

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

CUY-43-6.04

CITY OF SOLON
CUYAHOGA COUNTY

PROJECT DESCRIPTION

THIS PROJECT WILL REPLACE THE EXISTING CUY-43-0607 BRIDGE LOCATED ON AURORA ROAD OVER HAWTHORNE CREEK, IN SOLON, OHIO. THE EXISTING SINGLE SPAN STRUCTURE WILL BE REPLACED WITH A SINGLE SPAN STEEL BEAM STRUCTURE. THE PROJECT ALSO INCLUDES NEW APPROACH SLABS, APPROACH ROADWAY RESURFACING, AND UTILITY RELOCATIONS.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA: 0.8 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.3 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: 1.1 ACRES

2019 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PLANS AND CHANGES 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 AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED _____
DATE _____ DISTRICT DEPUTY DIRECTOR

APPROVED _____
DATE _____ DIRECTOR, DEPARTMENT OF TRANSPORTATION



LOCATION MAP

LATITUDE: 41°24'15" LONGITUDE: 81°29'13"

SCALE IN MILES



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

DESIGN DESIGNATION

CURRENT ADT (2022)	11,000
DESIGN YEAR ADT (2042)	12,500
DESIGN HOURLY VOLUME (2042)	1,200
DIRECTIONAL DISTRIBUTION	51%
TRUCKS (24 HOUR B&C)	9%
DESIGN SPEED	40 MPH
LEGAL SPEED	35 MPH
DESIGN FUNCTIONAL CLASSIFICATION:	
MINOR URBAN ARTERIAL	
NHS PROJECT	NO

DESIGN EXCEPTIONS

NONE REQUIRED

UNDERGROUND UTILITIES
Contact Two Working Days Before You Dig

OHIO811. 8-1-1. or 1-800-362-2764
(Non-members must be called directly)

PLAN PREPARED BY:
ENGINEERING ASSOCIATES, INC.
1935 EAGLE PASS - WOOSTER OHIO
TELEPHONE: 330-345-6556

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ENGINEERS SEAL:

FOR STRUCTURES & WATER WORK



SIGNED: Andrew C. Baker
DATE: 9-28-21

ENGINEERS SEAL:

FOR ROADWAY AND DRAINAGE



SIGNED: Sheldon D. Schlabach
DATE: 9-28-2021

STANDARD CONSTRUCTION DRAWINGS										SUPPLEMENTAL SPECIFICATIONS	SPECIAL PROVISIONS	
BP-1.1	7/28/00	DM-1.1	7/17/20	RM-1.1	1/15/21	TC-41.20	10/18/13	AS-1-15	7/17/15	800	7/15/22	WATERWAY PERMITS CONDITIONS
BP-2.1	7/17/15	DM-1.2	7/16/21	RM-4.1	1/17/20	TC-42.20	10/18/13	AS-2-15	1/18/19	821	4/20/12	5/11/21
BP-2.2	1/15/21	DM-4.1	7/17/20	RM-4.2	4/17/20	TC-52.10	10/18/13	GSD-1-19	1/15/21	832	10/19/18	
BP-2.4	7/19/13	DM-4.3	1/15/16	MT-95.60	4/19/19	TC-71.10	7/16/21	PCB-91	7/17/20	902	7/19/19	
BP-2.5	7/19/13	DM-4.4	1/15/16	MT-95.61	4/19/19			BR-2-15	7/17/15	921	4/20/12	
BP-3.1	1/17/20	MGS-1.1	7/16/21	MT-97.10	4/19/19							
BP-4.1	7/19/13	MGS-2.1	1/19/18	MT-99.20	4/19/19							
BP-5.1	7/16/21	MGS-3.1	1/19/18	MT-101.70	1/17/20							
		MGS-3.2	1/18/13									
		MGS-4.2	7/19/13	MT-101.75	1/17/20							
				MT-101.90	7/17/20							
		MGS-4.3	1/18/13	MT-105.10	1/17/20							

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FEDERAL PROJECT NO. E191(572)
PID NO. 104097
CONSTRUCTION PROJECT NO. -
RAILROAD INVOLVEMENT NONE
CUY-43-6.04
1/116

EARTHWORK FOR MAINTAINING TRAFFIC

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED IN THE PLAN FOR INFORMATION ONLY.

EXCAVATION FOR MAINTAINING TRAFFIC 83 CU. YD.
EMBANKMENT FOR MAINTAINING TRAFFIC 83 CU. YD.

WHEN UNDERCUTS ARE NECESSARY FOR MAINLINE PAVEMENT OR EMBANKMENT CONSTRUCTION, EVALUATE THE NEED FOR TEMPORARY ROAD UNDERCUTS IF WITHIN A CLOSE PROXIMITY TO THE MAINLINE UNDERCUTS. A GEOTECHNICAL EVALUATION SHOULD BE CONSIDERED TO DETERMINE IF THE EXISTING SOIL CONDITIONS ARE ADEQUATE TO SUPPORT THE TEMPORARY ROAD. ADDITIONAL SOIL BORINGS ALONG THE TEMPORARY ROAD ARE NOT NORMALLY REQUIRED.

ITEM 614, PORTABLE CHANGEABLE MESSAGE SIGNS, AS PER PLAN

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND REMOVE, WHEN NO LONGER NEEDED, A CHANGEABLE MESSAGE SIGN. THE SIGN SHALL BE OF A TYPE SHOWN ON A LIST OF APPROVED PCMS UNITS AVAILABLE ON THE OFFICE OF MATERIALS MANAGEMENT WEB PAGE. THE LIST CONTAINS CLASS A AND B UNITS WITH MINIMUM LEGIBILITY DISTANCES OF 800 FEET AND 650 FEET, RESPECTIVELY.

EACH SIGN SHALL BE TRAILER-MOUNTED AND EQUIPPED WITH A FUNCTIONAL DIMMING MECHANISM, TO DIM THE SIGN DURING DARKNESS, AND A TAMPER AND VANDAL PROOF ENCLOSURE. EACH SIGN SHALL BE PROVIDED WITH APPROPRIATE TRAINING AND OPERATION INSTRUCTIONS TO ENABLE ON-SITE PERSONNEL TO OPERATE AND TROUBLESHOOT THE UNIT. THE SIGN SHALL ALSO BE CAPABLE OF BEING POWERED BY AN ELECTRICAL SERVICE DROP FROM A LOCAL UTILITY COMPANY. THE PCMS SHALL BE DELINEATED IN ACCORDANCE WITH C&MS 614.03.

PLACEMENT, OPERATION, MAINTENANCE AND ALL ACTIVATION OF THE SIGNS BY THE CONTRACTOR SHALL BE AS DIRECTED BY THE ENGINEER. THE PCMS SHALL BE LOCATED IN A HIGHLY VISIBLE POSITION YET PROTECTED FROM TRAFFIC. THE CONTRACTOR SHALL, AT THE DIRECTION OF THE ENGINEER, RELOCATE THE PCMS TO IMPROVE VISIBILITY OR ACCOMMODATE CHANGED CONDITIONS. WHEN NOT IN USE, THE PCMS SHALL BE TURNED OFF. ADDITIONALLY, WHEN NOT IN USE FOR EXTENDED PERIODS OF TIME, THE PCMS SHALL BE TURNED AWAY FROM ALL TRAFFIC.

THE ENGINEER SHALL BE PROVIDED ACCESS TO EACH SIGN UNIT AND SHALL BE PROVIDED WITH APPROPRIATE TRAINING AND OPERATION INSTRUCTIONS TO ENABLE ODOT PERSONNEL TO OPERATE AND TROUBLESHOOT THE UNIT, AND TO REVISE SIGN MESSAGES, IF NECESSARY.

ALL MESSAGES TO BE DISPLAYED ON THE SIGN WILL BE PROVIDED BY THE ENGINEER. A LIST OF ALL REQUIRED PREPROGRAMMED MESSAGES WILL BE GIVEN TO THE CONTRACTOR AT THE PROJECT PRECONSTRUCTION CONFERENCE. THE SIGN SHALL HAVE THE CAPABILITY TO STORE UP TO 99 MESSAGES. MESSAGE MEMORY OR PRE-PROGRAMMED DISPLAYS SHALL NOT BE LOST AS A RESULT OF POWER FAILURES TO THE ON-BOARD COMPUTER. THE SIGN LEGEND SHALL BE CAPABLE OF BEING CHANGED IN THE FIELD. THREE-LINE PRESENTATION FORMATS WITH UP TO SIX MESSAGE PHASES SHALL BE SUPPORTED. PCMS FORMAT SHALL PERMIT THE COMPLETE MESSAGE FOR EACH PHASE TO BE READ AT LEAST TWICE.

THE PCMS SHALL CONTAIN AN ACCURATE CLOCK AND PROGRAMMING LOGIC WHICH WILL ALLOW THE SIGN TO BE ACTIVATED, DEACTIVATED OR MESSAGES CHANGED AUTOMATICALLY AT DIFFERENT TIMES OF THE DAY FOR DIFFERENT DAYS OF THE WEEK.

THE PCMS UNIT SHALL BE MAINTAINED IN GOOD WORKING ORDER BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF C&MS 614.07. THE CONTRACTOR SHALL, PRIOR TO ACTIVATING THE UNIT, MAKE ARRANGEMENTS, WITH AN AUTHORIZED SERVICE AGENT FOR THE PCMS, TO ASSURE PROMPT SERVICE IN THE EVENT OF FAILURE. ANY FAILURE SHALL NOT RESULT IN THE SIGN BEING OUT OF SERVICE FOR MORE THAN 12 HOURS, INCLUDING WEEKENDS. FAILURE TO COMPLY MAY RESULT IN AN ORDER TO STOP WORK AND OPEN ALL TRAFFIC LANES AND/OR IN THE DEPARTMENT TAKING APPROPRIATE ACTION TO SAFELY CONTROL TRAFFIC. THE ENTIRE COST TO CONTROL TRAFFIC, ACCRUED BY THE DEPARTMENT DUE TO THE CONTRACTOR'S NONCOMPLIANCE, WILL BE DEDUCTED FROM MONEYS DUE, OR TO BECOME DUE TO THE CONTRACTOR ON HIS CONTRACT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR 24-HOUR-PER-DAY OPERATION AND MAINTENANCE OF THESE SIGNS ON THE PROJECT FOR THE DURATION OF THE PHASES WHEN THE PLAN REQUIRES THEIR USE.

PAYMENT FOR THE ABOVE DESCRIBED ITEM SHALL BE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, FUELS, LUBRICATING OILS, SOFTWARE, HARDWARE AND INCIDENTALS TO PERFORM THE ABOVE DESCRIBED WORK.

ITEM 614, PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN 18 SIGN MONTH ASSUMING 2 PCMS SIGN(S) FOR 9 MONTH(S)

DELINEATION OF PORTABLE AND PERMANENT BARRIER

BARRIER REFLECTORS AND OBJECT MARKERS SHALL BE INSTALLED ON ALL PORTABLE BARRIER (PB) USED FOR TRAFFIC CONTROL; AND, ON PERMANENT CONCRETE BARRIER (INCLUDING BRIDGE PARAPETS) LOCATED WITHIN 5 FEET OF THE EDGE OF THE ADJACENT TRAVEL LANE.

BARRIER REFLECTORS SHALL CONFORM TO C&MS 626, EXCEPT THAT THE SPACING SHALL BE AS PER TRAFFIC SCD MT-101.70. OBJECT MARKERS AND THEIR INSTALLATION SHALL CONFORM TO C&MS 614.03 AND SCD MT-101.70. WHEN THE PB CONTAINS GLARE SCREEN, ONE SET OF THREE VERTICAL STRIPES OF SHEETING SHALL BE CONSIDERED EQUIVALENT TO AN OBJECT MARKER, ONE-WAY.

INCREASED BARRIER DELINEATION, AS SPECIFIED HEREIN, SHALL BE INSTALLED ON ALL PB AND PERMANENT CONCRETE BARRIER LOCATED WITHIN 5 FEET OF THE EDGE OF THE TRAVELED LANE UNDER EITHER OF THE FOLLOWING CONDITIONS: ALONG TAPERS AND TRANSITION AREAS; OR ALONG CURVES (OUTSIDE ONLY) WITH DEGREE OF CURVATURE GREATER THAN OR EQUAL TO 3 DEGREES.

THE INCREASED BARRIER DELINEATION SHALL CONSIST OF EITHER DELINEATION PANELS OR THE TRIPLE STACKING OF WORK ZONE BARRIER REFLECTORS.

DELINEATION PANELS SHALL CONSIST OF PANELS OF DELINEATION, APPROXIMATELY 34 INCHES LONG AND 6 INCHES WIDE AND SHALL BE "CRIMPED." PANELS SHALL BE INSTALLED AND SPACED PER TRAFFIC SCD MT-101.70.

TRIPLE-STACKED BARRIER REFLECTORS SHALL CONSIST OF ALIGNING THREE BARRIER REFLECTORS VERTICALLY, AT LOCATIONS WHERE A SINGLE BARRIER REFLECTOR WOULD BE OTHERWISE ATTACHED. THERE SHALL BE NO OPEN SPACE BETWEEN THE ADJACENT BARRIER REFLECTORS. THE TRIPLE-STACKED BARRIER REFLECTORS SHALL CONFORM TO C&MS 626, EXCEPT THAT THEY SHALL BE SPACED AND ALIGNED PER TRAFFIC SCD MT-101.70.

ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE PLANS AND CARRIED TO THE GENERAL SUMMARY.

PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIAL, LABOR, INCIDENTALS AND EQUIPMENT NECESSARY FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING EACH OF THE ABOVE ITEMS.

ALONG RUNS OF INCREASED BARRIER DELINEATION WHERE THIS ITEM IS PROVIDED, THE QUANTITY SHALL BE MEASURED AS THE ENTIRE LENGTH OF THE RUN OF INCREASED BARRIER DELINEATION, INCLUDING THE SPACES BETWEEN THE INDIVIDUAL DELINEATION PANELS OR STACKS OF BARRIER REFLECTORS.

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CALCULATED
KJA
CHECKED
SDS

MAINTENANCE OF TRAFFIC NOTES

CUY - 43-6.04

6
116

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SHEET NUM.											PART.	ALT	ITEM	ITEM	GRAND	UNIT	DESCRIPTION	SEE SHEET NO.
3, 4	5, 6, 7	10, 11	24	25	26	39	42	63	103	OFFICE CALCS	01/BRO/BR	(X)	EXT	TOTAL				
										88	88		SPECIAL	45130000	88	FT	PRESSURE RELIEF JOINT, TYPE A	
										71	71		452	12010	71	SY	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS OC IP	
										549	549		609	26000	549	FT	CURB, TYPE 6	
																	WATER WORK	
							40				40		638	06705	40	FT	20" STEEL PIPE ENCASEMENT, OPEN CUT, AS PER PLAN	39
							40				40		638	06914	40	FT	54" STEEL PIPE ENCASEMENT, OPEN CUT, AS PER PLAN	39
							1				1		SPECIAL	63820538	1	EACH	6" GATE VALVE WITH VALVE BOX, CITY OF CLEVELAND SPECIFICATIONS	
							2				2		SPECIAL	63820586	2	EACH	12" GATE VALVE WITH VALVE BOX, CITY OF CLEVELAND SPECIFICATIONS	
							2				2		SPECIAL	63820738	2	EACH	2" AIR RELEASE VALVE, CITY OF CLEVELAND SPECIFICATIONS	
							1				1		SPECIAL	63820750	1	EACH	6" FIRE HYDRANT, CITY OF CLEVELAND SPECIFICATIONS	
							1				1		SPECIAL	63820752	1	EACH	FIRE HYDRANT REMOVED FOR STORAGE, CITY OF CLEVELAND SPECIFICATIONS	
							45				45		SPECIAL	63820770	45	FT	1" COPPER WATER SERVICE LINE, CITY OF CLEVELAND SPECIFICATIONS	
							2				2		638	98000	2	EACH	WATER WORK, MISC.:CONNECT TO EXISTING 12" CI WATERLINE	39
							1				1		638	98000	1	EACH	WATER WORK, MISC.:CONNECTION ASSEMBLY	39
						LS					LS		638	98100	LS		WATER WORK, MISC.:CATHODIC PROTECTION FOR 36" DUCTILE IRON WATERMAIN, COMPLETE IN PLACE	39
							288				288		638	98600	288	FT	WATER WORK, MISC.:12" WATER MAIN AND FITTINGS	39
							393				393		638	98600	393	FT	WATER WORK, MISC.:36" WATER MAIN AND FITTINGS	39
							15				15		638	98600	15	FT	WATER WORK, MISC.:6" WATER MAIN AND FITTINGS	39
																	WATER WORK ALTERNATES	
							2				2	X	638	98000	2	EACH	WATER WORK, MISC.:CONNECT TO EXISTING 36" PCC WATERMAIN (ALTERNATE 1)	39
							2				2	X	638	98000	2	EACH	WATER WORK, MISC.:CONNECT TO EXISTING 36" PCC WATERMAIN (ALTERNATE 2)	39
																	TRAFFIC CONTROL	
			13								13		626	00116	13	EACH	BARRIER REFLECTOR, TYPE 5, (BI-DIRECTIONAL)	
								10.5			10.5		630	02100	10.5	FT	GROUND MOUNTED SUPPORT, NO. 2 POST	
								41.5			41.5		630	03100	41.5	FT	GROUND MOUNTED SUPPORT, NO. 3 POST	
								32.7			32.7		630	80100	32.7	SF	SIGN, FLAT SHEET	
								7			7		630	84900	7	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	
								1			1		630	85100	1	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
								6			6		630	86002	6	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
								0.4			0.4		642	00300	0.4	MILE	CENTER LINE, TYPE 1	
								136			136		642	00400	136	FT	CHANNELIZING LINE, 8", TYPE 1	
								28			28		642	00500	28	FT	STOP LINE, TYPE 1	
								8			8		642	01300	8	EACH	LANE ARROW, TYPE 1	
																	STRUCTURE OVER 20 FOOT SPAN (CUY-43-0607)	
																	FOR QUANTITIES SEE SHEET 67	
																	MAINTENANCE OF TRAFFIC	
	16										16		410	12000	16	CY	TRAFFIC COMPACTED SURFACE, TYPE A OR B	
	48										48		614	11110	48	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
		930									930		614	11630	930	FT	INCREASED BARRIER DELINEATION	
		13									13		614	12380	13	EACH	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (UNIDIRECTIONAL)	
		2									2		614	13000	2	CY	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	
			46								46		614	13310	46	EACH	BARRIER REFLECTOR, TYPE 1, (BI-DIRECTIONAL)	
			28								28		614	13310	28	EACH	BARRIER REFLECTOR, TYPE 1, (ONE WAY)	
			28								28		614	13350	28	EACH	OBJECT MARKER, ONE WAY	
			46								46		614	13360	46	EACH	OBJECT MARKER, TWO WAY	
	18										18		614	18601	18	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	6
											0.71		614	21000	0.71	MILE	WORK ZONE CENTER LINE, CLASS I	
											2.1		614	22010	2.1	MILE	WORK ZONE EDGE LINE, CLASS I, 6"	
											263		614	23010	263	FT	WORK ZONE CHANNELIZING LINE, CLASS I, 12"	
											81		614	26000	81	FT	WORK ZONE STOP LINE, CLASS I	
											9		614	30000	9	EACH	WORK ZONE ARROW, CLASS I	
											LS		615	10000	LS		ROADS FOR MAINTAINING TRAFFIC	
											351		615	20000	351	FT	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	
											2		616	10000	2	MGAL	WATER	
											3,050		622	41011	3,050	FT	PORTABLE BARRIER, 50", AS PER PLAN	5
																	INCIDENTALS	
											LS		614	11000	LS		MAINTAINING TRAFFIC	
											6		619	16010	6	MNTH	FIELD OFFICE, TYPE B	
											LS		623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
											LS		624	10000	LS		MOBILIZATION	

GENERAL SUMMARY

CUY - 43 - 6 . 04

STANDARDS FOR WATERWORK

ALL WATER WORK SHALL CONFORM TO THE CLEVELAND DIVISION OF WATER STANDARDS AND SPECIFICATIONS.

WATERLINE SHUTDOWN RESTRICTIONS

THE CONTRACTOR SHALL NOTIFY THE CLEVELAND DIVISION OF WATER (CONTACT INFORMATION BELOW) IN WRITING A MINIMUM OF 30 DAYS IN ADVANCE OF THE DATE THE WATERLINE SHUTDOWN IS NEEDED.

CLEVELAND DIVISION OF WATER
ATTN: FRED ROBERTS
1201 LAKESIDE AVE.
CLEVELAND, OH 44114
(216) 664-2444

WATERLINE CLOSURES FOR THE 36" WATERLINE ARE RESTRICTED TO THE PERIOD BETWEEN NOVEMBER 1 AND MAY 1, AND SHALL NOT EXCEED 2 MONTHS IN TOTAL DURATION.

THERE ARE NO RESTRICTIONS FOR THE SHUTTING DOWN OF THE 12" WATERLINE, PROVIDED THE SHUTDOWN DOES NOT EXCEED 2 MONTHS IN TOTAL DURATION.

WATER SERVICE LOCATIONS

WATER SERVICES SHOWN IN THE PLANS ARE BASED ON FIELD SURVEY WORK, RECORD PLANS AND INFORMATION PROVIDED BY CLEVELAND DIVISION OF WATER. THE CONTRACTOR SHALL BE INFORMED THE ACTUAL LOCATIONS IN THE FIELD MAY VARY FROM WHAT IS SHOWN IN THE PLANS, HOWEVER NO ADDITIONAL COMPENSATION SHALL BE MADE TO ACCOMMODATE THESE VARIANCES.

ITEM 638 - WATER WORK, MISC.: WATER MAIN AND FITTINGS (VARIOUS SIZES)

THIS ITEM SHALL MEET ALL OF CLEVELAND DIVISION OF WATER STANDARD REQUIREMENTS FOR WATERLINE INSTALLATION.

ALL PIPE JOINTS SHALL BE BOLTLESS RESTRAINED PIPE JOINTS (MCWANE TR FLEX OR APPROVED EQUAL).

ANY SURFACE RESTORATION REQUIRED FOR THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 638 - WATER WORK, MISC.: WATER MAIN AND FITTINGS.

PRESTRESSED CONCRETE CYLINDER PIPE (PCCP) CONFORMING TO THE CLEVELAND DIVISION OF WATER SUPPLEMENTAL SPECIFICATIONS, PROVIDED WITH THE BID DOCUMENTS, IS ACCEPTABLE AS A SUBSTITUTE MATERIAL. IN ORDER TO FACILITATE THE INSTALLATION OF PRESTRESSED CONCRETE CYLINDER PIPE (PCCP) OR BAR-WRAPPED CONCRETE CYLINDER PIPE (BWP) INTO A STEEL TUNNEL CASING, THE PIPE MANUFACTURER SHALL CREATE THICKENED BANDS OF MORTAR COATING ON THE PIPE EXTERIOR TO ACT AS SKIDS THUS PROTECTING THE REMAINDER OF THE PIPE COATING AND THE GROUT BANDS AS THE PIPE IS PUSHED INTO THE TUNNEL CASING. THESE BANDS SHALL BE OF SUFFICIENT HEIGHT AND WIDTH TO PROVIDE THIS PROTECTION. THE PIPE MANUFACTURER SHALL SUBMIT, FOR REVIEW BY THE ENGINEER, DETAILED DRAWINGS OF THE PROPOSED BANDS. THE FIRST LENGTH OF PIPE TO BE INSTALLED IN THE TUNNEL CASING SHALL HAVE TWO RAISED BANDS INSTALLED NEAR THE ENDS OF THE PIPE. SUBSEQUENT LENGTHS OF PIPE SHALL HAVE ONE RAISED BAND INSTALLED NEAR THE TRAILING END OF THE PIPE.

ALL ADDITIONAL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ALL RESPECTIVE SIZES OF ITEM 638 - WATER WORK, MISC.: WATER MAIN AND FITTINGS.

ITEM 638 - WATER WORK, MISC.: CONNECT TO EXISTING 12" CI WATERMAIN

THE CONTRACTOR SHALL CONNECT TO THE EXISTING 12" CI PIPE PER THE DETAIL ON SHEET 44.

THIS WORK SHALL BE COORDINATED WITH THE CLEVELAND DIVISION OF WATER AS OUTLINED IN THEIR NOTES ON SHEET 40.

THE CONTRACTOR SHALL INCLUDE IN THE UNIT BID PRICE FOR ITEM 638 - WATER WORK, MISC.: CONNECT TO EXISTING 12" CI WATERMAIN, THE COST FOR ABANDONING AND/OR REMOVING EXISTING WATER MAINS, AS WELL AS ANY COST ASSOCIATED WITH THRUST BLOCKS, CAPS OR OTHER APPURTENANT FITTINGS NECESSARY FOR THE ABANDONMENT AND/OR REMOVAL.

ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ALL RESPECTIVE SIZES OF ITEM 638 - WATER WORK, MISC.: CONNECT TO EXISTING 12" CI WATERMAIN.

ITEM 638 - WATER WORK, MISC.: CONNECT TO EXISTING 36" PCC WATERMAIN (ALTERNATE 1)

THE CONTRACTOR SHALL CONNECT TO THE EXISTING PCC PIPE WITH A FORTERRA TRANSITION (OR APPROVED EQUAL) AS DETAILED ON SHEET 43.

THIS WORK SHALL BE COORDINATED WITH THE CLEVELAND DIVISION OF WATER AS OUTLINED IN THEIR NOTES ON SHEET 40.

THE CONTRACTOR SHALL INCLUDE IN THE UNIT BID PRICE FOR ITEM 638 - WATER WORK, MISC.: CONNECT TO EXISTING 36" PCC WATERMAIN, THE COST FOR ABANDONING AND/OR REMOVING EXISTING WATER MAINS, AS WELL AS ANY COST ASSOCIATED WITH THRUST BLOCKS, CAPS OR OTHER APPURTENANT FITTINGS NECESSARY FOR THE ABANDONMENT AND/OR REMOVAL.

ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ALL RESPECTIVE SIZES OF ITEM 638 - WATER WORK, MISC.: CONNECT TO EXISTING 36" PCC WATERMAIN.

ITEM 638 - WATER WORK, MISC.: CONNECT TO EXISTING 36" PCC WATERMAIN (ALTERNATE 2)

THIS ITEM SHALL MEET THE REQUIREMENTS OF ITEM 638 - WATER WORK, MISC.: CONNECT TO EXISTING 36" PCC WATERMAIN, AND IN ADDITION THE CONTRACTOR SHALL INSTALL A VALVE ASSEMBLY PER SM-STD2B AND CONNECT TO THE EXISTING 36" PCC WATERLINE WITH A FORTERRA TRANSITION (OR APPROVED EQUAL).

FULL DEPTH PAVEMENT PER THE TYPICAL SECTION SHALL BE PLACED IN THE AREAS DISTURBED BY THE INSTALLATION OF THE VALVE ASSEMBLY.

ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ALL RESPECTIVE SIZES OF ITEM 638 - WATER WORK, MISC.: CONNECT TO EXISTING 36" PCC WATERMAIN. (ALTERNATE 2)

ITEM 638 - WATER WORK, MISC.: CONNECTION ASSEMBLY

THE CONTRACTOR SHALL COMPLETE THE SERVICE CONNECTION PER THE CLEVELAND DIVISION OF WATER STANDARD DRAWING STD-C04.

THIS ITEM INCLUDES THE TAPPING SADDLE, COUPLINGS, CORP STOP, CURB STOP, CURB BOX AND ALL WORK PER THE STANDARD DETAIL, AND THE REMOVAL OF THE EXISTING SERVICE CONNECTION, VALVES, PIPE, CURB STOPS AND BOXES, AND OTHER MATERIALS ASSOCIATED WITH THE EXISTING SERVICE CONNECTION. THIS WORK DOES NOT INCLUDE THE COPPER SERVICE PIPE WHICH SHALL BE FURNISHED UNDER ITEM 638 - 1" COPPER SERVICE BRANCH.

ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 638 - WATER WORK MISC.: CONNECTION ASSEMBLY.

**20" STEEL PIPE ENCASEMENT, OPEN CUT, AS PER PLAN.
54" STEEL PIPE ENCASEMENT, OPEN CUT, AS PER PLAN.**

THE CARRIER PIPE SHALL BE ENCASED WITH A 20", SCHEDULE 20 STEEL PIPE WITH A WALL THICKNESS OF 3/8" AS DETAILED IN STANDARD DRAWING STD-016.

THE CONTRACTOR SHALL SUBMIT A GROUT PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE MANUFACTURING OF THE 54" STEEL PIPE, WHICH MAY OR MAY NOT INCLUDE SMALL DIAMETER THREADED OUTLETS/GROUT PORTS TO BE USED FOR THE GROUTING OF THE ANNULUS BETWEEN THE ENCASEMENT PIPE AND CARRIER PIPE.

THE GROUT MIX FOR THE ANNULUS SHALL CONSIST OF A HIGH ALKALINITY (ELEVATED PH) LOW DENSITY CELLULAR GROUT THAT HAS A WET CAST DENSITY OF 45-60 PCF, AND A MINIMUM DESIGN STRENGTH EQUAL TO 300 PSI.

COST FOR CONCRETE ENCASEMENT OF WATERLINE AND BACKFILL FOR THE STREAM EXCAVATION AS REQUIRED BY STANDARD DRAWINGS STD-019 & STD-020 SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 638 - 20" STEEL PIPE ENCASEMENT, OPEN CUT, AS PER PLAN. OR ITEM 638 - 54" STEEL PIPE ENCASEMENT, OPEN CUT, AS PER PLAN.

ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 638 - 20" STEEL PIPE ENCASEMENT, OPEN CUT, AS PER PLAN. OR ITEM 638 - 54" STEEL PIPE ENCASEMENT, OPEN CUT, AS PER PLAN.

ITEM 638 - WATERWORK MISC.: CATHODIC PROTECTION FOR 36" DUCTILE IRON WATERMAIN, COMPLETE IN PLACE

THIS ITEM OF WORK SHALL CONSIST OF INSTALLING A CATHODIC PROTECTION SYSTEM PER CLEVELAND WATER DEPARTMENT STANDARD DRAWINGS SM-STD10 & SM-STD12. THIS WORK INCLUDES FURNISHING ALL LABOR, EQUIPMENT, APPLIANCES, AND MATERIALS IN PERFORMING ALL OPERATIONS NECESSARY FOR THE INSTALLATION OF ALL ELECTRICAL WORK FOR AN ELECTROLYSIS TEST STATION IN STRICT ACCORDANCE WITH THIS SECTION AND CLEVELAND WATER DEPARTMENT STANDARD DRAWING SM-STD10 AND APPROVAL OF THE ENGINEER. THIS WORK ALSO INCLUDES THE FURNISHING OF 26-60LB ZINC VERTICAL SACRIFICIAL ANODES AT THE BEGINNING AND END OF THE INSTALLED PIPE, PLUS ANODE LOCATED AT APPROXIMATELY 10 FOOT SPACINGS ALONG THE WATERMAIN AS INDICATED ON THE PLANS. THE VERTICAL ANODES SHALL BE LOCATED 3 FEET HORIZONTAL OFFSET FROM THE PIPE AND THE TOP OF THE VERTICAL ANODE SHALL BE LOCATED BELOW THE OUTSIDE INVERT OF THE WATERMAIN PIPE. TWO ELECTROLYSIS TEST STATIONS WILL BE INSTALLED AT EITHER END OF THE ALIGNMENT. THIS WORK INCLUDES THE ELECTRICAL CONTINUITY BONDING OF ALL NEW PIPE SEGMENTS.

THE INSTALLATION, MATERIAL AND EQUIPMENT REQUIRED FOR THE ELECTROLYSIS TEST STATION SHALL CONFORM TO THE SPECIFICATIONS SHOWN IN CLEVELAND WATER DEPARTMENT STANDARD DRAWING SM-STD10 AND SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE AND THE ELECTRICAL CODES OF THE STATE OF OHIO AND THE POLITICAL SUBDIVISIONS, AS APPLICABLE TO THE LOCATION IN WHICH THE WORK IS TO BE PERFORMED AND WITH THE APPROVAL OF THE ENGINEER.

PAYMENT WILL BE MADE AT THE CONTRACT LUMP SUM UNIT PRICE BID, WHICH SHALL INCLUDE ALL ELECTRICAL WORK REQUIRED FOR THE INSTALLATION OF THE ELECTROLYSIS TEST STATION; ADDITIONAL EXCAVATION FOR THE ANODE BEDS AND COVERING OF THE ANODES WITH NATIVE EARTH BACKFILL TAKEN FROM THE BOTTOM OF THE PIPE TRENCH, BACKFILL AND OR PREMIUM BACKFILL TO BRING THE TRENCH BED TO GRADE, ADDITIONAL SHEETING AND SHORING (INCLUDING USE OF TRENCH BOX) NEEDED TO INSTALL ANODE BED, REPAIR AND/OR REPLACEMENT OF MATERIALS DUE TO DEFECTS; TRENCH DEWATERING, AND ROCK EXCAVATION AND THE FURNISHING OF ALL MATERIALS, LABOR, TOOLS, EQUIPMENT, AND INCIDENTALS AS SPECIFIED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT.

THE CONTRACTOR HAS THE OPTION TO USE PCCP PIPE FOR THE 36" WATER MAIN ON THIS PROJECT. IF PCCP IS USED, CATHODIC PROTECTION WILL NOT BE NECESSARY AND THIS ITEM WILL BE NON-PERFORMED.

CALCULATED
JGL
CHECKED
ACB

WATERLINE NOTES

CUY - 43-6.04

39
116

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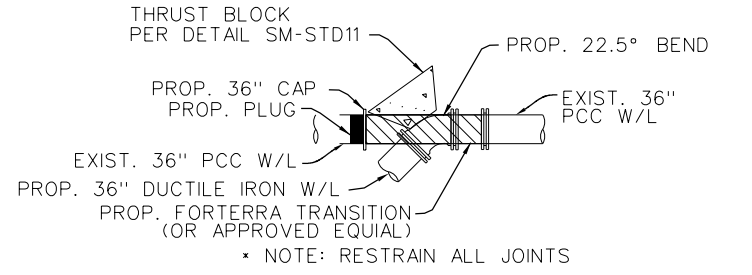
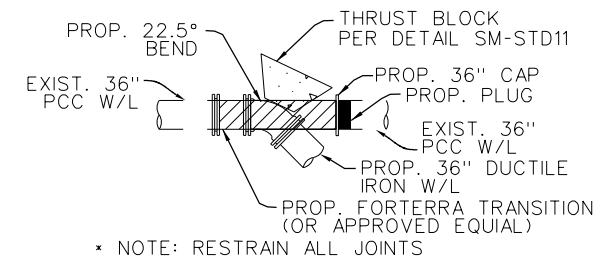
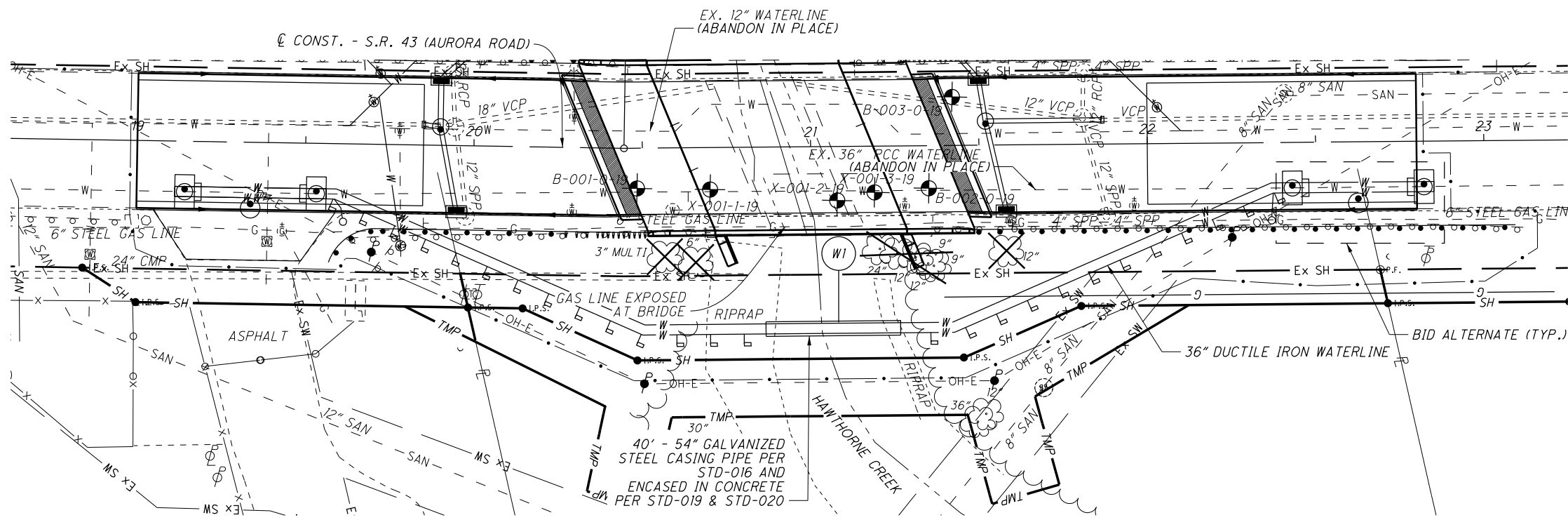


0 10 20 30 40
HORIZONTAL SCALE IN FEET
CALCULATED JGL
CHECKED ACB

36" WATERLINE DETAILS - RIGHT
STA 19+00 TO STA 23+00

CUY-43-6.04

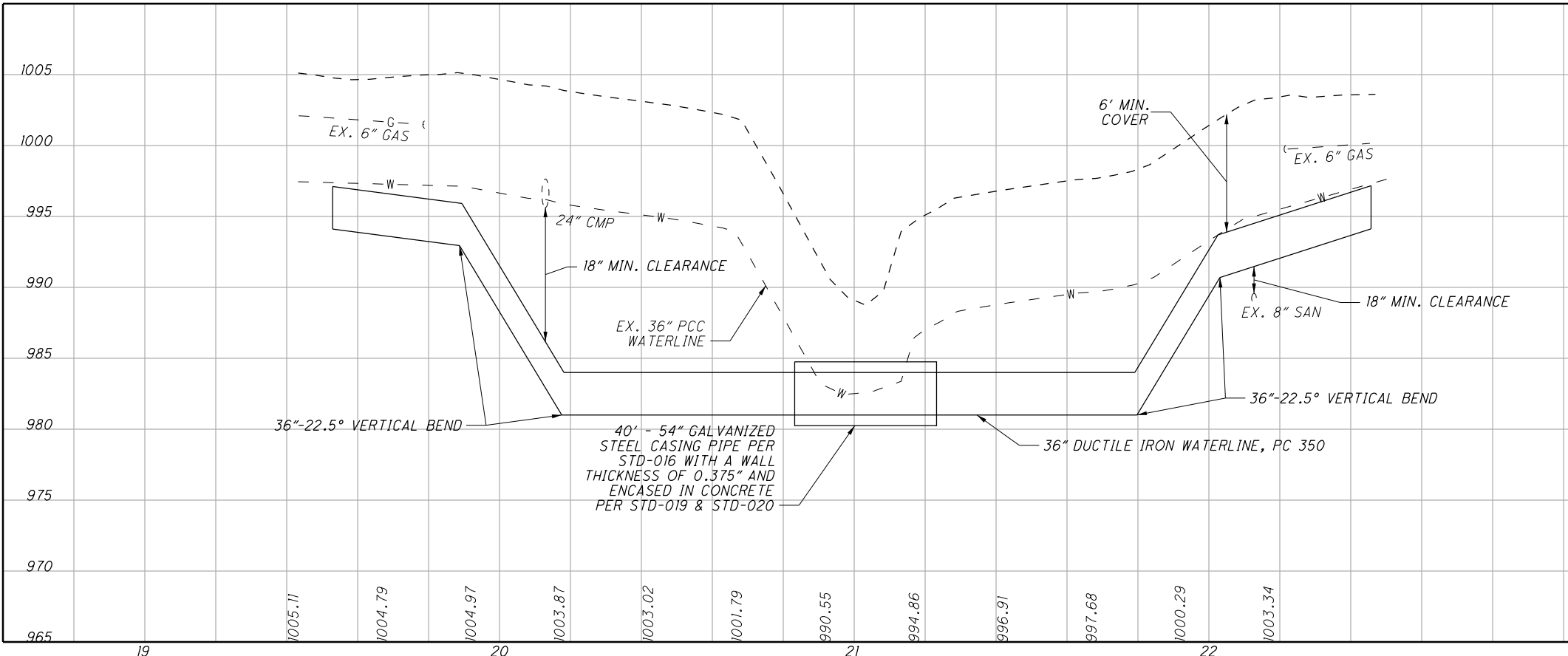
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LEGEND

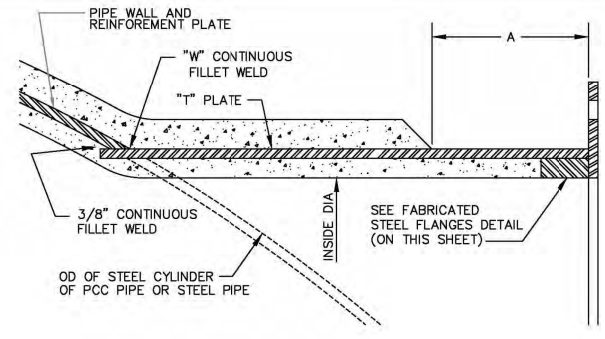
- ⊥ ANODE LOCATION (10' CENTER TO CENTER SPACING)
- ⊕ CATHODIC PROTECTION TEST STATION

- STA 19+59.00, 14.95' RT
CONNECT TO EXISTING
36" WATERLINE PER DETAIL
- STA 19+59.00, 14.95' RT
INSTALL TWO WIRE TEST
STATION PER SM-STD-10
- STA 19+62.00, 16.21' RT
INSTALL AIR RELIEF
VALVE PER SM-STD6
- STA 20+50.00, 54.00' RT
INSTALL 36" - 22.5° BEND
- STA 21+42.00, 54.00' RT
INSTALL 36" - 22.5° BEND
- STA 22+34.00, 14.79' RT
INSTALL AIR RELIEF
VALVE PER SM-STD6
- STA 22+37.00, 13.51' RT
INSTALL TWO WIRE TEST
STATION PER SM-STD-10
- STA 22+37.00, 13.51' RT
CONNECT TO EXISTING
36" WATERLINE PER DETAIL



- NOTES:
1. THE PROPOSED 36" DUCTILE IRON WATERLINE SHALL BE CONNECTED TO THE EXIST 36" WATERLINE AT THE EAST END AND CAPPED WITH A FLUSHING LINE ON THE WEST END FOR FLUSHING AND TESTING.
IF THE VALVE ASSEMBLY IS NOT INSTALLED AT THE EAST END PER THE BID ALTERNATE, THE 36" WATER MAIN SHALL BE CAPPED WITH A TEMPORARY CONNECTION AT BOTH ENDS TO BE USED FOR FILLING, FLUSHING, AND TESTING PRIOR TO CONNECTING TO THE EXISTING MAIN.
 2. ALL PIPE JOINTS SHALL BE BOLTLESS RESTRAINED PIPE JOINTS (MCWANE TR FLEX OR APPROVED EQUAL).
 3. BID ALTERNATE FOR ITEM 638 - WATER WORK, MISC.: CONNECT TO EXISTING 36" PCC WATERMAIN CONSISTS OF INSTALLING A VALVE ASSEMBLY PER SM-STD2B AND CONNECTING TO THE EXISTING 36" PCC WATERLINE WITH A FORTERRA TRANSITION (OR APPROVED EQUAL).

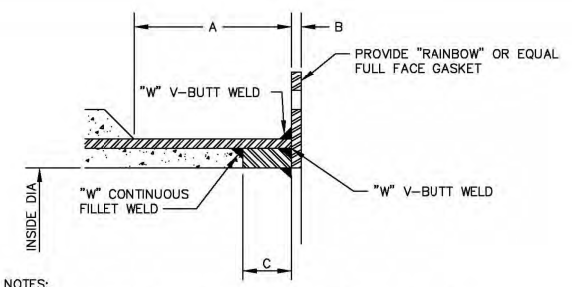
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FLANGED OUTLET ON PRESTRESSED CONCRETE CYLINDER PIPE

AND STEEL PIPE

NOTE: DIMENSIONS SHOWN HEREON ARE MINIMUM AND SHALL BE INCREASED ACCORDINGLY PER DESIGN AND PRESSURE REQUIREMENTS.
WHERE "INSULATED" FLANGES ARE REQUIRED OR CALLED FOR THE FLANGE BOLT HOLE SHALL BE DRILLED 1/16" LARGER TO ACCOMMODATE THE BOLT INSULATED SLEEVES.

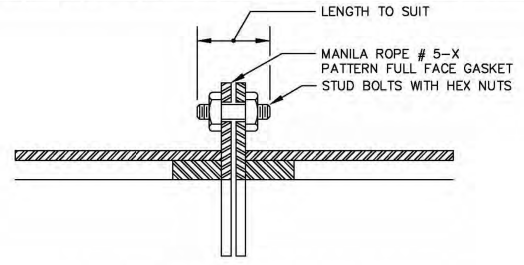


- NOTES:
1. CAST FORGED OR ROLLED STEEL FLANGES MAY BE USED INSTEAD OF FABRICATED STEEL.
 2. FLANGES SHALL BE CLASS "E" (RING) ALL FLANGES SHALL BE DRILLED TO AMERICAN 125 LB CAST IRON FLANGE STANDARD.
 3. ALL BOLTS AND NUTS SHALL BE STAINLESS STEEL, ASTM A 276/A193/A194 TYPE 304, HEAVY HEX

FABRICATED STEEL FLANGES DETAIL

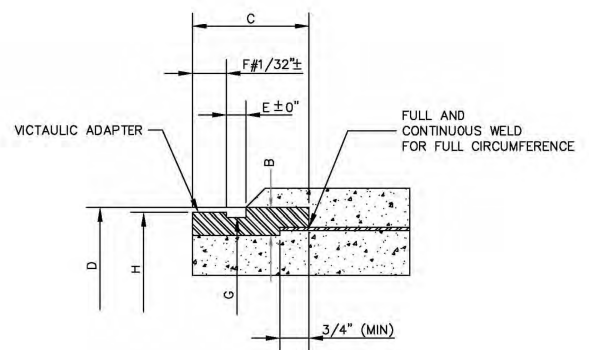
FABRICATED STEEL FLANGES-SCHEDULE

INSIDE DIA	A	B	C	"T"	W	BC	OD	HOLE		BOLT SIZE
								NO.	SIZE	
12"	8"	1 3/4"	1 7/8"	1/4"	1/4"	17"	19"	12	1"	7/8"
16"	8"	2"	2 1/8"	1/4"	1/4"	21 1/4"	23 1/2"	16	1 1/8"	1"
20"	8"	2 3/8"	2 1/2"	1/4"	1/4"	25"	27 1/2"	20	1 1/4"	1 1/8"
24"	8"	2 5/8"	2 3/4"	5/16"	5/16"	29 1/2"	32"	20	1 3/8"	1 1/4"
30"	8"	2 7/8"	3"	3/8"	3/8"	36"	38 3/4"	28	1 3/8"	1 1/4"
36"	8"	3 1/4"	3 3/8"	3/8"	3/8"	42 3/4"	46"	32	1 5/8"	1 1/2"
42"	8"	3 3/8"	3 1/2"	7/16"	7/16"	49 1/2"	53"	36	1 5/8"	1 1/2"
48"	8"	3 1/2"	3 5/8"	1/2"	1/2"	56"	59 1/2"	44	1 5/8"	1 1/2"



FLANGE CONNECTIONS DETAIL

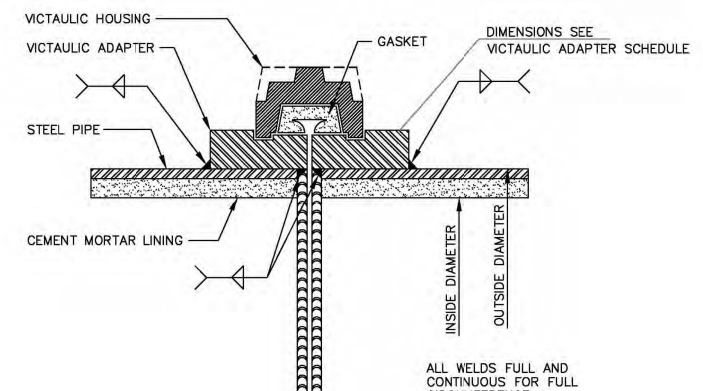
(SECTIONS THROUGH C)



SHOULDERED PIPE END FOR VICTAULIC COUPLING

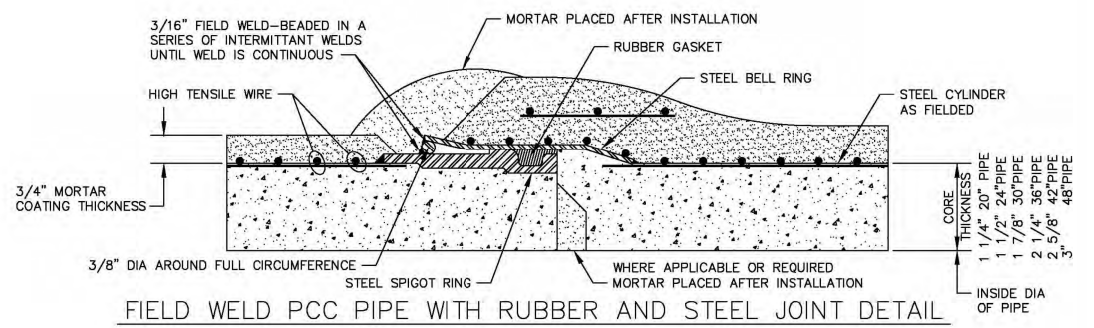
(PCC PIPE) (STYLE 44)
VICTAULIC ADAPTER-SCHEDULE

SIZE	B	C	D	E	F	G	H
20"	1"	4"	23 1/4"	3/4"	1 3/16"	22.34"	22.37"
24"	1"	4"	27 1/2"	3/4"	1 3/16"	26.59"	27.13"
30"	1 1/4"	4 1/2"	34 1/8"	1"	1 3/4"	33.00"	33.75"
36"	1 1/4"	4 1/2"	40 7/16"	1"	1 3/4"	39.43"	40.19"
42"	1 1/4"	4 1/2"	47 1/8"	1 1/4"	1 3/4"	45.81"	46.53"
48"	1 1/2"	4 1/2"	53 7/8"	1 1/4"	1 3/4"	52.19"	53.13"

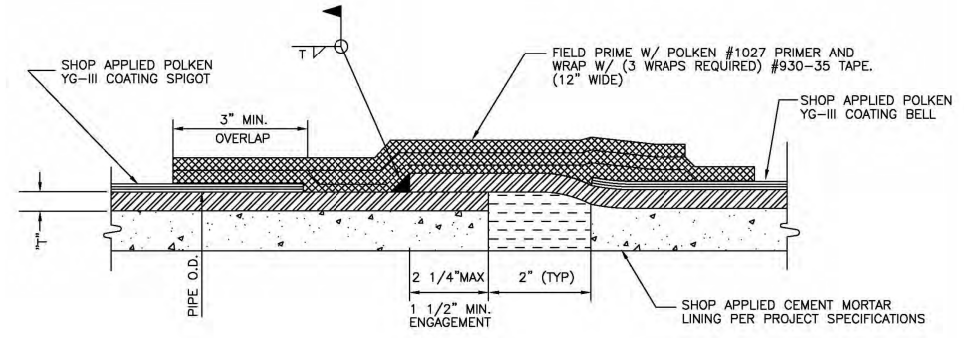


VICTAULIC COUPLING-STYLE 44

(STEEL PIPE)
NOTE: DUCTILE IRON-PIPE ENDS SHALL BE SHOULDERED JOINTS OF EITHER CAST PIPE OR WITH WELDED END RING, ADAPTED FOR INSTALLATION OF A STYLE 44 JOINT AND COUPLING CONFORMING TO THE DIMENSIONS SHOWN HEREON.



FIELD WELD PCC PIPE WITH RUBBER AND STEEL JOINT DETAIL

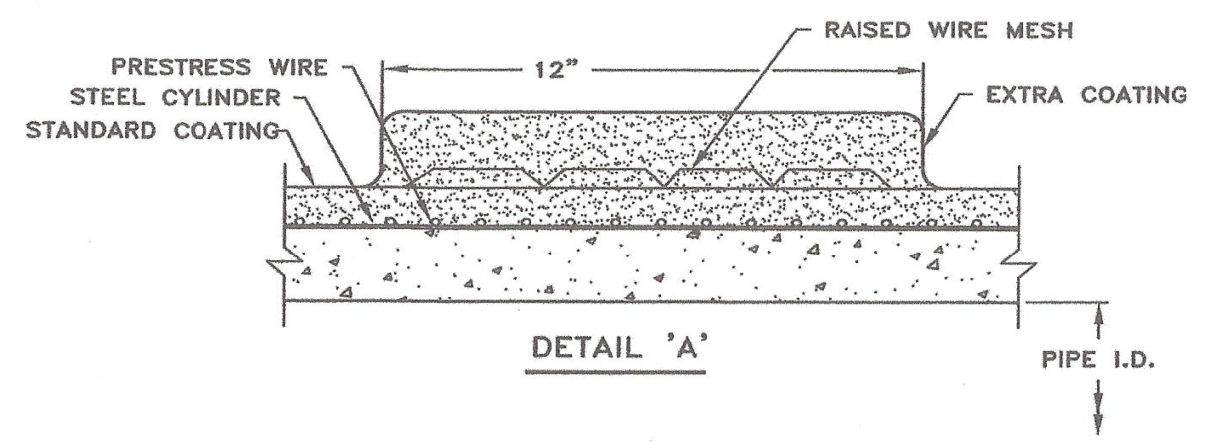
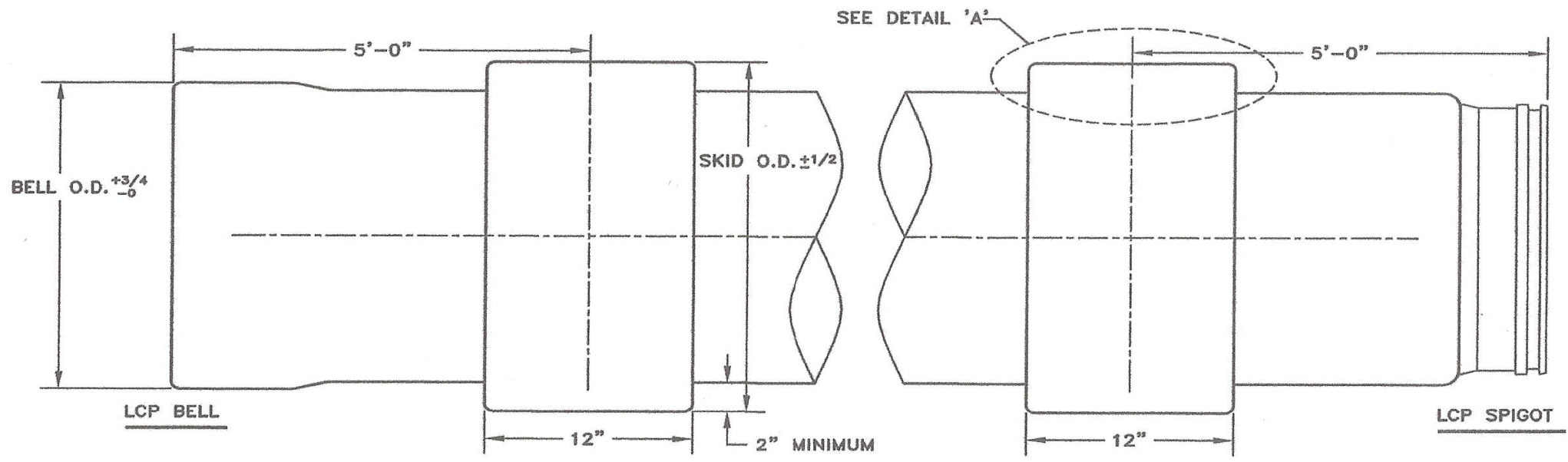


- NOTES:
1. FOR STEEL PIPE THICKNESS "T" AND PIPE O.D. SEE DETAILED SPECIFICATIONS
 2. FOR PIPE SIZES 20" THRU 30" ONE (1) FULL AND CONTINUOUS FILLET WELD ON OUTSIDE OF LAP JOINT FOR FULL JOINT CIRCUMFERENCE IS REQUIRED.
 3. FOR PIPE SIZES 36" THRU 48" ONE (1) FULL AND CONTINUOUS FILLET WELD ON OUTSIDE AND ONE (1) FULL AND CONTINUOUS FILLET WELD ON INSIDE OF LAP JOINT, EACH FOR FULL JOINT CIRCUMFERENCE, IS REQUIRED.

STEEL PIPE FIELD WELDED JOINT DETAIL

GENERAL NOTE: FOR FEILD WELD JOINTS ALL SLCH WELDS SHALL BE FILLET WELDS MADE FOR THE FULL JOINT CIRCUMFERENCE. WELDS MAY BE MADE WITH A "DOUBLE PASS."

REVISIONS			STANDARD DETAILS	
NO.	DATE	BY		
			DEPARTMENT OF PUBLIC UTILITIES DIVISION OF WATER CLEVELAND, OHIO	
			SUBJECT: FLANGE AND VICTAULIC DETAILS; PCCP AND STEEL PIPE WELDED JOINTS	
			DRAWN BY: DLT/FB	SCALE: NONE
			DESIGNED BY:	
			CHECKED BY:	DATE: 10/1/97 No. SM-STD9



PIPE SIZE	SINGLE WRAP & COAT		DOUBLE WRAP & COAT	
	BELL O.D.	SKID O.D.	BELL O.D.	SKID O.D.
16"	21"	25"	23"	27"
18"	23 1/4"	27 1/4"	25 1/4"	29 1/4"
20"	25 1/2"	29 1/2"	27 1/2"	31 1/2"
24"	30"	34 1/2"	32"	36"
30"	36 3/4"	40 3/4"	38 3/4"	42 3/4"
36"	43 1/2"	47 1/2"	45 1/2"	49 1/2"
42"	49 3/4"	53 3/4"	51 3/4"	55 3/4"
48"	56 1/2"	60 1/2"	58 1/2"	62 1/2"

NOTES:
 1. GENERALLY, THE FIRST PIPE INSERTED INTO THE TUNNEL WILL HAVE RAISED COATING SKIDS ON EACH END AND SUBSEQUENT PIPE WILL ONLY HAVE ONE COATING SKID, THE LAYING SCHEDULE WILL INDICATE SKID REQUIREMENTS.

48033A REV.E

16"-48" LCP WITH
 RAISED MORTAR COATING
 SKIDS FOR TUNNEL INSTALLATION

DRAWN BY: KLB
 APPR. BY:
 DATE: 1 28/2013

DWG. NO.
 120430 - DR09
 REV.

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