

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

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WHERE THE FOLLOWING ITEMS ARE CALLED FOR ON PLANS, THEY ARE TO BE CONSTRUCTED ACCORDING TO THE MDOT STANDARD PLAN GIVEN BELOW OPPOSITE EACH ITEM UNLESS OTHERWISE INDICATED.

*SPECIAL DETAILS INCLUDED IN PROPOSAL OR MODIFIED IN GENERAL PLANS



SECTION 14, T7N-R2E, CITY OF OWOSSO
SECTION 19, T7N-R3E, CITY OF OWOSSO
POP: 15,194 (2010 CENSUS)



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

BENCH MARK DATA	
ELEV.	DESCRIPTION

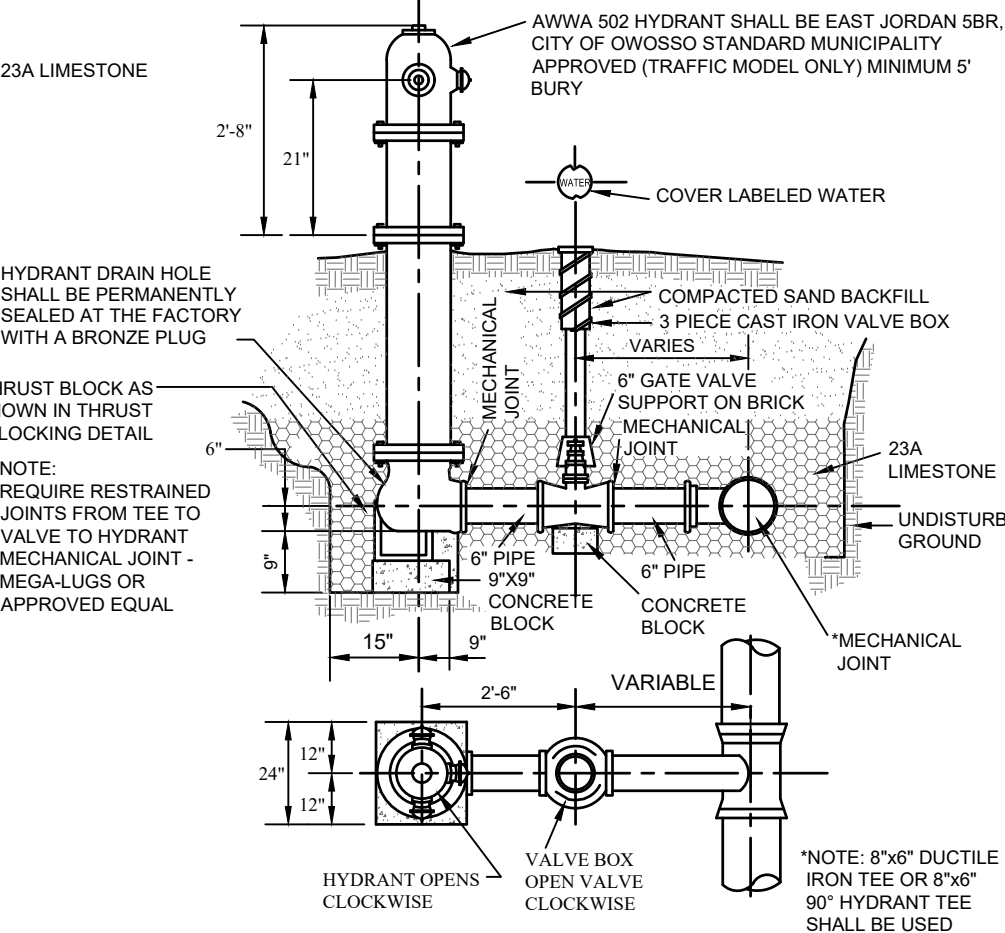
2023 WATER MAIN REPLACEMENT PROJECT - DWSRF 7491-01

COVER SHEET

DECEMBER, 2022	FIELD BOOK
PROJECT NO	PG

CS

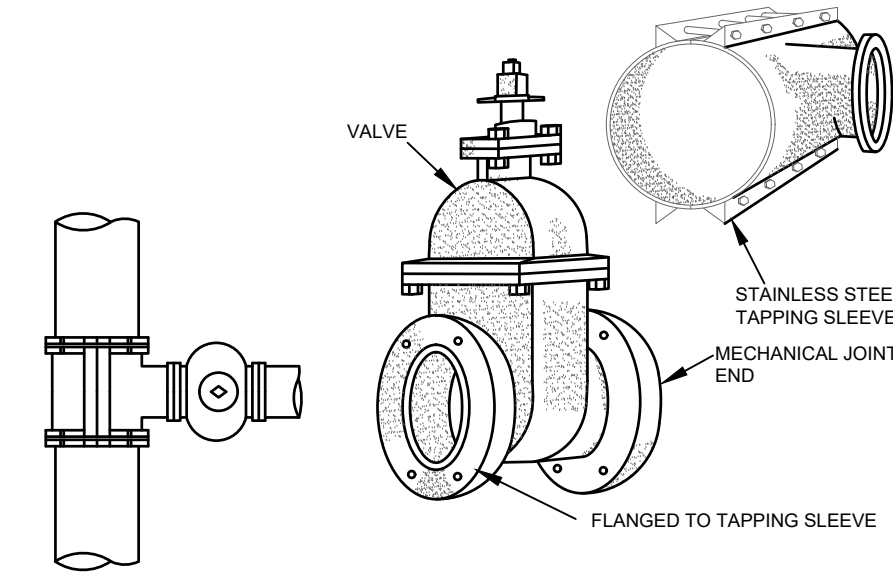
- NOTES:**
1. THE PUMPER CONNECTION SHALL FACE THE STREET.
 2. SET THE HYDRANT FLANGE AT PROPOSED GRADE OR AS FIELD DIRECTED.
 3. SET THE VALVE BOX COVER FLUSH WITH THE PROPOSED GRADE.
 4. ALL WORK FROM THE CENTER LINE OF THE MAIN TO AND INCLUDING THE HYDRANT SHALL BE PAID FOR BY UNIT PRICE BID ITEM 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.



SD-1W

FIRE HYDRANT DETAIL

- NOTES:**
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 DUCTILE IRON CLASS 53.
 3. OUTLET FLANGE IS CLASS 125 ANSI/616.1.
 4. TAPPING TEE 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 AWWA C-500.
 8. THE TOP OPENING OF GATE VALVE SHALL BE CENTERED ON THE VALVE OPERATING NUT.



SD-2W

PRESSURE TAPPING SLEEVE AND VALVE

MINIMUM PIPE RESTRAINT LENGTH SCHEDULE FOR GROUND BURIED PRESSURE PIPES(1)							
LENGTH (IN FEET) OF RESTRAINT REQUIRED (2)							
DEFLECTION ANGLE	22 1/2°	33 3/4°	45°	56 1/4°	67 1/2°	78 3/4°	90° OR DEAD END
PIPE							
6"	3	6	11	16	23	29	37
8"	4	8	15	22	31	41	50
10"	5	11	18	28	38	49	61

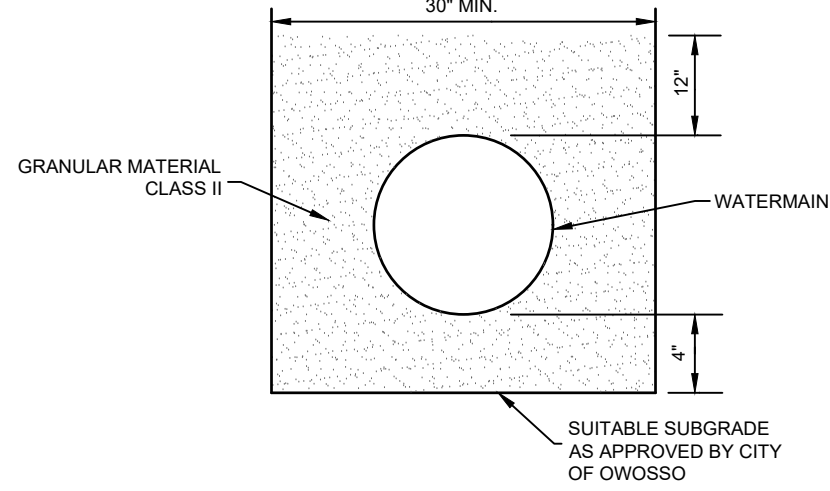
* WHEN MANUFACTURER SPECIFICATIONS CALL FOR GREATER RESTRAINT LENGTHS THE GREATER LENGTHS SHALL BE INSTALLED. WHEN THE MANUFACTURER SPECIFICATIONS CALL FOR LESSER RESTRAINT LENGTHS THEN THE ABOVE LENGTHS SHALL BE INSTALLED.

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.

SD-7W

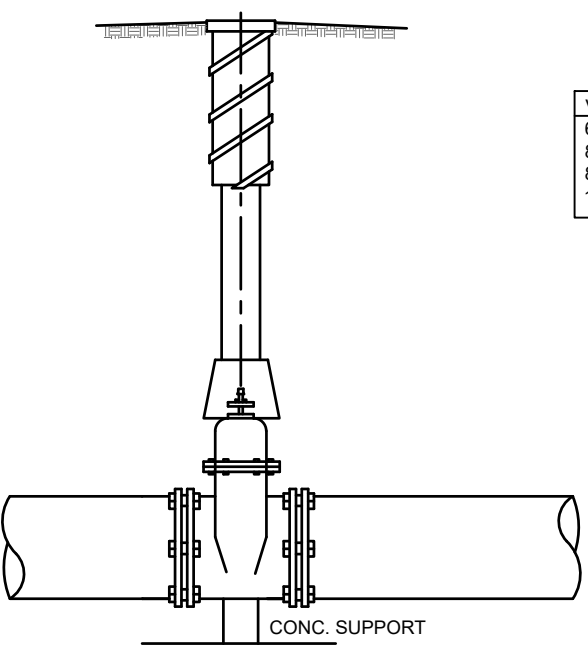
MINIMUM PIPE RESTRAINT SCHEDULE



SD-10W

WATERMAIN BEDDING DETAIL

- NOTES:**
1. RESILIENT SEATED WEDGE GATE VALVES SHALL BE PER PROJECT SPECIFICATIONS.
 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.



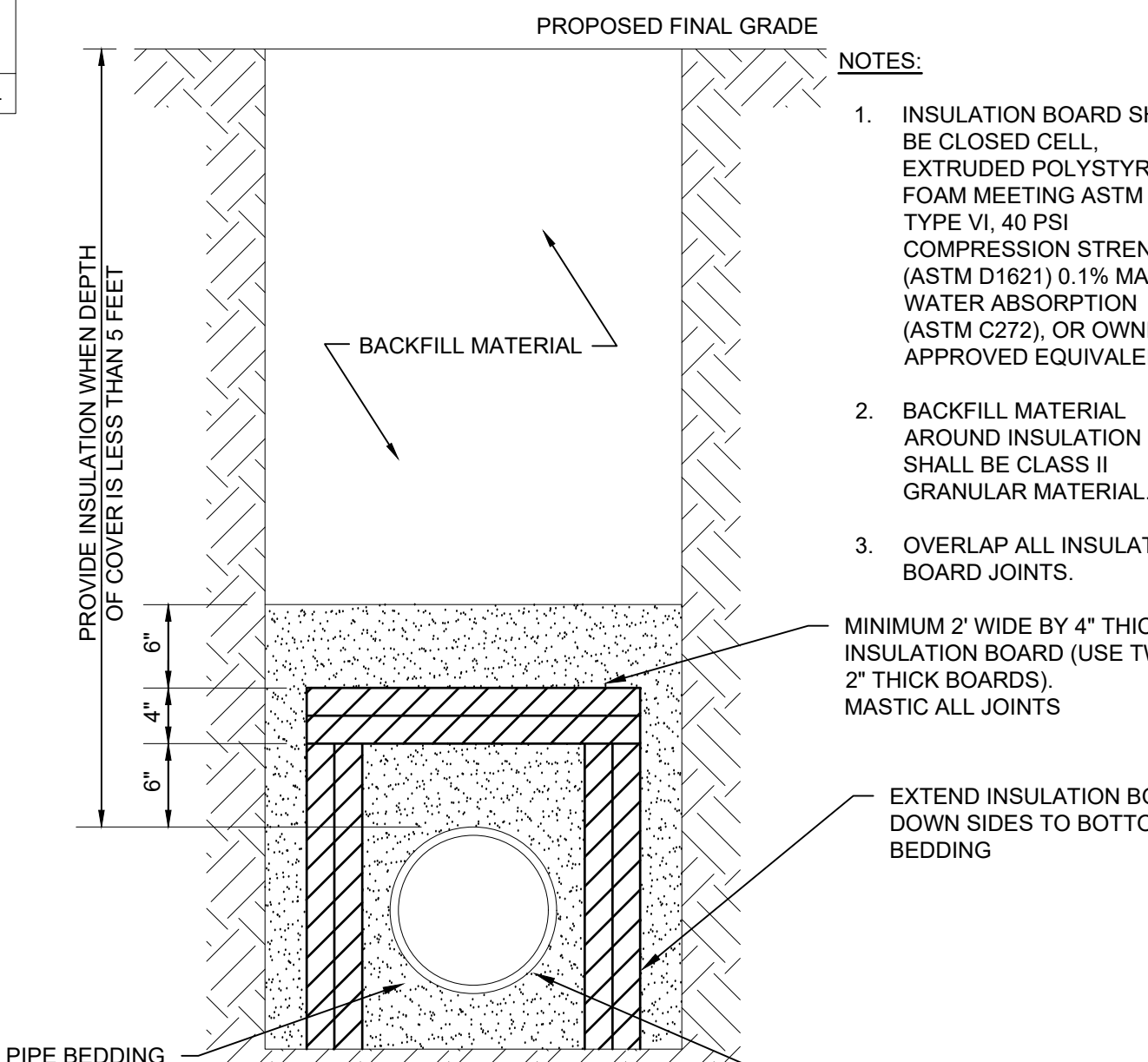
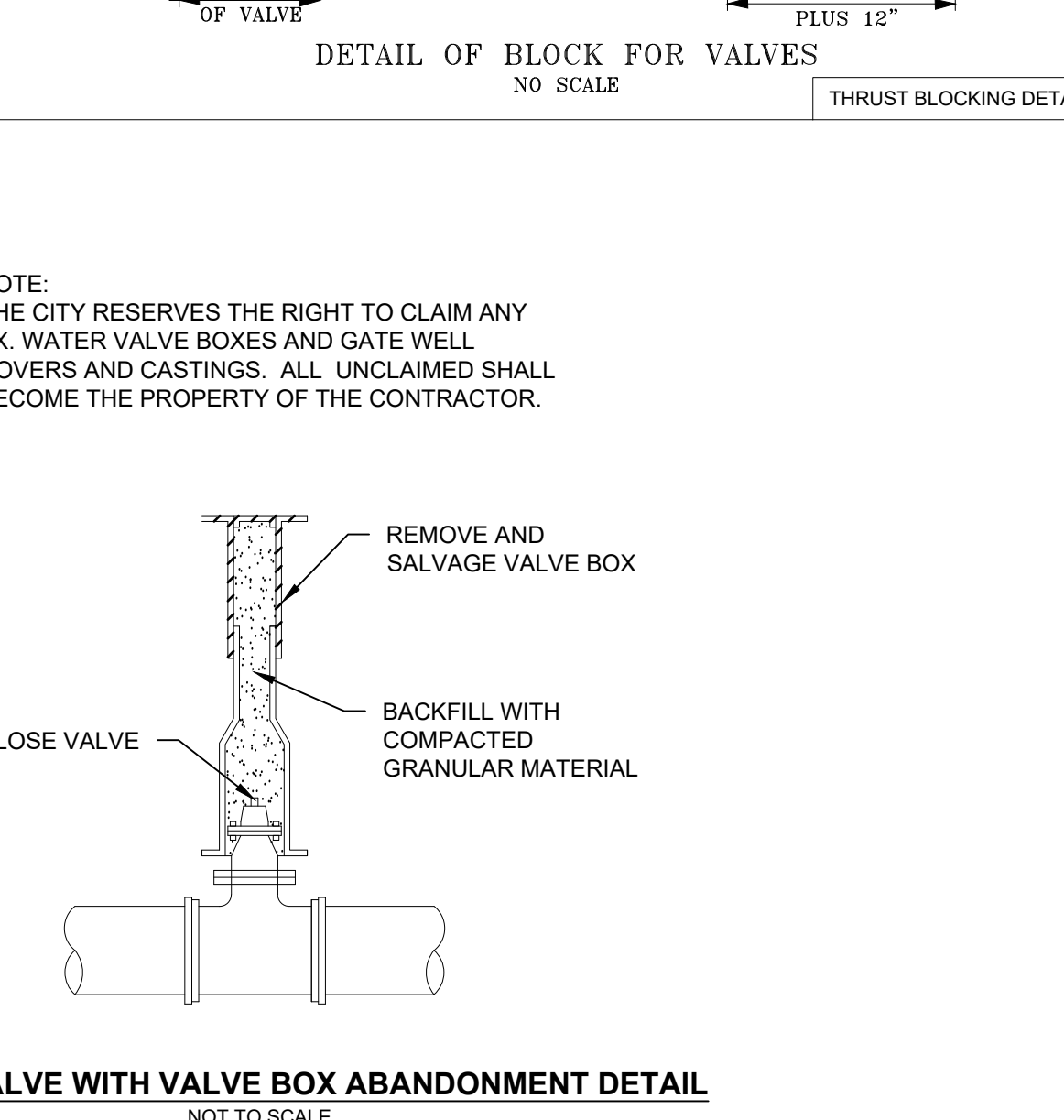
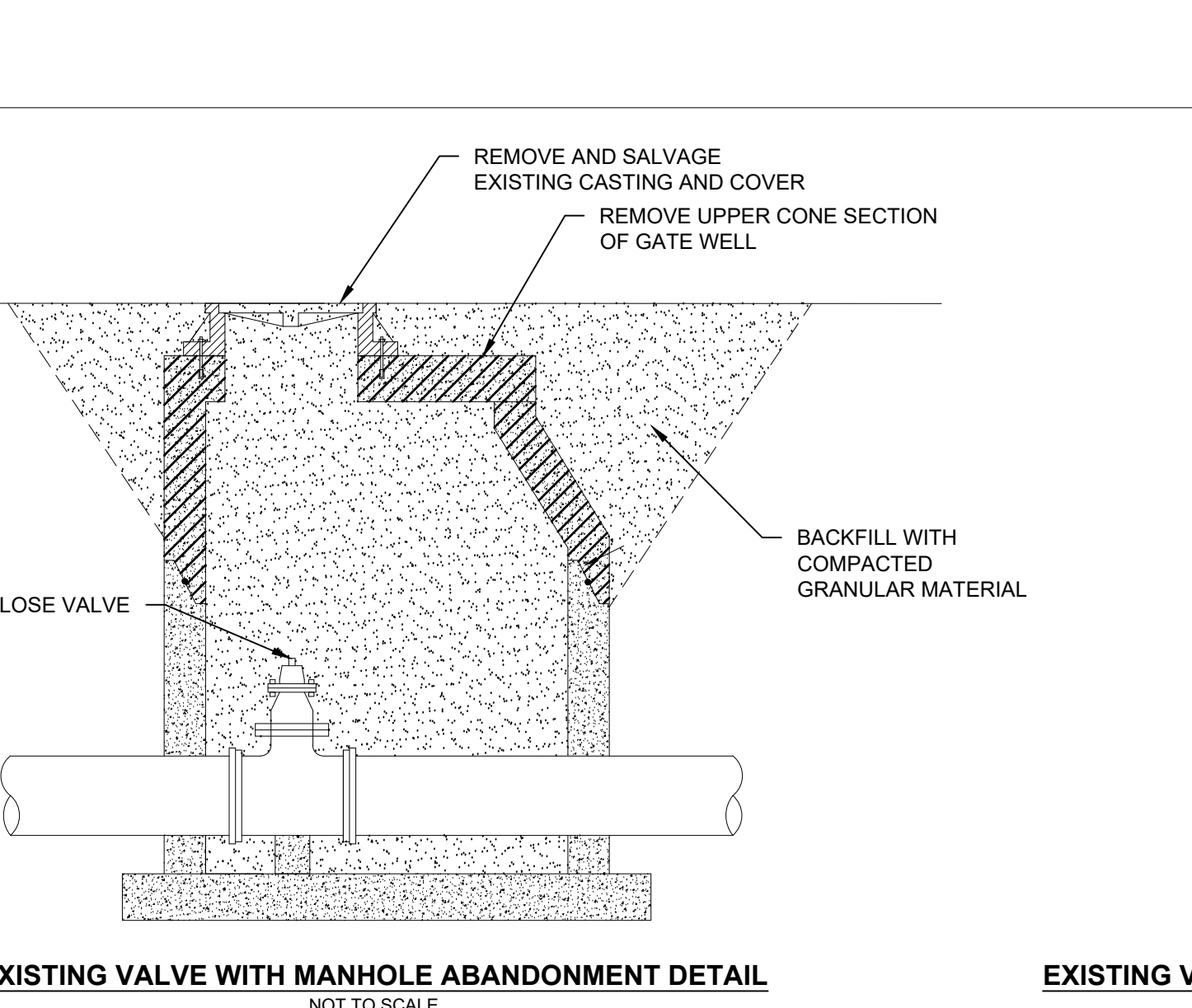
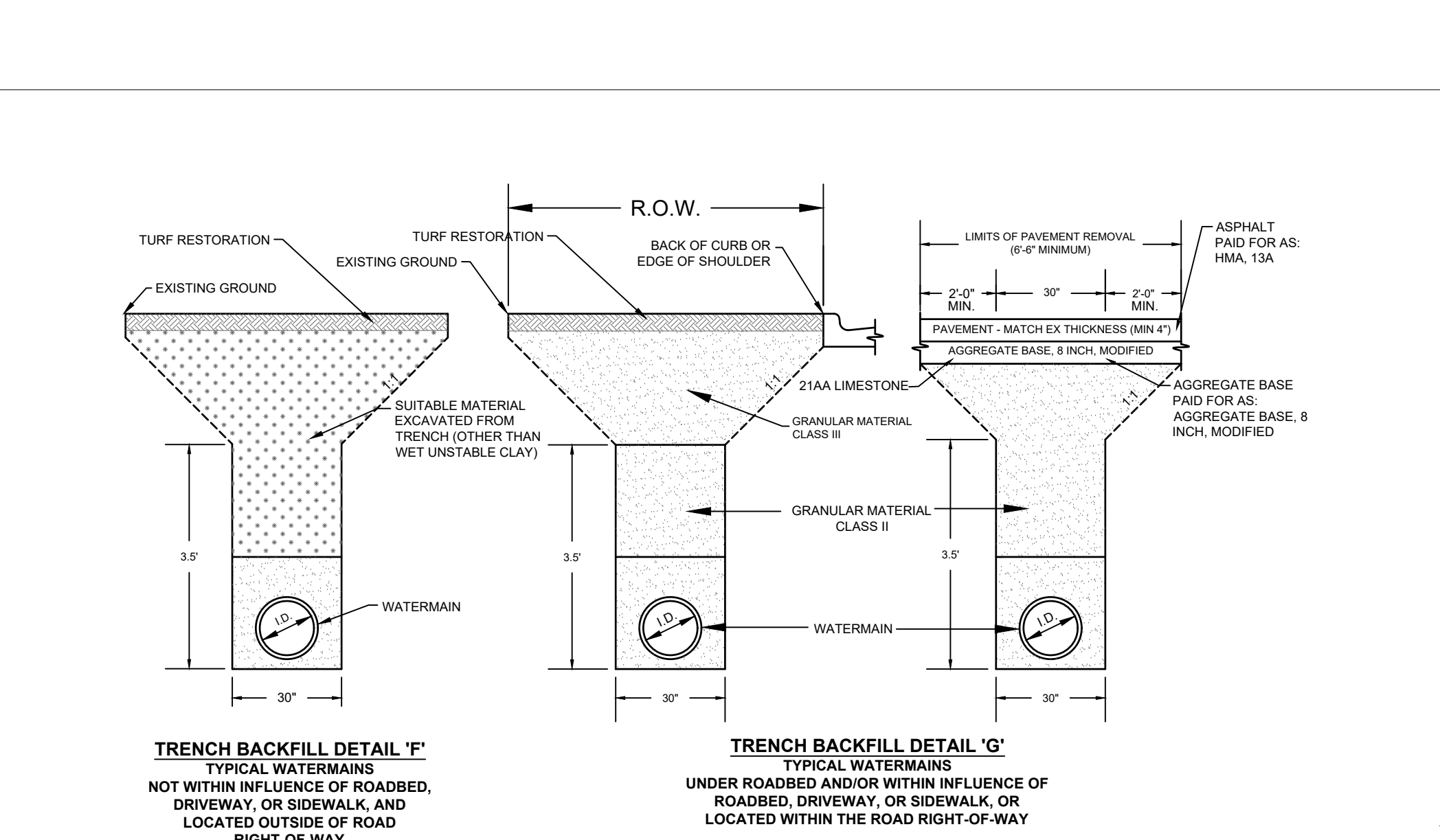
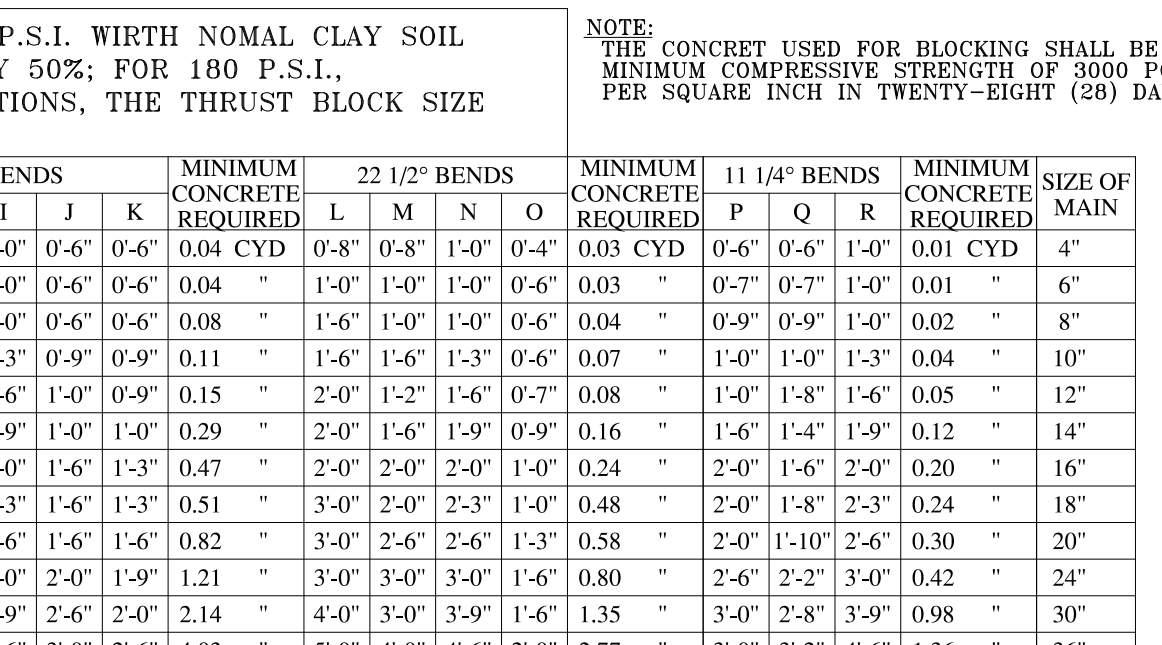
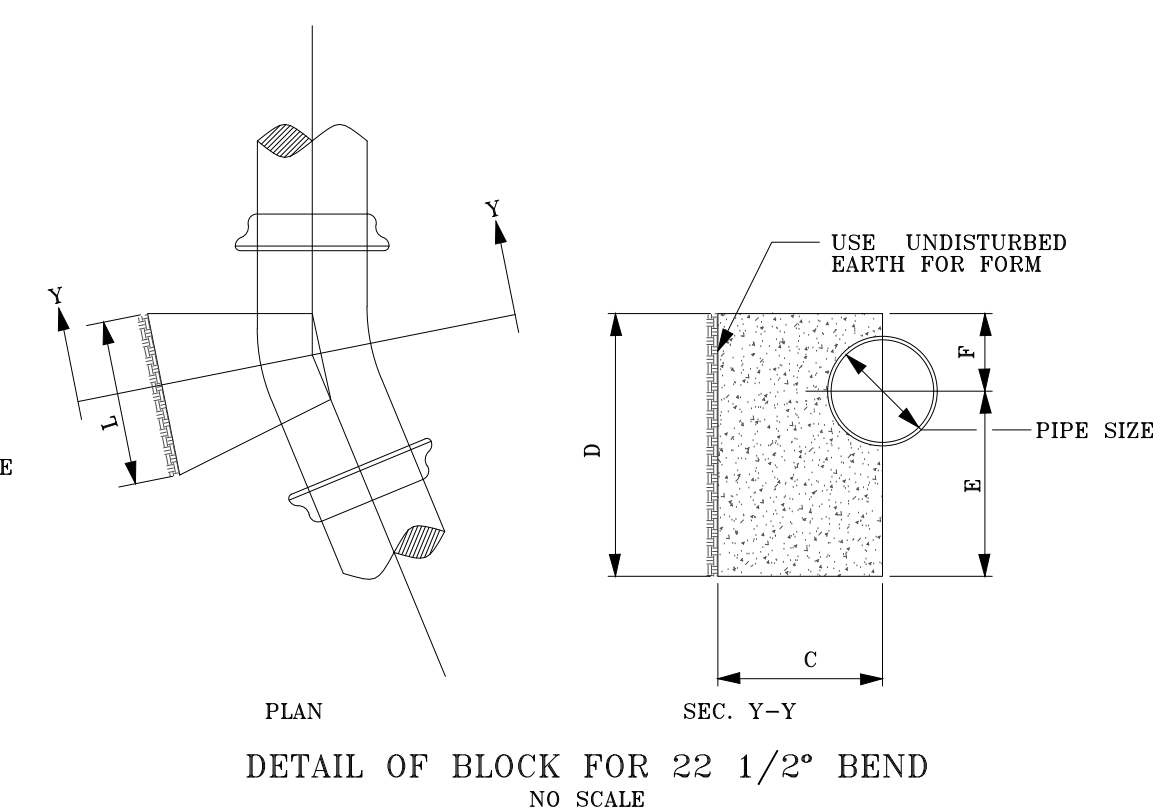
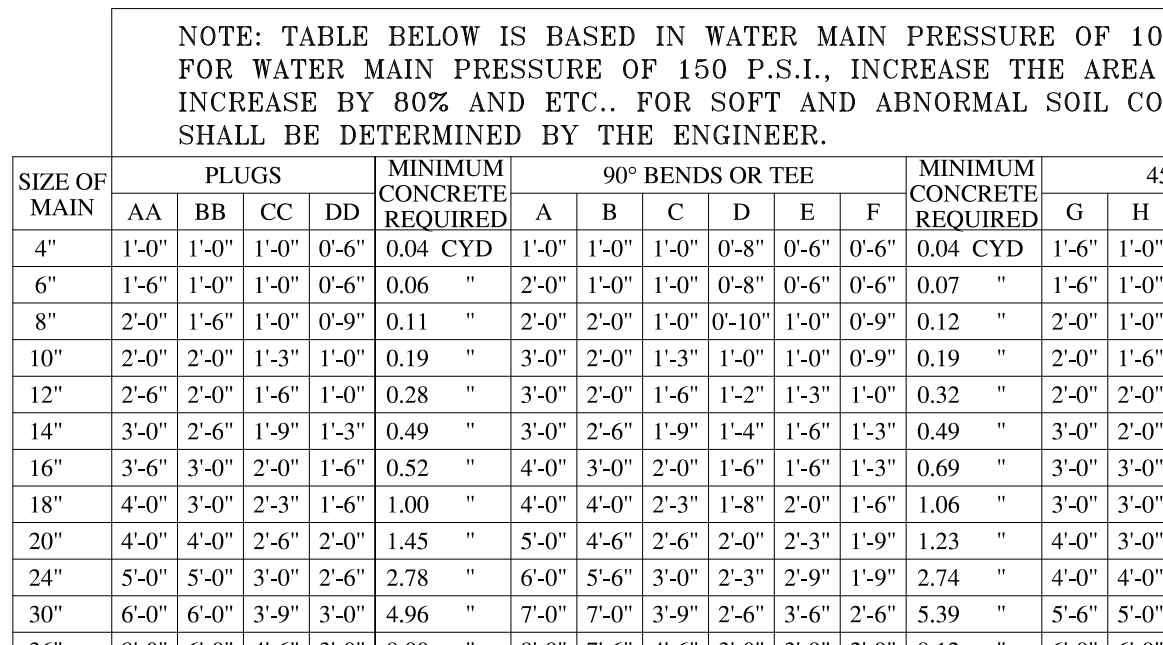
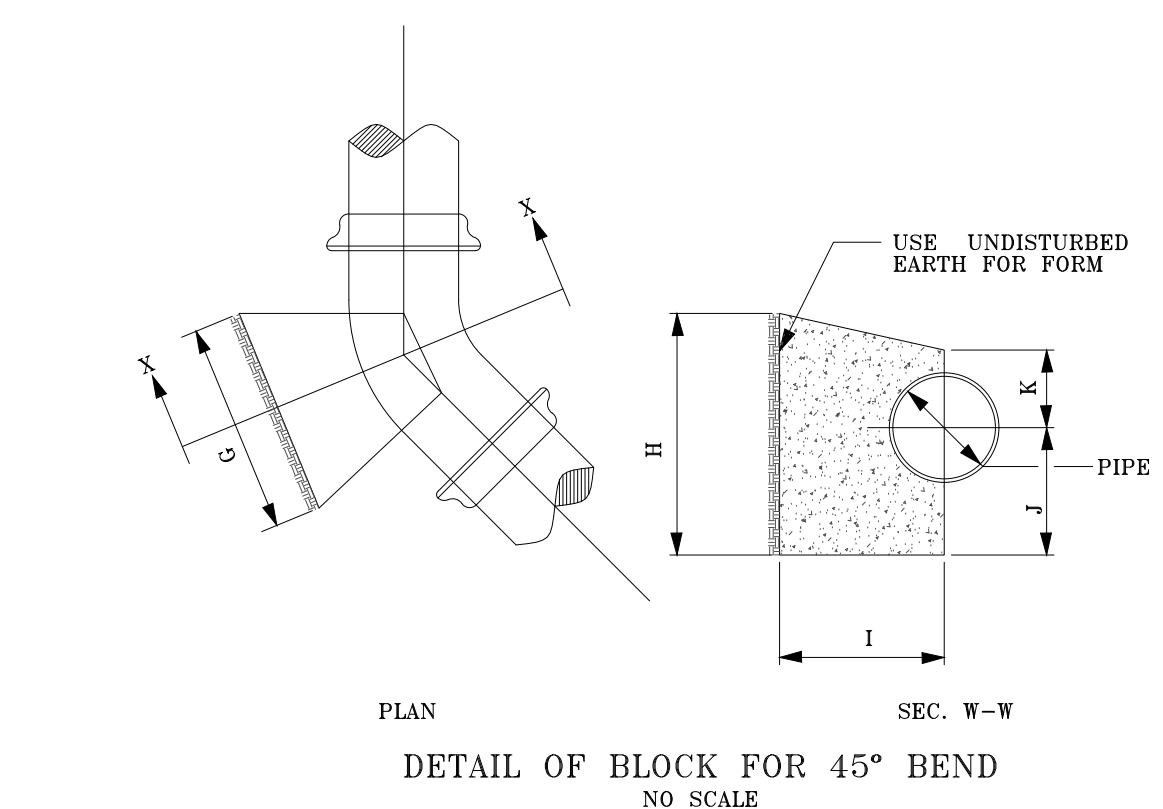
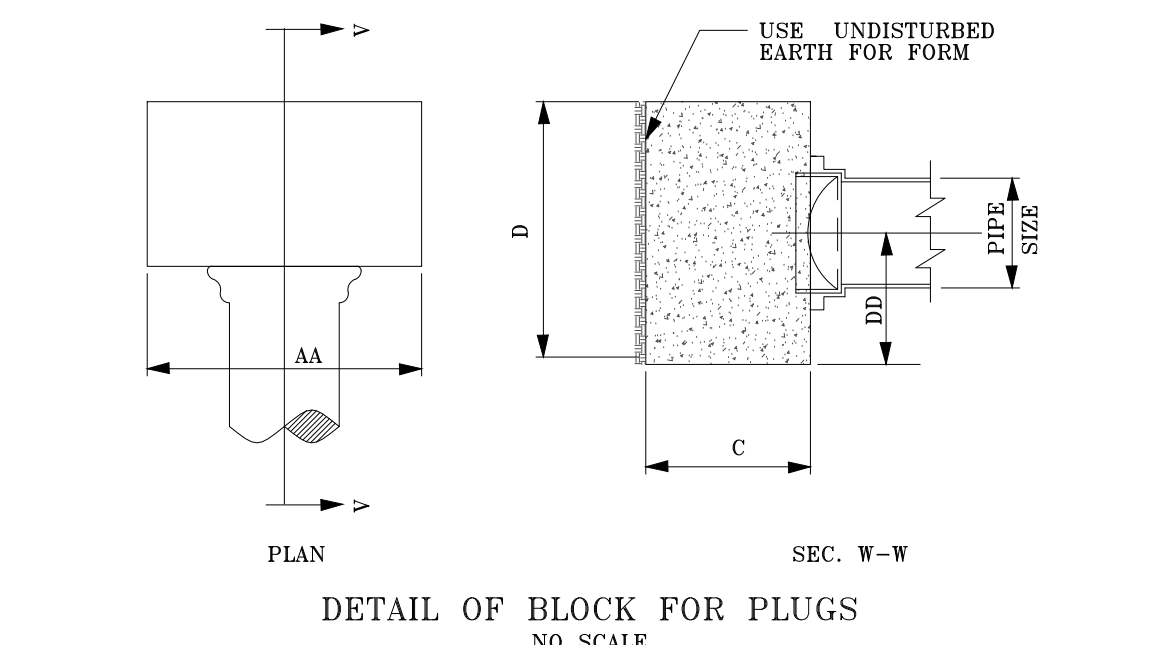
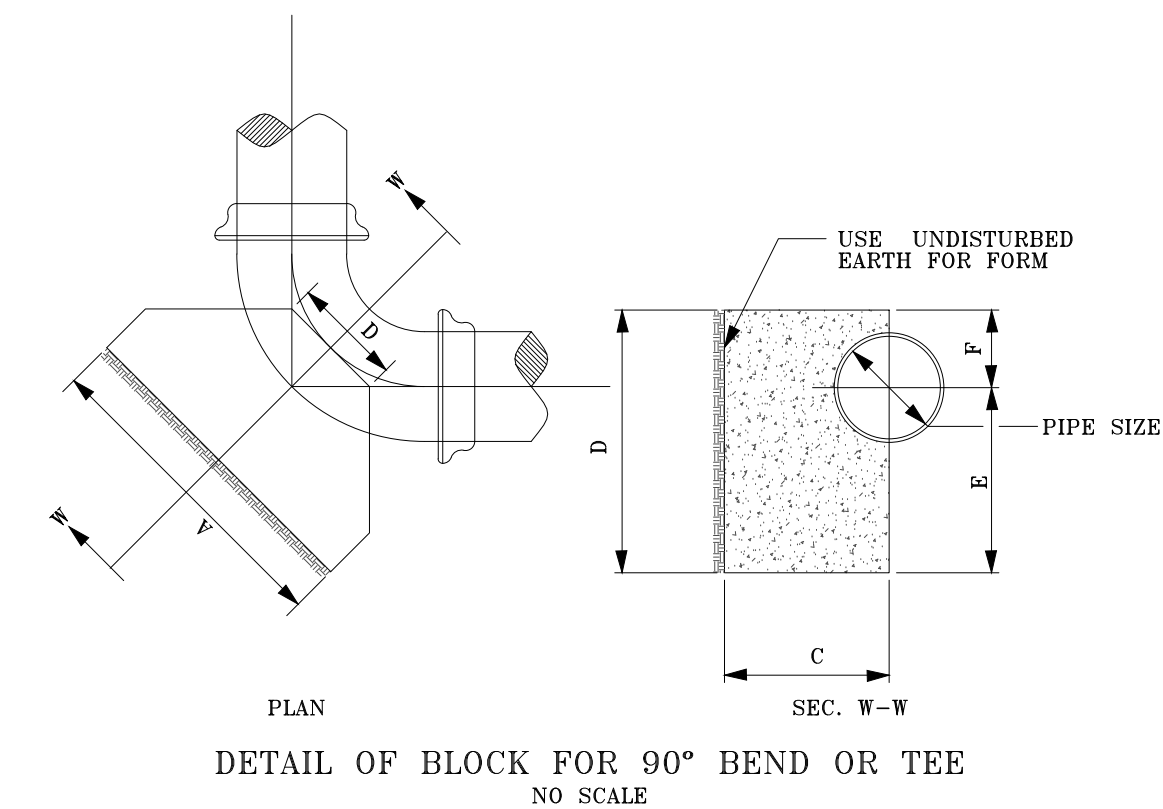
SD-4W

WATER VALVE AND VALVE BOX DETAIL

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 OWOSSO. 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 OWOSSO.

SD-3W

LOCATION OF RESTRAINED JOINTS



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.

STORM SEWER REMOVAL
REMOVAL OF SEWER WITH DIAMETER LESS THAN 12 INCHES, WITHIN THE EXCAVATION LIMITS OF NEW SEWER, IS INCLUDED IN THE UNIT PRICE FOR NEW SEWER AND WILL NOT BE PAID FOR SEPARATELY.

SEWER STRUCTURES
ALL ORIFICES TO RECEIVE SEWER PIPE SHALL BE FITTED WITH KOR-N-SEAL FLEXIBLE CONNECTOR (S) , OR APPROVED EQUAL CONNECTOR. THE FLEXIBLE CONNECTOR WILL NOT BE PAID FOR SEPARATELY, BUT IS CONSIDERED AS PART OF THE DRAINING STRUCTURE PAY ITEM.

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.

STREET APPROACHES
STREET APPROACHES SHALL BE PAID FOR AS PART OF THE MAINLINE PAVING PAY ITMES.

STRUCTURE ADJUSTMENTS
ADJUSTMENTS TO STORM AND SANITARY STRUCTURES LOCATED WITHIN THE PAVEMENT OR CURB AND GUTTER SHALL BE PAID FOR AS: Dr Structure Cover, Adj, Case 1.

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 2012 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 Sidewalk Ramp, Conc, 7 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 POWDER COATED RED, 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.

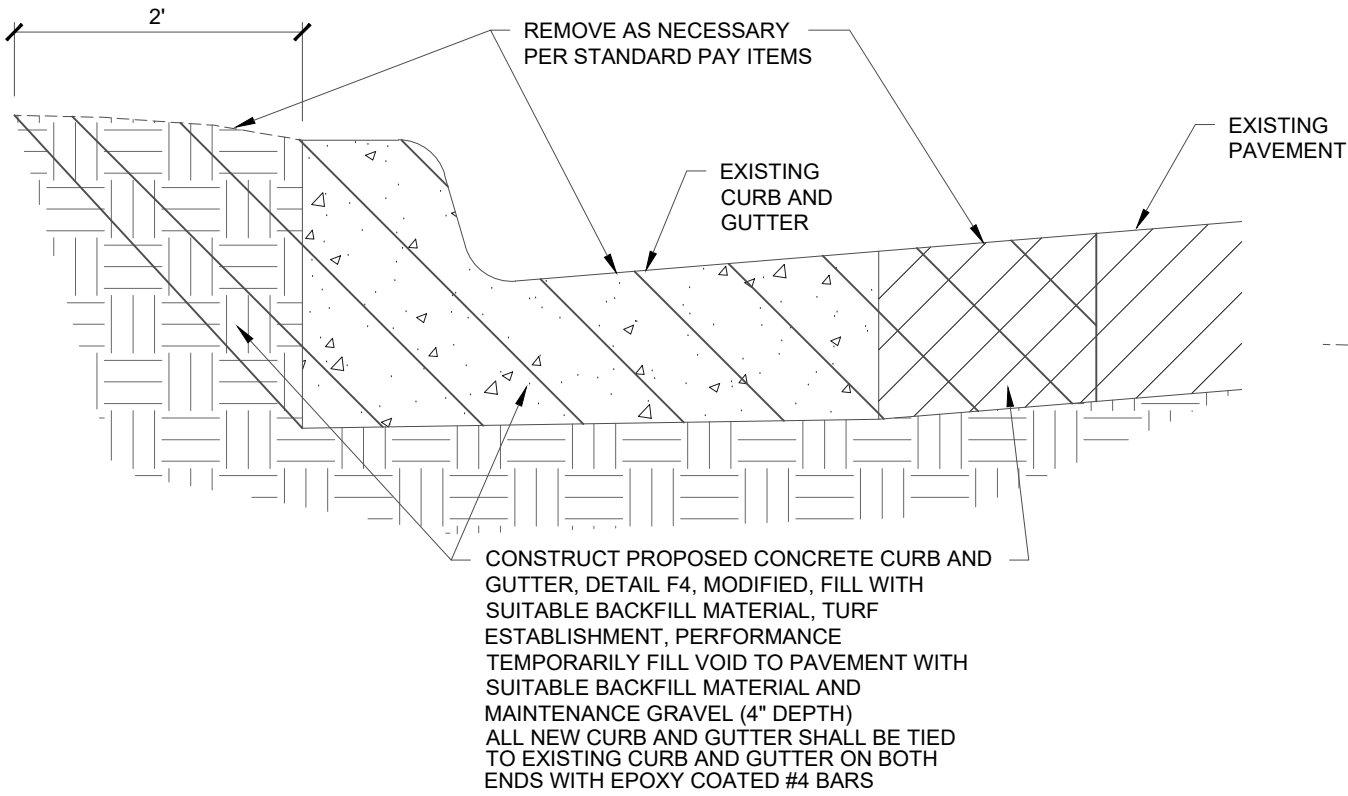
SIDEWALKS LOCATED WITHIN RESIDENTIAL DRIVEWAYS SHALL BE 6-INCHES THICK AND WILL BE PAID FOR AS Sidewalk, Conc, 6 inch.

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

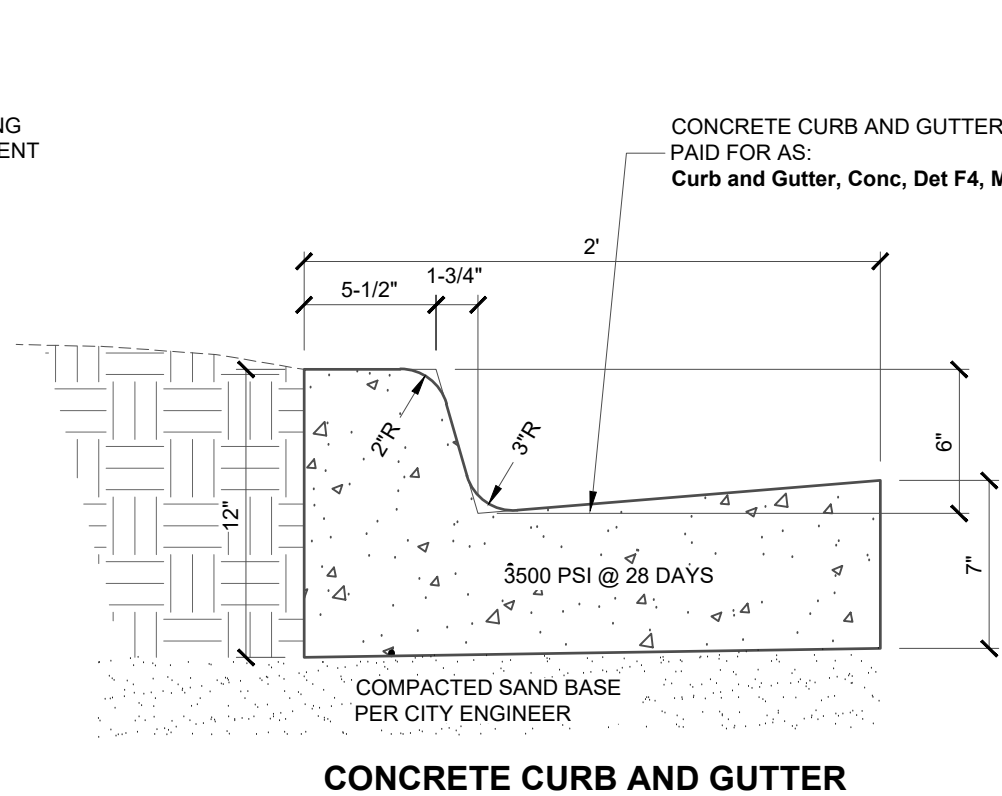
LAWN SPRINKLERS / LANDSCAPING
OWNERS OF EXISTING LAWN SPRINKLER SYSTEMS AND / OR LANDSCAPING SHALL BE NOTIFIED (IN WRITING WITH A COPY SENT TO THE ENGINEER) BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF ANY WORK THAT WILL BE DONE THAT WILL AFFECT THOSE SYSTEMS AND / OR LANDSCAPING. IF THE PROPERTY OWNER 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.

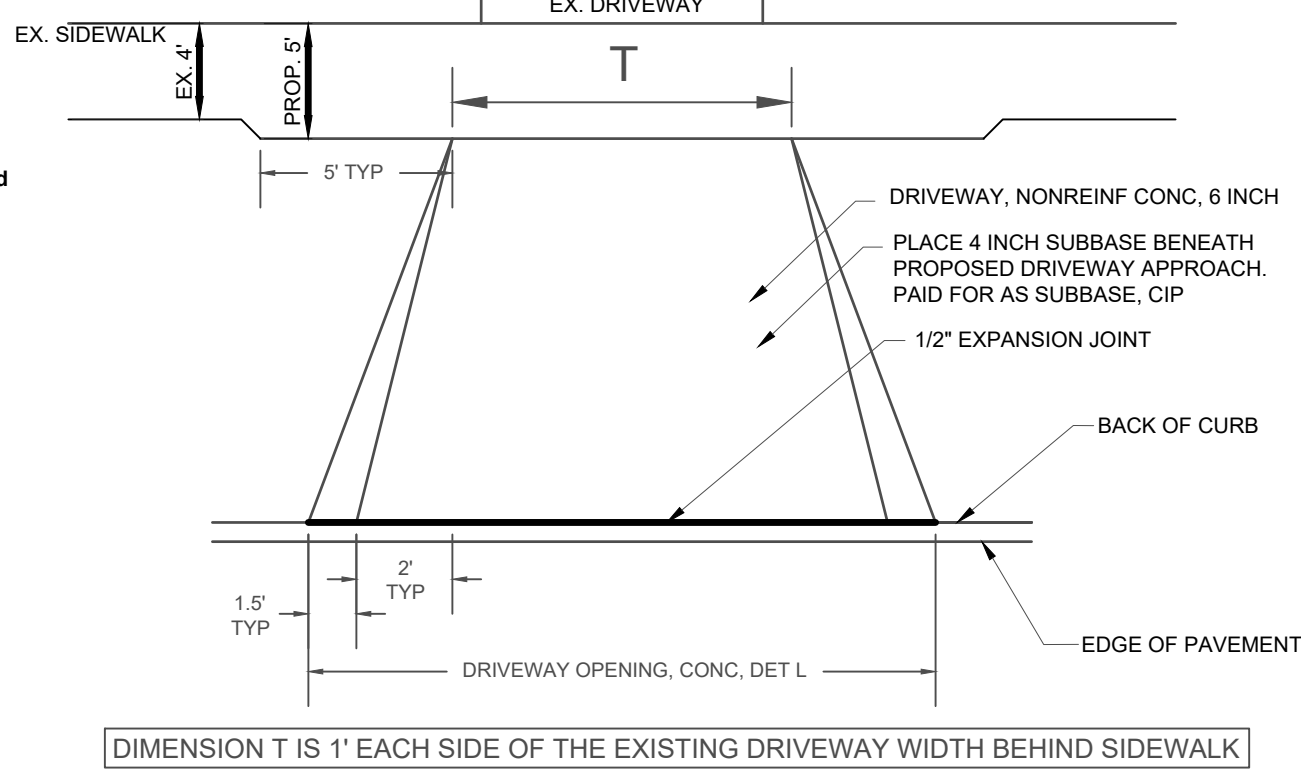
MAINTAINING TRAFFIC
REFER TO THE CONTRACT SPECIAL PROVISION FOR WORK RESTRICTIONS RELATIVE TO MAINTAINING TRAFFIC.



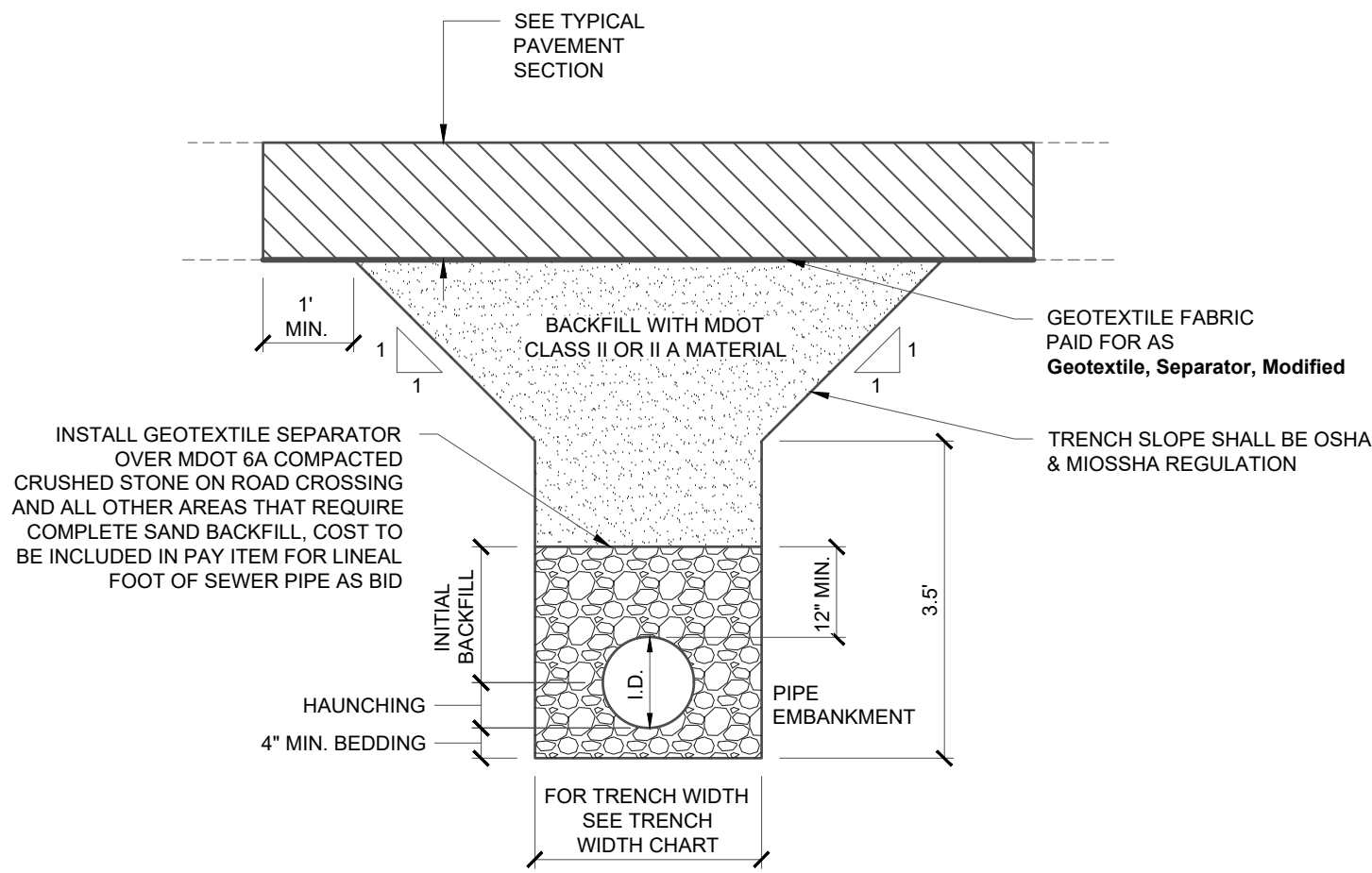
TYPICAL SELECT CURB AND GUTTER REPAIR DETAIL
NOT TO SCALE



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

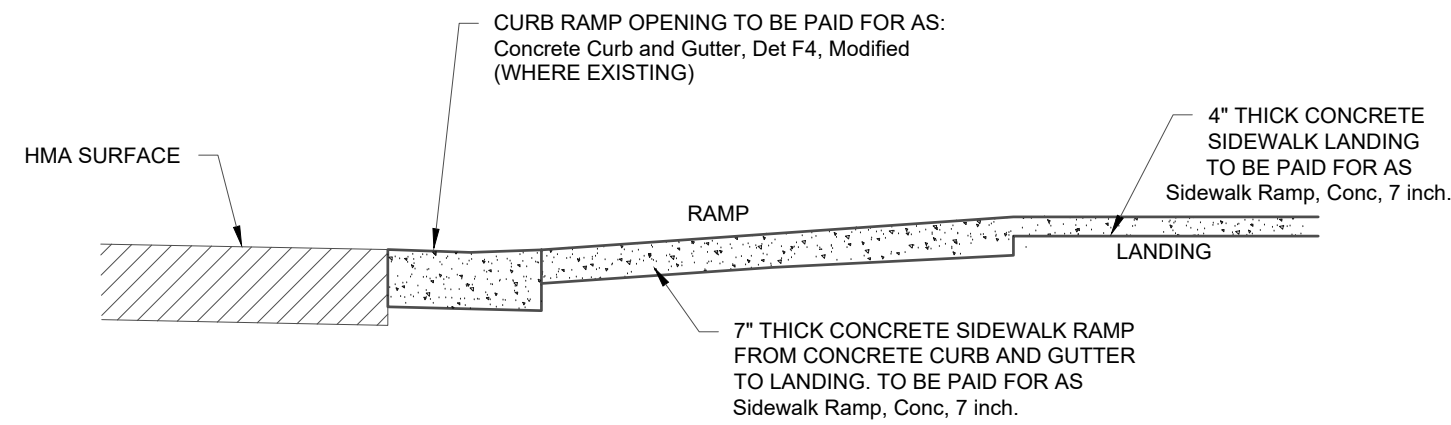


DRIVEWAY APPROACH DETAIL
NOT TO SCALE

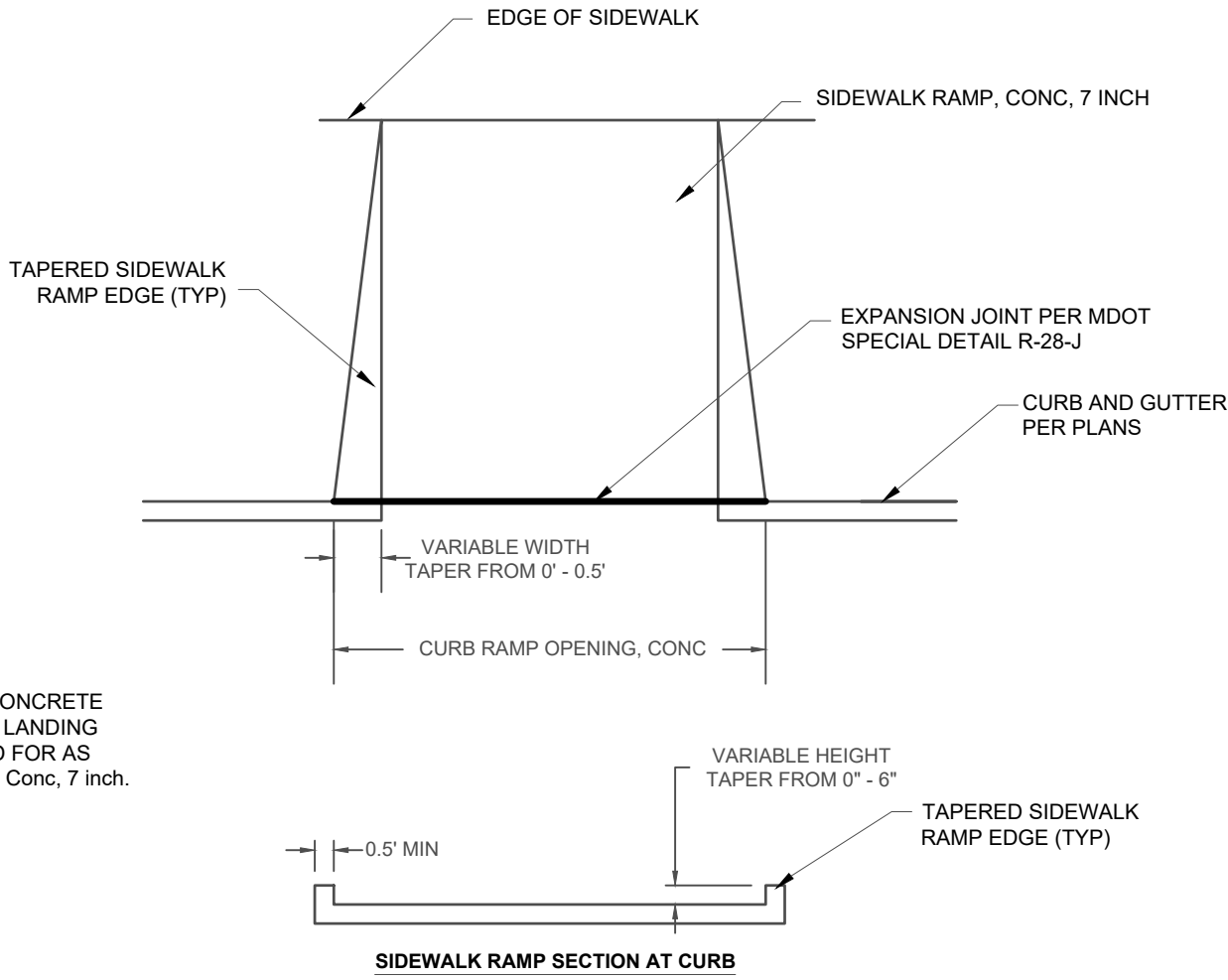


TRENCH DETAIL B, MODIFIED DETAIL
NOT TO SCALE

TRENCH WIDTH CHART		
PIPE SIZE	MINIMUM	MAXIMUM
6", 8" & 10"	24"	30"
12" & 15"	30"	36"
18"	34"	40"
21"	38"	42"
24"	42"	46"
27"	45"	49"
30"	49"	53"
36"	56"	60"
LARGER THAN 36"	I.D. +20"	I.D. +24



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.

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

NO.	1	ISSUED FOR BIDS PLANS	DATE	11/29/22	BY	CW
REVISIONS						
CHECKED BY		ORIGINAL PLAN			APPROVED BY	

2023 WATER MAIN REPLACEMENT PROJECT - DWSRF 7491-01

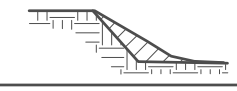

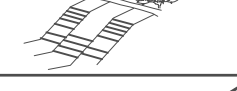
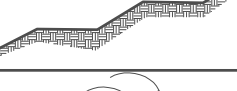
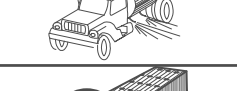


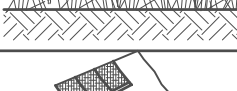
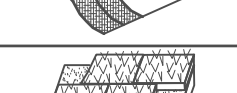



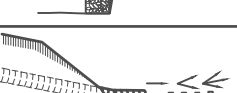
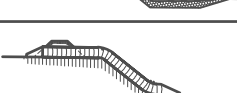
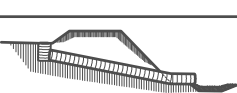

STREET ITEMS GENERAL NOTES & DETAILS

DECEMBER, 2022
PROJECT NO.

FIELD BOOK
PG.

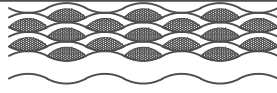

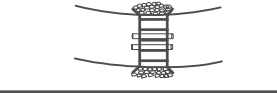
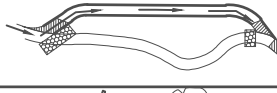

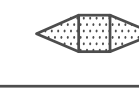
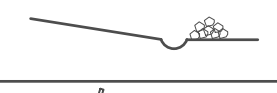

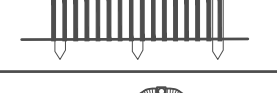

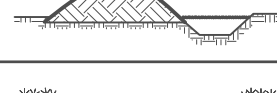
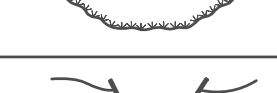




D3

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 SCARRIFICATION		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.



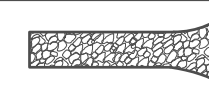
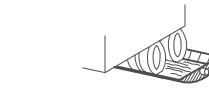
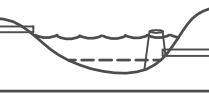
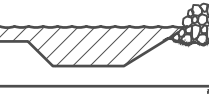



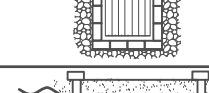

B = BIOENGINEERING

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 resource, 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								N/A				
TEMP CONSTRUCTION ROADS								N/A				
FOUNDATION/ BLDG. CONSTRUCTION								N/A				
SITE CONSTRUCTION												
PERM CONTROL MEASURES												
FINISH GRADING												
LANDSCAPING								N/A				

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	ISSUED FOR BIDS PLANS	11/28/22	CW

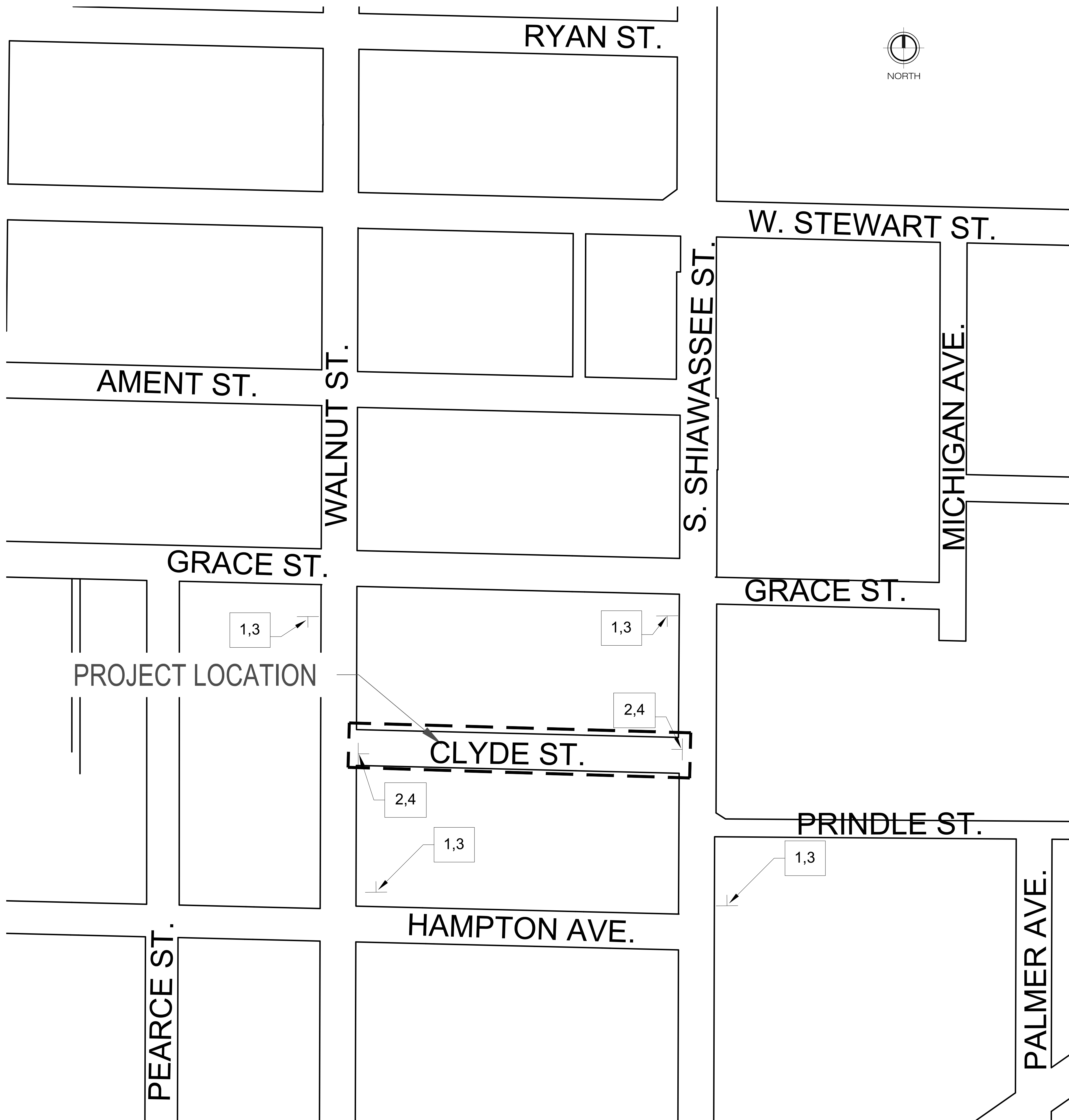
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ELEV.		




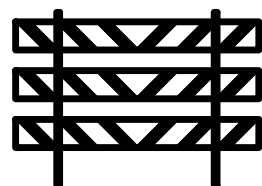
2023 WATER MAIN REPLACEMENT PROJECT - DWSRF 7491-01	SESC STANDARD NOTES AND DETAILS	FIELD BOOK PG.
DECEMBER, 2022 PROJECT NO.		

CLYDE STREET
CITY OF OWOSSO

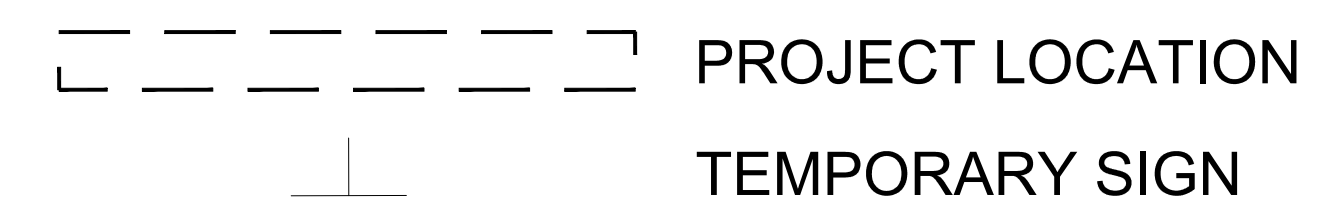
SHEET NO.	DESCRIPTION
CL1	CLYDE ST - COVER SHEET & TRAFFIC CONTROL PLAN
CL2	CLYDE ST - WATER MAIN PLAN AND PROFILE

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



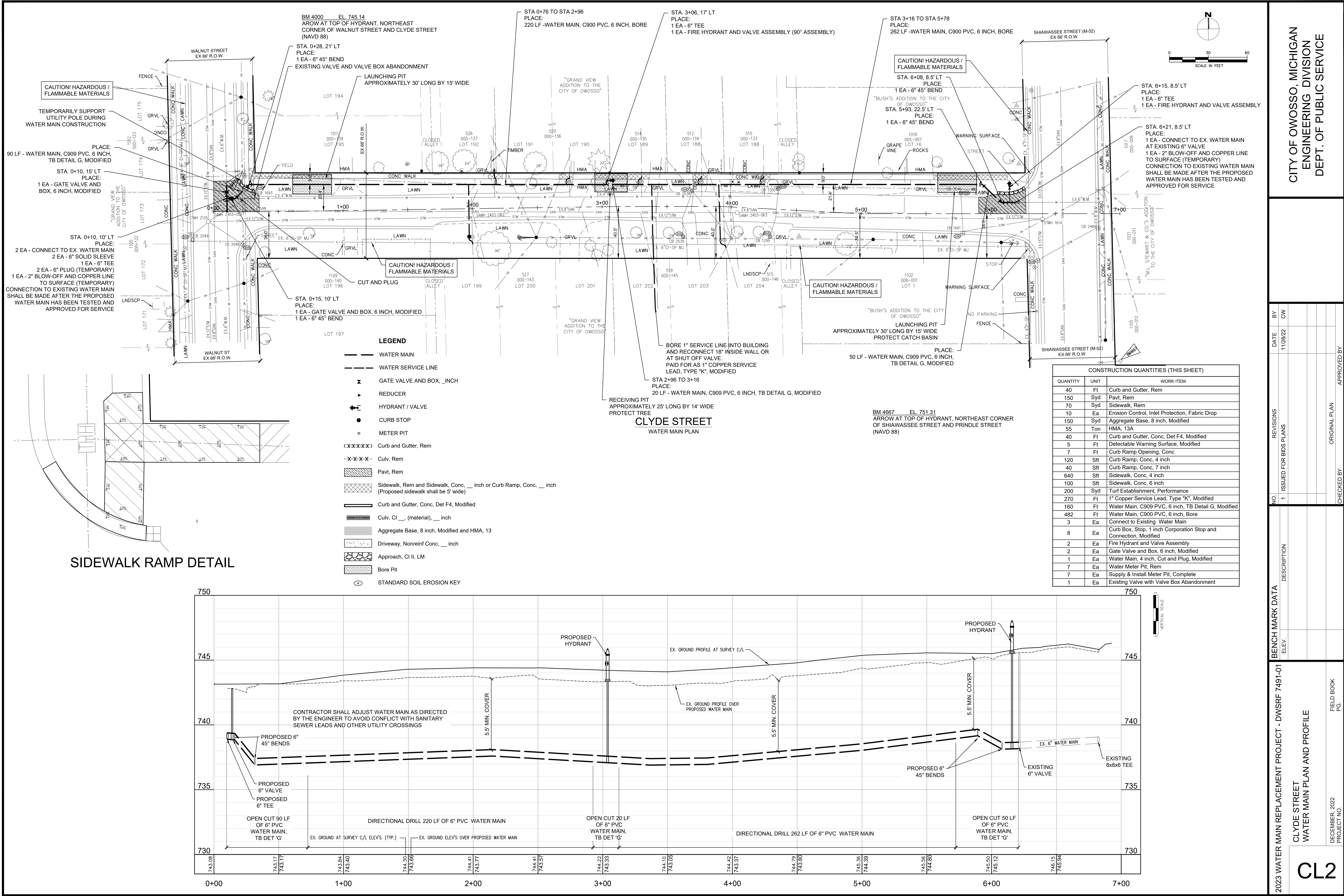
SIGNING REQUIREMENTS					
NO.	SIGN	SIGN DESIGNATION	SIZE	NO. REQ.	TOTAL AREA (SFT)
1		W20-1	48 x 48	4	64
2		R11-3A	60 x 30	2	25
3		M4-8 MOD	30 X 8	4	7
4		TYPE III BARRICADE		2	

MAINTAINING TRAFFIC LEGEND

[illegible]

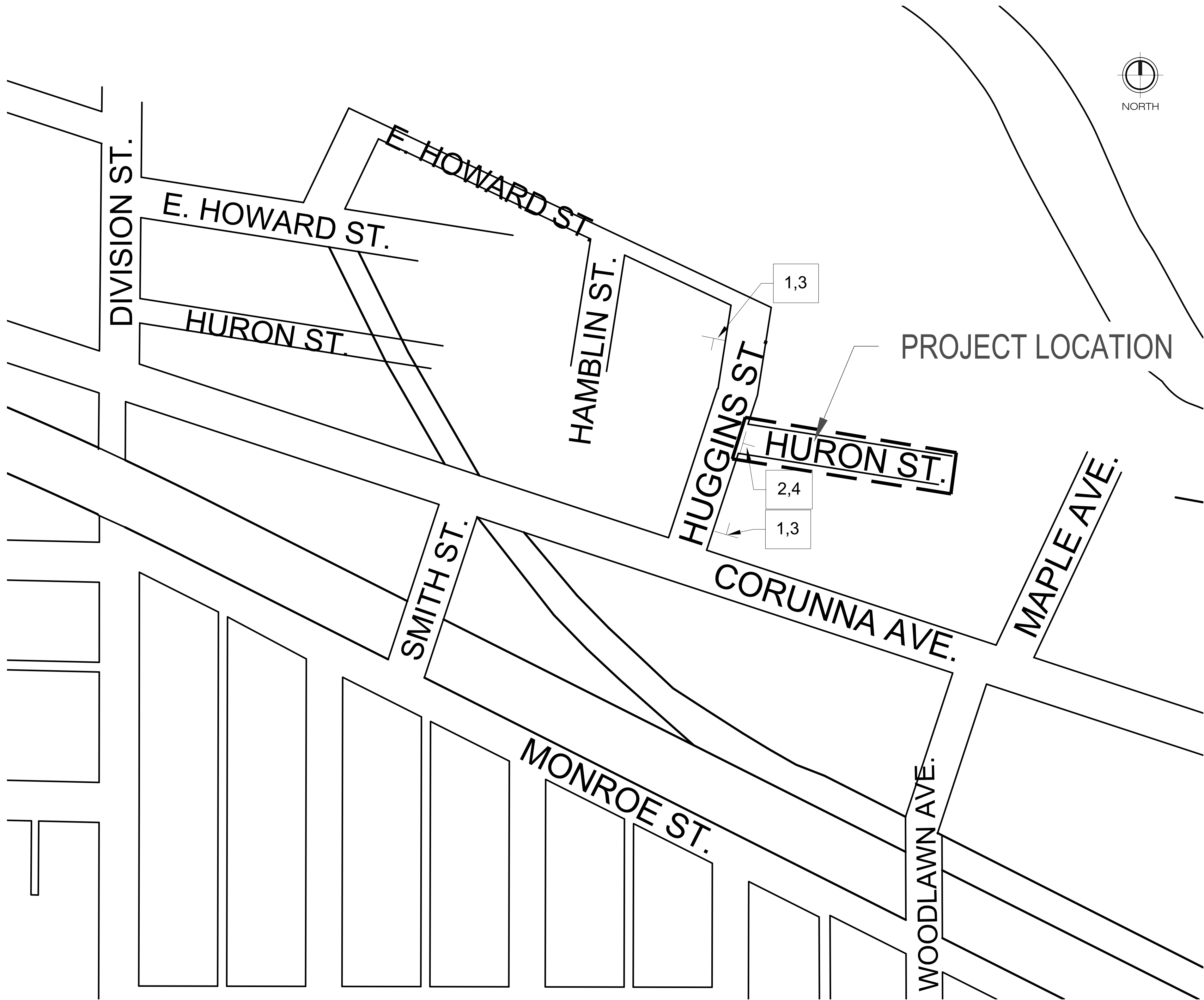
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ELEV.	DESCRIPTION

CL1	CLYDE STREET COVER SHEET & TRAFFIC CONTROL PLAN	FIELD BOOK PG.
	DECEMBER, 2022 PROJECT NO.	



HURON STREET
CITY OF OWOSSO
2023 WATER MAIN REPLACEMENT PROJECT

SHEET NO.	DESCRIPTION
HR1	HURON ST - COVER SHEET & TRAFFIC CONTROL PLAN
HR2	HURON ST - REMOVAL & TEMPORARY WATER PLAN
HR3	HURON ST - WATER MAIN PLAN AND PROFILE

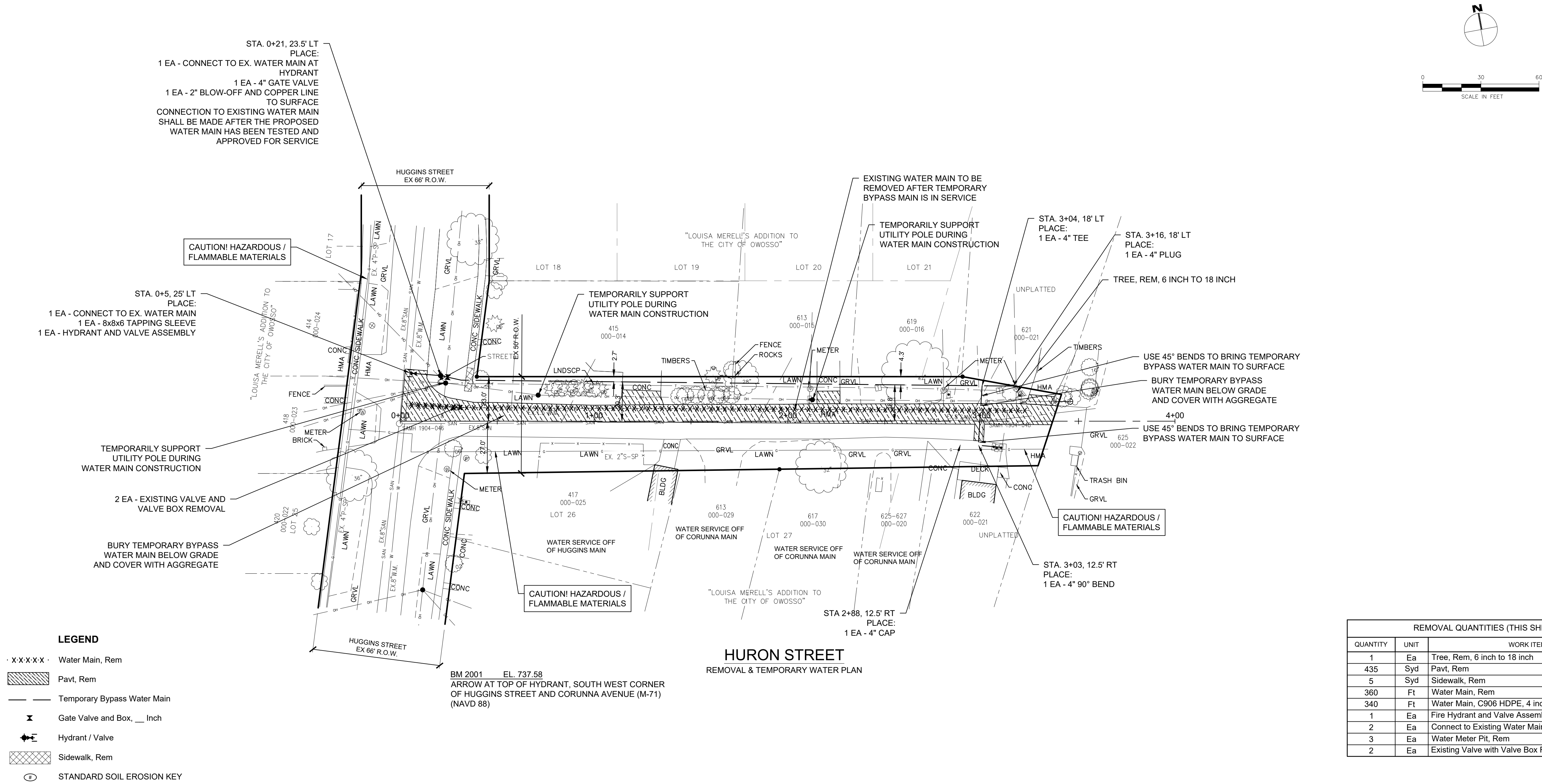


SIGNING REQUIREMENTS					
NO.	SIGN	SIGN DESIGNATOIN	SIZE	NO. REQ.	TOTAL AREA (SFT)
1		W20-1	48 x 48	2	32
2		R11-3A	60 x 30	1	13
3		M4-8 MOD	30 X 8	2	4
4		TYPE III BARRICADE		1	

MAINTAINING TRAFFIC LEGEND

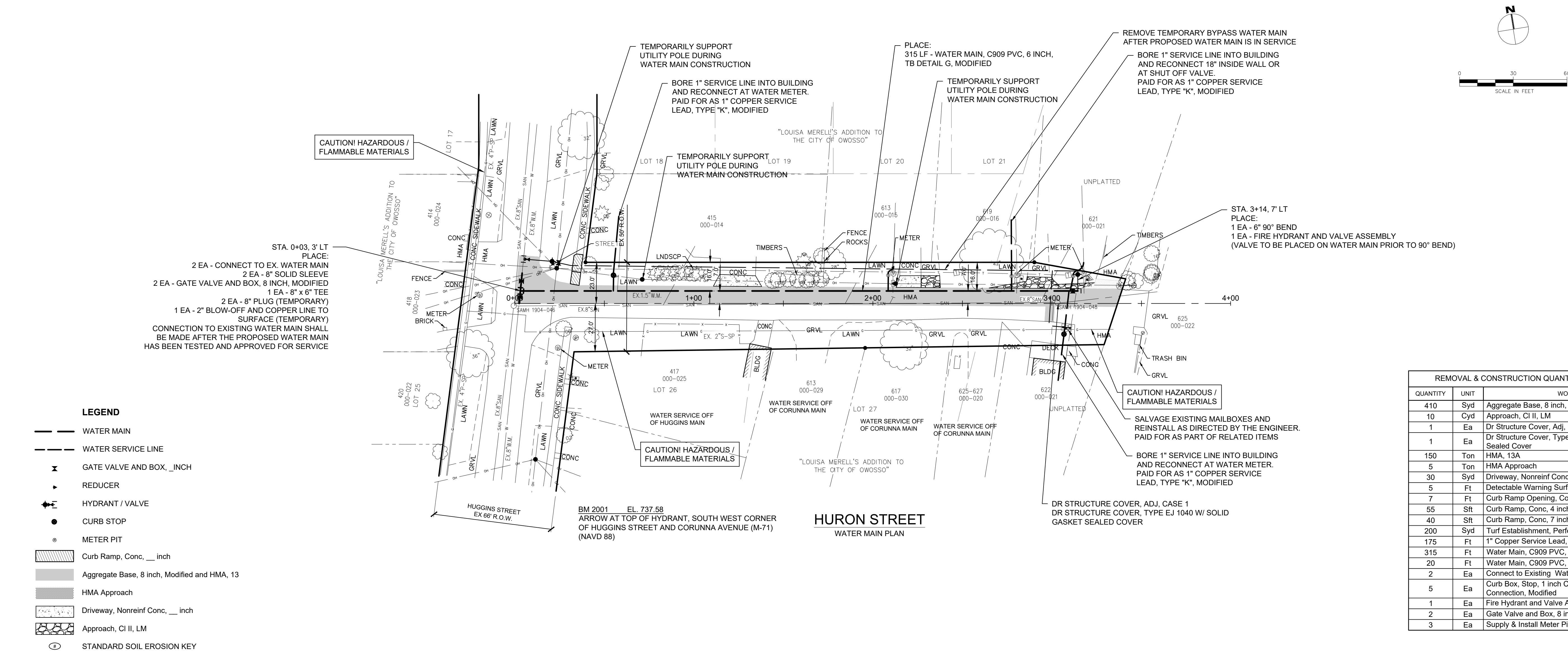
PROJECT LOCATION

TEMPORARY SIGN



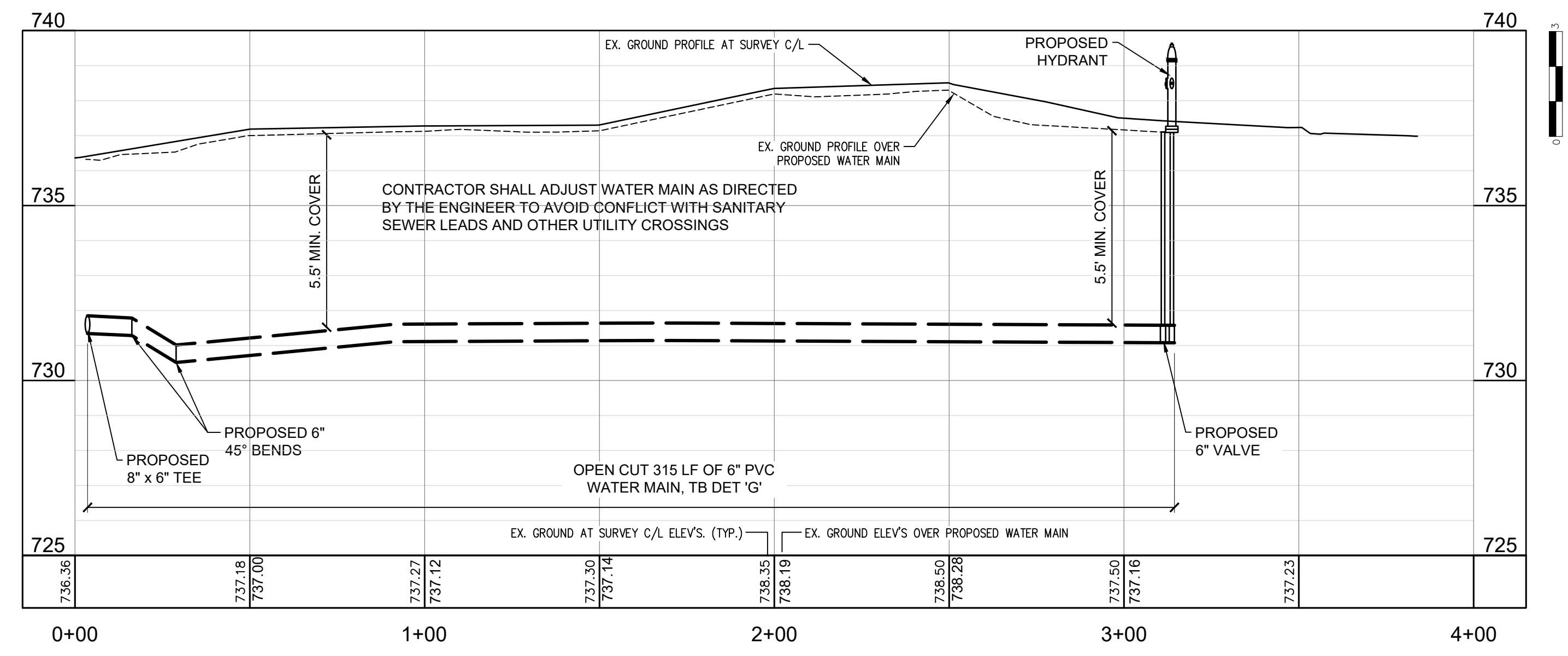
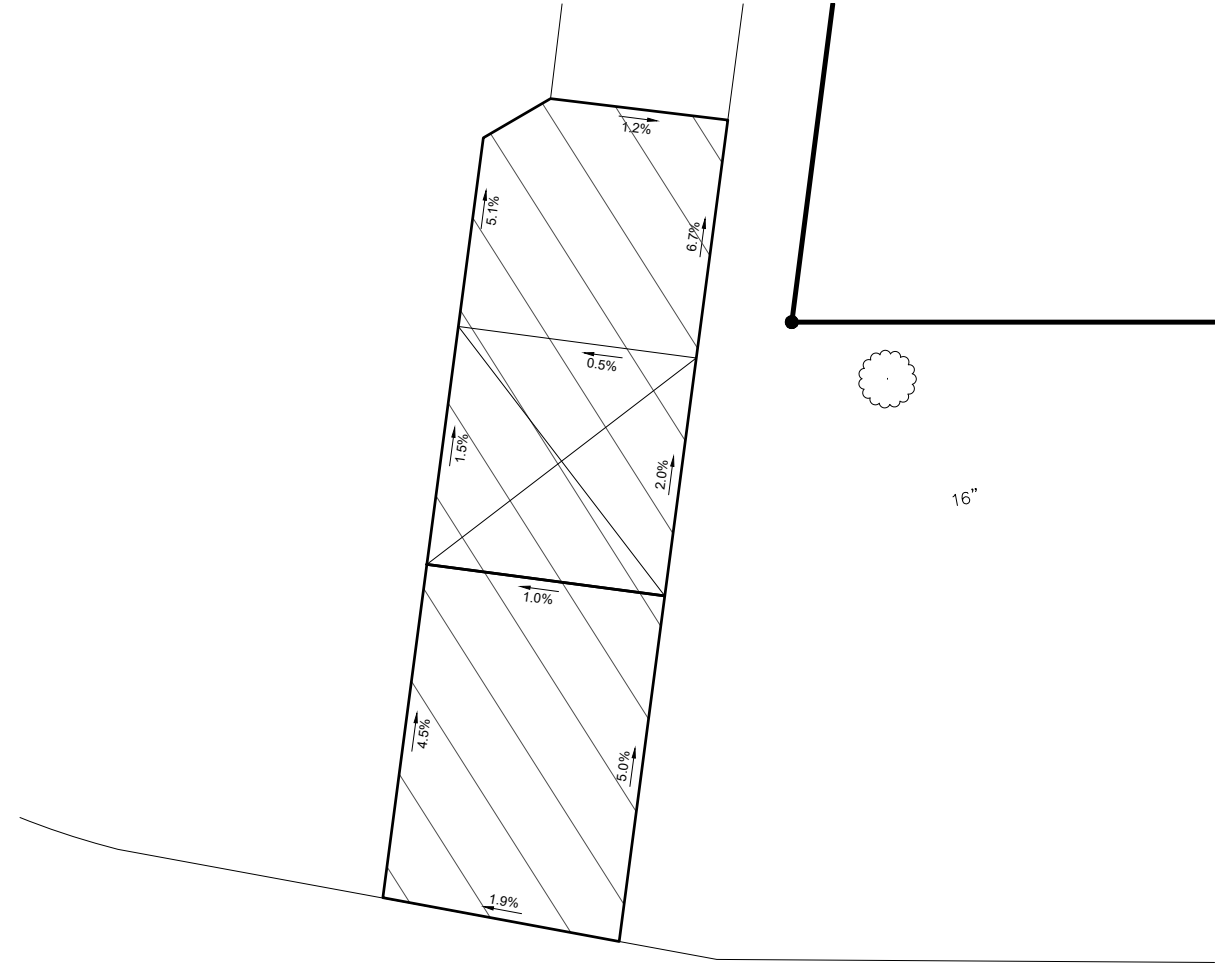
- LEGEND**
- X·X·X·X· Water Main, Rem
 - Pavt, Rem
 - Temporary Bypass Water Main
 - Gate Valve and Box, ___ Inch
 - Hydrant / Valve
 - Sidewalk, Rem
 - STANDARD SOIL EROSION KEY

REMOVAL QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
1	Ea	Tree, Rem, 6 inch to 18 inch
435	Syd	Pavt, Rem
5	Syd	Sidewalk, Rem
360	Ft	Water Main, Rem
340	Ft	Water Main, C906 HDPE, 4 inch, Temporary Bypass
1	Ea	Fire Hydrant and Valve Assembly
2	Ea	Connect to Existing Water Main
3	Ea	Water Meter Pit, Rem
2	Ea	Existing Valve with Valve Box Removal



STA. 0+03, 3' LT
PLACE:
2 EA - CONNECT TO EX. WATER MAIN
2 EA - 8" SOLID SLEEVE
2 EA - GATE VALVE AND BOX, 8 INCH, MODIFIED
1 EA - 8" x 6" TEE
2 EA - 8" PLUG (TEMPORARY)
1 EA - 2" BLOW-OFF AND COPPER LINE TO SURFACE (TEMPORARY)
CONNECTION TO EXISTING WATER MAIN SHALL BE MADE AFTER THE PROPOSED WATER MAIN HAS BEEN TESTED AND APPROVED FOR SERVICE

REMOVAL & CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
410	Syd	Aggregate Base, 8 inch, Modified
10	Cyd	Approach, CI II, LM
1	Ea	Dr Structure Cover, Adj, Case 1
1	Ea	Dr Structure Cover, Type EJ 1040 w/ Solid Gasket Sealed Cover
150	Ton	HMA, 13A
5	Ton	HMA Approach
30	Syd	Driveway, Nonreinf Conc, 6 inch
5	Ft	Detectable Warning Surface, Modified
7	Ft	Curb Ramp Opening, Conc
55	Sft	Curb Ramp, Conc, 4 inch
40	Sft	Curb Ramp, Conc, 7 inch
200	Syd	Turf Establishment, Performance
175	Ft	1" Copper Service Lead, Type "K", Modified
315	Ft	Water Main, C909 PVC, 6 inch, TB Detail G, Modified
20	Ft	Water Main, C909 PVC, 8 inch, TB Detail G, Modified
2	Ea	Connect to Existing Water Main
5	Ea	Curb Box, Stop, 1 inch Corporation Stop and Connection, Modified
1	Ea	Fire Hydrant and Valve Assembly
2	Ea	Gate Valve and Box, 8 inch, Modified
3	Ea	Supply & Install Meter Pit, Complete

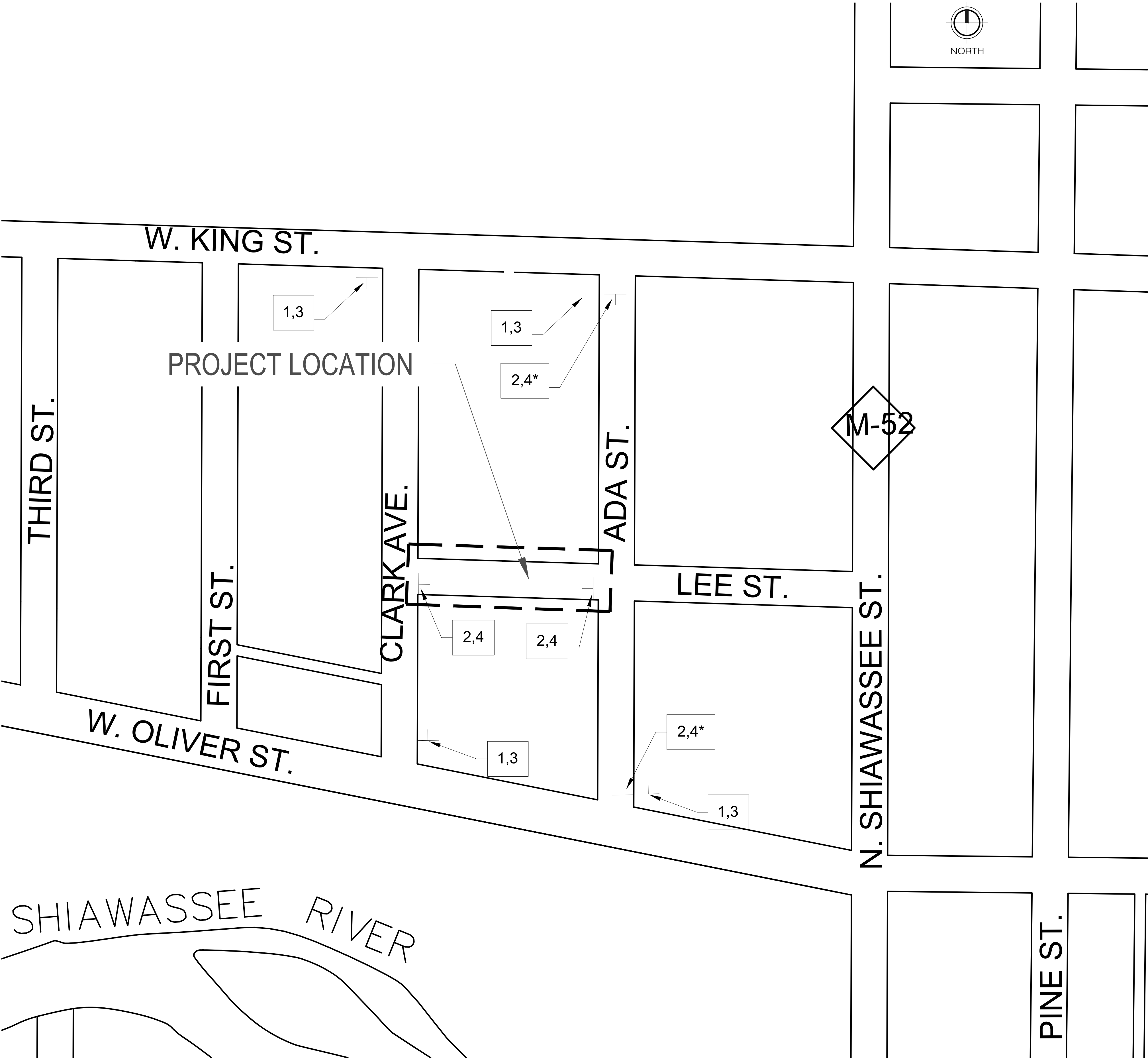


SIDEWALK RAMP DETAIL

LEE STREET
CITY OF OWOSSO
2023 WATER MAIN REPLACEMENT PROJECT

SHEET NO.	DESCRIPTION
LE1	LEE ST - COVER SHEET & TRAFFIC CONTROL PLAN
LE2	LEE ST - TYPICAL CROSS SECTIONS
LE3	LEE ST - REMOVAL PLAN
LE4 - LE5	LEE ST - ROAD PLAN AND PROFILE
LE6	LEE ST - SOIL BORINGS
LE7	LEE ST - WATER MAIN PLAN AND PROFILE

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



SIGNING REQUIREMENTS					
NO.	SIGN	SIGN DESIGNATOIN	SIZE	NO. REQ.	TOTAL AREA (SFT)
1		W20-1	48 x 48	4	64
2		R11-3A	60 x 30	4	50
3		M4-8 MOD	48 X 12	4	16
4		TYPE III BARRICADE		4	

MAINTAINING TRAFFIC LEGEND

PROJECT LOCATION

TEMPORARY SIGN

*SIGN/BARRICADE ONLY NEEDED WHEN WORKING IN THE LEE & ADA INTERSECTION

2023 WATER MAIN REPLACEMENT PROJECT - DWSRF 7491-01

LEE STREET
COVER SHEET & TRAFFIC CONTROL PLAN

DECEMBER, 2022
PROJECT NO.

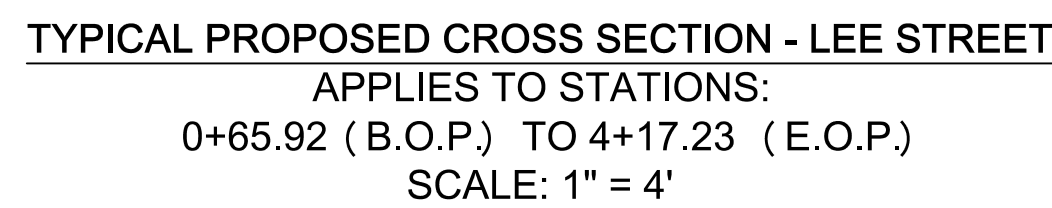
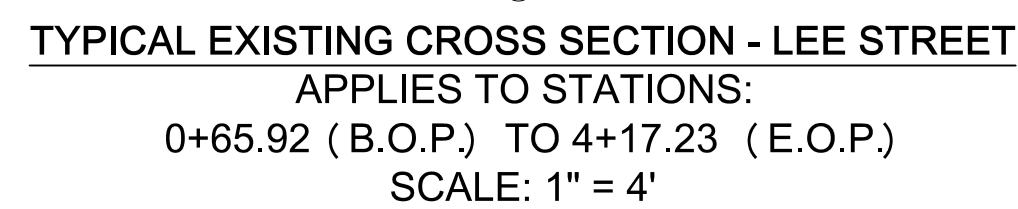
LE1

BENCH MARK DATA

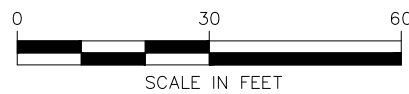
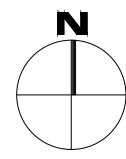
NO.	ISSUED FOR BIDS PLANS	REVISIONS	DATE	BY
1			11/28/22	CW

FIELD BOOK
PG.

DESCRIPTION	ELEV.	CHECKED BY	APPROVED BY

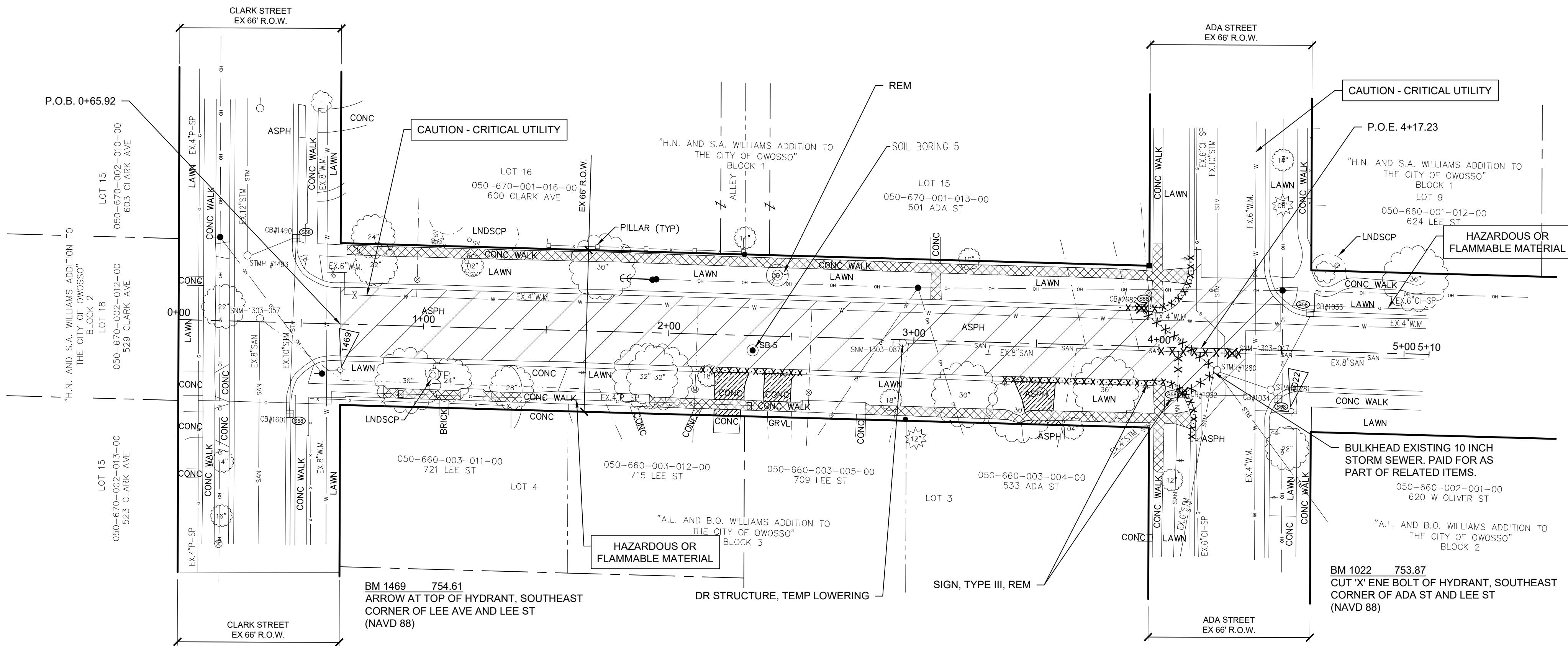


LEE STREET - HMA APPLICATION RATE					
ITEM	PAY ITEM	RATE PER SYD	PERFORMANCE GRADE	ESTIMATED THICKNESS	REMARKS
HMA	HMA, 5EML	165 LBS.	64-28	1.5"	TOP COURSE - AWI = 220 (MIN)
	HMA, 3EML	330 LBS.	64-28	3"	BASE COURSE
DRIVE APPROACH BEHIND SIDEWALK	HAND PATCHING	220 LBS.	58-28	2"	TOP COURSE - AWI = 220 (MIN) HMA, 5EML
	HAND PATCHING	330 LBS.	58-28	3"	BASE COURSE HMA, 3EML
BOND COAT		0.1 GAL.			SS-1H (FOR INFORMATION ONLY)



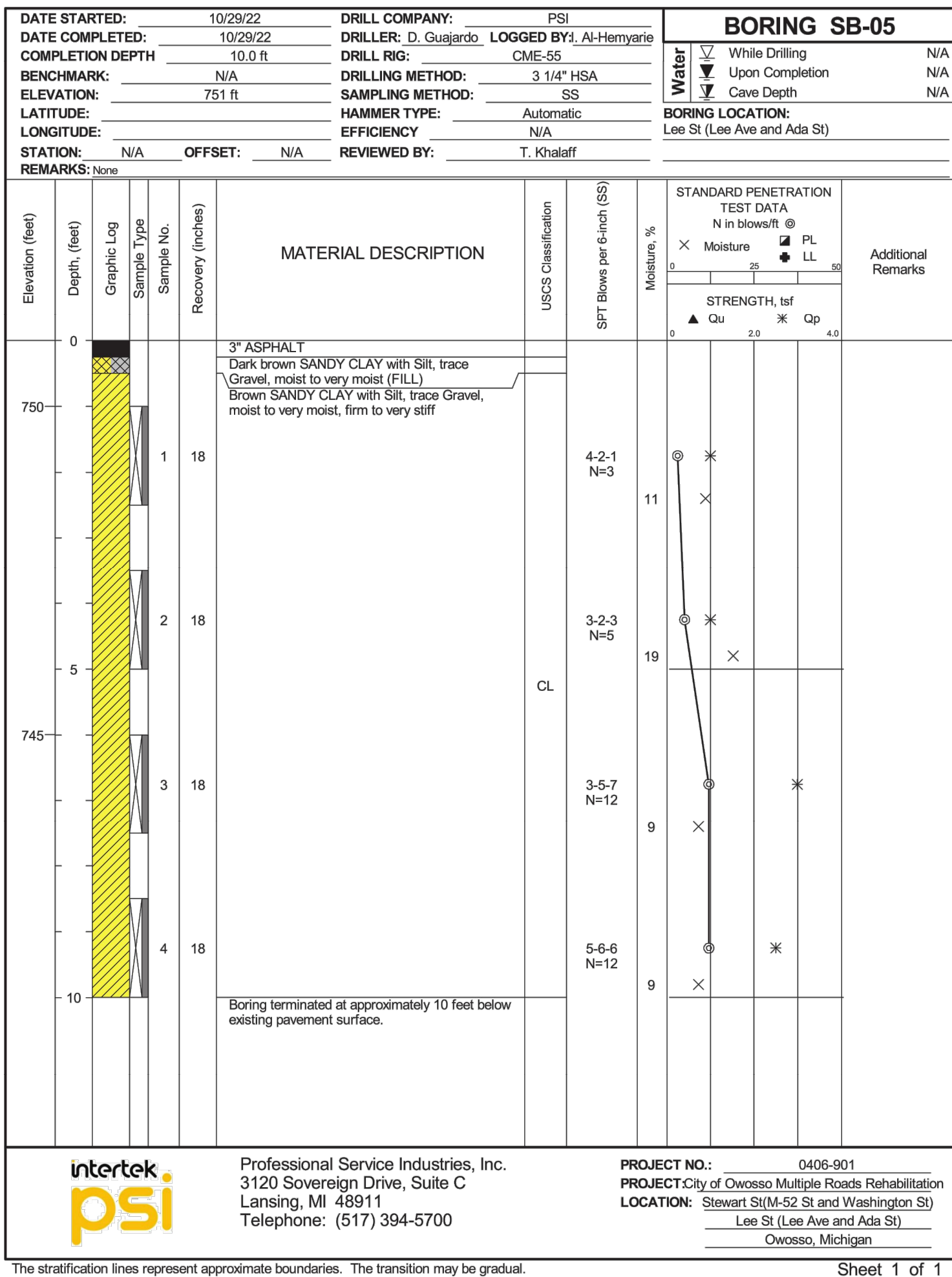
LEGEND

- XXXXXX Curb and Gutter, Rem
-X-X-X- Sewer, Rem
XXX Dr Structure, Rem
HMA Surface, Rem
Pavt, Rem
Sidewalk, Rem
Excavation Earth
STANDARD SOIL EROSION KEY



LEE STREET
REMOVAL PLAN

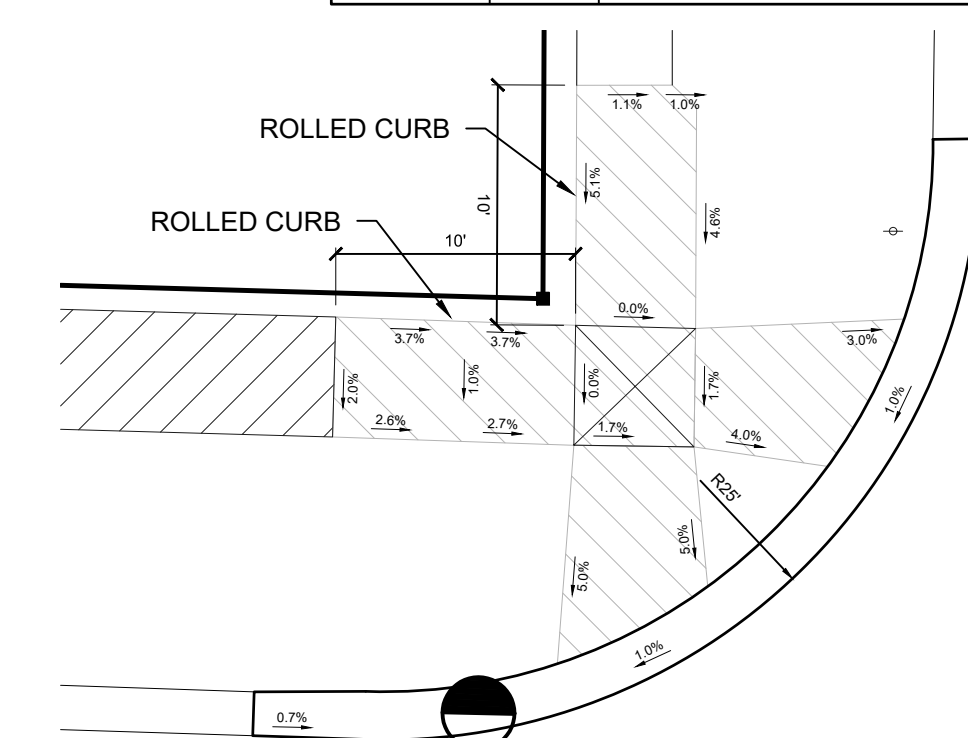
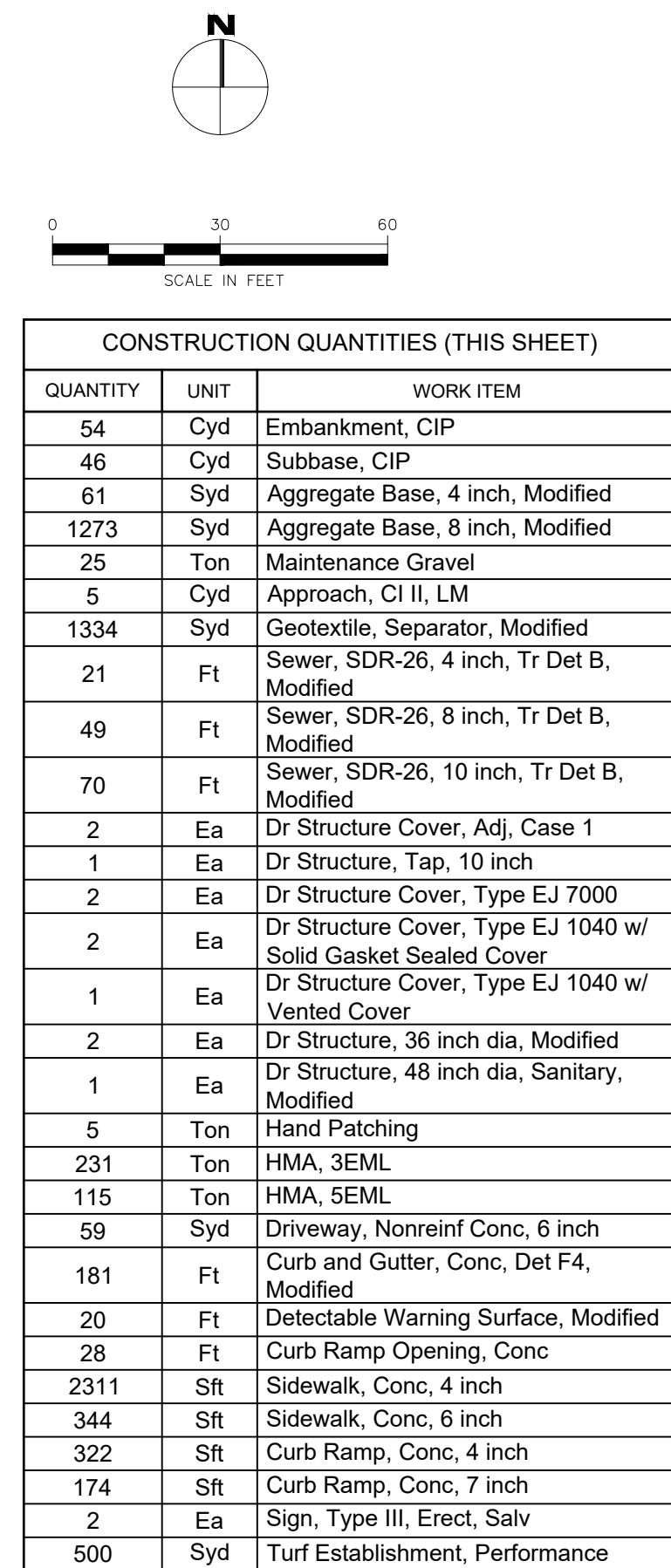
REMOVAL QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
1	Ea	Stump, Rem, 19 inch to 36 inch
3	Ea	Dr Structure, Rem
100	Ft	Sewer, Rem, Less than 24 inch
189	Ft	Curb and Gutter, Rem
54	Syd	Pavt, Rem
290	Syd	Sidewalk, Rem
283	Cyd	Excavation, Earth
6	Ea	Erosion Control, Inlet Protection, Fabric Drop
1	Ea	Dr Structure, Temp Lowering
1255	Syd	HMA Surface, Rem
2	Ea	Sign, Type III, Rem



NO.	ISSUED FOR BIDS PLANS	REVISIONS	DATE	BY	APPROVED BY
1			11/28/22	CW	

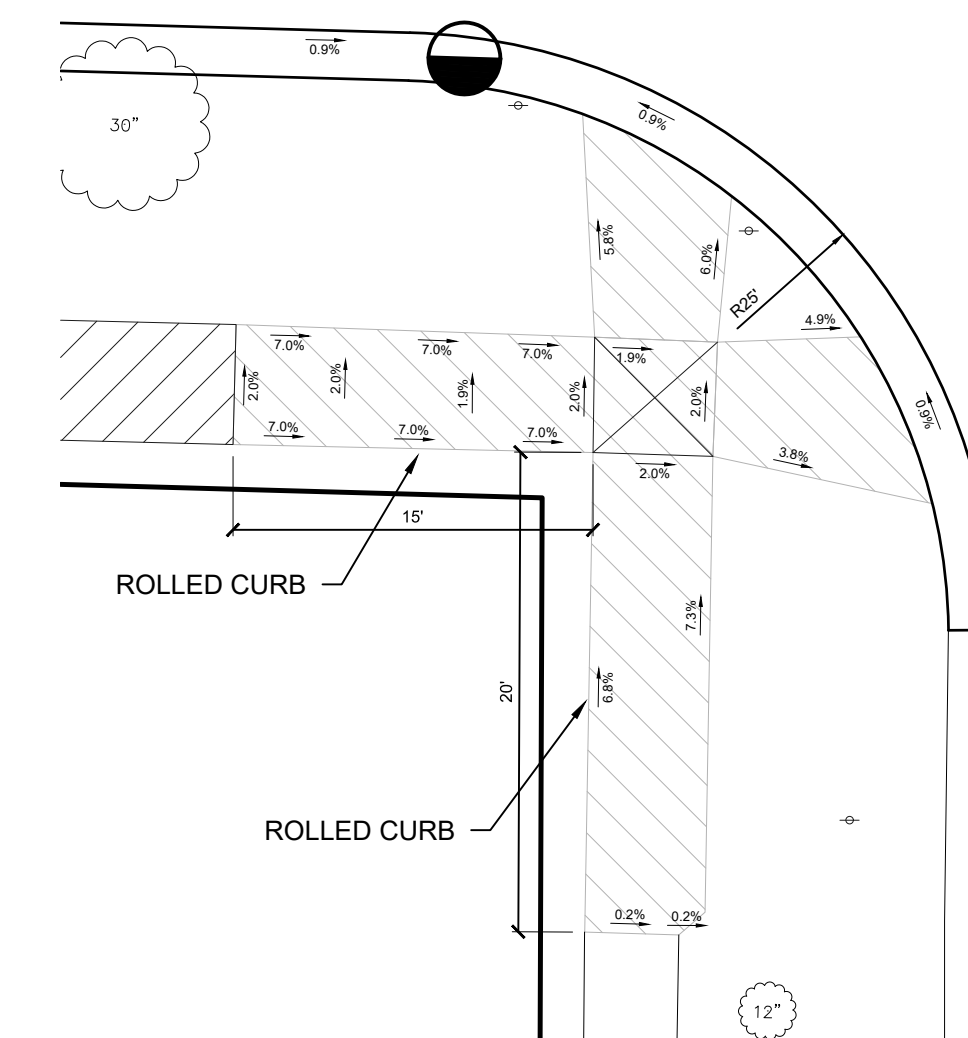
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ELEV.		





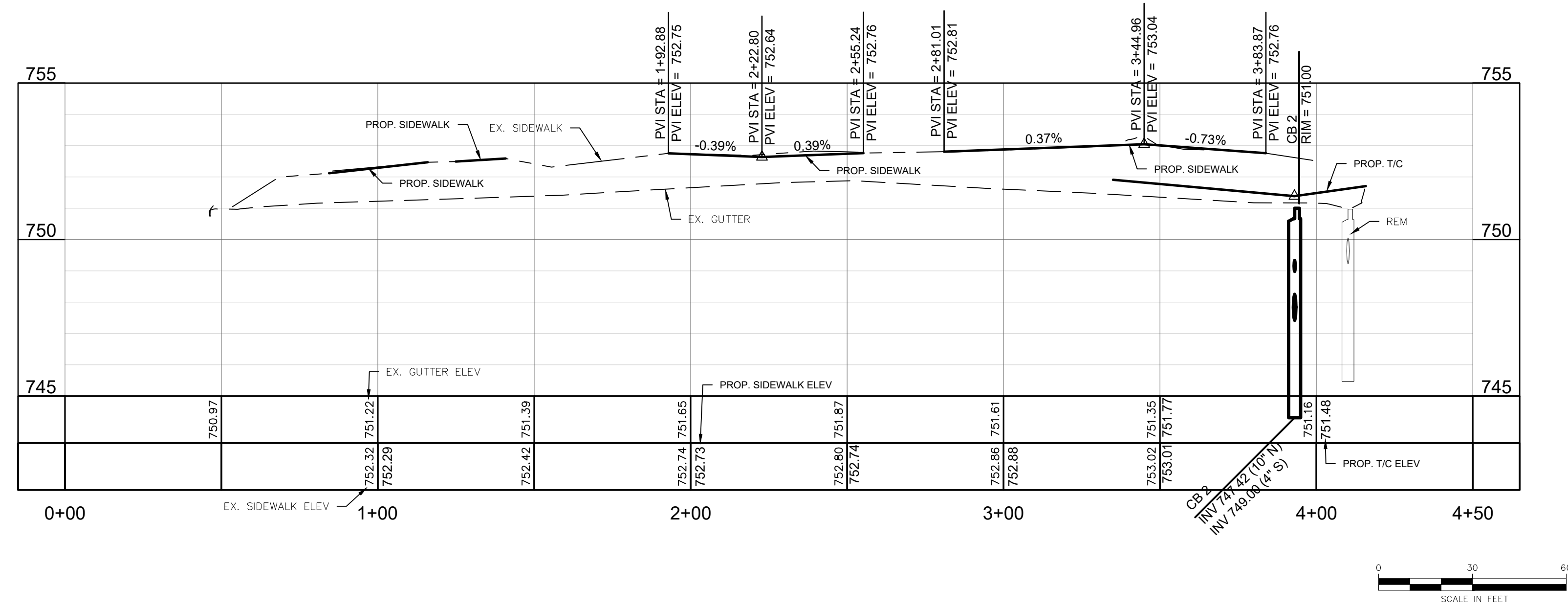
NW QUAD

DETAIL GRADES

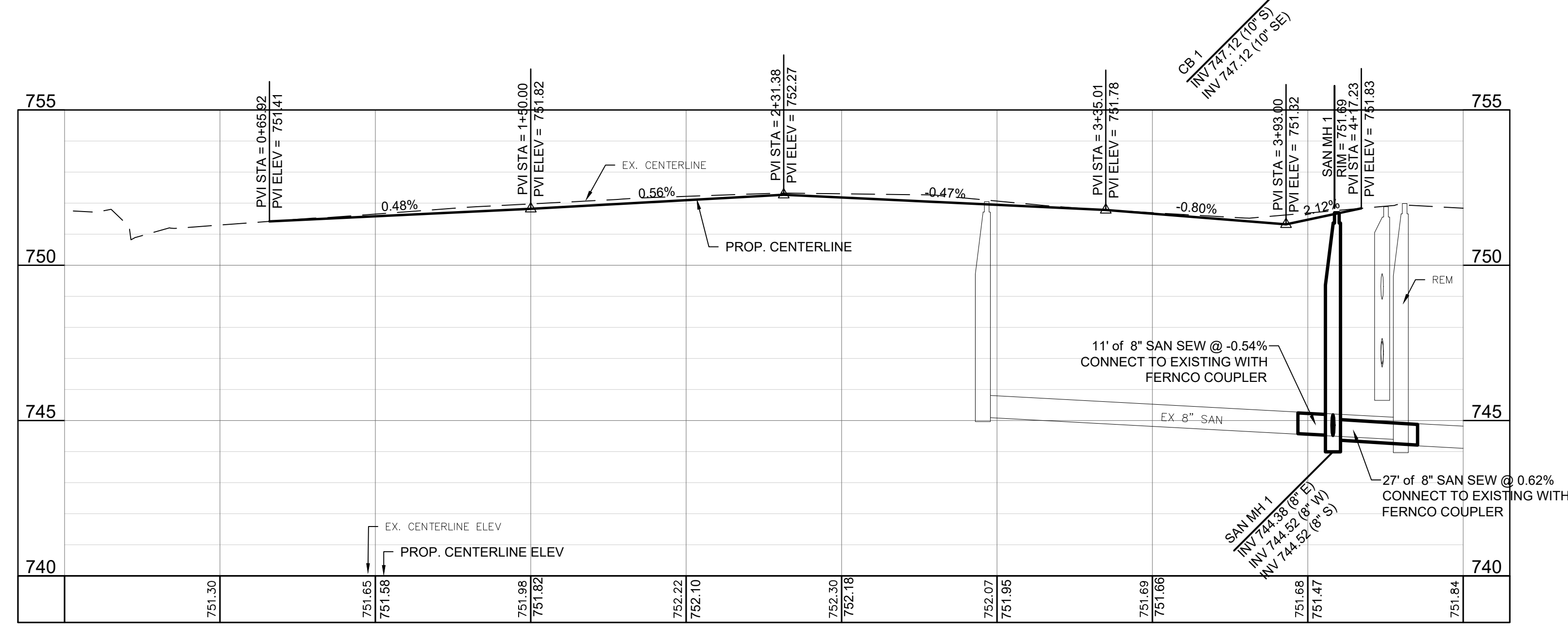


SW QUAD

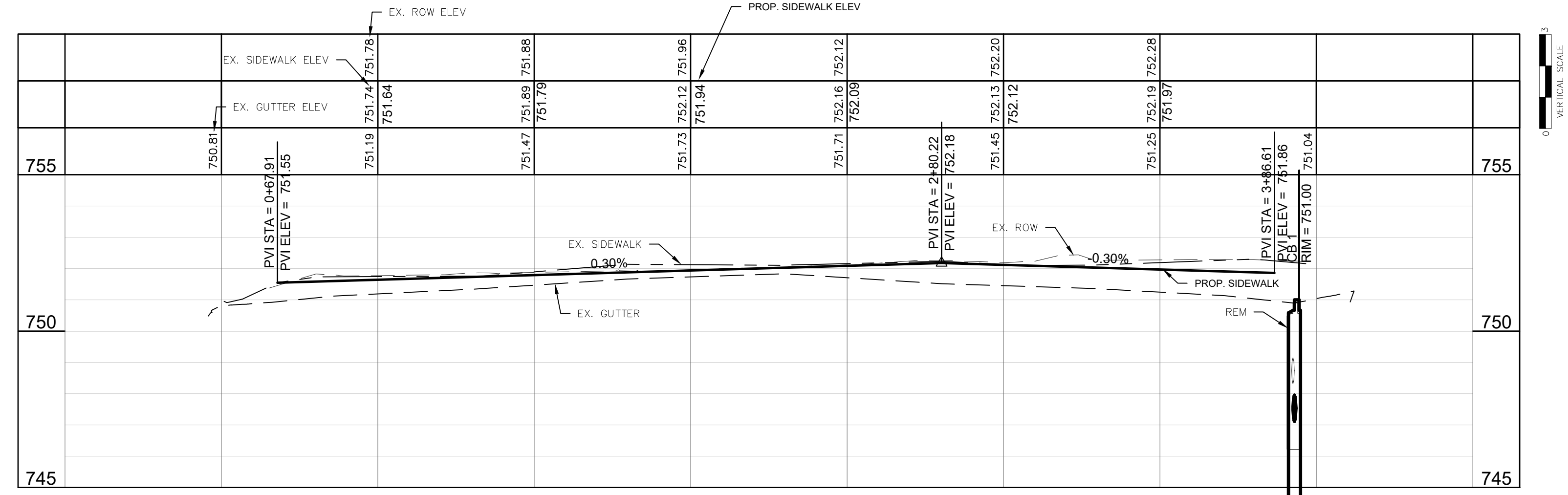
RIGHT

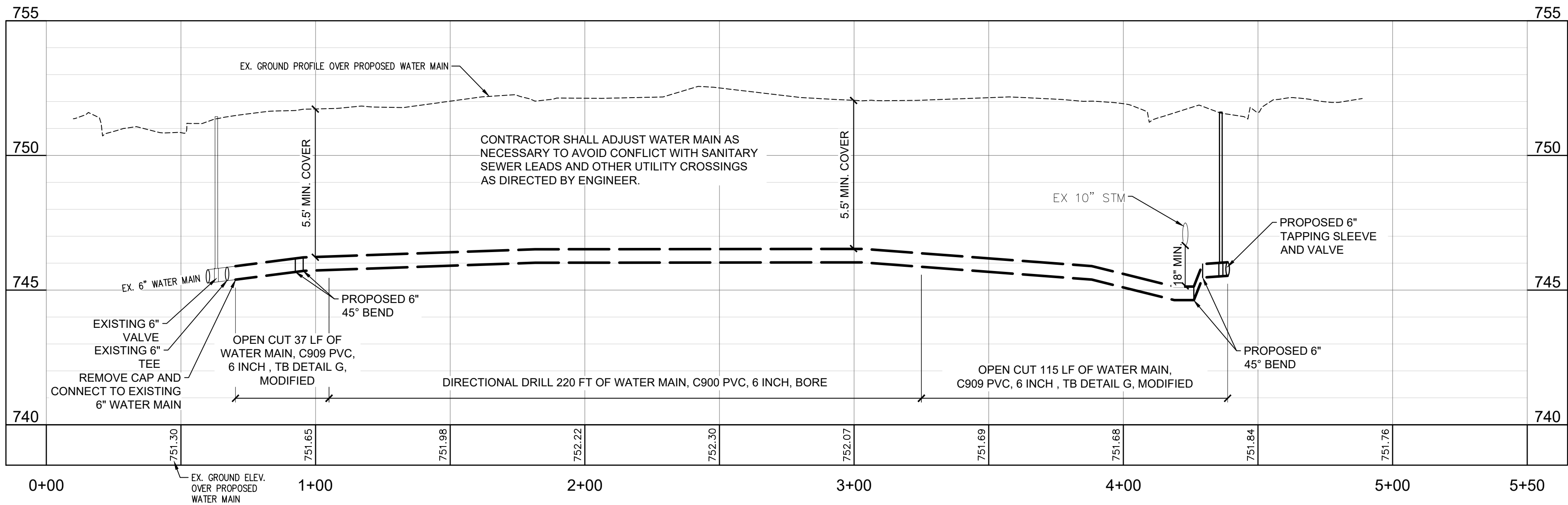


CENTERLINE



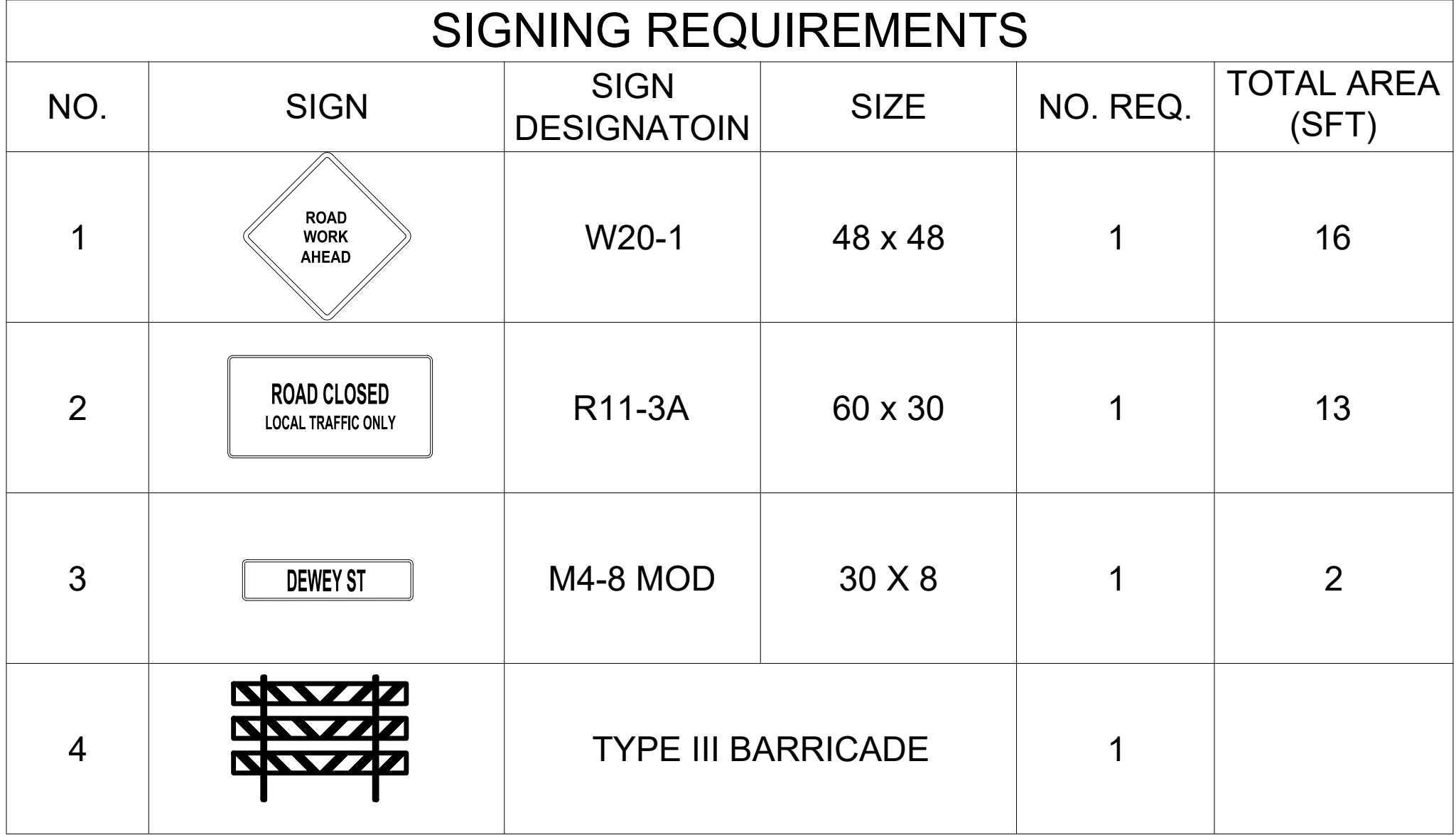
THE





WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
4	EA	CONNECT TO EX. WATER MAIN
10	FT	WATER MAIN, REM
167	FT	WATER MAIN, C909 PVC, 6 INCH, TB DETAIL G, MODIFIED
220	FT	WATER MAIN, C900 PVC, 6 INCH, BORE
2	EA	WATER MAIN, 4 INCH, CUT AND PLUG, MODIFIED
1	EA	WATER MAIN, 6 INCH, CUT AND PLUG, MODIFIED
1	EA	EXISTING VALVE AND VALVE BOX ABANDONMENT
2	EA	GATE VALVE AND BOX, 6 INCH, MODIFIED
200	FT	1" COPPER SERVICE LEAD, TYPE "K", MODIFIED
4	EA	CURB BOX, STOP, 1 INCH CORPORATION STOP AND CONNECTION, MODIFIED
1	EA	SUPPLY & INSTALL METER PIT, COMPLETE
1	EA	METER PIT, REM

SHEET NO.	DESCRIPTION
LY1	LYNN ST - COVER SHEET & TRAFFIC CONTROL PLAN
LY2	LYNN ST - WATER MAIN PLAN AND PROFILE



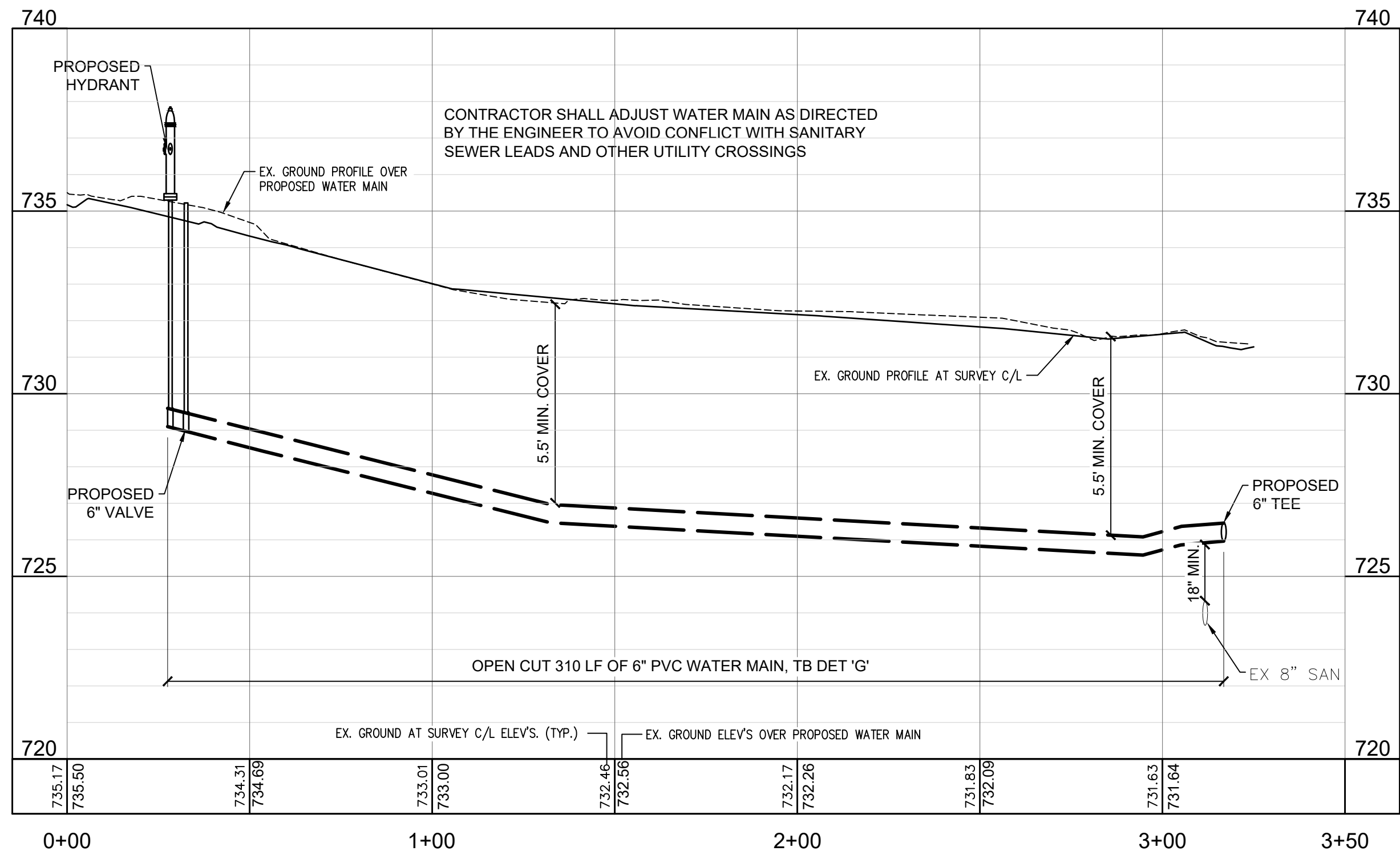
PROJECT LOCATION

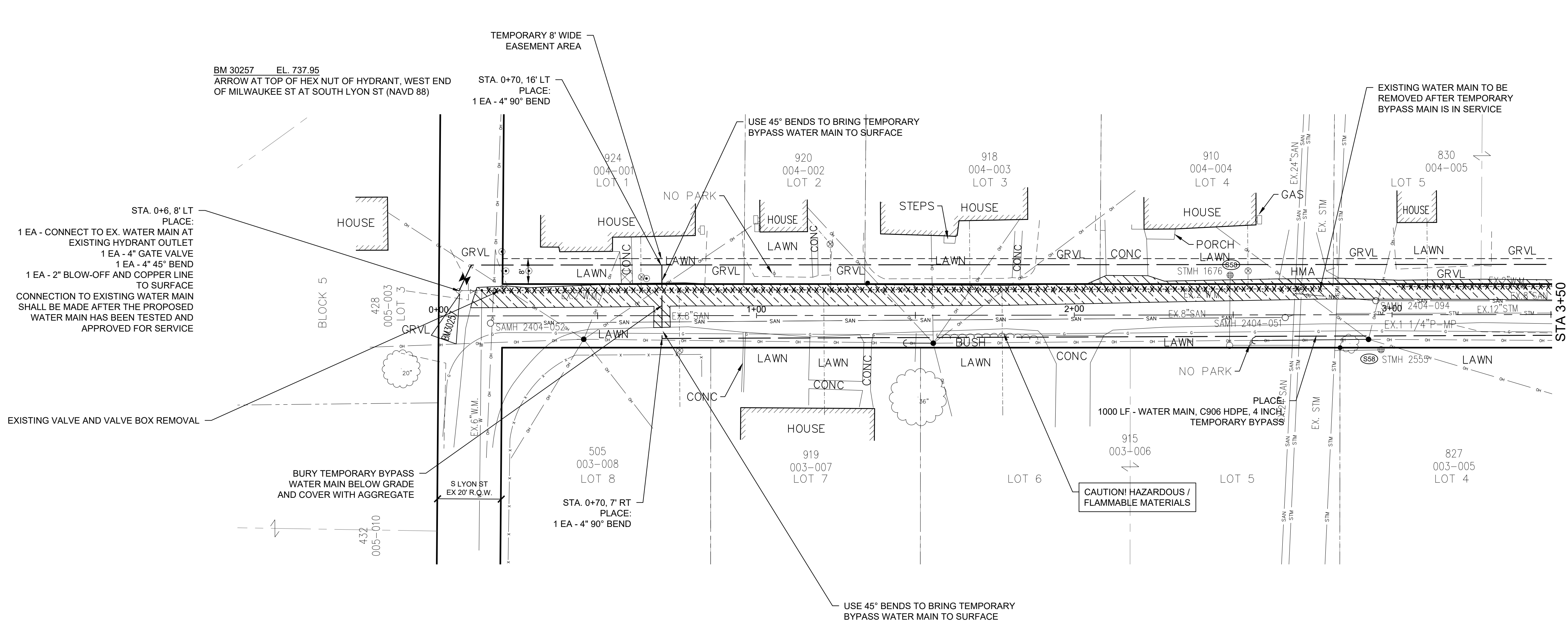
TEMPORARY SIGN

LY1



CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
110	Syd	Pavt, Rem
16	Syd	Sidewalk, Rem
2	Ea	Erosion Control, Inlet Protection, Fabric Drop
100	Syd	Aggregate Base, 8 inch, Modified
52	Cyd	Approach, CI II, LM
1	Ea	Dr Structure Cover, Adj, Case 1
1	Ea	Dr Structure Cover, Type EJ 1040 w/ Solid Gasket Sealed Cover
36	Ton	HMA, 13A
5	Ft	Detectable Warning Surface, Modified
7	Ft	Curb Ramp Opening, Conc
175	Sft	Curb Ramp, Conc, 4 inch
28	Sft	Curb Ramp, Conc, 7 inch
24	Sft	Sidewalk, Conc, 4 inch
140	Syd	Turf Establishment, Performance
330	Ft	1" Copper Service Lead, Type "K", Modified
310	Ft	Water Main, C909 PVC, 6 inch, TB Detail G, Modified
2	Ea	Connect to Existing Water Main
9	Ea	Curb Box, Stop, 1 inch Incorporation Stop and Connection, Modified
1	Ea	Fire Hydrant and Valve Assembly
2	Ea	Gate Valve and Box, 6 inch, Modified
1	Ea	Water Main, 4 inch, Cut and Plug, Modified
1	Ea	Water Meter Pit, Rem
1	Ea	Supply & Install Meter Pit, Complete
1	Ea	Existing Valve with Valve Box Abandonment

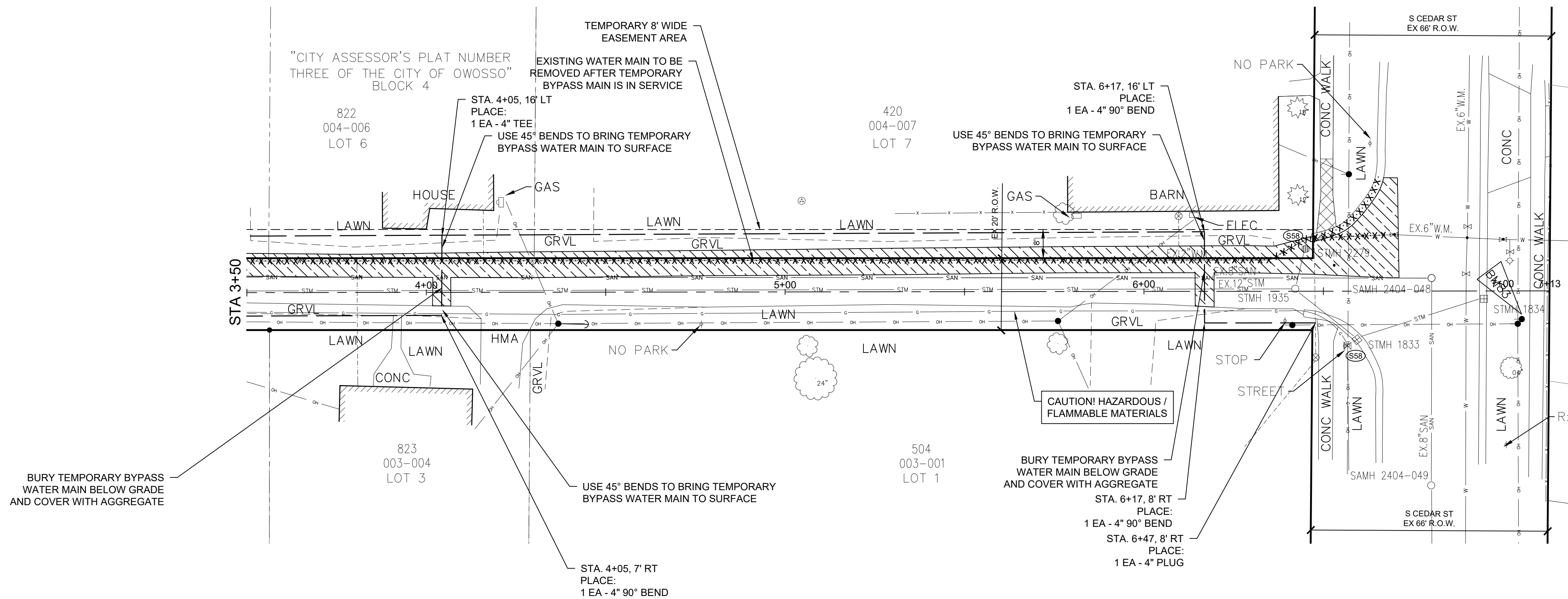




- LEGEND**
- x x x x · Water Main, Rem
 - ▨ Pavt, Rem
 - Temporary Bypass Water Main
 - ✕ Gate Valve and Box, ___ Inch
 - ▨ Sidewalk, Rem
 - ⊕ STANDARD SOIL EROSION KEY

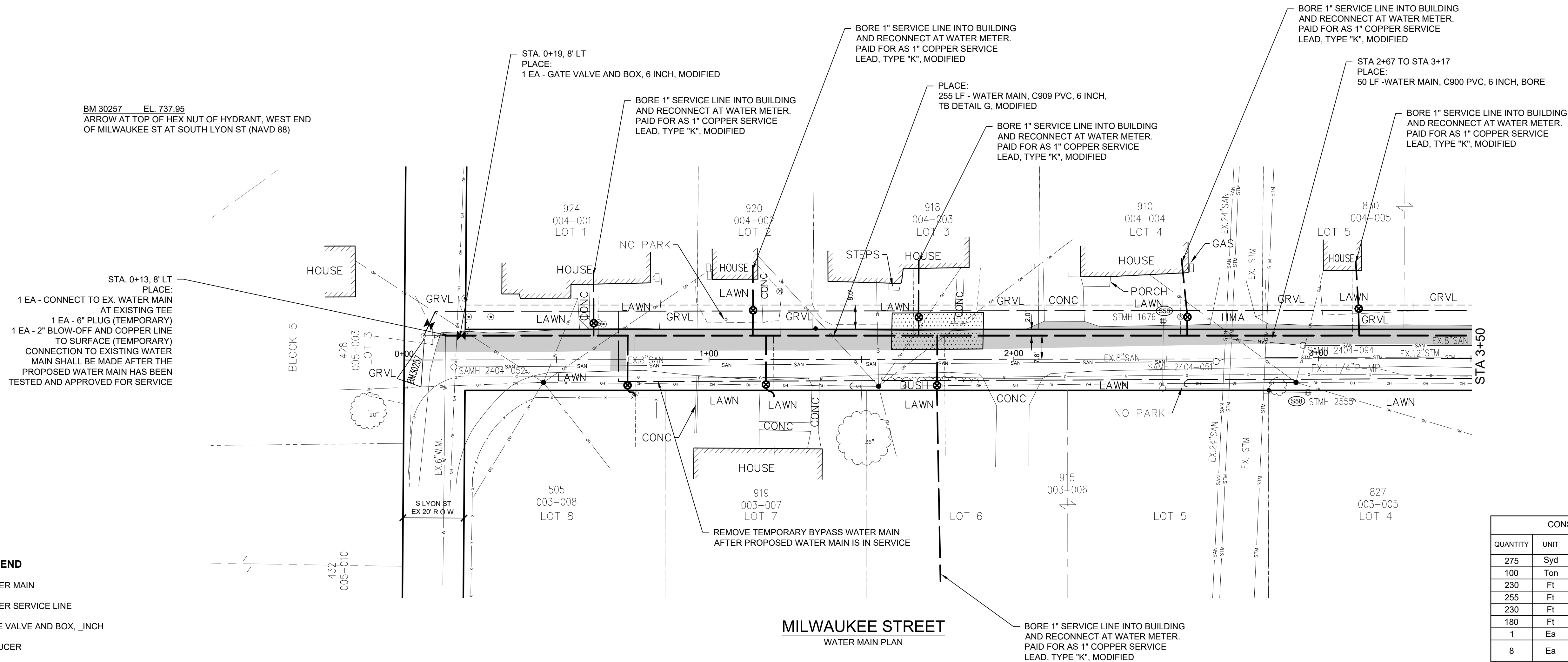
MILWAUKEE STREET
REMOVAL & TEMPORARY WATER PLAN

REMOVAL QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
30	Ft	Curb and Gutter, Rem
550	Syd	Pavt, Rem
10	Syd	Sidewalk, Rem
4	Ea	Erosion Control, Inlet Protection, Fabric Drop
640	Ft	Water Main, Rem
1060	Ft	Water Main, C906 HDPE, 4 inch, Temporary Bypass
1	Ea	Connect to Existing Water Main
1	Ea	Existing Valve with Valve Box Removal

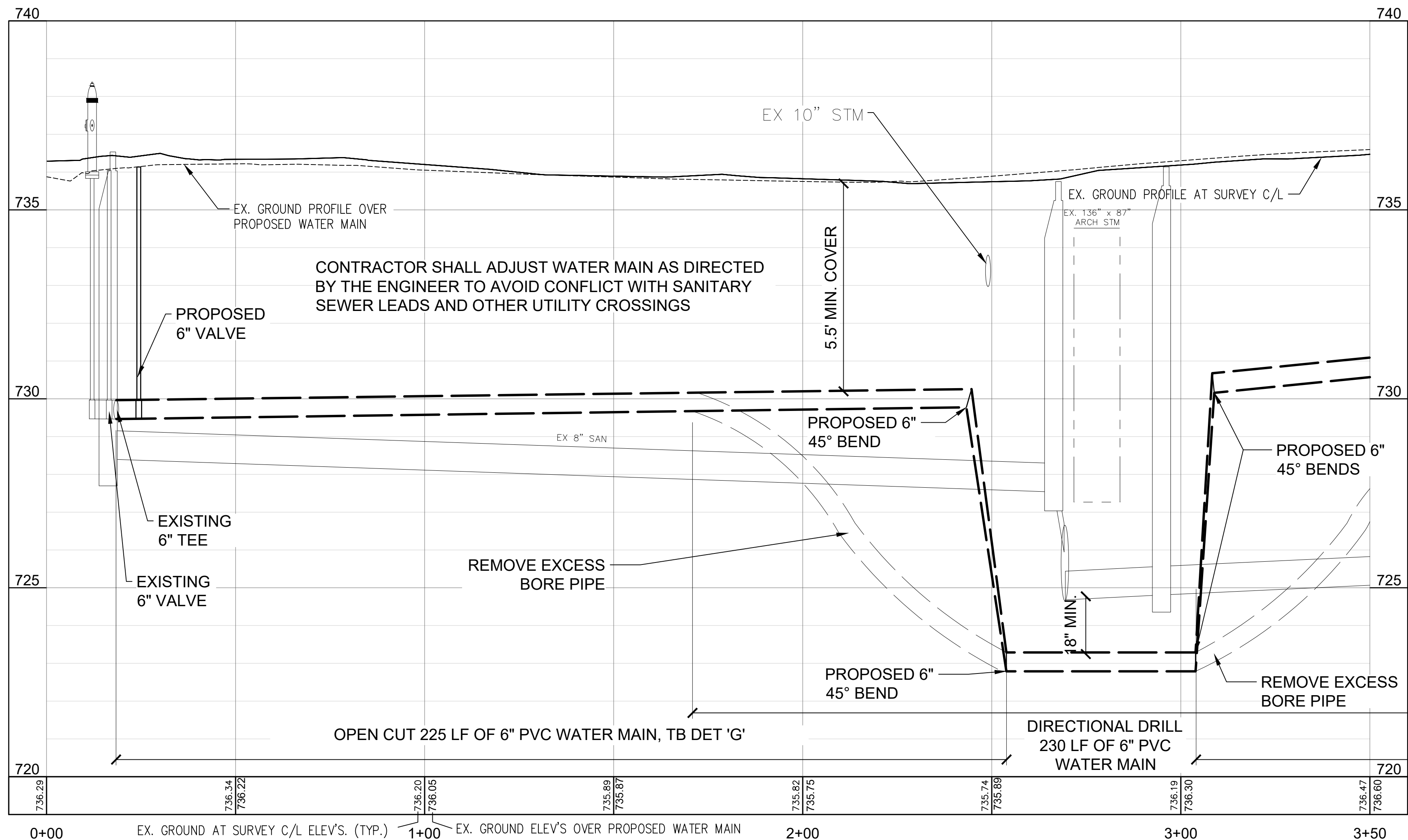


BENCH MARK DATA		REVISIONS		BY	
NO.	DESCRIPTION	NO.	DATE	DATE	CW
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2023 WATER MAIN REPLACEMENT PROJECT - DWSRF 7491-01		ORIGINAL PLAN		APPROVED BY	
MILWAUKEE STREET REMOVAL & TEMPORARY WATER PLAN		CHECKED BY		FIELD BOOK	
DECEMBER, 2022 PROJECT NO.				PG.	

- LEGEND**
- WATER MAIN
 - WATER SERVICE LINE
 - ✕ GATE VALVE AND BOX, _INCH
 - REDUCER
 - ⚡ HYDRANT / VALVE
 - CURB STOP
 - ⊙ METER PIT
 - ▨ Curb Ramp, Conc, _ inch
 - ▨ Aggregate Base, 8 inch, Modified and HMA, 13
 - ▨ Approach, CI II, LM
 - ▨ Bore Pit
 - ⊖ STANDARD SOIL EROSION KEY



CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
275	Syd	Aggregate Base, 8 inch, Modified
100	Ton	HMA 13A
230	Ft	1" Copper Service Lead, Type "K", Modified
255	Ft	Water Main, C909 PVC, 6 inch, TB Detail G, Modified
230	Ft	Water Main, C900 PVC, 6 inch, Bore
180	Ft	Water Main, Rem
1	Ea	Connect to Existing Water Main
8	Ea	Curb Box, Stop, 1 inch Corporation Stop and Connection, Modified
1	Ea	Gate Valve and Box, 6 inch, Modified

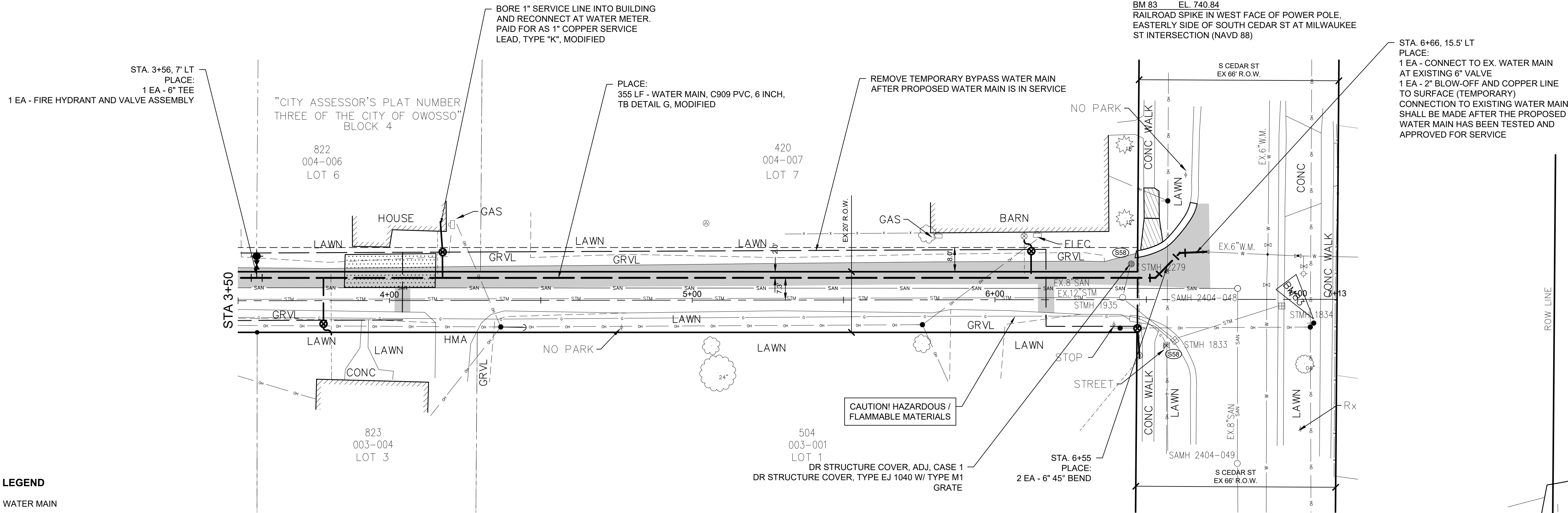


NO.		REVISIONS	DATE	BY
1	ISSUED FOR BIDS PLANS		11/28/22	CW
CHECKED BY		ORIGINAL PLAN	APPROVED BY	

BENCH MARK DATA		DESCRIPTION
ELEV.		

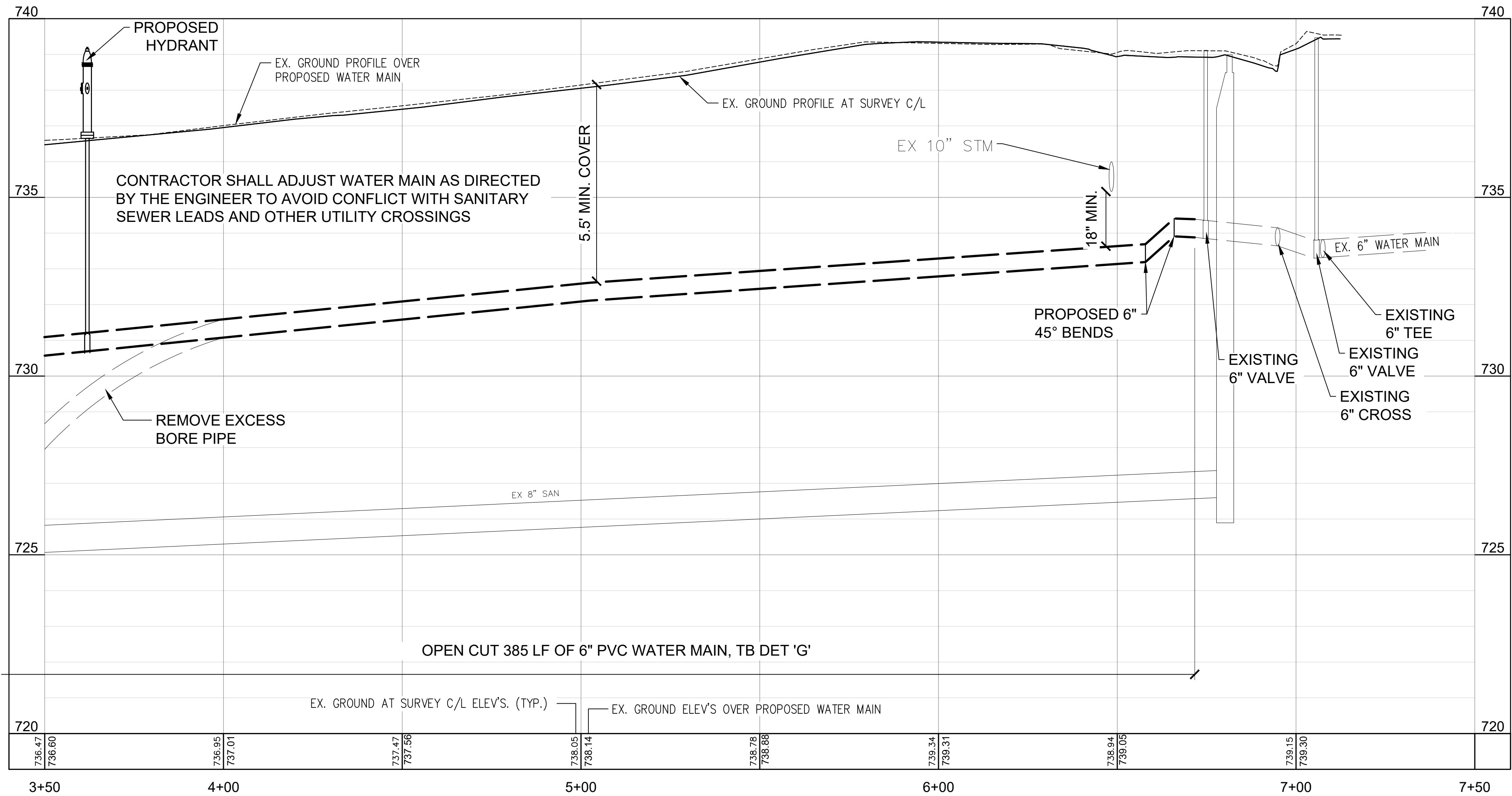
2023 WATER MAIN REPLACEMENT PROJECT - DWSRF 7491-01	FIELD BOOK PG.
MILWAUKEE STREET WATER MAIN PLAN AND PROFILE	
DECEMBER, 2022 PROJECT NO.	
ML3	

- LEGEND**
- WATER MAIN
 - WATER SERVICE LINE
 - ✕ GATE VALVE AND BOX, _INCH
 - REDUCER
 - ⬢ HYDRANT / VALVE
 - CURB STOP
 - ⊙ METER PIT
 - ▨ Curb Ramp, Conc, _ inch
 - ▨ Aggregate Base, 8 inch, Modified and HMA, 13



SIDEWALK RAMP DETAIL

CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
275	Syd	Aggregate Base, 8 inch, Modified
100	Ton	HMA 13A
30	Ft	Curb and Gutter, Conc, Det F4, Mod
5	Ft	Detectable Warning Surface, Modified
7	Ft	Curb Ramp Opening, Conc
50	Sft	Curb Ramp, Conc, 4 inch
60	Sft	Curb Ramp, Conc, 7 inch
1	Ea	Dr Structure Cover, Adj, Case 1
1	Ea	Dr Structure Cover, Type EJ 1040 w/ Type M1 Grate
200	Syd	Turf Establishment, Performance
85	Ft	1\" Copper Service Lead, Type \"K\", Modified
355	Ft	Water Main, C909 PVC, 6 inch, TB Detail G, Modified
1	Ea	Connect to Existing Water Main
4	Ea	Curb Box, Stop, 1 inch Corporation Stop and Connection, Modified
1	Ea	Fire Hydrant and Valve Assembly



NO.	DATE	BY
1	11/28/22	CW

REVISIONS
ISSUED FOR BIDS PLANS

CHECKED BY
APPROVED BY

BENCH MARK DATA	DESCRIPTION
ELEV.	