CITY OF OWOSSO

2022 WATER MAIN REPLACEMENT – CENTER STREET

SHIAWASSEE COUNTY, MICHIGAN

DWSRF PROJECT NUMBER 7458-01

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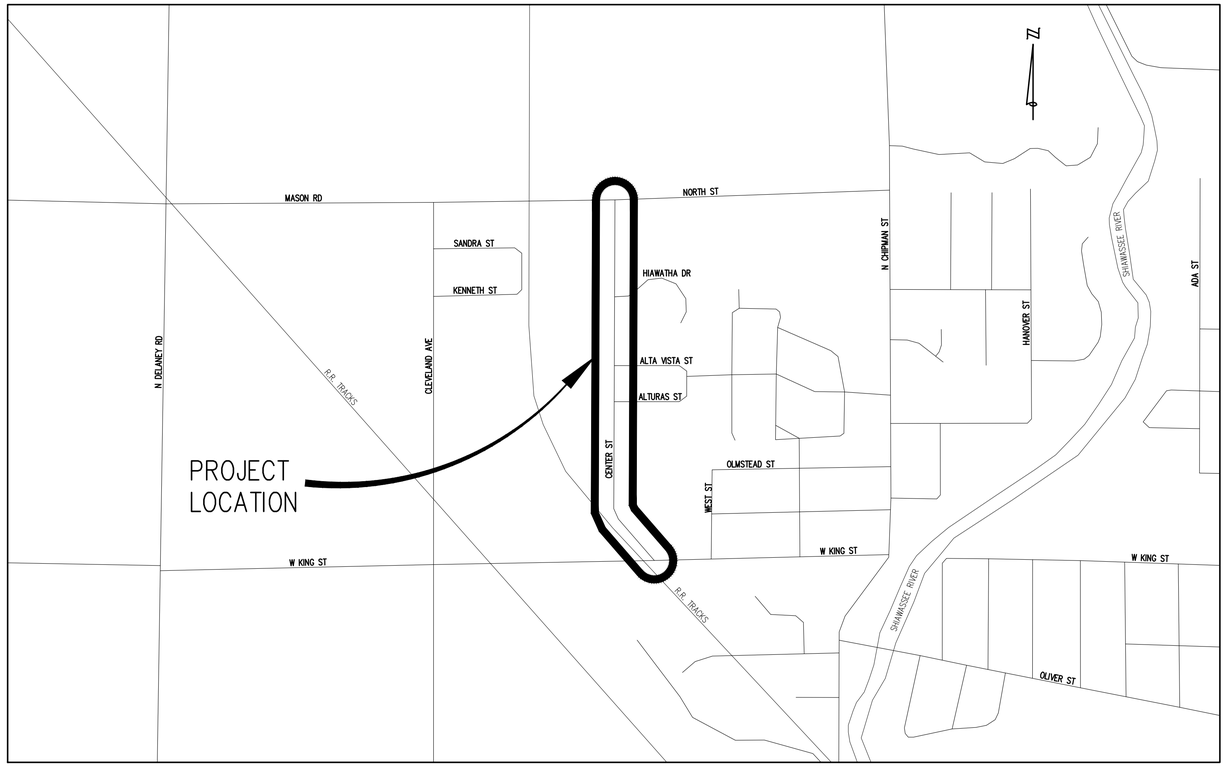

LOCATION MAP

N.T.S.

M.D.O.T. STANDARD PLANS	
TITLE	PLAN NO.
DRIVEWAY OPENINGS & APPROACHES AND CONCRETE SIDEWALKS	R-29-I
CONCRETE CURB AND CONCRETE CURB & GUTTER	R-30-G
UTILITY TRENCHES	R-83-C
SOIL EROSION & SEDIMENTATION CONTROL MEASURES	R-96-E

* DENOTES SPECIAL DETAIL PROVIDED IN THE PROPOSAL

TRAFFIC & SAFETY STANDARD PLANS	
TITLE	PLAN NO.
MAINTENANCE – LANE CLOSURE FOR A 2-LANE, 2-WAY ROADWAY UTILITIZING TRAFFIC REGULATORS, NO SPEED REDUCTION	4110A-M-TR-NFW-2L
GROUND DRIVEN SIGN SUPPORTS FOR TEMP. SIGNS	WZD-100-A*
TEMPORARY TRAFFIC CONTROL DEVICES	WZD-125-E*

* DENOTES SPECIAL DETAIL PROVIDED IN THE PROPOSAL

THE IMPROVEMENTS BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND SUPPLEMENTAL SPECIFICATIONS. THE PROPOSED IMPROVEMENTS COVERED BY THESE PLANS ARE DESIGNED IN ACCORDANCE WITH THE AASHTO; A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, 2011 EDITION AND SECTION B (3R) OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION LOCAL AGENCY PROGRAMS FOR GEOMETRICS ON LOCAL AGENCY PROJECTS, 2014 EDITION.

ALL TRAFFIC CONTROL TEMPORARY AND PERMANENT SHALL FOLLOW 2011 EDITION OF MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).

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

UTILITY NOTE

FOR THE PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, THE CONTRACTOR SHALL CONTRACT THE MISS DIG SYSTEM, INC. BY PHONE AT 811 OR 800-482-7171 OR VIA THE WEB AT EITHER ELOCATE.MISSDIG.ORG FOR SINGLE ADDRESS OR RTE.MISSDIG.ORG, A MINIMUM OF 3 BUSINESS DAYS PRIOR TO EXCAVATION, EXCLUDING WEEKENDS AND HOLIDAYS.

UTILITY CONTACTS

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SOIL EROSION CONTROL
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CONTRACT FOR: 2,745 FEET OF WATER MAIN. 2,174 FEET OF 8" PVC WATER MAIN DIRECTIONAL DRILLED AND 571 FEET 8" PVC WATER MAIN. THIS PROJECT INCLUDES REMOVAL AND REPLACEMENT OF PAVEMENT, SIDEWALK, DRIVEWAYS, CURB & GUTTER, NEW VALVES, NEW HYDRANTS AND NEW WATER SERVICE LEADS.

THESE PLANS WERE PREPARED FOR THE CITY OF OWOSSO BY:

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STATE OF MICHIGAN
ANDREW C. VANWORMER
ENGINEER
No. 6201052683
LICENSED PROFESSIONAL ENGINEER

REVISIONS

PROJECT NO.	SHEET NO.
0020200050	1 OF 14

GENERAL PROVISIONS

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

THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) 2012 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION EXCEPT AS NOTED HEREIN AND IN THE PROPOSAL BOOK.

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL CODES FOR NOISE LEVELS, VIBRATIONS, OR ANY OTHER RESTRICTIONS WHILE REMOVING PAVEMENT OR FOR ANY OTHER CONSTRUCTION OPERATIONS WITHIN THIS CONTRACT TO BE INCLUDED IN THE RESPECTIVE ITEM OF WORK.

THE CONTRACTOR SHALL NOT ENTER UPON PRIVATE PROPERTY FOR ANY PURPOSE WITHOUT OBTAINING WRITTEN PERMISSION, NOTIFYING THE ENGINEER, AND HE/SHE SHALL BE RESPONSIBLE FOR PRESERVATION OF ALL PUBLIC PROPERTY, TREES, MONUMENTS, ETC. ALONG AND ADJACENT TO THE STREET AND/OR RIGHT OF WAY, AND SHALL USE EVERY PRECAUTION NECESSARY TO PREVENT DAMAGE OR INJURY THERETO. HE/SHE SHALL USE SUITABLE PRECAUTIONS TO PREVENT DAMAGE TO PIPES, CONDUITS, AND OTHER UNDERGROUND STRUCTURES AND SHALL PROTECT CAREFULLY FROM DISTURBANCE OR DAMAGE ALL MONUMENTS AND PROPERTY MARKERS UNTIL THE ENGINEER OR AUTHORIZED AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION AND SHALL NOT REMOVE THEM UNTIL DIRECTED.

THE CONTRACTOR SHALL BE REQUIRED TO NOTIFY THE ENGINEER, LOCAL FIRE, POLICE, HOSPITAL, AND EMERGENCY AGENCIES 72 HOURS IN ADVANCE OF PROPOSED ROAD CLOSURES.

THE CONTRACTOR AND/OR HIS SUBCONTRACTOR SHALL NOTIFY "MISS DIG", LOCAL SEWER, FIRE AND POLICE DEPARTMENTS 72 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.

UTILITIES

THE FOLLOWING UTILITY COMPANIES HAVE FACILITIES WITHIN THE PROJECT LIMITS:

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SOIL EROSION CONTROL

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THE UTILITIES AND THEIR LOCATIONS ARE SHOWN ON THE PLANS ARE DEEMED ACCURATE BUT NOT GUARANTEED. THE CONTRACTOR SHALL CALL THE MISS DIG 3 WORKING DAYS BEFORE BEGINNING WORK.

GAS FACILITIES SHALL BE PROTECTED AND SUPPORTED PER THE FACILITIES OWNER STANDARDS.

THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.

THE CONTRACTOR SHALL BE AWARE OF AND USE CAUTION WHEN WORKING NEAR UNDERGROUND OR OVERHEAD LINES OF ALL UTILITIES WITHIN THE PROJECT AREA.

MAINTAINING TRAFFIC/TRAFFIC CONTROL

THE CONSTRUCTION INFLUENCE AREA (CIA) SHALL CONSIST OF THE WIDTH OF THE PROPOSED RIGHT-OF-WAY FROM THE PROJECT POINT OF BEGINNING TO THE POINT OF ENDING, CONNECTING SIDE STREETS, AND A SUFFICIENT DISTANCE BEFORE AND AFTER THE PROJECT TO WARN MOTORISTS OF THE CONSTRUCTION AHEAD.

THE CONTRACTOR SHALL MAINTAIN THE PEDESTRIAN ACCESS THROUGHOUT THE ENTIRE PROJECT AT ALL TIMES DURING CONSTRUCTION. AREAS OF SIDEWALK THAT ARE SHOWN TO BE REMOVED AND REPLACED SHALL BE MAINTAINED WITH A TEMPORARY HARD SURFACE. PEDESTRIAN ACCESS TO ALL RESIDENCES AND BUSINESSES SHALL BE ALLOWED AT ALL TIMES DURING CONSTRUCTION.

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER THAT LOCAL TRAFFIC AND EMERGENCY VEHICLES SHALL HAVE ACCESS WITHIN THE PROJECT AT ALL TIMES IN A MANNER APPROVED BY THE ENGINEER. ALL EMERGENCY RESPONSE, ROAD COMMISSION, MUNICIPALITIES, SCHOOL BUS GARAGES, OR OTHER NECESSARY AGENCIES SHALL BE NOTIFIED A MINIMUM OF THREE DAYS IN ADVANCE OF IMPLEMENTING ANY TEMPORARY ROAD CLOSURE. THIS SHALL BE INCLUDED IN THE COST OF THE PROJECT.

MAINTENANCE GRAVEL (TON) FOR MAINTAINING LOCAL TRAFFIC HAS BEEN INCLUDED IN THE PROJECT TO BE USED AS DIRECTED BY THE ENGINEER TO MAINTAIN VEHICULAR AND PEDESTRIAN TRAFFIC ALONG THE PROJECT, DRIVEWAYS, AND STREET APPROACHES.

THE CONTRACTOR SHALL SCHEDULE WORK BETWEEN THE HOURS OF 7:00 A.M. AND 7:00 P.M., MONDAY THROUGH SATURDAY. NO WORK IS ALLOWED SUNDAYS OR NATIONAL HOLDIDAYS. NO WORK IS ALLOWED OUTSIDE THESE TIME PERIODS. THE CONTRACTOR SHALL COORDINATE WORK SO THAT ANY NECESSARY PRELIMINARY OR CLOSING OPERATIONS ARE ALSO DONE WITHIN THESE TIME PERIODS.

PAVEMENT REMOVAL QUANTITIES

PAVEMENT REMOVAL AS SHOWN ON THE PLANS WILL BE AT THE DISCRETION OF THE ENGINEER. IF IN HIS/HER JUDGEMENT, AREAS OF PAVEMENT MAY BE LEFT IN PLACE, OR ADDITIONAL AREAS ADDED TO PROVIDE THE PROPER CROSS-SECTION AND BASE, CHANGES WILL BE MADE TO THE QUANTITIES.

SOIL EROSION MEASURES

APPROPRIATE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO EARTH-DISTURBING ACTIVITIES. PLACE TURF ESTABLISHMENT ITEMS AS SOON AS POSSIBLE ON POTENTIAL ERODABLE SLOPES AS DIRECTED BY THE ENGINEER.

ALL SOIL EROSION AND SEDIMENTATION MUST BE CONTROLLED AND CONTAINED ON SITE.

SOIL EROSION AND SEDIMENTATION CONTROL: IN ADDITION TO THE GENERAL SOIL EROSION AND SEDIMENTATION CONTROL REQUIREMENTS IN THE PROPOSAL, THE FOLLOWING MEASURES SHALL BE INCORPORATED INTO THIS PROJECT:

1. THE CONTRACTOR SHALL CONDUCT HIS OR HER OPERATIONS IN SUCH A MANNER AS TO MINIMIZE THE AREAS LEFT BARREN DURING CONSTRUCTION AND TO DISTURB ONLY THOSE AREAS ABSOLUTELY REQUIRED FOR THE CONSTRUCTION OF THE PROJECT.
2. EROSION CONTROL ITEMS SHALL BE INSTALLED AND MAINTAINED ACCORDING TO THE MDOT STANDARD PLANS AND SHALL BE REMOVED WHEN THEY ARE NO LONGER EFFECTIVE AS DETERMINED BY THE ENGINEER. NO SEPARATE PAYMENT SHALL BE ALLOWED FOR EITHER MAINTENANCE OR REMOVAL OF THE EROSION CONTROL ITEMS.
3. THE CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED IN STORM SEWERS AND DRAINAGE STRUCTURES CONSTRUCTED WITH THE PROJECT WHEN SUCH SEDIMENT EXCEEDS 1/2 OF THE SUMP DEPTH. THE ENGINEER WILL INSPECT SUMPS AFTER STORMS AND DIRECT THE CONTRACTOR TO CLEAN OUT TO PROVIDE FOR SEDIMENT COLLECTIONS. CLEANING SUMPS FOR SEDIMENTATION CONTROL SHALL NOT BE PAID FOR SEPARATELY.
4. THE CONTRACTOR SHALL FOLLOW ALL ENTITIES HAVING JURISDICTION FOR SOIL EROSION AND SEDIMENTATION CONTROL FOR ALL MATERIALS DISPOSED OF OFF THE PROPERTY.

ALL AREAS DISTURBED BY THE CONTRACTOR AND/OR HIS OR HER SUBCONTRACTOR BEYOND THE GRADING LIMITS OF THIS PROJECT SHALL BE RESTORED WITH THE USE OF SOD OR HYDROSEED AS DIRECTED BY THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS ACTIVITY.

THE CONTRACTOR SHALL BE REIMBURSED BY THE CITY OF OWOSSO FOR THE INITIAL COST OF THE SOIL EROSION AND SEDIMENTATION CONTROL PERMIT.

SAWCUTTING

PAYMENT FOR SAWCUTTING REQUIRED THROUGHOUT THIS PROJECT SHALL BE INCLUDED IN REMOVAL ITEMS AND WILL NOT BE PAID FOR SEPARATELY.

PAVING

EXCAVATION OR FILL AS REQUIRED TO PREPARE DRIVE APPROACHES FOR PAVING ARE INCLUDED IN THE DRIVEWAY PAY ITEMS.

ANY RANDOM, IRREGULARLY CRACKED NEW CONCRETE CURB AND GUTTER THAT OCCURS BEFORE THE TOP COURSE OF PAVEMENT IS INSTALLED SHALL BE REMOVED AND REPLACED AT THE SOLE EXPENSE OF THE CONTRACTOR PRIOR TO PLACING THE TOP COURSE.

FINAL ADJUSTMENTS OF ALL STRUCTURES, BOTH NEW AND EXISTING, SHALL BE MADE PRIOR TO PLACING THE TOP COURSE OF ASPHALT.

ILLICIT CONNECTIONS TO STORM WATER SYSTEM

CONNECTIONS TO EXISTING STORM CONVEYANCE SYSTEMS NOT SHOWN ON THE PLANS MUST BE RECONNECTED WITH MINIMAL INTERRUPTION IN SERVICE. SIZE, TYPE AND LOCATION BY STATION AND OFFSET AND ANY SUSPECT ILLICIT DISCHARGE OBSERVED SHALL BE REPORTED TO THE ENGINEER PRIOR TO RECONNECTING. CONTRACTOR SHALL PROCEED AS DIRECTED BY THE ENGINEER.

SIDEWALK AND SIDEWALK RAMP GRADES

ALL SIDEWALK AND SIDEWALK RAMP GRADES SHALL BE FORMED ACCORDING TO STANDARD PLAN R-28-J* WITH SPECIAL DETAIL AS SHOWN ON THE PLANS. PRIOR TO CONSTRUCTING THE SIDEWALK AND SIDEWALK RAMPS, THE ENGINEER WILL VERIFY THE GRADES ON THE FORMS SET AND AUTHORIZE THE CONSTRUCTION OF THE SIDEWALK AND SIDEWALK RAMPS.

EARTHWORK

EARTHWORK QUANTITIES ARE ESTIMATED BY THE AVERAGE END AREA METHOD BASED UPON GROUND SURVEY INFORMATION. ALL EARTHWORK ITEMS WILL BE INCLUDED IN THE EXCAVATION AND EMBANKMENT PAY ITEMS AND WILL NOT BE PAID FOR SEPARATELY.

ALL EXCAVATION UNDER OR WITHIN 5 FEET OF THE PAVEMENT SECTION SHALL BE BACKFILLED AND COMPACTED WITH GRANULAR MATERIAL, CLASS II WITHIN THE PAVED SECTION AND A 1:1 INFLUENCE OUTSIDE THE PAVED SECTION.

THROUGHOUT THE DURATION OF CONSTRUCTION, NO UNDERCUTS WILL BE LEFT OVERNIGHT NEXT TO THE EDGE OF THE TRAVELED WAY.

EXCAVATION OF TRENCHES OVER 5' DEEP WITHIN 10' OF THE EDGE OF THE TRAVELED PAVEMENT SHALL NOT BE LEFT OPEN OVERNIGHT.

BACKFILL BEHIND ALL PROPOSED CURB IN ACCORDANCE WITH THE MDOT STANDARD SPECIFICATIONS OF CONSTRUCTION. WORK IS INCLUDED IN THE EMBANKMENT PAY ITEM.

MISCELLANEOUS

RUBBISH COLLECTION IS DONE BY PRIVATE CONTRACTORS BETWEEN THE HOURS OF 7:00 A.M. AND 7:00 P.M. ACCORDING TO THE FOLLOWING SCHEDULE: ALL RESIDENTIAL CUSTOMERS NORTH OF MAIN STREET (M-21) ARE SERVICED ON THURSDAYS. ALL RESIDENTIAL CUSTOMERS SOUTH OF MAIN STREET (M-21) ARE SERVICED ON TUESDAYS. RUBBISH COLLECTED AT COMMERCIAL PROPERTIES IS COLLECTED ANY TIME/DATE. THE CONTRACTOR SHALL SCHEDULE WORK TO ALLOW AND PROVIDE ACCESS FOR REFUSE CONTRACTORS TO PROVIDE THEIR SERVICE TO THE RESIDENTIAL AND COMMERCIAL PROPERTIES. IF THE REFUSE CONTRACTORS ARE UNABLE TO COLLECT MATERIALS DUE TO CONSTRUCTION OPERATIONS, THEN THE CONTRACTOR SHALL COORDINATE WITH THE REFUSE CONTRACTORS THE MOVING OF CONTAINERS TO A COLLECTION SITE AND RETURNING SAME CONTAINERS TO THE PROPERTY OWNER.

AS DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL REPAIR OR REPLACE ANY MAILBOXES OR THEIR SUPPORTS DAMAGED BY THE CONTRACTOR OR THEIR SUBCONTRACTOR. NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS ACTIVITY.

ANY SEWER CLEANOUTS AND/OR CURB STOP BOXES LOCATED IN SIDEWALKS, DRIVEWAYS, OR ANY OTHER AREAS DISTURBED BY CONSTRUCTION SHALL BE ADJUSTED TO MEET PROPOSED ELEVATIONS. PVC PIPE SHALL BE PLACED AROUND CLEANOUT AND STOPS PRIOR TO PLACING NEW CONCRETE OR HMA MATERIAL IF LOCATED WITHIN A DRIVEWAY OR SIDEWALK. ANY CURB STOP BOXES THAT NEED TO BE REPLACED SHALL BE COORDINATED WITH THE ENGINEER AND CITY TO ENSURE CITY APPROVED STOP BOXES ARE USED. PAYMENT FOR ADJUSTING, PVC SLEEVES, AND NEW STOP BOXES SHALL BE INCLUDED IN THE DRIVEWAY AND SIDEWALK PAY ITEMS AND WILL NOT BE PAID FOR SEPARATELY.

EXISTING WATER MAINS AND SEWERS

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

MISCELLANEOUS QUANTITIES

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
1	LSUM	Mobilization, Max
7	Ea	Erosion Control, Inlet Protection, Fabric Drop
500	Ft	Erosion Control, Silt Fence
1	LSUM	Project Cleanup
1470	Syd	Turf Establishment, Performance
1	Ea	Testing and Chlorination of Water Main

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REVISIONS:

DATE	PROJ. NUMBER	ENG.	PROJ. MGR.	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORZ. DATUM	VERT. DATUM
---	0020020050	AH	AH	KB	SHIAWASSEE	OWOSSO	H: NONE V: NONE	NAD 83	NGVD 29

CITY OF OWOSSO - DWSRF PROJECT NO. 7458-01
2022 WATER MAIN REPLACEMENT

NOTE SHEET

SHEET 2 OF 14

WATER & SEWER UTILITY SYMBOLS

EXISTING

- ST — STORM MANHOLE
- SQUARE CATCH BASIN
- ROUND CATCH BASIN
- CULVERT
- CULVERT W/O END SECTION
- CULVERT W/END SECTION
- S — SANITARY MANHOLE
- CO — CLEAN OUT
- GW — GATE VALVE & WELL
- GATE VALVE & BOX
- W — WATER STOP BOX
- FIRE HYDRANT
- MP — METER PIT
- WATER METER
- SH — SPRINKLER HEAD
- IRRIGATION VALVE

PROPOSED

- STORM MANHOLE
- INLET/CATCH BASIN
- CULVERT END SECTION
- SANITARY MANHOLE
- GV&W — GATE VALVE & WELL
- GV&B — GATE VALVE & BOX
- VALVE — WATER STOP BOX
- FIRE HYDRANT

REAL ESTATE SYMBOLS

- CONTIGUOUS PROPERTY SYMBOL
- XXXX — PARCEL NUMBER BOX
- XXXX — NO ROW IMPACTS

MISCELLANEOUS UTILITY SYMBOLS

EXISTING

- GUY WIRE
- GP — GUY POLE
- U — UTILITY POLE
- U — UTILITY POLE W/LIGHT
- LIGHT/DECOR LAMP POLE
- FLOOD LIGHT
- GAS VALVE
- G — GAS VENT
- G — GAS METER
- G — GAS RISER
- TRAFFIC SIGNAL
- P — PEDESTRIAN RISER
- T — TRANSFORMER PAD
- U — PRIVATE UTILITY MANHOLE
- R R — RAILROAD CROSSING
- E — ELECTRIC METER
- PB — PHONE BOOTH
- TS — TRAFFIC SIGNAL CONTROLLER
- HAND HOLE
- E — ELECTRIC RISER
- T — TELEPHONE RISER
- C — CABLE TV RISER
- W — MONITORING WELL
- UNDERGROUND MARKER

MISCELLANEOUS SYMBOLS

EXISTING

- RIPRAP
- SIGN
- FLOW DIRECTION
- STUMP
- WETLAND
- CONIFEROUS TREE — CL 1 1" TO 5", CL 2 6" TO 17", CL 3 18" TO 35", CL 4 36" AND UP
- DECIDUOUS TREE — CL 1 1" TO 5", CL 2 6" TO 17", CL 3 18" TO 35", CL 4 36" AND UP
- CONIFEROUS SHRUB
- DECIDUOUS SHRUB
- SB# — SOIL BORING
- SECTION CORNER
- MON — MONUMENT
- IRON ROD/PIPE
- PK — PK NAIL
- BM# — BENCHMARK
- TP# — TRAVERSE POINT
- MAIL/NEWSPAPER BOX
- FP — FLAG POLE
- POST
- HAZARDOUS OR FLAMMABLE MATERIAL — USED WITH UNDERGROUND GAS & ELECTRICAL LINES
- CAUTION – CRITICAL UNDERGROUND UTILITY — USED WITH TELEPHONE & FIBER OPTIC LINES

PROPOSED

- RIPRAP
- SIGN
- FLOW DIRECTION

MISCELLANEOUS HATCHING

PROPOSED

- HMA, Repair
- Driveway, Nonreinf Conc, 6 inch, Modified

UTILITY PATTERN

EXISTING

- ELEC — ELECTRICAL *
- 6" (COMPANY) GAS — GAS\OIL
- CABLE/TEL — CABLE/TELEPHONE *
- FIBER OPTIC — FIBER OPTIC *
- 12" WM — WATER
- 12" SAN — SANITARY
- 12" STM — STORM

PROPOSED

- 12" — STORM/SANITARY/WATER
- 12" — PRIMARY UTILITY WILL HAVE A CONTINUOUS LINESTYLE, WITH THE SECONDARY UTILITY MATCHING ITS RESPECTIVE EXISTING UTILITY LINESTYLE

*OH = OVERHEAD , UG = UNDERGROUND

ROW PATTERN

EXISTING

- ROW — ROW
- SECTION
- PROPERTY/PARCEL

PROPOSED

- ROW — ROW

TOPO PATTERN

EXISTING

- HEDGE/TREE
- FENCE
- GUARDRAIL
- CENTERLINE OF DITCH
- RAILROAD
- WETLAND/EDGE OF WATER

PROPOSED

- GRADING LIMIT (SLOPE STAKE)
- CENTERLINE OF DITCH
- GUARDRAIL
- FENCE

REMOVAL LEGEND

- SIDEWALK REMOVAL
- DRIVEWAY REMOVAL
- COLD MILLING HMA SURFACE
- PAVEMENT REMOVAL
- CURB AND GUTTER, REM
- TREE, REM
- SEWER, REM
- S-XXXXXX — SALVAGE
- B-XXXXXX — BULKHEAD
- A-XXXXXX — ABANDON
- R-XXXXXX — REMOVE
- ADJ-XXXXXX — ADJUST
- REL-XXXXXX — RELOCATE
- REC-XXXXXX — RECONSTRUCT
- R B/O-XXXXXX — REMOVE BY OTHERS
- ADJ B/O-XXXXXX — ADJUST BY OTHERS
- REL B/O-XXXXXX — RELOCATE BY OTHERS

IF NECESSARY FOR CLARITY

- (S) — SALVAGE
- (B) — BULKHEAD
- (A) — ABANDON
- (C) — CLEARING
- (R) — REMOVE
- (REL) — RELOCATE
- (REC) — RECONSTRUCT
- (REL B/O) — RELOCATE BY OTHERS
- (ADJ B/O) — ADJUST BY OTHERS

SPECIAL LEGEND

- XX — SESC MEASURE

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

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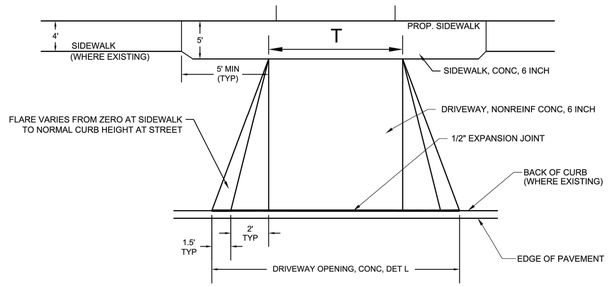
CADD KB
COUNTY SHIAWASSEE
CITY/VILLAGE/TOWNSHIP OWOSSO
SCALE H: NONE V: NONE
HORIZ DATUM NAD 83
VERT DATUM NGVD 29

CITY OF OWOSSO – DWSRF PROJECT NO. 7458-01
2022 WATER MAIN REPLACEMENT
LEGEND SHEET

SHEET 3 OF 14

DRAWING PATH: P:\0000_0100\0020200050_2021 Water Main Replacement\Drawings\Civil\Misc\2200050LEG.dwg Dec 16, 2021 - 8:39am



DIMENSION T IS 1' EACH SIDE OF THE EXISTING DRIVEWAY WIDTH BEHIND SIDEWALK

DRIVEWAY APPROACH DETAIL

NOT TO SCALE

GENERAL NOTES

NO SINGLE CURB CUT SHALL EXCEED 30 FEET WITH A MINIMUM WIDTH OF 10 FEET.

THE MINIMUM DISTANCE BETWEEN ANY CURB CUT AND PUBLIC CROSS WALK SHALL BE FIVE FEET.

THE MINIMUM DISTANCE BETWEEN TWO CURB CUTS, EXCEPT THOSE SERVICING RESIDENTIAL PROPERTY, SHALL BE FIVE FEET.

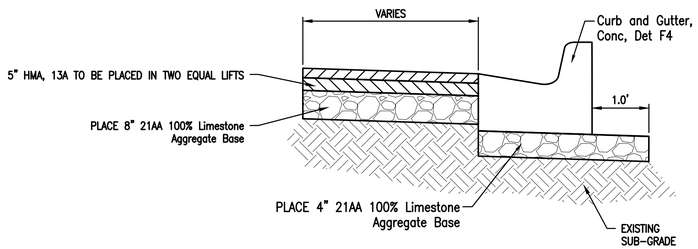
NO SINGLE SIDEWALK DRIVEWAY CROSSING SHALL EXCEED 30 FEET IN WIDTH.

THE MINIMUM DISTANCE BETWEEN SIDEWALK DRIVEWAY CROSSINGS, EXCEPT THOSE SERVING RESIDNETIAL PROPERTY, SHALL BE 25 FEET.

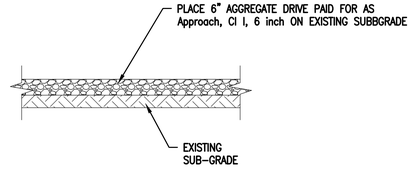
THE MAXIMUM NUMBER OF LINEAL FEET OF SIDEWALK DRIVEWAY CROSSING PERMITTED FOR ANY LOT, PARCEL OF LAND, BUSINESS, OR ENTERPRISE, SHALL BE 45% OF THE TOTAL ABUTTING STREET FRONTAGE UP TO AND INCLUDING 200 LINEAL FEET OF FRONTAGE PLUS 20% OF LINEAL STREET FRONTAGE IN EXCESS OF 200 FEET.

NO PROVISION HEREOF SHALL AUTHORIZE ANY CURB CUT OR SIDEWALK DRIVEWAY CROSSING WHICH, BY REASON OF ITS LOCATION WITH REFERENCE TO THE COMMON PROPERTY LINE, WOULD PREVENT A SIMILAR INSTALLATION TO THE ABUTTING PROPERTY.

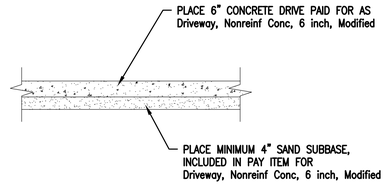
THE NUMBER OF CURB CUTS FOR RESIDENTIAL PROPERTIES SHALL BE ONE.



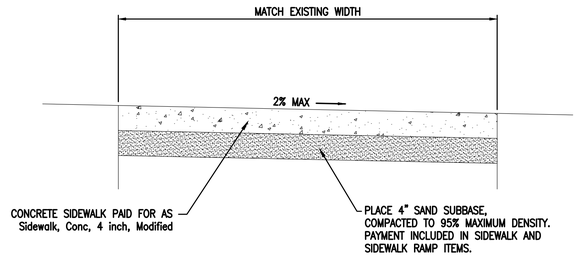
PROPOSED HMA, REPAIR DETAIL



PROPOSED AGGREGATE DRIVEWAY CROSS SECTION



PROPOSED CONCRETE DRIVEWAY CROSS SECTION



PROPOSED CONCRETE SIDEWALK DETAIL

NOTES:

1. CONCRETE SIDEWALK THICKNESS SHALL BE INCREASED TO 6" IN DRIVEWAY CROSSINGS AND SHALL BE PAID FOR AS Sidewalk, Conc, 6 inch, Modified.
2. CONCRETE SIDEWALK THICKNESS SHALL BE INCREASED TO 7" IN SIDEWALK RAMPS AND SHALL BE PAID FOR AS Sidewalk Ramp, Conc, 7 inch, Modified.

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 ENVIRONMENT, GREAT LAKES, AND ENERGY 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 C509. 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 PLASTIC OR CONCRETE PIPE 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.

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REVISIONS:

DATE: ---
PROJ NUMBER: 0020200050
ENG: AV
PROJ MGR: AV
CADD: KB
COUNTY: SHIAWASSEE
CITY/VILLAGE/TOWNSHIP: OWOSSO
SCALE: H: NONE V: NONE
HORIZ DATUM: NAD 83
VERT DATUM: NGVD 29

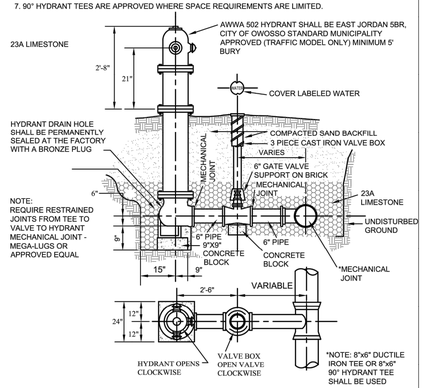
CITY OF OWOSSO - DWSRF PROJECT NO. 7458-01
2022 WATER MAIN REPLACEMENT

DETAIL SHEET

SHEET 4 OF 14

NOTES:

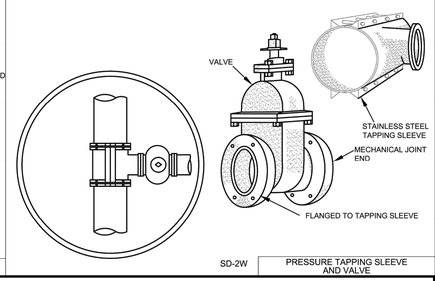
1. THE PUMPER CONNECTION SHALL FACE THE STREET.
2. SET THE HYDRANT FLANGE AT PROPOSED GRADE OR AS FIELD DIRECTED.
3. SET THE VALVE BOX COVER FLUSH WITH THE PROPOSED GRADE.
4. ALL WORK FROM THE CENTER LINE OF THE MAIN TO AND INCLUDING THE HYDRANT SHALL BE PAID FOR BY UNIT PRICE BID ITEM FOR HYDRANTS.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



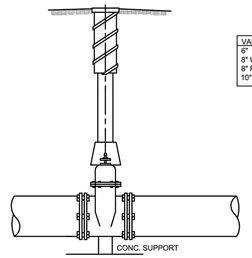
SD-2W | PRESSURE TAPPING SLEEVE AND VALVE

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

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

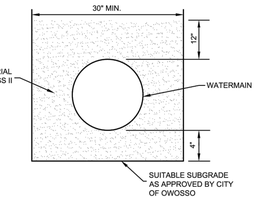
LENGTH (IN FEET) OF RESTRAINT REQUIRED (2)

DEFLECTION ANGLE	22½°	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

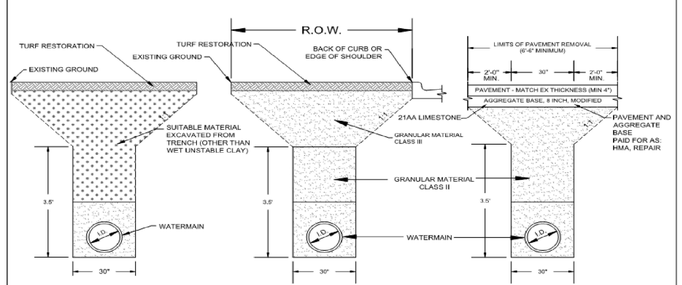
* WHEN MANUFACTURER SPECIFICATIONS CALL FOR GREATER RESTRAINT LENGTHS THE GREATER LENGTHS SHALL BE INSTALLED. WHEN THE MANUFACTURER SPECIFICATIONS CALL FOR LESSER RESTRAINT LENGTHS THEN THE ABOVE LENGTHS SHALL BE INSTALLED

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.
3. IF TIE 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



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

TRENCH BACKFILL DETAIL 'G'
TYPICAL WATERMAINS 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

WaterMaster® Fire Hydrant Specification

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

1. Manufacturers shall provide sufficient documentation to assure that their dry-barrel fire 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. (UL 246) and meet the test requirements of Factory Mutual (FM 1510) at this pressure**.

2. Hydrants shall have a minimum 5 1/4" valve opening.

3. 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.

4. Fire hydrants shall be **three-way** in design, having **5" Harrington Storz C & X Dome** pumper nozzle, and **2 1/2" NPT- 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.

5. The lubrication system shall be sealed from the waterway 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.

6. 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.

7. The direction of opening shall be **right**. An arrow shall be cast on the top of the hydrant to indicate the opening direction.

8. 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.

9. The hydrant will have **6'** depth of bury, unless otherwise noted.

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

11. 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 degree 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.

12. The inside diameter of the hydrant barrels shall not be less than 7 1/4" and the hydrant shall be painted **Yellow**.

13. 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" 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 four turns of opening the hydrant before positively closing while operating the hydrant.

14. 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 NSF 61 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.

15. 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/or 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**.
557726D

TYPICAL METER PIT DETAIL

NOT TO SCALE

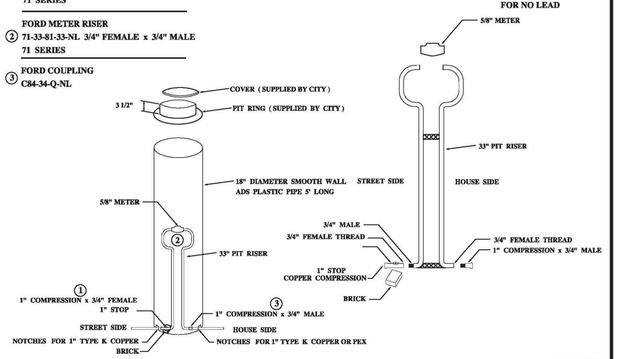
1" COPPER: MAIN TO STOP 1" COOPER OR PEX: STOP TO HOUSE (NO GALVANIZED ALLOWED)

FORD STOP
① **B-41-343-Q-NL 3/4" FEMALE x 1" CTS COMP 71 SERIES**

FORD METER RISER
② **71-33-81-33-NL 3/4" FEMALE x 3/4" MALE 71 SERIES**

FORD COUPLING
③ **C84-34-Q-NL**

DEQ
ALL PARTS MUST BE STAMPED N L FOR NO LEAD



REVISED 1/2020

OHM
ARCHITECTS ENGINEERS PLANNERS
201 E Ellsworth St, Unit 100
Midland, MI 48640
P (989) 956-2020
OHM-ADVISORS.COM

REVISIONS:

DATE	----
PROJ NUMBER	0020200050
ENG	AW
PROJ MGR	AW
CADD	KB
COUNTY	SHIAWASSEE
CITY/VILLAGE/TOWNSHIP	OWOSSO
SCALE	H: NONE V: NONE
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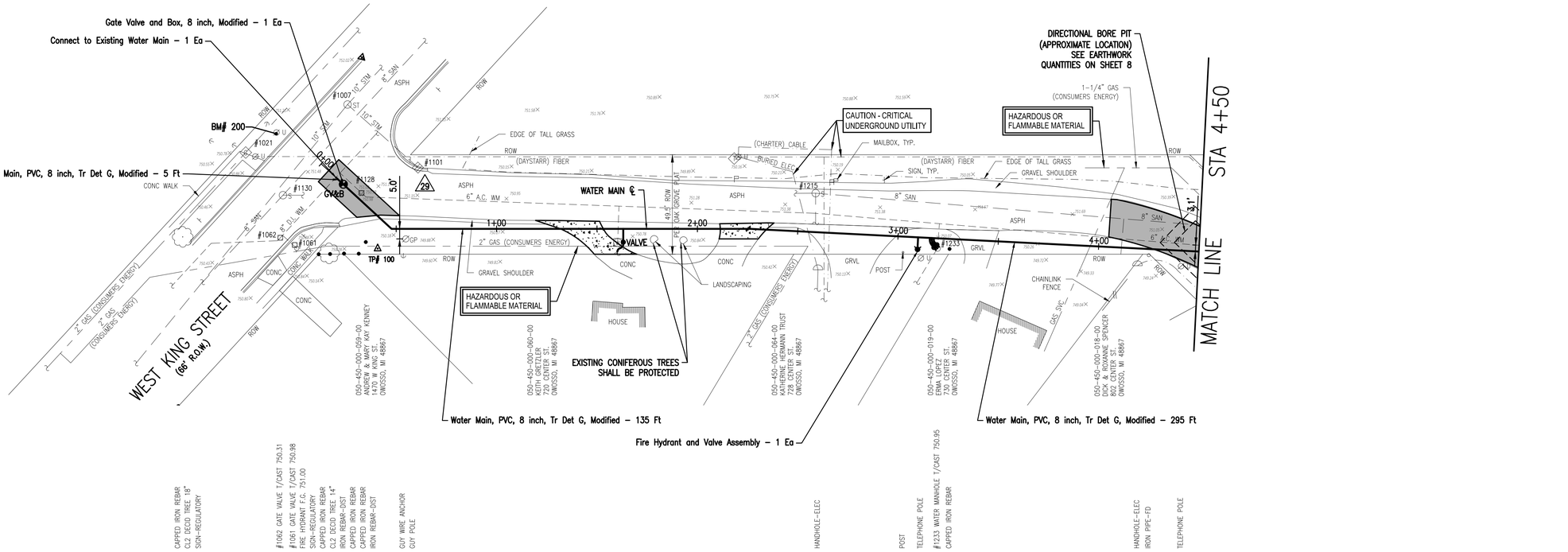
CITY OF OWOSSO – DWSRF PROJECT NO. 7458-01
2022 WATER MAIN REPLACEMENT
WATER MAIN DETAIL SHEET

SHEET 5 OF 14

JOB BENCHMARK # 200 COTTON SPINDLE IN NORTH FACE OF POWER POLE ON S SIDE OF WEST KING ST @ CENTER ST ELEV 752.24
JOB BENCHMARK # 201 COTTON SPINDLE IN EAST FACE OF POWER POLE IN FRONT OF HOUSE #717 CENTER STREET ELEV 750.44
TRAVERSE POINT # 100 N 548583.784 E 13169888.360 ELEV 750.11
TRAVERSE POINT # 101 N 548878.438 E 13169584.979 ELEV 750.04

CENTER STREET
(49.5' R.O.W.)



GRAPHIC SCALE: 1 inch = 30 feet
0 15 30 60 90

WATER MAIN APPURTENANCES

ITEM	STATION	OFFSET	T/BOX OR BURY LINE
CONNECT TO EXISTING 8" WATER MAIN	0+10.00		
8" GV&B	0+15.00		751.20
8" 45° HOR. BEND	0+47.69		
8" 45° VER. BEND	2+52.02		
8" 45° VER. BEND	2+55.92		
8" 45° VER. BEND	2+61.92		
8" 45° VER. BEND	2+65.47		
8"X6" HYD. TEE	3+10.00		
6" FIRE HYDRANT (6'-6" BURY)	3+10.00	6.0' R	750.90

WATER SERVICE LEAD SCHEDULE

APPROXIMATE WM STATION	OFFSET	TYPE	ADDRESS	SIZE (Inch)	LENGTH (Ft)	INSTALLATION METHOD	SHUT OFF TYPE
1+63	R	SHORT	720 CENTER	1	13	OPEN CUT	CURB STOP
3+16	R	SHORT	722 CENTER	1	6	OPEN CUT	METER PIT/VAULT
3+17	R	SHORT	724 CENTER	1	6	OPEN CUT	METER PIT/VAULT
3+18	R	SHORT	728 CENTER	1	6	OPEN CUT	METER PIT/VAULT

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
57	Syd	Driveway, Rem
155	Syd	Pavt, Rem, Modified
96	Ton	Maintenance Gravel
74	Syd	Approach, Cl I, 6 inch
8	Ton	Shoulder, Cl I
155	Syd	HMA, Repair
57	Syd	Driveway, Nonreinf Conc, 6 inch, Modified
31	Ft	1 inch Copper Service Lead, Type "K", Modified
435	Ft	Water Main, PVC, 8 inch, Tr Det G, Modified
1	Ea	Connect to Existing Water Main
1	Ea	Fire Hydrant Valve and Assembly
1	Ea	Supply & Install Meter Pit, Complete
1	Ea	Water Meter Pit, Rem
4	Ea	Curb Box, Stop, 1 inch, Corporation Stop and Connection, Modified
1	Ea	Gate Valve and Box, 8 inch, Modified
1	Ea	Water Main, 6 inch, Cut and Plug, Modified

NOTES:

1. THE PROPOSED WATER SERVICE LEADS ARE TO BE FIELD DIRECTED BY THE INSPECTOR. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN A 10' HORIZONTAL CLEARANCE BETWEEN WATER SERVICE LEADS AND SANITARY SERVICE LEADS WHENEVER POSSIBLE.
2. PLACEMENT OF CURB BOXES SHALL BE 3 FEET INSIDE THE PUBLIC UTILITY EASEMENT LINE OR PUBLIC RIGHT-OF-WAY: WHICHEVER IS THE GREATEST DISTANCE.
3. THE DIRECTIONAL DRILL PITS INDICATED ARE AN APPROXIMATION IN LOCATION AND SIZE AND ARE SUBJECT TO CHANGE. CONTRACTOR MAY CONSIDER LIMITING DIRECTIONAL DRILL LENGTHS AND INCREASING NUMBER OF BORE PITS TO DECREASE IMPACTS ON RESIDENTS. CONTRACTOR MAY ADD BORE PITS AT OWN COST.
4. METER PITS MAY NEED TO BE REPLACED TO ACCOMMODATE LARGER SERVICE LINE SIZES. REFER TO CITY SPECIAL PROVISIONS FOR THIS WORK.
5. VERTICALLY DEFLECT AS NECESSARY TO MAINTAIN AN 18 INCH SEPARATION BETWEEN UTILITIES AT CROSSING LOCATIONS.

PROPOSED HATCHING

HMA, Repair

Driveway, Nonreinf Conc, 6 inch, Modified

Know what's below. Call before you dig.

OHM
ARCHITECTS ENGINEERS PLANNERS
201 E Ellsworth St, Unit 100
Midland, MI 48640
P (989) 956-2020
OHM-ADVISORS.COM

REVISIONS:

DATE: ---
PROJ NUMBER: 0020020050
ENG: AH
PROJ MGR: AH
CADD: KB
COUNTY: SHIAWASSEE
CITY/VILLAGE/TOWNSHIP: OWOSSO
SCALE: H: 1"=30' V: 1"=3'
HORIZ DATUM: NAD 83
VERT DATUM: NGVD 29

CITY OF OWOSSO - DWSRF PROJECT NO. 7458-01
2022 WATER MAIN REPLACEMENT
WATER MAIN PLAN SHEET

SHEET 6 OF 14

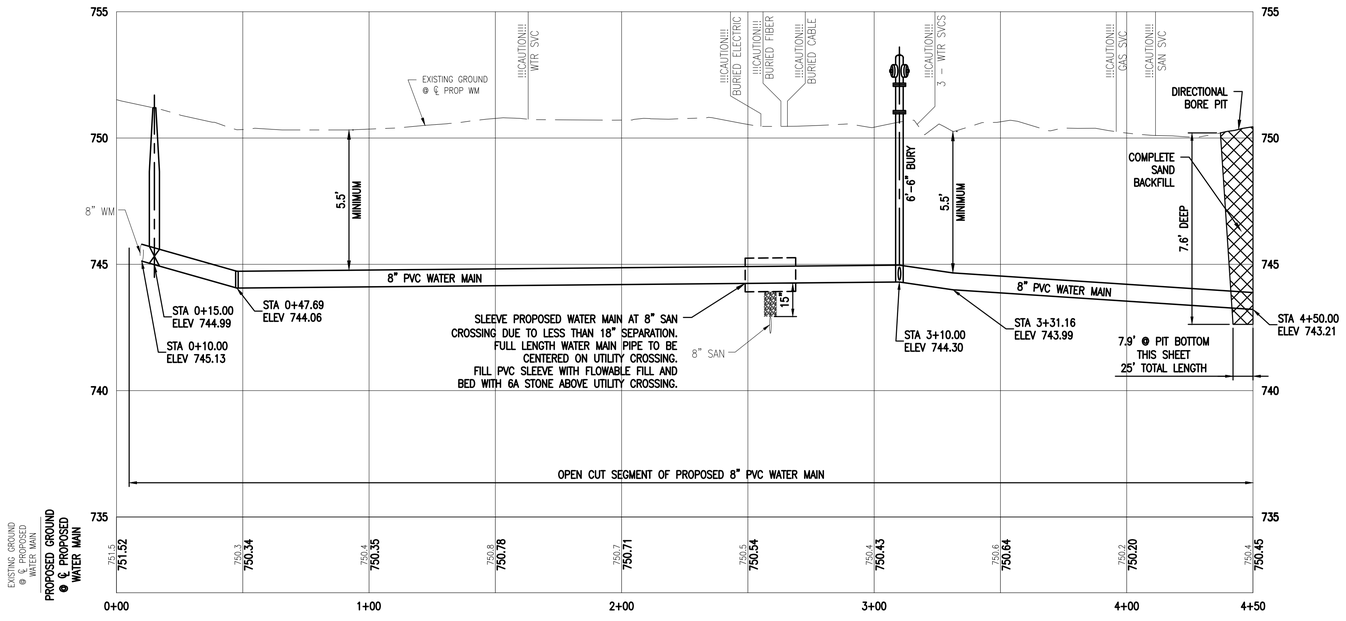
DRAWING PATH: P:\0000_0100\0020020050_2021 Water Main Replacement\Drawings\Civil\Plans_Const\20020SGWTR.dwg Dec 16, 2021 - 8:43pm

JOB BENCHMARK # 200
COTTON SPINDLE IN NORTH FACE OF POWER POLE ON S SIDE OF WEST KING ST @ CENTER ST
ELEV 752.24

JOB BENCHMARK # 201
COTTON SPINDLE IN EAST FACE OF POWER POLE IN FRONT OF HOUSE #717 CENTER STREET
ELEV 750.44

TRAVERSE POINT # 100
N 548583.784
E 13169888.360 ELEV 750.11

TRAVERSE POINT # 101
N 548878.438
E 13169584.979 ELEV 750.04



HORIZONTAL GRAPHIC SCALE: 1 inch = 30 feet
VERTICAL GRAPHIC SCALE: 1 inch = 3 feet
0 15 30 60 90
0 1 2 3 4 5

WATER MAIN APPURTENANCES			
ITEM	STATION	OFFSET	T/BOX OR BURY LINE
CONNECT TO EXISTING 8" WATER MAIN	0+10.00		
8" GV&B	0+15.00		751.20
8" 45° HOR. BEND	0+47.69		
8" 45° VER. BEND	2+52.02		
8" 45° VER. BEND	2+55.92		
8" 45° VER. BEND	2+61.92		
8" 45° VER. BEND	2+65.47		
8"X6" HYD. TEE	3+10.00		
6" FIRE HYDRANT (6'-6" BURY)	3+10.00	6.0' R	750.90

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CITY OF OWOSSO - DWSRF PROJECT NO. 7458-01
2022 WATER MAIN REPLACEMENT
WATER MAIN PROFILE SHEET

SHEET 7 OF 14

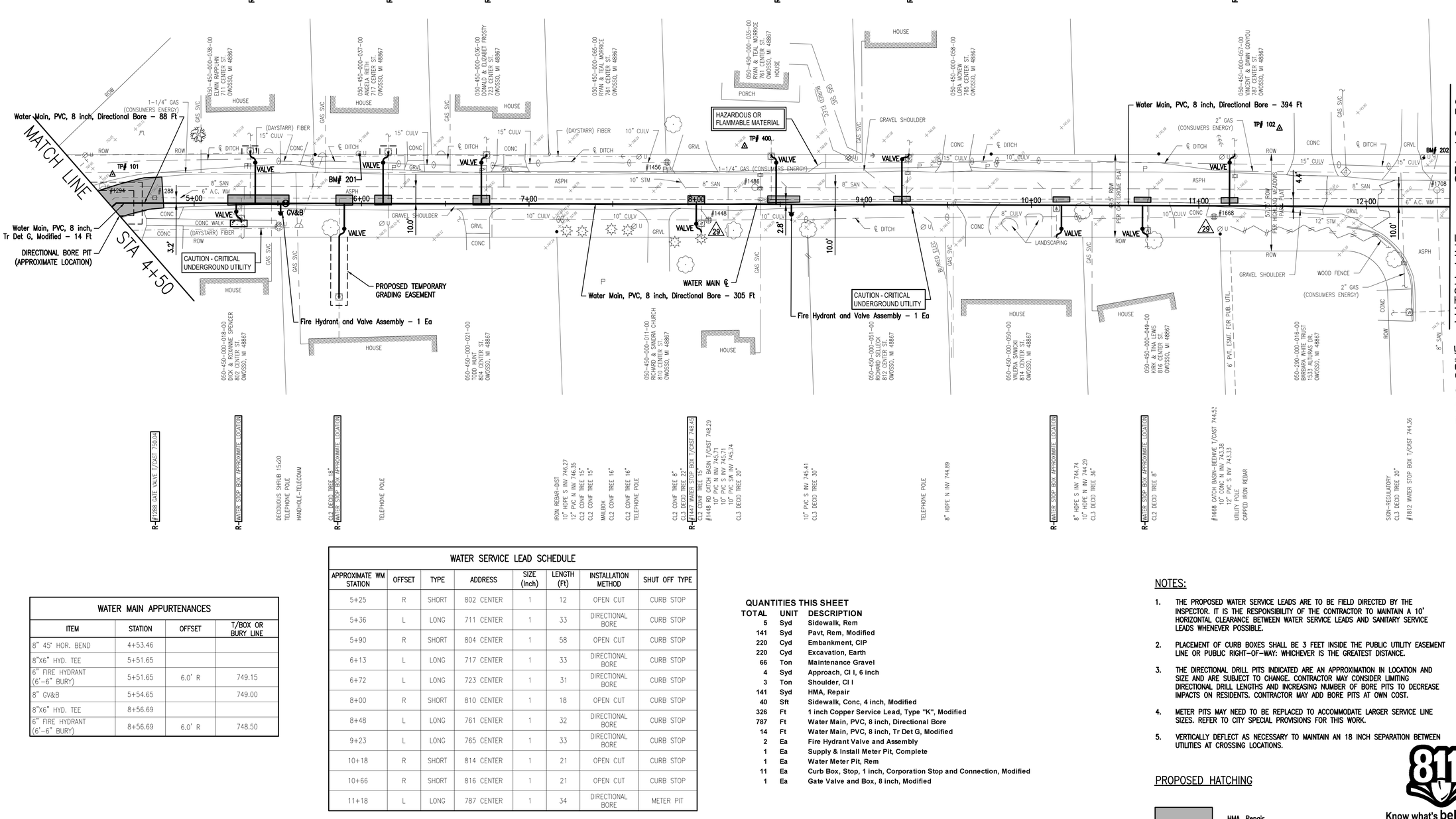
JOB BENCHMARK # 201 COTTON SPINDLE IN EAST FACE OF POWER POLE IN FRONT OF HOUSE #717 CENTER STREET ELEV 750.44
JOB BENCHMARK # 202 COTTON SPINDLE IN EAST FACE OF LIGHT POLE @ INTERSECTION OF CENTER ST AND ALTURAS ST ELEV 746.85
TRAVERSE POINT # 102 N 549575.343 E 13169556.069 ELEV 746.00
TRAVERSE POINT # 400 N 549255.916 E 13169567.369 ELEV 748.47

CENTER STREET

(R.O.W. VARIES)

GRAPHIC SCALE: 1 inch = 30 feet

0 15 30 60 90



WATER MAIN APPURTENANCES

ITEM	STATION	OFFSET	T/BOX OR BURY LINE
8" 45° HOR. BEND	4+53.46		
8"X6" HYD. TEE	5+51.65		
6" FIRE HYDRANT (6'–6" BURY)	5+51.65	6.0' R	749.15
8" GV&B	5+54.65		749.00
8"X6" HYD. TEE	8+56.69		
6" FIRE HYDRANT (6'–6" BURY)	8+56.69	6.0' R	748.50

WATER SERVICE LEAD SCHEDULE

APPROXIMATE WM STATION	OFFSET	TYPE	ADDRESS	SIZE (Inch)	LENGTH (Ft)	INSTALLATION METHOD	SHUT OFF TYPE
5+25	R	SHORT	802 CENTER	1	12	OPEN CUT	CURB STOP
5+36	L	LONG	711 CENTER	1	33	DIRECTIONAL BORE	CURB STOP
5+90	R	SHORT	804 CENTER	1	58	OPEN CUT	CURB STOP
6+13	L	LONG	717 CENTER	1	33	DIRECTIONAL BORE	CURB STOP
6+72	L	LONG	723 CENTER	1	31	DIRECTIONAL BORE	CURB STOP
8+00	R	SHORT	810 CENTER	1	18	OPEN CUT	CURB STOP
8+48	L	LONG	761 CENTER	1	32	DIRECTIONAL BORE	CURB STOP
9+23	L	LONG	765 CENTER	1	33	DIRECTIONAL BORE	CURB STOP
10+18	R	SHORT	814 CENTER	1	21	OPEN CUT	CURB STOP
10+66	R	SHORT	816 CENTER	1	21	OPEN CUT	CURB STOP
11+18	L	LONG	787 CENTER	1	34	DIRECTIONAL BORE	METER PIT

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
5	Syd	Sidewalk, Rem
141	Syd	Pavt, Rem, Modified
220	Cyd	Embankment, CIP
220	Cyd	Excavation, Earth
66	Ton	Maintenance Gravel
4	Syd	Approach, CI I, 6 inch
3	Ton	Shoulder, CI I
141	Syd	HMA, Repair
40	Sft	Sidewalk, Conc, 4 inch, Modified
326	Ft	1 inch Copper Service Lead, Type "K", Modified
787	Ft	Water Main, PVC, 8 inch, Directional Bore
14	Ft	Water Main, PVC, 8 inch, Tr Det G, Modified
2	Ea	Fire Hydrant Valve and Assembly
1	Ea	Supply & Install Meter Pit, Complete
1	Ea	Water Meter Pit, Rem
11	Ea	Curb Box, Stop, 1 inch, Corporation Stop and Connection, Modified
1	Ea	Gate Valve and Box, 8 inch, Modified

NOTES:

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PROPOSED HATCHING

HMA, Repair

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

OHM
ARCHITECTS ENGINEERS PLANNERS
201 E Ellsworth St, Unit 100
Midland, MI 48640
P (989) 956–2020
OHM–ADVISORS.COM

REVISIONS:

DATE: —— | PROJ NUMBER: 0020200950 | ENG: AH | PROJ MGR: AH | CADD: KB | COUNTY: SHIAWASSEE | CITY/VILLAGE/TOWNSHIP: OWOSSO | SCALE: H: 1"=30' V: 1"=3' | HORIZ DATUM: NAD 83 | VERT DATUM: NGVD 29

CITY OF OWOSSO – DWSRF PROJECT NO. 7458–01
2022 WATER MAIN REPLACEMENT
WATER MAIN PLAN SHEET

SHEET 8 OF 14

DRAWING PATH: P:\0000 0100\0020200950 2021 Water Main Replacement\Drawings\Civil\Plans Const\0020SGWTR.dwg Dec 16, 2021 – 8:47am

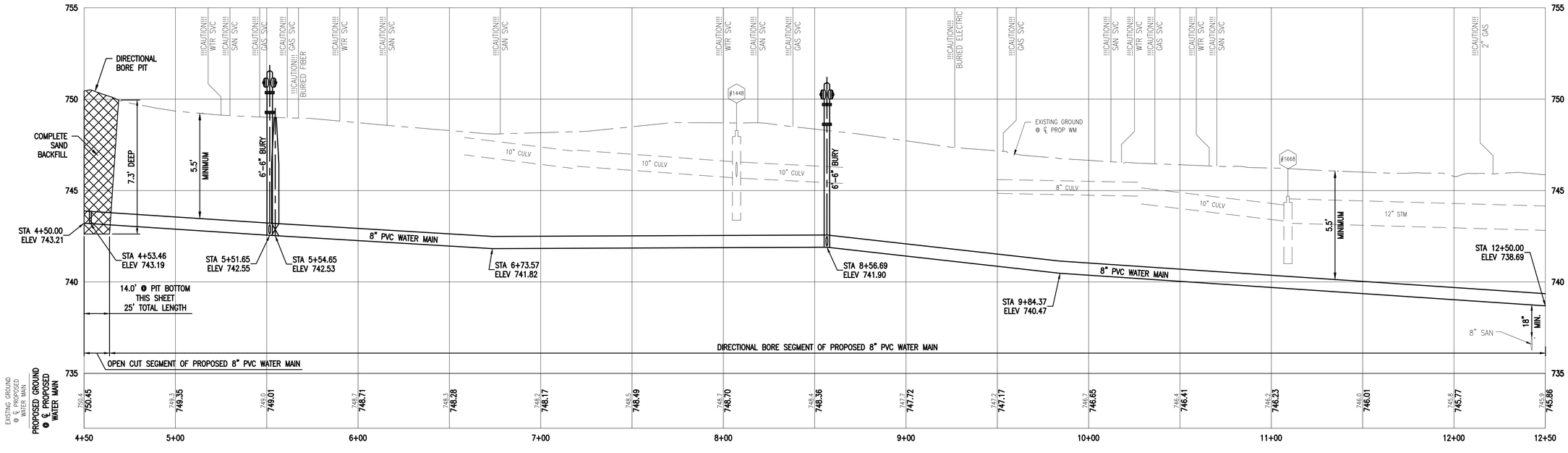
JOB BENCHMARK # 201
COTTON SPINDLE IN EAST FACE OF POWER POLE IN FRONT OF HOUSE #717 CENTER STREET
ELEV 750.44

JOB BENCHMARK # 202
COTTON SPINDLE IN EAST FACE OF LIGHT POLE @ INTERSECTION OF CENTER ST AND ALTURAS ST
ELEV 746.85

TRAVERSE POINT # 102
N 549575.343
E 13169556.069 ELEV 746.00

TRAVERSE POINT # 400
N 549255.916
E 13169567.369 ELEV 748.47

HORIZONTAL GRAPHIC SCALE: 1 inch = 30 feet
VERTICAL GRAPHIC SCALE: 1 inch = 3 feet



WATER MAIN APPURTENANCES			
ITEM	STATION	OFFSET	T/BOX OR BURY LINE
8" 45° HOR. BEND	4+53.46		
8"X6" HYD. TEE	5+51.65		
6" FIRE HYDRANT (6'-6" BURY)	5+51.65	6.0' R	749.15
8" GV&B	5+54.65		749.00
8"X6" HYD. TEE	8+56.69		
6" FIRE HYDRANT (6'-6" BURY)	8+56.69	6.0' R	748.50

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REVISIONS:

DATE: ---
PROJ NUMBER: 0020200050
ENG: AH
PROJ MGR: AH
CADD: KB
COUNTY: SHIAWASSEE
CITY/VILLAGE/TOWNSHIP: OWOSSO
SCALE: H: 1"=30' V: 1"=3'
HORIZ DATUM: NAD 83
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CITY OF OWOSSO - DWSRF PROJECT NO. 7458-01
2022 WATER MAIN REPLACEMENT

WATER MAIN PROFILE SHEET

SHEET 9 OF 14

JOB BENCHMARK # 203
COTTON SPINDLE IN EAST FACE OF POWER POLE WEST OF CENTER ST AND ALTA VISTA ST INTERSECTION
ELEV 746.48

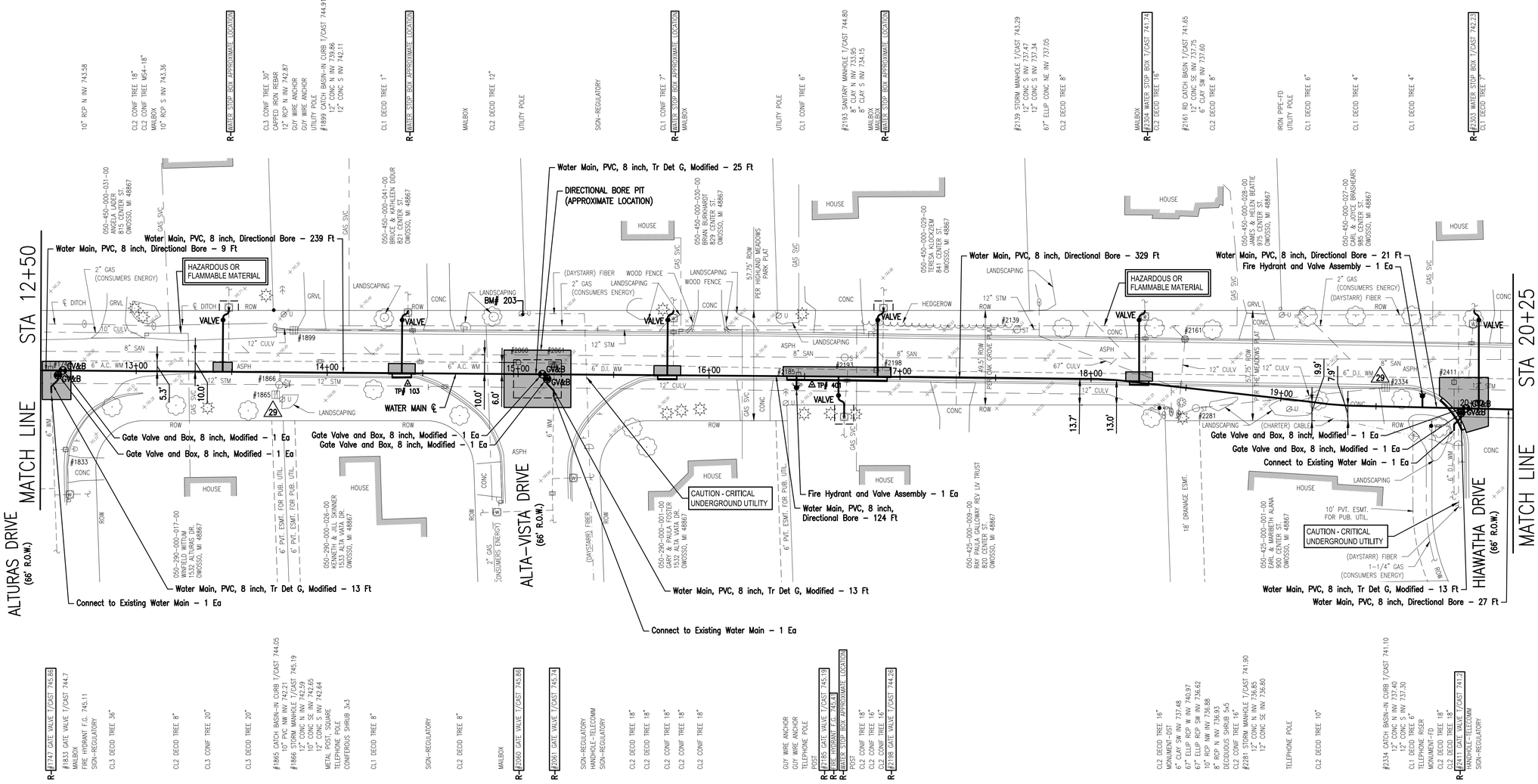
JOB BENCHMARK # 204
COTTON SPINDLE IN EAST FACE OF POWER POLE WEST OF CENTER ST BETWEEN HSE #1025 AND #1029
ELEV 742.88

TRAVERSE POINT # 103
N 549869.395
E 13169609.429 ELEV 745.36

TRAVERSE POINT # 401
N 550081.112
E 13169609.479 ELEV 745.24

CENTER STREET
(R.O.W. VARIES)

GRAPHIC SCALE: 1 inch = 30 feet
0 15 30 60 90



WATER MAIN APPURTENANCES

ITEM	STATION	OFFSET	T/BOX OR BURY LINE
8" 45° HOR. BEND	12+55.50	8.5' R	
CONNECT TO EXISTING 6" WATER MAIN	12+55.50	11.5' R	
8"x8" TEE	12+59.05		
8" GV&B	12+59.05	2.5' R	745.73
8" 45° HOR. BEND	12+59.05	5.0' R	
8" GV&B	12+61.55		745.90
8" GV&B	15+12.69		745.70
8"x8" TEE	15+15.19		
8" GV&B	15+15.19	2.5' R	745.60
8" 45° HOR. BEND	15+15.19	5.0' R	
8" 45° HOR. BEND	15+18.72	8.5' R	
CONNECT TO EXISTING 6" WATER MAIN	15+18.72	11.5' R	

WATER MAIN APPURTENANCES

ITEM	STATION	OFFSET	T/BOX OR BURY LINE
8"X6" HYD. TEE	16+45.80		
6" FIRE HYDRANT (6'–6" BURY)	16+45.80	6.0' R	745.40
8"X6" HYD. TEE	19+74.31		
6" FIRE HYDRANT (6'–6" BURY)	19+74.31	6.0' L	741.95
8" 45° HOR. BEND	19+91.09	8.5' R	
CONNECT TO EXISTING 6" WATER MAIN	19+91.09	11.5' R	
8"x8" TEE	19+94.63		
8" GV&B	19+94.63	2.5' R	740.95
8" 45° HOR. BEND	19+94.63	5.0' R	
8" GV&B	19+97.13		740.98

WATER SERVICE LEAD SCHEDULE

APPROXIMATE WM STATION	OFFSET	TYPE	ADDRESS	SIZE (Inch)	LENGTH (Ft)	INSTALLATION METHOD	SHUT OFF TYPE
13+45	L	LONG	815 CENTER	1	35	DIRECTIONAL BORE	CURB STOP
14+39	L	LONG	821 CENTER	1	35	DIRECTIONAL BORE	CURB STOP
15+78	L	LONG	829 CENTER	1	36	DIRECTIONAL BORE	CURB STOP
16+68	R	SHORT	820 CENTER	1	23	OPEN CUT	CURB STOP
16+88	L	LONG	841 CENTER	1	38	DIRECTIONAL BORE	CURB STOP
18+23	L	LONG	975 CENTER	1	39	DIRECTIONAL BORE	CURB STOP
20+03	L	LONG	985 CENTER	1	53	DIRECTIONAL BORE	CURB STOP

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
107	Ft	Curb and Gutter, Rem
274	Syd	Pavt, Rem, Modified
220	Cyd	Embankment, CIP
220	Cyd	Excavation, Earth
36	Syd	Aggregate Base, 4 inch
124	Ton	Maintenance Gravel
274	Syd	HMA, Repair
107	Ft	Curb and Gutter, Conc, Det F4
259	Ft	1 inch Copper Service Lead, Type "K", Modified
749	Ft	Water Main, PVC, 8 inch, Directional Bore
64	Ft	Water Main, PVC, 8 inch, Tr Det G, Modified
3	Ea	Connect to Existing Water Main
2	Ea	Fire Hydrant Valve and Assembly
7	Ea	Curb Box, Stop, 1 inch, Corporation Stop and Connection, Modified
6	Ea	Gate Valve and Box, 8 inch, Modified
1	Ea	Hydrant, Rem
3	Ea	Water Main, 6 inch, Cut and Plug, Modified

NOTES:

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PROPOSED HATCHING

HMA, Repair

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

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ARCHITECTS ENGINEERS PLANNERS
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Midland, MI 48640
P (989) 956-2020
OHM-ADVISORS.COM

REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM	VERT DATUM
----	0002000050	AV	AV	KB	SHIAWASSEE	OWOSSO	H: 1"=30'	NAD 83	NGVD 29

CITY OF OWOSSO – DWSRF PROJECT NO. 7458-01
2022 WATER MAIN REPLACEMENT
WATER MAIN PLAN SHEET

SHEET 10 OF 14

DRAWING PATH: P:\0000_0100\0020200050_2021 Water Main Replacement\Drawings\Civil\Plans_Const\200050WTR.dwg Dec 16, 2021 - 8:50am

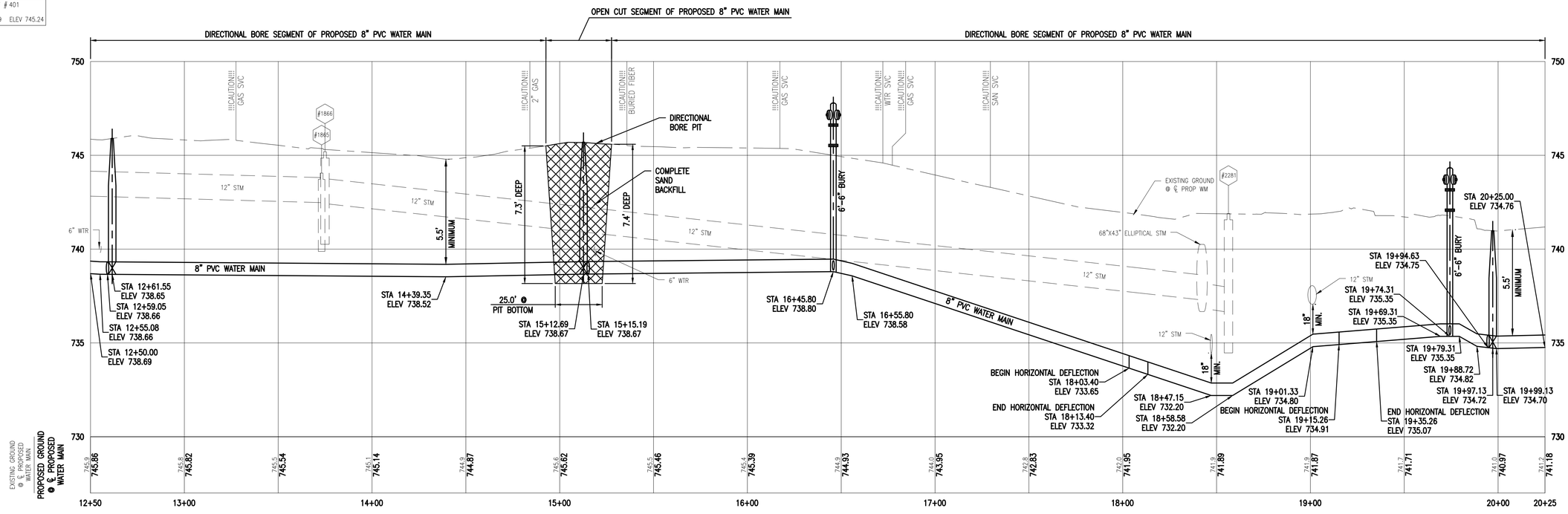
JOB BENCHMARK # 203
COTTON SPINDLE IN EAST FACE OF POWER POLE WEST OF CENTER ST AND ALTA VISTA ST INTERSECTION
ELEV 746.48

JOB BENCHMARK # 204
COTTON SPINDLE IN EAST FACE OF POWER POLE WEST OF CENTER ST BETWEEN HSE #1025 AND #1029
ELEV 742.88

TRAVERSE POINT # 103
N 549869.395
E 13169609.429 ELEV 745.36

TRAVERSE POINT # 401
N 550081.112
E 13169609.479 ELEV 745.24

HORIZONTAL GRAPHIC SCALE: 1 inch = 30 feet
VERTICAL GRAPHIC SCALE: 1 inch = 3 feet



WATER MAIN APPURTENANCES			
ITEM	STATION	OFFSET	T/BOX OR BURY LINE
8" 45° HOR. BEND	12+55.50	8.5' R	
CONNECT TO EXISTING 6" WATER MAIN	12+55.50	11.5' R	
8"x8" TEE	12+59.05		
8" GV&B	12+59.05	2.5' R	745.73
8" 45° HOR. BEND	12+59.05	5.0' R	
8" GV&B	12+61.55		745.90
8" GV&B	15+12.69		745.70
8"x8" TEE	15+15.19		
8" GV&B	15+15.19	2.5' R	745.60
8" 45° HOR. BEND	15+15.19	5.0' R	
8" 45° HOR. BEND	15+18.72	8.5' R	
CONNECT TO EXISTING 6" WATER MAIN	15+18.72	11.5' R	

WATER MAIN APPURTENANCES			
ITEM	STATION	OFFSET	T/BOX OR BURY LINE
8"X6" HYD. TEE	16+45.80		
6" FIRE HYDRANT (6'-6" BURY)	16+45.80	6.0' R	745.40
8"X6" HYD. TEE	19+74.31		
6" FIRE HYDRANT (6'-6" BURY)	19+74.31	6.0' L	741.95
8" 45° HOR. BEND	19+91.09	8.5' R	
CONNECT TO EXISTING 6" WATER MAIN	19+91.09	11.5' R	
8"x8" TEE	19+94.63		
8" GV&B	19+94.63	2.5' R	740.95
8" 45° HOR. BEND	19+94.63	5.0' R	
8" GV&B	19+97.13		740.98

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CITY OF OWOSSO - DWSRF PROJECT NO. 7458-01
2022 WATER MAIN REPLACEMENT
WATER MAIN PROFILE SHEET

SHEET 11 OF 14

DRAWING PATH: P:\0000_0100\0020020050_2021 Water Main Replacement\Drawings\Civil\Profiles\Y20005PRF.dwg Dec 16, 2021 - 8:51am

JOB BENCHMARK # 204
COTTON SPINDLE IN EAST FACE OF POWER POLE WEST OF CENTER ST BETWEEN HSE #1025 AND #1029
ELEV 742.88

JOB BENCHMARK # 205
COTTON SPINDLE IN EAST FACE OF POWER POLE WEST OF CENTER ST IN FRONT OF HSE #1221
ELEV 747.07

JOB BENCHMARK # 206
COTTON SPINDLE IN EAST FACE OF PP IN SW QUAD OF INTERSECTION OF CENTER ST AND W NORTH ST
ELEV 741.57

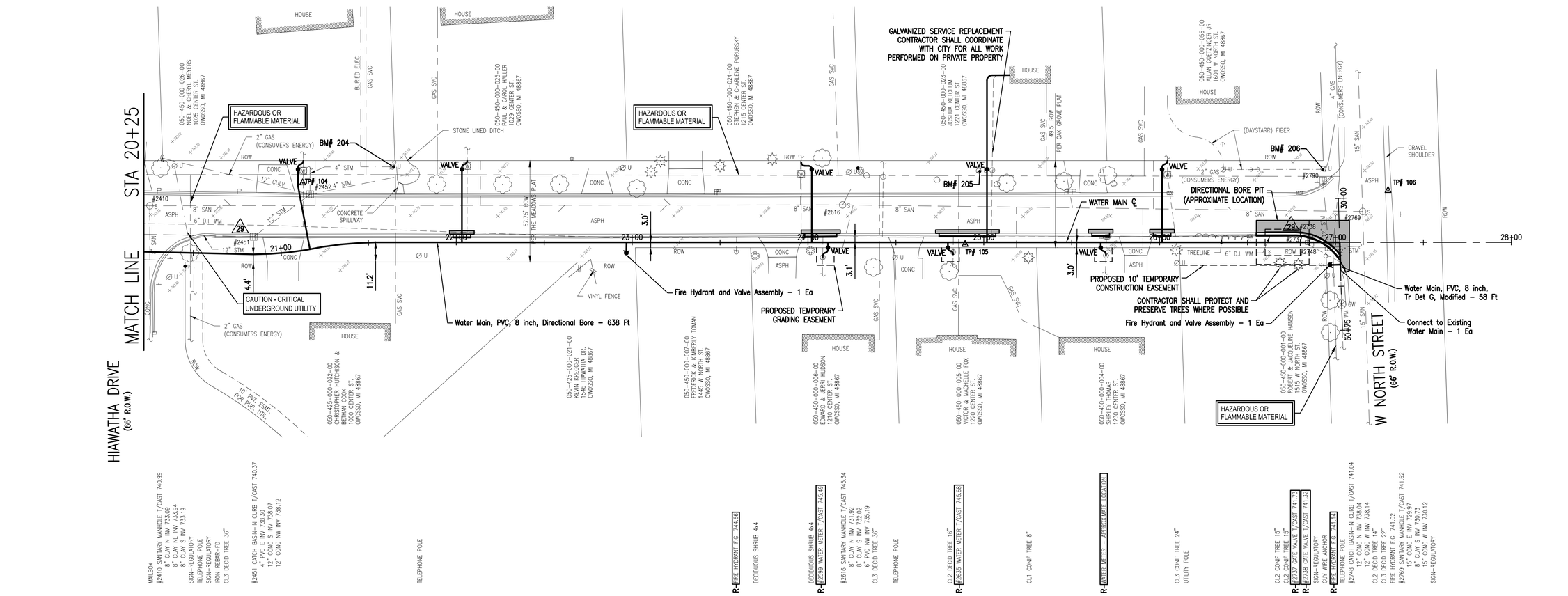
TRAVERSE POINT # 104
N 550538.551
E 13169582.239 ELEV 741.79

TRAVERSE POINT # 105
N 550915.387
E 13169616.479 ELEV 745.94

TRAVERSE POINT # 106
N 551155.839
E 13169585.392 ELEV 741.08

CENTER STREET
(R.O.W. VARIES)

GRAPHIC SCALE: 1 inch = 30 feet
0 15 30 60 90



WATER MAIN APPURTENANCES

ITEM	STATION	OFFSET	T/BOX OR BURY LINE
8"X6" HYD. TEE	22+96.77		
6" FIRE HYDRANT (6'-6" BURY)	22+96.77	6.0' R	744.10
8" 90° HOR. BEND	27+02.41 = 30+25.00		
8"X6" HYD. TEE	30+37.66		
6" FIRE HYDRANT (6'-6" BURY)	30+37.66	6.0' R	741.10
CONNECT TO EXISTING 12" WATER MAIN	30+40.66		

WATER SERVICE LEAD SCHEDULE

APPROXIMATE WM STATION	OFFSET	TYPE	ADDRESS	SIZE (Inch)	LENGTH (Ft)	INSTALLATION METHOD	SHUT OFF TYPE
21+13	L	LONG	1025 CENTER	1	52	DIRECTIONAL BORE	CURB STOP
22+03	L	LONG	1029 CENTER	1	48	DIRECTIONAL BORE	CURB STOP
24+02	L	LONG	1215 CENTER	1	50	DIRECTIONAL BORE	CURB STOP
24+11	R	SHORT	1210 CENTER	1	10	OPEN CUT	METER PIT
24+80	R	SHORT	1220 CENTER	1	9	OPEN CUT	METER PIT
25+02	L	LONG	1221 CENTER	1	107	DIRECTIONAL BORE	METER PIT
25+67	R	SHORT	1230 CENTER	1	9	OPEN CUT	METER PIT
26+02	L	LONG	1601 CENTER	1	48	DIRECTIONAL BORE	CURB STOP

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
133	Ft	Curb and Gutter, Rem
88	Syd	Pavt, Rem, Modified
220	Cyd	Embankment, CIP
220	Cyd	Excavation, Earth
36	Syd	Aggregate Base, 4 inch
40	Ton	Maintenance Gravel
88	Syd	HMA, Repair
133	Ft	Curb and Gutter, Conc, Det F4
1	Ea	Curb Nose
273	Ft	1 inch Copper Service Lead, Type "K", Modified
638	Ft	Water Main, PVC, 8 inch, Directional Bore
58	Ft	Water Main, PVC, 8 inch, Tr Det G, Modified
1	Ea	Connect to Existing Water Main
2	Ea	Fire Hydrant Valve and Assembly
4	Ea	Supply & Install Meter Pit, Complete
4	Ea	Water Meter Pit, Rem
8	Ea	Curb Box, Stop, 1 inch, Corporation Stop and Connection, Modified
2	Ea	Hydrant, Rem
1	Ea	Water Main, 6 inch, Cut and Plug, Modified

NOTES:

1. THE PROPOSED WATER SERVICE LEADS ARE TO BE FIELD DIRECTED BY THE INSPECTOR. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN A 10' HORIZONTAL CLEARANCE BETWEEN WATER SERVICE LEADS AND SANITARY SERVICE LEADS WHENEVER POSSIBLE.
2. PLACEMENT OF CURB BOXES SHALL BE 3 FEET INSIDE THE PUBLIC UTILITY EASEMENT LINE OR PUBLIC RIGHT-OF-WAY: WHICHEVER IS THE GREATEST DISTANCE.
3. THE DIRECTIONAL DRILL PITS INDICATED ARE AN APPROXIMATION IN LOCATION AND SIZE AND ARE SUBJECT TO CHANGE. CONTRACTOR MAY CONSIDER LIMITING DIRECTIONAL DRILL LENGTHS AND INCREASING NUMBER OF BORE PITS TO DECREASE IMPACTS ON RESIDENTS. CONTRACTOR MAY ADD BORE PITS AT OWN COST.
4. METER PITS MAY NEED TO BE REPLACED TO ACCOMMODATE LARGER SERVICE LINE SIZES. REFER TO CITY SPECIAL PROVISIONS FOR THIS WORK.
5. VERTICALLY DEFLECT AS NECESSARY TO MAINTAIN AN 18 INCH SEPARATION BETWEEN UTILITIES AT CROSSING LOCATIONS.

PROPOSED HATCHING

HMA, Repair

Know what's below. Call before you dig.

OHM
ARCHITECTS ENGINEERS PLANNERS
201 E Ellsworth St, Unit 100
Midland, MI 48640
P (989) 956-2020
OHM-ADVISORS.COM

REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM	VERT DATUM
----	0020200050	AH	AW	KB	SHIAWASSEE	OWOSSO	H: 1"=30' V: 1"=5'	NAD 83	NGVD 29

CITY OF OWOSSO – DWSRF PROJECT NO. 7458-01
2022 WATER MAIN REPLACEMENT
WATER MAIN PLAN SHEET

SHEET 12 OF 14

JOB BENCHMARK # 204
COTTON SPINDLE IN EAST FACE OF POWER POLE WEST OF CENTER ST BETWEEN HSE #1025 AND #1029
ELEV 742.88

JOB BENCHMARK # 205
COTTON SPINDLE IN EAST FACE OF POWER POLE WEST OF CENTER ST IN FRONT OF HSE #1221
ELEV 747.07

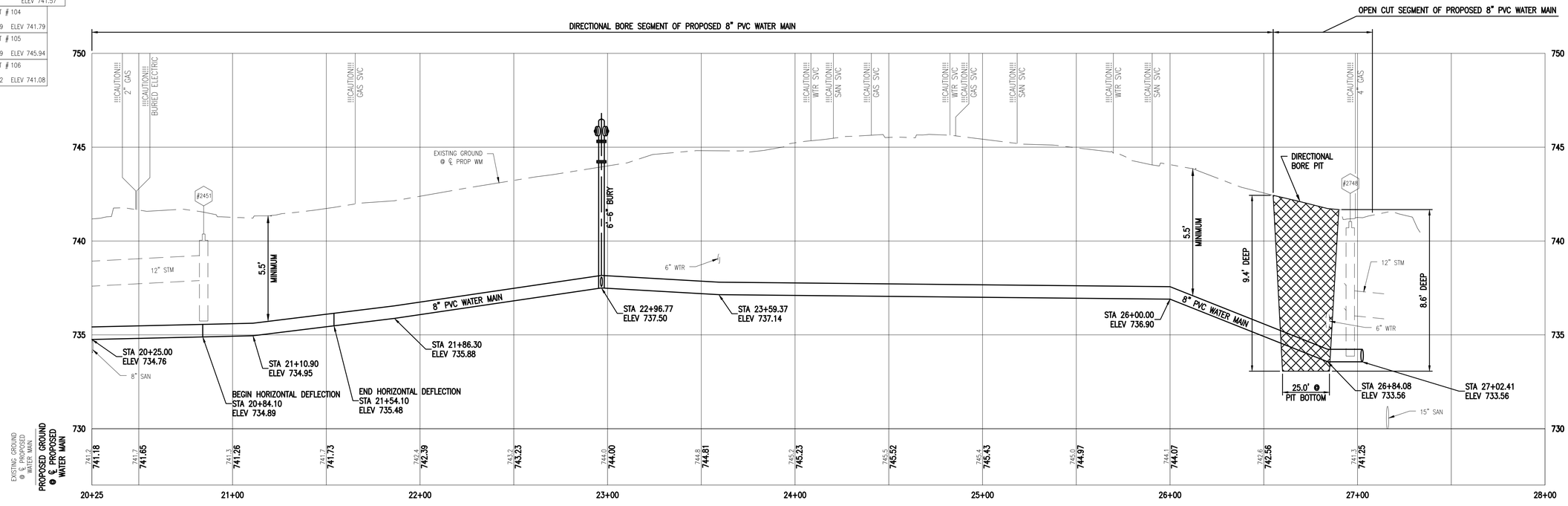
JOB BENCHMARK # 206
COTTON SPINDLE IN EAST FACE OF PP IN SW QUAD OF INTERSECTION OF CENTER ST AND W NORTH ST
ELEV 741.57

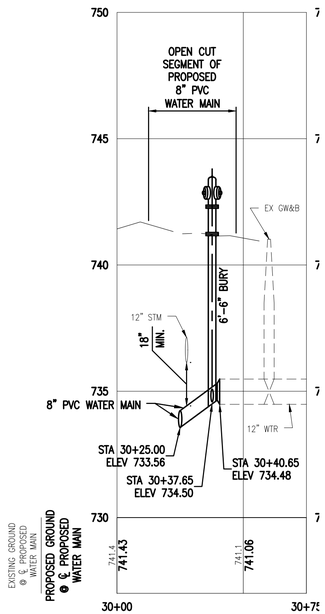
TRAVERSE POINT # 104
N 550538.551
E 13169582.239 ELEV 741.79

TRAVERSE POINT # 105
N 550915.387
E 13169616.479 ELEV 745.94

TRAVERSE POINT # 106
N 551155.839
E 13169585.392 ELEV 741.08

HORIZONTAL GRAPHIC SCALE: 1 inch = 30 feet
VERTICAL GRAPHIC SCALE: 1 inch = 3 feet





WATER MAIN APPURTENANCES			
ITEM	STATION	OFFSET	T/BOX OR BURY LINE
8"X6" HYD. TEE	22+96.77		
6" FIRE HYDRANT (6'-6" BURY)	22+96.77	6.0' R	744.10
8" 90° HOR. BEND	27+02.41 = 30+25.00		
8"X6" HYD. TEE	30+37.66		
6" FIRE HYDRANT (6'-6" BURY)	30+37.66	6.0' R	741.10
CONNECT TO EXISTING 12" WATER MAIN	30+40.66		

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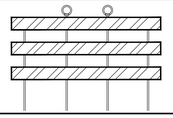
REVISIONS:

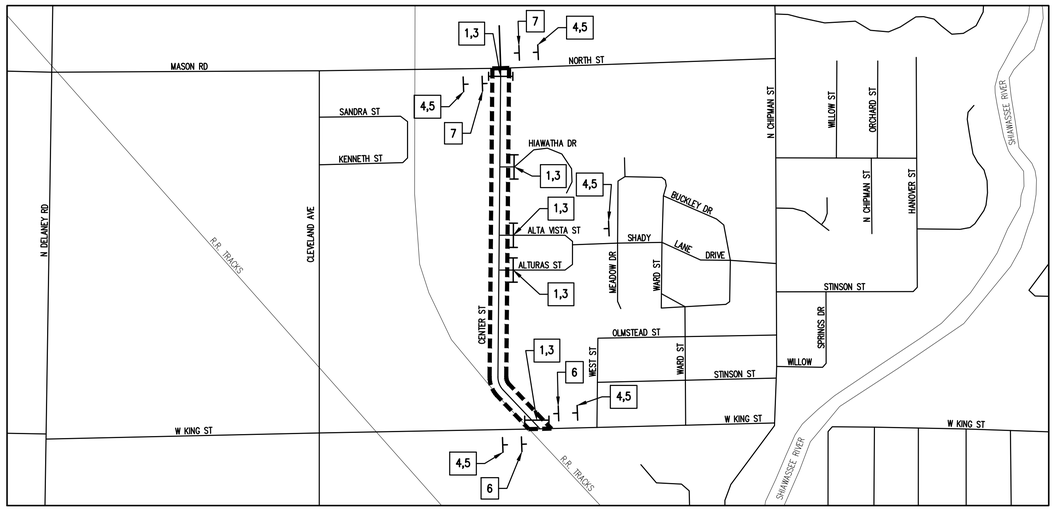
DATE: ---
PROJ NUMBER: 0020020050
ENG: AH
PROJ MGR: AH
CADD: KB
COUNTY: SHIAWASSEE
CITY/VILLAGE/TOWNSHIP: OWOSSO
SCALE: H: 1"=30' V: 1"=3'
HORIZ DATUM: NAD 83
VERT DATUM: NGVD 29

CITY OF OWOSSO - DWSRF PROJECT NO. 7458-01
2022 WATER MAIN REPLACEMENT
WATER MAIN PROFILE SHEET

SHEET 13 OF 14

SIGNING REQUIREMENTS

#	SIGN	SIGN DESIGNATION	SIZE	NO. REQ.
1.		TYPE III BARRICADE	LIGHTED	25
2.	ROAD CLOSED	R11-2	48 x 30	3
3.	ROAD CLOSED TO THRU TRAFFIC	R11-4	60 x 30	4
4.	ROAD WORK AHEAD	W20-1	48 X 48	4
5.	CENTER ST	SS-1	30 x 12	5
6.	CENTER STREET CLOSED TO THRU TRAFFIC @ KING STREET	SS-2	48 x 36	10
7.	CENTER STREET CLOSED TO THRU TRAFFIC @ NORTH STREET	SS-2	48 x 36	10



LOCATION MAP

N.T.S.

GENERAL NOTES:

ADVANCE WARNING SIGNS WILL BE STAKED BY THE CONTRACTOR AND REVIEWD BY THE ENGINEER PRIOR TO CONSTRUCTION.

ACCESS SHALL BE ALLOWED AT ALL DRIVEWAYS WITHIN THE CONSTRUCTION ZONE THROUGHOUT THE DURATION OF CONSTRUCTION.

CONTRACTOR SHALL USE Maintenance Gravel TO MAINTAIN ACCESS TO ALL RESIDENTIAL DRIVEWAYS.

SIGN SS-1, SS-2 SHALL FOLLOW W16-8P SIGN REQUIREMENTS AND SHALL HAVE AN ORANGE BACKGROUND.

ALL TEMPORARY TRAFFIC CONTROL SIGNS SHALL BE PLACED AT A DISTANCE "D", "B", AND "L" AS PER MDOT WORK ZONE TYPICAL M0020a.

CONTRACTOR SHALL FOLLOW MDOT 4110A-M-TR-NFW-2L MAINTAINING TRAFFIC TYPICAL FOR WORK WITHIN NORTH STREET AND KING STREET.

ALL TRAFFIC CONTROL DEVICES AND THEIR USAGE SHALL CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD), 2011 EDITION PART 6, THE 2020 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, AND AS SPECIFIED HEREIN.

LEGEND

- TEMPORARY SIGN
- TYPE III BARRICADE
- WORK ZONE

QUANTITIES THIS SHEET

TOTAL	UNIT	DESCRIPTION
25	Ea	Barricade, Type III, High Intensity, Double Sided, Lighted, Furn
25	Ea	Barricade, Type III, High Intensity, Double Sided, Lighted, Oper
2	Ea	Lighted Arrow, Type C, Furn
2	Ea	Lighted Arrow, Type C, Oper
1	LSUM	Minor Traf Devices
100	Ea	Plastic Drum, High Intensity, Furn
100	Ea	Plastic Drum, High Intensity, Oper
581	Sft	Sign, Type B, Temp, Prismatic, Furn
566	Sft	Sign, Type B, Temp, Prismatic, Oper
1	LSUM	Traf Regulator Control
24	Hr	Railroad Flag Person

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CITY OF OWOSSO - DWSRF PROJECT NO. 7458-01
2022 WATER MAIN REPLACEMENT

MAINTAINING TRAFFIC

SHEET 14 OF 14