CONDITION AT ALL TIMES.

- 2. EQUIPMENT AND/OR STOCKPILE MATERIAL SHALL NOT BE STORED IN THE DRIPLINE AREA
- 3. THE CONTRACTOR SHALL CONTACT TOWN OF MIDDLETOWN WATER/WASTEWATER DEPARTMENT AT LEAST 14 DAYS IN ADVANCE OF STARTING CONSTRUCTION.
- 4. THE CONTRACTOR SHALL CONTACT MISS UTILITY OF DELMARVA AT 1-800-282-8555 FOR UTILITY LOCATIONS WITHIN AND SURROUNDING CONSTRUCTION AREAS NOT LESS THAN 3 DAYS BEFORE PERFORMING ANY EXCAVATION.
- 5. THE CONTRACTOR SHALL ESTABLISH BENCHMARK ELEVATION DATUM IN ACCORDANCE WITH TOWN OF MIDDLETOWN WATER/WASTEWATER DEPARTMENT
- 6. THE CONTRACTOR SHALL PROVIDE TEMPORARY SEED AND MULCH FOR ALL AREAS WHERE SOIL IS EXPOSED AND SILT FENCE IS NOT SPECIFIED, BY THE CLOSE OF EACH BUSINESS
- 7. THE CONTRACTOR SHALL MAINTAIN PUBLIC ROADS AND STREETS IN A BROOM SWEPT
- 8. PIPE JOINTS TO BE RESTRAINED ARE SHOWN ON THE DRAWINGS.
- 9. THE CONTRACTOR SHALL USE ONLY NEW MATERIALS, PARTS, AND PRODUCTS. ALL MATERIALS SHALL BE STORED SO AS TO ASSURE THE PRESERVATION OF THEIR QUALITY AND FITNESS FOR THE INTENDED WORK.
- IO. MAINTENANCE OF TRAFFIC ALL WORK SHALL BE PERFORMED IN A MANNER THAT WILL ENSURE THE LEAST PRACTICABLE OBSTRUCTION TO TRAFFIC CONSISTENT WITH SAFETY AND SHALL COMPLY WITH THE DEPARTMENT MANUAL ENTITLED "TRAFFIC CONTROLS FOR STREETS AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY AND EMERGENCY OPERATIONS". THE MOST CURRENT VERSION OF THIS MANUAL IN EFFECT AT THE TIME O CONSTRUCTION SHALL BE USED. HEREINAFTER, THIS MANUAL SHALL BE REFERRED TO AS THE "TRAFFIC CONTROL MANUAL". THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN FOR APPROVAL BY THE ENGINEER BEFORE THE START OF THE PROJECT.
- II. ALL UTILITIES PLOTTED ON THE DRAWINGS ARE FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR, PRIOR TO LAYING A RUN OF PIPE OR OTHER INVOLVED CONSTRUCTION, SHALL EXCAVATE MITHIN THE ALIGNMENT AT POINTS OF POSSIBLE CONFLICT TO DETERMINE IF A CONFLICT EXISTS. ANY CONFLICTS SHALL BE COORDINATED BY THE CONTRACTOR WITH THE ENGINEER AND THE UTILITY INVOLVED. THE ENGINEER SHALL DETERMINE THE SOLUTION. EXCAVATING, BACKFILLING AND RESTORATION OF THE TEST HOLES AS REQUIRED FOR UTILITY INVESTIGATIONS SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE UTILITIES AS SHOWN ON THE PLANS.
- 12. CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS FOR THE EXECUTION OF THIS
- 13. ALL CONSTRUCTION SHALL BE PERFORMED TO THE SATISFACTION OF THE ENGINEER, TOWN OF MIDDLETOWN WATER/WASTEWATER DEPARTMENT, DELAWARE DEPARTMENT OF TRANSPORTATION (DELDOT) AND ALL RESPECTIVE UTILITY OWNER/S IN ACCORDANCE WITH ALL APPLICABLE CONTRACT DRAWINGS AND SPECIFICATIONS.
- 14. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS AND ORDERS OF ANY PUBLIC BODY HAVING JURISDICTION. THE CONTRACTOR SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR SAFETY AND PROTECTION.
- 15. CONTRACTOR TO DEFLECT WATER MAINS WITH VERTICAL BENDS OR VERTICAL DEFLECTION AS NEEDED TO ACHIEVE APPROPRIATE SEPARATION FROM OTHER UTILITIES AS PER WATER
- 16. WATER SUPPLY BY TOWN OF MIDDLETOWN WATER/WASTEWATER DEPARTMENT. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH TOWN OF MIDDLETOWN WATER/WASTEWATER DEPARTMENT STANDARDS AND SPECIFICATIONS. ALL WATER MAINS LL BE LOCATED AT LEAST IO FEET HORIZONTALLY FROM SANITARY SEMER AND SHALL HAVE A MINIMUM VERTICAL SEPARATION OF 18 INCHES.
- 17. THE ENTIRE WATER DISTRIBUTION SYSTEM MUST BE IN COMPLIANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE DELAWARE STATE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL AND THE DELAWARE STATE DIVISION OF PUBLIC HEALTH
- IS FIXTURE LOCATIONS SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF TOWN OF MIDDLETOWN WATER/WASTEWATER DEPARTMENT
- 19. EXISTING UTILITIES ARE SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND ALLOW FOR UTILITY
- 20. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT ALL EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE, ANY DAMAGE DONE TO EXISTING UTILITIES DUE TO HIS/HER NEGLIGENCE SHALL BE IMMEDIATELY REPAIRED AT HIS/HER
- 21. PLAN LOCATIONS AND DIMENSIONS SHALL BE STRICTLY ADHERED TO UNLESS OTHERWISE SPECIFIED BY THE ENGINEER. THE CONTRACTOR SHALL ADJUST WATERLINE LOCATIONS AS REQUIRED TO AVOID CONFLICTS WITH OTHER UTILITIES.
- 22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OF DAMAGED OR DESTROYED LANDSCAPE.
- 23. THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE PERFORMED IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY
- AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERETO APPLICATIONAL 24. DISINFECTION REQUIREMENTS SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE STATE ENVIRONMENTAL PROTECTION AGENCY OR EQUIVALENT TO THE AMERICAN WATER WORKS ASSOCIATION STANDARD 060-08.
- 25. ALL WATER PIPES SHALL HAVE A MINIMUM COVER OF 3.5 FEET.
- 26. THE CONTRACTOR SHALL PROVIDE PRESSURE REDUCING VALVES IN UNITS, IF NECESSARY.
- 27. THE CONTRACTOR SHALL PROVIDE BUTTRESSES FOR ALL HORIZONTAL AND VERTICAL BENDS AS REQUIRED PER STANDARDS AND SPECIFICATIONS OF THE TOWN OF MIDDLETOWN
- 28. EROSION CONTROL FOR WORK RELATED TO THE INSTALLATION OF WATERLINE IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE PERFORMED IN ACCORDANCE WITH THE DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK OF 1989.
- 29. THE CONTRACTOR SHALL INSTALL AIR RELEASE VALVES AS SPECIFIED IN FIELD.
- 30. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL MATERIALS FOR APPROVAL TO THE OWNER PRIOR TO COMMENCEMENT OF CONSTRUCTION. ALL MATERIALS ORDERED AND NSTALLED PRIOR TO THE OWNER'S REVIEW AND ACCEPTANCE WILL BE AT THE
- 31. THE CONTRACTOR SHALL OPEN ONLY THAT SECTION OF TRENCH OR ACCESS PITS WHICH CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKING DAY. STEEL PLATES SHALL BE USED ON ANY TRENCH OR ACCESS PITS WHICH MUST REMAIN OPEN OVERNIGHT REQUIREMENT DOES NOT APPLY TO AREAS COMPLETELY CLOSED AND SECURE FROM VEHICULAR OR PEDESTRIAN TRAFFIC
- 32. ALL PVC SANITARY SEWER SHALL BE MARKED WITH LOCATOR TAPE, LABELED "SANITARY SEWER", INSTALLED 12" BELOW FINISH GRADE,
- 33. FINAL APPROVED SET OF PLANS AND SPECIFICATIONS SHALL BE MAINTAINED ON THE JOB SITE, FAILURE TO COMPLY WITH THIS PROVISION SHALL BE CONSIDERED CAUSE TO STOP
- 34. THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF CONTRACT DRAWINGS ON WHICH HE SHALL NOTE, IN RED, THE ALIGNMENTS AND INVERTS OF ALL UNDERGROUND UTILITIES INSTALLED OR ENCOUNTERED DURING THE PROSECUTION OF THE WORK, ALL DISCREPANCIES BETWEEN THE PLAN LOCATIONS AND ELEVATIONS OF BOTH THE EXISTING AND PROPOSED UTILITIES SHALL BE SHOWN ON THE AS-BUILT DRAWINGS TO BE MAINTAINED BY THE CONTRACTOR IN THE FIELD.
- 35. ALL SANITARY SEWERS AND MANHOLES SHALL BE TESTED IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. IN ADDITION ALL MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE WITH THE ACCEPTANCE TESTING IN MIDDLETOWN'S CHAPTER 46 " MANUAL OF CONSTRUCTION SPECIFICATIONS AND DETAILS OF ROADS, OPEN SPACES AND UTILITIES". CONTRACTOR SHALL PROVIDE ALL MATERIAL AND EQUIPMENT NECESSARY FOR TESTING. IF
- THAT THIS TESTING SHALL BE PERFORMED BEFORE BACKFILLING SO THAT ANY LEAKS CAN BE FOUND AND FIXED EXTERNALLY. THE MANHOLE FRAME AND ADJUSTING RINGS SHALL BE 36. ROUTINE PERIODIC INSPECTIONS DURING CONSTRUCTION WILL BE PROVIDED BY THE OWNER, THESE INSPECTIONS DO NOT RELIEVE THE CONTRACTOR FROM HIS OBLIGATION AND

TESTING FAILS, CONTRACTOR SHALL SEAL ALL LEAKS AND RE-TEST UNTIL ACCEPTABLE.

RESPONSIBILITY FOR CONSTRUCTING A SANITARY SEWER SYSTEM IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE OWNER. 37. AFTER TESTING IS COMPLETE AND ALL COMPONENTS OF THE SANITARY SEWER SYSTEM ARE DEEMED ACCEPTABLE TO TOWN OF MIDDLETOWN WATER/WASTEWATER DEPARTMENT.

THE CONTRACTOR SHALL SUBMIT THE AS-BUILT DRAWINGS TO TOWN OF MIDDLETOWN

- INSPECTION SHALL BE CORRECTED BY THE CONTRACTOR WITHIN 30 DAYS. 36. THE PROPERTY AND RIGHT OF WAY LINES SHOWN ON THESE DRAWINGS ARE APPROXIMATE. AND ARE NOT BASED ON METES AND BOUNDS FIELD RUN SURVEYS OR PROPERTY
- 39. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO LOCATE PROPERTY LINES AND RIGHT OF WAY LINES PRIOR TO CONSTRUCTION AND AVOID CONSTRUCTION ACTIVITIES ON PRIVATE PROPERTY AND/OR RIGHTS OF WAYS WHERE SAID CONSTRUCTION IS PROHIBITED. THE CONTRACTOR MAY CONDUCT CONSTRUCTION ACTIVITIES ON PRIVATE PROPERTY PROVIDED HE HAS OBTAINED PRIOR WRITTEN PERMISSION FROM THE PROPERTY OWNER AND HAS SUBMITTED A COPY OF SAID WRITTEN PERMISSION TO TOWN OF MIDDLETOWN WATER/WASTEWATER DEPARTMENT
- 40. ANY REQUIRED EASEMENTS, PERMITS AND APPROVALS SHALL BE ACQUIRED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF SANITARY SEWER CONSTRUCTION.
- 41. PIPE MATERIAL: GRAVITY SEWER MAIN LESS THAN OR EQUAL TO 15 FEET DEEP SHALL BE PVC SDR 26 OR DIP, GREATER THAN 15 FEET SHALL TO BE DIP (CONCRETE LINED WITH CERAMIC COATING). A MINIMUM "C" FACTOR OF 130 SHALL BE USED FOR THE DESIGN OF SANITARY SEWER.

- 42. ALL GRAVITY SEWER MAINS SHALL HAVE MINIMUM COVER OF 48 INCHES.
- 43. MANHOLES SHALL BE OF THE PRECAST CONCRETE OR POURED-IN-PLACE CONCRETE TYPE MANHOLES SHALL BE WATERPROOFED ON THE EXTERIOR WITH A BITUMINOUS COATING JOINTS BETWEEN MANHOLE SECTIONS TO BE WRAPPED WITH EZ-WRAP PAK BUTYL JOINT WRAP. INLET AND OUTLET PIPES SHALL BE JOINED TO THE MANHOLE WITH A GASKETED ELEXIBLE WATERTIGHT CONNECTION OR ANY WATERTIGHT CONNECTION ARRANGEMENT THAT ALLOWS DIFFERENTIAL SETTLEMENT OF THE PIPE AND MANHOLE WALL TO TAKE PLACE. CONNECTIONS TO EXISTING MANHOLES SHALL BE MADE UTILIZING A HOLE SAM AND A TYCITE ADAPTER WITH A-LOK GASKETS OR LINK SEALS. THE INTERIOR JOINT SHALL BE SEALED WITH NON-SHRINK HYDRAULIC GROUT.
- 44. CLEARANCES BETWEEN SEWERS AND OTHER UTILITIES, BOTH EXISTING AND PROPOSED, SHOULD BE DESIGNED AS FOLLOWS:
- SEWERS CROSSING WATER MAINS. SEWERS SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF IA INCHES MEASURED FROM THE OUTSIDE OF THE WATER MAIN TO THE OUTSIDE OF THE SEMER. THIS SHALL BE THE CASE WHETHER THE WATER MAIN IS ABOVE OR BELOW THE SEMER. WHERE POSSIBLE, THE SEMER SHALL BE BENEATH THE WATER MAIN. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS, WHERE A WATER MAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED.
- SEWER PARALLEL TO WATER MAIN, SEWERS SHALL BE KEPT AT LEAST 10 FEET HORIZONTALLY FROM ANY WATER MAIN AS MEASURED FROM THE OUTSIDE OF THE WATER MAIN TO THE OUTSIDE OF THE SEWER.
- IF SEWER AND WATER MAIN CANNOT BE BUILT TO SPECIFIED CLEARANCES, STEEL ENCASEMENT SHALL BE USED. AT A JOINT THERE SHOULD BE 5 FEET OF ENCASING ON EITHER SIDE OF THE JOINT AND AT A CROSSING THERE SHALL BE IO FEET ON EITHER
- CROSSING OTHER UTILITIES. SEMERS SHALL HAVE A MINIMUM OF 18-INCH CLEARANCE FROM ELECTRIC LINES, GAS MAINS, ETC.
- WHERE STORM WATER CROSSES OVER THE GRAVITY SEWER SYSTEM AND THERE IS MORE THAN 3-FEET OF SEPARATION NO SPECIAL CONSTRUCTION IS REQUIRED
- WHERE STORM WATER CROSSES OVER THE GRAVITY SEWER SYSTEM AND THERE IS BETWEEN 6-INCHES AND 3-FEET OF SEPARATION THE GRAVITY SEWER PIPE MUST EITHER: BE CONSTRUCTED OF DUCTILE IRON PIPE BE CONSTRUCTED OF SDR-26 PVC AND STEEL ENCASED (IO FOOT MINIMUM ON EACH SIDE OF THE CROSSING). ALL CASINGS SHALL BE SEALED TO PREVENT ENTRY OF SOIL OR OTHER FOREIGN MATERIAL.
- 512479.9910 NORTH 567562.5440 EAST ELEV. 61.61 REBAR & CAP 511435.7700 NORTH 570075.5700 EAST ELEV. 58.12 REBAR & CAP HORIZONTAL DATUM: DELAWARE COORDINATE SYSTEM 83 VERTICAL DATUM: N.A.V.D. 88

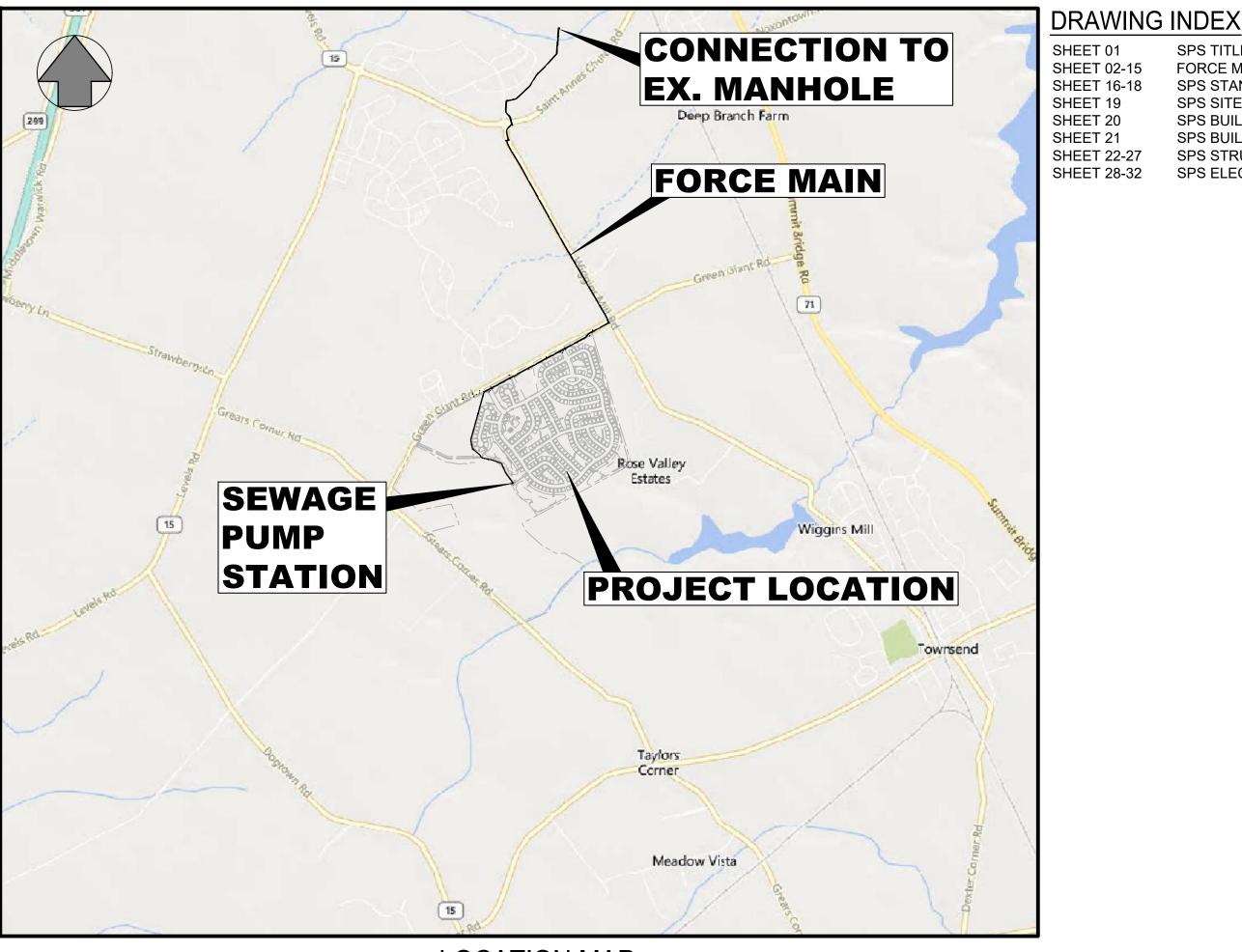
#### UNDERGROUND UTILITY NOTES

- THE LOCATION OF UNDERGROUND UTILITIES AS INDICATED ON PLANS HAS BEEN OBTAINED FROM EXISTING RECORDS. NEITHER THE OWNER OR THE ARCHITECT/ENGINEER ASSUMES ANY RESPONSIBILITY WHATEVER IN RESPECT TO ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION SHOWN. THERE IS NO GUARANTEE, EITHER EXPRESSED OR IMPLIED THAT THE LOCATIONS, SIZE AND TYPE OF MATERIALS OF EXISTING UNDERGROUND UTILITIES INDICATED ARE REPRESENTATIVE OF THOSE TO BE ENCOUNTERED DURING CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH UTILITIES, INCLUDING SERVICE CONNECTIONS TO NDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE OWNER OF HIS OPERATIONAL PLANS. IN THE EVENT OF AN UNEXPECTED UTILITY INTERFERENCE DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER, ANY SUCH MAINS AND/OR SERVICES DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED IMMEDIATELY AT HIS EXPENSE.
  - 2. CONTRACTOR SHALL VERIFY ALL LOCATIONS OF EXISTING UTILITIES AND EXISTING PAVEMENT PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. WHEN CROSSING EXISTING UTILITIES. CONTRACTOR SHALL TEST PIT PRIOR TO CONSTRUCTION IN ORDER TO VERIFY VERTICAL LEARANCE AND SHALL NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES PRIOR TO
- 3. PRIOR TO PERFORMING ANY EXCAVATION GREATER THAN 6 INCHES, THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO DETERMINE THE LOCATION OF UNDERGROUND UTILITY LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL ORGANIZATIONS THAT CONTROL EXISTING UNDERGROUND UTILITIES IN THE CONSTRUCTION AREA OR WOULD BE AFFECTED BY CONSTRUCTION WORK AROUND
- THE CONTRACTOR SHALL NOT START EXCAVATION UNTIL ALL UTILITY LINE LOCATIONS HAVE BEEN STAKED OR OTHERWISE CLEARLY MARKED AND DOCUMENTATION FURNISHED TO THE OWNER, ALL MARKINGS SHALL BE CONSIDERED APPROXIMATE, AND UTILITIES OTHER THAN THOSE SHOWN SHALL BE CONSIDERED TO EXIST
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DEFINITE LOCATION OF EACH UTILITY WITHIN THE WORK AREA. CARE SHOULD BE EXERCISED DURING EXCAVATION WORK TO AVOID DAMAGING OR DISRUPTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING (AT CONTRACTOR'S EXPENSE) DAMAGE TO ANY UTILITY CAUSED BY THE
- 6. WHERE EXISTING UNDERGROUND UTILITIES OR OTHER CONSTRUCTION ARE EXPECTED TO BE IN PROXIMITY TO PROPOSED CONSTRUCTION, OR WHEN APPROACHING EXISTING UTILITIES OR STRUCTURES FOR CONNECTIONS, THE CONTRACTOR SHALL DIG TEST PITS TO DETERMINE THE EXACT LOCATION AND INVERTS OF THE EXISTING UTILITY TO ALLOW FOR POSSIBLE CHANGES TO THE PROPOSED UTILITY IN LINE AND/OR GRADE. THE CONTRACTOR SHALL ALSO DIG TEST PITS IN THE LOCATION OF THE PROPOSED CONNECTIONS TO EXISTING UTILITIES AND SHALL MAKE ALL MEASUREMENTS NECESSARY TO ENSURE PROPER CONNECTION. ANY NECESSARY CHANGES IN LINE OR GRADE OF WORK CAUSED BY FAILURE TO TAKE SUCH PRECAUTIONS SHALL BE AT THE EXPENSE OF THE CONTRACTOR.
- WHEN IT IS NECESSARY TO EXCAVATE NEAR OR INTERFERE WITH ANY SEWER LINE, WATER SERVICES, DRAIN PIPE, CATCH BASIN, CULVERT, OR OTHER STRUCTURES, THE CONTRACTOR SHALL MAINTAIN THE SAME IN WORKING ORDER AND SHALL REPAIR AND MAKE GOOD ANY DAMAGE DONE DURING THE PROGRESS OF THE WORK.
- WHERE EXISTING UTILITIES CROSS THE TRENCH EXCAVATION, THEY SHALL BE ADEQUATELY SUPPORTED AND PROTECTED FROM DAMAGE DUE TO CONSTRUCTION. ALL METHODS FOR SUPPORTING AND MAINTAINING THESE UTILITIES SHALL BE SUBJECT TO REVIEW BY OWNER, CARE SHALL BE TAKEN TO ENSURE THAT THE EXISTING UTILITY GRADES AND ALIGNMENT ARE MAINTAINED AND THE PIPE JOINTS ARE NOT DISTURBED. BACKFILL SHALL BE CAREFULLY PLACED AND TAMPED TO PREVENT DAMAGE OR FUTURE SETTLEMENT. ANY DAMAGE OR MISALIGNMENT OF THE UTILITIES DUE TO CONSTRUCTION OR SETTLEMENT SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
- ANY UNPROTECTED CABLE (DIRECT BURIED) ENCOUNTERED THAT IS VERIFIED AS NOT ABANDONED IN PLACE SHALL BE PROTECTED. THE UTILITY OWNER MAY DIRECT THE CABLE BE PLACED IN SPLIT DUCT OF APPROPRIATE SIZE AND CONCRETE ENCASED THROUGH THE AREA OF CONSTRUCTION. CONTRACTOR SHALL TAKE ALL REASONABLE MEASURES TO AVOID HAVING TO CUT AND SPLICE DIRECT BURIED CABLE. THE CONTRACTOR SHALL NOTE SPLIT DUCT PORTIONS ON AS-BUILTS.
- IO. ALL EXCESS EXCAVATED MATERIALS SHALL BE DISPOSED OF OFF COUNTY/STATE PROPERTY, EXCEPT FOR CONTAMINATED SOILS OR LIQUIDS. ALL CONTAMINATED SOILS AND LIQUIDS SHALL BE TRANSPORTED TO AN APPROVED RECEIVING SITE AS DIRECTED BY THE ENGINEER, FOR FINAL DISPOSITION.
- II. INTERRUPTION OF EXISTING UTILITIES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND/OR AT THE DIRECTION OF THE UTILITY OWNER/S.

### SEWAGE PUMPING STATION AND FORCE MAIN

## ABBEY CREEK

TOWN OF MIDDLETOWN NEW CASTLE COUNTY, DELAWARE

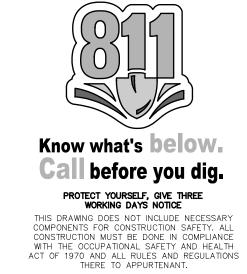


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SPS TITLE SHEET SHEET 02-15 FORCE MAIN PLAN & PROFILE SHEET 16-18 SPS STANDARD DETAILS SHEET 19 SPS SITE PLAN & DESIGN CRITERIA SPS BUILDING & WET WELL PLAN SPS BUILDING & WET WELL SECTION VIEWS SHEET 22-27 SPS STRUCTURAL PLANS & DETAILS SPS ELECTRICAL PLAN & DETAILS SHEET 28-32

**LOCATION MAP** 

ALL SEMER INFRASTRUCTURE CONSTRUCTION SHALL BE IN ACCORDANCE WITH MIDDLETOWN'S CHAPTER 46 "MANUAL OF CONSTRUCTION SPECIFICATIONS AND DETAILS FOR ROADS. OPEN SPACES AND UTILITIES AND TOWN OF MIDDLETOWN SUPPLEMENTAL LIFT STATION PUMP STATION SPECIFICATIONS"



MORRIS & RITCHIE ASSOC., INC. ENGINEERS, ARCHITECTS, PLANNERS, SURVEYORS & LANDSCAPE ARCHITECTS 18 BOULDEN CIRCLE, SUITE 36 NEW CASTLE, DE 19720 PHONE: (302) 326-2200 FAX NUMBER: (302) 326-2399

PHILLIP L. TOLLIVER, P.E.

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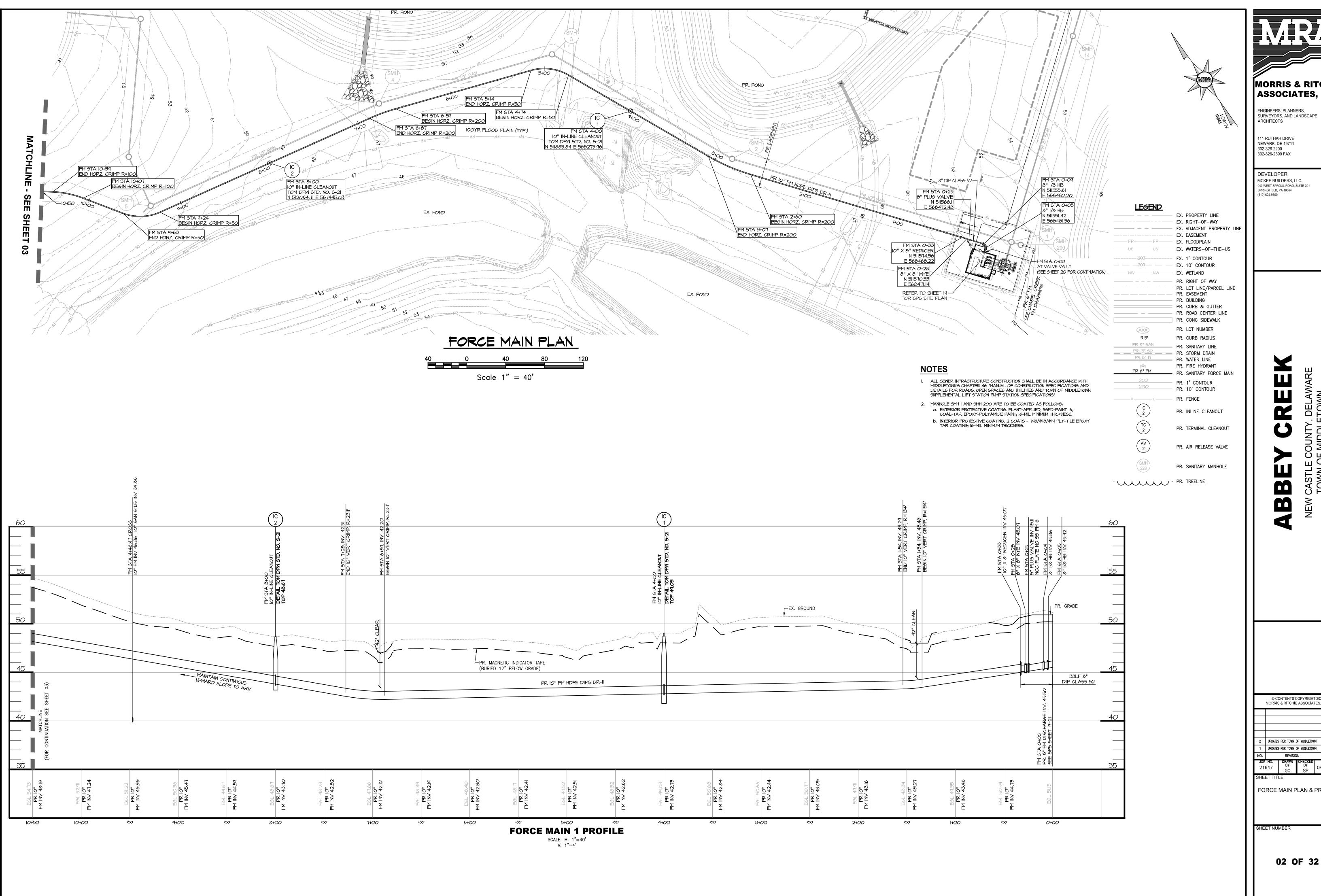
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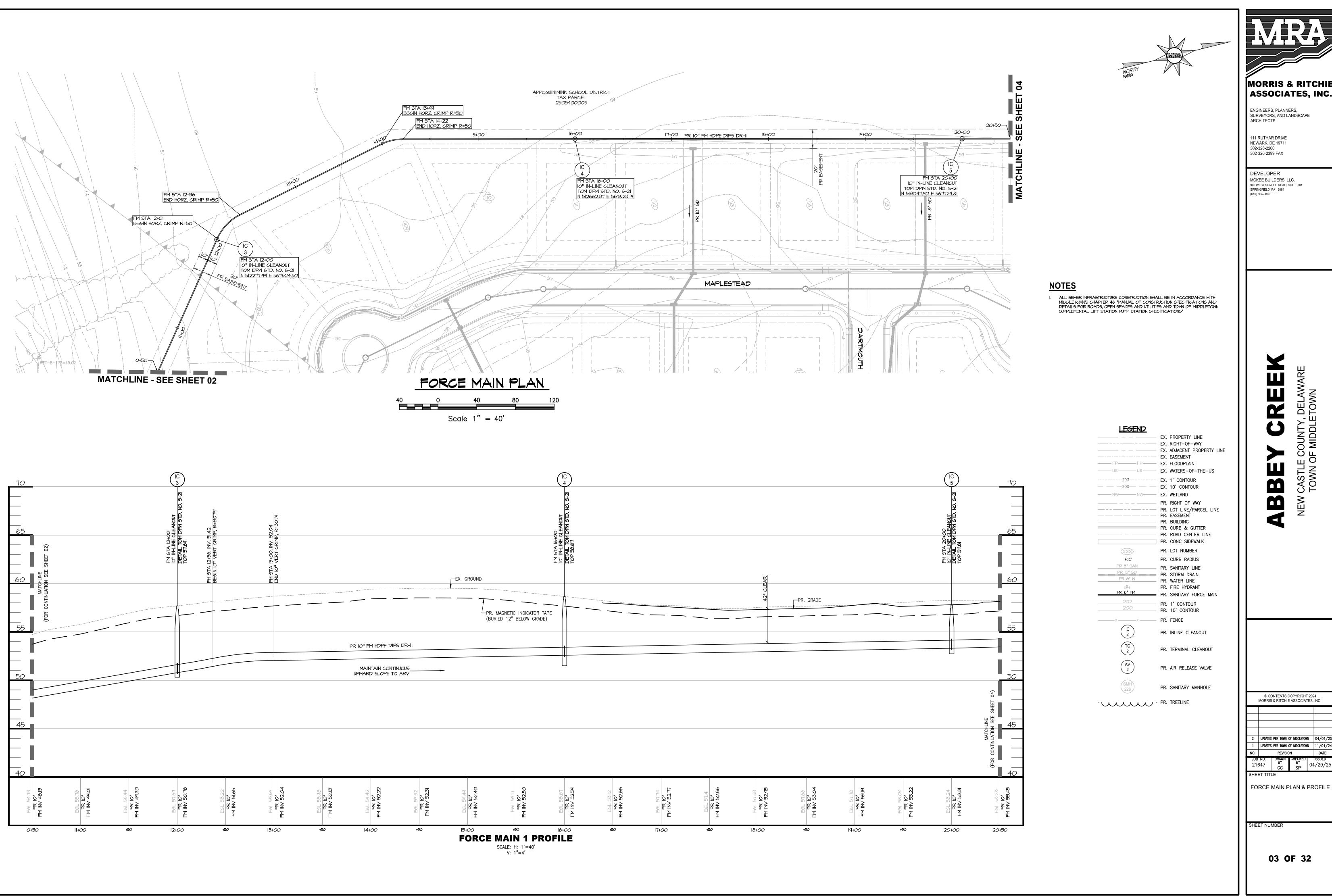
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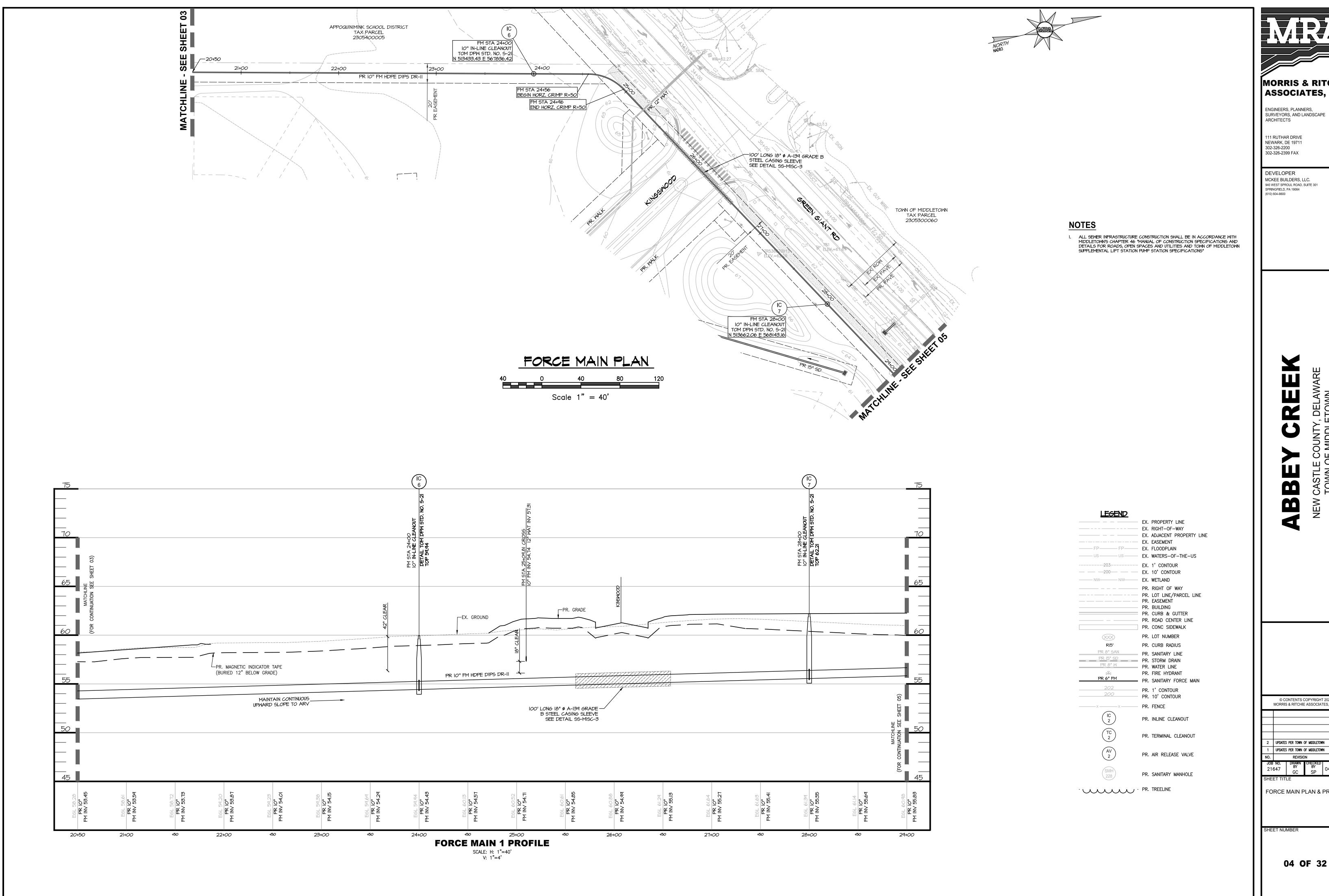
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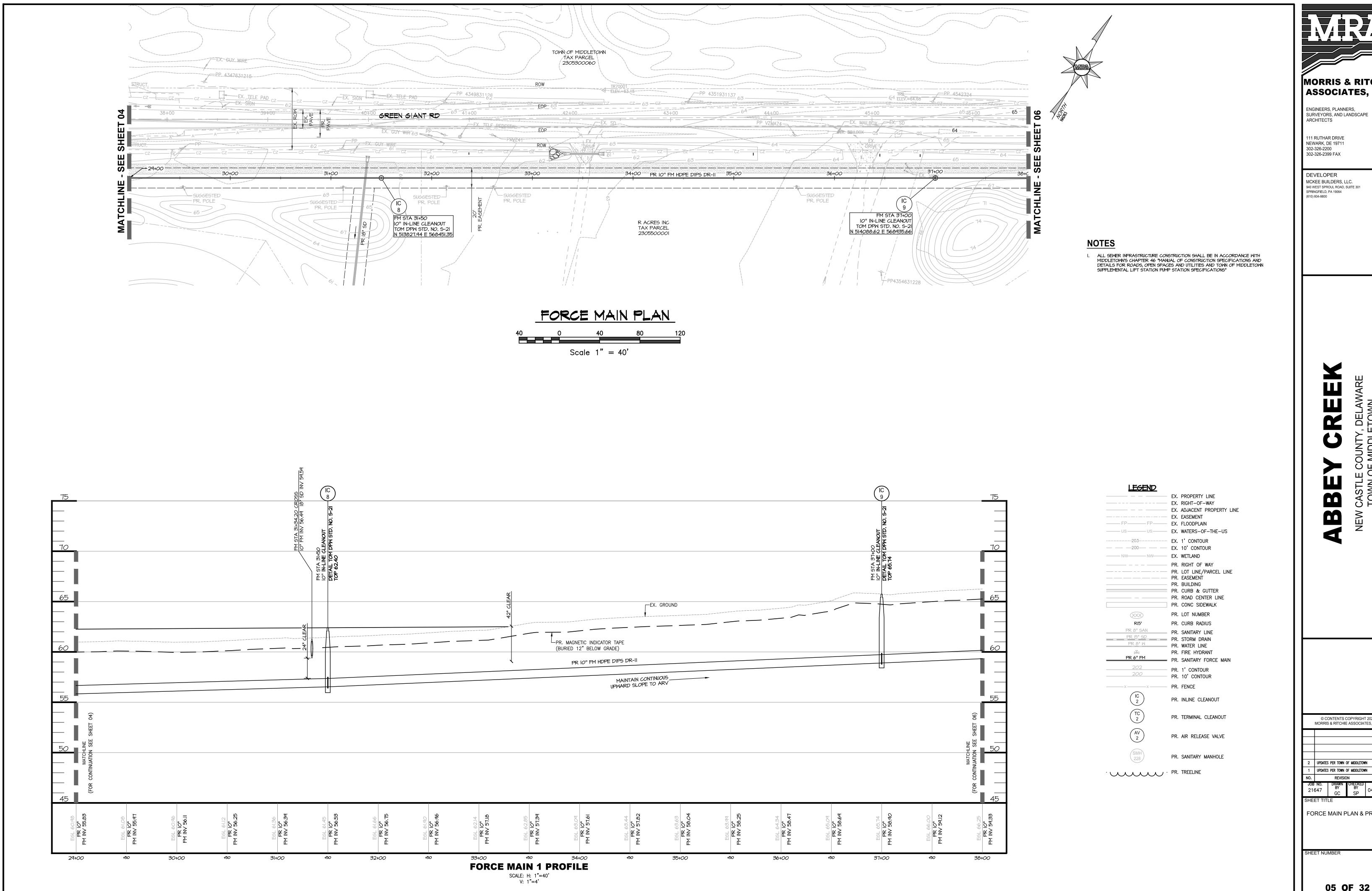
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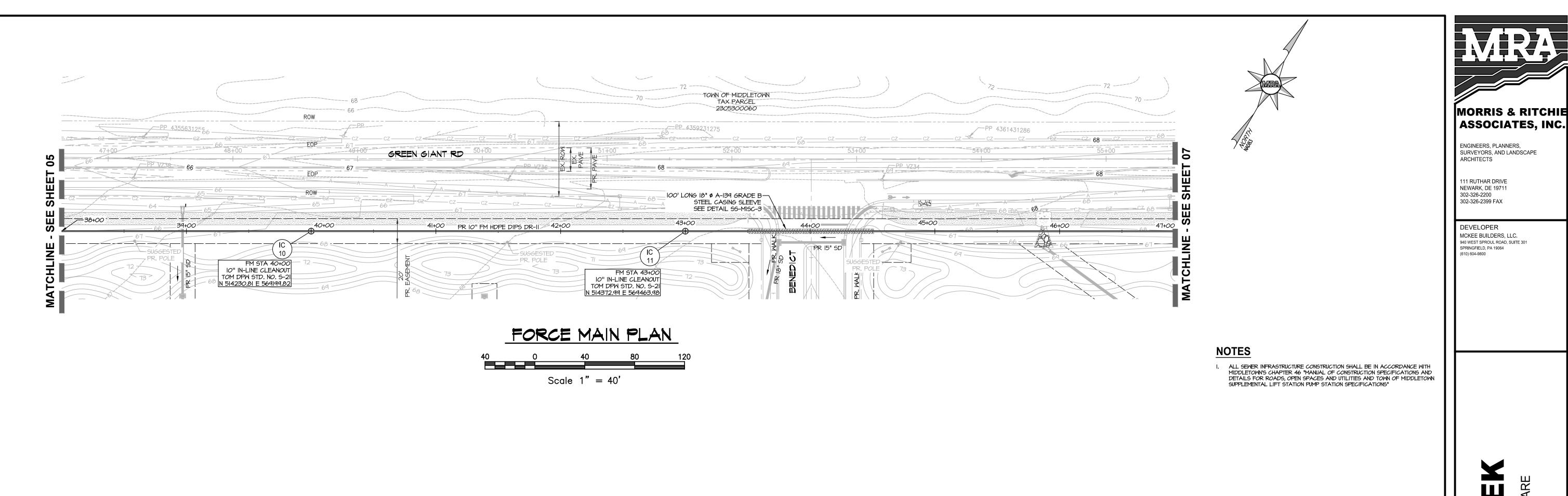
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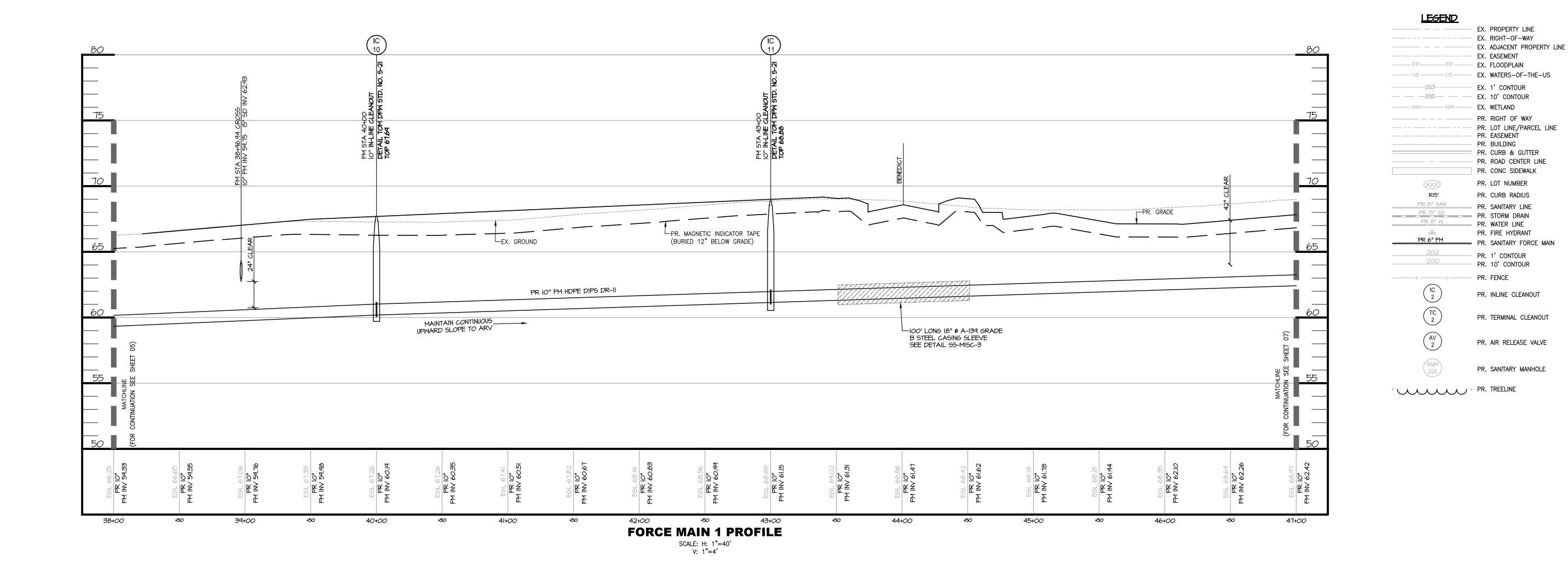
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# M

— EX. PROPERTY LINE

PR. RIGHT OF WAY

PR. BUILDING PR. CURB & GUTTER - PR. ROAD CENTER LINE PR. CONC SIDEWALK PR. LOT NUMBER PR. CURB RADIUS

PR. FIRE HYDRANT

PR. 10' CONTOUR

PR. INLINE CLEANOUT

PR. TERMINAL CLEANOUT

PR. AIR RELEASE VALVE

PR. SANITARY MANHOLE

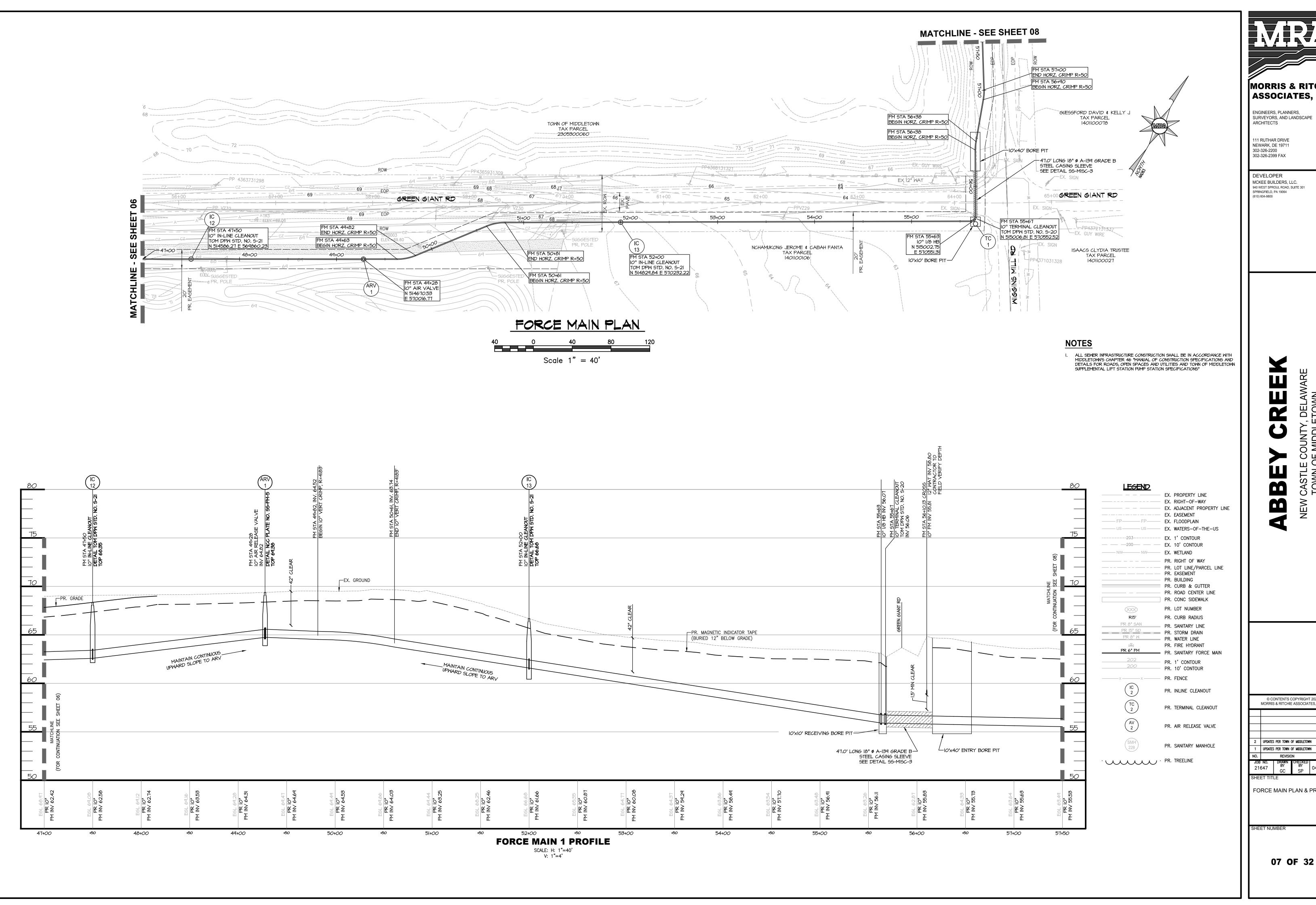
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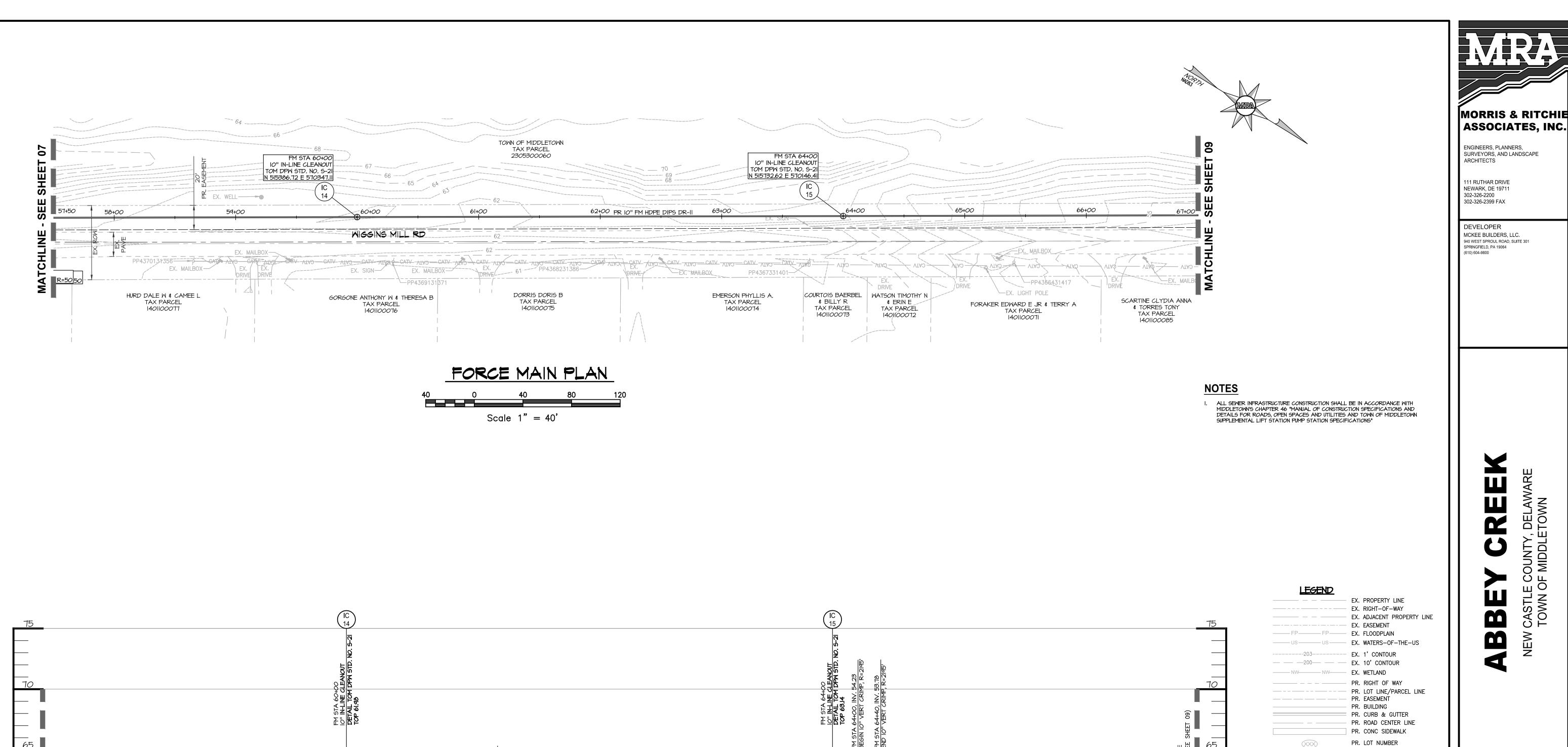
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EX. GROUND

63+00

FM 2 PROFILE

SCALE: H: 1"=40"
V: 1"=4"

64+00

65+*00* 

PR. MAGNETIC INDICATOR TAPE

PR IO" FM HDPE DIPS DR-II

MAINTAIN CONTINUOUS

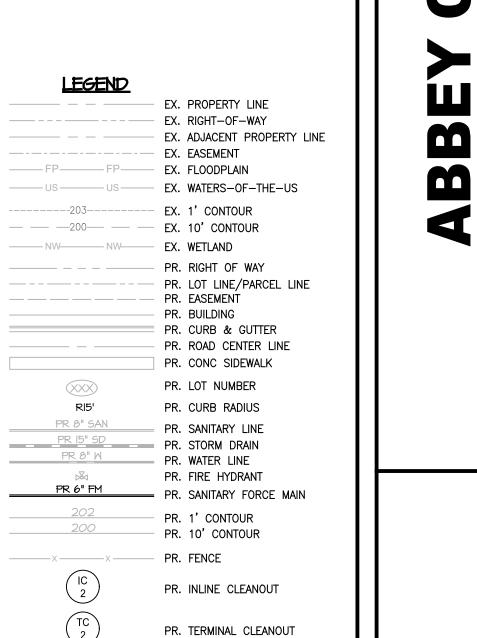
UPWARD SLOPE TO ARY

59+00

60+00

(BURIED 12" BELOW GRADE)

58+00



PR. AIR RELEASE VALVE

PR. SANITARY MANHOLE

R15'

SMH 228

· PR. TREELINE

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NEW

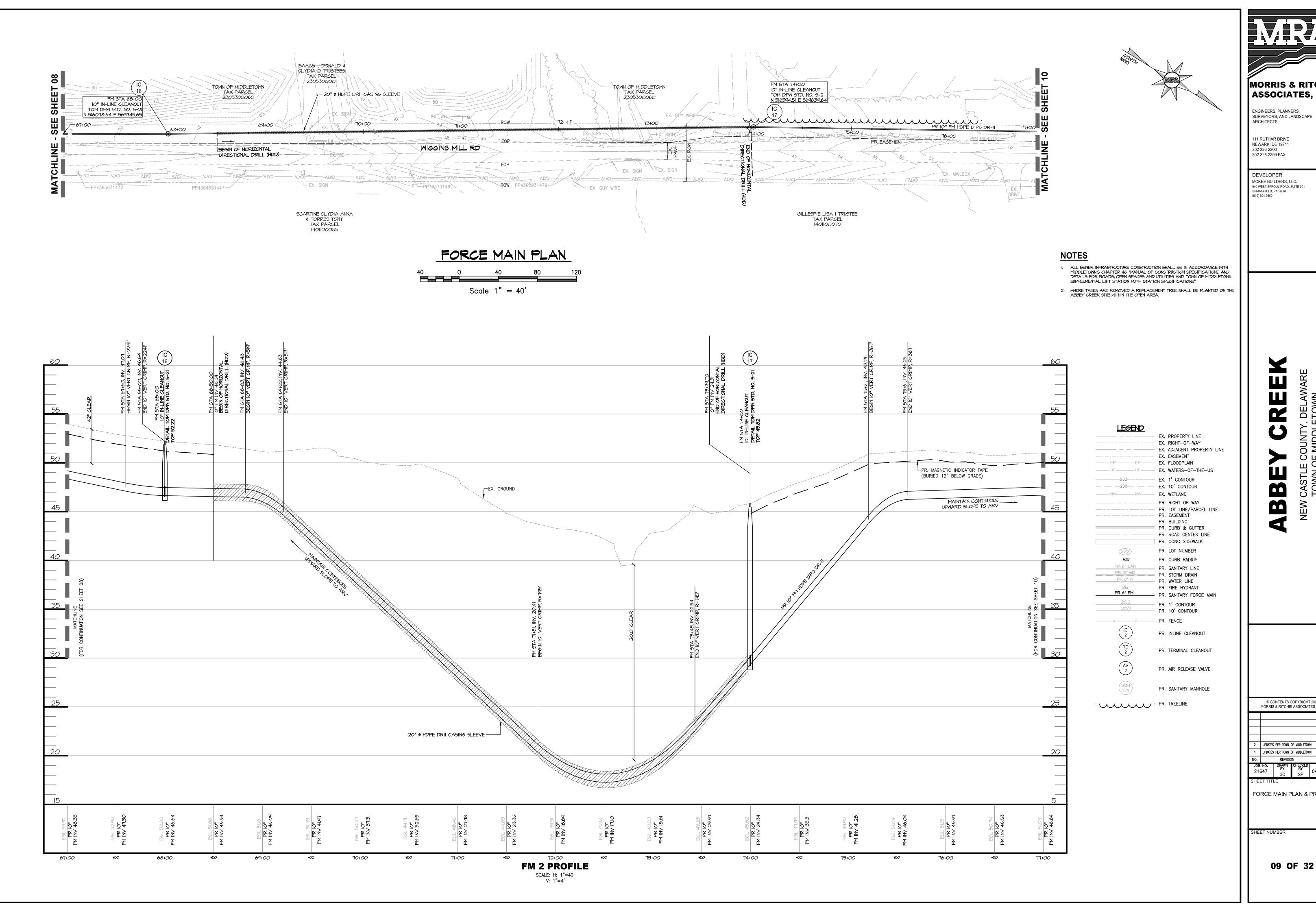
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08 OF 32

67+00

PR 10" INV 48.5





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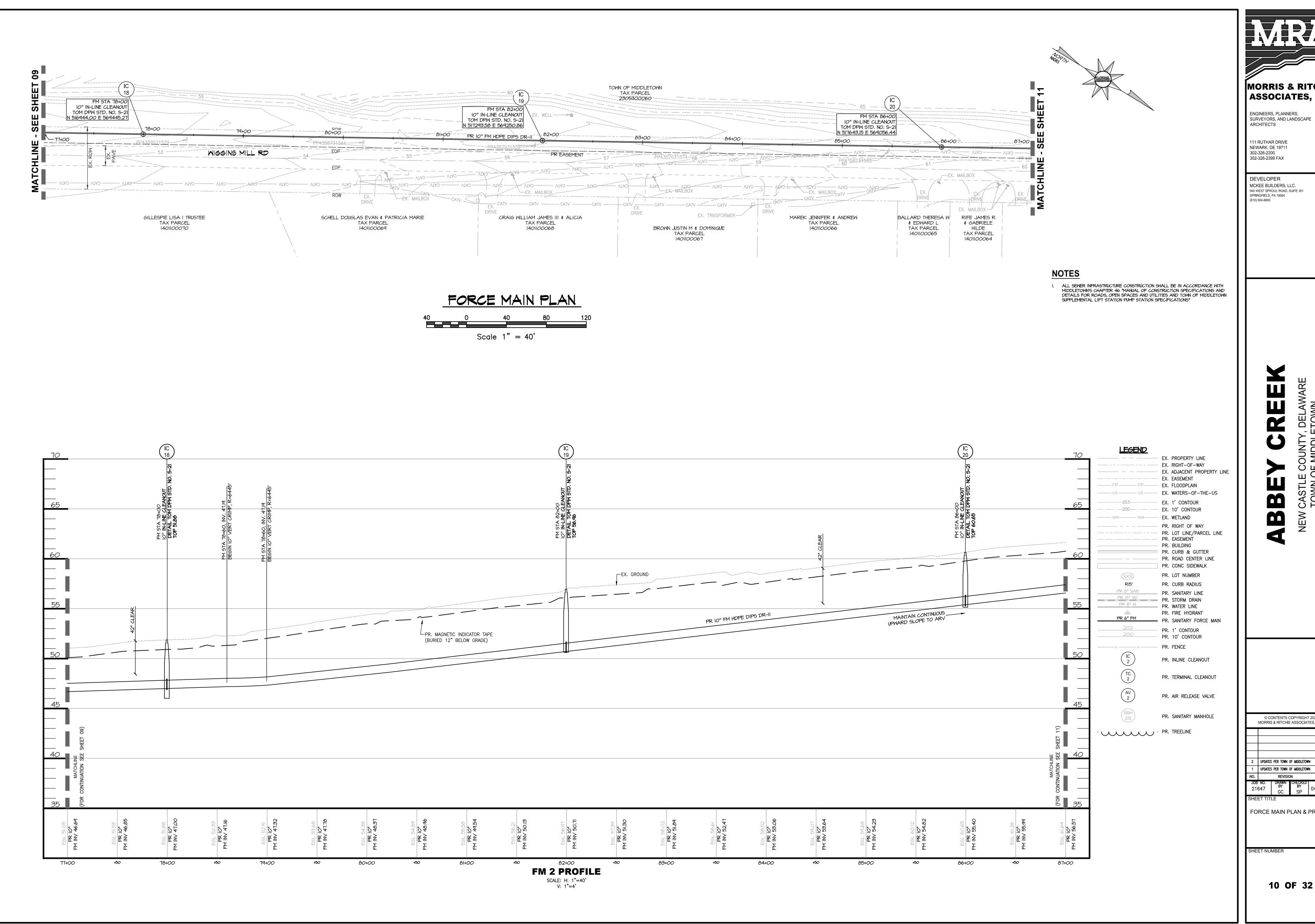
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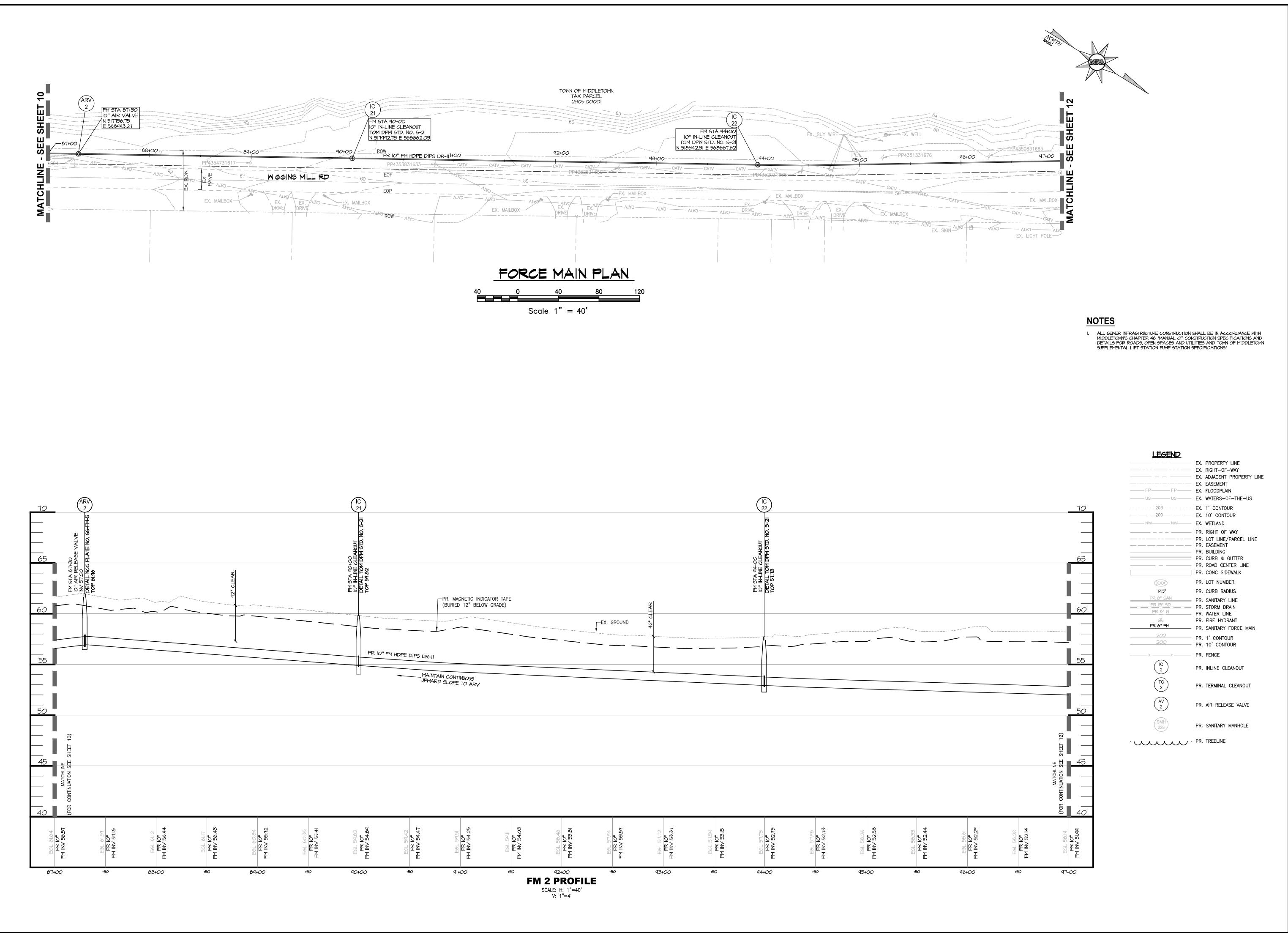
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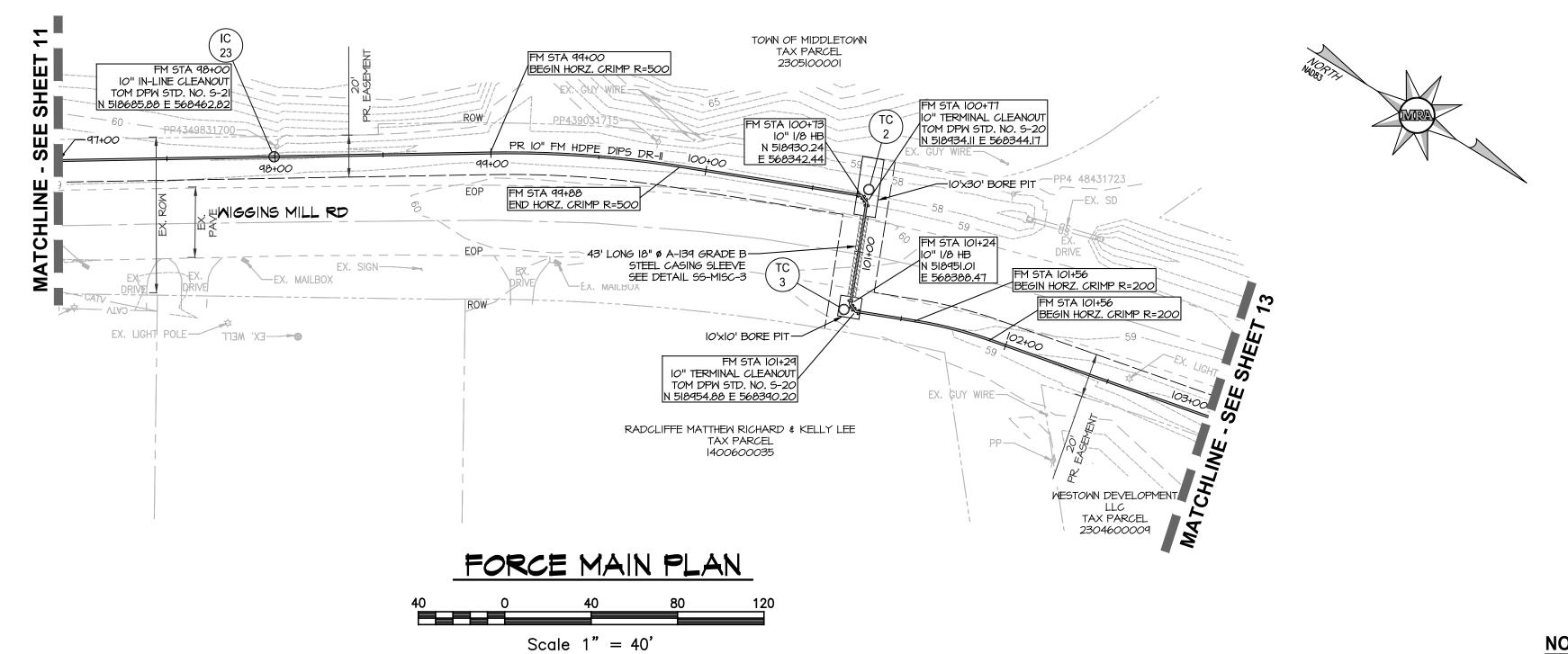
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NEW CASTLE COUNTY, DELAWARE

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2 UPDATES PER TOWN OF MIDDLETOWN 04/01/25
1 UPDATES PER TOWN OF MIDDLETOWN 11/01/24
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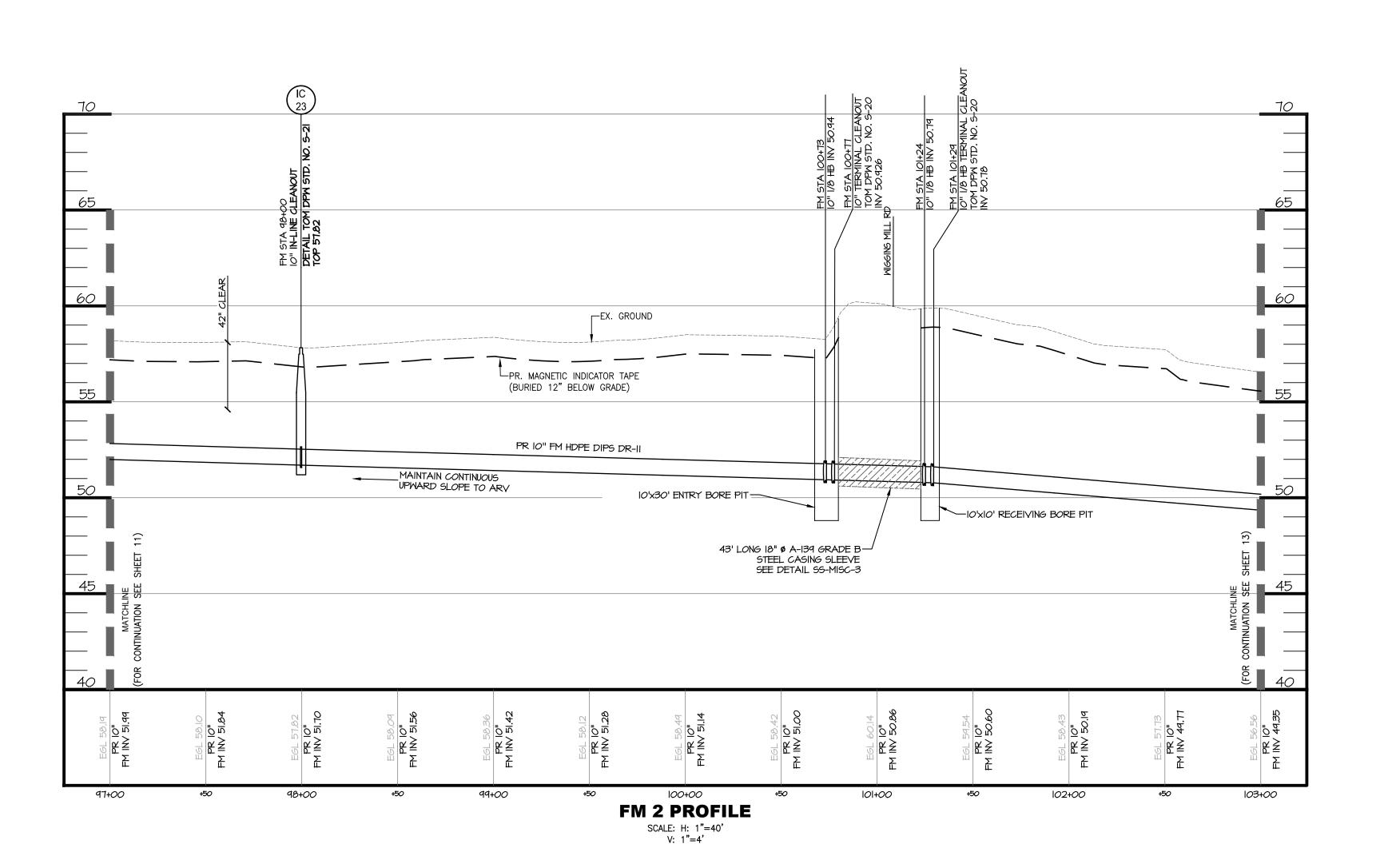
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HEET NUMBER



#### **NOTES**

I. ALL SEMER INFRASTRUCTURE CONSTRUCTION SHALL BE IN ACCORDANCE WITH MIDDLETOWN'S CHAPTER 46 "MANUAL OF CONSTRUCTION SPECIFICATIONS AND DETAILS FOR ROADS, OPEN SPACES AND UTILITIES AND TOWN OF MIDDLETOWN SUPPLEMENTAL LIFT STATION PUMP STATION SPECIFICATIONS"



LEGEND	
——————————————————————————————————————	EX. PROPERTY LINE EX. RIGHT—OF—WAY EX. ADJACENT PROPERTY LI EX. EASEMENT EX. FLOODPLAIN EX. WATERS—OF—THE—US
203 200	EX. 1' CONTOUR EX. 10' CONTOUR EX. WETLAND
	PR. RIGHT OF WAY PR. LOT LINE/PARCEL LINE PR. EASEMENT PR. BUILDING PR. CURB & GUTTER PR. ROAD CENTER LINE PR. CONC SIDEWALK
XXX	PR. LOT NUMBER
RI5'  PR 8" SAN  PR 15" SD  PR 8" W  PR 6" FM	PR. CURB RADIUS PR. SANITARY LINE PR. STORM DRAIN PR. WATER LINE PR. FIRE HYDRANT PR. SANITARY FORCE MAIN
<u>202</u> 200	PR. 1' CONTOUR PR. 10' CONTOUR
xx	PR. FENCE
IC 2	PR. INLINE CLEANOUT
TC 2	PR. TERMINAL CLEANOUT
AV 2	PR. AIR RELEASE VALVE
SMH 228	PR. SANITARY MANHOLE

· PR. TREELINE

MRA

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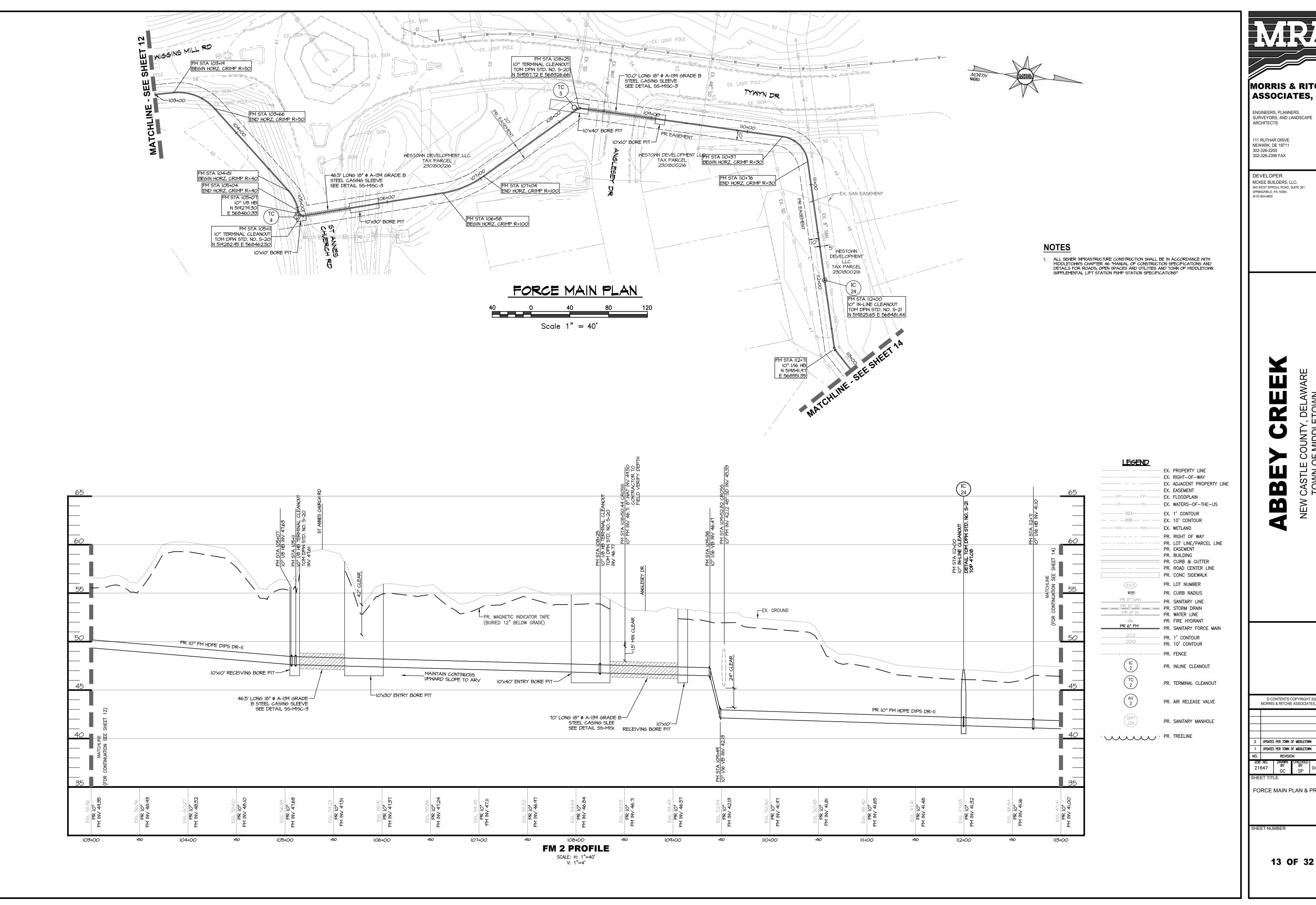
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TOWN OF MIDDLETOWN

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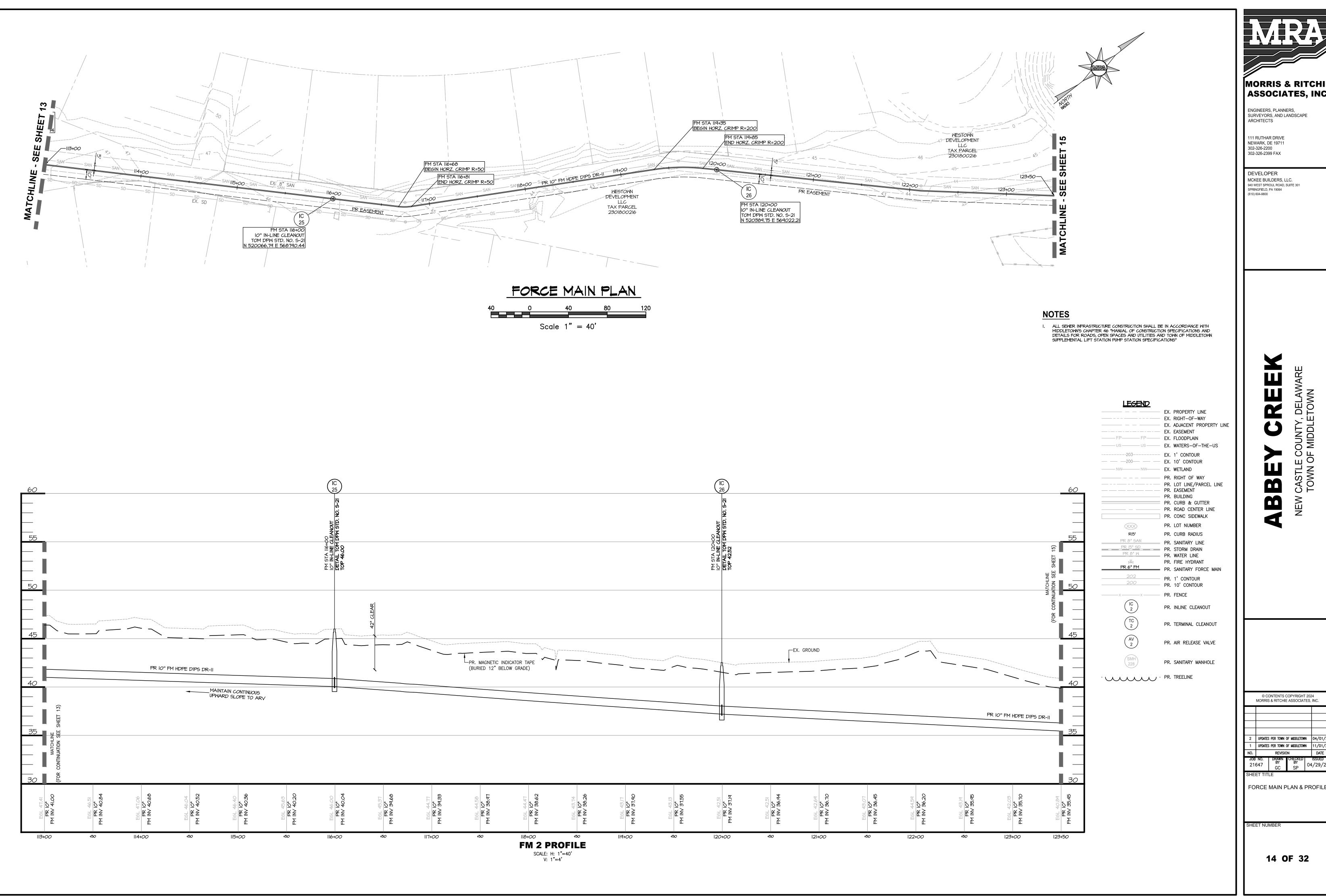
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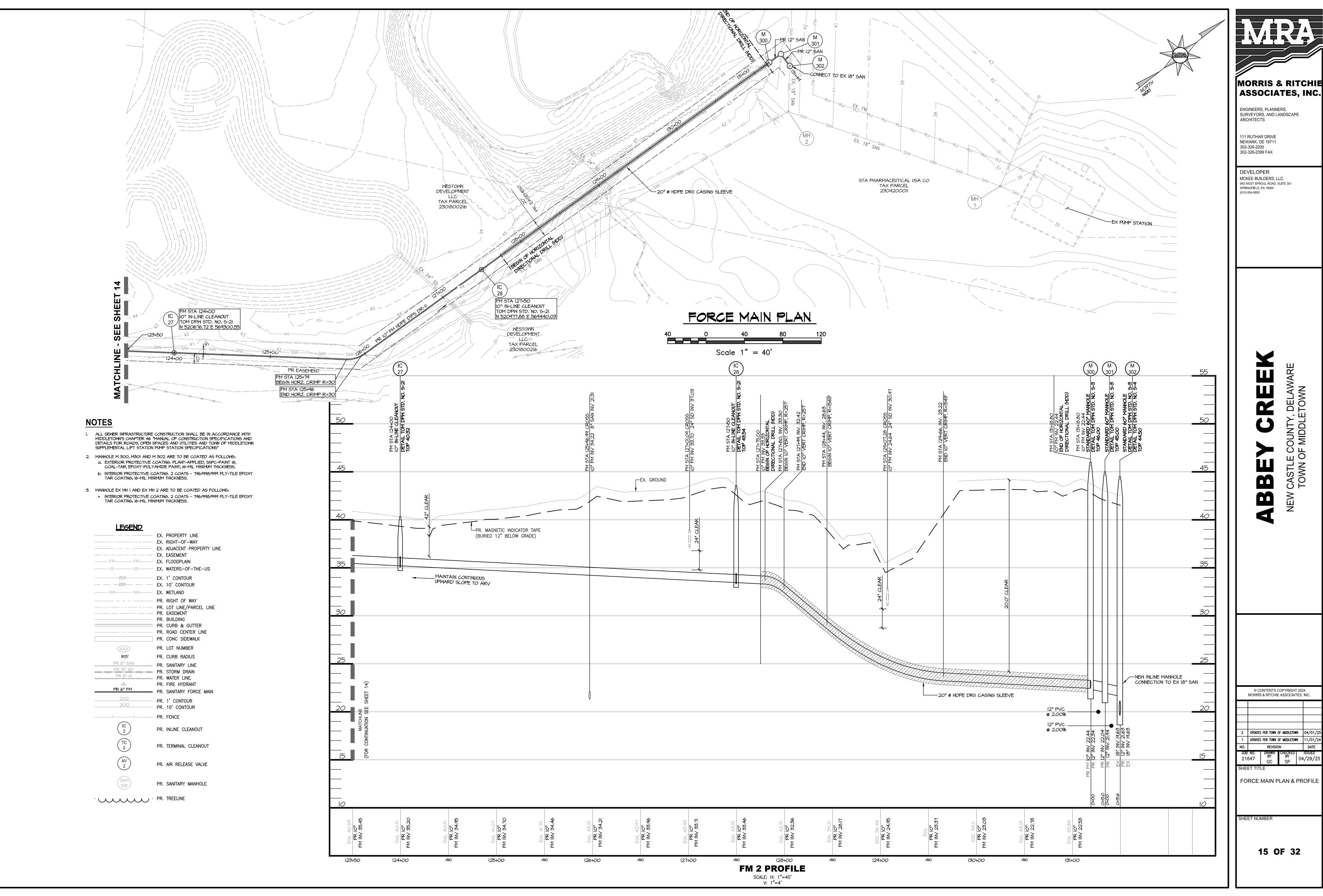
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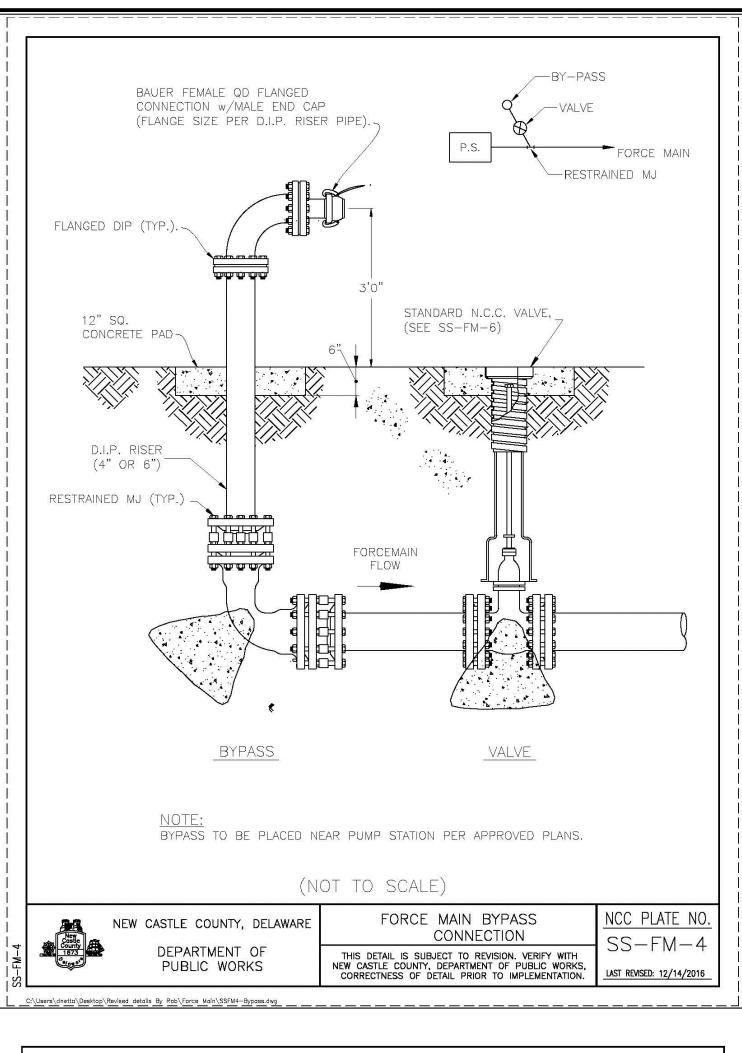
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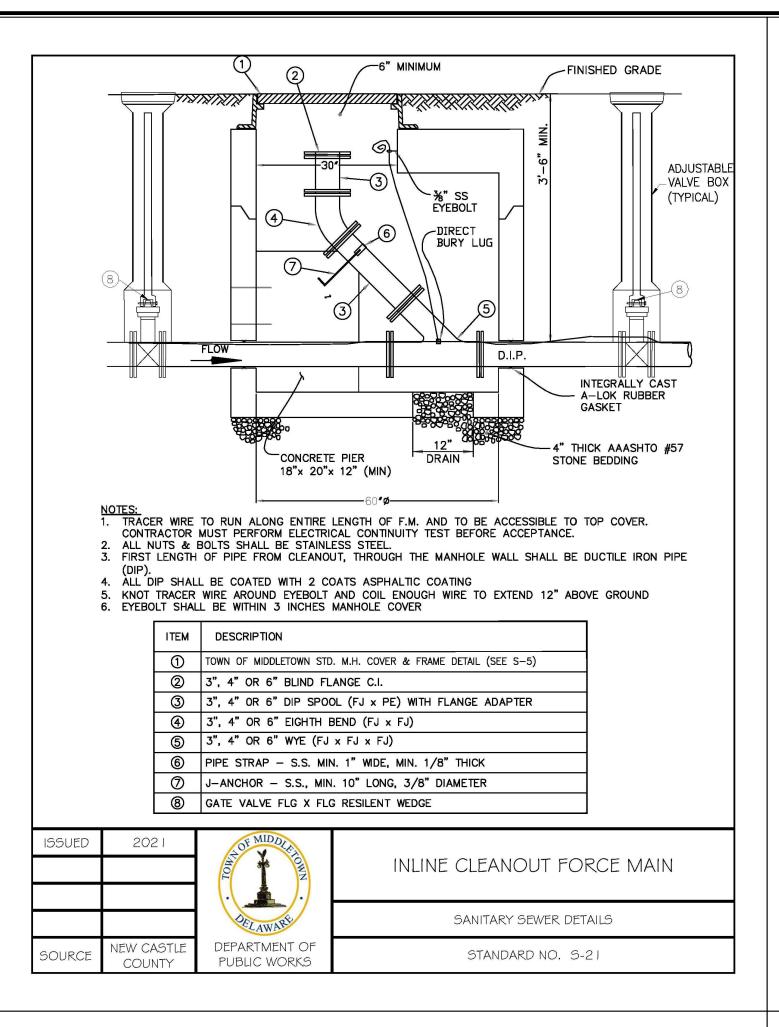
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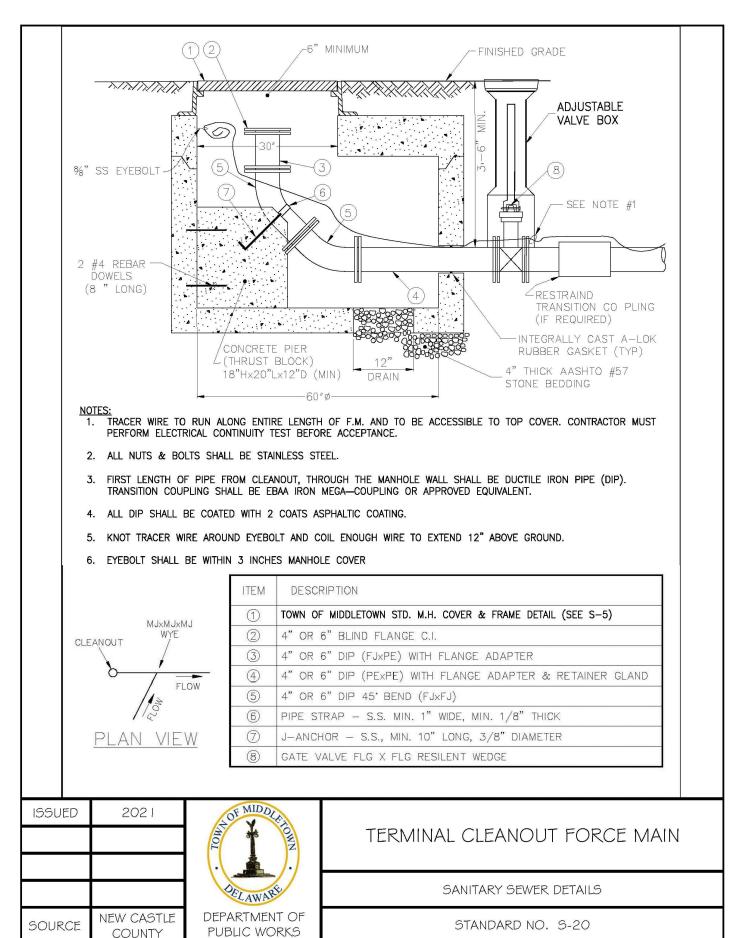
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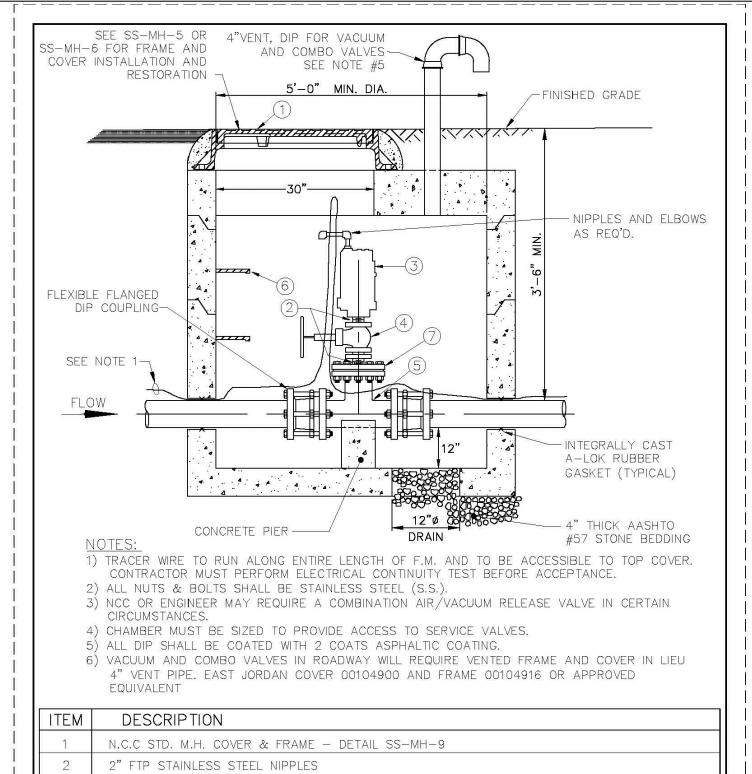
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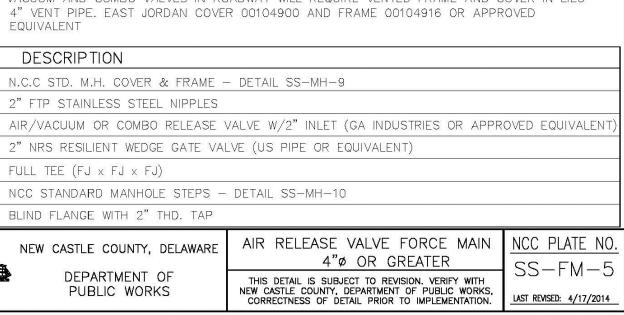


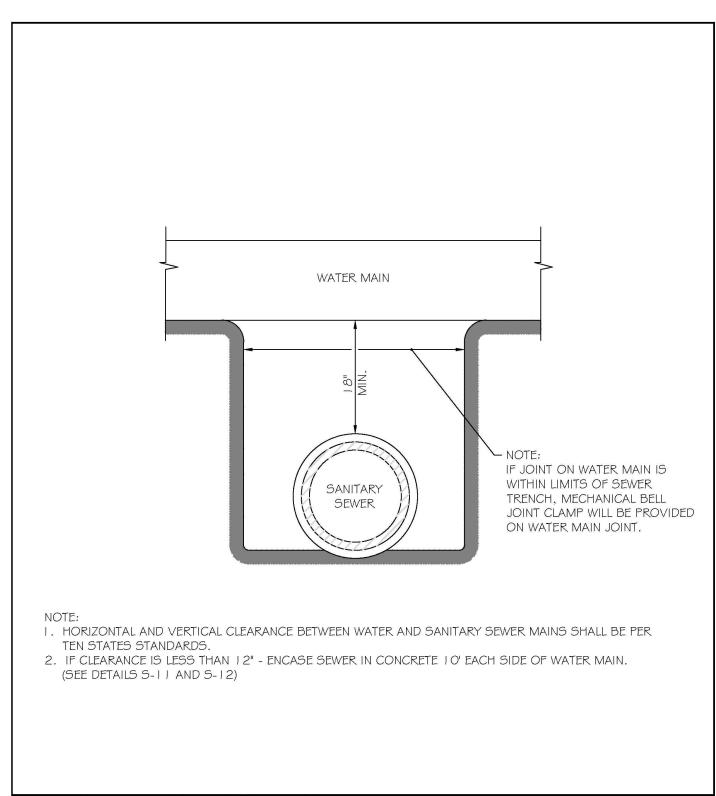






FULL TEE (FJ x FJ x FJ)





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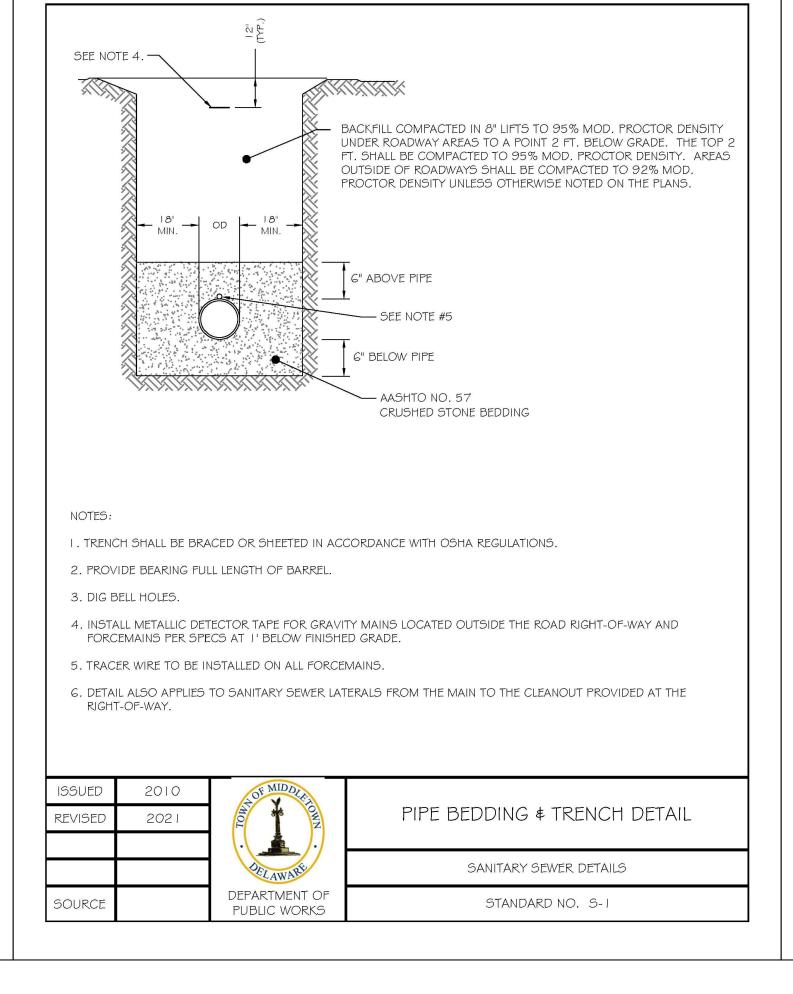
PUBLIC WORKS

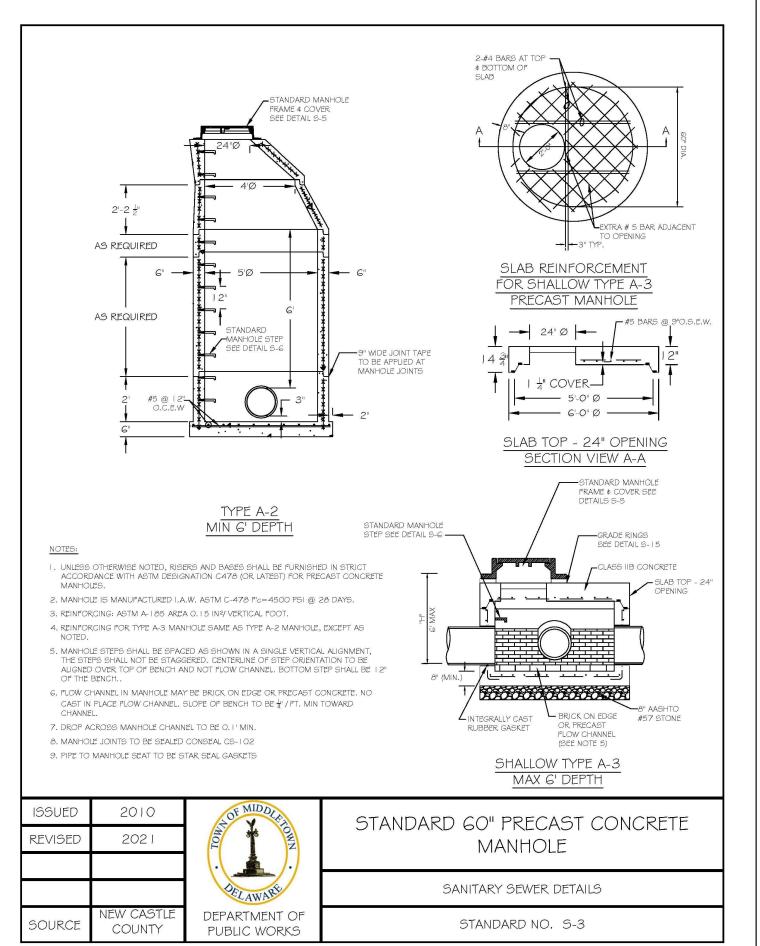
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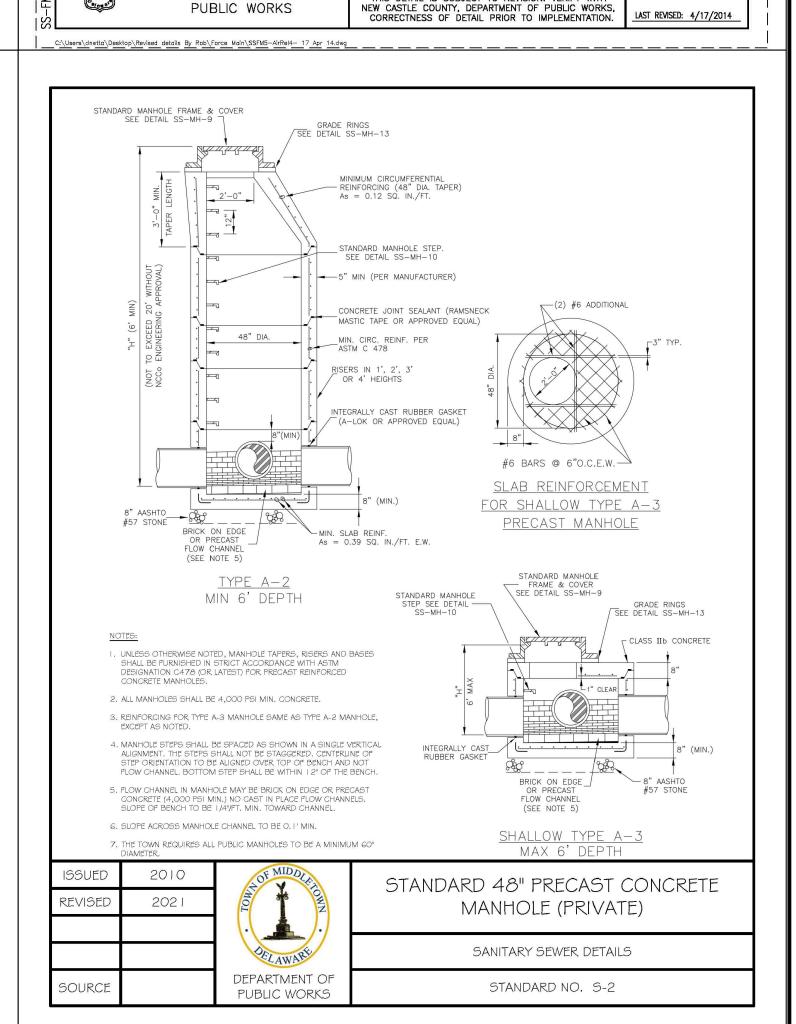
WATER MAIN CLEARANCE

SANITARY SEWER DETAILS

STANDARD NO. S-7









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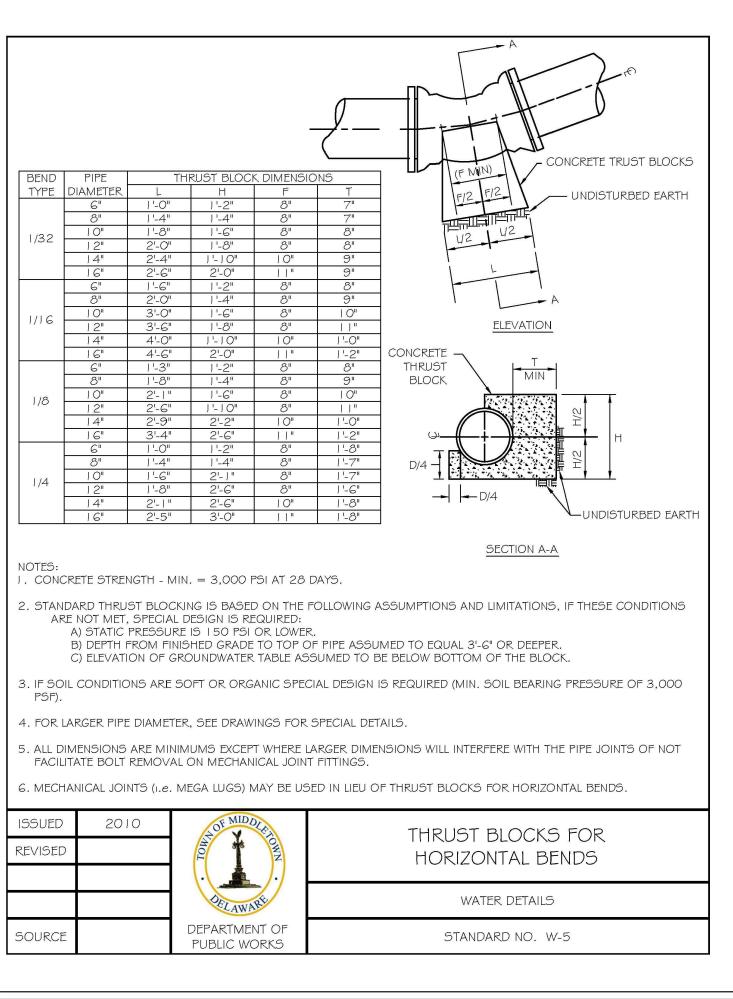
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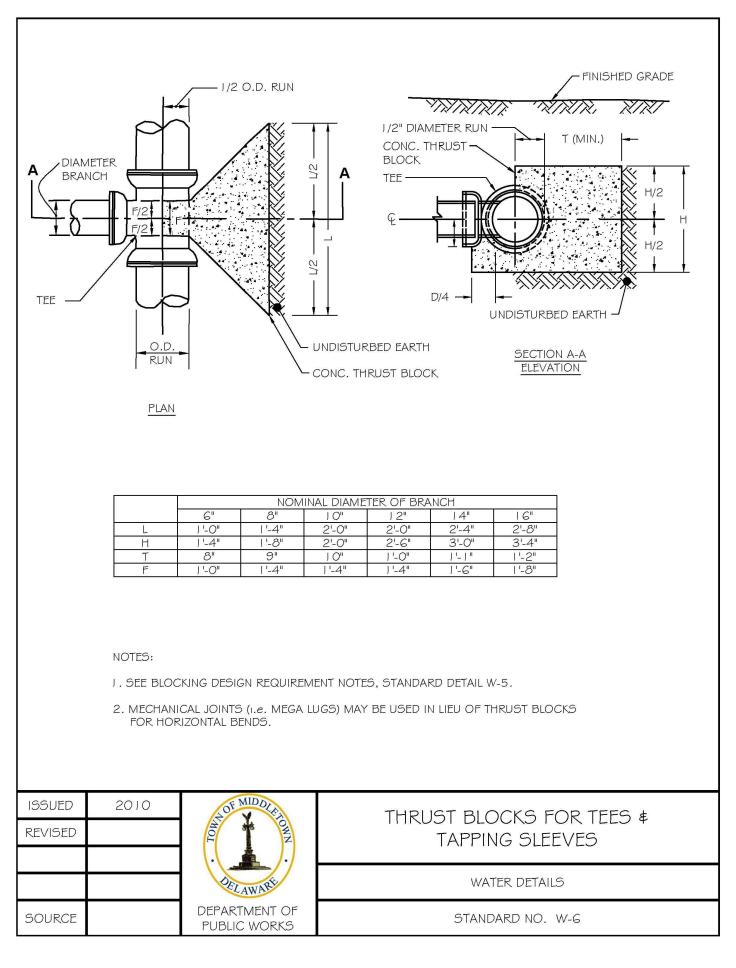
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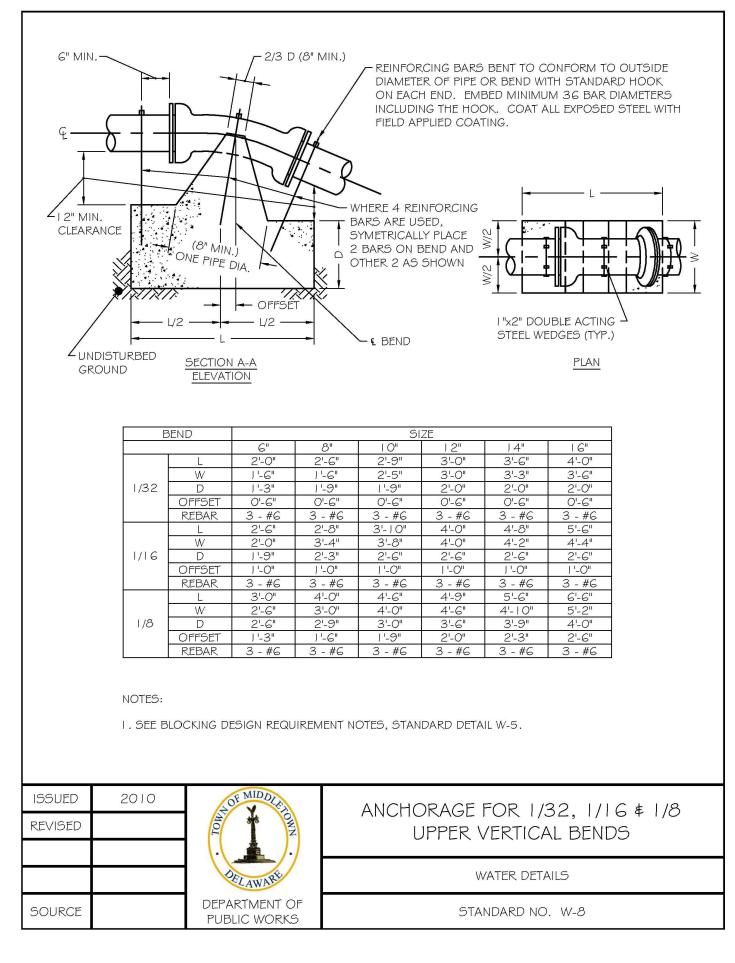
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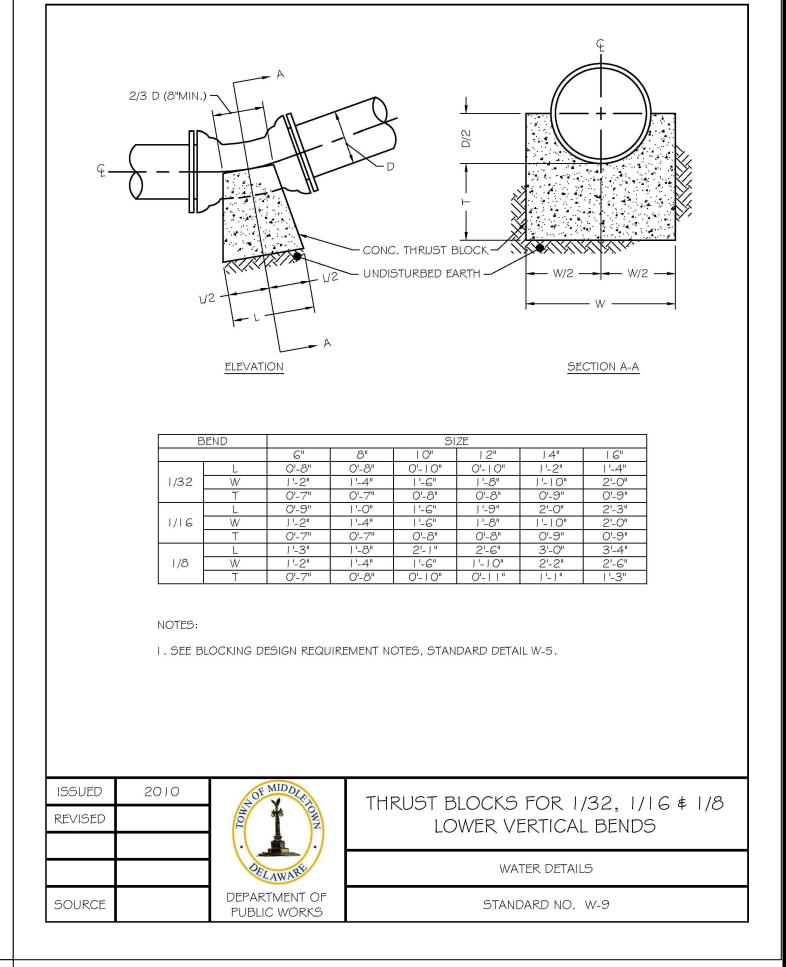
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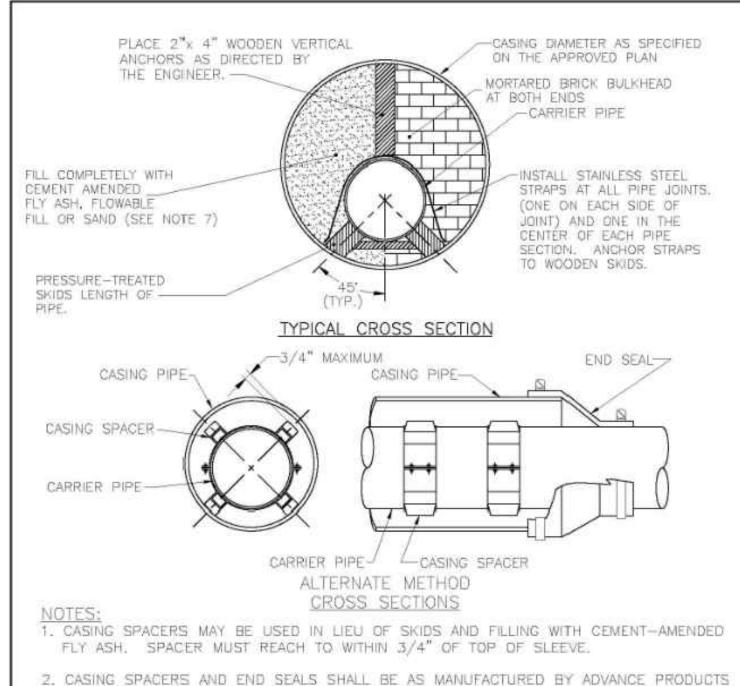
AS SHOWN











AND SYSTEMS INC. OR APPROVED EQUAL.

NEW CASTLE COUNTY, DELAWARE

DEPARTMENT OF

PUBLIC WORKS

CARRIER PIPE, WITH A MINIMUM DIAMETER OF 24".

SPECIFICATION.

3. INSTALL CASING SPACERS PER MANUFACTURER'S RECOMMENDATIONS.

4. CASING PIPE SHALL CONFORM TO SECTION 20.10-3 OF NEW CASTLE COUNTY STANDARD

6. THE INSIDE DIAMETER OF THE CASING PIPE SHALL BE AT LEAST 12" GREATER THAN THE

7. FLOWABLE FILL SHALL BE AS DEFINED BY THE AMERICAN CONCRETE INSTITUTE (ACI) AS A

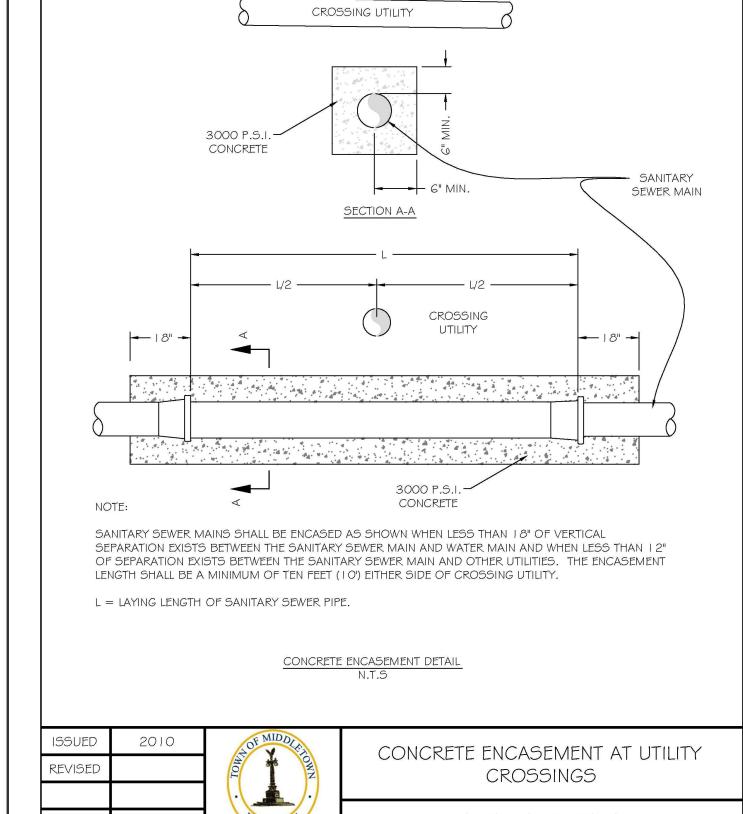
SANITARY SEWER DETAILS

CASING PIPE

SELF COMPACTING CEMENTITIOUS MATERIAL THAT IS IN A FLOWABLE STATE AT PLACEMENT

AND HAS A COMPRESSIVE STRENGTH OF 8.3 MPa (1,200 lb/in2) OR MORE AT 28 DAYS.

5. STEEL CASING PIPE SHALL HAVE A MINIMUM COVER OF 3 FT. BELOW FINAL GRADE.



DEPARTMENT OF

PUBLIC WORKS

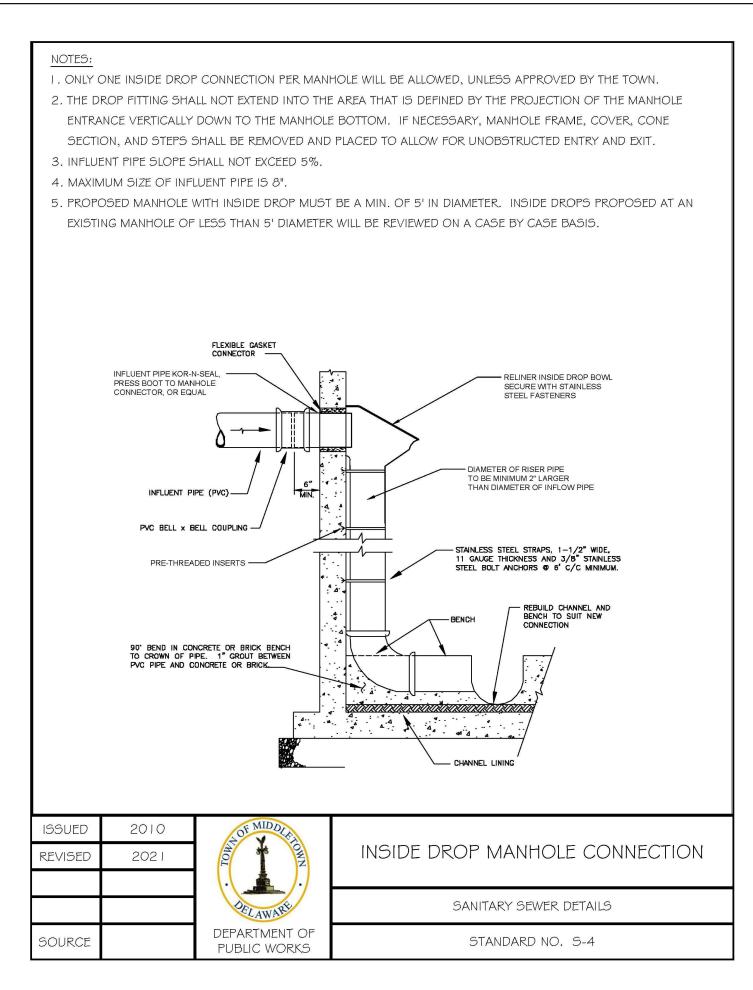
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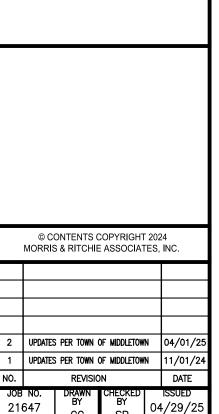
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DETAIL SS-MISC-3

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**MORRIS & RITCHIE** 

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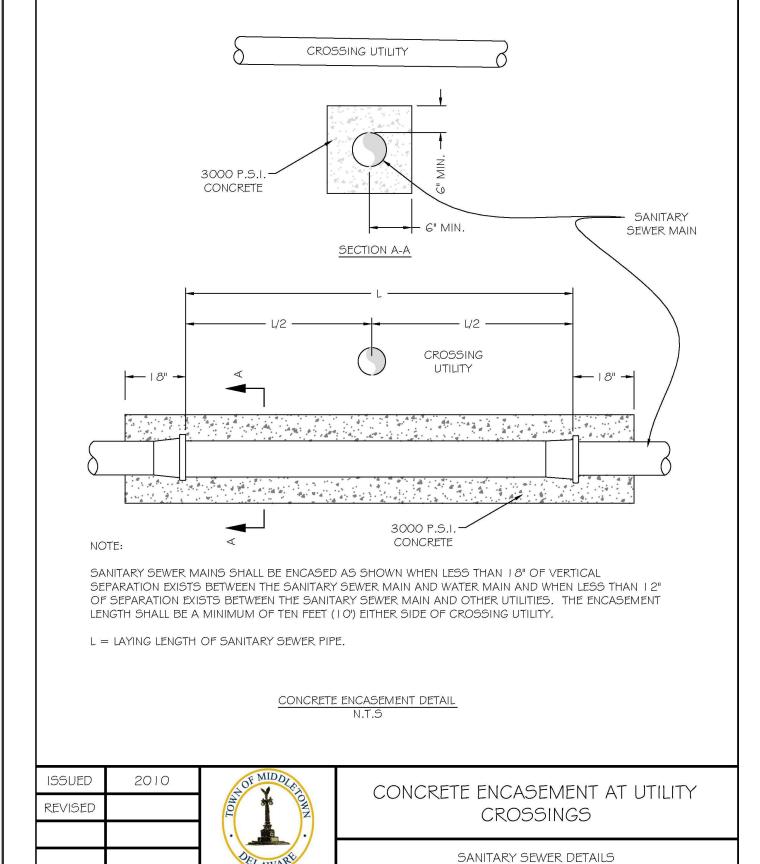
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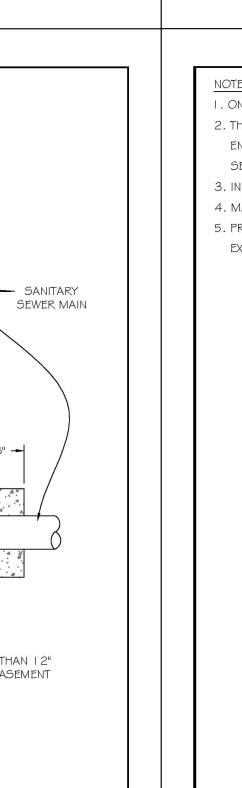
SURVEYORS, AND LANDSCAPE

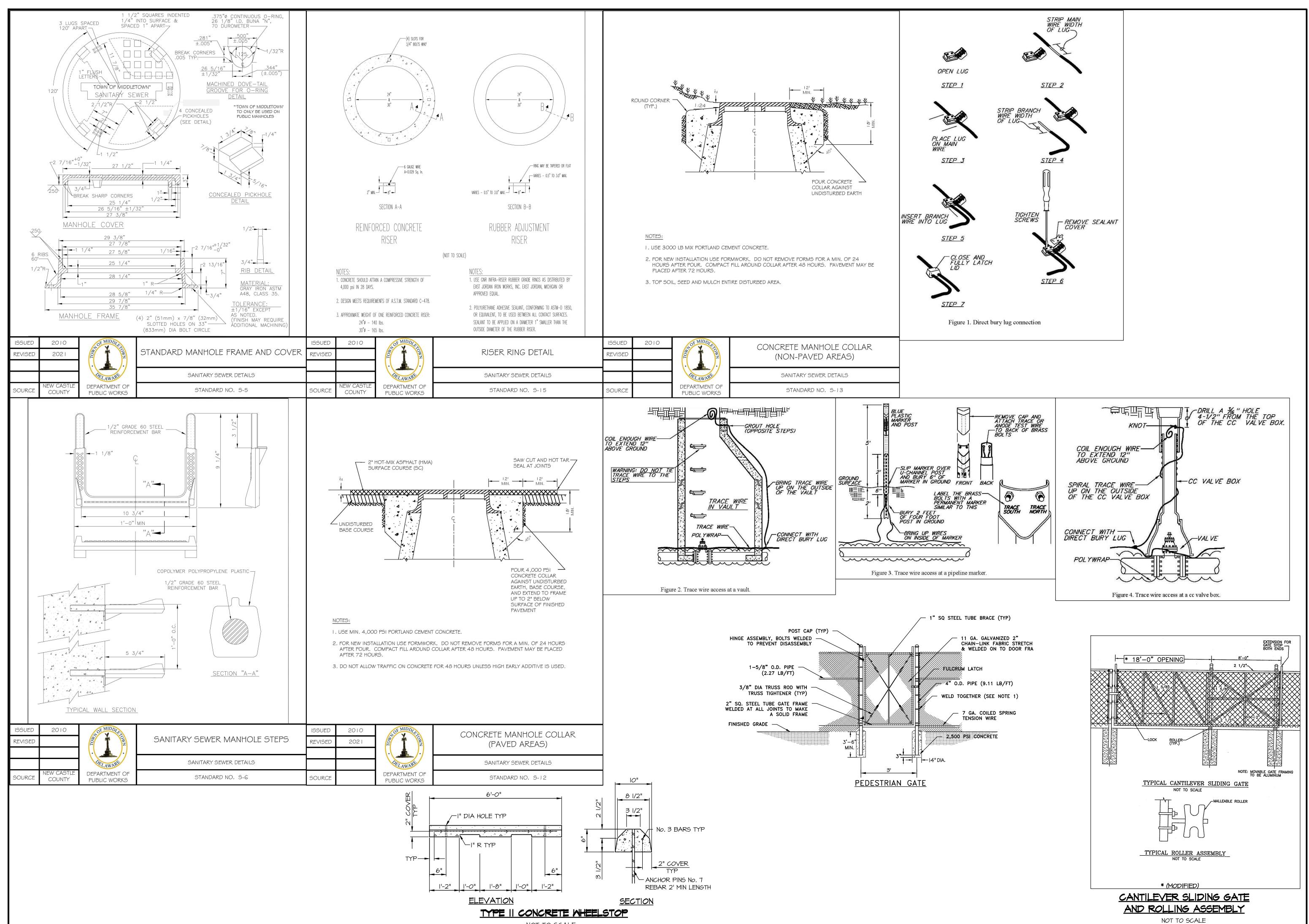
SEWAGE PUMPING STATION STANDARD DETAILS

17 OF 32



STANDARD NO. S-11





NOT TO SCALE

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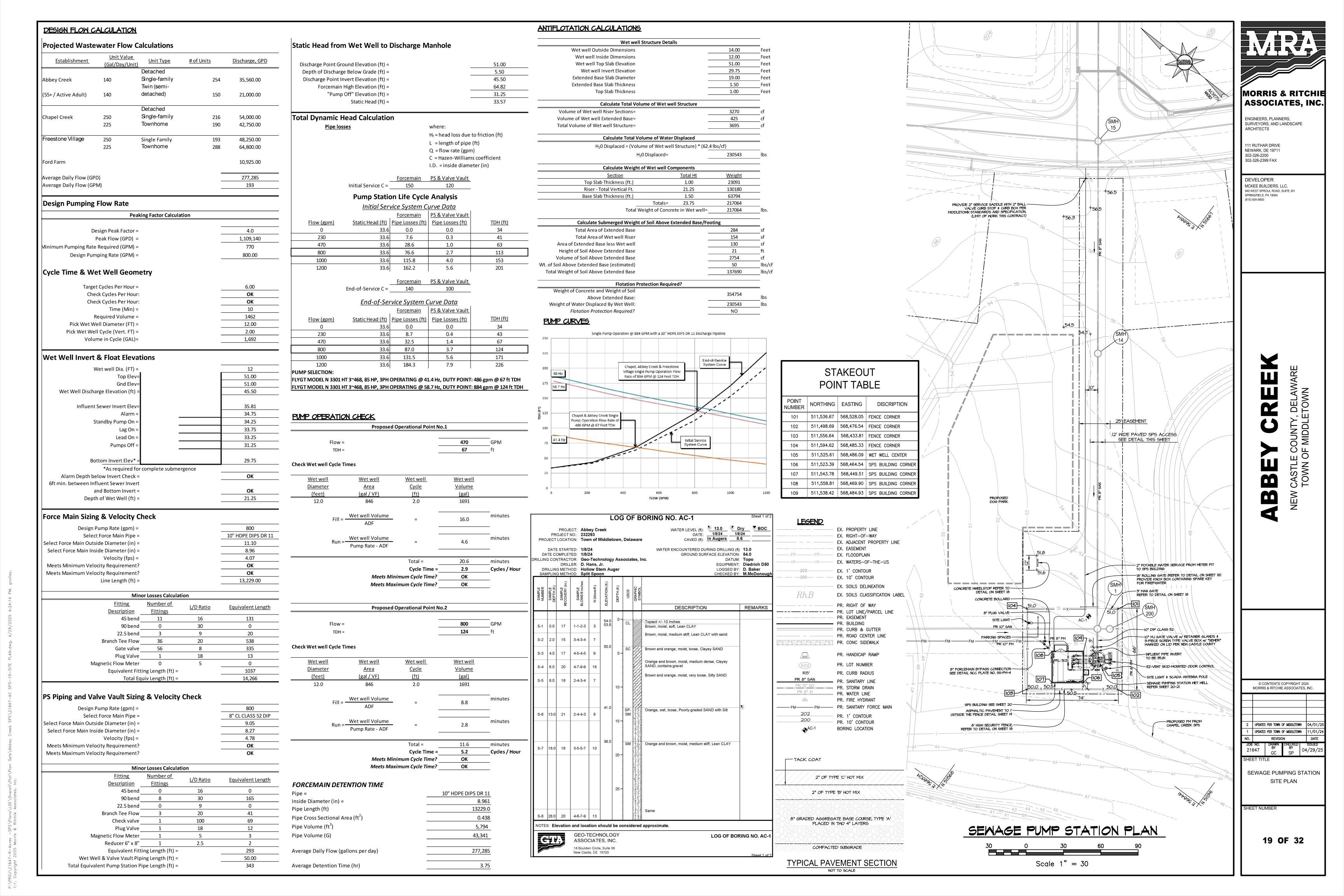
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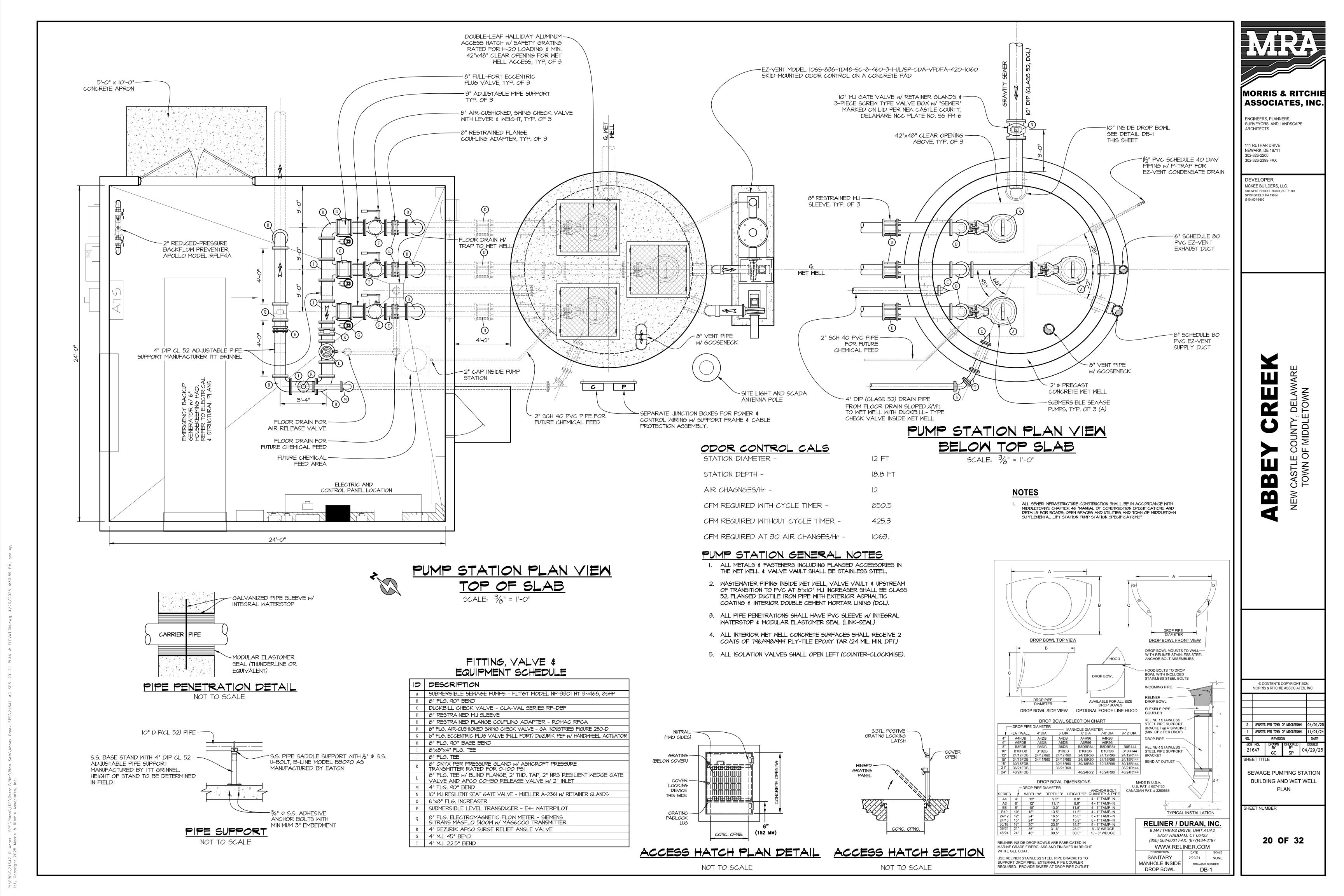
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UPDATES PER TOWN OF MIDDLETOWN 11/01/2

SHEET TITLE
SEWAGE PUMPING STATION

STANDARD DETAILS

ET NUMBER





#### **NOTES**

DETAIL

NOT TO SCALE

I. ALL SEMER INFRASTRUCTURE CONSTRUCTION SHALL BE IN ACCORDANCE WITH MIDDLETOWN'S CHAPTER 46 "MANUAL OF CONSTRUCTION SPECIFICATIONS AND DETAILS FOR ROADS, OPEN SPACES AND UTILITIES AND TOWN OF MIDDLETOWN SUPPLEMENTAL LIFT STATION PUMP STATION SPECIFICATIONS"

#### FITTING, VALVE & EQUIPMENT SCHEDULE

D	DESCRIPTION
A	SUBMERSIBLE SEWAGE PUMPS - FLYGT MODEL NP-3301 HT 3~468, 85HP
В	8" FLG. 90° BEND
С	DUCKBILL CHECK VALVE - CLA-VAL SERIES RF-DBF
D	8" RESTRAINED MJ SLEEVE
Е	8" RESTRAINED FLANGE COUPLING ADAPTER - ROMAC RFCA
F	8" FLG. AIR-CUSHIONED SWING CHECK VALVE - GA INDUSTRIES FIGURE 250-D
G	8" FLG. ECCENTRIC PLUG VALVE (FULL PORT) DeZURIK PEF W/ HANDWHEEL ACTUATOF
Н	8" FLG. 90° BASE BEND
I	8"x8"x4" FLG. TEE
J	8" FLG. TEE
K	8" ONYX PSR PRESSURE GLAND W/ ASHCROFT PRESSURE TRANSMITTER RATED FOR 0-100 PSI
L	8" FLG. TEE W/ BLIND FLANGE, 2' THD. TAP, 2" NRS RESILIENT WEDGE GATE VALVE AND APCO COMBO RELEASE VALVE W/ 2" INLET
M	4" FLG. 90° BEND
N	IO" MJ RESILIENT SEAT GATE VALVE - MUELLER A-2361 W/ RETAINER GLANDS
0	6"x8" FLG. INCREASER
P	SUBMERSIBLE LEVEL TRANSDUCER - E+H WATERPILOT
Q	8" FLG. ELECTROMAGNETIC FLOW METER - SIEMENS SITRANS MAGFLO 5100W W/ MAG6000 TRANSMITTER
R	4" DEZURIK APCO SURGE RELIEF ANGLE VALVE
S	4" MJ. 45° BEND
T	4" MJ. 22.5° BEND
U	4" MJ. 90° BEND
V	8" MJ. 90° BEND
W	4" GATE VALVE

#### PUMP STATION GENERAL NOTES

- I. ALL METALS & FASTENERS INCLUDING FLANGED ACCESSORIES IN THE WET WELL & VALVE VAULT SHALL BE STAINLESS STEEL.
- 2. WASTEWATER PIPING INSIDE WET WELL, VALVE VAULT & UPSTREAM OF TRANSITION TO PVC AT 8"XIO" MJ INCREASER SHALL BE CLASS 52, FLANGED DUCTILE IRON PIPE WITH EXTERIOR ASPHALTIC COATING & INTERIOR DOUBLE CEMENT MORTAR LINING (DCL).
- 3. ALL PIPE PENETRATIONS SHALL HAVE PVC SLEEVE W/ INTEGRAL WATERSTOP & MODULAR ELASTOMER SEAL (LINK-SEAL)
- 4. ALL INTERIOR WET WELL CONCRETE SURFACES SHALL RECEIVE 2 COATS OF 796/998/999 PLY-TILE EPOXY TAR (24 MIL MIN. DFT,)
- 5. ALL ISOLATION VALVES SHALL OPEN LEFT (COUNTER-CLOCKWISE).

#### SEMER PUMP STATION STANDARDS SPECIFICATIONS

#### (TOWN OF MIDDLETOWN)

- I. ALL WORK SHALL CONFORM TO THE TOWN OF MIDDLETOWN SUPPLEMENTAL LIFT STATION / PUMP STATION SPECIFICATIONS (2024 EDITION), TOWN STANDARD DETAILS, AND APPLICABLE FEDERAL, STATE, AND LOCAL CODES INCLUDING NEPA, NEC, AWWA, ASTM, DNREC, AND NEW CASTLE COUNTY.
- 2. PUMP STATION DESIGN: PUMP STATION SHALL USE A WET WELL SUBMERSIBLE SYSTEM WITH TRIPLEX PUMP CONFIGURATION (ONE DUTY, TWO STANDBY). PUMPS SHALL BE FLYGT OR TOWN-APPROVED EQUAL, NON-CLOG CENTRIFUGAL, CAPABLE OF PASSING A MINIMUM 3-INCH SOLID. INSTALL MIX-FLUSH VALVES WHERE REQUIRED.
- 3. SITE REQUIREMENTS: PROVIDE PAVED ACCESS DRIVE AND PARKING AREA, DESIGNED FOR JET/VAC TRUCK ACCESS (39-FT MINIMUM VEHICLE LENGTH CLEARANCE). INSTALL 8' HIGH VINYL-SLATTED CHAIN LINK FENCING WITH KNOX-BOX ENTRY, AND LED SITE LIGHTING WITH DUSK-TO-DAWN PHOTOCELLS AND MANUAL OVERRIDE SWITCHES. PROVIDE SITE GRADING FOR POSITIVE DRAINAGE AWAY FROM THE STATION.
- POSITIVE DRAINAGE AWAY FROM THE STATION.

  4. STRUCTURAL COMPONENTS: WET WELL AND VALVE VAULTS TO BE PRECAST CONCRETE WITH MINIMUM 4,000 PSI STRENGTH, DESIGNED WITH 1.5 FACTOR OF SAFETY AGAINST BUOYANCY. APPLY 16-MIL COAL-TAR EPOXY COATING ON EXTERIORS AND 16-MIL PLY-TILE EPOXY COATINGS
- 5. ELECTRICAL SYSTEM: ALL EQUIPMENT SHALL BE NEMA 4X STAINLESS STEEL RATED FOR OUTDOOR SERVICE. ELECTRICAL SERVICE SHALL BE 3-PHASE, 4-WIRE AT 480V, 240V, OR 208V BASED ON UTILITY AVAILABILITY. PROVIDE GROUND FAULT PROTECTION, LIGHTNING SURGE PROTECTION, AND GROUNDING SYSTEMS IN ACCORDANCE WITH NEC. USE COLOR-CODED WIRING AND LABELED TERMINATIONS.

INSIDE, PROVIDE H-20 RATED ALUMINUM ACCESS HATCHES WITH INTEGRAL SAFETY GRATES.

- 6. INSTRUMENTATION AND CONTROLS: PRIMARY WET WELL LEVEL CONTROL SHALL BE PROVIDED USING A MULTITRODE SENSING SYSTEM. BACKUP LEVEL CONTROL SHALL BE BY MECHANICAL FLOAT SWITCHES. USE FLYGT MULTISMART PUMP STATION MANAGER OR APPROVED EQUAL FOR MONITORING AND CONTROL, WITH SCADA INTERFACE TO TOWN'S SYSTEM. PROVIDE UPS-BACKED POWER TO ALARM SYSTEMS COORDINATED WITH B SAFE SECURITY.
- 7. ALARM REQUIREMENTS: SCADA SYSTEM SHALL MONITOR AND REPORT ALARMS INCLUDING UTILITY POWER FAILURE, GENERATOR OPERATION, HIGH WET WELL LEVEL, AND LOW WET WELL LEVEL. COORDINATE INSTALLATION WITH TOWN'S DESIGNATED SCADA INTEGRATOR AND ALARM CONTRACTOR.
- 8. PIPING AND VALVES: USE DUCTILE IRON PIPE CLASS 52, PROTECTO 401 LINED AND EPOXY-COATED FOR PRESSURE PIPING. USE SCHEDULE 80 PVC FOR DRAIN AND VENT LINES. INSTALL DEZURICK PLUG VALVES, MUELLER RESILIENT WEDGE GATE VALVES, AND GOLDEN-ANDERSON LEVER-WEIGHTED CHECK VALVES. PROVIDE A BAUER QUICK-CONNECT BYPASS CONNECTION WITH ISOLATION VALVE.
- 9. FORCE MAIN REQUIREMENTS: INSTALL COMBINATION AIR RELEASE VALVES AT ALL HIGH POINTS, CLEANOUTS EVERY 400 LINEAR FEET, AND TERMINAL CLEANOUTS AT CHANGES IN DIRECTION OVER 30 DEGREES. DISCHARGE MANHOLES AND FIRST TWO DOWNSTREAM MANHOLES MUST BE EPOXY COATED.
- IO. GENERATOR AND ATS: PROVIDE DIESEL-POWERED GENERATOR BY CUMMINS/ONAN SIZED FOR FULL STATION ELECTRICAL LOAD, WITH 500-GALLON MINIMUM DOUBLE-WALL FUEL TANK. INSTALL LEVEL 2 AUTOMATIC TRANSFER SWITCH (ATS) WITH ADJUSTABLE START DELAY AND RETRANSFER SETTINGS. PROVIDE WEEKLY AUTO-EXERCISE AND MANUAL LOAD BANK CONNECTION IF STATION LOAD IS CONSISTENTLY BELOW 30% OF GENERATOR CAPACITY.
- II. HVAC AND ODOR CONTROL: WET WELL VENTILATION SHALL BE CONTINUOUS, I2 AIR CHANGES PER HOUR (ACH) MINIMUM, USING EXPLOSION-PROOF FANS. BUILDING VENTILATION SHALL BE INTERMITTENT, 6 ACH MINIMUM, THERMOSTATICALLY CONTROLLED. PROVIDE CARBON FILTRATION ODOR CONTROL SYSTEM IF DETENTION TIMES EXCEED LIMITS SET BY TOWN SPECIFICATIONS.
- 12. TESTING AND START-UP: CONTRACTOR SHALL PERFORM ALL REQUIRED FIELD TESTING INCLUDING PUMP DRAW-DOWN TESTS (MINIMUM THREE CYCLES PER PUMP), FORCE MAIN PRESSURE TESTING, SCADA/ALARM VERIFICATION, AND GENERATOR/ATS TESTING. PROVIDE COMPLETE START-UP SERVICES BY CERTIFIED FACTORY TECHNICIANS. CORRECT ALL DEFICIENCIES PRIOR TO FINAL ACCEPTANCE
- 13. OPERATION AND MAINTENANCE MANUALS: SUBMIT COMPLETE AS-BUILT DRAWINGS, CERTIFIED PUMP CURVES, SPARE PARTS LIST, MAINTENANCE PROCEDURES, MANUFACTURER WARRANTIES, AND OPERATIONS MANUALS. POST LAMINATED AS-BUILT DRAWINGS INSIDE CONTROL PANEL ENCLOSURE FOR REFERENCE.
- 14. WARRANTY: PROVIDE A MINIMUM I-YEAR WARRANTY ON COMPLETE INSTALLATION, AND A 5-YEAR MANUFACTURER'S WARRANTY ON SUBMERSIBLE PUMPS, CONTROL PANELS, AND MAJOR ELECTRICAL COMPONENTS.
- 15. FOR COMPLETE DETAILED REQUIREMENTS, REFER TO THE TOWN OF MIDDLETOWN SUPPLEMENTAL LIFT STATION / PUMP STATION SPECIFICATIONS (2024 EDITION). NO DEVIATIONS PERMITTED WITHOUT PRIOR WRITTEN TOWN APPROVAL.



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BEY CREEK

SASTLE COUNTY, DELAWARE

NEW

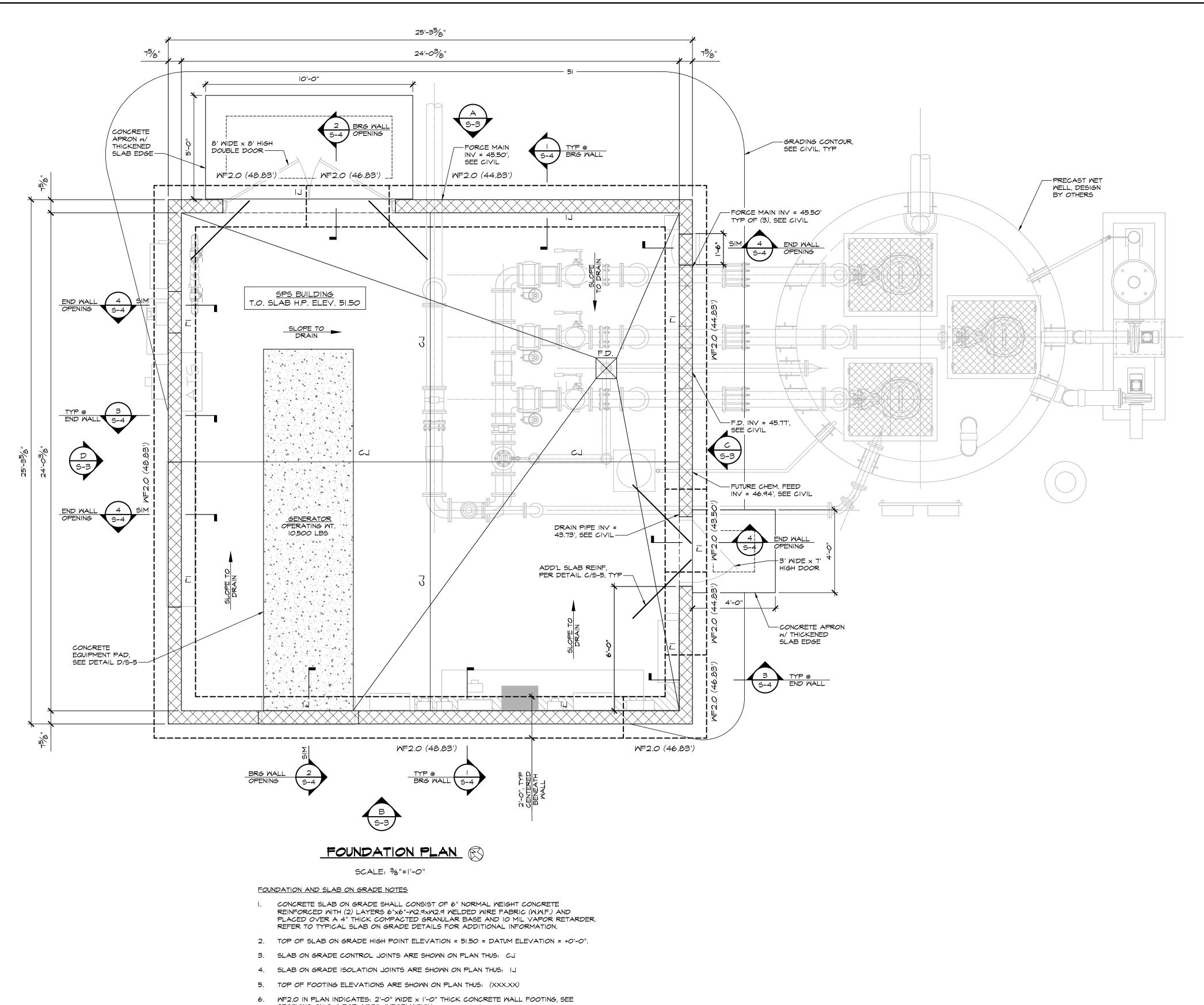
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IO. REVISION DATE

1647 BY SP 04/29/25
EET TITLE

SEWAGE PUMPING STATION
BUILDING AND WET WELL
SECTION VIEW

SHEET NUMBER



SECTIONS ON S-4 FOR ADD'L INFORMATION.

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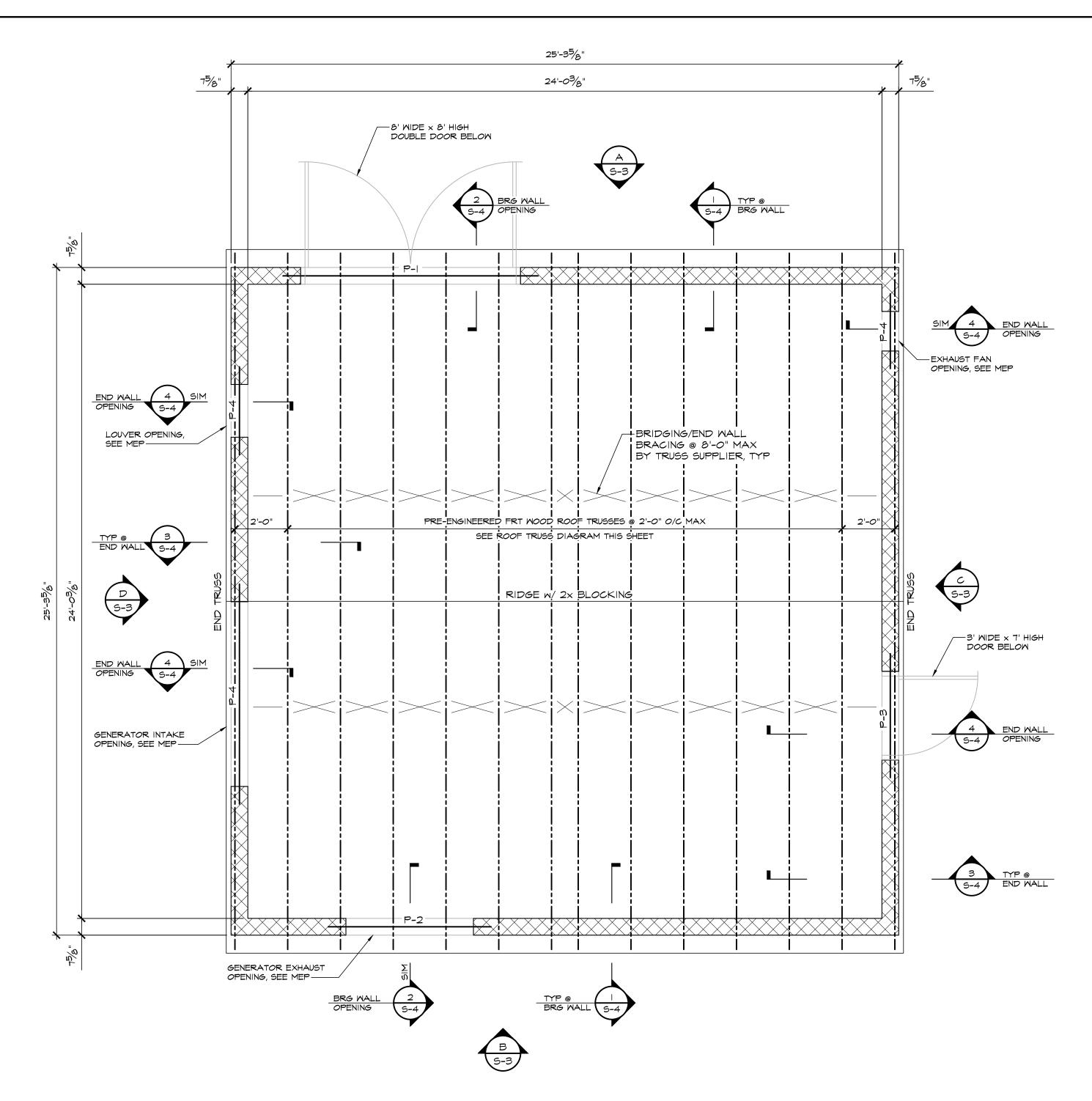
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UPDATES PER TOWN OF MIDDLETOWN 04/01/3 UPDATES PER TOWN OF MIDDLETOWN

**FOUNDATION PLAN** 



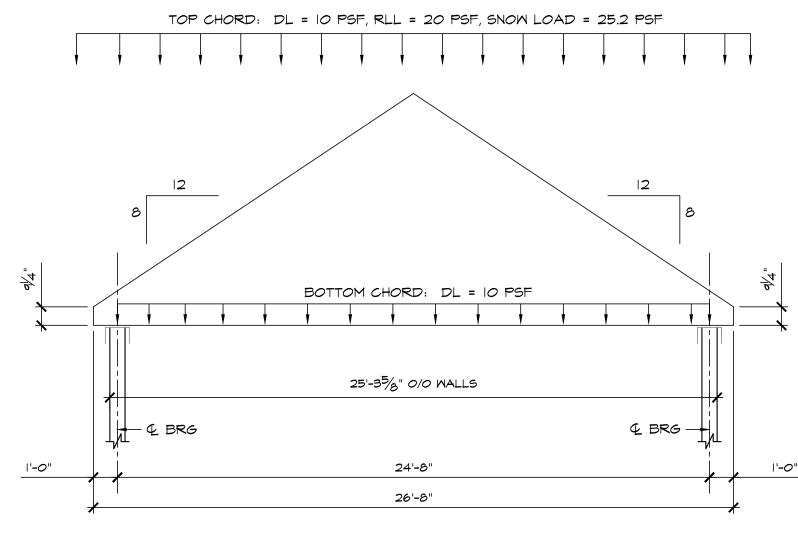
#### ROOF FRAMING PLAN SCALE: %"=|'-0"

#### ROOF FRAMING NOTES

- I. ALL ROOF FRAMING SHEATHED WITH WOOD FRT STRUCTURAL PANELS SHALL FORM A DIAPHRAGM. THE WOOD STRUCTURAL PANELS SHALL BE GLUED & NAILED TO THE FRAMING MEMBERS USING IOD NAILS SPACED AT 6" OC ALONG ALL SUPPORTED PANEL EDGES AND AT 12" OC AT INTERMEDIATE SUPPORTS.
- 2. ROOF SHEATHING SHALL CONSIST OF 19/32" WOOD STRUCTURAL PANELS WITH THE FOLLOWING DESIGN PROPERTIES:

GRADE SHEATHING
SPAN RATING: 48/24
EXPOSURE RATING: EXPOSURE I
VENEER GRADE: GRADE C

- 3. ALL WOOD ROOF FRAMING SHALL BE FIRE RETARDANT TREATED WOOD (FRT)
- 4. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR SIZE AND LOCATION OF ALL ROOF TOP EQUIPMENT AND ROOF OPENINGS. COORDINATE OPENINGS AND ADDITIONAL FRAMING WITH TYPICAL DETAILS.
- 5. T.O. MASONRY WALL ELEVATION = 62.83 = 11'-4" ABOVE SLAB HIGH POINT.



ROOF TRUSS DIAGRAM

SCALE: 1/4" = 1'-0"

MRA

MORRIS & RITCHIE ASSOCIATES, INC.

ENGINEERS, PLANNERS, SURVEYORS, AND LANDSCAPE ARCHITECTS

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SPRINGFIELD, PA 19064
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ABBEY CREEK

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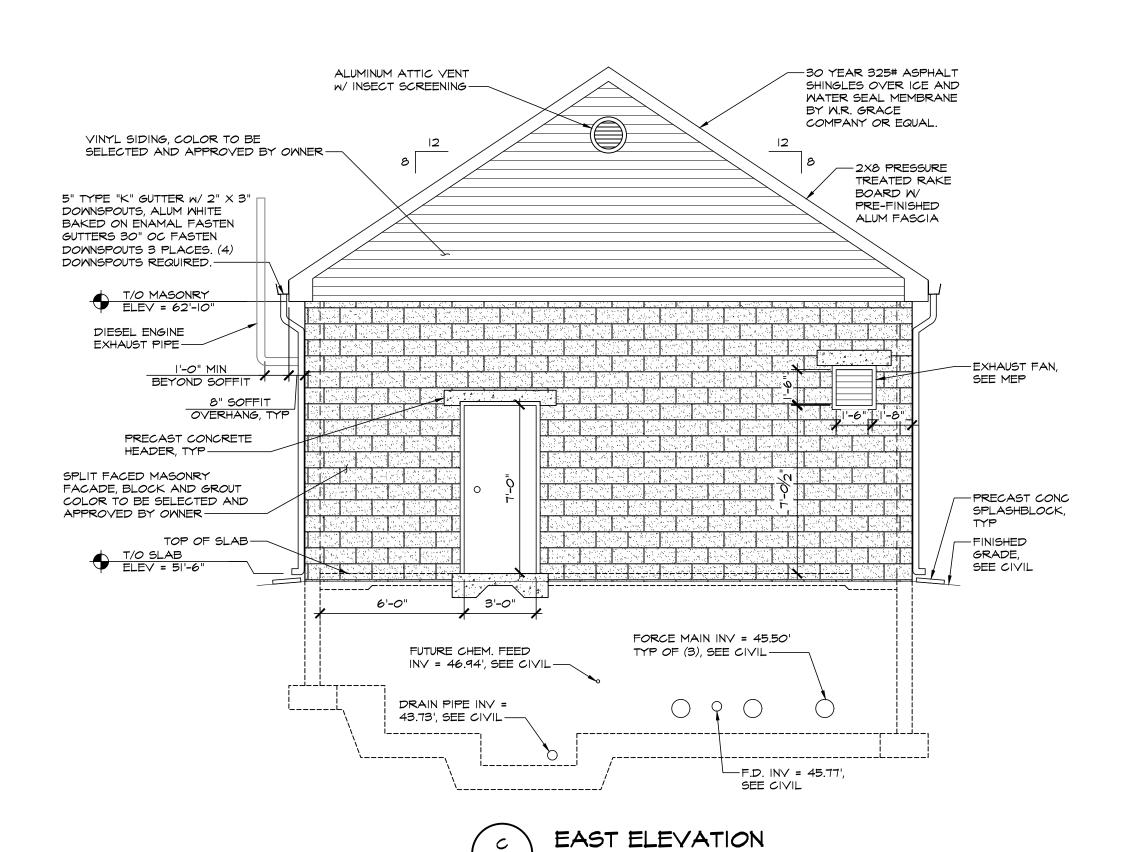
2 UPDATES PER TOWN OF MIDDLETOWN 04/01/

ROOF

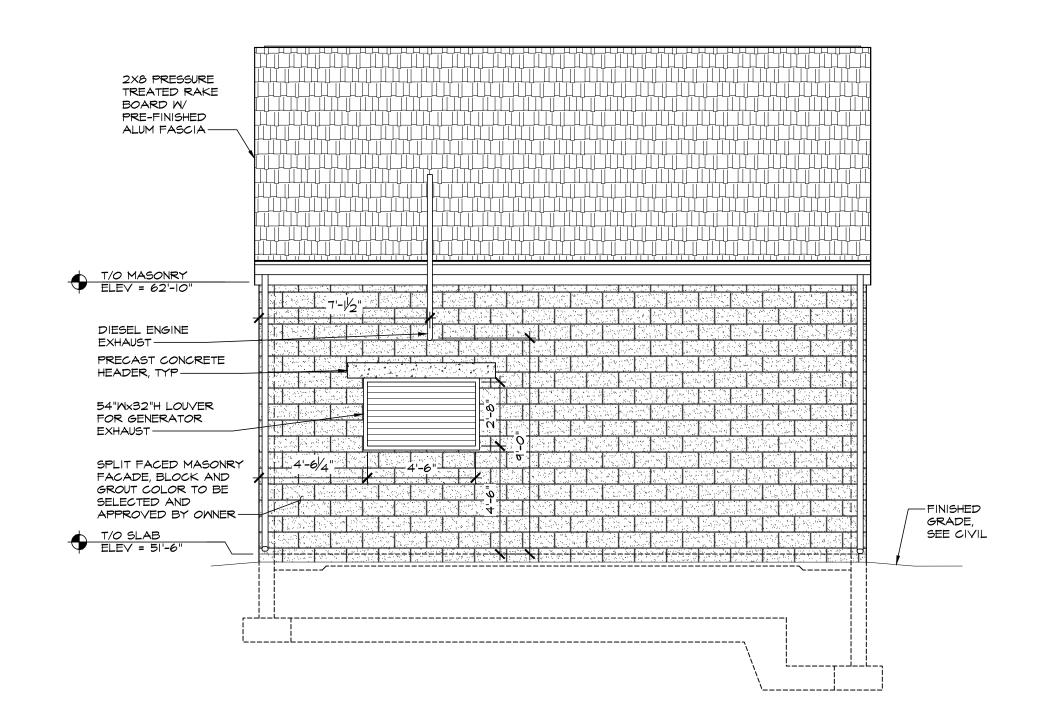
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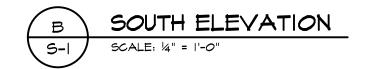
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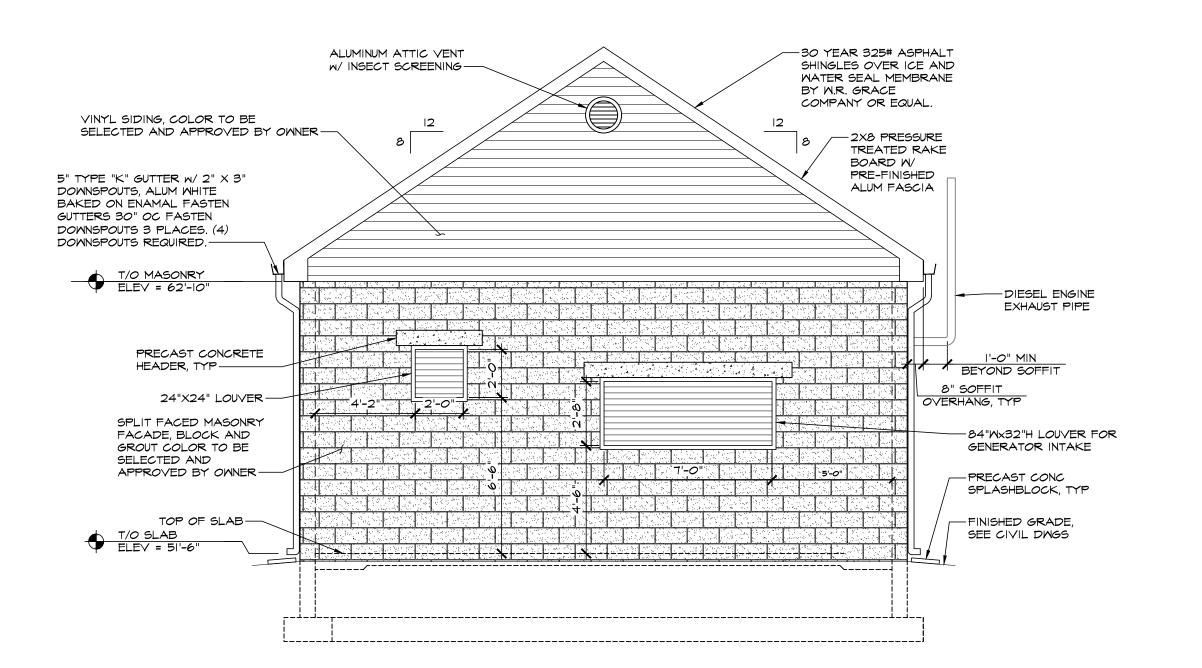




SCALE: 1/4" = 1'-0"











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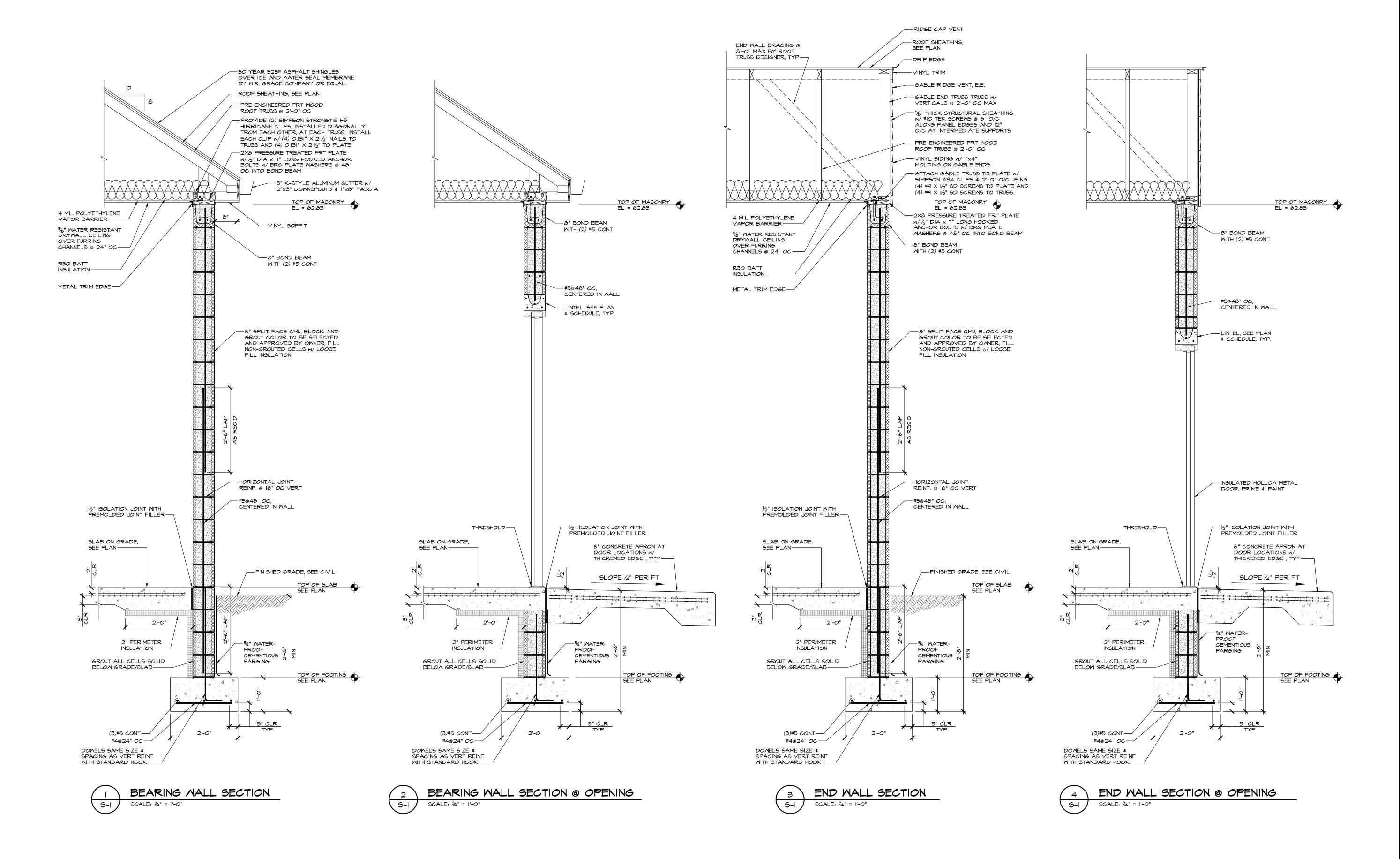
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**SECTIONS** 

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UPDATES PER TOWN OF MIDDLETOWN 11/01/24

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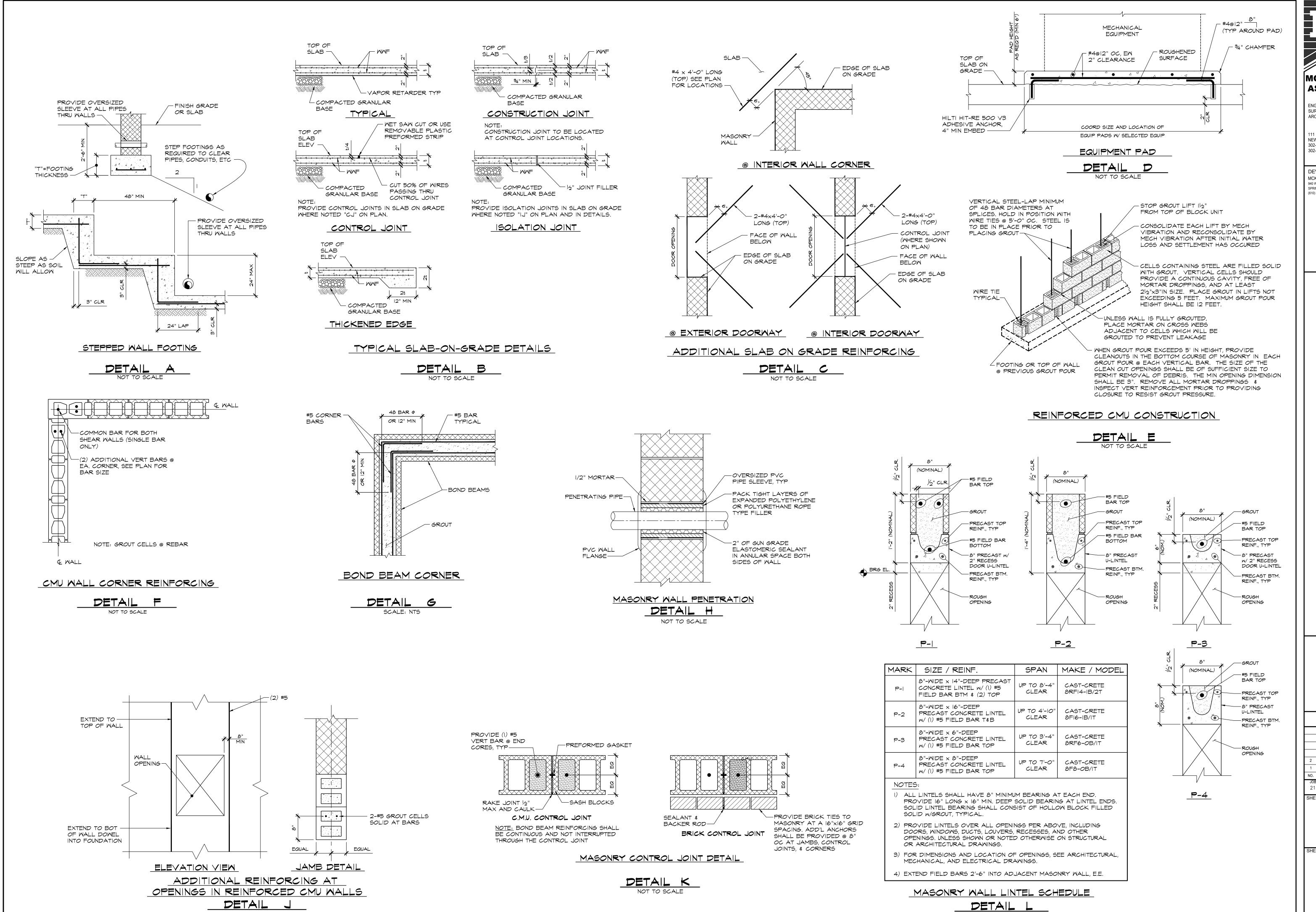
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NOT TO SCALE

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**TYPICAL** 

**DETAILS** 

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NOT TO SCALE

 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (ASCET-16). B. IN ADDITION, ALL CONSTRUCTION SHALL CONFORM WITH THE GOVERNING LOCAL BUILDING CODE.

C. BUILDING USE GROUP: U (UTILITY)

D. CONSTRUCTION CLASSIFICATION: IIB

#### DESIGN LOAD

A. THE DESIGN DEAD LOADING FOR ALL FRAMING IS BASED ON THE CONSTRUCTION MATERIALS SHOWN ON THE DRAWINGS AND INDICATED IN THE SPECIFICATIONS. ALL FRAMING IS DESIGNED FOR THE FOLLOWING UNIFORM SUPERIMPOSED DEAD LOADS APPLIED IN ADDITION TO STRUCTURE SELF WEIGHT:

B. THE MINIMUM DESIGN UNIFORMLY DISTRIBUTED LIVE LOADING FOR ALL NEW FRAMING SHALL BE AS FOLLOWS:

25 PSF

25.2 PSF

ENCLOSED

ROOF C. RISK CATEGORY:

D. SNOW LOAD DESIGN DATA:

GROUND SNOW LOAD (Pg)= FLAT ROOF SNOW LOAD (Pf)=

EXPOSURE FACTOR (Ce)= IMPORTANCE FACTOR (Is)= THERMAL FACTOR (Ct)= SLOPE FACTOR (Cs)= SLOPED ROOF SNOW LOAD (Ps)=

25.2 PSF MINIMUM ROOF SNOW LOAD (Pm)= N/A (SLOPE EXCEEDS 15°)

E. WIND LOAD DESIGN CRITERIA:

ANALYSIS PROCEDURE: DIRECTIONAL PROCEDURE, ULTIMATE WIND SPEED (Vult)= 128 MPH 0.85 WIND DIRECTIONALITY FACTOR (Kd)= EXPOSURE CATEGORY= TOPOGRAPHIC FACTOR (Kzt)= GUST EFFECT FACTOR (G)= 0.85

IT IS THE RESPONSIBILITY OF THE COMPONENT & CLADDING MANUFACTURER'S ENGINEER TO CALCULATE WIND LOADS FOR COMPONENTS AND CLADDING BASED ON EACH COMPONENT'S TRIBUTARY AREA AND LOCATION ON THE BUILDING. MINIMUM DESIGN PRESSURE = 20 PSF.

F. EARTHQUAKE LOAD DESIGN CRITERIA:

ENCLOSURE CLASSIFICATION=

INTERNAL PRESSURE COEFF (GCpi)=

SEISMIC IMPORTANCE FACTOR (I)= SPECTRAL RESPONSE ACCELERATIONS SS= O.152 0.044 D (DEFAULT) SPECTRAL RESPONSE COEFFICIENTS SDS= 0.163 SDI= 0.070 SEISMIC DESIGN CATEGORY= BASIC SEISMIC FORCE RESISTING SYSTEM= ORDINARY REINF MASONRY

SHEAR MALLS ANALYSIS PROCEDURE= EQUIVALENT LATERAL FORCE RESPONSE MODIFICATION COEFFICIENT (R)= BASE SHEAR COEFFICIENT (Cs)= 0.122

G. THE CONTRACTOR SHALL NOT STORE ANY CONSTRUCTION MATERIALS OR UNDERTAKE ANY CONSTRUCTION OPERATION WHICH WILL EXCEED THE DESIGN LIVE LOADINGS NOTED.

H. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, INSTALLATION AND REMOVAL OF TEMPORARY BRACING AND CONSTRUCTION SUPPORTS FOR NEW AND EXISTING STRUCTURES, AS REQUIRED TO COMPLETE THE PROJECT. THE STABILITY OF THE STRUCTURE IS DEPENDENT UPON THE DIAPHRAGM ACTION OF THE FLOORS AND ROOF. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR THE METHOD OF CONSTRUCTION AND SHALL PROVIDE ALL TEMPORARY BRACING AND SHORING REQUIRED TO MAINTAIN THE STABILITY OF THE STRUCTURE AND TO SUPPORT CONSTRUCTION LOADS DURING CONSTRUCTION. CONTRACTOR SHALL RETAIN STRUCTURAL ENGINEER LICENSED IN THE STATE IN WHICH PROJECT IS LOCATED TO DESIGN TEMPORARY BRACING AND CONSTRUCTION SUPPORTS.

DESIGN OF ALL BRACING INCLUDING BRACING WHEN BACKFILLING SOILS PRIOR TO PLACING FLOOR FRAMING AND/OR SLAB ON GRADE IS THE CONTRACTORS RESPONSIBILITY.

THE FRAMING HAS BEEN DESIGNED FOR THE WEIGHT OF EQUIPMENT SHOWN ON THE STRUCTURAL DRAWINGS IF ACTUAL MEIGHT OF EQUIPMENT EXCEEDS THAT SHOWN OR IF EQUIPMENT NOT SHOWN EXCEEDS 500 POUNDS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.

K. DO NOT PLACE ANY STRUCTURES (ELECTRICAL CONDUIT, TELECOMMUNICATIONS OR SIGNAL WIRE, OPERABLE DEVICES, FLUID LINES, ETC) WITHIN NINE (9) INCHES OF THE UNDERSIDE OF THE ROOF AS THESE MAY BE COMPROMISED BY ROOFING SCREWS AT SOME FUTURE DATE FROM ROOF REPLACEMENT. THE APPROVED METHOD OF SUSPENSION IS FROM BUILDING STRUCTURAL STEEL, INCLUDING THOSE MEMBERS SUPPORTING THE

. ALL CLADDING, AND EXTERIOR CEILINGS AND SOFFITS SHALL BE DESIGNED FOR THE LOADS INDICATED OR

#### SPECIFIED BY THE BUILDING CODE. MISCELLANEOUS

A. SHOP DRAWINGS FOR ALL STRUCTURAL ELEMENTS SHOWN ON THE CONTRACT DOCUMENTS MUST BE SUBMITTED BY THE CONTRACTOR OR OWNER FOR REVIEW BY THE ENGINEER. IF THE CONTRACTOR OR OWNER FAILS TO SUBMIT THE SHOP DRAWINGS, THE ENGINEER WILL NOT BE RESPONSIBLE FOR STRUCTURAL CERTIFICATION AND DESIGN OF THE PROJECT. THE SHOP DRAWINGS SHALL INDICATE ANY DEVIATIONS OR OMISSIONS FROM THE CONTRACT DOCUMENTS. THE GENERAL CONTRACTOR SHALL REVIEW ALL SHOP DRAWINGS PRIOR TO SUBMISSION AND MAKE ALL CORRECTIONS DEEMED NECESSARY.

B. SEE CIVIL AND MEP CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION RELATING TO THE COORDINATION OF STRUCTURAL COMPONENTS.

C. THE CONTRACTOR SHALL REVIEW THE CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATION AND DIMENSION OF CHASES, INSERTS, OPENINGS, SLEEVES, DEPRESSIONS AND OTHER PROJECT REQUIREMENTS WHICH IMPACT THE STRUCTURAL COMPONENTS. THE STRUCTURAL CONSTRUCTION DRAWINGS DO NOT SHOW ALL OPENINGS REQUIRED. ADDITIONAL OPENINGS, BLOCKOUTS AND SLEEVES MAY BE REQUIRED BY OTHER DISCIPLINES AND SHALL BE CONSTRUCTED USING THE TYPICAL DETAILS AND/OR CRITERIA INDICATED THE STRUCTURAL DRAWINGS. OPENINGS REQUIRED BUT NOT SHOWN ON THE STRUCTURAL DRAWINGS MUST BE APPROVED BY THE STRUCTURAL ENGINEER.

D. IN CASES OF CONFLICT BETWEEN THE DRAWINGS AND/OR SPECIFICATIONS AND OTHER DISCIPLINES OR EXISTING CONDITIONS, CONTRACTOR SHALL NOTIFY THE DESIGN PROFESSIONALS AND OBTAIN CLARIFICATION PRIOR TO BIDDING AND PROCEEDING WITH WORK.

E. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS SHOWN ON THE CONTRACT DRAWINGS BEFORE PROCEEDING WITH CONSTRUCTION. ALL DISCREPANCIES AND OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.

F. THE CONTRACTOR SHALL NOT SUBMIT REPRODUCTIONS OF THE STRUCTURAL CONTRACT DOCUMENTS AS

G. SCALES SHOWN ON THE STRUCTURAL CONTRACT DRAWINGS ARE FOR GENERAL INFORMATION ONLY. DIMENSIONAL INFORMATION SHALL NOT BE OBTAINED BY SCALING THE DRAWINGS.

H. APPLY DETAILS, SECTIONS AND NOTES ON THE DRAWINGS WHERE CONDITIONS ARE SIMILAR TO THOSE INDICATED BY DETAIL, DETAIL TITLE OR NOTE.

ASSUME EQUAL SPACING BETWEEN ESTABLISHED DIMENSIONS, IF NOT INDICATED ON DRAWINGS.

J. CENTERLINE OF GRADE BEAMS AND WALLS COINCIDE WITH CENTERLINES OF FOUNDATIONS, UNLESS OTHERWISE NOTED.

K. THE CONTRACTOR SHALL VERIFY THAT CONSTRUCTION LOADS DO NOT EXCEED THE CAPACITY OF THE

STRUCTURE AT THE TIME THE LOAD IS APPLIED. PROVIDE SHORING AND PROTECTION FOR EXCAVATION BANKS AS NECESSARY TO PREVENT CAVING AND

COMPLY WITH ALL APPLICABLE OSHA RULES AND REGULATIONS. M. THE OWNER SHALL HIRE AN INDEPENDENT TESTING AGENCY TO PROVIDE ALL REQUIRED TESTING AND INSPECTIONS. IT SHALL BE THE GENERAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL TESTING AND INSPECTIONS WITH THE INDEPENDENT INSPECTION AGENCY. THE FOLLOWING STRUCTURAL ITEMS REQUIRE

THIRD-PARTY TESTING/INSPECTIONS: CONCRETE CONSTRUCTION (IBC SECTION 1705.3)

MASONRY CONSTRUCTION (IBC SECTION 1705.4)

MOOD TRUSSES (IBC SECTION 1704.2.5)

#### SPREAD FOOTING FOUNDATIONS

A. THE BOTTOM OF ALL EXTERIOR FOOTINGS SHALL BE A MINIMUM OF 2'-8" BELOW FINISH GRADE FOR FROST PROTECTION.

B. TOP OF ALL INTERIOR FOOTINGS SHALL BE A MINIMUM 8" BELOW FINISHED FLOOR UNLESS NOTED OTHERWISE

ON THE DRAWINGS. C. ALL FOOTINGS HAVE BEEN DESIGNED FOR AN ASSUMED NET ALLOWABLE SOIL BEARING PRESSURE OF 3000

D. ALL FILL PLACED UNDER SPREAD FOOTINGS SHALL BE COMPACTED TO A DRY DENSITY OF AT LEAST 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698.

GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACING FOUNDATIONS. SHOULD THE ACTUAL SOIL

BEARING PRESSURE BE LESS THAN 3000 PSF, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.

E. ALL EXCAVATION AND BACKFILLING OPERATIONS WITHIN THE BUILDING FOOTPRINT, INCLUDING ALL COMPACTION TESTS AND INSPECTIONS, SHALL BE DONE UNDER THE DIRECTION AND SUPERVISION OF A REGISTERED GEOTECHNICAL ENGINEER.

PSF. THE ALLOWABLE SOIL BEARING PRESSURE SHALL BE FIELD VERIFIED BY A REGISTERED

F. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ALL FOUNDATION AND SOIL CONDITIONS WHICH DIFFER FROM THOSE ANTICIPATED OR INDICATED IN THE CONTRACT DOCUMENTS.

G. ALL EXISTING SOIL CONTAINING GRAVEL, CONSTRUCTION OR DEMOLITION DEBRIS, ORGANIC SUBSTANCES, OR OTHER FOREIGN OBJECTS SHALL BE REMOVED FROM THE REGION WITHIN THE FOOTPRINT OF THE STRUCTURE.

STRUCTURAL FILL A. NEW FILL MATERIAL AND EXISTING BASE MATERIAL SHALL BE FREE OF ALL REFUSE, DEBRIS, AND ORGANIC MATTER AND SHALL BE APPROVED FOR USE BY A REGISTERED GEOTECHNICAL ENGINEER.

B. FILL MATERIAL SHALL BE DEPOSITED IN & INCH MAXIMUM LOOSE LIFTS AND COMPACTED TO A DRY DENSITY OF AT LEAST 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698. FILL SHALL BE PLACED AND COMPACTED IN & INCH LOOSE LIFTS TO DESIRED FINISHED GRADE UNDER THE GUIDANCE AND OBSERVATION OF A PROFESSIONAL GEOTECHNICAL ENGINEER REGISTERED IN THE STATE OF

C. WHEN WORK IS INTERRUPTED BY RAIN, FILL OPERATIONS SHALL NOT RESUME UNTIL FIELD TESTS INDICATE THAT THE MOISTURE CONTENT AND SOIL DENSITY OF THE TOP & INCHES OF FILL IS WITHIN THE LIMITS SPECIFIED.

D. ALL FILL MATERIAL SHALL BE PLACED IN SUCH A MANNER THAT THE SURFACE IS SLOPED TO PREVENT THE PONDING OF WATER.

#### <u>SLABS ON GRADE</u>

A. ALL SLABS ON GRADE SHALL BE OF THE THICKNESS AND SHALL BE REINFORCED AS INDICATED ON THE FLOOR PLANS. CONCRETE SLABS ON GRADE SHALL BE PLACED OVER A 10 MIL POLYETHYLENE VAPOR RETARDER (INTERIOR SLABS ONLY, UNO) AND 4 INCHES OF COMPACTED GRANULAR BASE. ALL EDGES OF VAPOR RETARDER SHALL BE LAPPED 6 INCHES AND TAPED. MAXIMUM AGGREGATE SIZE OF GRANULAR BASE SHALL BE 1/2 INCH.

B. ALL FILL PLACED UNDER SLABS ON GRADE SHALL BE COMPACTED TO A DRY DENSITY OF AT LEAST 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698.

C. ALL EXCAVATION, BACKFILLING, AND COMPACTION OPERATIONS UNDER THE SLAB ON GRADE SHALL BE DONE UNDER THE DIRECTION AND SUPERVISION OF A REGISTERED GEOTECHNICAL ENGINEER.

D. MAXIMUM CONTROL/CONSTRUCTION JOINT SPACING SHALL NOT EXCEED 15'-O" ON CENTER, EACH WAY. THE FRAMING PLANS SHOW APPROXIMATE JOINT LAYOUTS. ACTUAL JOINT SPACING/LAYOUT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, BUT SHALL NOT EXCEED THE MAXIMUM SPACING INDICATED ABOVE. CONTRACTOR SHALL SUBMIT PLANS SHOWING THE PROPOSED JOINT LAYOUT FOR REVIEW PRIOR TO PLACING CONCRETE.

E. CONTROL JOINTS THAT ARE TO BE SAW-CUT SHALL BE CUT AS SOON AS THE CONCRETE SETS-UP/HARDENS SUFFICIENTLY TO SUPPORT THE WEIGHT OF THE SAW-CUTTING OPERATION.

F. ALL RE-ENTRANT CORNERS REQUIRE REINFORCING IN ACCORDANCE WITH THE TYPICAL DETAILS.

G. FLOOR FINISH TOLERANCE SHALL BE MEASURED USING THE 10-FOOT STRAIGHT EDGE METHOD AND SHALL BE LIMITED TO ¼".

H. CONTRACTOR SHALL CURE CONCRETE SLABS ON GRADE FOR A MINIMUM OF THREE (3) DAYS. ACTUAL DURATION OF WET CURE SHALL BE BASED ON CONDITIONS AT THE TIME OF THE CONCRETE POUR AND SHALL BE IN ACCORDANCE WITH ALL ACI SPECIFICATIONS AND RECOMMENDATIONS. SPECIAL CARE SHALL BE TAKEN WHEN CONCRETE IS PLACED DURING HOT, COLD AND/OR WINDY CONDITIONS.

#### CAST IN PLACE CONCRETE

A. ALL CONCRETE CONSTRUCTION SHALL CONFORM TO THE "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301)"; AND TO THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318)".

B. IN ADDITION TO THE ABOVE, ALL CONCRETE WORK SHALL CONFORM TO THE FOLLOWING:

RECOMMENDED PRACTICE FOR HOT WEATHER CONCRETING (ACI 305) RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING (ACI 306). RECOMMENDED PRACTICE FOR CONCRETE FORMWORK (ACI 347) STANDARD SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS (ACI IIT).

CHEMICAL ADMIXTURES FOR CONCRETE (ACI 212.3),

STANDARD SPECIFICATION FOR CURING CONCRETE (ACI 308.1). C. ALL CONCRETE EXPOSED TO PUBLIC VIEW SHALL CONFORM TO THE REQUIREMENTS FOR ARCHITECTURAL CONCRETE CONTAINED IN ACI 301.

D. ALL CONCRETE; UNLESS NOTED OTHERWISE, SHALL BE NORMAL WEIGHT STONE AGGREGATE CONCRETE HAVING THE FOLLOWING MINIMUM 28 DAY COMPRESSIVE STRENGTHS:

MAX W/C RATIO SLUMP AIR CONTENT SPREAD FOOTINGS 3000 PSI 4500 PSI 0.45 SLAB ON GRADE 6.0%

ALL CONCRETE EXPOSED TO WEATHER SHALL HAVE AN AIR ENTRAINMENT OF 6% +/- 1%. NO ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL BE PERMITTED. MAXIMUM AGGREGATE SIZE SHALL BE I", AND MAXIMUM SLUMP SHALL BE 4", 3" FOR SLABS ON GRADE. ALL CONCRETE, EXCEPT FOOTINGS, SHALL CONTAIN A WATER REDUCING ADMIXTURE. PORTLAND CEMENT SHALL CONFORM TO ASTM CI50 AND NORMAL WEIGHT AGGREGATES SHALL CONFORM ASTM C33.

E. ALL CONCRETE MIX DESIGNS, INCLUDING CEMENT CONTENT, WATER CEMENT RATIO, FINE AND COARSE AGGREGATE CONTENT AND ALL ADMIXTURES, SHALL BE REVIEWED BY ENGINEER PRIOR TO PLACING FIRST

F. ALL CONCRETE SHALL BE SAMPLED AND TESTED BY THE TESTING AGENCY. THE CONTRACTOR SHALL NOTIFY THE TESTING AGENCY 48 HOURS PRIOR TO THE PLACING OF ANY CONCRETE. TESTING SHALL BE IN ACCORDANCE WITH ASTM CI72.

G. THE CONCRETE STRUCTURE SHALL NOT SUPPORT THE DESIGN LIVE LOAD FOR A MINIMUM OF 28 DAYS AND ALL SHORING AND RE-SHORING REQUIRED TO SUPPORT THE CONCRETE STRUCTURE DURING CONSTRUCTION SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR. SHOP DRAWINGS, SIGNED AND SEALED BY A REGISTERED ENGINEER IN THE STATE OF DELAWARE, SHALL BE SUBMITTED FOR REVIEW. SHOP DRAWINGS SHALL INDICATE THE TYPE, EXTENT, SIZE, AND LOCATION OF ALL SHORING AND RE-SHORING AS WELL AS THE SEQUENCE OF CONSTRUCTION.

H. GROUND BLAST FURNACE SLAG MAY BE USED TO REPLACE UP TO 50 PERCENT OF THE PORTLAND CEMENT IN A CONCRETE MIX, AND FLY ASH OR POZZOLAN MAY BE USED TO REPLACE UP TO 25 PERCENT OF PORTLAND CEMENT, SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER AND SHALL CONFORM TO ASTM C989.

I. ALL REINFORCING BARS SHALL BE NEW BILLET STEEL CONFORMING TO ASTM A615 GRADE 60 (FY = 60 KSI).

J. ALL WELDED WIRE FABRIC (W.W.F.) SHALL CONFORM TO ASTM A185.

FOOTINGS

SLABS ON GRADE

K. LAP ALL REINFORCING BARS A MINIMUM OF 48 BAR DIAMETERS AND ALL W.W.F. A MINIMUM OF TWO FULL GRIDS, UNLESS OTHERWISE INDICATED.

L. ALL BARS SHALL BE EPOXY COATED SHALL BE IN ACCORDANCE WITH ASTMS A615 \$ A775. REPAIR CUT AND DAMAGED EPOXY COATINGS WITH EPOXY REPAIR COATINGS ACCORDING TO ASTM D3963. USE EPOXY-COATED STEEL WIRE TIES TO FASTEN EPOXY-COATED STEEL REINFORCEMENT. USE EPOXY COATED OR OTHER DIELECTRIC-POLYMER-COATED WIRE BAR SUPPORTS.

M. ALL REINFORCING SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH THE CRSI "MANUAL OF STANDARD PRACTICE", ACI 315" DETAILS AND DETAILING OF CONCRETE REINFORCEMENT", ACI SP 66 "DETAILING MANUAL".

N. DOWELS SHALL MATCH SIZE AND SPACING OF MAIN REINFORCEMENT, UNLESS NOTED OTHERWISE.

O. WHERE A 90°, 135° OR 180° HOOK IS GRAPHICALLY INDICATED, PROVIDE CORRESPONDING ACI STANDARD HOOKS, UNLESS NOTED OTHERWISE.

2 INCHES (TOP), 3 INCHES (BTM)

3 INCHES (BOTTOM & SIDES), 2 INCHES (TOP)

P. MINIMUM COVER FOR ALL REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE INDICATED:

Q. UNLESS NOTED OTHERWISE, TERMINATE BARS AT DISCONTINUOUS ENDS WITH STANDARD HOOKS.

R. ALL CAST-IN-PLACE CONCRETE WILL EXPERIENCE DIFFERING VARIATIONS OF CRACKING. ANY ELEMENT EXPOSED TO DIRECT WEATHER AND/OR TEMPERATURE VARIATIONS DURING CONSTRUCTION OR IN THE FINAL CONDITION IS TO BE TREATED AND REGULARLY MAINTAINED TO PREVENT PROPOGATION OF CRACKS AND MATER INFILTRATION. THE CONTRACTOR SHALL DEVELOP A REGULAR MAINTENANCE PROGRAM AND SUBMIT IT TO THE OWNER.

S. FLOOR FINISH TOLERANCE SHALL BE MEASURED USING THE 10-FOOT STRAIGHT EDGE METHOD AND SHALL BE LIMITED TO 4"

T. ALL CONCRETE CONSTRUCTION SHALL BE INSPECTED IN ACCORDANCE WITH CHAPTER 17 OF THE

#### CONCRETE MASONRY

INTERNATIONAL BUILDING CODE.

A. ALL MASONRY CONSTRUCTION SHALL CONFORM TO THE "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530/ASCE 5/TMS 402)" AND TO THE "SPECIFICATIONS FOR MASONRY STRUCTURES (ACI

B. ALL CONCRETE MASONRY SHALL HAVE A SPECIFIED NET AREA COMPRESSIVE STRENGTH OF MASONRY, F'M = 2000 PSI.

C. ALL EXTERIOR WALLS AND ALL WALLS SUPPORTING LOADS OTHER THAN THEIR OWN WEIGHT SHALL BE CONSTRUCTED OF NORMAL WEIGHT HOLLOW LOAD BEARING UNITS CONFORMING TO ASTM C 90 WITH A NET AREA COMPRESSIVE STRENGTH OF 2000 PSI. PROVIDE TYPE NI BLOCK BELOW GRADE AND WHERE BLOCK IS SUBJECTED TO MOISTURE PENETRATION, OTHERWISE PROVIDE TYPE SI.

D. ALL EXTERIOR WALLS AND BEARING WALLS SHALL BE CONSTRUCTED WITH TYPE "S" CEMENT LIME MORTAR ABOVE GRADE, AND TYPE "M" BELOW GRADE. ALL MORTAR SHALL CONFORM TO ASTM C 270.

E. ALL FILL FOR CONCRETE MASONRY SHALL BE GROUT CONFORMING TO ASTM C476. GROUT COMPRESSIVE

STRENGTH SHALL EQUAL OR EXCEED THE SPECIFIED MASONRY COMPRESSIVE STRENGTH, BUT SHALL NOT BE LESS THAN 2000 PSI. F. ALL MASONRY WALLS SHALL BE REINFORCED WITH #9 LADDER TYPE GALVANIZED HORIZONTAL JOINT

REINFORCING CONFORMING TO ASTM AS2 AND SPACED VERTICALLY AT 16" O.C., UNLESS OTHERWISE INDICATED. PROVIDE CORNER AND TEE PIECES AT ALL INTERSECTIONS. LAP ALL JOINTS 6" MINIMUM REFER TO THE CAST IN PLACE CONCRETE NOTES FOR ADDITIONAL INFORMATION ON REINFORCING.

G. ALL VERTICAL REINFORCING SHALL BE LAP SPLICED A MINIMUM OF 48 BAR DIAMETERS UNLESS OTHERWISE

H. UNLESS OTHERWISE INDICATED, ALL BOND BEAMS SHALL BE REINFORCED WITH 2-#5 BARS RUNNING CONTINUOUS AND LAP SPLICED A MINIMUM OF 48 BAR DIAMETERS. PROVIDE CORNER BARS OF THE SAME SIZE AT CORNERS AND INTERSECTIONS WITH 48 BAR DIAMETER SPLICES WITH MAIN REINFORCING.

VERTICAL WALL REINFORGING SHALL BE CUT AND LAP SPLICED FOR MAXIMUM 5'-O" GROUT LIFTS. MASONRY CORES CONTAINING VERTICAL REINFORCING SHALL BE GROUTED SOLID.

PLACEMENT OF REINFORCEMENT, AND THE QUALITY AND PLACEMENT OF ALL JOINTS.

SHALL BE PLACED WHERE ABRUPT CHANGES IN WALL OCCUR

J. THE CONTRACTOR SHALL PROVIDE HOLLOW BLOCK FILLED SOLID WITH GROUT DIRECTLY BELOW ALL CHANGES IN WALL THICKNESS. K. CONTROL JOINTS SHALL BE PLACED IN THE MASONRY WALL TO FORM PANELS WITH A LENGTH TO HEIGHT RATIO OF 2.5 OR LESS. THE MAXIMUM PANEL LENGTH SHALL NOT EXCEED 45 FEET. ADDITIONAL JOINTS

L. THE CONTRACTOR SHALL BRACE AND SHORE ALL MASONRY WALLS AS REQUIRED UNTIL ROOF AND FLOOR

SYSTEMS HAVE BEEN COMPLETELY INSTALLED. M. ALL MASONRY SHALL BE FIELD INSPECTED IN ACCORDANCE WITH ACI 530/ASCE 6/TMS 602 INCLUDING VERIFICATION OF THE MASONRY COMPRESSIVE STRENGTH, VERIFICATION OF GROUT COMPRESSIVE

STRENGTH, COMPLIANCE OF ALL MATERIALS TO CONTRACT DOCUMENTS, THE CONDITION, SIZE, SPACING, AND

N. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS INDICATING THE EXTENT, TYPE, AND SIZE OF ALL MASONRY WORK, THE LOCATION AND BENDING DETAILS OF ALL REINFORCING, AND THE TYPE AND LOCATION OF ALL JOINTS.

#### **MOOD FRAMING**

A. IN ADDITION TO THE IBC BUILDING CODE, ALL WOOD FRAMING SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE @NATIONAL DESIGN SPECIFICATIONA (NDS) PUBLISHED BY THE NATIONAL FOREST PRODUCTS ASSOCIATION.

B. ALL NEW WOOD MEMBERS SHALL HAVE THE FOLLOWING MINIMUM ALLOWABLE PROPERTIES AND DESIGN STRESSES:

HEM-FIR NORTH (HF) NO. 2 1.6X10^6 PSI FB 1000 PSI 575 PSI FC(PERP) 405 PS FC(PARALLEL) 1450 PS 145 PSI

C. ALL WOOD STRUCTURAL PANELS (PLYWOOD, ORIENTED STRAND BOARD (OSB)) SHALL MEET THE REQUIREMENTS OF VOLUNTARY PRODUCT STANDARD PS-2. PANELS SHALL BE A MINIMUM OF 4 BY 8 FEET EXCEPT AT BOUNDARIES. REFER TO PLANS FOR SPAN RATING, THICKNESS, AND EXPOSURE RATING.

E. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN CALCULATIONS FOR ALL WOOD TRUSSES

D. WOOD TRUSSES SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE THE TRUSS PLATE INSTITUTE'S "DESIGN SPECIFICATION FOR LIGHT METAL PLATE CONNECTED WOOD TRUSSES" FOR THE DESIGN LOADS INDICATED ON THE CONTRACT DOCUMENTS.

INCLUDING MEMBER LAYOUT, WOOD SPECIES AND GRADE, MEMBER SIZES, TRUSS BEARING CONNECTION DETAILS, CAPACITY OF CONNECTOR PLATES AND THE SIZE AND LOCATION OF ALL REQUIRED BRIDGING. THE CALCULATIONS AND SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF DELAWARE. F. FASTENING OF ALL WOOD FRAMING SHALL MEET THE MINIMUM RECOMMENDED REQUIREMENTS PROVIDED IN

GOVERNS. FASTENERS FOR PRESSURE-PRESERVATIVE AND FIRE-RETARDANT-TREATED WOOD SHALL BE OF HOT-DIPPED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER (EXCEPT BOLTS WITH A MINIMUM DIAMETER OF 1/2 INCH). G. WOOD FRAMING CONNECTIONS REQUIRING THE USE OF STEEL CONNECTORS SHALL CONSIST OF MINIMUM 20 GAGE GALVANIZED STEEL. THE CONTRACTOR SHALL SELECT STEEL CONNECTIONS BASED ON THE

THE FASTENING SCHEDULE OF THE IBC UNLESS OTHERWISE NOTED ON DRAWINGS, STRICTER OF TWO

OTHERWISE ON PLAN. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS INDICATING THE STEEL CONNECTIONS FOR EACH MEMBER FOR REVIEW BY THE ENGINEER. H. PROVIDE DOUBLE JOISTS OR HEADERS ALONG EACH SIDE OF FLOOR OR ROOF OPENINGS, UNDER THE CENTERLINE OF PARTITION WALLS PARALLEL TO JOIST SPANS, AND ABOVE ALL WALL OPENINGS UNLESS

REACTIONS RESULTING FROM THE ALLOWABLE UNIFORM LOAD OF THE SUPPORTED MEMBER UNLESS NOTED

OTHERWISE INDICATED. PROVIDE A MINIMUM 3" BEARING LENGTH OF ALL SAWN LUMBER WOOD MEMBERS BEARING DIRECTLY ON MASONRY OR CONCRETE. ALL SAWN LUMBER WOOD MEMBERS BEARING DIRECTLY ON MASONRY OR CONCRETE SHALL HAVE A PRESERVATIVE TREATMENT BY PRESSURE PROCESS IN ACCORDANCE WITH AWPA STANDARD UI-14 TO THE REQUIREMENTS OF THE APPLICABLE USE CATEGORY.

PROVIDE A MINIMUM 1-1/2" BEARING LENGTH FOR ALL SAWN LUMBER WOOD MEMBERS BEARING ON WOOD OR

J. ENGINEERED WOOD MEMBERS SHALL BE PROVIDED WITH THE MINIMUM BEARING LENGTH AS INDICATED IN THE APPROVED PRODUCT INFORMATION.

ACCORDANCE WITH WITH AMERICAN WOOD PROTECTION ASSOCIATION STANDARD AWPA UI-14 TO THE REQUIREMENTS OF THE APPLICABLE USE CATEGORY. L. ALL PLYWOOD INDICATED TO BE FIRE-RETARDANT TREATED SHALL BE PRESSURE-TREATED IN ACCORDANCE WITH AMERICAN WOOD PROTECTION ASSOCIATION STANDARD AWPA UI-14 WITH AN APPROVED

K. ALL SAWN LUMBER WOOD MEMBERS INDICATED TO BE PRESSURE TREATED SHALL BE TREATED IN

FIRE RETARDANT (INTERIOR: UCFA-FIRE RETARDANT INTERIOR, EXTERIOR: UCFB-FIRE RETARDANT EXTERIOR). M. THE CONTRACTOR SHALL PROVIDE 1/2" DIA. X 0'-7" LONG ANCHOR BOLTS WITH I" HOOK OR 16 GAGE GALVANIZED STEEL SILL ANCHORS SPACED AT 6'-O" OC FOR THE ANCHORAGE OF WOOD SILL PLATES TO

LOCATE FIRST ANCHOR WITHIN 12" OF EACH END. N. PROVIDE SOLID BLOCKING BETWEEN ALL JOISTS AND RAFTERS AT ALL BOTTOM BEARING LOCATIONS. ALL JOISTS AND RAFTERS THAT EXCEED A NOMINAL DEPTH TO THICKNESS RATIO OF 6:1 SHALL HAVE ONE LINE OF BRIDGING FOR EACH & FEET OF SPAN.

THE CONCRETE OR CMU FOUNDATION WALLS. PROVIDE A MINIMUM OF 2 ANCHORS PER SILL MEMBER.

O. THE CONTRACTOR SHALL CUT OR NOTCH THE WOOD FRAMING ONLY AS REQUIRED AND IN ACCORDANCE WITH THE IBC BUILDING CODE. THE NDS. OR AS SHOWN ON THE CONTRACT DRAWINGS. EXCESSIVE CUTS REQUIRING REPAIR SHALL BE REPAIRED BY THE CONTRACTOR AND DESIGNED BY THE ENGINEER AT THE CONTRACTOR EXPENSE.

POST-INSTALLED ANCHORS (ADHESIVE ANCHORS):

ANCHORS IS NOT PERMITTED.

A. THE ADHESIVE ANCHOR SYSTEM USED FOR POST-INSTALLED ANCHORAGE TO CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE MOST RECENTLY PUBLISHED ACI 355.4.

B. EXISTING REINFORCING BARS AND/OR POST-TENSIONING TENDONS SHALL NOT BE DAMAGED DURING INSTALLATION OF THE ADHESIVE ANCHORS. THE CONTRACTOR SHALL FIELD LOCATE ALL REINFORCING BARS AND/OR TENDONS IN THE VIGINITY OF THE ADHESIVE ANCHORS BY MEANS OF NON-DESTRUCTIVE METHODS (GPR, X-RAY OR OTHER NON-DESTRUCTIVE METHOD).

C. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (Fc') OF 2,500 PSI AT THE TIME OF ADHESIVE ANCHOR INSTALLATION.

D. CONCRETE AT TIME OF ADHESIVE ANCHOR INSTALLATION SHALL HAVE A MINIMUM AGE OF 21 DAYS.

E. CONCRETE TEMPERATURE AT THE TIME OF ADHESIVE ANCHOR INSTALLATION SHALL BE AT LEAST 50° F.

F. EMBEDMENT DEPTH SHALL BE AS SHOWN ON THE DRAWINGS OR DETAILS FOR THE PARTICULAR ANCHOR OR GROUP OF ANCHORS BEING INSTALLED ANCHOR PROJECTION SHALL BE AS REQUIRED TO COMPLETELY INSTALL ALL ATTACHED COMPONENTS.

G. ADHESIVES SHALL BE STORED AND INSTALLED AT THE SERVICE TEMPERATURE RANGES RECOMMENDED BY THE MANUFACTURER.

H. ADHESIVE ANCHORS SHALL BE INSTALLED BY QUALIFIED PERSONNEL TRAINED TO INSTALL ADHESIVE ANCHORS IN ACCORDANCE WITH THE SPECIFICATIONS AND/OR CONSTRUCTION DOCUMENTS. POST-INSTALLED ADHESIVE ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.

THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT REQUIRED TO INSTALL THE ADHESIVE ANCHOR INCLUDING, BUT NOT LIMITED TO, DRILLS, SETTING TOOLS, CLEAN-OUT BRUSHES, BLOW OUT BULBS, OIL-FREE COMPRESSED AIR, SHOP VACUUMS, WRENCHES, ETC.

ANCHORS SHALL BE INSTALLED IN HOLES DRILLED WITH A ROTARY IMPACT HAMMER DRILL OR ROCK DRILL. CORE-DRILLING HOLES FOR ADHESIVE

K. ANCHOR HOLES SHALL BE THOROUGHLY CLEANED PRIOR TO ADHESIVE INJECTION, AS REQUIRED BY THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.

L. DRILLED AND CLEANED ANCHOR HOLES SHALL BE PROTECTED FROM CONTAMINATION UNTIL THE ADHESIVE IS INSTALLED.

M. INSTALLED ADHESIVE ANCHORS SHALL BE SECURELY FIXED IN-PLACE TO PREVENT DISPLACEMENT WHILE THE ADHESIVE CURES. UNLESS SHOWN OTHERWISE ON THE DRAWINGS, ANCHORS SHALL BE INSTALLED PERPENDICULAR TO THE CONCRETE SURFACE. ANCHORS DISPLACED BEFORE FULL ADHESIVE CURE SHALL BE CONSIDERED DAMAGED AND REPLACED.

N. REINFORCING BARS OR ALL-THREAD BARS SHALL NOT BE BENT AFTER BEING ADHESIVELY EMBEDDED IN THE HARDENED, SOUND CONCRETE.

#### ABBREVIATION I IST

GALV

INV

KSF

KSI

MAX

MEZZ

MISC

GALVANIZED

HIGH POINT

INFORMATION

KNEE BRACE

LOW POINT

MAXIMUM

MECHANICAL

MEZZANINE MINIMUM

MISCELLANEOUS MASONRY OPENING

I KIP = 1,000 POUNDS

KIPS PER SQUARE FOOT

KIPS PER SQUARE INCH

LONG LEG HORIZONTAL

LONG LEG VERTICAL

LONG-SLOTTED HOLE

MOMENT CONNECTION

LAMINATED VENEER LUMBER

LONG MAY OR LIGHTMEIGHT

INSULATION

INTERIOR

INVERT

H, HORIZ HORIZONTAL

ABBREVIA	ATION LIST		
AB ACI ADD'L AESS AISC ALUM ARCH ASTM	ANCHOR BOLT AMERICAL CONCRETE INSTITUTE ADDITIONAL ARCHITECTURALLY EXPOSED STRUCTURAL STEEL AMERICAN INSTITUTE OF STEEL CONSTRUCTION ALUMINUM ARCHITECTURAL AMERICAN SOCIETY FOR TESTING & MATERIALS	NIC NTS OC, O/C OD O/O OP WT OPP	NOT IN CONTRACT NOT TO SCALE  ON CENTER (SPACING) OUTSIDE DIAMETER OUT-TO-OUT OPERATING WEIGHT OPPOSITE
AWS B, (B) B/F BPL BLDG BRG	AMERICAN WELDING SOCIETY  BOTTOM REINFORCING BOTTOM OF FOOTING BASE PLATE OR BEARING PLATE BUILDING BEARING	PAF P/C PC PCF PL, PL PSI	POWDER ACTUATED FASTENER PRECAST PILE CAP POUNDS PER CUBIC FOOT PLATE POUNDS PER SQUARE INCH
CANT CL, Q CLR CJ CMU COL CONC	CANTILEVER CENTERLINE CLEAR (CONCRETE COVER) CONTROL JOINT OR CONSTRUCTION JOINT CONCRETE MASONRY UNIT COLUMN CONCRETE	PT  ATY  REINF  REQ'D  REV  RLL	PRESSURE-TREATED OR POST-TENSIONED  QUANTITY  REINFORCED OR REINFORCING  REQUIRED  REVISION  ROOF LIVE LOAD
CONT CONST COORD CY	CONTINUOUS CONSTRUCTION COORDINATE CUBIC YARDS	SC SF SIM SL	SLIP-CRITICAL (CONNECTION) SQUARE FEET OR STEPPED FOOTING SIMILAR TO; NOT EXACT, BUT SAME INTENT SNOW LOAD
DEMO DTL DIA, Ф DIAG DIM DL DWLS DWG	DEMOLITION DETAIL DIAMETER DIAGONAL DIMENSION DEAD LOAD DOWELS DRAWING	SOE SOG SPEC SS STD SW SYM	SUPPORT OF EXCAVATION SLAB ON GRADE OR SLAB ON GROUND SPECIFICATION STAINLESS STEEL STANDARD SHORT WAY SYMMETRICAL
EA E.E. EF EJ ELEC ELEC ELEC EMBED EOD EOS EQ EX EXP EXT	EACH EACH END EACH FACE EXPANSION JOINT ELEVATION ELECTRICAL ELEVATOR OR ELEVATION EMBEDMENT EDGE OF DECK EDGE OF SLAB EQUAL OR EQUAL SPACING EACH MAY EXISTING EXPANSION EXTERIOR	T, (T) TB TBB TBD TD TEMP T&G THK TOS T/STL TYP UNO V, VERT VIF	TOP REINFORCING TIE BEAM TOP & BOTTOM TO BE DETERMINED TRENCH DRAIN TEMPORARY TONGUE & GROOVE THICK TOP OF SLAB TOP OF STEEL TYPICAL UNLESS NOTED OTHERWISE VERTICAL VERIFY IN FIELD
', FT FDN FF FTG	FEET FOUNDATION FINISHED FLOOR FOOTING	W/ W/O W.P. WWF	MITH MITHOUT MORKING POINT MELDED MIRE FABRIC
GA GB GC	GAUGE OR GAGE GRADE BEAM GENERAL CONTRACTOR GALVANIZED	DRAWING SECT	<b>LEGEND</b> TON/DETAIL

SECTION/DETAIL

SHOWN

SECTION CUT

DRAWING NUMBER

WHERE SECTION IS

SECTION/DETAIL

DRAWING NUMBER REFERENCING

BACK TO SHEET WHERE SECTION

IS CUT (TYPICALLY A PLAN VIEW)

NUMBER

SECTION

SECTION TITLE

NUMBER

MCKEE BUILDERS, LLC. SPRINGFIELD, PA 19064 (610) 604-9800

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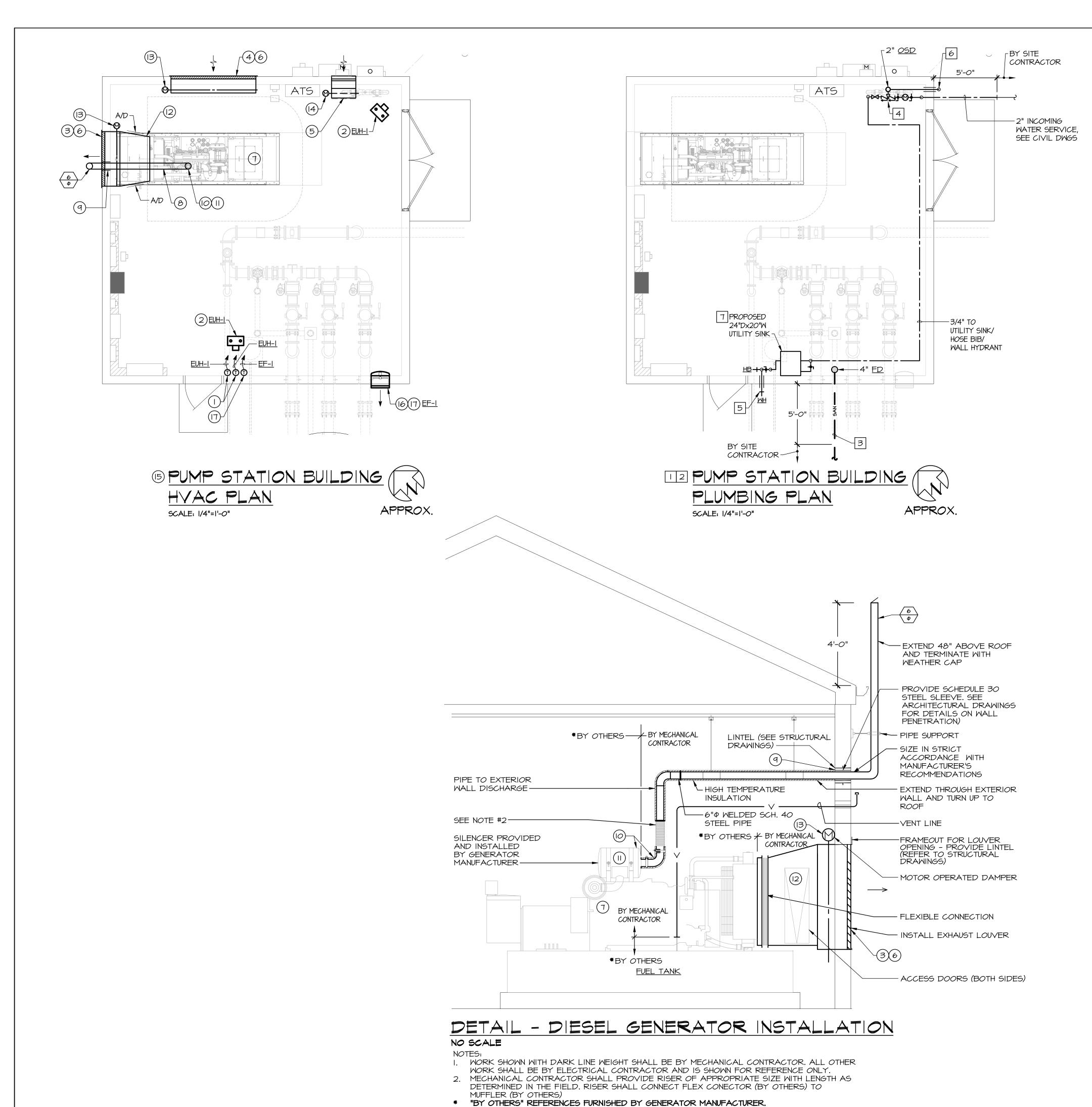
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UPDATES PER TOWN OF MIDDLETOWN UPDATES PER TOWN OF MIDDLETOWN REVISION

**GENERAL** 

NOTES



#### DRAWING NOTES - PLUMBING

- CONTRACTOR SHALL REVIEW ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF ALL NEW PLUMBING FIXTURES TO BE INSTALLED AND SHALL MAKE ALL NECESSARY ALLOWANCES AND MODIFICATIONS TO SANITARY, VENT, AND DOMESTIC WATER PIPING FOR THE INSTALLATION OF ALL NEW PLUMBING FIXTURES.
- EXTENT OF PLUMBING CONTRACTOR'S WORK. ALL WORK BEYOND 5'-O" FROM BUILDING SHALL BE BY SITE UTILITIES CONTRACTOR. REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFORMATION. PROVIDE PIPE SLEEVE AT PENETRATION OF FOUNDATION WALL WHERE APPLICABLE. COORDINATE ALL FINAL INVERTS WITH SITE UTILITIES CONTRACTOR.
- PROVIDE SANITARY PIPING BELOW FLOOR SLAB AND EXTEND TO WET WELL/SEWER MANHOLE WITH 1/4" PER LINEAR FOOT SLOPE TOWARDS WET WELL/MANHOLE. REFER TO CIVIL DRAWINGS FOR CONNECTION AND ADDITIONAL INFORMATION.
- 2" LEAD FREE, REDUCED PRESSURE BACKFLOW PREVENTER WITH INTEGRAL UNION BALL VALVES, SAE THREADED TEST COCKS AND LOCKING LEVER HANGLES, 2" APOLLO MODEL RPLF4A. REFER TO DETAIL, SHEET M-2 FOR ADDITIONAL INFORMATION.
- PROVIDE ENCASED AUTOMATIC DRAINING, NON-FREEZE WALL HYDRANT WITH REMOVABLE KEY, INTEGRAL BACKFLOW PREVENTER. FINISH TO BE SELECTED BY ARCHITECT. IN ADDITION, PROVIDE 2" CAMLOCK FOR FUTURE USE. INSTALL AT 18" ABOVE GRADE. CONTRACTOR SHALL EXTEND INSULATED VERTICAL PIPING ON WARM SIDE OF INSULATION FOR FREEZE PREVENTION.
- ROUTE OVERFLOW PIPING TO SPLASH BLOCK ON GRADE. TERMINATE OVERFLOW PIPING SHALL BE AT LEAST 12" ABOVE GRADE. PROVIDE TAMPER PROOF WIRE MESH INSECT SCREEN. REFER TO DETAIL, SHEET M-2 FOR ADDITIONAL INFORMATION.
- 7 DRAIN FROM UTILITY SINK SHALL BE ROUTED TO ADJACENT 4" FLOOR DRAIN AND DISCHARGE WITH A MINIMUM 2" AIR GAP.

#### DRAWING NOTES - HVAC

- PROVIDE THERMOSTAT WITH WALL GUARD MOUNTED APPROXIMATELY 48 INCHES ABOVE FINISHED FLOOR FOR UNIT HEATER.
- 2 PROVIDE CEILING SUSPENDED ELECTRIC UNIT HEATER WITH INTEGRAL DISCONNECT. REFER TO ELECTRIC UNIT HEATER SCHEDULE, SHEET M-2, FOR ADDITIONAL INFORMATION.
- 3 PROVIDE 54"x54" AIR LOUVER BY RUSKIN MODEL ELF375DXH; II.67 SQ FT FREE AREA, WITH INSECT SCREEN. INSTALL LOUVER HIGH ON WALL AS SHOWN AND FIELD COORDINATE EXACT LOCATION WITH STRUCTURE. SEAL WALL PENETRATION WEATHER TIGHT. FINISH SHALL BE SELECTED BY ARCHITECT.
- 4 PROVIDE 84"x60" AIR LOUVER BY RUSKIN MODEL ELF375DXH; I9.2 SQ FT FREE AREA, WITH INSECT SCREEN. INSTALL LOUVER HIGH ON WALL AS SHOWN AND FIELD COORDINATE EXACT LOCATION WITH STRUCTURE. SEAL WALL PENETRATION WEATHER TIGHT. FINISH SHALL BE SELECTED BY ARCHITECT.
- PROVIDE 24"x24" AIR LOUVER BY RUSKIN MODEL ELF375DXH; 1.78 SQ FT FREE AREA, WITH INSECT SCREEN. INSTALL LOUVER HIGH ON WALL AS SHOWN AND FIELD COORDINATE EXACT LOCATION WITH STRUCTURE. SEAL WALL PENETRATION WEATHER TIGHT. FINISH SHALL BE SELECTED BY ARCHITECT.
- PROVIDE ACTUATORS FOR EACH SECTION, FAIL OPEN, ALL INTERLOCKED WITH GENERATOR START CIRCUIT SUCH THAT ON SIGNAL TO START GENERATOR, DAMPERS SHALL GO FULLY OPEN AND WHEN GENERATOR IS DE-ENGERIZED DAMPERS SHALL CLOSE.
- (7) PROPOSED EMERGENCY GENERATOR SHOWN FOR INFORMATION AND COORDINATION ONLY.
- 8 PROVIDE 6" PSCHEDULE 40 BLACK STEEL EXHAUST PIPE FROM DISCHARGE OF SILENCER, THROUGH EXTERIOR WALL AND TERMINATE 4'-0" ABOVE ROOF WITH FLAPPER.
- (9) SEE STRUCTURAL DRAWINGS FOR PIPE THRU-WALL PENETRATION DETAILS.
- PROVIDE RIGID, HIGH TEMPERATURE CALCIUM SILICATE INSULATION ON MUFFLER AND ENTIRE INTERIOR LENGTH OF EXHAUST PIPING. INSULATION SHALL BE OF THICKNESS AND FINISH AS RECOMMENDED BY MANUFACTURER. INSULATION TEMPERATURE RATING SHALL BE VERIFIED TO BE COMPATIBLE WITH GENERATOR MANUFACTURER SPECIFIED EXHAUST TEMPERATURES. ALL FASTENERS, SEALANTS, COATINGS, COVERINGS, ETC. SHALL HAVE A TEMPERATURE RATING EQUAL TO OR GREATER THAN THE REQUIRED INSULATION. PROVIDE 12" LONG SHEET METAL SHIELDS AT ALL HANGERS TO PROTECT INSULATION FROM CRUSHING. HANGERS SHALL BE OVERSIZED TO ACCOMMODATE INSULATION.
- PROVIDE SILENCER MOUNTED DIRECTLY ON GENERATOR. SEE ELECTRICAL DRAWINGS FOR GENERATOR DETAILS.
- DUCT TRANSITION FROM GENERATOR RADIATOR TO EXHAUST LOUVER, PROVIDE HINGED ACCESS DOORS ON BOTH SIDES, DOORS SHALL BE SIZED FOR 80% OF THE WIDTH OF THE TRANSITION & 80% OF THE HEIGHT, PROVIDE FLEXIBLE CONNECTION AT RADIATOR DISCHARGE.
- PROVIDE 2 POSITION, NORMALLY CLOSED, LOW-LEAKAGE MOTOR OPERATED DAMPER BY RUSKIN MODEL CD60. INTERLOCK WITH GENERATOR START CIRCUIT. REFER TO ATC SEQUENCE, SHEET M-2, FOR ADDITIONAL INFORMATION.
- PROVIDE 2 POSITION, NORMALLY CLOSED, LOW-LEAKAGE MOTOR OPERATED DAMPER BY RUSKIN MODEL CD60. INTERLOCK WITH ASSOCIATED EXHAUST FAN EF-I. REFER TO ATC SEQUENCE, SHEET M-2, FOR ADDITIONAL INFORMATION.
- (5) COORDINATE WALL OPENINGS, WALL PENETRATIONS, AND LINTEL INSTALLATIONS WITH GENERAL CONTRACTOR.
- PROVIDE CORROSION RESISTANT EXHAUST SHUTTER FAN, DAYTON MODEL #IBLJ3, 1/4HP, 1490 CFM AT 1/4" SP, 120 VOLT. SIDEWALL MOUNTED EXHAUST FAN WITH BIRD SCREEN AND BACK DRAFT DAMPER. MOUNT AT 8'-0" AFF TO BOTTOM OF WALL OPENING.
- EXHAUST FAN SHALL BE CONTROLLED BY HOA CONTROLS ON STARTER AND AUTOMATICALLY VIA THERMOSTAT. FAN SHALL BE INTERLOCKED WITH LOUVER MOD OPERATION TO OPEN WHEN ENERGIZED AND CLOSE WHEN DE-ENERGIZED. FAN SHALL BE ENERGIZED BY A RISE IN TEMPERATURE TO 80°F (AD I.)



MRA

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TOWN OF MIDDLETOWN

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NO. REVISION DATE

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MECHANICAL PLANS

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28 OF 32

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#### SYMBOLS LIST & ABBREVIATIONS



<del>So </del>HB HOSE BIB

A/D	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
BDD	BACK DRAFT DAMPER
BTUH	BRITISH THERMAL UNITS/HOUR

CAP. CAPACITY CFM CUBIC FEET PER MINUTE

CONN. CONNECTION DIA DIAMETER

DMH DOMESTIC WATER HEATER ELECTRIC DUCT HEATER

EXHAUST FAN EUH ELECTRIC UNIT HEATER GPM GALLONS PER MINUTE

HBHOSE BIBB HORSE POWER

i.n. INCH kΜ KILOWATT 0.A. OUTSIDE AIR

OAI OUTSIDE AIR INTAKE

PSIG POUNDS PER SQUARE INCH GAUGE RPM REVOLUTIONS PER MINUTE

SUPPLY FAN

TANKLESS WATER HEATER

TYP TYPICAL VENT THRU ROOF MHWALL HYDRANT

MPDWATER PRESSURE DROP

SINGLE PHASE

#### AUTOMATIC TEMPERATURE CONTROL SEQUENCES

#### BUILDING VENTILATION SYSTEM - EF-I:

I. EXHAUST FAN (EF-I), SHALL BE CONTROLLED BY H-O-A CONTROLS ON STARTER AND AUTOMATICALLY VIA THE WALL MOUNTED THERMOSTAT. FAN SHALL BE INTERLOCKED WITH LOUVER MOD OPERATION TO OPEN WHEN ENERGIZED AND CLOSE WHEN DE-ENERGIZED. FAN SHALL BE ENERGIZED BY A RISE IN TEMPERATURE TO 80°F (ADJUSTABLE).

#### ELECTRIC UNIT HEATER:

I. ELECTRIC UNIT HEATERS (EUH-I), SHALL OPERATE UNDER CONTROL OF THEIR WALL MOUNTED THERMOSTAT TO MAINTAIN THERMOSTAT HEATING SET POINT OF 45°F (ADJUSTABLE).

#### GENERATOR VENTILATION:

- I. THE ATC CONTRACTOR SHALL PROVIDE CONTROL PANEL TO CONTROL ASSOCIATED INTAKE AIR AND EXHAUST AIR MOTOR OPERATED DAMPERS. CONTRACTOR SHALL FURNISH AND INSTALL MOTOR OPERATED DAMPERS AND ASSOCIATED ACTUATORS AS NECESSARY FOR ALL DAMPERS AS PER THE DAMPER'S MANUFACTURER RECOMMENDATIONS FOR PROPER OPERATION WITH END SWITCH AND NUMBER OF ACTUATORS AS NEEDED. COORDINATE INSTALLATION OF DAMPERS WITH MECHANICAL CONTRACTOR THESES DAMPERS SHALL BE INTERLOCKED TO THE GENERATOR CONTROL CIRCUIT.
- 2. WHEN THE SIGNAL FOR THE GENERATOR TO START, FROM LOSS OF POWER, THE INLET DAMPER (D-I) AND EXHAUST DAMPER (D-2) SHALL BE OPENED BY SPRING AND THEN GENERATOR SHALL START. THE DAMPERS SHALL BE PROVEN OPEN BY THE END SWITCH.
- 3. WHEN POWER IS RESTORED AND AFTER GENERATOR HAS GONE THROUGH ITS COOL DOWN CYCLE, THE DAMPERS SHALL BE CLOSED BY MOTOR OPERATION.
- 4. GENERATOR MANUFACTURER SHALL PROVIDE CONTACTS FOR THE FOLLOWING ALARM CONDITIONS:
- GENERATOR OPERATING
- LOW OIL PRESSURE
- HIGH COOLANT TEMPERATURES
- LOW FUEL LEYEL

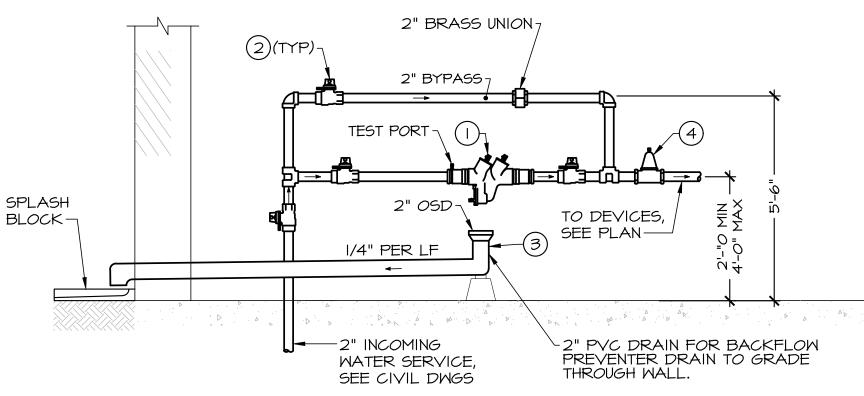
ELECTRIC UNIT HEATER (EUH) SCHEDULE							
UNIT TAG	LOCATION	HEATING OUTPUT (KM)	FAN MOTOR				MANUFACTURER/ MODEL #
IAG			<b>Y</b>	PH	HZ	RPM	MODEL #
EUH-I	SEWAGE PUMPING STATION BUILDING	E PUMPING STATION BUILDING 5.0				1600	QMARK MUH05-41

I. PROVIDE REMOTE THERMOSTAT CONTROL. 2. MOUNT AT 8'-O" AFF TO BOTTOM OF UNIT.

3. PROVIDE WALL MOUNTING BRACKET.

#### DETAIL NOTES:

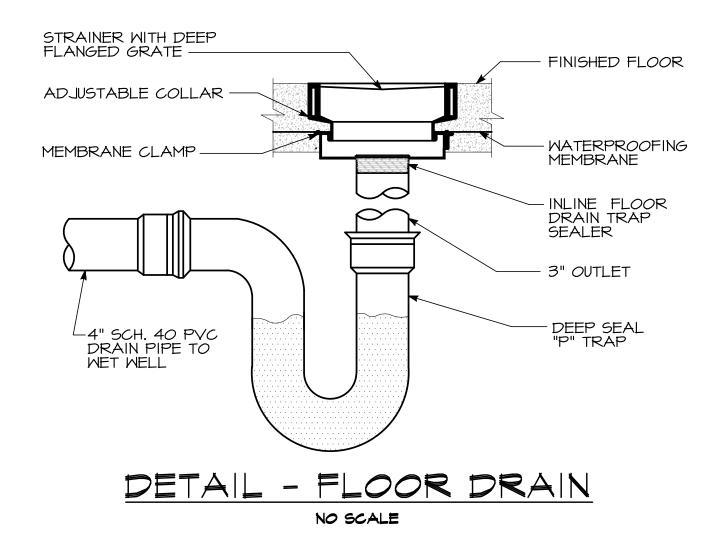
- 2" LEAD FREE, REDUCED PRESSURE BACKFLOW PREVENTER WITH INTEGRAL UNION BALL VALVES, SAE THREADED TEST COCKS AND LOCKING LEVER HANGLES, 2" APOLLO MODEL RPLF4A.
- (2) BALL VALVE (LOCK WING) FORD MODEL B-II-666-W
- (3) ROUTE OVERFLOW PIPING TO SPLASH BLOCK ON GRADE. TERMINATE OVERFLOW PIPING SHALL BE AT LEAST 12" ABOVE GRADE. PROVIDE TAMPER PROOF WIRE MESH INSECT SCREEN.
- (4) PROVIDE GOLDEN-ANDERSON 43-D PRESSURE REGULATOR.

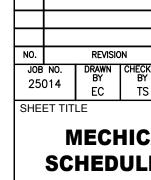


#### DETAIL - INCOMING WATER SERVICE VALVING

- I. PRIOR TO ORDERING THE METER SETTING AND BACKFLOW PREVENTER, THE CONTRACTOR SHALL SCHEDULE AND HOLD A MEETING WITH THE DIVISION OF WATER AND SEWER MAINTENANCE CHIEF TO DISCUSS THE INSTALLATION REQUIREMENTS.
- 2. INSTALL CORROSIVE RESISTANT WELDED CANTILEVERED WALL BRACKETS AS REQUIRED TO SUPPORT THE EQUIPMENT AND PIPING.
- 3. TYPE 'K' COPPER TUBING SHALL BE CONTINUOUS TO THE BALL VALVE.
- 4. BYPASS PIPING SHALL BE THREADED BRASS.
- 5. ALL FITTINGS AND NIPPLES SHALL BE BRASS WITH APPROPRIATE ADAPTERS.
- 6. ALL COMPONENTS SHALL BE LEAD FREE.

GENERAL NOTES:





SHEET NUMBER

**MECHICAL SCHEDULES & DETAILS** 

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M-2 *TEI* Telegent Engineering Inc 2216 Commerce Road, Suite 1 Forest Hill, MD 21050

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M NEW **M** 

#### ELECTRICAL LEGEND

SYMBOL DESCRIPTION SYMBOL DESCRIPTION LIGHTING FIXTURE - STRIP - TYPE AS SPECIFIED TIME CLOCK PANELBOARD - 277/480V LIGHTING FIXTURE - WALL MOUNTED - TYPE AS SPECIFIED MINI-POWER ZONE UNIT (SQUARE D SERIES OR APPROVED EQUAL) LIGHTING FIXTURE - EXTERIOR WALL PACK -INTERGRAL PANELBOARD "P" (120/240V.) TYPE AS SPECIFIED SPECIFIC DEVICE AS NOTED BATTERY POWERED EMERGENCY LIGHTING UNIT WITH INTEGRAL CHARGER CONTROL PANEL (AS SPECIFIED) CONTROL PANEL SWITCH - SINGLE POLE, THREE WAY, SUBSCRIPT DENOTES CONDUIT - IN OR ON CEILING OR WALLS \$ \$\frac{3}{6}\$ \$\_a\$p\$0\$\frac{5}{6}\$ FIXTURE CONTROLLED, DIMMER, OCCUPANCY SENSOR, VACANCY SENSOR - M.H. +48" CONDUIT - IN OR UNDER FLOOR HOMERUN TO PANEL - NUMBER OF ARROWS INDICATE SWITCH - KEY OPERATED, WITH PILOT LIGHT, WEATHER NUMBER OF CIRCUITS AND NUMBER OF CROSSLINES PROOF - MOUNTING HEIGHT 48" INDICATES NUMBER OF #12 CONDUCTORS - WHERE NO CROSSLINES APPEAR 3#12 CONDUCTORS ARE IMPLIED \$<sub>XP</sub> SWITCH - EXPLOSION PROOF - MOUNTING HEIGHT 48" CONDUIT TERMINATED IN BUSHING OR CAPPED AS NOTED DUPLEX RECEPTACLE - 20A., 2P, 3M GROUNDING, 125V. -MOUNTING HEIGHT 18" UNLESS NOTED OTHERWISE DISCONNECT SWITCH - FUSED, NON-FUSED - TYPE AND RATING AS INDICATED GFI RECEPTACLE - 20A., 2P, 3W GROUNDING, 125V. -MOUNTING HEIGHT 18" UNLESS NOTED OTHERWISE MAGNETIC STARTER, COMBINATION TYPE STARTER - TYPE AND RATING AS INDICATED QUADRUPLEX RECEPTACLE - 20A., 2P. 3W GROUNDING. 125V. - MOUNTING HEIGHT 18" UNLESS NOTED OTHERWISE VARIABLE FREQUENCY DRIVE (VFD) SPECIAL PURPOSE RECEPTACLE - WALL M \$<sup>™</sup> MOUNTED - TYPE AS INDICATED OR SCHEDULED MANUAL MOTOR STARTER, H.P. RATED SWITCH TELEPHONE OUTLET BOX - MOUNTING HEIGHT 18" UNLESS CONTACTOR, RELAY NOTED OTHERWISE (OUTLETS BY OTHERS). EXTEND 34"C FROM BOX TO ABOVE CEILING, TURNOUT AND PROVIDE ELECTRIC HEATING ELEMENT END BUSHING MOTOR - I PHASE DATA OUTLET BOX - WALL MOUNTED - MOUNTING HEIGHT 18" UNLESS NOTED OTHERWISE (OUTLETS BY OTHERS). EXTEND MOTOR - 3 PHASE 34"C FROM BOX TO ABOVE CEILING, TURNOUT AND PROVIDE MOTOR - HORSEPOWER AS NOTED SINGLE GANG DATA/TELE OUTLET BOX - WALL MOUNTED -TRANSFORMER MOUNTING HEIGHT 18" UNLESS NOTED OTHERWISE (OUTLETS BY P OTHERS). EXTEND 34"C FROM BOX TO ABOVE CEILING, TURNOUT PHOTOCELL AND PROVIDE END BUSHING EMERGENCY GENERATOR STOP PUSH BUTTON JUNCTION BOX - WALL, CEILING  $\bigcirc$ SMOKE, HEAT DETECTOR ENCLOSED CIRCUIT BREAKER PHASE MONITOR SURGE PROTECTIVE DEVICE ATS AUTOMATIC TRANSFER SWITCH

YELLOW HEAVY GAUGE
POLYETHYLENE PLASTIC
MARKING TAPE FOR THE
FULL LENGTH OF DUCTBANK

FINISHED
GRADE

3'-O" (MIN)

4" PVC ELECTRIC
CONDUIT

TRENCH INFILL

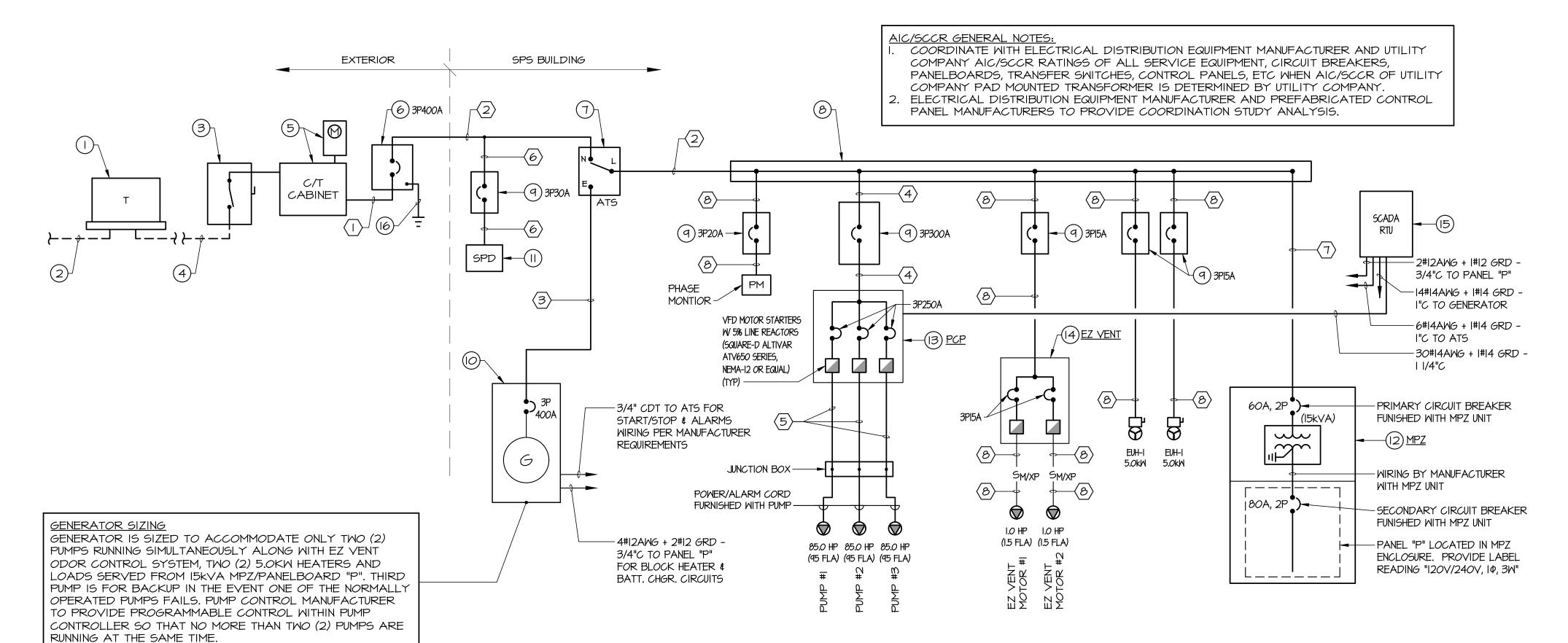
\* COORDINATE FINAL QUANTITY WITH UTILITY COMPANY DESIGN DRAWINGS PRIOR TO START OF WORK.

NOTE: DUCT BANK SHALL BE CONSIDERED TYPICAL. FINAL DUCT BANK SHALL BE INSTALLED IN FULL ACCORDANCE WITH APPLICABLE UTILITY(S) COMPANY LATEST EDITION SPECIFICATIONS.

#### DETAIL - ELECTRIC CONDUIT SECTION

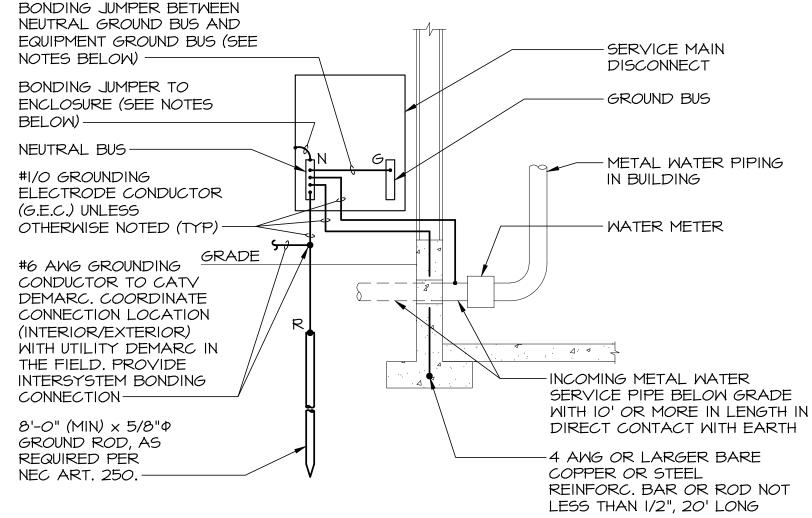
NO SCALE

# FEEDER SCHEDULE FEEDER NUMBER FEEDER SIZE 1 2 SETS OF (4#3/0 AWG) - 4"C 2 2 SETS OF (4#3/0 AWG + I#3 GRD) - 2"C 3 2 SETS OF (4#3/0 AWG + I#3 GRD) - 2"C 4 4#4/0 AWG + I#4 GRD - 2 I/2"C 5 3#I AWG + #4 GRD - I-I/2" C 6 4#IO AWG + I#IO GRD - I"C 7 2#6 AWG + I#8 GRD - I"C



#### DRAWING NOTES

- UTILITY COMPANY FURNISHED AND INSTALLED PAD MOUNTED TRANSFORMER (217/480V, 3¢, 4W SECONDARY). CONTRACTOR FURNISHED AND INSTALLED MOUNTING PAD. COORDINATE ALL REQUIREMENTS WITH UTILITY COMPANY IN THE FIELD.
- PROVIDE TWO (2) 4" PVC CONDUITS WITH PULLSTRING TO LOCATION AS DETERMINED BY THE UTILITY COMPANY FOR EXTENSION OF PRIMARY SERVICE CONDUCTORS BY THE UTILITY COMPANY. COORDINATE ALL REQUIREMENTS WITH UTILITY COMPANY IN THE FIELD.
- 3 PROVIDE AND INSTALL NEW, NEMA-3R, 600V, SERVICE ENTRANCE RATED, MAIN NON-FUSIBLE UTILITY COMPANY LINE SIDE, 400A, 3P W/ S/N SAFETY DISCONNECT SWITCH FOR BUILDING ELECTRICAL SERVICE. COORDINATE ALL REQUIREMENTS WITH UTILITY COMPANY REPRESENTATIVE IN THE FIELD. PROVIDE PHENOLIC NAMEPLATE READING "UTILITY NON-FUSED SERVICE SWITCH".
- 4 PROVIDE AND INSTALL TWO (2) 4" SCHEDULE 40 PVC CONDUITS BELOW GRADE FROM PROPOSED UTILITY TRANSFORMER TO NEW UTILITY COMPANY DISCONNECT FOR EXTENSION OF SECONDARY ELECTRIC SERVICE CABLES BY UTILITY COMPANY. COORDINATE FINAL TERMINATION LOCATION, ROUTING, QUANTITY OF DUCTS AND REQUIREMENTS WITH THE UTILITY COMPANY PRIOR TO START OF WORK. REFER TO DETAIL, THIS SHEET FOR ADDITIONAL INFORMATION.
- 5 PROVIDE AND INSTALL NEW, WEATHERPROOF, 277/480V, 3¢, 4W, 400A (MINIMUM) RATED UTILITY COMPANY APPROVED C/T CABINET. PROVIDE AND INSTALL UTILITY COMPANY APPROVED METER CAN. EXTEND 1-1/4" EMPTY CONDUIT BETWEEN METER AND C/T CABINET.
- 6 PROVIDE AND INSTALL NEW, NEMA-3R 600V, SERVICE ENTRANCE RATED, 400A, 3P W/ S/N, SERVICE MAIN ENCLOSED CIRCUIT BREAKER. PROVIDE NAMEPLATE READING "SERVICE MAIN DISCONNECT."
- 7 PROVIDE AND INSTALL NEW, NEMA-3R, 480V RATED, 3P WITH S/N, 400A, DELAYED OPEN TRANSITION, AUTOMATIC TRANSFER SWITCH WITH ENGINE EXERCISER AND ENCLOSURE HEATER.
- 8) PROVIDE AND INSTALL NEMA-4X, SS, WIRE TROUGH, SIZED PER NEC AND LENGTH AS REQUIRED.
- 9 PROVIDE AND INSTALL, 600V RATED, ENCLOSED CIRCUIT BREAKER, 2P OR 3P, RATING AS INDICATED ON RISER. PROVIDE SOLID NEUTRAL WHERE FEEDER CONTAINS A NEUTRAL CONDUCTOR.
- PROVIDE AND INSTALL 277/480V, 3¢, 4W OUTPUT, 230 KW, DIESEL GENERATOR WITH SUB-BASE, DOUBLE WALL FUEL TANK FOR 24 HOUR OPERATION AT 100%
- PROVIDE NEMA-4X, SURGE PROTECTIVE DEVICE, SQUARE-D EMA SERIES OR
- PROVIDE NEW SQUARE-D MINI POWER ZONE (MPZ) 15kVA, 480V:120/240V, 1¢, 3W, ENCLOSURE WITH INTEGRAL 120/240V, 1¢, 3W, PANELBOARD "P." REFER TO PANELBOARD SCHEDULE, SHEET E-2 FOR ADDITIONAL INFORMATION.
- PUMP CONTROL PANEL WITH NEMA-4X STAINLESS STEEL ENCLOSURE. COORDINATE ALL REQUIREMENTS WITH OWNER. COORDINATE WITH PUMP CONTROL PANEL MANUFACTURER FOR PROGRAMMABLE CONTROL OF ONLY TWO (2) PUMPS RUNNING SIMULTANEOUSLY AT ONE TIME.
- (4) EZ VENT ODOR CONTROL PANEL (24"x24"x10") WITH NEMA-4X STAINLESS STEEL ENCLOSURE. COORDINATE ALL REQUIREMENTS WITH EZ VENT MANUFACTURER.
- (15) SCADA RTU CONTROL PANEL WITH NEMA-4X STAINLESS STEEL ENCLOSURE. COORDINATE ALL REQUIREMENTS WITH OWNER.
- (16) ELECTRIC SERVICE GROUNDING ELECTRODE. REFER TO DETAIL, THIS SHEET.



NOTES:

I. #I/O AWG G.E.C. & MAIN BONDING JUMPER FOR 400A SERVICE.

#### DETAIL - ELECTRIC SERVICE GROUNDING ELECTRODE NO SCALE

ALL WORK SHALL BE PROVIDED IN ACCORDANCE WITH NEW CASTLE COUNTY DEPARTMENT OF SPECIAL SERVICES SEWER DESIGN POLICY "SS7" INCLUDING PUMP STATION, EMERGENCY GENERATOR AND TELEMETRY SYSTEM.



MORRIS & RITCHIE ASSOCIATES, INC.

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DEVELOPER

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MCKEE BUILDERS, LLC. 940 WEST SPROUL ROAD, SUITE 301 SPRINGFIELD, PA 19064 (610) 604-9800

ABBEY CREET

NEW CASTLE COUNTY, DELAWARE

TOWN OF MIDDIFTOWN

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IO. REVISION DA'

JOB NO. DRAWN CHECKED ISSUE
25014 BY BY 4/29/
HEET TITLE

ELECTRICAL ONE LINE DIAGRAM

SHEET NUMBER

30 OF 32

**REVIEW SET - NOT FOR CONSTRUCTION OR PERMIT** 

APPROX

SCALE: 1/4"=1'-0"

ALL WORK SHALL BE PROVIDED IN

DEPARTMENT OF SPECIAL SERVICES

AND TELEMETRY SYSTEM.

ACCORDANCE WITH NEW CASTLE COUNTY

SEWER DESIGN POLICY "SST" INCLUDING

PUMP STATION, EMERGENCY GENERATOR

#### DRAWING NOTES

- | WIRING METHODS AND ELECTRICAL DEVICES IN WET WELL SHALL BE PER NEC ARTICLE 501 FOR CLASS I, DIVISION I LOCATIONS.
- PROVIDE AND INSTALL TWO (2) 4" PVC CONDUITS WITH PULLSTRINGS BELOW GRADE TO UTILITY COMPANY FURNISHED, GRADE MOUNTED TRANSFORMER PAD AS DETERMINED BY UTILITY COMPANY FOR EXTENSION OF SECONDARY SERVICE CABLES. COORDINATE EXACT LOCATION WITH UTILITY COMPANY IN THE FIELD. REFER TO ONE LINE DIAGRAM AND ELECTRICAL DUCTBANK DETAIL, SHEET E-I FOR ADDITIONAL INFORMATION.
- 3 PROVIDE AND INSTALL NEMA-3R SERVICE MAIN NON-FUSIBLE UTILITY COMPANY LINE SIDE SAFETY DISCONNECT SWITCH FOR BUILDING ELECTRICAL SERVICE. COORDINATE ALL REQUIREMENTS WITH UTILITY COMPANY REPRESENTATIVE IN THE FIELD. REFER TO ONE-LINE DIAGRAM, SHEET E-I FOR ADDITIONAL INFORMATION.
- PROVIDE AND INSTALL NEMA-3R UTILITY COMPANY APPROVED C/T CABINET FOR MAIN ELECTRICAL SERVICE. PROVIDE AND INSTALL METER FOR BUILDING ELECTRIC SERVICE METERING. METER FURNISHED AND INSTALLED BY UTILITY COMPANY. REFER TO ONE-LINE DIAGRAM SHEET E-I FOR ADDITIONAL INFORMATION.
- PROVIDE AND INSTALL NEW NEMA-3R, SERVICE ENTRANCE RATED, SERVICE MAIN ENCLOSED CIRCUIT BREAKER. REFER TO ONE-LINE DIAGRAM, SHEET E-I FOR ADDITIONAL INFORMATION.
- (6) PROVIDE AND INSTALL NEW AUTOMATIC TRANSFER SWITCH (NEMA 3R RATED). REFER TO ONE-LINE DIAGRAM, SHEET E-I FOR ADDITIONAL INFORMATION.
- 7 PROVIDE AND INSTALL NEW MINI-POWER ZONE (MPZ) WITH INTEGRAL PANELBOARD "P." REFER TO ONE LINE DIAGRAM, SHEET E-I AND PANEL SCHEDULE, THIS SHEET FOR ADDITIONAL INFORMATION.
- 8 PROVIDE AND INSTALL NEW ENCLOSED CIRCUIT BREAKER TO SURGE PROTECTIVE DEVICE. REFER TO ONE LINE DIAGRAM, SHEET E-I FOR ADDITIONAL INFORMATION.
- 9 PROVIDE AND INSTALL NEW SURGE PROTECTIVE DEVICE. REFER TO ONE-LINE DIAGRAM, SHEET E-I FOR ADDITIONAL INFORMATION.
- PROVIDE AND INSTALL NEW ENCLOSED CIRCUIT BREAKER TO PUMP CONTROL PANEL SERVING SUBMERSIBLE PUMPS "PI," "P2" AND "P3." REFER TO ONE-LINE DIAGRAM, SHEET E-I FOR ADDITIONAL INFORMATION.
- PROVIDE AND INSTALL NEW ENCLOSED CIRCUIT BREAKER TO PHASE MONITOR PANEL. REFER TO ONE LINE DIAGRAM, SHEET E-I FOR ADDITIONAL INFORMATION.
- PROPOSED LOCATION OF PHASE MONITOR PANEL. REFER TO ONE LINE DIAGRAM, SHEET E-I FOR ADDITIONAL INFORMATION.
- B PROVIDE AND INSTALL NEW ENCLOSED CIRCUIT BREAKER TO EUH-I. REFER TO ONE LINE DIAGRAM, SHEET E-I FOR ADDITIONAL INFORMATION.
- PROVIDE AND INSTALL NEW ENCLOSED CIRCUIT BREAKER TO EZ VENT ODOR CONTROL PANEL. REFER TO ONE LINE DIAGRAM, SHEET E-I FOR ADDITIONAL INFORMATION.
- (15) CONTROL PANEL AS NOTED. REFER TO COUNTY SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- (16) PROVIDE AND INSTALL SEALABLE WIRE TROUGH (SIZED PER NEC).
- (17) EXTEND I 1/4"C BELOW GRADE TO TELEMETRY ANTENNA POLE FOR COAXIAL CABLE.
- (B) EXTEND I" CONDUIT BETWEEN GENERATOR CONTROLLER AND ATS FOR START/STOP & ALARMS WIRING AS RECOMMENDED BY MANUFACTURER.
- (9) EXTEND I" CONDUIT WITH 6#14AMG (GENERATOR RUNNING, GENERATOR FAULT & SPARE) BETWEEN GENERATOR CONTROLLER AND TELEMETRY RTU PANEL FOR ALARMS WIRING.
- 0 I-1/2" GALVANIZED RIGID STEEL CONDUIT FOR SUBMERSIBLE PUMPS. REFER TO ONE-LINE DIAGRAM, SHEET E-I FOR ADDITIONAL INFORMATION.
- (2) I-I/4" GALVANIZED RIGID STEEL CONDUIT TO WET WELL FOR TRANSDUCER AND FLOAT CONTROL CABLES IN SEPARATE CONDUITS. PROVIDE SEALING HUBS (CROUSE-HINDS EYSR SERIES) PRIOR TO TERMINATION INTO J-BOX.
- REMOTE GENERATOR EMERGENCY STOP PUSH-BUTTON WITH DUAL ACTION (LIFT LID, PUSH BUTTON) OPERATION. EXTEND 2#12AWG TO GENERATOR CONTROL PANEL PER MANUFACTURER'S INSTRUCTIONS. PROVIDE PHENOLIC NAMEPLATE READING "GENERATOR EMERGENCY STOP."
- PROVIDE STANDBY GENERATOR MOUNTED ON CONCRETE HOUSEKEEPING PAD. REFER TO POWER ONE-LINE DIAGRAM, SHEET E-I AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- PROVIDE NON-REVERSING STARTER/DISCONNECT WITH H-O-A CONTROLS AND THERMAL OVERLOADS. SEE DIAGRAM, SHEET E-3 FOR ADDITIONAL INFORMATION.
- 25 PROVIDE SPARE RIGID STEEL CONDUIT (SIZE AS INDICATED ON PLAN) FROM CONTROLLER TO JUNCTION BOX.
- RIGID STEEL CONDUIT BETWEEN JUNCTION BOXES AND WET WELL FOR PUMP POWER AND CONTROL CABLES PLUS TWO (2) SPARE.
- (27) PROVIDE AND INSTALL NEW SAFETY DISCONNECT SWITCH SIZED PER MANUFACTURER'S RECOMMENDATIONS.
- EMERGENCY BATTER EGRESS LIGHT. CONNECT TO UNSWITCHED PORTION OF LIGHTING CIRCUIT. REFER TO LIGHT FIXTURE SCHEDULE, THIS SHEET FOR ADDITIONAL INFORMATION.

(WITHIN MPZ ENCLOSURE)

(NEMA 3R.) (SURFACE)		*	PA	NE	LP	•		1	18 KAI
120 / 240	VOLTS	1	Φ	3	MIRE	ટ	O AMP MAIN	C.B.	
DESCRIPTION	KVA	СВ	CKT	CKT	CB	KVA	DESCRIF	TION	
LTS-INTERIORÆMERGENCY	.30	20	1	2	20	1.50	GEN. BLOCK HEATE	R	
LTS-EXTERIOR	.20	20	3	4	20	1.50	GEN. BATTERY CHA	RGER	
RECEPTACLES	1.08	20	5	6	20	.20	RTU PANEL		
GENERATOR LOUVERS	.60	20	7	8	20	.60	PUMP CONTROL PA	NEL	
MOTORIZED DAMPER	.30	20	9	10	B	.15	SITE LIGHT		
EF-1/CONTROLS	.70	20	11	12	-	-	SPACE		
SPACE	-	-	13	14	-	-	SPACE		
SPACE	-	-	15	16	1	-	SPACE		
SPACE	-	-	17	18	-	-	SPACE		
SPACE	-	-	19	20	_	-	SPACE		
SPACE	-	-	21	22	-	-	SPACE		
SPACE	-	-	23	24	-	_	SPACE		
SPACE	-	-	25	26	-	-	SPACE		
SPACE	-	_	21	28	1	-	SPACE		
SPACE	-	_	29	30	-	-	SPACE		
LIGHTING LOAD: RECEPTACLE LOAD: MISC LOAD: MECHANICAL LOAD: LARGEST MOTOR LOAD: REMAINING MOTOR LOAD: WATER HEATER LOAD: ELECTRIC HEAT LOAD: SUB-PANEL LOAD						0.65 1.08 0.00	KVA x125% +(0.00 x50%) KVA x125%	0.81 1.05 3.20 0.70 0.00 0.00 0.00 1.50 0.00	KV# KV# KV# KV# KV# KV#
XFMR LOAD:								0.00	KVA
** TOTAL LOAD:							7.29 KVA=	30.39	A @

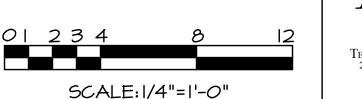
	LIGHT FIXTURE SCHEDULE							
TYPE	DESCRIPTION	MANUFACTURER OR EQUAL						
A	4' GASKETED ENCLOSED STRIP FIXTURE WITH ACRYLIC LENS AND WHITE FINISH (120V, 37W, 4000°K, 4195 LM)	COLUMBIA LTG LXEM 4 40 LW RFA E I						
В	WALL MOUNTED, ABOVE DOOR, SECURITY LIGHT WITH DARK BRONZE FINISH, INTEGRAL PHOTOCELL AND BATTER BACK UP (120V, 15W, 4000°K, 1,868 LM)	HUBBELL: LNC2 48L-15 4K7 4W UNV DBT PC E						
	INDUSTRIAL EMERGENCY EGRESS LIGHTING UNIT W/2 HEADS AND MAINT. FREE BATTERY (120 VOLT)	DUAL LITE DYN SERIES						

FOURMENT SCHEDULE

120/240V, 1Ф, 3W

ITEM	EQUIPMENT	VOLTAGE/Ф	LOAD	MANUF.	SU	CONN.	NOTES					
			(MCA UON)	MOCP	CIRC #	WIRE	CDT					
$\langle A \rangle$	EUH-I	480V/3Ф	5.0 KW	-	SEE NOTES	3#12AWG + #12GRD	3/4"	H.M.	I			
B	MOTORIZED DAMPER	120V/IΦ	-	-	SEE PLAN	2#12AWG + #12GRD	3/4"	H.M.	2			
⟨C⟩	EF-I	I20V/IΦ	1/4 HP	-	P-II	2#12AWG + #12GRD	3/4"	H.M.				

REFER TO ONE-LINE DIAGRAM, SHEET E-I FOR ADDITIONAL INFORMATION. 2. PROVIDE IZOV CONNECTION TO MOTOR OPERATED DAMPER FURNISHED AND INSTALLED BY MECHANICAL. REFER TO GENERATOR LOUVER CONTROL DIAGRAM, SHEET E-3.



E-2

Telegent Engineering Inc Forest Hill, MD 21050 410-692-5816

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ENGINEERS, PLANNERS,

ARCHITECTS

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**DEVELOPER** MCKEE BUILDERS, LLC. 940 WEST SPROUL ROAD, SUITE 301

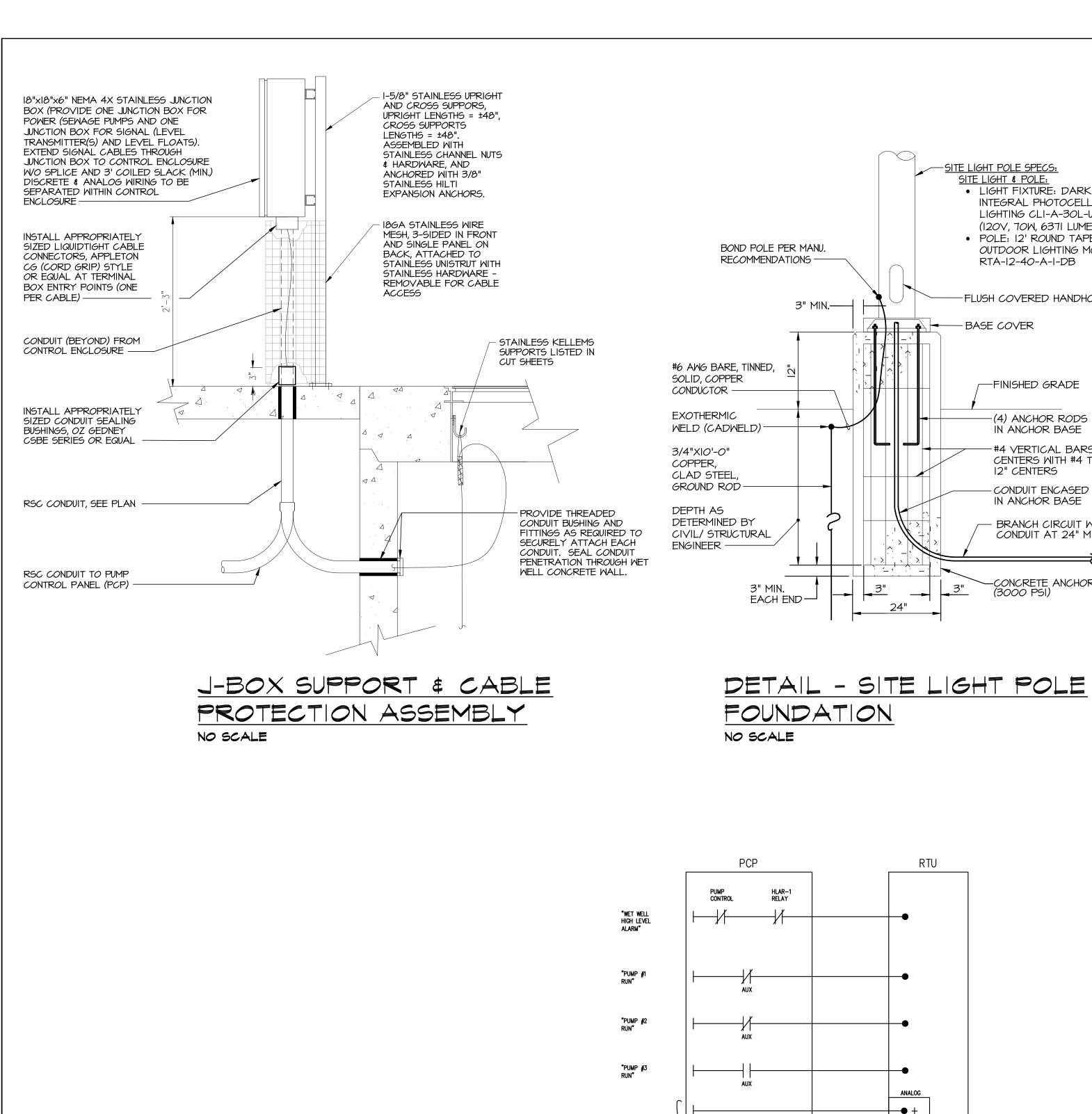
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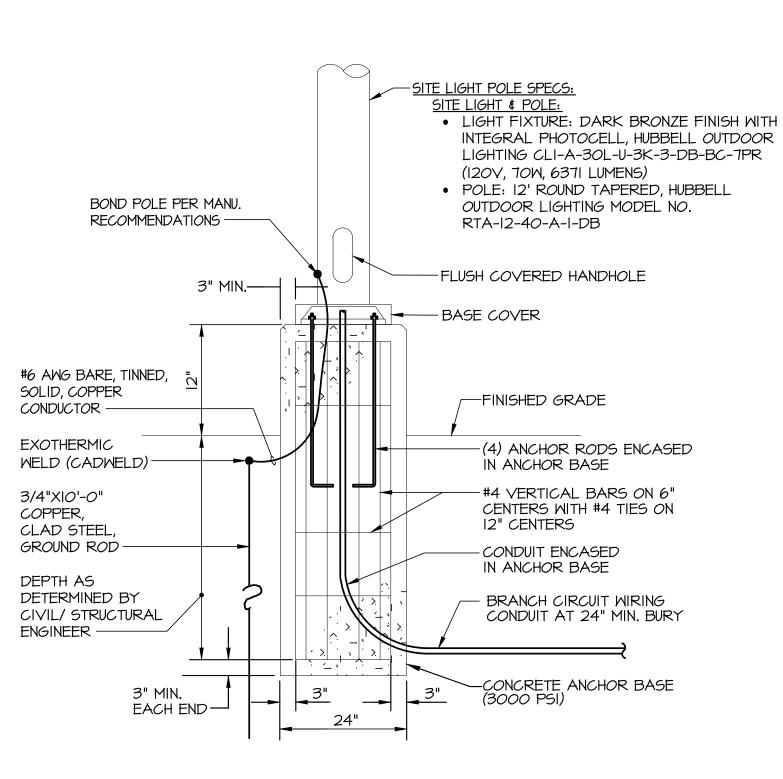
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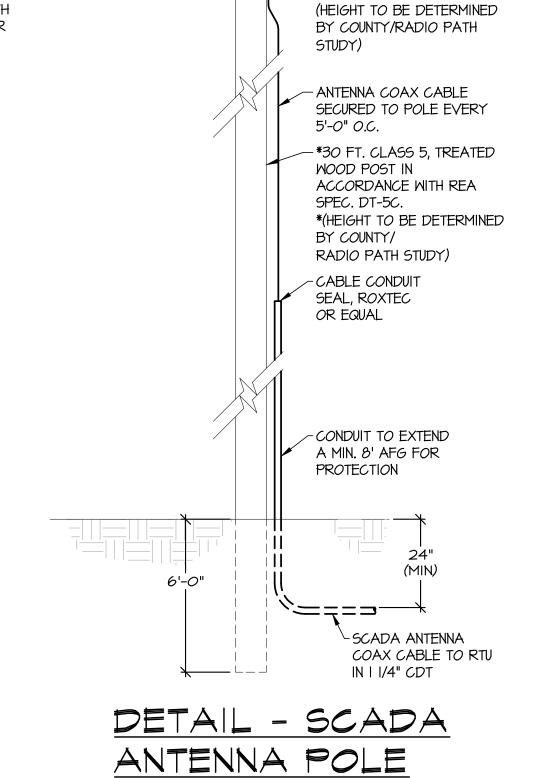
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**ELECTRICAL SITE** PLAN

SHEET NUMBER

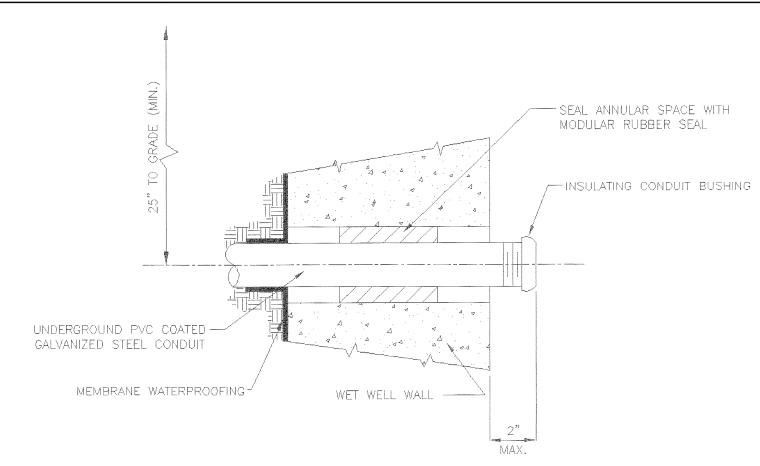






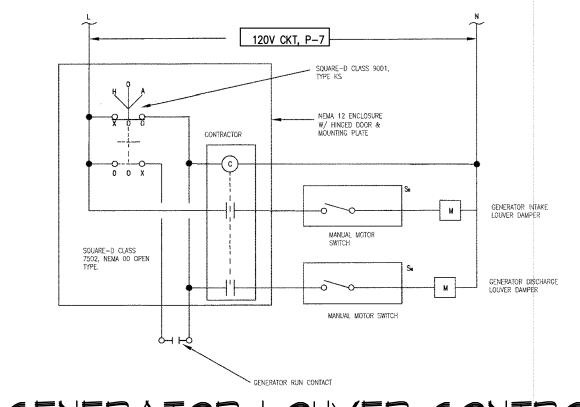
NO SCALE

-SCADA ANTENNA



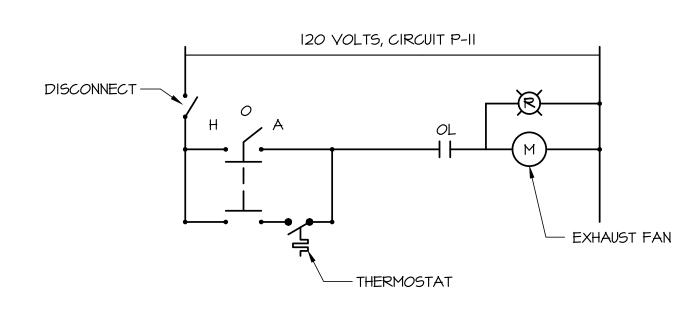
#### MET WELL ELECTRICAL CONDUIT DETAIL (TYPICAL)

NO SCALE

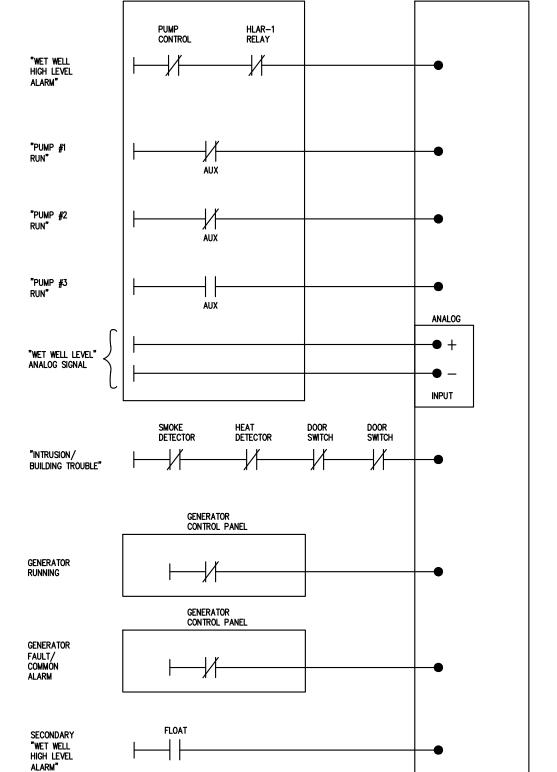


#### GENERATOR LOUVER CONTROL DIAGRAM

NO SCALE

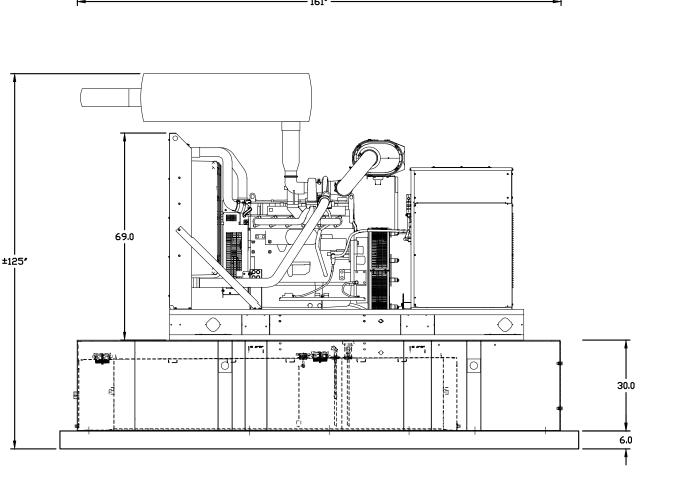


BLDG EF-I CONTROL DIAGRAM NO SCALE



PCP

TELEMETRY INPUT WIRING DIAGRAM NO SCALE



DETAIL EMERGENCY GENERATOR NO SCALE

E-3



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**MORRIS & RITCHIE** ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS, AND LANDSCAPE ARCHITECTS

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ABBE

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**ELECTRICAL DETAILS** 

SHEET NUMBER