINEERED DRAWINGS.

D. EACH ROLE OF GEOSYNTHETIC REINFORCEMENT SHOULD BE INSPECTED BY THE CONTRACTOR TO ENSURE THAT IT IS UNDAMAGED PRIOR TO COVERING WITH FILL MATERIAL.

E. CARE SHALL BE TAKEN TO PREVENT EXCESSIVE MUD, WET CONCRETE, EPOXY, OR OTHER DELETERIOUS MATERIALS FROM COMING IN CONTACT WITH AND AFFIXING TO THE GEOGRID MATERIALS.

F. GEOSYNTHETIC REINFORCEMENT SHALL BE STORED AT TEMPERATURES RECOMMENDED BY THE MANUFACTURER.

G. GEOSYNTHETIC REINFORCEMENT SHALL NOT BE LEFT DIRECTLY EXPOSED TO SUNLIGHT FOR A PERIOD LONGER THAN RECOMMENED BY THE MANUFACTURER OR ONE MONTH WHICHEVER IS SHORTER.

H. ANY ROLL OR PORTION OF A ROLL OF GEOSYNTHETIC DAMAGED BEFORE, DURING, AND/OR AFTER INSTALLATION SHALL BE REPLACED BY THE CONTRACTOR.

I. LARGE PILES OF FILL MATERIAL SHALL NOT BE PLACED ON THE GEOSYNTHETIC REINFORCEMENT.

J. IF GEOTEXTILE SEAMS ARE SPECIFIED, THE SEAMS SHOULD BE PLACED UP AND EVERY STITCH SHOULD BE INSPECTED.

K. THE CONTRACTOR SHALL REMOVE SLACK AND WRINKLES FROM THE GEOSYNTHETIC PRIOR TO PLACING FILL.

L. THE CONTRACTOR SHALL SUBMIT THE LOT NUMBERS AND ROLL NUMBERS ALONG WITH THEIR LOCATIONS WITHIN THE EMBANKMENT FOR ALL GEOSYNTHETIC REINFORCEMENT.

PART 8 POST-INSTALLATION PERFORMANCE MONITORING INSTRUMENTATION

6

8.1 POST-INSTALLATION PERFORMANCE MONITORING INSTRUMENTATION: SIX (6) SETS OF CSW PERFORMANCE MONITORING INSRUMENTATION SHALL BE INSTALLED. THIS INSTRUMENTATION WILL BE PLACED TO MONITOR THE PERFORMANCE OF THE CSW SYSTEM AFTER IT HAS BEEN SUCCESSFULLY CONSTRUCTED AND IS SUBJECTED TO THE CONSTRUCTION LOADING AND SUBSEQUENT SERVICE LOADING. THE INSTALLATION MAY BE PERFORMED BY THE PRIME CONTRACTOR, THE CONTRACTOR, OR AN INSTRUMENTATION SUBCONTRACTOR OR CONSULTANT (OR IN WHOLE OF IN PART BY COMBINATIONS THEREOF). IMPORTANT NOT: IN THE EVENT THAT THIS QA MONITORING WORK IS NOT TO BE COORDINATED OR PERFORMED BY THE CSW CONTRACTOR, THE CSW CONTRACTOR SHALL BE REQUIRED TO SPECIFICALLY COORDINATE THIS WORK AND SUBMIT A WORK PLAN TO THE ENGINEER PRIOR TO INITIATING THE CSW WORK.

6

A. THE INSTRUMENTATION SHALL BE INSTALLED AS DESCRIBED IN THE FOLLOWING SUBSECTIONS, AT THE APPROXIMATE LOCATIONS IN THE TABLE ON SHEET 8/8, THE SPECIFIC LOCATIONS TO BE DETERMINED BY THE CONTRACTOR AS ACCEPTED BY THE ENGINEER SUCH THAT CONSTRUCTION INTERFERENCE AND THE POTENTIAL FOR DAMAGE IS MINIMIZED. THE INSTALLATIONS SHALL ALSO BE PLACED SUCH THAT DATA MAY CONTINUE TO BE ACQUIRED ONCE THE FACILITY HAS BEEN PLACED IN SERVICE. DETAILS OF THE EXACT INSTALLATION LOCATIONS WILL BE DETERMINED AT THE PRE-CONSTRUCTION MEETING.

B. MINIMUM INSTRUMENTATION PROVIDED BY THE CONTRACTOR IS TO CONSIST OF:

1. SETTLEMENT PLATES, TO BE INSTALLED ON TOP OF THE LOAD/TRANSFER PLATFORM.
2. PIEZOMETERS TO MONITOR PORE PRESSURES BENEATH THE MSE WALLS AND EMBANKMENTS IN THE STABILIZED ZONE.

C. CONTRACTOR SHALL RECORD INSTRUMENTATION DATA FROM THE TIME OF INSTALLATION (END OF CSW CONSTRUCTION) UNTIL 30 DAYS AFTER THE WALLS REACH THEIR FINAL PLAN ELEVATION (LESS COPING AND PAVEMENTS). READINGS SHALL BE TAKEN TWICE WEEKLY DURING WALL AND EMBANKMENT FILL PLACEMENT AND AT INTERVALS NOT TO EXCEED 15 CALENDAR DAYS AT OTHER TIMES. DATA FROM ALL SENSORS SHALL BE READ IN A UNIFORM MANNER, SUCH THAT ALL DATA IS TAKEN WITHIN A 2-DAY PERIOD AT THE 15 (OR 30) DAY INTERVALS TO AID IN THE EVALUATION OF THE DATA AND SUBSEQUENT PRESENTATION OF RESULTS.

D. IF THE WALLS SUPPORTED OVER THE CSW ELEMENTS HAVE COMPLETED SETTLEMENT IN ACCORDANCE WITH THE PERFORMANCE CRITERIA WITHIN 30 DAYS OF SUBSTANTIAL WALL COMPLETION AS DEFINED IN 1.1.A.6 ABOVE, THE CONTRACTOR MAY TURN OVER FURTHER MONITORING OF THE DATA TO THE DEPARTMENT. IF THE WALLS HAVE NOT COMPLETED SETTLEMENT IN ACCORDANCE WITH THE DESIGN CRITERIA, THE CONTRACTOR SHALL CONTINUE MONITORING EFFORTS (AT NO ADDITIONAL COST TO THE DEPARTMENT) AS DIRECTED BY THE ENGINEER.

E. INSTRUMENTATION SHALL BE INSTALLED AFTER THE CONSTRUCTION OF THE CSW ELEMENTS WITHIN THE IN-SITU SOILS AND PRIOR TO MSE WALL CONSTRUCTION OR EMBANKMENT FILL PLACEMENT. A MINIMUM OF 2 SETS OF BASELINE READINGS SHALL BE TAKEN AND CONFIRMED PRIOR TO THE CONSTRUCTION OF ELEMENTS ABOVE THE INSTALLED CSW CONSTRUCTION.

F. INSTRUMENTATION SHALL BE ELECTRONIC AND SELF-RECORDING, WHERE PRACTICAL. READINGS FROM SENSORS SHALL BE TAKEN WITH AUTOMATED DATA COLLECTION SYSTEMS. ANY PARTICULAR INSTRUMENT TYPE SHALL BE OBTAINED FROM THE SAME MANUFACTURER TO MINIMIZE POTENTIAL INCOMPATIBILITIES AND ERRORS. DATA ACQUISITION DEVISES (DATA LOGGERS) SHALL BE OF A TYPE COMPATIBLE WITH EACH TYPE OF INSTRUMENTATION AND RECOMMENDED BY THE MANUFACTURER.

H. ALL INSTRUMENTATION AND ASSOCIATED MONITORING AND DATA COLLECTION DEVICES (PROBES, CABLES, DATA COLLECTORS, ETC.) BECOME THE PROPERTY OF THE DEPARTMENT AT THE END OF THE MONITORING PERIOD. ELECTRONIC FILES AND ALL DATA REPORTS SHALL BE PROVIDED TO THE DEPARTMENT AT THE END OF THE MONITORING PERIOD.

I. THE DEPARTMENT RESERVES THE RIGHT TO PUBLISH THE INFORMATION FROM THE MONITORING INVESTIGATION IN INTERNAL AND EXTERNAL TECHNICAL PUBLICATIONS.

J. THE PERFORMANCE MONITORING INSTRUMENTATION AND ASSOCIATED DATA COLLECTION AND ANALYSIS SHALL NEITHER BE USED AS A BASIS OF PAYMENT NOR AS A PERFORMANCE CRITERIA FOR THE DETERMINATION OF SUCCESSFUL INSTALLATION OF THE CSW APPLICATION.

K. INSTRUMENTS SHALL MEET ACCEPTED INDUSTRY STANDARDS AND HAVE AN ACCURACY OF +/- 0.5% WITH A MINIMUM PRECISION OF +/- 0.5% OF FULL SCALE (SPAN).

L. INSTRUMENTS SHALL HAVE APPROPRIATE RUGGEDNESS TO SURVIVE INSTALLATION AND CONSTRUCTION PROCESSES SUCH THAT THEY READ WITH THE MINIMUM PRECISION AND ACCURACY OVER THE DURATION OF CONSTRUCTION AND A MINIMUM OF EIGHTEEN (18) MONTHS OF SERVICE FOLLOWING CONSTRUCTION.

M. INSTRUMENTATION SHALL HAVE AN OPERATING TEMPERATURE RANGE AS APPROPRIATE FOR CONDITIONS ANTICIPATED WHERE INSTALLED (I.E. WITHIN OR ABOVE A CSW ELEMENT).

N. CABLING TO EACH SENSOR (REQUIRING CABLING) SHALL BE INCLUDED SUCH THAT DATA MAY BE OBTAINED AT ALL PHASES OF CONSTRUCTION AND WHEN THE NEW CONSTRUCTION IS IN SERVICE. THE DISTANCE FROM THE DATA ACQUISITION SYSTEM TO ANY GIVEN SENSOR SHALL BE A MINIMUM HORIZONTAL DISTANCE FROM THE SENSOR TO THE OUTSIDE OF THE NEAREST RETAINING WALL OR ABUTMENT FACE, PLUS A MINIMUM CABLING AMOUNT TO PROVIDE FOR ANY NECESSARY VERTICAL TRAVEL TO THE GROUND SURFACE, PLUS 6 FT.

O. THE INSTRUMENTATION INSTALLATIONS SHALL BE ADEQUATELY PROTECTED FROM CONSTRUCTION IMPACTS, DURING CONSTRUCTION, AS WELL AS WEATHER EFFECTS, AND VANDALISM. APPROPRIATE LOCKED CASINGS AND/OR REMOVABLE CABLING AND PLASTIC CONNECTOR CAPS AND RELATED PROTECTIVE DEVICES SHALL BE PROVIDED TO ENSURE THE INTEGRITY OF THE INSTRUMENTATION OVER THE PROPOSED MONITORING DURATION.

P. THE PLAN FOR INSTALLATION OF INSTRUMENTATION SHALL BE APPROVED BY THE DESIGNER AND SUBMITTED TO THE ENGINEER FOR ACCEPTANCE PRIOR TO PLACEMENT.

PART 9 ACCEPTANCE CRITERIA

9.1 ACCEPTANCE CRITERIA: THE COLUMN-SUPPORTED WALL IS CONSIDERED ACCEPTABLE WHEN THE EMBANKMENT CONSTRUCTION AND QC/QA REQUIREMENTS ARE COMPLETED IN ACCORDANCE WITH SECTION 7, COMPLIANCE WITH THE PERFORMANCE CRITERIA FROM PARAGRAPH 1.1 IS DEMONSTRATED, AND NO DAMAGE TO ADJACENET FACILITIES IS FOUND OR COMPENSATION IS MADE FOR DAMAGED CAUSED OR DAMAGE IS REPAIRED AT CONTRACTOR'S EXPENSE.

PART 10 CSW PAYMENT

10.1 ALL COST IN CONNECTION WITH MOBILIZATION AND DEMOBILIZATION OF MATERIALS, EQUIPMENT AND LABOR FOR THE CONSTRUCTION OF COLUMN-SUPPORTED WALLS (CSW) AS REQUIRED IN THIS SPECIFICATION, SHALL BE IN PAID FOR UNDER ITEM 203 - ROADWAY MISC; COLUMN SUPPORTED WALLS.

10.2 ALL COST IN CONNECTION WITH DESIGN, EQUIPMENT, MATERIAL, AND LABOR FOR THE INSTALLATION OF COLUMN-SUPPORTED WALLS (CSW), INCLUDING COLUMN MATERIALS AND CONSTRUCTION, QC MONITORING, INSTRUMENTATION, WORKING AND LOAD TRANSFER PLATFORM MATERIALS, WICK DRAINS IF NECESSARY TO MEET SETTLEMENT REQUIREMENTS, AND THE GEOSYNTHETIC REINFORCEMENTS AS REQUIRED IN THIS SPECIFICATION, SHALL BE INCIDENTAL TO ITEM-203. SEPARATE PAYMENT WILL NOT BE MADE FOR SITE PREPARATION, DEWATERING, TEMPORARY WORKS TO FACILITATE CONSTRUCTION, ETC. INCLUDE ALL THE ANTICIPATED COSTS IN PRICE BID FOR ITEM 203 - ROADWAY, MISC.: COLUMN SUPPORTED WALLS. GROUND IMPROVEMENT AREAS HAVE BEEN DEFINED IN THE PLANS FOR BIDDING PURPOSES. ADDITIONAL COLUMN SUPPORTS SHALL BE PROVIDED AS NECESSARY BEYOND THE DEFINED AREAS TO SATISFY GLOBAL STABILITY AND SHALL BE INCIDENTAL TO THIS ITEM.

10.3 ALL COSTS ASSOCIATED WITH THE INSTALLATION OF TEST COLUMNS, REACTION FRAMES, INSTRUMENTATION, PERFORMANCE, ANALYSIS, AND REPORTING OF TEST RESULTS TO ENGINEER SHALL BE INCLUDED IN UNIT BID FOR ITEM - 203, ROADWAY, MISC.: COLUMN SUPPOPRTED WALLS.

10.4 THE TERMS CSW AND COLUMN SUPPORTED WALLS SHALL BE USED INTERCHANGEABLY THROUGHOUT THE PLANS.

NO.	DESCRIPTION	REV. BY	DATE
6	UPDATED NOTES	MMS	11-6-2023

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RETAINING WALL NOTES 7 OF 8
RETAINING WALLS
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

MSE WALL DESIGN CRITERIA:

THE FACTORED BEARING RESISTANCE FOR EACH MSE WALL IS LISTED IN THE TABLE BELOW:

6

RETAINING WALL DESIGN CRITERIA

WALL LOCATION	DESCRIPTION	WALL LIMITS			WALL TYPE	BACKFILL TYPE	FOUNDATION TREATMENT	BEARING RESISTANCE (KSF)		MIN. REINF. LENGTH	TARGET MIN. ELEVATION (FT)	BEARING PRESSURE (KSF)	
		ALIGNMENT	FROM STA.	TO STA.				BEFORE GROUND IMPROVEMENT	REQUIRED AFTER GROUND IMPROVEMENT			STRENGTH LIMIT	SERVICE LIMIT
E2	WALL SECTION SUPPORTING REAR ABUTMENT OF BRIDGE NO. FRA-70-1358L (I-70 WB OVER CSX/NS RAILROAD)	B/L WALL E2	200+68.45	201+62.80	MSE	SGB	CSW	2.76	8.26 (6)	0.70 X H	700	8.26	4.26
			201+62.80	202+02.72	MSE	SGB	NONE **	5.07	N/A	1.15 X H #	N/A	5.06	3.06
E3	WALL SECTION SUPPORTING RAMP I-70 WB ROADWAY ON NORTH SIDE OF I-70 EB	B/L WALL E3	307+00.00	310+35.80	MSE	SGB	NONE **	6.99	N/A	0.70 X H #	N/A	3.58	2.43
E4	WALL SECTION SUPPORTING RAMP D7 ROADWAY WEST OF SHORT STREET (OR NORTH OF I-70 WB)	B/L WALL E4	402+90.45	404+75	MSE	SGB	CSW	2.26	6.63 (6)	0.70 X H	695	6.63	5.05
			404+75.00	407+00.00	MSE	SGB	CSW	5.19	N/A *	0.70 X H	695	4.01	5.59
			407+00.00	409+50.00	MSE	SGB	CSW	3.52	9.64	0.70 X H	695	9.64	6.80
	WALL SECTION SUPPORTING FORWARD ABUTMENT OF BRIDGE NO. FRA-70-1358L (I-70 WB OVER CSX/NS RAILROAD)		409+50.00	411+04.66	MSE	SGB	CSW	6.35	9.72	0.70 X H	695	9.72	5.10
E7	WALL SECTION SUPPORTING FORWARD ABUTMENT OF BRIDGE NO. FRA-70-1373L (I-70 WB OVER SHORT STREET)	B/L WALL E7	705+60.87	706+28.57	MSE	CCF	NONE **	2.86	N/A	0.70 X H #	N/A	2.38	1.76
E9	WALL SECTION SUPPORTING REAR ABUTMENT OF BRIDGE NO. FRA-70-1373L (I-70 WB OVER SHORT STREET)	B/L WALL E9	901+56.27	903+12.20	MSE	SGB	NONE **	12.27	N/A	0.90 X H #	N/A	9.68	6.95

6

BASED ON THE SOIL REINFORCEMENT LENGTHS IDENTIFIED FOR EACH WALL SECTIONS, THE REINFORCED SOIL PRODUCES MAXIMUM BEARING PRESSURE AS IDENTIFIED IN THE TABLE ABOVE.

** - WHERE CSW IS NOT REQUIRED THE FOUNDATION SOIL SHALL BE EVALUATED BY THE GEOTECHNICAL ENGINEER OF RECORD DURING CONSTRUCTION TO DETERMINE SUITABILITY FOR SUPPORT OF THE APPLIED BEARING STRESSES.

- PROVIDE MINIMUM SOIL REINFORCEMENT LENGTH EQUAL TO THE GREATER OF 8 FEET OR THE VALUE SPECIFIED IN THE ABOVE TABLE, ACCORDING TO SUPPLEMENTAL SPECIFICATION 840.04.

H = WALL HEIGHT AS DEFINED ACCORDING TO SUPPLEMENTAL SPECIFICATION 840.04.

* - GROUND IMPROVEMENT PROVIDED FOR LIMITING THE GROUND SETTLEMENT WITHIN TOLERANCE LIMITS.

6

POST-INSTALLATION PERFORMANCE MONITORING INSTRUMENTATION LOCATIONS

WALL	S.P. No.	STATION	OFFSET	SETTLEMENT PLATFORM ELEVATION	PIEZOMETER ELEVATION
WALL E2	S.P. 1	201+09.16	13.35 L	EL. 716.85	EL. 707
WALL E4	S.P. 3	408+25.00	15.00 L	EL. 726.00	EL. 707
WALL E4	S.P. 4	409+99.19	14.76 L	EL. 711.00	EL. 707
WALL E4	S.P. 5	410+51.02	15.98 L	EL. 711.00	EL. 707
WALL E7	S.P. 6	705+68.45	9.86 L	EL. 708.50	EL. 700
WALL E7	S.P. 7	706+26.07	9.95 L	EL. 708.50	EL. 700

NO.	DESCRIPTION	REV. BY	DATE
6	UPDATED BEARING RESISTANCE	MMS	11-6-2023
6	ADDED MONITORING INSTRUMENT LOCATION TABLE	MMS	11-6-2023
6	ADDED BEARING PRESSURE	MMS	11-6-2023
6	ADDED NOTE	MMS	11-6-2023

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RETAINING WALL NOTES 8 OF 8
RETAINING WALLS
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

CALCULATED BY: MMS DATE: 11/18/2021
CHECKED BY: JGM DATE: 11/18/2021

ESTIMATED QUANTITIES

ITEM	ITEM EXT	TOTAL	UNIT	DESCRIPTION	AS PER PLAN REFERENCE SHEET
203	07500	1	EACH	SPECIAL - PNEUMATIC PIEZOMETER	6
203	20000	261	CU YD	EMBANKMENT	6
203	35110	1112	CU YD	GRANULAR MATERIAL, TYPE B	
203	65000	2	EACH	SPECIAL - SETTLEMENT PLATFORM	661 667
203	98100	273	SQ YD	ROADWAY MISC.: COLUMN SUPPORTED WALLS	664
503	11101	LS	LS	COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	660
512	10001	129	SQ YD	SEALING OF CONCRETE SURFACES, AS PER PLAN (PERMANENT GRAFFITI PROTECTION)	660
512	10100	168	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY URETHANE)	
516	13200	121	SQ FT	1/2" PREFORMED EXPANSION JOINT FILLER	
601	21000	45	SY	CONCRETE SLOPE PROTECTION	
840	20001	2115	SQ FT	MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN	660
840	21000	298	CU YD	WALL EXCAVATION	
840	22000	368	SQ YD	FOUNDATION PREPARATION	
840	23000	1851	CU YD	SELECT GRANULAR BACKFILL	
840	25010	312	FT	6" DRAINAGE PIPE, PERFORATED	
840	26000	135	FT	CONCRETE COPING	
840	26050	2115	SQ FT	AESTHETIC SURFACE TREATMENT	
840	27000	5	DAY	ON-SITE ASSISTANCE	

NO.	DESCRIPTION	REV. BY	DATE
6	ADDED ITEM203 - PNEUMATIC PIEZOMETER QUANTITY	MMS	11-6-2023
6	UPDATED AS PER PLAN REFERENCE SHEET NUMBERS	MMS	11-6-2023

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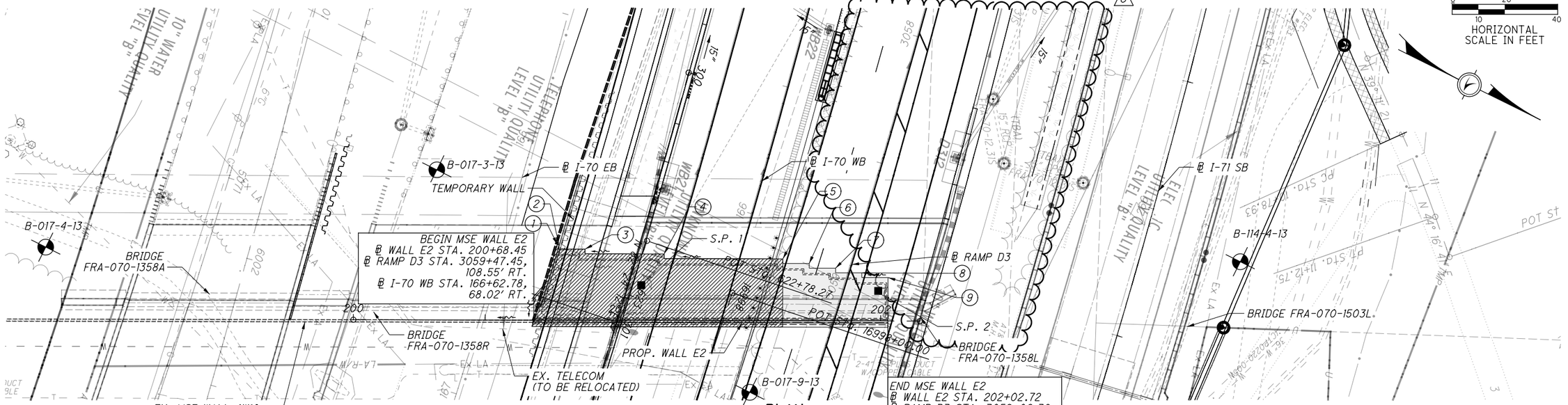
ESTIMATED QUANTITIES
RETAINING WALL E2
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-.13.10
PID No. 77372



PLAN

MSE WALL E2, TANGENT 1
STA. 200+68.45
STA. 202+02.72
L = 134.92'
BRG. = N 26°10'01" W

EX. MSE WALL 4W10 (CONSTRUCTED BY PROJECT 4A)

ALL STATIONS AND OFFSETS ARE FROM THE ℄ OF WALL E2

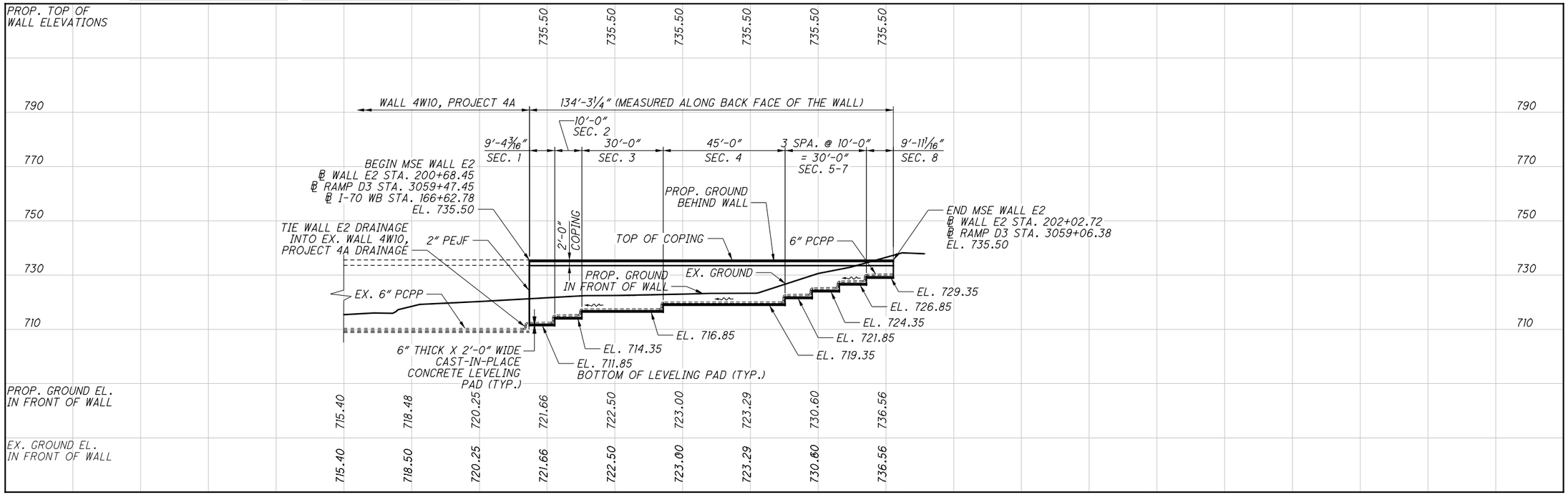
	STATION	OFFSET
1	200+77.24	28.71' LT.
2	200+77.80	28.71' LT.
3	200+87.80	26.96' LT.
4	201+17.80	25.21' LT.
5	201+62.80	23.46' LT.
6	201+72.80	21.71' LT.
7	201+82.80	19.96' LT.
8	201+92.80	18.21' LT.
9	202+02.72	16.46' LT.

NOTES:

1. LEVELING PAD ELEVATIONS ARE GIVEN AT BOTTOM OF PAD.
2. ALL EXISTING UTILILITIES TO BE REMOVED/RELOCATED UNLESS NOTED OTHERWISE.
3. STATIONING IS ALONG ℄ WALL E2.
4. STATIONS AND OFFSETS ARE GIVEN AT BACK FACE OF THE WALL.
5. TOP OF WALL ELEVATIONS ARE GIVEN AT TOP OF COPING.

LEGEND:

- 6" DIA PERF CPP
- PROJECT BORING LOCATION
- SETTLEMENT PLATFORM & PIEZOMETER
- HISTORIC BORING LOCATION
- = PLAN BOUNDARY FOR ITEMS INCLUDED WITH MSE WALL E2 FOR PAYMENT
- = LIMITS OF GROUND IMPROVEMENT NEEDED = 273 SY



ELEVATION ALONG BACK OF WALL

NO.	DESCRIPTION	REV. BY	DATE
6	REMOVED HATCH PATTERN	MMS	11-6-2023
6	UPDATED LEGEND	MMS	11-6-2023

RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949

DESIGNED	DRAWN	REVIEWED	DATE
JGM	JGM	NCK	11/18/2021
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MMS	—		

MSE RETAINING WALL E2 - PLAN AND ELEVATION 1 OF 1
I-70 EB, I-70 WB & RAMP D3
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

2 / 3

669
702

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CALCULATED BY: JGM DATE: 11/18/2021
CHECKED BY: MMS DATE: 11/18/2021

ESTIMATED QUANTITIES

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	AS PER PLAN REFERENCE SHEET
203	07500	3	EACH	SPECIAL - PNEUMATIC PIEZOMETER	667
203	20000	1334	CU YD	EMBANKMENT	
203	35110	919	CU YD	GRANULAR MATERIAL, TYPE B	
203	98100	1336	SQ YD	ROADWAY MISC.: COLUMN-SUPPORTED WALLS *	664
203	65000	3	EACH	SPECIAL - SETTLEMENT PLATFORM	661 , 667
503	11101	LS	LS	COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN	660
509	10001	49546	LB	EPOXY COATED REINFORCING STEEL, AS PER PLAN	660
511	53012	332	CU YD	CLASS QC2 CONCRETE, MISC.: PARAPET INCLUDING SLEEPER SLAB WITH QC/QA	
512	10001	216	SQ YD	SEALING OF CONCRETE SURFACES, (PERMANENT GRAFFITI PROTECTION), AS PER PLAN	660
512	10100	1841	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY URETHANE)	
516	13200	70	SQ FT	1/2" PREFORMED EXPANSION JOINT FILLER	
516	13900	1241	SQ FT	2" PREFORMED EXPANSION JOINT FILLER	
601	21000	35	SY	CONCRETE SLOPE PROTECTION	
840	20001	14829	SQ FT	MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN	660
840	21000	1036	CU YD	WALL EXCAVATION	
840	23000	1381	CU YD	SELECT GRANULAR BACKFILL	
840	25010	1172	FT	6" DRAINAGE PIPE, PERFORATED	
840	26000	707	FT	CONCRETE COPING	
840	26001	123	FT	CONCRETE COPING, AS PER PLAN	686
840	26050	14829	SQ FT	AESTHETIC SURFACE TREATMENT	
840	27000	5	DAY	ON-SITE ASSISTANCE	

* - QUANTITY FOR COLUMN-SUPPORTED WALLS INCLUDES GROUND IMPROVEMENTS PERFORMED UNDER THIS SET OF PLANS. SEE SHEETS 692 FOR LIMITS.

NO.	DESCRIPTION	REV. BY	DATE
6	ADDED ITEM203 - PNEUMATIC PIEZOMETER QUANTITY	MMS	11-6-2023
6	UPDATED AS PER PLAN REFERENCE SHEET NUMBERS & SETTLEMENT PLATFORM QUANTITY	MMS	11-6-2023
6	REMOVED FOUNDATION PREPARATION QUANTITY	MMS	11-6-2023

RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949

DESIGNED KSJ | DRAWN MMS | REVIEWED NCK | DATE 11/18/2021
CHECKED MMS | REVISED | STRUCTURE FILE NUMBER

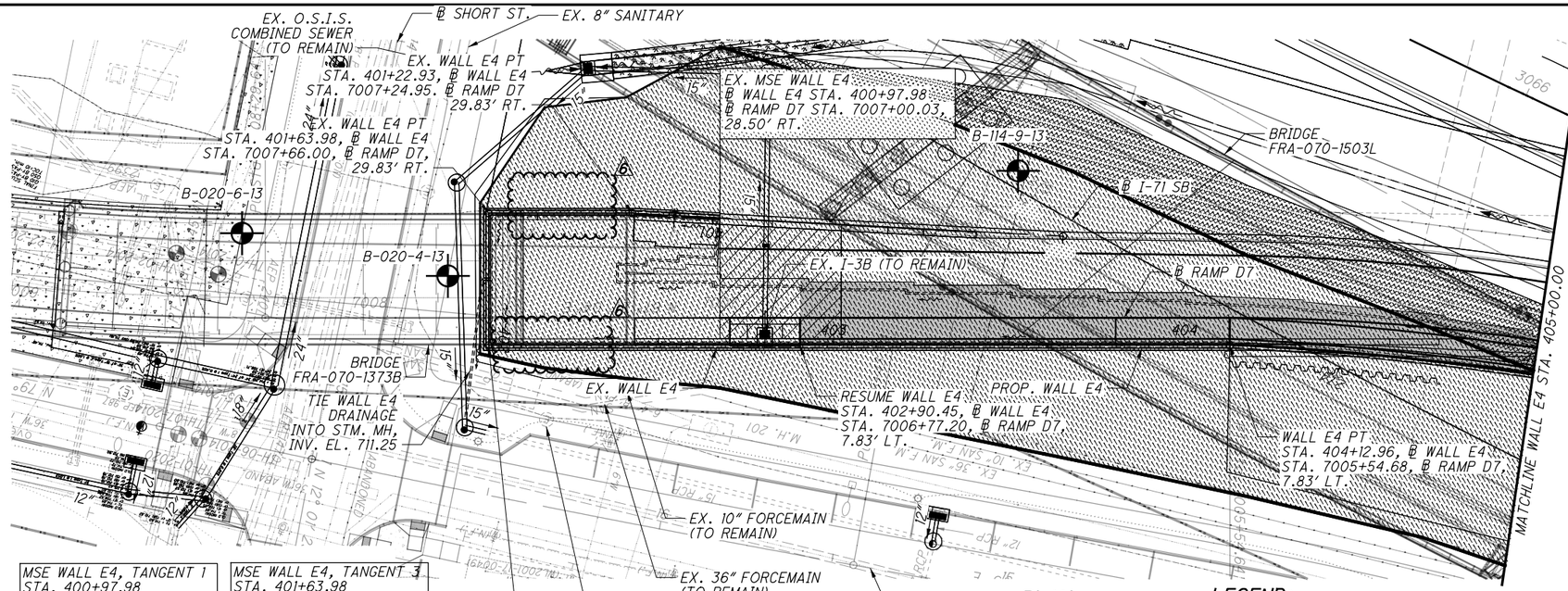
ESTIMATED QUANTITIES
RETAINING WALL E4
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

NO.	DESCRIPTION	REV. BY	DATE
6	REMOVED EX. SETTLEMENT PLATFORM CALLOUT	MMS	11-6-2023

NOTES:

1. ITEM 503, COFFERDAMS AND EXCAVATION BRACINGS, AS PER PLAN: THE DESIGN SHOWN ON THE PLANS FOR TEMPORARY SUPPORT OF EXCAVATION IS ONE REPRESENTATIVE DESIGN THAT MAY BE USED TO CONSTRUCT THE PROJECT. THE CONTRACTOR MAY CONSTRUCT THE DESIGN SHOWN ON THE PLANS OR PREPARE AN ALTERNATE DESIGN TO SUPPORT THE SIDES OF EXCAVTIONS. IF CONSTRUCTING AN ALTERNATE DESIGN FOR TEMPORARY SUPPORT OF EXCAVATION, PREPARE AND PROVIDE PLANS IN ACCORDANCE WITH C&MS 501.05. THE DEPARTMENT WILL PAY FOR THE TEMPORARY SUPPORT OF EXCAVATION AT THE CONTRACT LUMP SUM PRIVE FOR COFFERDAMS AND EXCAVATION BRACING. NO ADDITIONAL PAYMENT WILL BE MADE FOR PROVIDING AN ALTERNATE DESIGN.
2. LEVELING PAD ELEVATIONS ARE GIVEN AT BOTTOM OF PAD.
3. ALL EXISTING UTILILITIES TO BE REMOVED/RELOCATED UNLESS NOTED OTHERWISE.
4. STATIONING IS ALONG ℄ WALL E4.
5. STATIONS AND OFFSETS ARE GIVEN AT BACK FACE OF THE WALL.
6. TOP OF WALL ELEVATIONS ARE GIVEN AT TOP OF COPING.
7. SOIL REINFORCEMENT SHALL BE CONSTRUCTED SO AS TO AVOID INTERFERENCE WITH PROPOSED DRAINAGE STRUCTURES.
8. GROUND IMPROVEMENT SHALL BE IN THE FORM OF COLUMN SUPPORTED WALLS AND A 3'-0" THICK DENSE GRADE AGGREGATE LOAD TRANSFER PLATFORM (LTP). THE BOTTOM 1'-0" OF THE LTP IS CONSIDERED A WORKING PLATFORM. FOR ADDITIONAL INFORMATION, SEE NOTES ON SHEET 3 / 13.



PLAN

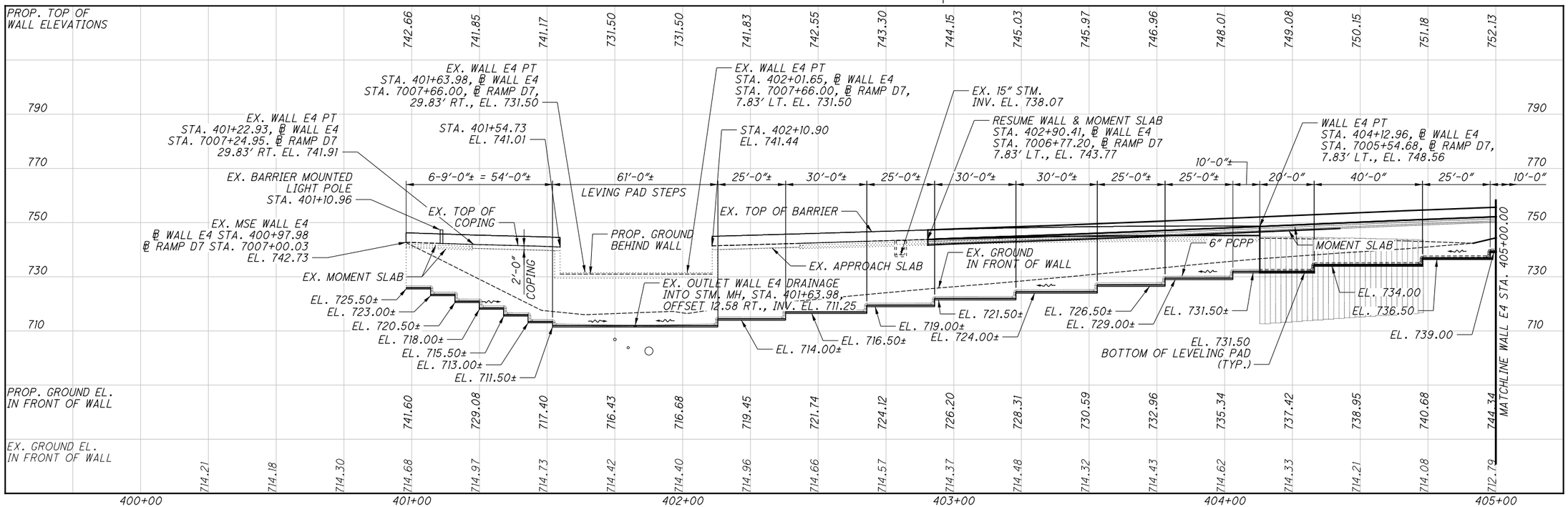
MSE WALL E4, TANGENT 1	MSE WALL E4, TANGENT 3
STA. 400+97.98	STA. 401+63.98
STA. 401+22.93	STA. 402+01.65
L = 24.95'	L = 37.67'
BRG. = N 70°30'27" E	BRG. = S 22°32'56" E

MSE WALL E4, TANGENT 2	MSE WALL E4, TANGENT 4
STA. 401+22.93	STA. 402+01.65
STA. 401+63.98	STA. 404+12.96
L = 41.05'	L = 211.31'
BRG. = N 67°27'04" E	BRG. = N 67°27'04" E

LEGEND:

- 6" DIA PERF CPP
- PROJECT BORING LOCATION
- SETTLEMENT PLATFORM AND PIEZOMETER
- LIGHT POLE LOCATION
- HISTORIC BORING LOCATION
- = LIMIT OF GROUND IMPROVEMENT PREVIOUSLY PERFORMED
- = PLAN BOUNDARY FOR ITEMS INCLUDED WITH MSE WALL E4 FOR PAYMENT

HORIZONTAL SCALE IN FEET
0 10 20 40



ELEVATION ALONG BACK OF WALL

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RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949

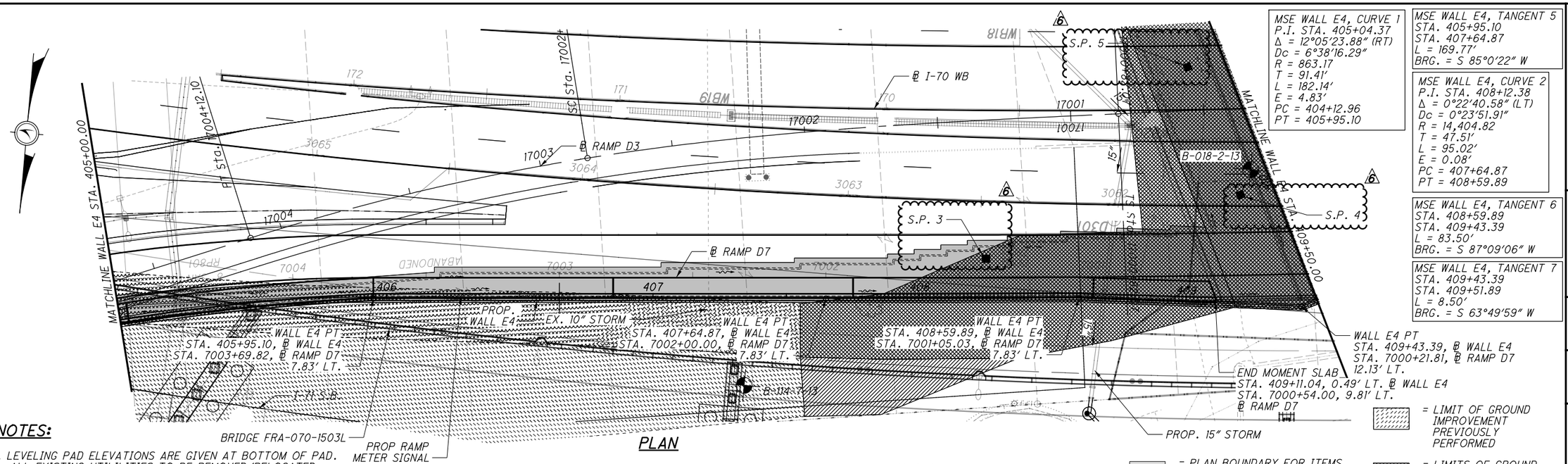
DESIGNED	DRAWN	REVIEWED	DATE
JGM	JGM	NCK	11/18/2021
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MMS			

MSE RETAINING WALL E4 - PLAN AND ELEVATION 1 OF 3
RAMP D7, SHORT ST., MOUND ST.
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

2 / 13

681
702



MSE WALL E4, CURVE 1
P.I. STA. 405+04.37
Δ = 12°05'23.88" (RT)
Dc = 6°38'16.29"
R = 863.17
T = 91.41'
L = 182.14'
E = 4.83'
PC = 404+12.96
PT = 405+95.10

MSE WALL E4, TANGENT 5
STA. 405+95.10
STA. 407+64.87
L = 169.77'
BRG. = S 85°0'22" W

MSE WALL E4, CURVE 2
P.I. STA. 408+12.38
Δ = 0°22'40.58" (LT)
Dc = 0°23'51.91"
R = 14,404.82
T = 47.51'
L = 95.02'
E = 0.08'
PC = 407+64.87
PT = 408+59.89

MSE WALL E4, TANGENT 6
STA. 408+59.89
STA. 409+43.39
L = 83.50'
BRG. = S 87°09'06" W

MSE WALL E4, TANGENT 7
STA. 409+43.39
STA. 409+51.89
L = 8.50'
BRG. = S 63°49'59" W

PLAN

NOTES:

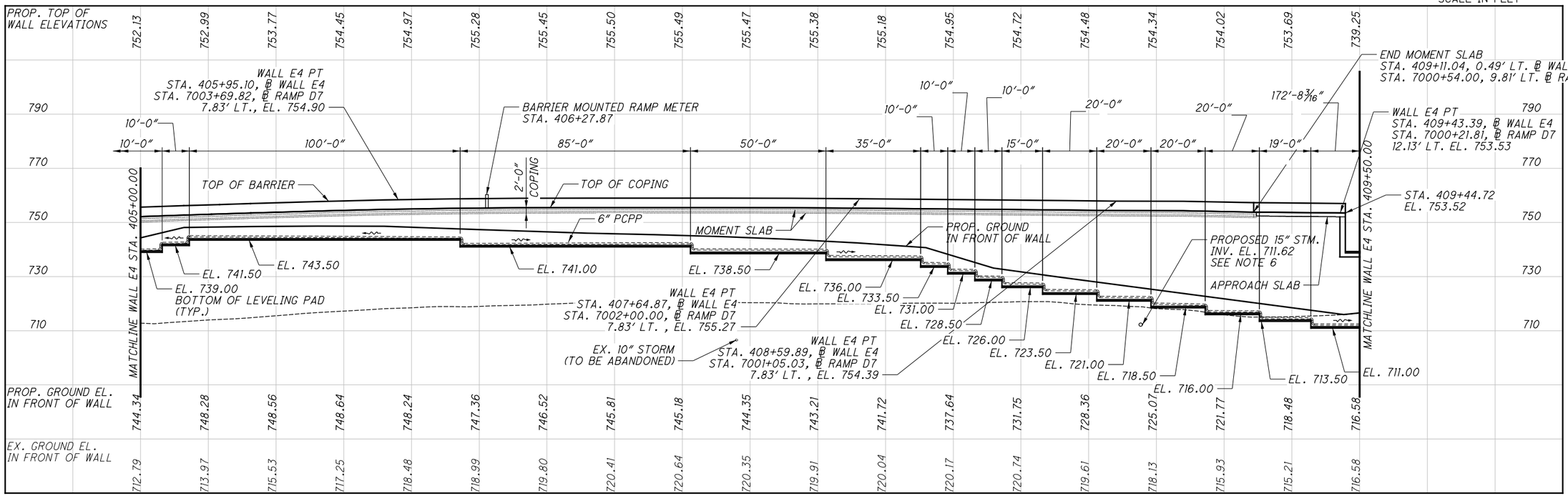
1. LEVELING PAD ELEVATIONS ARE GIVEN AT BOTTOM OF PAD.
2. ALL EXISTING UTILILITIES TO BE REMOVED/RELOCATED UNLESS NOTED OTHERWISE.
3. STATIONING IS ALONG ℄ WALL E4.
4. STATIONS AND OFFSETS ARE GIVEN AT BACK FACE OF THE WALL.
5. TOP OF WALL ELEVATIONS ARE GIVEN AT TOP OF COPING.
6. LEVELING PAD SHALL BE CONSTRUCTED SO AS TO AVOID INTERFERENCE WITH PROPOSED DRAINAGE STRUCTURES.

NO.	DESCRIPTION	REV. BY	DATE
6	ADDED S.P. 3	MMS	11-9-2023
6	ADDED S.P. 4 & 5 CALLOUT	MMS	11-9-2023
6	UPDATED LEGEND	MMS	11-9-2023

LEGEND:

- 6" DIA PERF CPP
- PROJECT BORING LOCATION
- SETTLEMENT PLATFORM AND PIEZOMETER 6
- = PLAN BOUNDARY FOR ITEMS INCLUDED WITH MSE WALL E4 FOR PAYMENT
- = LIMITS OF GROUND IMPROVEMENT NEEDED OVER EX. I-70 EMBANKMENT = 1,263 SY
- = LIMIT OF GROUND IMPROVEMENT PREVIOUSLY PERFORMED
- = LIMITS OF GROUND IMPROVEMENT NEEDED = 130 SY

0 20 10 40
HORIZONTAL SCALE IN FEET



ELEVATION ALONG BACK OF WALL

RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949

DESIGNED	DRAWN	REVIEWED	DATE
JGM	JGM	NCK	11/18/2021
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MMS			

MSE RETAINING WALL E4 - PLAN AND ELEVATION 2 OF 3

RAMP D7, RAMP D3, I-70 WB
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

3 / 13

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702

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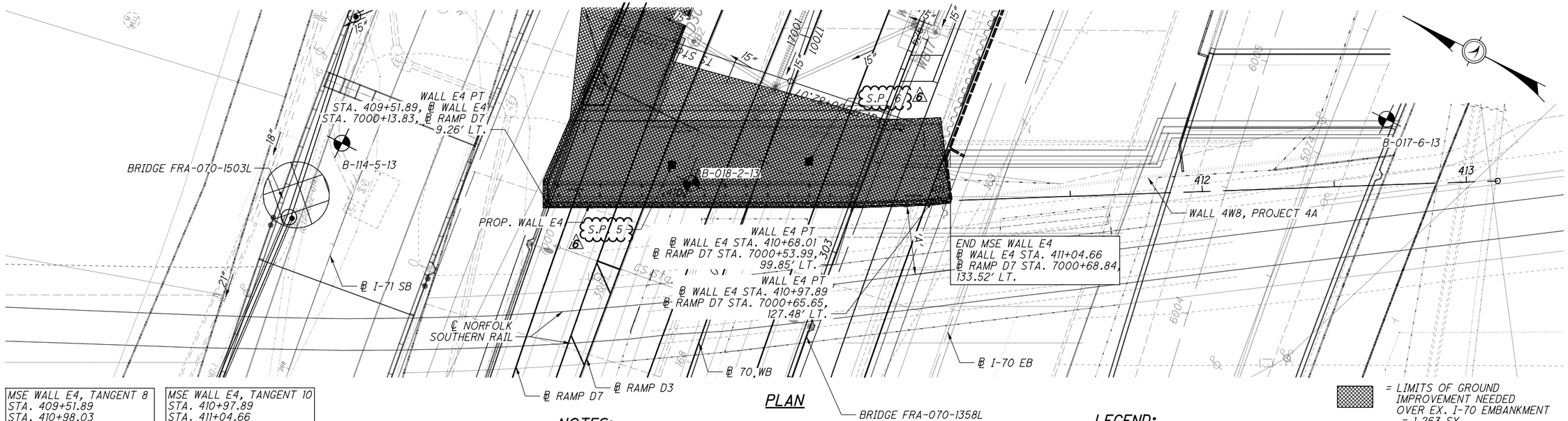


PLAN

MSE WALL E4, TANGENT 8
STA. 409+51.89
STA. 410+98.03
L = 116.11′
BRG. = S 26°10′01″ E

MSE WALL E4, TANGENT 9
STA. 410+68.01
STA. 410+97.89
L = 29.88′
BRG. = S 28°13′45″ E

MSE WALL E4, TANGENT 10
STA. 410+97.89
STA. 411+04.66
L = 6.77′
BRG. = N 32°58′08″ W

DIMENSION 'A' = 25′-9⅞″ ACTUAL MINIMUM HORIZONTAL CLEARANCE (18′-0″ MINIMUM REQUIRED) (NORFOLK SOUTHERN)

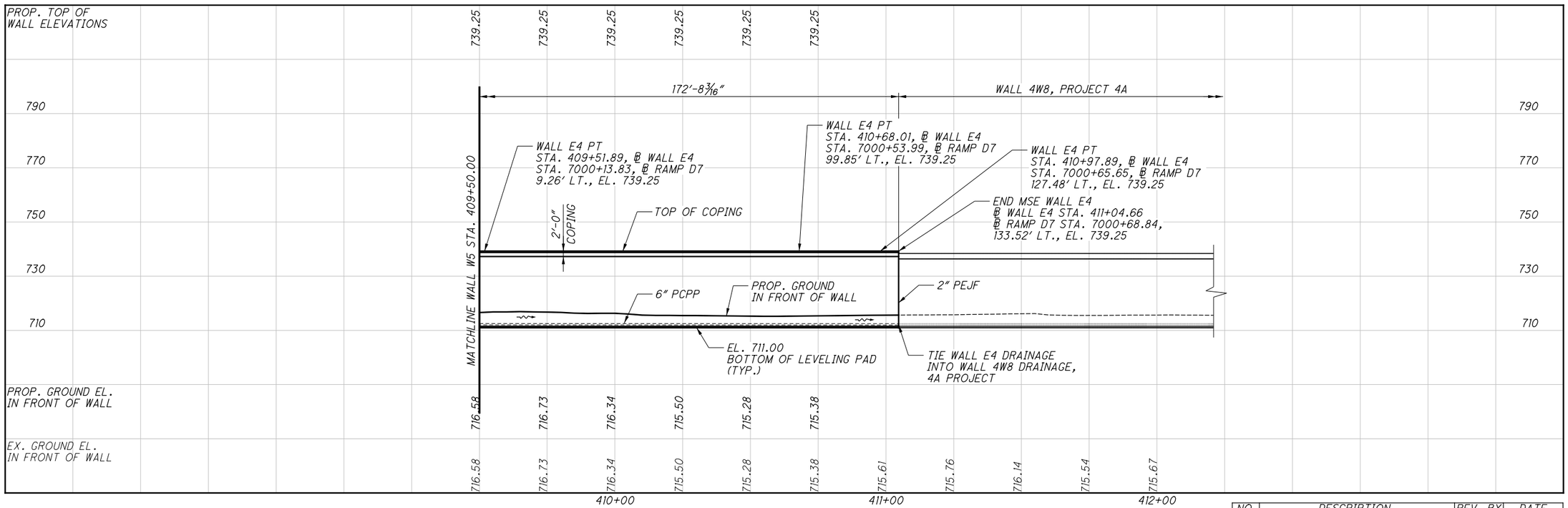
NOTES:

1. LEVELING PAD ELEVATIONS ARE GIVEN AT BOTTOM OF PAD.
2. ALL EXISTING UTILILITIES TO BE REMOVED/RELOCATED UNLESS NOTED OTHERWISE.
3. STATIONING IS ALONG ℄ WALL E4.
4. STATIONS AND OFFSETS ARE GIVEN AT BACK FACE OF THE WALL.
5. TOP OF WALL ELEVATIONS ARE GIVEN AT TOP OF COPING.

LEGEND:

- 6″ DIA PERF CPP
- PROJECT BORING LOCATION
- SETTLEMENT PLATFORM AND PIEZOMETER (6)
- HISTORIC BORING LOCATION
- = LIMITS OF GROUND IMPROVEMENT NEEDED OVER EX. I-70 EMBANKMENT = 1,263 SY
- = PLAN BOUNDARY FOR ITEMS INCLUDED WITH MSE WALL E4 FOR PAYMENT

0 10 20 40
HORIZONTAL SCALE IN FEET



ELEVATION ALONG BACK OF WALL

NO.	DESCRIPTION	REV. BY	DATE
6	UPDATED S.P. CALLOUTS	MMS	11-9-2023
6	UPDATED LEGEND	MMS	11-9-2023

RESOURCE INTERNATIONAL INC.
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DESIGNED	DRAWN	REVIEWED	DATE
JGM	JGM	NCK	11/18/2021
CHECKED	REVISED		STRUCTURE FILE NUMBER
MMS			

MSE RETAINING WALL E4 - PLAN AND ELEVATION 3 OF 3

I-71 SB, RAMP D3 & RAILROAD TRACKS
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

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702

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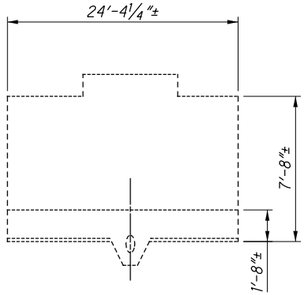
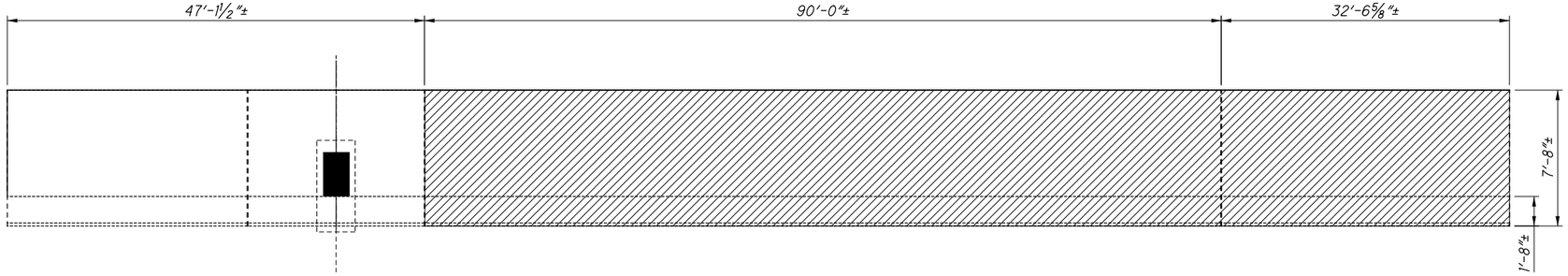
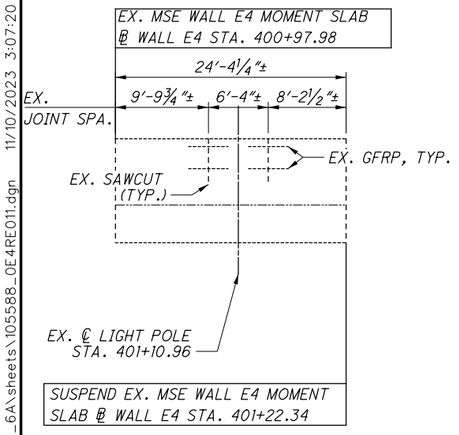
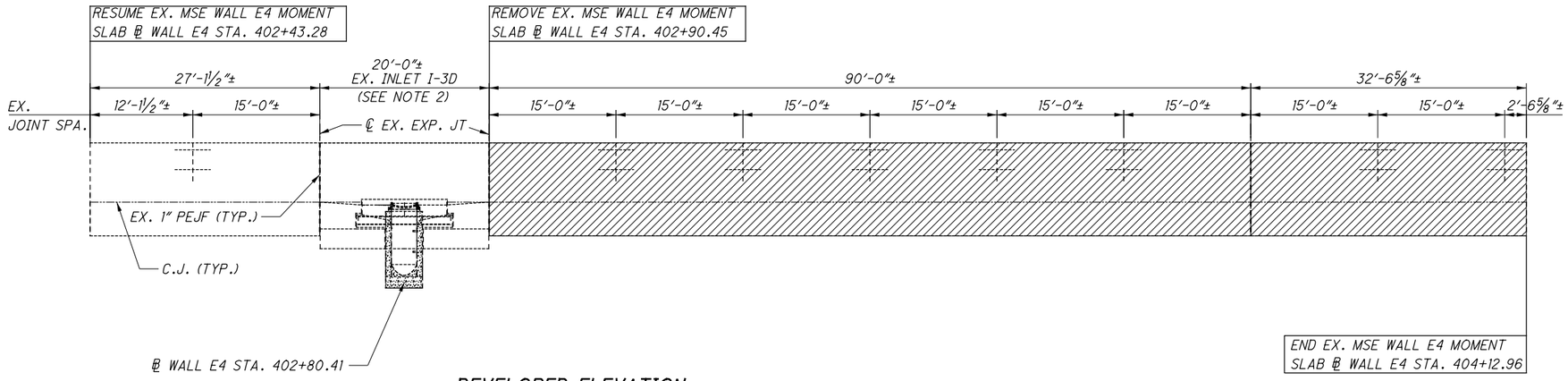


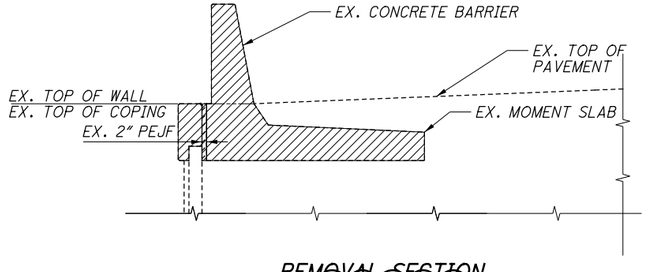


PLAN





DEVELOPED ELEVATION
REAR FACE



REMOVAL SECTION
(SEE NOTE 2) 6

LEGEND:

- REMOVAL

NOTES:

1. ALL DIMENSIONS MEASURED ALONG BACK FACE OF MOMENT SLAB.
2. REMOVAL OF TRAFFIC BARRIER, MOMENT SLAB AND COPING ARE INCIDENTAL TO ITEM - 511, CLASS QC2 CONCRETE, MISC: PARAPET INCLUDING SLEEPER SLAB WITH QC/QA. 6

NO.	DESCRIPTION	REV. BY	DATE
6	ADDED NOTE	MMS	11-9-2023

RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
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(614) 823-4949

DESIGNED JGM | DRAWN JGM | CHECKED MMS | REVIEWED NCK | DATE 11/18/2021 | REVISED | STRUCTURE FILE NUMBER

REMOVAL DETAILS
RETAINING WALL E4
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

5 / 13

684
702

11/10/2023 3:07:20 PM meets
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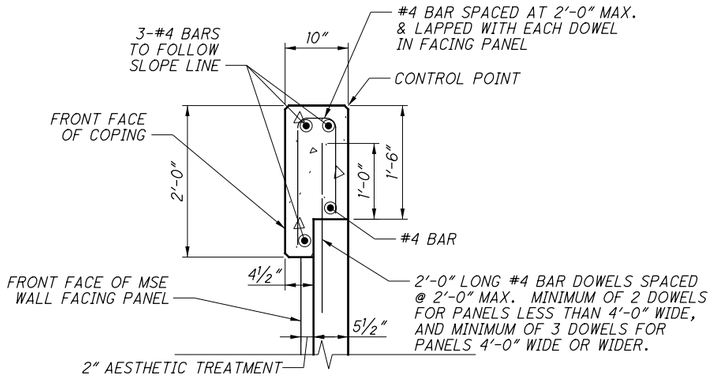
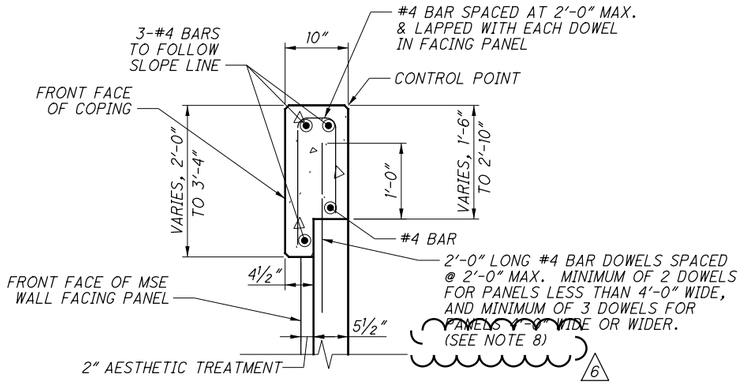


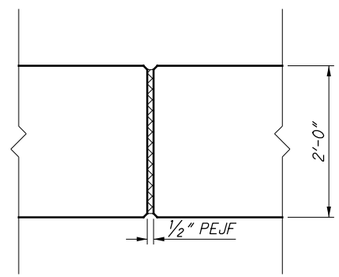
COPING DETAIL

STA. 404+12.96 TO STA. 409+11.04



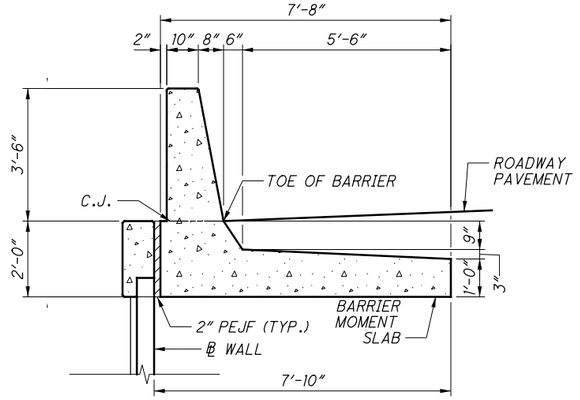
COPING DETAIL - AS PER PLAN

STA. 402+90.41 TO STA. 404+12.96

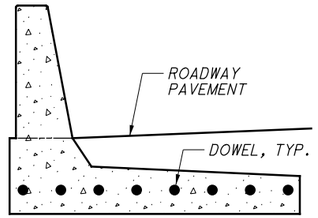


COPING EXPANSION JOINTS

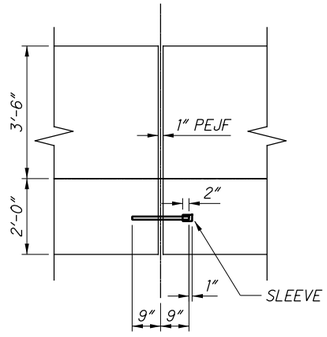
NO.	DESCRIPTION	REV. BY	DATE
6	UPDATED CALLOUT & ADDED NOTE	MMS	11-9-2023



MOMENT SLAB DETAIL

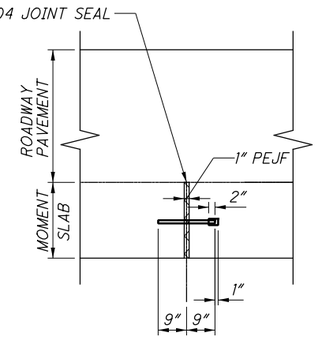


EXPANSION JOINT SECTION



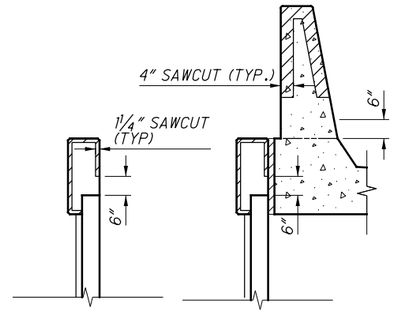
EXPANSION JOINT DETAIL

(AT PARAPET)



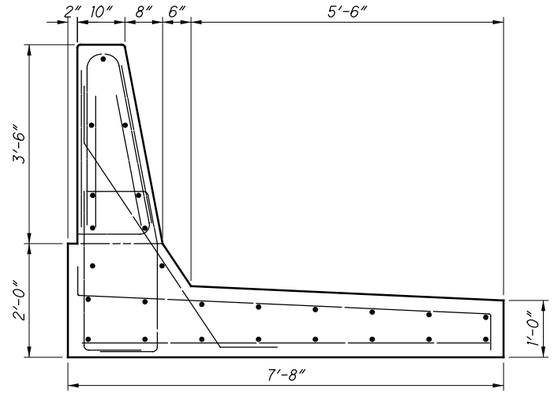
EXPANSION JOINT DETAIL

(AT PAVEMENT)



SAWCUT DETAILS

SEE SBR-1-13 FOR ADDITIONAL DETAILS



MOMENT SLAB REBAR

LEGEND:

MINIMUM LAP LENGTHS:
#5 LAP LENGTH = 2'-5"
#6 LAP LENGTH = 2'-11"

NOTES:

1. TRAFFIC BARRIER & MOMENT SLAB ARE INCIDENTAL TO ITEM - 511, CLASS QC2 CONCRETE, MISC: PARAPET INCLUDING SLEEPER SLAB WITH QC/QA.
2. CONTROL JOINT: SAWCUT 1¼" DEEP CONTROL JOINTS ALONG THE PERIMETER AS SHOWN ON THIS SHEET AS SOON AS THE SAW CAN BE OPERATED WITHOUT DAMAGING THE CONCRETE.

   USE AN EDGE GUIDE, FENCE, OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE AND ALIGNED ON ALL FACES OF THE BARRIER. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF ¼".

   SEAL THE PERIMETER OF THE CONTROL JOINT TO A MINIMUM DEPTH OF 1" WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO C920, TYPE S. LEAVE THE BOTTOM ½" OF BOTH THE INSIDE AND OUTSIDE FACES OF THE BARRIER UNSEALED TO ALLOW ANY WATER WHICH MAY ENTER THE JOINT TO ESCAPE.
3. SAWCUT CONTROL JOINTS SHALL HAVE A MINIMUM SPACING OF 6' AND A MAXIMUM SPACING OF 15'. SEE SHEET 687 FOR BARRIER CONTROL JOINT LOCATIONS.
4. FOR ABBREVIATIONS LEGEND, SEE SHEET 660 .
5. FOR LOCATIONS OF CIP BARRIER TO RECEIVE 2" LIGHTING CONDUIT, SEE HIGHWAY LIGHTING PLANS. FOR ADDITIONAL CIP BARRIER CONDUIT DETAILS AND NOTES, SEE STD. DWG. HL-20.14.
6. FOR LOCATIONS OF JUNCTION BOXES AND TRAFFIC CONDUIT IN CIP BARRIER, SEE TRAFFIC CONTROL PLANS.
7. COPING EXPANSION JOINT SHALL BE SPACED NO MORE THAN 20 FEET APART AND ALIGNED WITH JOINTS BETWEEN FACING PANELS.

6

8. INSTALLATION OF NEW DOWELS SHALL BE INCIDENTAL TO ITEM - 840, CONCRETE COPING, AS PER PLAN.

RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949

DESIGNED	DRAWN	REVIEWED	DATE
MMS	MMS	NCK	11/18/2021
CHECKED	REVISED	STRUCTURE FILE NUMBER	
JGM			

TYPICAL RETAINING WALL DEATAILS 2 OF 2
RETAINING WALL E4
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

7 / 13

686
702

CALCULATED BY: MMS DATE: 11/18/2021
CHECKED BY: JGM DATE: 11/18/2021

ESTIMATED QUANTITIES					AS PER PLAN REFERENCE SHEET
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	
203	02000	12305	CU YD	SPECIAL - ENGINEERED FILL: LIGHTWEIGHT CELLULAR CONCRETE FILL, CLASS II	663
203	02000	758	CU YD	SPECIAL - ENGINEERED FILL: LIGHTWEIGHT CELLULAR CONCRETE FILL, CLASS III	663
203	07500	2	EACH	SPECIAL - PNEUMATIC PIEZOMETER	667
203	80000	18	CU YD	EMBANKMENT	
203	35110	691	CU YD	GRANULAR MATERIAL, TYPE B	
203	98000	3117	CU YD	ROADWAY MISC.: EPS GEOFOAM FILL	662
203	65000	2	EACH	SPECIAL - SETTLEMENT PLATFORM	661 , 667
503	11101	LS	LS	COFFERDAMS AND EXCAVATION, AS PER PLAN	660
511	53012	87	CU YD	CLASS QC2 CONCRETE, MISC.: LOAD DISTRIBUTION SLAB	660
512	10100	281	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY URETHANE)	
516	13200	68	SQ FT	1/2" PREFORMED EXPANSION JOINT FILLER	
516	13900	59	SQ FT	2" PREFORMED EXPANSION JOINT FILLER	
601	21000	16	SQ YD	CONCRETE SLOPE PROTECTION	
840	20001	2906	SQ FT	MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN	660
840	21000	1300	CU YD	WALL EXCAVATION	
840	22000	315	SQ YD	FOUNDATION PREPARATION	
840	26000	97	FT	CONCRETE COPING	
840	26050	2906	SQ FT	AESTHETIC SURFACE TREATMENT	
840	27000	5	DAY	ON-SITE ASSISTANCE	

6

6

6

ABOVE WALL QUANTITIES ALSO INCLUDE ROADWAY QUANTITIES LISTED BELOW BETWEEN STATION 177+17.60 TO 179+00.00.
THE BELOW ROADWAY QUANTITIES ARE PAID FOR WITH WALL E7 AS THE PLAN NOTES INDICATE. THE TABLE BELOW IS FOR INFORMATION ONLY AND THE QUANTITIES ARE NOT CARRIED TO THE ROADWAY GENERAL SUMMARY.

ESTIMATED QUANTITIES - ROADWAYS					AS PER PLAN REFERENCE SHEET
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	
203	02000	7941	CU YD	SPECIAL - ENGINEERED FILL: LIGHTWEIGHT CELLULAR CONCRETE FILL, CLASS II	663
203	02000	555	CU YD	SPECIAL - ENGINEERED FILL: LIGHTWEIGHT CELLULAR CONCRETE FILL, CLASS III	663
203	35110	564	CU YD	GRANULAR MATERIAL, TYPE B	
203	98000	3117	CU YD	ROADWAY MISC.: EPS GEOFOAM FILL	662

NO.	DESCRIPTION	REV. BY	DATE
6	ADDED ITEM203 - PNEUMATIC PIEZOMETER QUANTITY	MMS	11-9-2023
6	UPDATED AS PER PLAN REFERENCE SHEET NUMBERS	MMS	11-9-2023
6	REMOVED ITEM-840, SELECT GRANULAR BACKFILL QUANTITY	MMS	11-9-2023

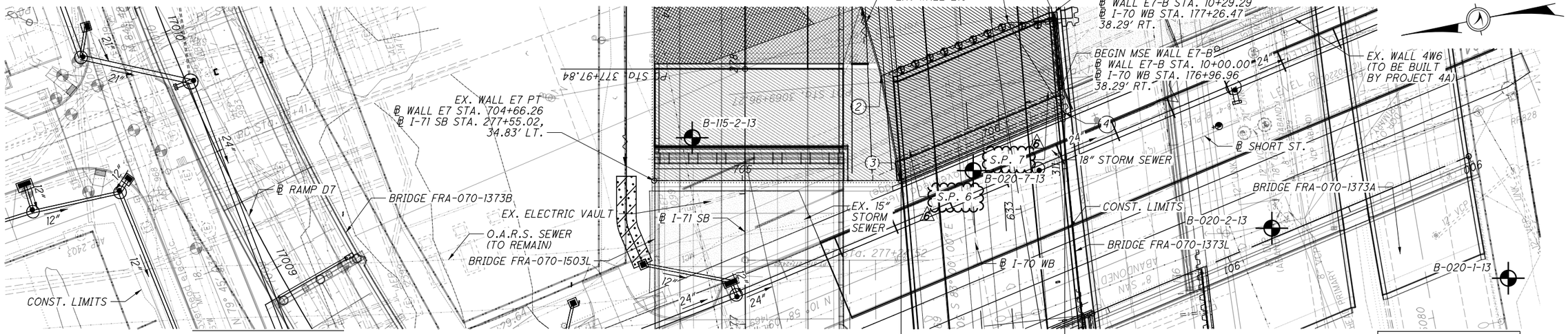
RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949

DESIGNED JGM | DRAWN MMS | REVIEWED NCK | DATE 11/18/2021
CHECKED MMS | REVISED | STRUCTURE FILE NUMBER

ESTIMATED QUANTITIES

RETAINING WALL E7
1-70/1-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372



PLAN

ALL STATIONS AND OFFSETS ARE FROM THE ℄ OF WALL E7		
(1)	706+28.57	40.18′ LT.
(2)	705+69.37	39.98′ LT.
(3)	705+60.87	0.00′
(4)	706+28.57	0.00′
(5)	706+39.43	33.49′ LT.

BEGIN MSE WALL E7
℄ WALL E7 STA. 705+60.87
℄ I-71 SB STA. 277+55.02,
59.78′ RT.

END MSE WALL E7
℄ WALL E7 STA. 706+28.57
℄ I-71 SB STA. 277+81.13,
122.25′ RT.

HORIZONTAL SCALE IN FEET: 0, 10, 20, 40

MSE WALL E7, TANGENT 2
STA. 704+66.26
STA. 705+60.87
L = 94.62′
BRG. = S 11°43′07″ W

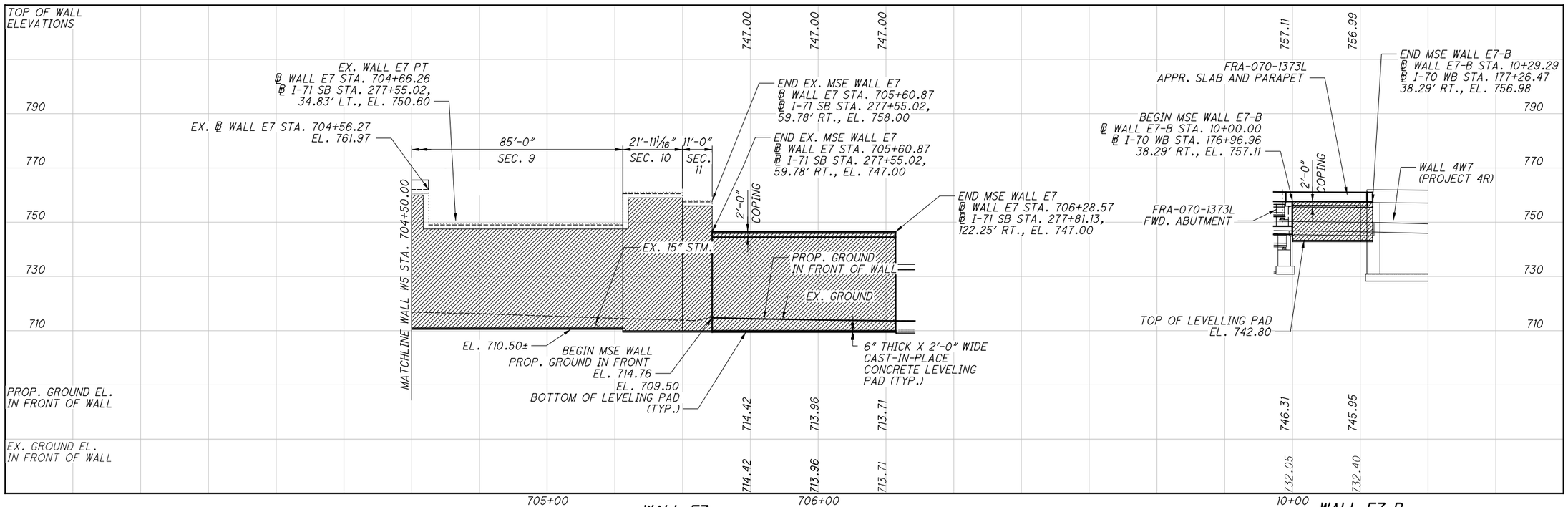
NO.	DESCRIPTION	REV. BY	DATE
6	UPDATED S.P. CALLOUTS	MMS	11-9-2023
6	UPDATED LEGEND	MMS	11-9-2023

NOTES:

1. LEVELING PAD ELEVATIONS ARE GIVEN AT BOTTOM OF PAD.
2. ALL EXISTING UTILILITIES TO BE REMOVED/RELOCATED UNLESS NOTED OTHERWISE.
3. STATIONING IS ALONG ℄ WALL E7.
4. STATIONS AND OFFSETS ARE GIVEN AT BACK FACE OF THE WALL.
5. TOP OF WALL ELEVATIONS ARE GIVEN AT TOP OF COPING.
6. LEVELING PAD SHALL BE CONSTRUCTED SO AS TO AVOID INTERFERENCE WITH EXISTING UTILITIES.

LEGEND:

- 6″ DIA PERF CPP
- PROJECT BORING LOCATION
- SETTLEMENT PLATFORM AND PIEZOMETER
- HISTORIC BORING LOCATION
- = PLAN BOUNDARY FOR ITEMS INCLUDED WITH MSE WALL E7 FOR PAYMENT
- = LIMITS OF GEOFOAM BACKFILL
- = LIMITS OF CELLULAR CONCRETE FILL



WALL E7 — WALL E7-B

ELEVATION ALONG FACE OF WALL

RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949

DESIGNED	DRAWN	REVIEWED	DATE
JGM	JGM	NCK	11/18/2021
CHECKED	REVISED	STRUCTURE FILE NUMBER	
MMS			

PLAN AND ELEVATION 1 OF 1
RETAINING WALL E7 & E7-B (MAINLINE I-71 SB, I-70WB & SHORT ST.)
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

2 / 3

694
702

CALCULATED BY: MMS DATE: 11/18/2021
CHECKED BY: JGM DATE: 11/18/2021

ESTIMATED QUANTITIES

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	AS PER PLAN REFERENCE SHEET
203	20000	1523	CU YD	EMBANKMENT	
203	35110	1229	CU YD	GRANULAR MATERIAL, TYPE B	
503	11101	LS	LS	COFFERDAMS AND EXCAVATION, AS PER PLAN	660
509	10001	3766	LB	EPOXY COATED REINFORCING STEEL, AS PER PLAN	660
511	53012	24	CU YD	CLASS QC2 CONCRETE, MISC.: PARAPET INCLUDING SLEEPER SLAB WITH QC/QA	
512	10001	41	SQ YD	SEALING OF CONCRETE SURFACES, (PERMANENT GRAFFITI PROTECTION), AS PER PLAN	660
512	10100	500	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY URETHANE)	
516	13200	70	SQ FT	1/2" PREFORMED EXPANSION JOINT FILLER	
516	13900	195	SQ FT	2" PREFORMED EXPANSION JOINT FILLER	
601	21000	17	SY	CONCRETE SLOPE PROTECTION	
840	20001	5574	SQ FT	MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN	660
840	21000	2754	CU YD	WALL EXCAVATION	
840	22000	582	SQ YD	FOUNDATION PREPARATION	
840	23000	4381	CU YD	SELECT GRANULAR BACKFILL	
840	25018	334	FT	6" DRAINAGE PIPE, PERFORATED	
840	26000	169	FT	CONCRETE COPING	
840	26050	5574	SQ FT	AESTHETIC SURFACE TREATMENT	
840	27000	5	DAY	ON-SITE ASSISTANCE	

6

NO.	DESCRIPTION	REV. BY	DATE
6	UPDATED QUANTIY	MMS	11-6-2023

RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949

DESIGNED MMS | CHECKED JGM
DRAWN MMS | REVISED
REVIEWED NCK 11/18/2021 | STRUCTURE FILE NUMBER

ESTIMATED QUANTITIES
RETAINING WALL E9
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

1 / 6

696
702

MSE WALL E9, TANGENT 1
STA. 901+56.27
STA. 902+28.67
L = 72.40'
BRG. = N 10°58'09" W

MSE WALL E9, TANGENT 2
STA. 902+28.67
STA. 902+56.28
L = 27.61'
BRG. = N 82°59'56" W

MSE WALL E9, CURVE 1
P.I. STA. 903+01.96
Δ = 1°32'07.32" (LT)
Dc = 1°40'50.35"
R = 3,409.14
T = 45.68'
L = 91.36'
E = 0.31'
PC = 902+56.28
PT = 903+47.64

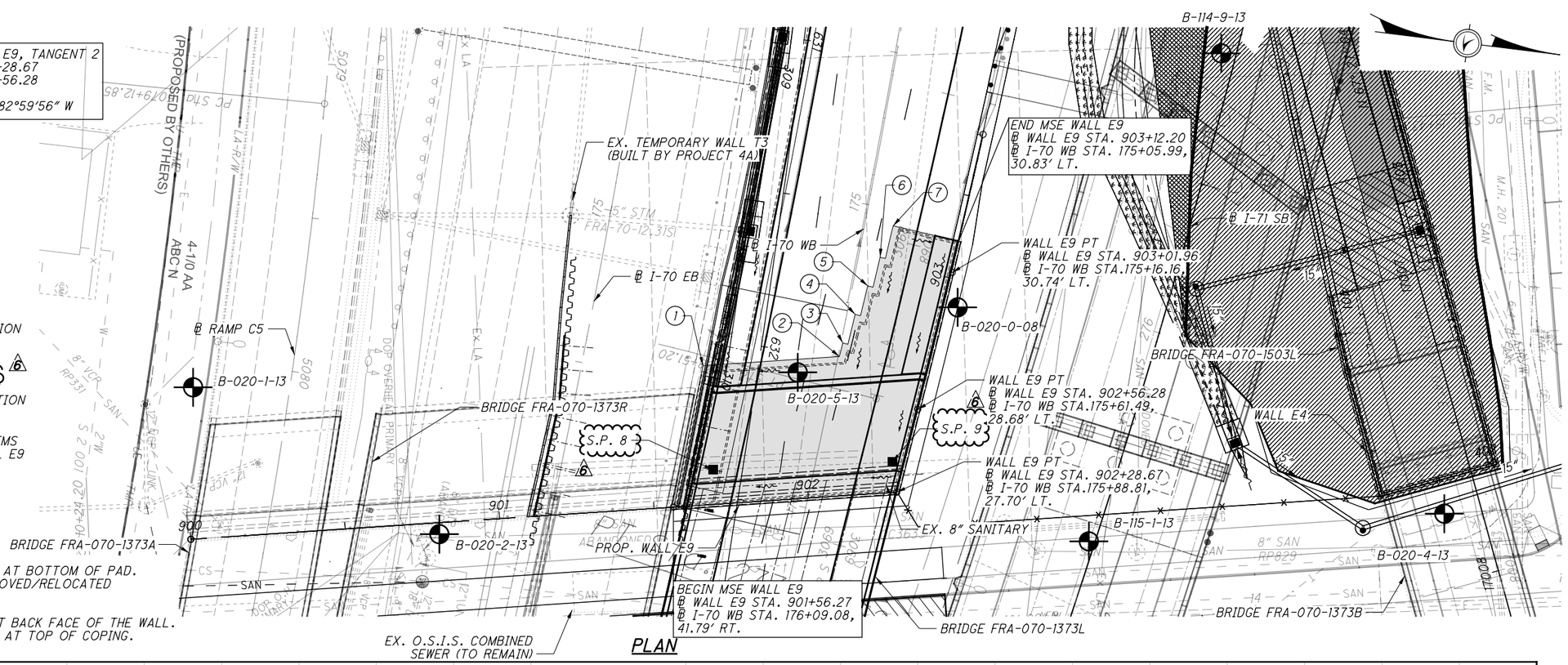
LEGEND:

- 6" DIA PERF CPP
- PROJECT BORING LOCATION
- SETTLEMENT PLATFORM AND PIEZOMETER (6)
- HISTORIC BORING LOCATION
- = PLAN BOUNDARY FOR ITEMS INCLUDED WITH MSE WALL E9 FOR PAYMENT

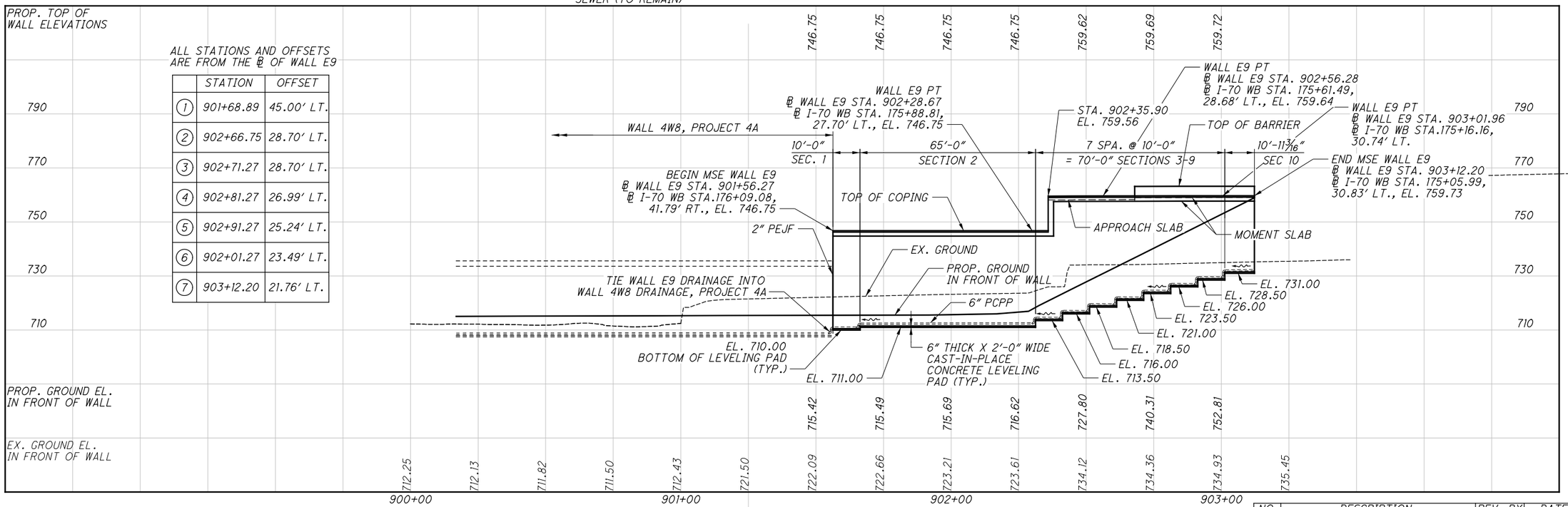
0 10 20 40
HORIZONTAL SCALE IN FEET

NOTES:

1. LEVELING PAD ELEVATIONS ARE GIVEN AT BOTTOM OF PAD.
2. ALL EXISTING UTILILITIES TO BE REMOVED/RELOCATED UNLESS NOTED OTHERWISE.
3. STATIONING IS ALONG ℄ WALL E9.
4. STATIONS AND OFFSETS ARE GIVEN AT BACK FACE OF THE WALL.
5. TOP OF WALL ELEVATIONS ARE GIVEN AT TOP OF COPING.



PLAN



ALL STATIONS AND OFFSETS ARE FROM THE ℄ OF WALL E9

	STATION	OFFSET
1	901+68.89	45.00' LT.
2	902+66.75	28.70' LT.
3	902+71.27	28.70' LT.
4	902+81.27	26.99' LT.
5	902+91.27	25.24' LT.
6	902+01.27	23.49' LT.
7	903+12.20	21.76' LT.

ELEVATION ALONG BACK OF WALL

NO.	DESCRIPTION	REV. BY	DATE
6	UPDATED S.P. CALLOUTS	MMS	11-9-2023
6	UPDATED LEGEND	MMS	11-9-2023

RESOURCE INTERNATIONAL INC.
6350 PRESIDENTIAL GATEWAY
COLUMBUS, OHIO 43231
(614) 823-4949

DESIGNED	DRAWN	REVIEWED	DATE
MMS	MMS	NCK	11/18/2021
CHECKED	REVISED	STRUCTURE FILE NUMBER	
JGM			

MSE RETAINING WALL E9 - PLAN AND ELEVATION 1 OF 1

MAINLINE I-70 WB & SHORT ST.
I-70/I-71 WEST INTERCHANGE PROJECT

FRA-70-13.10
PID No. 77372

2 / 6

697
702

G:\projects\2013\W-13-072 FRA-70-13.10 6A\89464\structures\wall_0E9\sheets\105588_0E9WP001.dgn 11/10/2023 3:07:59 PM meets

UNLESS NOTED OTHERWISE, THE FOLLOWING NOTES PERTAIN TO RETAINING WALLS 4W13, 4W14, 4W15, 4W16, 4W17, 4W18, AND 4W22, WHICH ARE ALL PART OF THIS PROJECT.

FOR SPECIFIC NOTES PERTAINING TO CAST-IN-PLACE REINFORCED CONCRETE WALLS ON SPREAD FOOTINGS, WHICH INCLUDES 4W13, 4W14, 4W15, AND 4W22, SEE SHEET 299.

FOR SPECIFIC NOTES PERTAINING TO TANGENT DRILLED SHAFT WALLS WITH PRECAST PANELS, WHICH INCLUDES 4W16, 4W17, AND 4W18, SEE SHEETS 300 AND 301 .

SUPPLEMENTAL SPECIFICATIONS:

REFER TO THE FOLLOWING SUPPLEMENTAL SPECIFICATION:
800 DATED 1-20-23
894 DATED 4-16-21

DESIGN SPECIFICATIONS:

THESE STRUCTURES CONFORM TO THE 8TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, AND THE ODOT BRIDGE DESIGN MANUAL, 2019.

OPERATIONAL IMPORTANCE:

A LOAD MODIFIER OF 1.00 HAS BEEN ASSUMED FOR THE DESIGN OF THESE STRUCTURES IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, ARTICLE 1.3.5 AND THE ODOT BRIDGE DESIGN MANUAL, 2019.

DESIGN STRESSES:

CONCRETE CLASS QC1:
COMPRESSIVE STRENGTH - 4.0 KSI (ALL COMPONENTS OF ALL WALLS WITH CLASS QC1 CONCRETE SPECIFIED)

CONCRETE CLASS QC2:
COMPRESSIVE STRENGTH - 4.5 KSI (ALL COMPONENTS OF ALL WALLS WITH CLASS QC2 CONCRETE SPECIFIED)

CONCRETE CLASS QC5:
COMPRESSIVE STRENGTH - 4.5 KSI (4W16, 4W17, & 4W18 DRILLED SHAFTS)

REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

STRUCTURAL STEEL - ASTM A709 GRADE 50 - YIELD STRENGTH 50 KSI (4W16, 4W17)

EXCAVATION, SHEETING AND BRACING

EXCAVATION ENVELOPES AS DETAILED IN THE PLANS SHALL BE PROTECTED FROM CAVING AND SLOUGHING. WHERE CLEARANCES AND CONSTRUCTION SEQUENCING WILL NOT ALLOW FOR SLOPED EXCAVATIONS, APPROPRIATE SHEETING OR BRACING METHODS SHALL BE EMPLOYED BY THE CONTRACTOR. THIS TEMPORARY SHEETING OR BRACING IS CONSIDERED INCIDENTAL TO ITEM 503 - COFFERDAMS AND EXCAVATION BRACING.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN (4W15)

THIS ITEM SHALL INCLUDE REMOVAL OF A PORTION OF THE EXISTING RETAINING WALL "D", WHICH WAS MODIFIED IN PROJECT 2G. REMOVE THE SLOPING PORTION OF THE WALL INCLUDING THE FOOTING AT THE WEST END, AS INDICATED IN THE PLANS.

ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN (4W15)

THE DESIGN SHOWN ON THE PLANS FOR TEMPORARY SUPPORT OF EXCAVATION IS ONE REPRESENTATIVE DESIGN THAT MAY BE USED TO CONSTRUCT THE PROJECT. THE CONTRACTOR MAY CONSTRUCT THE DESIGN SHOWN ON THE PLANS OR PREPARE AN ALTERNATE DESIGN TO SUPPORT THE SIDES OF EXCAVATIONS. IF CONSTRUCTING AN ALTERNATE DESIGN FOR TEMPORARY SUPPORT OF EXCAVATION, PREPARE AND PROVIDE PLANS IN ACCORDANCE WITH C&MS 501.05. THE DEPARTMENT WILL PAY FOR THE TEMPORARY SUPPORT OF EXCAVATION AT THE CONTRACT LUMP SUM PRICE FOR COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN. NO ADDITIONAL PAYMENT WILL BE MADE FOR PROVIDING AN ALTERNATE DESIGN.

6 ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN (4W16 & 4W17)

THE NEED TO PROVIDE TEMPORARY SHORING BEHIND THE DRILLED SHAFTS TO CONSTRUCT THE CONCRETE CAP SHALL BE DETERMINED BY THE CONTRACTOR BASED ON THEIR MEANS AND METHODS. DESIGN, LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY TO INSTALL THE TEMPORARY SHORING SHALL BE COMPENSATED UNDER ITEM 503 COFFERDAM AND EXCAVATION BRACING, AS PER PLAN.

ITEM 503 - UNCLASSIFIED EXCAVATION, AS PER PLAN (4W18)

IN ADDITION TO THE REQUIREMENTS OF THE 503 ITEM LISTED ABOVE, THIS ITEM SHALL ALSO INCLUDE INSTALLATION OF A LOW STRENGTH MORTAR (LSM) BACKFILL AT THE EAST END OF WALL 4W18 WHERE IS ABUTS EXISTING WALL 7W5. DEPENDING ON THE BACK FACE BATTER THE THE EXISTING WALL, THERE MAY BE A GAP BETWEEN THE LAST 4W18 DRILLED SHAFT AND THE EXISTING WALL STEM. BOUNDED ON THE BOTTOM BY THE TOP OF THE 4W18 PRECAST FACADE PANEL FOOTING AND BOUNDED ON THE TOP BY THE BOTTOM OF THE DRILLED SHAFT CAP. THE CONTRACTOR SHALL EXCAVATE A MINIMUM OF 1'-0" BEYOND THE GAP AND SHALL BACKFILL WITH A MINIMUM 1'-0" THICK PLUG-SHAPED LAYER OF LSM IN ACCORDANCE WITH CMS 613 PRIOR TO INSTALLATION OF THE PRECAST FACADE PANELS.

METHOD OF MEASUREMENT: FURNISHING, FORMING FOR, PLACING, & CURING OF LSM AND ALL INCIDENTALS ASSOCIATED WITH IT SHALL BE INCLUDED IN THIS ITEM.

PAYMENT: ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THE WORK DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR ITEM 503 - UNCLASSIFIED EXCAVATION, AS PER PLAN.

ITEM 507 - PILING, MISC.: SOLDIER PILES (4W16, 4W17)

THIS WORK SHALL CONSIST OF FURNISHING AND PLACING STEEL SOLDIER PILES OF THE SIZE AND LOCATIONS INDICATED ON THE DRAWINGS FOR USE IN CONJUNCTION WITH PRECAST CONCRETE LAGGING FOR EARTH RETAINAGE SYSTEMS. FURNISH PILES MEETING THE REQUIREMENTS OF ASTM A572, GRADE 50. AFTER THE ADJACENT DRILLED SHAFT IS CONSTRUCTED, INSTALL SOLDIER PILES BY DRIVING OR VIBRATORY METHODS TO THE DEPTH SPECIFIED. AFTER COMPLETION OF THE CAST-IN-PLACE CONCRETE WALL BETWEEN DRILLED SHAFTS, THE STEEL SOLDIER PILES MAY BE LEFT IN PLACE OR REMOVED AT THE DISCRETION OF THE CONTRACTOR.

PAYMENT FOR PILING, MISC.: SOLDIER PILES SHALL BE MADE AT THE LUMP SUM PRICE BID FOR THE RESPECTIVE WALL LOCATIONS AND SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS DESCRIBED AND REQUIRED. NO ADDITIONAL PAYMENT SHALL BE MADE FOR PILING LEFT IN PLACE.

ITEM 511 - CONCRETE, MISC.: PRECAST LAGGING (4W16, 4W17)

THIS WORK SHALL CONSIST OF FURNISHING AND INSTALLING PRECAST CONCRETE LAGGING OF THE SIZE OR SIZES INDICATED ON THE PLANS FOR EARTH RETAINAGE SYSTEMS. ALL WORK SHALL CONFORM TO ITEMS 511 AND 509 USING CLASS QC1 CONCRETE AND EPOXY COATED GRADE 60 REINFORCING STEEL RESPECTIVELY. FABRICATORS SHALL BE PREQUALIFIED BY THE OFFICE OF MATERIAL MANAGEMENT ACCORDING TO SUPPLEMENT 1073 BEFORE THE CONTRACT LETTING DATE. SUBMIT COMPLETE SHOP DRAWINGS IN ACCORDANCE WITH CMS 501.04. SUITABLE LIFTING INSERT DEVICES SHALL BE CAST INTO THE MEMBER AND DETAILED ON THE SHOP DRAWINGS. MEANS AND METHODS OF LAGGING PLACEMENT ARE THE RESPONSIBILITY OF THE CONTRACTOR. AS REQUIRED BY THE SITE CONDITIONS, INSTALL LAGGING IN A TOP DOWN METHOD AS THE EXCAVATION PROCEEDS AND/OR PLACE LAGGING IN A BOTTOM UP CONFIGURATION AS FILL MATERIAL IS BEING PLACED.

PAYMENT FOR CONCRETE, MISC.: PRECAST LAGGING SHALL BE MADE AT THE LUMP SUM PRICE BID FOR THE RESPECTIVE WALL LOCATIONS AND SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS DESCRIBED AND REQUIRED.

ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN
ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)
ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)

FOR NOTES, SEE SHEET 682.

ITEM 607 - FENCE, MISC.: WALL MOUNTED TYPE A (W/ VANDAL MESH) (4W13, 4W14, 4W16, AND 4W17)
ITEM 607 - FENCE, MISC.: WALL MOUNTED TYPE A (W/O VANDAL MESH) (4W15, 4W18)

FOR NOTES AND DETAILS, SEE AESTHETIC ENHANCEMENT PLANS

6 ITEM 894 - THERMAL INTEGRITY PROFILER (T.I.P.) TEST

PERFORM INTEGRITY TESTING ON ALL OF THE DRILLED SHAFTS AT WALL 4W16, 4W17 & 4W18 BY THERMAL INTEGRITY PROFILING (TIP). PERFORM TIP TESTING PER ASTM D7949, "STANDARD TEST METHODS FOR THERMAL INTEGRITY PROFILING OF CONCRETE DEEP FOUNDATIONS," METHOD B, AND PER SUPPLEMENTAL SPECIFICATION 894.

ABBREVIATIONS:

ABUT.	ABUTMENT
B.S.	BOTH SIDES
BOT.	BOTTOM
BRG.	BEARING
BTWN.	BETWEEN
CLR.	CLEAR
CONST. JT., C.J.	CONSTRUCTION JOINT
EA.	EACH
EQ.	EQUAL
F.S.	FAR SIDE
FRWD.	FORWARD
MIN.	MINIMUM
N.P.C.P.P.	NON-PERFORATED CORRUGATED PLASTIC PIPE
N.S.	NEAR SIDE
P.C.P.P.	PERFORATED CORRUGATED PLASTIC PIPE
P.E.J.F.	PREFORMED EXPANSION JOINT FILLER
SER.	SERIES
SPA.	SPACES
TYP.	TYPICAL

NO.	DESCRIPTION	DATE	REV. BY
6	ADDED NOTE	11-6-23	RSN

DESIGN AGENCY: GPD GROUP® Glaus, Pyle, Schomer, Burns & DeHaven, Inc. 1801 Watermark Drive, Suite 210, Columbus, OH 43215 614.210.0751

DESIGNED MOJ | DRAWN MOJ | REVIEWED DGN | DATE 4-21-23 | CHECKED DJC | REVISED | STRUCTURE FILE NUMBER

RETAINING WALL GENERAL NOTES

FRA-70-14.05
PID No. 96053

ITEM 203, SPECIAL - ENGINEERED FILL (LIGHTWEIGHT CELLULAR CONCRETE FILL): (4W16)

A. DESCRIPTION.
THIS WORK CONSISTS OF FURNISHING AND PLACING A LOW DENSITY, LIGHTWEIGHT, FLOWABLE, CEMENTITIOUS FILL MATERIAL, HEREIN REFERRED TO AS CELLULAR CONCRETE FILL (CCF).

(6) ALL LIGHTWEIGHT CELLULAR CONCRETE FILL INSTALLATIONS SHALL BE SUBJECT TO FINAL ACCEPTANCE BY THE ENGINEER.

B. QUALIFICATIONS.
1. SUPPLIER/PRODUCER.
PROVIDE CCF FROM A SUPPLIER/PRODUCER REGULARLY ENGAGED IN THE PLACEMENT OF CCF MATERIAL, WHO HAS IN THE PAST THREE YEARS COMPLETED MASS FILLS HAVING A COMBINED QUANTITY OF AT LEAST 10,000 TOTAL CUBIC YARDS (7,650 CUBIC METERS).

DOCUMENTATION FOR THE ABOVE QUALIFICATIONS SHALL BE SUBMITTED AT OR BEFORE THE PRECONSTRUCTION CONFERENCE ACCORDING TO C&MS 108.02.

2. CCF MATERIAL.
PROVIDE CCF MATERIAL, MEETING THE REQUIREMENT OF SECTION C OF THIS SPECIFICATION, WHICH HAS BEEN SUCCESSFULLY PLACED ON AT LEAST 5 PROJECTS THAT HAVE PERFORMED SATISFACTORY FOR AT LEAST FIVE YEARS.

PREAPPROVAL OF THE CCF MATERIAL WILL BE BASED ON DOCUMENTATION FOR THE ABOVE QUALIFICATIONS. THIS DOCUMENTATION SHALL BE SUBMITTED TO THE LABORATORY. PREAPPROVED CCF MATERIALS WILL BE LISTED ON THE DEPARTMENT'S QUALIFIED PROJECT LIST AND WILL NEED TO BE REAPPROVED YEARLY.

C. MATERIALS
1. FOAM.
USE A FOAMING AGENT CONFORMING TO ASTM C796. PERVIOUS CCF SHALL COMPLY WITH THE STANDARD SPECIFICATIONS OF ASTM C869 WHEN TESTED IN ACCORDANCE WITH ASTM C796.

THE CONTRACTOR SHALL PROVIDE A PLAN FOR PROTECTION AND STORAGE OF FOAMING AGENTS PREPARED BY THE MANUFACTURER FOR THE ENGINEER TO REVIEW. (6)

2. CEMENT.
USE PORTLAND CEMENT CONFORMING TO C&MS 701.04 OR C&MS 701.05

3. WATER.
USE WATER ACCORDING TO C&MS 499.02. POTABLE WATER IS SATISFACTORY FOR USE IN CCF.

4. ADMIXTURES.
USE ADMIXTURES CONFORMING TO C&MS 499.02 FOR WATER REDUCING, RETARDING, ACCELERATING, IMPROVING THE BOND, OR FOR OTHER SPECIFIC PROPERTIES, WHEN SPECIFICALLY APPROVED BY THE SUPPLIER/PRODUCER OF THE CCF.

D. MIX DESIGN.
DESIGN OF THE PROPOSED CCF MIX WILL BE PROVIDED BY THE SUPPLIER/PRODUCER. THE PROPOSED MIX DESIGN MUST MEET THE PROPERTIES OF TABLE A.

MIX DESIGNS MUST BE APPROVED BY THE LABORATORY PRIOR TO USE. A MINIMUM OF 30 DAYS PRIOR TO PLACING CCF, SUBMIT A PROPOSED MIX DESIGN, WITH CERTIFIED TEST DATA FROM THE SUPPLIER/PRODUCER, TO THE LABORATORY, WITH A COPY TO THE ENGINEER.

E. QUALITY CONTROL.
PERFORM CAST DENSITY MEASUREMENTS ON A MINIMUM OF 8 BATCHES PER PRODUCTION DAY. MAINTAIN A LOG OF THE CAST DENSITY MEASUREMENTS.

F. QUALITY ASSURANCE.
QUALITY ASSURANCE WILL BE BASED ON THE CAST DENSITY AND COMPRESSIVE STRENGTH AT THE POINT OF PLACEMENT. ANY MIXES NOT MEETING THE TABLE A PROPERTIES WILL BE REJECTED.

1. CAST DENSITY
AT A MINIMUM, THE DEPARTMENT WILL CHECK ONE OF THE BATCHES EACH DAY AS FOLLOWS:

A) WEIGH THE CONTAINER OF KNOWN VOLUME AND RECORD THE WEIGHT. A STANDARD CONCRETE CYLINDER MOLD MAY BE USED AS THE CONTAINER.

B) FILL THE CONTAINER WITH CCF, TAPPING THE CONTAINER SIDES BRISKLY WITH A RUBBER HAMMER DURING THE FILLING.

C) OVERFILL THE CONTAINER, STRIKING OFF THE EXCESS CCF. WIPE OFF THE OUTSIDE SURFACE OF THE CONTAINER.

D) WEIGH THE FULL CONTAINER.

E) SUBTRACT THE WEIGHT OF THE EMPTY CONTAINER FROM THE FULL CONTAINER.

F) CALCULATE THE CAST DENSITY AND COMPARE IT TO THE MAXIMUM DENSITY FOR THE CLASS OF CCF.

IF THE CCF MATERIAL EXCEEDS THE MAXIMUM DENSITY FOR THE CLASS OF CCF, ADJUST THE MIX AND RECHECK THE CAST DENSITY.

2. COMPRESSIVE STRENGTH.
TAKE AT LEAST FOUR (4) TEST SPECIMENS FOR EACH 300 CUBIC YARDS (230 CUBIC METERS) OF CCF PLACED OR FOR EACH DAY'S PRODUCTION, PREPARE, CURE, AND TEST THE SPECIMENS IN ACCORDANCE WITH ASTM C796 EXCEPT AS FOLLOWS:

A) FILL AN APPROPRIATE 3-INCH BY 6-INCH (75 MM BY 150 MM) CYLINDER MOLD ACCORDING TO ASTM C796, EXCEPT STRIKE OFF THE EXCESS CCF WITH A TROWEL.

B) CURE THE MOLDS IN A CURING BOX.

C) AFTER CURING, DO NOT OVEN DRY THE SPECIMENS THAT ARE TO BE LOAD TESTED. AIR DRY THE SPECIMENS FOR 1 TO 3 DAYS PRIOR TO TESTING.

D) WHILE SPECIMENS MAY BE TESTED AT ANY AGE TO MONITOR COMPRESSIVE STRENGTH OF THE CCF, TEST A MINIMUM OF TWO SPECIMENS AT 28 DAYS FOR ACCEPTANCE.

E) PROVIDE THE 28 DAY TEST RESULTS TO THE ENGINEER.

REVIEW THE STATUS OF THE CCF MATERIAL THAT FAILS TO MEET THE MINIMUM COMPRESSIVE STRENGTH FOR THE CLASS OF CCF TO DETERMINE IF IT IS ACCEPTABLE AT THAT LOCATION.

(6) 3. PRE-PRODUCTION TRIAL POUR.
AT LEAST 4 DAYS PRIOR TO PRODUCTION POURS TAKING PLACE, THE CONTRACTOR SHALL MAKE AN ON-SITE TRIAL POUR OUTSIDE THE PRODUCTION AREA USING THE APPROVED PROPOSED MIX. THE TRIAL POUR SHALL HAVE VOLUME NOT LESS THAN 3 CUBIC YARDS. THE CONTRACTOR SHALL CONSTRUCT NECESSARY WATERTIGHT FORMWORK WITH A BOTTOM AND SIDES TO PROVIDE A 4 FOOT DEEP FINISHED POUR DEPTH. THE ENGINEER WILL PERFORM CAST DENSITY TESTS USING THREE (3) TEST SPECIMEN CORES OF THE TRIAL POUR COLLECTED BY THE CONTRACTOR AFTER NOT LESS THAN 24 HOURS CURE. THE ENGINEER WILL ALSO EVALUATE ANY RESULTING VOLUME LOSS WITHIN THE CELLULAR CONCRETE MATERIAL AFTER IT HAS CURED FOR A PERIOD OF NOT LESS THAN 24 HOURS. TRIAL POURS NOT MEETING THE CAST DENSITY REQUIREMENTS OR EXHIBITING VOLUME LOSS SHALL BE CAUSE FOR REJECTION OF THE MIX. IN THE EVENT THAT AN INITIAL TRIAL POUR IS REJECTED, THE CONTRACTOR SHALL CONSTRUCT ADDITIONAL FORMS FOR SUBSEQUENT TRIAL POUR(S). THE CONTRACTOR SHALL DISPOSE OF ALL TRIAL POUR MATERIALS, FORMS, ETC. THE COST TO PERFORM TRIAL POURS SHALL BE INCIDENTAL TO THE WORK AND NO ADDITIONAL COMPENSATION WILL BE MADE.

G. CONSTRUCTION METHODS.
PLACEMENT OF CCF SHALL BE ACCORDING TO PROCEDURES PROVIDED BY THE SUPPLIER/PRODUCER.

1. PREPARATION.
THE ENGINEER WILL EXAMINE THE SUBSOIL CONDITIONS IN THE PLACEMENT AREAS. CORRECT UNSUITABLE SOIL CONDITIONS PRIOR TO PLACING THE CCF. PROPERTY FIX IN PLAN POSITION ITEMS TO BE ENCASED IN THE CCF. COAT ANY ALUMINUM TO PREVENT OXIDATION FROM THE FRESH CONCRETE.

2. WEATHER.
DO NOT PLACE CCF WHEN THE SUBSOIL IS FROZEN, WHEN THE AMBIENT TEMPERATURE IS LESS THAN 32°F (0°C), OR WHEN FREEZING CONDITIONS ARE EXPECTED IN LESS THAN 24 HOURS. IF THESE CONDITIONS CANNOT BE MET, FOLLOW THE MANUFACTURER'S RECOMMENDATIONS TO DETERMINE PRECAUTIONS NECESSARY TO ASSURE ACCEPTABLE INSTALLATION.

TAKE PRECAUTIONS TO AVOID DAMAGE TO THE CCF FROM FREEZING TEMPERATURES PER THE MANUFACTURER'S RECOMMENDATIONS.

3. MIXING AND CONVEYING.
USE JOB SITE MIXING AND CONVEYING EQUIPMENT FOR PROPORTIONING, MIXING AND PLACING THE CCF APPROVED BY THE SUPPLIER/PRODUCER. MIX THE MATERIALS ACCORDING TO THE SUPPLIER/PRODUCER MIX DESIGN PROCEDURES AND, PROMPTLY AFTER MIXING, CONVEY THE CCF TO ITS FINAL POSITION. AVOID EXCESSIVE HANDLING OF THE CCF.

4. PLACEMENT.
THE TOP OF THE PERVIOUS CCF SHALL NOT BE LESS THAN 3'-0" FROM THE BOTTOM OF THE SIDEWALK.

DO NOT PLACE CCF IN LIFTS GREATER THAN 48" UNLESS RECOMMENDED BY THE MANUFACTURER.

DO NOT PLACE CCF INTO AN AREA OF STANDING WATER.

CONTRACTOR SHALL PROVIDE WORKING DRAWINGS SHOWING THE FINAL WEIGHT TO BE USED IN THE FIELD, PLAN AND SECTIONS LOCATING THE CROWNS, AND LOCATIONS OF THE STEPS IN THE CCF LIFTS.

FINISHING THE CCF:
THE TOP SURFACE OF THE CCF SHALL BE FINISHED TO DRAIN AS SHOWN ON THE PLANS. THE FINISHING MAY BE EXECUTED DURING PLACEMENT, OR GRADED AFTERWARDS, AT THE CONTRACTOR'S DISCRETION. THE FINISHED SURFACE SHALL NOT EXHIBIT EXCESSIVE CRACKING SUBJECT TO THE APPROVAL OF THE ENGINEER.

5. LOADING.
DO NOT APPLY ANY LOAD ONTO THE CCF UNTIL IT HAS ATTAINED A COMPRESSIVE STRENGTH OF AT LEAST 20 PSI (0.14 MPA).

H. METHOD OF MEASUREMENT.
THE DEPARTMENT WILL MEASURE EACH CLASS OF CCF BY THE NUMBER OF CUBIC YARDS COMPLETE IN PLACE.

I. BASIS OF PAYMENT.
THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE AS FOLLOWS:

ITEM	UNIT	DESCRIPTION
SPECIAL	CUBIC YARD	ENGINEERED FILL: LIGHTWEIGHT CELLULAR CONCRETE FILL, PERVIOUS (4W16)

TABLE A - CELLULAR CONCRETE FILL PROPERTIES

PROPERTY	PERVIOUS CCF
*-CAST DENSITY, MAX	35 LB/FT3 (561 KG/M3)
**-COMPRESSIVE STRENGTH, MIN. @ 28 DAYS	210 PSI (0.28 MPA)
COEFFICIENT OF PERMEABILITY	247 FT/DAY (0.087 CM/SEC)

* - SPECIFIED IN SECTION F.1 OF THIS SPECIFICATION
** - SPECIFIED IN SECTION F.2 OF THIS SPECIFICATION

NO.	DESCRIPTION	DATE	REV. BY
6	ADDED NOTES	11-6-23	RSN

DESIGN AGENCY
GPD GROUP®
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215 614.210.0751

DESIGNED MOJ | DRAWN MOJ | REVIEWED DGN | DATE 4-21-23
CHECKED DJC | REVISED | STRUCTURE FILE NUMBER

RETAINING WALL GENERAL NOTES

FRA-70-14.05
PID No. 96053

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FOUNDATION BEARING RESISTANCE (4W13, 4W14, 4W15, 4W22)

C.I.P. WALL 4W13 FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 5.21 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 7.64 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 17.46 KIPS PER SQUARE FOOT.

C.I.P. WALL 4W14 FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 5.72 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 8.26 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 17.35 KIPS PER SQUARE FOOT.

C.I.P. WALL 4W15 FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 5.56 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 8.09 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 12.61 KIPS PER SQUARE FOOT.

C.I.P. WALL 4W22 FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 2.29 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 3.31 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 15.16 KIPS PER SQUARE FOOT.

6 *DRILLED SHAFTS (4W16, 4W17, 4W18)*

LOADS:
THE MAXIMUM FACTORED LOAD TO BE SUPPORTED BY EACH DRILLED SHAFT IS INDICATED IN THE TABLES BELOW FOR EACH SHAFT SIZE. VERTICAL LOAD IS RESISTED BY TIP RESISTANCE AS NOTED HERE.

THE DESIGN OF THE WALL AND TANGENT DRILLED SHAFTS IS GENERALLY GOVERNED BY LATERAL SOIL PRESSURE ACTING ON THE SHAFTS. RESISTANCE IS PROVIDED THROUGH LATERAL SOIL RESISTANCE AND EMBEDMENT OF THE DRILLED SHAFTS. THE MAXIMUM FACTORED LATERAL LOAD TO BE SUPPORTED BY EACH DRILLED SHAFT IS INDICATED IN THE TABLE BELOW FOR EACH SHAFT SIZE. TIP RESISTANCE IS PROVIDED FOR THE AXIAL LOADS THAT ARE PRESENT, AS INDICATED IN THE TABLE. SIDE RESISTANCE IS NEGLECTED.

WALL 4W16				
SHAFT SIZE (DIAMETER)	SHAFT ID	MAX FACTORED LATERAL LOAD (KIPS)	MAX FACTORED VERTICAL LOAD (KIPS)	FACTORED TIP RESISTANCE (KIPS)
60″	#1 TO #56, #59 TO #73 & #76 TO #89	228	169	530
72″	#57, #58, #74 & #75	304	211	763

WALL 4W17				
SHAFT SIZE (DIAMETER)	SHAFT ID	MAX FACTORED LATERAL LOAD (KIPS)	MAX FACTORED VERTICAL LOAD (KIPS)	FACTORED TIP RESISTANCE (KIPS)
48″	#59	-	108	339
60″	#1 TO #58 & #60	190	162	530

WALL 4W18				
SHAFT SIZE (DIAMETER)	SHAFT ID	MAX FACTORED LATERAL LOAD (KIPS)	MAX FACTORED VERTICAL LOAD (KIPS)	FACTORED TIP RESISTANCE (KIPS)
30″	#9	-	31	133
42″	#1 TO #8 & #10	83	63	189

NO.	DESCRIPTION	DATE	REV. BY
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DESIGN AGENCY
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RETAINING WALL GENERAL NOTES
CAST-IN-PLACE CONCRETE WALLS

FRA-70-14.05
PID No. 96053

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ITEM 511 - CLASS QC1 CONCRETE, MISC.: CAST-IN-PLACE CONCRETE WALL (4W16)

THIS ITEM SHALL INCLUDE THE CONSTRUCTION OF THE CONCRETE WALL AT THE LOCATIONS INDICATED IN THE PLANS FOR WALLS 4W16 AND 4W17. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH CMS 511. THE SHEAR STUDS INSTALLATION SHALL BE IN ACCORDANCE WITH ITEM 513.

METHOD OF MEASUREMENT: THE DEPARTMENT WILL MEASURE THE APPROPRIATE CONCRETE ITEM BY THE NUMBER OF CUBIC YARDS DETERMINED BY CALCULATIONS FROM PLAN DIMENSION, IN PLACE, COMPLETED AND ACCEPTED.

PAYMENT: ALL LABOR EQUIPMENT AND MATERIALS INCLUDING THE SHEAR STUDS NECESSARY TO COMPLETE THE WORK SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR ITEM 511 - CLASS QC1 CONCRETE, MISC.: CAST-IN-PLACE CONCRETE WALL. 3

ITEM 511 - CLASS QC1 CONCRETE, MISC.: DRILLED SHAFT CAP WITH QC/QA (4W16, 4W17, 4W18)

THIS ITEM SHALL INCLUDE THE CONSTRUCTION OF THE REINFORCED CONCRETE DRILLED SHAFT CAP, RETAINING WALL, AND COPING ABOVE THE PRECAST FACADE PANELS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH CMS 511.

METHOD OF MEASUREMENT: THE DEPARTMENT WILL MEASURE THE APPROPRIATE CONCRETE ITEM BY THE NUMBER OF CUBIC YARDS DETERMINED BY CALCULATIONS FROM PLAN DIMENSION, IN PLACE, COMPLETED AND ACCEPTED.

PAYMENT: ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THE WORK SHALL BE INCLUDED IN ~~THE CONTRACT~~ BID PRICE FOR ITEM 511-CLASS QC1 CONCRETE, MISC.: DRILLED SHAFT CAP WITH QC/QA. 3

ITEM 524 - DRILLED SHAFTS, 42" DIAMETER, ABOVE BEDROCK WITH QC/QA, AS PER PLAN: (4W18)
ITEM 524 - DRILLED SHAFTS, 60" DIAMETER, ABOVE BEDROCK WITH QC/QA, AS PER PLAN: (4W16, 4W17)

6 THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS PER ITEM 524 EXCEPT THE FOLLOWING:

THE COARSE AGGREGATE SIZE FOR ALL DRILLED SHAFTS SHALL BE A MAXIMUM OF NO. 8.

ALL DRILLED SHAFTS SHALL BE CONSTRUCTED FULL DEPTH FROM THE REQUIRED BOTTOM ELEVATION TO THE PROPOSED TOP PLAN ELEVATION USING THE TEMPORARY CASING CONSTRUCTION METHOD OF HOLE EXCAVATION AS DETAILED IN C&MS 524.04.C. NO OTHER METHODS OF HOLE EXCAVATION SHALL BE PERMITTED.

THE CONSTRUCTION TOLERANCES FOR TANGENT SHAFT INSTALLATION UNDER SECTION 524.14 SHALL BE WITHIN ½" OF THE PLAN LOCATION IN THE HORIZONTAL PLANE AT THE PLAN ELEVATION FOR THE TOP OF THE SHAFT.

THE DRILLED SHAFT CAP AND P.E.J.F. JOINTS SHALL BE ACCURATELY PLACED ACCORDING TO THE DESIGN PLAN. IF THE LOCATIONS OF THE INSTALLED DRILLED SHAFTS VARY FROM THE DESIGN PLAN AND RESULT IN THE P.E.J.F. IN THE DRILLED SHAFT CAP FALLING OVER A DRILLED SHAFT INSTEAD OF BETWEEN SHAFTS, ALL VERTICAL SHAFT BARS INTERFERING WITH, OR CROSSING, THE CAP JOINT SHALL BE CUT FLUSH WITH THE TOP OF THE DRILLED SHAFT SO THAT BOTH SIDES OF THE CAP ARE NOT TIED TOGETHER BY SHAFT REINFORCING STEEL. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO CUTTING ANY REINFORCING STEEL. THE DEPARTMENT WILL CONSIDER THIS WORK AS INCIDENTAL AND SHALL BE INCLUDED WITH ITEM 524 FOR PAYMENT.

ITEM 524 - DRILLED SHAFTS, 72" DIAMETER, ABOVE BEDROCK WITH QC/QA, AS PER PLAN (4W16)

6 THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS PER ITEM 524 EXCEPT THE FOLLOWING:

THE COARSE AGGREGATE SIZE FOR ALL DRILLED SHAFTS SHALL BE A MAXIMUM OF NO. 8.

ALL DRILLED SHAFTS SHALL BE CONSTRUCTED FULL DEPTH FROM THE REQUIRED BOTTOM ELEVATION TO THE PROPOSED TOP PLAN ELEVATION USING THE TEMPORARY CASING CONSTRUCTION METHOD OF HOLE EXCAVATION AS DETAILED IN C&MS 524.04.C. NO OTHER METHODS OF HOLE EXCAVATION SHALL BE PERMITTED.

THE CONSTRUCTION TOLERANCES FOR TANGENT SHAFT INSTALLATION UNDER SECTION 524.14 SHALL WITHIN ½" OF THE PLAN LOCATION IN THE HORIZONTAL PLANE AT THE PLAN ELEVATION FOR THE TOP OF THE SHAFT.

AT SHAFT NUMBERS 57, 58, 74, AND 75, STEEL CASING WITHIN THE LIMITS OF THE CAST-IN-PLACE CONCRETE WALL SHALL BE LEFT IN PLACE AND BE INCLUDED FOR PAYMENT WITH ITEM 524.

ITEM SPECIAL - STRUCTURE, MISC.: PRECAST WALL PANELS (4W13, 4W14, 4W15)

THIS BID ITEM CONSISTS OF PRECAST PANELS MANUFACTURED AND CONSTRUCTED IN ACCORDANCE WITH THIS SPECIFICATION AND DESIGNED IN ACCORDANCE WITH THE 8TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY AASHTO, AND THE ODOT BRIDGE DESIGN MANUAL, 2019.

DESIGN STRESSES:

CONCRETE - COMPRESSIVE STRENGTH 4,000 PSI
REINFORCING STEEL - GRADE 60

MATERIALS - CONCRETE:

THE CONCRETE FOR THE WALL SECTIONS SHALL BE COMPOSED OF PORTLAND CEMENT, FINE & COARSE AGGREGATES, ADMIXTURES, AND WATER. PORTLAND CEMENT SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION C150, TYPE I, II, OR III. THE AIR ENTRAINING ADMIXTURE SHALL CONFORM TO AASHTO M154. THE CONCRETE SHALL CONTAIN 6% ±2% ENTRAINED AIR, AND SLUMP SHALL BE MAINTAINED WITHIN THE RANGE OF 1" TO 4". THE SLUMP MAY BE INCREASED TO 7" PROVIDED THE INCREASE IS ACHIEVED BY THE ADDITION OF A CHEMICAL WATER-REDUCING ADMIXTURE APPROVED BY THE ENGINEER.

MATERIALS - REINFORCING AND HARDWARE:

REINFORCEMENT SHALL CONSIST OF WELDED WIRE FABRIC CONFORMING TO ASTM A185 OR A497, OR DEFORMED BILLET-STEEL BARS CONFORMING TO ASTM A615, A616, OR A617, GRADE 60.

SHOP DRAWING REQUIREMENTS:

THE MANUFACTURER SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO MANUFACTURE. THE SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING:
- ALL STRUCTURAL DESIGN AND LOADING INFORMATION.
- A PLAN VIEW.
- ALL ELEVATION VIEWS.
- ALL DIMENSIONS.

MANUFACTURING SHALL NOT BEGIN UNTIL WRITTEN APPROVAL OF THE SUBMITTED SHOP DRAWINGS HAS BEEN RECEIVED.

TESTING AND INSPECTION:

ACCEPTABILITY OF THE CONCRETE FOR THE PRECAST PANELS WILL BE DETERMINED ON THE BASIS OF COMPRESSION TESTS, CERTIFICATIONS AND VISUAL INSPECTION. THE CONCRETE STRENGTH REQUIREMENTS FOR THE PRECAST PANELS SHALL BE CONSIDERED ATTAINED REGARDLESS OF CURING AGE WHEN COMPRESSION TEST RESULTS INDICATE STRENGTH WILL CONFORM TO 28-DAY SPECIFICATIONS AS STATED BELOW. THE MANUFACTURER SHALL FURNISH FACILITIES AND PERFORM ALL NECESSARY SAMPLING AND TESTING IN AN EXPEIDITIOUS AND SATISFACTORY MANNER. PANELS UTILIZING TYPE I OR II CEMENT SHALL BE CONSIDERED ACCEPTABLE FOR PLACEMENT IN THE WALL WHEN 7-DAY INITIAL STRENGTHS EXCEED 85% OF 28-DAY REQUIREMENTS. PANELS UTILIZING TYPE III CEMENT SHALL BE CONSIDERED ACCEPTABLE FOR PLACEMENT IN THE WALL PRIOR TO 28 DAYS ONLY WHEN COMPRESSIVE STRENGTH TEST RESULTS INDICATE THAT THE STRENGTH EXCEEDS THE 28-DAY SPECIFICATION.

MANUFACTURE:

THE AGGREGATES, CEMENT, AND WATER SHALL BE PROPORTIONED AND MIXED IN A BATCH MIXER TO PRODUCE A HOMOGENEOUS CONCRETE MEETING THE STRENGTH REQUIREMENTS OF THESE NOTES. THE PROPORTION OF PORTLAND CEMENT IN THE MIXTURE SHALL NOT BE LESS THAN 564 POUNDS PER CUBIC YARD OF CONCRETE.

THE WALL SECTIONS SHALL BE CURED FOR A SUFFICIENT LENGTH OF TIME SO THAT THE CONCRETE WILL DEVELOP THE SPECIFIED COMPRESSIVE STRENGTH IN 28 DAYS OR LESS. ANY ONE OF THE METHODS OF CURING OR COMBINATION THEREOF SHALL BE USED:

STEAM CURING - THE SECTIONS MAY BE LOW PRESSURE, STEAM CURED BY A SYSTEM THAT WILL MAINTAIN A MOIST ATMOSPHERE.

WATER CURING - THE SECTIONS MAY BE WATER CURED BY ANY METHOD THAT WILL KEEP THE SECTIONS MOIST.

THE FORMS USED IN MANUFACTURE SHALL BE SUFFICIENTLY RIGID AND ACCURATE TO MAINTAIN THE SECTION DIMENSIONS WITHIN THE PERMISSIBLE VARIATIONS GIVEN IN THESE NOTES. ALL CASTING SURFACES SHALL BE OF SMOOTH MATERIAL.

THE WALL SECTIONS SHALL BE STORED IN SUCH A MANNER TO PREVENT CRACKING OR DAMAGES.

THE FRONT FACE OF THE REINFORCED CONCRETE PANELS SHALL HAVE A SMOOTH CONCRETE FINISH AND INCORPORATE THE PATTERNS SHOWN IN THE STRUCTURE AESTHETIC DETAIL PLANS. CAULKING BETWEEN PRECAST PANELS SHALL BE IN ACCORDANCE WITH THE PLAN DETAILS. THE BACK SIDE OF THE REINFORCED CONCRETE PANELS SHALL HAVE AND UNFORMED SURFACE FINISH AND SHALL BE ROUGH SCREEDED TO ELIMINATE OPEN POCKETS OF AGGREGATE AND SURFACE DISTORTIONS IN EXCESS OF ¼".

ALL PANELS SHALL BE MANUFACTURED WITH ALL PANEL DIMENSIONS WITHIN ¼"

COMPRESSIVE STRENGTH:

ACCEPTANCE OF THE CONCRETE PANELS WITH RESPECT TO COMPRESSIVE STRENGTH WILL BE DETERMINED ON THE BASIS OF PRODUCTION LOTS. A PRODUCTION LOT IS DEFINED AS A GROUP OF PANELS THAT WILL BE REPRESENTED BY A SINGLE COMPRESSIVE STRENGTH SAMPLE AND WILL CONSIST OF EITHER 6 PANELS OR A SINGLE DAY'S PRODUCTION, WHICHEVER IS LESS.

DURING THE PRODUCTION OF THE CONCRETE PANELS, THE MANUFACTURER WILL RANDOMLY SAMPLE THE CONCRETE IN ACCORDANCE WITH ASTM C172. A SINGLE COMPRESSIVE STRENGTH SAMPLE, CONSISTING OF A MINIMUM OF FOUR CYLINDERS, WILL BE RANDOMLY SELECTED FOR EVERY PRODUCTION LOT.

CYLINDERS FOR COMPRESSIVE STRENGTH TESTS SHALL BE 6" DIA. X 1'-0" SPECIMENS PREPARED IN ACCORDANCE WITH ASTM C31. FOR EVERY COMPRESSIVE STRENGTH SAMPLE, A MINIMUM OF 2 CYLINDERS WILL BE CURED IN THE SAME MANNER AS THE PANELS AND TESTED AT APPROXIMATELY 7 DAYS. THE AVERAGE COMPRESSIVE STRENGTH OF THESE CYLINDERS, WHEN TESTED IN ACCORDANCE WITH ASTM C39, WILL PROVIDE A TEST RESULT WHICH WILL DETERMINE THE INITIAL STRENGTH OF THE CONCRETE. IN ADDITION, 2 CYLINDERS SHALL BE CURED IN ACCORDANCE WITH ASTM C31 AND TESTED AT 28 DAYS. THE AVERAGE COMPRESSIVE STRENGTH OF THESE TWO CYLINDERS, WHEN TESTED IN ACCORDANCE WITH ASTM C39, WILL PROVIDE A COMPRESSIVE STRENGTH TEST RESULT WHICH WILL DETERMINE THE COMPRESSIVE STRENGTH OF THE PRODUCTION LOT.

IF THE INITIAL STRENGTH TEST RESULTS INDICATE A COMPRESSIVE STRENGTH IN EXCESS OF 4,000 PSI, THEN THESE TEST RESULTS WILL BE UTILIZED AS THE COMPRESSIVE STRENGTH TEST RESULT FOR THE PRODUCTION LOT AND THE REQUIREMENT FOR TESTING AT 28 DAYS WILL BE WAIVED FOR THAT PARTICULAR PRODUCTION LOT.

REJECTION:

PANELS SHALL BE SUBJECT TO REJECTION BECAUSE OF FAILURE TO MEET ANY OF THE REQUIREMENTS SPECIFIED ABOVE. IN ADDITION, ANY OR ALL OF THE FOLLOWING DEFECTS MAY BE SUFFICIENT CAUSE FOR REJECTION:
- DEFECTS THAT INDICATE IMPERFECT MOLDING.
- DEFECTS INDICATING HONEYCOMBED OR OPEN TEXTURED CONCRETE.
- DEFECTS IN THE PHYSICAL CHARACTERISTICS OF THE CONCRETE, SUCH AS BROKEN OR CHIPPED CONCRETE.
- STAINED FORM FACE, DUE TO EXCESS FORM OIL OR OTHER CONTAMINATIONS.
- SIGNS OF AGGREGATE SEGREGATION.
- BROKEN OR CRACKED CORNERS.
- LIFTING INSERTS NOT USABLE.
- EXPOSED REINFORCING STEEL.
- INSUFFICIENT CONCRETE COMPRESSIVE STRENGTH.

THE ENGINEER WILL DECIDE IF AN ATTEMPT MAY BE MADE TO REPAIR A DEFECTIVE PANEL. THE CONTRACTOR OR MANUFACTURER SHALL MAKE THE REPAIRS. IF THE REPAIRS ARE MADE TO THE ENGINEER'S SATISFACTION, THE PANEL WILL BE ACCEPTABLE.

MARKING:

THE DATE OF MANUFACTURE, THE PRODUCTION LOT NUMBER, AND THE PIECE MARK SHALL BE CLEARLY SCRIBED ON THE BACK SURFACE OF EACH PANEL.

CONCRETE LEVELING PAD:

THE CONCRETE LEVELING PAD (MUD SLAB) SHALL BE CONSTRUCTED AS SHOWN IN THE PLANS WITH CONCRETE HAVING A STRENGTH THAT IS NOT LESS THAN 3,500 PSI AND SHALL HAVE SUFFICIENT STRENGTH TO ADEQUATELY SUPPORT THE PANELS AT THE BOTTOM OF THE WALL IN A LEVEL POSITION DURING INSTALLATION. THE PAD SHALL BE CURED A MINIMUM OF 24 HOURS BEFORE PLACING WALL PANELS ON THE LEVELING PAD.

FOUNDATION PREPARATION:

PRIOR TO WALL CONSTRUCTION, THE FOUNDATION, IF NOT IN ROCK, SHALL BE LEVELED AND ROLLED WITH A SMOOTH WHEEL VIBRATORY ROLLER. ANY FOUNDATION SOILS FOUND TO BE UNSUITABLE SHALL BE REMOVED AND REPLACED, AS DIRECTED BY THE ENGINEER.

WALL ERECTION:

PANELS ARE HANDLED BY MEANS OF A LIFTING DEVICE CONNECTED TO THE LIFTING INSERT WHICH IS CAST INTO THE UPPER EDGE OR BACK SIDE OF THE PANELS. ALL PANELS SHALL BE BRACED TO RESIST THE TEMPORARY CONSTRUCTION LOADS INCLUDING WIND LOADS, PRIOR TO FOOTING CONSTRUCTION.

PAYMENT:

PAYMENT FOR ITEM SPECIAL - STRUCTURE, MISC.: PRECAST WALL PANELS COVERS ALL LABOR, MATERIAL, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK DESCRIBED ABOVE.

NO.	DESCRIPTION	DATE	REV. BY
3	REVISED ITEM DESCRIPTION	10-23-23	DJC
6	REVISED NOTES	11-6-23	RSN

DESIGN AGENCY
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CHECKED	REVISED	STRUCTURE FILE NUMBER	
DJC			

RETAINING WALL GENERAL NOTES
DRILLED SHAFT AND/OR PRECAST PANEL WALLS

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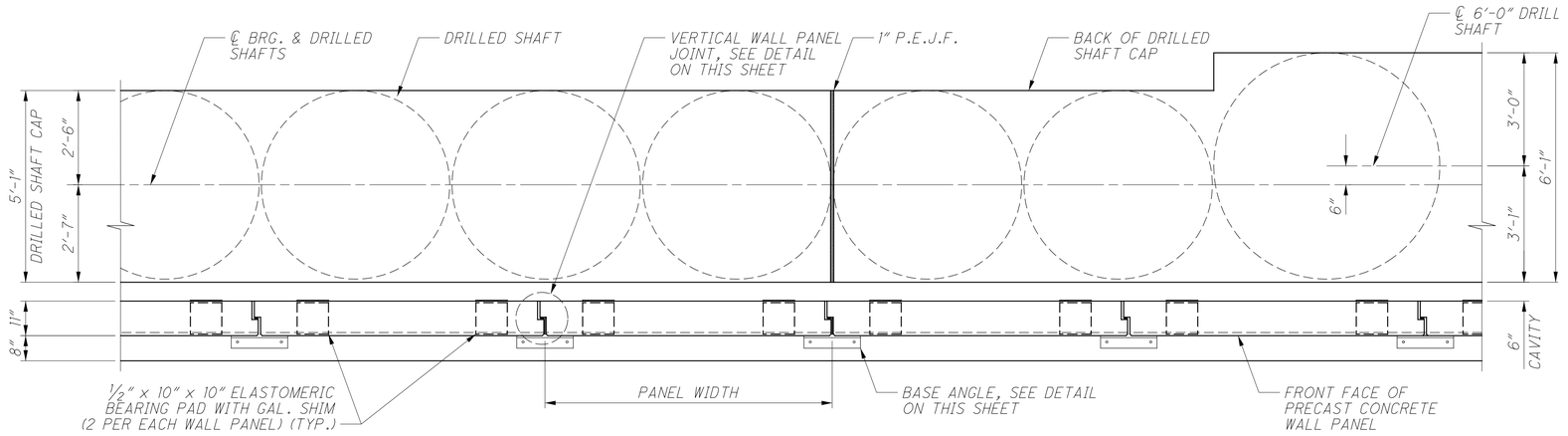
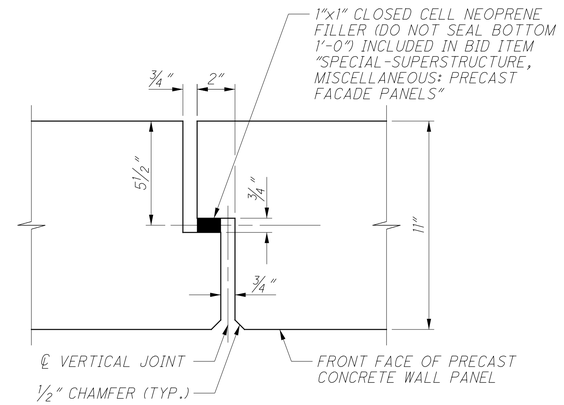
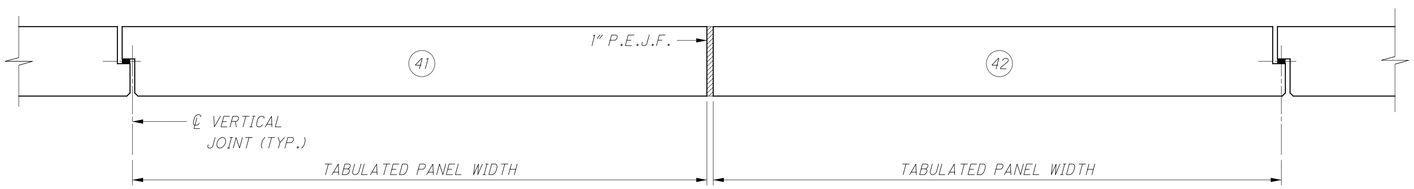


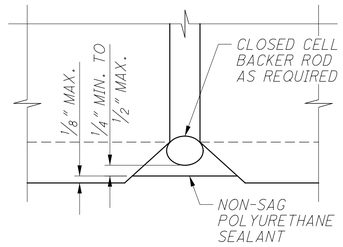
TYPICAL DRILLED SHAFT AND FOOTING PLAN



VERTICAL WALL PANEL JOINT DETAIL

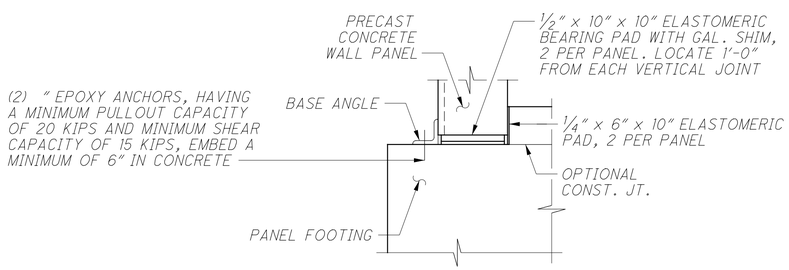


PRECAST PANEL EXPANSION JOINT DETAILS

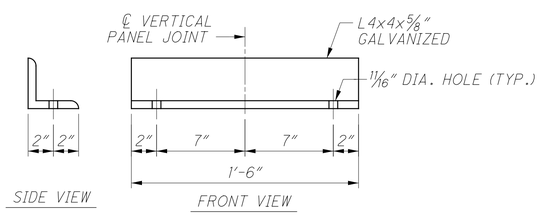


CAULKING DETAIL

TYPICAL ALL PRECAST PANEL JOINTS



WALL BASE DETAILS



BASE ANGLE DETAIL

MINIMUM LAP LENGTH	
#5 HORIZONTAL	3'-1"

NOTES:

6

1. ALL PANEL RELATED CONNECTION HARDWARE: PLATES,EPOXY ANCHORS, EXPANDED POLYSTYRENE, NEOPRENE FILLER, ELASTOMERIC BEARING PADS, CONCRETE FOUNDATION, AND REINFORCEMENT ARE INCIDENTAL TO BID ITEM "SPECIAL - STRUCTURE, MISC.: PRECAST FACADE PANELS".
2. ALL ATTACHMENT PLATES, ANCHOR BOLTS, NUTS, WASHERS, AND OTHER STEEL APPURTENANCE ARE TO BE GALVANIZED, UNLESS NOTES OTHERWISE.
3. FOR TOP OF WALL PANEL CONNECTION, SEE DETAILS ON SHT. NO. 21/22 .

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	RSN	11-9-23

DESIGN AGENCY
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215
614.210.0791
Ohio Certificate of Authorization No. 10033

DESIGNED RHC | DRAWN JJB | REVIEWED DGN | DATE 4-21-23
CHECKED DJC | REVISED | STRUCTURE FILE NUMBER

PRECAST FACADE PANEL DETAILS - 1
TANGENT DRILLED SHAFT WALL 4W16
NORTHSIDE OF I-70 WB FROM FRA-70-1405C TO FRA-33-1747C

FRA-70-14.05
PID No. 96053

20 / 22

355
855

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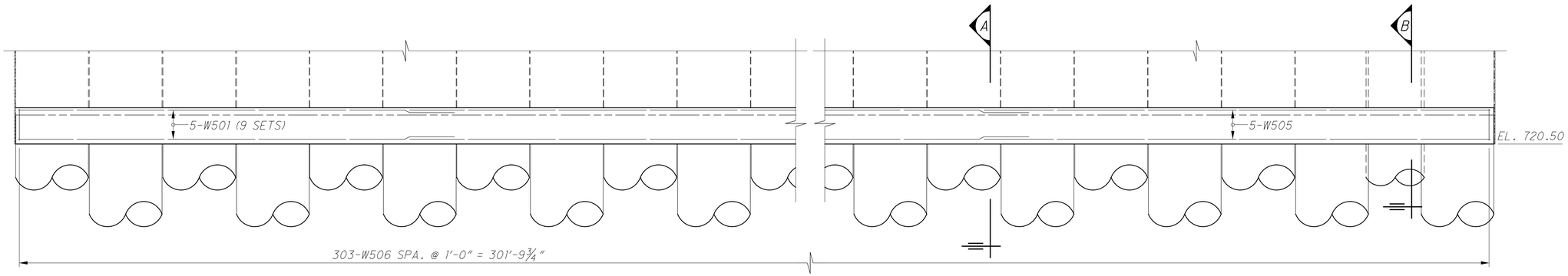
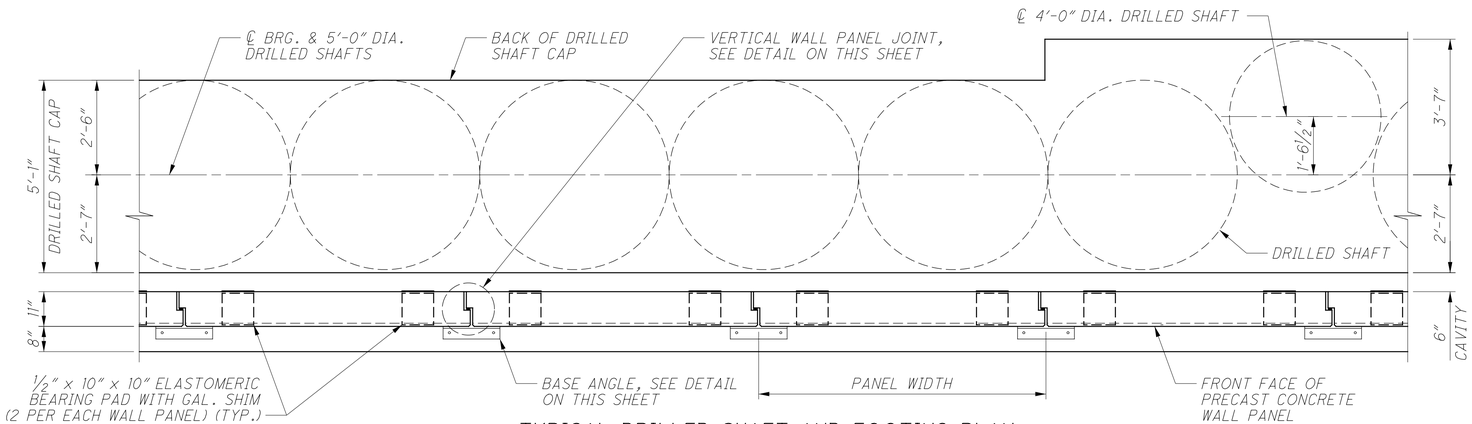
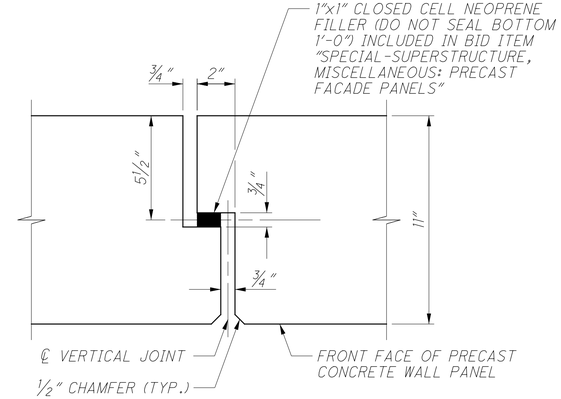


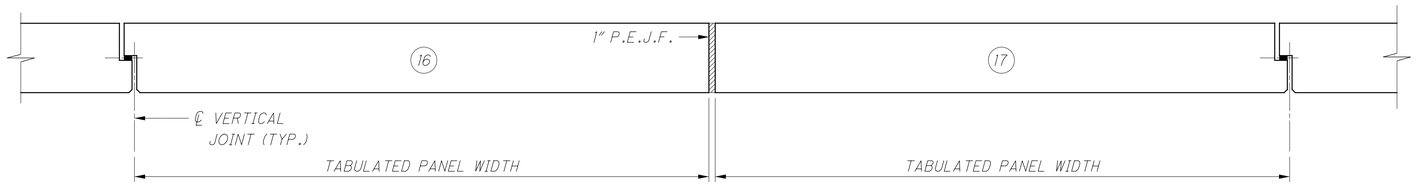
FOOTING ELEVATION



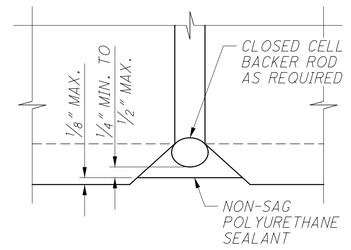
TYPICAL DRILLED SHAFT AND FOOTING PLAN



VERTICAL WALL PANEL JOINT DETAIL

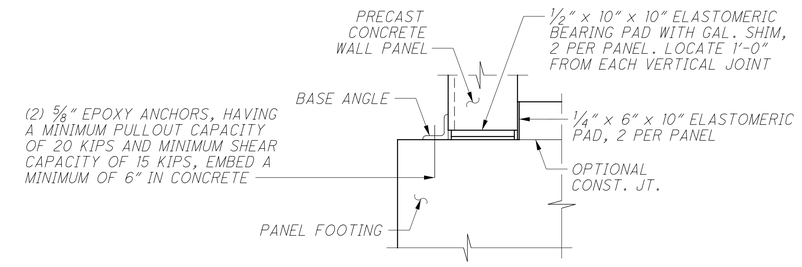


PRECAST PANEL EXPANSION JOINT DETAILS

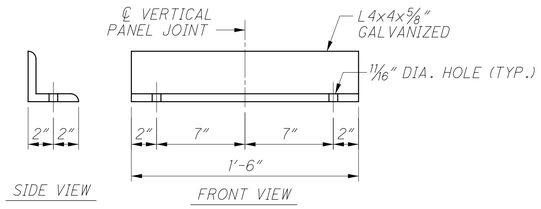


CAULKING DETAIL

TYPICAL ALL PRECAST PANEL JOINTS



WALL BASE DETAILS



BASE ANGLE DETAIL

MINIMUM LAP LENGTH	
#5 HORIZONTAL	3'-1"

NOTES:

1. ALL PANEL RELATED CONNECTION HARDWARE: PLATES, EPOXY ANCHORS, EXPANDED POLYSTYRENE, NEOPRENE FILLER, ELASTOMERIC BEARING PADS, CONCRETE FOUNDATION, AND REINFORCEMENT ARE INCIDENTAL TO BID ITEM "SPECIAL - STRUCTURE: PRECAST FACADE PANELS".
2. ALL ATTACHMENT PLATES, ANCHOR BOLTS, NUTS, WASHERS, AND OTHER STEEL APPURTENANCE ARE TO BE GALVANIZED, UNLESS NOTED OTHERWISE.
3. FOR TOP OF WALL PANEL CONNECTION, SEE DETAILS ON SHT. NO. 10/11 .
4. FOR SECTIONS A & B, SEE SHT. NO. 9/11 .

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	RSN	11-9-23

DESIGN AGENCY
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215
614.210.0791
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DESIGNED	DRAWN	REVIEWED	DATE
T.UW	JJB	DGN	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RHC			

PRECAST FACADE PANEL DETAILS
TANGENT DRILLED SHAFT WALL 4W17
NORTHSIDE OF I-70 WB FROM FRA-33-1747C TO FRA-23-1075C

FRA-70-14.05
PID No. 96053

8 / 11

365
855

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ESTIMATED QUANTITIES

CALCULATED BY: MOJ DATE: 4-2-20
CHECKED BY: TJW DATE: 4-3-20

ITEM	EXT.	TOTAL	PARTICIPATION 01/IMS/04	UNITS	DESCRIPTION	REFERENCE SHEET NO. ___ / 855
503	11100	LS	LS	LS	COFFERDAMS AND EXCAVATION BRACING	
503	21101	125	125	CY	UNCLASSIFIED EXCAVATION, AS PER PLAN	301
509	10000	3,256	3,256	LB	EPOXY COATED REINFORCING STEEL	
511	34451	4	4	CY	CLASS QC2 CONCRETE WTH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN	693
511	46512	8	8	CY	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	
511	53010	31	31	CY	CLASS QC1 CONCRETE, MISC.: DRILLED SHAFT CAP WITH QC/QA (3)	304
512	10050	24	24	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)	693
512	10100	75	75	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	693
512	33000	23	23	SY	TYPE 2 WATERPROOFING	
516	13600	25	25	SF	1" PREFORMED EXPANSION JOINT FILLER	
518	21200	18	18	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
518	40000	71	71	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	
524	95422	23	23	FT	DRILLED SHAFTS, 30" DIAMETER, ABOVE BEDROCK WITH QC/QA	
524	95443	431	431	FT	DRILLED SHAFTS, 42" DIAMETER, ABOVE BEDROCK WITH QC/QA, AS PER PLAN	304
SPECIAL	53000600	720	720	SF	STRUCTURES: PRECAST FACADE PANELS	305
607	98000	39	39	FT	FENCE, MISC.: WALL MOUNTED TYPE A (W/O VANDAL MESH)	693
894	10000	10 (6)	10 (6)	EACH	THERMAL INTEGRITY PROFILING (TIP) TEST	301 (6)

NO.	DESCRIPTION	REV. BY	DATE
3	REVISED ITEM DESCRIPTION	DJC	10-23-23
6	REVISED QUANTITY	RSN	11-9-2023

DESIGN AGENCY
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
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DESIGNED MOJ | DRAWN MOJ | REVIEWED DGN | DATE 4-21-23
CHECKED TJW | REVISED | STRUCTURE FILE NUMBER

ESTIMATED QUANTITIES
TANGENT DRILLED SHAFT WALL 4W18
NORTH SIDE OF I-70 WB - EAST OF FRA-23-1075C

FRA-70-14.05
PID No. 96053

1 / 8

369
855

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DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO THE 8TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATION" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2017, AND THE ODOT BRIDGE DESIGN MANUAL, 2019.

STANDARD DRAWINGS

REFER TO THE FOLLOWING ODOT STANDARD BRIDGE DRAWINGS:

AS-1-15	REVISED:	7-17-15
AS-2-15	REVISED:	1-18-19
EXJ-4-87	REVISED:	1-19-18
GSD-1-19	REVISED:	1-15-21

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATION:

800	DATED	1-20-23
894	DATED	4-16-21

DESIGN DATA

OPERATIONAL IMPORTANCE: A LOAD MODIFIER OF 1.00 HAS BEEN ASSUMED FOR THE DESIGN OF THIS STRUCTURE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, ARTICLE 1.3.5 AND THE ODOT BRIDGE DESIGN MANUAL, 2020.

DESIGN LOADING

HL-93
FUTURE WEARING SURFACE (FWS) OF 0.060 KIPS PER SQUARE FOOT

DESIGN STRESSES

CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI (SUBSTRUCTURE)

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (SUPERSTRUCTURE)

CONCRETE CLASS QC5 - COMPRESSIVE STRENGTH 4.5 KSI (DRILLED SHAFTS)

REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

STRUCTURAL STEEL - ASTM A709 GRADE 50 - YIELD STRENGTH 50 KSI

DECK PROTECTION METHOD

EPOXY COATED REINFORCING STEEL
2½" CONCRETE COVER
CLASS QC2 CONCRETE

MONOLITHIC WEARING SURFACE

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

EXISTING STRUCTURE VERIFICATION:

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING 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 THAT HAVE BEEN VERIFIED IN THE FIELD.

CONSTRUCTION CONSTRAINTS:

FILL THE VOID CREATED BY EXCAVATION FOR THE ABUTMENT FOOTING WITH TYPE B GRANULAR MATERIAL, 703.16.C. AFTER THE FOOTING AND THE BREASTWALL HAVE BEEN CONSTRUCTED, FILL THE VOID BEHIND EACH ABUTMENT UP TO THE BEAM SEAT ELEVATION AND FROM THE BEAM SEAT UP ON A 1:1 SLOPE TO THE SUBGRADE ELEVATION PRIOR TO CONSTRUCTING THE BACKWALL AND SETTING THE GIRDERS ON THE ABUTMENT.

STRUCTURE GROUNDING

GROUND THE PROPOSED BRIDGE ACCORDING TO THE REQUIREMENTS OF ODOT STD. DWG. HL-50.21 - STRUCTURE GROUNDING. THE FOLLOWING BRIDGE COMPONENTS SHALL BE CONNECTED TO THE GROUNDING SYSTEM: ALL STRUCTURAL STEEL, UTILITY SUPPORTS, AND LIGHT POLES.

DECK PLACEMENT DESIGN ASSUMPTIONS

THE FOLLOWING ASSUMPTION OF CONSTRUCTION MEANS AND METHODS WERE MADE FOR THE ANALYSIS AND DESIGN OF THE SUPERSTRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE FALSEWORK SUPPORT SYSTEM WITHIN THESE PARAMETERS AND WILL ASSUME RESPONSIBILITY FOR SUPERSTRUCTURE ANALYSIS FOR DEVIATION FROM THESE DESIGN ASSUMPTIONS.

AN EIGHT WHEEL FINISHING MACHINE WITH A MAXIMUM WHEEL LOAD OF 2.54 KIPS.

A MINIMUM OUT-TO-OUT WHEEL SPACING AT EACH END OF THE MACHINE OF 103 IN.

A MAXIMUM SPACING OF OVERHANG FALSEWORK OF 48 IN.

A MAXIMUM DISTANCE FROM THE CENTERLINE OF THE FASCIA GIRDER TO THE FACE OF THE SAFETY HANDLE OF 65 IN.

FOUNDATION BEARING RESISTANCE

REAR ABUTMENT FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 6.00 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 8.67 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 16.76 KIPS PER SQUARE FOOT.

PIER FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 6.10 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 9.60 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 20.88 KIPS PER SQUARE FOOT.

6 FORWARD ABUTMENT FOUNDATION, AS DESGNED PRODUCE A MAXIMUM FACTORED LOAD OF 226 KIPS AT EACH DRILLED SHAFT. THIS LOAD IS RESISTED BY TIP RESISTANCE ONLY. THE FACTORED RESISTANCE DEVELOPED BY THE DRILLED SHAFT TIP IS 530 KIPS.

6 ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN

THE NEED TO PROVIDE TEMPORARY SHORING BEHIND THE DRILLED SHAFTS TO CONSTRUCT THE CONCRETE CAP SHALL BE DETERMINED BY THE CONTRACTOR BASED ON THEIR MEANS AND METHODS.

DESIGN, LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY TO INSTALL THE TEMPORARY SHORING SHALL BE COMPENSATED UNDER ITEM 503 -COFFERDAM AND EXCAVATION BRACING, AS PER PLAN.

ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN

FINISH TOP OF BACKWALL IN LOCATIONS ADJACENT TO SIDEWALKS WITH A BUFF WASH FINISH PER THE STRUCTURE AESTHETIC PLANS.

AFTER CONDUITS ARE PLACED THROUGH THE UTILITY BLOCKOUTS IN THE ABUTMENT BACKWALLS, FILL THE VOIDS USING NON-SHRINK MORTAR CONFORMING TO CMS 705.22.

ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, SIDEWALK, AS PER PLAN:
ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)
ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)

SEE STRUCTURE AESTHETIC PLANS FOR DETAILS.

ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT

ALL NEW STRUCTURAL STEEL SHALL BE PAINTED USING THE IZEU COATING SYSTEM. THE URETHANE TOP COAT SHALL BE TINTED TO MEET FEDERAL COLOR No. 17038 (BLACK)

ITEM 518 - PIPE HORIZONTAL CONDUCTOR, AS PER PLAN (8")

THIS ITEM CONSISTS OF FURNISHING AND INSTALLING 8" DIAMETER PIPE HORIZONTAL CONDUCTOR WITHIN THE BRIDGE SUPERSTRUCTURE AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE REQUIREMENTS OF CMS ITEM 518. THIS WORK INCLUDES THE CONDUCTOR PIPE, ELBOWS, CLEANOUTS, REDUCER FITTINGS, EXPANSION JOINT COUPLING, PIPE HANGERS AND ALL OTHER INCIDENTALS TO COMPLETE THE INSTALLATION TO THE SATISFACTION OF THE ENGINEER. PIPE HANGER ASSEMBLIES SHALL BE HOT-DIP GALVANIZED STEEL. ALL MATERIALS SHALL BE SUBMITTED FOR REVIEW IN ACCORDANCE WITH CMS 501.04.

THE METHOD OF MEASUREMENT SHALL BE BY THE FOOT ALONG THE CENTERLINE OF MAIN CONDUCTOR PIPE. PAYMENT WILL BE MADE AT THE UNIT PRICE BID PER FOOT AND SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS AND INCIDENTALS FOR A COMPLETE FUNCTIONING SYSTEM.

ITEM 524 - DRILLED SHAFTS, 60" DIAMETER, ABOVE BEDROCK WITH QC/QA, AS PER PLAN

6 THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS PER ITEM 524 EXCEPT THE FOLLOWING:
THE COARSE AGGREGATE SIZE FOR ALL DRILLED SHAFTS SHALL BE A MAXIMUM OF NO. 8.

ALL DRILLED SHAFTS SHALL BE CONSTRUCTED FULL DEPTH FROM THE REQUIRED BOTTOM ELEVATION TO THE PROPOSED TOP PLAN ELEVATION USING THE TEMPORARY CASING CONSTRUCTION METHOD OF HOLE EXCAVATION AS DETAILED IN C&MS 524.04.C. NO OTHER METHODS OF HOLE EXCAVATION SHALL BE PERMITTED.

THE CONSTRUCTION TOLERANCES FOR TANGENT SHAFT INSTALLATION UNDER SECTION 524.14 SHALL WITHIN ½" OF THE PLAN LOCATION IN THE HORIZONTAL PLANE AT THE PLAN ELEVATION FOR THE TOP OF THE SHAFT.

STEEL BEAMS SHALL BE ACCURATELY SET AT THE CENTER OF THE DRILLED SHAFT IMMEDIATELY AFTER THE INSTALLATION OF REINFORCING STEEL CAGE AND BEFORE PLACING CONCRETE.

THE DRILLED SHAFT CAP AND P.E.J.F. JOINTS SHALL BE ACCURATELY PLACED ACCORDING TO THE DESIGN PLAN. IF THE LOCATIONS OF THE INSTALLED DRILLED SHAFTS VARY FROM THE DESIGN PLAN AND RESULT IN THE P.E.J.F. IN THE DRILLED SHAFT CAP FALLING OVER A DRILLED SHAFT INSTEAD OF BETWEEN SHAFTS, ALL VERTICAL SHAFT BARS INTERFERING WITH, OR CROSSING, THE CAP JOINT SHALL BE CUT FLUSH WITH THE TOP OF THE DRILLED SHAFT SO THAT BOTH SIDES OF THE CAP ARE NOT TIED TOGETHER BY SHAFT REINFORCING STEEL. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO CUTTING ANY REINFORCING STEEL. THE DEPARTMENT WILL CONSIDER THIS WORK AS INCIDENTAL AND SHALL BE INCLUDED WITH ITEM 524 FOR PAYMENT.

ITEM 625 - LIGHT POLE ANCHOR BOLTS, MISC.: LIGHT POLE ANCHOR BOLT ASSEMBLIES EMBEDDED IN CONCRETE BRIDGE DECK

FURNISH ONE ANCHOR BOLT ASSEMBLY FOR EACH LIGHT POLE MOUNTED ON THE BRIDGE. EACH ASSEMBLY INCLUDES A STEEL PLATE AND ALL STEEL ANCHOR RODS, LEVELING RODS, NUTS, AND WASHERS AS SHOWN ON THE DRAWINGS OR AS REQUIRED FOR INSTALLATION. FABRICATE THE ASSEMBLY IN ACCORDANCE WITH CMS 513 AND 730. GALVANIZE THE ASSEMBLY AFTER FABRICATION IN ACCORDANCE WITH CMS 711.02. ALL MATERIALS, LABOR, AND INCIDENTALS NECESSARY TO INSTALL EACH POLE SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 625 - LIGHT POLE ANCHOR BOLTS, MISC.: LIGHT POLE ANCHOR BOLT ASSEMBLIES EMBEDDED IN CONCRETE BRIDGE DECK.

ITEM 894 - THERMAL INTEGRITY PROFILER (T.I.P.) TEST

PERFORM INTEGRITY TESTING ON ALL OF THE DRILLED SHAFTS AT THE FORWARD ABUTMENT BY THERMAL INTEGRITY PROFILING (TIP). PERFORM TIP TESTING PER ASTM D7949, "STANDARD TEST METHODS FOR THERMAL INTEGRITY PROFILING OF CONCRETE DEEP FOUNDATIONS," METHOD B, AND PER SUPPLEMENTAL SPECIFICATION 894

ASBESTOS ABATEMENT AND NOTIFICATION

ASBESTOS SURVEYS OF THE FRA-33-1747C BRIDGE SCHEDULED FOR REPLACEMENT WAS CONDUCTED BY CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALISTS. COPIES OF THE ASBESTOS INSPECTION REPORTS ARE INCLUDED IN THE PLAN SET FOR THIS PROJECT.

THE ASBESTOS SURVEYS DETERMINED THAT 55 SQUARE FEET OF ASBESTOS CONTAINING MATERIAL IS PRESENT ON THE BRIDGE DECK IN EXCESS OF THE ALLOWABLE REGULATORY LIMITS AND REQUIRES ABATEMENT.

THE CONTRACTOR SHALL ENSURE THAT ASBESTOS CONTAINING MATERIALS DO NOT BECOME FRIABLE (BROKEN UP OR DISPERSED) AND THAT NO VISIBLE FIBER EMISSIONS WILL OCCUR. ADDITIONALLY, THE REMOVAL AND DISPOSAL OF THE ASBESTOS CONTAINING MATERIAL SHALL COMPLY WITH CHAPTER 3745-20 OF THE OHIO ADMINISTRATIVE CODE, THE NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS (NESHAP) AND APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS (29 CFR 1926.1101).

THE CONTRACTOR SHALL SUBMIT A COMPLETED ELECTRONIC NOTIFICATION OF DEMOLITION AND RENOVATION FORM (NDRF), APPLICABLE FEES, AND THE ASBESTOS INSPECTION REPORT TO THE OEPA AT LEAST 10 DAYS PRIOR TO ANY DEMOLITION ACTIVITY, RENOVATION ACTIVITY, OR BOTH. SUBMIT THE NDRF AND PAYMENT ALONG WITH THE ASBESTOS INSPECTION REPORT USING THE OEPA BUSINESS CENTER. SUBMIT ONE ELECTRONIC PDF COPY TO THE ENGINEER. THE ENGINEER WILL PROVDE ONE COPY TO THE DISTRICT ENVIRONMENTAL COORDINATOR AT MARCI.LININGER@DOT.OHIO.GOV.

BASIS OF PAYMENT - THE CONTRACTOR SHALL FURNISH ALL THE FEES, LABOR, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THE OEPA NOTIFICATION OF DEMOLITION AND RENOVATION FORM AND PROPERLY REMOVE, ENCAPSULATE, HANDLE, TRANSPORT AND DISPOSE OF ASBESTOS CONTAINING MATERIALS IN A LANDFILL LICENSED BY THE LOCAL HEALTH DEPARTMENT AND PERMITTED BY THE OHIO ENVIRONMENTAL PROTECTION AGENCY - DIVISION OF AIR POLLUTION CONTROL TO ACCEPT ASBESTOS CONTAINING MATERIAL. PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT PRICE BID OF LUMP SUM.

PAYMENT FOR THIS WORK SHALL BE INCLUDED IN ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN.

NO.	DESCRIPTION	DATE	REV. BY
6	REVISED NOTES	11-6-23	RSN

DESIGN AGENCY: GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215 614.210.0751

DESIGNED	DRAWN	REVIEWED	DATE
RHC	RPR	DGN	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DJC		2501554	

GENERAL NOTES - 1
BRIDGE NO. FRA-33-1747C
S. 3RD STREET (U.S. 33) OVER I-70/71

FRA-70-14.05
PID No. 96053

3/42
561/855

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ESTIMATED QUANTITIES

CALCULATED BY: RHC DATE: 7-5-22
CHECKED BY: DJC DATE: 7-7-22

ITEM	EXT.	TOTAL	PARTICIPATION 01/IMS/04	PARTICIPATION 02/IMS/11	PARTICIPATION 09/IMS/17/ COL	UNITS	DESCRIPTION	ABUTMENT	PIER	SUPER-STRUCTURE	GENERAL	REFERENCE SHEET NO.
202	11002	LS		LS			STRUCTURE REMOVED, OVER 20 FOOT SPAN					
202	22900	370		370		SY	APPROACH SLAB REMOVED				370	
202	23500	731		731		SY	WEARING COURSE REMOVED				731	
6 503	11101	LS		LS			COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN					3
503	21100	1,872		1,872		CY	UNCLASSIFIED EXCAVATION	1,479	393			
509	10000	188,244		188,244		LB	EPOXY COATED REINFORCING STEEL	41,330	50,212	96,702		
511	34446	357		357		CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK			357		
511	41012	119		119		CY	CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS		119			
511	44113	336		336		CY	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN	336				3
511	46512	278		278		CY	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	155	123			
511	51513	91		91		CY	CLASS QC2 CONCRETE WITH QC/QA, SIDEWALK, AS PER PLAN			91		3
512	10050	602		602		SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)	12		590		3
512	10100	456		456		SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	350	106			3
512	33000	23		23		SY	TYPE 2 WATERPROOFING	23				
513	10200	11,219	11,219			LB	STRUCTURAL STEEL MEMBERS, LEVEL UF (COC, COC DOT, AND ODOT DUCT BANK SUPPORT)			11,219		
513	10200	11,219			11,219	LB	STRUCTURAL STEEL MEMBERS, LEVEL UF (AEP DUCT BANK SUPPORT)			11,219		
513	10280	410,900	3 3	410,900		LB	STRUCTURAL STEEL MEMBERS, LEVEL 4		3	410,900		
513	20000	4,872		4,872		EACH	WELDED STUD SHEAR CONNECTORS			4,872		
514	00060	23,000		23,000		SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT			23,000		
514	00066	23,000		23,000		SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT			23,000		
514	10000	14		14		EACH	FINAL INSPECTION REPAIR			14		
516	10010	116		116		FT	ARMORLESS PREFORMED JOINT SEAL				116	
516	11210	128		128		FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (4")			128		
516	13600	344		344		SF	1" PREFORMED EXPANSION JOINT FILLER	344				
516	13900	136		136		SF	2" PREFORMED EXPANSION JOINT FILLER	136				
516	44101	14		14		EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 9.5" x 1'-4" x 2.67" PAD WITH 10.5" x 1'-10" BEVELED PLATE, AS PER PLAN			14		21
516	44201	7		7		EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 1'-5" x 2'-2" x 3.21" PAD WITH 1'-6" x 2'-11" BEVELED PLATE, AS PER PLAN			7		21
518	12301	2		2		EACH	SCUPPERS, INCLUDING SUPPORTS, AS PER PLAN			2		27
518	20000	227		227		SY	PREFABRICATED GEOCOMPOSITE DRAIN	227				
518	21200	35		35		CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	35				
518	40000	220		220		FT	6" PERFORATED CORRUGATED PLASTIC PIPE	220				
518	40012	45		45		FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE	45				
518	60031	70		70		FT	PIPE HORIZONTAL CONDUCTOR, INCLUDING SPECIALS, AS PER PLAN (8")			70		
524	95472	984		984		FT	DRILLED SHAFTS, 60" DIAMETER, ABOVE BEDROCK WITH QC/QA, AS PER PLAN	984				3
526	25011	104		104		SY	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=15"), AS PER PLAN				104	36 TO 39
526	30011	214		214		SY	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=17"), AS PER PLAN				214	36 TO 39
526	90031	120		120		FT	TYPE C INSTALLATION, AS PER PLAN				120	38
625	10620	6		6		EACH	LIGHT POLE ANCHOR BOLTS, MISC.: LIGHT POLE ANCHOR BOLT ASSEMBLIES EMBEDDED IN CONCRETE BRIDGE DECK			6		3
SPECIAL	53000200	LS	LS				STRUCTURES: CITY OF COLUMBUS DUCT BANK COMPLETE					4
SPECIAL	53000200	LS	LS				STRUCTURES: CITY OF COLUMBUS (DEPARTMENT OF TECH) DUCT BANK COMPLETE					4
SPECIAL	53000200	LS	LS				STRUCTURES: ODOT DUCT BANK COMPLETE					4
SPECIAL	53000200	LS			LS		STRUCTURES: AEP DUCT BANK COMPLETE					4
SPECIAL	53000600	1,460		1,460		SF	STRUCTURES: PRECAST FACADE PANELS	1,460				4
894	10000	15		15		EACH	THERMAL INTEGRITY PROFILING (TIP) TEST	15				

NO.	DESCRIPTION	DATE	REV. BY
3	QUANTITY REVISED	10-23-23	DJC
6	REVISED ITEM DESCRIPTION	11-6-23	RSN

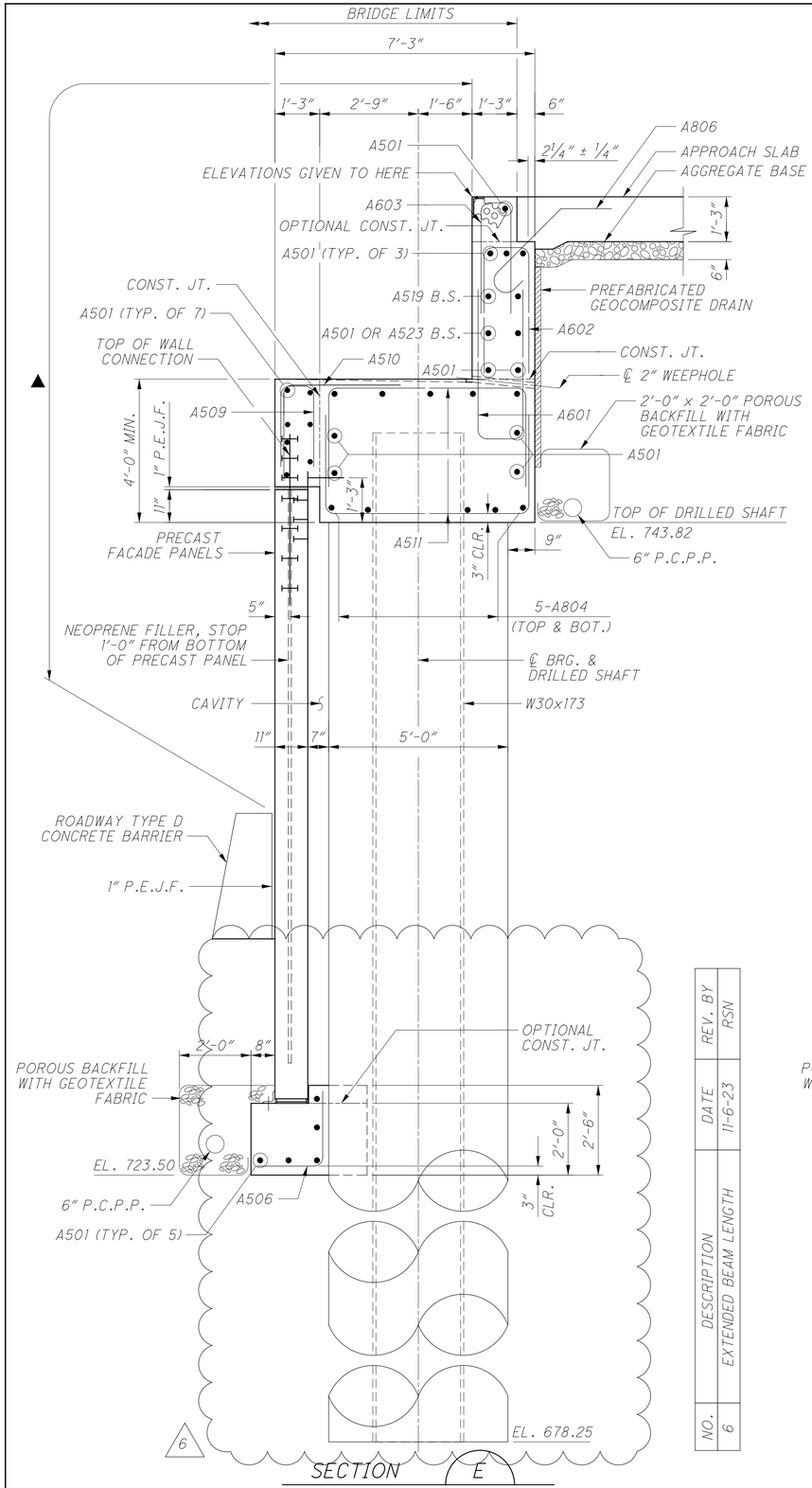
DESIGN AGENCY
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215
Corporate Seal, No. Common Pleas Licensure, No. 1933

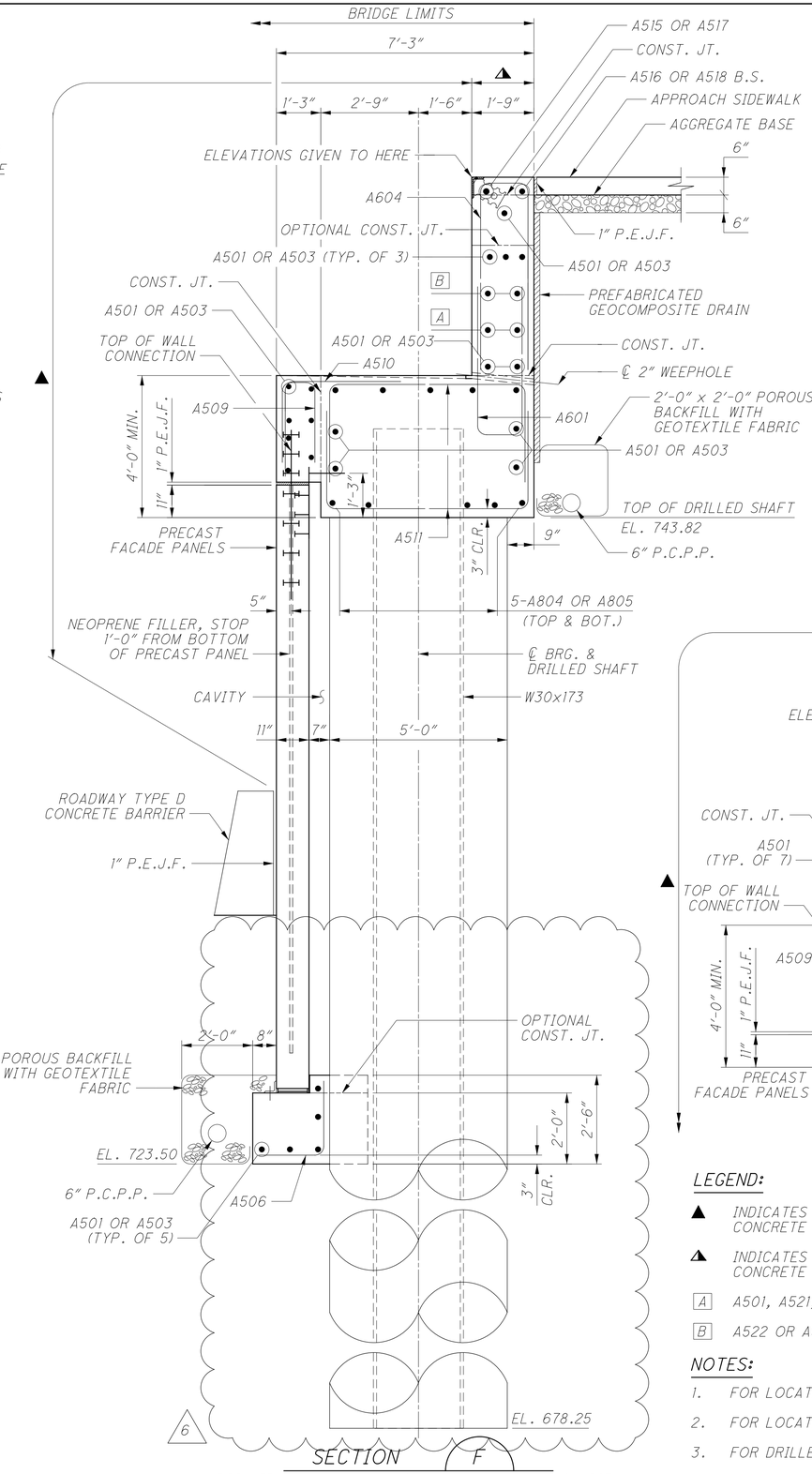
DESIGNED MOJ | CHECKED RHC
DRAWN MOJ | REVIEWED DGN | DATE 4-21-23
REVISED
STRUCTURE FILE NUMBER 2501554

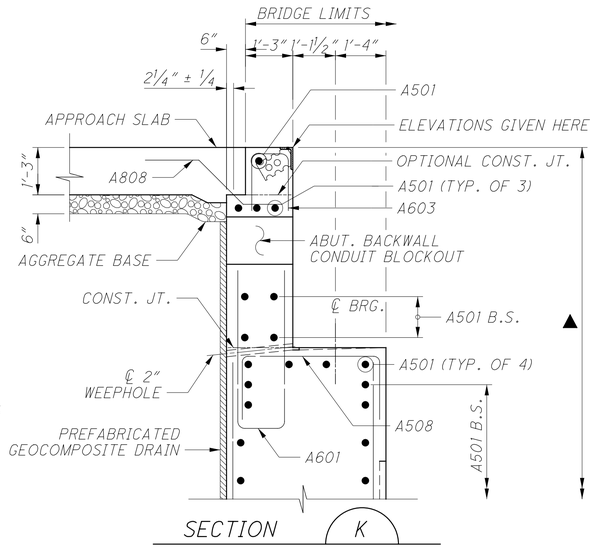
ESTIMATED QUANTITIES
BRIDGE NO. FRA-33-1747C
S. 3RD STREET (U.S. 33) OVER I-70/71

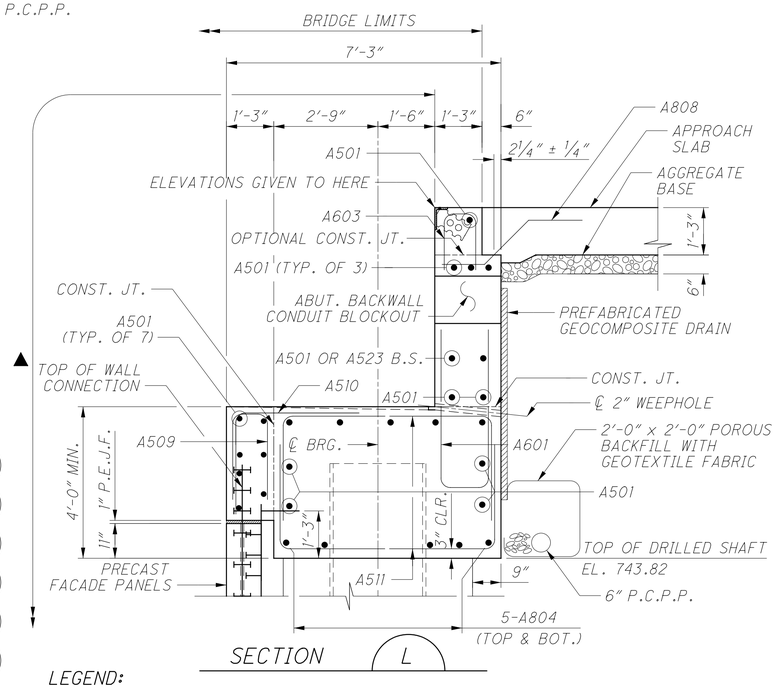
FRA-70-14.05
PID No. 96053

563
855









NO.	DESCRIPTION	DATE	REV. BY
6	EXTENDED BEAM LENGTH	11-6-23	RSN

LEGEND:

▲ INDICATES LIMITS OF "ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)"

△ INDICATES LIMITS OF "ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)"

[A] A501, A521, A523 OR A524

[B] A522 OR A525

NOTES:

1. FOR LOCATION OF SECTIONS E, F & L, SEE SHT. NO. 13/42 .
2. FOR LOCATION OF SECTION K, SEE SHT. NO. 9/42 .
3. FOR DRILLED SHAFT REINFORCING DETAILS, SEE SHT. NO. 15/42 .
4. FOR 2" WEEP HOLE DETAIL, SEE SHT. NO. 14/38 . FROM FRA-33-1747C-CAPS PLAN

DESIGN AGENCY
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215
614.210.0791
Certificate Glaus, Pyle, Schomer, Burns & DeHaven, Inc. No. 0833

DESIGNED RHC/MLS
DRAWN MLS/JJB
REVIEWED DGN
DATE 4-21-23
CHECKED DJC
REVISED
STRUCTURE FILE NUMBER 2501554

FORWARD ABUTMENT DETAILS

BRIDGE NO. FRA-33-1747C
S. 3RD STREET (U.S. 33) OVER I-70/71

FRA-70-14.05
PID No. 96053

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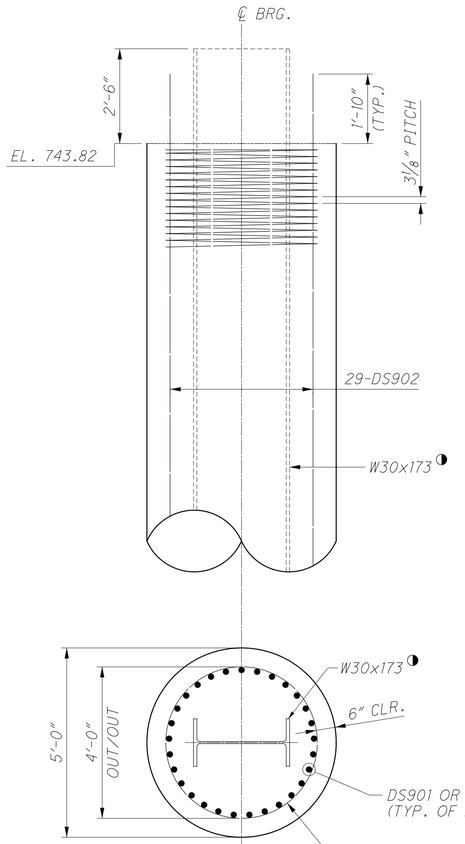
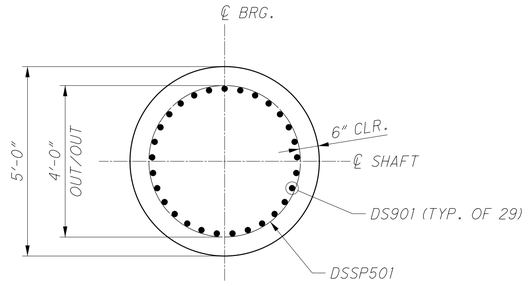
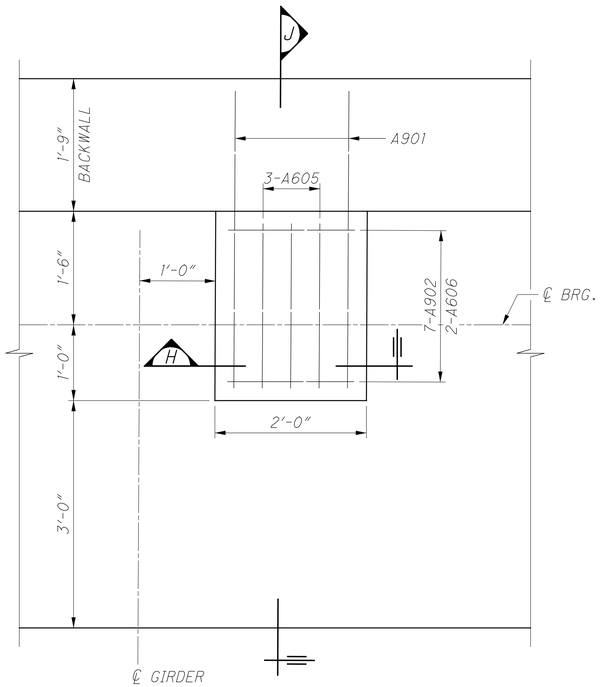


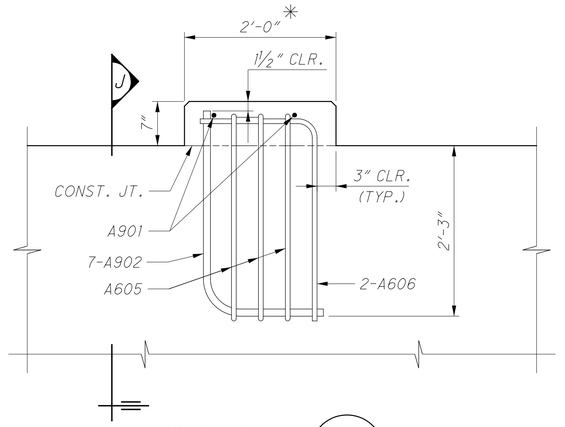


SECTION G

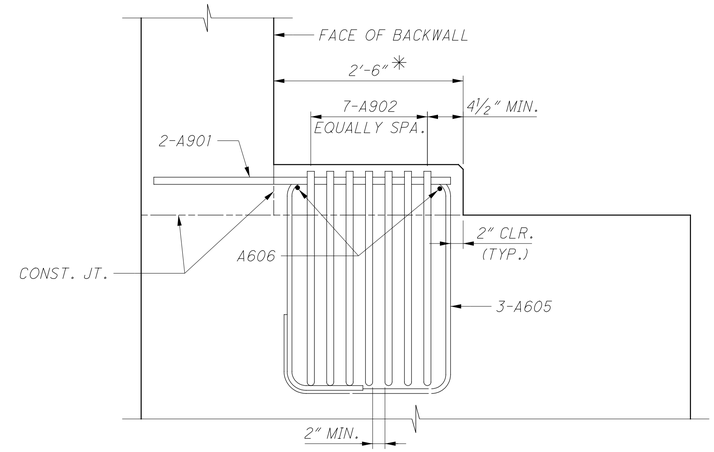


SEISMIC PEDESTAL DETAIL

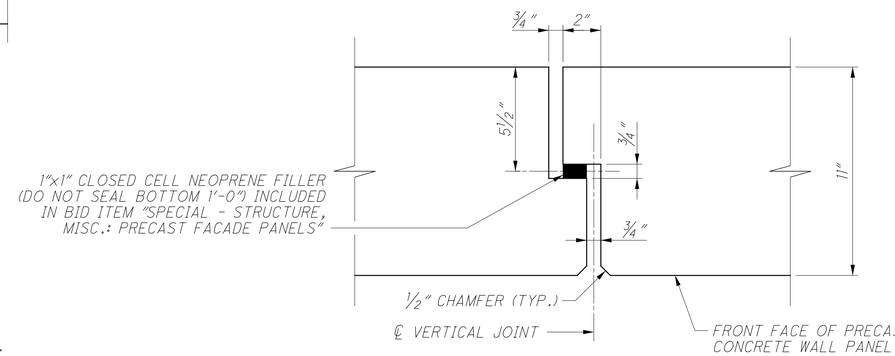
LEFT PEDESTAL SHOWN, RIGHT PEDESTAL IS SIMILAR BUT OPPOSITE



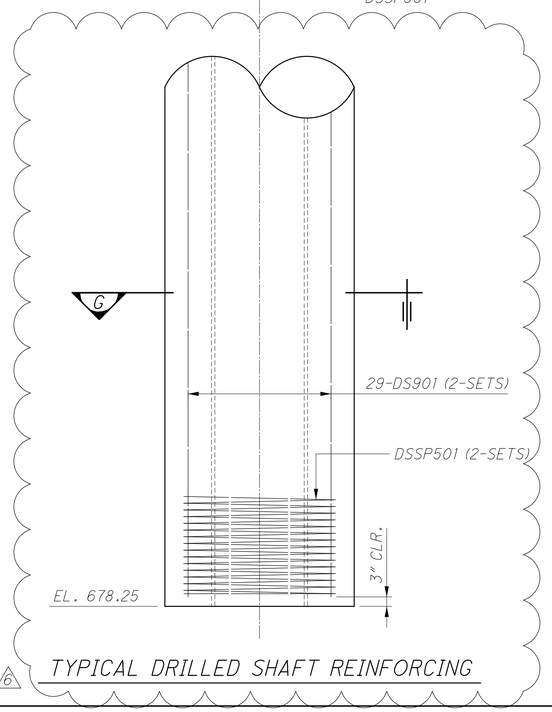
SECTION H



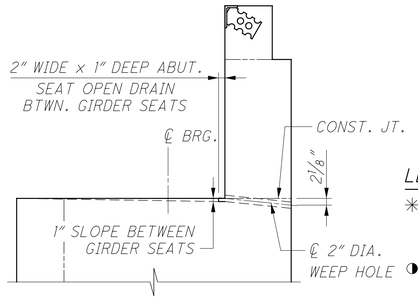
SECTION J



VERTICAL WALL PANEL JOINT DETAIL



6 TYPICAL DRILLED SHAFT REINFORCING



FORWARD ABUTMENT DRAINAGE DETAIL

LEGEND:

✳ THE SURFACE OF THE BEAM SEAT IN THIS AREA SHALL BE FINISHED WITH A SERRATED TROWEL. THE SERRATIONS SHALL BE ¼" DEEP MINIMUM.

◑ EXTEND W30x173 SECTION TO THE BOTTOM OF SHAFT AND PROJECT IT 2'-6" MIN. INTO THE BOTTOM OF THE ABUTMENT SHAFT CAP. STEEL BEAMS SHALL BE INCLUDED WITH ITEM 524 FOR PAYMENT. (6)

NOTES:

1. THE LOCATION OF THE MAIN REINFORCING STEEL IN THE BEAM SEAT MAY BE ADJUSTED HORIZONTALLY 1"(±) TO ACCOMMODATE THE #9 SEISMIC PEDESTAL BARS.
2. MINIMUM REINFORCING LAP SPLICE LENGTHS ARE AS FOLLOWS, UNLESS NOTED OTHERWISE:

NO. 9 BARS 5'-4"

NO.	DESCRIPTION	DATE	REV. BY
6	EXTENDED BEAM LENGTH	11-16-23	RSN

DESIGN AGENCY
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215
614.210.0791
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DESIGNED RHC/MLS
DRAWN MLS/JJB
REVIEWED DGN
DATE 4-21-23
CHECKED DJC
REVISED
STRUCTURE FILE NUMBER 2501554

FORWARD ABUTMENT DETAILS

BRIDGE NO. FRA-33-1747C
S. 3RD STREET (U.S. 33) OVER I-70/71

FRA-70-14.05
PID No. 96053

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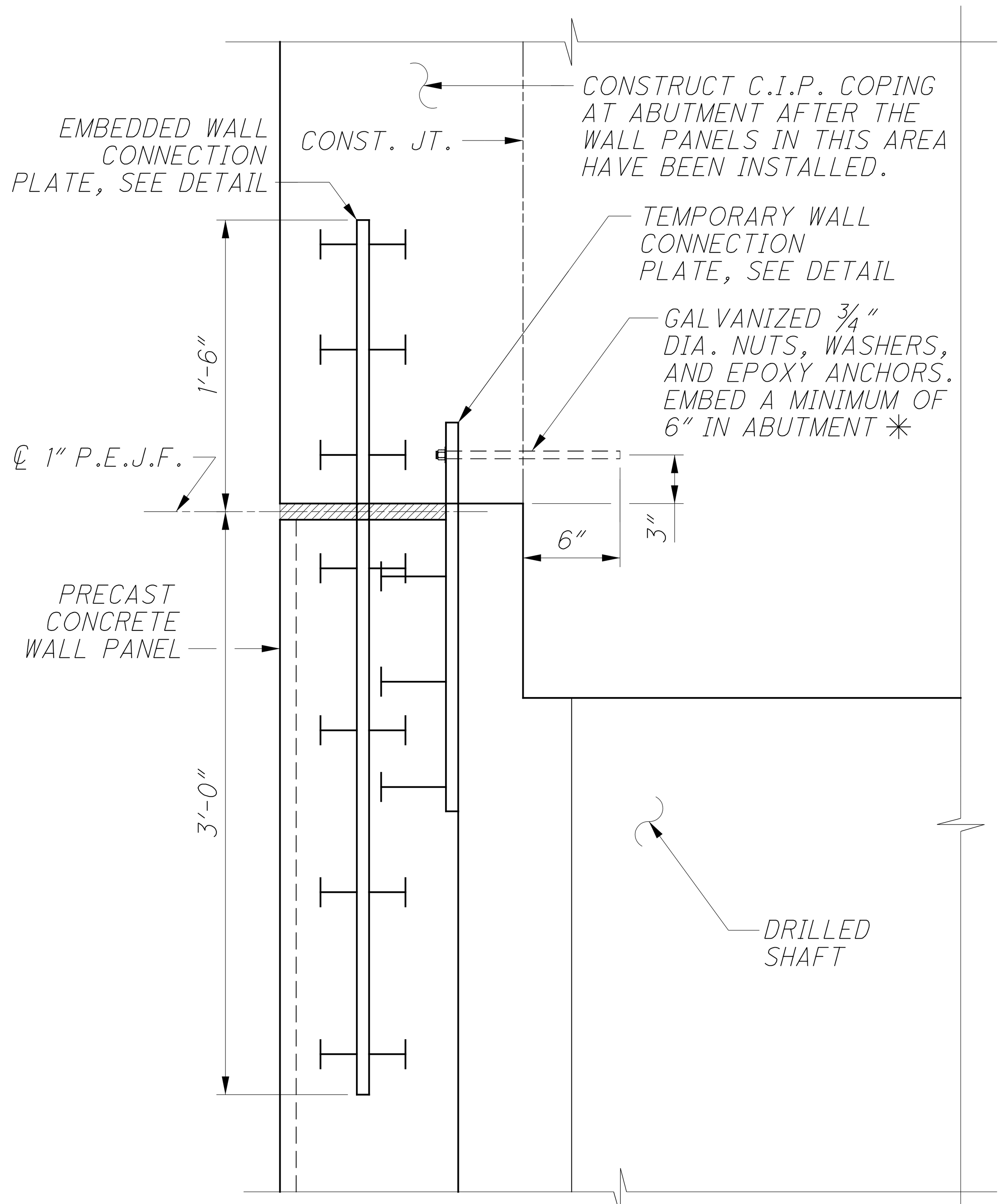
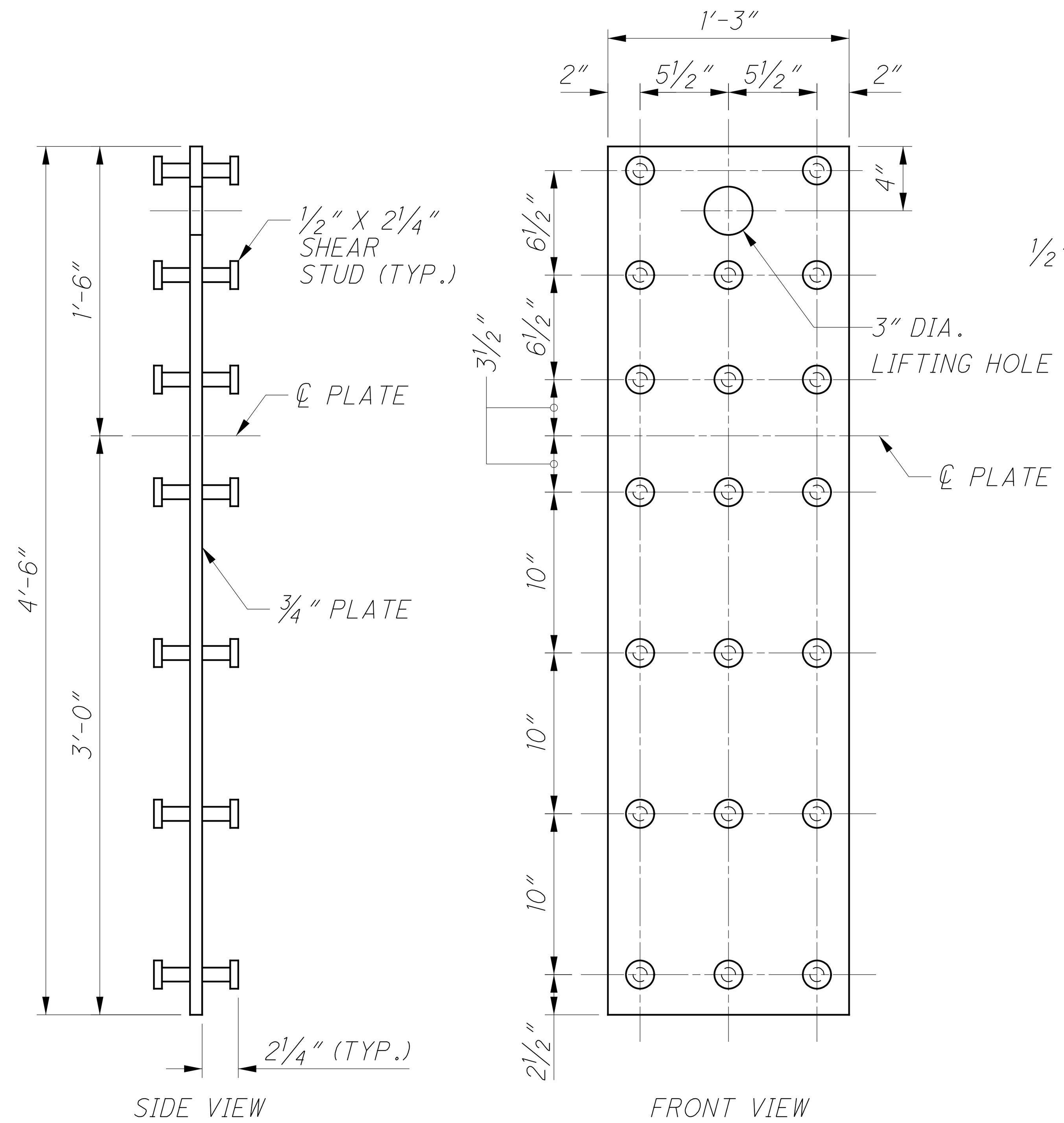
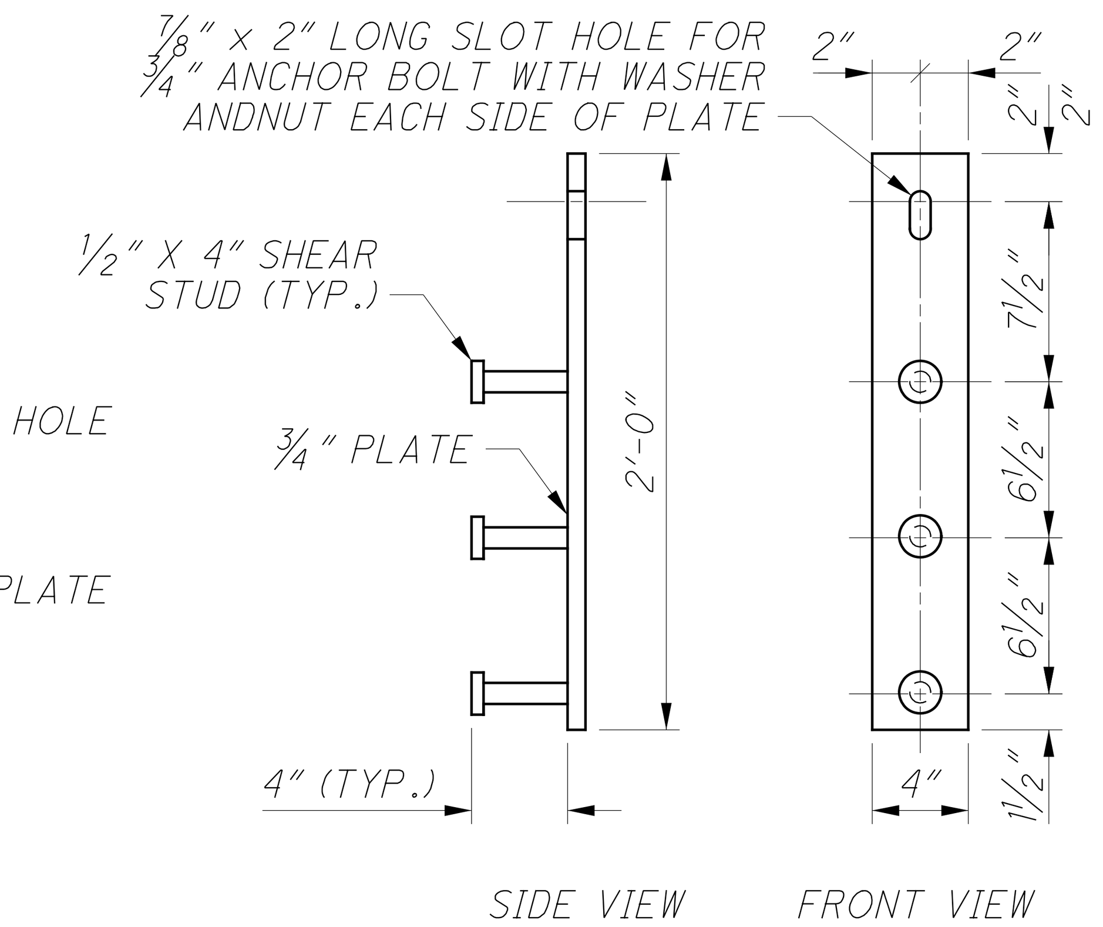


TOP WALL PANEL CONNECTION DETAIL

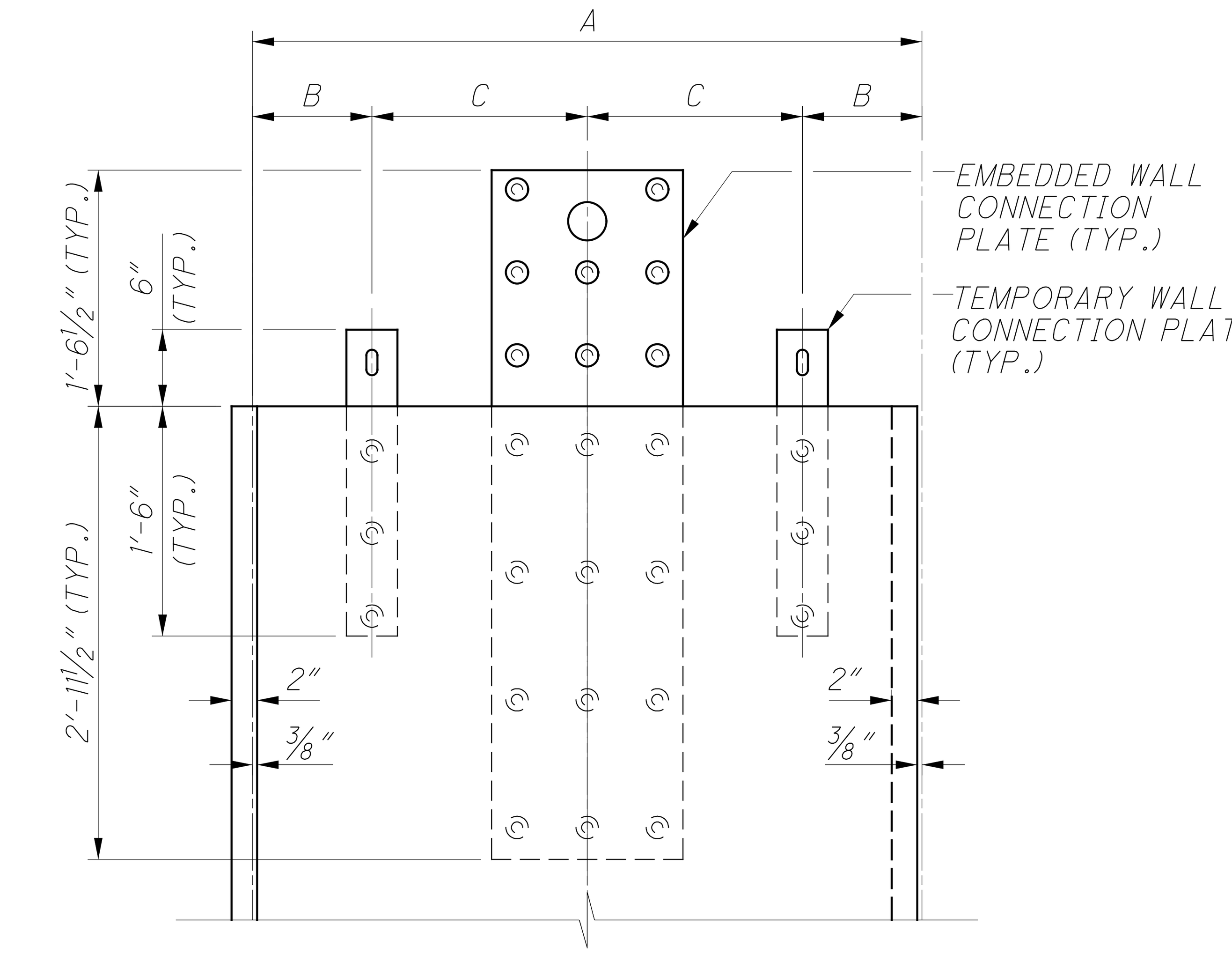
✳ - INSTALL 3/4" EPOXY ANCHOR PRIOR TO THE CONSTRCTION OF THE C.I.P. COPING



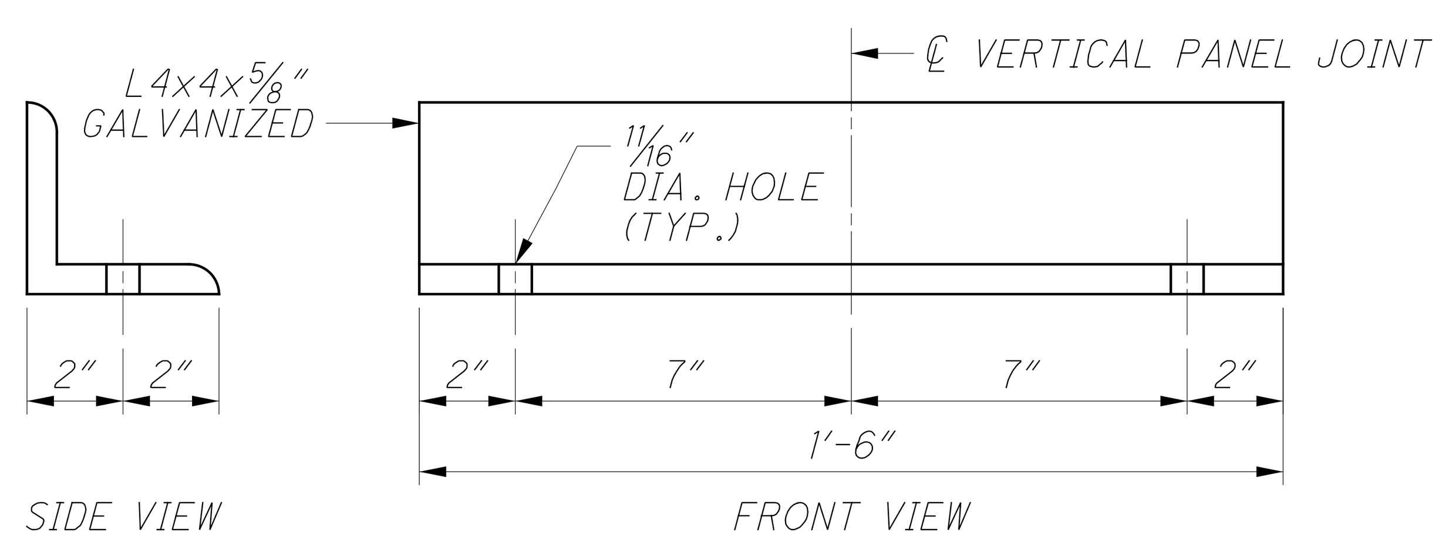
EMBEDDED WALL CONNECTION PLATE



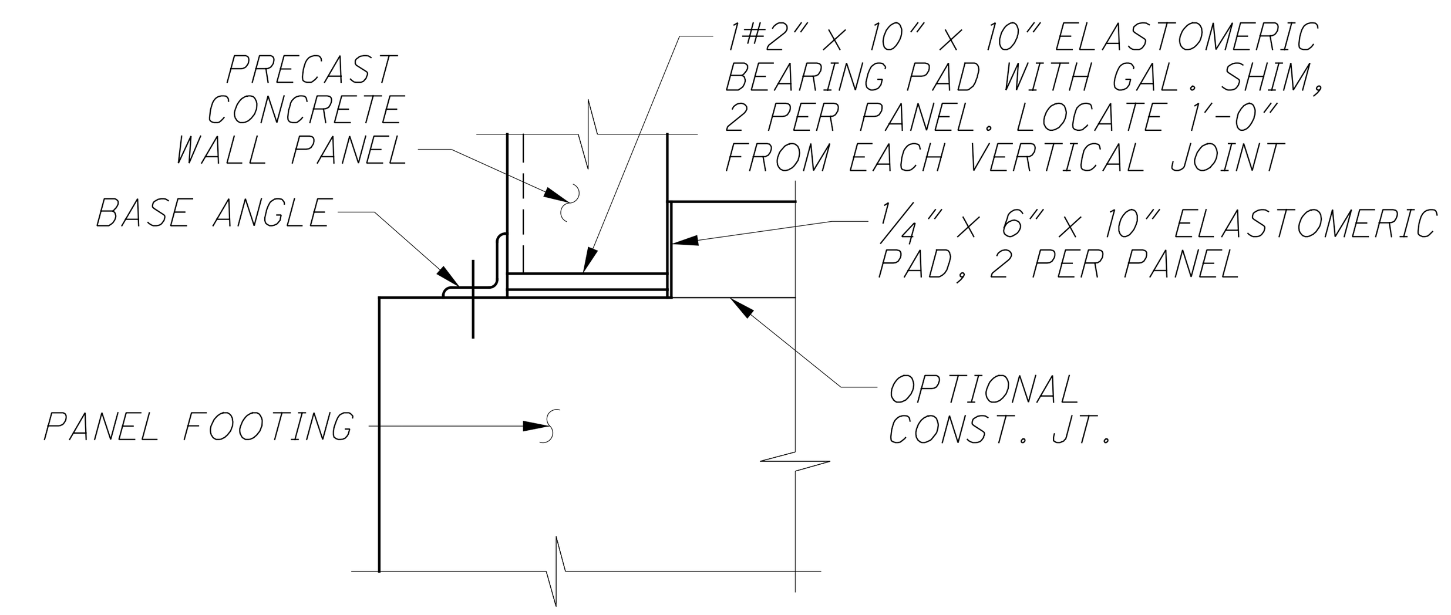
TEMPORARY WALL CONNECTION PLATE



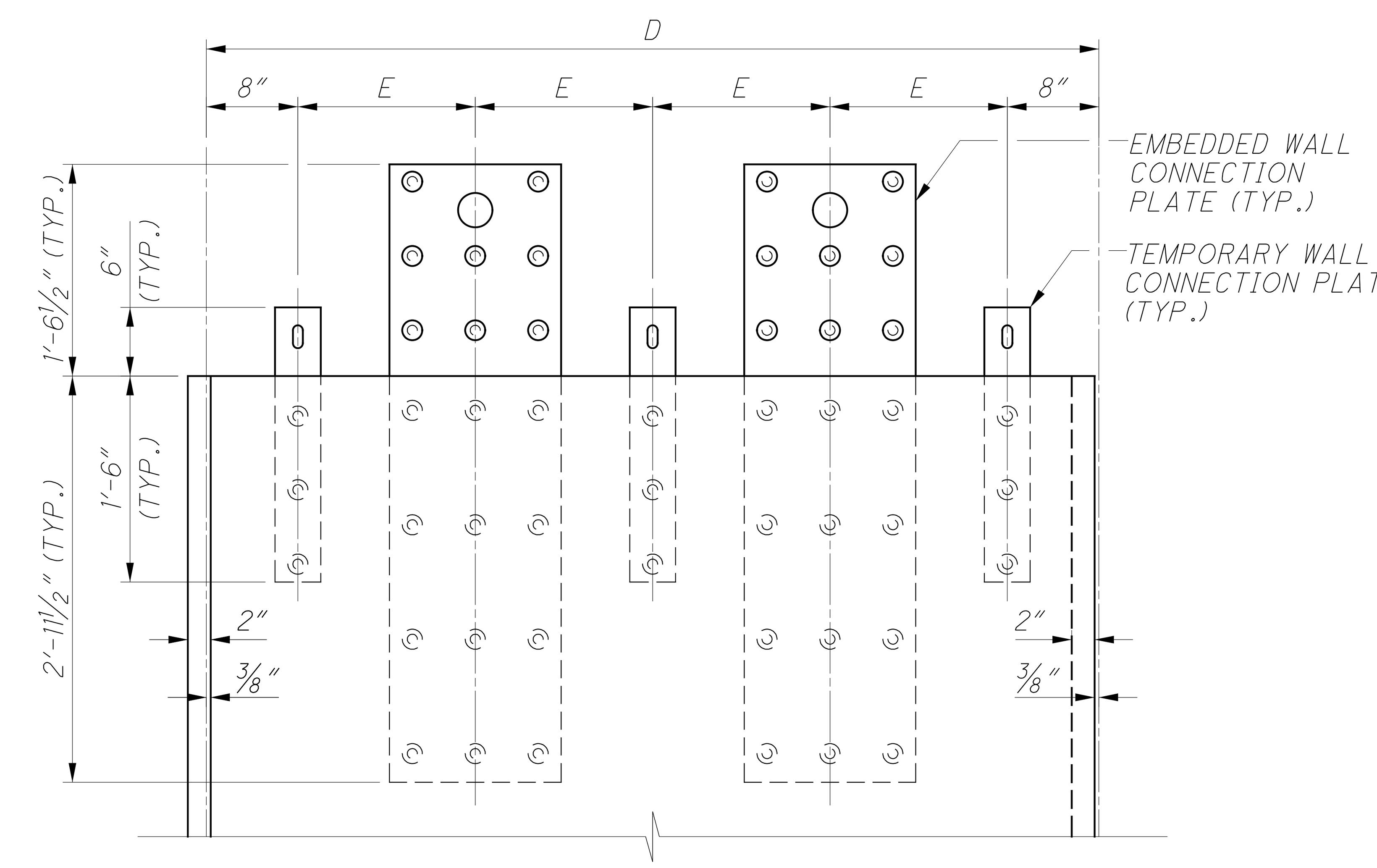
PRECAST WALL PLATE ELEVATION



BASE ANGLE DETAIL

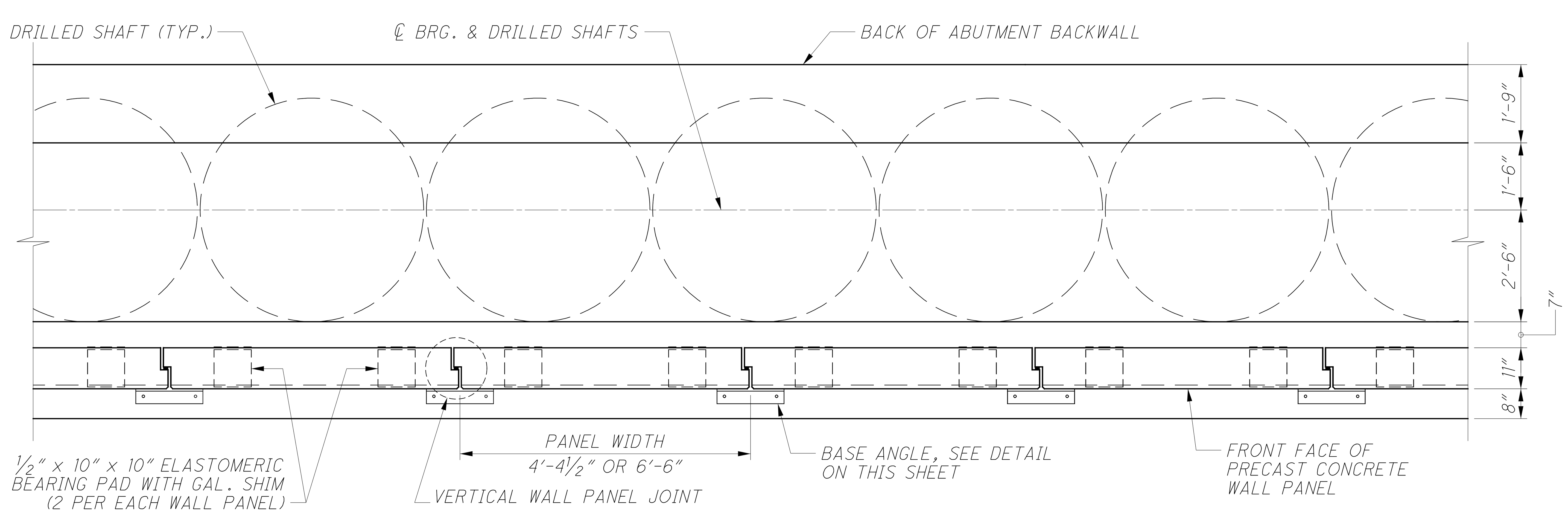


WALL BASE DETAILS



PRECAST WALL PLATE ELEVATION

PRECAST WALL PLATE SPACING DIMENSIONS					
NO. OF PANELS	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"
1	3'-7 1/2"	7 1/8"	1'-2 5/8"	-	-
1	4'-4 1/2"	9 3/8"	1'-4 7/8"	-	-
1	4'-8 1/4"	EQ. SPA.	EQ. SPA.	-	-
19	-	-	-	6'-6"	1'-3 1/2"
8	-	-	-	7'-0"	1'-5"



TYPICAL DRILLED SHAFT AND FOOTING PLAN

FOR TOP OF WALL PANEL CONNECTION, SEE DETAILS ON THIS SHEET

NOTES:

1. THE CONTRACTOR OR PRECAST PANEL MANUFACTURER IS RESPONSIBLE FOR DESIGNING OF THE LIFTING DEVICE. A MODIFICATION TO THE CONNECTION PLATE AS SHOWN MAY BE REQUIRED TO RESIST TEMPORARY CONSTRUCTION LOADS INCLUDING BUT NOT LIMITED TO WIND LOAD DURING ERECTION.
2. (6) ALL PANEL RELATED CONNECTION HARDWARE: PLATES, EPOXY ANCHORS, EXPANDED POLYSTYRENE, NEOPRENE FILLER, ELASTOMERIC BEARING PADS, CONCRETE FOUNDATION, AND REINFORCEMENT ARE INCIDENTAL TO BID ITEM "SPECIAL - STRUCTURE, MISC.: PRECAST FACADE PANELS".
3. ALL ATTACHMENT PLATES, ANCHOR BOLTS, NUTS, WASHERS, AND OTHER STEEL APPURTENANCE ARE TO BE GALVANIZED, UNLESS NOTED OTHERWISE.

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	RSN	11-9-23

DESIGN AGENCY
GPD GROUP® Glaus, Pyle, Schomer, Burns & DeHaven, Inc. 1801 Watermark Drive, Suite 210, Columbus, OH 43215 614.210.0751

DESIGNED	DRAWN	REVIEWED	DATE
RHC	MLS/JJB	DGN	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DJC		2501554	

PRECAST FACADE PANEL CONNECTION DETAILS
BRIDGE NO. FRA-33-1747C
S. 3RD STREET (U.S. 33) OVER I-70/71

FRA-70-14.05
PID No. 96053

16/42

574/855

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DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO THE 8TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2017 AND THE ODOT BRIDGE DESIGN MANUAL, 2019.

SPECIAL DESIGN SPECIFICATIONS

THIS BRIDGE REQUIRED THE USE OF A THREE-DIMENSIONAL FINITE ELEMENT MODEL TO ANALYZE THE STRUCTURE. THE COMPUTER PROGRAM USED FOR STRUCTURAL ANALYSIS WAS MIDAS. THE BRIDGE COMPONENTS DESIGNED BY THIS METHOD WERE THE STEEL GIRDERS AND CROSSFRAMES. THE LOADS WERE DISTRIBUTED AS FOLLOWS:

DEAD LOAD DISTRIBUTION: FOR GREEN CAP OPTION. ALL DEAD LOADS (COMPOSITE AND NON-COMPOSITE) INCLUDING WEIGHT OF GIRDERS, CROSSFRAMES, DECK, PARAPETS, PLANTER WALLS, SIDEWALKS, BENCHES, SOIL, TRELLIS, AND OTHER LANDSCAPING FEATURES WERE INPUT AS LINEAR VARYING DISTRIBUTED LOADS WITH MAGNITUDES CALCULATED USING THE TRIBUTARY AREA METHOD AT TENTH POINTS OF EACH SPAN ALONG EACH GIRDER.

LIVE LOAD DISTRIBUTION: DISTRIBUTION FACTORS FOR LIVE LOAD MOMENT AND SHEAR AT INTERIOR AND EXTERIOR MEMBERS VARIED ACROSS THE STRUCTURE AND WERE BASED ON AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 4.

PEDESTRIAN LOAD DISTRIBUTION: A PEDESTRIAN LOAD WAS APPLIED TO THE ENTIRE DECK SURFACE EXCEPT FOR THE AREA UNDER THE PARAPET PLANTERS. PEDESTRIAN LOAD WAS NOT APPLIED SIMULTANEOOUSLY WITH LIVE LOAD.

STANDARD DRAWINGS

REFER TO THE FOLLOWING ODOT STANDARD BRIDGE DRAWINGS:

EXJ-4-87	REVISED:	1-19-18
GSD-1-19	REVISED:	1-15-21
PCB-91	REVISED	7-17-20

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATION:

800	DATED	1-20-23
894	DATED	4-16-21

LRFD LOAD MODIFIERS

OPERATIONAL IMPORTANCE: A LOAD MODIFIER OF 1.00 HAS BEEN ASSUMED FOR THE DESIGN OF THIS STRUCTURE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, ARTICLE 1.3.5 AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

DESIGN LOADING

GREEN CAP OPTION
LIVE LOAD MAINTENANCE VEHICLE H-10 TRUCK
NO FUTURE WEARING SURFACE (FWS)
SATURATED SOIL UNIT WEIGHT OF 0.130 KIPS/CU.FT.
AGGREGATE FILL UNIT WEIGHT OF 0.100 KIPS/CU.FT.
PRECAST AND CAST-IN-PLACE CONCRETE UNIT WEIGHT OF 0.150 KIPS/CU.FT.
TRELLIS COLUMN WEIGHT OF 2.5 KIPS.
SCREEN WALL UNIT WEIGHT OF 0.095 KIPS/FT.
MATURE TREE UNIT WEIGHT OF 2.1 KIPS/EACH
PEDESTRIAN LIVE LOAD OF 0.090 KIPS/SQ.FT.

FOR BUILDING OPTION
THE SUPERIMPOSED DEAD LOAD IS 140 PSF, UTILITY LOAD 80 #/LF PER GIRDER AND LIVE LOAD IS 90 PSF FOR ENTIRE SLAB OF THE CAP.

THE DESIGN OF THE BRIDGE STRUCTURAL COMPONENTS WERE CONTROLLED BY THE GREEN CAP OPTION. THE BUILDING ENGINEER SHALL PERFORM AN INDEPENDENT ANALYSIS BASED ON THEIR COLUMN LAYOUT AND MAKE ANY NECESSARY MODIFICATIONS TO THE GIRDERS AT NO COST TO THE OWNER, IF NEEDED.

DESIGN STRESSES

CONCRETE CLASS QC5 - COMPRESSIVE STRENGTH 4.5 KSI (DRILLED SHAFTS)
CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (SUPERSTRUCTURE)
CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI (SUBSTRUCTURE)
REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI
STRUCTURAL STEEL - ASTM A709 GRADE 50 - YIELD STRENGTH 50 KSI

DECK PROTECTION METHOD

EPOXY COATED REINFORCING STEEL
2½" CONCRETE COVER
CLASS QC2 CONCRETE

MONOLITHIC WEARING SURFACE

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

CONSTRUCTION CONSTRAINTS

FILL THE VOID CREATED BY EXCAVATION FOR THE ABUTMENT FOOTING WITH TYPE B GRANULAR MATERIAL, 703.16.C. AFTER THE FOOTING AND THE BREASTWALL HAVE BEEN CONSTRUCTED, FILL THE VOID BEHIND EACH ABUTMENT UP TO THE BEAM SEAT ELEVATION AND FROM THE BEAM SEAT UP ON A 1:1 SLOPE TO THE SUBGRADE ELEVATION PRIOR TO CONSTRUCTING THE BACK WALL AND SETTING THE GIRDERS ON THE ABUTMENT.

FOUNDATION BEARING RESISTANCE

WEST CAP REAR ABUTMENT FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 8.08 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 11.31 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 22.45 KIPS PER SQUARE FOOT.

WEST CAP PIER FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 5.99 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 8.29 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 36.93 KIPS PER SQUARE FOOT.

EAST CAP REAR ABUTMENT FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 8.35 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 11.71 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 17.06 KIPS PER SQUARE FOOT.

EAST CAP PIER FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 5.99 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 8.29 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 21.09 KIPS PER SQUARE FOOT.

FORWARD ABUTMENT FOUNDATION, AS DESGNED PRODUCE A MAXIMUM FACTORED LOAD OF 410 KIPS AT EACH DRILLED SHAFTTHIS LOAD IS RESISTED BY TIP RESISTANCE ONLY. THE FACTORED RESISTANCE PROVIDED BY THE DRILLED SHAFT TIP IS 530 KIPS.

6

DECK PLACEMENT DESIGN ASSUMPTIONS

THE FOLLOWING ASSUMPTIONS OF CONSTRUCTION MEANS AND METHODS WERE MADE FOR THE ANALYSIS AND DESIGN OF THE SUPERSTRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE FALSEWORK SUPPORT SYSTEM WITHIN THESE PARAMETERS AND WILL ASSUME RESPONSIBILITY FOR SUPERSTRUCTURE ANALYSIS FOR DEVIATION FROM THESE DESIGN ASSUMPTIONS.
AN EIGHT WHEEL FINISHING MACHINE WITH A MAXIMUM WHEEL LOAD OF 2.5 KIPS.
A MINIMUM OUT-TO-OUT WHEEL SPACING AT EACH END OF THE MACHINE OF 103".
A MAXIMUM SPACING OF OVERHANG FALSEWORK BRACKETS OF 48".
A MAXIMUM DISTANCE FROM THE CENTERLINE OF THE FASCIA GIRDER TO THE FACE OF THE SAFETY HANDRAIL OF 65".

STRUCTURE GROUNDING

GROUND THE PROPOSED BRIDGE ACCORDING TO THE REQUIREMENTS OF ODOT STD. DWG. HL-50.21 - STRUCTURE GROUNDING. THE FOLLOWING BRIDGE COMPONENTS SHALL BE CONNECTED TO THE GROUNDING SYSTEM: ALL STRUCTURAL STEEL, UTILITY SUPPORTS, STEEL SCREEN WALL COMPONENTS, STEEL TRELLISES, STEEL FIN WALLS, METAL BENCHES, ALUMINUM PLANTERS, AND LIGHT POLES.

ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK, AS PER PLAN

FINISH TOP OF EXPANSION DEVICE SLAB WITH A BUFF WASH FINISH PER THE STRUCTURE AESTHETIC PLANS.

ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN

FINISH TOP OF BACKWALL IN LOCATIONS ADJACENT TO SIDEWALKS WITH A BUFF WASH FINISH PER THE STRUCTURE AESTHETIC PLANS.

AFTER CONDUITS ARE PLACED THROUGH THE UTILITY BLOCKOUTS IN THE ABUTMENT BACKWALLS, FILL THE VOIDS USING NON-SHRINK MORTAR CONFORMING TO CMS 705.22.

ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)
ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)
ITEM 607 - FENCE, MISC.: WALL MOUNTED TYPE A (W/ VANDAL MESH)

SEE STRUCTURE AESTHETIC PLANS FOR DETAILS.

ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT

ALL NEW STRUCTURAL STEEL SHALL BE PAINTED USING THE IZEU COATING SYSTEM. THE URETHANE TOP COAT SHALL BE TINTED TO MEET FEDERAL COLOR No. 17038 (BLACK).

ITEM 518 - PIPE HORIZONTAL CONDUCTOR, AS PER PLAN (6")

THIS ITEM CONSISTS OF FURNISHING AND INSTALLING 6" DIAMETER PIPE HORIZONTAL CONDUCTOR WITHIN THE BRIDGE SUPERSTRUCTURE AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE REQUIREMENTS OF CMS ITEM 518. THIS WORK INCLUDES THE CONDUCTOR PIPE, ELBOWS, CLEANOUTS, REDUCER FITTINGS, EXPANSION JOINT COUPLING, PIPE HANGERS AND ALL OTHER INCIDENTALS TO COMPLETE THE INSTALLATION TO THE SATISFACTION OF THE ENGINEER. PIPE HANGER ASSEMBLIES SHALL BE HOT-DIP GALVANIZED STEEL. ALL MATERIALS SHALL BE SUBMITTED FOR REVIEW IN ACCORDANCE WITH CMS 501.04.
THE METHOD OF MEASUREMENT SHALL BE BY THE FOOT ALONG THE CENTERLINE OF MAIN CONDUCTOR PIPE. PAYMENT WILL BE MADE AT THE UNIT PRICE BID PER FOOT AND SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS AND INCIDENTALS FOR A COMPLETE FUNCTIONING SYSTEM.

6

ITEM 524 - DRILLED SHAFTS, 60" DIAMETER, ABOVE BEDROCK WITH QC/QA, AS PER PLAN

THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS PER ITEM 524 EXCEPT THE FOLLOWING:
THE COARSE AGGREGATE SIZE FOR ALL DRILLED SHAFTS SHALL BE A MAXIMUM OF NO. 8.

THE CONSTRUCTION TOLERANCES FOR TANGENT SHAFT INSTALLATION UNDER SECTION 524.14 SHALL WITHIN ½" OF THE PLAN LOCATION IN THE HORIZONTAL PLANE AT THE PLAN ELEVATION FOR THE TOP OF THE SHAFT.

STEEL BEAMS SHALL BE ACCURATELY SET AT THE CENTER OF THE DRILLED SHAFT IMMEDIATELY AFTER THE INSTALLATION OF REINFORCING STEEL CAGE AND BEFORE PLACING CONCRETE.

THE DRILLED SHAFT CAP AND P.E.J.F. JOINTS SHALL BE ACCURATELY PLACED ACCORDING TO THE DESIGN PLAN. IF THE LOCATIONS OF THE INSTALLED DRILLED SHAFTS VARY FROM THE DESIGN PLAN AND RESULT IN THE P.E.J.F. IN THE DRILLED SHAFT CAP FALLING OVER A DRILLED SHAFT INSTEAD OF BETWEEN SHAFTS, ALL VERTICAL SHAFT BARS INTERFERING WITH, OR CROSSING, THE CAP JOINT SHALL BE CUT FLUSH WITH THE TOP OF THE DRILLED SHAFT SO THAT BOTH SIDES OF THE CAP ARE NOT TIED TOGETHER BY SHAFT REINFORCING STEEL. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO CUTTING ANY REINFORCING STEEL. THE DEPARTMENT WILL CONSIDER THIS WORK AS INCIDENTAL AND SHALL BE INCLUDED WITH ITEM 524 FOR PAYMENT.

ITEM 894 - THERMAL INTEGRITY PROFILER (T.I.P.) TEST

PERFORM INTEGRITY TESTING ON ALL OF THE DRILLED SHAFTS AT THE FORWARD ABUTMENT BY THERMAL INTEGRITY PROFILING (TIP). PERFORM TIP TESTING PER ASTM D7949, "STANDARD TEST METHODS FOR THERMAL INTEGRITY PROFILING OF CONCRETE DEEP FOUNDATIONS," METHOD B, AND PER SUPPLEMENTAL SPECIFICATION 894

ABBREVIATIONS:

ABUT.	ABUTMENT
BRG.	BEARING
B.S.	BOTH SIDES
C.I.P.	CAST-IN-PLACE
CLR.	CLEAR
CONC.	CONCRETE
CONST.	CONSTRUCTION
DIA.	DIAMETER
DIM.	DIMENSION
EL.	ELEVATION
EXIST.	EXISTING
EXP.	EXPANSION
FIX.	FIXED
FRWD.	FORWARD
F.S.	FAR SIDE OR FIELD SPLICE
JT.	JOINT
N.P.C.P.P.	NON-PERFORATED CORRUGATED PLASTIC PIPE
N.S.	NEAR SIDE
P.C.P.P.	PERFORATED CORRUGATED PLASTIC PIPE
P.E.J.F.	PREFORMED EXPANSION JOINT FILLER
PT.	POINT
SPA.	SPACED OR SPACES
STD. DWG.	STANDARD DRAWING
TYP.	TYPICAL
W/	WITH
W.P.	WORKING POINT

NO.	DESCRIPTION	DATE	REV. BY
6	REVISED NOTE	11-6-23	RSN

DESIGN AGENCY
GPD GROUP®
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215 614.210.0751

DESIGNED	DRAWN	REVIEWED	DATE
DGN	RPR	TJW	4-21-23
CHECKED: RHC	REVISED:	STRUCTURE FILE NUMBER: 2501554	

GENERAL NOTES - 1
BRIDGE NO. FRA-33-1747C - CAPS
S. 3RD STREET (U.S. 33) OVER I-70/71

FRA-70-14.05
PID No. 96053

ESTIMATED QUANTITIES

CALCULATED BY: RHC DATE: 7-5-22
CHECKED BY: DJC DATE: 7-7-22

ITEM	EXT.	TOTAL	PARTICIPATION 02/IMS/11	PARTICIPATION 07/NHS/04/COL	UNITS	DESCRIPTION	ABUTMENT	PIER	SUPER-STRUCTURE	GENERAL	REFERENCE SHEET NO.
503	11101	LS	LS			COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN					2
503	21100	3,779	2,880	899	CY	UNCLASSIFIED EXCAVATION	2,880	899			
509	10000	384,666	77,041	307,625	LB	EPOXY COATED REINFORCING STEEL	77,041	115,463	192,162		
511	34447	684		684	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK, AS PER PLAN			684		2
511	41012	285		285	CY	CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS		285			
511	44113	635	635		CY	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN	635				2
511	46512	584	300	284	CY	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	300	284			
511	53012	17		17	CY	CLASS QC2 CONCRETE MISC.: EXPANSION DEVICE SLAB			17		
512	10050	129	60	69	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)	60		69		2
512	10100	833	617	216	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	617	150	66		2
512	33000	22	22		SY	TYPE 2 WATERPROOFING	22				
513	10200	14,960		14,960	LB	STRUCTURAL STEEL MEMBERS, LEVEL UF (CITY OF COLUMBUS DUCT BANK SUPPORT)				14,960	
513	10200	1,110		1,110	LB	STRUCTURAL STEEL MEMBERS, LEVEL UF (TEMPORARY DRAINAGE PIPE)				1,110	
513	10280	1,598,390		1,598,390	LB	STRUCTURAL STEEL MEMBERS, LEVEL 4			1,598,390		
513	20000	13,680		13,680	EACH	WELDED STUD SHEAR CONNECTORS			13,680		
514	00060	56,000		56,000	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT			56,000		
514	00066	56,000		56,000	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT			56,000		2
514	10000	39		39	EACH	FINAL INSPECTION REPAIR			39		
516	11210	616		616	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (4")			616		
516	13600	85	85		SF	1" PREFORMED EXPANSION JOINT FILLER	85				
516	44101	20		20	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 9 1/2" x 1'-4" x 2.67" PAD WITH 10 1/2" x 1'-10" BEVELED PLATE, AS PER PLAN			20		21
516	44101	20		20	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 9 1/2" x 1'-5" x 2.67" PAD WITH 10 1/2" x 1'-10" BEVELED PLATE, AS PER PLAN			20		21
516	44201	20		20	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 1'-6" x 2'-4" x 3.79" PAD WITH 1'-7" x 3'-1" BEVELED PLATE, AS PER PLAN			20		21
518	20000	431	431		SY	PREFABRICATED GEOCOMPOSITE DRAIN	431				
518	21200	58	58		CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	58				
518	40000	360	360		FT	6" PERFORATED CORRUGATED PLASTIC PIPE	360				
518	60031	25		25	FT	PIPE HORIZONTAL CONDUCTOR, AS PER PLAN (6")			25		2 & 32
524	95472	1,509	1,509		FT	DRILLED SHAFTS, 60" DIAMETER, ABOVE BEDROCK WITH QC/QA, AS PER PLAN	1,509				2
SPECIAL	53000200	LS		LS		STRUCTURES: CITY OF COLUMBUS DUCT BANK COMPLETE				LS	3
SPECIAL	53000200	LS		LS		STRUCTURES: SANITARY SERVICE TO CAPS				LS	3
SPECIAL	53000600	2,184	2,184		SF	STRUCTURES: PRECAST FACADE PANELS	2,184				3
607	98000	13	13		FT	FENCE, MISC.: WALL MOUNTED TYPE A (W/ VANDAL MESH)	13				2
894	10000	23	23		EACH	THERMAL INTEGRITY PROFILING (TIP) TEST	23				

6

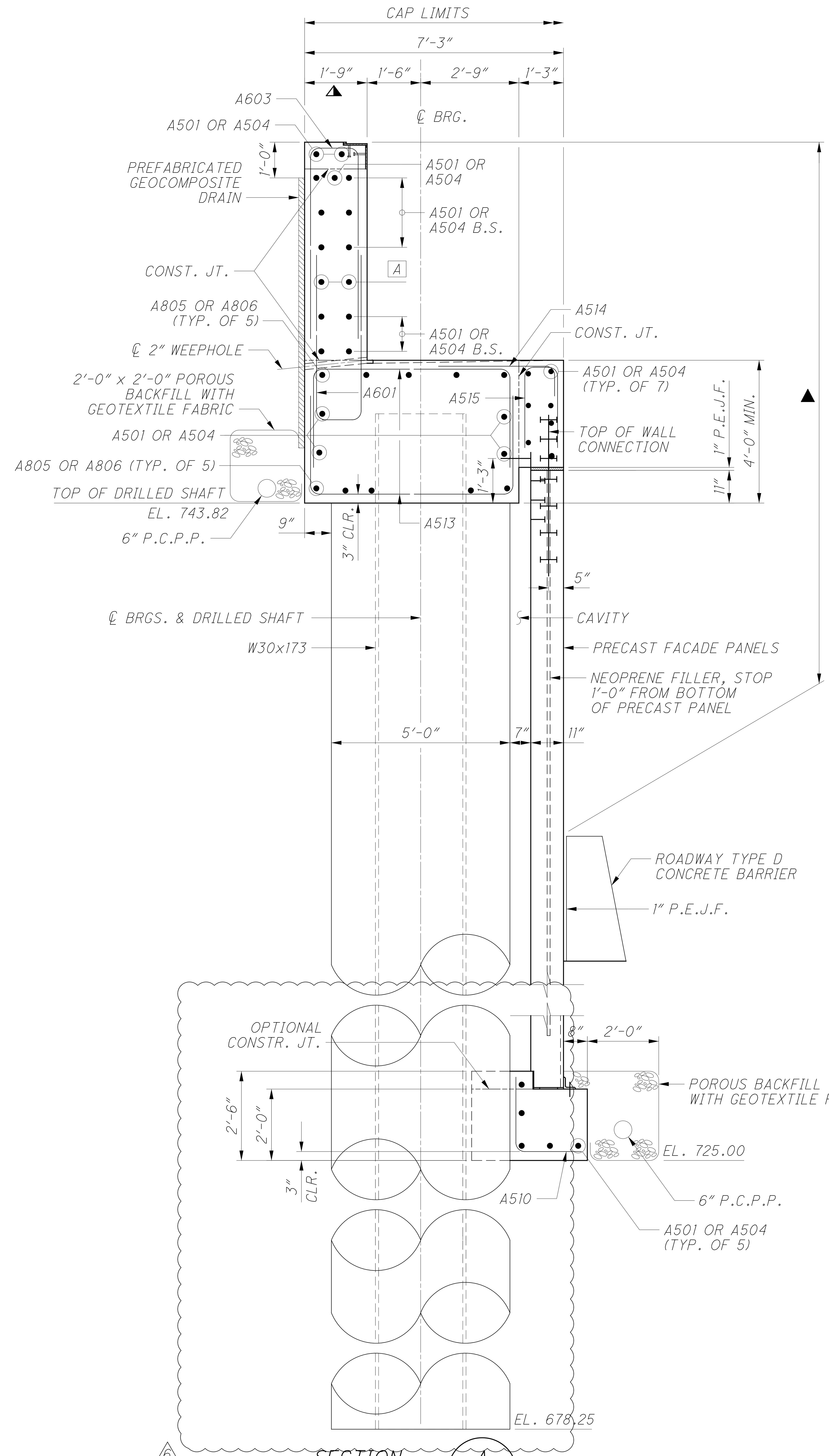
NO.	DESCRIPTION	DATE	REV. BY
6	REVISED ITEM DESCRIPTION	11-6-23	RSN

DESIGN AGENCY
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215 614.210.0751

REVIEWED DGN DATE 4-21-23
STRUCTURE FILE NUMBER 2501554
DRAWN RFV REVISED
DESIGNED RHC CHECKED MLS

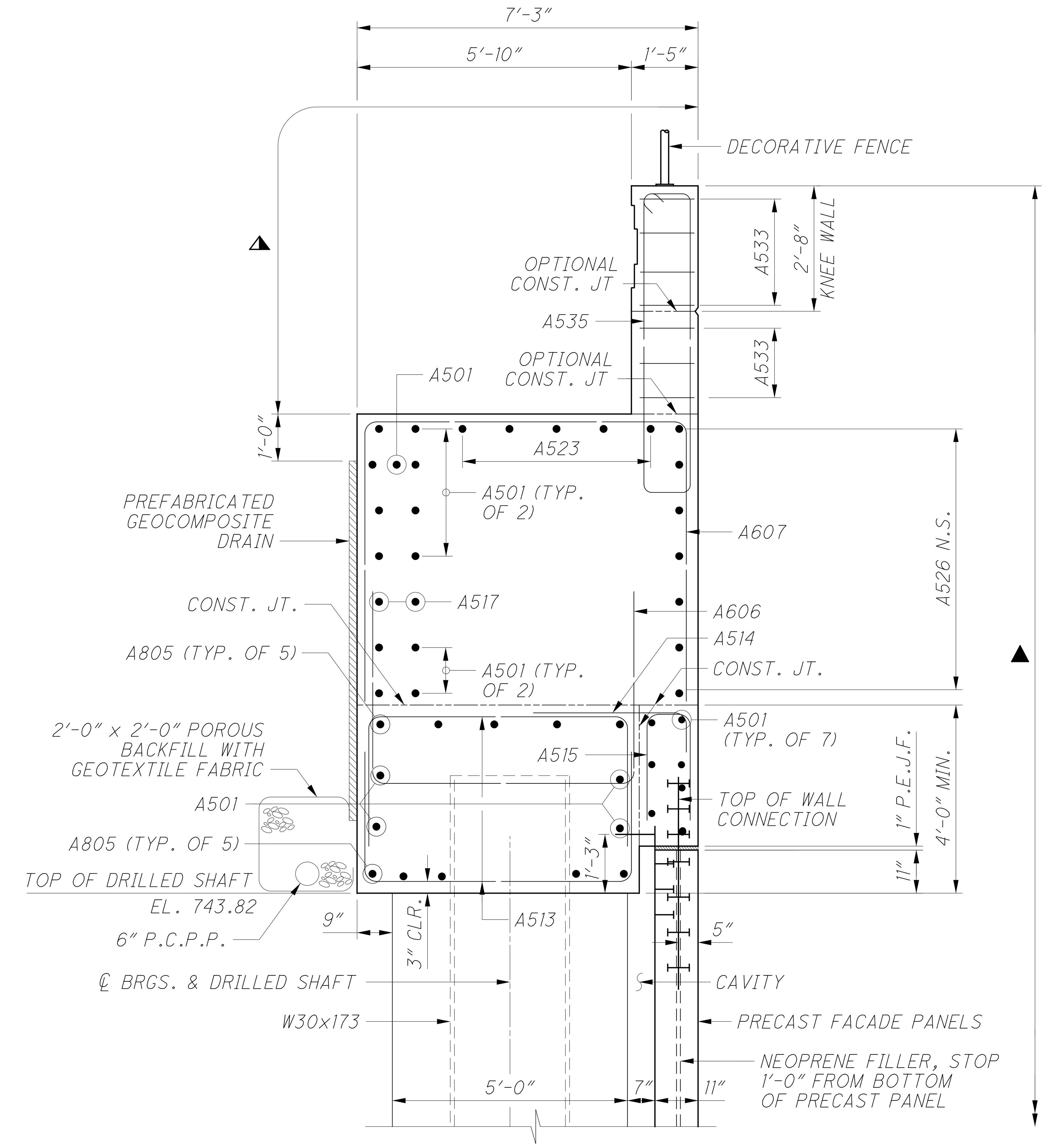
ESTIMATED QUANTITIES
BRIDGE NO. FRA-33-1747C - CAPS
S. 3RD STREET (U.S. 33) OVER I-70/71

FRA-70-14.05
PID No. 96053



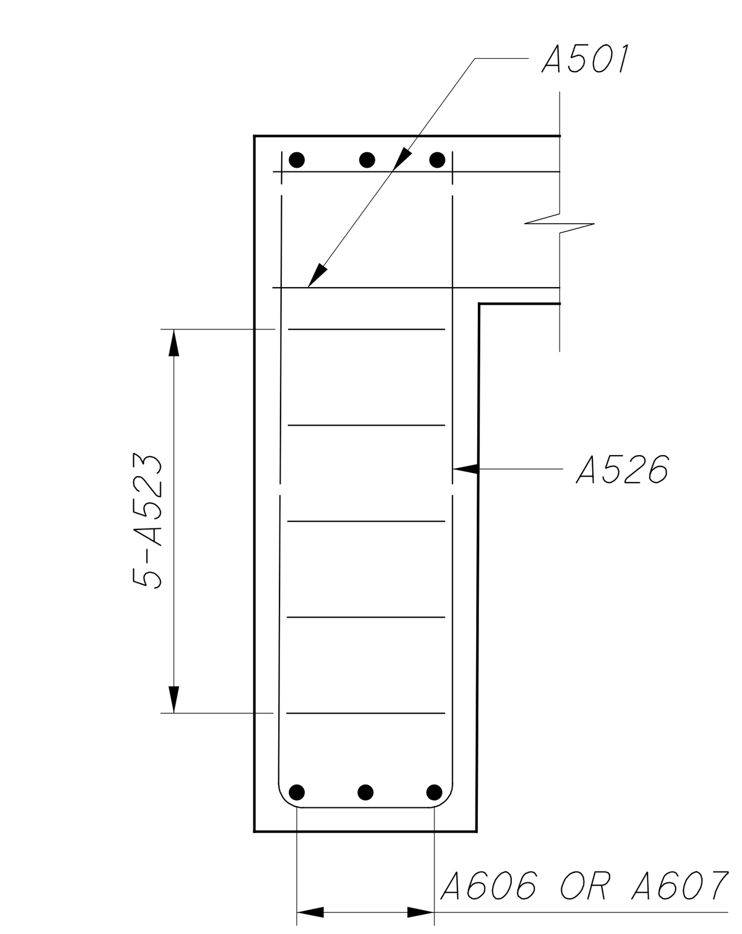
SECTION A

DRILLED SHAFT REINFORCING NOT SHOWN FOR CLARITY



SECTION B

DRILLED SHAFT REINFORCING NOT SHOWN FOR CLARITY



SECTION C

LEGEND:

▲ INDICATES LIMITS OF ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE).

✳ THE SURFACE OF THE BEAM SEAT IN THIS AREA SHALL BE FINISHED WITH A SERRATED TROWEL. THE SERRATIONS SHALL BE ¼" DEEP MINIMUM.

◭ INDICATES LIMITS OF ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)

[A] A501, A517, A518 OR A529

NO.	DESCRIPTION	DATE	REV. BY
6	EXTENDED BEAM LENGTH	11-6-23	RSN

NOTES:

1. FOR LOCATION OF SECTIONS A & B, SEE SHT. NO. 9/38 .
2. FOR DRILLED SHAFT REINFORCING DETAILS, SEE SHT. NO. 14/38 .

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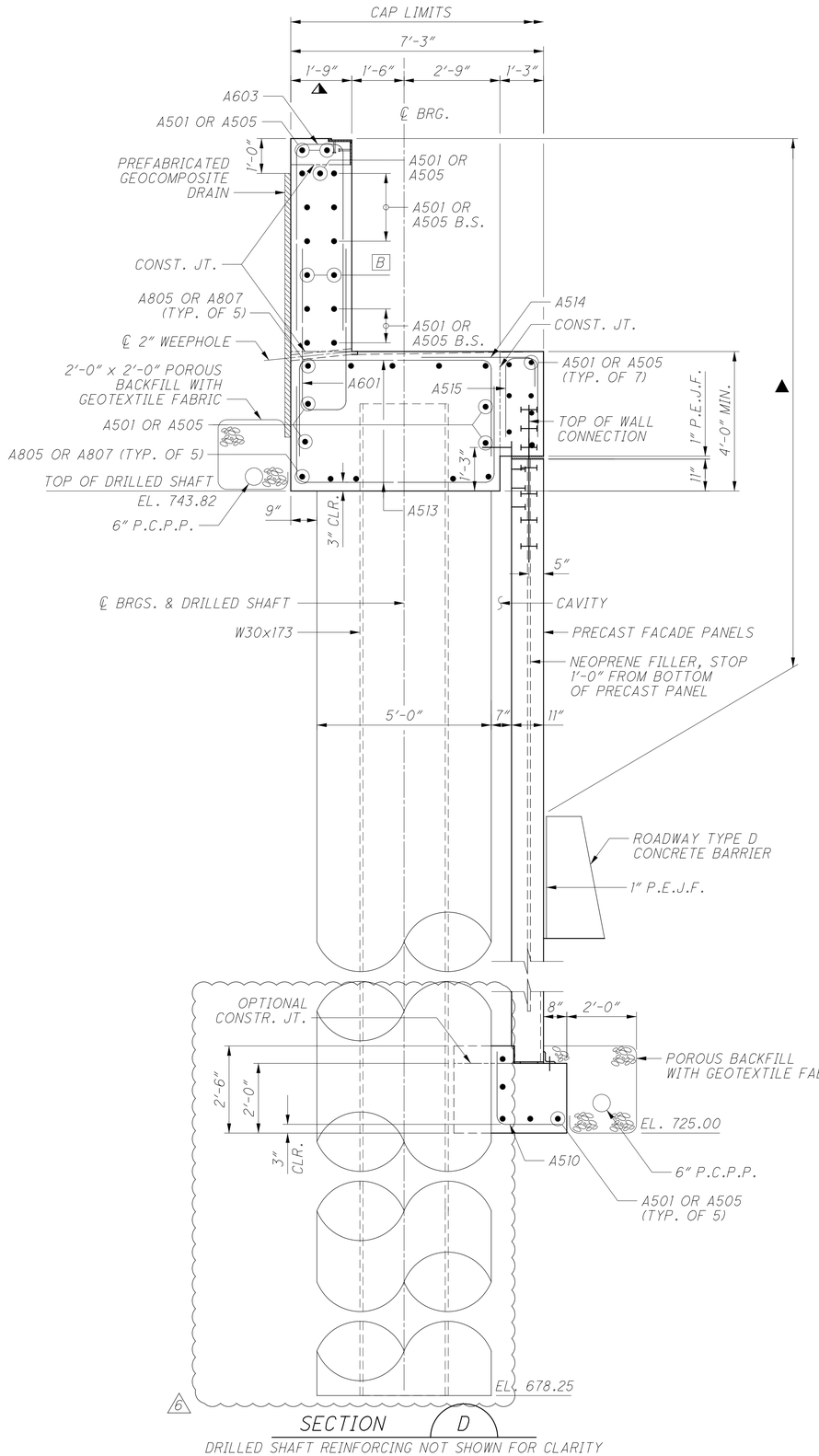
DESIGNED	DRAWN	REVIEWED	DATE
RHC	RFV/JJB	DGN	4-21-23
CHECKED TJW	REVISED	STRUCTURE FILE NUMBER 2501554	

WEST CAP FORWARD ABUTMENT DETAILS

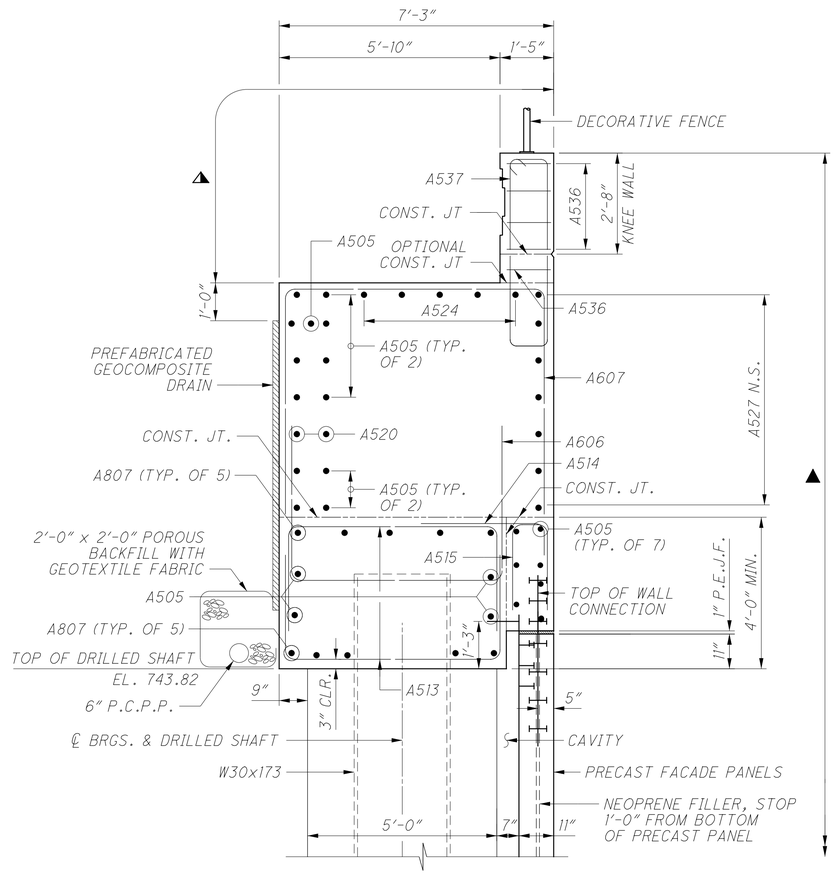
BRIDGE NO. FRA-33-1747C - CAPS
S. 3RD STREET (U.S. 33) OVER I-70/71

FRA-70-14.05
PID No. 96053



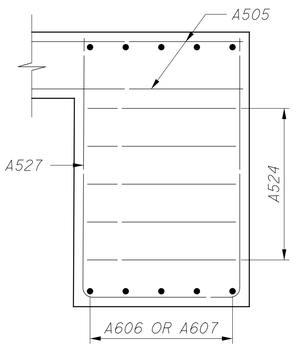
SECTION D

DRILLED SHAFT REINFORCING NOT SHOWN FOR CLARITY



SECTION E

DRILLED SHAFT REINFORCING NOT SHOWN FOR CLARITY



SECTION F

LEGEND:

▲ INDICATES LIMITS OF ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE).

✳ THE SURFACE OF THE BEAM SEAT IN THIS AREA SHALL BE FINISHED WITH A SERRATED TROWEL. THE SERRATIONS SHALL BE 1/4" DEEP MINIMUM.

◭ INDICATES LIMITS OF ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)

[B] A501, A519, A520 A529

NO.	DESCRIPTION	DATE	REV. BY
6	EXTENDED BEAM LENGTH	11-6-23	RSN

NOTES:

1. FOR LOCATION OF SECTIONS D THRU F, SEE SHT. NO. [10/38].
2. FOR DRILLED SHAFT REINFORCING DETAILS, SEE SHT. NO. [14/38].

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RHC	RFV/JJB	DGN	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJW		2501554	

EAST CAP FORWARD ABUTMENT DETAILS
BRIDGE NO. FRA-33-1747C - CAPS
S. 3RD STREET (U.S. 33) OVER I-70/71

FRA-70-14.05
PID No. 96053

12 / 38

612
855

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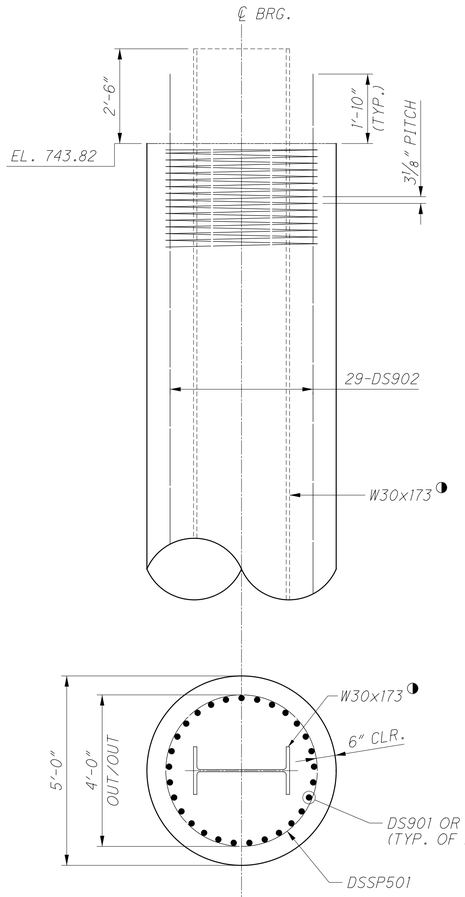
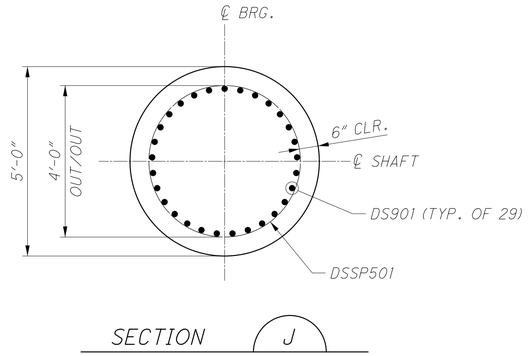
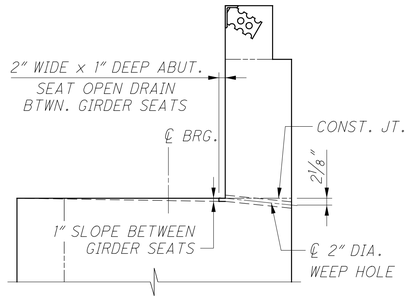
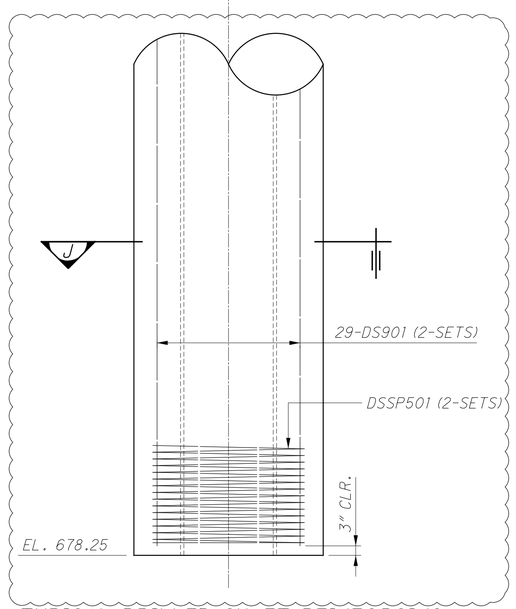






FORWARD ABUTMENT DRAINAGE DETAIL



6 TYPICAL DRILLED SHAFT REINFORCING

NO.	DESCRIPTION	DATE	REV. BY
6	EXTENDED BEAM LENGTH	11-6-23	RSN

LEGEND:

✳ THE SURFACE OF THE BEAM SEAT IN THIS AREA SHALL BE FINISHED WITH A SERRATED TROWEL. THE SERRATIONS SHALL BE ¼" DEEP MINIMUM.

◑ EXTEND W30x173 SECTION TO THE BOTTOM OF SHAFT AND PROJECT IT 2'-6" MIN. INTO THE BOTTOM OF THE ABUTMENT SHAFT CAP. STEEL BEAMS SHALL BE INCLUDED WITH ITEM 524 FOR PAYMENT. 6

NOTES:

MINIMUM REINFORCING LAP SPLICE LENGTHS ARE AS FOLLOWS, UNLESS NOTED OTHERWISE:

NO. 9 BARS 5'-4"

DESIGN AGENCY
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215
614.481.6000 Fax: 614.481.7883
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DESIGNED	DRAWN	REVIEWED	DATE
RHC/MLS	MLS	DGN	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJW		2501554	

DRILLED SHAFT & FORWARD ABUTMENT DETAILS
BRIDGE NO. FRA-33-1747C - CAPS
S. 3RD STREET (U.S. 33) OVER I-70/71

FRA-70-14.05
PID No. 96053

14 / 38

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855

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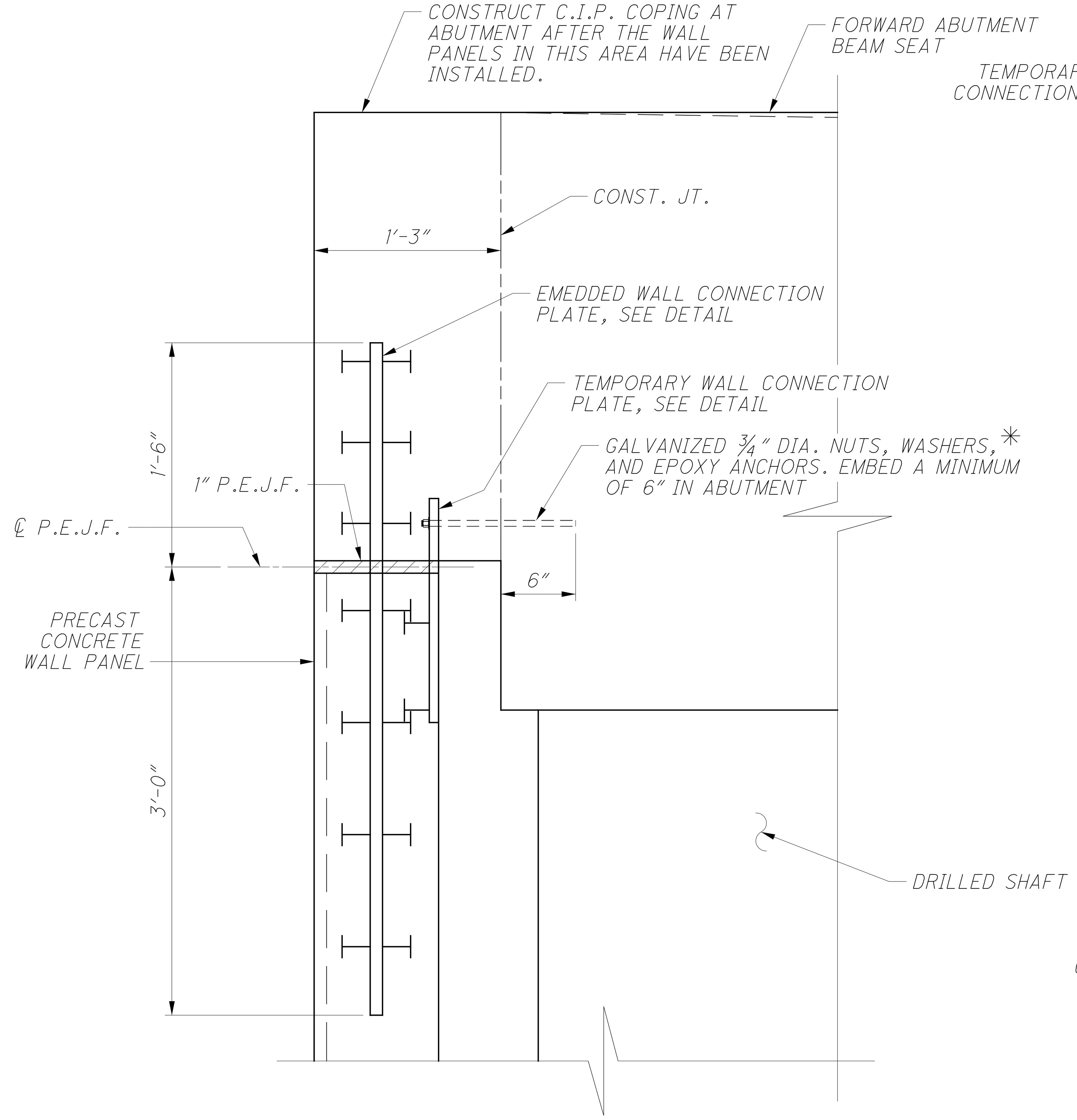
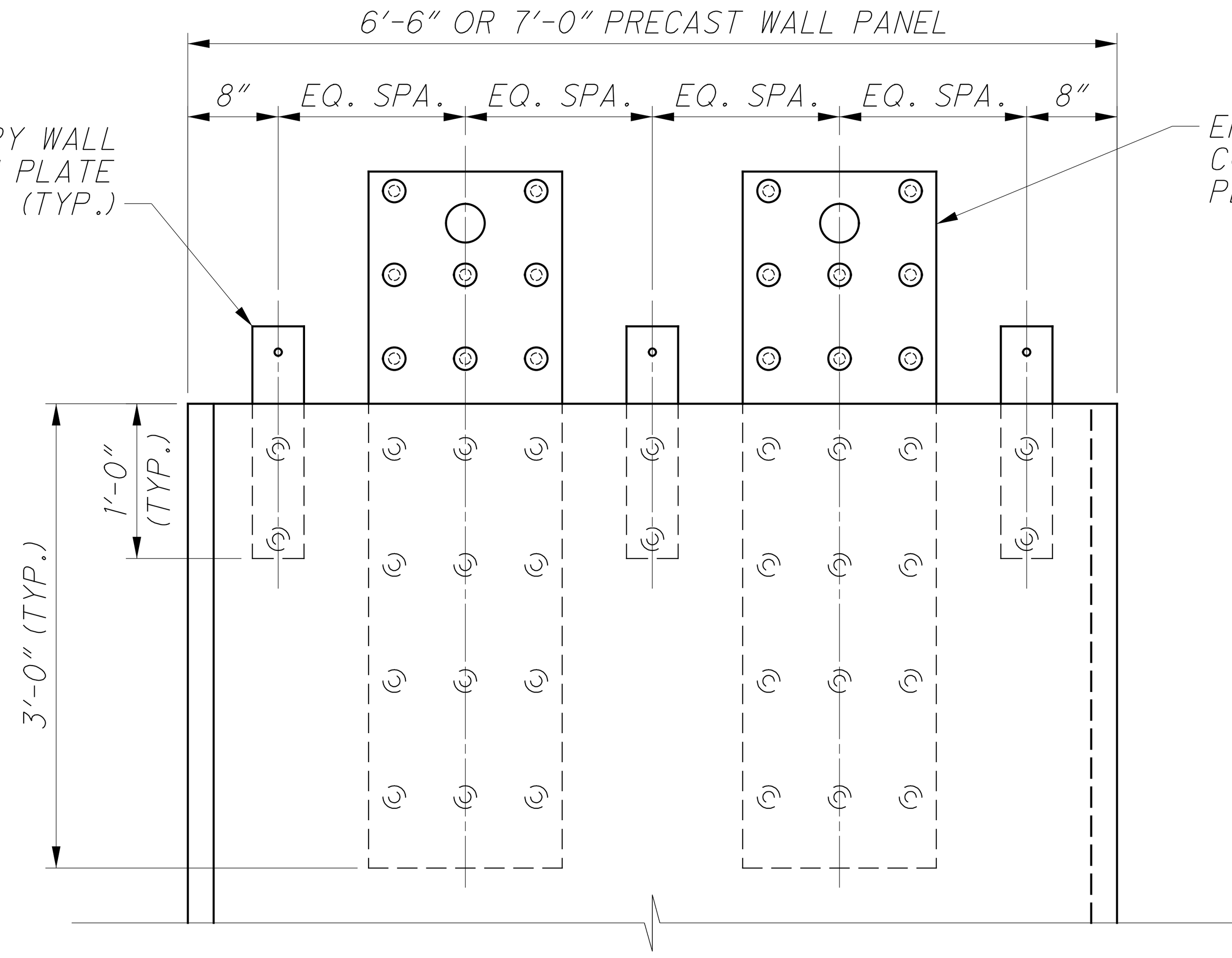
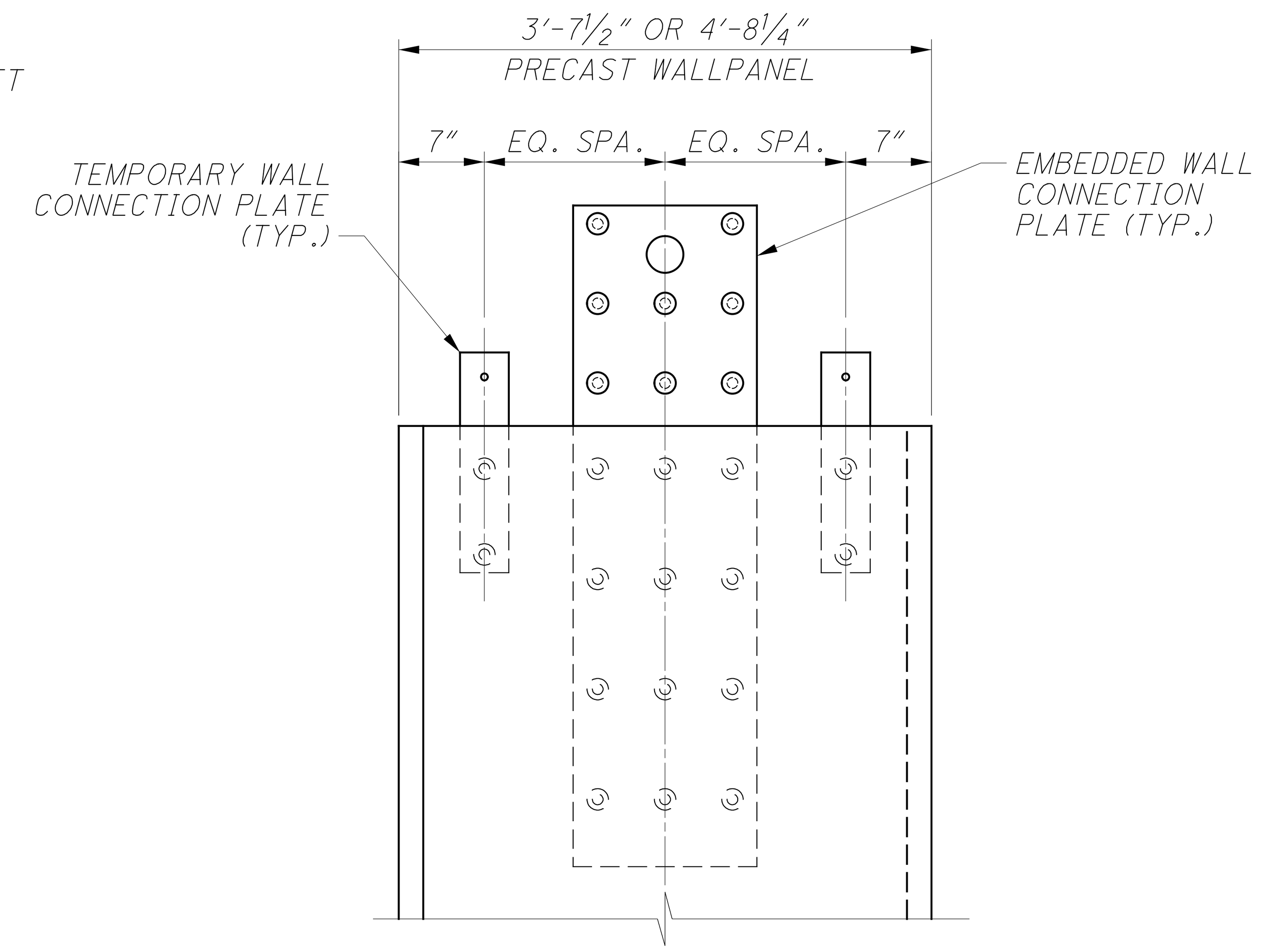


TOP WALL PANEL CONNECTION DETAIL

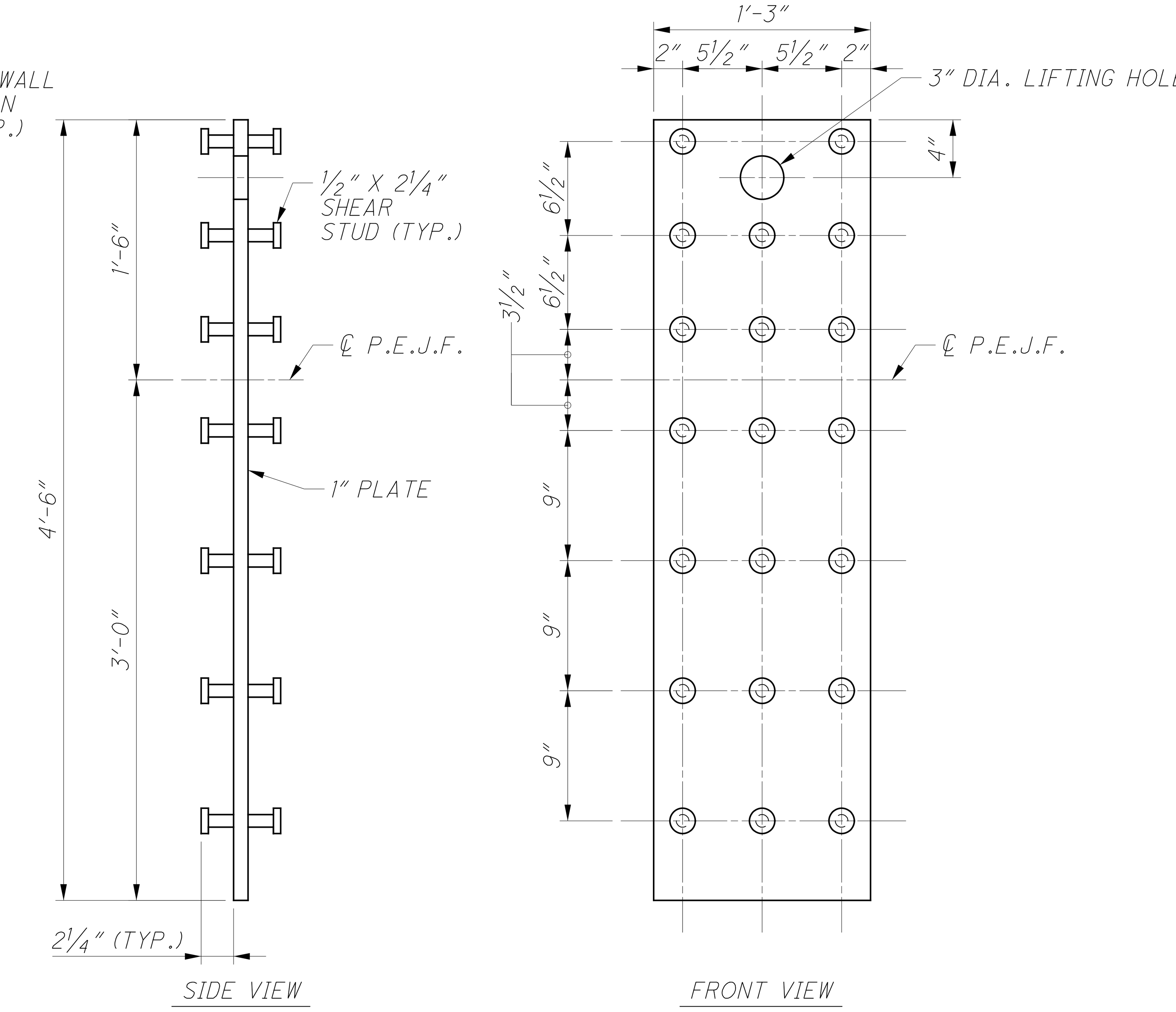
✳ - INSTALL ¾" EPOXY ANCHOR PRIOR TO THE CONSTRUCTION OF THE C.I.P. COPING



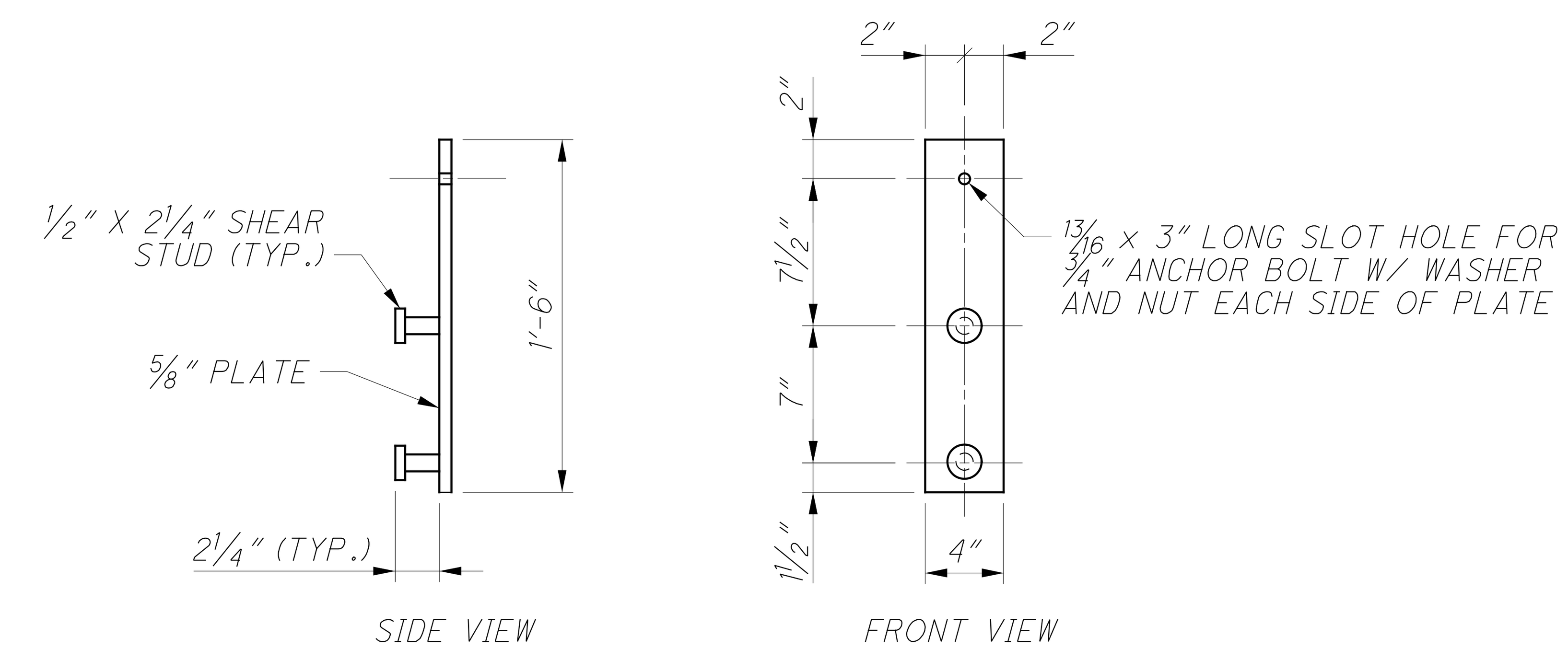
PRECAST WALL PLATE ELEVATON



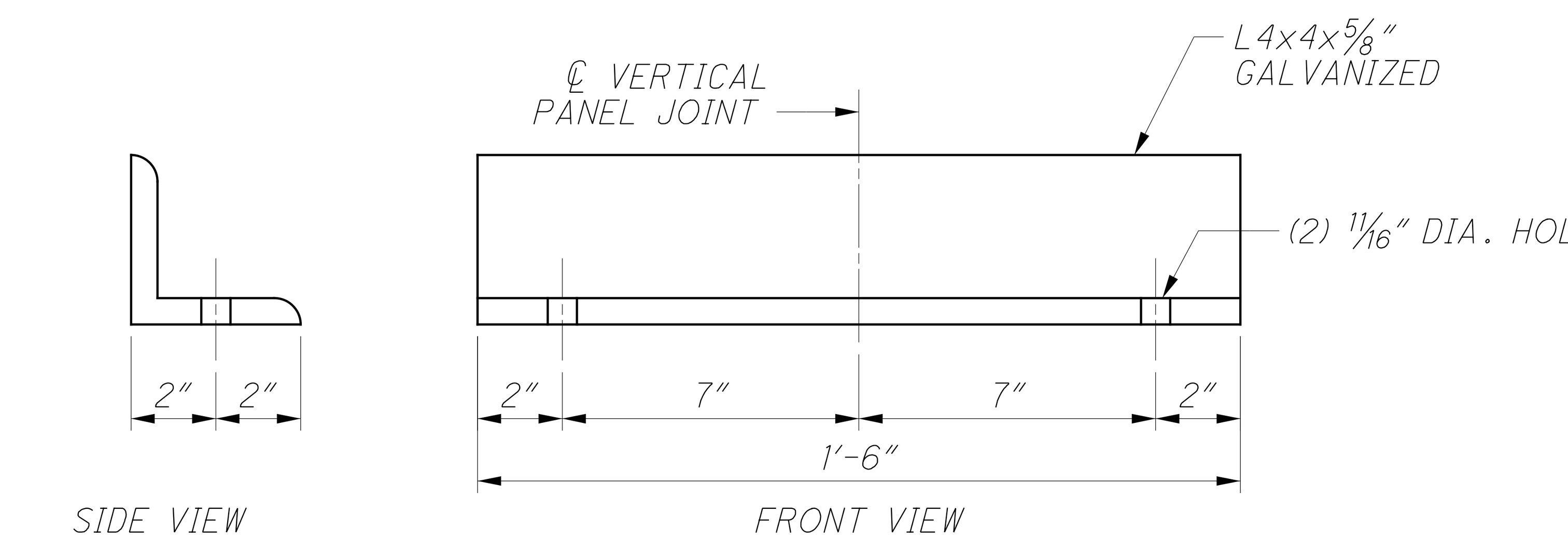
PRECAST WALL PLATE ELEVATON



EMBEDDED WALL CONNECTION PLATE



TEMPORARY WALL CONNECTION PLATE



6 BASE ANGLE DETAIL

NOTES:

1. THE CONTRACTOR OR PRECAST PANEL MANUFACTURER IS RESPONSIBLE FOR DESIGNING OF THE LIFTING DEVICE. A MODIFICATION TO THE CONNECTION PLATE AS SHOWN MAY BE REQUIRED TO RESIST TEMPORARY CONSTRUCTION LOADS INCLUDING BUT NOT LIMITED TO WIND LOAD DURING ERECTION.
2. ALL PANEL RELATED CONNECTION HARDWARE: PLATES, EPOXY ANCHORS, EXPANDED POLYSTYRENE, NEOPRENE FILLER, ELASTOMERIC BEARING PADS, CONCRETE FOUNDATION, AND REINFORCEMENT ARE INCIDENTAL TO BID ITEM "SPECIAL - STRUCTURE, MISC.: PRECAST FACADE PANELS".
3. ALL ATTACHMENT PLATES, ANCHOR BOLTS, NUTS, WASHERS, AND OTHER STEEL APPURTENANCE ARE TO BE GALVANIZED, UNLESS NOTED OTHERWISE.

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	RSN	11-9-23

DESIGN AGENCY
GPD GROUP®
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215 614.210.0751

DESIGNED	DRAWN	REVIEWED	DATE
RHC	MLS	DGN	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJW		2501554	

PRECAST FACADE PANEL CONNECTION DETAILS
BRIDGE NO. FRA-33-1747C - CAPS
S. 3RD STREET (U.S. 33) OVER I-70/71

FRA-70-14.05
PID No. 96053

15/38

615/855

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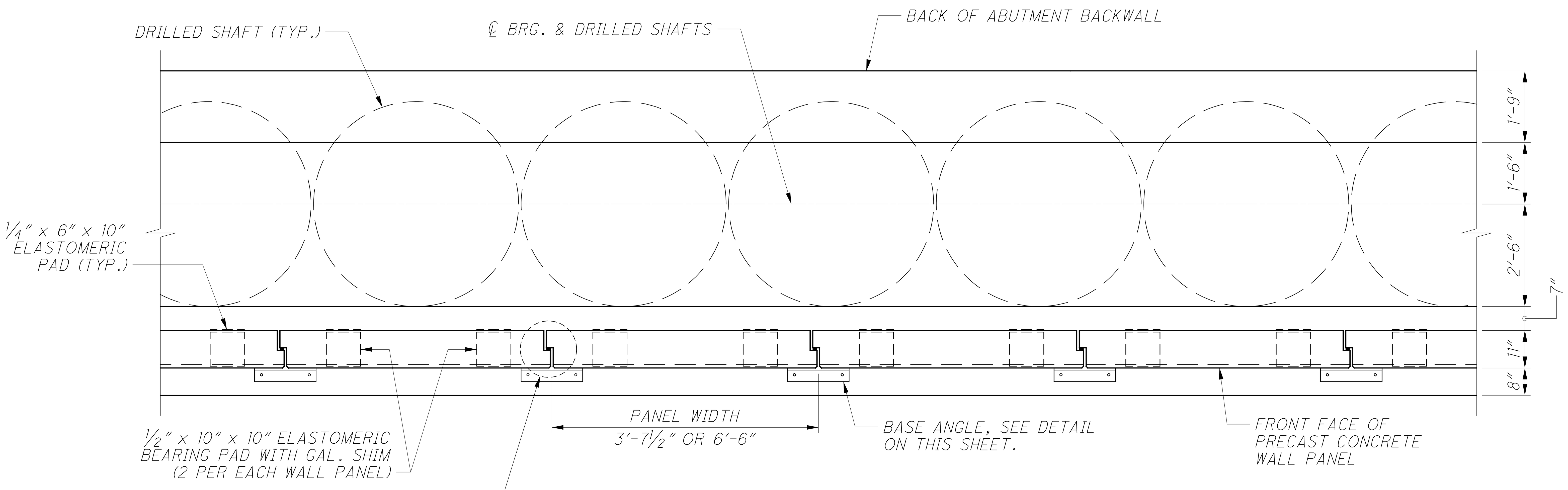
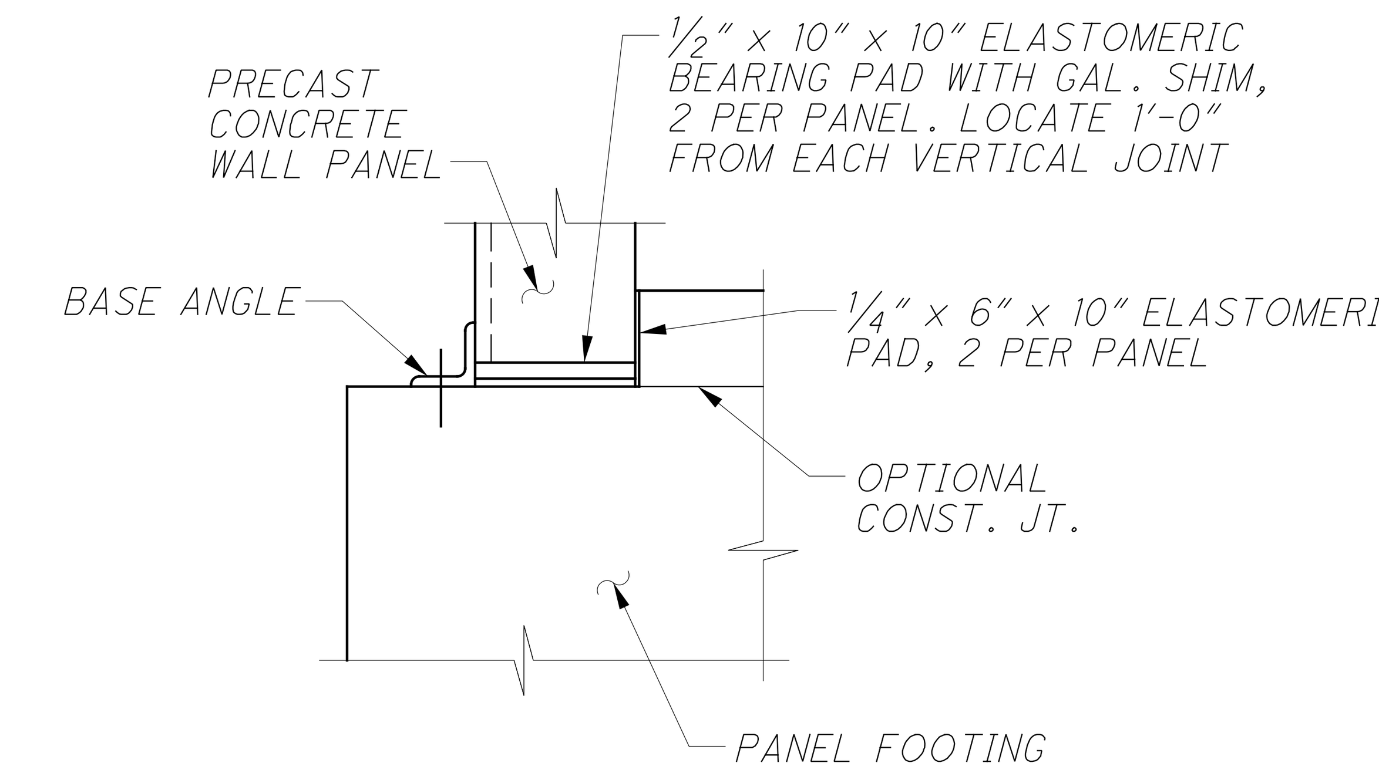
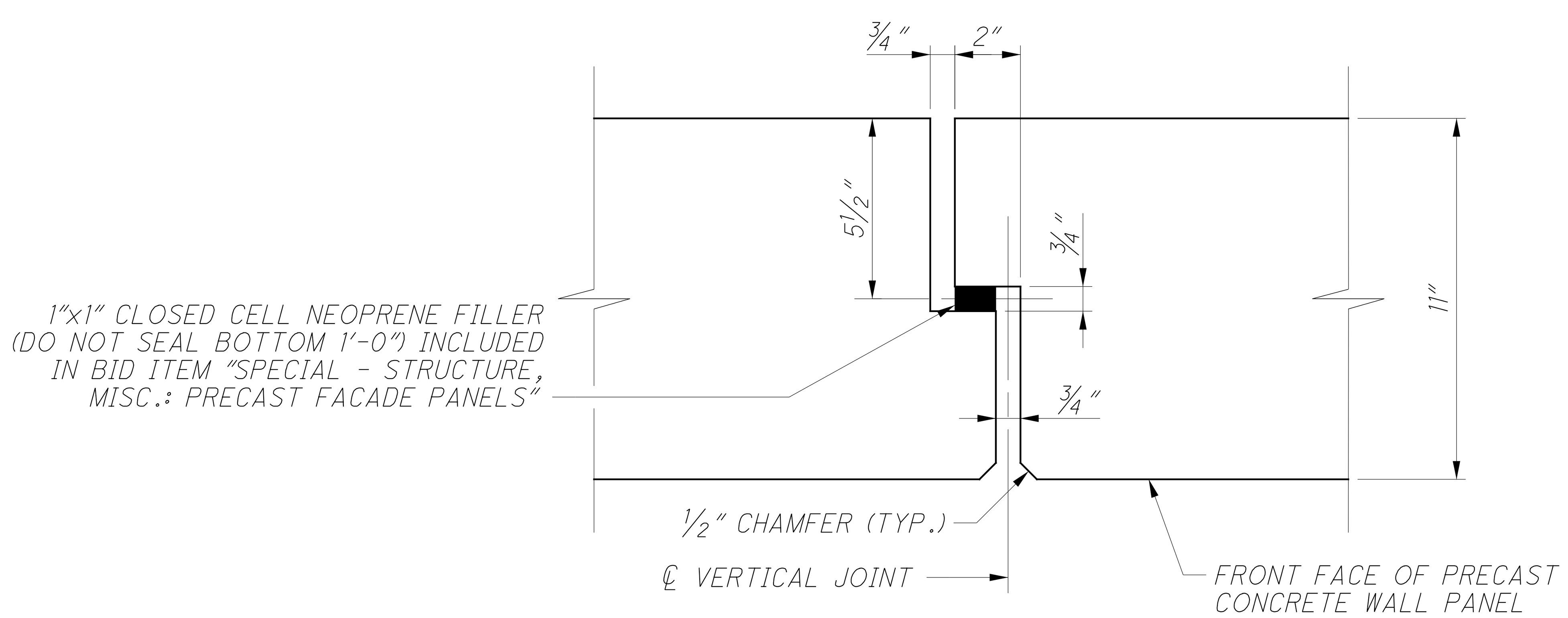


TYPICAL DRILLED SHAFT AND FOOTING PLAN

FOR TOP OF WALL PANEL CONNECTION, SEE DETAILS ON SHT. 15/50.



WALL BASE DETAILS



VERTICAL WALL PANEL JOINT DETAIL

NO.	DESCRIPTION	REV. BY	DATE
6	NOTE REVISED	RSN	11-9-23

NOTES:

1. THE CONTRACTOR OR PRECAST PANEL MANUFACTURER IS RESPONSIBLE FOR DESIGNING OF THE LIFTING DEVICE. A MODIFICATION TO THE CONNECTION PLATE AS SHOWN MAY BE REQUIRED TO RESIST TEMPORARY CONSTRUCTION LOADS INCLUDING BUT NOT LIMITED TO WIND LOAD DURING ERECTION.
2. ALL PANEL RELATED CONNECTION HARDWARE: PLATES, EPOXY ANCHORS, EXPANDED POLYSTYRENE, NEOPRENE FILLER, ELASTOMERIC BEARING PADS, CONCRETE FOUNDATION, AND REINFORCEMENT ARE INCIDENTAL TO BID ITEM "SPECIAL - STRUCTURE, MISC.: PRECAST FACADE PANELS". (6)
3. ALL ATTACHMENT PLATES, ANCHOR BOLTS, NUTS, WASHERS, AND OTHER STEEL APPURTENANCE ARE TO BE GALVANIZED, UNLESS NOTED OTHERWISE.

DESIGN AGENCY: GPD GROUP® Glaus, Pyle, Schomer, Burns & DeHaven, Inc. 1801 Watermark Drive, Suite 210, Columbus, OH 43215 614.210.0751

DESIGNED RHC | CHECKED TJW | DRAWN MLS | REVISED | REVIEWED DGN | DATE 4-21-23 | STRUCTURE FILE NUMBER 2501554

PRECAST FACADE PANEL DETAILS
BRIDGE NO. FRA-33-1747C - CAPS
S. 3RD STREET (U.S. 33) OVER I-70/71

FRA-70-14.05
PID No. 96053

DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO THE 8TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2017, AND THE ODOT BRIDGE DESIGN MANUAL, 2019.

STANDARD DRAWINGS

REFER TO THE FOLLOWING ODOT STANDARD BRIDGE DRAWINGS:

AS-1-15	REVISED:	7-17-15
AS-2-15	REVISED:	1-18-19
EXJ-4-87	REVISED:	1-19-18
GSD-1-19	REVISED:	1-15-21

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATION:

800	DATED	1-20-23
894	DATED	4-16-21

DESIGN DATA

OPERATIONAL IMPORTANCE: A LOAD MODIFIER OF 1.00 HAS BEEN ASSUMED FOR THE DESIGN OF THIS STRUCTURE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, ARTICLE 1.3.5 AND THE ODOT BRIDGE DESIGN MANUAL, 2020.

DESIGN LOADING

HL-93
FUTURE WEARING SURFACE (FWS) OF 0.060 KIPS PER SQUARE FOOT
SATURATED SOIL UNIT WEIGHT OF 0.130 KIPS PER CUBIC FOOT
PRECAST AND C.I.P. CONCRETE UNIT WEIGHT OF 0.150 KIPS PER CUBIC FOOT
SCREEN WALL UNIT WEIGHT OF 0.095 KIPS PER LINEAR FOOT

DESIGN STRESSES

CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI (SUBSTRUCTURE)

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (SUPERSTRUCTURE)

CONCRETE CLASS QC5 - COMPRESSIVE STRENGTH 4.5 KSI (DRILLED SHAFTS)

REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

STRUCTURAL STEEL - ASTM A709 GRADE 50 - YIELD STRENGTH 50 KSI

DECK PROTECTION METHOD

EPOXY COATED REINFORCING STEEL
2½" CONCRETE COVER
CLASS QC2 CONCRETE

MONOLITHIC WEARING SURFACE

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

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 UNCERTANTIES 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 THAT HAVE BEEN VERIFIED IN THE FIELD.

DECK PLACEMENT DESIGN ASSUMPTIONS

THE FOLLOWING ASSUMPTIONS OF CONSTRUCTION MEANS AND METHODS WERE MADE FOR THE ANALYSIS AND DESIGN OF THE SUPERSTRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE FALSEWORK SUPPORT SYSTEM WITHIN THESE PARAMETERS AND WILL ASSUME RESPONSIBILITY FOR SUPERSTRUCTURE ANALYSIS FOR DEVIATION FROM THESE DESIGN ASSUMPTIONS.

AN EIGHT WHEEL FINISHING MACHINE WITH A MAXIMUM WHEEL LOAD OF 2.81 KIPS.

A MINIMUM OUT-TO-OUT WHEEL SPACING AT EACH END OF THE MACHINE OF 103 IN.

A MAXIMUM SPACING OF OVERHANG FALSEWORK BRACKETS OF 48 IN.

A MAXIMUM DISTANCE FROM THE CENTERLINE OF THE FASCIA GIRDER TO THE FACE OF THE SAFETY HANDRAIL OF 65 IN.

FOUNDATION BEARING RESISTANCE

REAR ABUTMENT FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 5.90 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 8.46 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 12.66 KIPS PER SQUARE FOOT.

PIER FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LOAD PRESSURE OF 1.75 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LOAD PRESSURE OF 2.60 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 16.47 KIPS PER SQUARE FOOT.

FORWARD ABUTMENT FOUNDATION, AS DESGNED PRODUCE A MAXIMUM FACTORED LOAD OF 214 KIPS AT EACH DRILLED SHAFT. THE FACTORED RESISTANCE PROVIDED BY THE DRILLED SHAFT TIP IS 530 KIPS.

ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN

THE NEED TO PROVIDE TEMPORARY SHORING BEHIND THE DRILLED SHAFTS TO CONSTRUCT THE CONCRETE CAP SHALL BE DETERMINED BY THE CONTRACTOR BASED ON THEIR MEANS AND METHODS.

DESIGN, LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY TO INSTALL THE TEMPORARY SHORING SHALL BE COMPENSATED UNDER ITEM 503 -COFFERDAM AND EXCAVATION BRACING, AS PER PLAN.

ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN

FINISH TOP OF BACKWALL IN LOCATIONS ADJACENT TO SIDEWALKS WITH A BUFF WASH FINISH PER THE STRUCTURE AESTHETIC PLANS.

AFTER CONDUITS ARE PLACED THROUGH THE UTILITY BLOCKOUTS IN THE ABUTMENT BACKWALLS, FILL THE VOIDS USING NON-SHRINK MORTAR CONFORMING TO CMS 705.22

ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN
ITEM 511 - CLASS QC2 CONCRETE WITH QC/QA, SIDEWALK, AS PER PLAN
ITEM 512 - SEALING OF CONCRETE SURFACES (NON-EPOXY)
ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)
ITEM 607 - FENCE, MISC.: WALL MOUNTED TYPE A (W/ VANDAL MESH)
ITEM 607 - FENCE, MISC.: WALL MOUNTED TYPE A (W/O VANDAL MESH)

SEE STRUCTURE AESTHETIC PLANS FOR DETAILS.

ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT

ALL NEW STRUCTURAL STEEL SHALL BE PAINTED USING THE IZEU COATING SYSTEM. THE URETHANE TOP COAT SHALL BE TINTED TO MEET FEDERAL COLOR No. 17038 (BLACK)

ITEM 518 - PIPE HORIZONTAL CONDUCTOR, AS PER PLAN (8")

THIS ITEM CONSISTS OF FURNISHING AND INSTALLING 8" DIAMETER PIPE HORIZONTAL CONDUCTOR WITHIN THE BRIDGE SUPERSTRUCTURE AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE REQUIREMENTS OF CMS ITEM 518. THIS WORK INCLUDES THE CONDUCTOR PIPE, ELBOWS, CLEANOUTS, REDUCER FITTINGS, EXPANSION JOINT COUPLING, PIPE HANGERS AND ALL OTHER INCIDENTALS TO COMPLETE THE INSTALLATION TO THE SATISFACTION OF THE ENGINEER. PIPE HANGER ASSEMBLIES SHALL BE HOT-DIP GALVANIZED STEEL. ALL MATERIALS SHALL BE SUBMITTED FOR REVIEW IN ACCORDANCE WITH CMS 501.04. THE METHOD OF MEASUREMENT SHALL BE BY THE FOOT ALONG THE CENTERLINE OF MAIN CONDUCTOR PIPE. PAYMENT WILL BE MADE AT THE UNIT PRICE BID PER FOOT AND SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS AND INCIDENTALS FOR A COMPLETE FUNCTIONING SYSTEM.

ITEM 524 - DRILLED SHAFTS, 60" DIAMETER, ABOVE BEDROCK WITH QC/QA, AS PER PLAN

THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS PER ITEM 524 EXCEPT THE FOLLOWING:
THE COARSE AGGREGATE SIZE FOR ALL DRILLED SHAFTS SHALL BE A MAXIMUM OF NO. 8.

ALL DRILLED SHAFTS SHALL BE CONSTRUCTED FULL DEPTH FROM THE REQUIRED BOTTOM ELEVATION TO THE PROPOSED TOP PLAN ELEVATION USING THE TEMPORARY CASING CONSTRUCTION METHOD OF HOLE EXCAVATION AS DETAILED IN C&MS 524.04.C. NO OTHER METHODS OF HOLE EXCAVATION SHALL BE PERMITTED.

THE CONSTRUCTION TOLERANCES FOR TANGENT SHAFT INSTALLATION UNDER SECTION 524.14 SHALL WITHIN ½" OF THE PLAN LOCATION IN THE HORIZONTAL PLANE AT THE PLAN ELEVATION FOR THE TOP OF THE SHAFT.

STEEL BEAMS SHALL BE ACCURATELY SET AT THE CENTER OF THE DRILLED SHAFT IMMEDIATELY AFTER THE INSTALLATION OF REINFORCING STEEL CAGE AND BEFORE PLACING CONCRETE.

THE DRILLED SHAFT CAP AND P.E.J.F. JOINTS SHALL BE ACCURATELY PLACED ACCORDING TO THE DESIGN PLAN. IF THE LOCATIONS OF THE INSTALLED DRILLED SHAFTS VARY FROM THE DESIGN PLAN AND RESULT IN THE P.E.J.F. IN THE DRILLED SHAFT CAP FALLING OVER A DRILLED SHAFT INSTEAD OF BETWEEN SHAFTS, ALL VERTICAL SHAFT BARS INTERFERING WITH, OR CROSSING, THE CAP JOINT SHALL BE CUT FLUSH WITH THE TOP OF THE DRILLED SHAFT SO THAT BOTH SIDES OF THE CAP ARE NOT TIED TOGETHER BY SHAFT REINFORCING STEEL. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO CUTTING ANY REINFORCING STEEL. THE DEPARTMENT WILL CONSIDER THIS WORK AS INCIDENTAL AND SHALL BE INCLUDED WITH ITEM 524 FOR PAYMENT.

ITEM 625 - LIGHT POLE ANCHOR BOLTS, MISC.: LIGHT POLE ANCHOR BOLT ASSEMBLIES EMBEDDED IN CONCRETE BRIDGE DECK

FURNISH ONE ANCHOR BOLT ASSEMBLY FOR EACH LIGHT POLE MOUNTED ON THE BRIDGE. EACH ASSEMBLY INCLUDES A STEEL PLATE AND ALL STEEL ANCHOR RODS, LEVELING RODS, NUTS, AND WASHERS AS SHOWN ON THE DRAWINGS OR AS REQUIRED FOR INSTALLATION. FABRICATE THE ASSEMBLY IN ACCORDANCE WITH CMS 513 AND 730. GALVANIZE THE ASSEMBLY AFTER FABRICATION IN ACCORDANCE WITH CMS 711.02. ALL MATERIALS, LABOR, AND INCIDENTALS NECESSARY TO INSTALL EACH POLE SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 625 - LIGHT POLE ANCHOR BOLTS, MISC.: LIGHT POLE ANCHOR BOLT ASSEMBLIES EMBEDDED IN CONCRETE BRIDGE DECK.

ITEM 894 - THERMAL INTEGRITY PROFILER (T.I.P.)TEST

PERFORM INTEGRITY TESTING ON ALL OF THE DRILLED SHAFTS AT THE FORWARD ABUTMENT BY THERMAL INTEGRITY PROFILING (TIP). PERFORM TIP TESTING PER ASTM D7949, "STANDARD TEST METHODS FOR THERMAL INTEGRITY PROFILING OF CONCRETE DEEP FOUNDATIONS," METHOD B, AND PER SUPPLEMENTAL SPECIFICATION 894

STRUCTURE GROUNDING

GROUND THE PROPOSED BRIDGE ACCORDING TO THE REQUIREMENTS OF ODOT STD. DWG. HL-50.21 - STRUCTURE GROUNDING. THE FOLLOWING BRIDGE COMPONENTS SHALL BE CONNECTED TO THE GROUNDING SYSTEM: ALL STRUCTURAL STEEL, UTILITY SUPPORTS, STEEL SCREEN WALL COMPONENTS, AND LIGHT POLES.

ASBESTOS ABATEMENT AND NOTIFICATION

ASBESTOS SURVEYS OF THE FRA-23-1075C BRIDGE SCHEDULED FOR REPLACEMENT WAS CONDUCTED BY CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALISTS. COPIES OF THE ASBESTOS INSPECTION REPORTS ARE INCLUDED IN THE PLAN SET FOR THIS PROJECT.

THE ASBESTOS SURVEYS DETERMINED THAT 70 SQUARE FEET OF ASBESTOS CONTAINING MATERIAL IS PRESENT ON THE BRIDGE DECK IN EXCESS OF THE ALLOWABLE REGULATORY LIMITS AND REQUIRES ABATEMENT.

ADDITIONALLY, 6,804 SQUARE FEET OF ASBESTOS CONTAINING TRANSITE UTILITY PIPE AND 880 SQUARE FEET OF ASBESTOS CONTAINING PIPE RACK WAS IDENTIFIED UNDER THE BRIDGE DECK. THIS PIPE WILL BE SUPPORTED AND REMAIN IN PLACE DURING THE BRIDGE DEMOLITION AND RECONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE ASBESTOS CONTAINING MATERIAL IS PROTECTED AND NOT DISTURBED THROUGHOUT THE PROJECT BY PROVIDING ADEQUATE SHIELDING TO PREVENT THE DISTURBANCE OF THE ASBESTOS MATERIAL. FOLLOWING THE RELOCATION OF THE UTILITIES IN THIS PIPE, THE PIPE AND PIPE RACK WILL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH STATE AND FEDERAL REGULATIONS.

THE CONTRACTOR SHALL ENSURE THAT ASBESTOS CONTAINING MATERIALS DO NOT BECOME FRIABLE (BROKEN UP OR DISPERSED) AND THAT NO VISIBLE FIBER EMISSIONS WILL OCCUR. ADDITIONALLY, THE REMOVAL AND DISPOSAL OF THE ASBESTOS CONTAINING MATERIAL SHALL COMPLY WITH CHAPTER 3745-20 OF THE OHIO ADMINISTRATIVE CODE, THE NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS (NESHAP) AND APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS (29 CFR 1926.1101).

THE CONTRACTOR SHALL SUBMIT A COMPLETED ELECTRONIC NOTIFICATION OF DEMOLITION AND RENOVATION FORM (NDRF), APPLICABLE FEES, AND THE ASBESTOS INSPECTION REPORT TO THE OEPA AT LEAST 10 DAYS PRIOR TO ANY DEMOLITION ACTIVITY, RENOVATION ACTIVITY, OR BOTH. SUBMIT THE NDRF AND PAYMENT ALONG WITH THE ASBESTOS INSPECTION REPORT USING THE OEPA BUSINESS CENTER. SUBMIT ONE ELECTRONIC PDF COPY TO THE ENGINEER. THE ENGINEER WILL PROVDE ONE COPY TO THE DISTRICT ENVIRONMENTAL COORDINATOR AT MARCI.LININGER@DOT.OHIO.GOV.

BASIS OF PAYMENT - THE CONTRACTOR SHALL FURNISH ALL THE FEES, LABOR, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THE OEPA NOTIFICATION OF DEMOLITION AND RENOVATION FORM AND PROPERLY REMOVE, ENCAPSULATE, HANDLE, TRANSPORT AND DISPOSE OF ASBESTOS CONTAINING MATERIALS IN A LANDFILL LICENSED BY THE LOCAL HEALTH DEPARTMENT AND PERMITTED BY THE OHIO ENVIRONMENTAL PROTECTION AGENCY - DIVISION OF AIR POLLUTION CONTROL TO ACCEPT ASBESTOS CONTAINING MATERIAL. PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT PRICE BID OF LUMP SUM.

PAYMENT FOR THIS WORK SHALL BE INCLUDED IN ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN.

NO.	DESCRIPTION	DATE	REV. BY
6	REVISED NOTES	11-6-23	RSN

DESIGN AGENCY
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215 614.210.0751

DESIGNED DGN | DRAWN RPR | REVIEWED TJW | DATE 4-21-23
CHECKED RHC | REVISED | STRUCTURE FILE NUMBER 2502620

GENERAL NOTES - 1
BRIDGE NO. FRA-23-1075C
S. 4TH STREET (U.S. 23) OVER I-70/71

FRA-70-14.05
PID No. 96053

ITEM	EXT.	TOTAL	PARTICIPATION 01/IMS/04	PARTICIPATION 02/IMS/11	PARTICIPATION 09/IMS/17/COL	UNITS	DESCRIPTION	ABUTMENT	PIER	SUPER-STRUCTURE	GENERAL	REFERENCE SHEET NO.
202	11002	LS		LS			STRUCTURE REMOVED, OVER 20 FOOT SPAN					2
202	22900	219		219		SY	APPROACH SLAB REMOVED				219	
202	23500	906		906		SY	WEARING COURSE REMOVED				906	
503	11101	LS		LS			COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN					2
503	21100	3,173		3,173		CY	UNCLASSIFIED EXCAVATION	2,438	735			
509	10000	357,555		357,555		LB	EPOXY COATED REINFORCING STEEL	127,946	74,285	155,324		
511	34446	485		485		CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK			485		
511	34451	145		145		CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN			145		2
511	41012	183		183		CY	CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS		183			
511	44113	1,186		1,186		CY	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN	1,186				2
511	46512	604		604		CY	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	443	161			
511	51513	98		98		CY	CLASS QC2 CONCRETE WITH QC/QA, SIDEWALK, AS PER PLAN			98		2
512	10050	1,236		1,236		SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)	165		1,071		2
512	10100	1,393		1,393		SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	1,171	222			2
512	33000	193		193		SY	TYPE 2 WATERPROOFING	193				
					3					3		
513	10200	5,360		5,360		LB	STRUCTURAL STEEL MEMBERS, LEVEL UF (PIPE HORIZONTAL CONDUCTOR)			5,360		
513	10200	4,840	4,840			LB	STRUCTURAL STEEL MEMBERS, LEVEL UF (COC, COC DOT, AND ODOT DUCT BANK SUPPORT)			4,840		
513	10200	4,740	4,740			LB	STRUCTURAL STEEL MEMBERS, LEVEL UF (COC: DOT - TELECOM DUCT BANK SUPPORT)			4,740		
513	10200	12,510			12,510	LB	STRUCTURAL STEEL MEMBERS, LEVEL UF (AEP DUCT BANK SUPPORT)			12,510		
513	10200	12,510			12,510	LB	STRUCTURAL STEEL MEMBERS, LEVEL UF (AT&T DUCT BANK SUPPORT)			12,510		
513	10280	553,000		553,000		LB	STRUCTURAL STEEL MEMBERS, LEVEL 4			553,000		
513	20000	6,507		6,507		EACH	WELDED STUD SHEAR CONNECTORS			6,507		
514	00060	24,600		24,600		SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT			24,600		
514	00066	24,600		24,600		SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT			24,600		2
514	10000	25		25		EACH	FINAL INSPECTION REPAIR			25		
516	10010	155		155		FT	ARMORLESS PREFORMED JOINT SEAL				155	
516	11210	177		177		FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL (3")			177		
516	13600	584		584		SF	1" PREFORMED EXPANSION JOINT FILLER	584				
516	44101	18		18		EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 9 1/2" x 1'-4" x 2.67" PAD WITH 10 1/2" x 1'-10" BEVELED PLATE, AS PER PLAN			18		28
516	44201	9		9		EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 1'-5" x 2'-2" x 3.21" PAD WITH 1'-6" x 2'-11" BEVELED PLATE, AS PER PLAN			9		28
518	12301	2		2		EACH	SCUPPERS, AS PER PLAN			2		37
518	20000	655		655		SY	PREFABRICATED GEOCOMPOSITE DRAIN	655				
518	21200	104		104		CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	104				
518	40000	650		650		FT	6" PERFORATED CORRUGATED PLASTIC PIPE	650				
518	40012	40		40		FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE	40				
518	60031	90		90		FT	PIPE HORIZONTAL CONDUCTOR, AS PER PLAN (8")			90		2 & 37
524	95472	2,602		2,602		FT	DRILLED SHAFTS, 60" DIAMETER, ABOVE BEDROCK WITH QC/QA, AS PER PLAN	2,602				2
526	25010	153		153		SY	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=15")				153	
526	30011	254		254		SY	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=17"), AS PER PLAN				254	49
526	90031	160		160		FT	TYPE C INSTALLATION, AS PER PLAN				160	49
625	10620	6		6		EACH	LIGHT POLE ANCHOR BOLTS, MISC.: LIGHT POLE ANCHOR BOLT ASSEMBLIES EMBEDDED IN CONCRETE BRIDGE DECK			6		2
SPECIAL	53000200	LS	LS			LS	STRUCTURES: CITY OF COLUMBUS DUCT BANK COMPLETE					3
SPECIAL	53000200	LS	LS			LS	STRUCTURES: CITY OF COLUMBUS (DEPARTMENT OF TECH) DUCT BANK COMPLETE					3
SPECIAL	53000200	LS			LS	LS	STRUCTURES: AEP DUCT BANK COMPLETE					3
SPECIAL	53000200	LS			LS	LS	STRUCTURES: AT&T DUCT BANK COMPLETE					3
SPECIAL	53000200	LS	LS			LS	STRUCTURES: ODOT DUCT BANK COMPLETE					3
SPECIAL	53000200	LS			LS	LS	STRUCTURES: TEMPORARY UTILITY SUPPORTS					3
SPECIAL	53000600	3,639		3,639		SF	STRUCTURES: PRECAST FACADE PANELS	3,639				3
607	98000	112		112		FT	FENCE, MISC.: WALL MOUNTED TYPE A (W/ VANDAL MESH)	112				2
607	98000	135		135		FT	FENCE, MISC.: WALL MOUNTED TYPE A (W/O VANDAL MESH)	135				2
894	10000	43		43		EACH	THERMAL INTEGRITY PROFILING (TIP) TEST	43				

CALCULATED BY: RHC DATE: 7-5-22
CHECKED BY: DJC DATE: 7-7-22

NO.	DESCRIPTION	DATE
6	REVISED ITEM DESCRIPTION	7-7-22

NO.	DESCRIPTION	DATE
3	QUANTITIES REVISED	10-23-23

DESIGNED	DRAWN	REVIEWED	DESIGN AGENCY
MLS	MLS	DGN	GPD GROUP
CHECKED	REVISED	DATE	
RHC		4-21-23	

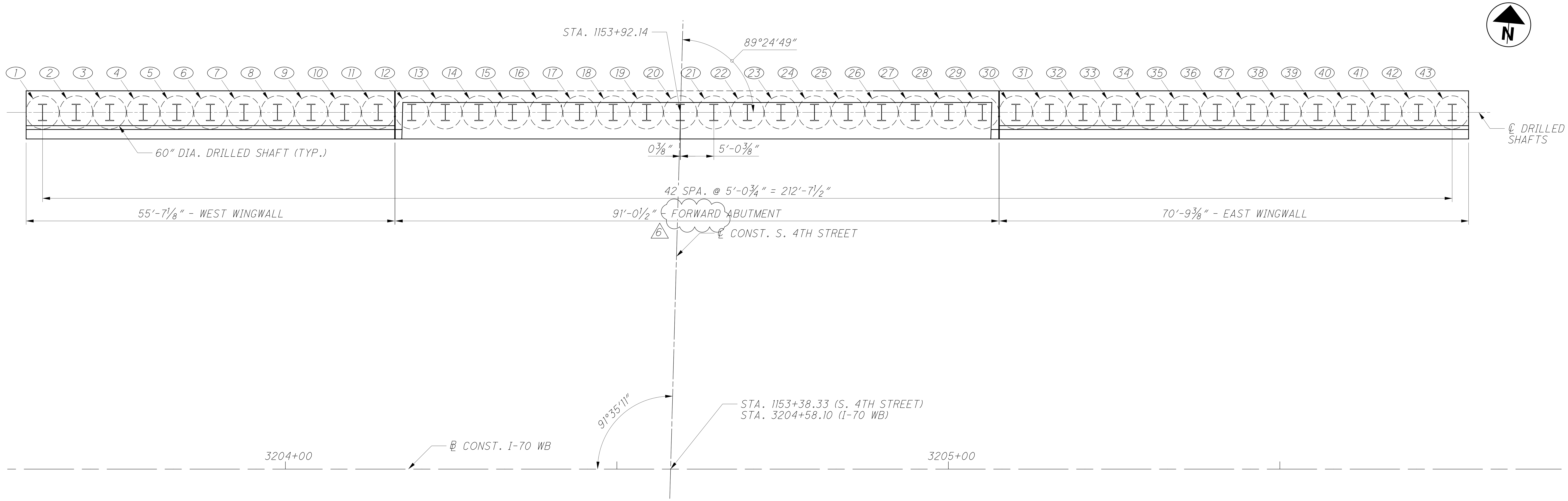
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
Consulting Engineers, Surveyors, Planners & Landscape Architects
1801 Watermark Drive, Suite 210, Columbus, OH 43215
614.210.0791

STRUCTURE FILE NUMBER 2502620

ESTIMATED QUANTITIES
BRIDGE NO. FRA-23-1075C
S. 4TH STREET (U.S. 23) OVER I-70/71

FRA-70-14.05
PID No. 96053

642
855



DRILLED SHAFT PLAN

DRILLED SHAFT TABLE							
	STATION	OFFSET	SIDE		STATION	OFFSET	SIDE
1	3206+63.37	53.80	LT.	23	3204+74.74	53.80	LT.
2	3203+68.43	53.80	LT.	24	3204+79.81	53.80	LT.
3	3203+73.49	53.80	LT.	25	3204+84.87	53.80	LT.
4	3203+78.56	53.80	LT.	26	3204+89.93	53.80	LT.
5	3203+83.62	53.80	LT.	27	3204+94.99	53.80	LT.
6	3203+88.68	53.80	LT.	28	3205+00.06	53.80	LT.
7	3203+93.74	53.80	LT.	29	3205+05.12	53.80	LT.
8	3203+98.81	53.80	LT.	30	3205+10.18	53.80	LT.
9	3203+03.87	53.80	LT.	31	3205+15.24	53.80	LT.
10	3204+08.93	53.80	LT.	32	3205+20.31	53.80	LT.
11	3204+13.99	53.80	LT.	33	3205+25.37	53.80	LT.
12	3204+19.06	53.80	LT.	34	3205+30.43	53.80	LT.
13	3204+24.12	53.80	LT.	35	3205+35.49	53.80	LT.
14	3204+29.18	53.80	LT.	36	3205+40.56	53.80	LT.
15	3204+34.24	53.80	LT.	37	3205+45.62	53.80	LT.
16	3204+39.31	53.80	LT.	38	3205+50.68	53.80	LT.
17	3204+44.37	53.80	LT.	39	3205+55.74	53.80	LT.
18	3204+49.43	53.80	LT.	40	3205+60.81	53.80	LT.
19	3204+54.49	53.80	LT.	41	3205+65.87	53.80	LT.
20	3204+59.56	53.80	LT.	42	3205+70.93	53.80	LT.
21	3204+64.62	53.80	LT.	43	3205+75.99	53.80	LT.
22	3204+69.68	53.80	LT.				

NOTE: STATIONS AND OFFSETS GIVEN TO ℄ CONST. I-70 WB

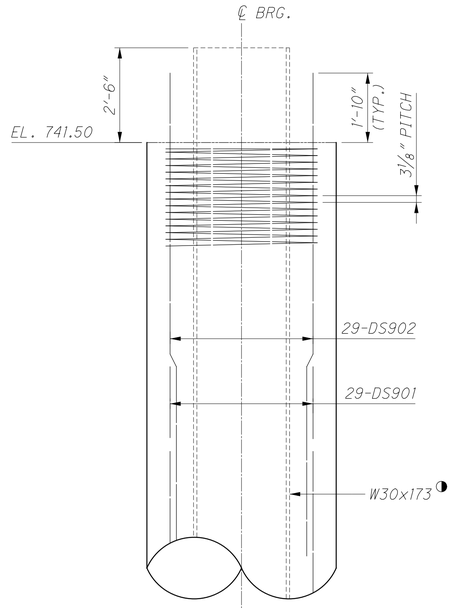
NO.	DESCRIPTION	DATE	REV. BY
6	REVISED CALLOUT	11-6-23	RSN

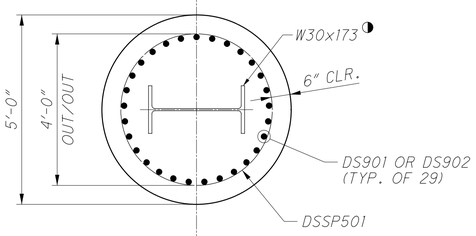
DESIGN AGENCY
GPD GROUP®
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215 614.210.0751

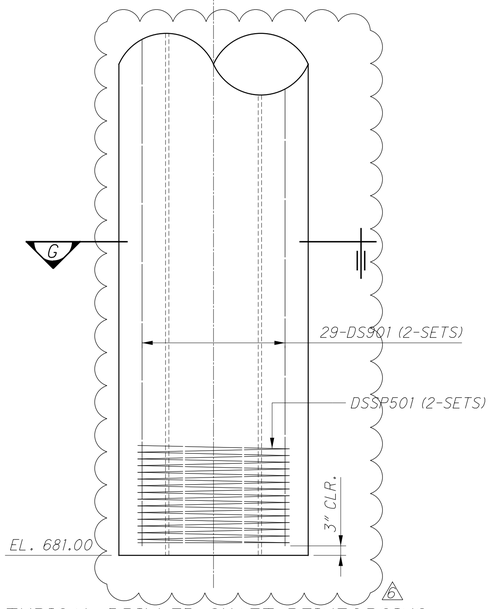
DESIGNED	DRAWN	REVIEWED	DATE
RHC	RFV	DGN	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DJC		2502620	

DRILLED SHAFT PLAN
BRIDGE NO. FRA-23-1075C
S. 4TH STREET (U.S. 23) OVER I-70/71

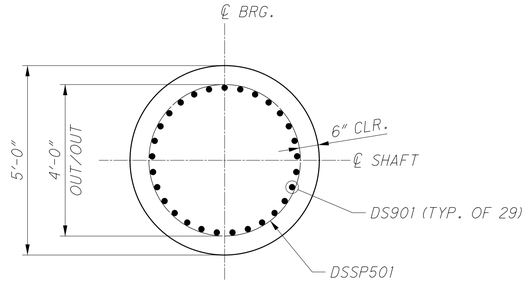
FRA-70-14.05
PID No. 96053



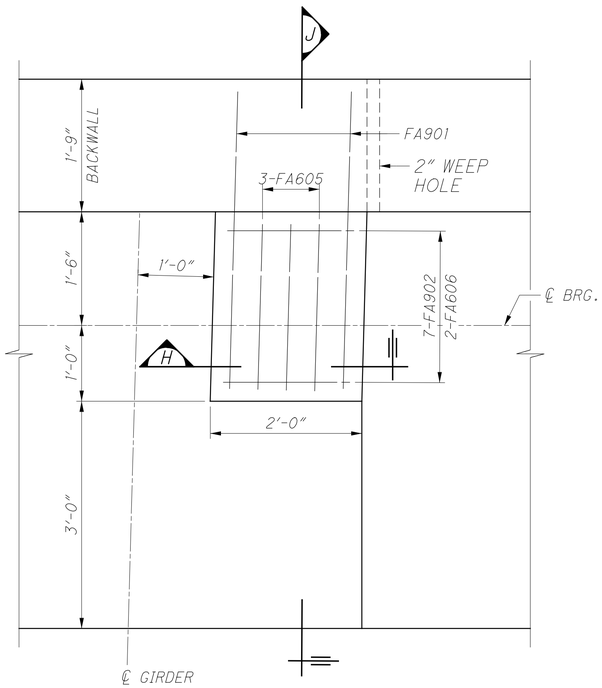




TYPICAL DRILLED SHAFT REINFORCING

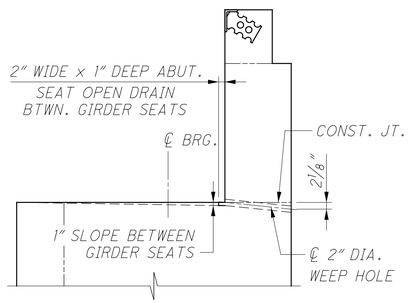


SECTION G

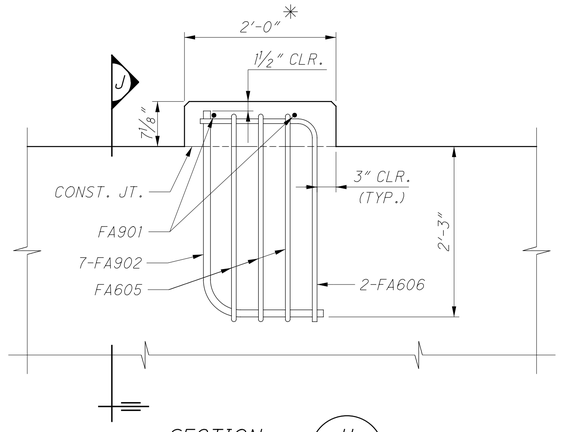


SEISMIC PEDESTAL DETAIL

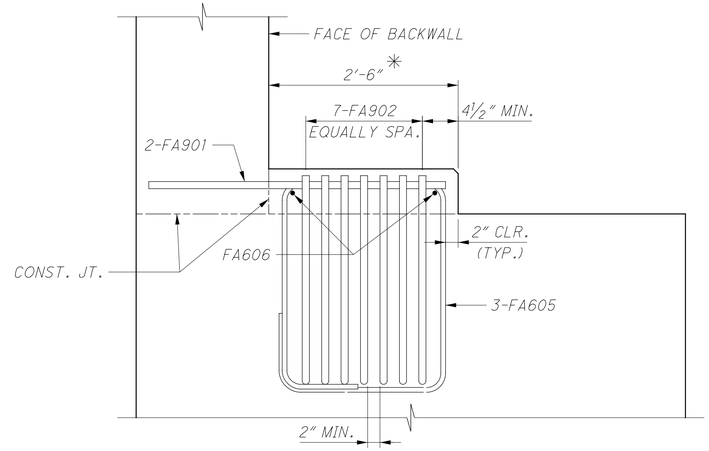
LEFT PEDESTAL SHOWN, RIGHT PEDESTAL IS SIMILAR BUT OPPOSITE



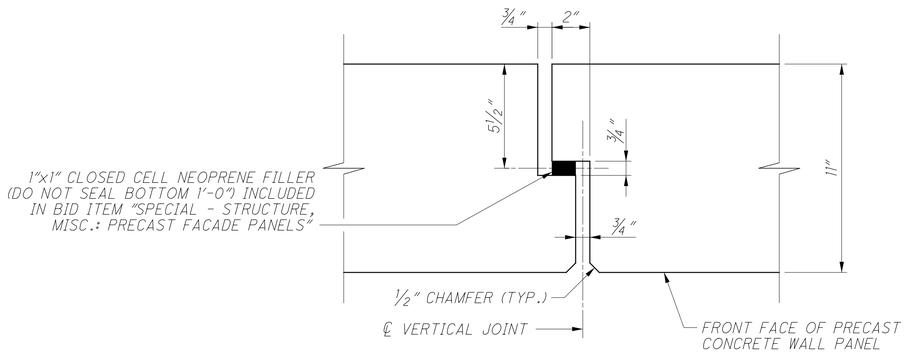
FORWARD ABUTMENT DRAINAGE DETAIL



SECTION H



SECTION J



VERTICAL WALL PANEL JOINT DETAIL

LEGEND:

✳ THE SURFACE OF THE BEAM SEAT IN THIS AREA SHALL BE FINISHED WITH A SERRATED TROWEL. THE SERRATIONS SHALL BE ¼" DEEP MINIMUM.

◑ EXTEND W30x173 SECTION TO THE BOTTOM OF SHAFT AND PROJECT IT 2'-6" MIN. INTO THE BOTTOM OF THE ABUTMENT SHAFT CAP. STEEL BEAMS SHALL BE INCLUDED WITH ITEM 524 FOR PAYMENT. (6)

NOTES:

1. THE LOCATION OF THE MAIN REINFORCING STEEL IN THE BEAM SEAT MAY BE ADJUSTED HORIZONTALLY 1"(±) TO ACCOMMODATE THE #9 SEISMIC PEDESTAL BARS.
2. MINIMUM REINFORCING LAP SPLICE LENGTHS ARE AS FOLLOWS, UNLESS NOTED OTHERWISE:

NO. 9 BARS 5'-4"

NO.	DESCRIPTION	DATE	REV. BY
6	EXTENDED BEAM LENGTH	11-6-23	RSN

DESIGN AGENCY
GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
1801 Watermark Drive, Suite 210, Columbus, OH 43215
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DESIGNED	DRAWN	REVIEWED	DATE
MLS	JJB	DGN	4-21-23
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RHC		2502620	

FORWARD ABUTMENT DETAILS
BRIDGE NO. FRA-23-1075C
S. 4TH STREET (U.S. 23) OVER I-70/71

FRA-70-14.05
PID No. 96053

SHEET NUM.														PART.		ITEM	ITEM	GRAND	UNIT	DESCRIPTION	SEE SHEET NO.
12	85											132	OFFICE CALCS	02/IMS/11	05/IMS/14		EXT	TOTAL			
																				STRUCTURE OVER 20 FOOT SPAN (FRA-70-1301R) (CONT.)	
														LUMP		503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
	479													479		503	21100	479	CY	UNCLASSIFIED EXCAVATION	
														LUMP		505	11100	LS		PILE DRIVING EQUIPMENT MOBILIZATION	
	1,700													1,700		507	00100	1,700	FT	STEEL PILES HP10X42, FURNISHED	
	1,615													1,615		507	00150	1,615	FT	STEEL PILES HP10X42, DRIVEN	
	4,890													4,890		507	00200	4,890	FT	STEEL PILES HP12X53, FURNISHED	
	4,450													4,450		507	00250	4,450	FT	STEEL PILES HP12X53, DRIVEN	
	266													266		507	92200	266	FT	PREBORED HOLES	
	105													105		507	93300	105	EACH	STEEL POINTS OR SHOES	
	408,419													408,419		509	10000	408,419	LB	EPOXY COATED REINFORCING STEEL	
	948													948		511	34446	948	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	
	172													172		511	34451	172	CY	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN	83
	236													236		511	41012	236	CY	CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS	
	173													173		511	44112	173	CY	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING	
	303													303		511	46512	303	CY	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	
	1,835													1,835		512	10100	1,835	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
	1,553,954													1,553,954		513	10301	1,553,954	LB	STRUCTURAL STEEL MEMBERS, LEVEL 5, AS PER PLAN	84
	7,926													7,926		513	20000	7,926	EACH	WELDED STUD SHEAR CONNECTORS	
	10,859													10,859		514	00060	10,859	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	
	10,859													10,859		514	00066	10,859	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	
	65													65		516	10010	65	FT	ARMORLESS PREFORMED JOINT SEAL	
	127													127		516	11210	127	FT	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL	
	104													104		516	13600	104	SF	1" PREFORMED EXPANSION JOINT FILLER	
	43													43		516	13900	43	SF	2" PREFORMED EXPANSION JOINT FILLER	
	137													137		518	21200	137	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
	178													178		518	40000	178	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	
	28													28		518	40010	28	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	
	176													176		526	25010	176	SY	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=15")	
	212													212		526	30010	212	SY	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=17")	
	64													64		526	90010	64	FT	TYPE A INSTALLATION	
	64													64		526	90030	64	FT	TYPE C INSTALLATION	
	1													1		625	33000	1	EACH	STRUCTURE GROUNDING SYSTEM	
	27													27		846	00110	27	CF	POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM	
	28													28		869	00100	28	EACH	HIGH LOAD MULTI-ROTATIONAL (HLMR) BEARINGS	
																				RETAINING WALLS (MSE W4)	
												6		6		203	20001	6	CY	EMBANKMENT, AS PER PLAN	
											5	427		427		203	35110	427	CY	GRANULAR MATERIAL, TYPE B	
												9,226		9,226		509	10000	9,226	LB	EPOXY COATED REINFORCING STEEL	
												78		78		511	53012	78	CY	CLASS QC2 CONCRETE, MISC.:MOMENT SLAB AND PARAPET WITH QC/QA	
												530		530		512	10100	530	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
												91		91		516	13600	91	SF	1" PREFORMED EXPANSION JOINT FILLER	
												409		409		516	13900	409	SF	2" PREFORMED EXPANSION JOINT FILLER	
												20		20		601	21000	20	SY	CONCRETE SLOPE PROTECTION	
												3,252		3,252		840	20000	3,252	SF	MECHANICALLY STABILIZED EARTH WALL	
												1,139		1,139		840	21000	1,139	CY	WALL EXCAVATION	
												491		491		840	22000	491	SY	FOUNDATION PREPARATION	
												1,666		1,666		840	23000	1,666	CY	SELECT GRANULAR BACKFILL	
												543		543		840	25010	543	FT	6" DRAINAGE PIPE, PERFORATED	
												22		22		840	25020	22	FT	6" DRAINAGE PIPE, NON-PERFORATED	
												277		277		840	26000	277	FT	CONCRETE COPING	
												3,252		3,252		840	26050	3,252	SF	AESTHETIC SURFACE TREATMENT	
											6	5		5		840	27000	5	DAY	ON-SITE ASSISTANCE	

NO.	DESCRIPTION	REV. BY	DATE
4	ITEM TYPE CHANGED	ACW	10/30/23
5	DELETED ITEM/QUANTITY	ACW	11/6/23
6	DELETED ITEM/QUANTITY	ACW	11/13/23

CALCULATED DNO
CHECKED DLT

GENERAL SUMMARY

FRA-70-13.01

SHEET NUM.												PART.		ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
									12	132	OFFICE CALCS	02/IMS/11	05/IMS/14						
																		RETAINING WALLS (MSE W6)	
										122		122		512	10100	122	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) 5	
										1,005		1,005		840	20000	1,005	SF	MECHANICALLY STABILIZED EARTH WALL	
										227		227		840	21000	227	CY	WALL EXCAVATION	
										111		111		840	22000	111	SY	FOUNDATION PREPARATION 3	
										479		479		840	23000	479	CY	SELECT GRANULAR BACKFILL	
										156		156		840	25010	156	FT	6" DRAINAGE PIPE, PERFORATED	
										24		24		840	25020	24	FT	6" DRAINAGE PIPE, NON-PERFORATED	
										73		73		840	26000	73	FT	CONCRETE COPING	
										1,005		1,005		840	26050	1,005	SF	AESTHETIC SURFACE TREATMENT	
										5		5		840	27000	5	DAY	ON-SITE ASSISTANCE 6	
																		MAINTENANCE OF TRAFFIC	
									4			4		614	12380	4	EACH	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)	
									120			120		614	13310	120	EACH	BARRIER REFLECTOR, TYPE 1 (ONE WAY)	
									40			40		614	13350	40	EACH	OBJECT MARKER, ONE WAY	
									4			4		614	13600	4	EACH	MAINTENANCE OF TRAFFIC, ONE LANE CLOSURE ON A TWO LANE HIGHWAY	

NO.	DESCRIPTION	REV. BY	DATE
3	ADDED QUANTS FOR WALL	ACW	6/23/23
5	DELETED ITEM/QUANTITY	ACW	11/6/23
6	DELETED ITEM/QUANTITY	ACW	11/13/23

CALCULATED DNO
CHECKED DLT

GENERAL SUMMARY

FRA-70-13.01

14B
137

N:\03\60\08353\105430_FRA-70-13.0\Design\Roadway\Sheets\105430_GG004.dgn Sheet 11/13/2023 2:05:12 PM awhite

ESTIMATED QUANTITIES

CALC.	DATE
DBL	2/15/2023
CHK'D	DATE
ATM	2/21/2023

ITEM	ITEM EXT.	UNIT	DESCRIPTION	TOTAL	SHT. REF.
			MSE WALL W4		
203	20001	CY	EMBANKMENT, AS PER PLAN	6	4/58
203	35110	CY	GRANULAR MATERIAL, TYPE B △5	427	
509	10000	LB	EPOXY COATED REINFORCING STEEL	9,226	55/58 58/58
511	53012	CY	CLASS QC2 CONCRETE, MISC.: MOMENT SLAB AND PARAPET WITH QC/QA	78	55/58
512	10100	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	530	51/58
516	13600	SF	1" PREFORMED EXPANSION JOINT FILLER	91	
516	13900	SF	2" PREFORMED EXPANSION JOINT FILLER	409	
601	21000	SY	CONCRETE SLOPE PROTECTION	20	
840	20000	SF	MECHANICALLY STABILIZED EARTH WALL	3,252	
840	21000	CY	WALL EXCAVATION	1,139	
840	22000	SY	FOUNDATION PREPARATION	491	
840	23000	CY	SELECT GRANULAR BACKFILL	1,666	
840	25010	FT	6" DRAINAGE PIPE, PERFORATED	543	
840	25020	FT	6" DRAINAGE PIPE, NON-PERFORATED	22	
840	26000	FT	CONCRETE COPING	277	
840	26050	SF	AESTHETIC SURFACE TREATMENT	3,252	
840	27000	DAY	ON-SITE ASSISTANCE	5	
					△6

ESTIMATED QUANTITIES

CALC.	DATE
DBL	2/17/2023
CHK'D	DATE
ATM	2/21/2023

ITEM	ITEM EXT.	UNIT	DESCRIPTION	TOTAL	SHT. REF.
			MSE WALL W6		
					△5
512	10100	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	122	
840	20000	SF	MECHANICALLY STABILIZED EARTH WALL	1,005	
840	21000	CY	WALL EXCAVATION	227	
840	22000	SY	FOUNDATION PREPARATION	111	
840	23000	CY	SELECT GRANULAR BACKFILL	479	
840	25010	FT	6" DRAINAGE PIPE, PERFORATED	156	
840	25020	FT	6" DRAINAGE PIPE, NON-PERFORATED	24	
840	26000	FT	CONCRETE COPING	73	
840	26050	SF	AESTHETIC SURFACE TREATMENT	1,005	
840	27000	DAY	ON-SITE ASSISTANCE	5	
					△6

NO.	DESCRIPTION	REV. BY	DATE
5	QUANTITY CHANGED	ACW	10/23/23
6	ITEM REMOVED	ACW	11/13/23

DESIGN AGENCY
ms consultants, inc.
2221 Schrock Road
Columbus, Ohio 43229

DESIGNED	DRAWN	REVIEWED	DATE
DBL	DBL	YSJ	11/5/2021
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DEA		2504767	

MSE WALL ESTIMATED QUANTITIES
BRIDGE NO. FRA-70-1301R
EASTBOUND I-70 OVER S.R. 315

FRA-70-13.01
PID No. 105430