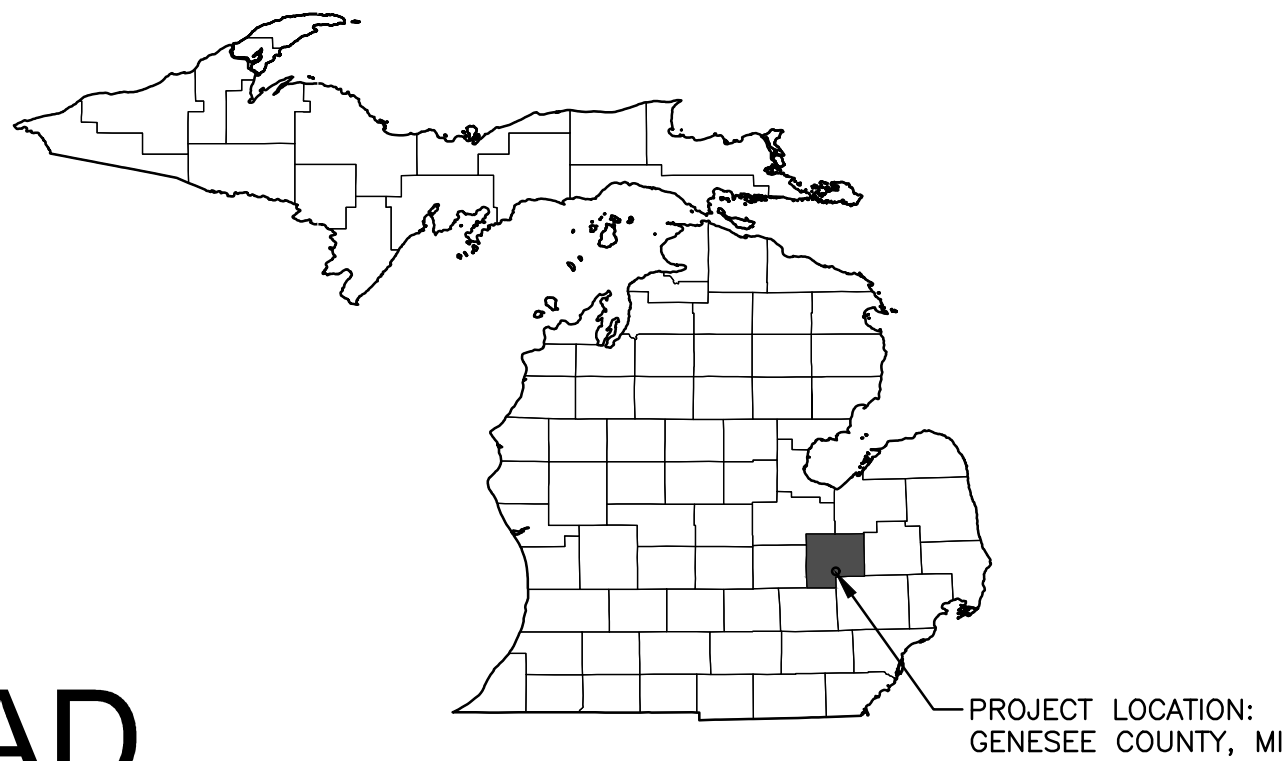
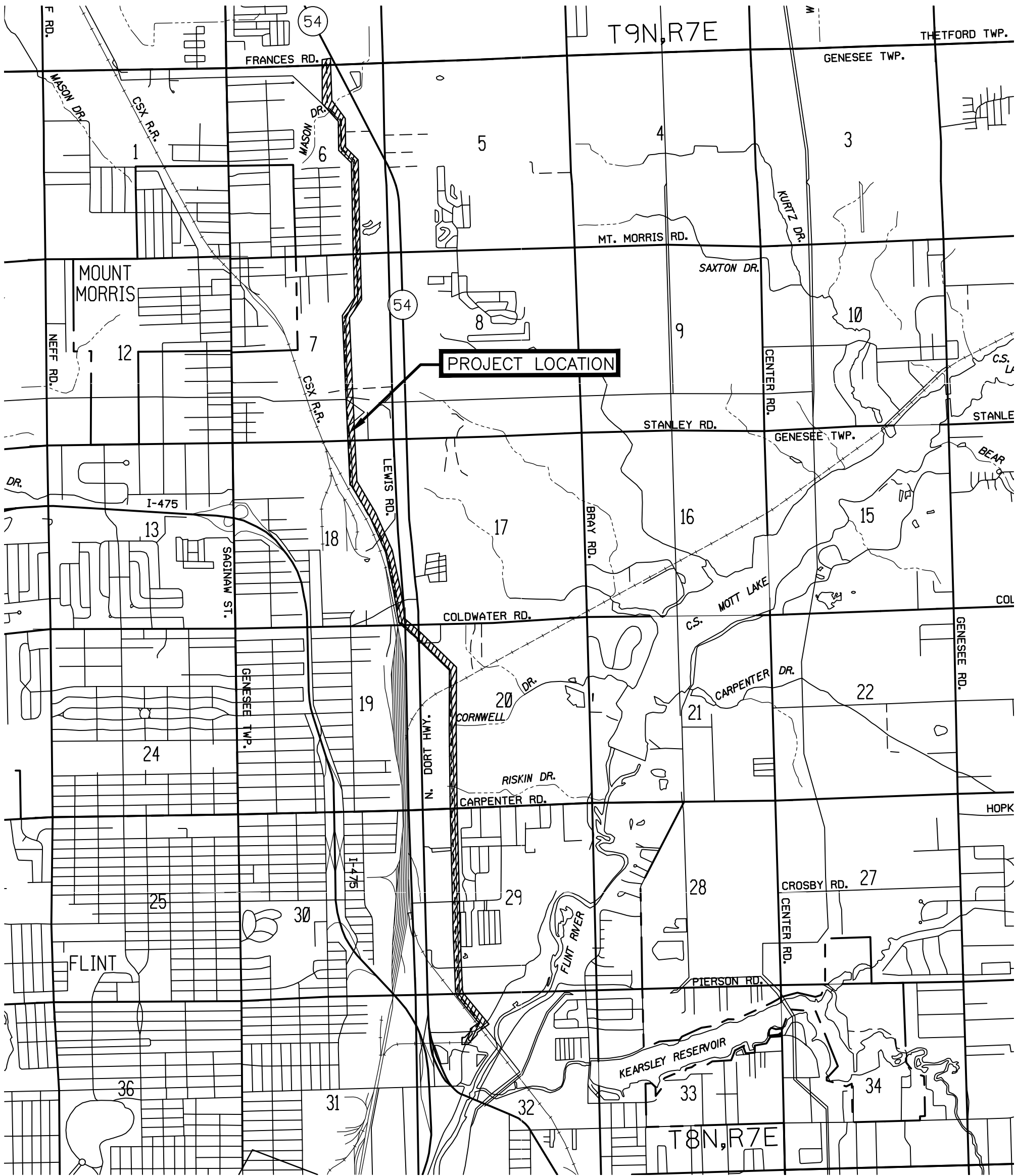


CONSTRUCTION PLANS
FOR
CITY OF FLINT
36" SECONDARY WATER SUPPLY
FROM CITY OF FLINT WATER TREATMENT PLANT
TO GCDC NORTH WATER MAIN LOOP AT FRANCES ROAD



KEY MAP
NOT TO SCALE



LOCATION MAP

NO SCALE
CITY OF FLINT AND GENESEE TWP
GENESEE COUNTY, MI

ISSUED FOR BID

2/10/2020

| |
|--|
| TELEPHONE AT&T ENGINEERING 54 NORTH MILL STREET, P.O. BOX 32 PONTIAC, MICHIGAN 48342 CONTACT: JEFF HEATH PHONE: 248.975.4588 |
| CABLE TV COMCAST CABLEVISION 6095 WALL STREET STERLING HEIGHTS, MI 48312 CONTACT: TOM DICKINSON PHONE: 586.883.7412 |
| RAILROAD CSX TRANSPORTATION INC. REAL ESTATE AND FACILITIES MANAGEMENT 500 WATER STREET, (J-180) JACKSONVILLE, FL 32202 CONTACT: ANN M JACKSON PHONE: 904.279.3953 |
| PETROLEUM BUCKEYE PARTNERS, L.P. CONTACT: CHRIS BETTS PHONE: 810.789.9180 OFFICE 313.549.1443 CELL Cbetts@buckeye.com |
| ELECTRIC CONSUMERS ENERGY – ELECTRIC 3201 EAST COURT STREET FLINT, MICHIGAN 48501 CONTACT: MARCEY CONN PHONE: 810.760.3506 |
| GAS CONSUMERS ENERGY 3201 EAST COURT STREET FLINT, MICHIGAN 48501 CONTACT: AARON PARKER PHONE: 810.760.3486 |
| CHARTER TOWNSHIP OF GENESEE 7244 N GENESEE ROAD PO BOX 215, GENESEE, MICHIGAN 48437 CONTACT: ROBERT ELLIS, DPW MANAGER PHONE: 810.640.2000 |
| BUS ROUTES FLINT COMMUNITY SCHOOLS 923 EAST KEARSLEY STREET FLINT, MI 48503 CONTACT: DERRICK LOPEZ, SUPERINTENDENT PHONE: 810.760.1000 |
| SOIL EROSION & SEDIMENTATION CONTROL GCDC-WWS G-4610 BEECHER ROAD FLINT, MI 48532 CONTACT: LYNNETTE MEINZ, ENGINEER PHONE: 810.732.7870 |
| CITY OF FLINT 702 WEST 12TH STREET TRANSPORTATION BUILDING FLINT, MI 48502 CONTACT: JOHN DALEY, DIRECTOR PHONE: 810.766.7343 |
| CITY OF FLINT WATER SERVICE CENTER 3310 EAST COURT STREET FLINT, MICHIGAN 48506 CONTACT: ROB BINCSIK PHONE: 810.766.7202 |
| CITY OF FLINT TRAFFIC ENGINEERING 702 WEST 12TH STREET FLINT, MI 48502 CONTACT: ROD MCGAHA PHONE: 810.766.7135 |
| BUS ROUTES MASS TRANSPORTATION AUTHORITY (MTA) 1401 SOUTH DORT HIGHWAY FLINT, MI 48503 CONTACT: EDGAR BENNING, GENERAL MANAGER PHONE: 810.767.6950 |
| MDOT – DAVISON TSC 9495 E POTTER RD DAVISON, MI 48423 CONTACT: EVAN HUIZENGA PHONE: 810.653.7470 |

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JOB NO.
COF1068.01F

SHEET
1




















































































































555 S. Saginaw Street, Suite 201
Flint, MI 48502
810.235.2555
www.wadetrिम.com


























































PREPARED UNDER THE SUPERVISION OF:

















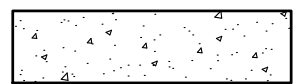










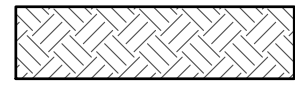

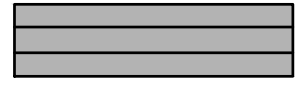

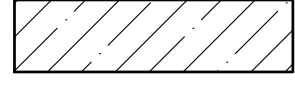

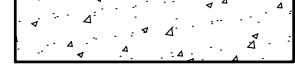
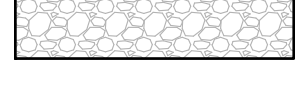
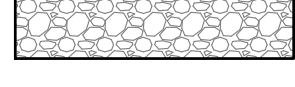


Know what's below.
Call before you dig.

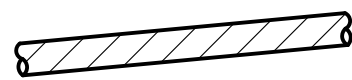
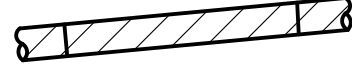

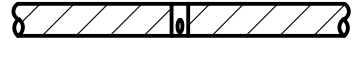

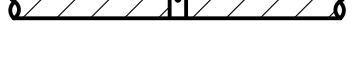



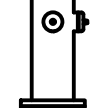
| EXISTING | PROPOSED |
|---|---|
| CABLE TV | |
| CABLE TV POLE |  |
| CABLE TV PEDESTAL |  |
| OVERHEAD CABLE TELEVISION | —CTV— CTV— |
| UNDERGROUND CABLE TELEVISION | —UCTV— UCTV— |
| | —CTV— CTV— |
| | —UCTV— UCTV— |
| ELECTRICAL | |
| CIRCUIT BREAKER PANEL |  |
| HANDHOLE |  |
| MANHOLE |  |
| OUTLET |  |
| PEDESTAL |  |
| TRANSFORMER BOX |  |
| METER |  |
| POWER POLE |  |
| TRANSFORMER TOWER |  |
| OVERHEAD ELECTRIC | —E— E— |
| UNDERGROUND ELECTRIC | —UE— UE— |
| | —E— E— |
| | —UE— UE— |
| GAS | |
| VENT |  |
| BLOW OFF |  |
| FILLER PIPE |  |
| MANHOLE |  |
| METER |  |
| STOP BOX |  |
| SHUTOFF VALVE |  |
| GAS | —G— G— |
| | —G— G— |
| MONUMENTS | |
| IRON (FOUND) |  |
| IRON (SET) |  |
| BENCH MARK |  |
| BRASS PLATE |  |
| CONCRETE NAIL |  |
| DRILL HOLE |  |
| GOVERNMENT CORNER |  |
| GPS MONUMENT |  |
| IRON PIPE |  |
| MONUMENT BOX |  |
| MONUMENT |  |
| MERE STONE |  |
| NGS MONUMENT |  |
| NAIL & TAG |  |
| PINCH IRON |  |
| PK NAIL |  |
| RAILROAD SPIKE |  |
| RIGHT-OF-WAY MARKER |  |
| SPIKE |  |
| SHIPS SPIKE |  |
| T-IRON |  |
| USGS MONUMENT |  |
| CROSS CUT |  |
| CROSS CUT IN MONUMENT |  |
| WOOD STAKE |  |
| |  |
| OVERHEAD UTILITIES | |
| DEADMAN ANCHOR |  |
| FLOOD LIGHT |  |
| GUY WIRE ANCHOR |  |
| GUY POLE |  |
| LAMP POLE |  |
| METAL LIGHT POLE |  |
| ORNAMENTAL LIGHT |  |
| POLE BOX |  |
| POWER & LIGHT POLE |  |
| POWER & TELEPHONE POLE |  |
| TELE, CTV, PWR & LIGHT POLE |  |
| TELE, CTV, & POWER POLE |  |
| TELE, & CTV POLE |  |
| TELE, CTV, & LIGHT POLE | |
| TELE, & LIGHT POLE | |
| TELE, POWER, & LIGHT POLE | |
| MONO POLE | |
| UTILITY POLE | |
| OVERHEAD CABLE TV & TELEPHONE | —CTV&T— |
| OVERHEAD ELECTRIC & CABLE TV | —E&CTV— |
| OVERHEAD ELECTRIC, CABLE TV AND TELEPHONE | —E&CTV&T— |

| EXISTING | PROPOSED |
|--------------------------------|--|
| SANITARY SEWER | |
| CLEAN OUT |  |
| PUMPSTATION MANHOLE |  |
| SANITARY MANHOLE |  |
| SEPTIC TANK |  |
| SEWER VENT |  |
| SEWER VALVE |  |
| FORCEMAIN | —FM— FM— |
| SANITARY SEWER (<24"Ø) | —FM— FM— |
| SANITARY SEWER (>24"Ø; scaled) | —FM— FM— |
| | —FM— FM— |
| SITE (MISCELLANEOUS) | |
| ABANDON ITEM |  |
| ACCESSIBLE SYMBOL |  |
| ADJUST ITEM |  |
| FINISH GRADE |  |
| FLOW ARROW |  |
| PARKING COUNT |  |
| RECONSTRUCT ITEM |  |
| RELOCATE ITEM |  |
| REMOVE ITEM |  |
| SLOPE LABEL |  |
| SPOT GRADE |  |
| FLOOD LIGHT |  |
| LAMP POLE |  |
| LIGHT POLE (SINGLE LAMP) |  |
| LIGHT POLE (DOUBLE LAMP 180°) |  |
| LIGHT POLE (DOUBLE LAMP 90°) |  |
| LIGHT POLE (THREE LAMP) |  |
| LIGHT POLE (FOUR LAMP) |  |
| ORNAMENTAL LIGHT POLE |  |
| METAL LIGHT POLE |  |
| STORM SEWER/DRAINAGE | |
| CATCH BASIN (ROUND GRATE) |  |
| CATCH BASIN (SQUARE GRATE) |  |
| CISTERN |  |
| BOX CULVERT |  |
| CULVERT HEADWALL |  |
| CULVERT END SECTION |  |
| DOWN SPOUT |  |
| ROUND INLET |  |
| SQUARE INLET |  |
| STORM MANHOLE |  |
| STORM SEWER STUB | —SS— SS— |
| DITCH CENTERLINE | —SS— SS— |
| STORM SEWER (<24"Ø) | —SS— SS— |
| STORM SEWER (>24"Ø; scaled) | —SS— SS— |
| | —SS— SS— |
| TELEPHONE | |
| TELEPHONE POLE |  |
| TELEPHONE MANHOLE |  |
| TELEPHONE PEDESTAL |  |
| COMMUNICATIONS HANDHOLE |  |
| FIRE CALL |  |
| POLICE CALL |  |
| PHONE BOOTH |  |
| OVERHEAD TELEPHONE | —T— T— |
| UNDERGROUND TELEPHONE | —UT— UT— |
| | —T— T— |
| | —UT— UT— |
| TOPOGRAPHIC FEATURES | |
| AIR CONDITION UNIT |  |
| ANTENNA |  |
| BASKET BALL POST |  |
| BATTERY BOX |  |
| BILLBOARD SIGN BASE |  |
| CAMERA TOWER |  |
| CLIMBING BARS |  |
| COLUMN |  |
| FENCE CORNER |  |
| FILL PORT |  |
| FLAG POLE |  |
| FOUNTAIN |  |
| GAS PUMP |  |
| GAS TANK (UNDERGROUND) | |
| HEAT PUMP | |

| EXISTING | PROPOSED |
|--|---|
| TOPOGRAPHIC FEATURES (CONT.) | |
| HIGHWAY DELINEATOR |  |
| LIGHT POLE BASE |  |
| MAIL BOX |  |
| MERRY-GO-ROUND |  |
| MONITORING WELL |  |
| NEWSPAPER BOX |  |
| OIL WELL |  |
| PARKING METER |  |
| PIER |  |
| PILING |  |
| POST (ROUND) |  |
| POST (SQUARE) |  |
| ROCK |  |
| RAILROAD SIGNAL |  |
| SATELLITE DISH |  |
| SIGN POST |  |
| SLIDE (SPIRAL) |  |
| SLIDE (STRAIGHT) |  |
| SLIDE END |  |
| SLIDE STEPS |  |
| SOIL BORING |  |
| SPRINKLER HEAD |  |
| SPRINKLER JUNCTION BOX |  |
| STATUE |  |
| SWING SET END |  |
| TETHER BALL POLE |  |
| TRAFFIC SIGNAL |  |
| UNDERGROUND MARKER |  |
| U/G MARKER CABLE |  |
| U/G MARKER ELECTRIC |  |
| U/G MARKER FIBER OPTIC |  |
| U/G MARKER GAS |  |
| U/G MARKER TELEPHONE |  |
| VOLLEY BALL POST |  |
| WOOD STAKE |  |
| UNDERGROUND UTILITIES | |
| UTILITY MANHOLE |  |
| FIBER OPTIC | —FO— FO— |
| OIL | —OIL— OIL— |
| UNDERGROUND CTV & TELEPHONE | —UCTV&T— |
| UNDERGROUND ELEC. & CABLE TV | —UE&CTV— |
| UNDERGROUND ELEC. & TELEPHONE | —UE&T— |
| UNDERGROUND ELECTRIC, CABLE TV AND TELEPHONE | —UE&CTV&T— |
| VEGETATION | |
| CONIFEROUS BUSH |  |
| CONIFEROUS TREE |  |
| DECIDUOUS BUSH |  |
| DECIDUOUS TREE |  |
| MULTI-STEM CONIFEROUS TREE |  |
| MULTI-STEM DECIDUOUS TREE |  |
| STUMP |  |
| BRUSH LINE |  |
| EDGE OF WOODS |  |
| HEDGE |  |
| TREE ROW |  |
| WATER (DOMESTIC) | |
| 45° BEND |  |
| AIR RELEASE VALVE |  |
| BACKFLOW PREVENTER |  |
| BLOW-OFF VALVE |  |
| FAUCET |  |
| FIRE DEPARTMENT CONNECTION |  |
| FIRE HYDRANT |  |
| ACCESS MANHOLE |  |
| GATE VALVE WITH OFFSET OPERATOR |  |
| CORROSION TEST STATION |  |

| EXISTING | PROPOSED |
|-------------------------------------|--|
| WATER (DOMESTIC) (CONT.) | |
| GATE VALVE & BOX |  |
| GATE VALVE & WELL |  |
| GATE VALVE & WELL (DETROIT) |  |
| INDICATOR VALVE POST |  |
| METER |  |
| METER PIT |  |
| METER |  |
| METER PIT |  |
| VALVE |  |
| WATER LINE STUB |  |
| WATER TOWER BASE |  |
| WELL |  |
| SHUT OFF VALVE |  |
| DOMESTIC WATER (<24"Ø) | —WD— WD— |
| DOMESTIC WATER (>24"Ø; scaled) | —WD— WD— |
| | —WD— WD— |
| WATER (MISC.) | |
| RECLAIM WATER GATE VALVE |  |
| SPRINKLER HEAD |  |
| SPRINKLER JUNCTION BOX |  |
| RECLAIM WATER | —REC— REC— |
| WATER MAIN BORE & JACK | —REC— REC— |
| | —REC— REC— |
| LINE WORK | |
| BOUNDARY LINE | —BL— BL— |
| BUILDING | —BL— BL— |
| BUILDING SETBACK | —BL— BL— |
| CHAIN LINK FENCE | —CLF— CLF— |
| CONTOUR (MAJOR) | —595— 595— |
| CONTOUR (MINOR) | —F— F— |
| FIELD | —FLP— FLP— |
| FLOODPLAIN | —GD— GD— |
| GARDEN | —LS— LS— |
| GRAVEL | —LS— LS— |
| GUARDRAIL | —LS— LS— |
| LANDSCAPE | —LS— LS— |
| ORNAMENTAL FENCE | —LS— LS— |
| PROPERTY LINE | —LS— LS— |
| RAILROAD TRACK CENTERLINE | —R/W— R/W— |
| RIGHT OF WAY | —R/W— R/W— |
| SECTION LINE | —R/W— R/W— |
| SHORE LINE | —R/W— R/W— |
| TO BE DEMOLISHED | —R/W— R/W— |
| TOP OF BANK | —R/W— R/W— |
| UTILITY/DRAINAGE EASEMENT | —R/W— R/W— |
| WALL | —R/W— R/W— |
| WETLAND | —R/W— R/W— |
| WOOD FENCE | —R/W— R/W— |
| PATTERNS (PLAN) | |
| CONCRETE |  |
| PAVEMENT |  |
| HEAVY DUTY PAVEMENT |  |
| CRUSH AND SHAPE AND 2" HMA PAVEMENT |  |
| ADA DETECTABLE WARNING |  |
| ADA RAMP |  |
| CONCRETE REMOVAL |  |
| PAVEMENT REMOVAL |  |
| WETLAND |  |

| EXISTING | PROPOSED |
|---|---|
| <u>PATTERNS (TYPICAL CROSS SECTIONS)</u> | |
| EARTH |  |
| HMA PAVEMENT |   |
| CRUSHED AND SHAPED HMA PAVEMENT |   |
| CONCRETE |   |
| GRAVEL/AGGREGATE |   |
| <u>MISCELLANEOUS</u> | |
| TAX ID NUMBER | 120-033-400-010-01 |
| HOUSE NUMBER | 9022 FISHER RD |
| SOIL EROSION KEY NOTE |  |
| SILT FENCE |  |
| STATIONING | 6+00 , , , 7+00 |
| TEMPORARY WETLAND IMPACT REFER TO CONTRACT DOCUMENTS | APPROX. WETLAND BOUNDARY (NO. 36.1) |

| EXISTING | PROPOSED |
|-------------------------------|---|
| <u>CONSTRUCTION PROFILE</u> | |
| WATER MAIN |  |
| WATER MAIN, DIRECTIONAL DRILL |  |
| WATER MAIN, JACK & BORE |  |
| BLOWOFF HYDRANT TEE |  |
| HYDRANT TEE (STANDARD) |  |
| AIR RELEASE HYDRANT TEE |  |
| GATE VALVE |  |
| ACCESS MANHOLE |  |
| AIR RELEASE VALVE TEE |  |
| FIRE HYDRANT IN PROFILE |  |

PROJECT MANAGER: JASON K. KENYON, PE
FIELD BOOK INFORMATION:
C:\PW_WORK2\00948736\GDT-PLTS-DETAILS-COF.DWG - CITY OF FLINT NOTE SHEET - PLOTTED 2/7/2020 10:07 AM BY RUGGLES, TIMOTHY

- PROJECT MANAGER: Jason K. Kenyon, PE
C:\PW_WORK2\00948736\GDT-PLTS-DE-

- PROJECT MANAGER: Jason K. Kenyon, PE
C:\PW_WORK2\00948736\GDT-PLTS-DE-

PROJECT MANAGER: JASON K. KENYON, PE
FIELD BOOK INFORMATION:
C:\PW_WORK2\00948736\GDT-PLTS-DETAILS-COF.DWG - CITY OF FLINT NOTE SHEET - PLOTTED 2/7/2020 10:07 AM BY RUGGLES, TIMOTHY

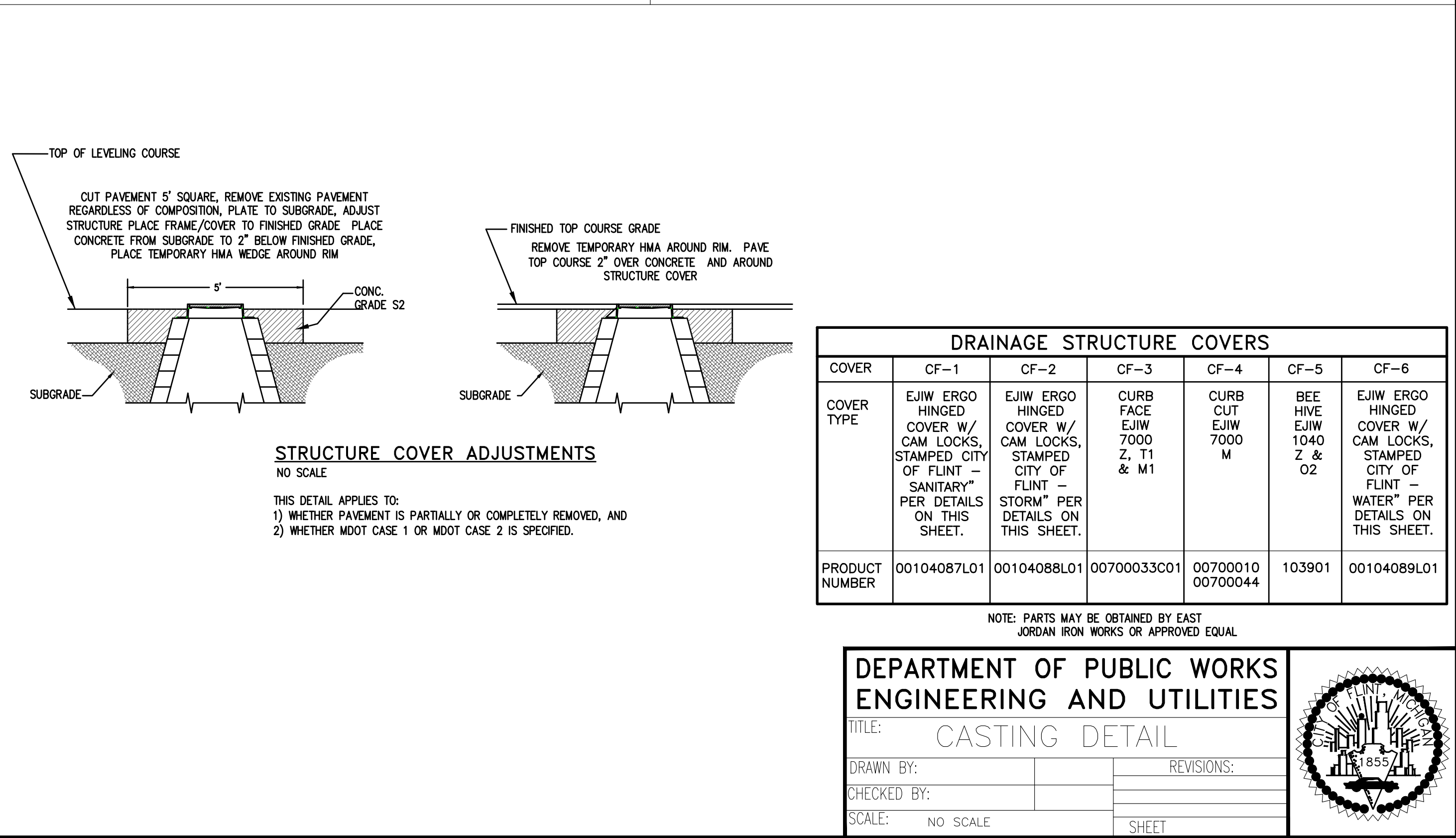
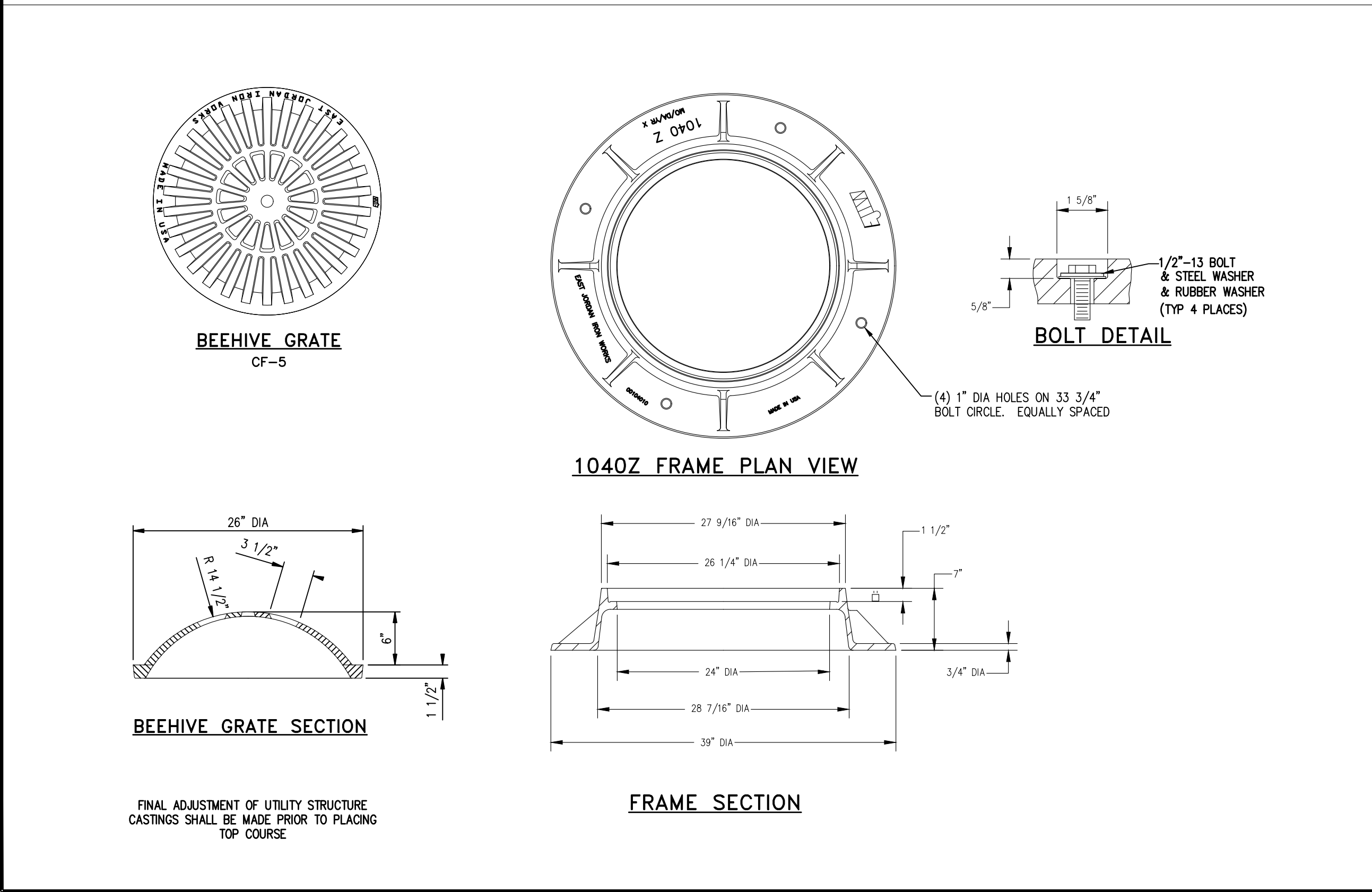
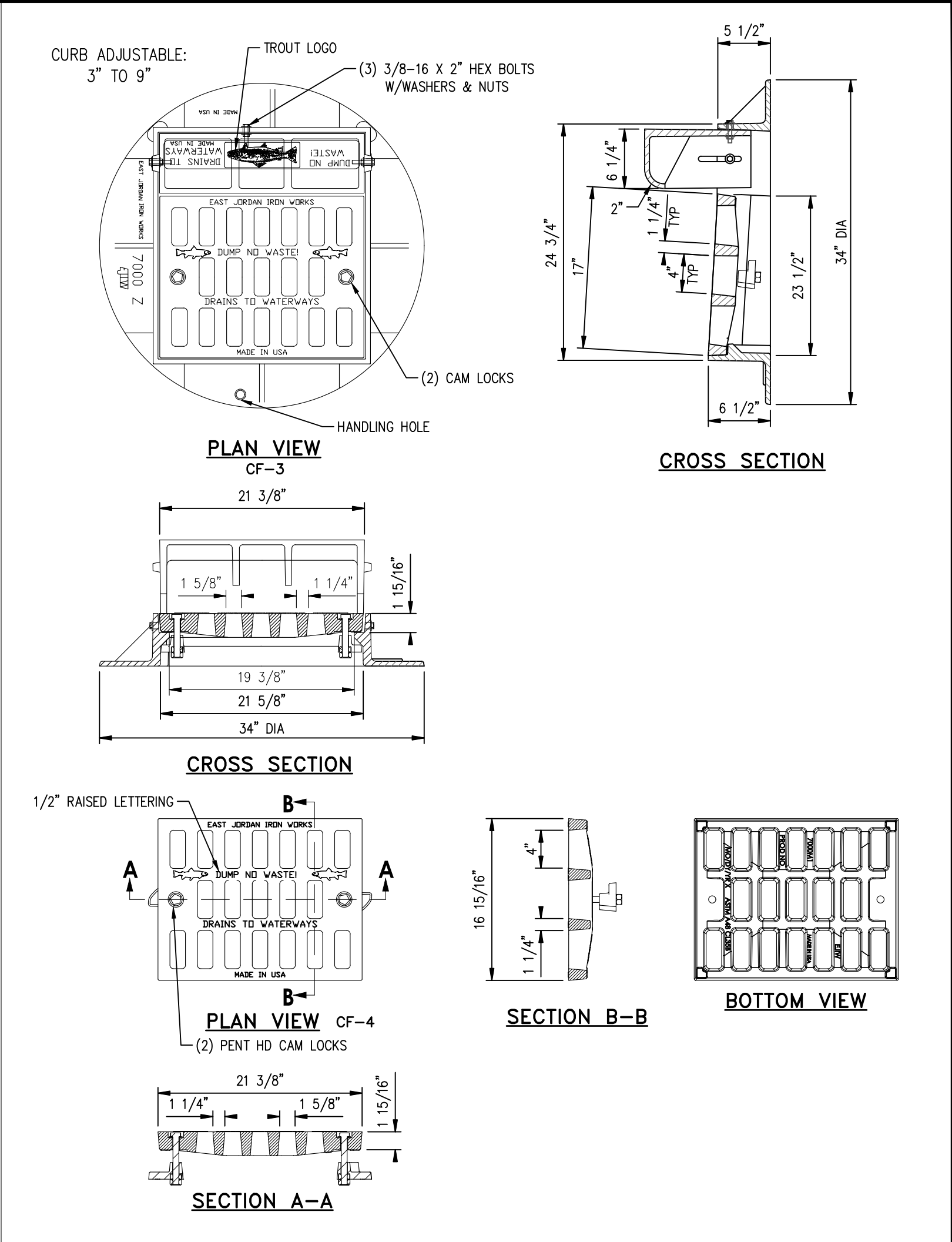
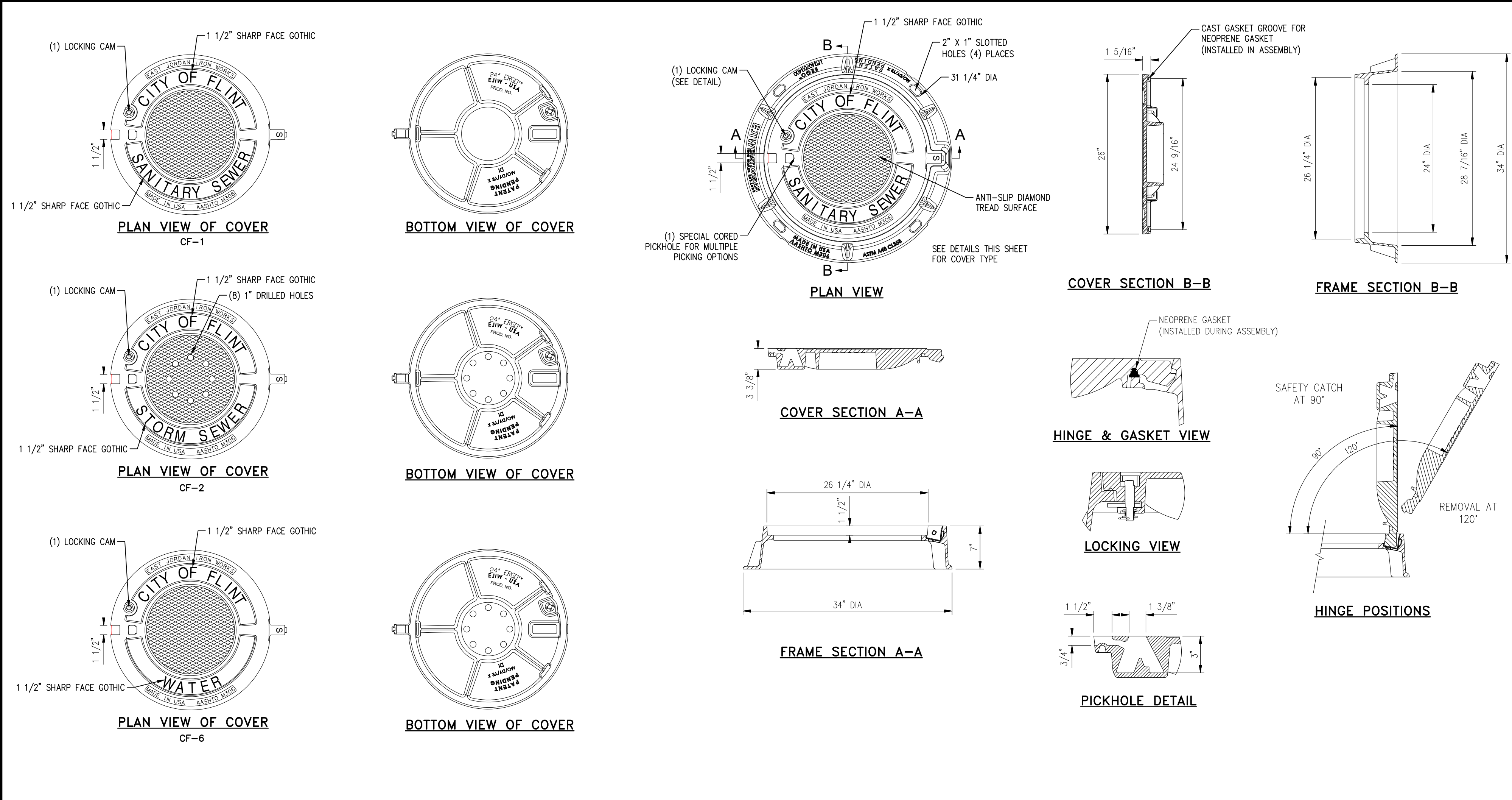
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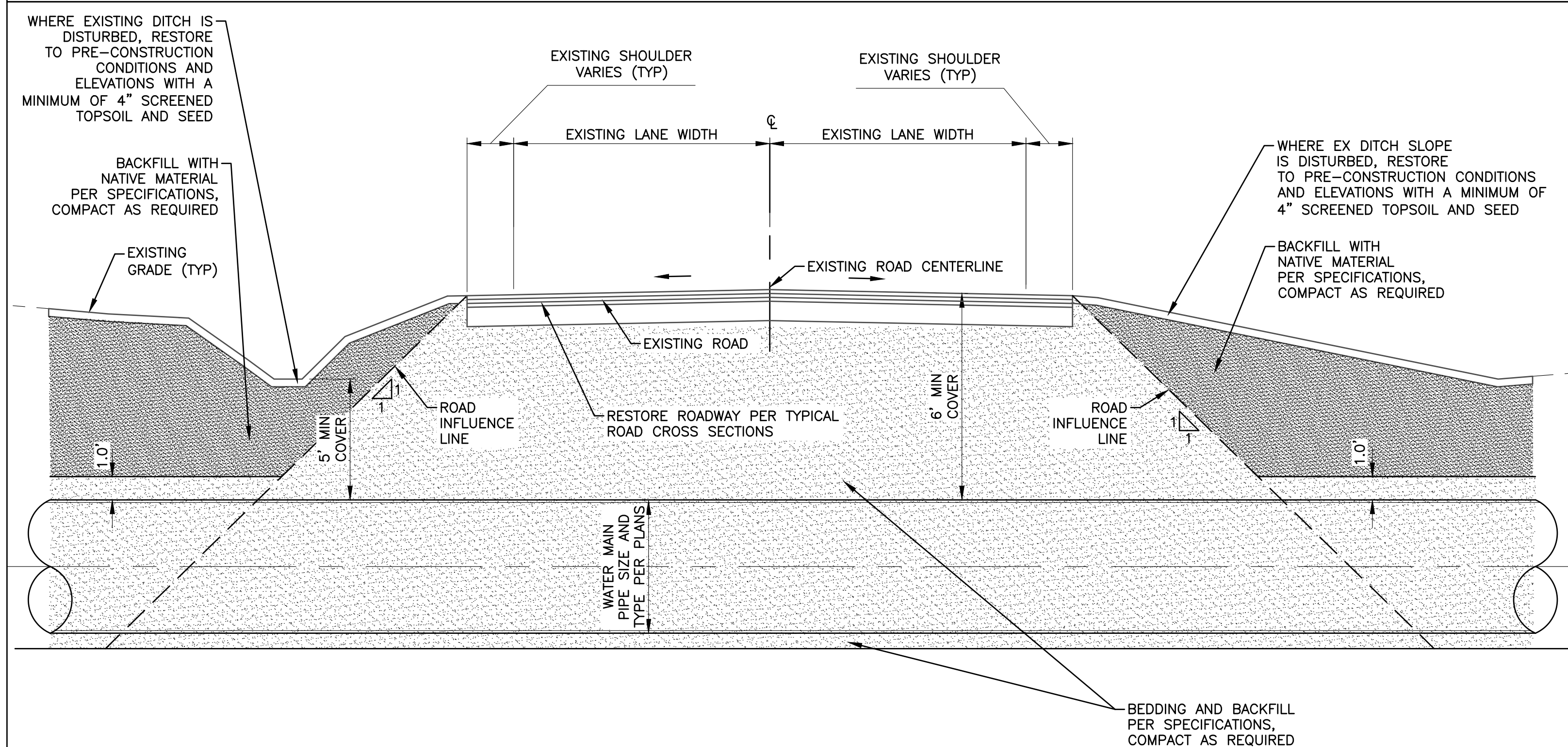
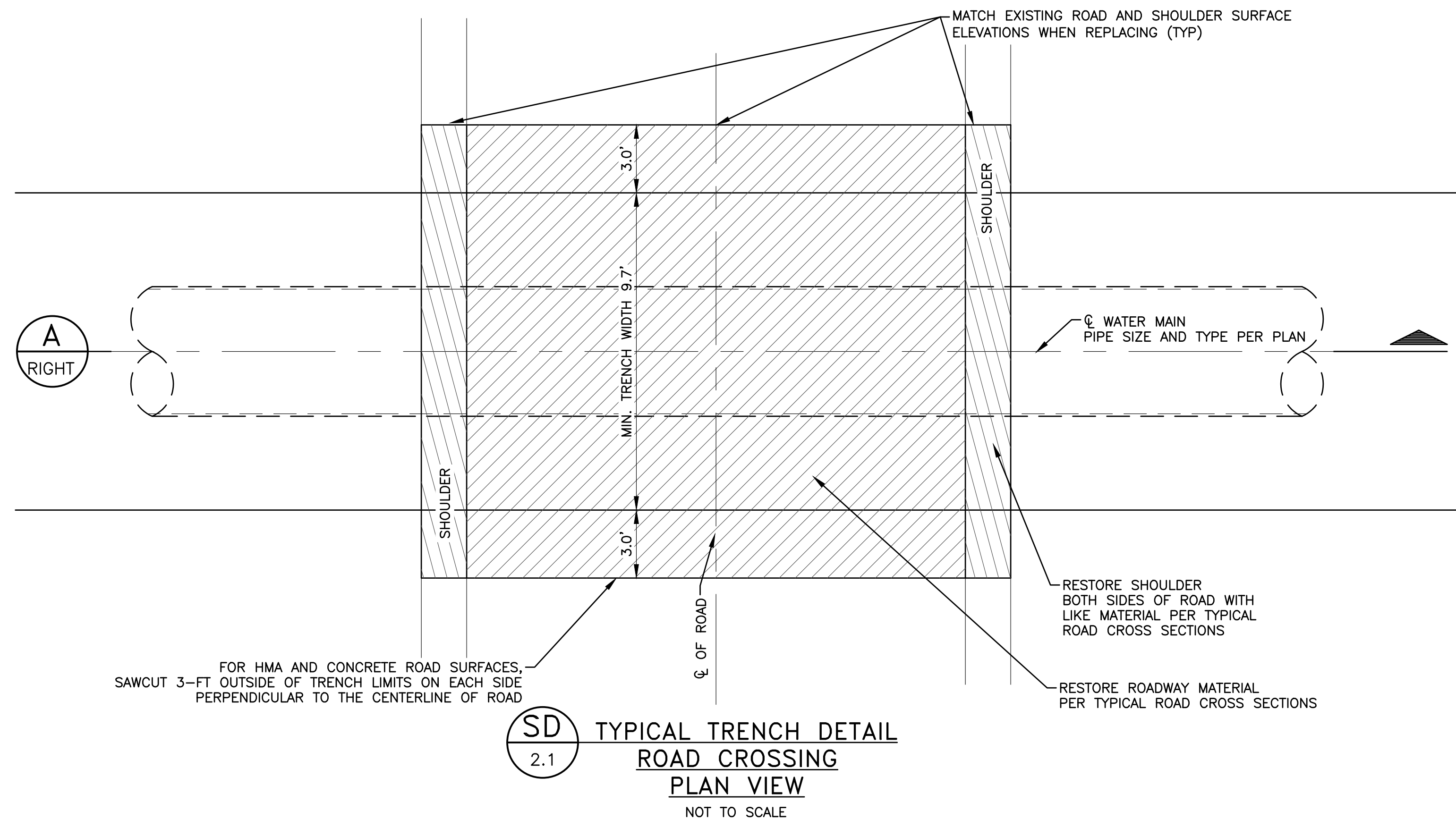
PROJECT MANAGER: Jason K. Kenyon, PE
C:\PW_WORK2\00948736\GDT-PLTS-DE-

- PROJECT MANAGER: Jason K. Kenyon, PE
C:\PW_WORK2\00948736\GDT-PLTS-DE-

3-26-09

PROJECT MANAGER: Jason R. Karpov, PE
C:\PWL\WORK\2\00948736\G01-PLTS-DETAILS-COF.DWG - CITY OF FLINT DETAILS - COF.DWG - PLOTTED 2/7/2020 10:07 AM BY RUGGLES, TIMOTHY





SD
2.1A

TYPICAL TRENCH DETAIL
ROAD CROSSING

SECTION A
LEFT

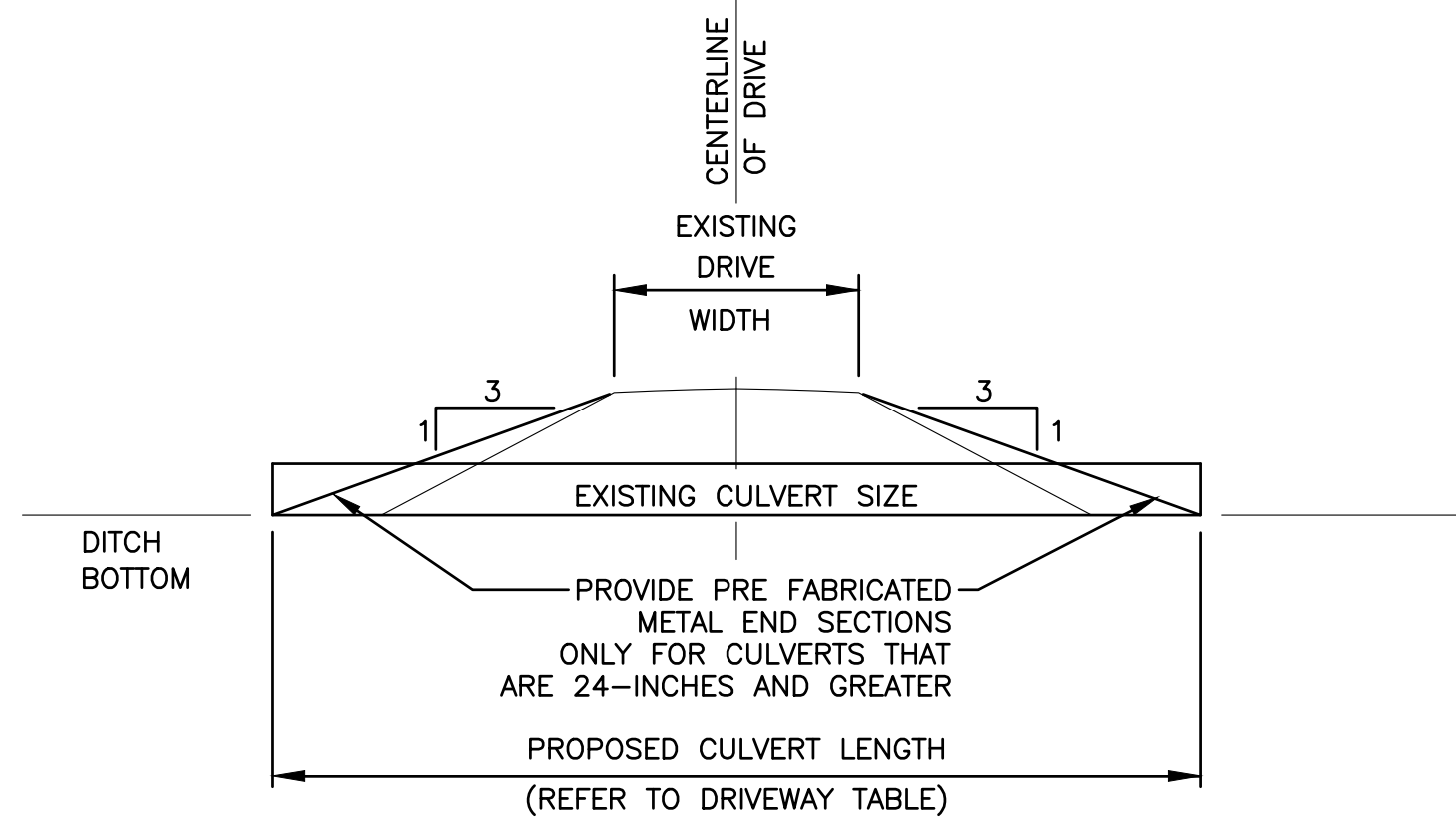
NOT TO SCALE

NOTES

1. TRENCH SHALL BE SHORED WITH TRENCH BOX OR OTHER MEANS PER MIOSHA GUIDELINES.
2. CONTRACTOR SHALL LIMIT DISTURBANCE OF EXISTING SITE.

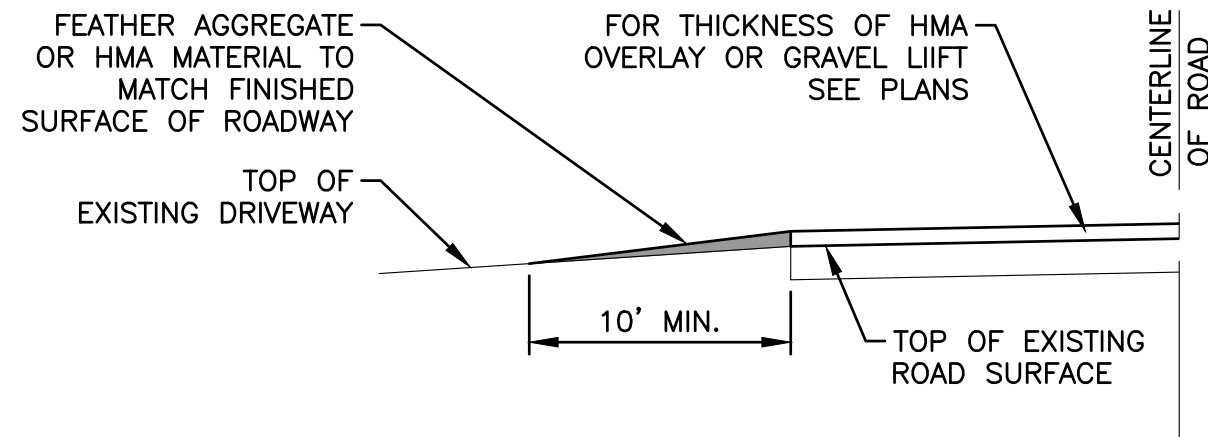
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PROJECT: MANAGER: JESSA B. KAYSER, PE
C:\PW\WORK\03048736_031-FLTS--COUNTYDETAILS.DWG -- CD--2 -- PLOTTED 2/7/2023 10:08 AM BY: RUGGLES, TIMOTHY



CULVERT REPLACEMENT DETAIL – DRIVEWAYS
NOT TO SCALE

NOTE: DRIVEWAY CULVERTS SHALL BE PLACED AT FINAL DITCH GRADES. DITCH CLEANING IN AREAS WHERE DITCH IS DISTURBED BY CONSTRUCTION OR DESIGNATED ON THE PLANS, SHALL BE CLEANED TO PROVIDE POSITIVE DRAINAGE. CONTRACTOR SHALL NOTIFY ENGINEER OF PROPOSED METHOD TO RESTORE DITCH.



DRIVEWAY FEATHERING DETAIL
NOT TO SCALE

RESIDENTIAL\FIELD\ACCESSWAY DRIVES:

ASPHALT:
SURFACE COURSE: 2" HMA 13A AT 220 LBS/SY
BASE COURSE: 2" HMA MIX 13A AT 220 LBS/SY
SUBGRADE: A5 COMPACTED SAND BACKFILL PER NOTE 7, TOP 12" SHALL BE MDOT 22A COMPACTED LIMESTONE

CONCRETE:
SURFACE COURSE: 6" CONCRETE P-NC
BASE COURSE: 8" A5 COMPACTED SAND PER NOTE 7

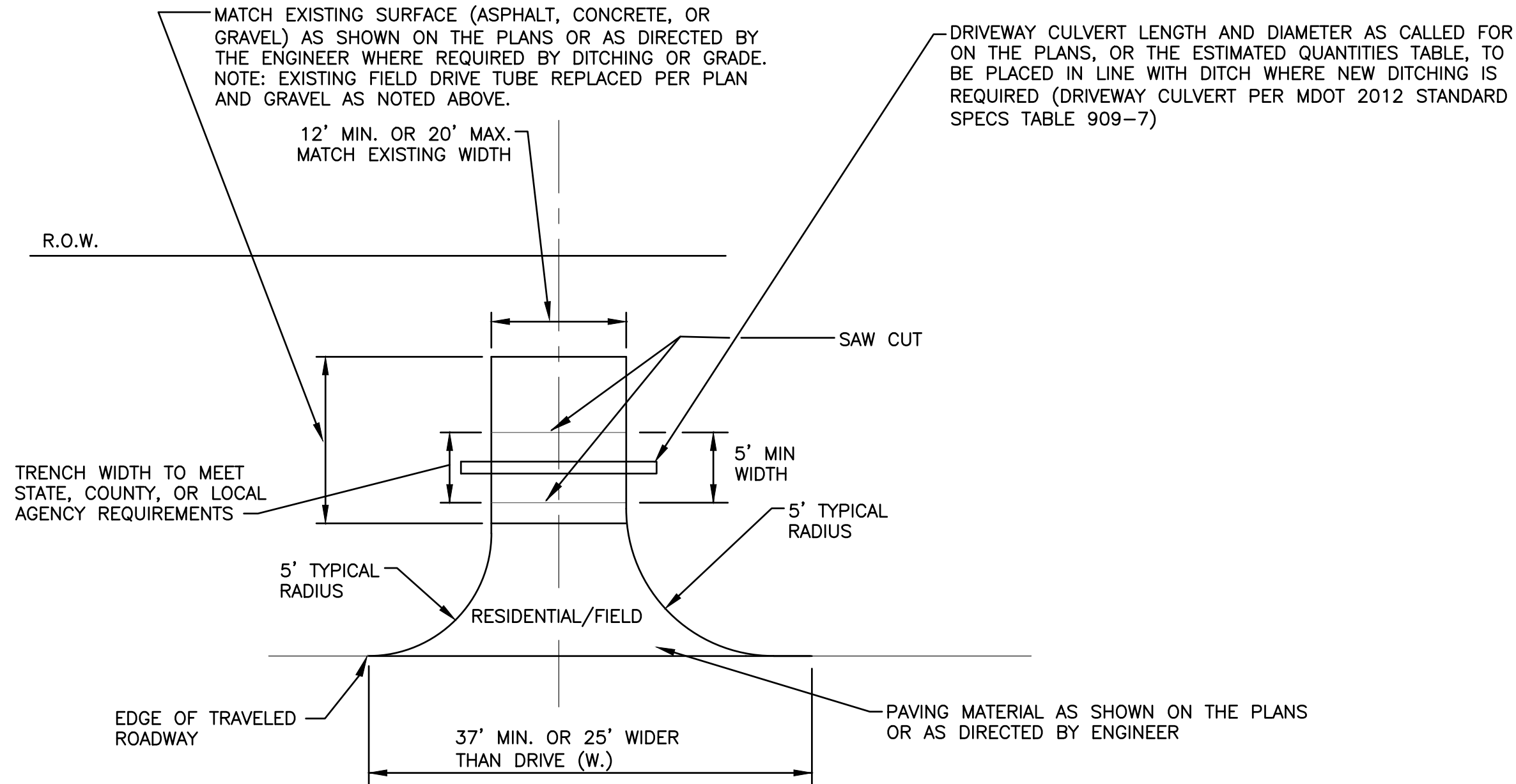
GRAVEL:
SURFACE COURSE: 8" A3 COMPACTED LIMESTONE
SUBGRADE: A5 COMPACTED SAND BACKFILL PER NOTE 7

COMMERCIAL DRIVES:

ASPHALT:
SURFACE COURSE: 2" HMA 13A AT 220 LBS/SY
BASE COURSE: 4" HMA 13A 2 LIFTS AT 440 LBS/SY
SUBGRADE: A5 COMPACTED SAND BACKFILL PER NOTE 7, TOP 12" SHALL BE MDOT 22A COMPACTED LIMESTONE

CONCRETE:
SURFACE COURSE: 8" CONCRETE P-NC
BASE COURSE: 12" A5 COMPACTED SAND PER NOTE 7

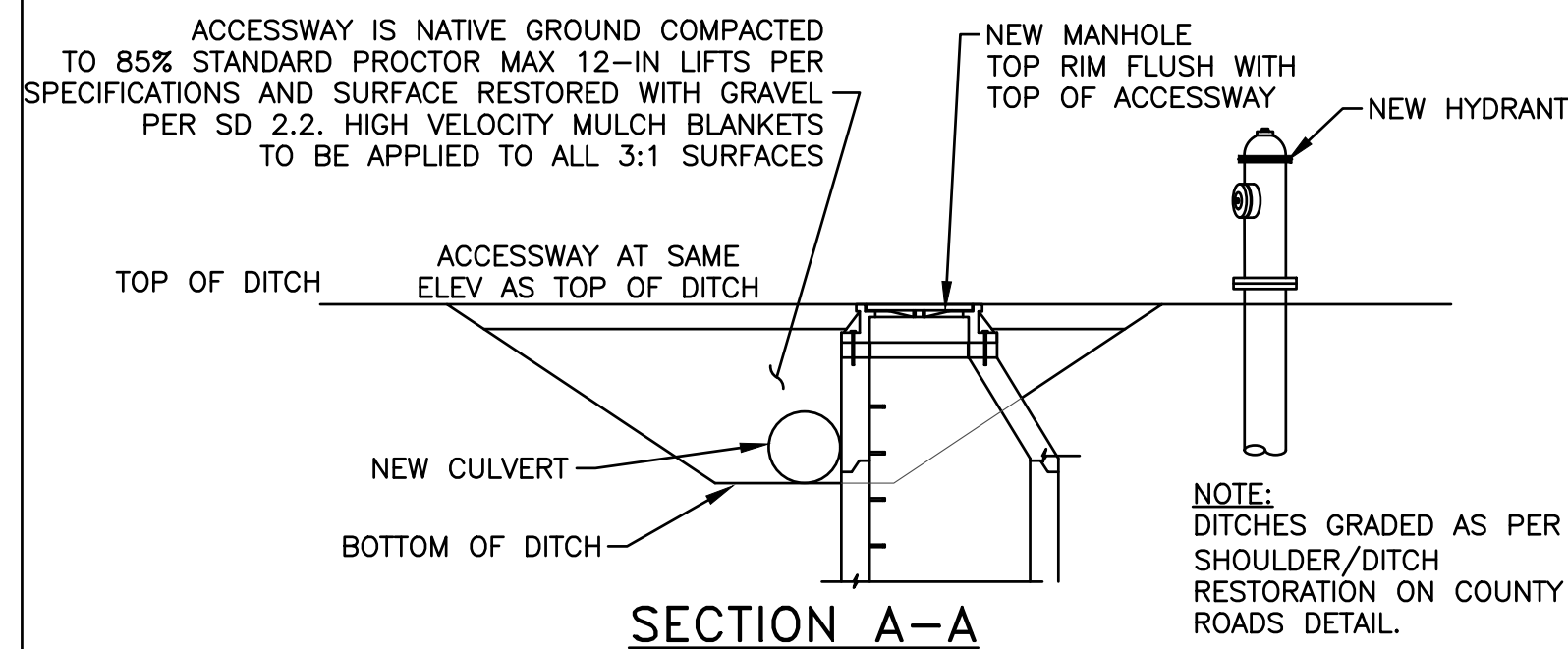
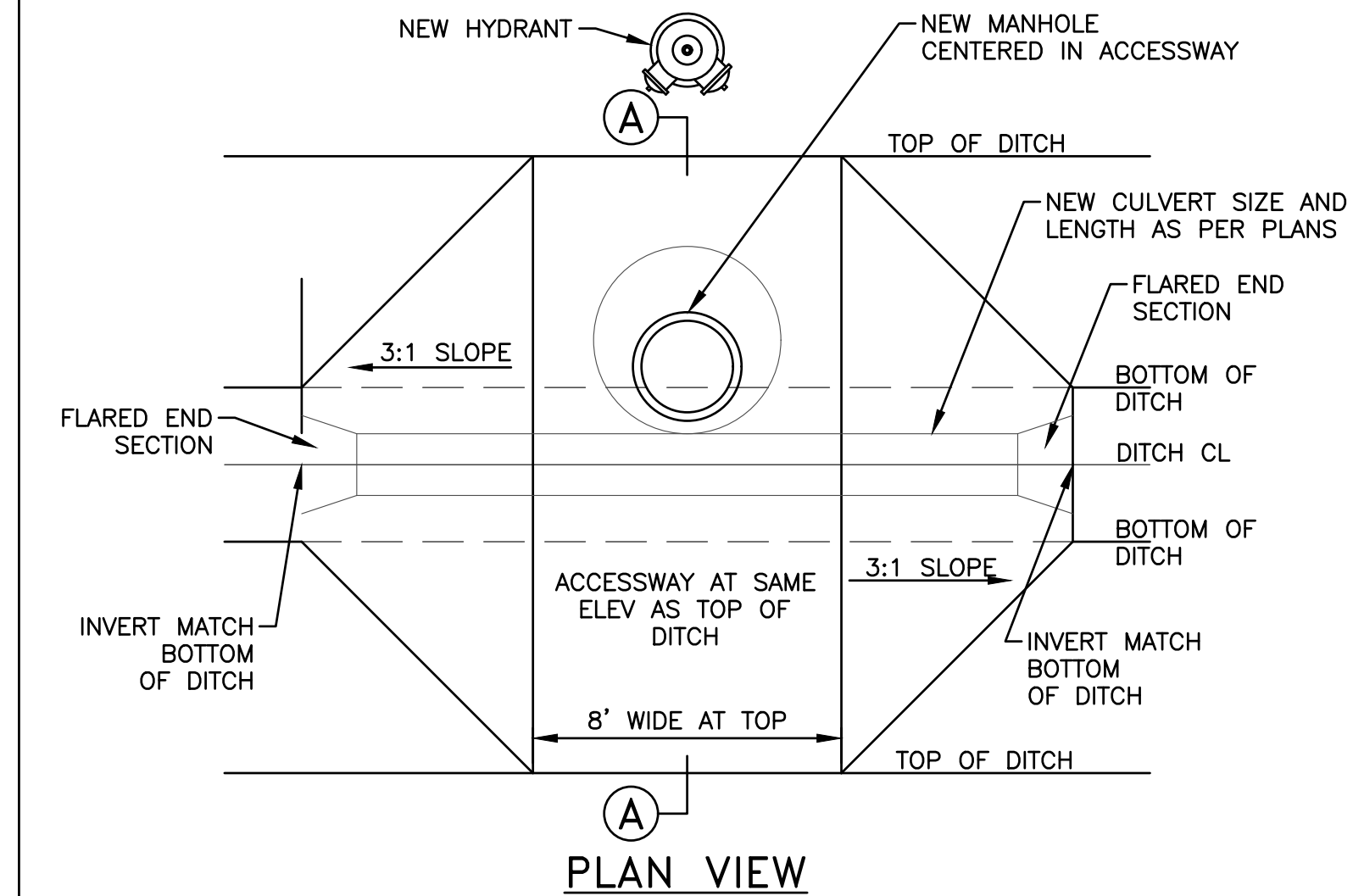
GRAVEL:
SURFACE COURSE: 12" A3 COMPACTED LIMESTONE
SUBGRADE: A5 COMPACTED SAND BACKFILL PER NOTE 7



SD 2.2 CULVERT AND DRIVEWAY REPLACEMENT DETAIL
NOT TO SCALE

NOTES:

1. TYPE OF PAVING MATERIAL (ASPHALT, CONCRETE, OR GRAVEL) TO BE USED SHALL MATCH EXISTING ON THE PLANS, UNLESS DIRECTED OTHERWISE BY ENGINEER.
2. CONTRACTOR SHALL REMOVE CONCRETE DRIVE TO THE NEXT JOINT IF JOINT IS WITHIN 5–FT OF A PROPOSED SAW CUT.
3. REPLACE EXISTING DRIVE AS INDICATED ON THE PLANS OR AS DIRECTED BY ENGINEER.
4. CONTRACTOR SHALL NEATLY SAW CUT ALL EXISTING PAVEMENT PRIOR TO PLACING NEW APPROACH ADJACENT TO EXISTING PAVEMENT.
5. IF SIDEWALK REMOVAL IS NECESSARY FOR PIPELINE CONSTRUCTION, THE SIDEWALK SHALL BE REPLACED TO THE SAME WIDTH AND SAME LOCATION AS EXISTING. THE THICKNESS SHALL MATCH EXISTING OR AS CALLED FOR IN THE SPECIFICATIONS, WHICHEVER IS GREATER.
6. THE BANKS OF ALL DRIVEWAYS AND CROSS ROAD CULVERTS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH MULCH BLANKETS FOR THE WIDTH OF THE DISTURBED TRENCH, FROM THE TOP OF THE BANK TO THE BOTTOM AND SIDES OF THE ROADSIDE DITCH. THIS MULCH BLANKET SHALL ALSO EXTEND A MINIMUM OF 10–FT DOWNSTREAM ALONG THE ROADSIDE DITCH FROM THE DOWNSTREAM END OF THE CULVERT. SEE SOIL EROSION DETAIL 6 FOR ADDITIONAL INFORMATION.
7. MDOT CLASS II AND IIA SAND BACKFILL SHALL BE COMPACTED TO 95% STANDARD PROCTOR, MAXIMUM 12–IN LIFTS
8. CURB AND GUTTER SHALL BE REPLACED IF IT EXISTS. CURB AND GUTTER SHALL MATCH THE SAME TYPE AS EXISTING.



SD 3.4 MANHOLE OR HYDRANT ACCESSWAY
NOT TO SCALE

555 S. Saginaw Street, Suite 201
Flint, MI 48502
www.wadetrिम.com



CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
DETAIL SHEET 4


ISSUED FOR: DATE: BY:

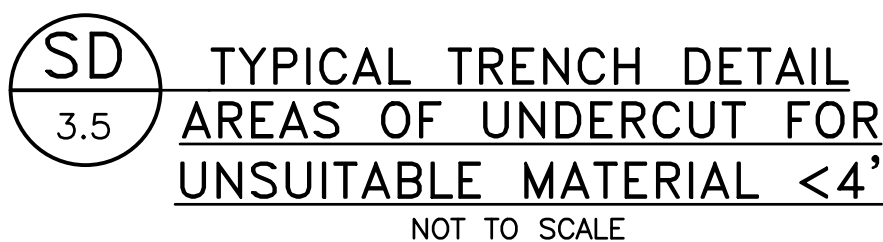
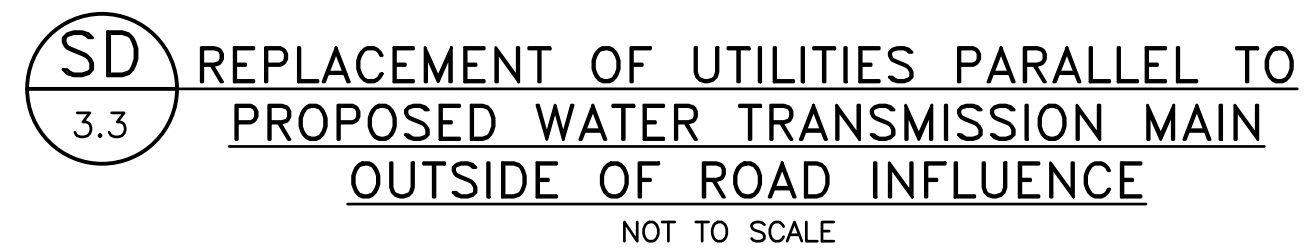
JOB NO.
COF1068.01F

SHEET

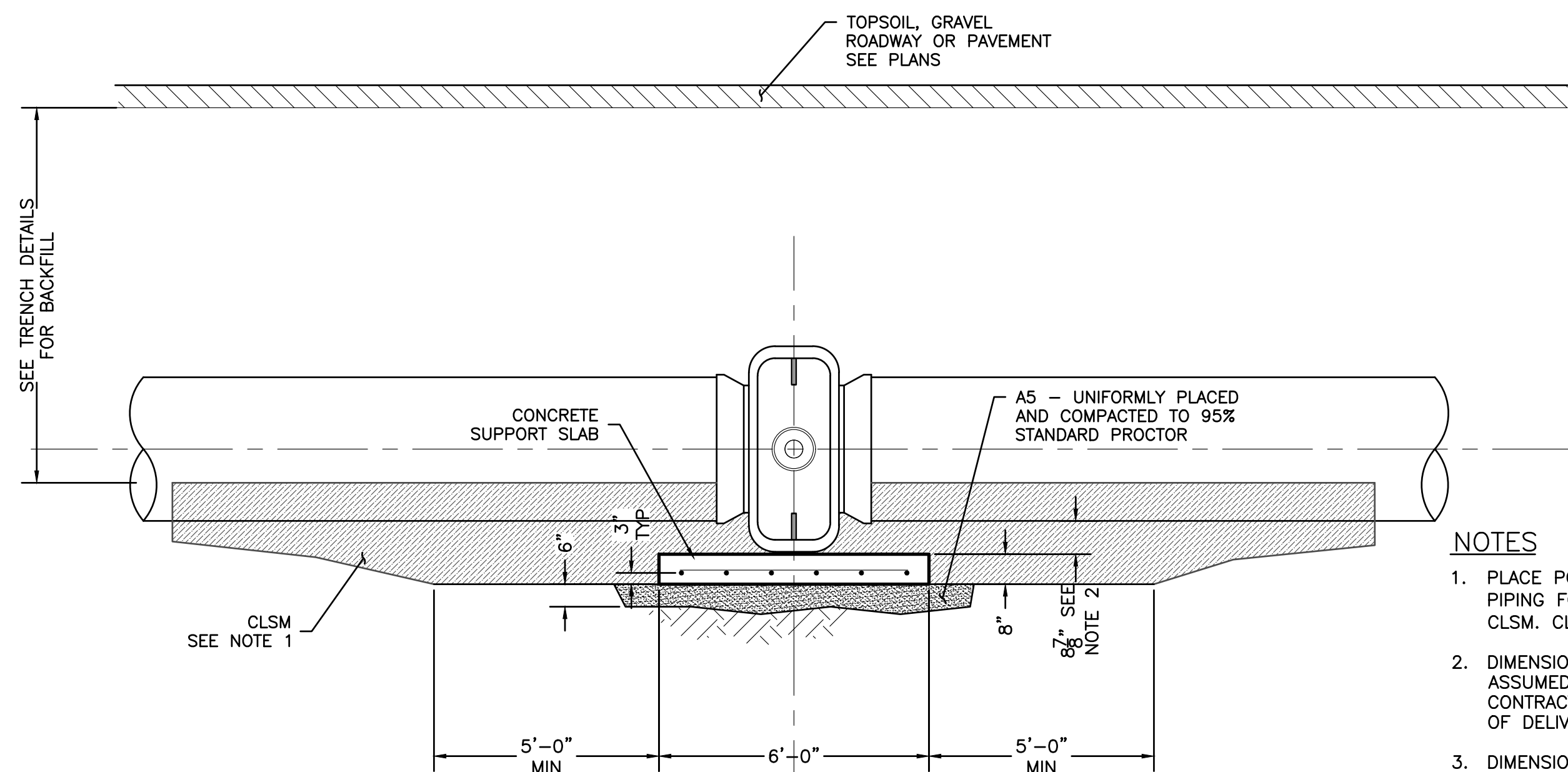
8




 6"-36" PRESSURE PIPE
BEDDING AND BACKFILL
IN GREENBELT AREAS
OUTSIDE THE INFLUENCE
OF THE ROAD
 NOT TO SCALE



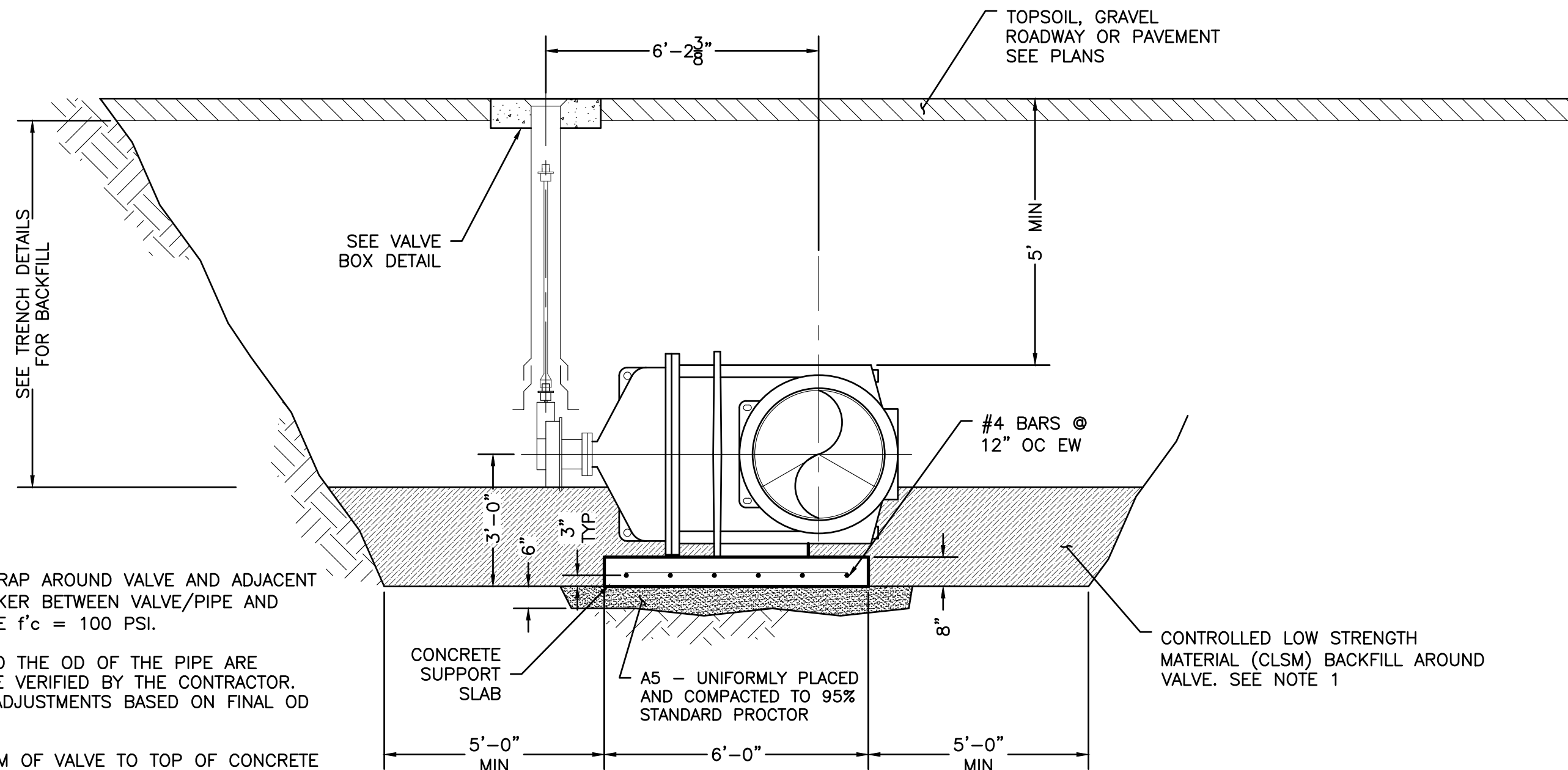
2. THE PRESSURE PIPE SHALL BE INSTALLED AT THE DEPTHS AND ELEVATIONS INDICATED ON THE PLANS. THESE ELEVATIONS SHALL BE RECORDED ON THE AS-BUILT DRAWINGS.
3. FOR ADDITIONAL CONSIDERATION OF PIPE ZONE EMBEDMENT CONDITIONS, SEE AWWA C600-99.
4. TRENCH SHALL BE SHORED WITH TRENCH BOX OR OTHER MEANS PER MIOSHA GUIDELINES.
5. CONTRACTOR SHALL LIMIT DISTURBANCE OF EXISTING SITE.



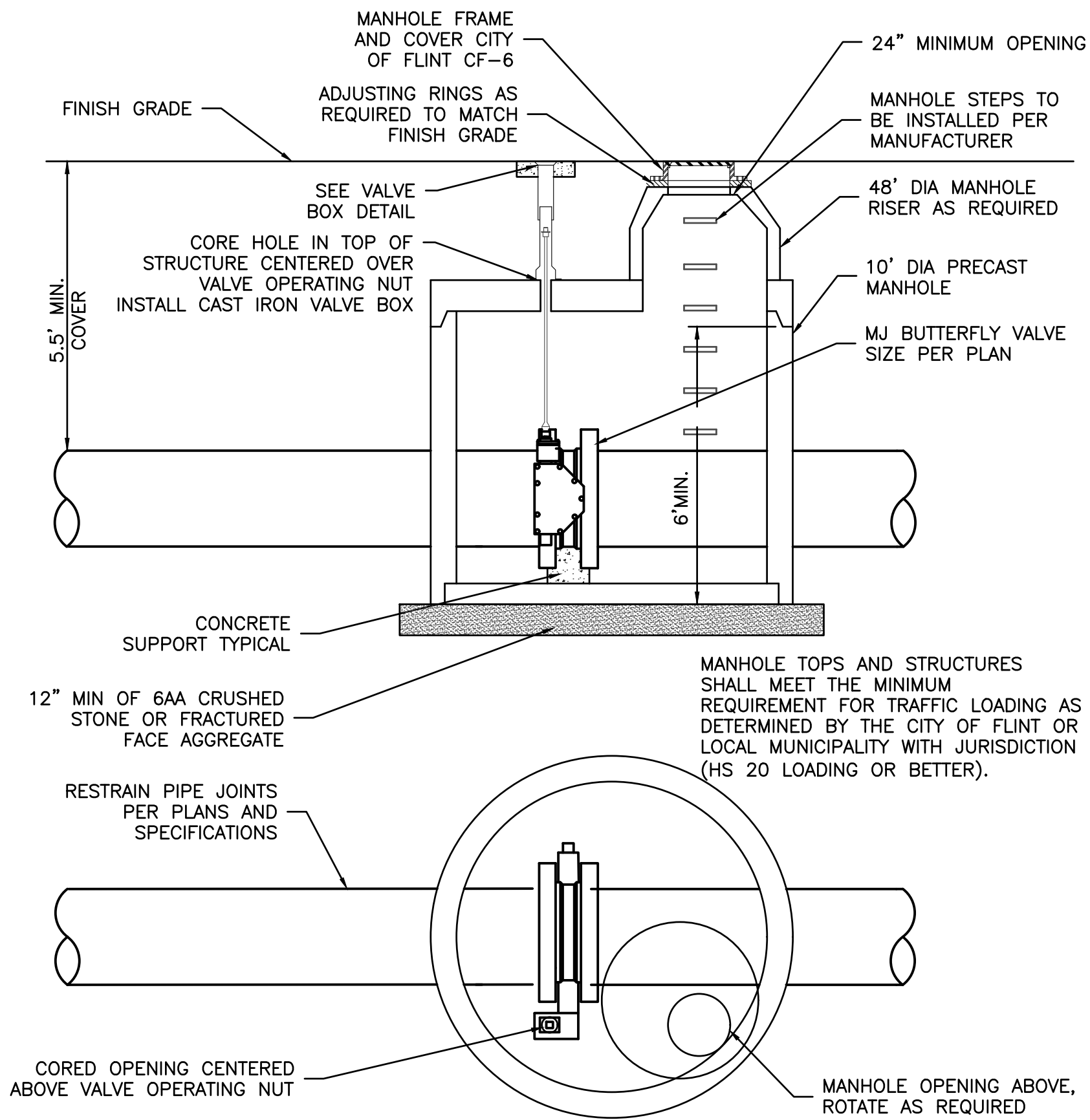
SD 36" GATE VALVE ELEVATION
13.1
NO TO SCALE

NOTES

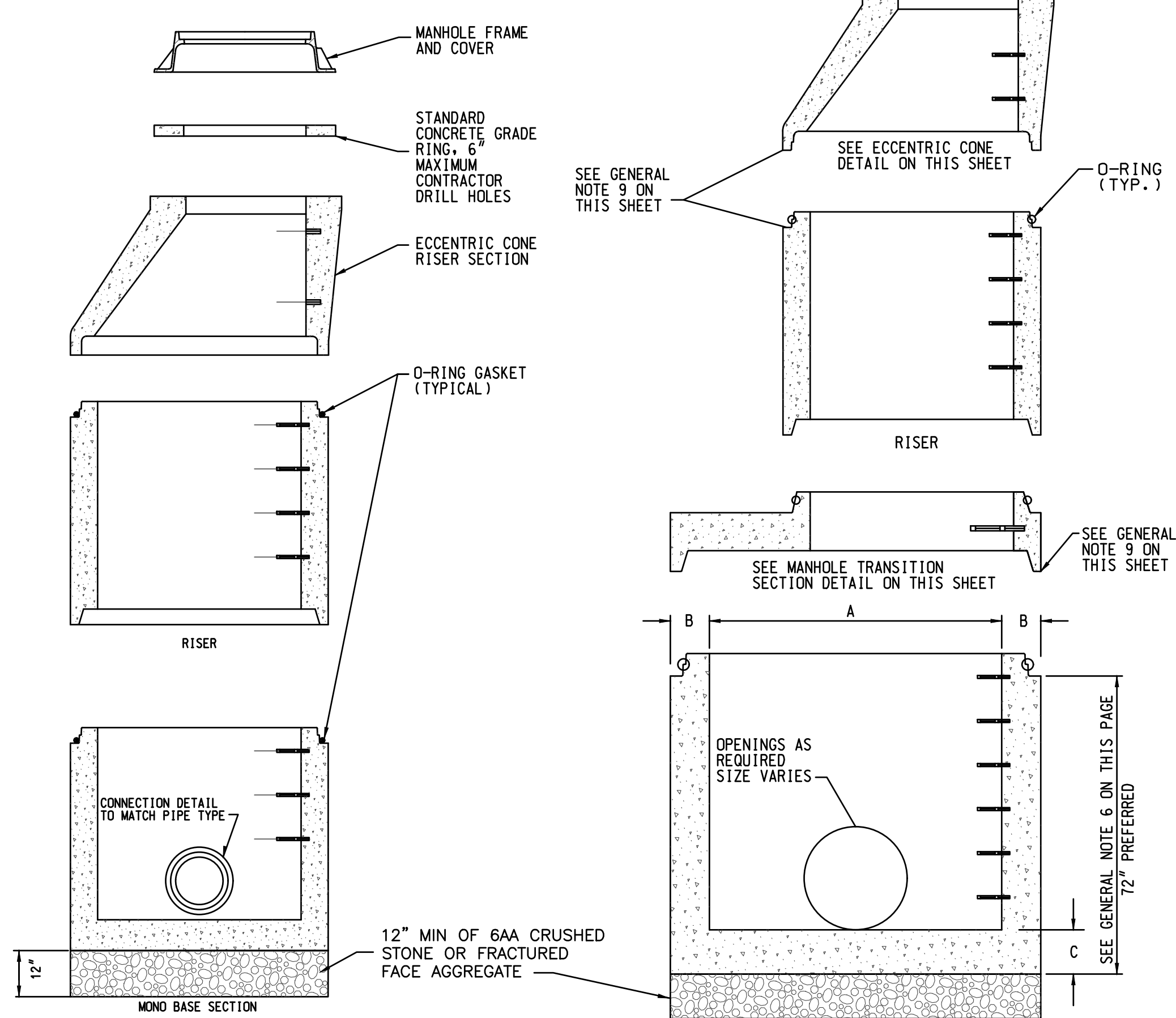
1. PLACE POLYETHYLENE WRAP AROUND VALVE AND ADJACENT PIPING FOR BOND BREAKER BETWEEN VALVE/PIPE AND CLSM. CLSM SHALL HAVE $f'c = 100$ PSI.
2. DIMENSIONS RELATING TO THE OD OF THE PIPE ARE ASSUMED AND SHALL BE VERIFIED BY THE CONTRACTOR. CONTRACTOR TO MAKE ADJUSTMENTS BASED ON FINAL OD OF DELIVERED PIPE.
3. DIMENSION FROM BOTTOM OF VALVE TO TOP OF CONCRETE SLAB MAY CHANGE DEPENDING ON FINAL VALVE SUPPORT PROVIDED BY VALVE MANUFACTURER. BLOCK IS ASSUMED TO BE 11" WIDE X 24" LONG, WITH HEIGHT AS NEEDED. CONTRACTOR SHALL CONFIRM.
4. DETAIL IS ADEQUATE FOR UP TO 12' OF COVER AND MINIMUM SOIL BEARING CAPACITY OF 2000 LBS/SFT. WHERE THESE CONDITIONS ARE NOT MET, THIS DETAIL DOES NOT APPLY.



SD 36" GATE VALVE SECTION
13.1A
NO TO SCALE

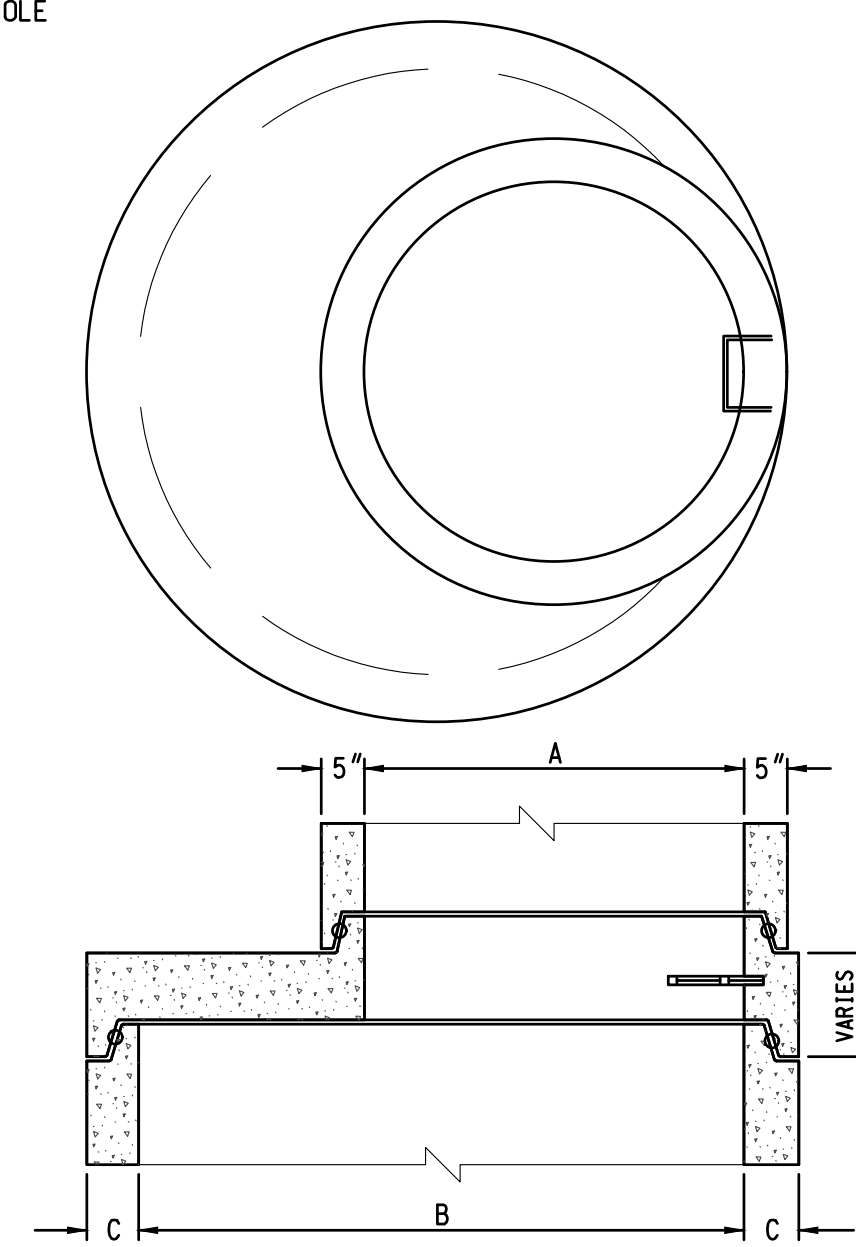


SD BUTTERFLY VALVE IN MANHOLE
15.1
NO TO SCALE



PRECAST MANHOLE BASE AND RISER SECTIONS
NO TO SCALE

PRECAST MANHOLE BASE AND RISER SECTIONS
NO TO SCALE



GENERAL NOTES:

2. ALL MATERIAL, DESIGN, MANUFACTURE, PHYSICAL TEST REQUIREMENTS, FINISH MARKING, INSPECTION, REJECTION AND REPAIRS TO MEET "SPECIFICATIONS FOR PRECAST-REINFORCED CONCRETE MANHOLE SECTIONS", PER ASTM C-478 (LATEST REVISION).
3. CONCRETE STRENGTH PER ASTM C-478. REINFORCING: GRADE 60
4. TRANSITIONS TO BE DESIGNED FOR HS-20 LOADING AND HAVE A MAXIMUM OF 20' OF COVER.
5. REBAR TO BE EPOXY COATED.

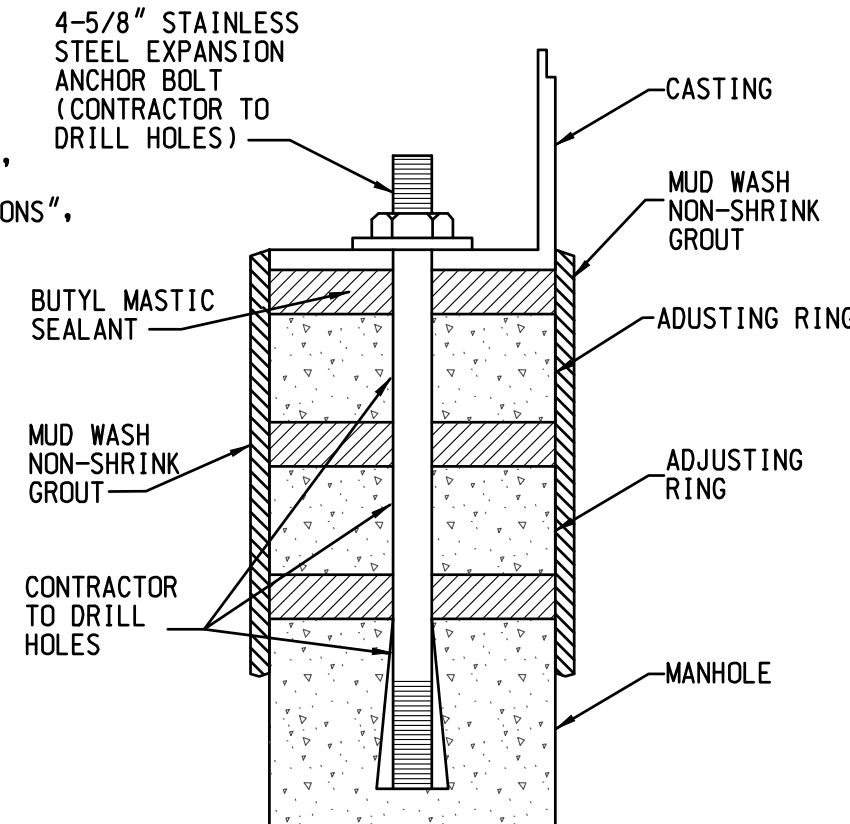
MANHOLE TRANSITION SECTION DETAIL
NO TO SCALE

| TRANSITION TYPE | A | B | C |
|-----------------|-----|------|-----|
| 72" TO 48" | 48" | 72" | 7" |
| 84" TO 48" | 48" | 84" | 8" |
| 96" TO 48" | 48" | 96" | 9" |
| 120" TO 48" | 48" | 120" | 11" |
| 144" TO 48" | 48" | 144" | 12" |

CIRCULAR MANHOLE TRANSITION SECTION DIMENSIONS TABLE
NO TO SCALE

GENERAL NOTES:

1. ALL MATERIAL, DESIGN, MANUFACTURE, PHYSICAL TEST REQUIREMENTS, FINISH MARKING, INSPECTION, REJECTION AND REPAIRS TO MEET "SPECIFICATIONS FOR PRECAST-REINFORCED CONCRETE MANHOLE SECTIONS", PER ASTM C-478 (LATEST REVISION).
2. CONCRETE STRENGTH PER ASTM C-478.
3. VERTICAL MANHOLE STEPS SHALL BE CONSISTENTLY SPACED AND SHALL COMPLY WITH OSHA (SUBPART D) "FIXED LADDERS" (SECTION 1910-27) AND/OR ASTM C-478.
4. MANHOLE STEPS TO BE 16" O.C. MAX.
5. MANHOLE TRANSITION SECTION SHALL BE USED ON ALL MANHOLES WITH A MONO BASE SECTION 72" OR GREATER.
6. FOR MANHOLES WITH A BASE DIAMETER OF 72" AND LARGER, THE PREFERRED DEPTH OF THE BASE SECTION IS 72" BEFORE THE TRANSITION SECTION IS INSTALLED. IN LOCATIONS WHERE THE GRADES DO NOT ALLOW THE PREFERRED DEPTH, THE BASE SECTION SHALL BE AS DEEP AS POSSIBLE WHILE STILL PROVIDING THE ECCENTRIC CONE SECTION.
7. MULTIPLE RISER SECTIONS AND HEIGHTS CAN BE USED IF NECESSARY.
8. TRANSITION JOINT TYPE MAY VARY.
9. PLAN CALLOUT REPRESENTS BASE STRUCTURE.
10. DETAIL TO APPLY TO ROUND STRUCTURES
11. SHOP DRAWINGS TO BE SUBMITTED AND APPROVED BY OWNER PRIOR TO CONSTRUCTION.



CASTING ADJUSTMENT DETAIL
NO TO SCALE

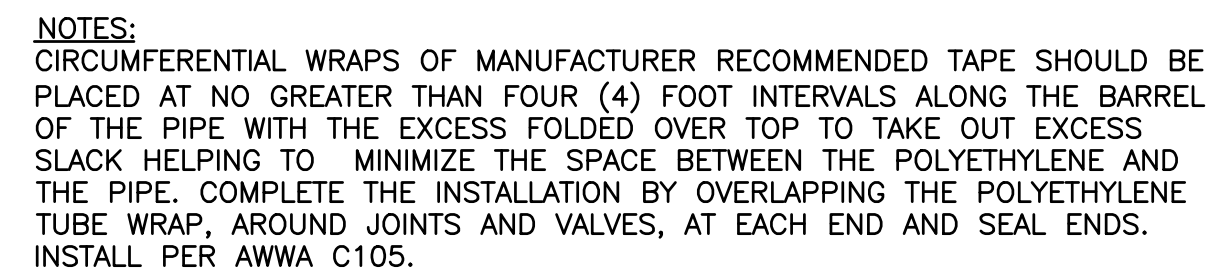


CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
DETAIL SHEET 6

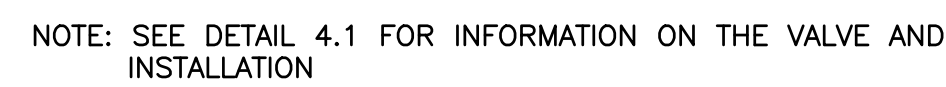
ISSUED FOR: DATE: BY:

JOB NO. COF1068.01F

SHEET



SD TYPICAL WRAP FOR DUCTILE IRON
4.7 PIPE AT MANHOLE
NOT TO SCALE

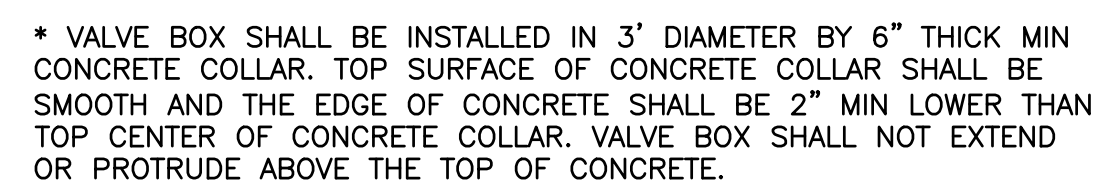


SD
4.4

POLYETHYLENE WRAP
FOR VALVES SMALLER THAN 24"
NOT TO SCALE



INSTALLATION
 (SD) POLYETHYLENE WRAP FOR VALVES 36" & LARGER
 11.5 NOT TO SCALE



SD VALVE BOX DETAIL
4.1 (FOR VALVES SMALLER THAN 24")
(CONTRACTOR SUPPLIED ALL)
NOT TO SCALE

[illegible]

Flint, MI 48502
810.235.2555
www.wadetrim.com



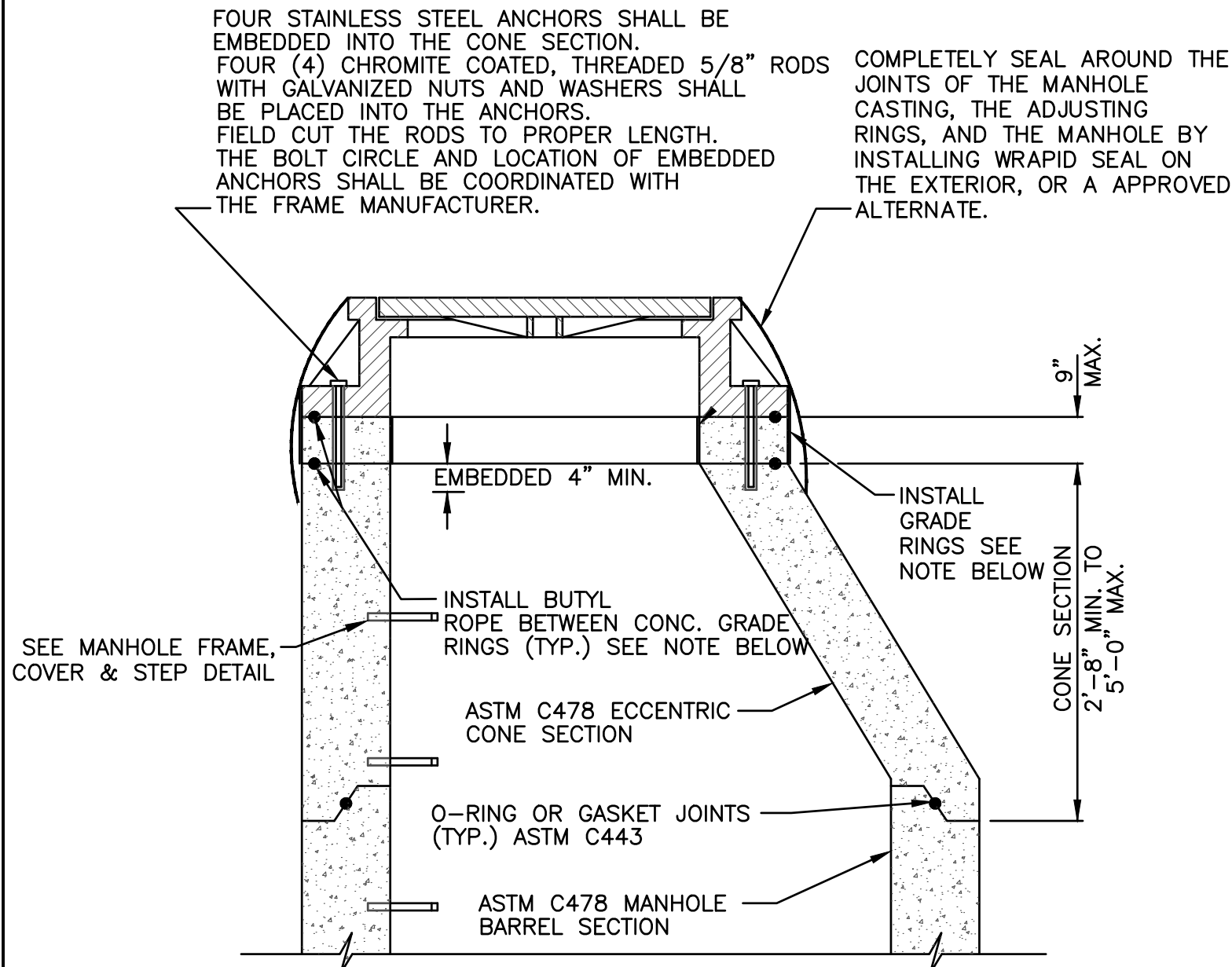
CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
DETAIL SHEET 7

ISSUED FOR: DATE: BY:

OB NO.
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HEET

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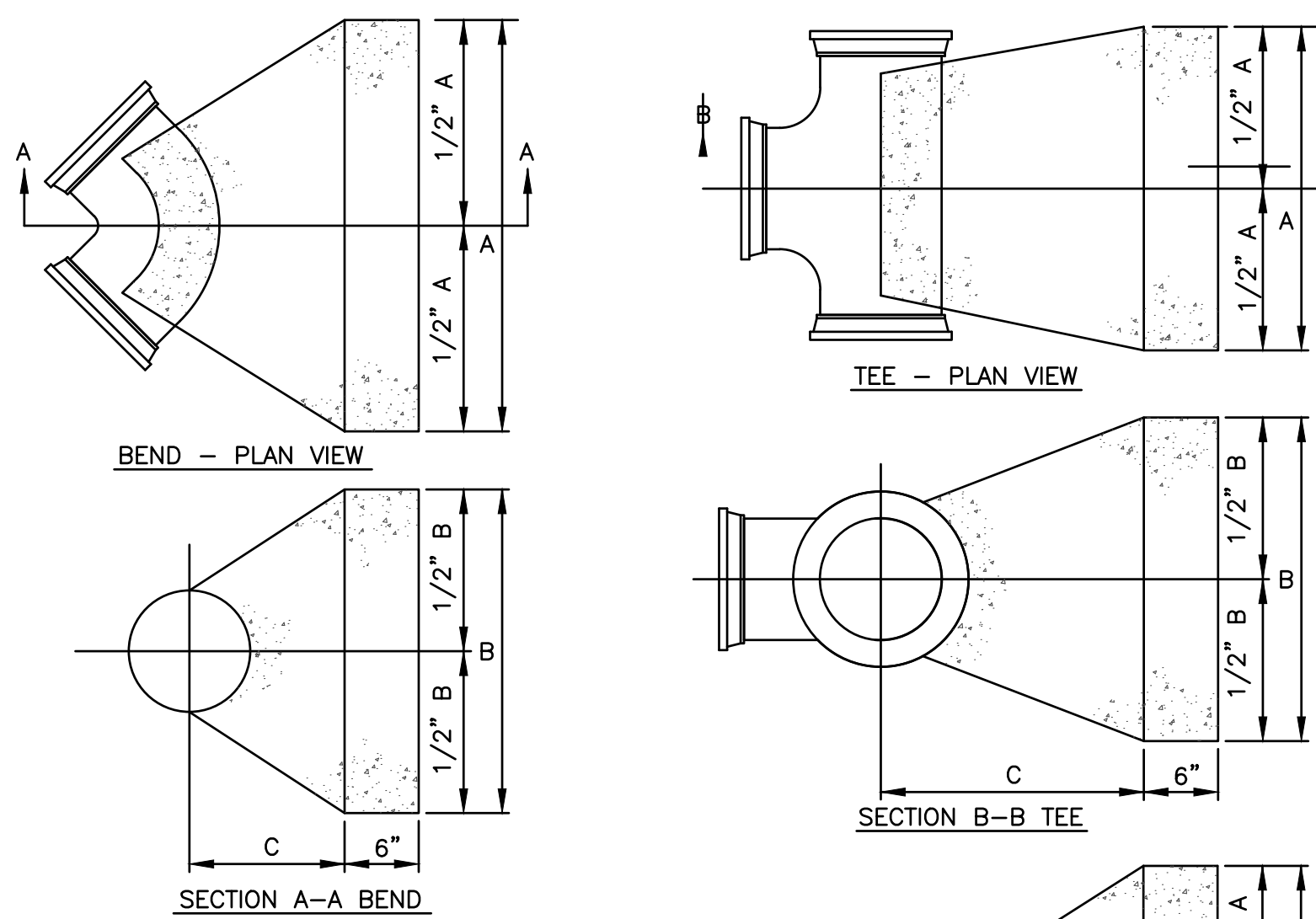


- NOTES**
1. DURING THE FINAL INSPECTION, FINAL ADJUSTMENT SHALL BE AS DIRECTED BY ENGINEER. MAXIMUM ADJUSTMENT ALLOWED SHALL BE 9". THE USE OF BLOCK OR BRICK FOR ADJUSTMENT SHALL NOT BE PERMITTED.
 2. PERMISSIBLE GRADE RING SIZES FOR MANHOLE ADJUSTMENT SHALL BE 3", 4", OR 6", AS REQUIRED, TO FINISH GRADE. NOTE: A MAXIMUM OF TWO (2) GRADE RINGS WILL BE ALLOWED.
 3. THE CONTRACTOR SHALL USE AN APPROVED 1-1/4" PRE-FORMED BUTYL RUBBER JOINT SEALANT BETWEEN GRADE RING, MANHOLE FRAME, & MANHOLE SECTION. USE MORTAR FOR MANHOLES IN ROADWAYS.

SD MANHOLE FRAME & COVER ADJUSTMENT
5.1 NOT TO SCALE

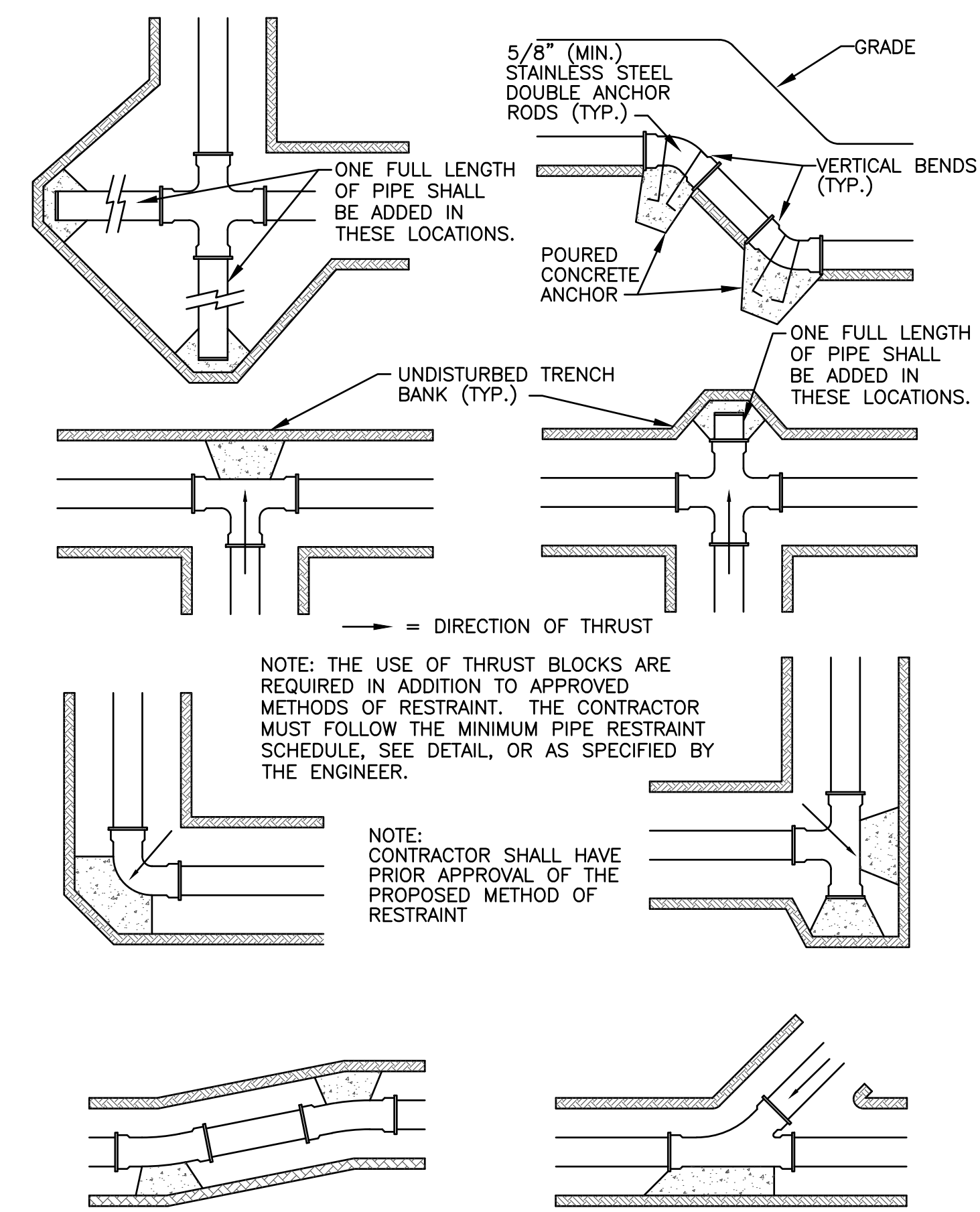
TABLE INDICATES MINIMUM BEARING

| DIA. OF PIPE OR BRANCH OF TEE | 90° BEND | | | 45° BEND | | | 22 1/2° BEND | | | PLUGS, HYDRANTS AND TEES | | |
|-------------------------------|----------|--------|-------|----------|-------|-------|--------------|-------|-------|--------------------------|-------|-------|
| | A | B | C | A | B | C | A | B | C | A | B | C |
| 6" | 2'-0" | 2'-0" | 0'-9" | 2'-0" | 1'-0" | 0'-9" | 2'-0" | 1'-0" | 0'-9" | 2'-0" | 2'-0" | 1'-0" |
| 8" | 3'-0" | 2'-0" | 1'-0" | 2'-0" | 2'-0" | 1'-3" | 2'-0" | 1'-0" | 1'-0" | 3'-0" | 2'-0" | 1'-9" |
| 12" | 4'-0" | 3'-0" | 1'-6" | 3'-0" | 3'-0" | 1'-6" | 2'-0" | 2'-0" | 1'-6" | 4'-0" | 3'-0" | 2'-0" |
| 16" | 6'-0" | 4'-0" | 1'-6" | 4'-0" | 4'-0" | 1'-6" | 3'-0" | 3'-0" | 1'-6" | 5'-0" | 4'-0" | 2'-0" |
| 24" | 8'-0" | 6'-6" | 2'-0" | 5'-0" | 5'-0" | 2'-0" | 4'-0" | 4'-0" | 2'-0" | 8'-0" | 6'-0" | 2'-6" |
| 36" | 12'-0" | 10'-0" | 2'-0" | 8'-0" | 8'-0" | 2'-0" | 6'-0" | 6'-0" | 2'-0" | 10'-0" | 8'-0" | 2'-6" |

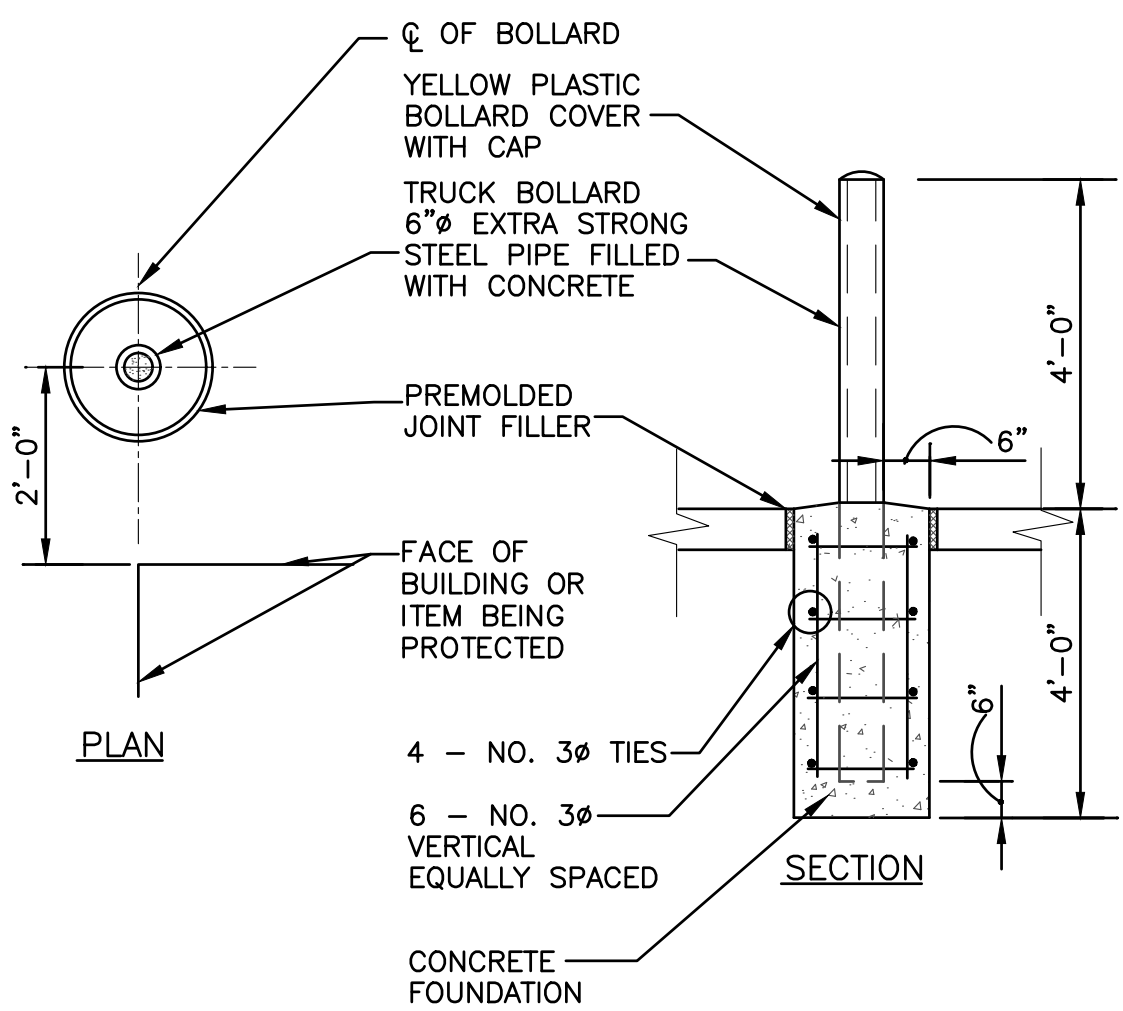


- NOTES**
1. THE CONTRACTOR SHALL USE GCDC-WWS APPROVED RESTRAINED JOINTS IN ADDITION TO THRUST BLOCKS.
 2. PIPE SHOULD BE POLYWRAPPED (WHERE REQUIRED) PRIOR TO THRUST BLOCK INSTALLATION.
 3. USE 3000 PSI CONCRETE FOR ALL THRUST BLOCKS.
 4. POUR AGAINST UNDISTURBED SOIL.
 5. KEEP BOLTS, FITTINGS AND JOINTS CLEAR OF CONCRETE.
 6. BEARING AREA IS FIGURED ON 2000-PSI SOIL CAPACITY.

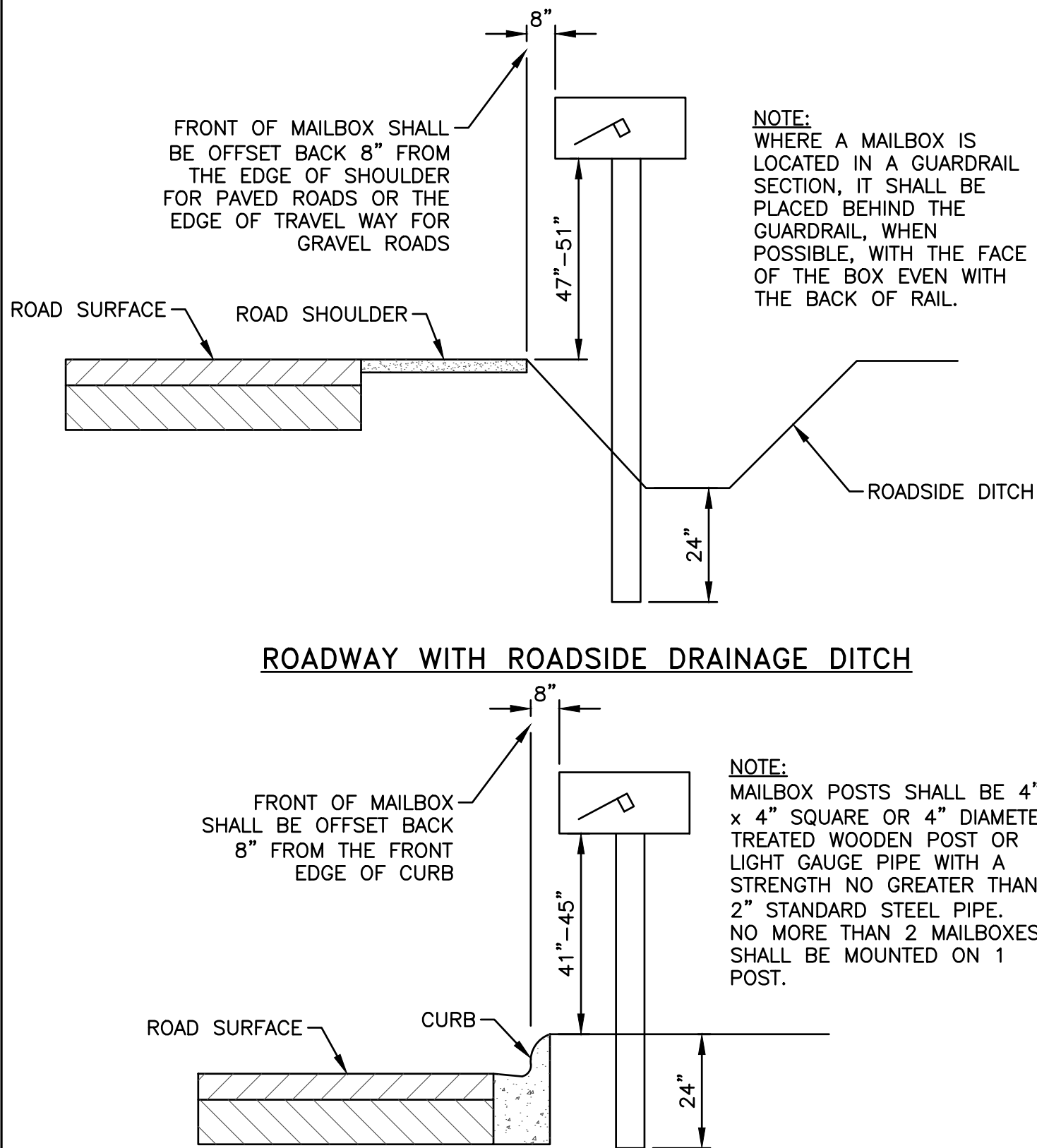
SD THRUST BLOCK DETAILS
5.6 NOT TO SCALE



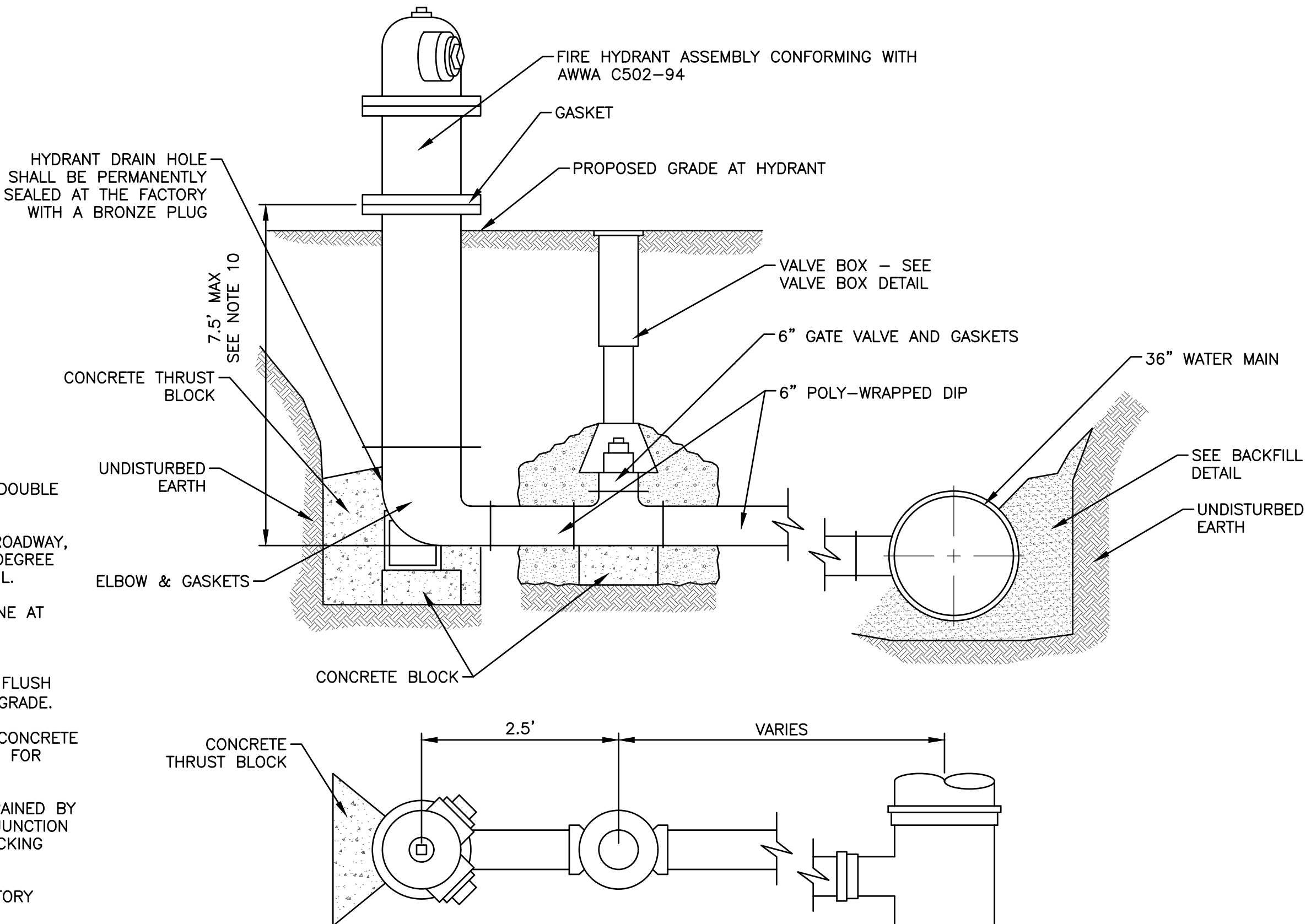
SD LOCATION OF THRUST BLOCK RESTRAINT
5.7 NOT TO SCALE



SD TYPICAL BOLLARD DETAIL
5.4 NOT TO SCALE




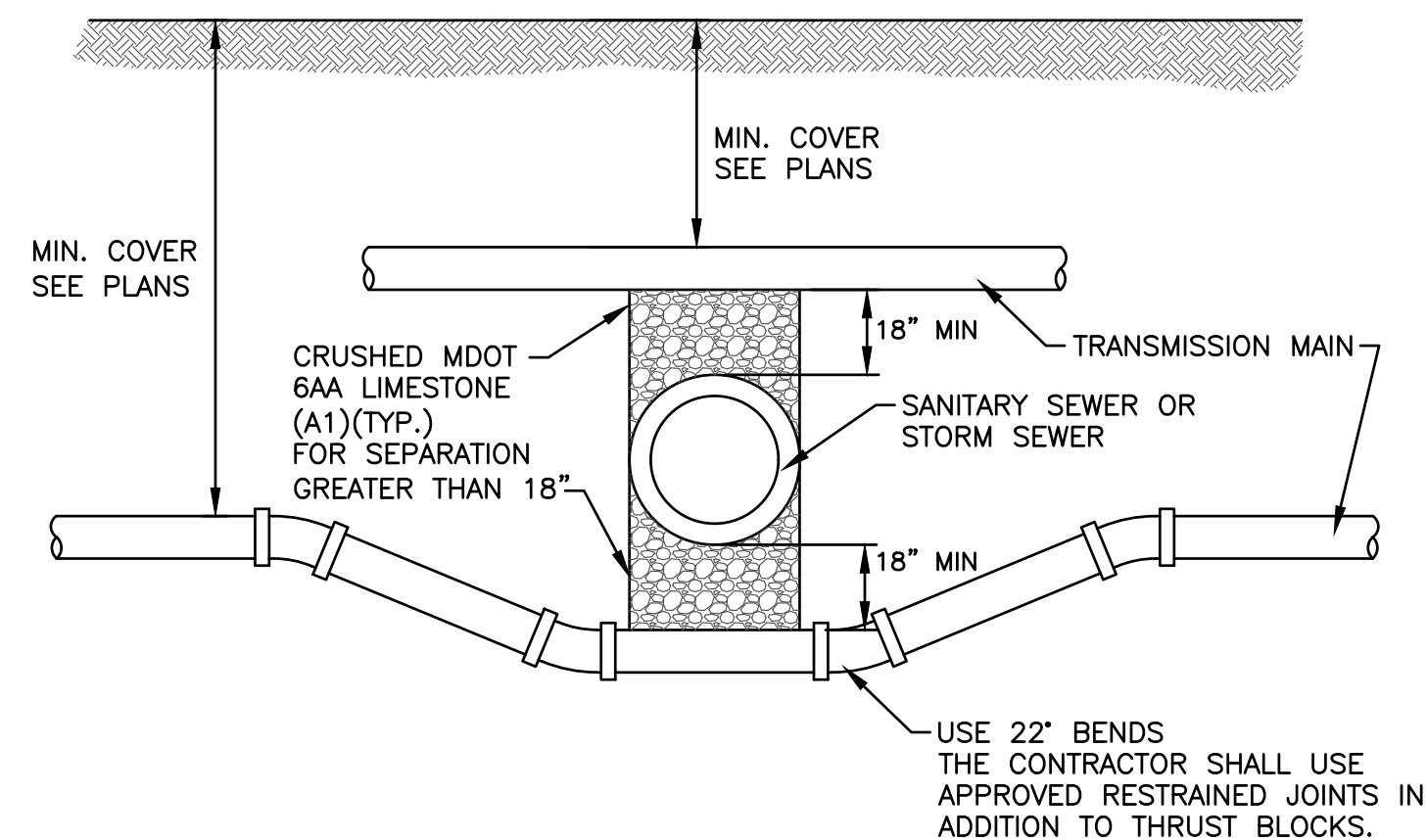
SD STANDARD MAILBOX REHAB
5.5 NOT TO SCALE



- NOTES**
1. ALL HYDRANTS SHALL HAVE DOUBLE PUMPER NOZZLES.
 2. NOZZLES SHALL FACE THE ROADWAY, EACH AT AN APPROXIMATE 45 DEGREE ANGLE AS SHOWN IN THE DETAIL.
 3. SET THE HYDRANT GRADE LINE AT PROPOSED GRADE OR AS FIELD DIRECTED.
 4. SET THE VALVE BOX COVER FLUSH WITH THE EXISTING/PROPOSED GRADE.
 5. THE CONTRACTOR MAY USE CONCRETE BLOCK AND DRY MIX CONCRETE FOR THRUST BLOCKS.
 6. ALL JOINTS SHALL BE RESTRAINED BY AN APPROVED METHOD IN CONJUNCTION WITH THE USE OF THRUST BLOCKING FOR THIS PROJECT.
 7. HYDRANTS ARE TO BE FACTORY PAINTED "ORANGE."

SD STANDARD FIRE HYDRANT DETAIL
4.3 NOT TO SCALE

1. THE PUMPER CONNECTION SHALL FACE THE STREET.
2. SET THE HYDRANT GRADE LINE AT PROPOSED GRADE OR AS FIELD DIRECTED.
3. SET THE VALVE BOX COVER FLUSH WITH THE EXISTING GRADE LEVEL.
4. ALL WORK AND MATERIALS FROM THE CENTER LINE OF THE MAIN TO AND INCLUDING THE HYDRANT WILL BE PAID FOR BY UNIT PRICE BID ITEM FOR HYDRANTS.
5. ALL JOINTS SHALL BE RESTRAINED BY AN OWNER APPROVED METHOD; FIELD LOCK GASKETS, ANCHORING COUPLINGS, RODS OR THRUST BLOCKS.
6. HYDRANTS ARE TO BE FACTORY PAINTED "ORANGE."
7. ALL TANGENTIAL PIPE CONNECTIONS SHALL BE FABRICATED BY THE MANUFACTURER.
8. 90 DEG. HYDRANT TEES ARE APPROVED WHERE SPACE REQUIREMENTS ARE LIMITED.
9. EACH HYDRANT INSTALLATION SHALL BE INSPECTED BY WSC PERSONNEL PRIOR TO BACKFILL.
10. HYDRANT OPERATING AND CAP NUTS ARE TO BE 7/8" SQUARE.



SD WATER TRANSMISSION MAIN
8.5 SEPARATION
NOT TO SCALE



| AIR VALVE TABLE | | | |
|-----------------|----------------|------|---------|
| STATION | AIR VALVE TYPE | SIZE | WM SIZE |
| 848+50 | D-060-C HF | 4" | 36" |

1. ACCESS DRIVE AND CULVERT SHALL BE INSTALLED WHERE DESIGNATED ON THE PLANS.

2. CONTRACTOR TO PROVIDE TRENCH STABILIZATION AS NEEDED TO KEEP WORK WITHIN ROW.

SLOPE GROUND AWAY FROM STRUCTURE IN ALL DIRECTIONS TO CREATE POSITIVE DRAINAGE

ROAD CENTERLINE, CENTER OF LANE, OR EDGE OF SHOULDER

TURF DRIVE APPROACH CULVERT SIZE PER PLANS

FLAT TOP PRECAST MANHOLE (ASTM C478) WITH STEPS(SEE TABLE FOR MH SIZE)

FOR 2" PIPE INSTALL CORP STOP IN TOP OF PIPE AND INSTALL 2" "K" COPPER AT 2.0% MIN SLOPE TO AIR RELEASE IN STRUCTURE (2" PIPING AND FITTINGS RATED @ 300 PSI MIN)

TANGENTIAL PIPE CONNECTION TO BE FABRICATED BY THE MANUFACTURER

SLOPE PIPE UP TO AIR/VAC VALVE FROM WATER MAIN

RESTRAINED JOINT

CL 250 (MIN) RESTRAINED JOINT POLY-WRAPPED DUCTILE IRON PIPE, BEDDED PER PIPE TRENCH DETAILS

36" WATER TRANSMISSION MAIN

COMPACTED BEDDING/BACKFILL AS REQUIRED

GATE VALVE WITH BOX (SEE TABLE FOR SIZE) * FOR 2" USE 2" BALL VALVE CURB STOP AND BOX

PRESS WEDGE II, RES-SEAL, LINK SEAL, OR KOR-N-SEAL (WITH STAINLESS STEEL KORBANS) FLEXIBLE RUBBER MANHOLE JOINTS (TYP ALL PIPE CONNECTIONS)

MIN SLOPE OF 2.0%

4' MIN

SEE DETAIL SD-5.2

2' MIN 4' MAX

SCH. 80 PVC FLANGE

BOLLARD (SEE TYP. BOLLARD DTL.)

SLOPE AIR VENT TO DRAIN TO VAULT

MIN SLOPE OF 2.0%

INSULATE INSIDE OF MANHOLE WITH 2" STYROFOAM

VARIES SEE CHART

SCH. 80 PVC VENT PIPE SIZED AS PER AIR RELEASE VALVE MANUFACTURER'S RECOMMENDATIONS

AIR VALVE VENTS TO BE HARD PIPED INSIDE MANHOLE TO VENT LINE

TYPICAL AIR RELEASE/VACUUM VALVE

ISOLATION FLANGE TO PREVENT CORROSION, IF DISSIMILAR METALS.

TEE WITH OPEN END CAPPED (SEE TABLE FOR SIZE) OR IF NOTED ON THE PLANS EXTEND HYDRANT LEAD FROM THIS POINT OUT OF STRUCTURE FOR COMBINATION HYDRANT AND AIR/VALVE LOCATIONS. IF HYDRANT IS USED PLAN SHALL

12" MIN OF 6AA CRUSHED STONE OR FRACTURED FACE AGGREGATE

PIPE SUPPORT 4" MIN FROM BOTTOM (CONCRETE SADDLE)

2" TAP W/ SHUT-OFF

1' MIN

** APPROX MIN COVER SEE PLANS

| | |
|------------------------------|------|
| VALVE SIZE | 4" |
| FLANGED OUTLET DIAMETER | 4" |
| GATE VALVE | 4" |
| MANHOLE DIAMETER | 7' |
| ** APPROX MAIN MINIMUM COVER | 5.0' |

**** NOTE: WHERE AIR RELEASE VALVES ARE INSTALLED IN FARM FIELDS OR IN EASEMENT AREA RIMS OF MANHOLES AND GATE VALVE BOXES SHALL BE BURIED 2' BELOW EXISTING GRADE.

SD AIR RELEASE/VACUUM RELIEF CONNECTION AND VALVE
14.2 NOT TO SCALE

* indicates applicability of a specific control measure to one or more of the seven problem areas

* indicates applicability of a specific control measure to one or more of the seven problem areas

| Michigan United Keying System (modified) | | | * indicates applicability of a specific control measure to one or more of the seven problem areas | | | | | | |
|---|---|--|--|---|---|---|---|---|---|
| KEY | DETAIL | CHARACTERISTICS | A | B | C | D | E | F | G |
| 1 | Dust Control - No Detail - | DUST CONTROL APPLICATIONS CAN INCLUDE WATERING, CHEMICAL DUST SUPPRESSION, GRAVEL OR ASPHALT SURFACING, TEMPORARY AGGREGATE COVER AND HAUL TRUCK COVERS | * | | | | | * | * |
| 2 | Selective Grading & Shoring | WATER CAN BE DIVERTED TO MINIMIZE EROSION FLATTER SLOPES EASE EROSION PROBLEMS | * | | | | | * | * |
| 3 | Grubbing/Grading | SAVES COST OF GRUBBING, PROVIDES NEW SPROUTS RETAINS EXISTING ROOT MAT SYSTEM, REDUCES WIND FALL AT NEW FOREST EDGE, DISCOURAGES EQUIPMENT ENTRANCE | * | | | | | * | |
| 4 | Vegetative Stabilization | MAY UTILIZE A VARIETY OF PLANT MATERIAL STABILIZES SOIL SLOWS RUNOFF VELOCITY FILTERS SEDIMENT FROM RUNOFF | * | * | * | | | * | * |
| 5 | AVAILABLE DETAIL | | | | | | | | |
| 6 | Seeding with Mulch Based on/ or/ w/ Matting | FACILITATES ESTABLISHMENT OF VEGETATIVE COVER EFFECTIVE FOR DRAINAGEWAYS WITH LOW VELOCITY EASILY PLACED IN SMALL QUANTITIES BY INEXPERIENCED PERSONNEL, SHOULD INCLUDE PREPARED TOPSOIL BED | * | | * | | | * | * |
| 7 | AVAILABLE DETAIL | | | | | | | | |
| 8 | Sodding | PROVIDES IMMEDIATE PROTECTION CAN BE USED ON STEEP SLOPES WHERE SEED MAY BE DIFFICULT TO ESTABLISH, EASY TO PLACE, MAY BE REPAIRED IF DAMAGED SHOULD INCLUDE PREPARED TOPSOIL BED | * | | * | | | * | * |
| 9 | Vegetative Buffer Strip | SLOWS RUNOFF VELOCITY FILTERS SEDIMENT FROM RUNOFF REDUCES VOLUME OF RUNOFF ON SLOPES | * | * | | | | | * |
| 10 | Mulching | USED ALONE TO PROTECT EXPOSED AREAS FOR SHORT PERIODS PROTECTS SOIL FROM IMPACT OF FALLING ROCKS PRESERVES SOIL MOISTURE AND PROTECTS GERMINATING SEED FROM TEMPERATURE EXTREMES | * | | | | | * | * |
| 11 | Roughened Surface | REDUCES VELOCITY AND INCREASES INFILTRATION RATES COLLECTS SEDIMENT HOLDS WATER, SAND AND MULCH BETTER THAN SMOOTH SURFACES | * | | | | | * | |
| 12 | AVAILABLE DETAIL | | | | | | | | |
| 13 | Riprap, Rubble, Gabions | USED WHERE VEGETATION IS NOT EASILY ESTABLISHED EFFECTIVE FOR HIGH VELOCITIES OR HIGH CONCENTRATIONS PERMITS RUNOFF TO INFILTRATE SOIL DISAPPEARS ENERGY FLOW AT SYSTEM OUTLETS | * | * | * | | | | |
| 14 | AVAILABLE DETAIL | | | | | | | | |
| 15 | AVAILABLE DETAIL | | | | | | | | |
| 16 | AVAILABLE DETAIL | | | | | | | | |
| 17 | Berches | REDUCES RUNOFF VELOCITY BY REDUCING EFFECTIVE SLOPE LENGTH COLLECTS SEDIMENT, PROVIDES ACCESS TO SLOPES FOR SEEDING, MULCHING AND MAINTENANCE | * | | | | | * | |
| 18 | Earth Diversion Berm | DIVERTS WATER FROM VULNERABLE AREAS COLLECTS AND DIRECTS WATER TO PREPARED DRAINAGEWAYS MAY BE PLACED AS PART OF NORMAL CONSTRUCTION OPERATION | * | | | | | * | * |
| 18A | Earth Diversion Berm with Stone Outlet Filter | DIVERTS WATER FROM VULNERABLE AREAS COLLECTS AND DIRECTS WATER TO PREPARED DRAINAGEWAYS MAY BE PLACED AS PART OF NORMAL CONSTRUCTION OPERATION | * | | | | | * | * |
| 19 | Diversion Ditch | COLLECTS AND DIVERTS WATER TO REDUCE EROSION POTENTIAL MAY BE INCORPORATED IN PERMANENT PROJECT DRAINAGE SYSTEMS | * | | | | | * | * |
| 20 | Diversion Berm & Ditch | DIVERTS WATER TO A PREPARED DRAINAGEWAY MAY BE USED AT INTERVALS ACROSS SLOPE FACE TO REDUCE EFFECTIVE SLOPE LENGTH | * | | | | | * | * |
| 21 | Stone Filter Berm | CONSTRUCTED OF GRAVEL OR STONE INTERCEPTS AND DIVERTS RUNOFF TO STABILIZED AREAS OR PREPARED DRAINAGE SYSTEMS SLOWS RUNOFF AND COLLECTS SEDIMENT | * | * | | | | | * |
| 21A | Stone Filter Berm with Silt Fence | CONSTRUCTED OF GRAVEL OR STONE INTERCEPTS AND DIVERTS RUNOFF TO STABILIZED AREAS OR PREPARED DRAINAGE SYSTEMS SLOWS RUNOFF AND COLLECTS SEDIMENT - SILT FENCE PREVENTS EROSION AROUND SPILLWAY | * | * | | | | | * |
| 22 | AVAILABLE DETAIL | | | | | | | | |
| 23 | AVAILABLE DETAIL | | | | | | | | |
| 24 | Grassed Waterway | MUCH MORE STABLE FORM OF DRAINAGEWAY THAN BARE CHANNEL GRASS TENDS TO SLOW RUNOFF AND FILTER OUT SEDIMENT USED WHERE BARE CHANNEL WOULD BE ERODED | | | * | | | | |
| 25 | Slope Drain (Surface Pipe) | PREVENTS EROSION ON SLOPES WHEN RUNOFF CANNOT BE DIVERTED TO EDGES OF SLOPE AREA - USUALLY TEMPORARY CAN BE CONSTRUCTED OR EXTENDED AS GRADING PROGRESSES | * | | | | | | |
| 26 | Slope Drain - Paved Chute/Pipe | PREVENTS EROSION ON SLOPES WHEN RUNOFF CANNOT BE DIVERTED TO EDGE OF SLOPE AREA - USUALLY PERMANENT CAN BE CONSTRUCTED OR EXTENDED AS GRADING PROGRESSES | * | | | | | | |
| 27 | Slope Drain (Subsurface Pipe) | PREVENTS EROSION ON SLOPES WHEN RUNOFF CANNOT BE DIVERTED TO EDGE OF SLOPE AREA - USUALLY PERMANENT CAN BE CONSTRUCTED AS GRADING PROGRESSES | * | | | | | | |
| 28 | Drop Spillway | SLOWS VELOCITY OF FLOW, REDUCING ERODIVE CAPACITY | | * | * | | | | |
| 29 | Pipe Drop | REDUCES RUNOFF VELOCITY REMOVES SEDIMENT AND TURBIDITY CAN BE DESIGNED TO HANDLE LARGE VOLUMES OF FLOW | | | * | | | | |
| 30 | Pipe Spillway | REMOVES SEDIMENT AND TURBIDITY FROM RUNOFF MAY BE PART OF PERMANENT EROSION CONTROL PLAN | | | * | * | | | |
| 31 | Energy Dissipater | SLOWS RUNOFF VELOCITY TO NON-EROSIVE LEVEL PERMITS SEDIMENT COLLECTION FROM RUNOFF | * | | * | * | | | |
| 32 | Leak Spreader | CONVERTS COLLECTED CHANNEL, OR PIPE FLOW BACK TO SHEET FLOW AVOIDS CHANNEL EXEMPTIONS AND CONSTRUCTION OFF PROJECT SITE SIMPLE TO CONSTRUCT | | | * | | | | |
| 33 | Sediment Trap | MAY BE CONSTRUCTED OF A VARIETY OF MATERIALS TRAPS SEDIMENT AND REDUCES VELOCITY OF FLOW CAN BE CLEANED AND EXPANDED AS NEEDED | | | * | * | | | |
| 34 | Sediment Basin | TRAPS SEDIMENT RELEASES RUNOFF AT NON-EROSIVE RATES CONTROLS RUNOFF AT SYSTEM OUTLETS CAN BE VISUAL AMENITIES | | | * | * | | | |
| 35 | AVAILABLE DETAIL | | | | | | | | |
| 36 | Catch Basin Inlet Protection | COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF MAY USE FILTER CLOTH OVER INLET | | | | | * | | * |
| 37 | Sod Filter | INEXPENSIVE AND EASY TO CONSTRUCT PROVIDES IMMEDIATE PROTECTION PROTECTS AREAS AROUND INLETS FROM EROSION | | | | * | | | |
| 38 | AVAILABLE DETAIL | | | | | | | | |

* indicates applicability of a specific control measure to one or more of the seven problem areas

| <p>* indicates applicability of a specific control measure to one or more of the seven problem areas</p> | | | SLOPES | STREAMS AND WATERWAYS | SURFACE DRAINAGEWAYS | ENCLOSED DRAINAGE (Inlet & Outlet Control) | LARGE FLAT SURFACE AREAS | BORROW AND STOCKPILE AREAS | ADJACENT PROPERTIES |
|--|---|--|--------|-----------------------|----------------------|--|--------------------------|----------------------------|---------------------|
| KEY | DETAIL | CHARACTERISTICS | A | B | C | D | E | F | G |
| 39 | Fabric Filter Curtin with Reef Protection | CAN UTILIZE MATERIAL FOUND ON SITE EASY TO CONSTRUCT FILTERS SEDIMENT FROM RUNOFF | | | | * | | | * |
| 40 | Inlet Sediment Trap | EASY TO SHAPE COLLECTS SEDIMENT MAY BE CLEANED AND EXPANDED AS NEEDED | | | | * | | | |
| 41 | Stone and Rock Ford Crossing | MAY BE ROCK OR CLEAN RUBBLE MINIMIZES STREAM TURBIDITY INEXPENSIVE MAY ALSO SERVE AS DITCH CHECK OR SEDIMENT TRAP | | | * | | | | |
| 42 | Temporary Culvert | ELIMINATES STREAM TURBULENCE AND TURBIDITY PROVIDES UNOBSTRUCTED PASSAGE FOR FISH AND OTHER WATER LIFE CAPACITY FOR NORMAL FLOW CAN BE PROVIDED WITH STORM WATER FLOWING OVER ROADWAY | | | * | | | | |
| 43 | Culvert Sediment Trap | EASY TO INSTALL AT INLET KEEPS CULVERT CLEAN AND FREE FLOWING MAY BE CONSTRUCTED OF LUMBER OR LOGS | | | * | | | | * |
| 44 | AVAILABLE DETAIL | | | | | | | | |
| 45 | Temporary Stream Channel Check | NEW CHANNEL KEEPS NORMAL FLOWS AWAY FROM CONSTRUCTION REQUIRES STATE PERMIT | | | * | | | | |
| 46 | AVAILABLE DETAIL | | | | | | | | |
| 47 | Cofferdam | WORK CAN BE CONTINUED DURING MOST ANTICIPATED STREAM CONDITIONS CLEAR WATER CAN BE PUMPED DIRECTLY BACK INTO STREAM | | | * | | | | |
| 48 | AVAILABLE DETAIL | | | | | | | | |
| 49 | Check Dam | REDUCES FLOW VELOCITY CATCHES SEDIMENT CAN BE CONSTRUCTED OF LOGS, STRAW, HAY, ROCK, LUMBER, MASONRY, OR SAND BAGS | | | * | * | | | |
| 50 | AVAILABLE DETAIL | | | | | | | | |
| 51 | Retaining Wall | REDUCES GRADIENT WHERE SLOPES ARE EXTREMELY STEEP PERMITS RETENTION OF EXISTING VEGETATION, KEEPING SOIL STABLE IN CRITICAL AREAS, MINIMIZES MAINTENANCE | * | | | | | | * |
| 52 | AVAILABLE DETAIL | | | | | | | | |
| 53 | Windbreak | MINIMIZES WIND EROSION MAY BE SNOW FENCE | | | | | * | | |
| 54 | Silt Fence | USES GEOTEXTILE FABRIC AND POSTS OR POLES EASY TO CONSTRUCT AND LOCATE AS NECESSARY | * | | * | | * | | * |
| 55 | Stone Filter-Before Paving | STONE FILTER TO PROVIDE INEXPENSIVE AND EASILY CONSTRUCTED SEDIMENT CONTROL PRIOR TO PAVING SEE DETAIL AT LEFT | | | * | * | | | |
| 55A | Stone Filter-After Paving | STONE FILTER TO PROVIDE INEXPENSIVE AND EASILY CONSTRUCTED SEDIMENT CONTROL AFTER PAVING SEE DETAIL AT LEFT | | | * | * | | | |
| 56 | Turbidity Curtain | A TURBIDITY CURTAIN IS USED WHEN SLACK WATER AREA IS NECESSARY TO ISOLATE CONSTRUCTION ACTIVITIES FROM THE WATERCOURSE. THE STILL WATER AREA CONTAINS THE SEDIMENT WITHIN THE CONSTRUCTION LIMITS | | | * | | | | |
| 57 | Stream - Liner | MAY BE 6A TYPE STONE, SMALL ROCKS OR SIMILAR-SIZED CLEAN CONCRETE-MASONRY RUBBLE. MINIMIZES STREAM TURBIDITY RELATIVELY INEXPENSIVE MAY BE USED AS DITCH CHECK OR SEDIMENT TRAP | | | * | | | | |
| 58 | Sediment Sump | CONTROLS SEDIMENTATION IN LARGE STREAMS, CONSIST OF OVER EXCAVATING THE DRAIN BY ONE TO TWO FEET, THE SUMP WILL BE AT LEAST 200 FEET LONG. SEDIMENTS ACCUMULATED DURING CONSTRUCTION WILL BE REMOVED UPON PROJECT COMPLETION | | | * | | | | |
| 59 | AVAILABLE DETAIL | | | | | | | | |
| 60 | Temporary Construction Entrance | ASSISTS IN REMOVING SOIL FROM THE TIRES OF CONSTRUCTION EQUIPMENT/VEHICLES WHEN EXITING THE CONSTRUCTION SITE THIS REDUCES TRACKING EXCESSIVE SEDIMENT/SOIL ONTO THE ADJACENT ROAD | | | | | | | |

ON OPERATIONS SHALL BE SCHEDULED AND PERFORMED SO THAT
VE EROSION CONTROL MEASURES ARE IN PLACE PRIOR TO EXCAVATION
RRARY STABILIZATION MEASURES ARE IN PLACE IMMEDIATELY
ACKFILLING AND/OR GRADING OPERATIONS.

CAUTIONS WILL BE TAKEN IN THE USE OF CONSTRUCTION
TO PREVENT SITUATIONS THAT PROMOTE EROSION.

ILL BE DONE IN A MANNER TO INSURE THAT EROSION CONTROL
ARE NOT DISTURBED.

CT WILL CONTINUALLY BE INSPECTED FOR SOIL EROSION AND
CONTROL COMPLIANCE. DEFICIENCIES WILL BE CORRECTED BY
ACTOR WITHIN 24 HOURS.

EROSION CONTROL MEASURES SHALL BE COMPLETELY REMOVED
TRACTOR UPON ESTABLISHMENT OF PERMANENT CONTROL MEASURES.

1. EXCAVATION AND STOCKPILING OF SOIL.
2. IMPLEMENTATION OF TEMPORARY EROSION CONTROL MEASURES;
SELECTIVE GRADING, DIVERSIONS AS REQUIRED IN FIELD,
PROTECTION OF STORM SEWER FACILITIES.
3. PERIODIC MAINTENANCE OF AFFECTED EROSION CONTROL MEASURES.
4. PERMANENT MEASURES; FINAL GRADING, SEEDING AND MULCHING.

SEE UNIFIED KEYING SYSTEM FOR EROSION CONTROL KEY NUMBERS

| TYPE OF SEED | APRIL | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | RATE OF APPLICATION * | |
|-----------------------------|-------|-----|------|------|------|-------|------|-----------------------|---------------------|
| | | | | | | | | PER/1000 S.F. | PER ACRE |
| OATS / BARLEY ANNUAL RYE | | | | | | 15TH | | 2 LBS. 3/4 LB. | 3 BUSHES 25 LBS. |
| SUDANGRASS | | | | 15TH | | | | 1 LB. | 35 LBS. |
| CEREAL RYE | | | | | | | 15TH | 1.5 LBS. | 2 BU. |
| WINTER WHEAT | | | | | | 20TH | 15TH | 1.5 LBS. | 2 BU. |

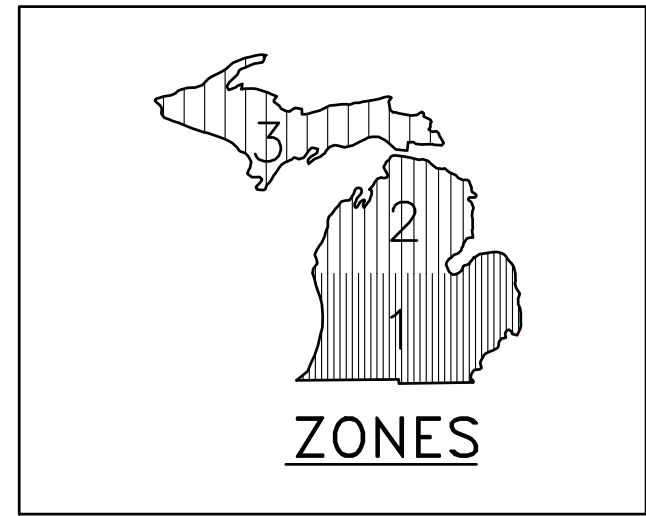
 RECOMMENDED
PLANTING SEASON

* RATE OF APPLICATION APPLIES TO ALL ZONES

 RECOMMENDED
PLANTING SEASON

SOIL EROSION / SEDIMENTATION CONTROL OPERATION TIME SCHEDULE

| CONSTRUCTION SEQUENCE | DEC | JAN | FEB | MAR | APR | MAY | JUN | JULY | AUG | SEP | OCT | NOV | DEC |
|---------------------------------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|
| STRIP & STOCKPILE TOPSOIL | | | | | | | | | | | | | |
| ROUGH GRADE / SEDIMENT CONTROL | | | | | | | | | | | | | |
| TEMP. CONTROL MEASURES | | | | | | | | | | | | | |
| STORM FACILITIES | | | | | | | | | | | | | |
| TEMP. CONSTRUCTION ROADS | | | | | | | | | | | | | |
| FOUNDATION / BLDG. CONSTRUCTION | | | | | | | | | | | | | |
| SITE CONSTRUCTION | | | | | | | | | | | | | |
| PERM. CONTROL MEASURES | | | | | | | | | | | | | |
| FINISH GRADING | | | | | | | | | | | | | |
| LANDSCAPING | | | | | | | | | | | | | |

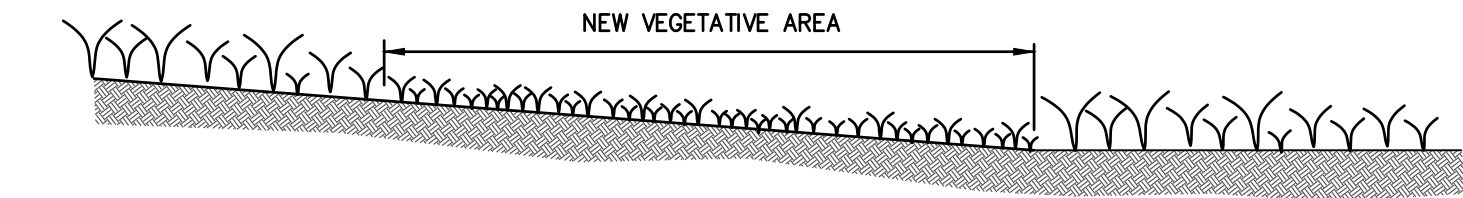
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TEMPORARY SEEDING APPLICATIONS

- 1. WHEN AN AREA NEEDS STABILIZATION DURING A BREAK IN CONSTRUCTION.
- 2. TO STABILIZE SOIL AND PREVENT OR REDUCE SOIL EROSION/SEDIMENTATION PROBLEMS FROM DEVELOPING.
- 3. USED ON CONSTRUCTION AND EARTH CHANGE SITES WHICH REQUIRE TEMPORARY VEGETATIVE STABILIZATION.

DESIGN

- 1. REVIEW SESC PLAN AND CONSTRUCTION PHASING TO IDENTIFY AREAS IN NEED OF TEMPORARY VEGETATIVE STABILIZATION.
- 2. SELECT ANNUAL GRASS SEED FOR TEMPORARY COVER AREAS. SEED MIXES MAY VARY, SHOULD ONLY CONTAIN ANNUAL, NON-AGGRESSIVE SPECIES, AND GENERALLY INCLUDE RYE, WHEAT OR OAT SPECIES. SEED MIXES SHOULD OBTAINED THROUGH CONSULTATION WITH A CERTIFIED SEED PROVIDER AND WITH CONSIDERATION OF SOIL TYPE, LIGHT, MOISTURE AND USE APPLICATION.
- 4. PREPARE SEEDBED BY REMOVAL OF CONSTRUCTION AND WOODY DEBRIS. THEN SCARIFY OR RAKE SEEDBED.
- 5. SLOPES STEEPER THAN 1:3 SHOULD BE ROUGHENED.
- 6. APPLY SEED AS SOON AS POSSIBLE AFTER SEEDBED PREPARATION. MULCH IMMEDIATELY AFTER SEEDING ALL SLOPES, UNSTABLE SOILS, HEAVY CLAY SOILS AND ALL AREAS ADJACENT TO WETLANDS, WATERCOURSES, OR SENSITIVE AREAS.
- 7. PROTECT SEEDED AREAS FROM PEDESTRIAN OR VEHICULAR TRAFFIC.
- 8. DIVERT CONCENTRATED FLOWS AWAY FROM THE SEEDED AREA UNTIL VEGETATION IS ESTABLISHED.
- 9. INSPECT TEMPORARY SEEDED AREAS WEEKLY AND FOLLOWING EACH RAIN EVENT UNTIL FINAL GRADING AND STABILIZATION ARE COMPLETED.
- 10. TEMPORARY SEEDING MUST BE FOLLOWED BY PERMANENT SEEDING.



PERMANENT SEEDING APPLICATIONS

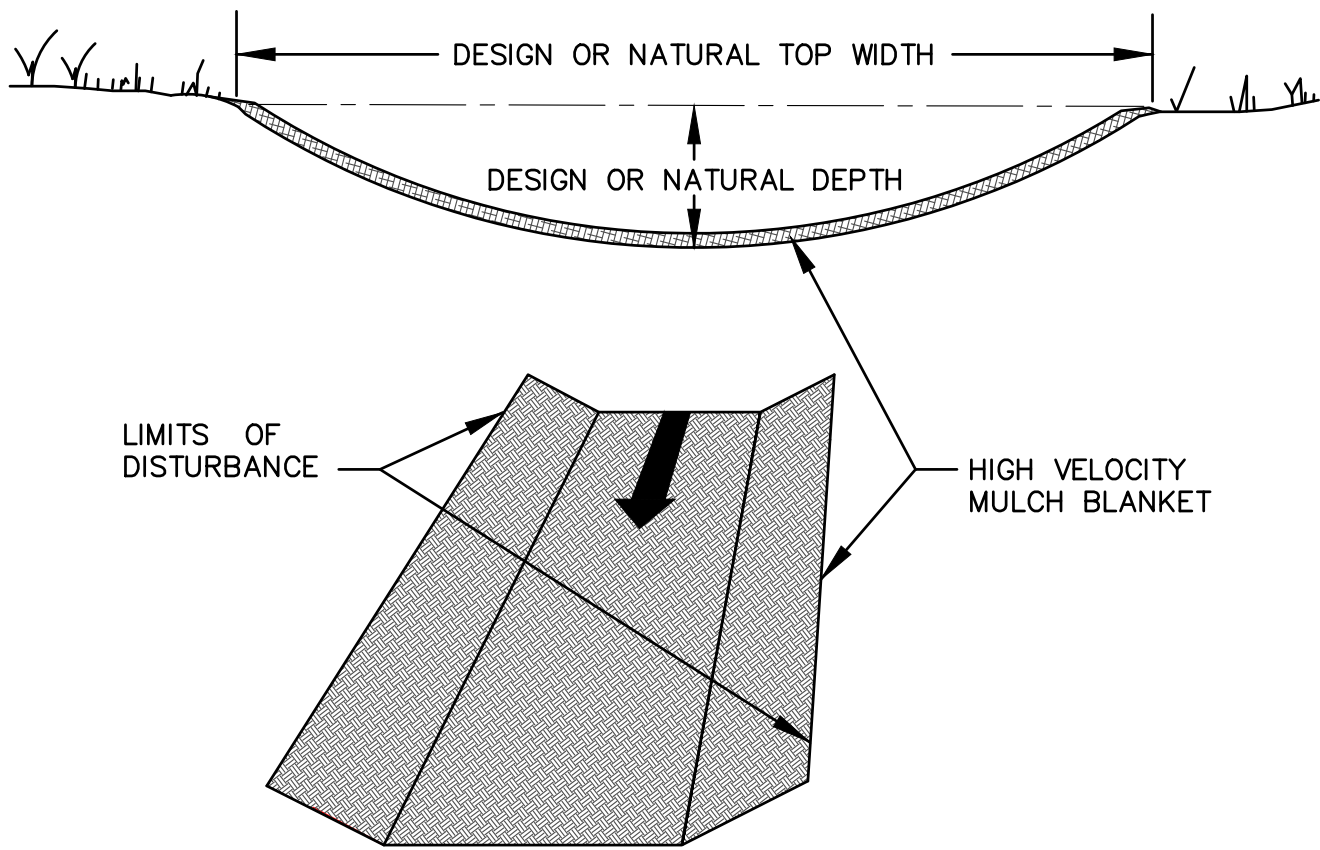
- 1. TO FINALIZE STABILIZATION OF TEMPORARY SEEDING AREAS OR WHEN AN AREA NEEDS PERMANENT STABILIZATION FOLLOWING COMPLETION OF CONSTRUCTION. ALSO USED WHEN VEGETATIVE ESTABLISHMENT CAN CORRECT EXISTING SOIL EROSION OR SEDIMENTATION PROBLEM.
- 2. TO STABILIZE SOIL AND PREVENT OR REDUCE SOIL EROSION/SEDIMENTATION PROBLEMS FROM DEVELOPING.
- 3. USED ON CONSTRUCTION AND EARTH CHANGE SITES WHICH REQUIRE PERMANENT VEGETATIVE STABILIZATION.

DESIGN

- 1. REVIEW SESC PLAN AND CONSTRUCTION PHASING TO IDENTIFY AREAS IN NEED OF PERMANENT VEGETATIVE STABILIZATION.
- 2. SELECT PERENNIAL GRASS AND GROUND COVER FOR PERMANENT COVER.
- 3. SEED MIXES MAY VARY BUT SHOULD BE SELECTED THROUGH CONSULTATION WITH A CERTIFIED SEED PROVIDER AND WITH CONSIDERATION OF SOIL TYPE, LIGHT, MOISTURE, USE APPLICATIONS, AND NATIVE SPECIES CONTENT.

VEGETATIVE STABILIZATION 4

NOT TO SCALE



APPLICATIONS

- 1. STEEP SLOPES.
- 2. CHANNEL AND ROADSIDE DITCH BOTTOMS.
- 3. USE SEED AND HIGH VELOCITY MULCH BLANKETS TO STABILIZE THE GRASSED LINED CHANNEL, IMMEDIATELY AFTER GRADING (ONE DAY MAX).
- 4. MUST NOT BE PLACED ON FROZEN SOIL: MUST REMAIN IN CONTACT WITH SEED AND SOIL.
- 5. MUST BE USED DURING THE NON-GROWING SEASON TO MINIMIZE EROSION UNTIL VEGETATION IS ESTABLISHED.

DESIGN

- 1. FOR DITCHES AND CHANNELS ROLL HIGH VELOCITY MULCH BLANKETS IN THE DIRECTION OF FLOW. DO NOT STRETCH.
- 2. FASTEN OR PEG MULCH BLANKET PER MANUFACTURERS INSTRUCTIONS.
- 3. ON BACKSLOPES, BLANKETS SHALL BE PLACED AT RIGHT ANGLES TO ROADBED OR PIPE LINE.
- 4. OVERLAY ENDS BY 18" AND EDGES BY 4".
- 5. AT ALL BLANKET EDGES, BURY 6"-10" OF BLANKET IN 3'-4" DEEP TRENCH AND COMPACT TRENCH WITH NATIVE SOIL BACKFILL OR MDOT 6AA STONE.

SEEDING WITH MULCH BLANKET AND/OR MATTING 6

NOT TO SCALE

NO DRAWING DETAIL PROVIDED

APPLICATIONS

- 1. WHEN AREAS ARE SUBJECT TO EROIVE SURFACE SHEET FLOWS OR SEVERE WIND.
- 2. TEMPORARILY PROTECTS SEEDD AREAS AND SLOPES AGAINST EROSION FROM RAIN OR WIND. HOLDS SOIL MOISTURE TO ALLOW FOR SEED GERMINATION AND REDUCES WIND DESSICATION OF GERMINATED SEEDS. INHIBITS SEED CONSUMPTION BY BIRDS.
- 3. USE ON EXPOSED SLOPES, NEWLY SEEDD AREAS AND OTHER AREAS SUBJECT TO EROSION.

DESIGN

- 1. OTHER SURFACE RUNOFF CONTROL MEASURES SHOULD BE INSTALLED PRIOR TO MULCHING.
- 2. PREPARE SURFACE TO PROPER GRADE AND COMPACTION REQUIREMENTS.
- 3. IF TREATMENT AREA IS TO BE REVEGETATED IMMEDIATELY, SPREAD OR DRILL SEED, OR INSTALL VEGETATIVE SPRIGS INTO PLANTING SURFACE.
- 4. SELECT MULCH MATERIAL APPROPRIATE FOR SITE CHARACTERISTICS, INCLUDING GRADE, LEVEL OF TRAFFIC, INSTALLATION METHOD, AND ACCESSIBILITY.

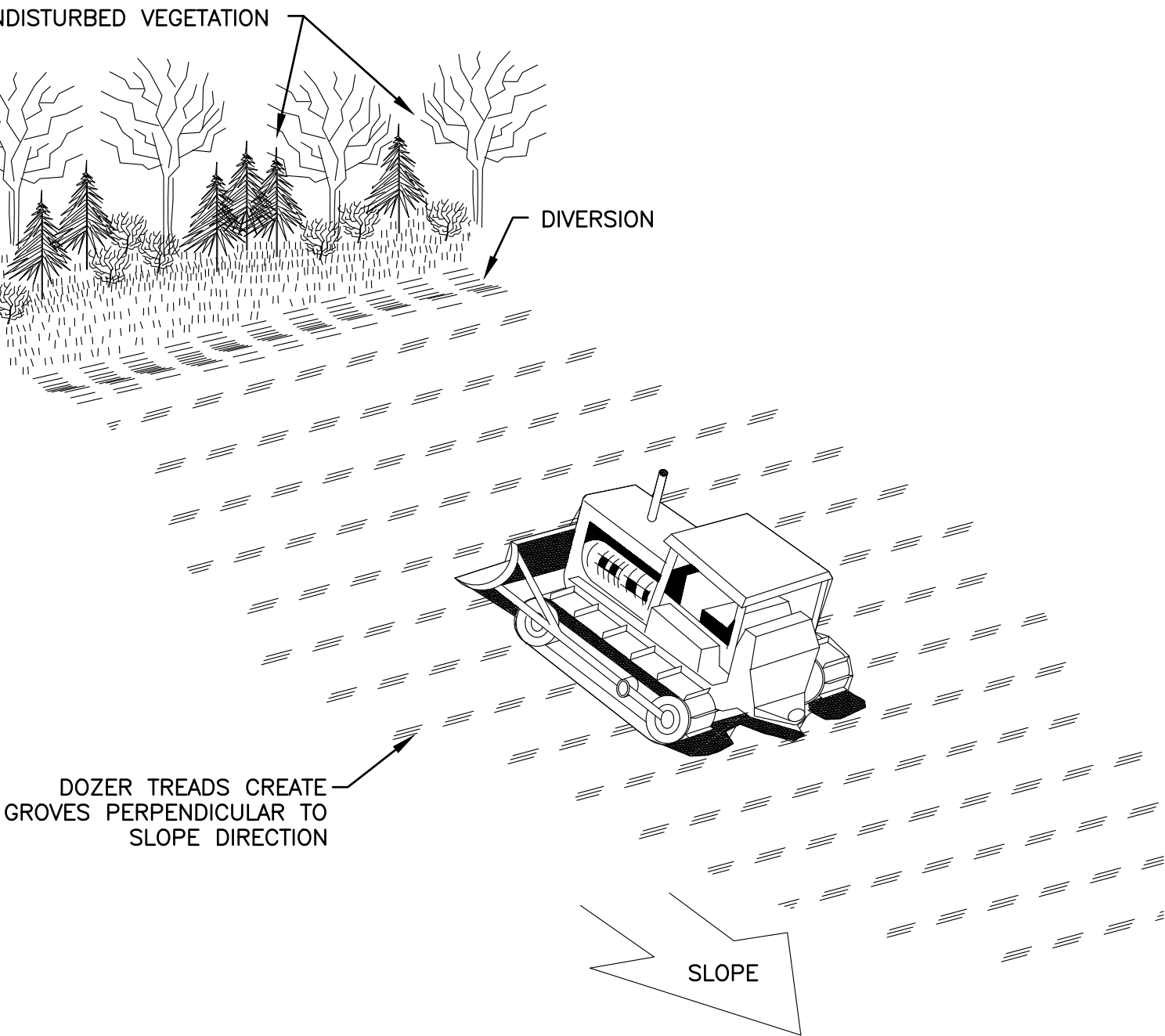
STRAW – MOST COMMON AND WIDELY USED MATERIAL. PROVIDES ORGANIC MATTER AS IT BREAKS DOWN. EFFECTIVENESS OF SEDIMENT REDUCTION HIGH FOR AT LEAST 3 MONTHS. SUBJECT TO WINDBLOW AND WASHOUT. FOR STRAW, APPLY A MINIMUM OF 2 TONS/ACRE OR APPROX. 50 LBS./1000 SQ.FT. TO COVER THE SURFACE. INCREASE APPLICATION RATES 50% FOR DORMANT SEEDING.

DESIGN (CONT.)

- 5. MULCHES SHOULD NOT BE APPLIED IF FREE SURFACE WATER IS PRESENT BUT MAY BE APPLIED TO WET SOIL.
- 6. MULCHES (PARTICULARLY STRAW) MAY NEED ANCHORING. COMMON METHODS INCLUDE CRIMPING, DISKING, OR PUNCHING INTO SOIL; COVERING WITH NETTING; SPRAYING WITH A BINDER/TACKIFIER, OR KEEPING MOIST.
- 7. IF USING A TACKIFIER TO ANCHOR MULCH IN PLACE, APPLY IMMEDIATELY AFTER MULCH HAS BEEN PLACED. TACKIFIERS INCLUDE:
LATEX-BASE. MIX 37 GALLONS OF ADHESIVE OR THE MANUFACTURER'S RECOMMENDED RATE WITH A MINIMUM OF 620 LBS. OF RECYCLED NEWSPRINT AS A TRACER WITH 925 GALLONS OF WATER.
RECYCLED NEWSPRINT. MIX 1850 LBS. OF NEWSPRINT WITH 3700 GALLONS OF WATER.
WOOD FIBER. MIX 1850 LBS. OF WOOD FIBER WITH 3700 GALLONS OF WATER.
GUAR GUM. MIX 120 LBS. OF DRY ADHESIVE AND A MINIMUM OF 620 LBS. RECYCLED NEWSPRINT AS A TRACER WITH 3225 GALLONS OF WATER.

OTHER TACKIFIERS. MIX 240 LBS. OF DRY ADHESIVE OR THE MANUFACTURER'S RECOMMENDED RATE AND A MINIMUM OF 620 LBS. OF RECYCLED NEWSPRINT AS A TRACER WITH 3225 GALLONS OF WATER.

MULCHING 10



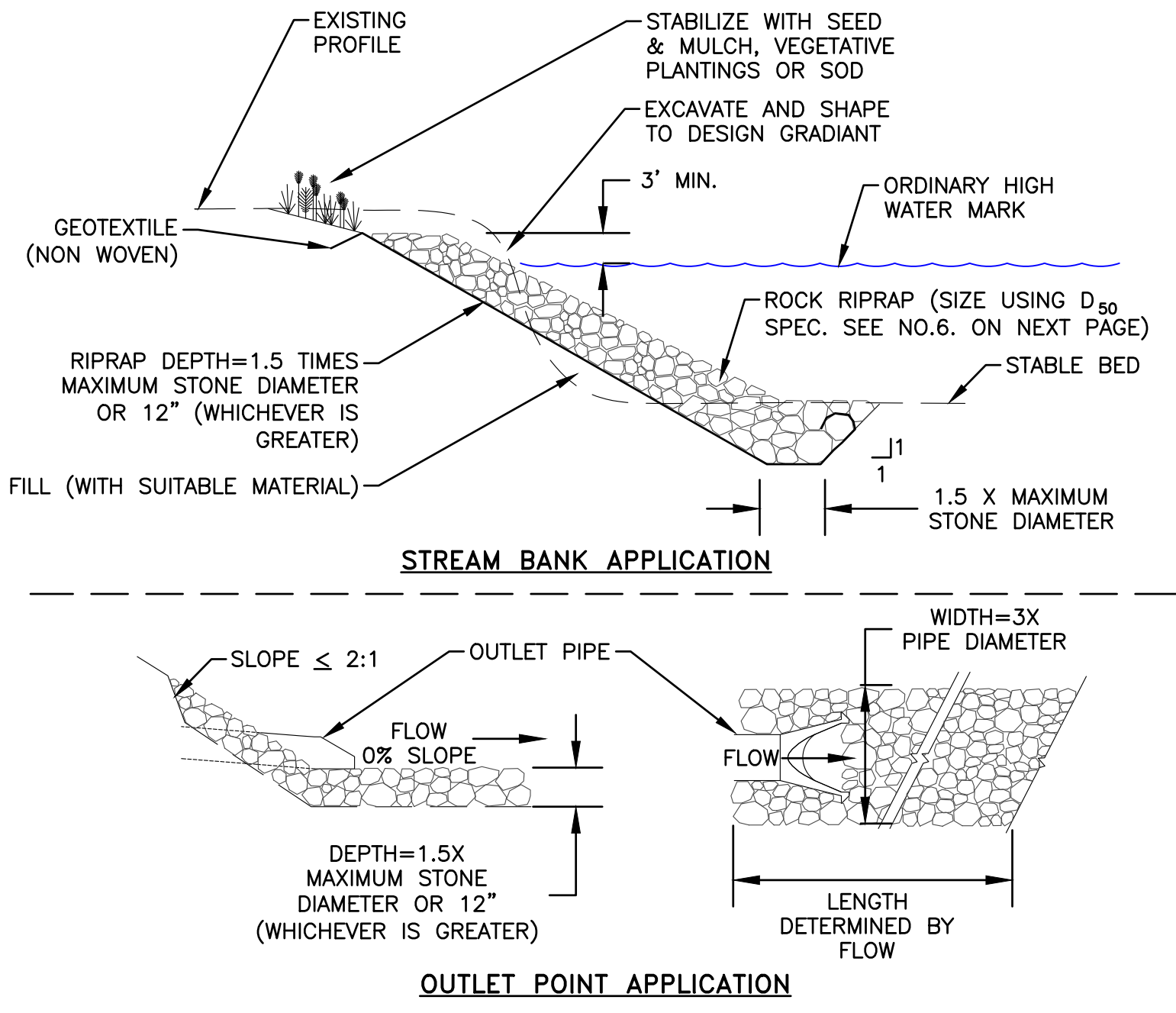
UNVEGETATED SLOPE SHOULD BE TEMPORARILY SCARIFIED TO MINIMIZE RUNOFF VELOCITIES

APPLICATION

PLACE HORIZONTAL GROOVES IN A SLOPE PERPENDICULAR TO THE FLOW OF THE RUNOFF. THIS CAN BE DONE BY EITHER DISC HARROWING, BACK BLADING OR JUST RUNNING THE TREADS OF A CRAWLER TRACTOR PERPENDICULAR TO THE SLOPE AS SHOWN BELOW.

ROUGHENED SURFACE 11

NOT TO SCALE



OUTLET POINT APPLICATION

| Weight (lbs.) | Average Spherical Diameter (in.) | Typical Rectangular Shape | |
|---------------|----------------------------------|---------------------------|--------------------|
| | | Length (in.) | Width/Height (in.) |
| 50 | 10 | 18 | 6 |
| 100 | 13 | 21 | 7 |
| 150 | 14 | 24 | 8 |
| 300 | 18 | 30 | 10 |
| 500 | 22 | 36 | 12 |
| 1000 | 27 | 45 | 15 |
| 1500 | 31 | 52 | 17 |
| 2000 | 34 | 57 | 19 |
| 4000 | 43 | 72 | 24 |
| 6000 | 49 | 83 | 28 |
| 8000 | 54 | 90 | 30 |

Source: Adapted from USDA NRCS

RIP RAP, RUBBLE, GABIONS 13

NOT TO SCALE

APPLICATIONS

- 1. WHEN CONCENTRATED WATER FLOWS HAVE THE POTENTIAL TO CREATE SCOUR, DOWN-CUTTING, OR LATERAL CUTTING.
- 2. TO PREVENT LOSS OF LAND OR DAMAGE TO UTILITIES OR STRUCTURES. IN AQUATIC APPLICATIONS, RIPRAP IS USED TO CONTROL CHANNEL MEANDER AND MAINTAIN CAPACITY, PROTECT AGAINST WAVE ATTACK, AND REDUCE SEDIMENT LOAD.
- 3. ON SLOPES WITH PROFILES MEASURING 1:1.5 OR LESS.

DESIGN

- 1. REVIEW SUBJECT SITE TO IDENTIFY AREAS SUBJECT TO CONCENTRATED FLOWS OR WAVE/CURRENT ATTACK.
- 2. THE AREA UNDER REVIEW FOR RIPRAP PLACEMENT MUST BE SHAPED AND CONTOURED APPROPRIATELY BY GRADING PRIOR TO MATERIAL PLACEMENT.
- 3. NON-WOVEN GEOTEXTILE FABRIC SHOULD BE INSTALLED PRIOR TO RIPRAP PLACEMENT, WITH UPPER END AND TOE END OF FABRIC BURIED OR ANCHORED TO PREVENT MOVEMENT.
- 4. RIPRAP PLACEMENT SHOULD BE STARTED AT A STABILIZED LOCATION AND ENDED AT A STABILIZED OR CONTOURED POINT.
- 5. MATERIAL SELECTED FOR RIPRAP SHOULD BE HARD, ANGULAR, AND RESISTANT TO WEATHERING. APPROPRIATE MATERIAL SIZE DEPENDS ON EXPECTED WATER ENERGY AND INTENDED FUNCTION OF THE MATERIAL.
- 6. RIPRAP MIXTURE SHOULD BE AN EVEN MIXTURE OF STONE SIZES BASED ON THE AVERAGE, OR D50 THIS MEANS 50% OF THE STONE, BY SIZE, WILL BE LARGER THAN THE DIAMETER SPECIFIED, AND 50% WILL BE SMALLER THAN THE SIZE SPECIFIED. THE DIAMETER OF THE LARGEST STONE SHOULD NOT BE MORE THAN 1.5 TIMES THE D STONE SIZE.
- 7. SEE TABLE ON THE PREVIOUS PAGE FOR TYPICAL RIPRAP STONE SIZES.
- 8. ROCK SHALL BE PLACED SO THAT LARGER ROCKS ARE UNIFORMLY DISTRIBUTED AND IN CONTACT WITH ONE ANOTHER. SMALLER ROCKS SHOULD FILL THE VOIDS.
- 9. WHEN IN CONTACT WITH MOVING WATER, RIPRAP WILL TIE INTO A STABLE BANK AT THE DOWNSTREAM END AND WILL BE KEYED INTO THE BANK AT THE UPSTREAM END. RIPRAP SHOULD EXTEND 3 FT. ABOVE THE ORDINARY HIGH WATER MARK OR TO THE TOP OF THE BANK ON SHORT SLOPES. EXTEND RIPRAP A MINIMUM 10 FT. BEYOND ACTIVE EROSION AREA.

RIP RAP, RUBBLE, GABIONS 13

2 of 2

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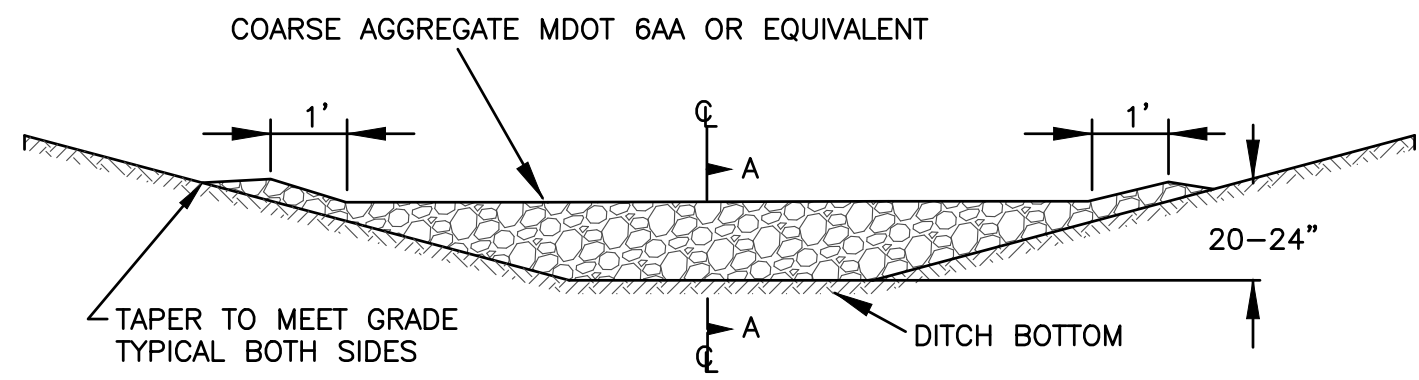
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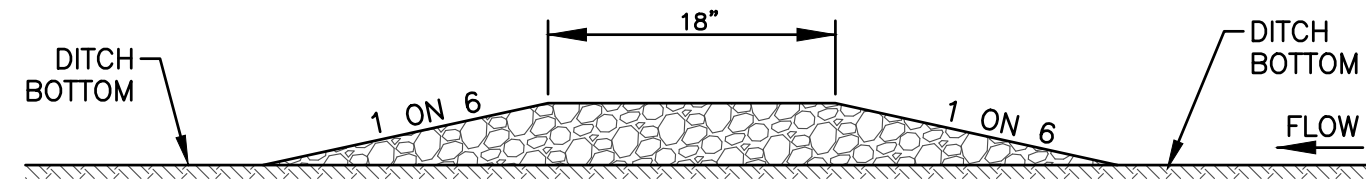
WADE TRIM

CITY OF FLINT
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FLINT, MI 48502
36" SECONDARY WATER SUPPLY
DETAIL SHEET 11

PROJECT: MANAGER: JASON R. KAYSON, PE
CA: PW: WORK: 00948735, 001-FLTS--COUNTYDETAILS.DWG -- CD--10 -- PLOTTED 2/7/2020 10:19 AM BY: RUGGLES, TIMOTHY



DITCH CROSS SECTION



SECTION A - A

APPLICATION

1. FILTER WATER BEFORE LEAVES SITE TO REDUCE SEDIMENT.
2. DO NOT USE AS A CHECK DAM.

WARNINGS

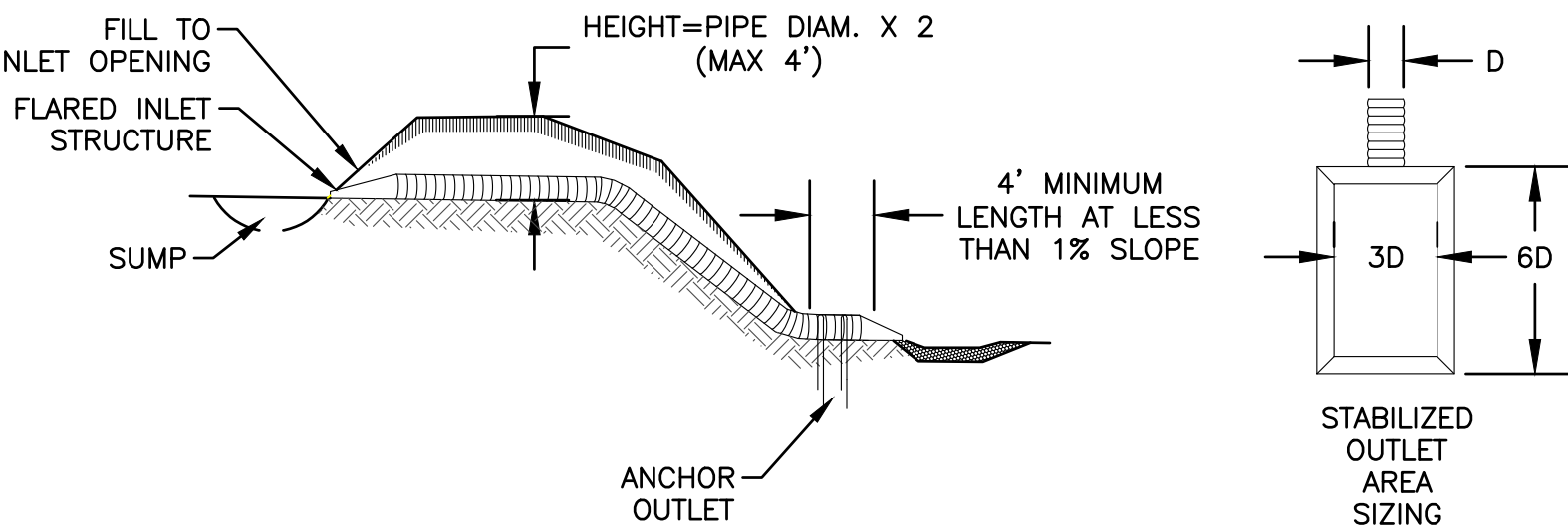
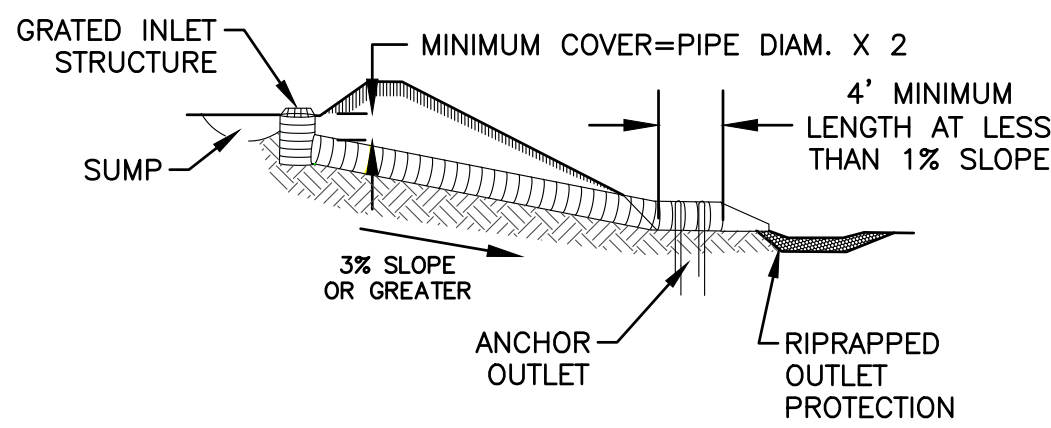
1. WARNING! THIS DEVICE MAY CAUSE FLOODING OF ADJACENT PROPERTY.

GRAVEL FILTER BERM [21]

NOT TO SCALE

DESIGN CRITERIA FOR PIPE SLOPE DRAIN

| PIPE DIAMETER (IN.) | MAXIMUM DRAINAGE AREA (ACRES) |
|---------------------|-------------------------------|
| 12 | 0.5 |
| 18 | 1.5 |
| 21 | 2.5 |
| 24 | 3.5 |
| (2) 24 | 5.0 |



APPLICATIONS

1. WHEN SURFACE RUNOFF ACCUMULATES AT THE TOP OF A SLOPE AND REQUIRES PERMANENT CONVEYANCE TO SLOPE BOTTOM TO MINIMIZE EROSION.
2. TO ELIMINATE SLOPE EROSION, GULLY FORMATION, AND SLOPE FAILURE.
3. WHERE CONCENTRATED FLOW OF SURFACE RUNOFF MUST BE PERMANENTLY CONVEYED DOWN A SLOPE IN ORDER TO PREVENT EROSION.
4. TO PROVIDE PERMANENT DRAINAGE FOR TOP OF SLOPE DIVERSION DIKES OR SWALES.

DESIGN (CONT)

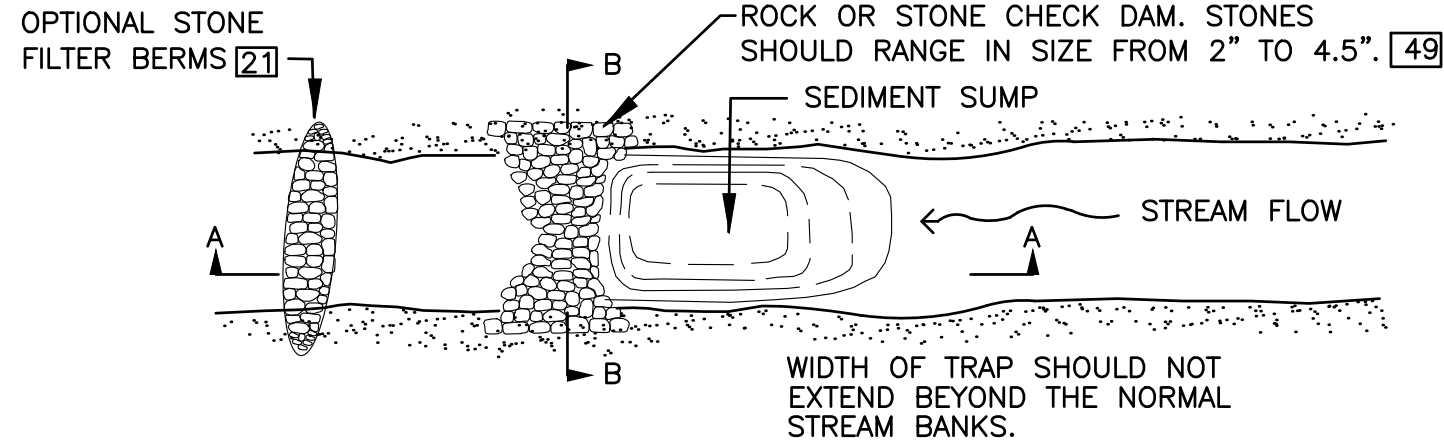
2. SELECT APPROPRIATE PIPE SIZE. SIZE SHOULD NOT BE LESS THAN SPECIFIED IN DESIGN CRITERIA TABLE. UNLESS OTHERWISE SPECIFIED, TEMPORARY DRAINS SHOULD BE SUFFICIENT TO HANDLE PEAK RUNOFF FROM A 10-YEAR, 24-HOUR RAINFALL EVENT.
3. CONSTRUCT THE PIPE SLOPE DRAIN ENTRANCE USING A DROP PIPE WITH A SCREENED INLET (ALTERNATIVE: A STANDARD FLARED INLET). THE SLOPE OF THE ENTRANCE IS USUALLY AT LEAST 3 PERCENT.
4. UTILIZE ANTI-SEEP WATERTIGHT COLLARS TO JOIN PIPE SECTIONS.
5. THOROUGHLY COMPACT THE SOIL AROUND AND UNDER THE PIPE AND ENTRANCE SECTION IN MULTIPLE LIFTS.
6. STABILIZE OUTLET WITH RIPRAP. RIPRAP SHOULD CONSIST OF 6" DIAMETER STONE PLACED ACCORDING TO VOLUME OF DISCHARGE EXPECTED.

DESIGN

1. UTILIZE GRADING PLAN TO IDENTIFY PERMANENT SLOPE TOP RUNOFF/STORMWATER CONCENTRATION POINTS.

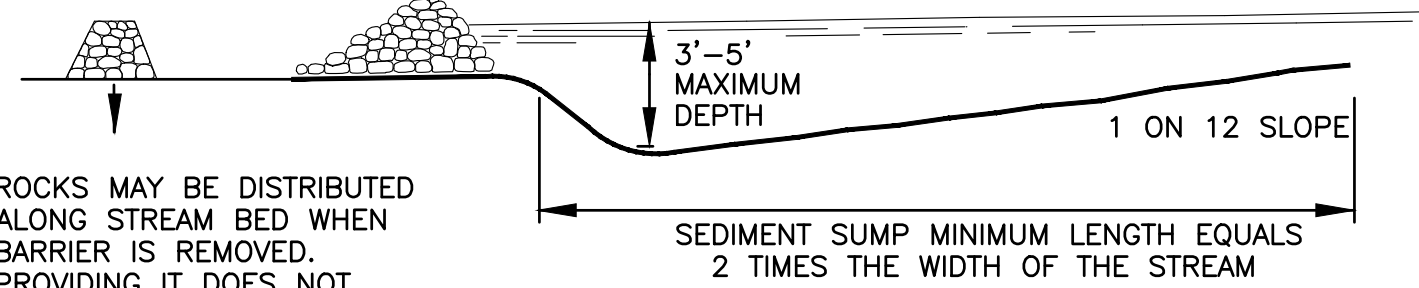
SLOPE DRAIN - SUBSURFACE PIPE [27]

NOT TO SCALE

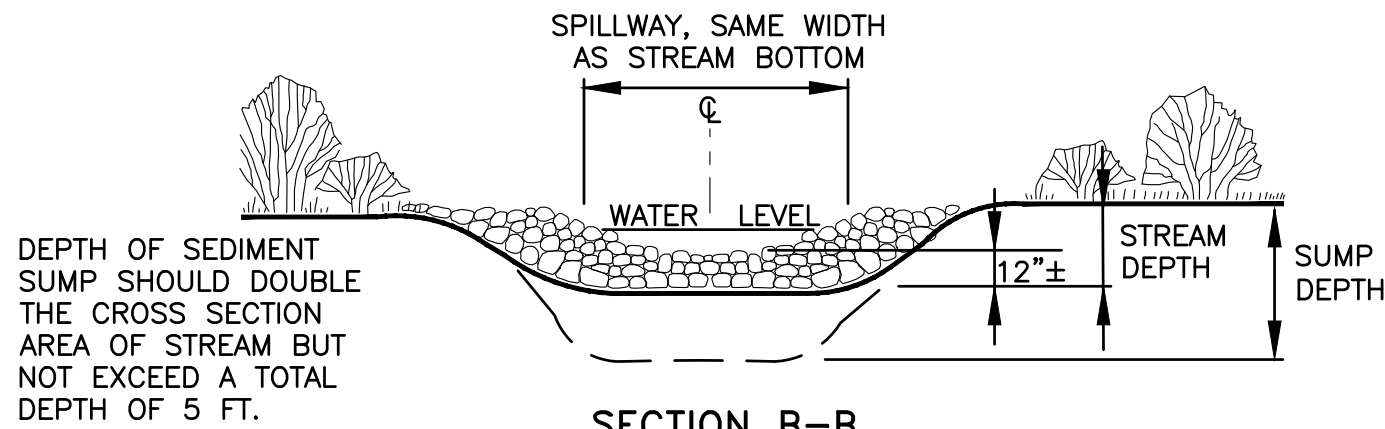


PLAN VIEW

STONE FILTER BERMS [21] MAY BE PLACED DOWN STREAM OF THE SUMP, IF NEEDED. ROCK OR STONE CHECK DAM PER [49] WILL ENHANCE EFFICIENCY OF SEDIMENT TRAP



SECTION A-A



SECTION B-B

APPLICATION

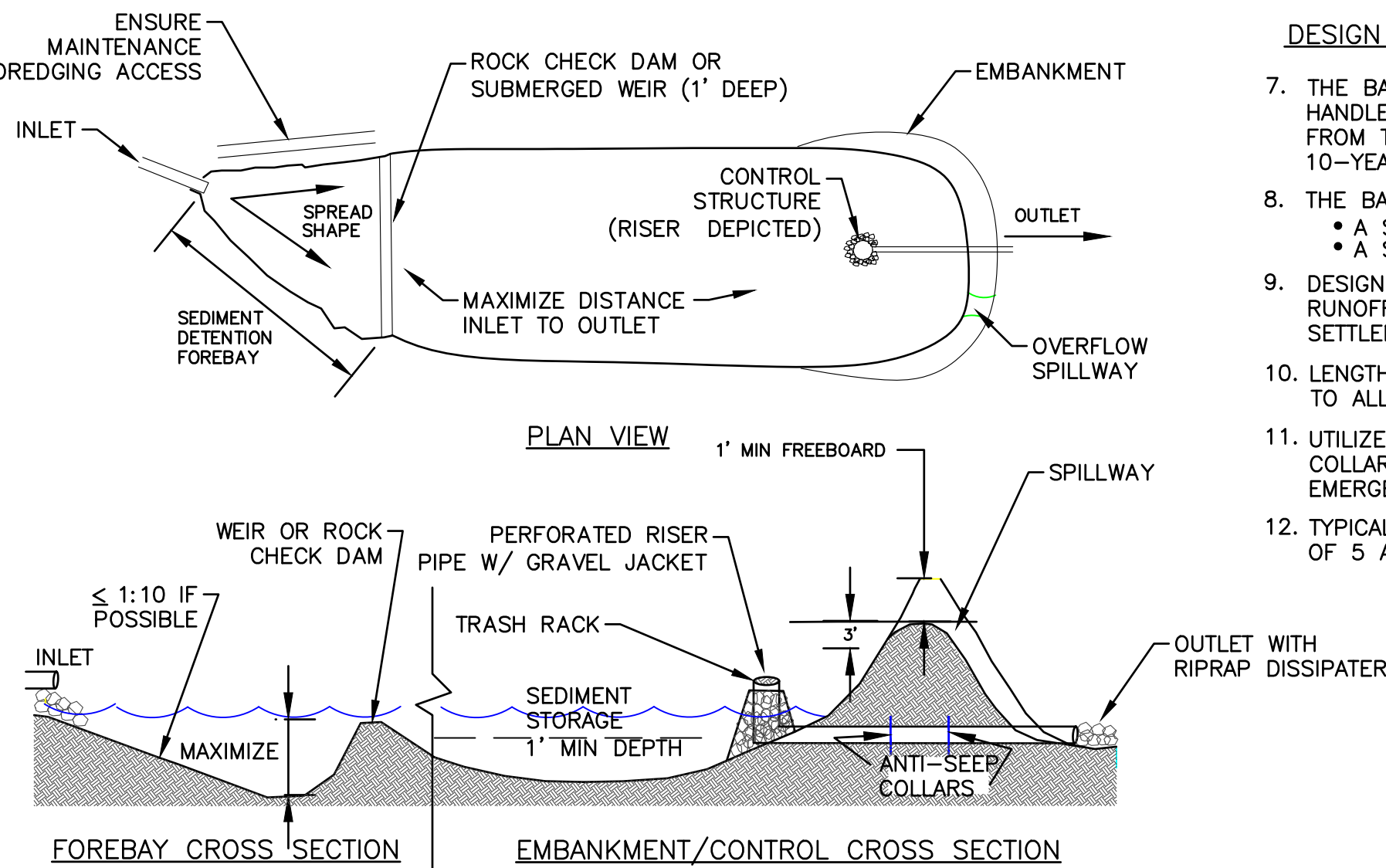
1. FLOWING STREAMS.

DESIGN

1. TRAP DESIGN FOR APPROXIMATELY 170 FT OF SEDIMENT.
2. REMOVED SEDIMENT AND RESTORE ORIGINAL CAPACITY WHEN SUMP IS 50% FULL.
3. STONE SHALL BE MAINTAINED AND REPAIRED WHEN DAMAGE OR DISPLACED.
4. WARNING! THIS DEVICE MAY CAUSE FLOODING OF ADJACENT PROPERTY.

SEDIMENT TRAP [33]

NOT TO SCALE



APPLICATIONS

1. WHEN SITE RUNOFF IS SEDIMENT-LADEN AND/OR RUNOFF RELEASE RATE IS REQUIRED.
2. TO DETAIN RUNOFF SUFFICIENTLY TO ALLOW EXCESSIVE SEDIMENT TO SETTLE OUT BEFORE STORMWATER LEAVES CONSTRUCTION SITE.
3. AT THE OUTLET OF ANY DISTURBED AREA OR AT THE ULTIMATE SITE OUTLET.
4. SHOULD BE USED IN ASSOCIATION WITH DIKES, TEMPORARY CHANNELS, AND PIPES TO DIVERT STORMWATER FROM THE DISTURBED AREAS INTO THE BASIN.
5. MAY BE COMBINED WITH PERMANENT DETENTION BASIN.

DESIGN

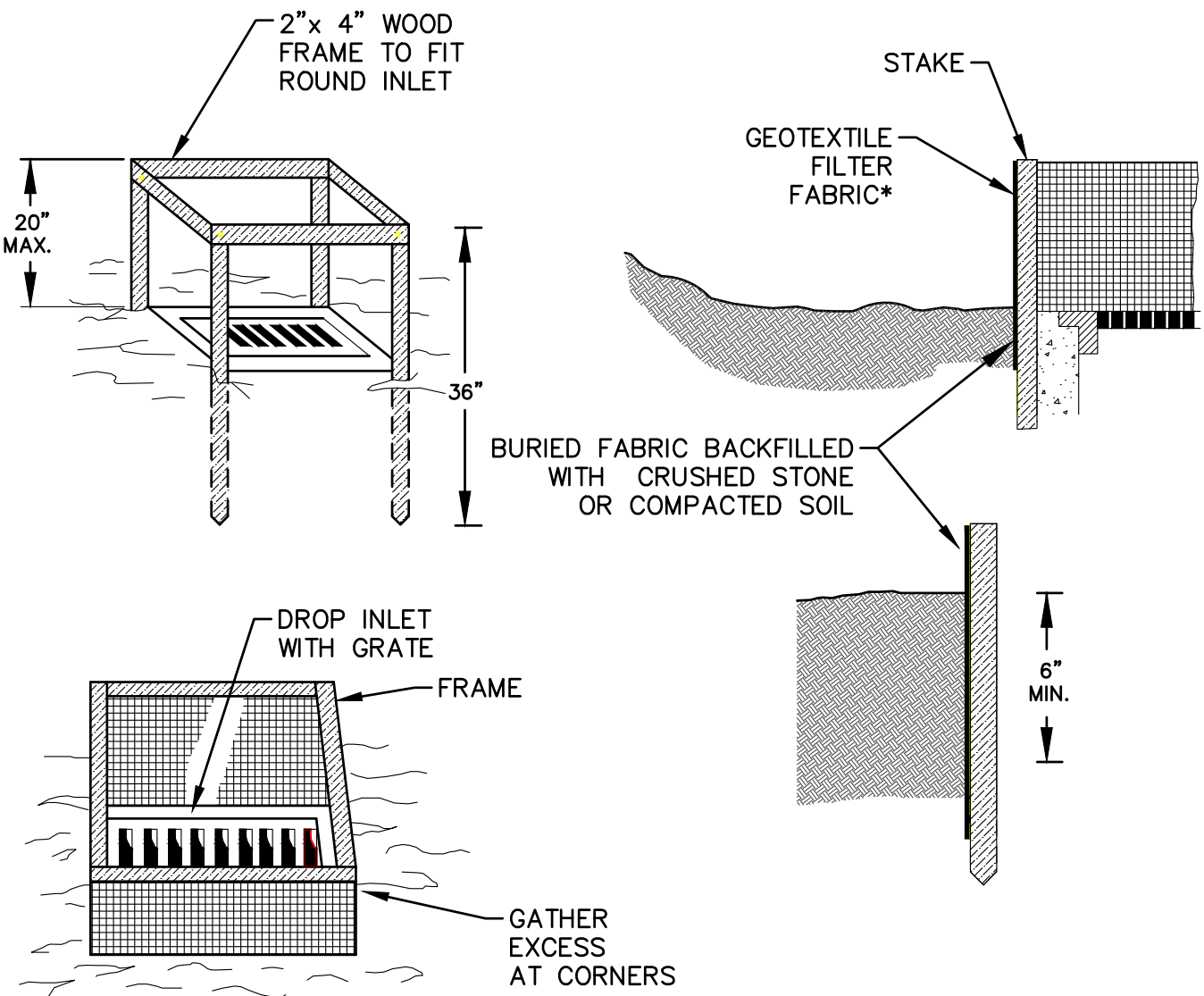
1. BASIN TO BE DESIGNED TO ENSURE ADEQUATE STORAGE VOLUME FROM THE CONTRIBUTING DRAINAGE AREA.
2. BASINS SHOULD BE CONSTRUCTED BEFORE CLEARING AND GRADING WORK BEGINS.
3. BASINS SHOULD BE LOCATED AT THE STORMWATER OUTLET FOR THE SITE AND MULTIPLE BASINS MAY BE LOCATED THROUGHOUT THE SITE.
4. BASIN LOCATION SHOULD ENSURE SUITABLE ACCESS FOR MAINTENANCE AND CLEANOUT.
5. DO NOT LOCATE IN A STREAM.
6. ALL BASIN SITES SHOULD BE LOCATED WHERE EMBANKMENT FAILURE WILL NOT COMPROMISE SAFETY OR RESULT IN PROPERTY DAMAGE.

SEDIMENT BASIN [34]

NOT TO SCALE

DESIGN (CONT)

7. THE BASIN VOLUME SHOULD BE DESIGNED TO HANDLE THE VOLUME OF STORMWATER EXPECTED FROM THE DISTURBED ACREAGE FOR A MINIMUM 10-YEAR STORM EVENT.
8. THE BASIN VOLUME CONSISTS OF TWO ZONES
 - A SEDIMENT STORAGE ZONE TO A 1' MINIMUM DEPTH.
 - A SETTLING ZONE AT LEAST 2 FEET DEEP.
9. DESIGN SHOULD CONTAIN SUFFICIENT CAPACITY TO DETAIN RUNOFF FOR 24-48 HOURS, MAXIMIZING SEDIMENT SETTLEMENT POTENTIAL.
10. LENGTH TO WIDTH RATIO SHOULD BE GREATER THAN 4:1 TO ALLOW FOR SUFFICIENT SETTLEMENT TIME.
11. UTILIZE A WELL ANCHORED RISER PIPE WITH ANTI-SEEP COLLARS AS THE PRINCIPAL OUTLET, ALONG WITH AN EMERGENCY OVERFLOW SPILLWAY FOR MAJOR EVENTS.
12. TYPICALLY, PERMANENT BASINS ARE USED FOR DRAINAGE OF 5 ACRES OR MORE.



APPLICATIONS

1. INLETS WITH DRAINAGE OF 1 ACRE OR LESS AND SLOPES LESS THEN 5%.
2. SERVICE, CLEAN AND REPAIR AFTER EACH STORM EVENT.

* NOTE *

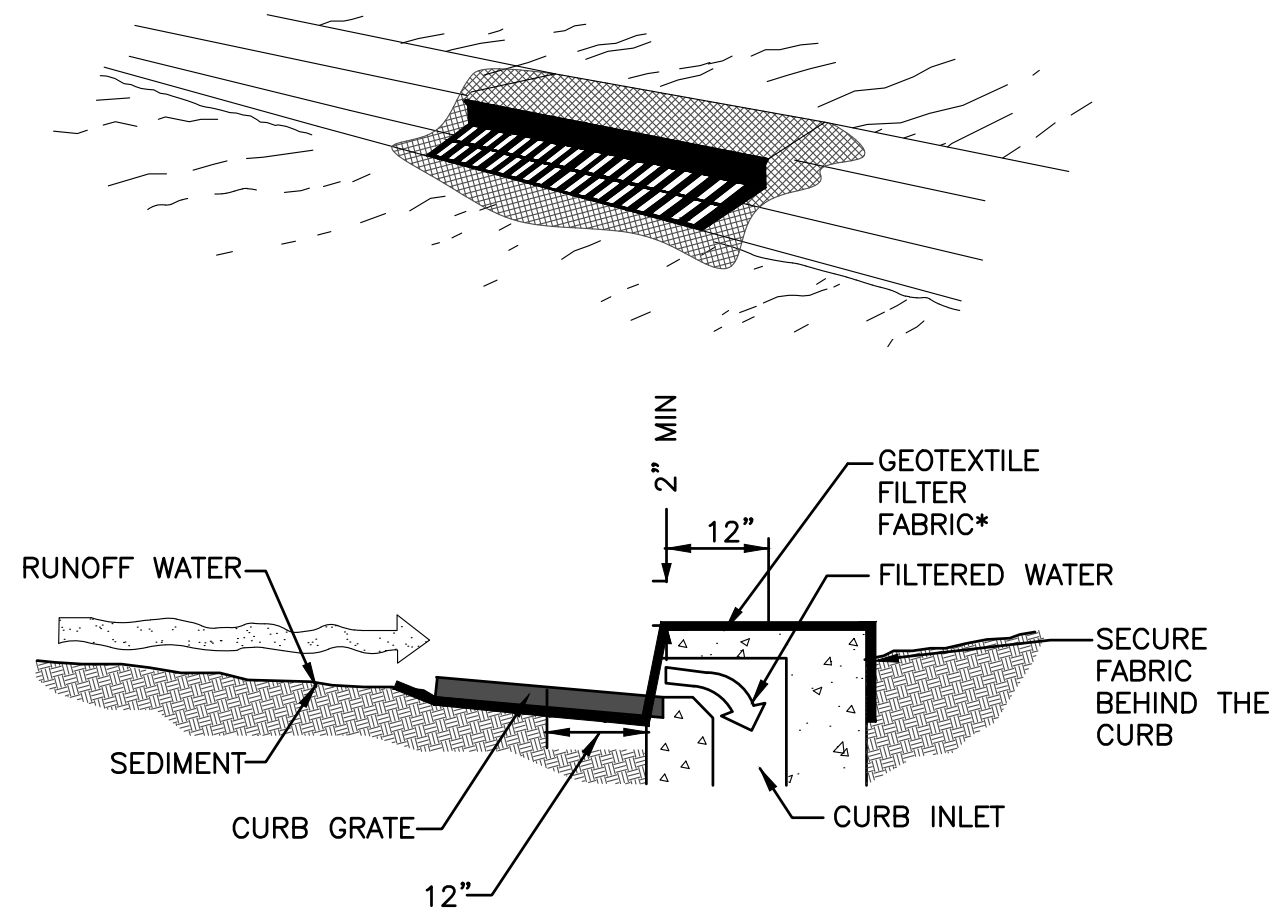
DO NOT USE SILT FENCE IN LIEU OF FILTER FABRIC FOR THIS APPLICATION.

DESIGN

1. FILTER BAGS MAY BE PLACED IN THE MANHOLE TO INCREASE THE EFFECTIVENESS OF THIS DEVICE.
2. IN SOME CASES FILTER BAGS IN THE MANHOLE MAY BE USED ALONE.
3. WARNING! THIS DEVICE MAY CAUSE FLOODING OF ADJACENT PROPERTY!
4. TOP OF FRAME (PONDING HEIGHTS) MUST BE LOWER THAN GROUND ELEVATION DOWN STREAM TO PREVENT BYPASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY DOWN SLOPE OF THE STRUCTURE.

CATCH BASIN INLET PROTECTION [36]

NOT TO SCALE



APPLICATION

1. INLETS AT CURB OPENINGS.

* NOTE *

DO NOT USE SILT FENCE IN LIEU OF FILTER FABRIC FOR THIS APPLICATION.

DESIGN

1. WARNING! THIS DEVICE MAY CAUSE FLOODING OF ADJACENT PROPERTIES.
2. SERVICE CLEAN AND REPAIR AFTER EACH STORM EVENT.

FABRIC FILTER CURB INLET PROTECTION [39]

NOT TO SCALE

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PROJECT: MANAGER-Jesse B. Kravos, PE
C:\PW\WORK\00948736\001-FLINT-COUNTYDETAILS.DWG -- CD--13 -- PLOTTED 2/7/2020 11:44 AM BY: RUGGLES, TIMOTHY

PROPOSED RESTORATION BY WETLAND AREA

| WETLAND AREA | Wetland Type | | | | | Restoration Notes | Restoration Plan** | Notes* |
|--------------|-------------------------------|-----------------|------------------|---------------|-------|---|--------------------|---|
| | Wet ***Meadow/Invasives (WMI) | Wet Meadow (WM) | Scrub Shrub (SS) | Forested (FO) | Drain | | | |
| 1 | | | | X | | None | None | Avoided- work on east side. No impact |
| 2 | | | | X | | Restore to original grade. | Plan 3 | |
| 3 | | X | X | X | | Restore to original grade. | Plan 4 | Northern portion FO/Southern portion WM. Project only impacts FO/SS. |
| 4 | | X | | | X | Work in dry weather. Contain sediment in Drain. Restore to original grade. | Plan 2 | WM in and adjacent to Mason Drain. Work on southern side (avoid wooded area). |
| 5 | | X | | | | Restore to original grade. | Plan 2 | Work on W side (avoid wooded area). |
| 6 | | X | | | | Restore to original grade. | Plan 2 | Work on W side (avoid wooded area). |
| 7 | | X | | | | Restore to original grade. | Plan 2 | Work on W side (avoid wooded area). |
| 8 | X | | | | | Restore to original grade. Invasives. Vegetation to restore naturally. | Plan 1 | Invasives dominant. |
| 9 | X | | | | | Restore to original grade. Invasives. Vegetation to restore naturally. | Plan 1 | Invasives dominant. |
| 10 | | X | | X | | None | None | Not impacted. |
| 11 | X | | | | | Restore to original grade. Invasives. Vegetation to restore naturally. | Plan 1 | Invasives dominant. |
| 12 | | X | | | X | Work in dry weather. Contain sediment in Drain. Restore to original grade. | Plan 2 | Work on E side (avoid wooded area). Costello Drain. No defined stream channel in open area. |
| 13 | | X | X | X | | None | None | Not impacted. |
| 14 | X | | X | X | | Restore to original grade. Restore FO/SS impacts with planting. WM area to restore naturally. | Plan 4 | Work on E side (Minimize wooded area impacts) |
| 15 | | X | | X | | Restore to original grade. | Plan 2 | Work on E side (Avoid wooded area). |
| 16 | | X | | | | None | None | Not regulated |
| 17 | X | X | | | | Restore to original grade. | Plan 2 | Work on E side (avoid wooded area). |
| 18 | X | X | | | | Restore to original grade. | Plan 2 | Work on E side (avoid wooded area). |
| 19 | X | X | | | | Restore to original grade. | Plan 2 | |
| 20 | X | | | | | Restore to original grade. | Plan 1 | Invasives dominant. |
| 21 | X | | | | | Restore to original grade. | Plan 1 | Invasives dominant. |
| 22 | | X | X | X | X | None | None | Not impacted. |
| 23 | X | | | | | None | None | Not impacted. |
| 24 | X | | | X | | Restore to original grade. Invasives. Vegetation to restore naturally. | Plan 1 | No impacts to FO |
| 25 | X | | | | | Restore to original grade. Invasives. Vegetation to restore naturally. | Plan 1 | Work on NE side (avoid woody vegetation) |
| 26 | X | | | X | | None | None | Not impacted. |
| 27 | X | | | | | Restore to original grade. Invasives. Vegetation to restore naturally. | Plan 1 | Invasives dominant. |
| 28 | X | | | | | Restore to original grade. Invasives. Vegetation to restore naturally. | Plan 1 | Invasives dominant. |
| 29 | X | X | X | X | | Restore to original grade. | Plan 2 | Only WM/IWM impacted |
| 30 | | X | | | | Restore to original grade. | None | Not regulated |
| 31 | | X | | | | Restore to original grade. | Plan 2 | Work on E side (avoid woody vegetation) |
| 32 | | X | | | | Restore to original grade. | Plan 2 | Work on E side (avoid woody vegetation) |
| 33 | X | X | | X | | Restore to original grade. | Plan 2 | Only IWM/WM impacted |
| 34 | X | X | X | X | | Restore to original grade. | Plan 2 and 3 | Work on E side (avoid woody vegetation to the extent possible) |

- * Avoid wooded areas throughout when feasible
- | | | |
|----------|------------------|---|
| **Plan 1 | Invasive plants | No wetland seeding or plantings. Stabilization only. Wetland Vegetation restores naturally. |
| **Plan 2 | Wet Meadow | See plant lists |
| **Plan 3 | Forested | See plant lists |
| **Plan 4 | Forested & Scrub | See plant lists |

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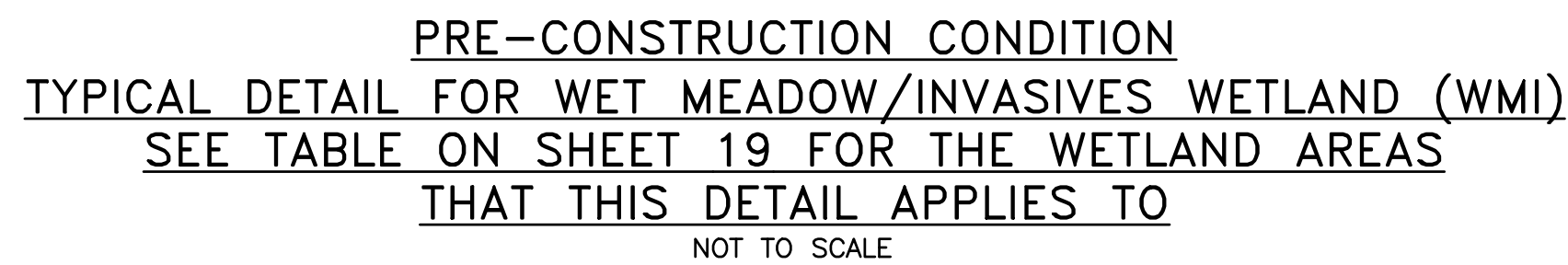
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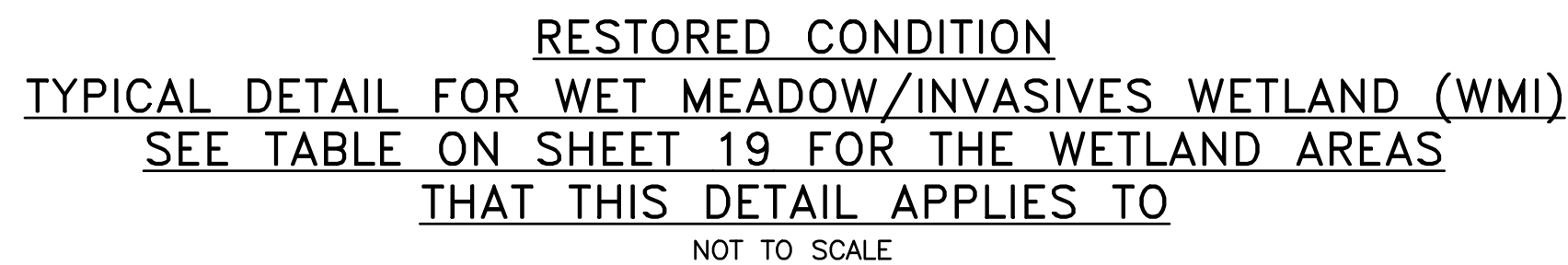
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- NOTES:
1. REMOVE AND TEMPORARILY STOCKPILE SOILS WITH TOPSOIL SEPARATE. REPLACE SOILS IN REVERSE ORDER TO ORIGINAL GRADE WITH TOPSOIL PLACED LAST AND LEVELED TO ORIGINAL GRADE. STABILIZE WITH PLANTING PLAN 1 PER TABLE.
 2. STOCKPILING DONE IN WETLAND AREAS WILL BE DONE AT INCIDENTAL COST TO THE CONTRACTOR.
 3. ALL EXCESS MATERIAL SHALL BE REMOVED FROM SITE.

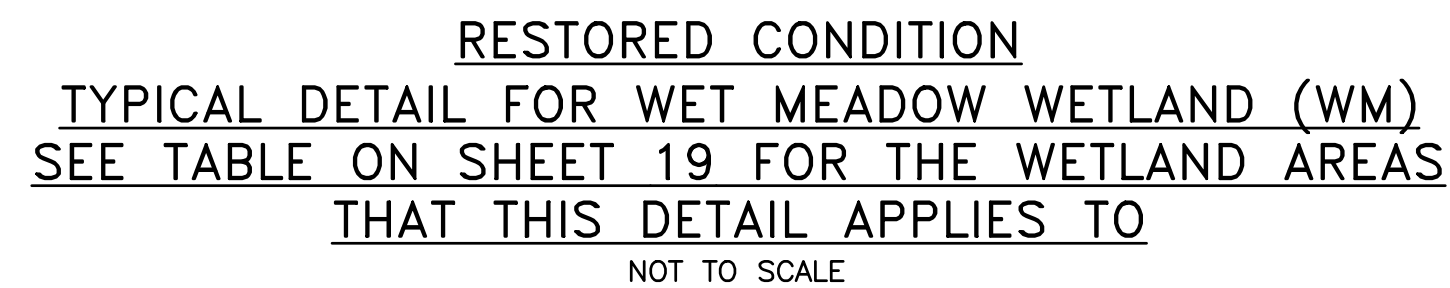


Stabilization at Wet Meadow Invasives crossings

PLANTING PLAN 2

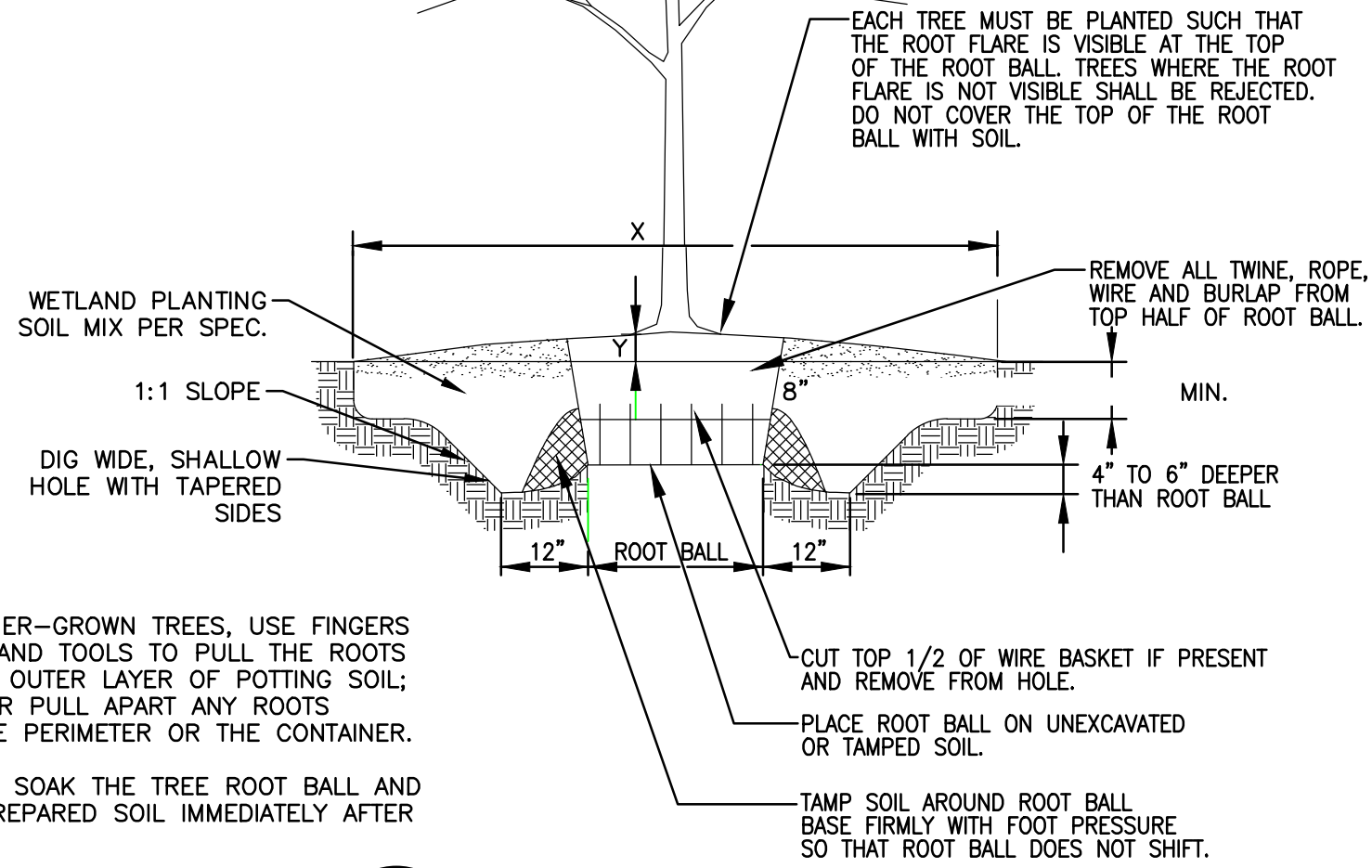
PRE-CONSTRUCTION CONDITION
TYPICAL DETAIL FOR WET MEADOW WETLAND (WM)
SEE TABLE ON SHEET 19 FOR THE WETLAND AREAS
THAT THIS DETAIL APPLIES TO
NOT TO SCALE

- NOTES:
1. REMOVE AND TEMPORARILY STOCKPILE SOILS WITH TOPSOIL SEPARATE. REPLACE SOILS IN REVERSE ORDER TO ORIGINAL GRADE WITH TOPSOIL PLACED LAST AND LEVELED TO ORIGINAL GRADE. STABILIZE WITH WITH HERBACIOUS PLANTS PER PLANTING PLAN 2 SPECIFIED IN TAB.
 2. STOCKPILING DONE IN WETLAND AREAS WILL BE DONE AT INCIDENTAL COST TO THE CONTRACTOR.
 3. ALL EXCESS MATERIAL SHALL BE REMOVED FROM SITE.



PROJECT: MANAGER: JESSA R. KAYES, PE FIELD BOOK INFORMATION: CD-19 - PLOTTED 2/7/2020 11:50 AM BY RUGGLES, TIMOTHY
C:\PW\WORK\CD0848736\CD1-FL15-COUNTYDETAILS.DWG

X = MINIMUM WIDTH OF PREPARED SOIL FOR TREES
Y = HEIGHT OF TOP OF ROOT BALL ABOVE SURROUNDING GRADE
X = 10'
Y = 3" MINIMUM; 6" MAXIMUM



NOTES:

1. FOR CONTAINER-GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OR THE CONTAINER.
2. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL IMMEDIATELY AFTER PLANTING.

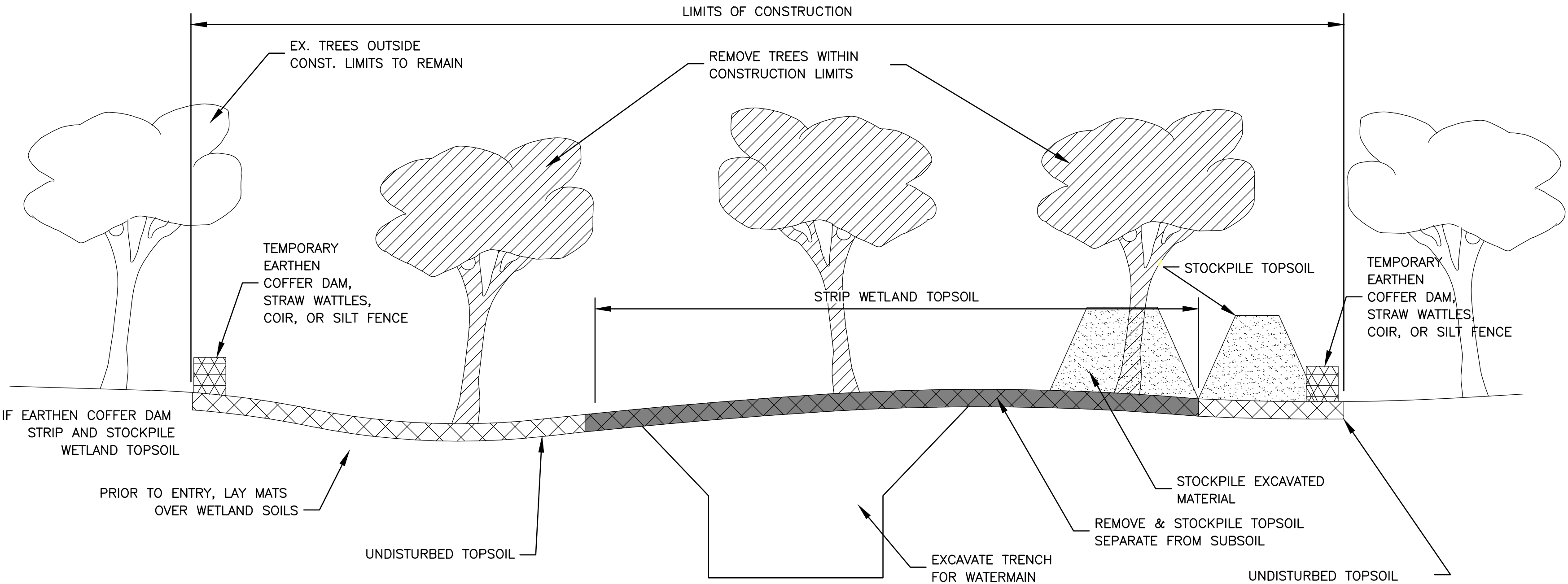


TYPICAL TREE PLANTING DETAIL

NOT TO SCALE

PLANTING PLAN 3

| Wooded Wetland Plantings | | | Wooded Wetland Seed Mix | | |
|--------------------------|-----------------|--------------------|----------------------------------|-----------------------------|-----------------|
| Botanical Name | Common Name | Quantity | Botanical Name | Common Name | PLS Ounces/Acre |
| Swamp White Oak | Quercus bicolor | 150 bare root/acre | Permanent Grasses/Sedges: | | |
| Acer saccharinum | Silver Maple | 150 bare root/acre | Calamagrostis canadensis | Bluejoint Grass | 1.00 |
| | | | Carex crinita | Fringed Sedge | 1.00 |
| | | | Carex frankii | Bristly Cattail Sedge | 3.00 |
| | | | Carex lupulina | Common Hop Sedge | 3.00 |
| | | | Carex lurida | Bottlebrush Sedge | 2.00 |
| | | | Carex muskingumensis | Swamp Oval Sedge | 1.00 |
| | | | Carex squarrosa | Narrow-Leaved Cattail Sedge | 1.00 |
| | | | Carex typhina | Common Cattail Sedge | 3.00 |
| | | | Carex vulpinoidea | Brown Fox Sedge | 2.00 |
| | | | Cinna arundinacea | Common Wood Reed | 0.50 |
| | | | Elymus virginicus | Virginia Wild Rye | 32.00 |
| | | | Glyceria striata | Fowl Manna Grass | 2.00 |
| | | | Juncus effusus | Common Rush | 0.50 |
| | | | Leersia oryzoides | Rice Cut Grass | 2.00 |
| | | | Scirpus atrovirens | Dark Green Rush | 1.00 |
| | | | Spartina pectinata | Prairie Cord Grass | 1.00 |
| | | | Total | | 56.00 |
| | | | Forbs: | | |
| | | | Alisma subcordatum | Common Water Plantain | 1.00 |
| | | | Angelica atropurpurea | Great Angelica | 1.00 |
| | | | Asclepias incarnata | Swamp Milkweed | 0.50 |
| | | | Bidens spp. | Bidens Species | 2.50 |
| | | | Boehmeria cylindrica | False Nettle | 2.00 |
| | | | Campanulastrum americanum | Tall Bellflower | 0.25 |
| | | | Cephalanthus occidentalis | Buttonbush | 0.50 |
| | | | Doellingeria umbellata | Flat-Top Aster | 0.25 |
| | | | Helenium autumnale | Sneezeweed | 1.00 |
| | | | Heracleum maximum | Cow Parsnip | 1.00 |
| | | | Lobelia siphilitica | Great Blue Lobelia | 0.50 |
| | | | Lycopus americanus | Common Water Horehound | 0.50 |
| | | | Mimulus ringens | Monkey Flower | 0.50 |
| | | | Penthorum sedoides | Ditch Stonecrop | 0.50 |
| | | | Persicaria spp. | Pinkweed Species | 2.00 |
| | | | Rudbeckia laciniata | Wild Golden Glow | 2.00 |
| | | | Senna hebecarpa | Wild Senna | 2.00 |
| | | | Solidago patula | Swamp Goldenrod | 1.00 |
| | | | Symphotrichum puniceum | Bristly Aster | 1.00 |
| | | | Thalictrum dasycarpum | Purple Meadow Rue | 2.00 |
| | | | Verbesina alternifolia | Wingstem | 4.00 |
| | | | Total | | 26.00 |



PRE-CONSTRUCTION CONDITION

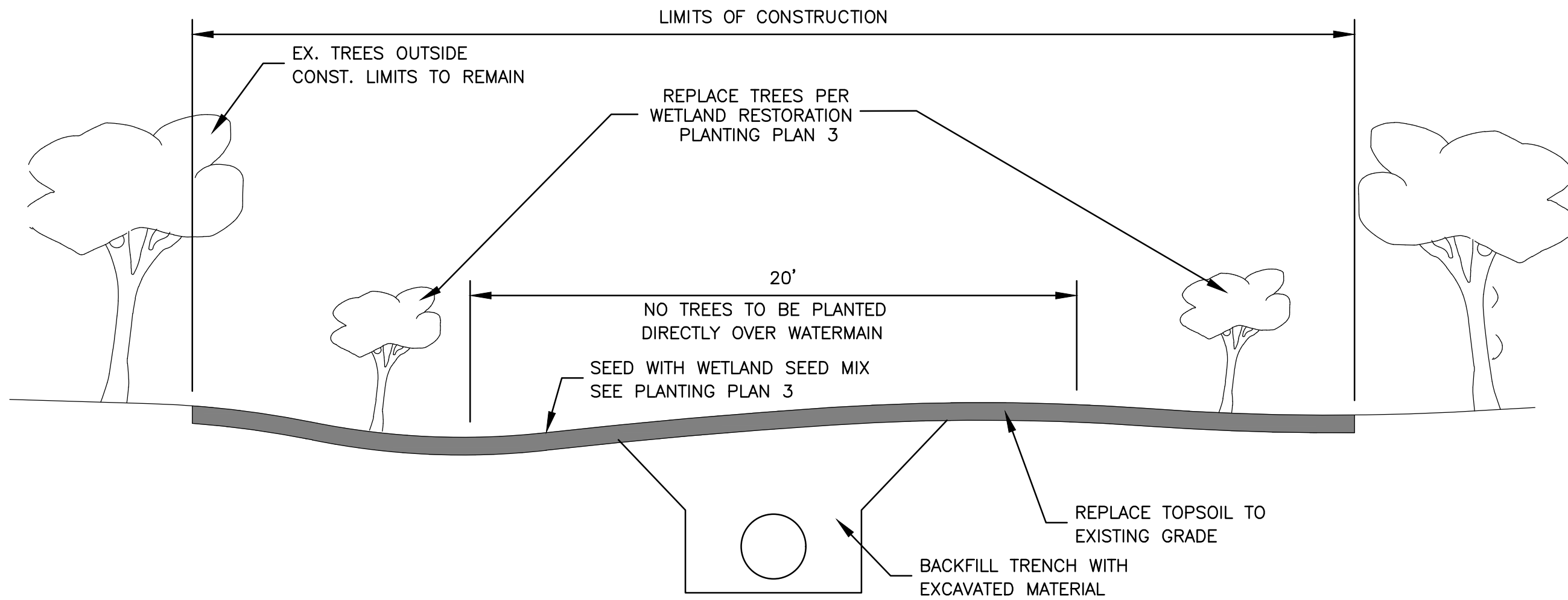
TYPICAL DETAIL FOR FORESTED WETLAND (FO)

SEE TABLE ON SHEET 19 FOR THE WETLAND AREAS THAT THIS DETAIL APPLIES TO

NOT TO SCALE

NOTES:

1. REMOVE AND TEMPORARILY STOCKPILE SOILS WITH TOPSOIL SEPARATE. REPLACE SOILS IN REVERSE ORDER TO ORIGINAL GRADE WITH TOPSOIL PLACED LAST AND LEVELED TO ORIGINAL GRADE. STABILIZE WITH SEED AND TREES PER PLANTING PLAN 3 SHOWN IN TABLE.
2. STOCKPILING DONE IN WETLAND AREAS WILL BE DONE AT INCIDENTAL COST TO THE CONTRACTOR.
3. ALL EXCESS MATERIAL SHALL BE REMOVED FROM SITE.
4. IN AREAS WHERE SLOPE EXCEEDS 1%, INSTALL TEMPORARY OAT AND RYE SEED MIX. IF SLOPE EXCEEDS 5%, APPLY STRAW MULCH OR MULCH BLANKET TO STABILIZE THE SLOPE.
5. DO NOT GRUB TREE ROOTS UNLESS IN DIRECT LINE OF TRENCH.



RESTORED CONDITION

TYPICAL DETAIL FOR FORESTED WETLAND (FO)

SEE TABLE ON SHEET 19 FOR THE WETLAND AREAS THAT THIS DETAIL APPLIES TO

NOT TO SCALE

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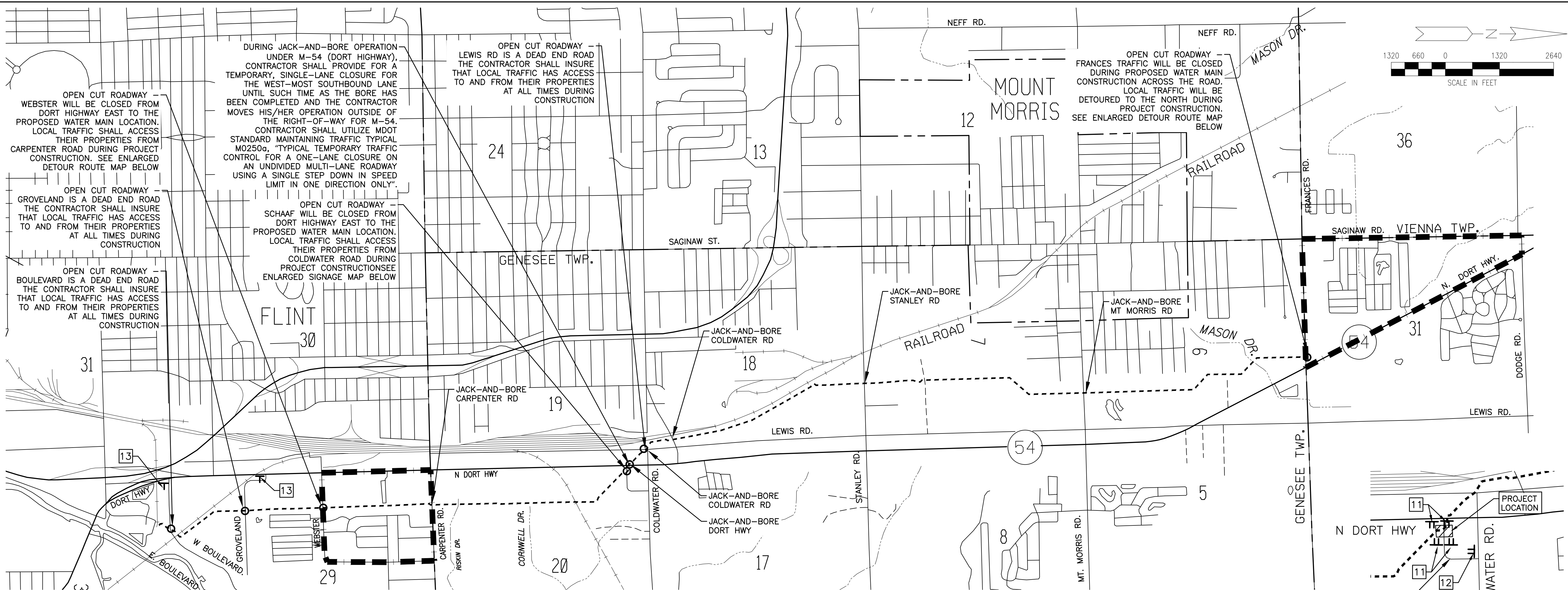
CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
WETLAND RESTORATION DETAIL SHEET 3

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET

21



LEGEND - W16-8P

1 W20-2 (48"x48")

2 W20-3 (48"x48")

3 W16-8P (30"x12") 4"C
M4-9L (30"x24")

4 W16-8P (30"x12") 4"C
M4-9S (30"x24")

5 W16-8P (30"x12") 4"C
M4-9R (30"x24")

6 W16-8P (30"x12") 4"C
M4-9S (30"x24")

7 W16-8P (30"x12") 4"C
M4-9S (30"x24")

8 W16-8P (30"x12") 4"C
M4-8a (30"x24")

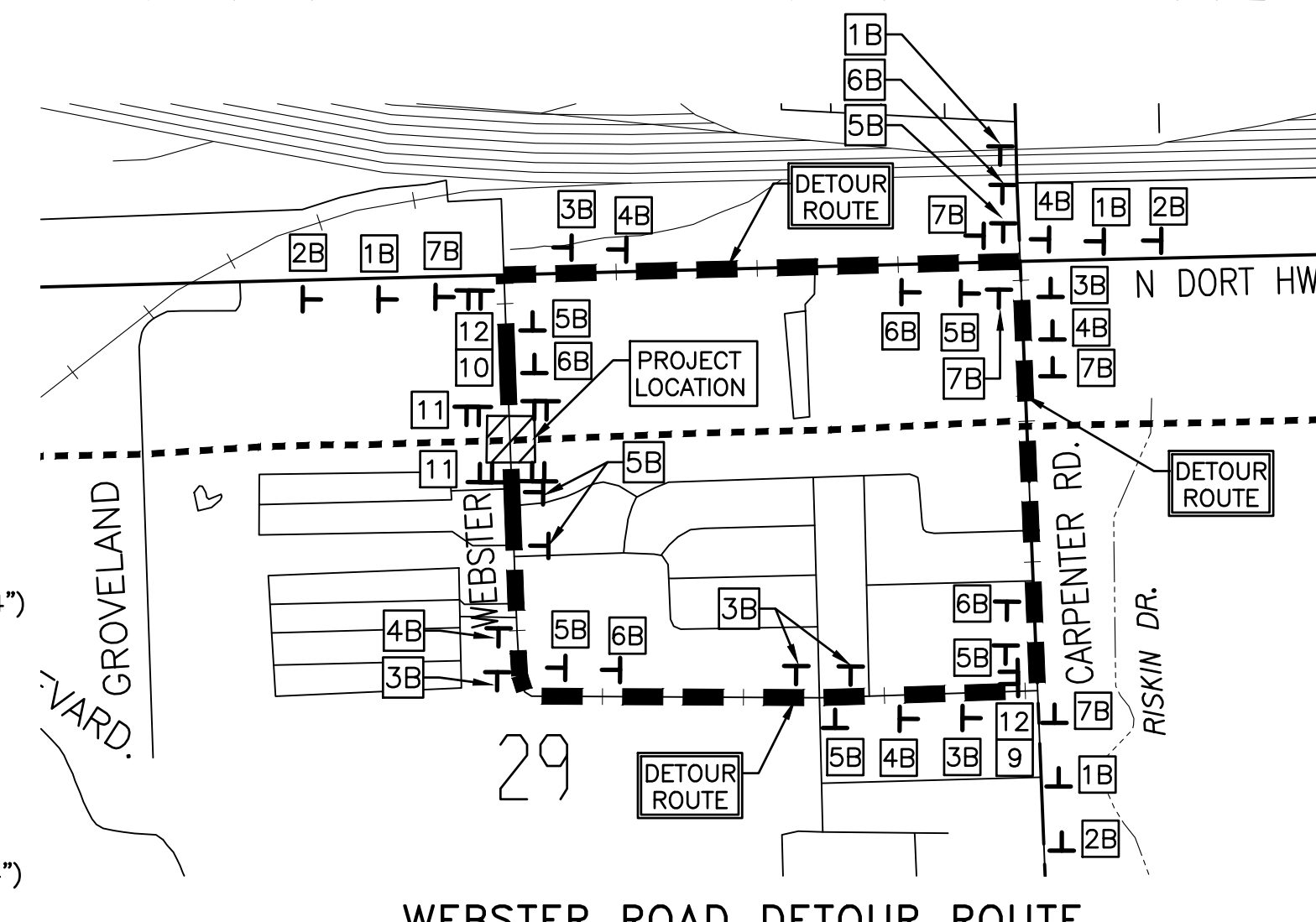
9 M4-10R (48"x18")

10 M4-10L (48"x18")

11 ROAD CLOSED

12 ROAD CLOSED TO THRU TRAFFIC

13 W20-1 (48"x48")



WEBSTER ROAD DETOUR ROUTE

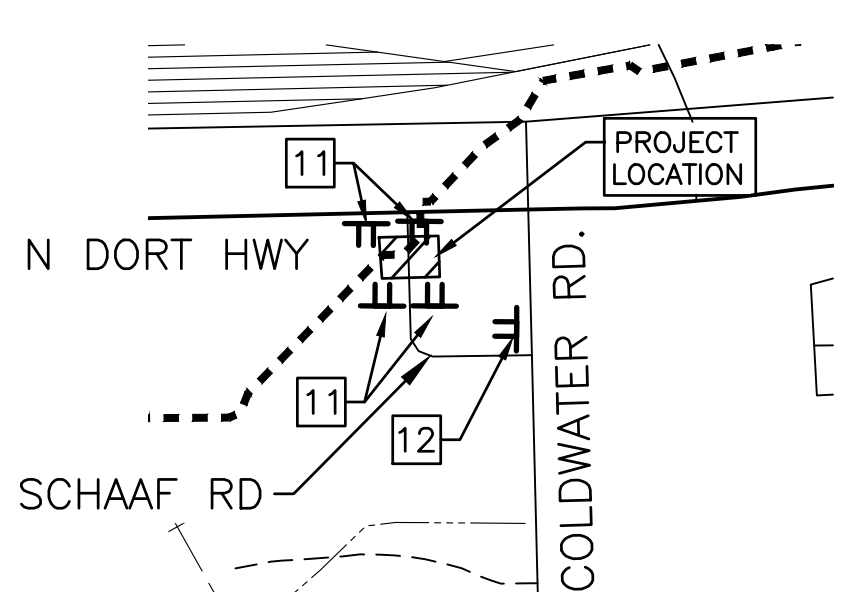
DISTANCE BETWEEN TRAFFIC CONTROL DEVICES "D" AND LENGTH OF LONGITUDINAL BUFFER SPACE ON "WHERE WORKERS PRESENT" SEQUENCES

| "D" DISTANCES | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| D (FEET) | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 |

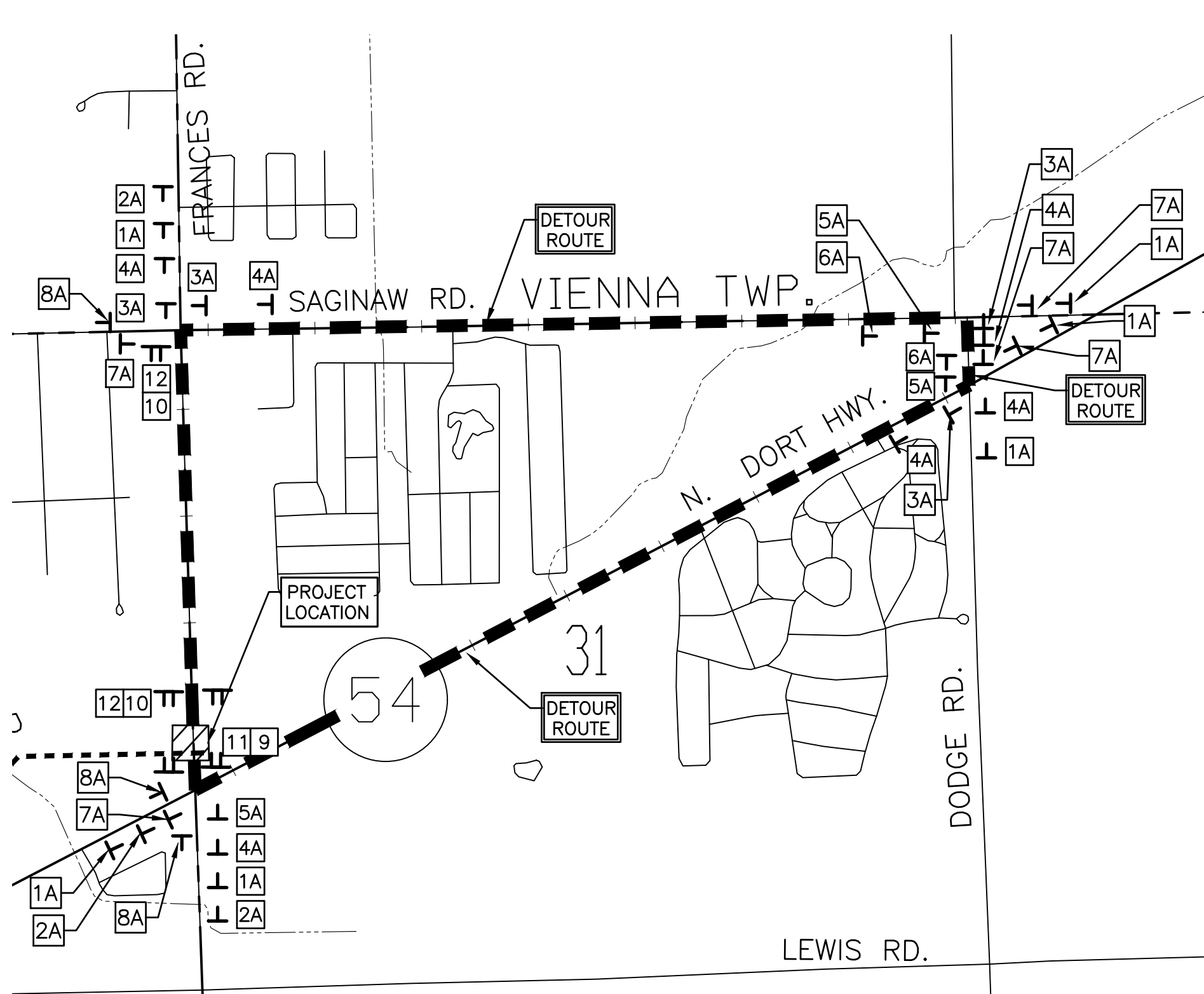
TRAFFIC CONTROL NOTES

- 1) COMPLETE CLOSURE IS LIMITED TO ONE LOCATION, THE CURRENT LOCATION OF PIPE INSTALLATION.
- 2) ACCESS TO ALL PROPERTIES MUST BE MAINTAINED AT ALL TIMES, INCLUDING DURING LANES CLOSURES.
- 3) ALL AREAS OUTSIDE OF THE CURRENT PIPE INSTALLATION MUST BE OPEN TO 2 FULL LANES OF TRAFFIC.
- 4) ALL PLASTIC DRUMS AND BARRICADES SHALL BE PROPERLY WEIGHTED, AND LIGHTS SHALL BE KEPT IN WORKING ORDER AT ALL TIMES. ANY PLASTIC DRUMS AND BARRICADES DAMAGED BY THE CONTRACTOR OR DUE TO IMPROPER USE SHALL BE REPLACED PROMPTLY AT THE CONTRACTOR'S EXPENSE.

SCHAAF ROAD SIGNAGE



FRANCES ROAD DETOUR ROUTE



BY: _____

DESCRIPTION: _____

DATE: _____

REV# _____

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WADE TRIM

CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
TRAFFIC CONTROL PLAN

ISSUED FOR: _____ DATE: _____ BY: _____

JOB NO.: COF1068.01F

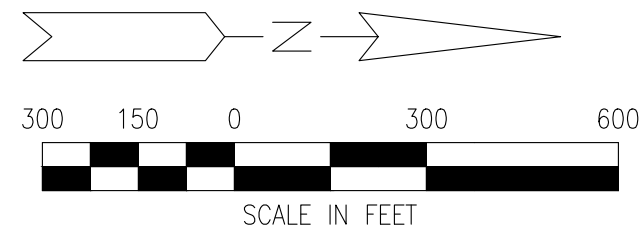
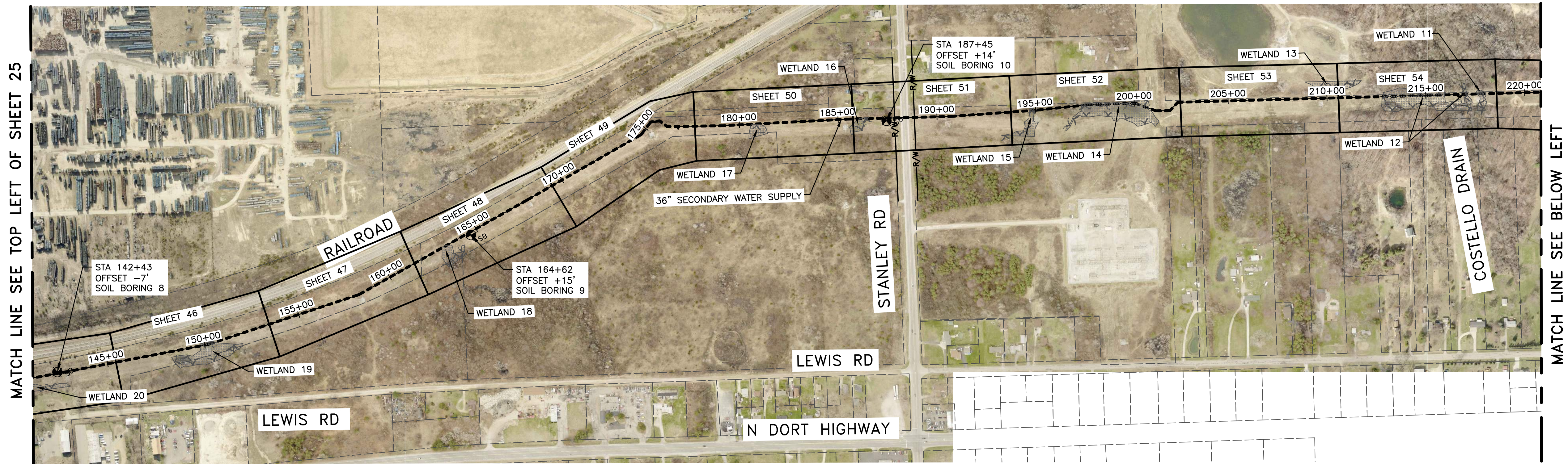
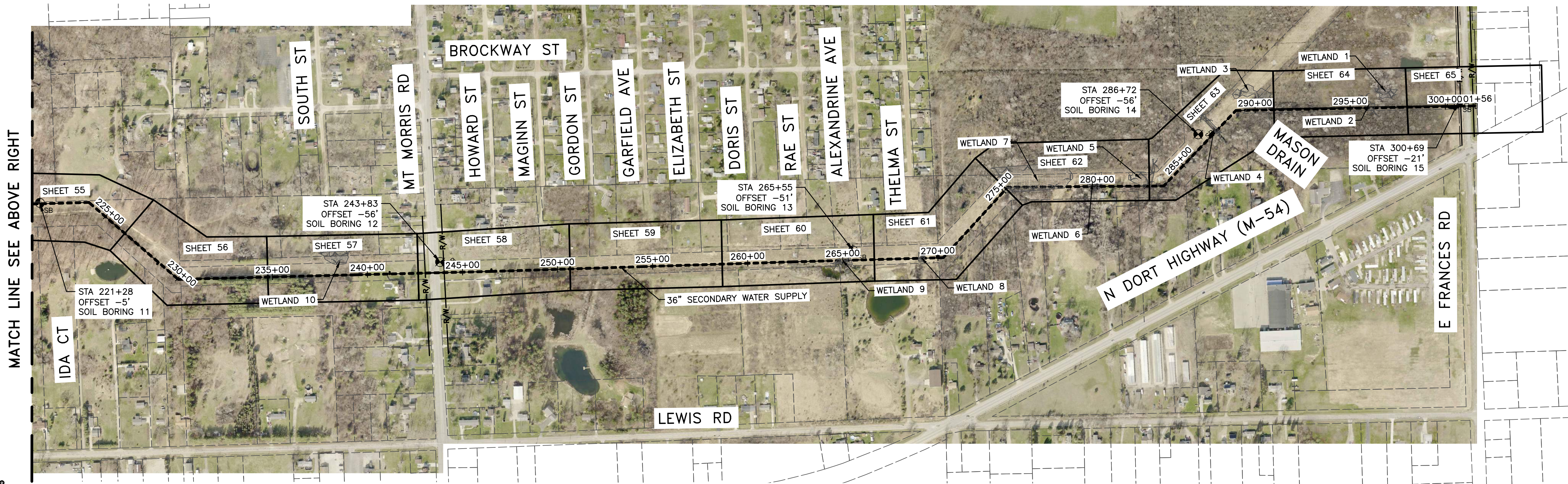
SHEET 24

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PROJECT: MANAGER: JESSA R. KENNER, PE FIELD BOOK INFORMATION: CA:\PW\WORK\2\0048736\CLF-PLTS-SHEET-INDEX.DWG - SHT-INDEX-2 - PLOTTED 2/7/2020 10:29 AM BY: RUGGLES, TIMOTHY



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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN SHEET INDEX SHEET 2

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET
26

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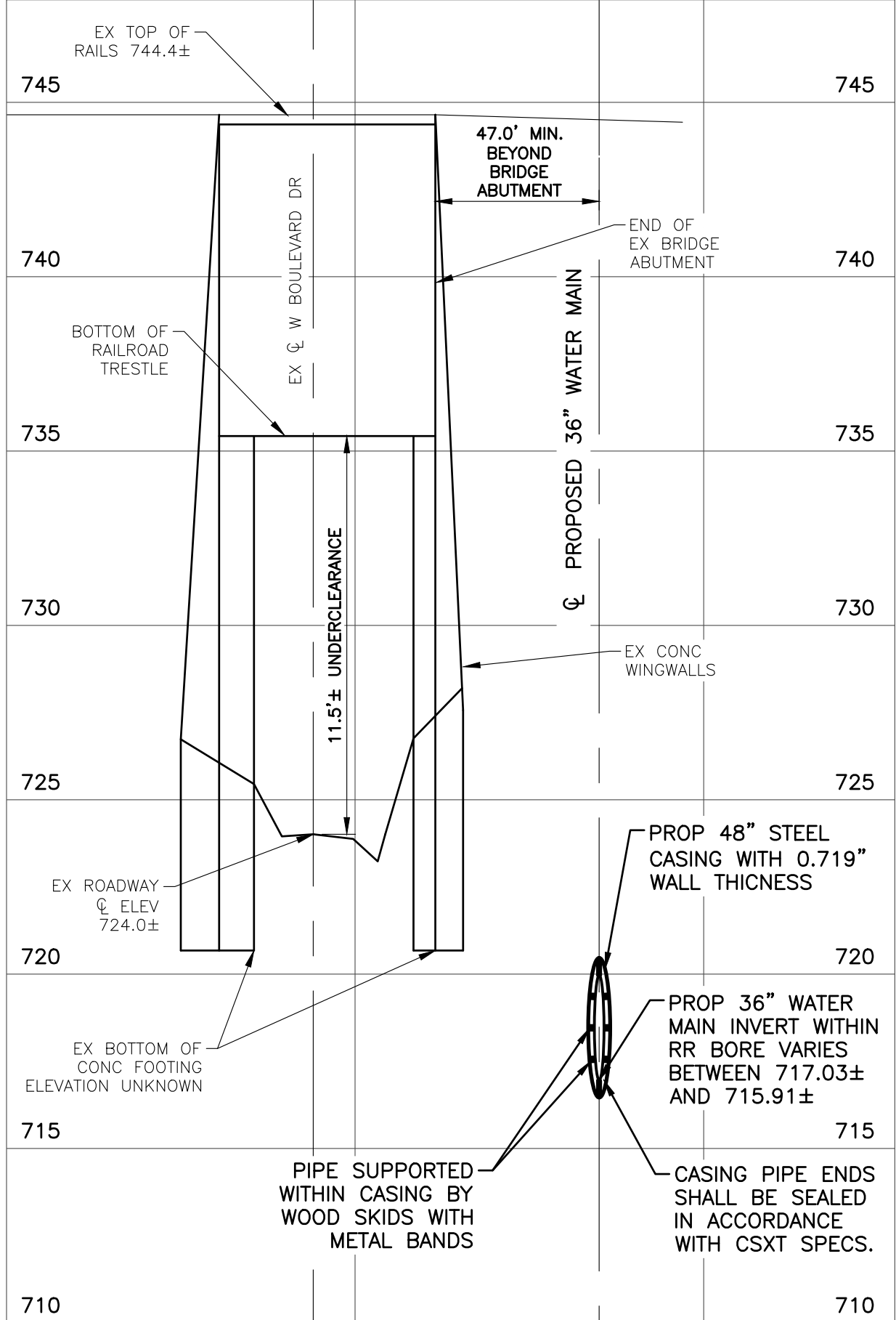
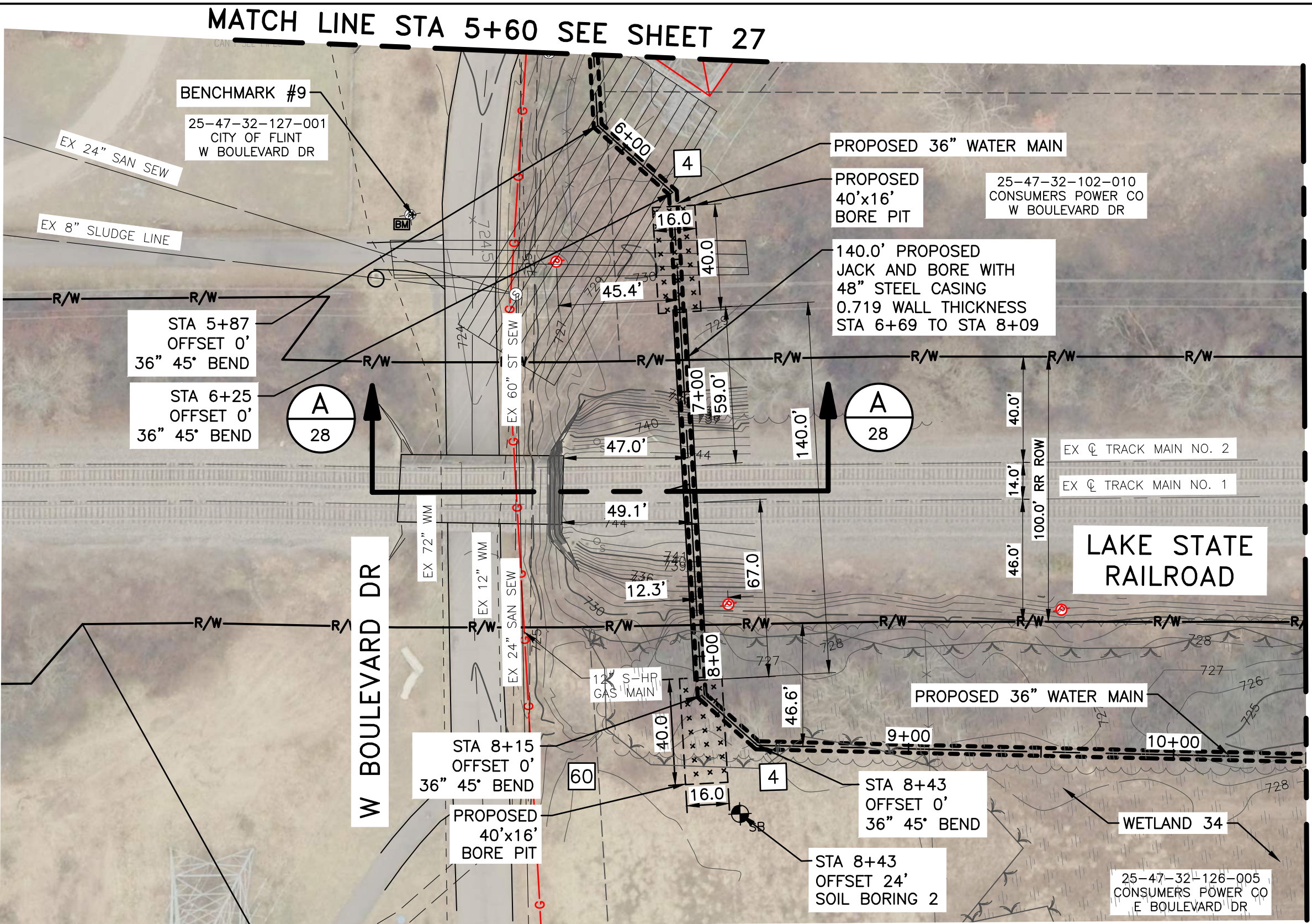
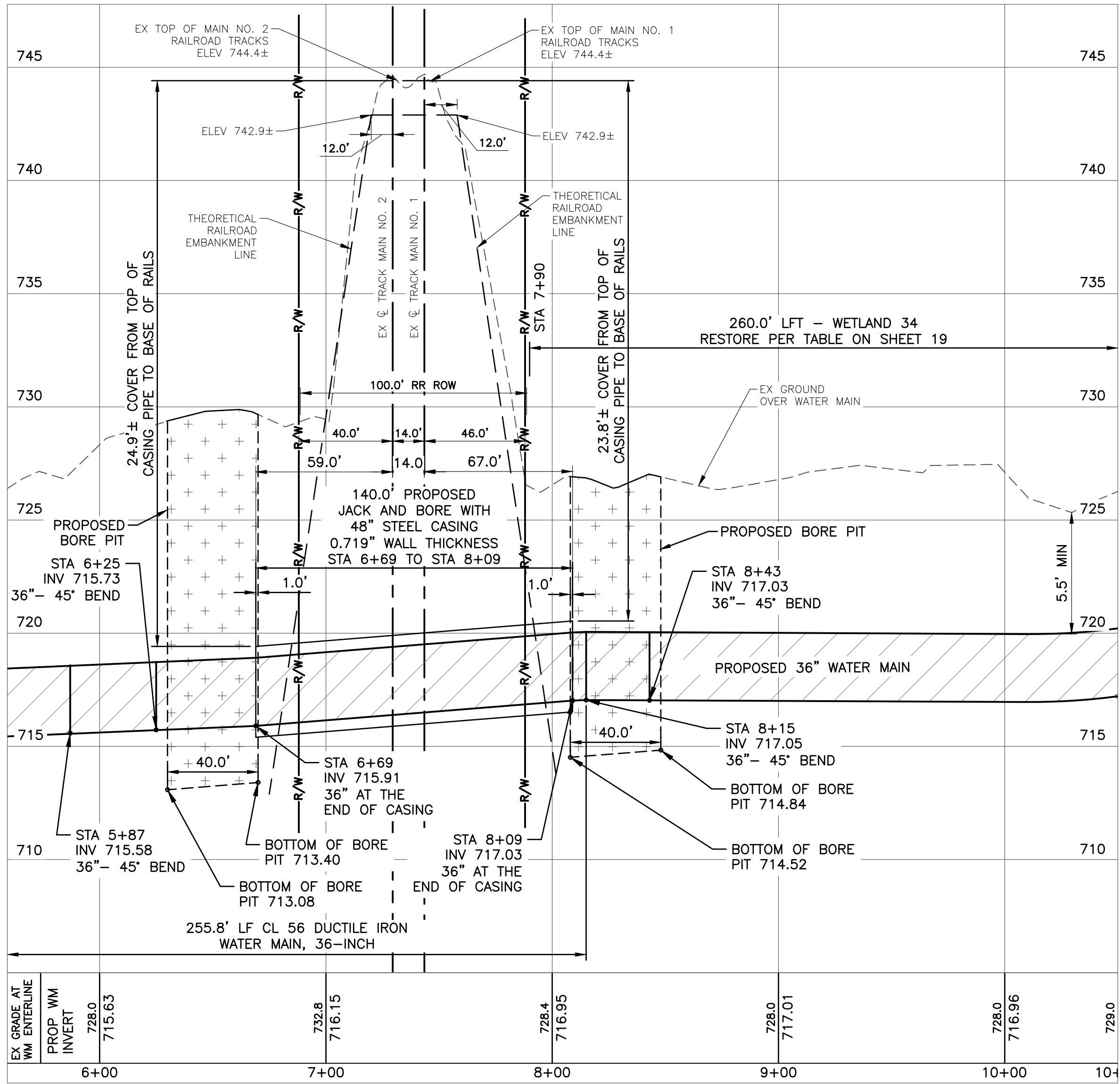


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PROJECT: MANAGER: JESSA R. KAYCO, PE FIELD BOOK INFORMATION: CA: PW: WORK: 03048735 CUB-PLTS-PLAN-PROF-1.DWG - PP-2 - PLOTTED 2/7/2020 10:31 AM BY RUGGLES, TIMOTHY



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A SECTION OF 36" WATER MAIN
AT RAILROAD CROSSING

CSX CONSTRUCTION NOTES

GENERAL

- CSXT LEASED RAILROAD TO LAKE STATE RAILWAY CO. CSXT MANAGES THE UTILITY LICENSES.

SITE ACCESS

- CITY OF FLINT / CONTRACTOR SHALL OBTAIN ALL NECESSARY CONSTRUCTION EASEMENTS FROM CONSUMERS POWER (ADJACENT LANDOWNER) FOR WORK ON CONSUMERS POWER RIGHT OF WAY.

EXCAVATION

- THE TOE OF RAILROAD EMBANKMENT SLOPE SHALL IN NO CASE BE UNDERCUT / UNDERMINED BY POWER SHOVELS, BULLDOZERS, GRADERS, BLASTING, OR IN ANY MANNER.

- CONTRACTOR SHALL BE GOVERNED BY CSXT CONSTRUCTION SUBMISSION CRITERIA SEC. VI TEMPORARY SHORING, INCLUDED IN THE CONTRACT DOCUMENTS.

SPOILS

- CONTRACTOR SHALL BE GOVERNED BY CSXT SOIL AND WATER MANAGEMENT POLICY, INCLUDED IN THE CONTRACT DOCUMENTS.

DEWATERING

- IF DEWATERING IS NECESSARY, DEWATERING PLANS MUST BE APPROVED BY CSXT PRIOR TO EXECUTION/ CONSTRUCTION.

- PUMPS OF SUFFICIENT CAPACITY TO HANDLE THE FLOW SHALL BE MAINTAINED AT THE SITE. PUMPS IN OPERATION SHALL BE CONSTANTLY ATTENDED ON A 24-HOUR BASIS UNTIL THE OPERATION CAN BE SAFELY HALTED. WHEN DEWATERING, A PROCESS FOR MONITORING FOR ANY SETTLEMENT OF TRACK OR STRUCTURES MUST BE IN PLACE.

SAFETY REQUIREMENTS

- ALL OPERATIONS SHALL BE CONDUCTED SO AS NOT TO INTERFERE WITH, INTERRUPT, OR ENDANGER THE OPERATION OF TRAINS NOR DAMAGE, DESTROY, OR ENDANGER THE INTEGRITY OF RAILROAD FACILITIES. ALL WORK ON OR NEAR CSXT PROPERTY SHALL BE CONDUCTED IN ACCORDANCE WITH CSXT SAFETY RULES AND REGULATIONS. SPECIFICALLY ALL LICENSEE'S EMPLOYEES AND AGENTS, WHILE ON CSXT PROPERTY, SHALL BE REQUIRED TO WEAR AN ORANGE HARD HAT, SAFETY GLASSES WITH SIDE SHIELDS, 6" LACE UP BOOTS WITH A DISTINCT HEEL, SHIRTS WITH SLEEVES, AND LONG PANTS; ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT MAY BE REQUIRED FOR CERTAIN OPERATIONS INCLUDING ABRASIVE CUTTING, USE OF TORCHES, USE OF CHAINSAWS, ETC. THE CONTRACTOR AND IT'S EMPLOYEES SHALL COMPLY WITH THE CSXT SAFETY RULES AT ALL TIMES WHILE OCCUPYING CSXT'S PROPERTY. OPERATIONS WILL BE SUBJECT TO CSXT INSPECTION AT ANY AND ALL TIMES.

- ALL CRANES, LIFTS, OR OTHER EQUIPMENT THAT WILL BE OPERATED IN THE VICINITY OF THE RAILROAD'S ELECTRIFICATION AND POWER TRANSMISSION FACILITIES SHALL BE ELECTRICALLY GROUNDING AS DIRECTED BY CSXT.

- WHENEVER EQUIPMENT OR PERSONNEL ARE WORKING CLOSER THAN 25 FEET FROM THE CENTERLINE OF AN ADJACENT TRACK, THAT TRACK SHALL BE CONSIDERED AS BEING OBSTRUCTED. INsofar AS POSSIBLE, ALL OPERATIONS SHALL BE CONDUCTED NO LESS THAN THIS DISTANCE. ALL OPERATIONS SHALL BE CONDUCTED ONLY WITH THE PERMISSION OF, AND AS DIRECTED BY, A DULY QUALIFIED RAILROAD EMPLOYEE PRESENT AT THE SITE OF THE WORK. ALL COSTS RELATED TO RAILROAD PROTECTION WILL BE PASSED ON TO THE APPLICANT.

- CROSSING OF TRACKS AT GRADE BY EQUIPMENT AND PERSONNEL IS PROHIBITED EXCEPT BY PRIOR ARRANGEMENT WITH AND AS DIRECTED BY CSXT.

UTILITY NOTES

NOTES

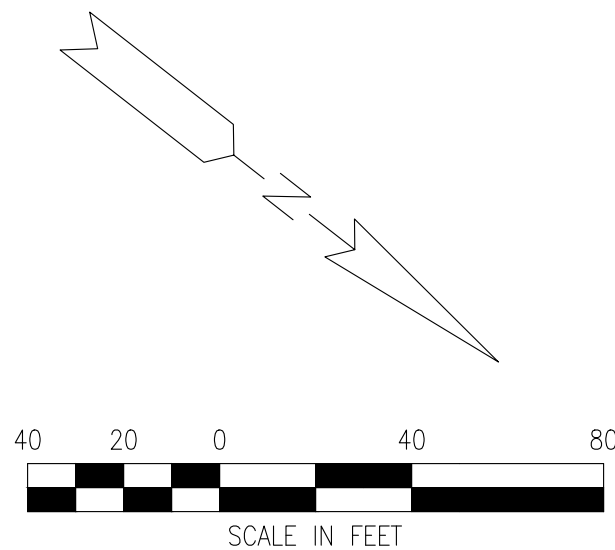
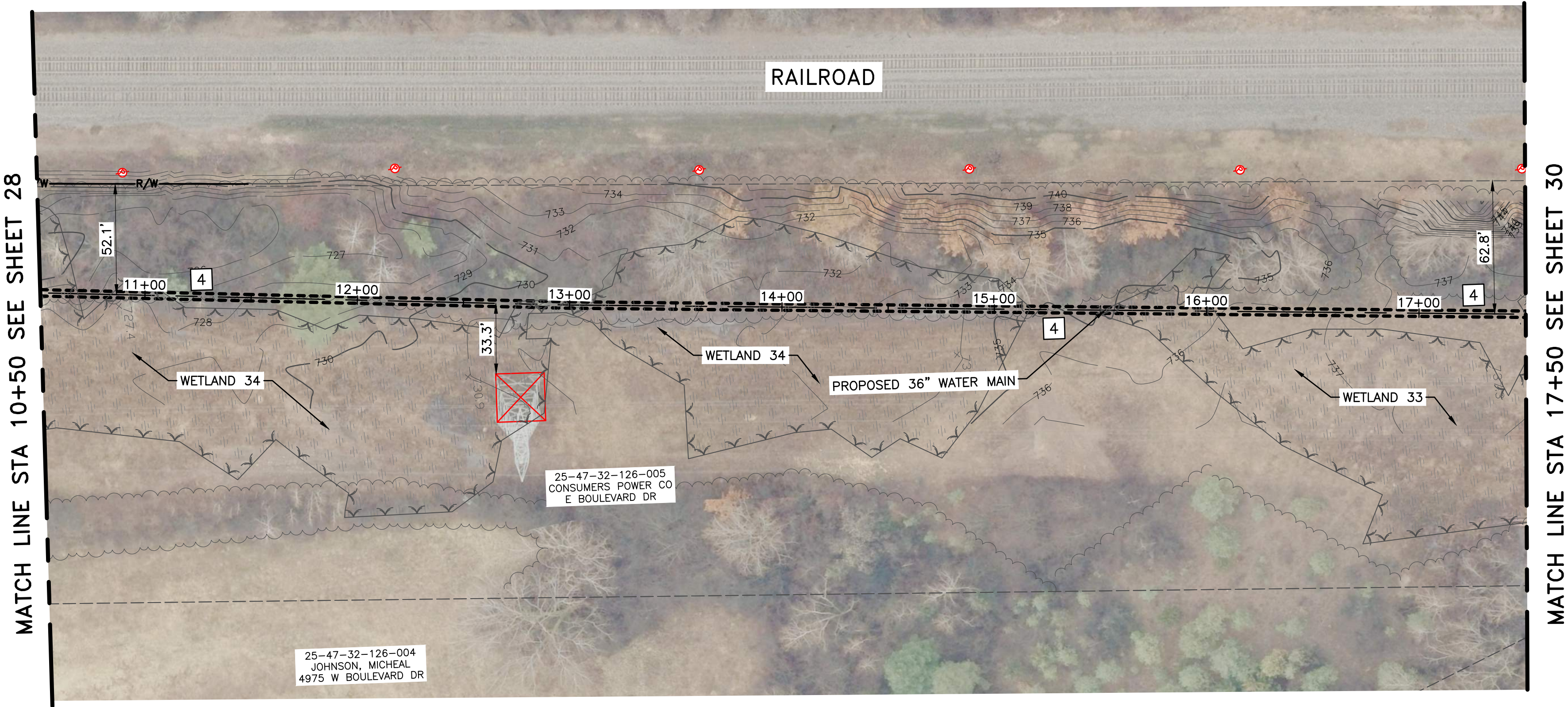
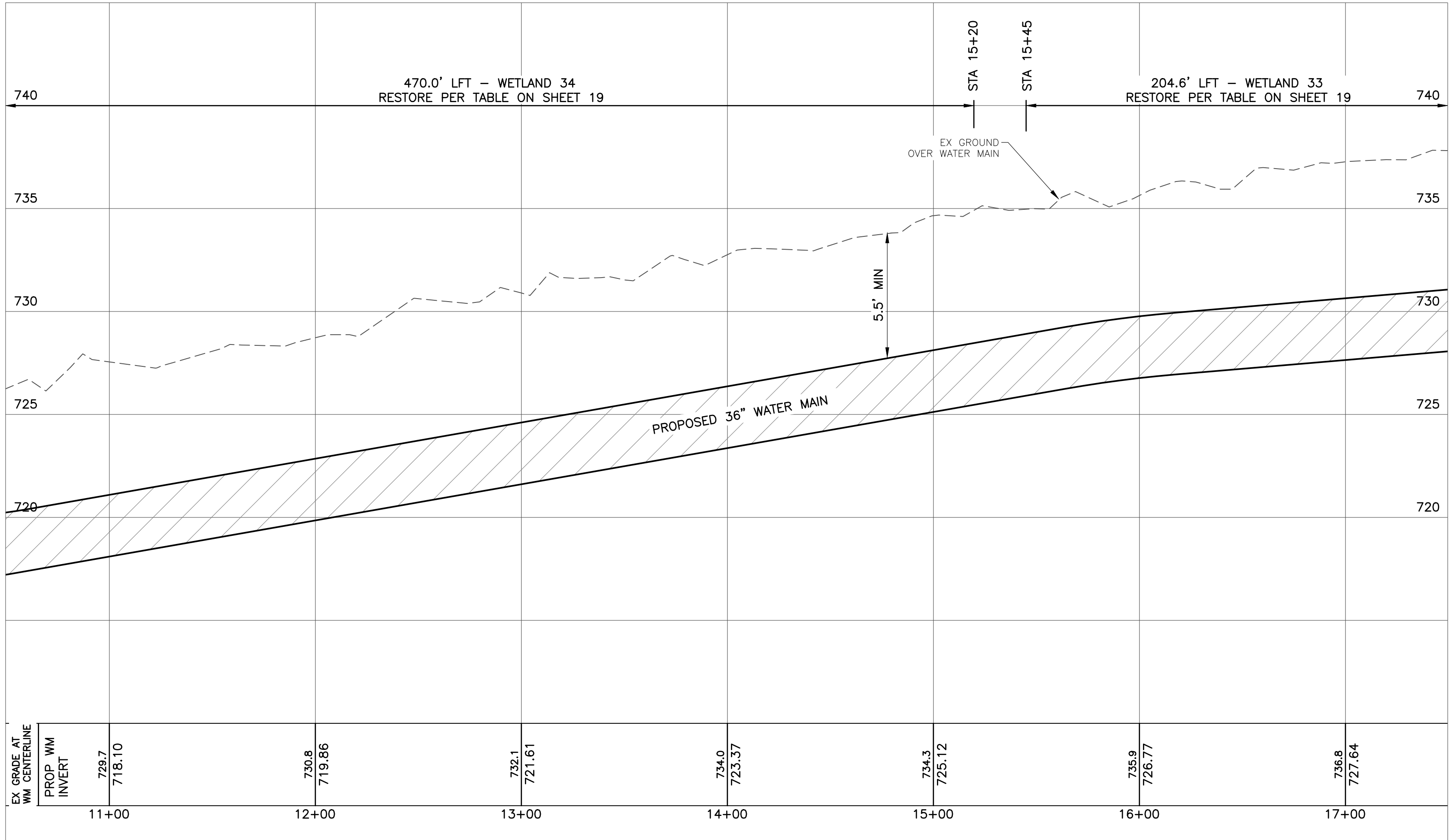
- THE CONTRACTOR SHALL USE A TRENCH BOX IN ANY LOCATION WHERE THE PROPOSED WATER MAIN IS TO BE CONSTRUCTED LESS THAN 20' FROM AN EXISTING ELECTRIC POWER POLE OR TOWER.
- PRIOR TO BEGINNING THE WORK. THE CONTRACTOR SHALL BE REQUIRED TO EXPOSE ALL EXISTING UTILITIES THAT CROSS OR ARE WITHIN THE INFLUENCE OF THE PROPOSED CONSTRUCTION, SO THE ENGINEER MAY DETERMINE IF A CONFLICT EXISTS BETWEEN AN EXISTING UTILITY AND THE PROPOSED WORK. ALL LABOR REQUIRED TO UNCOVER THE EXISTING UTILITY SHALL BE CONSIDERED INCLUSIVE TO THE UNIT PRICE OF THE WATER MAIN. THE CONTRACTOR SHALL VERIFY THE UTILITY SIZE, MATERIAL, DEPTH AND HORIZONTAL LOCATION OF ALL UTILITIES IN SUFFICIENT TIME SUCH THAT ANY CONFLICTS CAN BE RESOLVED BEFORE WORK IS STARTED.
- ALL EXISTING UTILITIES SHALL BE PROPERLY SUPPORTED AND REMAIN IN SERVICE AT ALL TIMES DURING THE PROJECT, UNLESS OTHERWISE INDICATED.
- UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE, OR REPLACED AS CALLED FOR ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SIZE AND MATERIAL REQUIRED PRIOR TO REPLACING.
- ANY EXISTING STORM OR SANITARY SEWER PIPES THAT COME APART OR ARE DAMAGED IN THE CITY OF FLINT WILL NEED TO BE REPLACED WITH SDR-26 OR SCHEDULE 40 PVC PIPE, FROM MANHOLE TO MANHOLE. NEW MANHOLES CAN BE ADDED TO MINIMIZE LENGTH OF SEWER REPLACEMENT. ANY STORM AND SANITARY SEWER PIPES THAT ARE DAMAGED OUTSIDE OF THE CITY OF FLINT SHALL BE REPLACED IN KIND AT THE CONTRACTORS EXPENSE.
- REGULATED WETLANDS HAVE BEEN DELINEATED, NUMBERED AND SHOWN ON THE PLANS ALONG THE PROPOSED WATER MAIN ROUTE. FOR WETLAND RESTORATION THE CONTRACTOR SHALL REFER TO THE TABLE LOCATED ON PLAN SHEET 19 ALONG WITH DETAILS ON SHEETS 20-23. CONTRACTOR SHALL LIMIT THE EXTENT OF CONSTRUCTION ACTIVITIES WITHIN DELINEATED WETLANDS TO REDUCE IMPACTS OF SUCH ACTIVITIES TO THE WETLANDS. AREAS DISTURBED BY CONTRACTOR OUTSIDE OF THE AREAS DESIGNATED IN THE WETLAND RESTORATION DETAILS WILL BE AT CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITIES ALONG THE TRANSMISSION MAIN ROUTE TO REDUCE IMPACTS OF SUCH ACTIVITIES ON THE REMAINDER OF THE PROPERTY, INCLUDING ON PROPERTIES OWNED BY CONSUMERS ENERGY. AREAS DISTURBED OUTSIDE OF THE DESIGNATED EASEMENT WILL BE AT CONTRACTOR'S EXPENSE.

| | |
|--|--|
| BY | |
| DESCRIPTION | |
| DATE | |
| REV# | |
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| WADE TRIM | |
| CITY OF FLINT 1101 S. SAGINAW STREET FLINT, MI 48502 36" SECONDARY WATER SUPPLY PLAN AND PROFILE SHEET 2 | |
| ISSUED FOR: DATE: BY: | |
| JOB NO. COF1068.01F | |
| SHEET 28 | |

PROJECT: MANAGER: JESSA R. KAYEVO, PE FIELD BOOK INFORMATION: C:\PW\WORK\2\0348735\CUB-FLTS-PLAN-PROF-1.DWG - PP-3 - PLOTTED 2/7/2020 10:31 AM BY RUGGLES, TIMOTHY



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NOTES

1. THE CONTRACTOR SHALL USE A TRENCH BOX IN ANY LOCATION WHERE THE PROPOSED WATER MAIN IS TO BE CONSTRUCTED LESS THAN 20' FROM AN EXISTING ELECTRIC POWER POLE OR TOWER.
2. PRIOR TO BEGINNING THE WORK. THE CONTRACTOR SHALL BE REQUIRED TO EXPOSE ALL EXISTING UTILITIES THAT CROSS OR ARE WITHIN THE INFLUENCE OF THE PROPOSED CONSTRUCTION, SO THE ENGINEER MAY DETERMINE IF A CONFLICT EXISTS BETWEEN AN EXISTING UTILITY AND THE PROPOSED WORK. ALL LABOR REQUIRED TO UNCOVER THE EXISTING UTILITY SHALL BE CONSIDERED INCLUSIVE TO THE UNIT PRICE OF THE WATER MAIN. THE CONTRACTOR SHALL VERIFY THE UTILITY SIZE, MATERIAL, DEPTH AND HORIZONTAL LOCATION OF ALL UTILITIES IN SUFFICIENT TIME SUCH THAT ANY CONFLICTS CAN BE RESOLVED BEFORE WORK IS STARTED.
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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 3

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET

29

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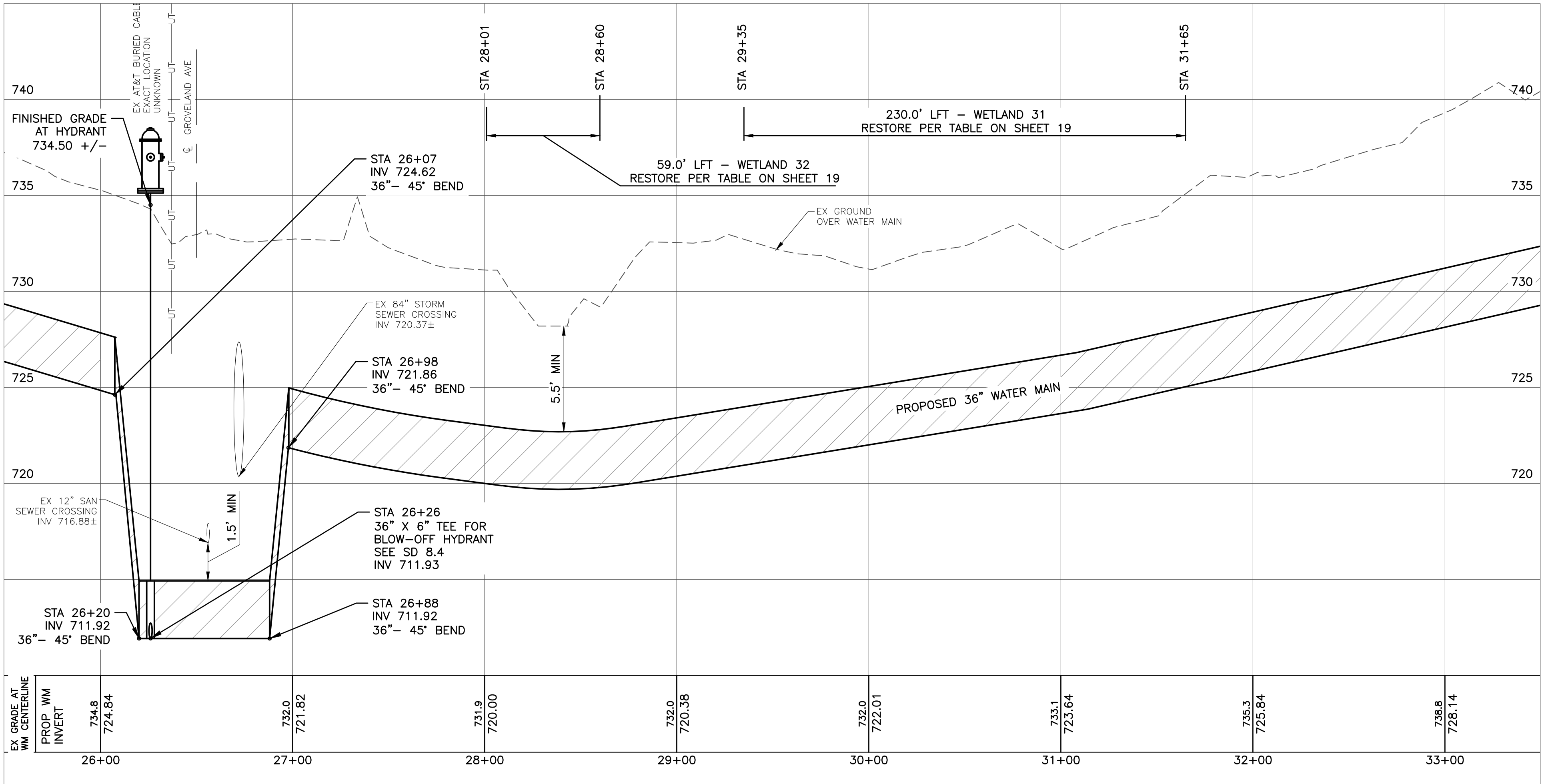


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PROJECT: MANAGER: JASON R. KENNER, PE FIELD BOOK INFORMATION: C:\PW\WORK\2\0948736\CUB-FLTS-PLAN-PROF-1.DWG - PP-5 - PLOTTED 2/7/2020 10:32 AM BY RUGGLES, TIMOTHY



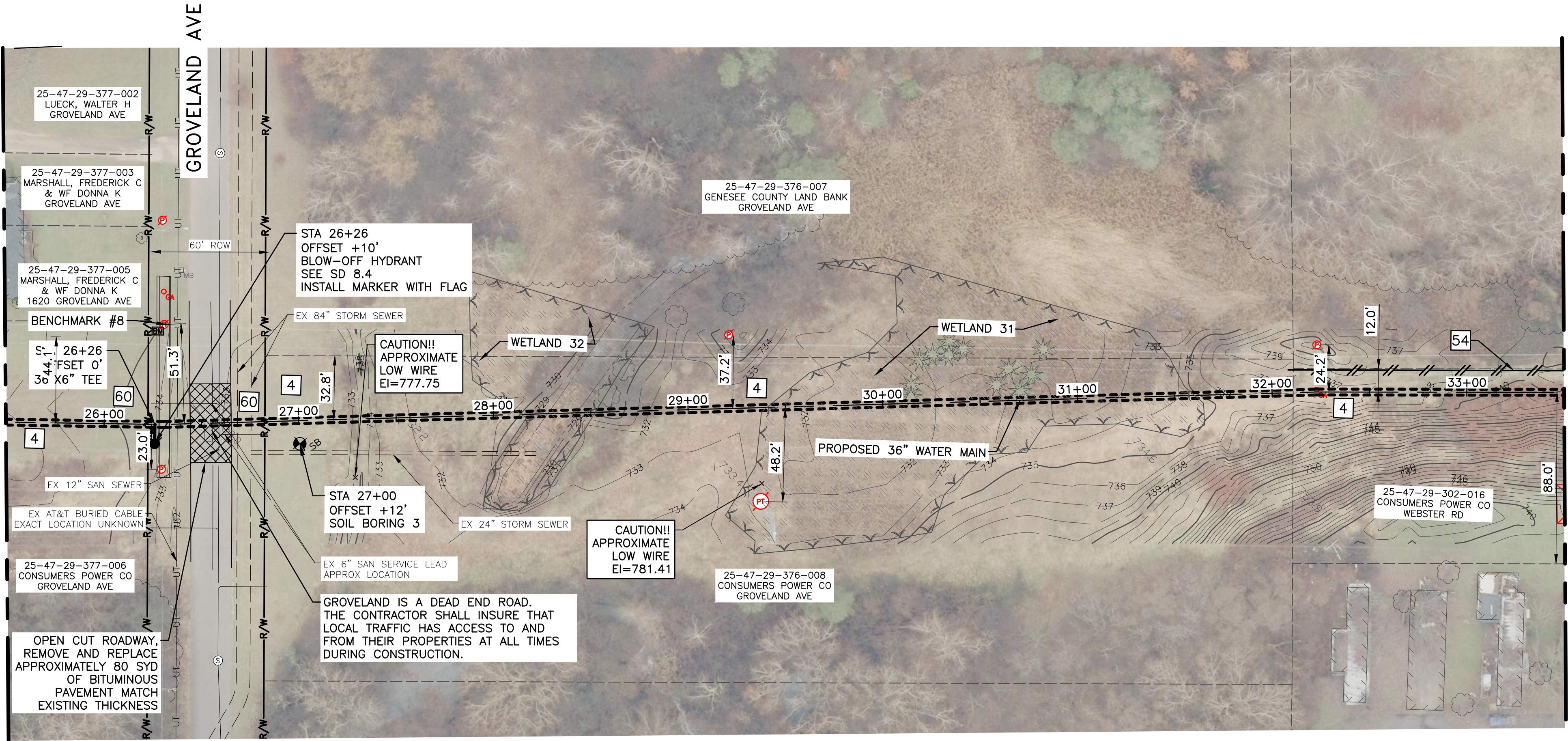
Know what's below.
Call before you dig.



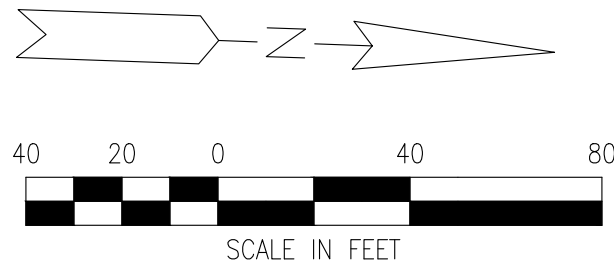
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MATCH LINE STA 25+50 SEE SHEET 30



MATCH LINE STA 33+50 SEE SHEET 32



BENCHMARK #8
RR SPIKE IN NE FACE OF PP
SOUTH SIDE OF GROVELAND ROAD
20' +/- SE OF MAILBOX TO
HOUSE #1620 GROVELAND AVE
ELEV=734.94

CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 5

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET

31



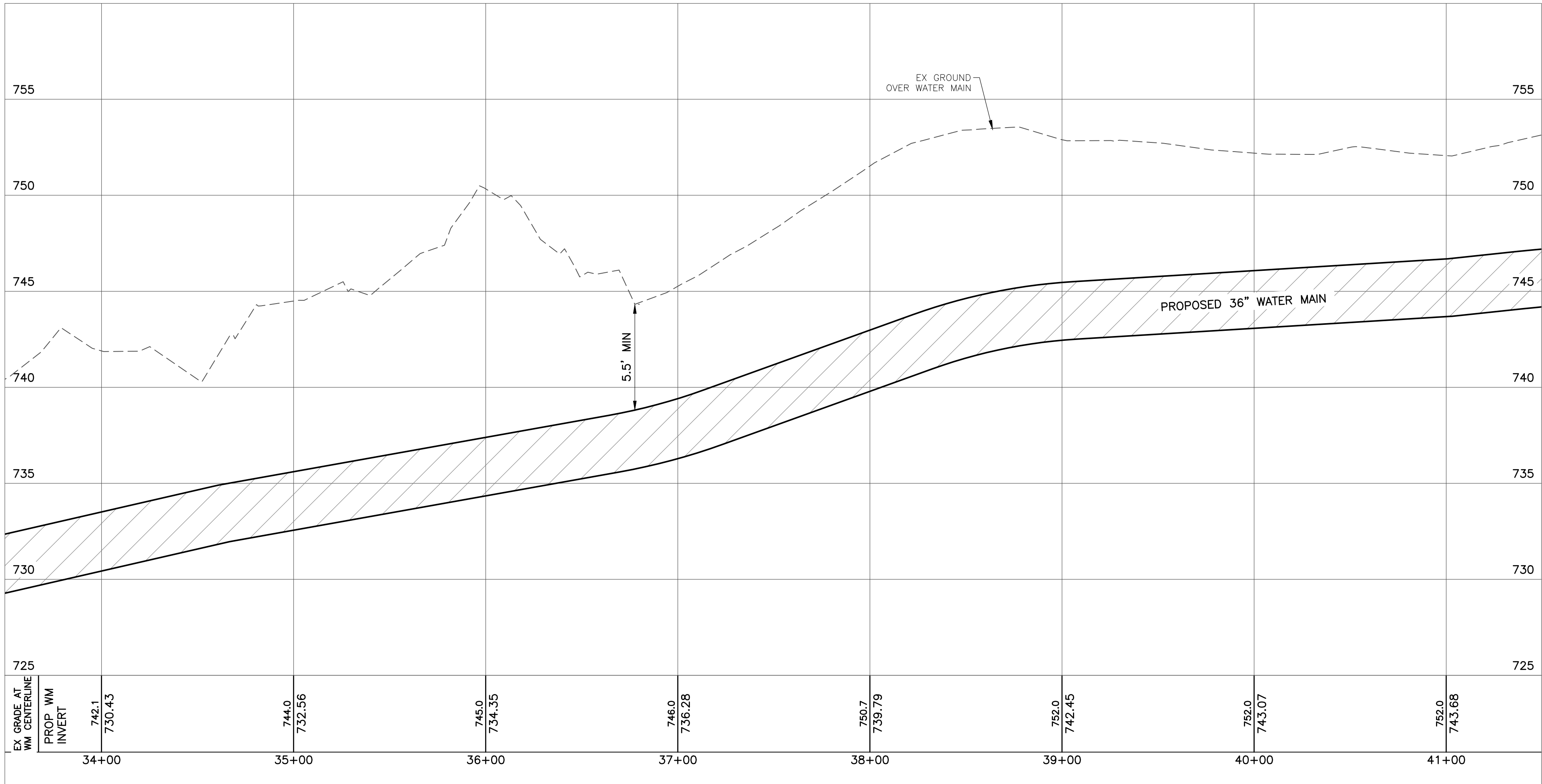
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PROJECT: MANAGER: JESSA R. KAYEVO, PE FIELD BOOK INFORMATION: CA: PW: WORK: 00948736 CUB-FLTS-PLAN-PROF-1.DWG - PP-6 - PLOTTED 2/7/2020 10:32 AM BY RUGGLES, TIMOTHY



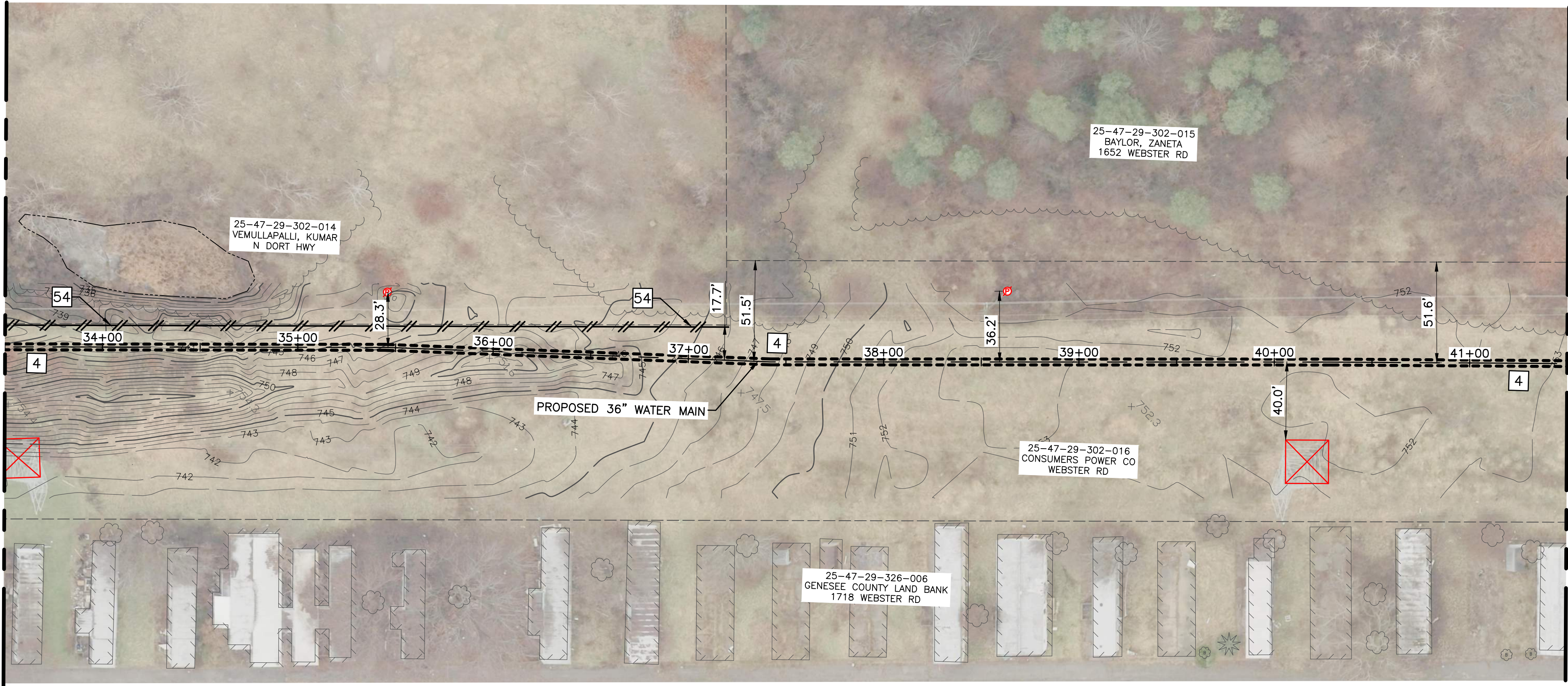
Know what's below.
Call before you dig.



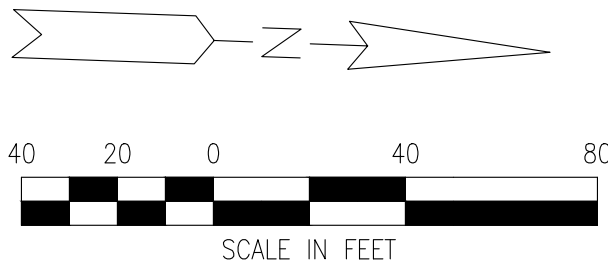
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MATCH LINE STA 33+50 SEE SHEET 31



MATCH LINE STA 41+50 SEE SHEET 33



CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 6

ISSUED FOR: DATE: BY:

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SHEET

32

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DESCRIPTION

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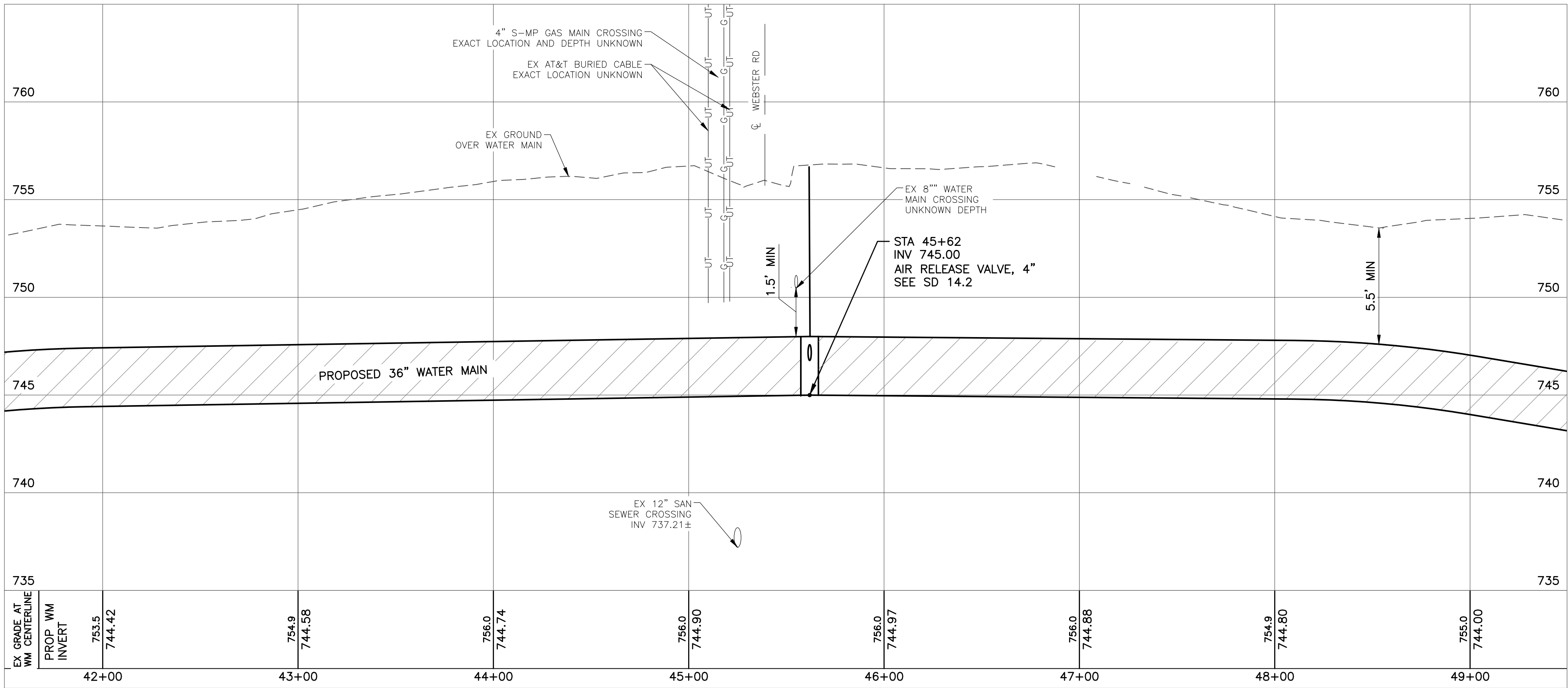
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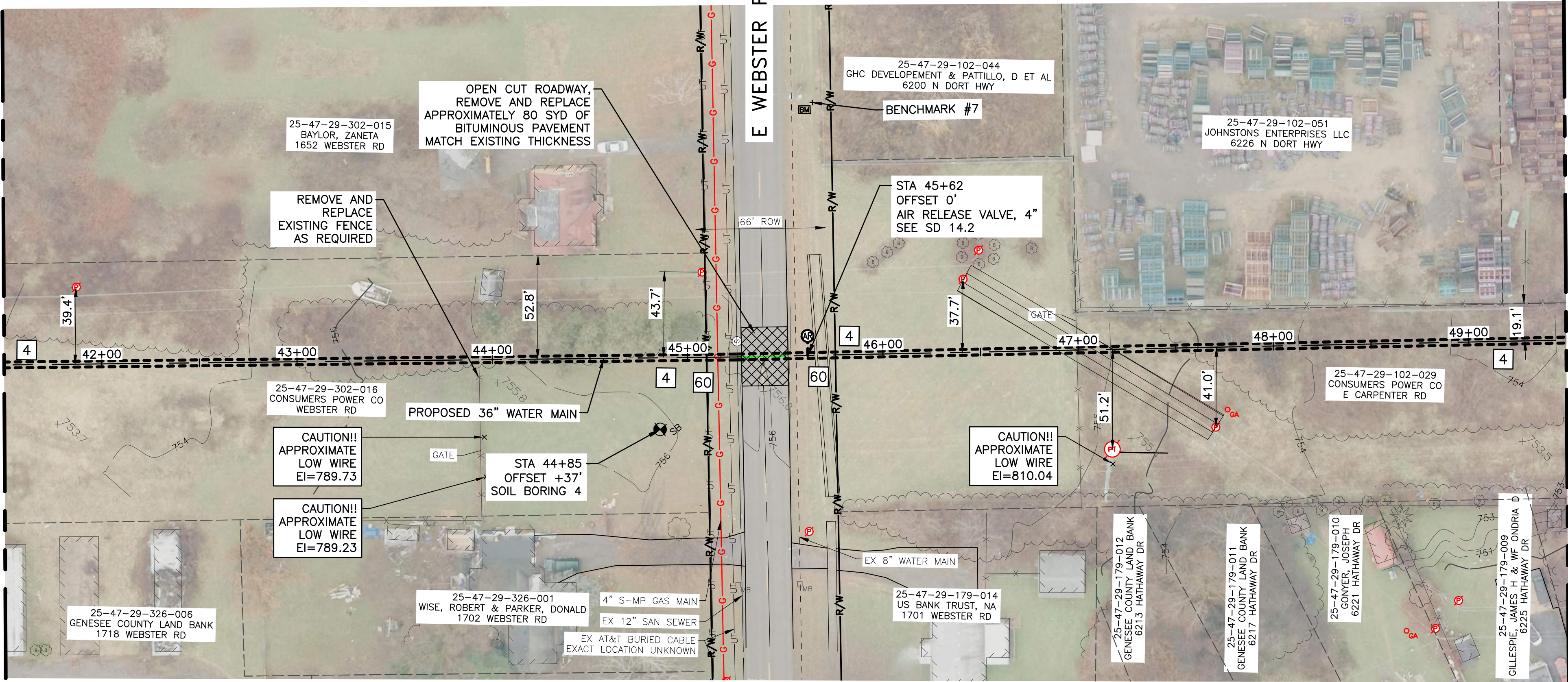
PROJECT: MANAGER: JESSA R. KAYEVO, PE FIELD BOOK INFORMATION: C:\PW\WORK\2\09348736\CUP-FLTS-PLAN-PROF-1.DWG - PP-7 - PLOTTED 2/7/2020 10:32 AM BY RUGGLES, TIMOTHY



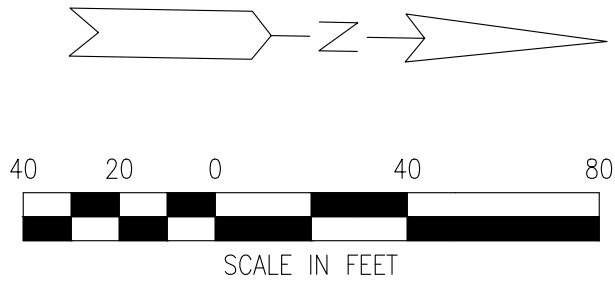
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MATCH LINE STA 41+50 SEE SHEET 32



MATCH LINE STA 49+50 SEE SHEET 34



BENCHMARK #7
NORTH FLANGE BOLT ON HYDRANT
ON THE WET LINE OF RIGHT OF WAY
12' NORTH OF WEBSTER ROAD
ELEV=755.77

NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 7

ISSUED FOR: DATE: BY:

JOB NO.
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SHEET

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DESCRIPTION

DATE

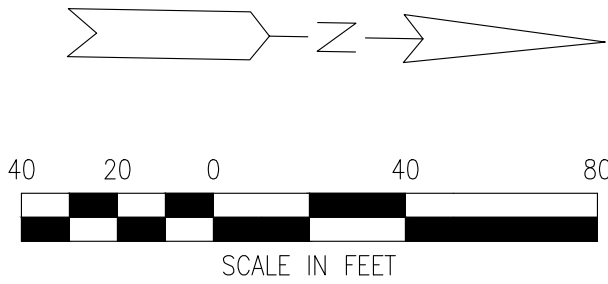
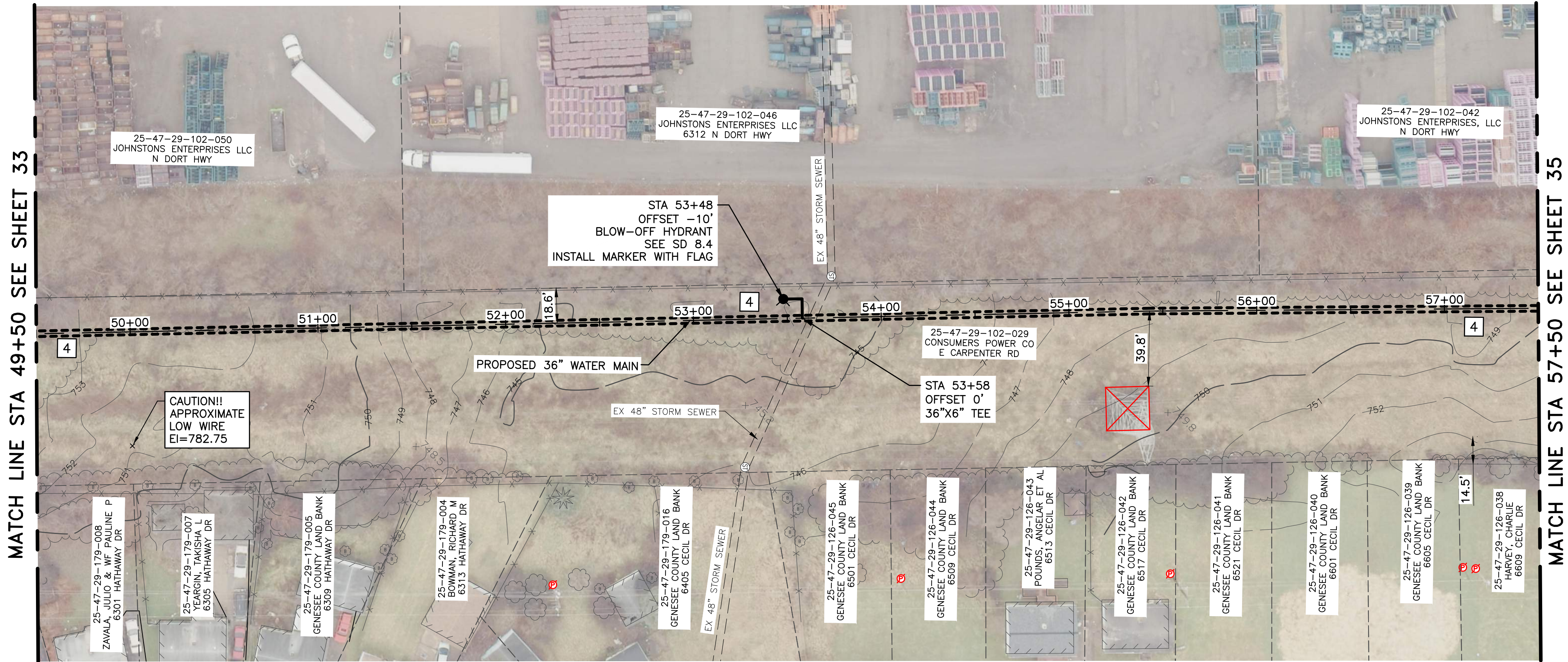
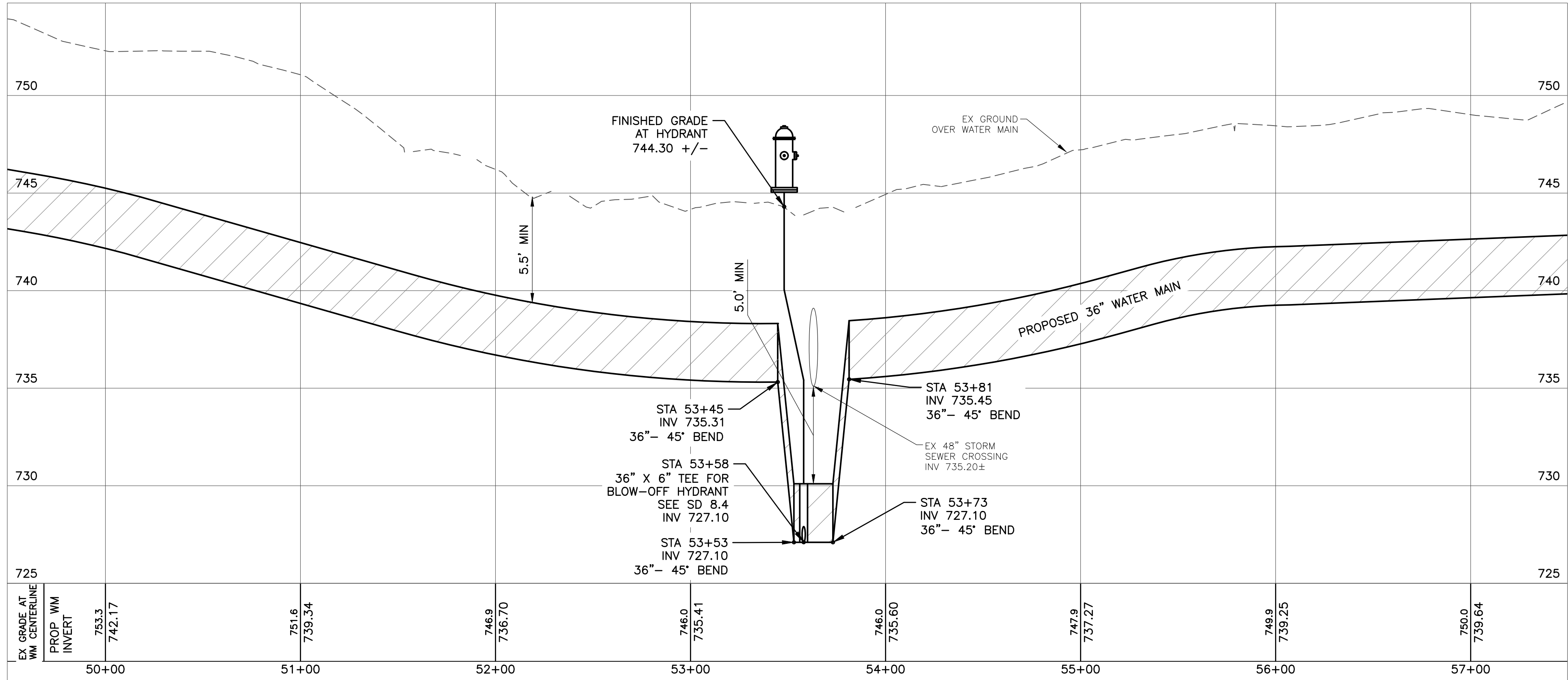
REV#

BY

PROJECT: MANAGER: JESSA R. KENYON, PE FIELD BOOK INFORMATION: C:\PW\WORK\2\0948736\CUP-FLTS-PLAN-PROF-1.DWG - PP-8 - PLOTTED 2/7/2020 10:33 AM BY RUGGLES, TIMOTHY



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NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 8

ISSUED FOR: DATE: BY:

JOB NO.
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SHEET

34

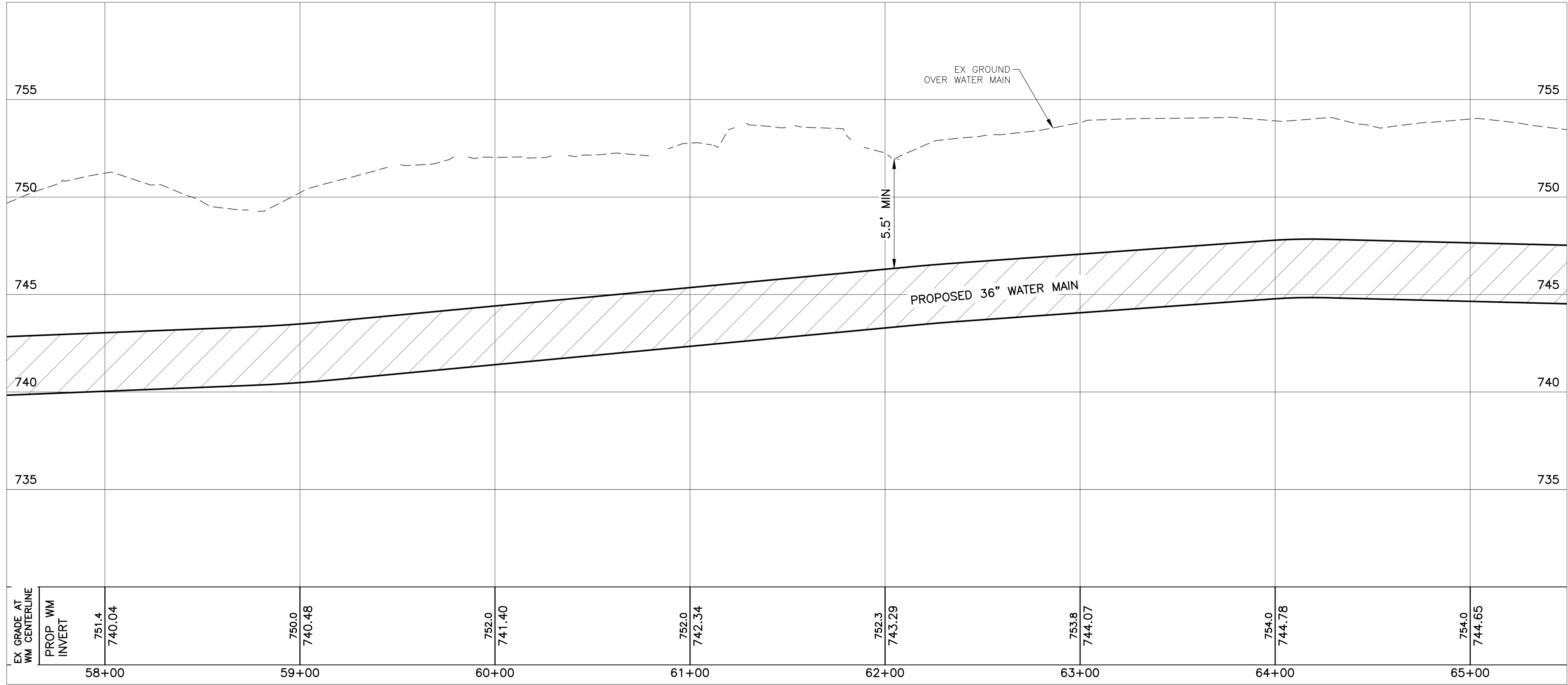


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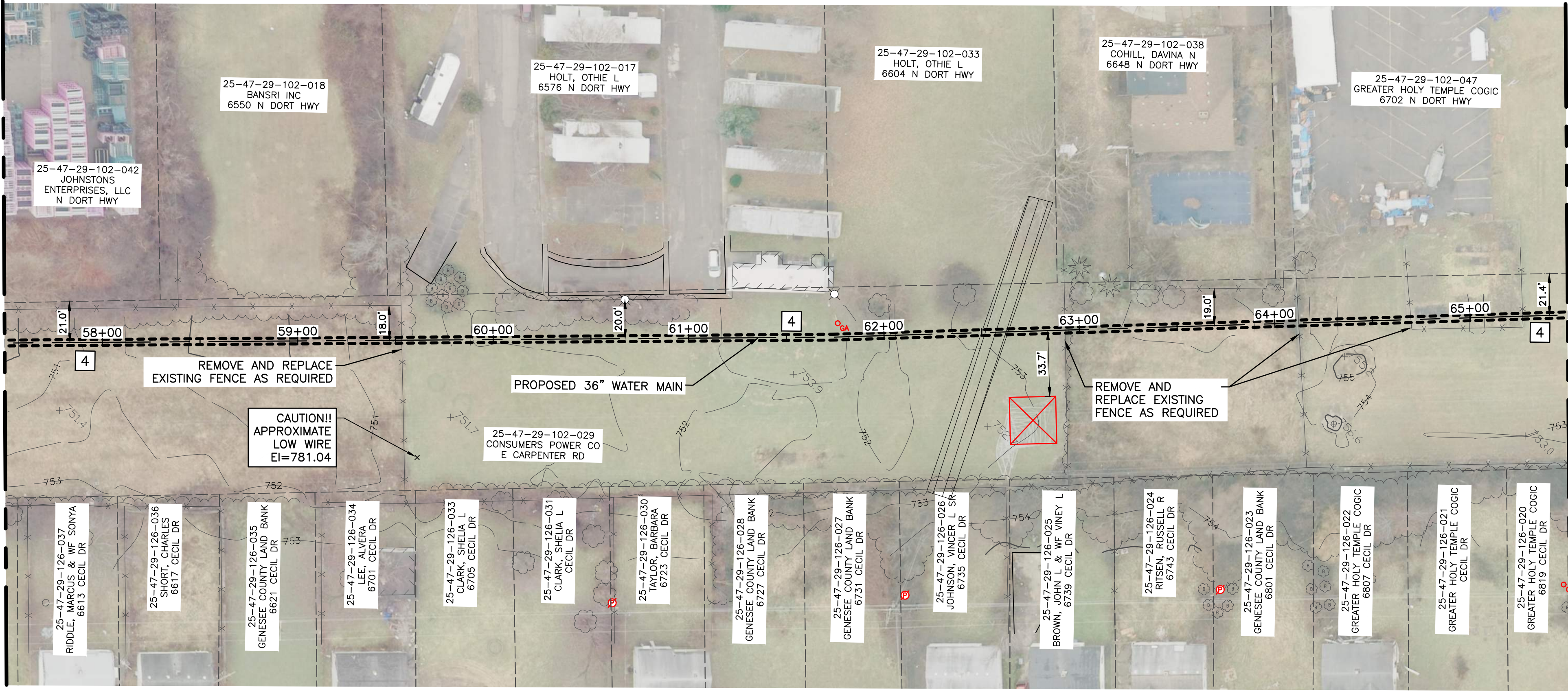
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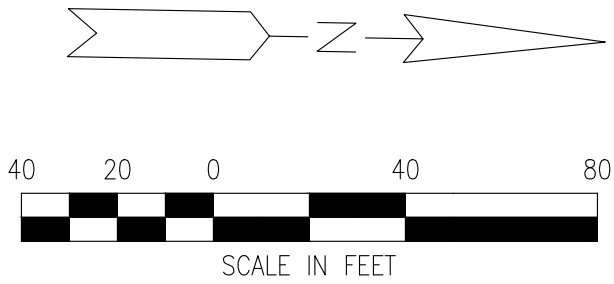
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MATCH LINE STA 57+50 SEE SHEET 34



MATCH LINE STA 65+50 SEE SHEET 36



NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 9

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SHEET

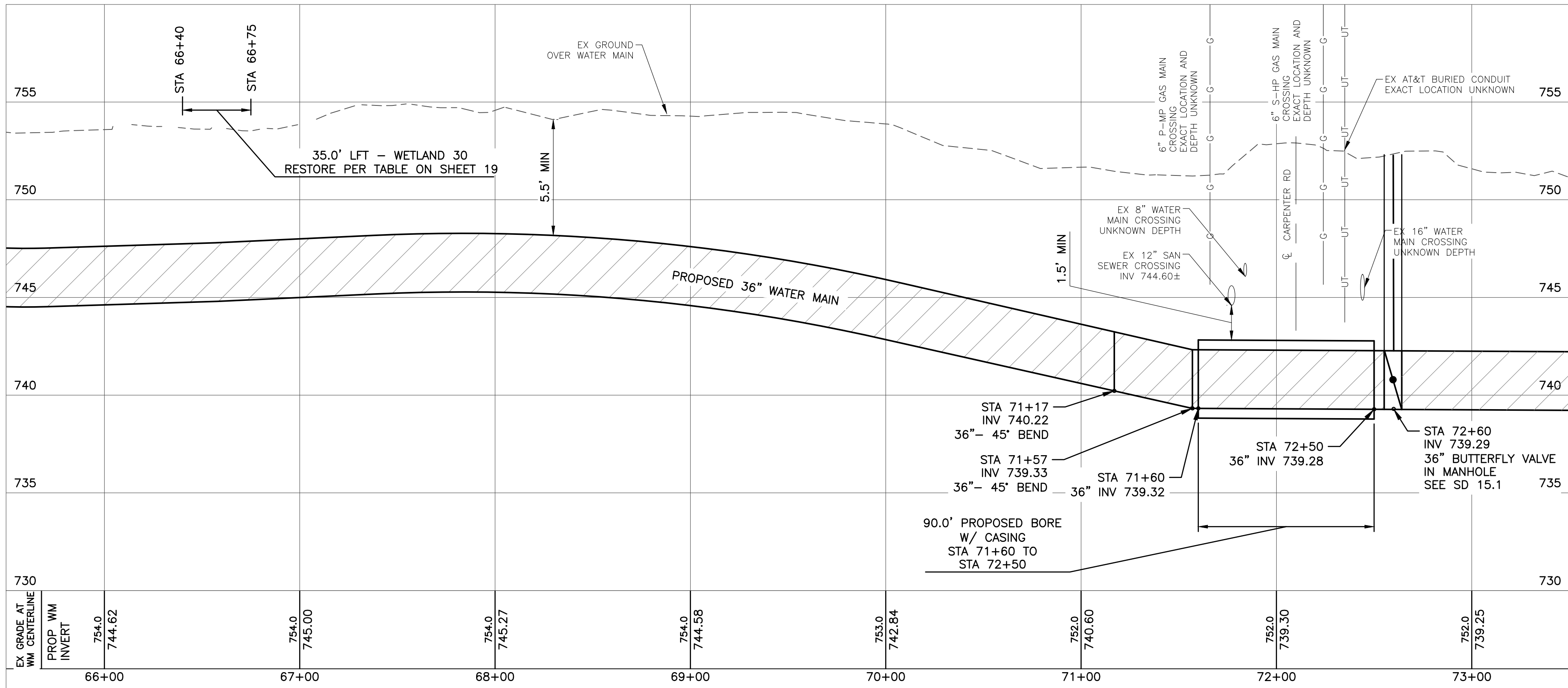
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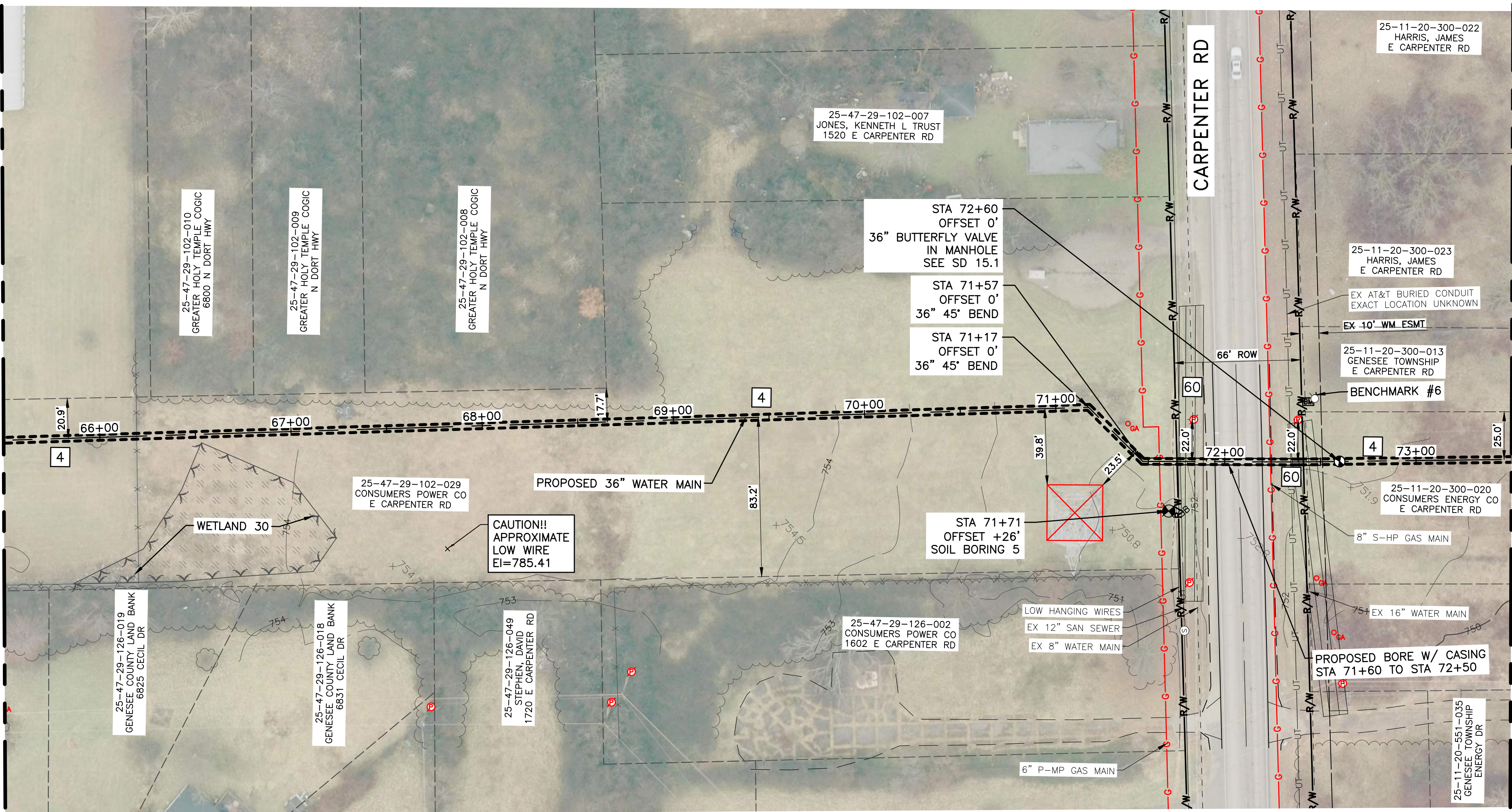
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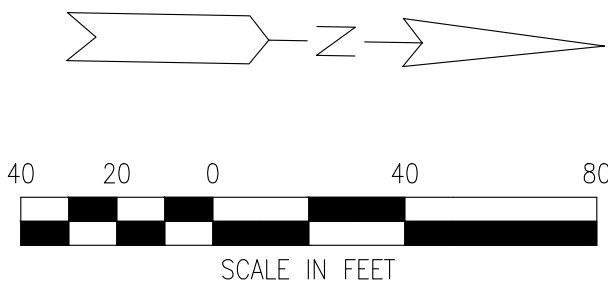
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MATCH LINE STA 65+50 SEE SHEET 35



MATCH LINE STA 73+50 SEE SHEET 37



BENCHMARK #6
NORTH FLANGE BOLT ON HYDRANT
IN THE MIDDLE OF RIGHT OF WAY
ON THE NORTH SIDE OF
CARPENTER ROAD
ELEV=753.17

CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 10

ISSUED FOR: DATE: BY:

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DATE

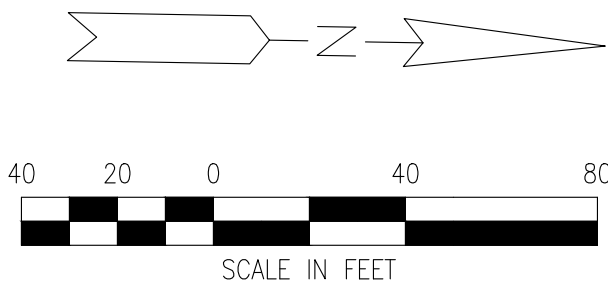
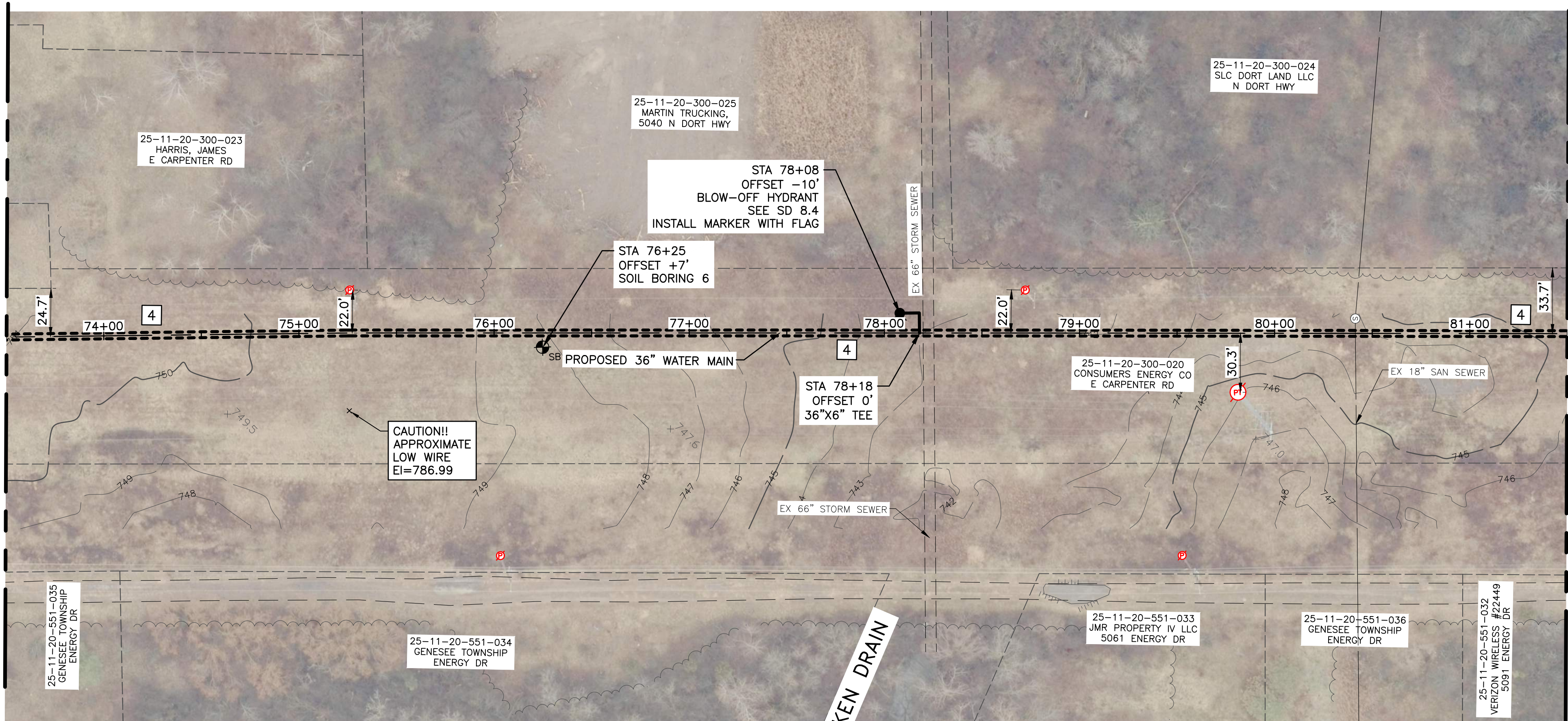
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BY

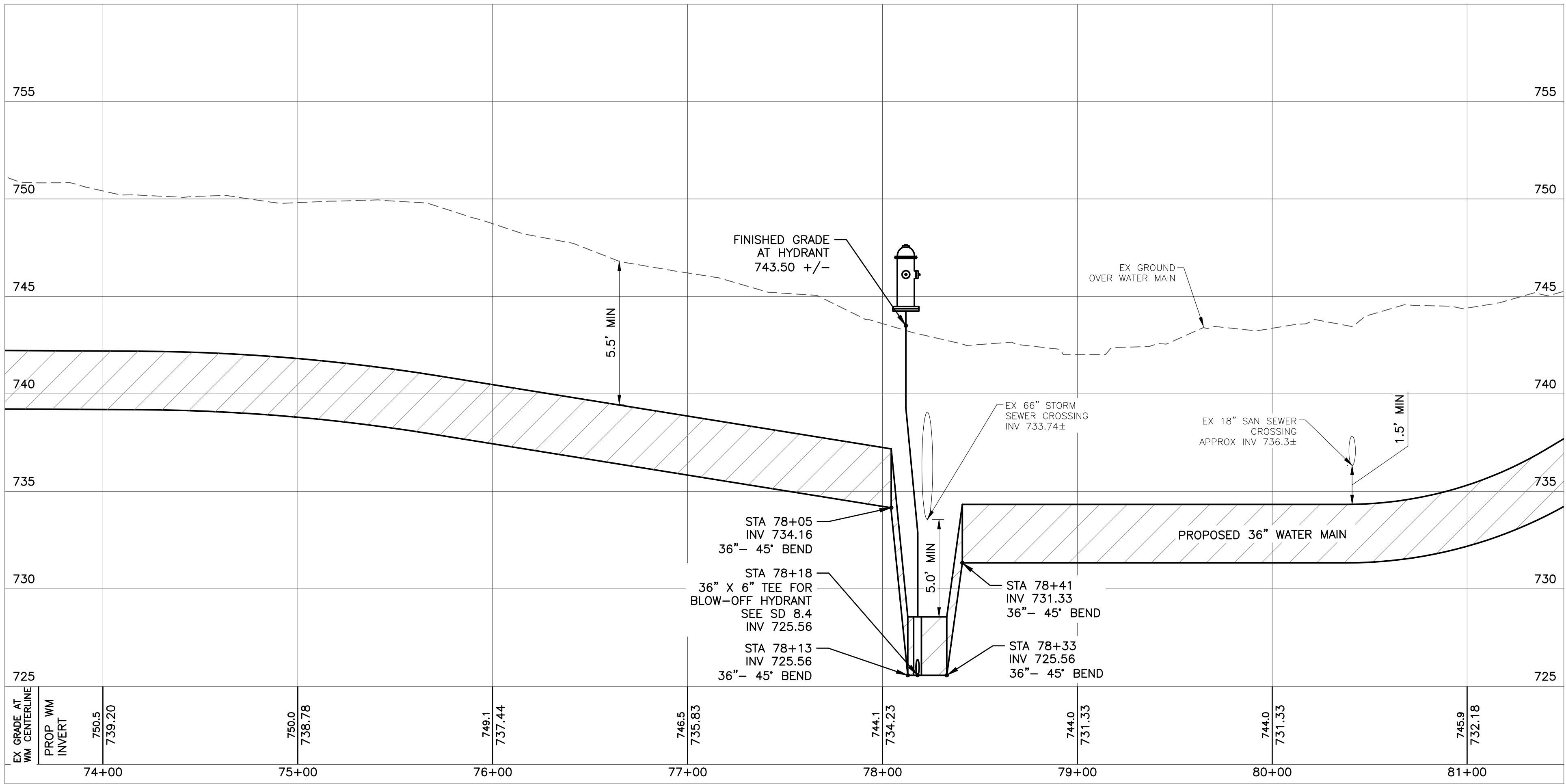


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Call before you dig.

MATCH LINE STA 73+50 SEE SHEET 36



MATCH LINE STA 81+50 SEE SHEET 38



NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 11

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET

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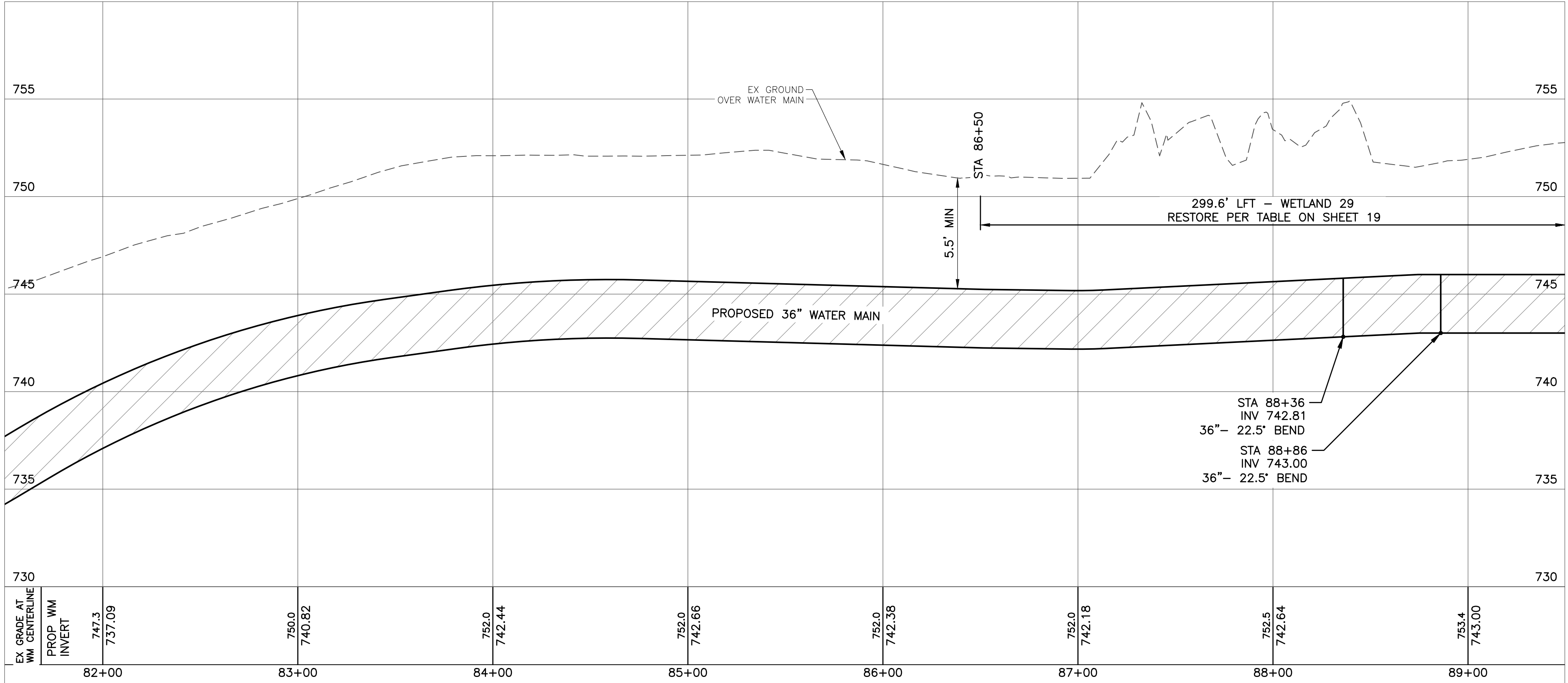


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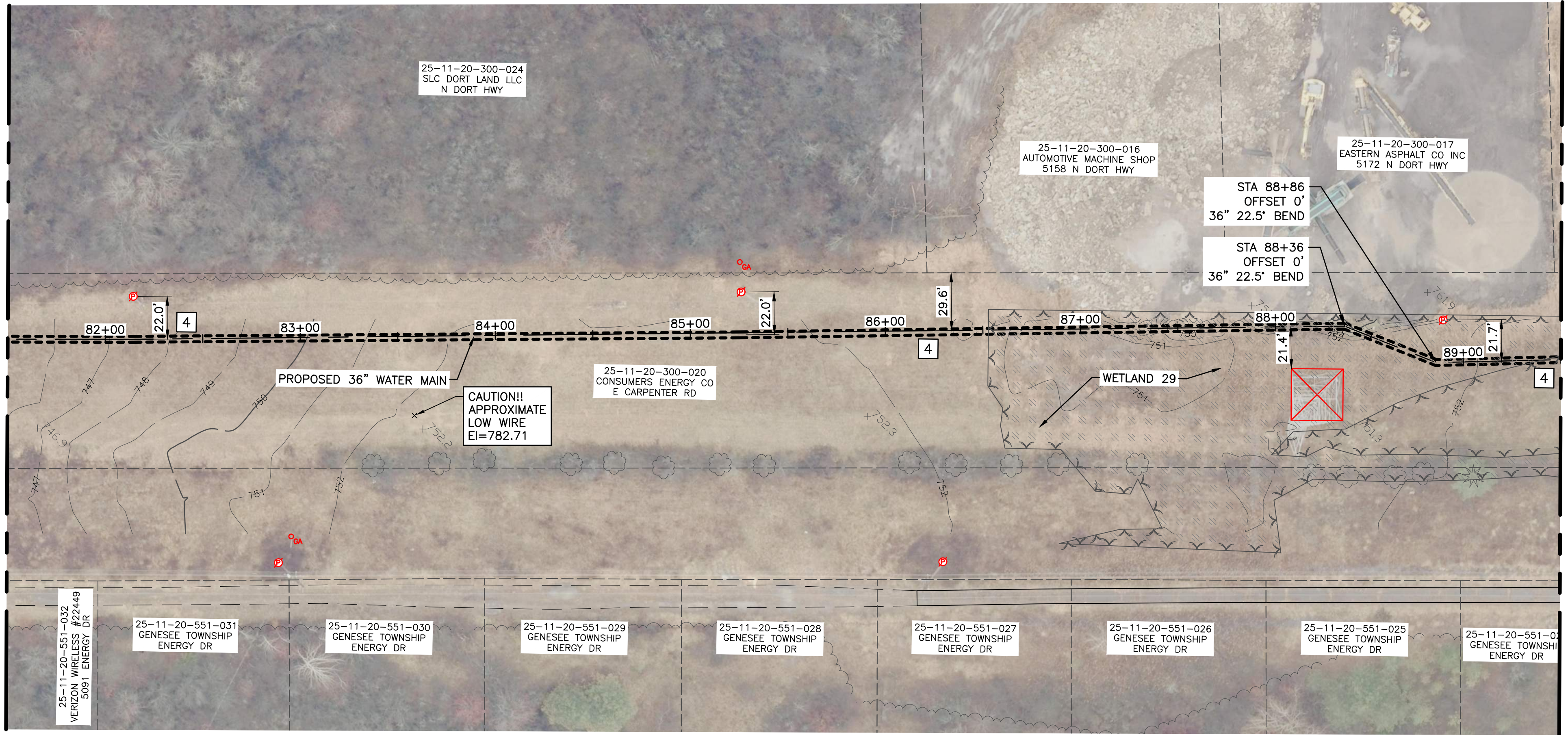
PROJECT: MANAGER: JESSA R. KENYON, PE FIELD BOOK INFORMATION: C:\PW\WORK\2\00848736\CUP-FLTS-PLAN-PROF-2.DWG - PP-12 - PLOTTED: 2/7/2020 10:35 AM BY: RUGGLES, TIMOTHY



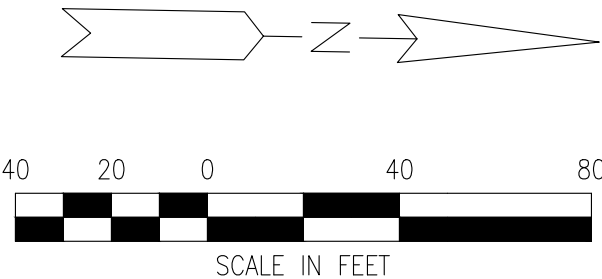
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MATCH LINE STA 81+50 SEE SHEET 37



MATCH LINE STA 89+50 SEE SHEET 39



NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 12

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET

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DESCRIPTION

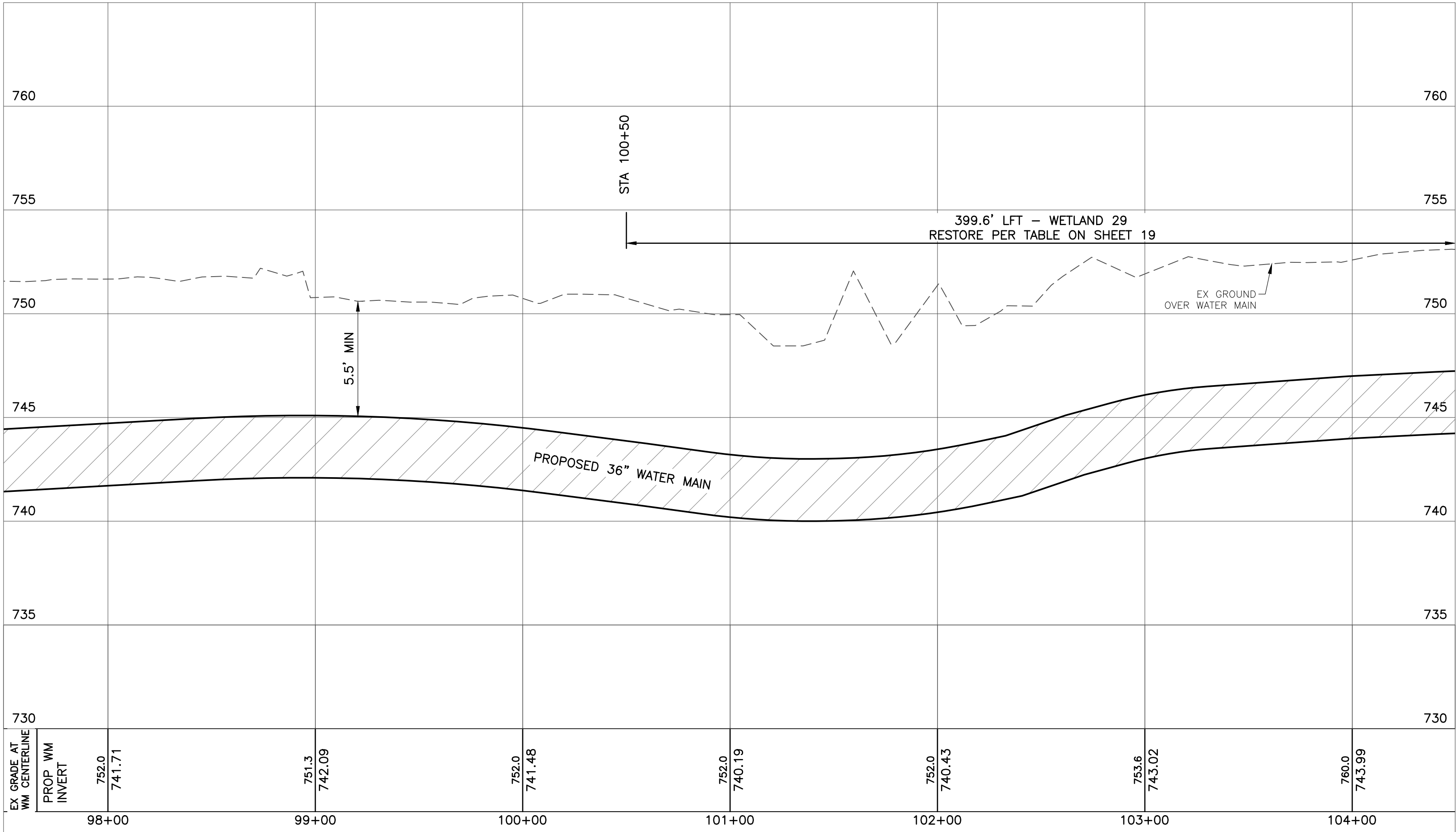
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REV#

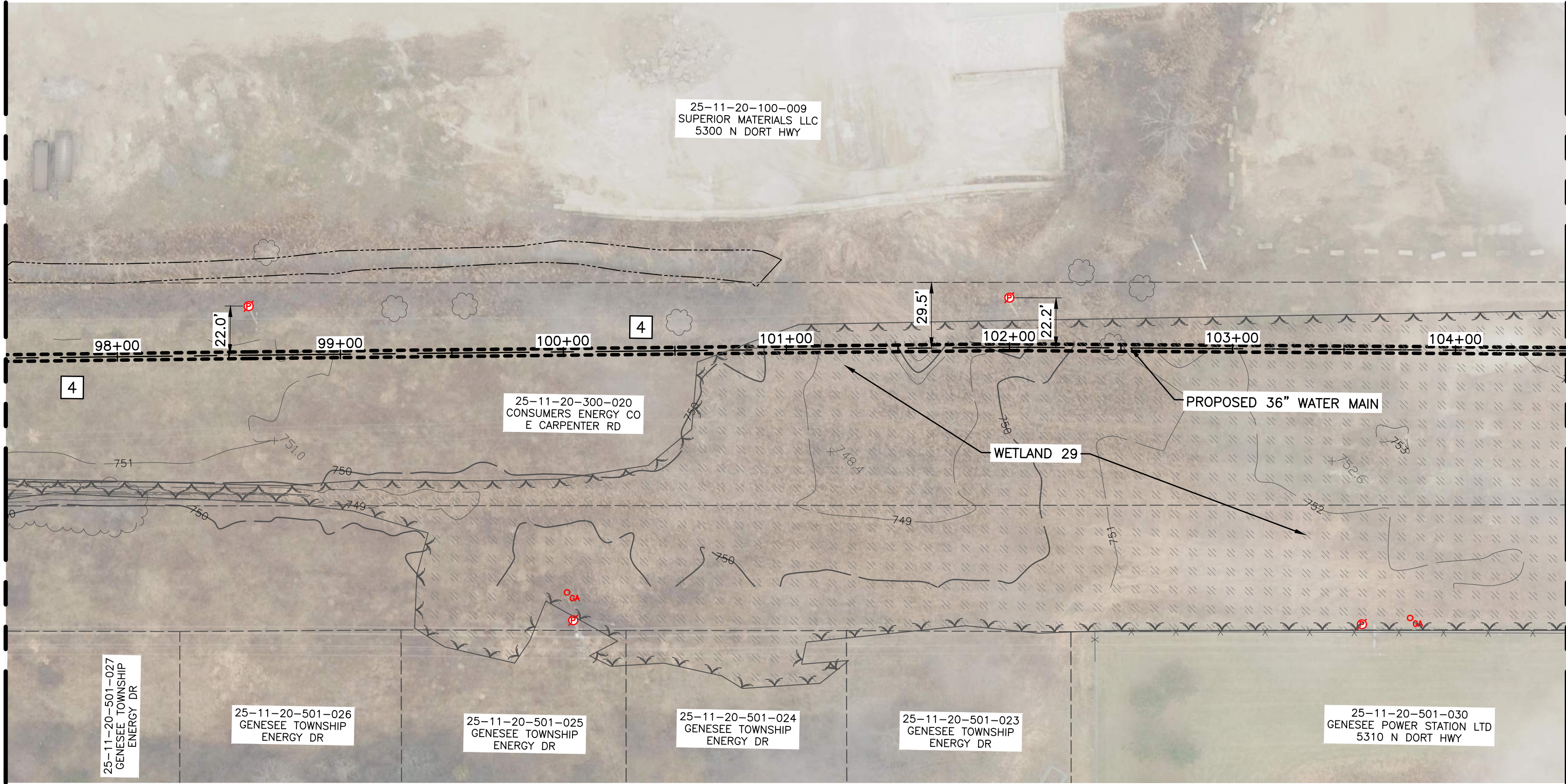
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MATCH LINE STA 104+50 SEE SHEET 41

NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 14

ISSUED FOR: DATE: BY:

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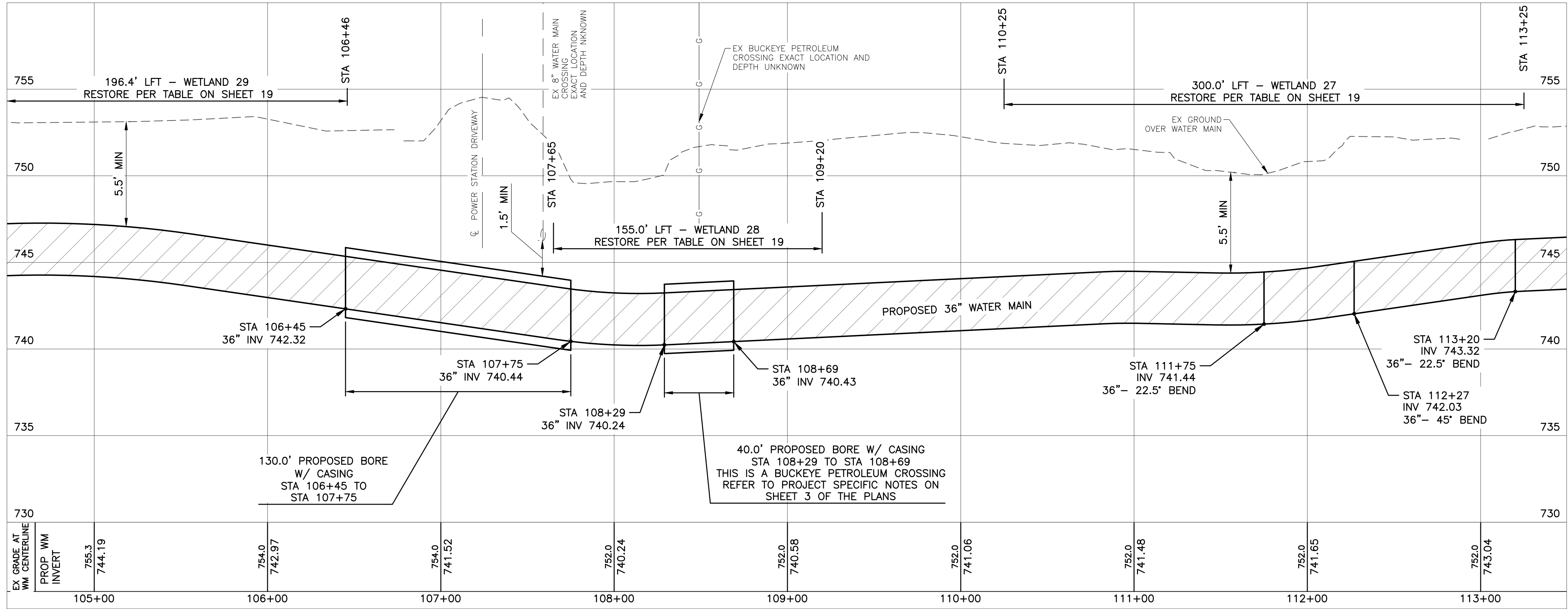
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PROJECT: MANAGER: JESSA R. KAYEVO, PE
C:\PW\WORK\2\0348735\CLIP-PLANS-PLAN-PROF-2.DWG - PP-15 - PLOTTED: 2/7/2020 10:36 AM BY: RUGGLES, TIMOTHY



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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 15

ISSUED FOR: DATE: BY:

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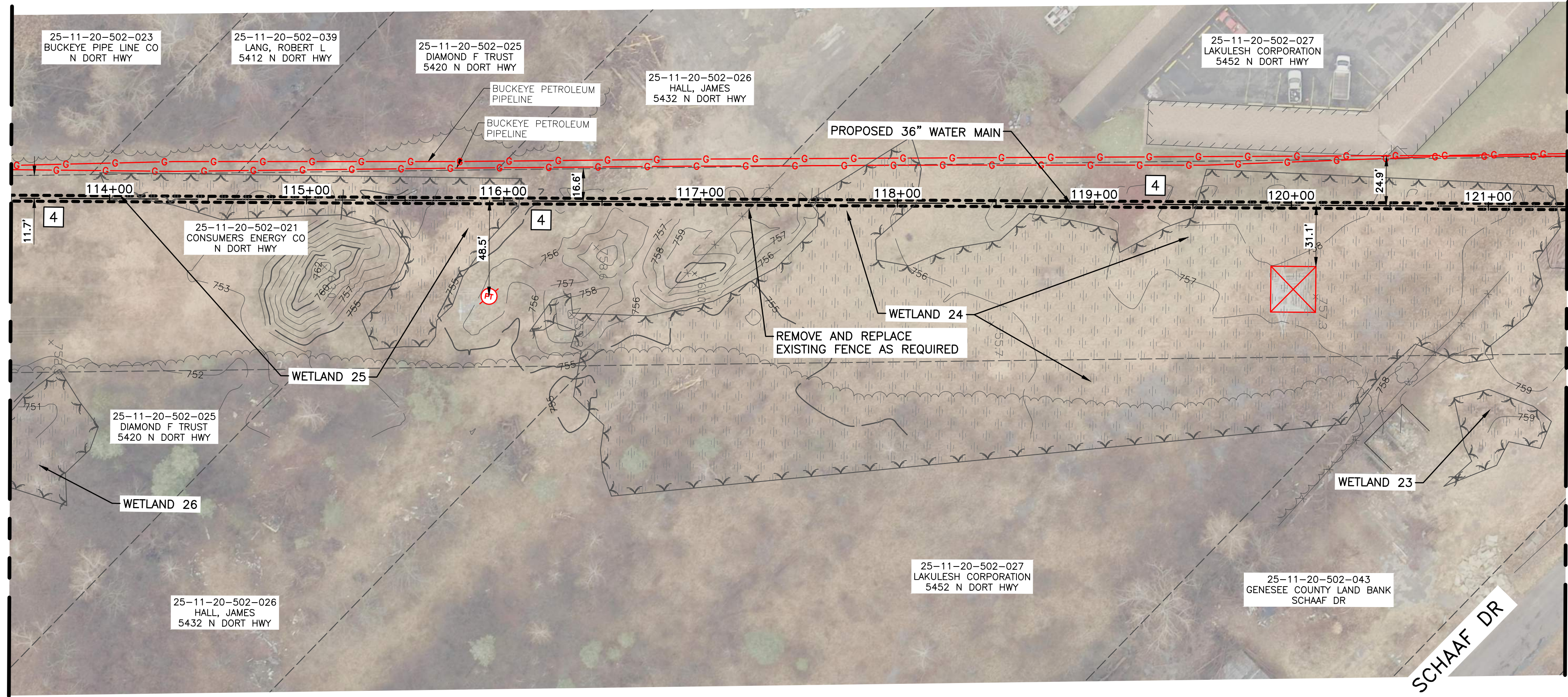
BY

PROJECT: MANAGER: JESSA R. KENYON, PE FIELD BOOK INFORMATION: C:\PW\WORK\2\0348735\0348735-PLAN-PROF-2.DWG - PP-16 - PLOTTED: 2/7/2020 10:37 AM BY: RUGGLES, TIMOTHY

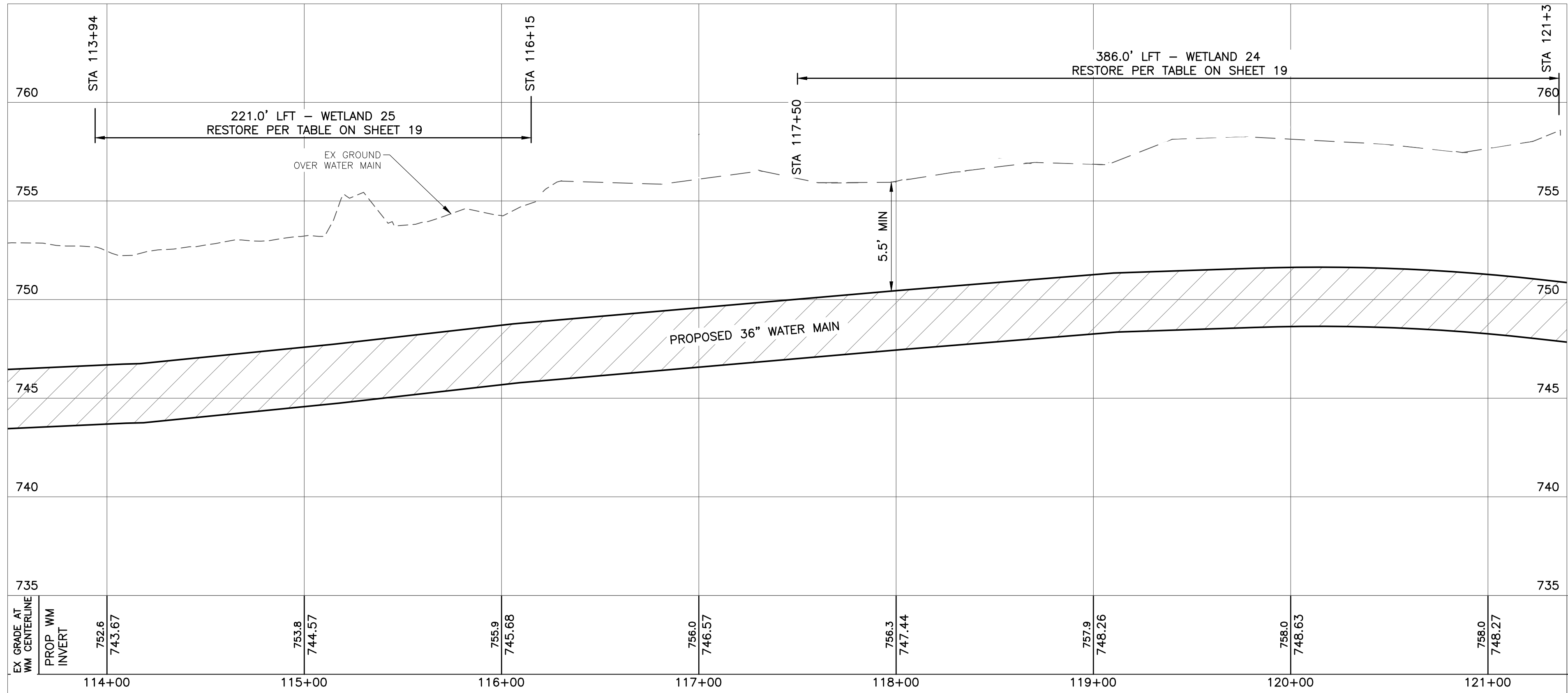


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MATCH LINE STA 113+50 SEE SHEET 41



MATCH LINE STA 121+50 SEE SHEET 43



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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 16

ISSUED FOR: DATE: BY:

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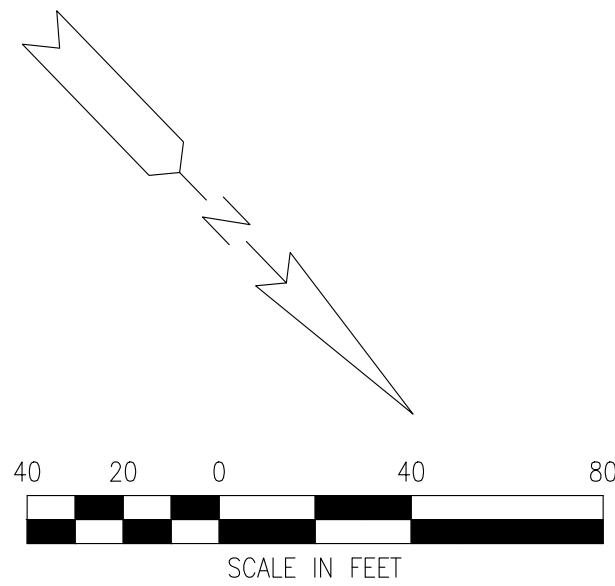
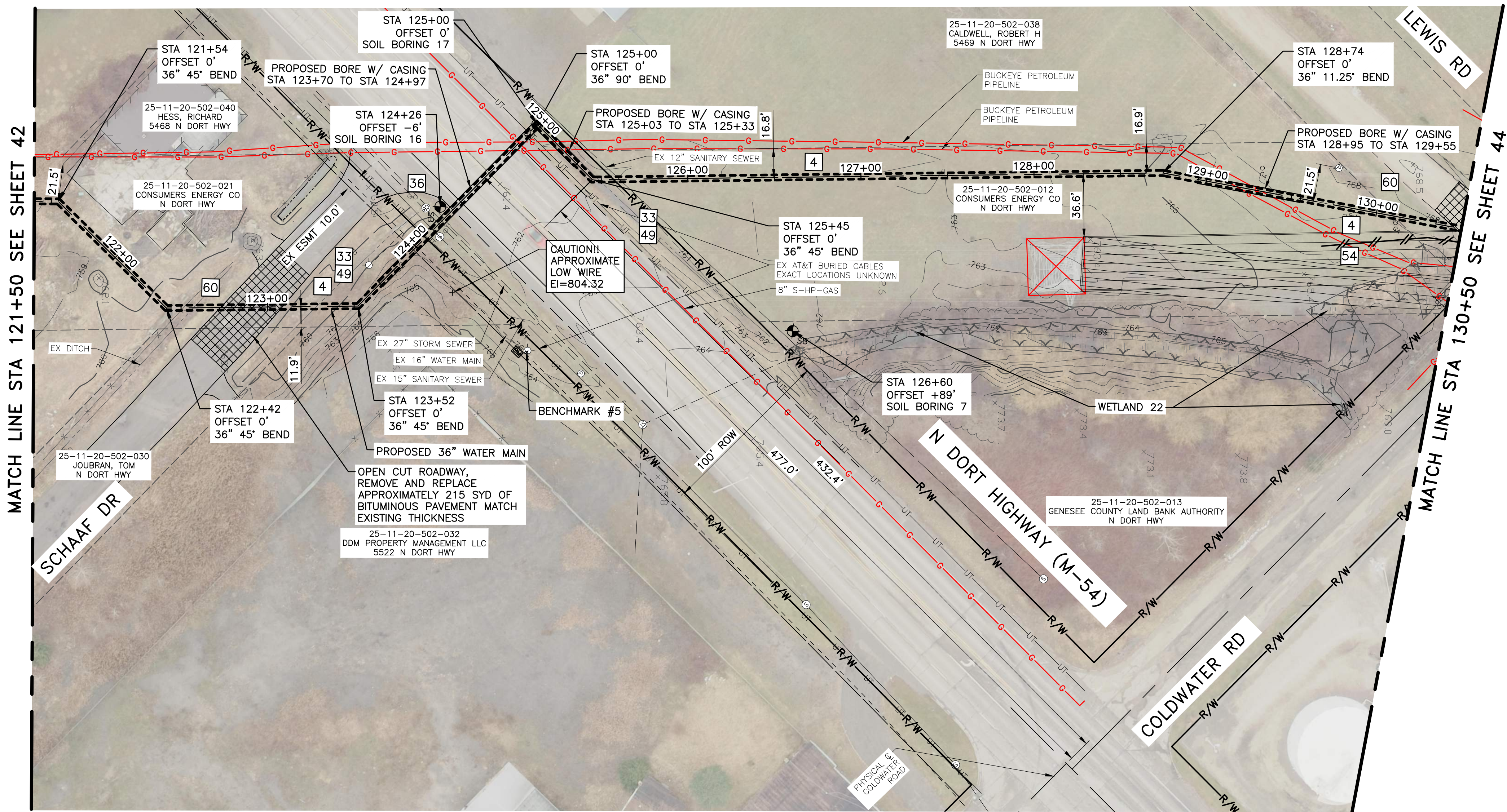
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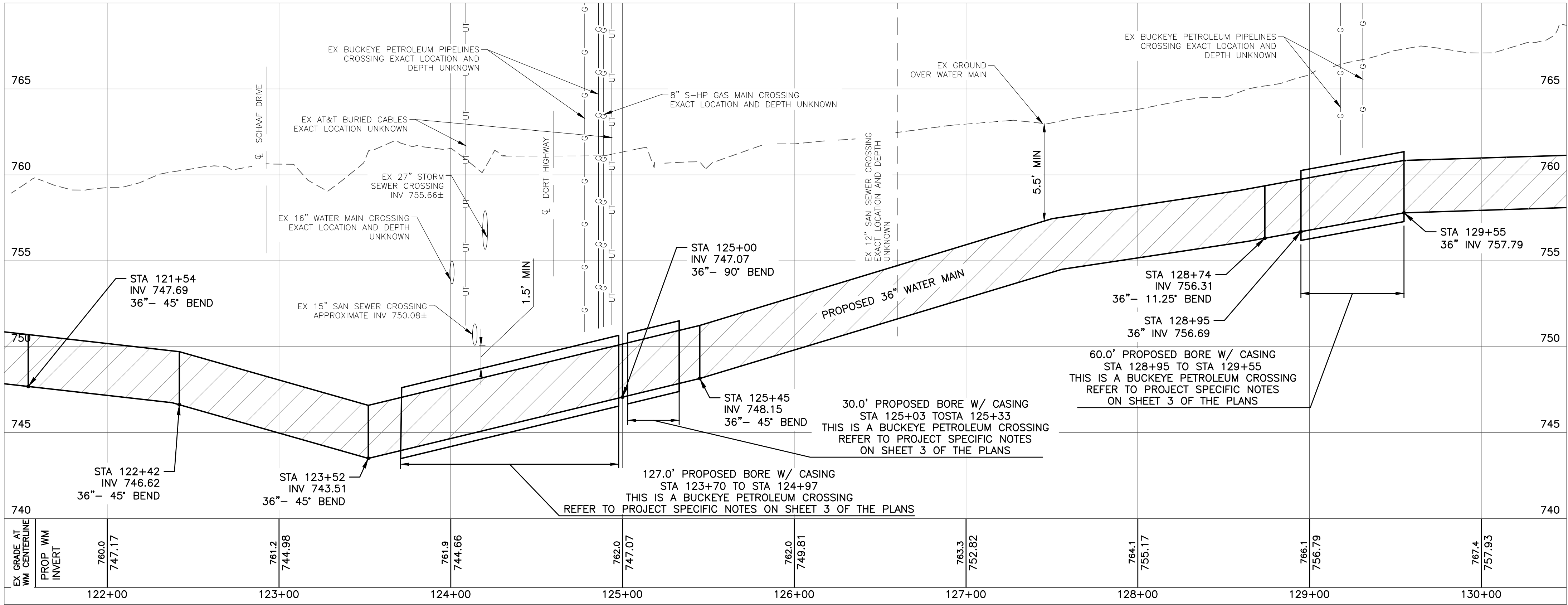
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PROJECT: MANAGER: JESSA R. KAYEVO, PE FIELD BOOK INFORMATION: C:\PW\WORK\2009\48735\000-PLAN-PROF-3.DWG - PP-17 - PLOTTED: 2/7/2020 10:39 AM BY: RUGGLES, TIMOTHY



BENCHMARK #5
EAST FLANGE BOLT ON HYDRANT
ON EAST SIDE OF DORT HWY
75' +/- NORTH OF SCHAAF ROAD
ELEV=763.22

TRAFFIC CONTROL NOTE:
DURING JACK-AND-BORE OPERATION UNDER M-54 (DORT HIGHWAY), CONTRACTOR SHALL PROVIDE FOR A TEMPORARY, SINGLE-LANE CLOSURE FOR THE WEST-MOST SOUTHBOUND LANE UNTIL SUCH TIME AS THE BORE HAS BEEN COMPLETED AND THE CONTRACTOR MOVES HIS/HER OPERATION OUTSIDE OF THE RIGHT-OF-WAY FOR M-54. CONTRACTOR SHALL UTILIZE MDOT STANDARD MAINTAINING TRAFFIC TYPICAL M02500, "TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON AN UNDIVIDED MULTI-LANE ROADWAY USING A SINGLE STEP DOWN IN SPEED LIMIT IN ONE DIRECTION ONLY".



NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 17

ISSUED FOR: DATE: BY:

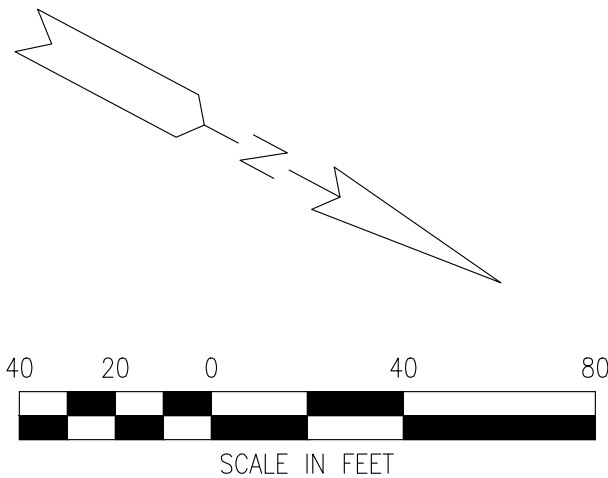
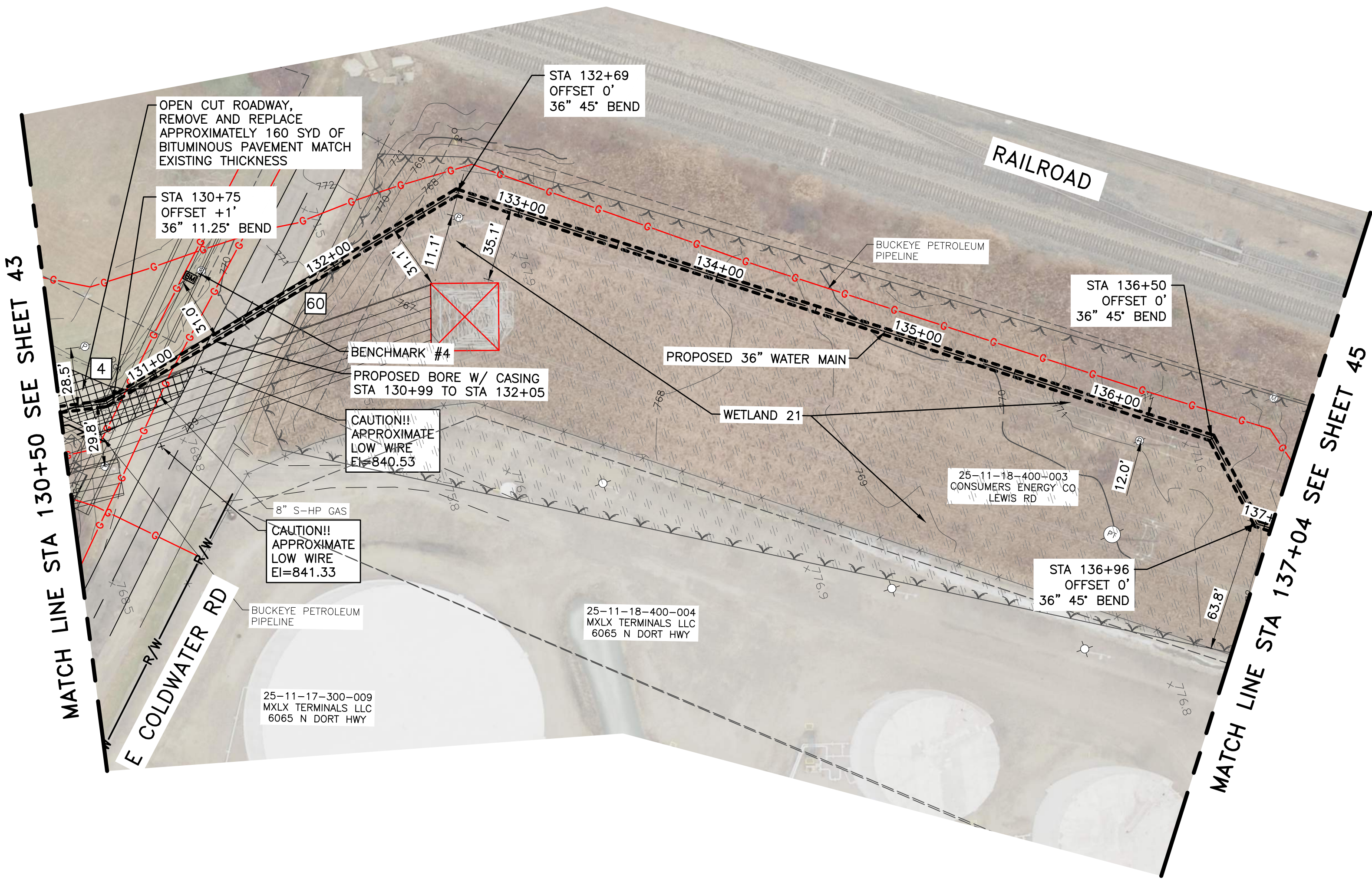
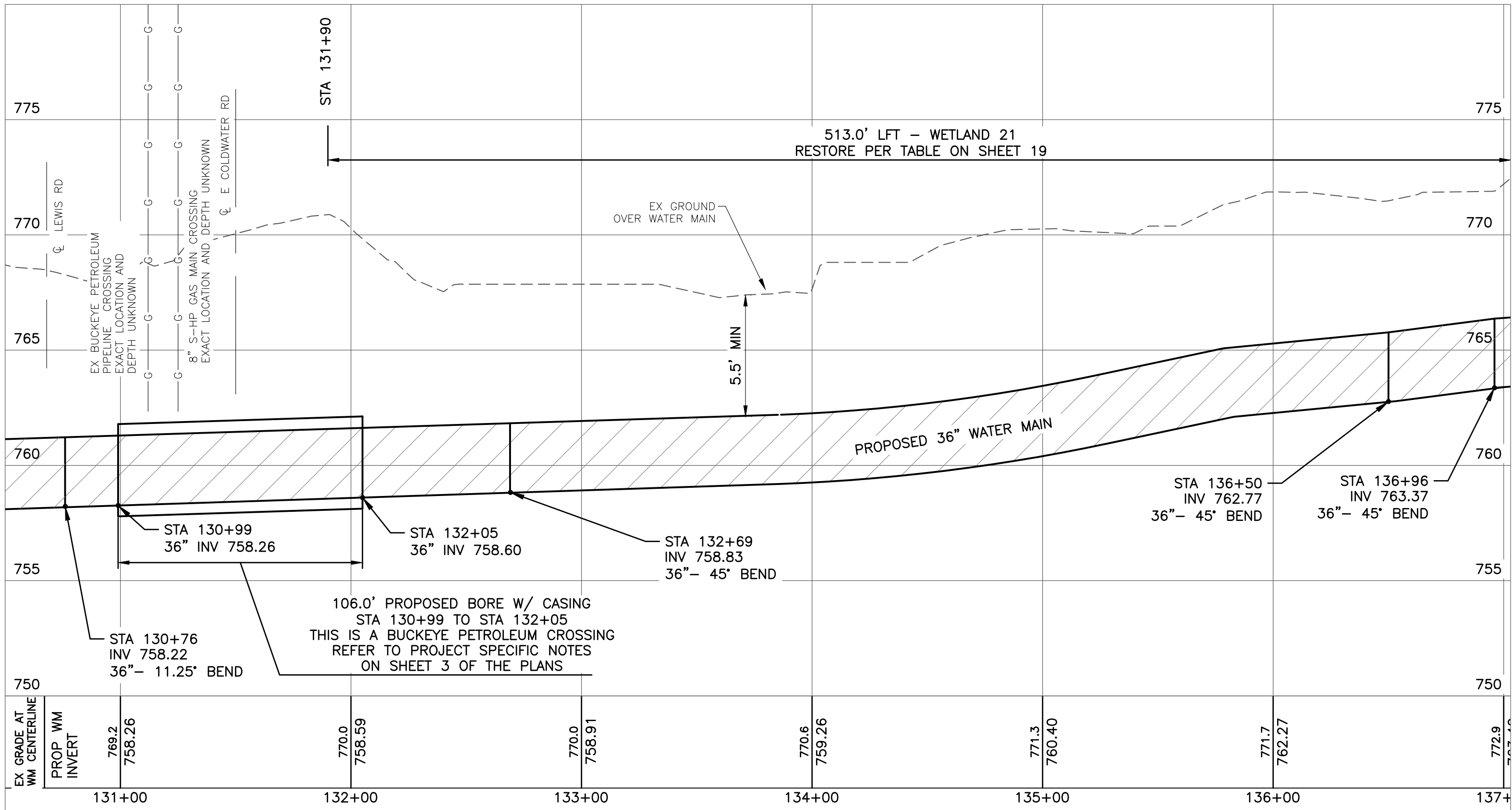
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PROJECT: MANAGER: JASON R. KAYEVO, PE
CA/PW WORKS: 00948735, CUP-FLTS-PLAN-PROF-3.DWG - PP-18 - PLOTTED: 2/7/2020, 10:39 AM, BY: RUGGLES, TIMOTHY



BENCHMARK #4
SET BENCHTIE IN NORTH
FACE OF PP SOUTH OF
COLDWATER ROAD AND 5' WEST
OF DRIVE
ELEVATION=770.34

NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 18

ISSUED FOR: DATE: BY:

JOB NO.
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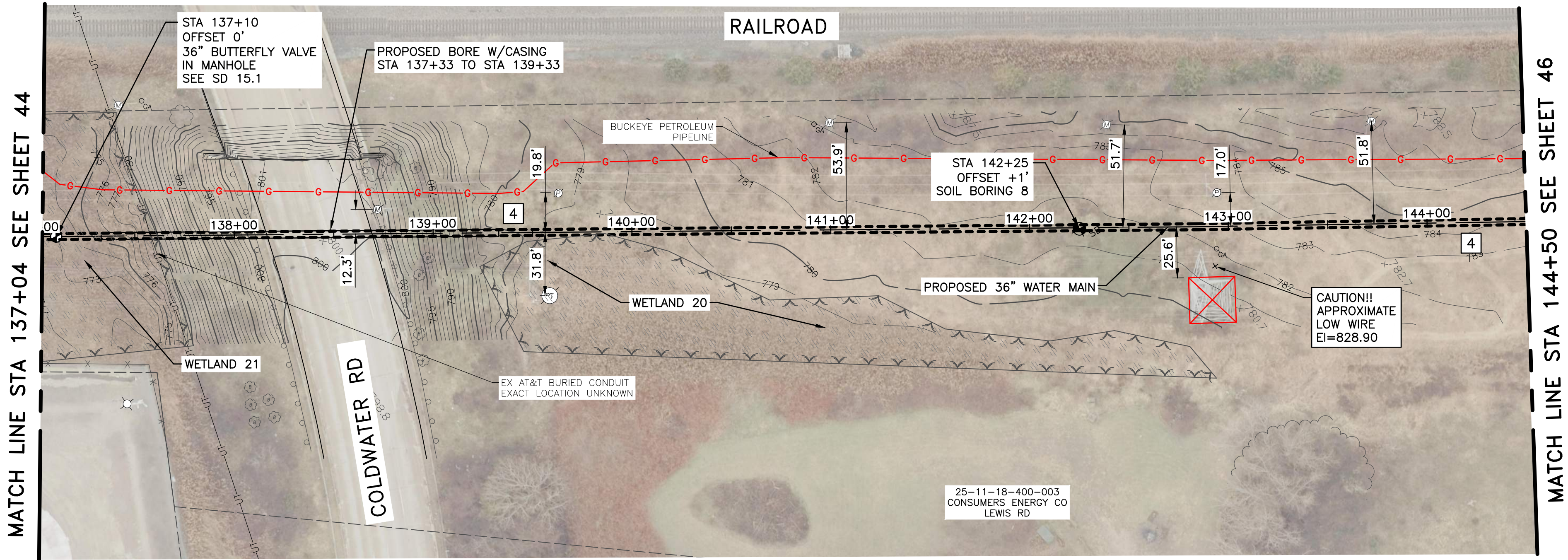
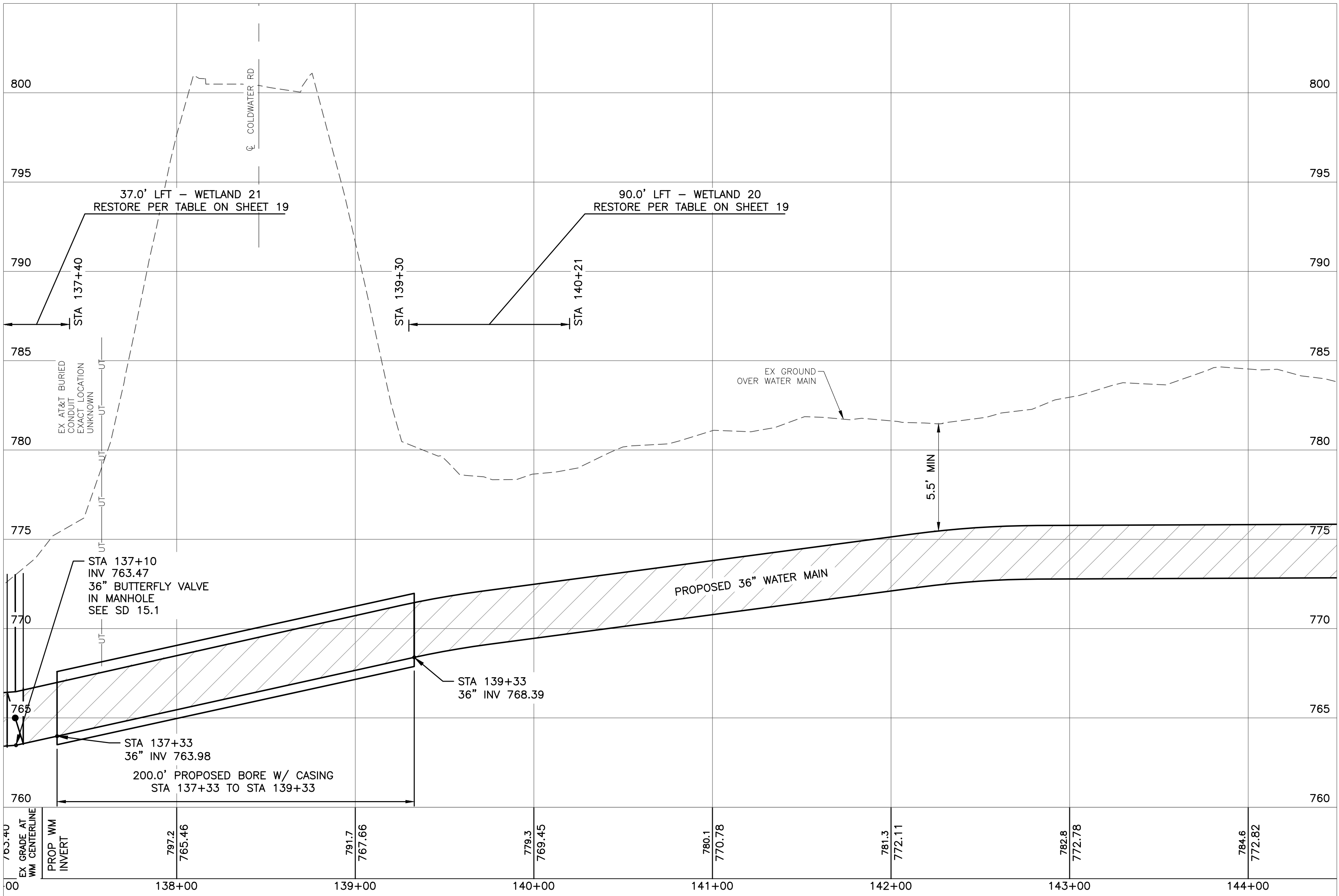
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PROJECT: MANAGER: JESSA R. KAYSON, PE FIELD BOOK INFORMATION: 2,77/2020, 10:39 AM BY: RUGGLES, TIMOTHY
C:\PW\WORK\00948736\00948736-PLAN-PROF-3.DWG - PP-19 - PLOTTED: 2,77/2020, 10:39 AM BY: RUGGLES, TIMOTHY



NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 19

ISSUED FOR: DATE: BY:

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SHEET

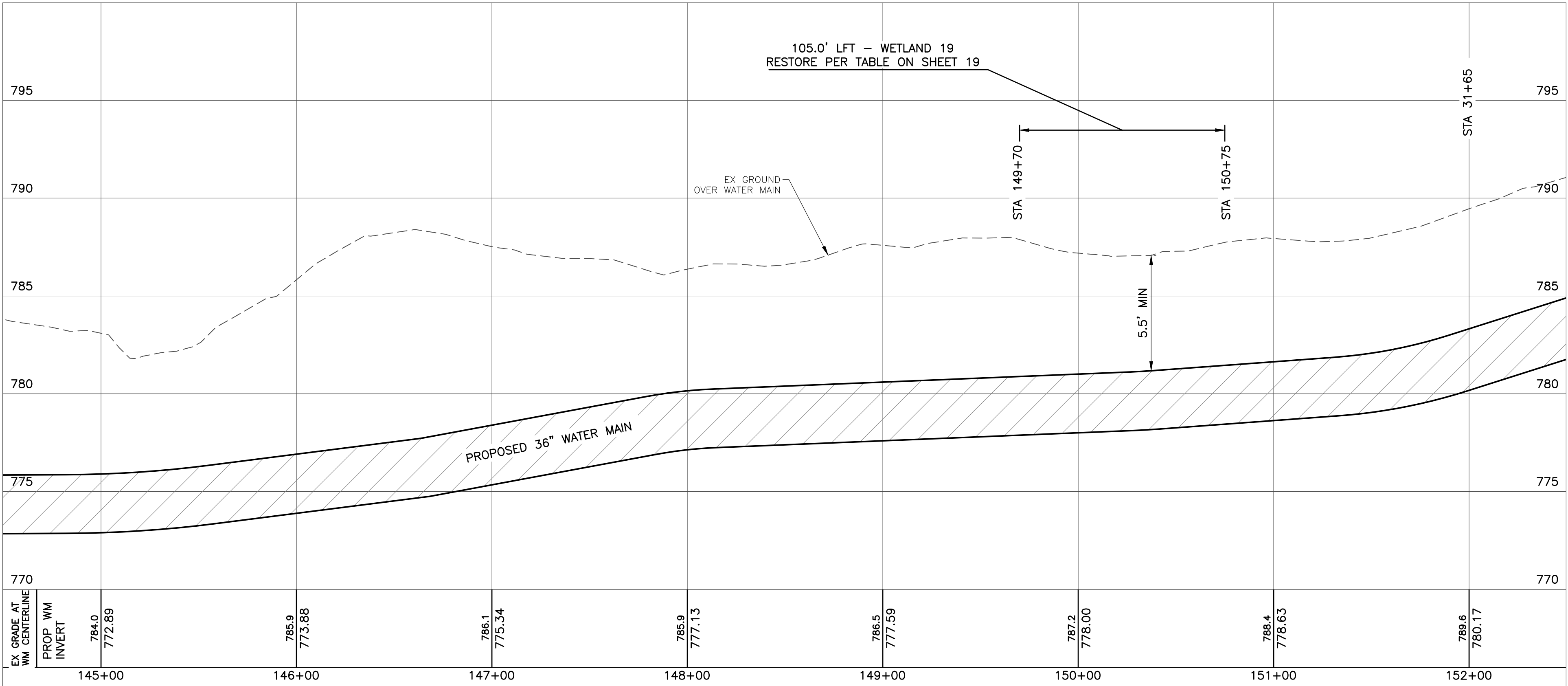
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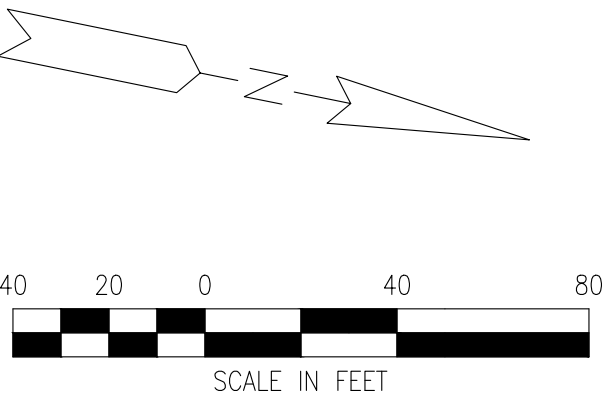
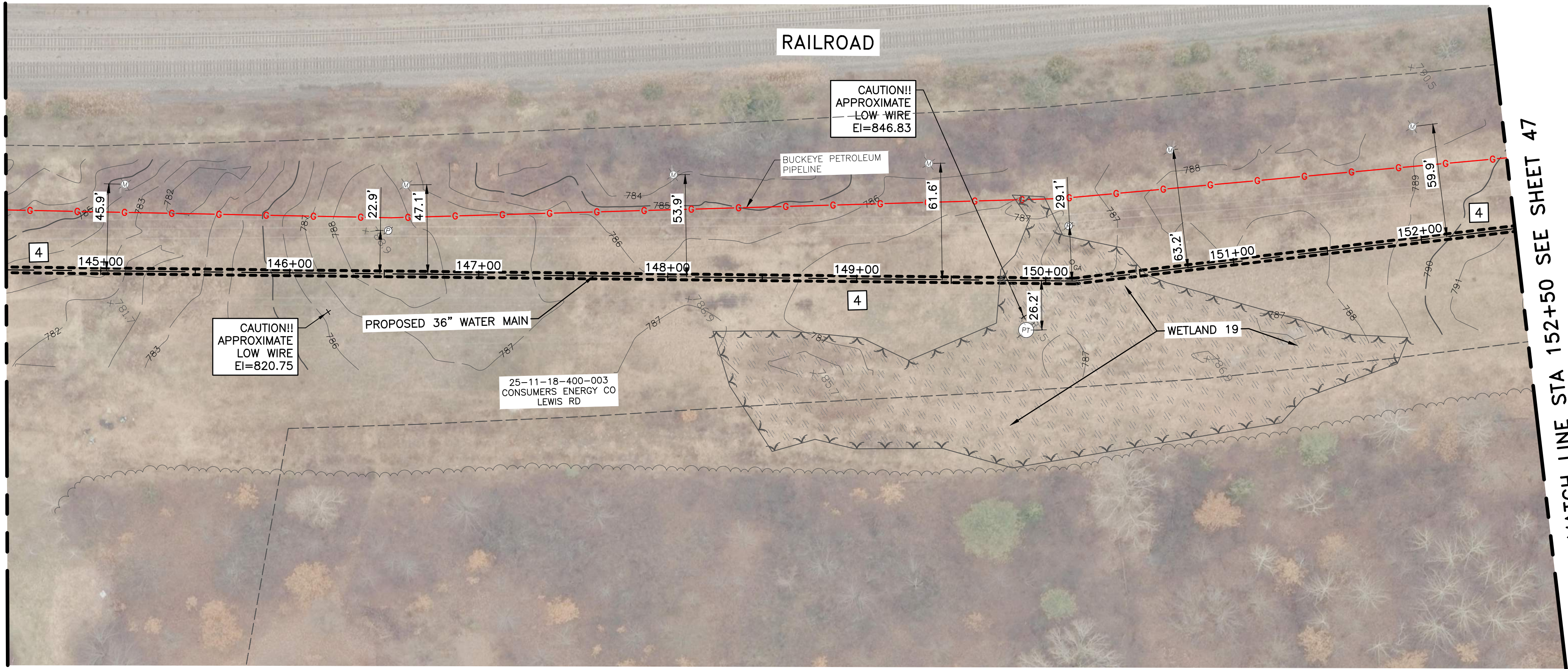
PROJECT: MANAGER: JESSA R. KAYEVO, PE FIELD BOOK INFORMATION: C:\PW\WORK\00948735\00948735-PLAN-PROF-3.DWG - PP-20 - PLOTTED: 2/7/2020 10:39 AM BY: RUGGLES, TIMOTHY



NOTES

1. THE CONTRACTOR SHALL USE A TRENCH BOX IN ANY LOCATION WHERE THE PROPOSED WATER MAIN IS TO BE CONSTRUCTED LESS THAN 20' FROM AN EXISTING ELECTRIC POWER POLE OR TOWER.
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MATCH LINE STA 144+50 SEE SHEET 45



MATCH LINE STA 152+50 SEE SHEET 47

CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 20

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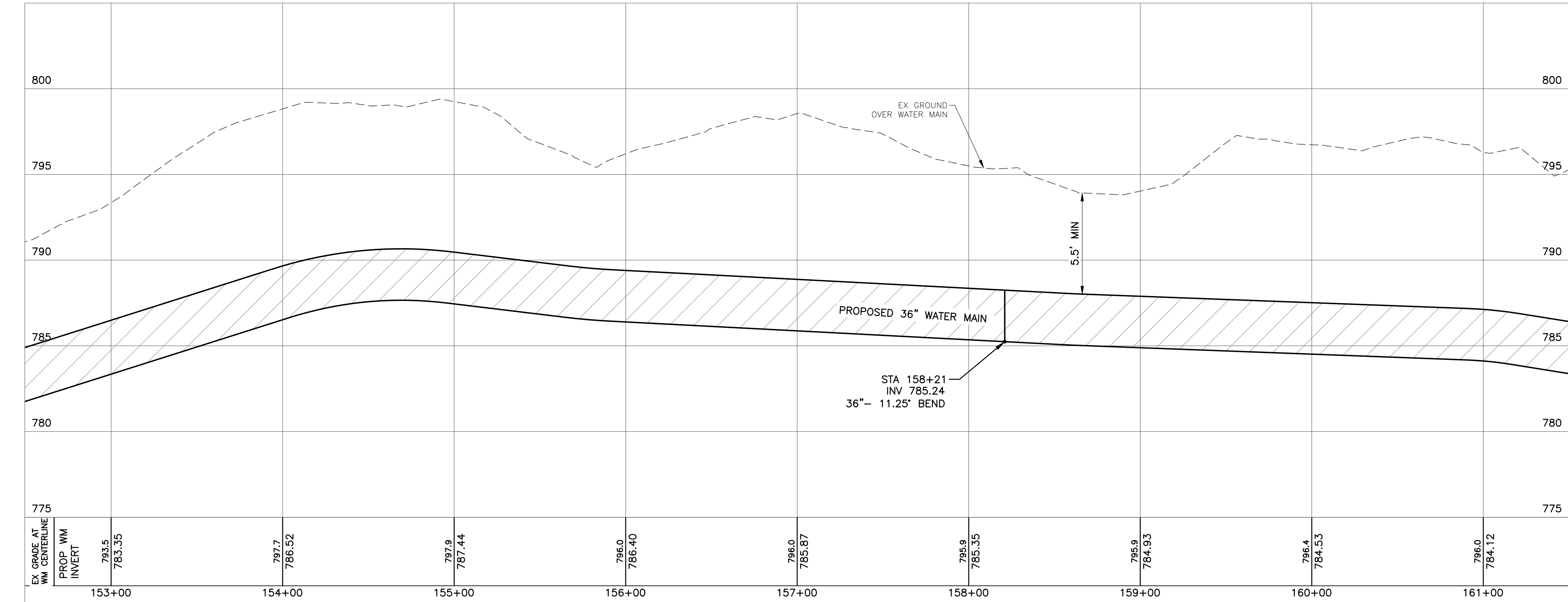
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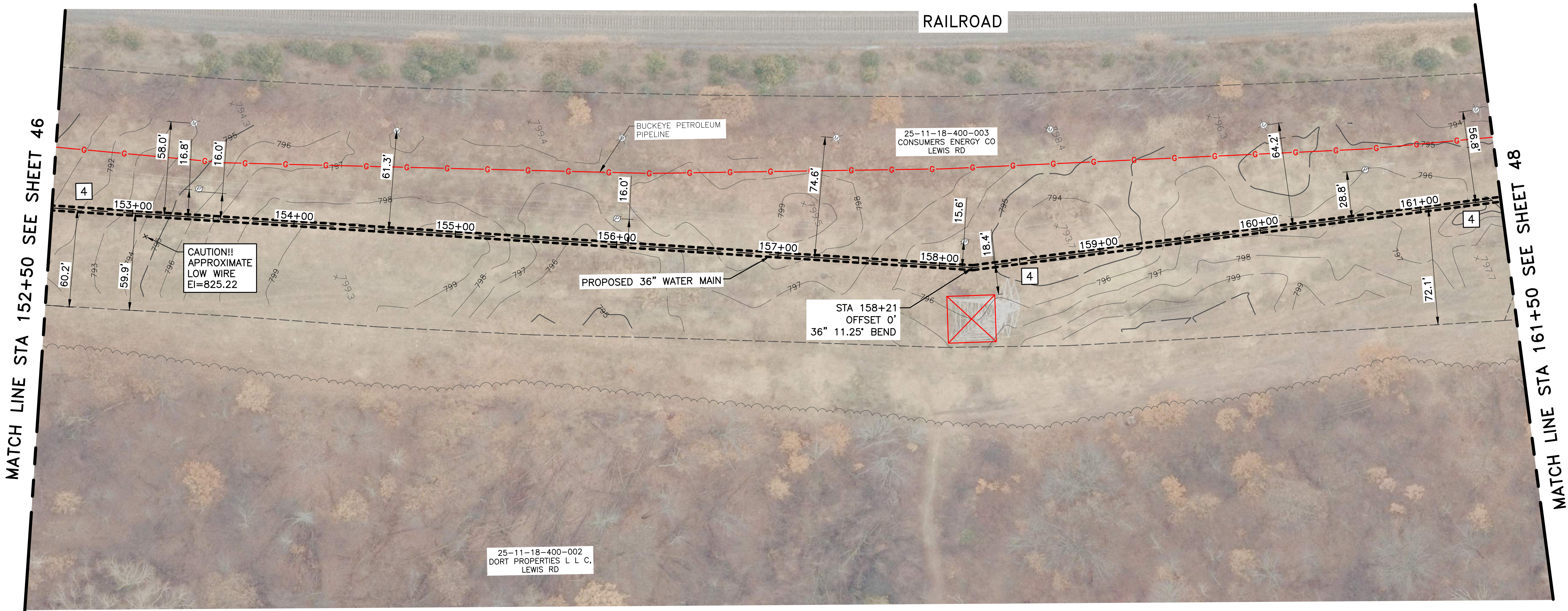
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PROJECT: MANAGER: JESSA B. KAYSON, PE FIELD BOOK INFORMATION: C:\PW\WORK\200848736\CLIP-FLTS-PLAN-PROF-3.DWG - PP-21 - PLOTTED: 2/7/2020 10:40 AM BY: RUGGLES, TIMOTHY



NOTES

1. THE CONTRACTOR SHALL USE A TRENCH BOX IN ANY LOCATION WHERE THE PROPOSED WATER MAIN IS TO BE CONSTRUCTED LESS THAN 20' FROM AN EXISTING ELECTRIC POWER POLE OR TOWER.
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47

CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 21

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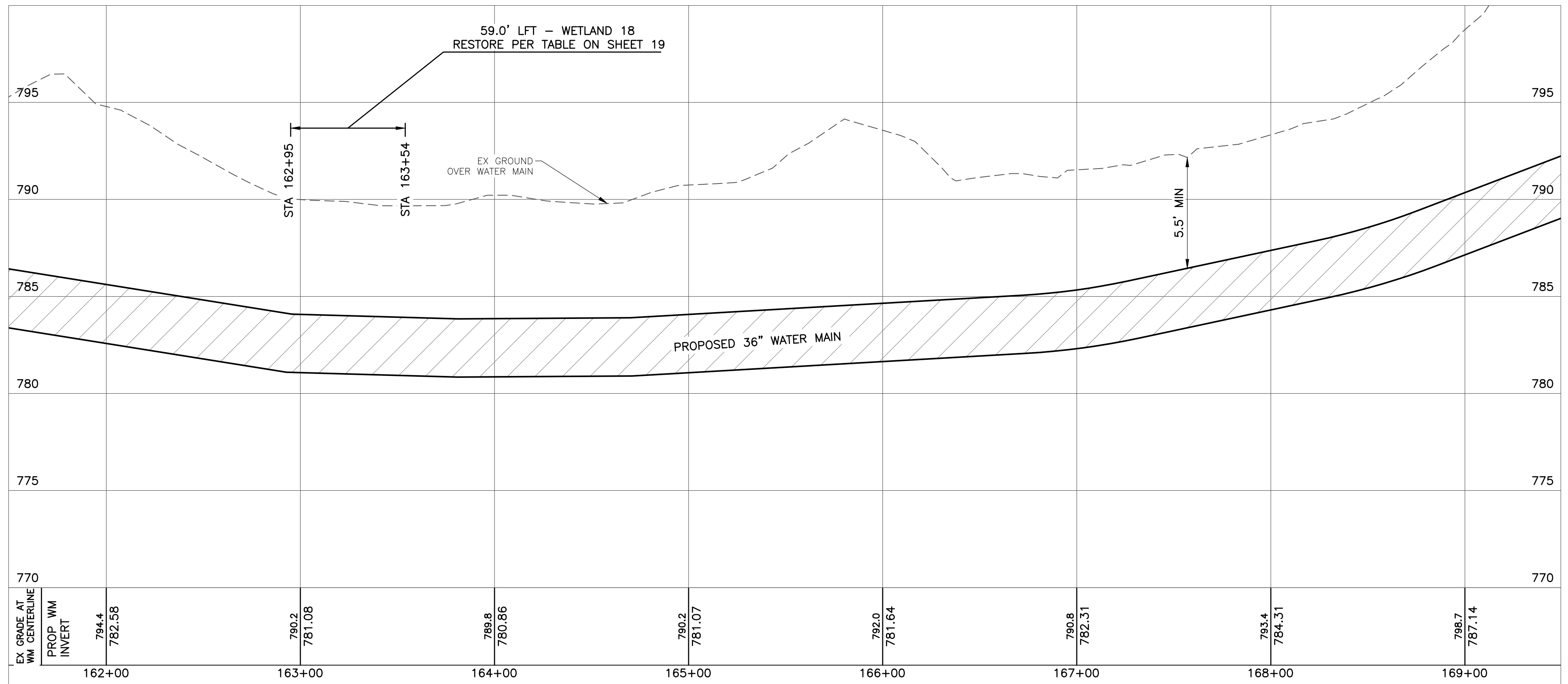
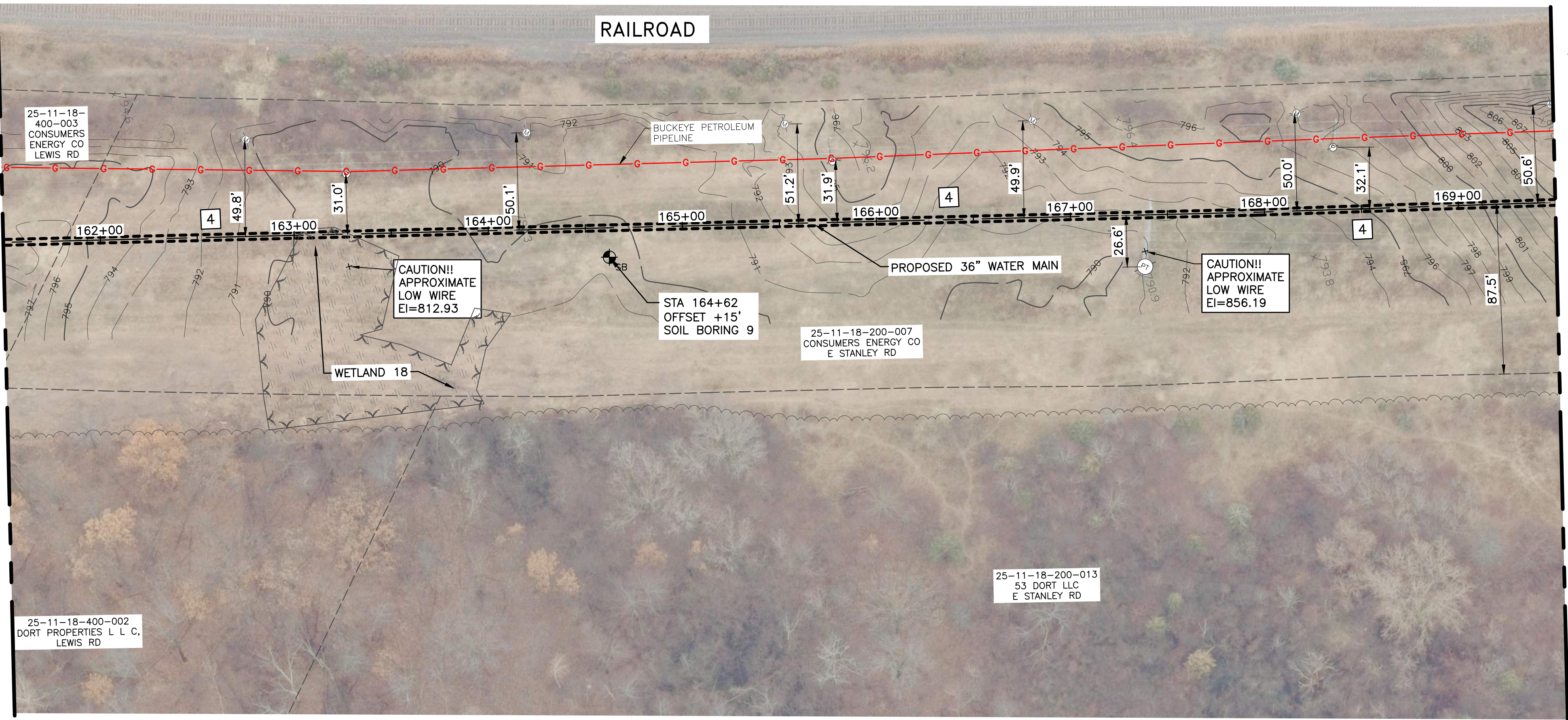
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DESCRIPTION

BY

PROJECT: MANAGER: JESSA R. KAYE, PE
C:\PW\WORK\20348735\CUP-FLTS-PLAN-PROF-3.DWG - PP-22 - PLOTTED: 2/7/2020 10:40 AM BY: RUGGLES, TIMOTHY

MATCH LINE STA 161+50 SEE SHEET 47



NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 22

ISSUED FOR: DATE: BY:

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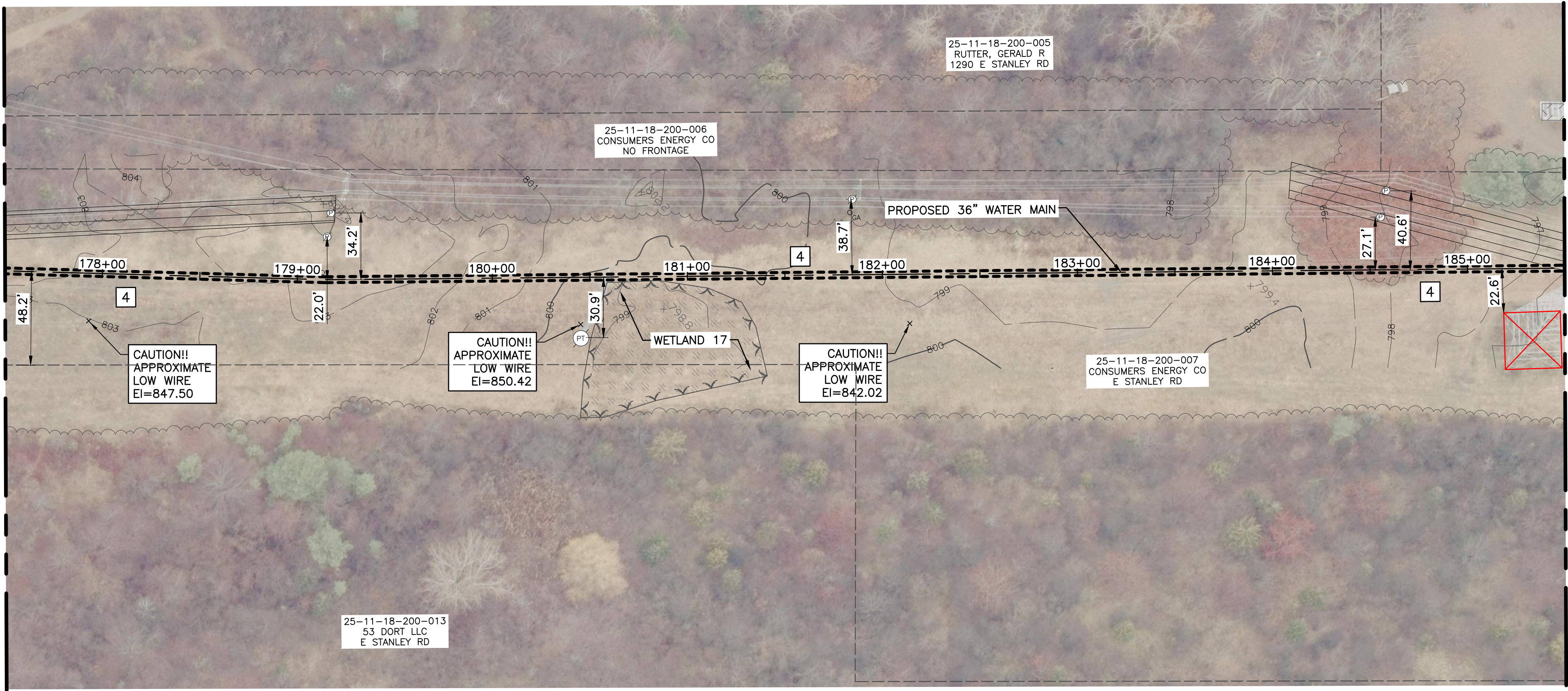
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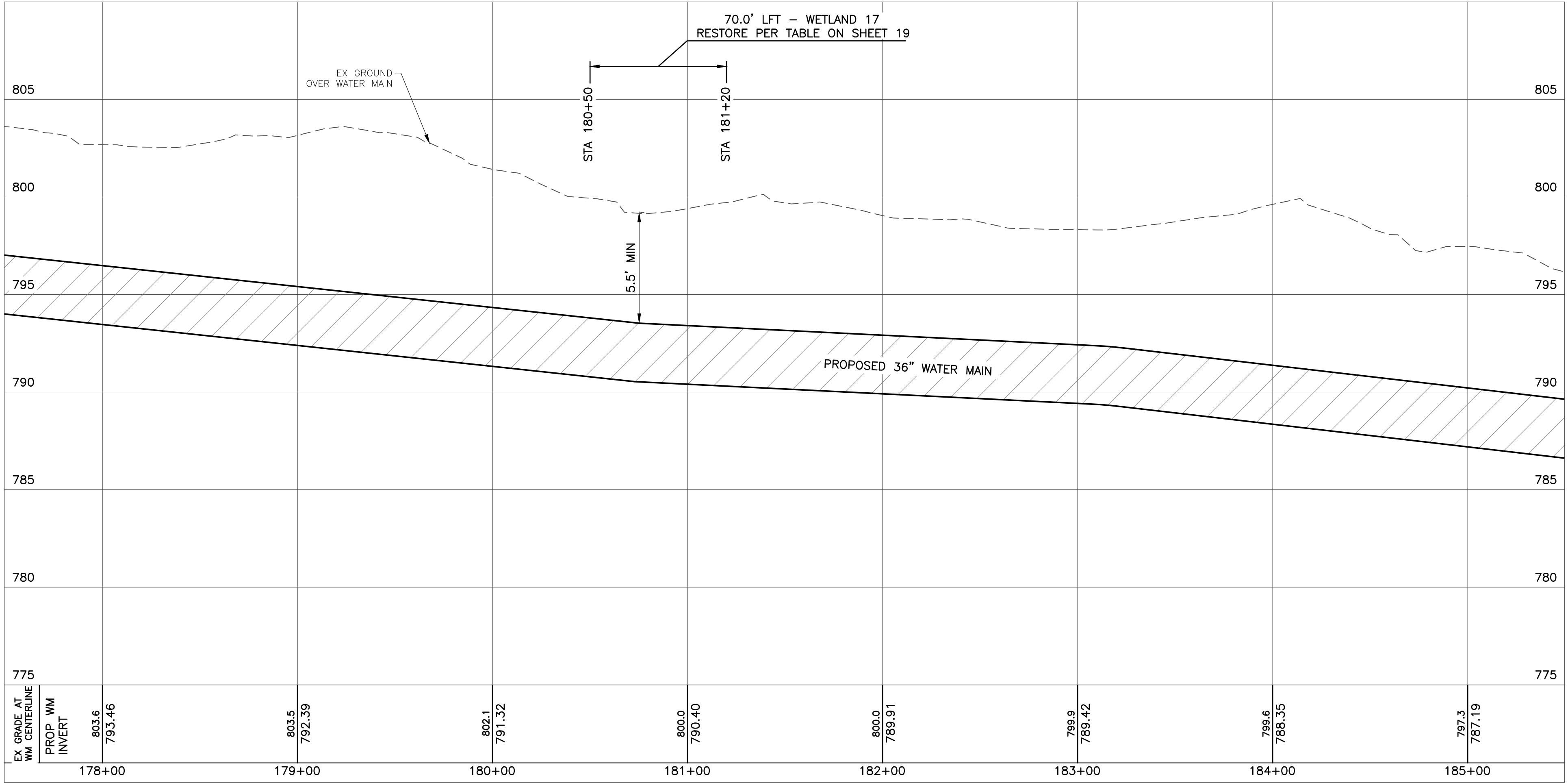
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MATCH LINE STA 177+50 SEE SHEET 49



MATCH LINE STA 185+50 SEE SHEET 51



NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 24

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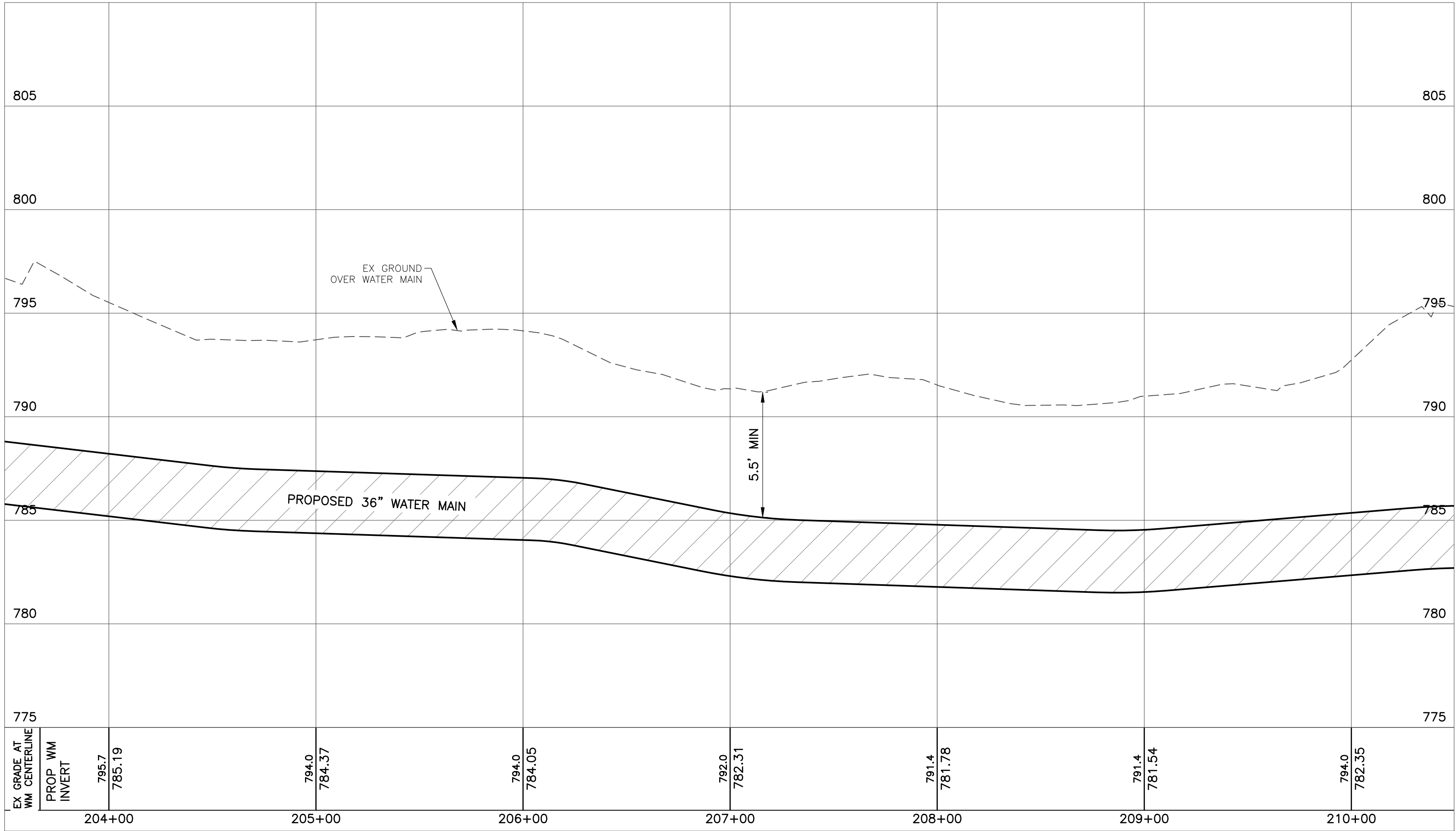
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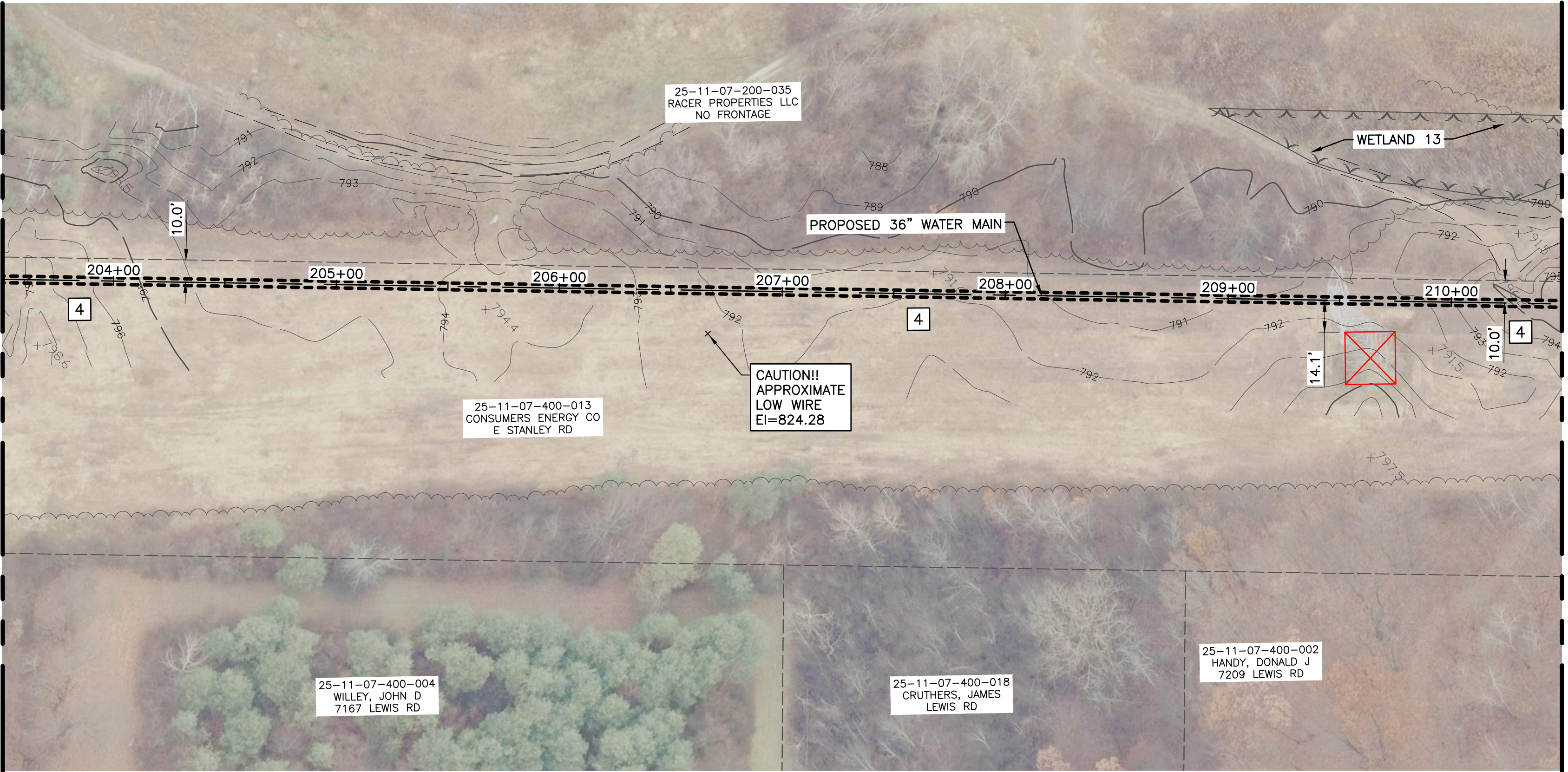


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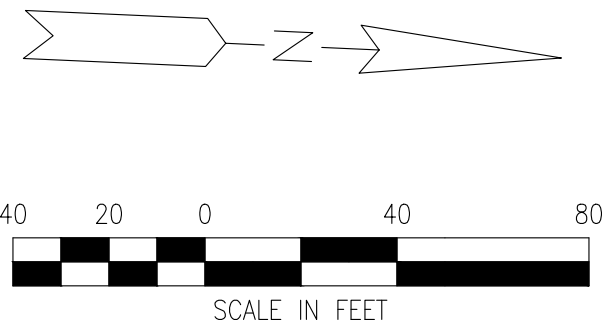
PROJECT: MANAGER: JESSA R. KAYEVO, PE FIELD BOOK INFORMATION: 2, 7/2020, 10:43 AM, BY: RUGGLES, TIMOTHY
C:\PW\WORK\2\0348735\CUP-FLTS-PLAN-PROF-4.DWG - PP-27 - PLOTTED: 2, 7/2020, 10:43 AM, BY: RUGGLES, TIMOTHY



MATCH LINE STA 203+50 SEE SHEET 52



MATCH LINE STA 210+50 SEE SHEET 34



NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 27

ISSUED FOR: DATE: BY:

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