

UTILITY CONTACTS

THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AT THE TOME OF PREPARING THESES PANS. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE REASONABILITY TO BE SATISFIED AS TO ITS ACCURACY AND LOCATION OF EXISTING UTILITIES.

CHARTER COMMUNICATIONS
ATT: MARK KELLY
1480 S. VALLEY CENTER DRIVE
BAY CITY, MI 48706

CABLE TV
PHONE: 989-233-9404
mark.kelly@chartercom.com

CITY OF OWOSSO
ATT: CLAYTON WEHNER, P.E.
301 W. MAIN STREET
OWOSSO, MI 48867

ROAD & STORM SEWER
989-725-0551
clayton.wehner@ci.owosso.mi.us

CITY OF OWOSSO
ATT: RYAN SUCHANEK
301 W. MAIN STREET
OWOSSO, MI 48867

SANITARY SEWER & WATER MAIN
989-725-0550
ryan.suchanek@ci.owosso.mi.us

CONSUMERS ENERGY
ATT: TRACY MAHAR
1801 W. MAIN ST
OWOSSO, MI 48867

ELECTRIC
OFFICE: 989-729-3250
CELL: 517-204-9018
tracy.mahar@cmsenergy.com

CONSUMERS ENERGY
ATT: ADAM BERTRAM
530 W. WILLOW STREET
P.O. BOX 30162
LANSING, MI 48909

GAS
OFFICE: 517-374-2375
CELL: 517-614-8570
adam.bertram@cmsenergy.com

DAYSTARR COMMUNICATIONS
ATT: JARED JACKSON
307 N. BALL STREET
OWOSSO, MI 48867

FIBER
PHONE: 989-720-6004
FAX: 989-720-6060
jared.jackson@daystarrfiber.net

FRONTIER COMMUNICATIONS
ATT: HAROLD ROTH
1943 W. M-21
OWOSSO, MI 48847

FIBER
PHONE: 989-627-9759
harold.roth@ftr.com

SHIAWASSEE COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH DIVISION
ATT: STEVE ALWORDEN
201 N. SHIAWASSEE STREET
CORUNNA, MI 48817

SOIL EROSION AND SEDIMENTATION CONTROL
PHONE: 989-743-2289
FAX: 989-743-2413
salworden@shiawasseechd.net

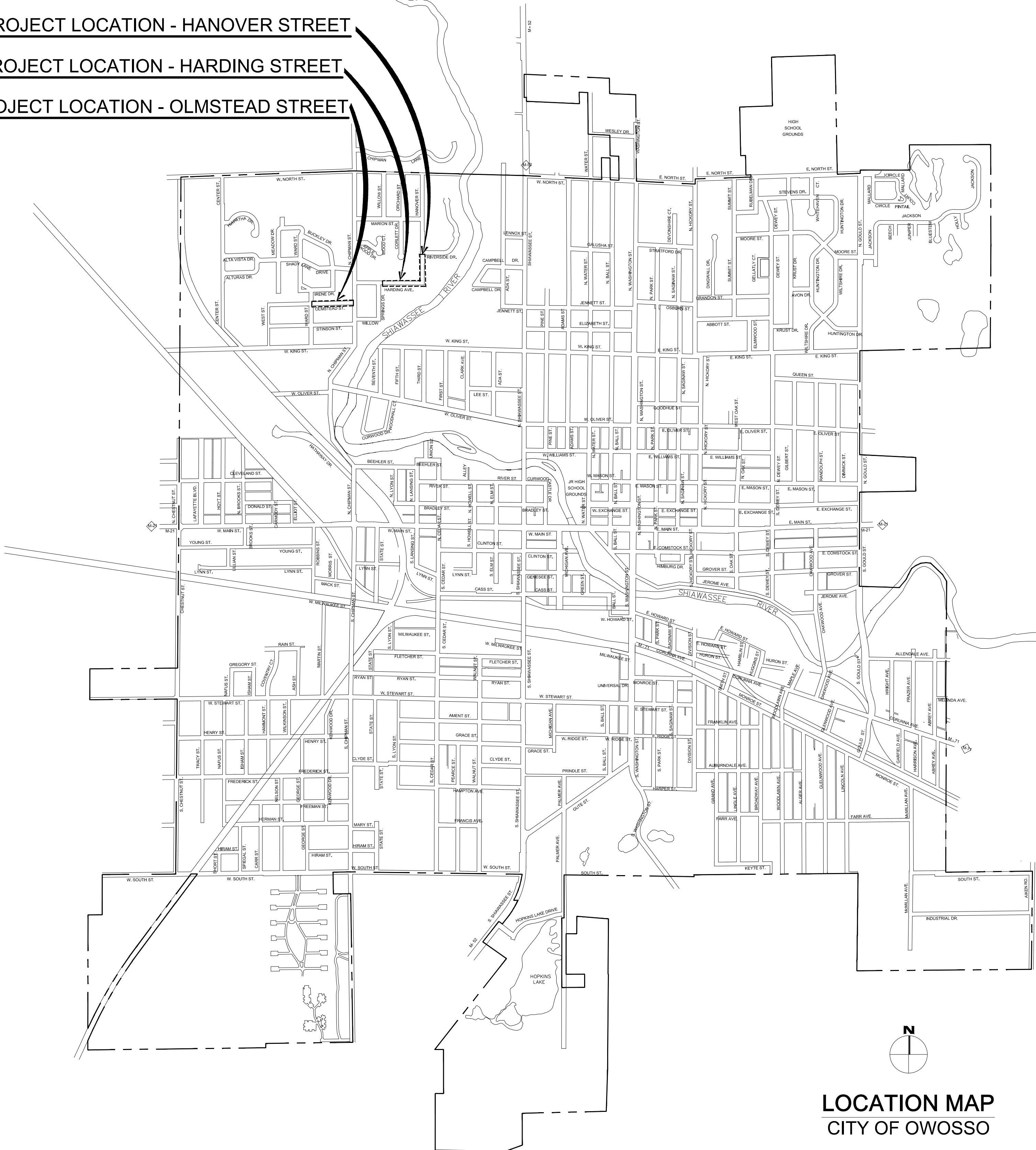
CALL MISS DIG AT 1-800-482-7171 OR 811 THREE DAYS, EXCLUDING SATURDAY, SUNDAY, AND HOLIDAY, BEFORE STARTING YOUR PROJECT.



Know what's below.
Call before you dig.

CITY OF OWOSSO
2025 WATER MAIN REPLACEMENT PROJECT
CONTRACT 1
DWSRF 7880-01
SHIAWASSEE COUNTY
SECTIONS 13 & 14, T7N-R2E, CITY OF OWOSSO
POP: 15,194 (2010 CENSUS)

PROJECT LOCATION - HANOVER STREET
PROJECT LOCATION - HARDING STREET
PROJECT LOCATION - OLMSTEAD STREET

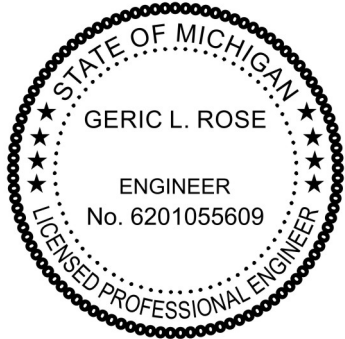


SHEET NO.	DESCRIPTION
CS	COVER SHEET
D1	WATER MAIN NOTES AND DETAILS
D2	WATER MAIN STANDARD DETAILS
D3	STREET ITEMS GENERAL NOTES AND DETAILS
D4	SESC STANDARD NOTES AND DETAILS
OL1	OLMSTEAD ST - WATER MAIN PLAN AND PROFILE
HR1	HARDING ST - WATER MAIN PLAN AND PROFILE
HN1	HANOVER ST - WATER MAIN PLAN AND PROFILE

WATER MAIN DESIGN PLANS BY:



WATER MAIN PLANS PREPARED UNDER SUPERVISION OF:



GERIC L. ROSE, P.E., P.S.
REGISTERED PROFESSIONAL ENGINEER No. 6201055609
FLEIS & VANDENBRINK ENGINEERING, INC.

4/17/2025
DATE

THE MATERIAL AND METHODS FOR WATER MAIN CONSTRUCTION CONFORM TO THE STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA) AND THE MICHIGAN SAFE DRINKING WATER ACT 1976 PA 399, AS AMENDED, AND THE ADMINISTRATIVE RULES.

CONTRACT FOR: 0.30 MILES OF WATER MAIN REPLACEMENT WITH WATER SERVICE LINE REPLACEMENTS.

CITY OF OWOSSO APPROVAL



Clayton Wehner
DIRECTOR OF ENGINEERING CLAYTON WEHNER, PE

620100052
REGISTRATION NUMBER

4/17/2025
DATE

CS		2025 WATER MAIN REPLACEMENT PROJECT - CONTRACT 1 DWSRF 7880-01		COVER SHEET		JANUARY, 2025 PROJECT NO. 870280		FIELD BOOK PG.			
BENCH MARK DATA											
ELEV.		DESCRIPTION		NO.		REVISIONS		DATE		BY	
				1		DRAFT PLANS		1/17/25		CW	
				2		REVISED PLANS CSD1,HR1		3/14/25		DH	
				3		IFB PLANS		4/17/25		DH	

1. THE PUMPER CONNECTION SHALL FACE THE STREET.
2. SET THE HYDRANT FLANGE AT PROPOSED GRADE OR AS FIELD DIRECTED.
3. SET THE VALVE BOX COVER FLUSH WITH THE PROPOSED GRADE.
4. ALL WORK FROM THE CENTER LINE OF THE MAIN TO AND INCLUDING THE HYDRANT SHALL BE PAID FOR BY UNIT PRICE BID ITEM FOR HYDRANTS.
5. ALL MECHANICAL JOINTS SHALL BE RESTRAINED BY MEGA LUGS, OR APPROVED EQUAL.
6. HYDRANT BARRELS SHALL BE PAINTED YELLOW. CAPS SHALL BE COLOR GREEN
7. 90° HYDRANT TEES ARE APPROVED WHERE SPACE REQUIREMENTS ARE LIMITED.



1. ALL TAPPING SLEEVES SHALL BE STAINLESS STEEL, WITH FLANGED OUTLET. TAPPING SLEEVES SHALL BE APPROVED BY THE CITY OF OWOSSO PRIOR TO INSTALLATION.
2. THE GASKET FOR MAIN LINE SHALL BE MADE FOR THE PIPE MATERIAL IN PLACE, NORMALLY OUTSIDE RIGID POLYURETHANE RUBBER GASKETS.
3. OUTLET FLANGE IS CLASS 125 ANSI B16.1.
4. TAPPING TREE SHALL HAVE A BUILT-IN TEST PLUG.
5. THE VALVE SHALL BE FLANGED, CONNECTED TO THE SLEEVE BY MECHANICAL JOINT TO THE LINE TO BE CONSTRUCTED.
6. THE VALVE SHALL HAVE OVERSIZE SEAT RINGS TO PERMIT ENTRY OF THE TAPPING MACHINE CUTTERS.
7. THE VALVE SHALL MEET ALL REQUIREMENTS OF ANWWA C500.
8. THE TOP OPENING OF GATE VALVE SHALL BE CENTERED ON THE VALVE OPERATING NUT.



MANUFACTURER SPECIFICATIONS CALL FOR GREATER RESTRAINT LENGTHS THE GREATER LENGTHS SHALL BE INSTALLED. WHEN THE MANUFACTURER SPECIFICATIONS CALL FOR LESSER RESTRAINT LENGTHS THEN THE ABOVE LENGTHS SHALL BE INSTALLED

1. THIS TABLE IS BASED ON A TEST PRESSURE OF 180 PSI (OPERATING PRESSURE + WATER HAMMER). FOR OTHER TEST PROCEDURES, ALL VALUES ARE TO BE INCREASED PROPORTIONALLY.

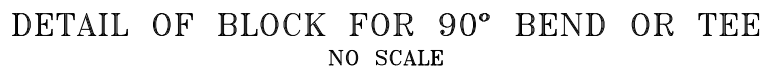
2. IN EACH DIRECTION FROM POINT OF DEFLECTION OR TERMINATION EXCEPT FOR A TEE AT WHICH ONLY THE BRANCH IN THE DIRECTION OF THE TEE STEM.



2. VALVE BOXES SHALL BE MADE OF GOOD QUALITY CAST IRON AND SHALL BE OF THE SECTIONAL TYPE. THE LOWER SECTION SHALL BE A MINIMUM OF FIVE (5) INCHES IN DIAMETER, ENLARGED AT THE BASE TO FIT AROUND THE BONNET OF THE VALVE. THE UPPER SECTION SHALL BE ARRANGED TO SLIDE OR SCREW DOWN OVER THE ADJOINING LOWER SECTION AND SHALL BE FULL DIAMETER THROUGHOUT. VALVE BOXES SHALL BE PROVIDED WITH CAST IRON LIDS OR COVERS. LIDS OR COVERS SHALL BE MARKED "WATER". THE OVER-ALL LENGTH OF VALVE BOXES SHALL BE SUFFICIENT TO PERMIT THE TOP TO BE SET FLUSH WITH THE FINAL GROUND SURFACE GRADE. VALVE BOXES SHALL BE AS MANUFACTURED BY TRAVERSE CITY IRON WORKS, CLOW CORPORATION OR APPROVED EQUAL.

NOTE:
ALL MECHANICAL JOINTS SHALL BE
RESTRAINED WITH MEGA LUGS OR APPROVED
EQUAL. LENGTH OF RESTRAINT SHALL BE
DETERMINED BY MANUFACTURER AND DIPRA,
AND APPROVED BY CITY OF OWOSO.
THE MINIMUM REQUIRED RESTRAINT LENGTHS ARE
SHOWN IN DETAIL SD-7W. MANUFACTURER
RESTRAINT LENGTHS THAT ARE LESS THAN
SHOWN IN SD-7W MUST BE APPROVED BY CITY
OF OWOSO.

CITY OF OWOSSO, MICHIGAN
ENGINEERING DIVISION
DEPT. OF PUBLIC SERVICE



1. CASING PIPE SHALL BE EITHER REINFORCED CONCRETE PIPE OR DRSD 36" PLASTIC PIPE
 2. FOR CARRIER PIPES LESS THAN SIX (6) INCHES IN DIAMETER, THE INSIDE DIAMETER OF THE CASING PIPE SHALL BE AT LEAST TWO (2) INCHES GREATER THAN THE LARGEST OUTSIDE DIAMETER OF THE CARRIER PIPE JOINTS OR COUPLINGS.
 3. FOR CARRIER PIPES SIX (6) INCHES OR GREATER IN DIAMETER, THE INSIDE DIAMETER OF THE CASING PIPE SHALL BE AT LEAST FOUR (4) INCHES GREATER THAN THE LARGEST OUTSIDE DIAMETER OF THE CARRIER PIPE JOINTS OR COUPLINGS.
- ALL CASING PIPE ENDS THAT ARE BELOW GROUND LEVEL SHALL BE CONSTRUCTED AS PER THE FOLLOWING: ALL CASING PIPE SHALL BE CUT TO THE PROPER LENGTH, BUT NOT LESS THAN 10 FEET. EACH END OF THE CASING SHALL REQUIRE A SUFFICIENT SEAL TO PREVENT THE POTENTIAL FOR LEAKAGE OF ANY SUBSTANCE FROM THE CASING PIPE. GROUT FILL AN ACCEPTABLE METHOD INSTALLED BY PRESSURE GROUTING. IF USED, THE GROUT MATERIAL SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LOS ANGELES APPROVED, EIGHT AND SUFFICIENTLY SEAL THE CASING PIPE ENDS.



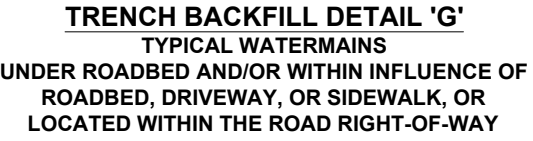
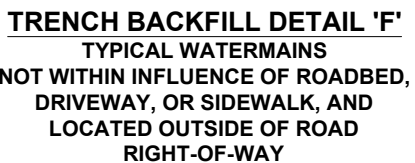
NOTE:
THE CITY RESERVES THE RIGHT TO CLAIM ANY
EX. WATER VALVE BOXES AND GATE WELL
COVERS AND CASTINGS. ALL UNCLAIMED SHALL
BECOME THE PROPERTY OF THE CONTRACTOR.



NOTE: TABLE BELOW IS BASED IN WATER MAIN PRESSURE OF 100 P.S.I. WIRTH NOMAL CLAY SOIL
FOR WATER MAIN PRESSURE OF 150 P.S.I., INCREASE THE AREA BY 50%; FOR 180 P.S.I.,
INCREASE BY 80% AND ETC.. FOR SOFT AND ABNORMAL SOIL CONITIONS, THE THRUST BLOCK SIZE
SHALL BE DETERMINED BY THE ENGINEER.

[illegible]

NOTE:
THE CONCRET USED FOR BLOCKING SHALL BE A
MINIMUM COMPRESSIVE STRENGTH OF 3000 POUNDS
PER SQUARE INCH IN TWENTY-EIGHT (28) DAYS.



NOTES

1. INSULATION BOARD SHALL BE CLOSED CELL, EXTRUDED POLYSTYRENE FOAM MEETING ASTM 578, TYPE VI, 40 PSI COMPRESSION STRENGTH (ASTM D1621) 0.1% MAX. WATER ABSORPTION (ASTM C272), OR OWNER APPROVED EQUIVALENT.
 2. BACKFILL MATERIAL AROUND INSULATION SHALL BE CLASS II GRANULAR MATERIAL.
 3. OVERLAP ALL INSULATION BOARD JOINTS.
- MINIMUM 2" WIDE BY 4" THICK INSULATION BOARD (USE TWO, 2" THICK BOARDS).
MASTIC ALL JOINTS

EXTEND INSULATION BOARD
DOWN SIDES TO BOTTOM OF
BEDDING

BENCH MARK DATA

2025 WATER MAIN REPLACEMENT PROJECT - CONTRACT 1

WATER MAIN STANDARD DETAILS

FIELD BOOK
PC
JANUARY, 2025
PROJECT NO. 970390

D2

GENERAL NOTES

UNDERGROUND UTILITIES/MISS DIG
FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174, 2013, THE CONTRACTOR SHALL DIAL 1-800-482-7171 FOR A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS, PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBER WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

THE EXISTING UTILITIES ON THESE DRAWINGS HAVE BEEN SHOWN ACCORDING TO THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD LOCATE ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION AND SHALL NOTIFY THE ENGINEER AS TO WHERE POSSIBLE CONFLICT EXIST.

EXISTING WATER MAINS AND SEWERS
THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO PROPERLY IDENTIFIED EXISTING WATER MAINS AND / OR EXISTING SEWERS DURING THE CONSTRUCTION OF THE PROJECT.

ADJUSTING OF MONUMENT BOXES
ALL GOVERNMENT CORNERS ON THIS PROJECT SHALL BE PRESERVED, WHETHER SHOWN OR NOT. IT MAY BE NECESSARY TO PLACE OR ADJUST MONUMENT BOXES AS REQUIRED.

PAVEMENT MARKINGS AND SIGNS
ALL PERMANENT PAVEMENT MARKINGS, SHAPES, AND DIMENSIONS SHALL CONFORM WITH MDOT PAVEMENT MARKING TYPICALS PAVE - 900 SERIES.

SOIL EROSION MEASURES
APPROPRIATE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO EARTH DISTURBING ACTIVITIES. PLACE LAWN RESTORATION ITEMS AS SOON AS POSSIBLE ON POTENTIAL ERODIBLE SLOPES AS DIRECTED BY THE ENGINEER. CRITICAL DITCH GRADES SHALL BE PROTECTED WITH EITHER SOD OR SEED / MULCH BLANKET AS DIRECTED BY THE ENGINEER.

SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT SOIL EROSION AND SEDIMENTATION CONTROL MEASURES ARE IN PLACE AND MAINTAINED UNTIL THE CONTRACT HAS BEEN COMPLETED AND ACCEPTED. MEASURES SHALL ONLY BE PAID FOR ONCE.

RUBBISH DISPOSAL
SEE MAINTAINING TRAFFIC SPECIAL PROVISIONS.

MAIL DELIVERY
SEE MAINTAINING TRAFFIC SPECIAL PROVISIONS.

SEWER CONNECTIONS
PROPOSED SEWERS SHALL BE CONNECTED TO EXISTING SEWERS WITH A FERNCO COUPLER, OR APPROVED EQUAL, AS DIRECTED BY THE ENGINEER. CONNECTION SHALL BE ACCOMPLISHED WITH COUPLER OF SIMILAR SIZE IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. PAYMENT FOR ALL MATERIALS AND LABOR NECESSARY TO ACCOMPLISH THIS WORK WILL NOT BE PAIR FOR SEPARATELY, BUT WILL BE CONSIDERED AS PART OF OTHER WORK ITEMS.

CURB AND GUTTER
ALL NEW SECTIONS OF CURB AND GUTTER SHALL BE TIED TO EXISTING CURB AND GUTTER ON BOTH ENDS USING EPOXY COATED #4 BARS.

SIDEWALK RAMPS AND SIDEWALKS
SIDEWALK RAMPS SHALL BE COMPLETED IN ACCORDANCE WITH THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MDOT STANDARD PLAN R-28 SERIES, EXCEPT AS MODIFIED HEREIN. THE PORTION OF RAMP FROM THE CURB AND GUTTER TO THE LANDING SHALL BE 7-INCHES THICK AS IDENTIFIED ON THE SIDEWALK RAMP THICKNESS DETAIL. THE LANDING SHALL BE 4-INCHES THICK. THE PAY ITEMS FOR Curb Ramp, Conc.,__ inch AND Sidewalk, Conc.,__ inch SHALL INCLUDE ALL EXCAVATION AND EMBANKMENT NECESSARY TO CONSTRUCT EACH ITEM AND ALL WORK NECESSARY TO SAW AND TRIM EDGES OF EXISTING CONCRETE. EXCAVATION AND EMBANKMENT WILL NOT BE PAID FOR SEPARATELY.

DETECTIBLE WARNING SURFACES SHALL BE EAST JORDAN DURALAST TM AND BLACK ASPHALT DIPPED, INSTALLED ONTO FRESH CONCRETE, AND IN ACCORDANCE WITH MDOT STANDARD R-28 SERIES. THE WARNING SURFACES SHALL BE 2.5 FEET IN LENGTH SUCH THAT TWO PLATES ARE USED FOR EACH 5 FOOT WIDE RAMP.

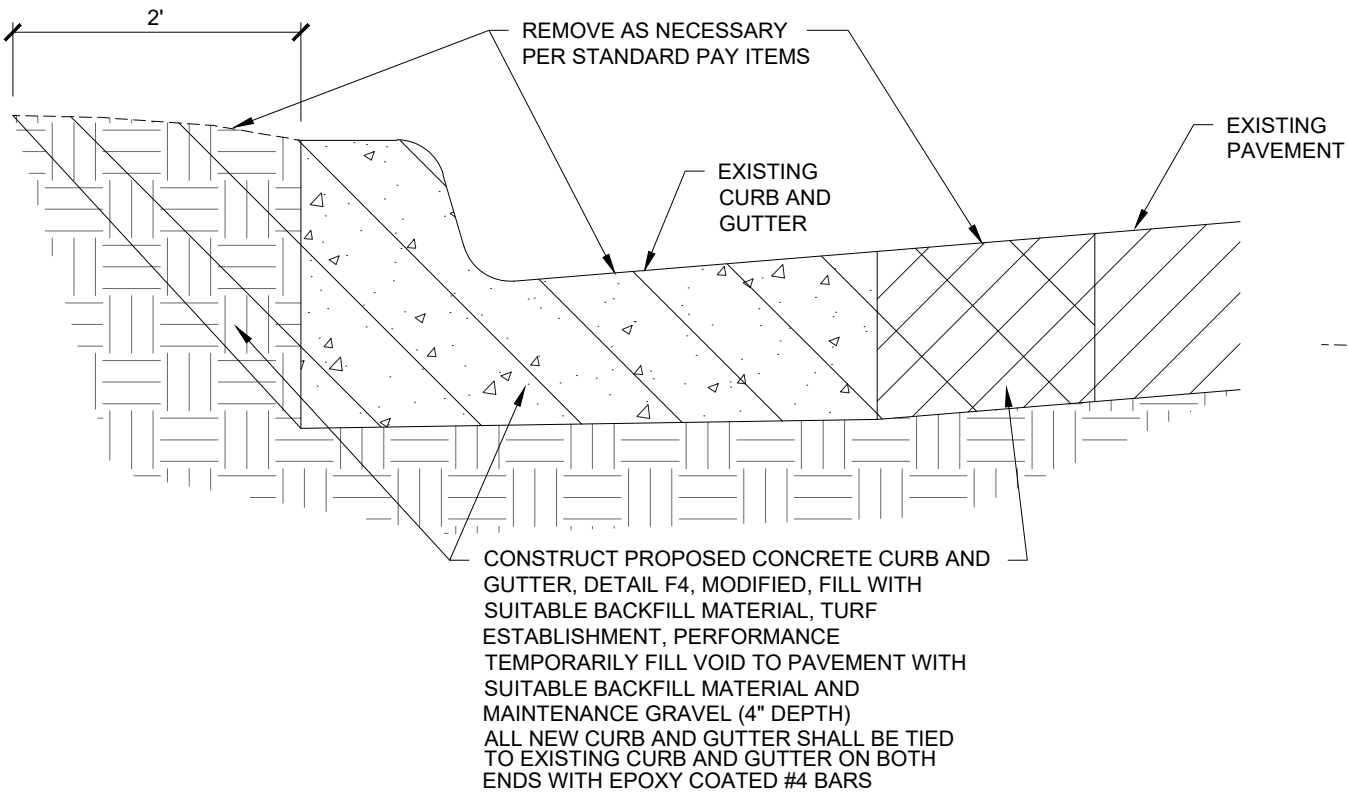
SIDEWALKS LOCATED WITHIN RESIDENTIAL DRIVEWAYS SHALL BE 6-INCHES THICK AND WILL BE PAID FOR AS Sidewalk, Conc, 6 inch.

SIDEWALKS LOCATED WITHIN COMMERCIAL DRIVEWAYS SHALL BE 7-INCHES THICK AND WILL BE PAID FOR AS Sidewalk, Conc, 7 inch.

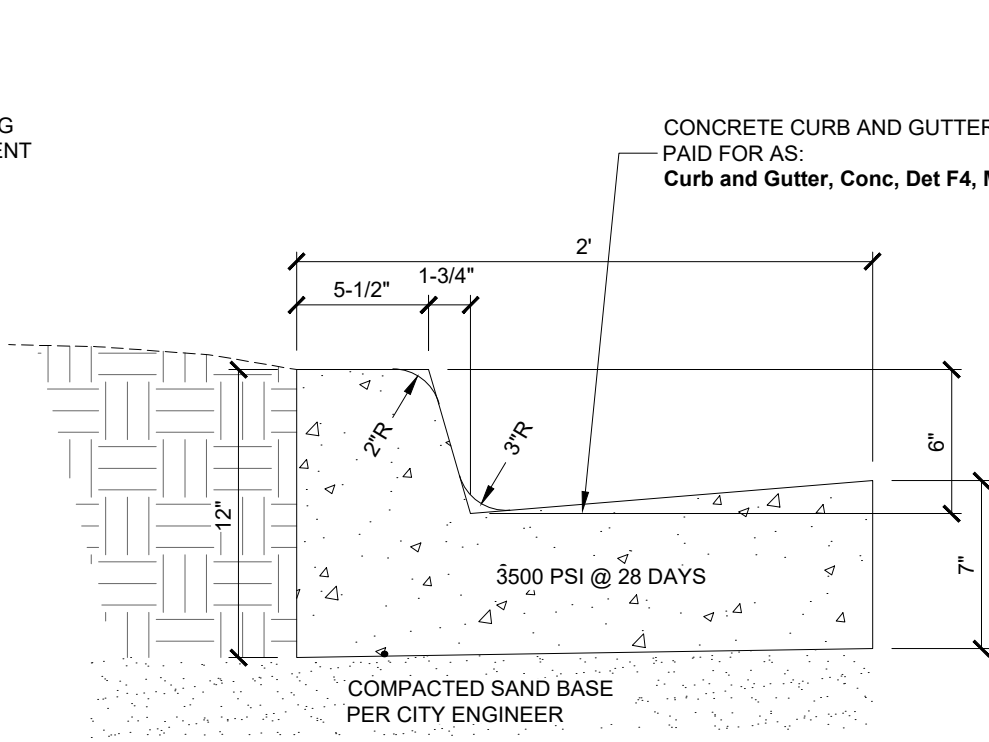
LAWN SPRINKLERS / LANDSCAPING
OWNERS OF EXISTING LAWN SPRINKLER SYSTEMS AND / OR LANDSCAPING SHALL BE NOTIFIED (IN WRITING WITH A COPY SENT TO THE ENGINEER) BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF ANY WORK THAT WILL BE DONE THAT WILL AFFECT THOSE SYSTEMS AND / OR LANDSCAPING. IF THE PROPERTY OWNER FAILS TO RELOCATE THE LAWN SPRINKLER SYSTEM PRIOR TO THE CONTRACTOR BEGINNING WORK, AND IF THE CONTRACTOR CUTS THE SYSTEM DURING CONSTRUCTION, THE CONTRACTOR SHALL CAP THE SYSTEM PIPE AND WITNESS THE LOCATION OF THE CAP WITH A WOODEN STAKE FOR THE PROPERTY OWNERS USE. THE CONTRACTOR SHALL PLACE THE SALVAGED SPRINKLER HEADS ON THE BACK OF THE RIGHT OF WAY. IF THE PROPERTY OWNER FAILS TO RELOCATE THE LANDSCAPING PRIOR TO THE CONTRACTOR BEGINNING WORK, THE CONTRACTOR SHALL CAREFULLY SALVAGE THE LANDSCAPING ITEMS AND STOCKPILE THEM ON THE BACK OF THE RIGHT OF WAY OR AT A LOCATION DESIGNATED BY THE ENGINEER FOR THE PROPERTY OWNER. ANY OTHER MODIFICATION TO THE SPRINKLER SYSTEM AND / OR LANDSCAPING IS THE RESPONSIBILITY OF THE OWNER AND IS NOT PART OF THIS CONTRACT. THIS WORK WILL NOT BE PAID FOR SEPARATELY.

PROPERTY OWNERS
PROPERTY OWNERS' NAMES, WHERE SHOWN, ARE FOR INFORMATION ONLY, AND THIER ACCURACY IS NOT GUARANTEED.

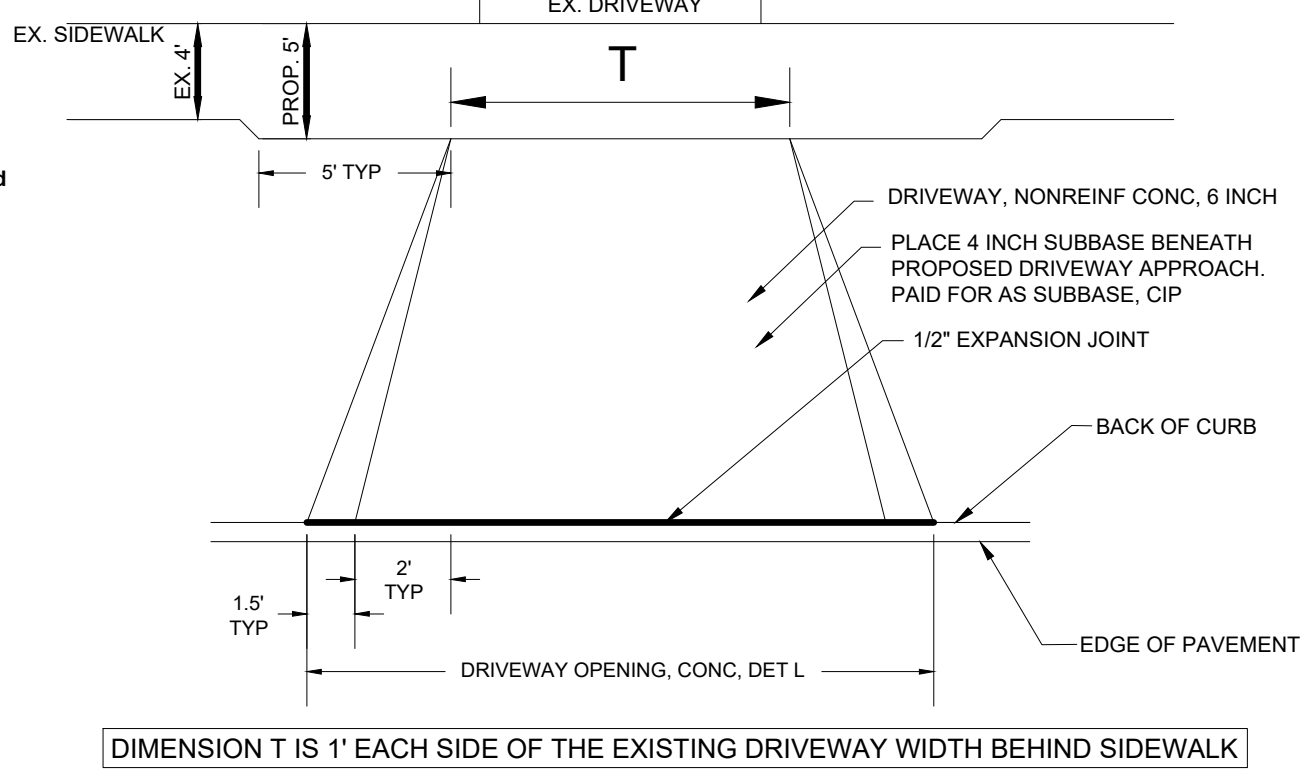
MAINTAINING TRAFFIC
REFER TO THE CONTRACT SPECIAL PROVISION FOR WORK RESTRICTIONS RELATIVE TO MAINTAINING TRAFFIC.



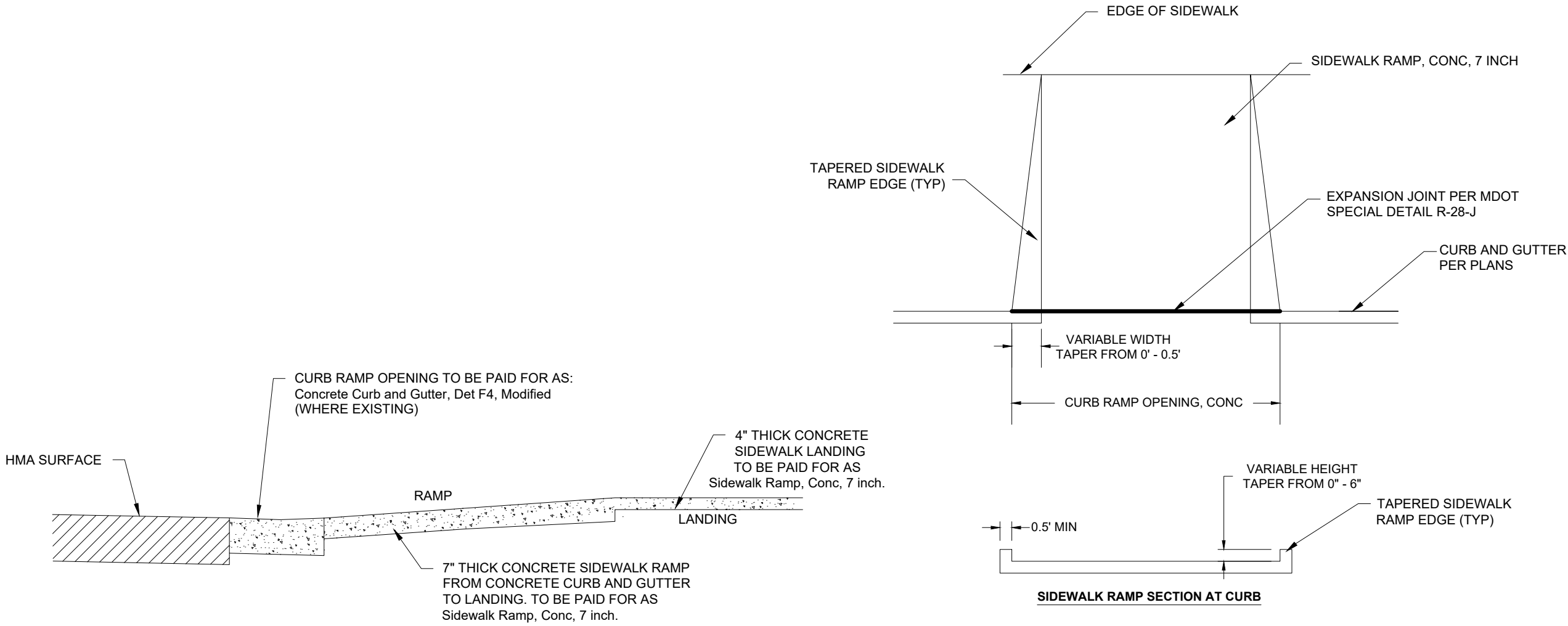
TYPICAL SELECT CURB AND GUTTER REPAIR DETAIL
NOT TO SCALE



CONCRETE CURB AND GUTTER MDOT F4 - MODIFIED DETAIL
NOT TO SCALE



DRIVEWAY APPROACH DETAIL
NOT TO SCALE



SIDEWALK RAMP THICKNESS DETAIL
NOT TO SCALE

SIDEWALK RAMP DETAIL
NOT TO SCALE

EXISTING FEATURES LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	TREE (DECIDUOUS)		CABLE BOX		SURVEY CONTROL POINT
	BUSH		TELEPHONE RISER		BENCHMARK
	TREE (CONIFEROUS)		TELEPHONE MANHOLE		SECTION CORNER
	DEAD TREE		TELEPHONE HANDHOLE	BOUNDARY LINE	
	STUMP		ELECTRICAL RISER	PROPERTY LINE	
	MANHOLE		ELECTRICAL MANHOLE	WATERMAIN	
	SANITARY CLEANOUT		ELECTRICAL HANDHOLE	SANITARY SEWER	
	RD. CATCH BASIN		POWER POLE	STORM SEWER	
	SQ. CATCH BASIN		LIGHT POLE	CULVERT (21" AND UNDER)	
	FIRE HYDRANT		GUY POLE	CULVERT (24" AND UP)	
	WATER VALVE		GUY ANCHOR	CABLE T.V.	
	CURB STOP & BOX		PED CROSSING SIGNAL	TELEPHONE	
	WELL		YARD LIGHT	ELECTRIC	
	WATER MANHOLE		SIGN	GAS	
	WATER METER		MAILBOX	OVERHEAD LINES	
	SOIL BORING		GUARD POST	GUARDRAIL	
	MONITORING WELL		FOUND CONC. MONUMENT	FENCE	
			FOUND IRON ROD	WOODLINE	
			SET IRON ROD		

NOTE: ALL ITEMS LISTED ON THE LEGEND MAY NOT BE PRESENT ON DRAWING.



NO.	REVISIONS	DATE	BY
1	DRAFT PLANS	1/17/25	CW
2	REVISED PLANS CS-D1,HR1	3/14/25	DH
3	IFB PLANS	4/17/25	DH
ORIGINAL PLAN		APPROVED BY	

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET
S-E-S-C KEYING SYSTEM

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
EROSION CONTROLS			
E1	SELECTIVE GRADING AND SHAPING		To reduce steep slopes and erosive velocities.
E2	GRUBBING OMITTED		For use on steep slopes to prevent rilling, gullying, and reduce sheet flow velocity or where clear vision corridors are necessary.
E3	SLOPE ROUGHENING AND SCARIFICATION		Where created grades cause increased erosive velocities. Promotes infiltration and reduces runoff velocity.
E4	TERRACES		On relatively long slopes up to 8% grades with fairly stable soils.
E5	DUST CONTROL		For use on construction sites, unpaved roads, etc. to reduce dust and sedimentation from wind and construction activities.
E6	MULCH		For use in areas subject to erosive surface flows or severe wind or on newly seeded areas.
E7	TEMPORARY SEEDING		Stabilization method utilized on construction sites where earth change has been initiated but not completed within a 2 week period.
E8	PERMANENT SEEDING		Stabilization method utilized on sites where earth change has been completed (final grading attained).
E9	MULCH BLANKETS		On exposed slopes, newly seeded areas, new ditch bottoms, or areas subject to erosion.
E10	SODDING		On areas and slopes where immediate stabilization is required.
E11	VEGETATED CHANNELS		For use in created stormwater channels. Vegetation is used to slow water velocity and reduce erosion within the channel.
E12	RIPRAP		Use along shorelines, waterways, or where concentrated flows occur. Slows velocity, reduces sediment load, and reduces erosion.
E13	GABION WALLS		On newly created or denuded stream banks to reduce velocity until permanent stabilization is achieved or on existing banks to retard erosive velocities.
E14	ENERGY DISSIPATOR		Where the energy transmitted from a concentrated flow of surface runoff is sufficient to erode receiving area or watercourse.
E15	TEMPORARY SLOPE DRAIN		Where surface runoff temporarily accumulates or sheet flows over the top of a slope and must be conveyed down a slope in order to prevent erosion.
E16	SLOPE DRAIN		Where concentrated flow of surface runoff must be permanently conveyed down a slope in order to prevent erosion.

B = BIOENGINEERING

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET
S-E-S-C KEYING SYSTEM

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
E17	CELLULAR CONFINEMENT SYSTEMS		Used on steep slopes and high velocity channels.
E18	PLASTIC SHEETS		Used on exposed slopes, seeded areas, new ditch bottoms, and areas subject to surface runoff and erosion. Used as a liner in temporary channels and to stabilize stockpiles.
E19	TEMPORARY DRAINAGEWAY/ STREAM CROSSING		Use on construction sites where stream/drainage way crossings are required.
E20	TEMPORARY BYPASS CHANNEL		Use within existing stream corridors when existing flow cannot be interrupted, and at culvert and bridge repair sites.
E21	LIVE STAKING		In areas requiring protection of slopes against surface erosion and shallow mass wasting.
EROSION / SEDIMENT CONTROLS			
ES31	CHECK DAM		Used to reduce surface flow velocities within constructed and existing flow corridors.
ES32	STONE FILTER BERM		Use primarily in areas where sheet or rill flow occurs and to accommodate dewatering flow.
ES33	FILTER ROLLS		In areas requiring immediate protection of slopes against surface erosion and gully formation and for perimeter sediment control.
ES34	SAND FENCE		For use in areas susceptible to wind erosion, especially where the ground has not yet been stabilized by other means.
ES35	DEWATERING		Use where construction activities are limited by the presence of water and dry work is required.
ES36	DIVERSION DIKE/BERM		Within existing flow corridors to address or prevent erosion and sedimentation, or on disturbed or unstable slopes subject to erosive surface water velocities.
ES37	DIVERSION DITCH		In conjunction with a diversion dike, or where diversion of upslope runoff is necessary to prevent damage to unstabilized or disturbed construction areas.
ES38	COFFERDAM/SHEET PILING		Constructed along or within water corridor or waterbody to provide dry construction area.
ES39	STREAMBANK BIOSTABILIZATION		For use along banks where stream and riparian zones may have difficulty recovering from the long-term effects of erosion.
ES40	POLYMERS		To minimize soil erosion and reduce sedimentation in water bodies by increasing soil particle size.
ES41	WATTLES		In areas requiring protection of slopes against surface erosion and gully formation.

B = BIOENGINEERING

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET
S-E-S-C KEYING SYSTEM

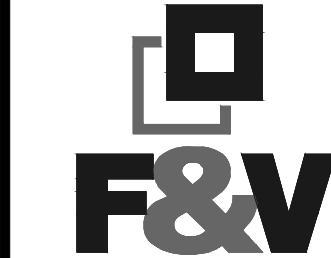
KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
SEDIMENT CONTROLS			
S51	SILT FENCE		Use adjacent to critical areas, to prevent sediment laden sheet flow from entering these areas.
S52	CATCH BASIN SEDIMENT GUARD		Use in or at stormwater inlets, especially at construction sites.
S53	STABILIZED CONSTRUCTION ACCESS		Used at every point where construction traffic enters or leaves a construction site.
S54	TIRE WASH		For use on construction sites where vehicular traffic requires sediment removed from its tires in highly erosive areas.
S55	SEDIMENT BASIN		At the outlet of disturbed areas and at the location of a permanent detention basin.
S56	SEDIMENT TRAP		In small drainage areas, along construction site perimeters, and above check dams or drain inlets.
S57	VEGETATED BUFFER/FILTER STRIP		Use along shorelines, waterways, or other sensitive areas. Slows velocity, reduces sediment load, and reduces erosion in areas of sheet flow.
S58	INLET PROTECTION FABRIC DROP		Use at stormwater inlets, especially at construction sites.
S59	INLET PROTECTION FABRIC FENCE		Use at stormwater inlets, especially at construction sites.
S60	INLET PROTECTION STONE		Use around urban stormwater inlets.
S61	TURBIDITY CURTAIN		Use during construction adjacent to a water esource, to contain sediment within the work area when other BMP's cannot be used.

B = BIOENGINEERING

SOIL EROSION/SEDIMENTATION CONTROL											
OPERATION TIME SCHEDULE											
CONSTRUCTION SEQUENCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV/DEC
STRIP AND STOCKPILE TOPSOIL											
ROUGH GRADE/ SEDIMENT CONTROL											
TEMP CONTROL MEASURES											
STORM FACILITIES											
TEMP CONSTRUCTION ROADS											
FOUNDATION/ BLDG. CONSTRUCTION											
SITE CONSTRUCTION											
PERM CONTROL MEASURES											
FINISH GRADING											
LANDSCAPING											

CONSTRUCTION SEQUENCE

1. INSTALLATION OF TEMPORARY EROSION CONTROL MEASURES.
2. TRENCH EXCAVATION, WATER MAIN INSTALLATION, AND BACKFILL.
3. PERMANENT MEASURES, FINAL GRADING, SEEDING AND MULCHING.



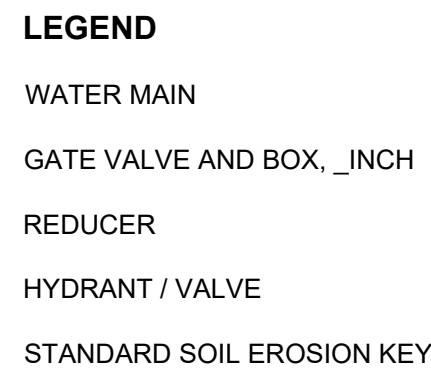
NO.	REVISIONS	DATE	BY
1	DRAFT PLANS	1/17/25	CW
2	REVISED PLANS CS.D1.HR1	3/14/25	DH
3	IFB PLANS	4/17/25	DH
ORIGINAL PLAN			
APPROVED BY			

BENCH MARK DATA	DESCRIPTION
ELEV.	

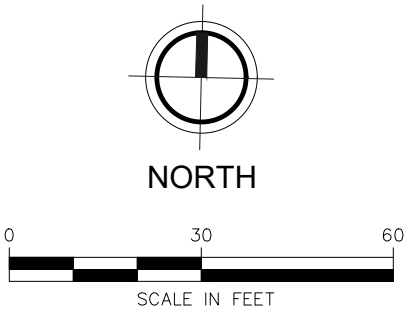
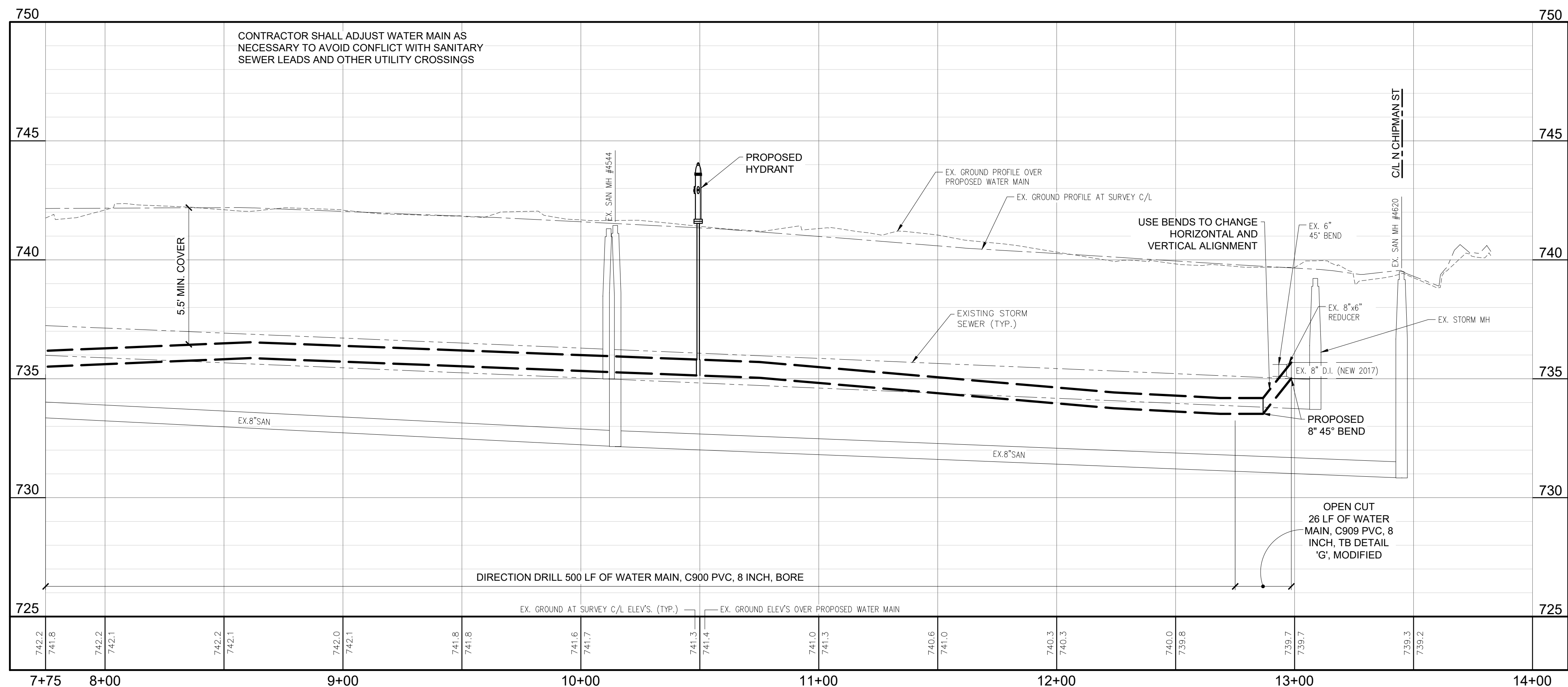
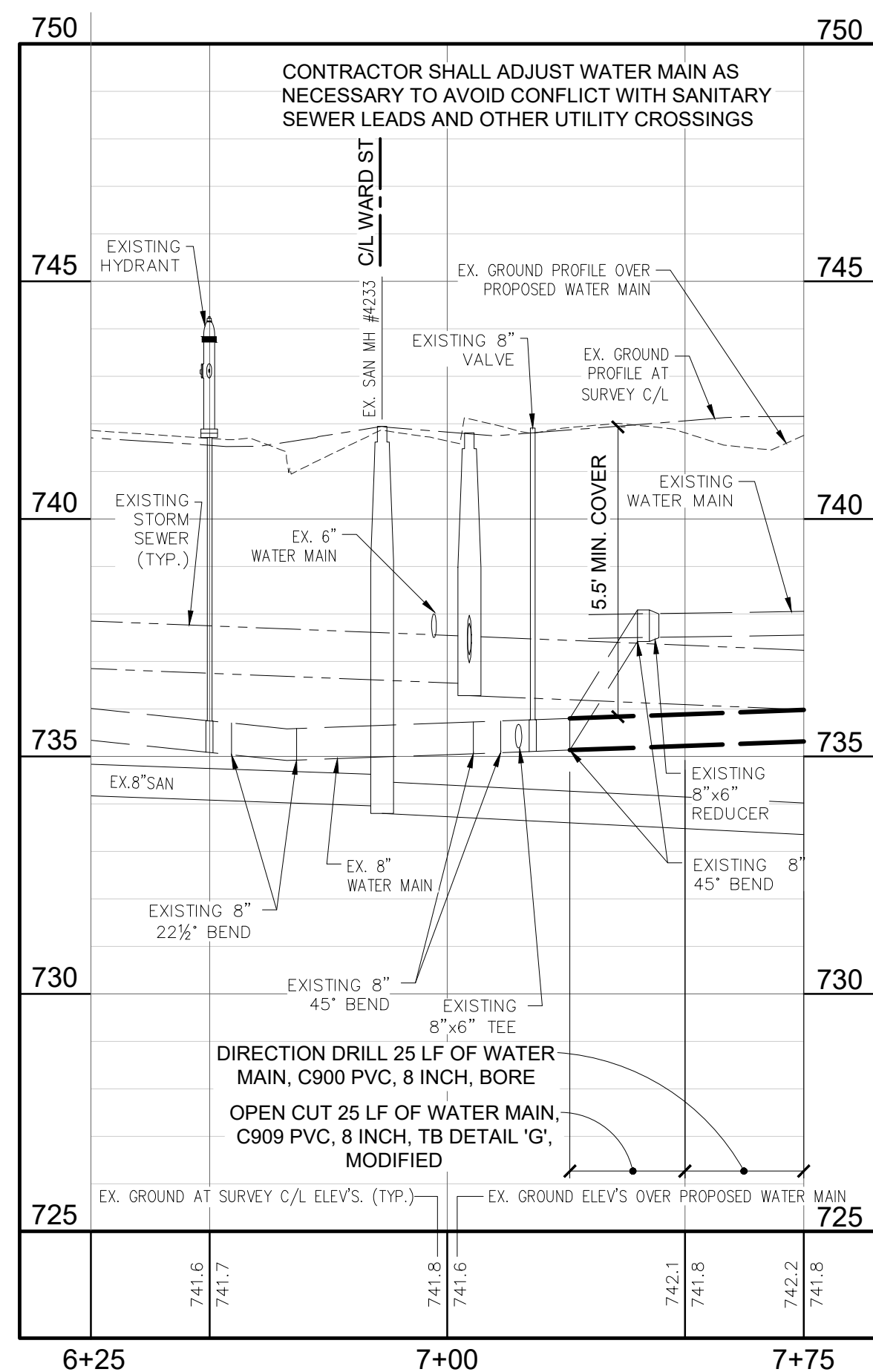
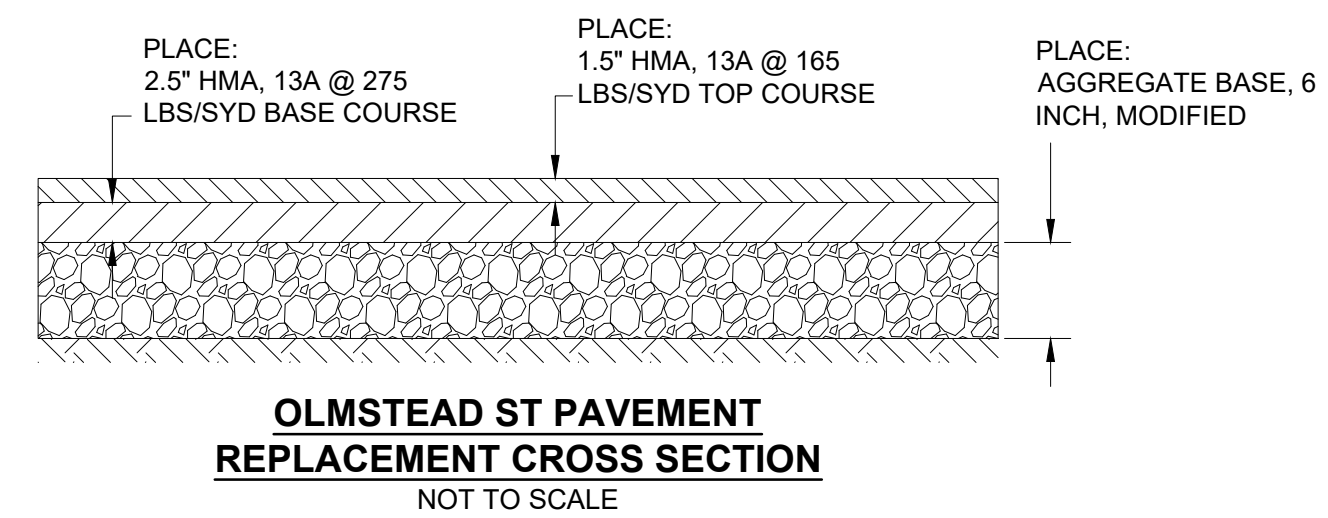
2025 WATER MAIN REPLACEMENT PROJECT - CONTRACT 1 DWSRF 7880-01	SESC STANDARD NOTES AND DETAILS	FIELD BOOK PG.
JANUARY, 2025 PROJECT NO. 870280		

ONCE THE PROPOSED WATER MAIN HAS BEEN TESTED AND ACCEPTED AND ALL SERVICES HAVE BEEN TRANSFERRED, THE EXISTING WATER MAIN AND APPURTENANCES SHALL BE ABANDONED AND/OR REMOVED AS DIRECTED WITH THE FOLLOWING PAY ITEMS:

- EXISTING VALVE WITH VALVE BOX ABANDONMENT - EA
- EXISTING VALVE WITH MANHOLE ABANDONMENT - EA
- HYDRANT REM - EA
- WATER MAIN, __ INCH, CUT AND PLUG, MODIFIED - EA



WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
600	FT	1 INCH COPPER SERVICE LEAD, TYPE "K", MODIFIED
51	FT	WATER MAIN, C909 PVC, 8 INCH, TB DETAIL 'C', MODIFIED
525	FT	WATER MAIN, C900 PVC, 8 INCH, BORE
2	EA	CONNECT TO EXISTING WATER MAIN
17	EA	CURB BOX, STOP, 1 INCH CORPORATION STOP AND CONNECTION, MODIFIED
1	EA	FIRE HYDRANT AND VALVE ASSEMBLY
9	EA	INSTALL METER PIT, COMPLETE
9	EA	WATER METER PIT, REM
10	FT	CURB AND GUTTER, REM
7	SYD	PAVT, REM
10	FT	CURB AND GUTTER, CONC, DET F4, MODIFIED
7	SYD	AGGREGATE BASE, 6 INCH, MODIFIED
1.6	TON	HMA, 13A
20	CYD	SUBBASE, CIP
4	EA	EROSION CONTROL, INLET PROTECTION, FABRIC DROP



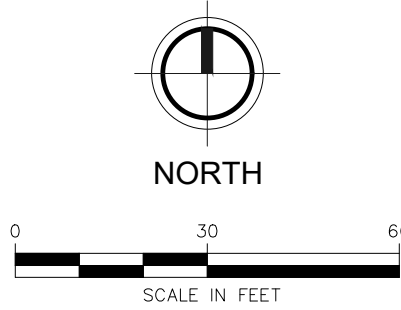
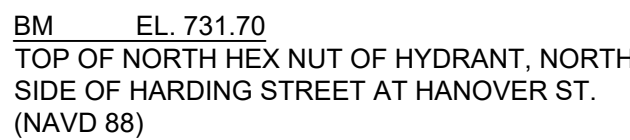
CITY OF OWOSSO, MICHIGAN
ENGINEERING DIVISION
DEPT. OF PUBLIC SERVICE

[illegible]

Know what's below.
Call before you dig.

OL1

- EXISTING VALVE WITH VALVE BOX ABANDONMENT - EA
- EXISTING VALVE WITH MANHOLE ABANDONMENT - EA
- HYDRANT REM - EA
- WATER MAIN, __ INCH, CUT AND PLUG, MODIFIED - EA



NOTE:
SEE HANOVER STREET WATER MAIN
PLAN AND PROFILE

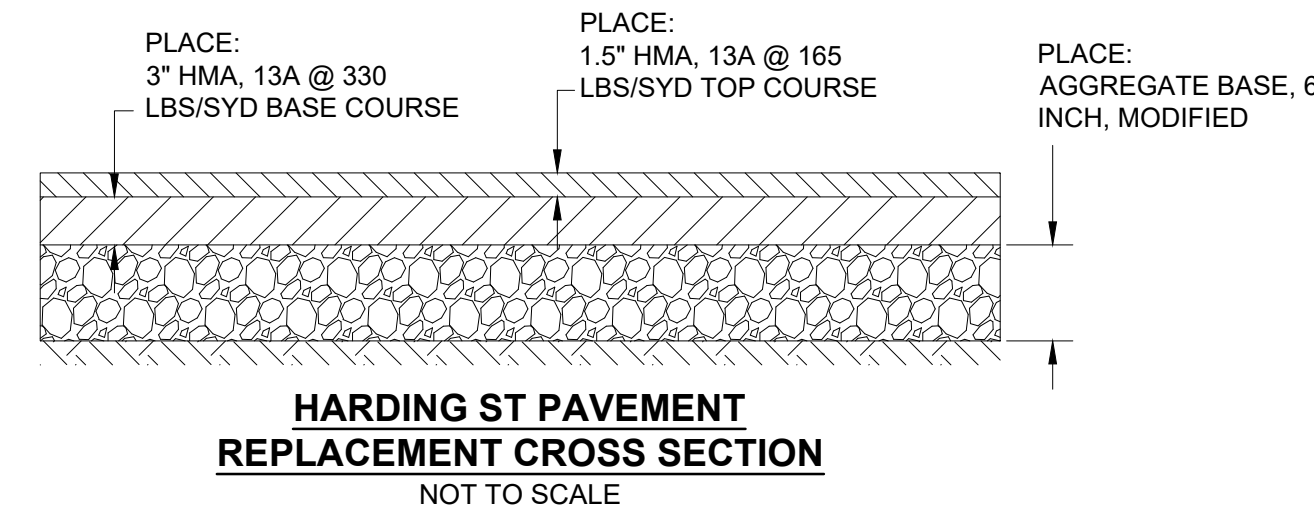
1200
000-010
OUTLOT NO. 9
"WILLOW SPINGS PARK"

STA. 11+02, 16' RT
PLACE:
1 EA - 8" 45° BEND
END WATER MAIN CONSTRUCTION
HARDING STREET.
BEGIN WATER MAIN
CONSTRUCTION HANOVER STREET

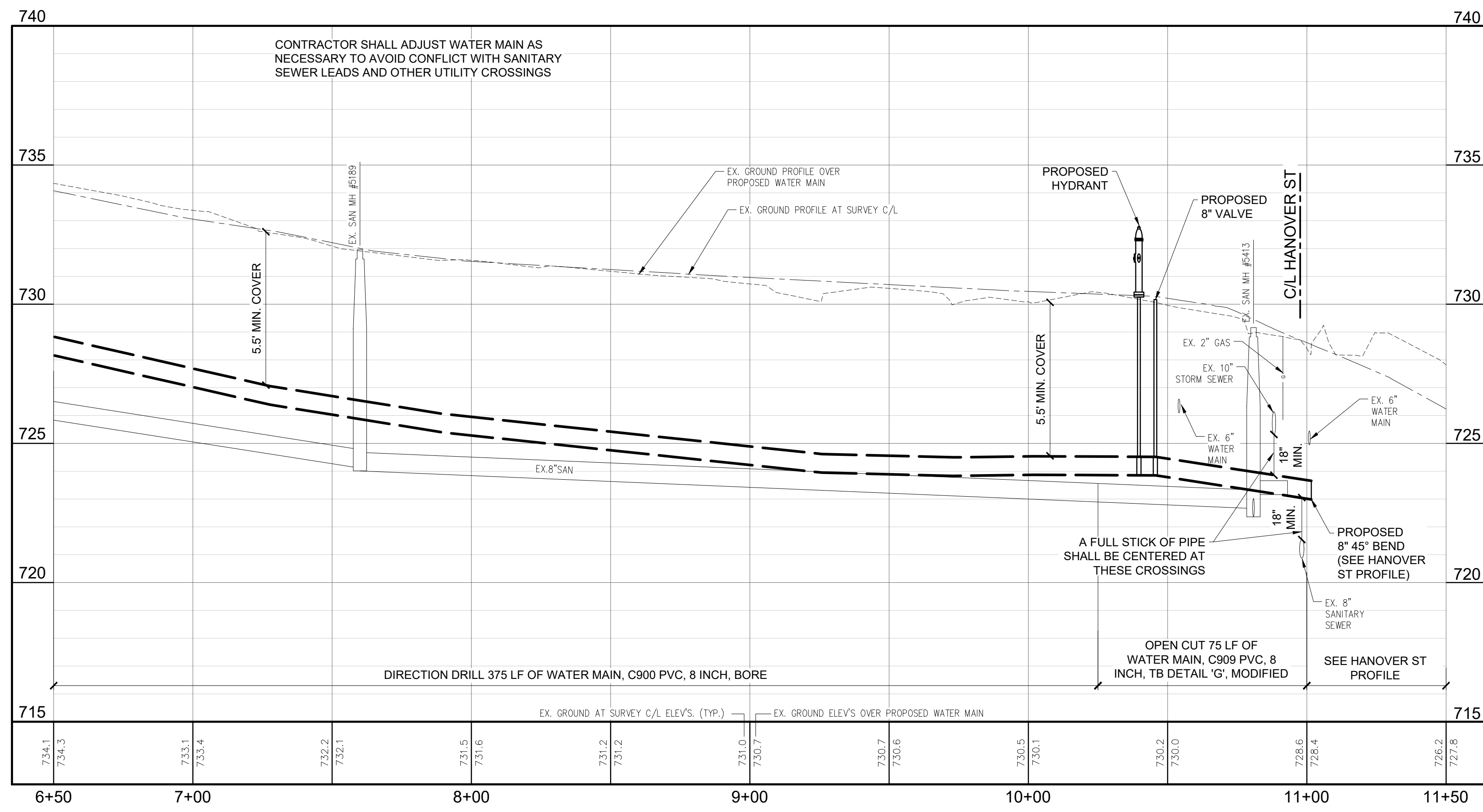
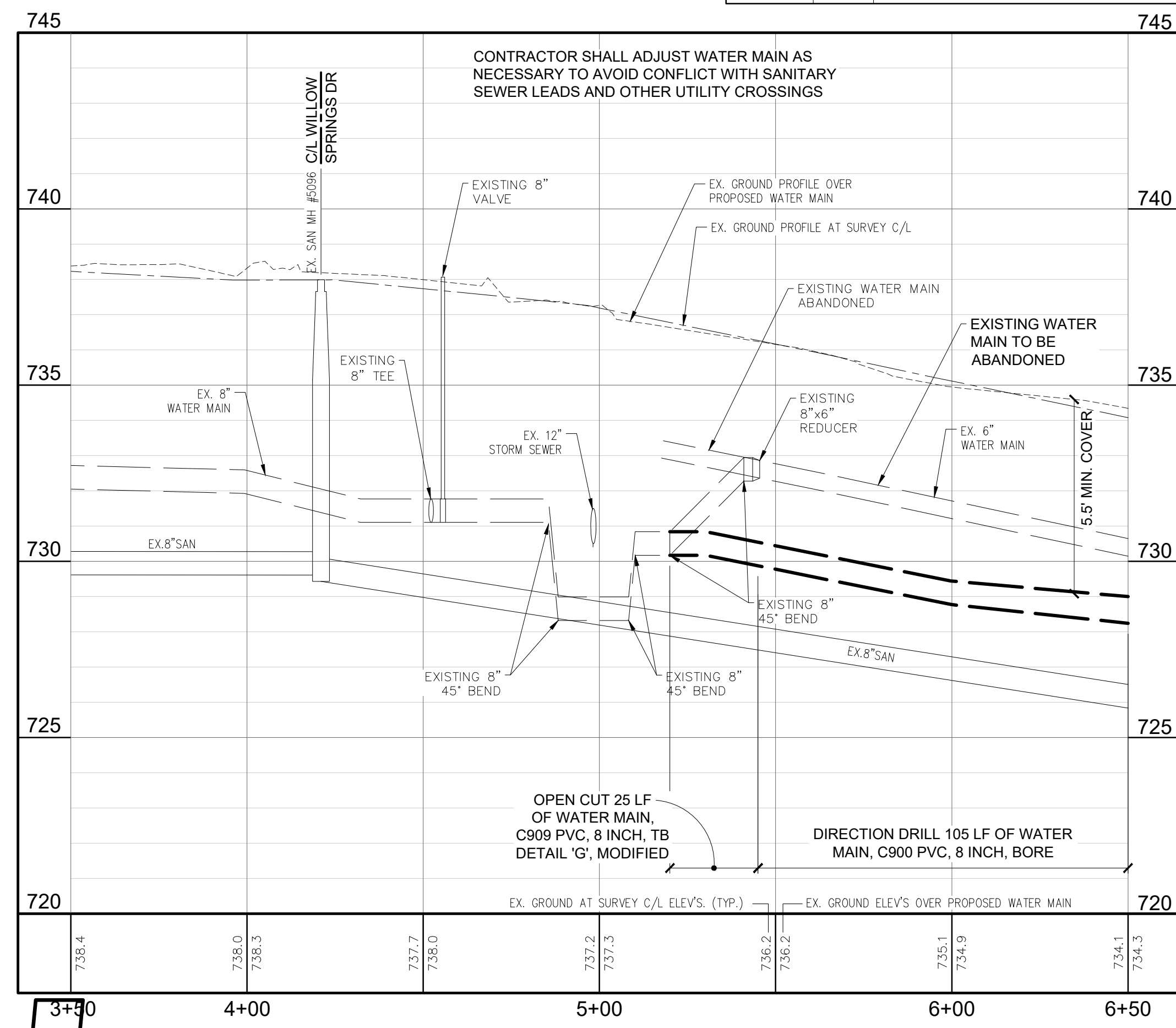
CAUTION! HAZARDOUS /
FLAMMABLE MATERIALS

WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
370	FT	1 INCH COPPER SERVICE LEAD, TYPE "K", MODIFIED
100	FT	WATER MAIN, C909 PVC, 8 INCH, TB DETAIL "G", MODIFIED
480	FT	WATER MAIN, C909 PVC, 8 INCH, BORE
1	EA	CONNECT TO EXISTING WATER MAIN
13	EA	CURB BOX, STOP, 1 INCH CORPORATION STOP AND CONNECTION, MODIFIED
1	EA	FIRE HYDRANT AND VALVE ASSEMBLY
1	EA	GATE VALVE AND BOX, 8 INCH, MODIFIED
1	EA	HYDRANT, REM
3	EA	EXISTING VALVE AND VALVE BOX ABANDONMENT
4	EA	INSTALL METER PIT, COMPLETE
4	EA	WATER METER PIT, REM
20	FT	CURB AND GUTTER, REM
42	SYD	PAVT, REM
20	FT	CURB AND GUTTER, CONC, DET F4, MODIFIED
42	SYD	AGGREGATE BASE, 6 INCH, MODIFIED
11.0	TON	HMA, 13A
20	CYD	SUBBASE, C/P
4	EA	EROSION CONTROL, INLET PROTECTION, FABRIC DROP

HARDING STREET



Know what's **below**.
Call before you dig.



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1	DRAFT PLANS	1/17/25	CW
2	REVISED PLANS CS.D1.HR1	3/14/25	DH
3	IFB PLANS	4/17/25	DH
	ORIGINAL PLAN		
CHECKED BY	APPROVED BY		

BENCH MARK DATA

2025 WATER MAIN REPLACEMENT PROJECT - CONTRACT 1
DWSRF 7880-01

HARDING ST - WATER MAIN PLAN AND PROFILE

JANUARY, 2025
PROJECT NO. 870280

HR1

EXISTING WATER MAIN ABANDONMENT
ONCE THE PROPOSED WATER MAIN HAS BEEN TESTED AND ACCEPTED AND ALL SERVICES HAVE BEEN TRANSFERRED, THE EXISTING WATER MAIN AND APPURTENANCES SHALL BE ABANDONED AND/OR REMOVED AS DIRECTED WITH THE FOLLOWING PAY ITEMS:

- EXISTING VALVE WITH VALVE BOX ABANDONMENT - EA
- EXISTING VALVE WITH MANHOLE ABANDONMENT - EA
- HYDRANT REM - EA
- WATER MAIN, ____ INCH, CUT AND PLUG, MODIFIED - EA

