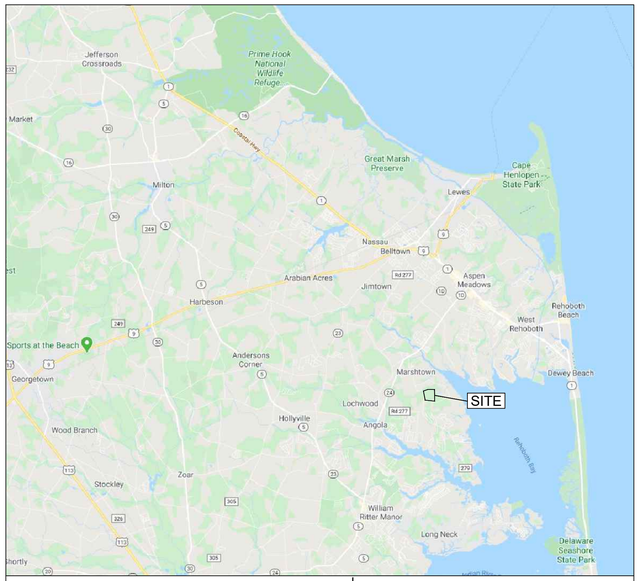
JOY BEACH
SEWER COLLECTION SYSTEM
PHASE 2



SCALE: 1" = 2 MI.

DRAWING LIST

SHEET	NAME
G-0.01	COVER SHEET
C-0.00	KEY PLAN
C-0.01	P.S. SITE EXISTING CONDITIONS
C-0.02	PROPOSED P.S. SITE CONDITIONS
C-1.01	PLAN VIEW
C-1.02	PLAN VIEW
C-1.03	PLAN VIEW
C-1.04	PLAN VIEW, PIPE & MH SCHEDULES
C-2.01	GRAVITY PROFILES
C-2.02	GRAVITY PROFILES
C-2.03	GRAVITY PROFILES
C-2.04	GRAVITY PROFILES 1
C-2.05	GRAVITY PROFILES
C-3.01	FM PROFILE
C-3.02	FM PROFILE
C-4.01	CIVIL DETAILS
C-4.02	CIVIL DETAILS
MOT-1.01	MOT DETAILS
PS-1.01	PUMP STATION PLANS & ELEVATION
PS-2.01	PUMP STATION DETAILS
E-0.01	ELECTRICAL GENERAL NOTES & ABBREV.
E-0.02	ELECTRICAL GENERAL LEGEND & SYMBOLS
E-1.01	ELECTRICAL SITE PLAN
E-1.02	ELECTRICAL PLAN
E-2.01	ELECTRICAL DETAILS I
E-2.02	ELECTRICAL DETAILS II
E-2.03	ELECTRICAL DETAILS III
E-2.04	ELECTRICAL DETAILS IV
E-3.01	ELECTRICAL DIAGRAMS AND SCHEDULES
E-3.02	INSTRUMENTATION RISER DIAGRAM
E-3.03	PUMP CONTROL PANEL ECD
E-3.04	ELECTRICAL CONTROL DIAGRAMS
ES-0.00	EROSION & SEDIMENT CONTROL TITLE SHEET
ES-1.00	OVERALL / KEY E&S PLAN
ES-1.01	PROPOSED E&S PLAN
ES-1.02	PROPOSED E&S PLAN
ES-1.03	PROPOSED E&S PLAN
ES-1.04	PROPOSED E&S PLAN
ES-2.01	EROSION AND SEDIMENT CONTROL DETAILS
ES-2.02	EROSION AND SEDIMENT CONTROL DETAILS

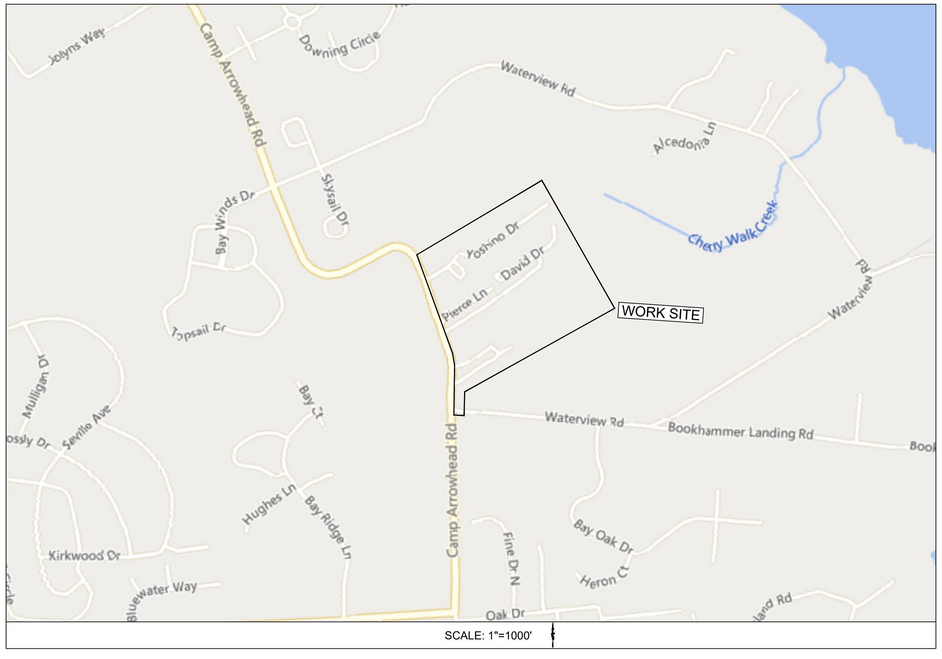
LEGEND

EXISTING	PROPOSED
STRUCTURE / BUILDING / OBJECT	ASPHALT ROAD RESTORATION
EXISTING ASPHALT ROAD	GRAVEL ROAD RESTORATION
TREE	GRAVITY SEWER & STANDARD MANHOLE
PAVED ROADWAY	GRAVITY SEWER & WATERTIGHT MANHOLE
EX WATER FORCE MAIN	FORCEMAIN
EX GAS LINE	GRAVITY LATERAL
EX SANITARY SEWER FORCE MAIN	LOW PRESSURE LATERAL
EX SANITARY SEWER	BOLLARD
EX OVERHEAD ELEC.	VALVE
EX PROPERTY LINE	PERMANENT UTILITY EASEMENT
EX SPLIT RAIL FENCE	TEMPORARY CONSTRUCTION EASEMENT
EX ELEC. TRANSFORMER W/PAD	PROPOSED FENCE
EX TELEPHONE BOX	PROPOSED CONTOUR LINE
EX CLEAN OUT	BORE LOCATION
EX BOLLARD	GRINDER PUMP
EX SIGN	
EX WATER VALVE	
EX SANITARY MANWAY	
EX FIRE HYDRANT	
EX GAS METER	
EX CABLE BOX	
EX SEPTIC TANK	
EX MAIL BOX	
EX GUY WIRE	

MISS UTILITY
DELMARVA

BEFORE YOU DIG CALL
1-800-282-8555 (In Del.)
1-800-441-8355 (Md., Va.)
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

SUSSEX COUNTY, DELAWARE
CONTRACT #S25-03
CONSTRUCTION DRAWINGS



SCALE: 1"=1000'

CONSTRUCTION NOTES

OWNER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGESUSSEX COUNTY, DE 19947
PH. (302) 855-7700

1. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE SUSSEX COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION. ALL CONSTRUCTION WITHIN A STATE RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT DELAWARE DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATION FOR CONSTRUCTION AND MATERIALS.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL AMENDMENTS THERETO. THESE DRAWINGS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
3. ALL WORK SHALL COMPLY WITH DELAWARE SEDIMENT & STORMWATER REGULATIONS AND DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK.
4. PLAN LOCATIONS AND DIMENSIONS SHALL BE STRICTLY ADHERED TO UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
5. FULL ACCESS SHALL BE PROVIDED FOR RESIDENTS, EMERGENCY VEHICLES, PEDESTRIANS, MAIL, TRASH PICKUP, DELIVERIES, AND ACCESS TO ALL BUILDINGS.
6. EXISTING UTILITIES AS OF THIS DATE ARE SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION. COMPLETENESS AND CORRECTNESS THEREOF IS NOT GUARANTEED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONFER WITH THE UTILITY COMPANIES INVOLVED IN ORDER TO SECURE THE MOST ACCURATE INFORMATION AVAILABLE AS TO UTILITY LOCATION. NO CONSTRUCTION AROUND OR ADJACENT TO UTILITIES SHALL BE DONE WITHOUT FIRST CALLING 'MISS UTILITY' (1-800-282-8555) 72 HOURS PRIOR TO EXCAVATION TO HAVE UNDERGROUND UTILITY CABLES LOCATED AND MARKED.
7. CONTRACTOR SHALL PERFORM TEST PITS AS NECESSARY TO VERIFY EXISTING CONDITIONS AT THE SITE. IN CERTAIN INSTANCES, SPECIFIC TEST PIT LOCATIONS HAVE BEEN IDENTIFIED AS REQUIRED BY THE ENGINEER. THIS DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO VERIFY OTHER LOCATIONS AS NEEDED.
8. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE, AND ANY DAMAGE DONE TO THEM DUE TO THEIR NEGLIGENCE SHALL BE IMMEDIATELY AND COMPLETELY REPAIRED TO THE OWNER'S SATISFACTION AT THE CONTRACTOR'S SOLE EXPENSE. THIS SHALL INCLUDE BUT SHALL NOT BE LIMITED TO STORM DRAINS, INLETS, PAVEMENT, SIGNALS, CONDUITS, CABLES, PIPING POLES, AND OVERHEAD FACILITIES, ETC., REGARDLESS OF OWNERSHIP.
9. THE CONTRACTOR SHALL PROTECT ALL ADJOINING AND NEARBY BUILDINGS, EQUIPMENT, ALL UTILITIES, STRUCTURES, FENCES, TREES, SHRUBBERY, ETC. FROM DAMAGE DUE TO EXCAVATION, DEMOLITION, AND CONSTRUCTION, DURING THE ENTIRE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED DIRECTLY OR INDIRECTLY WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
10. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ALL INSTALLED UTILITIES UNTIL THE COMPLETION OF CONSTRUCTION. PIPES WITH SHALLOW COVER SHALL BE PROTECTED FROM DAMAGE BY CONSTRUCTION MACHINERY WITH ADEQUATE TEMPORARY COVER. PIPING AND MANHOLE AND VAULT OPENINGS SHALL BE PROTECTED TO PREVENT MUD, DEBRIS AND WATER FROM ENTERING THE FACILITIES. THE CONTRACTOR SHALL CLEAN AND DISPOSE OF ALL MATERIAL TO THE SATISFACTION OF THE SUSSEX COUNTY SHOULD THESE MATERIALS BE ALLOWED TO ENTER THE INSTALLED FACILITIES OR EXISTING FACILITIES WHERE CONNECTIONS EXIST.
11. THE CONTRACTOR SHALL MAINTAIN ALL CONSTRUCTION ACTIVITIES WITHIN THE DESIGNATED LIMITS OF DISTURBANCE. ANY CHANGE TO THOSE LIMITS MUST BE AGREED UPON BY THE SUSSEX COUNTY AND DNREC. STAGING AREAS SHALL ONLY BE THOSE APPROVED BY THE SUSSEX COUNTY. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER FOR THE LOCATION AND SIZE OF THE CONTRACTOR'S TEMPORARY LAY DOWN, STORAGE AREA AND CONSTRUCTION TRAILER. THIS AREA SHALL BE RESTORED TO ITS ORIGINAL BY THE CONTRACTOR UPON COMPLETION OF CONSTRUCTION.
12. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTY OWNER'S AND BUSINESS POINTS OF ACCESS
13. ALL COMMON FACILITIES INCLUDING, BUT NOT LIMITED TO, PAVED AREAS, SIDEWALKS, CURBING, LANDSCAPING, PUBLIC OPEN SPACE, AND/OR DAMAGE FACILITIES SHALL BE KEPT IN GOOD REPAIR AND MAINTAINED IN A SAFE SANITARY CONDITION.
14. ALL ROADWAYS ARE TO BE SWEPT FREE OF SEDIMENT ON A DAILY BASIS. CONTRACTOR SHALL MAINTAIN A CLEAN AND ORGANIZED WORK SITE AT ALL TIMES.
15. 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. THIS REQUIREMENT DOES NOT APPLY TO AREAS COMPLETELY CLOSED AND SECURE FROM VEHICULAR OR PEDESTRIAN TRAFFIC.
16. ALL MATERIALS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
17. CONTRACTOR SHALL PROVIDE ALL NECESSARY ADAPTER FITTINGS OR REDUCERS REQUIRED TO CONNECT TO EXISTING UTILITIES.
18. 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.
19. 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.
20. IT IS THE INTENT OF THE CONTRACT DOCUMENTS TO PROVIDE SUFFICIENT INFORMATION TO THE CONTRACTOR TO COMPLETE THE WORK. ALL OTHER INCIDENTAL WORK REQUIRED BY THE DRAWINGS OR SPECIFICATIONS FOR WHICH NO PAYMENT IS SPECIFICALLY PROVIDED AND ANY WORK OR MATERIALS NOT THEREIN SPECIFIED WHICH ARE REQUIRED TO COMPLETE THE WORK AND WHICH MAY FAIRLY BE IMPLIED AS INCLUDED IN THE CONTRACT OR WHICH THE ENGINEER MAY JUDGE TO BE SO INCLUDED SHALL BE FURNISHED AND CONSTRUCTED BY THE CONTRACTOR.
21. CONTRACTOR SHALL VERIFY THAT ALL APPLICABLE PERMITS HAVE BEEN OBTAINED PRIOR TO THE START OF WORK.
22. TRAFFIC AND SAFETY CONTROL SHALL BE MAINTAINED DURING CONSTRUCTION IN CONFORMANCE WITH THE CURRENT REVISION OF THE MANUAL ON DELAWARE TRAFFIC CONTROLS FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS.

SEWER NOTES:

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE SUSSEX COUNTY STANDARD SPECIFICATIONS AND DETAILS.
2. REPRESENTATIVES OF THE DIVISION OF PUBLIC HEALTH, OFFICE OF DRINKING WATER, OR DNREC, MAY INSPECT THIS PROJECT AT ANY TIME DURING THE CONSTRUCTION.
3. IN ACCORDANCE WITH TEN STATES STANDARDS, A MINIMUM TEN (10) FOOT HORIZONTAL AND EIGHTEEN (18) INCH VERTICAL SEPARATION MUST BE MAINTAINED BETWEEN WATER MAINS AND SANITARY SEWER. WHEN IT IS IMPOSSIBLE TO OBTAIN THE MINIMAL 10 FOOT HORIZONTAL SEPARATION AND/OR 18 INCH VERTICAL SEPARATION BETWEEN WATER MAINS AND SANITARY SEWER, THE OFFICE OF DRINKING WATER MUST SPECIFICALLY APPROVE ANY VARIANCE SUPPORTED BY DATA FROM THE DESIGN ENGINEER.
4. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THE APPROVAL AND ACCEPTANCE OF THE SANITARY SEWER BY SUSSEX COUNTY UPON COMPLETION OF CONSTRUCTION.
5. GRAVITY LATERAL RESPONSIBILITIES FOR CONTRACTOR END AT PROPERTY LINE. LATERALS ON PRIVATE PROPERTIES ARE BY OTHERS.

SEQUENCE OF CONSTRUCTION

1. SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE COUNTY AND SUSSEX CONSERVATION DISTRICT.
2. CONTACT THE COUNTY FIVE DAYS PRIOR TO ANY SITE DISTURBANCE.
3. INSTALL EROSION AND SEDIMENT CONTROL MEASURES AS REQUIRED. THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE COUNTY AND SUSSEX CONSERVATION DISTRICT PRIOR TO EARTH MOVING ACTIVITY.
4. CLEAR AND GRUB AS NEEDED.
5. INSTALL GRAVITY SEWER MAIN PIPE, LATERAL, CLEANOUTS AND MANHOLES
6. PLACE ADDITIONAL STONE ON ALL DISTURBED ROADS AFTER TRENCH RESTORATION.
7 INSTALL THE PUMP STATION AND ALL SITE IMPROVEMENTS.
8. INSTALL THE FORCE MAIN PIPING BY OPEN CUT AND HORIZONTAL DIRECTIONAL DRILL TO THE DISCHARGE POINT AS SHOWN. THE PIPING SHALL BE TESTED AND ACCEPTED PRIOR TO THE PUMP STATION STARTUP.
9. INSTALL E-ONE GRINDER PUMPS AND LOW-PRESSURE LATERAL PIPING TO DISCHARGE POINTS.
10. CONDUCT TESTS OF GRAVITY SEWER, LATERALS AND FORCE MAIN AND CORRECT ANY DEFICIENCIES IDENTIFIED.
11. TESTING OF THE PUMP STATION SHALL BE CONDUCTED ONCE ALL PIPING AND STRUCTURES HAVE BEEN TESTED AND ACCEPTED AS REQUIRED.
12. AFTER CONSTRUCTION IS COMPLETE, REMOVE ALL EROSION AND SEDIMENT CONTROL MEASURES. STABILIZE AND RESTORE ALL AREAS AS REQUIRED..

SUSSEX COUNTY ENGINEERING DEPARTMENT
GEORGETOWN, DELAWARE

COUNTY ENGINEER DATE

BID SET

OWNER/DEVELOPER:	SUSSEX COUNTY ENGINEERING DEPT. PO BOX 589 GEORGETOWN, DE 19947 PH. (302) 855-7700
SUSSEX COUNTY CONTRACT #	S20-12

DATE	REVISION
11/25/2025	DNREC COMMENTS
10/22/2025	ADDED PER ADDENDUM #1

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 751-1907 Website: www.kci.com

SCALE - PLAN: 0

COVER SHEET
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2
SUSSEX DELAWARE
LEWES

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE;
LICENSE NO.: 13033
EXPIRATION DATE: 06-30-26

DANIEL R. STRINE LICENSE No. 13033 DELAWARE PROFESSIONAL ENGINEER

SIGNATURE:

Drafting:	TJG	Check:	DRS
Design:	TJG	Check:	KAN
SCALE:			
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	G-0.01		

BY: Thomas Gilliland PRINTED: 10/22/2025 11:04 AM
LOCATION: C:\Users\tgilliland\Desktop\13157731.S20-12 JS-Bemm.dwg

C-1.01

C-1.02

YOSHINO DR

YOSHINO DR

CAMP ARROWHEAD RD (279) (DELDOT)

PIERCE'S LN

DAVID DR

CHERRY WALK DR

STA 12+44.32
4" - 45° HORIZ. BEND
4" - 22.50° HORIZ. BEND

STA 0+77.16
4" - 11.25° HORIZ. BEND

STA 0+19.21
ID
4" - 45° HORIZ. BEND
STA 0+10.72
4" - 45° HORIZ. BEND

STAGING AREA

PUMP STATION LOCATION

100 YEAR FLOOD PLAN

HAPPY GO RD

HAPPY GONE RD

FM TIE-IN POINT

C-1.03

C-1.04

KEY PLAN
SCALE: 1"=80'

BID SET

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # S20-12

DATE | REVISION

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 731-7807 Website: www.kci.com

SCALE: PLAN: 1"=80'

KEY PLAN
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2
DELAWARE
SUSSEX
LEWES

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE
LICENSE NO: 13533
EXPIRATION DATE: 06.30.26

DANIEL R. STRING LICENSE No. 13533 DELAWARE PROFESSIONAL ENGINEER

SIGNATURE:

Drafting:	TJG	Check:	DRS
Design:	TJG	Check:	KAN
SCALE:	1"=80'		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-0.00		

BY: Daniel Gabriel PRINTED: 9/30/2025 4:44 PM
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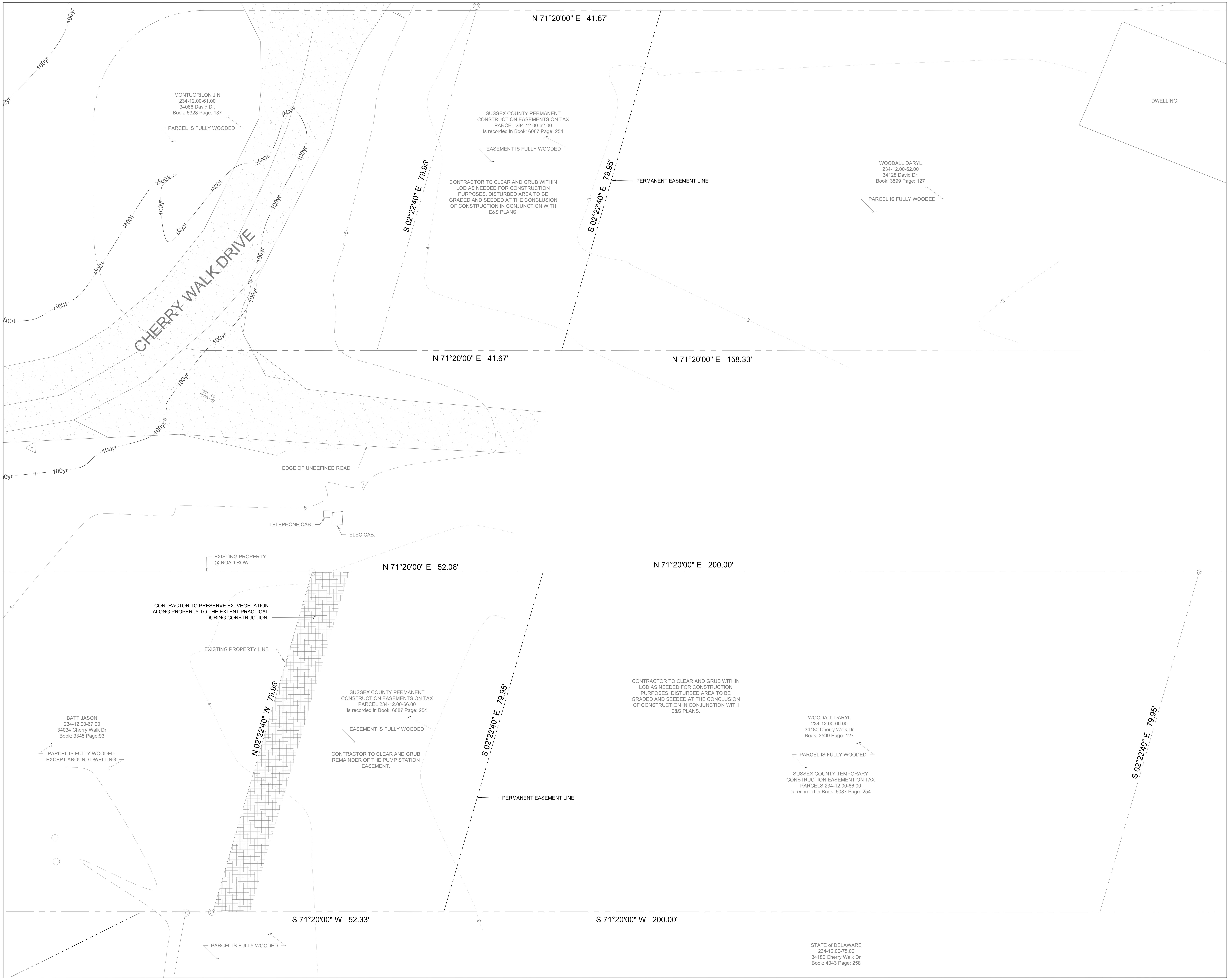


P.S. SITE EXISTING CONDITIONS PLAN

SCALE: 1"=10'

BID SET

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT #
S20-12

SCALE - PLAN: 1"=10'

KCI TECHNOLOGIES, INC.
ENGINEERS . PLANNERS . SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

P.S. SITE EXISTING CONDITIONS
JOY BEACH SEWER COLLECTION SYSTEM PHASE 2

LEWES SUSSEX DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13533
EXPIRATION DATE: 06-30-26

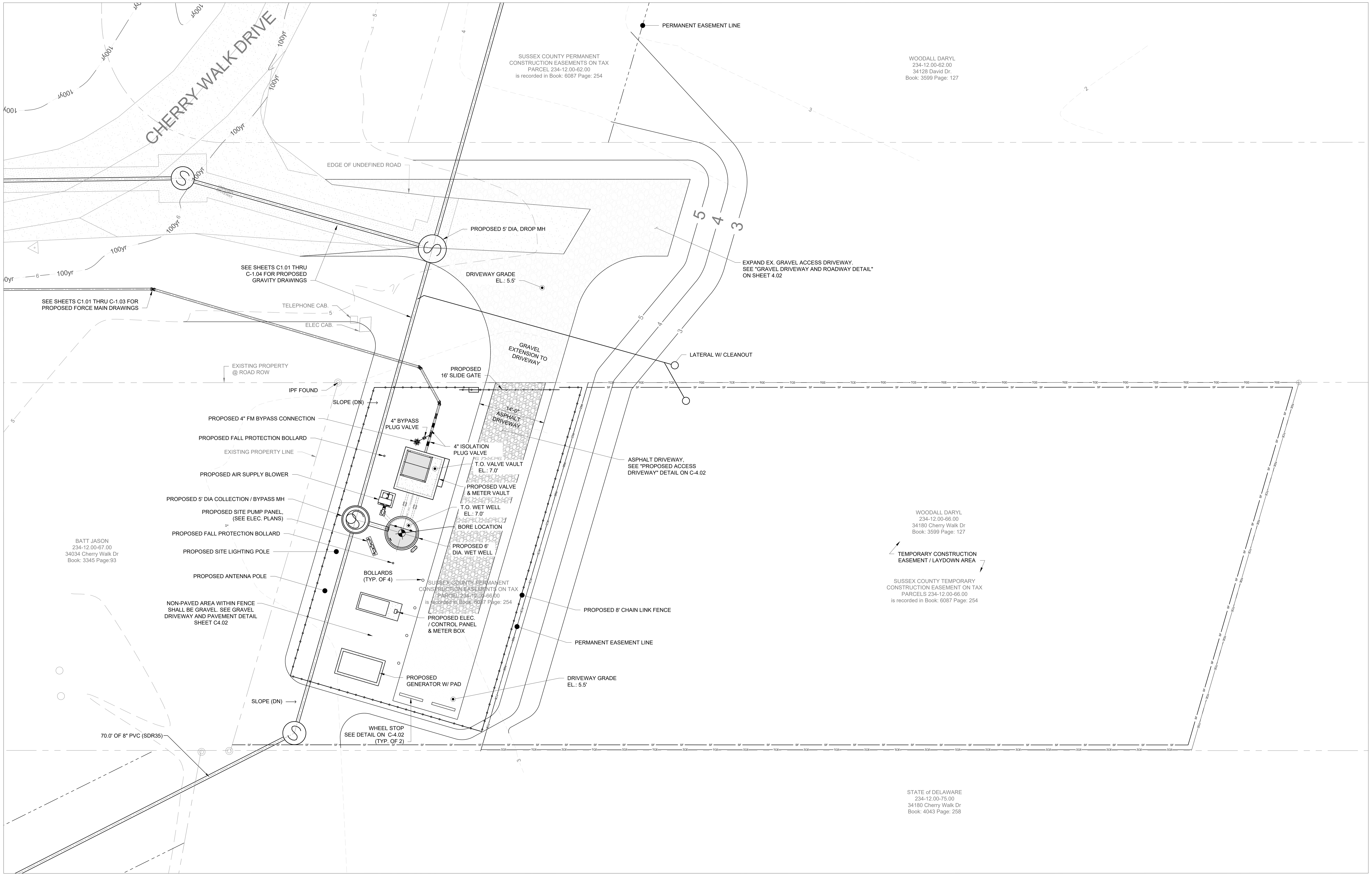
DANIEL R. STRING LICENSE No. 13533 DELAWARE PROFESSIONAL ENGINEER

SIGNATURE:

Drafting:	TJG	Check:	DRS
Design:	TJG	Check:	KAN
SCALE:	1"=10'		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-0.01		

DATE | REVISION

BY: Thomas Gilchrist PRINTED: 9/30/2025 4:44 PM
LOCATION: C:\DMS\PWwest\thomas.gilchrist\d0500469\01 13157731.S20 12_Civil Set - Phase 2.dwg



PROPOSED P.S. SITE PLAN

SCALE: 1"=10'

REVISION	DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT #
S20-12

SCALE : PLAN: 1"=10'

KCI TECHNOLOGIES, INC.
ENGINEERS . PLANNERS . SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

PROPOSED P.S. SITE CONDITIONS
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

LEWES SUSSEX DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13633
EXPIRATION DATE: 06-30-26

DANIEL R. STRUNG, LICENSE No. 13633, DELAWARE, PROFESSIONAL ENGINEER

SIGNATURE:

Drafting:	TJG	Check:	DRS
Design:	TJG	Check:	KAN
SCALE:	1"=10'		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-0.02		

BID SET

BY: Thomas Gilchrist PRINTED: 9/30/2025 4:44 PM
LOCATION: C:\DMS\PWork\thomas.gilchrist\d0006480\1_13157731.S20.12_Civil Set - Phase 2.dwg

RESTORATION NOTES:
1. 5'-0" MIN WIDE GRAVEL DRIVEWAY RESTORATION SEE DETAIL SHEET C4.02
2. YOSHINO DRIVE PAVED AREAS SHALL BE RESTORED USING TRENCH RESTORATION SEE DETAIL SHEET C4.02.
3. ALL EXISTING GRAVEL ROADS SHALL BE RESTORED USING GRAVEL ROADWAY/DRIVEWAY RESTORATION. SEE DETAIL SHEET C4.02 AND 2" OF GRAVEL OVER FULL WIDTH OF ROAD.

BAYNUM TRUDY A/K/A/ GERTRUDE M BAYNAM
234-12.00-23.00
22167 Camp Arrowhead Rd
Book:635 Page:471

HELLENS R GREEG TTEE LIV TR
HELENS BARBARA ANNE TTEE LIV TR
234-12.00-24.00
22189 Camp Arrowhead Rd
Book:5788 Page:107

MAIL BOX

6" GRAVITY SEWER LATERAL & CLEANOUT (TYP)

G-02 SSMH
RIM ELEV.: 17.12
N: 249312.4788
E: 729717.0731

YOSHINO DR

BP: 0+00.00

190.0' OF 8" PVC (SDR35)

MAIL BOX, TYP. OF 4

LIGHT POST

G-01 SSMH
RIM ELEV.: 14.97
N: 249229.3752
E: 729546.2112

ELDER JAMES I TTEE REV TR
KATHERINE K ELDER TTEE REV TR
234-12.00-25.00
33910 Yoshino Dr
Book:5847 Page:229

PI: 1+90.00

EP: 1+75.53

167.0' OF 8" PVC (SDR35)

G-X 5' STUB OUT OF 8" PVC (SDR35) W/ CAP

G-03 SSMH
RIM ELEV.: 11.06
N: 249426.2340
E: 729839.3383

PI: 3+57.00

168.0' OF 8" PVC (SDR35)

TELEPHONE BOX (2)
LIGHT POST
TELEPHONE BOX
TELEPHONE BOX/ POLE
22172 LAPIN CIRCLE LOT 12
33955 YOSHINO DRIVE LOT 122
33967 YOSHINO DRIVE LOT 123
VERIZON VAULT
CLEANOUT (3)
EM (2)
C-1.01
J-001

22144 LAPIN CIRCLE LOT 1 VACANT

LAPIN CIRCLE

103.0' OF 8" PVC (SDR35)

CONCRETE PAD

22172 LAPIN CIRCLE LOT 12

K-01 SSMH
RIM ELEV.: 20.26
N: 249296.1713
E: 729890.3207

G-04 SSMH
RIM ELEV.: 8.28
N: 249368.3152
E: 729997.0386

RESTORE SPEED BUMP IN KIND

PI: 5+25.00

VERIZON VAULT

TELEPHONE BOX (3)

DUKE RYAN CHRISTOPHER
234-12.00-26.00
22201 Camp Arrowhead Rd
Book:5306 Page:246

22152 LAPIN CIRCLE LOT 2 VACANT

PI: 0+72.50

EP: 1+40.00

140.0' OF 8" PVC (SDR35)

BP: 0+00.00

22170 LAPIN CIRCLE LOT 11 - VACANT

PUMP HOUSE

BP: 0+00.00

72.5' OF 8" PVC (SDR35)

J-01 SSMH
RIM ELEV.: 16.69
N: 249186.9591
E: 729708.0326

LPS DISCHARGE CONNECTION SEE DETAIL ON C-4.02

J-02 (60in) SSMH
RIM ELEV.: 18.28
N: 249224.2197
E: 729770.2250

J-X 5' STUB OUT OF 8" PVC (SDR35) W/ CAP

TELEPHONE BOX

POLITE ERIC J
234-12.00-27.00
22209 Camp Arrowhead Rd
Book:3312 Page:190

22154 LAPIN CIRCLE LOT 4+5 VACANT

22156 LAPIN CIRCLE LOT 6

22158 LAPIN CIRCLE LOT 7

22160 LAPIN CIRCLE LOT 8 VACANT

22164 LAPIN CIRCLE LOT 9

22166 LAPIN CIRCLE LOT 10 VACANT

COMMUNITY WELL

33960 YOSHINO DRIVE LOT 101 VACANT

33962 YOSHINO DRIVE LOT 102 VACANT

33966 YOSHINO DRIVE LOT 103

33970 YOSHINO DRIVE LOT 104

1.25" SDR-11 HDPE

INLET TOP=15.71

GRINDER PUMP, LOCATION AND PIPING ROUTING TO BE DECIDED WITH HOME OWNER

BARBOUR FRANK S JR
ROSE E BARBOUR
234-12.00-28.00
22219 Camp Arrowhead Rd
Book:3249 Page:269

MAILBOX

RCP = 14.86

CAMP ARROWHEAD RD (279) (DELDOT)

CLEMENTS ANDREW
234-12.00-35.00
34064 David Dr
Book:4457 Page:89

OLSZEWSKI MICHAEL A TTEE LIV TR
OLSZEWSKI LORETTA M TTEE LIV TR
234-12.00-29.00
33973 Pierce Ln
Book:6247 Page:92

L-01 SSMH
RIM ELEV.: 13.05
N: 249178.4741
E: 730190.3774

UTILITY POLE #14896

BP: 0+00.00

140.0' OF 8" PVC (SDR35)

IPF

CPF

SIGN

ELEC. VAULT

CARTER AND FELMLEE PROPERTY HOLDING LLC
22227 Camp Arrowhead Rd
DB 6193 PG 24

TARASKUS DENINE M
234-12.00-32.00
33951 Pierce Ln
Book:5352 Page:284

N-01 SSMH
RIM ELEV.: 20.32
N: 248840.3144
E: 729687.9680

UTILITY POLE #14892

UTILITY POLE #14894

UTILITY POLE #14895

MAILBOX (3)

EM (2)

UTILITY POLE #DA24-16/ TELEPHONE BOX

PIERCE'S LN

BP: 0+00.00

300.0' OF 8" PVC (SDR35)

PI: 3+00.00

EP: 1+60.00

160.0' OF 8" PVC (SDR35)

N 71°20'00" E 200'

BP: 0+00.00

N-02 SSMH
RIM ELEV.: 18.87
N: 248974.3460
E: 729956.3624

P-01 SSMH
RIM ELEV.: 18.20
N: 249046.2534
E: 730099.2936

PETERMAN GENE E
PETERMAN DEBORAH J
234-12.00-56.00
33935 Cherry Walk Dr
Book:4350 Page:68

EAGER CHARLES R JR
234-12.00-57.00
33957 Cherry Walk Dr
Book:2336 Page:276

MARCHIO ANGEL
DAVID MARCHIO
234-12.00-58.00
33979 Cherry Walk Dr
Book:4754 Page:105

HARRISON ROBERT J
234-12.00-59.00
33997 Cherry Walk Dr
Book:3112 Page:106

N 02°22'40" W 79.86'

N 18°05'57" W 76.74'

90.0' OF 8" PVC (SDR35)

S 18°05'57" E 76.74'

S 02°22'40" E 79.86'

20' WIDE PERMANENT EASEMENT LINE

20' WIDE PERMANENT EASEMENT LINE

Q-01 SSMH
RIM ELEV.: 21.13
N: 248739.2295
E: 729693.3516

Q-02 SSMH
RIM ELEV.: 19.51
N: 248893.7058
E: 729996.2329

N 71°20'00" W 200'

CATV PEDESTAL

ELEC. PANEL

SAT. DISH

IPF

FIBER OPTIC VAULT

ELEC. PANEL (2)

GAS BOX/ METER

CRBF

END OPEN CUT ALONG CHERRY WALK DR. BEGIN HDD FM ALONG ARROWHEAD RD.

STA 12+44.32
4" - 45° HORIZ. BEND

STA 12+33.20
4" - 22.50° HORIZ. BEND

BP: 0+00.00

340.0' OF 8" PVC (SDR35)

PI: 3+40.00

EP: 3+89.97

360.5' OF 8" PVC (SDR35)

EM

CHERRY WALK DR

MAILBOX (2)

4" PVC (DR-18) FM VIA OPEN TRENCH & BACKFILL METHOD

4" PVC (DR-18) FM VIA OPEN TRENCH & BACKFILL METHOD

STA 12+30.17
4" VALVE
N 248670.7739
E 729618.7557

UTILITY POLE #DEC 11339

TELEPHONE B

FIBER OPTIC VAULT

TELEPHONE BOX (2)

STA 10+35.37
ARV VALVE & VAULT
N 248752.6472
E 729795.4244

PROVIDE 18" OF TONING WIRE SLACK ABOVE TOP OF VAULT

ELEC. PANEL

EM

MULLINS LUCY ANN
234-12.00-71.00
33956 Cherry Walk Dr
Book:2419 Page:34

TELEPHONE BOX

ELEC. CABINET

WILDASIN LINDA S TTEE
REV TR
234-12.00-70.00
33974 Cherry Walk Dr
Book:4959 Page:231

CATV VAULT

CATV PEDESTAL

DASHER JOSEPH T
CHERYL LOUIS DASHLER
33936 Cherry Walk Dr
Book:5803 Page:5

DELNOVA PROPERTIES LLC
234-12.00-69.00
33996 Cherry Walk Dr
Book:4974 Page:196

C-1.01
C-1.03

C-1.01
C-1.02

PLAN VIEW
SCALE: 1"=30'

BID SET

SCALE: PLAN: 1"=30'
60' 30' 0 30'

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # S20-12

DATE	REVISION
11/25/2025	DNREC COMMENTS

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 731-7807 Website: www.kci.com

PLAN VIEW
JOY BEACH SEWER COLLECTION SYSTEM PHASE 2
SUSSEX COUNTY, DELAWARE
LEWES

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13033
EXPIRATION DATE: 06/30/26

DANIEL R. STRING LICENSE No. 13033 DELAWARE PROFESSIONAL ENGINEER

SIGNATURE:

Drafting:	TJG	Check:	DRS
Design:	TJG	Check:	KAN
SCALE:	1"=30'		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-1.01		

BY: Thomas Gilcrest (PRINTED: 9/30/2025 4:44 PM)
DWG: I:\Projects\Sussex\Joy Beach\13157731.S20-12_Civil Set - Phase 2.dwg

RESTORATION NOTES:
1. 5'-0" MIN WIDE GRAVEL DRIVEWAY RESTORATION SEE DETAIL SHEET C4.02.
2. YOSHINO DRIVE PAVED AREAS SHALL BE RESTORED USING TRENCH RESTORATION SEE DETAIL SHEET C4.02.
3. ALL EXISTING GRAVEL ROADS SHALL BE RESTORED USING GRAVEL ROADWAY/DRIVEWAY RESTORATION. SEE DETAIL SHEET C4.02 AND 2" OF GRAVEL OVER FULL WIDTH OF ROAD.

REVISION	DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # 520-12

SCALE: PLAN: 1"=30'

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 751-7807 Website: www.kci.com

PLAN VIEW
JOY BEACH SEWER COLLECTION SYSTEM PHASE 2
SUSSEX DELAWARE
LEWES

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE;
LICENSE NO.: 13518
EXPIRATION DATE: 06.30.26

DANIEL R. STRING LICENSE No. 13518 DELAWARE PROFESSIONAL ENGINEER

SIGNATURE:

Drafting:	TJG	Check:	DRS
Design:	TJG	Check:	KAN
SCALE:	1"=30'		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-1.02(PS)		

PLAN VIEW
SCALE: 1"=30'

BID SET

BY: Thomas Coleman PRINTED: 9/30/2025 4:43 PM
DOCUMENT: P:\Projects\Sussex County\2013157731.S20.12 Civil Set_Phase 2.dwg

NOTES:
1. HAPPY GO LUCKY COMMUNITY HAS AN EXISTING PRIVATE WATER DISTRIBUTION SYSTEM WHICH IS UNDOCUMENTED.
2. HAPPY GO LUCKY GRAVEL AREAS SHALL BE RESTORED USING GRAVEL ROADWAY AND DRIVEWAY RESTORATION DETAIL WITH 2" GRAVEL OVERLAY FOR A MAXIMUM WIDTH OF 16'-0".

C-1.01
C-1.03

13+00

4" HDPE (DR-11) FM

18" CMP = 16.26

IPF

FM

CONTRACTOR TO TIE IN 1.25" FM LATERAL, INTO PROPOSED 4" FM

1.25" SDR-11 HDPE

SEPTIC HOLDING TANK

GRINDER PUMP LOCATION AND PIPING ROUTING TO BE DECIDED WITH HOME OWNER

CRBF

MB

14+00

TELEPHONE BOX (2)

ELEC. METER (2)

4" DOMESTIC WELL
THIS SIDE LOCATION
UNKNOWN

DUFFY BEONICA L
234-12.00-73.00
22263 Camp Arrowhead Rd
Book:4753 Page:337

GAS METER

18" RCP = 19.98

DELDOT ROW/ PROPERTY LINE

4" HDPE (DR-11) FM

INSTALL BY DIRECTIONAL DRILL METHOD

18" RCP = 20.51

15+00

MB

TELEPHONE BOX (2)

S-01
SSMH
RIM ELEV.: 24.35
N: 248347.2216
E: 729708.6034

HAPPY GO RD

BP: 0+00.00

140.0' OF 8" PVC (SDR35)

1+00

PI: 1+40.00

2+00

240.0' OF 8" PVC (SDR35)

3+00

PI: 3+80.01

EP: 0+70.00

70.0' OF 8" PVC (SDR35)

BP: 0+00.00

CLEANOUT (2)

S-02
SSMH
RIM ELEV.: 24.63
N: 248387.5561
E: 729842.6673
OFFICE

S-03
SSMH
RIM ELEV.: 23.12
N: 248489.6141
E: 730059.9017

T-01
SSMH
RIM ELEV.: 21.97
N: 248522.0605
E: 730121.9278

4+00

103.0' OF 8" PVC (SDR35)

LORD AUDREY R J PHILLIP SIMMONS
234-12.00-74.00
33943 Happy Go Rd
Book:0 Page:0

MAILBOX (4)

TELEPHONE BOX (2)

ELEC. BOX

CLEANOUT (4)

ELEC. METER (4)

R-01
SSMH
RIM ELEV.: 26.89
N: 248226.5497
E: 729742.7413

HAPPY GONE RD

BP: 0+00.00

1+00

2+00

400.0' OF 8" PVC (SDR35)

3+00

EP: 4+83.01

5+00

6+00

332.1' OF 8" PVC (SDR35)

PI: 4+00.01

R-02
SSMH
RIM ELEV.: 22.76
N: 248396.8593
E: 730104.6854

C-1.04
C-1.05

CAMP ARROWHEAD RD (279)
(DELDOT)

16+00

17+00

18+00

DOYLE JOHN
RACHEL SMITH
234-12.00-145.00
22602 Waterview Rd
Book:5695 Page:42

4" HDPE (DR-11) FM

END HDG FM ALONG ARROWHEAD RD.

EP: 19+19.15

19+00

TIE-IN PIT

TONING WIRE BOX SEE DETAIL S-4.07 ON C-4.02

STA 19+16.15
4" VALVE

CONTRACTOR TO TIE-IN TO EXISTING STUB OUT AND INSTALL A NEW ISOLATION VALVE

STA 19+19.15
4" RESTRAINED COUPLING

PLAN VIEW
SCALE: 1"=30'

BID SET

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # 520-12

REVISION	DATE

SCALE: PLAN: 1"=30'

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 731-1707 Website: www.kci.com

PLAN VIEW
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

DELAWARE
SUSSEX
LEWES

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO: 13533
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SIGNATURE:

Drafting:	TJG	Check:	DRS
Design:	TJG	Check:	KAN
SCALE:	1"=30'		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-1.03		

BY: Thomas Gilchrist PRINTED: 9/30/2025 4:43 PM
DOCUMENT: P:\Projects\Sussex County\13157731.S20.12 Civil Set_Phase 2.dwg

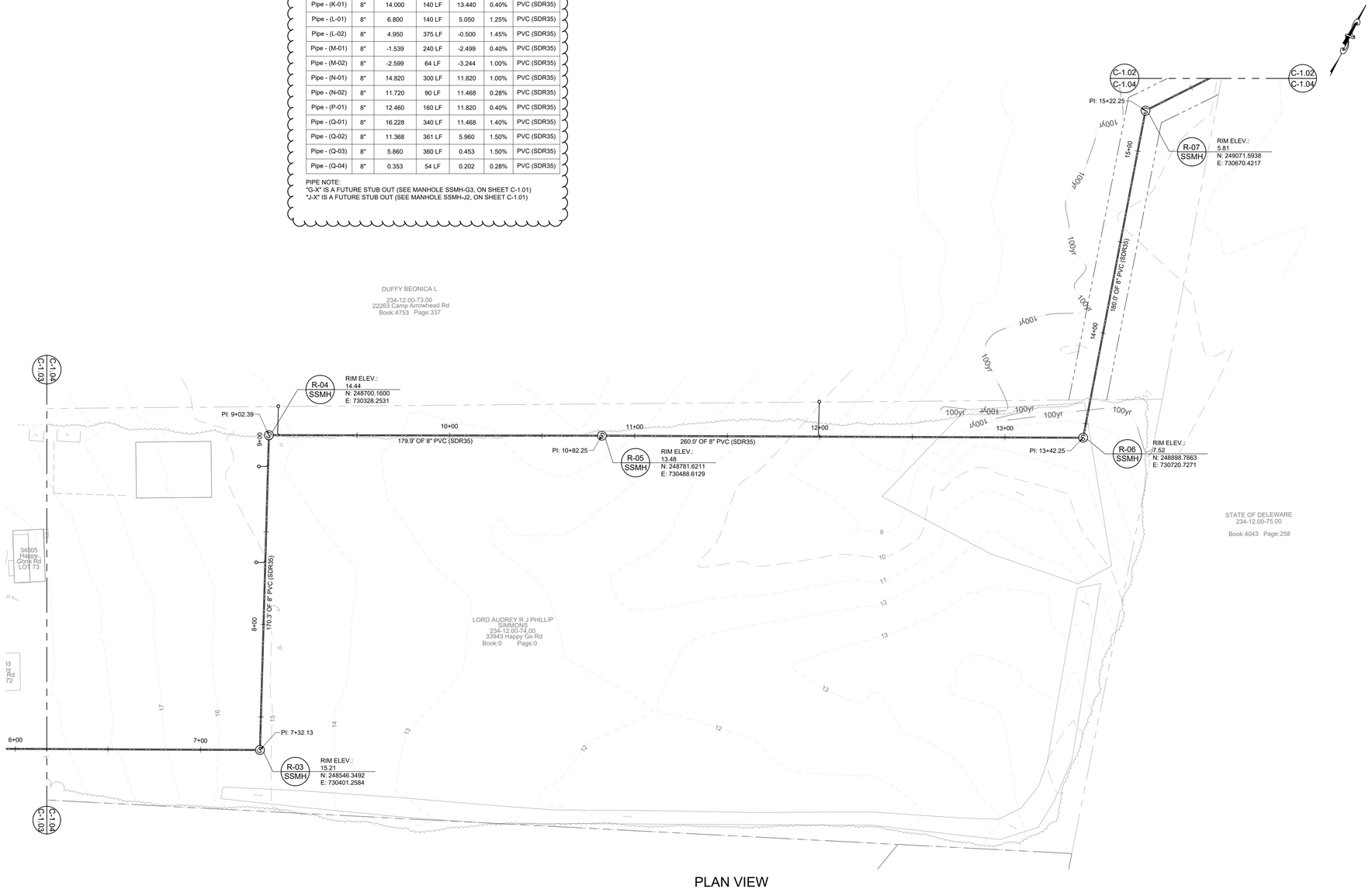
MANHOLE SCHEDULE							
MH NO.	SIZE. IN	INV. IN	SIZE OUT	INV. OUT	RIM ELEV	NORTHING	EASTING
G-01			8"	10.27	14.97	249229.3752	729546.2112
G-02	8" 8"	9.13 9.13	8"	9.03	17.12	249312.4788	729717.0731
G-03	8" 8"	6.11 6.11	8"	6.01	11.06	249426.2340	729839.3383
G-04	8"	1.81	8"	1.71	8.28	249368.3152	729997.0386
G-05	8"	0.79	8"	0.69	5.57	249483.1436	730196.3234
G-06	8" 8"	-2.00 -2.00	8"	-2.10	4.55	249674.0235	730536.5214
G-07	8"	-2.46	8"	-2.56	4.80	249583.6330	730626.9708
G-08	8"	-2.84	8"	-2.94	4.49	249495.2394	730671.6995
G-09	8" 8"	-3.24 -3.24	8"	-3.34	4.20	249460.9068	730776.5949
G-10	8"	-3.57	8"	-3.67	3.98	249383.4637	730751.2476
G-11 (60in)	8" 8"	-3.93 -0.50	8"	-4.03	4.28	249342.2806	730670.0084
G-12 (60in)	8" 8"	-4.34 0.20	8"	-4.44	5.27	249231.0311	730691.7602
G-13	8"	-4.61	10"	-4.70	7.00	249173.4964	730703.0097
H-01			8"	-1.11	3.58	249792.2415	730714.1477
H-02	8"	-1.73	8"	-1.83	4.12	249716.4637	730578.9341
J-01			8"	9.81	16.69	249186.9591	729708.0326
J-02 (60in)	8" 8" 8"	13.44 13.44 9.52	8"	9.42	18.28	249224.2197	729770.2250
K-01			8"	14.00	20.26	249296.1713	729890.3207
L-01			8"	6.80	13.05	249178.4741	730190.3774
L-02	8"	5.05	8"	4.95	10.49	249183.4891	730330.2875
M-01			8"	-1.54	3.42	249633.5477	731009.2282
M-02	8"	-2.50	8"	-2.60	4.15	249522.1582	730796.6848
N-01			8"	14.82	20.32	248840.3144	729687.9680
N-02	8" 8"	11.82 11.82	8"	11.72	18.87	248974.3460	729956.3624
P-01			8"	12.46	18.20	249046.2534	730099.2936
Q-01			8"	16.23	21.13	248739.2295	729693.3516
Q-02	8" 8"	11.47 11.47	8"	11.37	19.51	248893.7058	729996.2329
Q-03	8"	5.96	8"	5.86	11.23	249053.4834	730319.3913
Q-04	8"	0.45	8"	0.35	6.06	249220.6720	730638.7786

MANHOLE SCHEDULE							
MH NO.	SIZE. IN	INV. IN	SIZE OUT	INV. OUT	RIM ELEV	NORTHING	EASTING
R-01			8"	20.57	26.89	248226.5497	729742.7413
R-02	8" 8"	16.57 16.57	8"	16.47	22.76	248396.8593	730104.6854
R-03	8"	10.66	8"	10.56	15.21	248546.3492	730401.2584
R-04	8"	8.86	8"	8.76	14.44	248700.1600	730328.2531
R-05	8"	5.16	8"	5.06	13.48	248781.6211	730488.6129
R-06	8"	0.51	8"	0.41	7.52	248898.7663	730720.7271
R-07	8"	-0.09	8"	-0.19	5.81	249071.5938	730670.4217
R-08	8"	-0.47	8"	-0.57	4.50	249128.0904	730711.7108
S-01			8"	18.29	24.35	248347.2216	729708.6034
S-02	8"	17.73	8"	17.63	24.63	248387.5561	729842.6673
S-03	8" 8"	16.96 16.96	8"	16.86	23.12	248489.6141	730059.9017
T-01			8"	17.24	21.97	248522.0605	730121.9278

PIPE SCHEDULE						
PIPE	SIZE	START INV.	LENGTH	END INV.	SLOPE	MATERIAL
Pipe - (G-01)	8"	10.272	190 LF	9.132	0.60%	PVC (SDR35)
Pipe - (G-02)	8"	9.032	167 LF	6.111	1.75%	PVC (SDR35)
Pipe - (G-03)	8"	6.011	168 LF	1.811	2.50%	PVC (SDR35)
Pipe - (G-04)	8"	1.711	230 LF	0.791	0.40%	PVC (SDR35)
Pipe - (G-05)	8"	0.691	390 LF	-2.000	0.69%	PVC (SDR35)
Pipe - (G-06)	8"	-2.100	128 LF	-2.458	0.28%	PVC (SDR35)
Pipe - (G-11)	8"	-4.027	113 LF	-4.344	0.28%	PVC (SDR35)
Pipe - (G-12)	8"	-4.444	59 LF	-4.608	0.28%	PVC (SDR35)
Pipe - (G-13)	10"	-4.704	7 LF	-4.733	0.40%	PVC (SDR35)
PIPE - (G-07)	8"	-2.558	99 LF	-2.835	0.28%	PVC (SDR35)
PIPE - (G-08)	8"	-2.935	110 LF	-3.244	0.28%	PVC (SDR35)
PIPE - (G-09)	8"	-3.344	81 LF	-3.572	0.28%	PVC (SDR35)
PIPE - (G-10)	8"	-3.672	91 LF	-3.927	0.28%	PVC (SDR35)
Pipe - (G-X)	8"	6.131	7 LF	6.110	0.28%	PVC (SDR35)
Pipe - (H-01)	8"	-1.112	155 LF	-1.732	0.40%	PVC (SDR35)
Pipe - (H-02)	8"	-1.832	60 LF	-2.000	0.28%	PVC (SDR35)
Pipe - (J-01)	8"	9.810	72 LF	9.520	0.40%	PVC (SDR35)
Pipe - (J-02)	8"	9.420	103 LF	9.132	0.28%	PVC (SDR35)
Pipe - (J-X)	8"	13.462	8 LF	13.440	0.28%	PVC (SDR35)
Pipe - (K-01)	8"	14.000	140 LF	13.440	0.40%	PVC (SDR35)
Pipe - (L-01)	8"	6.800	140 LF	5.050	1.25%	PVC (SDR35)
Pipe - (L-02)	8"	4.950	375 LF	-0.500	1.45%	PVC (SDR35)
Pipe - (M-01)	8"	-1.539	240 LF	-2.499	0.40%	PVC (SDR35)
Pipe - (M-02)	8"	-2.599	64 LF	-3.244	1.00%	PVC (SDR35)
Pipe - (N-01)	8"	14.820	300 LF	11.820	1.00%	PVC (SDR35)
Pipe - (N-02)	8"	11.720	90 LF	11.468	0.28%	PVC (SDR35)
Pipe - (P-01)	8"	12.460	160 LF	11.820	0.40%	PVC (SDR35)
Pipe - (Q-01)	8"	16.228	340 LF	11.468	1.40%	PVC (SDR35)
Pipe - (Q-02)	8"	11.368	361 LF	5.960	1.50%	PVC (SDR35)
Pipe - (Q-03)	8"	5.860	360 LF	0.453	1.50%	PVC (SDR35)
Pipe - (Q-04)	8"	0.353	54 LF	0.202	0.28%	PVC (SDR35)

PIPE NOTE:
"G-X" IS A FUTURE STUB OUT (SEE MANHOLE SSMH-G3, ON SHEET C-1.01)
"J-X" IS A FUTURE STUB OUT (SEE MANHOLE SSMH-J2, ON SHEET C-1.01)

PIPE SCHEDULE						
PIPE	SIZE	START INV.	LENGTH	END INV.	SLOPE	MATERIAL
Pipe - (R-01)	8"	20.572	400 LF	16.572	1.00%	PVC (SDR35)
Pipe - (R-02)	8"	16.472	332 LF	10.660	1.75%	PVC (SDR35)
Pipe - (R-03)	8"	10.560	170 LF	8.857	1.00%	PVC (SDR35)
Pipe - (R-04)	8"	8.757	180 LF	5.160	2.00%	PVC (SDR35)
Pipe - (R-05)	8"	5.060	260 LF	0.510	1.75%	PVC (SDR35)
Pipe - (R-06)	8"	0.410	180 LF	-0.094	0.28%	PVC (SDR35)
Pipe - (R-07)	8"	-0.194	70 LF	-0.474	0.40%	PVC (SDR35)
Pipe - (R-08)	8"	-0.574	43 LF	-1.007	1.00%	PVC (SDR35)
Pipe - (S-01)	8"	18.292	140 LF	17.732	0.40%	PVC (SDR35)
Pipe - (S-02)	8"	17.632	240 LF	16.960	0.28%	PVC (SDR35)
Pipe - (S-03)	8"	16.860	103 LF	16.572	0.28%	PVC (SDR35)
Pipe - (T-01)	8"	17.240	70 LF	16.960	0.40%	PVC (SDR35)



PLAN VIEW
SCALE: 1"=30'

BID SET

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # S20-12

REVISION	DATE
DNREC COMMENTS	11-25-2025

SCALE - PLAN: 1"=30'

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 731-7807 Website: www.kci.com

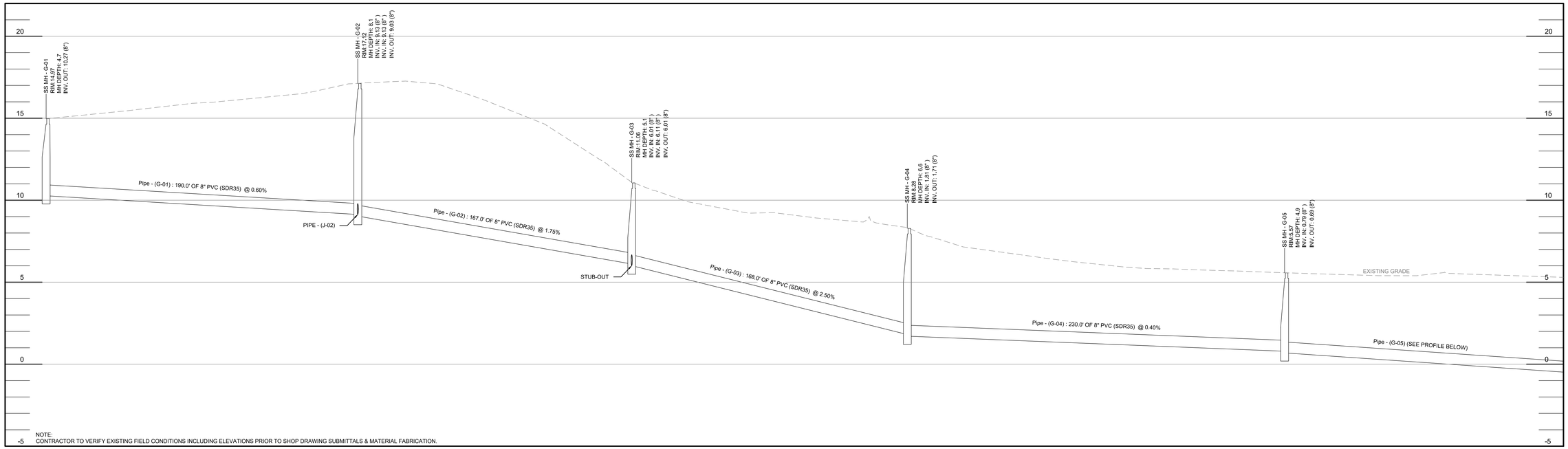
PLAN VIEW
JOY BEACH SEWER COLLECTION SYSTEM PHASE 2

DELAWARE
SUSSEX
LEWES

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13632
EXPIRATION DATE: 06-30-26

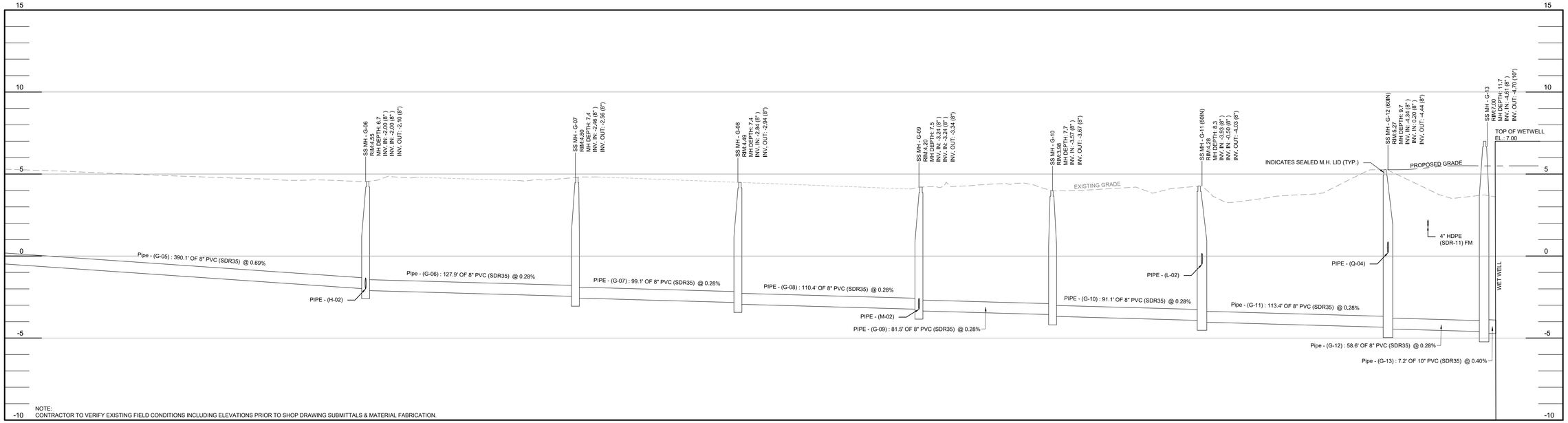
SIGNATURE:

Drafting:	TJG	Check:	DRS
Design:	TJG	Check:	KAN
SCALE:	1"=30'		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-1.04		



15.0 15.2 15.5 15.7 16.0 16.2 16.4 16.9 17.2 17.2 16.7 15.8 14.8 13.3 11.6 10.5 9.7 9.3 9.2 8.9 8.8 8.3 7.4 6.9 6.6 6.3 6.0 5.8 5.8 5.7 5.6 5.5 5.4 5.4 5.8 5.5 5.4 5.3

-0+25 0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 9+25



5.3 5.2 5.1 5.0 4.9 4.8 4.7 4.6 4.6 4.6 4.8 4.7 4.8 4.4 4.4 4.4 4.0 4.1 3.8 4.2 3.3 3.6 3.8 4.9 4.9 3.7 3.7

9+25 10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 18+75

ALIGNMENT - G (YOSHINO DR)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)

BID SET

REVISION	DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # S20-12

SCALE - PLAN: 0

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 731-7807 Website: www.kci.com

PROFILES SHEET
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

SUSSEX COUNTY, DELAWARE
LEWES

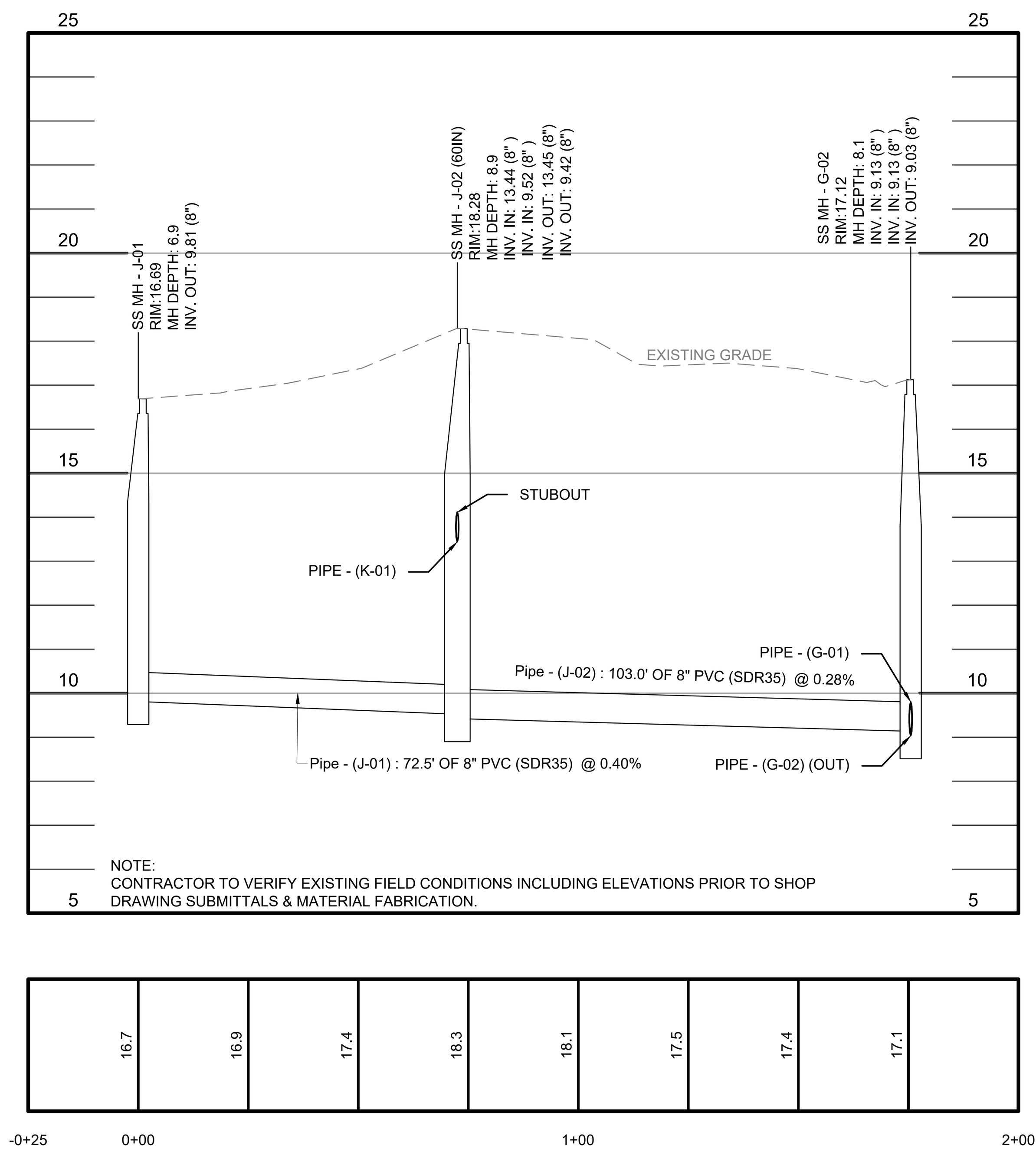
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: [illegible]
EXPIRATION DATE: 06-30-26

DANIEL R. R. STRING LICENSE No. 13533 DELAWARE PROFESSIONAL ENGINEER

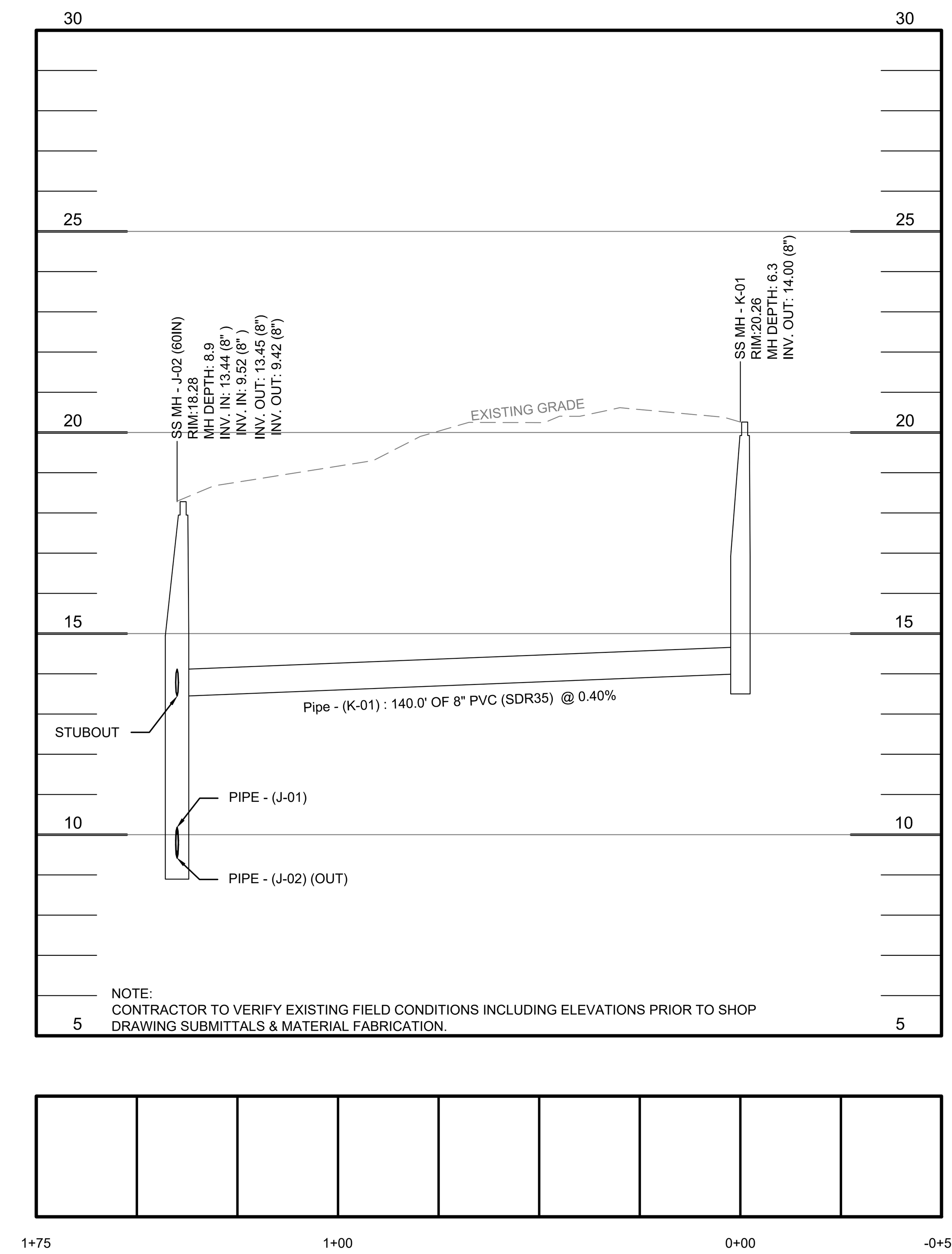
SIGNATURE:

Drafting:	TJG	Check:	KN
Design:	TJG	Check:	KN
SCALE:			
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-2.01		

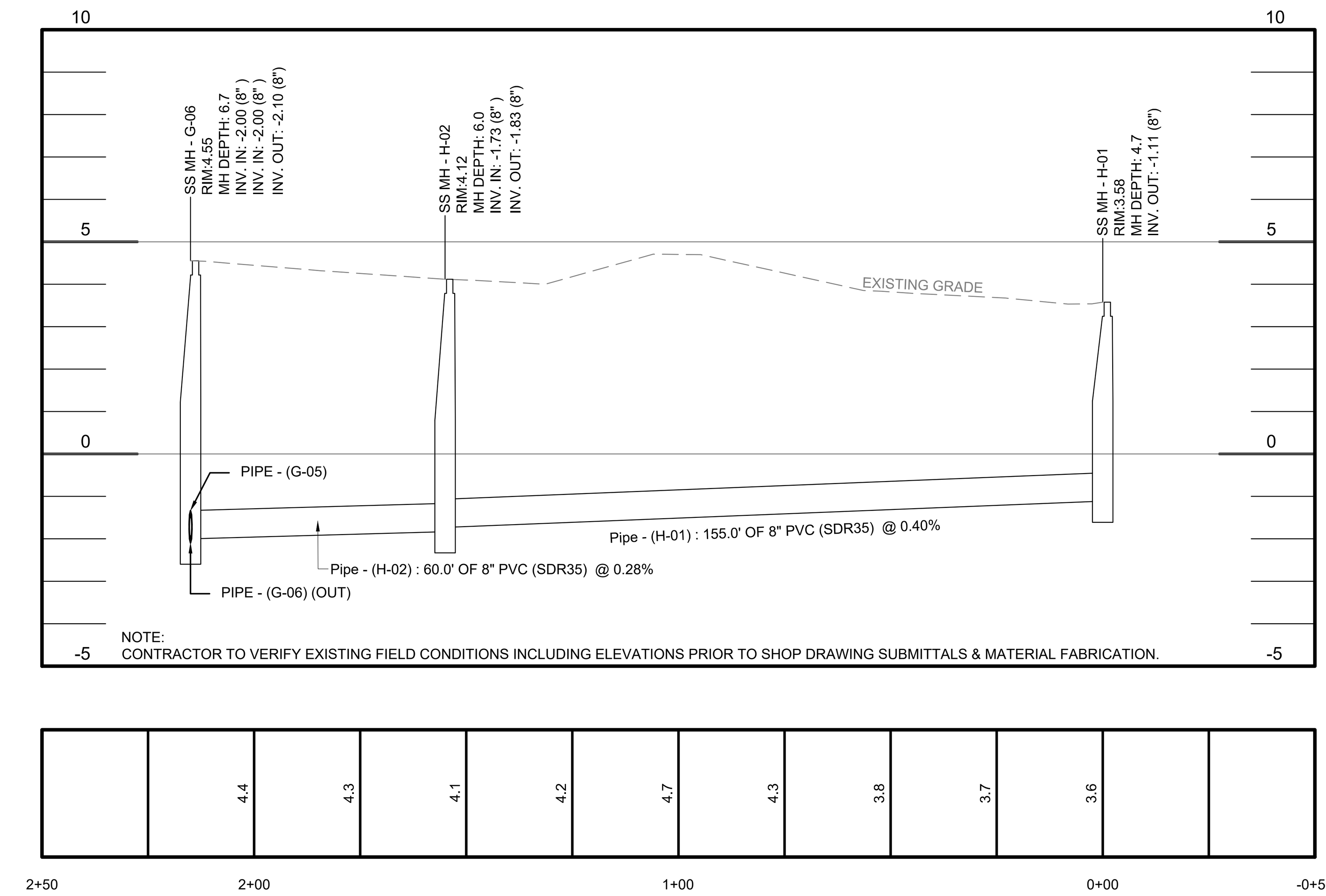
BY: Thomas Gilleland PRINTED: 9/30/2025 4:49 PM
DOCUMENT: Construction Plans\Sheets\13157731.S20.12 Profile Sheets - Phase 2.dwg



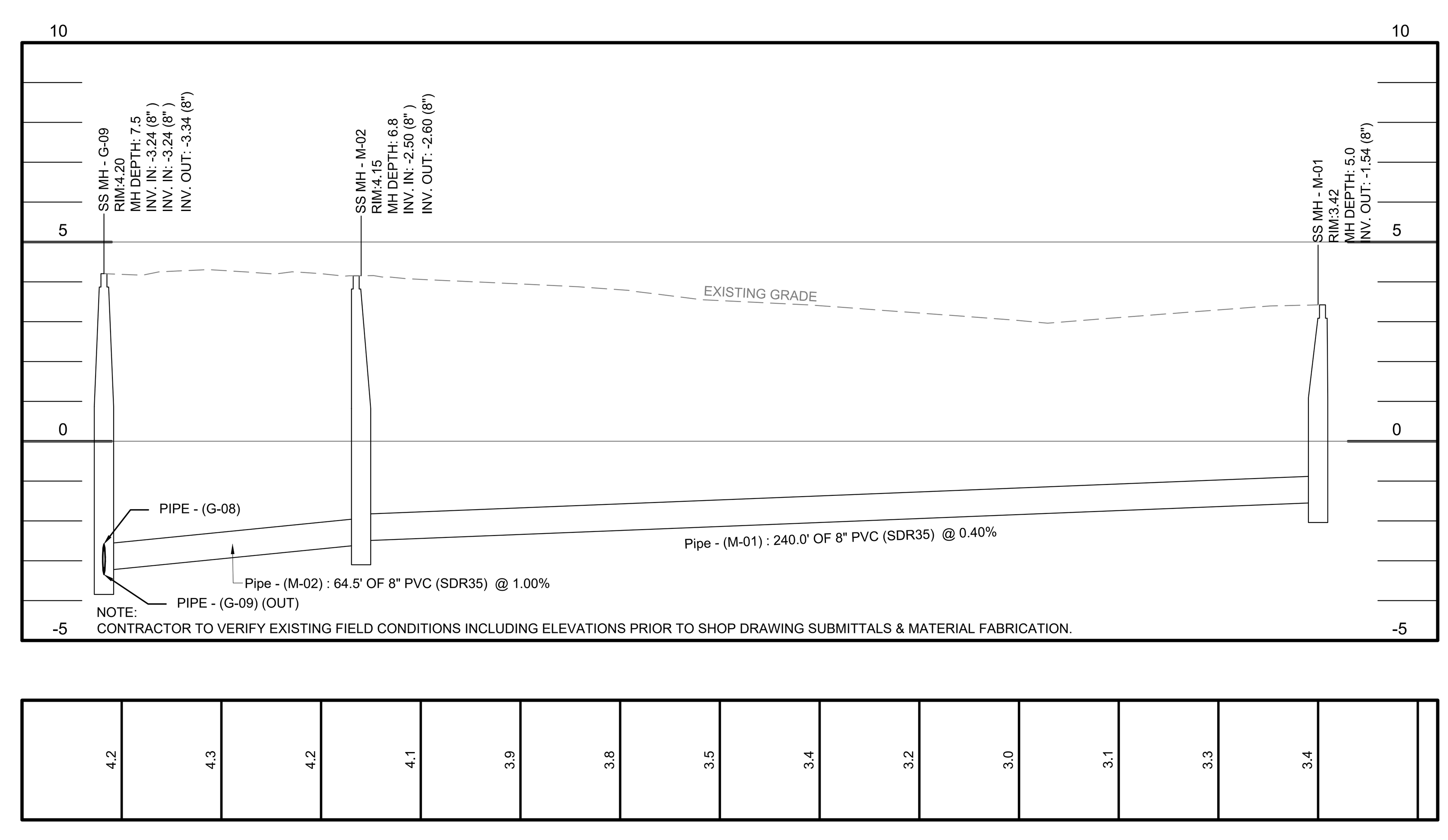
ALIGNMENT - J (LAPIN CIR)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)



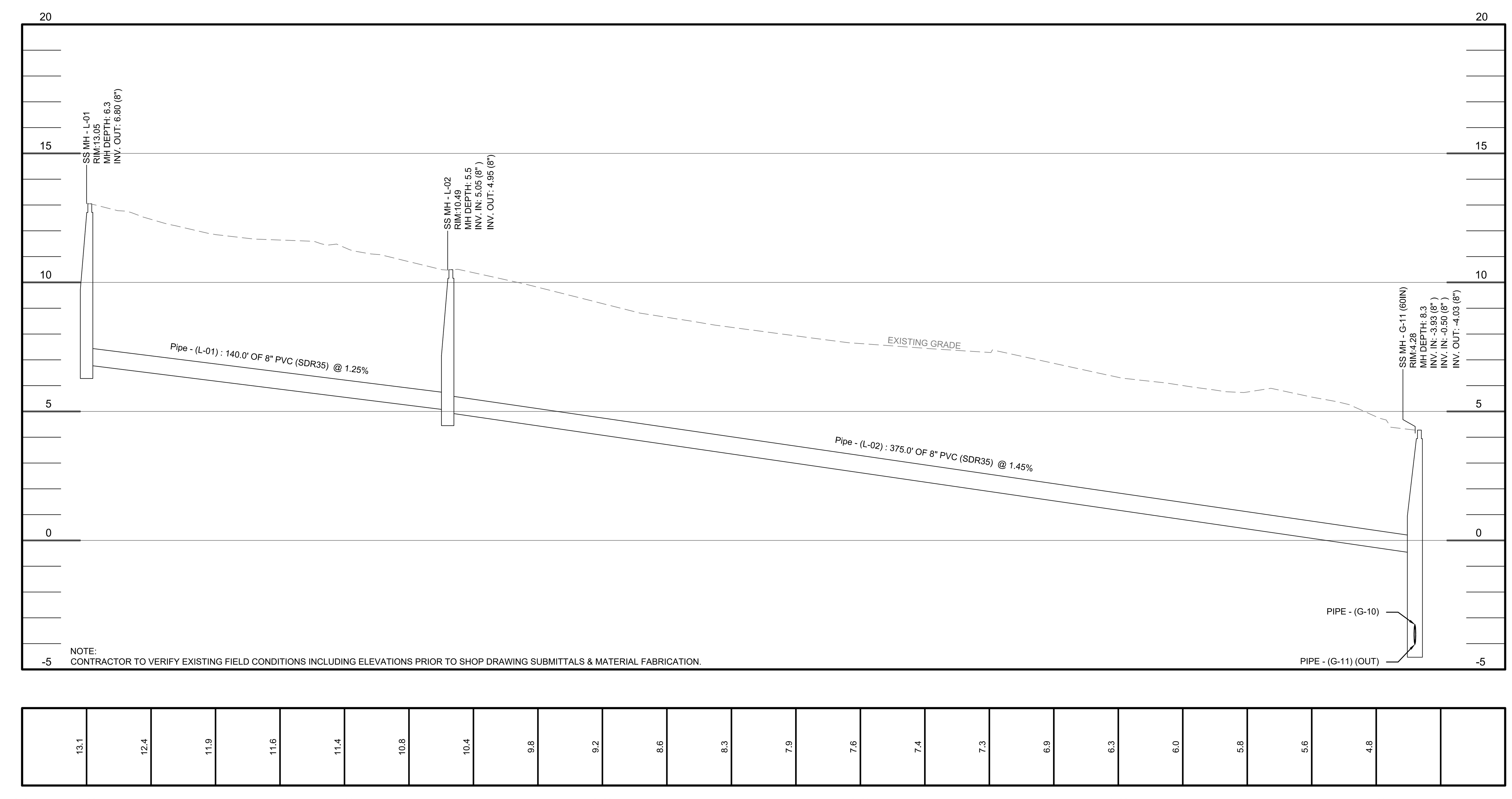
ALIGNMENT - K (LAPIN CIR)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)



ALIGNMENT - H (YOSHINO DR)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)



ALIGNMENT - M (DAVID DR)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)



ALIGNMENT - L (DAVID DR)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)

BID SET

REVISION | DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT #
S20-12

SCALE - PLAN:

KCI TECHNOLOGIES, INC.
ENGINEERS • PLANNERS • SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

PROFILES SHEET
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

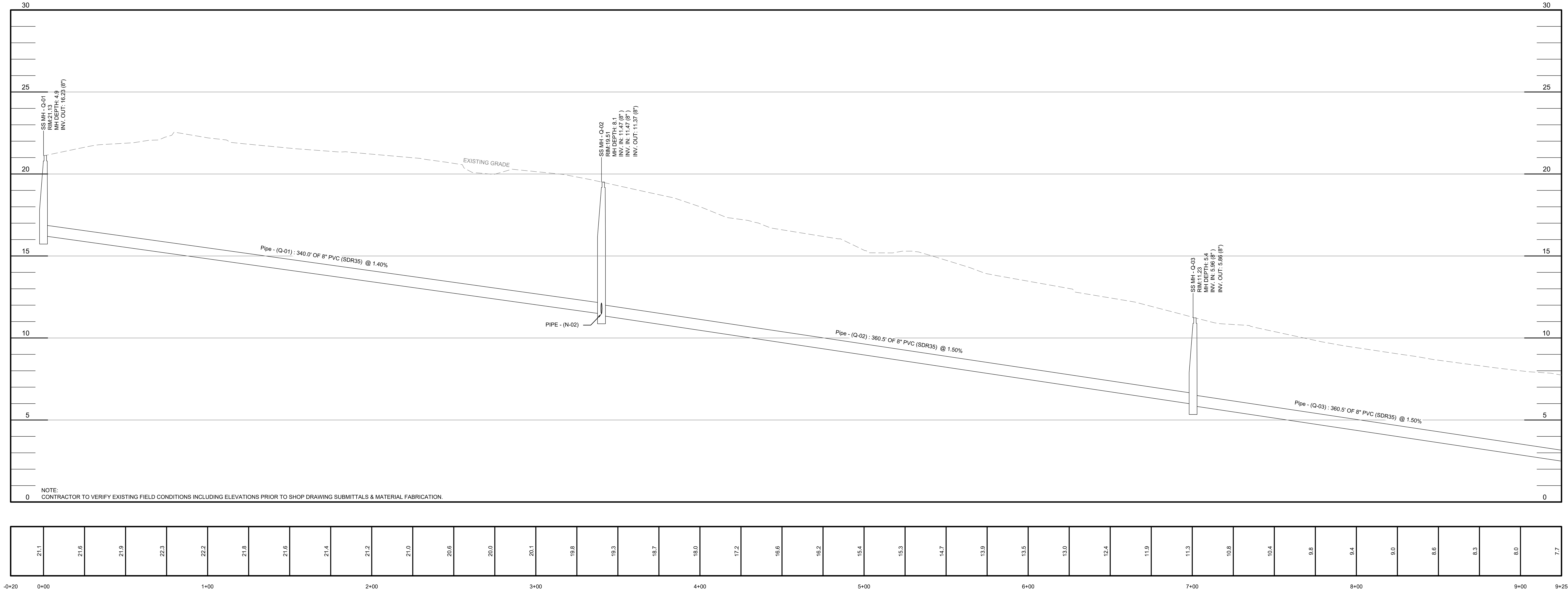
LEWES SUSSEX DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13533
EXPIRATION DATE: 06-30-26

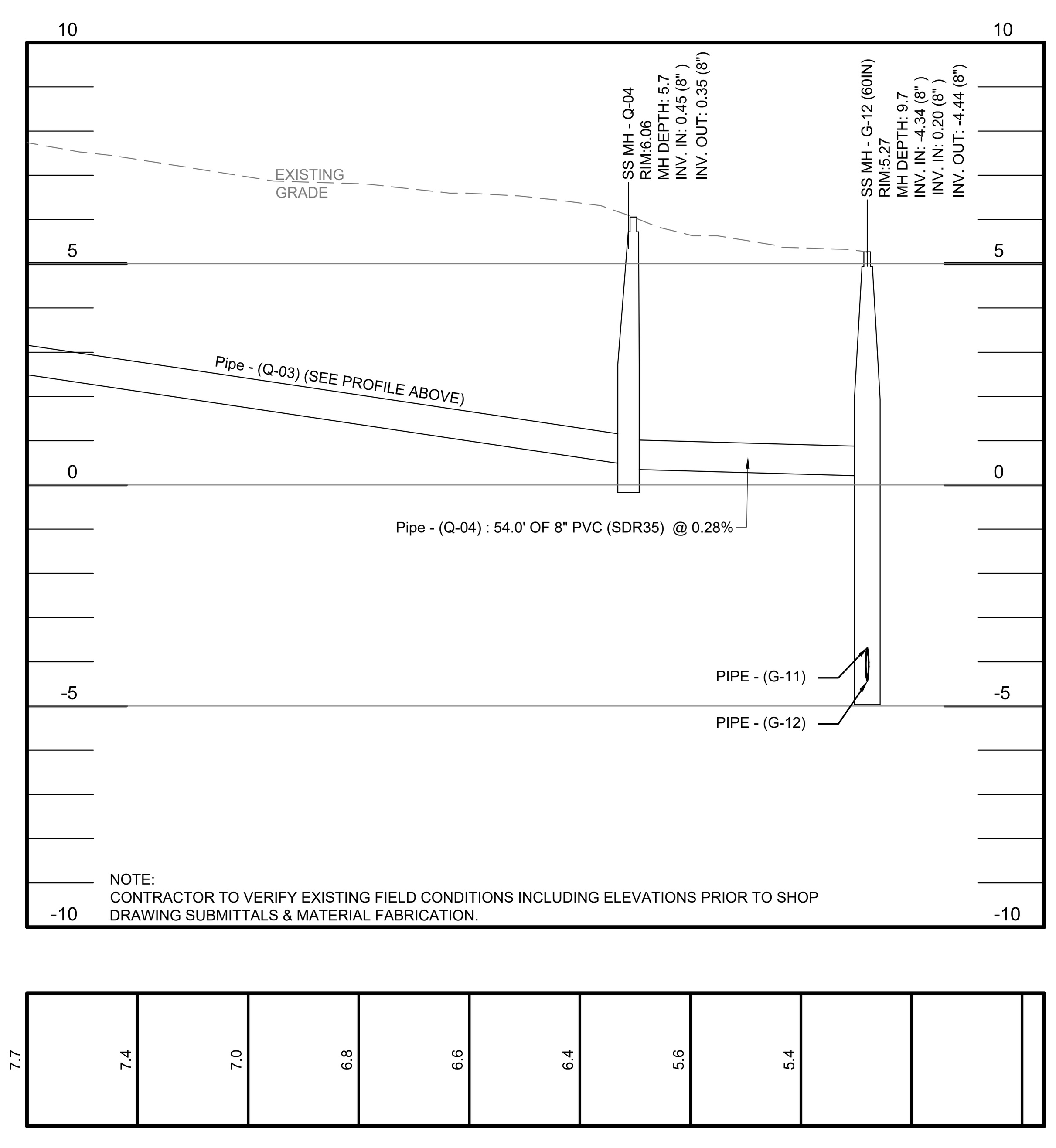
DANIEL R. STRING LICENSE No. 13533 DELAWARE PROFESSIONAL ENGINEER

SIGNATURE:

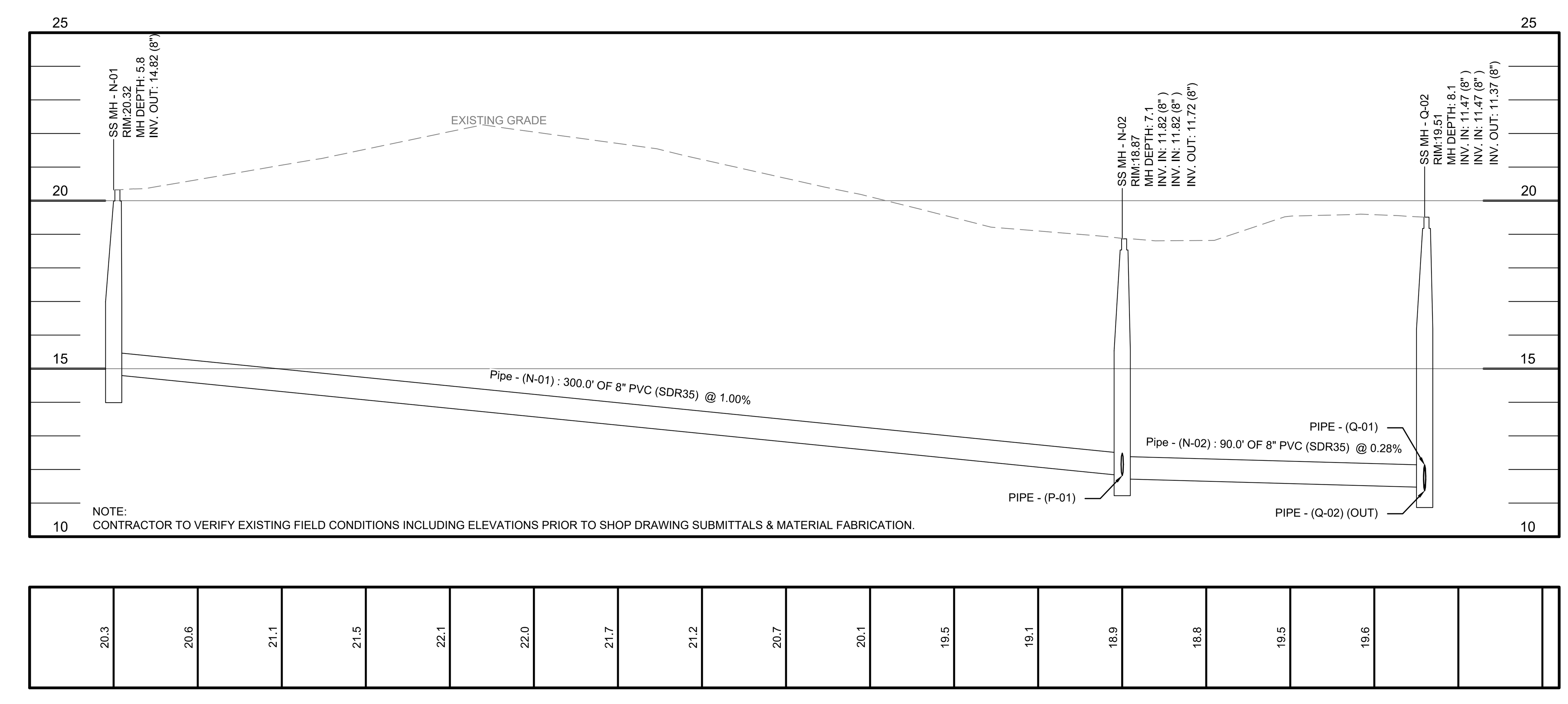
Drafting:	TJG	Check:	KN
Design:	TJG	Check:	KN
SCALE:			
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-2.02		



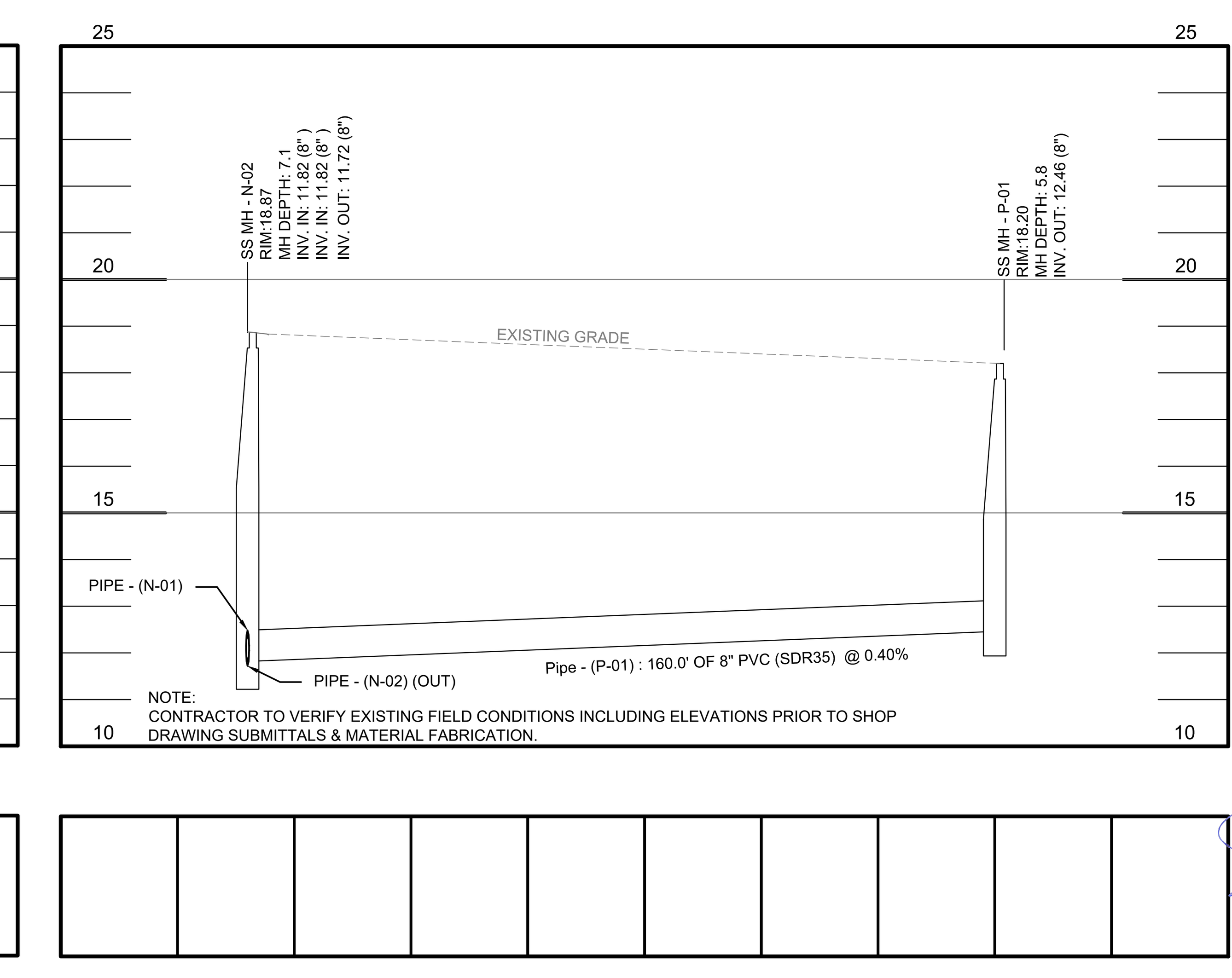
ALIGNMENT - Q (CHERRY WALK)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)



ALIGNMENT - Q (CHERRY WALK)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)



ALIGNMENT - N (PIERCE'S LN)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)



ALIGNMENT - P (PIERCE'S LN)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)

BID SET

REVISION | DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT #
S20-12

SCALE - PLAN: 0

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE. 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

PROFILES SHEET
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

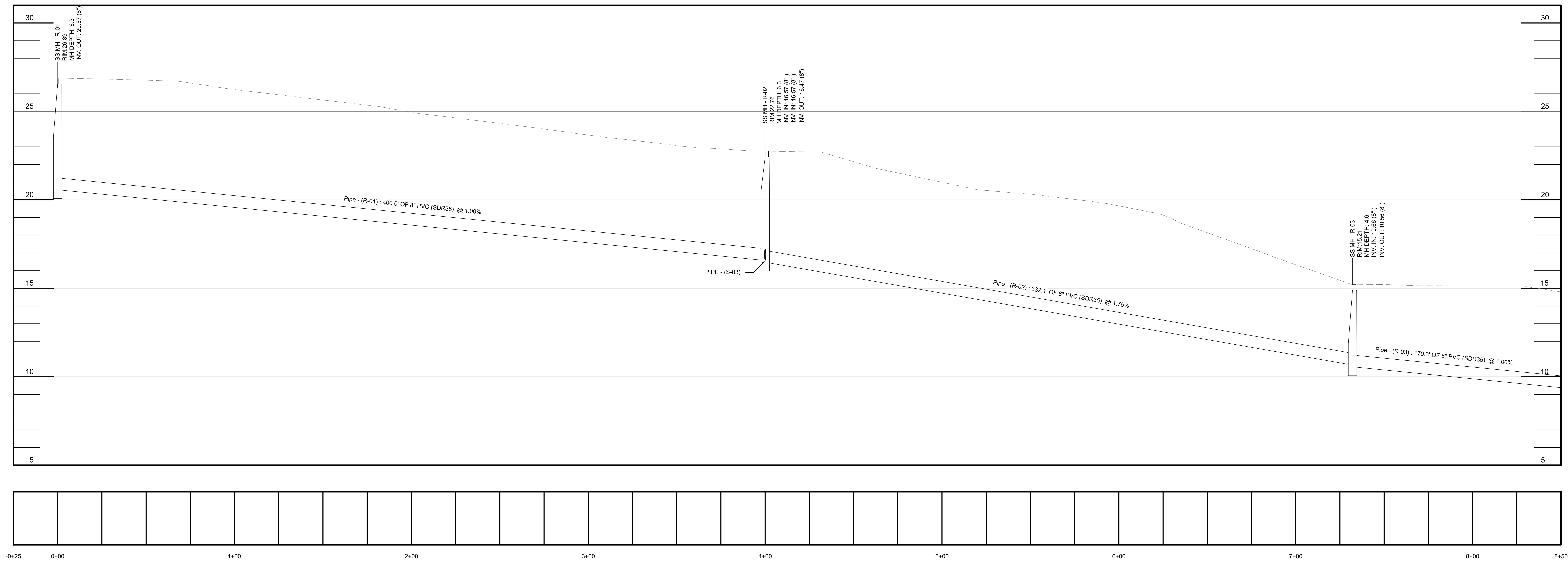
LEWES SUSSEX DELAWARE

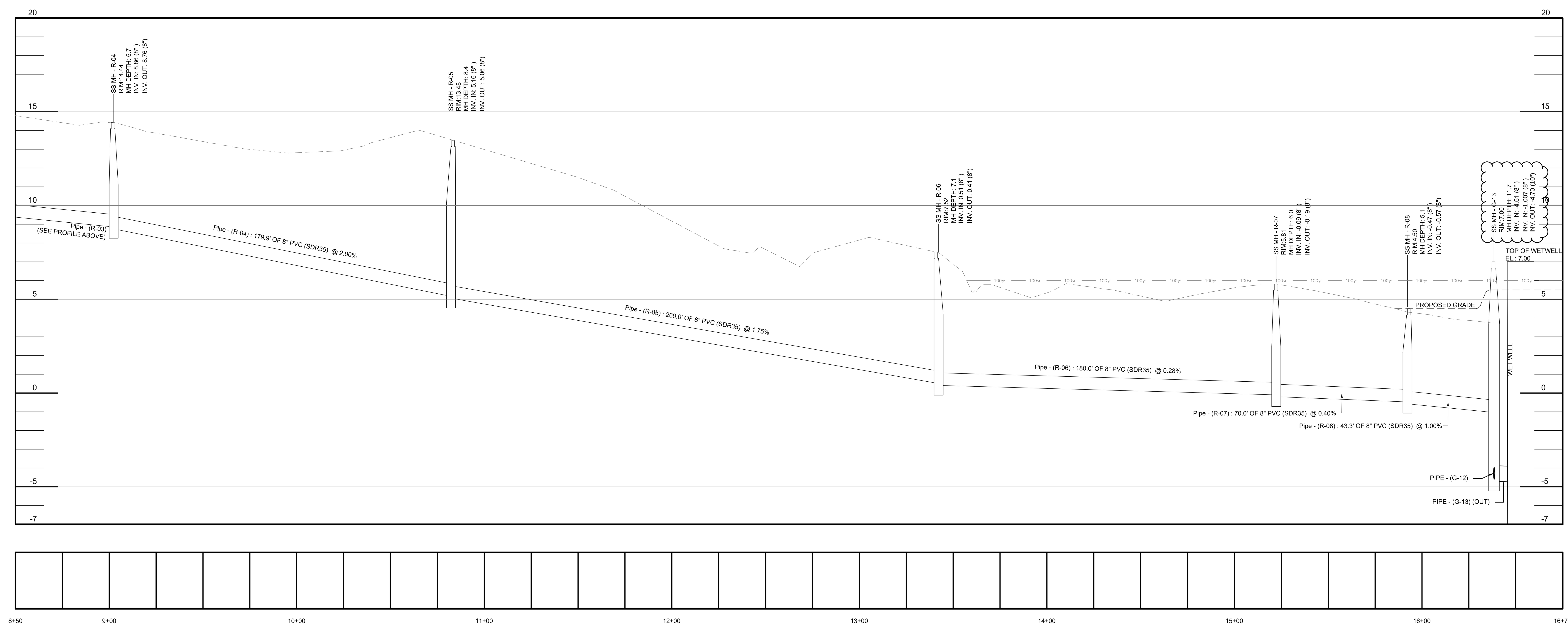
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13532
EXPIRATION DATE: 06-30-26

DANIEL R. STRING LICENSE No. 13532 DELAWARE PROFESSIONAL ENGINEER

SIGNATURE:

Drafting:	TJG	Check:	KN
Design:	TJG	Check:	KN
SCALE:			
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-2.03		





ALIGNMENT - R (HAPPY GONE RD)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)

BID SET

REVISION	DATE
DNREC COMMENTS	11/25/2025
ADDED PER ADDENDUM #1	10/22/2025

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH: (302) 855-7700

SUSSEX COUNTY CONTRACT #
S20-12

SCALE - PLAN:

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

PROFILES SHEET
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

LEWES SUSSEX DELAWARE

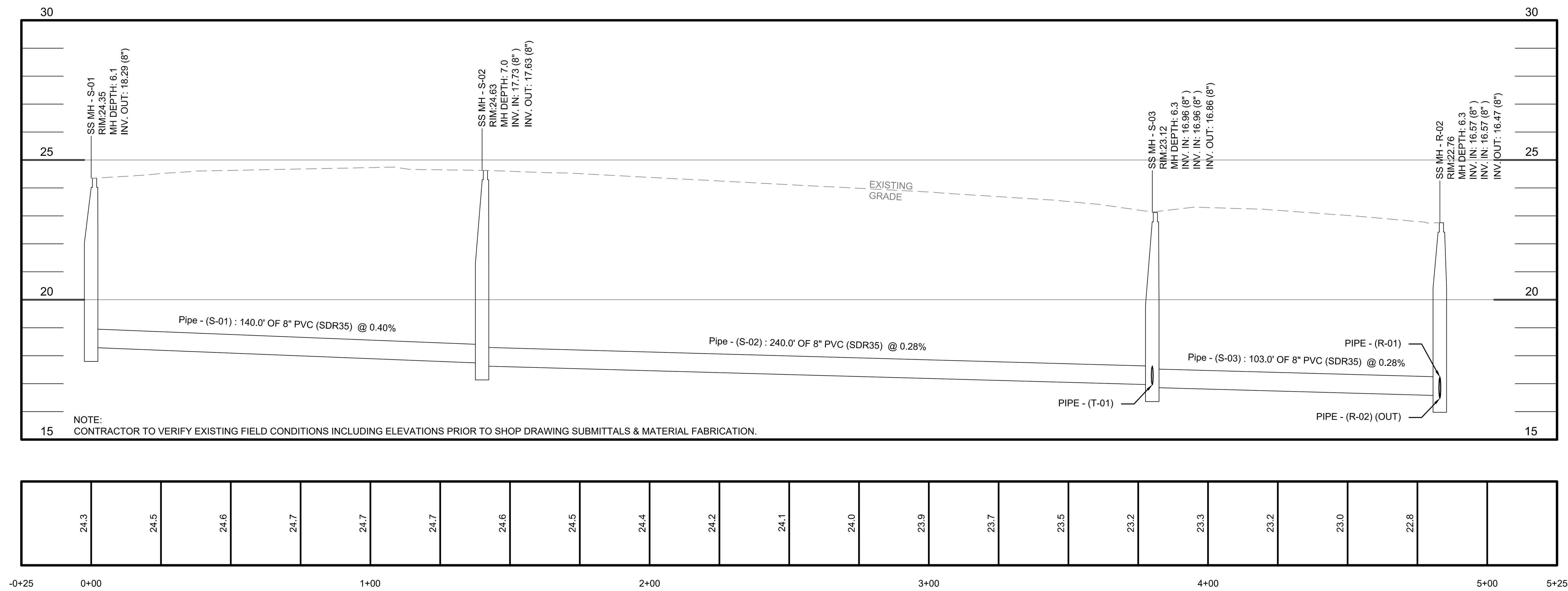
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 15633
EXPIRATION DATE: 06-30-26

DANIEL R. STRINO LICENSE No. 15633 DELAWARE PROFESSIONAL ENGINEER

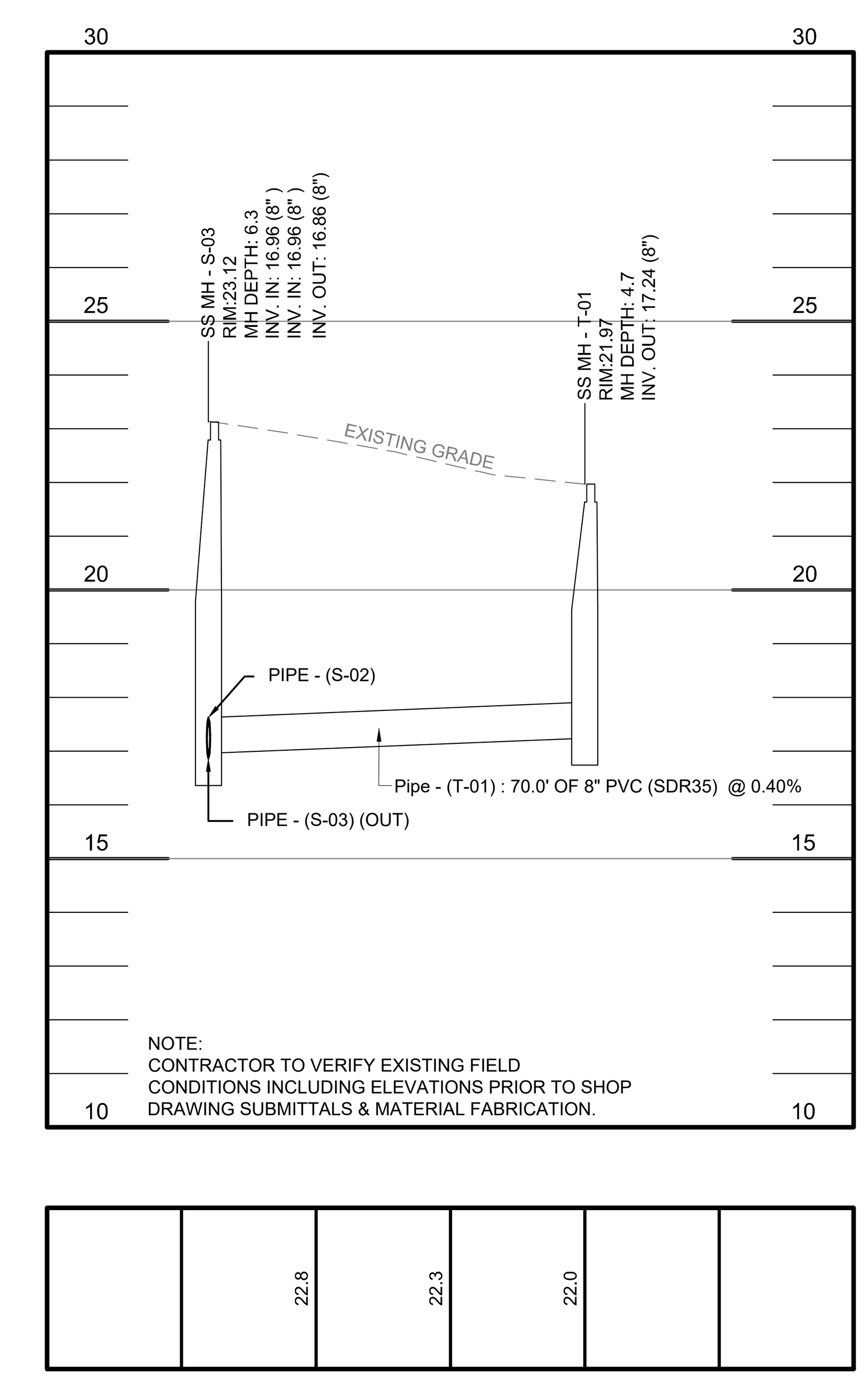
SIGNATURE:

Drafting:	TJG	Check:	KN
Design:	TJG	Check:	KN
SCALE:			
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-2.04		

BY: Thomas Gilchrist PRINTED: 10/22/2025 10:53 AM
LOCATION: C:\tmp\profiles\...\13157731 S20-12 - Profile Sheets - Phase 2.dwg



ALIGNMENT - S (HAPPY GO RD)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)



ALIGNMENT - T (HAPPY GO ROAD)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)

BID SET

DATE	REVISION
10/22/2025	ADDED PER ADDENDUM #1

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT #
S20-12

KCI TECHNOLOGIES, INC.
ENGINEERS • PLANNERS • SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE. 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

SCALE - PLAN:

PROFILES SHEET
JOY BEACH SEWER COLLECTION SYSTEM PHASE 2
LEWES SUSSEX DELAWARE

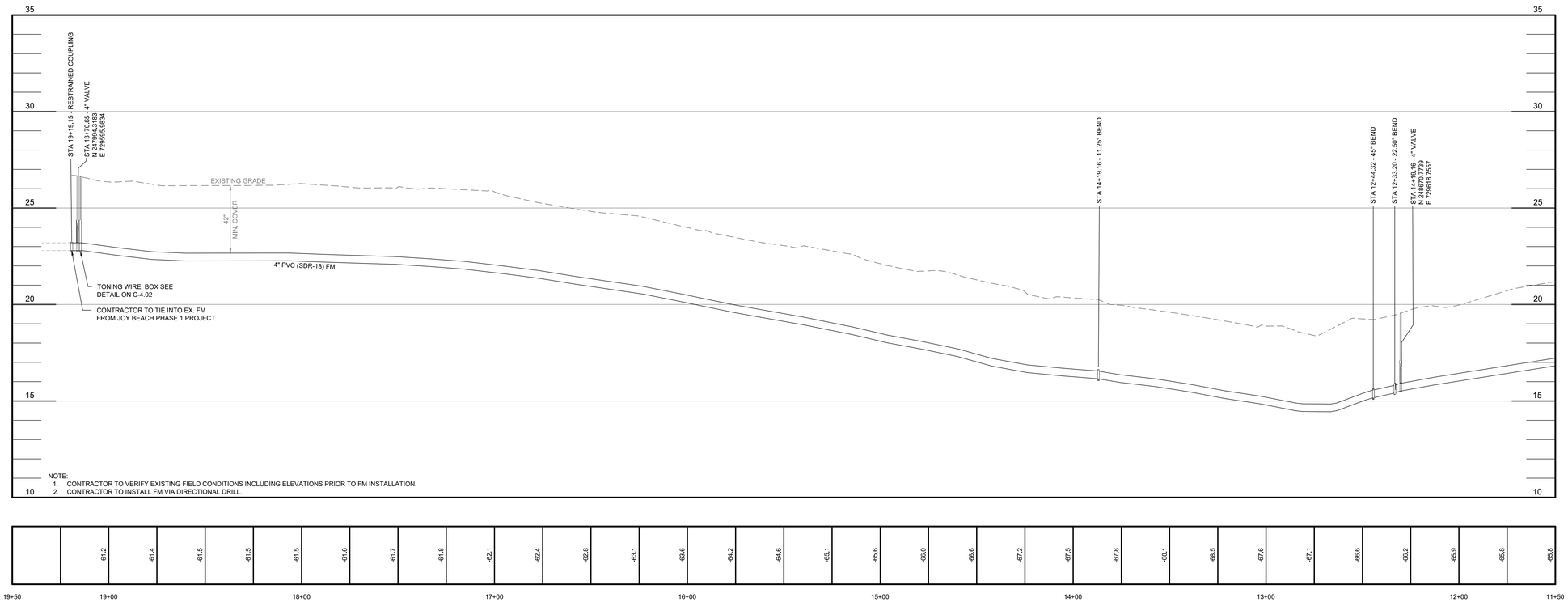
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13533
EXPIRATION DATE: 06-30-26

DANIEL R. STRINO LICENSE No. 13533 DELAWARE PROFESSIONAL ENGINEER

SIGNATURE:

Drafting:	TJG	Check:	KN
Design:	TJG	Check:	KN
SCALE:			
DATE:	09-29-2025		
KCI JOB #:	13157731 S20-12		
SHEET:	C-2.05		

BY: Thomas Gibree PRINTED: 10/22/2025 10:53 AM
LOCATION: C:\dms\pwwork\thomas.gibree\d0834802\13157731 S20-12 - Profile Sheets - Phase 2.dwg



PIPE RUN - (FM-PH2)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH, (302) 855-7700

SUSSEX COUNTY CONTRACT # S20-12

DATE	REVISION

SCALE - PLAN: 0

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 731-1707 Website: www.kci.com

FM PROFILE SHEET
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

LEWES — SUSSEX — DELAWARE

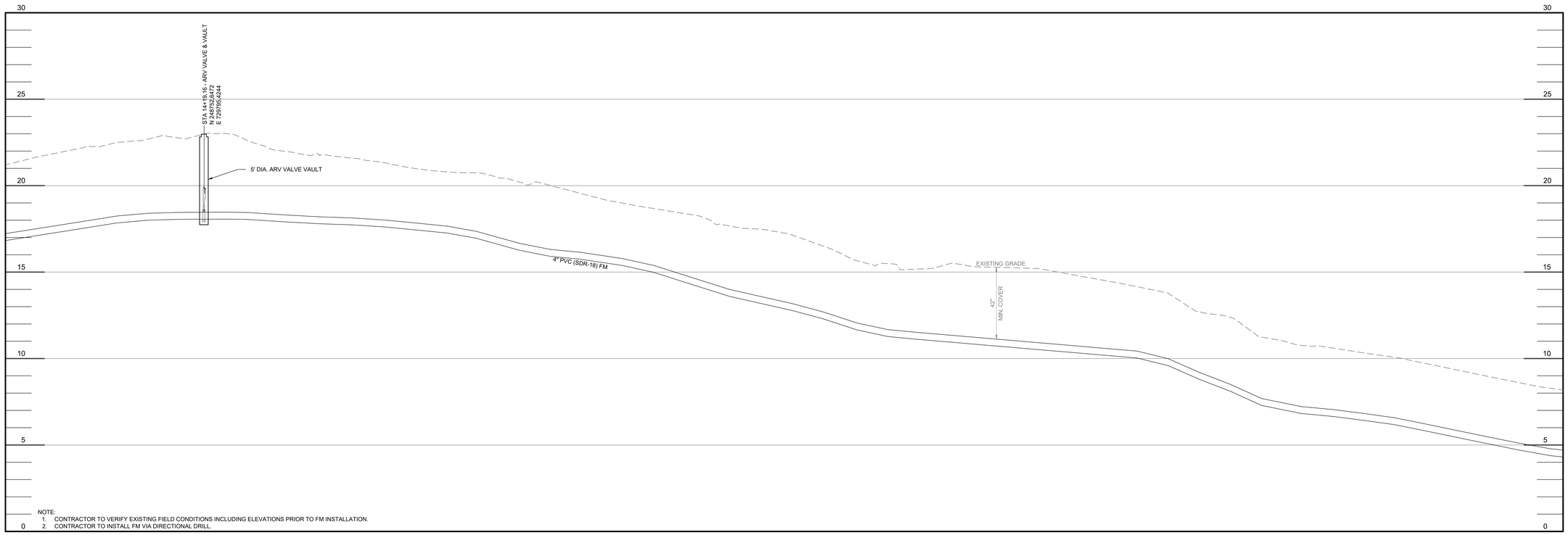
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13533
EXPIRATION DATE: 06-30-26

DANIEL R. STRUNG LICENSE No. 13533 DELAWARE PROFESSIONAL ENGINEER

SIGNATURE:

Drafting:	TJG	Check:	KN
Design:	TJG	Check:	KN
SCALE:			
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-3.01		

BID SET



NOTE:
1. CONTRACTOR TO VERIFY EXISTING FIELD CONDITIONS INCLUDING ELEVATIONS PRIOR TO FM INSTALLATION.
2. CONTRACTOR TO INSTALL FM VIA DIRECTIONAL DRILL.

-65.8	-65.7	-65.7	-65.8	-65.5	-65.5	-65.8	-65.9	-66.0	-66.3	-66.8	-67.2	-67.6	-67.9	-68.3	-68.8	-69.4	-70.0	-70.4	-71.2	-72.2	-72.6	-72.8	-73.0	-73.2	-73.5	-73.7	-74.3	-75.3	-76.4	-76.9	-77.2	-77.5	-78.0	-78.5	-79.0	-79.4
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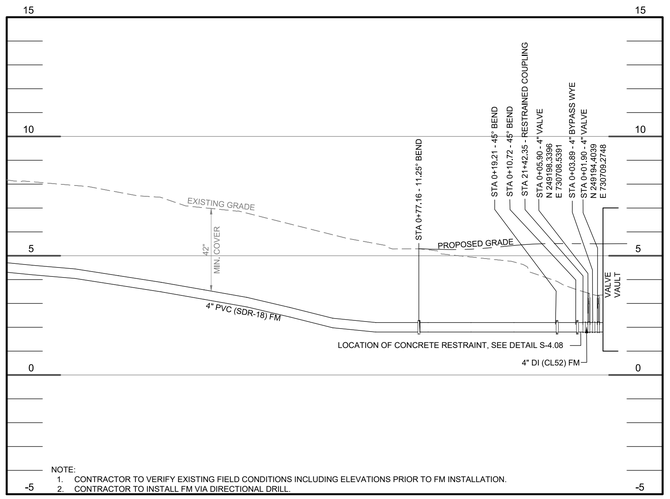


NOTE:
1. CONTRACTOR TO VERIFY EXISTING FIELD CONDITIONS INCLUDING ELEVATIONS PRIOR TO FM INSTALLATION.
2. CONTRACTOR TO INSTALL FM VIA DIRECTIONAL DRILL.

-79.4	-79.7	-80.0	-80.4	-80.9	-81.5	-81.9	-81.9	-81.9	-81.9	-81.9	
2+50		2+00			1+00				0+00		-0+25

PIPE RUN - (FM-PH2)
SCALE: 1" = 30' (HORIZ)
1" = 3' (VERT)

BID SET

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
P.O BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # S20-12

DATE	REVISION

SCALE - PLAN: 0

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 731-1707 Website: www.kci.com

FM PROFILE SHEET
JOY BEACH SEWER COLLECTION SYSTEM PHASE 2

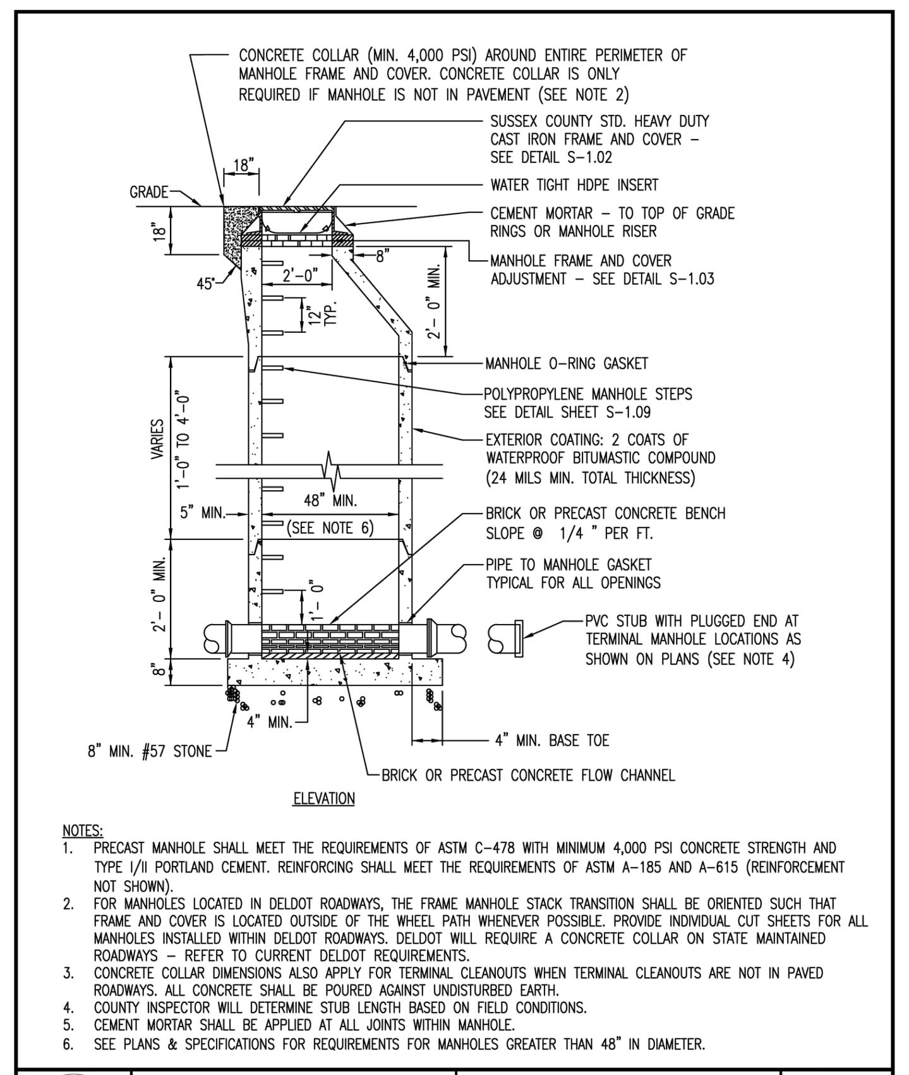
DELAWARE
SUSSEX
LEWES

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE;
LICENSE NO.: 13538
EXPIRATION DATE: 06-30-26

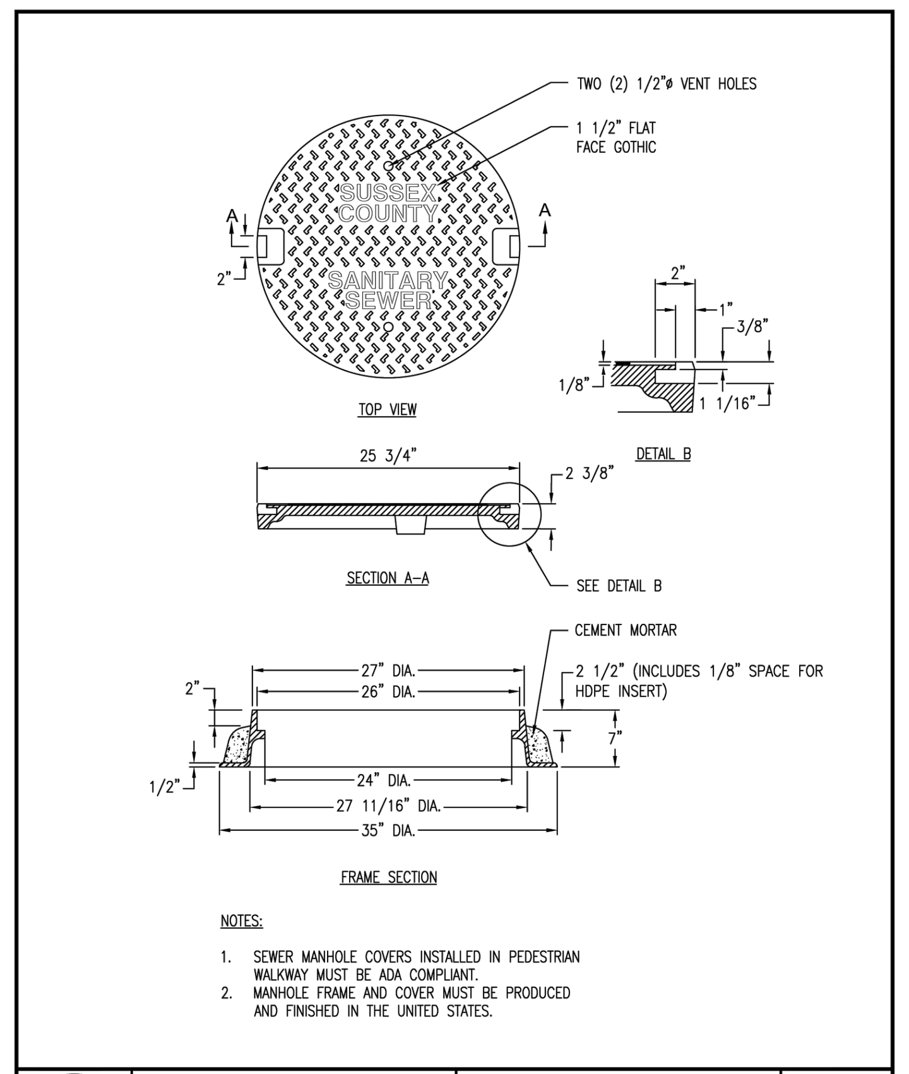
DANIEL R. STRUNG LICENSE No. 13538 DELAWARE PROFESSIONAL ENGINEER

SIGNATURE:

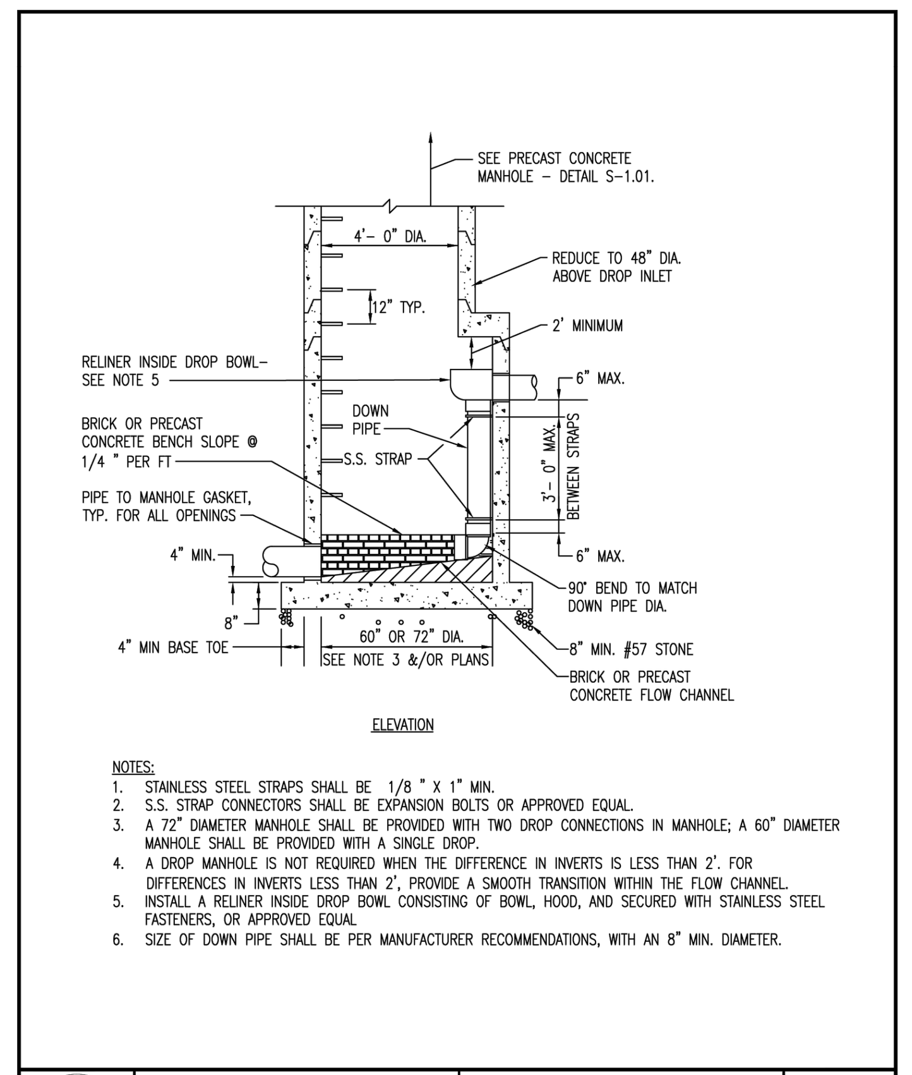
Drafting:	TJG	Check:	KN
Design:	TJG	Check:	KN
SCALE:			
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-3.02		



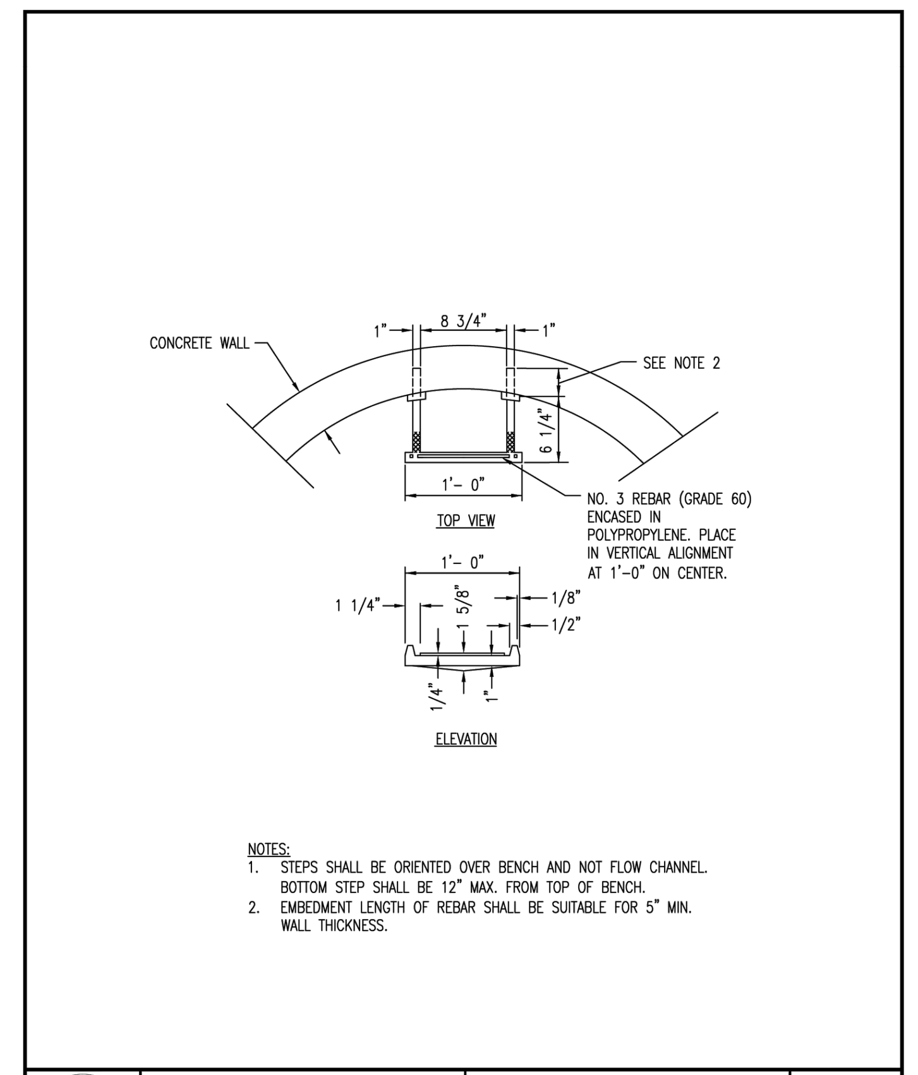
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — PRECAST CONCRETE MANHOLE — DETAIL S-1.01 — DATE ISSUED 12/30/2021



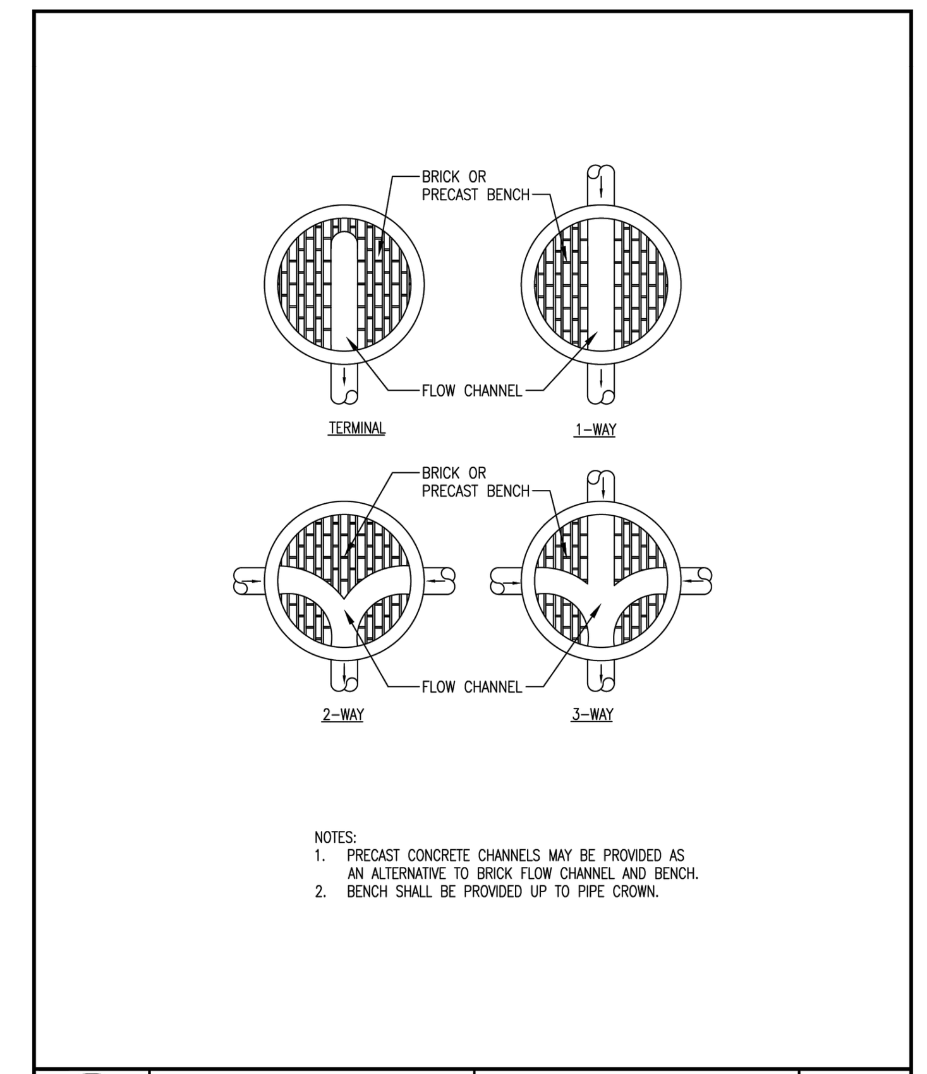
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — MANHOLE FRAME AND COVER — DETAIL S-1.02 — DATE ISSUED 5/31/2022



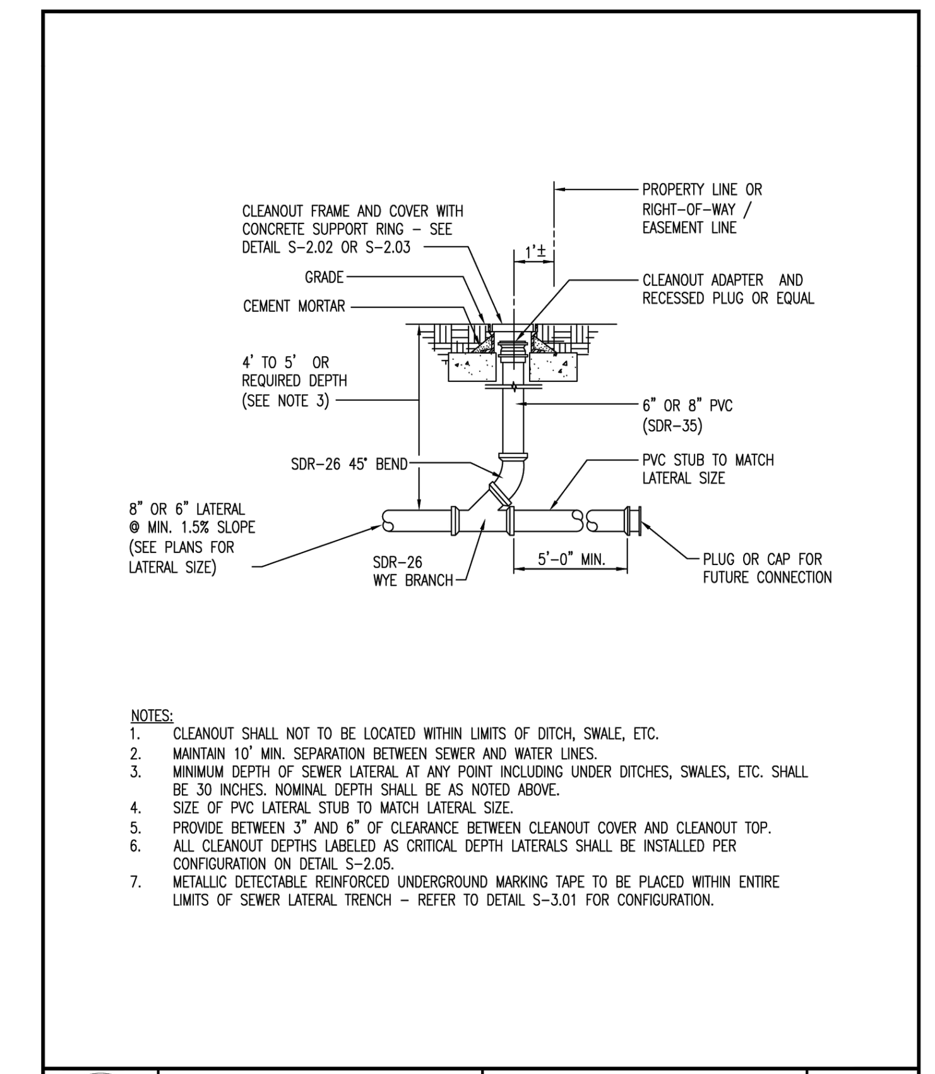
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — INSIDE DROP MANHOLE — DETAIL S-1.04 — DATE ISSUED 12/30/2021



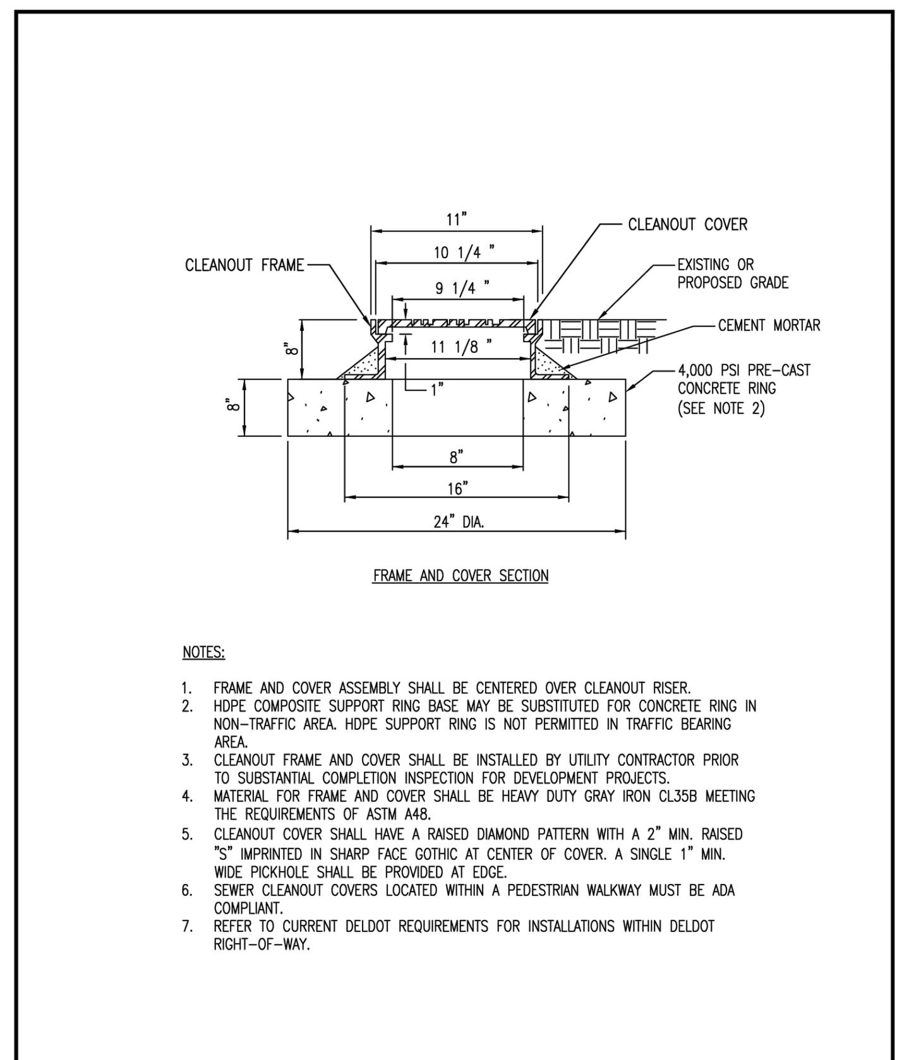
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — MANHOLE STEP — DETAIL S-1.09 — DATE ISSUED 12/30/2021



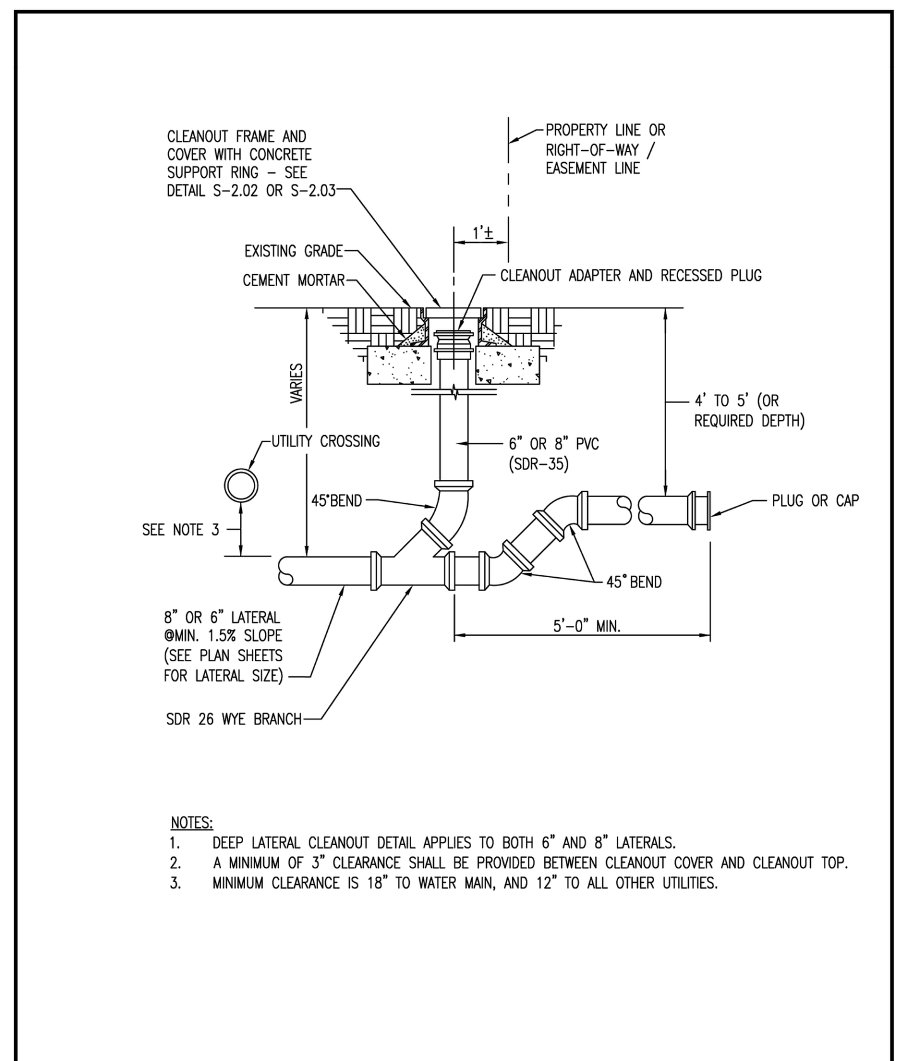
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — MANHOLE FLOW CHANNEL — DETAIL S-1.10 — DATE ISSUED 12/30/2021



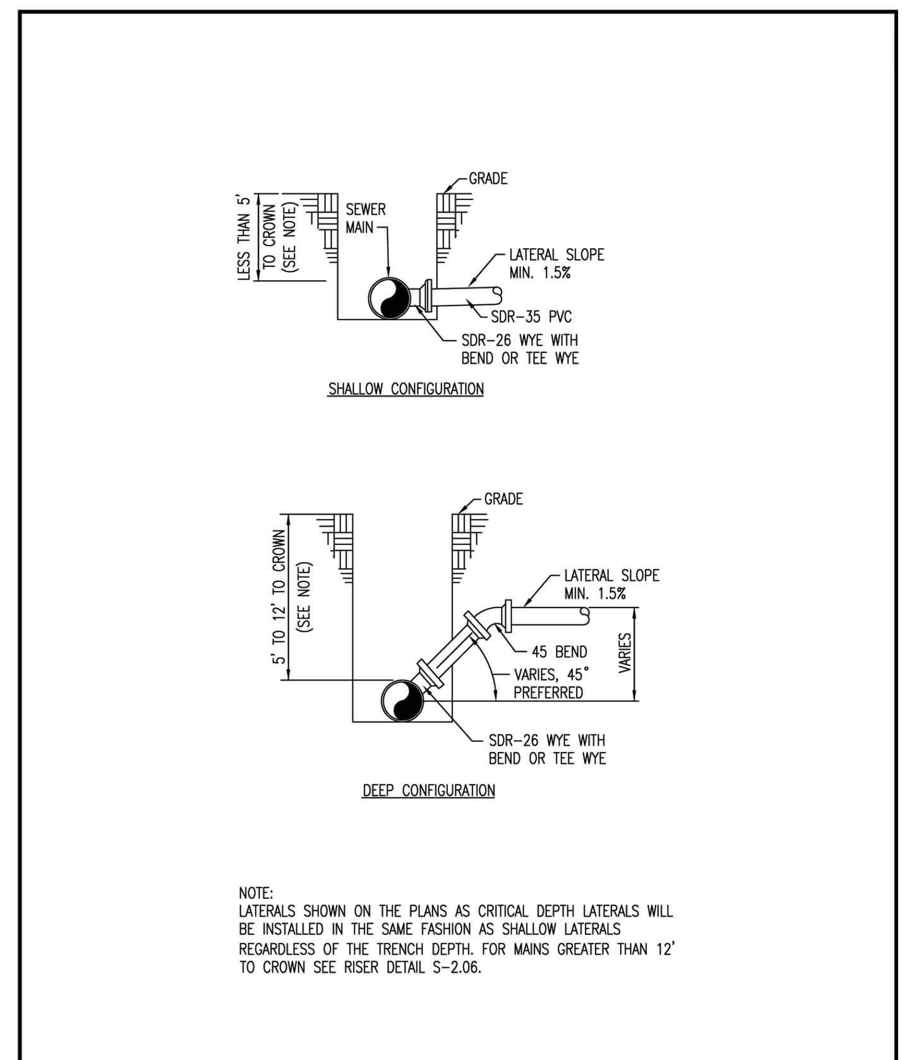
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — SEWER LATERAL CLEANOUT — DETAIL S-2.01 — LAST REVISED 10/11/2023



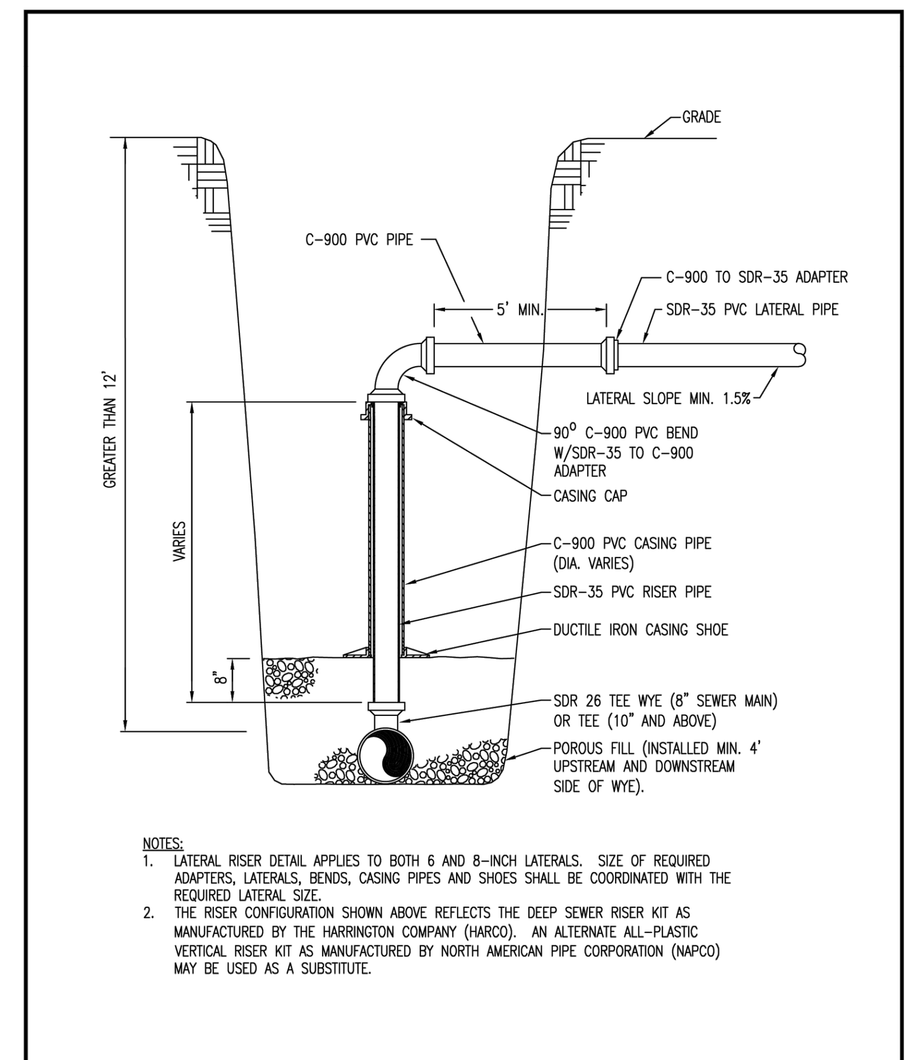
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — 6" SEWER LATERAL CLEANOUT FRAME AND COVER — DETAIL S-2.02 — DATE ISSUED 5/31/2022



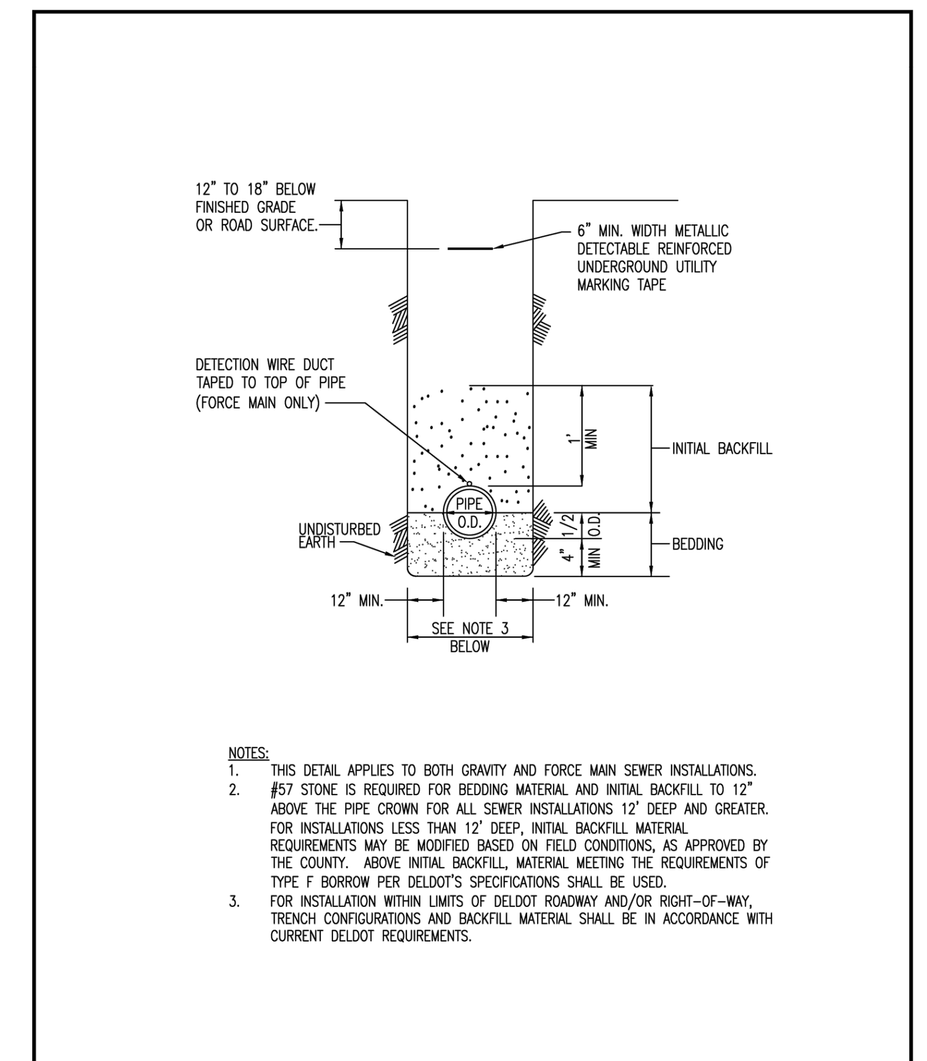
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — DEEP SEWER LATERAL CLEANOUT — DETAIL S-2.04 — DATE ISSUED 12/30/2021



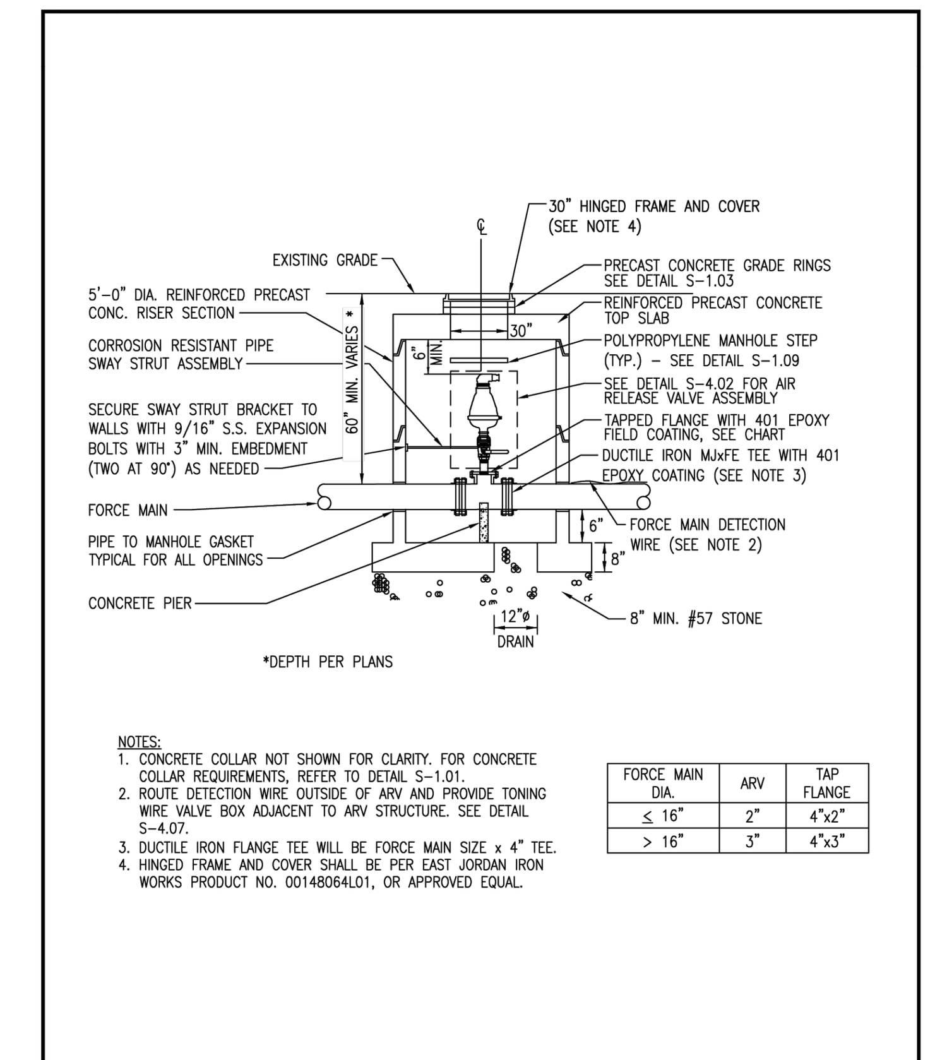
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — SEWER LATERAL CONNECTIONS — DETAIL S-2.05 — DATE ISSUED 10/5/2022



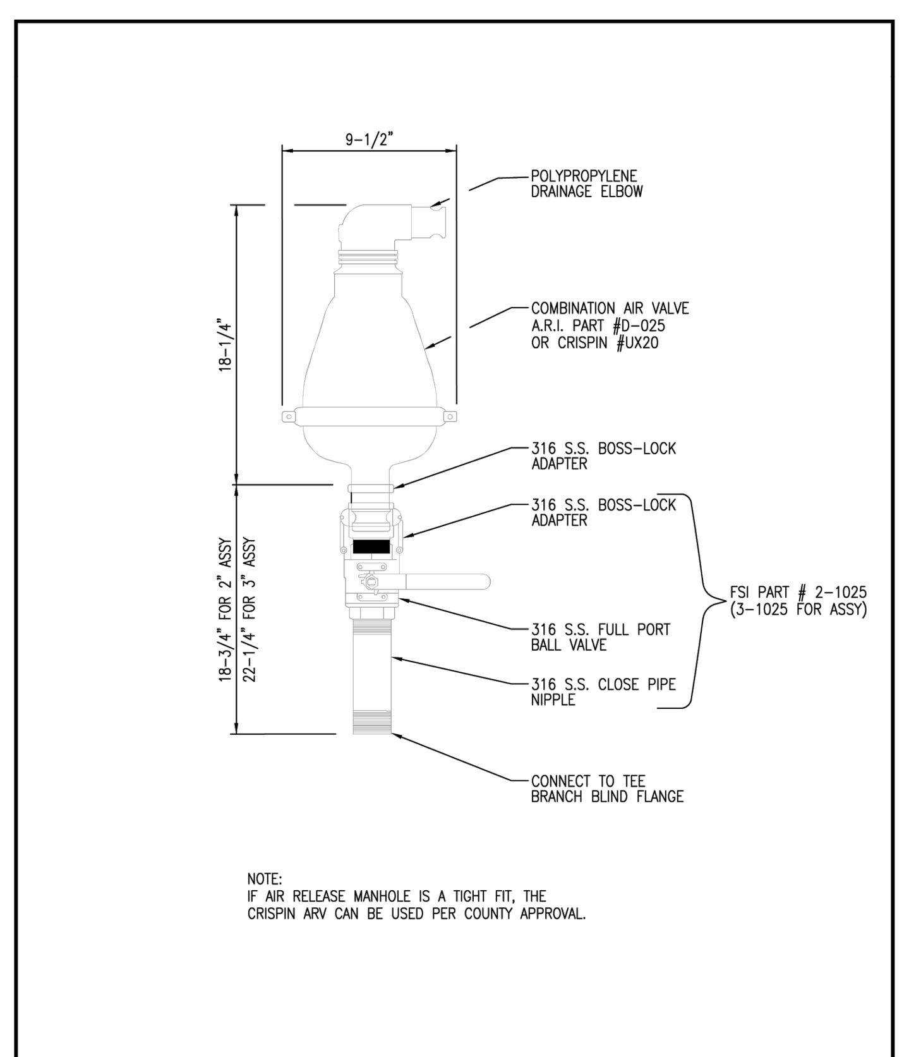
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — SEWER LATERAL RISER — DETAIL S-2.06 — DATE ISSUED 10/5/2022



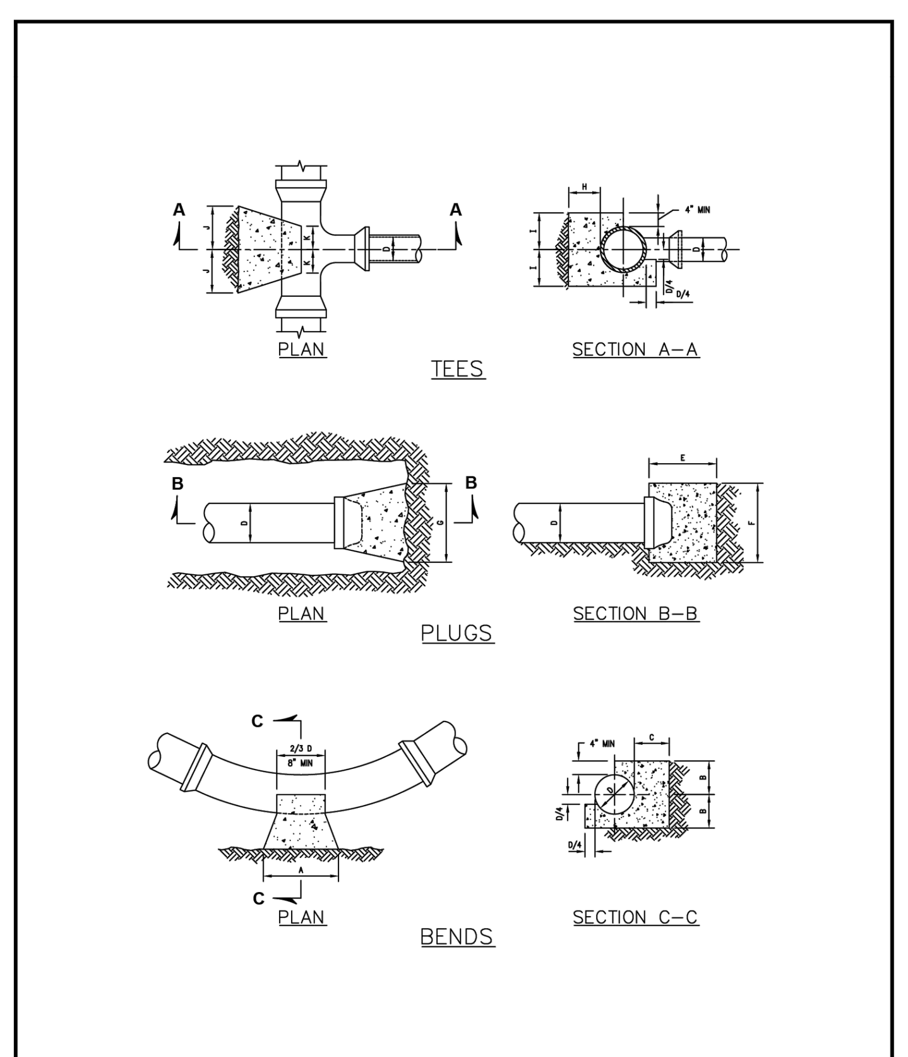
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — SEWER TRENCH — DETAIL S-3.01 — DATE ISSUED 12/30/2021



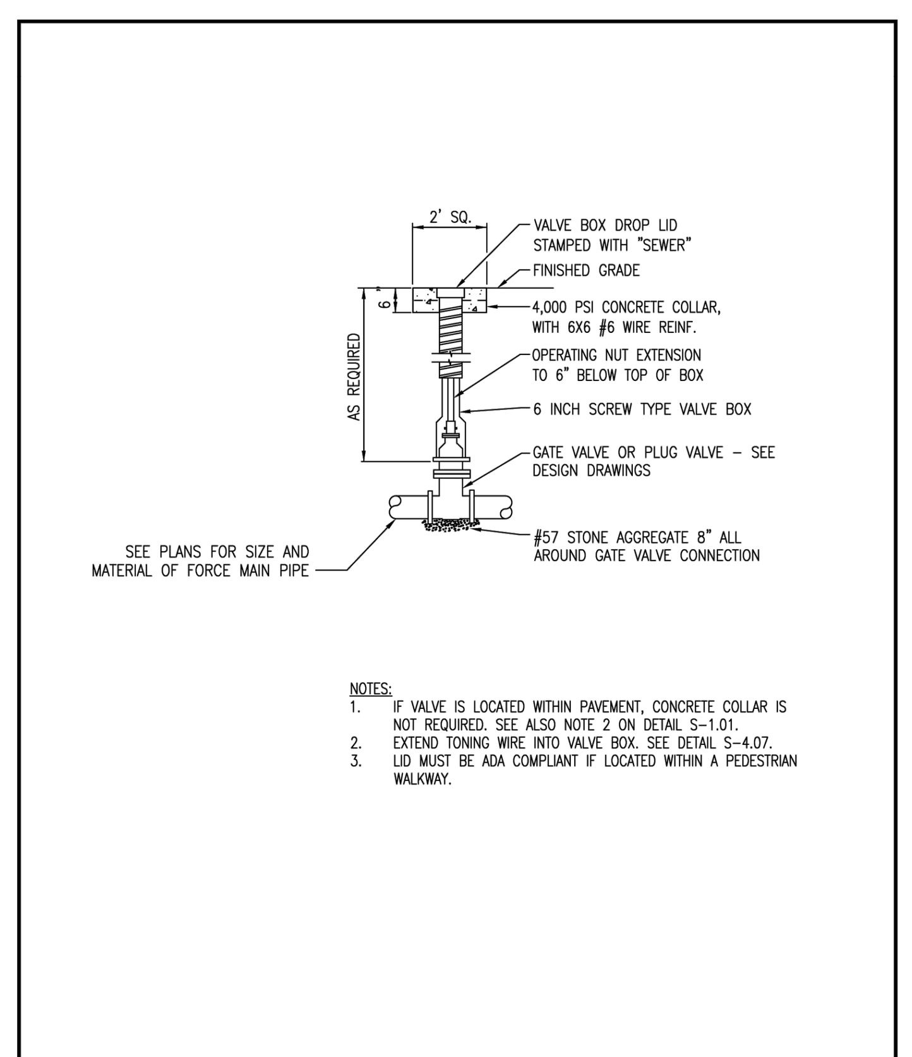
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — SEWER FORCE MAIN AIR RELEASE VALVE — DETAIL S-4.01 — DATE ISSUED 05/31/2022



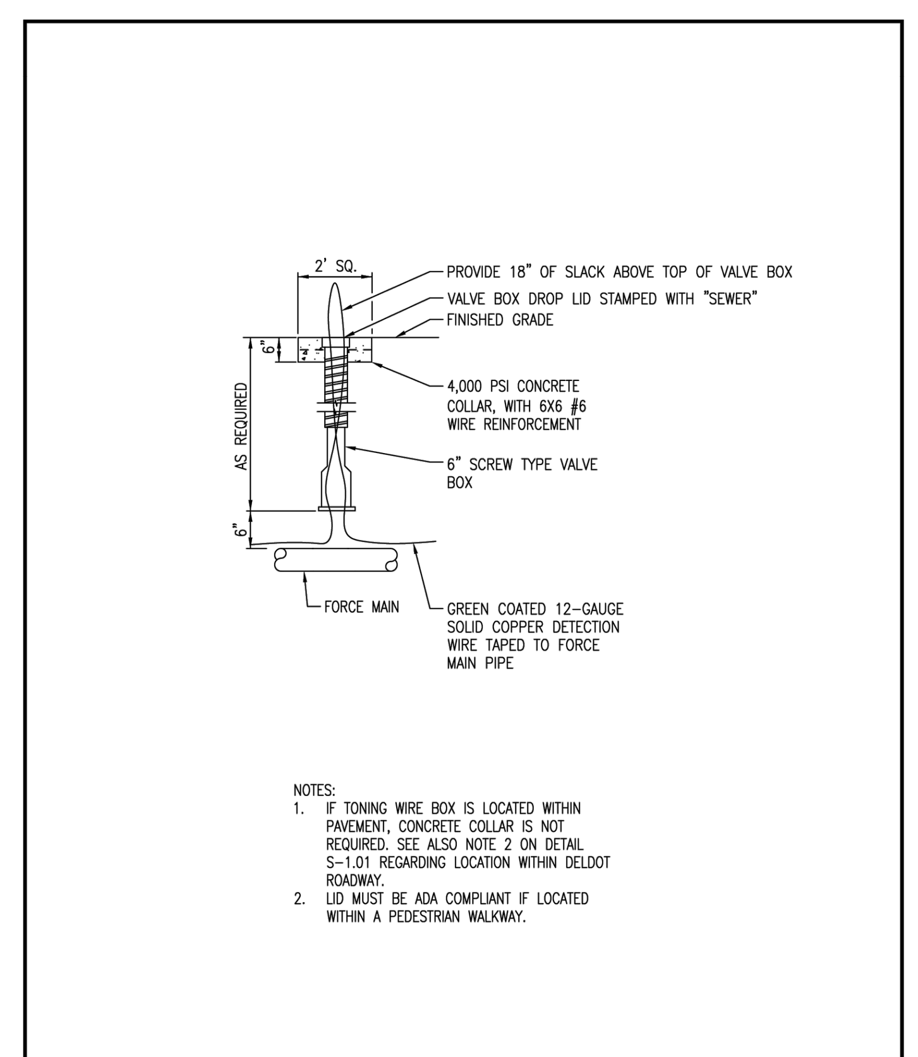
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — AIR RELEASE VALVE ASSEMBLY — DETAIL S-4.02 — DATE ISSUED 12/30/2021



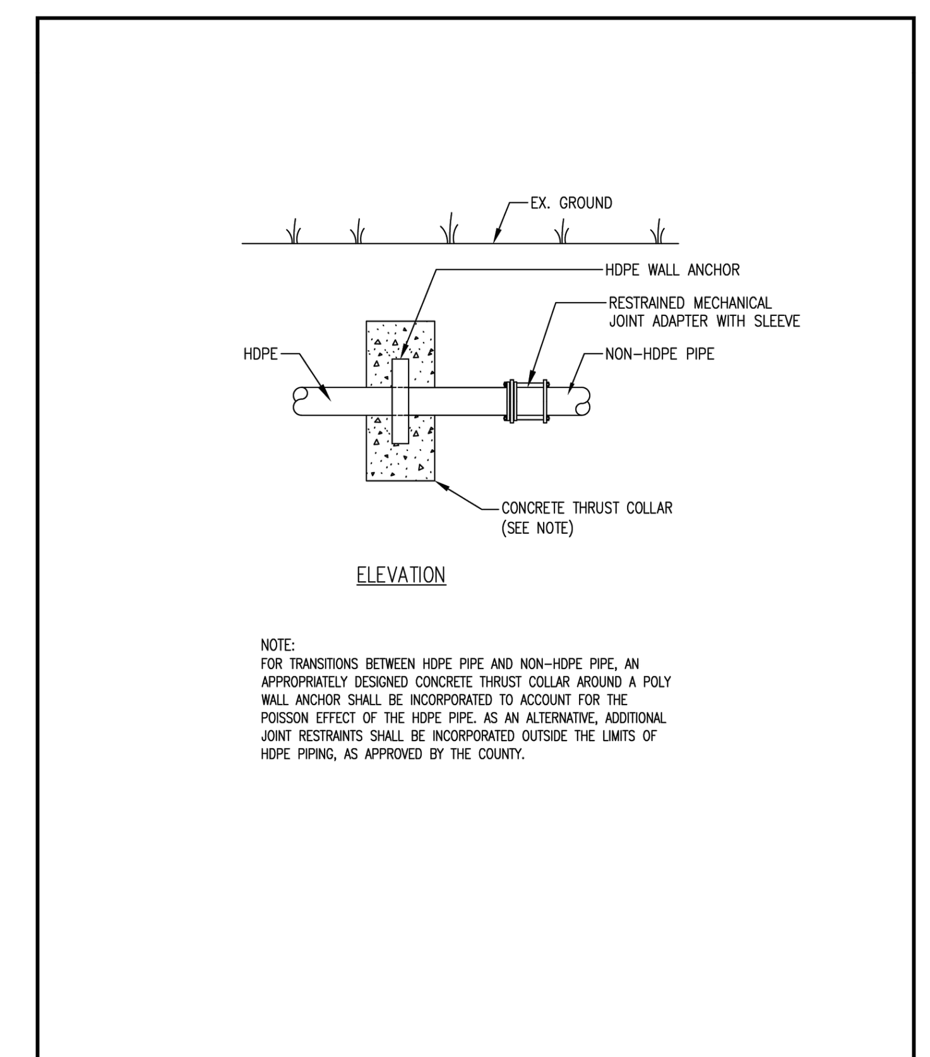
SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — CONCRETE BUTTRESS CONFIGURATIONS — DETAIL S-4.03 — DATE ISSUED 12/30/2021



SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — SEWER FORCE MAIN ISOLATION VALVE — DETAIL S-4.06 — DATE ISSUED 12/30/2021



SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — SEWER FORCE MAIN TONING WIRE BOX — DETAIL S-4.07 — DATE ISSUED 12/30/2021



SUSSEX COUNTY ENGINEERING DEPARTMENT — APPROVED: SUSSEX COUNTY ENGINEER — TRANSITION FROM HDPE TO NON-HDPE PIPE — DETAIL S-4.08 — DATE ISSUED 12/30/2021

NOTE:
1. CONTRACTOR REQUIRED TO VERIFY THAT ALL DETAILS ARE CURRENT AND UP TO DATE AT START OF PROJECT. CURRENT DETAILS CAN BE FOUND AT: *HTTPS://SUSSEXCOUNTYDE.GOV/STANDARD-DETAILS*

BID SET

REVISION | DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT #
S20-12

SCALE - PLAN:

KCI TECHNOLOGIES, INC.
ENGINEERS — PLANNERS — SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

CIVIL DETAILS
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

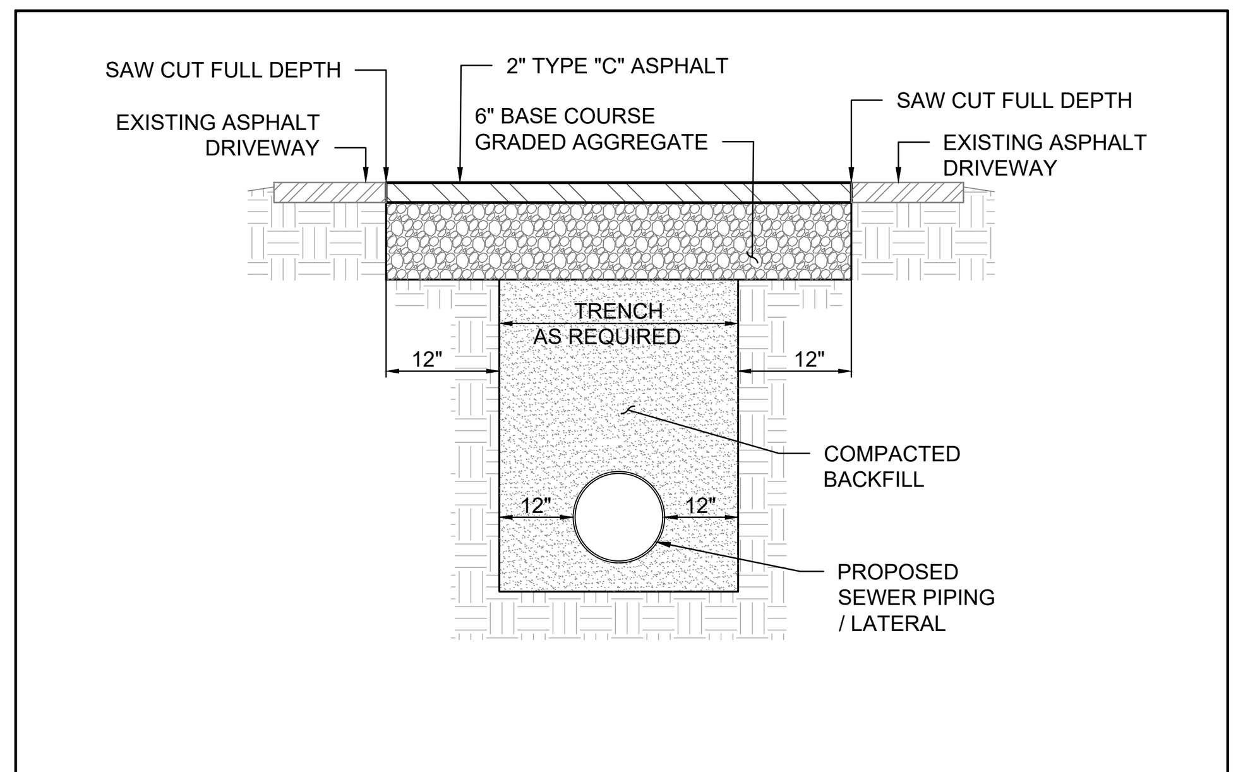
LEWES — SUSSEX — DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13533
EXPIRATION DATE: 06-30-2026

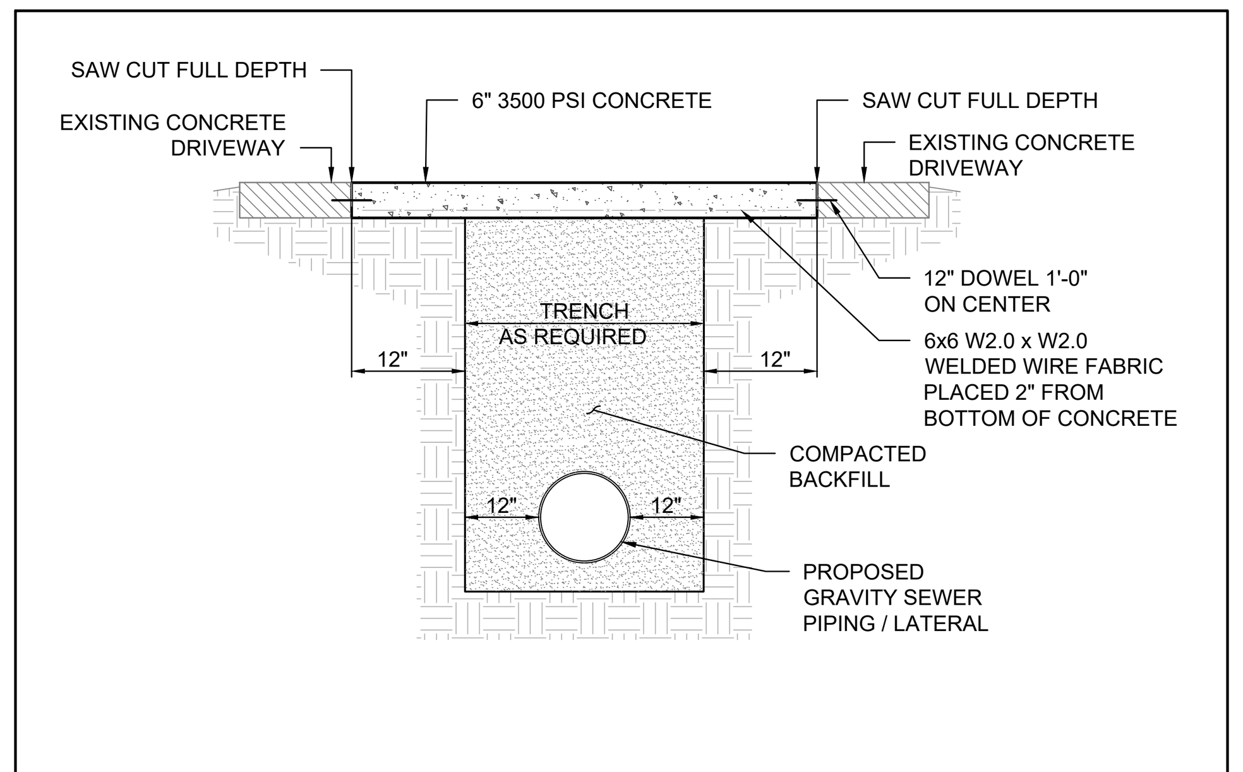
DANIEL R. STRING — LICENSED PROFESSIONAL ENGINEER — No. 13533 — DELAWARE

SIGNATURE:

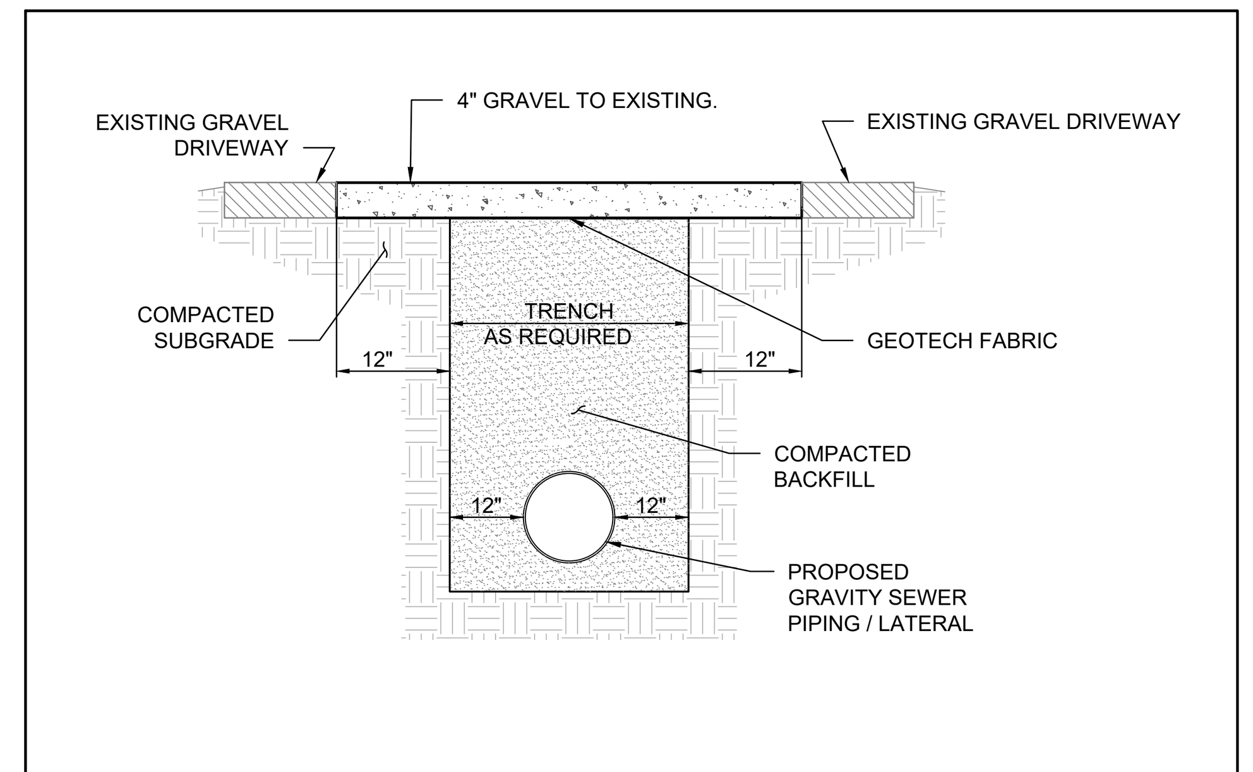
Drafting:	TJG	Check:	RH
Design:	RH	Check:	JRF
SCALE:	NA		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-4.01		



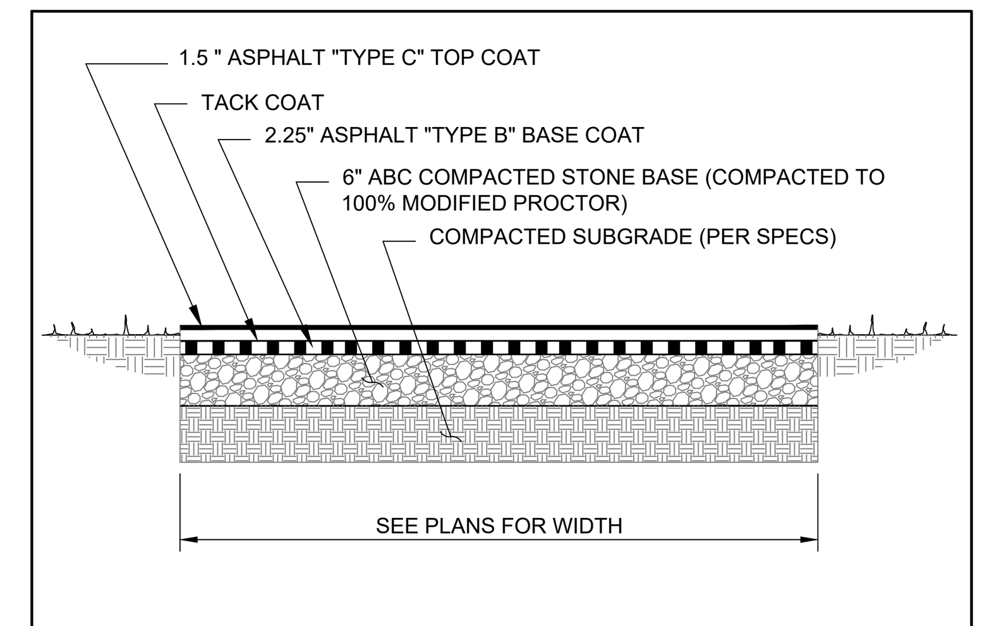
PRIVATE ASPHALT DRIVEWAY REPAIR
NOT TO SCALE



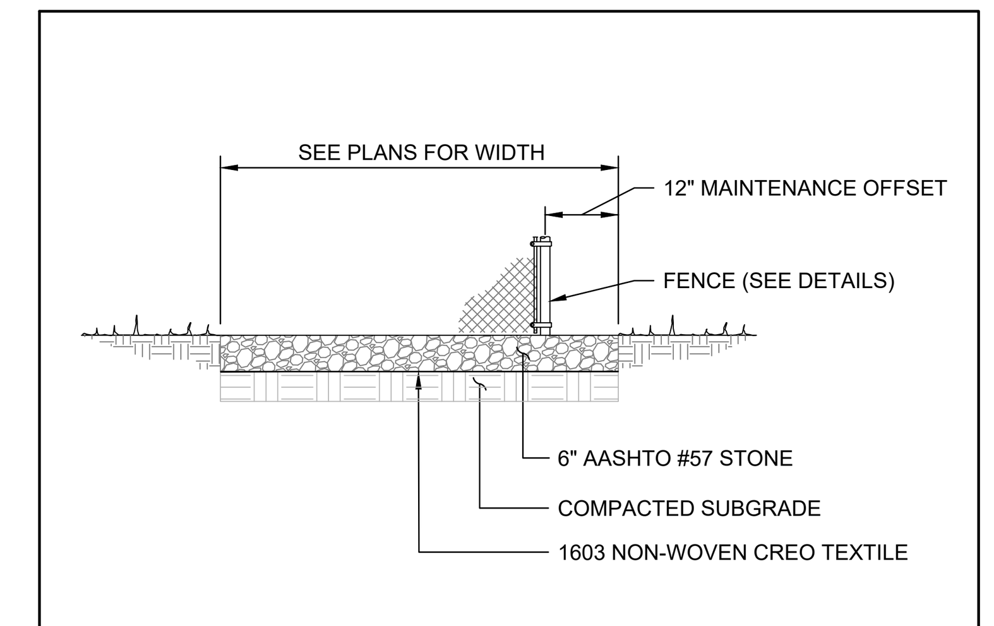
PRIVATE CONCRETE DRIVEWAY REPAIR
NOT TO SCALE



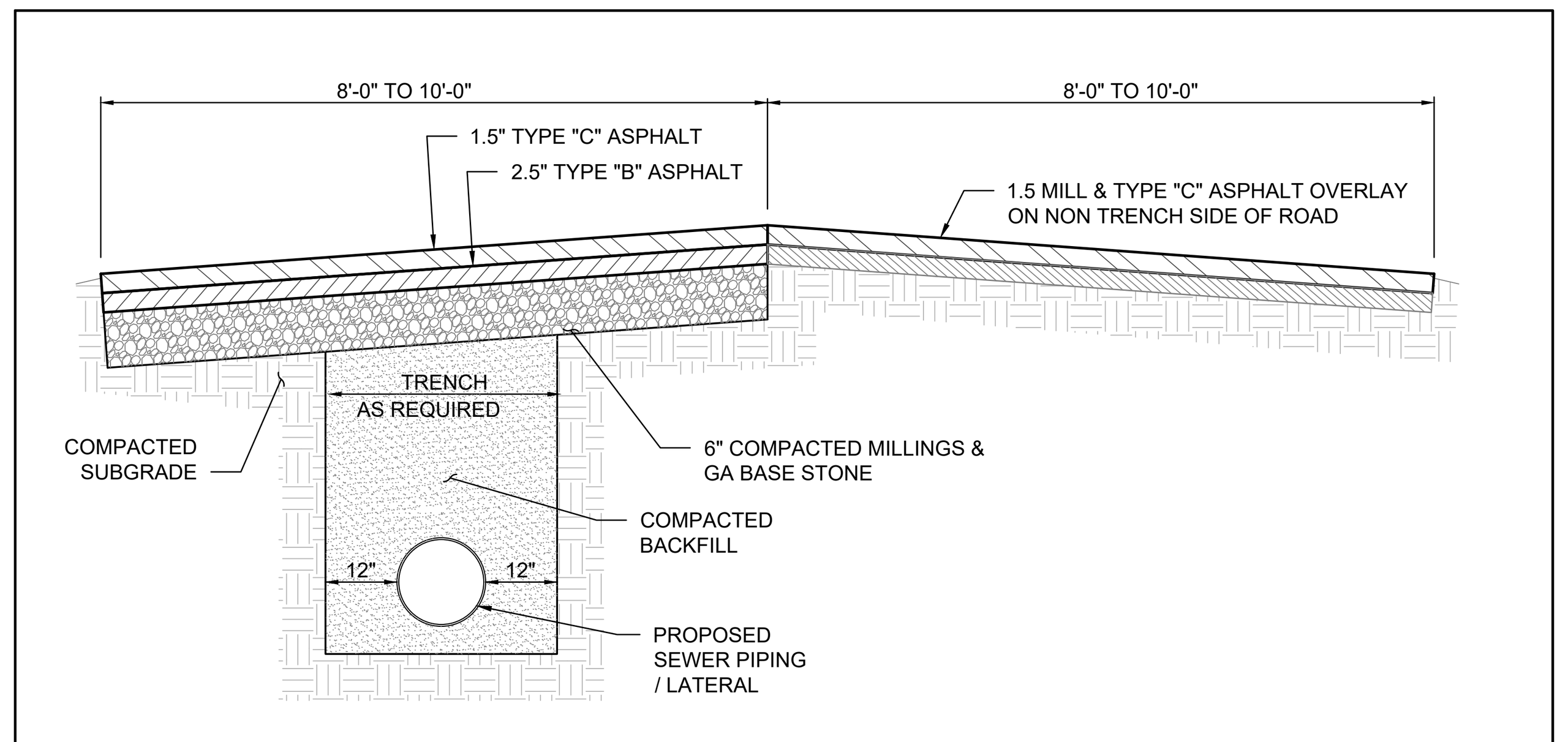
GRAVEL DRIVEWAY / ROAD REPAIR
NOT TO SCALE



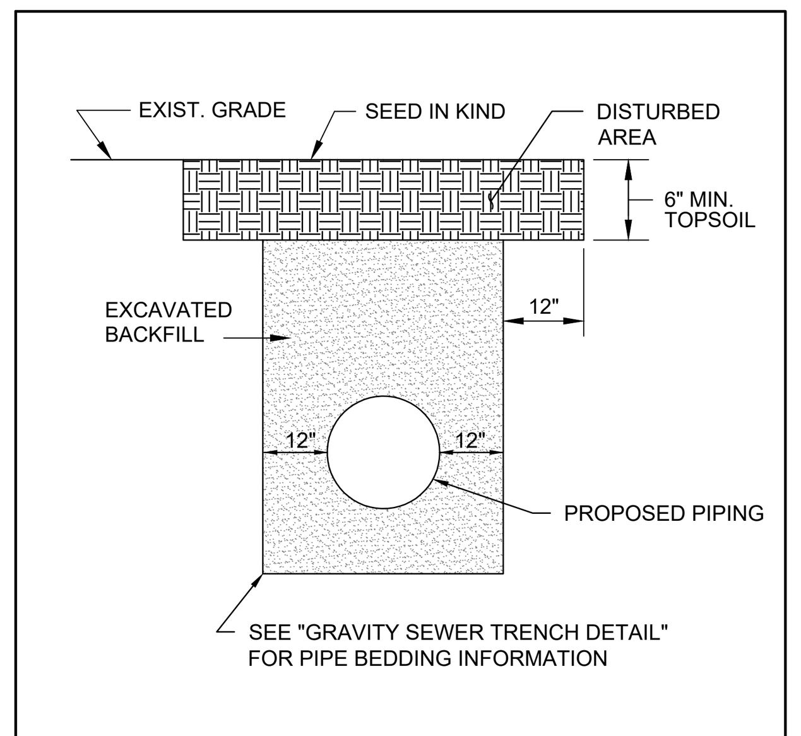
PROPOSED ACCESS DRIVEWAY
NOT TO SCALE



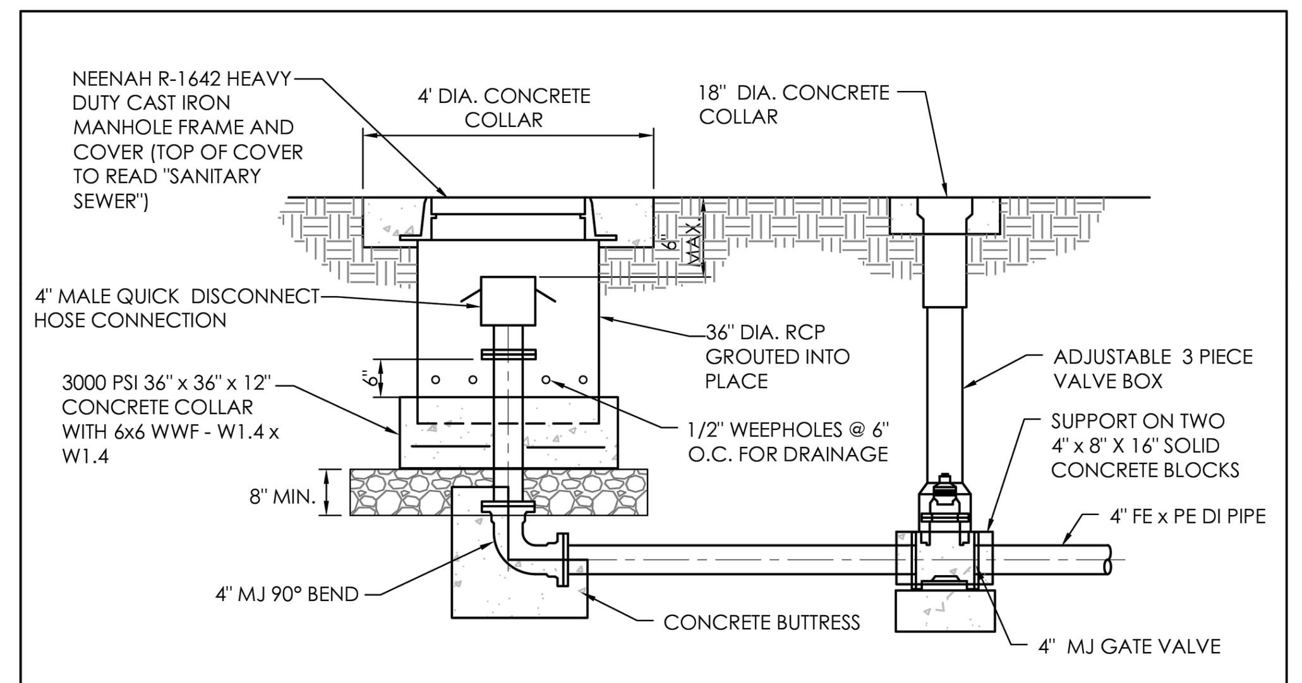
PROPOSED GRAVEL P.S. SITE
NOT TO SCALE



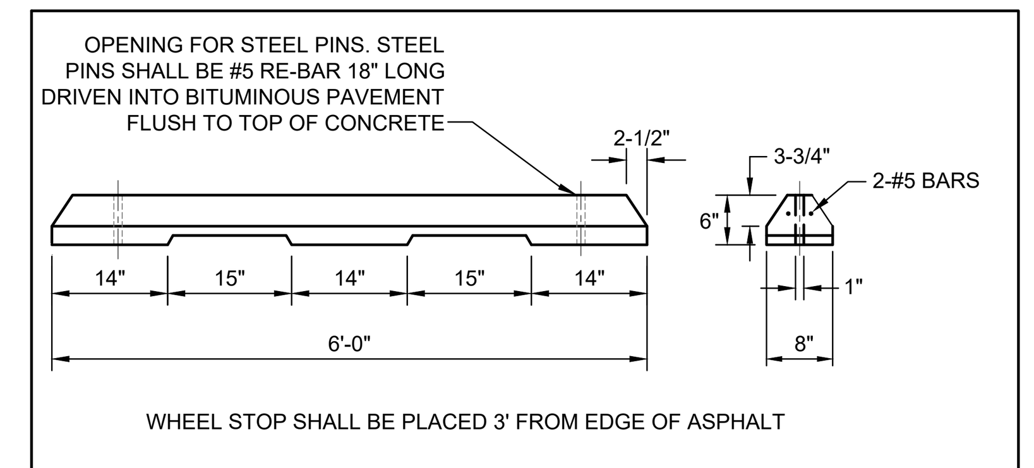
MILLING AND OVERLAY
NOT TO SCALE



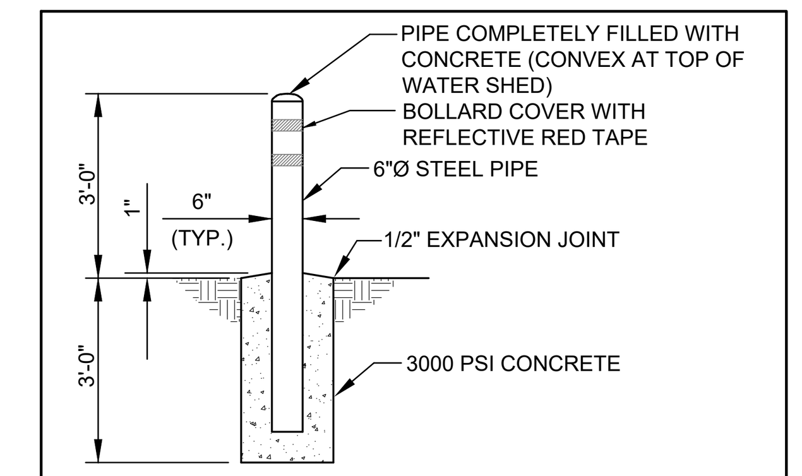
LAWN RESTORATION DETAIL
NOT TO SCALE



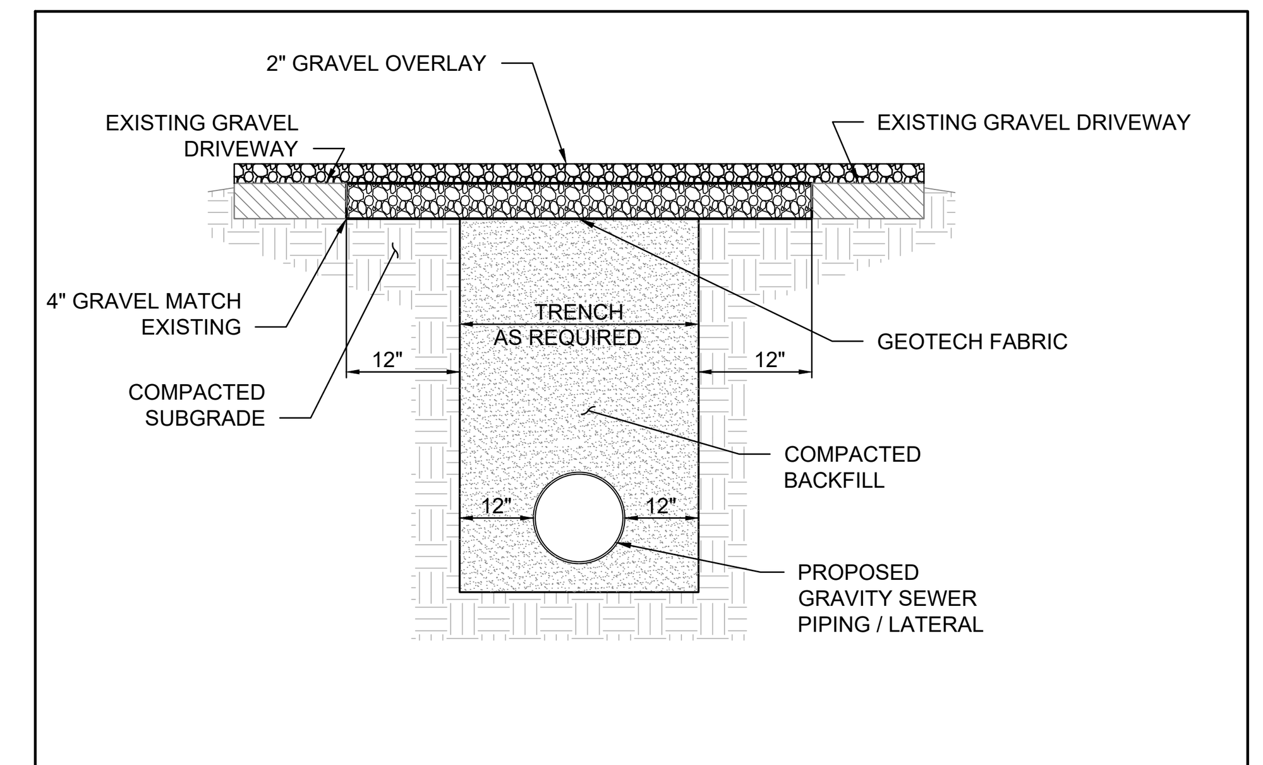
EMERGENCY BYPASS
N.T.S.



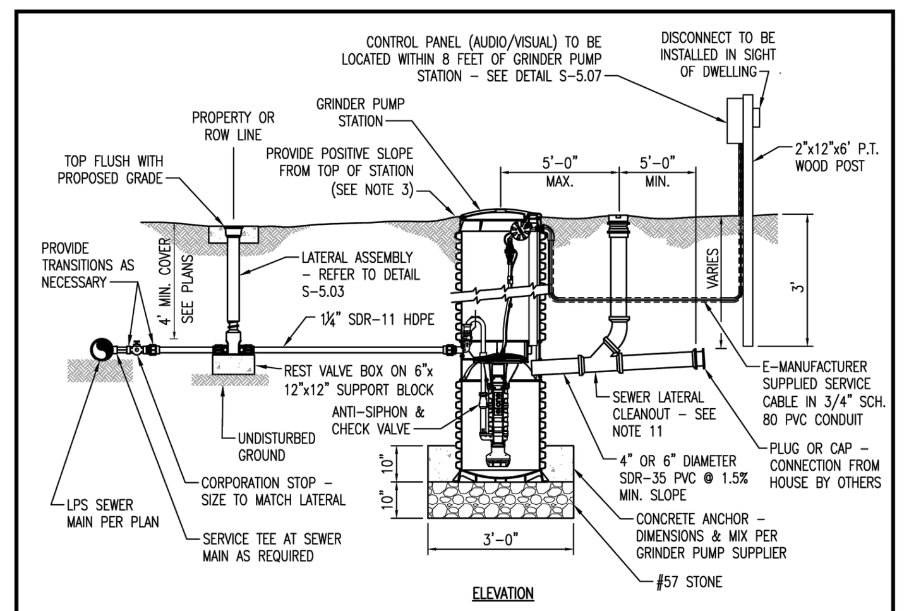
CONCRETE WHEEL STOP
NOT TO SCALE



STEEL BOLLARD
NOT TO SCALE

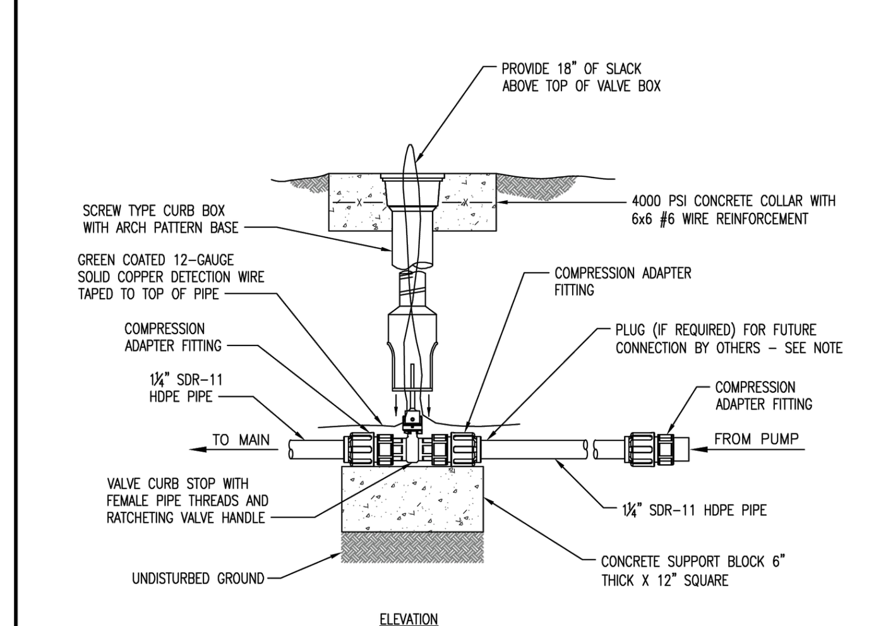


GRAVEL ROADWAY/DRIVEWAY RESTORATION
NOT TO SCALE



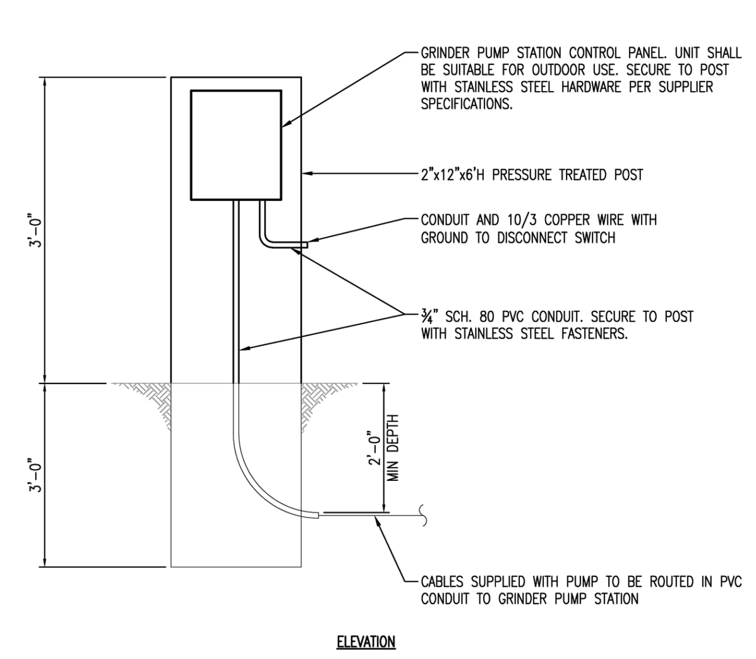
NOTES
1. THE SEWER CONTRACTOR SHALL PROVIDE AND INSTALL ALL ITEMS INDICATED UNLESS OTHERWISE NOTED.
2. SEWER LATERAL CONNECTION FROM THE HOUSE TO THE PVC STUB SHALL BE THE RESPONSIBILITY OF THE HOMEOWNER/PRIVATE PLUMBER.
3. THE CONTRACTOR SHALL GRADE AS REQUIRED TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BASIN TOP. ALL FINISHED GRADES AROUND THE BASIN SHALL BE 1 TO 3 INCHES BELOW THE REMOVABLE BASIN LID. MOUNDING OF THE SOIL AROUND THE BASIN WILL NOT BE PERMITTED.
4. ALL VENTS IN GRINDER PUMP ENCLOSURE COVER SHALL BE COVERED WITH GORTEX VENT COVER.
5. CONTRACTOR WILL BE RESPONSIBLE TO PROVIDE TEMPORARY POWER AND WATER TO CONDUCT PUMP TEST ON SITE FOLLOWING INSTALLATION OF GRINDER PUMP STATION AND ALL HOOK-UPS TO THE FORCE MAIN HAVE BEEN COMPLETED.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF CONTROL PANEL, POWER DISCONNECT, PUMP CABLING, DISCONNECT SWITCH, AND ALL RELATED INCIDENTALS PER THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE. CONTRACTOR IS NOT RESPONSIBLE FOR POWER CONNECTION BETWEEN HOUSE ELECTRICAL PANEL AND DISCONNECT SWITCH.
7. PROVIDE GREEN COATED 12-GAUGE SOLID COPPER DETECTION WIRE TAPED TO TOP OF PIPE, WITH 18 INCHES OF SLACK PROVIDED ABOVE TOP OF VALVE BOX.
8. LOCATION OF GRINDER PUMP ASSEMBLY SHALL BE WITHIN DESIGNATED PRIVATE EASEMENT PER PLAN. CONTRACTOR SHALL COORDINATE WITH HOMEOWNER PRIOR TO ENTERING PROPERTY AND RESTORE ALL DISTURBED AREAS TO EXISTING CONDITION.
9. GRINDER PUMP ENCLOSURE, INTERNAL COMPONENTS AND CONNECTIONS SHALL BE D-SERIES WETWELL/DRYWELL GRINDER PUMP STATION AS MANUFACTURED BY ENVIRONMENT ONE CORPORATION (E/ONE), OR APPROVED EQUAL. D-SERIES MODEL SHALL BE AS SPECIFIED ON PLANS OR IN SPECIFICATIONS.
10. THIS DETAIL IS APPLICABLE FOR GRINDER PUMP INSTALLATION IN DESIGNATED NON-FLOODPLAIN AREAS ONLY - SEE DETAIL S-5.02 FOR GRINDER PUMP INSTALLATION IN FLOODPLAIN AREAS.
11. IN RESIDENTIAL APPLICATIONS, STANDARD SEWER LATERAL CLEANOUT SHALL BE MODIFIED TO OMIT FRAME, COVER AND CONCRETE SUPPORT RING - CLEANOUT CAP SHALL BE SET FLUSH WITH ADJACENT GRADE.

SUSSEX COUNTY ENGINEERING DEPARTMENT APPROVED: ______ SUSSEX COUNTY ENGINEER	STANDARD GRINDER PUMP ASSEMBLY	DETAIL S-5.01 LAST REVISED: 10/27/2022



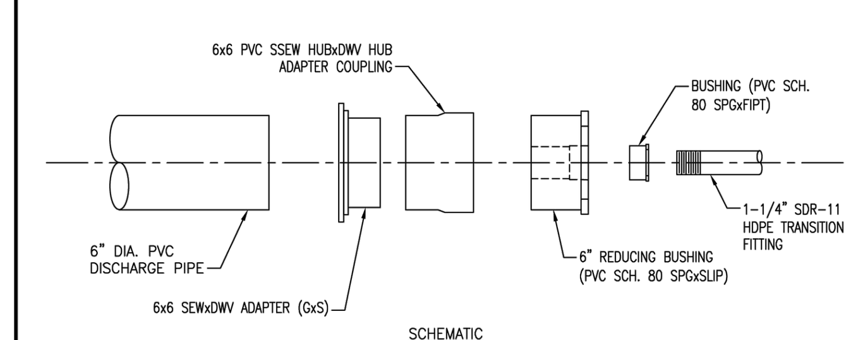
NOTE: FOR APPLICATONS WHERE A GRINDER PUMP STATION IS NOT INSTALLED AS PART OF THE WORK, CONTRACTOR SHALL FURNISH AND INSTALL A SCHEDULE 80 PVC MALE THREADED PLUG INTO THE END OF VALVE ASSEMBLY FOR FUTURE CONNECTION.

SUSSEX COUNTY ENGINEERING DEPARTMENT APPROVED: ______ SUSSEX COUNTY ENGINEER	LATERAL ASSEMBLY ISOLATION VALVE	DETAIL S-5.03 DATE ISSUED: 09/09/2022



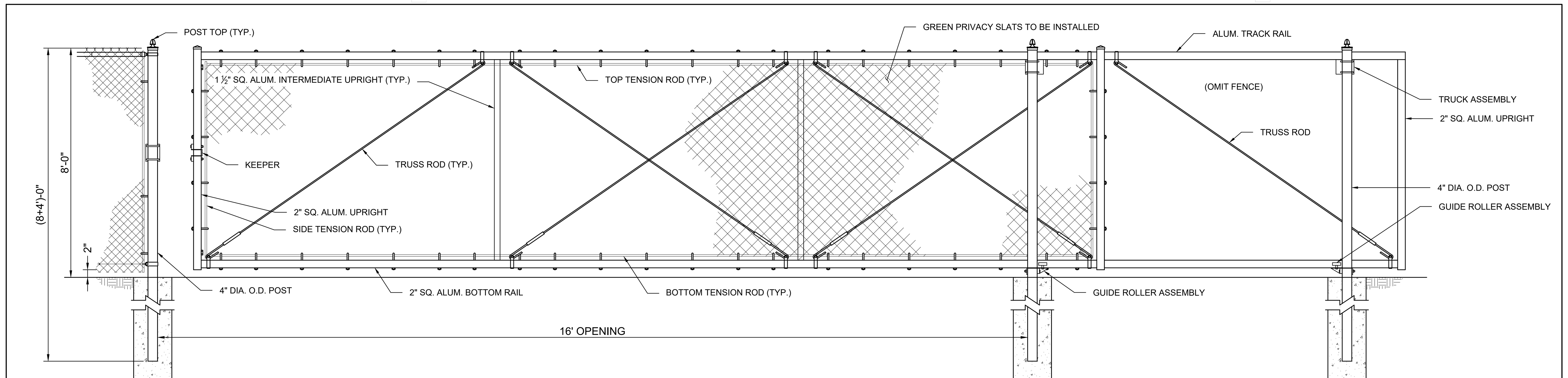
NOTES:
1. ALL ELECTRICAL WORK SHALL BE PERFORMED PER THE NATIONAL ELECTRICAL CODE.
2. REFER TO THE LATEST VERSION OF SUSSEX COUNTY'S "PROCEDURES FOR GRINDER PUMP CONNECTIONS" FOR MINIMUM ELECTRICAL REQUIREMENTS OF POWER SUPPLY.
3. POWER DISCONNECT SWITCH ON HOUSE SIDE OF WOOD POST NOT SHOWN FOR CLARITY.
4. DISCONNECT SWITCH SHALL BE MILBANK'S MODEL U3802 AIR CONDITIONER DISCONNECT, OR APPROVED EQUAL.

SUSSEX COUNTY ENGINEERING DEPARTMENT APPROVED: ______ SUSSEX COUNTY ENGINEER	CONTROL PANEL POST MOUNTING	DETAIL S-5.07 LAST REVISED: 10/27/2022



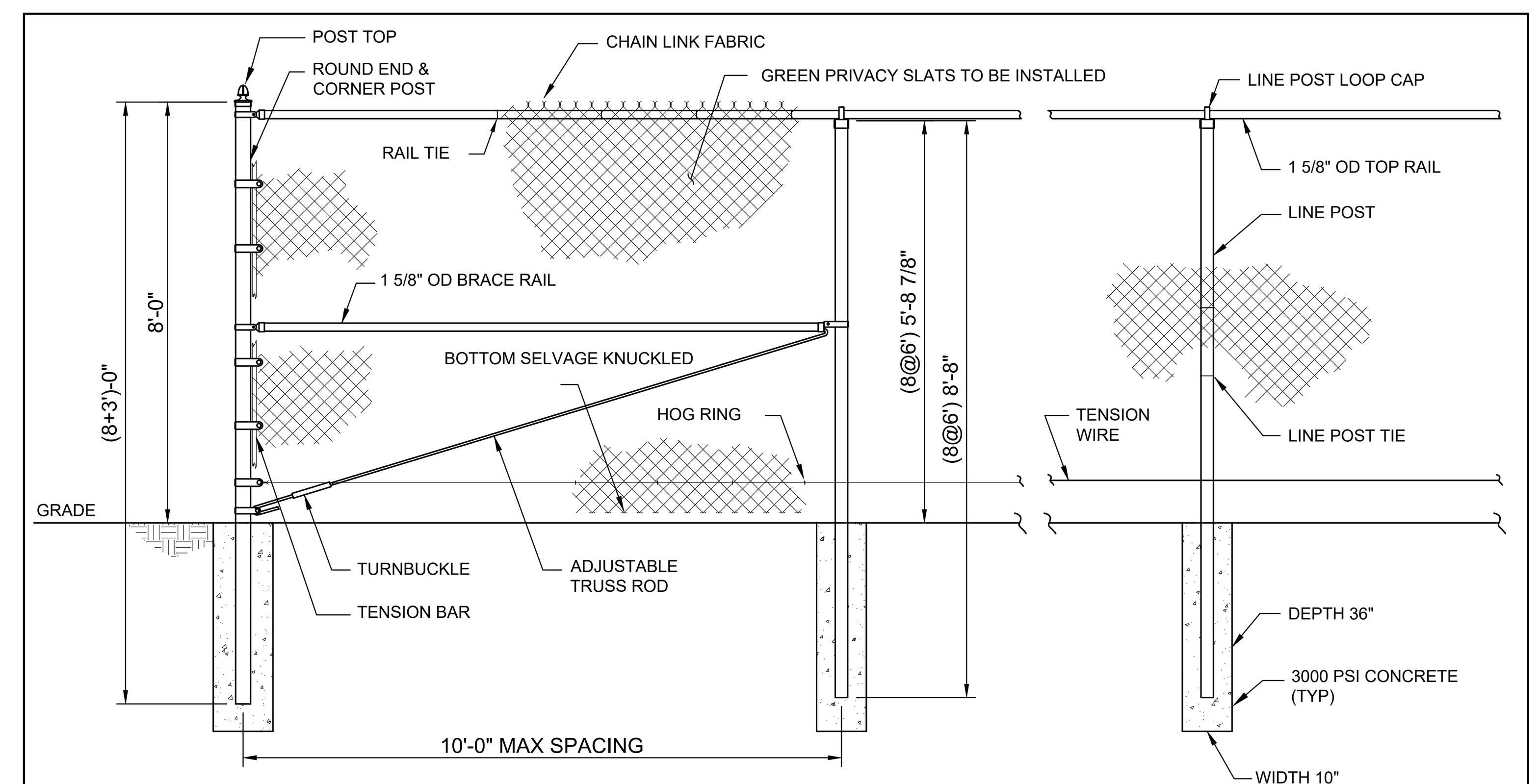
NOTE: THIS DETAIL REPRESENTS A DISCHARGE CONNECTION FROM A 1-1/4" LPS PIPE TO A 6" DIAMETER GRAVITY SEWER MAIN OR LATERAL. FOR DISCHARGE CONFIGURATION WITH PIPE SIZES THAT VARY FROM THOSE SHOWN ABOVE, APPROPRIATELY SIZED FITTINGS/ADAPTERS SHALL BE INCORPORATED.

SUSSEX COUNTY ENGINEERING DEPARTMENT APPROVED: ______ SUSSEX COUNTY ENGINEER	LPS DISCHARGE CONNECTION	DETAIL S-5.04 DATE ISSUED: 09/09/2022



NOTES:
1. FABRIC: 96" 9 GA. GALVANIZED (2" MESH) CHAIN LINK FABRIC WITH 7MIL BLACK PVC OR POLYOLEFIN.
2. TOP RAIL: 1 5/8" O.D. SWEDGE END .055 TUBE, .90 LBS. PER FOOT. LENGTH OF 21'.
3. LINE POST: 2" O.D., .005 TUBE, .90 LBS. PER FOOT.
4. TERMINAL POST: 2 1/2" O.D. SS-20 PIPE, 1.76 LBS. PER FOOT.
5. FITTINGS: REGULAR BRACE BAND & CARRIAGE BOLT, DIE-CAST ALUMINUM RAIL-END, DIE-CAST ALUMINUM LOOP CAP, DIE-CAST ALUMINUM ACORN CAP, 3/16" X 5/8" TENSION BAR, REGULAR TENSION BANK & CARRIAGE BOLT.
6. TIE WIRE: 6 1/2" 9 GA. ALUMINUM TIE WIRE SPACED 16" ON CENTER FOR LINE POSTS & 24" ON CENTER FOR RAILS.
7. POST FOOTING: HAND MIXED CONCRETE.
8. FENCE TO HAVE GREEN PRIVACY SLATS IN ENTIRE FENCED IN AREA.
NOTE: NO EXPOSED BARBS ON TOP OR BOTTOM OF FABRIC.

CANTILEVER SLIDE GATE DETAIL
SCALE: N.T.S.



TYP. 8' HIGH FENCE DETAIL
SCALE: N.T.S.

BID SET

REVISION
DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT #
S20-12

SCALE - PLAN:
0

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

CIVIL DETAILS
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2
LEWES SUSSEX DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13532
EXPIRATION DATE: 06-30-2026
DANIEL R. STRING LICENSE No. 13532 DELAWARE PROFESSIONAL ENGINEER
SIGNATURE:

Drafting:	TJG	Check:	RH
Design:	RH	Check:	JRF
SCALE:	NA		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	C-4.02		

Notes for Figure 6H-1—Typical Application 1
Work Beyond the Shoulder Greater Than 10 Feet from the Edge of the Traveled Way
(Delaware Revision)

Guidance:

1. If the work space is in the median of a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

2. Where drivers emerging from an intersecting roadway will not encounter an advance warning sign prior to the work zone, additional signs should be placed on the intersecting road.

Option:

3. The ROAD WORK AHEAD sign may be replaced with other appropriate signs such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

4. The ROAD WORK AHEAD sign may be omitted where the work space is behind guardrail or barrier or more than 10 feet from the edge of the traveled way.

5. For short-term, short duration or mobile operation, all signs and channelizing devices may be eliminated if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.

Notes for Figure 6H-3—Typical Application 3
Work on the Shoulder of a Two-Lane Road
(Delaware Revision)

Guidance:

1. A SHOULDER CLOSED sign should be placed on the left side of the roadway for a divided or one-way street only if the left shoulder is affected.

Option:

2. The SHOULDER CLOSED sign may be omitted from an intersecting roadway where drivers emerging from that roadway will encounter another advance warning sign prior to the activity area.

3. For short duration operations of 60 minutes or less, all signs and channelizing devices may be eliminated if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.

Standard:

4. When paved shoulders having a width of 8 feet or more are closed, at least one advance warning sign shall be used. In addition, channelizing devices shall be used to close the shoulder in advance to delineate the beginning of the work space and direct vehicular traffic to remain within the traveled way.

5. If the shoulder closure is located within a passing zone, ROAD WORK AHEAD and END ROAD WORK signs shall be placed for traffic approaching in the opposite direction.

6. For long-term, intermediate-term, and short-term operations, a truck-mounted attenuator shall be used on roadways with a posted speed limit or 85th-percentile speed greater than 40 mph.

Option:

7. If the shoulder closure is located within a no-passing zone, ROAD WORK AHEAD and END ROAD WORK signs may be placed for traffic approaching in the opposite direction based on engineering judgment.

8. For short duration operations along roadways with a posted speed limit or 85th-percentile speed greater than 40 mph, a truck-mounted attenuator may be omitted if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used or if the shoulder width is less than the width of a truck-mounted attenuator.

9. Truck-mounted attenuators may be used for all operations along roadways with a posted speed limit or 85th-percentile speed less than or equal to 40 mph.

Notes for Figure 6H-10—Typical Application 10
Lane Closure on a Two-Lane Road Using Flaggers
(Delaware Revision)

Option:

1. For low-volume situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger, positioned to be visible to road users approaching from both directions, may be used (see Chapter 6E).

2. The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short-duration operations.

3. A BE PREPARED TO STOP sign may be added to the sign series.

Guidance:

4. The buffer space should be extended so that the two-way traffic taper is placed before a horizontal (or crest vertical) curve to provide adequate sight distance for the flagger and a queue of stopped vehicles.

Standard:

5. At night, flagger stations shall be illuminated, except in emergencies.

Guidance:

6. When used, the BE PREPARED TO STOP sign should be located between the Flagger symbol (or FLAGGER AHEAD) sign and the ONE LANE ROAD sign.

7. Where drivers emerging from an intersecting roadway will not encounter an advance warning sign prior to the work zone, additional signs should be placed on the intersecting road.

8. When a grade crossing exists within or upstream of the transition area and it is anticipated that queues resulting from the lane closure might extend through the grade crossing, the TTC zone should be extended so that the transition area precedes the grade crossing (see Figure 6H-46).

9. When a grade crossing equipped with active warning devices exists within the activity area, provisions should be made for keeping flaggers informed as to the activation status of these warning devices (see Figure 6H-46).

10. When a grade crossing exists within the activity area, drivers operating on the left-hand side of the normal center line should be provided with comparable warning devices as for drivers operating on the right-hand side of the normal center line (see Figure 6H-46).

11. Early coordination with the railroad company or light rail transit agency should occur before work starts (see Figure 6H-46).

Option:

12. A flagger or a uniformed law enforcement officer may be used at the upstream side of the grade crossing to minimize the probability that vehicles are stopped within 50 feet of the grade crossing, measured from both sides of the outside rails (see Figure 6H-46).

Standard:

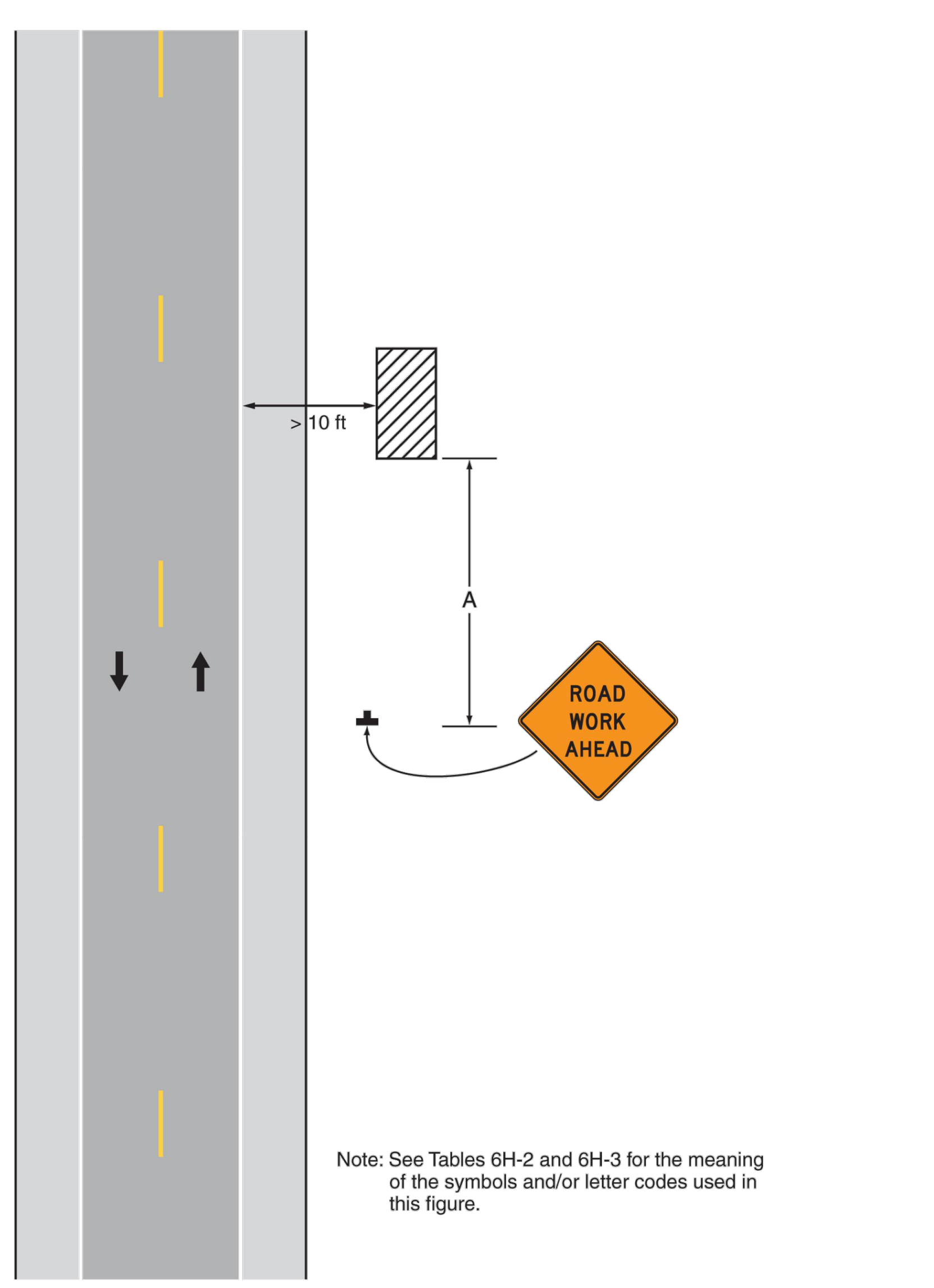
13. For long-term, intermediate-term, and short-term operations, a truck-mounted attenuator shall be used on roadways with a posted speed limit or 85th-percentile speed greater than 40 mph.

Option:

14. For short duration operations along roadways with a posted speed limit or 85th-percentile speed greater than 40 mph, a truck-mounted attenuator may be omitted if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.

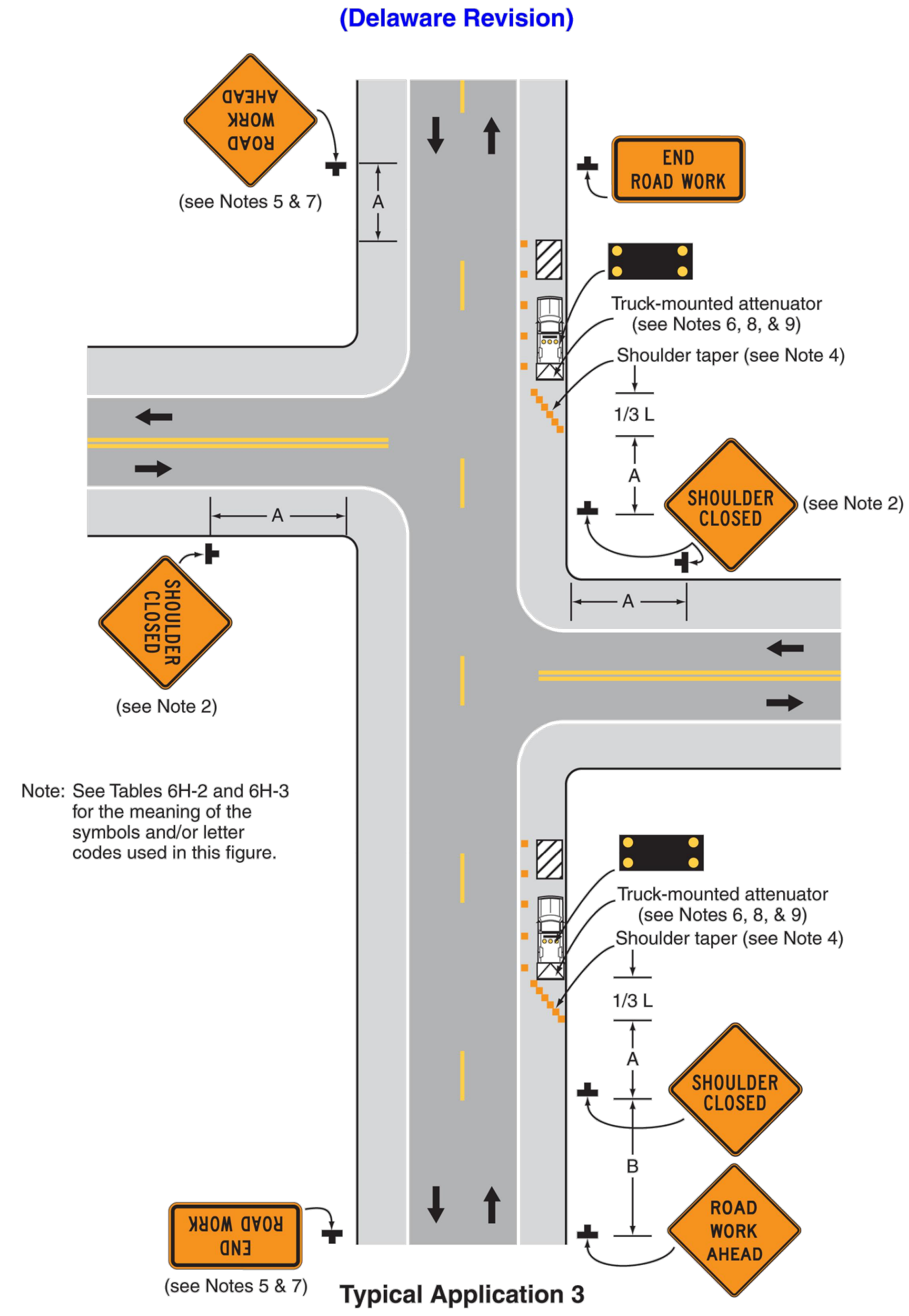
15. Truck-mounted attenuators may be used for all operations along roadways with a posted speed limit or 85th-percentile speed less than or equal to 40 mph.

Figure 6H-1. Work Beyond the Shoulder > 10 Feet from the Edge of the Traveled Way (TA-1)
(Delaware Revision)



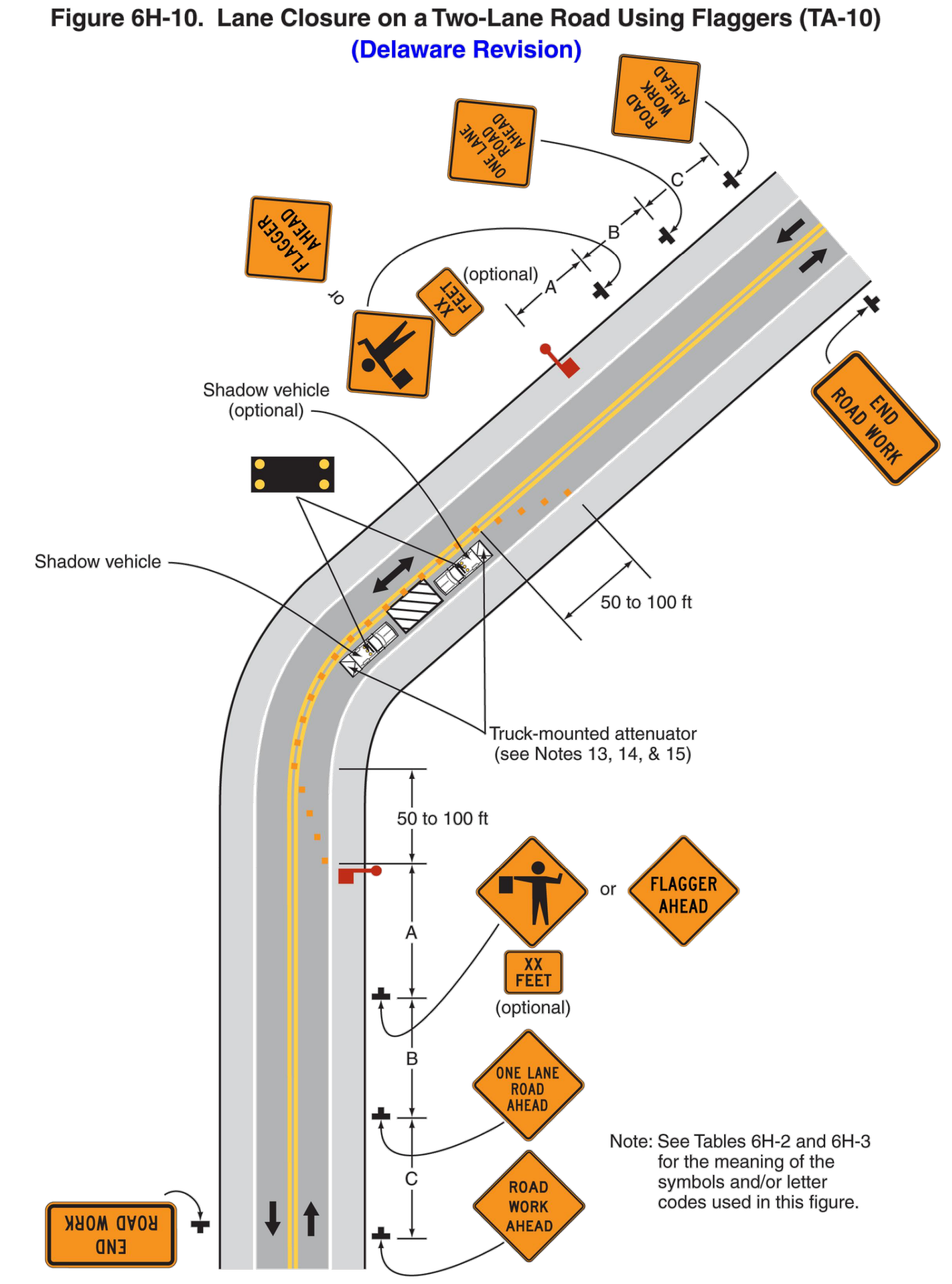
Typical Application 1

Figure 6H-3. Work on the Shoulder of a Two-Lane Road (TA-3)
(Delaware Revision)

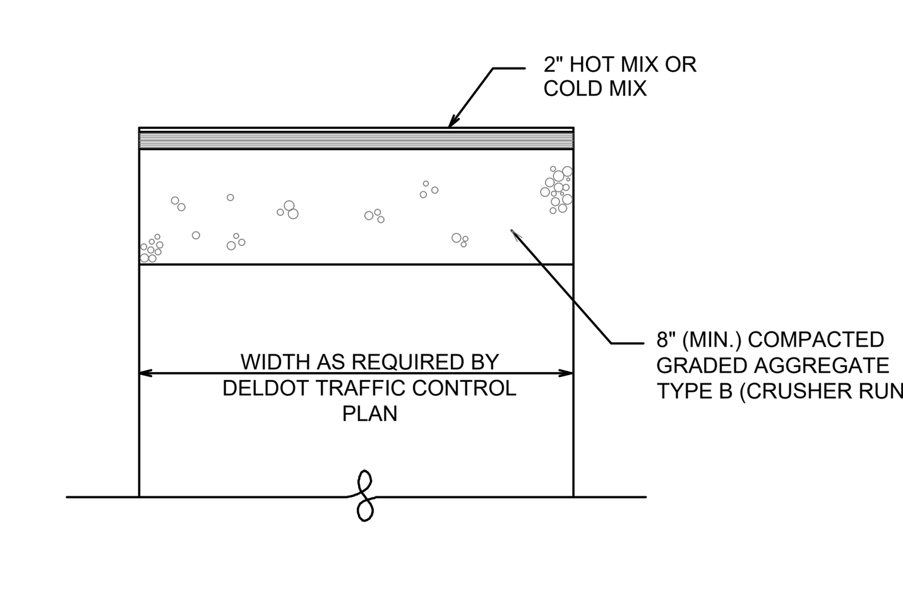


Typical Application 3

Figure 6H-10. Lane Closure on a Two-Lane Road Using Flaggers (TA-10)
(Delaware Revision)



Typical Application 10



TEMPORARY LANES & SHOULDERS FOR MAINTENANCE OF TRAFFIC

NO SCALE

BID SET

DATE	REVISION

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT #
S20-12

SCALE - PLAN: 0

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE. 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

MOT DETAILS
JOY BEACH SEWER COLLECTION SYSTEM PHASE 2

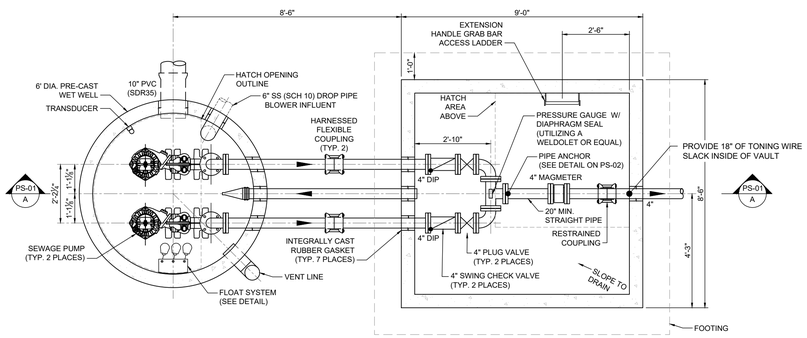
LEWES SUSSEX DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13532
EXPIRATION DATE: 06-30-2026

DANIEL R. STRING LICENSE No. 13532 DELAWARE PROFESSIONAL ENGINEER

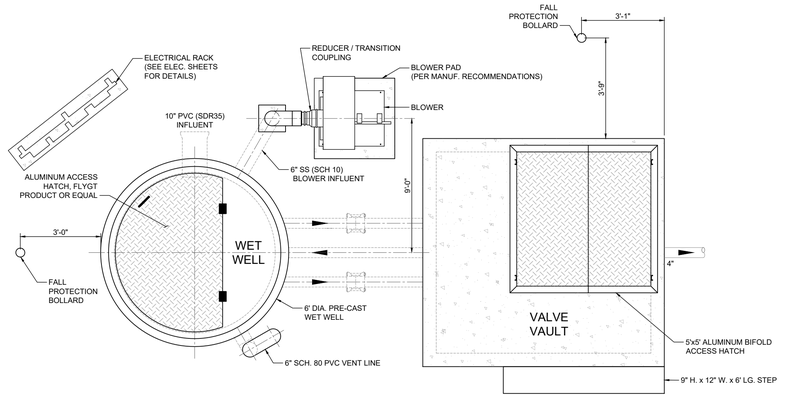
SIGNATURE:

Drafting:	TJG	Check:	RH
Design:	RH	Check:	JRF
SCALE:	NA		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	MOT-1.01		



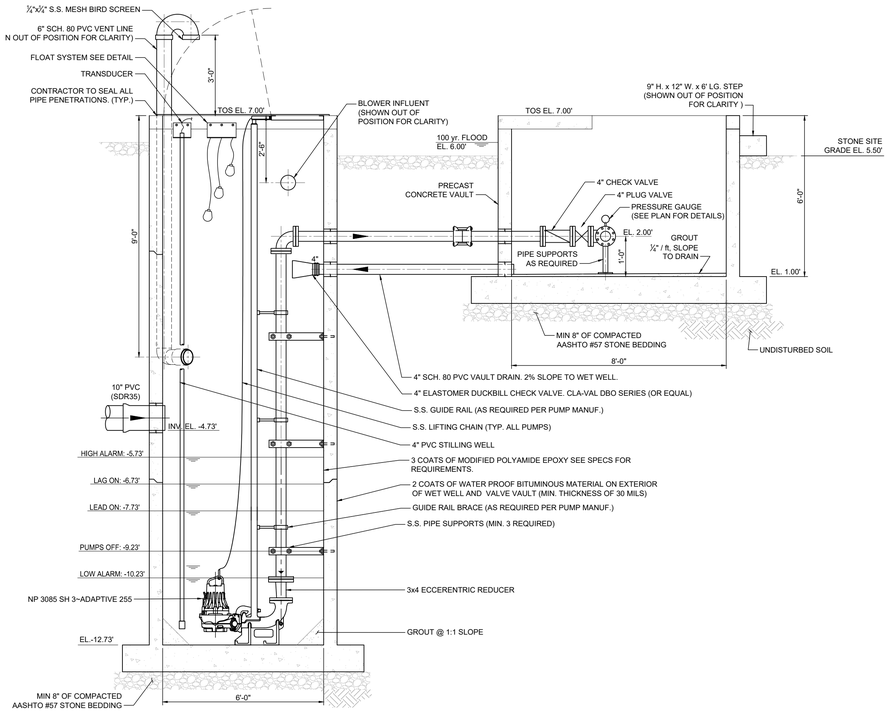
PLAN VIEW BELOW GRADE

SCALE: 3/8" = 1'-0"



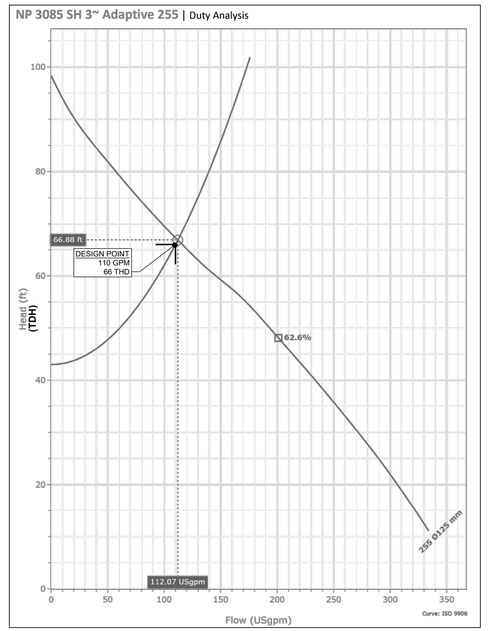
PLAN VIEW @ GRADE

SCALE: 3/8 = 1'-0"



SECTION "A - A"

SCALE: 3/8" = 1'-0"



PUMP & SYSTEM CURVE

SCALE: NA

PUMP STATION CALCULATIONS

EDU COUNT	120
GPD/EDU	250
AVERAGE DAILY FLOW (GPD)	30,000
PEAKING FACTOR*	5.25
PEAK HOURLY FLOW (GPD)	157,500
PUMP DESIGN FLOW (GPM)	110
VELOCITY (FPS) 4" DR-11 HDPE	2.67
PUMP OFF ELEV. (FT)	-9.23
SYSTEM HIGH POINT (FT)	23.50
STATIC HEAD (FT)	43
TOTAL DYNAMIC HEAD (FT)	66
FORCE MAIN LENGTH (FT)	3,267

PUMP STATION NOTES

1. BLOWER AND TOP OF VENT PIPE SHOWN OUT OF POSITION ON SECTION FOR CLARITY.
2. FIVE PIPE DIAMETERS UPSTREAM AND THREE PIPE DIAMETERS DOWNSTREAM SHALL BE MAINTAINED BETWEEN THE MAG METER AND THE NEAREST VALVE OR FITTING.
3. WASTEWATER PIPING INSIDE WET WELL AND VALVE VAULT SHALL BE CLASS 52 FLANGED DUCTILE IRON PIPE.
4. ALL METALS, NUTS, BOLTS AND WASHERS IN WET WELL AND VALVE VAULT TO BE STAINLESS STEEL UNLESS OTHERWISE NOTED.
5. LOW LEVEL ALARM FLOAT SWITCH ELEVATION SHALL BE SET TO MAINTAIN A LEVEL THAT THE PUMPS BE TOTALLY SUBMERGED.

BID SET

REVISION	DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # 520-12

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 731-7807 Website: www.kci.com

SCALE - PLAN: 3/8" = 1'-0"
0
3/2"
6/4"
3/2"

PUMP STATION PLANS & ELEVATION
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

SUSSEX
DELAWARE
LEWES

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13233
EXPIRATION DATE: 10-30-2026

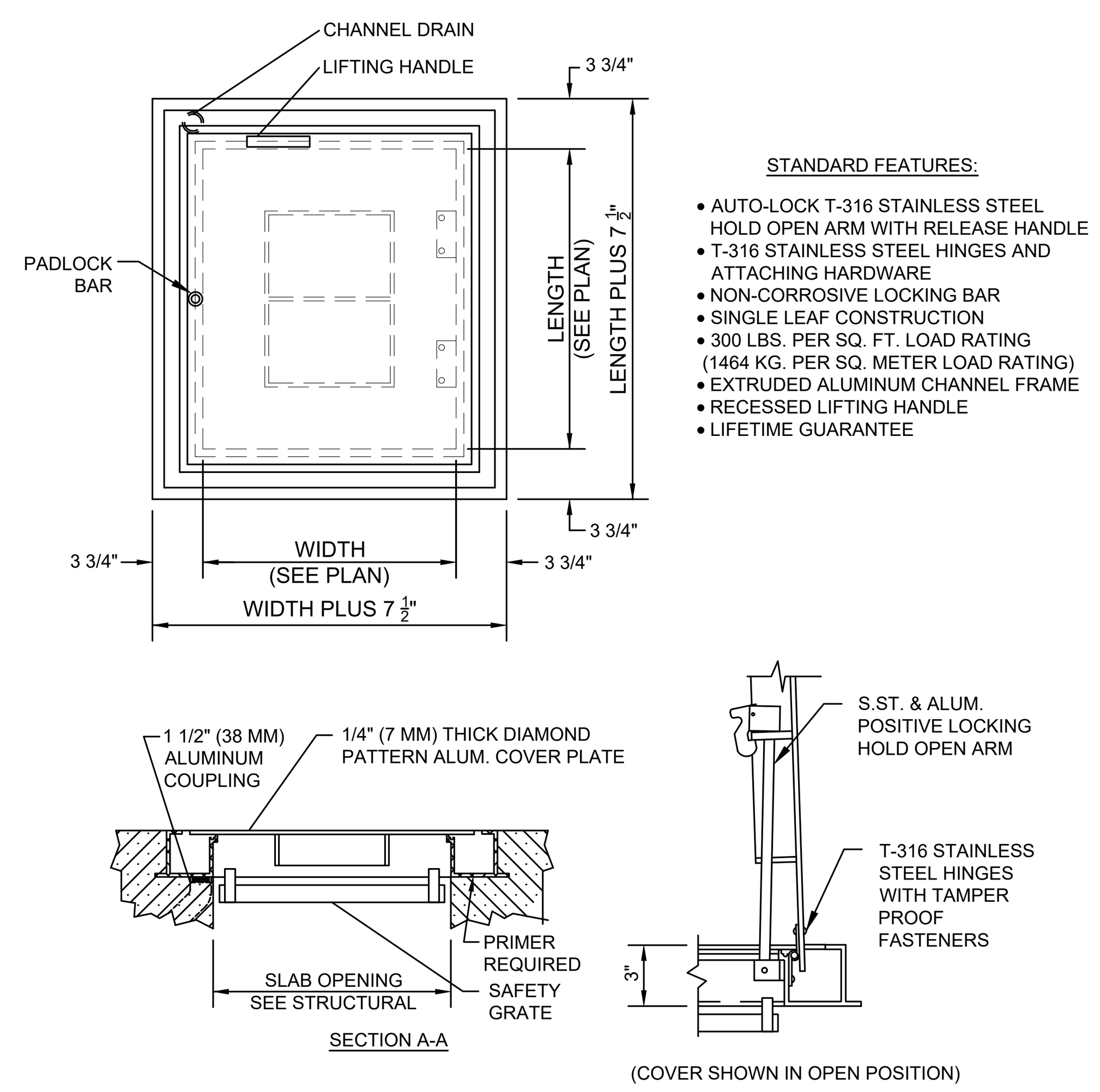
DANIEL R. STRING LICENSE No. 13233 DELAWARE PROFESSIONAL ENGINEER

SIGNATURE:

Drafting:	TJG	Check:	RH
Design:	RH	Check:	JRF
SCALE:	3/8" = 1'-0"		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	PS-1.01		

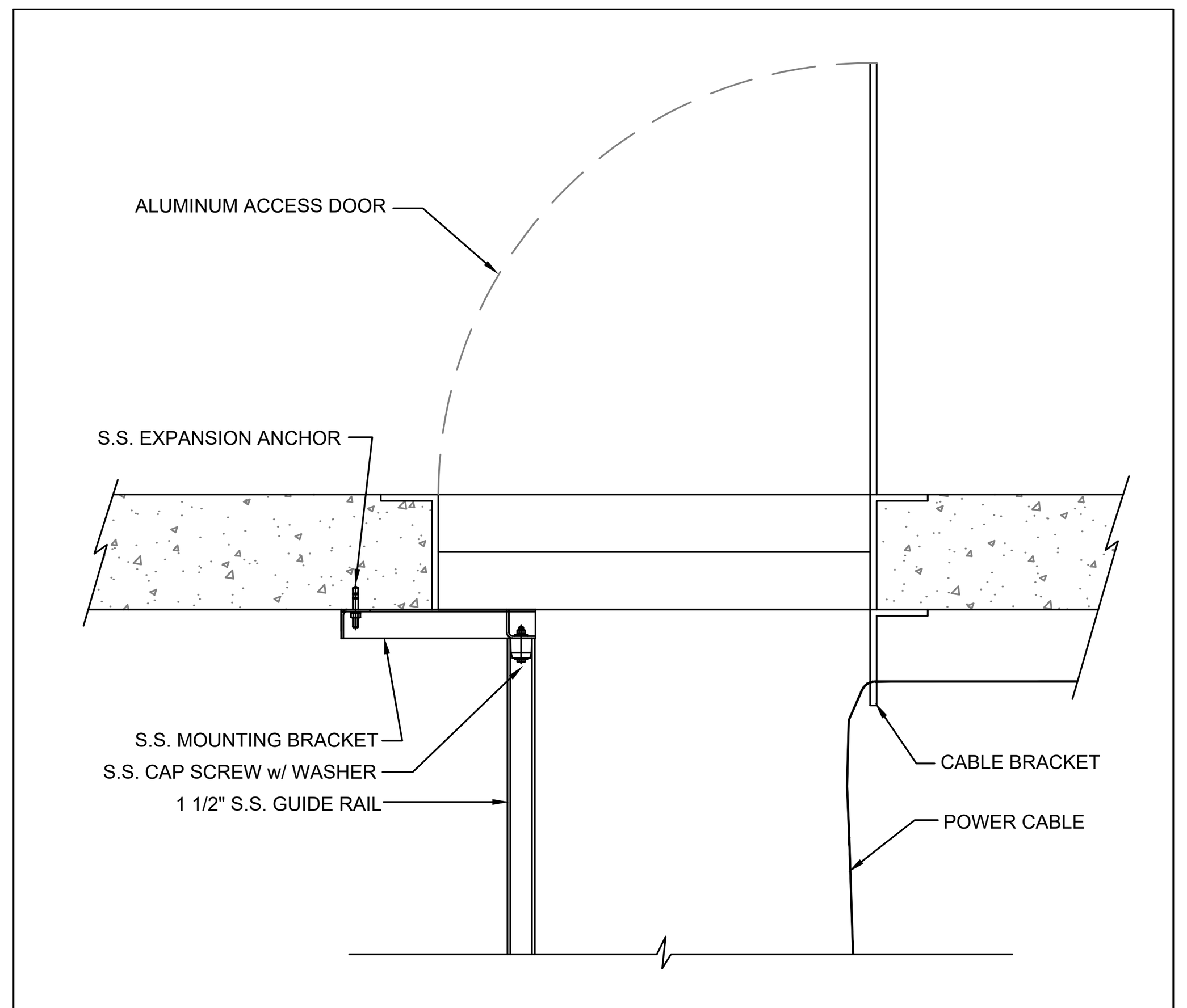
BY: Thomas Gilsdorf-PRINTED: 9/30/2025 4:45 PM
LOCATION: P:\Projects\2013\13157731.S20-12_PS Series.dwg

FLYGT ACCESS HATCH w/ SAFETY GRATE DETAILS



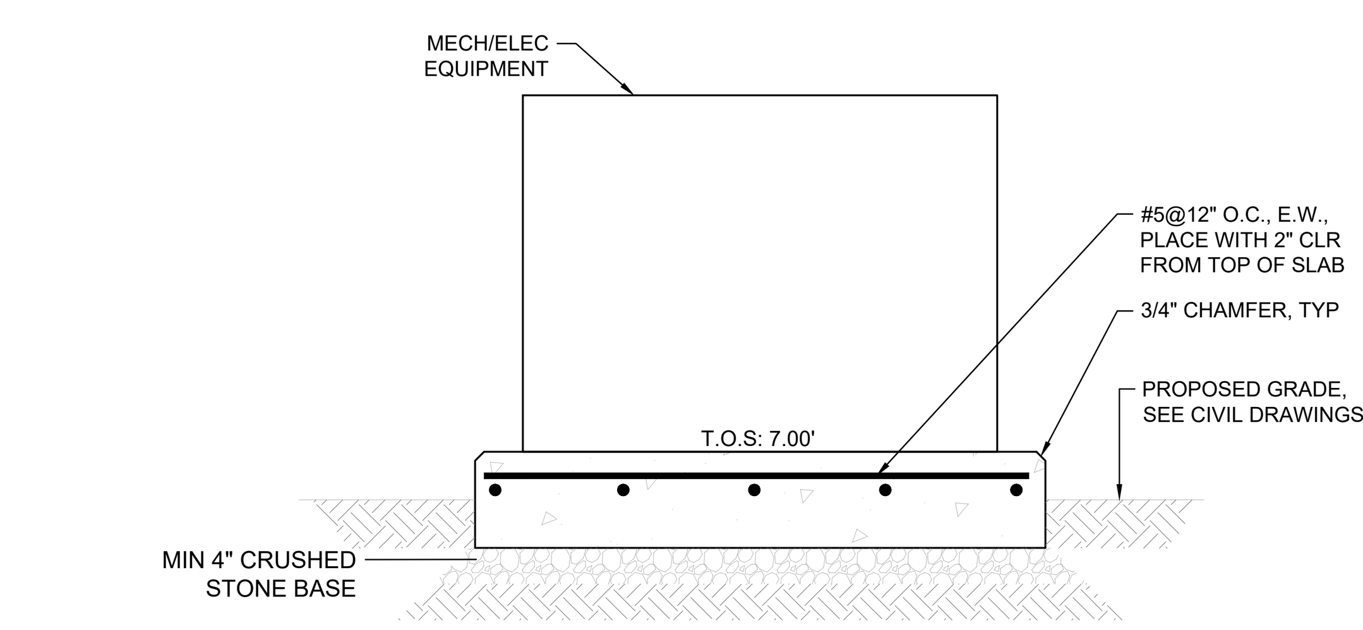
SCALE: N/A

GUIDE RAIL MOUNTING DETAIL



NOT TO SCALE

EQUIPMENT PAD DETAIL

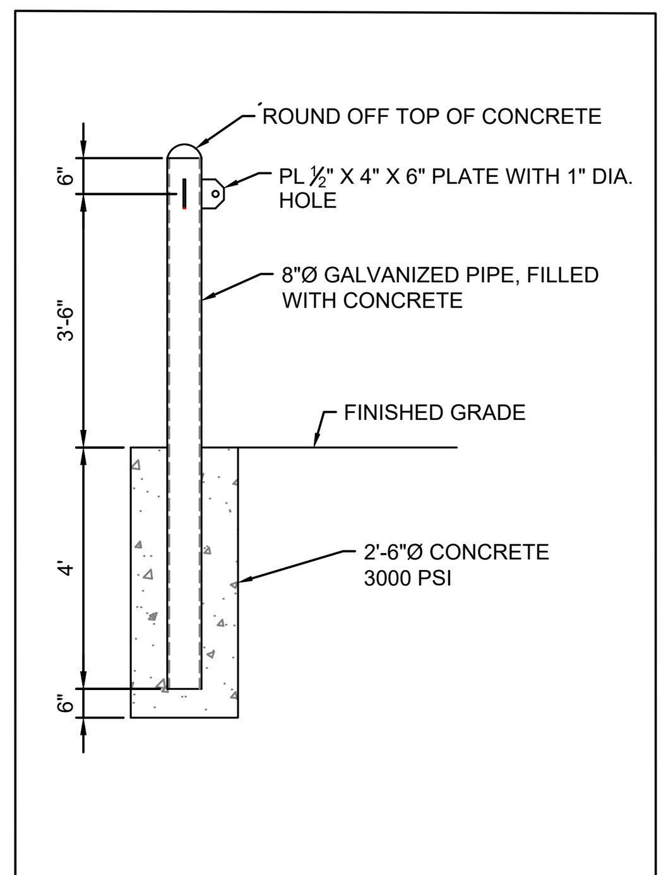


NOTES:

1. THE PAD FOR THE EQUIPMENT RACK MUST BE AT LEAST 15 INCHES DEEP.

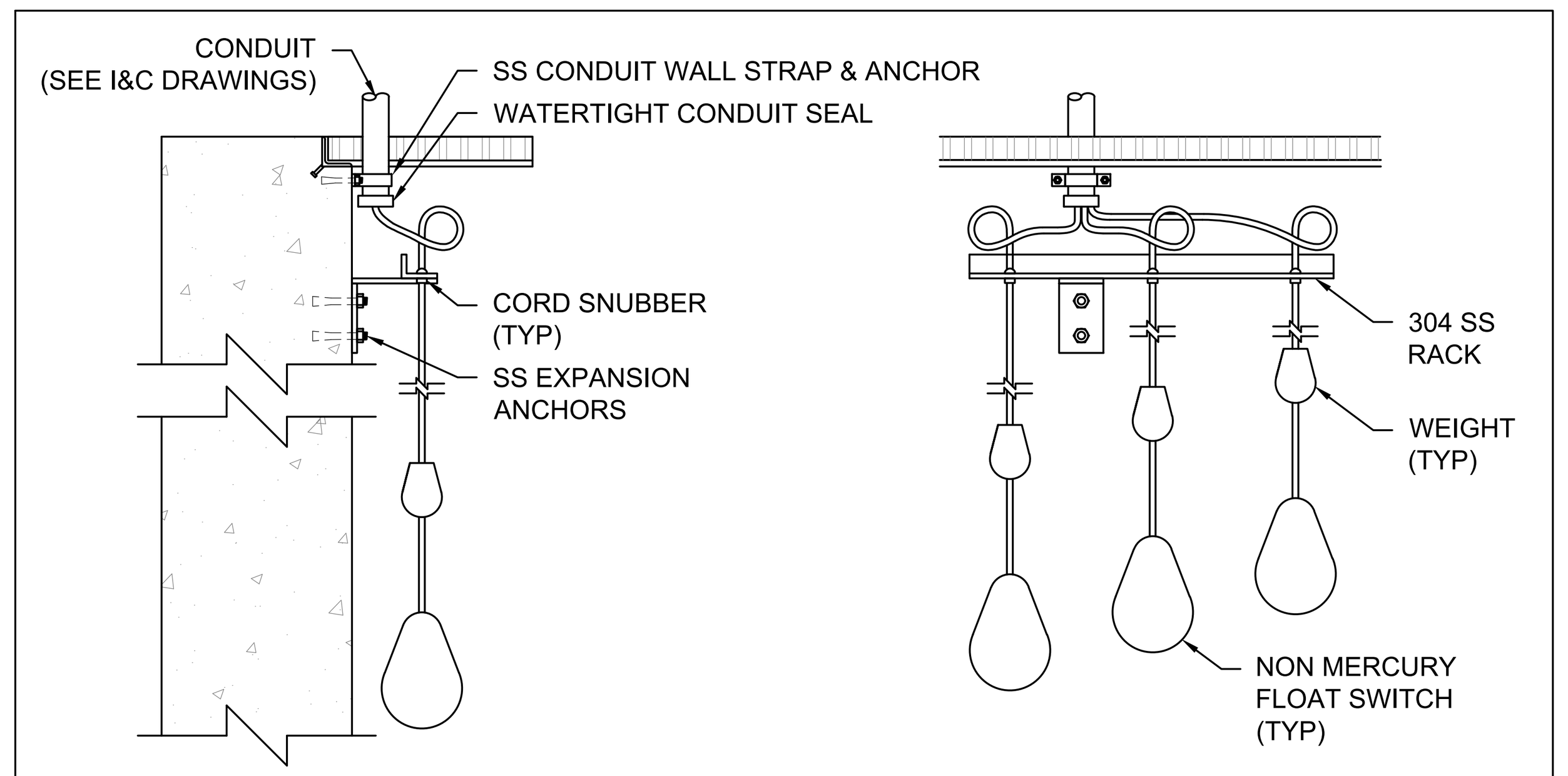
NO SCALE

FALL PROTECTION DETAIL



NO SCALE

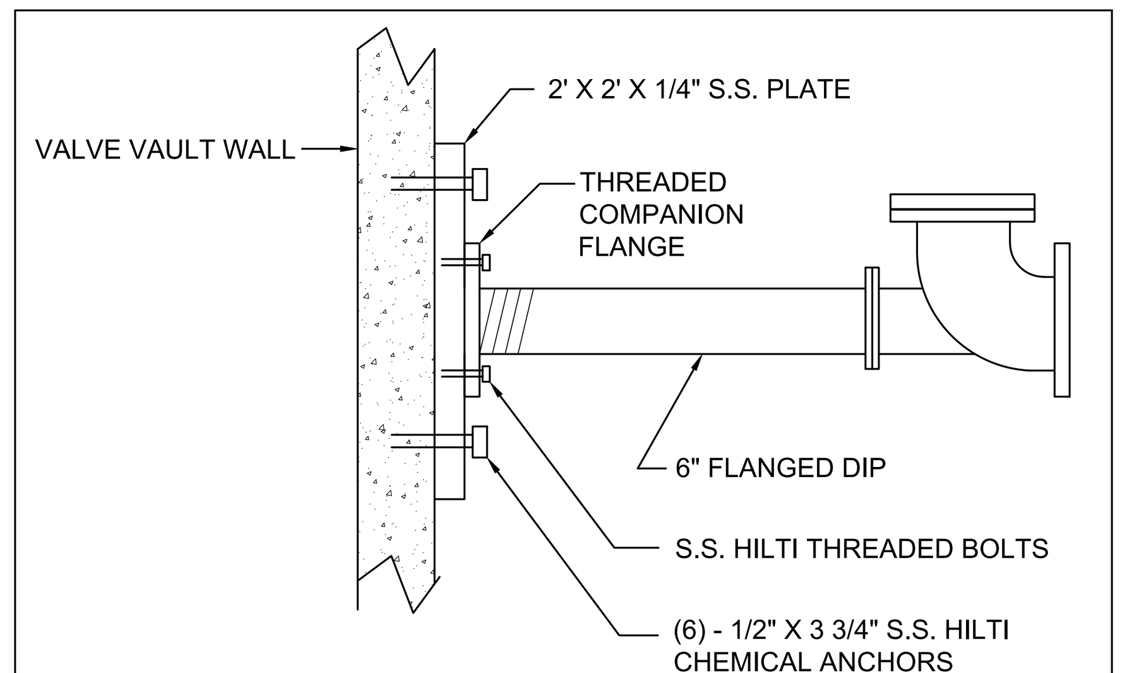
RACK STLYE FLOAT SYSTEM DETAIL



NOTE:
1. FOR QUANTITY OF FLOATS COORDINATE W/ ELECTRICAL AND I&C DRAWINGS.
2. INSTALL ALL COMPONENTS PER MANUFACTURES RECOMMENDATIONS, INCLUDING BUT NOT LIMITED TO SS ANCHORS AND WIRE ROUTING.

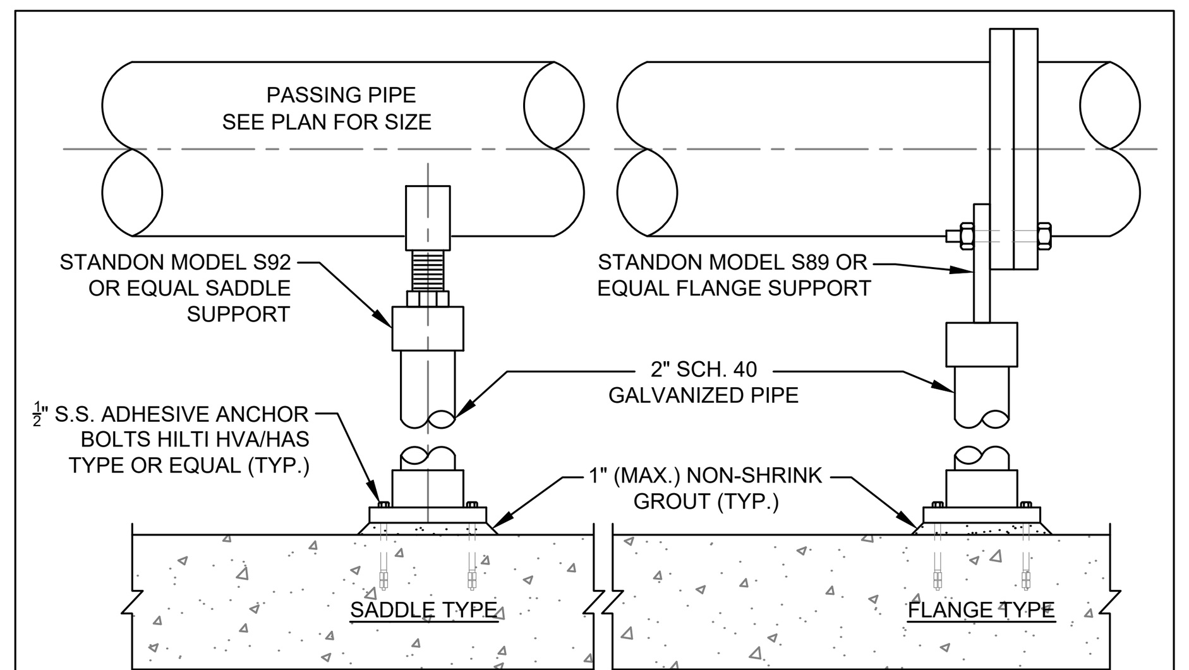
SCALE: N/A

VALVE VAULT PIPE ANCHOR



SCALE: N.T.S.

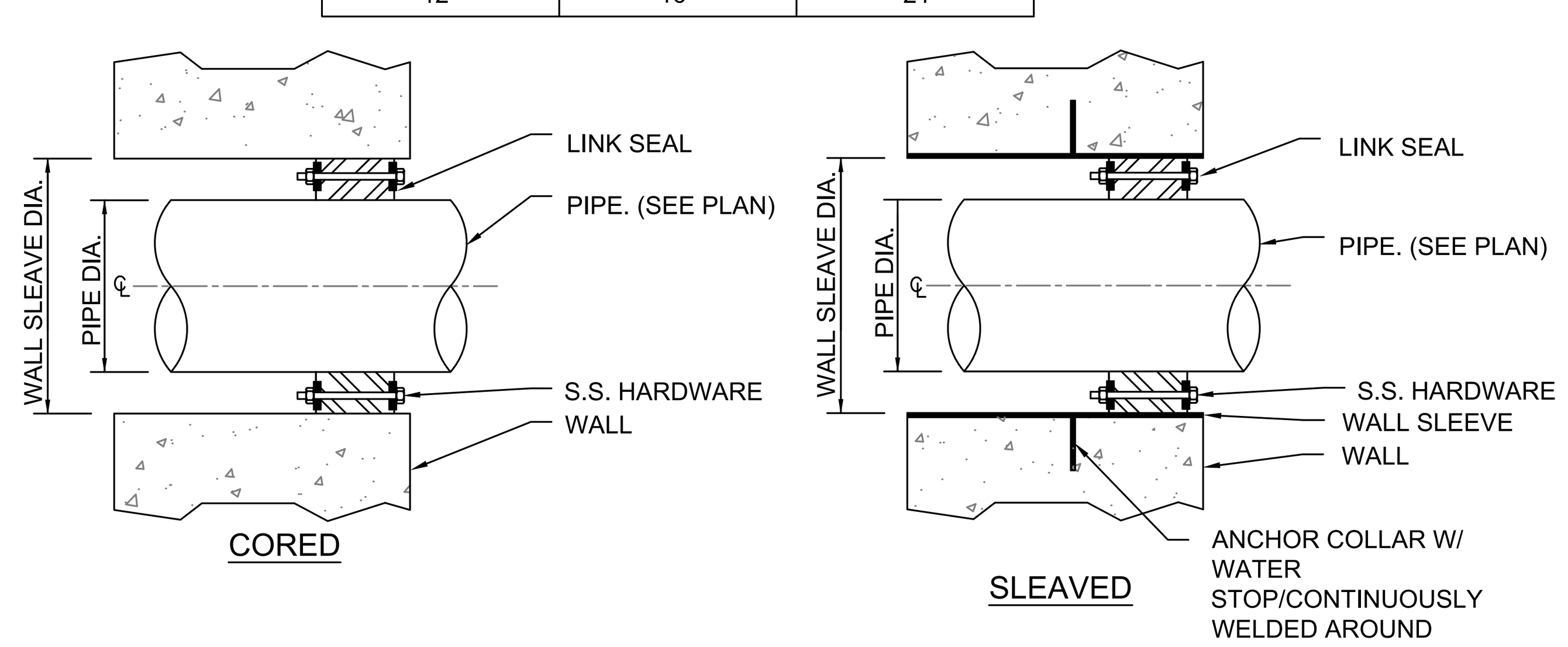
FLOOR PIPE SUPPORT DETAIL



SCALE: N/A

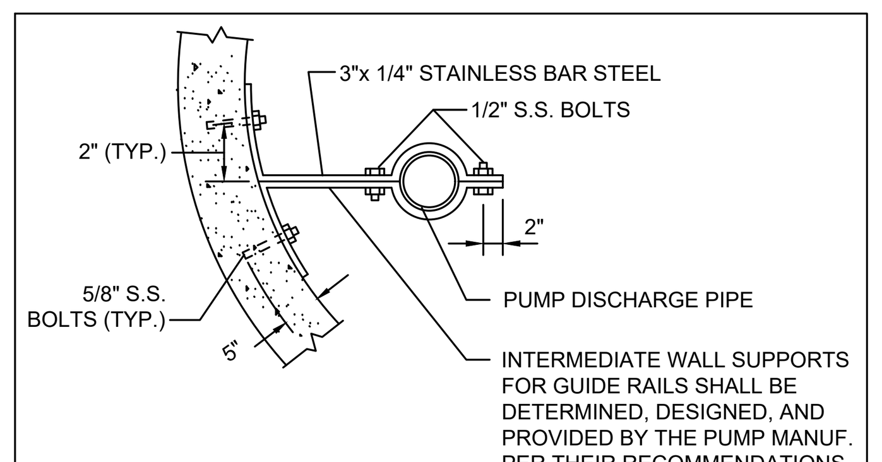
LINK SEAL CHART

D.I.P. DIA.	WALL SLEAVE DIA.	LINKS PER SEAL
4"	8"	7
6"	10"	10
8"	12"	9
10"	14"	10
12"	16"	21



LINK SEAL PIPE PENETRATION

SCALE: N.T.S.



WALL SUPPORT

SCALE: N/A

BID SET

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT #
S20-12

DATE	REVISION

0
SCALE - PLAN:

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ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE. 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

PUMP STATION DETAILS
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

LEWES SUSSEX DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 13532
EXPIRATION DATE: 06-30-2026

DANIEL R. STRING LICENSE No. 13532 DELAWARE PROFESSIONAL ENGINEER

SIGNATURE:

Drafting:	TJG	Check:	RH
Design:	RH	Check:	JRF
SCALE:	AS NOTED		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	PS-2.01		

GENERAL ELECTRICAL NOTES:

1. PROVIDE MATERIALS THAT ARE NEW AND WITHOUT IMPERFECTIONS OR BLEMISHES, AND PROTECTED FROM THE ELEMENTS PRIOR TO CONSTRUCTION.
2. COMPLY WITH OWNER'S USE OF PREMISES AND SAFETY REGULATIONS.
3. COORDINATE LOCATIONS OF ALL ELECTRICAL EQUIPMENT AND ROUTINGS OF ALL ELECTRICAL FEEDERS (AND ASSOCIATED PULLBOXES) AND BRANCH CIRCUITS WITH ALL OTHER UTILITIES (EXISTING AND NEW), WITH STRUCTURE, AND WITH BUILDING ELEMENTS.
4. PROVIDE SEPARATE CONDUITS FOR CONTROL AND POWER CONDUCTORS.
5. ALL WIRING SHALL BE 600V, TYPE THHN-THWN COPPER CONDUCTORS INSTALLED IN CONDUIT UNLESS OTHERWISE NOTED.
6. ALL ELECTRICAL PANELBOARDS, DISCONNECT SWITCHES, ENCLOSURES, BOXES, ETC. SHALL BE PROVIDED WITH PERMANENT LABELS INDICATING THEIR RESPECTIVE POWER SOURCE.
7. UNLESS NOTED OTHERWISE, EVERY CONDUIT CONTAINING 120V RATED WIRING AND GREATER, SHALL CONTAIN A SEPARATE INSULATED GROUND WIRE RATED FOR 600V.
8. PROVIDE SEPARATE UNSHARED NEUTRAL CONDUCTOR(S) FOR ALL BRANCH CIRCUITS UTILIZING A NEUTRAL (I.E. 120V, 277V, ETC). PROVIDE SEPARATE UNSHARED NEUTRAL CONDUCTOR(S) FOR ALL FEEDERS REQUIRING A NEUTRAL (I.E. 1 PHASE-3 WIRE, 3 PHASE-4 WIRE FEEDERS). SHARING OF NEUTRAL CONDUCTORS BETWEEN ANY CIRCUIT (BRANCH OR FEEDER) IS NOT PERMITTED. MULTI-WIRE BRANCH CIRCUITS ARE NOT PERMITTED.
9. PROVIDE STRUCTURAL SUPPORTS AS REQUIRED FOR CEILING, RACK, AND WALL MOUNTED EQUIPMENT.
10. PROVIDE ALL CUTTING, PATCHING, AND ACCESS PANELS REQUIRED FOR ELECTRICAL WORK. REPAIR AND REFINISH DISTURBED FINISH MATERIALS AND OTHER SURFACES TO MATCH ADJACENT UNDISTURBED SURFACES.
11. ALL WORK AND EQUIPMENT SHALL COMPLY WITH ALL AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO THE INTERNATIONAL MECHANICAL CODE, THE LOCAL FIRE MARSHALL, UNDERWRITERS LABORATORY (UL), AND THE NATIONAL ELECTRICAL CODE (NEC). MODIFICATIONS REQUIRED BY THE ABOVE SAID AUTHORITIES TO BRING THE SPACE UNDER CONTRACT UP TO CODE SHALL BE MADE WITHOUT ADDITIONAL CHARGE WHERE CONTRACT DOCUMENT REQUIREMENTS ARE IN EXCESS OF CODE REQUIREMENTS, THE CONTRACT DOCUMENTS SHALL GOVERN. DEVIATIONS FROM THE CONTRACT DOCUMENTS REQUIRED BY THE ABOVE AUTHORITIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
12. CONTRACTOR SHALL VERIFY ALL POINTS OF CONNECTION BEFORE COMMENCING WORK. CONTRACTOR SHALL REMOVE ALL WASTE MATERIALS, DEBRIS, AND RUBBISH FROM THE SITE AND LEGALLY DISPOSE OF IT.
13. A SET OF ELECTRICAL RECORD/COORDINATION DRAWINGS SHALL BE MAINTAINED AT THE JOB SITE. ACTUAL LOCATIONS OF ALL EQUIPMENT, CONDUIT, ETC., AND ALL DEVIATIONS OF THE WORK FROM THAT SHOWN ON THE CONTRACT DOCUMENTS SHALL BE MARKED ON THE RECORD/COORDINATION DRAWINGS. EACH TRADE SHALL REVIEW THE COORDINATION DRAWINGS AND RESOLVE ANY POTENTIAL CONFLICTS WITH OTHER TRADES PRIOR TO INSTALLING ANY PORTION OF THEIR WORK.
14. WORK SHALL BE EXECUTED IN A GOOD WORKMANLIKE MANNER USING MECHANICS SKILLED IN THEIR RESPECTIVE TRADES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES FOR ALL COORDINATION OF WORK UNDER THIS CONTRACT. MAINTAIN THE CONSTRUCTION PREMISES IN A NEAT AND ORDERLY CONDITION AT THE END OF EACH WORKING DAY.
15. CONTRACTOR SHALL MAKE ALL FINAL EQUIPMENT CONNECTIONS AND PROVIDE THE NECESSARY DEVICES, ETC. FOR A COMPLETE AND OPERABLE SYSTEM.
16. ARRANGE CONDUIT, WIRING, EQUIPMENT AND OTHER WORK GENERALLY AS SHOWN, PROVIDING PROPER CLEARANCE AND ACCESS. CAREFULLY EXAMINE ALL CONTRACT DRAWINGS AND COORDINATE THE WORK WITH ALL TRADES. WHERE DEPARTURES ARE PROPOSED BECAUSE OF FIELD CONDITIONS OR OTHER CAUSES, PREPARE AND SUBMIT DETAILED DRAWINGS FOR ACCEPTANCE.
17. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC. ALL OFFSETS, BENDS, FITTINGS AND ACCESSORIES ARE NOT NECESSARILY SHOWN. PROVIDE ALL SUCH ITEMS AS REQUIRED FOR COMPLETE OPERATIONAL SYSTEM.
18. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, PLAN REVIEWS AND CERTIFICATES OF INSPECTION REQUIRED BY THE AUTHORITIES HAVING JURISDICTION OVER THIS WORK.
19. COST INCURRED FROM DAMAGES AS A RESULT OF THE CONTRACTOR'S WORK WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. DAMAGES WILL NOT WARRANT COST OR DELAY CLAIMS.
20. CONTRACTOR SHALL COMPLY WITH LOCAL AND APPLICABLE CODES. IN THE EVENT OF A CONFLICT, THE MOST STRINGENT SHALL GOVERN. SHOULD A CONFLICT ARISE BETWEEN CONSTRUCTION DOCUMENTS AND APPLICABLE CODES, WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE ENFORCING CODE AUTHORITIES.
21. WHERE EVER POSSIBLE, THE CONTRACTOR SHALL OBTAIN ACTUAL ROUGH-IN DRAWINGS FOR THE ACTUAL ITEM OF EQUIPMENT TO BE INSTALLED PRIOR TO ROUGH-IN. THIS SHALL APPLY TO ALL EQUIPMENT, WHETHER IT IS TO BE INSTALLED BY THE CONTRACTOR OR BY OTHERS.
22. ANY EXISTING ELECTRICAL WORK SHOWN ON THESE DRAWINGS IS INDICATED FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE OWNER AND ENGINEER IN NO WAY WARRANT OR GUARANTEE EITHER THE ACCURACY OR COMPLETENESS OF THIS INFORMATION. FINAL LOCATIONS AND QUANTITIES SHALL BE FIELD VERIFIED BY THE CONTRACTOR TO THEIR OWN SATISFACTION.
23. THE CONTRACTOR SHALL VISIT THE SITE AND FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK. ROUTINGS SHOWN ON DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR SHALL VERIFY THAT INTERFERENCES WILL NOT BE ENCOUNTERED. IF ANY DISCREPANCY IS DETECTED, THE CONTRACTOR SHALL BRING IT TO THE OWNER'S ATTENTION WITH RECOMMENDATIONS FOR OWNER'S APPROVAL.
24. PROVIDE 60-INCHES SLACK WIRE AT EACH OF ALL SPARE INSTRUMENTATION WIRES.
25. CONDUIT CONTAINING ANALOG SIGNALS SHALL BE LOCATED 6-INCHES (MINIMUM) AWAY FROM CONDUIT CONTAINING POWER CONDUCTORS OR DISCRETE SIGNALS.
26. ALL CONDUIT SHALL BE 3/4-INCH IN SIZE UNLESS OTHERWISE NOTED .
27. SYSTEM INTEGRATOR SHALL VERIFY ALL APPROVED EQUIPMENT AND TERMINATIONS PRIOR TO INSTALLATION. THE SYSTEM INTEGRATOR SHALL VERIFY ALL WIRE COUNTS AND INCLUDE SPARES AS SHOWN HERE IN AND ASSEMBLE INSTRUMENT RISERS FOR CONSTRUCTION. THE RISERS SHALL BE SUBMITTED FOR APPROVAL AS A SHOP DRAWING.
28. ALL RELAYS SHALL HAVE LED INDICATION OF STATUS.
29. ALL FUSES AND BREAKERS SHALL BE SIZED IN ACCORDANCE WITH NEC.
30. SEE SPECIFICATIONS FOR WRITTEN CONTROL DESCRIPTIONS.

ELECTRICAL, INSTRUMENTATION, AND CONTROL SCOPE

ELECTRICAL

1. INSTALL PUMP CONTROL EQUIPMENT.
2. INSTALL ALL INSTRUMENTATION DEVICES, EQUIPMENT, AND CONTROL PANELS.
3. FURNISH AND INSTALL ALL CONTROL POWER AND SIGNAL CONDUCTORS AND CONDUIT.
4. TERMINATE ALL CONTROL POWER SIGNAL CONDUCTORS IN ACCORDANCE WITH SYSTEM INTEGRATION DRAWINGS.
5. FURNISH AND INSTALL ALL GROUNDING SYSTEMS.

SYSTEM INTEGRATOR

1. FURNISH THE FOLLOWING INSTRUMENTATION:
   - 1.1. FLOATS
   - 1.2. LEVEL INSTRUMENTATION
   - 1.3. PUMP CONTROLS WITH UPS
   - 1.4. PUMP STARTERS
2. COORDINATE INTEGRATION OF THE FOLLOWING:
   - 2.1. PUMP SENSORS AND MONITORING EQUIPMENT
   - 2.2. PUMP STARTERS
   - 2.3. STANDBY POWER EQUIPMENT
   - 2.4. ALARMS MONITORING SYSTEM
3. CONTROL PANEL
   - 3.1. FURNISH COMPLETE PUMP CONTROL PANEL INCLUDING ALL EQUIPMENT AND DEVICES SHOW IN DRAWINGS.
4. SYSTEMS INTEGRATION:
   - 4.1. THE SYSTEMS INTEGRATOR SHALL CHAIR ONE (1) CONTROLS DESIGN REVIEW MEETING TO COORDINATE CONTROL SYSTEMS, DEVICES, AND PROGRAMMING REQUIRED BY THE OWNER.
   - 4.2. THE SYSTEMS INTEGRATOR SHALL REVIEW AND APPROVE ALL PUMPING STATION EQUIPMENT TO ENSURE SYSTEMS INTEGRATION. THE SYSTEMS INTEGRATOR SHALL PROVIDE LOOP DIAGRAMS, ECD'S, AND TERMINAL SCHEDULES FOR ALL CONTROL POWER AND SIGNAL I/O SHOWN AND DESCRIBED HEREIN. THE SYSTEMS INTEGRATOR SHALL REVIEW AND APPROVE ALL INSTRUMENTATION AND CONTROLS POWER AND SIGNAL TERMINATIONS.
   - 4.3. THE SYSTEMS INTEGRATOR SHALL PROVIDE THREE (3) DAYS FOR EQUIPMENT POWER AND SIGNAL COORDINATION WITH THE CONTRACTOR.
   - 4.4. THE SYSTEMS INTEGRATOR SHALL PROVIDE THREE (3) DAYS OF INSPECTION/STARTUP AND TESTING TERMED AS PRELIMINARY AND PRE-FINAL STARTUP AND TESTING ACTIVITIES.
   - 4.5. THE SYSTEMS INTEGRATOR SHALL PROVIDE A 14 CONSECUTIVE DAY OPERATIONS TEST WITHOUT FAILURE.
   - 4.6. THE SYSTEMS INTEGRATOR SHALL COORDINATE STATION STARTUP AND TESTING, FURNISH A PROCEDURES PROTOCOL DOCUMENT, AND DEMONSTRATE PROPER STATION OPERATIONS INCLUDING LOCAL AND REMOTE INDICATIONS.

NOTE: FIELD PULL BOXES AND JUNCTION PANELS INCLUDING TERMINAL BOARDS SHALL BE FURNISHED AS REQUIRED TO COMPLETE THE WIRING TERMINATIONS AS SHOWN AND DESCRIBED HEREIN.

5. PROJECT CLOSE-OUT.
   - 5.1. TRAINING
   - 5.2. AS-BUILT DATA
   - 5.3. FINAL O&M MANUALS

(ISA) INSTRUMENT IDENTIFICATION SCHEDULE

	FIRST LETTER		SUCCEEDING LETTER		
	VARIABLE	MODIFIER	PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		AUTOMATIC
B	BREAKER		USER'S CHOICE	CLOSE OR STOP	BYPASS/REVERSE
C	COMMUNICATIONS			CONTROL	
D	DENSITY	DIFFERENTIAL		OPEN OR START	
E	VOLTAGE (EMF)		PRIMARY ELEMENT	SENSOR	
F	FLOW RATE	RATIO	FAIL	FAIL	FAIL/INCOMPLETE
G	GAUGING		GLASS		LOCAL/MANUAL/HAND
H	HAND				HIGH OR OPEN
I	CURRENT		INDICATE		INTERMEDIATE
J	POWER	SCAN			
K	TIME	TIME RATE		CONTROL STATION	
L	LEVEL		LIGHT		LOW OR CLOSE
M	MOTOR	MOMENTARY		MOTOR	MIDDLE
N	STATUS		INPUT	FORWARD	ON OR OPERATE
O				OFF	OVERLOAD
P	PRESSURE	PNEUMATIC	POINT (TEST)	POSITION	
Q	QUALITY OR EVENT	TOTALIZE		EMERGENCY/ABNORMAL	
R	RADIOACTIVITY		RECORD OR PRINT	REMOTE	RUN/FORWARD
S	SPEED OR FREQUENCY	SUM	SWITCH	SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VARIABLE OR VISCOSITY			VALVE OR DAMPER	VFD/VALVE
W	WEIGHT OR FORCE	TORQUE	WELL		UNCLASSIFIED
X	MOD. LIGHT OR VALVE		UNCLASSIFIED	UNCLASSIFIED	RESET
Y	INTERLOCK			RELAY OR COMPUTE	
Z	POSITION			DRIVE OR ACTUATOR	

INSTRUMENT EXAMPLES

LI = LEVEL INDICATE
MR = MOTOR RUNNING
ZS = POSITION SWITCH

P&ID NUMBERING SEQUENCE

100 SERIES = PROCESS
200 SERIES = POWER MONITORING

NOTE:
THIS IS A STANDARD LEGEND AND ABBREVIATIONS SHEET. NOT ALL THE INFORMATION SHOWN ON THIS LEGEND IS USED ON THIS PROJECT.

ABBREVIATIONS

A	= AMPERE	HH	= HAND HOLE	PH, Φ	= PHASE
AC	= ALTERNATING CURRENT	HMI	= HUMAN MACHINE INTERFACE	PLC	= PROGRAMMABLE LOGIC CONTROLLER
ACT	= ABOVE COUNTER TOP	HP	= HORSEPOWER	PNL	= PANEL
AF	= AMPERE FRAME	HPS	= HIGH PRESSURE SODIUM	PM	= PHASE MONITOR
AFF	= ABOVE FINISHED FLOOR	IS	= INTRINSICALLY SAFE	PRI	= PRIMARY
AFG	= ABOVE FINISHED GRADE	ISB	= INTRINSICALLY SAFE BARRIER	PSI	= POUNDS PER SQUARE INCH
AHF	= ACTIVE HARMONIC FILTER	ISR	= INTRINSICALLY SAFE RELAY	PS	= POWER SUPPLY
AIC	= AMPERE INTERRUPTING CAPACITY	JB	= JUNCTION BOX	PVC	= POLYVINYL CHLORIDE
AT	= AMPERE TRIP	JH	= JACKET HEATER	PWR	= POWER
ATS	= AUTOMATIC TRANSFER SWITCH	KCMIL	= THOUSAND CIRCULAR MILS	RCT	= REPEAT CYCLE TIMER
AUTO	= AUTOMATIC	KV	= KILOVOLT	RECEPT	= RECEPTACLE
AWG	= AMERICAN WIRE GAUGE	KVA	= KILOVOLT AMPERE	RGS	= RIGID GALVANIZED STEEL
BC	= BATTERY CHARGER	KW	= KILOWATT	RTU	= REMOTE TELEMETRY UNIT
BLDG	= BUILDING	LBC	= LOAD BANK CONNECTION	RVSS	= REDUCED VOLTAGE SOLID STATE
C	= CONDUIT	LCP	= LOCAL CONTROL PANEL	SCADA	= SUPERVISORY CONTROL AND DATA ACQUISITION
CB	= CIRCUIT BREAKER	LED	= LIGHT EMITTING DIODE	SF	= SUPPLY FAN
CKT	= CIRCUIT	LRA	= LOCKER ROTOR AMPERES	SPD	= SURGE PROTECTION DEVICE
CMU	= CONCRETE MASONRY UNIT	MAX	= MAXIMUM	SS, SST	= STAINLESS STEEL
CP	= CONTROL PANEL	MCA	= MAXIMUM CIRCUIT AMPACITY	STP	= SHIELDED TWISTED PAIR
CPT	= CONTROL POWER TRANSFORMER	MCB	= MAIN CIRCUIT BREAKER	TB	= TERMINATION BOX
CT	= CURRENT TRANSDUCER	MCC	= MOTOR CONTROL CENTER	TYP	= TYPICAL
DC	= DIRECT CURRENT	MCP	= MAIN CIRCUIT PROTECTOR	UG	= UNDERGROUND
DIV	= DIVISION	MH	= MANHOLE	UL	= UNDERWRITERS LABORATORIES
DP	= DISTRIBUTION PANEL	MIN	= MINIMUM	UON	= UNLESS OTHERWISE NOTED
DS	= DISCONNECT SWITCH	MISC	= MISCELLANEOUS	UPS	= UNINTERRUPTIBLE POWER SUPPLY
DTP	= DEMARCATION TERMINAL PANEL	MOD	= MOTOR OPERATED DAMPER	UTP	= UNSHIELDED TWISTED PAIR
DWG	= DRAWING	MTS	= MANUAL TRANSFER SWITCH	V	= VOLT
ECD	= ELECTRICAL CONTROL DIAGRAM	N	= NEUTRAL	VA	= VOLT-AMPERES
EF	= EXHAUST FAN	NEC	= NATIONAL ELECTRICAL CODE	VAC	= VOLTS / ALTERNATING CURRENT
ELEC	= ELECTRICAL	NEMA	= NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION	VCP	= VENTILATION CONTROL PANEL
ETM	= ELAPSED TIME METER	NFPA	= NATIONAL FIRE PROTECTION ASSOCIATION	VDC	= VOLTS / DIRECT CURRENT
EX.	= EXISTING	NTS	= NOT TO SCALE	VFD	= VARIABLE FREQUENCY DRIVE
FLA	= FULL LOAD AMPERES	OIT	= OPERATOR INTERFACE TERMINAL	W	= WIRE
FRP	= FIBERGLASS REINFORCED POLYESTER	OL	= OVERLOAD	WP	= WEATHER PROOF
FT	= FEET	P&ID	= PROCESS AND INSTRUMENTATION DIAGRAM	XDCR	= TRANSDUCER
FVNR	= FULL VOLTAGE NON-REVERSING	P	= POLE	XFMR	= TRANSFORMER
G, GND	= GROUND	PB	= PULL BOX	XMTR	= TRANSMITTER
GALV	= GALVANIZED	PCP	= PUMP CONTROL PANEL	XP	= EXPLOSION PROOF
GFCI, GFIC	= GROUND FAULT CURRENT INTERRUPTER	PFFB	= PROVIDED FOR FUTURE BREAKER		

BID SET

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # 520-12

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REVISION | DATE

ELECTRICAL GENERAL NOTES & ABBREV.
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2
SUSSEX COUNTY, DELAWARE
LEWES

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE
LICENSE NO: 26121
EXPIRATION DATE: 06-30-2026

SETH D. RANCK LICENSE NO. 26121 PROFESSIONAL ENGINEER STATE OF DELAWARE
9/29/2025

SIGNATURE

Drafting:	MHD	Check:	SDR
Design:	MHD	Check:	SDR
SCALE:	N/A		
DATE:	09-29-2025		
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SHEET:	E-0.01		

PLAN SYMBOLS

- UTILITY POLE
- CT METERING
- 20A, 1 POLE, 120V MANUAL MOTOR STARTER (TOGGLE SWITCH TYPE) WITH THERMAL OVERLOAD PROTECTION
- TRANSFER SWITCH, TYPE AS NOTED
- EQUIPMENT (SURFACE MOUNTED AND RECESSED)
- CONDUIT ROUTING
- CONDUIT ROUTING: UNDERGROUND
- FLEXIBLE CONDUIT
- CONDUIT STUB-OUT WITH CAP
- PNL-CKT — HOMERUN TO PANELBOARD, NOTATION INDICATES PANEL AND CIRCUIT
- RACEWAY-CONDUIT TURNED DOWN
- RACEWAY-CONDUIT TURNED UP
- ABOVE GRADE / BELOW GRADE — RACEWAY-CHANGE IN ELEVATION
- PLUG AND CORD CONNECTION
- E — UNDERGROUND CONDUIT ROUTING
- OHE — OVERHEAD ELECTRICAL UTILITY COMPANY ROUTING
- X — DUPLEX RECEPTACLE, X INDICATES TYPE:
  - GFCI = GROUND FAULT CURRENT INTERRUPTER
  - WP = WEATHER PROOF COVER
  - XP = EXPLOSION PROOF
- $ — SINGLE POLE TOGGLE SWITCH
- $3 — 3-WAY TOGGLE SWITCH
- GROUND ROD
- GROUND ROD WITH TEST WELL
- ELECTRICAL DISCONNECT, NON-FUSED
- ELECTRICAL DISCONNECT, FUSED
- COMBINATION MOTOR STARTER
- BOND TO REINFORCING STEEL

HAND SWITCHES

- HS 123 (XXX) — SELECTOR SWITCH OR PUSH BUTTON (MAINTAINED CONTACTS)
- HK 123 (XXX) — HAND CONTROL STATION
- HMS 123 (XXX) — MOMENTARY SELECTOR SWITCH

HAND SWITCH-NOTES (XXX)

ACK	= ACKNOWLEDGE PUSHBUTTON
AT	= ALARM TEST
CL	= CLOSE
ES	= EMERGENCY STOP
HOA	= HAND-OFF-AUTOMATIC
LO	= LOCKOUT STOP
LR	= LOCAL-REMOTE
MA	= MANUAL-AUTOMATIC
OP	= OPEN
PA	= PERSONAL ALARM
POT	= POTENTIOMETER
RES	= RESET
SEL	= SELECTOR
SP	= STOP
ST	= START

ELECTRICAL CONTROL DIAGRAM SYMBOLS (ECD)

- INCOMING LINE
- OUTGOING LINE
- CIRCUIT BREAKER
- (A) AMMETER
- (V) VOLTMETER
- POWER TRANSFORMER
- GROUND (GND)
- F — FUSE
- DISCONNECT SWITCH
- ETM — ELAPSED TIME METER
- RCT — REPEAT CYCLE TIMER
- SPD — SURGE PROTECTION DEVICE
- INTERFACE - CONTACTS N.O.
- H O A, XOO, OOX — HAND-OFF AUTOMATIC SWITCH
- A B XO — 2 POSITION SWITCH X INDICATES POSITION
- MANUAL MOTOR STARTER, SINGLE-POLE
- OVERCURRENT ELEMENT THERMOSTAT
- F — FUSED DISCONNECT
- POWER DISTRIBUTION BLOCK
- ENCLOSURE FAN
- PANEL HEATER
- PM — PHASE MONITOR
- RESISTOR
- CAPACITOR
- LINE REACTOR
- SOLENOID
- RHEOSTAT
- REMOTE CONTACT
- MOD — MOTOR OPERATED DAMPER
- PLC OUTPUT (RTU OUTPUT)
- (M) STARTER OR CONTACT COIL - DESIGNATION AS INDICATED
- (T1) TIMER RELAY
- (XXX) CONTROL RELAY (SEQUENTIAL)
- NON PUSH TO TEST INDICATING LAMP - X INDICATES LENS COLOR:
  - R = RED (RUNNING) B = BLUE (POSITION)
  - G = GREEN (STOPPED) Y = YELLOW (POSITION)
  - W = WHITE (POWER) A = AMBER (ALARM)
- PUSH TO TEST INDICATING LAMP - X INDICATES LENS COLOR:
  - R = RED (RUNNING) B = BLUE (POSITION)
  - G = GREEN (STOPPED) Y = YELLOW (POSITION)
  - W = WHITE (POWER) A = AMBER (ALARM)
- ALARM STROBE; X INDICATES LENS COLOR
  - R = RED (RUNNING) B = BLUE (POSITION)
  - G = GREEN (STOPPED) Y = YELLOW (POSITION)
  - W = WHITE (POWER) A = AMBER (ALARM)

EQUIPMENT SYMBOLS

- AIR RELEASE VALVE
- ALARM LIGHT - PLAN / SECTION
- ANTI-SYPHON VALVE
- BALL CHECK VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CAPPED FLUSHING CONNECTION (F.C.)
- CENTRIFUGAL PUMP
- CHECK VALVE
- DELTA-WYE POWER TRANSFORMER
- DIRECTIONAL RADIO ANTENNA (YAGI)
- DIRECTIONAL MICROWAVE ANTENNA
- FLOAT SWITCH
- FLOW METER (MAGNETIC)
- GATE VALVE
- GENERATOR
- GLOBE VALVE
- HT-X — HEAT TRACE
- MOTOR
- MOTOR ACTUATOR
- MOTOR STARTER, FULL VOLTAGE NON-REVERSING
- MULTI-DIRECTIONAL RADIO ANTENNA (OMNI)
- NEEDLE VALVE
- PLUG VALVE
- PRESSURE GAUGE
- PRESSURE REGULATING VALVE
- PRESSURE RELIEF VALVE
- REDUCER OR INCREASER
- SOLENOID VALVE
- SOLENOID VALVE (3-WAY)
- SUPPLY/EXHAUST FAN
- TEES (4 WAY/3 WAY)
- TWO-WAY-THREE PORT VALVE, OR THREE WAY VALVE
- UNION

ELECTRICAL CONTROL DIAGRAM LEGEND (ECD):

- REMOTE
- AT PLC CABINET
- AT LOCAL PANEL
- AT MOTOR CONTROL CENTER
- PANEL BOARD
- AT SYSTEM CONTROL PANEL
- PANEL WIREWAY TERMINATIONS
- WIRING CONNECTIONS
- REMOTE TERMINATIONS
- PANEL CONNECTIONS
- REMOTE CONNECTIONS
- POWER SUPPLY CONNECTION

N.O. | N.C.

- RELAY CONTACTS
- MOMENTARY PUSHBUTTON
- MAINTAINED PUSH-PULL BUTTON
- PRESSURE SWITCH
- LEVEL SWITCH
- TORQUE SWITCH
- LIMIT SWITCH
- PULL CORD SWITCH
- TIMED CONTACT
- FLOW SWITCH
- X — THERMOSTAT; X INDICATES FUNCTION (CAN BE COMBINATION):
  - F - FREEZE PROTECTION
  - T - TEMPERATURE PROTECTION
  - H - HEAT RELIEF
  - V - NORMAL VENTILATION

LEGEND:

- EXISTING
- PROPOSED
- COAX CABLE
- ETHERNET COMMUNICATIONS
- ELECTRICAL POWER CONNECTIONS
- ANALOG COMMUNICATIONS
- DISCRETE COMMUNICATIONS
- NEMA BOUNDARY
- SERIAL COMMUNICATIONS
- G — GROUNDING CABLE
- FO — FIBER OPTIC COMMUNICATIONS
- P — PNEUMATIC SIGNAL / SERVICE

CONDUIT LEGEND:

A#14-B (C)

- A - QUANTITY OF CONDUCTORS
- B - SIZE OF CONDUIT (LARGER THAN 3/4-INCH)
- C - QUANTITY OF SPARE CONDUCTORS INCLUDED IN TOTAL COUNT (ITEM-A)

EQUIPMENT LEGEND

ABC-X
- SEQUENTIAL NUMBER
- IDENTIFICATION

- T_H = THERMOSTAT HEAT RELIEF
- T_V = THERMOSTAT NORMAL VENTILATION
- T_F = FREEZESTAT

NOTE:
THIS IS A STANDARD LEGEND AND ABBREVIATIONS SHEET. NOT ALL THE INFORMATION SHOWN ON THIS LEGEND IS USED ON THIS PROJECT.

NEMA RATING OF ENCLOSURES

NEMA ENCLOSURE TYPES FOR MISCELLANEOUS ELECTRICAL BOXES, PANELS, DISCONNECT SWITCHES AND ALL OTHER ELECTRICAL EQUIPMENT ENCLOSURES NOT SPECIFICALLY INDICATED SHALL BE RATED IN ACCORDANCE WITH THE FOLLOWING:

- EXTERIOR APPLICATIONS: NEMA 4X STAINLESS STEEL
- INTERIOR, DRY APPLICATIONS: NEMA 12
- DAMP, WET, OR CORROSIVE APPLICATIONS: NEMA 4X STAINLESS STEEL
- HAZARDOUS LOCATIONS: NEMA 7

MOUNTING HEIGHT SCHEDULE

INTERIOR RECEPTACLES	18" ABOVE FINISHED FLOOR
EXTERIOR RECEPTACLES	24" ABOVE FINISHED GRADE
LIGHT SWITCHES	46" ABOVE FINISHED FLOOR
PANELBOARDS AND CONTROL PANELS	TOP OF PANEL TO BE 72" ABOVE FINISHED FLOOR
LIGHT FIXTURES	SEE LIGHT FIXTURE SCHEDULE

- UNLESS INDICATED OTHERWISE, DEVICE MOUNTING HEIGHTS ARE TO CENTER LINE OF DEVICE

BID SET

REVISION | DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # S20-12

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE. 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

ELECTRICAL GENERAL LEGEND & SYMBOLS
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

LEWES SUSSEX DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 26121
EXPIRATION DATE: 06-30-2026

SETH D. RANG LICENSE No. 26121 DELAWARE PROFESSIONAL ENGINEER
9/29/2025

SIGNATURE:

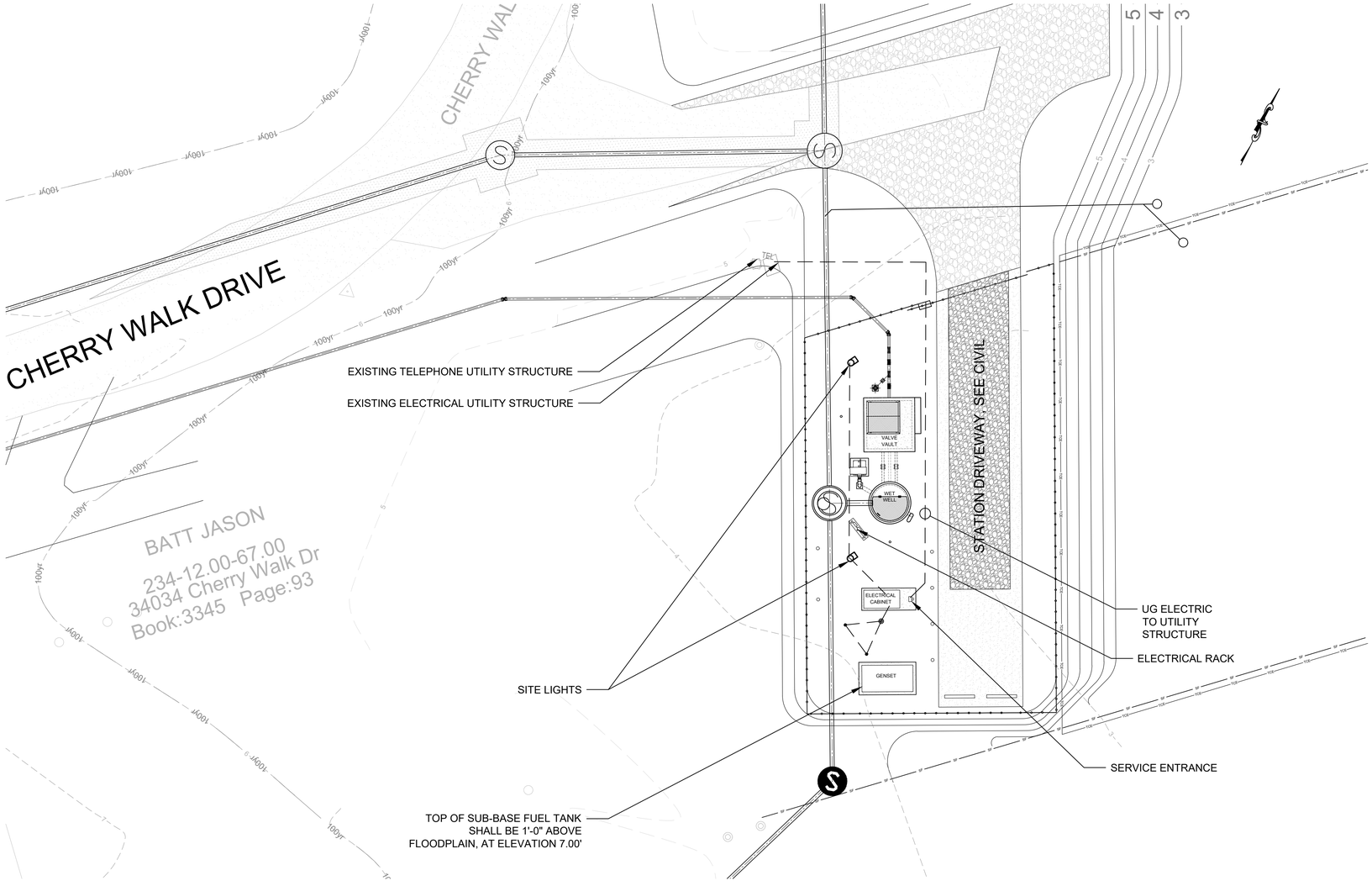
Drafting:	MHD	Check:	SDR
Design:	MHD	Check:	SDR
SCALE:	NONE		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	E-0.02		

GENERAL ELECTRICAL SITE NOTES:

1. MAINTAIN A MINIMUM VERTICAL CLEARANCE OF 12 INCHES BETWEEN UNDERGROUND ROUTINGS THAT CROSS EACH OTHER.
2. OTHER EXISTING AND PROPOSED UNDERGROUND ROUTINGS ARE SHOWN ON ELECTRICAL SITE PLAN FOR COORDINATION PURPOSES.
3. REFER TO CIVIL AND PROCESS DRAWINGS FOR DIMENSIONS AND ADDITIONAL SITE DETAILS.
4. THE CONTRACTOR SHALL KEEP THE TRENCHES AND EXCAVATION DE-WATERED AT ALL TIMES. EXCAVATED MATERIAL OR TRENCH BOTTOM MATERIAL RENDERED UNSUITABLE FOR BEDDING OR REUSE DUE TO IMPROPER DE-WATERING OPERATIONS SHALL BE REPLACED WITH SELECT BACKFILL MATERIALS BY THE CONTRACTOR AT NO ADDITIONAL COST OF THE OWNER.
5. AN UL LISTED SILICON SEALANT SHALL BE APPLIED TO ALL JOINT CONNECTIONS AT UNDERGROUND CONDUIT ROUTINGS FOR WATER TIGHT SEAL.

ELECTRICAL UTILITY NOTES:

1. CONDUIT SWEEP BENDS SHALL HAVE A MINIMUM RADIUS OF 36 INCHES.
2. 3/16" 3-STRAND POLYPROPYLENE PULL CABLES SHALL BE INSTALLED IN CONDUITS FOR EXTENSION OF UTILITY COMPANY INSTALLED FEEDERS.
3. UTILITY COMPANY SHALL INSTALL FEEDERS AND MAKE ALL FINAL CONNECTIONS TO SERVICE METER.
4. ALL WORK AND MATERIALS RELATED TO INCOMING ELECTRICAL SERVICE SHALL BE COMPLIANT WITH ELECTRIC UTILITY COMPANY (DELAWARE ELECTRIC CO-OP) STANDARDS AND SPECIFICATIONS.
5. PRIOR TO ANY CONSTRUCTION FOR THE UNDERGROUND ELECTRICAL SERVICE AND METER, CONTRACTOR SHALL FIELD COORDINATE WITH ELECTRICAL UTILITY COMPANY (DELAWARE ELECTRIC CO-OP).



1 E-1.01 ELECTRICAL SITE PLAN
SCALE: 1" = 10'-0"

BID SET

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # S20-12

DATE: REVISION

SCALE - PLAN: 1"= 10'-0"

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614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 731-7057 Website: www.kci.com

ELECTRICAL SITE PLAN
JOY BEACH SEWER COLLECTION SYSTEM PHASE 2

DELAWARE
SUSSEX
LEWES

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 20122
EXPIRATION DATE: 06-30-2026

SETH D. HANDY LICENSE NO. 20122 A DELAWARE PROFESSIONAL ENGINEER

9/29/2025

SIGNATURE:

Drafting:	MHD	Check:	SDR
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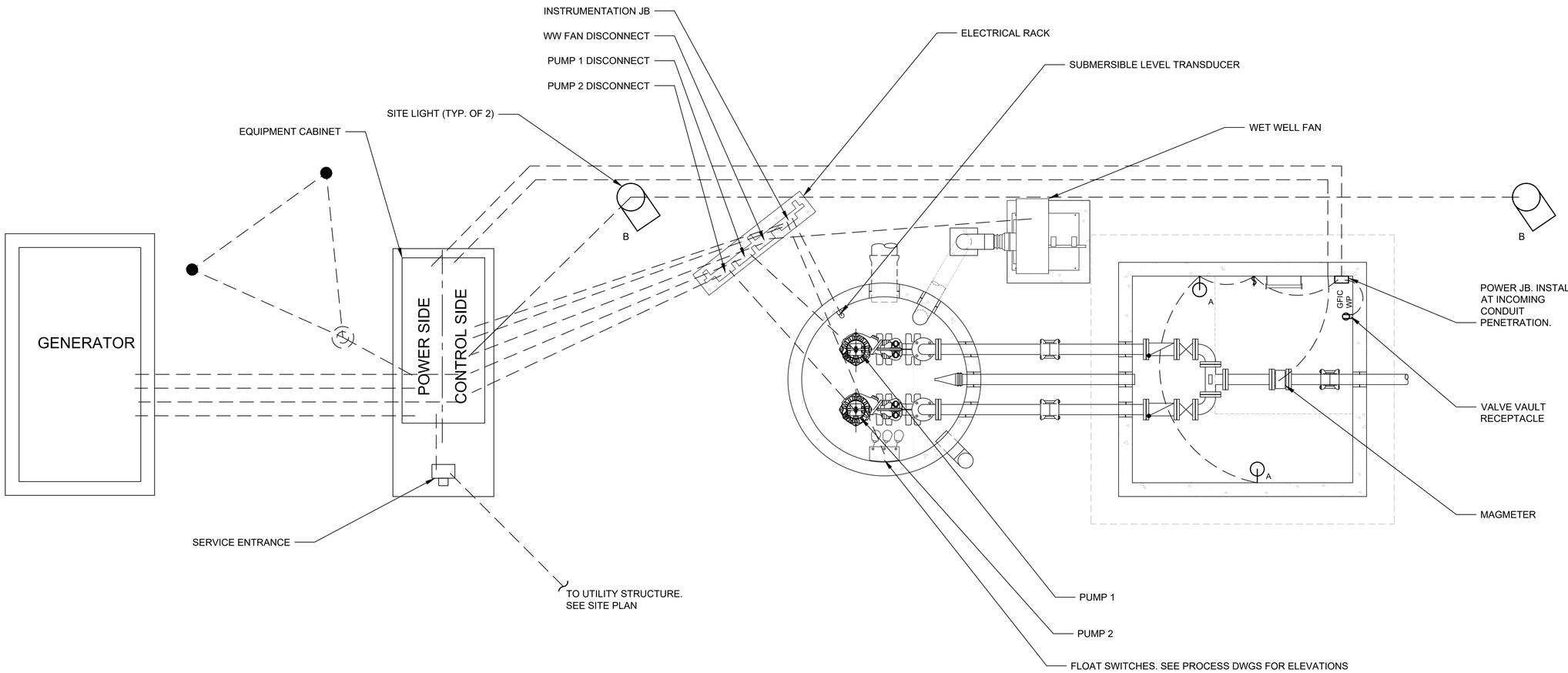
SCALE:	1"= 10'-0"		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	E-1.01		

By: Matthew Driscoll PRINTED: 9/29/2025 4:43 PM
DWG: S:\Projects\Sussex County\13157731.S20-12 E-Series-Phase-2.dwg



1 ELECTRICAL PLAN

SCALE: 1/2" = 1'-0"

NOTE:
SEE RISER DIAGRAMS FOR WIRE AND CONDUIT SIZES.

LIGHTING SCHEDULE

SYMBOL	DESCTIPTION	LAMPS	BALLAST	MOUNTING	VOLTAGE	BASIS OF DESIGN
B	POLE MOUNTED, SEALED LIGHT FIXTURE WITH DAMP LOCATION RATING, ROUND POLE MOUNT, 4000K TEMP, 70CRI, 26,000 LUMENS, 180 WATT.	LED	DRIVER	POLE MOUNTED, 20'-0" AFG	120VAC	LITHONIA LIGHTING: DSX2-LED-P2-40K-70CRI-T1S-MVOLT-RPA
A	WALL MOUNTED LIGHT FIXTURE WITH DAMP LOCATION RATING, 5000K TEMP, 80CRI, 1,400 LUMENS, 25 WATT. WITH FROSTED GLASS LENS ENCLOSURE.	LED	DRIVER	WALL MOUNTED, 6'-0" AFF	120VAC	HUBBELL LIGHTING: VTH-5K-G-U-W-2-G-GR

BID SET

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # S20-12

DATE | REVISION

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614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 731-7807 Website: www.kci.com

SCALE: PLAN: 1/2" = 1'-0"

ELECTRICAL PLAN
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

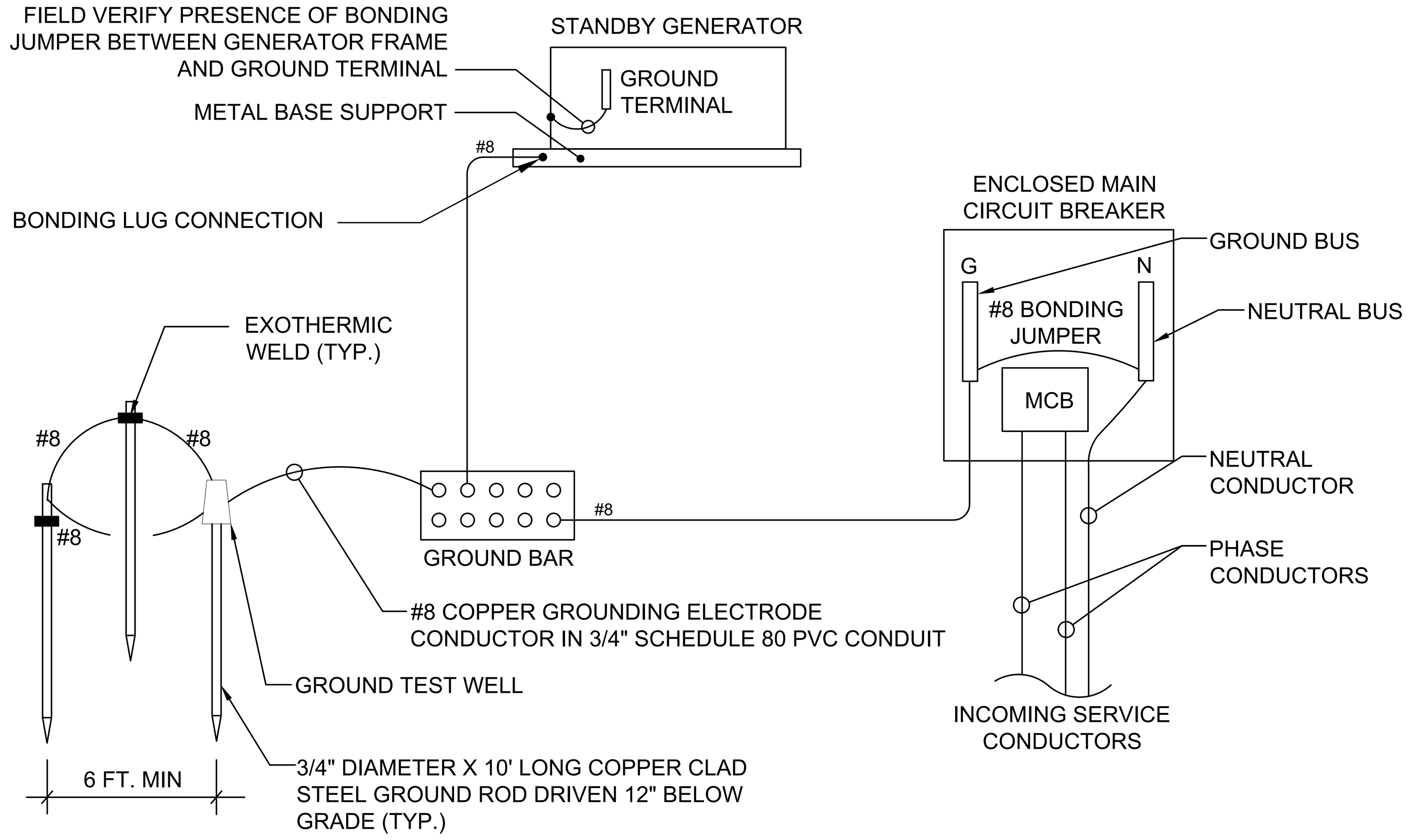
SUSSEX | LEWES | DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 20121
EXPIRATION DATE: 06-30-2026

SCOTT D. RYNDAK — LICENSE — NO. 20121 — PROFESSIONAL ENGINEER — DELAWARE

SIGNATURE: 9/29/2025

Drafting:	MHD	Check:	SDR
Design:	MHD	Check:	SDR
SCALE:	1/2" = 1'-0"		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	E-1.02		

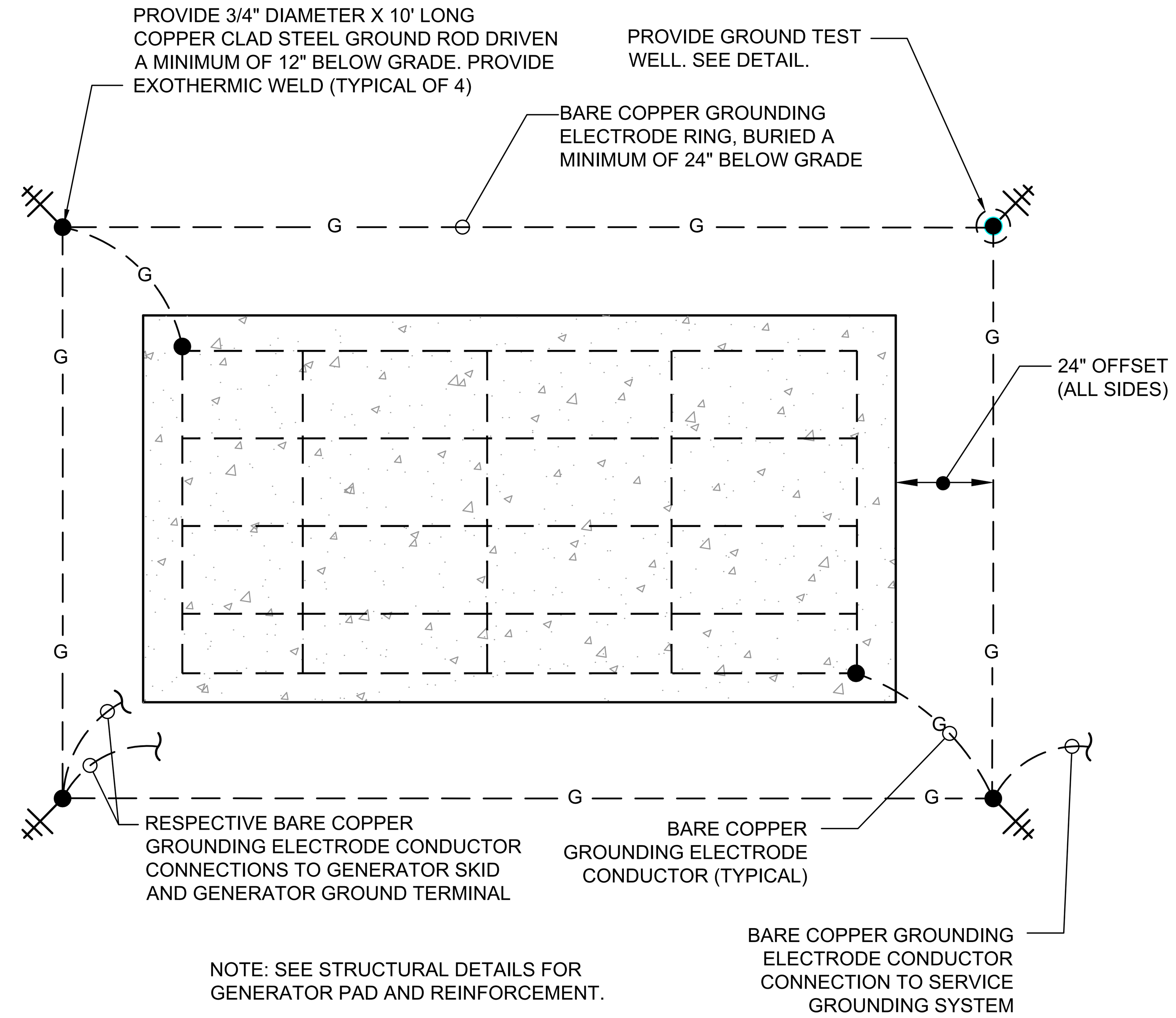


GENERAL GROUNDING NOTES:

1. ALL GROUNDING ELECTRODES THAT ARE PRESENT AT THE BUILDING SHALL BE BONDED TOGETHER TO FORM THE GROUNDING ELECTRODE SYSTEM. GROUND PER NATIONAL ELECTRICAL CODE (NEC) SECTION 250.5 PART III.
2. GROUNDING ELECTRODE CONDUCTORS SHALL NOT BE LESS THAN REQUIRED BY NEC TABLE 250.66.
3. TEST GROUND SYSTEM RESISTANCE AND VERIFY LESS THAN 5 OHMS.
4. ALL GROUNDING AND BONDING CONDUCTORS SHALL BE COPPER.

1 SERVICE ENTRANCE GROUNDING DETAIL

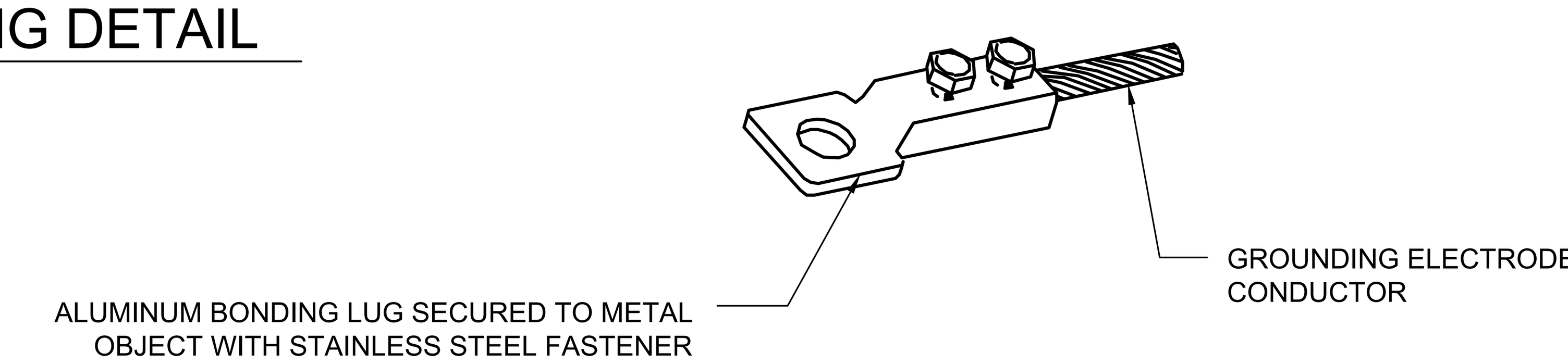
SCALE: NONE



NOTE: SEE STRUCTURAL DETAILS FOR GENERATOR PAD AND REINFORCEMENT.

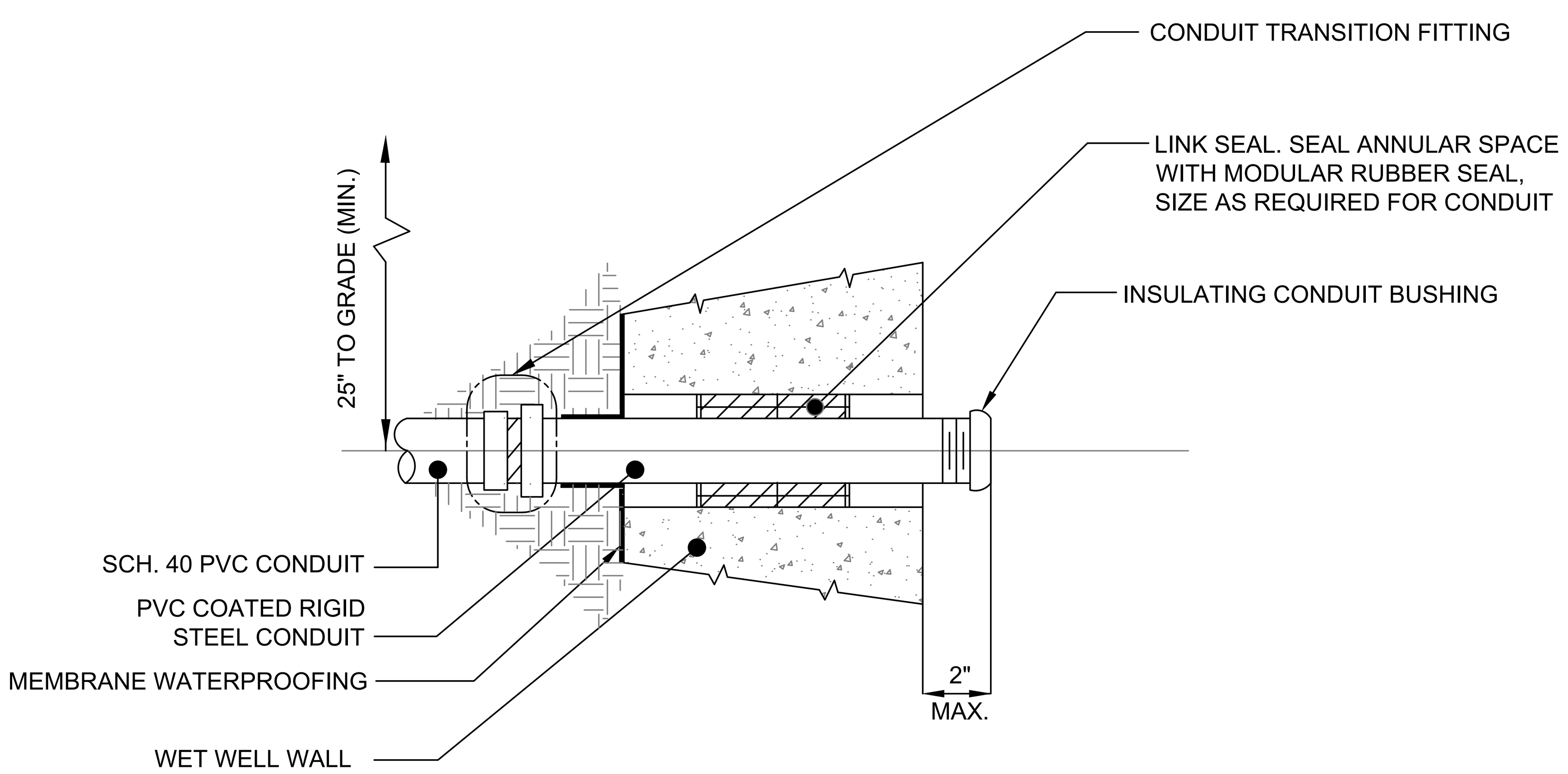
2 TYPICAL GENERATOR PAD GROUND RING DETAIL

SCALE: NONE



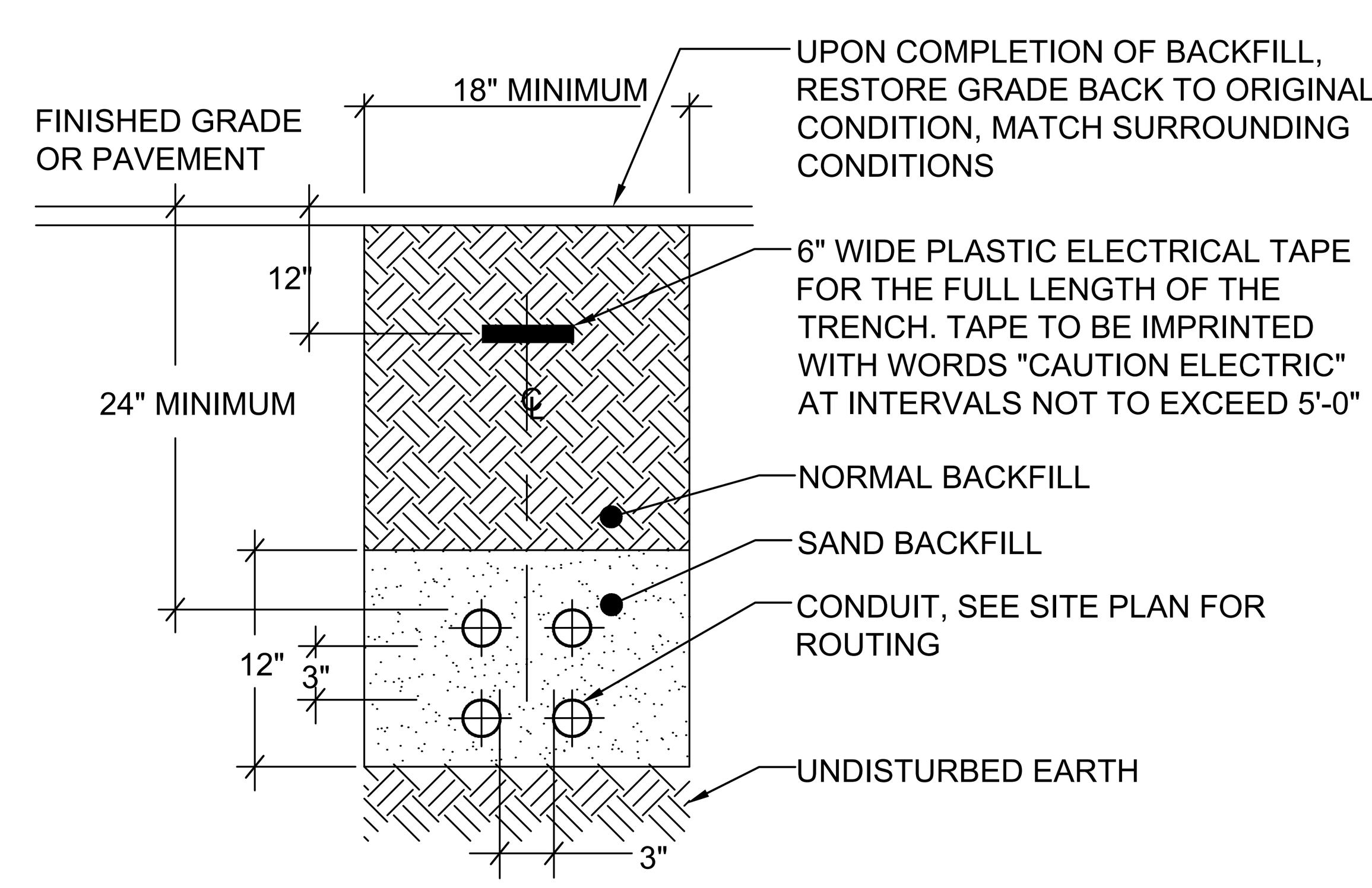
3 TYPICAL BONDING LUG CONNECTION DETAIL

SCALE: NONE



4 TYPICAL CONDUIT WET WELL PENETRATION DETAIL

SCALE: NONE

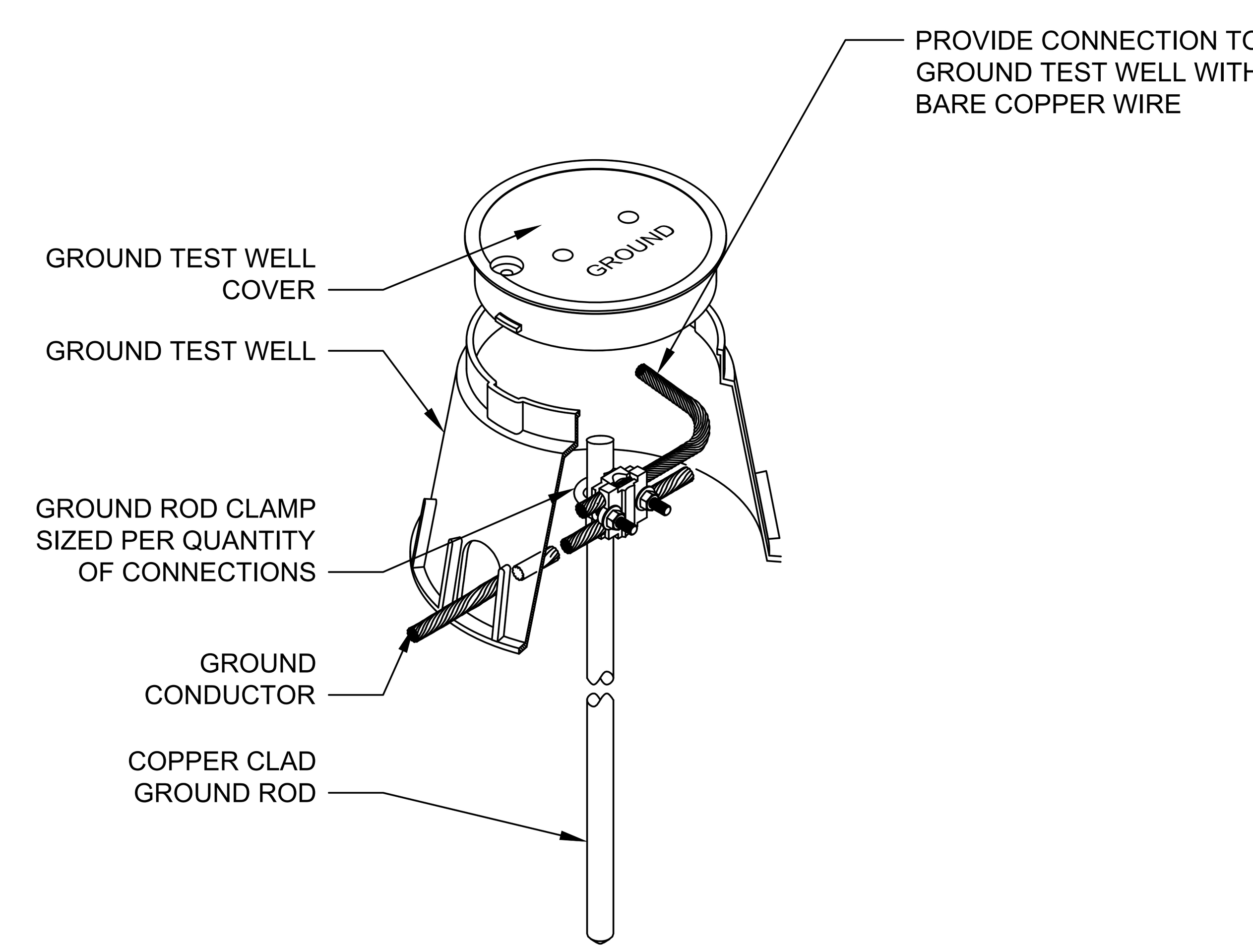


5 TYPICAL 4-WAY DIRECT BURIED CONDUITS DETAIL

SCALE: NONE

(TYP. SPACING AND CONSTRUCTION FOR ANY QUANTITY OF CONDUITS)

NOTE: TRANSITION TO PVC COATED RGS CONDUIT WHERE CONDUIT IS ROUTED UNDER VEHICLE LOAD BEARING AREA



6 TYPICAL GROUND TEST WELL DETAIL

SCALE: NONE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # S20-12

REVISION | DATE

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

ELECTRICAL DETAILS I
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2
LEWES SUSSEX DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.

9/29/2025

SIGNATURE:

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SCALE:	N/A		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	E-2.01		

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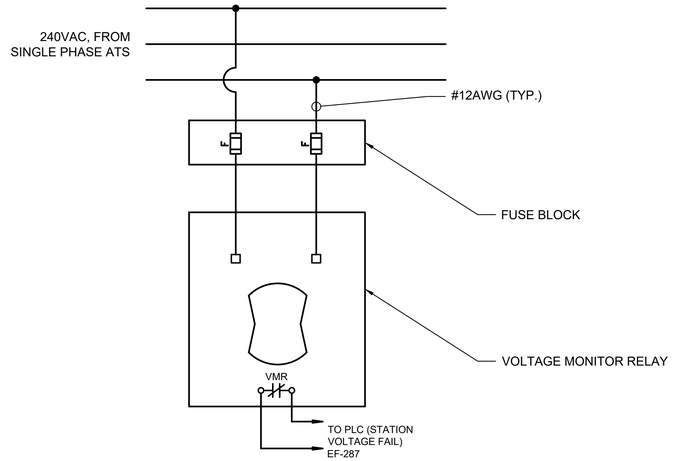
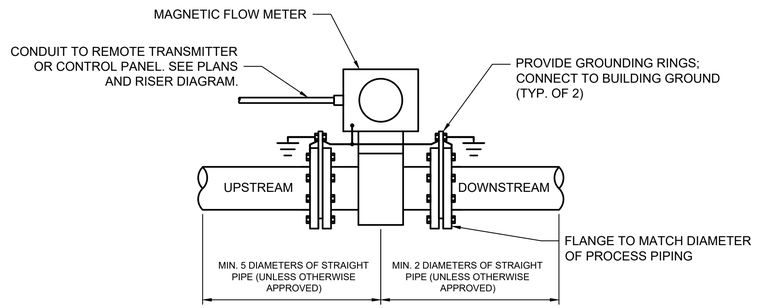


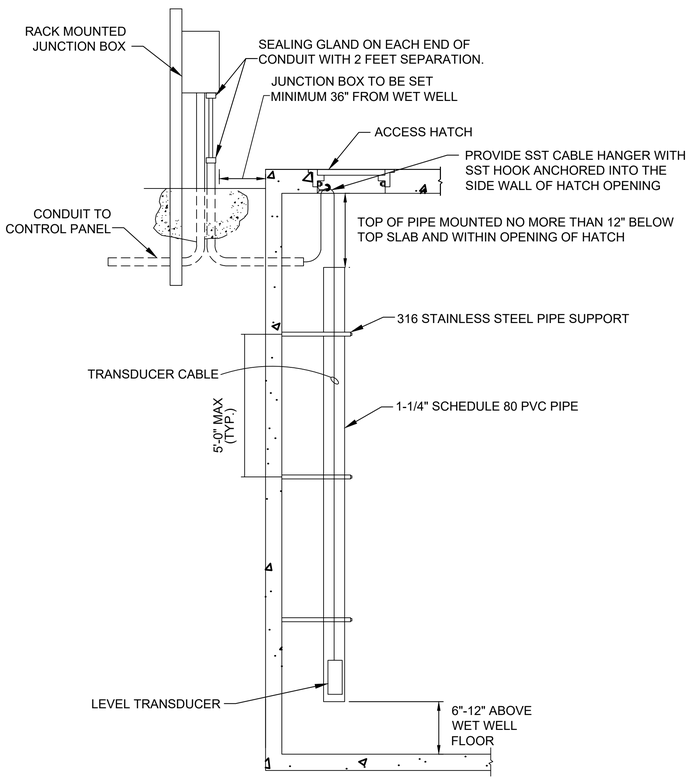
1 VOLTAGE MONITOR RELAY

SCALE: NONE



2 TYPICAL MAGNETIC FLOW METER MOUNTING DETAIL

SCALE: NONE

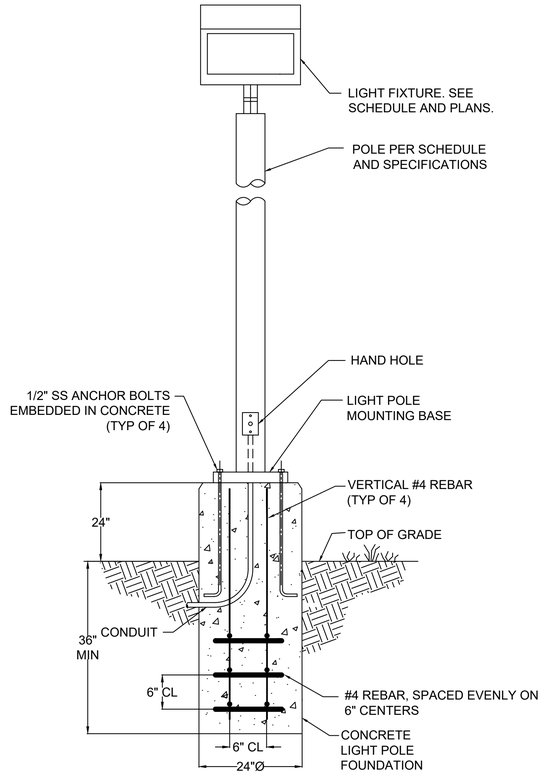


NOTES:

1. DETAIL IS TYPICAL OF TWO LEVEL TRANSDUCERS INSTALLED. PROVIDE ALL EQUIPMENT CONDUIT AND WIRE FOR TWO SEPARATE LEVEL TRANSDUCER SYSTEMS.
2. LEVEL TRANSDUCER MOUNTING PIPE AND CONDUIT ENTRY SHALL BE LOCATED MAXIMUM 18" FROM WET WELL LADDER, STEPS, OR HATCH.

4 TYPICAL LEVEL TRANSDUCER DETAIL

SCALE: NONE



NOTE:

1. POLE SHAFT SHALL CONSIST OF SQUARE EXTRUDED METAL WITH FINISH TO MATCH FIXTURE. DESIGN POLES, INCLUDING HANDHOLES AND LUMINARIES, FOR A MINIMUM YIELD SAFETY FACTOR OF 1.5 WHEN SUBJECTED TO A SUSTAINED WIND VELOCITY OF 100 MPH AND WIND GUSTS OF 130 MPH. IN ADDITION, LIMIT THE DEFLECTION TO 5% OF POLE LENGTH UNDER THESE CONDITIONS. EQUIP WITH HANDHOLE OF SUFFICIENT SIZE TO PERMIT THE PULLING AND SPLICING OF WIRES AND GROUNDING OF POLE. PROVIDE A GROUNDING LUG ACCESSIBLE THROUGH THE HANDHOLE TO ACCEPT A 1/2 INCH DIAMETER COPPER CONDUCTOR. EQUIP HANDHOLE WITH A COVER.

3 TYPICAL LIGHT FIXTURE - YARD MOUNTING DETAIL

SCALE: NONE

BID SET

REVISION

DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # S20-12

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-0999 FAX: (302) 731-7057 Website: www.kci.com

ELECTRICAL DETAILS II
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

SUSSEX
DELAWARE
LEWES

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 26151
EXPIRATION DATE: 06-30-2026

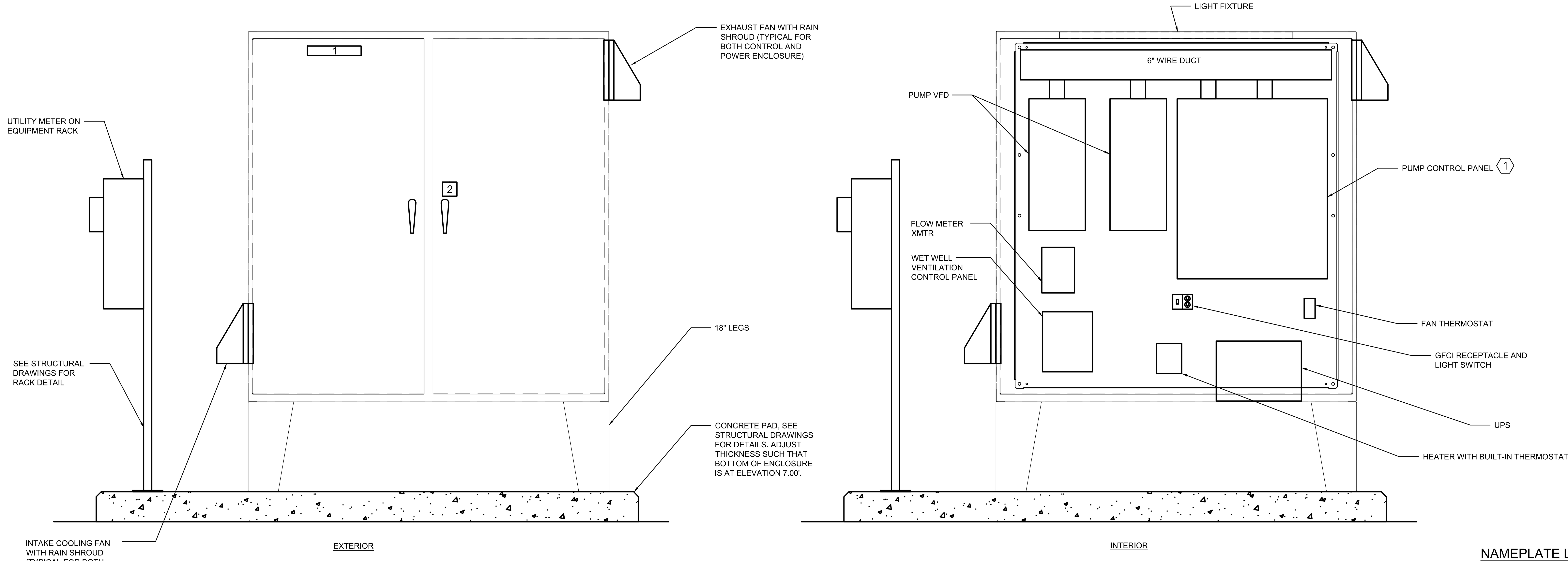
STEVEN D. RYNKO
LICENSE
26151
DELAWARE
PROFESSIONAL ENGINEER

9/29/2025

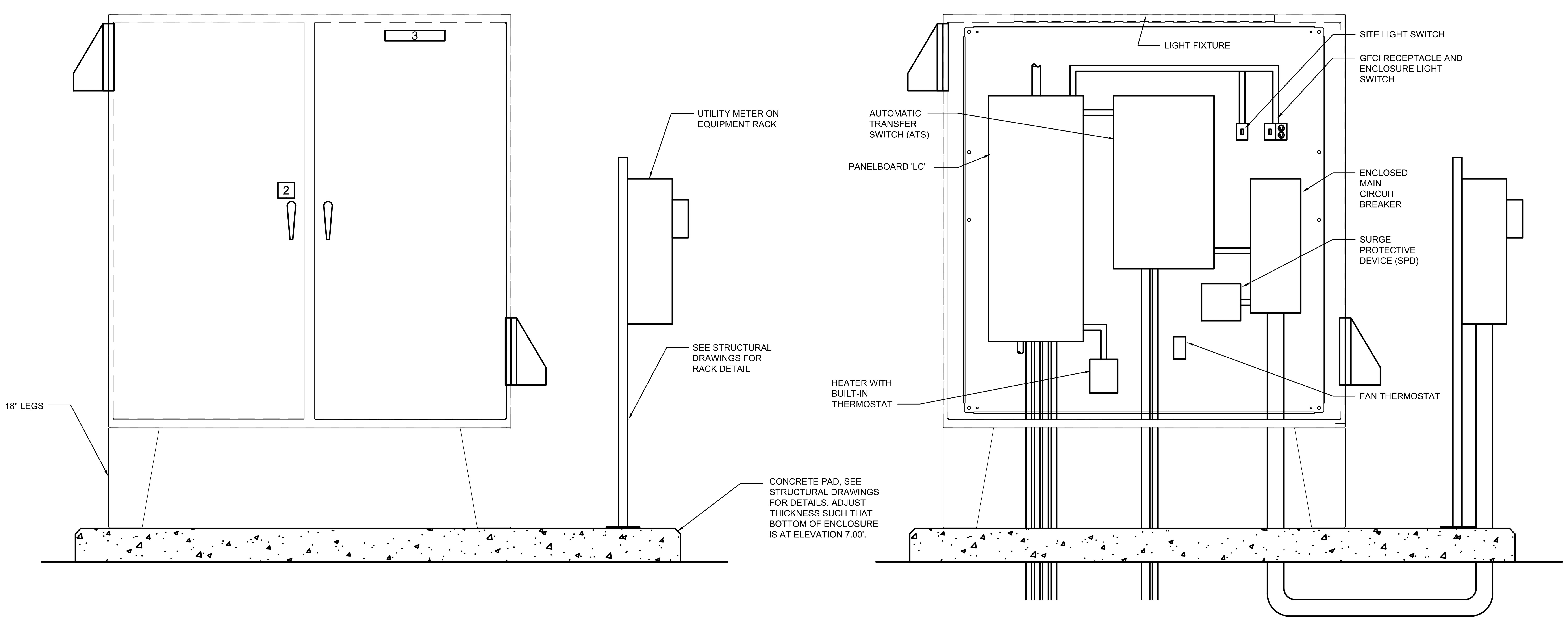
SIGNATURE

Drafting:	MHD	Check:	SDR
Design:	MHD	Check:	SDR
SCALE:	N/A		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	E-2.02		

BY: Matthew Dilsaver [PRINTED: 9/29/2025 4:43 PM]
[J:\Civil\Projects\Sussex\Joy Beach\13157731.S20-12.E-Series-Phase-2\dwg\E-2.02 - Electrical Details II.dwg]



1 PUMP STATION EQUIPMENT CABINET - CONTROL SIDE
SCALE: NONE



2 PUMP STATION EQUIPMENT CABINET - POWER SIDE
SCALE: NONE

GENERAL NOTES:

1. PROVIDE INSULATED BUSHINGS ON ALL CONDUIT ENDS. ALL CONDUIT PENETRATIONS INTO THE ENCLOSURE ARE TO BE SEALED WEATHERTIGHT.
2. LABEL APPROPRIATE CONDUITS WITHIN PANEL AS BEING INTRINSICALLY SAFE CIRCUITS. MAINTAIN CLEARANCES BETWEEN INTRINSICALLY SAFE CIRCUITS AND OTHER WIRING PER NEC.
3. NOT ALL CONDUITS ARE SHOWN, FOR CLARITY. AS PART OF THE SHOP DRAWING REVIEW PROCESS, CONTRACTOR IS TO SHOW ALL PROPOSED CONDUIT PENETRATIONS, ROUTINGS, MATERIAL, AND SIZE.
4. EQUIPMENT PLACEMENTS SHOWN ARE NOT FINAL. AS PART OF THE SHOP DRAWING REVIEW PROCESS, CONTRACTOR IS TO DETERMINE PLACEMENTS THAT COORDINATE WITH WORK BEING DONE AND CONDUIT PATHS. EQUIPMENT REQUIRING OPERATOR INTERFACE (SCREENS, LIGHTS, SWITCHES, ECT.) SHALL BE MOUNTED NO HIGHER THAN 6'-6" ABOVE FINAL GRADE.

SHEET KEY NOTES:

1. REFER TO PUMP CONTROL PANEL DRAWINGS FOR LAYOUT INFORMATION.

NAMEPLATE LEGEND:

1	CONTROL SIDE
2	WARNING: POWER IS FED FROM MULTIPLE SOURCES. TURN OFF ALL INCOMING POWER PRIOR TO WORKING ON EQUIPMENT.
3	POWER SIDE

REVISION | DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT #
S20-12

KCI TECHNOLOGIES, INC.
ENGINEERS • PLANNERS • SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

ELECTRICAL DETAILS III
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2
LEWES SUSSEX DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 26121
EXPIRATION DATE: 06-30-2026

9/29/2025

SIGNATURE:

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SCALE:	N/A		
DATE:	09-29-2025		
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SHEET:	E-2.03		

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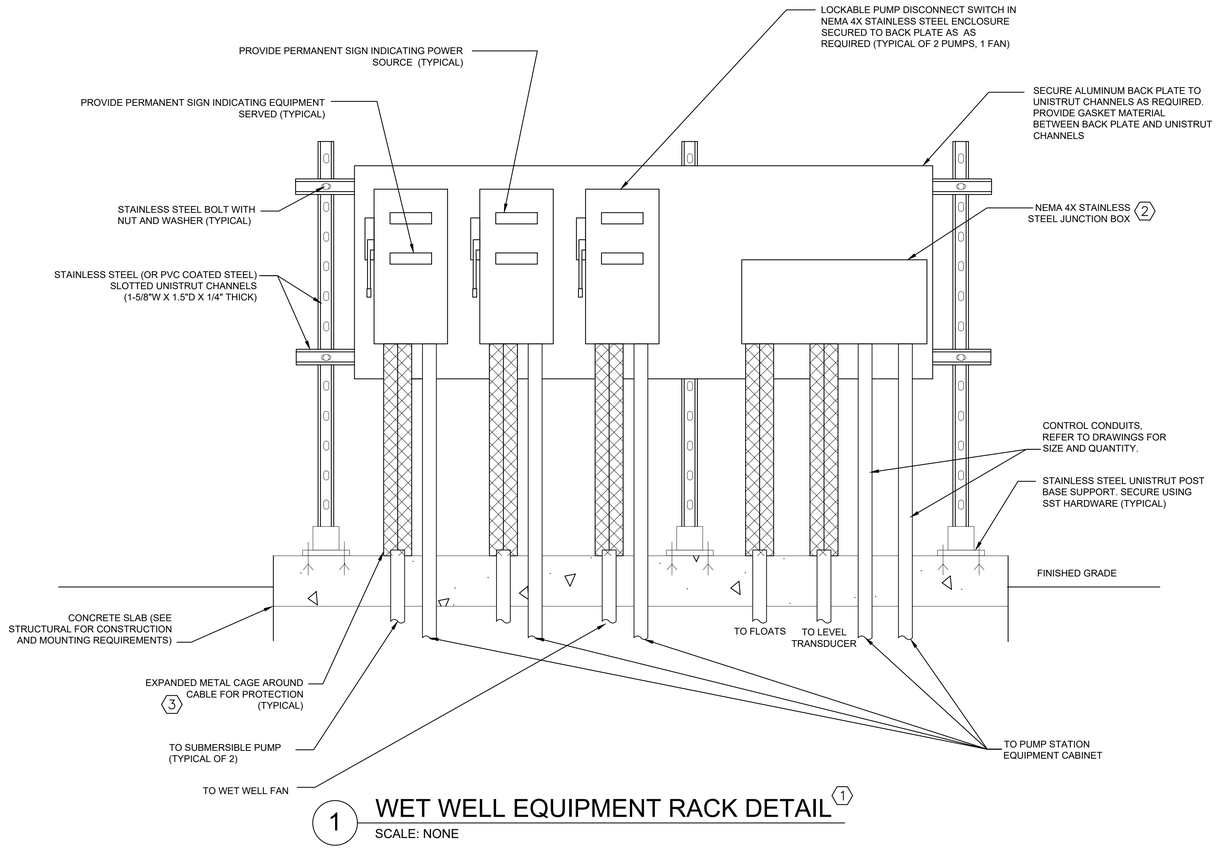

1 WET WELL EQUIPMENT RACK DETAIL 1

SCALE: NONE

CONSTRUCTION NOTES:

1. BOTTOM OF DISCONNECTS OR OTHER PANELS TO BE A MINIMUM OF 18" ABOVE THE TOP SLAB. TOP OF RACK TO BE MAXIMUM OF 60", BOTTOM OF RACK TO BE AT MINIMUM OF ELEVATION 7.00'.
2. JUNCTION BOX TO BE PARTITIONED TO SEPARATE DISCRETE AND ANALOG SIGNAL WIRING.
3. PROVIDE A WATER-STOP SEALANT AROUND PUMP CABLE TO SEAL OFF CONDUIT OPENING. CONDUIT STUB-UP AND PUMP CABLE TO BE SURROUNDED BY AN EXPANDED METAL COVERING TO PROVIDE PROTECTION. COVERING TO BE STAINLESS STEEL AND MOUNTED USING STAINLESS STEEL HARDWARE.

BID SET

REVISION	DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700

SUSSEX COUNTY CONTRACT # S20-12

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ELECTRICAL DETAILS IV
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2

SUSSEX COUNTY, DELAWARE

LEWES

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE
LICENSE NO. 20124
EXPIRATION DATE 06-30-2026

SETH D. RANDALL LICENSE NO. 20124 PROFESSIONAL ENGINEER DELAWARE

9/29/2025

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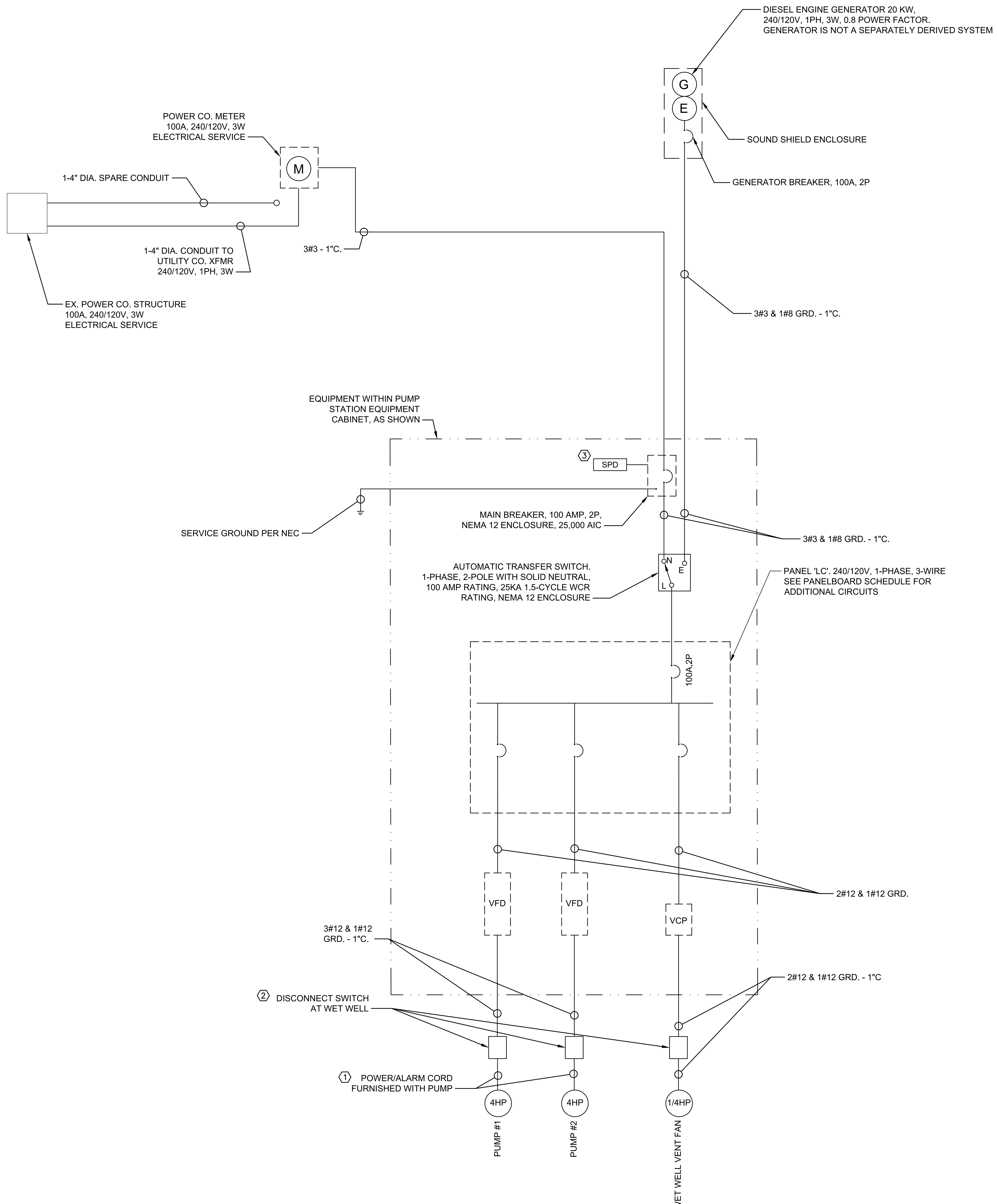
SHEET:	E-2.04		



GENERAL ELECTRICAL NOTES:

1. ALL ELECTRICAL PANELBOARDS, BOXES, ETC. SHALL BE PROVIDED WITH PERMANENT LABELS INDICATING THEIR RESPECTIVE POWER SOURCE.
2. ALL CONDUCTORS SHALL BE COPPER.
3. THE TRANSFER SWITCH DOES NOT SWITCH THE NEUTRAL, THE SYSTEM IS NOT SEPARATELY DERIVED.
4. ALL ENCLOSURES AT THE BACKBOARDS SHALL BE NEMA 4X STAINLESS STEEL AND SECURED TO THE BACKBOARD WITH STAINLESS STEEL FASTENERS.

ELECTRICAL DRAWING NOTES:

(1) CONTRACTOR SHALL COORDINATE WITH PUMP VENDOR ON REQUIRED LENGTH OF SUBMERSIBLE CABLES FOR PUMPS.

(2) PROVIDE DISCONNECT SWITCH LOCKABLE IN THE ON/OFF POSITIONS. PROVIDE PERMANENT LABELING INDICATING EQUIPMENT SERVED.

(3) PROVIDE UL 1499 LISTED, TYPE 1 SURGE PROTECTION DEVICE IN ENCLOSURE WITH A MINIMUM SURGE RATING OF 240 KA. PROVIDE 3/4" CONDUIT ROUTING FROM SPD TO ENCLOSED BREAKER FOR EXTENSION OF SPD'S PRE-INSTALLED WIRING HARNESS. PROVIDE SPD WITH MEANS OF DISCONNECTION TO REPLACE DEVICE WITHOUT TURNING OFF POWER TO ENTIRE STATION.

PANEL DESIGNATION: **LC**
VOLTAGE: **120/240 VOLT, 1 PHASE, 3 WIRE**
MIN. AIC: **25,000**
MOUNTING: **SURFACE**
BUS AMP: **225 AMP (100% NEUTRAL)**
TOTAL POLES: **24**
LOCATION: **ELECTRICAL ENCLOSURE**
MAIN BREAKER: **100 AMP**
NOTES:

CKT NO.	DESCRIPTION	BREAKER A	BREAKER P	BREAKER GFI	LOAD (KVA) A	LOAD (KVA) B	WIRE NO.	WIRE SIZE	GND. SIZE	COND. SIZE	COND. SIZE	GND. SIZE	WIRE SIZE	WIRE NO.	LOAD (KVA) A	LOAD (KVA) B	BREAKER GFI	BREAKER P	BREAKER A	DESCRIPTION	CKT NO.
1	VFD-1	20	2		2.0		3	12	12	3/4	3/4	12	12	3	2.0			2	20	VFD-2	2
3	-					2.0										2.0				-	4
5	WET WELL FAN	15	2		0.2		3	12	12	3/4	3/4	12	12	2	1.0			1	20	GENERATOR BATTERY CHARGER	6
7	-					0.2					3/4	12	12	2		0.5		1	20	GENERATOR JACKET HEATER	8
9	LIGHT POLE/RECEPTACLE	20	1		1.2		2	12	12	3/4	3/4	12	12	2	2.4			1	20	CONTROL SIDE LIGHT, RECPTACLE, HEATER	10
11	PUMP CONTROL PANEL	20	1			0.5	2	12	12	3/4	3/4	12	12	2		2.4		1	20	POWER SIDE LIGHT, RECPTACLE, HEATER	12
13	VALVE VAULT LIGHTS	20	1		0.5		2	12	12	3/4	3/4	12	12	2	0.4			1	20	FLOWMETER	14
15	VALVE VAULT RECEPTACLE	20	1			0.7	2	12	12	3/4											16
17																					18
19																					20
21																					22
23																					24
	SIDE TOTAL CONNECTED KVA				3.9	3.4									5.8	4.9				SIDE TOTAL CONNECTED KVA	

LOAD: A: 9.7 KVA
B: 8.3 KVA

TOTAL LOAD: 18.0 KVA

GENERAL PANELBOARD NOTES:

1. AIC RATING OF BREAKER INSTALLATIONS SHALL MATCH AIC RATING OF PANELBOARD IN WHICH BREAKERS ARE TO BE INSTALLED.
2. PROVIDE TYPE WRITTEN PANEL SCHEDULE.

BID SET

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DATE

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
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SUSSEX COUNTY CONTRACT #
S20-12

KCI TECHNOLOGIES, INC.
ENGINEERS - PLANNERS - SURVEYORS
614 N. DuPont Highway, Suite 100 Dover DE. 19901
PHONE: (302) 747-5999 FAX: (302) 731-7807 Website: www.kci.com

ELECTRICAL DIAGRAMS AND SCHEDULE
JOY BEACH SEWER COLLECTION SYSTEM PHASE 2

LEWES SUSSEX DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE.
LICENSE NO.: 26121
EXPIRATION DATE: 06-30-2026

SETH D. RANG LICENSE No. 26121 DELAWARE PROFESSIONAL ENGINEER
9/29/2025

SIGNATURE:

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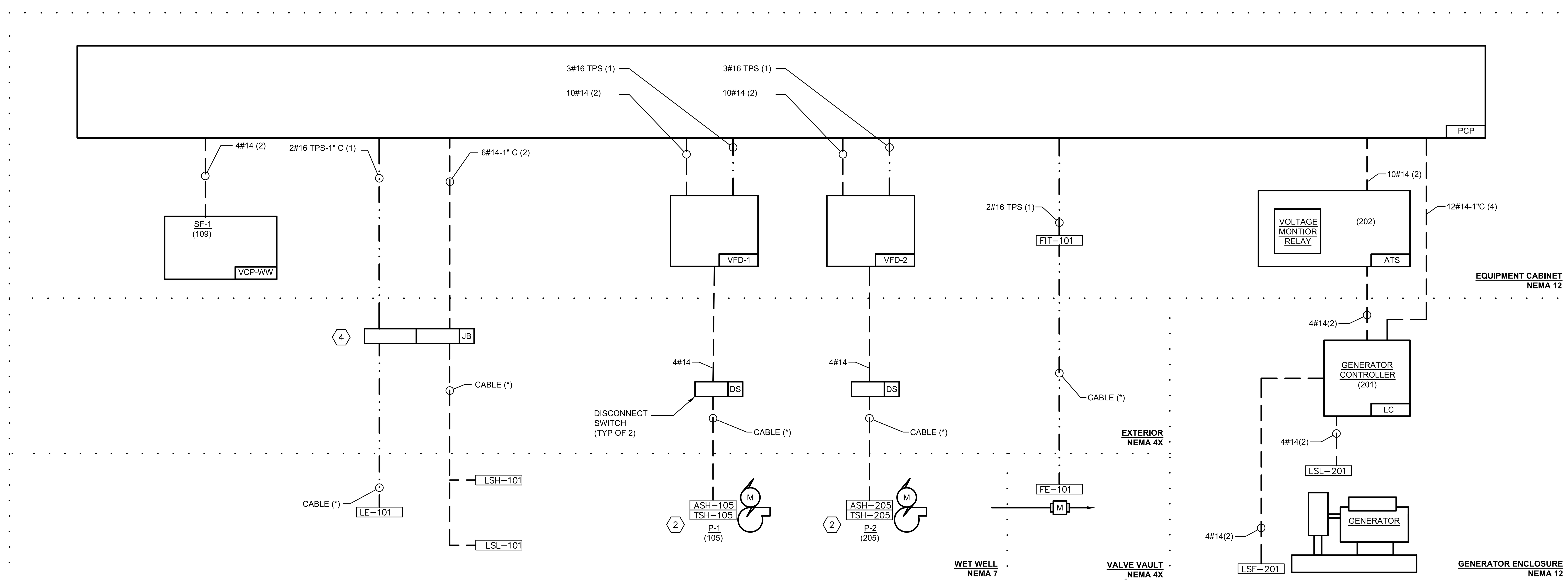
SCALE:	N/A		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	E-3.01		

GENERAL NOTES:

1. REFER TO ELECTRICAL SITE PLAN AND POWER DIAGRAMS FOR POWER CONDUIT INFORMATION AND EQUIPMENT LOCATION.

(X) SHEET KEY NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL INSTRUMENT LOCATIONS, CLEARANCES, AND INSTALLATIONS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. SEAL LEAK AND THERMAL SWITCH CABLING SHALL ENTER PUMP DISCONNECT ENCLOSURE.
3. THE RISER DIAGRAM DELINEATES FIELD DEVICES, CONDUIT, CONDUCTOR COUNTS AND NEMA RATINGS. THE DIAGRAM DOES NOT NECESSARILY DEPICT CONDUIT ROUTING.
4. JUNCTION BOX SHALL CONTAIN PHYSICAL BARRIER TO SEPARATE DISCRETE AND ANALOG WIRING.



(3) (A) INSTRUMENETATION RISER DIAGRAM

SCALE: NONE (*) MANUFACTURES CABLE TO SUIT FIELD CONDITIONS.

BID SET

REVISION | DATE

OWNER/DEVELOPER:
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PO BOX 589
GEORGETOWN, DE 19947
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SUSSEX COUNTY CONTRACT #
S20-12

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INSTRUMENTATION RISER DIAGRAM
JOY BEACH SEWER COLLECTION SYSTEM PHASE 2

LEWES SUSSEX DELAWARE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF DELAWARE. LICENSE NO.: 20121 EXPIRATION DATE: 06-30-2026

SETH D. RANG LICENSE PROFESSIONAL ENGINEER DELAWARE

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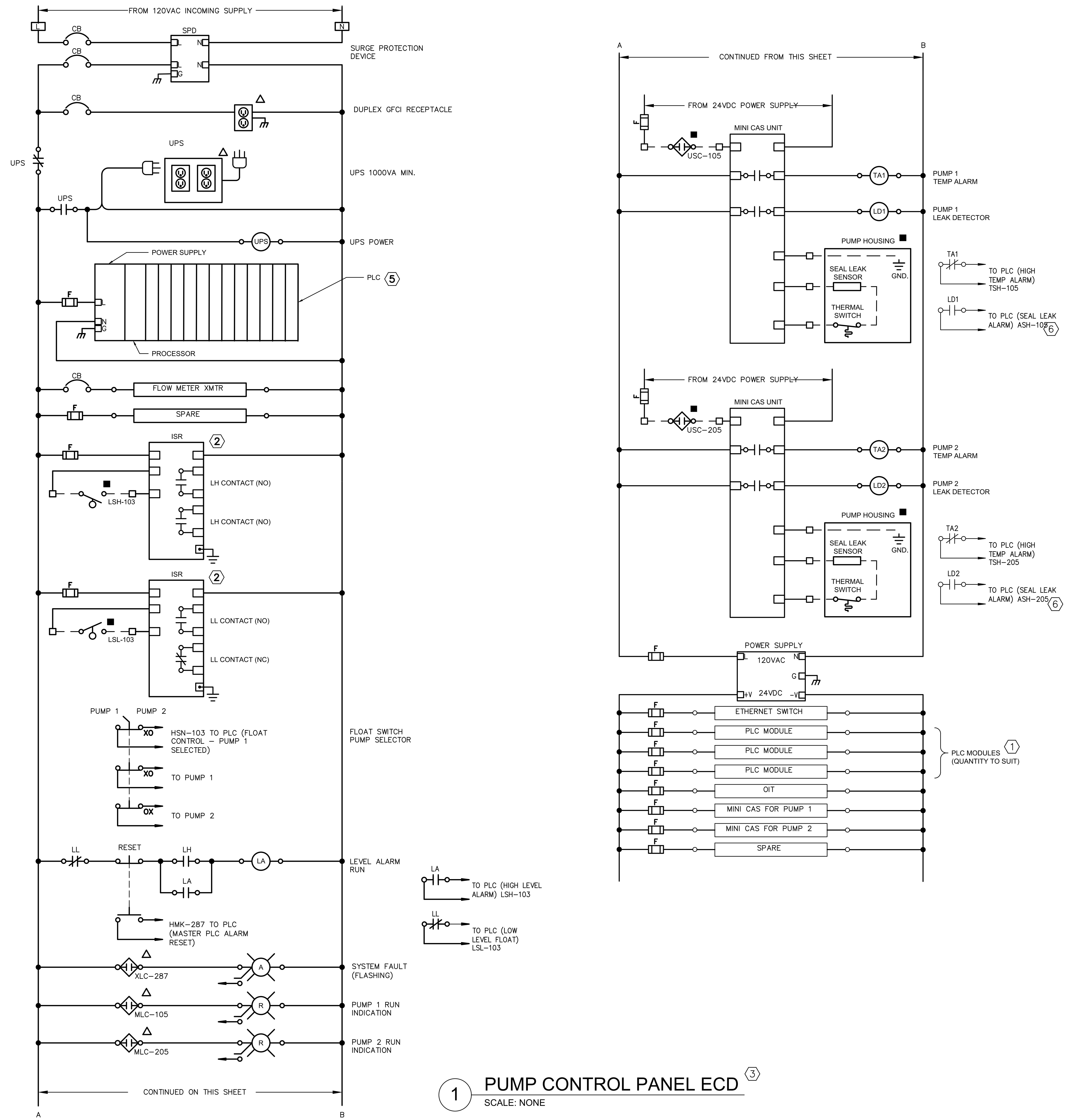
SHEET:	E-3.02		

BY: Matthew Driscoll PRINTED: 9/29/2025 4:43 PM

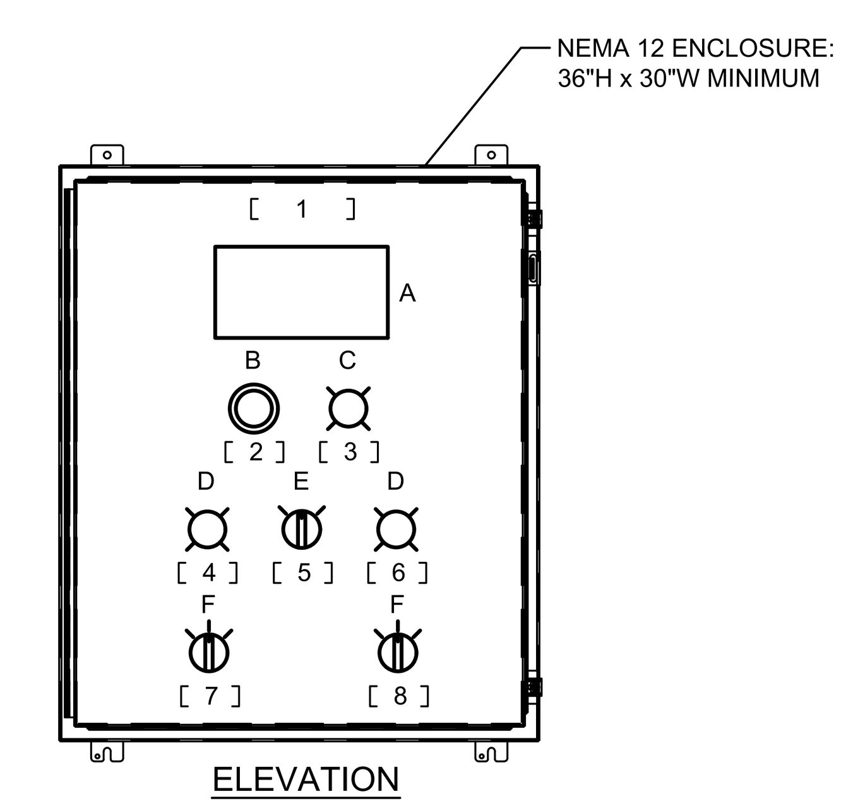


1 PUMP CONTROL PANEL ECD (3)

SCALE: NONE

SHEET KEY NOTES:

1. ALL DISCRETE OUTPUTS FROM PLC SHALL BE PROVIDED WITH INTERPOSING RELAYS.
2. MOUNT INTRINSICALLY SAFE RELAYS TOGETHER WITHIN PANEL. PROVIDE PHYSICAL BARRIER BETWEEN INTRINSICALLY SAFE CIRCUITS AND ALL OTHER DEVICES / WIRING WITHIN PANEL. PROVIDE LABELS FOR INTRINSICALLY SAFE CIRCUITS.
3. PROVIDE CONTROL WIRING AND CONDUIT FOR PLC I/O AS REQUIRED BETWEEN EQUIPMENT AND PLC MODULES WITHIN PANEL.
4. CENTER OF OIT TO BE MOUNTED AT 5'-6" ABOVE FINISHED GRADE.
5. PLC TO CONTAIN THE FOLLOWING INTERNAL POINTS. REFER TO I/O LIST FOR MORE INFORMATION:
   - LTF-101 LOSS OF WET WELL TRANSDUCER SIGNAL
   - UF-274 PLC BATTERY FAIL
   - UN-101 PLC IN SIMULATION MODE
   - HK-101 SIMULATED WET WELL LEVEL
   - MIH-105 PUMP 1 LEAD
   - MIL-105 PUMP 1 LAG
   - MIH-205 PUMP 2 LEAD
   - MIL-205 PUMP 2 LAG
6. SEAL LEAK PERMISSIVE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION TO MAINTAIN WARRANTY.



DEVICE LEGEND:

A	OPERATOR INTERFACE TERMINAL (OIT) (4)
B	MOMENTARY PUSHBUTTON
C	ALARM LIGHT (AMBER)
D	INDICATING LIGHT (RED)
E	2-POSITION SELECTOR SWITCH
F	3-POSITION SELECTOR SWITCH

NAMEPLATE LEGEND:

1	PUMP CONTROL PANEL
2	MASTER RESET
3	ALARM
4	PUMP 1 RUNNING
5	FLOAT SWITCH PUMP SELECTION - PUMP 1, PUMP 2
6	PUMP 2 RUNNING
7	PUMP 1, HAND-OFF-AUTO
8	PUMP 2, HAND-OFF-AUTO

A PUMP CONTROL PANEL LAYOUT

SCALE: NONE

BID SET

OWNER/DEVELOPER:
SUSSEX COUNTY ENGINEERING DEPT.
PO BOX 589
GEORGETOWN, DE 19947
PH. (302) 855-7700
SUSSEX COUNTY CONTRACT #
S20-12

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PUMP CONTROL PANEL ECD
JOY BEACH SEWER COLLECTION SYSTEM
PHASE 2
LEWES SUSSEX DELAWARE

PROFESSIONAL CERTIFICATION
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9/29/2025

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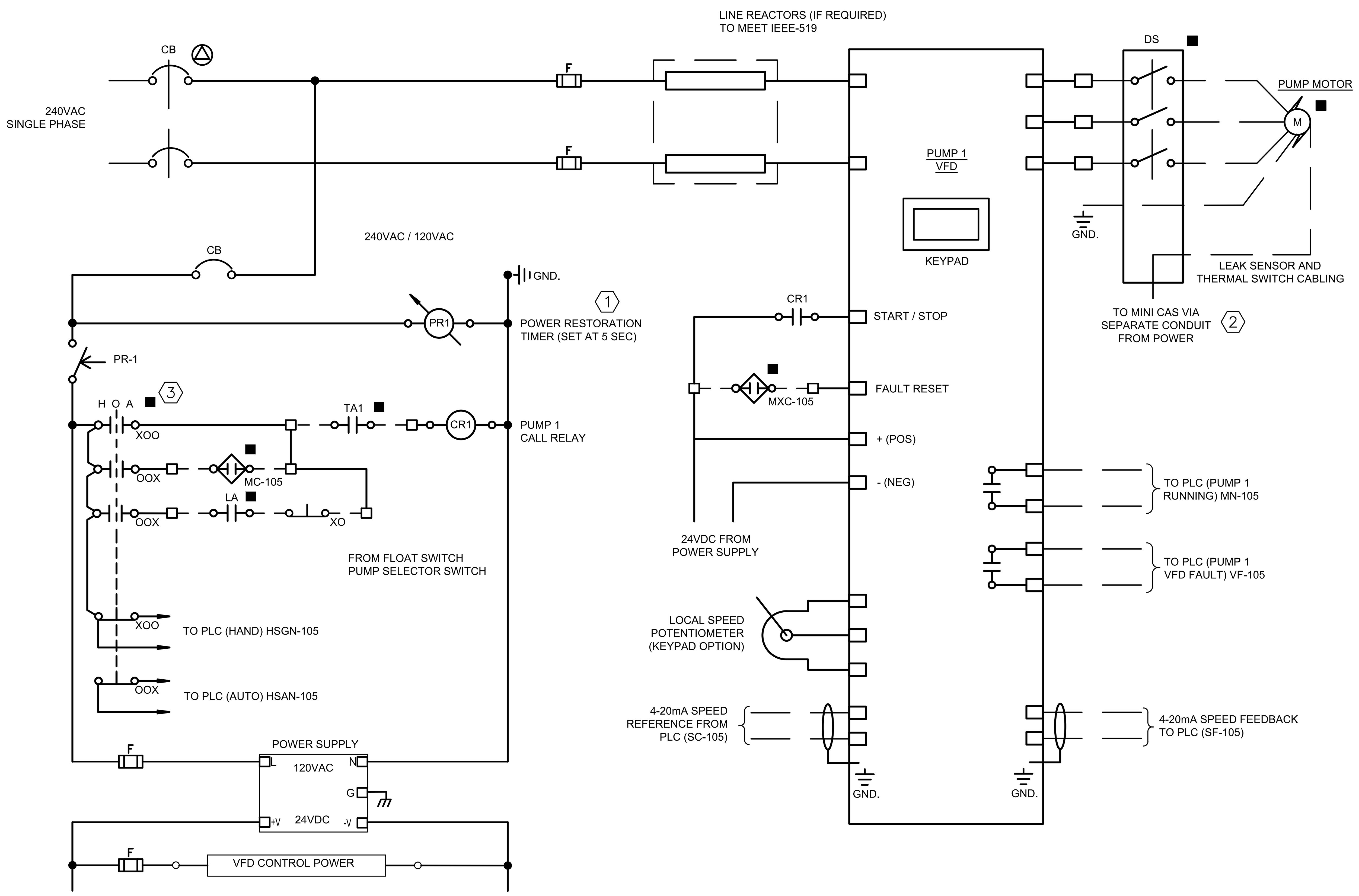
SCALE:	N/A		
DATE:	09-29-2025		
KCI JOB #:	13157731.S20-12		
SHEET:	E-3.03		

SHEET KEY NOTES:

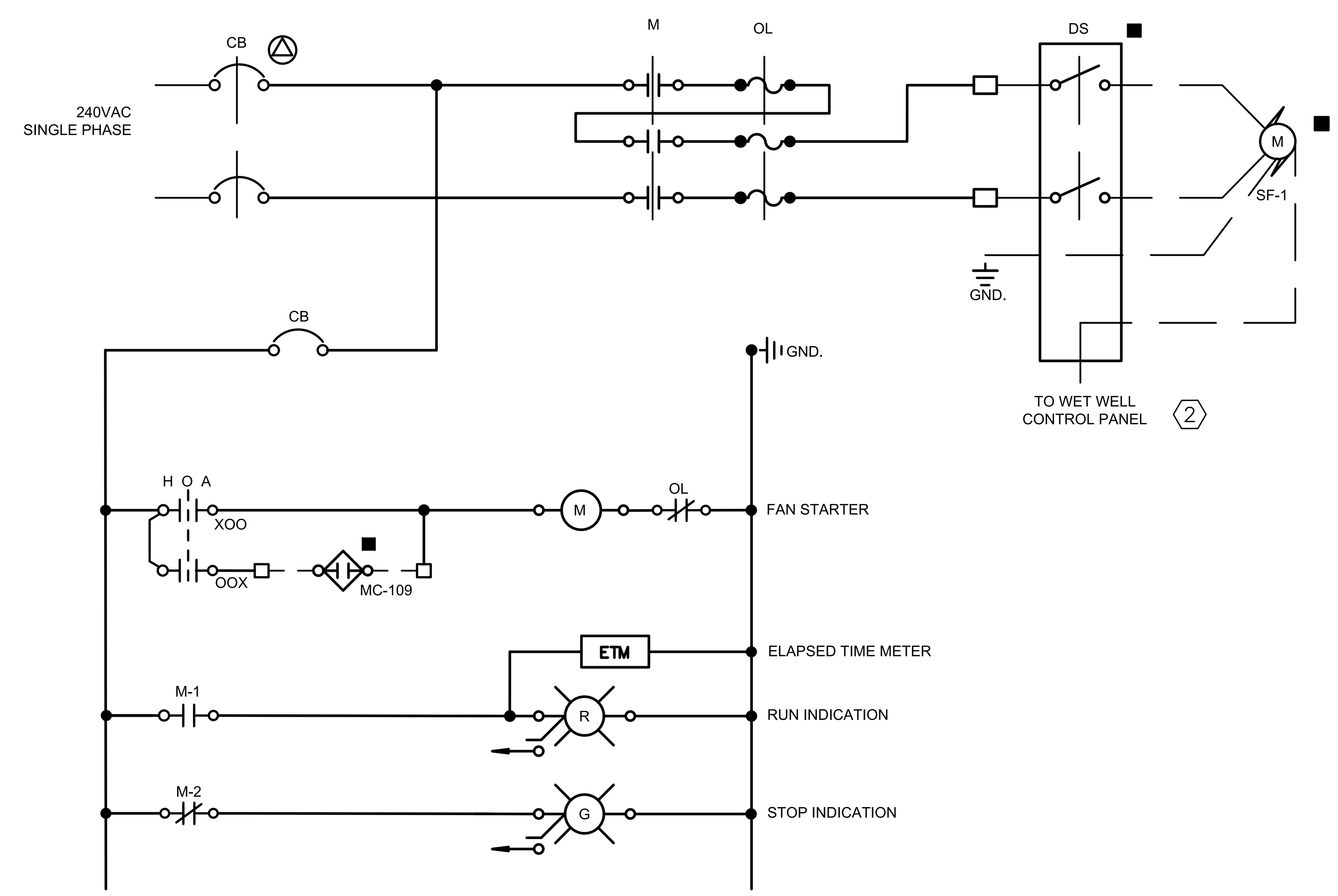
1. PUMPS' POWER RESTORATION TIMERS SHALL BE STAGGERED AT 5 SECOND INTERVALS BETWEEN PUMPS.
2. REFER TO RISER DIAGRAMS AND PLANS FOR PUMP CABLE ROUTING REQUIREMENTS. WIRES FROM PUMP SHALL PASS THROUGH AN INTRINSICALLY SAFE BARRIER PRIOR TO TERMINATING AT THE MOTOR MONITOR.
3. PUMP H-O-A SWITCHES ARE LOCATED ON THE PUMP CONTROL PANEL. SEE DRAWING I-04 FOR MORE INFORMATION.



1 VFD PANEL ECD

SCALE: NONE (TYPICAL OF 2)

NOTE: ALL DEVICES ARE VFD MOUNTED UNLESS OTHERWISE SHOWN.



2 WET WELL FAN ECD

SCALE: NONE

REVISION | DATE

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SUSSEX COUNTY CONTRACT # S20-12

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ELECTRICAL CONTROL DIAGRAMS
JOY BEACH SEWER COLLECTION SYSTEM PHASE 2

LEWES SUSSEX DELAWARE

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