

**UTILITY CONTACTS**

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.

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: RANDY CHESNEY, P.E.  
301 W. MAIN STREET  
OWOSSO, MI 48867

ROAD  
989-725-0550  
randy.chesney@ci.owosso.mi.us

CITY OF OWOSSO  
ATT: GLENN CHINAVARE  
301 W. MAIN STREET  
OWOSSO, MI 48867

SANITARY SEWER & WATER MAIN  
989-725-0555  
glenn.chinavare@ci.owosso.mi.us

CONSUMERS ENERGY  
ATT: JACOB CHALUT  
530 W. WILLOW STREET  
P.O. BOX 30162  
LANSING MI 48909

ELECTRIC  
OFFICE: 517-374-2329  
CELL: 517-580-2049  
jacob.chalut@cmsenergy.com

CONSUMERS ENERGY  
ATT: ADAM BERTRAM  
530 W. WILLOW STREET  
P.O. BOX 30162  
LANSING MI 48906

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

DAYSTARR COMMUNICATIONS  
ATT: CASEY ROSE  
307 N. BALL STREET  
OWOSSO, MI 48867

FIBER  
PHONE: 989-720-1000  
FAX: 989-720-6060  
casey.rose@corp.daystarr.net

FRONTIER COMMUNICATIONS  
ATT: MARK V. STEVENS  
1943 W. M-21  
OWOSSO, MI 48867

FIBER  
PHONE: 989-723-0373  
mark.stevens@ftr.com

SHIAWASSEE COUNTY HEALTH DEPARTMENT  
ENVIRONMENTAL HEALTH DIVISION  
ATT: CASEY ELLIOT, REHS  
201 N. SHIAWASSEE STREET  
CORUNNA, MI 48817

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

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

PROJECT LOCATION - OLMSTEAD ST  
B.O.P. STA. 00+40 TO E.O.P. STA. 13+03  
TOTAL LENGTH = 1,263 FT (0.24 MILES)

PROJECT LOCATION - HANOVER ST  
B.O.P. STA. 11+27 TO E.O.P. STA. 27+10  
TOTAL LENGTH = 1,583 FT (0.30 MILES)

PROJECT LOCATION - HARDING ST  
B.O.P. STA. 00+96 TO E.O.P. STA. 11+27  
TOTAL LENGTH = 1,031 FT (0.20 MILES)

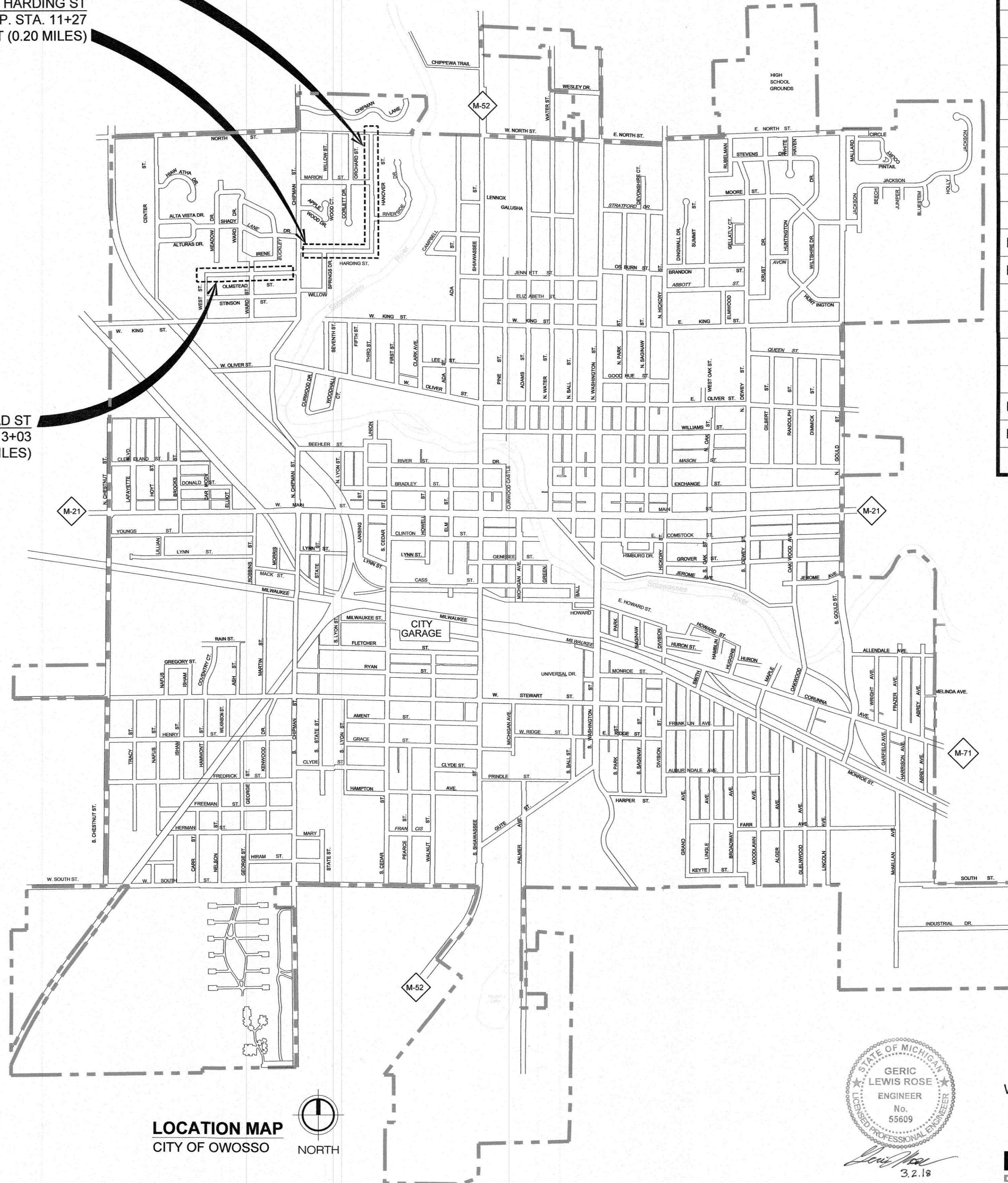
# CITY OF OWOSSO

## 2018 STREET PROGRAM

### CONTRACT 1

SHIAWASSEE COUNTY  
SECTIONS 23 & 24, T7N-R2E, CITY OF OWOSSO  
POP: 15,194 (2010 CENSUS)

SHEET NO.	DESCRIPTION
CS	COVER SHEET
D1	NOTES AND MISCELLANEOUS ESTIMATES
D2	ROAD AND STORM SEWER DETAILS
D3	WATER MAIN NOTES AND DETAILS
D4	WATER MAIN STANDARD DETAILS
D5	SESC STANDARD NOTES AND DETAILS
OL1	OLMSTEAD ST - COVER SHEET, SIDEWALK RAMP DETAILS
OL2	OLMSTEAD ST - TYPICAL CROSS SECTIONS
OL3	OLMSTEAD ST - REMOVAL PLAN
OL4 - OL5	OLMSTEAD ST - ROAD PLAN AND PROFILE
OL6 - OL7	OLMSTEAD ST - WATER MAIN PLAN AND PROFILE
HR1	HARDING ST - COVER SHEET
HR2	HARDING ST - TYPICAL CROSS SECTIONS
HR3	HARDING ST - REMOVAL PLAN
HR4 - HR5	HARDING ST - ROAD PLAN AND PROFILE
HR6 - HR7	HARDING ST - WATER MAIN PLAN AND PROFILE
HN1	HANOVER ST - COVER SHEET, SIDEWALK RAMP DETAILS
HN2	HANOVER ST - TYPICAL CROSS SECTIONS
HN3	HANOVER ST - REMOVAL PLAN
HN4 - HN5	HANOVER ST - ROAD PLAN AND PROFILE
HN6 - HN7	HANOVER ST - WATER MAIN PLAN AND PROFILE



LOCATION MAP  
CITY OF OWOSSO

**MDOT ROAD STANDARD PLANS**

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.

- |   |         |
|---|---------|
| DRAINAGE STRUCTURES                                   | R-1-G*  |
| COVER B   | R-7-F   |
| MONUMENT BOXES  | R-11-E  |
| COVER K   | R-15-F  |
| COVER Q   | R-18-F  |
| SIDEWALK RAMP AND DETECTABLE WARNING DETAILS          | R-28-J* |
| DRIVEWAY OPENINGS & APPROACHES AND CONCRETE SIDEWALKS | R-29-I  |
| CONCRETE CURB AND CONCRETE CURB GUTTER                | R-30-G  |
| BUMPER & PARKING RAILS AND MISC. WOOD POSTS           | R-74-D  |
| GRANULAR BLANKET, UNDERDRAINS, OUTLET ENDINGS         | R-80-E  |
| FOR UNDERDRAINS, AND SEWER BULKHEADS                  | R-82-D  |
| BEDDING AND FILLING AROUND PIPE CULVERTS              | R-83-C  |
| UTILITY TRENCHES                                      | R-96-E  |
| SOIL EROSION & SEDIMENTATION CONTROL MEASURES         | R-100-H |
| SEEDING AND TREE PLANTING                             |         |

\*SPECIAL DETAILS INCLUDED IN PROPOSAL OR MODIFIED IN GENERAL PLANS



WATER MAIN DESIGN PLANS BY:



Know what's below.  
Call before you dig.

2018 STREET PROGRAM  
COVER SHEET  
CONTRACT 1

FIELD BOOK  
PG.  
MARCH 2018  
PROJECT NO. 832190

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

NO.	DATE	BY	REVISIONS

BENCH MARK DATA	DESCRIPTION
ELEV.	

CHECKED BY: \_\_\_\_\_  
ORIGINAL PLAN APPROVED BY: \_\_\_\_\_



**GENERAL NOTES**

**UNDERGROUND UTILITIES / MISS DIG**

FOR PROTECTION OF UNDERGROUND UTILITIES AN IN CONFORMANCE WITH PUBLIC ACT 174, 2013, THE CONTRACTOR SHALL DIAL 1-800-482-7171 OR 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. MEMBERS WILL THIS 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 CONFLICTS EXISTS.

**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 ERODABLE 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 DIAMETERS 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.

**STORM SEWER STRUCTURES**

ALL STORM 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 ARE CONSIDERED AS PART OF THE DRAINING STRUCTURE PAY ITEM.

**STORM SEWER CONNECTIONS**

PROPOSED STORM SEWERS SHALL BE CONNECTED TO EXISTING STORM SEWERS WITH A FERNCO COUPLER, OR APPROVED EQUAL, AS DIRECTED BY THE BEGINNER. 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 PAID 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 ITEMS.

**STRUCTURE ADJUSTMENTS**

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

**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 NEAREST THE CURB AND GUTTER SHALL BE 7-INCHES THICK AS IDENTIFIED ON THE SIDEWALK RAMP THICKNESS DETAIL. THE REMAINDER OF THE RAMP SHALL BE 4-INCHES THICK. THE PAY ITEMS FOR Sidewalk Ramp, Conc, 4 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.

DETECTABLE WARNING SURFACES SHALL BE RED IN COLOR, INSTALLED ONTO FRESH CONCRETE, AND IN ACCORDANCE WITH MDOT STANDARD PLAN R-28 SERIES.

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 SYSTEMS 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 THEIR ACCURACY IS NOT GUARANTEED.

**MAINTAINING TRAFFIC**

REFER TO THE CONTRACT SPECIAL PROVISIONS FOR WORK RESTRICTION RELATIVE TO MAINTAINING TRAFFIC.

**MISCELLANEOUS ESTIMATES**

THE FOLLOWING ITEMS OF WORK SHALL BE DONE AS THEY APPLY THROUGHOUT THE PROJECT. THESE ITEMS ARE NOT DETAILED OR INCLUDED ON THE PLAN AND PROFILE SHEETS.

1	LSUM	Mobilization, Max _____ (ROAD AND STORM)
1	LSUM	Mobilization, Max _____ (WATER MAIN)
200	Cyd	Subgrade Undercutting, Type II
400	Ton	Maintenance Gravel
4	Ea	Sanitary Serv Conflict
10	Ea	Abandoned Gas Main Conflict
17	Ft	Dr Structure, Adj, Add Depth
100	Syd	Pavt, Rem
33	Syd	Sidewalk, Rem
200	Sft	Sidewalk, Conc, 4 inch
100	Sft	Sidewalk, Conc, 6 inch
5	Ton	Cement
800	Ft	Curb and Gutter, Rem
800	Ft	Curb and Gutter, Conc, Det F4, Modified
15	Ton	HMA Approach
30	Syd	Driveway, Nonreinf Conc, 6 inch
10	Cyd	Approach, CL II, LM
20	Ea	Post, Mailbox
10	Ea	Sign, Type III, Rem
10	Ea	Sign, Type III, Erect, Salv
160	Ft	Post, Steel, 3 Pound
3375	Syd	Turf Establishment, Performance

**MAINTAINING TRAFFIC QUANTITIES**

10	Ea	Barricade, Type III, High Intensity, Double Sided, Furn & Oper
4	Ea	Pedestrian Type II Barricade, Temp
4	Ea	Lighted Arrow, Type C, Furn & Oper
125	Ea	Plastic Drum, High Intensity, Furn & Oper
200	Sft	Sign, Type B, Temp, Prismatic, Furn & Oper
1	LSUM	Minor Traf Devices

**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		RIGHT-OF-WAY 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.

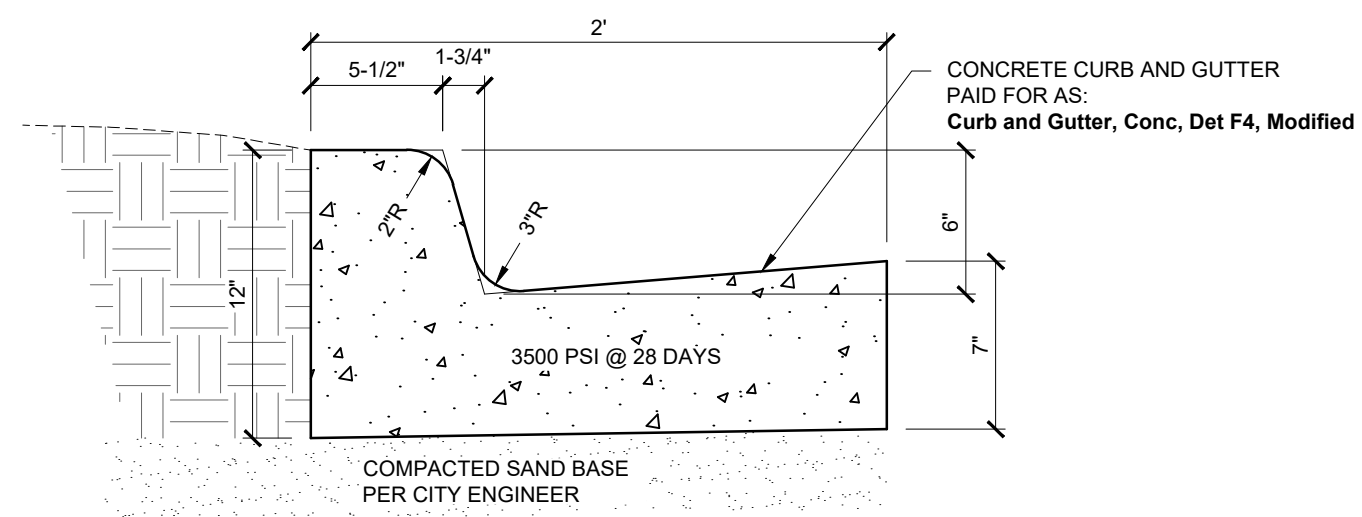
CITY OF OWOSSO, MICHIGAN  
ENGINEERING DIVISION  
DEPT. OF PUBLIC SERVICE

NO.	REVISIONS	DATE	BY

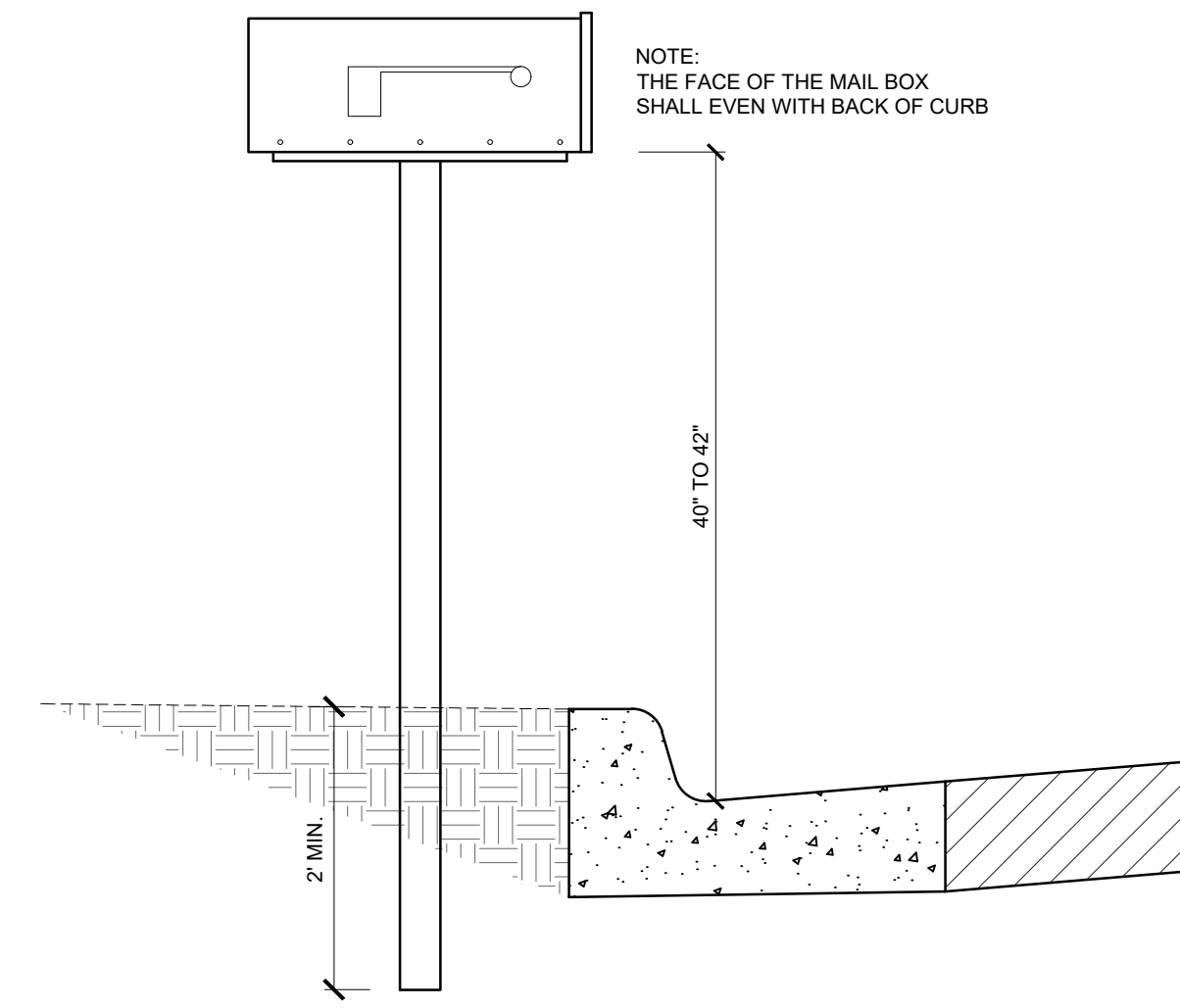
BENCH MARK DATA	DESCRIPTION	ELEV.

2018 STREET PROGRAM  
NOTES AND MISCELLANEOUS  
ESTIMATES  
MARCH, 2018  
PROJECT NO. 832190  
FIELD BOOK  
PG.

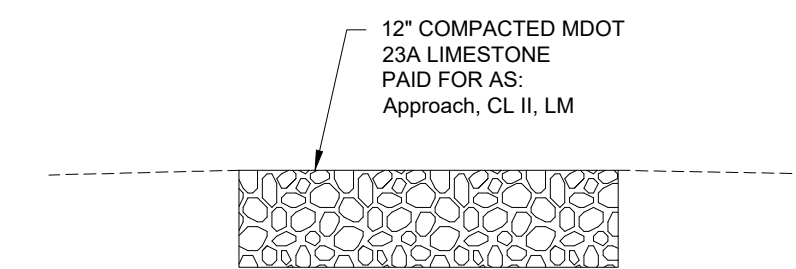
**D1**



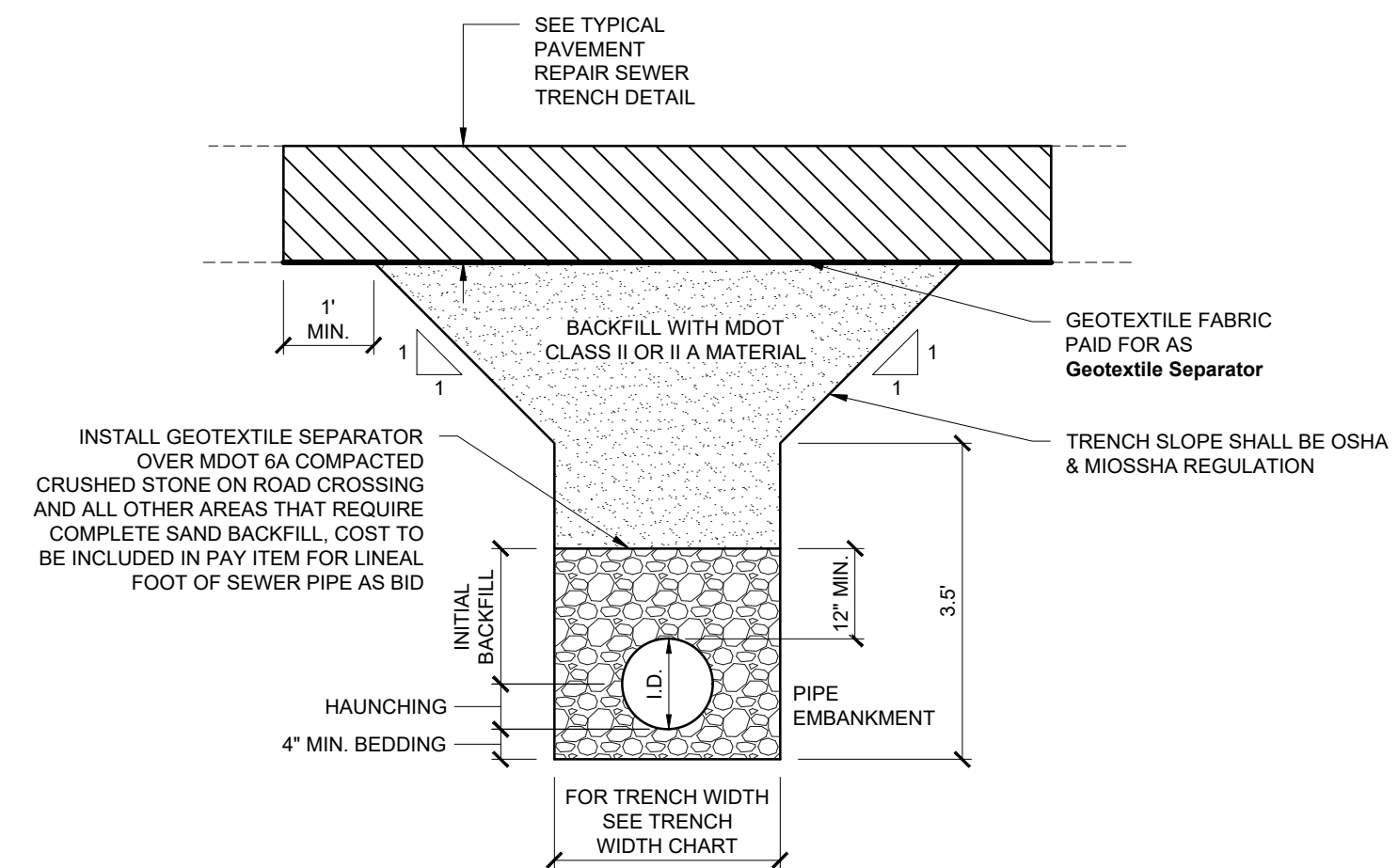
**CONCRETE CURB AND GUTTER  
MDOT F4 - MODIFIED DETAIL**  
NOT TO SCALE



**TYPICAL MAIL BOX CROSS SECTION DETAIL**  
NOT TO SCALE

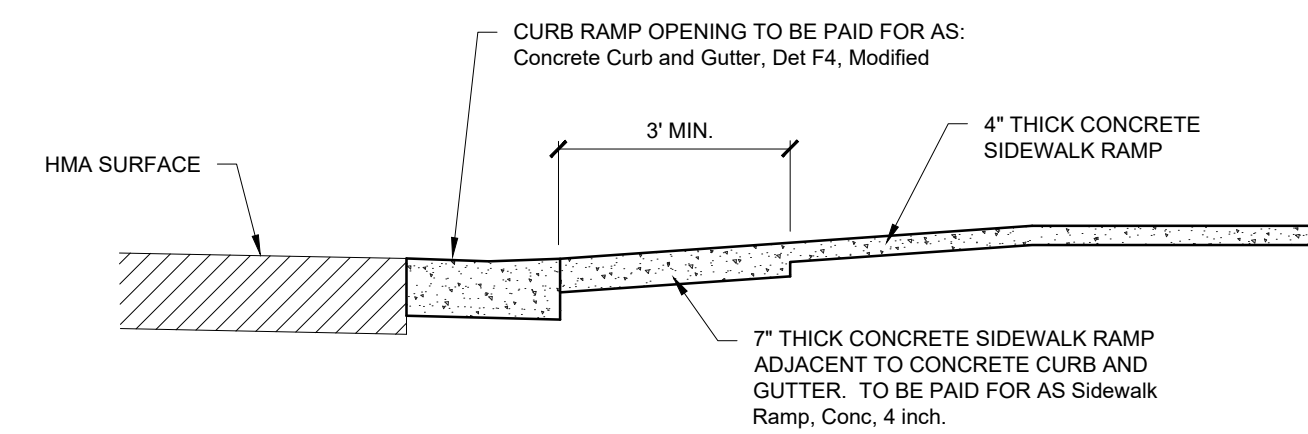


**RESIDENTIAL AGGREGATE DRIVE RESTORATION DETAIL**  
NOT TO SCALE



**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

NO.	REVISIONS	DATE	BY

CHECKED BY: \_\_\_\_\_ APPROVED BY: \_\_\_\_\_ ORIGINAL PLAN

BENCH MARK DATA	DESCRIPTION
ELEV.	

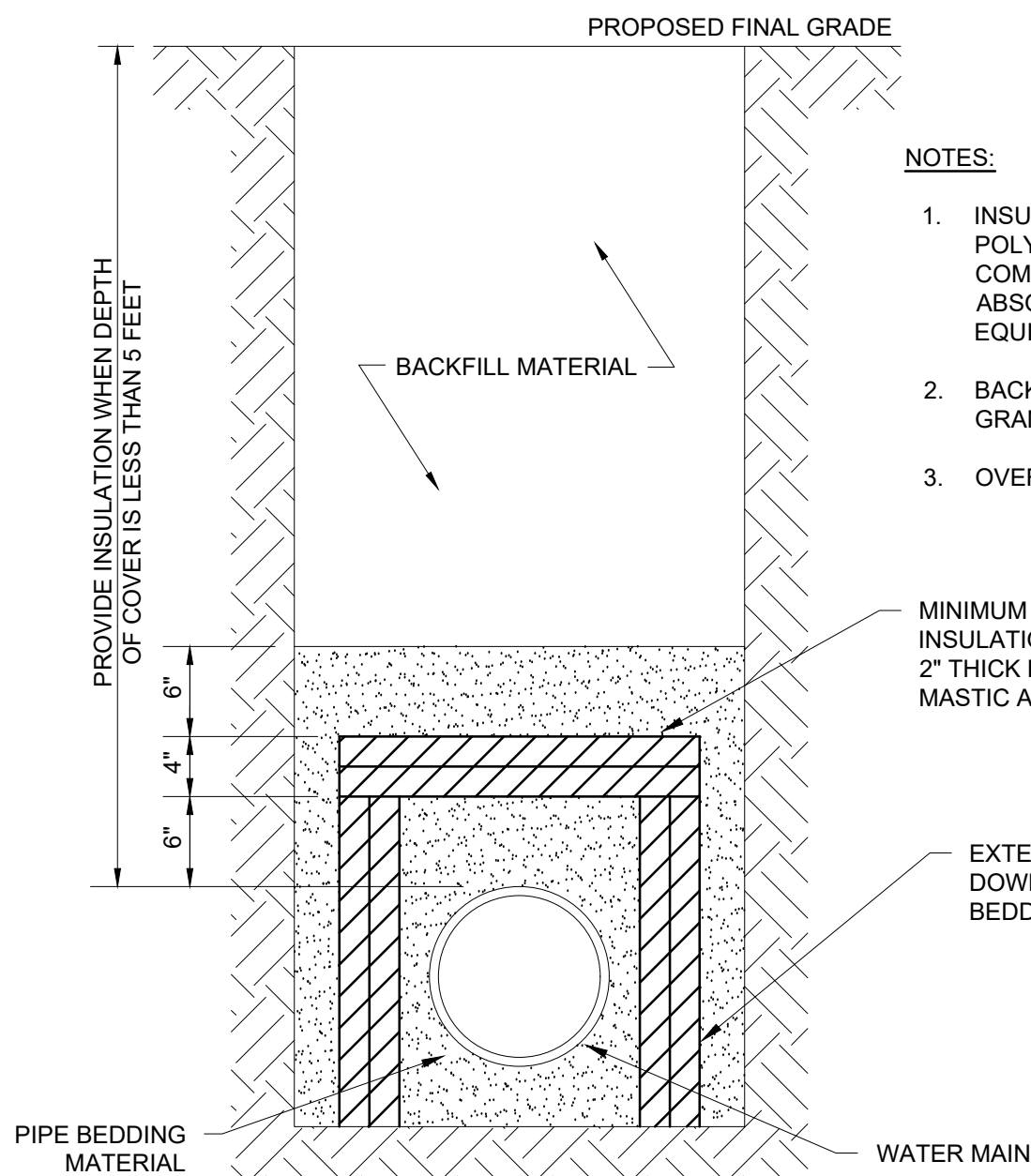
**WATER MAIN CONSTRUCTION NOTES**

1. ALL WATER MAIN MAIN LINE PROPOSED FOR THIS PROJECT HAS BEEN DESIGNED FOR AND SHALL BECOME A PUBLIC SYSTEM.
2. A WATER MAIN CONSTRUCTION PERMIT FROM THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY MUST BE ISSUED PRIOR TO BEGINNING THE CONSTRUCTION OF ANY WATER MAIN IN THIS PROJECT.
3. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF OWOSSO SPECIAL PROVISION FOR WATER MAIN INSTALLATION AND THE STANDARD DETAILS.
4. ALL PUBLIC WATER MAIN SHALL BE OWNED AND MAINTAINED BY THE CITY OF OWOSSO UPON COMPLETION OF THE PROJECT.
5. ALL PUBLIC WATER MAIN SHALL BE PVC AWWA C900/C909. TRACER WIRE AND BOXES SHALL CONFORM TO THE CITY OF OWOSSO SPECIAL PROVISION FOR WATER MAIN INSTALLATION.
6. ALL PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES THAT ARE USED FOR POTABLE WATER MUST COMPLY WITH THE LEAD FREE REQUIREMENT AND MUST BEAR THE MARK NSF/ANSI STANDARD 61, ANNEX G OR NSF 61-G.
7. GATE VALVES SHALL BE EAST JORDAN RESILIENT SEATED GATE VALVES CONFORMING TO AWWA C515. VALVES SHALL BE VERTICAL, NON-RISING STEM AND OPEN CLOCKWISE. SEE CITY OF OWOSSO SPECIAL PROVISION FOR WATER MAIN INSTALLATION AND STANDARD DETAILS.
8. FIRE HYDRANTS SHALL CONFORM TO THE SPECIFICATION SHOWN ON THIS SHEET.
9. WHERE SANITARY SERVICE LEADS OR OTHER UTILITIES ARE ENCOUNTERED DURING THE CONSTRUCTION OF THE WATER MAIN, THE CONTRACTOR SHALL MAKE ADJUSTMENTS TO EITHER THE WATER MAIN OR EXISTING UTILITY TO PROVIDE CONTINUOUS SERVICE TO PROPERTIES ALONG THE ROUTE OF CONSTRUCTION. ALL WORK INCLUDING THE REBORING OF SANITARY SEWER SERVICE LEADS TO ACCOMMODATE CONSTRUCTION OR ADJUSTING WATER MAIN CONSTRUCTION TO CLEAR EXISTING SERVICES SHALL BE CONSIDERED INCLUSIVE TO CONSTRUCTION OF THE WATER MAIN.
10. PRESSURE TAPS TO EXISTING WATER MAINS AND CONNECTIONS TO EXISTING VALVES SHALL BE MADE ONLY UNDER CITY OF OWOSSO OBSERVATION. ALL VALVE OPENING AND CLOSING SHALL BE BY THE CITY OF OWOSSO PERSONNEL. A FULL DIAMETER STAINLESS STEEL TAPPING SLEEVE IS REQUIRED FOR ALL PRESSURE TAPS.
11. ALL WATER MAIN SHALL HAVE A MINIMUM COVER OVER THE TOP OF THE PIPE OF 5.5 FEET FROM FINISHED GRADE. THE STANDARD LAYING CONDITIONS FOR WATER MAIN SHALL BE A 30" TRENCH WIDTH OR PIPE DIAMETER PLUS 12". THE PIPE SHALL BE LAID ON A 4" PREPARED SAND CUSHION WITH RECESSES TO ACCOMMODATE PIPE BELLS.
12. ALL WATER SERVICE LEADS SHALL HAVE A MINIMUM COVER OVER THE TOP OF THE PIPE OF 5 FEET FROM FINISHED GRADE.
13. ALL TRENCH EXCAVATION UNDER OR WITHIN 5' OF EXISTING OR PROPOSED PAVING SHALL BE BACKFILLED WITH CLASS II COMPACTED GRANULAR MATERIALS.
14. MINIMUM HORIZONTAL SEPARATION BETWEEN WATER MAIN AND SEWERS SHALL BE 10 FEET.
15. CONTRACTOR SHALL RESTRAIN ALL THRUST IN THE SYSTEM BY THE USE OF MEGA-LUG RESTRAINED JOINTS. ALL HYDRANTS, TEES, VERTICAL OR HORIZONTAL BENDS AND FUTURE VALVE CONNECTIONS SHALL BE RESTRAINED. RESTRAINTS SHALL HAVE APPROVAL PRIOR TO BEING INCORPORATED INTO PROJECT CONSTRUCTION.
16. WATER MAINS SHALL BE PRESSURE TESTED IN ACCORDANCE WITH AWWA STANDARD C605, AND DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651. WATER MAIN CHLORINATION SHALL BE OBSERVED AND MONITORED BY CITY OF OWOSSO REPRESENTATIVE.
17. WATER SERVICE LEADS SHALL BE TYPE "K" COPPER AND SHALL BE A MINIMUM OF ONE-INCH (1") IN DIAMETER. ALL SERVICE LEADS SHALL BE BORED UNDER ROADWAY. CORPORATIONS SHALL BE BRONZE ALLOY OR BRASS AND COMPLY WITH NSF/ANSI-372 OR NSF/ANSI-61G.
18. THE CONTRACTOR SHALL INSTALL TWO INCH CORPORATIONS ON THE WATERLINE FOR PRESSURE TESTING, CHLORINE ADDITION AND FOR BLOW-OFF PURPOSES. THE CORPORATIONS SHALL HAVE COPPER PIPE EXTENDING TO THE GROUND SURFACE. THE CONTRACTOR SHALL REMOVE THE CORPORATION AND COPPER LINE UPON A SATISFACTORY TEST AND INSTALL A PLUG.
19. THE CONTRACTOR SHALL ENCASE THE WATER MAIN IN CONCRETE WHERE VERTICAL SEPARATION BETWEEN STORM SEWER AND WATER MAIN OR SANITARY SEWER AND WATER MAIN IS LESS THAN EIGHTEEN (18) INCHES, AS PER MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY REQUIREMENTS.
20. WHERE WATER MAIN CROSSES BENEATH SANITARY OR STORM SEWER, A SOLID LENGTH OF PIPE SHALL BE POSITIONED BENEATH THE CROSSING TO AVOID PIPE JOINTS IN THE VICINITY OF THE CROSSING.

**FREEBORE NOTE:**  
CONTRACTOR SHALL FREEBORE PROPOSED WATER MAIN WHERE NECESSARY TO SAVE/PROTECT TREES OR AVOID EXISTING UTILITIES AND POLES. COST OF FREEBORE SHALL BE INCLUDED IN THE WATER MAIN PAY ITEM. REQUIRED FREEBORE LOCATIONS SHALL BE DETERMINED IN THE FIELD AND ARE NOT SHOWN ON THE PLANS.

**CONSUMERS ENERGY NOTE:**  
ALL UTILITY POLES SHALL BE PROTECTED BY THE CONTRACTOR DURING CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE HIS CONSTRUCTION OPERATIONS WITH AFFECTED UTILITIES AND ADEQUATELY SUPPORT THE POLES.

**WATER USAGE NOTE:**  
A SERVICE CHARGE OF \$1,000 WILL BE REQUIRED AT TIME OF PERMIT APPLICATION. THIS FEE INCLUDES THE MINIMUM CHARGE OF \$50 FOR 5,000 BULK GALLONS OF WATER, PLUS ADDITIONAL CHARGES OF \$10 PER 1,000 GALLONS CONSUMED IN EXCESS OF THE MINIMUM QUANTITY. OWOSSO WATER SYSTEM PERSONNEL WILL ATTACH A WATER METER AND RPZ BACKFLOW PREVENTER TO THE HYDRANT FOR CONTRACTOR USE. IF THE WATER METER AND RPZ IS RETURNED IN GOOD OPERATING CONDITION, THE CONTRACTOR WILL RECEIVE A \$450 REFUND, LESS ADDITIONAL WATER CONSUMED IN EXCESS OF MINIMUM QUANTITY.



**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.

**WATER MAIN TRENCH INSULATION DETAIL**

NOT TO SCALE

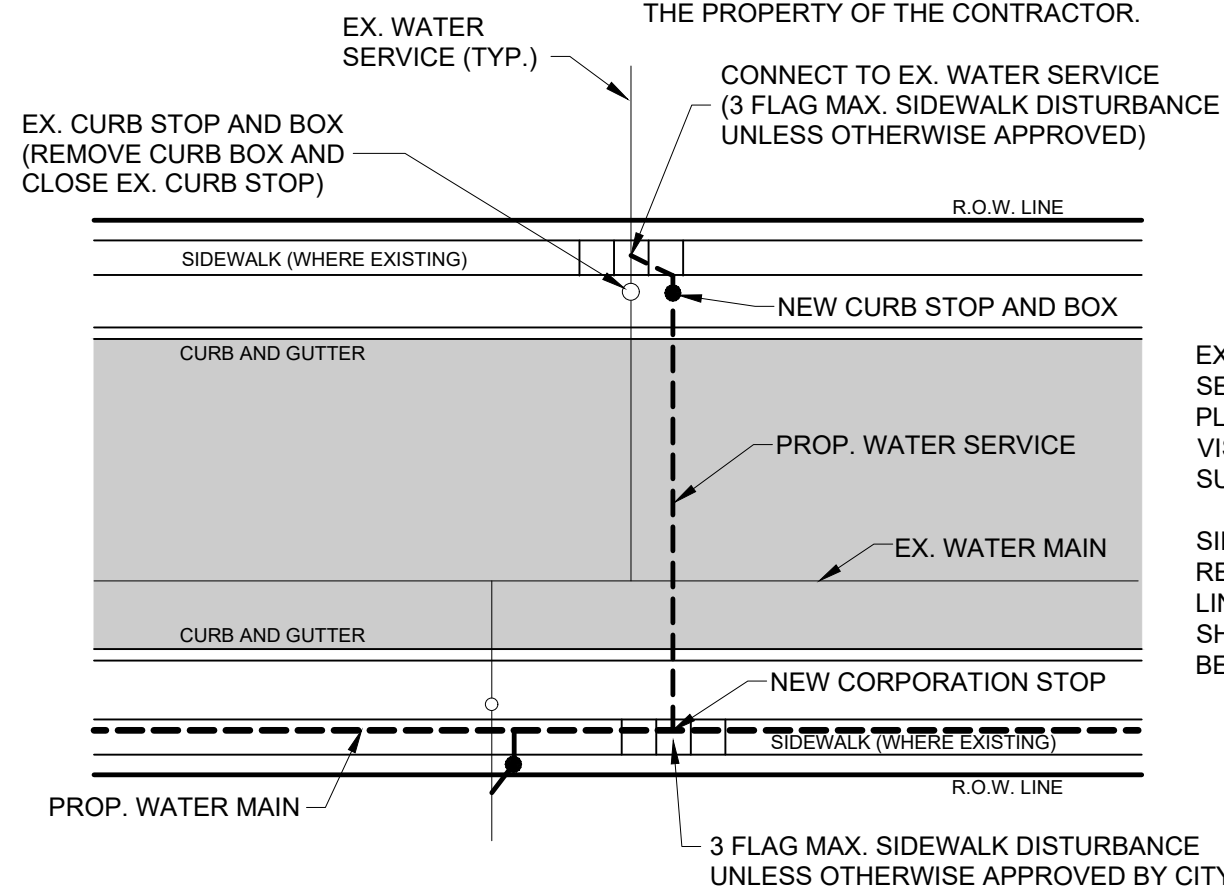
NEW WATER SERVICE, OPEN CUT OR FREEBORE, SHALL INCLUDE ALL LABOR AND MATERIALS REQUIRED TO COMPLETELY INSTALL A NEW WATER SERVICE FROM THE NEW MAIN TO THE EXISTING SERVICE AT THE CURB STOP BOX, INCLUDING CORPORATION, COPPER SERVICE LINE, NEW CURB STOP AND BOX, REMOVING EXISTING CURB STOP AND CLOSING EXISTING CURB STOP, TAPPING THE NEW MAIN, AND MAKING CONNECTION WITH THE EXISTING SERVICE AT THE CURB STOP BOX. LEADS TO OPPOSITE SIDE OF THE ROAD OF THE NEW WATER MAIN WILL BE INSTALLED WITH MORE LENGTH THAN SERVICES INSTALLED ON THE WATER MAIN CONSTRUCTION SIDE.

WATER SERVICES ON THE OPPOSITE SIDE OF THE ROAD OF THE NEW WATER MAIN SHALL BE PAID FOR AS 'NEW WATER SERVICE, FREEBORE' (EA).

WATER SERVICES ON THE SAME SIDE OF THE ROAD AS THE NEW WATER MAIN SHALL BE PAID FOR AS 'NEW WATER SERVICE, OPEN CUT' (EA).

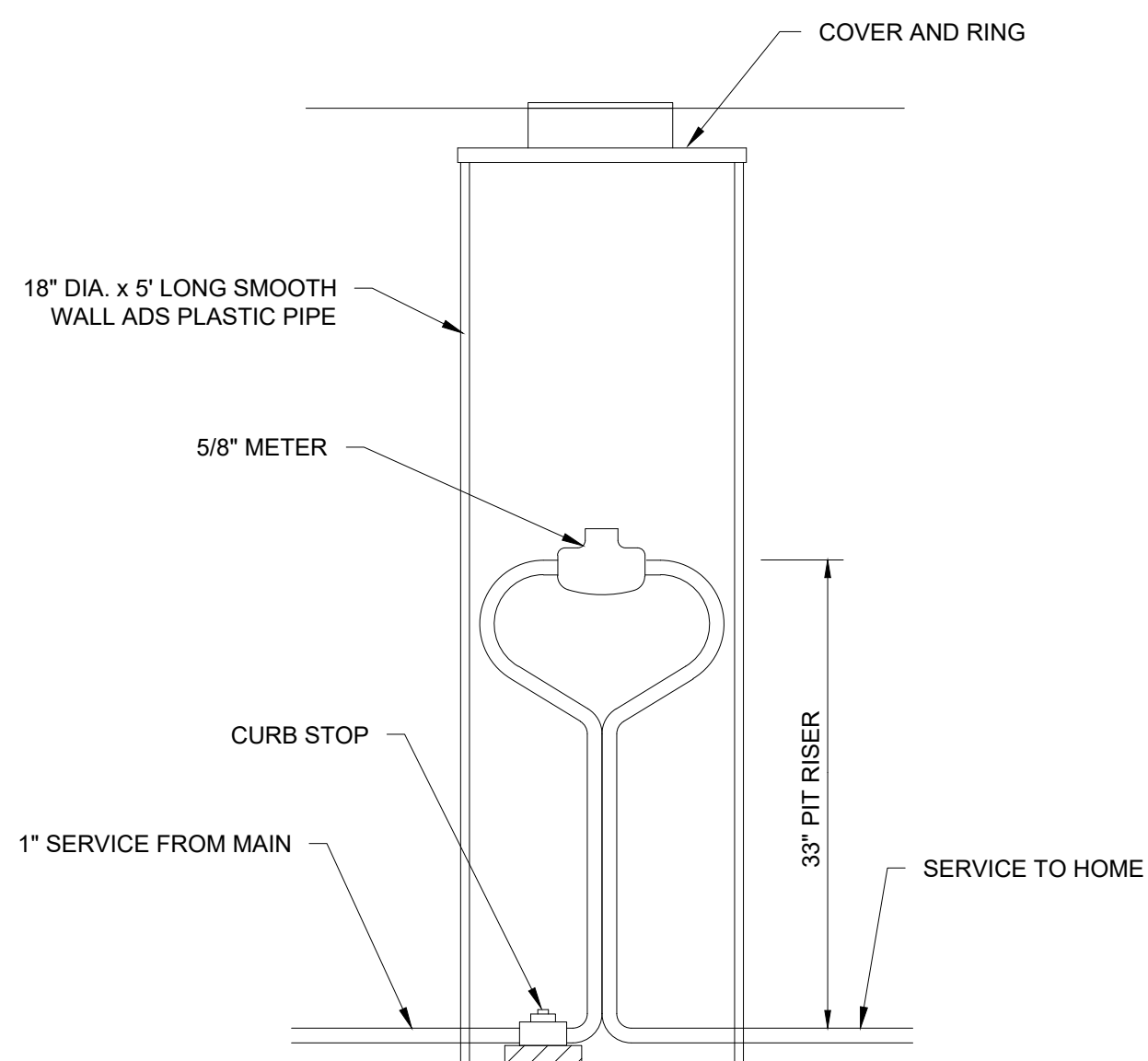
WHERE THE EXISTING CURB STOP BOX IS LOCATED IN PAVEMENT, PAVEMENT REMOVAL AND DRIVE RESTORATION WILL BE PAID SEPARATELY. CONTRACTOR SHALL MINIMIZE PAVEMENT DISTURBANCE AS DIRECTED BY THE ENGINEER.

NOTE: THE CITY OF OWOSSO RESERVES THE RIGHT TO CLAIM ANY EX. WATER BOXES. ALL UNCLAIMED WATER BOXES BECOME THE PROPERTY OF THE CONTRACTOR.



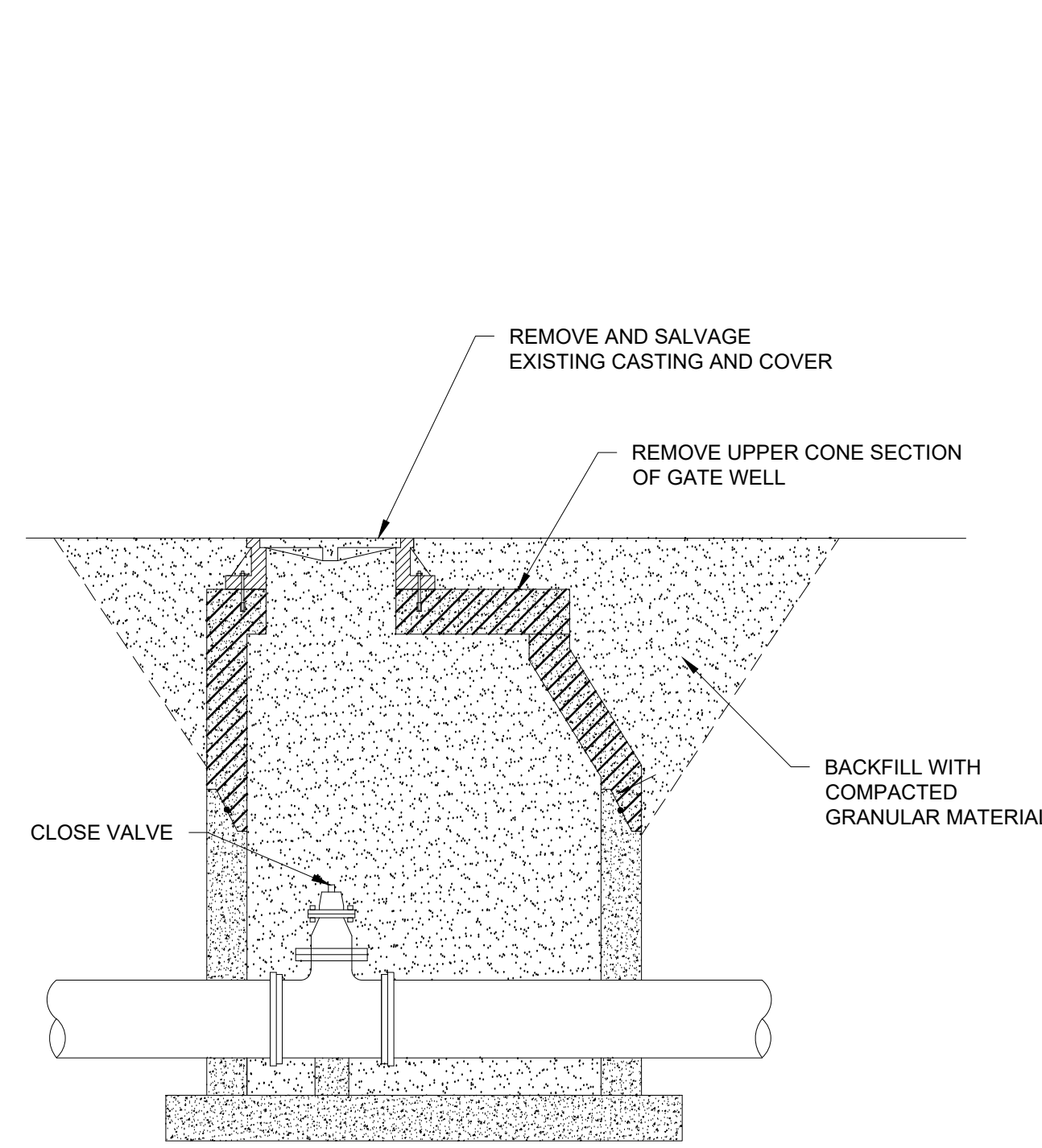
**NEW WATER SERVICE CONNECTION DETAIL**

NOT TO SCALE



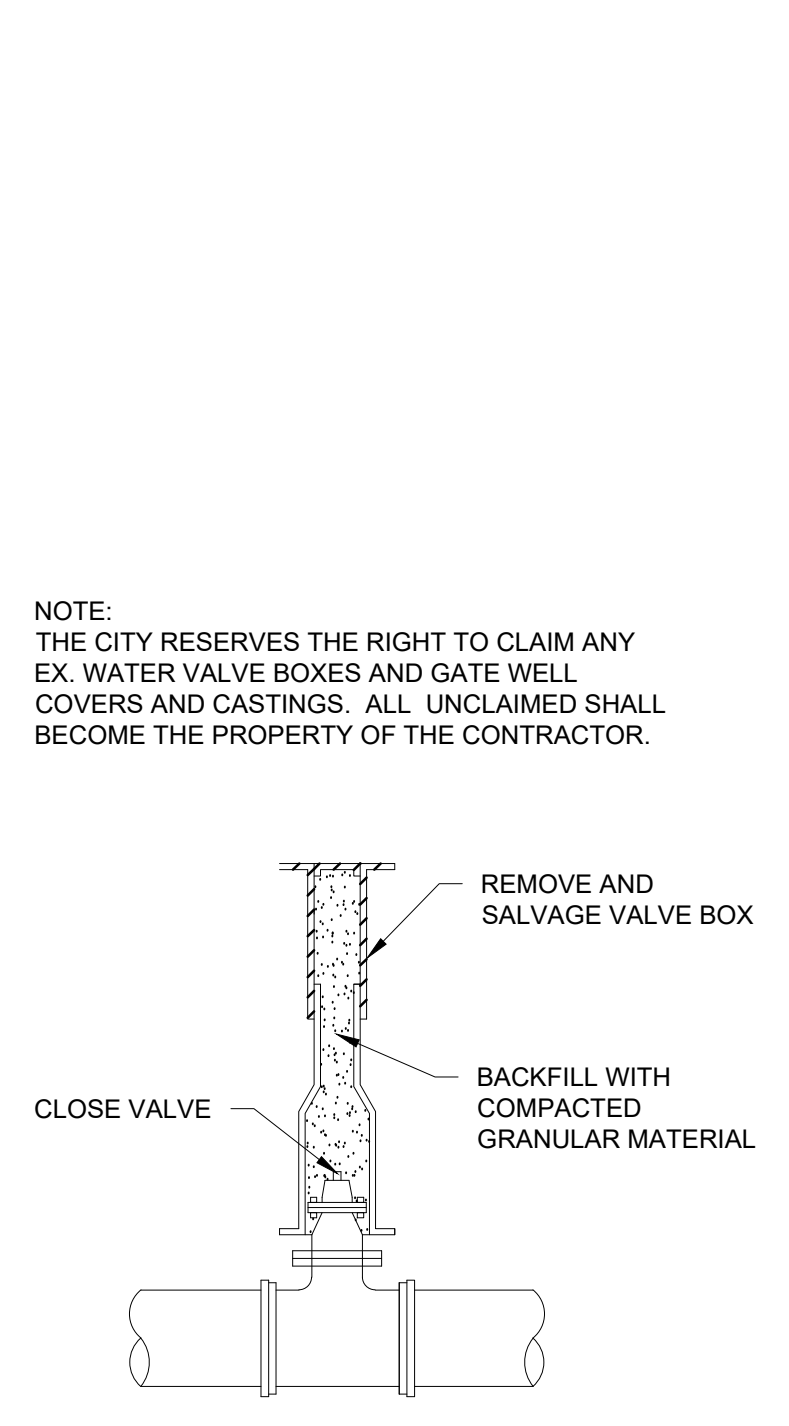
**METER PIT SCHEMATIC (FOR INFORMATION ONLY)**

NOT TO SCALE



**EXISTING VALVE WITH MANHOLE ABANDONMENT DETAIL**

NOT TO SCALE



**EXISTING VALVE WITH VALVE BOX ABANDONMENT DETAIL**

NOT TO SCALE



WaterMaster® Fire Hydrant Specifications for City of Owosso hydrants with Storz

1. Manufacturers shall provide sufficient documentation to assure that their hydrant will successfully meet the latest revisions of AWWA Standard C502. Fire hydrants shall be rated for 250 psi working pressure and be listed by Underwriters Laboratories Inc. (UL246) and meet the test requirements of Factory Mutual (1510) at this pressure.
2. Hydrants shall be of a true compression type, opening against the pressure and closing with the pressure. Composition of the main valve shall be a molded rubber having a durometer hardness of 91 +/- 5. The rubber seat valve shall fit a 5 1/4" opening and not be less than 1" thick.
3. Fire hydrants shall be **three-way** in design, having **Harrington 5" Storz C & X Dome** hose nozzle, and **2 1/2" Nat Std 2 7/8" Base, C Dome** hose nozzle. Nozzles shall "thread" counterclockwise into hydrant barrel utilizing "o" ring pressure seals. A suitable nozzle lock shall be in place to prevent inadvertent nozzle removal. Wedging devices and/or ductile iron retainer rings to secure nozzles shall not be allowed.
4. The lubrication system shall be sealed from the roadway and any external contaminants by use of "o" ring pressure seals. Anti-friction washers shall be in place above and below the thrust collar of the operating nut to further minimize operating torque. The grease reservoir shall be factory filled with an FDA approved food grade lubricant. Oil shall not be used.
5. The operating nut shall be a one piece design, manufactured of ASTM B-584 bronze. It shall be **1 1/8" Pentagon-point to flat** in size/shape. The operating nut shall be affixed to the bonnet by means of an ASTM B-584 bronze hold down nut. The hold down nut shall be threaded into the bonnet in such a manner as to prevent accidental disengagement during the opening cycle of the hydrant. A resilient weather seal shall be incorporated with the hold down nut, for the purpose of protecting the operating mechanism from the elements.
6. The direction of opening shall be **right**. An arrow shall be cast on the top of the hydrant to indicate the opening direction.
7. The hydrant bonnet shall be attached to the upper barrel by no more than six bolts and nuts. All nuts and bolts below grade shall be 304 stainless steel.
8. The hydrant will have **6"** Depth of bury, unless otherwise noted.
9. Hydrants shall be of the "Traffic Model" design, provided with a safety coupling and flange design that will permit a full 360 degree facing of the nozzles. O-rings shall be the Quad-Ring® type and be installed in a groove on the bottom of the joint so that taping or gluing to the upper standpipe or

ejco.com

800 626 4653

1

**WaterMaster® Fire Hydrant Specification**

extension is not required. The safety coupling shall be a one piece design. Multiple parts and cast iron not allowed.

10. The operating stem shall be a two piece design, not less than 1 1/4" diameter (excluding threaded or machined areas). Threads shall be Acme type with no 60 deg. V threads allowed. Travel stops shall be in the inlet/shoe and are not allowed in the bonnet area. Screws, pins, bolts or fasteners used in conjunction with the stem coupling shall be stainless steel.
11. The inside diameter of the hydrant barrels shall not be less than 7 1/4 inches and the hydrant shall be painted **Yellow**.
12. Heavy duty drip shutoff (top plate) and valve seat shall be high strength manganese bronze. Valve seat shall be installed in a bronze seat ring. Drain shall be **tapped and plugged**, bronze lined and 3/8 inch diameter minimum. They shall operate without the use of springs, toggles, tubes, levers or other intricate synchronizing mechanisms. Lower valve plate shall be a one piece ductile iron casting and not require a separate cap nut. Drains shall be open and flushed during the first 4 turns of opening the hydrant before positively closing while operating the hydrant.
13. The shoe connection shall be **Mechanical Joint** or as specified. The inlet/shoe shall be fusion bonded epoxy coated per ANSI/AWWA C550 and with an NSF61 approved coating having ample blocking pads for sturdy setting. Six stainless steel bolts and nuts are required to fasten the shoe to the lower barrel. The shoe/inlet shall be directly connected to the standpipe flange. Designs using a sandwich piece in between the standpipe and shoe/inlet shall not be allowed.
14. External parts- the top bonnet, upper standpipe, lower standpipe and shoe shall be ductile iron to ensure strength throughout the exterior of the hydrant- Gray iron hydrant body parts will not be allowed.

Municipality reserves the right to accept only those materials which are in full compliance with these specifications and deemed most advantageous to its interests.

Upon request, supplier shall furnish flow data indicating friction loss in psi at a flow of 1,000 gpm from the pumper nozzle. Such friction loss shall not exceed 2.5 psi. Also, the municipality may request the manufacturing "point of origin" for any/all hydrant parts. All cast components shall be made in the USA.

Failure to comply with any of these above requirements is sufficient cause for rejection of proposed hydrants.

Hydrant shall be EJ WaterMaster® **5BR250. 55726D**

REVISION:

CITY OF OWOSSO  
SHIAWASSEE COUNTY, MICHIGAN  
2018 STREET PROGRAM  
WATER MAIN NOTES AND DETAILS

DESIGN TEAM:  
GLR, DPH  
CHECK BY:  
SMB MAR 2018  
DRAWING INFORMATION:  
832190\_04\_D3\_WM  
011918 gar/cr

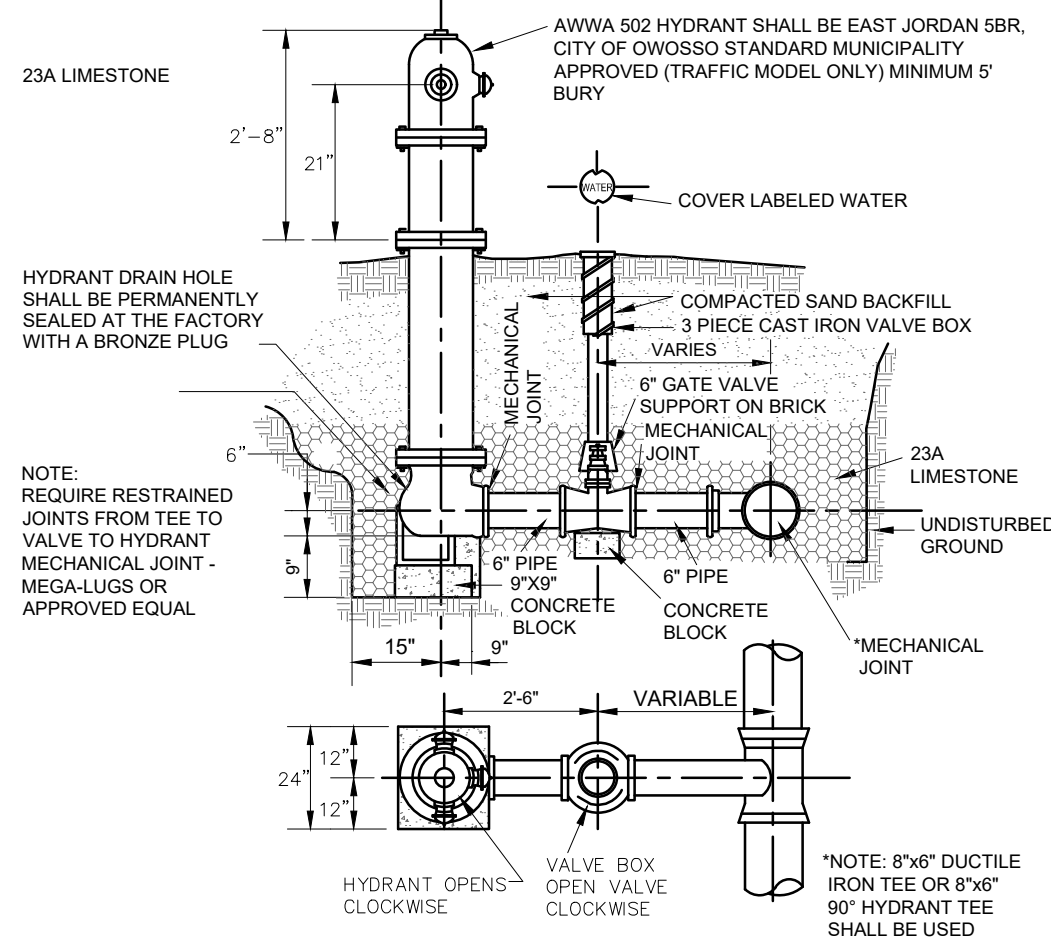
MARCH, 2018  
F&V PROJECT NO.  
832190

**D3**

**FLEISCHMANN & VANDENBRINK**  
DESIGN, BUILD, OPERATE.  
9475 Holly Rd., Suite 201  
Grand Blanc, MI 48439  
P: 810.743.9120  
F: 810.743.1797

**NOTES:**

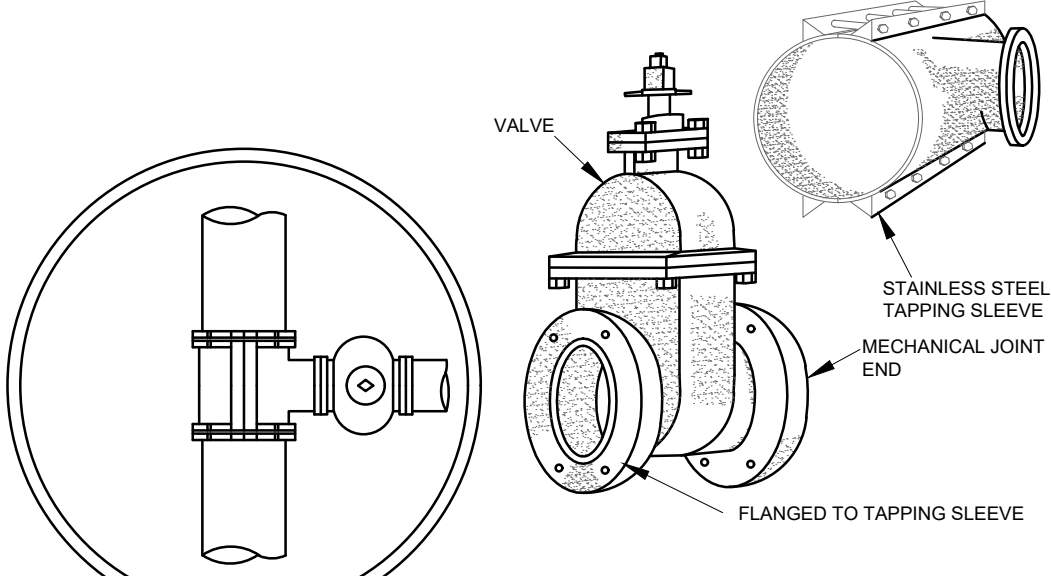
1. THE PUMPER CONNECTION SHALL FACE THE STREET.
2. SET THE HYDRANT FLANGE AT PROPOSED GRADE OR AS FIELD DIRECTED.
3. SET THE VALVE BOX COVER FLUSH WITH THE PROPOSED GRADE.
4. ALL WORK FROM THE CENTER LINE OF THE MAIN TO AND INCLUDING THE HYDRANT SHALL BE PAID FOR BY UNIT PRICE BID ITEM FOR HYDRANTS.
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 ANS/B16.1.
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 MINIMUM SIZE MANHOLE SHALL BE 5' - 0" INTERNAL DIAMETER.
9. THE TOP OPENING SHALL BE CENTERED ON THE VALVE OPERATING NUT.
10. USE FLAT SLAB FOR COVER WITH 24" OPENING.



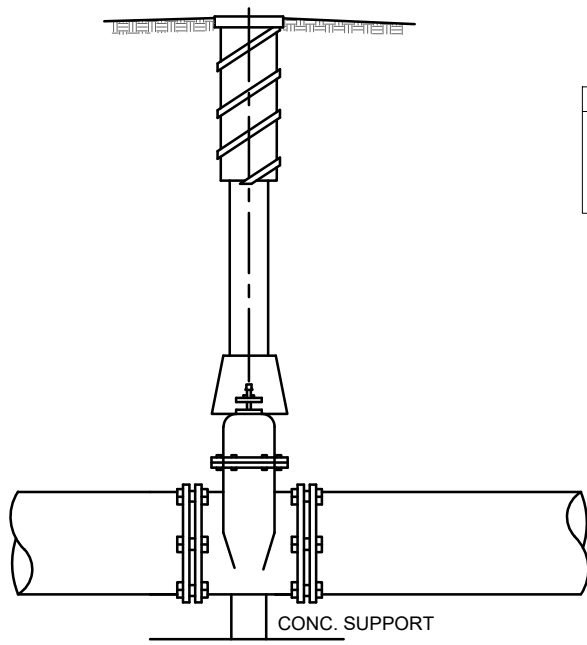
SD-2W PRESSURE TAPPING SLEEVE AND VALVE

**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

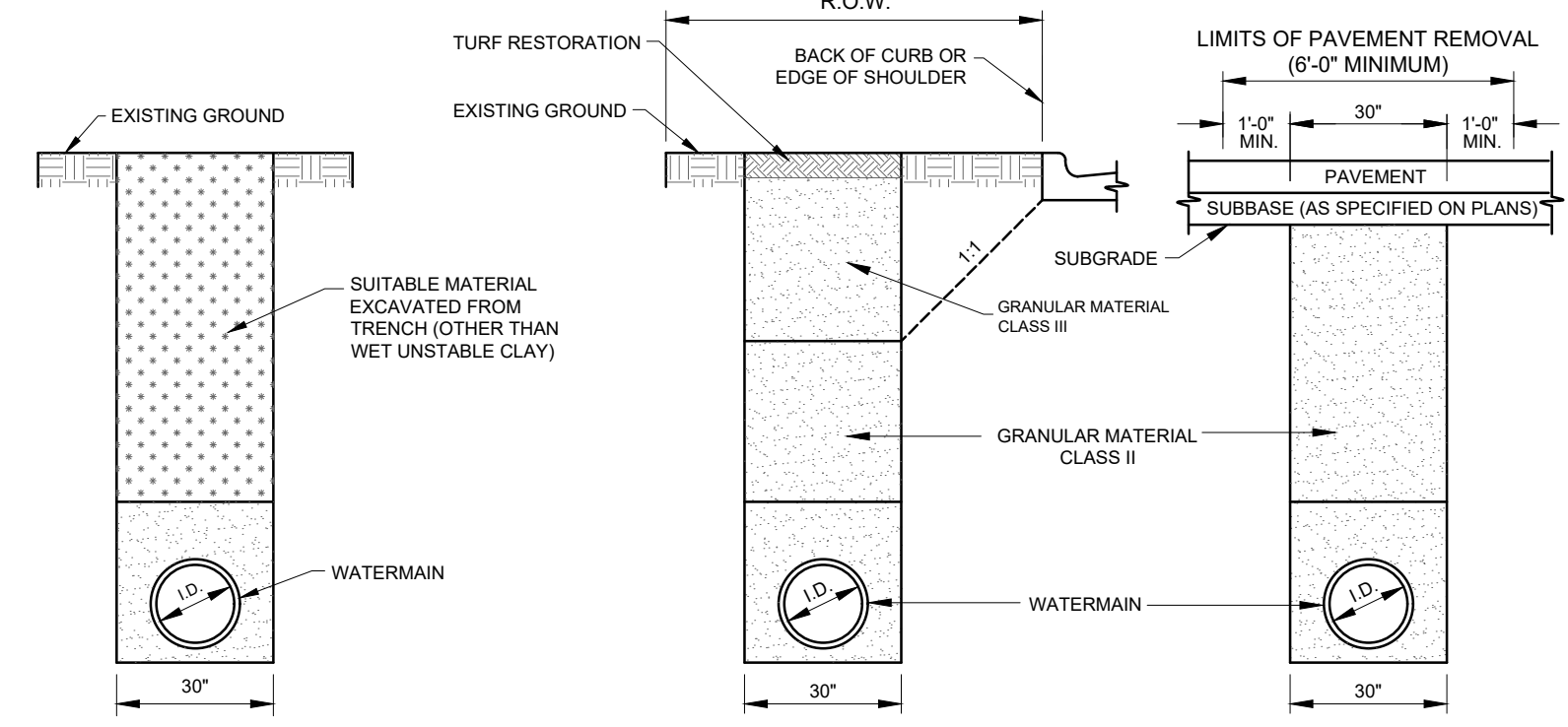
**NOTES:**

1. RESILIENT SEATED WEDGE GATE VALVES SHALL BE PER PROJECT SPECIFICATIONS.
2. ALL PRESSURE TAPS 4" AND OVER MUST BE ENCLOSED WITH A CONCRETE VALVE MANHOLE.
3. CONCRETE ADJUSTING BRICK OR RINGS ALLOWABLE TO A MAXIMUM ADJUSTMENT OF 12".
4. 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.



VALVE SIZE	MIN. BASIN SIZE
6"	BOX-3 PIECE
8" UNPAVED	BOX-3 PIECE
8" PAVED	BOX-3 PIECE
10" - 12"	BOX-3 PIECE

SD-4W WATER VALVE AND VALVE BOX DETAIL



TRENCH BACKFILL DETAIL 'F'  
TYPICAL WATERMANS  
NOT WITHIN INFLUENCE OF ROADBED, DRIVEWAY, OR SIDEWALK, AND LOCATED OUTSIDE OF ROAD RIGHT-OF-WAY

TRENCH BACKFILL DETAIL 'G'  
TYPICAL WATERMANS  
UNDER ROADBED AND/OR WITHIN INFLUENCE OF ROADBED, DRIVEWAY, OR SIDEWALK, OR LOCATED WITHIN THE ROAD RIGHT-OF-WAY

SD-5W WATERMAIN TRENCH BACKFILL DETAILS

**MINIMUM PIPE RESTRAINT LENGTH SCHEDULE FOR GROUND BURIED PRESSURE PIPES(1)**

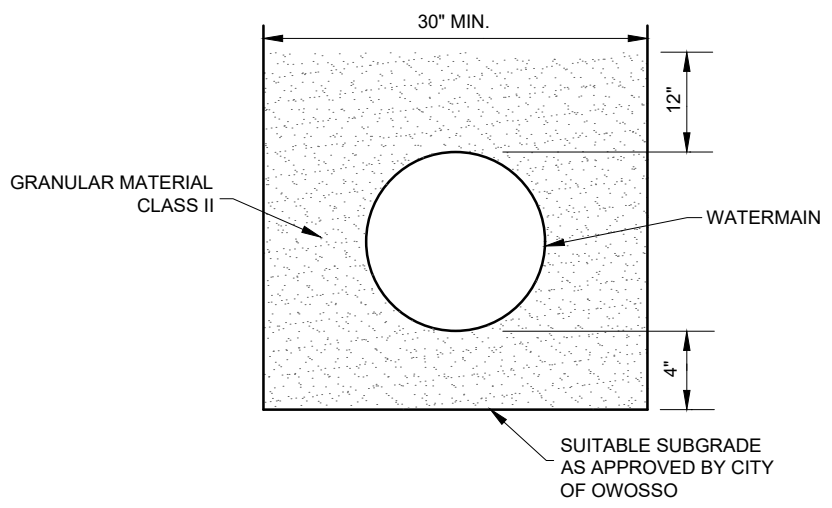
**LENGTH (IN FEET) OF RESTRAINT REQUIRED (2)**

DEFLECTION ANGLE	22½°	33¾°	45°	56¼°	67½°	78¾°	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.
3. IF THE RODS ARE USED, PLACE 2 RODS 5/8 INCH DIAMETER MINIMUM FOR WATERMAIN 6 INCH TO 10 INCH.

SD-7W MINIMUM PIPE RESTRAINT SCHEDULE



SD-10W WATERMAIN BEDDING DETAIL



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

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
<b>EROSION CONTROLS</b>			
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/drainageway 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.
<b>EROSION / SEDIMENT CONTROLS</b>			
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
<b>SEDIMENT CONTROLS</b>			
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 source, to contain sediment within the work area when other BMP's cannot be used.

B = BIOENGINEERING

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.

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	

REVISION:

CITY OF OWOSSO  
SHIAWASSEE COUNTY, MICHIGAN  
2018 STREET PROGRAM

S-E-S-C STANDARD NOTES AND DETAILS

DESIGN TEAM:  
INITIALS  
CHECK BY:  
SMB MAR 2018  
DRAWING INFORMATION:  
832190\_06\_05\_SESC  
010918 gericr

MARCH, 2018

F&V PROJECT NO:  
832190

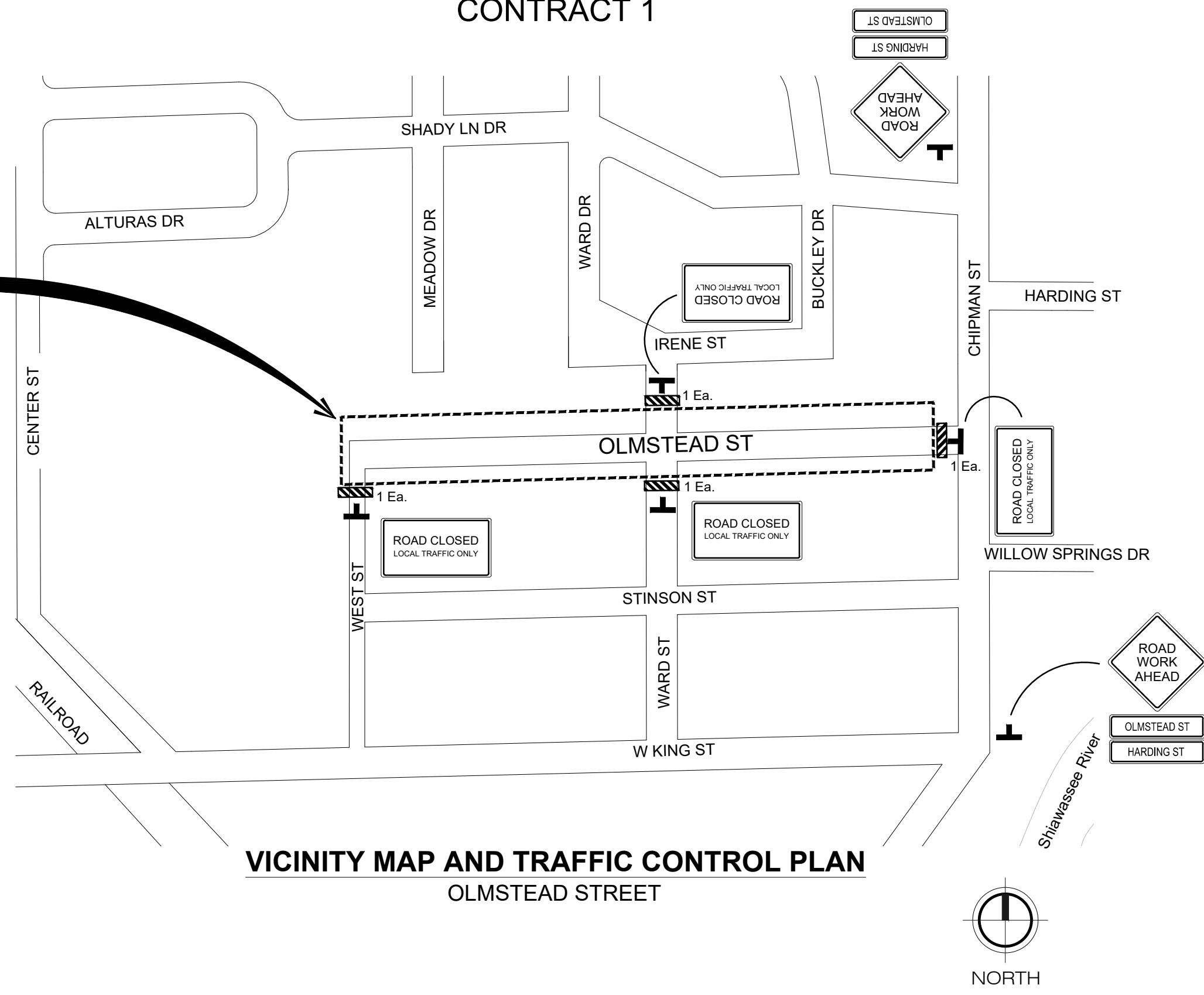
**D5**

# OLMSTEAD STREET

CITY OF OWOSSO  
2018 STREET PROGRAM  
CONTRACT 1

SHEET NO.	DESCRIPTION
OL1	OLMSTEAD ST - COVER SHEET, SIDEWALK RAMP DETAILS
OL2	OLMSTEAD ST - TYPICAL CROSS SECTIONS
OL3	OLMSTEAD ST - REMOVAL PLAN
OL4 - OL5	OLMSTEAD ST - ROAD PLAN AND PROFILE
OL6 - OL7	OLMSTEAD ST - WATER MAIN PLAN AND PROFILE

PROJECT LOCATION - OLMSTEAD ST  
B.O.P. STA. 00+40 TO E.O.P. STA. 13+03  
TOTAL LENGTH = 1,263 FT (0.24 MILES)



ROAD CLOSED  
LOCAL TRAFFIC ONLY

R11-3a  
60" x 30"

ROAD WORK AHEAD

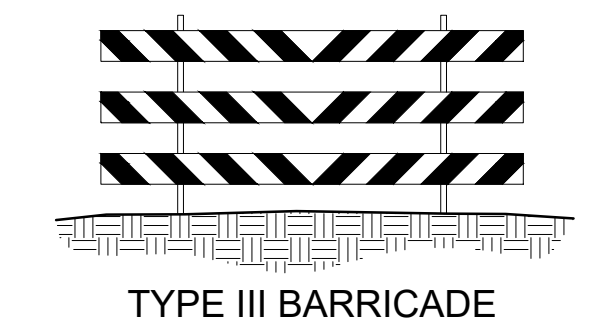
W20-1  
48" x 48"

OLMSTEAD ST

M4-8 (MOD)  
30" x 8"

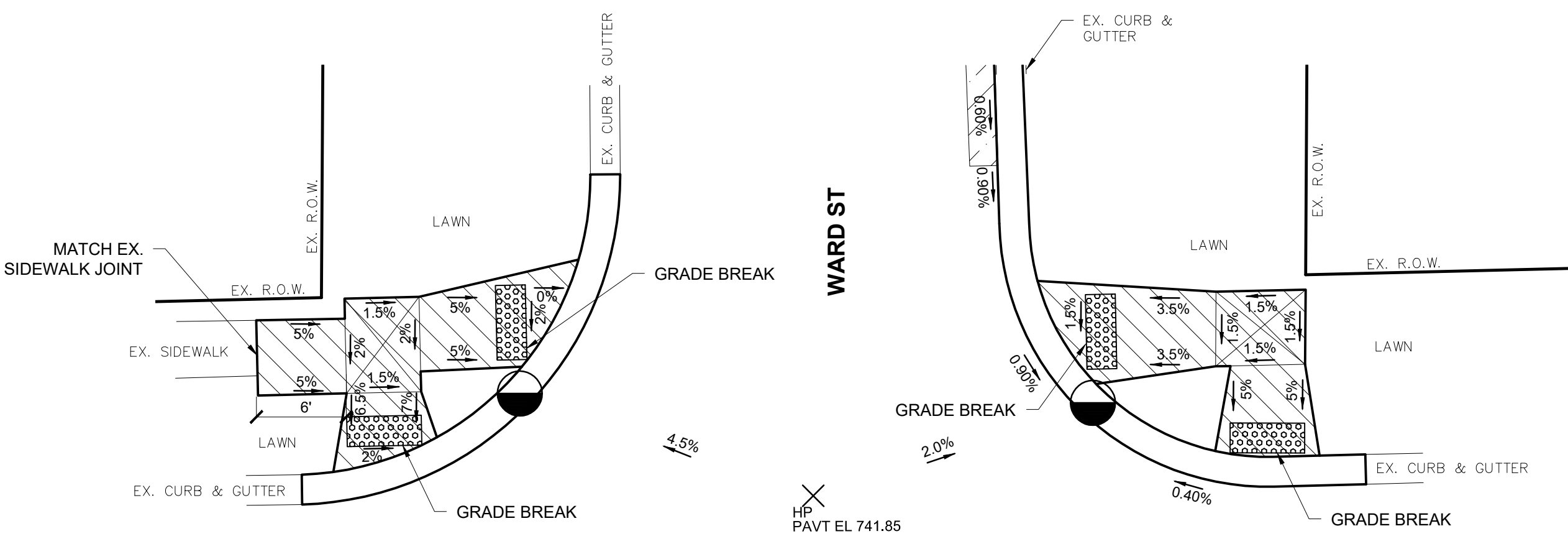
HARDING ST

M4-8 (MOD)  
30" x 8"



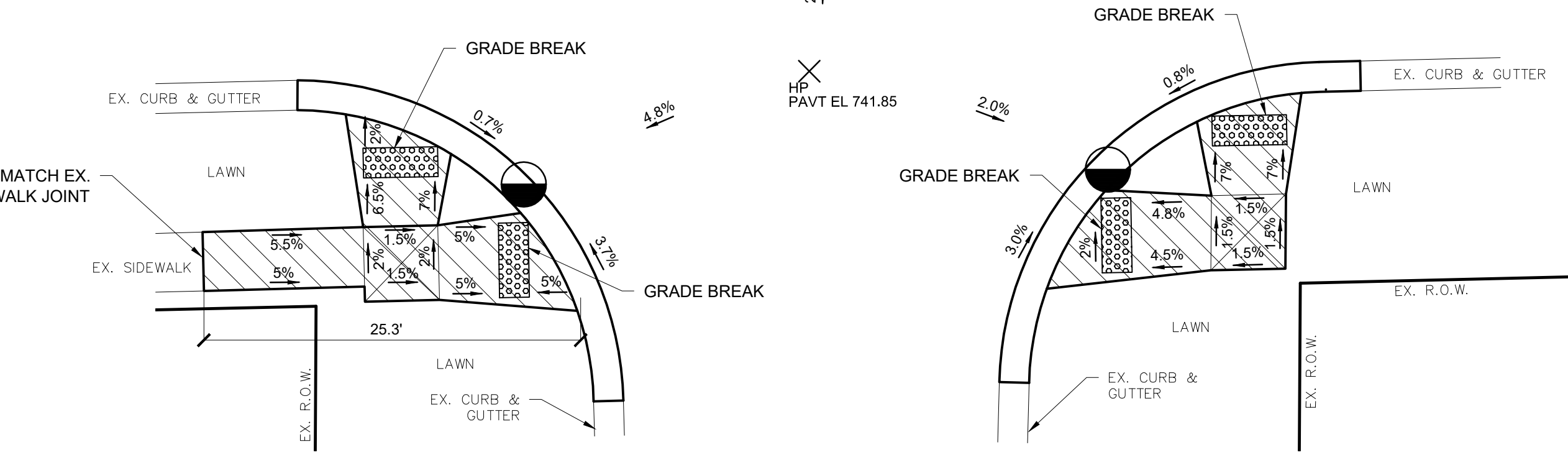
TYPE III BARRICADE

VICINITY MAP AND TRAFFIC CONTROL PLAN  
OLMSTEAD STREET



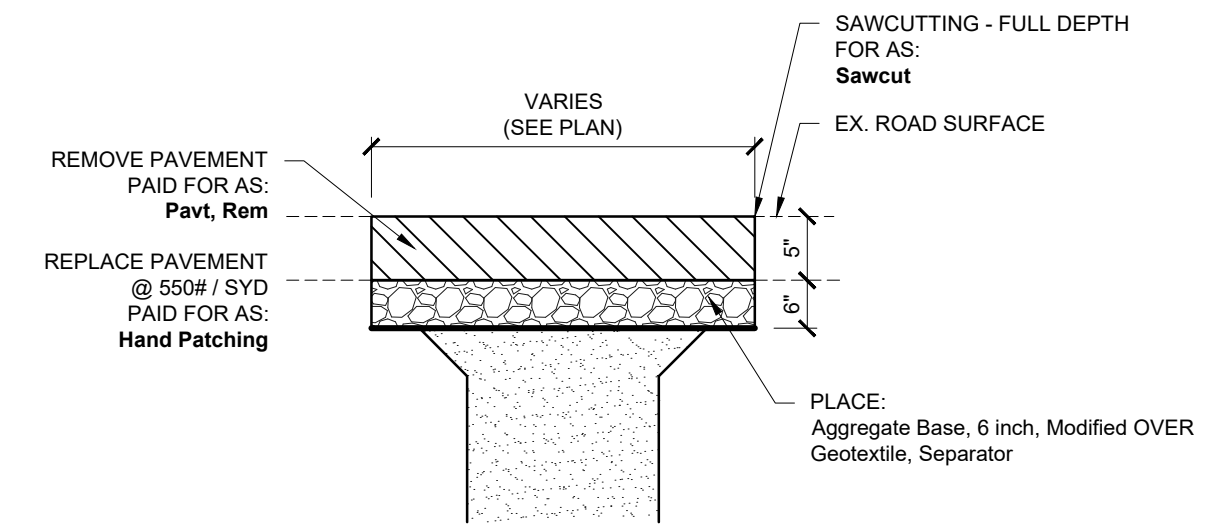
WARD ST

OLMSTEAD ST

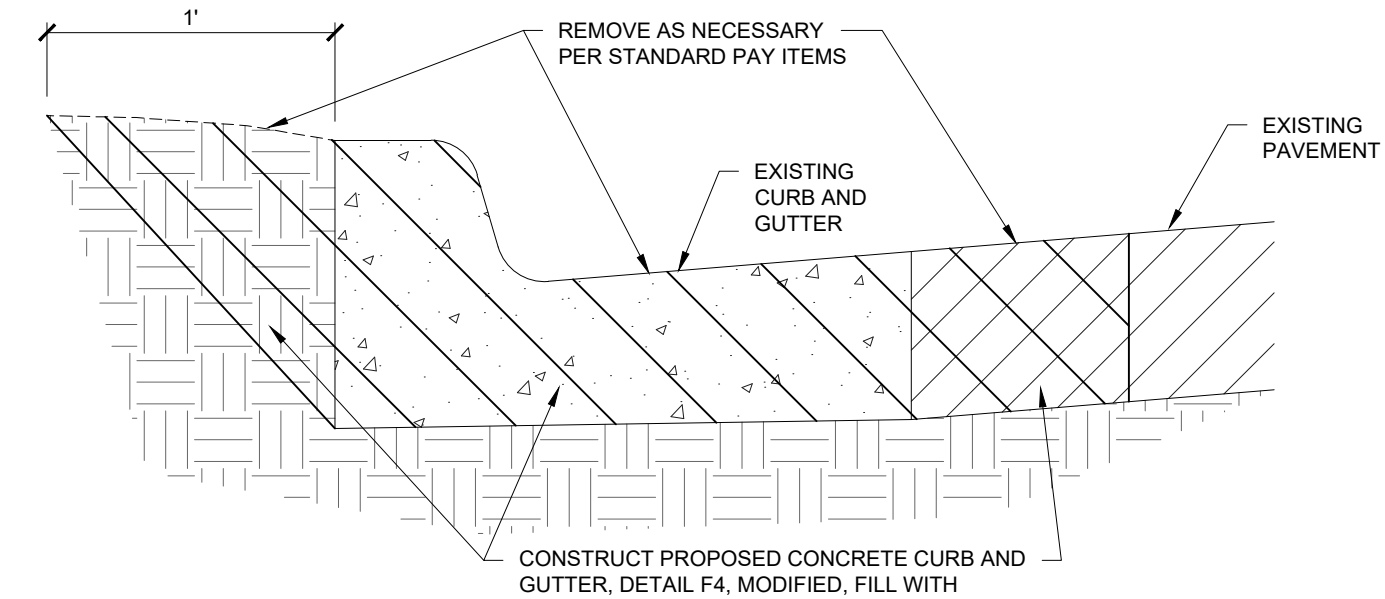


SIDEWALK RAMPS NW, SW QUAD AT WARD ST  
SCALE: 1" = 8'

- LEGEND:
- LANDING AREA
  - DETECTABLE WARNING SURFACE
  - SIDEWALK RAMP PAY ITEM
  - SIDEWALK PAY ITEM
  - CURB & GUTTER REMOVAL & REPLACEMENT

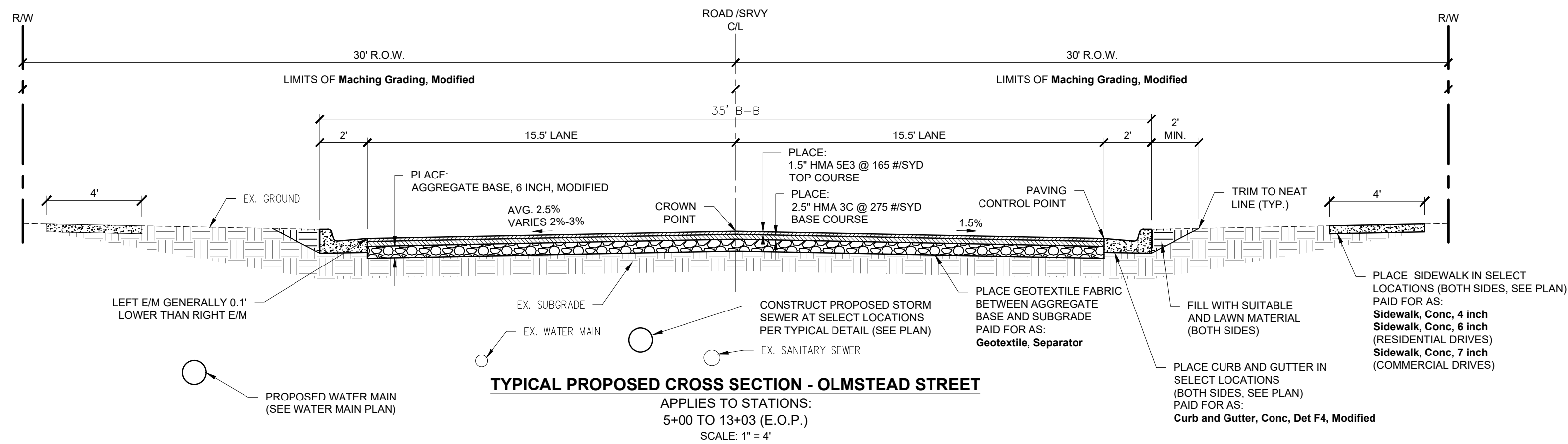
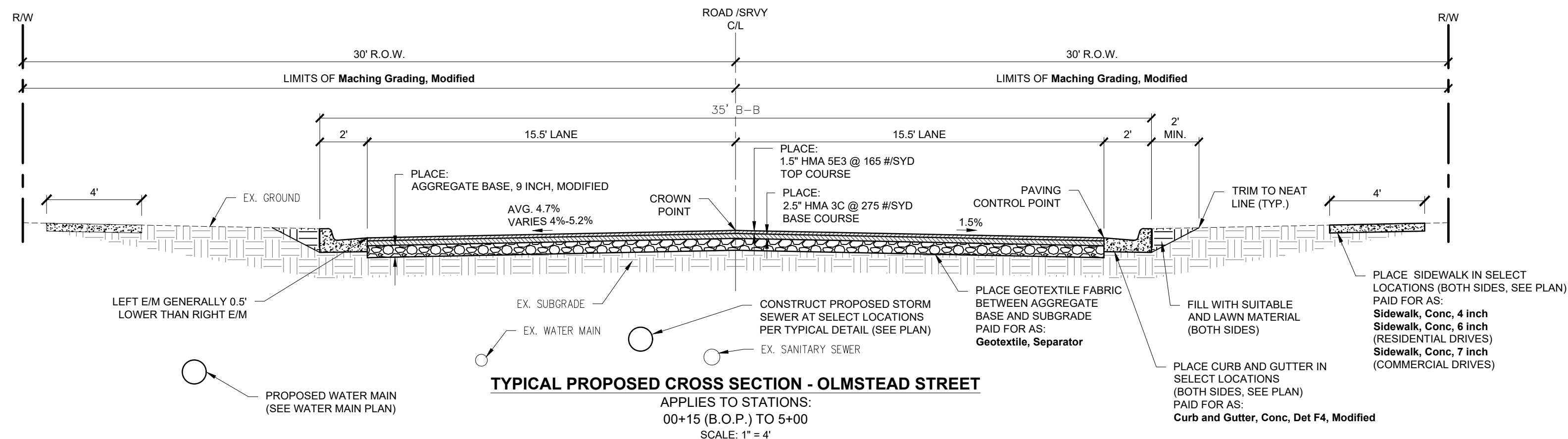
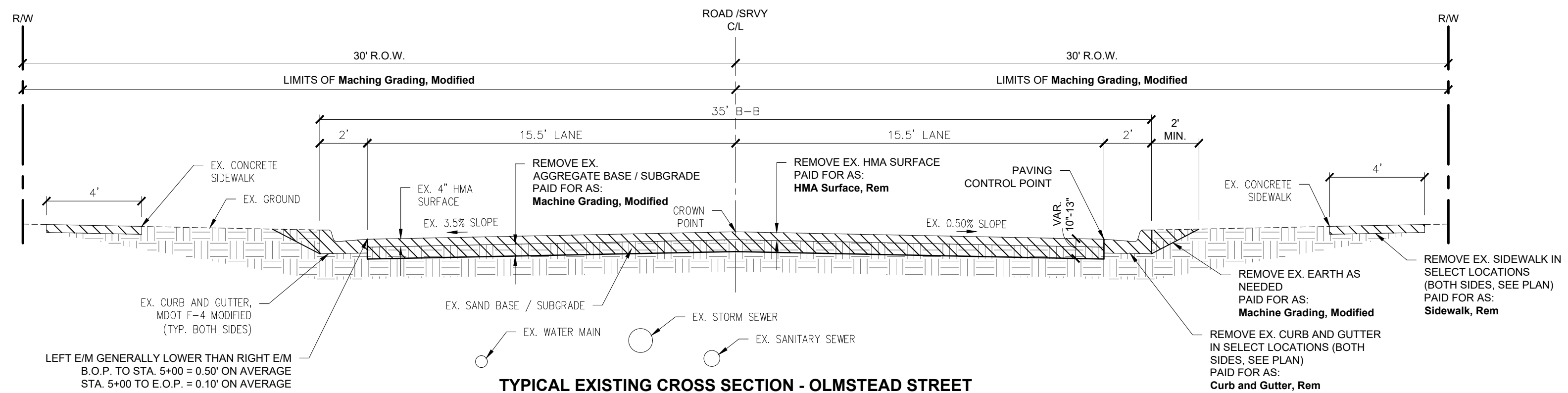


TYPICAL WATER MAIN TRENCH PAVEMENT REPAIR DETAIL  
APPLIES TO ROAD AREAS OUTSIDE OF PROPOSED STREET REHABILITATION  
NOT TO SCALE



TYPICAL SELECT CURB AND GUTTER REPAIR DETAIL  
NOT TO SCALE

NO.	REVISIONS	DATE	BY



OLMSTED STREET - HMA APPLICATION CHART					
ITEM	PAY ITEM	RATE PER SYD	PERFORMANCE GRADE	ESTIMATED THICKNESS, INCH	REMARKS
HMA	HMA, SE3	165 LBS.	64 - 28	1.5"	TOP COURSE - AWI = 260 (MIN.)
	HMA, 3C	275 LBS.	64 - 28	2.5"	BASE COURSE
HAND PATCHING	Hand Patching	110 LBS / SYD / INCH	64 - 28		HMA, SE3 (PLACED IN EQUAL LIFTS)
RESIDENTIAL DRIVE APPROACH	HMA Approach	220 LBS.	58 - 28	2"	TOP COURSE - AWI = 220 (MIN.) HMA, 13A
	HMA Approach	330 LBS.	58 - 28	3"	BASE COURSE - HMA, 13A
HMA BOND COAT		0.10 GAL.			SS-1H (FOR INFORMATION ONLY)

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

2018 STREET PROGRAM  
 OLMSTED ST  
 TYPICAL CROSS SECTIONS

MARCH, 2018  
 PROJECT NO. 832190

FIELD BOOK  
 PG.

REVISIONS

NO.	DATE	BY

APPROVED BY: [Signature]

CHECKED BY: [Signature]

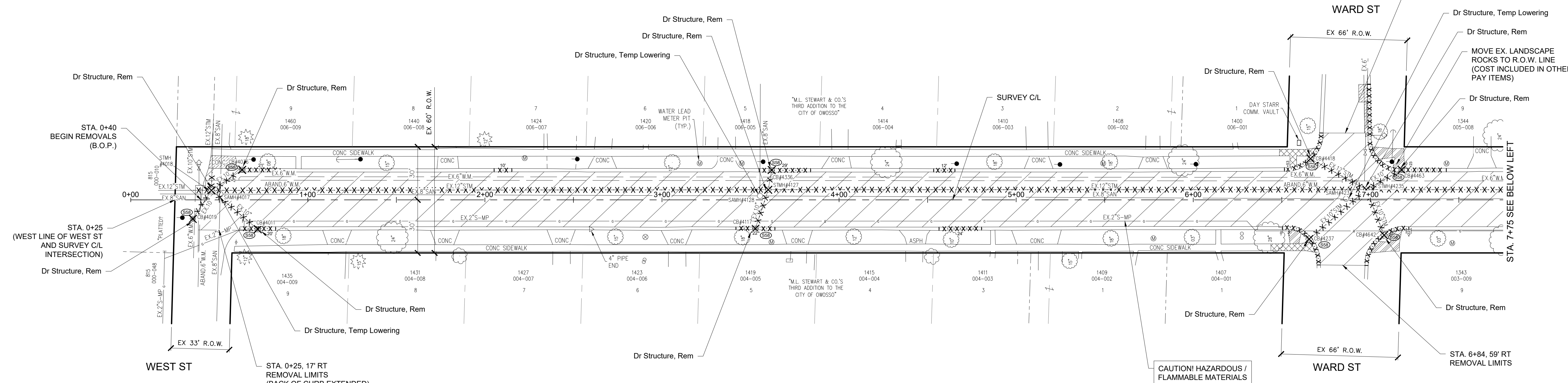
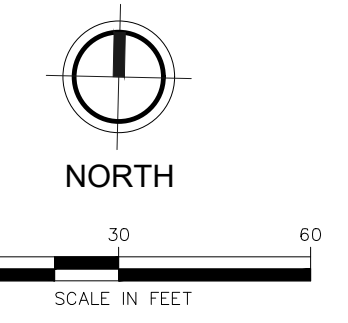
ORIGINAL PLAN

BENCH MARK DATA

ELEV.	DESCRIPTION

**OL2**





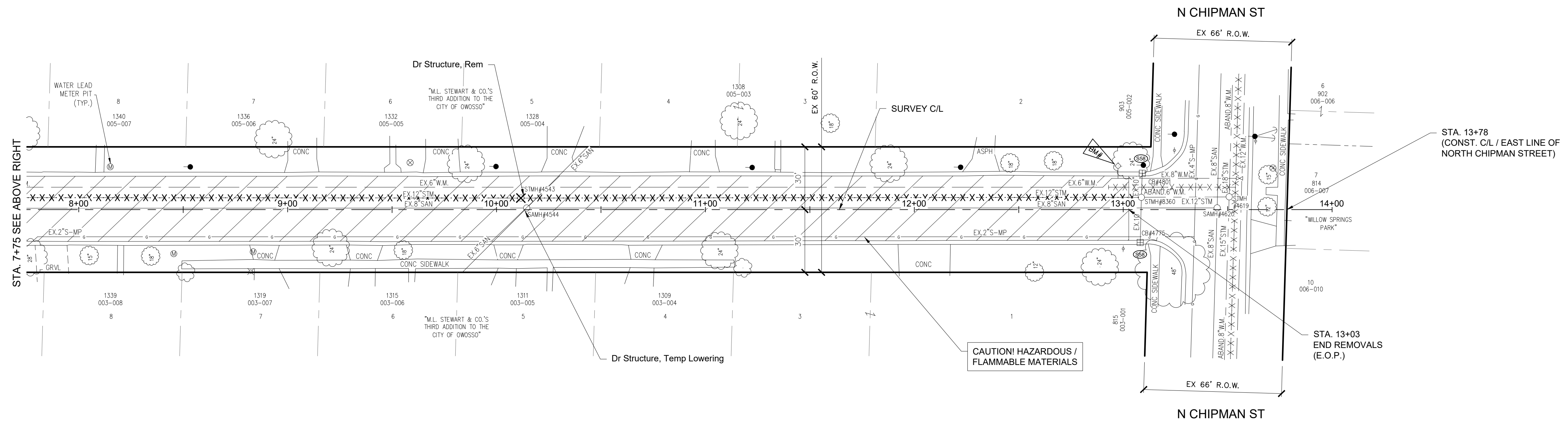
NOTE:  
CONTRACTOR SHALL PROVIDE SUFFICIENT PROTECTION FOR BOTH MOTORISTS AND WORKERS THROUGHOUT WORKSITE SO AS TO ALLOW SAFE PASSAGE AROUND WORK AREAS - AS DIRECTED BY THE ENGINEER

**OLMSTEAD STREET**  
REMOVAL PLAN

REMOVAL QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
4537	Syrd	HMA Surface, Rem
13	Syrd	Pavt, Rem
22	Syrd	Sidewalk, Rem
330	Ft	Curb and Gutter, Rem
13	Ea	Dr Structure, Rem
1310	Ft	Sewer, Rem, Less than 24 inch
11	Ea	Erosion Control, Inlet Protection, Fabric Drop
26	Slt	Machine Grading, Modified
4	Ea	Dr Structure, Temp Lowering

- LEGEND**
- XXXXXX Curb and Gutter, Rem
  - X-X-X-X- Sewer, Rem
  - XXXXX Dr Structure, Rem
  - ▨ HMA Surface, Rem
  - ▨ Pavt, Rem
  - ▨ Sidewalk, Rem
  - ▨ Excavation Earth (Cost inclusive to Machine Grading, Modified)
  - ⊙ STANDARD SOIL EROSION KEY

BM EL. 741.48  
ARROW AT TOP OF CASTING OF HYDRANT, NORTHWEST CORNER OF OLMSTEAD STREET AND NORTH CHIPMAN STREET. (NAVD 88)



**OLMSTEAD STREET**  
REMOVAL PLAN

NO.	REVISIONS	DATE	BY

BENCH MARK DATA	DESCRIPTION	ELEV.

**2018 STREET PROGRAM**  
OLMSTEAD ST  
REMOVAL PLAN

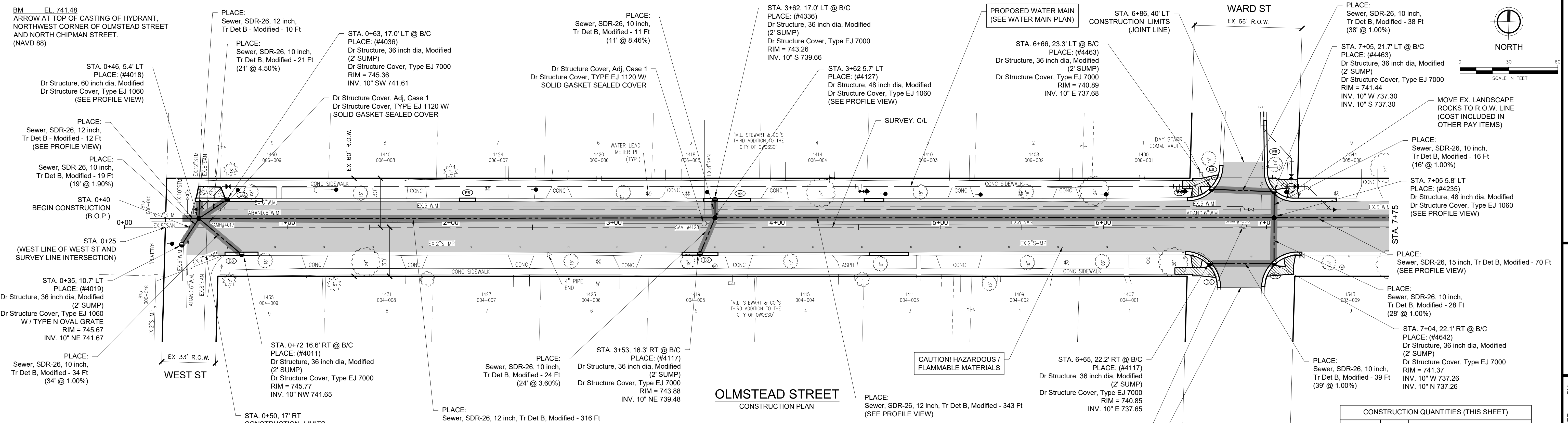
FIELD BOOK  
PG.

MARCH, 2018  
PROJECT NO. 832190

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



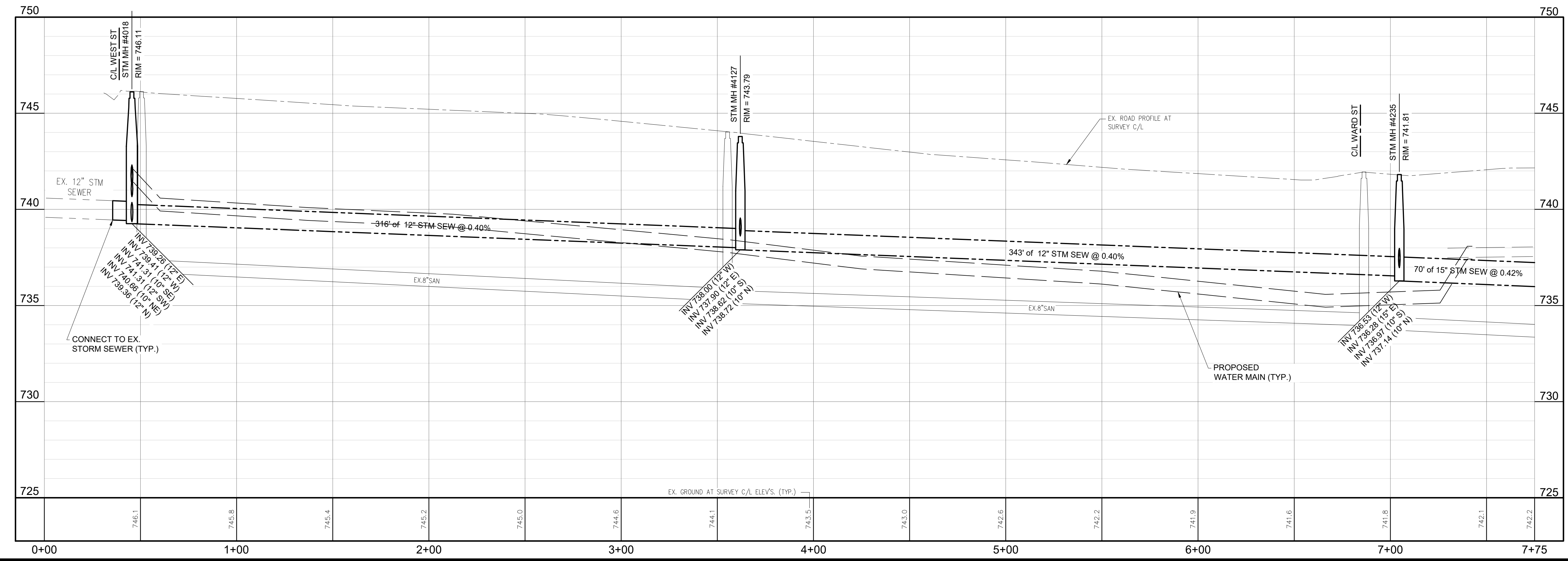
**OL3**



**CONSTRUCTION QUANTITIES (THIS SHEET)**

QUANTITY	UNIT	WORK ITEM
246	Ton	HMA, 5E3
410	Ton	HMA, 3C
13	Syd	Driveway, Nonreinf Conc, 6 inch
1130	Syd	Aggregate Base, 6 inch, Modified
1585	Syd	Aggregate Base, 9 inch, Modified
2715	Syd	Geotextile, Separator
20	Ft	Detectable Warning Surface
550	Sft	Sidewalk Ramp, Conc, 4 inch
330	Ft	Curb and Gutter, Conc, Det F4, Modified
9	Ea	Dr Structure, 36 inch dia, Modified
2	Ea	Dr Structure, 48 inch dia, Modified
1	Ea	Dr Structure, 60 inch dia, Modified
3	Ea	Dr Structure Cover, Type EJ 1060
1	Ea	Dr Structure Cover, Type EJ 1060 w/Type N Oval Grate
8	Ea	Dr Structure Cover, Type EJ 7000
3	Ea	Dr Structure Cover, Adj, Case 1
3	Ea	Dr Structure Cover, Type EJ 1120 W/ SOLID GASKET SEALED COVER
230	Ft	Sewer, SDR-26, 10 inch, Tr Det B, Modified
681	Ft	Sewer, SDR-26, 12 inch, Tr Det B, Modified
70	Ft	Sewer, SDR-26, 15 inch, Tr Det B, Modified

- LEGEND**
- Curb and Gutter, Conc, Det F4, Modified
  - Sewer, SDR-26, \_ inch, Tr Det B, Modified
  - Dr Structure, \_ inch dia, Modified (Catch Basin, Manhole)
  - HMA / HMA Approach
  - ▨ Driveway, Nonreinf, Conc, \_ inch
  - ▨ Aggregate Approach, \_ inch
  - ▨ Sidewalk, Conc, \_ inch
  - ▨ Sidewalk, Ramp, Conc, \_ inch
  - Abn Dr Structure, Abandon
  - Adj Dr Structure Cover, Adj, Case \_ / Valve Box, Adj
  - ⊙ STANDARD SOIL EROSION KEY



**2018 STREET PROGRAM**  
OLMSTEAD ST  
ROAD PLAN AND PROFILE

MARCH, 2018  
PROJECT NO. 832190

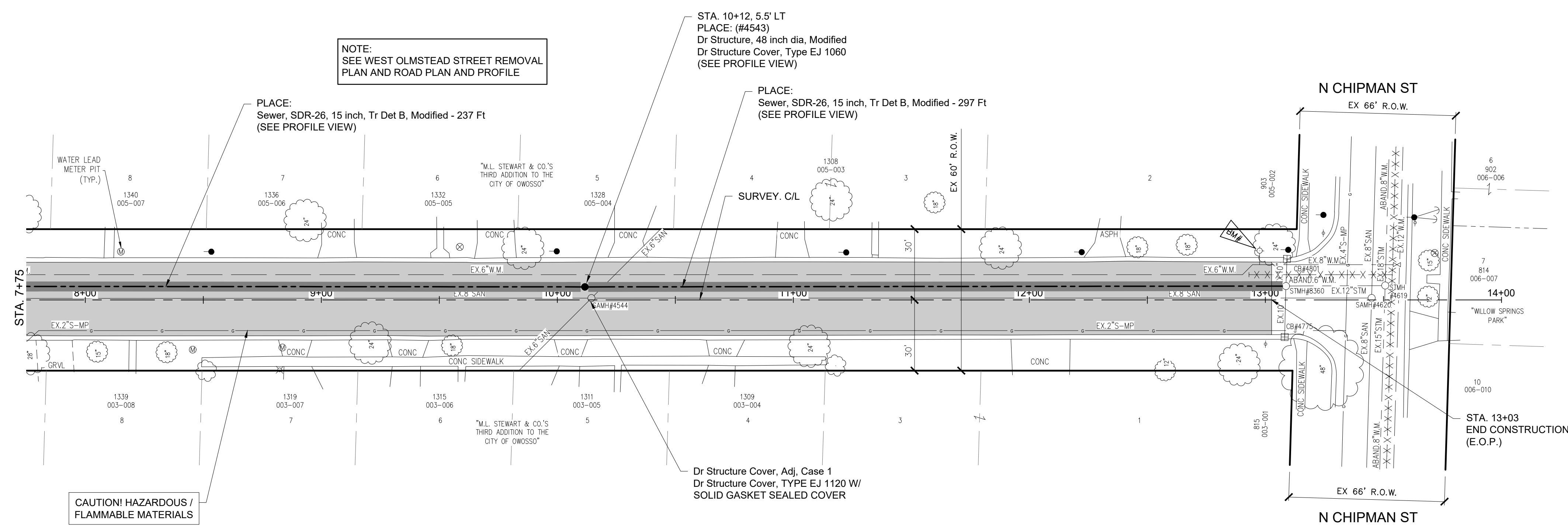
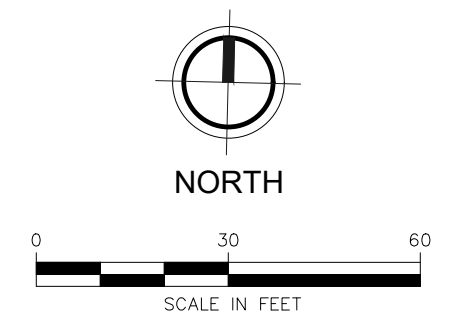
FIELD BOOK  
PG.

NO. BY DATE REVISIONS

CHECKED BY: ORIGINAL PLAN

APPROVED BY:

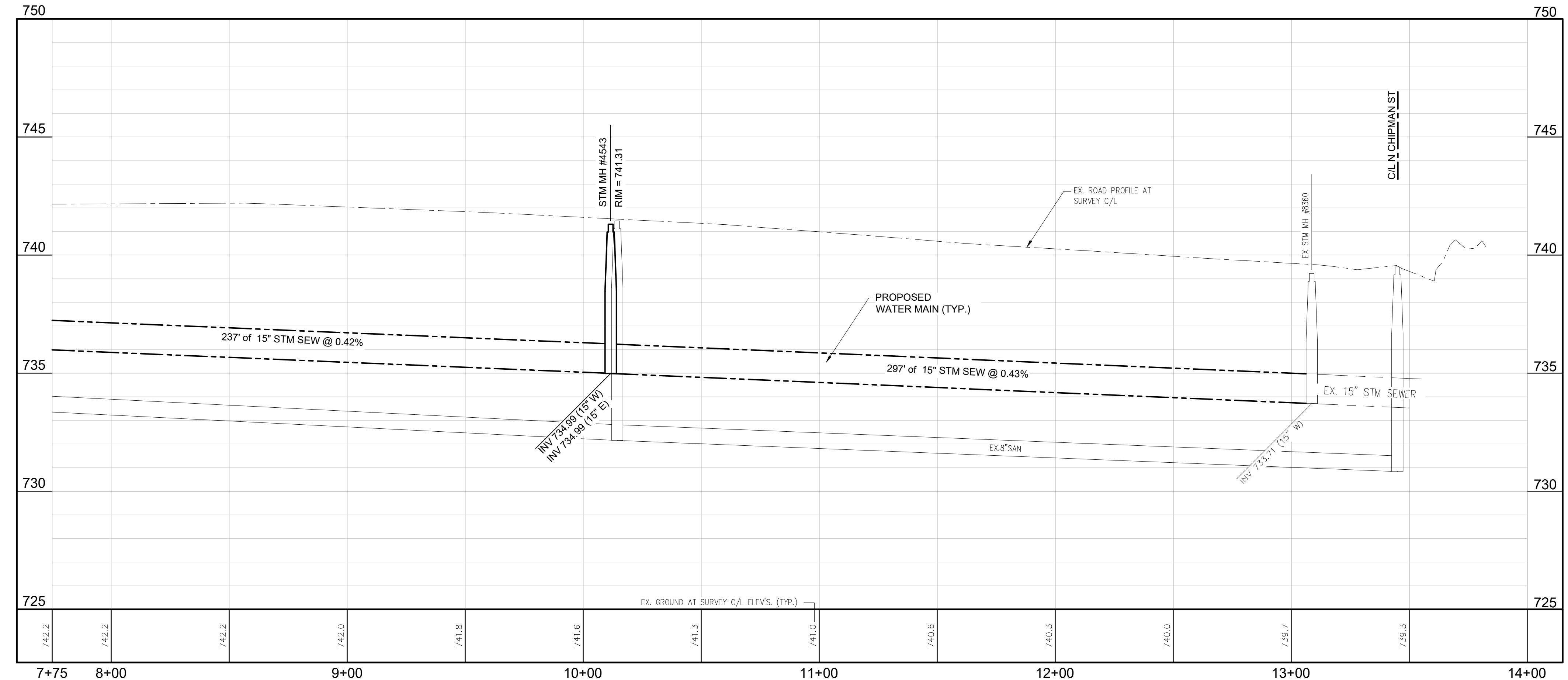
BM EL. 741.48  
 ARROW AT TOP OF CASTING OF HYDRANT,  
 NORTHWEST CORNER OF OLMSTEAD STREET  
 AND NORTH CHIPMAN STREET.  
 (NAVD 88)



**OLMSTEAD STREET**  
 CONSTRUCTION PLAN

- LEGEND**
- Curb and Gutter, Conc, Det F4, Modified
  - Sewer, SDR-26, \_ inch, Tr Det B, Modified
  - Dr Structure, \_ inch dia, Modified (Catch Basin, Manhole)
  - HMA / HMA Approach
  - Driveway, Nonreinf, Conc, \_ inch
  - Aggregate Approach, \_ inch
  - Sidewalk, Conc, \_ inch
  - Sidewalk, Ramp, Conc, \_ inch
  - Dr Structure, Abandon
  - Dr Structure Cover, Adj, Case \_ / Valve Box, Adj
  - STANDARD SOIL EROSION KEY

CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
165	Ton	HMA, 5E3
275	Ton	HMA, 3C
1822	Syd	Aggregate Base, 6 inch, Modified
1822	Syd	Geotextile, Separator
1	Ea	Dr Structure, 48 inch dia, Modified
1	Ea	Dr Structure Cover, Type EJ 1060
1	Ea	Dr Structure Cover, Adj, Case 1
1	Ea	Dr Structure Cover, Type EJ 1120 W/ SOLID GASKET SEALED COVER
534	Ft	Sewer, SDR-26, 15 inch, Tr Det B, Modified



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

NO.	DATE	BY	REVISIONS	APPROVED BY

BENCH MARK DATA	DESCRIPTION
ELEV.	

2018 STREET PROGRAM  
 OLMSTEAD ST  
 ROAD PLAN AND PROFILE  
 MARCH, 2018  
 PROJECT NO. 832190  
 FIELD BOOK  
 PG.



**OL5**

BM EL. 741.48  
 ARROW AT TOP OF CASTING OF HYDRANT,  
 NORTHWEST CORNER OF OLMSTEAD STREET  
 AND NORTH CHIPMAN STREET.  
 (NAVD 88)

STA. 0+42, 11' LT  
 PLACE:  
 1 EA - CONNECT TO EX. WATER MAIN (AT 6" TEE)  
 1 EA - 8" x 6" REDUCER  
 1 EA - 8" 45° BEND  
 1 EA - 6" 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

STA. 0+60, 25' LT  
 PLACE:  
 1 EA - 8" 45° BEND  
 1 EA - 8" VALVE AND VALVE BOX

NOTE:  
 SEE WEST OLMSTEAD STREET REMOVAL  
 PLAN AND ROAD PLAN AND PROFILE

STA. 0+42 TO STA. 7+75  
 PLACE:  
 738 FT - 8" PVC WATER MAIN

STA. 4+55, 22' LT  
 PLACE:  
 1 EA - 8" x 6" TEE  
 1 EA - 90° FIRE HYDRANT ASSEMBLY

STA. 6+88, 60' LT  
 PLACE:  
 1 EA - CONNECT TO EX. WATER MAIN  
 1 EA - 6" 45° BEND  
 1 EA - 6" 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

SEE PAVEMENT REPAIR  
 DETAIL ON SHEET OL1  
 PLACE:  
 42 LF - 6" PVC WATER MAIN, TB DET 'G'

STA. 7+06, 31' LT  
 PLACE:  
 1 EA - 8" 45° BEND

STA. 7+15, 42' LT  
 PLACE:  
 1 EA - 8" 45° BEND

STA. 7+11, 25' LT  
 PLACE:  
 1 EA - 8" 45° BEND

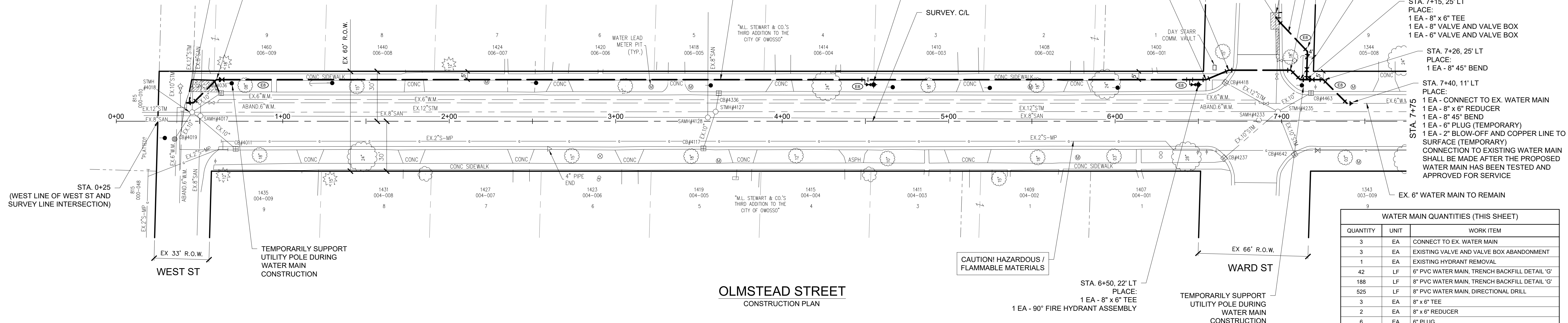
STA. 7+15, 25' LT  
 PLACE:  
 1 EA - 8" x 6" TEE  
 1 EA - 8" VALVE AND VALVE BOX  
 1 EA - 6" VALVE AND VALVE BOX

STA. 7+26, 25' LT  
 PLACE:  
 1 EA - 8" 45° BEND

STA. 7+40, 11' LT  
 PLACE:  
 1 EA - CONNECT TO EX. WATER MAIN  
 1 EA - 8" x 6" REDUCER  
 1 EA - 8" 45° BEND  
 1 EA - 6" 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

STA. 7+40, 11' LT  
 PLACE:  
 1 EA - CONNECT TO EX. WATER MAIN  
 1 EA - 8" x 6" REDUCER  
 1 EA - 8" 45° BEND  
 1 EA - 6" 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

WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
3	EA	CONNECT TO EX. WATER MAIN
3	EA	EXISTING VALVE AND VALVE BOX ABANDONMENT
1	EA	EXISTING HYDRANT REMOVAL
42	LF	6" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
188	LF	8" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
525	LF	8" PVC WATER MAIN, DIRECTIONAL DRILL
3	EA	8" x 6" TEE
2	EA	8" x 6" REDUCER
6	EA	6" PLUG
2	EA	6" 45° BEND
2	EA	8" 22.5° BEND
6	EA	8" 45° BEND
1	EA	6" VALVE AND VALVE BOX
2	EA	8" VALVE AND VALVE BOX
2	EA	90° FIRE HYDRANT ASSEMBLY
9	EA	NEW WATER SERVICE, OPEN CUT
9	EA	NEW WATER SERVICE, FREEBORE
3	EA	2" BLOW-OFF AND COPPER LINE TO SURFACE
9	EA	SUPPLY & INSTALL METER PIT, COMPLETE
9	EA	WATER METER PIT, REM
160	SYD	SIDEWALK, REM
1200	SFT	SIDEWALK, CONC, 4 INCH
250	SFT	SIDEWALK, CONC, 6 INCH



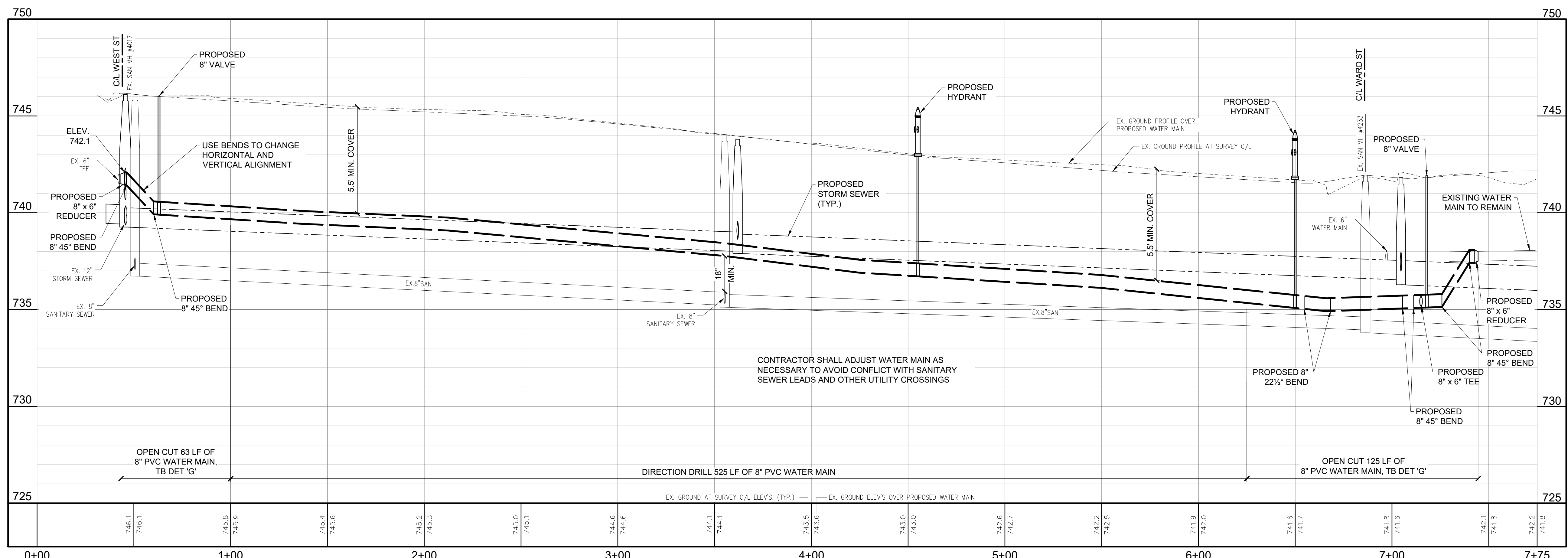
OLMSTEAD STREET  
 CONSTRUCTION PLAN

LEGEND

- WATER MAIN
- ✕ GATE VALVE AND BOX, INCH
- REDUCER
- ⊕ HYDRANT / VALVE
- ⊙ STANDARD SOIL EROSION KEY

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
- EXISTING HYDRANT REMOVAL - EA



CONTRACTOR SHALL ADJUST WATER MAIN AS  
 NECESSARY TO AVOID CONFLICT WITH SANITARY  
 SEWER LEADS AND OTHER UTILITY CROSSINGS



**FLEIS & VANDENBRINK**  
 DESIGN, BUILD, OPERATE

9475 Holly Rd, Suite 201  
 Grand Blanc, MI 48439  
 P: 810.743.9120  
 F: 810.743.1797

CITY OF OWOSSO  
 SHIAWASSEE COUNTY, MICHIGAN  
 2018 STREET PROGRAM

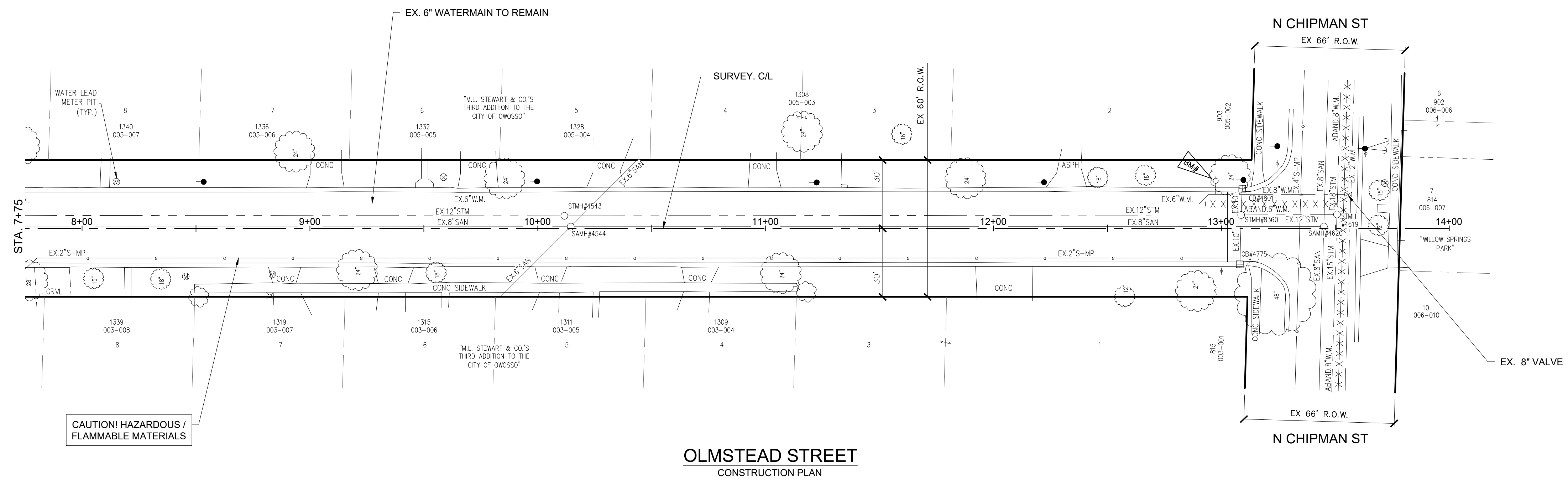
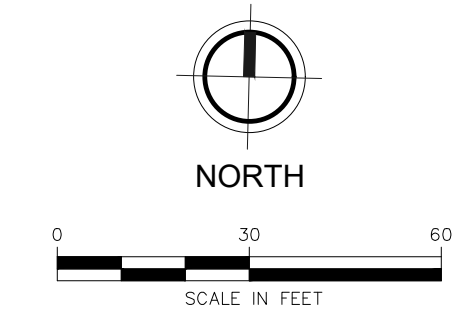
OLMSTEAD ST - WATER MAIN PLAN AND PROFILE

DESIGN TEAM:  
 G.L.R. DPH  
 CHECK BY:  
 S.M.B. MAR 2018  
 DRAWING INFORMATION:  
 832190\_11\_OL6\_OL7\_WMPP  
 022718 gvr/cr

MARCH, 2018  
 P&V PROJECT NO.  
 832190

**OL6**

NO PROPOSED WATER MAIN CONSTRUCTION ON THIS SHEET

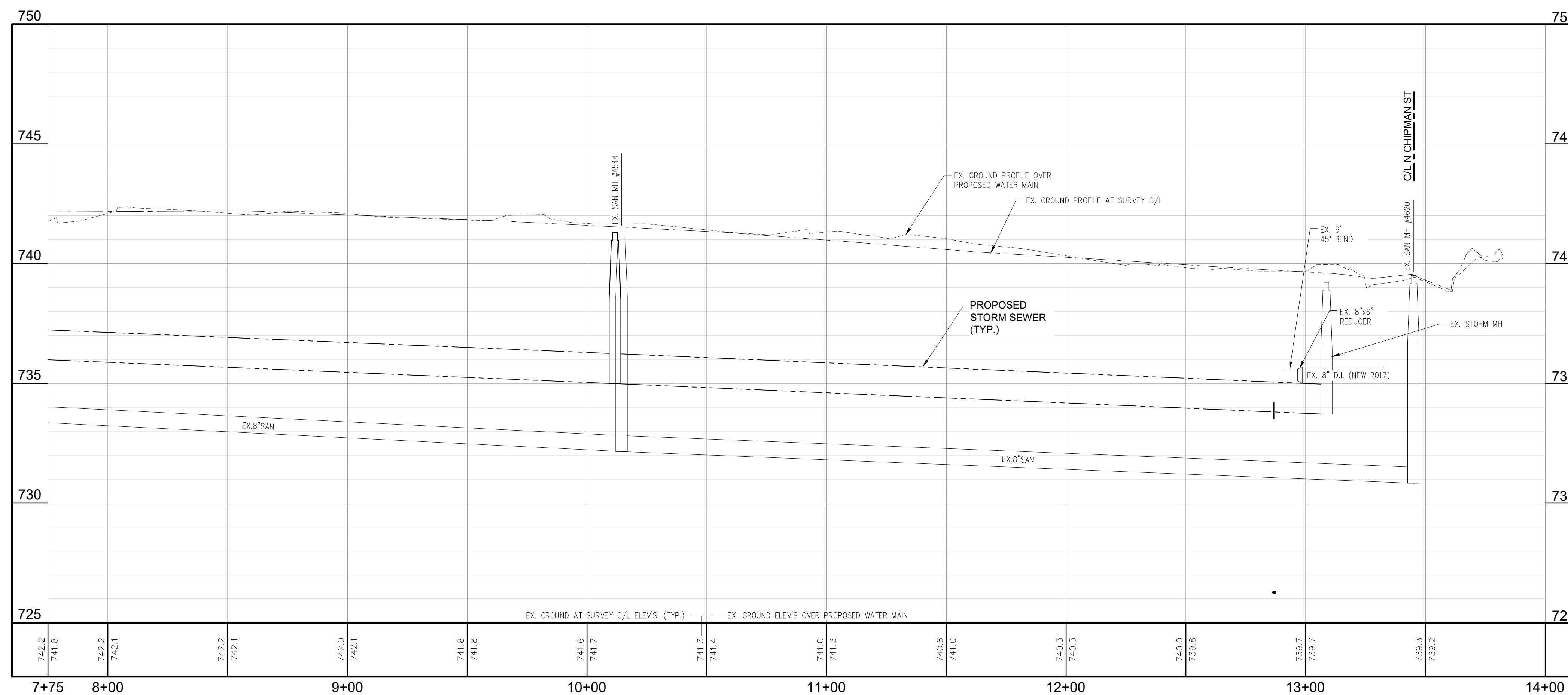


BM EL. 741.48  
ARROW AT TOP OF CASTING OF HYDRANT,  
NORTHWEST CORNER OF OLMSTEAD STREET  
AND NORTH CHIPMAN STREET.  
(NAVD 88)

**FLEIS & VANDENBRINK**  
DESIGN, BUILD, OPERATE.

9475 Holly Rd, Suite 201  
Grand Blanc, MI 48439  
P: 810.743.9120  
F: 810.743.1797

- LEGEND**
- WATER MAIN
  - x GATE VALVE AND BOX, \_INCH
  - ▷ REDUCER
  - ⊕ HYDRANT / VALVE
  - ⊙ STANDARD SOIL EROSION KEY



REVISION:

CITY OF OWOSSO  
SHIAWASSEE COUNTY, MICHIGAN  
2018 STREET PROGRAM

OLMSTEAD ST - WATER MAIN PLAN AND PROFILE

DESIGN TEAM:  
GLR, DPH  
CHECK BY:  
SMB MAR 2018  
DRAWING INFORMATION:  
832190\_11\_OL6\_OL7\_WMPP  
022718 gqrct

MARCH, 2018  
F&V PROJECT NO.  
832190



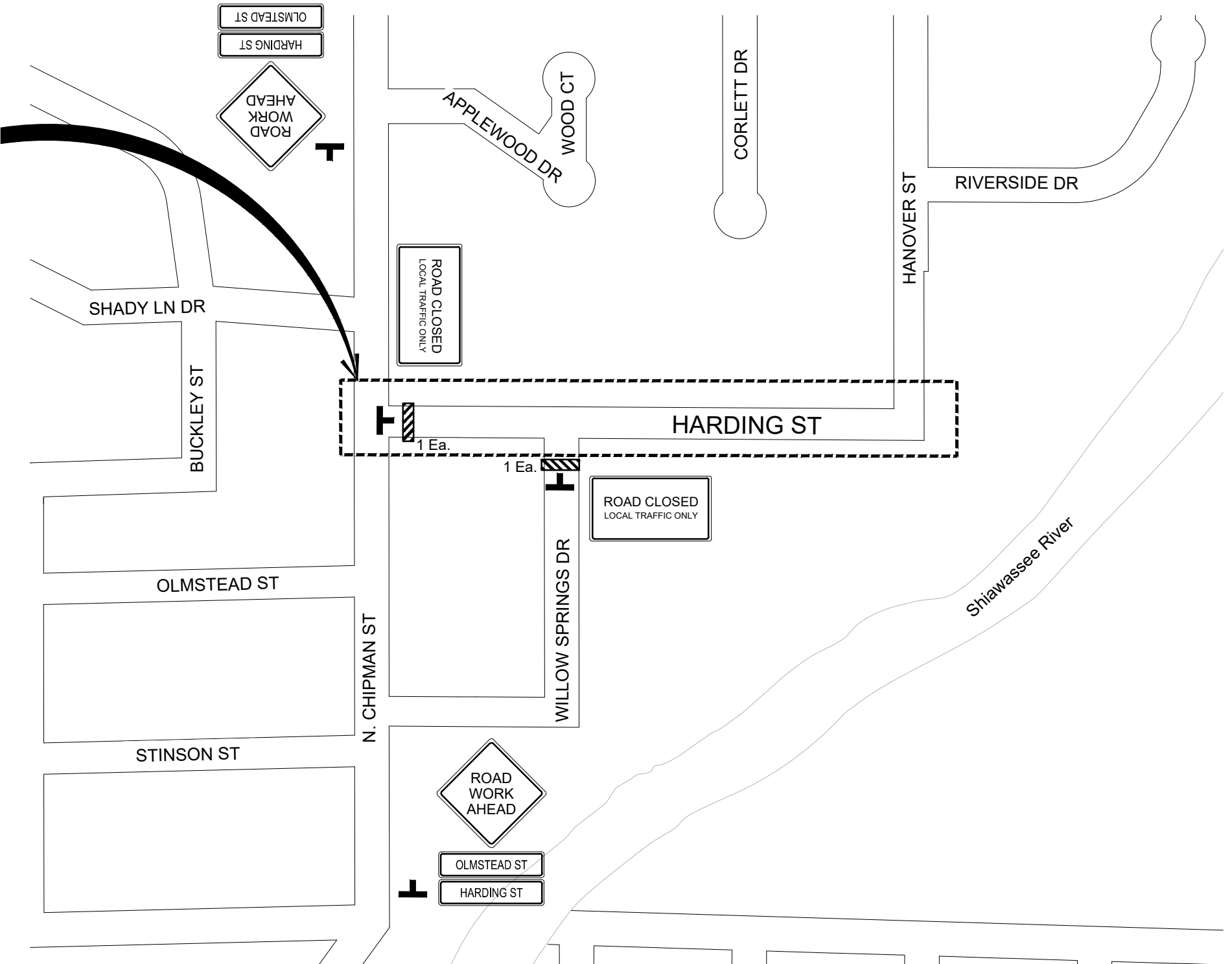
**OL7**

# HARDING STREET

CITY OF OWOSSO  
2018 STREET PROGRAM  
CONTRACT 1

SHEET NO.	DESCRIPTION
HR1	HARDING ST - COVER SHEET
HR2	HARDING ST - TYPICAL CROSS SECTIONS
HR3	HARDING ST - REMOVAL PLAN
HR4 - HR5	HARDING ST - ROAD PLAN AND PROFILE
HR6 - HR7	HARDING ST - WATER MAIN PLAN AND PROFILE

PROJECT LOCATION - HARDING ST  
B.O.P. STA. 00+96 TO E.O.P. STA. 11+27  
TOTAL LENGTH = 1,031 FT (0.20 MILES)



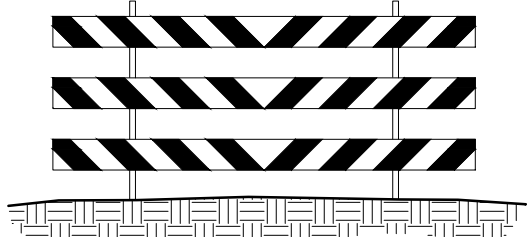
**VICINITY MAP AND TRAFFIC CONTROL PLAN**  
HARDING STREET

ROAD CLOSED  
LOCAL TRAFFIC ONLY

R11-3a  
60" x 30"



W20-1  
48" x 48"



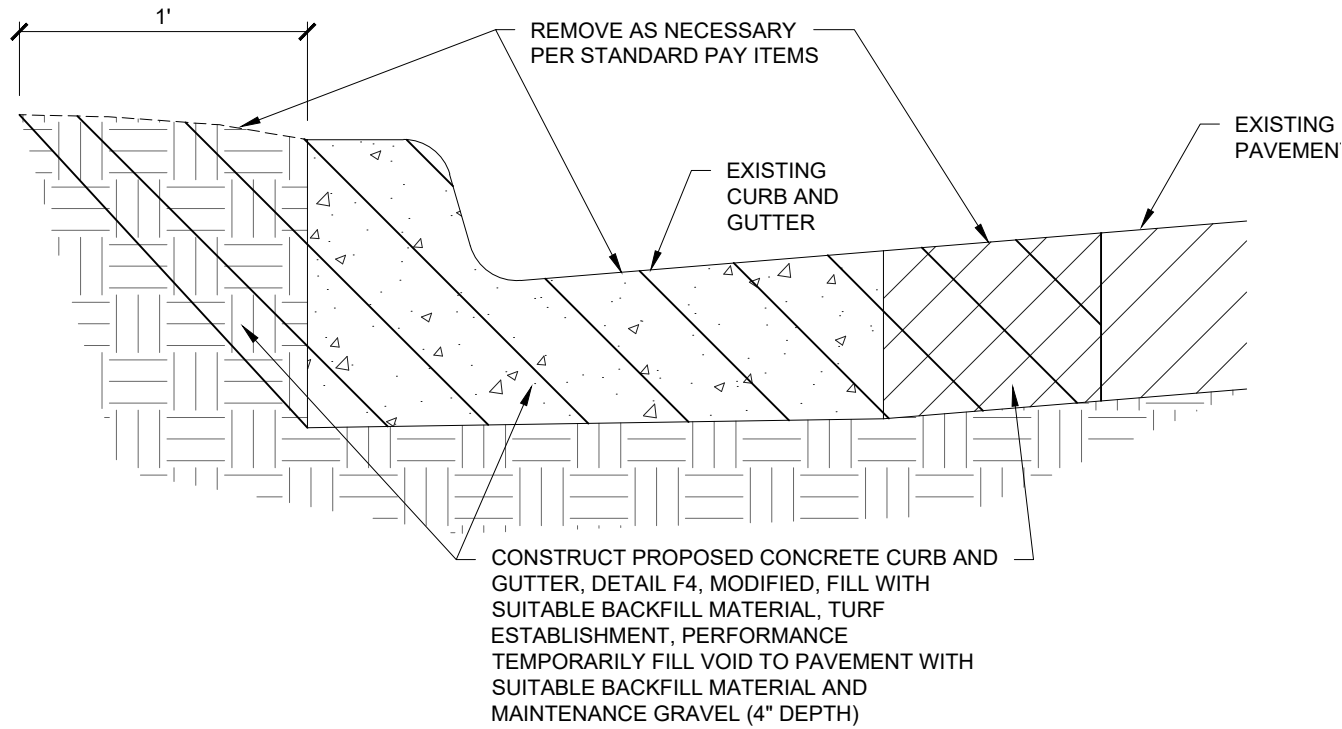
TYPE III BARRICADE

OLMSTEAD ST

M4-8 (MOD)  
30" X 8"

HARDING ST

M4-8 (MOD)  
30" X 8"



**TYPICAL SELECT CURB AND GUTTER REPAIR DETAIL**  
NOT TO SCALE

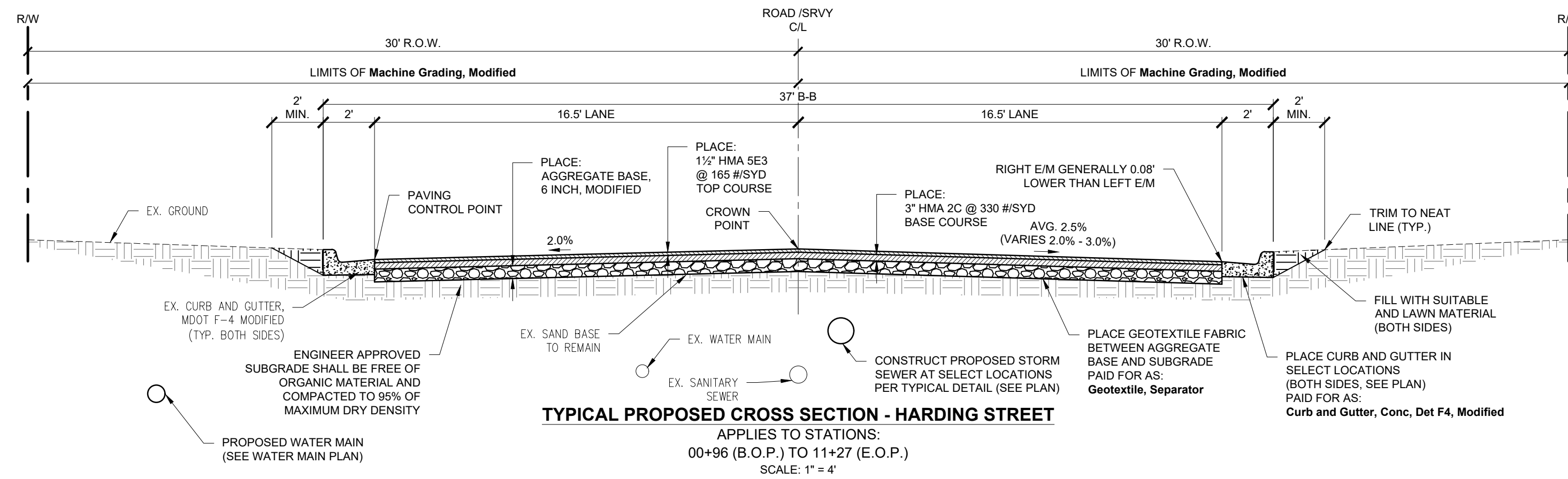
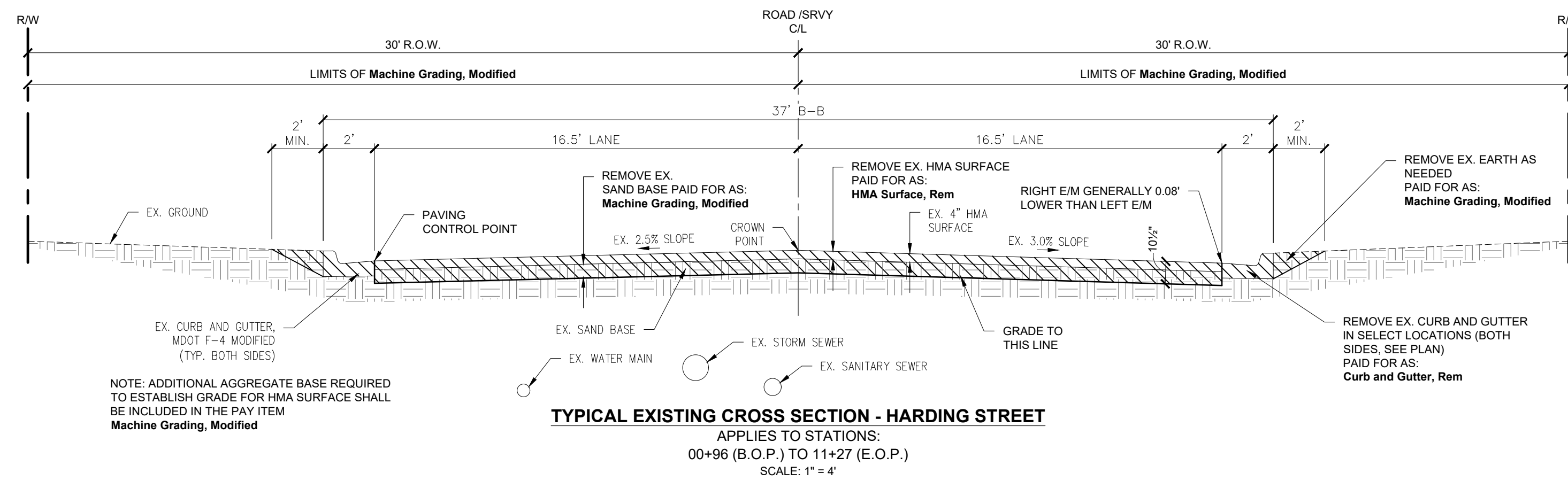
NO.	REVISIONS	DATE	BY

BENCH MARK DATA	ELEV.

ORIGINAL PLAN	APPROVED BY



ITEM	PAY ITEM	RATE PER SYD	PERFORMANCE GRADE	ESTIMATED THICKNESS, INCH	REMARKS
HMA	HMA, 5E3	165 LBS.	64 - 28	1.5"	TOP COURSE - AWI = 260 (MIN.)
	HMA, 2C	330 LBS.	64 - 28	3"	BASE COURSE
HAND PATCHING	Hand Patching	110 LBS / SYD / INCH	64 - 28		HMA, 2C (PLACED IN EQUAL LIFTS)
RESIDENTIAL DRIVE APPROACH	HMA Approach	220 LBS.	58 - 28	2"	TOP COURSE - AWI = 220 (MIN.) HMA, 15A
	HMA Approach	330 LBS.	58 - 28	3"	BASE COURSE - HMA, 15A
HMA BOND COAT		0.10 GAL.			SS-1H (FOR INFORMATION ONLY)

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

---

**2018 STREET PROGRAM**  
HARDING ST  
TYPICAL CROSS SECTIONS

MARCH, 2018  
PROJECT NO. 832190

FIELD BOOK  
PG.

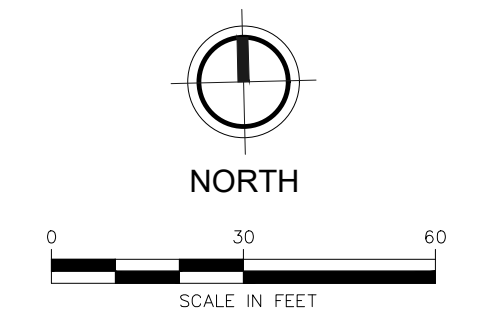
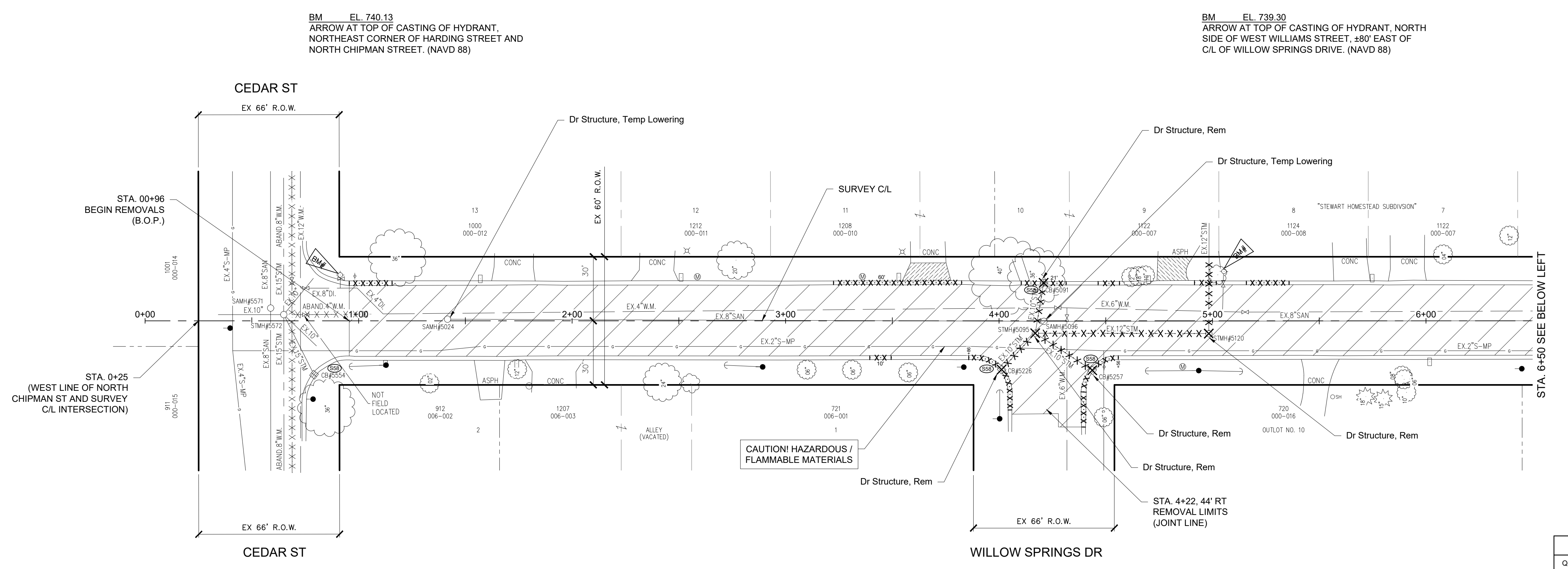
---

NO.	REVISIONS	DATE	BY	APPROVED BY

---

CHECKED BY: \_\_\_\_\_  
ORIGINAL PLAN





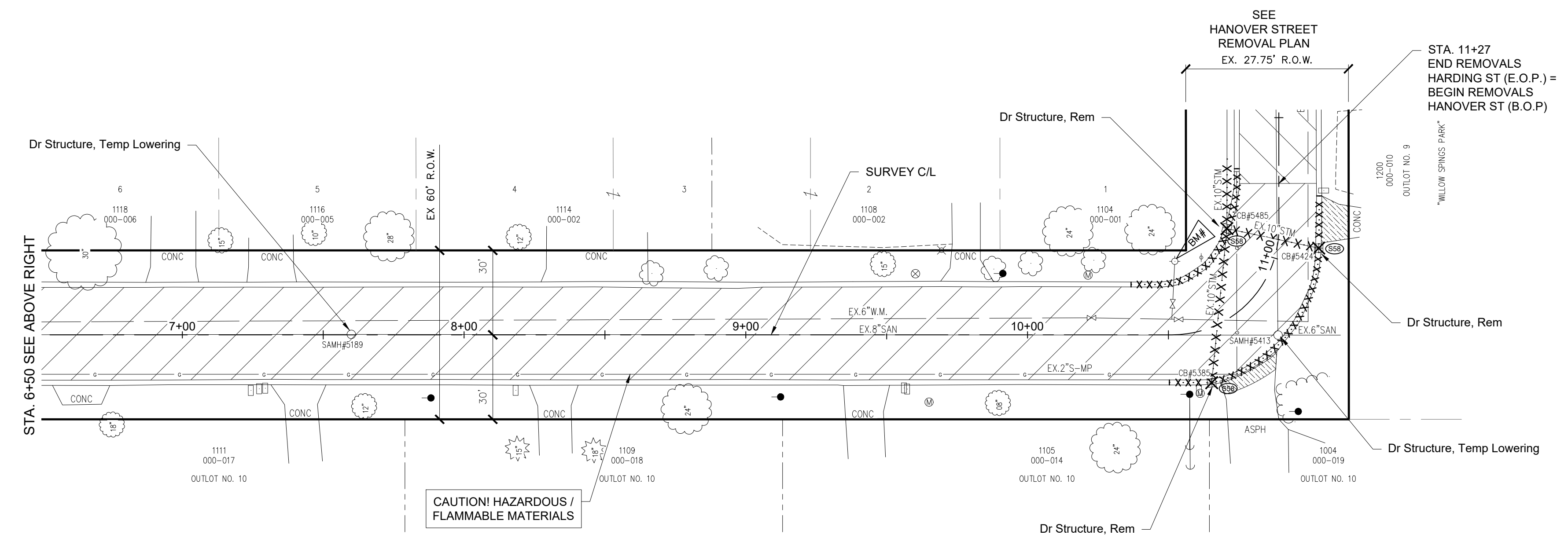
REMOVAL QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
3921	Syd	HMA Surface, Rem
33	Syd	Pavt, Rem
380	Fl	Curb and Gutter, Rem
8	Ea	Dr Structure, Rem
118	Fl	Sewer, Rem, Less than 24 inch
9	Ea	Erosion Control, Inlet Protection, Fabric Drop
21	Sta	Machine Grading, Modified
4	Ea	Dr Structure, Temp Lowering

NOTE:  
CONTRACTOR SHALL PROVIDE SUFFICIENT PROTECTION FOR BOTH MOTORISTS AND WORKERS THROUGHOUT WORKSITE SO AS TO ALLOW SAFE PASSAGE AROUND WORK AREAS - AS DIRECTED BY THE ENGINEER

**HARDING STREET**  
REMOVAL PLAN

- LEGEND**
- XXXXXX Curb and Gutter, Rem
  - X-X-X- Sewer, Rem
  - XXXX Dr Structure, Rem
  - ▨ HMA Surface, Rem
  - ▨ Pavt, Rem
  - ▨ Sidewalk, Rem
  - ▨ Excavation Earth (Cost inclusive to Machine Grading, Modified)
  - ⊙ STANDARD SOIL EROSION KEY

BM EL. 731.70  
TOP OF NORTH HEX NUT OF HYDRANT, NORTH SIDE OF HARDING STREET AT HANOVER STREET. (NAVD 88)



**HARDING STREET**  
REMOVAL PLAN

NO.	REVISIONS	DATE	BY

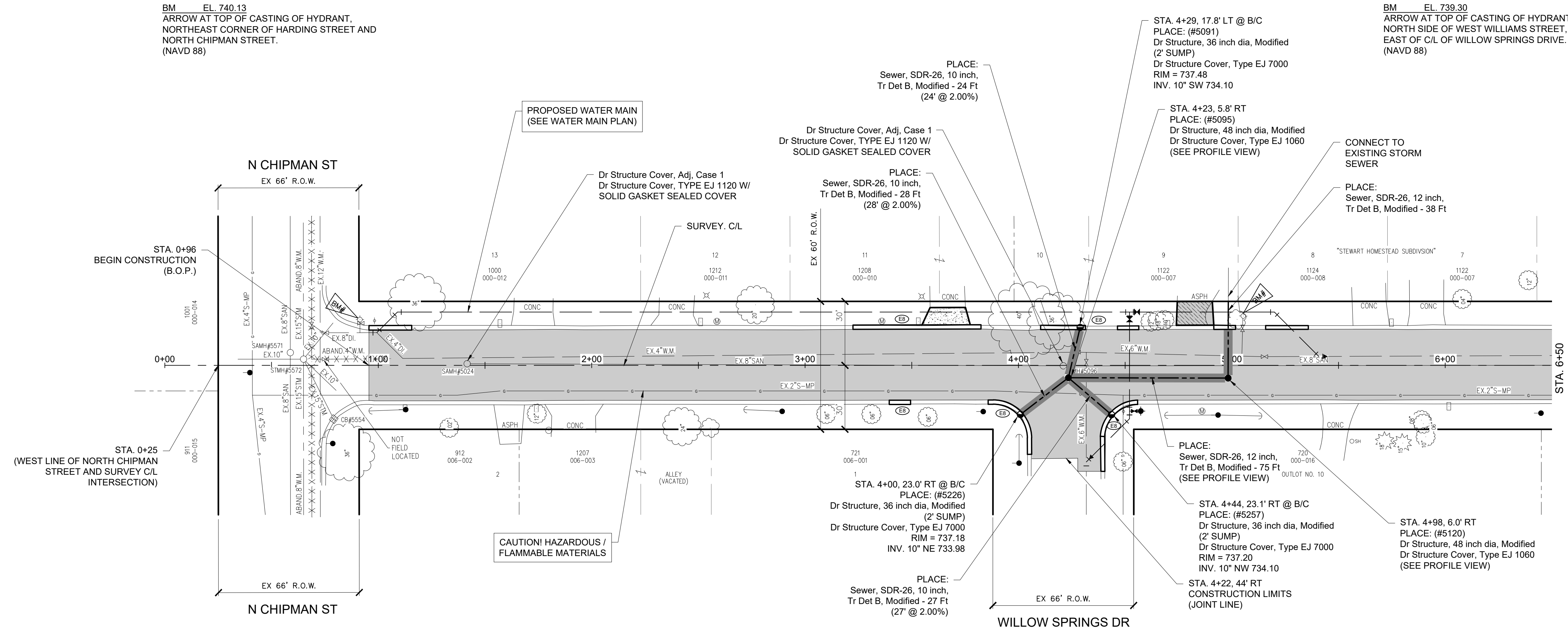
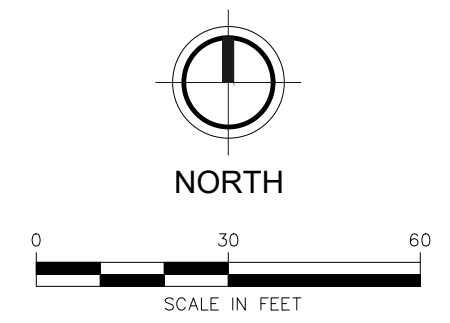
BENCH MARK DATA	DESCRIPTION
ELEV.	





BM EL. 740.13  
ARROW AT TOP OF CASTING OF HYDRANT,  
NORTHEAST CORNER OF HARDING STREET AND  
NORTH CHIPMAN STREET.  
(NAVD 88)

BM EL. 739.30  
ARROW AT TOP OF CASTING OF HYDRANT,  
NORTH SIDE OF WEST WILLIAMS STREET, ±80'  
EAST OF C/L OF WILLOW SPRINGS DRIVE.  
(NAVD 88)

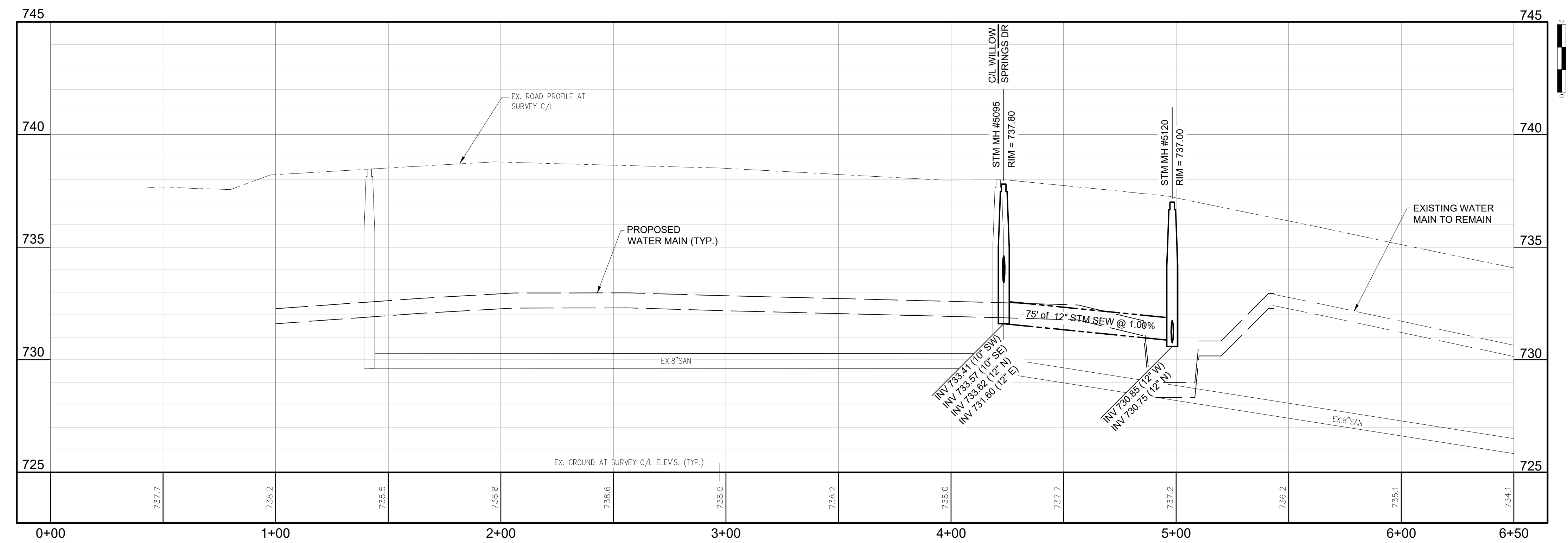


**HARDING STREET**  
CONSTRUCTION PLAN

**LEGEND**

- Curb and Gutter, Conc, Det F4, Modified
- Sewer, SDR-26, 10 inch, Tr Det B, Modified
- Dr Structure, 36 inch dia, Modified (Catch Basin, Manhole)
- HMA / HMA Approach
- Driveway, Nonreinf, Conc, 12 inch
- Aggregate Surface Cse, 12 inch
- Sidewalk, Conc, 12 inch
- Sidewalk, Ramp, Conc, 12 inch
- Dr Structure, Abandon
- Dr Structure Cover, Adj, Case 1 / Valve Box, Adj
- STANDARD SOIL EROSION KEY

CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
195	Ton	HMA, 5E3
390	Ton	HMA, 2C
2162	Syd	Aggregate Base, 6 inch, Modified
2162	Syd	Geotextile, Separator
18	Syd	Driveway, Nonreinf Conc, 6 inch
228	Ft	Curb and Gutter, Conc, Det F4, Modified
3	Ea	Dr Structure, 36 inch dia, Modified
2	Ea	Dr Structure, 48 inch dia, Modified
2	Ea	Dr Structure Cover, Type EJ 1060
3	Ea	Dr Structure Cover, Type EJ 7000
2	Ea	Dr Structure Cover, Adj, Case 1
2	Ea	Dr Structure Cover, Type EJ 1120 W/ SOLID GASKET SEALED COVER
79	Ft	Sewer, SDR-26, 10 inch, Tr Det B, Modified
113	Ft	Sewer, SDR-26, 12 inch, Tr Det B, Modified



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

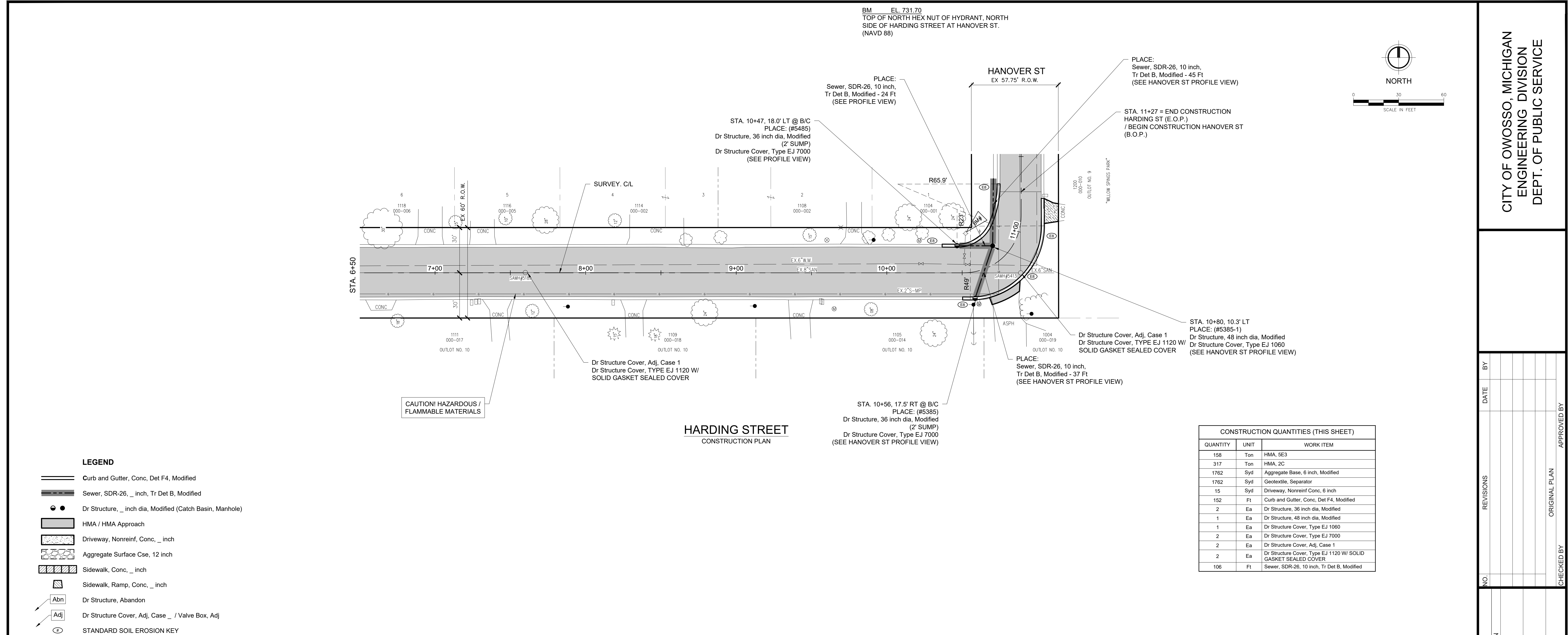
NO.	DATE	BY	REVISIONS	APPROVED BY

BENCH MARK DATA	DESCRIPTION
ELEV.	

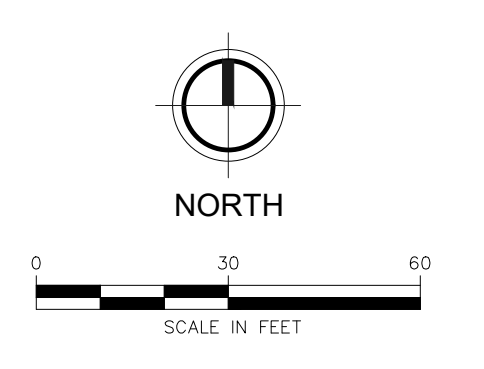
2018 STREET PROGRAM  
HARDING ST  
ROAD PLAN AND PROFILE  
MARCH, 2018  
PROJECT NO. 832190  
FIELD BOOK  
PG.



**HR4**



BM EL. 731.70  
 TOP OF NORTH HEX NUT OF HYDRANT, NORTH  
 SIDE OF HARDING STREET AT HANOVER ST.  
 (NAVD 88)



PLACE:  
 Sewer, SDR-26, 10 inch,  
 Tr Det B, Modified - 45 Ft  
 (SEE HANOVER ST PROFILE VIEW)

STA. 11+27 = END CONSTRUCTION  
 HARDING ST (E.O.P.)  
 / BEGIN CONSTRUCTION HANOVER ST  
 (B.O.P.)

STA. 10+47, 18.0' LT @ B/C  
 PLACE: (#5485)  
 Dr Structure, 36 inch dia, Modified  
 (2' SUMP)  
 Dr Structure Cover, Type EJ 7000  
 (SEE PROFILE VIEW)

STA. 10+80, 10.3' LT  
 PLACE: (#5385-1)  
 Dr Structure, 48 inch dia, Modified  
 Dr Structure Cover, Type EJ 1060  
 (SEE HANOVER ST PROFILE VIEW)

CAUTION! HAZARDOUS /  
 FLAMMABLE MATERIALS

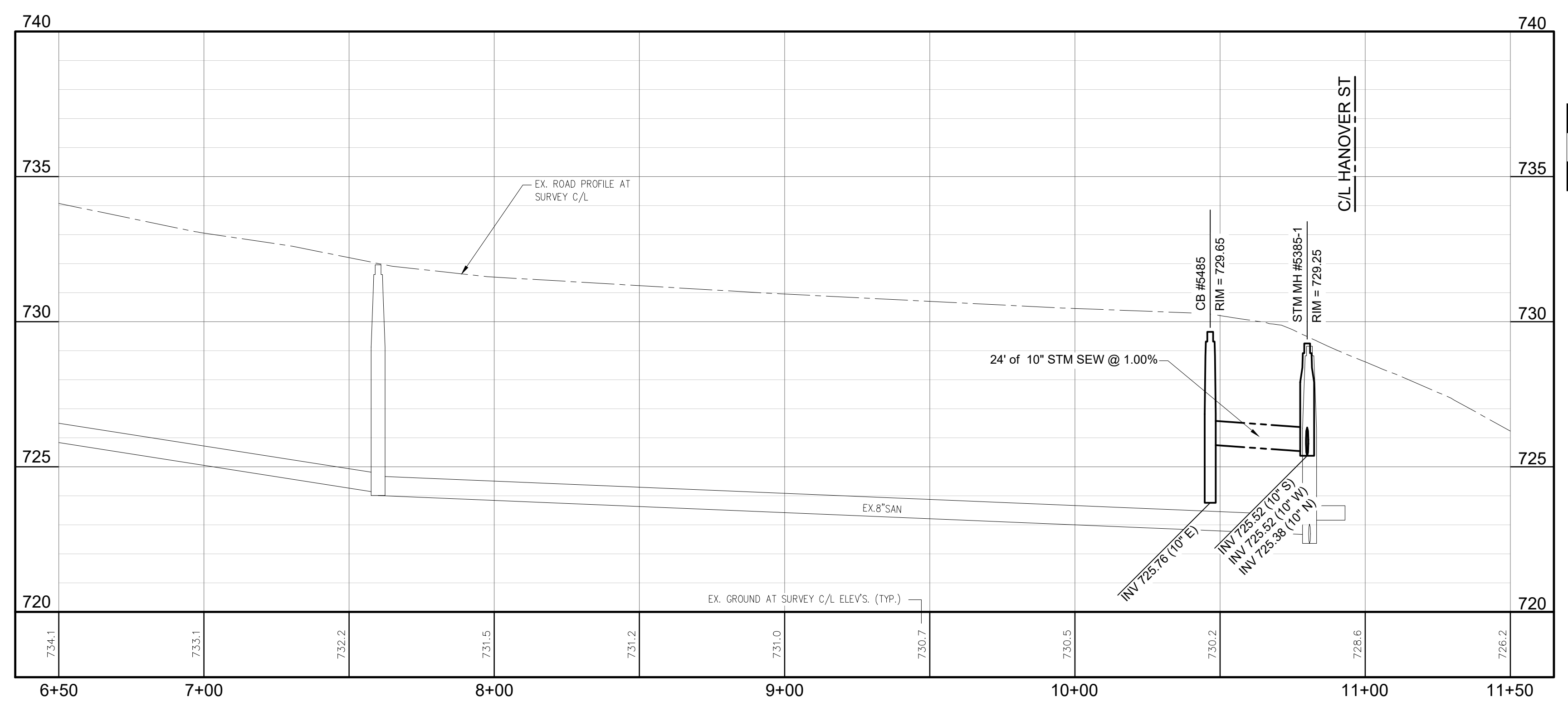
STA. 10+56, 17.5' RT @ B/C  
 PLACE: (#5385)  
 Dr Structure, 36 inch dia, Modified  
 (2' SUMP)  
 Dr Structure Cover, Type EJ 7000  
 (SEE HANOVER ST PROFILE VIEW)

### HARDING STREET CONSTRUCTION PLAN

CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
158	Ton	HMA, 5E3
317	Ton	HMA, 2C
1762	Syd	Aggregate Base, 6 inch, Modified
1762	Syd	Geotextile, Separator
15	Syd	Driveway, Nonreinf Conc, 6 inch
152	Ft	Curb and Gutter, Conc, Det F4, Modified
2	Ea	Dr Structure, 36 inch dia, Modified
1	Ea	Dr Structure, 48 inch dia, Modified
1	Ea	Dr Structure Cover, Type EJ 7000
2	Ea	Dr Structure Cover, Type EJ 1060
2	Ea	Dr Structure Cover, Adj, Case 1
2	Ea	Dr Structure Cover, Type EJ 1120 W/ SOLID GASKET SEALED COVER
106	Ft	Sewer, SDR-26, 10 inch, Tr Det B, Modified

**LEGEND**

- Curb and Gutter, Conc, Det F4, Modified
- Sewer, SDR-26, \_ inch, Tr Det B, Modified
- Dr Structure, \_ inch dia, Modified (Catch Basin, Manhole)
- HMA / HMA Approach
- Driveway, Nonreinf, Conc, \_ inch
- Aggregate Surface Cse, 12 inch
- Sidewalk, Conc, \_ inch
- Sidewalk, Ramp, Conc, \_ inch
- Dr Structure, Abandon
- Dr Structure Cover, Adj, Case \_ / Valve Box, Adj
- STANDARD SOIL EROSION KEY



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

NO.	REVISIONS		APPROVED BY
	DATE	BY	

BENCH MARK DATA	DESCRIPTION
ELEV.	

**2018 STREET PROGRAM**  
 HARDING ST  
 ROAD PLAN AND PROFILE

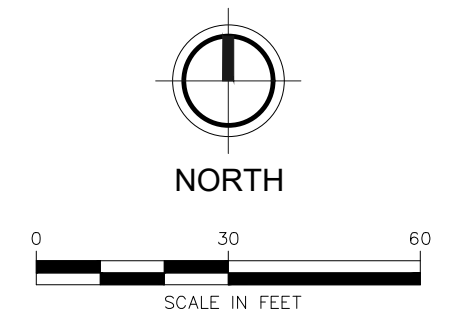
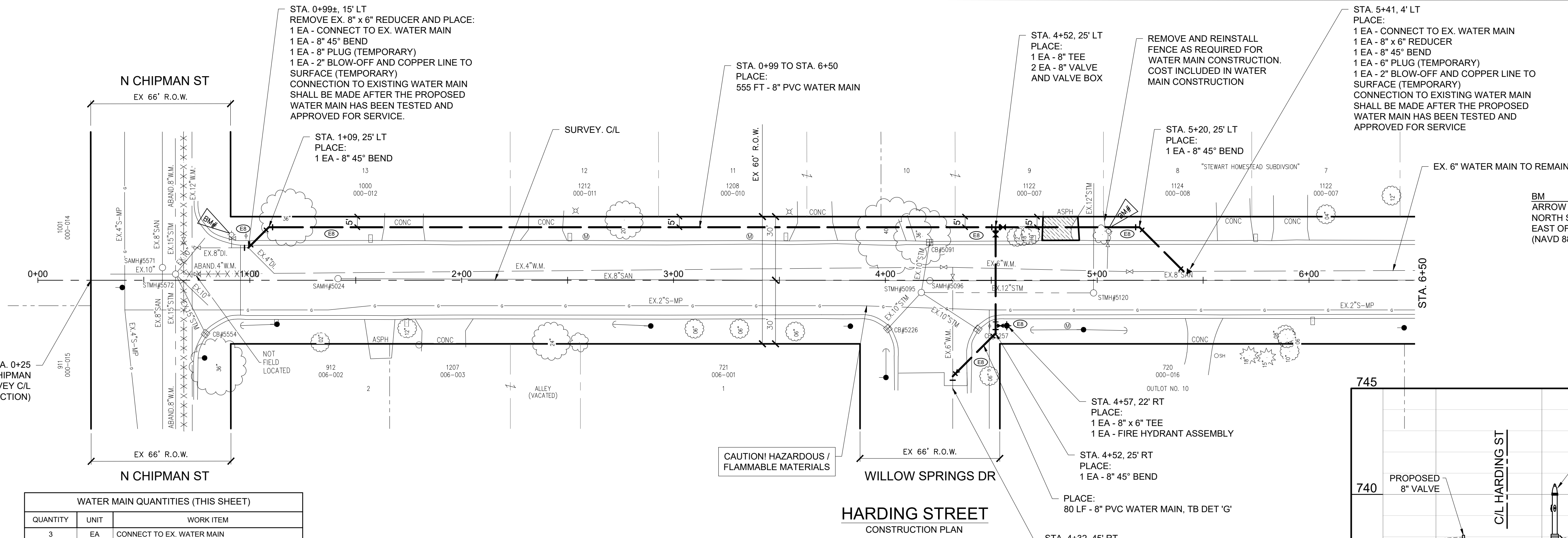
MARCH, 2018  
 PROJECT NO. 832190

FIELD BOOK  
 PG.



BM EL. 740.13  
 ARROW AT TOP OF CASTING OF HYDRANT,  
 NORTHEAST CORNER OF HARDING STREET AND  
 NORTH CHIPMAN STREET.  
 (NAVD 88)

STA. 0+25  
 (WEST LINE OF NORTH CHIPMAN  
 STREET AND SURVEY C/L  
 INTERSECTION)



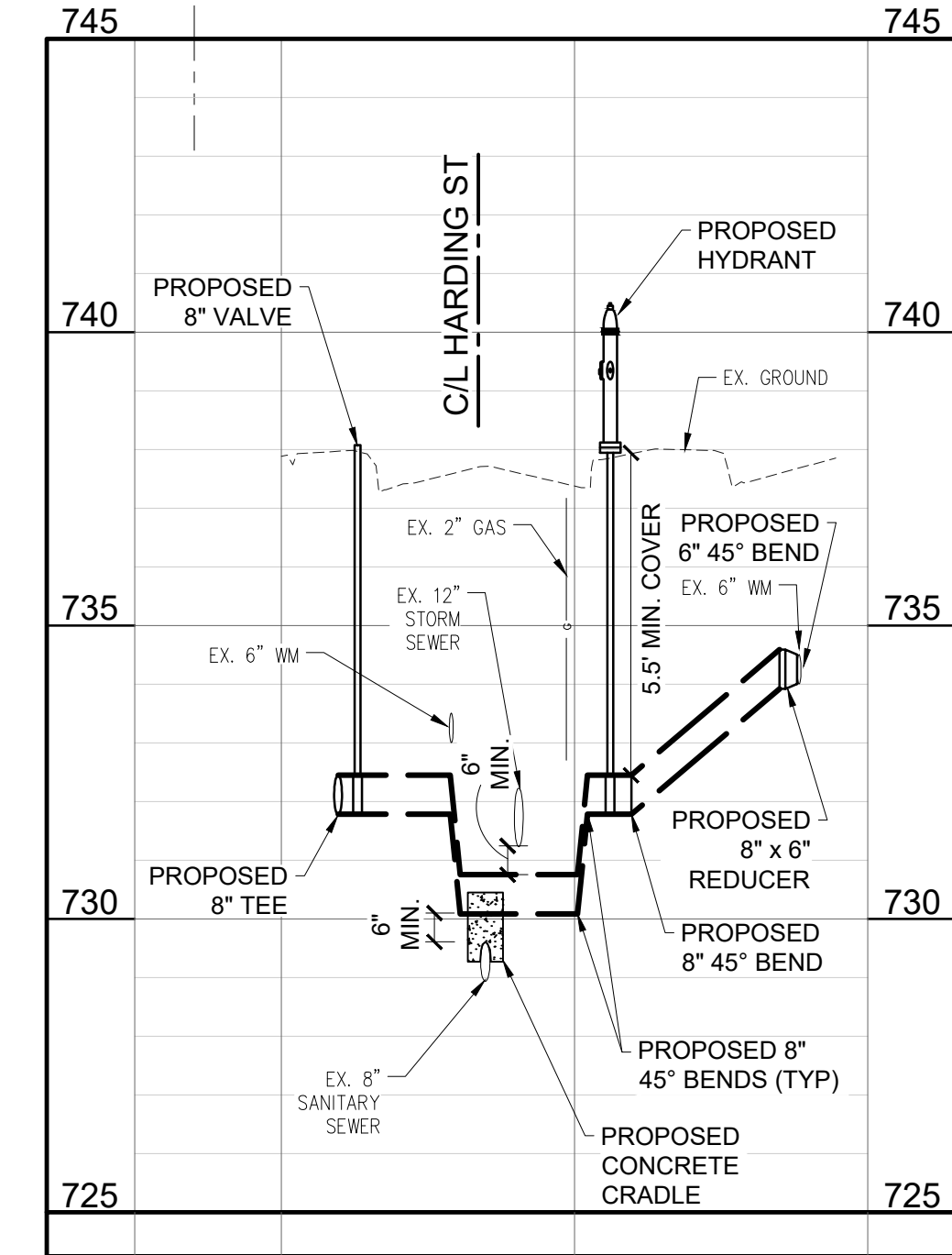
BM EL. 739.30  
 ARROW AT TOP OF CASTING OF HYDRANT,  
 NORTH SIDE OF WEST WILLIAMS STREET, ±80'  
 EAST OF C/L OF WILLOW SPRINGS DRIVE.  
 (NAVD 88)

WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
3	EA	CONNECT TO EX. WATER MAIN
4	EA	EXISTING VALVE AND VALVE BOX ABANDONMENT
1	EA	EXISTING VALVE AND VALVE BOX REMOVAL
1	EA	EXISTING HYDRANT REMOVAL
260	LF	8" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
275	LF	8" PVC WATER MAIN, DIRECTIONAL DRILL
1	EA	4" PLUG
4	EA	6" PLUG
1	EA	8" PLUG
2	EA	8" x 6" REDUCER
1	EA	8" x 6" TEE
1	EA	8" TEE
1	EA	6" 45° BEND
9	EA	8" 45° BEND
2	EA	8" VALVE AND VALVE BOX
1	EA	90° FIRE HYDRANT ASSEMBLY
5	EA	NEW WATER SERVICE, OPEN CUT
4	EA	NEW WATER SERVICE, FREEBORE
3	EA	2" BLOW-OFF AND COPPER LINE TO SURFACE
3	EA	SUPPLY & INSTALL METER PIT, COMPLETE
3	EA	WATER METER PIT, REM

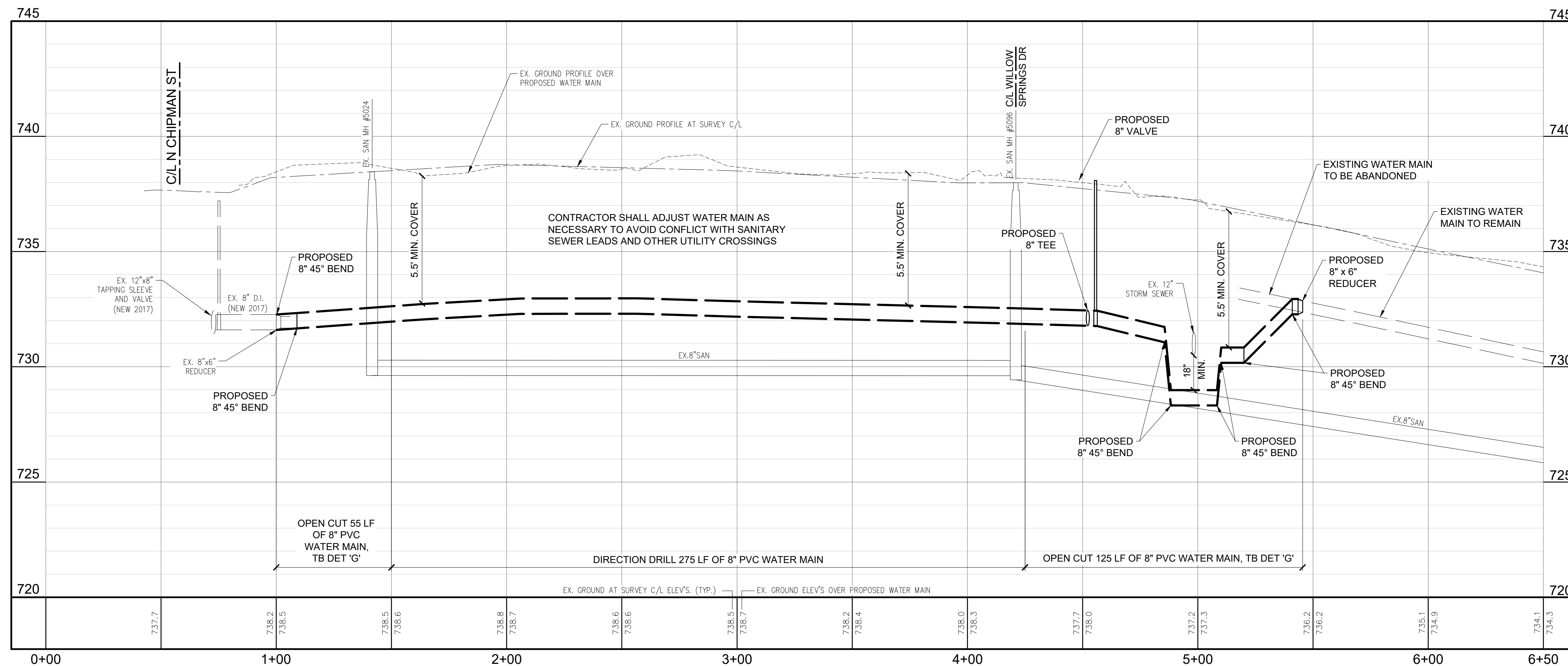
**EXISTING WATER MAIN ABANDONMENT**  
 ONCE THE PROPOSED WATER MAIN HAS BEEN TESTED AND ACCEPTED AND ALL SERVICES HAVE BEEN TRANSFERRED, THE EXISTING WATER MAIN AND APPURTENANCES SHALL BE ABANDONED AND/OR REMOVED AS DIRECTED WITH THE FOLLOWING PAY ITEMS:

- EXISTING VALVE WITH VALVE BOX ABANDONMENT - EA
- EXISTING VALVE WITH MANHOLE ABANDONMENT - EA
- EXISTING HYDRANT REMOVAL - EA

- LEGEND**
- WATER MAIN
  - ✕ GATE VALVE AND BOX, \_INCH
  - REDUCER
  - ⊕ HYDRANT / VALVE
  - ⊙ STANDARD SOIL EROSION KEY



CROSSING AT WILLOW SPRINGS DRIVE



CITY OF OWOSSO  
 SHIAWASSEE COUNTY, MICHIGAN  
 2018 STREET PROGRAM

DESIGN TEAM:  
 GLR, DPH  
 CHECK BY:  
 SMB MAR 2018  
 DRAWING INFORMATION:  
 832190\_16\_HR6\_HR7\_WMPP  
 022718 gencr



Know what's below.  
 Call before you dig.

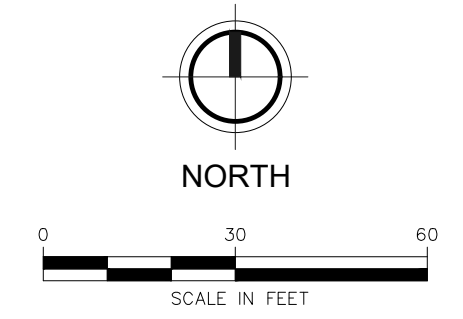
MARCH, 2018  
 F&V PROJECT NO.  
 832190

**HR6**

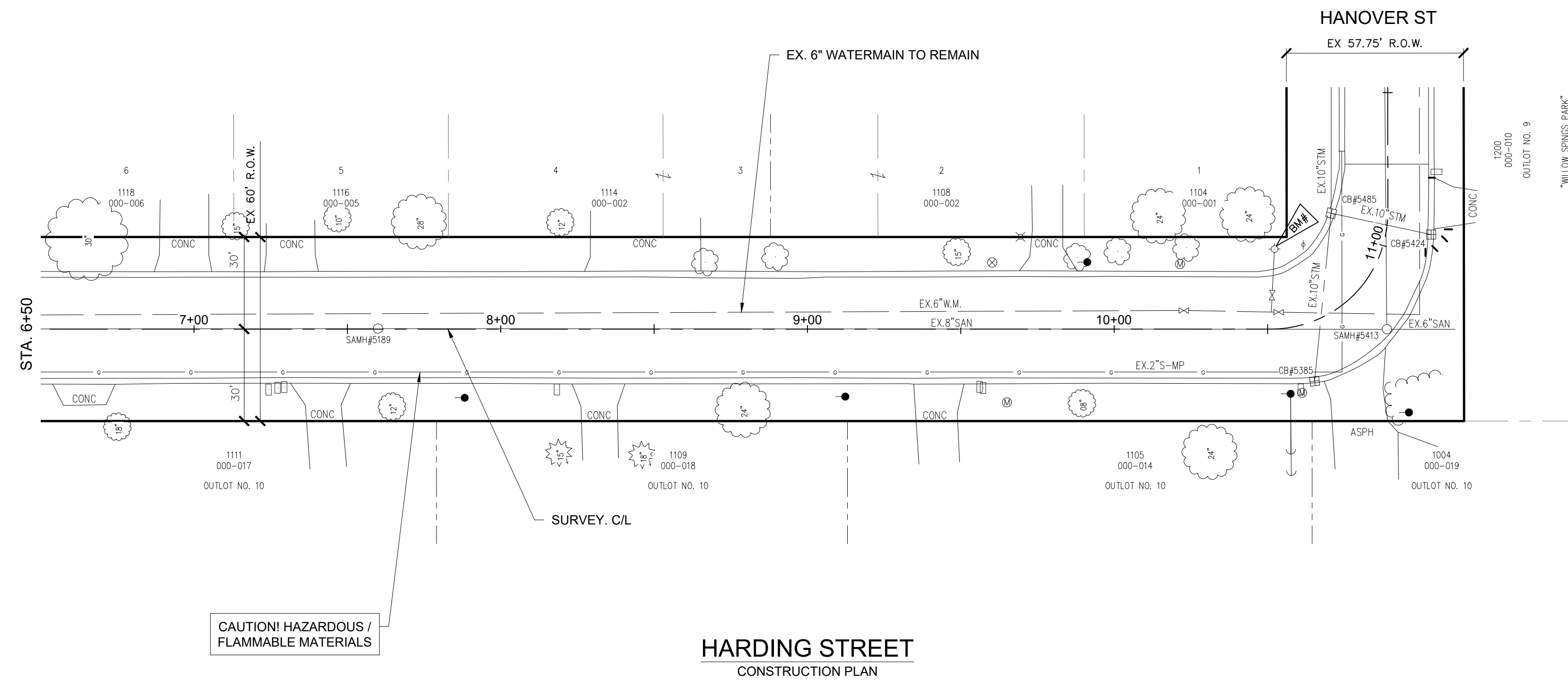
**FLEISCHMANN & VANDENBRINK**  
 DESIGN, BUILD, OPERATE

9475 Holly Rd, Suite 201  
 Grand Blanc, MI 48439  
 P: 810.743.9120  
 F: 810.743.1797

BM EL. 731.70  
TOP OF NORTH HEX NUT OF HYDRANT, NORTH  
SIDE OF HARDING STREET AT HANOVER ST.  
(NAVD 88)



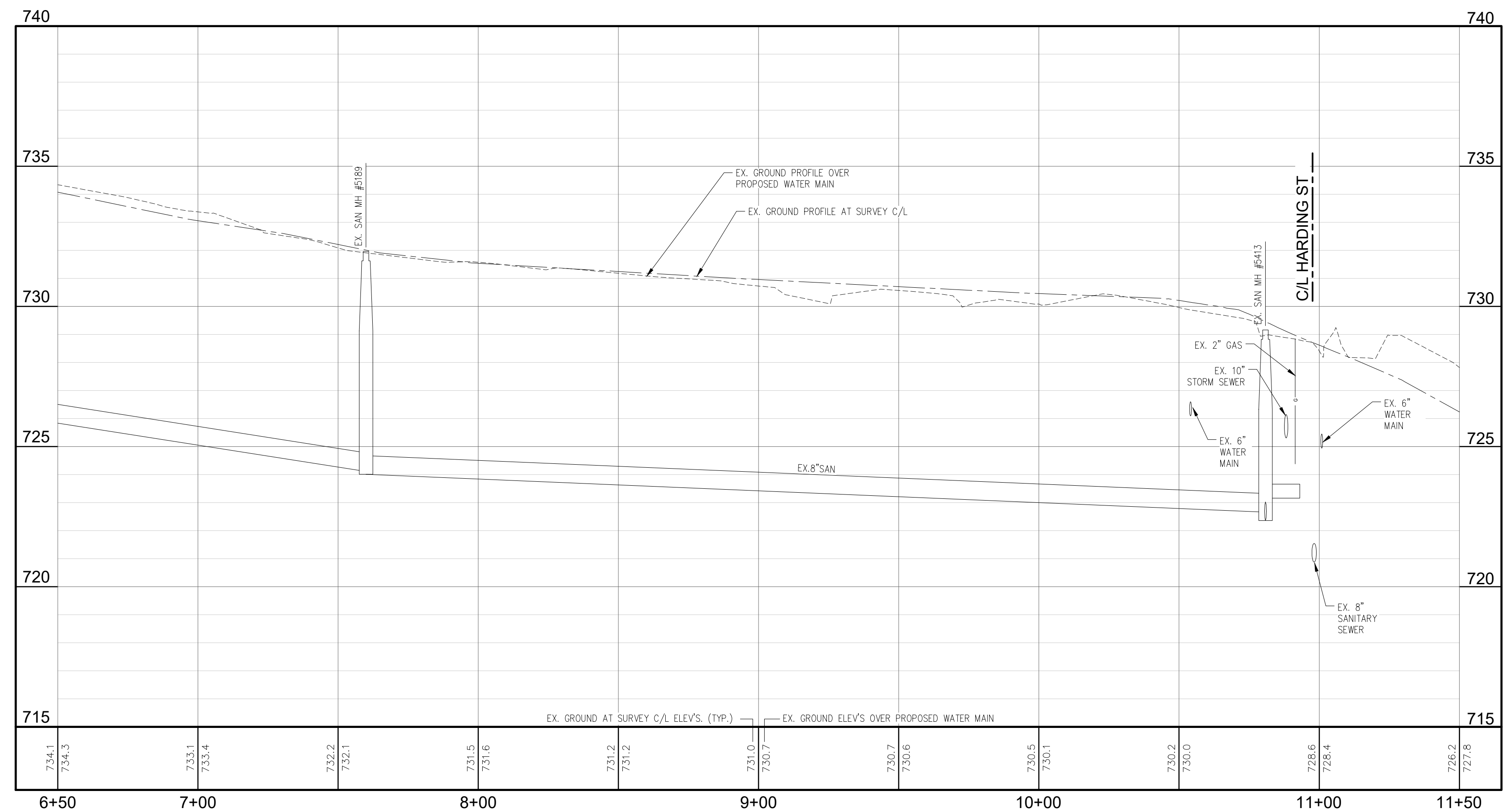
NO PROPOSED WATER MAIN CONSTRUCTION ON THIS SHEET



CAUTION! HAZARDOUS /  
FLAMMABLE MATERIALS

**HARDING STREET**  
CONSTRUCTION PLAN

- LEGEND**
- WATER MAIN
  - x GATE VALVE AND BOX, \_INCH
  - REDUCER
  - ⊕ HYDRANT / VALVE
  - ⊙ STANDARD SOIL EROSION KEY



**FILEIS&VANDENBRINK**  
DESIGN. BUILD. OPERATE.

9475 Holly Rd, Suite 201  
Grand Blanc, MI 48439  
P: 810.743.9120  
F: 810.743.1797

REVISION:

CITY OF OWOSSO  
SHIAWASSEE COUNTY, MICHIGAN  
2018 STREET PROGRAM

HARDING ST - WATER MAIN PLAN AND PROFILE

DESIGN TEAM:  
GLR, DPH  
CHECK BY:  
SMB MAR 2018  
DRAWING INFORMATION:  
832190\_16\_HR6\_HR7\_WMPP  
022718 gqrct

MARCH, 2018  
P&V PROJECT NO.  
832190



**HR7**

# HANOVER STREET

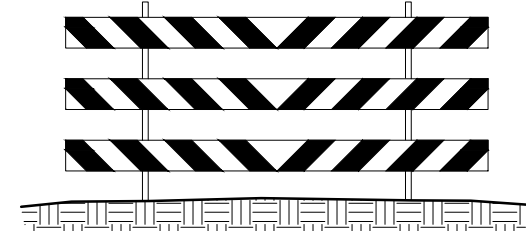
CITY OF OWOSSO  
2018 STREET PROGRAM  
CONTRACT 1

SHEET NO.	DESCRIPTION
HN1	HANOVER ST - COVER SHEET, SIDEWALK RAMP DETAILS
HN2	HANOVER ST - TYPICAL CROSS SECTIONS
HN3	HANOVER ST - REMOVAL PLAN
HN4 - HN5	HANOVER ST - ROAD PLAN AND PROFILE
HN6 - HN7	HANOVER ST - WATER MAIN PLAN AND PROFILE

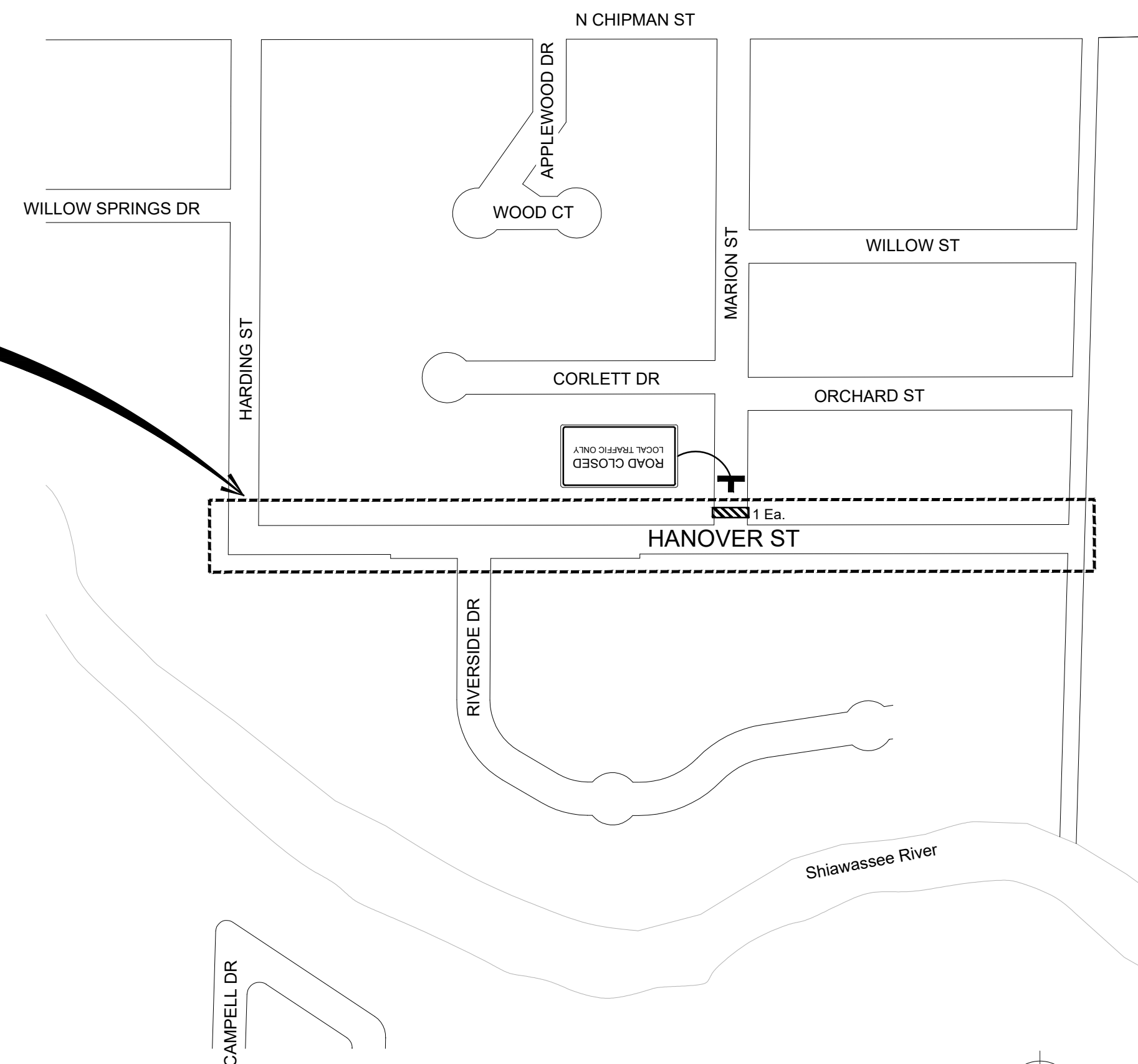
PROJECT LOCATION - HANOVER ST  
B.O.P. STA. 11+27 TO E.O.P. STA. 27+10  
TOTAL LENGTH = 1,583 FT (0.30 MILES)

**ROAD CLOSED**  
LOCAL TRAFFIC ONLY

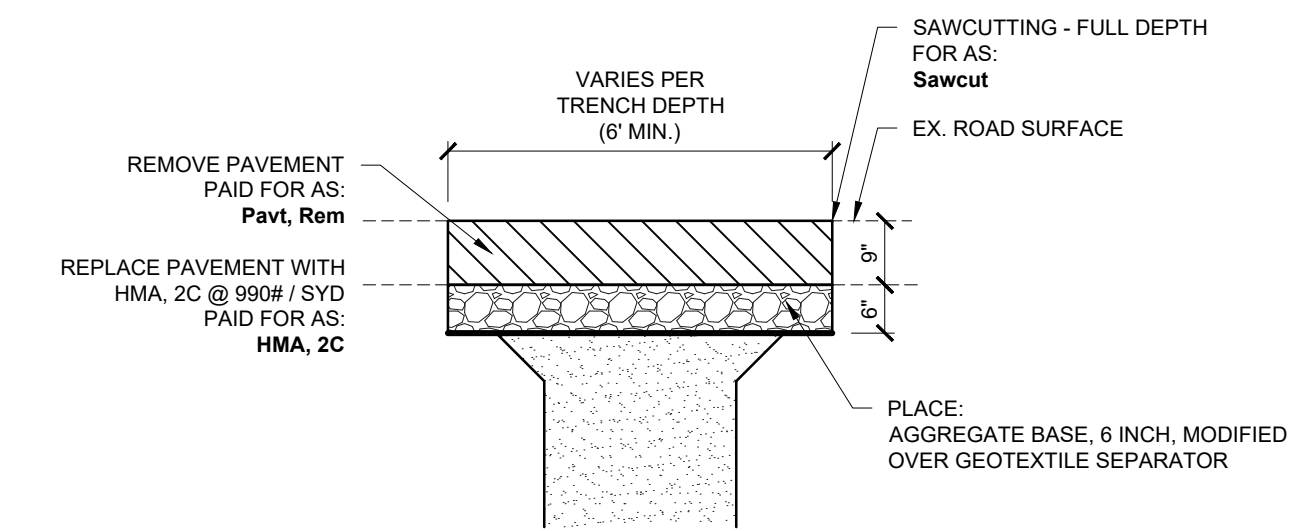
R11-3a  
60" x 30"



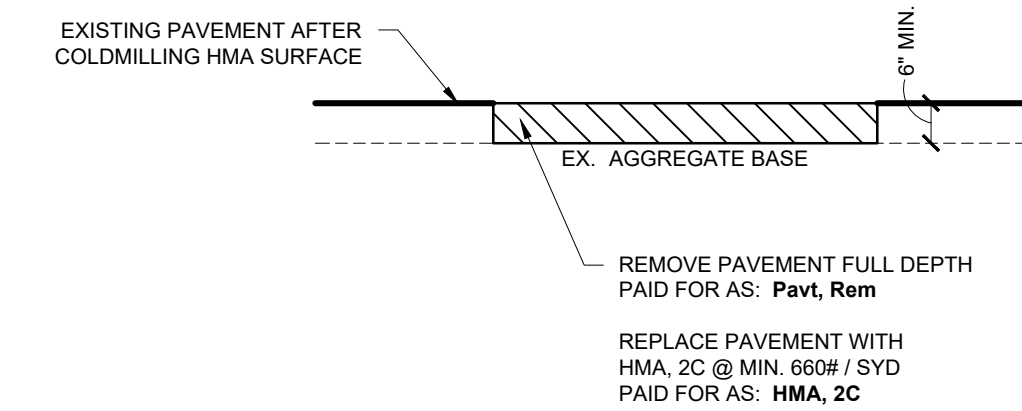
TYPE III BARRICADE



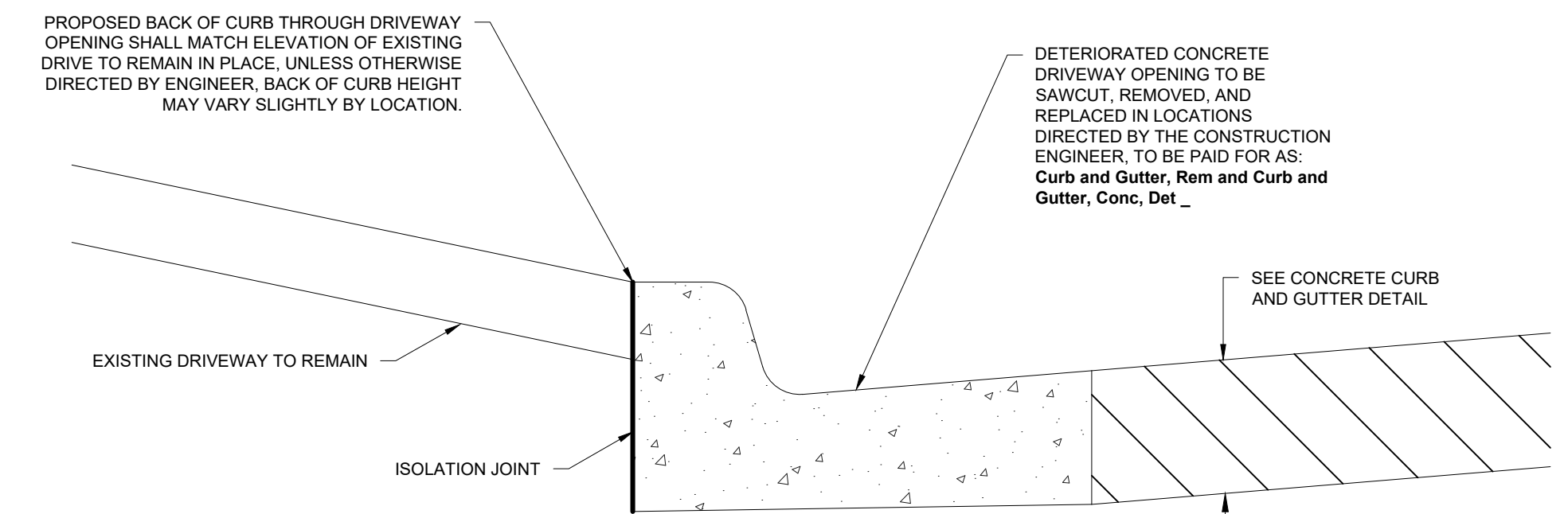
VICINITY MAP AND TRAFFIC CONTROL PLAN  
HANOVER STREET



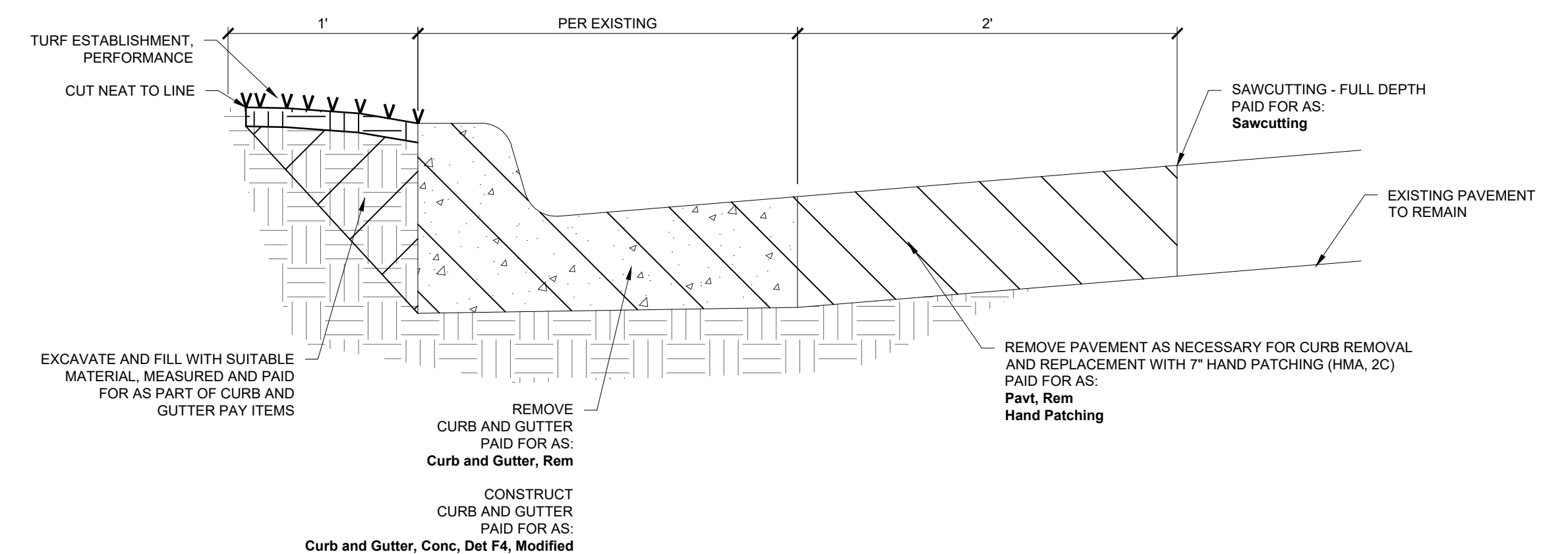
TYPICAL PAVEMENT SEWER TRENCH REPAIR DETAIL  
NOT TO SCALE



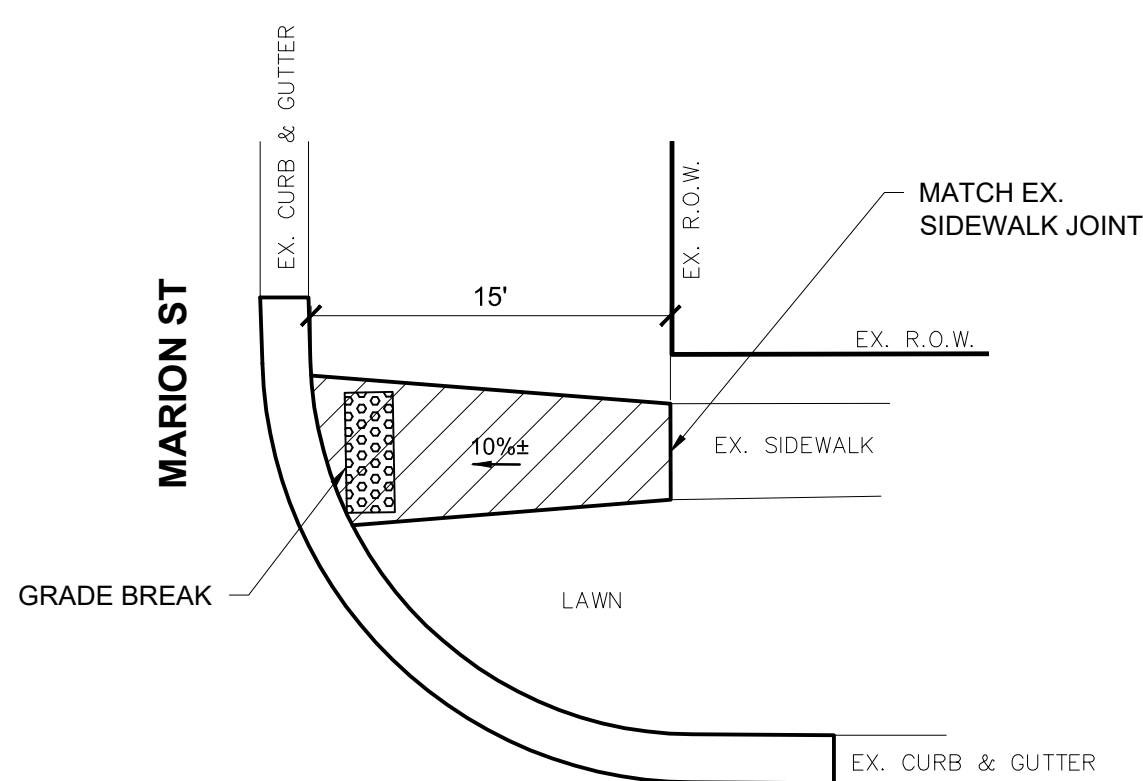
TYPICAL ISOLATED BASE REPAIR DETAIL  
NOT TO SCALE



CONCRETE CURB AND GUTTER REMOVAL AND REPLACEMENT AT DRIVEWAY TO REMAIN DETAIL  
NOT TO SCALE



TYPICAL SELECT CURB AND GUTTER REPAIR DETAIL  
NOT TO SCALE



SIDEWALK RAMP NW QUAD AT MARION ST  
SCALE: 1" = 8'

**LEGEND:**

- LANDING AREA
- DETECTABLE WARNING SURFACE
- SIDEWALK RAMP PAY ITEM
- SIDEWALK PAY ITEM
- CURB & GUTTER REMOVAL & REPLACEMENT

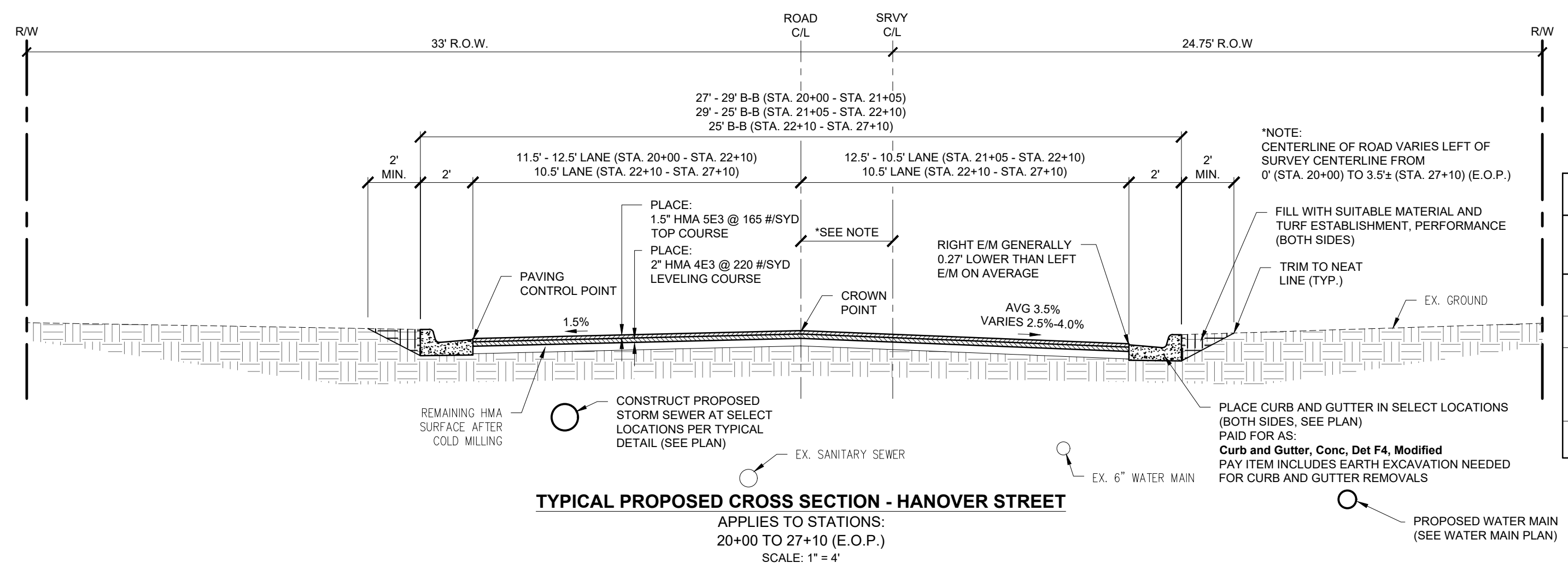
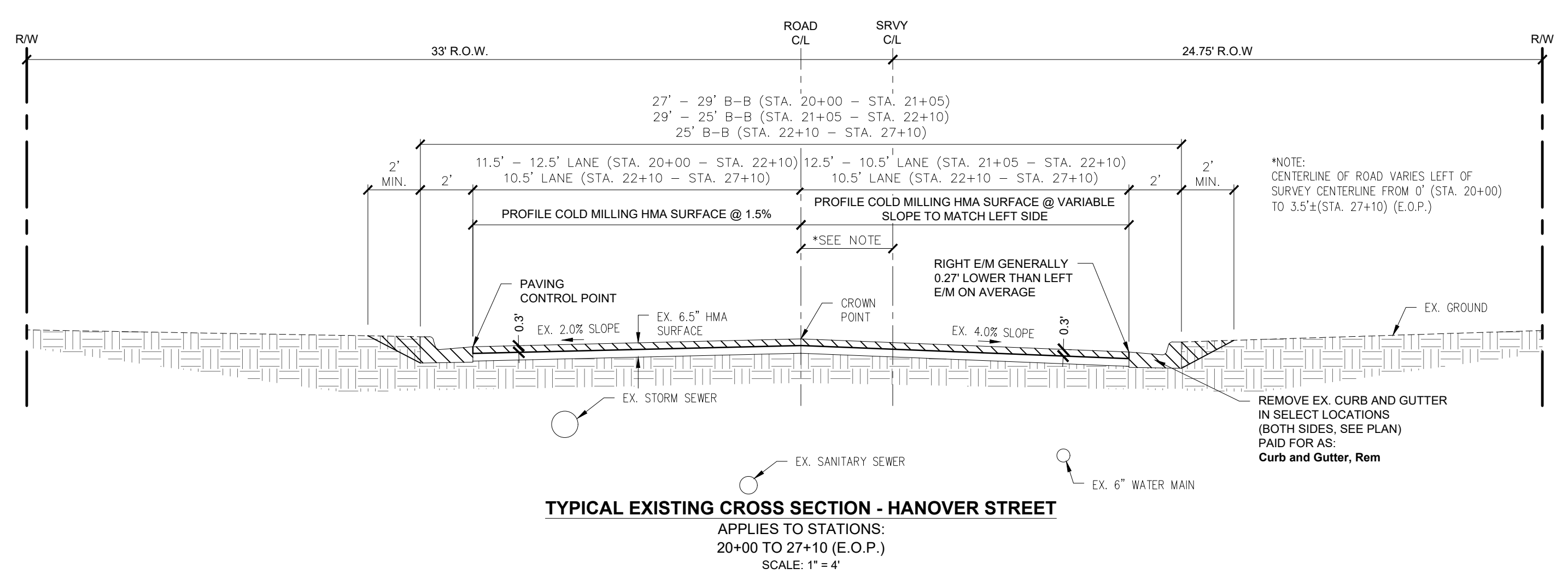
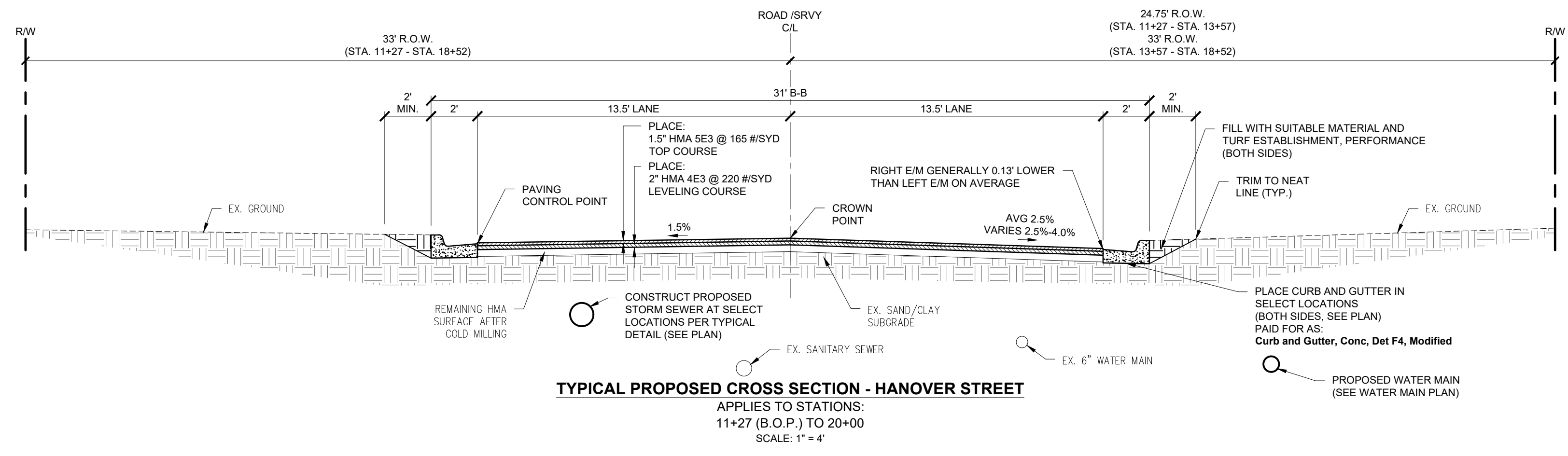
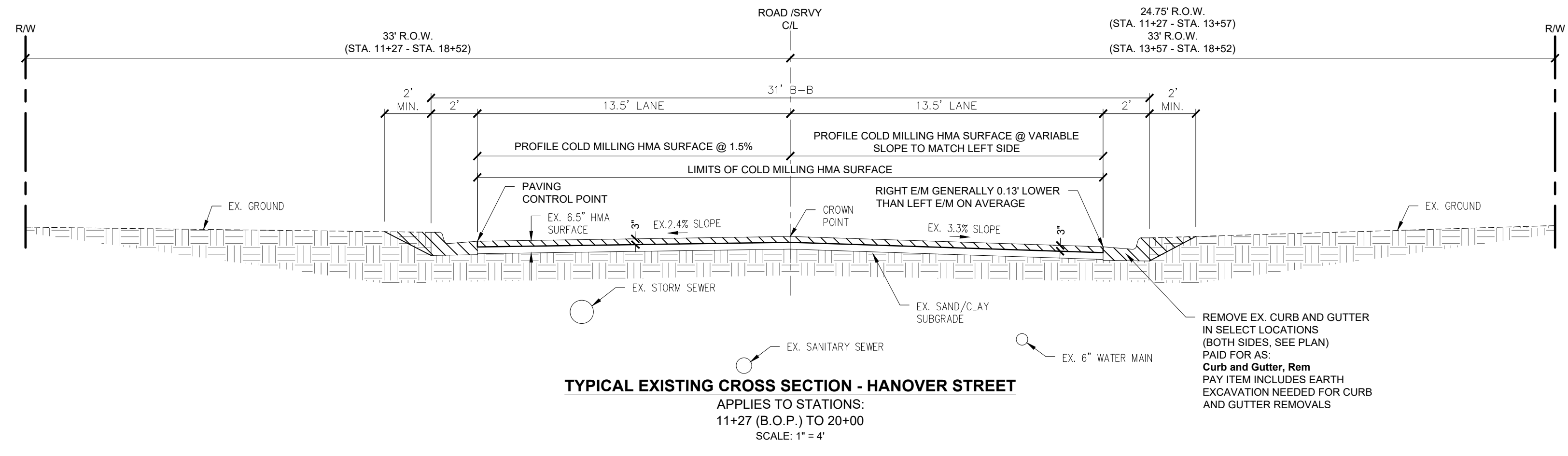
CITY OF OWOSSO, MICHIGAN  
ENGINEERING DIVISION  
DEPT. OF PUBLIC SERVICE

NO.	DATE	BY	REVISIONS	APPROVED BY

BENCH MARK DATA	DESCRIPTION
ELEV.	

2018 STREET PROGRAM  
HANOVER ST - COVER SHEET,  
SIDEWALK RAMP DETAILS  
MARCH, 2018  
PROJECT NO. 832190  
FIELD BOOK  
PG.

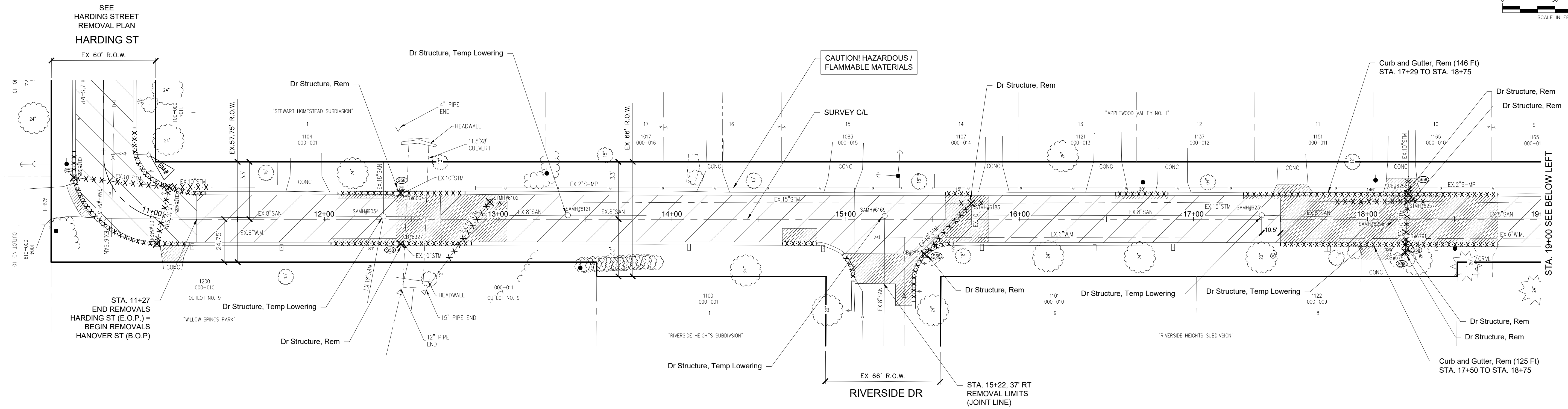
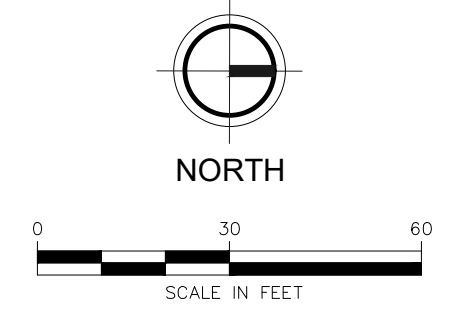
**HN1**



HANOVER STREET - HMA APPLICATION CHART					
ITEM	PAY ITEM	RATE PER SYD	PERFORMANCE GRADE	ESTIMATED THICKNESS, INCH	REMARKS
HMA	HMA, SE3	165 LBS.	64 - 28	1.5"	TOP COURSE - AWI = 260 (MIN.)
	HMA, 4E3	220 LBS.	64 - 28	2"	LEVELING COURSE
HAND PATCHING	Hand Patching	110 LBS / SYD / INCH	64 - 28		HMA, 2C (PLACED IN EQUAL LIFTS)
RESIDENTIAL DRIVE APPROACH	HMA Approach	220 LBS.	58 - 28	2"	TOP COURSE - AWI = 220 (MIN.)
	HMA Approach	330 LBS.	58 - 28	3"	BASE COURSE - HMA, 13A
HMA BOND COAT		0.10 GAL.			SS-1H (FOR INFORMATION ONLY)

NO.	REVISIONS	DATE	BY	BENCH MARK DATA	
				ELEV.	DESCRIPTION

BM EL 731.70  
TOP OF NORTH HEX NUT OF HYDRANT, NORTH SIDE  
OF HARDING STREET AT HANOVER STREET. (NAVD 88)



**LEGEND**

- XXXXXX Curb and Gutter, Rem
- X-X-X-X Sewer, Rem
- XXXX Dr Structure, Rem
- HMA Surface, Rem
- Pavt, Rem
- Sidewalk, Rem
- Excavation Earth (Cost inclusive to Machine Grading, Modified)
- STANDARD SOIL EROSION KEY

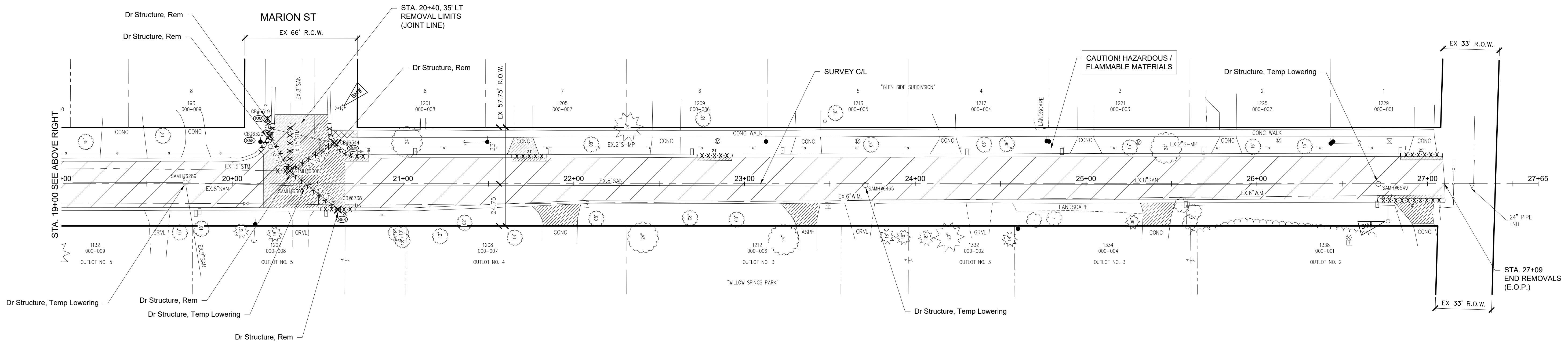
NOTE:  
CONTRACTOR SHALL PROVIDE SUFFICIENT PROTECTION FOR BOTH MOTORISTS AND WORKERS THROUGHOUT WORKSITE SO AS TO ALLOW SAFE PASSAGE AROUND WORK AREAS - AS DIRECTED BY THE ENGINEER

**HANOVER STREET  
REMOVAL PLAN**

BM EL 742.69  
TOP OF NORTH HEX NUT OF HYDRANT AT  
NORTHWEST CORNER OF HANOVER STREET AND  
MARION ST. (NAVD 88)

BM EL 744.03  
TOP OF HEX NUT OF HYDRANT, EAST SIDE OF  
HANOVER STREET NEAR END OF STREET. (NAVD 88)

REMOVAL QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
4830	Syd	Cold Milling HMA Surface
600	Ft	Saw Cutting
1195	Syd	Pavt, Rem
7	Syd	Sidewalk, Rem
734	Ft	Curb and Gutter, Rem
14	Ea	Dr Structure, Rem
144	Ft	Sewer, Rem, Less than 24 inch
10	Ea	Erosion Control, Intel Protection, Fabric Drop
9	Ea	Dr Structure, Temp Lowering



**HANOVER STREET  
REMOVAL PLAN**



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

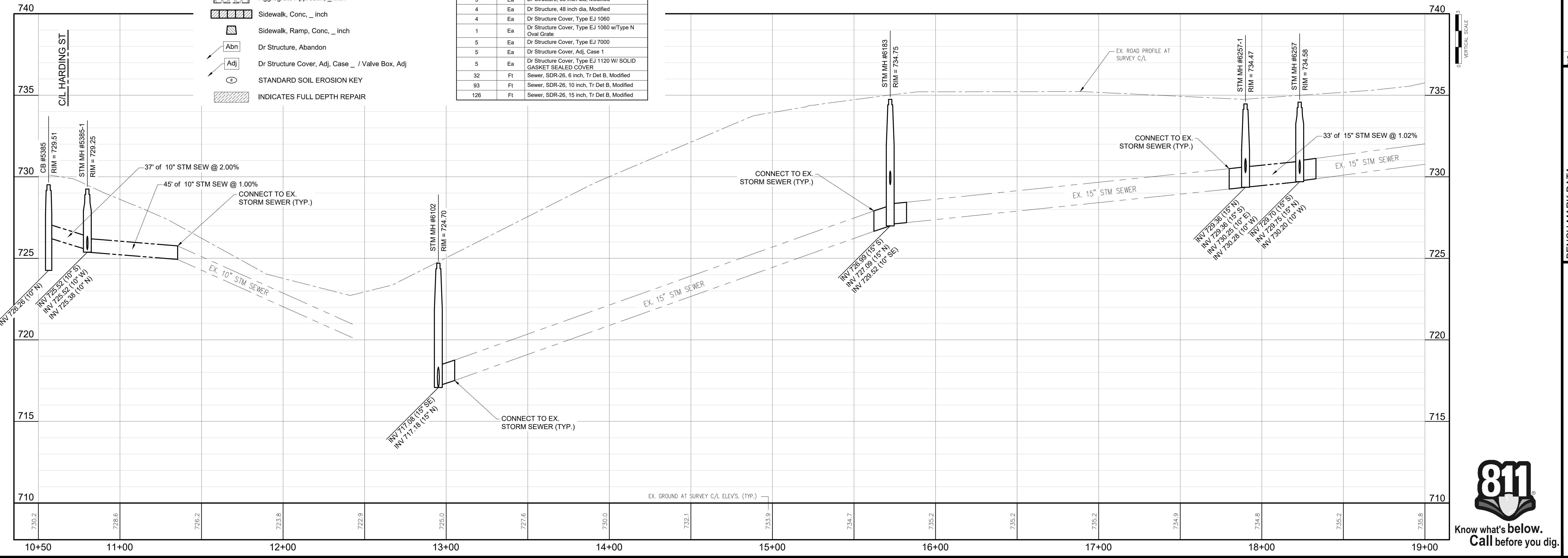
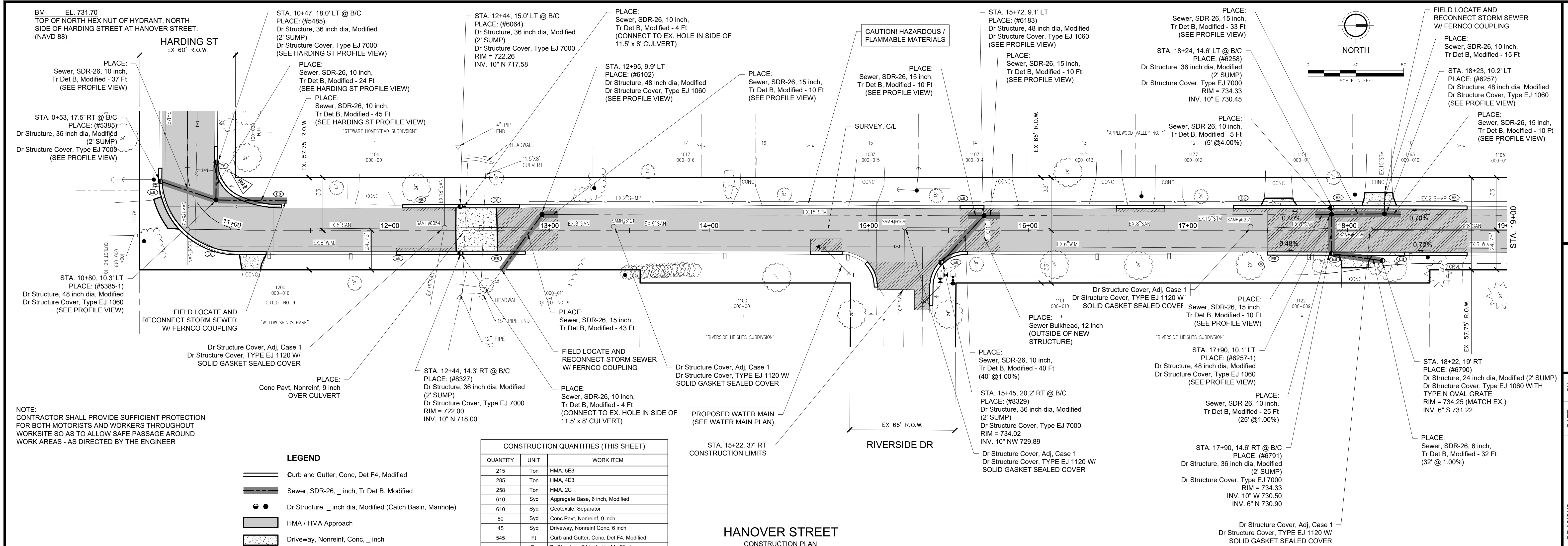
NO.	REVISIONS	DATE	BY

APPROVED BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_

BENCH MARK DATA	DESCRIPTION
ELEV.	

2018 STREET PROGRAM  
HANOVER ST  
REMOVAL PLAN  
MARCH, 2018  
PROJECT NO. 832190  
FIELD BOOK  
PG.



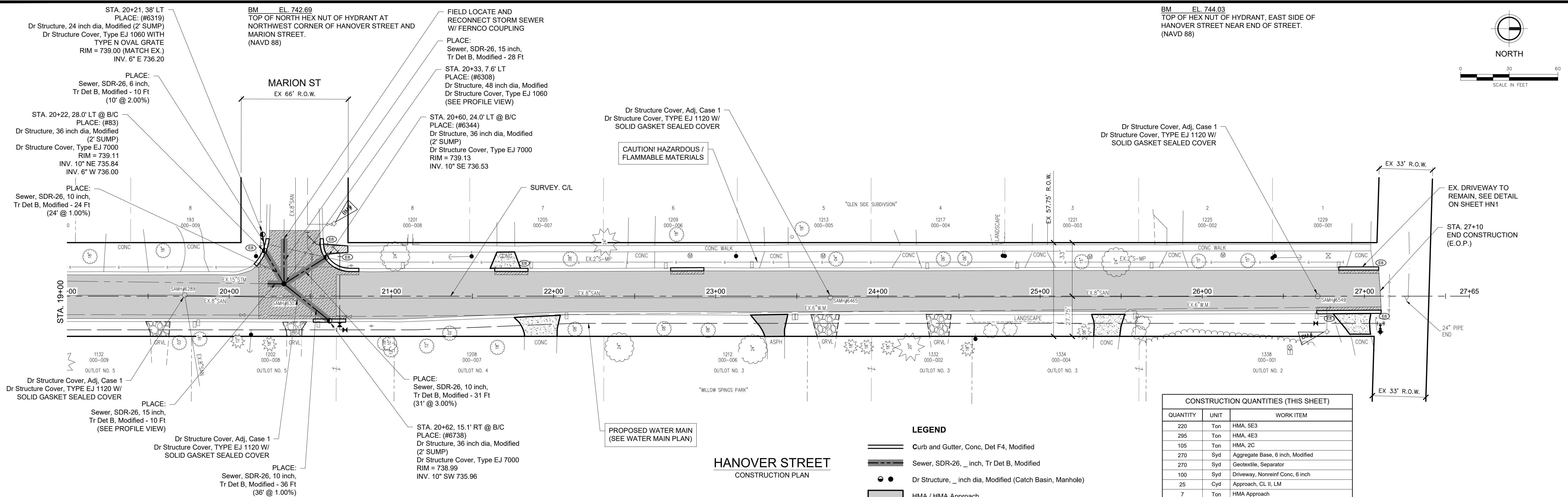
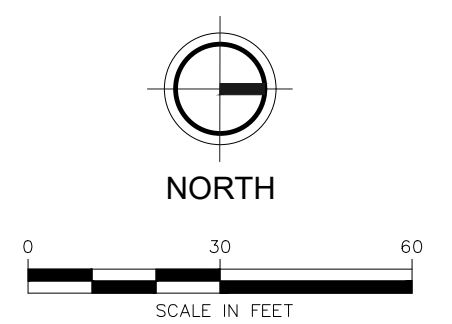


NO.	DATE	BY	REVISIONS

NO.	DESCRIPTION



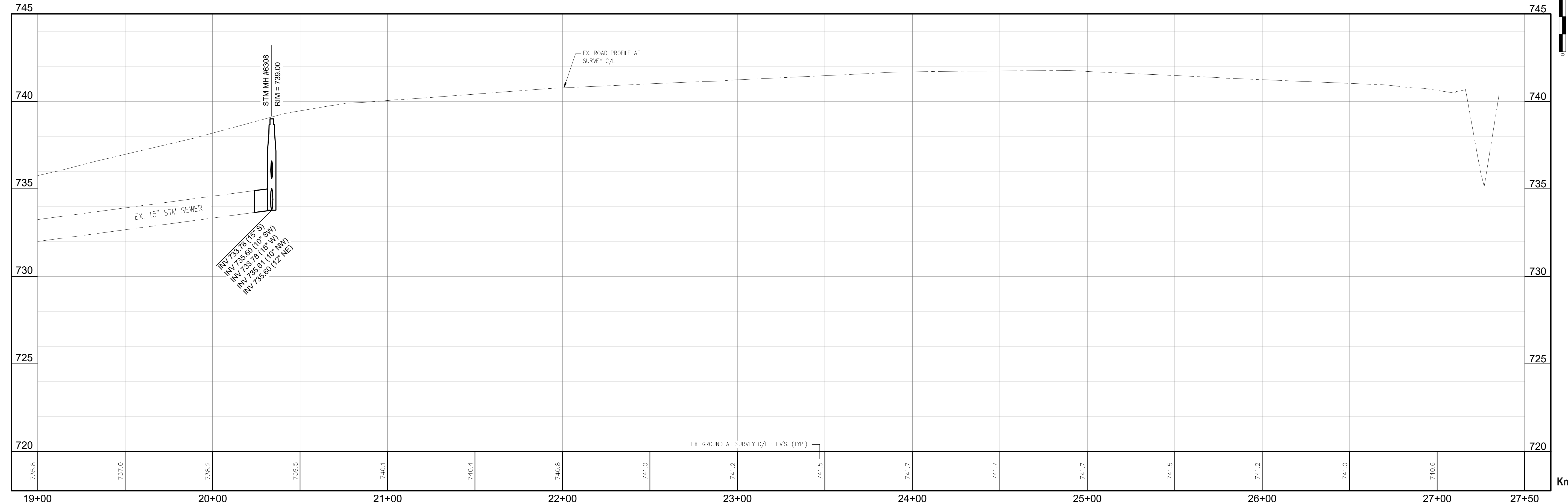




**HANOVER STREET**  
CONSTRUCTION PLAN

- LEGEND**
- Curb and Gutter, Conc, Det F4, Modified
  - Sewer, SDR-26, \_ inch, Tr Det B, Modified
  - Dr Structure, \_ inch dia, Modified (Catch Basin, Manhole)
  - HMA / HMA Approach
  - Driveway, Nonrein, Conc, \_ inch
  - Aggregate Approach, \_ inch
  - Sidewalk, Conc, \_ inch
  - Sidewalk, Ramp, Conc, \_ inch
  - Dr Structure, Abandon
  - Dr Structure Cover, Adj, Case \_ / Valve Box, Adj
  - STANDARD SOIL EROSION KEY
  - INDICATES FULL DEPTH REPAIR

CONSTRUCTION QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
220	Ton	HMA, 5E3
295	Ton	HMA, 4E3
105	Ton	HMA, 2C
270	Syd	Aggregate Base, 6 inch, Modified
270	Syd	Geotextile, Separator
100	Syd	Driveway, Nonrein, Conc, 6 inch
25	Cyd	Approach, CL II, LM
7	Ton	HMA Approach
179	Ft	Curb and Gutter, Conc, Det F4, Modified
5	Ft	Detectable Warning Surface
75	Sft	Sidewalk Ramp, Conc, 4 inch
3	Ea	Dr Structure, 36 inch dia, Modified
1	Ea	Dr Structure, 48 inch dia, Modified
1	Ea	Dr Structure Cover, Type EJ 1060
1	Ea	Dr Structure Cover, Type EJ 1060 w/Type N Oval Grate
3	Ea	Dr Structure Cover, Type EJ 7000
4	Ea	Dr Structure Cover, Adj, Case 1
4	Ea	Dr Structure Cover, Type EJ 1120 W/ SOLID GASKET SEALED COVER
10	Ft	Sewer, SDR-26, 8 inch, Tr Det B, Modified
91	Ft	Sewer, SDR-26, 10 inch, Tr Det B, Modified
38	Ft	Sewer, SDR-26, 15 inch, Tr Det B, Modified



NO.	DATE	BY	REVISIONS

BENCH MARK DATA	DESCRIPTION
ELEV.	



BM EL. 731.70  
TOP OF NORTH HEX NUT OF HYDRANT, NORTH  
SIDE OF HARDING STREET AT HANOVER STREET.  
(NAVD 88)

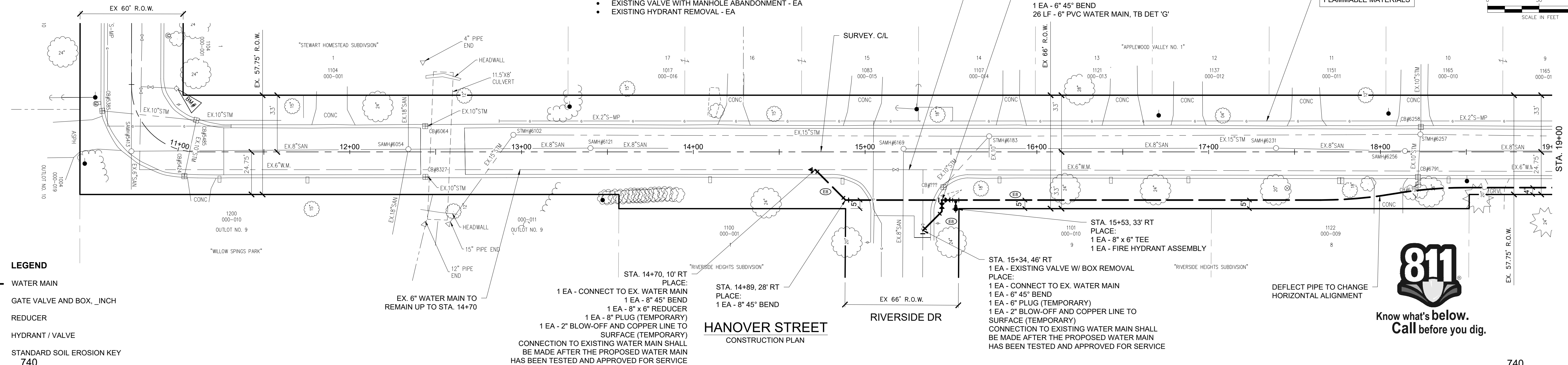
**EXISTING WATER MAIN ABANDONMENT**  
ONCE THE PROPOSED WATER MAIN HAS BEEN TESTED AND ACCEPTED AND  
ALL SERVICES HAVE BEEN TRANSFERRED, THE EXISTING WATER MAIN AND  
APPURTENANCES SHALL BE ABANDONED AND/OR REMOVED AS DIRECTED  
WITH THE FOLLOWING PAY ITEMS:

- EXISTING VALVE WITH VALVE BOX ABANDONMENT - EA
- EXISTING VALVE WITH MANHOLE ABANDONMENT - EA
- EXISTING HYDRANT REMOVAL - EA

EX. 6" WATER MAIN TO BE ABANDONED  
(STA. 14+70 TO 19+00)

STA. 15+45, 28' RT  
PLACE:  
1 EA - 8" x 6" TEE  
1 EA - 8" VALVE AND VALVE BOX  
1 EA - 6" VALVE AND VALVE BOX  
1 EA - 6" 45° BEND  
26 LF - 6" PVC WATER MAIN, TB DET 'G'

CAUTION! HAZARDOUS /  
FLAMMABLE MATERIALS



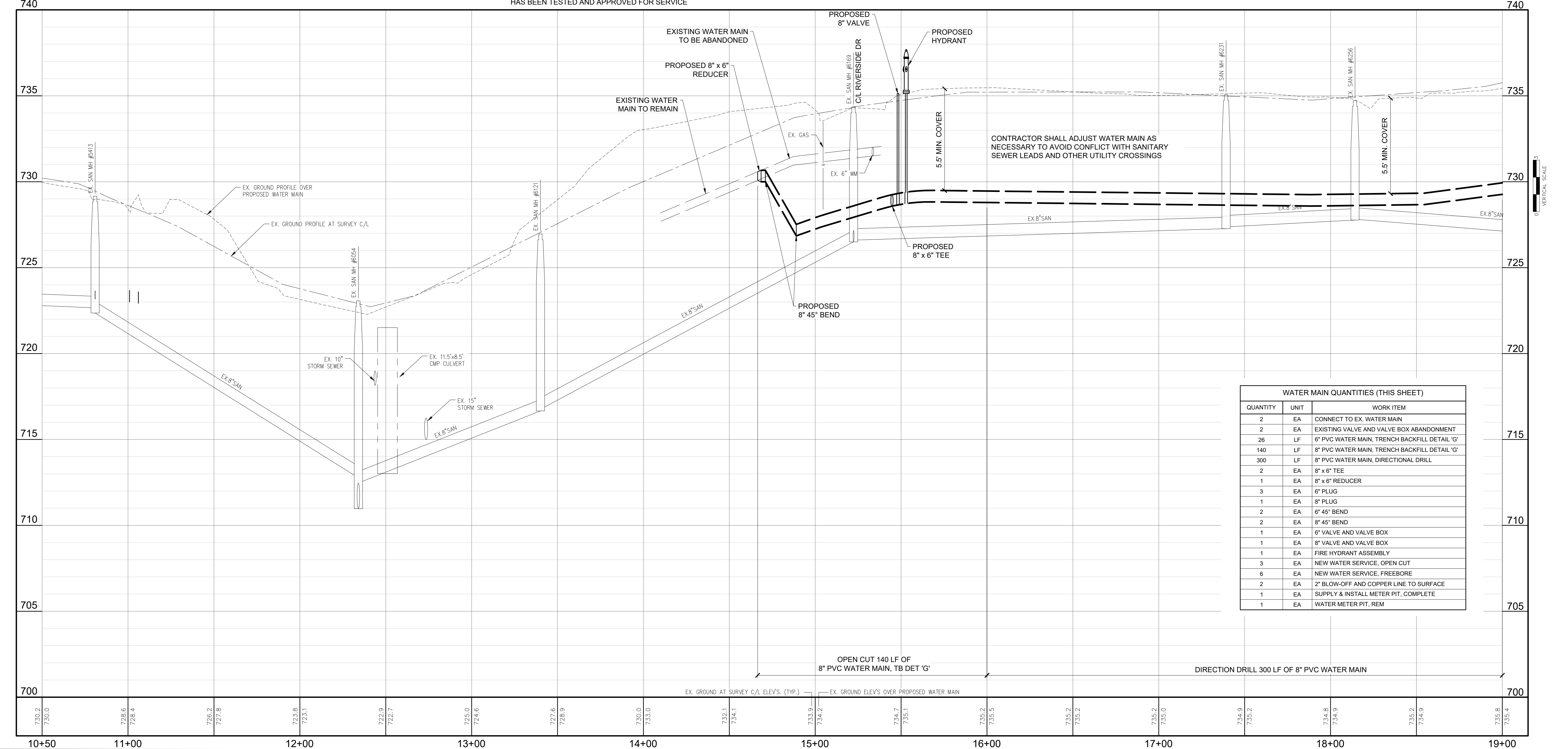
- LEGEND**
- WATER MAIN
  - ⊗ GATE VALVE AND BOX, .INCH
  - REDUCER
  - ⊕ HYDRANT / VALVE
  - STANDARD SOIL EROSION KEY

STA. 14+70, 10' RT  
PLACE:  
1 EA - CONNECT TO EX. WATER MAIN  
1 EA - 8" 45° BEND  
1 EA - 8" x 6" REDUCER  
1 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

**HANOVER STREET**  
CONSTRUCTION PLAN

STA. 15+34, 46' RT  
PLACE:  
1 EA - EXISTING VALVE W/ BOX REMOVAL  
1 EA - 8" x 6" TEE  
1 EA - 6" 45° BEND  
1 EA - 6" 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

DEFLECT PIPE TO CHANGE  
HORIZONTAL ALIGNMENT



WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
2	EA	CONNECT TO EX. WATER MAIN
2	EA	EXISTING VALVE AND VALVE BOX ABANDONMENT
26	LF	6" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
140	LF	8" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
300	LF	8" PVC WATER MAIN, DIRECTIONAL DRILL
2	EA	8" x 6" TEE
1	EA	8" x 6" REDUCER
3	EA	6" PLUG
1	EA	8" PLUG
2	EA	6" 45° BEND
2	EA	8" 45° BEND
1	EA	6" VALVE AND VALVE BOX
1	EA	8" VALVE AND VALVE BOX
1	EA	FIRE HYDRANT ASSEMBLY
3	EA	NEW WATER SERVICE, OPEN CUT
6	EA	NEW WATER SERVICE, FREEBORE
2	EA	2" BLOW-OFF AND COPPER LINE TO SURFACE
1	EA	SUPPLY & INSTALL METER PIT, COMPLETE
1	EA	WATER METER PIT, REM

**FLEIS & VANDENBRINK**  
DESIGN, BUILD, OPERATE

9475 Holly Rd, Suite 201  
Grand Blanc, MI 48439  
P: 810.743.9120  
F: 810.743.1797

REVISION:

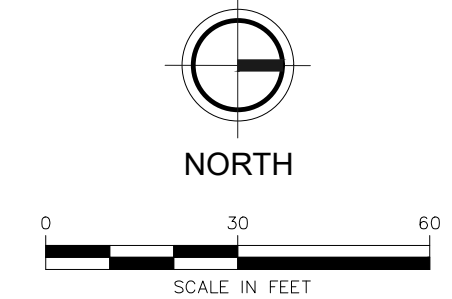
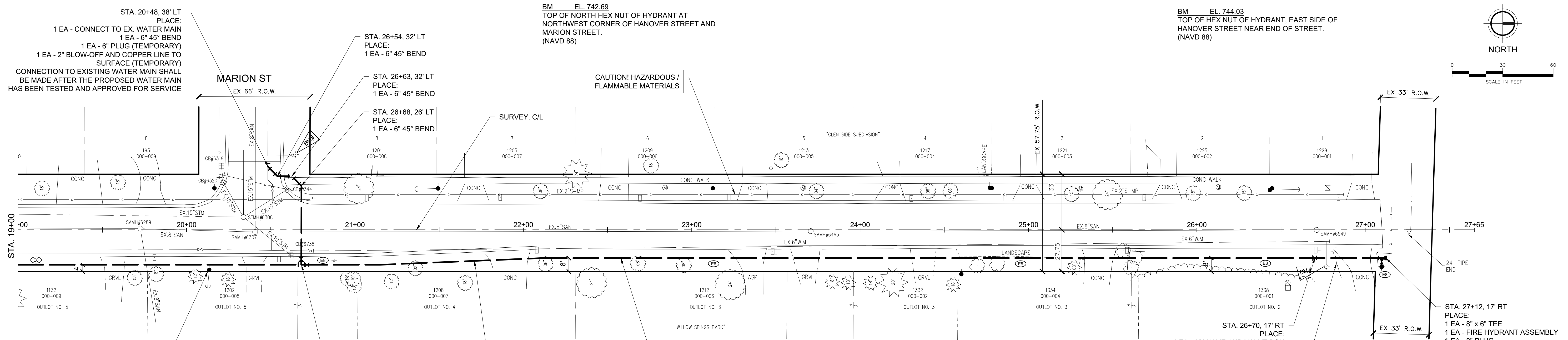
**CITY OF OWOSSO**  
SHIAWASSEE COUNTY, MICHIGAN  
2018 STREET PROGRAM

**HARDING ST - WATER MAIN PLAN AND PROFILE**

DESIGN TEAM:  
GLR, DPH  
CHECK BY:  
SMB MAR 2018  
DRAWING INFORMATION:  
832190\_21\_HN6\_HN7\_WMPP  
022718 gqrcc

MARCH, 2018  
P&V PROJECT NO.  
832190

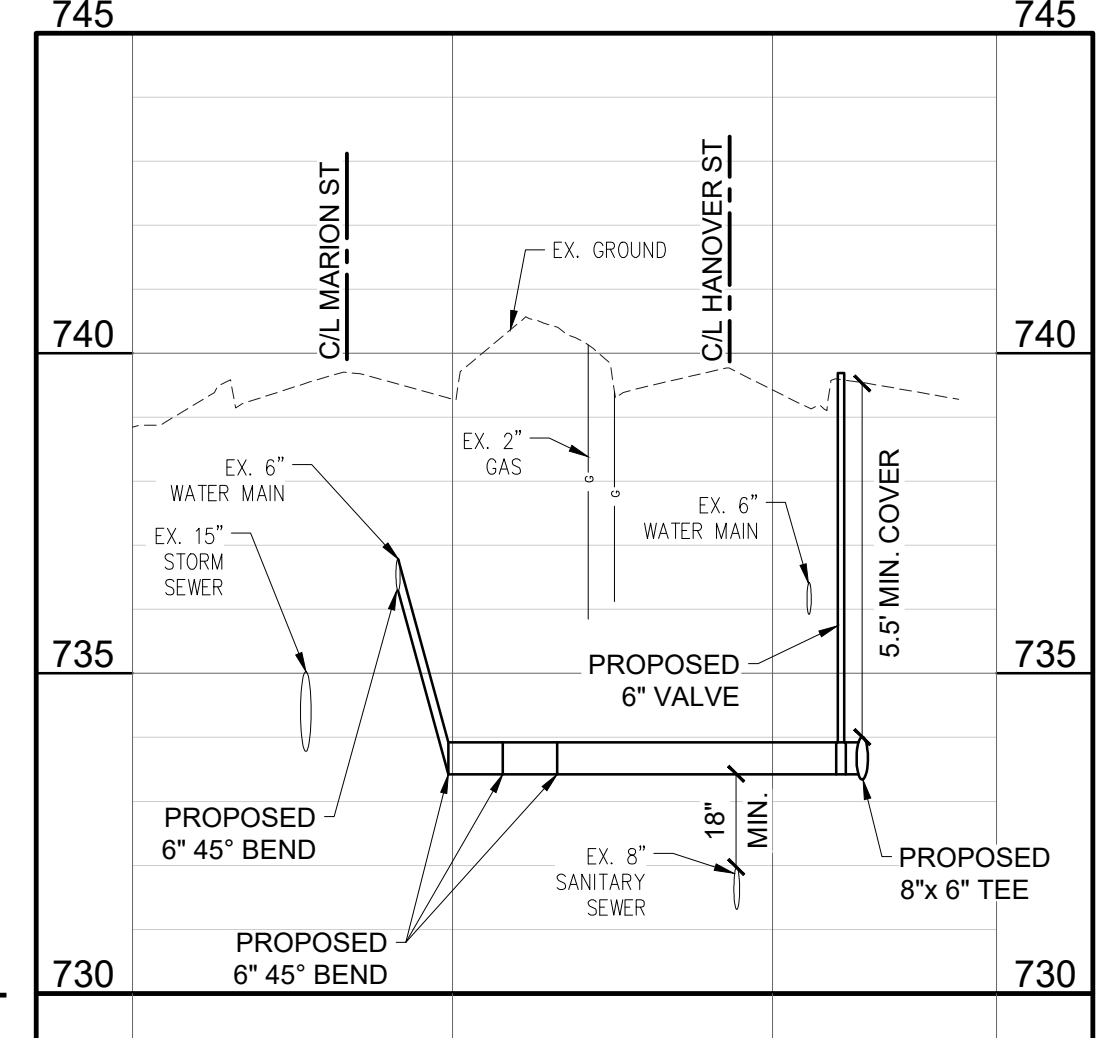
**HN6**



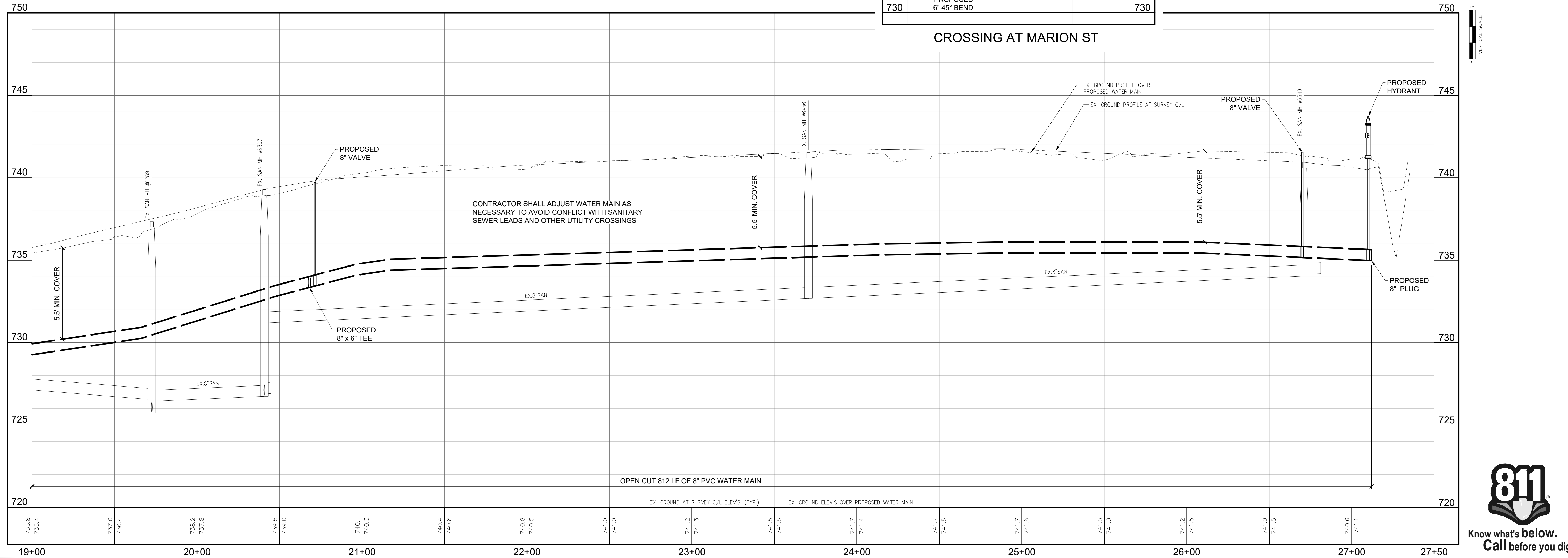
- LEGEND**
- WATER MAIN
  - ✕ GATE VALVE AND BOX, \_INCH
  - ▶ REDUCER
  - ⊕ HYDRANT / VALVE
  - ⊙ STANDARD SOIL EROSION KEY

REMOVE AND REINSTALL SPLIT RAIL FENCE AS REQUIRED FOR WATER MAIN CONSTRUCTION (TYPICAL BOTH SIDES OF DRIVE). COST INCLUDED IN WATER MAIN CONSTRUCTION

WATER MAIN QUANTITIES (THIS SHEET)		
QUANTITY	UNIT	WORK ITEM
1	EA	CONNECT TO EX. WATER MAIN
2	EA	EXISTING VALVE AND VALVE BOX ABANDONMENT
1	EA	EXISTING HYDRANT REMOVAL
75	LF	6" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
812	LF	8" PVC WATER MAIN, TRENCH BACKFILL DETAIL 'G'
2	EA	8" x 6" TEE
1	EA	6" PLUG
1	EA	8" PLUG
4	EA	6" 45° BEND
1	EA	6" VALVE AND VALVE BOX
2	EA	8" VALVE AND VALVE BOX
1	EA	FIRE HYDRANT ASSEMBLY
7	EA	NEW WATER SERVICE, OPEN CUT
10	EA	NEW WATER SERVICE, FREEBORE
1	EA	2" BLOW-OFF AND COPPER LINE TO SURFACE
4	EA	SUPPLY & INSTALL METER PIT, COMPLETE
4	EA	WATER METER PIT, REM
50	SYD	SIDEWALK, REM
400	SFT	SIDEWALK, CONC, 4 INCH



CROSSING AT MARION ST



**FLEIS & VANDENBRINK**  
DESIGN, BUILD, OPERATE

9475 Holly Rd, Suite 201  
Grand Blanc, MI 48439  
P: 810.743.9120  
F: 810.743.1797

REVISION:

CITY OF OWOSSO  
SHIAWASSEE COUNTY, MICHIGAN  
2018 STREET PROGRAM

HANOVER ST - WATER MAIN PLAN AND PROFILE

DESIGN TEAM:  
GLR, DPH  
CHECK BY:  
SMB MAR 2018  
DRAWING INFORMATION:  
832190\_21\_HN6\_HN7\_WMPP  
030618 gercr

MARCH, 2018  
P&V PROJECT NO.  
832190



**HN7**