DEERCLIFF WATER LOOP

MONROE TOWNSHIP

MIAMI COUNTY, OHIO



VICINITY MAP



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2025 SPECIFICATIONS

THE CONSTRUCTION STANDARDS AND DRAWINGS OF THE MCSED AND THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND GENERAL NOTES LISTED IN THE PLAN, SHALL GOVERN THIS IMPROVEMENT. THE MOST RESTRICTIVE SHALL APPLY.

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF THE EXTENSION OF THE EXISTING 8" WATER MAIN ROUGHLY 650' TO THE EXISTING 12" WATER MAIN ON S TIPP-COWLESVILLE ROAD IN MONROE TOWNSHIP, OHIO.

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

STANDARD CONSTRUCTION DRAWINGS		ODOT STANDARD CONSTRUCTION DRAWINGS

ODOT SUPPLEMENTAL SPECIFICATIONS	
800	1-16-2026
832	7-18-2025

Choice One Engineering

2633 CAMPBELL ROAD • SIDNEY, OHIO 45365 • 937.497.0200
6279 TRI-RIDGE BOULEVARD, SUITE 100 • LOVELAND, OHIO 45140 • 513.239.8554

www.CHOICEONEENGINEERING.com

OCTOBER 30, 2026

ANDREW T. SHUMAN, P.E.
P.E.-#71386

STATE OF OHIO · ANDREW T. SHUMAN 71386 · REGISTERED PROFESSIONAL ENGINEER

Approved _____
Date _____

Choice One Engineering

DEERCLIFF WATER LOOP

REVISIONS:

FILE NAME GT.dw
DRAWN BY RDC
CHECKED BY ATS
PROJECT No. MIAMON2601
SHEET NUMBER 1 OF 11

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ELEVATION DATUM
ALL ELEVATIONS ARE BASED ON NAVD 88 (ODOT VRS GEOID 18).

GENERAL NOTES AND DETAILS
ALL CONSTRUCTION METHODS, MATERIALS, AND SPECIFICATIONS SHALL COMPLY WITH THE MCSED ENGINEERING STANDARDS AND SPECIFICATIONS OR OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION STANDARDS AND SPECIFICATIONS, WHICHEVER IS MORE RESTRICTIVE AS DETERMINED BY THE COUNTY.

MODIFICATIONS
ANY MODIFICATIONS TO THE SPECIFICATIONS OR CHANGES TO THE WORK AS SHOWN ON THE DRAWINGS MUST HAVE PRIOR WRITTEN APPROVAL BY THE COUNTY.

FUNDING
DUE TO FUNDING, THE OWNER RESERVES THE RIGHT TO INCREASE, DECREASE, OR OMIT ANY ITEMS LISTED IN THE BID SCHEDULE.

NO FINAL UNIT PRICE ADJUSTMENTS PER ODOT 104.02 WILL BE MADE AT CONTRACT FINALIZATION.

CONTRACT WORK PERFORMED BY THE COUNTY
IF THE CONTRACTOR REFUSES OR FAILS TO PERFORM WORK OF ANY IMMEDIATE NATURE SUCH AS THE PLACEMENT OF BARRICADES, REPLACEMENT OF SIGNS, OR OTHER DEVICES, REQUIRED BY THIS CONTRACT IN A REASONABLE TIME, THE COUNTY WILL PERFORM THE NECESSARY WORK. THE CONTRACTOR SHALL REIMBURSE THE COUNTY AT THE RATE OF 2.5 TIMES THE ACTUAL COST OF LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO PERFORM SUCH WORK. THE COUNTY SHALL NOTIFY OR ATTEMPT TO NOTIFY THE CONTRACTOR OF THE NECESSITY TO PERFORM SUCH WORK. THE COUNTY SHALL BE REIMBURSED BY A DEDUCTION FROM THE CONTRACTOR'S NEXT PAYMENT UNDER THE CONTRACT. REASONABLE TIME FOR ALL STREETS INVOLVED ON THIS CONTRACT IS 1 HOUR FROM THE TIME OF NOTIFICATION BY THE COUNTY.

RECORD DRAWINGS
THE CONTRACTOR SHALL PROVIDE 2 COMPLETE SETS OF RECORD DRAWINGS TO THE COUNTY WITHIN 30 DAYS OF PROJECT COMPLETION. THESE DRAWINGS SHALL SHOW ALL CHANGES TO THE ORIGINAL DRAWINGS, ALL MANHOLE AND CATCH BASIN LOCATIONS AND INVERTS, ALL LATERAL LOCATIONS AND DEPTHS, ALL LOCATIONS AND DEPTHS OF EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION, AND ALL OTHER PERTINENT DATA TO THE IMPROVEMENTS. PAYMENT FOR THIS ITEM SHALL BE INCIDENTAL TO THE OTHER ITEMS PAID FOR IN THIS PROJECT.

MISCELLANEOUS
COMPENSATION FOR THE WORK AS SHOWN ON THE PLANS SHALL BE AT THE UNIT PRICES INCLUDED ON THE BID PROPOSAL. NO SEPARATE PAYMENT WILL BE MADE FOR TASKS (NOT ALL INCLUSIVE) INCLUDING ITEMS SUCH AS MOBILIZATION, RECORD DRAWINGS AND CONNECTIONS TO EXISTING FACILITIES.

UNDERGROUND UTILITIES
THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF THE UTILITY AS REQUIRED BY SECTION 153.64 ORC. EXISTING UTILITIES ARE SHOWN IN THEIR APPROXIMATE LOCATION ACCORDING TO THE BEST AVAILABLE DATA. THE CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING THEM IN THE FIELD PRIOR TO CONSTRUCTION AND WILL BE RESPONSIBLE FOR ANY DAMAGE DONE TO THEM. CONTRACTOR TO CONTACT OHIO UTILITIES PROTECTION SERVICE (1-800-362-2764) 48 HOURS PRIOR TO CONSTRUCTION.

NON-MEMBERS MUST BE CALLED DIRECTLY.

PROPERTY POINTS AND SURVEY MONUMENTS
CARE SHALL BE TAKEN BY THE CONTRACTOR TO SAFEGUARD ANY PROPERTY POINTS OR OTHER SURVEY REFERENCE MARKS ENCOUNTERED DURING CONSTRUCTION OF THIS PROJECT. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RESET ANY PROPERTY POINT OR SURVEY MONUMENT WHICH IS DISTURBED AS A RESULT OF CONSTRUCTION OF THIS PROJECT. THE PROPERTY POINTS AND SURVEY MONUMENTS SHALL BE RESET UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL SURVEYOR.

PAYMENT FOR THIS ITEM SHALL BE INCIDENTAL TO THE OTHER ITEMS PAID FOR IN THIS PROJECT.

UTILITY STATEMENT
THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. CHOICE ONE ENGINEERING CORPORATION MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED. FURTHER, CHOICE ONE ENGINEERING CORPORATION DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH CHOICE ONE ENGINEERING CORPORATION DID LOCATE AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. CHOICE ONE ENGINEERING CORPORATION HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

UTILITY OWNERSHIP
WATER
MIAMI COUNTY SANITARY ENGINEERING DEPARTMENT
2200 N COUNTY ROAD 25A
TROY, OHIO 45373
(937 440-5653
ATTN: JOSHUA LOCOCO

GAS
CENTERPOINT ENERGY
6500 CLYO RD
CENTERVILLE, OHIO 45459
(937) 440-1806
ATTN: RUSTY STUMPFF

ELECTRIC
AES OHIO
1900 DRYDEN ROAD
DAYTON, OHIO 45439
ATTN: WILLIAM WARD

CABLE
CHARTER COMMUNICATIONS
3691 TURNER ROAD
DAYTON, OHIO 45415
(937) 287-3115
ATTN: BRYAN CRUSE

TELEPHONE
FRONTIER COMMUNICATIONS
6464 WESTBROOK ROAD
CLAYTON, OHIO 45315
(541) 340-3910
ATTN: ANDREW MEGGITT

FIBER
CNI TEAM
1720 WILLIPIE STREET
WAPAKONETA, OH 45895
(419) 957-4911
ATTN: NICK SAYRE

OHIO UTILITIES PROTECTION
SERVICE 2 WORKING DAYS BEFORE
YOU DIG CALL TOLL FREE
800-362-2764

UTILITY INTERFERENCE
IF, DURING CONSTRUCTION, INTERFERENCE ARISES WITH EXISTING UTILITIES, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE UTILITY COMPANY INVOLVED. ANY AND ALL WORK REQUIRED FOR PUBLIC OR PRIVATE UTILITIES WILL BE DONE BY AND AT THE EXPENSE OF THEIR RESPECTIVE OWNERS, UNLESS OTHERWISE NOTED ON THESE PLANS. THE CONTRACTOR SHALL NOTIFY, AT LEAST 7 DAYS BEFORE BREAKING GROUND, ALL PUBLIC SERVICE COMPANIES HAVING WIRES, POLES, PIPES, CONDUITS, MANHOLES, OR OTHER STRUCTURES THAT MAY BE AFFECTED BY THIS OPERATION, INCLUDING ALL STRUCTURES WHICH ARE AFFECTED AND NOT SHOWN ON THESE PLANS. THERE WILL BE NO DELAYS ALLOWED FOR UTILITY INTERFERENCES.

LOCATION, SUPPORT, PROTECTION, AND RESTORATION OF ALL UTILITIES, AND STRUCTURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE METHOD OF SUPPORT OR PROTECTION MUST BE APPROVED BY THE APPROPRIATE UTILITY COMPANY, AND IF FACILITY IS DAMAGED BY THE CONTRACTOR, ALL REPAIRS SHALL BE MADE BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

THE CONTRACTOR IS HEREBY ADVISED THAT ALL UTILITY COMPANIES AFFECTED BY THIS PROJECT MAY BE WORKING CONCURRENTLY WITHIN THE PROJECT LIMITS. NO ADDITIONAL COMPENSATION WILL BE MADE TO THE CONTRACTOR FOR COORDINATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE UTILITY COMPANIES.

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

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

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

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEMS.

EXISTING DRAINAGE FACILITIES
ANY DRAINAGE CONDUIT DAMAGED BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR TO A CONDITION EQUAL TO OR BETTER THAN ITS ORIGINAL CONDITION. ALL CONDUIT REMOVED, REPLACED AND/OR CONNECTED TO THE STORM SEWER SHALL BE NOTED ON THE RECORD DRAWINGS AND SHALL BE INSPECTED BY THE COUNTY BEFORE IT IS COVERED.

A CONCRETE COLLAR SHALL BE PROVIDED WHERE PROPOSED STORM SEWER PIPE IS CONNECTED TO AN EXISTING PIPE. THE COST SHALL BE INCLUDED IN THE BID PRICE FOR THE NEW CONDUIT.

ALL FIELD OR STORM DRAINS WHICH ARE ENCOUNTERED DURING CONSTRUCTION SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS OR PLUGGED AS APPROVED AND DIRECTED BY THE COUNTY. THE COUNTY WILL ASSIST IN ANY NECESSARY INVESTIGATION OR DYE TESTING PRIOR TO APPROVING THE PLUGGING OF A FIELD OR STORM CONDUIT. COST OF THE ITEMS ABOVE SHALL BE INCLUDED IN THE COST OF ITEM 611 CONDUIT, TYPE B, 707.45, STORM REPAIR.

THE LOCATION, TYPE, SIZE, AND GRADE OF THE NEW CONDUIT REQUIRED TO REPLACE OR EXTEND THE EXISTING DRAIN WILL BE DETERMINED BY THE COUNTY OR COUNTY'S REPRESENTATIVE DURING CONSTRUCTION, AND PAYMENT SHALL BE MADE ON FINAL MEASUREMENTS AND INCLUDE ALL MATERIALS NECESSARY SUCH AS GRANULAR BEDDING, PROPER FITTINGS AND CONNECTIONS, AND PIPE.

THE FOLLOWING CONTINGENT ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE PLANS FOR THE WORK NOTED ABOVE:

ITEM 611 4" CONDUIT, TYPE C, 707.45, STORM REPAIR, AS PER PLAN	25'
ITEM 611 6" CONDUIT, TYPE C, 707.45, STORM REPAIR, AS PER PLAN	25'
ITEM 611 8" CONDUIT, TYPE C, 707.45, STORM REPAIR, AS PER PLAN	25'
ITEM 611 12" CONDUIT, TYPE C, 707.45, STORM REPAIR, AS PER PLAN	50'

SUBCONTRACTOR SUPERVISION
THE CONTRACTOR IS REQUIRED TO HAVE A PROJECT SUPERVISOR ON-SITE TO SUPERVISE THE SUBCONTRACTOR FOR QUALITY CONTROL PURPOSES AND TO PROVIDE ANY NECESSARY ASSISTANCE TO THE SUBCONTRACTOR TO ENSURE QUALITY WORK.

COST OF THIS ITEM SHALL BE INCLUDED IN THE COST OF RELATED PAY ITEMS OF THIS PROJECT.

CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES
WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION, OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE COUNTY SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT ANY EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE COUNTY SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEM.

DROP OFF IN WORK ZONES
THE BASE WIDENING SHALL BE COMPLETED TO A DEPTH OF NO MORE THAN 3" BELOW THE EXISTING PAVEMENT BY THE END OF EACH WORK DAY. CONTRACTOR SHALL HAVE ONSITE STEEL PLATES FOR MAINTENANCE OF TRAFFIC AS DEEMED NECESSARY BY THE COUNTY IF THE 3" TOLERANCE IS NOT MET. CONTRACTOR SHALL ALSO PROVIDE ANY DRIVEWAY RAMPING NEEDED DURING PAVEMENT REMOVAL.

WATER MAIN SEPARATION
WHENEVER A SANITARY SEWER AND A WATER MAIN MUST CROSS, THE SEWER SHALL BE LAID BELOW THE WATER MAIN AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER IS AT LEAST 18" BELOW THE BOTTOM OF THE WATER MAIN PIPE. IF IT IS ABSOLUTELY IMPOSSIBLE TO MAINTAIN THE 18" VERTICAL SEPARATION, THE SEWER SHALL BE EITHER CONSTRUCTED OF EITHER SLIP-ON OR MECHANICAL JOINT WATER MAIN MATERIAL AND BE PRESSURE TESTED TO 150 PSI TO ENSURE WATER-TIGHTNESS OR BE ENCASED IN A ¼" THICK CONTINUOUS STEEL, DUCTILE IRON OR PRESSURE RATED, DR 18 OR LESS PVC PIPE FOR A DISTANCE OF 10 FEET ON EITHER SIDE OF THE CROSSING. THE SEWER SHALL BE THE LONGEST STANDARD LENGTH AVAILABLE AND BE CENTERED AT THE POINT OF CROSSING SO THE JOINTS ARE AS FAR AS POSSIBLE FROM THE WATER MAIN.

WHENEVER A STORM SEWER AND A WATER MAIN MUST CROSS, THE PIPES SHALL BE LAID AT SUCH ELEVATIONS THAT THE CROWN OF ONE PIPE IS AT LEAST 18" BELOW THE BOTTOM OF THE OTHER.

WATER MAIN MUST BE INSTALLED WITH A MINIMUM OF 10' HORIZONTAL SEPARATION FROM ALL SANITARY AND STORM SEWER PIPES, MEASURED FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE, AS WELL AS ANY STRUCTURES.

SAFETY
THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR COMPLYING WITH ALL FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS, TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS (INCLUDING EMPLOYEES) AND PROPERTY. IT IS ALSO THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO INITIATE, MAINTAIN, AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS, AND PROGRAMS IN CONNECTION WITH THE WORK.

MUD
THE TRACKING OR SPILLING OF MUD, DIRT, OR DEBRIS UPON COUNTY STREETS IS PROHIBITED, AND ANY SUCH OCCURRENCE SHALL BE CLEANED UP IMMEDIATELY BY THE CONTRACTOR.

DEWATERING
ANY DEWATERING, COFFERDAMS, OR PUMPING NECESSARY FOR THE CONSTRUCTION OF ANY ITEMS SHALL BE INCIDENTAL TO THOSE PARTICULAR CONSTRUCTION ITEMS. NO ADDITIONAL PAYMENT WILL BE ALLOWED.

NONRUBBER TIRE VEHICLES
NO NONRUBBER TIRE VEHICLES SHALL BE MOVED ON COUNTY STREETS. EXCEPTIONS MAY BE GRANTED BY THE COUNTY WHERE SHORT DISTANCES AND SPECIAL CIRCUMSTANCES ARE INVOLVED. GRANTING OF EXCEPTIONS MUST BE IN WRITING AND ANY RESULTING DAMAGE MUST BE REPAIRED TO THE SATISFACTION OF THE COUNTY. THE CONTRACTOR SHALL USE EXTREME CARE WHEN OPERATING NONRUBBER TIRE VEHICLES ON STREETS OR DRIVEWAYS TO AVOID MARKING OR DAMAGING THE PAVEMENT. PROTECTION OF THE PAVEMENT FROM DAMAGE RESULTING FROM THE TRACKS OF NONRUBBER TIRE VEHICLES UTILIZED IN TRENCH EXCAVATION SHALL BE REQUIRED. A WOOD PLANK SYSTEM, USED TIRES, RUBBER MATS, OR OTHER MEANS AS APPROVED BY THE COUNTY'S REPRESENTATIVE SHALL BE USED TO PROTECT THE PAVEMENT. THE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE VARIOUS ITEMS OF THE CONTRACT.

CONSTRUCTION NOISE
IN ORDER TO MINIMIZE ANY ADVERSE CONSTRUCTION NOISE IMPACTS, ANY POWER-OPERATED CONSTRUCTION-TYPE DEVICES SHALL NOT BE OPERATED BETWEEN THE HOURS SPECIFIED IN THE COUNTY NOISE ORDINANCE. IF THERE IS NO NOISE ORDINANCE IN PLACE, POWER-OPERATED CONSTRUCTION-TYPE DEVICES SHALL NOT BE OPERATED BETWEEN THE HOURS OF 7:00 PM TO 7:00AM.

ChoiceOne Engineering
SIDNEY, OHIO 937.497.0200
LOVELAND, OHIO 513.239.8554
www.CHOICEONEENGINEERING.com

DEERCLIFF WATER LOOP
MONROE TOWNSHIP
GENERAL NOTES

REVISIONS:

FILE NAME GN.dw
DRAWN BY RDC
CHECKED BY ATS
PROJECT No. MIAMON2601
DATE 10-30-2026
SHEET NUMBER 2 OF 11

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CONTROL OF SPILLS

BEST CONSTRUCTION PRACTICES ARE TO BE IMPLEMENTED TO MINIMIZE WATER QUALITY IMPACTS. IDLE EQUIPMENT, PETROCHEMICALS, AND TOXIC/HAZARDOUS MATERIALS SHALL NOT BE STORED NEAR DRAINAGE WAYS, DITCHES, OR STREAMS. REFUELING SHALL NOT BE UNDERTAKEN NEAR DRAINAGE WAYS, DITCHES, OR STREAMS. A SPILL CONTAINMENT KIT IS TO BE MAINTAINED ONSITE THROUGHOUT CONSTRUCTION ACTIVITIES. SPILLS OF FUELS, OILS, CHEMICALS, OR OTHER MATERIALS WHICH COULD POSE A THREAT TO GROUNDWATER SHALL BE CLEANED UP IMMEDIATELY. IF THE SPILL IS A REPORTABLE AMOUNT, THE LOCAL FIRE DEPARTMENT IS TO BE CONTACTED.

HAUL ROADS

WHEN PICKING A DUMP SITE, CONTRACTOR IS TO TAKE INTO CONSIDERATION THE HAUL ROAD ROUTE AND ANY NECESSARY ROADWAY REPAIR CAUSED BY HAULING TO THE DUMP SITE.

PRIOR TO HAULING EQUIPMENT OR MATERIALS, THE CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE COUNTY OF THE SPECIFIC ROADS OR STREETS ON THE HAUL ROUTE. IF THE HAUL ROUTE INCLUDES ROADS AND STREETS THAT ARE NOT UNDER THE JURISDICTION AND CONTROL OF THE COUNTY OR OF THE STATE, THE CONTRACTOR MUST USE LOCAL ROADS AND STREETS THAT ARE NOT RESTRICTED BY LOCAL AUTHORITIES. IF IT IS DETERMINED BY THE COUNTY THAT THE HAUL ROADS USED TO HAUL EQUIPMENT AND MATERIALS TO THE DUMP SITE WERE DAMAGED FROM THIS OPERATION, THE COUNTY WILL ORDER THE CONTRACTOR TO PERFORM IMMEDIATE AND PRACTICAL REPAIRS TO ENSURE REASONABLY NORMAL TRAVELING CONDITIONS AND BRING PAVEMENT CONDITIONS BACK TO CONDITIONS EQUAL OR BETTER THAN PRE-OPERATION CONDITIONS AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL TAKE ALL THIS INTO CONSIDERATION WHEN PICKING A DUMP SITE.

THE CONTRACTOR SHALL NOT FILE A CLAIM FOR DELAYS OR OTHER IMPACTS TO THE WORK CAUSED BY DISPUTE WITH THE LOCAL AUTHORITIES REGARDING THE USE OF LOCAL ROADS OR STREETS AS HAUL ROADS. THE CONTRACTOR SHALL SAVE THE COUNTY AND THE STATE HARMLESS FOR ANY CLOSURES OR HAULING RESTRICTION OUTSIDE THE PROJECT LIMITS BEYOND THE CONTROL OF THE COUNTY OR ODOT.

GRAFFITI AND VANDALISM

THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF ANY CONCRETE WORK OR OTHER PAY ITEM UNDER THIS CONTRACT WHICH IS DEEMED UNACCEPTABLE BY THE COUNTY DUE TO GRAFFITI OR VANDALISM DAMAGE.

WORK LIMITS

ALL WORK SHALL BE WITHIN EXISTING OR PROPOSED RIGHT-OF-WAY AND/OR CONSTRUCTION LIMITS UNLESS OTHERWISE INSTRUCTED BY THE COUNTY.

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE INSTALLATION AND OPERATION OF ALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS. ALL WORK WITHIN THE RIGHT-OF-WAY WILL REQUIRE A PERMIT FROM THE MIAMI COUNTY ENGINEERING DEPARTMENT. ANY ASSOCIATED FEES ARE INCIDENTAL TO THE COST OF THE PROJECT.

ESTIMATED AND CONTINGENT QUANTITIES

THESE PLANS INCLUDE ESTIMATED AND CONTINGENCY QUANTITIES THAT MAY OR MAY NOT BE USED. ANY UNUSED MATERIAL PURCHASED BY THE CONTRACTOR WILL NOT BE PURCHASED OR REIMBURSED BY THE COUNTY. THE COUNTY WILL NOT APPROVE ANY WORK DELAYS BECAUSE OF THE LACK OF MATERIALS AT THE SITE. ANY RESTOCKING FEES THAT MAY BE CHARGED WILL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR.

CAD FILE DISCLAIMER

THE CAD FILE ASSOCIATED WITH THESE CONSTRUCTION PLANS IS A NON-CERTIFIED DOCUMENT. ANY USE OF THE INFORMATION OBTAINED OR DERIVED FROM THE ASSOCIATED CAD FILE WILL BE AT THE RECEIVING PARTY/USER'S RISK. CHOICE ONE ENGINEERING CORP. OFFERS NO WARRANTY AS TO THE ACCURACY OF THE INFORMATION IN THE CAD FILE OR THAT REVISIONS HAVE BEEN ISSUED AFTER THE CAD DRAWING WAS RELEASED. RECEIVING PARTIES/USERS SHALL HOLD HARMLESS TO THE MAXIMUM EXTENT ALLOWED BY LAW CHOICE ONE ENGINEERING CORP. FROM ANY USE OF THE CAD FILE BY THE RECEIVING PARTY/USER. IN ALL CIRCUMSTANCES, AND AT ALL TIMES, THE PUBLISHED PAPER AND/OR PDF DRAWINGS FOR THE PROJECT SHALL SUPERSEDE THE CAD FILES. IN THE CASE OF AN INCONSISTENCY BETWEEN THE PUBLISHED PAPER/PDF DRAWINGS AND THE ASSOCIATED CAD FILE, THE PUBLISHED PAPER/PDF DRAWINGS SHALL GOVERN THE PROJECT AND ALL WORK.

ASPHALT

ALL ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS SHALL APPLY TO THIS PROJECT, EXCLUDING THE BINDER PRICE ADJUSTMENT PER ODOT 401.20. ALL ASPHALT DELIVERED SHALL BE ACCOMPANIED WITH A LOAD TICKET AS PER ITEM 401.21.

SPECIAL CONCRETE CONDITIONS

ALL CONCRETE WORK MUST BE FINISHED TO THE SATISFACTION OF THE MCSE.

TESTING AND CERTIFICATION

PROVIDE TESTING OF AND CERTIFICATION THAT MATERIAL SUPPLIED FOR THIS PROJECT MEETS THE PROJECT SPECIFICATIONS, IF REQUIRED.

POTENTIAL ITEMS FOR TESTING CONSIST OF TRENCH BACKFILL, EMBANKMENT, AND CONCRETE, WHICH MAY BE PERFORMED BY THE COUNTY IF THEY SUSPECT DEFECTIVE WORK OR MATERIALS.

PAYMENT FOR CERTIFICATION OF WORK SHALL BE INCIDENTAL TO THE VARIOUS ITEMS IT IS RELATED TO AND SHALL INCLUDE ALL COST RELATED TO PROVIDING THE CERTIFICATION. COST OF ANY TESTING BY A TESTING LAB CONTRACTED BY THE COUNTY SHALL BE BORNE BY THE COUNTY, UNLESS THE TEST DOES NOT MEET PROJECT SPECIFICATIONS OR WORK IS FOUND TO BE DEFECTIVE, AT WHICH POINT, THE CONTRACTOR SHALL PAY THE EXPENSES FOR TESTING.

ITEM 611 CONDUITS/STRUCTURES AND RELATED WORK

THIS ITEM OF WORK SHALL CONSIST OF THE WORK AS DESCRIBED IN OHIO DEPARTMENT OF TRANSPORTATION ITEM 611, PIPE CULVERTS, SEWERS, DRAINS, AND DRAINAGE STRUCTURES, EXCEPT AS HEREIN MODIFIED.

THE INSTALLATION OF ALL STORM SEWER, SANITARY SEWER, AND ALL CORRESPONDING STRUCTURES SHALL BE PER MANUFACTURER'S RECOMMENDATIONS OR AS NOTED ON THE PLANS. THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN A HIGH STANDARD OF WORK. AND ENSURE THAT ALL ITEMS ARE FULLY AND PROPERLY FUNCTIONAL TO A QUALITY ACCEPTABLE TO THE OWNER.

ALL PIPE CULVERTS, CONDUITS, SEWERS, DRAINS, AND DRAINAGE STRUCTURES SHALL MEET THE MATERIAL REQUIREMENTS OF THIS ITEM. THE FOLLOWING ITEMS WILL NOT BE REQUIRED UNLESS OTHERWISE NOTED: 1) INSTALLATION PLAN, 2) CONSTRUCTION INSPECTION FORMS, 3) PERFORMANCE INSPECTIONS AND REPORTS, 4) CONDUIT AND DRAINAGE STRUCTURE EVALUATIONS.

THE CONTRACTOR SHALL ENSURE THE CONDUIT BEDDING AND BACKFILL COMPACTION DENSITY MEETS ASTM D698 (98% STANDARD PROCTOR). TESTING MAY BE REQUIRED IF DEEMED NECESSARY BY THE OWNER OR THE OWNER'S REPRESENTATIVE.

ITEM 614 MAINTAINING TRAFFIC

IT IS THE INTENTION TO PERFORM THE REQUIRED WORK WITHIN THESE PLANS WITH THE LEAST INCONVENIENCE TO, AND THE MAXIMUM SAFETY OF, THE CONTRACTOR, LOCAL MERCHANTS, PEDESTRIAN TRAFFIC, AND THE TRAVELING PUBLIC.

REQUIREMENTS FOR MAINTAINING TRAFFIC AS SPECIFIED IN THE "OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" (CURRENT EDITION, LATEST REVISION), PERTINENT PROVISIONS OF THE "OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS" (INCLUDING SUPPLEMENTAL SPECIFICATIONS) AND APPLICABLE STANDARD CONSTRUCTION DRAWINGS SHALL APPLY TO THIS PROJECT IN ADDITION TO THE FOLLOWING NOTES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SAFE AND EFFECTIVE VEHICULAR TRAFFIC CONTROL 24 HOURS A DAY FOR THE DURATION OF THIS PROJECT. THIS WILL INCLUDE PROVIDING, PLACING, MAINTAINING, AND SUBSEQUENTLY REMOVING ALL NECESSARY TRAFFIC CONTROL MEASURES FOR ALL PROPOSED CONSTRUCTION OPERATIONS.

BEFORE THE WORK BEGINS, THE CONTRACTOR SHALL SUBMIT TO THE COUNTY THE NAME(S) AND TELEPHONE NUMBER(S) OF A PERSON OR PERSONS WHO CAN BE CONTACTED TWENTY-FOUR (24) HOURS A DAY BY THE COUNTY , OR ANY OTHER INTERESTED POLICE AGENCY.

THIS PERSON OR PERSONS SHALL BE RESPONSIBLE FOR REPAIRING AND/OR REPLACING ALL TRAFFIC CONTROL DEVICES NEEDED TO MAINTAIN THE SAFETY OF THE TRAVELED PAVEMENT FOR THE DURATION OF THIS PROJECT. THIS PERSON SHALL HAVE AVAILABLE ALL MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO PERFORM THE REQUIRED REPAIRS WITHIN A REASONABLE PERIOD OF TIME AS PER C.M.S. 614.14.

THE CONTRACTOR SHALL ALSO SUBMIT A CONSTRUCTION SEQUENCING SCHEDULE PRIOR TO WORK BEGINNING FOR APPROVAL BY THE COUNTY . THE CONSTRUCTION SEQUENCING SCHEDULE SHALL TAKE INTO CONSIDERATION ALL ASPECTS OF THE PROJECT INCLUDING HOW LOCAL TRAFFIC WILL BE MAINTAINED. THE CONSTRUCTION SEQUENCE WILL NEED TO BE APPROVED BY THE COUNTY PRIOR TO ANY COMMENCEMENT OF WORK.

ANY DAMAGE TO MAINTENANCE OF TRAFFIC EQUIPMENT SUCH AS SIGNS, BARRELS, ETC. SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

THE CONTRACTOR WILL BE REQUIRED TO PROVIDE, ERECT, MAINTAIN (IN PROPER POSITION, CLEAN AND LEGIBLE, AND IN GOOD WORKING CONDITION), AND SUBSEQUENTLY REMOVE ALL TRAFFIC CONTROL DEVICES NECESSARY FOR THE MAINTENANCE OF TRAFFIC.

THE CONTRACTOR SHALL ADJUST THE LOCATION AND/OR SPACING OF ALL TRAFFIC CONTROL CHANNELING DEVICES AS DICTATED BY THE PROGRESS OF THE REQUIRED WORK TO ALLOW CONSTRUCTION ACCESS TO WORK AREAS WHILE MAINTAINING SAFE AND EFFECTIVE TRAFFIC CONTROL DURING ALL CONSTRUCTION OPERATIONS. THE ORIGINAL LOCATION, PLACEMENT, SPACING AND SUBSEQUENT RELOCATION OR REMOVAL OF ALL TRAFFIC CONTROL DEVICES SHALL BE SUBJECT TO THE COUNTY'S APPROVAL.

IT IS INTENDED THAT THE LOCAL TRAFFIC BE MAINTAINED DURING ACTIVE WORK. THE ROADWAY SHALL NOT BE RESTRICTED TO ANY LANE CLOSURE DURING PERIODS OF WORK.

THE CONTRACTOR SHALL FURNISH AND INSTALL ADVANCE WARNING "ROAD WORK AHEAD" (W20-1) SIGNS AND "END ROAD WORK" (G20-2) SIGNS, PLACED AT EACH CROSSROAD IN THE PROJECT AREA, AS WELL AS OTHER NECESSARY MAINTENANCE OF TRAFFIC SIGNS.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH C&MS 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

ITEM 623 CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF THE WORK AS DESCRIBED IN OHIO DEPARTMENT OF TRANSPORTATION ITEM 623 CONSTRUCTION LAYOUT STAKES AND SURVEY MONUMENTS, EXCEPT AS HEREIN MODIFIED.

THE VERTICAL CONTROL IS LISTED ON THE PLANS WITH THE BENCHMARKS. TRAVERSE POINTS ARE SHOWN BELOW FOR HORIZONTAL CONTROL. THE BEARINGS ARE LISTED FOR THE CENTERLINE OF CONSTRUCTION.

PAYMENT FOR ITEM 623 CONSTRUCTION LAYOUT STAKES, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT LUMP SUM BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL, AND EQUIPMENT, REQUIRED TO COMPLETE THIS ITEM OF WORK.

TRAVERSE POINT #	STATION	OFFSET	NORTH	EAST	ELEVATION
100	17+66.59	14.10' RT.	707235.702	1499557.433	918.31
101	10+92.66	11.39' RT.	706568.631	1499455.709	916.98

ITEM 638 AIR RELEASE VALVE PIT, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF THE WORK AS DESCRIBED IN OHIO DEPARTMENT OF TRANSPORTATION ITEM 638 WATER MAINS AND SERVICE BRANCHES, EXCEPT AS HEREIN MODIFIED.

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING A.R.I. S-050 AUTOMATIC AIR RELEASE VALVE, AND SHALL INCLUDE THE VALVE PIT, BALL VALVE, RISERS, ALL FITTINGS, AND CORPORATION STOPS AS SHOWN IN THE DETAIL.

PAYMENT FOR ITEM 638 AIR RELEASE VALVE PIT, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

Choice One Engineering
SIDNEY, OHIO 937.497.0200
LOVELAND, OHIO 513.239.8554
www.CHOICEONEENGINEERING.com

DEERCLIFF WATER LOOP
MONROE TOWNSHIP
GENERAL NOTES

REVISIONS:

FILE NAME	GN.dw
DRAWN BY	RDC
CHECKED BY	ATS
PROJECT No.	MIAMON2601
DATE	10-30-2026
SHEET NUMBER	3 OF 11

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ITEM 638 DUCTILE IRON WATER MAIN, CL-52, OPEN-TRENCH, AS PER PLAN (ALTERNATE)

THIS ITEM OF WORK SHALL CONSIST OF THE WORK AS DESCRIBED IN OHIO DEPARTMENT OF TRANSPORTATION ITEM 638 WATER MAINS AND SERVICE BRANCHES, EXCEPT AS HEREIN MODIFIED.

ALL MATERIALS AND PROCEDURES USED SHALL CONFORM TO COUNTY ENGINEERING STANDARDS AND SPECIFICATIONS. WATER MAIN MATERIAL SHALL BE 8" DUCTILE IRON CL-52. THIS ITEM INCLUDES ALL PIPE FITTINGS, BENDS, TEES, ETC. REQUIRED FOR THE PIPE INSTALLATION. WATER MAIN DISINFECTION AND TESTING SHALL CONFORM TO MCSED SPECIFICATIONS.

THE CONTRACTOR WILL PERFORM THE CHLORINATION PER AWWA STANDARDS. THE CONTRACTOR SHALL ADD A TEMPORARY 3/4" TYPE K COPPER SERVICE BRANCH, UNLESS OTHERWISE SHOWN, WITH COMPRESSION STYLE CORPORATION STOP AND CORP STOP (AS REQUIRED) NEAR ALL WATER MAIN CONNECTIONS. THE COUNTY WILL TEST THE CHLORINE SAMPLES AND PERFORM BACTERIAL TESTING.

ALL EXCAVATION, ROCK EXCAVATION, BEDDING, AND BACKFILL, AS WELL AS CONNECTION TO EXISTING MAINS ARE TO BE INCIDENTAL TO THE WATER MAIN INSTALLATION.

PAVEMENT RESTORATION, PLAIN CONCRETE PAVEMENT REPLACEMENT, CULVERT REPLACEMENT, MAIL BOX REPLACEMENT AND SEEDING AND MULCHING SHALL BE CONTINGENT TO THIS ITEM. ALL DAMAGED PAVEMENT, TREES, AND CONCRETE PAVEMENT SHALL BE REPLACED TO EQUAL OR BETTER CONDITIONS.

PAYMENT FOR ITEM 638 DUCTILE IRON WATER MAIN, CL-52, OPEN-TRENCH, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT FOOT BID PRICE, MEASURED HORIZONTALLY, AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 638 DUCTILE IRON WATER MAIN, CL-52, HDSS, DIRECTIONAL BORED, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF THE WORK AS DESCRIBED IN OHIO DEPARTMENT OF TRANSPORTATION ITEM 638 WATER MAINS AND SERVICE BRANCHES, EXCEPT AS HEREIN MODIFIED.

ALL MATERIALS, PROCEDURES, AND TESTING USED SHALL CONFORM TO MCSED ENGINEERING STANDARDS AND SPECIFICATIONS.

THIS ITEM CONSISTS OF ALL WORK TO DIRECTIONAL DRILL WATER MAIN IN ACCORDANCE WITH THE PLANS, INCLUDING DRILLING, STRINGING AND INSTALLING PIPE, POT-HOLING ALL EXISTING UTILITIES AS NECESSARY, EXCAVATING BORE ENTRY/RECEIVING PITS.

ENSURE THAT ENTRY AND EXIT CONTAINMENTS ARE OF SUFFICIENT SIZE TO CONTAIN THE EXPECTED RETURN OF DRILLING FLUIDS AND SOIL CUTTINGS. CARRY OUT EXCAVATION AND BACKFILL FOR ENTRY, EXIT, RECOVERY PITS, CONNECTION PITS, SLURRY SUMP PITS, OR ANY OTHER EXCAVATION AS SPECIFIED IN SECTION 611 OF ODOT'S CMS. ENSURE THAT ALL DRILLING FLUIDS ARE DISPOSED OF OR RECYCLES IN A MANNER ACCEPTABLE TO THE APPROPRIATE LOCAL, STATE, OR FEDERAL REGULATORY AGENCIES. WITHIN 48 HOURS OF COMPLETING INSTALLATION, CLEAN THE WORK SITE OF ALL EXCESS SLURRY OR SPOILS, DE-MOBILIZE EQUIPMENT, AND ENSURE THAT THE SITE IS SAFE AND SECURED. TAKE ALL NECESSARY MEASURES TO ELIMINATE THE DISCHARGE OF WATER, DRILLING MUD, AND CUTTINGS TO NEARBY WATERWAYS DURING THE HDD WORK. FOLLOW SECTION 107.19 ENVIRONMENTAL PROTECTION OF THE ODOT'S CMS FOR ENVIRONMENTAL PROTECTION REQUIREMENTS, CONTRACTOR IS REQUIRED TO MAINTAIN POLLUTION LIABILITY INSURANCE COVERAGE FOR 3 YEARS AFTER THE COMPLETION OF THE PROJECT.

ITEM 638 DUCTILE IRON WATER MAIN, CL-52, TR FLEX, DIRECTIONAL BORED, AS PER PLAN (CONT.)

TAKE RESPONSIBILITY FOR RESTORATION OF ANY DAMAGE CAUSED BY HEAVING, SETTLEMENT, SEPARATION OF PAVEMENT, ESCAPING DRILLING FLUID, OR FROM THE DIRECTIONAL DRILLING OPERATION. IF THE NEGLIGENCE OF THE CONTRACTOR CAUSES DAMAGE TO ANY FACILITY, RESTORE THE FACILITY TO ITS ORIGINAL CONDITIONS OR BETTER AT NO ADDITIONAL COST TO THE OWNER. FOLLOW SECTIONS 104.04 AND 107.10 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR OTHER REQUIREMENTS REGARDING CLEAN UP AND RESTORATION. WHEN REMEDIATION PLANS ARE REQUIRED BY THE ENGINEER, PROVIDE DETAILED AND ACCEPTABLE PLANS SHOWING HOW THE DAMAGE WILL BE REMEDIED BEFORE ANY WORK PROCEEDS.

ANY REQUIRED EXCAVATION, BACKFILL, AND SHORING REQUIRED FOR BORE PITS ARE TO BE INCIDENTAL TO THIS ITEM. ALL SEEDING AND MULCHING AND HARD SURFACE RESTORATION IS INCIDENTAL TO THIS BID ITEM.

ANY COST TO INSTALL MAIN LINE VALVES OR CUT-IN ANCHOR TEE FOR HYDRANT BRANCHES ON HORIZONTALLY DIRECTIONALLY DRILLED LINES SHALL BE PAID UNDER ITS RESPECTIVE ITEM NUMBER.

DIRECTIONALLY DRILLED WATER MAIN MATERIAL SHALL BE 8" DUCTILE IRON CL-52. PIPE JOINTS SHALL BE A FLEXIBLE RESTRAINED JOINT DESIGNED FOR DIRECTIONAL DRILLING APPLICATIONS, US PIPE HDSS, AMERICAN FLEX-RING, OR APPROVED EQUAL.

PRIOR TO BEGINNING DIRECTIONAL DRILLING OPERATION, THE CONTRACTOR SHALL COORDINATE WITH THE MCSED SO AS TO DETERMINE THE BEGINNING AND ENDING LOCATIONS OF THE BORE.

THIS ITEM INCLUDES ALL PIPE FITTINGS, BENDS, TEES, ETC. REQUIRED FOR THE PIPE INSTALLATION. ALL FITTINGS SHALL BE HDSS WITH RESTRAINED JOINTS IN ACCORDANCE WITH AWWA/ANSI C153/A21.53 AND AWWA/ANSI C110/A21.10, OR APPROVED EQUAL. NO MECHANICAL JOINT FITTINGS WILL BE ALLOWED. DIRECTIONALLY DRILLED WATER MAIN SHALL BE PAID FOR THE LENGTH OF WATER MAIN PIPE INSTALLED BY HORIZONTALLY DIRECTIONALLY DRILLING, MEASURED HORIZONTALLY ALONG THE CENTERLINE OF THE BORE. ANY REQUIRED SEEDING AND MULCHING OR HARD SURFACE RESTORATION IS INCIDENTAL TO THIS BID ITEM.

PAYMENT FOR ITEM 638 DUCTILE IRON WATER MAIN, CL-52, HDSS, DIRECTIONAL BORED, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT FOOT BID PRICE, MEASURED HORIZONTALLY, AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 638 6-INCH FIRE HYDRANT ASSEMBLY, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF THE WORK AS DESCRIBED IN OHIO DEPARTMENT OF TRANSPORTATION ITEM 638 WATER MAINS AND SERVICE BRANCHES, EXCEPT AS HEREIN MODIFIED.

THE ASSEMBLY WILL CONSIST OF THE FIRE HYDRANT AND PIPE BRANCH, INCLUDING GATE VALVE WITH VALVE BOX, ANCHORING PIPE/COUPLING, ANCHORING TEE BRANCH, BLOCKING, AND DRAINAGE.

PAYMENT FOR ITEM 638 6-INCH FIRE HYDRANT ASSEMBLY, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 638 WATER SERVICE BRANCH, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF THE WORK AS DESCRIBED IN OHIO DEPARTMENT OF TRANSPORTATION ITEM 638 WATER MAINS AND SERVICE BRANCHES, EXCEPT AS HEREIN MODIFIED.

THE PROPOSED SERVICES SHALL CONSIST OF FURNISHING AND INSTALLING 1" COPPER-TUBE SIZE CPVC SDR-11 SERVICE BRANCHES, AND SHALL INCLUDE NEW TAPPING SADDLES, COMPRESSION FITTINGS, ANGLE STOPS, AND CORPORATION STOPS AS SHOWN ON THE PLANS.

PAYMENT FOR ITEM 638 WATER SERVICE BRANCH, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT FOOT BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 638 METER PIT, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF THE WORK AS DESCRIBED IN OHIO DEPARTMENT OF TRANSPORTATION ITEM 638 WATER MAINS AND SERVICE BRANCHES, EXCEPT AS HEREIN MODIFIED.

THIS ITEM INCLUDES ALL WORK TO INSTALL THE METER PIT PER THE DETAIL IN THE PLANS. IT INCLUDES FURNISHING AND INSTALLING THE METER PIT AND THE METER COVER/CASTING.

ALL EXCAVATION, BEDDING, BACKFILL AND SEEDING AND MULCHING REQUIRED FOR METER PIT INSTALLATION ARE TO BE INCIDENTAL TO THIS ITEM. PAVEMENT RESTORATION, CURB AND GUTTER REPAIR, SIDEWALK REPLACEMENT, AND SEEDING AND MULCHING SHALL BE PAID UNDER THEIR RESPECTIVE ITEM NUMBERS.

PAYMENT FOR ITEM 638 METER PIT, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ESTIMATED QUANTITIES

REF. NO.	ITEM NO.	DESCRIPTION	UNIT OF MEASURE	APPROX. QTY.
1	611	4" CONDUIT, TYPE C, 707.45, STORM REPAIR, AS PER PLAN	FT.	25
2	611	6" CONDUIT, TYPE C, 707.45, STORM REPAIR, AS PER PLAN	FT.	25
3	611	8" CONDUIT, TYPE C, 707.45, STORM REPAIR, AS PER PLAN	FT.	25
4	611	12" CONDUIT, TYPE C, 707.45, STORM REPAIR, AS PER PLAN	FT.	50
5	614	MAINTAINING TRAFFIC	LUMP	1
6	623	CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN	LUMP	1
7	624	MOBILIZATION	LUMP	1
8	630	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	EACH	1
9	630	REMOVAL OF GROUND MOUNTED POST AND REERECTION	EACH	1
10	638	8" DUCTILE IRON WATER MAIN, CL-52, HDSS, DIRECTIONAL BORED, AS PER PLAN	FT.	644
11	638	1" WATER SERVICE BRANCH, AS PER PLAN	FT.	78
12	638	1" WATER SERVICE BRAND HDD	FT.	49
13	638	METER PIT, AS PER PLAN	EACH	5
14	638	6" FIRE HYDRANT ASSEMBLY, AS PER PLAN	EACH	1
15	638	AIR RELEASE VALVE PIT	EACH	1
16	659	SEEDING AND MULCHING, CLASS 1	LUMP	1
ALTERNATE #1 (REPLACE 8" DUCTILE IRON WATER MAIN HDSS WITH 8" DUCTILE IRON WATER MAIN)				
17	611	4" CONDUIT, TYPE C, 707.45, STORM REPAIR, AS PER PLAN	FT.	25
18	611	6" CONDUIT, TYPE C, 707.45, STORM REPAIR, AS PER PLAN	FT.	25
19	611	8" CONDUIT, TYPE C, 707.45, STORM REPAIR, AS PER PLAN	FT.	25
20	611	12" CONDUIT, TYPE C, 707.45, STORM REPAIR, AS PER PLAN	FT.	50
21	614	MAINTAINING TRAFFIC	LUMP	1
22	623	CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN	LUMP	1
23	624	MOBILIZATION	LUMP	1
24	630	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	EACH	1
25	630	REMOVAL OF GROUND MOUNTED POST AND REERECTION	EACH	1
26	638	8" DUCTILE IRON WATER MAIN, CL-52, OPEN CUT, AS PER PLAN	FT.	584
27	638	8" DUCTILE IRON WATER MAIN, CL-52, HDSS, DIRECTIONAL BORED, AS PER PLAN	FT.	60
28	638	1" WATER SERVICE BRANCH, AS PER PLAN	FT.	78
29	638	1" WATER SERVICE BRAND HDD	FT.	49
30	638	METER PIT, AS PER PLAN	EACH	5
31	638	6"FIRE HYDRANT ASSEMBLY, AS PER PLAN	EACH	1
32	638	AIR RELEASE VALVE PIT	EACH	1
33	659	SEEDING AND MULCHING, CLASS 1	LUMP	1
34	SPEC	REMOVE AND RESET MAILBOX	EACH	3

ALTERNATE BID NOTES:

A. THE BASE BID INCLUDES THE DIRECTIONAL BORING OF THE ENTIRE LENGTH OF 8" DUCTILE IRON WATER MAIN.

B. ALTERNATE #1 INVOLVES SUBSTITUTING ITEM 638 8" DUCTILE IRON WATER MAIN, HDSS, DIRECTIONAL BORED, AS PER PLAN WITH ITEM 638 8" DUCTILE IRON WATER MAIN, CL-52, OPEN-TRENCH, AS PER PLAN. ALTERNATE #1 SHALL INCLUDE ALL RESTORATION INCLUDING BUT NOT LIMITED TO PAVEMENT, DRIVE CULVERTS, SEEDING, MULCHING, EXCAVATION AND BACKFILL. THE CONTRACTOR SHALL STILL BORE UNDERNEATH GINGHAMSBURG ROAD IF THE ALTERNATE IS SELECTED.

C. THE MIAMI COUNTY SANITARY ENGINEERING DEPARTMENT RESERVES THE RIGHT TO AWARD THE LOWEST AND BEST BID BETWEEN THE BASE BID AND ALTERNATE BID, OR TO AWARD NEITHER, AT THE MCSED'S DISCRETION.

ChoiceOne Engineering
SIDNEY, OHIO 937.497.0200
LOVELAND, OHIO 513.239.8554
www.CHOICEONEENGINEERING.com

DEERCLIFF WATER LOOP
MONROE TOWNSHIP
GENERAL NOTES AND ESTIMATED QUANTITIES

REVISIONS:

FILE NAME GN.dw
DRAWN BY RDC
CHECKED BY ATS
PROJECT No. MIAMON2601
DATE 10-30-2026
SHEET NUMBER 4 OF 11

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WATER MAIN INSTALLATION

1. MAIN DEPTH SHALL BE A MINIMUM OF 4 FEET–6 INCHES AFTER FINAL GRADE.
2. MAIN DEPTH IS NOT TO EXCEED 60 INCHES AFTER FINAL GRADE WITHOUT APPROVAL OF MIAMI COUNTY SANITARY ENGINEERING DEPARTMENT (MCSED).
3. ALL WATER MAIN SIZES 6"–16" AND LARGER SHALL MEET AWWA C–900, PVC POLYVINYL CHLORIDE (PVC) PRESSURE PIPE, DR–18 (PC 235).
4. ALL WATER MAIN EXTENSIONS SHALL BE EXTENDED TO THE FAR END OF THE PROPERTY LINE.
5. COPPERHEAD INDUSTRIES TRACER WIRE, OR EQUIVALENT, SHALL BE INSTALLED WITH THE PIPE. SEE SEPARATE SECTION OF THIS DOCUMENT FOR DETAILS.
6. MAIN AND ALL APPURTENANCES SHALL BE DISINFECTED ACCORDING TO CHLORINATING PROCEDURES LISTED IN THIS DOCUMENT.
7. A HYDROSTATIC TEST SHALL BE PERFORMED IN THE PRESENCE OF MCSED PERSONNEL. DETAILS ARE LISTED IN SEPARATE SECTION OF THIS DOCUMENT.
8. THE MAIN WILL BE APPROVED AFTER SATISFACTORILY PASSING TWO BACTERIOLOGICAL ANALYSES, AS DETAILED IN SEPARATE SECTION OF THIS DOCUMENT, PERFORMED BY THE MCSED WATER DEPARTMENT.
9. ALL WATER MAIN TRENCHES SHALL BE INSPECTED BY MCSED PERSONNEL PRIOR TO BACKFILLING.
10. MATERIAL USED AROUND ANY WATER SERVICE LINES OR FITTINGS SHALL CONTAIN NO LIME.
11. ALL GATE VALVES SHALL OPEN LEFT (COUNTER–CLOCKWISE), AND BE INSTALLED EVERY 500 FEET.
12. GATE VALVES SHALL MEET ALL VALVE MATERIAL SPECIFICATIONS ON SHEET 800–3.
13. ALL FITTINGS IN SIZES 2" THROUGH 48" SHALL BE DUCTILE IRON AND CONFORM TO ALL REQUIREMENTS OF AWWA C–153/ ANSI A21.53–84 SPECS. ALL FITTINGS 12" AND SMALLER SHALL BE CLASS 250. LARGER FITTINGS SHALL BE CLASS 150. FITTINGS SHALL BE RESTRAINED, AS DIRECTED BY THE MCSED, WITH MECHANICAL JOINTS.
14. BELL JOINT RESTRAINTS – FOR AWWA C–900 PVC PIPE (6"–12"), USE FIELD LOCK BY U.S. PIPE OR APPROVED EQUIVALENT.
15. MECHANICAL JOINT RESTRAINT – FOR PVC C900 PIPE, USE EBAA MEGA–LUG IRON SERIES 19MJ00, OR APPROVED EQUIVALENT. FOR DUCTILE IRON PIPE, USE EBAA IRON MEGALUG SERIES 1100, OR APPROVED EQUAL. RESTRAINTS SHALL CONFORM TO ASTM A–536.

THE REQUIRED LENGTH OF RESTRAINED JOINTS SHALL BE PER THE RESTRAINED JOINT TABLES ON DWG 800–9, OR BASED ON MANUFACTURER'S RECOMMENDATIONS FOR THE SITE CONDITIONS PRESENT.

WATER MAIN LOOPING NOTE

ALL NEW WATER MAINS SHALL BE LOOPED, EXCEPT FOR TEMPORARY DEAD–ENDS OR SPECIAL CASES AS APPROVED BY THE MCSED. THE NEED FOR LOOPING DOES NOT PRECLUDE CUL–DE–SAC STREETS. ALL WATER MAINS ON CUL–DE–SAC STREETS SHALL BE LOOPED TO ADJACENT MAINS, UNLESS OTHERWISE APPROVED BY THE MCSED.

WATER MAIN CROSSING SEPARATION

WHENEVER A SANITARY SEWER AND WATER LINE SHALL CROSS, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER IS AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER LINE. IF IT IS ABSOLUTELY IMPOSSIBLE TO MAINTAIN THE 18–INCH VERTICAL SEPARATION, THE SANITARY SEWER SHALL BE CONSTRUCTED WITH WATER LINE TYPE MATERIALS WHICH WILL WITHSTAND A 200 PSI PRESSURE TEST.

AT CROSSINGS, THE WATER MAIN SHALL HAVE A MINIMUM VERTICAL DISTANCE OF 18 INCHES FROM STORM AND SANITARY SEWERS. ALSO, ONE FULL LENGTH OF WATER MAIN SHALL BE LOCATED SO THE JOINTS ARE AS FAR FROM THE STORM/SANITARY SEWERS AS POSSIBLE.

HORIZONTAL SEPARATION BETWEEN WATER MAIN AND SANITARY OR STORM SEWERS SHALL BE 10' MINIMUM, MEASURED EDGE TO EDGE.

SINGULAR WATER SERVICE NOTE

THE WATERWORKS DEPARTMENT SHALL NOT SERVICE MORE THAN ONE LOCATION, RESIDENCE, PLACE OF BUSINESS, OR PREMISES WITH MORE THAN ONE WATER SERVICE.

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WATER MAIN INSTALLATION AND MATERIAL NOTES | REVISIONS: | DATE APPROVED: | PAGE No. 800–1

HYDRANT INSTALLATION

EXAMINATION OF MATERIAL
PRIOR TO INSTALLATION, ALL HYDRANTS SHALL BE INSPECTED FOR DIRECTION OF OPENING, NOZZLE THREADING, OPERATING–NUT AND CAP–NUT DIMENSIONS, TIGHTNESS OF PRESSURE–CONTAINING BOLTING, CLEANLINESS OF INLET ELBOW, HANDLING DAMAGE, AND CRACKS. DEFECTIVE HYDRANTS SHALL BE MARKED AND HELD FOR FINAL DISPOSITION.

PLACEMENT
ALL HYDRANTS SHALL STAND PLUMB AND SHALL HAVE THEIR NOZZLES PARALLEL WITH OR AT RIGHT ANGLES TO THE CURB, WITH PUMPER NOZZLES FACING THE CURB.

HYDRANTS SHALL BE SET AT ESTABLISHED GRADE, WITH THE LOWEST NOZZLE AT LEAST 12 INCHES ABOVE GROUND OR AS REQUIRED BY PROJECT SPECIFICATIONS. THE LOWEST NOZZLE SHALL BE INSTALLED AWAY FROM THE CURB LINE AT A SUFFICIENT DISTANCE TO AVOID DAMAGE FROM OR TO VEHICLES. TRAFFIC MODEL HYDRANTS SHALL BE INSTALLED SO THAT THE BREAKAWAY FLANGE IS NOT LESS THAN 2 INCHES, NOR NO MORE THAN 4 INCHES ABOVE ESTABLISHED GRADE.

EACH HYDRANT SHALL BE CONNECTED TO THE MAIN WITH A 6 INCH OR LARGER DIAMETER BRANCH CONTROLLED BY AN INDEPENDENT VALVE. THE VALVE SHALL BE A RESILIENT SEAT GATE VALVE RESTRAINED TO ALLOW SHUT OFF WHEN THE HYDRANT IS TO BE REMOVED. GATE VALVE SHALL MEET SPECIFICATIONS LISTED ELSEWHERE IN THIS DOCUMENT.

ALL FIRE HYDRANTS SHALL BE "DRY–BARREL" HYDRANTS WITH OPEN DRAIN PORTS PROVIDED. SITES SHALL BE IMPROVED TO ALLOW HYDRANTS TO DRAIN.

WHEN A DRY–BARREL HYDRANT WITH AN OPEN DRAIN PORT IS SET IN CLAY OR OTHER IMPERVIOUS SOIL, A DRAINAGE PIT 2 FT. X 2 FT. X 2 FT. SHALL BE EXCAVATED BELOW EACH HYDRANT. THE DRAINAGE PIT SHALL BE FILLED WITH COARSE GRAVEL OR STONE UNDER AND AROUND THE ELBOW OF THE HYDRANT AND TO A LEVEL OF 6 INCHES ABOVE THE DRAIN PORT. TO PREVENT POSSIBLE CONTAMINATION OF THE WATER SUPPLY, DO NOT CONNECT HYDRANT DRAINS TO A SANITARY SEWER OR STORM SEWER.

PROTECTION
HYDRANTS THAT ARE INTENDED TO FAIL AT THE GROUND LINE JOINT ON VEHICLE IMPACT (TRAFFIC HYDRANTS), SPECIFIC CARE SHALL BE TAKEN TO PROVIDE ADEQUATE SOIL RESISTANCE TO AVOID TRANSMITTING SHOCK MOVEMENT TO THE LOWER BARREL AND INLET CONNECTION.

LOCATION
HYDRANTS SHALL BE LOCATED AS SHOWN ON THE APPROVED PLANS;

- ONE HYDRANT SHALL BE LOCATED AT EACH STREET INTERSECTION WITH INTERMEDIATE HYDRANTS LOCATED SO THAT SPACING BETWEEN HYDRANTS DOES NOT EXCEED 500–FEET AND NO POINT IS OVER 300–FEET FROM A HYDRANT.
- ONE HYDRANT SHALL BE LOCATED NOT MORE THAN 100–FEET FROM EACH FIRE DEPARTMENT CONNECTION FOR SPRINKLER OR STANDPIPE SYSTEMS. SAID HYDRANT SHALL BE PLACED SUCH THAT THE FIRE DEPARTMENT APPARATUS CAN CONNECT TO AND SUPPORT THE SPRINKLER OR STANDPIPE IN A TIMELY MANNER.
- ADDITIONAL FIRE HYDRANTS MAY BE REQUIRED BY THE FIRE DEPARTMENT.
- HYDRANTS SHALL BE LOCATED ADJACENT TO PAVED ROADWAYS SUITABLE FOR FIRE APPARATUS.
- HYDRANTS SHALL BE SET WITHIN A DISTANCE OF 10 FEET OF THE CURB LINE.
- CAPS ON YARD HYDRANTS SUPPORTED BY FIRE PUMPS SHALL BE PAINTED YELLOW.
- ALL FIRE HYDRANTS AND FIRE MAINS SHALL BE INSTALLED IN COMPLIANCE WITH THE OHIO FIRE CODE INCLUDING BUT NOT LIMITED TO SECTION FM–500.0 CERTIFICATION AND SECTION FM–516.0 WATER TANKS AND FIRE SERVICE MAINS.
- HYDRANT SHALL BE INSTALLED A MINIMUM OF 50 FEET FROM ANY BUILDING.
- HYDRANT SHALL BE INSTALLED AWAY FROM ANY OBSTRUCTION.
- HYDRANT SHALL BE CONNECTION TO THE WATER MAIN NO CLOSER THAN 3 FEET FROM A BELL JOINT.

THRUST RESTRAINT

HYDRANTS
THE BOWL OF EACH HYDRANT SHALL BE WELL BRACED AGAINST A SUFFICIENT AREA OF UNEXCAVATED EARTH AT THE END OF THE TRENCH WITH THRUST BLOCKS OF CONCRETE OR OTHER SPECIFIED BLOCKING MATERIALS, OR IT SHALL BE TIED TO THE PIPE WITH SUITABLE METAL TIE RODS, CLAMPS, OR RESTRAINED JOINTS, AS SHOWN ON THE PLANS OR AS SPECIFIED.

FITTINGS
ALL PLUGS, CAPS, TEES, REDUCERS, AND BENDS, UNLESS OTHERWISE SPECIFIED, SHALL BE PROVIDED WITH THRUST BLOCKS OR SUITABLE RESTRAINED JOINTS AS SPECIFIED.

DESIGN
THE DESIGN PRESSURE IS THE MAXIMUM PRESSURE TO WHICH THE PIPE LINE WILL BE SUBJECTED, WITH CONSIDERATION GIVEN TO THE VULNERABILITY OF THE PIPE–SOIL SYSTEM WHEN THE PRESSURE IS EXPECTED TO BE APPLIED. IN MOST CASES, THIS WILL BE THE TEST PRESSURE OF THE PIPE, APPLIED SHORTLY AFTER INSTALLATION, WHEN THE PIPE–SOIL SYSTEM IS NORMALLY MOST VULNERABLE.

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WATER MAIN INSTALLATION AND MATERIAL NOTES (CONT.) | REVISIONS: | DATE APPROVED: | PAGE No. 800–2

GATE VALVE SPECIFICATIONS

VALVE CONSTRUCTION
1. VALVES SHALL MEET OR EXCEED ANSI/AWWA C515, LATEST REVISION FOR WATER SUPPLY SERVICE.
2. VALVES SIZE SHALL BE OF A RESILIENT WEDGE DESIGN WITH A RATED WORKING PRESSURE OF 250 PSIG.
3. ALL CAST FERROUS COMPONENTS SHALL BE DUCTILE IRON AND SHALL BE MANUFACTURED IN COMPLIANCE WITH THE LATEST EDITION OF ANSI/AWWA C515.
4. ALL VALVES SHALL BE CERTIFIED TO NSF/ANSI STANDARD 61.
5. VALVE TO BE DESIGNED FOR USE IN DRINKING WATER, SEWAGE, FIRE PROTECTION SYSTEMS, IRRIGATION, AND BACKFLOW CONTROL SYSTEMS.
6. ALL VALVES WILL COME STANDARD WITH A QR CODE USED FOR MAPPING ASSETS TO BE USED IN CONJUNCTION WITH THE AFC MAPPER MOBILE APPLICATION.

DUCTILE IRON COMPONENTS
1. THE VALVE BODY DESIGN SHALL BE LIGHTWEIGHT IN DESIGN AND EASY TO HANDLE. VALVE BODY AND BONNET SHALL BE CONSTRUCTED OF DUCTILE IRON WITH WALL THICKNESS PER TABLE 2 OF ANSI/AWWA C515. HEAVY WALL AND/OR CAST GRAY–IRON BODIES ARE NOT ACCEPTABLE.
2. THE VALVE SHALL HAVE A SMOOTH AND OVERSIZE WATERWAY AND HAVE THE MARKING "DI" OR "DUCTILE IRON" CAST ONTO THE BODY.
3. ALL WEDGES SHALL BE CONSTRUCTED OF DUCTILE IRON. WEDGE SHALL BE FULLY ENCAPSULATED WITH EPDM RUBBER AND PROVIDED WITH POLYMER WEDGE GUIDE COVERS.
4. VALVE STUFFING BOX AND WRENCH NUT SHALL BE MADE OF DUCTILE IRON.

STEM SEALS
1. VALVE STEMS SHALL BE SEALED BY THREE O–RINGS.
2. TWO OF THE STEM O–RINGS SHALL RESIDE ABOVE THE THRUST COLLAR. ONE O–RING SHALL BE LOCATED BELOW THE THRUST COLLAR WHICH CREATES A SEALED LUBRICATION CHAMBER AROUND THE STEM THRUST COLLAR.
3. O–RINGS SET IN A CARTRIDGE SHALL NOT BE ALLOWED.
4. THE VALVE SHALL ALSO BE EQUIPPED WITH THRUST WASHERS ABOVE AND BELOW THE STEM THRUST COLLAR FOR REDUCED OPERATING TORQUE.

BOLTING AND BODY GASKETS
1. ALL EXTERIOR VALVE BODY BOLTING SHALL BE TYPE 304 STAINLESS STEEL AND SHALL BE PROVIDED WITH HEXAGONAL HEADS WITH DIMENSIONS CONFORMING TO ANSI B18.2.1.
2. METRIC SIZES AND / OR SOCKET HEAD CAP SCREWS, OR BOLTS, ARE NOT ALLOWED.
3. THE OPERATING NUT SHALL BE 2 IN. SQUARE AND SHALL BE CONSTRUCTED OF DUCTILE IRON FITTED TO A SQUARE TAPERED STEM TO HELP ENSURE EVEN DISTRIBUTION OF INPUT TORQUE.
4. THE BODY–TO–BONNET AND STUFFING BOX SEALS ARE PRESSURE ENERGIZED O–RING STYLE DESIGNS THAT REDUCE THE NEED FOR EXCESSIVE BOLT LOADING. THE SEALS SHALL BE REUSABLE.

COATING
1. ALL INTERNAL AND EXTERNAL FERROUS SURFACES OF THE VALVE BODY AND BONNET SHALL HAVE FUSION–BONDED EPOXY COATING, COMPLYING WITH ANSI/AWWA C550.

CONNECTION
1. VALVE INLET SHALL BE DESIGNED FOR USE WITH DUCTILE IRON, CAST IRON, HDPE AND PVC PIPE MATERIALS.
2. INLET SHALL INCORPORATE STAB–FIT DESIGN REQUIRING THE USE OF ONLY ONE TYPE 304 STAINLESS STEEL FASTENER. THE ASSEMBLY OF FLANGE OR MECHANICAL JOINT RESTRAINERS USING MULTIPLE FASTENERS OR WEDGE BOLTS IS NOT PERMITTED.
3. RESTRAINT ACCESSORIES SHALL BE FACTORY INSTALLED.
4. REQUIRED INSTALLATION TORQUE WILL BE DISPLAYED ON THE VALVE BODY AND MAY NOT EXCEED 45FT–LBS.
5. ALL VALVE INLETS SHALL BE THE ALPHA DESIGN FURNISHED BY AMERICAN FLOW CONTROL, OR APPROVED EQUAL.

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GATE VALVE MATERIAL SPECIFICATIONS | REVISIONS: | DATE APPROVED: | PAGE No. 800–3

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SIDNEY, OHIO 937.497.0200
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WATER MAIN NOTES:

WATERLINE PIPE SHALL BE DUCTILE IRON AND SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C151/A21.51, CLASS 52 FOR 4" TO 16" WITH SLIP ON JOINTS AND RUBBER GASKETS, CEMENT LINED AND SEAL COATED ON THE OUTSIDE. THE SPECIFICATIONS IN THIS NOTE CONCERNING PIPE MATERIAL SHALL SUPERSEDE THOSE GIVEN IN MCSED WATER MAIN INSTALLATION AND MATERIAL NOTES.

FITTINGS AND SPECIALS SHALL BE DUCTILE IRON (COMPACT) IN ACCORDANCE WITH ANSI/AWWA C153/A21.53 RATED FOR 350 PSI WORKING PRESSURE SHALL BE CEMENT LINED PER ANSI/AWWA C104/A21.4 AND SEAL COATED ON THE OUTSIDE WITH A UNIFORM COATING OF ASPHALTIC, COAL TAR VARNISH OR ENAMEL APPLIED HOT, AND SHALL HAVE MECHANICAL JOINTS. ALL BOLTS AND NUTS SHALL BE COR-TEN.

PIPE SHALL BE ANCHORED AT ALL DEAD ENDS, REDUCERS, BENDS, TEES, VALVES, AND OTHER FITTINGS BY MEANS OF MECHANICAL JOINT RESTRAINT. RESTRAINTS FOR MECHANICAL JOINTS SHALL BE EITHER EBBA IRON MEGALUG SERIES 2000 PV. UNI-FLANGE SERIES 1500, OR AN OWNER APPROVED EQUAL. RESTRAINTS FOR PVC BELL JOINTS SHALL BE EITHER EBBA IRON SERIES 1500, UNI-FLANGE SERIES 1390, OR AN OWNER APPROVED EQUAL. ALL BOLTS AND NUTS SHALL BE COR-TEN. ALL OTHER HARDWARE SHALL BE DUCTILE IRON.

RUBBER GASKET SHALL BE USED ON ALL MECHANICAL JOINT FITTINGS AND SHALL CONFORM TO AWWA C111.

DIRECTIONAL DRILLED WATER MAINS/FITTING: RESTRAINED JOINT PIPE RATED 350 PSI, PRESSURE CLASS 52 AND FITTINGS SHALL BE U.S. PIPE'S HDSS AND FITTINGS OR APPROVED EQUAL. RESTRAINT OF FIELD CUT PIPE SHALL BE PROVIDED WITH US. PIPE'S HDSS GRIPPER RING, HDSS PIPE FIELD WELDMENTS OR APPROVED EQUAL. RESTRAINED PIPE SHALL BE DUCTILE IRON MANUFACTURED IN ACCORDANCE WITH ANSI/AWWA C151/A21.51. PUSH-ON JOINTS FOR SUCH PIPE SHALL BE IN ACCORDANCE WITH ANSI/AWWA C11/A21.11 "RUBBER-GASKET JOINTS FOR DUCTILE IRON PIPE AND FITTINGS." RESTRAINED JOINT FITTINGS AND AND THE RESTRAINING COMPONENTS SHALL BE DUCTILE IRON IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF ANSI/AWWA C153/A21.53 WITH THE EXCEPTION OF THE MANUFACTURER'S PROPRIETARY DESIGN DIMENSIONS. PUSH-ON JOINTS FOR SUCH FITTINGS SHALL BE IN ACCORDANCE WITH ANSI/AWWA C111/A21.11. CEMENT MORTAR LINING AND SEAL COATING FOR PIPE FITTINGS SHALL BE IN ACCORDANCE WITH ANSI/AWWA C104/A21.4. ASPHALTIC OUTSIDE COATING SHALL BE IN ACCORDANCE WITH ANSI/AWWA C151/A21.51 FOR PIPE AND ANSI/AWWA C110/A21.10 OR ANSI/AWWA C153/A21.53 FOR FITTINGS. RESTRAINED PUSH-ON JOINTS FOR PIPE AND FITTINGS SHALL BE DESIGNED FOR A WATER WORKING PRESSURE OF 350 PSI FOR SIZES 4" THROUGH 24" AND 250 PSI FOR SIZES 30" THROUGH 36".

HYDROSTATIC TESTING

HYDROSTATIC TESTING OF NEW WATER MAINS SHALL BE COMPLETED IN ACCORDANCE OF SECTION 10.3 OF THE MOST RECENT VERSION OF AWWA STANDARD C605. WATER SHALL BE USED FOR ALL PRESSURE TESTING OF NEWLY–INSTALLED WATER MAINS AND NEW WATER SERVICES. AIR TESTING, OR ANY OTHER TYPE MATERIAL, IS PROHIBITED.

PRESSURE TEST

ALL NEWLY LAID PIPE OR ANY VALVED SECTION THEREOF SHALL BE SUBJECT TO A HYDROSTATIC PRESSURE OF AT LEAST 150 PSI AT THE POINT OF TESTING. BEFORE TESTING, SUFFICIENT BACKFILL SHALL BE PROVIDED TO PREVENT PIPE MOVEMENT.

TEST PRESSURE REQUIREMENTS

TEST PRESSURE SHALL:
1. NOT BE LESS THAN 150 PSI AT THE HIGHEST POINT ALONG THE TEST SECTION.
2. NOT EXCEED PIPE OR THRUST–RESTRAINT DESIGN PRESSURE.
3. BE OF AT LEAST 2–HOUR DURATION.
4. NOT VARY BY MORE THAN 5 PSI (0.35 BAR) FOR THE DURATION OF THE TEST. NOT EXCEED TWICE THE RATED PRESSURE OF THE VALVES OR HYDRANTS WHEN THE PRESSURE BOUNDARY OF THE TEST SECTION INCLUDES CLOSED GATE VALVES OR HYDRANTS. NOTE: VALVES SHALL NOT BE OPERATED IN EITHER DIRECTION AT DIFFERENTIAL PRESSURE EXCEEDING THE RATED PRESSURE OF THE VALVES WHEN THE PRESSURE BOUNDARY OF THE TEST SECTION INCLUDES CLOSED, RESILIENT–SEATED GATE VALVES OR BUTTERFLY VALVES.

PRESSURIZATION

EACH VALVED SECTION OF PIPE SHALL BE FILLED WITH WATER SLOWLY AND THE SPECIFIED TEST PRESSURE, BASED ON THE ELEVATION THE LOWEST POINT OF ELEVATION OF THE TEST GAUGE, SHALL BE APPLIED BY MEANS OF A PUMP CONNECTED TO THE PIPE IN A MANNER SATISFACTORY TO THE MCSED. VALVES SHALL NOT BE OPERATED IN EITHER THE OPENING OR CLOSING DIRECTION AT DIFFERENTIAL PRESSURES ABOVE THE RATED PRESSURE. IT IS GOOD PRACTICE TO ALLOW THE SYSTEM TO STABILIZE AT THE TEST PRESSURE BEFORE CONDUCTING THE LEAKAGE TEST.

FLUSHING

FOREIGN MATERIAL LEFT IN PIPELINES DURING INSTALLATION OFTEN RESULTS IN VALVE OR HYDRANT–SEAT LEAKAGE DURING PRESSURE TESTS. EVERY EFFORT SHALL BE MADE TO KEEP LINES CLEAN DURING INSTALLATION. THOROUGH FLUSHING IS RECOMMENDED PRIOR TO A PRESSURE TEST. FLUSHING SHOULD BE ACCOMPLISHED BY PARTIALLY OPENING AND CLOSING VALVES AND HYDRANTS SEVERAL TIMES UNDER EXPECTED LINE PRESSURE, WITH FLOW VELOCITIES ADEQUATE TO FLUSH FOREIGN MATERIAL OUT OF THE VALVES AND FIRE HYDRANTS.

AIR REMOVAL

BEFORE APPLYING THE SPECIFIED TEST PRESSURE, AIR SHALL BE EXPELLED COMPLETELY FROM THE PIPE, VALVES, AND HYDRANTS. IF PERMANENT AIR VENTS ARE NOT LOCATED AT ALL HIGH POINTS, THE CONTRACTOR SHALL INSTALL CORPORATION STOPS AT SUCH POINTS SO THAT THE AIR CAN BE EXPELLED AS THE LINE FILLS WITH WATER. AFTER ALL THE AIR HAS BEEN EXPELLED, THE CORPORATION STOPS SHALL BE CLOSED AND THE TEST PRESSURE APPLIED. AT THE CONCLUSION OF THE PRESSURE TEST, THE CORPORATION STOPS SHALL BE REMOVED AND PLUGGED OR LEFT IN PLACE AT THE DISCRETION OF THE MCSED.

EXAMINATION

ANY EXPOSED PIPE, FITTINGS, VALVES, HYDRANTS, AND JOINTS SHALL BE EXAMINED CAREFULLY DURING THE TEST. ANY DAMAGED OR DEFECTIVE PIPING, FITTINGS, VALVES, OR HYDRANTS THAT ARE DISCOVERED FOLLOWING THE PRESSURE TEST SHALL BE REPAIRED OR REPLACED WITH SOUND MATERIAL. VISIBLE LEAKAGE SHALL BE REPAIRED, REGARDLESS OF THE AMOUNT OF LEAKAGE. THE TEST SHALL BE REPEATED UNTIL IT IS SATISFACTORY TO THE MCSED.

WATER SERVICE TESTING

WATER SERVICES SHALL BE TESTED FROM THE NEW MAIN TO THE CURB STOP, INCLUDING THE CURB STOP. WATER SERVICE TAPS SHALL BE MADE INTO A PRESSURIZED MAIN. ALL NEW WATER SERVICES SHALL BE TESTED CONCURRENTLY WITH THE WATER MAIN HYDROSTATIC TEST, WITH CORPORATION STOPS OPEN FOR THE TEST.

ACCEPTANCE OF INSTALLATION

ACCEPTANCE SHALL BE DETERMINED ON THE BASIS OF ALLOWABLE LEAKAGE. IF ANY TEST OF PIPE LAID DISCLOSES LEAKAGE GREATER THAN 5 PSI, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE AND MAKE REPAIRS AS NECESSARY UNTIL THE LEAKAGE IS WITHIN THE SPECIFIED ALLOWANCE.

A. LEAKAGE IS DEFINED AS THE QUANTITY OF WATER TO BE SUPPLIED INTO THE NEWLY LAID PIPE, OR ANY VALVED SECTION THEREOF, NECESSARY TO MAINTAIN THE SPECIFIED LEAKAGE TEST PRESSURE AFTER THE PIPE HAS BEEN FILLED WITH WATER AND THE AIR EXPELLED.

B. NO PIPE INSTALLATION WILL BE ACCEPTED IF THE LEAKAGE EXCEEDS THE LEAKAGE DETERMINED BY THE FOLLOWING FORMULA:

Where: S = length of pipe tested, in ft. D = pipe diameter, in inches P = average test pressure L = allowable leakage per hour

$$L = \frac{S \cdot D \cdot \sqrt{P}}{148{,}000}$$

C. DURING THE HYDROSTATIC TEST, A THOROUGH EXAMINATION OF ALL PIPING, FITTINGS, VALVES, HYDRANTS, ETC. SHALL BE PERFORMED. LEAKING JOINTS SHALL BE TIGHTENED, AND CRACKED OR OTHERWISE DEFECTIVE MATERIAL SHALL BE REMOVED AND REPLACED AND THE TEST SHALL BE REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED.

BELOW IS A TABLE WHICH REPRESENTS THE ALLOWABLE LEAKAGE IN GALLONS PER HOUR.

ALLOWABLE LEAKAGE PER 1000 FT. OF PIPELINE

Avg. Test Pressure psi(bar)	NOMINAL PIPE DIAMETER– INCHES 3	4	6	8	10	12
450(31)	0.43	0.57	0.86	1.15	1.43	1.72
400(28)	0.41	0.54	0.81	1.08	1.35	1.62
350(24)	0.38	0.51	0.76	1.01	1.26	1.52
300(21)	0.35	0.47	0.70	0.94	1.17	1.40
275(19)	0.34	0.45	0.67	0.90	1.12	1.34
250(17)	0.32	0.43	0.64	0.85	1.07	1.28
225(16)	0.30	0.41	0.61	0.81	1.01	1.22
200(14)	0.29	0.38	0.57	0.76	0.96	1.15
150(10)	0.25	0.33	0.50	0.66	0.83	0.99
175(12)	0.27	0.36	0.54	0.72	0.89	1.07

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HYDROSTATIC TESTING OF WATERLINES | REVISIONS: | DATE APPROVED: | PAGE No. 800–4

DISINFECTION OF NEW WATER MAINS

A. DISINFECTION TESTING SHALL BE PERFORMED PRIOR TO HYDROSTATIC TESTING. COORDINATE WITH MCSED TO PERFORM ALL WATER MAIN TESTING. THE COMPLETED WATER WORK SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C–651.

B. DISINFECTION OR STERILIZATION OF NEW MAINS AND SERVICES, AS REQUIRED BY THE OEPA, SHALL BE COORDINATED THROUGH THE MCSED ENGINEER OR MCSED ENGINEER'S REPRESENTATIVE. THE MCSED ENGINEER OR MCSED ENGINEER'S REPRESENTATIVE RESERVES THE RIGHT TO REQUIRE STRICTER CHLORINE RESIDUAL REQUIREMENTS ON A CASE–BY–CASE BASIS.

C. MAINTAIN PIPES FREE OF DIRT AND FOREIGN MATTER DURING CONSTRUCTION BY DEWATERING TRENCH AND SEALING OPEN PIPE BARRELS. SWAB EACH LENGTH OF PIPE AS IT IS INSTALLED. UPON COMPLETION OF MAIN, ISOLATE MAIN SEGMENTS AND FLUSH PIPE AT 2 FPS VELOCITY.

D. STERILIZE MAIN IN ACCORDANCE WITH AWWA C–651. INJECT 3% TO 5% HYPO CHLORITE SOLUTION TO PROVIDE 50 TO 60 MG PER LITER CONCENTRATION IN MAIN. CHLORINE MAY BE PLACED IN EACH SECTION OF PIPE AT THE TIME OF INSTALLATION. SAMPLE WATER AT EACH HYDRANT OR IF NO HYDRANT IS AVAILABLE, A SAMPLE TAP SHALL BE INSTALLED BY CONTRACTOR EVERY 1200 FT. ANALYZE SAMPLE USING ORTHOTOLIDINE REAGENT TO VERIFY FREE CHLORINE CONCENTRATION. MAINTAIN CONCENTRATION IN MAIN FOR 24 HOURS. SAMPLE HYDRANTS AT COMPLETION OF STERILIZATION VERIFYING MINIMUM CHLORINE RESIDUAL OF 20 MG PER LITER.

E. CONTRACTOR SHALL ACCOMMODATE FLUSHING AND SAMPLE LOCATIONS

F. WATER SAMPLES – BACTERIOLOGICAL TEST PER AWWA C–651. TEST TO BE COLLECTED AND PERFORMED BY THE MCSED.

FINAL FLUSHING

CLEARING THE MAIN OF HEAVILY CHLORINATED WATER
AFTER THE APPLICABLE RETENTION PERIOD, HEAVILY CHLORINATED WATER SHOULD NOT REMAIN IN PROLONGED CONTACT WITH PIPE. IN ORDER TO PREVENT DAMAGE TO THE PIPE LINING OR CORROSION DAMAGE TO THE PIPE ITSELF, THE HEAVILY CHLORINATED WATER SHALL BE FLUSHED FROM THE MAIN UNTIL CHLORINE MEASUREMENTS SHOW THAT THE CONCENTRATION IN THE WATER LEAVING THE MAIN IS NO HIGHER THAN THAT GENERALLY PREVAILING IN THE SYSTEM OR IS ACCEPTABLE FOR DOMESTIC USE.

DISPOSING OF HEAVILY CHLORINATED WATER
THE ENVIRONMENT TO WHICH THE CHLORINATED WATER IS TO BE DISCHARGED SHALL BE INSPECTED. IF THERE IS ANY QUESTION THAT THE CHLORINATED DISCHARGE WILL CAUSE DAMAGE TO THE ENVIRONMENT, THEN A REDUCING AGENT SHALL BE APPLIED TO THE WATER TO BE WASTED TO NEUTRALIZE THE CHLORINE RESIDUAL REMAINING IN THE WATER. AWWA STANDARD C655 DETAILS BEST PRACTICES FOR DECHLORINATION.

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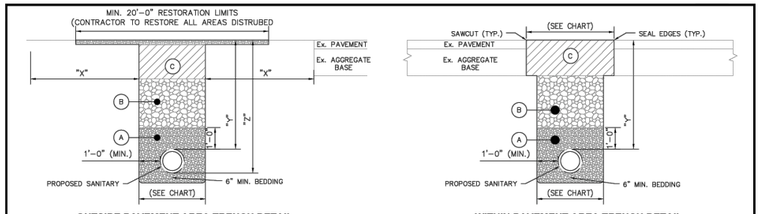
DISINFECTION OF NEW WATER MAINS | REVISIONS: | DATE APPROVED: | PAGE No. 800–5

DEERCLIFF WATER LOOP
MONROE TOWNSHIP
GENERAL DETAILS

REVISIONS:

FILE NAME GN.dw
DRAWN BY RDC
CHECKED BY ATS
PROJECT No. MIAMON2601
DATE 10-30-2026
SHEET NUMBER 5 OF 11

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OUTSIDE PAVEMENT AREA TRENCH DETAIL

WITHIN PAVEMENT AREA TRENCH DETAIL

"X"= DISTANCE FROM EDGE OF TRENCH TO EDGE OF CLOSEST PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS.
"Z"= DISTANCE FROM TOP OF BEDDING TO FINISH SURFACE.
"Y"= MIN. DEPTH OF COVER FOR PROPOSED CONDUIT
WATER MAINS.....4'-6", STORM SEWERS.....2'-0", SANITARY SEWERS....4'-0"

NOTES

(A) STRUCTURAL BEDDING SHALL BE PER ODOT 703.11 "STRUCTURAL BACKFILL FOR 611 BEDDING AND BACKFILL" TYPE 3 (#57 OR #67 OR #8 AGGREGATE) NATURAL WASHED GRAVEL (NO LIMESTONE).

(B) STRUCTURAL BACKFILL – DENSITY TEST TO 98% OF ASTM D698 STANDARD PROCTOR CURVE SHALL REQUIRED BY THE MCSED TO BE COMPLETED BY A CERTIFIED COMMERCIAL TESTING LABORATORY.

FOR "NON TRAFFIC AREAS" (GRASS AREAS)
ALL TRENCHES WHERE "X" IS GREATER THAN "Z", THE BACKFILL MATERIAL SHALL BE COMPACTED NATIVE MATERIAL IN 12" MAXIMUM LIFTS OR AS APPROVED BY THE MCSED. NO MATERIAL SHALL BE USED FOR BACKFILLING THAT CONTAINS STONE, ROCKS, ETC., GREATER THAN 3" DIAMETER.

ALL TRENCHES WHERE "Z" IS GREATER THAN "X", THE BACKFILL MATERIAL SHALL BE ODOT ITEM 703.11, TYPE 1 (#304 AGGREGATE). THE AGGREGATE SHALL BE COMPACTED IN 6" MAXIMUM LIFTS AND BE USED UNTIL THE BACKFILL HEIGHT RESULTS IN "X" BEING GREATER THAN "Z" AT WHICH TIME NATIVE BACKFILL CAN BE USED.

FOR "TRAFFIC AREAS" (GRAVEL, ASPHALT, CONCRETE PAVEMENT)
ALL TRENCH BACKFILL SHALL BE ODOT ITEM 703.11, TYPE 1 (#304 AGGREGATE). THE AGGREGATE SHALL BE COMPACTED IN 6" MAXIMUM LIFTS UNLESS OTHERWISE DIRECTED BY THE MCSED.

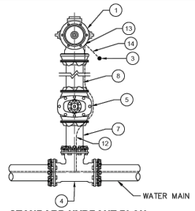
(C) ALL "NON TRAFFIC AREAS" SHALL RECEIVE A MIN. OF 6" OF TOPSOIL OVER THE COMPACTED MATERIAL AND THEN SEEDED PER ODOT 659.

ALL "IN-PAVEMENT AREAS" SHALL MATCH EXISTING ASPHALT THICKNESS OR MINIMUM MCSED ROADWAY STANDARDS.

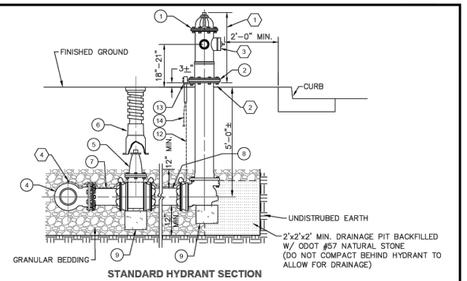
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WATER MAIN TRENCH NOTES AND DETAILS

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STANDARD HYDRANT PLAN



STANDARD HYDRANT SECTION

MATERIAL LEGEND

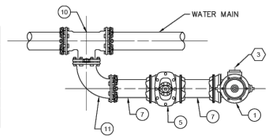
NO.	DESCRIPTION
1	FIRE HYDRANT, CITY OF TROY SERVICE AREA; AMERICAN DARLING B–84–B, CITY OF TIPP CITY/CLARK COUNTY SERVICE AREA; MUELLER SUPER CENTURION 250.
2	BREAK FLANGE
3	DRIVE–IN MAGNESIUM GROUND ROD (AWAY FROM STREET)
4	MJ×MJ TEE W/ 6" BRANCH
5	GATE VALVES: AWWA C–515, RESILIENT WEDGE, NONRISING STEM, MECHANICAL JOINT, 150 PSI WORKING PRESSURE, OPEN LEFT WITH ARROW INDICATING OPEN DIRECTION. MUELLER OR EQUIVALENT
6	6" NOM. DIA. CAST IRON 3–PIECE VALVE BOX – TO BE LOCATED IN STREET OR BEHIND CURB, COVER MARKED "WATER"
7	6" PVC AWWA C–900 PC–235 PIPE, 18" MIN. CUT LENGTH
8	6" PVC AWWA C–900 PC–235 PIPE, CUT TO LENGTH
9	8"x8"x16" SOLID CONCRETE BLOCK INSTALLED UNDER VALVE (TYPICAL)
10	ANCHORING TEE W/ 6" BRANCH
11	6" MJ×MJ ELBOW
12	BLUE TRACER WIRE, IN ACCORDANCE WITH TRACER WIRE SPECIFICATIONS
13	ABOVE GRADE TRACER WIRE ACCESS POINT, SECURED TO BOTTOM OF GRADE FLANGE W/ BRACKET (SEE TRACER WIRE NOTES)
14	TRACER WIRE (RED) FACTORY CONNECTED TO GROUND ROD

FIRE HYDRANT KEY NOTES

NO.	DESCRIPTION
1	HYDRANT COLOR SHALL BE YELLOW WITH WHITE CAP
2	IF FH EXTENSIONS ARE REQ. DUE TO GRADE, ALL RISER SECTIONS MUST USE CENTERING SPIDERS AT EACH RISER SECTION. ONE (1) 18" MAX. RISER MAY BE USED.
3	PUMPER NOZZLE TO FACE PAVEMENT WHEN PLACED IN SERVICE. FH TO BE BAGGED IF OUT OF SERVICE.
4	3–WAY TRACER WIRE CONNECTOR TO BE PROVIDED AT MAIN

NOTES

A. SEE DWG. 800–8 FOR FIRE HYDRANT MATERIAL SPECIFICATIONS.
B. SEE DWG. 800–2 FOR FIRE HYDRANT INSTALLATION NOTES.



ROTATED HYDRANT BRANCH DETAIL
*TO BE UTILIZED IN SPECIAL CASES ONLY, AND MUST BE APPROVED FOR USE BY MCSED

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FIRE HYDRANT DETAILS

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FIRE HYDRANT MATERIAL SPECIFICATIONS

1. FIRE HYDRANTS YELLOW AMERICAN DARLING B84B FOR THE CITY OF TROY SERVICE AREA; MUELLER SUPER CENTURION 250 FOR THE CITY OF TIPP CITY/CLARK COUNTY SERVICE AREA. CONFORMING TO AWWA; CCW TO OPEN; SELF–DRAINING; BREAK FLANGES 3" ABOVE GRADE.
2. TRAFFIC BREAK FEATURE TO BE DESIGNED FOR 360° ROTATION OF NOZZLE SECTION AND INCORPORATE THE USE OF A 2–PIECE SQUARE ROD AND SINGLE CAST–IRON ROD COUPLING SECURED WITH STAINLESS STEEL COUPLING PINS.
3. THE HYDRANT SHALL HAVE A TRAVEL STOP NUT IN THE TOP OF THE HYDRANT TO LIMIT THE TRAVEL OF THE HYDRANT ROD. HYDRANT DESIGNS THAT ALLOW THE VALVE BOTTOM TO STOP AGAINST THE SHOE OR EMPLOY A STOP IN THE DRAIN MECHANISM RESULTING IN A BENDING MOMENT IN THE ROD ASSEMBLY ARE NOT ALLOWED.
4. HYDRANT UPPER AND LOWER BARRELS AND BASE SHALL BE MADE OF DUCTILE IRON.
5. HYDRANT TO BE CERTIFIED TO NSF/ANSI STANDARD 61 AND NSF/ANSI 372.
6. THE HYDRANT SHALL INCORPORATE A DRAINING SYSTEM CONSTRUCTED ENTIRELY OF BRONZE AND POSITIVELY ACTIVATED BY THE COMPRESSION OF AN E–COATED STAINLESS STEEL SPRING.
7. HYDRANT DRAINS SHALL CLOSE COMPLETELY AFTER NO MORE THAN 3 TURNS OF THE OPERATING NUT.
8. THERE SHALL BE A MINIMUM OF TWO INTERNAL DRAIN PORTS IN THE HYDRANT SEAT AND FOUR OUTLETS IN THE HYDRANT DRAIN RING DIRECTING WATER TO THE EXTERIOR OF THE HYDRANT.
9. HYDRANTS EMPLOYING SLIDING–STYLE DRAINS ARE NOT PERMITTED.
10. ALL PUMPER AND HOSE NOZZLES SHALL BE RETAINED BY A SINGLE–PIECE THREADED DUCTILE IRON RETAINING COLLAR. THREADED–IN NOZZLES AND NOZZLES USING SET SCREWS OR WEDGE PINS ARE NOT ALLOWED.
11. CITY OF TROY SERVICE AREA FIRE HYDRANTS SHALL HAVE 2EA. 2–1/2" HOSE NOZZLES WITH DAYTON THREADS AND 1EA. 4–1/2" PUMPER NOZZLE WITH 5" STORZ NOT NATIONAL THREAD. THE CITY OF TIPP CITY /CLARK COUNTY SERVICE AREA FIRE HYDRANTS SHALL HAVE 2EA. 2–1/2" HOSE NOZZLES WITH NATIONAL STANDARD THREAD CONNECTIONS AND 5" STORZ CONNECTION.
12. THE OPERATION NUT AND NOZZLE CAP NUTS SHALL BE 1–1/2" NST PENTAGON, AND SHALL OPEN IN THE COUNTER CLOCKWISE DIRECTION. HYDRANT OPERATION NUT SHALL BE SUPPLIED WITH A GREASE ZERK FOR LUBRICATION PURPOSES.
13. HYDRANTS SHALL BE YELLOW IN COLOR WITH A WHITE BONNET CAP. ALL BOLTING ABOVE AND BELOW GRADE SHALL BE TYPE 304 STAINLESS STEEL.
14. FIRE HYDRANT BASE INLET SHALL INCORPORATE A STAB–FIT DESIGN REQUIRING THE USE OF ONLY ONE TYPE 304 STAINLESS STEEL FASTENER. FLANGE OR MECHANICAL JOINT RESTRAINERS USING MULTIPLE FASTENERS OR WEDGE BOLTS IS NOT PERMITTED.

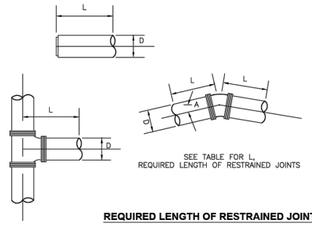
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- HYDRANT BASE SHALL BE AMERICAN FLOW CONTROL ALPHA XL BASE W/ 6" ALPHA INLET, OR APPROVED EQUAL.
- RESTRAINT ACCESSORIES SHALL BE FACTORY INSTALLED.

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FIRE HYDRANT MATERIAL SPECIFICATIONS

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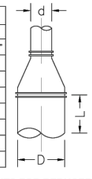
SEE TABLE FOR L, REQUIRED LENGTH OF RESTRAINED JOINTS

A – DEGREE OF BEND/FITTING TYPE	REQUIRED LENGTH OF RESTRAINED JOINTS D–DIAMETER OF PIPE							
	4"	6"	8"	10"	12"	16"	20"	24"
11 1/4°	4	5	6	7	9	11	13	15
22 1/2°	7	9	12	14	17	22	26	31
45°	13	19	24	29	34	44	54	63
90°	28	40	52	63	74	96	116	136
TEE/END	28	40	52	63	74	96	116	136
VALVE	28	40	52	63	74	96	116	136

*THE FITTING OR VALVE SHALL BE RESTRAINED, AT MINIMUM, IN ALL CASES.

REQUIRED LENGTH OF RESTRAINED JOINTS FOR BENDS, TEES, VALVES, AND DEAD ENDS

DIAMETER OF LARGER PIPE ("D")	REQUIRED LENGTH OF RESTRAINED JOINTS FOR REDUCERS("L") DIAMETER OF SMALLER PIPE ("d")							
	4"	6"	8"	10"	12"	16"	20"	24"
6"	21'							
8"	38'	22'						
10"	51'	39'	21'					
12"	64'	54'	39'	22'				
16"	88'	81'	70'	57'	41'			
20"	111'	105'	98'	86'	73'	41'		
24"	132'	127'	120'	111'	101'	75'	41'	



RESTRAINED JOINT REQUIREMENTS CALCULATED BASED ON THE FOLLOWING PARAMETERS:

- PIPE MATERIAL: PVCO C–909 OR PVC C–900
- SOIL TYPE: GRANULAR BACKFILL/BEDDING
- SAFETY FACTOR: 1.5
- TRENCH TYPE: 4
- DEPTH OF BURY: 4'–6"
- TEST PRESSURE: 150 PSI

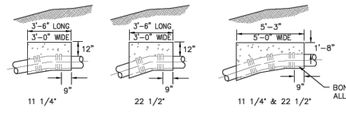
*ALL RESTRAINT CALCULATIONS FOR BENDS ARE BASED ON VERTICAL BENDS DOWNWARD.

REQUIRED LENGTH OF RESTRAINED JOINTS FOR REDUCERS

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WATER MAIN RESTRAINED JOINT DETAIL

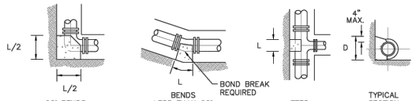
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CONCRETE BLOCKING FOR VERTICAL BENDS

SIZE OF PIPE	BENDS DEGREE OF BEND 11 1/4° L	D	22 1/2° L	D	45° L	D	90° L	D
3", 4", 6"	6'	6"	10'	6"	20'	6"	36'	6"
8"	9'	6"	14'	6"	24'	9"	50'	9"
12"	14'	12"	22'	12"	30'	16"	60'	16"
16"	18'	16"	24'	18"	33'	30'	70'	22"

RUN	TEES BRANCH 3",4",6" L	D	8" L	D	12" L	D	16" L	D
3", 4", 6"	16'	7"						
8"	14'	8"	18'	12"				
12"	9'	12"	16'	12"	24'	18"		
16"	8'	16"	14'	16"	28'	16"	30'	26"



CONCRETE BLOCKING FOR HORIZONTAL BENDS

NOTES

A. CARE SHALL BE TAKEN TO KEEP CONCRETE AWAY FROM MECHANICAL JOINTS BY PLACING VISQUEEN OR OTHER APPROVED MATERIAL OVER PIPE BEFORE PLACING OF CONCRETE. BOLTS MUST NOT BE ENCASED IN CONCRETE.

B. CONCRETE FOR BLOCKING VALVES AND FITTINGS SHALL CONFORM TO SECTION 0DOT QC MISC.

C. **CONCRETE THRUST BLOCKING MAY ONLY BE USED IN SPECIAL CASES WITH PRIOR APPROVAL BY THE MCSED. RESTRAINED JOINTS SHALL BE THE STANDARD MEANS OF THRUST RESTRAINT, PER DETAIL 800-9.**

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CONCRETE BLOCKING FOR WATER MAINS

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NOTES

TRACER WIRE IS REQUIRED ON ALL WATER MAIN, REGARDLESS OF PIPE MATERIAL. TRACER WIRE SHALL BE INSTALLED ON ALL NEW WATER MAINS, HYDRANT LATERALS AND SERVICE LINES. THIS SPECIFICATION PROVIDES THE TECHNICAL REQUIREMENTS NECESSARY TO ENSURE PROPER INSTALLATION OF TRACER WIRE AND RELATED COMPONENTS FOR THE PURPOSES OF LOCATING UNDERGROUND WATER UTILITIES. IT RECOGNIZES THAT THE FIRST STEP IN PROTECTING UNDERGROUND UTILITY ASSETS IS INSTALLING A QUALITY, RELIABLE LOCATING SYSTEM.

MATERIALS

GENERAL
- ALL SYSTEM COMPONENTS, INCLUDING TRACER WIRE, CONNECTORS, GROUND RODS AND ACCESS POINTS, SHALL BE COMPATIBLE TO COPPERHEAD INDUSTRIES COMPLETE UTILITY LOCATING SYSTEM. FOR CONVENIENCE, COPPERHEAD PARTS ARE LISTED.
- ALL TRACER WIRE SHALL HAVE HDPE INSULATION FOR DIRECT BURY, BLUE–COLOR CODED.

TRACER WIRE
- OPEN TRENCH – TRACER WIRE SHALL BE COPPERHEAD COPPER–CLAD STEEL 12–AWG HIGH STRENGTH, HIGH CARBON WITH MINIMUM 450 LB. BREAK LOAD, MINIMUM 30 MIL HDPE INSULATION THICKNESS.
- DIRECTIONAL DRILLING/BORING – TRACER WIRE SHALL BE COPPERHEAD COPPER–CLAD STEEL 12–AWG EXTRA HIGH STRENGTH WITH MINIMUM 1,150 LB. BREAK LOAD, MINIMUM 45 MIL HDPE INSULATION THICKNESS.

CONNECTORS
- ALL MAINLINE TRACER WIRES SHALL BE INTERCONNECTED AT INTERSECTIONS, AT MAINLINE TEES AND MAINLINE CROSSES. AT TEES, THE THREE WIRES SHALL BE JOINED USING A SINGLE, THREE–WAY SNAKEBITE LOCKING CONNECTOR (LSC1230C). AT CROSSES, THE FOUR WIRES SHALL BE JOINED USING TWO, THREE–WAY COPPERHEAD SNAKEBITE LOCKING CONNECTORS (LSC1230C) WITH A SHORT JUMPER WIRE BETWEEN THEM.
- DIRECT BURY WIRE CONNECTORS SHALL INCLUDE THREE–WAY LOCKABLE COPPERHEAD SNAKEBITE™LOCKING CONNECTORS (LSC1230C) AND COPPERHEAD MAINLINE–TO–SERVICE CONNECTORS (SWB–01) SPECIFICALLY MANUFACTURED FOR USE IN UNDERGROUND TRACER WIRE INSTALLATION. CONNECTORS SHALL BE DIELECTRIC SILICONE FILLED TO SEAL OUT MOISTURE AND CORROSION AND SHALL BE INSTALLED IN A MANNER AS TO PREVENT ANY UNINSULATED WIRE EXPOSURE.
- NON–LOCKING, FRICTION FIT OR TAPED CONNECTORS ARE PROHIBITED.

GROUNDING
- TRACER WIRE SHALL BE PROPERLY GROUNDED AT ALL DEAD–ENDS/STUBS.
- GROUNDING OF TRACER WIRE SHALL BE ACHIEVED BY USING A 1.5–LB, DRIVE–IN, MAGNESIUM COPPERHEAD GROUND ROD (ANO–12) WITH A MINIMUM 20–FEET, #12 RED HDPE INSULATED COPPER–CLAD STEEL WIRE CONNECTED TO THE ROD SPECIFICALLY MANUFACTURED FOR THIS PURPOSE.

TERMINATION/ACCESS
- ALL TRACER WIRE TERMINATION POINTS SHALL PROVIDE A DIRECT CONNECTION POINT TO THE TRACER WIRE BY A UTILITY LOCATE TRANSMITTER (ABOVE GROUND OR AT GRADE) SPECIFICALLY MANUFACTURED FOR LIGHT DUTY, CONCRETE/DRIVEWAY, OR ROADWAY APPLICATIONS.
- ALL AT–GRADE ACCESS POINTS SHALL BE APPROPRIATELY IDENTIFIED WITH "WATER" ON THE CAP AND BE COLOR CODED BLUE.
- ALL TWO–TERMINAL TRACER WIRE ACCESS POINTS SHALL INCLUDE A MANUALLY INTERRUPTIBLE CONDUCTIVE/CONNECTIVE LINK BETWEEN THE TERMINAL FOR THE TRACER WIRE CONNECTION AND THE TERMINAL FOR THE GROUND ROD WIRE CONNECTION.
- ALL TWO–TERMINAL TRACER WIRE ACCESS POINTS SHALL HAVE EXTERNAL DIRECT CONNECTION POINTS TO BOTH THE TRACER WIRE AND GROUND ROD WIRE FROM TOP OF LID.
- ALL AT–GRADE ACCESS POINTS SHALL INCLUDE AN ENCAPSULATED MAGNET MOLDED INTO THE TOP PORTION OF THE TUBE, TO ALLOW FOR DETECTION BY A FERROUS METAL DETECTOR.
- ALL AT–GRADE ACCESS POINTS SHALL BE SUPPLIED WITH ANTI–CORROSION WAX/GEL TO PROTECT WIRES.
- SERVICE LATERALS ON PUBLIC PROPERTY –TRACER WIRE SHALL BE ACCESSIBLE FROM THE CURB BOX. THE TRACER WIRE SHALL TERMINATE AT THE CURB BOX OR MAY BE EXTENDED ONTO PRIVATE PROPERTY WITH APPROVAL OF THE MCSED.
- SERVICE LATERALS ON PRIVATE PROPERTY –TRACER WIRE SHALL TERMINATE AT AN APPROVED COPPERHEAD SINGLE–TERMINAL ACCESS POINT (WHEN GROUNDING IS NOT REQUIRED) AFFIXED TO OR NEAR THE BUILDING EXTERIOR DIRECTLY ABOVE WHERE THE UTILITY ENTERS THE BUILDING, OR AT A TWO–TERMINAL ACCESS POINT (WHEN GROUNDING IS REQUIRED) LOCATED WITHIN TWO LINEAR FEET OF THE BUILDING BEING SERVED BY THE UTILITY.
- HYDRANTS –TRACER WIRE SHALL TERMINATE AT AN APPROVED ABOVE–GRADE COPPERHEAD COBRA ACCESS POINT PROPERLY AFFIXED TO THE HYDRANT–GRADE FLANGE (T2–B–FLPKG–5/8 FOR HYDRANTS WITH 5/8" BOLTS, AND T2–B–FLPKG–3/4 FOR HYDRANTS WITH 3/4" BOLTS). AFFIXING WITH TAPE OR PLASTIC TIES SHALL NOT BE ACCEPTABLE. TRACER WIRE MAY ALSO TERMINATE AT AN APPROVED ATGRADE COPPERHEAD SNAKEPIT LITE DUTY (LD1482T–SW), LITE DUTY ADJUSTABLE (LD1482T–ADJSW), LITE DUTY XL (LDXL3682T–SW), OR CONCRETE/DRIVEWAY (CD1482TP–SW) ACCESS POINT.
- LONG–RUNS, MORE THAN 2,500 LINEAR FEET, WITHOUT SERVICE LATERALS OR HYDRANTS –TRACER WIRE ACCESS SHALL BE PROVIDED UTILIZING AN APPROVED AT–GRADE COPPERHEAD SNAKEPIT® ACCESS POINT AND GROUNDED AT DEAD–ENDS UTILIZING A DRIVE–IN MAGNESIUM COPPERHEAD GROUND ROD (ANO–12).

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TRACER WIRE NOTES

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LOVELAND, OHIO 513.239.8554
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DEERCLIFF WATER LOOP
MONROE TOWNSHIP
GENERAL DETAILS

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PROJECT No. MIAMON2601
DATE 10-30-2026
SHEET NUMBER 6 OF 11

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INSTALLATION

GENERAL

- TRACER WIRE INSTALLATION SHALL BE PERFORMED IN SUCH A MANNER THAT ALLOWS PROPER ACCESS FOR CONNECTION OF LINE TRACING EQUIPMENT, PROPER LOCATING OF WIRE WITHOUT LOSS OR DETERIORATION OF LOW FREQUENCY (512 HZ) SIGNAL, AND WITHOUT DISTORTION OF SIGNAL CAUSED BY MORE THAN ONE WIRE BEING INSTALLED IN CLOSE PROXIMITY TO ONE ANOTHER.
- TRACER WIRE SYSTEMS SHALL BE INSTALLED AS A SINGLE CONTINUOUS WIRE, EXCEPT WHERE USING APPROVED CONNECTORS. NO LOOPING OR COILING OF WIRE IS ALLOWED.
- ANY DAMAGE OF THE TRACER WIRE OCCURRING DURING INSTALLATION SHALL BE IMMEDIATELY REPAIRED BY REMOVING THE DAMAGED WIRE AND INSTALLING A NEW SECTION OF WIRE WITH APPROVED CONNECTORS. TAPING AND/OR SPRAY COATING SHALL NOT BE ALLOWED.
- TRACER WIRE SHALL BE INSTALLED AT THE BOTTOM HALF OF THE PIPE AND SECURED (TAPED/TIED) AT 5–FOOT INTERVALS.
- MAINLINE TRACER WIRE SHALL NOT BE CONNECTED TO EXISTING CONDUCTIVE PIPES. TREAT AS A MAINLINE DEAD–END GROUND USING AN APPROVED WATERPROOF CONNECTOR TO A GROUND ROD DRIVEN INTO VIRGIN SOIL BENEATH AND IN LINE WITH THE UTILITY.
- ALL SERVICE LATERAL TRACER WIRE SHALL BE A SINGLE WIRE, CONNECTED TO THE MAINLINE TRACER WIRE USING A THREE–WAY MAINLINE–TO–SERVICE CONNECTOR, INSTALLED WITHOUT CUTTING/SPLICING THE MAINLINE TRACER WIRE.
- IN OCCURRENCES WHERE AN EXISTING TRACER WIRE IS ENCOUNTERED ON AN EXISTING UTILITY THAT IS BEING EXTENDED OR TIED INTO, THE NEW TRACER WIRE AND EXISTING TRACER WIRE SHALL BE CONNECTED USING APPROVED CONNECTORS.
- ONE FOOT OF EXCESS/SLACK WIRE IS REQUIRED IN ALL TRACER WIRE ACCESS POINTS AFTER MEETING FINAL ELEVATION.
- TRACER WIRE SHALL BE PROPERLY GROUNDED AS SPECIFIED.
- AT ALL MAINLINE DEAD–ENDS, TRACER WIRE SHALL GO TO GROUND USING AN APPROVED CONNECTION TO A DRIVE–IN MAGNESIUM GROUND ROD.
- WHEN GROUNDING THE TRACER WIRE AT DEAD–ENDS/STUBS, THE GROUND ROD SHALL BE DRIVEN INTO VIRGIN SOIL DIRECTLY BENEATH AND IN LINE WITH THE UTILITY.
- GROUND ROD WIRE SHALL BE CONNECTED TO THE GROUND ROD TERMINAL ON THE TWO–TERMINAL SNAKEPIT ACCESS POINT LID OR TO THE BOTTOM TERMINAL ON THE TWO–TERMINAL COBRA ACCESS POINT.
- WHERE THE GROUND ROD WIRE WILL BE CONNECTED TO A TRACER WIRE ACCESS POINT, ONE FOOT OF EXCESS/SLACK WIRE IS REQUIRED AFTER MEETING FINAL ELEVATION.

WATER SYSTEM

- A MAINLINE TRACER WIRE SHALL BE INSTALLED, WITH ALL SERVICE LATERAL TRACER WIRES PROPERLY CONNECTED TO THE MAINLINE TRACER WIRE, TO PROMOTE TRACING/LOCATING CAPABILITIES FROM A SINGLE CONNECTION POINT.
- LAY MAINLINE TRACER WIRE CONTINUOUSLY, BY–PASSING AROUND THE OUTSIDE OF VALVES AND FITTINGS ON THE NORTH OR EAST SIDE.
- TRACER WIRE ON ALL WATER SERVICE LATERALS SHALL TERMINATE AT AN APPROVED TRACER WIRE ACCESS POINT, COLOR CODED BLUE AND LOCATED DIRECTLY ABOVE THE SERVICE LATERAL AT THE EDGE OF ROAD RIGHT–OF–WAY.
- TRACER WIRE ACCESS POINTS WILL BE INSTALLED AT ALL FIRE HYDRANTS.
- ALL CONDUCTIVE AND NON–CONDUCTIVE SERVICE LINES SHALL INCLUDE TRACER WIRE.

PROHIBITED PRODUCTS AND METHODS

THE FOLLOWING PRODUCTS AND METHODS SHALL NOT BE ALLOWED OR ACCEPTABLE:

- UNINSULATED TRACER WIRE
- STAINLESS STEEL TRACER WIRE
- TRACER WIRE INSULATIONS OTHER THAN HDPE
- NON–LOCKING, FRICTION FIT OR TAPED CONNECTORS
- BRASS OR COPPER GROUND RODS
- WIRE CONNECTIONS UTILIZING TAPING OR SPRAY–ON WATERPROOFING
- LOOPED WIRE OR CONTINUOUS WIRE INSTALLATIONS THAT HAVE MORE THAN ONE WIRE LAID SIDE–BY–SIDE OR IN CLOSE PROXIMITY TO ONE ANOTHER
- TRACER WIRE WRAPPED AROUND THE CORRESPONDING UTILITY
- BRASS FITTINGS WITH TRACER WIRE CONNECTION LUGS
- WIRE TERMINATIONS WITHIN THE ROADWAY IN VALVE BOXES, CLEANOUTS, MANHOLES, ETC.
- CONNECTING TRACER WIRE TO EXISTING CONDUCTIVE UTILITIES.

TESTING

ALL NEW TRACER WIRE INSTALLATIONS SHALL BE LOCATED USING TYPICAL LOW FREQUENCY (512 HZ) LINE TRACING EQUIPMENT, WITNESSED BY THE MCSED OR DESIGNEE, AS APPLICABLE, PRIOR TO ACCEPTANCE OF THE MCSED. THIS VERIFICATION SHALL BE PERFORMED UPON COMPLETION OF ROUGH GRADING AND AGAIN PRIOR TO FINAL ACCEPTANCE OF THE PROJECT. CONTINUITY TESTING IN LIEU OF ACTUAL LINE TRACING SHALL NOT BE ACCEPTED.

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TRACER WIRE NOTES (CONT.)

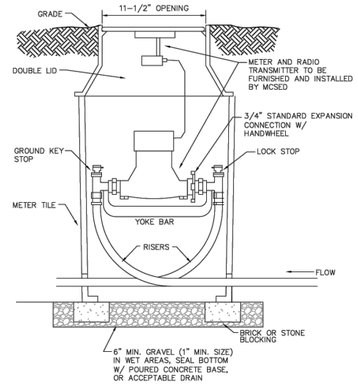
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METER PIT NOTES

1. METER TILE SHALL BE SMOOTH–WALLED HDPE PLASTIC TILE, 36" MIN. LENGTH, W/ MOUSE HOLES CUT.
2. PROVIDE GROUND KEY STOP ON THE INLET SIDE OF THE YOLK.
3. PROVIDE LOCK STOP ON THE OUTLET SIDE OF THE YOLK, UNLESS BACKFLOW PREVENTER IS REQUIRED.
4. FORD YOLK SETTER OR EQUAL TO BE SUPPLIED (SEE DRAWING AND TABLE). THE MCSED MAY ELECT TO HAVE SAMPLING SETTERS INSTALLED.
5. LID AND COVER SHALL BE FORD A33 BR, MC 24 MB OR APPROVED EQUAL.
6. THE MCSED SHALL INSPECT ALL PIPING FROM WATER MAIN TO BUILDING, PRIOR TO BACKFILLING.
7. THE MCSED RECOMMENDS INSTALLING AN EXPANSION TANK ON THE WATER LINE RIGHT BEFORE THE WATER HEATER.
8. GROUNDING ELECTRIC TO WATER SERVICE IS PROHIBITED DUE TO INCREASED CORROSION OF LINE AND FITTINGS.
9. THE METER PIT SHALL HAVE SUFFICIENT DRAINAGE TO PRECLUDE STANDING WATER.

METER INSTALLATION NOTES

1. TO ENSURE THAT METER IS COMPATIBLE WITH THE MCSED'S READ SYSTEM, IT SHALL BE SUPPLIED BY THE MCSED AND PAID FOR AT THE SAME TIME AS OTHER ACCESS AND TAPPING FEES.
2. MCSED PERSONNEL WILL INSTALL THE METER, ONLY AFTER ALL OTHER PLUMBING REQUIREMENTS ARE MET.



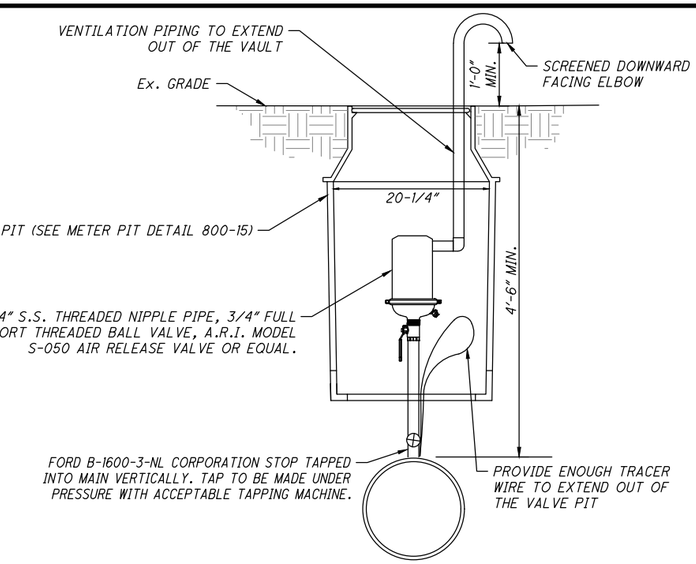
APPROVED METER PARTS LIST

FORD YOLK NUMBER	SERVICE PIPE SIZE	METER	SPREAD	TILE SIZE
518 (502 BAR)	3/4"	5/8" X 3/4"	12–1/4"	20" DIA
519 (503 BAR)	3/4" OR 1"	3/4"	13–7/8"	20" DIA
520 (504 BAR)	1" OR 1/2"	1"	16–5/8"	24" DIA

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TYPICAL 5/8", 3/4", AND 1" METER PIT INSTALLATIONS

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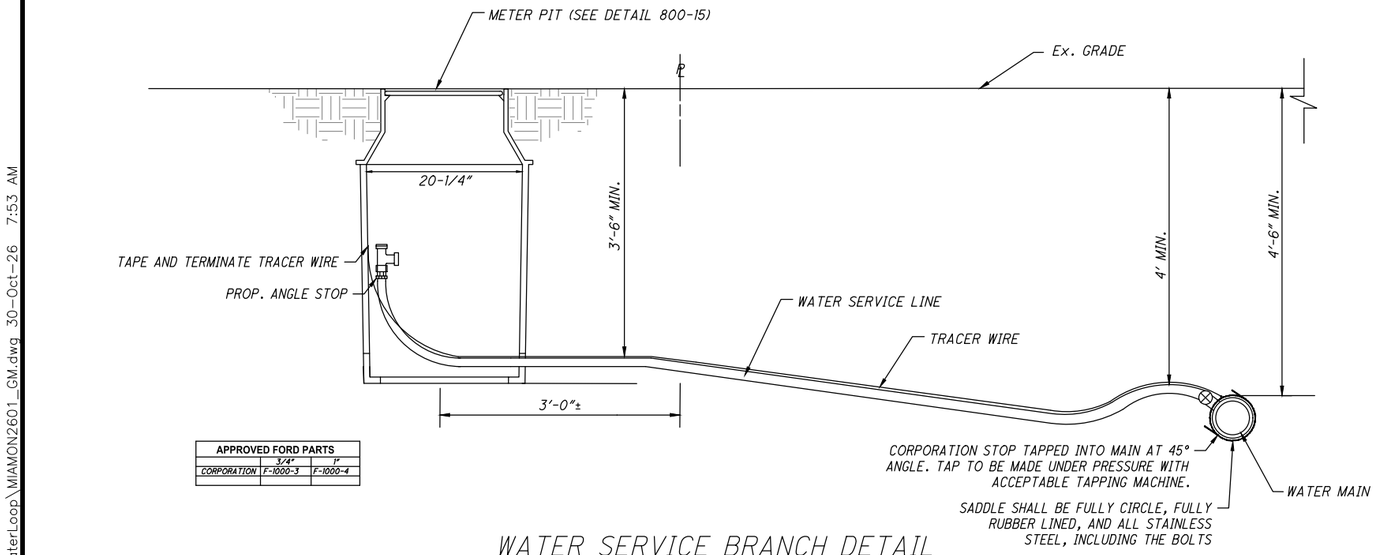


AIR RELEASE VALVE PIT DETAIL

A. AIR RELEASE VALVE BODY SHALL BE MADE REINFORCED NYLON, ALL VALVE OPERATING PARTS SHALL BE MADE OF NON–CORROSIVE MATERIALS.

B. ALL INTERNAL AIR RELEASE VALVE PARTS MUST BE MADE OF 316 STAINLESS STEEL.

C. ALL FITTINGS TO BE RESTRAINED.



APPROVED FORD PARTS

	3/4"	1"
CORPORATION	F–1000–3	F–1000–4

WATER SERVICE BRANCH DETAIL

WATER SERVICE NOTES

A. MINIMUM 3/4" WATER SERVICE SHALL BE COPPER–TUBE SIZE CPVC SDR–11 OR APPROVED MATERIAL BY THE UTILITY DIRECTOR.

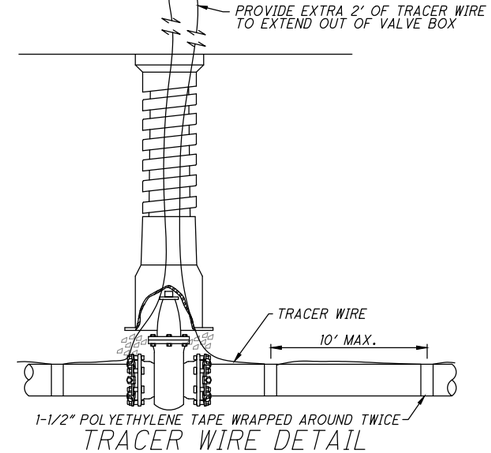
B. TAPPING SADDLE SHALL BE 18–8 STAINLESS STEEL DESIGNED FOR USE ON THE CLASS OF PIPE BEING TAPPED INCLUDING PIPE MATERIALS CAST IRON, DUCTILE IRON, STEEL, PVC, HDPE AND ASBESTOS CEMENT PIPE MATERIALS WITH NO SPECIAL SPRINGS OR WASHERS REQUIRED. THE TAPPING SLEEVE SHALL HAVE A RANGE UP TO 0.9" (NINE TENTHS OF AN INCH). THE TAPPING SLEEVE SHALL BE TESTED AND SHOWN TO BE ABLE TO ACCOMMODATE A SIMULATED 360 DEGREE PIPELINE BEAM BREAK TEST, PERFORMED AT 1.5 TIMES RATED PRESSURE ON A TEST PIPE OUTFITTED WITH A 1/8" WIDE 3/16" DEEP HYDROSTATICALLY PRESSURIZED GROOVE. SLEEVE SHALL BE RATED AT 175 PSI MAXIMUM WORKING PRESSURE AND SHALL HAVE NSF–61 APPROVED NBR RUBBER GASKET. NUTS, BOLTS AND WASHERS SHALL BE TYPE 304 STAINLESS STEEL DOUBLE COATED WITH A FLUOROELASTOMER COATING TO PREVENT GALLING. TAPPING SADDLE SHALL BE JCM 404 OR 406 DOUBLE STAINLESS STEEL STRAPS OR APPROVED EQUAL.

C. THE CORPORATION STOP SHALL BE FULL–PORT BALL VALVES WITH COMPRESSION STYLE CONNECTIONS. CORP STOP SHALL BE FORD PRODUCTS, PER THE TABLE, OR APPROVED EQUAL.

D. SERVICE LINE RUNS SHALL BE CONTINUOUS AND WITHOUT JOINTS OR COUPLINGS BETWEEN CORP STOP, CURB BOX AND METER.

E. WATER SERVICE SHALL BE TAPPED NO CLOSER THAN 3 FEET FROM A BELL JOINT ON THE WATER MAIN.

F. WATER SERVICE SHALL BE A MINIMUM OF 10' MEASURED HORIZONTALLY FROM THE SEWER LATERAL AND SHALL BE A MINIMUM OF 18" ABOVE THE CROWN OF THE SANITARY SEWER MAIN WHERE THE WATER SERVICE CROSSES THE SEWER MAIN.



TRACER WIRE DETAIL

TRACER WIRE NOTES:

A. FOR OPEN CUT CONSTRUCTION TRACER WIRE SHALL BE STEEL CORE COPPER CLAD REINFORCED WIRE #12 AWG OR STAINLESS STEEL #12 AWG WITH 30 MIL HIGH DENSITY POLYETHYLENE COATING. TRACER WIRE SHALL BE BLUE FOR WATER. TRACER WIRE SHALL HAVE A MINIMUM 450 LBS. TENSILE BREAK LOAD.

FOR DIRECTIONAL DRILL CONSTRUCTION TRACER WIRE SHALL BE COPPERHEAD SOLOSHOT REINFORCED TRACER WIRE MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC. BLUE FOR WATER, OR APPROVED EQUAL BY TRIDENT SOLUTIONS. DUAL TRACER WIRE SHALL HAVE A MINIMUM 1150 LBS BREAK LOAD.

B. TRACER WIRE MUST BE RUN ON TOP OF THE PIPE CONTINUOUSLY FOR THE FULL LENGTH OF THE PIPE.

C. TRACER WIRE WILL BE INSTALLED ON ALL NEW INSTALLATION AND WILL COME TO THE SURFACE AT EVERY VALVE CHAMBER, VALVE BOX CURB BOX AND FIRE HYDRANT.

D. WHEN TRACER WIRE MUST BE SPLICED, USE ONLY AN APPROVED SPLICE KIT FILLED WITH MOISTURE DISPLACEMENT SILICONE FOR CORROSION RESISTANT PROTECTION. 3–WAY WIRE CONNECTIONS FROM MAIN TO HYDRANT, VALVE BOX OR VAULT WILL BE MADE ONLY WITH APPROVED DIRECT BURY CONNECTOR WITH MOISTURE DISPLACEMENT SILICONE FILLED CAP FOR CORROSION RESISTANT PROTECTION.

E. ALL MATERIAL, LABOR, EQUIPMENT NEEDED FOR THE INSTALLATION OF THE TRACER WIRE SHALL BE INCIDENTAL TO WATER MAIN INSTALLATION.

F. THE CONTRACTOR SHALL SCHEDULE A CONDUCTIVITY/LOCATE TEST UPON COMPLETION. THE TEST WILL BE CONDUCTED BY THE OWNER, WITH THE CONTRACTOR PRESENT.

G. ALL DEAD ENDS SHALL BE GROUNDED WITH A MAGNESIUM GROUND ROD.

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SIDNEY, OHIO 937.497.0200
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DEERCLIFF WATER LOOP
MONROE TOWNSHIP
GENERAL DETAILS

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PROJECT No. MIAMON2601
DATE 10–30–2026
SHEET NUMBER 7 OF 11

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SPECIFICATION HORIZONTAL DIRECTIONAL DRILLING
STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
11/06/2012

DESCRIPTION
MATERIALS
CONSTRUCTION
TESTING
METHOD OF MEASUREMENT
BASIS OF PAYMENT

DESCRIPTION
USE HORIZONTAL DIRECTIONAL DRILLING (HDD) METHOD WHEN THE PLAN CALLS FOR SUCH A METHOD TO BE USED, OR WHEN THE ENGINEER APPROVES USING THIS METHOD VIA A VALUE ENGINEERING PROCESS, TO FURNISH AND INSTALL UNDERGROUND UTILITY/FACILITY/PRODUCT/PIPE/CONDUIT (REFERRED TO AS PRODUCT PIPE IN THE REST OF THIS SECTION). THE INSTALLATION IS ACCORDING TO THE SIZES AND LIMITS SHOWN ON THE PLANS, AND SPECIFIED BY THESE TECHNICAL SPECIFICATIONS HEREIN. THE WORK INCLUDES ALL SERVICES, EQUIPMENT, MATERIALS, TOOLS, AND LABOR FOR A COMPLETE AND PROPER INSTALLATION AND TESTING.

HDD IS A TRENCHLESS METHOD FOR INSTALLING A PRODUCT PIPE. IT IS A MULTI-STAGE PROCESS CONSISTING OF SITE PREPARATION, EQUIPMENT SETUP, PILOT BORE, PRODUCT PIPE PULLING THROUGH THE DRILLED BORE, AND SITE RESTORATION. ALIGNMENT OF THE BORE IS ACCOMPLISHED BY PROPER ORIENTATION OF THE DRILL BIT HEAD AS IT IS PUSHED THROUGH THE GROUND BY THE DRILL RIG. ORIENTATION AND TRACKING OF THE DRILL BIT IS DETERMINED BY USING AN ACCEPTABLE TRACKING SYSTEM FROM A TRANSMITTER LOCATED WITHIN THE DRILL BIT HEAD. WHEN NECESSARY, ENLARGE THE PILOT BOREHOLE (BACK REAMING) TO ACCOMMODATE A PRODUCT PIPE LARGER THAN THE PILOT BOREHOLE SIZE. BACK REAM AHEAD OF OR AT THE SAME TIME PULLING THE PRODUCT PIPE THROUGH THE PILOT BOREHOLE.

IN ORDER TO MINIMIZE FRICTION AND PREVENT COLLAPSE OF THE BORE HOLE, INTRODUCE A SOIL STABILIZING AGENT (DRILLING FLUID) INTO THE ANNULAR BORE SPACE FROM THE FRONT END OF THE DRILL BIT. THE ROTATION OF THE BIT IN THE SOIL WETTED BY THE DRILLING FLUID CREATES SLURRY. THE SLURRY STABILIZES THE SURROUNDING SOIL, PREVENTS THE BORE HOLE FROM COLLAPSING, AND PROVIDES LUBRICATION. SELECT OR DESIGN THE DRILLING FLUIDS FOR THE SITE'S SPECIFIC SOIL AND GROUND WATER CONDITIONS. CONFINE FREE FLOWING (ESCAPING) SLURRY OR DRILLING FLUIDS AT THE GROUND SURFACE DURING PULL BACK OR DRILLING.

MATERIALS
PRODUCT PIPE
SELECT THE PRODUCT PIPE MATERIAL ACCORDING TO THE TYPE OF PRODUCT INDICATED ON THE PLANS. THE PRODUCT PIPE MUST COMPLY WITH ALL APPLICABLE ODOT SPECIFICATION SECTIONS AND ASTM STANDARDS DEPENDING ON THE PURPOSE AND MATERIAL OF THE PRODUCT PIPE. JOIN THE PIPE SECTIONS SO THAT THE JOINED PIPE SECTIONS ARE INSTALLABLE USING HDD. ENSURE THAT THE JOINED PRODUCT PIPES HAVE ADEQUATE STRENGTH AND FLEXIBILITY TO WITHSTAND THE INSTALLATION STRESSES, OVERBURDEN PRESSURES, AND OPERATING PRESSURES WITHOUT COMPROMISING THE STRUCTURAL STABILITY OF THE PIPE WALL. ENSURE THAT THE PRODUCT PIPE MEETS THE BEND RADIUS REQUIRED FOR THE PROPOSED INSTALLATION. JOIN THE PIPE SECTIONS SO THAT THE INNER SURFACES ARE FLUSH AND EVEN.

THE FOLLOWING MATERIAL STANDARDS ARE THE MINIMUM IN PLACE STANDARDS.

MATERIAL STANDARDS FOR HDD INSTALLATION

MATERIAL TYPE	NON-PRESSURE	PRESSURE
POLYETHYLENE (PE)	ASTM D2447	ASTM D2513, ASTM D2447
HIGH DENSITY POLYETHYLENE (HDPE)	ASTM D2447, ASTM D3350, ASTM F714	ASTM D2447, ASTM D3350 ASTM F714, ASTM D2513
POLYVINYL-CHLORIDE (PVC)	ASTM F789	ASTM D1785, ASTM D2241
STEEL	ASTM A139 GRADE B*	AWWA C200 API 2B**

*NO HYDROSTATIC TEST REQUIRED **DIMENSIONAL TOLERANCES ONLY

DETECTION WIRE: ELECTRONIC DETECTION MATERIAL FOR NON-CONDUCTIVE PIPING PRODUCTS. SELECT TRACER WIRE DESIGNED FOR HDD TO CONDUCTIVELY LOCATE UNDERGROUND UTILITY LINES ACCORDING TO ASTM D-1248. SEE MCSE STANDARD DRAWINGS 800-12 AND 800-13 AND TRACER WIRE DETAIL.

CONSTRUCTION
SUBMITTALS
WORK PLAN: PRIOR TO BEGINNING WORK, SUBMIT TO THE ENGINEER A WORK PLAN DETAILING THE PROCEDURE AND SCHEDULE TO EXECUTE THE PROJECT. THE WORK PLAN WILL BE COMPREHENSIVE, REALISTIC, AND BASED ON ACTUAL WORKING CONDITIONS FOR THIS PARTICULAR PROJECT. THE WORK PLAN DOCUMENTS THE PLANNING REQUIRED TO SUCCESSFULLY COMPLETE THE PROJECT. THE WORK PLAN INCLUDES COMPLETE DESCRIPTIONS OF PROPOSED PLANS, PROCEDURES, EQUIPMENT, PERSONNEL, AND IF APPLICABLE, SUPPORTING MATERIAL, FOR THE FOLLOWING:

- DRILLING OPERATIONS: DESCRIBE THE PILOT HOLE DRILLING PROCEDURE, THE REAMING OPERATION, THE PULLBACK PROCEDURE, AND ILLUSTRATE THE PLAN
- PROFILE OF THE BORE PLOTTED AT A SCALE APPROPRIATE FOR THE CROSSING AND ACCEPTABLE TO THE ENGINEER.
- HDD SITE LAYOUT INCLUDING ENTRY AND EXIT POINTS.
- DIRECTIONAL DRILLING EQUIPMENT LIST INCLUDES: DRILLING RIG, DRILL BIT, BACK-REAMER, MUD MIXING AND PUMPING SYSTEMS, DOWN-HOLE TOOLS, GUIDANCE SYSTEM, AND RIG SAFETY SYSTEM. PROVIDE CALIBRATION RECORDS FOR GUIDANCE EQUIPMENT.
- DRILLING FLUID MANAGEMENT PLAN: DRILLING FLUID TYPES AND SPECIFICATIONS, CLEANING AND RECYCLING EQUIPMENT, ESTIMATED FLOW RATES, PROCEDURES FOR MINIMIZING DRILLING FLUID ESCAPE, AND THE METHOD/LOCATION FOR FINAL DISPOSAL OF WASTE DRILLING FLUIDS. PROVIDE THE MSDS FOR ALL DRILLING FLUID ADDITIVES THAT WILL BE USED.
- PIPE STORAGE AND HANDLING DETAILS.
- PIPELINE ASSEMBLY AND INSTALLATION PROCEDURES.
- MSDS OF ANY POTENTIALLY HAZARDOUS SUBSTANCES TO BE USED.
- CONTINGENCY PLANS FOR POSSIBLE PROBLEMS.

SUBMIT SUPPORTING CALCULATIONS, CERTIFICATIONS, OR MATERIAL DEMONSTRATING THE STRENGTH OF THE PRODUCT PIPES FOR ACCEPTANCE BEFORE THE BEGINNING OF THE INSTALLATION. SUBMIT FOR THE ENGINEER'S ACCEPTANCE PRIOR TO CONSTRUCTION, OTHER PRODUCT PIPE MATERIAL THAN THOSE LISTED ON THE PLANS. DEMONSTRATE THAT THE PROPOSED MATERIAL SATISFIES THE PURPOSE OF THE UTILITY AND WITHSTANDS THE DESIGN AND CONSTRUCTION STRESSES AND PRESSURES.

IF SITE CONDITIONS CHANGE AND REQUIRE MODIFICATION TO THE WORK PLAN, RESUBMIT REVISED DRILLING PLANS TO ACHIEVE SUCCESSFUL INSTALLATION. EXPLAIN, IN THE REVISED SUBMITTAL, THE ANTICIPATED AND ENCOUNTERED CONDITIONS THAT MANDATED THE CHANGE IN PLANS.

DAILY REPORTS AND OPERATOR LOGS
SUBMIT THE DAILY REPORTS TO THE ENGINEER WITHIN 24 HOURS. INCLUDE, IN THE DAILY REPORTS, LOG OF BORING OPERATIONS AND GUIDANCE SYSTEM FOR EACH DRILL ROD ADDED OR WITHDRAWN DURING DRILLING, REAMING, AND PULLBACK. THE LOG COVERS DOWNHOLE TOOLS AND EQUIPMENT IN USE, DRILLING FLUID, FLUID PUMPING RATE, DRILLING HEAD LOCATION. COVER, IN THE REPORT, DETAILS OF AND PERCEIVED REASONS FOR ANY UNUSUAL EVENTS AND DELAYS GREATER THAN ONE HOUR EXCLUDING NORMAL BREAKS.

RECORD DRAWINGS
AT THE COMPLETION OF THE HDD PRODUCT PIPE INSTALLATION, THE GENERAL CONTRACTOR WILL PROVIDE THE ENGINEER MARKED UP PLANS NOTING ALL DEVIATIONS FROM THE PLANS THAT RESULT IN CHANGE OF LOCATION, MATERIAL, TYPE OR SIZE OF WORK GUIDED BY THE BORING OPERATIONS AND GUIDANCE SYSTEM LOG. POST, ON THE DRAWING, THE X, Y, AND Z COORDINATES OF THE STARTING AND ENDING POINTS OF THE LINE AT MINIMUM. INCLUDE IN THE MARKED UP PLANS, THE STATION NUMBER OR REFERENCE TO A PERMANENT STRUCTURE WITHIN THE PROJECT RIGHT-OF-WAY, NAME OF PERSON COLLECTING DATA, INCLUDING TITLE, POSITION AND COMPANY NAME, DETECTION METHOD USED, AND ELEVATIONS AND OFFSET DIMENSIONS. CERTIFY THE ACCURACY OF THE DRAWING TO THE CAPABILITY OF THE TRACKING SYSTEM. IF THE HDD CONTRACTOR IS THE GENERAL CONTRACTOR, THE HDD CONTRACTOR PROVIDES THE ENGINEER AND ODOT WITH THE MARKED UP PLANS.

INSTALLATION
SITE PREPARATION: PRIOR TO ANY ALTERATIONS TO WORKSITE, WALK THE AREA PRIOR TO THE COMMENCEMENT OF THE HDD PROJECT AND VISUALLY INSPECT THE SITE FOR POTENTIAL PROBLEMS.
UTILITY LOCATION: CONTACT THE OHIO UTILITIES PROTECTION SERVICE (OUPS) AT 1-800-362-2764 OR 8-1-1 AND CONTACT THE OIL & GAS PRODUCERS UNDERGROUND PROTECTION SERVICE (OGPUPS) BY DIALING 1-800-825-0988 OR 8-1-1 AT LEAST 48 HOURS, BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE BEGINNING WORK. EXPLORE AND LOCATE EXISTING UNDERGROUND UTILITIES IN THE AREAS OF WORK. VERIFY THE EXACT PHYSICAL LOCATION AND DEPTH OF EXISTING UTILITIES BY EXPOSING AS NEEDED. IF UTILITIES ARE TO REMAIN IN PLACE, PROVIDE ADEQUATE MEANS OF PROTECTING THE UTILITY DURING EXCAVATION OPERATIONS. SHOULD UNCHARTED OR INCORRECTLY CHARTED PIPING OR OTHER UTILITIES BE ENCOUNTERED DURING THE UTILITY EXPLORATION, CONTACT THE OWNER OF THE UTILITIES AND THE PERMITTEE IN THE FIELD.

CONTRACTOR IS RESPONSIBLE FOR REPAIRING DAMAGED UTILITIES TO THE SATISFACTION OF THE UTILITY OWNER IN ACCORDANCE TO THE OHIO REVISED CODE 153.64 PROTECTING UNDERGROUND UTILITY FACILITIES DURING CONSTRUCTION OF PUBLIC IMPROVEMENT AND 3781.25 ONE-CALL UTILITY PROTECTION SERVICE DEFINITIONS. IF THE UTILITY WAS ACCURATELY MARKED BY THE UTILITY LOCATER OR ON THE DRAWING, REPAIR IT AT NO ADDITIONAL COST. IF THE DAMAGED UTILITY WAS NOT ACCURATELY MARKED BY THE UTILITY LOCATER OR ON THE DRAWING, OWNER ADJUSTS THE CONTRACT VALUE AND/OR TIME ACCORDINGLY. FOLLOW THE ADDITIONAL INSTRUCTIONS IN SECTION 105.07 COOPERATION WITH UTILITIES OF THE OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR COOPERATION WITH UTILITIES.

TAKE CONTROL OF THE HDD OPERATION AT ALL TIMES. HAVE A REPRESENTATIVE WHO IS THOROUGHLY KNOWLEDGEABLE OF THE EQUIPMENT, BORING AND THE OWNER PROCEDURES, PRESENT AT THE JOB SITE DURING THE ENTIRE INSTALLATION AND AVAILABLE TO ADDRESS IMMEDIATE CONCERNS AND EMERGENCY OPERATIONS. NOTIFY THE ENGINEER 48 HOURS IN ADVANCE OF STARTING WORK. DO NOT BEGIN INSTALLATION UNTIL THE ENGINEER IS PRESENT AT THE JOB SITE AND AGREES THAT PROPER PREPARATIONS HAVE BEEN MADE.

EQUIPMENT REQUIREMENTS
MATCH THE HDD DRILL RIG AND ITS AUXILIARY PIECES OF EQUIPMENT TO THE DIAMETER AND LENGTH OF PRODUCT PIPE BEING INSTALLED AND ENSURE THAT THE DRILL ROD CAN MEET THE BEND RADIUS REQUIRED FOR THE PROPOSED INSTALLATION. THE DIRECTIONAL DRILLING MACHINE CONSIST OF A POWER SYSTEM TO ROTATE, PUSH AND PULL BACK HOLLOW DRILL PIPE INTO THE GROUND AT VARIABLE ANGLES WHILE DELIVERING A PRESSURIZED FLUID MIXTURE TO A GUIDABLE DRILL HEAD (BIT). SELECT/DESIGN THE POWER SYSTEM TO PROVIDE SUFFICIENT PRESSURE TO POWER THE DRILLING OPERATIONS THROUGH A LEAK-FREE HYDRAULIC SYSTEM. ANCHOR THE DIRECTIONAL DRILLING MACHINE TO THE GROUND TO WITHSTAND THE PULLING, PUSHING, AND ROTATING PRESSURE REQUIRED TO COMPLETE THE HDD INSTALLATION.

SELECT A DRILLING FLUID MIXING SYSTEM THAT IS SELF-CONTAINED AND CLOSED WITH SUFFICIENT SIZE TO MIX AND DELIVER DRILLING FLUID TO THE DRILL BIT. THE MIXING SYSTEM WILL CONTINUALLY AGITATE THE DRILLING FLUID DURING DRILLING OPERATIONS. SELECT FLUIDS DELIVERY SYSTEM CAPABLE OF PUMPING DRILLING FLUID WITH SUFFICIENT VOLUME AND PRESSURE FROM THE MIXING TANK THROUGH THE DRILL RODS TO THE DRILL HEAD (BIT).

MINIMIZE POTENTIAL DAMAGE FROM SOIL DISPLACEMENT/SETTLEMENT/HEAVE BY LIMITING THE BOREHOLE DIAMETER COMPARED TO THE PRODUCT PIPE. SELECT THE BACK-REAMER SIZE SO IT CREATES A LARGE ENOUGH BOREHOLE TO ALLOW CUTTINGS TO TRANSFER FROM THE FACE OF EXCAVATION TO THE SURFACE WITH A MINIMUM SOIL DISPLACEMENT.

GUIDANCE SYSTEM
UNLESS IT IS SPECIFIED ON THE PLAN, SELECT AN ACCEPTABLE GUIDANCE SYSTEM TO LOCATE AND TRACK CONTINUOUSLY AND ACCURATELY THE DRILL HEAD DURING THE PILOT BORE. THE GUIDANCE SYSTEM MUST BE CAPABLE OF TRACKING THE DRILL BIT IN THE EXPECTED UNDERGROUND ENVIRONMENT AND AT THE DEPTH SHOWN ON THE PLANS. THE ACCEPTABLE METHODS INCLUDE: WALKOVER, WIRE LINE, MAGNETIC GUIDANCE SYSTEM (MGS) PROBE, PROVEN (NON-EXPERIMENTAL) GYROSCOPIC PROBE, OR ANY OTHER SYSTEM AS ACCEPTED BY THE ENGINEER. SELECT THE GUIDANCE SYSTEM AND THE DRILL RIG TO DELIVER THE REQUIRED HORIZONTAL AND VERTICAL ACCURACY REQUIRED FOR THE PRODUCT PIPE. USE A LOCATING AND TRACKING SYSTEM CAPABLE OF ENSURING THAT THE PROPOSED INSTALLATION IS EXECUTED AS INTENDED. IF SIGNAL INTERFERENCE IS ENCOUNTERED THAT SIGNIFICANTLY AFFECTS THE ABILITY TO ACCURATELY TRACK THE DRILL BIT, THE ENGINEER MAY SPECIFY THE USE OF A SUITABLE TRACKING SYSTEM. IF THE OWNER INFORMS THE CONTRACTOR ABOUT SIGNAL INTERFERENCE OR IT IS REASONABLE TO EXPECT INTERFERENCE AT THE SITE PRIOR TO BIDDING; SELECT A SUITABLE TRACKING SYSTEM WITHOUT EXTRA COST TO THE OWNER; OTHERWISE THE OWNER ADJUSTS THE CONTRACT VALUE AND TIME ACCORDINGLY. SELECT THE LOCATING AND TRACKING SYSTEM TO PROVIDE INFORMATION ON: (A) CLOCK AND PITCH INFORMATION (B) DEPTH (C) TRANSMITTER TEMPERATURE (D) BATTERY STATUS (E) POSITION (X,Y) (F) AZIMUTH, WHERE DIRECT OVERHEAD READINGS (WALKOVER) ARE NOT POSSIBLE (I.E. SUBAQUEOUS OR LIMITED ACCESS TRANSPORTATION FACILITY). ENSURE PROPER CALIBRATION OF ALL EQUIPMENT BEFORE COMMENCING DIRECTIONAL DRILLING OPERATION. TAKE NECESSARY MEASURES TO ENSURE ACCURATE RECORD DRAWING. INSTALL ALL FACILITIES SUCH THAT THEIR LOCATION CAN BE READILY DETERMINED BY ELECTRONIC DESIGNATION AFTER INSTALLATION.

DRILLING FLUIDS
USE A DRILLING FLUID MIXTURE COMPOSED OF POTABLE WATER AND STABILIZING AGENT - USUALLY BENTONITE AND/OR POLYMER AND/OR APPROPRIATE ADDITIVES CONTINUOUSLY PUMPED TO THE DRILL BIT. DESIGN/SELECT THE DRILLING FLUID: TO TRANSPORT THE SPOILS; MAINTAIN TEMPERATURES OF BITS AND TRANSMITTER; CLEAN CUTTINGS FROM DRILL BIT AND REAMERS; REDUCE FRICTION, PULLBACK, AND TORQUE ON DRILL RODS AND PRODUCT PIPE; STABILIZE THE BOREHOLE; CONTROL GROUND WATER PRESSURE; AND REDUCE MIGRATION OF DRILLING FLUIDS IN SOIL. USE WATER WITH PH BETWEEN 7.5 AND 10 AND FREE OF CHLORINE WITH CALCIUM < 100PPM, SODIUM CHLORIDE < 500PPM, AND CHLORINE < 50PPM. HARD WATER MAY BE TREATED WITH SODA ASH TO REACH THE REQUIRED PH. DESIGN THE QUANTITY AND THE MIXTURE OF DRILLING FLUIDS TO PERFORM THE PRECEDING FUNCTIONS IN THE EXPECTED SOIL. VARY THE FLUID VISCOSITY TO BEST FIT THE ENCOUNTERED SOIL CONDITIONS. DO NOT USE ANY OTHER CHEMICALS OR POLYMER SURFACTANTS IN THE DRILLING FLUID WITHOUT WRITTEN CONSENT FROM THE ENGINEER. CERTIFY TO THE ENGINEER IN WRITING THAT ANY ADDED CHEMICALS ARE ENVIRONMENTALLY SAFE AND NOT HARMFUL OR CORROSIVE TO THE PRODUCT PIPE AND THE ENVIRONMENT. APPROVALS AND PERMITS ARE REQUIRED FOR OBTAINING WATER FROM SUCH SOURCES AS STREAMS, RIVERS, PONDS OR FIRE HYDRANTS. ANY WATER SOURCE USED OTHER THAN POTABLE WATER REQUIRES A PH TEST.

DRILLING OPERATIONS
PRIOR TO THE START OF THE BORING OPERATION, SURVEY THE WORK SITE WITH X, Y, Z COORDINATES AT CONTROL POINT AT 100/LF INTERVALS AT MINIMUM ALONG THE PLANNED BORE PATH. PROVIDE STAKES AT OFFSET DISTANCES (LEFT OR RIGHT) FROM THE CENTERLINE AT THESE CONTROL POINTS AND AT ALL KNOWN EXISTING UTILITY
CROSSINGS. SUBMIT THIS INFORMATION TO THE OWNER AT LEAST 24 HOURS BEFORE THE START OF PILOT BORE OPERATIONS.

DRILL THE PILOT HOLE ALONG THE PATH SHOWN ON THE PLANS AND PROFILE DRAWINGS WITHIN THE ALLOWABLE TOLERANCE OF THE TYPE OF UTILITY. PROVIDE AND MAINTAIN INSTRUMENTATION NECESSARY TO ACCURATELY LOCATE THE PILOT HOLE (BOTH HORIZONTAL AND VERTICAL PLACEMENTS). ENSURE ADEQUATE REMOVAL OF SOIL CUTTINGS AND STABILITY OF THE BORE HOLE BY MONITORING THE DRILLING FLUIDS PARAMETERS SUCH AS THE PUMPING RATE, PRESSURES, VISCOSITY AND DENSITY DURING THE PILOT BORE, BACK REAMING, AND PRODUCT PIPE INSTALLATION. RELIEF HOLES CAN BE USED AS NECESSARY TO RELIEVE EXCESS PRESSURE DOWN HOLE. OBTAIN THE ENGINEER'S APPROVAL OF THE LOCATION AND ALL CONDITIONS NECESSARY TO CONSTRUCT RELIEF HOLES. MAINTAIN PROPER DISPOSITION OF DRILLING FLUIDS AND MINIMIZE INCONVENIENCE TO OTHER FACILITY USERS.

TO MINIMIZE HEAVING DURING PULL BACK, DETERMINE THE PULLBACK RATE IN ORDER TO MAXIMIZE THE REMOVAL OF SOIL CUTTINGS WITHOUT BUILDING EXCESS DOWN HOLE PRESSURE. CONTAIN EXCESS DRILLING FLUIDS AT ENTRY AND EXIT POINTS UNTIL THE RECYCLE, VACUUM, OR REMOVAL FROM THE SITE DURING DRILLING OPERATIONS. ENSURE THAT ENTRY AND EXIT CONTAINMENTS ARE OF SUFFICIENT SIZE TO CONTAIN THE EXPECTED RETURN OF DRILLING FLUIDS AND SOIL CUTTINGS. CARRY OUT EXCAVATION AND BACKFILL FOR ENTRY, EXIT, RECOVERY PITS, CONNECTION PITS, SLURRY SUMP PITS, OR ANY OTHER EXCAVATION AS SPECIFIED IN SECTION 611 OF ODOT'S CMS.

ENSURE THAT ALL DRILLING FLUIDS ARE DISPOSED OF OR RECYCLED IN A MANNER ACCEPTABLE TO THE APPROPRIATE LOCAL, STATE, OR FEDERAL REGULATORY AGENCIES. WHEN DRILLING IN CONTAMINATED GROUND, TEST THE DRILLING FLUID FOR CONTAMINATION AND APPROPRIATELY DISPOSE OF IT. THE ENGINEER WILL ADJUST THE CONTRACT VALUE AND/OR TIME IF THE CONTRACTOR WAS NOT NOTIFIED ABOUT THE CONTAMINATION DURING THE BIDDING PHASE. REMOVE ANY EXCESS MATERIAL UPON COMPLETION OF THE BORE. CONTACT THE ENGINEER IMMEDIATELY IF IT BECOMES EVIDENT THAT THE SOIL IS CONTAMINATED IN THE DRILLING PROCESS. DO NOT CONTINUE DRILLING WITHOUT THE ENGINEER'S CONSENT. INSTALL ALL FACILITIES SUCH THAT THEIR LOCATION CAN BE READILY DETERMINED BY ELECTRONIC DESIGNATION AFTER INSTALLATION. FOR NON-CONDUCTIVE INSTALLATIONS, ATTACH A CONTINUOUS CONDUCTIVE TRACKING (TRACER WIRE) MATERIALS, EITHER EXTERNALLY, INTERNALLY OR INTEGRAL WITH THE PRODUCT. TRACKING CONDUCTORS MUST EXTEND TWO FEET BEYOND BORE TERMINI. TEST CONDUCTORS FOR CONTINUITY.

WITHIN 48 HOURS OF COMPLETING THE INSTALLATION, CLEAN THE WORK SITE OF ALL EXCESS SLURRY OR SPOILS, DE-MOBILIZE EQUIPMENT, AND ENSURE THAT THE SITE IS SAFE AND SECURED.

ENVIRONMENTAL PROTECTION
TAKE ALL NECESSARY MEASURES TO ELIMINATE THE DISCHARGE OF WATER, DRILLING MUD, AND CUTTINGS TO NEARBY WATERWAYS DURING THE HDD WORK. IF APPLICABLE, PROVIDE EQUIPMENT AND PROCEDURES TO MAXIMIZE THE RECIRCULATION OR REUSE OF DRILLING MUD TO MINIMIZE WASTE. FOLLOW SECTION 107.19 ENVIRONMENTAL PROTECTION OF THE OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR ENVIRONMENTAL PROTECTION REQUIREMENTS.

DAMAGE RESTORATION
TAKE RESPONSIBILITY FOR RESTORATION OF ANY DAMAGE CAUSED BY HEAVING, SETTLEMENT, SEPARATION OF PAVEMENT, ESCAPING DRILLING FLUID, OR FROM THE DIRECTIONAL DRILLING OPERATION. IF THE NEGLIGENCE OF THE CONTRACTOR CAUSES DAMAGE TO ANY FACILITY, RESTORE THE FACILITY TO ITS ORIGINAL CONDITIONS OR BETTER AT NO ADDITIONAL COST TO THE OWNER. FOLLOW SECTIONS 104.04 AND 107.10 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR OTHER REQUIREMENTS REGARDING CLEAN UP AND RESTORATION. WHEN REMEDIATION PLANS ARE REQUIRED BY THE ENGINEER, PROVIDE DETAILED AND ACCEPTABLE-BY-THE-ENGINEER PLANS SHOWING HOW THE DAMAGE WILL BE REMEDIED BEFORE ANY WORK PROCEEDS.

ChoiceOne Engineering
SIDNEY, OHIO 937.497.0200
LOVELAND, OHIO 513.239.8554
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DEERCLIFF WATER LOOP
MONROE TOWNSHIP
HORIZONTAL DIRECTIONAL DRILLING NOTES

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FILE NAME GN.dw
DRAWN BY RDC
CHECKED BY ATS
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SHEET NUMBER 8 OF 11

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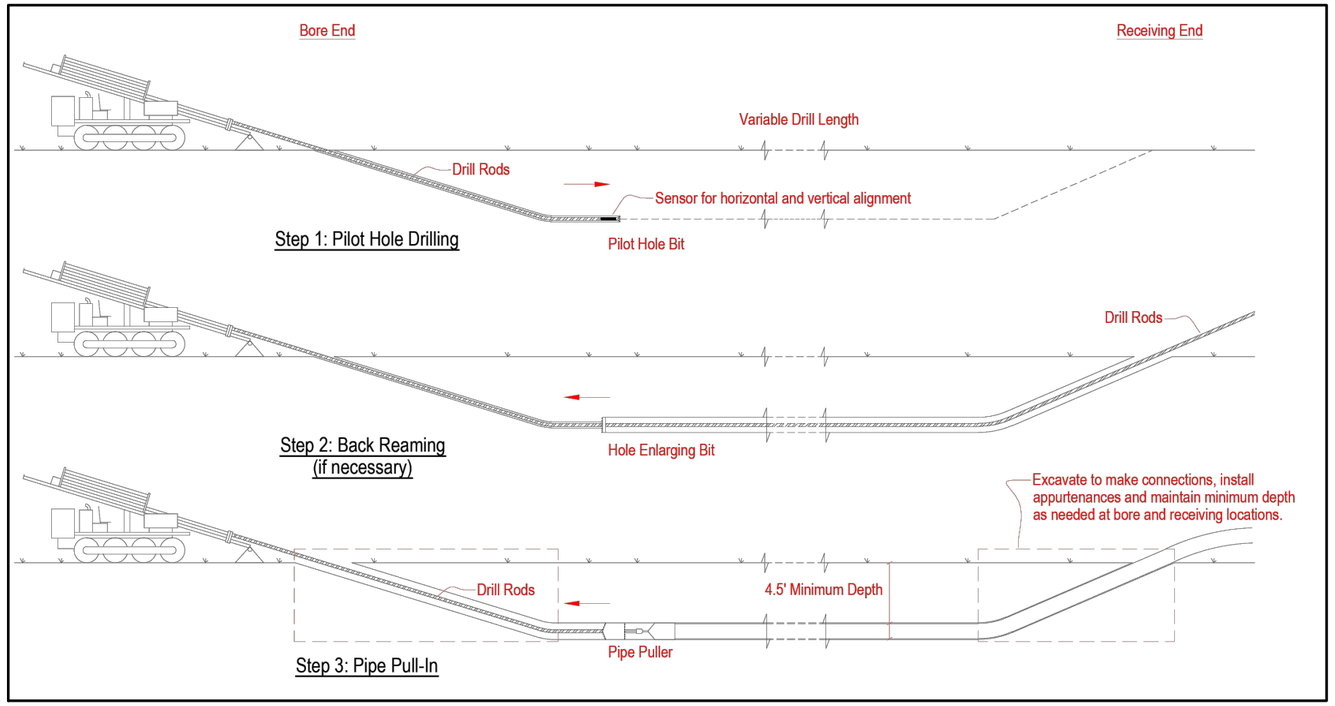
TESTING
UPON COMPLETION OF THE DIRECTIONAL BORE, TEST TRACER WIRE CONTINUITY FOR EACH BORE BEFORE ACCEPTANCE.

METHOD OF MEASUREMENT
THE INSTALLED LENGTH OF PIPE WILL BE MEASURED BY STRAIGHT LINE HORIZONTAL DISTANCE IN FEET IN PLACE MEASURED FROM CENTER-TO-CENTER OF APPURTENANT SMALL STRUCTURES, CONNECTION POINTS, OR BETWEEN OPEN ENDS INCLUSIVE OF LENGTHS OF PIPE BENDS AND BRANCHES, OR AS SHOWN ON THE PLANS. THE OWNER WILL NOT DEDUCT FOR CATCH BASINS, INLETS, OR MANHOLES THAT ARE 6 FEET OR LESS ACROSS, MEASURED IN THE DIRECTION OF FLOW. WHERE THE LOCATION OF AN APPURTENANCE, CONNECTION POINT, OR AN OPEN END IS CHANGED WITH THE APPROVAL OF THE ENGINEER, THE LENGTH PLACED WILL BE MEASURED IN THE FIELD.

BASIS OF PAYMENT
PAYMENT WILL BE MADE TO THE CONTRACTOR FOR ALL WORK SPECIFIED, INCLUDING FURNISHING AND INSTALLING PRODUCT PIPE, FROM PLAN POINT OF BEGINNING TO PLAN POINT OF ENDING AT PLAN DEPTH, REMOVAL OF EXCAVATED MATERIALS AND SPOILS, REMOVAL AND DISPOSAL OF DRILLING FLUIDS, BACKFILLING, AND COMPLETE RESTORATION OF THE SITE. THE PRICE COVERS ALL OTHER RELATED INCIDENTAL WORK AND MATERIALS INCLUDING LAYOUT AND REFERENCE POINTS, FENCE AND SHRUB RESTORATION, LOCATE WIRING AND TESTING. THE COST OF THE BORE INCLUDES THE FURNISHING AND INSTALLING DETECTION WIRE OR TAPE. NO PAYMENT WILL BE MADE FOR FAILED BORE PATHS, INJECTION OF FLOWABLE FILL, PRODUCTS TAKEN OUT OF SERVICE OR INCOMPLETE INSTALLATIONS DUE TO FAULT OF THE CONTRACTOR.

NO PAYMENT WILL BE MADE FOR THE HDD WORK UNTIL THE DAILY BORING LOGS HAS BEEN DELIVERED TO THE ENGINEER. PAYMENT WILL BE MADE ON A PER FOOT BASIS UNDER ITS RESPECTIVE ITEM NUMBER.

HORIZONTAL DIRECTIONAL DRILLING - TYPICAL PROFILES (NTS)



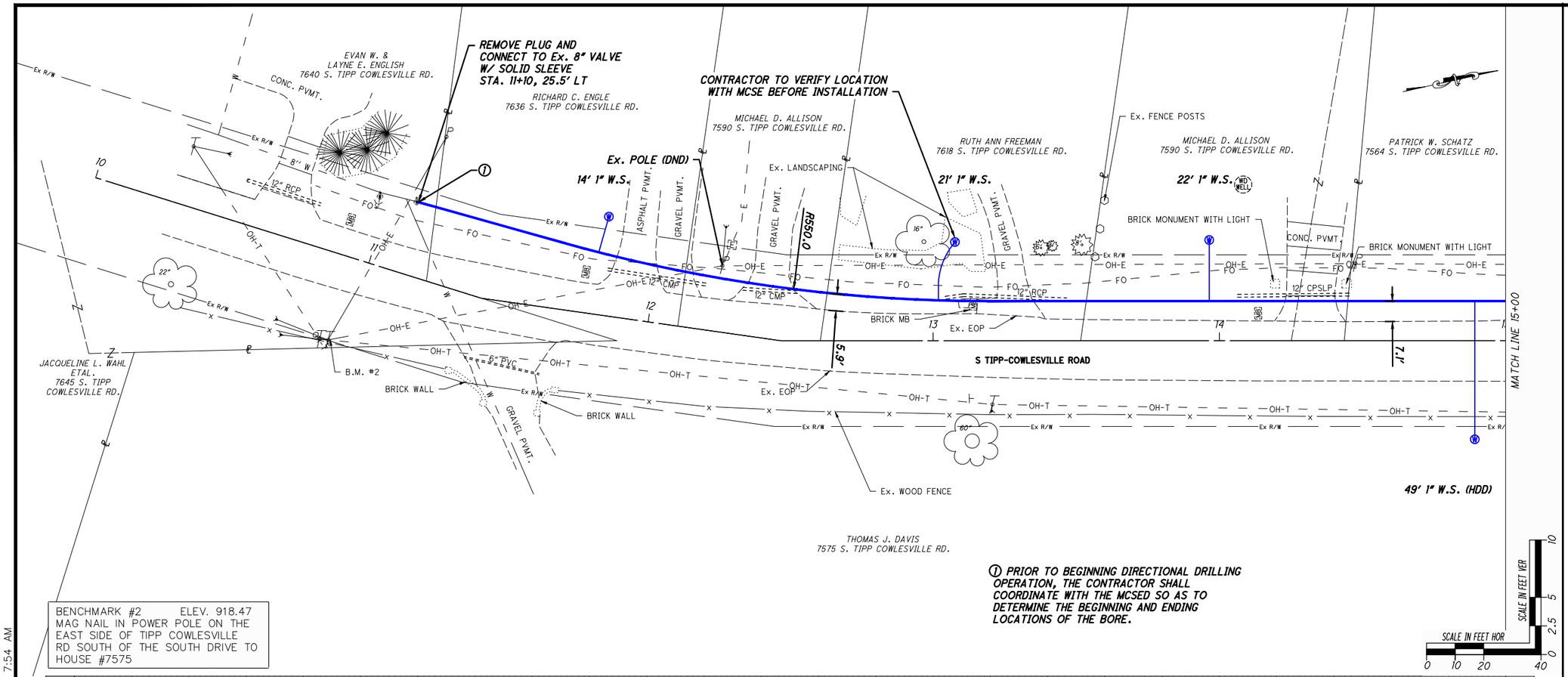
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DEERCLIFF WATER LOOP
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HORIZONTAL DIRECTIONAL DRILLING NOTES

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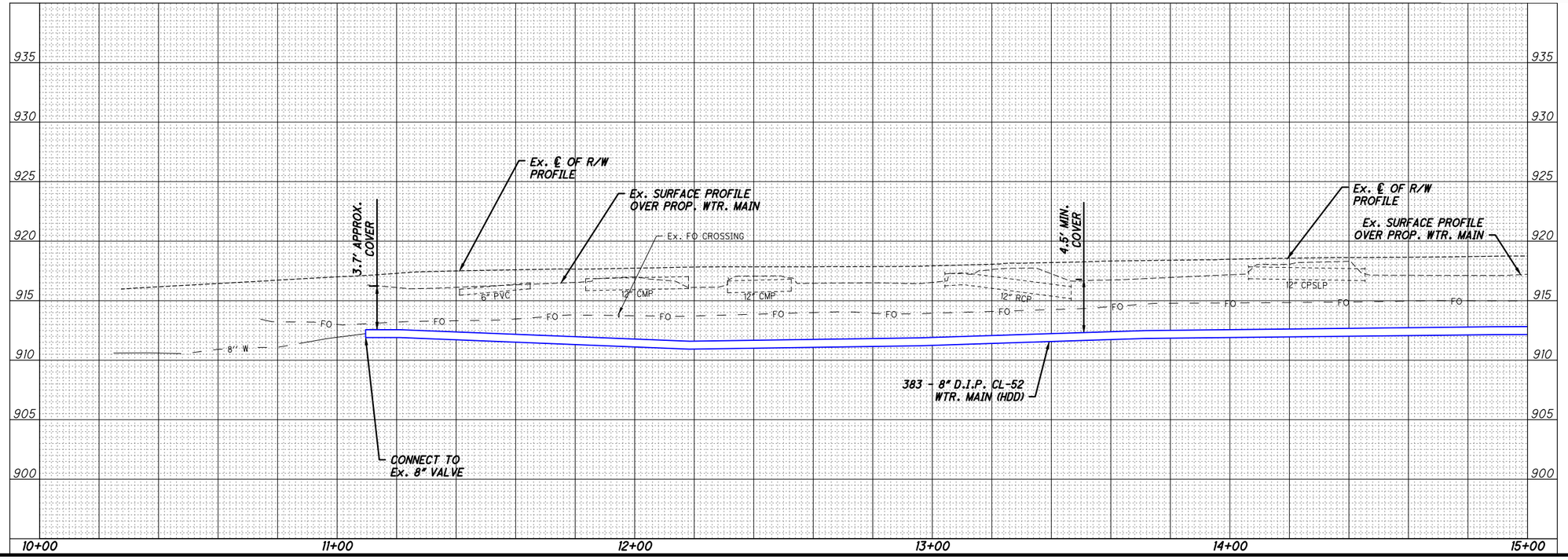
FILE NAME: GN.dw
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① PRIOR TO BEGINNING DIRECTIONAL DRILLING OPERATION, THE CONTRACTOR SHALL COORDINATE WITH THE MCSED SO AS TO DETERMINE THE BEGINNING AND ENDING LOCATIONS OF THE BORE.

BENCHMARK #2 ELEV. 918.47
MAG NAIL IN POWER POLE ON THE EAST SIDE OF TIPP COWLESVILLE RD SOUTH OF THE SOUTH DRIVE TO HOUSE #7575



LEGEND

CMP - CORRUGATED METAL PIPE
CONC. - CONCRETE
CPSLP - CORRUGATED POLYETHYLENE SMOOTH LINED PIPE
DND -DO NOT DISTURB
EOP - EDGE OF PAVEMENT
Ex. - EXISTING
FO - FIBER OPTIC
FH - FIRE HYDRANT
HDD - HORIZONTAL DIRECTIONAL DRILL
LT - LEFT
MB - MAILBOX
MIN. - MINIMUM
PROP. - PROPOSED
PVMT. - PAVEMENT
RCP - REINFORCED CONCRETE PIPE
RR - REMOVE AND RESET
R/W - RIGHT-OF-WAY
W.S. - WATER SERVICE
WTR. - WATER

- EXISTING FIRE HYDRANT
- EXISTING WATER METER PIT
- EXISTING WATER VALVE
- EXISTING WELL
- PROPOSED FIRE HYDRANT
- PROPOSED WATER METER PIT
- PROPOSED WATER VALVE

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DEERCLIFF WATER LOOP
MONROE TOWNSHIP
S TIPP-COWLESVILLE ROAD PLAN AND PROFILE STA. 10+00 TO 15+00

REVISIONS:

FILE NAME	GP.dw
DRAWN BY	RDC
CHECKED BY	ATS
PROJECT No.	MIAMON2601
DATE	10-30-2026
SHEET NUMBER	10 OF 11

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PATRICK W. SCHATZ
7564 S. TIPP COWLESVILLE RD.

GRAHAM J. & BROOKE A. LONG
1380 E. GINGHAMSBURG RD.

FREDERICK J. & FRANCES M. SCHERMAN
7454 S. TIPP COWLESVILLE RD.

21' 1" W.S.

AIR-RELEASE VALVE PIT
STA. 15+71, 13.8' LT

ROCKS

GINGHAMSBURG ROAD

12"X8" REDUCER
REMOVE PLUG AND
CONNECT TO Ex. 12" VALVE
W/ SOLID SLEEVE
STA. 17+61, 19.1' LT

Ex. SIGN (RR)

Ex. POLE (DND)

B.M. #1

Ex. 12" D.I.P. WTR. MAIN

ASPHALT PVMT.

12" CMP

6" DIP

MB W/ CONC. FOUNDATION

MATCH LINE 15+00

CUT-IN ROTATED FH ASSEMBLY
STA. 15+69, 10.9' LT

Ex. EOP

S TIPP-COWLESVILLE ROAD

R800.0

Ex. WOOD FENCE

GRAVEL PVMT.

THOMAS J. DAVIS
7575 S. TIPP COWLESVILLE RD.

WILLIAM R. & KATIE A. PHILLIPS
7511 S. TIPP COWLESVILLE RD.

THOMAS & KIMBERLY L. MALDONADO
TIPP COWLESVILLE RD.

THOMAS & KIMBERLY L. MALDONADO
7505 S. TIPP COWLESVILLE RD.

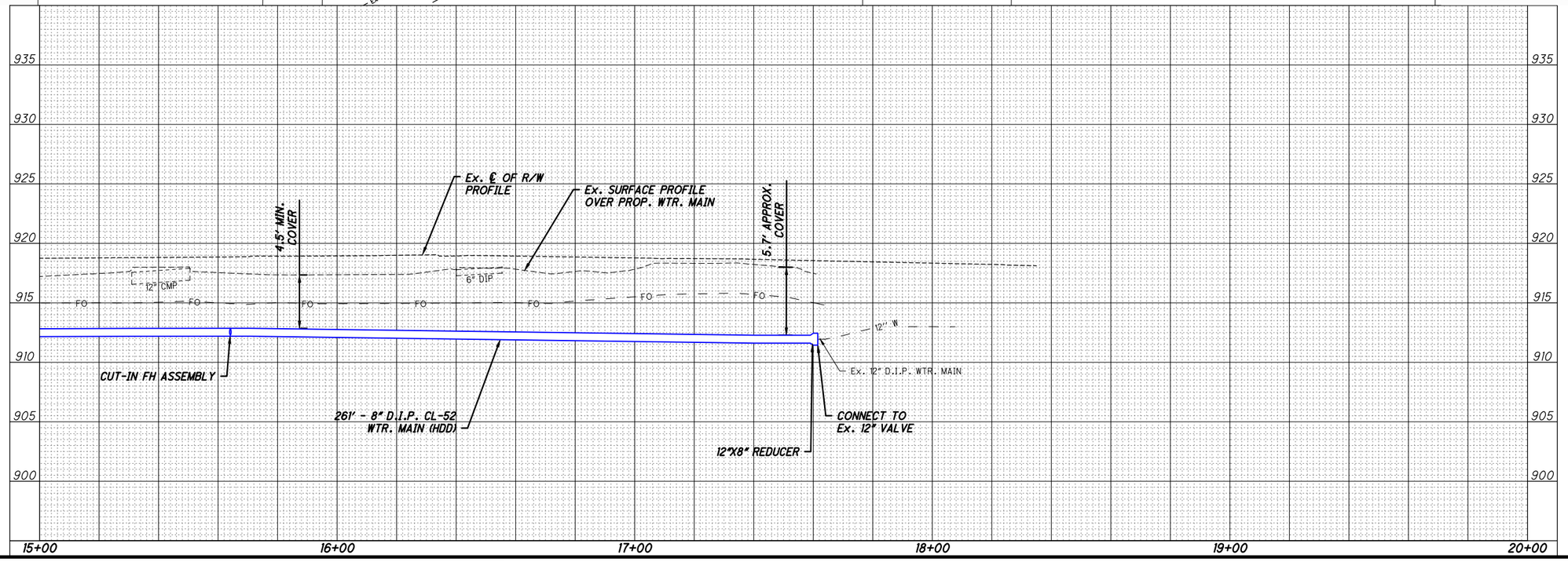
Ex. 10' WATERLINE EASEMENT

① PRIOR TO BEGINNING DIRECTIONAL DRILLING OPERATION, THE CONTRACTOR SHALL COORDINATE WITH THE MCSED SO AS TO DETERMINE THE BEGINNING AND ENDING LOCATIONS OF THE BORE.

BENCHMARK #1 ELEV. 919.06
MAG NAIL IN POWER POLE AT THE NORTHWEST CORNER OF TIPP COWLESVILLE RD AND GINGHAMSBURG RD

SCALE IN FEET HOR
0 10 20 40

SCALE IN FEET VER
0 2.5 5 10



LEGEND

CMP - CORRUGATED METAL PIPE

CONC. - CONCRETE

CPSLP - CORRUGATED POLYETHYLENE SMOOTH LINED PIPE

DND -DO NOT DISTURB

EOP - EDGE OF PAVEMENT

Ex. - EXISTING

FO - FIBER OPTIC

FH - FIRE HYDRANT

HDD - HORIZONTAL DIRECTIONAL DRILL

LT - LEFT

MB - MAILBOX

MIN. - MINIMUM

PROP. - PROPOSED

PVMT. - PAVEMENT

RCP - REINFORCED CONCRETE PIPE

RR - REMOVE AND RESET

R/W - RIGHT-OF-WAY

W.S. - WATER SERVICE

WTR. - WATER

EXISTING FIRE HYDRANT

EXISTING WATER METER PIT

EXISTING WATER VALVE

EXISTING WELL

PROPOSED FIRE HYDRANT

PROPOSED WATER METER PIT

PROPOSED WATER VALVE

ChoiceOne Engineering
SIDNEY, OHIO 937.497.0200
LOVELAND, OHIO 513.239.8554
www.CHOICEONEENGINEERING.com

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