UTILITIES

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

AES (DAYTON POWER AND LIGHT)
ATTN: WILLIAM WARD
william.ward@aes.com

MIAMI VALLEY LIGHTING
ATTN: STEVEN GAYLORD
steven.gaylo@aes.com

CENTERPOINT ENERGY (VECTREN)
ATTN: PUBLIC PROJECT
publicproject@centerpointenergy.com

LEVEL 3 COMMUNICATIONS (LUMEN)
ATTN: DANIEL GOETTE
relocations@lumen.com

AT&T
ATTN: HOWARD LAUDERMILK
HL1596@att.com

CITY OF MIAMISBURG
ATTN: VALERIE GRIFFIN
600 N. MAIN STREET
MIAMISBURG, OH
valerie.griffin@cityofmiamisburg.com

CHARTER COMMUNICATIONS
ATTN: MARY EVANS
Mary.Evans@charter.com

CITY OF WEST CARROLTON
300 E. CENTRAL AVENUE
WEST CARROLTON, OH 45449
service@westcarrolton.org

ODOT CENTRAL OFFICE
TRAFFIC/ITS
1606 W. BROAD STREET
COLUMBUS, OH 43223
(614) 387-4113
cen.its.lab@dot.ohio.gov

MONTGOMERY COUNTY ENVIRONMENTAL SERVICES
ATTN: KIRBY M. KING
19850 SPAULDING ROAD
KETTERING, OH 45332
P (937) 781-2543
kingki@mcohio.org

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

CLEARING AND GRUBBING

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

ENDANGERED BAT HABITAT REMOVAL

THIS PROJECT IS LOCATED WITHIN THE KNOWN HABITAT RANGES OF THE FEDERALLY LISTED AND PROTECTED INDIANA BAT, AND NORTHERN LONG-EARED BAT. NO TREES SHALL BE REMOVED UNDER THIS PROJECT FROM APRIL 1 THROUGH SEPTEMBER 30. ALL NECESSARY TREE REMOVAL SHALL OCCUR FROM OCTOBER 1 THROUGH MARCH 31. THIS REQUIREMENT IS NECESSARY TO AVOID AND MINIMIZE IMPACTS TO THESE SPECIES AS REQUIRED BY THE ENDANGERED SPECIES ACT (ESA). FOR THE PURPOSES OF THIS NOTE, A TREE IS DEFINED AS: A LIVE, DYING, OR DEAD WOODY PLANT, WITH A TRUNK 3 INCHES OR GREATER IN DIAMETER AT A HEIGHT OF 4.5 FEET ABOVE THE GROUND SURFACE, AND WITH A MINIMUM HEIGHT OF 13 FEET.

SURVEYING PARAMETERS

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS. SEE SHEET 2 OF THE PLANS FOR A TABLE CONTAINING PROJECT CONTROL INFORMATION.

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

PROJECT CONTROL

POSITIONING METHOD:	ODOT VRS
MONUMENT TYPE:	IRON PIN

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM:	NAVD 88
GEOID:	GEOID12B

HORIZONTAL POSITIONING

REFERENCE FRAME:	NAD_83(2011)(EPOCH:2010.0000)
ELLIPSOID:	GRS80
MAP PROJECTION:	LAMBERT CONFORMAL CONIC
COORDINATE SYSTEM:	STATE PLANE COORDINATES
COMBINED SCALE FACTOR:	1.000094479
ORIGIN OF COORDINATE SYSTEM:	NORTHING 0.000 EASTING 0.000

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH CMS 623.

UNITS ARE IN U.S. SURVEY FEET.

AIRWAY/HIGHWAY CLEARANCE FOR AIRPORTS AND HELIPORTS

THIS PROJECT HAS BEEN IDENTIFIED AS BEING WITHIN THE INFLUENCE AREA OF A PUBLIC USE AIRPORT OR HELIPORT. NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT AT MAXIMUM OPERATING HEIGHT SHALL EXCEED A HEIGHT OF 100 FT. IF ANY TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT WILL EXCEED THIS HEIGHT, FURTHER COORDINATION WITH THE FEDERAL AVIATION ADMINISTRATION (FAA), AND ODOT OFFICE OF AVIATION, WILL BE NECESSARY PRIOR TO ERECTING SUCH TEMPORARY STRUCTURES OR OPERATING SUCH EQUIPMENT ON THE PROJECT. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT FORM 7460-1 TO THE FAA. NOTIFY THE ODOT OFFICE OF AVIATION WHEN SUBMITTING AN FAA FORM 7460-1.

NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT SHALL EXCEED THE PERMISSIBLE HEIGHT, UNTIL A COPY OF THE FAA APPROVAL AND ODOT OFFICE OF AVIATION PERMIT HAS BEEN FURNISHED TO THE PROJECT ENGINEER.

EXPRESS PROCESSING CENTER
THE FEDERAL AVIATION ADMINISTRATION
SOUTHWEST REGIONAL OFFICE
AIR TRAFFIC AIRSPACE BRANCH ASW-520
2601 MEACHAN BLVD.
FORT WORTH, TX 76137-4298

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF AVIATION
2829 WEST DUBLIN-GRANVILLE ROAD
COLUMBUS, OHIO 43235
614-387-2346

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E

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

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

REFER TO THE MANUFACTURER'S INSTRUCTIONS REGARDING THE INSTALLATION OF, AND THE GRADING AROUND THE FOUNDATION TUBES AND GROUND STRUT. THE TOP OF ANY FOUNDATION TUBE SHOULD BE LESS THAN 4 INCHES ABOVE THE GROUND. THE PLACEMENT OF THE FOUNDATION TUBES SHOULD BE AN APPROPRIATE DEPTH BELOW THE LEVEL LINE IN ORDER TO MAINTAIN THE FINISHED GUARDRAIL HEIGHT OF 31 INCHES FROM THE EDGE OF THE SHOULDER.

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

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

ITEM 202 REMOVAL MISC.: RIPRAP REMOVED

THIS ITEM SHALL INCLUDE THE COMPLETE REMOVAL AND DISPOSAL OF THE RIPRAP AS CALLED OUT ON THE PLANS AND AS DIRECTED BY THE ENGINEER.

PAYMENT FOR ITEM 202 REMOVAL MISC.: RIPRAP REMOVED SHALL BE AT THE UNIT BID PRICE PER SQUARE YARD AND SHALL INCLUDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO REMOVE AND DISPOSE OF THE RIPRAP.

ITEM 654 RENOVATING EXISTING SOIL, AS PER PLAN.

THIS ITEM SHALL INCLUDE THE COMPLETE RENOVATION OF EXISTING SOIL AS CALLED OUT ON PLAN SHEETS 45 - 46 AND AS DIRECTED BY THE ENGINEER.

PAYMENT FOR ITEM 654 RENOVATING EXISITNG SOIL, AS PER PLAN SHALL BE AT THE UNIT BID PRICE PER THOUSAND SQUARE FEET AND SHALL INCLUDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO RENOVATE THE EXISTING SOIL.

ITEM SPECIAL - FILL AND PLUG EXISTING CONDUIT

THIS ITEM CONSISTS OF THE CONSTRUCTION OF BULKHEADS IN AN EXISTING 15 INCH DIAMETER CONDUIT AND FILLING THE AREA SEALED OFF WITH ITEM 613, SAND OR OTHER MATERIAL APPROVED BY THE ENGINEER.

LOCATE THE BULKHEADS AT THE LIMITS OF THE AREA TO BE FILLED, AS INDICATED ON THE PLANS. THE BULKHEADS CONSIST OF BRICK OR CONCRETE MASONRY WITH A MINIMUM THICKNESS OF 12 INCHES.

PUMP THE FILL MATERIAL INTO PLACE OR BY OTHER MEANS APPROVED BY THE ENGINEER, SO THAT AFTER SETTLEMENT, AT LEAST 90 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CONDUIT, FOR ITS ENTIRE LENGTH IS FILLED. THE LENGTH OF THE FILLED AND PLUGGED CONDUIT TO BE PAID FOR IS THE ACTUAL NUMBER OF FEET (MEASURED ALONG THE CENTERLINE OF EACH CONDUIT FROM OUTER FACE TO OUTER FACE OF BULKHEADS FILLED AND PLUGGED AS DESCRIBED ABOVE.

IN LIEU OF FILLING AND PLUGGING THE EXISTING CONDUIT, THE PIPE MAY BE CRUSHED AND BACKFILLED PER ITEM 203, OR IT MAY BE REMOVED. THE LENGTH, MEASURED AS PROVIDED ABOVE, WILL BE PAID FOR AT THE CONTRACT PRICE PER FOOT FOR, ITEM SPECIAL, FILL AND PLUG EXISTING CONDUIT.

ITEM 608 WALKWAY, MISC.: 4" STAMPED WALK.

THIS ITEM SHALL INCLUDE THE CONSTRUCTION OF A 4" STAMPED WALK AS CALLED OUT ON PLAN SHEET 166 AND AS DIRECTED BY THE ENGINEER.

PAYMENT FOR ITEM 608 WALKWAY, MISC.: 4" STAMPED WALK SHALL BE AT THE UNIT BID PRICE PER SQUARE FOOT AND SHALL INCLUDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO CONSTRUCT THE WALKWAY.

ITEM 202 GUARDRAIL REMOVED, AS PER PLAN

MANY OF THE EXISTING GUARDRAIL POSTS ARE SET IN A CONCRETE FOUNDATION. THIS ITEM INCLUDES REMOVAL OF THE POST AND CONCRETE FOUNDATION AND BACKFILL OF THE RESULTING CAVITY IN ACCORDANCE WITH SECTION 203.

PAYMENT FOR ITEM 202 GUARDRAIL REMOVED SHALL BE AT THE UNIT BID PRICE PER FOOT AND SHALL INCLUDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO REMOVE AND DISPOSE OF THE GUARDRAIL INCLUDING POSTS AND CONCRETE FOUNDATIONS.

CALCULATED VLC
CHECKED RJM

GENERAL NOTES

MOT-725-14.41

SHEET NUM.											PART.				ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
10	39	40	41		42	43	83	171	OFFICE CALCS		01/SAF/21	02/S>2/21	03/MPO/28	04/ENH/31						
																			ROADWAY	
									LUMP				LUMP		201	11000	LS		CLEARING AND GRUBBING	
		1											1		202	20010	1	EACH	HEADWALL REMOVED	
		1,593											1,593		202	23000	1,593	SY	PAVEMENT REMOVED	
		830											830		202	30000	830	SF	WALK REMOVED	
		4											4		202	30600	4	SY	CONCRETE MEDIAN REMOVED	
		936											936		202	32000	936	FT	CURB REMOVED	
		78											78		202	32500	78	FT	CURB AND GUTTER REMOVED	
		44											44		202	32600	44	FT	GUTTER REMOVED	
		64											64		202	35100	64	FT	PIPE REMOVED, 24" AND UNDER	
		43											43		202	35200	43	FT	PIPE REMOVED, OVER 24"	
		1,074											1,074		202	38000	1,074	FT	GUARDRAIL REMOVED	
		318											318		202	38001	318	FT	GUARDRAIL REMOVED, AS PER PLAN	9
		8											8		202	58300	8	EACH	CATCH BASIN OR INLET REMOVED	
		1											1		202	58500	1	EACH	CATCH BASIN ABANDONED	
		8											8		SPECIAL	20270000	8	FT	FILL AND PLUG EXISTING CONDUIT 15"	9
		1,255											1,255		202	98400	1,255	SF	REMOVAL MISC.: RIPRAP REMOVED	9
			2,023										2,023		203	10000	2,023	CY	EXCAVATION	
			1,432										1,432		203	20000	1,432	CY	EMBANKMENT	
							86		1,201				1,287		204	10000	1,287	SY	SUBGRADE COMPACTION	
	762.5												762.5		606	15050	762.5	FT	GUARDRAIL, TYPE MGS	
	12.5												12.5		606	17360	12.5	FT	GUARDRAIL, TYPE MGS, LONG-SPAN	
	5												5		606	26150	5	EACH	ANCHOR ASSEMBLY, MGS TYPE E MASH 2016	10
	4												4		606	26550	4	EACH	ANCHOR ASSEMBLY, MGS TYPE T	
	1												1		606	35002	1	EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	
	23,225												23,225		608	10000	23,225	SF	4" CONCRETE WALK	
	9												9		608	10001	9	SF	4" CONCRETE WALK, AS PER PLAN	10
	1,939												1,939		608	52000	1,939	SF	CURB RAMP	
	154							2,431					2,585		608	98000	2,585	SF	WALKWAY, MISC.: TYPE A	9
	246												246		622	10160	246	FT	CONCRETE BARRIER, SINGLE SLOPE, TYPE D	
	1												1		622	25000	1	EACH	CONCRETE BARRIER END SECTION, TYPE D	
	3												3		622	25050	3	EACH	CONCRETE BARRIER, END ANCHORAGE, REINFORCED, TYPE D	
					10.43								10.43		654	10001	10.43	MSF	RENOVATING EXISTING SOIL, AS PER PLAN	9
																			EROSION CONTROL	
					3.94								3.94		601	11000	3.94	SY	RIPRAP, TYPE D	
5						2							7		601	21050	7	SY	TIED CONCRETE BLOCK MAT WITH TYPE 1 UNDERLAYMENT	
					455								455		601	37500	455	FT	PAVED GUTTER, TYPE 1-2	
416													416		659	00300	416	CY	TOPSOIL	
3,752													3,752		659	00500	3,752	SY	SEEDING AND MULCHING, CLASS 1	
188													188		659	14000	188	SY	REPAIR SEEDING AND MULCHING	
188													188		659	15000	188	SY	INTER-SEEDING	
0.85													0.85		659	20000	0.85	TON	COMMERCIAL FERTILIZER	
0.78													0.78		659	31000	0.78	ACRE	LIME	
21													21		659	35000	21	MGAL	WATER	
					1,158.69								1,158.69		671	14000	1,158.69	SY	EROSION CONTROL MAT	
													LUMP		832	15000	LS		STORM WATER POLLUTION PREVENTION PLAN	
													LUMP		832	15002	LS		STORM WATER POLLUTION PREVENTION INSPECTIONS	
													LUMP		832	15010	LS		STORM WATER POLLUTION PREVENTION INSPECTION SOFTWARE	
									5,000				5,000		832	30000	5,000	EACH	EROSION CONTROL	
																			DRAINAGE	
					0.69								0.69		602	20000	0.69	CY	CONCRETE MASONRY	
						1,350							1,350		605	11110	1,350	FT	6" SHALLOW PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC	
100													100		605	13300	100	FT	6" UNCLASSIFIED PIPE UNDERDRAINS	
200						79							279		611	00510	279	FT	6" CONDUIT, TYPE F FOR UNDERDRAIN OUTLETS	
					59								59		611	04400	59	FT	12" CONDUIT, TYPE B	
					8								8		611	05900	8	FT	15" CONDUIT, TYPE B	
					5								5		611	07600	5	FT	18" CONDUIT, TYPE C	
					21								21		611	10400	21	FT	24" CONDUIT, TYPE B	
					5								5		611	10600	5	FT	24" CONDUIT, TYPE C	
					15								15		611	16400	15	FT	36" CONDUIT, TYPE B	
					65								65		611	16600	65	FT	36" CONDUIT, TYPE C	
					2								2		611	98150	2	EACH	CATCH BASIN, NO. 3	
					1								1		611	98540	1	EACH	CATCH BASIN, NO. 2-4	
					1								1		611	98630	1	EACH	CATCH BASIN ADJUSTED TO GRADE	
					3								3		611	98710	3	EACH	INLET, NO. 2-6	

CALCULATED VLC
CHECKED RJM

GENERAL SUMMARY

MOT-725-14.41

SHEET NUM.										PART.				ALT	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
10	39	42	43	83		154	155	156	OFFICE CALCS	01/SAF/21	02/S>2/21	03/MPO/28	04/ENH/31	(X)						
																			DRAINAGE (CONT.)	
		1										1			611	99114	1	EACH	INLET, NO. 3 FOR SINGLE SLOPE BARRIER, TYPE D	
		4										4			611	99574	4	EACH	MANHOLE, NO. 3	
		3										3			611	99654	3	EACH	MANHOLE ADJUSTED TO GRADE	
		2										2			611	99660	2	EACH	MANHOLE RECONSTRUCTED TO GRADE	
3			1									4			611	99710	4	EACH	PRECAST REINFORCED CONCRETE OUTLET	
																			PAVEMENT	
4				2					147			153			301	56000	153	CY	ASPHALT CONCRETE BASE, PG64-22, (449)	
									197			197			304	20000	197	CY	AGGREGATE BASE	
				1					89			90			407	20000	90	GAL	NON-TRACKING TACK COAT	
				1								1			441	70500	1	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (449), (DRIVEWAYS)	
									34			34			442	22100	34	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (449)	
									43			43			442	22400	43	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A (449)	
				70								70			452	12010	70	SY	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	
									89			89			452	13010	89	SY	9" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	
	124											124			609	14000	124	FT	CURB, TYPE 2-A	
	1,592											1,592			609	26000	1,592	FT	CURB, TYPE 6	
	5											5			609	71000	5	SF	CONCRETE MEDIAN	
																			WATER WORK	
	2											2			638	10300	2	EACH	FIRE HYDRANT EXTENDED AND ADJUSTED TO GRADE	
																			LIGHTING	
							LUMP					LUMP			202	75700	LS		CONTROL CENTER REMOVED	
						2	4					6			625	00480	6	EACH	CONNECTION, UNFUSED PERMANENT	
						4	6	5				15			625	14000	15	EACH	LIGHT POLE FOUNDATION, 24" X 6' DEEP	
						2	6					8			625	14001	8	EACH	LIGHT POLE FOUNDATION, 24" X 6' DEEP, AS PER PLAN	153
						1						1			625	15200	1	EACH	LIGHT TOWER FOUNDATION, 36" X 25' DEEP	
						1						1			625	21000	1	EACH	LIGHT TOWER MAINTENANCE PLATFORM, TYPE A	
								1				1			625	21400	1	EACH	LIGHT TOWER MAINTENANCE PLATFORM, MISC.: REMOVE PLATFORM	159
						182						182			625	25014	182	FT	CONDUIT, 3/4", 725.052	
						2,052	1,298	428				3,778			625	25410	3,778	FT	CONDUIT, 2", 725.052	
							45					45			625	25506	45	FT	CONDUIT, 3", 725.052	
						40	463					503			625	25900	503	FT	CONDUIT, JACKED OR DRILLED, 2"	
						3						3			625	27520	3	EACH	REMOVAL OF LUMINAIRE AND REERECTION	
						2,052	1,196	428				3,676			625	29010	3,676	FT	TRENCH, 30" DEEP	
						2						2			625	29901	2	EACH	JUNCTION BOX, AS PER PLAN, WALL MOUNTED, 6"x6"	153
						11	11	1				23			625	30530	23	EACH	PULL BOX, 725.06, SIZE 18	
							1					1			625	31510	1	EACH	PULL BOX REMOVED	
						20	28	6				54			625	32000	54	EACH	GROUND ROD	
							2					2			625	34000	2	EACH	POWER SERVICE	
						1						1			625	35020	1	EACH	RE-ERECT EXISTING LIGHT TOWER	
						2,052	1,196	428				3,676			625	36010	3,676	FT	UNDERGROUND WARNING/MARKING TAPE	
								LUMP				LUMP			SPECIAL	62540000	LS		MAINTAIN EXISTING LIGHTING	153
								1				1			625	75360	1	EACH	LIGHT TOWER REMOVED FOR STORAGE	
							1					1			625	75510	1	EACH	POWER SERVICE REMOVED	
								1				1			625	75540	1	EACH	LIGHT TOWER FOUNDATION REMOVED	
							1					1			625	75800	1	EACH	DISCONNECT CIRCUIT	
							1					1			630	89812	1	EACH	REMOVAL OF WOOD POLE AND DISPOSAL	
						2	3					5			632	70400	5	EACH	CONDUIT RISER, 2" DIAMETER	
							1					1			632	89300	1	EACH	WOOD POLE	
																			LIGHTING ALTERNATES	
						6	12	5				23		X	625	10481	23	EACH	LIGHT POLE, AESTHETIC, AS PER PLAN (ALTERNATE 1)	153
						6	12	5				23		X	625	27550	23	EACH	LUMINAIRE, DECORATIVE (ALTERNATE 1)	153
						14	32	10				56		X	625	00450	56	EACH	CONNECTION, FUSED PULL APART (ALTERNATE 1)	153
						7	16	5				28		X	625	00460	28	EACH	CONNECTION, UNFUSED PULL APART (ALTERNATE 1)	153
						6,726	5,367	1,374				13,467		X	625	23200	13,467	FT	NO. 4 AWG 2400 VOLT DISTRIBUTION CABLE (ALTERNATE 1)	153
						210	420	175				805		X	625	23400	805	FT	NO. 10 AWG POLE AND BRACKET CABLE (ALTERNATE 1)	153
							4					4		X	625	27502	4	EACH	LUMINAIRE, UNDERPASS, SOLID STATE (LED), ASYMMETRIC, 240V, 3000K (ALTERNATE 1)	153
						6	12	5				23		X	625	10481	23	EACH	LIGHT POLE, AESTHETIC, AS PER PLAN (ALTERNATE 2)	170
						6	12	5				23		X	625	27550	23	EACH	LUMINAIRE, DECORATIVE (ALTERNATE 2)	170
						14	32	10				56		X	625	00450	56	EACH	CONNECTION, FUSED PULL APART (ALTERNATE 2)	153
						13	28	10				51		X	625	00460	51	EACH	CONNECTION, UNFUSED PULL APART (ALTERNATE 2)	153
						8,808	6,976	1,832				17,616		X	625	23200	17,616	FT	NO. 4 AWG 2400 VOLT DISTRIBUTION CABLE (ALTERNATE 2)	153
						336	672	280				1,288		X	625	23400	1,288	FT	NO. 10 AWG POLE AND BRACKET CABLE (ALTERNATE 2)	153
							4					4		X	625	27502	4	EACH	LUMINAIRE, UNDERPASS, SOLID STATE (LED), ASYMMETRIC, 240V, 3000K (ALTERNATE 2)	153

CALCULATED VLC
CHECKED RJM

GENERAL SUMMARY

MOT-725-14.41

SHEET NUM.							PART.				ALT	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
116	117	148		173			01/SAF/21	02/SAF/21	03/MPO/28	04/ENH/31	(X)						
																TRAFFIC SIGNALS (CONT.)	
95.75							92		3.75			630	80100	95.75	SF	SIGN, FLAT SHEET	
126							126					630	80224	126	SF	SIGN, OVERHEAD EXTRUSHEET	
	1						1					630	89812	1	EACH	REMOVAL OF WOOD POLE AND DISPOSAL	
19							19					632	05006	19	EACH	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE	
4									4			632	20740	4	EACH	PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AUDIBLE	
4									4			632	20751	4	EACH	ACCESSIBLE PEDESTRIAN PUSHBUTTON, AS PER PLAN	114
19							19					632	25000	19	EACH	COVERING OF VEHICULAR SIGNAL HEAD	
4									4			632	25010	4	EACH	COVERING OF PEDESTRIAN SIGNAL HEAD	
408									408			632	40200	408	FT	SIGNAL CABLE, 2 CONDUCTOR, NO. 14 AWG	
4,789							4,362		427			632	40700	4,789	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	
6							6					632	64011	6	EACH	SIGNAL SUPPORT FOUNDATION, AS PER PLAN	114
		8						8				632	64020	8	EACH	PEDESTAL FOUNDATION	
3									3			632	64021	3	EACH	PEDESTAL FOUNDATION, AS PER PLAN	114
		3,247						3,247				632	67300	3,247	FT	POWER CABLE, 3 CONDUCTOR, NO. 8 AWG	
		1,595						1,595				632	68300	1,595	FT	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG	
310	113						423					632	69320	423	FT	POWER CABLE, 3 CONDUCTOR, NO. 2 AWG	
2							2					632	70000	2	EACH	POWER SERVICE	
		2						2				632	70001	2	EACH	POWER SERVICE, AS PER PLAN	147
	3	3					3	3				632	70400	6	EACH	CONDUIT RISER, 2" DIAMETER	
1							1					632	72131	1	EACH	SIGNAL SUPPORT, TYPE TC-81.22, DESIGN 12, AS PER PLAN	114
2							2					632	72141	2	EACH	SIGNAL SUPPORT, TYPE TC-81.22, DESIGN 13, AS PER PLAN	114
2							2					632	72151	2	EACH	SIGNAL SUPPORT, TYPE TC-81.22, DESIGN 14, AS PER PLAN	114
1							1					632	78101	1	EACH	COMBINATION SIGNAL SUPPORT, TYPE TC-12.31, DESIGN 6, AS PER PLAN	114
	1						1					632	89300	1	EACH	WOOD POLE	
3									3			632	90008	3	EACH	PEDESTAL, 15', TRANSFORMER BASE	114
		8						8				632	90010	8	EACH	PEDESTAL, MISC.: PEDESTAL, 15' TRANSFORMER BASE	147
2							2					632	90100	2	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	
2							2					633	65511	2	EACH	CABINET, TYPE TS-2, AS PER PLAN	115
2							2					633	67100	2	EACH	CABINET FOUNDATION	
2							2					633	67200	2	EACH	CONTROLLER WORK PAD	
2							2					633	74000	2	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS)	
	3,101						3,101					804	15010	3,101	FT	FIBER OPTIC CABLE, 24 FIBER	
	1,389						1,389					809	24500	1,389	FT	CONDUIT, 4", MULTICELL, HDPE WITH 4 * 1* INNERDUCTS	
2							2					809	60040	2	EACH	CCTV IP-CAMERA SYSTEM, QUAD MULTI-VIEW FIXED WITH PTZ	
		807					807					809	64550	807	FT	ETHERNET CABLE, OUTDOOR-RATED	
		2						2				809	65990	2	EACH	ITS DEVICE, MISC.:RELOCATE CCTV IP-CAMERA SYSTEM, WRONG WAY	147
6							6					809	69001	6	EACH	ADVANCE RADAR DETECTION, AS PER PLAN	115
3							3					809	69101	3	EACH	STOP LINE RADAR DETECTION, AS PER PLAN	115
2							2					809	69123	2	EACH	ATC CONTROLLER, AS PER PLAN	114
		2						2				809	69130	2	EACH	WRONG WAY DETECTION SYSTEM	
	LUMP						LUMP					809	70050	LS		AS-BUILT CONSTRUCTION PLANS	
																RETAINING WALLS (002)	
				LUMP					LUMP			503	21300	LS		UNCLASSIFIED EXCAVATION	
				2,918					2,918			509	10000	2,918	LB	EPOXY COATED STEEL REINFORCEMENT	
				32					32			511	46210	32	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL INCLUDING FOOTING	
				32					32			512	10100	32	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
				7					7			512	33000	7	SY	TYPE 2 WATERPROOFING	
				46					46			516	13600	46	SF	1" PREFORMED EXPANSION JOINT FILLER	
				23					23			518	21200	23	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
				76					76			518	39800	76	FT	4" PERFORATED CORRUGATED PLASTIC PIPE	
				70					70			518	39900	70	FT	4" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	

CALCULATED VLC
CHECKED RJM

GENERAL SUMMARY

MOT-725-14.41

SHEET NUM.										PART.				ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
12	13	14	15	171	182				OFFICE CALCS	01/SAF/21	02/SAF/21	03/MPO/28	04/ENH/31						
																		RETAINING WALLS (003)	
					50							50		203	20000	50	CY	EMBANKMENT	
					LUMP							LUMP		503	21300	LS		UNCLASSIFIED EXCAVATION	178
					34,963							34,963		509	10000	34,963	LB	EPOXY COATED STEEL REINFORCEMENT	
					150							150		511	46011	150	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING, AS PER PLAN	178
					4,050							4,050		511	71200	4,050	SF	CONCRETE, MISC.: FORMLINER	168
					2								2	511	81300	2	EACH	CONCRETE, MISC.: AESTHETIC TEST PANEL	168
					202							202		516	13600	202	SF	1" PREFORMED EXPANSION JOINT FILLER	
					400							400		518	20000	400	SY	PREFABRICATED GEOCOMPOSITE DRAIN	
					17							17		518	21050	17	SY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
					450							450		518	39800	450	FT	4" PERFORATED CORRUGATED PLASTIC PIPE	179
					45							45		518	39900	45	FT	4" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	179
					5,190							5,190		520	10001	5,190	SF	PNEUMATICALLY PLACED CONCRETE SHOTCRETE, AS PER PLAN	179
				6									6	SPECIAL	53000400	6	EACH	STRUCTURES, AESTHETIC LOGO	168
					363							363		SPECIAL	53051100	363	EACH	RETAINING WALL, SOIL NAIL, 20' LONG, MINIMUM	178
					11							11		SPECIAL	53051110	11	EACH	RETAINING WALL, SOIL NAIL VERIFICATION TEST	178
					19							19		SPECIAL	53051120	19	EACH	RETAINING WALL, SOIL NAIL PROOF TEST	178
																		RETAINING WALLS (003) ALTERNATES	
					530							530		512	10100	530	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (ALTERNATE 1)	
				321								321		512	10050	321	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY) (ALTERNATE 2)	168
				107					102			209		512	10100	209	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (ALTERNATE 2)	168
																		MAINTENANCE OF TRAFFIC	
		80										80		614	11110	80	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
									2			2		SPECIAL	61411300	2	EACH	WORK ZONE TRAFFIC SIGNAL	113
									LUMP			LUMP		614	12420	LS		DETOUR SIGNING	
5												5		614	12500	5	EACH	REPLACEMENT SIGN	
20												20		614	12600	20	EACH	REPLACEMENT DRUM	
			29									29		614	12800	29	EACH	WORK ZONE RAISED PAVEMENT MARKER	
	4											4		614	18601	4	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	13
			0.24									0.24		614	20110	0.24	MILE	WORK ZONE LANE LINE, CLASS I, 6", 642 PAINT	
			0.72									0.72		614	22110	0.72	MILE	WORK ZONE EDGE LINE, CLASS I, 6", 642 PAINT	
			401									401		614	23210	401	FT	WORK ZONE CHANNELIZING LINE, CLASS I, 12", 642 PAINT	
			12									12		614	26200	12	FT	WORK ZONE STOP LINE, CLASS I, 642 PAINT	
			5									5		614	30200	5	EACH	WORK ZONE ARROW, CLASS I, 642 PAINT	
11												11		616	10000	11	MGAL	WATER	
			2,922									2,922		642	30000	2,922	FT	REMOVAL OF PAVEMENT MARKING	
			8									8		642	30020	8	EACH	REMOVAL OF PAVEMENT MARKING	
																		INCIDENTALS	
									LUMP			LUMP		614	11000	LS		MAINTAINING TRAFFIC	
									15			15		619	16010	15	MNTH	FIELD OFFICE, TYPE B	
									LUMP			LUMP		623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
									LUMP			LUMP		624	10000	LS		MOBILIZATION	

CALCULATED VLC
CHECKED RJM

GENERAL SUMMARY

MOT-725-14.41

REF. NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	601 RIPRAP, TYPE D	601 PAVED GUTTER, TYPE 1-2	602 CONCRETE MASONRY	611 12" CONDUIT, TYPE B	611 15" CONDUIT, TYPE B	611 18" CONDUIT, TYPE C	611 24" CONDUIT, TYPE B	611 24" CONDUIT, TYPE C	611 36" CONDUIT, TYPE B	611 36" CONDUIT, TYPE C	611 CATCH BASIN, NO. 3	611 CATCH BASIN, NO. 2-4	611 CATCH BASIN ADJUSTED TO GRADE	611 INLET, NO. 2-6	611 INLET NO. 3 FOR SINGLE SLOPE BARRIER, TYPE D	611 MANHOLE, NO. 3	611 MANHOLE ADJUSTED TO GRADE	611 MANHOLE RECONSTRUCTED TO GRADE	654 RENOVATING EXISTING SOIL, AS PER PLAN	671 EROSION CONTROL MAT
					SY	FT	CY	FT	FT	FT	FT	FT	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	MSF	SY
D-1	47	753+07.48		RT																	1			
AVFS-1	47-49	3+13.71	6+74.10	LT																			1.82	202.3
D-2	49	756+28.50		RT																	1			
D-3	49	757+11.06		RT													1							
D-4	49	758+12.81	758+27.83	RT										15						1				
AVFS-2	49-51	7+56.38	10+53.24	LT																			2.39	265.02
D-5	51	760+36.91	760+54.65	RT	3.94		0.69							26										
D-6	51	760+97.98		RT				5										1						
D-7	51	762+70.01		RT					8										1					
D-8	51	762+62.51	762+77.51	RT									15							1				
D-9	51	764+98.94	765+00.88	RT				9										1						
D-9A	51	764+99.91		RT																		1		
PG-1	51	761+25.00	765+50.00	RT		425																		
AVFS-3	51-53	14+61.75	16+89.67	LT																			1.81	201.6
D-10	53	766+42.90	766+52.88	RT										11										
D-11	53	767+05.15	767+18.10	RT		5								13		1								
D-12	53	769+76.04		RT				7			15	5								1				
D-13	53	769+73.88		RT							6							1						
PG-2	53	765+50.00	765+75.00	RT		25																		
AVFS-4	53-55	17+99.75	22+77.47	LT																			2.46	273.14
D-14	55	773+11.42	773+21.27	RT				14							1									
D-15	55	773+10.01		RT																		1		
D-16	55	773+63.34		RT																	1			
D-17	55	774+88.52	775+00.00	LT				24							1									
D-18	55	774+83.52	774+88.52	LT						5										1				
AVFS-5	55-57	25+00.00	28+89.93	RT																			1.95	216.63
TOTALS CARRIED TO GENERAL SUMMARY					3.94	455	0.69	59	8	5	21	5	15	65	2	1	1	3	1	4	3	2	10.43	1158.69

NOTE: THE STATIONING ASSOCIATED WITH THE PROPOSED DRAINAGE QUANTITIES ARE BASED UPON THE EXISTING CENTERLINE STATIONING OF SR 725. THE AMENDED VEGETATED FILTER STRIP QUANTITIES ARE BASED UPON THE BASELINE OF CONSTRUCTION OF THE WALK.

CALCULATED JDC
CHECKED RJM

DRAINAGE SUB-SUMMARY

MOT-725-14.41

Walls 2 Quantities

ESTIMATED QUANTITIES

ITEM	EXT.	QUANTITY	UNIT	DESCRIPTION	REF.
503	21300	LS		UNCLASSIFIED EXCAVATION	
509	10000	2918	LB	EPOXY COATED STEEL REINFORCEMENT	
511	46210	32	CY	CLASS QC1 CONCRETE, RETAINING WALL INCLUDING FOOTING	
512	10100	32	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
512	33000	7	SY	TYPE 2 WATERPROOFING	
516	13600	46	SF	1" PREFORMED EXPANSION JOINT FILLER	
518	21200	23	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
518	39800	76	FT	4" PERFORATED CORRUGATED PLASTIC PIPE	
518	39900	70	FT	4" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	

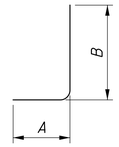
DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO THE 9TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2020 AND THE ODOT BRIDGE DESIGN MANUAL, 2020.

DESIGN DATA:

CONCRETE QC1	COMPRESSIVE STRENGTH 4000 PSI (FACING)
CONCRETE QC5	COMPRESSIVE STRENGTH 4000 PSI (DRILLED SHAFTS)
REINFORCING STEEL	ASTM, A615, OR A996 GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI

BAR BENDING DIAGRAMS



TYPE-1

MARK	NUMBER TOTAL	LENGTH	WEIGHT (LBS)	TYPE	DIMENSIONS A	B	C	D	E	INC.
WALL 2										
2W501	10	14'-6"	152	ST.						
2W502	20	30'-0"	626	ST.						
2W503	18	6'-8"	126	1	64.5	15.5				
2W504	12	14'-2"	178	ST.						
2W505	14	20'-0"	293	ST.						
2W506	20	24'-0"	501	ST.						
	1	7'-4"			72	15.5				
2W507	SER. OF	TO	106	1						1"
	13	8'-3"			84	15.5				
2W508	14	11'-8"	171	ST.						
	1	8'-3"			84	15.5				
2W509	SER. OF	TO	56	1						2"
	7	6'-10"			66	15.5				
2W510	10	14'-0"	147	ST.						
	1	6'-10"			66	15.5				
2W511	SER. OF	TO	20	1						1"
	9	7'-4"			72	15.5				
2W5012	18	7'-2"	135	1	64.5	21.5				
	1	7'-4"			66	21.5				
2W513	SER. OF	TO	20	1						1"
	9	7'-10"			72	21.5				
	1	7'-10"			72	21.5				
2W514	SER. OF	TO	28	1						1"
	13	8'-9"			84	21.5				
	1	8'-9"			84	21.5				
2W515	SER. OF	TO	15	1						2"
	7	7'-4"			66	21.5				
2W5016	94	3'-6"	344	ST.						
		TOTAL =	2,918							

ABBREVIATIONS:

BOT. - BOTTOM
℄ - CENTERLINE
CIP - CAST-IN-PLACE
CLR. - CLEAR
CONST. - CONSTRUCTION
DIA. - DIAMETER
E.F. - EACH FACE
EL. - ELEVATION
EX. - EXISTING
FF - FAR FACE
MAX. - MAXIMUM
MIN. - MINIMUM
NF - NEAR FACE
PROP. - PROPOSED
R/W - RIGHT OF WAY
STA. - STATION
TYP. - TYPICAL
W/ - WITH

NOTES:

1. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED, AND THE THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, 2W501:
   - 2W: LOCATION OF THE BARS IN THE STRUCTURE (WALL 2)
   - 5: BAR SIZE DIMENSION NO. 5
   - 01: SEQUENCE NUMBER

2. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED.

3. "ST." INDICATES A STRAIGHT BAR.

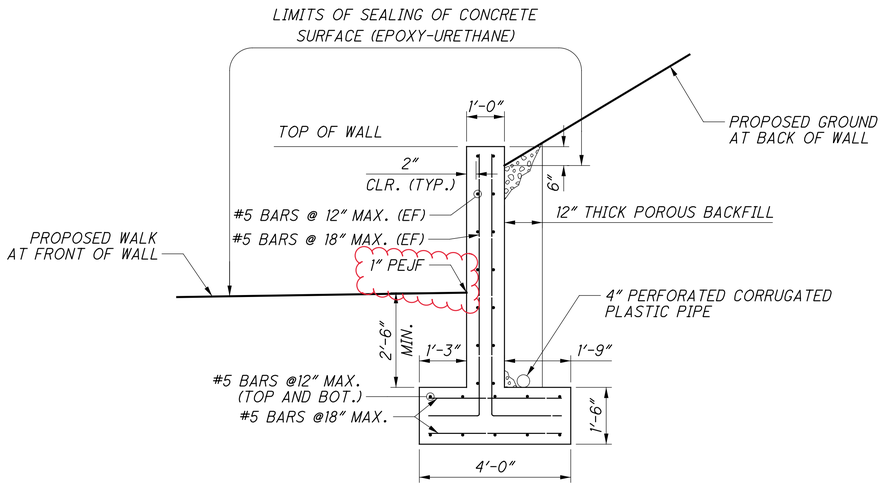
4. ALL REINFORCING TO BE EPOXY COATED.

DESIGN AGENCY
JMT
2000 Corporate Exchange Drive, Suite 200, Columbus, OH 43231

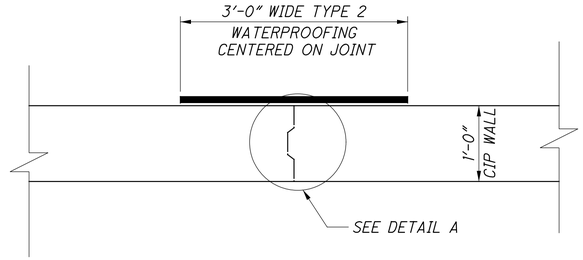
DESIGNED PPA | DRAWN PPA | REVIEWED RJM | DATE 1/11/2024 | CHECKED SOL | REVISED | STRUCTURE FILE NUMBER

ESTIMATED QUANTITIES, REINFORCING SCHEDULE & GENERAL NOTES
RETAINING WALL 2

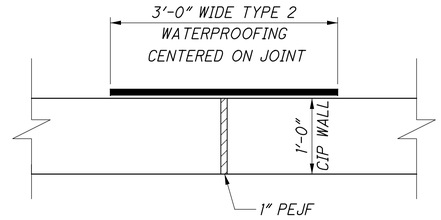
MOT-725-14.41
PID No. 108619



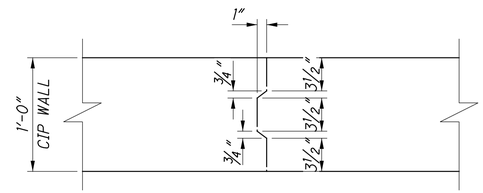
SECTION



CONTRACTION JOINT DETAILS



EXPANSION JOINT DETAILS



DETAIL A

NOTES:

1. SEE SHEET 172 FOR WALL 2 PLAN AND PROFILE.
2. SEE SHEET 173 FOR REINFORCING SCHEDULE.

DESIGN AGENCY
2000 Corporate Exchange Drive, Suite 200, Columbus, OH 43231

DESIGNED	DRAWN	REVIEWED	DATE
PPA	PPA	RJM	1/11/2024
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SOL			

RETAINING WALL DETAILS
RETAINING WALL 2

MOT-725-14.41
PID No. 108619

3 / 4

174
220

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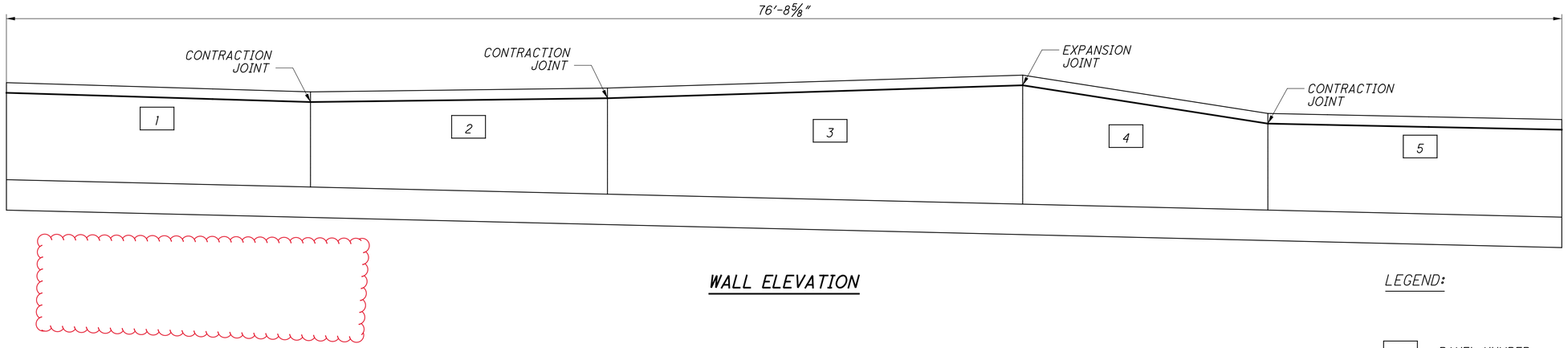
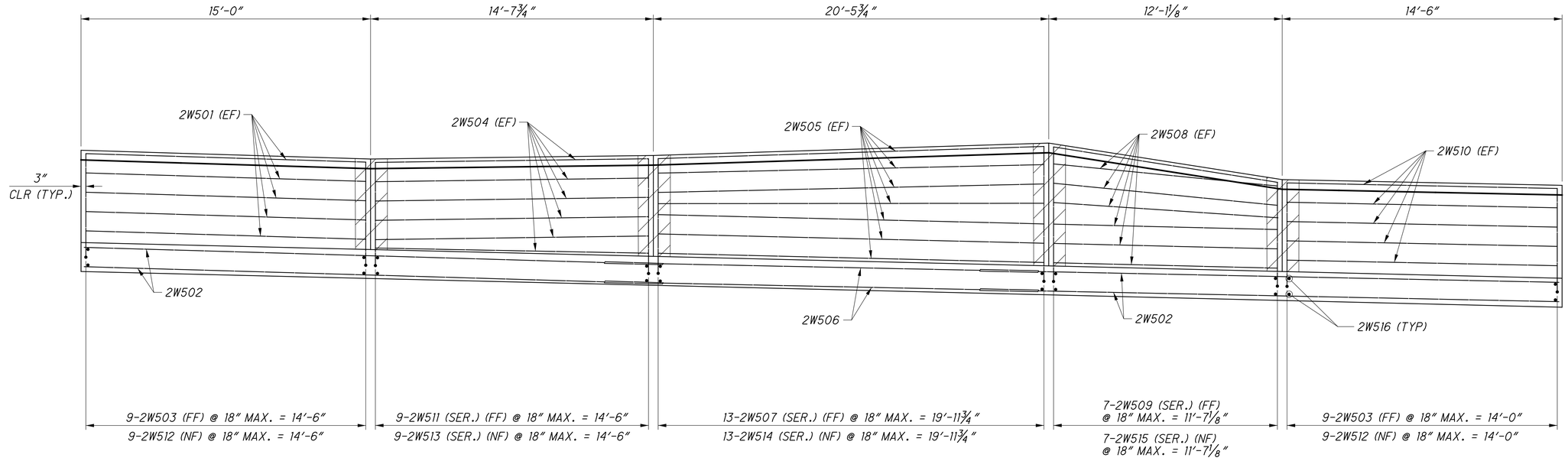


WALL ELEVATION

LEGEND:

X — PANEL NUMBER

TYPE 2 WATERPROOFING



REINFORCING LAYOUT

NOTES:

1. SEE SHEET 174 FOR ADDITIONAL WALL DETAILS.
2. FIELD BEND BARS WHERE REQUIRED.
3. ALL LONGITUDINAL BARS SPACED AT 12" UNLESS OTHERWISE NOTED.

DESIGN AGENCY
JMT
3600 Corporate Exchange Drive, Suite 250, Columbus, OH 43231

DESIGNED PPA | DRAWN PPA | REVIEWED RJM | DATE 1/11/2024
CHECKED SOL | REVISED | STRUCTURE FILE NUMBER

RETAINING WALL DETAILS
RETAINING WALL 2

MOT-725-14.41
PID No. 108619

4 / 4

175
220

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ITEM 520 - PNEUMATICALLY PLACED CONCRETE SHOTCRETE, AS PER PLAN

ITEM 518 - PREFABRICATED GEOCOMPOSITE DRAIN

ITEM 518 - 4" PERFORATED CORRUGATED PLASTIC PIPE

ITEM 518 - 4" CORRUGATED PLASTIC PIPE

ITEM 518 - POROUS BACKFILL WITH GEOTEXTILE FABRIC

1.0 DESCRIPTION.

SHOTCRETE FACING AND WALL DRAINAGE WORK CONSISTS OF FURNISHING ALL MATERIALS AND LABOR REQUIRED FOR PLACING AND SECURING GEOCOMPOSITE DRAINAGE MATERIAL, CONNECTION PIPES, WEEPHOLES, REINFORCING STEEL AND SHOTCRETE FOR THE TEMPORARY SHOTCRETE CONSTRUCTION FACING FOR THE SOIL NAIL WALL SHOWN ON THE PLANS. THE WORK SHALL INCLUDE ANY PREPARATORY TRIMMING AND CLEANING OF SOIL/ROCK SURFACES AND SHOTCRETE COLD JOINTS TO RECEIVE NEW SHOTCRETE.

SHOTCRETE SHALL COMPLY WITH THE REQUIREMENTS OF ACI 506.2, "SPECIFICATIONS FOR MATERIALS, PROPORTIONING AND APPLICATION OF SHOTCRETE," EXCEPT AS OTHERWISE SPECIFIED. SHOTCRETE SHALL CONSIST OF AN APPLICATION OF ONE OR MORE LAYERS OF CONCRETE CONVEYED THROUGH A HOSE AND PNEUMATICALLY PROJECTED AT A HIGH VELOCITY AGAINST A PREPARED SURFACE.

SHOTCRETE MAY BE PRODUCED BY EITHER A WET-MIX OR DRY-MIX PROCESS. THE WET-MIX PROCESS CONSISTS OF THOROUGHLY MIXING ALL THE INGREDIENTS EXCEPT ACCELERATING ADMIXTURES, BUT INCLUDING THE MIXING WATER, INTRODUCING THE MIXTURE INTO THE DELIVERY EQUIPMENT AND DELIVERING IT, BY POSITIVE DISPLACEMENT, TO THE NOZZLE. THE WET-MIX SHOTCRETE SHALL THEN BE AIR JETTED FROM THE NOZZLE AT HIGH VELOCITY ONTO THE SURFACE. THE DRY-MIX PROCESS CONSISTS OF SHOTCRETE WITHOUT MIXING WATER WHICH IS CONVEYED THROUGH THE HOSE PNEUMATICALLY WITH THE MIXING WATER INTRODUCED AT THE NOZZLE. FOR ADDITIONAL DESCRIPTIVE INFORMATION, THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE AMERICAN CONCRETE INSTITUTE ACI 506R "GUIDE TO SHOTCRETE."

CAST IN PLACE CONCRETE FACING CONSTRUCTION IS COVERED BY THE STANDARD SPECIFICATIONS.

1.1 CONTRACTOR'S EXPERIENCE REQUIREMENTS.

WORKERS, INCLUDING FOREMEN, NOZZLEMEN, AND DELIVERY EQUIPMENT OPERATORS, SHALL BE FULLY EXPERIENCED TO PERFORM THE WORK. ALL SHOTCRETE NOZZLEMEN ON THIS PROJECT SHALL HAVE EXPERIENCE ON AT LEAST 3 PROJECTS IN THE PAST 3 YEARS IN SIMILAR SHOTCRETE APPLICATION WORK AND SHALL DEMONSTRATE ABILITY TO SATISFACTORILY PLACE THE SHOTCRETE.

INITIAL QUALIFICATION OF NOZZLEMEN WILL BE BASED EITHER ON PREVIOUS ACI CERTIFICATION OR SATISFACTORY COMPLETION OF PRECONSTRUCTION TEST PANELS. THE REQUIREMENT FOR NOZZLEMEN TO SHOOT PRECONSTRUCTION QUALIFICATION TEST PANELS WILL BE WAIVED FOR NOZZLEMEN WHO CAN SUBMIT DOCUMENTED PROOF THEY HAVE BEEN CERTIFIED IN ACCORDANCE WITH THE ACI 506.3R GUIDE TO CERTIFICATION OF SHOTCRETE NOZZLEMEN. THE CERTIFICATION SHALL HAVE BEEN DONE BY AN ACI RECOGNIZED SHOTCRETE TESTING LAB AND/OR RECOGNIZED SHOTCRETING CONSULTANT AND HAVE COVERED THE TYPE OF SHOTCRETE TO BE USED. ALL NOZZLEMEN WILL BE REQUIRED TO PERIODICALLY SHOOT PRODUCTION TEST PANELS DURING THE COURSE OF THE WORK AT THE FREQUENCY SPECIFIED HEREIN.

NOTIFY THE ENGINEER NO LESS THAN 2 DAYS PRIOR TO THE SHOOTING OF PRECONSTRUCTION TEST PANELS TO BE USED TO QUALIFY NOZZLEMEN WITHOUT PREVIOUS ACI CERTIFICATION. USE THE SAME SHOTCRETE MIX AND EQUIPMENT TO MAKE THE QUALIFICATION TEST PANELS AS THOSE TO BE USED FOR THE SOIL NAIL WALL SHOTCRETE FACING. INITIAL QUALIFICATION OF THE NOZZLEMEN WILL BE BASED ON A VISUAL INSPECTION OF THE SHOTCRETE DENSITY AND VOID STRUCTURE AND ON ACHIEVING THE SPECIFIED 3-DAY AND 28-DAY COMPRESSIVE STRENGTH REQUIREMENTS DETERMINED FROM TEST SPECIMENS EXTRACTED FROM THE PRECONSTRUCTION TEST PANELS. PRECONSTRUCTION AND PRODUCTION TEST PANELS, CORE EXTRACTION AND COMPRESSIVE STRENGTH TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH ACI 506.2 AND AASHTO T24/ASTM C42, UNLESS OTHERWISE SPECIFIED HEREIN. NOZZLEMEN WITHOUT ACI CERTIFICATION WILL BE ALLOWED TO BEGIN PRODUCTION SHOOTING BASED ON SATISFACTORY COMPLETION OF THE PRECONSTRUCTION TEST PANELS AND PASSING 3-DAY STRENGTH TEST REQUIREMENTS. CONTINUED QUALIFICATION WILL BE SUBJECT TO PASSING THE 28-DAY STRENGTH TESTS AND SHOOTING SATISFACTORY PRODUCTION TEST PANELS.

1.2 CONSTRUCTION SUBMITTALS.

AT LEAST 15 CALENDAR DAYS BEFORE THE PLANNED START OF SHOTCRETE PLACEMENT, SUBMIT 5 COPIES OF THE FOLLOWING INFORMATION, IN WRITING, TO THE ENGINEER FOR REVIEW:

A. WRITTEN DOCUMENTATION OF THE NOZZLEMEN'S QUALIFICATIONS INCLUDING PROOF OF ACI CERTIFICATION (IF APPLICABLE).

B. PROPOSED METHODS OF SHOTCRETE PLACEMENT AND OF CONTROLLING AND MAINTAINING FACING ALIGNMENT AND LOCATION AND SHOTCRETE THICKNESS.

C. SHOTCRETE MIX DESIGN INCLUDING:
TYPE OF PORTLAND CEMENT.
AGGREGATE SOURCE AND GRADATION.
PROPORTIONS OF MIX BY WEIGHT AND WATER-CEMENT RATIO. PROPOSED ADMIXTURES, MANUFACTURER, DOSAGE, TECHNICAL LITERATURE. PREVIOUS STRENGTH TEST RESULTS FOR THE PROPOSED SHOTCRETE MIX COMPLETED WITHIN ONE YEAR OF THE START OF SHOTCRETING MAY BE SUBMITTED FOR INITIAL VERIFICATION OF THE REQUIRED COMPRESSIVE STRENGTHS AT START OF PRODUCTION WORK.

D. CERTIFICATIONS OF COMPLIANCE, MANUFACTURER'S ENGINEERING DATA AND INSTALLATION INSTRUCTIONS FOR THE GEOCOMPOSITE DRAIN STRIP, DRAIN GRATE AND ACCESSORIES.

E. CERTIFICATE OF COMPLIANCE FOR PVC DRAIN PIPING.

F. FORMWORK DIMENSIONS AND DETAILS FOR CASTING THE CAST IN PLACE CONCRETE FACING OVER THE SHOTCRETE CONSTRUCTION FACING, INCLUDE DETAILS FOR FORMWORK CONNECTIONS TO THE SHOTCRETE FACING AND/OR NAILS (IF APPLICABLE), PROPOSED CONCRETE PLACEMENT METHOD AND PLACEMENT RATES, AND ACCOMPANYING STRUCTURAL CALCULATIONS VERIFYING THE STRUCTURAL ADEQUACY OF THE FORMWORK, CONNECTIONS, AND SHOTCRETE FACING AND/OR NAILS TO SUPPORT THE LOADING INDUCED BY THE FLUID CAST IN PLACE CONCRETE. WHEN ANCHORS EMBEDDED INTO THE SHOTCRETE FACING WILL BE USED TO SUPPORT THE I-SIDED CAST IN PLACE CONCRETE FACE FORM, INCLUDE CALCULATIONS ILLUSTRATING THE ANCHOR DESIGN LOAD (CALCULATED AS THE DESIGN CONCRETE FLUID PRESSURE TIMES THE ANCHOR TRIBUTARY AREA). THE STRUCTURAL CALCULATIONS SHALL BE PREPARED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF OHIO.

THE ENGINEER WILL APPROVE OR REJECT THE CONTRACTOR'S SUBMITTALS WITHIN 10 CALENDAR DAYS AFTER RECEIPT OF A COMPLETE SUBMISSION. THE CONTRACTOR WILL NOT BE ALLOWED TO BEGIN WALL CONSTRUCTION OR INCORPORATE MATERIALS INTO THE WORK UNTIL THE SUBMITTAL REQUIREMENTS ARE SATISFIED AND FOUND ACCEPTABLE TO THE ENGINEER. CHANGES OR DEVIATIONS FROM THE APPROVED SUBMITTALS MUST BE RESUBMITTED FOR APPROVAL. NO ADJUSTMENTS IN CONTRACT TIME WILL BE ALLOWED DUE TO INCOMPLETE SUBMITTALS.

UPON DELIVERY TO THE PROJECT SITE, PROVIDE CERTIFIED MILL TEST RESULTS FOR ALL REINFORCING STEEL SPECIFYING THE MINIMUM ULTIMATE STRENGTH, YIELD STRENGTH, ELONGATION AND CHEMICAL COMPOSITION.

1.3 PRE-CONSTRUCTION MEETING.

A PRE-CONSTRUCTION MEETING SCHEDULED BY THE ENGINEER WILL BE HELD PRIOR TO THE START OF WALL CONSTRUCTION. ATTENDANCE IS MANDATORY. THE SHOTCRETE CONTRACTOR, IF DIFFERENT FROM THE SOIL NAIL SPECIALTY CONTRACTOR, SHALL ATTEND.

2.0 MATERIALS.

ALL MATERIALS FOR SHOTCRETE SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

CEMENT	AASHTO M85/ASTM C150, TYPE I, II, III, OR V.
FINE AGGREGATE	AASHTO M6/ASTM C33 CLEAN, NATURAL.
COARSE AGGREGATE	AASHTO M80, CLASS B FOR QUALITY.
WATER	CLEAN AND POTABLE, AASHTO M157/ASTM C94.

CHEMICAL ADMIXTURES:

ACCELERATOR	FLUID TYPE, APPLIED AT NOZZLE, MEETING REQUIREMENTS OF AASHTO M194/ASTM C494/ASTM C1141.
WATER-REDUCER AND SUPERPLASTISIZER	AASHTO M194 / ASTM C494 TYPE A, C, D, E, F, OR G.
RETARDERS	AASHTO M194 / ASTM C494 TYPE B OR D.

MINERAL ADMIXTURES:

FLY ASH	AASHTO M295 / ASTM C618 TYPE F OR C, CEMENT REPLACEMENT UP TO 35 PERCENT BY WEIGHT OF CEMENT.
SILICA FUME	ASTM C1240, 90 PERCENT, MINIMUM SILICON DIOXIDE SOLIDS CONTENT, NOT TO EXCEED 12 PERCENT BY WEIGHT OF CEMENT.
WELDED WIRE FABRIC	AASHTO M55 / ASTM A185 OR A497.
REINFORCING BARS FOR SHOTCRETE FACING	AASHTO M31 / ASTM A615, GRADE 60, DEFORMED.
PREPACKAGED SHOTCRETE	ASTM C928.

DRAINAGE GEOTEXTILE:

FOR DRAIN STRIP	AASHTO M288 CLASS 3, PERMITTIVITY MIN. 0.2 PER SECOND; AOS 0.01 INCH MAX.
GEOCOMPOSITE DRAIN STRIP	MIRADRAIN 6000, AMERDRAIN 500 OR APPROVED EQUAL.
FILM PROTECTION	POLYETHYLENE FILMS PER AASHTO M-171

MATERIALS SHALL BE DELIVERED, STORED AND HANDLED TO PREVENT CONTAMINATION, SEGREGATION, CORROSION OR DAMAGE. STORE LIQUID ADMIXTURES TO PREVENT EVAPORATION AND FREEZING.

GEOCOMPOSITE DRAIN STRIPS SHALL BE PROVIDED IN ROLLS WRAPPED WITH A PROTECTIVE COVERING AND STORED IN A MANNER WHICH PROTECTS THE MATERIAL FROM MUD, DIRT, DUST, DEBRIS, AND SHOTCRETE REBOUND. PROTECTIVE WRAPPING SHALL NOT BE REMOVED UNTIL IMMEDIATELY BEFORE THE DRAIN STRIP IS INSTALLED. EXTENDED EXPOSURE TO ULTRA-VIOLET LIGHT SHALL BE AVOIDED. EACH ROLL OF DRAIN STRIP IN THE SHIPMENT SHALL BE LABELED TO IDENTIFY THE PRODUCTION RUN.

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DESIGN AGENCY
2001 Crown Centre Drive, Suite 250, Columbus, OH 43201
DESIGNED PPA
DRAWN TBC
CHECKED RPM
REVIEWED RJM
DATE 1/11/2024
STRUCTURE FILE NUMBER
REVISED

GENERAL NOTES
RETAINING WALL 3

MOT-725-14.41
PID No. 108619

2.1 SHOTCRETE MIX DESIGN.

THE CONTRACTOR MUST RECEIVE NOTIFICATION FROM THE ENGINEER THAT THE PROPOSED MIX DESIGN AND METHOD OF PLACEMENT ARE ACCEPTABLE BEFORE SHOTCRETE PLACEMENT CAN BEGIN.

2.1.1 AGGREGATE.

AGGREGATE FOR SHOTCRETE SHALL MEET THE STRENGTH AND DURABILITY REQUIREMENTS OF AASHTO M6 / M80 AND THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE SIZE	PERCENT PASSING BY WEIGHT
½ INCH	100
⅜ INCH	90-100
NO. 4	70-85
NO. 8	50-70
NO. 16	35-55
NO. 30	20-35
NO. 50	8-20
NO. 100	2-10

2.1.2 PROPORTIONING AND USE OF ADMIXTURES.

PROPORTION THE SHOTCRETE TO BE PUMPABLE WITH THE CONCRETE PUMP FURNISHED FOR THE WORK, WITH A CEMENTING MATERIALS CONTENT OF AT LEAST 720 POUNDS PER CUBIC YARD AND WATER/CEMENT RATIO NOT GREATER THAN 0.50. DO NOT USE ADMIXTURES UNLESS APPROVED BY THE ENGINEER. THOROUGHLY MIX ADMIXTURES INTO THE SHOTCRETE AT THE RATE SPECIFIED BY THE MANUFACTURER. ACCELERATORS (IF USED) SHALL BE COMPATIBLE WITH THE CEMENT USED, BE NON-CORROSIVE TO STEEL AND NOT PROMOTE OTHER DETRIMENTAL EFFECTS SUCH AS CRACKING OR EXCESSIVE SHRINKAGE. THE MAXIMUM ALLOWABLE CHLORIDE ION CONTENT OF ALL INGREDIENTS SHALL NOT EXCEED 0. 10% WHEN TESTED ACCORDING TO AASHTO T260.

2.1.3 AIR ENTRAINMENT.

AIR ENTRAINMENT IS NOT REQUIRED FOR TEMPORARY SHOTCRETE CONSTRUCTION FACINGS.

2.1.4 STRENGTH REQUIREMENTS.

PROVIDE A SHOTCRETE MIX CAPABLE OF ATTAINING 2,000 PSI COMPRESSIVE STRENGTH IN 3 DAYS AND 4,000 PSI IN 28 DAYS. THE AVERAGE COMPRESSIVE STRENGTH OF EACH SET OF THREE TEST CORES EXTRACTED FROM TEST PANELS OR WALL FACE MUST EQUAL OR EXCEED 85 PERCENT OF THE SPECIFIED COMPRESSIVE STRENGTH, WITH NO INDIVIDUAL CORE LESS THAN 75 PERCENT OF THE SPECIFIED COMPRESSIVE STRENGTH, IN ACCORDANCE WITH ACI 506.2.

2.1.5 MIXING AND BATCHING.

AGGREGATE AND CEMENT MAY BE BATCHED BY WEIGHT OR BY VOLUME IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM C94 OR AASHTO M241 / ASTM C685. MIXING EQUIPMENT SHALL THOROUGHLY BLEND THE MATERIALS IN SUFFICIENT QUANTITY TO MAINTAIN PLACING CONTINUITY. READY MIX SHOTCRETE SHALL COMPLY WITH AASHTO M157. SHOTCRETE SHALL BE BATCHED, DELIVERED, AND PLACED WITHIN 90 MINUTES OF MIXING. THE USE OF RETARDING ADMIXTURES MAY EXTEND APPLICATION TIME BEYOND 90 MINUTES IF APPROVED BY THE ENGINEER.

PREMIXED AND PACKAGED SHOTCRETE MIX MAY BE PROVIDED FOR ON-SITE MIXING. THE PACKAGES SHALL CONTAIN MATERIALS CONFORMING TO THE MATERIALS SECTION OF THIS SPECIFICATION. PLACING TIME LIMIT AFTER MIXING SHALL BE PER THE MANUFACTURER'S RECOMMENDATIONS.

2.2 FIELD QUALITY CONTROL.

BOTH PRECONSTRUCTION TEST PANELS (FOR NOZZLEMEN WITHOUT PREVIOUS ACI CERTIFICATION) AND PRODUCTION TEST PANELS OR TEST CORES FROM THE WALL FACING ARE REQUIRED. SHOTCRETING AND CORING OF TEST PANELS SHALL BE PERFORMED BY QUALIFIED PERSONNEL IN THE PRESENCE OF THE ENGINEER. THE CONTRACTOR SHALL PROVIDE EQUIPMENT, MATERIALS, AND PERSONNEL AS NECESSARY TO OBTAIN SHOTCRETE CORES FOR TESTING INCLUDING CONSTRUCTION OF TEST PANEL BOXES, FIELD CURING REQUIREMENTS AND CORING. COMPRESSIVE STRENGTH TESTING WILL BE PERFORMED BY THE ENGINEER. SHOTCRETE FINAL ACCEPTANCE WILL BE BASED ON THE 28-DAY STRENGTH.

SHOTCRETE PRODUCTION WORK MAY COMMENCE UPON INITIAL APPROVAL OF THE DESIGN MIX AND NOZZLEMEN AND CONTINUE IF THE SPECIFIED STRENGTHS ARE OBTAINED. THE SHOTCRETE WORK BY A CREW WILL BE SUSPENDED IF THE TEST RESULTS FOR THEIR WORK DOES NOT SATISFY THE STRENGTH REQUIREMENTS. THE CONTRACTOR SHALL CHANGE ALL OR SOME OF THE FOLLOWING: THE MIX, THE CREW, THE EQUIPMENT, OR THE PROCEDURES. BEFORE RESUMING WORK, THE CREW MUST SHOOT ADDITIONAL TEST PANELS AND DEMONSTRATE THAT THE SHOTCRETE IN THE PANELS SATISFIES THE SPECIFIED STRENGTH REQUIREMENTS. THE COST OF ALL WORK REQUIRED TO OBTAIN SATISFACTORY STRENGTH TESTS WILL BE BORNE BY THE CONTRACTOR.

2.2.1 PRECONSTRUCTION TEST PANELS.

EACH NOZZLEMAN WITHOUT PREVIOUS ACI CERTIFICATION SHALL FURNISH AT LEAST ONE PRECONSTRUCTION TEST PANEL FOR EACH PROPOSED MIXTURE BEING CONSIDERED AND FOR EACH SHOOTING POSITION TO BE ENCOUNTERED ON THE JOB. PRECONSTRUCTION TEST PANELS SHALL BE MADE PRIOR TO THE COMMENCEMENT OF PRODUCTION WORK USING THE SAME EQUIPMENT, MATERIALS, MIXTURE PROPORTIONS AND PROCEDURES PROPOSED FOR THE JOB.

MAKE PRECONSTRUCTION TEST PANELS WITH MINIMUM DIMENSIONS OF 30 X 30 INCHES SQUARE AND AT LEAST 4 INCHES THICK. SLOPE THE SIDES OF PRECONSTRUCTION AND PRODUCTION TEST PANELS AT 45 DEGREES OVER THE FULL PANEL THICKNESS TO RELEASE REBOUND.

2.2.2 PRODUCTION TEST PANELS.

FURNISH AT LEAST ONE PRODUCTION TEST PANEL OR, IN LIEU OF PRODUCTION TEST PANELS, SIX 3 INCH DIAMETER CORES TAKEN FROM THE SHOTCRETE FACING, DURING THE FIRST PRODUCTION APPLICATION OF SHOTCRETE AND HENCEFORTH FOR EVERY 2,500 SQUARE FEET OF SHOTCRETE PLACED. CONSTRUCT THE PRODUCTION TEST PANELS SIMULTANEOUSLY WITH THE SHOTCRETE FACING INSTALLATION AT TIMES DESIGNATED BY THE ENGINEER. MAKE PRODUCTION TEST PANELS WITH MINIMUM DIMENSIONS OF 18 X 18 INCHES SQUARE AND AT LEAST 4 INCHES THICK.

2.2.3 TEST PANEL CURING, TEST SPECIMEN EXTRACTION AND TESTING.

IMMEDIATELY AFTER SHOOTING, FIELD MOIST CURE THE TEST PANELS BY COVERING AND TIGHTLY WRAPPING WITH A SHEET OF MATERIAL MEETING THE REQUIREMENTS OF ASTM C171 UNTIL THEY ARE DELIVERED TO THE TESTING LAB OR TEST SPECIMENS ARE EXTRACTED. DO NOT IMMERSE THE TEST PANELS IN WATER. DO NOT FURTHER DISTURB TEST PANELS FOR THE FIRST 24 HOURS AFTER SHOOTING. PROVIDE AT LEAST SIX 3 INCH DIAMETER CORE SAMPLES CUT FROM EACH PRECONSTRUCTION TEST PANEL AND PRODUCTION TEST PANEL. CONTRACTOR HAS THE OPTION OF EXTRACTING TEST SPECIMENS FROM TEST PANELS IN THE FIELD OR TRANSPORTING TO ANOTHER LOCATION FOR EXTRACTION. KEEP PANELS IN THEIR FORMS WHEN TRANSPORTED. DO NOT TAKE CORES FROM THE OUTER 6 INCHES OF TEST PANELS MEASURED IN FROM THE TOP AND OUTSIDE EDGES OF THE PANEL FORM. TRIM THE ENDS OF THE CORES TO PROVIDE TEST CYLINDERS AT LEAST 3 INCHES LONG. IF THE CONTRACTOR CHOOSES TO TAKE CORES FROM THE WALL FACE IN LIEU OF MAKING PRODUCTION TEST PANELS, LOCATIONS WILL BE DESIGNATED BY THE ENGINEER. CLEARLY MARK THE CORES AND CONTAINER TO IDENTIFY THE CORE LOCATIONS AND WHETHER THEY ARE FOR PRECONSTRUCTION OR PRODUCTION TESTING. IF FOR PRODUCTION TESTING, MARK THE SECTION OF THE WALL REPRESENTED BY THE CORES ON THE CORES AND CONTAINER. IMMEDIATELY WRAP CORES IN WET BURLAP OR MATERIAL MEETING REQUIREMENTS OF ASTM C171 AND SEAL IN A PLASTIC BAG. DELIVER CORES TO THE ENGINEER OR TESTING LAB, AS DIRECTED BY THE ENGINEER, WITHIN 48 HOURS OF SHOOTING THE PANELS. THE REMAINDER OF THE PANELS WILL BECOME THE PROPERTY OF THE CONTRACTOR. COMPRESSIVE STRENGTH TESTING WILL BE PERFORMED BY THE ENGINEER. UPON DELIVERY TO THE TESTING LAB, SAMPLES WILL BE PLACED IN THE MOIST ROOM UNTIL THE TIME OF TEST. WHEN THE TEST LENGTH OF A CORE IS LESS THAN TWICE THE DIAMETER, THE CORRECTION FACTORS GIVEN IN AASHTO T24/ASTM C42 WILL BE APPLIED TO OBTAIN THE COMPRESSIVE STRENGTH OF INDIVIDUAL CORES. THREE CORES WILL BE TESTED AT 3 DAYS AND THREE CORES WILL BE TESTED AT 28 DAYS IN ACCORDANCE WITH AASHTO T24/ASTM C42.

FILL CORE HOLES IN THE WALL BY DRY-PACKING WITH NON-SHRINK PATCHING MORTAR AFTER THE HOLES ARE CLEANED AND DAMPENED. DO NOT FILL CORE HOLES WITH SHOTCRETE.

3.0 CONSTRUCTION REQUIREMENTS.

3.1 WALL DRAINAGE NETWORK.

INSTALL AND SECURE ALL ELEMENTS OF THE WALL DRAINAGE NETWORK AS SHOWN ON THE PLANS, SPECIFIED HEREIN, OR AS REQUIRED BY THE ENGINEER TO SUIT THE SITE CONDITIONS. THE DRAINAGE NETWORK SHALL CONSIST OF INSTALLING GEOCOMPOSITE DRAIN STRIPS, POROUS BACKFILL, 4" PERFORATED CORRUGATED PLASTIC PIPE AND 4" CORRUGATED PLASTIC PIPE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. ALL ELEMENTS OF THE DRAINAGE NETWORK SHALL BE INSTALLED PRIOR TO SHOTCRETING.

UNANTICIPATED SUBSURFACE DRAINAGE FEATURES EXPOSED IN THE EXCAVATION CUT FACE SHALL BE CAPTURED INDEPENDENTLY OF THE WALL DRAINAGE NETWORK AND SHALL BE MITIGATED PRIOR TO SHOTCRETE APPLICATION.

3.1.1 GEOCOMPOSITE DRAIN STRIPS AND CONNECTION PIPES.

INSTALL GEOCOMPOSITE DRAIN STRIPS CENTERED BETWEEN THE COLUMNS OF NAILS AS SHOWN ON THE PLANS. INSTALL HORIZONTAL GEOCOMPOSITE DRAIN STRIPS BEHIND HORIZONTAL SHOTCRETE CONSTRUCTION JOINTS AND WHERE ZONES OF LOCALIZED GROUNDWATER SEEPAGE ARE ENCOUNTERED DURING CONSTRUCTION. THE DRAIN STRIPS SHALL BE AT LEAST 30 INCHES WIDE AND PLACED WITH THE GEOTEXTILE SIDE AGAINST THE GROUND. SECURE THE STRIPS TO THE EXCAVATION FACE AND PREVENT SHOTCRETE FROM CONTAMINATING THE GROUND SIDE OF THE GEOTEXTILE. DRAIN STRIPS WILL BE CONTINUOUS. SPLICES SHALL BE MADE WITH A 12 INCH MINIMUM OVERLAP SUCH THAT THE FLOW OF WATER IS NOT IMPEDED. REPAIR DAMAGE TO THE GEOCOMPOSITE DRAIN STRIP, WHICH MAY INTERRUPT THE FLOW OF WATER.

IN ACCORDANCE WITH C&MS 518.06.D AND AS SHOWN IN THE PLANS, FOR THE PREFABRICATED GEOCOMPOSITE DRAIN, PROVIDE PREFABRICATED WEEP HOLE FITTINGS PROVIDED BY THE MANUFACTURER AND INSTALLED TO THE MANUFACTURER'S INSTRUCTIONS EVERY 15 FEET ALONG THE LENGTH OF THE WALL, PASSING THROUGH THE SHOTCRETE AND CIP WALL FACE TO THE POROUS BACKFILL RUNNING IN FRONT OF THE FACE OF THE WALL. TEMPORARILY BLOCK THE OUTLETS OF THE PREFABRICATED WEEP HOLE FITTINGS DURING PLACEMENT OF SHOTCRETE AND THE CIP WALL FACE, TO AVOID INTRUSION OF CONCRETE INTO THE OUTLETS. PROVIDE A 1-FOOT WIDE BY 1-FOOT TALL BLOCK OF POROUS BACKFILL WITH GEOTEXTILE FABRIC AT THE BOTTOM OF THE FRONT FACE OF THE WALL, CONTAINING A 4" PERFORATED CORRUGATED PLASTIC PIPE, SLOPED TO DRAIN. AT THE WEST END OF THE WALL, CONNECT THE PERFORATED CORRUGATED PLASTIC COLLECTION PIPE TO THE 4" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS, RUNNING TO THE DRAINAGE OUTLET AS SHOWN IN THE PLANS.

3.2 TEMPORARY SHOTCRETE CONSTRUCTION FACING.

3.2.1 SHOTCRETE ALIGNMENT AND THICKNESS CONTROL.

ENSURE THAT THE THICKNESS OF SHOTCRETE SATISFIES THE MINIMUM REQUIREMENTS SHOWN ON THE PLANS USING SHOOTING WIRES, THICKNESS CONTROL PINS, OR OTHER DEVICES ACCEPTABLE TO THE ENGINEER. INSTALL THICKNESS CONTROL DEVICES NORMAL TO THE SURFACE SUCH THAT THEY PROTRUDE THE REQUIRED SHOTCRETE THICKNESS OUTSIDE THE SURFACE. ENSURE THAT THE FRONT FACE OF THE SHOTCRETE DOES NOT EXTEND BEYOND THE LIMITS SHOWN ON THE PLANS.

3.2.2 SURFACE PREPARATION.

CLEAN THE FACE OF THE EXCAVATION AND OTHER SURFACES TO BE SHOTCRETED OF LOOSE MATERIALS, MUD, REBOUND, OVERSPRAY OR OTHER FOREIGN MATTER THAT COULD PREVENT OR REDUCE SHOTCRETE BOND. PROTECT ADJACENT SURFACES FROM OVERSPRAY DURING SHOOTING. AVOID LOOSENING, CRACKING, OR SHATTERING THE GROUND DURING EXCAVATION AND CLEANING. REMOVE ANY SURFACE MATERIAL WHICH IS SO LOOSENED OR DAMAGED TO A SUFFICIENT DEPTH TO PROVIDE A BASE THAT IS SUITABLE TO RECEIVE THE SHOTCRETE. REMOVE MATERIAL THAT LOOSENS AS THE SHOTCRETE IS APPLIED. COST OF ADDITIONAL SHOTCRETE IS INCIDENTAL TO THE WORK. DIVERT WATER FLOW AND REMOVE STANDING WATER SO THAT SHOTCRETE PLACEMENT WILL NOT BE DETRIMENTALLY AFFECTED BY STANDING WATER. DO NOT PLACE SHOTCRETE ON FROZEN SURFACES.

DESIGN AGENCY
2001 Crocker Road, Suite 250, Cleveland, OH 44201

DESIGNED PPA | DRAWN TBC | CHECKED RPM | REVIEWED RJM | DATE 1/11/2024 | REVISED | STRUCTURE FILE NUMBER

GENERAL NOTES
RETAINING WALL 3

MOT-725-14.41
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3.2.3 DELIVERY AND APPLICATION.

MAINTAIN A CLEAN, DRY, OIL-FREE SUPPLY OF COMPRESSED AIR SUFFICIENT FOR MAINTAINING ADEQUATE NOZZLE VELOCITY AT ALL TIMES. THE EQUIPMENT SHALL BE CAPABLE OF DELIVERING THE PREMIXED MATERIAL ACCURATELY, UNIFORMLY, AND CONTINUOUSLY THROUGH THE DELIVERY HOSE. CONTROL SHOTCRETE APPLICATION THICKNESS, NOZZLE TECHNIQUE, AIR PRESSURE, AND RATE OF SHOTCRETE PLACEMENT TO PREVENT SAGGING OR SLOUGHING OF FRESHLY-APPLIED SHOTCRETE.

APPLY THE SHOTCRETE FROM THE LOWER PART OF THE AREA UPWARDS TO PREVENT ACCUMULATION OF REBOUND. ORIENT NOZZLE AT A DISTANCE AND APPROXIMATELY PERPENDICULAR TO THE WORKING FACE SO THAT REBOUND WILL BE MINIMAL AND COMPACTION WILL BE MAXIMIZED. PAY SPECIAL ATTENTION TO ENCAPSULATING REINFORCEMENT. DO NOT WORK REBOUND BACK INTO THE CONSTRUCTION. WHERE SHOTCRETE IS USED TO COMPLETE THE TOP UNGROUTED ZONE OF THE NAIL DRILL HOLE NEAR THE FACE, POSITION THE NOZZLE INTO MOUTH OF THE DRILLHOLE TO COMPLETELY FILL THE VOID.

A CLEARLY DEFINED PATTERN OF CONTINUOUS HORIZONTAL AND VERTICAL RIDGES OR DEPRESSIONS AT THE REINFORCING ELEMENTS AFTER THEY ARE COVERED WITH SHOTCRETE WILL BE CONSIDERED AN INDICATION OF INSUFFICIENT REINFORCEMENT COVER OR POOR NOZZLE TECHNIQUES. IN THIS CASE THE APPLICATION OF SHOTCRETE SHALL BE IMMEDIATELY SUSPENDED AND THE CONTRACTOR SHALL IMPLEMENT CORRECTIVE MEASURES BEFORE RESUMING THE SHOTCRETE OPERATIONS. THE SHOTCRETING PROCEDURE MAY BE CORRECTED BY ADJUSTING THE NOZZLE DISTANCE AND ORIENTATION, BY INSURING ADEQUATE COVER OVER THE REINFORCEMENT, BY ADJUSTING THE WATER CONTENT OF THE SHOTCRETE MIX OR OTHER MEANS. ADJUSTMENT IN WATER CONTENT OF WET-MIX WILL REQUIRE REQUALIFYING THE SHOTCRETE MIX.

3.2.4 DEFECTIVE SHOTCRETE.

REPAIR SHOTCRETE SURFACE DEFECTS AS SOON AS POSSIBLE AFTER PLACEMENT. REMOVE AND REPLACE SHOTCRETE WHICH EXHIBITS SEGREGATION, HONEYCOMBING, LAMINATION, VOIDS, OR SAND POCKETS. IN-PLACE SHOTCRETE DETERMINED NOT TO MEET THE SPECIFIED STRENGTH REQUIREMENT WILL BE SUBJECT TO REMEDIATION AS DETERMINED BY THE ENGINEER. POSSIBLE REMEDIATION OPTIONS INCLUDE PLACEMENT OF ADDITIONAL SHOTCRETE THICKNESS OR REMOVAL AND REPLACEMENT, AT THE CONTRACTOR'S COST.

3.2.5 CONSTRUCTION JOINTS.

TAPER CONSTRUCTION JOINTS UNIFORMLY TOWARD THE EXCAVATION FACE OVER A MINIMUM DISTANCE EQUAL TO THE THICKNESS OF THE SHOTCRETE LAYER. PROVIDE A MINIMUM REINFORCEMENT OVERLAP AT REINFORCEMENT SPLICE JOINTS AS SHOWN ON THE PLANS. CLEAN AND WET THE SURFACE OF A JOINT BEFORE ADJACENT SHOTCRETE IS APPLIED. WHERE SHOTCRETE IS USED TO COMPLETE THE TOP UNGROUTED ZONE OF THE NAIL DRILL HOLE NEAR THE FACE, TO THE MAXIMUM EXTENT PRACTICAL, CLEAN AND DAMPEN THE UPPER GROUT SURFACE TO RECEIVE SHOTCRETE, SIMILAR TO A CONSTRUCTION JOINT.

3.2.6 FINISH.

SHOTCRETE FINISH SHALL BE EITHER AN UNDISTURBED GUN FINISH AS APPLIED FROM THE NOZZLE OR A ROUGH SCREEDED FINISH. REMOVE SHOTCRETE EXTENDING INTO THE CAST IN PLACE CONCRETE FINISH FACE SECTION BEYOND THE TOLERANCES SHOWN ON THE PLANS OR SPECIFIED HEREIN.

3.2.7 ATTACHMENT OF NAIL HEAD BEARING PLATE AND NUT.

ATTACH A BEARING PLATE AND NUT TO EACH NAIL HEAD AS SHOWN ON THE PLANS. WHILE THE SHOTCRETE IS STILL PLASTIC AND BEFORE ITS INITIAL SET, UNIFORMLY SEAT THE PLATE ON THE SHOTCRETE BY HAND WRENCH TIGHTENING THE NUT. WHERE UNIFORM CONTACT BETWEEN THE PLATE AND THE SHOTCRETE CANNOT BE PROVIDED, SET THE PLATE IN A BED OF GROUT. AFTER GROUT HAS SET FOR 24 HOURS, HAND WRENCH TIGHTEN THE NUT. ENSURE BEARING PLATES WITH HEADED STUDS ARE IN INTIMATE CONTACT WITH THE CONSTRUCTION FACING AND THE STUDS ARE LOCATED WITHIN THE TOLERANCES SHOWN ON THE PLANS OR SPECIFIED HEREIN.

3.2.8 WEATHER LIMITATIONS.

PROTECT THE SHOTCRETE IF IT MUST BE PLACED WHEN THE AMBIENT TEMPERATURE IS BELOW 32°F AND FALLING OR WHEN IT IS LIKELY TO BE SUBJECTED TO FREEZING TEMPERATURES BEFORE GAINING SUFFICIENT STRENGTH. MAINTAIN COLD WEATHER PROTECTION UNTIL THE IN PLACE COMPRESSIVE STRENGTH OF THE SHOTCRETE IS GREATER THAN 700 PSI. COLD WEATHER PROTECTION INCLUDES BLANKETS, HEATING UNDER TENTS, OR OTHER MEANS ACCEPTABLE TO THE ENGINEER. THE TEMPERATURE OF THE SHOTCRETE MIX, WHEN DEPOSITED, SHALL BE NOT LESS THAN 50° F OR MORE THAN 95° F.

SUSPEND SHOTCRETE APPLICATION DURING HIGH WINDS AND HEAVY RAINS UNLESS SUITABLE PROTECTIVE COVERS, ENCLOSURES OR WIND BREAKS ARE INSTALLED. REMOVE AND REPLACE NEWLY PLACED SHOTCRETE EXPOSED TO RAIN THAT WASHES OUT CEMENT OR OTHERWISE MAKES THE SHOTCRETE UNACCEPTABLE. PROVIDE A POLYETHYLENE FILM OR EQUIVALENT TO PROTECT THE WORK FROM EXPOSURE TO ADVERSE WEATHER.

3.2.9 CURING.

CURING IS NOT REQUIRED FOR TEMPORARY CONSTRUCTION FACINGS TO BE COVERED BY A CAST IN PLACE CONCRETE FACING OR WHOSE SERVICE LIFE IS LESS THAN 36 MONTHS.

3.2.10 CONSTRUCTION FACING TOLERANCES.

CONSTRUCTION TOLERANCES FOR THE TEMPORARY SHOTCRETE CONSTRUCTION FACING ARE AS FOLLOWS:

HORIZONTAL LOCATION OF WIRE MESH; REBAR; HEADED STUDS ON BEARING PLATES, FROM PLAN LOCATION: + OR - ½ INCH.

HEADED STUDS LOCATION ON BEARING PLATE, FROM PLAN LOCATION: ¼ INCH.

SPACING BETWEEN REINFORCING BARS, FROM PLAN DIMENSION: 1 INCH.

REINFORCING LAP, FROM SPECIFIED DIMENSION: - 1 INCH.

THICKNESS OF SHOTCRETE: - ⅜ INCH.

NAIL HEAD BEARING PLATE, DEVIATION FROM PARALLEL TO WALL FACE: 10 DEGREES.

3.3 BACKFILLING BEHIND WALL FACING UPPER CANTILEVER.

COMPACT ANY BACKFILL WITHIN 3 FEET BEHIND THE WALL FACING UPPER CANTILEVER USING LIGHT MECHANICAL TAMPERS.

3.4 SAFETY REQUIREMENTS.

NOZZLEMEN AND HELPERS SHALL BE EQUIPPED WITH GLOVES, EYE PROTECTION, AND ADEQUATE PROTECTIVE CLOTHING DURING THE APPLICATION OF SHOTCRETE. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL FEDERAL, STATE, AND LOCAL SAFETY CODE REQUIREMENTS.

3.5 CAST IN PLACE CONCRETE FORM CONNECTION TO SHOTCRETE FACING.

WHEN MECHANICAL, GROUTED, OR EPOXIED ANCHORS EMBEDDED INTO THE SHOTCRETE FACING ARE USED TO SUPPORT A ONE-SIDED CAST IN PLACE CONCRETE FACE FORM, PERFORM PULLOUT TESTING OF THE EMBEDDED ANCHORS IN ACCORDANCE WITH ASTM C900 AND AS MODIFIED HEREIN. PERFORM PULLOUT TESTING OF INSTALLED ANCHORS PRIOR TO ATTACHMENT OF THE FACE FORM. SELECT TEST ANCHOR LOCATIONS TO BE REPRESENTATIVE OF THE FULL WALL SURFACE AREA TO BE COVERED.

FOR FACING AREAS UP TO 5,000 SQUARE FEET, PERFORM A MINIMUM OF THREE FLEXURE/SHEAR PULLOUT TESTS WITH THE ANCHORS LOCATED APPROXIMATELY MID-SPAN BETWEEN TWO ADJACENT NAIL HEADS AND WITH THE NAIL HEADS OR OTHER REACTION POINTS LOCATED APPROXIMATELY ONE-HALF THE NAIL SPACING FROM THE ANCHOR. FOR FACING AREAS IN EXCESS OF 5,000 SQUARE FEET, PERFORM ONE ADDITIONAL FLEXURE/SHEAR PULLOUT TEST FOR EACH ADDITIONAL 2,500 SQUARE FEET OF FACE AREA. TEST THESE ANCHORS TO 1.5 TIMES THEIR REQUIRED DESIGN LOAD (CALCULATED AS THE DESIGN CONCRETE FLUID PRESSURE TIMES THE ANCHOR TRIBUTARY AREA).

PERFORM LOCAL PUNCHING SHEAR PULLOUT TESTING ON 2 PERCENT OF THE INSTALLED ANCHORS. PLACE THE LOAD REACTION SUPPORT NO CLOSER TO THE EDGE OF THE ANCHOR THAN THE EMBEDMENT DEPTH OF THE ANCHOR INTO THE CONSTRUCTION FACING. TEST THESE ANCHORS TO 2.0 TIMES THEIR REQUIRED DESIGN LOAD.

MODIFY THE ANCHOR AND/OR FACE FORM SUPPORT SYSTEM IF THE TESTED ANCHORS DO NOT MEET THE ABOVE TEST ACCEPTANCE CRITERIA. MODIFIED ANCHOR INSTALLATION WILL REQUIRE RE-TESTING IN ACCORDANCE WITH THE ABOVE TESTING CRITERIA. COST OF ANCHOR PULLOUT TESTING IS INCIDENTAL TO THE WORK.

4.0 METHOD OF MEASUREMENT.

THE SHOTCRETE FACING WILL BE MEASURED IN SQUARE FEET OF THE SHOTCRETE AREA COMPLETED AND ACCEPTED IN THE FINAL WORK. THE NET AREA LYING IN A PLANE OF THE OUTSIDE FRONT FACE OF THE STRUCTURE AS SHOWN ON THE PLANS WILL BE MEASURED. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR ADDITIONAL SHOTCRETE OR CAST IN PLACE CONCRETE NEEDED TO FILL VOIDS CREATED BY IRREGULARITIES IN THE CUT FACE, EXCAVATION OVERBREAK OR INADVERTENT EXCAVATION BEYOND THE PLAN FINAL WALL FACE EXCAVATION LINE, OR FAILURE TO CONSTRUCT THE FACING TO THE SPECIFIED LINE AND GRADE AND TOLERANCES. THE FINAL PAY QUANTITY SHALL INCLUDE ALL STRUCTURAL SHOTCRETE, ADMIXTURES, WELDED WIRE MESH, WIRE HOLDING DEVICES, EMBEDDED CAST IN PLACE CONCRETE FACE FORM SUPPORT ANCHORS, TEST PANELS AND ALL SAMPLING, TESTING AND REPORTING REQUIRED BY THE PLANS AND THIS SPECIFICATION.

5.0 BASIS OF PAYMENT.

THE ACCEPTED QUANTITY MEASURED AS PROVIDED ABOVE WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE FEET. PAYMENT WILL BE FULL COMPENSATION FOR FURNISHING ALL EQUIPMENT, MATERIALS, LABOR, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED AND AS DETAILED ON THE PLANS, INCLUDING THE WORK REQUIRED TO PROVIDE THE PROPER SHOTCRETE FACING ALIGNMENT AND THICKNESS CONTROL. THE FOLLOWING WALL DRAINAGE MATERIALS WILL BE PAID SEPARATELY FROM THE SHOTCRETE FACING: THE PAVED GUTTER, GEOCOMPOSITE DRAIN STRIPS, POROUS BACKFILL, AND 4" CORRUGATED PLASTIC PIPE. THE FOLLOWING MATERIALS ARE CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE GEOCOMPOSITE DRAIN STRIPS AND WILL NOT BE PAID SEPARATELY: THE DRAIN GEOTEXTILE, PREFABRICATED WEEPHOLE FITTINGS, 3" WEEPHOLE PIPE, AND ANY FITTINGS OR ACCESSORIES.

PAYMENT WILL BE MADE FOR THE FOLLOWING BID ITEMS INCLUDED IN THE BID FORM:

ITEM	DESCRIPTION	UNIT
509	EPOXY COATED STEEL REINFORCING	LB
511	CLASS QC1 CONCRETE, RETAINING; WINGWALL NOT INCLUDING FOOTING, AS PER PLAN	CY
512	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	SY
518	PREFABRICATED GEOCOMPOSITE DRAIN	SY
518	POROUS BACKFILL	CY
520	PNEUMATICALLY PLACED CONCRETE SHOTCRETE, AS PER PLAN	SF

ESTIMATED QUANTITIES

ITEM	EXT.	QUANTITY	UNIT	DESCRIPTION	REF.
203	20000	50	CY	EMBANKMENT	178
503	21101	LUMP		UNCLASSIFIED EXCAVATION, AS PER PLAN	178
509	10000	34,963	LB	EPOXY COATED STEEL REINFORCEMENT	
511	46011	150	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL INCLUDING FOOTING, AS PER PLAN	178
511	71200	4,050	SF	CONCRETE, MISC.: FORMLINER	168
511	81300	2	EACH	CONCRETE, MISC.: AESTHETIC TEST PANEL	168
512	10100	530	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
516	13600	202	SF	1" PREFORMED EXPANSION JOINT FILLER	
518	20000	400	SY	PREFABRICATED GEOCOMPOSITE DRAIN	
518	21050	17	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
518	39800	450	FT	4" PERFORATED CORRUGATED PLASTIC PIPE	179
518	39900	45	FT	4" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	179
520	10001	5,190	SF	PNEUMATICALLY PLACED CONCRETE SHOTCRETE, AS PER PLAN	179
530	51100	363	EACH	RETAINING WALL, SOIL NAIL 20' LONG, MINIMUM	178
530	51110	11	EACH	RETAINING WALL, SOIL NAIL VERIFICATION TEST	178
530	51120	19	EACH	RETAINING WALL, SOIL NAIL PROOF TEST	178

DESIGN AGENCY

REVIEWED RJM DATE 1/11/2024 STRUCTURE FILE NUMBER

DRAWN TBC REVISED

DESIGNED PPA CHECKED RPM

ESTIMATED QUANTITIES
RETAINING WALL 3
ALONG SR 725

MOT-725-14.41
PID No. 108619

7 / 23

182
220

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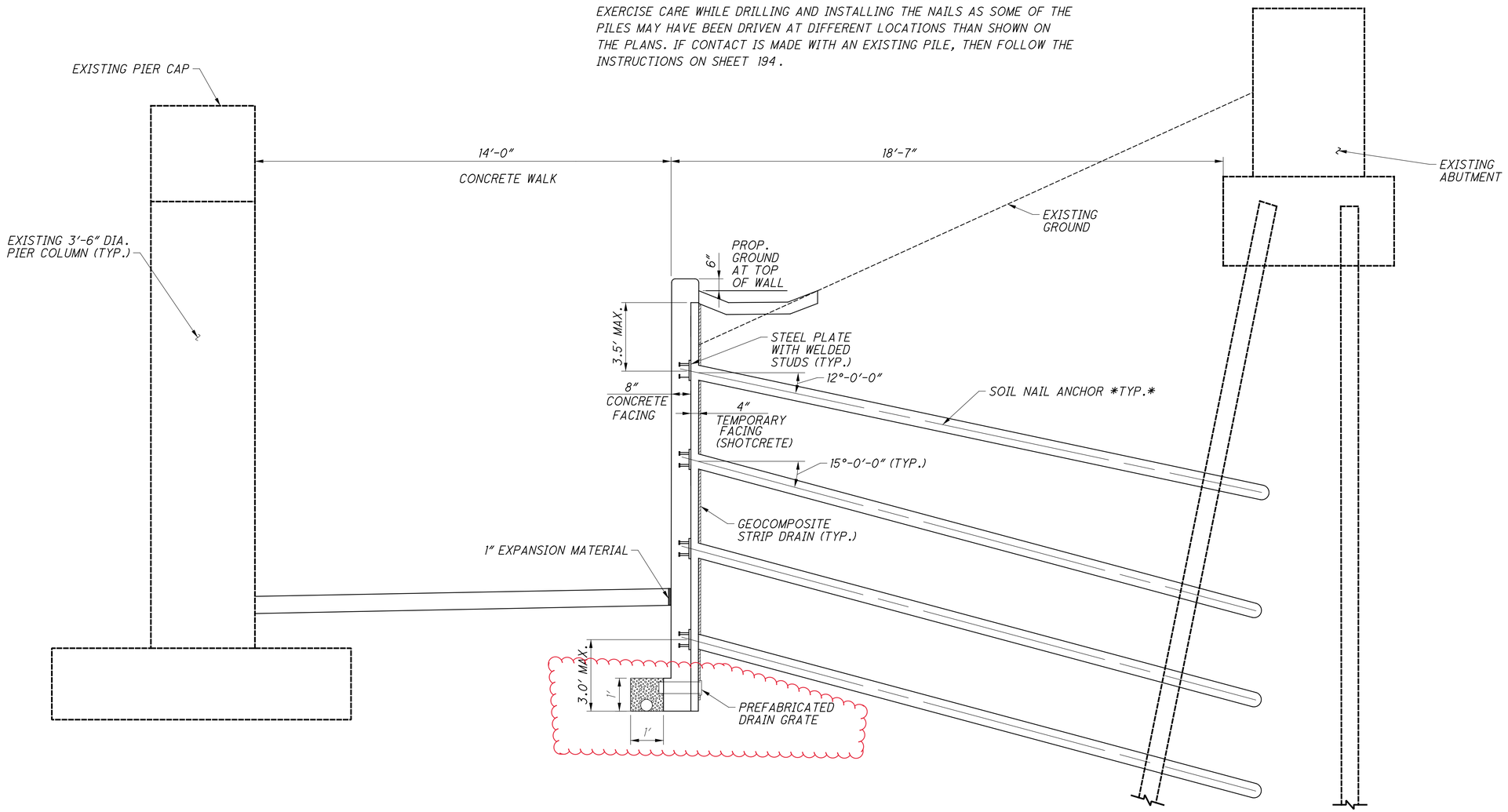
NOTES:

1. SEE SHEET 176 AND 177 FOR WALL 3 PLAN AND PROFILE.

2. ARCHITECTURAL FORMLINER NOT SHOWN IN THIS DETAIL. SEE SHEETS 194 AND 167 - 169 FOR ARCHITECTURAL FORMLINER DETAILS.

3. THIS DETAIL CORRESPONDS TO THE NAIL COLUMN CONSISTING OF NAILS 28, 131, 228, and 288. THE TOP NAIL OF THIS COLUMN IS THE CLOSEST IN ELEVATION TO THE BOTTOM OF THE PIER CAP. THEREFORE THIS NAIL, ALONG WITH NAILS 279 THROUGH 288, HAS BEEN DESIGNED WITH A 12 DEGREE INCLINATION ANGLE IN ORDER TO NOT CONFLICT WITH THE PIER CAP DURING INSTALLATION.

4. SOIL NAIL ADJUSTMENT: EACH SOIL NAIL WAS LOCATED SO AS TO MISS THE ABUTMENT PILES IN FRONT AND THE PIER COLUMNS BEHIND. IN SOME CASES, LATERAL ANGLES, WHICH WILL REQUIRE EXTRA BEVELED WASHERS, WERE PRESCRIBED IN ORDER TO MISS THE EXISTING COLUMNS AND PILES. EXERCISE CARE WHILE DRILLING AND INSTALLING THE NAILS AS SOME OF THE PILES MAY HAVE BEEN DRIVEN AT DIFFERENT LOCATIONS THAN SHOWN ON THE PLANS. IF CONTACT IS MADE WITH AN EXISTING PILE, THEN FOLLOW THE INSTRUCTIONS ON SHEET 194 .



TYPICAL SECTION

DESIGN AGENCY

REVIEWED RJM DATE 1/11/2024 | STRUCTURE FILE NUMBER

DRAWN MRS | REVISED

DESIGNED MRS | CHECKED RPM

RETAINING WALL DETAILS

RETAINING WALL 3
ALONG SR 725

MOT-725-14.41

PID No. 108619

18 / 23

193
220

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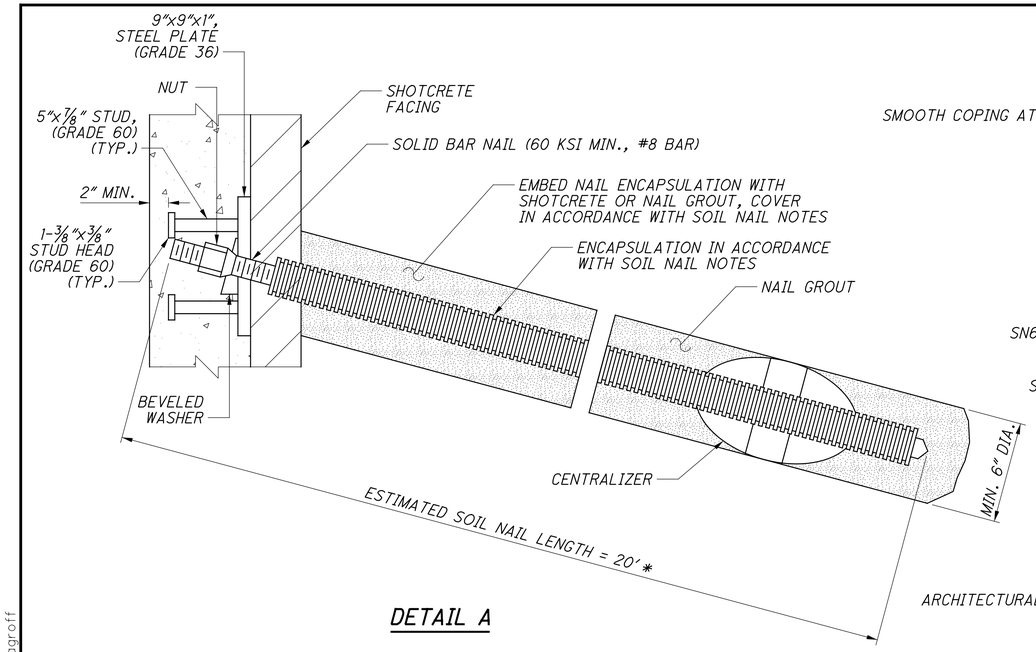
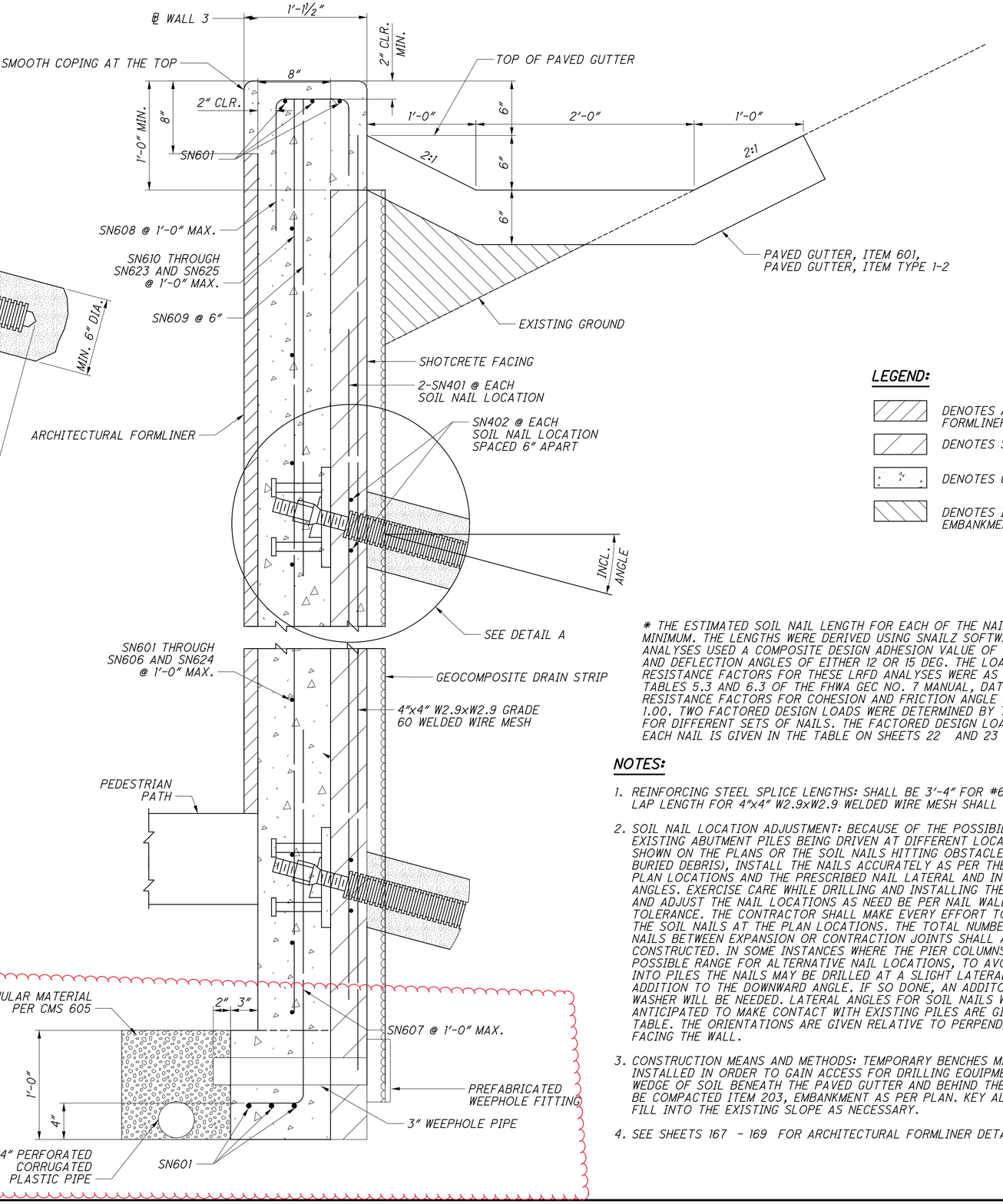


DETAIL A



LEGEND:

- DENOTES ARCHITECTURAL FORMLINER
- DENOTES SHOTCRETE
- DENOTES CONCRETE
- DENOTES ITEM 203 - EMBANKMENT MATERIAL

* THE ESTIMATED SOIL NAIL LENGTH FOR EACH OF THE NAILS IS 20' MINIMUM. THE LENGTHS WERE DERIVED USING SNAILZ SOFTWARE. THE ANALYSES USED A COMPOSITE DESIGN ADHESION VALUE OF 1.923 KIPS/L.F.; AND DEFLECTION ANGLES OF EITHER 12 OR 15 DEG. THE LOAD AND RESISTANCE FACTORS FOR THESE LRFD ANALYSES WERE AS SPECIFIED IN TABLES 5.3 AND 6.3 OF THE FHWA GEC NO. 7 MANUAL, DATED 2015. RESISTANCE FACTORS FOR COHESION AND FRICTION ANGLE WERE SET AT 1.00. TWO FACTORED DESIGN LOADS WERE DETERMINED BY THE ANALYSES FOR DIFFERENT SETS OF NAILS. THE FACTORED DESIGN LOAD (FDL) FOR EACH NAIL IS GIVEN IN THE TABLE ON SHEETS 22 AND 23 OF 23 .

NOTES:

1. REINFORCING STEEL SPLICE LENGTHS: SHALL BE 3'-4" FOR #6 BARS. LAP LENGTH FOR 4"x4" W2.9xW2.9 WELDED WIRE MESH SHALL BE 8".
2. SOIL NAIL LOCATION ADJUSTMENT: BECAUSE OF THE POSSIBILTY OF THE EXISTING ABUTMENT PILES BEING DRIVEN AT DIFFERENT LOCATIONS THAN SHOWN ON THE PLANS OR THE SOIL NAILS HITTING OBSTACLES (ROCKS OR BURIED DEBRIS), INSTALL THE NAILS ACCURATELY AS PER THE PRESCRIBED PLAN LOCATIONS AND THE PRESCRIBED NAIL LATERAL AND INCLINATION ANGLES. EXERCISE CARE WHILE DRILLING AND INSTALLING THE NAILS, AND ADJUST THE NAIL LOCATIONS AS NEED BE PER NAIL WALL INSTALLATION TOLERANCE. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO CONSTRUCT THE SOIL NAILS AT THE PLAN LOCATIONS. THE TOTAL NUMBER OF SOIL NAILS BETWEEN EXPANSION OR CONTRACTION JOINTS SHALL ALWAYS BE CONSTRUCTED. IN SOME INSTANCES WHERE THE PIER COLUMNS LIMIT THE POSSIBLE RANGE FOR ALTERNATIVE NAIL LOCATIONS, TO AVOID DRILLING INTO PILES THE NAILS MAY BE DRILLED AT A SLIGHT LATERAL ANGLE IN ADDITION TO THE DOWNWARD ANGLE. IF SO DONE, AN ADDITONAL BEVELED WASHER WILL BE NEEDED. LATERAL ANGLES FOR SOIL NAILS WHICH ARE ANTICIPATED TO MAKE CONTACT WITH EXISTING PILES ARE GIVEN IN THE TABLE. THE ORIENTATIONS ARE GIVEN RELATIVE TO PERPENDICULAR FACING THE WALL.
3. CONSTRUCTION MEANS AND METHODS: TEMPORARY BENCHES MAY BE INSTALLED IN ORDER TO GAIN ACCESS FOR DRILLING EQUIPMENT. THE WEDGE OF SOIL BENEATH THE PAVED GUTTER AND BEHIND THE WALL SHALL BE COMPACTED ITEM 203, EMBANKMENT AS PER PLAN. KEY ALL EMBANKMENT FILL INTO THE EXISTING SLOPE AS NECESSARY.
4. SEE SHEETS 167 - 169 FOR ARCHITECTURAL FORMLINER DETAILS.

DESIGN AGENCY
2000 Corporate Exchange Drive, Suite 250, Columbus, OH 43231

DESIGNED	DRAWN	REVIEWED	DATE
PPA	TBC	RJM	1/11/2024
CHECKED	REVISED	STRUCTURE FILE NUMBER	
RPM			

RETAINING WALL DETAILS
RETAINING WALL 3

MOT-725-14.41
PID No. 108619

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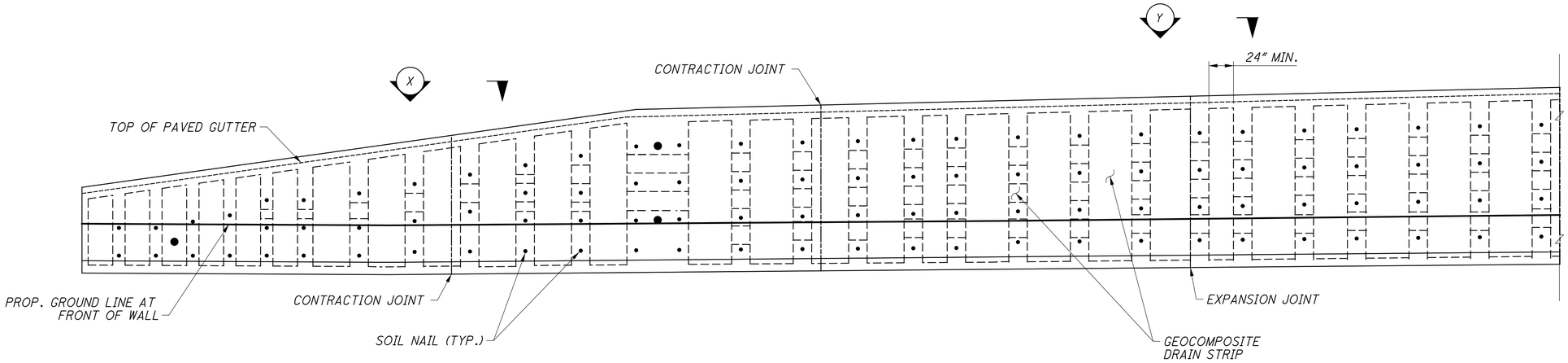
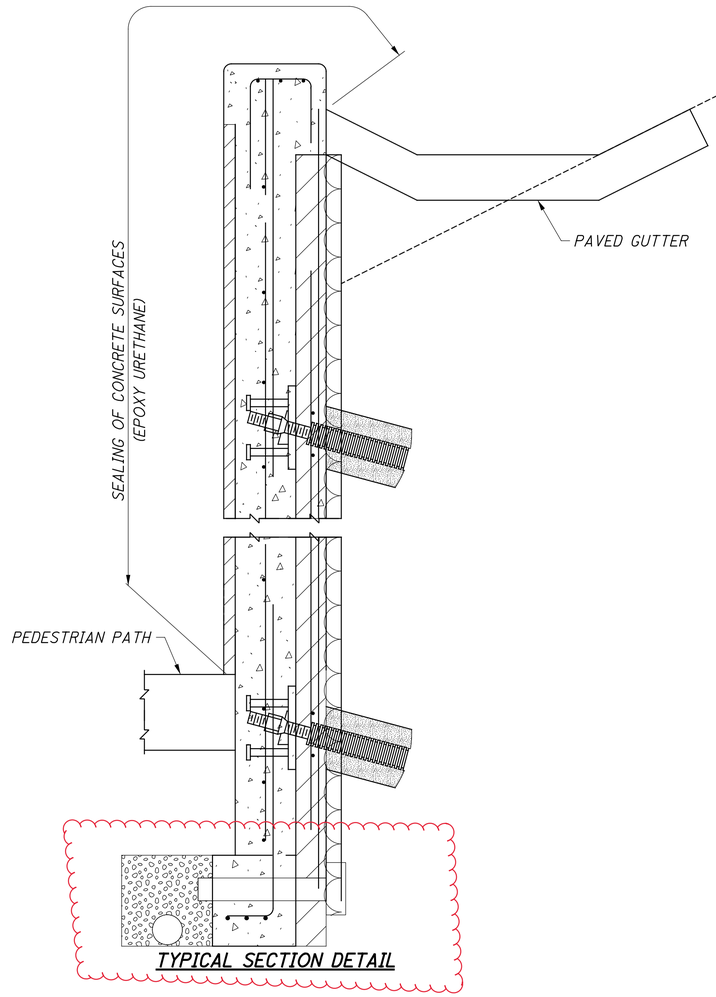
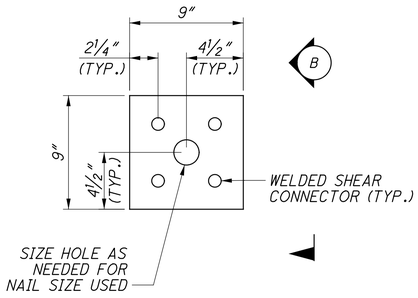


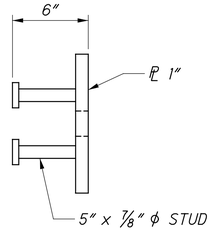
WALL DRAINAGE DETAIL



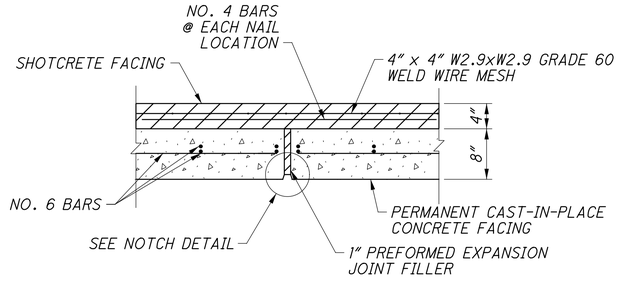
TYPICAL SECTION DETAIL



ANCHOR PLATE DETAILS

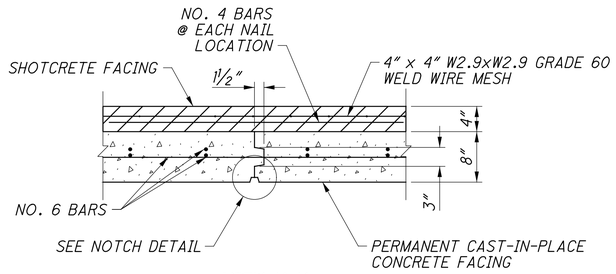


VIEW B



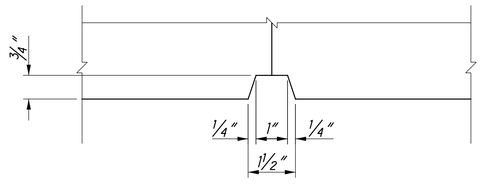
VIEW Y-Y

(TYPICAL EXPANSION JOINT)



VIEW X-X

(TYPICAL CONTRACTION JOINT)



NOTCH DETAIL

DESIGN AGENCY
JMT
2000 Crocker Exchange Drive, Suite 250, Columbus, OH 43221

DESIGNED	CHECKED	DATE
PPA	RPM	1/11/2024
DRAWN	REVISED	REVIEWED
TBC		RJM

STRUCTURE FILE NUMBER

RETAINING WALL DETAILS
RETAINING WALL 3

MOT-725-14.41
PID No. 108619

20 / 23

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