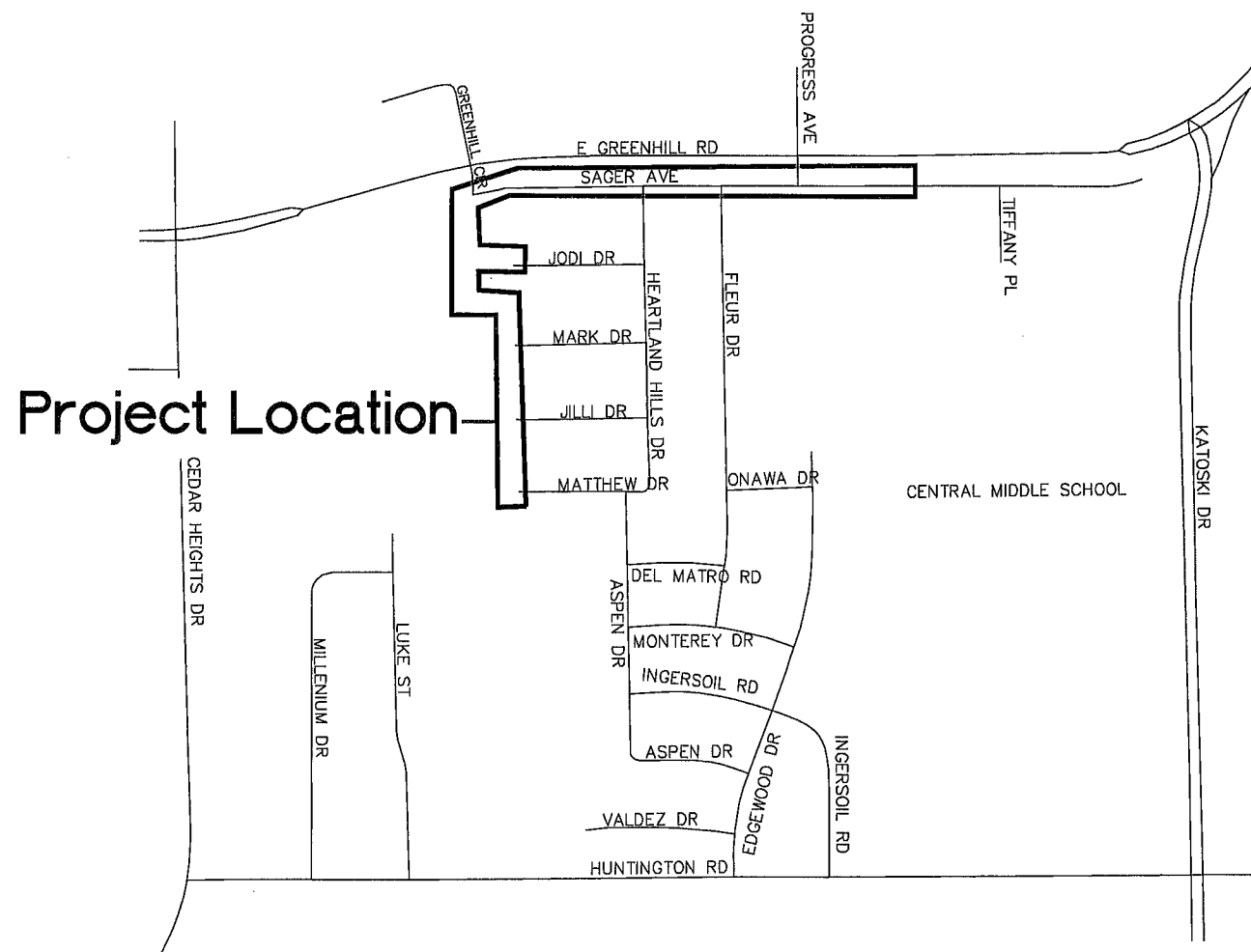


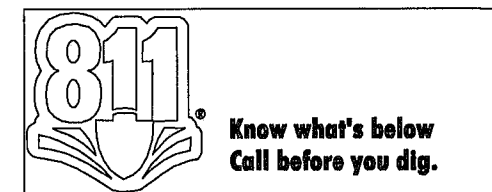
Construction Plans for the 2023 Heartland Hills Area West Water Main Loop Waterloo Water Works, Waterloo, Iowa

THE CURRENT SPECIFICATIONS OF THE WATERLOO WATER WORKS AND REFERENCED DIVISIONS OF THE 2022 EDITION OF THE IOWA URBAN STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS (SUDAS) TOGETHER WITH THESE PLANS AND THE CONTRACT DOCUMENTS SHALL APPLY TO ALL WORK PERFORMED ON THIS PROJECT.



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	Certification	
	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Iowa.	
	Signature: <i>William J. Claassen</i>	License No. 9408
	Date: 04-20-23	My license renewal date is December 31, 2023
	Pages or sheets covered by this seal: 1-19	

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BK. 718 & 748	PG. 01 & 34	DR.	DATE 11/22
FILE NO. 4558	CK'D	WJC	DATE 01/23
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Construction Plans for the 2023
Heartland Hills West Area Water Main Loop
Waterloo Water Works, Waterloo, Iowa
Title Sheet

THE "ENGINEER" AS INDICATED ON THESE PLANS, SPECIAL PROVISIONS AND OR PAYMENT WILL BE MADE FOR THIS. CONTRACT DOCUMENTS IS DEFINED AS:

WAYNE CLAASSEN ENGINEERING AND SURVEYING, INC.
2705 UNIVERSITY AVENUE (P.O. BOX 898)
WATERLOO, IOWA 50704
TELEPHONE: (319) 235-6294 FAX: (319) 235-0028

DIVISIONS 3, 5, 8, 9 AND 10 OF THE 2021 EDITION OF THE STATEWIDE URBAN DESIGN AND SPECIFICATIONS (SUDAS) IN ADDITION TO THE STANDARD SPECIFICATIONS, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO ALL WORK ON THIS PROJECT.

SEE CONTRACT DOCUMENTS FOR ADDITIONAL REQUIREMENTS.

PLANS INCLUDED IN THE PROJECT ARE FOR THE PURPOSE OF ALIGNMENT, LOCATION AND SPECIFIC DIRECTIONS FOR THE WORK TO BE PERFORMED UNDER THE CONTRACT. IRRELEVANT DATA ON THESE SHEETS IS NOT TO BE CONSIDERED A PART OF THIS CONTRACT.

THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF WORK BETWEEN ALL EQUIPMENT SUPPLIERS, CRAFTS AND SUBCONTRACTORS INVOLVED IN THE PROJECT INCLUDING STAGING OF CONSTRUCTION AND CONSTRUCTION DETAILS.

THE PRIME CONTRACTOR SHALL INSURE ALL REQUIRED BARRICADES, FENCING, DELINEATORS, AND SUCH ADDITIONAL SAFEGUARDS, SAFETY DEVICES AND PROTECTIVE EQUIPMENT ARE ERECTED AND MAINTAINED, AND TAKE SUCH ACTIONS AS ARE REASONABLY NECESSARY TO PROTECT THE LIFE AND HEALTH OF HIS EMPLOYEES, SUBCONTRACTORS AND THE PUBLIC IN THE VICINITY OF ALL CONSTRUCTION WORK ZONES. ALL ABOVE REFERENCED TRAFFIC CONTROL DEVICES SHALL BE IN CONFORMANCE WITH PART VI OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). MILLENNIUM EDITION.

ALL OBSTRUCTIONS TO THE WORK REMOVED BY THE CONTRACTOR TO FACILITATE CONSTRUCTION WHICH ARE NOT SHOWN FOR REMOVAL, OR ORDERED BY THE ENGINEER, SHALL BE REPLACED WITH EQUAL OR BETTER MATERIALS AS APPROVED BY THE PROJECT ENGINEER.

THE LOCATION OF ALL KNOWN EXISTING UTILITIES AND SEWERS INDICATED ON THESE PLANS ARE TAKEN FROM EXISTING RECORDS AND ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER; THEREFORE, THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THE CONTRACTOR SHALL CONFIRM THE EXACT LOCATIONS AND ELEVATIONS OF THESE AND OTHER FACILITIES THAT MAY EXIST BUT ARE NOT SHOWN ON THE PLANS PRIOR TO SUBMITTING BIDS. THE CONTRACTOR SHALL EXPOSE UTILITIES AND SEWERS NOTED ON THE PLANS, AS DIRECTED IN THE FIELD BY THE ENGINEER, PRIOR TO BEGINNING ANY CONSTRUCTION OPERATIONS SO THE EXACT LOCATIONS AND ELEVATIONS MAY BE DETERMINED. NO DIRECT PAYMENT SHALL BE MADE FOR THIS WORK, UNLESS NOTED IN SPECIFIC ITEM REFERENCE DATA, AND SHALL BE CONSIDERED INCIDENTAL TO OTHER WORK.

THE CONTRACTOR SHALL NOTIFY THE RESPECTIVE UTILITIES AND/OR CITY DEPARTMENTS A MINIMUM OF FORTY-EIGHT (48) WORKING HOURS IN ADVANCE OF COMMENCING WORK ON THE PROJECT AND TO THEREAFTER COORDINATE NECESSARY ADJUSTMENTS AND/OR RELOCATIONS SO AS TO ELIMINATE DELAYS AND SERVICE INTERRUPTIONS. THE CONTRACTOR SHALL NOT BE COMPENSATED FOR DELAYS AND/OR EXTRA COSTS DUE TO CONFLICTS WITH ANY UTILITIES OR SEWER FACILITY UNLESS OTHERWISE NOTED.

UTILITY LOCATES-IOWA ONE CALL 800-292-8989

GAS-MIDAMERICAN ENERGY COMPANY 800-292-8989

ELECTRIC-MIDAMERICAN ENERGY COMPANY 800-292-8989

PHONE-CENTURY LINK 800-833-0825

CABLE-MEDIACOM 800-292-8989

SEWER-CITY OF WATERLOO 319-291-4553

WATER-WATERLOO WATER WORKS 319-232-6280

ROADS-STREETS CITY OF WATERLOO 319-291-4267

THE CONTRACTOR SHALL NOTE THAT EXISTING WATER, SEWERS, GAS, TELEPHONE, PROVISIONS AND ELECTRIC, ELECTRONIC AND OTHER, PUBLIC AND PRIVATE, UTILITIES, SERVICES AND CONNECTIONS FROM THESE UTILITIES MAY EXIST WITHIN OR ADJACENT TO THE WORK AREA. SPECIAL PRECAUTIONS MUST BE USED WHEN WORKING AROUND SAID UTILITIES, SERVICES AND CONNECTIONS.

PRIOR TO OPENING AN EXCAVATION, THE CONTRACTOR SHALL DETERMINE WHETHER PUBLIC OR PRIVATE UNDERGROUND INSTALLATIONS; I.E., SEWER, WATER, FUEL, ELECTRIC LINES, ETC., WILL BE ENCOUNTERED AND, IF SO, WHERE SUCH UNDERGROUND INSTALLATIONS ARE LOCATED. WHEN THE EXCAVATION APPROACHES THE APPROXIMATE LOCATIONS OF SUCH AN INSTALLATION, THE EXACT LOCATIONS SHALL BE DETERMINED BY CAREFUL PROBING OR HAND DIGGING AND, WHEN IT IS UNCOVERED, ADEQUATE PROTECTION SHALL BE PROVIDED FOR THE EXISTING INSTALLATION. ALL KNOWN OWNERS OF UNDERGROUND FACILITIES IN THE AREA CONCERNED SHALL BE ADVISED OF PROPOSED WORK AT LEAST 48 HOURS PRIOR TO THE START OF ACTUAL EXCAVATION.

THE ENGINEER SHALL FURNISH THE REQUIRED STAKES AND BENCH MARKS FOR THIS WORK IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL MAINTAIN ALL STAKES AND REPORT ANY DAMAGE TO THE ENGINEER. THE CONTRACTOR SHALL VERIFY ALL GRADES, LINES, LEVELS AND DIMENSIONS AS SHOWN ON THE DRAWINGS, AND HE SHALL REPORT ANY ERRORS OR INCONSISTENCIES TO THE ENGINEER PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST TWO (2) WORKING DAYS PRIOR TO THE NEED FOR THE SURVEY STAKES AND BENCH MARKS. IF ANY SURVEY STAKES OR BENCH MARKS ARE CARELESSLY OR WILLFULLY DESTROYED OR DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MISTAKES THAT MAY BE CAUSED BY THEIR LOSS OR DISTURBANCE, AND SHALL BE CHARGED FOR THE COST OF REPLACING THEM.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO ITEMS NOT SPECIFIED FOR REMOVAL, RECONSTRUCTION, OR DEMOLITION. ALL AREAS INCLUDING BUT NOT LIMITED TO ROADWAYS, DRIVES, STRUCTURES, LAWNS, CROP LAND, AND PARKING AREAS OUTSIDE THE PROJECT SCOPE OR CONSTRUCTION LIMITS WHICH ARE DAMAGED BY THE CONTRACTOR'S OPERATIONS DURING CONSTRUCTION SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR, AS APPROVED BY THE PROJECT ENGINEER. NO SEPARATE PAYMENT SHALL BE MADE FOR SAID WORK AND IT SHALL BE CONSIDERED INCIDENTAL TO OTHER APPLICABLE WORK.

CONTRACTORS WISHING TO MAKE SUBSURFACE EXPLORATIONS PRIOR TO SUBMITTING BIDS ON THE PROJECT SHALL CONTACT THE PROJECT ENGINEER TO MAKE NECESSARY ARRANGEMENTS PRIOR TO CONDUCTING SAID INVESTIGATIONS.

THE CONTRACTOR SHALL NOT DISTURB DESIRABLE GRASS AREAS AND DESIRABLE TREES WITHIN OR OUTSIDE THE CONSTRUCTION LIMITS. THE CONTRACTOR WILL NOT BE PERMITTED TO PARK OR SERVICE VEHICLES AND EQUIPMENT OR USE THESE AREAS FOR STORAGE OF MATERIALS. STORAGE, PARKING AND SERVICE AREAS WILL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

BOND, MAINTENANCE, 2-YEAR: CONTRACTOR SHALL GUARANTEE THE MAINTENANCE OF THE IMPROVEMENTS TO THE WATERLOO WATER WORKS FOR A PERIOD OF TWO (2) YEARS AFTER COMPLETION OF SAID IMPROVEMENTS AND ACCEPTANCE BY THE WATERLOO WATER WORKS. SAID BOND TO BE OF A FORM THAT IS ACCEPTABLE TO THE WATERLOO WATER WORKS.

CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, CERTIFICATIONS AND CUT SHEETS ON ALL MATERIALS TO BE INCORPORATED INTO THE PROJECT, PRIOR TO ORDERING SUCH MATERIALS.

THE CONTRACTOR SHALL APPLY NECESSARY MOISTURE TO THE CONSTRUCTION AREA AND HAUL ROADS TO PREVENT THE SPREAD OF DUST. REFER TO ARTICLE 1107.07 OF THE IOWA D.O.T. STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS. NO PAYMENT WILL BE MADE FOR THIS ITEM. IT SHALL BE CONSIDERED INCIDENTAL TO OTHER APPLICABLE ITEMS.

CONTRACTOR IS TO USE DUE CAUTION IN WORKING OVER AND AROUND ALL TILE LINES. BREAKS IN THE LINE DUE TO THE CONTRACTOR'S CARELESSNESS ARE TO BE REPLACED AT HIS/HER EXPENSE WITHOUT COST TO THE OWNER. EXISTING TILE LINES THAT MUST BE CUT FOR INSTALLATION OF SEWER OR WATER LINES WILL BE REPLACED AS DIRECTED BY THE OWNER'S REPRESENTATIVE AT THE OWNER'S EXPENSE AS PER THE APPLICABLE BID ITEM.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER, FOR CITY OF WATERLOO APPROVAL, ALL ROUTES OF HAUL OF MATERIALS TO THE PROJECT SITE. ROUTES OF HAUL WILL BE LIMITED TO THOSE ROUTES WHICH ARE APPROVED BY THE CITY OF WATERLOO.

THE CONTRACTOR SHALL STRIP, SALVAGE AND SEPARATELY STOCKPILE THE TOP 12" OF TOPSOIL FROM ALL EXCAVATIONS FOR SUBSEQUENT RE-SPREADING OVER EXCAVATION AREAS. SAID RE-SPREADING SHALL BE TO A UNIFORM THICKNESS FREE OF ROOTS, ROCK AND DEBRIS. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO PRE-CONSTRUCTION CONDITIONS. THE CONTRACTOR SHALL BACKFILL ALL SUBSOIL EXCAVATIONS WITH SUITABLE EXCAVATION MATERIALS FROM THE TRENCH EXCAVATION. SAID SUBSOIL BACKFILL SHALL BE PLACED IN MAXIMUM 9" LOOSE THICKNESS LIFTS AND SHALL BE MECHANICALLY BACKFILLED TO 95% OF THE MATERIAL'S STANDARD PROCTOR DENSITY AT -2 TO +4 % OF ITS OPTIMUM MOISTURE. THERE SHALL BE NO SEPARATE PAYMENT FOR THIS WORK.

EROSION CONTROL DEVICES DISTURBED BY CONSTRUCTION OR OTHER ACTIVITIES ON THE SITE SHALL BE REPLACED AT NO COST TO THIS CONTRACT. THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL FENCING TO PREVENT THE TRANSPORT OF SEDIMENT OFF-SITE AT NO ADDITIONAL COST TO THIS CONTRACT. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ALL EROSION CONTROL DEVICES WITHIN 48 HOURS OF THE TIME FIRST INSTRUCTED BY THE ENGINEER.

THE CONTRACTOR SHALL COMPLETE THIS PROJECT IN A MANNER THAT DOES NOT ALLOW SILT OR SEDIMENT TO LEAVE THE WORK AREA.

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE EXISTING SURFACE WATER AND GROUNDWATER CONDITIONS AT THE PROJECT. SURFACE WATER AND GROUNDWATER IS PRESENT IN THE WORK AREA AND WILL AFFECT WORKING CONDITIONS AT THE SITE. THE CONTRACTOR IS REQUIRED TO PROVIDE AND USE ALL NECESSARY MATERIALS, EQUIPMENT AND LABOR NECESSARY TO COMPLETE ALL PORTIONS OF THE PROJECT AS PER THE PLANS AND SPECIFICATIONS AT NO ADDITIONAL COST ATTRIBUTABLE TO SURFACE WATER OR GROUNDWATER.

EACH CONTRACTOR IS RESPONSIBLE FOR THE SAFETY OF HIS/HER WORKERS, HIS/HER SUBCONTRACTOR'S AND THE PUBLIC.

THE CONTRACTOR IS REQUIRED TO REMOVE ALL CONSTRUCTION RELATED DEBRIS FROM ALL AREAS DISTURBED BY HIS/HER ACTIVITIES AND SHALL RESTORE SAID AREAS TO THE AREA'S ELEVATION, SLOPE AND DRAINAGE PATTERN THAT EXISTED PRIOR TO CONSTRUCTION OF THIS PROJECT. THIS INCLUDES, PLACEMENT OF A 6" (MINIMUM) ROLLED THICKNESS OF TOPSOIL THAT IS CLEAR OF ALL ROCK, SUB-BASE, FOUNDATION STONE AND BEDDING STONE. SAID TOPSOIL MAY BE DERIVED FROM TOPSOIL THAT WAS STRIPPED, SALVAGED AND SEPARATELY STOCKPILED FROM ON-SITE EXCAVATION AREAS, PROVIDED THAT SAID TOPSOIL IS FREE FROM DEBRIS, ROCK, SUB-BASE, FOUNDATION STONE AND BEDDING STONE. SAID TOPSOIL MAY ALSO BE PROCURED FROM OFF-SITE SOURCES AT CONTRACTOR'S EXPENSE, IF FREE FROM DEBRIS AND IF APPROVED BY THE OWNER'S REPRESENTATIVE. CLEAN-UP AND RESTORATION OF DISTURBED AREAS IS AN INCIDENTAL ITEM TO THE CONTRACTOR'S WORK AND SHALL NOT BE MEASURED OR PAID FOR SEPARATELY

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Construction Plans for the 2023
Heartland Hills West Area Water Main Loop
Waterloo Water Works, Waterloo, Iowa
General Notes

Bid Reference Notes

001. MOBILIZATION

ITEM INCLUDES MOBILIZING ALL EQUIPMENT, LABOR AND MATERIALS TO THE SITE FOR ALL ASPECTS OF THE PROJECT, IRREGARDLESS OF HOW MANY MOBILIZATIONS ARE NECESSARY TO COMPLETE THE PROJECT.

002. SEED, FERTILIZE, AND MULCH (IDOT URBAN MIX) BY HYDROSEEDING

BID PRICE SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, SEED, FERTILIZING, MULCHING AND OTHER ITEMS NEEDED FOR COMPLETION IN CONFORMANCE WITH ARTICLE 2601 OF THE IDOT STANDARD SPECIFICATIONS. ITEM IS TO BE COMPLETED BY HYDRO-SEEDING. ALL DISTURBED AREAS EXCEPT FOR PAVED AREAS ARE INCLUDED IN THIS ITEM. ITEM TO BE COMPLETED WITHIN 21 CALENDAR DAYS AFTER NEW WATER SERVICES AND REPLACEMENT PAVING HAS BEEN COMPLETED.

003. 9" DIA., STRAW FILLED WATTLES

ITEMS TO BE INSTALLED AND MAINTAINED FOR INLET PROTECTION AND AT LOCATIONS AS DIRECTED IN THE FIELD BY THE ENGINEER WITHIN 24 HOURS OF THE TIME FIRST INSTRUCTED BY THE ENGINEER.

004. TRAFFIC CONTROL

BID PRICE SHALL INCLUDE ALL LABOR, EQUIPMENT, FLAGGERS, SIGNS, BARRICADES AND APPURTENANT ITEMS NEEDED FOR TRAFFIC CONTROL.

THE I.D.O.T. CURRENT SPECIFICATIONS SHALL APPLY TO ALL TRAFFIC CONTROL. PAY WILL BE BY LUMP SUM PAYMENT FOR EVERYTHING NEEDED TO CARRY OUT TRAFFIC CONTROL ON THIS PROJECT. THE CONTRACTOR SHALL BE ENTIRELY RESPONSIBLE FOR THE SAFETY AND PROPER TRAFFIC CONTROL WITHOUT FURTHER DIRECTION FROM THE ENGINEER OR INSPECTOR.

CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SIGNS AND FLASHERS THROUGHOUT THE ENTIRE TIME THEY ARE IN PLACE.

CONTRATOR'S WORK SHALL BE COMPLETED IN A MANNER THAT DOES NOT CLOSE STREETS COMPLETELY TO TRAFFIC. ALL EQUIPMENT WITHIN ROADWAY AREAS SHALL BE REMOVED AND ALL EXCAVATIONS WITHIN ROADWAY SECTIONS SHALL BE BACKFILLED TO SAFELY ALLOW THRU TRAFFIC BETWEEN SUNSET AND SUNRISE EVERY DAY.

CONTRACTOR SHALL SUBMIT HIS/HER PROPOSED TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO THE PRE-CONSTRUCTION CONFERENCE.

005. MAINTENANCE BOND, 2-YEAR

ITEM INCLUDES PROVIDING A TWO-YEAR MAINTENANCE BOND TO THE WATERLOO WATER WORKS FOR ALL WORK PERFORMED BY THE CONTRACTOR AND HIS/HER SUBCONTRACTORS ON THIS PROJECT.

SAID BOND SHALL BE OF A FORM THAT IS ACCEPTABLE TO THE WATERLOO WATER WORKS. SAID TWO YEAR PERIOD SHALL BEGIN AFTER THE PROJECT IMPROVEMENTS ARE ACCEPTED BY THE WATERLOO WATER WORKS.

006. CLEARING AND GRUBBING

ITEM INCLUDES CLEARING AND GRUBBING OF BRUSH, TREES AND DEBRIS THAT IS IN THE WAY OF CONSTRUCTION. SAID MATERIALS SHALL BE REMOVED TO A CONTRACTOR PROVIDED OFF-SITE DISPOSAL AREA.

DESIRABLE TREES AND SHRUBS, AS IDENTIFIED AT THE TIME OF CONSTRUCTION BY THE OWNER'S REPRESENTATIVE, SHALL BE PROTECTED FROM THE CONTRACTOR'S ACTIVITIES BY THE CONTRACTOR AT HIS/HER SOLE COST.

401. WATER MAIN, C900/RJ RESTRAINED JOINT DR18 PVC, 8-INCH DIA.

BID PRICE SHALL INCLUDE ALL MATERIALS AND EQUIPMENT NECESSARY TO INSTALL DR 18 AWWA C-900/RJ RESTRAINED JOINT PVC WATER MAIN PIPE, OF THE INDICATED SIZE, BY CONVENTIONAL, OPEN TRENCH CONSTRUCTION. PIPE SHALL BE CERTA-LOK BY CERTAINTED OR APPROVED EQUAL WITH STANDARD STYRENE BUTADIENE RUBBER GASKETS. ITEM INCLUDES COPPERHEAD COPPER CLAD STEEL OR APPROVED EQUAL TRACING WIRES.

ITEM INCLUDES 1" CLEAN, CLASS 1 EMBEDMENT MATERIAL. SEE DETAIL FOR BEDDING, BACKFILL AND OTHER REQUIREMENTS.

ITEM INCLUDES REMOVING ALL EXCESS EXCAVATION MATERIALS FROM THE WORK AREAS AND HAULING THEM TO A CONTRACTOR PROVIDED OFF-SITE AREA.

ITEM INCLUDES BACTERIOLOGICAL, PRESSURE, AND LEAKAGE TESTING AND ALL OTHER ITEMS NECESSARY TO COMPLETE THIS CONSTRUCTION AND TO PROVIDE A PROPERLY OPERATING WATER MAIN. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY FOR TESTING THE WATER MAIN. THIS SHALL INCLUDE RESTRAINED JOINTS ON PIPE AND FITTINGS AT DEADENDS, PLUGS, PIPE AND CORP STOPS OF SUFFICIENT SIZE FOR FLUSHING AFTER TESTING. ALL TESTS SHALL BE CONSIDERED INCIDENTAL TO WATER MAIN CONSTRUCTION.

WATER MAIN TO BE DISINFECTED, FLUSHED AND TESTED FOR BACTERIA AND CHLORINE PRIOR TO HYDROSTATIC TESTING. TWO CONSECUTIVE BACTERIOLOGICAL TESTS MUST PASS AT 24 HOUR MINIMUM INTERVALS TO BE ACCEPTED AS PASSING.

PRESSURE TEST SHALL BE 1 1/2 TIMES NORMAL WORKING PRESSURE, BUT NOT LESS THAN 150 P.S.I.

ALL SECTIONS OF AWWA STANDARD 651 SHALL APPLY, INCLUDING SECTION 4.6, WHICH IS NOT OPTIONAL. NEW WATER MAIN SHALL BE ISOLATED FROM THE EXISTING WATER MAIN UNTIL ACCEPTANCE OF THE PRESSURE, LEAK AND BACTERIOLOGICAL TESTING OF EACH SEGMENT OF NEW MAIN.

ITEM INCLUDES SHOCK DISINFECTING THE EXISTING HYDRANTS AND PIPING TO BE RE-LOCATED WITH CONCENTRATED SOLUTIONS AS PER AWWA C651, SEC.4.7, INCLUDING SEC. 4.7.4 AND SEC 4.7.5.

401. WATER MAIN, C900/RJ RESTRAINED JOINT DR18 PVC, 8-INCH DIA. (CONTINUED)

WATER FOR FILLING, FLUSHING AND TESTING WATER MAINS SHALL BE FURNISHED BY THE WATERLOO WATER WORKS AT NO COST TO THE CONTRACTOR UNLESS THE NEW WATER MAIN DOES NOT PASS TESTING ON THE FIRST TRIAL. IF THE WATER MAIN DOES NOT PASS TESTING ON THE FIRST TRIAL, THE ADDITIONAL WATER THAT IS NECESSARY FOR SUBSEQUENT ADDITIONAL DISINFECTION, FLUSHING AND/OR TESTING SHALL BE MEASURED BY THE WATERLOO WATER WORKS AND PAID TO THE WATERLOO WATER WORKS AT ITS NORMAL RATE. THE FLOW RATES AT WHICH WATER IS FURNISHED SHALL BE CONTROLLED BY THE WATERLOO WATER WORKS. THE CONTRACTOR SHALL FURNISH SATISFACTORY BACKFLOW PREVENTION DEVICES, HOSES AND ALL OTHER MATERIALS, EQUIPMENT AND LABOR NECESSARY TO COMPLETE SAID FILLING, FLUSHING AND TESTING AT NO ADDITIONAL COST TO THE OWNER.

CONTRACTOR SHALL LOCATE AND SHALL AVOID ALL EXISTING UTILITIES, SEWER AND WATER SERVICES AND SHALL COMPLETE THIS ITEM IN A MANNER THAT DOES NOT DISTURB SAID ITEMS.

402. WATER MAIN, CASING, C900 RESTRAINED JOINT DR18 PVC, 12-INCH DIA.

BID PRICE SHALL INCLUDE ALL MATERIALS AND EQUIPMENT NECESSARY TO INSTALL DR 18 AWWA C-900/RJ RESTRAINED JOINT PVC WATER MAIN PIPE, OF THE INDICATED SIZE, BY CONVENTIONAL, OPEN TRENCH CONSTRUCTION AS A CASING PIPE AROUND THE NEW 8" PVC WATER MAIN TO BE CONSTRUCTED FROM STA. 10+70± TO 17+50±, EXCEPT AT VALVES AND FITTINGS. PIPE JOINTS SHALL BE STANDARD STYRENE BUTADIENE RUBBER GASKETS. ITEM INCLUDES INSTALLING THE COPPER CLAD STEEL TRACING WIRES PAID FOR UNDER ITEM 401 ON THE OUTSIDE OF SAID CASING PIPE.

ITEM INCLUDES 1" CLEAN, CLASS 1 EMBEDMENT MATERIAL. SEE DETAIL FOR BEDDING, BACKFILL AND OTHER REQUIREMENTS.

ITEM INCLUDES REMOVING ALL EXCESS EXCAVATION MATERIALS FROM THE WORK AREAS AND HAULING THEM TO A CONTRACTOR PROVIDED OFF-SITE AREA.

403. WATER MAIN, SAGER AVE. HDD, C900/RJ RESTRAINED JOINT DR18 PVC, 8-INCH DIA.

BID PRICE SHALL INCLUDE ALL MATERIALS AND EQUIPMENT NECESSARY TO INSTALL AN 8" DIA. DR 18 AWWA C-900/RJ RESTRAINED JOINT PVC WATER MAIN BY DIRECTIONAL DRILLING. PIPE SHALL BE CERTA-LOK BY CERTAINTED OR APPROVED EQUAL WITH STANDARD STYRENE BUTADIENE RUBBER GASKETS. ITEM INCLUDES TWO COPPERHEAD COPPER CLAD STEEL OR APPROVED EQUAL TRACING WIRES.

DRILLING FLUIDS SHALL BE CONTAINED TEMPORARILY WITHIN THE STREET RIGHT-OF-WAY, COLLECTED AND HAULED OFF-SITE TO AN APPROVED DISPOSAL AREA AT NO ADDITIONAL COST TO THE WATER WORKS.

ITEM INCLUDES BACTERIOLOGICAL, PRESSURE, AND LEAKAGE TESTING AND ALL OTHER ITEMS NECESSARY TO COMPLETE THIS CONSTRUCTION AND TO PROVIDE A PROPERLY OPERATING WATER MAIN. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY FOR TESTING THE WATER MAIN. THIS SHALL INCLUDE RESTRAINED JOINTS ON PIPE AND FITTINGS AT DEADENDS, PLUGS, PIPE AND CORP STOPS OF SUFFICIENT SIZE FOR FLUSHING AFTER TESTING. ALL TESTS SHALL BE CONSIDERED INCIDENTAL TO WATER MAIN CONSTRUCTION.

WATER FOR FILLING, FLUSHING AND TESTING WATER MAINS SHALL BE FURNISHED BY THE WATERLOO WATER WORKS AT NO COST TO THE CONTRACTOR UNLESS THE NEW WATER MAIN DOES NOT PASS TESTING ON THE FIRST TRIAL. IF THE WATER MAIN DOES NOT PASS TESTING ON THE FIRST TRIAL, THE ADDITIONAL WATER THAT IS NECESSARY FOR SUBSEQUENT ADDITIONAL DISINFECTION, FLUSHING AND/OR TESTING SHALL BE MEASURED BY THE WATERLOO WATER WORKS AND PAID TO THE WATERLOO WATER WORKS AT ITS NORMAL RATE. THE FLOW RATES AT WHICH WATER IS FURNISHED SHALL BE CONTROLLED BY THE WATERLOO WATER WORKS. THE CONTRACTOR SHALL FURNISH SATISFACTORY BACKFLOW PREVENTION DEVICES, HOSES AND ALL OTHER MATERIALS, EQUIPMENT AND LABOR NECESSARY TO COMPLETE SAID FILLING, FLUSHING AND TESTING AT NO ADDITIONAL COST TO THE OWNER.

CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES BY POTHOLING WITH NO OPEN EXCAVATIONS AND SHALL AVOID ALL EXISTING UTILITIES, SEWER AND WATER SERVICES AND SHALL COMPLETE THIS ITEM IN A MANNER THAT DOES NOT DISTURB SAID ITEMS.

ITEM INCLUDES RESTORING THE BORE HOLES AT THE BORE ENTRY AND EXIT LOCATIONS SUCH THAT OPEN HOLES ARE NOT LEFT AHEAD OF AND BEHIND THE WATER MAIN TIE-IN LOCATIONS. HDD PIPE SHALL BE REMOVED TO A MINIMUM OF 4' VERTICAL DEPTH BELOW EXISTING GRADE AT THE BORE EXIT AND ENTRY POINTS AND THE REMAINING UNDERGROUND HDD PIPE FROM SAID REMOVAL DEPTH TO THE WATER MAIN TIE-IN LOCATIONS SHALL BE FILLED WITH CELLULAR CONCRETE. ITEM INCLUDES BACKFILLING ALL OPEN EXCAVATIONS WITH SUITABLE MATERIALS TO A MINIMUM OF 95% OF THE MATERIALS OPTIMUM DENSITY AT -2 TO +4% OF ITS OPTIMUM MOISTURE. ITEM INCLUDES RESTORATION OF ALL DISTURBED AREAS TO PRE-CONSTRUCTION CONDITIONS AFTER TIE-INS ARE COMPLETED. FURNISHING, TRANSPORTING AND INSTALLATION OF A 6" (MINIMUM) THICKNESS OF TOPSOIL AT ALL DISTURBED AREAS THAT ARE NOT ROCKED OR PAVED IS INCIDENTAL TO THIS ITEM. SAID TOPSOIL MATERIAL SHALL BE PRE-APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO ITS USE ON THIS PROJECT.

THE CONTRACTOR SHALL LOCATE AND MARK THE DRILL-OUT BORE PATH CENTERLINE LOCATION WITH TILE FLAGS IMMEDIATELY AFTER OR DURING THE BORE-OUT. SAID FLAGS SHALL BE SET AT A MAXIMUM SPACING OF 25' AND SHALL BE MARKED WITH THE DEPTH OF THE DRILL PIPE.

404. CASING END SEALS

BID PRICE SHALL INCLUDE ALL MATERIALS AND EQUIPMENT NECESSARY TO INSTALL MODULAR LINKS AT CASING ENDS TO CLOSE THE ANNULAR SPACE BETWEEN THE 8" PVC WATER MAIN AND THE 12" PVC CASING PIPE WATERTIGHT AND SOILTIGHT, AT LOCATIONS SHOWN ON THE PLANS AND/OR AS IDENTIFIED BY THE OWNER'S REPRESENTATIVE AT THE TIME OF CONSTRUCTION.

Estimated Project Quantities

EROSION CONTROL AND MISCELLANEOUS

ITEM NO.	DESCRIPTION	UNITS	EST. QTY.	ASBUILT QTY
001.	MOBILIZATION	LUMP SUM	1	
002.	SEED, FERTILIZE AND MULCH (IDOT URBAN MIX) BY HYDROSEEDING	ACRES	1.6	
003.	9" DIA., STRAW FILLED WATTLES	L.F.	400	
004.	TRAFFIC CONTROL	LUMP SUM	LUMP SUM	
005.	MAINTENANCE BOND, 2-YEAR	LUMP SUM	LUMP SUM	
006.	CLEARING AND GRUBBING	LUMP SUM	LUMP SUM	

WATER CONSTRUCTION

ITEM NO.	DESCRIPTION	UNITS	EST. QTY.	
401.	WATER MAIN, C900/RJ RESTRAINED JOINT DR18 PVC, 8-INCH DIA.	L.F.	1432	
402.	WATER MAIN, CASING, C900 RESTRAINED JOINT DR18 PVC, 12-INCH DIA.	L.F.	680	
403.	WATER MAIN, SAGER AVE. HDD, C900/RJ RESTRAINED JOINT DR18 PVC, 8-INCH DIA.	L.S.	1	
404.	CASING END SEALS	EACH	6	
405.	CONNECTION OF NEW 8" DIA. WATER MAIN TO EXISTING 6" DIA. WATER MAIN	EACH	1	
406.	CONNECTION OF NEW 8" DIA. WATER MAIN TO EXISTING 8" DIA. WATER MAIN	EACH	1	
407.	TEE, 8" DIA. X 6" DIA., D.I.P. COMPLETE WITH THRUST RESTRAINT	EACH	5	
408.	TEE, 8" DIA. X 8" DIA., D.I.P. COMPLETE WITH THRUST RESTRAINT	EACH	3	
409.	BEND, 90°, 8" DIA., DUCTILE IRON, COMPLETE WITH THRUST RESTRAINT	EACH	2	
410.	BEND, 45°, 8" DIA., DUCTILE IRON, COMPLETE WITH THRUST RESTRAINT	EACH	5	
411.	BEND, 22.5°, 8" DIA., DUCTILE IRON, COMPLETE WITH THRUST RESTRAINT	EACH	2	
412.	ENDCAP, 8" DIA., DUCTILE IRON, COMPLETE WITH THRUST RESTRAINT	EACH	1	
413.	ENDCAP, 6" DIA., DUCTILE IRON, COMPLETE WITH THRUST RESTRAINT	EACH	4	
414.	REDUCER, 8" X 6", DUCTILE IRON, COMPLETE WITH THRUST RESTRAINT	EACH	2	
415.	NEW FIRE HYDRANT ASSEMBLY, M.J., 6.5' BURY, COMPLETE	EACH	2	
416.	REMOVE AND SALVAGE EXISTING FIRE HYDRANT ASSEMBLY, COMPLETE	EACH	2	
417.	INSTALL TEMPORARY HYDRANT	EACH	2	
418.	GATE VALVE, AVT EZ INSERTION, 8" DIA., M.J., WITH VALVE BOX AND MECHANICAL THRUST RESTRAINT	EACH	1	
419.	GATE VALVE, 8" DIA., M.J., WITH VALVE BOX AND MECHANICAL THRUST RESTRAINT	EACH	13	
420.	GATE VALVE, 6" DIA., M.J., WITH VALVE BOX AND MECHANICAL THRUST RESTRAINT	EACH	5	
421.	WATER SERVICE CONNECTION TO NEW WATER MAIN, 1" DIA., COMPLETE	EACH	8	
422.	WATER SERVICE CONNECTION TO EXISTING 3/4" DIA. WATER SERVICE LINE, COMPLETE	EACH	7	
423.	WATER SERVICE, 3/4" DIA. BY OPEN-CUT EXCAVATION	L.F.	224	
424.	WATER SERVICE, 1" DIA. BY DIRECTIONAL DRILLING	L.F.	477	
425.	FILL EXISTING 8" DIA. WATER MAIN WITH CELLULAR CONCRETE	L.F.	927	
426.	FILL EXISTING 6" DIA. WATER MAIN WITH CELLULAR CONCRETE	L.F.	1095	

PAVING CONSTRUCTION

ITEM NO.	DESCRIPTION	UNITS	EST. QTY.	
501.	REMOVE AND REPLACE EXISTING COMPOSITE STREET PAVEMENT	S.Y.	70	
502.	REMOVE/REPLACE EXISTING PORTLAND CEMENT CONCRETE STREET PAVING	S.Y.	140	
503.	REMOVE/REPLACE EXISTING PORTLAND CEMENT CONCRETE SIDEWALK	S.Y.	22	
504.	REMOVE/REPLACE EXISTING PORTLAND CEMENT CONCRETE DRIVEWAY	S.Y.	40	
505.	CLASS A ROADSTONE FOR DRIVEWAYS	TON	10	

FENCING

ITEM NO.	DESCRIPTION	UNITS	EST. QTY.	
601.	REMOVE AND SALVAGE EXISTING VINYL FENCING	L.F.	110	
602.	REMOVE AND SALVAGE EXISTING WOOD FENCING	L.F.	10	

Wayne Claassen Engineering and Surveying, Inc.



BK. _____ PG. _____ DR. _____ DATE _____
FILE NO. _____ CKY. _____ DATE _____
DATE PLOTTED: _____ FILENAME: _____
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Construction Plans for the 2023 Heartland Hills West Area Water Main Loop Waterloo Water Works, Waterloo, Iowa
Estimated Quantities an Bid Reference Notes

Bid Reference Notes

405. CONNECTION OF NEW 8" DIA. WATER MAIN TO EXISTING 6" DIA. D.I.P. WATER MAIN
406. CONNECTION OF NEW 8" DIA. WATER MAIN TO EXISTING 8" DIA. D.I.P. WATER MAIN
BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, EXCAVATION, COMPACTION, CLEANING, SHOCK DISINFECTION, HOLDING SPOOLS, SLEEVES, MECHANICAL THRUST RESTRAINTS, POURED P.C. CONCRETE THRUST RESTRAINTS AND OTHER ITEMS AND WORK, AND APPURTENANT ITEMS NEEDED FOR CONNECTING THE NEW WATER MAIN THAT IS INSTALLED BY TRENCHED CONSTRUCTION TO THE EXISTING 6" DIA. DUCTILE IRON PIPE WATER MAINS THAT IS NOT PAID FOR SEPARATELY UNDER OTHER BID ITEMS.

407. TEE, 8" DIA. X 6" DIA., D.I.P. COMPLETE WITH THRUST RESTRAINT
408. TEE, 8" DIA. X 8" DIA., D.I.P. COMPLETE WITH THRUST RESTRAINT
409. BEND, 90°, 8" DIA., DUCTILE IRON, COMPLETE WITH THRUST RESTRAINT
410. BEND, 45°, 8" DIA., DUCTILE IRON, COMPLETE WITH THRUST RESTRAINT
411. BEND, 22.5°, 8" DIA., DUCTILE IRON, COMPLETE WITH THRUST RESTRAINT
412. ENDCAP, 8" DIA., DUCTILE IRON, COMPLETE WITH THRUST RESTRAINT
413. ENDCAP, 6" DIA., DUCTILE IRON, COMPLETE WITH THRUST RESTRAINT
414. REDUCER, 8" X 6", DUCTILE IRON, COMPLETE WITH THRUST RESTRAINT
BID PRICE SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, EXCAVATION, COMPACTION AND APPURTENANT ITEMS NEEDED FOR INSTALLATION. ITEMS INCLUDE POURED CONCRETE THRUST RESTRAINTS AS PER DETAILS.

MECHANICAL THRUST RESTRAINTS MAY BE SUBSTITUTED FOR POURED CONCRETE RESTRAINTS AS APPROVED IN ADVANCE BY THE ENGINEER.

415. NEW FIRE HYDRANT ASSEMBLY, M.J., 6.5' BURY, COMPLETE
BID PRICE SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, EXCAVATION, BEDDING, COMPACTED BACKFILL AND APPURTENANT ITEMS NEEDED FOR INSTALLATION. ITEM INCLUDES HYDRANT, 6" GATE VALVE AND BOX, ANCHOR TEES, HOLDING SPOOLS, MECHANICAL THRUST RESTRAINT AT ALL JOINTS, CONCRETE THRUST RESTRAINTS, CLEAN STONE, 8 MIL POLYETHYLENE WRAP, AND ALL OTHER ITEMS AND WORK NECESSARY TO PROVIDE A COMPLETE, FULLY FUNCTIONING FIRE HYDRANT. SEE DETAIL.

MATERIALS AND CONSTRUCTION TO MEET THE REQUIREMENTS OF THE WATERLOO WATER WORKS. HYDRANTS SHALL BE CLOW MEDALION, WATROUS PACER WB-67 OR APPROVED EQUAL, AND BE FACTORY PAINTED SAFETY BLUE AND WITHOUT CHAINS. GATE VALVES SHALL BE MUELLER A2360-20 6" DIA. RESILIENT WEDGE GATE VALVES OR APPROVED EQUAL. VALVE BOXES SHALL BE TYLER 3-PIECE TYPE D VALVE BOX OR APPROVED EQUAL.

ALL JOINT CONNECTIONS SHALL BE MECHANICALLY RESTRAINED AGAINST THRUST WITH MEGA LUGS OR APPROVED EQUAL.

ALL JOINT BOLTS AND NUTS SHALL BE COR-BLUE T-BOLTS AND NUTS.

416. REMOVE AND SALVAGE EXISTING FIRE HYDRANT ASSEMBLY, COMPLETE
BID PRICE SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, EXCAVATION, BEDDING, COMPACTED BACKFILL AND APPURTENANT ITEMS NEEDED FOR REMOVAL AND SALVAGING THE EXISTING FIRE HYDRANT, PIPE, VALVE AND FITTINGS.
CONTRACTOR'S ATTENTION IS DIRECTED TO THE CONDITION OF THE EXISTING HYDRANTS. THESE HYDRANTS AND HYDRANT LEAD GATE VALVES ARE FULLY FUNCTIONING AND UNDAMAGED. CONTRACTOR SHALL TAKE PARTICULAR CARE IN REMOVING THESE ITEMS SO AS TO NOT DAMAGE THEM. EXISTING HYDRANTS AND/OR HYDRANT LEAD VALVES DAMAGED BY THE CONTRACTOR SHALL BE REPLACED WITH NEW HYDRANTS AND/OR LEAD VALVES AT NO COST TO THE WATERLOO WATER WORKS. SAID REPLACEMENT HYDRANTS AND/OR VALVES SHALL BE OF THE TYPE SPECIFIED IN THESE CONSTRUCTION PLANS.
ITEM INCLUDES HAULING SAID MATERIALS TO A LOCATION TO BE DESIGNATED BY THE WATERLOO WATER WORKS.

417. INSTALL TEMPORARY HYDRANT
THE TEMPORAY HYDRANT (ONLY) WILL BE FURNISHED TO THE CONTRACTOR AT NO COST TO BY THE WATERLOO WATER WORKS (WWW). BID PRICE SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, EXCAVATION, BEDDING, COMPACTED BACKFILL AND APPURTENANT ITEMS NEEDED TO HAUL THE TEMPOARY HYDRANT FROM THE WWW STORAGE LOCATION AND TO INSTALL IT AT LOCATIONS INDICATED ON THE PLANS OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.

418. GATE VALVE, AVT EZ INSERTION, 8" DIA., M.J., WITH VALVE BOX AND MECHANICAL THRUST RESTRAINT
419. GATE VALVE, 8" DIA., M.J., WITH VALVE BOX AND MECHANICAL THRUST RESTRAINT
420. GATE VALVE, 6" DIA., M.J., WITH VALVE BOX AND MECHANICAL THRUST RESTRAINT
BID PRICE SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, EXCAVATION, 8-MIL POLYETHYLENE WRAP, COMPACTION AND APPURTENANT ITEMS NEEDED FOR INSTALLATION. MATERIALS AND CONSTRUCTION TO MEET THE WATERLOO WATER WORKS REQUIREMENTS.
ALL JOINT BOLTS AND NUTS SHALL BE COR-BLUE T-BOLTS AND NUTS.

421. WATER SERVICE CONNECTION TO NEW WATER MAIN, 1" DIA., COMPLETE
422. WATER SERVICE CONNECTION TO EXISTING 3/4" DIA. WATER SERVICE LINE, COMPLETE
423. WATER SERVICE, 3/4" DIA. BY OPEN-CUT EXCAVATION
424. WATER SERVICE, 1" DIA. BY DIRECTIONAL DRILLING
ALL WATER SERVICE CONSTRUCTION SHALL HAVE A MINIMUM COVER OF 6 FEET BELOW FINISHED GRADE AND ALL MATERIALS AND CONSTRUCTION SHALL COMPLY WITH WATERLOO WATER WORKS REQUIREMENTS. THE CONTRACTOR SHALL VERIFY THESE REQUIREMENTS PRIOR TO BIDDING ON THIS PROJECT.

BID ITEMS 421 AND 422 SHALL INCLUDE PROVIDING A SUITABLE EXCAVATION, CORPORATION STOP, APPROVED SADDLE AND ALL OTHER NECESSARY MATERIALS FOR EACH WATER SERVICE TAP TO THE NEW WATER MAIN. THE ACTUAL NEW WATER SERVICE TAPS WILL BE COMPLETED BY THE WATERLOO WATER WORKS AT NO COST TO THE CONTRACTOR.

BID ITEM 422 SHALL INCLUDE DISCONNECTING EXISTING WATER SERVICES AT THE EXISTING WATER MAIN, PLUGGING THE EXISTING WATER SERVICES AT THE EXISTING CORPORATION VALVE, CUTTING, CLEANING AND PREPARING THE EXISTING WATER SERVICE AND PROVIDING AND INSTALLING AN APPROVED NO LEAD, BRONZE CONNECTION AT THE END OF THE EXISTING WATER SERVICE FOR SUBSEQUENT EXTENSION OF THE EXISTING WATER SERVICE TO THE NEW PVC WATER MAIN.

ITEMS INCLUDE CLOSING-OFF ALL FLOW OF WATER FROM THE EXISTING WATER MAIN TO THE EXISTING SERVICE CONNECTIONS WITH A PRE-APPROVED PLUG AT THE EXISTING WATER MAIN AND AT THE HOUSE SIDE OF THE CURB VALVE WHILE UNDER PRESSURE.

NEW WATER MAIN SERVICE CONSTRUCTION MAY NOT PROCEED UNTIL AFTER THE NEW WATER MAIN HAS BEEN SUCCESSFULLY INSTALLED, PASSED ALL TESTING. CONNECTIONS OF THE NEW WATER SERVICES TO THE EXISTING HOUSE SERVICES WILL BE REQUIRED TO BE COMPLETED WITHIN 2 HOURS OF THE EXISTING WATER SERVICE BEING DISCONNECTED AT EACH RESIDENCE.

THE FLOW OF WATER IN THE EXISTING WATER MAIN SHALL REMAIN ACTIVE AT ALL TIMES.

ALL WATER SERVICES IDENTIFIED AS BEING INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING (HDD) METHODS SHALL BE SO INSTALLED.

ALL WATER SERVICES NOT IDENTIFIED AS BEING INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING (HDD) METHODS SHALL BE SO INSTALLED BY OPEN TRENCH EXCAVATION METHODS, UNLESS AUTHORIZED IN ADVANCE BY THE OWNER'S REPRESENTATIVE AS BEING APPROVED TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING (HDD) METHODS, HOWEVER, PAYMENT FOR THESE SERVICES SHALL BE AT THE UNIT PRICES BID FOR THESE ITEMS, AND NOT FOR THE HORIZONTAL DIRECTIONAL DRILLING (HDD) BID PRICE.

ALL TAP PERMIT APPLICATIONS FOR CONNECTIONS TO WATER MAINS SHALL BE FILED BY A LICENSED PLUMBER, APPROVED BY THE CITY OF WATERLOO. THE NORMAL PERMIT FEE AND TAPPING COSTS SHALL BE WAIVED FOR THIS PROJECT, HOWEVER, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE ALL MATERIALS, EXCAVATIONS AND EXCAVATION BACKFILL FOR SAID TAPS AND CONNECTIONS.ALL

EXCAVATIONS TO BE COMPACTED TO 98% OF STANDARD PROCTOR DENSITY UNDER AND/OR WITHIN 5' OF PAVED AREAS, INCLUDING STREETS, DRIVEWAYS AND SIDEWALKS, AND 95% IN ALL OTHER AREAS AT -2% TO +4% OF OPTIMUM MOISTURE IN 8" MAXIMUM LIFTS

425. FILL EXISTING 8" DIA. WATER MAIN WITH CELLULAR CONCRETE
426. FILL EXISTING 6" DIA. WATER MAIN WITH CELLULAR CONCRETE

ITEM INCLUDES FILLING THE SECTION OF EXISTING 8" AND 6" DIA. WATER THAT IS TO BE ABANDONED IN PLACE WITH LOW DENSITY CELLULAR CONCRETE AS PER ACI CHAPTER 523.1 MIXED WITH AN APPROVED EXTERNALLY GENERATED FOAM AND NO SAND, WITH AN OVERALL DENSITY OF 25-30 PCF AND A CURED 14 DAY COMPRESSIVE STRENGTH OF AT LEAST 20 PSI. ITEM INCLUDES COLLECTING AND DISPOSING OF CONTAMINATED WATER THAT IS PURGED FROM THE EXISTING WATER MAIN BY ITS DISPLACEMENT FROM THE EXISTING MAIN BY THE CELLULAR CONCRETE.

THE EXISTING 6" DIA. WATER MAIN FROM STA. 24+75± TO STA. 35+70± AND THE EXISTING 8" DIA. WATER MAIN FROM STA. 30+00± TO STA. 39+27± ARE INCLUDED IN THESE ITEMS.

ITEM INCLUDES CLOSING EXISTING VALVES AT THE NORTH ENDS OF HEARTLAND HILLS DRIVE AND FLEUR DRIVE TO PREVENT CELLULAR CONCRETE FROM ENTERING EXISTING WATER MAIN SEGMENTS THAT ARE TO REMAIN IN SERVICE AND CAPPING AND BLOCKING ENDS OF THE EXISTING WATER MAIN TO BE ABANDONED AND FILLED AS NECESSARY SO AS TO NOT ALLOW THE CELLULAR CONCRETE TO SPILL OUT DURING SAID FILLING.

THE FOAM SHALL BE IN COMPLIANCE WITH ASTM C869.

THE CONTRACTOR SHALL SUBMIT HIS/HER PROPOSED METHOD OF COMPLETING THIS ITEM, INCLUDING PROPOSED MIX, PROPOSED CELLULAR CONCRETE PRODUCTION AND PUMPING EQUIPMENT, PROPOSED METHOD OF COLLECTING AND DISPOSING OF THE AFORESAID CONTAMINATED WATER AND PROPOSED METHOD OF VERIFYING THAT THE EXISTING WATER MAIN HAS INDEED BEEN FILLED WITH CELLULAR CONCRETE TO THE ENGINEER FOR APPROVAL PRIOR TO INITIATING THIS WORK. BID PRICE SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, EXCAVATION AND COMPACTED BACKFILL TO COMPLETE THIS ITEM.

501. REMOVE/REPLACE EXISTING COMPOSITE STREET PAVING
BID PRICE SHALL INCLUDE ALL LABOR, EQUIPMENT, EXCAVATION, COMPACTION, FULL DEPTH SAW-CUTS, OFF-SITE DISPOSAL OF REMOVED PAVEMENTS, NEW SUBBASE AND PAVEMENT MATERIALS AND OTHER WORK AND MATERIALS NECESSARY TO REMOVE THE EXISTING COMPOSITE P.C. CONCRETE PAVEMENT WITH HMA OVERLAY AND REPLACEMENT OF THE REMOVED PAVEMENT WITH AN 6" THICKNESS OF P.C. CONCRETE PAVEMENT OVERLAID WITH A 3" THICKNESS OF HMA, ALL OVER A 6" COMPACTED THICKNESS OF MODIFIED SUBBASE.

ITEM INCLUDES BACKFILLING THE EXCAVATION WITH SUITABLE EXCAVATION MATERIALS COMPACTED IN 8" MAXIMUM LOOSE THICKNESS LIFTS, COMPACTED TO A MINIMUM OF 98% OF STANDARD PROCTOR DENSITY AT -2 TO +3% OF THE MATERIALS OPTIMUM MOISTURE. ALL REPLACEMENT PAVEMENT MATERIALS, CONSTRUCTION, CURING AND PROTECTION SHALL BE IN ACCORDANCE WITH CURRENT SUDAS REQUIREMENTS AND THE REQUIREMENTS OF THE CITY OF WATERLOO ENGINEERING DEPARTMENT.

P.C. CONCRETE SHALL BE CLASS M-4 WITH CLASS 2 DURABILITY AGGREGATE.

HMA SHALL BE A 3" COMPACTED THICKNESS THICKNESS OF 1/2", 1,000,000 ESAL SURFACE COURSE.

THE REPLACEMENT SECTION OF P.C. CONCRETE SHALL BE DOWELED INTO THE ADJOINING P.C. CONCRETE PAVEMENT WITH SUDAS "B" JOINTS. ALL OTHER JOINTS SHALL BE SUDAS "L" JOINTS.

502. REMOVE/REPLACE EXISTING PORTLAND CEMENT CONCRETE DRIVEWAY PAVING
BID PRICE SHALL INCLUDE ALL LABOR, EQUIPMENT, EXCAVATION, COMPACTION, FULL DEPTH SAW-CUTS, OFF-SITE DISPOSAL OF REMOVED PAVEMENTS, NEW SUBBASE AND PAVEMENT MATERIALS AND OTHER WORK AND MATERIALS NECESSARY TO REMOVE THE EXISTING PORTLAND CEMENT CONCRETE DRIVEWAYS WITH A 6" THICKNESS OF P.C. CONCRETE PAVEMENT OVER A 6" COMPACTED THICKNESS OF MODIFIED SUBBASE.

ITEM INCLUDES BACKFILLING THE EXCAVATION WITH SUITABLE EXCAVATION MATERIALS COMPACTED IN 8" MAXIMUM LOOSE THICKNESS LIFTS, COMPACTED TO A MINIMUM OF 98% OF STANDARD PROCTOR DENSITY AT -2 TO +3% OF THE MATERIALS OPTIMUM MOISTURE. ALL REPLACEMENT PAVEMENT MATERIALS, CONSTRUCTION, CURING AND PROTECTION SHALL BE IN ACCORDANCE WITH CURRENT SUDAS REQUIREMENTS AND THE REQUIREMENTS OF THE CITY OF WATERLOO ENGINEERING DEPARTMENT.

P.C. CONCRETE SHALL BE CLASS M-4 WITH CLASS 3 DURABILITY AGGREGATE.

503. REMOVE/REPLACE EXISTING PORTLAND CEMENT CONCRETE SIDEWALK
BID PRICE SHALL INCLUDE ALL LABOR, EQUIPMENT, EXCAVATION, COMPACTION, FULL DEPTH SAW-CUTS, OFF-SITE DISPOSAL OF REMOVED SIDEWALK AND OTHER WORK AND MATERIALS NECESSARY TO REMOVE THE EXISTING PORTLAND CEMENT CONCRETE SIDEWALK WITH A 4" THICKNESS OF P.C. CONCRETE SIDEWALK.

ITEM INCLUDES BACKFILLING THE EXCAVATION WITH SUITABLE EXCAVATION MATERIALS COMPACTED IN 8" MAXIMUM LOOSE THICKNESS LIFTS, COMPACTED TO A MINIMUM OF 98% OF STANDARD PROCTOR DENSITY AT -2 TO +3% OF THE MATERIALS OPTIMUM MOISTURE. ALL REPLACEMENT PAVEMENT MATERIALS, CONSTRUCTION, CURING AND PROTECTION SHALL BE IN ACCORDANCE WITH CURRENT SUDAS REQUIREMENTS AND THE REQUIREMENTS OF THE CITY OF WATERLOO ENGINEERING DEPARTMENT.

P.C. CONCRETE SHALL BE CLASS C WITH CLASS 3 DURABILITY AGGREGATE.

504. CLASS A ROADSTONE FOR DRIVEWAYS
BID PRICE SHALL INCLUDE ALL LABOR, EQUIPMENT, EXCAVATION AND COMPACTION NECESSARY TO RESTORE DISTURBED GRAVEL AREAS TO PRE-CONSTRUCTION CONDITIONS WITH A UNIFORM SURFACE, MATCHING ADJOINING AREAS.

ITEM INCLUDES BACKFILLING THE EXCAVATION WITH SUITABLE EXCAVATION MATERIALS COMPACTED IN 8" MAXIMUM LOOSE THICKNESS LIFTS, COMPACTED TO A MINIMUM OF 95% OF STANDARD PROCTOR DENSITY AT -2 TO +3% OF THE MATERIALS OPTIMUM MOISTURE. THE RESTORED GRAVEL SURFACING SHALL BE UNFORMALLY GRADED AND COMPACTED TO A MINIMUM OF 95% OF STANDARD PROCTOR DENSITY AND HAVE A MINIMUM COMPACTED THICKNESS OF 6".

ITEM TO BE COMPLETED IN ACCORDANCE WITH SUDAS STANDARDS AND SPECIFICATIONS.

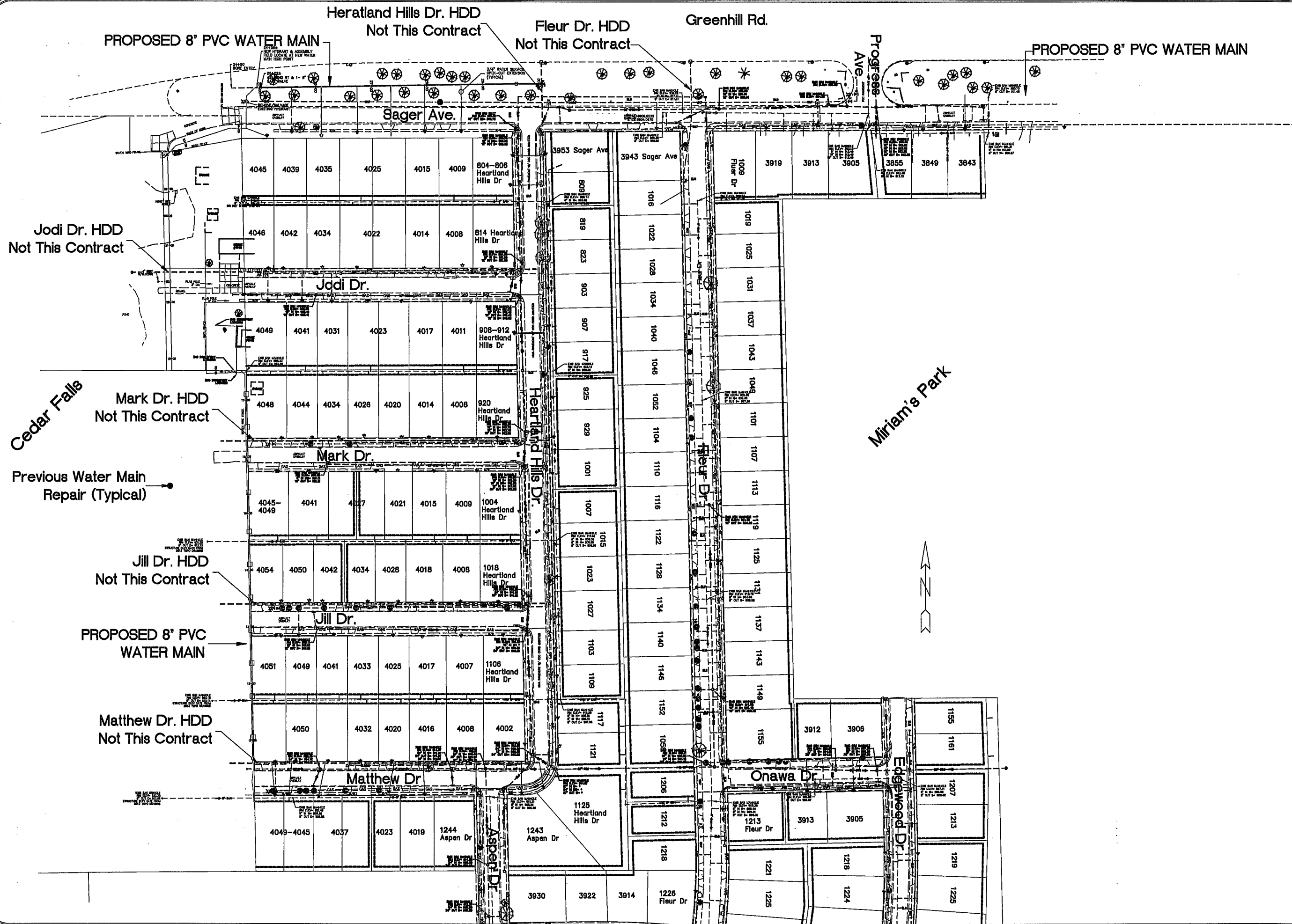
601. REMOVE AND SALVAGE EXISTING VINYL FENCING
602. REMOVE AND SALVAGE EXISTING WOOD FENCING
BID PRICE SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO REMOVE, SALVAGE, STOCKPILE AND TEMPRARILY STORE UNSITE THE EXISTING FENCING, POSTS AND GATES AS NECESSARY TO INSTALL THE NEW WATER MAIN AND APPURTENANCES.

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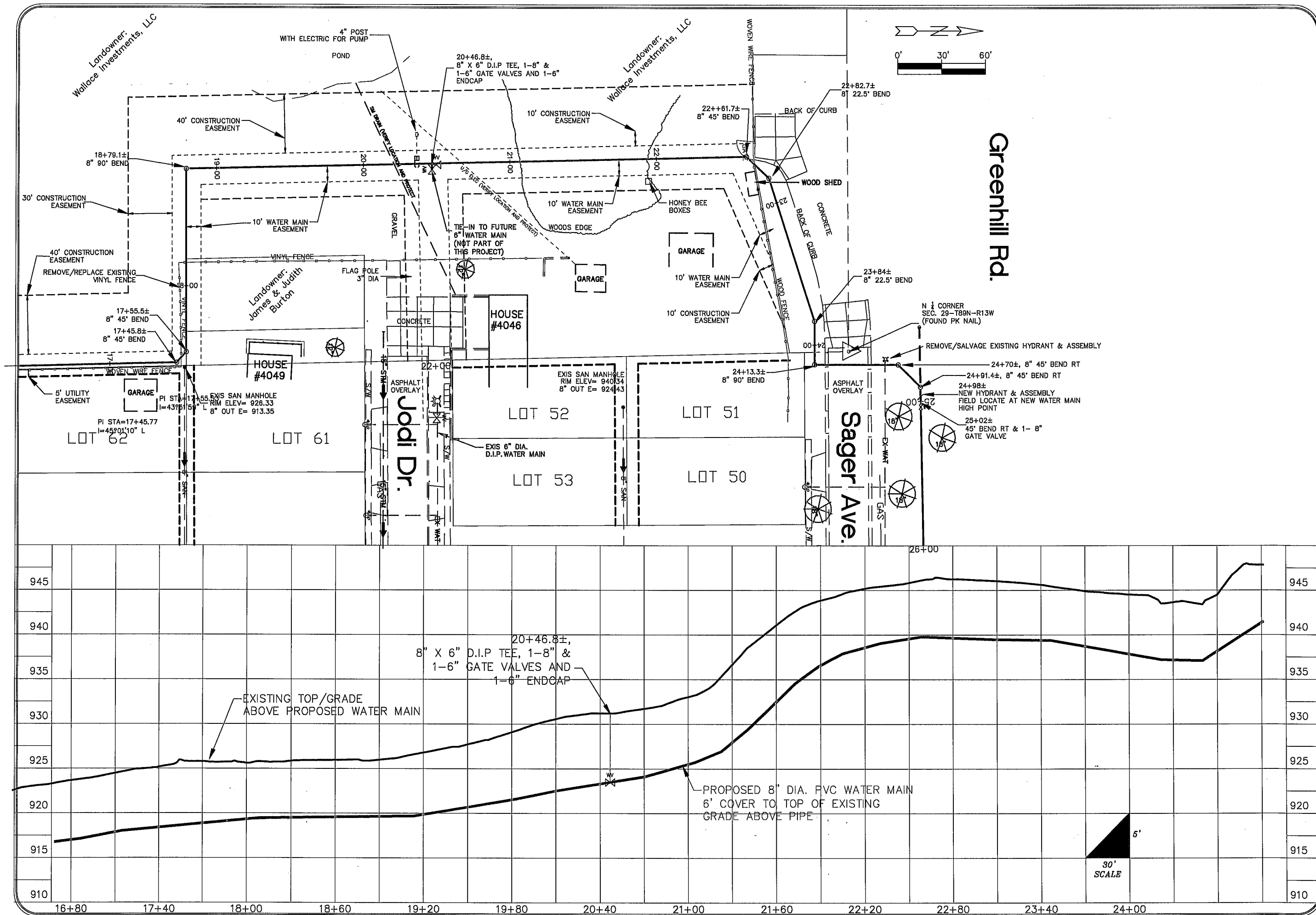


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Construction Plans for the 2023
Heartland Hills West Area Water Main Loop
Waterloo Water Works, Waterloo, Iowa
Bid Reference Notes



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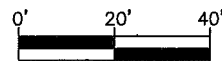
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Construction Plans for the 2023
Heartland Hills West Area Water Main Loop
Waterloo Water Works, Waterloo, Iowa
Plan and Profile From North of Mark Dr. to Sager Ave.

sheet

7



Greenhill Rd.

PROTECT AND DO NOT
HARM EXISTING TREES

FUTURE 8"
HEARTLAND HILLS
DR. HDD

24+98±
NEW HYDRANT & ASSEMBLY
FIELD LOCATE AT NEW WATER
MAIN HIGH POINT

24+50
BORE ENTRY

25+02±
45° BEND RT & 1- 8"
GATE VALVE

PROPOSED BORE PATH-
8" PVC WATER MAIN

3/4" WATER SERVICE
OPEN-CUT EXTENSION
(TYPICAL)

24+65.98
45° BEND RT

REMOVE/SALVAGE
EXISTING HYDRANT

CONCRETE

ASPHALT
OVERLAY

Sager Ave.

EXIS STM INLET
RIM ELEV= 933.61
12" OUT SE= 930.70

EXIS STM MANHOLE
RIM ELEV= 933.78
12" IN NW= 930.59
12" OUT S= 930.59

804-806
Heartland
Hills Dr

Heartland
Hills Dr

WOOD FENCE

4045

4039

4035

4029

4025

4015

4009

	①	②	③	④
VPI STA=	25+04.79	25+49.55	27+08	29+48
VPI EL=	939.50	941.65	940.37	934.49
Δ	11°43'	3°13'	0°56'	0°7'
VPC STA=	24+64.37	25+35.55	26+99.80	29+47
VPC EL=	944.30	940.97	940.43	934.52
VPT STA=	25+35.55	25+63.56	27+16.20	29+49
VPT EL=	940.97	941.53	940.17	934.47
R=	200'	200'	1000'	1000'

DIRECTIONAL BORE: STA. 24+50± TO STA 24+50± - 8" PVC
6' MINIMUM COVER TO TOP GRADE, 2' MINIMUM COVER TO ALL UTILITIES
HORIZONTAL DISTANCE = 1475.3± L.F. BORE DISTANCE = 1477.4±

BORE ENTRY, 8'56"
24+50±, EL 948.2±

6' MIN. COVER
TO TOP
GRADE

EXISTING TOP/GRADE
ABOVE PROPOSED WATER MAIN

PROPOSED HDD BORE PATH-
8" DIA. PVC WATER MAIN
6' COVER TO TOP OF EXISTING
GRADE ABOVE PIPE

20'
SCALE

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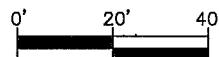
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REVISIONS: _____

Construction Plans for the 2023
Heartland Hills Area Water Main Replacement
Waterloo Water Works, Waterloo, Iowa
Sager Ave. West Plan and Profile

sheet

8



PROTECT AND DO NOT
HARM EXISTING TREES

Greenhill Rd.

30+05.3± TEE SOUTH, 8" X 8"
D.I.P. TEE, 2-8" GATE VALVES
AND 8" ENDCAP (SOUTH)

32+72.2± TEE SOUTH
8" X 6" D.I.P. TEE, 1-8" &
1-6" GATE VALVES AND
1-6" ENDCAP (SOUTH)

PROPOSED BORE PATH
8" PVC WATER MAIN

BACK OF CURB

FUTURE 8"
HEARTLAND HILLS
DR. HDD

FUTURE 6"
FLEUR DR.
HDD

EXIS STM MANHOLE
RIM ELEV= 925.86
12" IN W= 920.01
12" OUT E= 920.01

NEW 1" WATER
SERVICE BY HDD
(TYPICAL)

3/4" WATER SERVICE
OPEN-CUT EXTENSION
(TYPICAL)

EXIS SAN MANHOLE
RIM ELEV= 926.28
8" IN W= 917.41
8" OUT E= 917.41

BACK OF CURB

12" STM

Sager Ave

EXIS STM INLET
RIM ELEV= 933.61
12" OUT SE= 930.70

EXIS STM MANHOLE
RIM ELEV= 933.78
12" IN NW= 930.59
12" OUT S= 930.59

804-806
Heartland
Hills Dr

Heartland
Hills Dr

HEARTLAND HILLS DR. HDD
NOT THIS CONTRACT

3953 Sager Ave

EXIS SAN MANHOLE
RIM ELEV= 926.38
8" OUT E= 918.66

3943 Sager Ave

Fleur Dr.

FLEUR DR. HDD
NOT THIS CONTRACT

1009 Fleur Dr

3919

DIRECTIONAL BORE: STA. 24+50± TO STA 24+50± - 8" PVC
6' MINIMUM COVER TO TOP GRADE, 2' MINIMUM COVER TO ALL UTILITIES
HORIZONTAL DISTANCE = 1475.3± L.F. BORE DISTANCE = 1477.4±

EXISTING TOP/GRADE
ABOVE PROPOSED WATER MAIN

6' MIN.
COVER
TO TOP
GRADE

PROPOSED HDD BORE PATH
8" DIA. PVC WATER MAIN
6' COVER TO TOP OF EXISTING
GRADE ABOVE PIPE

	④	⑤	⑥
VPI STA=	29+48	31+76	33+92
VPI EL=	934.49	928.46	925.05
Δ	0°7'	0°37'	0°25'
VPC STA=	29+47	31+70.65	33+88.34
VPC EL=	934.52	928.60	925.11
VPT STA=	29+49	31+81.35	33+95.66
VPT EL=	934.47	928.37	924.97
R=	1000'	1000'	1000'

Construction Plans for the 2023
Heartland Hills Area Water Main Replacement
Waterloo Water Works, Waterloo, Iowa
Sager Ave. Middle Plan and Profile

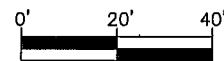
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FILE NO. 749 PG. 34 DR. DATE
CKD. DATE
FILENAME: WWPART2.DWG
REVISIONS
DATE PLOTTED:
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2.



PROTECT AND DO NOT
HARM EXISTING TREES

Greenhill Rd.

35+68± 8"DIA. X 6" DIA.
D.I.P. TEE, 6" GATE
VALVE NORTH AND 8"
GATE VALVE EAST, 6"
ENDCAP ON EXISTING
MAIN SOUTH

PROPOSED BORE PATH
8" PVC WATER MAIN

39+25.7± 8" X 8" D.I.P. TEE,
8" GATE VALVE WEST & EAST,
8" X 6" REDUCER AND
TEMPORARY HYDRANT EAST

EXIS SAN MANHOLE
RIM ELEV= 920.73
8" OUT S= 911.48

39+78±, NEW 1-8" INSERTION VALVE
ON EXISTING 8" MAIN TO THE EAST;
NEW 8' ENDCAP WEST AFTER NEW
MAIN IS IN SERVICE AND OLD MAIN IS
FILLED WITH CELLULAR CONCRETE.

BORE EXIT
39+25.3±

EXIS SAN MANHOLE
RIM ELEV= 921.31
8" IN N= 911.00
8" OUT W= 909.87

NEW 1" WATER
SERVICE BY HDD
(TYPICAL)

EXIS SAN MANHOLE
RIM ELEV= 922.13
8" IN W= 913.40
10" IN N= 913.40
10" OUT S= 913.40

EXIS STM MANHOLE
RIM ELEV= 922.09
12" IN W= 913.82
15" IN N= 913.82
12" IN E= 913.82
33" OUT S= 913.82

3855
EXIS SAN MANHOLE
RIM ELEV= 922.48
10" IN N= 913.10

	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬
VPI STA=	33+92	35+16.22	35+59.81	35+98.33	36+88	37+68	38+36	39+01.11
VPI EL=	925.05	922.18	913.81	917.09	914.89	914.33	915.90	918.29
Δ	0°25'	9°33'	15°45'	6°17'	1°1'	1°42'	0°47'	14°21'
VPC STA=	33+88.34	34+99.51	35+32.64	35+87.39	36+79.19	37+54.14	38+29.12	39+25.26
VPC EL=	925.11	922.57	919.03	916.16	915.11	914.44	915.72	925.39
VPT STA=	33+95.66	35+32.64	35+87.39	36+09.31	36+96.81	37+82.85	38+42.87	38+75.95
VPT EL=	924.97	919.03	916.16	916.82	914.83	914.67	916.13	917.34
R=	1000'	200'	200'	200'	1000'	1000'	1000'	200'

DIRECTIONAL BORE: STA. 24+50± TO STA 24+50± - 8" PVC
6' MINIMUM COVER TO TOP GRADE. 2' MINIMUM COVER TO ALL UTILITIES
HORIZONTAL DISTANCE = 1475.3± L.F. BORE DISTANCE = 1477.4±

BORE EXIT, 8'56'
39+25.3, EL 925.4±

EXISTING TOP/GRADE
ABOVE PROPOSED WATER MAIN

6' MIN. COVER
TO TOP GRADE

PROPOSED HDD BORE PATH
8" DIA. PVC WATER MAIN
6' COVER TO TOP OF EXISTING
GRADE ABOVE PIPE

Construction Plans for the 2023
Heartland Hills Area Water Main Replacement
Waterloo Water Works, Waterloo, Iowa
Sager Ave. East Plan and Profile

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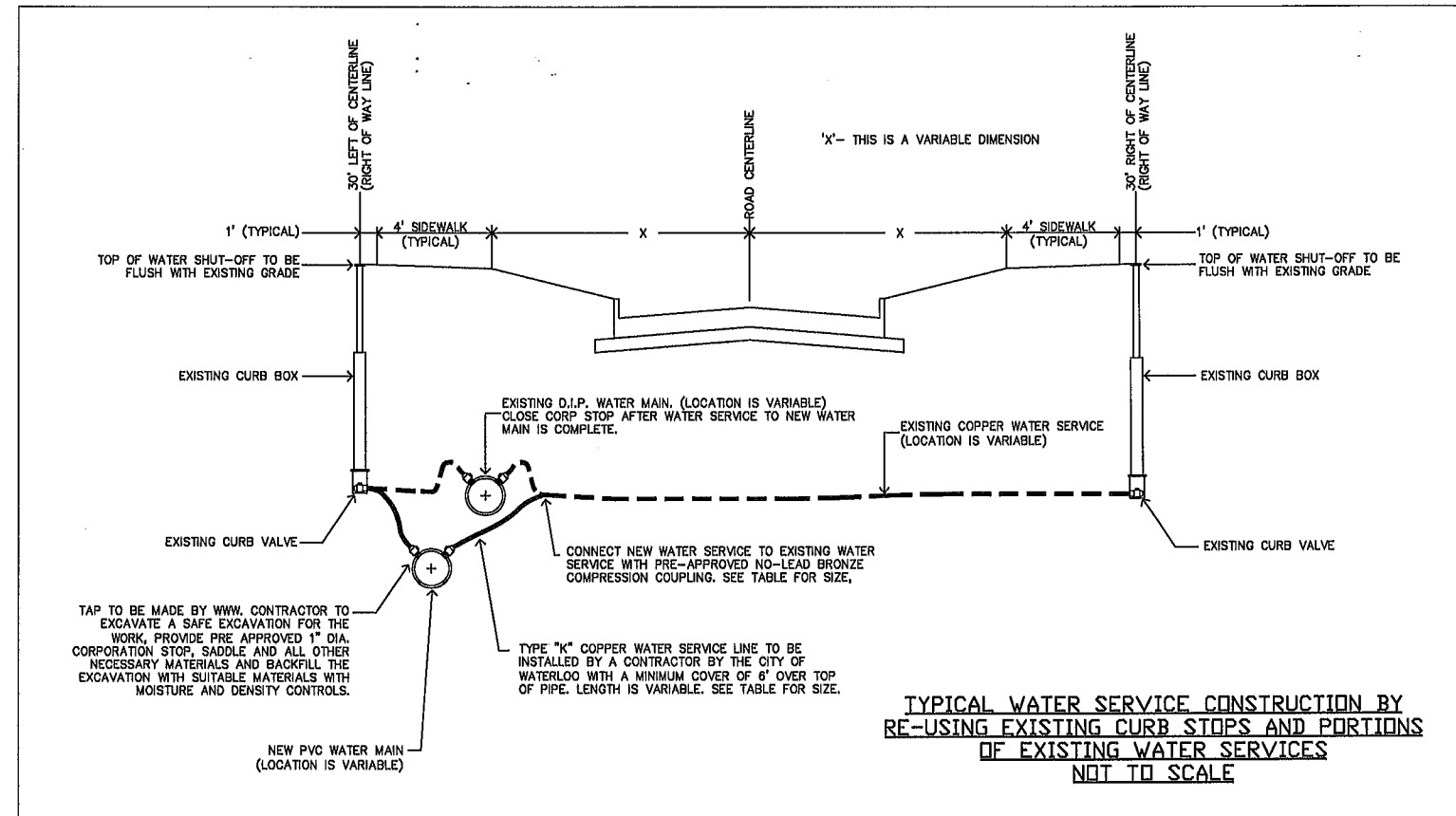
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1. MATERIALS AND CONSTRUCTION TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE "IOWA STANDARDS FOR WATER SUPPLY DISTRIBUTION SYSTEMS" AND THE "TEN STATES STANDARDS". CONTRACTOR SHALL VERIFY THESE REQUIREMENTS PRIOR TO BIDDING ON THIS PROJECT. SERVICES SHALL BE WITH TYPE "K" COPPER. THERE SHALL BE NO SPLICES UNLOCATED UNDER OR WITHIN 10 HORIZONTAL FEET OF ANY PAVING.
2. ALL WATER SYSTEM CONSTRUCTION TO HAVE A MINIMUM 6" OF COVER OVER TOP OF PIPE.
3. ALL CONSTRUCTION SHALL COMPLY WITH SUDAS 5010.306 STANDARDS REGARDING SEWER/WATER MAIN SEPERATION.
4. EXISTING WATER SERVICE INFORMATION IS FOR INFORMATION ONLY.
5. THIS SERVICE IS AN EXTENSION OF THE EXISTING SERVICE.
6. THIS SERVICE IS A COMPLETELY NEW SERVICE FROM THE NEW WATER MAIN TO THE EXISTING WATER SHUTOFF AND IS TO BE DIRECTIONALLY DRILLED.



SEE SHEETS 12-13
PLAN/PROFILES OF
WATER SERVICES TO
BE DIRECTIONALLY
DRILLED

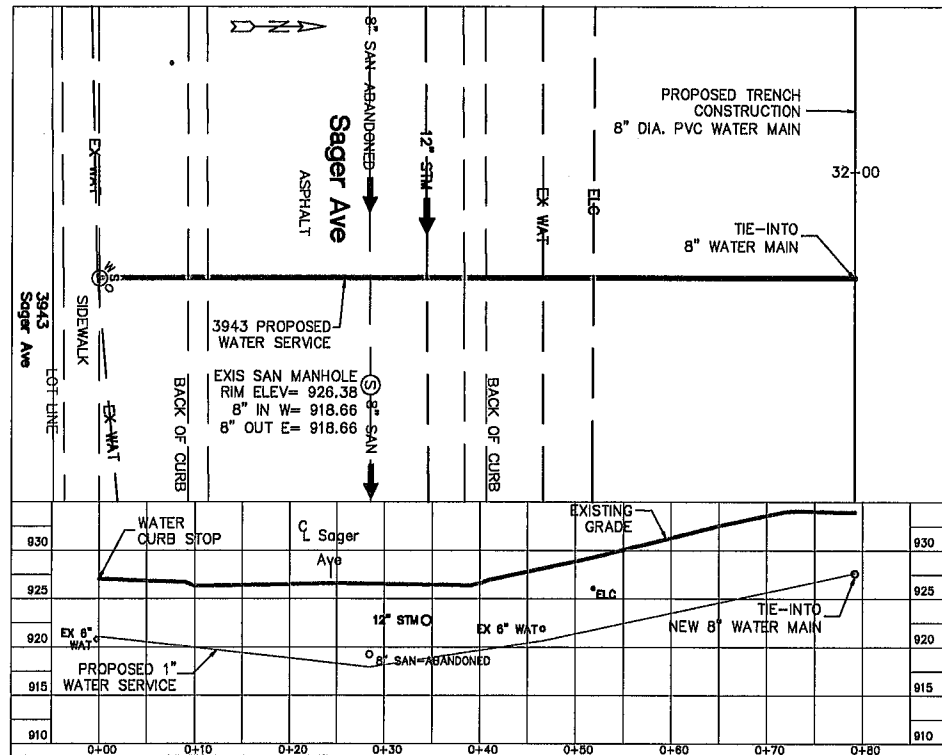
Construction Plans for the 2023 Heartland Hills West Area Water Main Loop Waterloo Water Works, Waterloo, Iowa Water Services

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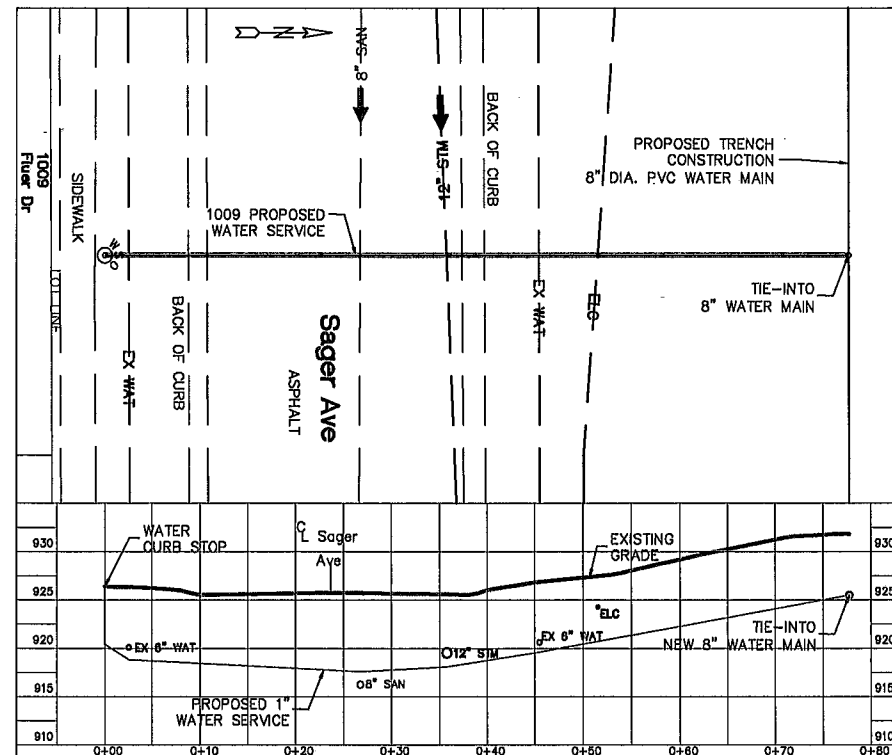
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REVIEWS

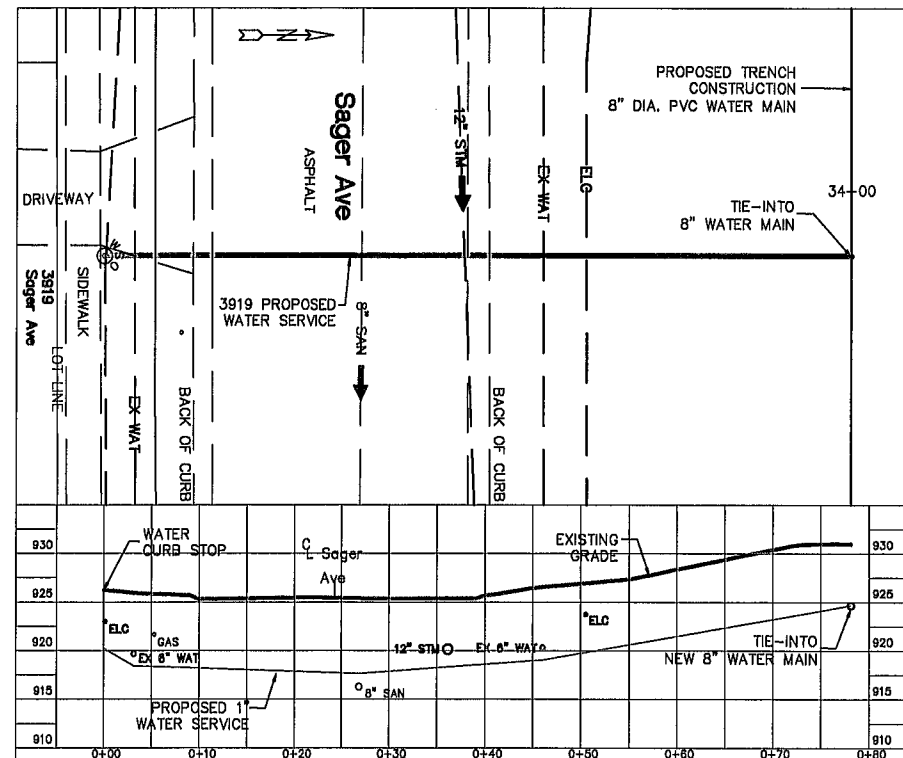
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3943 PROPOSED
WATER SERVICE



1009 FLUER DR PROPOSED
WATER SERVICE



3919 PROPOSED
WATER SERVICE

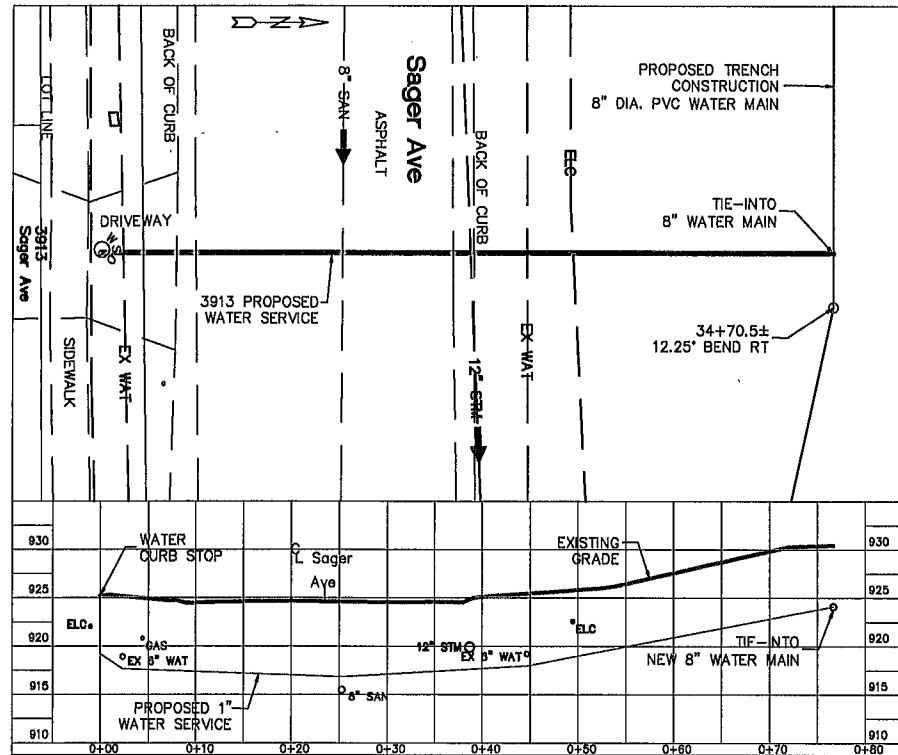
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Heartland Hills Area Water Main Replacement
Waterloo Water Works, Waterloo, Iowa
Sager Ave. Water Services Plan and Profile

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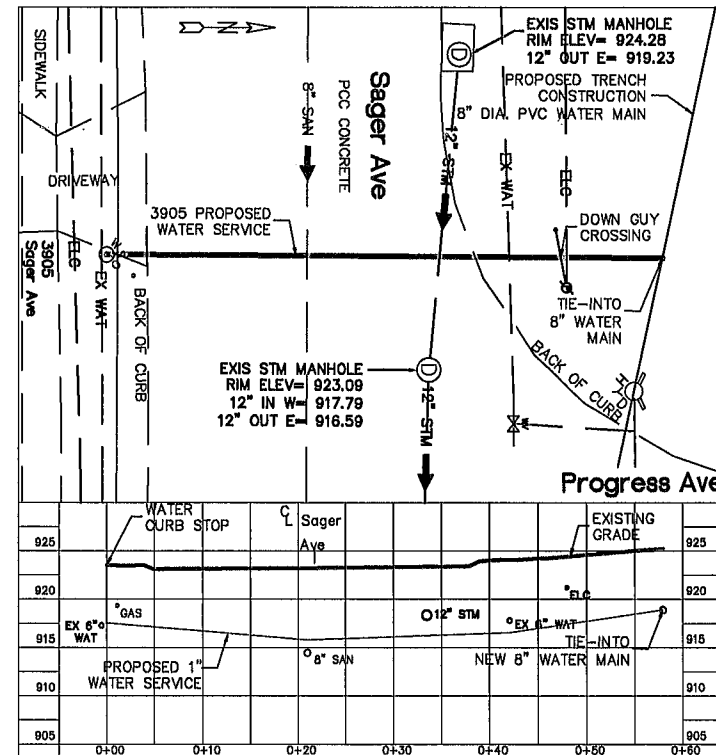
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DATE: 7/19/23
FILE NO.: 749
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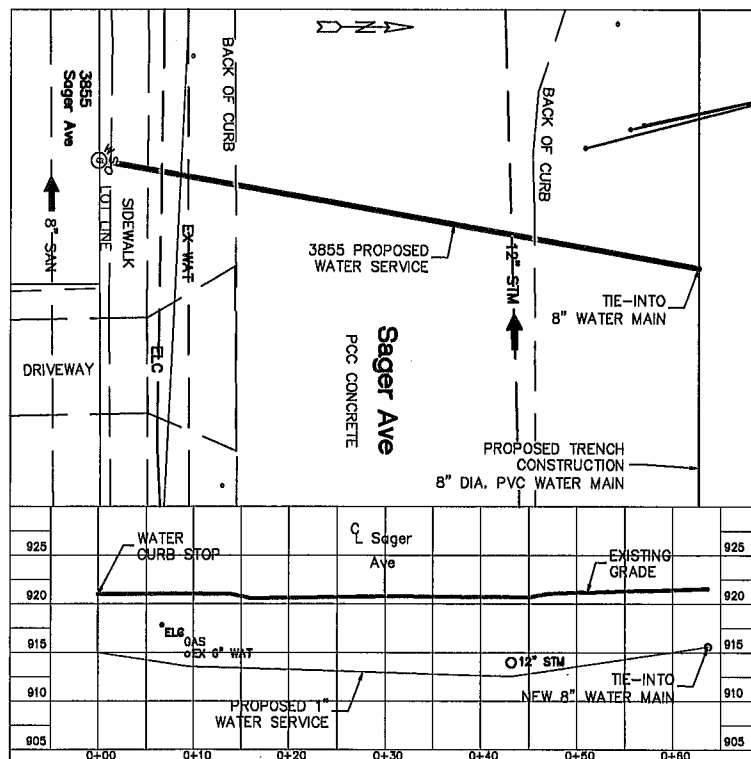
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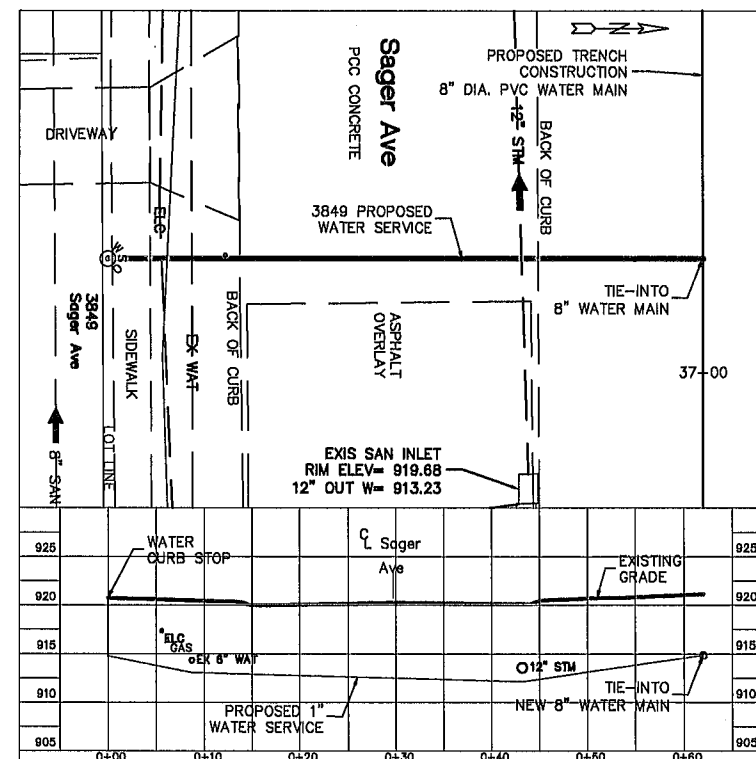
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WATER SERVICE



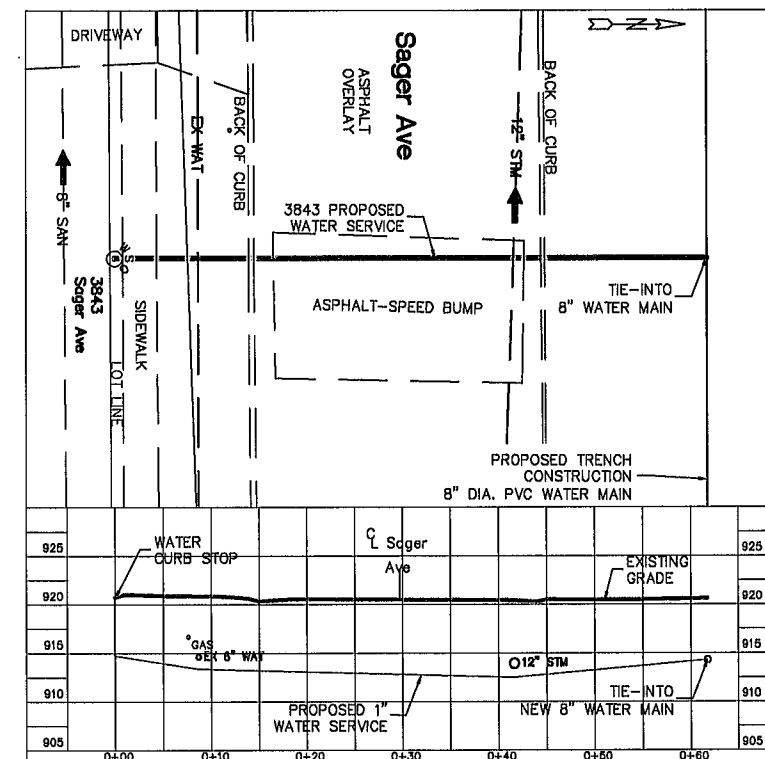
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WATER SERVICE



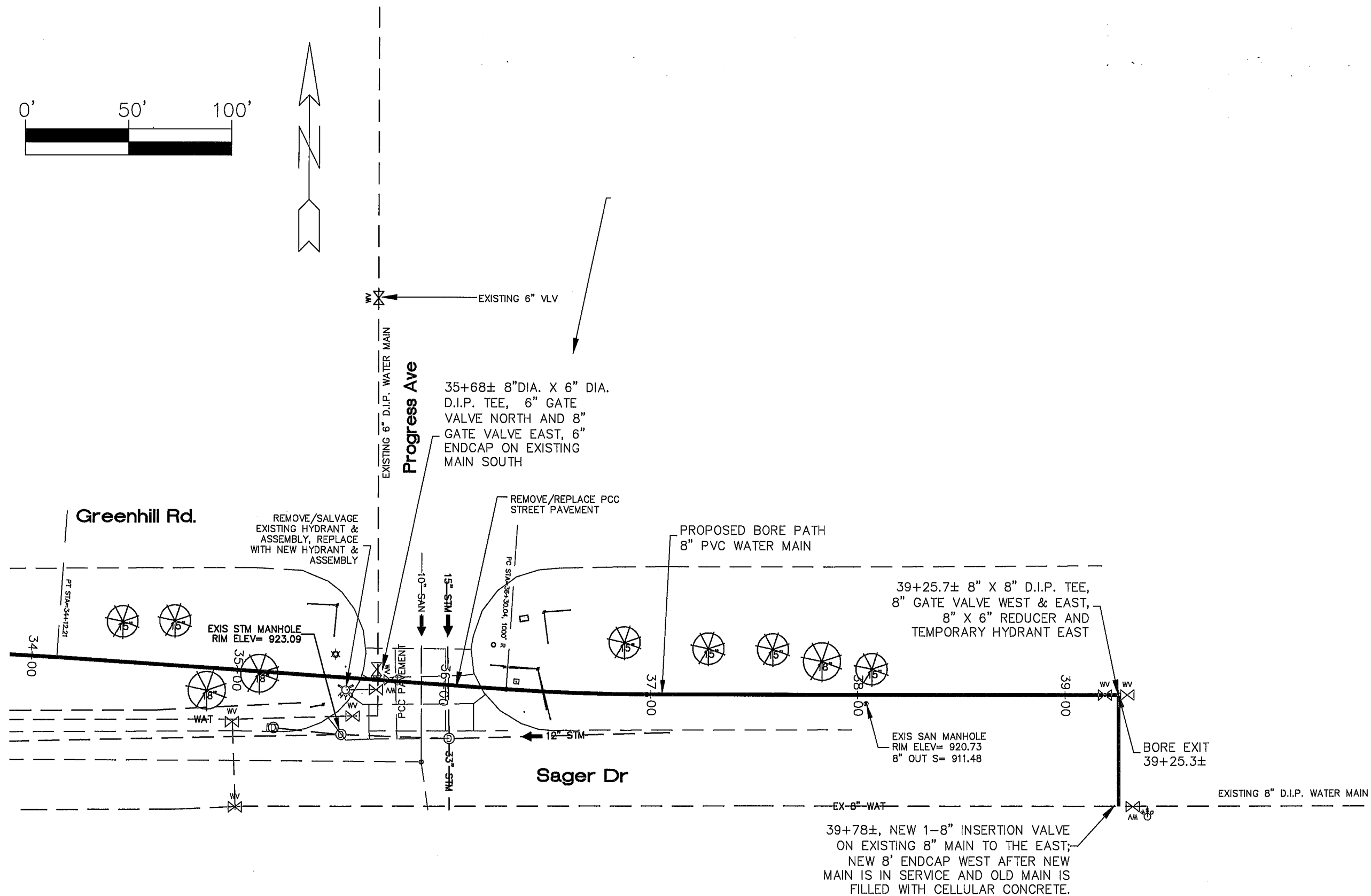
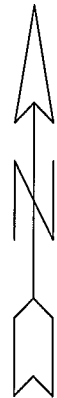
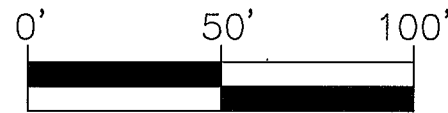
3855 PROPOSED
WATER SERVICE



3849 PROPOSED
WATER SERVICE



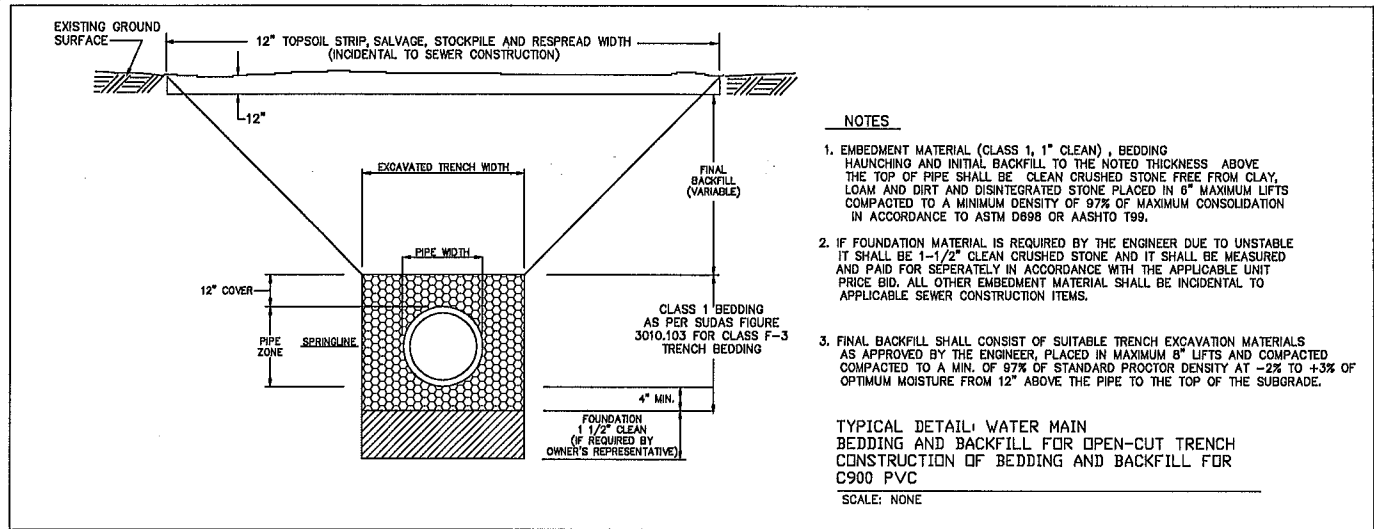
3843 PROPOSED
WATER SERVICE



Construction Plans for the 2023
Heartland Hills Area West Water Main Loop
Waterloo Water Works, Waterloo, Iowa
Tie-In Details

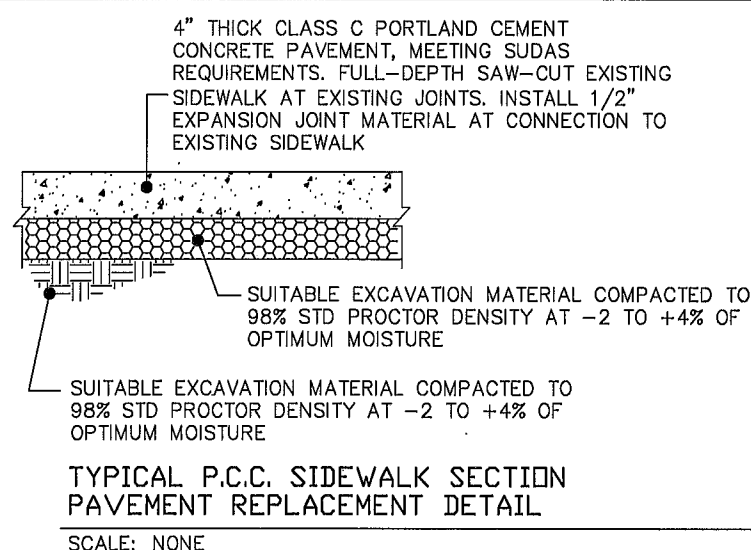
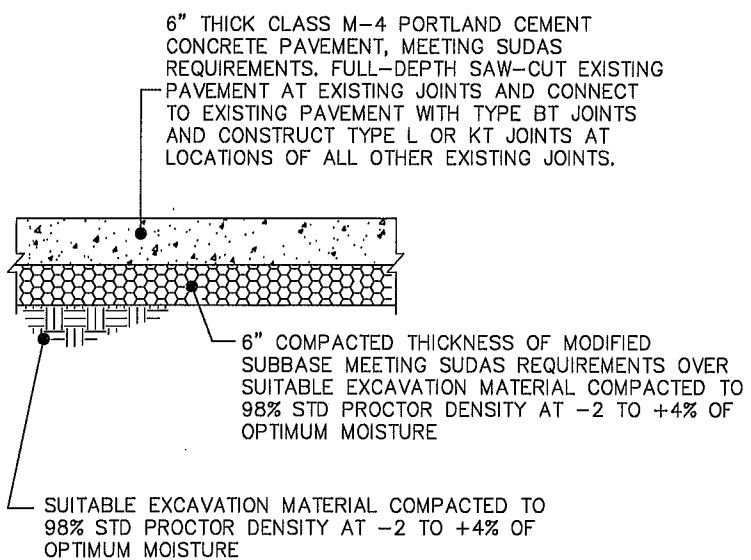
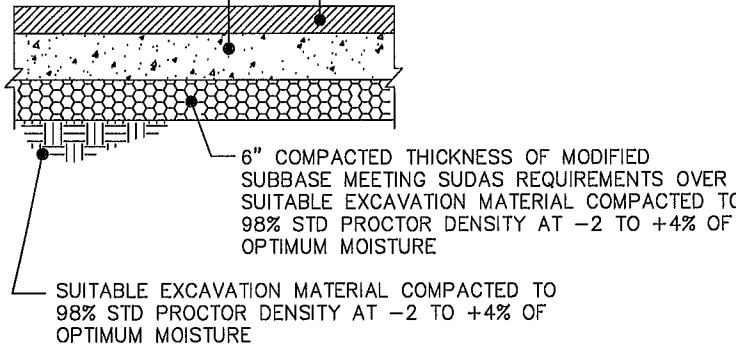
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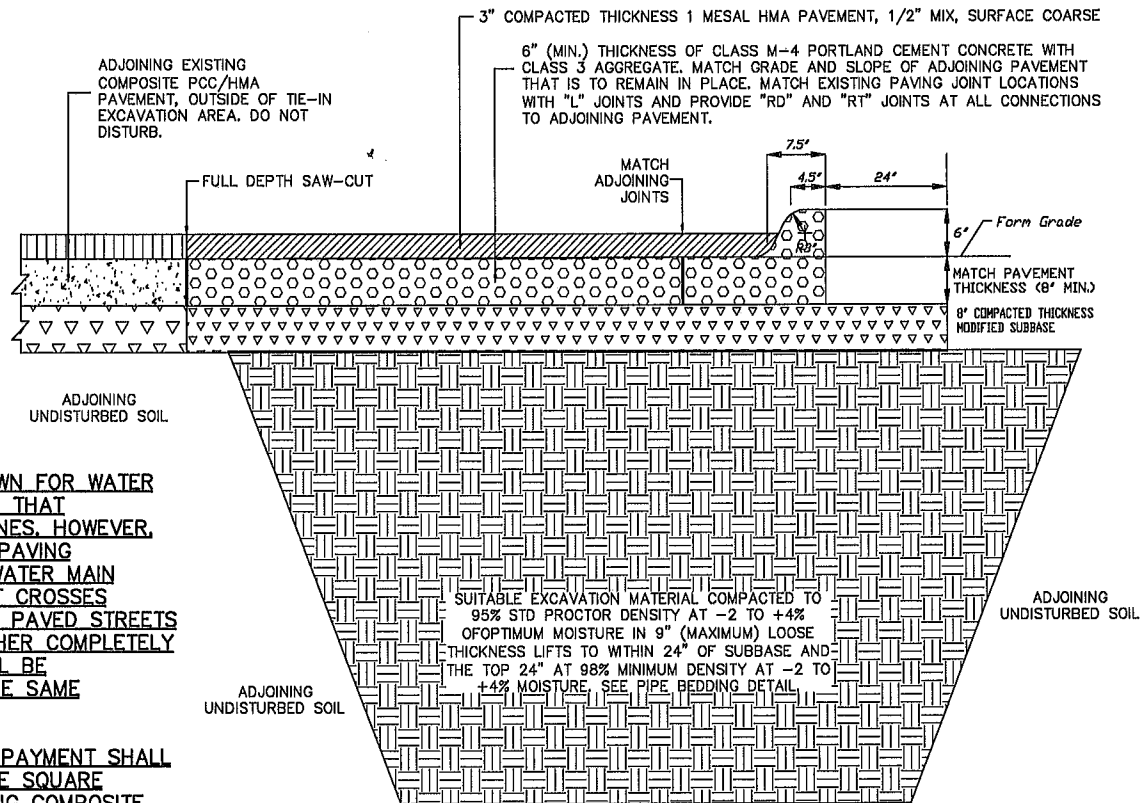
6" THICK CLASS M-4 PORTLAND CEMENT CONCRETE PAVEMENT, MEETING SUDAS REQUIREMENTS. FULL-DEPTH SAW-CUT EXISTING PAVEMENT AT EXISTING JOINTS AND CONNECT TO EXISTING PAVEMENT WITH TYPE BT JOINTS AND CONSTRUCT TYPE L OR KT JOINTS AT LOCATIONS OF ALL OTHER EXISTING JOINTS.

3" COMPACTED THICKNESS 1 MESAL HMA PAVEMENT, 1/2" MIX, SURFACE COARSE



THIS DETAIL IS SHOWN FOR WATER MAIN CONSTRUCTION THAT PARALLELS CURB LINES. HOWEVER, COMPOSITE STREET PAVING RESTORATION FOR WATER MAIN CONSTRUCTION THAT CROSSES EXISTING COMPOSITE PAVED STREETS LONGITUDINALLY EITHER COMPLETELY OR PARTIALLY SHALL BE CONSTRUCTED IN THE SAME MANNER.

MEASUREMENT AND PAYMENT SHALL BE BASED UPON THE SQUARE YARDAGE OF EXISTING COMPOSITE STREET PAVING REMOVED AND REPLACED.

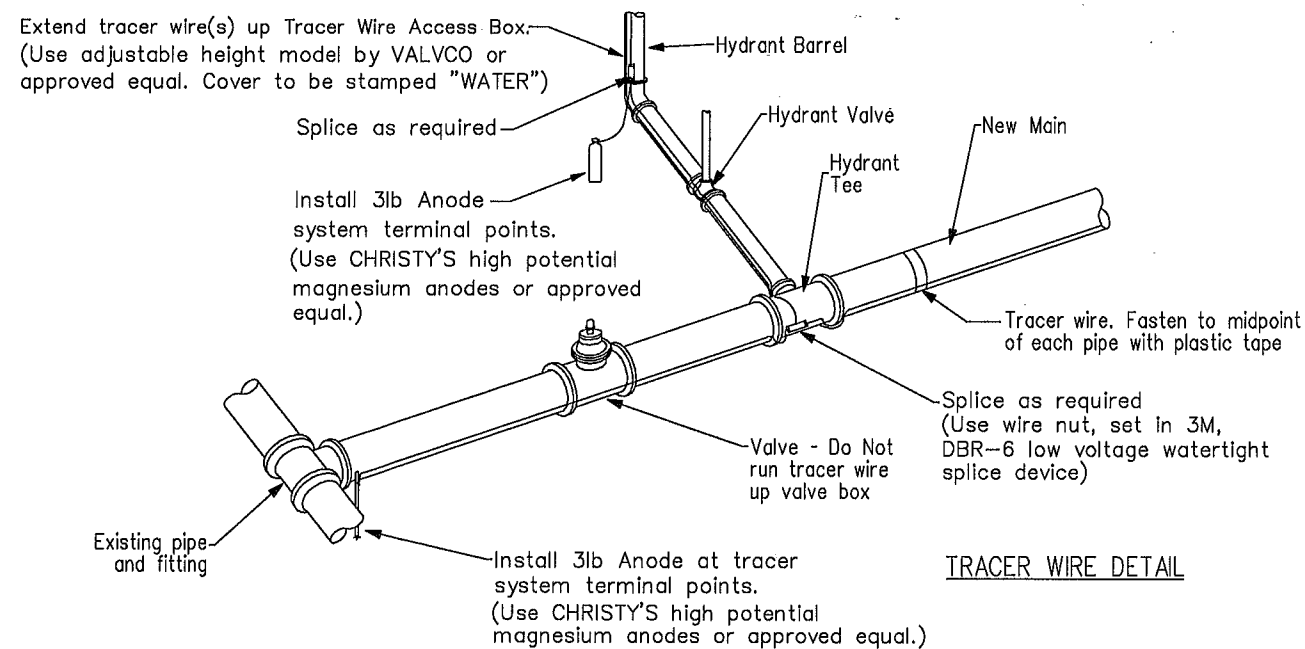


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Construction Plans for the 2023 Heartland Hills Area West Water Main Loop Waterloo Water Works, Waterloo, Iowa Details



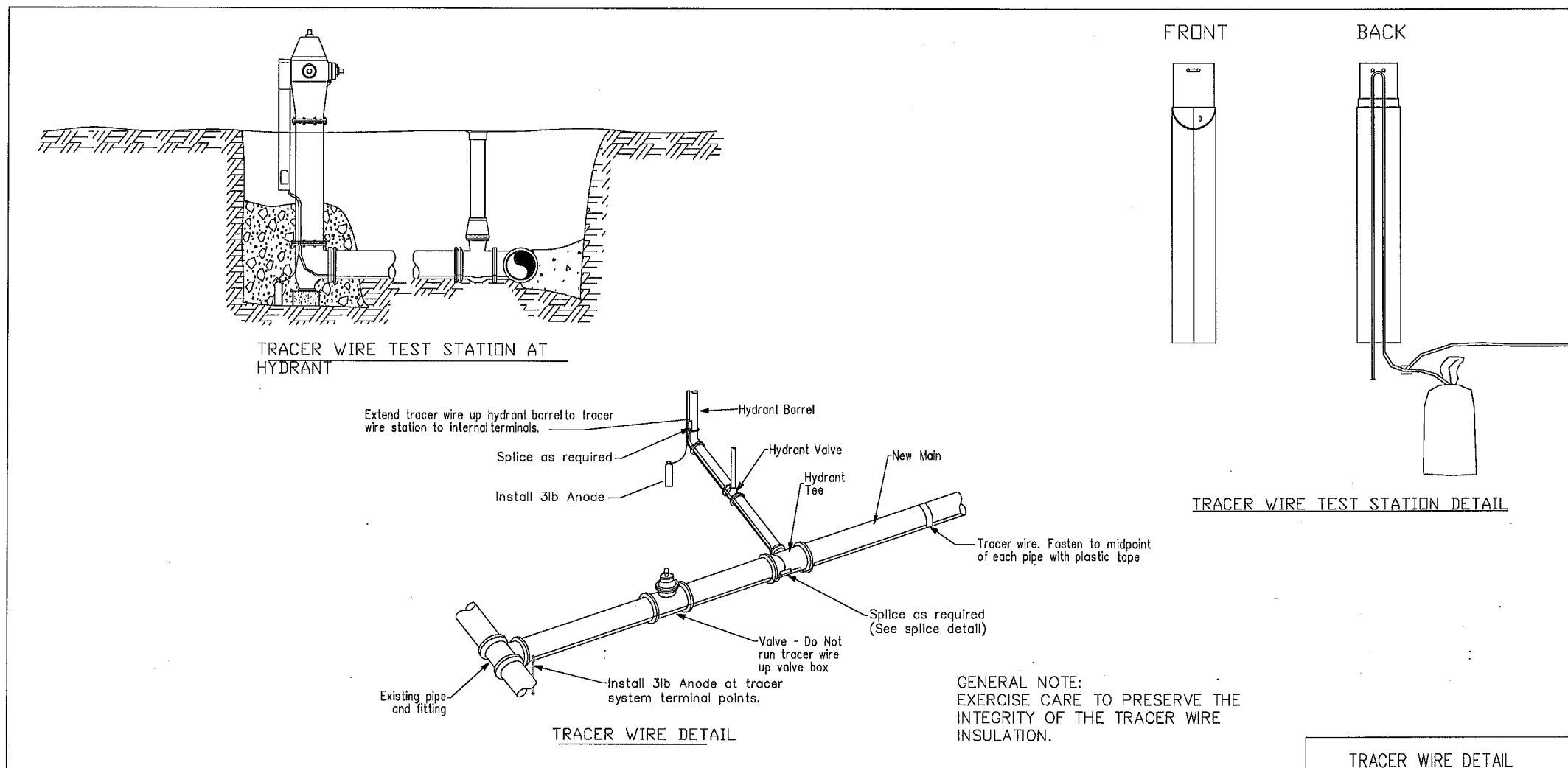
TRACER WIRE DETAIL

TRACER WIRE DETAILS

TRACER WIRE SYSTEM GENERAL NOTES

TWO (2) SINGLE STRAND TRACER WIRES SHALL BE INSTALLED WITH ALL WATER MAIN ON THIS PROJECT. THE WIRE SHALL BE INSULATED, COPPER, SINGLE STRAND, AWG 12 (MINIMUM) GAGE, BLUE COLORED TW, THW, THWM OR THWN, OR APPROVED EQUAL. THIS TRACER WIRE SHALL BE ATTACHED TO THE SIDE OF THE WATER MAIN AT ITS MIDPOINT, OUTSIDE OF THE PIPE'S POLY WRAP, WITH PLASTIC TAPE. THE TRACER WIRE SHALL FOLLOW ALL NEW WATER MAIN AND APPURTENANCES AND SHALL BE LOOPE TO THE SURFACE AT ALL NEW AND RELOCATED FIRE HYDRANTS. SAID LOOPS SHALL BE EXTENDED TO THE SURFACE INSIDE AN ADJUSTABLE HEIGHT VALVCO TRACER WIRE ACCESS BOX OR APPROVED, SET VERTICALLY AND FLUSH WITH THE GROUND AT THE HYDRANT BASE AT ALL NEW AND RELOCATED FIRE HYDRANTS. CONNECT TRACER WIRE TO TERMINALS, ALLOWING 12" OF ADDITIONAL WIRE IN THE BARREL OF THE ACCESS BOX.

THIS WILL REQUIRE MULTIPLE LOOPS TO THE SURFACE WHERE NEW WATER MAINS CROSS OR CONNECT SUCH AS AT INTERSECTIONS. THE TRACER WIRE SHALL BE INSTALLED WITH A MINIMUM NUMBER OF SPLICES. SPLICES SHALL BE MADE WITH WATER-TIGHT DEVICES SPECIFICALLY MADE FOR THIS PURPOSE THAT ARE PRE-APPROVED BY THE ENGINEER. THE CONTRACTOR IS TO EXERCISE CARE TO PRESERVE THE INTEGRITY OF THE TRACER SYSTEM AND SHALL CONDUCT TESTS AFTER FINAL BACKFILL TO TEST AND INSURE THE CONDUCTIVITY OF THE SYSTEM.



TRACER WIRE DETAIL

TRACER WIRE DETAIL

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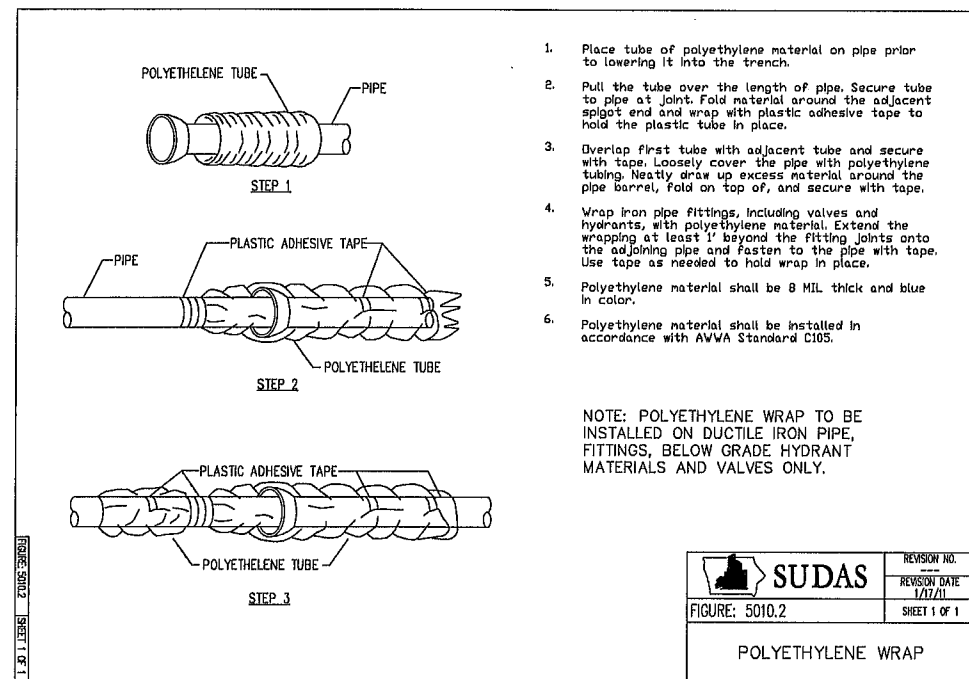
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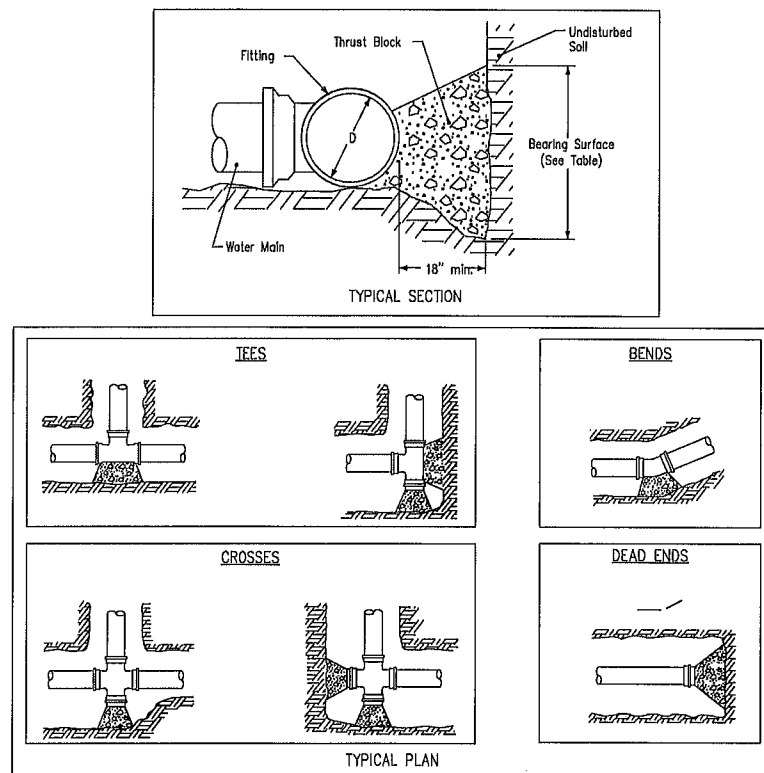
Construction Plans for the 2023
Heartland Hills Area West Water Main Loop
Waterloo Water Works, Waterloo, Iowa
Details

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POLYETHYLENE WRAP IS REQUIRED ON DUCTILE IRON PIPE, VALVES AND FITTINGS, ONLY.



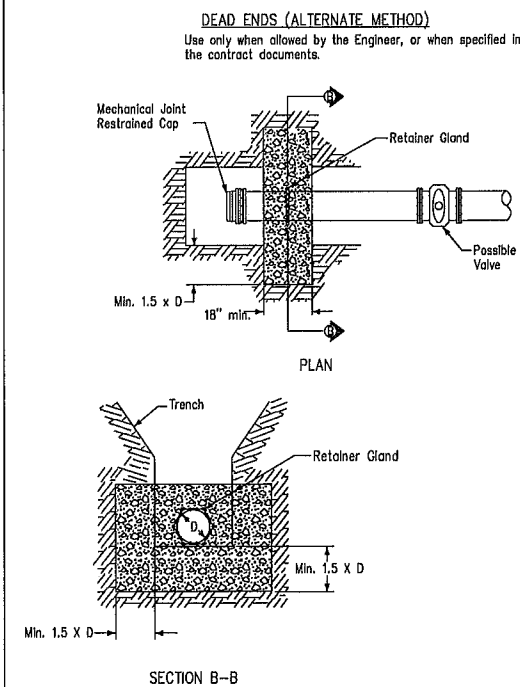
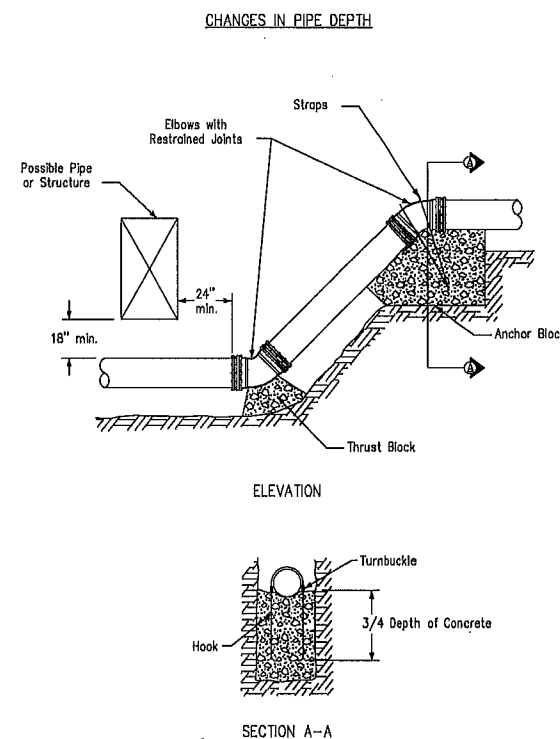
Extend thrust blocks to undisturbed soil. Excavation into trench wall may be necessary.

Form vertical surfaces of poured concrete thrust blocks except on bearing surface.

Encase all fittings in polyethylene wrap. Do not allow concrete to directly contact joints or fitting bolts.

Diameter of Pipe, D (inches)	MINIMUM BEARING SURFACE (sf)				Tees and Dead Ends
	11.25°	22.5°	45°	90°	
4	1	1	2	4	3
6	1	2	4	8	6
8	2	4	7	14	10
10	3	6	11	21	15
12	4	8	16	29	21
14	5	11	21	39	28
16	7	14	27	50	36
18	9	17	34	63	45
20	11	21	42	78	55
24	15	31	60	111	78
30	24	47	92	171	120
36	34	67	132	244	173

Minimum surface area based on water pressure of 150 psi and allowable soil pressure of 1,000 psf.



POURED CONCRETE THRUST BLOCK DETAILS

Hydrant flag shall be a RoDon 5-foot Hydrfinder with flat bracket, or approved equal.

Extend tracer wires up Tracer Wire Access Box. (Use adjustable height, SNAKEPIT model by COPPERHEAD or approved equal). Box cover to be stamped "WATER".

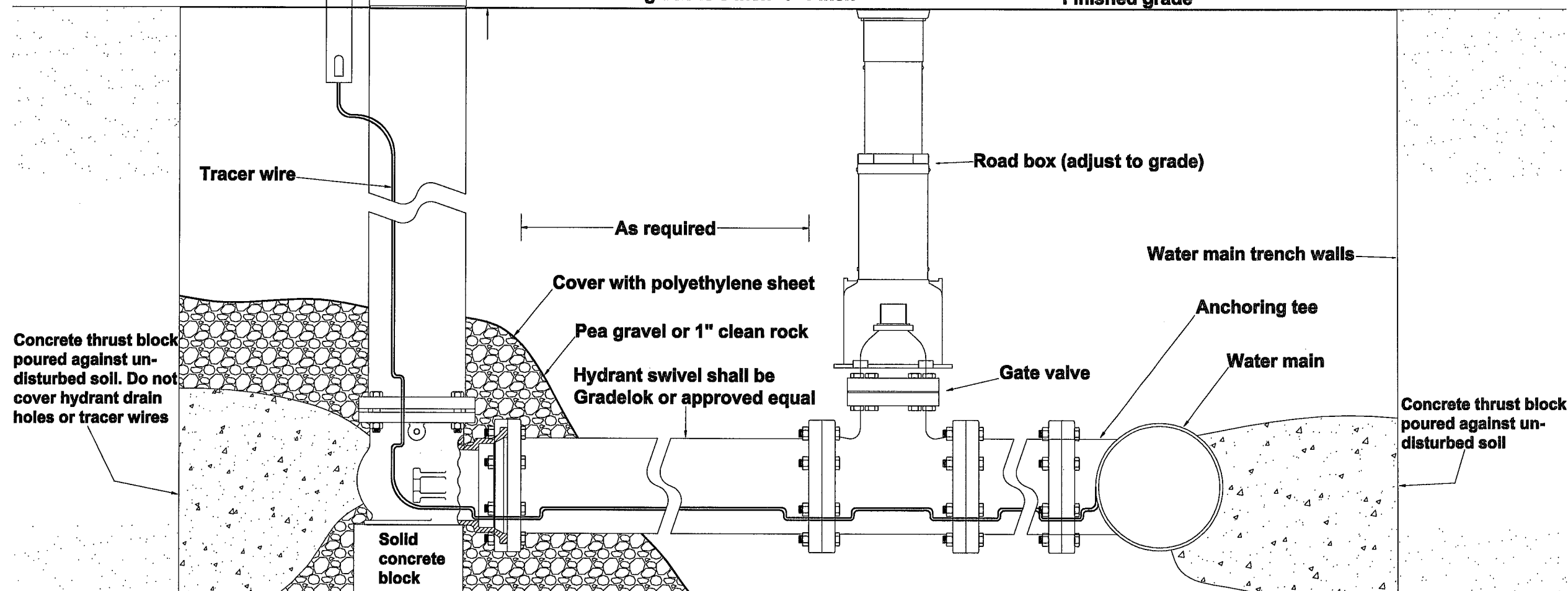
HYDRANT ASSEMBLY

NOTES:

1. WATERLOO, IA SPECIFICATIONS WATEROUS WB-67 OR CLOW MEDALLION HYDRANTS WITH FACTORY APPLIED EPOXY PAINT IN SAFETY BLUE, WITH FIBERGLASS FLAGS, AND WITHOUT CHAINS, ARE REQUIRED.
2. INSTALL TRACER WIRE AS SHOWN ON DRAWING.
3. APPLY POLYETHYLENE ENCASEMENT ON PIPE, VALVE, VALVE BOX, FIRE HYDRANT, AND FITTINGS.
4. ALL ITEMS OF WORK SHOWN ON THIS DETAIL, INCLUDING THE ANCHOR TEE AND THRUST BLOCKS, ARE TO BE INCLUDED IN THE HYDRANT ASSEMBLY BID ITEM.
5. USE GRADELOK, OR APPROVED EQUAL, HYDRANT SWIVEL TO MEET SPECIFIED TOLERANCE BETWEEN BOTTOM OF FLANGE AND FINISH GRADE. HYDRANT EXTENSIONS ARE PROHIBITED.

Distance between bottom of flange and finished grade is 3 inch +/- 1 inch

Finished grade



November, 2019

HYDRANT ASSEMBLY DETAIL

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Waterloo Water Works, Waterloo, Iowa
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