

# WATERLOO TOWNSHIP, ATHENS COUNTY, OHIO

## ATHENS COUNTY COMMISSIONERS

### NEW MARSHFIELD SANITARY SEWER

# 2025

# Contract A

PROJECT NO. 2428310800

1 OF 23

WATERLOO TOWNSHIP, ATHENS COUNTY, OH  
ATHENS COUNTY COMMISSIONERS  
NEW MARSHFIELD SANITARY SEWER

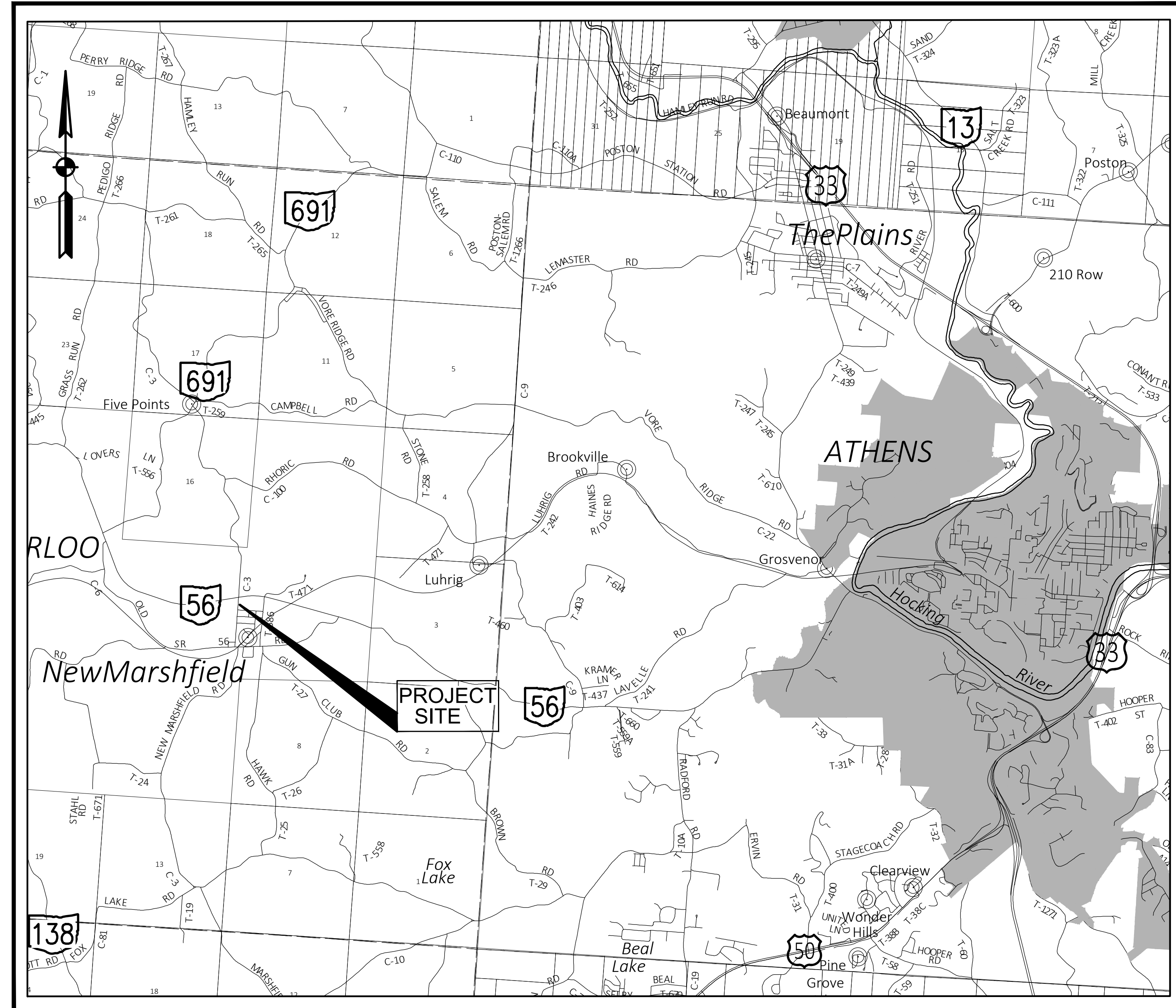
TITLE SHEET

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### COMMISSION MEMBERS:

LENNY ELIASON  
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CHARLIE ADKINS  
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CLERK: CANDY RUSSELL



**LOCATION MAP**

NOT TO SCALE

ATHENS COUNTY STANDARD DRAWINGS:  
Sa.S-1, Sa.S-3, Sa.S-5, Sa.S-7, Sa.S-8, Sa.S-10, Sa.S-11,  
Sa.S-15, Sa.S-17, Sa.S-18, Sa.S-20, Sa.S-22, Sa.S-23, Sa.S-24,  
Sa.S-25, Sa.S-26, Sa.S-27, Sa.S-33, Sa.S-34, Sa.S-35

**UNDERGROUND UTILITIES**

Two Working Days  
**BEFORE YOU DIG**

Call 811  
**OHIO UTILITIES PROTECTION SERVICE**

NON-MEMBERS  
**MUST BE CALLED DIRECTLY**

30661 RED ROCK COURT LOGAN, OHIO 43138  
(740) 380-2828  
FAX (740) 380-3535  
DLZ OHIO, INC

DESIGN        GDS  
DRAWN        TJS  
SCALE        NTS

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**SAFETY REQUIREMENTS**

THE CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE FEDERAL, STATE AND LOCAL SAFETY WORK REQUIREMENTS.

**COMMENCEMENT OF WORK**

THE CONTRACTOR SHALL NOTIFY THE OWNER 5 WORKING DAYS BEFORE THE ACTUAL START OF CONSTRUCTION AND 2 WORKING DAYS PRIOR TO ANY TIME PERIODS OF STOPPING WORK.

**EXTRA COMPENSATION**

NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR BY REASON OF COMPLIANCE WITH ANY OF THE REQUIREMENTS INDICATED IN THE CONTRACT DRAWINGS.

**EXISTING UTILITIES**

THE INFORMATION SHOWN CONCERNING EXISTING UTILITIES IS APPROXIMATE ONLY AND IS ONLY AS ACCURATE AS THE INFORMATION PROVIDED BY THE OWNERS OF THE UTILITY COMPANY. IT IS NOT REPRESENTED, WARRANTED, OR GUARANTEED TO BE COMPLETE OR ACCURATE. THE ENGINEER DOES NOT INDEPENDENTLY VERIFY NOR FIELD LOCATE UTILITIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PHYSICALLY LOCATE AND VERIFY, IN THE FIELD, THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO THE BEGINNING OF HIS CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL SUPPORT, PROTECT, AND RESTORE ALL EXISTING UTILITIES AND THEIR ASSOCIATED ITEMS. THE CONTRACTOR SHALL NOTIFY THE UNDERGROUND UTILITY PROTECTION SERVICE AND ALL OWNERS OF UNDERGROUND UTILITY FACILITIES WHO ARE NOT MEMBERS OF A REGISTERED UNDERGROUND PROTECTION SERVICE, IN WRITING, BY TELEPHONE OR IN PERSON, IN ACCORDANCE WITH SECTION 153.64, OHIO REVISED CODE, AT LEAST TWO WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND LEGAL HOLIDAYS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THEM, AND SHALL KEEP THE UTILITY OWNERS APPRAISED OF HIS SCHEDULE AND REQUIREMENTS UNTIL ALL WORK IS COMPLETED. THE CONTRACTOR SHALL PROVIDE THE OWNER OR HIS REPRESENTATIVE WITH EVIDENCE OF HAVING NOTIFIED THE UTILITIES AND PROVIDING THEM WITH HIS WORK SCHEDULE PRIOR TO BEGINNING ANY WORK. THE CONTRACTOR IS RESPONSIBLE FOR THE INVESTIGATION, LOCATION, SUPPORT, PROTECTION, AND RESTORATION OF ALL EXISTING UTILITIES AND APPURTENANCES WHETHER SHOWN ON THESE PLANS OR NOT. THE CONTRACTOR SHALL EXPOSE ALL UTILITIES OR STRUCTURES PRIOR TO CONSTRUCTION TO VERIFY THE VERTICAL AND HORIZONTAL EFFECT ON PROPOSED CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR COMPLYING WITH ALL FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS INCLUDING EMPLOYEES AND PROPERTY. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE FOLLOWING UTILITY COMPANIES PROVIDED INFORMATION WHICH IS SHOWN ON THE PLANS TO THE SAME DEGREE OF ACCURACY AS THE INFORMATION PROVIDED BY THE UTILITY COMPANY:

American Electric Power Clarke Saunders (740) 985-3054 CMSaunders@AEP.com	Damage Prevention Center Columbia Gas of Ohio 843 Piatt Avenue Chillicothe, Ohio 45601 Joseph DiBenedetto (740) 774-8202 jmdibenedetto@NiSource.com	Charter-Time Warner Cable stated by USIC DigCheck@usilc.com	Athens County Water & Sewer 15 S Court Street Athens, OH 45701 Oscar Carson ocarson@athensoh.org
TC Energy (Columbia Gas Transmission) Kirk Allen (740) 503-7430 kirk_allen@tcenergy.com	Frontier Communications stated by USIC DigCheck@usilc.com	Le-Ax Water District 6000 Industrial Drive Athens, OH 45701 Travis Anderson (740) 594-0123 tanderson@le-ax.com	Buckeye Rural Electric stated by USIC DigCheck@usilc.com

**SERVICE LINE**

NO INDIVIDUAL SERVICE LINE LOCATIONS WERE PROVIDED BY UTILITIES COMPANIES. CONTRACTOR SHALL COORDINATE WITH UTILITY PROVIDERS FOR SERVICE LINE LOCATIONS.

**BENCHMARKS AND ELEVATIONS**

ALL ELEVATIONS SHOWN ARE BASED ON U.S.G.S. DATUM. IF BENCHMARKS HAVE BEEN SET AND REFERENCED ON THE DRAWINGS, CONTRACTOR SHALL VERIFY ELEVATION OF EACH WITH PERMANENT BENCHMARKS PRIOR TO COMMENCING THE WORK. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE AND RESOLVED BEFORE PROCEEDING WITH THE WORK. BENCHMARKS SHALL BE MAINTAINED AS REQUIRED TO COMPLETE THE WORK AT THE CONTRACTOR'S COST.

**IRON PINS AND MONUMENTS**

THE CONTRACTOR SHALL REFERENCE ALL IRON PINS, AND MONUMENTS FOUND BEFORE EXCAVATING AT OR NEAR THEM. COPIES OF REFERENCE DOCUMENTATIONS SHALL BE SUBMITTED TO OWNER'S REPRESENTATIVE. IF ANY PINS OR MONUMENTS ARE DESTROYED OR DAMAGED, THEY SHALL BE ACCURATELY REPLACED BY A REGISTERED SURVEYOR AT THE COMPLETION OF THE PROJECT AT CONTRACTOR'S COST.

**WORK LIMITS**

WORK LIMITS ARE DEFINED AS THE LIMITS OF EASEMENTS, OR ROAD RIGHT OF WAY. THE CONTRACTOR SHALL LIMIT OPERATIONS TO THOSE AREAS. AGREEMENTS FOR USE OF PRIVATE LANDS SHALL BE FORMALIZED IN WRITING.

**DITCHES, STRUCTURES**

ALL DRAINAGE DITCHES AND STRUCTURES SHALL BE RESTORED TO EXISTING CONDITION AND GRADE UNLESS SHOWN OTHERWISE. THE CONTRACTOR SHALL REPLACE AT ITS COST, TO THE SATISFACTION OF THE ENGINEER, ALL EXISTING MANHOLES, CATCH BASINS, DRAINS, SEWERS AND APPURTENANCES REMOVED OR DAMAGED DURING CONSTRUCTION & SHALL BE INSTALLED PER ODOT 611. THIS INCLUDES ANY RESIDENTIAL DRAIN TILE DAMAGED, DISTURBED, OR REMOVED, WHICH SHALL BE REPAIRED OR REPLACED TO AN EQUAL OR BETTER CONDITION. THE ABOVE IS NOT APPLICABLE TO STRUCTURES TO BE ABANDONED.

**EXCAVATION AND FILL**

ALL EXCAVATION IS UNCLASSIFIED. THE CONTRACTOR SHALL MAKE ALL EXCAVATION OF WHATEVER NATURE ENCOUNTERED, INCLUDING ROCK IN PLACE, NECESSARY FOR CONSTRUCTION OF THE WORK INCLUDED IN THIS CONTRACT.

**BACKFILL**

ALL TRENCHES SHALL BE BACKFILLED OR SECURED FROM PUBLIC ACCESS IN ACCORDANCE WITH THE PLANS DURING NON-WORKING HOURS. DRIVEWAY APPROACHES AND PEDESTRIAN WALKWAYS SHALL BE MADE ACCESSIBLE DURING NON-WORKING HOURS.

**DUST CONTROL**

DUST CONTROL SHALL BE PROVIDED BY THE CONTRACTOR AT THE TIME, LOCATION, AND IN THE AMOUNT ORDERED BY THE OWNER. FUGITIVE DUST GENERATED BY THIS SEWER CONSTRUCTION PROJECT SHALL BE CONTROLLED AS SPECIFIED IN OAC 3745-17-08 (B).

**USE OF FIRE HYDRANTS**

THE CONTRACTOR SHALL MAKE THE PROPER ARRANGEMENTS WITH THE OWNER FOR THE USE OF FIRE HYDRANTS WHEN USED FOR WORK PERFORMED UNDER THIS CONTRACT. CONTRACTOR IS RESPONSIBLE FOR COST.

**USE OF PUBLIC AND PRIVATE UTILITIES**

THE CONTRACTOR SHALL MAKE THE PROPER ARRANGEMENTS WITH THE RESPECTIVE UTILITIES FOR THE USE OF THEIR FACILITIES WHEN USED FOR WORK PERFORMED UNDER THIS CONTRACT.

**NON-RUBBERED TIRE VEHICLES**

THE USE OF NON-RUBBER TIRE VEHICLES SHALL BE LIMITED TO ROADS OF CONSTRUCTION ONLY. EXCEPTIONS MAY BE GRANTED BY THE AUTHORIZED JURISDICTION WHERE SHORT DISTANCES AND SPECIAL CIRCUMSTANCES ARE INVOLVED. GRANTING OF EXCEPTIONS MUST BE IN WRITING AND ANY RESULTING DAMAGE MUST BE REPAIRED TO THE SATISFACTION OF THE JURISDICTIONAL AUTHORITY, AT THE CONTRACTOR'S EXPENSE.

**DAILY CLEANUP**

AT THE END OF EACH WORK DAY, THE CONTRACTOR SHALL REMOVE ALL DEBRIS AND CONSTRUCTION MATERIALS FROM THE ADJACENT ROADS OR ALLEYS. AFFECTED STREETS SHALL BE CLEARED WITH A SELF CONTAINED STREET CLEANER.

**REPLACEMENT OF DRAIN TILE**

ALL DRAIN TILE, STORM SEWERS, AND PROCESS PIPES DAMAGED, DISTURBED OR REMOVED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED WITH THE SAME QUALITY OF PIPE OR BETTER, MAINTAINING THE SAME GRADIENT AS EXISTING. REPLACED DRAIN TILE SHALL BE LAID ON COMPACTED BEDDING EQUAL IN DENSITY TO SURROUNDING STRATUM.

**FINAL CLEANUP**

THE CONTRACTOR SHALL CLEAN UP ALL DEBRIS AND MATERIALS RESULTING FROM THE WORK AND RESTORE ALL SURFACES, STRUCTURES, DITCHES AND PROPERTY NOT INTENDED FOR WORK IN THIS CONTRACT TO ITS ORIGINAL CONDITION, AND TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE AND/OR THE OWNER. THE COST OF THIS WORK SHALL BE AT THE CONTRACTOR'S EXPENSE.

**SURPLUS EXCAVATION**

ALL EXCESS EXCAVATED MATERIAL AND DEBRIS TO BE DISPOSED OF OFF-SITE MUST BE DISPOSED OF IN AN ENVIRONMENTALLY SOUND FASHION AND IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

**CURBS AND SIDEWALKS**

ALL CURBS OR SIDEWALKS DAMAGED OR REMOVED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED USING THE SAME TYPE OF MATERIAL AND OF THE SAME DIMENSIONS AS THAT REMOVED.

**CLEARING AND GRUBBING**

TREES AND SHRUBS WITHIN CONSTRUCTION EASEMENTS NOT DESIGNATED TO BE SAVED ON THE DRAWINGS MAY BE REMOVED AND SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH SPECIFICATION AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNER AT LEAST ONE WEEK IN ADVANCE.

**SIGNS, MAILBOXES, FENCES, GUARDRAILS, ETC**

ALL FENCES, GUARDRAILS, ROADSIDE DITCHES OR OTHER PHYSICAL FEATURES DISTURBED OR DAMAGED DURING WORK UNDER THIS CONTRACT SHALL BE RESTORED TO THEIR ORIGINAL CONDITION BY THE CONTRACTOR, UNLESS OTHERWISE PROVIDED IN THE CONTRACT. ANY GUARDRAIL REPAIR OR CONSTRUCTION SHALL BE BY AN ODOT PREQUALIFIED CONTRACTOR.

**LAYDOWN, STAGING AND STOCKPILE**

THE OWNER IS NOT PROVIDING ADDITIONAL ACCESS, STAGING, LAYDOWN OR STOCKPILE AREAS OUTSIDE OF EASEMENTS OR ROAD RIGHT OF WAY. THE CONTRACTOR MAY OBTAIN ADDITIONAL AREAS, IF AVAILABLE, AND AS SPECIFIED IN PROJECT MANUAL.

**AIR/NOISE CONTROL**

CONSTRUCTION EQUIPMENT SHALL BE PROVIDED WITH INTAKE SILENCERS AND MUFFLERS, AS REQUIRED BY SAFETY STANDARDS AND PROJECT MANUALS. ALL CONSTRUCTION VEHICLES SHOULD BE EQUIPPED WITH PROPER EMISSION CONTROL EQUIPMENT. PERIODICALLY CHECK EQUIPMENT AND MACHINERY FOR PROPER TUNING TO MINIMIZE EXHAUST EMISSIONS AND NOISE.

**PERMITS**

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL PERMITS.

**SEDIMENTATION AND SOIL EROSION**

CONTROL THE CONTRACTOR SHALL MAINTAIN PROPER DRAINAGE OF THE FLOWS UPSTREAM OF THE CONSTRUCTION SITE. ALL TRENCHES ARE TO BE BACKFILLED IMMEDIATELY AFTER SEWER INSTALLATION. FOLLOWING THE BACKFILLING OF THE TRENCH, THE GROUND SURFACE WILL BE ROUGH GRADED TO THE EXISTING CONTOURS TO ALLOW FOR PROPER DRAINAGE.

SLOPES WITH A GRADE STEEPER THAN 2 TO 1 (TWO FEET OF HORIZONTAL FOR EACH FOOT OF VERTICAL RISE) REQUIRE SPECIAL TREATMENT SUCH AS WATER DIVERSION BERMS, SODDING, OR THE USE OF JUTE OR EXCELSIOR BLANKETS.

PROPERLY INSTALLED SILT BARRIERS (i.e., SILT FENCE OR STRAW BALES) SHALL BE USED FOR EROSION/SEDIMENT CONTROL AS REQUIRED TO PREVENT SILT FROM LEAVING THE CONSTRUCTION SITE, AND BE PROPERLY MAINTAINED UNTIL PERMANENT VEGETATIVE COVER HAS BEEN SUCCESSFULLY ESTABLISHED.

SILT FROM CONSTRUCTION OPERATIONS SHALL NOT BE PERMITTED TO ENTER STORM SEWER SYSTEMS. WHEN CONSTRUCTION OCCURS NEAR OR AFFECTS STORM SEWERS INLETS, EROSION CONTROL MEASURES SUCH AS INLET FILTERS AND STRAW BALES WILL BE USED AND MAINTAINED TO PREVENT SILT FROM ENTERING THE STORM SEWERS. SUCH EROSION CONTROL MEASURES SHALL NOT IMPEDE THE NORMAL FLOW OF TRAFFIC.

REMOVE ONLY THOSE TREES, SHRUBS, AND GRASSES THAT MUST BE REMOVED FOR CONSTRUCTION; PROTECT THE REST TO PRESERVE THEIR AESTHETIC AND EROSION CONTROL VALUES.

ALL DEWATERING FLOWS ARE TO BE SETTLED IN SILTATION BASINS OR DIRECTED THROUGH FILTERS BEFORE DISCHARGE TO STABILIZED SITES, SUCH AS STREAMS OR STORM SEWERS; NOT ONTO EXPOSED SOILS, STREAM BANKS, OR ANY OTHER SITES WHERE THE FLOW COULD CAUSE EROSION.

STREAM CROSSINGS: DISTURBED STREAM BANKS WILL BE STABILIZED AND THE ENTIRE CONSTRUCTION SITE AT THE STREAM CROSSING WILL BE IMMEDIATELY RESTORED UPON COMPLETION OF THE WORK THERE. NATURAL STREAM COURSES WILL NOT BE ALTERED.

NO CHEMICALS, FUELS, LUBRICANTS, BITUMINOUS MATERIAL, RAW SEWAGE, TREES, BRUSH, OR DEBRIS FROM DEMOLITION OR EXCAVATION ACTIVITIES WILL BE DISCHARGED OR DISPOSED OF ONTO OR ALONGSIDE ANY STREAM, WATERCOURSE, FLOODPLAIN, OR WETLAND UNDER ANY CIRCUMSTANCES.

THE OWNER HAS SUBMITTED A NOTICE OF INTENT (NOI) FOR COVERAGE UNDER GENERAL CONSTRUCTION STORM WATER PERMIT TO THE OHIO EPA. THE CONTRACTOR MUST SUBMIT A CO-PERMITTEE NOI FOR THIS PROJECT AT LEAST 21 DAYS PRIOR TO THE START OF CONSTRUCTION.

**SURFACE DRAINAGE**

CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SURFACE DRAINAGE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING ITEMS:  
- PROVISION, INSTALLATION, MAINTENANCE, AND REMOVAL OF TEMPORARY CULVERTS AT ACCESS DRIVE AND BARRIER LOCATIONS.  
- MAINTAIN OR IMPROVE EXISTING ROADSIDE DITCHES TO CARRY STORMWATER FLOWS THROUGHOUT THE DURATION OF THE PROJECT.  
- ROADSIDE DRAINAGE SHALL BE MAINTAINED SUCH THAT THE WATER SURFACE SHALL BE A MINIMUM OF 9 INCHES BELOW THE ADJACENT ROADSIDE SURFACE.

**PROHIBITED CONSTRUCTION ACTIVITIES**

DISPOSAL OF EXCAVATED MATERIAL IN WETLANDS OR FLOOD PLAINS, REGARDLESS OF PERMISSION GRANTED BY PROPERTY OWNER; INDISCRIMINATE ARBITRARY, OR CAPRICIOUS OPERATION OF EQUIPMENT, PUMPING OF SEDIMENT-LADEN WATER FROM TRENCHES OR OTHER EXCAVATIONS INTO ANY SURFACE WATERS, ANY STREAM CORRIDORS, ANY WETLANDS, OR STORM SEWERS; DISCHARGING POLLUTANTS SUCH AS CHEMICALS, FUELS, LUBRICANTS, BITUMINOUS MATERIALS, RAW SEWAGE AND OTHER HARMFUL WASTES INTO OR ALONGSIDE OF RIVERS, STREAMS, IMPOUNDMENTS, OR INTO NATURAL OR MAN-MADE CHANNELS LEADING THERETO. PERMANENT OR UNSPECIFIED ALTERATION OF THE FLOW LINE OF A STREAM, DAMAGING VEGETATION OUTSIDE OF THE CONSTRUCTION AREA, DISPOSAL OF TREES, BRUSH, AND OTHER DEBRIS IN ANY STREAM CORRIDOR. OPEN BURNING OF PROJECT DEBRIS.

**ARCHAEOLOGICAL/HISTORICAL RESOURCES**

WHEN THE CONTRACTOR'S EXCAVATING OPERATIONS ENCOUNTER REMAINS OR PREHISTORIC PEOPLE'S DWELLING SITES OR ARTIFACTS OF HISTORICAL OR ARCHAEOLOGICAL SIGNIFICANCE, THE OPERATIONS SHALL BE TEMPORARILY DISCONTINUED IN THIS AREA AND THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE. THE OWNER'S REPRESENTATIVE WILL CONTACT THE OHIO HISTORIC PRESERVATION OFFICE TO DETERMINE THE DISPOSITION OF THE FIND. AFTER CONSULTATION WITH THE OHIO HISTORIC PRESERVATION OFFICE, THE OWNER'S REPRESENTATIVE MAY ELECT TO DISCONTINUE THE WORK IN THE AREA INDEFINITELY, RESUME NORMAL EXCAVATION, OR EXCAVATE FOR ARTIFACTS, WHEN DIRECTED BY THE OWNER'S REPRESENTATIVE TO EXCAVATE FOR ARTIFACTS, THE CONTRACTOR SHALL EXCAVATE THE SITE IN SUCH A MANNER AS TO PRESERVE THE ARTIFACTS ENCOUNTERED AND SHALL REMOVE THEM FOR DELIVERY TO THE CUSTODY OF THE PROPER AUTHORITIES.

THE CONTRACTOR SHALL NOT DISTURB ANY HISTORICAL OR CULTURAL BUILDING, FOUNDATION, STRUCTURE, OR MATERIALS EXISTING ABOVE OR BELOW GROUND SURFACE.

**ENCOUNTERING HAZARDOUS OR TOXIC MATERIALS**

IF THE CONTRACTOR ENCOUNTERS ANY ABNORMAL MATERIAL SUCH AS, BUT NOT LIMITED TO, DRUMS, TANKS, OR STAINED EARTH OR ANY UNUSUAL ODOR DURING CONSTRUCTION OPERATIONS, THE WORK IN THIS AREA SHALL BE TEMPORARILY DISCONTINUED, EQUIPMENT LEFT IN PLACE, THE AREA CORDONED OFF AND THE OWNER'S REPRESENTATIVE NOTIFIED. IF THE AREA IS CONSIDERED TO CONTAIN HAZARDOUS OR TOXIC MATERIAL IT MUST BE HANDLED CORRECTLY IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL LAWS. IF EQUIPMENT OR OPEN TRENCH IS WITHIN CLEAR ZONE, CONTRACTOR SHALL FOLLOW ODOT GUIDE LINES FOR PROTECTING AREA.

**POLE TIE-BACKS**

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COST AND COORDINATION ASSOCIATED WITH ALL UTILITY COMPANIES REQUIRING UTILITY POLE TIE-BACKS.

**TESTING**

TESTING ALL TESTS REQUIRED BY THE CONTRACT SHALL BE PERFORMED BY A CERTIFIED LABORATORY.

**BACKFILLING TRENCHES**

BACKFILL REQUIREMENTS FOR SANITARY SEWERS AS NOTED IN SECTION 305 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS SHALL BE REVISED IN THAT ALL BACKFILL BETWEEN THE EDGE OF PAVEMENT AND 5' FROM THE EDGE OF PAVEMENT MAY BE TYPE B OR TYPE C ABOVE A 45° REPOSE FROM THE EDGE OF PAVEMENT. ALL BACKFILL BELOW THE 45° REPOSE SHALL MEET THE REQUIREMENTS OF TYPE A OR COMPACTED TRENCH MATERIAL.

**TEMPORARY PAVEMENT REPLACEMENT**

TEMPORARY PAVEMENT REPLACEMENT SHALL BE AS REQUIRED BY CMS SECTION 304.13 AMENDED TO REMOVE THE REQUIREMENT OF BITUMINOUS COLD MIX PROVIDED THE CONTRACTOR MAINTAINS THE PAVEMENT TO ALLOW FOR AN EVEN AND SAFE TEMPORARY PAVEMENT USING 304 LIMESTONE OR 100 LB. CDF.

**DISTURBED AREA**

DISTURBED LAND EXPOSED LONGER THAN 15 DAYS SHALL BE TEMPORARILY STABILIZED BY SEEDING AND MULCHING.

**DEWATERING WELLS**

IF DEWATERING WELLS ARE USED, THE CONTRACTOR SHALL CONTACT THE OHIO DEPARTMENT OF NATURAL RESOURCES, DIVISION OF WATER, TO ASSURE PROPER WELL INSTALLATION AND ABANDONMENT OF WELLS. THE CONTRACTOR SHALL NOT DIRECT THE GROUNDWATER TO THE IMPOUNDMENT INTENDED FOR TRENCH DEWATERING DISCHARGES.

**SERVICE LATERALS/RISER PIPES/WYE POLES**

SERVICE LATERAL PIPE SLOPES SHOWN ON THE PLANS ARE A MINIMUM REQUIREMENT AND THE CONTRACTOR MAY INCREASE THE SLOPE TO A MAXIMUM OF 15% IN ORDER TO REDUCE SERVICE LATERAL DEPTH WHERE POSSIBLE. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING EXISTING BUILDING PLUMBING ELEVATIONS. SERVICE LATERALS MUST BE A MINIMUM OF 4 FEET DEEP IN ALL LOCATIONS INCLUDING UNDER ROADS AND ROADSIDE DITCHES. THE CONTRACTOR SHALL INSTALL RISER PIPE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING S&S-15 AT THE CONTRACTOR'S EXPENSE TO REDUCE SERVICE LATERAL DEPTH. COST FOR RISER PIPE SHALL BE INCLUDED IN ASSOCIATED SERVICE LINE BID ITEMS INCLUDED IN THE PLANS AND NO SEPARATE PAYMENT WILL BE MADE. CONTRACTOR SHALL PLACE TREATED 4"x4" POSTS AT EACH END OF LATERAL AND MARK LATERAL DEPTH ON POST FOR LOCATING. THE WYE POLES SHALL EXTEND ABOVE THE GROUND AT LEAST THREE (3) FEET AND HAVE A MINIMUM BURY OF FOUR (4) FEET. WYE POLES SHALL THEN BE PAINTED GREEN. COST SHALL BE INCLUDED IN ASSOCIATED SERVICE LINE BID ITEMS.

**FARM DRAINS**

ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS, AND WHICH CROSS THE ROADWAY, SHALL BE REPLACED WITHIN THE CONSTRUCTION LIMITS BY ITEM 611 CONDUIT, TYPE B, ONE COMMERCIAL SIZE LARGER THAN THE EXISTING CONDUIT.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS, WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF ROADWAY DITCHES, SHALL BE OUTLETTED INTO THE ROADWAY DITCH BY 611 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE 1 FOOT ABOVE THE FLOWLINE ELEVATION OF THE DITCH. LATERAL FIELD TILES WHICH CROSS THE ROADWAY SHALL BE INTERCEPTED BY 611, TYPE E CONDUIT, AND CARRIED IN A LONGITUDINAL DIRECTION TO AN ADEQUATE OUTLET OR ROADWAY CROSSING.

**EPA REQUIREMENTS**

FOR PARALLEL INSTALLATION, A MINIMUM HORIZONTAL SEPARATION OF 10 FEET BETWEEN GRAVITY SANITARY SEWERS AND ANY EXISTING OR PROPOSED POTABLE WATER MAINS SHALL BE MAINTAINED. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE.

WHERE GRAVITY SEWER LINES CROSS EXISTING OR PROPOSED WATER MAINS, THE GRAVITY SEWER LINES SHALL BE LAID BELOW THE WATER MAINS TO PROVIDE A SEPARATION OF AT LEAST 18 INCHES BETWEEN THE INVERT OF THE WATER MAIN AND THE CROWN OF THE GRAVITY SEWER. THE LINES SHALL BE LAID SO THAT THE GRAVITY SEWER LINE JOINTS ARE AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.

ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE DISPOSAL SYSTEM ARE PROHIBITED.

WHEN FLEXIBLE PIPE (PVC, ABS, HDPE, ETC.) IS USED IT MUST BE TESTED FOR MAXIMUM DEFLECTION OF 5 PERCENT AFTER THE FINAL BACKFILL HAS BEEN IN PLACE NO LESS THAN 30 DAYS TO PERMIT STABILIZATION OF THE SOIL-PIPE SYSTEM. PIPE WITH A STIFFNESS OF 200 P.S.I. OR GREATER NEED NOT BE TESTED FOR DEFLECTION IF ALL PIPE BETWEEN MANHOLES IS LESS THAN 12 FEET BELOW FINAL GRADE.

THE RIGID BALL OR MANDREL USED FOR DEFLECTION TEST SHALL HAVE A DIAMETER NOT LESS THAN 95 PERCENT OF THE BASE INSIDE DIAMETER OR AVERAGE INSIDE DIAMETER OF THE PIPE DEPENDING ON WHICH IS SPECIFIED IN THE ASTM SPECIFICATION, INCLUDING APPENDIX, TO WHICH THE PIPE IS MANUFACTURED. THE TEST SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES.

ALL PIPE, FLEXIBLE AND RIGID, SHALL BE SUBJECT TO A LEAKAGE TEST. THE LEAKAGE EXFILTRATION/INFILTRATION TEST SHALL BE A HYDROSTATIC OR AIR TEST. THE HYDROSTATIC LEAKAGE TEST SHALL NOT EXCEED 100 GALLONS PER INCH OF PIPE DIAMETER PER MILE PER DAY FOR ANY SECTION OF THE SYSTEM. IF AN AIR TEST IS USED, THE TEST SHALL CONFORM TO THE TEST PROCEDURE OUTLINED IN THE ASTM STANDARDS FOR THE MATERIAL OF PIPE USED.

THE LEAKAGE AND DEFLECTION TEST SHALL BE CONDUCTED UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER. A REPRESENTATIVE OF THE PROFESSIONAL ENGINEER MAY SUPERVISE THE DEFLECTION AND LEAKAGE TESTS, BUT THE PROFESSIONAL ENGINEER MUST SIGN OFF ON THE RESULTS OF THE DEFLECTION AND LEAKAGE TESTS. THE OWNERS/ENGINEERS RESIDENT PROJECT REPRESENTATIVE FOR THIS PROJECT WILL OBSERVE ALL TESTING TO FULFILL THIS REQUIREMENT. RESULTS OF THE DEFLECTION AND LEAKAGE TESTS SHALL BE KEPT ON FILE AT LEAST 180 DAYS BY THE ENTITY RESPONSIBLE FOR THE SEWERAGE SYSTEM, AND SHALL BE AVAILABLE UPON REQUEST BY THE OHIO ENVIRONMENTAL PROTECTION AGENCY. ANY LINES WHICH FAIL THE DEFLECTION OR LEAKAGE TEST MUST BE REPAIRED AND RETESTED UNTIL THEY MEET THE REQUIREMENTS WHICH HAVE BEEN SET FORTH WITHIN THIS CONDITION.

THE SOUTHEAST DISTRICT OFFICE OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY SHALL BE NOTIFIED IN WRITING AS TO (A) THE CONSTRUCTION STARTING DATE; (B) THE CONSTRUCTION COMPLETION DATE.

ALL GRAVITY SANITARY SEWERS WHICH ARE LOCATED IN WELL FIELD AREA SHALL COMPLY WITH AND BE TESTED AS SPECIFIED IN OHIO ENVIRONMENTAL PROTECTION AGENCY GUIDELINE, GRAVITY SEWERS IN WELL FIELD AREAS, FEBRUARY 1983.

CONSTRUCTION LAYDOWN AND STAGING AREAS SHOULD BE 100 FEET FROM ANY STREAM. CONSTRUCTION VEHICLES ARE NOT TO BE PARKED OR STORED WITHIN 100 FEET OF STREAMS OR PARKED ON STREAM BANKS OR SLOPES LEADING TO STREAMS. IF THIS DISTANCE CANNOT BE ACCOMMODATED, PLEASE SEND A MAP LOCATION TO OHIO EPA DEFA FOR REVIEW.

**CONTRACTOR RESPONSIBILITIES**

THE CONTRACTOR SHALL PERFORM CCTV INSPECTION OF ALL NEWLY INSTALLED SEWERS AS PART OF THE TESTING WORK FOR FINAL ACCEPTANCE. THE COST FOR THIS WORK SHALL BE INCLUDED IN THE BID PRICES FOR THE ASSOCIATED ITEMS. IF DEFICIENCIES ARE FOUND THAT REQUIRE REPLACEMENT OR REPAIR, THE SEWER SHALL BE REINSPECTED VIA CCTV AFTERWARDS TO VERIFY IT IS ACCEPTABLE.

VALVE BOXES (SNAKE PITS) ARE PLACED APPROXIMATELY EVERY 1000' ALONG 4" FORCE MAIN WHERE GATE VALVES DO NOT EXIST, TO BRING UP TRACER WIRE TO THE SURFACE.

DUE TO PROJECT AREA BEING WITHIN THE RANGE OF THE INDIANA BAT AND NORTHERN LONG-EARED BAT, THE ALLOWABLE TREE CLEARING TIMEFRAME HAS BEEN LIMITED TO BETWEEN OCTOBER 1 AND MARCH 30. IF TREES NEED TO BE CUT OUTSIDE OF THIS TIME WINDOW, A SURVEY MUST BE COORDINATED WITH ODNR DIVISION OF WILDLIFE. PLEASE NOTIFY OEPA DEFA AS WELL IF THIS BECOMES NECESSARY.

**GAS TRANSMISSION LINES**

- A REPRESENTATIVE FROM COLUMBIA GAS TRANSMISSION MUST BE ON SITE ANYTIME THE CONTRACTOR IS WORKING WITHIN 25' OF THE LINES AND THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH SAID REPRESENTATIVE.
- CONTRACTOR IS REQUIRED TO EXPOSE THE GAS TRANSMISSION LINE AND PROVIDE A 4' X 4' OBSERVATION PIT EXCAVATED TO AN ELEVATION OF 3' BELOW THE LINE WHEN THE CROSSING IS DIRECTIONAL DRILLED.
- NO MECHANICAL EXCAVATION WITHIN 24" OF TC ENERGY PIPELINE. SOFT DIG METHODS ONLY.

PROJECT NO. 2428310800

2 OF 23

WATERLOO TOWNSHIP, ATHENS COUNTY, OH  
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NEW MARSHFIELD SANITARY SEWER

GENERAL NOTES

UNDERGROUND UTILITIES  
Two Working Days  
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BY	
DESCRIPTION	
DATE	

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(740) 380-2828  
FAX (740) 380-3535  
DLZ OHIO, INC.

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DRAWN	<u>TJS</u>
SCALE	<u>NTS</u>

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NEW MARSHFIELD SANITARY SEWER

INDEX SHEET

UNDERGROUND UTILITIES  
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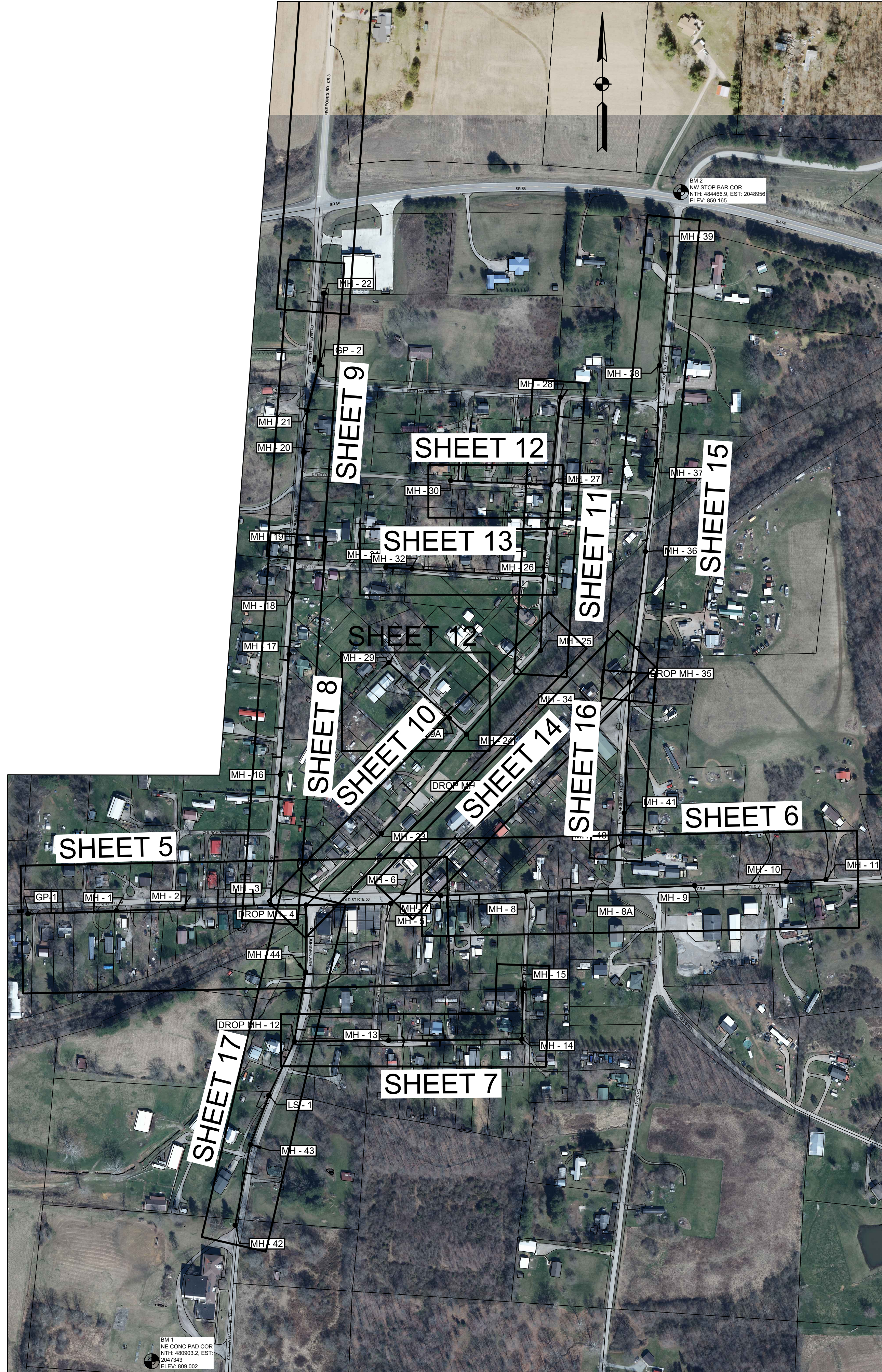
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### LEGEND

- PROPOSED MANHOLE
- PROPOSED GRINDER PUMP OR LIFT STATION
- PROPOSED RESIDENTIAL SERVICE LATERAL
- INDIVIDUAL GRINDER PUMP
- PROPOSED POWER POLE
- PROPOSED SANITARY SEWER
- PROPOSED DIRECTIONAL DRILL
- UNDERGROUND TELEPHONE
- UNDERGROUND FIBER OPTIC CABLE
- WATER LINE
- EXISTING SANITARY SEWER LINE
- GAS LINES
- UNDERGROUND ELECTRIC
- GUARDRAIL
- FENCE
- RIGHT OF WAY
- UTILITY POLE
- LIGHT POLE
- FLAG POLE
- SIGN
- MAIL BOX
- UTILITY MARKER
- CATCH BASIN
- PROPERTY HOOK
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- PHONE PEDESTAL
- GAS METER
- AERIAL CONTROL



WATERLOO TOWNSHIP, ATHENS COUNTY, OH  
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NEW MARSHFIELD SANITARY SEWER

QUANTITY SHEET

CONTRACT A  
ENGINEER'S ESTIMATE OF QUANTITIES

ITEM NO.	TOTAL	UNIT	DESCRIPTION	5	6	7	8	9	10	11	12	13	14	15	16	17
	11521	L.F.	8" SDR 35 SANITARY SEWER PIPE	1068	1174	847	954	775	1056	774	628	480	944	1310	500	1011
	1177	L.F.	2" SDR 26 FORCE MAIN	474			145	558								
	2581	L.F.	4" HDPE DR11 FORCE MAIN	107			1098	775								601
	41	EACH	STANDARD PRECAST MANHOLE	6	5	3	4	2	3	3	3	2	1	4	2	3
	5	EACH	DROP MANHOLE	1		1		1					2			
	1	EACH	LIFT STATION													1
	2	EACH	GRINDER PUMP	1				1								
	137	EACH	8" X 6" WYE	18	12	12	13	8	5	11	10	5	13	14	5	11
	3823	L.F.	6" SDR 35 SANITARY SEWER SERVICE	547	384	189	260	173	220	300	557	63	473	333	130	194
	2	EACH	INDIVIDUAL GRINDER PUMP		2											
	381	L.F.	1 1/4" HDPE DR9 SERVICE LINE		381											
	2	EACH	3/4" AIR RELEASE VALVE				2									
	1	EACH	4" GATE VALVE	1												
201	Lump	Sum	CLEARING & GRUBBING													
301	598	C.Y.	6" BITUMINOUS AGGREGATE BASE, ROADS	34	118	24	91	46	22	18	30	4	93	89	12	17
304	61	C.Y.	6" CRUSHED LIMESTONE, DRIVEWAYS	12		7			2	14	10	3		1	5	7
304	24	C.Y.	6" AGGREGATE BASE, ASPHALT DRIVEWAYS	16							3	3				2
441	214	C.Y.	2" ASPHALT CONCRETE ROADS	17	41	8	31	16	8	6	11	2	32	31	4	7
452	57	S.Y.	6" NON-REINFORCED CONCRETE PAVEMENT						6		29			15		7
	LUMP	SUM	CONSTRUCTION STAKING													
608	50	S.F.	CONCRETE WALK REPLACEMENT	15					35							
611	100	L.F.	8" & SMALLER PIPES CULVERTS, SEWERS, DRAINS, TYPE D													
611	25	L.F.	18" PIPE CULVERTS, SEWERS, DRAINS, TYPE D						5					5	5	10
	2	EACH	CATCH BASIN				1		1							
614	LUMP	SUM	MAINTAIN TRAFFIC													
659	14254	S.Y.	SEEDING & MULCHING W/ FERTILIZER	1981	105	1396	568	826	2087	1228	1141	953	386	1112	843	1629
703	8604	C.Y.	COMPACTED GRANULAR BACKFILL	871	790	463	1537	611	218	402	498	73	1180	1236	348	377
832	Lump	Sum	EROSION CONTROL													

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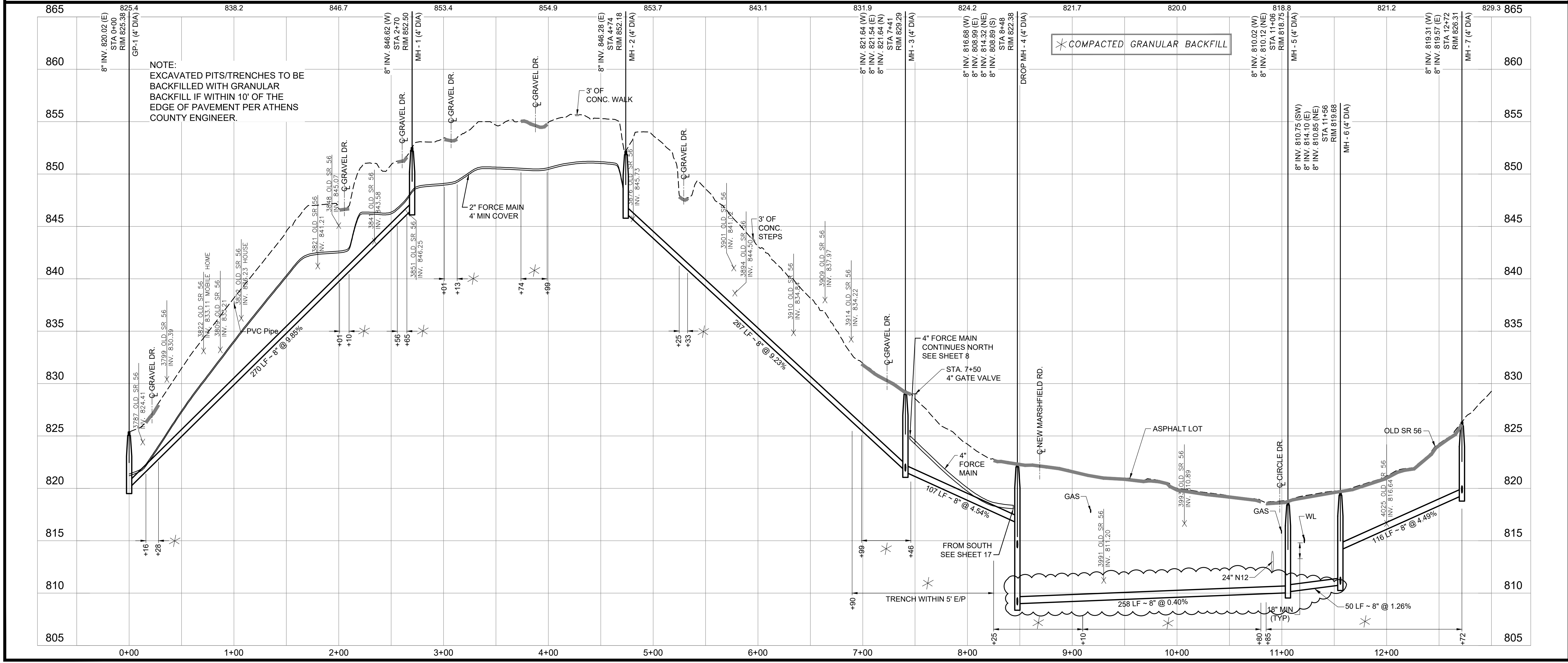
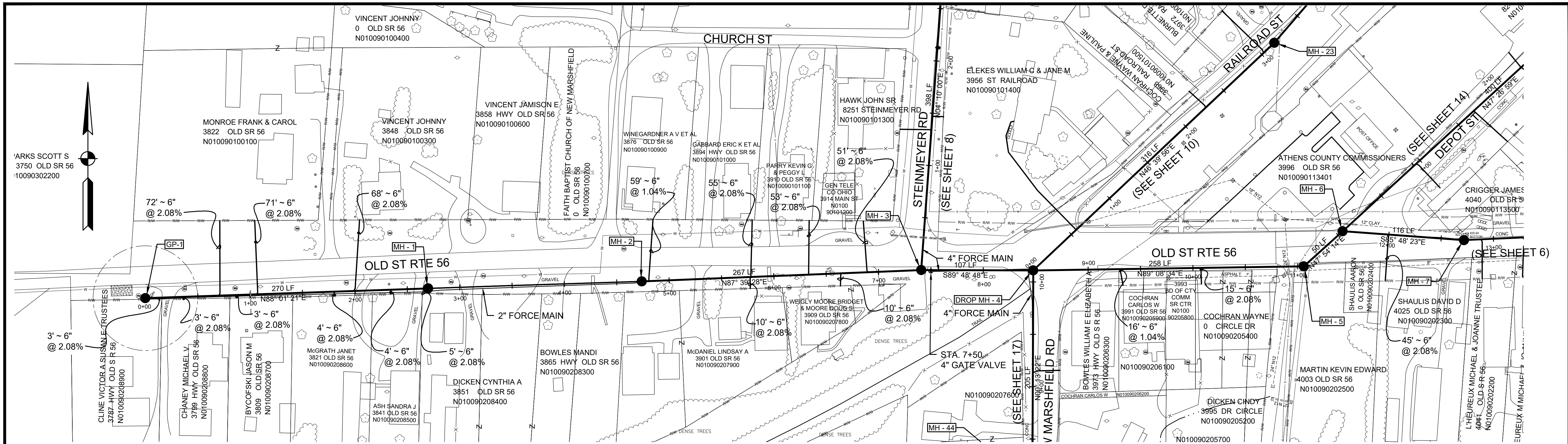
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 PLAN & PROFILE  
 OLD SR 56



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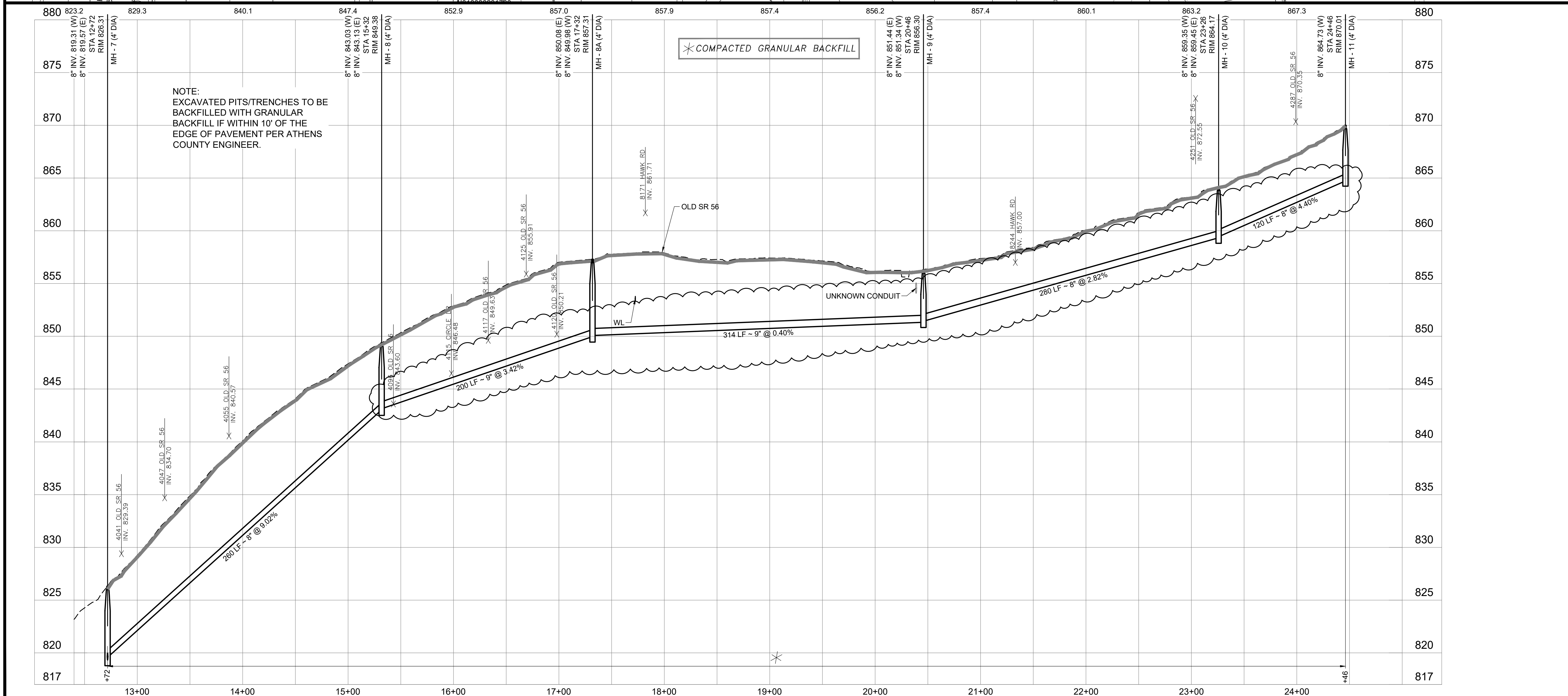
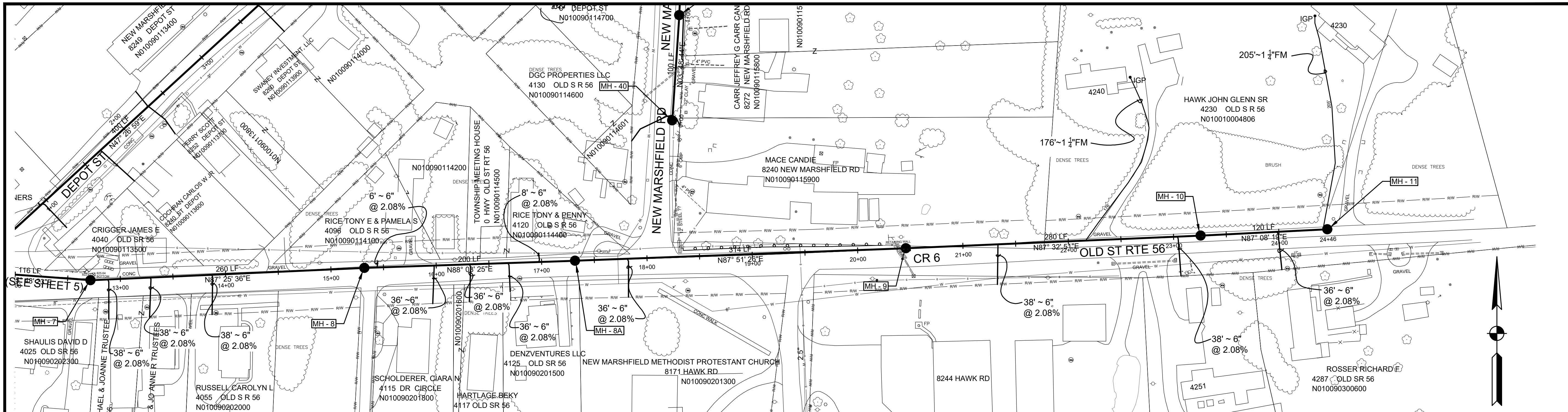
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 OLD SR 56



NOTE:  
 EXCAVATED PITS/TRENCHES TO BE  
 BACKFILLED WITH GRANULAR  
 BACKFILL IF WITHIN 10' OF THE  
 EDGE OF PAVEMENT PER ATHENS  
 COUNTY ENGINEER.

UNDERGROUND UTILITIES  
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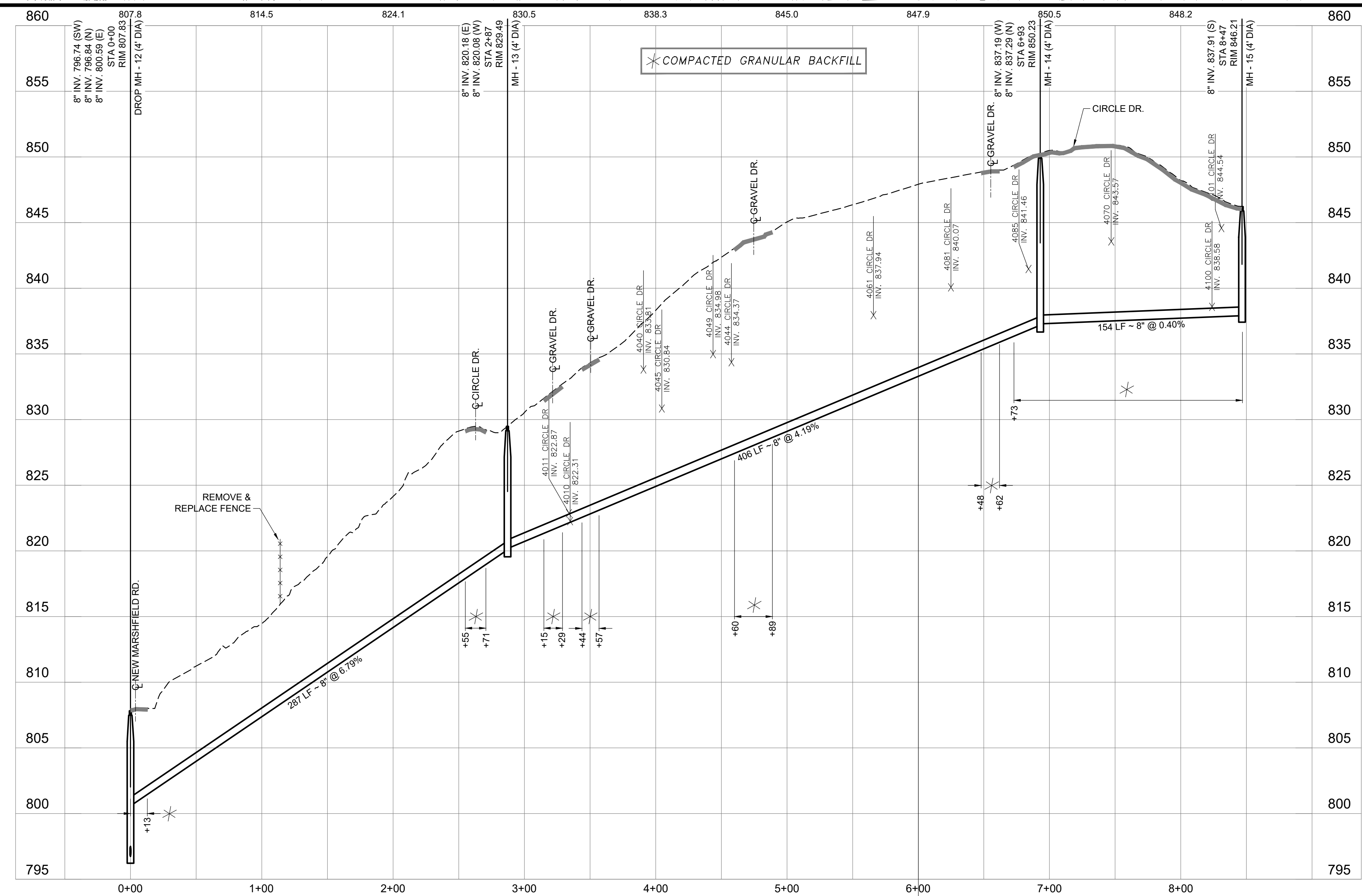
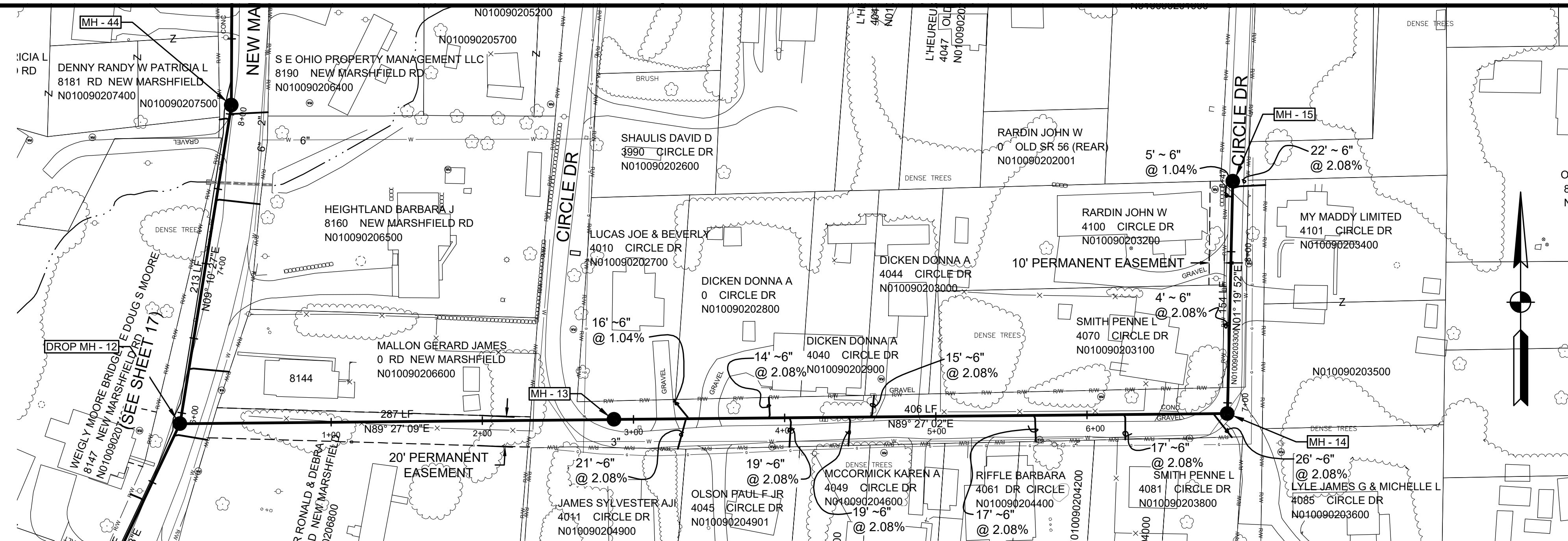
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PLAN & PROFILE  
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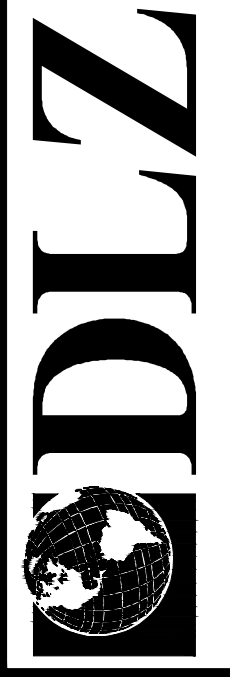
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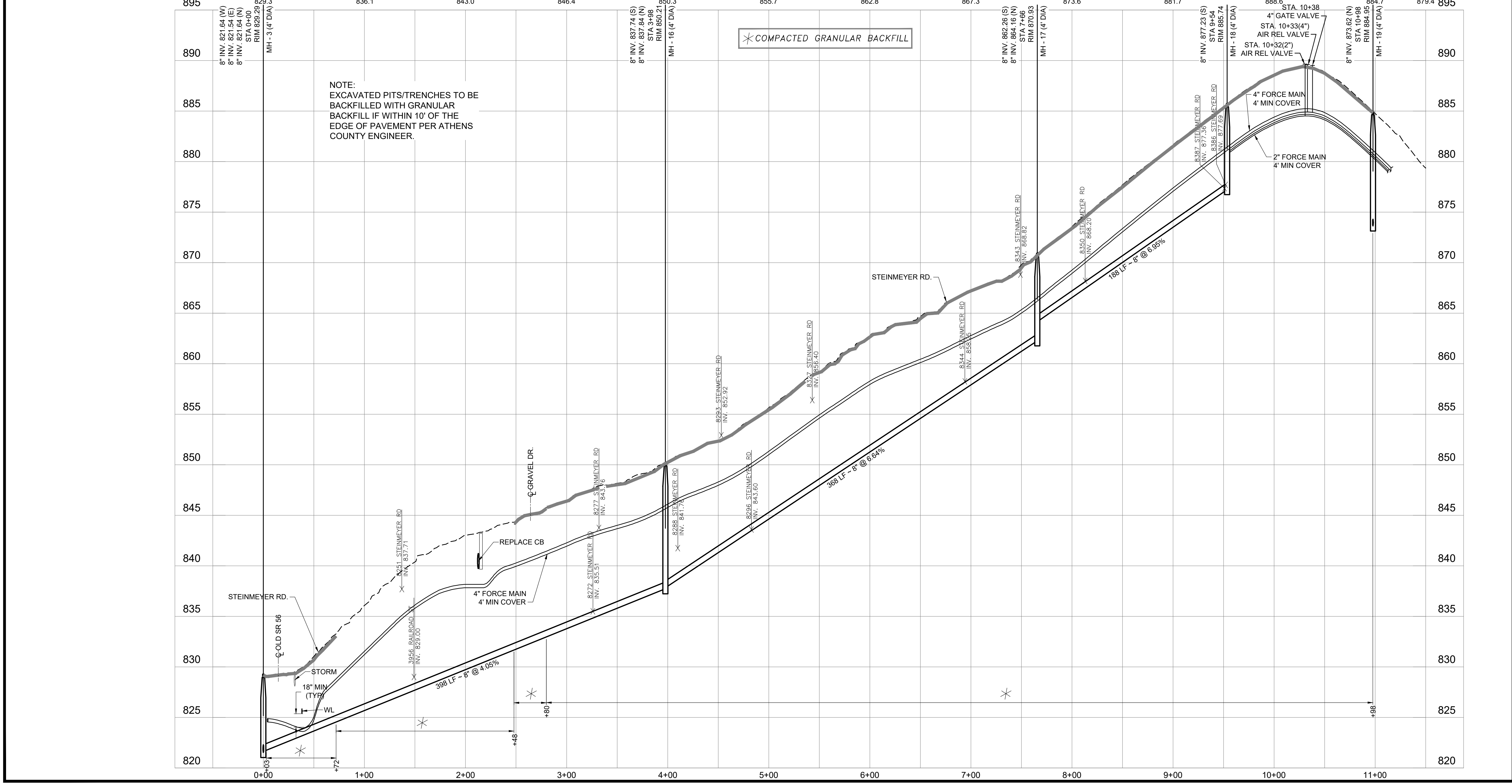
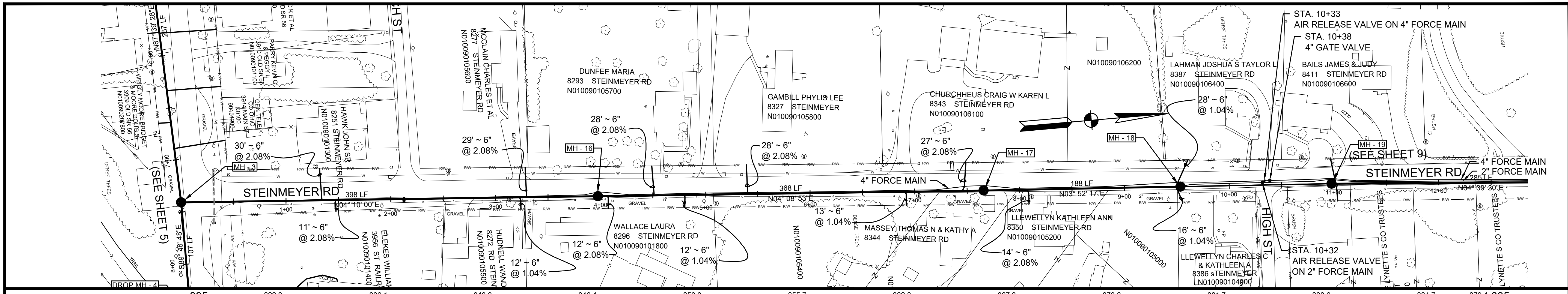
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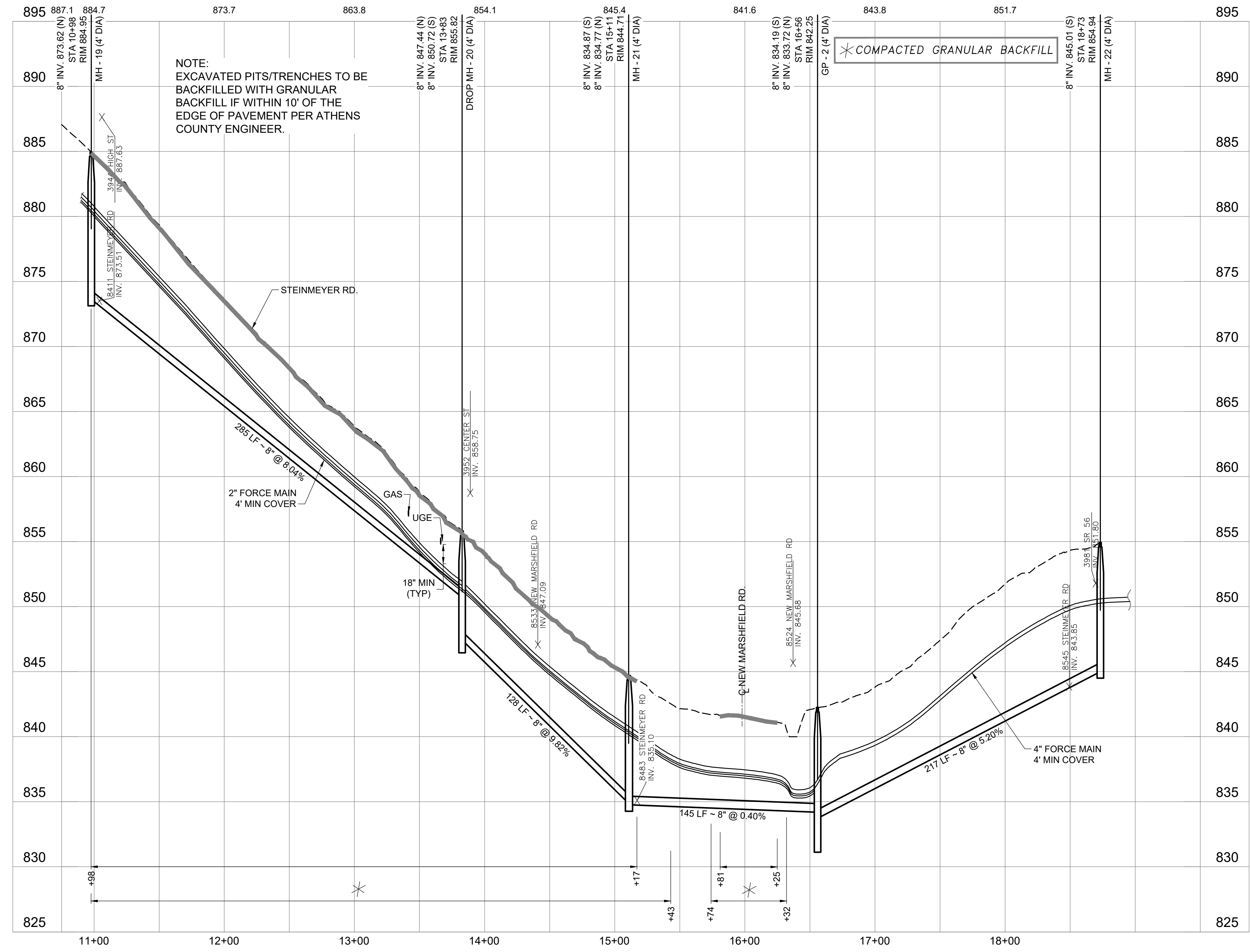
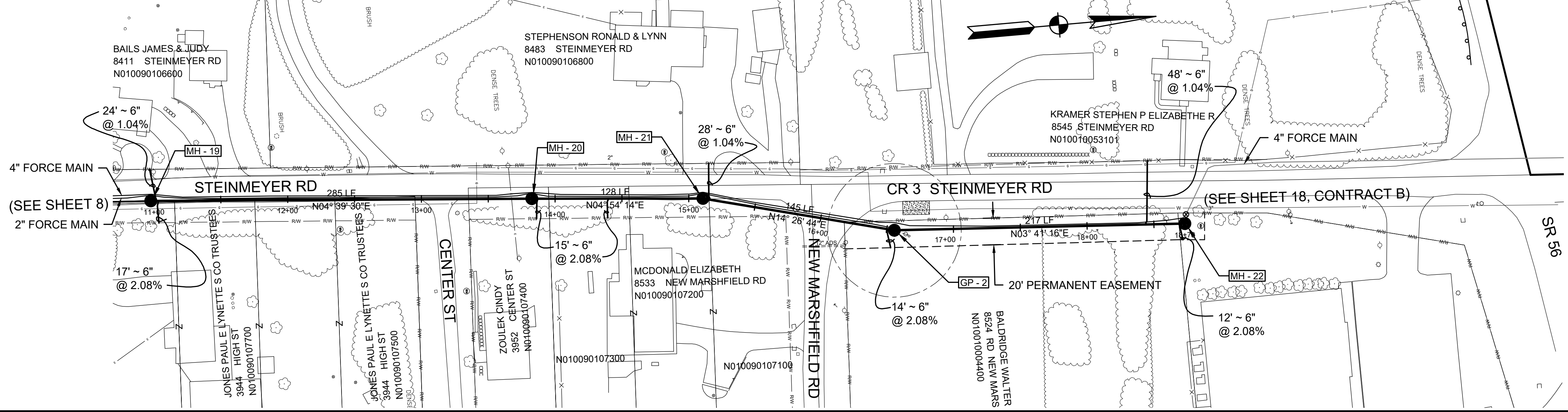
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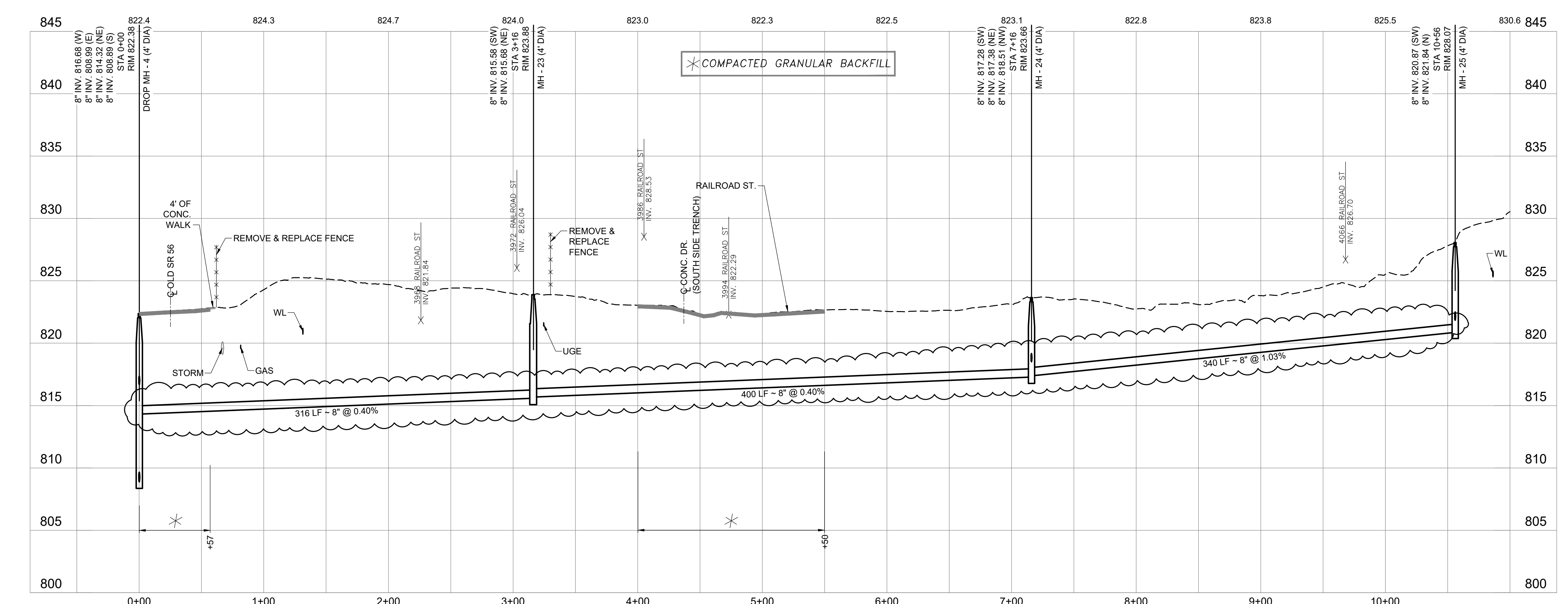
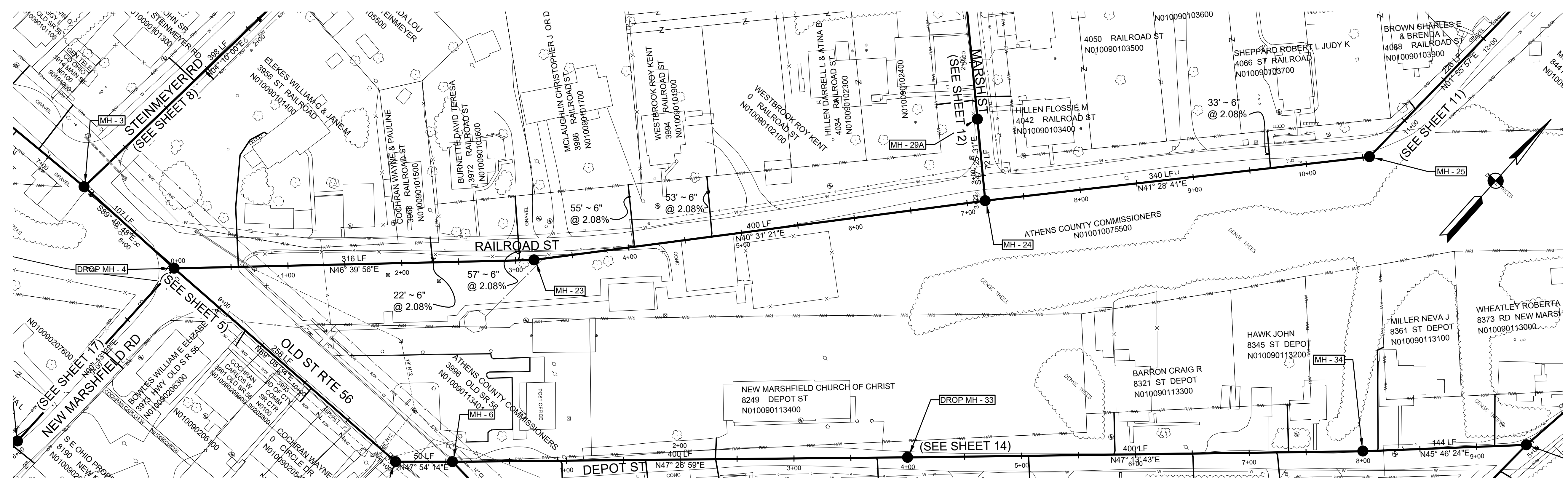
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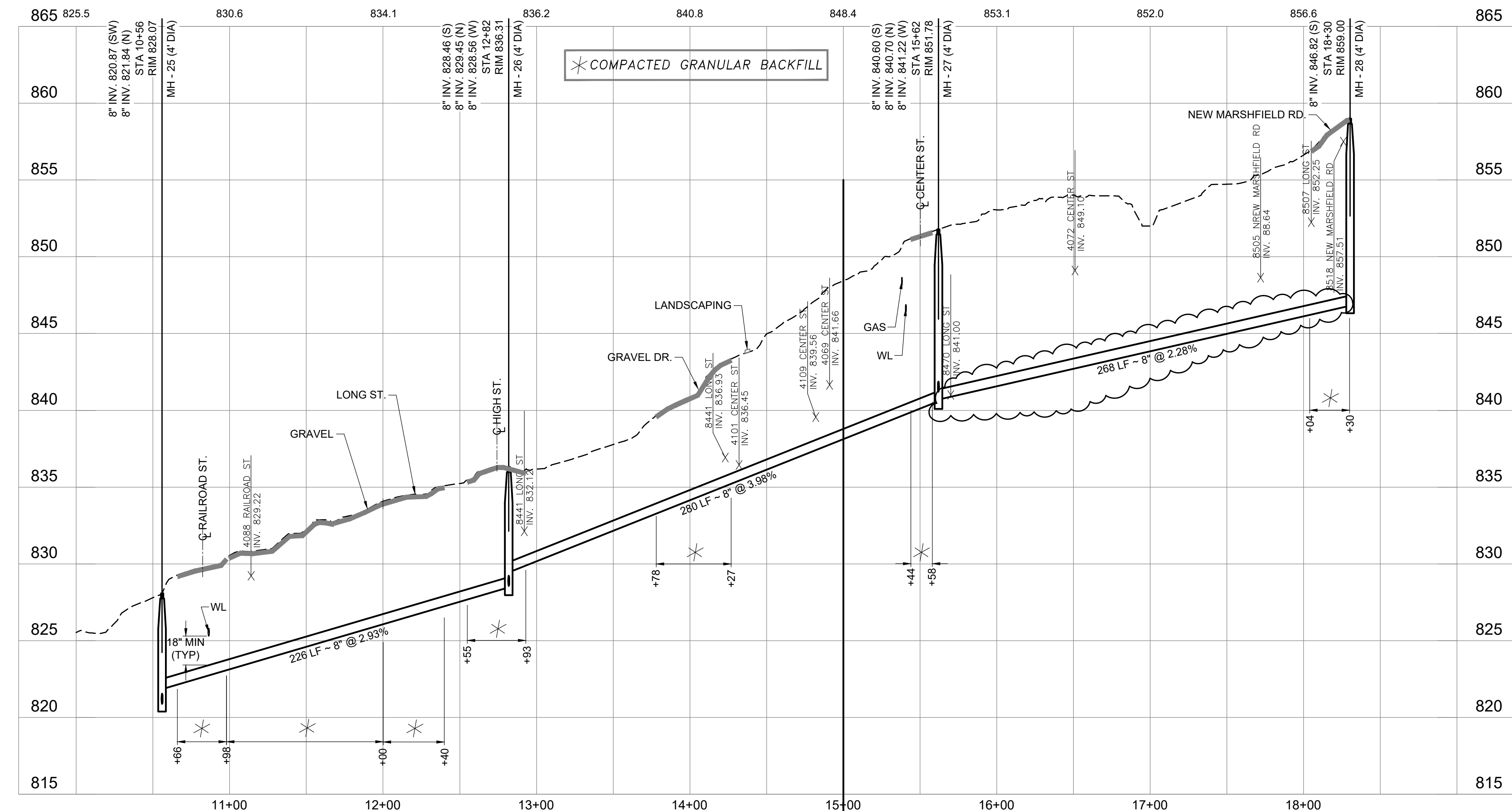
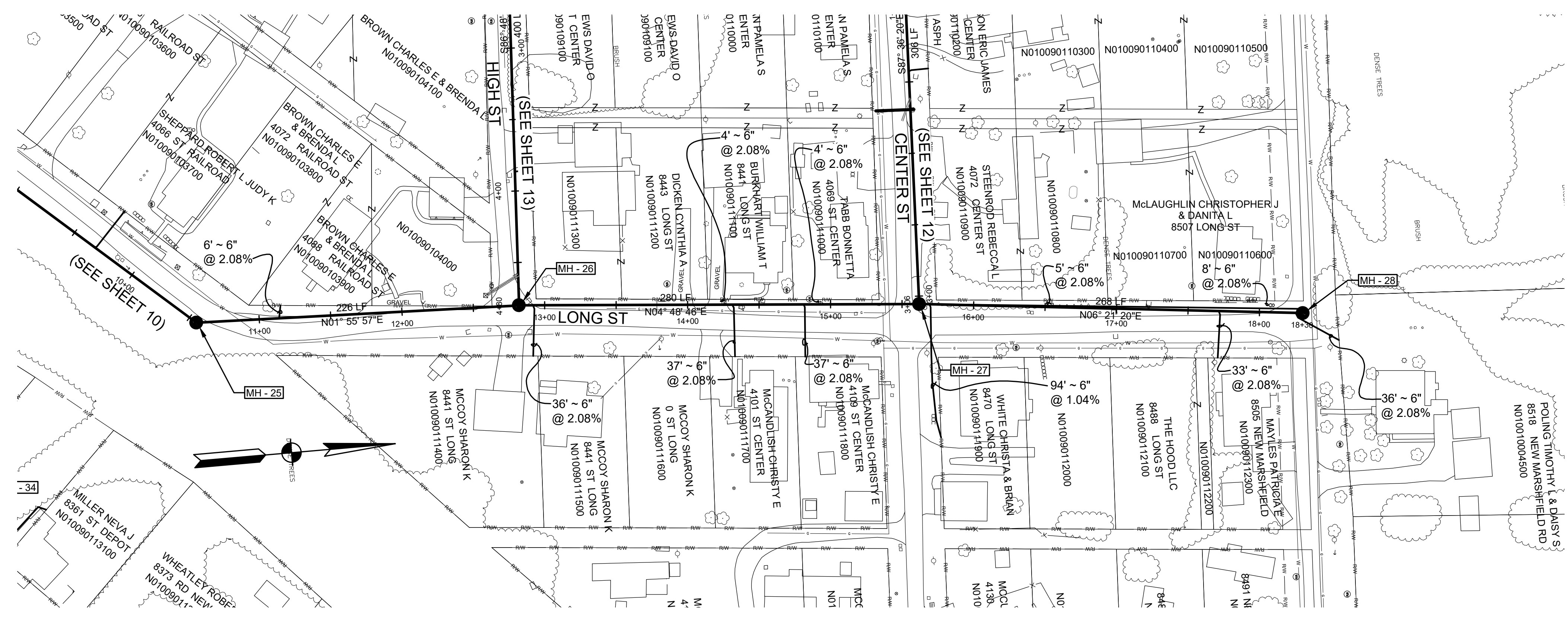
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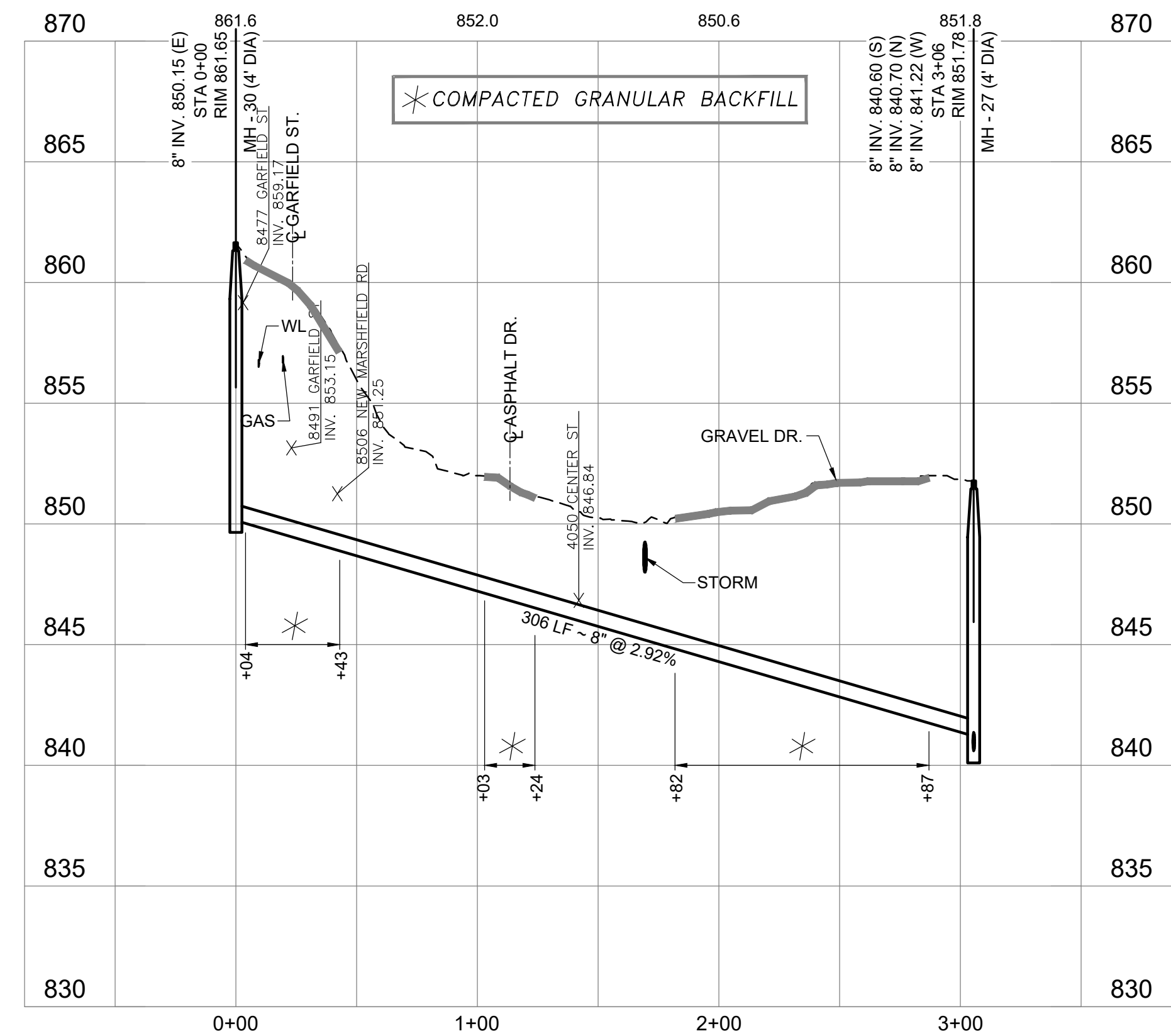
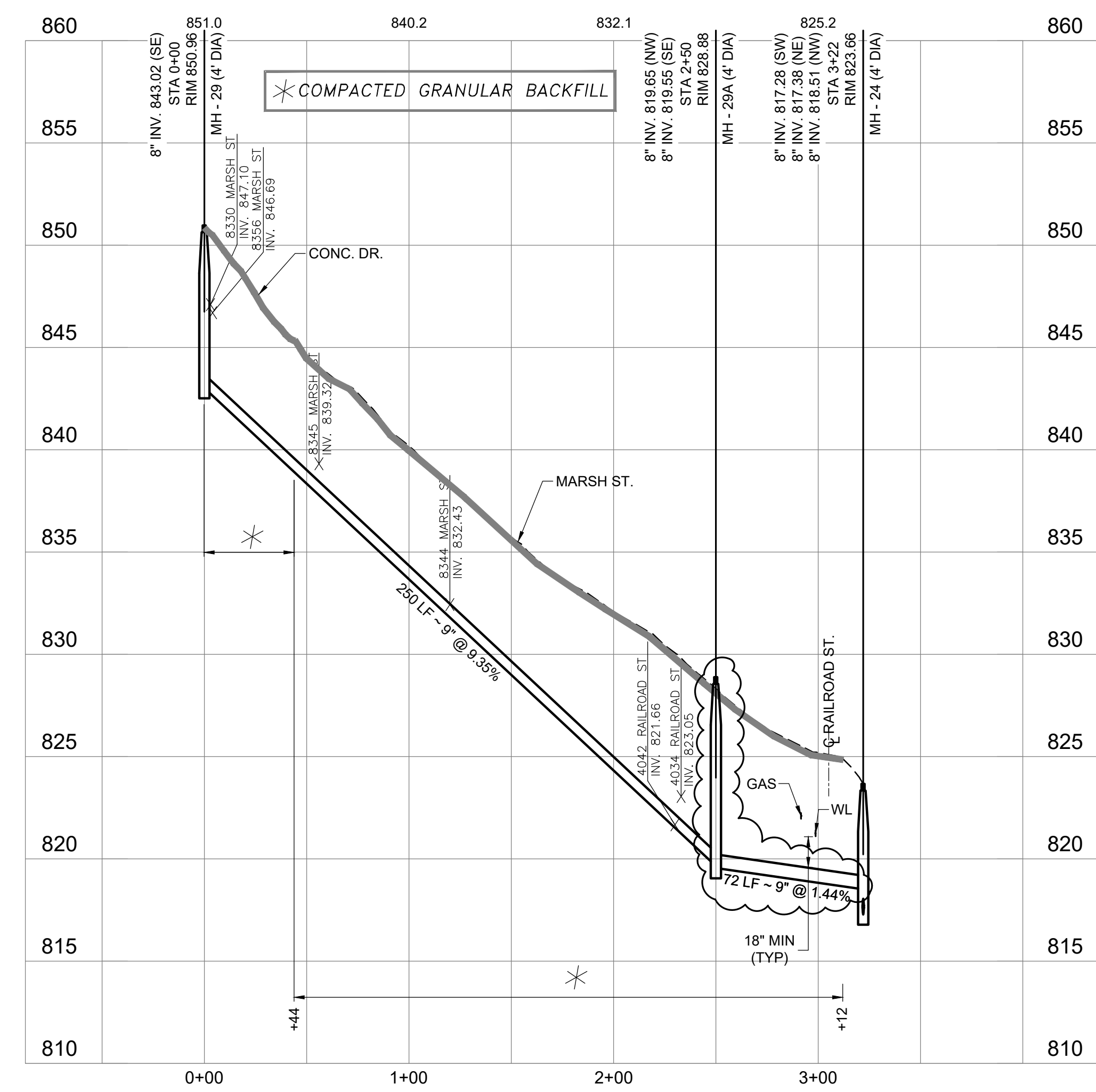
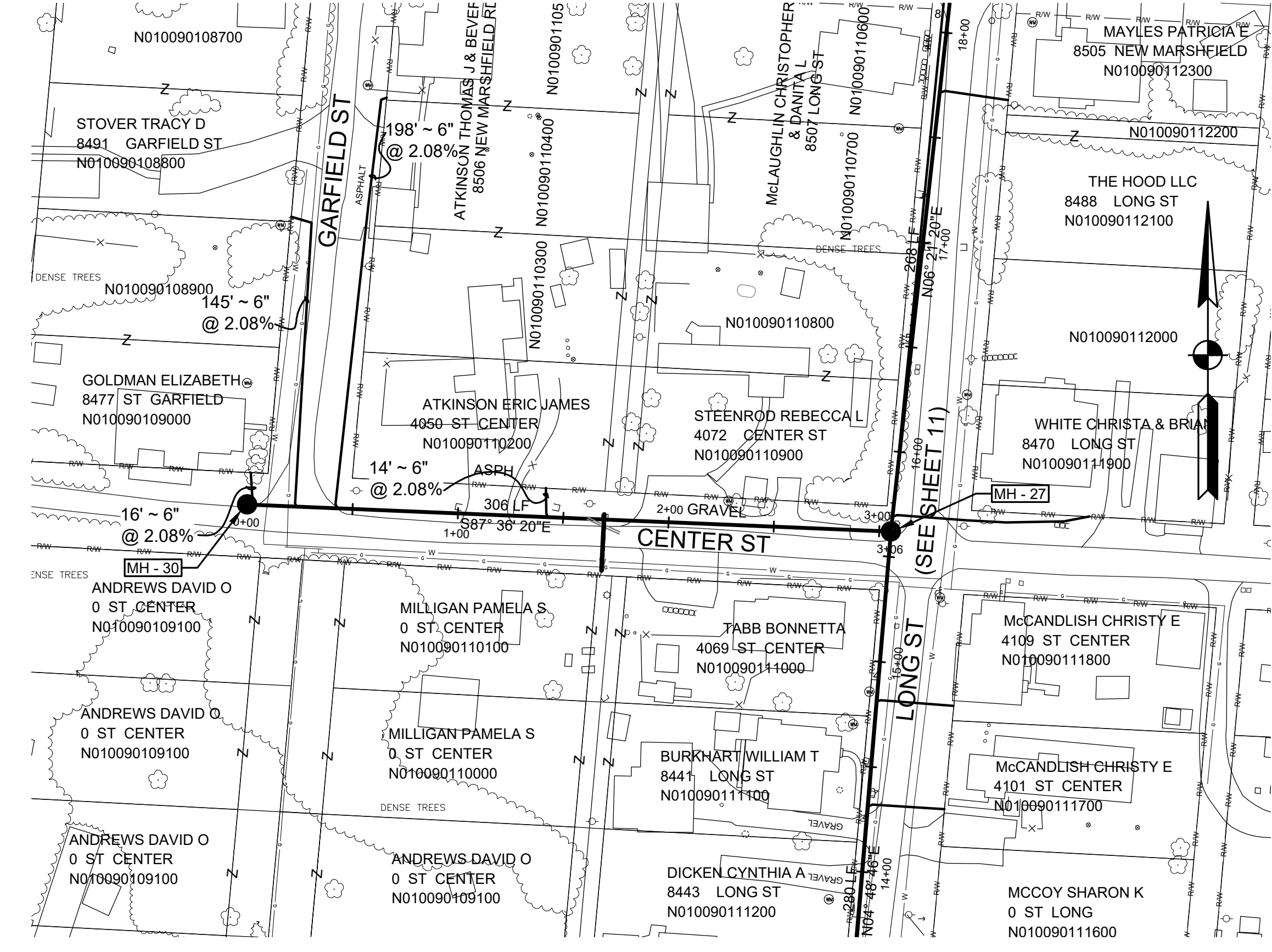
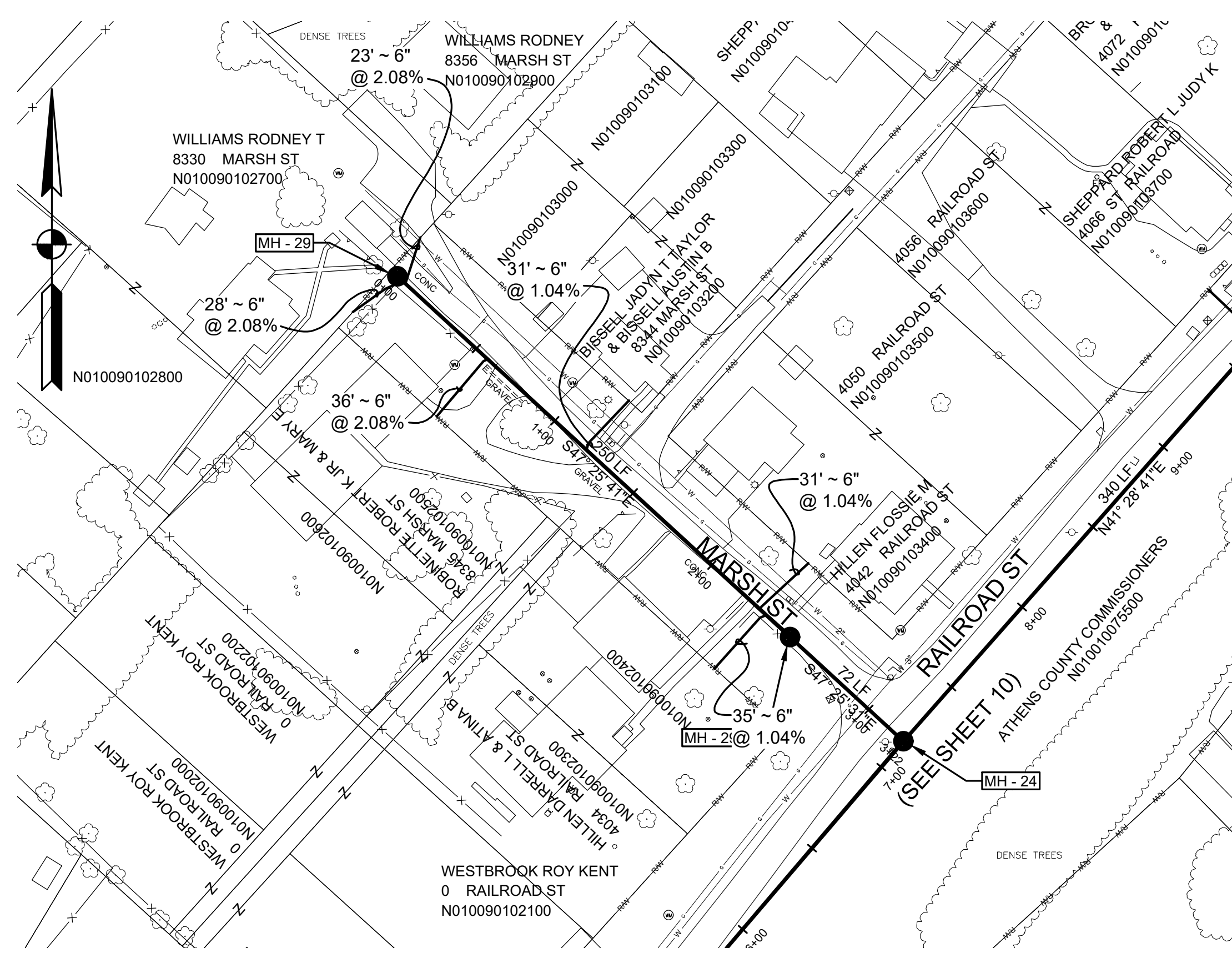
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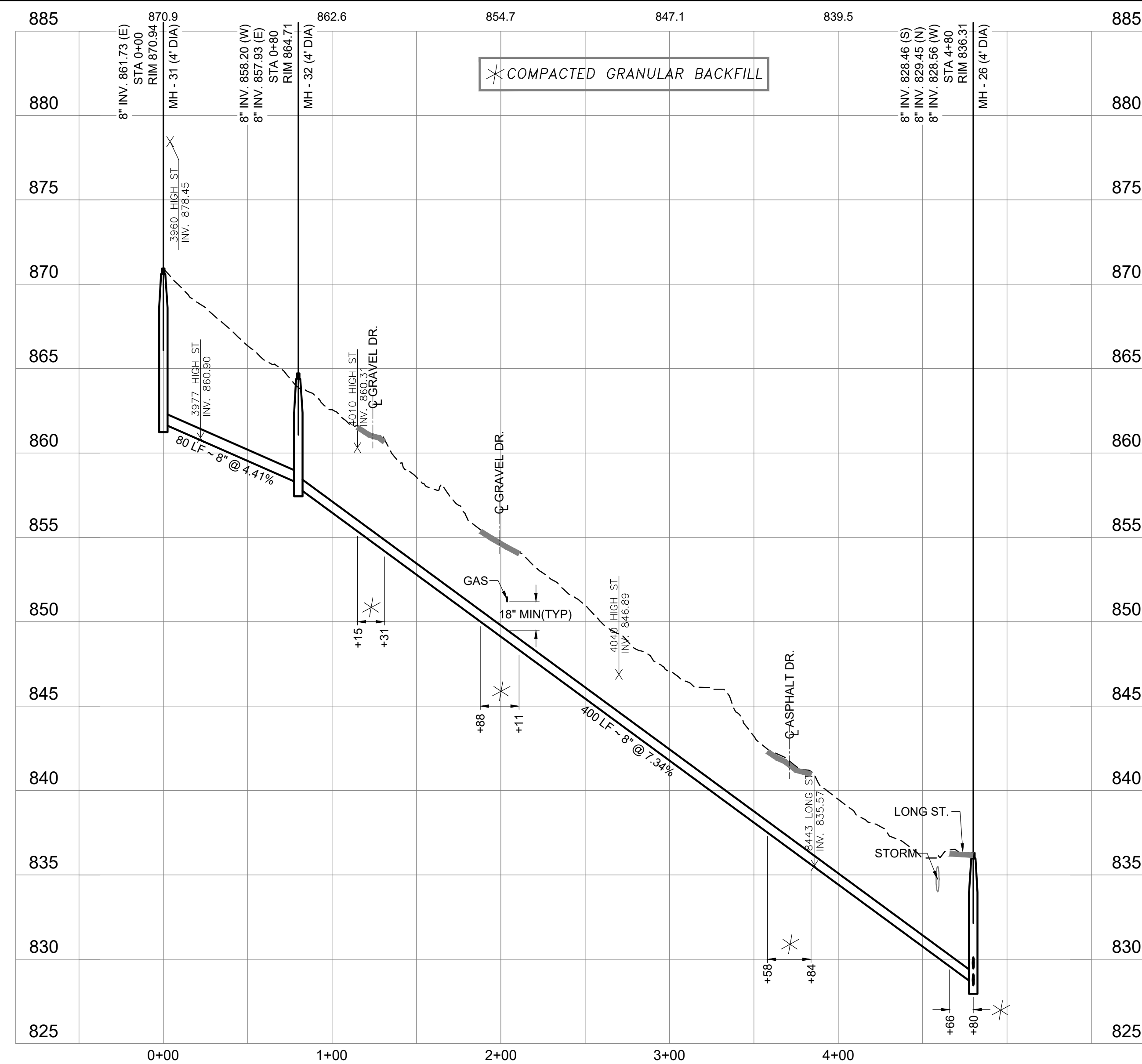
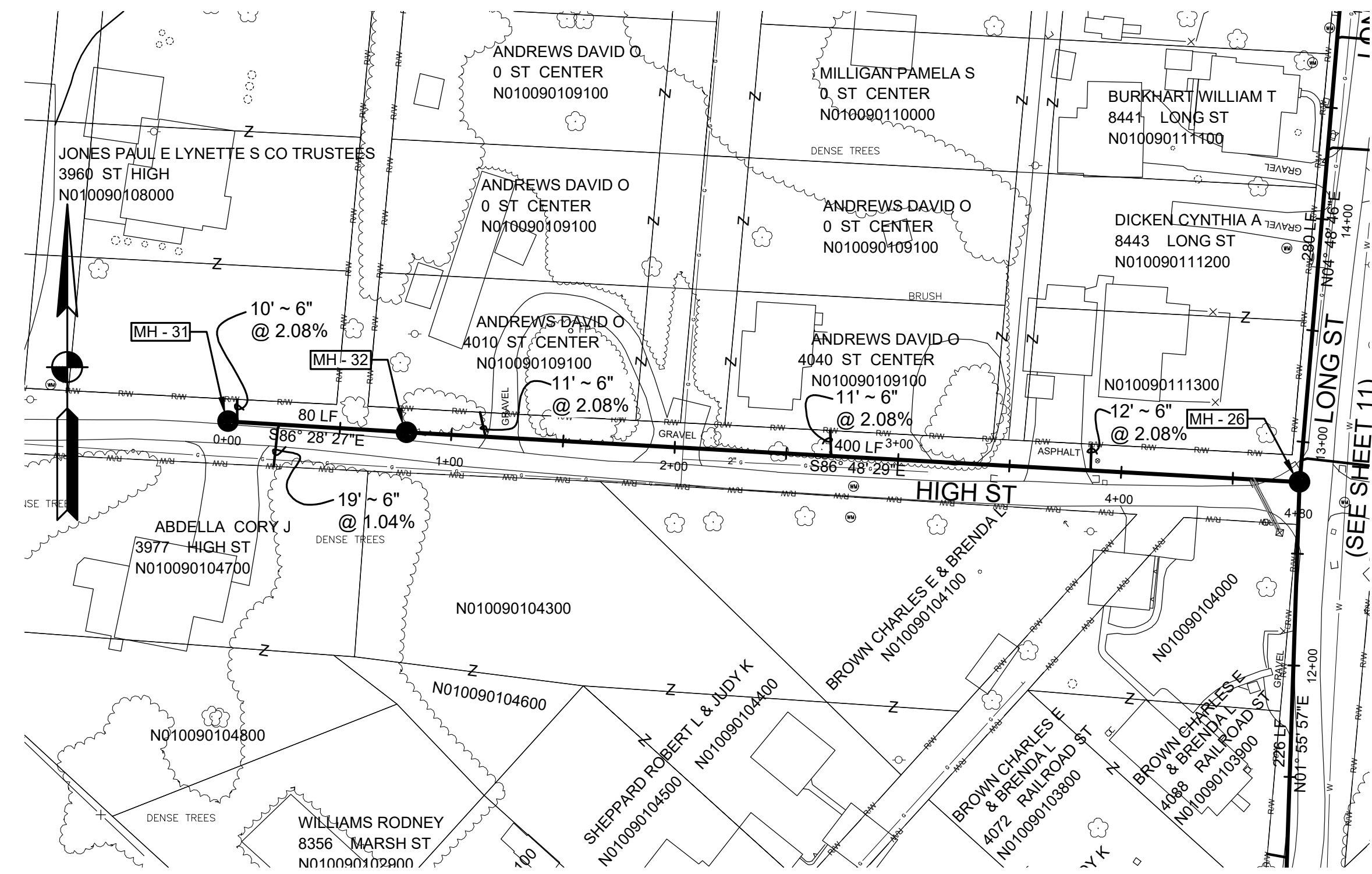
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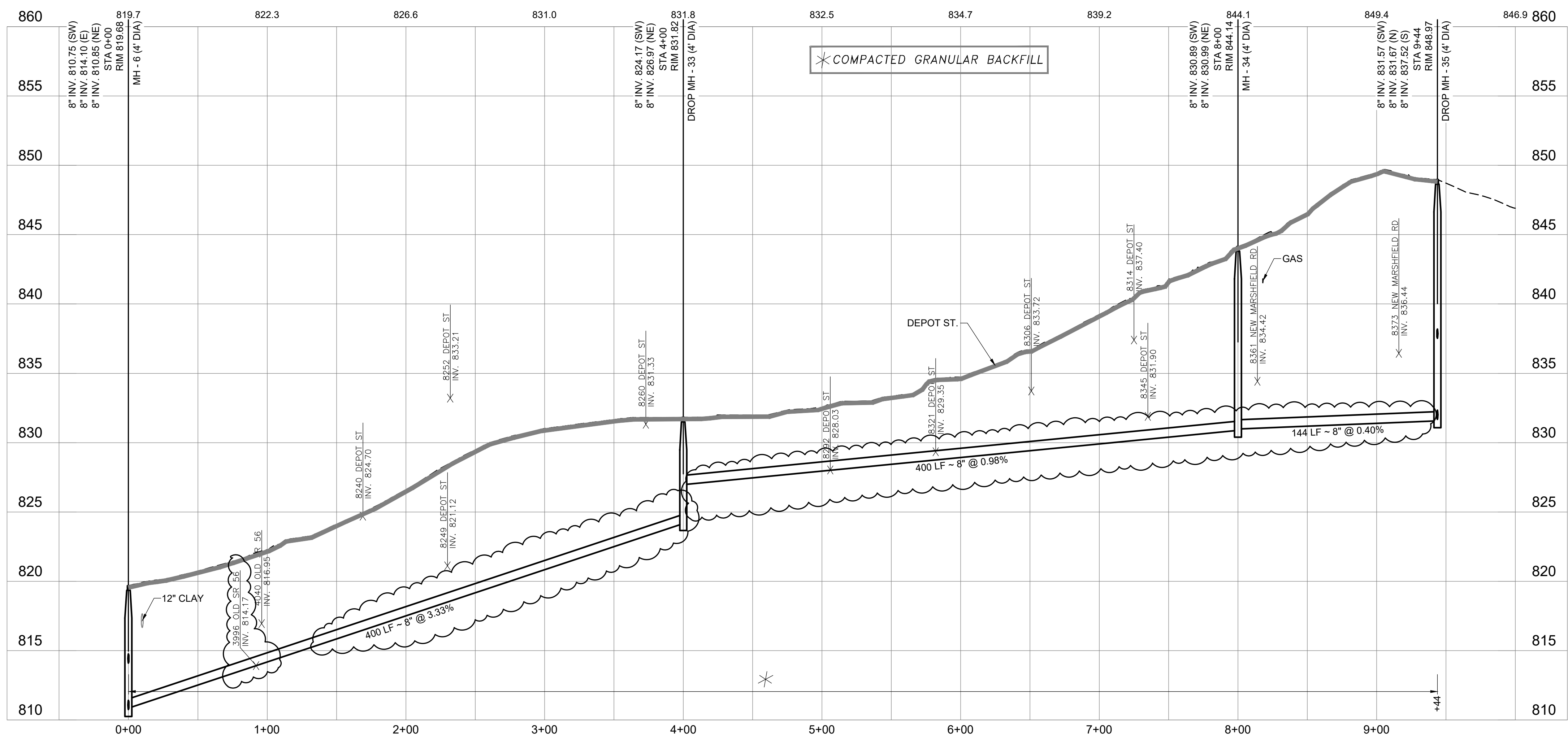
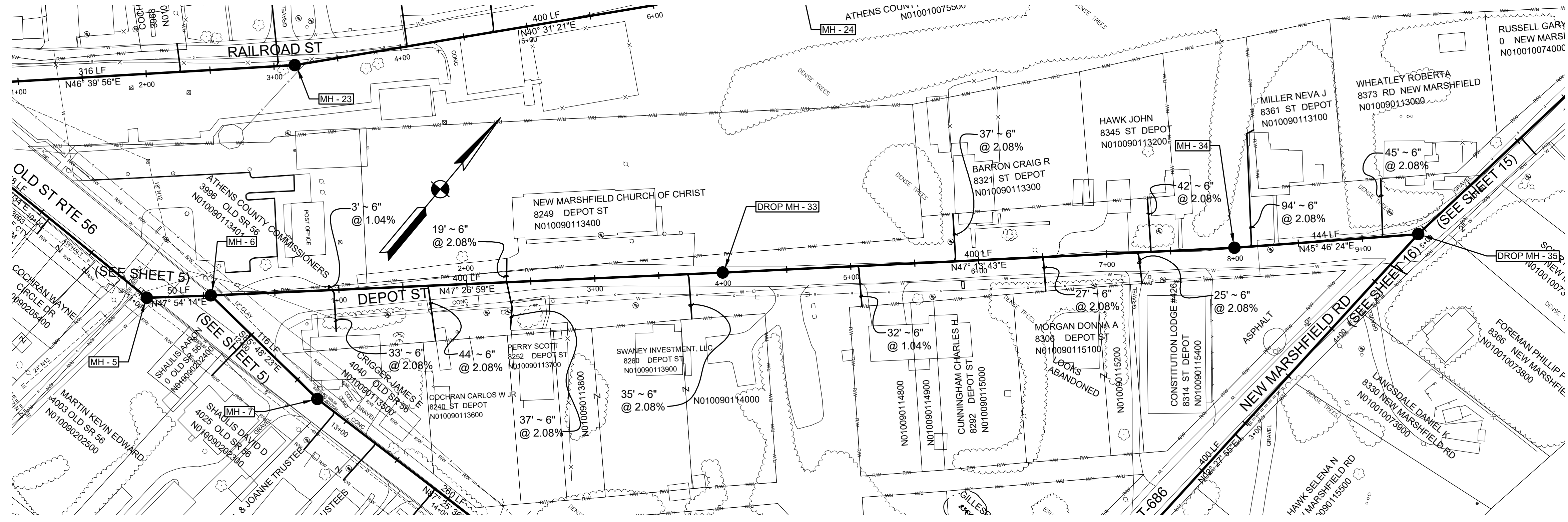
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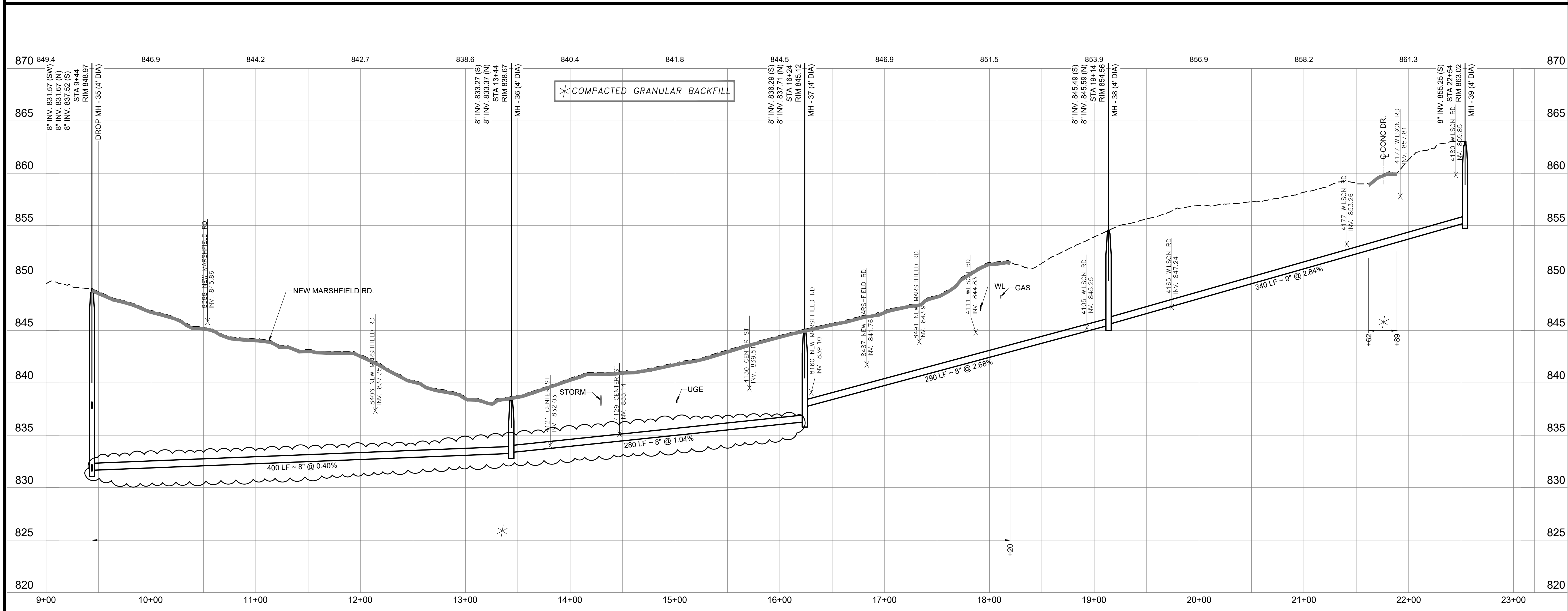
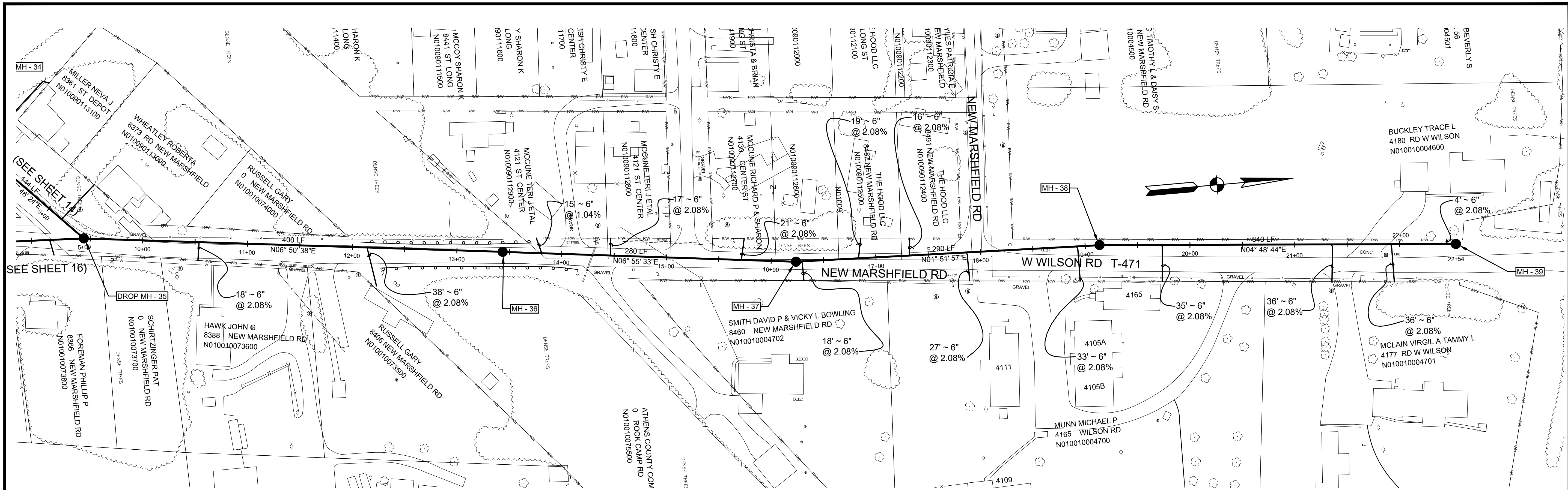
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PLAN & PROFILE  
NEW MARSHFIELD ROAD  
& W WILSON ROAD



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9/25/25	APPENDUM NO. 1		

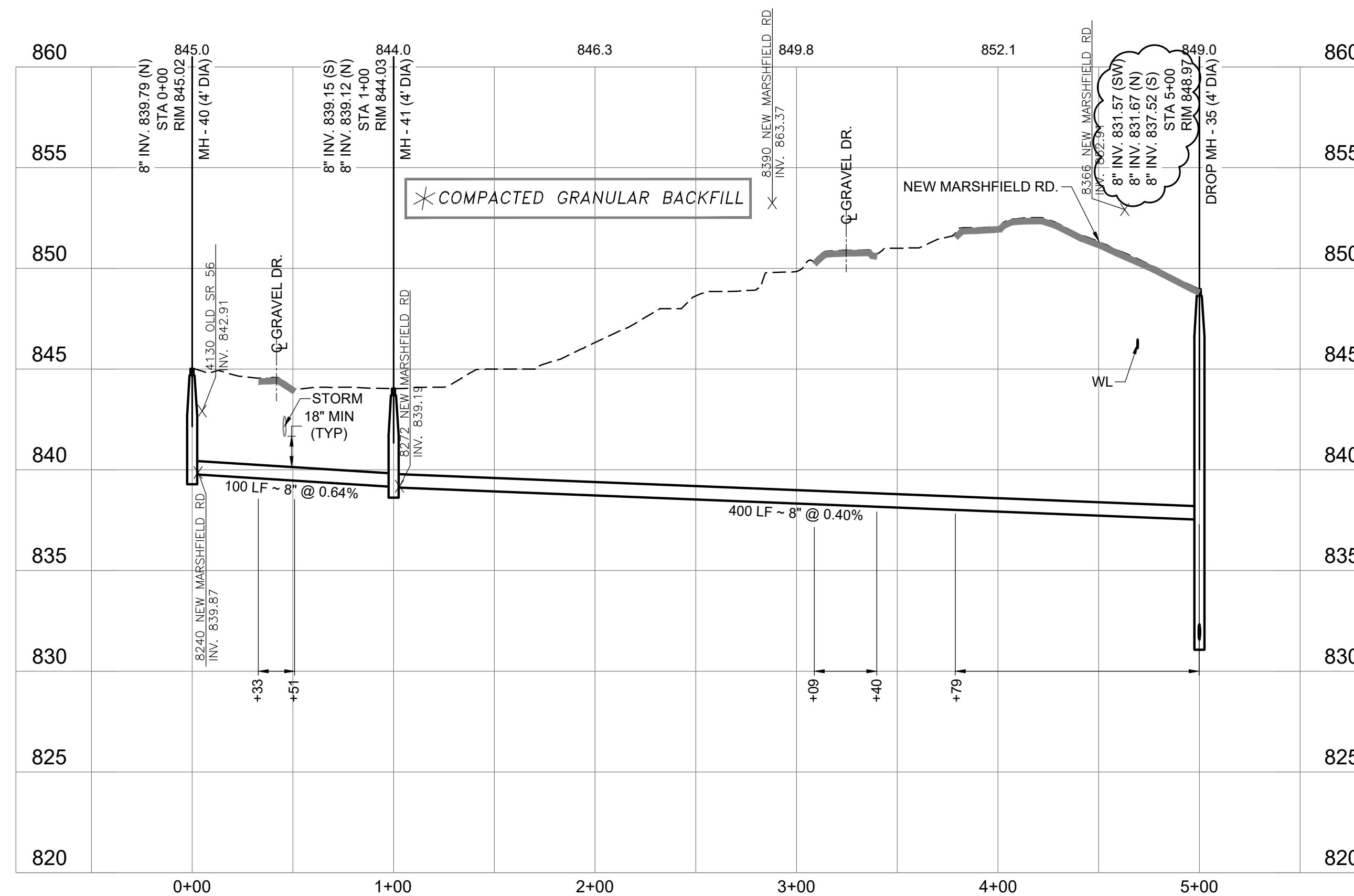
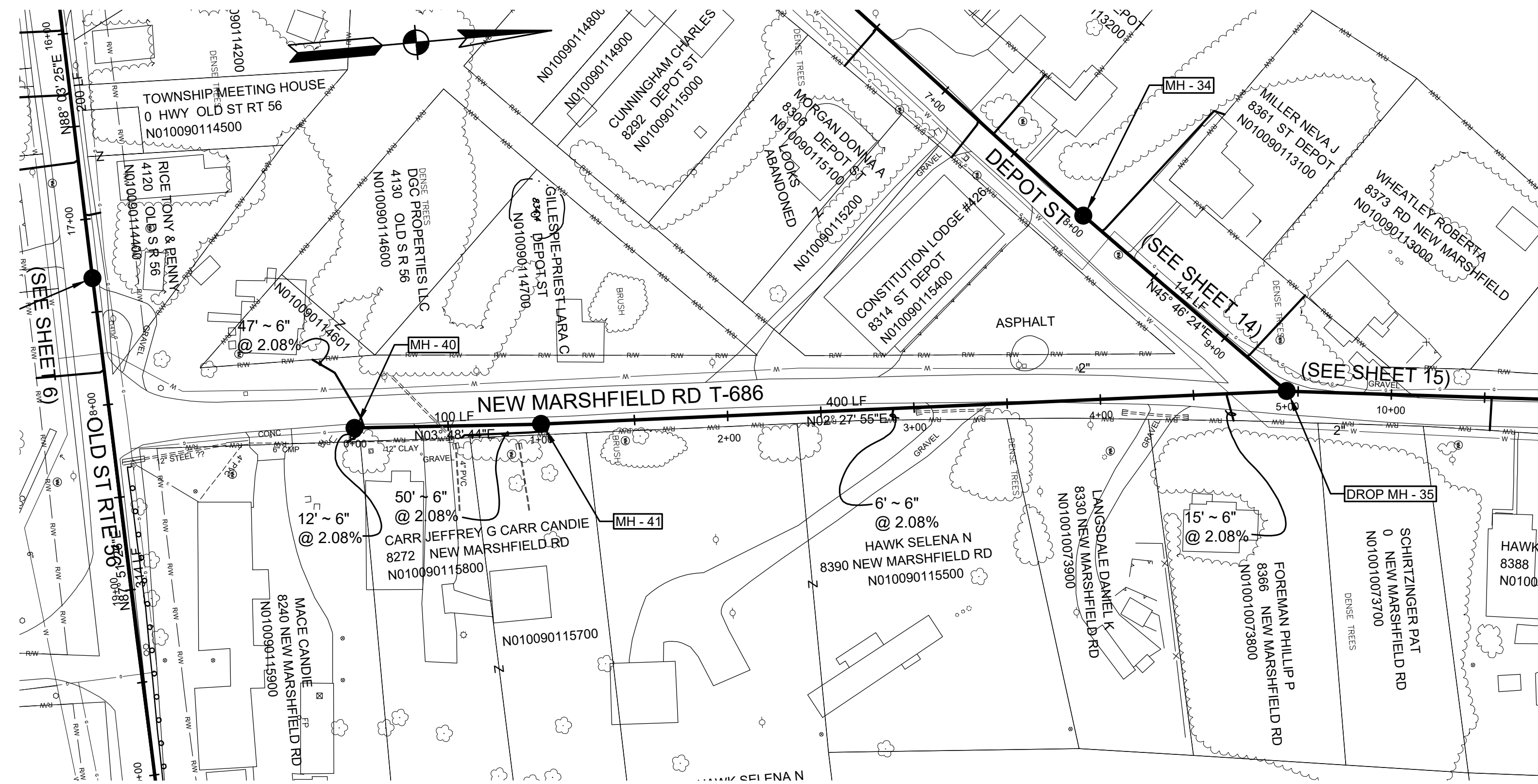
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(740) 380-2828  
FAX (740) 380-3535  
DLZ OHIO, INC

DESIGN: GDS  
DRAWN: TJS  
SCALE: HORZ. 1"=50'  
VERT. 1"=5'

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ATHENS COUNTY COMMISSIONERS  
NEW MARSHFIELD SANITARY SEWER

PLAN & PROFILE  
NEW MARSHFIELD ROAD



UNDERGROUND UTILITIES  
Two Working Days  
**BEFORE YOU DIG**  
Call 811  
OHIO UTILITIES PROTECTION SERVICE  
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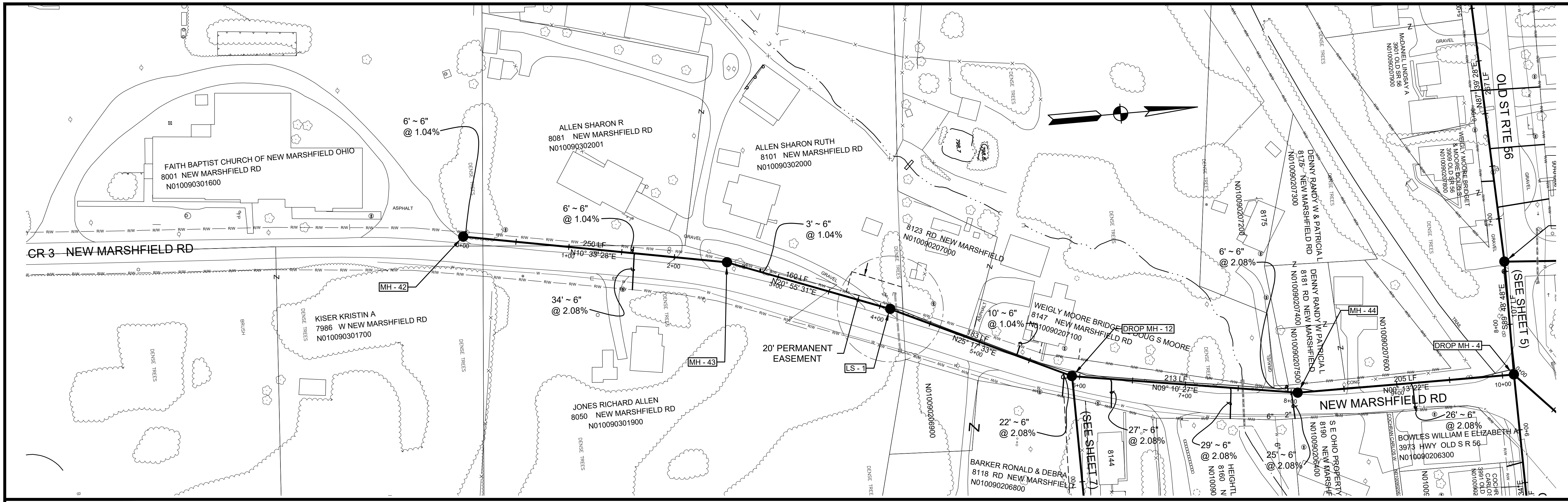
REVISIONS		
DATE	DESCRIPTION	BY
9/25/25	APPENDUM NO. 1	GDS

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(740) 380-2828  
FAX (740) 380-3535  
DLZ OHIO, INC

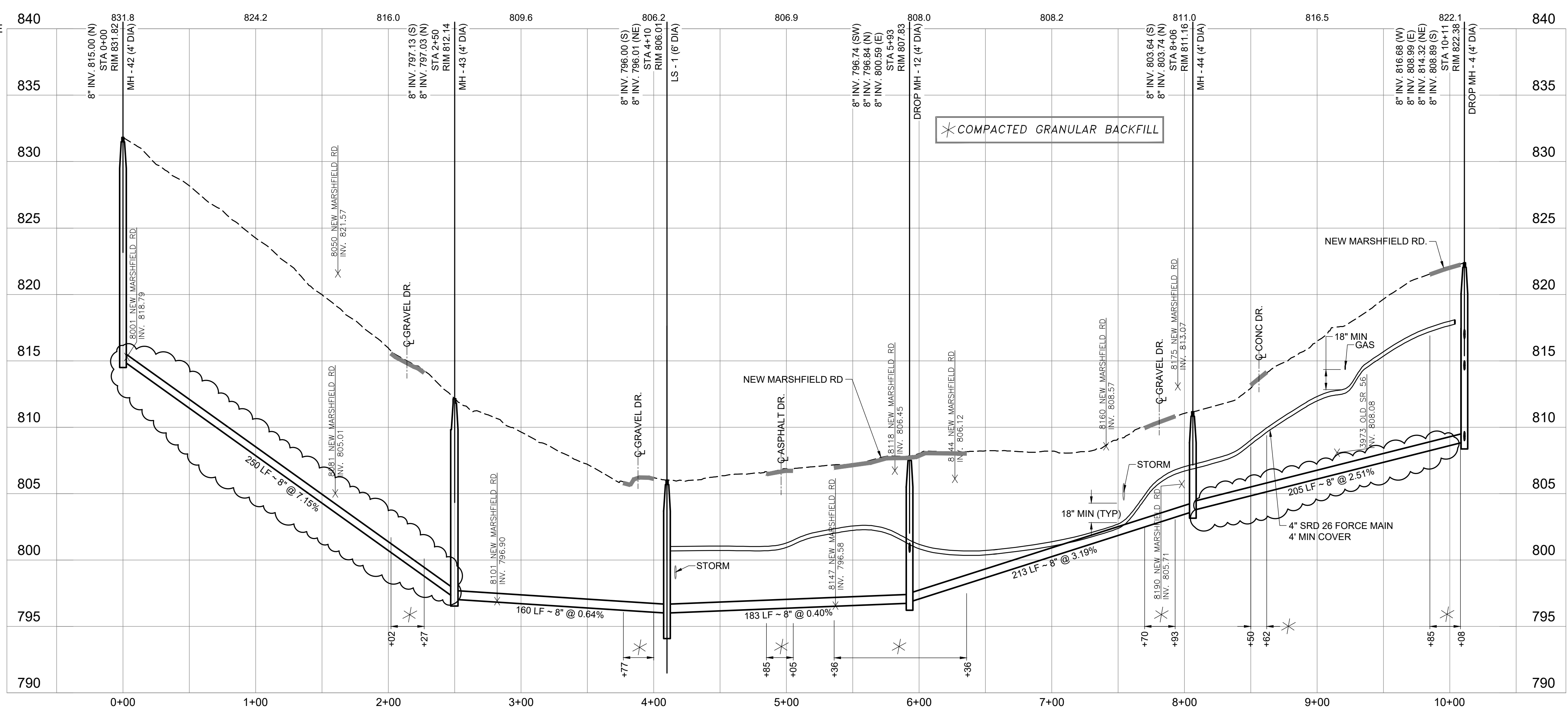
DESIGN	GDS
DRAWN	TJS
SCALE	HORZ. 1"=50' VERT. 1"=5'

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 NEW MARSHFIELD SANITARY SEWER  
 PLAN & PROFILE  
 NEW MARSHFIELD ROAD



NOTE:  
 EXCAVATED PITS/TRENCHES TO BE  
 BACKFILLED WITH GRANULAR  
 BACKFILL IF WITHIN 10' OF THE  
 EDGE OF PAVEMENT PER ATHENS  
 COUNTY ENGINEER.



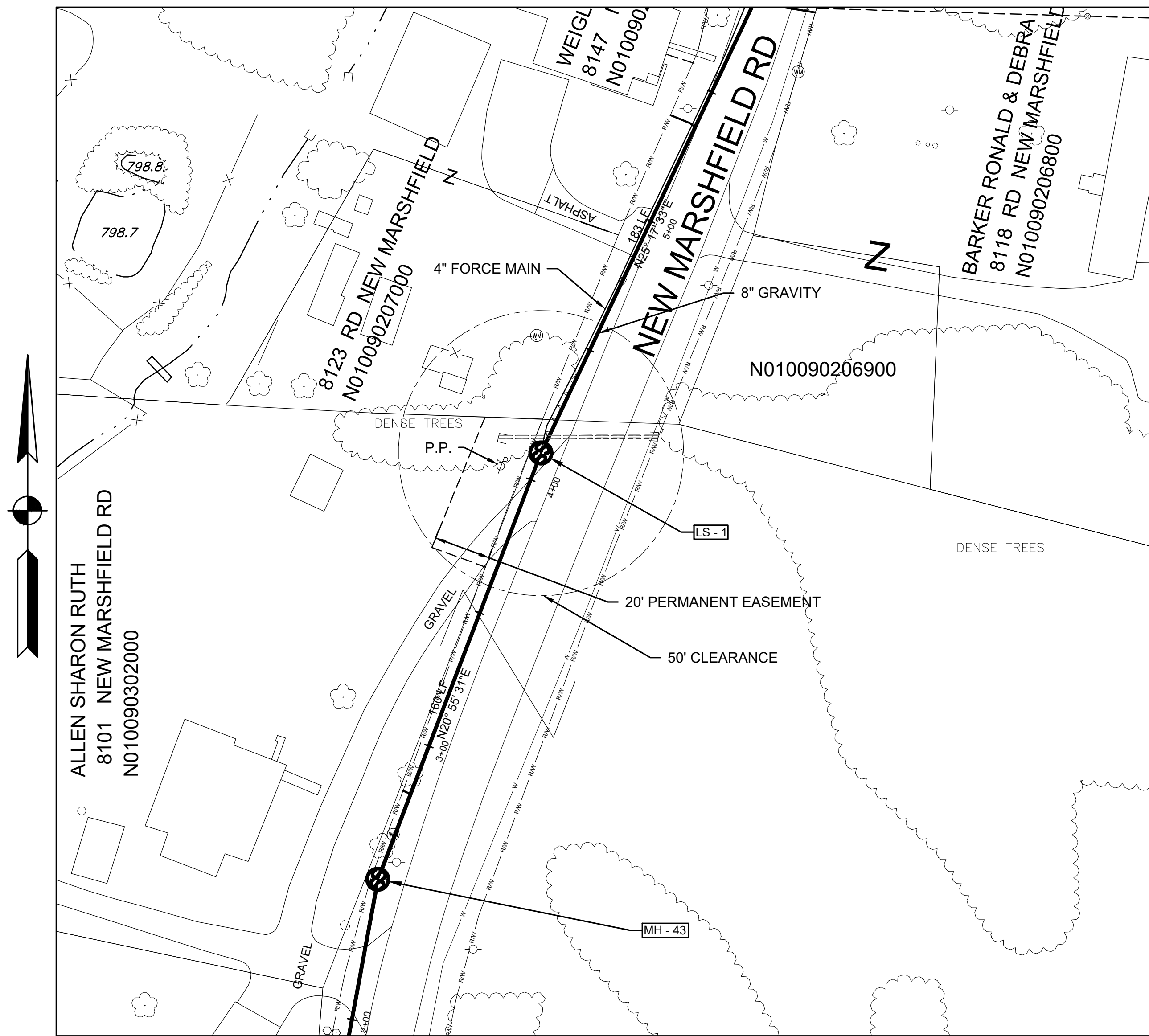
UNDERGROUND UTILITIES  
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REVISIONS			
DATE	DESCRIPTION	BY	GDS
9/24/25	ADDENDUM NO. 1		
12/03/25	REVISED FOR CONSTRUCTION		

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DESIGN GDS  
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 SCALE HORZ 1"=50'  
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Lift Station 1 Site Plan  
SCALE: 1" = 30'

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ATHENS COUNTY COMMISSIONERS  
NEW MARSHFIELD SANITARY SEWER

LIFT STATION  
SITE PLAN

UNDERGROUND UTILITIES  
Two Working Days  
**BEFORE YOU DIG**  
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DESIGN GDS  
DRAWN TJS  
SCALE AS SHOWN

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 ATHENS COUNTY COMMISSIONERS  
 NEW MARSHFIELD SANITARY SEWER

GRINDER PUMP  
 SITE PLANS

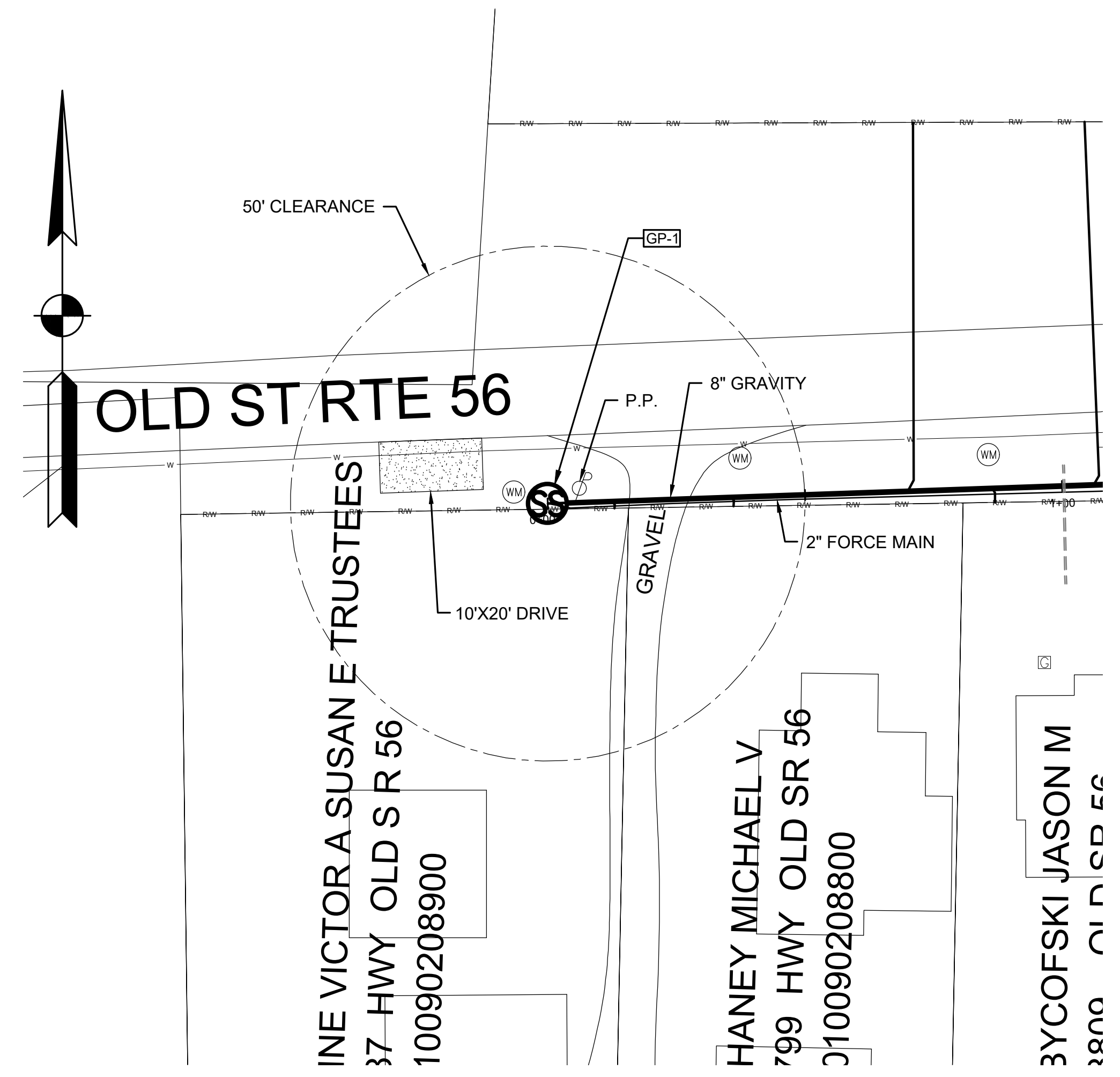
UNDERGROUND UTILITIES  
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REVISIONS		
DATE	DESCRIPTION	BY

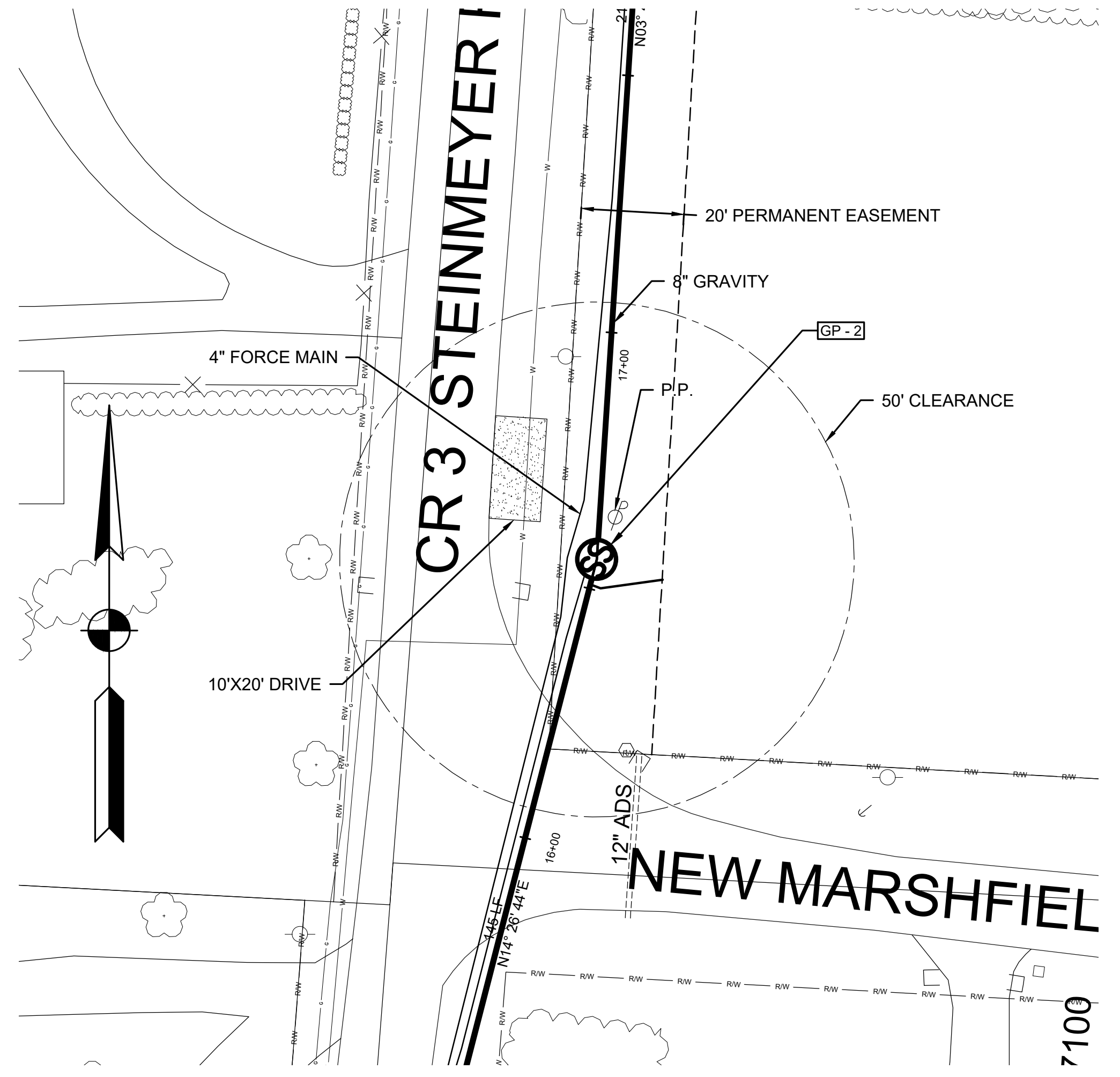
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 FAX (740) 380-3535  
 DLZ OHIO, INC

DESIGN GDS  
 DRAWN TJS  
 SCALE AS SHOWN

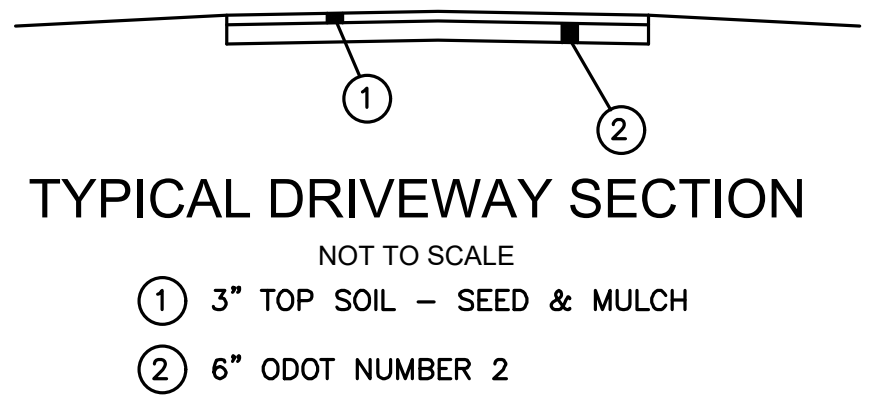
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Grinder Pump 1 Site Plan  
 SCALE: 1" = 20'



Grinder Pump 2 Site Plan  
 SCALE: 1" = 20'



UNDERGROUND UTILITIES  
Two Working Days  
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REVISIONS

BY	DESCRIPTION	DATE

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FAX (740) 380-3535  
DLZ OHIO, INC.

DESIGN GDS  
DRAWN TJS  
SCALE NTS

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United Precast or equivalent and/or as modified herewith. A padlock shall be provided by the Contractor matching the owner's standard. The Ductile iron Pipe in the wet well shall be AWWA 151 or ANSI A21.51, Class 53 Ductile Iron Pipe with flanged or mechanical joints. Fittings shall be AWWA C 110, Class 250. Material and equipment meeting the requirements listed herein shall be provided and installed along with all necessary accessories to provide a complete serviceable facility. The Contractor shall submit six (6) copies of all shop and equipment drawings for approval prior to ordering or installing any equipment or materials.

Two submersible sewage pumps shall be provided. Each unit shall be capable of pumping (A) gallons per minute at (B) feet total dynamic head, while operating on (C) volts, cycle, (D) phase power. The pump speed shall not exceed (E) rpm. The pumps and discharge piping shall be designed to pass solids up to 3 inches in diameter. Pump and motor case shall be made from heavy close-grain cast iron with stainless steel shaft and fittings. The impeller shall be of the solids-handling type designed to pump raw sewage and wastewater. Each motor shall have two mechanical seals installed in tandem with an oil chamber between pump and motor. Motor shall have thermal over-temperature protection with automatic reset. The motor shall be sized to be non-overloading throughout the curve exclusive of the service factor. The inner seal chamber of each pump shall have two moisture sensing probes. Each pump shall have sufficient multi-conductor cable, with ground wire, power leads, thermal detector leads, and moisture sensor leads. Pumps shall be Gorman Rupp, Flygt or approved equivalent, and supplied with manufacturer's standard five (5) year minimum warranty.

Scope: Work covered by this specification shall include all labor and material required to extend electric and telephone services to the proposed lift station(s). It is the intent of this specification that the Contractor also provide incidental items that may not be delineated herein but are required for a complete and operable system.

Existing Conditions: The Contractor shall visit the site and become familiar with all existing conditions which may affect his work and he must consider same as part of his bid. No additional compensation will be allowed for the Contractor's failure to become aware of existing conditions.

Permit and Inspection: The Contractor is required to obtain and pay for all permits and inspections required in the prosecution of this contract. The Contractor is also required to hold a valid Qualification Certificate as issued by the State of Ohio, Department of Industrial Relations, Ohio Construction Industry Examining Board. In the event that there is no local inspecting authority, the Contractor shall procure a Certificate of Plan Approval and necessary inspection from the State of Ohio, Department of Industrial Relations, Division of Factory and Building Inspection as required by law.

Codes: All electrical work for this project shall be installed in accordance with the latest editions of the National Electric Code (NEC) and all state and local codes. Said codes shall be considered the minimum standard for materials and methods not otherwise covered in this specifications.

Grounding: Ground all electrical equipment furnished or connected under this contract in accordance with Article 250 of the NEC. Size all grounding conductors as required by the appropriate tables in said article.

Conduit: All wiring shall be installed in conduit. Rigid galvanized steel conduit shall be used for above grade wiring and schedule 40 PVC may be used for wiring installed below grade.

Wire: All wire shall be stranded copper with THHN insulation. Conductors sizes shall be selected so that the maximum voltage drop does not exceed 3% of the nominal service voltage for the entire length of the circuit involved. Calculations shall be based on resistance values stated in Chapter 9 of NEC. Minimum control power wire shall be 14 ga. Minimum control circuit wire shall be 16 ga. All control wire shall be Type MTH or THW, 600V.

Service Disconnect: Furnish and install a service entrance rated (per Article 230-66 NEC), NEMA 3R, fused disconnect switch at the lift station site. Provide one class RK-5 and one additional spare fuse for each fuse holder in said disconnect. Service disconnect and fuses shall be sized appropriately for the voltage and load to which they are connected. Fuses shall comply with other requirements listed in this specification. A surge arrester shall be installed on the load side of service entrance disconnect. The service disconnect shall be pad lockable in the off and on position. Service disconnect is not furnished as part of the packaged lift station.

as the aforementioned service disconnect. The amperage rating shall be the same as the service disconnect or stand-by generator output, which ever is the higher. If the transfer switch selection is based on the output of the generator, it shall be fused with the same type and size fuses used in the service disconnect. Manual Transfer Switch is not furnished as part of the packaged lift station.

Generator Receptacle: Furnish and install a generator receptacle compatible with the owner's stand-by generator. If the owner does not presently have a stand-by generator, provide a receptacle and mating plug of the same voltage, amperage and number of poles as the service disconnect. The generator receptacle and plug shall be suitable for reverse service. Generator receptacle is not furnished as part of the packaged lift station.

Power Company: The service entrance equipment, conductors and installation shall be in accordance with the local electric utility company requirements. The Contractor shall provide all labor and material not furnished by said utility company.

Telephone Company: Contractor shall provide an empty conduit with pull wire, grounding and telephone terminal interface as required by the local telephone company for installation of the telephone circuit to the proposed telephone dialer or telemetering.

Control Panel: The pump control panel shall be fabricated by a company with at least five (5) years experience in the manufacturing of similar control panels and shall comply with the following:

- The enclosure will be NEMA 1 stainless steel and be UL listed. The selector switches, pilot lights, elapsed time totalizers, push buttons, duplex GFI receptacle and other through the panel components shall be mounted in a dead front swing out panel housed within the enclosure. Motor circuit protectors, circuit breakers, starters, relays, transformer, alternator and terminal strips will be mounted on a sub-panel behind the aforementioned swing out panel.
- Motor circuit protectors shall be provided for each pump motor and a circuit breaker for the control power transformer. They shall be of the proper ampacity for the load to which they are connected and have operating mechanisms extending through the dead front swing out panel.
- Control power transformer size shall be 3KVA sized for the sum of all loads connected including the mentioned duplex receptacle. Provide separate fusing or circuit breakers for the control circuit and the duplex receptacle.
- Motor starters shall be soft start type & properly sized for the motors they serve and shall be NEMA rated with interchangeable overload heaters. IEC starters and adjustable trip overload relays are not approved and shall not be substituted.
- Selector switches, push buttons and pilot lights shall be NEMA style 30.5 mm dIITE series. IEC or miniature series are not acceptable. Pilot lights shall be push-to-test transformer type with #755 or 1866 lamps.
- In accordance with the requirements of "Ten State Standards," provide intrinsically safe relays for all wetwell float switches. Low current interpose relays shall be wired to the output of the intrinsically safe relays for transient protection of said relays. All other relays shall be NEMA rated.
- Provide an alternator to automatically alternate pump operation. In addition to the automatic alternator, provide a three position selector switch to override said alternator and manually select the lead and lag pumps.
- Control and interconnecting wiring shall be copper, type MTW, neatly bundled and in plastic wireway. Provide insulated crimp lugs as required. Terminals with more than one wire each must be approved for that purpose.
- Integral motor thermal protection and pump seal failure detectors shall be included as part of the pump package. And shall be wired in accordance with the pump manufacturer's recommendation.
- Elapsed time totalizers shall be provided for each pump motor. They shall be non-resettable hour meters and wired parallel to the holding coil of the motor starter.
- Provide audible and visual alarms to indicate high level in the wet well. Include the necessary relays and push buttons to silence the audible alarm while maintaining the visual alarm until the alarm condition has been corrected.
- The level controller shall be Nema 4X G-R "EP 2000 or equal, capable of operating as air bubbler, submersible transducer, ultrasonic transmitter or floats, unless otherwise specified. Level controller will utilize the air bubbler to monitor the wet - well water level and permit the operator to read and set level set points from the controller. Under no circumstances should changing levels require entrance to the wet well unless floats are being utilized. Level controller shall operate on 12VDC and retain memory using a lithium-ion battery. Level controller shall utilize a digital back lit LCD screen and membrane type switches, and capable of controlling 8 set points.

Float Switches: Furnish and install (1) float switch in the wet well for redundant high water alarm at the level indicated on the contract drawings. Float switches shall be mercury tube type encapsulated in polyurethane resin with an outer seal of vinyl and equal to Buskirk and Owens #1900 or #1901. Float switch shall be suspended via anchor and pvc chain and wired in parallel to the primary level control system.

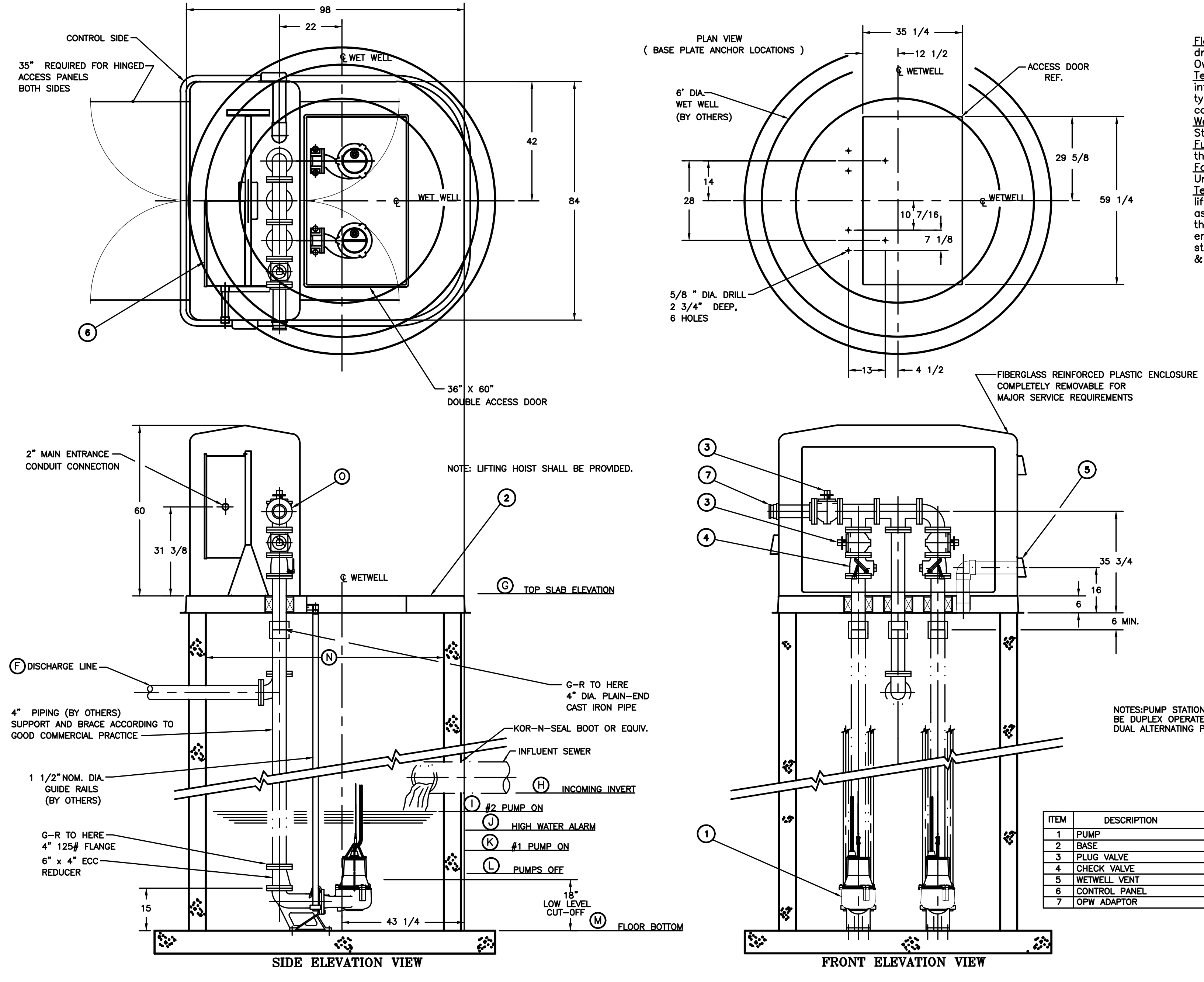
Terminal Box: Connection of pump power cables to the control panel shall be accomplished by extending through the station floor and directly into the panel without the use of a separate junction box. Penetrations through the station floor shall be sealed around cables with compression type cable seals. A Nema 4X junction box shall be provided for connection of the redundant high water alarm float cables complete with compression cable seal. Compression cable seals shall provide necessary cable strain relief.

Wet well: Furnish and install appropriately sized strain relief for pump cords. Strain relief shall be installed to facilitate easy removal of the Strain relief shall be installed to facilitate easy removal of the pumps or floats without entering the wet well.

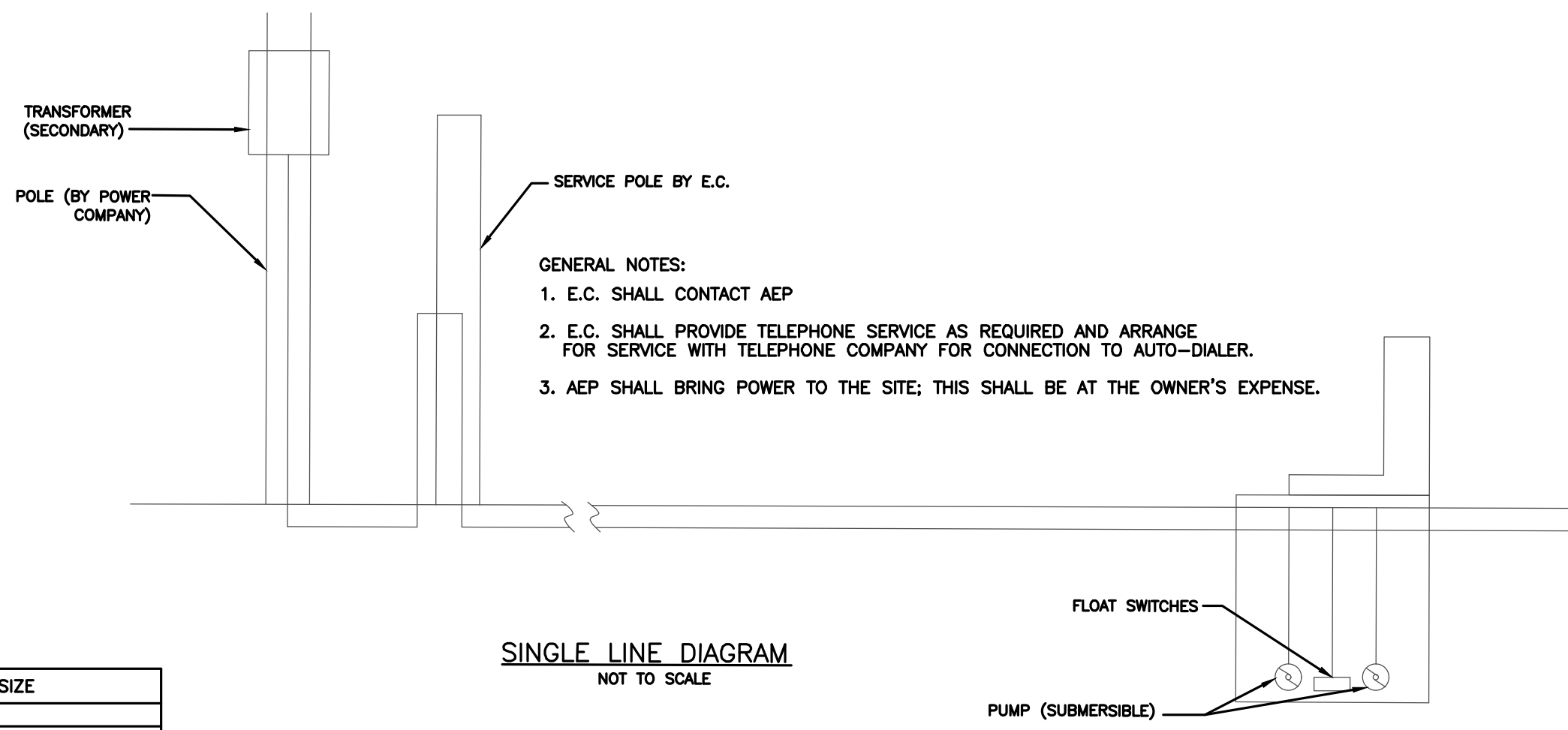
Fuses: Provide and install Class RK-5 fuses for each fused disconnect. Fuses shall be sized in accordance with the requirements of the NEC. Provide 3 spare fuses of each size installed and deliver same to the owner's representative.

Fasteners and Hardware: All fasteners and hardware for this installation shall be galvanized or stainless steel. Use P-1000 galvanized Unistrut or equal for mounting the disconnect at the well site. The use of perforated and/or painted structural materials is prohibited.

Telephone Dialer: Furnish and install a Sensaphone 1400, Verbatim, or approved equivalent telephone dialer to monitor fault conditions at the proposed lift station. Connect power and telephone circuits to said dialer through an Isotel FDG0023 surge protector. Provide programming and battery back-up as directed by the Engineer. Install the telephone dialer and surge protection along with a Daytona 2E919 strip heater, a Daytona 2E552 thermostat, a duplex GFI outlet, and a heavy duty touch tone telephone in an adequately sized NEMA 4 stainless steel enclosure. The enclosure shall be pad lockable with hinged cover. Dialer/Telemetry is not furnished as part of the packaged lift station. The package lift station manufacturer shall provide the following control contacts for Dialer/Telemetry interface; high water alarm, Pump 1 and Pump 2 "Run", & low water alarm.



LIFT STATION DATA	PLAN VIEW SHEET NUMBER	PUMP SIZE G.P.M. (A)	TOTAL DYNAMIC HEAD (B)	LIFT STATION VOLTAGE (C)	LIFT STATION PHASE (D)	PUMP MAXIMUM R.P.M. (E)	DISCHARGE PIPING SIZE (F)	TOP SLAB ELEVATION (G)	INCOMING INVERT(S) (H)	No. 2 PUMP ON (I)	HIGH WATER ALARM (J)	No. 1 PUMP ON (K)	PUMPS OFF (L)	FLOOR BOTTOM ELEVATION (M)	LIFT STATION DIAMETER (N)	BYPASS DIAMETER (O)
LS-1	17	80	135	480	3 Ø	3450	4"	806.01	796.00 796.01	796.00	795.75	795.25	794.00	792.50	6'-0"	4"



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GRINDER PUMP NOTES

The lift station wet well and valve vault shall be constructed of standard precast concrete O-ring joint manhole sections and bottoms using an 8" precast reinforced concrete top slab as provided by United Precast, E.C. Babbert, or equivalent and/or as modified herewith. A padlock shall be provided by the Contractor matching the owner's standard. The Ductile Iron Pipe in the wet well and valve vault shall be AWWA C 151 or ANSI A21.51, Class 53 Ductile Iron Pipe with flanged or mechanical joints. Fittings shall be AWWA C 110, Class 250. Material and equipment meeting the requirements listed herein shall be provided and installed along with all necessary accessories to provide a complete serviceable facility. The Contractor shall submit six (6) copies of all shop and equipment drawings for approval prior to ordering or installing any equipment or materials. The top slab shall not be poured until the openings and anchor bolts spacing are determined from the approved shop drawings of the electrical enclosure and equipment. The electrical conduit, 1" pipes, and anchor bolts shall be galvanized. The opening shall be caulked after installation of the pipe and fittings.

Two submersible sewage pumps shall be provided. Each unit shall be capable of pumping (A) gallons per minute at (B) feet total dynamic head, while operating on (C) volts, 60 cycle, (D) phase power. The pump speed shall not exceed (E) rpm. The pumps and discharge piping shall be designed to pass solids up to 3 inches in diameter. Pump and motor case shall be made from heavy close-grain cast iron with stainless steel shaft and fittings. The impeller shall be of the solids-handling type designed to pump raw sewage and wastewater. Each motor shall have two mechanical seals installed in tandem with an oil chamber between pump and motor. Motor shall have built-in thermal over-temperature protection with automatic reset. The motor shall be sized to be non-overloading throughout the curve exclusive of the service factor. The inner seal chamber of each pump shall have two moisture sensing probes. Each pump shall have sufficient multi-conductor cable, with ground wire, power leads, thermal detector leads, and moisture sensor leads. Pumps shall be Myers, ABS Piranha, or approved equiv. Submersible Non Clog Pump, and supplied with manufacturer's standard five (5) year minimum warranty.

**Scope:** Work covered by this specification shall include all labor and material required to extend new electric and telemetry services to the proposed lift station(s). It is the intent of this specification that the Contractor also provide incidental items that may not be delineated herein but are required for a complete and operable system.

**Existing Conditions:** The Contractor shall visit the site and become familiar with all existing conditions which may affect his work and he must consider same as part of his bid. No additional compensation will be allowed for the Contractor's failure to become aware of existing conditions.

**Permit and Inspection:** The Contractor is required to obtain and pay for all permits and inspections required in the prosecution of this contract. The Contractor is also required to hold a valid Qualification Certificate as issued by the State of Ohio, Department of Industrial Relations, Ohio Construction Industry Examining Board. In the event that there is no local inspecting authority, the Contractor shall procure a Certificate of Plan Approval and necessary inspection from the State of Ohio, Department of Industrial Relations, Division of Factory and Building Inspection as required by law.

**Codes:** All electrical work for this project shall be installed in accordance with the latest editions of the National Electric Code (NEC) and all state and local codes. Said codes shall be considered the minimum standard for materials and methods not otherwise covered in this specifications.

**Grounding:** Ground all electrical equipment furnished or connected under this contract in accordance with Article 250 of the NEC. Size all grounding conductors as required by the appropriate tables in said article.

**Conduit:** All wiring shall be installed in conduit. Rigid galvanized steel conduit shall be used for above grade wiring and schedule 40 PVC may be used for wiring installed below grade.

**Wire:** All wire shall be stranded copper with THHN/THWN insulation. Conductors sizes shall be selected so that the maximum voltage drop does not exceed 3% of the nominal service voltage for the entire length of the circuit involved. Calculations shall be based on resistance values stated in Chapter 9 of NEC.

**Service Disconnect:** Furnish and install a service entrance rated (per Article 230-66 NEC), NEMA 3R, fused disconnect switch at the lift station site. Provide one class RK-5 and one additional spare fuse for each fuse holder in said disconnect. Service disconnect and fuses shall be sized appropriately for the voltage and load to which they are connected. Fuses shall comply with other requirements listed in this specification. A surge arrester shall be installed on the load side of service entrance disconnect. The service disconnect shall be padlockable in the off and on position.

**Manual Transfer Switch:** Provide a double throw NEMA 3R manual transfer switch with the same number of poles and voltage rating as the aforementioned service disconnect. The amperage rating shall be the same as the service disconnect or stand-by generator output, whichever ever is the higher. If the transfer switch selection is based on the output of the generator, it shall be fused with the same type and size fuses used in the service disconnect. The manual transfer switch shall be mounted in the control panel. The manual transfer switch shall incorporate a positive mechanical interlock with the service disconnect device.

**Generator Receptacle:** Furnish and install a generator receptacle compatible with the owner's stand-by generator. If the owner does not presently have a stand-by generator, provide a receptacle and mating plug of the same voltage, amperage and number of poles as the service disconnect. The generator receptacle and plug shall be suitable for reverse service.

**Power Company:** The service entrance equipment, conductors and installation shall be in accordance with the local electric utility company requirements. The Contractor shall provide all labor and material not furnished by said utility company.

**Control Panel:** The pump control panel shall be fabricated by a company with at least five (5) years experience in the manufacturing of similar control panels and shall comply with the following:

- The enclosure will be NEMA 4X stainless steel with a blank outer door. The selector switches, pilot lights, elapsed time totalizers, push buttons, duplex GFI receptacle and other through the panel components shall be mounted in a dead front swing out panel housed within the enclosure. Motor circuit protectors, circuit breakers, starters, relays, transformer, alternator and terminal strips will be mounted on a sub-panel behind the aforementioned swing out panel.
- Motor circuit protectors shall be provided for each pump motor and a circuit breaker for the control power transformer. They shall be of the proper ampacity for the load to which they are connected and have operating mechanisms extending through the dead front swing out panel.
- Control power transformer size shall be adequate for the sum of all loads connected plus an additional 500 VA for the above mentioned duplex receptacle. Provide separate fusing or circuit breakers for the control circuit and the duplex receptacle.
- Motor starters shall be properly sized for the motors they serve and shall be NEMA rated with interchangeable overload heaters. IEC starters and adjustable trip overload relays are not approved and shall not be substituted.
- Selector switches, push buttons and pilot lights shall be NEMA style 30.5 mm oilite series. IEC or miniature series are not acceptable. Pilot lights shall be push-to-test transformer type with #755 or 1866 lamps.
- In accordance with the requirements of "Ten State Standards," provide intrinsically safe relays for all wetwell float switches. Low current interpose relays shall be wired to the output of the intrinsically safe relays for transient protection of said relays. All other relays shall be NEMA rated.
- Provide an alternator to automatically alternate pump operation. In addition to the automatic alternator, provide a three position selector switch to override said alternator and manually select the lead and lag pumps.
- Control and interconnecting wiring shall be copper, type MTW, neatly bundled and in plastic raceway. Provide insulated crimp lugs as required. Terminals with more than one wire each must be approved for that purpose.
- Integral motor thermal protection and pump seal failure detectors may be included as part of the pump package. When these are provided, they shall be wired in accordance with the pump manufacturer's recommendation.
- Elapsed time totalizers shall be provided for each pump motor. They shall be non-resettable hour meters and wired parallel to the holding coil of the motor starter.
- Provide audible and visual alarms to indicate high level in the wet well. Include the necessary relays and push buttons to silence the audible alarm while maintaining the visual alarm until the alarm condition has been corrected.
- Provide a Blower for panel ventilation with panel mounted inlet including louvers and filter ass'y. Inlet and blower are to be located at upper side of panel. The outlet ventilation opening is to be located on the lower panel side opposite the inlet opening. The outlet opening is to be covered with a louver and screen ass'y. The ventilation blower is to be thermostatically controlled.
- Provide a control panel heater with thermostatically controlled switches.

**Float Switches:** Furnish and install float switches in the wetwell for control of the pumps and alarm at the levels indicated on the contract drawings. Float switches shall be mercury tube type encapsulated in polyurethane resin with an outer seal of vinyl and equal to Buskirk and Owens #1900 or #1901, Flyght, or approved equivalent.

**Wetwell:** Furnish and install appropriately sized stainless steel strain relief for pump and float switch cords. Suspend strain relief from stainless steel hooks or other supporting devices anchored near the hatch. Strain relief shall be installed to facilitate easy removal of the pumps or floats without entering the wetwell.

for pump removal. Grinder pump station hoist shall be Halliday Series DA or approved equal.

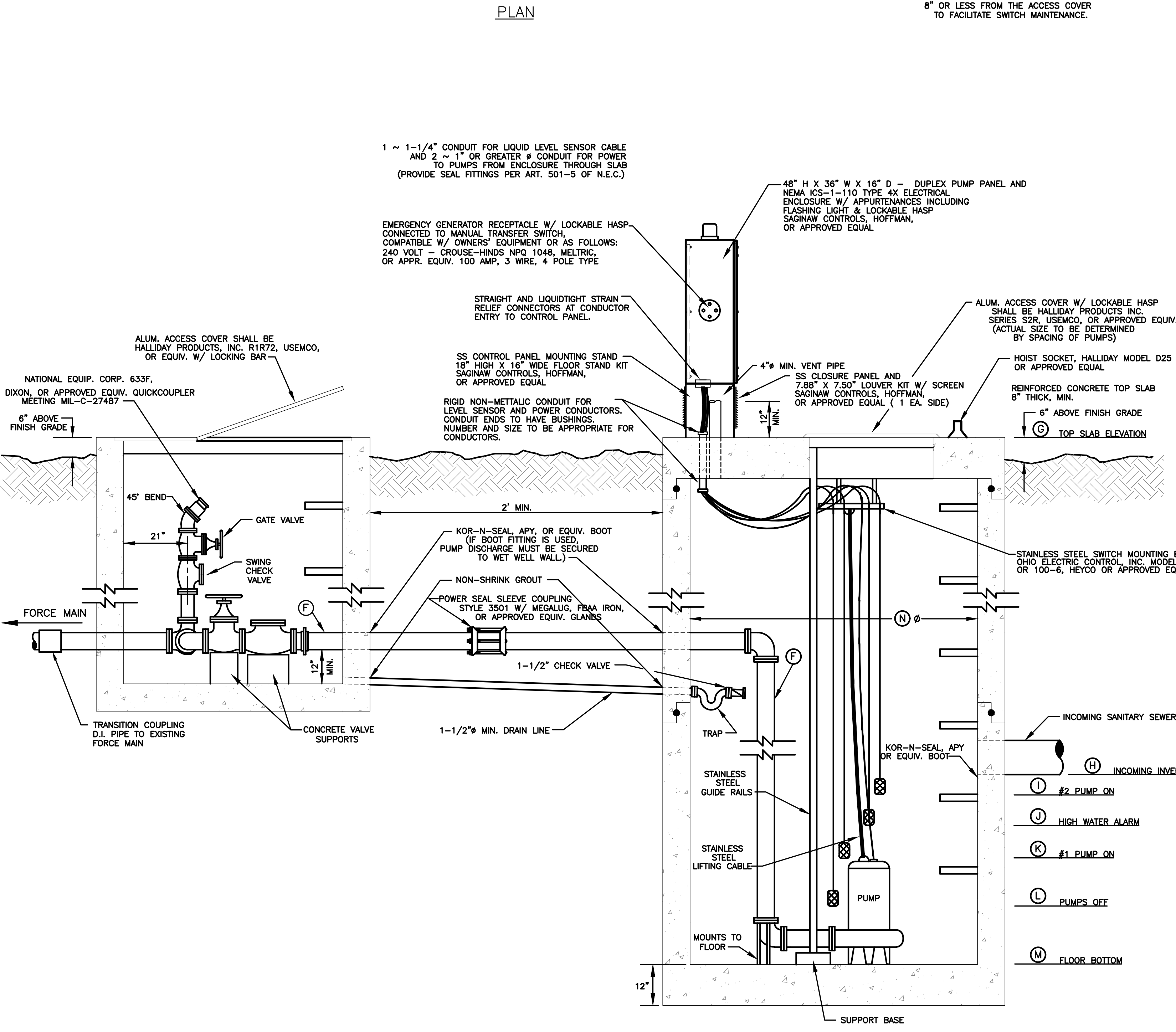
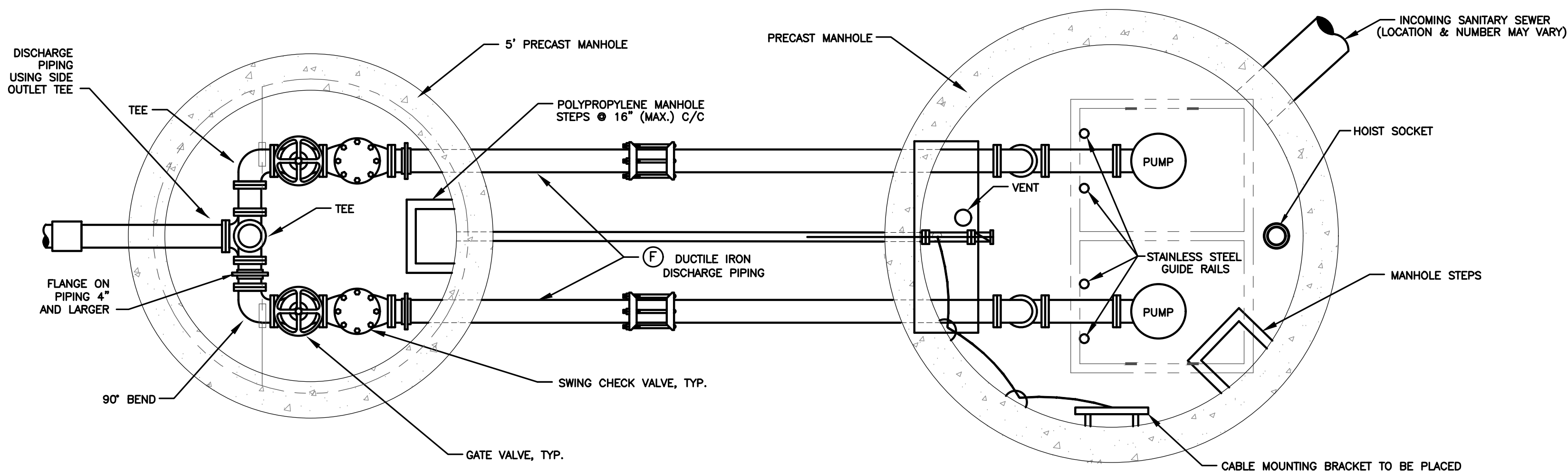
**Fuses:** Provide and install Class RK-5 fuses for each fused disconnect. Fuses shall be sized in accordance with the requirements of the NEC. Provide 3 spare fuses of each size installed and deliver same to the owner's representative.

**Fasteners and Hardware:** All fasteners and hardware for this installation shall be galvanized or stainless steel. Use P-1000 galvanized Unistrut or equal for mounting the disconnect at the well site. The use of perforated and/or painted structural materials is prohibited.

**Telemetry:** Furnish and install a Sensaphone Express II, Verbatim, or approved equiv. telephone dialer to monitor fault conditions at the proposed lift station. Connect power and telephone circuits to said dialer through an Isotel FDG0023 surge protector. Provide programming and battery back-up as directed by the Engineer. Install the telephone dialer and surge protection along with a Daytona 2E919, ULANET, or approved equiv. strip heater, a Daytona 2E552, ULANET, or approved equiv. thermostat, a duplex GFI outlet, and a heavy duty touch tone telephone in an adequately sized NEMA 4 stainless steel enclosure. The enclosure shall be padlockable with hinged cover.

GRINDER PUMP DATA	PLAN VIEW SHEET NUMBER	PUMP SIZE G.P.M. (A)	TOTAL DYNAMIC HEAD (B)	GRINDER PUMP VOLTAGE (C)	GRINDER PUMP PHASE (D)*	PUMP MAXIMUM R.P.M. (E)	DISCHARGE PIPING SIZE (F)	TOP SLAB ELEVATION (G)	INCOMING INVERT(S) (H)**	Pump No. 2 ON (I)	High Water Alarm (J)	Pump No. 1 ON (K)	PUMPS OFF (L)	FLOOR BOTTOM ELEVATION (M)	GRINDER PUMP DIAMETER (N)
GP-1	5	20	38	240	3 Ø	3450	2"	825.38	820.02	820.00	819.75	819.25	818.50	817.00	4'-0"
GP-2	9	20	70	240	3 Ø	3450	2"	842.25	832.60 832.59	832.50	832.25	831.75	831.00	829.50	4'-0"

- NOTES:
- \*GRINDER PUMP SHALL BE 3Ø. IF 3 Ø POWER IS UNAVAILABLE, THE GRINDER PUMP STATION CONTROL PANEL SHALL INCLUDE VFD'S TO CONVERT POWER TO 3Ø.
  - GP WILL REQUIRE A 1" CLA-VAL SERIES 33A OR APPROVED EQUIVALENT COMBINATION AIR RELEASE/VACUUM BREAKER VALVE ON HEADER PIPE WITH DRAIN BACK TO WET WELL.
  - \*\*CONTRACTOR TO FIELD VERIFY INVERT BEFORE ORDERING GRINDER PUMP WET WELL.



1 ~ 1-1/4" CONDUIT FOR LIQUID LEVEL SENSOR CABLE AND 2 ~ 1" OR GREATER Ø CONDUIT FOR POWER TO PUMPS FROM ENCLOSURE THROUGH SLAB (PROVIDE SEAL FITTINGS PER ART. 501-5 OF N.E.C.)

EMERGENCY GENERATOR RECEPTACLE W/ LOCKABLE HASP CONNECTED TO MANUAL TRANSFER SWITCH, COMPATIBLE W/ OWNERS' EQUIPMENT OR AS FOLLOWS: 240 VOLT - CROUSE-HINDS NFG 1048, MELTRIC, OR APPR. EQUIV. 100 AMP, 3 WIRE, 4 POLE TYPE

NATIONAL EQUIP. CORP. 633F, DIXON, OR APPROVED EQUIV. QUICKCOUPLER MEETING MIL-C-27487

SS CONTROL PANEL MOUNTING STAND 18" HIGH X 16" WIDE FLOOR STAND KIT SAGINAW CONTROLS, HOFFMAN, OR APPROVED EQUAL

ALUM. ACCESS COVER SHALL BE HALLIDAY PRODUCTS, INC. R1R72, USEMCO, OR EQUIV. W/ LOCKING BAR

STRAIGHT AND LIQUIDTIGHT STRAIN RELIEF CONNECTORS AT CONDUCTOR ENTRY TO CONTROL PANEL.

45° BEND

RIGID NON-METALLIC CONDUIT FOR LEVEL SENSOR AND POWER CONDUCTORS. CONDUIT ENDS TO HAVE BUSHINGS. NUMBER AND SIZE TO BE APPROPRIATE FOR CONDUCTORS.

21"

KOR-N-SEAL, APY, OR EQUIV. BOOT (IF BOOT FITTING IS USED, PUMP DISCHARGE MUST BE SECURED TO WET WELL WALL)

FORCE MAIN

NON-SHRINK GROUT

12" MIN.

POWER SEAL SLEEVE COUPLING STYLE 3501 W/ MEGALUG, FBAA IRON, OR APPROVED EQUIV. GLANDS

CONCRETE VALVE SUPPORTS

1-1/2" CHECK VALVE

TRANSITION COUPLING D.I. PIPE TO EXISTING FORCE MAIN

1-1/2" Ø MIN. DRAIN LINE

TRAP

STAINLESS STEEL GUIDE RAILS

12"

STAINLESS STEEL LIFTING CABLE

MOUNTS TO FLOOR

SUPPORT BASE

INCOMING SANITARY SEWER

INCOMING INVERT

#2 PUMP ON

HIGH WATER ALARM

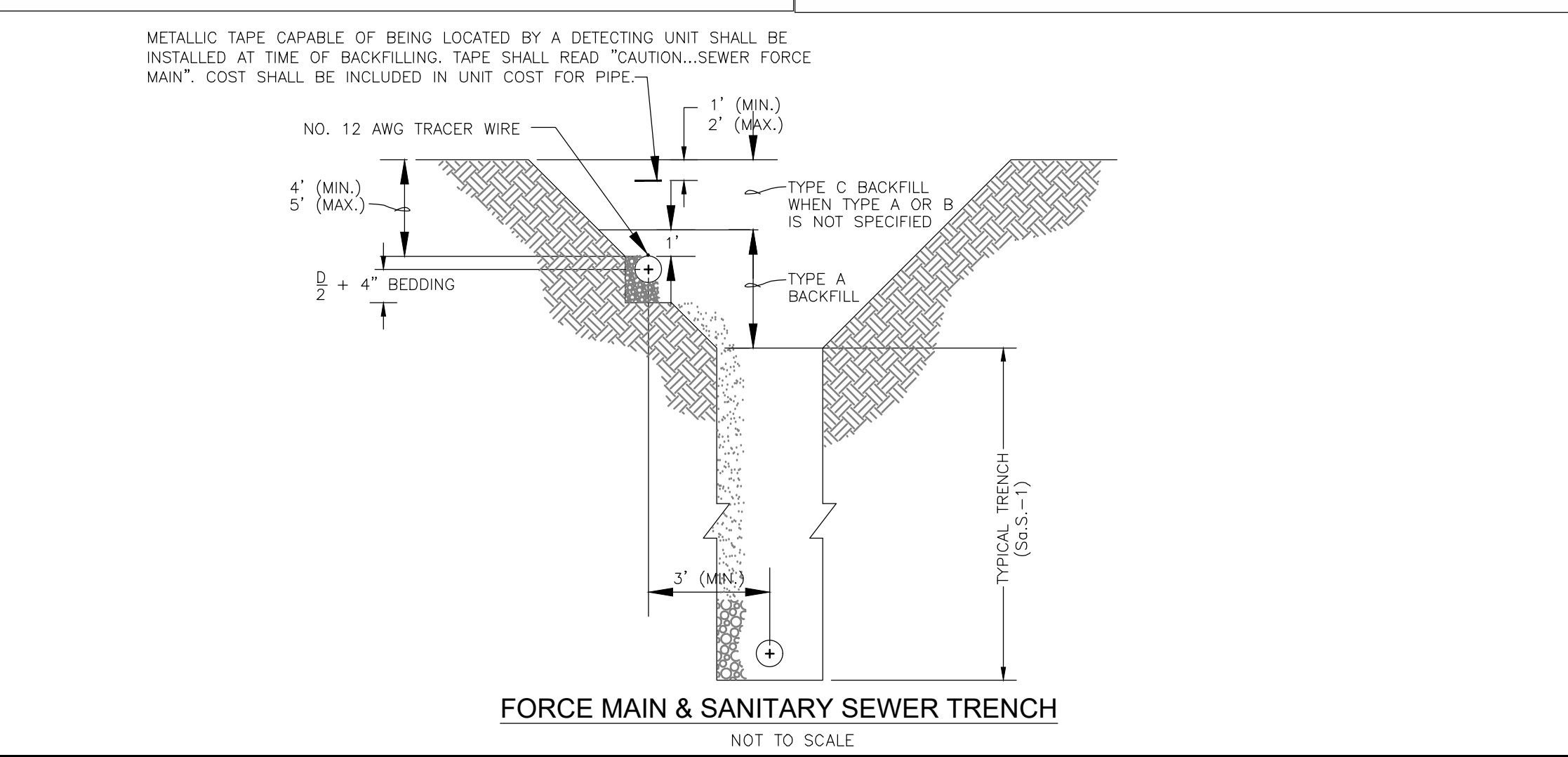
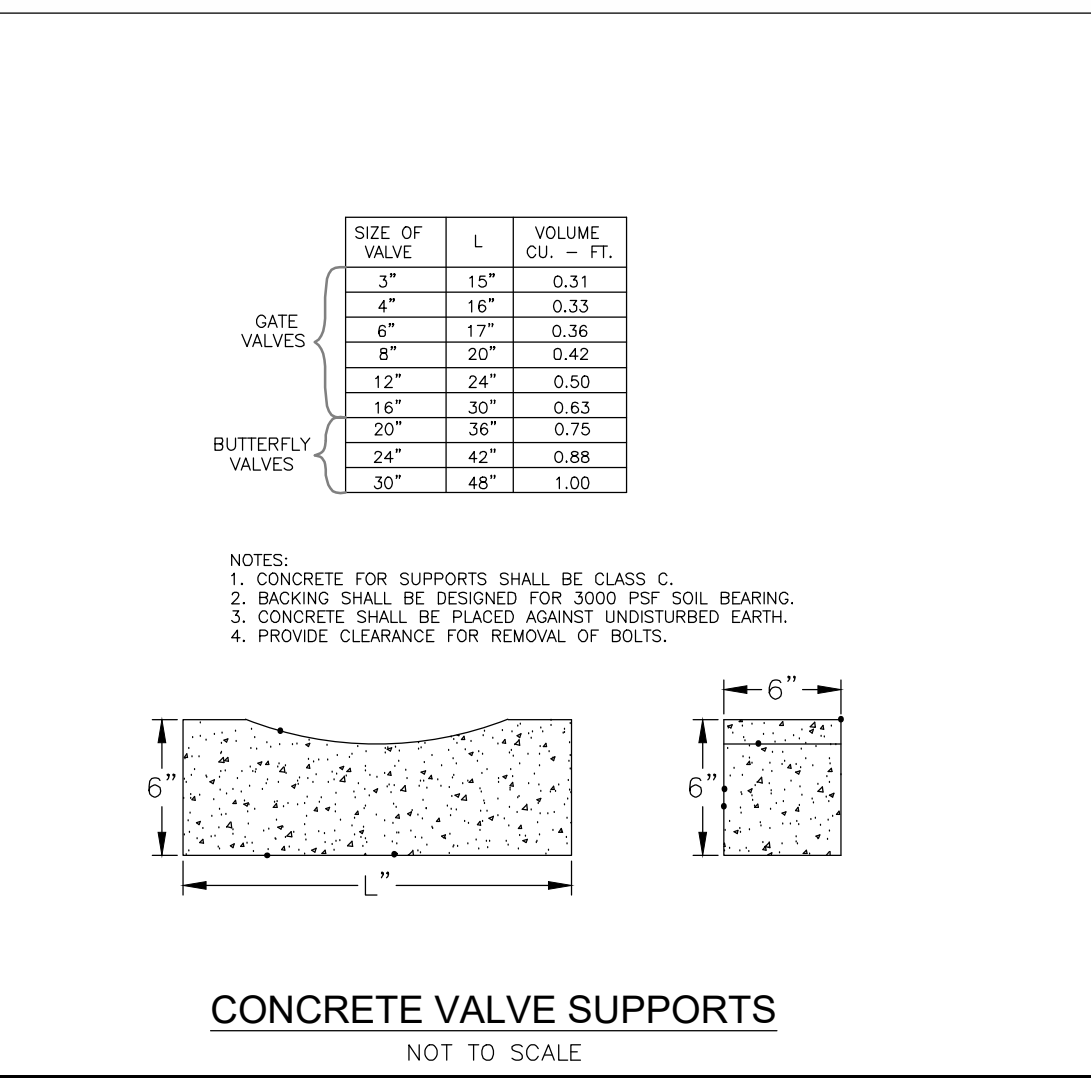
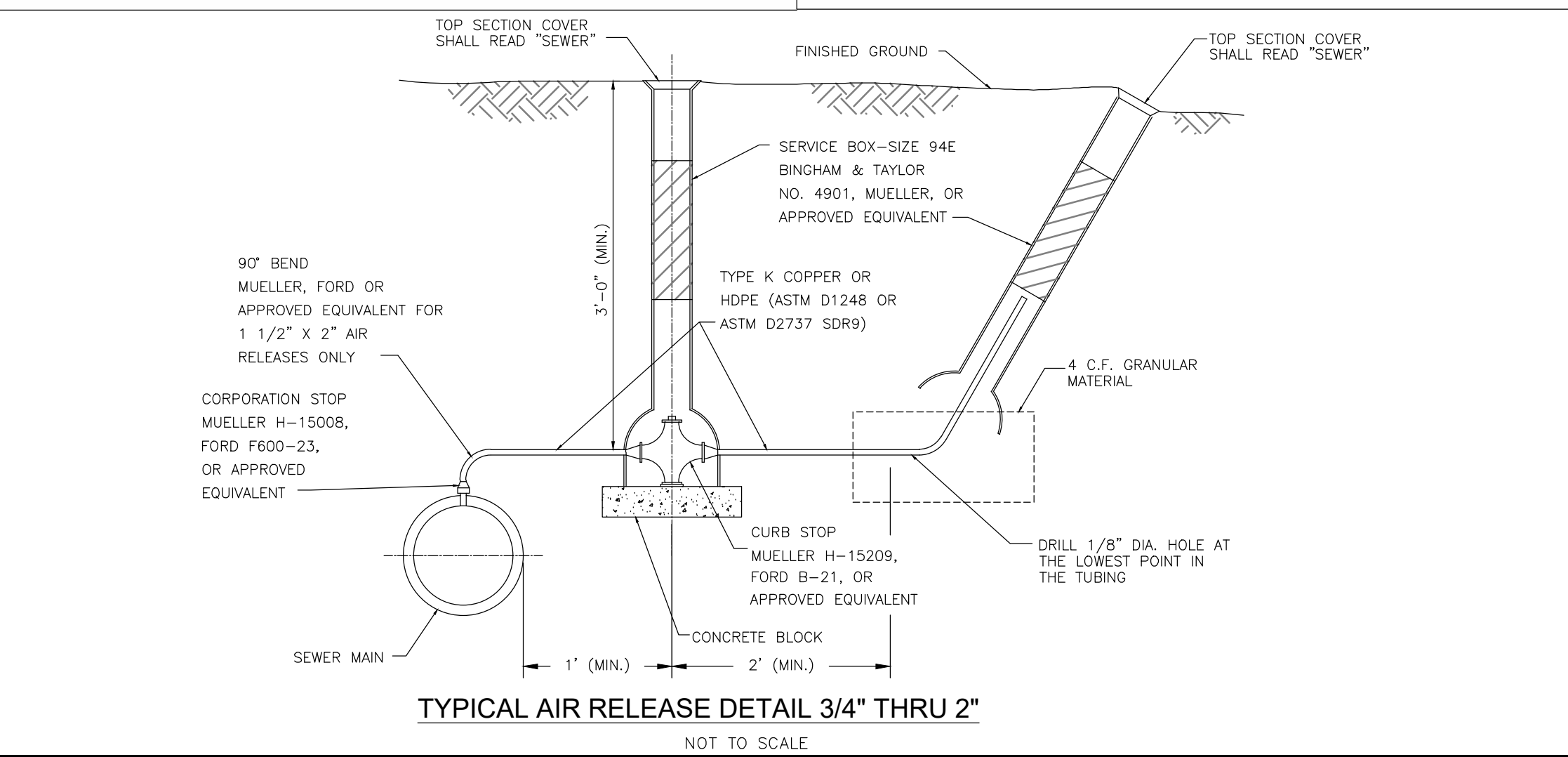
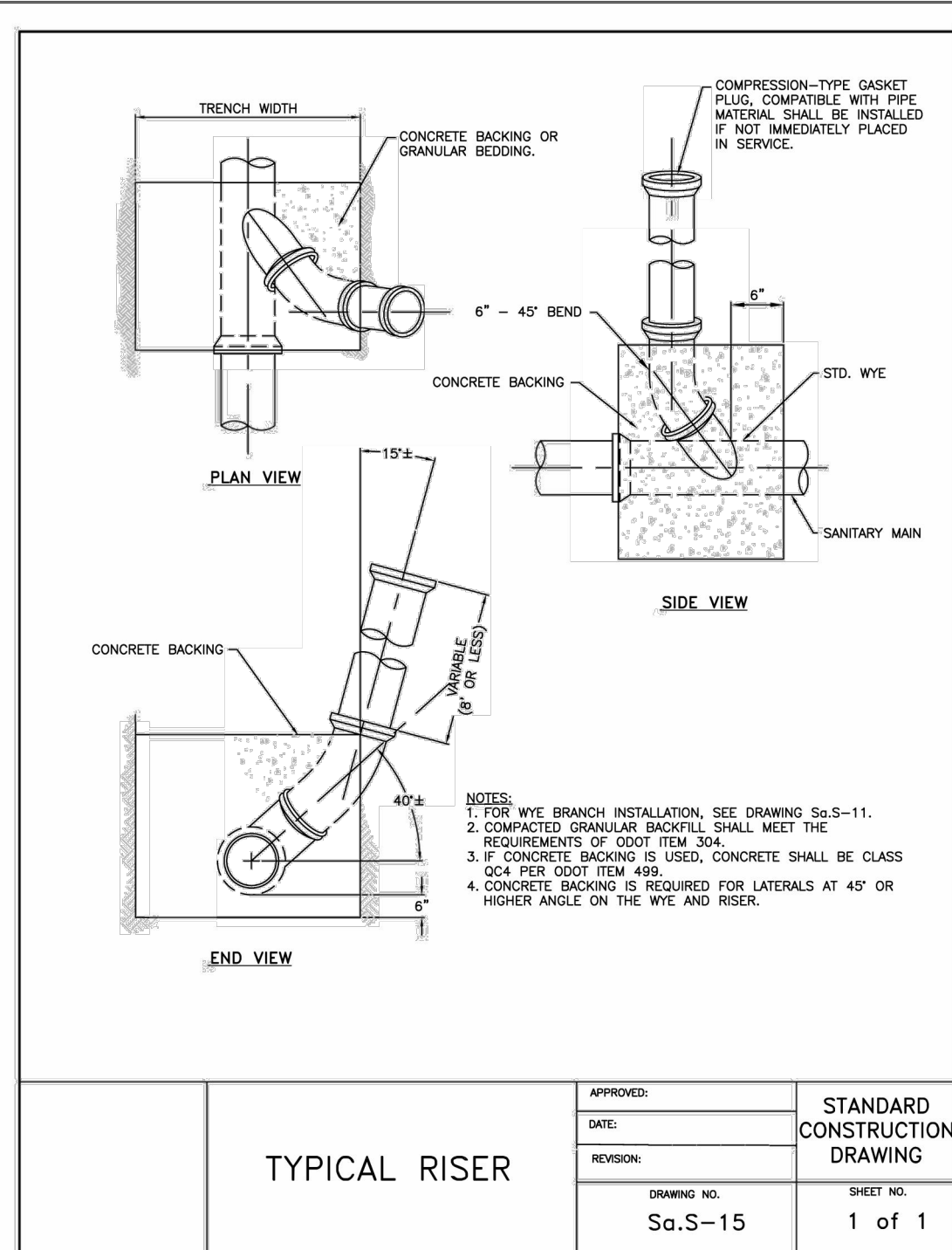
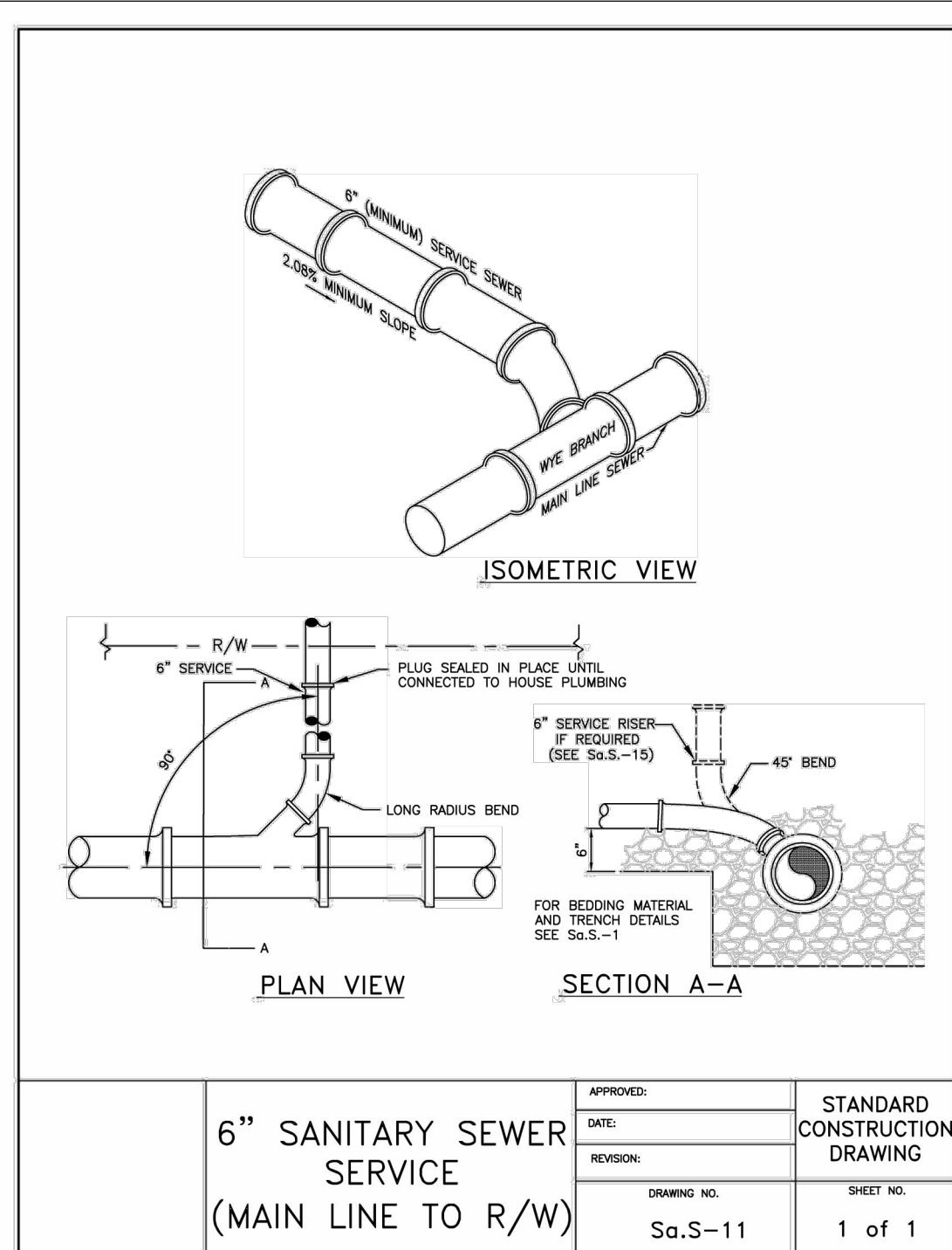
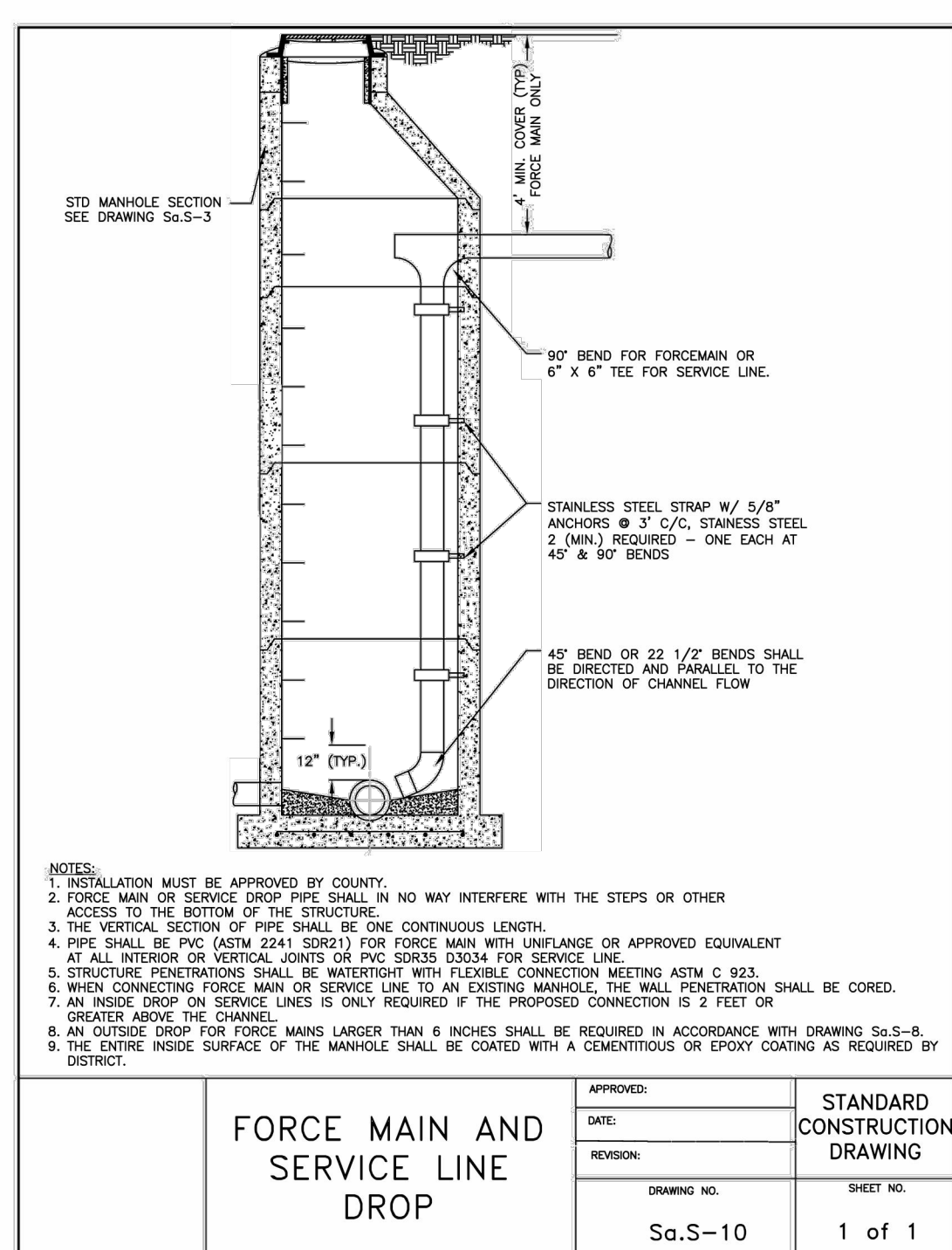
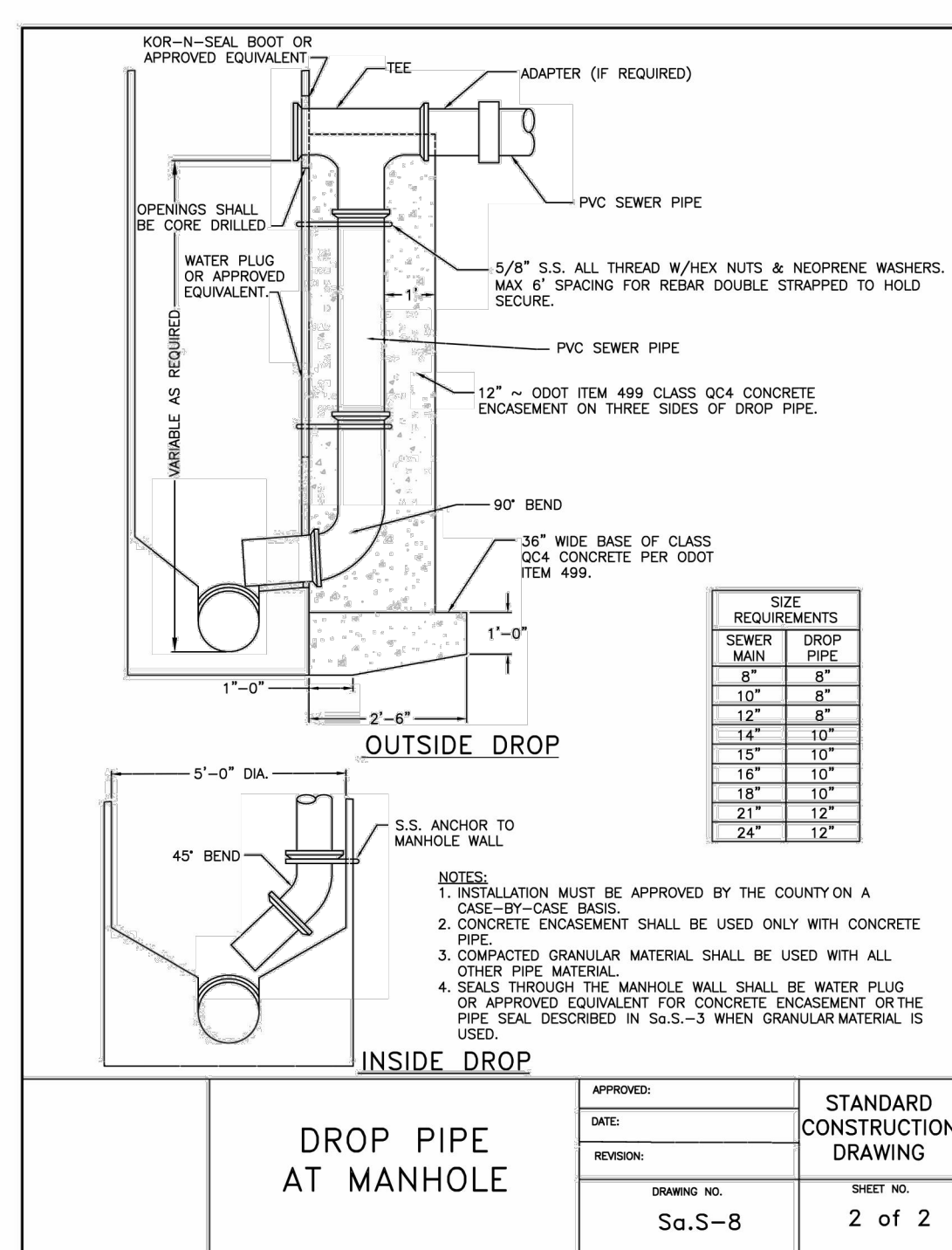
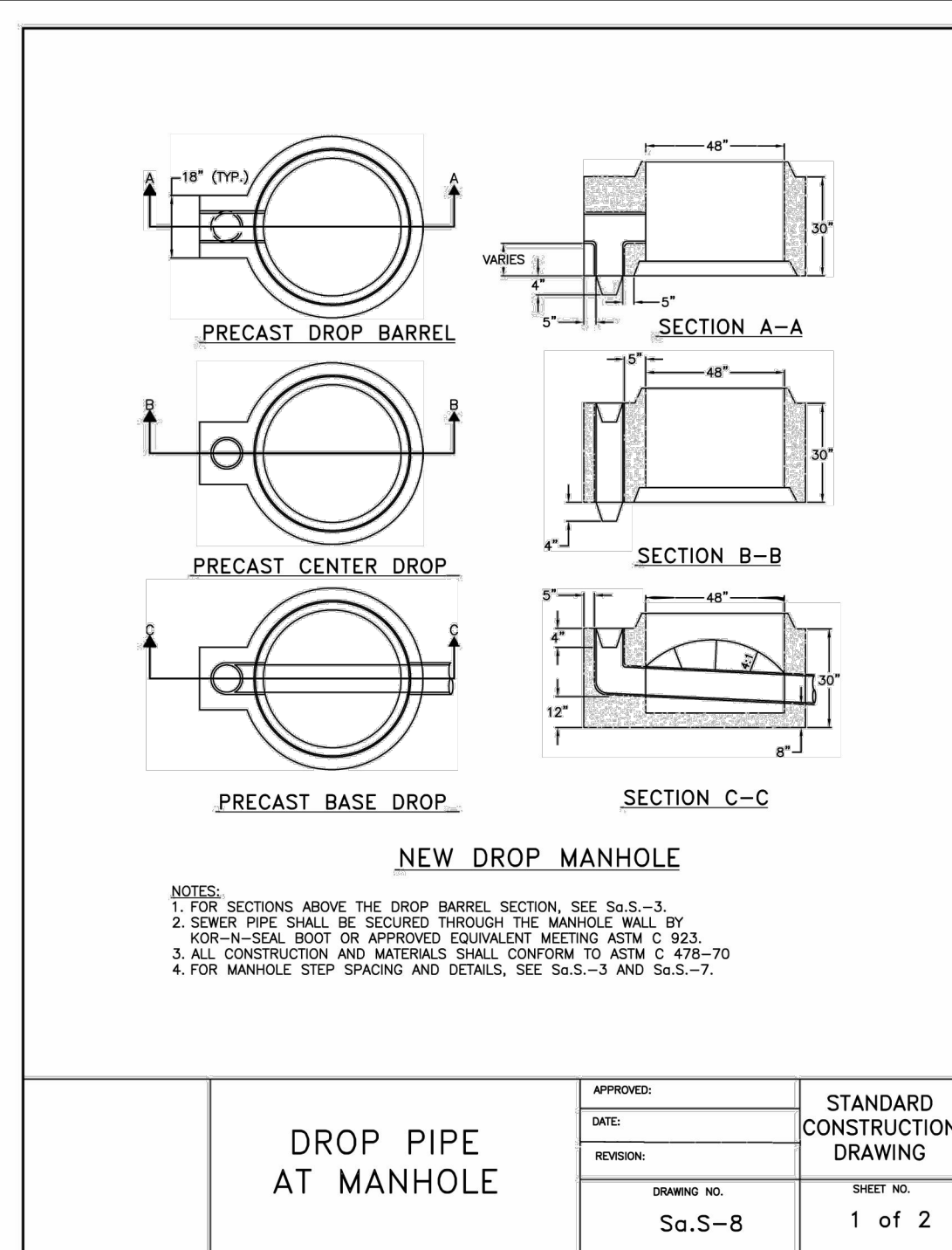
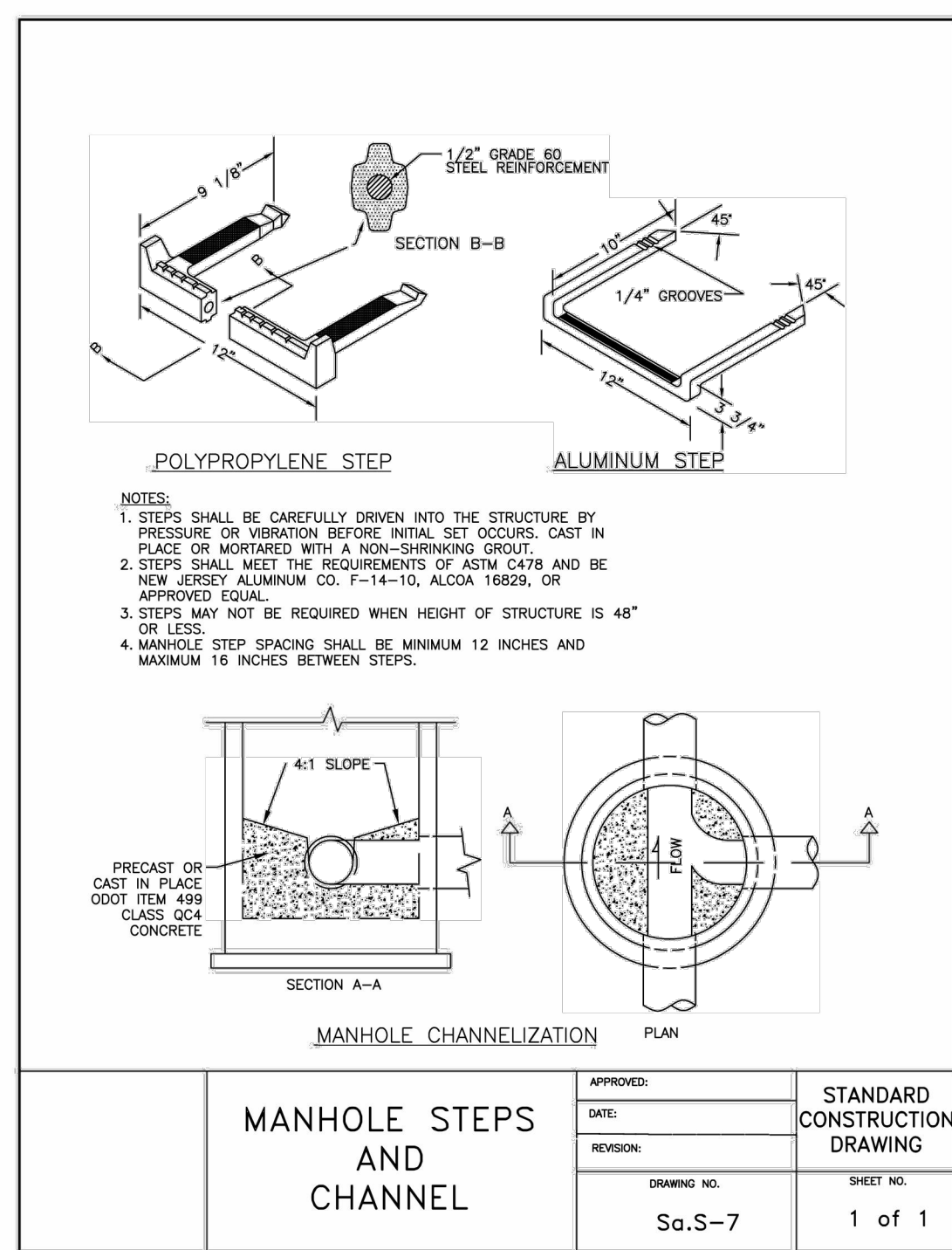
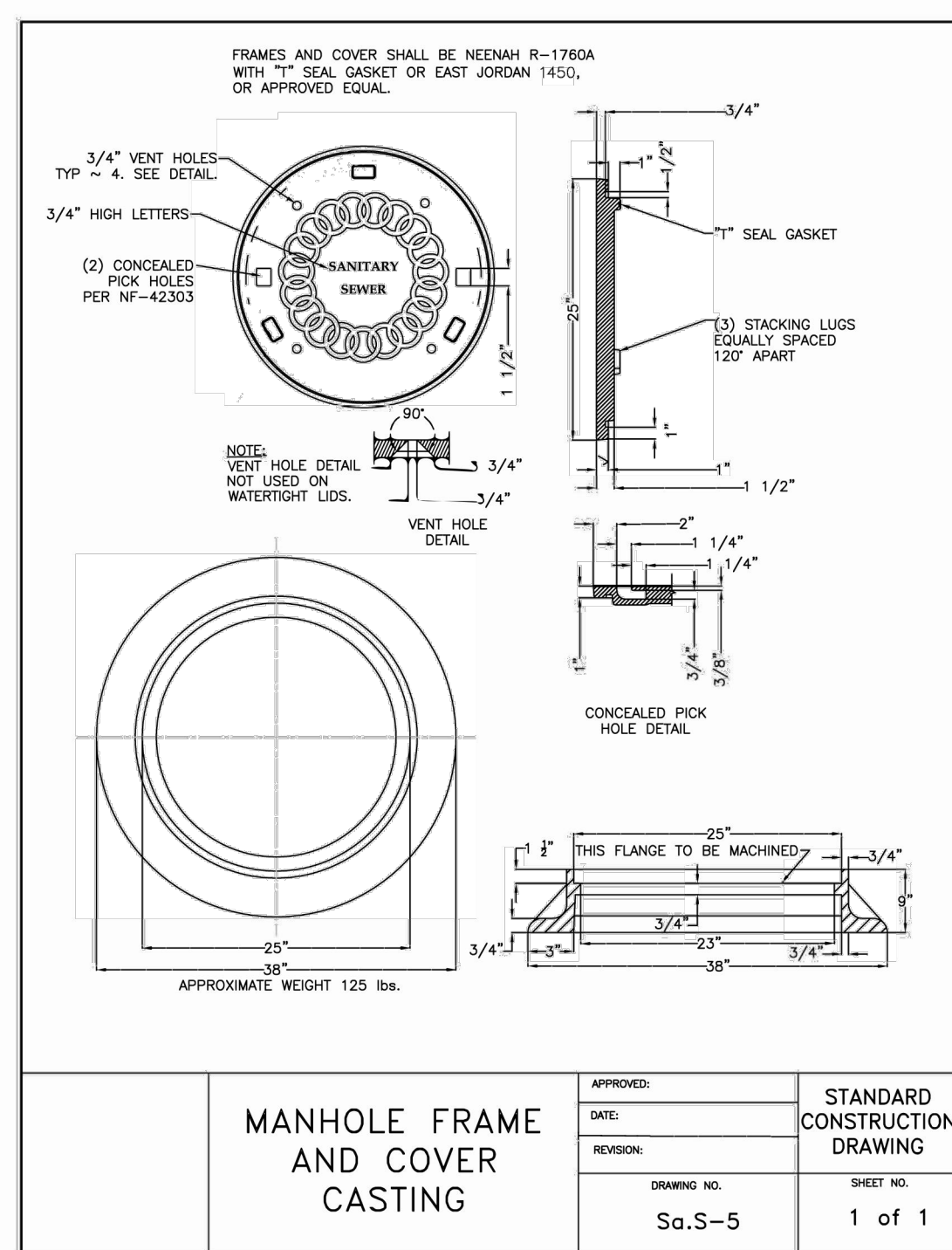
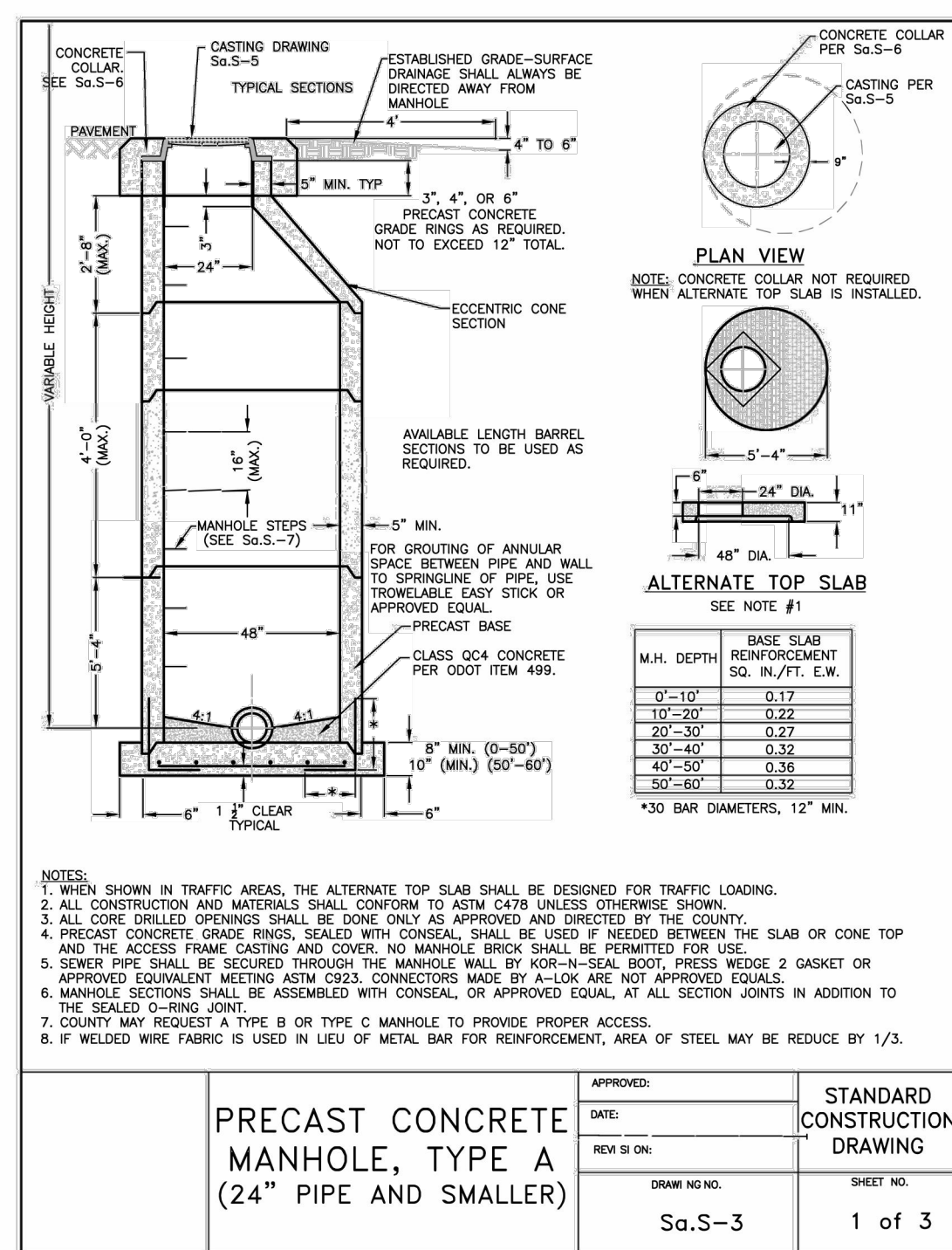
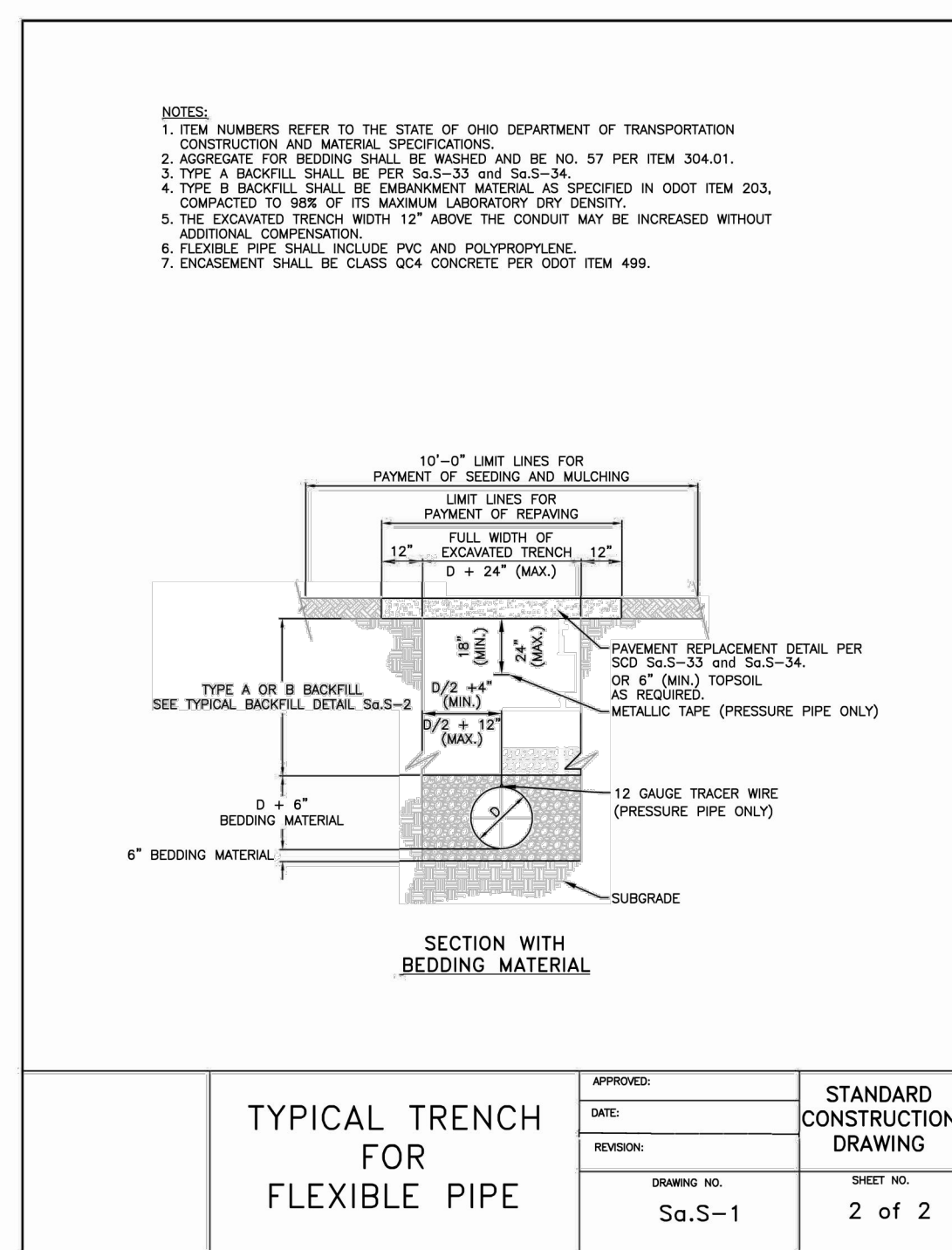
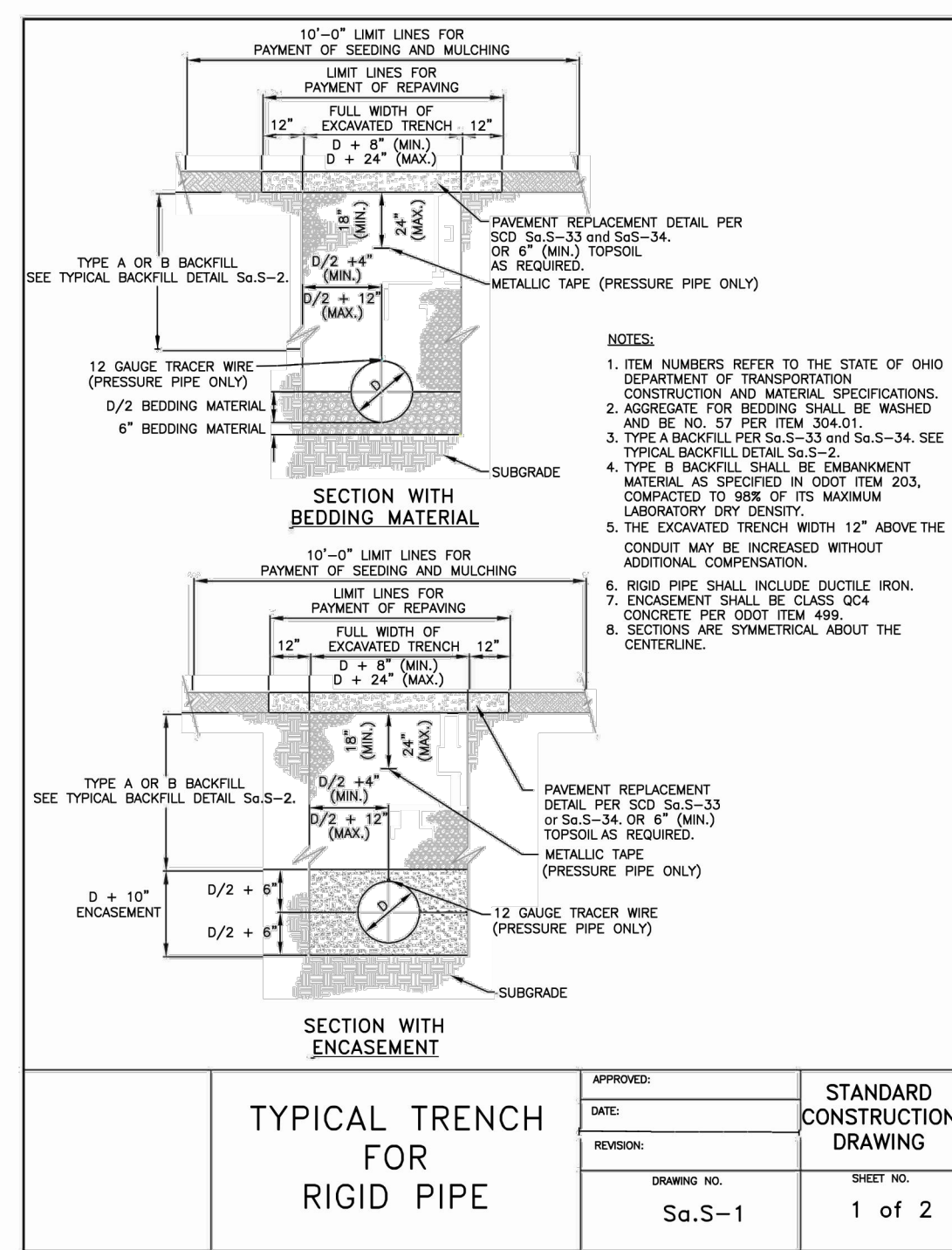
#1 PUMP ON

PUMPS OFF

FLOOR BOTTOM

2"

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**UNDERGROUND UTILITIES**

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OHIO UTILITIES PROTECTION SERVICE

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REVISIONS	
DATE	DESCRIPTION

30661 RED ROCK COURT LOGAN, OHIO 43138  
(740) 380-2828  
FAX (740) 380-3535  
DLZ OHIO, INC

DESIGN GDS  
DRAWN TJS  
SCALE NTS

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Table with 3 columns: REVISIONS, BY, DESCRIPTION, DATE

DLZ logo and contact information: 30661 RED ROCK COURT LOGAN, OHIO 43138 (740) 380-2828 FAX (740) 380-3535 DLZ OHIO, INC

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Drain tile and underdrain replacement details. Includes diagrams of existing drain and proposed sanitary sewer, and a table of casing pipe specifications.

CARRIER INSIDE DIAMETER	CASING MINIMUM DIAMETER	MINIMUM WALL THICKNESS
2"	8"	0.188"
3"	10"	0.188"
4"	10"	0.188"
6"	14"	0.219"
8"	14"	0.219"
10"	18"	0.250"
12"	20"	0.281"
15"	24"	0.344"
18"	24"	0.344"
18"	28"	0.406"
20"	28"	0.406"
24"	36"	0.469"
27"	42"	0.500"
30"	42"	0.500"
36"	48"	0.675"

APPROVED: [Signature] DATE: [Date] SHEET NO. 1 of 1  
STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-18

Casing pipe details. Includes plan, side, and end views of casing pipe installation with notes on spacing and bedding.

APPROVED: [Signature] DATE: [Date] SHEET NO. 1 of 1  
STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-17

Typical riser details. Includes plan, side, and end views of a riser pipe installation.

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STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-15

Optional dual lateral extension details. Includes plan and top views of a dual lateral extension.

APPROVED: [Signature] DATE: [Date] SHEET NO. 1 of 1  
STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-13

6" sanitary sewer service (R/W to building) details. Includes plan and detail views of a 6-inch sanitary sewer service.

APPROVED: [Signature] DATE: [Date] SHEET NO. 1 of 1  
STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-12

Concrete valve supports details. Includes diagrams of concrete supports for valves and a table of dimensions.

SIZE	L	V
4"	15	0.31
6"	19	0.33
8"	23	0.42
10"	27	0.50
12"	31	0.63
16"	39	0.75
24"	42	0.88
30"	48	1.00

APPROVED: [Signature] DATE: [Date] SHEET NO. 1 of 1  
STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-25

Backing for vertical bends (over bends only) details. Includes diagrams of backing for 90-degree and other bends.

APPROVED: [Signature] DATE: [Date] SHEET NO. 1 of 1  
STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-24

Backing for bends details. Includes diagrams of backing for various bend angles.

APPROVED: [Signature] DATE: [Date] SHEET NO. 1 of 1  
STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-23

Backing for tees details. Includes diagrams of backing for tee connections.

APPROVED: [Signature] DATE: [Date] SHEET NO. 1 of 1  
STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-22

Waterline crossing details. Includes diagrams showing the crossing of a waterline and a sanitary sewer.

APPROVED: [Signature] DATE: [Date] SHEET NO. 1 of 1  
STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-20

Driveway pavement replacement details. Includes diagrams for asphalt and concrete driveway pavement replacement.

APPROVED: [Signature] DATE: [Date] SHEET NO. 1 of 1  
STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-35

Trench typical section - County Roads details. Includes cross-section diagrams for temporary and permanent pavement.

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STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-34

Trench typical section - Township Roads details. Includes cross-section diagrams for temporary and permanent pavement.

APPROVED: [Signature] DATE: [Date] SHEET NO. 1 of 1  
STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-33

Standard valve box details. Includes diagrams of a standard valve box with drop lid and top/bottom views.

APPROVED: [Signature] DATE: [Date] SHEET NO. 1 of 1  
STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-27

Typical force main pressure pipe lowering details. Includes diagrams of a force main pipe being lowered into a trench.

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STANDARD CONSTRUCTION DRAWING  
DRAWING NO. Sa.S-26

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