ASHLEIGH KNOLLS SHARED SEWAGE DISPOSAL FACILITY
HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972

GENERAL NOTES

1. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
2. EXISTING FEATURES ON THESE PLANS HAVE BEEN DEVELOPED BY KCI TECHNOLOGIES USING PLANS FOR THE ASHLEIGH KNOLLS WASTEWATER COLLECTION, TREATMENT AND DISPOSAL SYSTEM (CONTRACT NO. 50-3357) DATED AUGUST 1994. NO TOPOGRAPHIC SURVEY WAS CONDUCTED FOR THIS CONTRACT. THE DATUM ON THE AS BUILT (CONTRACT NO. 50-3357): THE HORIZONTAL DATUM IS BASED ON MARYLAND STATE COORDINATES NAD 83/91. THE VERTICAL DATUM IS BASED ON U.S.G.S NGVD 29.
3. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
4. CLEAR ALL UTILITIES BY A MINIMUM OF 12".
5. FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
6. CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

AT&T	1-800-252-1133
BG&E (CONSTRUCTION SERVICES)	410-637-8713 / 800-233-1854
BG&E (EMERGENCY)	800-685-0123
BUREAU OF UTILITIES (DPW)	410-313-4900
COLONIAL PIPELINE CO.	410-795-1390 / 800-926-2728
MISS UTILITY	1-800-257-7777
STATE HIGHWAY ADMINISTRATION	410-313-7450 / 410-582-5650
VERIZON.	1-800-743-0033 / 410-224-9210

7. TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
8. CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR SITE WORK. ⚠
9. EXCEPT AS INDICATED ON THE PLANS AND NOTED ABOVE, ALL PUBLIC WATER MAINS SHALL BE POLYVINYLCHLORIDE (PVC) PIPE MEETING THE REQUIREMENTS OF AWWA C900 DR18, PRESSURE CLASS 150 AND THE HOWARD COUNTY DESIGN MANUAL VOLUME IV-STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND ALL SUBSEQUENT AMENDMENTS THERETO.
10. THE CONTRACTOR SHALL NOT OPERATE ANT STATION EQUIPMENT ON THE EXISTING TREATMENT SYSTEM. THE CONTRACTOR SHALL NOTIFY THE BUREAU OF UTILITIES HOWARD COUNTY, 15 DAYS PRIOR TO WATER MAIN SHUT DOWNS.
11. THE CONTRACTOR SHALL PROVIDE SURVEY CONSTRUCTION STAKEOUT FOR ALL NECESSARY LINES, GRADES AND ELEVATION OF THE PROPOSED FACILITIES.
12. THE CONTRACTOR SHALL PROVIDE STAGING/STORAGE AREA.
13. ALL EXCAVATION SHALL BE KEPT FREE OF WATER UNTIL BACKFILL IS PROPERLY TAMPED IN PLACE TO FINISHED GRADE.
14. THE CONTRACTOR SHALL COORDINATE WITH THE EXISTING SYSTEM. ALL CONNECTIONS TO THE EXISTING SYSTEM SHALL BE PERFORMED DURING LOW WASTEWATER FLOW CONDITION, AS APPROVED BY THE COUNTY, TO MINIMIZE THE DISRUPTION TO THE OPERATION OF THE EXISTING SYSTEM.

OWNER'S ADDRESS

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
BUREAU OF UTILITIES
8250 OLD MONTGOMERY ROAD
COLUMBIA MARYLAND, 20145

OWNERS / DEVELOPER CERTIFICATION

"I/WE CERTIFY THAT ALL CLEARING, GRADING, CONSTRUCTION OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO THE BEGINNING OF THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

Amy Hunt — 3-23-17
OWNER'S / DEVELOPERS SIGNATURE — DATE

Project Manager
PRINTED NAME & TITLE

DESIGN CERTIFICATION

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

DESIGNERS SIGNATURE — DATE

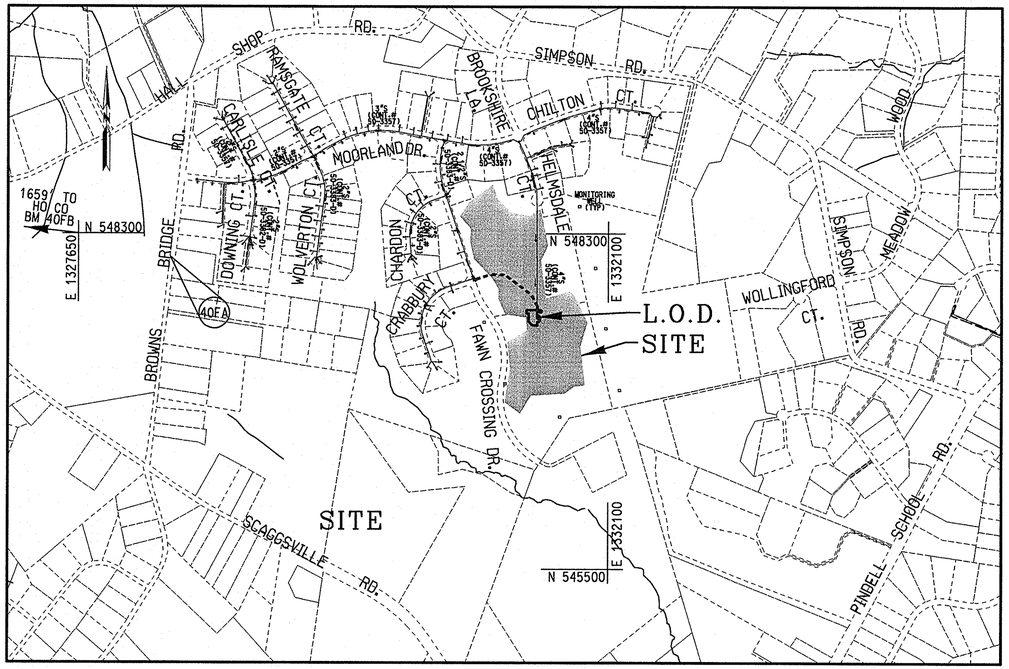
GUIHUA WANG
PRINTED NAME

MD REGISTRATION NO. 31363
(P.E., R.L.S. OR R.L.A. (CIRCLE ONE)

HOWARD SOIL CONSERVATION DISTRICT CERTIFICATION

THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 3/28/17
SP-16-04



VICINITY MAP

SCALE: 1"= 600'

DIRECTIONS: FROM I-95 SOUTH TO ROUTE 216 WEST, MAKE A RIGHT ONTO BROWN BRIDGE ROAD, RIGHT ON MOORLAND DRIVE AND A RIGHT ON FAWN CROSSING DRIVE, SITE ENTRANCE ROAD ON LEFT.

INDEX OF SHEETS

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1	G-1	TITLE SHEET
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4	C-2	PROPOSED SITE PLAN & SEDIMENT AND EROSION CONTROL PLAN
5	C-3	SITE PIPING PLAN
6	C-4	EQUALIZATION TANK
7	C-5	SITE PIPING PROFILES
8	C-6	SITE PIPING PROFILES
9	C-7	SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
10	A-1	BUILDING PLAN
11	A-2	BUILDING ELEVATIONS
12	A-3	REFLECTED CEILING PLAN
13	S-0	GENERAL NOTES
14	S-1	SLAB ON GRADE AND FOUNDATION PLAN
15	S-2	TYPICAL DETAILS
16	S-3	FOUNDATION SECTIONS
17	M-1	INFLUENT TRANSFER STATION PLAN AND SECTIONS
18	M-2	SEQUENCING BATCH REACTOR
19	M-3	PLUMBING - WASTE DISCHARGE
20	M-4	PLUMBING - POTABLE & NON POTABLE WATER SYSTEM
21	M-5	HVAC PLAN AND CRITERIA
22	M-6	HVAC SCHEDULES AND DETAILS
23	M-7	MECHANICAL DETAILS
24	E-0	ELECTRICAL GENERAL NOTES, SYMBOLS AND ABBREVIATIONS
25	E-1	SITE ELECTRICAL PLAN
26	E-2	ELECTRICAL POWER BUILDING LAYOUT
27	E-3	ELECTRICAL LIGHTING BUILDING LAYOUT
28	E-4	ELECTRICAL SCHEDULES
29	E-5	ELECTRICAL ONE-LINE
30	E-6	ELECTRICAL DETAILS I
30A	E-7	ELECTRICAL DETAILS II ⚠5
31	I-1	INSTRUMENTATION LEGEND
32	I-2	INSTRUMENTATION SYMBOLS
33	I-3	INSTRUMENTATION SITE PLAN
34	I-4	INFLUENT TRANSFER PUMP STATION P & ID
35	I-5	SEQUENCING BATCH REACTOR P & ID
36	I-6	AUXILIARY SYSTEMS P & ID
37	I-7	INSTRUMENTATION PLAN & RISER DETAILS
38	I-8	WIRING DIAGRAM - 1
39	I-9	WIRING DIAGRAM - 2
40	I-10	WIRING DIAGRAM - 3
41	I-11	WIRING DIAGRAM - 4
42	I-12	VENTILATION CONTROLS
43	I-13	GENERATOR CONTROLS

TYPE OF BUILDING:	UTILITY
NUMBER OF PARCELS:	109
NUMBER OF WATER HOUSE CONNECTIONS	0
NUMBER OF SEWER HOUSE CONNECTIONS:	0
DRAINAGE AREA:	NOT APPLICABLE
TREATMENT PLANT:	ASHLEIGH KNOLLS

HORIZONTAL AND VERTICAL CONTROL USED IN CONTRACT NO. 50-3357 BASED ON MARYLAND NAD 83/91 (HORIZONTAL) AND NGVD 29 (VERTICAL) DATUM. HOWARD COUNTY GEODETIC SURVEY CONTROL NUMBERS:

NO. 40FA
N 548106.87
E 1328421.4
ELEV. 497.648

NO. 40FB
N 548478.32
E 132600.81
ELEV. 505.297

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 MARYLAND, LICENSE NO. 31363 EXPIRATION DATE: 01/16/2022

STATE OF MARYLAND · GUIHUA WANG · No. 31363 · PROFESSIONAL ENGINEER — 6/19/2020

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.

Signature: _____
Design Professional Signature
Date: 12/06/2021 MD P.E. License: 31363

AS-BUILT REPLACEMENT SHEET 12/2021

GRAPHIC SCALE
600 300 0 600
SCALE: 1" = 600'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
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CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
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TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
www.kci.com

STATE OF MARYLAND · GUIHUA WANG · No. 31363 · PROFESSIONAL ENGINEER — 10/10/2016

DES: KFJ				
DRN: KFJ				
CHK: GW	KJ		AS-BUILT	12/21
DATE: AUG., 2016	JFW	5	ELECTRICAL DESIGN UPDATES	6/20
	GW	1	NOVEMBER 21, 2018	
	BY	NO.	REVISION	DATE

TITLE SHEET

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

G-1
SCALE AS SHOWN
SHEET 1 OF 43

PLOTTED: $DATE$
BY: $USERNAME$
FILE: $FILE$

DESIGN CRITERIA

WASTEWATER FLOW:

AVERAGE DAILY FLOW:	24,525	GPD
MAXIMUM DAILY FLOW (PERMIT):	32,700	GPD

EQUALIZATION TANK:

USE EXISTING SEDIMENTATION TANKS #1 & #2

EFFECTIVE EQUALIZATION VOLUME:	6,400	GALLON

SBR INFLUENT TRANSFER PUMPS:

NO. OF PUMPS:	2 (ONE DUTY, ONE STANDBY)
DESIGN POINT:	17.03 GPM @ 10.6 FT
	34.06 GPM @ 15.1 FT

SBR DESIGN CRITERIA:

DESIGN FLOW:	24,545	GPD
MAX DAY FLOW:	49,050	GPD
TEMPERATURE:	25	C (SUMMER)
	12	C (WINTER)
AMBIENT TEMPERATURE:	38	C (SUMMER)
	-18	C (WINTER)

SBR INFLUENT CHARACTERISTICS*:

BOD_5:	200	MG/L
TSS:	50	MG/L
TKN:	51	MG/L
NH_4^+-N:	43	MG/L
NO_3^--N:	0.1	MG/L
TP:	7.4	MG/L

* BASED ON THE SAMPLE AFTER THE FIRST SEDIMENTATION TANK.

SBR EFFLUENT DESIGN CRITERIA:

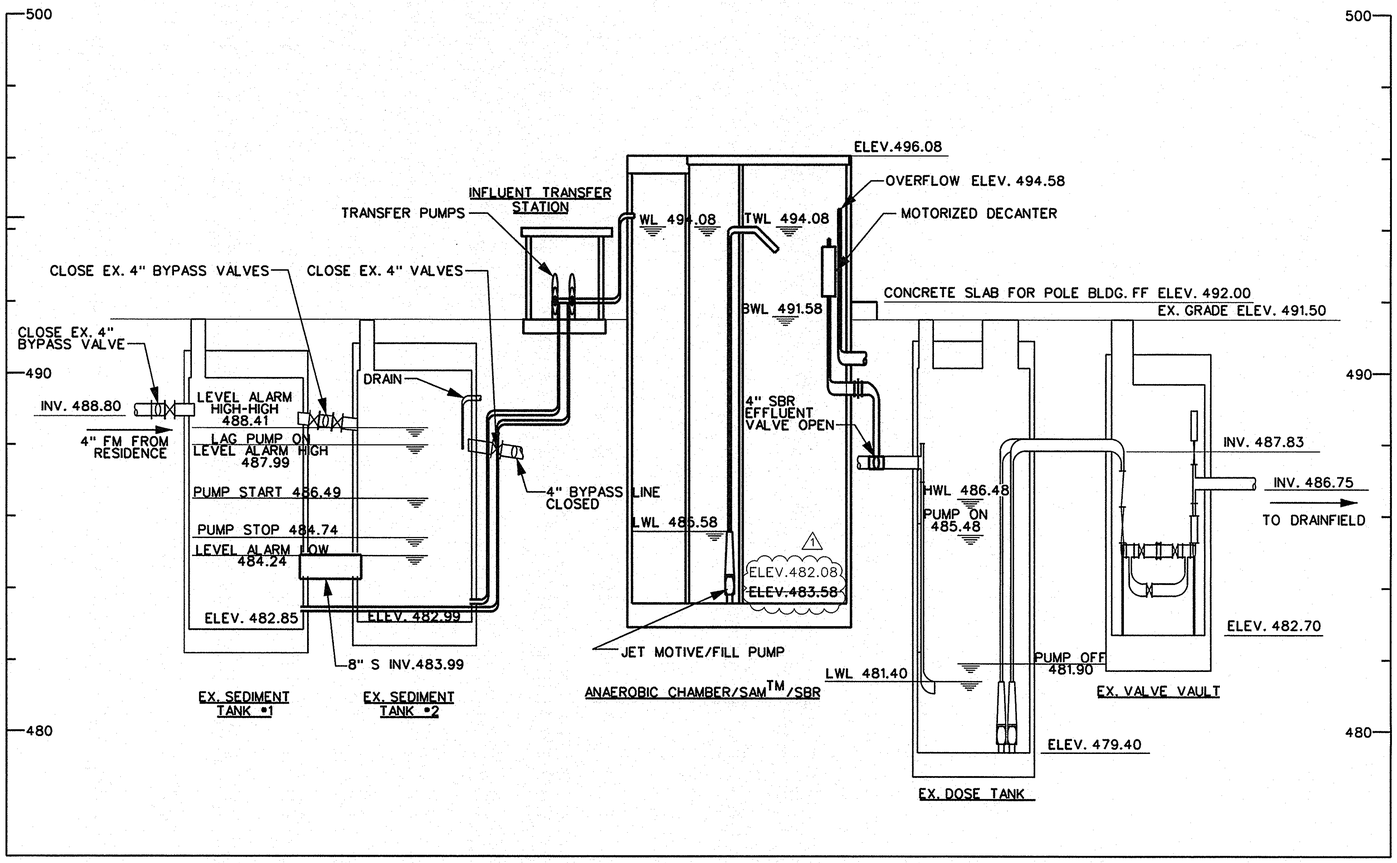
BOD_5:	20	MG/L
TSS:	20	MG/L
TN:	8	MG/L

SBR SYSTEM DESIGN:

NO. OF BASIN:	1	
MLSS:	2,500	MG/L
SRT (SBR):	19	DAYS
SRT (SBR + SAM):	23	DAYS
HRT (SBR):	14.5	HRS
CYCLE TIME @ ADF	6	HRS
FILL	0.37	HRS
AERATION	1.93	HRS
ANOXIC	2.27	HRS
SETTLE	0.75	HRS
DECANT	0.68	HRS
CYCLE TIME @ MAX DAY FLOW	6	HRS
FILL + AERATION	3.45	HRS
ANOXIC	1.12	HRS
SETTLE	0.75	HRS
DECANT	0.68	HRS
STANDARD OXYGEN REQUIRED @ ADF	69	LBS/DAY
STANDARD OXYGEN REQUIRED @ MAX DAY FLOW	104	LBS/DAY
DECANT FLOW:	150	GPM
EX. DOSING PUMP FLOW RATE:	330	GPM

CHEMICAL DOSING PUMPS

MICRO-C PUMP:	DESIGN FLOW 0.25 L/HR @5 PSIG
CAUSTIC (25% NaOH) PUMP:	DESIGN FLOW 0.14 L/HR @5 PSIG
SODIUM HYPOCHLORITE PUMP:	DESIGN FLOW 0.14 L/HR @ 50 PSI
UNITS OF EACH TYPE CHEMICAL PUMP:	ONE DUTY, ONE SHELF SPARE
pH CONTROLLER SET POINT:	pH = 6.5 (FOR CAUSTIC ADDITION)



1/G-2 **PROFILE**
SCALE: HORZ.- 1" = 10'
VERT.- 1" = 2'

LEGEND

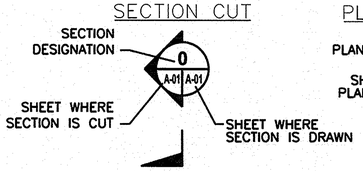
EXISTING FEATURES

PROPOSED FEATURES

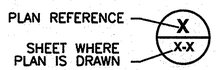
ABBREVIATIONS

ADF	AVERAGE DAILY FLOW
BWL	BOTTOM WATER LEVEL
D.I.P.	DUCTILE IRON PIPE
EX.	EXISTING
FM	FORCE MAIN
HRT	HYDRAULIC RETENTION TIME
HWL	HIGH WATER LEVEL
INV	INVERT
SAM™	SURGE/ANOXIC/MIX
SBR	SEQUENCING BATCH REACTOR
SRT	SLUDGE RETENTION TIME
WL	WATER LEVEL
TWL	TOP WATER LEVEL

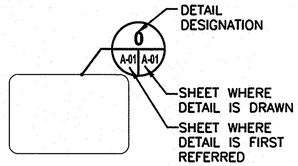
SECTION CUT



PLAN REFERENCE



DETAIL/SCHEMATIC



A/G-2 **DRAWING SYMBOLS**
SCALE: NONE

GRAPHIC SCALE

10 5 0 10
SCALE: 1" = 10'

2 1 0 2
SCALE: 1" = 2'

AS-BUILT
DATE 12/2021

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 MARYLAND, LICENSE NO. 31363 EXPIRATION DATE: 01/16/2022

STATE OF MARYLAND — GUIHUA WANG — NO.31363 — PROFESSIONAL ENGINEER — 6/16/2020

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/16
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

KCI TECHNOLOGIES
Engineers, Planners, Scientists, Construction Managers
936 Ridgebrook Road, Sparks, Maryland 21152
Telephone: (410) 316-7800, Fax: (410) 316-7818
www.kci.com

STATE OF MARYLAND — GUIHUA WANG — NO.31363 — PROFESSIONAL ENGINEER — 10/10/2016

DES: KFJ
DRN: KFJ
CHK: GW
DATE: AUG., 2016

BY	NO.	REVISION	DATE
GW	1	NOVEMBER 21, 2018	

HYDRAULIC PROFILE

600' SCALE MAP NO. 40-41 BLOCK NO. 12

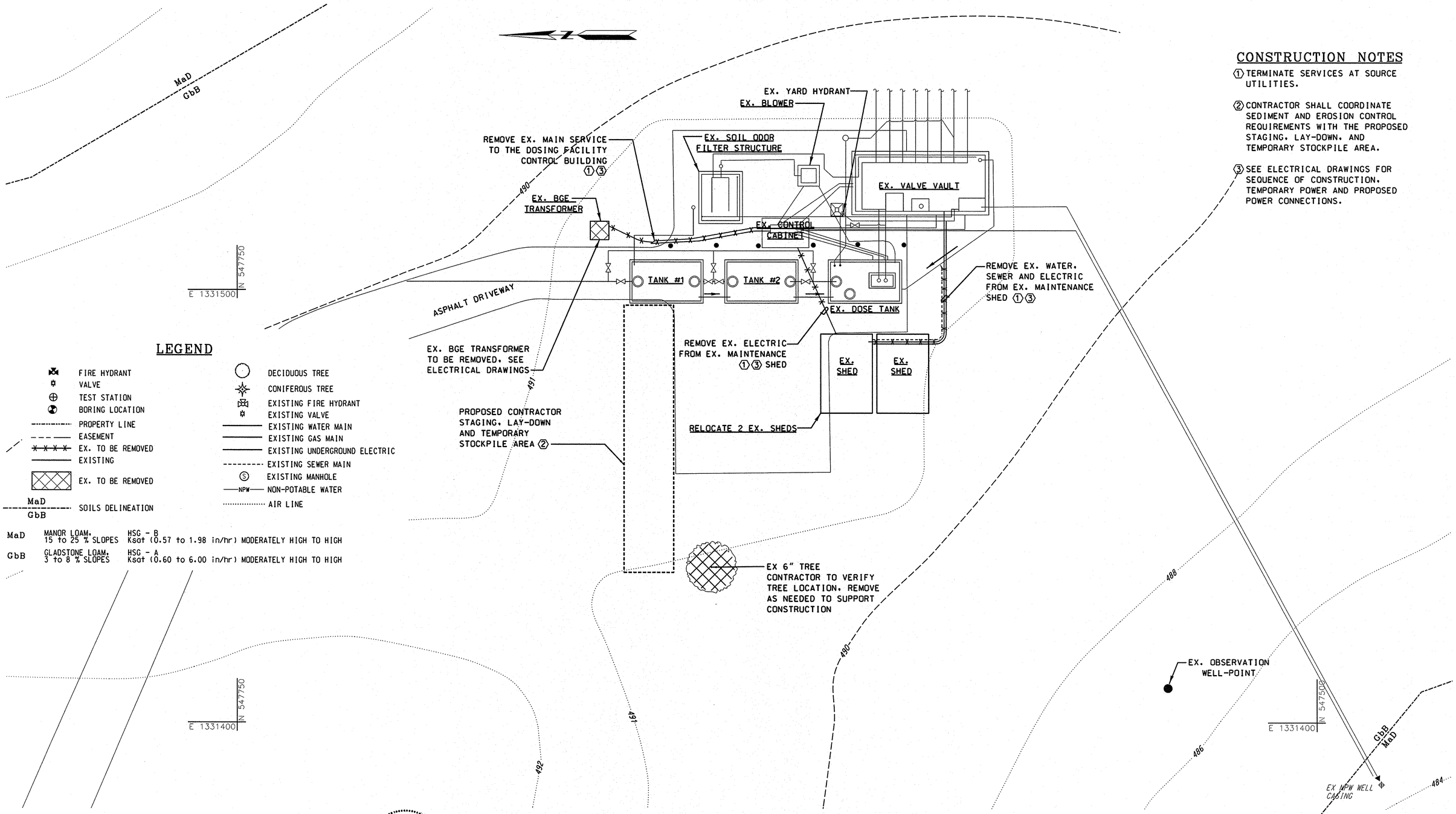
ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

G-2
SCALE AS SHOWN
SHEET 2 OF 43

PLOTTED: 8DATE$
STYLE: 8PENTABLE$
FILE: 8FILE$

CONSTRUCTION NOTES

1. TERMINATE SERVICES AT SOURCE UTILITIES.
2. CONTRACTOR SHALL COORDINATE SEDIMENT AND EROSION CONTROL REQUIREMENTS WITH THE PROPOSED STAGING, LAY-DOWN, AND TEMPORARY STOCKPILE AREA.
3. SEE ELECTRICAL DRAWINGS FOR SEQUENCE OF CONSTRUCTION, TEMPORARY POWER AND PROPOSED POWER CONNECTIONS.



LEGEND

- FIRE HYDRANT
- VALVE
- TEST STATION
- BORING LOCATION
- PROPERTY LINE
- EASEMENT
- EX. TO BE REMOVED
- EXISTING
- EX. TO BE REMOVED
- MaD / GbB — SOILS DELINEATION
- DECIDUOUS TREE
- CONIFEROUS TREE
- EXISTING FIRE HYDRANT
- EXISTING VALVE
- EXISTING WATER MAIN
- EXISTING GAS MAIN
- EXISTING UNDERGROUND ELECTRIC
- EXISTING SEWER MAIN
- EXISTING MANHOLE
- NPW — NON-POTABLE WATER
- AIR LINE

MaD	MANOR LOAM, 15 to 25 % SLOPES	HSG - B Ksat (0.57 to 1.98 in/hr) MODERATELY HIGH TO HIGH
GbB	GLADSTONE LOAM, 3 to 8 % SLOPES	HSG - A Ksat (0.60 to 6.00 in/hr) MODERATELY HIGH TO HIGH

NOTE:
THERE ARE NO STEEP AND HIGHLY ERODIBLE SOILS WITHIN THE WORK SITE AREA.

1 / C-1 EXISTING SITE PLAN
SCALE: 1"=10'

10 5 0 10
SCALE: 1" = 10'

AS-BUILT
DATE 12/2021

STATE OF MARYLAND — GUIJUNA WANG — No. 31363 — PROFESSIONAL ENGINEER
6/16/2020

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FAX: (410) 316-7818
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STATE OF MARYLAND — GUIJUNA WANG — No. 31363 — PROFESSIONAL ENGINEER
10/10/2016

DES: KFJ					
DRN: KFJ					
CHK: GW					
DATE: AUG., 2016	BY	NO.	REVISION	DATE	

EXISTING SITE PLAN & SOILS MAP

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

C-1
SCALE AS SHOWN
SHEET 3 OF 43

PLOTTED: 8/24/16
PLOT BY: MICHAEL
FILE: SFILE5

LEGEND

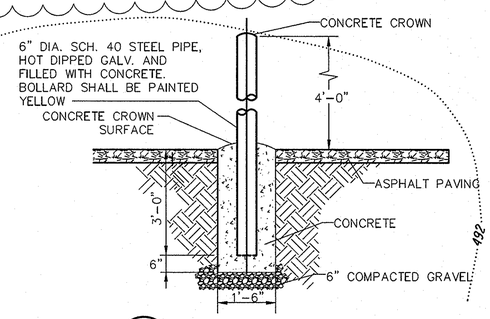
- FIRE HYDRANT
- VALVE
- TEST STATION
- BORING LOCATION
- LIMIT OF DISTURBANCE
- SILT FENCE
- PROPERTY LINE
- EASEMENT
- TEMPORARY CONSTRUCTION STRIP
- ASPHALT PAVING
- CONCRETE SIDEWALK
- DECIDUOUS TREE
- CONIFEROUS TREE
- EXISTING FIRE HYDRANT
- EXISTING VALVE
- EXISTING WATER MAIN
- EXISTING GAS MAIN
- EXISTING UNDERGROUND ELECTRIC
- EXISTING SEWER MAIN
- EXISTING MANHOLE
- NPW — NON-POTABLE WATER
- POTABLE WATER
- AIR LINE
- EXISTING
- PROPOSED

ADDITIONAL IMPERVIOUS AREA CALCULATIONS

① SBR FACILITY	1,590	S.F.
② ASPHALT DRIVE	2,751	S.F.
③ CONCRETE SIDEWALKS	387	S.F.
TOTAL:	4,728	S.F.

RELOCATED SHEDS
EX. YARD HYDRANT
EX. BLOWER
EX. SOIL ODOR FILTER STRUCTURE
EX. VALVE VAULT
EX. NON-POTABLE WATER SUPPLY
1 / E-1 NEW TRANSFORMER & SERVICE ENTRANCE
E 1331509.82 N 547665.21
E 1331509.80 N 547677.14
EX. 4" DIP
EX. CONTROL CABINET
EX. DOSE TANK
TANK #1
TANK #2
CONCRETE SIDEWALK SLOPE AWAY FROM BLDG. @ 2% (TYP.)
DRAIN: YARD CATCH BASIN TO 4" SCH. 40 PVC PIPE TO DAYLIGHT STONE AT INV. 489.92 PER RFI #016-R1
ASPHALT DRIVEWAY
E 1331497.77 N 547668.43
EX. SEDIMENTATION TANKS (CONVERT TO EQ TANKS)
INSTALL STABILIZED CONSTRUCTION ENTRANCE
E 1331492.41 N 547633.66
INFLUENT TRANSFER STATION FF=491.5
E 1331491.91 N 547602.17
RAMP
SBR FACILITY
SBR
FF=492.0
AC UNIT
E 1331463.91 N 547546.17
E 1331474.25 N 547575.83
E 1331463.91 N 547572.17
17'x13' UTILITY BUILDING SLAB AND POLE BUILDING FOOTPRINT
E 1331479.41 N 547616.66
E 1331487.91 N 547611.16
BOLLARD, TYP.
LANDING 492.0
PARKING BUMPER, TYP. OF 2
OVERHEAD DOOR
X 491.43 MANHOLE
X 491.43 ELECTRICAL PULL BOX
CONTRACTOR STAGING, LAY-DOWN AND TEMPORARY STOCKPILE AREA
28' x 56' CONCRETE SLAB AND POLE BUILDING FOOTPRINT
DIESEL GENERATOR
E 1331440.91 N 547572.17
E 1331415.91 N 547660.39
PARKING BUMPERS
E 1331415.91 N 547640.39
ASPHALT DRIVEWAY SLOPE AWAY FROM BLDG. @ 2% (TYP.) SEE HOWARD COUNTY STANDARD DETAIL R-2.01. P-2. CBR 3 TO #5 (TYP. ALL ASPHALT PAVING)
EX. OBSERVATION WELL-POINT
EX NPW WELL CASING
E 1331400 N 547500
E 1331500 N 547750
E 1331400 N 547750

① THE CONTRACTOR SHALL PROVIDE PRECAST CONCRETE PARKING BUMPERS OF HALF OCTAGONAL CONFIGURATIONS WITH A DIMENSION OF 7'-0"(L)x8"(W)x7"(H). BUMPERS SHALL BE MANUFACTURERED USING 5,000 PSI CONCRETE (28-DAY STRENGTH). EACH BUMPER SHALL BE REINFORCED WITH A MINIMUM OF TWO NO. 4 DEFORMED STEEL REINFORCING BARS. EACH BUMPER INSTALLED ON AT-GRADE ASPHALT PAVEMENT SHALL BE MANUFACTURERED WITH TWO HOLES TO ACCOMMODATE THE INSTALLATION OF STAINLESS STEEL REBAR. HOLES SHALL BE POSITIONED 6" FROM EACH END.



A / C-1 BOLLARD DETAIL

1 / C-2 SITE PLAN
SCALE: 1"=10'

SCALE: 1" = 10'

CONSTRUCTION NOTES:
1. PROVIDE MINIMUM 42" OF COVER WHEN INSTALLING THE NPW SUPPLY
2. SEE UTITLITY TRENCHING DETAILS FOR MINIMUM SUBSURFACE INSTALLATION REQUIREMENTS.
3. REPLACE APPROX. 200 S.F. OF EXISTING ASPHALT AND FIVE EXISTING BOLLARDS. ①

AS-BUILT REPLACEMENT SHEET 12/2021

OWNER'S ADDRESS
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
BUREAU OF UTILITIES
8250 OLD MONTGOMERY ROAD
COLUMBIA MARYLAND, 20145

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 MARYLAND, LICENSE NO. 31363 EXPIRATION DATE: 01/16/2022

STATE OF MARYLAND — GUIHUA WANG — NO. 31363 — PROFESSIONAL ENGINEER
6/16/2020

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/3/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

KCI TECHNOLOGIES
Engineers, Planners, Scientists, Construction Managers
936 Ridgebrook Road, Sparks, Maryland 21152
Telephone: (410) 316-7800, Fax: (410) 316-7818
www.kci.com

STATE OF MARYLAND — GUIHUA WANG — NO. 31363 — PROFESSIONAL ENGINEER
10/10/2016

DES: KFJ					
DRN: KFJ					
CHK: GW	KJ		AS-BUILT		12/21
DATE: AUG., 2016	GW	1	NOVEMBER 21, 2018		
	BY	NO.	REVISION		DATE

PROPOSED SITE PLAN & SEDIMENT AND EROSION CONTROL PLAN

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

C-2
SCALE AS SHOWN
SHEET 4 OF 43

PLOTTED: 5DATES
DGN FILE: 5NAMES
FILE: 5FILES

NO SHEDS

RELOCATED SHED

RELOCATED SHED

EX. VALVE VAULT

REROUTED WATER SUPPLY

1" WATER TO METER PANEL PROVIDE 42" MIN. COVER

8" GATE VALVE

8" PVC SAN.

4" X 4" D.I.P. TEE AND 4" GATE VALVE

1" POTABLE WATER TO RELOCATED SHED PROVIDE 42" MIN COVER

EX. SEDIMENTATION TANK #1
CONVERT TO EQUALIZATION TANK
SEE DRAWING C-3, TYP.

EX. SEDIMENTATION TANK #2

EX. DOSING TANK

4" GATE VALVE

4" PVC TO D.I.P. TRANSITION COUPLING

LSHH (1)

LE-1 & LSHH (1)

LEVEL TRANSDUCER W/ JUNCTION BOX, TYP. OF 2

PROFILE 2 / C-6

PROFILE 1 / C-5

4" PVC WYE BRANCH

PROFILE 2 / C-5

4" PVC CLEAN OUT

4" PVC SAN.@ 1% FROM BUILDING WASTE DISCHARGE

4" PVC SAN. @ 1.7% FROM SBR EFFLUENT

4" GATE VALVES

4" D.I.P. 45° H.B. (TYP. OF 2)

4" D.I.P. 45° H.B. (TYP. OF 4)

4" D.I.P. TO TRANSFER PUMPS

(2) LEVEL TRANSDUCER PULLBOX, TYP. OF 2

4" PVC 45° H.B. (TYP. OF 2)

3 / C-5

4" PVC 45° H.B. (TYP. OF 3)

4" GATE VALVE

4" PVC TO D.I.P. TRANSITION COUPLING

4" D.I.P. 45° H.B. (TYP. OF 2)

FOR CONTINUATION SEE DRAWING M-1

INSTRUMENTATION CONDUIT, TYP. PROVIDE 24" MIN. COVER

1 / C-6 PROFILE

FOR CONTINUATION SEE DRAWING M-3

INFLUENT TRANSFER STATION

3" SBR INFLUENT (ABOVE GROUND TYP.)

1" SEAL WATER INSTALL BELOW I&C DUCTBANK

FOR CONTINUATION SEE DRAWING M-4

SBR FACILITY

ELECTRIC DUCTBANK, PROVIDE 24" MIN. COVER

I&C MANHOLE

PROVIDE 10-WAY DUCTBANK

INSTRUMENTATION DUCTBANK, PROVIDE 24" MIN. COVER EXCEPT WHERE DUCTBANK CROSSES 4" PVC WASTE DISCHARGE AND 4" SBR EFFLUENT, PROVIDE 60" MIN. COVER.

N 547650
E 1331450

N 547550
E 1331450

E 1331500
N 547550

19ft-2in

26ft-6in

1ft-10½in

2ft-6in

8ft-6in

2ft-7in

6ft-4½in

4ft-8in

0+00

0+20

0+40

0+80

1 / C-3 SITE PIPING PLAN
SCALE: 1"=5'

NOTE:
FOR PIPE PROFILES SEE DRAWINGS C-5 AND C-6. (1)

THE CONTRACTOR SHALL COORDINATE WITH THE LOCATION OF THE EXISTING WATER PIPING IN THE RELOCATED SHEDS AND MAKE A CONNECTION WITH THE NEW LINE.

LEGEND

- FIRE HYDRANT
- VALVE
- TEST STATION
- BORING LOCATION
- LIMIT OF DISTURBANCE
- SILT FENCE
- PROPERTY LINE
- EASEMENT
- TEMPORARY CONSTRUCTION STRIP
- ASPHALT
- CONCRETE SIDEWALK
- VALVE ID
- DECIDUOUS TREE
- CONIFEROUS TREE
- EXISTING FIRE HYDRANT
- EXISTING VALVE
- EXISTING WATER MAIN
- EXISTING GAS MAIN
- EXISTING UNDERGROUND ELECTRIC
- EXISTING SEWER MAIN
- EXISTING MANHOLE
- NPW — EXISTING NON-POTABLE WATER
- EXISTING AIR LINE
- PROPOSED SEWER PIPE
- NPW — PROPOSED NON-POTABLE WATER
- SW — PROPOSED SEAL WATER
- PW — PROPOSED POTABLE WATER
- PROPOSED UNDERGROUND ELECTRIC

SUGGESTED SEQUENCE OF CONSTRUCTION FOR BUILDING AND UTILITY WORK

1. PREPARE THE SITE AND PERFORM CONSTRUCTION STAKEOUT.
2. INSTALL EROSION AND SEDIMENT CONTROL DEVICES, SEE SEQUENCE OF CONSTRUCTION ON DRAWING NO. C-7.
3. CONVERT EXISTING SEDIMENTATION TANKS INTO AN EQUALIZATION TANK IN ACCORDANCE WITH THE SEQUENCE SHOWN ON DRAWING NO. C-4.
4. INSTALL PROGRESSIVE CAVITY TRANSFER PUMPS AND ITS HOUSING SHED.
5. INSTALL SBR AND THE ASSOCIATED PIPING/EQUIPMENT.
6. INSTALL THE FACILITY BUILDING, HVAC, ELECTRICAL EQUIPMENT, AND PLUMBING.
7. COMPLETE THE SITE WORKS INCLUDING PAVEMENT AND SEEDING.
8. DURING NIGHT WHEN WATER CONSUMPTION IS LOW, CONNECT THE SBR EFFLUENT PIPE TO THE EXISTING 4-INCH DIP AS SHOWN ON DRAWING NO. C-3.
9. PROGRAM SBR SYSTEM IN ACCORDANCE WITH THE SPECIFICATION AND MANUFACTURER'S RECOMMENDATION. SEED THE SBR REACTOR WITH NITRIFYING/DENITRIFYING SLUDGE. AERATE.
10. TO START UP THE SBR SYSTEM, CLOSE V-2, V-3, AND V-4 (SHEET C-4) TO ALLOW INFLUENT INTO SBR.
11. REMOVE EROSION AND SEDIMENT CONTROL DEVICES, SEE SEQUENCE OF CONSTRUCTION ON DRAWING NO. C-7.

CONSTRUCTION NOTES

(1) LOCATE ULTRASONIC LEVEL TRANSDUCER LEVEL FLOATS BELOW TANK ACCESS MANHOLE WITH RELATED JUNCTION BOX AND STAINLESS STEEL MOUNTING HARDWARE.

(2) SEE INSTRUMENTATION SITE PLAN FOR DETAILED I&C DUCTBANKS AND FIELD INSTRUMENT TERMINATION.

(2) SEE ELECTRICAL DRAWINGS FOR DETAILED ELECTRICAL SERVICE DUCTBANKS AND SERVICE ENTRANCE DETAILS.

BYPASS OPTIONS

1. NORMAL OPERATION:
   CLOSE V-2, V-3, V-4, V-5, V-6, V-7
   OPEN V-1, V-8
1. TREATMENT FACILITY BYPASS:
   CLOSE V-1, V-4, V-6, V-8
   OPEN V-5, V-7
2. SBR FACILITY BYPASS:
   OPEN V-1, V-2, V-3, V-4
   CLOSE V-5, V-6, V-7, V-8
3. EQUALIZATION TANK #1 BYPASS:
   OPEN V-3, V-5, V-6, V-8
   CLOSE V-1, V-2, V-4, V-7
4. EQUALIZATION TANK #2 BYPASS:
   OPEN V-1, V-8
   CLOSE V-5, V-2, V-3, V-4, V-6, V-7

GRAPHIC SCALE
5 0 5
SCALE: 1" = 5'

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STATE OF MARYLAND — GUIHUA WANG — No. 31363 — PROFESSIONAL ENGINEER — 6/19/2020

AS-BUILT REPLACEMENT SHEET12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/16
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

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STATE OF MARYLAND — GUIHUA WANG — No. 31363 — PROFESSIONAL ENGINEER — 10/10/2016

DES: KFJ
DRN: KFJ
CHK: GW
DATE: AUG., 2016

BY	NO.	REVISION	DATE
KJ		AS-BUILT	12/21
JFW	5	ELECTRICAL DESIGN UPDATES	6/20
JFW	2	ADDENDUM 1	6/20
GW	1	NOVEMBER 21, 2018	

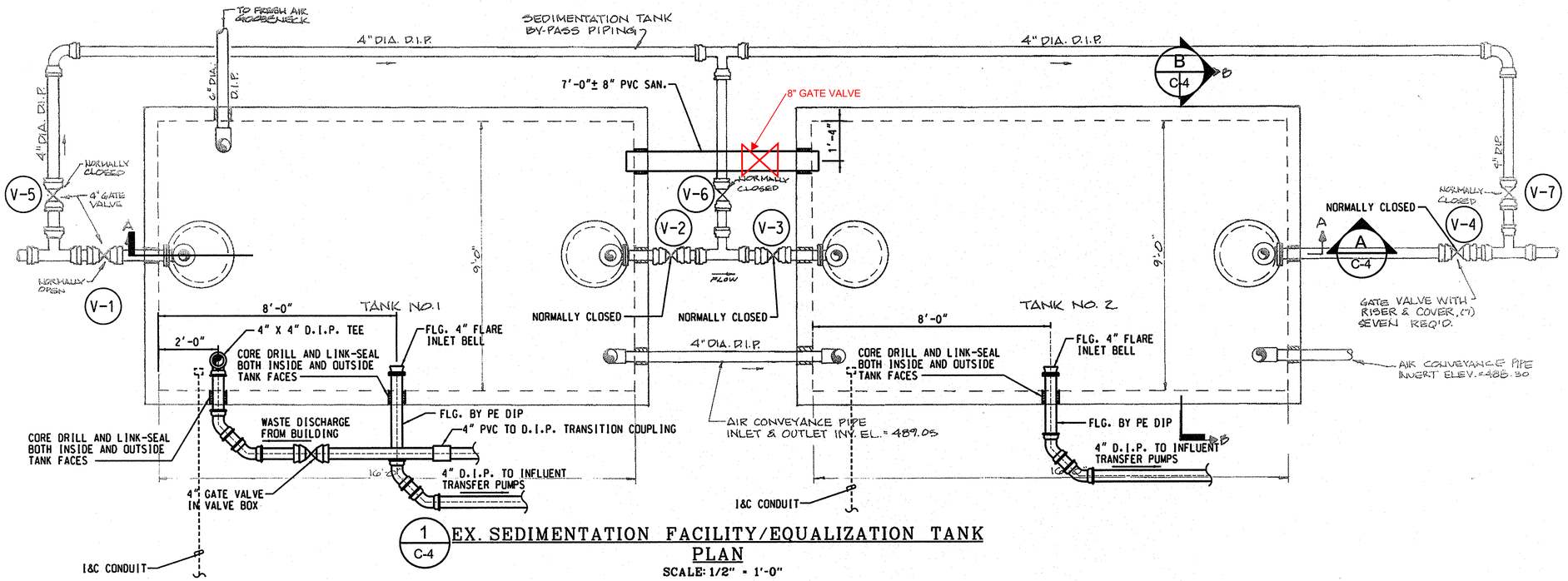
SITE PIPING PLAN

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

C-3
SCALE AS SHOWN
SHEET 5 OF 43

PLOTTED: 8DATE$
PSCRIPT STYLE$
FILE: $FILE$



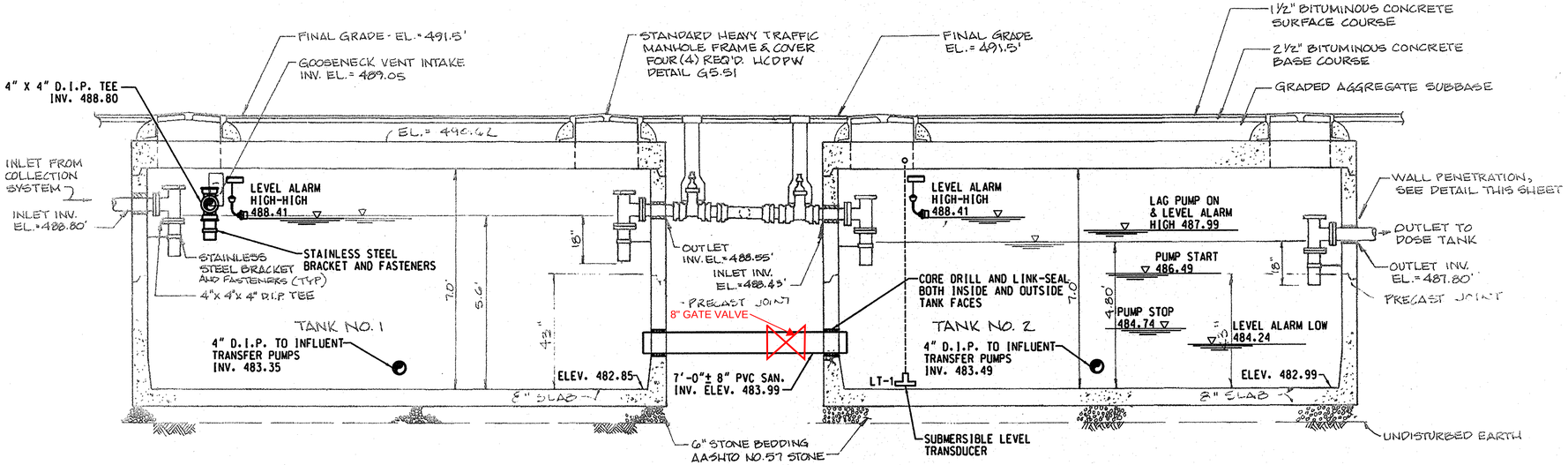
1 / C-4 EX. SEDIMENTATION FACILITY/EQUALIZATION TANK PLAN

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

SUGGESTED SEQUENCE OF CONSTRUCTION

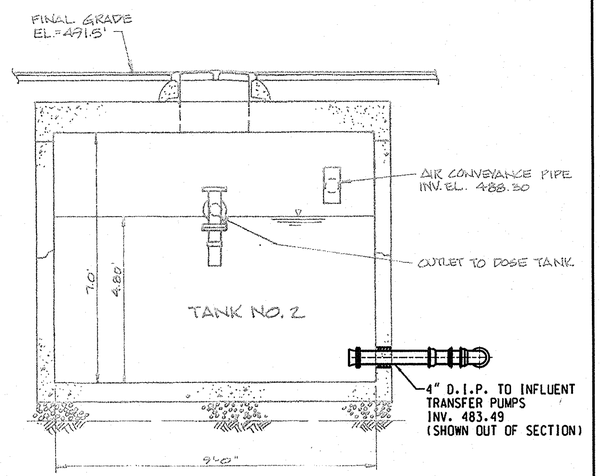
1. CLOSE V-3 AND V-4. OPEN V-6 AND V-7 ALLOWING SEWERAGE TO USE BYPASS PIPING.
2. DEWATER EX. TANK NO.2 AND DISPOSE THE SEWAGE PROPERLY.
3. INSTALL ASSOCIATED PIPING AND INFLUENT TRANSFER PUMPS. PLUG DISCHARGE PIPES UNTIL PREPARED TO ATTACH TO NEW SBR.
4. PREPARE TANK NO.2 FOR INSTALLATION OF NEW 8" PVC PIPE IN ORDER TO CONVERT BOTH TANKS TO EQUALIZATION TANK.
5. CLOSE V-1, V-6 AND OPEN V-5. ALLOW SEWERAGE TO USE BYPASS PIPING.
6. DEWATER EX. TANK NO.1 AND DISPOSE THE SEWAGE PROPERLY.
7. INSTALL 8" PVC PIPE IN ORDER TO CONVERT TANK NO. 1 AND TANK NO. 2 TO AN EQUALIZATION TANK.
8. OPEN V-1, V-2, V-3 AND V-4. CLOSE V-5, V-6 AND V-7. ALLOW SYSTEM TO OPERATE AS NORMAL (PRIOR TO THE COMPLETION OF NEW SYSTEM).
9. INSTALL SBR FACILITY AND ASSOCIATED PIPING, EQUIPMENT, AND ELECTRICAL CONDUIT.
10. UNPLUG THE DISCHARGE PIPES OF INFLUENT TRANSFER PUMPS. CLOSE V-2, V-3, AND V-4. BRING SBR FACILITY ONLINE.

NOTES:
1. SEE HIGH PERFORMANCE COATING SPECIFICATION FOR THE COATING REQUIREMENT FOR THE EQUALIZATION TANKS.



A / C-4 C-4 EX. SEDIMENTATION FACILITY/EQUALIZATION TANK SECTION A-A

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



B / C-4 C-4 EX. SEDIMENTATION FACILITY/EQUALIZATION TANK SECTION B-B

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

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STATE OF MARYLAND · GUIHUA WANG · No. 31363 · PROFESSIONAL ENGINEER

6/16/2020

1 0 1 2 3 4 5 10

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

AS-BUILT

DATE 12/2021

C-4

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/3/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

KCI TECHNOLOGIES
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TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
www.kci.com

STATE OF MARYLAND · GUIHUA WANG · No. 31363 · PROFESSIONAL ENGINEER
10/10/2016

DES: KFJ					
DRN: KFJ					
CHK: GW					
DATE: AUG., 2016	KJ	AS-BUILT	12/21		
	BY	NO.	REVISION	DATE	

EQUALIZATION TANK

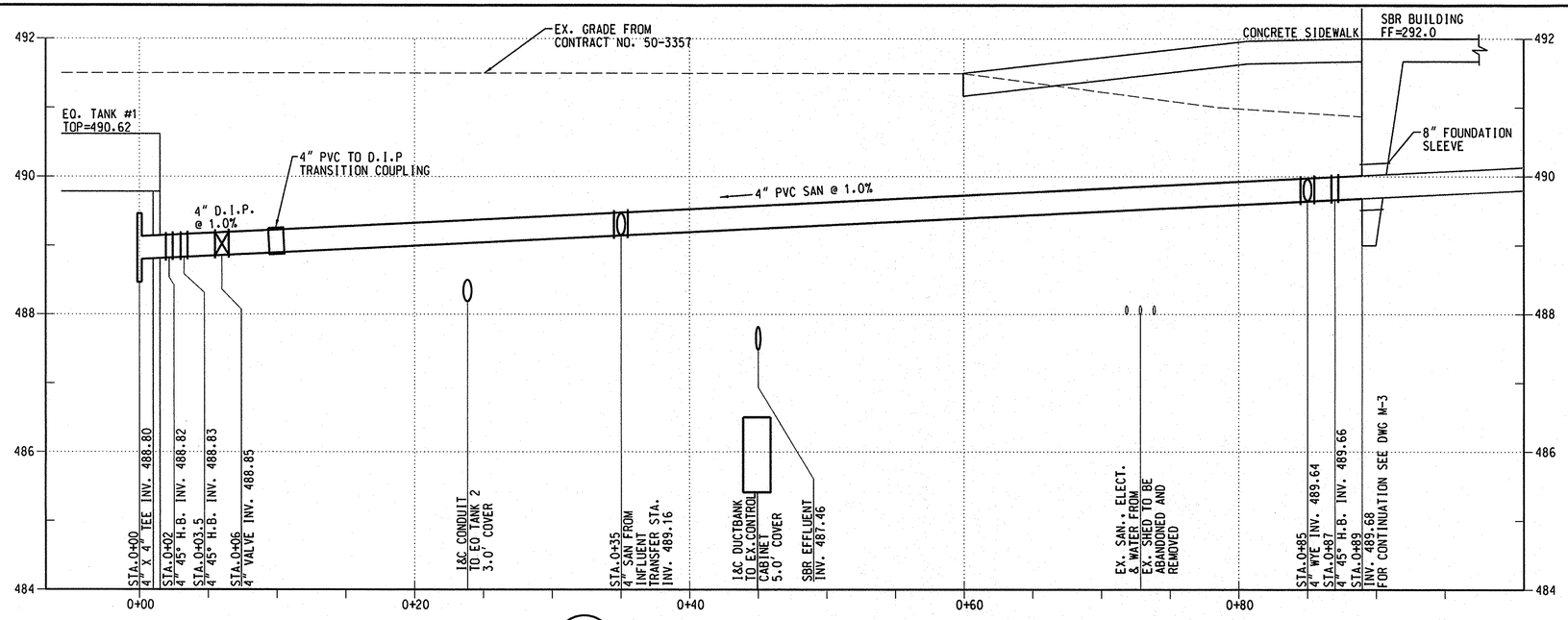
600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

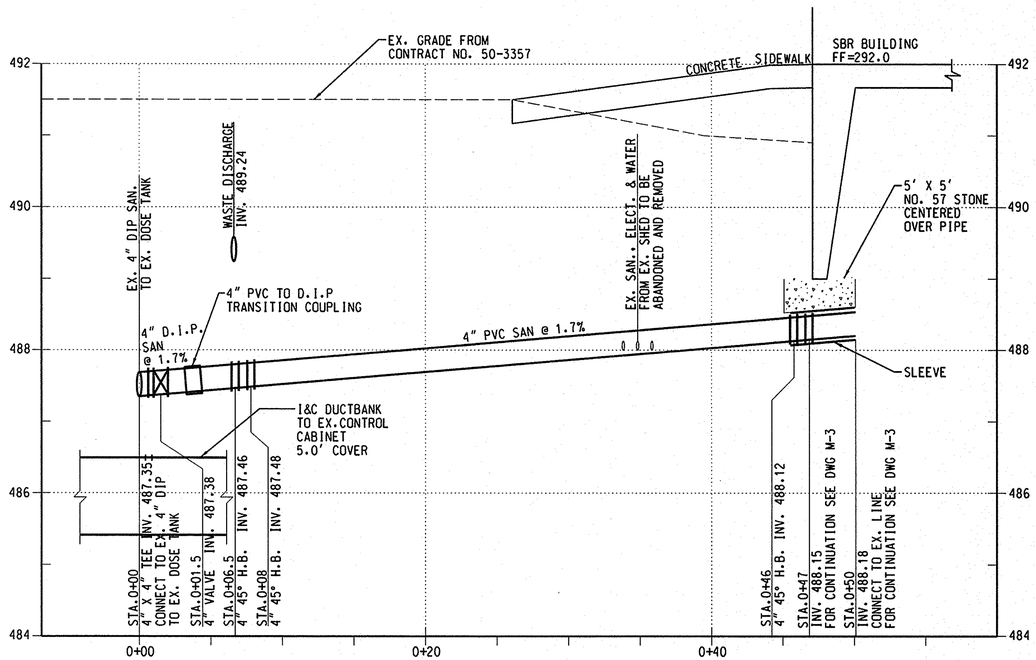
SHEET 6 OF 43

PLOTTED: 8DATES
BY: BUSERNAME
FILE: SFILES



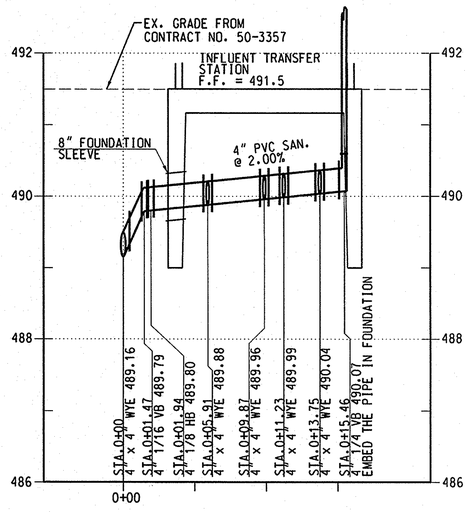
1 / C-5 **PROFILE - WASTE DISCHARGE**

SCALE: HORIZ. 1" = 5'
VERT. 1" = 1'



2 / C-5 **PROFILE - SBR EFFLUENT**

SCALE: HORIZ. 1" = 5'
VERT. 1" = 1'



3 / C-5 **PROFILE - INFLUENT TRANSFER STATION**

SCALE: HORIZ. 1" = 5'
VERT. 1" = 1'

GRAPHIC SCALE

5 0 5
SCALE: 1" = 5'

1 0 1
SCALE: 1" = 1'

AS-BUILT
DATE 12/2021

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HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND — GUIHUA WANG — No. 31363 — PROFESSIONAL ENGINEER — 10/10/2016

DES: KFJ
DRN: KFJ
CHK: GW
DATE: AUG., 2016

BY	NO.	REVISION	DATE

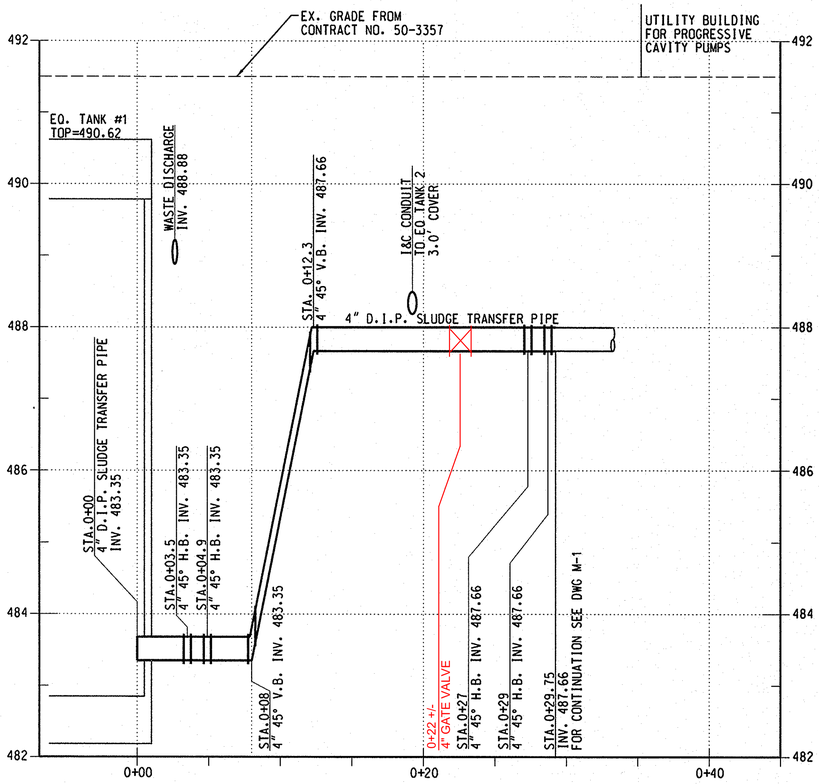
SITE PIPING PROFILES

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

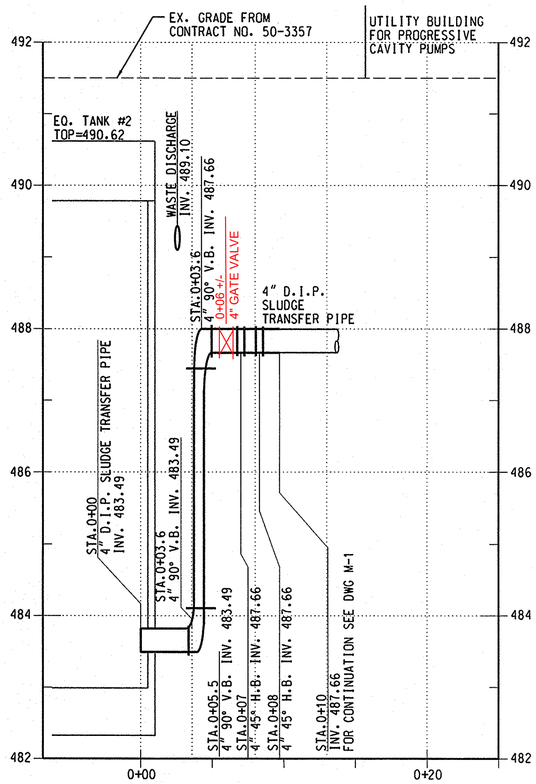
C-5
SCALE AS SHOWN
SHEET 7 OF 43

PLOTTED: 8DATES
DGN FILE: 8NAMES
FILE: $FILE$



1 / C-6 PROFILE - INFLUENT TRANSFER PIPE - EQ. TANK #1

SCALE: HORIZ. 1" = 5'
VERT. 1" = 1'



2 / C-6 PROFILE - INFLUENT TRANSFER PIPE - EQ. TANK #2

SCALE: HORIZ. 1" = 5'
VERT. 1" = 1'

NOTE:
ALL PIPE JOINTS AND PIPE FITTINGS MUST BE RESTRAINED JOINT TYPE

GRAPHIC SCALE

5 0 5
SCALE: 1" = 5'

1 0 1
SCALE: 1" = 1'

AS-BUILT
DATE 12/2021

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EXPIRATION DATE: 01/16/2022

STATE OF MARYLAND GUIHUA WANG NO. 31363 PROFESSIONAL ENGINEER 6/16/2020

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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DATE: AUG., 2016	KJ	AS-BUILT	11/21	
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SITE PIPING PROFILES

600' SCALE MAP NO. 40-41 BLOCK NO. 12

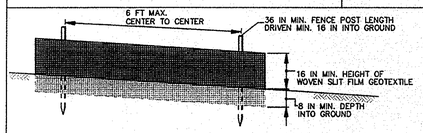
ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

C-6
SCALE AS SHOWN
SHEET 8 OF 43

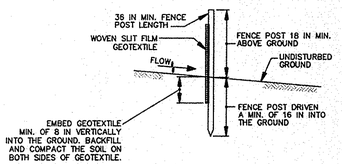
PLOTTED: DATES
PLOTTED: TIMES
FILE: SFILES

DETAIL E-1 SILT FENCE

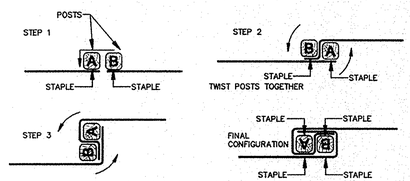
STANDARD SYMBOL: SF



ELEVATION



CROSS SECTION



JOINING TWO ADJACENT SILT FENCE SECTIONS (TOP VIEW)

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

E.2

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± ⅛ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

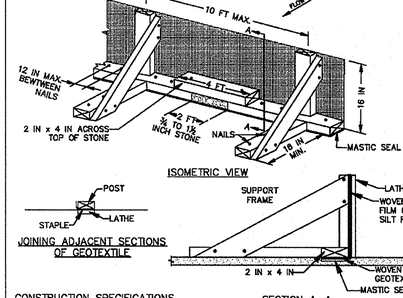
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-2 SILT FENCE ON PAVEMENT

STANDARD SYMBOL: SFOP



ISOMETRIC VIEW

SECTION A-A

CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH X 4 INCH LUMBER.
2. USE WOVEN SLIT FILM GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
3. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
4. SPACE UPRIGHT SUPPORTS NO MORE THAN 10 FEET APART.
5. PROVIDE A TWO FOOT OPENING BETWEEN EVERY SET OF SUPPORTS AND PLACE STONE IN THE OPENING OVER GEOTEXTILE.
6. KEEP SILT FENCE TAUT AND SECURELY STAPLE TO THE UPSLOPE SIDE OF UPRIGHT SUPPORTS. EXTEND GEOTEXTILE UNDER 2x4.
7. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, FOLD, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL. ATTACH LATHE.
8. PROVIDE A MASTIC SEAL BETWEEN PAVEMENT, GEOTEXTILE, AND 2x4 TO PREVENT SEDIMENT-LADEN WATER FROM ESCAPING BENEATH SILT FENCE INSTALLATION.
9. SECURE BOARDS TO PAVEMENT WITH 40D 5 INCH MINIMUM LENGTH NAILS.
10. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. MAINTAIN WATER TIGHT SEAL ALONG BOTTOM. REPLACE STONE IF DISPLACED.

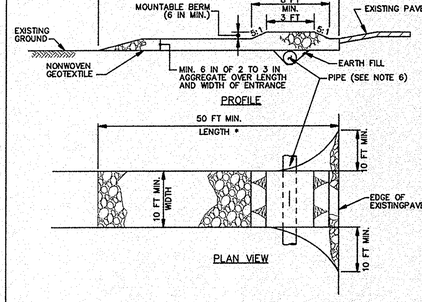
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

E.5

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*50 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

AS-BUILT

DATE 12/2021

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 MARYLAND, LICENSE NO. 31363 EXPIRATION DATE: 01/16/2022

HOWARD SOIL CONSERVATION DISTRICT (HSCD)
STANDARD SEDIMENT CONTROL NOTES

1. A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hour notice to CID must be given at the following stages:
   a. Prior to the start of earth disturbance,
   b. Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading.
   c. Prior to the start of another phase of construction or opening of another grading unit,
   d. Prior to the removal or modification of sediment control practices.

   Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made. Other related state and federal permits shall be referenced, to ensure coordination and to avoid conflicts with this plan.
2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and revisions thereto.
3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization is required within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.
4. All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for topsoil (Sec. B-4-2), permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1) specifications shall be enforced in areas with >15' of cut and/or fill. Stockpiles (Sec. B-4-8) in excess of 20 ft. must be benched with stable outlet. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).
5. All sediment control structures are to remain in place, and are to be maintained in operative condition until permission for their removal has been obtained from the CID.
6. Site Analysis:

Total Area of Site:	9.48	Acres
Area Disturbed:	9.24	Acres
Area to be roofed or paved:	0.11	Acres
Area to be vegetatively stabilized:	9.13	Acres
Total Cut:	151.58	Cu. Yds.
Total Fill:	110.00	Cu. Yds.
Offsite waste/borrow area location:	CONTRACTOR TO COORDINATE	

7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
8. Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly; and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:
   - Inspection date
   - Inspection type (routine, pre-storm event, during rain event)
   - Name and title of inspector
   - Weather information (current conditions as well as time and amount of last recorded precipitation)
   - Brief description of project's status (e.g., percent complete) and/or current activities
   - Evidence of sediment discharges
   - Identification of plan deficiencies
   - Identification of sediment controls that require maintenance
   - Identification of missing or improperly installed sediment controls
   - Compliance status regarding the sequence of construction and stabilization requirements
   - Photographs
   - Monitoring/sampling
   - Maintenance and/or corrective action performed
   - Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE).
9. Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back-filled and stabilized by the end of each workday, whichever is shorter.
10. Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may allowed by the CID per the list of HSCD-approved field changes.
11. Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the HSCD. Unless otherwise specified and approved by the HSCD, no more than 30 acres cumulatively may be disturbed at a given time.
12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.
13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.
14. All Silt Fence and Super Silt Fence shall be placed on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.
15. Stream channels must not be disturbed during the following restricted time periods (inclusive):
   - Use I and IP March 1 - June 15
   - Use III and IIIP October 1 - April 30
   - Use IV March 1 - May 31
16. A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.

Rev. 9 2016

SEDIMENT AND EROSION CONTROL SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT.
2. DELINEATE THE LIMIT OF DISTURBANCE (LOD), REQUEST PRE-CONSTRUCTION MEETING ON-SITE WITH REPRESENTATIVES OF HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION.
3. LAYOUT THE SITE (2 DAYS).
4. CLEAR AND GRUB AS NEEDED FOR THE INSTALLATION OF THE SEDIMENT CONTROL DEVICES AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR. INSTALL AND STABILIZE THE SEDIMENT CONTROL DEVICES IF NECESSARY. (2 DAYS)
5. EXCAVATE SITE FOR THE MODIFICATION OF EXISTING SEDIMENTATION TANKS TO EQUALIZATION TANKS, CONSTRUCTION OF INFLUENT TRANSFER PUMPING, ELECTRICAL CONDUIT, GENERATOR, AND SBR FACILITY (7 MONTHS).
6. PERFORM FINAL GRADING, PERMANENTLY STABILIZE ALL DISTURBED VEGETATED AREAS IN ACCORANCE WITH SECTION B-4-5 OF THE "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL". (5 DAYS).
7. CLEAN UP CONSTRUCTION SITE, DEMOBILIZE (1 DAY)
8. REMOVE SEDIMENT CONTROL DEVICES AFTER PERMISSION IS GRANTED BY THE SEDIMENT CONTROL INSPECTOR.
9. STABILIZE ALL AREAS THAT ARE DISTURBED BY REMOVAL OF SEDIMENT CONTROL DEVICES.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): 6b
SEED MIXTURE (FROM TABLE B.1): ----------

NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-20-20)	LIME RATE
	COOL-SEASON GRASS					
	ANNUAL RYE GRASS (LOLIUM PERENNE SSP. MULTIFLORUM	40	MAR 1 TO MAY 15 ; AUG 1 TO OCT 15	0.5		
	BARLEY (HORDEUM)	96	MAR 15 TO MAY 31 ; AUG 1 TO OCT 15	1.0		
	OATS (AVENA SATIVA)	72	MAR 15 TO MAY 31 ; AUG 1 TO OCT 15	1.0	436 lB/AC	2 TONS/AC
	WHEAT (TRITICUM AESTIVUM)	120	MAR 15 TO MAY 31 ; AUG 1 TO OCT 15	1.0	(10LB/1000 SF)	(90LB/1000 SF)
	CEREAL RYE (SECALE CEREALE)	112	MAR 15 TO MAY 31 ; AUG 1 TO NOV 15	1.0		
	WARM-SEASON GRASS					
	FOXTAIL MILLET (SETARIA ITALICA)	30	MAY 16 TO JUL 31	0.5		
	PEARL MILLET (PENNISETUM GLAUCUM)	20	MAY 16 TO JUL 31	0.5		

NOTES:

1/ Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (P.L.S). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses.

Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur in very late fall beyond the seeding dates for other temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

Oats are the recommended nurse crop for warm-season grasses.

2/ For sandy soils, plant seeds at twice the depth listed above.

3/ The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

Permanent Seeding Summary

Hardiness Zone (from Figure B.3): 6b
Seed Mixture (from Table B.3): 9

No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20) N	P_2O_5	K_2O	Lime Rate
	TALL FESCUE	60	MAR 1 TO MAY 15 ; AUG 1 TO OCT 15	¼- ½ in	45 pounds per acre (1.0 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
	KENTUCKY BLUEGRASS	40	MAR 1 TO MAY 15 ; AUG 1 TO OCT 15	¼- ½ in				
	SWITCH GRASS	10	MAY 16 TO JULY 31	¼- ½ in				

B-4-2 STANDARDS AND SPECIFICATIONS

FOR

SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

The process of preparing the soils to sustain adequate vegetative stabilization.

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation
   1. Temporary Stabilization
      a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
      b. Apply fertilizer and lime as prescribed on the plans.
      c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
   2. Permanent Stabilization
      a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
         i. Soil pH between 6.0 and 7.0.
         ii. Soluble salts less than 500 parts per million (ppm).
         iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
         iv. Soil contains 1.5 percent minimum organic matter by weight.
         v. Soil contains sufficient pore space to permit adequate root penetration.
      b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
      c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
      d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
      e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling
   1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
   2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
   3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
      a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
      b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
      c. The original soil to be vegetated contains material toxic to plant growth.
      d. The soil is so acidic that treatment with limestone is not feasible.
   4. Areas having slopes steeper than 2:1 require special consideration and design.
   5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
      a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
      b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
      c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
   6. Topsoil Application
      a. Erosion and sediment control practices must be maintained when applying topsoil.
      b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
      c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)
   1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analysis.
   2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
   3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
   4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
   5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B-4-5 STANDARDS AND SPECIFICATIONS

FOR

PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

Criteria

A. Seed Mixtures
   1. General Use
      a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
      b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
      c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
      d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary .
   2. Turfgrass Mixtures
      a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
      b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
         i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
         ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
         iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
         iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1½ to 3 pounds per 1000 square feet.

         Notes:
         Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland"

         Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line
      c. Ideal Times of Seeding for Turf Grass Mixtures

         Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)

         Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)

         Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)
      d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
      e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

OWNER'S ADDRESS

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
BUREAU OF UTILITIES
8250 OLD MONTGOMERY ROAD
COLUMBIA MARYLAND, 20145

STATE OF MARYLAND — GUIHUA WANG — No. 31363 — PROFESSIONAL ENGINEER
6/16/2020

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/3/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
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CONSTRUCTION MANAGERS
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FAX: (410) 316-7818
www.kci.com

STATE OF MARYLAND — GUIHUA WANG — No. 31363 — PROFESSIONAL ENGINEER
10/10/2016

DES: KFJ				
DRN: KFJ				
CHK: GW				
DATE: AUG., 2016	BY	NO.	REVISION	DATE

SEDIMENT AND EROSION CONTROL NOTES AND DETAILS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

C-7
SCALE AS SHOWN
SHEET 9 OF 43

PLOTTED: 5/24/16
DRAWING NAME:
FILE: SFILES

LOUVER SCHEDULE

LOUVER ID	MECHANICAL ID	WIDTH	HEIGHT	AFF
LV1	EF-1	36"	36"	~~8'-0"~~ 8'- 2"
LV1	EF-2	36"	36"	~~8'-0"~~ 8'- 4"
LV2	EF-3 (BOD)	24"	24"	9'-0"
LV3	EF-4 (SHUTTER VENT)	6"	6"	9'-0"
LV2	EF-5	24"	24"	7'-0"
---	HVAC-1	--	--	-----
LV5	MOD-1	48"	60"	3'-6"
LV5	MOD-2	48"	60"	3'-6"
LV2	MOD-3 (SF-1)	24"	24"	~~8'-0"~~ 8'- 2"
LV2	MOD-4	24"	24"	9'-0"
LV2	MOD-5	24"	24"	7'-0"
LV2	EXHAUST LOUVER (MECH. RM.)	24"	24"	8'-0"

ABBREVIATIONS

AFF	ABOVE FINISH FLOOR
OHD	OVERHEAD DOOR
SD	SMOKE DETECTOR
FE	FIRE EXTINGUISHER

DOOR SCHEDULE

DOOR ID	FRAME MATERIAL	DOOR MATERIAL	WIDTH	HEIGHT	FIRE RATING	REMARKS
D1	HOLLOW METAL	HOLLOW METAL	3'-0"	7'-0"	N/A	WEATHER PROOF THRESHOLD. PANIC EXIT BAR. DOOR WINDOW
D2	HOLLOW METAL	HOLLOW METAL	6'-0"	7'-0"	N/A	WEATHER PROOF THRESHOLD. PANIC EXIT BAR. DOOR WINDOW
D3	HOLLOW METAL	HOLLOW METAL	6'-0"	7'-0"	N/A	BASIC DOOR. PANIC EXIT BAR. DOOR WINDOW
D4	HOLLOW METAL	HOLLOW METAL	3'-0"	7'-0"	N/A	BASIC DOOR. PANIC EXIT BAR. DOOR WINDOW
D5	HOLLOW METAL	HOLLOW METAL	3'-0"	7'-0"	N/A	BASIC DOOR WITH INLET GRILL. LOCK

NOTES
1. WEATHER SEALS ARE NOT REQUIRED ON INTERIOR DOORS.
2. NO WINDOWS ON TOILET ROOM DOOR.
3. PANIC EXIT BAR IS NOT REQUIRED ON INTERIOR DOORS.

WALL SCHEDULE

WALL ID	INSULATION RATING	INTERIOR CLADDING	INTERIOR FINISH
W1	R-20	GYPSUM BOARD	SYSTEM NO. 10
W2	R-13	GYPSUM BOARD	SYSTEM NO. 10
W3	R-20	GYPSUM BOARD	FRP PANELING ADHERED TO GYPSUM
W4	R-13	GYPSUM BOARD	FRP PANELING ADHERED TO GYPSUM

FIRE EXTINGUISHER REQUIREMENTS

LOCATION: IN A CONSPICUOUS LOCATION WHERE THEY WILL HAVE READY ACCESS AND BE IMMEDIATELY AVAILABLE FOR USE. 906.5

VIEW: PORTABLE FIRE EXTINGUISHERS SHALL NOT BE OBSTRUCTED FROM VIEW. 906.6.

SIGNAGE: SIGNS OR OTHER MEANS USED TO INDICATE FIRE EXTINGUISHER LOCATION SHALL BE VISIBLE FROM NORMAL PATHS OF TRAVEL. 6.1.3.3.4

HANGERS/BRACKETS: SHALL NOT BE FABRICATED IN THE FIELD. INSTALL PER MANUFACTUERES RECOMMENDATIONS. 6.1.3.4.1

INSTALLATION: FIRE EXTINGUISHERS LESS THAN 40 LBS SHALL BE INSTALLED SO THE TOP IS NOT MORE THAN 5 FT. FROM THE FLOOR. FIRE EXTINGUISHERS MORE THAN 40 LBS SHALL BE INSTALLED SO THE TOP IS NOT MORE THAN 3-1/2 FT. FROM THE FLOOR. IN NO CASE SHOULD ANY FIRE EXTINGUISHER BE LESS THAN 4 INCHES FROM THE FLOOR. 6.1.3.8.1† 6.1.3.8.2‡ 6.1.3.8.3

TRAVEL DISTANCE: FIRE EXTINGUISHERS SHALL BE LOCATED SO THAT THE MAXIMUM TRAVEL DISTANCES SHALL NOT EXCEED 75 FT. 6.2.1.2.2

TYPE: FIRE EXTINGUISHER SHALL BE MULTIPURPOSE ABC 30 LB.

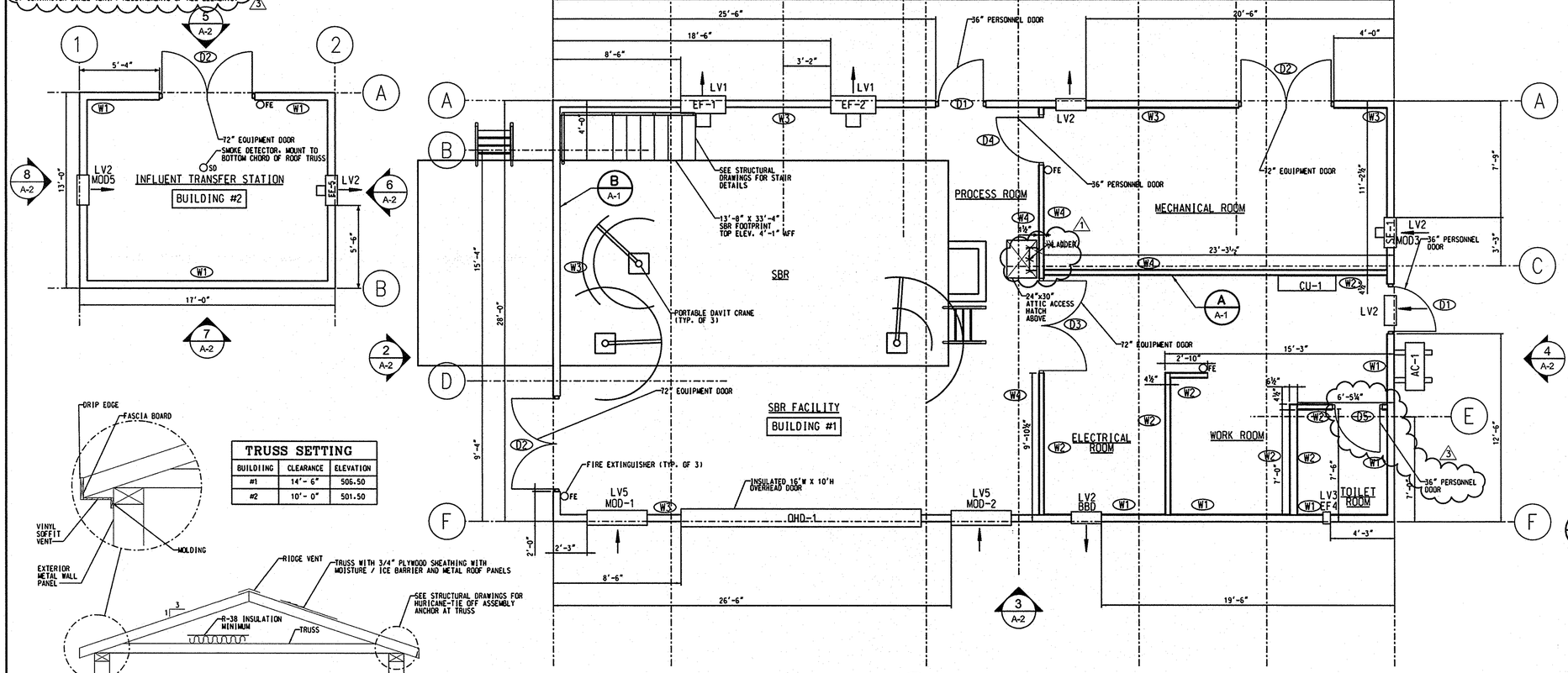
NOTES
1. SUMMARY OF 2018 IBC SEC 906 AND NFPA 10.
2. VERIFY QUANTITY AND LOCATIONS WITH CODE OFFICIAL.
3. CONTRACTOR SHALL VERIFY REQUIREMENTS OF ALL ELEMENTS. (3)

PROJECT INFORMATION

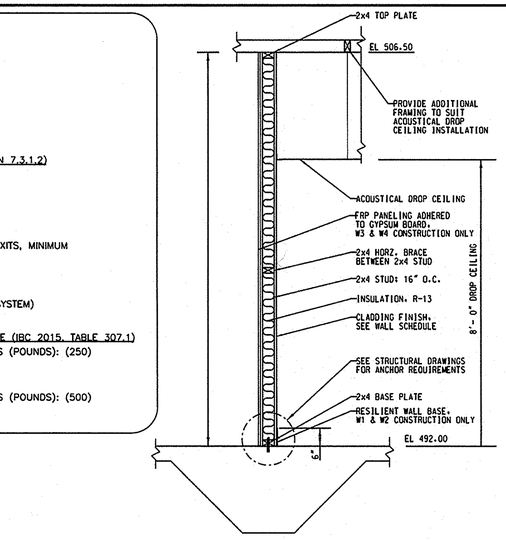
PROJECT NAME/ADDRESS:
ASHLEIGH KNOLLS SHARED SEWAGE DISPOSAL FACILITY
HOWARD COUNTY, MARYLAND

APPLICABLE CODES: (3)
INTERNATIONAL BUILDING CODE 2018
NFPA 101 LIFE SAFETY CODE 2018
INTERNATIONAL MECHANICAL CODE 2018
NEC – NATIONAL ELECTRIC CODE WITH LOCAL AMENDMENTS (NFPA 70) 2017

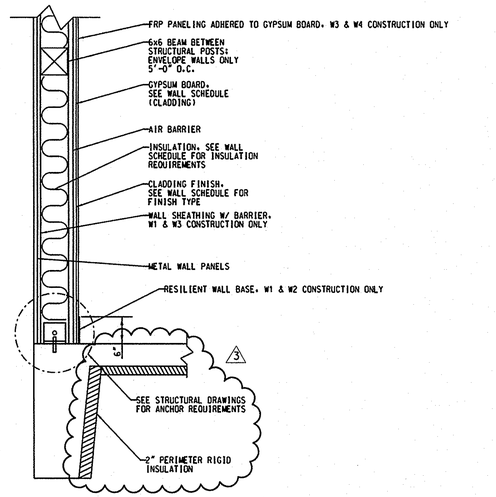
1. USE AND OCCUPANCY: FACTORY, GROUP F-2
2. TYPE OF CONSTRUCTION: IV
3. ALLOWABLE BUILDING HEIGHTS AND AREA (TABLE 504.4 & 506.2)
   AREA= 21,000 SF
   HEIGHT= 5 STORY
   ACTUAL HEIGHT: BUILDING 1: 20'-8"
   BUILDING 2: 13'-2"
   ACTUAL FLOOR AREA:
   TOTAL BUILDING FOOTPRINT = BUILDING 1: 1,568 S.F.
   BUILDING 2: 221 S.F.
4. FIRE RESISTANCE RATING FOR BUILDING ELEMENTS
   STRUCTURAL FRAME: 0 HOUR
   BEARING WALLS: 0 HOUR
   NON-BEARING WALL (INT): 0 HOUR
   FLOOR CONSTRUCTION: 0 HOUR
   ROOF CONSTRUCTION: 0 HOUR
   FIRE SEPARATION DISTANCE : 0 HOUR
   (TABLE 602) (EXEMPT BECAUSE BUILDINGS ARE ON SAME PROPERTY)
5. FIRE PROTECTION SYSTEM : NOT-SPRINKLERED
6. ACTUAL OCCUPANT LOAD (NFPA 101, SECTION 7.3.1.2)
   N/A
7. EGRESS WIDTH PER OCCUPANT SERVED
   DOORS (SECTION 1008.1.1) = 32 INCHES
8. MINIMUM NUMBER OF EXITS REQUIRED
   (NFPA 101, SECTION 7.4.1.2) : 2 EXITS, MINIMUM
   TWO (2) ON FIRST FLOOR
9. MAXIMUM ACCESS TRAVEL DISTANCE :
   (NFPA 101, SECTION 39.2.6.2)
   ALLOWABLE: 200'-0" (NO SPRINKLER SYSTEM)
   ACTUAL: 30'-0" MAXIMUM
10. CHEMICAL STORAGE TYPE & MAXIMUM VOLUME (IBC 2015, TABLE 307.1)
    OXIDIZER CLASS II: MAXIMUM LIQUID GALLONS (POUNDS): (250)
    (USE CLOSED SYSTEM)
    ACTUAL: 25 GALLONS (243 lbs.)
    CORROSIVES: MAXIMUM LIQUID GALLONS (POUNDS): (500)
    (USE CLOSED SYSTEM)
    ACTUAL: 50 GALLONS (400 lbs.)



1 A-2 **FLOOR PLAN**
SCALE: 1/4" = 1'-0"



A A-1 **INTERIOR WALL CONSTRUCTION DETAIL**
SCALE: 1/2" = 1'-0"



B A-1 **PERIMETER WALL CONSTRUCTION DETAIL**
SCALE: 3/4" = 1'-0"

TRUSS SETTING		
BUILDING	CLEARANCE	ELEVATION
#1	14'- 6"	506.50
#2	10'- 0"	501.50

(1) NOTE
1. CONTRACTOR SHALL PROVIDE GYPSUM BOARD WITH FRP PANELING, SIMILAR TO W4 WALL SCHEDULE, ON THE CEILING SURFACE EXPOSED TO THE SBR AND MECHANICAL ROOMS.

C A-1 **TYPICAL ROOF TRUSS ASSEMBLY**
SCALE: NONE

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 MARYLAND, LICENSE NO. 33925 EXPIRATION DATE: 01/15/2021

STEVEN E. ANDERSON — No. 33925 — PROFESSIONAL ENGINEER — 6/16/20

Refer to Rasche Brothers building drawings (Submittal 13121-001r2) for building details

GRAPHIC SCALES
SCALE: 1/4" = 1'-0"
SCALE: 1/2" = 1'-0"
SCALE: 3/4" = 1'-0"

AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/10
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

KCI TECHNOLOGIES
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936 RIDGEBROOK ROAD
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TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
www.kci.com

STEVEN E. ANDERSON — No. 33925 — PROFESSIONAL ENGINEER — DATE: 10/10/2016

DES: KFJ
DRN: KFJ
CHK: SEA
DATE: AUG., 2016

BY	NO.	REVISION	DATE
KJ		AS-BUILT	11/21
JFW	3	BUILDING PERMIT COMMENTS - HO. CO. DILP	6/20
GW	1	NOVEMBER 21, 2018	

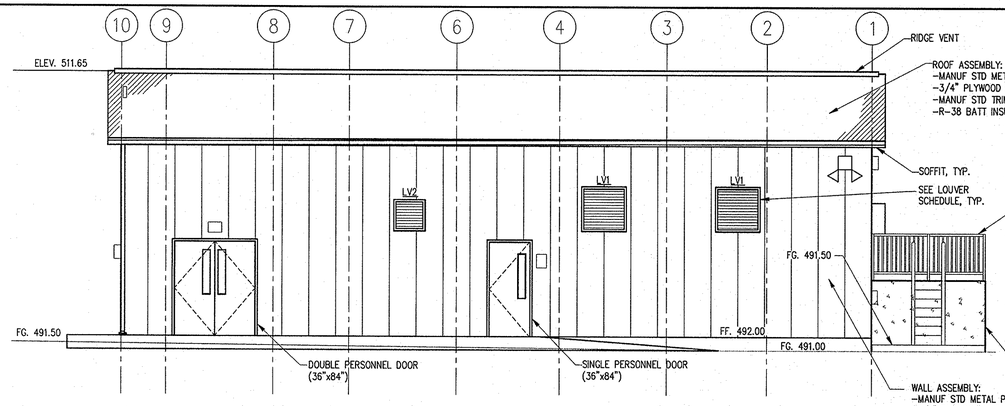
BUILDING PLAN

600' SCALE MAP NO. 40-41 BLOCK NO. 12

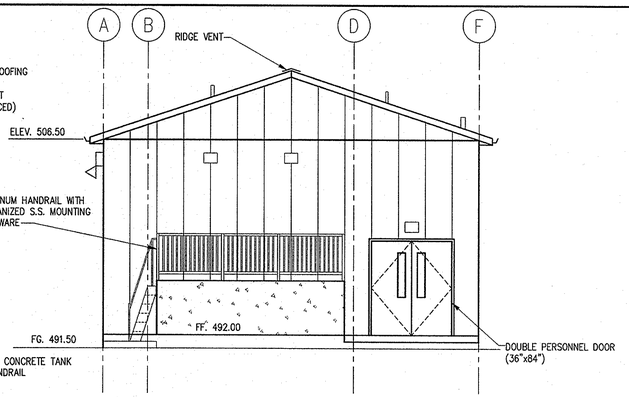
ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

A-1
SCALE AS SHOWN
SHEET 10 OF 43

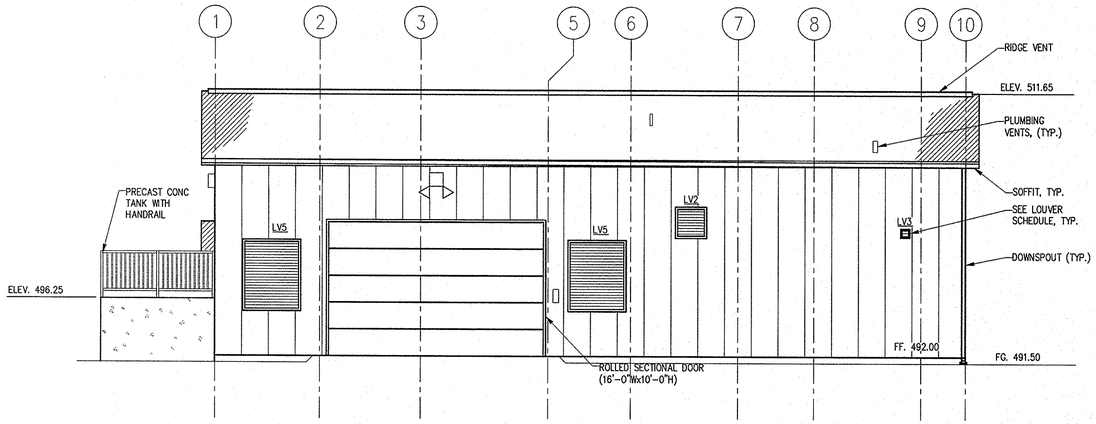
PLOTTED: 6/24/25
BY: HUSERNAMES
FILE: SFILES



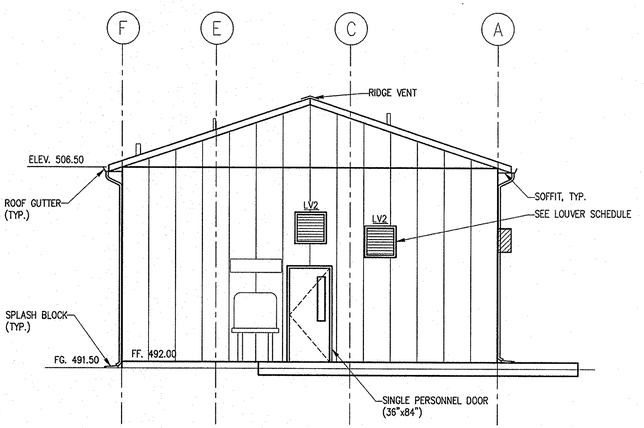
1 A–2 EAST ELEVATION
SCALE: 3/16"=1'-0"



2 A–2 NORTH ELEVATION
SCALE: 3/16"=1'-0"

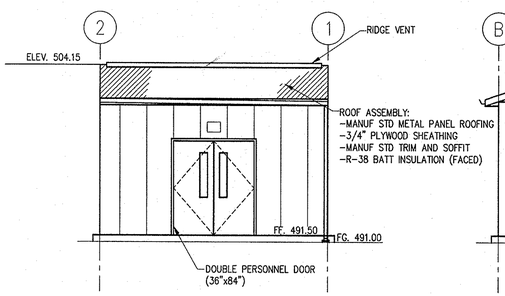


3 A–2 WEST ELEVATION
SCALE: 3/16"=1'-0"

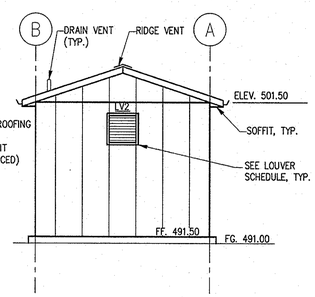


4 A–2 SOUTH ELEVATION
SCALE: 3/16"=1'-0"

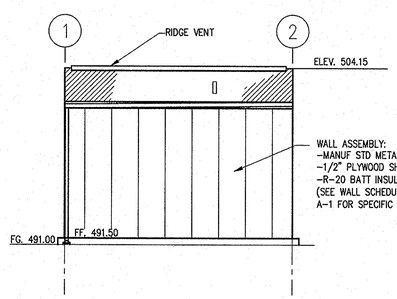
BUILDING NO.1



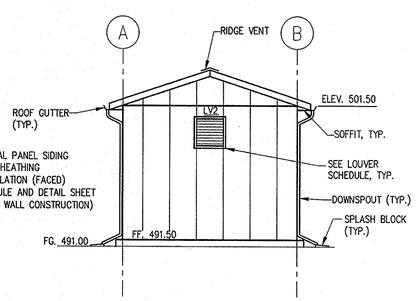
5 A–2 EAST ELEVATION
SCALE: 3/16"=1'-0"



6 A–2 SOUTH ELEVATION
SCALE: 3/16"=1'-0"



7 A–2 WEST ELEVATION
SCALE: 3/16"=1'-0"



8 A–2 NORTH ELEVATION
SCALE: 3/16"=1'-0"

BUILDING NO.2

BASIS OF DESIGN

1. SHEET METAL FLASHING AND TRIM
A. MATERIALS:
1. GALVANIZED STEEL SHEET: ASTM A 526, G90, COMMERCIAL QUALITY OR ASTM A 527 G90, LOCK-FORMING QUALITY, HOPT DIPPED GALVANIZED STEEL SHEET WITH 0.20 PERCENT COPPER, MILL PHOSPHATIZED WHERE INDICATED FOR PAINTING, NOT LESS THAN 0.0396 INCH THICK, UNLESS OTHERWISE NOTED.
2. BASE FLASHING: GALVANIZED STEEL, 0.0276 INCH THICK.
3. COUNTERFLASHING: GALVANIZED STEEL, 0.0217 INCH THICK.
4. CONDUCTOR HEADS: GALVANIZED STEEL, 0.0276 INCH THICK.
5. FASTENERS: SAME METAL AS SHEET METAL FLASHING OR OTHER NON-CORROSIVE METAL AS RECOMMENDED BY SHEET METAL MANUFACTURER. MATCH FINISH OF EXPOSED METAL HEADS WITH MATERIAL BEING FASTENED.

2. SEALANTS AND CAULKING
A. COMPATIBILITY: PROVIDE JOINT SEALERS, JOINT FILLERS, AND OTHER RELATED MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER AND WITH JOINT SUBSTRATES UNDER CONDITIONS OF SERVICE APPLICATIONS. PROVIDE COLORS TO MATCH ADJACENT SURFACES. PROVIDE BLACK OR OTHER NEUTRAL COLOR WHERE NO OTHER COLOR IS AVAILABLE.

B. MATERIALS:
1. ONE-COMPONENT, POLYSULFIDE BASED, ONE PART ELASTOMERIC SEALANT: COMPLY WITH FS-TT-S-00230, CLASS A, TYPE II (NON-SAG). FOR JOINTS AT PENETRATIONS THROUGH EXTERIOR WALLS, PROVIDE COMPOUND BEARING THE THIOCOL CHEMICAL CORPORATION SEAL OF APPROVAL. USE ONE OF THE FOLLOWING PRODUCTS/MANUFACTURERS OR AN APPROVED EQUAL:
a. FLEXISEAL 900 SERIES BY DAP, INC.
b. HORNFLEX ONE-COMPONENT BY W.R. GRACE & CO.
2. ONE-COMPONENT, ACRYLIC SEALANT: ACRYLIC TERPOLYMER, SOLVENT-BASED ONE-PART THERMOPLASTIC SEALANT COMPOUNDS, SOLIDS NOT LESS THAN 95% ACRYLIC. COMPLY WITH FS-TT-S-00230, CLASS B, TYPE II FOR PERIMETER OF METAL WINDOW AND DOOR FRAMES, THESHOLDS AT EXTERIOR DOORS, AND PIPE SLEEVES THROUGH EXTERIOR WALLS AND FLOOR SLABS. USE ONE OF THE FOLLOWING PRODUCTS/MANUFACTURERS OR AND APPROVED EQUAL:
a. DAP ACRYLIC BY DAP, INC.
b. GACO AS-3 BY GATES ENGINEERING/SMC.
3. OLEO-RESINS CAULKING COMPOUND: COMPLY WITH FS TT-C-598, NON-STAINING, NON-BLEEDING, PAINTABLE. FOR PERIMETER OF INTERIOR DOOR AND WINDOW FRAMES, USE ONE OF THE FOLLOWING PRODUCTS/MANUFACTURERS OR AN APPROVED EQUAL:
a. VULCATEX BY W.R. GRACE & CO.

3. HOLLOW METAL DOORS AND FRAMES

A. CODES AND STANDARDS:
1. STEEL DOOR INSTITUTE "RECOMMENDED SPECIFICATIONS FOR STANDARD STEEL DOOR AND FRAMES" (SDI 100)
2. ANSI A115 "SPECIFICATIONS FOR MINIMUM MATERIALS AND CONSTRUCTION REQUIREMENTS."

B. SUBMITTALS:
1. SHOP DRAWINGS FOR FABRICATION AND ERECTION OF HOLLOW METAL DOORS AND FRAMES, INCLUDING DETAILS OF EACH FRAME TYPE, ELEVATIONS OF DOOR DESIGN TYPES, CONDITIONS AT OPENINGS, DETAILS OF CONSTRUCTION, LOCATION AND INSTALLATION REQUIREMENTS OF FINISH HARDWARE AND REINFORCEMENT, AND DETAILS OF JOINTS AND CONNECTIONS. SHOW ANCHORAGE AND ACCESSORY ITEMS.

C. MATERIALS:
1. HOT-ROLLED SHEET AND STRIP: ASTM A 569 AND ASTM A 568, COMMERCIAL QUALITY CARBON STEEL, PICKLED AND OILED.
2. COLD-ROLLED STEEL SHEETS: ASTM A 366 AND ASTM A 568, COMMERCIAL QUALITY CARBON STEEL.
3. INSERTS, BOTLS, AND FASTENERS: MANUFACTURER'S STANDARD UNITS TO COMPLY WITH ASTM A 153, CLASS C OR D AS APPLICABLE.
4. SHOP APPLIED PAINT: FOR STEEL SURFACES, A RUST-INHIBITIVE ENAMEL OR PAINT, EITHER AIR-DRYING OR BAKING, SUITABLE AS A BASE FOR SPECIFIED FINISH PAINTS.

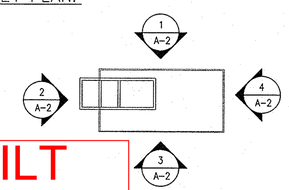
D. INSTALLATION:
1. SUPPORTS AND ANCHORS SHALL BE FABRICATED OF STEEL NOT LESS THAN 16 GAUGE.
2 HOLLOW METAL UNITS TO BE RIGID, NEAT IN APPEARANCE, AND FREE FROM DEFECTS, WARP OR BUCKLE. WHERE PRACTICAL, FIT AND ASSEMBLE UNITS IN MANUFACTURER'S PLANT.
3. WELD EXPOSED JOINTS CONTINUOUSLY, GRIND, AND DRESS TO MAKE SURFACE SMOOTH AND FLUSH. METALLIC FILLER TO CONCEAL MANUFACTURING DEFECTS IS NOT ACCEPTABLE.
4. UNLESS OTHERWISE INDICATED, PROVIDE COUNTERSUNK FLAT PHILLIPS OR JACKSON HEADS FOR EXPOSED SCREWS AND BOLTS.
5. PREPARE HOLLOW METAL UNITS TO RECEIVE MORTISED AND CONCEALED HARDWARE, INCLUDING CUT-OUTS, REINFORCING, DRILLING, AND TAPPING IN ACCORDANCE WITH FINAL FINISH HARDWARE SCHEDULE AND ANSI A115.
6. PROVIDE REINFORCING AT HINGES IN HOLLOW METAL UNITS TO BE 7 GAUGE x 10-1/2 INCHES x WIDTH REQUIRED.

5. GYPSUM DRYWALL SYSTEM
A. MATERIALS:
1. MANUFACTURER: FOR ALL GYPSUM DRYWALL SYSTEMS THROUGHOUT THE PROJECT, PROVIDE ALL DRYWALL MATERIALS, INCLUDING ACCESSORIES AND FASTENERS, PRODUCED BY ONE MANUFACTURER. PROVIDE GYPSUM DRYWALL SYSTEMS MANUFACTURED BY ONE OF THE FOLLOWING, OR AN APPROVED EQUAL:
a. AMERICAN GYPSUM CO.
b. CERTAINTEED CORP.
c. GEORGIA-PACIFIC GYPSUM LLC
2. STUDS AND TRACK: ASTM C 645, SCREW TYPE.
3. JOINT TAPES: ASTM C 475, IN DRY POWDER FORM OR PRE-MIXED READY FOR APPLICATION.
4. DRYWALL FASTENERES: SIZE AND TYPE RECOMMENDED BY DRYWALL MANUFACTURER FOR THE APPLICATION SHOWN

B. INSTALLATION:
1. TOLERANCES FOR DRYWALL WORK: DO NOT EXCEED VARIATION OF 3/16" IN 8'-0" FROM PLUMB, LEVEL, AND FLAT IN ALL DIRECTIONS. DO NOT EXCEED 1/8" OFFSET OF PLANES AND JOINTS BETWEEN PANELS. SHIM PANELS AS NEEDED TO COMPLY WITH TOLERANCE REQUIREMENTS.
2. AT EXPOSED WALLBOARD EDGES AND AROUND OPENINGS, PROVIDE SQUARE-NOSE METAL CASING BEAD WITH EITHER KNURLED AND PERFORATED OR EXPANDED FLANGES FOR NAILING OR STAPLING, AND BEADED FOR CONCEALMENT OF FLANGES IN JOINT COMPOUND.
3. APPLY JOINT COMPOUND IN THREE COATS (NOT INCLUDING PREFILL OR OPENING IN BASE). SAND BETWEEN EACH COAT AND AFTER LAST COAT.

NOTE:
1. SEE SPECIFICATIONS FOR GUTTER AND DOWNSPOUT FABRICATION AND INSTALLATION REQUIREMENTS.

KEY PLAN:



AS-BUILT
DATE 12/2021

Refer to Rasche Brothers building drawings (Submittal 13121-001r2) for building details

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 MARYLAND, LICENSE NO. 33925 EXPIRATION DATE: 01/15/2021

STATE OF MARYLAND · STEPHEN E. ANDERS · NO. 33925 · PROFESSIONAL ENGINEER
6/16/20

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

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STATE OF MARYLAND · STEPHEN E. ANDERS · NO. 33925 · PROFESSIONAL ENGINEER
10/10/2016

DES: JFW
DRN: KFJ
CHK: SEA
DATE: AUG, 2016

BY	NO.	REVISION	DATE

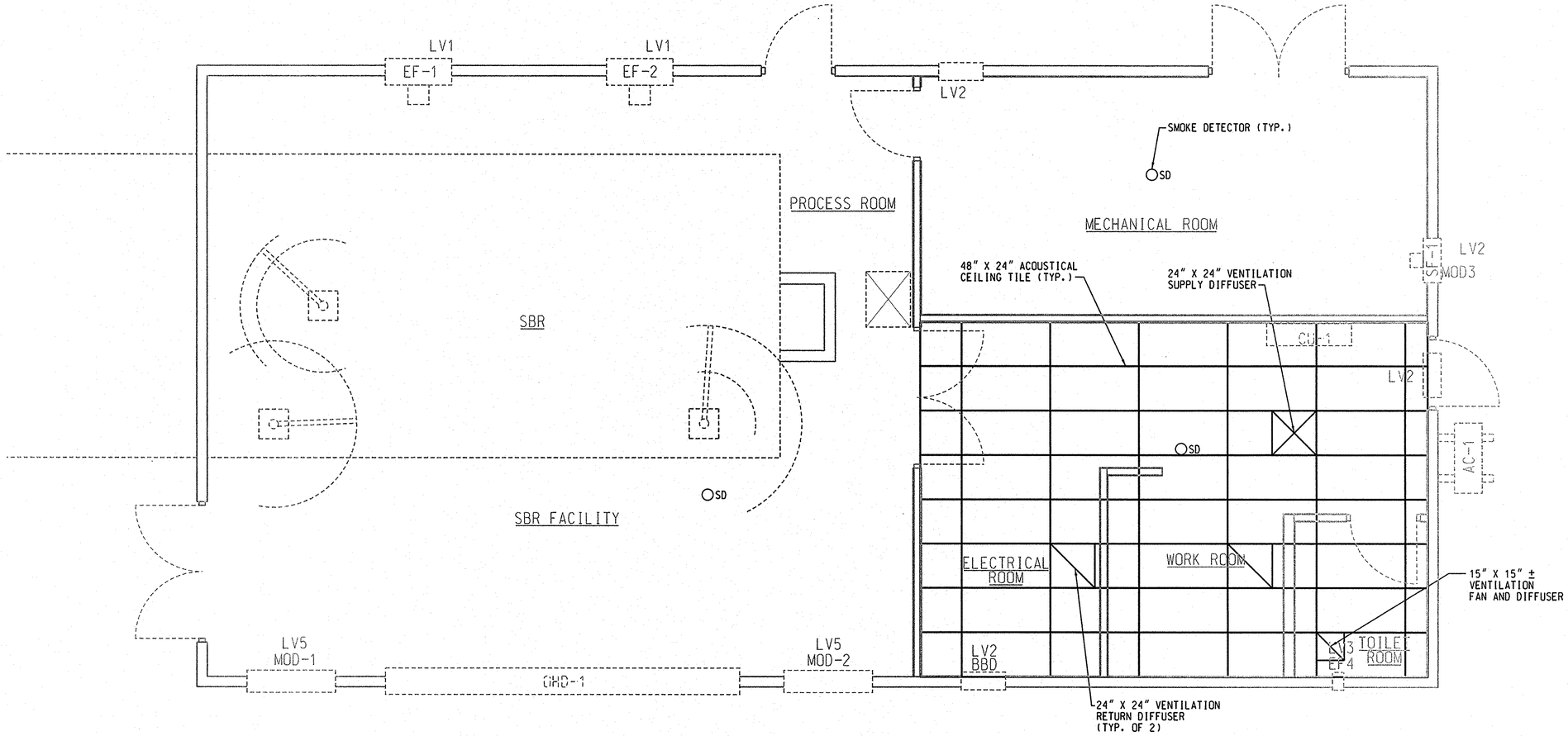
BUILDING ELEVATIONS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

A-2
SCALE AS SHOWN
SHEET 11 OF 43

Jun 11, 2020 - 12:14pm User: michelle.wolfe
M:\2020\01071378.00\Drawings\Structural\01071378.00_A-2.dwg



1 / A-3 **REFLECTED CEILING PLAN**
SCALE: 3/8" = 1'-0"

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 MARYLAND, LICENSE NO. 33925 EXPIRATION DATE: 01/15/2021

STATE OF MARYLAND — STEVEN E. ANDERSON — No. 33925 — PROFESSIONAL ENGINEER — 6/16/20

1 0 1 2 3 4 5 10 20
SCALE: 3/8" = 1'-0"

AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
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CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

KCI TECHNOLOGIES
Engineers, Planners, Scientists, Construction Managers
936 Ridgebrook Road, Sparks, Maryland 21152
Telephone: (410) 316-7800 Fax: (410) 316-7818 www.kci.com

STATE OF MARYLAND — STEVEN E. ANDERSON — No. 33925 — PROFESSIONAL ENGINEER — 10/10/2016

DES: KFJ
DRN: KFJ
CHK: SEA
DATE: AUG., 2016

BY	NO.	REVISION	DATE

REFLECTED CEILING PLAN

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

A-3
SCALE AS SHOWN
SHEET 12 OF 43

PLOTTED: 5/24/17
BY: SUSSEX HOMES
FILE: SFLES

3

BUILDING CODES

A. THE 2018 INTERNATIONAL BUILDING CODE (IBC) AND ALL SUBSEQUENT SUPPLEMENTS
B. GOVERNING LOCAL BUILDING CODE

DESIGN LOADS

A. IN ADDITION TO SELF WEIGHT, THE BUILDING IS DESIGNED FOR THE FOLLOWING LOADS:

	LIVE LOAD	SUPERIMPOSED DEAD LOAD
SLAB ON GRADE	150 PSF	10 PSF
ELEVATED PLATFORM AND STAIR	60 PSF	10 PSF
ROOF	40 PSF	10 PSF

B. ROOF SNOW LOAD DESIGN CRITERIA (RISK CATEGORY III):

GROUND SNOW LOAD (P_g):	25 PSF
FLAT ROOF SNOW LOAD (P_f):	17.3 PSF
EXPOSURE FACTOR (C_e):	0.9
IMPORTANCE FACTOR (I):	1.1
THERMAL FACTOR (C_t):	1.0

C. WIND LOAD DESIGN CRITERIA (RISK CATEGORY III):

BASIC WIND SPEED (V_{ult}):	119 MPH
WIND EXPOSURE:	B
INTERNAL PRESSURE COEFFICIENT (GC_{pi}):	0.18
COMPONENTS & CLADDING WIND PRESSURE (q_h):	18.3 PSF

D. EARTHQUAKE LOAD DESIGN CRITERIA (RISK CATEGORY III):

EQUIVALENT LATERAL FORCE PROCEDURE:	
SEISMIC DESIGN CATEGORY:	B
IMPORTANCE FACTOR (I):	1.25
MAPPED SPECTRAL RESPONSE ACCELERATIONS:	(S_S) = 0.136
	(S_1) = 0.043
DESIGN SPECTRAL RESPONSE COEFFICIENTS:	(S_{DS}) = 0.145
	(S_{D1}) = 0.069
SOIL SITE CLASS:	D (ASSUMED)
SEISMIC RESPONSE COEFFICIENT (C_S):	0.026
RESPONSE MODIFICATION FACTOR (R):	7
SEISMIC RESISTING SYSTEM	LIGHT-FRAME WOOD SHEAR WALLS
DESIGN BASE SHEAR (V):	1.0 KIP

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

F. THE STABILITY OF THE STRUCTURE IS DEPENDENT UPON THE DIAPHIRAGM ACTION OF THE FLOORS AND ROOF. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR THE METHOD OF CONSTRUCTION AND SHALL PROVIDE ALL TEMPORARY BRACING AND SHORING REQUIRED TO MAINTAIN THE STABILITY OF THE STRUCTURE AND TO SUPPORT CONSTRUCTION LOADS DURING CONSTRUCTION, INCLUDING SOILS ON WALLS FROM BACKFILLING PRIOR TO PLACING SLABS ON GRADE. DESIGN OF ALL BRACING IS THE CONTRACTORS RESPONSIBILITY.

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

H. ALL STAIRS, RAILINGS, STUD WALLS, GLASS STORE FRONT, AND EXTERIOR CEILINGS AND SOFFITS SHALL BE DESIGNED FOR THE LOADS INDICATED OR SPECIFIED BY THE BUILDING CODE.

EXISTING STRUCTURE

A. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY BRACING AND SHORING REQUIRED TO MAINTAIN THE STABILITY OF THE EXISTING STRUCTURE DURING CONSTRUCTION. THE DESIGN OF ALL TEMPORARY BRACING AND SHORING IS THE CONTRACTORS RESPONSIBILITY.

B. THE CONTRACTOR SHALL MONITOR THE EXISTING STRUCTURE DURING CONSTRUCTION. IMMEDIATELY NOTIFY THE ENGINEER OF AREAS EXHIBITING DISTRESS OR FAILURE.

SLAB ON GRADE FOUNDATIONS

A. REFER TO "CAST IN PLACE CONCRETE" FOR APPLICABLE CODES AND STANDARDS.

B. ASSUMED PARAMETERS FOR SPREAD FOOTING DESIGN ARE AS FOLLOWS:

1. MINIMUM DEPTH TO BOTTOM OF EXTERIOR FOOTINGS FOR FROST PROTECTION = 30 IN BELOW GRADE
2. ASSUMED NET ALLOWABLE BEARING CAPACITY = 2000 PSF

D. THE ALLOWABLE SOIL BEARING PRESSURE SHALL BE FIELD VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACING FOUNDATIONS. SHOULD THE ACTUAL SOIL BEARING PRESSURE BE LESS THAN 2000 PSF, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.

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

F. THE CONTRACTOR SHALL INFORM THE ENGINEER FOR SUBGRADE INSPECTION RESULTS FOR TANK AND BUILDING FOUNDATIONS. IF THE SUBGRADE IS DEEMED UNSUITABLE, THE CONTRACTOR WILL BE DIRECTED TO PLACE GEO-TEXTILE AND ADDITIONAL STONE BEDDING.

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

H. CONTRACTOR SHALL LIMIT CUT-FILL OPERATIONS TO EXTENT POSSIBLE. STRUCTURAL BACKFILL SHALL CONSIST OF MAXIMUM 8-INCH LIFTS AND BE COMPACTED TO A MINIMUM 95% DRY DENSITY IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.

DRILLED PIER FOUNDATIONS

A. REFER TO "CAST IN PLACE CONCRETE" FOR APPLICABLE CODES AND STANDARDS. IN ADDITION, COMPLY WITH THE FOLLOWING:

1. ACI 336.1 "STANDARD SPECIFICATION FOR THE CONSTRUCTION OF END BEARING DRILLED PIERS"

B. DESIGN PROPERTIES ASSUMED ARE AS FOLLOWS. ALL SITE PREPARATIONS SAND FIELD TESTING SHALL BE COMPLETED UNDER THE DIRECTION OF A REGISTERED GEOTECHNICAL ENGINEER.

1. DRILLED PIERS TO BEAR ON UNDISTURBED SOIL WITH NET ALLOWABLE BEARING CAPACITY OF 3000 PSF
2. BEARING ELEVATIONS OF DRILLED PIER FOUNDATIONS AS INDICATED ON DRAWINGS ARE APPROXIMATE.
3. SOIL BEARING PRESSURE SHALL BE FIELD VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER. CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER IF VARIATIONS OCCUR.

J. ALL CAST IN PLACE CONCRETE DRILLED PIERS SHALL CONSIST OF CONCRETE WITH A 28 DAY MINIMUM COMPRESSIVE STRENGTH OF f'c = 5000 PSI. ALL REINFORCING SHALL BE ASSEMBLED AND TIED TOGETHER TO FORM A SINGLE UNIT PRIOR TO PLACEMENT IN THE PILE EXCAVATION.

"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 MARYLAND, LICENSE NO. 22742, EXPIRATION DATE: 7-25-2020

STATE OF MARYLAND — KENNETH G. GILLER — No. 22742 — PROFESSIONAL ENGINEER — 4/21/20

D. CONSTRUCTION TOLERANCES:

1. PERMISSIBLE VARIATION OF CENTER OF SHAFT NOT MORE THAN 3 INCHES OF PLAN LOCATION, MEASURED AT THE GROUND SURFACE.
2. SHAFTS OUT OF PLUMB NOT MORE THAN 1 INCH PER 40 FEET OF DEPTH.
3. IF TOLERANCES ARE EXCEEDED, CONTRACTOR SHALL PROVIDE CORRECTIVE CONSTRUCTION TO COMPENSATE FOR EXCESSIVE ECCENTRICITY AS APPROVED BY ENGINEER.

E. DRILLED PIER FOUNDATIONS SHALL BE DRILLED WITHOUT DISTURBING THE SURROUNDING SOIL AND SHALL BE KEPT FREE OF WATER INFILTRATION UNTIL CONCRETE CAN BE PLACED.

RETAINING WALLS

A. REFER TO "CAST IN PLACE CONCRETE" (AND "PRECAST STRUCTURAL CONCRETE") SECTIONS FOR APPLICABLE CODES AND STANDARDS.

B. ASSUMED PARAMETERS FOR SPREAD FOOTING DESIGN ARE AS FOLLOWS:

1. MINIMUM DEPTH TO BOTTOM OF EXTERIOR FOOTINGS FOR FROST PROTECTION = 30 IN BELOW GRADE
2. ASSUMED NET ALLOWABLE BEARING CAPACITY = 2000 PSF
3. EQUIVALENT FLUID LATERAL EARTH PRESSURE FOR CANTILEVERED WALLS = 42 PCF

C. CONTRACTOR TO SUPPLY OR VERIFY BACKFILL MATERIALS WITH THE FOLLOWING CHARACTERISTICS:

1. SATURATED SOIL DENSITY:	125 PCF
2. INTERNAL FRICTION ANGLE:	30 DEGREES
3. COHESION (C):	0
4. COULOMB ACTIVE PRESSURE CONSTANT (Ka):	0.33

D. ALL RETAINING WALLS ARE DESIGNED USING THE FOLLOWING FACTORS OF SAFETY:

1. SLIDING = 1.5
2. OVERTURNING = 2.0

E. THE ALLOWABLE SOIL BEARING PRESSURE SHALL BE FIELD VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACING FOUNDATIONS. SHOULD THE ACTUAL SOIL BEARING PRESSURE BE LESS THAN 2000 PSF, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.

F. ALL RETAINING WALLS SHALL BE BRACED AND SHORED AS REQUIRED DURING BACKFILLING. BOTH SUPPORTING ELEMENTS SHALL BE IN PLACE AND DEVELOPING FULL REQUIRED STRENGTH PRIOR TO BACK FILLING OF WALLS SUPPORTED AT TOP AND BOTTOM.

CAST IN PLACE CONCRETE

A. CODES AND STANDARDS:
1. ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS"
2. ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"
3. ACI 117 "SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS"
4. ACI 305 "RECOMMENDED PRACTICE FOR HOT WEATHER CONCRETING"
5. ACI 306 "RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING"
6. ACI 347 "RECOMMENDED PRACTICE FOR CONCRETE FORM WORK"
7. ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT"
8. CRSI "MANUAL OF STANDARD PRACTICE"

B. REINFORCING MATERIALS:
1. STEEL REINFORCEMENT: ASTM A 615, GRADE 60, DEFORMED
2. PLAIN-STEEL WELDED WIRE REINFORCEMENT: ASTM A 185

C. CONCRETE MATERIALS:
1. PORTLAND CEMENT: ASTM C 150, TYPE I/II
2. FLY ASH: ASTM C 618, CLASS F
3. GROUND GRANULATED BLAST FURNACE SLAG: ASTM C 989, GRADE 120
4. NORMAL WEIGHT AGGREGATES: ASTM C 33
   a. MAXIMUM COARSE AGGREGATE SIZE: 1 INCH NOMINAL
   b. FINE AGGREGATE SHALL BE FREE OF MATERIAL WITH DELETERIOUS REACTIVITY TO ALKALI IN CEMENT.
5. WATER: ASTM C 94, POTABLE

D. ADMIXTURES:
1. AIR ENTRAINMENT: ASTM C 260
2. WATER-REDUCER: ASTM C 494
3. SILICA FUME: ASTM C 1240
4. NO ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL BE PERMITTED.

E. CONCRETE MIXTURES:
1. FLY ASH, POZZOLAN, GROUND GRANULATED BLAST FURNACE SLAG, AND SILICA FUME MAY BE USED AS NEEDED TO REDUCE THE TOTAL AMOUNT OF PORTLAND CEMENT WHICH WOULD OTHERWISE BE USED BY NOT MORE THAN 40 PERCENT.
   a. MAXIMUM SUBSTITUTION OF FLY ASH SHALL BE 20 PERCENT.
   b. MAXIMUM SUBSTITUTION OF SILICA FUME SHALL BE 10 PERCENT.

F. PROPORTION NORMAL WEIGHT CONCRETE MIXES AS FOLLOWS:

LOCATION	28 DAY STRENGTH (f'c)	WATER-CEMENTIOUS RATIO	SLUMP LIMIT	AIR CONTENT
FOUNDATIONS	5000 PSI	0.60	4" ± 1"	6.0% ± 1.5%
SLABS ON GRADE	5000 PSI	0.60	4" ± 1"	4.5% ± 1.5%

3

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

H. ALL CONCRETE SHALL BE SAMPLED AND TESTED BY THE TESTING AGENCY. THE CONTRACTOR SHALL NOTIFY THE TESTING AGENCY 48 HOURS PRIOR TO THE PLACING OF ANY CONCRETE.

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

FOUNDATIONS	3 INCHES
SLABS ON GRADE	2 INCHES (TOP)

PRECAST STRUCTURAL CONCRETE

A. REFER TO "CAST IN PLACE CONCRETE" SECTION FOR APPLICABLE CODES AND STANDARDS.

B. REFER TO "DESIGN LOADS" FOR STRUCTURAL PERFORMANCE REQUIREMENTS OF STRUCTURAL CONCRETE UNITS AND CONNECTIONS.

C. SUBMITTALS:
1. DESIGN MIXTURES FOR EACH PRECAST CONCRETE MIX, INCLUDING COMPRESSIVE STRENGTH AND WATER-ABSORPTION TESTS
2. COMPLETE DESIGN CALCULATIONS AND SHOP DRAWINGS SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER

D. ALL PRECAST CONCRETE ELEMENTS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5000 PSI. HIGHER STRENGTH CONCRETE MAY BE USED IF REQUIRED BY DESIGN.

E. TOPPING SLABS FOR ALL PRECAST FLOOR AND ROOF SYSTEMS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5000 PSI.

F. THE CONTRACTOR SHALL NOT CUT ANY OPENINGS INTO THE PRECAST CONCRETE ELEMENTS WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER AND PRECAST MANUFACTURER.

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 MARYLAND, LICENSE NO. 18323 EXPIRATION DATE: 07-05-2017

STATE OF MARYLAND — KENNETH G. GILLER — No. 18323 — PROFESSIONAL ENGINEER — 10-10-16

STRUCTURAL AND MISCELLANEOUS STEEL

3

A. CODES AND STANDARDS:
1. AISC "STEEL CONSTRUCTION MANUAL" 15TH EDITION.
2. AISC 303 "CODE OF STANDARD PRACTICE FOR BUILDINGS AND BRIDGES"
3. AISC 360 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS"
4. RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A 325 OR A 490 BOLTS"
5. AWS D1.1 "STRUCTURAL WELDING CODE"
6. AISC "SPECIFICATION FOR ARCHITECTURALLY EXPOSED STRUCTURAL STEEL"

B. SUBMITTALS:
1. SHOP DRAWINGS INDICATING THE SIZES, EXTENT, AND LOCATION OF ALL STRUCTURAL AND MISCELLANEOUS STEEL FRAMING INCLUDING ALL CONNECTIONS, FASTENERS, AND BEARINGS.

C. MATERIALS:
1. W-SHAPES: ASTM A 992
2. CHANNELS, ANGLES, PLATES: ASTM A 36
3. HOLLOW STRUCTURAL SECTIONS (HSS): ASTM A 500, GRADE B
4. STEEL PIPE: ASTM A 53, TYPE E OR S, GRADE B
5. PRIMER: FABRICATOR'S STANDARD LEAD AND CHROMATE FREE, NONASPHALTIC, RUST INHIBITING, COMPLY WITH MPI#79
6. NON-METALLIC, SHRINKAGE RESISTANT GROUT: ASTM C 1107 WITH MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS
7. GALVANIZE: HOT-DIP ZINC COATING, ASTM A 123

D. CONNECTIONS:
1. WELDED CONNECTIONS: E70XX ELECTRODES
2. HIGH-STRENGTH BOLTS: ASTM A 325, TYPE 1, HEAVY-HEX STEEL STRUCTURAL BOLTS

E. INSTALLATION:
1. ALL CONNECTIONS, UNLESS OTHERWISE NOTED, SHALL BE DOUBLE ANGLE OR SINGLE PLATE SHEAR CONNECTIONS DESIGNED AND DETAILED IN ACCORDANCE WITH AISC MANUAL OF STEEL CONSTRUCTION.
   a. MINIMUM EDGE DISTANCE: 1 1/2 INCHES
   b. BOLT SPACING: 3 INCHES
2. BEAM CONNECTIONS SHALL USE NO LESS THAN TWO 3/4" DIAMETER ASTM A 325N OR A 490 HIGH STRENGTH BOLTS.
3. ALL SHOP AND FIELD WELDS SHALL BE PERFORMED BY CERTIFIED WELDERS.
4. WELDS SHALL DEVELOP THE FULL STRENGTH OF MATERIALS BEING WELDED UNLESS OTHERWISE INDICATED.
5. THE CONTRACTOR SHALL NOT SPLICE OR CUT OPENINGS IN STEEL MEMBERS NOT SHOWN ON CONTRACT DRAWINGS WITHOUT THE PERMISSION OF THE STRUCTURAL ENGINEER.

METAL GRATING

A. REFER TO "STRUCTURAL STEEL" SECTION FOR APPLICABLE CODES AND STANDARDS. IN ADDITION, COMPLY WITH THE FOLLOWING:

1. NAAMM – MBG 531 "METAL BAR GRATING MANUAL"

B. SUBMITTALS:
1. SHOP DRAWINGS INDICATING LAYOUT, MATERIAL PROPERTIES OR LOAD TABLES, ANCHORAGE DETAILS, PANS, AND ACCESSORIES.
2. PRODUCT DATA AND STRUCTURAL LOAD TABLES FOR GRATING.
3. PRODUCT DATA AND STRUCTURAL LOAD TABLES OF MECHANICAL FASTENERS, IF APPLICABLE.

C. MATERIALS:
1. GALVANIZED AND PRIME PAINTED STEEL BAR GRATING: ASTM A 653, STRUCTURAL STEEL, GRADE 33, G60 ZINC COATING.
2. ALUMINUM EXTRUDED BARS AND SHAPES: ASTM B2.21, ALLOYS 6061-76 OR 6063-T6 FOR BEARING BARS ALLOY 6061-T1 FOR CROSS BAR
3. FASTENER: TYPE 316 STAINLESS STEEL

D. INSTALLATION:
1. COMPLY WITH RECOMMENDATIONS OF REINFORCED STANDARDS AND MANUFACTURER'S WRITTEN INSTRUCTIONS.
2. ATTACH REMOVABLE UNITS TO SUPPORTING MEMBERS BY WELDING UNLESS OTHERWISE NOTED.

ALUMINUM STAIRS

A. REFER TO ARCHITECTURAL DRAWINGS FOR RISERS, TREADS, AND LANDING REQUIREMENTS.

B. SUBMITTALS:
1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER FOR ALL STEEL STAIRS.

C. STRUCTURAL PERFORMANCE REQUIREMENTS:
1. ALL STAIR FRAMING SHALL BE DESIGNED BY THE CONTRACTOR TO SUPPORT ALL DEAD LOADS PLUS A MINIMUM LIVE LOADING OF 100 PSF.

D. INSTALLATION:
1. THE CONTRACTOR SHALL PROVIDE ALL STEEL HANGERS, CLIP ANGLES ETC., AS REQUIRED TO SUPPORT THE STAIR FRAMING.

WOOD FRAMING

A. CODES AND STANDARDS:
1. "NATIONAL DESIGN SPECIFICATIONS" PUBLISHED BY THE NATIONAL FOREST PRODUCTS ASSOCIATION.
2. NIST'S VOLUNTARY PRODUCT STANDARD DOC PS 20 "AMERICAN SOFTWOOD LUMBER STANDARD"
3. NIST'S VOLUNTARY PRODUCT STANDARD DOC PS 2 "PERFORMANCE STANDARD FOR WOOD BASED STRUCTURAL PANELS"
4. TRUSS PLATE INSTITUTE'S "DESIGN SPECIFICATIONS FOR LIGHT METAL PLATE CONNECTED WOOD TRUSSES"
5. AMERICAN WOOD PROTECTION ASSOCIATION (APWA) STANDARD

B. MATERIALS (UNADJUSTED VALUES FOR 12" DEPTH):

1. DIMENSION LUMBER: NO. 2 HEM-FIR AT 19 PERCENT MOISTURE CONTENT OR APPROVED EQUAL

Fb :	Fv :	Fc(perp) :	Fc(parallel):	Ft :	E :
850 PSI	150 PSI	405 PSI	1300 PSI	525 PSI	1300 KSI

2. ENGINEERED WOOD PRODUCTS:

LAMINATED VENEER LUMBER (LVL):

Fb :	Fv :	Fc(perp) :	Fc(parallel):	Ft :	E :
2600 PSI	285 PSI	750 PSI	2510 PSI	1555 PSI	1900 KSI

LAMINATED STRAND LUMBER (LSL):

Fb :	Fv :	Fc(perp) :	Fc(parallel):	Ft :	E :
2600 PSI	400 PSI	880 PSI	2380 PSI	1825 PSI	1700 KSI

PARALLEL STRAND LUMBER (PSL):

Fb :	Fv :	Fc(perp) :	Fc(parallel):	Ft :	E :
2900 PSI	290 PSI	750 PSI	2900 PSI	2025 PSI	2000 KSI

3. PRESERVATIVE TREATMENT BY PRESSURE PROCESS (P.T.) LUMBER: AWPA U1
   a. INTERIOR CONSTRUCTION NOT IN CONTACT WITH GROUND: USE CATEGORY UC2
   b. EXTERIOR CONSTRUCTION NOT IN CONTACT WITH GROUND: USE CATEGORY UC3B
   c. ALL CONSTRUCTION IN CONTACT WITH GROUND: USE CATEGORY UC4A

4. ROOF SHEATHING: EXTERIOR, STRUCTURAL I PLYWOOD OR OSB SHEATHING, FOR SPANS SHOWN ON DRAWINGS

C. SUBMITTALS:
1. SHOP DRAWINGS AND DESIGN CALCULATIONS FOR ALL WOOD TRUSSES AND BUILDING MEMBERS INCLUDING MEMBER LAYOUT, WOOD SPECIES AND GRADE, MEMBER SIZES, TRUSS BEARING CONNECTION DETAILS, CAPACITY OF CONNECTOR PLATES AND THE SIZE AND LOCATION OF ALL REQUIRED BRIDGING, SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
2. WOOD PRESERVATIVE TREATMENT DATA, INCLUDING CERTIFICATION BY TREATING PLANT THAT MATERIALS COMPLY WITH REQUIREMENTS.
3. MATERIAL CERTIFICATES FOR LUMBER SPECIFIED TO COMPLY WITH MINIMUM ALLOWABLE UNIT STRESSES.
4. TECHNICAL DATA FOR FASTENERS, INCLUDING GAUGE, FINISH, AND STRUCTURAL LOAD CAPACITY.

D. FASTENERS
1. WHERE WOOD FRAMING IS EXPOSED TO WEATHER, IN GROUND CONTACT, OR PRESSURE-PRESERVATIVE TREATED, PROVIDE FASTENERS WITH HOT-DIP ZINC COATING COMPLYING WITH ASTM A 153.
2. WOOD FRAMING CONNECTIONS REQUIRING STEEL FASTENERS AND HANGERS SHALL CONSIST OF A MINIMUM 16 GA. GALVANIZED STEEL. ALL CONNECTIONS SHALL DEVELOP THE LOAD CAPACITY OF BASIS OF DESIGN PRODUCTS INDICATED.
3. NAILING OF ALL WOOD FRAMING SHALL MEET THE MINIMUM RECOMMENDED REQUIREMENTS PROVIDED IN THE FASTENING SCHEDULE OF THE IBC BUILDING CODE.

E. INSTALLATION:
1. PROVIDE DOUBLE JOISTS OR HEADERS ALONG EACH SIDE OF FLOOR OR ROOF OPENINGS, UNDER THE CENTERLINE OF PARTITION WALLS PARALLEL TO JOIST SPANS, AND ABOVE ALL WALL OPENINGS UNLESS OTHERWISE INDICATED.
   a. ALL DOUBLE JOISTS OR HEADERS SHALL BE NAILED TOGETHER WITH TWO ROWS OF 10d NAILS SPACED AT 16 INCHES ON CENTER UNLESS OTHERWISE INDICATED.
2. WOOD BEAMS MADE UP OF THREE OR MORE MEMBERS SHALL BE BOLTED TOGETHER WITH TWO ROWS OF 1/2 INCH DIA. BOLTS SPACED AT 32 INCHES ON CENTER.
3. ALL WOOD MEMBERS BEARING DIRECTLY ON MASONRY OR CONCRETE SHALL HAVE A PRESERVATIVE PRESSURE TREATMENT.
   a. PROVIDE A MINIMUM 3" BEARING LENGTH OF ALL WOOD MEMBERS BEARING ON MASONRY OR CONCRETE.
4. THE CONTRACTOR SHALL CUT OR NOTCH THE WOOD FRAMING ONLY AS SHOWN ON THE CONTRACT DRAWINGS OR MANUFACTURER SPECIFICATIONS FOR ENGINEERED WOOD PRODUCTS.
5. UNLESS OTHERWISE INDICATED, PROVIDE DOUBLE WALL STUDS AT ALL CORNERS, SIDES OF OPENINGS, AND BENEATH ALL WOOD BEAMS AND LINTELS.
6. PROVIDE SOLID BLOCKING AT MAXIMUM SPACING OF 4'-0" OC, VERTICAL, FOR ALL WALL STUDS.

PRE ENGINEERED WOOD POST-FRAME BUILDINGS

A. REFER TO "WOOD FRAMING" SECTION FOR APPLICABLE CODES IN ADDITION, COMPLY WITH THE FOLLOWING:
1. NFBA'S "ACCEPTED PRACTICES FOR POST-FRAME BUILDING CONSTRUCTION FRAMING PRACTICES"

B. SUBMITTALS:
1. SHOP DRAWINGS FOR ALL WOOD POST FRAME BUILDING COMPONENTS INCLUDING ANCHORAGE DEVICES, LATERAL LOAD BRACING, AND ALL MISCELLANEOUS, SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
2. DESIGN CALCULATIONS FOR ALL ACCESSORIES BUILDING COMPONENTS INCLUDING ANCHOR AGE DEVICES, LATERAL LOAD BRACING, AND ALL MISCELLANEOUS ACCESSORIES, SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   a. INCLUDE ALL SERVICE LOAD REACTIONS TO FOUNDATION, AND INDICATE DESIGN LIVE, DEAD, AND COLLATERAL LOADS, AND ALL WIND, SNOW, AND SEISMIC CRITERIA AS REQUIRED BY IBC 2015.

C. STRUCTURAL PERFORMANCE REQUIREMENTS:
1. WOOD POST FRAMING BUILDING SYSTEMS SHALL BE DESIGNED, FABRICATED, AND ERECTED BY THE CONTRACTOR TO SUPPORT LOADS INDICATED IN "DESIGN LOADS" SECTION.
2. DEFLECTION LIMITS:
   a. ROOF TRUSSES: VERTICAL DEFLECTION OF L/240.
   b. GIRTS: HORIZONTAL DEFLECTION OF L/240.
   c. WOOD ROOF PANELS: VERTICAL DEFLECTION OF L/240.
   d. WOOD WALL PANELS: HORIZONTAL DEFLECTION OF L/240.
3. DRIFT LIMITS:
   a. MAXIMUM OF L/200 OF THE BUILDING HEIGHT.

D. FOUNDATION REQUIREMENTS:
1. FOUNDATIONS SHOWN ON THE CONTRACT DRAWINGS HAVE BEEN DESIGNED FOR THE DEAD AND LIVE LOADS INDICATED AND FOR ASSUMED PINNED COLUMN BASE CONNECTIONS. SHOULD DIFFERENT LOADING CONDITIONS OR FIXED COLUMN BASE CONNECTIONS BE REQUIRED, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN CALCULATIONS FOR THE NEW FOUNDATIONS, SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER.

MISCELLANEOUS

A. THE CONTRACTOR SHALL LOCATE ALL UTILITIES IN THE AREA OF CONSTRUCTION AND PREVENT DAMAGE TO THEM. SHOULD DAMAGE OCCUR TO ANY UTILITIES, THE CONTRACTOR IS REQUIRED TO REPAIR THE DAMAGE TO THE SATISFACTION OF THE OWNER AT HIS OWN EXPENSE.

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

C. THE CONTRACTOR SHALL REVIEW THE ARCHITECTURAL, CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATION AND DIMENSION OF CHASES, INSERTS, OPENINGS, SLEEVES, DEPRESSIONS AND OTHER PROJECT REQUIREMENTS WHICH IMPACT THE STRUCTURAL COMPONENTS.

D. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS SHOWN ON THE CONTRACT DRAWINGS BEFORE PROCEEDING WITH CONSTRUCTION.

E. THE CONTRACTOR SHALL NOT SUBMIT REPRODUCTIONS OF THE STRUCTURAL CONTRACT DOCUMENTS AS SHOP DRAWINGS.

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

AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

KCI TECHNOLOGIES
ENGINEERS
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CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE (410) 316-7800
FAX (410) 316-7818
www.kci.com

DES: NB				
DRN: PB				
CHK: LH				
DATE: AUG, 2016	AGM	3	BUILDING PERMIT COMMENTS – HO. CO. DILP	6/20
	BY	NO.	REVISION	DATE

GENERAL NOTES

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

S-0
SCALE AS SHOWN
SHEET 13 OF 43

Jan 11, 2020 - 5:03pm User: AllanMitchell
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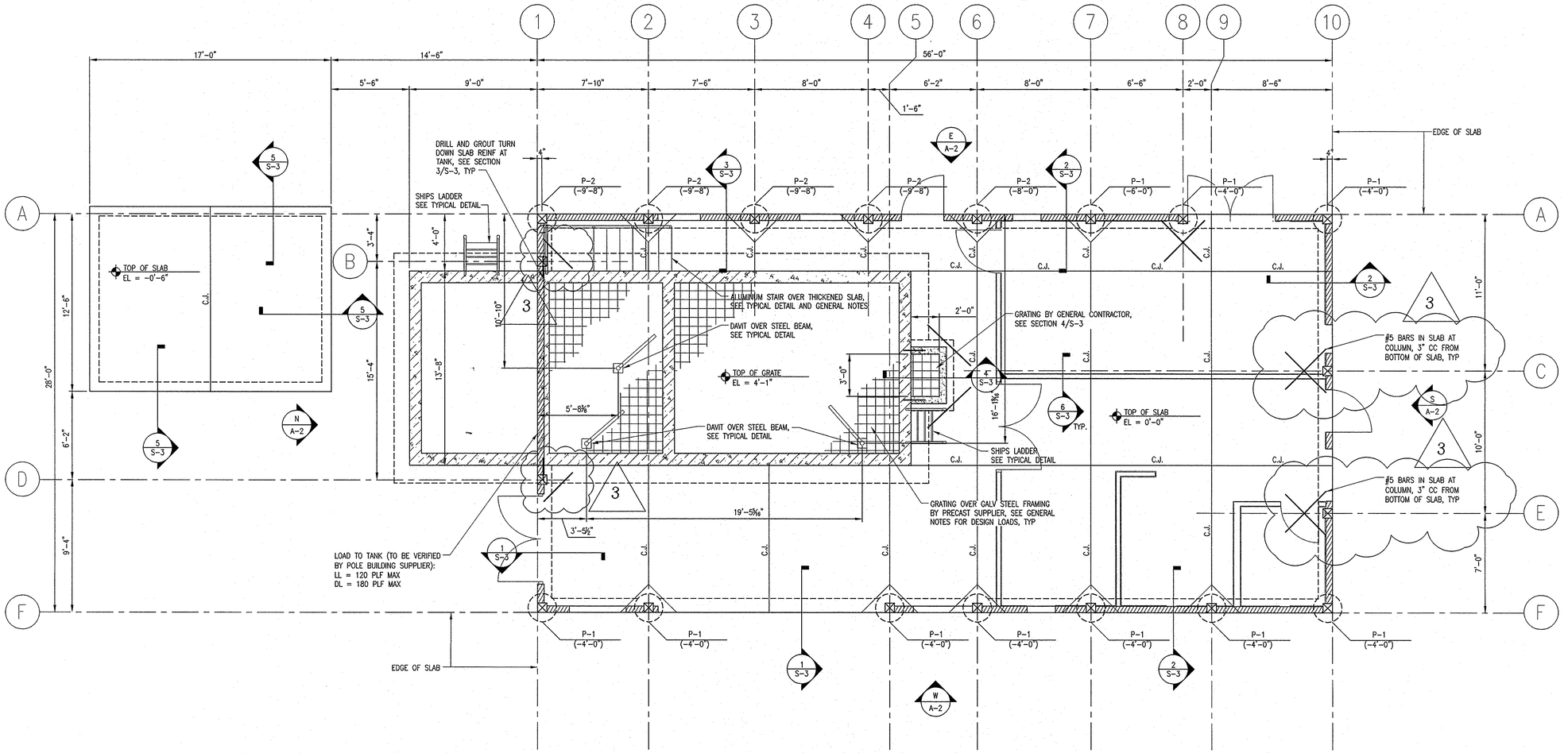

SLAB ON GRADE AND FOUNDATION PLAN

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

DRILLED CONCRETE PIER SCHEDULE ASSUMED ALLOWABLE END BEARING = 3000 PSF			
MARK	SIZE	PIER REINFORCING	TIES
P-1	24" DIA	8-#5	#3 @ 16"
P-2	24" DIA	8-#7	#3 @ 16"

FOUNDATION AND SLAB ON GRADE NOTES

1. SCOPE OF WORK IS TO PLACE FOUNDATIONS FOR PRECAST CONCRETE TANK, PARTIALLY BURIED; PRE-ENGINEERED WOOD POLE STRUCTURE; AND PRE-ENGINEERED WOOD BEARING WALL STRUCTURE. PRECAST TANK SHALL INCLUDE CONCRETE LID (EXTERIOR) AND METAL GRATE WITH SUPPORTS (INTERIOR) IN ACCORDANCE WITH SPECIFICATIONS. COORDINATE CONNECTION DETAILS FOR ALL THREE STRUCTURES WITH MANUFACTURER PRIOR TO INSTALLATION.
2. SLAB ON GRADE SHALL CONSIST OF 5" THICK NORMAL WEIGHT CONCRETE REINFORCED WITH 6"x6" – W2.9xW2.9 WELDED WIRE FABRIC (WWF). PLACE SLAB ON GRADE OVER MINIMUM 6" CRUSHED #57 STONE AND 10 MIL VAPOR BARRIER.
3. TYPICAL TOP OF SLAB ELEVATION = 492.00' (DATUM 0'-0")
4. TYPICAL DRILLED CONCRETE PIERS ARE INDICATED ON PLAN THUS: P-X. REFER TO PIER SCHEDULE AND TYPICAL DETAILS FOR MORE INFORMATION.
5. TYPICAL TOP OF PIER ELEVATION IS 0'-0". BOTTOMS OF PIERS ARE NOTED ON PLAN THUS (X'-X") AND MEASURED FROM DATUM 0'-0".
6. CONTROL JOINTS ARE INDICATED ON PLAN THUS: C.J. REFER TO TYPICAL SLAB ON GRADE DETAILS FOR MORE INFORMATION.
7. FOUNDATIONS ARE DESIGNED FOR PRELIMINARY SERVICE LOADS. CONTRACTOR SHALL SUBMIT REACTIONS FOR COLUMNS PRIOR TO PLACEMENT OF FOUNDATIONS.

AS-BUILT
DATE 12/2021

"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 MARYLAND, LICENSE NO. 42146, EXPIRATION DATE: 12-13-2020"

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 MARYLAND, LICENSE NO. 18323 EXPIRATION DATE: 07-05-2017

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/7/17
CHIEF, BUREAU OF UTILITIES — DATE 12/15/16
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

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10-10-16

DES: NB					
DRN: PB					
CHK: LH					
DATE: AUG, 2016	AGM	3	BUILDING PERMIT COMMENTS – HO. CO. DILP	6/20	
	BY	NO.	REVISION	DATE	

SLAB ON GRADE AND FOUNDATION PLAN

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

S-1
SCALE AS SHOWN
SHEET 14 OF 43

Jun 16, 2020 - 10:40am User: Allan.Mitchell
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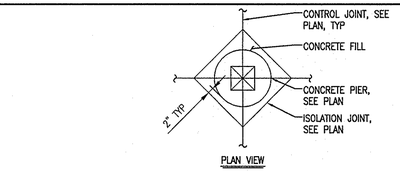
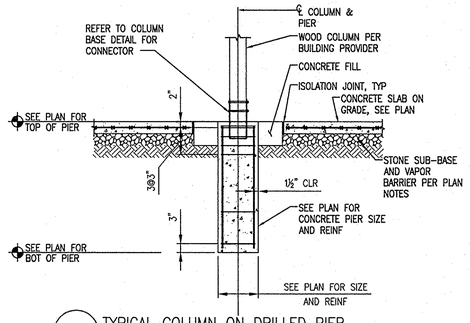
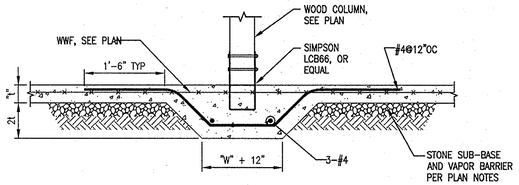


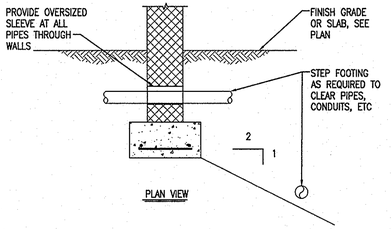
PLAN VIEW



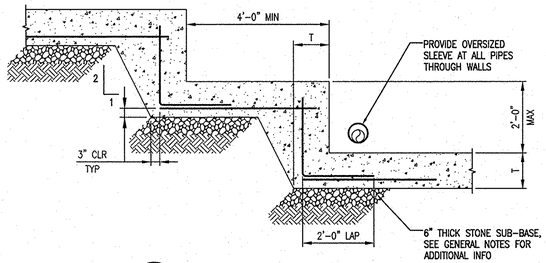
A TYPICAL COLUMN ON DRILLED PIER
SCALE: 1/2"=1'-0"



B COLUMN BASE
SCALE: 3/4"=1'-0"



PLAN VIEW



C TYPICAL STEPPED WALL FOOTING
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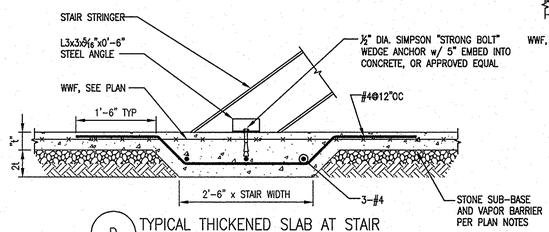
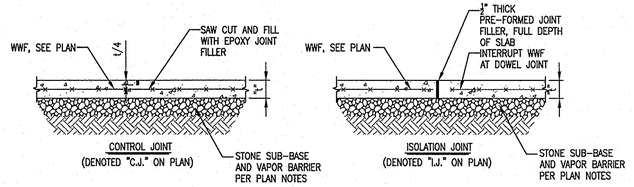
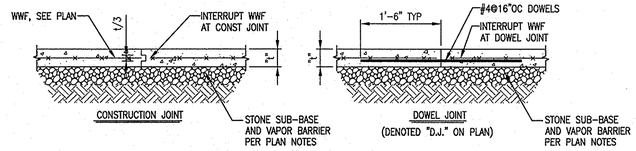
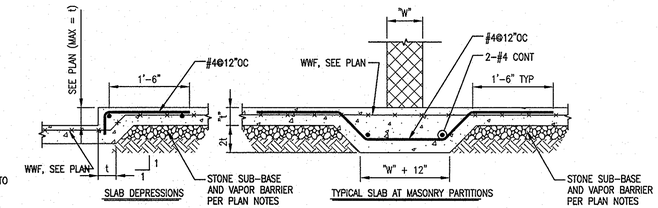


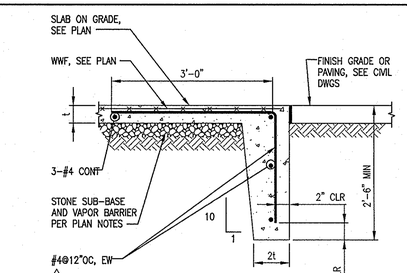
D TYPICAL THICKENED SLAB AT STAIR
SCALE: 3/4"=1'-0"



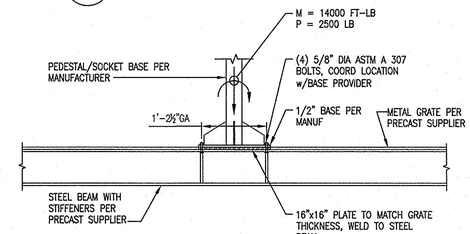




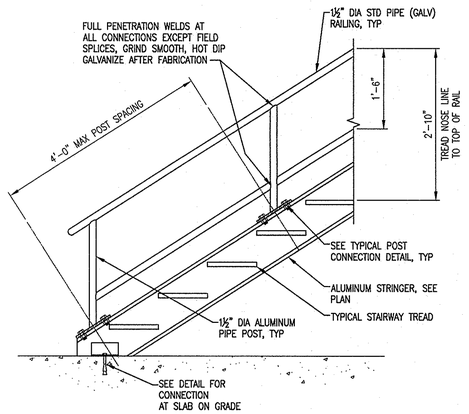
E TYPICAL SLAB ON GRADE DETAILS
SCALE: 3/4"=1'-0"



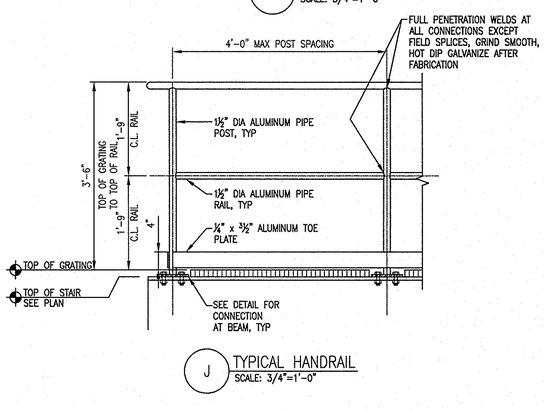
F TYPICAL TURN DOWN SLAB
SCALE: 3/4"=1'-0"



G DAVIT SUPPORT
SCALE: 3/4"=1'-0"



H TYPICAL STAIRWAY HANDRAIL
SCALE: 3/4"=1'-0"



J TYPICAL HANDRAIL
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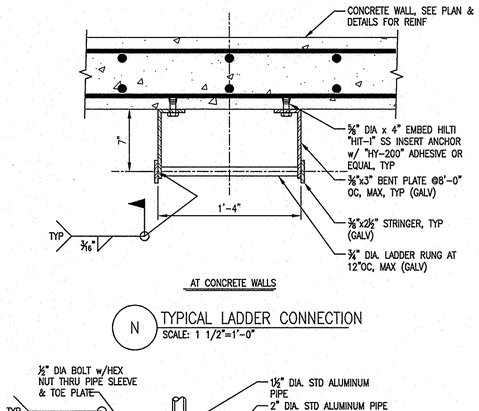
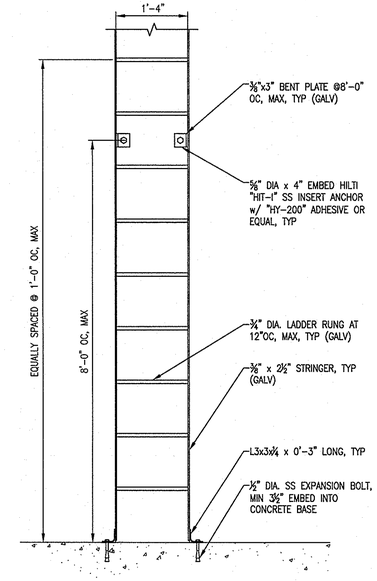
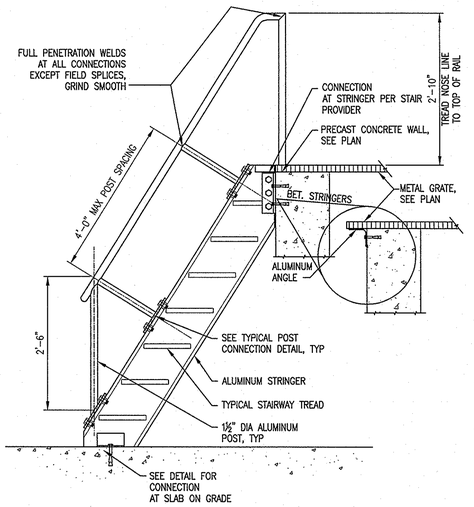


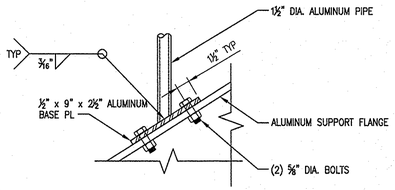
N TYPICAL LADDER CONNECTION
SCALE: 1 1/2"=1'-0"



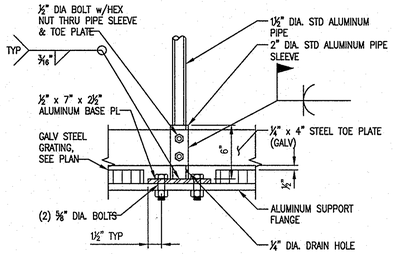
M TYPICAL LADDER ELEVATION
SCALE: 3/4"=1'-0"



P TYPICAL SHIP'S LADDER
SCALE: 3/4"=1'-0"



K TYPICAL POST CONNECTION AT STAIR
SCALE: 1 1/2"=1'-0"



L TYPICAL REMOVABLE POST CONNECTION
SCALE: 1 1/2"=1'-0"

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AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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10-10-16

DES: NB				
DRN: PB				
CHK: LH				
DATE: AUG, 2016	AGM	3	BUILDING PERMIT COMMENTS – HO. CO. DILP	6/20
	BY	NO.	REVISION	DATE

TYPICAL DETAILS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

S-2
SCALE AS SHOWN
SHEET 15 OF 43

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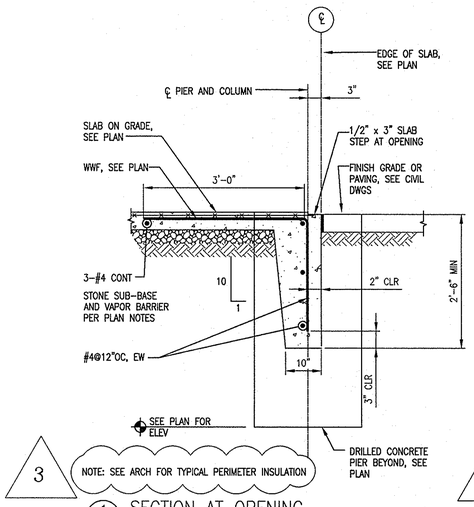
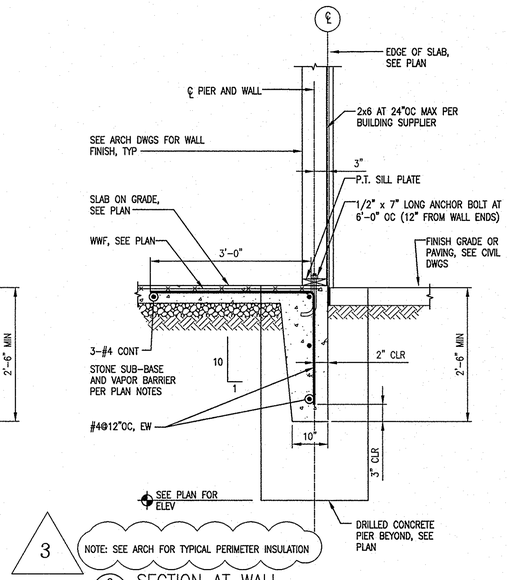
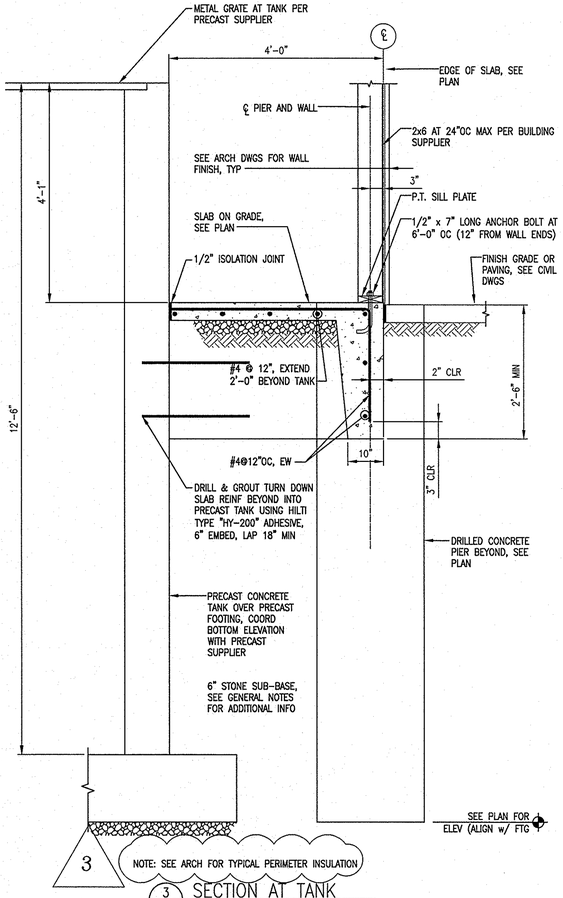


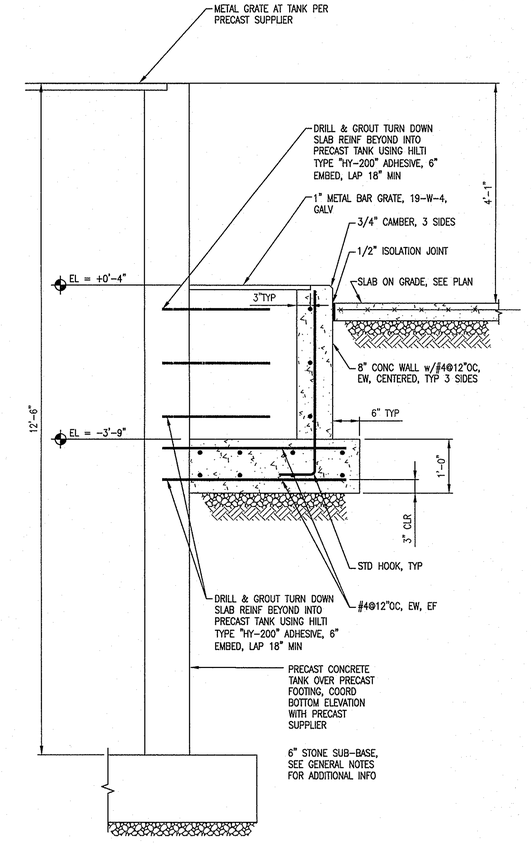
1 S-3 SECTION AT OPENING
SCALE: 3/4"=1'-0"



2 S-3 SECTION AT WALL
SCALE: 3/4"=1'-0"



3 S-3 SECTION AT TANK
SCALE: 3/4"=1'-0"



4 S-3 SECTION AT SUMP PIT
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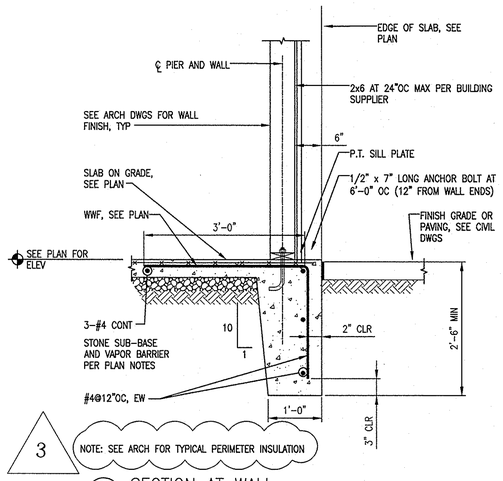

5 S-3 SECTION AT WALL
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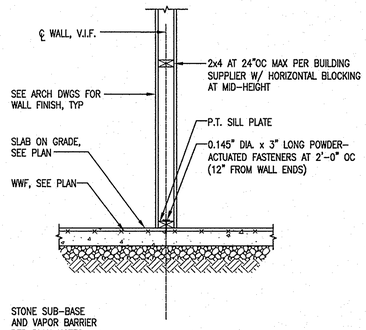
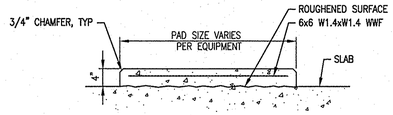
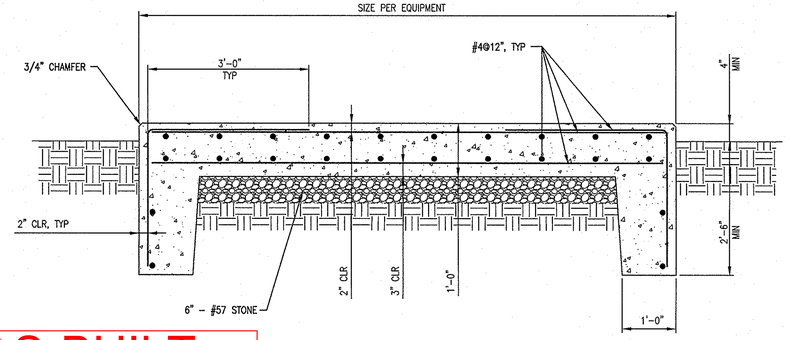


6 S-3 SECTION AT WALL
SCALE: 3/4"=1'-0"



7 S-3 EQUIPMENT PAD DETAIL
SCALE: 3/4"=1'-0"



8 S-3 EXTERIOR GENERATOR PAD
SCALE: 3/4"=1'-0"

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STATE OF MARYLAND · KENNETH G. SIEG · 42146 · PROFESSIONAL ENGINEER
12/4/20

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 MARYLAND, LICENSE NO. 18323, EXPIRATION DATE: 07-05-2017

STATE OF MARYLAND · KENNETH G. SIEG · No. 18323 · PROFESSIONAL ENGINEER
10-10-16

AS-BUILT
DATE 12/2021

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HOWARD COUNTY, MARYLAND

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DES: NB
DRN: PB
CHK: LH
DATE: AUG, 2016

BY	NO.	REVISION	DATE
KJ		AS-BUILT	11/21
AGM	2	BUILDING PERMIT COMMENTS – HO. CO. DILP	6/20

FOUNDATION SECTIONS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

S-3
SCALE AS SHOWN
SHEET 16 OF 43

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PROCESS PIPING SYMBOLS

	DOUBLE LINE	SINGLE LINE
FLANGED PIPING (4" & LARGER)		
ELBOW UP		
ELBOW DOWN		
TEE UP		
TEE DOWN		
LATERAL UP		
LATERAL DOWN		
CONCENTRIC REDUCER		
ECCENTRIC REDUCER		
UNION		

VALVE SYMBOLS

GATE VALVE

CHECK VALVE

BALL VALVE

PLUG VALVE

HVAC SYMBOLS

DUCT SIZE- RECTANGULAR (FIRST DIMENSION IS SIDE SHOWN) — 24X12 PLAN, 12X24 SECTION

DUCT TRANSITION - FLAT ON BOTTOM — FOB

DUCT TRANSITION - FLAT ON TOP — FOT

DUCT TRANSITION - CIRCULAR TO RECTANGULAR — RECTANGULAR

RETURN AIR DUCT — UP / DOWN

EXHAUST AIR DUCT — UP / DOWN

SUPPLY AIR DUCT — UP / DOWN

SQUARE ELBOW WITH TURNING VANES

UNIT HEATER — EUH-7

HOSE STATION — HS

EXHAUST FLOW ARROW

SUPPLY FLOW ARROW

MOTOR OPERATED DAMPER — M

VOLUME DAMPER — VD

THERMOSTAT-AIR CONDITIONING — T AC

FREEZESTAT — T F

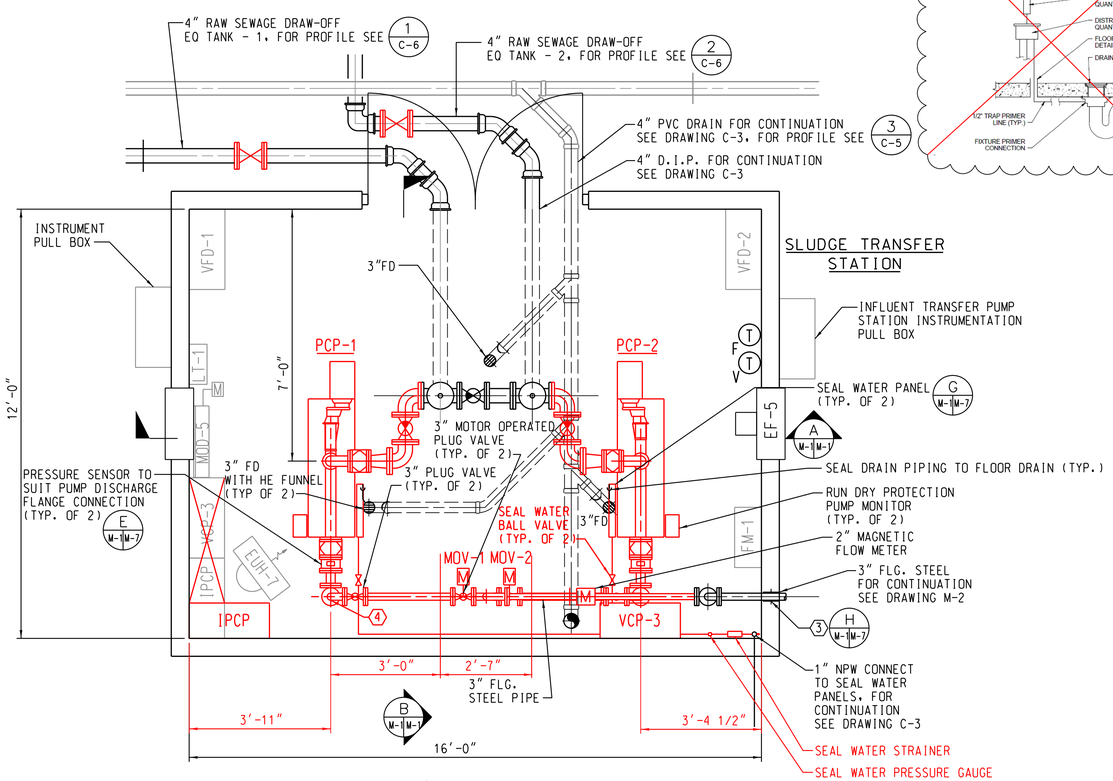
THERMOSTAT-VENTILATION — T V

ABBREVIATIONS

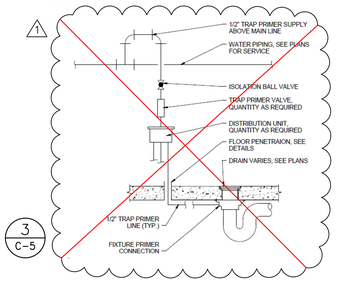
EF	EXHAUST FAN
MOD	MOTOR OPERATED DAMPER
BDD	BACK DRAFT DAMPER
SF	SUPPLY FAN

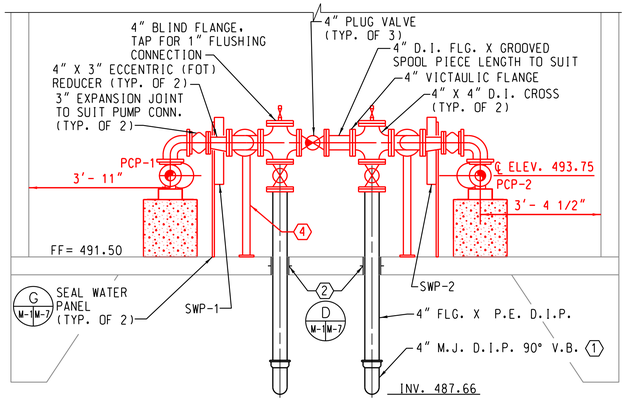
GENERAL MECHANICAL NOTES

1. THESE NOTES APPLY TO ALL MECHANICAL DRAWINGS
2. UNLESS OTHERWISE NOTED, WALL PIPES AND SLEEVES SHALL HAVE A WATERSTOP COLLAR POSITIONED IN THE CENTER OF THE WALL OR FLOOR. SEE TYPICAL DETAILS FOR CONFIGURATION. WALL PIPES AND SLEEVES SHALL BE INSTALLED AND PROPERLY SECURED PRIOR TO CONCRETE POUR.
3. PIPING SMALLER THAN 3" HAS BEEN SCHEMATICALLY SHOWN ON PLAN AND SECTION DRAWINGS. PROVIDE PIPE ROUTING AND ALL APPURTENANCES IN ACCORDANCE WITH RESPECTIVE SCHEMATICS. PROVIDE ALL NECESSARY FITTINGS TO MAKE CONNECTIONS. UNIONS, BUSHING AND/OR REDUCING INSERTS, ETC. NOT SHOWN ON DRAWINGS BUT REQUIRED FOR INSTALLATION SHALL BE FURNISHED AND INSTALLED.
4. SCHEMATIC DRAWINGS SHOW PROCESS CONNECTIONS AND NOT SPATIAL ORIENTATION.
5. THE SIZE OF THE PIPE CONNECTIONS AT THE PROCESS EQUIPMENT ARE SHOWN TO DEMONSTRATE INTENT. SIZES MAY VARY FROM WHAT IS SHOWN. COORDINATE THE SIZE OF CONNECTIONS TO ALL APPROVED PROCESS EQUIPMENT.
6. SIZE OF FITTINGS SHOWN SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS OTHERWISE INDICATED.
7. UNLESS OTHERWISE NOTED, MINIMUM SLOPE FOR DRAINS SHALL BE 1/4 INCH PER LINEAR FOOT.
8. VALVES ARE NORMALLY OPEN (N.O.) UNLESS NOTED AS NORMALLY CLOSED (N.C.).
9. COORDINATE THE LOCATION OF VALVE SUPPORTS SO THAT ACCESS TO VALVE BEARINGS IS NOT RESTRICTED.



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





A M-1|M-1 SECTION-A 6
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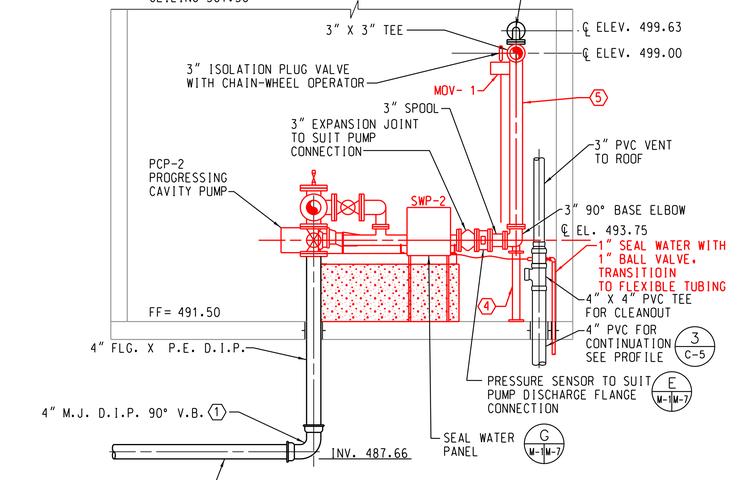

B M-1|M-1 SECTION-B 6
SCALE: 1/2" = 1'-0"

EQUIPMENT NAMES

EF-X	EXHAUST FAN
EUH-X	ELECTRIC UNIT HEATER
IPCP	INFLUENT PUMP CONTROL PANEL
MOD-X	MOTOR OPERATED DAMPER
MOV-X	MOTOR OPERATED VALVE
PCP-X	PROGRESSING CAVITY PUMP
VFD-X	VARIABLE FREQUENCY DRIVE
VCP	VENTILATION CONTROL PANEL
SWP-X	SEAL WATER PANEL

CONSTRUCTION NOTES

1. ALL BURIED M.J. PIPING JOINTS SHALL BE RESTRAINED.
2. SLEEVE FLOOR, GROUT AND MAKE WATERTIGHT.
3. SLEEVE WALL TO SUIT PIPE PENETRATION, SEAL AND MAKE WATERTIGHT WITH MECHANICAL SEAL.
4. TYPICAL PIPE SUPPORT SHALL BE AN ADJUSTABLE PIPE STANCHION OR CONCRETE PIER TO SUIT HEIGHT REQUIREMENTS.
5. PROVIDE FLOOR MOUNTED STYLE PIPE SUPPORT.
6. NOT ALL PLUMBING AND HVAC SHOWN FOR CLARITY.

GRAPHIC SCALE

1 0 1 2 3 4 5 10

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

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 MARYLAND, LICENSE NO. 33925
EXPIRATION DATE: 01/15/2021

STATE OF MARYLAND — STEVEN E. ANDERSON — NO. 33925 — PROFESSIONAL ENGINEER — 6/16/20

AS-BUILT REPLACEMENT SHEET 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

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936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
www.kci.com

STATE OF MARYLAND — STEVEN E. ANDERSON — NO. 33925 — PROFESSIONAL ENGINEER — 10/10/2016

DES: KFJ
DRN: KFJ
CHK: SEA
DATE: AUG., 2016

BY	NO.	REVISION	DATE
KJ		AS-BUILT	12/21
GW	1	NOVEMBER 21, 2018	

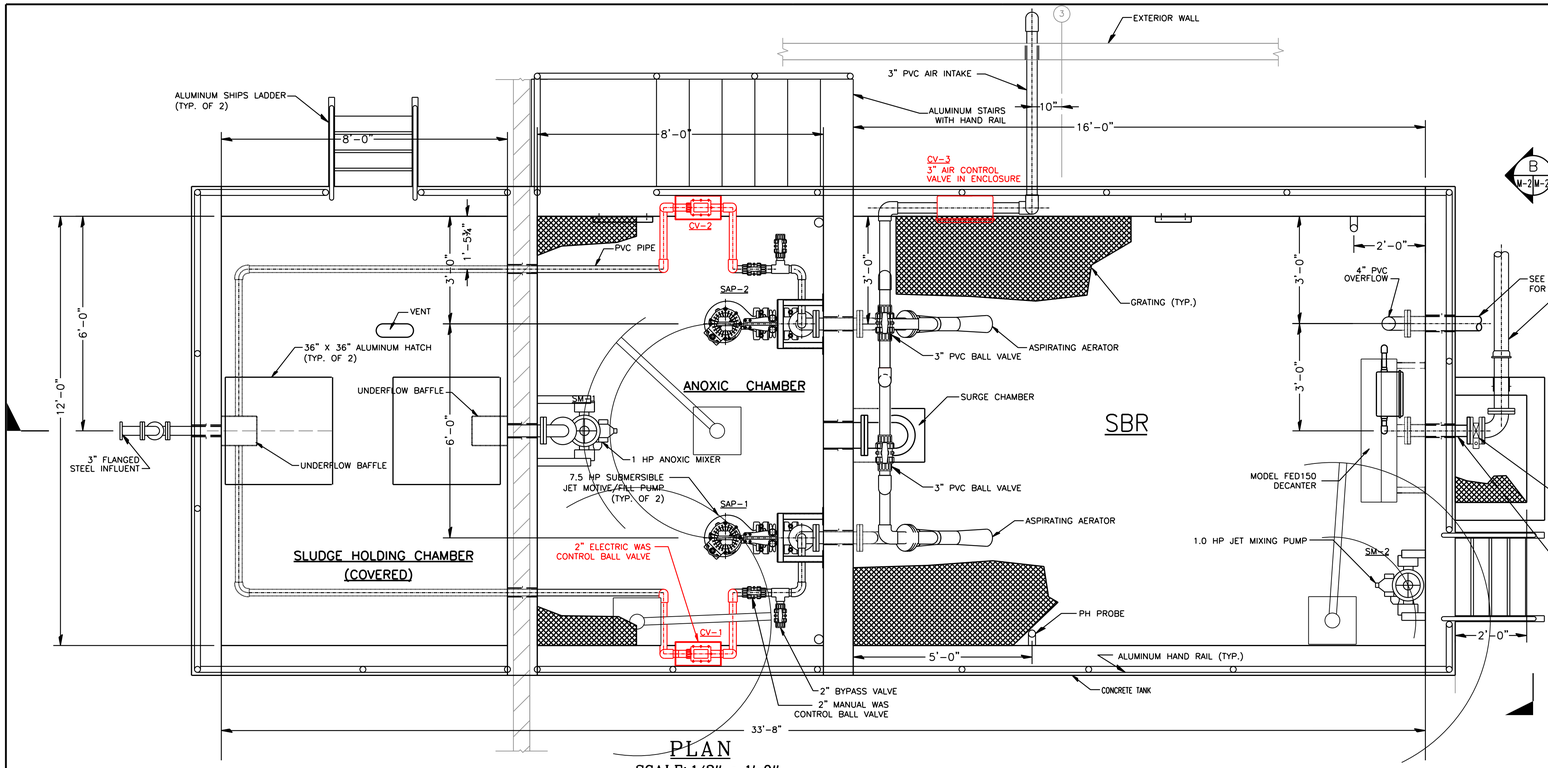
INFLUENT TRANSFER STATION
PLAN AND SECTIONS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

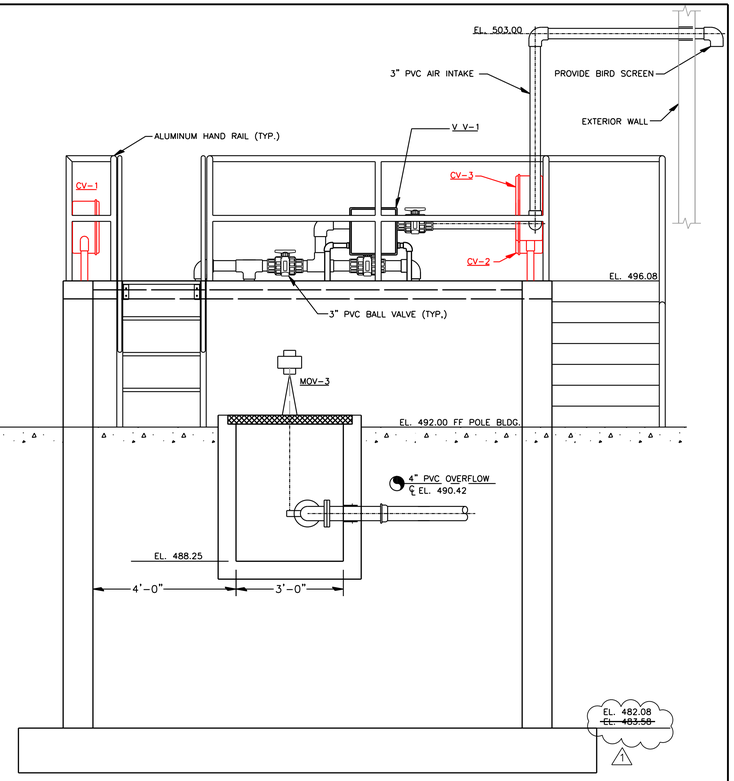
ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 17 OF 43
M-1

PLOTTED: 10:09 AM on Tuesday, December 14, 2021
BY: kevin.jackson
FILE: M:\2007\007137\07137806\Drawings\007137806_M-001 Sludge Trans.dgn



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



SECTION-B
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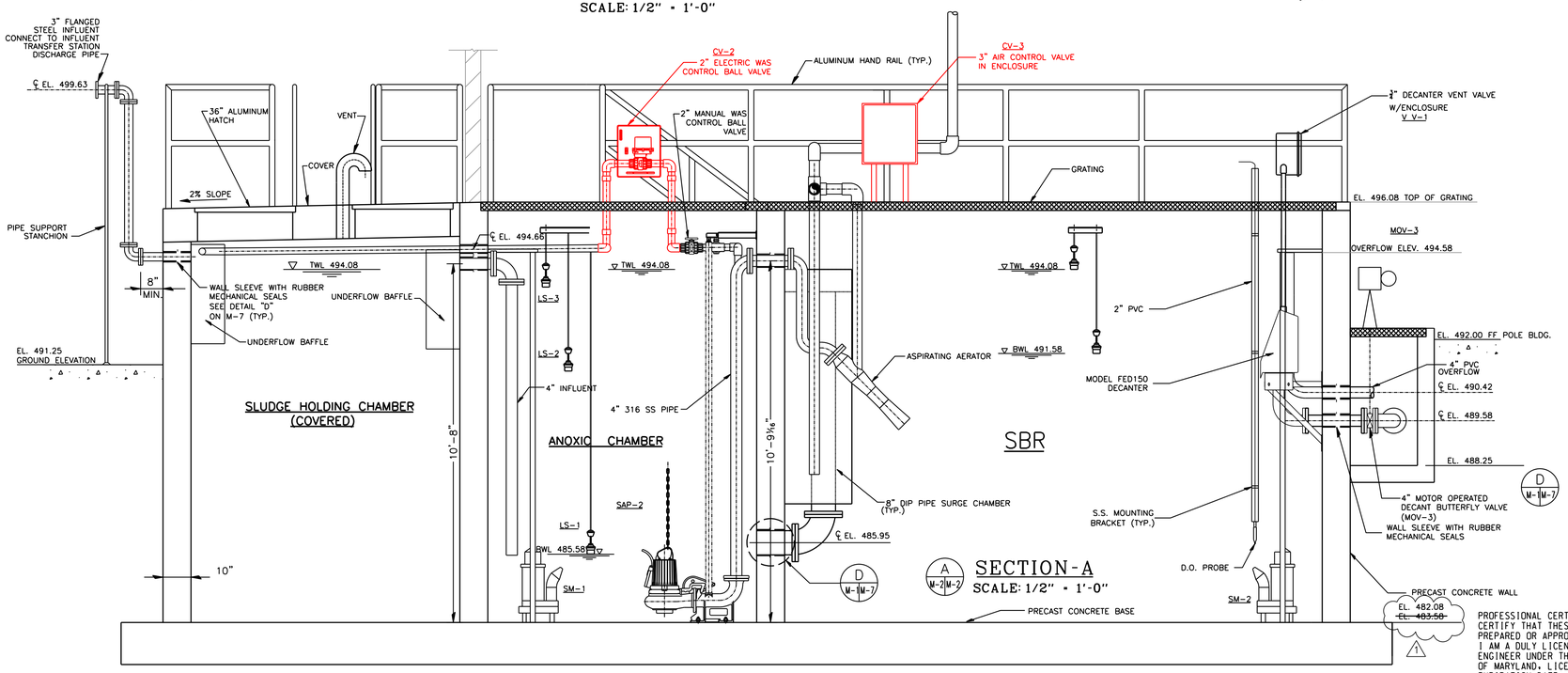

SECTION-A
SCALE: 1/2" = 1'-0"

NOTE:
1. SEE HIGH PERFORMANCE COATING SPECIFICATION FOR THE COATING REQUIREMENT FOR THE SLUDGE HOLDING CHAMBER.
2. COORDINATE DAVIT CRANE LOCATIONS TO SUIT EQUIPMENT REMOVAL LOCATIONS.
3. COORDINATE WITH WOOD POST FRAME BUILDING MANUFACTURER FOR PIPE PENITRATIONS AT THE BUILDING.

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 MARYLAND, LICENSE NO. 31363 EXPIRATION DATE: 01/16/2022

STATE OF MARYLAND · GUIHUA WANG · No. 31363 · PROFESSIONAL ENGINEER
6/16/2020

1 0 1 2 3 4 5 10
SCALE: 1/2" = 1'-0"

AS-BUILT REPLACEMENT SHEET 12/2021

M-2

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/3/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
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STATE OF MARYLAND · GUIHUA WANG · No. 31363 · PROFESSIONAL ENGINEER
10/10/2016

DES: KFJ				
DRN: KFJ				
CHK: GW	KJ		AS-BUILT	12/21
DATE: AUG., 2016	GW	1	NOVEMBER 21, 2018	
	BY	NO.	REVISION	DATE

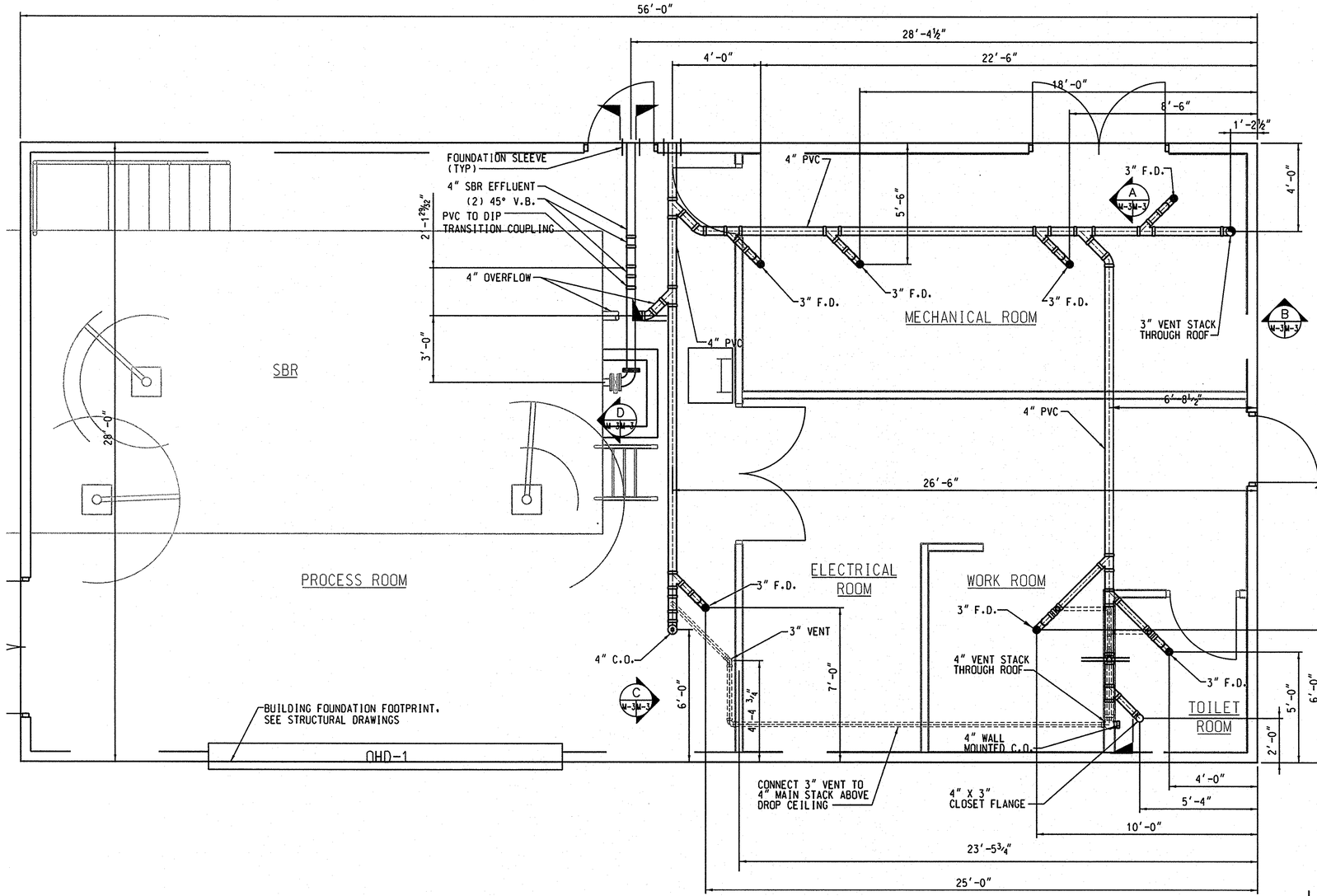
SEQUENCING BATCH REACTOR

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

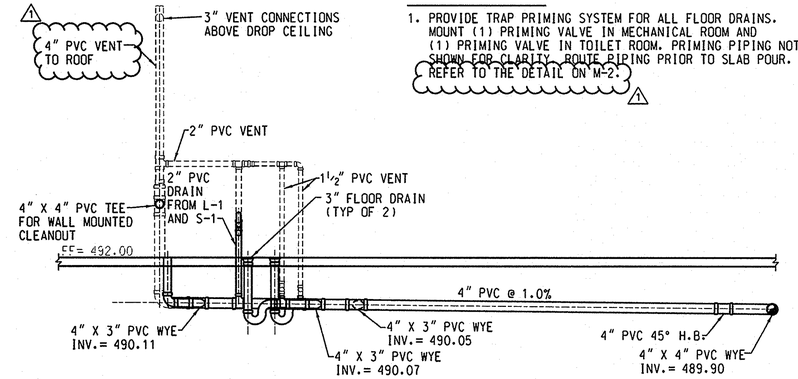
SCALE AS SHOWN
SHEET 18 OF 43

PLOTTED: "01:53 PM on Friday, December 10, 2021"
BY: kevin.jackson
FILE: M:\2007\07071378.00\Drawings\07071378_M-002SBR.dgn



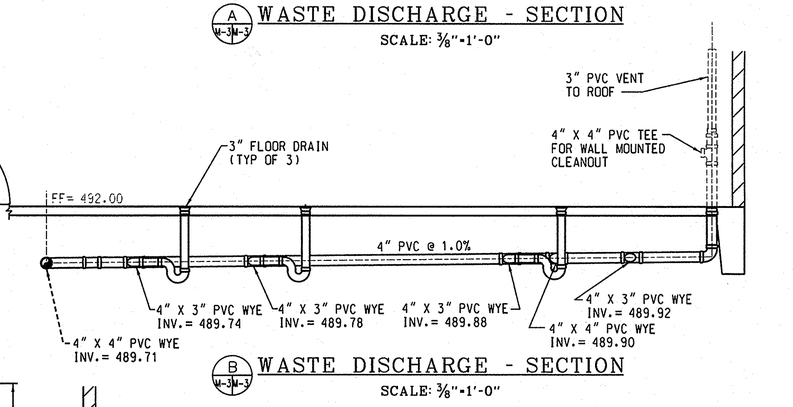
1 W-3 WASTE DISCHARGE - PLAN

SCALE: ⅜"=1'-0"



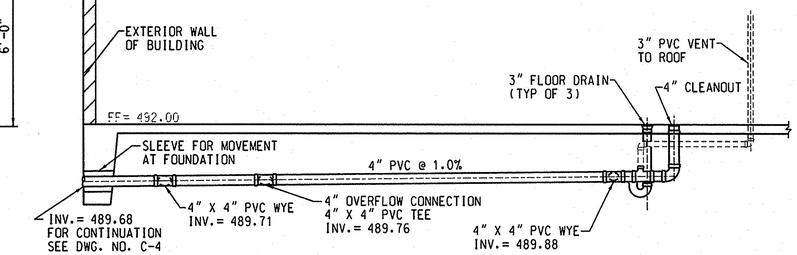
A W-3M-3 WASTE DISCHARGE - SECTION

SCALE: ⅜"=1'-0"



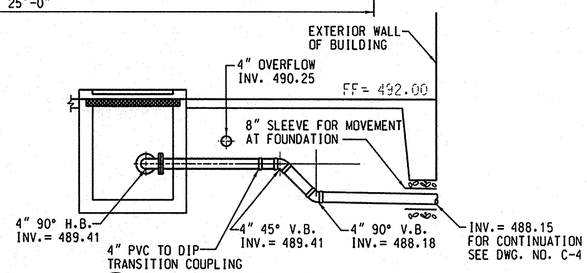
B W-3M-3 WASTE DISCHARGE - SECTION

SCALE: ⅜"=1'-0"



C W-3M-3 WASTE DISCHARGE - SECTION

SCALE: ⅜"=1'-0"



D W-3M-3 SBR EFFLUENT - SECTION

SCALE: ⅜"=1'-0"

GENERAL SHEET NOTES

1. PROVIDE TRAP PRIMING SYSTEM FOR ALL FLOOR DRAINS. MOUNT (1) PRIMING VALVE IN MECHANICAL ROOM AND (1) PRIMING VALVE IN TOILET ROOM. PRIMING PIPING NOT SHOWN FOR CLARITY. ROUTE PIPING PRIOR TO SLAB POUR. REFER TO THE DETAIL ON M-2. 1

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

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 MARYLAND, LICENSE NO. 33925 EXPIRATION DATE: 01/15/2021

STATE OF MARYLAND STEVEN E. ANDERSEN NO. 33925 PROFESSIONAL ENGINEER

6/16/20

AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

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STATE OF MARYLAND STEVEN E. ANDERSEN NO. 33925 PROFESSIONAL ENGINEER
10/10/2016

DES: KFJ
DRN: KFJ
CHK: SEA
DATE: AUG., 2016

BY	NO.	REVISION	DATE
GW	1	NOVEMBER 21, 2018	

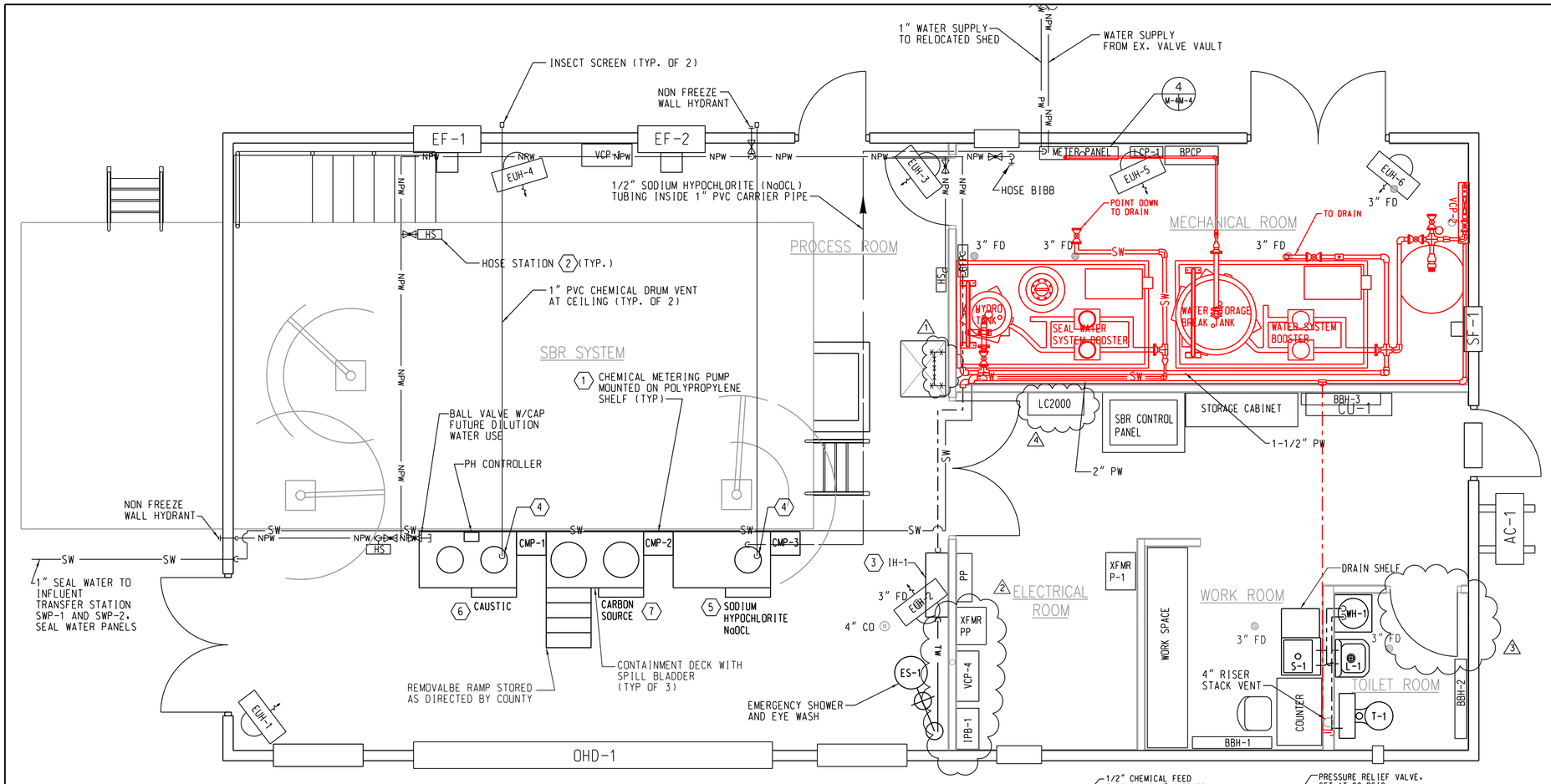
PLUMBING-
WASTE DISCHARGE

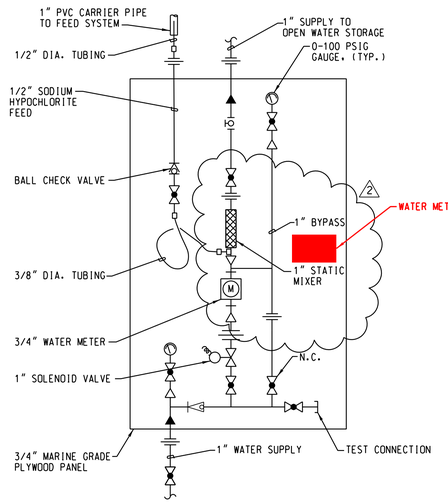
600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

M-3
SCALE AS SHOWN
SHEET 19 OF 43

PLOTTED: 8/24/16
PLOT: USERNAMES
FILE: SFILES





(4 M-4M-4) METER PANEL DETAIL

SCALE: NONE

CONSTRUCTION NOTES

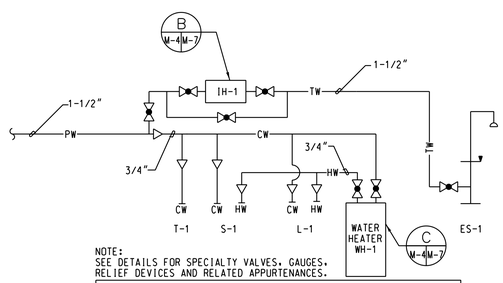
1. SHELF BY PUMP MANUFACTURER. SIZE TO SUIT PUMP.
2. PROVIDE S.S. FRAMING CHANNEL MOUNTING STAND W/BASE FITTINGS.
3. IN NEMA 4X ENCLOSURE.
4. PROVIDE 2' OF 1" FLEXIBLE TUBING WITH CONNECTION BUNG AT DRUM.
5. MAXIMUM 25 GAL. STORAGE.
6. MAXIMUM 50 GAL. STORAGE.
7. 2 X 50 GAL. STORAGE.

LEGEND

SW	SEAL WATER
PW	POTABLE WATER
NPW	NON POTABLE WATER
HW	HOT WATER
CW	COLD WATER
SH	SODIUM HYPOCHLORITE (CARRY PIPE)
W	EXISTING WATER SYSTEM
SC	SIGNAL COMMUNICATIONS
TW	TEMPERED WATER
	PROP. FEATURES

EQUIPMENT NAMES

IH	INSTANTANEOUS HEATER
HS	HOSE STATION
BFP	BACKFLOW PREVENTER
WBP	WATER BOOSTER PUMP



NOTE:
SEE DETAILS FOR SPECIALTY VALVES, GAUGES, RELIEF DEVICES AND RELATED APPURTENANCES.

FIXTURE SCHEDULE				
I.D.	DESCRIPTION	HW	CW	REMARKS
S-1	SERVICE SINK	1/2"	1/2"	2" DRAIN AND VENT, DRAINBOARD
L-1	LAVATORY	1/2"	1/2"	2" DRAIN AND VENT
T-1	TOILET	-	1/2"	4" SANITARY AND 3" VENT

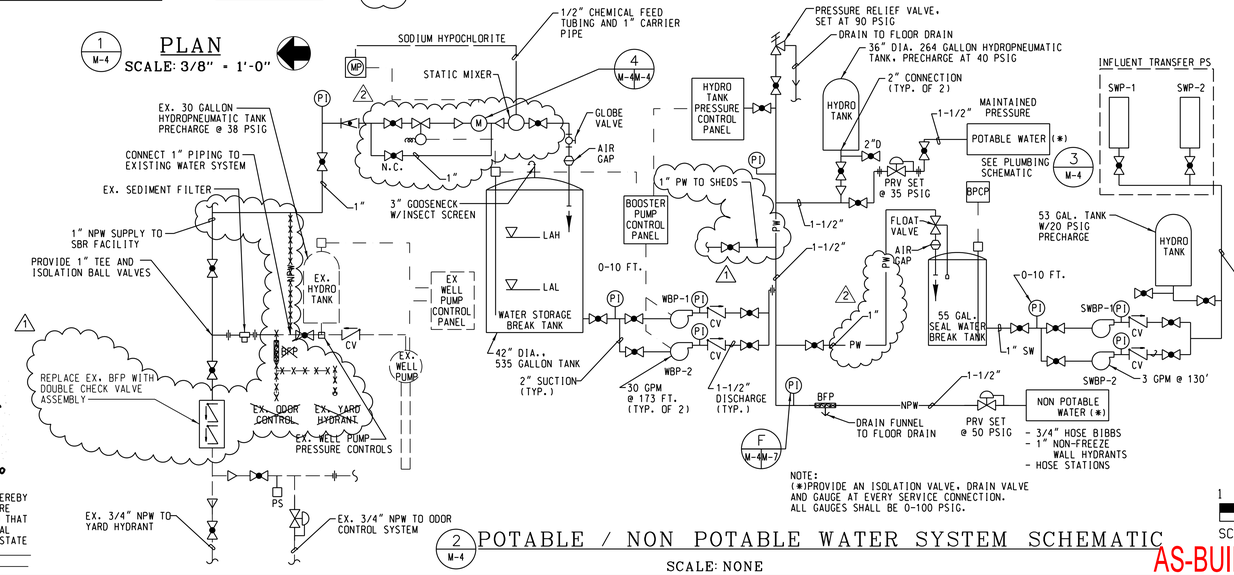
IH-1 INSTANTANEOUS WATER HEATER 79 KW, 480 VAC, 3-PHASE, 23° TEMPERATURE RISE @ 23 GPM
ES-1 EMERGENCY SHOWER/EYEWASH 1-1/4" CONNECTION, 23 GPM @ 30 PSIG
WH-1 10 GALLON WATER HEATER, 1650W, 120 VAC, 1 PHASE, 8 GPH RECOVERY RATE @ 90°F RISE

(3 M-4) PLUMBING SCHEMATIC

SCALE: NONE

(1 M-4) PLAN

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



NOTE:
(*)PROVIDE AN ISOLATION VALVE, DRAIN VALVE AND GAUGE AT EVERY SERVICE CONNECTION. ALL GAUGES SHALL BE 0-100 PSIG.

(2 M-4) POTABLE / NON POTABLE WATER SYSTEM SCHEMATIC

SCALE: NONE

1 0 1 2 3 4 5 10 20

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

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EXPIRATION DATE: 01/15/2021

6/16/20

AS-BUILT REPLACEMENT SHEET 12/2021

M-4

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/13/17

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10/10/2016

DES: KFJ
DRN: KFJ
CHK: SEA
DATE: AUG., 2016

BY	NO.	REVISION	DATE
KJ		AS-BUILT	12/21
JFW	4	RFI #002	6/20
JFW	3	BUILDING PERMIT COMMENTS - HO. CO. DILP	6/20
JFW	2	ADDENDUM 1	6/20
GW	1	NOVEMBER 21, 2018	

PLUMBING-
POTABLE & NON POTABLE
WATER SYSTEM

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 20 OF 43

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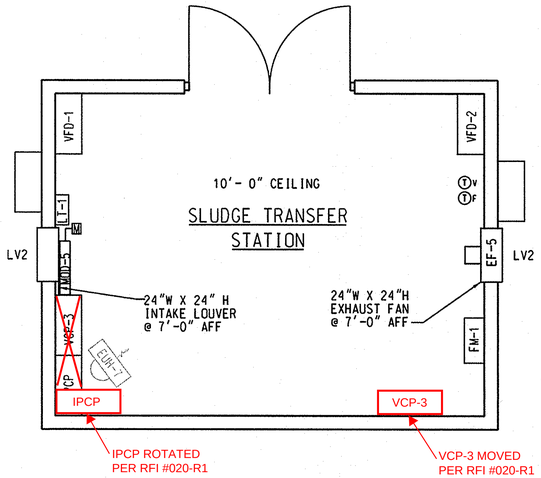
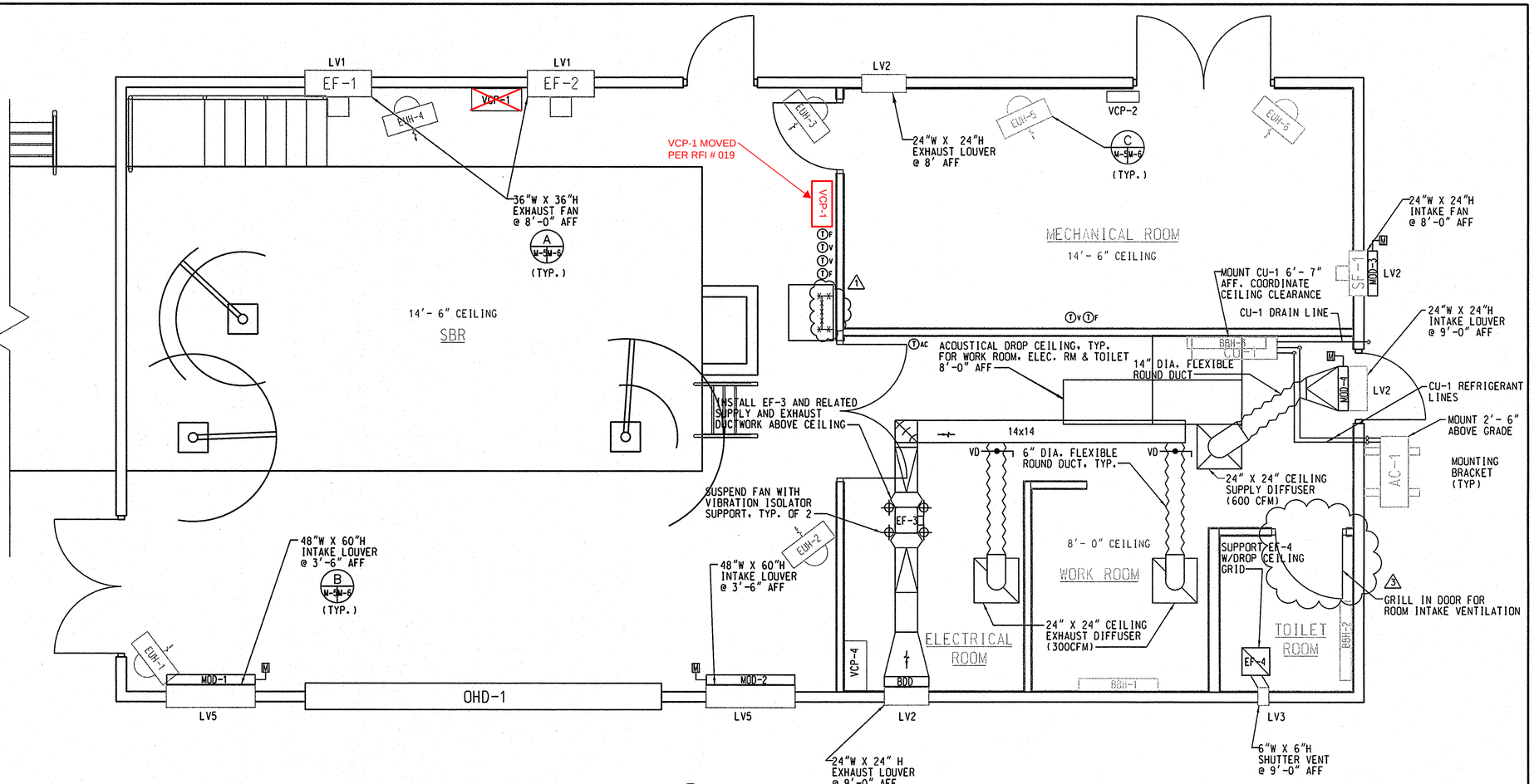
BY: kevin.jackson
FILE: M:\2007\00713781.06\Drawings\00713780&_M-004 Plumbing_Water System.dgn





1/M-5 PLAN 1 SCALE: 3/8" = 1'-0"

HVAC OPERATIONS CRITERIA

1. TOILET ROOM AT 2 CFM/SF MINIMUM
2. OFFICE FUME CONTROL AT 15 AC
   STANDARD OFFICE A/C
   STANDARD OFFICE HEATING
3. MECHANICAL ROOM
   MINIMUM 6 AC STANDARD VENTILATION
   MAXIMUM 10 AC HEAT REMOVAL CAPACITY
4. SBR PROCESS ROOM
   MINIMUM 6 AC STANDARD VENTILATION
   1 - FAN OPERATION AT 15 AC HEAT REMOVAL
   2 - FAN OPERATION AT 30 AC HIGH TEMPERATURE
5. INFLUENT TRANSFER PUMP STATION
   MINIMUM 6 AC STANDARD VENTILATION
   MAXIMUM 20 AC HEAT REMOVAL CAPACITY
6. NFPA 820 REVIEW: SBR PROCESS IS PROCEEDED BY A PRELIMINARY TREATMENT PROCESS TANK LOCATED OUTSIDE. THEREFORE THE PRELIMINARY TREATMENT PROCESS IS CLASSIFIED CLASS-1 DIVISION-1. WHILE THE INTERIOR PROCESS TANKS ARE NON-CLASSIFIED SPACES. THE SBR PROCESS ROOM IS 1-HOUR FIRE RATED AND CLASSIFIED NEMA-4X BY NEC GUIDELINES

HVAC DESIGN CRITERIA

1. STANDARDS
   MDE/TEN STATES STANDARDS
   NFPA 820 CLASSIFICATIONS
2. SPACE CONDITIONS
   OFFICE A/C AT 75°F
   OFFICE HEAT AT 70°F
   STANDARD HEATING AT 60°F
   STANDARD VENTILATION AT 90°F
3. VENTILATION RATES
   MINIMUM RATE AT 6 AIR CHANGES (AC)
   HEAT REMOVAL TO MAINTIN 90°F
   PURGE VENTILATION AT 30 AIR CHANGES (AC)
   FUME CONTROL AT 15 AIR CHANGES (AC)

CONSTRUCTION NOTES

1. SEE ARCHITECURAL LOUVER SCHEDULE FOR BUILDER OPENING COORDINATION

AS-BUILT
DATE 12/2021

EQUIPMENT NAMES

BBH: BASE BOARD HEATER
BDD: BACK DRAFT DAMPER
EF: EXHAUST FAN
EUH: ELECTRIC UNIT HEATER
MOD: MOTOR OPERATED DAMPER
SF: SUPPLY FAN
CU: CASSETTE UNIT
AC: AIR COOLED CONDENSING UNIT

1 0 1 2 3 4 5 10 20
SCALE: 3/8" = 1'-0"

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STATE OF MARYLAND STEVEN E. ANDERSEN No. 33925 PROFESSIONAL ENGINEER 6/16/20

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
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CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
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STATE OF MARYLAND STEVEN E. ANDERSEN No. 33925 PROFESSIONAL ENGINEER 10/10/2016

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KJ		AS-BUILT	12/21
JFW	3	BUILDING PERMIT COMMENTS - HO. CO. DILP	6/20
GW	1	NOVEMBER 21, 2018	

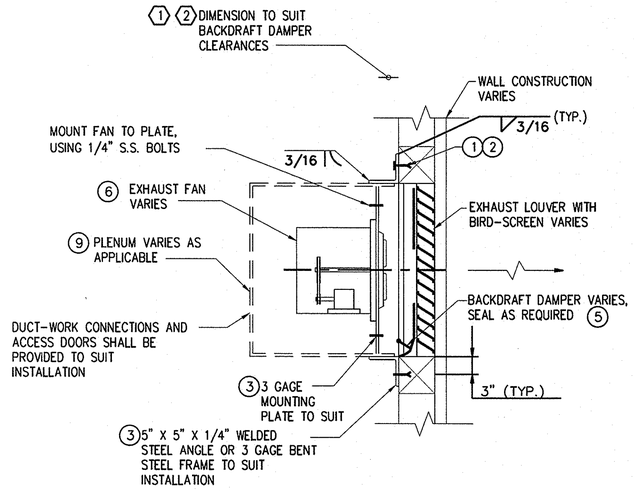
HVAC PLAN AND CRITERIA

600' SCALE MAP NO. 40-41 BLOCK NO. 12

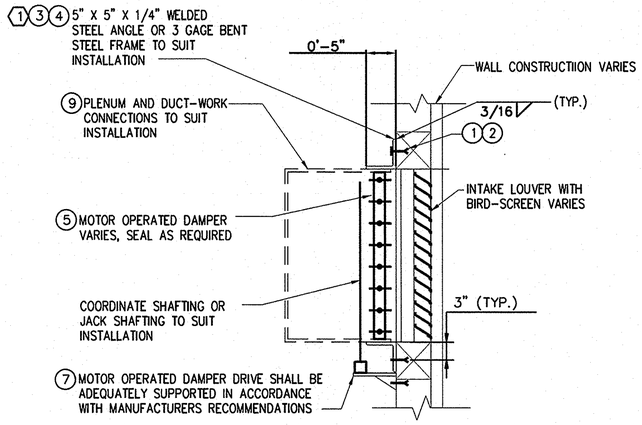
ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

M-5
SCALE AS SHOWN
SHEET 21 OF 43

PLOTTED: 5/24/21
PLOT BY: JAMES
FILE: SFILE5



A TYPICAL EXHAUST FAN DETAIL
SCALE: NONE



B TYPICAL INTAKE DETAIL
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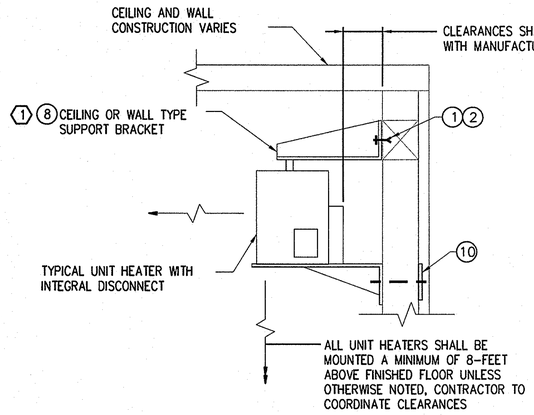

C TYPICAL UNIT HEATER DETAIL
SCALE: NONE

CONSTRUCTION NOTES:

1. SEE RESPECTIVE HEATING, VENTILIATION AND MECHANICAL PLANS AND SECTIONS FOR INSTALLATION REFERENCES.
2. SEE DAMPER CLEARANCE TABLE.

KEYED NOTES:

1. FOR WOOD FRAMING ANCHORING USE 3/8" DIA. S.S. LAG BOLTS WITH 3-INCH EMBEDMENT, OR APPROVED EQUAL SPACED AT 12-INCHES ON-CENTER.
2. FOR METAL STUD WALL ANCHORING USE 3/8" DIA. S.S. LAG BOLTS WITH 1-1/2" EMBEDMENT AT 12 INCHES ON-CENTER.
3. FRAME AND MOUNTING PLATE SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION. SQUARE-CORNER FRAME CONSTRUCTION IS ACCEPTABLE, MITERED CORNERS ARE NOT REQUIRED.
4. MOTOR-OPERATED AND BACK DRAFT DAMPER FRAMES SHALL BE REQUIRED. INSTALLATIONS SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
5. ALL DAMPERS SHALL MATCH IN NOMINAL SIZE WITH THEIR RESPECTIVE LOUVERS UNLESS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS. WHERE MULTIPLE FANS SHARE A LOUVER, THE BACK DRAFT DAMPERS SHALL BE PARTITIONED FOR EACH RESPECTIVE FAN. THE DAMPER SHALL BE FAN FRAME MOUNTED OR WALL MOUNTED TO SUIT FIELD CONDITIONS.
6. ALL BELT DRIVEN FANS SHALL BE FURNISHED WITH MOTOR/BELT GUARD PROTECTIVE SCREENS, UNLESS THE FAN IS INSIDE OF A PLENUM, OR OTHERWISE SPECIFIED.
7. CONTRACTOR SHALL COORDINATE M.O.D. SHAFTING ARRANGEMENTS WITH SUITABLE FRAME.
8. CONTRACTOR SHALL PROVIDE ADDITIONAL SUPPORT CHANNELS, RODS AND S.S. HARDWARE TO SUIT CEILING INSTALLATION.
9. PLENUM CONNECTIONS TO WALL FRAMES SHALL BE SUITABLE FOR MATERIALS OF CONSTRUCTION AND SHALL BE SELF-SUPPORTING IN ACCORDANCE WITH SMACCNA STANDARDS.
10. UNIT HEATERS IN EXCESS OF 200 LBS. UTILIZING SHELF OR BRACKET SUPPORTS, SHALL REQUIRE THRU-BOLTS WITH 3/8-INCH THICK BEARING PLATES SPANNING HORIZONTAL BOLT CENTERS. CONTRACTOR TO COORDINATE ADDITIONAL SUPPORT FRAMING.

HEATING SCHEDULE

UNIT I.D.	kW	AMPS	CFM	THROW (FT.)	VOLTS/PH/HERTZ	REMARKS
EUH-1	5.0	6.0	405	12	480 VAC. 3 - PH	DISCONNECT AND INTEGRAL THERMOSTAT
EUH-2	5.0	6.0	405	12	480 VAC. 3 - PH	DISCONNECT AND INTEGRAL THERMOSTAT
EUH-3	5.0	6.0	405	12	480 VAC. 3 - PH	DISCONNECT AND INTEGRAL THERMOSTAT
EUH-4	5.0	6.0	405	12	480 VAC. 3 - PH	DISCONNECT AND INTEGRAL THERMOSTAT
EUH-5	3.0	10.8	280	8	277 VAC. 1 - PH	DISCONNECT AND INTEGRAL THERMOSTAT
EUH-6	3.0	10.8	280	8	277 VAC. 1 - PH	DISCONNECT AND INTEGRAL THERMOSTAT
EUH-7	5.0	6.0	405	8	480 VAC. 3 - PH	DISCONNECT AND INTEGRAL THERMOSTAT
BBH-1	1.0	3.8	-	-	277 VAC. 1 - PH	INTEGRAL THERMOSTAT
BBH-2	1.0	3.8	-	-	277 VAC. 1 - PH	INTEGRAL THERMOSTAT
BBH-3	1.0	3.8	-	-	277 VAC. 1 - PH	INTEGRAL THERMOSTAT

VENTILATION SCHEDULE

UNIT I.D.	TYPE	DRIVE	TOTAL CAPACAITY (CFM)	TOTAL S.P. (IN.Hg)	FAN RPM	MAX. MOTOR H.P.	VOLTS/PH/HERTZ	DAMPER TYPE	REMARKS
EF-1	P	BD	3000	0.375	1163	1/2	480 VAC. 3 - PH	BDD	(3)
EF-2	P	BD	3000	0.375	1163	1/2	480 VAC. 3 - PH	BDD	(3)
EF-3	C	BD	600	0.5	1454	0.25	115 VAC. 1 - PH	BDD	(3) FUME CONTROL
EF-4	P	D	150	0.375	900	0.13	115 VAC. 1 - PH	BDD	(3)LIGHT SWITCH CONTROL
EF-5	P	D	600	0.375	1404	0.25	115 VAC. 1 - PH	BDD	(3) RHEOSTAT
SF-1	P	D	600	0.375	1404	0.25	115 VAC. 1 - PH	M.O.D.	(2) RHEOSTAT

NOTE:
1. COORDINATE CONTROLS AND INSTALLATIN DETAILS AS SHOWN ON THE CONTRACT DRAWINGS
2. ALL SUPPLY FANS REQUIRE AN EXHAUST M.O.D.
3. ALL EXHAUST FANS REQUIRE AN INTAKE M.O.D.

FAN TYPE:
BD = BELT DRIVE
C = CENTRIFUGAL INLINE
D = DIRECT DRIVE
P = PROPELLER WALL MOUNTED

DUCTLESS SPLIT SYSTEM AIR CONDITION - CRITERIA

CASSETTE FAN CFM	775 DRY CFM
CASSETTE FAN FLA	0.36
MAX. CASSETTE FAN MOTOR POWER	56W
TOTAL COOLING BTUH	24.000
SENSIBLE COLLING BTUH	18.500
CONDENSER COIL EDB	93F
EVAPORATOR COIL EDB/EWB	75/62F
ELECTRICAL CHARACTERISTICS VOLT/PH/HZ	208V/1-PHASE/60HZ

PACKAGE SYSTEM NOTES:

1. SPACE DESIGN CONDITIONS: 75°F DB 45% RH (COOLING).
2. PROVIDE EVAPORATOR COIL AND FIN COATINGS SUITABLE FOR BLEACH FUMES AND ACIDIC CORROSIVE REACTIONS.
3. AIR CONDITIONING SYSTEM SHALL UTILIZE GREEN REFRIGERANT R-410A.

DAMPER CLEARANCES

FAN SIZE	CLEARANCE
12"	6"
16"	8"
18"	8"
20"	10"
24"	12"
30"	12"
36"	14"

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 MARYLAND. LICENSE NO. 33925 EXPIRATION DATE: 01/15/2021

STATE OF MARYLAND · STEVEN E. ANDERSON · No. 33925 · PROFESSIONAL ENGINEER

6/16/20

AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

KCI TECHNOLOGIES
ENGINEERS
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www.kci.com

STATE OF MARYLAND · STEVEN E. ANDERSON · No. 33925 · PROFESSIONAL ENGINEER
10/10/2016

DES: KFJ
DRN: KFJ
CHK: SEA
DATE: AUG., 2016

BY	NO.	REVISION	DATE

HVAC SCHEDULES AND DETAILS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

M-6
SCALE AS SHOWN
SHEET 22 OF 43

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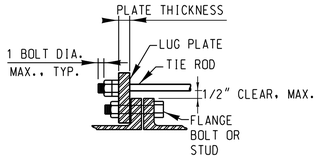
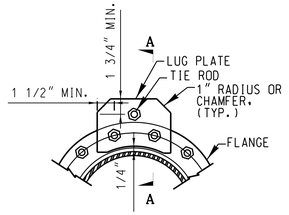
BY: $USERNAME$
FILE: $FILES$





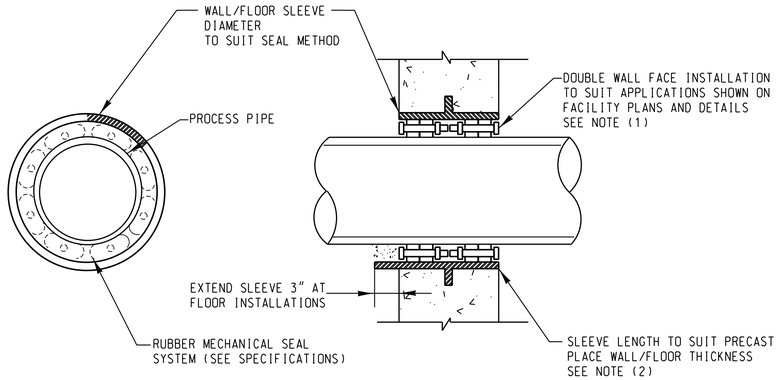
SECTION A-A

PIPE SIZE	NUMBER OF RODS	DIAMETER OF RODS	PLATE THICKNESS	PIPE SLEEVE (IF REQUIRED)	DESIGN PRESSURE (PSI)
3"	2	3/4"	3/4"	7/8"	150
4"	2	3/4"	3/4"	7/8"	150

NOTES:
FLANGE SURFACE IN CONTACT WITH THE LUG PLATE SHALL BE GROUND SMOOTH TO CLEAR THE CASTING IRREGULARITY AND EMBOSSED LETTERING. CONTACT SURFACE OF LUG PLATE SHALL BE MACHINED TO A ONE DEGREE TAPER FOR PIPE DIAMETERS 12-INCH AND LARGER.

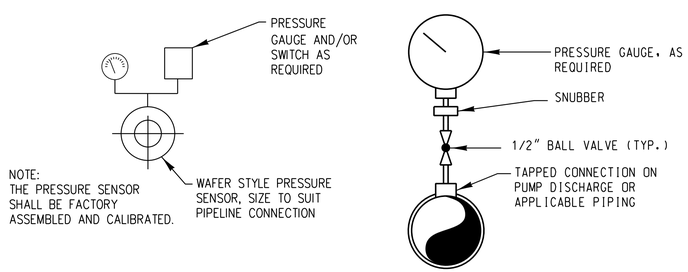
ROD MATERIAL - ASTM A588
PLATE MATERIAL - ASTM A36
SLEEVE MATERIAL - SCHEDULE 40 STEEL PIPE

A M-1M-7 TIE ROD INSTALLATION DETAIL
SCALE: NONE



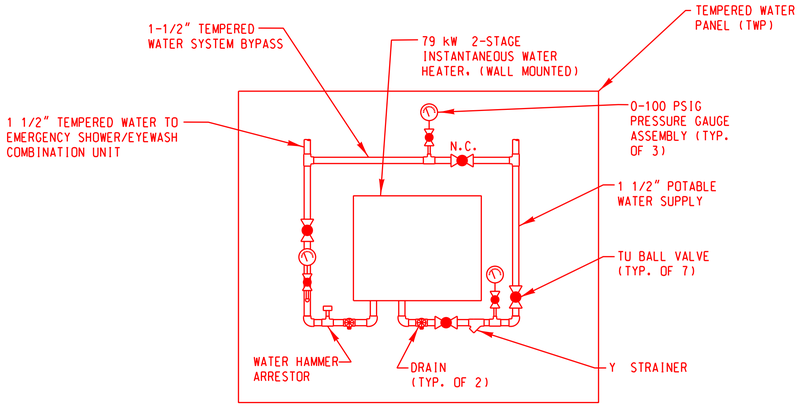
NOTES:
(1) PROVIDE NON SHRINK GROUT SEAL AT FLOOR SLEEVE LOCATIONS.
(2) EXISTING WALL AND FLOOR CORES DO NOT REQUIRE SLEEVE INSTALLATION.

D M-1M-7 PIPE THROUGH WALL/FLOOR DETAIL
SCALE: NONE

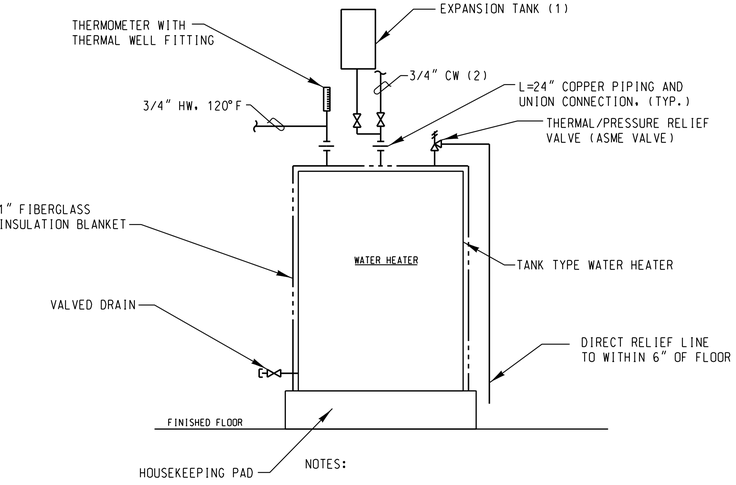


E M-1M-7 SEWAGE/SLUDGE PRESSURE SENSOR DETAIL
SCALE: NONE

F M-1M-7 PW/NPW PRESSURE GAUGE DETAIL
SCALE: NONE

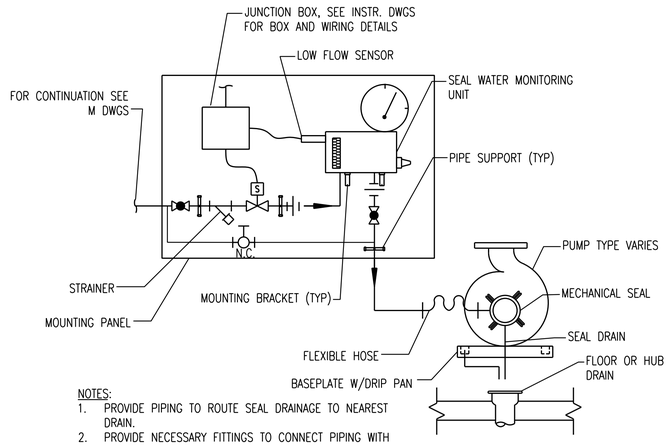


B M-4M-7 TEMPERED WATER PANEL DETAIL
SCALE: NONE

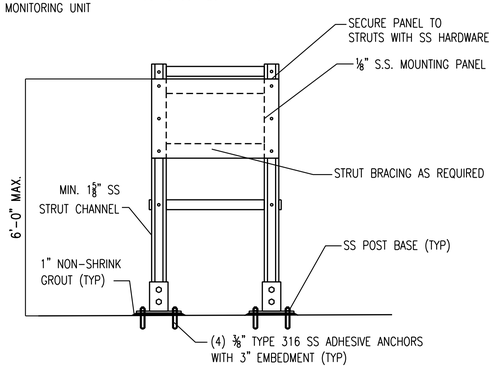


NOTES:
1. PROVIDE EXPANSIN TANK IN ACCORDANCEW WITH JURISDICTIONAL CODE REQUIREMENTS.
2. CONTRACTOR SHALL COORDINATE WATER HEATER CONNECTIONS AND REQUIREMENTS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

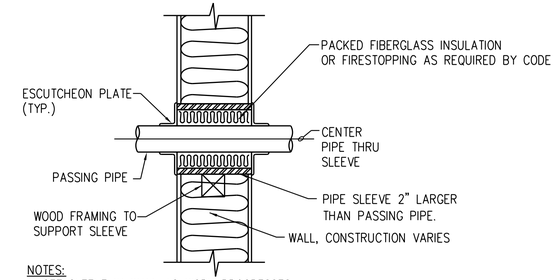
C M-4M-7 ELECTRIC WATER HEATER DETAIL
SCALE: NONE



NOTES:
1. PROVIDE PIPING TO ROUTE SEAL DRAINAGE TO NEAREST DRAIN.
2. PROVIDE NECESSARY FITTINGS TO CONNECT PIPING WITH MONITORING UNIT

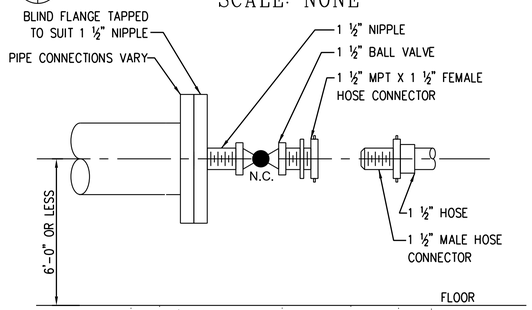


G M-1M-7 SEAL WATER PANEL DETAIL
SCALE: NONE



NOTES:
1. SET SLEEVE IN WALL AS WORK PROGRESSES.
2. SLEEVE LENGTH TO SUIT WALL CONSTRUCTION.
3. APPLY WATER PROOF SILICONE SEALANT TO EXTERIOR WALL PENETRATIONS.

H M-4M-7 PIPE SLEEVE-WOOD FRAME WALL DETAIL
SCALE: NONE



J M-4M-7 FLUSHING CONNECTION DETAIL
SCALE: NONE

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STATE OF MARYLAND — STEVEN E. ANDERSEN — No. 33925 — PROFESSIONAL ENGINEER — 6/16/20

AS-BUILT REPLACEMENT SHEET 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
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STATE OF MARYLAND — STEVEN E. ANDERSEN — No. 33925 — PROFESSIONAL ENGINEER — 10/10/2016

DES: KFJ
DRN: KFJ
CHK: SEA
DATE: AUG., 2016

BY	NO.	REVISION	DATE
KJ		AS-BUILT	12/21

MECHANICAL DETAILS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

M-7
SCALE AS SHOWN
SHEET 23 OF 43

PLOTTED: "08:36 AM on Friday, December 10, 2021"
BY: kevin.jackson
FILE: M:\2007\07137806\Drawings\07137806_M-007 Mechanical Details.dgn

ELECTRICAL GENERAL NOTES

1. INSTALL WORK IN ACCORDANCE WITH THE 2017 EDITION OF NFPA 70 NATIONAL ELECTRICAL CODE, 2018 EDITION OF THE INTERNATIONAL BUILDING CODE, 2018 EDITION OF NFPA 101 LIFE SAFETY CODE, 2018 EDITION OF INTERNATIONAL MECHANICAL CODE, 2018 EDITION OF NFPA 70E STANDARD OF FOR ELECTRICAL SAFETY IN THE WORK PLACE, APPLICABLE SECTIONS OF OSHA OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION REGULATIONS - LATEST EDITION, AND AUTHORITIES HAVING JURIDICTION.
2. PROVIDE MATERIALS THAT ARE NEW, OF THE BEST OF THEIR RESPECTIVE KINDS, WITHOUT IMPERFECTIONS OR BLEMISHES, AND PROTECTED FROM THE ELEMENTS PRIOR TO CONSTRUCTION.
3. COMPLY WITH OWNER'S USE OF PREMISES AND SAFETY REGULATIONS.
4. SECURE ALL PERMITS REQUIRED FOR ELECTRICAL WORK. SCHEDULE INSPECTIONS OF THE ELECTRICAL SYSTEMS. ELECTRICAL INSPECTIONS WILL BE PERFORMED BY THE AUTHORITIES HAVING JURISDICTION.
5. ALL EXISTING ELECTRICAL SYSTEMS (INCLUDING LIGHTING, POWER, SECURITY, FIRE ALARM, AND EMERGENCY) MUST REMAIN OPERATIONAL. COORDINATE AND SCHEDULE ALL REQUIRED OUTAGES WITH CONSTRUCTION MANAGER WITH A MINIMUM OF 14 DAYS ADVANCE NOTICE. CONFIRM WITH CONSTRUCTION MANAGER ALL CONDITIONS/INSTANCES WHERE EXISTING EQUIPMENT WILL BE REQUIRED TO BE DE-ENGERIZED TO MAKE NEW CONNECTIONS. THIS APPLIES TO ALL ELECTRICAL EQUIPMENT. CONFIRMATION SHALL INCLUDE THE PROPER PROCEDURES (ADMINISTRATIVE AND SAFETY) REQUIRED TO COORDINATE AND SCHEDULE WITH CONSTRUCTION MANAGER ALL REQUIRED POWER OUTAGES.
6. FIELD VERIFY DEMOLITION REQUIREMENTS AND EXISTING CONDITIONS.
7. CENTER EQUIPMENT OR DEVICES LOCATED ABOVE OPENINGS SUCH AS DOORS, LOUVERS, ETC. ABOVE THE OPENING. THIS NOTE REFERS TO, BUT IS NOT LIMITED TO, EXIT LIGHTS, EXTERIOR LIGHT FIXTURES OVER REQUIRED MEANS OF EXIT DISCHARGE, ETC.
8. COORDINATE LOCATIONS OF ALL ELECTRICAL EQUIPMENT AND LOCATION/ROUTING OF ALL ELECTRICAL FEEDERS (AND ASSOCIATED PULLBOXES) AND BRANCH CIRCUITS WITH ALL OTHER UTILITIES (EXISTING AND NEW), WITH STRUCTURE, AND WITH BUILDING ELEMENTS.
9. UNLESS NOTED OTHERWISE, EVERY CONDUIT CONTAINING 120V OR GREATER WIRING SHALL CONTAIN A SEPARATE INSULATED GROUND WIRE RATED FOR 600V.
10. 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.
11. PROVIDE STRUCTURAL FRAME SUPPORTS AS REQUIRED FOR DISCONNECT SWITCHES, MOTOR STARTERS, PANELBOARDS, TRANSFORMERS, CONTACTORS, ETC. (IF DISCONNECT SWITCHES OR STARTERS ARE LOCATED ON EQUIPMENT HOUSINGS, COORDINATE LOCATIONS WITH EQUIPMENT SUPPLIER TO ENSURE SWITCHES/STARTERS ARE NOT INSTALLED ON EQUIPMENT ACCESS PANELS). MAINTAIN PROPER NATIONAL ELECTRICAL CODE CLEARANCES. IN ADDITION, MAINTAIN PROPER MECHANICAL WORKING CLEARANCES FOR SERVICING OF EQUIPMENT.
12. UNLESS INDICATED OTHERWISE, PROVIDE ALL REQUIRED EQUIPMENT CONNECTIONS. THIS INCLUDES WIRING AND CONDUIT FROM LOCAL DISCONNECTING MEANS TO MOTOR TERMINALS OF ALL EQUIPMENT (GENERAL CONSTRUCTION, HVAC, PLUMBING, FIRE PROTECTION, OWNER FURNISHED EQUIPMENT, ETC.).
13. COORDINATE ROOF PENETRATIONS FOR MECHANICAL EQUIPMENT WITH WORK OF MECHANICAL CONTRACT.
14. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR LOCATIONS OF ALL BUILDING EXPANSION JOINTS. PROVIDE CONDUIT EXPANSION-JOINT FITTINGS AS SPECIFIED.
15. PROVIDE UNSWITCHED HOT CONDUCTOR TO ALL EXIT SIGNS (LIFE SAFETY NORMAL EMERGENCY APPLICATIONS). UNLESS INDICATED OTHERWISE, PROVIDE (2)#12, (1)#12G-3/4"C TO EACH EXIT SIGN.
16. UNLESS INDICATED OTHERWISE, CONNECT EMERGENCY BATTERY PACKS TO THE NORMAL LIGHTING CIRCUIT LOCATED IN THE SAME SPACE AS THE BATTERY PACKS. CONNECT BATTERY PACKS AHEAD OF SWITCHING, UNLESS INDICATED OTHERWISE, WIRING AND CONDUIT SHALL CONSIST OF (2)#12, (1)#12G-3/4"C.
17. 12VDC WIRING FROM ALL EMERGENCY BATTERY PACKS TO ASSOCIATED REMOTE HEADS SHALL BE A MINIMUM OF (2)#12 AWG IN 3/4" CONDUIT (FROM EMERGENCY BATTERY PACK TO END DEVICE). F
18. SIZE SUPPORTS FOR MULTIPLE RACEWAY INSTALLATIONS SO CAPACITY CAN BE INCREASED BY A MINIMUM 25 PERCENT IN THE FUTURE OR GREATER AS INDICATED.
19. PAINT ALL PLYWOOD BACKBOARDS (MINIMUM 2 COATS FIRE RETARDANT PAINT) TO MATCH WALL FINISH.
20. CONFIRM ALL EQUIPMENT LOCATIONS AND PLUG TYPES PRIOR TO RECEPTACLE INSTALLATION. PROVIDE RECEPTACLE TYPES TO MATCH PLUG TYPES AND NEMA CONFIGURATION. THIS INCLUDES THE USE OF TWISTLOCK DEVICES.
21. CONFIRM ALL WIRING DEVICE, DATA/VOICE BOXES, AND OWNER EQUIPMENT LOCATIONS PRIOR TO COMMENCING WORK.
22. SUPPORT ALL LOW VOLTAGE CABLING ABOVE ACCESSIBLE CEILINGS WITH J-HOOKS SPACED AT MAXIMUM 4'-0" INTERVALS.
23. INCLUDE THE FOLLOWING ADDITIONAL EQUIPMENT AND DEVICES IN THE COST FOR THE PROJECT FOR INSTALLATION AS DIRECTED BY AUTHORITY HAVING JURISDICTION REVIEW: UNIVERSAL EXIT SIGNS - FIVE (5) OF EACH STYLE FIRE ALARM HORN/STROBE - FIVE (5)
24. 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.
29. ALL EXISTING OR NEW EXPOSED CONDUIT SHALL BE PAINTED THE SAME COLOR OF THE CEILING OR WALL. CONTRACTOR SHALL COORDINATE WITH ARCHITECTURAL PLANS FOR PROPER PAINT COLORS.
30. WHERE EXISTING CONSTRUCTION ALLOWS WALLS TO BE "FISHED," INSTALL WIRING CONCEALED IN WALL CONSTRUCTION WITH CONDUIT. WHERE EXISTING CONSTRUCTION DOES NOT ALLOW WALLS TO BE "FISHED,"AND WHERE SPECIFICALLY APPROVED BY THE ENGINEER, SURFACE METAL RACEWAY MAY BE UTILIZED TO EXTEND WIRING FROM THE SURFACE MOUNTED DEVICE VERTICALLY TO ABOVE ACCESSIBLE CEILING. WHERE SURFACE METAL RACEWAY IS UTILIZED, PROVIDE COMPATIBLE OUTLET BOXES BY THE SAME MANUFACTURER AS THE SURFACE METAL RACEWAY.
31. CONTRACTOR SHALL FURNISH ANY AND ALL PERMITS REQUIRED FOR THE DEMOLITION AND INSTALLATION OF THIS WORK. COORDINATE WITH THE LOCAL AUTHORITY HAVING JURISDICTION AND/OR CODE INSPECTORS TO SCHEDULE ALL INSPECTIONS REQUIRED AS APPROPRIATE DURING THE CONSTRUCTION. PROVIDE REMEDIES FOR ANY VIOLATIONS NOTED BY THE INSPECTOR.
32. PROVIDE ANY/ALL MISCELLANEOUS FITTINGS, BENDS, CONNECTORS, AND APPURTENANCES NECESSARY FOR A COMPLETE AND FUNCTIONAL SYSTEM WHETHER EXPLICITLY SHOWN OR NOT. PROVIDE NAIL PLATES AND SIMILAR PROTECTION FOR SYSTEMS AS REQUIRED BY THE CODE.
33. CONTRACTOR SHALL USE ONLY NEW, HEAVY DUTY, COMMERCIAL GRADE MATERIALS. ALL MATERIALS AND EQUIPMENT USED SHALL BE LISTED AND LABELED FOR THE APPLICATION IN WHICH THEY ARE USED.
34. COORDINATE INSTALLATION OF MECHANICAL AND ELECTRICAL INSTALLATIONS AROUND OTHER SYSTEMS AND BUILDING STRUCTURE TO AVOID OBSTRUCTIONS AND PRESERVE CLEARANCES. LOCATE AND INSTALL COMPONENTS REQUIRING ACCESS SO THAT THEY MAY BE SERVICED, RESET, REPLACED AND/OR RECALIBRATED WITH NORMAL TOOLS AND EQUIPMENT.
35. OPENINGS MADE FOR MECHANICAL AND ELECTRICAL EQUIPMENT AND SYSTEMS SHALL BE NEAT AND OF A MINIMUM SIZE. SEAL AROUND OPENINGS WITH APPROPRIATE MATERIALS TO PRESENT A FINISHED APPEARANCE AND PROVIDE SUITABLE WEATHERPROOFING.
36. INSTALL ALL ELECTRICAL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. EQUIPMENT, DEVICES AND MATERIALS OF SIMILAR FUNCTION, TYPE, OR SYSTEM SHALL BE OF THE SAME MANUFACTURER.
37. PROVIDE HANGERS, SUPPORTS, AND SWAY BRACING FOR PIPING, DUCTWORK AND CONDUIT IN ACCORDANCE WITH THE APPROPRIATE CODE AND MATERIAL TYPE. PROVIDE APPROPRIATELY SIZED SLEEVES WHERE PIPING AND CONDUITS PENETRATE FOUNDATIONS. DO NOT CUT OR ALTER ANY STRUCTURAL MEMBERS OR COMPONENTS WITHOUT THE WRITTEN PERMISSION AND APPROVAL OF THE ARCHITECT AND/OR REGISTERED DESIGN PROFESSIONAL.
38. PROVIDE FIRE PROOFING MATERIALS NECESSARY TO MAINTAIN CODE REQUIRED FIRE AND SMOKE BARRIERS AT ALL MECHANICAL AND ELECTRICAL SYSTEM PENETRATIONS. INSTALL MATERIALS IN ACCORDANCE WITH THE MANUFACTURER'S SYSTEMS SHEETS APPROPRIATE FOR THE SPECIFIC INSTALLATION. MAINTAIN SYSTEMS SHEETS ON SITE FOR THE INSPECTORS REFERENCE DURING INSPECTIONS.
39. PROVIDE ALL EXCAVATION, TRENCHING, SHORING, BEDDING, SAWCUTTING AND BACKFILLING AS NECESSARY TO SUPPORT THE ELECTRICAL SYSTEMS INSTALLATIONS. CONTACT THE APPROPRIATE STATE AGENCY AND/OR UTILITIES IN ADVANCE PRIOR TO DIGGING.
40. PROVIDE IDENTIFICATION FOR ALL ELECTRICAL SYSTEMS AS REQUIRED BY THE APPLICABLE CODES.
41. DRAWINGS DEPICT GENERAL LOCATIONS FOR NEW & EXISTING ITEMS. CONTRACTOR SHOULD EXPECT SOME VARIATION AND SHALL ACCOMMODATE WITHOUT ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE PROPOSED EQUIPMENT TO INSURE THAT EQUIPMENT WILL FIT IN THE AVAILABLE SPACE.
42. PROVIDE AS BUILT DRAWINGS AND OPERATING AND MAINTENANCE MANUALS TO THE BUILDING OWNER UPON COMPLETION OF THE PROJECT.
43. PROVIDE EQUIPMENT SUBMITTALS UNDER THE PROVISIONS OF THE DIVISION 16 SPECIFICATIONS. NO EQUIPMENT SHALL BE INSTALLED WITHOUT PRIOR ACCEPTANCE BY THE ENGINEER. BRING AREAS OF POTENTIAL CONFLICT TO THE COUNTY'S ATTENTION.
44. ALL EQUIPMENT POWER OUTAGES FOR DEMOLITION SHALL BE COORDINATED WITH THE PLANT OPERATION PRIOR TO REMOVAL. OUTAGES SHALL BE SUBMITTED PER COUNTY NOTIFICATION REQUIREMENT IN ADVANCE TO THE SCHEDULED POWER OUTAGE. THE COUNTY RESERVES THE RIGHT TO REJECT ANY REQUEST FOR AN OUTAGE. IN SOME CASES IT MAY BE NECESSARY, AT CONTRACTOR'S EXPENSE, TO EITHER INSTALL TEMPORARY FACILITIES FOR SERVICE OR SCHEDULE THE WORK DURING A PERIOD WHEN THE OUTAGE WOULD HAVE MINIMAL IMPACT ON THE TREATMENT PROCESS.
45. IN CASES OF DOUBT AS TO THE WORK INTENDED, OR IN THE EVENT OF NEED FOR EXPLANATION THEREOF, THE CONTRACTOR SHALL REQUEST SUPPLEMENTARY INSTRUCTIONS FROM THE COUNTY. NO CHANGES ARE TO BE MADE TO THE WORK OF THIS CONTRACT WITHOUT PRIOR KNOWLEDGE AND APPROVAL OF THE COUNTY. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK, WHICH HE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT, WITHOUT WRITTEN AUTHORIZATION FROM THE COUNTY. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.
46. A SET OF MEP RECORD/COORDINATION DRAWINGS SHALL BE MAINTAINED IN THE CONTRACTORS OFFICE AT THE JOB SITE. ACTUAL LOCATIONS OF ALL EQUIPMENT, PIPING, DUCTWORK, 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. CONTRACTOR SHALL NOT CORE, DRILL, OR CUT CONCRETE SLABS FOR ANY REASON WITHOUT THE KNOWLEDGE AND WRITTEN CONSENT OF THE COUNTY.
47. THE INFORMATION PROVIDED IN THESE DRAWING IS MEANT TO SHOW DESIGN INTENT ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING THE NECESSARY MODIFICATIONS TO MEET ACTUAL FIELD CONDITIONS. THESE MODIFICATIONS SHALL BE APPROVED BY THE COUNTY AND INDICATED ON THE AS-BUILT DRAWINGS.
48. CONTRACTOR SHALL REMOVE ALL DEMOLISHED EQUIPMENT, WASTE MATERIAL, DEBRIS, AND RUBBISH FROM SITE AND LEGALLY DISPOSE OF IT IN ACCORDANCE WITH APPLICABLE LOCAL AND ENVIRONMENTAL REGULATIONS.
49. CONTRACTOR SHALL ACCOMPANY THE COUNTY FOR INSPECTION AND APPROVAL AT PROJECT COMPLETION.
50. CONTRACTOR SHALL MAKE ALL FINAL EQUIPMENT CONNECTIONS AND PROVIDE THE NECESSARY DEVICES, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. COORDINATE REQUIREMENTS FOR PROVISION OF MOTOR STARTERS, DISCONNECTS, CONTACTORS, CONTROL WIRING. ETC. AS REQUIRED FOR PROPER FUNCTIONING WITH THE MECHANICAL AND CONTROL SYSTEMS.
51. 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 COUNTY.
52. 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.
53. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND CERTIFICATES OF INSPECTION REQUIRED BY THE COUNTY.
54. 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.
55. 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.
56. ALL WORK SHALL BE GUARANTEED FOR ONE YEAR AGAINST FAULTY LABOR, MATERIALS AND WORKMANSHIP. TIME FOR GUARANTEE SHALL BEGIN FROM THE DATE OF ACCEPTANCE OF THE COMPLETED WORK BY THE OWNER OR APPOINTED REPRESENTATIVE.
57. PROVIDE AND UTILIZE NECESSARY SAFETY EQUIPMENT WHEN WORKING WITH EXISTING, ENERGIZED ELECTRICAL EQUIPMENT.
58. TEST ALL ELECTRICAL CONNECTIONS AND COMPONENTS PRIOR TO ENERGIZING SYSTEM AND CORRECT ALL DEFICIENCIES IDENTIFIED.
59. ALL CONDUCTORS SHALL BE COPPER, TYPE THHN, XHHW OR AS REQUIRED PER NEC, MINIMUM SIZE #12. PROVIDE A FULL SIZE NEUTRAL CONDUCTOR AND EQUIPMENT GROUND FOR EACH BRANCH CIRCUIT AND FEEDER, UNO.
60. CONTRACTOR SHALL REMOVE AND REINSTALL OR RELOCATE ANY MOVEABLE OBSTRUCTIONS THAT MAY IMPEDE WORK UNDER THIS CONTRACT, AT NO ADDITIONAL COST. THESE SHALL INCLUDE, BUT ARE NOT LIMITED TO EQUIPMENT, PIPING, ANY SUPPORTING APPURTENANCES, CONDUIT ROUTINGS, HVAC DUCTS, ETC. ANY CONSTRUCTION REQUIRING WORK AS STATED, SHALL BE RECONNECTED AFTER THE END OF CONSTRUCTION TO PROVIDE A FULLY FUNCTIONAL SYSTEM(S), AS FOUND PRIOR TO COMMENCING CONTRACT WORK. CONTRACTOR SHALL PROVIDE A TRAILER FOR DAILY WORK.

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 MARYLAND, LICENSE NO. 42043 EXPIRATION DATE: 01/11/2022

STATE OF MARYLAND — BRIAN MAISCH — No. 42043 — PROFESSIONAL ENGINEER — 6-19-20

ELECTRICAL ABBREVIATIONS

ABBR.	DESCRIPTION	ABBR.	DESCRIPTION
A	- AMPERE	MAX	- MAXIMUM
ACI	- AMERICAN CONCRETE INSTITUTE	MC	- MECHANICAL CONTRACTOR
AFF	- ABOVE FINISHED FLOOR	MEP	- MECHANICAL, ELECTRICAL, AND PLUMBING
AFG	- ABOVE FINISHED GRADE	MH	- MOUNTING HEIGHT
AHJ	- AUTHORITY HAVING JURISDICTION	MIN	- MINIMUM, MINUTE
AIC	- AMPERE INTERRUPTING CAPACITY	MOD	-MOTORIZED OPERATED DAMPER
ANSI	- AMERICAN NATIONAL STANDARDS INSTITUTE	MOV	-MOTORIZED OPERATED VALVE
APPROX	- APPROXIMATE	MS	- MAIN SWITCHGEAR, MOTOR STARTER
AUX	- AUXILIARY	MTD	- MOUNTED
AVG	- AVERAGE	MTR	- MOTOR
AWG	- AMERICAN WIRE GAUGE	<N>	- NEW
BOT	- BOTTOM	NEC	- NATIONAL ELECTRICAL CODE
℄	- CENTERLINE	NC	- NORMALLY CLOSED, NOISE CRITERIA
C	- CONDUIT	NEMA	- NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
CB	- CIRCUIT BREAKER	NF	- NON-FUSED
CKT	- CIRCUIT	NFPA	- NATIONAL FIRE PROTECTION ASSOCIATION
COMPR	- COMPRESSOR	NFSS	- NON-FUSED SAFETY SWITCH
CR	- CONTROL RELAY	NO	- NORMALLY OPEN, NUMBER
DB	- DIRECT BURIED, DRY BULB	NTS	- NOT TO SCALE
DIA	- DIAMETER	OC	- ON CENTER
DISC	- DISCONNECT	OH	- OVERHEAD
DN	- DOWN	OSHA	- OCCUPATIONAL SAFETY AND HEALTH ASSOCIATION
DWG	- DRAWING	OZ	- OUNCE
EC	- ELECTRICAL CONTRACTOR	P	- PURGE, PUMP
EF	- EXHAUST FAN	PH	- PHASE
EMT	- ELECTRICAL METALLIC TUBING	PNL	- PANEL
ENT	- ENTERING	POC	- POINT OF CONNECTION
ETR	- EXISTING TO REMAIN	PVC	- POLYVINYLCHLORIDE DUCT (SIZE NOTED)
EUH	-ELECTRIC UNIT HEATER	QTY	- QUANTITY
EWT	- ENTERING WATER TEMPERATURE	RGS	- RIGID GALVANIZED STEEL
EX	- EXISTING	RX	- REMOVE EXISTING
FDR	- FEEDER	SCH	- SCHEDULE
FLA	- FULL LOAD AMPS	SECT	- SECTION
FSS	- FUSED SAFETY SWITCH	SST	- STAINLESS STEEL
FT	- FEET	STL	- STEEL
G, GND, GRD, GRN	- GROUND	SPD	-SURGE PROTECTION DEVICE
GA	- GAGE, GAUGE	SW	- SWITCH, SOCKET WELD
GALV	- GALVANIZED	SYM	- SYMMETRICAL
GE	- GENERAL ELECTRIC	THK	- THICK(NESS)
GEC	- GROUNDING ELECTRODE CONDUCTOR	TYP	- TYPICAL
GFI	- GROUND FAULT INTERRUPTING	UDS	- UTILITY DISTRIBUTION SYSTEM
GFCI	- GROUND FAULT CURRENT INTERRUPTING	UF	- UNDERFLOOR
H-O-A	- HAND-OFF-AUTOMATIC SWITCH	UG	- UNDERGROUND
HP	- HEAT PUMP, HORSE POWER	UL	- UNDERWRITERS LABORATORIES, INC.
HVAC	- HEATING, VENTILATION, AND AIR CONDITIONING	UON	- UNLESS OTHERWISE NOTED
HZ	- HERTZ	V	- VOLT
JB	- JUNCTION BOX	VA	- VOLT AMPERE
KCM	- THOUSAND CIRCULAR MILS	W	- WIRE, WATT
KVA	- KILOVOLT AMPERES	W/	- WITH
KW	- KILOWATT	WP	- WEATHERPROOF EQUIPMENT
LF	- LINEAR FEET	XFMR	- TRANSFORMER
LG	- LENGTH		

ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
B C	LIGHTING FIXTURES, SEE LIGHT FIXTURE SCHEDULE		DUPLEX RECEPTACLE, 20A, NEMA 5-20R
	EXIT SIGN, SEE LIGHT FIXTURE SCHEDULE	GFI	DUPLEX RECEPTACLE, 20A, NEMA 5-20R GFI: GROUND FAULT CIRCUIT INTERRUPTER
	EMERGENCY LIGHTING UNIT, SEE LIGHT FIXTURE SCHEDULE	J J	JUNCTION BOX, CEILING OR WALL MOUNTED
	REMOTE LAMP HEADS AND BATTERY, SEE LIGHT FIXTURE SCHEDULE		WELDING RECEPTACLE
PP-2	HOMERUN TO PANELBOARD: DESIGNATION INDICATES PANEL AND CIRCUIT NUMBER		277/480V PANELBOARD
			120/208V PANELBOARD
S	SINGLE POLE, 20A, 120/277V TOGGLE TYPE LIGHT SWITCH	E	GENERATOR E-STOP BUTTON
S_3	THREE WAY, 20A, 120/277V TOGGLE TYPE LIGHT SWITCH	ANN	GENERATOR AUDIBLE/VISUAL ANNUNCIATOR
S_4	FOUR WAY, 20A, 120/277V TOGGLE TYPE LIGHT SWITCH	SPD	SURGE PROTECTION DEVICE
S_M	MANUAL MOTOR STARTER TOGGLE SWITCH WITH THERMAL OVERLOAD ELEMENT. VOLTAGE RATING IN ACCORDANCE WITH EQUIPMENT SERVED	G	GENERATOR
	GROUND CONNECTION	E N L	AUTOMATIC TRANSFER SWITCH
	DISCONNECT SWITCH, TYPE AS NOTED		CIRCUIT BREAKER
	MOTORIZED EQUIPMENT		FUSED DISCONNECT SWITCH
CT	CURRENT TRANSFORMER CONNECTION		DELTA WYE TRANSFORMER

MOUNTING HEIGHT SCHEDULE

RECEPTACLES	18" ABOVE FINISHED FLOOR
LIGHT SWITCHES	48" ABOVE FINISHED FLOOR
PANELBOARDS	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
- MOUNTING HEIGHTS OF ALL DEVICES SHALL COMPLY WITH ICC/ANSI A117.1-2003

AS-BUILT

DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/3/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

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STATE OF MARYLAND — CRAIG E. PURSLANK — No. 46409 — PROFESSIONAL ENGINEER — 10/10/16

DES: SB
DRN: SB
CHK: BRM
DATE: AUG, 2016

BY	NO.	REVISION	DATE
JFW	5	ELECTRICAL DESIGN UPDATES	6/20
JFW	3	BUILDING PERMIT COMMENTS – HO. CO. DILP	6/20

ELECTRICAL GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

E-0
SCALE AS SHOWN
SHEET 24 OF 43

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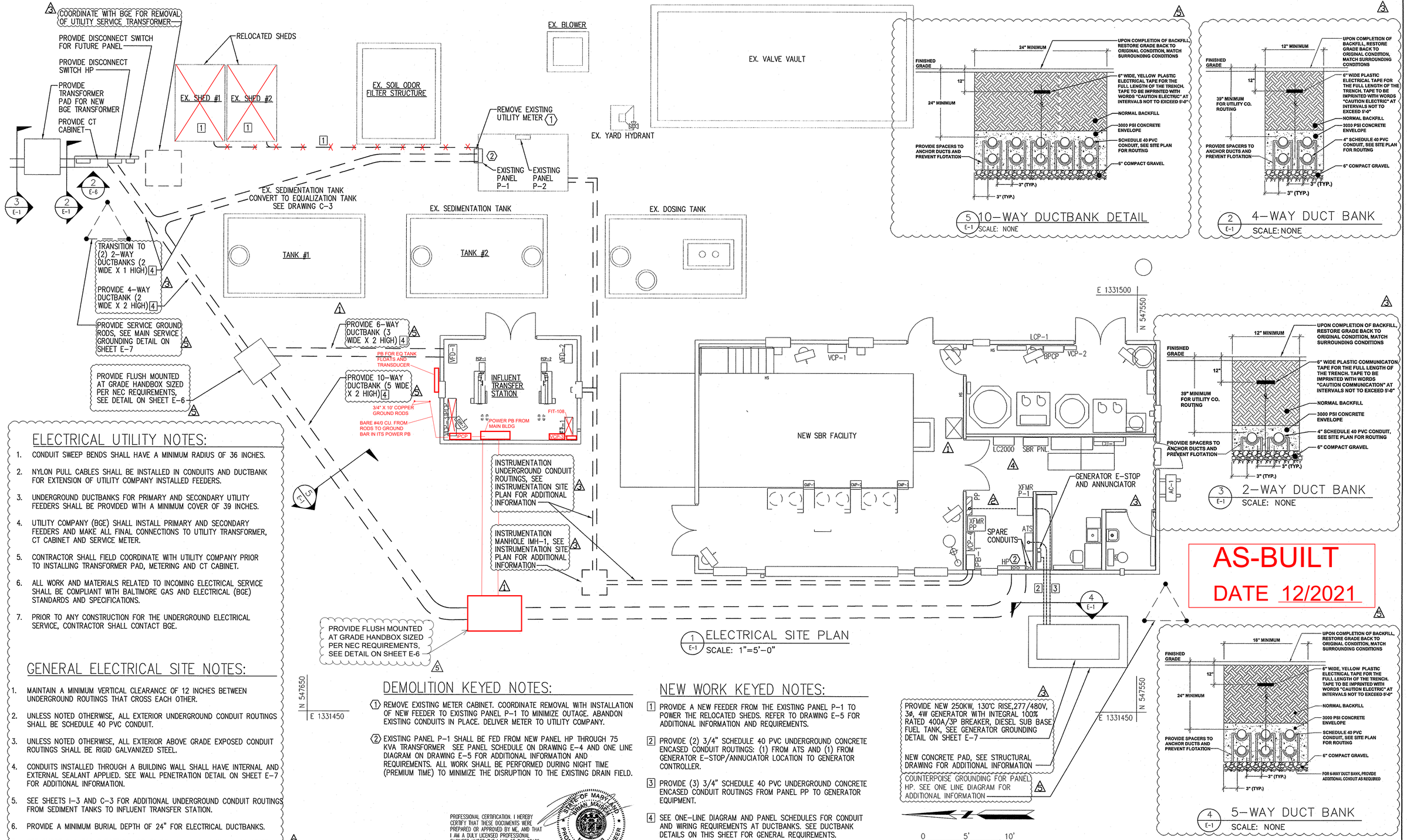

ELECTRICAL UTILITY NOTES:

1. CONDUIT SWEEP BENDS SHALL HAVE A MINIMUM RADIUS OF 36 INCHES.
2. NYLON PULL CABLES SHALL BE INSTALLED IN CONDUITS AND DUCTBANK FOR EXTENSION OF UTILITY COMPANY INSTALLED FEEDERS.
3. UNDERGROUND DUCTBANKS FOR PRIMARY AND SECONDARY UTILITY FEEDERS SHALL BE PROVIDED WITH A MINIMUM COVER OF 39 INCHES.
4. UTILITY COMPANY (BGE) SHALL INSTALL PRIMARY AND SECONDARY FEEDERS AND MAKE ALL FINAL CONNECTIONS TO UTILITY TRANSFORMER, CT CABINET AND SERVICE METER.
5. CONTRACTOR SHALL FIELD COORDINATE WITH UTILITY COMPANY PRIOR TO INSTALLING TRANSFORMER PAD, METERING AND CT CABINET.
6. ALL WORK AND MATERIALS RELATED TO INCOMING ELECTRICAL SERVICE SHALL BE COMPLIANT WITH BALTIMORE GAS AND ELECTRICAL (BGE) STANDARDS AND SPECIFICATIONS.
7. PRIOR TO ANY CONSTRUCTION FOR THE UNDERGROUND ELECTRICAL SERVICE, CONTRACTOR SHALL CONTACT BGE.

GENERAL ELECTRICAL SITE NOTES:

1. MAINTAIN A MINIMUM VERTICAL CLEARANCE OF 12 INCHES BETWEEN UNDERGROUND ROUTINGS THAT CROSS EACH OTHER.
2. UNLESS NOTED OTHERWISE, ALL EXTERIOR UNDERGROUND CONDUIT ROUTINGS SHALL BE SCHEDULE 40 PVC CONDUIT.
3. UNLESS NOTED OTHERWISE, ALL EXTERIOR ABOVE GRADE EXPOSED CONDUIT ROUTINGS SHALL BE RIGID GALVANIZED STEEL.
4. CONDUITS INSTALLED THROUGH A BUILDING WALL SHALL HAVE INTERNAL AND EXTERNAL SEALANT APPLIED. SEE WALL PENETRATION DETAIL ON SHEET E-7 FOR ADDITIONAL INFORMATION.
5. SEE SHEETS I-3 AND C-3 FOR ADDITIONAL UNDERGROUND CONDUIT ROUTINGS FROM SEDIMENT TANKS TO INFLUENT TRANSFER STATION.
6. PROVIDE A MINIMUM BURIAL DEPTH OF 24" FOR ELECTRICAL DUCTBANKS.
7. SEE SHEET C-1 FOR ELECTRICAL DEMOLITION OF UNDERGROUND ROUTINGS.

DEMOLITION KEYED NOTES:

1. REMOVE EXISTING METER CABINET. COORDINATE REMOVAL WITH INSTALLATION OF NEW FEEDER TO EXISTING PANEL P-1 TO MINIMIZE OUTAGE. ABANDON EXISTING CONDUITS IN PLACE. DELIVER METER TO UTILITY COMPANY.
2. EXISTING PANEL P-1 SHALL BE FED FROM NEW PANEL HP THROUGH 75 KVA TRANSFORMER SEE PANEL SCHEDULE ON DRAWING E-4 AND ONE LINE DIAGRAM ON DRAWING E-5 FOR ADDITIONAL INFORMATION AND REQUIREMENTS. ALL WORK SHALL BE PERFORMED DURING NIGHT TIME (PREMIUM TIME) TO MINIMIZE THE DISRUPTION TO THE EXISTING DRAIN FIELD.

NEW WORK KEYED NOTES:

1. PROVIDE A NEW FEEDER FROM THE EXISTING PANEL P-1 TO POWER THE RELOCATED SHEDS. REFER TO DRAWING E-5 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. PROVIDE (2) 3/4" SCHEDULE 40 PVC UNDERGROUND CONCRETE ENCASED CONDUIT ROUTINGS: (1) FROM ATS AND (1) FROM GENERATOR E-STOP/ANNUCIATOR LOCATION TO GENERATOR CONTROLLER.
3. PROVIDE (3) 3/4" SCHEDULE 40 PVC UNDERGROUND CONCRETE ENCASED CONDUIT ROUTINGS FROM PANEL PP TO GENERATOR EQUIPMENT.
4. SEE ONE-LINE DIAGRAM AND PANEL SCHEDULES FOR CONDUIT AND WIRING REQUIREMENTS AT DUCTBANKS. SEE DUCTBANK DETAILS ON THIS SHEET FOR GENERAL REQUIREMENTS.

5 E-1 — 10-WAY DUCTBANK DETAIL
SCALE: NONE

2 E-1 — 4-WAY DUCT BANK
SCALE: NONE

3 E-1 — 2-WAY DUCT BANK
SCALE: NONE

4 E-1 — 5-WAY DUCT BANK
SCALE: NONE

1 E-1 — ELECTRICAL SITE PLAN
SCALE: 1"=5'-0"

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 MARYLAND, LICENSE NO. 42043 EXPIRATION DATE: 01/11/2022

STATE OF MARYLAND — BRIAN MAISEL — No. 42043 — PROFESSIONAL ENGINEER — 12-19-20

AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

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STATE OF MARYLAND — GRAHAM E. POTTER — No. 46409 — PROFESSIONAL ENGINEER — 12/19/20

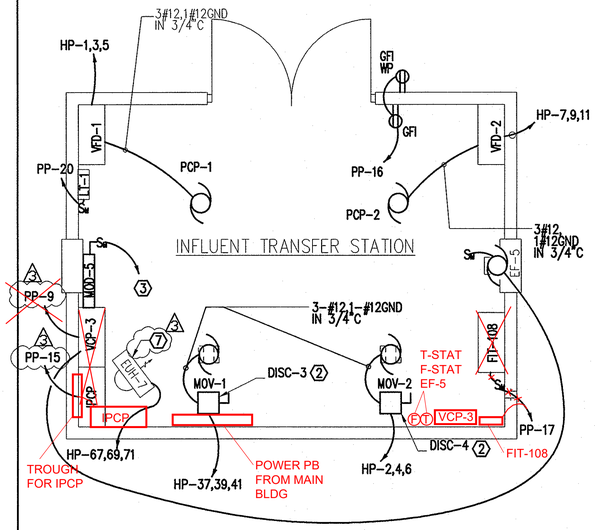
DES: SB				
DRN: SB	KJ		AS-BUILT	12/21
CHK: BRM	JFW	5	ELECTRICAL DESIGN UPDATES	6/20
DATE: AUG, 2016	JFW	4	RFI #002	6/20
	JFW	3	BUILDING PERMIT COMMENTS – HO. CO. DILP	6/20
	JFW	2	ADDENDUM 1	6/20
	GW	1	NOVEMBER 21, 2018	
	BY	NO.	REVISION	DATE

ELECTRICAL SITE PLAN

600' SCALE MAP NO. 40-41 BLOCK NO. 12

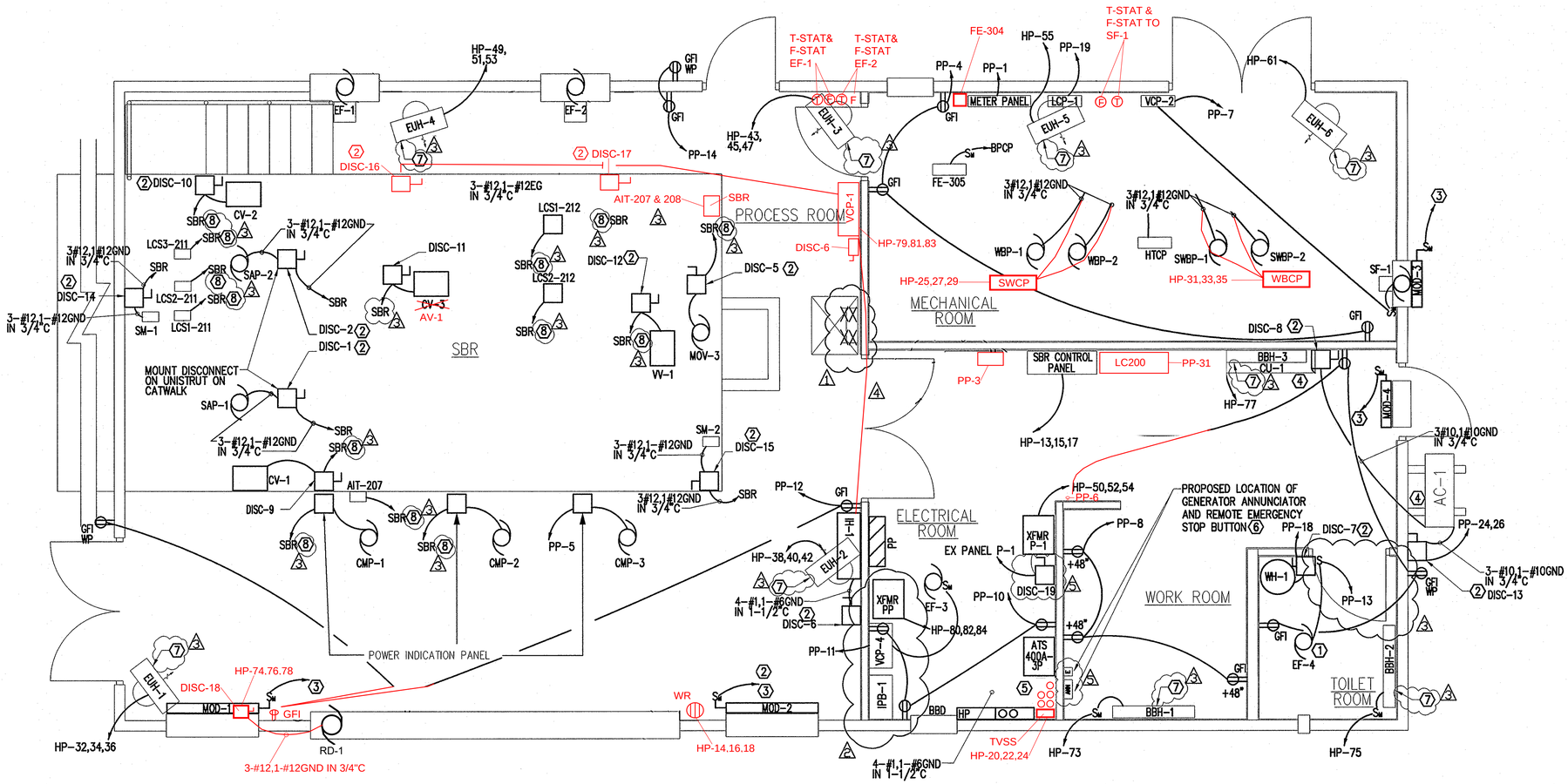
ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

E-1
SCALE AS SHOWN
SHEET 25 OF 43



DISCONNECT SCHEDULE

DISC ID	VOLTAGE	POLES	AMPS	RATING	FUSED / NON-FUSED
DISC-1	480	3	30	NEMA 4X FRP	FUSED 20A
DISC-2	480	3	30	NEMA 4X FRP	FUSED 20A
DISC-3	480	3	30	NEMA 4X SST	FUSED 20A
DISC-4	480	3	30	NEMA 4X SST	FUSED 20A
DISC-5	120	1	30	NEMA 4X FRP	FUSED 20A
DISC-6	480	3	200	NEMA 4X FRP	NON-FUSED
DISC-7	120	1	30	NEMA 1	NON-FUSED
DISC-8	208	2	30	NEMA 1	NON-FUSED
DISC-9	120	1	30	NEMA 4X FRP	NON-FUSED
DISC-10	120	1	30	NEMA 4X FRP	NON-FUSED
DISC-11	120	1	30	NEMA 4X FRP	NON-FUSED
DISC-12	120	1	30	NEMA 4X FRP	NON-FUSED
DISC-13	208	2	30	NEMA 4X SST	FUSED 25A
DISC-14	480	3	30	NEMA 4X FRP	NON-FUSED
DISC-15	480	3	30	NEMA 4X FRP	NON-FUSED
DISC-16	480	3	30	NEMA 4X FRP	FUSED 20A
DISC-17	480	3	30	NEMA 4X FRP	FUSED 20A
DISC-18	480	3	30	NEMA 4X FRP	FUSED 20A
DISC-19	208	3	300	NEMA 1	FUSED 225A



ELECTRICAL POWER BUILDING LAYOUT

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

AS-BUILT REPLACEMENT SHEET12/2021

GENERAL NOTES:

1. SHEET E-0 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
2. ELECTRICAL CONTRACTOR SHALL FIELD COORDINATE ALL ELECTRICAL INSTALLATIONS WITH ALL DISCIPLINES.
3. IN ACCORDANCE WITH NEC 358.26, THERE SHALL BE NO MORE THAN A TOTAL OF 360 DEGREES ON BENDS IN A CONDUIT ROUTIUNG BETWEEN PULL POINTS (BOXES).
4. AT EACH DISCONNECT SWITCH AND CONTROL ENCLOSURE, PROVIDE NAME PLATE DATA REFLECTING PANEL SOURCE AND CIRCUIT NUMBER.

KEYED NOTES:

1. CONNECT EXHAUST FAN EF-4 TO NEAREST SWITCH VIA A RELAY.
2. SEE DISCONNECT SCHEDULE FOR SIZING INFORMATION.
3. 2#12,1#12G -3/4"C. TO VCP CONTROL PANEL.
4. CU-1 SHALL BE FED FROM AC-1. PROVIDE WIRING IN CONDUIT AS PER MANUFACTURER'S RECOMMENDATION.
5. PROVIDE A 200A FRAME,125A FUSED DISCONNECT SWITCH TO FED EQUIPMENT H-1.PROVIDE A JUNCTION BOX AS NECESSARY TO TAP THE NORMAL FEEDER ENTERING THE BUILDING PRIOR TO NORMAL LUGS OF THE TRANSFER SWITCH. REFER TO ONE LINE DIAGRAM ON DRAWING E-5 FOR ADDITIONAL INFORMATION.
6. REMOTE EMERGENCY-STOP SWITCH: FLUSH; WALL MOUNTED UNLESS OTHERWISE INDICATED; AND LABELED. PUSH BUTTON SHALL BE PROTECTED FROM ACCIDENTAL OPERATION.
7. EQUIPMENT PROVIDED WITH INTEGRAL DISCONNECT SWITCH.
8. REFER TO INSTRUMENTATION DRAWINGS FOR CONDUIT AND WIRE QUANTITY AND SIZES.

0 1' 2' 4' 6' 8'

3/8"=1'-0"

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 MARYLAND, LICENSE NO. 42043, EXPIRATION DATE: 01/11/2022

STATE OF MARYLAND · BRIAN WAGNER · NO. 42043 · PROFESSIONAL ENGINEER · 01-19-20

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/3/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, BUREAU OF UTILITIES — DATE 1/27/17
CHIEF, UTILITY DESIGN DIVISION — DATE

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STATE OF MARYLAND · CHARLES F. PURSELL, JR. · No. 46408 · PROFESSIONAL ENGINEER · 10/10/16

DES: SB	KJ		AS-BUILT	12/21
	JFW	5	ELECTRICAL DESIGN UPDATES	6/20
DRN: SB	JFW	4	RFI #002	6/20
	JFW	3	BUILDING PERMIT COMMENTS – HO. CO. DILP	6/20
CHK: BRM	JFW	2	ADDENDUM 1	6/20
	GW	1	NOVEMBER 21, 2018	
DATE: AUG, 2016	BY	NO.	REVISION	DATE

ELECTRICAL POWER BUILDING LAYOUT

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 26 OF 43

E-2

Jun 19, 2020 - 10:08am User: Robert.Williams
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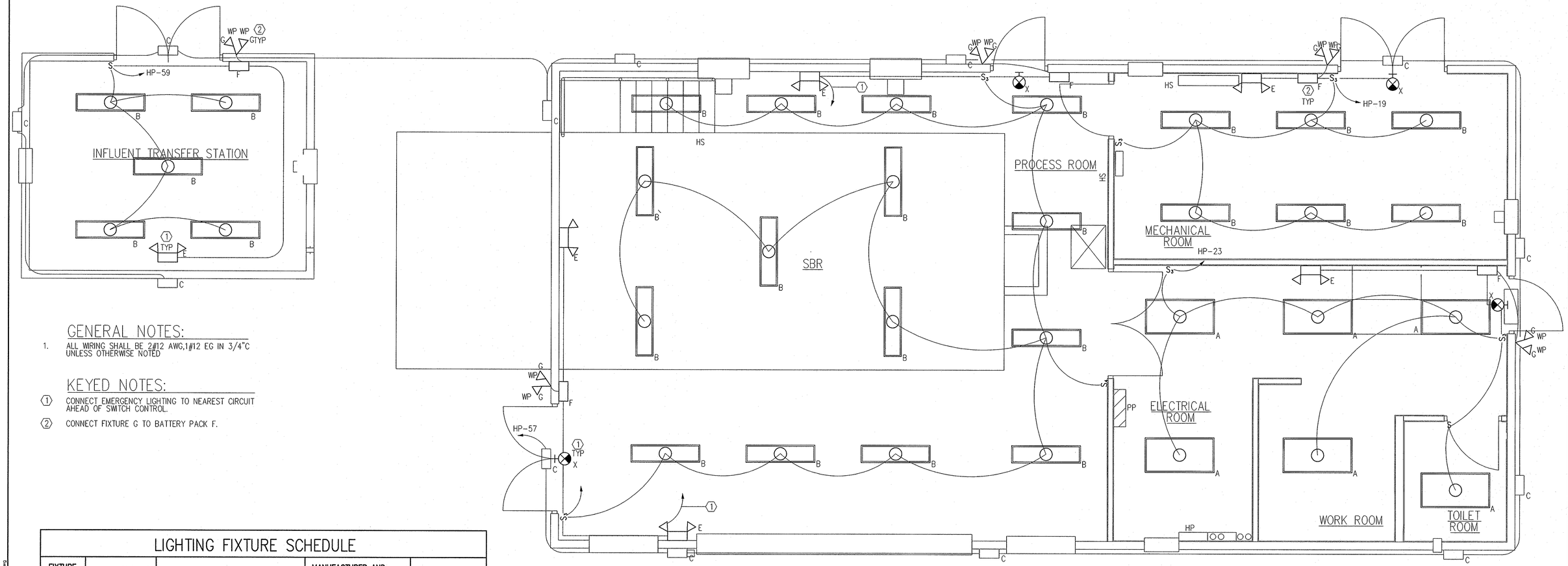

GENERAL NOTES:

1. ALL WIRING SHALL BE 2#12 AWG,1#12 EG IN 3/4"C UNLESS OTHERWISE NOTED

KEYED NOTES:

(1) CONNECT EMERGENCY LIGHTING TO NEAREST CIRCUIT AHEAD OF SWITCH CONTROL.

(2) CONNECT FIXTURE G TO BATTERY PACK F.

LIGHTING FIXTURE SCHEDULE

FIXTURE ID	LAMP(S)	DESCRIPTION	MANUFACTURER AND CATALOG NUMBER	MTD
A	(3) 32-WATT FLUORESCENT T8	2'X4' RECESSED, 3 LAMP, A12 LENS, ELECTRONIC BALLAST	LITHONIA 2GR8 G 3 32 A12 277 1/3 GEB10IS	9'-0" GRID MTD
B	(2) 32-WATT FLUORESCENT T8	4' WET LOCATION ENCLOSURE 2 LAMP 50% DR HIGH ACRYLIC LENS	LITHONIA DMW 2 32 277 GEB10IS	13'-0" AFF PENDANT MTD
C	LED	WALL MOUNTED EXTERIOR BUILDING LIGHT WITH INTEGRAL PHOTOCELL	LITHONIA TWPLED 10C 700 50K T3M 277 PE DDBXD	9'-0" AFG WALL MTD
E	(2) 12-WATT INCANDESCENT	EMERGENCY LIGHTING WITH BATTERY BACKUP	LITHONIA TITAN ELT125 H1212 TD (3)	13'-0" AFF WALL MTD
F	NONE	BATTERY PACK FOR REMOTE HEADS	LITHONIA TITAN ELT125 RO TD	13'-0" AFF WALL MTD
G	(1) 12V 12-WATT PAR36	EMERGENCY REMOTE HEAD	(3) LITHONIA ELA T MX H1212	9'-0" AFG WALL MTD
X	RED LED	RED LED EXIT SIGN WITH BATTERY BACKUP	LITHONIA EXR LED EL M6 (3)	10'-0" AFF WALL MTD

ELECTRICAL LIGHTING BUILDING LAYOUT
SCALE: 3/8"=1'-0"

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 MARYLAND, LICENSE NO. 42043, EXPIRATION DATE: 01/11/2022

STATE OF MARYLAND · BRIAN WARD · No. 42043 · PROFESSIONAL ENGINEER · 10-19-20

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

AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
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STATE OF MARYLAND · CRAIG E. PURSELL · No. 42409 · PROFESSIONAL ENGINEER · 10/10/16

DES: SB
DRN: SB
CHK: BRM
DATE: AUG, 2016

BY	NO.	REVISION	DATE
JFW	4	RFI #002	6/20
JFW	3	BUILDING PERMIT COMMENTS – HO. CO. DILP	6/20
JFW	2	ADDENDUM 1	6/20
SW	1	NOVEMBER 21, 2018	

ELECTRICAL LIGHTING BUILDING LAYOUT

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

E-3
SCALE AS SHOWN
SHEET 27 OF 43

NEW PANEL HP

POLES 42 **VOLTAGE** 480 /277 VOLTS **MOUNTING** SURFACE
SECTION 1 **BUS** 400A **LOCATION** ELEC RM
AIC 22,000 **MAIN** 400A MAIN CIRCUIT BREAKER **PHASE** 3
WIRE 4 WIRE (A, B, C, N, G) **FED FROM** SERVICE DISCONNECT

CKT #	BREAKER POLES	BREAKER TRIP	DESCRIPTION	WIRE NO.	WIRE SIZE	GROUND NO.	GROUND SIZE	CON SIZE	PHASE KVA A	PHASE KVA B	PHASE KVA C	WIRE NO.	WIRE SIZE	GROUND NO.	GROUND SIZE	CON SIZE	DESCRIPTION	BREAKER POLES	BREAKER TRIP	CKT #
1	3	20	VFD-1, PCP-1	3	10	1	10	3/4	2.10 / 0.30			3	10	1	10	3/4	MOV-2	3	20	2
3	-	-	-	-	-	-	-	-		2.10 / 0.30		-	-	-	-	-	-	-	-	4
5	-	-	-	-	-	-	-	-			2.10 / 0.30	-	-	-	-	-	-	-	-	6
7	3	20	VFD-2, PCP-2	3	10	1	10	3/4	2.10 / -			-	-	-	-	-	SPARE	3	20	8
9	-	-	-	-	-	-	-	-		2.10 / -		-	-	-	-	-	-	-	-	10
11	-	-	-	-	-	-	-	-			2.10 / -	-	-	-	-	-	-	-	-	12
13	3	60	SBR	3	6	1	10	1	5.48 / 15.00			3	6	1	10	1	WR-1	3	60	14
15	-	-	-	-	-	-	-	-		5.48 / 15.00		-	-	-	-	-	-	-	-	16
17	-	-	-	-	-	-	-	-			5.48 / 15.00	-	-	-	-	-	-	-	-	18
19	1	20	MECH RM LIGHTS	2	12	1	12	3/4	0.34 / -			-	-	-	-	-	SPACE	-	-	20
21	1	20	PROCESS RM LIGHTS	2	12	1	12	3/4		0.85 / -		-	-	-	-	-	SPACE	-	-	22
23	1	20	ELECT & WORK RM LIGHTS	2	12	1	12	3/4			0.26 / -	-	-	-	-	-	SPACE	-	-	24
25	3	15	BPCP	3	12	1	12	3/4	3.87 / -			-	-	-	-	-	SPARE	3	20	26
27	-	-	-	-	-	-	-	-		3.87 / -		-	-	-	-	-	-	-	-	28
29	-	-	-	-	-	-	-	-			3.87 / -	-	-	-	-	-	-	-	-	30
31	3	20	SPARE	-	-	-	-	-	- / 1.67			3	12	1	12	3/4	EUH-1	3	20	32
33	-	-	-	-	-	-	-	-		- / 1.67		-	-	-	-	-	-	-	-	34
35	-	-	-	-	-	-	-	-			- / 1.67	-	-	-	-	-	-	-	-	36
37	3	20	MOV-1	3	10	1	10	3/4	0.30 / 1.67			3	12	1	12	3/4	EUH-2	3	20	38
39	-	-	-	-	-	-	-	-		0.30 / 1.67		-	-	-	-	-	-	-	-	40
41	-	-	-	-	-	-	-	-			.30 / 1.67	-	-	-	-	-	-	-	-	42
									32.83	33.34	32.45									
									TOTAL CONNECTED KVA		98.62	TOTAL AMPS:							118.62	

NEW PANEL HP

POLES 42 **VOLTAGE** 480 /277 VOLTS **MOUNTING** SURFACE
SECTION 2 **BUS** 400A **LOCATION** ELEC RM
AIC 22,000 **MAIN** 400A MAIN LUGS ONLY **PHASE** 3
WIRE 4 WIRE (A, B, C, N, G) **FED FROM** PANEL HP, SECTION 1

CKT #	BREAKER POLES	BREAKER TRIP	DESCRIPTION	WIRE NO.	WIRE SIZE	GROUND NO.	GROUND SIZE	CON SIZE	PHASE KVA A	PHASE KVA B	PHASE KVA C	WIRE NO.	WIRE SIZE	GROUND NO.	GROUND SIZE	CON SIZE	DESCRIPTION	BREAKER POLES	BREAKER TRIP	CKT #
43	3	20	EUH-3	3	12	1	12	3/4	1.67 / -			-	-	-	-	-	SPARE	3	20	44
45	-	-	-	-	-	-	-	-		1.67 / -		-	-	-	-	-	-	-	-	46
47	-	-	-	-	-	-	-	-			1.67 / -	-	-	-	-	-	-	-	-	48
49	3	20	EUH-4	3	12	1	12	3/4	1.67 / 15.00			3	1	1	6	1-1/2	75KVA XFMR-2, P-1	3	125	50
51	-	-	-	-	-	-	-	-		1.67 / 15.00		-	-	-	-	-	-	-	-	52
53	-	-	-	-	-	-	-	-			1.67 / 15.00	-	-	-	-	-	-	-	-	54
55	1	20	EUH-5	2	12	1	12	3/4	3.00 / -			-	-	-	-	-	SPARE	1	20	56
57	1	20	EXTERIOR LIGHTS	2	10	1	10	3/4		1.76 / -		-	-	-	-	-	SPARE	1	20	58
59	1	20	UTILITY LIGHTS (ITS BLDG)	2	10	1	10	3/4			0.28 / -	-	-	-	-	-	SPACE	-	-	60
61	1	20	EUH-6	2	12	1	12	3/4	3.00 / -			-	-	-	-	-	SPACE	-	-	62
63	-	-	SPACE	-	-	-	-	-		- / -		-	-	-	-	-	SPACE	-	-	64
65	-	-	SPACE	-	-	-	-	-			- / -	-	-	-	-	-	SPARE	1	20	66
67	3	20	EUH-7	3	10	1	10	3/4	1.67 / -			-	-	-	-	-	SPARE	3	20	68
69	-	-	-	-	-	-	-	-		1.67 / -		-	-	-	-	-	-	-	-	70
71	-	-	-	-	-	-	-	-			1.67 / -	-	-	-	-	-	-	-	-	72
73	1	20	BBH-1	2	12	1	12	3/4	1.00 / 0.30			3	12	1	12	3/4	RD-1 ROLL UP DOOR	3	20	74
75	1	20	BBH-2	2	12	1	12	3/4		1.00 / 0.30		-	-	-	-	-	-	-	-	76
77	1	20	BBH-3	2	12	1	12	3/4			1.00 / 0.30	-	-	-	-	-	-	-	-	78
79	3	20	VCP-1	3	12	1	12	3/4	0.70 / 4.69			3	12	1	12	3/4	30KVA XFMR-1, PP	3	50	80
81	-	-	-	-	-	-	-	-		0.70 / 4.84		-	-	-	-	-	-	-	-	82
83	-	-	-	-	-	-	-	-			0.70 / 8.10	-	-	-	-	-	-	-	-	84
									32.70	28.61	30.39									
									TOTAL CONNECTED KVA		91.70	TOTAL AMPS:							110.30	

NEW PANEL PP

POLES 42 **VOLTAGE** 208 /120 VOLTS **MOUNTING** SURFACE
SECTION - **BUS** 100A **LOCATION** ELEC RM
AIC 22,000 **MAIN** 100A MAIN CIRCUIT BREAKER **PHASE** 3
WIRE 4 WIRE (A, B, C, N, G) **FED FROM** PANEL HP VIA XFMR-1

CKT #	BREAKER POLES	BREAKER TRIP	DESCRIPTION	WIRE NO.	WIRE SIZE	GROUND NO.	GROUND SIZE	CON SIZE	PHASE KVA A	PHASE KVA B	PHASE KVA C	WIRE NO.	WIRE SIZE	GROUND NO.	GROUND SIZE	CON SIZE	DESCRIPTION	BREAKER POLES	BREAKER TRIP	CKT #
1	1	20	METER PANEL	2	12	1	12	3/4	0.12 / -			-	-	-	-	-	SPACE	-	-	2
3	1	20	SPARE	-	-	-	-	-		- / 0.54		2	12	1	12	3/4	MECH RM RECEPT	1	20	4
5	1	20	CMP-3	2	12	1	12	3/4			0.12 / 0.72	2	12	1	12	3/4	WORK RM & AC-1 RECPT	1	20	6
7	1	20	VCP-2	2	12	1	12	3/4	0.05 / 0.54			2	12	1	12	3/4	WORK RM RECPT	1	20	8
9	1	20	VCP-3	2	10	1	10	3/4		0.73 / 0.54		2	12	1	12	3/4	ELECT. RM RECPT	1	20	10
11	1	20	VCP-4	2	12	1	12	3/4			0.05 / 0.54	2	12	1	12	3/4	PROCESS RM RECPT	1	20	12
13	1	20	EF-4	2	12	1	12	3/4	0.60 / 0.28			2	12	1	12	3/4	PROCESS RM & EXT RECPT	1	20	14
15	1	20	IPCP	2	10	1	10	3/4		0.25 / 0.36		2	10	1	10	3/4	IFS RECPT	1	20	16
17	1	20	FIT-108	2	10	1	10	3/4			0.25 / 1.60	2	12	1	12	3/4	WH-1	1	20	18
19	1	20	LCP-1	2	12	1	12	3/4	0.40 / 0.18			2	12	1	12	3/4	LT-1	1	20	20
21	1	20	GEN STRIP HEATER	2	10	1	10	3/4		1.20 / -		-	-	-	-	-	SPARE	1	20	22
23	1	20	GEN BATTERY CHARGER	2	10	1	10	3/4			1.20 / 2.40	2	10	1	10	3/4	AC-1	2	25	24
25	1	20	SPARE	-	-	-	-	-	- / 2.40			-	-	-	-	-	-	-	-	26
27	2	20	GEN BLOCK HEATER	2	10	1	10	3/4		1.22 / -		-	-	-	-	-	SPARE	1	20	28
29	-	-	-	-	-	-	-	-			1.22 / -	-	-	-	-	-	SPARE	1	20	30
31	1	20	LC2000	2	12	1	12	3/4	0.12 / -			-	-	-	-	-	SPARE	1	20	32
33	1	20	SPARE	2	12	1	12	3/4		- / -		-	-	-	-	-	SPARE	1	20	34
35	1	20	SPARE	2	10	1	10	3/4			- / -	-	-	-	-	-	SPARE	1	20	36
37	1	20	SPARE	2	10	1	10	3/4	- / -			-	-	-	-	-	SPARE	1	20	38
39	-	-	SPACE	2	12	1	12	3/4		- / -		-	-	-	-	-	SPACE	-	-	40
41	-	-	SPACE	2	12	1	12	3/4			- / -	-	-	-	-	-	SPACE	-	-	42
									4.69	4.84	8.10									
									TOTAL CONNECTED KVA		17.63	TOTAL AMPS:							48.9	

GENERAL NOTES:

1. PROVIDE TYPED WRITTEN SCHEDULES FOR PANELBOARD CIRCUITS.
2. PANELBOARD SCHEDULES SHALL REFLECT POWER SOURCE FOR PANEL.
3. AIC RATING OF BREAKER INSTALLATIONS SHALL MATCH AIC RATING OF DISTRIBUTION EQUIPMENT IN WHICH BREAKERS ARE TO BE INSTALLED.

AS-BUILT
DATE 12/2021

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 MARYLAND, LICENSE NO. 42043 EXPIRATION DATE: 01/11/2022

STATE OF MARYLAND BRIAN MAISCH No. 42043 PROFESSIONAL ENGINEER 6-19-20

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE 2/3/17
CHIEF, BUREAU OF ENGINEERING DATE 2/3/17
CHIEF, BUREAU OF UTILITIES DATE 1/25/17
CHIEF, UTILITY DESIGN DIVISION DATE 2/3/17

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STATE OF MARYLAND CRAIG E. PUSHLANK No. 46409 PROFESSIONAL ENGINEER 10/10/16

DES: SB
DRN: SB
CHK: BRM
DATE: AUG, 2016

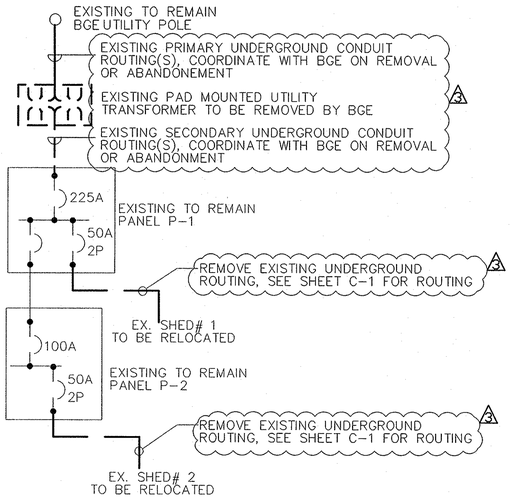
BY	NO.	REVISION	DATE
JFW	5	ELECTRICAL DESIGN UPDATES	6/20
JFW	4	RFI #002	6/20

ELECTRICAL PANEL SCHEDULES

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

E-4
SCALE AS SHOWN
SHEET 28 OF 43



ONE-LINE DIAGRAM-DEMOLITION

NOT TO SCALE

ONE-LINE DIAGRAM-NEW WORK

NOT TO SCALE

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 MARYLAND, LICENSE NO.: 42043 EXPIRATION DATE: 01/11/2022

GENERAL NOTES:

1. ALL ELECTRICAL PANELBOARDS, DISCONNECT SWITCHES, BOXES, ETC. SHALL BE PROVIDED WITH PERMANENT LABELS INDICATING THEIR RESPECTIVE POWER SOURCE.
2. ALL CONDUCTORS SHALL BE COPPER, UNLESS NOTED OTHERWISE.
3. THE TRANSFER SWITCHES DO NOT SWITCH THE NEUTRAL, THE SYSTEM IS NOT SEPARATELY DERIVED.
4. SEE PANEL SCHEDULES ON SHEET E-4 FOR ADDITIONAL INFORMATION ON BRANCH CIRCUIT CONDUIT AND WIRING REQUIREMENTS FOR EQUIPMENT.
5. IN ACCORDANCE WITH NEC ARTICLE 701.12, STANDBY GENERATOR POWER SHALL BE AVAILABLE WITHIN 60 SECONDS UPON LOSS OF NORMAL POWER SUPPLY.
6. FINAL PRIMARY AND SECONDARY CONNECTIONS TO INTERIOR FLOOR MOUNTED TRANSFORMERS SHALL BE IN FLEXIBLE METAL CONDUIT.

KEYED NOTES:

1. PROVIDE (1) 50A-2P CIRCUIT BREAKER IN EXISTING PANEL P-1. NEW BREAKER TYPE SHALL MATCH EXISTING BREAKER A.I.C. RATING AND BE MANUFACTURED BY THE SAME VENDOR AS THE EXISTING PANEL.
2. CONTRACTOR SHALL COORDINATE WITH THE GENERATOR MANUFACTURE FOR QUANTITY AND AMPACITY OF THE GENERATOR AUXILIARY CIRCUITS. SIZE THE CONDUCTORS AND CONDUITS PER NEC.
3. SEPARATE BUILDINGS/STRUCTURES ARE SUPPLIED BY A FEEDER. CONTRACTOR SHALL PROVIDE GROUNDING ELECTRODE SYSTEM PER ALL REQUIREMENTS IN NEC 250.32.
4. GENERATOR SHALL BE FURNISHED WITH A REMOTE SHUTDOWN MEANS FOR THE PRIME MOVER. COMPLY WITH NEC 445.18.

AS-BUILT

DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

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DES: SB
DRN: SB
CHK: BRM
DATE: AUG, 2016

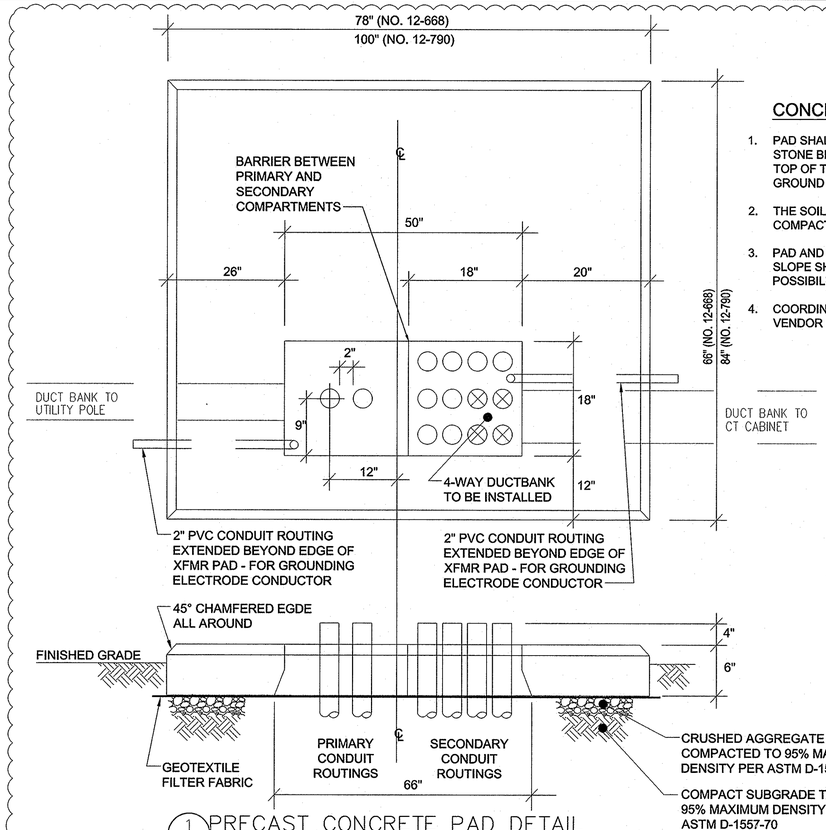
BY	NO.	REVISION	DATE
KJ		AS-BUILT	12/21
JFW	2	ELECTRICAL DESIGN UPDATES	6/20
JFW	1	BUILDING PERMIT COMMENTS - HO. CO. DILP	6/20

ELECTRICAL
ONE-LINE DIAGRAMS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

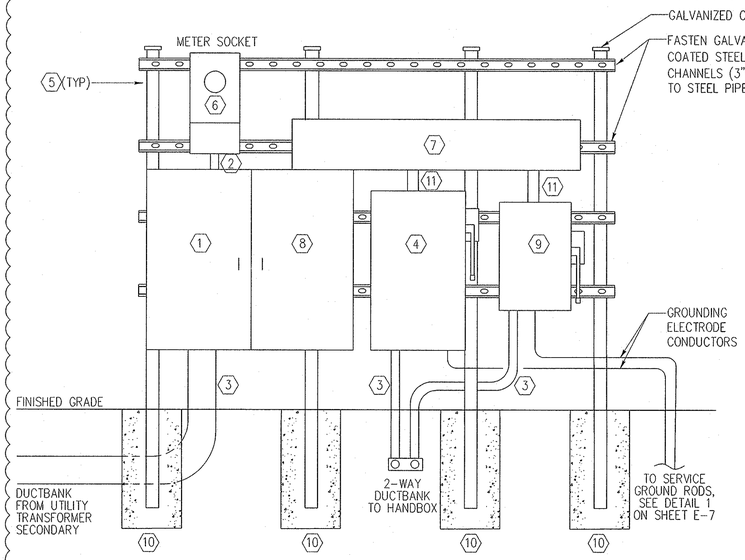
E-5
SCALE AS SHOWN
SHEET 29 OF 43



1 E-6 PRECAST CONCRETE PAD DETAIL
SCALE: NONE

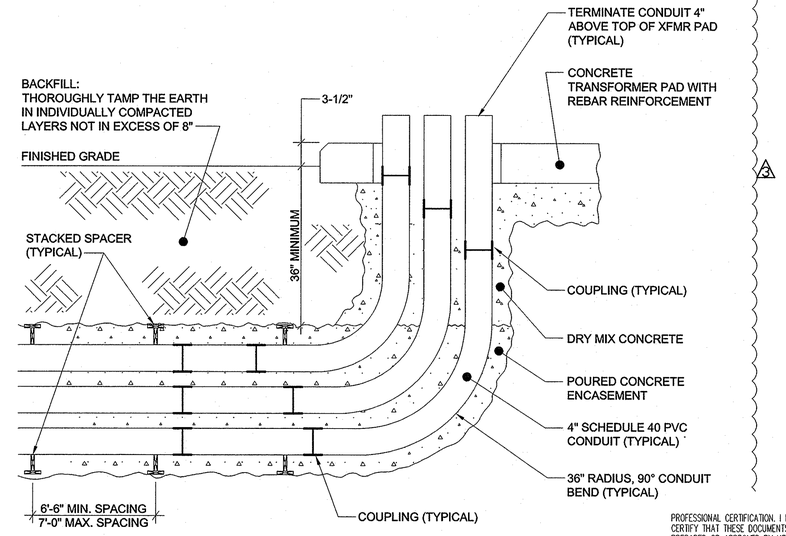
CONCRETE PAD NOTES:

1. PAD SHALL BE SET ON A MINIMUM 6" THICK CRUSHED STONE BED (MAXIMUM STONE SIZE SHALL BE 1") AND THE TOP OF THE PAD SHOULD BE A MINIMUM OF 3" ABOVE GROUND LEVEL.
2. THE SOIL BENEATH THE CRUSHED STONE SHALL BE WELL COMPACTED.
3. PAD AND TRANSFORMER MUST BE SET SO THAT THE SLOPE SHALL NOT EXCEED 3° TO PREVENT THE POSSIBILITY OF INTERNAL FLASHOVER.
4. COORDINATE WITH UTILITY COMPANY ON PREFERRED VENDOR FOR PRECAST CONCRETE.

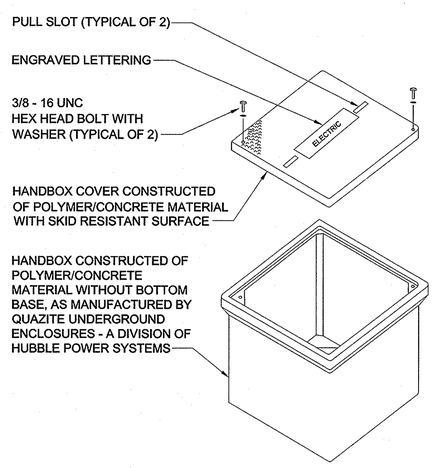


1 PROVIDE BGE APPROVED CT CABINET.
2 PROVIDE 2" RGS CONDUIT BETWEEN CT CABINET AND METER CABINET FOR BGE INSTALLED WIRING.
3 TRANSITION TO RGS CONDUITS ABOVE GRADE.
4 PROVIDE LOCKABLE, FUSIBLE 400A/3P/600V SERVICE ENTRANCE RATED DISCONNECT SWITCH WITH 400A TIME DELAY RK1 FUSES – FOR PANEL HP. PROVIDE PADLOCK AND KEY. PROVIDE PERMANENT LABEL INDICATING EQUIPMENT SERVED.
5 PROVIDE 2-1/2" MINIMUM GALVANIZED STEEL PIPE.
6 UTILITY COMPANY FURNISHED AND INSTALLED METER.
7 PROVIDE NEMA 4X SST TROUGH (SIZE PER NEC) SECURED AND BONDED TO CT CABINET FOR UTILITY COMPANY INSTALLED CT WIRING.
8 CT CABINET SHALL NOT BE ENTERED THROUGH BACK OR EITHER SIDE WALL.
9 PROVIDE LOCKABLE, FUSIBLE 200A/3P/600V SERVICE ENTRANCE RATED DISCONNECT SWITCH WITH 200A TIME DELAY CLASS RK1 FUSES – FOR FUTURE PANEL. PROVIDE PADLOCK AND KEY. PROVIDE PERMANENT LABEL INDICATING SPARE DISCONNECT SWITCH.
10 4000 PSI CONCRETE PIER. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
11 SEE ONE-LINE DIAGRAM FOR CONDUIT AND WIRING REQUIREMENTS.

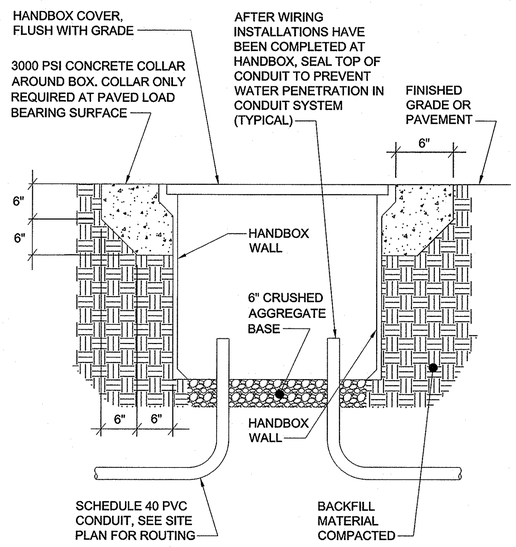
2 E-6 EQUIPMENT SUPPORT ELEVATION
SCALE: NONE



3 E-6 CONDUIT TERMINATION AT UTILITY XFMR PAD DETAIL
SCALE: NONE



ISOMETRIC VIEW



CROSS-SECTION VIEW

4 E-6 HANDBOX INSTALLATION DETAILS
SCALE: NONE

HANDBOX COVER AND ENCLOSURE TO BE TIER 22 RATED IN ACCORDANCE WITH ANSI/SCTE FOR AREAS WITH OCCASIONAL HEAVY VEHICULAR TRAFFIC

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 MARYLAND, LICENSE NO. 42043 EXPIRATION DATE: 01/11/2022

STATE OF MARYLAND · BENJAMIN MARSHALL · No. 42043 · PROFESSIONAL ENGINEER · 6-16-20

AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
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STATE OF MARYLAND · CRAIG A. PURSELL · No. 18409 · PROFESSIONAL ENGINEER · 6/9/16

DES: SB
DRN: SB
CHK: BRM
DATE: AUG, 2016

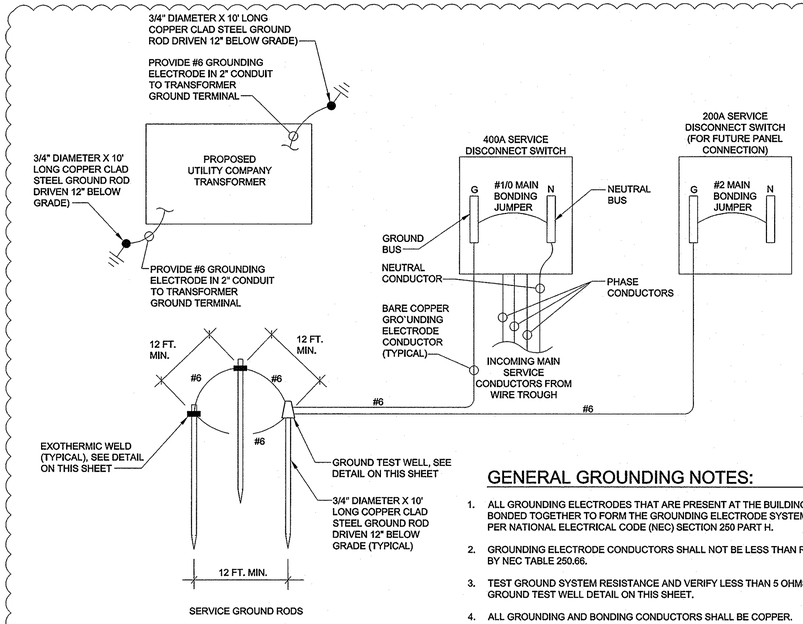
BY	NO.	REVISION	DATE
JFW	2	ELECTRICAL DESIGN UPDATES	6/20
JFW	3	BUILDING PERMIT COMMENTS – HO. CO. DILP	6/20

ELECTRICAL DETAILS I

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

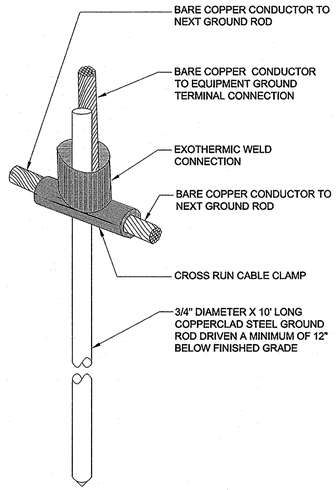
E-6
SCALE AS SHOWN
SHEET 30 OF 43



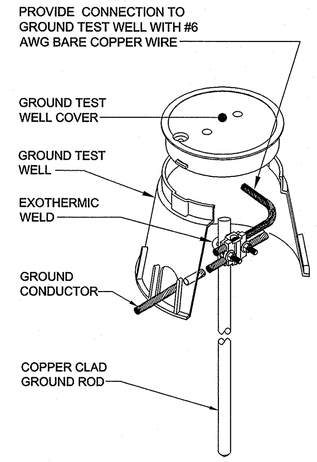
GENERAL GROUNDING NOTES:

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 PART H.
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. SEE GROUND TEST WELL DETAIL ON THIS SHEET.
4. ALL GROUNDING AND BONDING CONDUCTORS SHALL BE COPPER.

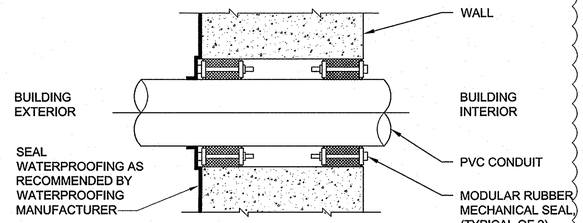
1 E-7 MAIN SERVICE GROUNDING DETAIL
SCALE: NONE



2 E-7 GROUND ROD DETAIL
SCALE: NONE

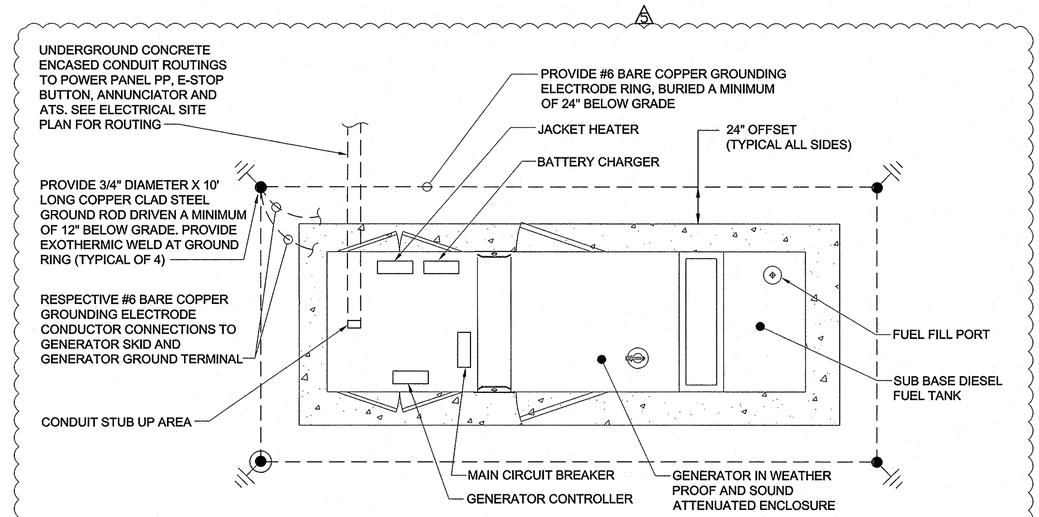


3 E-7 GROUND TEST WELL DETAIL
SCALE: NONE

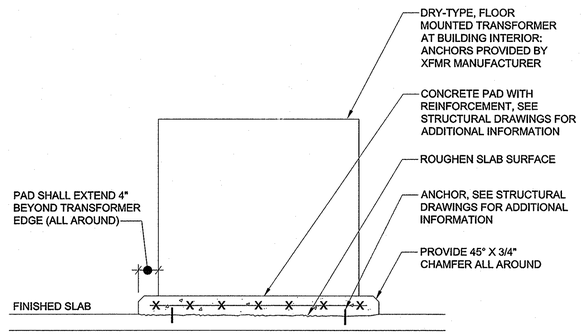


NOTES:
1. CORE DRILL HOLES TO ACCOMMODATE CONDUITS AND MECHANICAL SEALS.
2. SEAL ALL CONDUIT PENETRATIONS WITH APPROVED MATERIALS.

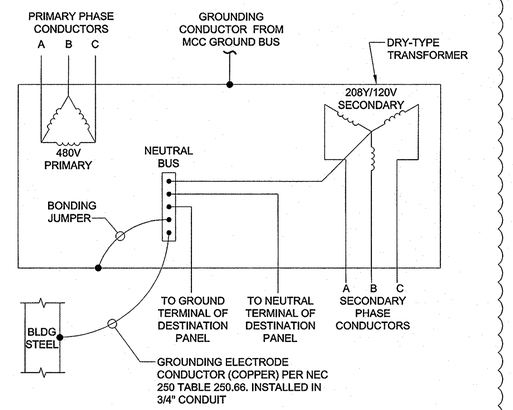
4 E-7 WALL PENETRATION DETAIL
SCALE: NONE



5 E-7 EXTERIOR GENERATOR AND GROUND RING PLAN
SCALE: NONE



6 E-7 BLDG. INTERIOR XFMR MOUNTING DETAIL
SCALE: NONE



7 E-7 BUILDING INTERIOR XFMR GROUNDING DETAIL
SCALE: NONE

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 MARYLAND, LICENSE NO. 42043 EXPIRATION DATE: 01/11/2022

STATE OF MARYLAND · SARAH MARCH · No. 42043 · PROFESSIONAL ENGINEER

6-19-20

AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
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STATE OF MARYLAND · GRAHAM PURCELLA · No. 46409 · PROFESSIONAL ENGINEER
5/9/16

DES: SB
DRN: SB
CHK: BRM
DATE: AUG, 2016

BY	NO.	REVISION	DATE
JFW	5	ELECTRICAL DESIGN UPDATES	6/20
JFW	3	BUILDING PERMIT COMMENTS – HO. CO. DILP	6/20

ELECTRICAL DETAILS II

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

E-7
SCALE AS SHOWN
SHEET 30 OF 43

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EQUIPMENT LEGEND

ABC-X
- SEQUENTIAL NUMBER
- IDENTIFICATION

P & I PANEL LEGEND

ABC-X
- SEQUENTIAL NUMBER
- IDENTIFICATION

ABC-X

P&ID LEGEND

ABC-123
- NUMBERING SEQUENCE
- ISA INDENTIFICATION SCHEDULE

EQUIPMENT

AE	ANALYZER ELEMENT
BDD	BACK DRAFT DAMPER
BFP	BACK FLOW PREVENTER
CGD	COMBUSTIBLE GAS DETECTOR
CV	CONTROL VALVE
EF	EXHAUST FAN
EUH	ELECTRIC UNIT HEATER
FCV	FLOW CONTROL VALVE
FE	FLOW ELEMENT
FIT	FLOW INDICATE TRANSMITTER
IB	INTRINSIC BARRIER
IWH	INSTANTANEOUS WATER HEATER
LE	LEVEL ELEMENT
LIT	LEVEL INDICATE TRANSMITTER
LS	LEVEL SWITCH
MCC	MOTOR CONTROL CENTER
ME	MIST ELIMINATOR
MM	MOTOR MONITOR
MOD	MOTOR OPERATED DAMPER
MOV	MOTOR OPERATED VALVE
NFHB	NON-FREEZE HOSE BIB
PCP	PROGRESSIVE CAVITY PUMP
PLC	PROGRAMMABLE LOGIC CONTROLLER
SAP	SUBMERSIBLE AERATION PUMP
SF	SUPPLY FAN
SMX	SUBMERSIBLE MIXER
VFD	VARIABLE FREQUENCY DRIVE
VV	VENT VALVE
WWP	WASTE WATER PUMP
XFMR	TRANSFORMER

NOTE:
SEE INSTRUMENTATION SYMBOLS FOR ADDITIONAL PROCESS NOMENCLATURE.

PANEL LEGEND

BPCP-X	BOOSTER PUMP CONTROL PANEL
HOA-X	HAND-OFF-AUTO CONTROL PANEL
LC	LOCAL CONTROL
MCC-X	MOTOR CONTROL CENTER
SBR-X	SEQUENCE BATCH REACTOR
VCP-X	VENTILATION CONTROL PANEL
VFD-X	VARIABLE FREQUENCY DRIVE
IPCP	INFLUENT PUMP CONTROL PANEL
RDP	RUN DRY PROTECTION
SWP	SEAL WATER PANEL

P&ID NUMBERING SEQUENCE

100 SERIES	INFLUENT PUMPING
200 SERIES	SBR SYSTEMS
300 SERIES	AUXILIARY SYSTEMS
400 SERIES	GENERATOR

GENERAL ABREVIATIONS

AUTO	AUTOMATIC
ATS	AUTOMATIC TRANSFER SWITCH
CB	CIRCUIT BREAKER
DC	DIRECT CURRENT
DPDT	DOUBLE POLE-DOUBLE THROW
ECD	ELECTRICAL CONTROL DIAGRAM
ETM	ELAPSED TIME METER
GND	GROUND
HMI	HUMAN MACHINE INTERFACE
I/O	INPUT/OUTPUT
JB	JUNCTION BOX
MB	MAIN BREAKER
OIT	OPERATOR INTERFACE TERMINAL
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
PM	PHASE MONITOR
SI	SYSTEM(S) INTEGRATOR
TB	TERMINAL BOARD
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
VAC	VOLTS/ALTERNATING CURRENT
VFD	VARIABLE FREQUENCY DRIVE
XFMR	TRANSFORMER

INSTRUMENT, EXAMPLES

FIT	FLOW INDICATING TRANSMITTER
PIT	PRESSURE INDICATING TRANSMITTER
ZS	POSITION SWITCH

PROCESS LEGEND

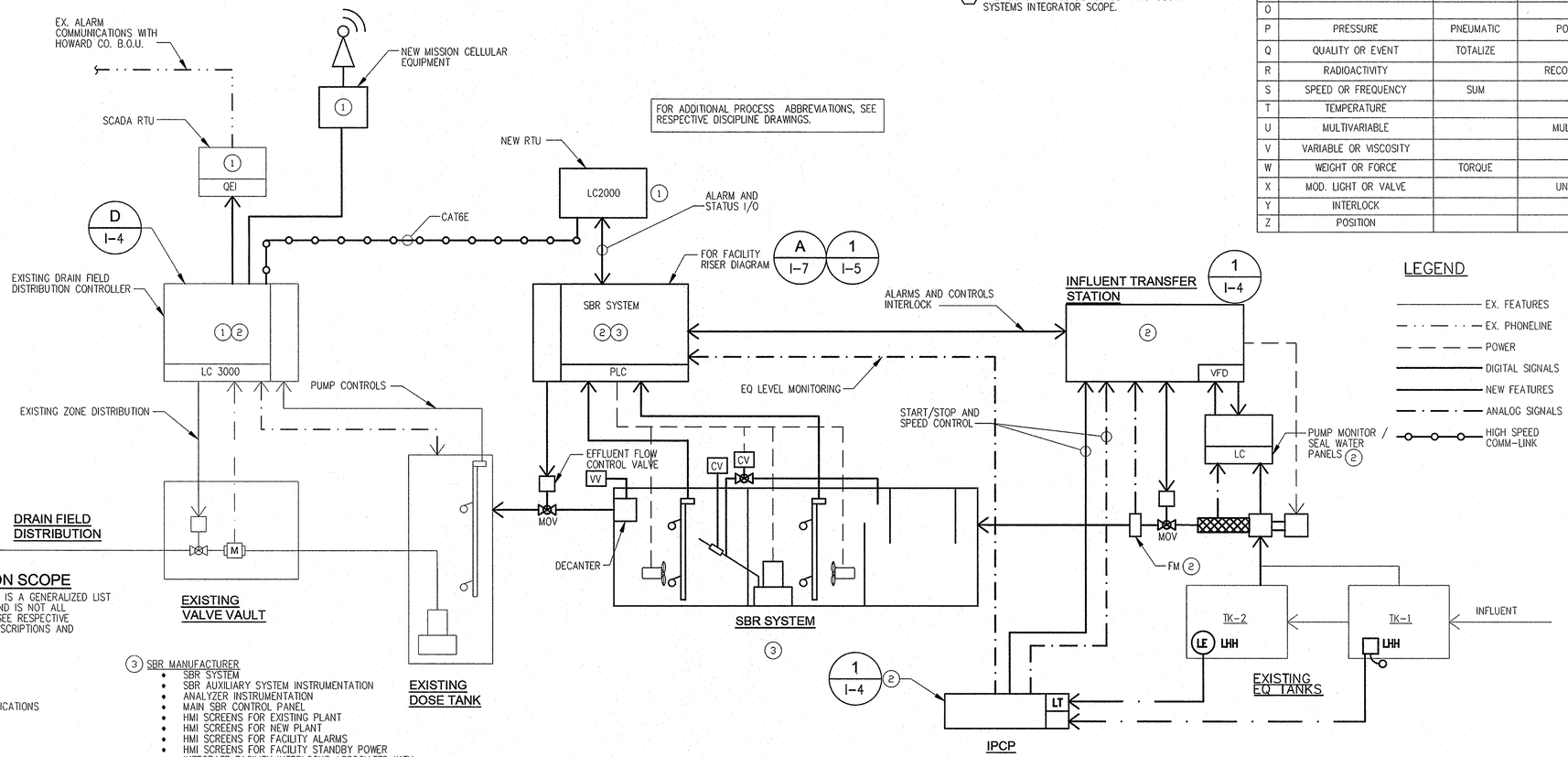
D	DRAIN
NPW	NON-POTABLE WATER
PW	POTABLE WATER
S	SANITARY
WW	WASTE WATER

CONSTRUCTION NOTES

1. SEE MECHANICAL DRAWINGS FOR DETAILED PROCESS PIPING AND INSTRUMENT LOCATIONS.
2. THE I&C DRAWINGS DEPICT SBR AND COUNTY SYSTEMS INTEGRATOR SCOPE.

(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	



SBR FACILITY INTERGRATION SCOPE

NOTE: THE FOLLOWING "SCOPE SUMMARY" IS A GENERALIZED LIST OF CONTRACTORS INTEGRATION SCOPE, AND IS NOT ALL INCLUSIVE TO THE ITEMS LISTED BELOW. SEE RESPECTIVE SPECIFICATIONS FOR COMPLETE SCOPE DESCRIPTIONS AND RESPONSIBILITIES.

(1) COUNTY SCADA SYSTEMS INTEGRATOR
- LC3000 INTEGRATION
- LC2000 REMOTE I/O INTEGRATION
- MISSION CELLULAR INTEGRATION
- PRE-STARTUP TERMINATION VERIFICATIONS
- COORDINATE WITH PROJECT SI
- STARTUP AND TESTING
- TRAINING
- AS-BUILTS

(2) PROJECT SYSTEMS INTEGRATOR
- COORDINATE WITH ALL SUPPLIERS
- SBR SYSTEM INTEGRATION
- INFLUENT PUMP STATION CONTROLS
- PUMP MONITOR SEAL WATER PANEL
- FLOW METER (INFLUENT)
- PUMP MONITORING INSTRUMENTATION
- INFLUENT STORAGE TANK LEVEL CONTROLS
- SMOKE DETECTOR SYSTEM
- CAUSTIC AND CARBON ADDITION SYSTEMS LOCAL CONTROLS
- SODIUM HYPOCHLORITE SYSTEM LOCAL CONTROLS
- VENTILATION SYSTEM AND CONTROLS
- PRE-STARTUP TERMINATION VERIFICATIONS
- STARTUP AND TESTING
- TRAINING
- COMPLETE PROJECT WIRING TERMINATION DRAWINGS
- COORDINATE AND FURNISH PROJECT AS-BUILTS

(3) SBR MANUFACTURER
- SBR SYSTEM
- SBR AUXILIARY SYSTEM INSTRUMENTATION
- ANALYZER INSTRUMENTATION
- MAIN SBR CONTROL PANEL
- HMI SCREENS FOR EXISTING PLANT
- HMI SCREENS FOR NEW PLANT
- HMI SCREENS FOR FACILITY ALARMS
- HMI SCREENS FOR FACILITY STANDBY POWER
- INTEGRATE FACILITY INTERLOCKS ASSOCIATED WITH INFLUENT AND EFFLUENT PUMPING STATIONS
- STARTUP AND TESTING
- TRAINING
- COORDINATION WITH PROJECT SYSTEMS INTEGRATOR
- COORDINATION WITH COUNTY SCADA SYSTEMS INTEGRATOR
- AS-BUILTS

(4) MECHANICAL CONTRACTOR
- PACKAGED PW / NPW / SEAL WATER SYSTEMS
- MOTORIZED VALVES
- FANS
- ALL CHEMICAL SYSTEM PUMPS, TANKS, CONTAINMENTS, RAMPS, PH CONTROLLER AND SYSTEM COMPONENTS

(5) ELECTRICAL CONTRACTOR
- POWER
- LIGHTING
- STANDBY POWER
- ALL POWER AND SIGNAL CONDUIT AND CONDUCTORS
- AS-BUILTS

1 / I-1 ASHLEIGH KNOLLS TREATMENT SYSTEM COMMUNICATIONS DIAGRAM

LEGEND

- EX. FEATURES
- EX. PHONELINE
- POWER
- DIGITAL SIGNALS
- NEW FEATURES
- ANALOG SIGNALS
- HIGH SPEED COMM-LINK

GENERAL NOTES

1. SEE MECHANICAL DRAWINGS FOR CONTROL AND FIELD INSTRUMENT LOCATIONS.
2. FOR P&ID AND ECD SYMBOLS, SEE SHEET I-2.
3. FOR POWER DISTRIBUTION AND DISCONNECT REQUIREMENTS, SEE ELECTRICAL DRAWINGS.

CONDUIT (CONDUCTOR FILL) SCHEDULE

SIZE	#12 THHN	#14 THHN	#16 TPS
3/4"	10	20	5
1"	15	30	8
1 1/2"	35	70	18
2"	60	120	30
3"	125	250	60
4"	200	400	100

NOTES:
1. **MAXIMUM FILL QUANTITIES SHOWN.**
2. **CONTRACTOR SHALL COMPLY WITH NEC STANDARDS AND MANUFACTURER'S RECOMMENDATIONS WHEN DETERMINING CONDUIT SIZES AND CONDUCTOR GROUPINGS WITHIN EACH CONDUIT.**

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STATE OF MARYLAND · STEVEN E. ANDERSON · NO. 33925 · PROFESSIONAL ENGINEER
6/16/20

AS-BUILT
DATE 12/2021

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HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
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CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
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10/24/16

DES: JFW					
DRN: JFW					
CHK: SEA					
DATE: AUG, 2016	BY	NO.	REVISION	DATE	

INSTRUMENTATION LEGEND

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

I-1
SCALE AS SHOWN
SHEET 31 OF 43

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PROCESS AND INSTRUMENTATION SYMBOLS

- EXISTING PROCESS FEATURES
- DIGITAL SIGNALS
- EQUIPMENT GROUPED AS A GROUPING TYPICAL TYPICAL ARRANGEMENT OF MULTIPLES OF THE SAME PROCESS.
- ETHERNET COMMUNICATIONS
- ELECTRICAL SIGNAL
- SOFTWARE OR COMMUNICATIONS DATA SIGNAL
- ANALOG SIGNALS
- VENT
- PNEUMATIC SIGNAL (COMPRESSED AIR)
- ELECTRICAL SERVICE
- PROCESS FLOW
- ANALOG INPUT
- ANALOG OUTPUT
- DIGITAL INPUT
- DIGITAL OUTPUT
- (X) X = A DESIGNATED CONTINUATION NUMBER WITH RESPECT TO A SPECIFIC SIGNAL. E.G. (1) (2)
- TS 112 CONTROL LOGIC I/O INTERFACE
- TS 112 FIELD-MOUNTED DEVICE
- AIT 110 PANEL-MOUNTED DEVICE
- ABC 123 X INDICATING LAMP - X INDICATES LENS COLOR: R = RED G = GREEN W = WHITE A = AMBER
- AH 110 PLC OR REMOTE INPUT/OUTPUT
- AH 123 TELEMETRY/SCADA SYSTEM INPUT/OUTPUT
- (X) SB SIGNAL BOOSTER/ISOLATOR (X) PANEL LOCATION
- LE XXX SUBMERSIBLE TRANSDUCER
- LE XXX ULTRASONIC LEVEL INSTRUMENT
- LE XXX RADAR LEVEL INSTRUMENT
- (X) I INTERPOSING RELAY (X) PANEL LOCATION
- SEE X-XX PROCESS CONTINUATION
- ABC-123 { ABC - LETTERS INDICATE FUNCTION ACCORDING TO IDENTIFICATION ASSOCIATED WITH ISA SCHEDULE. 123 - DIGITS INDICATE SEQUENTIAL EQUIPMENT

PROCESS AND INSTRUMENTATION SYMBOLS

- PRESSURE SWITCH
- LIMIT SWITCH
- FLOW SWITCH
- FLOAT SWITCH
- RECEPTACLE
- EXTERIOR PLUG CONNECTION
- TB TERMINAL BOARD
- J TERMINAL ENCLOSURE OR J - JUNCTION
- ELECTRICAL DISCONNECT
- J JUNCTION BOX, HAZARDOUS LOCATION
- J JUNCTION BOX, NON-HAZARDOUS LOCATION
- EXPLOSION PROOF SEAL-OFF

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
CL = CLOSE (PUSHBUTTON)
ES = EMERGENCY STOP (PUSHBUTTON)
HOA = HAND OFF AUTOMATIC (SELECTOR SWITCH)
LO = LOCKOUT STOP (PUSHBUTTON)
LR = LOCAL/REMOTE (SELECTOR SWITCH)
MA = MANUAL/AUTOMATIC (SELECTOR SWITCH)
OP = OPEN (PUSHBUTTON)
POT = POTENTIOMETER (HAND CONTROL)
RES = RESET (PUSHBUTTON)
SEL = SELECTOR
SP = STOP (PUSHBUTTON)
ST = START (PUSHBUTTON)

ANALYZERS

- AE XXX XXX-INDICATES: CH4 - METHANE

EQUIPMENT SYMBOLS

- V AIR RELEASE VALVE
- BALL CHECK VALVE
- BALL VALVE
- CENTRIFUGAL PUMP
- CHECK VALVE
- EXPANSION JOINT
- FLEXIBLE HOSE
- FLOAT
- M FLOW METER (MAGNETIC)
- GATE VALVE
- HOSE BIBB
- M MOTOR
- M MOTOR ACTUATOR
- PRESSURE REGULATING VALVE
- PRESSURE RELIEF VALVE
- SUBMERSIBLE MIXER
- P PUMP (AUXILIARY)
- REDUCER OR INCREASER
- SLUICE GATE
- SOLENOID VALVE
- TWO-WAY-THREE PORT VALVE, OR THREE WAY VALVE
- TRUCK QUICK CONNECTION
- UNION

ELECTRICAL CONTROL DIAGRAM SYMBOLS (ECD)

- INCOMING LINE / OUTGOING LINE
- CIRCUIT BREAKER
- CONTACTS - NORMALLY CLOSED
- CONTACTS - NORMALLY OPEN
- CONTROL POWER TRANSFORMER
- XXX CONTROL RELAY (SEQUENTIAL)
- DISCONNECT SWITCH
- ETM ELAPSED TIME METER
- FLOAT SWITCH - NORMALLY OPEN, CLOSE ON LEVEL DROP
- FLOAT SWITCH - NORMALLY OPEN, CLOSE ON LEVEL RISE
- F FUSE
- GROUND (GND)
- HT-2 HEAT TRACE
- H O A X00 00X HAND-OFF AUTOMATIC SWITCH
- X INDICATING LAMP INTEGRAL WITH HOA SELECTOR
- LIMIT SWITCH - NORMALLY OPEN
- MANUAL MOTOR STARTER, SINGLE-POLE
- OVERCURRENT ELEMENT THERMOSTAT
- PM PHASE MONITOR
- PLC OUTPUT (RTU OUTPUT)
- PRESSURE SWITCH - NORMALLY OPEN - CLOSES ON PRESSURE DROP
- PRESSURE SWITCH - NORMALLY OPEN - CLOSES ON PRESSURE RISE
- PUSH-BUTTON - MOMENTARY CONTACT
- PUSH-BUTTON - MOMENTARY CONTACT START/STOP
- PUSH-PULL BUTTON - MAINTAINED CONTACT
- X X INDICATES LENS COLOR: R = RED (RUN) G = GREEN (STOP) W = WHITE (POWER) B = BLUE (POSITION) Y = YELLOW (POSITION) A = AMBER (ALARM)
- RCT REPEAT CYCLE TIMER
- SOLENOID

ELECTRICAL CONTROL DIAGRAM SYMBOLS (ECD)

- M STARTER OR CONTACT COIL - DESIGNATION AS INDICATED
- START-STOP PUSHBUTTON - MAINTAINED CONTACT
- N.C. THERMOSTAT, NORMALLY CLOSED
- T1 TIMER NOTC NCTO
- TORQUE SWITCH - N.O. - CLOSES ON HIGH TORQUE

ELECTRICAL CONTROL DIAGRAM LEGEND (ECD)

- REMOTE
- AT PLC CABINET
- AT LOCAL PANEL
- AT MOTOR CONTROL CENTER
- AT PANEL BOARD
- AT VFD PANEL

ELECTRICAL CONTROL DIAGRAM TERMINALS (ECD)

- PANEL WIREWAY TERMINATIONS
- WIRING CONNECTIONS
- REMOTE TERMINATIONS
- + POWER SUPPLY CONNECTION
- PANEL CONNECTIONS
- REMOTE CONNECTIONS

RISER DIAGRAM SYMBOLS

- ABC-123 ISA P&ID NUMBERS
- DISCRETE SIGNAL/CONDUIT
- ANALOG SIGNAL/CONDUIT
- ETHERNET COMMUNICATIONS

NOTE:
FOR RISER DIAGRAM SYMBOLS SEE P&ID SYMBOLS AND EQUIPMENT SYMBOLS ON THIS SHEET.

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STATE OF MARYLAND · STEPHEN E. ANDERSON · 33925 · PROFESSIONAL ENGINEER
6/16/20

AS-BUILT
DATE 12/2021

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10/24/16

DES: JFW				
DRN: JFW				
CHK: SEA				
DATE: AUG, 2016	BY	NO.	REVISION	DATE

INSTRUMENTATION SYMBOLS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

I-2
SCALE AS SHOWN
SHEET 32 OF 43

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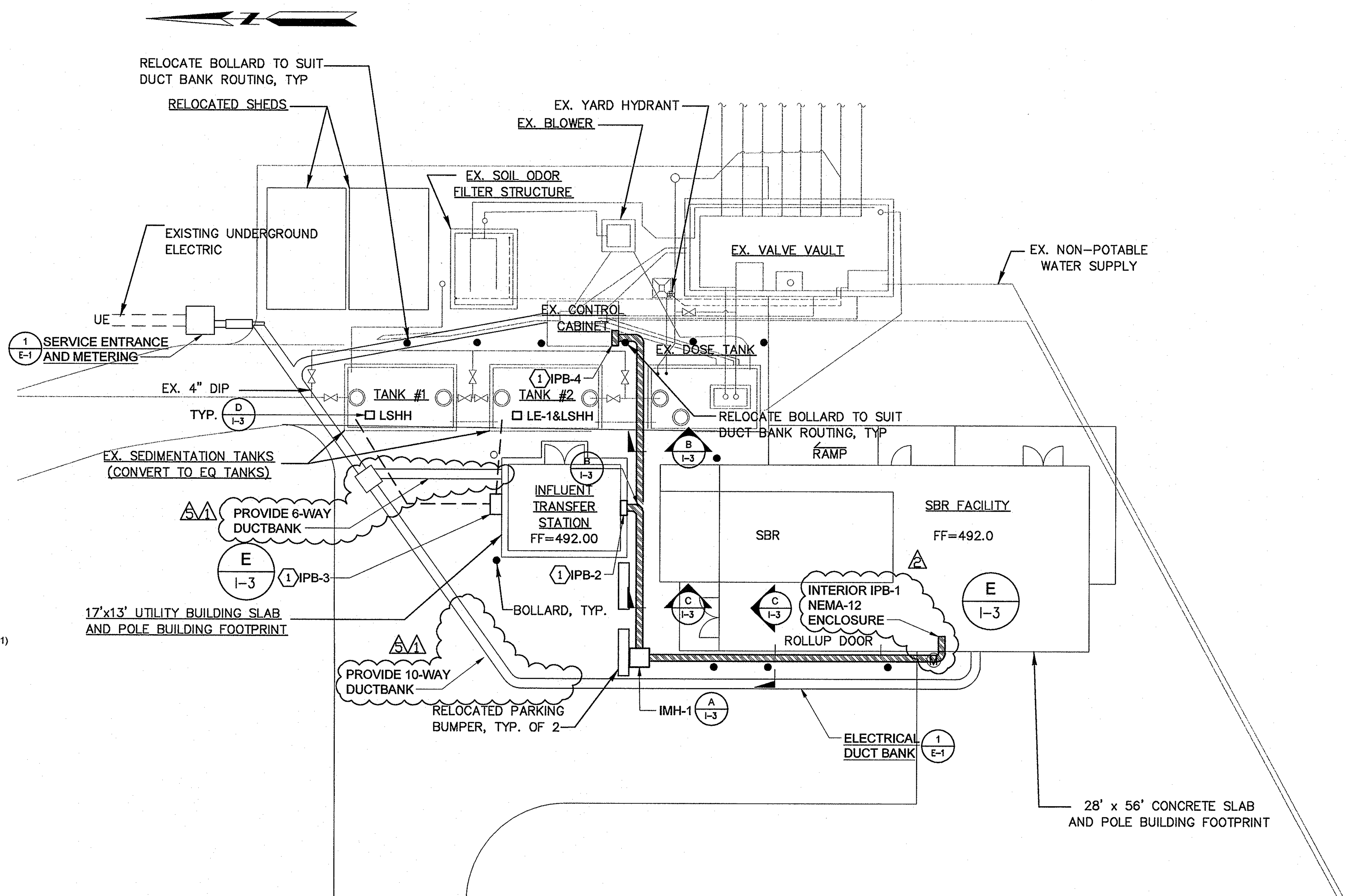


1 / I-3 INSTRUMENTATION SITE PLAN
SCALE: 1"=10'-0"

CONSTRUCTION NOTES:

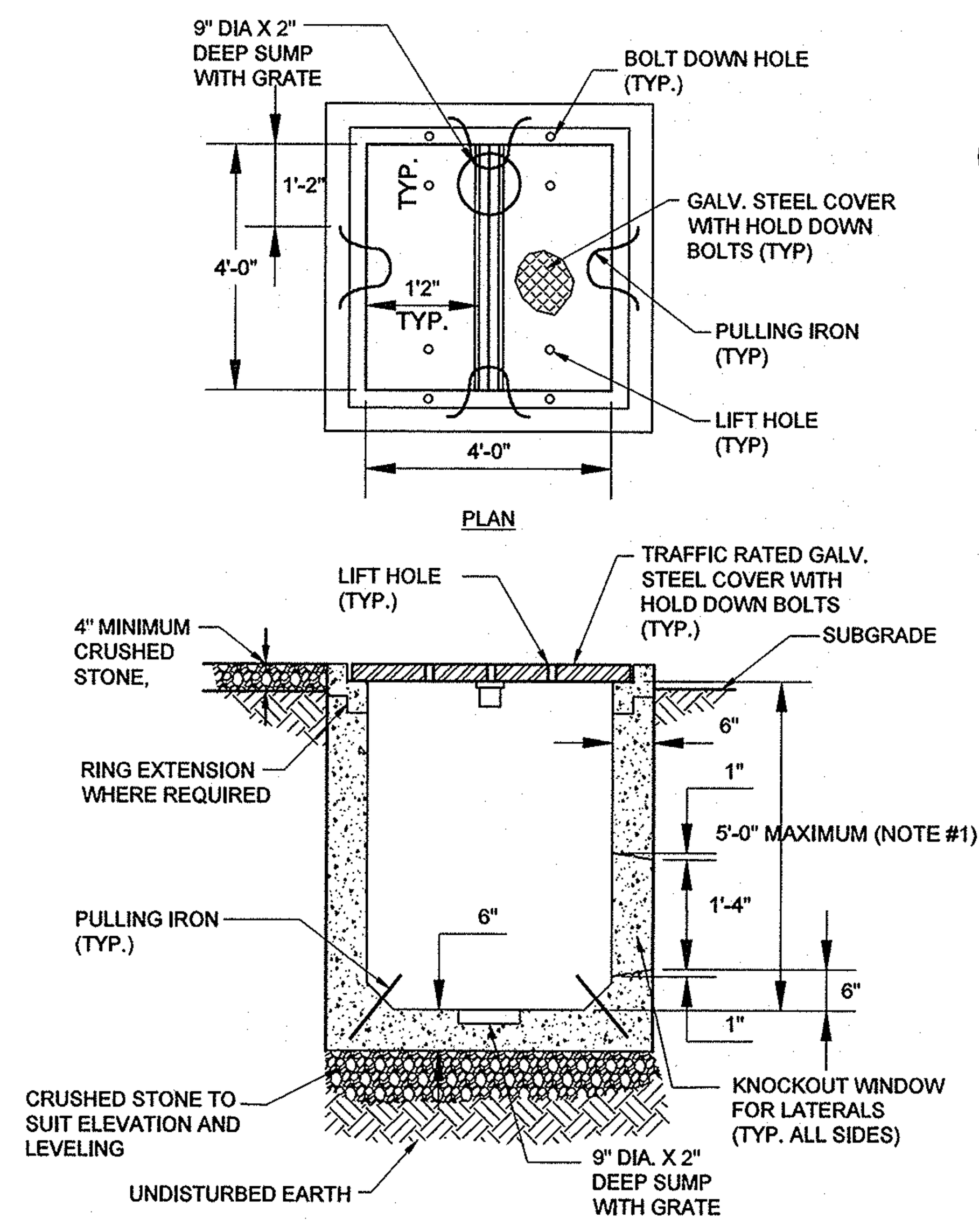
1. INSTRUMENTATION PULL BOXES SHALL BE ABOVE GRADE NEMA-4X S.S. ENCLOSURES SIZED TO SUIT 2-WAY CONDUIT ENTRY FROM THE BOTTOM WITH BACK-PANEL EXIT INTO STRUCTURES SHOWN.
2. SEE RISER DIAGRAMS FOR BURIED CONDUIT AND DUCT BANK CONDUCTOR QUANTITIES.

ABBREVIATIONS:

IMH – INSTRUMENTATION MANHOLE
IPB – INSTRUMENTATION PULL BOX
UE – UNDERGROUND ELECTRIC

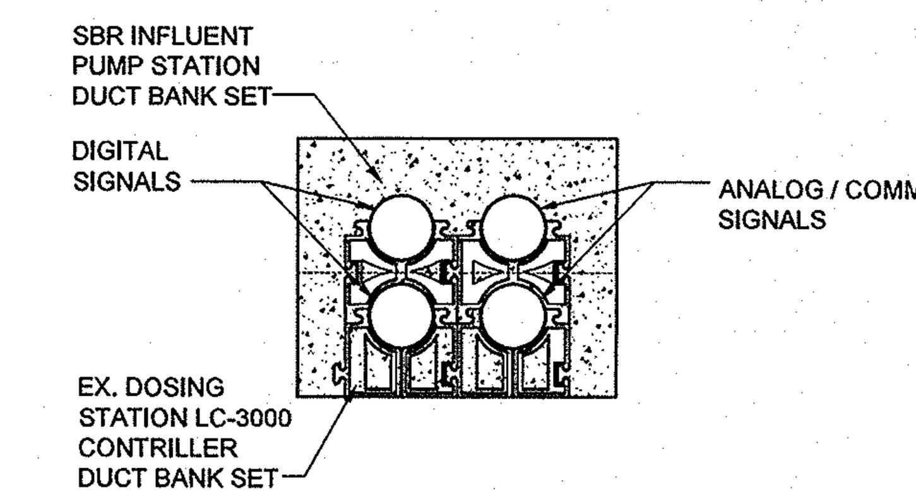
LEGEND

EXISTING
INSTRUMENTATION
INSTRUMENTATION DUCT BANK

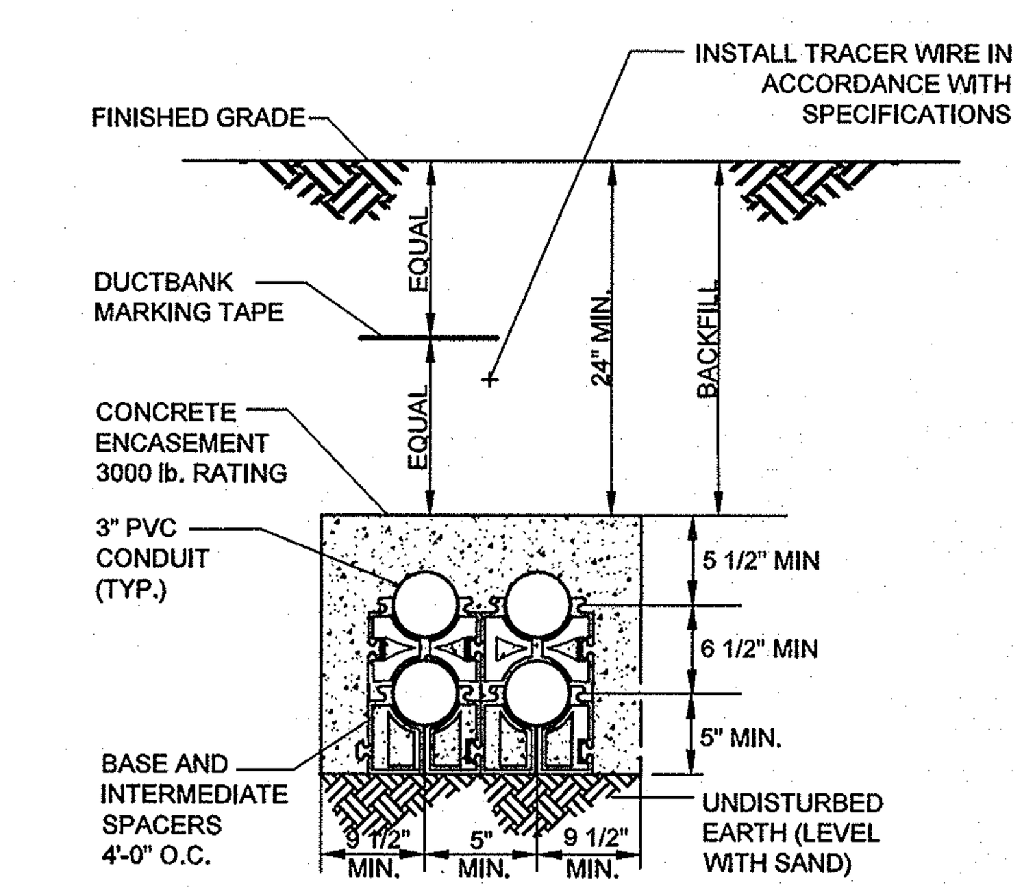


NOTES:
1. HANDHOLE SIZING TO SUIT PROPER INSTALLATION OF REQUIRED DUCTBANK PENETRATIONS.
2. CONTRACTOR COORDINATE MANHOLE DEPTH TO SUIT FIELD ROUTING OF DUCTBANK.

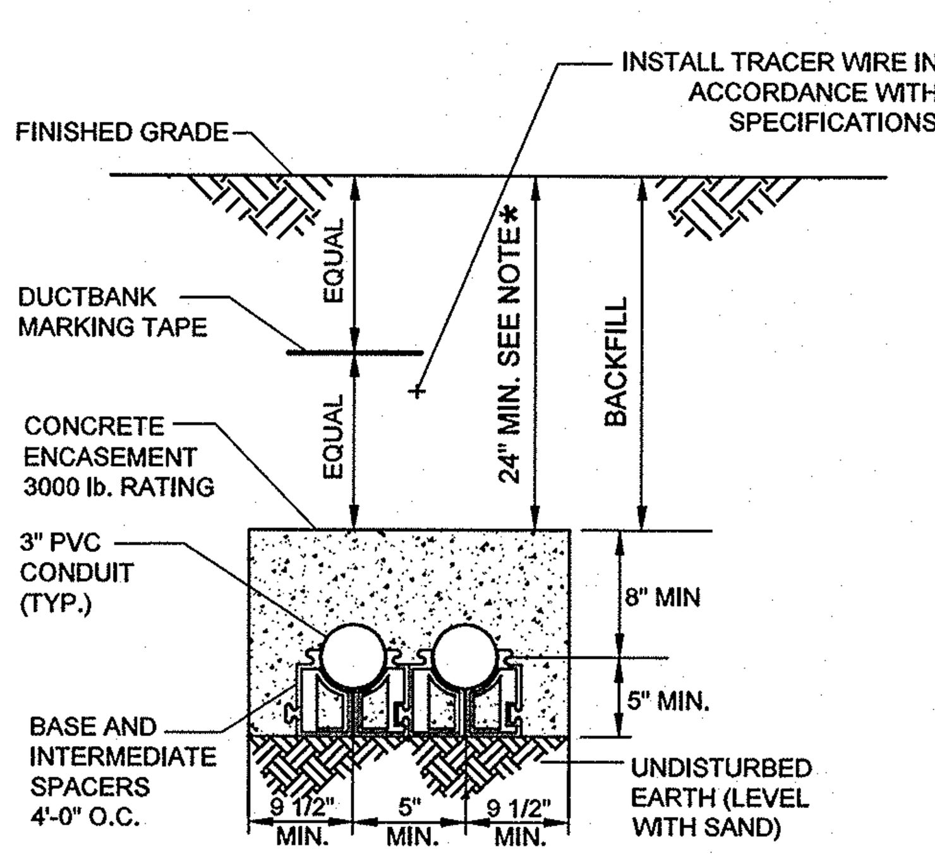
A / I-3 PRECAST INSTRUMENTATION MANHOLE DETAIL
SCALE: 1"=1'-0"

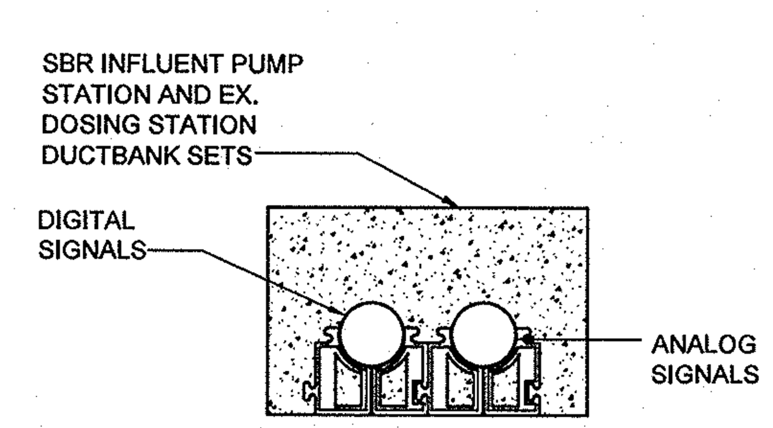


CONDUIT ASSIGNMENTS
NOTE: SEE INSTRUMENT RISER DIAGRAM ON SHEET I-7.



C / I-3 4-WAY CONCRETE ENCASED DUCT BANK
SCALE: 1"=1'-0"





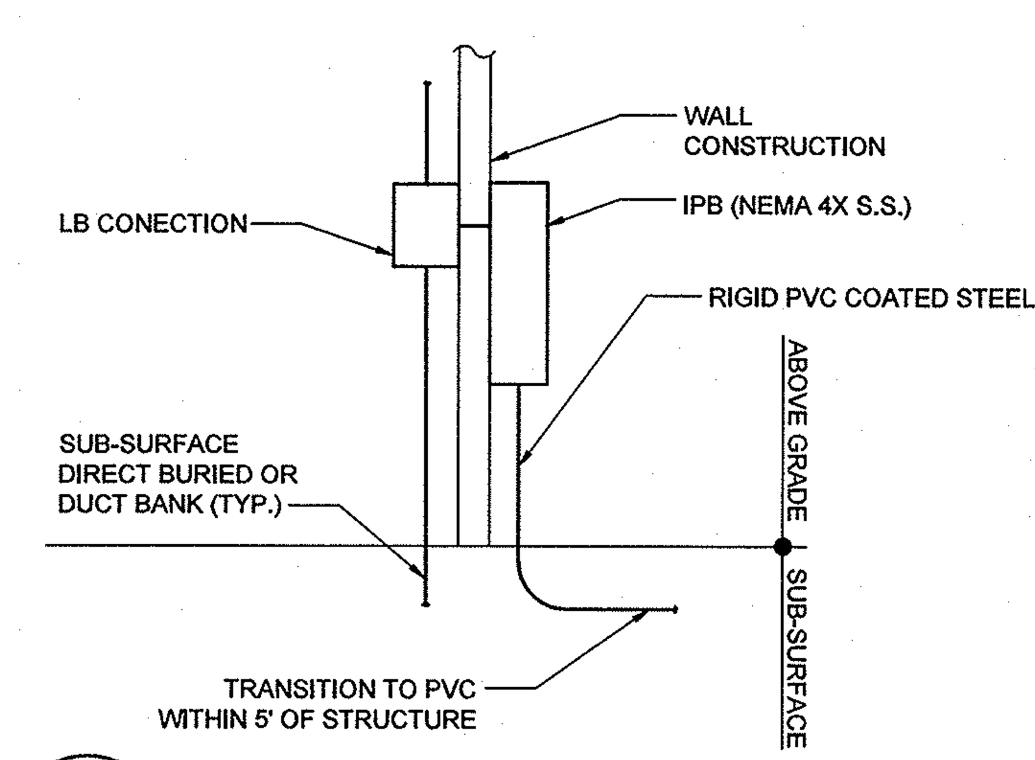
CONDUIT ASSIGNMENTS
NOTE: SEE INSTRUMENT RISER DIAGRAM ON SHEET I-7.

NOTE *:
MINIMUM COVER SHALL BE 24" TRANSITIONING TO 60" DEEP TO CLEAR PROCESS UTILITIES.

B / I-3 2-WAY CONCRETE ENCASED DUCT BANK
SCALE: 1"=1'-0"

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 MARYLAND, LICENSE NO. 31363 EXPIRATION DATE: 01/16/22

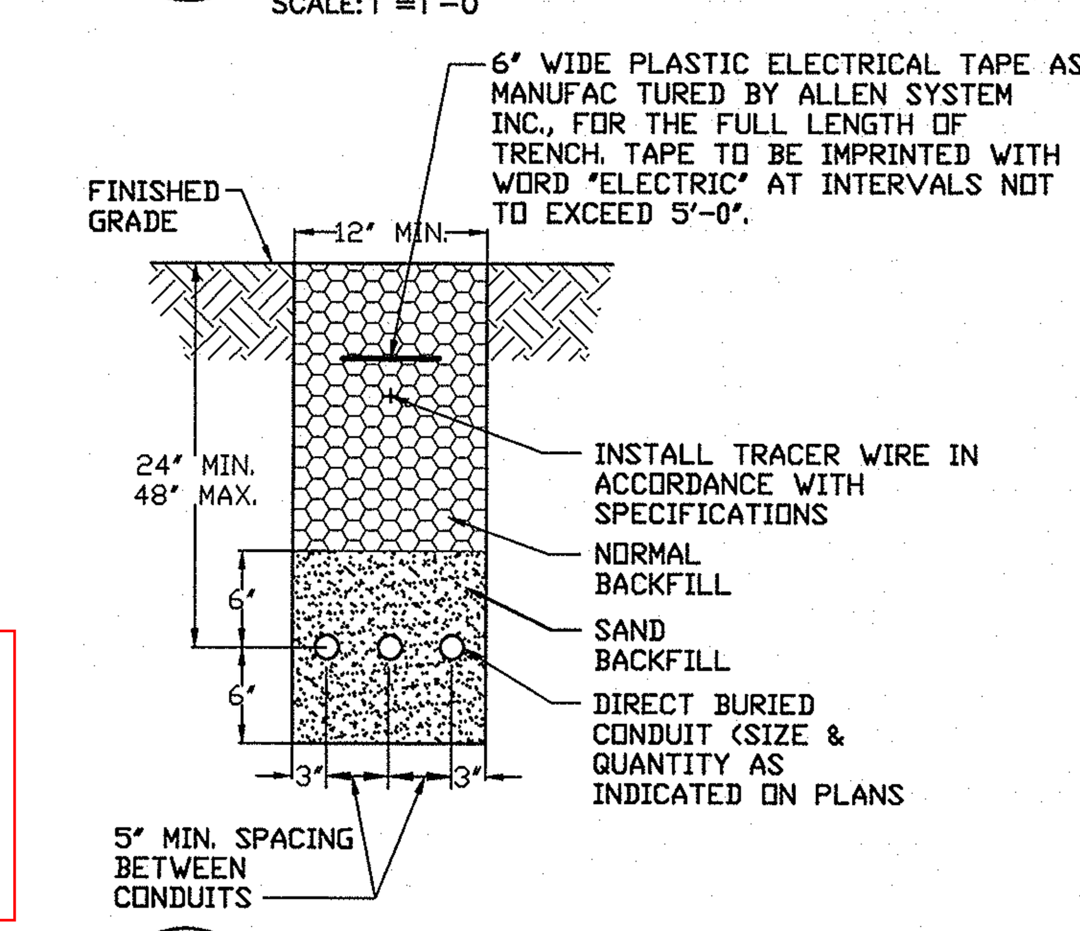
STATE OF MARYLAND GUIHUA WANG No. 31363 PROFESSIONAL ENGINEER 6/19/2020



E / I-3 INSTRUMENT PULL BOX (IPB)
SCALE: NONE

AS-BUILT
DATE 12/2021

GRAPHIC SCALE
0 1 2
10 0 10
SCALE: 1" = 10'



D / I-3 DIRECT BURIED CONDUIT INSTALLATION DETAIL
SCALE: 1"=1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 2/3/17
CHIEF, BUREAU OF UTILITIES	DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING	DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION	DATE 2/3/17

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936 RIDGEBROOK ROAD SPARKS, MARYLAND 21152 TELEPHONE: (410) 316-7800 FAX: (410) 316-7818 www.kci.com

STATE OF MARYLAND STEVEN E. ANDERSON No. 33925 PROFESSIONAL ENGINEER 10/24/16

DES: JFW
DRN: JFW
CHK: SEA
DATE: AUG, 2016

BY	NO.	REVISION	DATE
JFW	5	ELECTRICAL DESIGN UPDATES	6/20
JFW	2	ADDENDUM 1	6/20
GW	1	NOVEMBER 21, 2018	

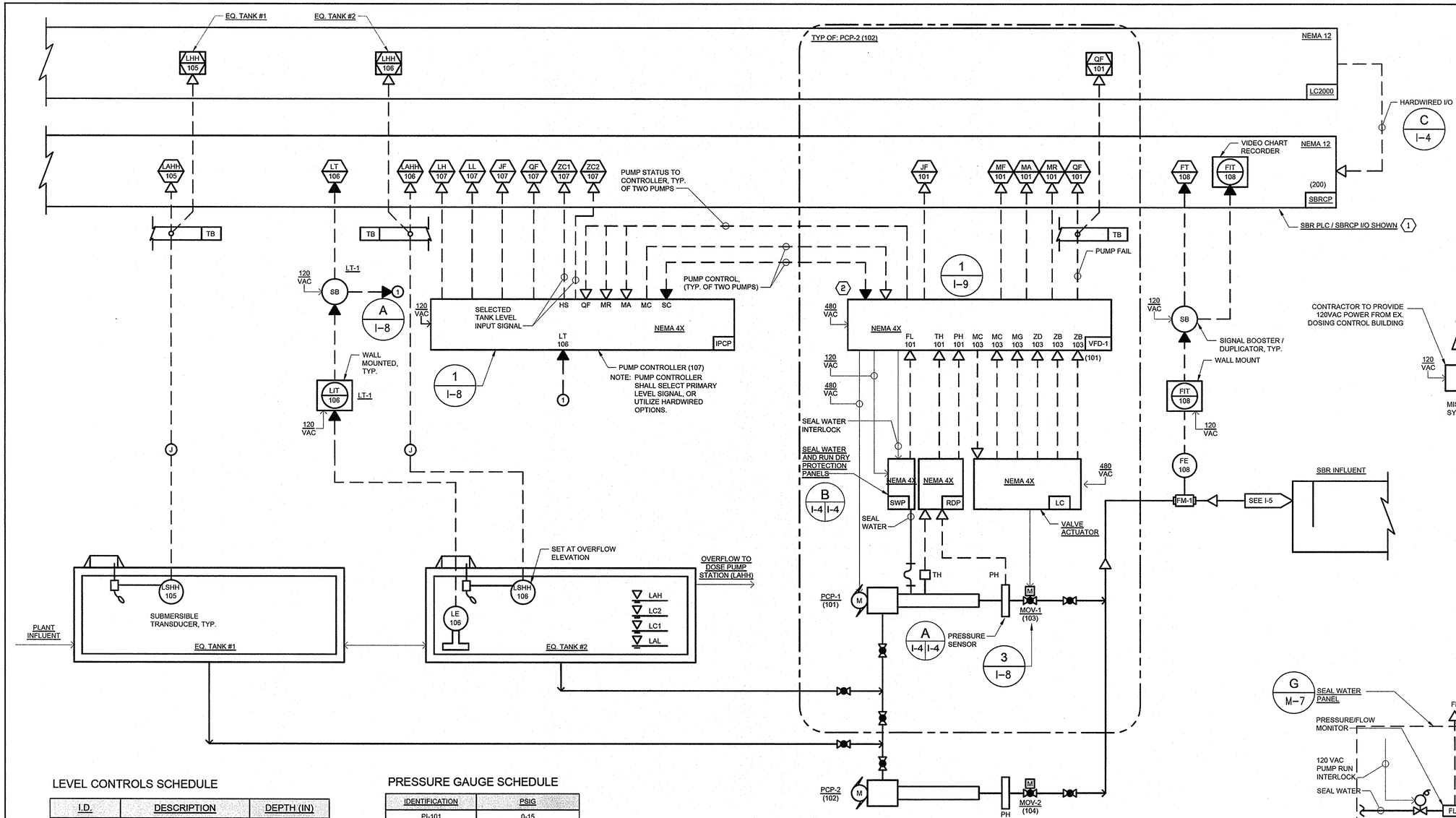
INSTRUMENTATION SITE PLAN

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

I-3
SCALE AS SHOWN
SHEET 33 OF 43

Jun 17, 2020 – 5:26pm User: jordan.wolfe
M:\2007\01071378.06\Drawings\I-03 SITE INSTRUMENTATION.dwg



CONSTRUCTION NOTES:

1. ALL SBRCP AND FACILITY EQUIPMENT COMMUNICATIONS REQUIRE HMI GRAPHICS.
2. SYSTEMS INTEGRATOR SHALL COORDINATE ANALOG SPEED CONTROL AND FEEDBACK LOOPS TO SUIT CONTROLLER OPERATIONS.
3. SBR MANUFACTURER SHALL COORDINATE HARD WIRED COMMUNICATIONS WITH COUNTY LC2000 RTU. SBR HMI SCREEN SHALL INCLUDE THE FOLLOWING DATA;

MR-001	DOSING PUMP-1 RUN
MF-001	DOSING PUMP-1 FAIL
MR-002	DOSING PUMP-2 RUN
MF-002	DOSING PUMP-2 FAIL
LH-003	DOSING WELL HIGH LEVEL (INTERLOCK TO STOP SBR CYCLE)
FE-004	ZONE FLOW
JN-005	POWER FAIL

C I-4 EX. DOSING STATION I/O 3

MISSION SYSTEM I/O

1. SBR SYSTEM FAIL — QA-200
2. COMMUNICATIONS FAIL — (MISSION GENERATED)
3. FACILITY POWER FAIL — JF-400
4. GENERATOR RUN — MR-401
5. DOSING PUMP-1 FAIL
6. DOSING PUMP-2 FAIL
7. DOSING WELL HIGH LEVEL

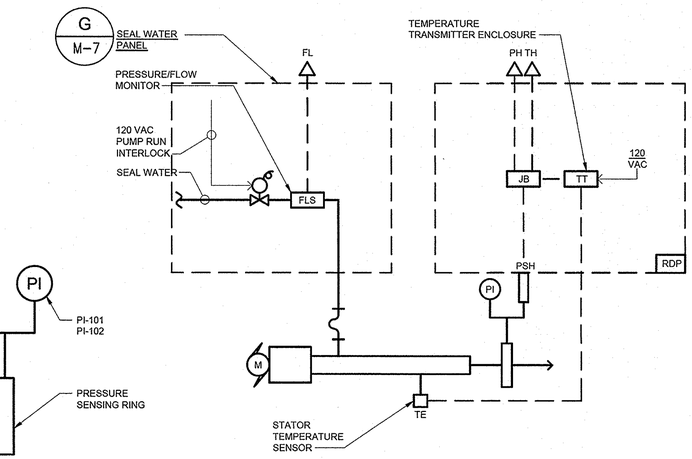
D I-4 LC3000 COMMUNICATIONS

LEVEL CONTROLS SCHEDULE

I.D.	DESCRIPTION	DEPTH (IN)
LAL	LEVEL ALARM LOW	15
LC1	PUMP STOP (MIN. SPEED)	21
LC2	PUMP START (MAX. SPEED)	42
LAH	LAG PUMP ON/ LEVEL ALARM HIGH	60
LAHH	LEVEL ALARM HIGH-HIGH	65

PRESSURE GAUGE SCHEDULE

IDENTIFICATION	PSIG
PI-101	0-15
PI-102	0-15



1 I-4 INFLUENT TRANSFER PUMP STATION P&ID

A I-4 DETAIL: PRESSURE SENSOR

B I-4 RUN DRY PROTECTION DETAIL

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 MARYLAND, LICENSE NO. 33925, EXPIRATION DATE: 01/15/21

STEVEN E. ANDERSON — STATE OF MARYLAND — NO. 33925 — PROFESSIONAL ENGINEER — 6/16/20

AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

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STEVEN E. ANDERSON — STATE OF MARYLAND — NO. 33925 — PROFESSIONAL ENGINEER — 10/27/16

DES:	JFW				
DRN:	JFW				
CHK:	SEA				
DATE:	AUG, 2016	BY	NO.	REVISION	DATE

INFLUENT TRANSFER PUMP STATION P&ID

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

I-4

SCALE AS SHOWN

SHEET 34 OF 43

Jun 12, 2020 - 4:44pm User: jordan.wolfe
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CONSTRUCTION NOTES:

1. REUSE EXISTING DIGITAL AND ANALOG I/O TERMINATIONS.
2. NEW DIGITAL AND ANALOG I/O TERMINATIONS.
3. ALL PLC-P COMMUNICATIONS REQUIRE HMI GRAPHICS.

GENERAL SBR SYSTEM ALARM

NEMA 12 — LC2000

TYP OF: SAP-2 (202) AND CV-2 (203)

4 / I-8

NEMA 12 — SBRCP (200) — GENERAL ALARM

1 / I-10

MOTOR MONITOR

A / I-5

VALVE POSITION

SYSTEM HMI TOUCH SCREEN AND PLC

2000 VAC UPS

TVSS

LC — VALVE ACTUATOR

3 / I-8

CV-1 (203)

CV-3 (205)

VV-1 (209)

MOV-3 (210)

SEE I-4

SBR INFLUENT

LAH

WAS

SM-1 (204)

SAP-1 (201)

SM-2 (206)

DECANT CONTROL VALVE

DECANT BOX

DOSING TO EX. VALVE CONTROL VAULT

TEMPERATURE AND SEAL FAIL SENSORS, TYP.

SLUDGE HOLDING CHAMBER (PRETREATMENT)

SAM CHAMBER

BOOT-SEAL TUBING AT CARRY PIPE HIGH POINT, TYP.

SBR TANK

3 / I-11

LOCAL NEMA-4X RECEPTACLE

ON/OFF

POWER CONNECTION

pH CONTROLLER

CMP-1 (207)

PVC CARRY-PIPE FOR CHEMICAL TUBING TO SBR APPLICATION POINT

POWER/START - STOP CONTROL

METERING PUMP WITH SUCTION TUBE/ FOOTVALVE

CHEMICAL DRUM BY CONTRACTOR

PORTABLE CONTAINMENT SKID

CAUSTIC ADDITION

RAMP

START / STOP CONTROL

EX. DOSING WELL PUMP STATION

EX. DOSING PUMP

FLOW PACING SIGNAL

HOA

PANEL MOUNTED RECEPTACLE

4 / I-11

CMP-2 (213)

LOCATE CARRY PIPE OUTLET TO DRAIN TO PORTABLE CONTAINMENT SKID

METERING PUMP WITH SUCTION TUBE/ FOOTVALVE

POWER CONNECTION

CARBON ADDITION

NEMA 12 — SBRCP (200)

VALVE POSITION TO SBR PLC

B / I-10

(*) VALVE CONTROL VARIES, SBR MANUFACTURER SHALL COORDINATE

1 / I-5 SEQUENCING BATCH REACTOR SYSTEM P&ID

A / I-5 TYPICAL CONTROL VALVE

TYP OF: (402), (403) & (404)

TEL

SBRCP

ROOMS
1. INFLUENT PUMP ROOM
2. SBR PROCESS ROOM
3. ELECTRICAL ROOM
4. MECHANICAL ROOM

FROM POWER PANEL

SMOKE DETECTOR, TYP OF 4

B / I-5 TYPICAL SMOKE DETECTOR

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STATE OF MARYLAND — STEVEN E. ANDERSON — NO. 33925 — PROFESSIONAL ENGINEER — 6/16/20

AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/25/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

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STATE OF MARYLAND — STEVEN E. ANDERSON — NO. 33925 — PROFESSIONAL ENGINEER — 10/27/16

DES: JFW
DRN: JFW
CHK: SEA
DATE: AUG, 2016

BY	NO.	REVISION	DATE

SEQUENCING BATCH REACTOR P&ID

600' SCALE MAP NO. 40-41 BLOCK NO. 12

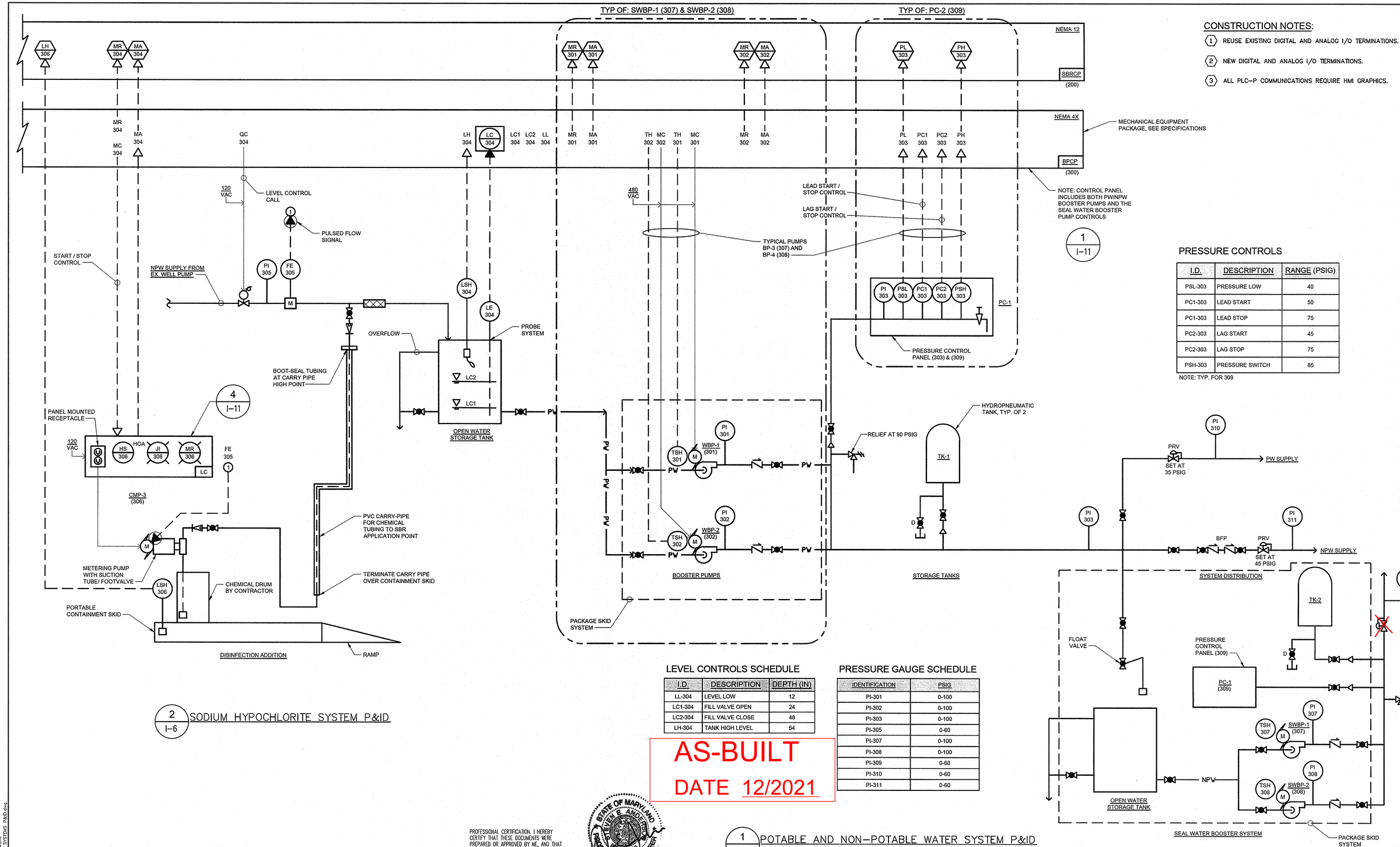
ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

I-5
SCALE AS SHOWN
SHEET 35 OF 43

Jun 12, 2020 - 4:56pm User: jordan.wolfe
M:\2007\07378\05\Drawings\I-05 SEQUENCING BATCH REACTOR P&ID.dwg

CONSTRUCTION NOTES:

1. REUSE EXISTING DIGITAL AND ANALOG I/O TERMINATIONS.
2. NEW DIGITAL AND ANALOG I/O TERMINATIONS.
3. ALL PLC–P COMMUNICATIONS REQUIRE HMI GRAPHICS.



PRESSURE CONTROLS

I.D.	DESCRIPTION	RANGE (PSIG)
PSL-303	PRESSURE LOW	40
PC1-303	LEAD START	50
PC1-303	LEAD STOP	75
PC2-303	LAG START	45
PC2-303	LAG STOP	75
PSH-303	PRESSURE SWITCH	85

NOTE: TYP. FOR 309

2 I–6 SODIUM HYPOCHLORITE SYSTEM P&ID

LEVEL CONTROLS SCHEDULE

I.D.	DESCRIPTION	DEPTH (IN)
LL-304	LEVEL LOW	12
LC1-304	FILL VALVE OPEN	24
LC2-304	FILL VALVE CLOSE	48
LH-304	TANK HIGH LEVEL	54

PRESSURE GAUGE SCHEDULE

IDENTIFICATION	PSIG
PI-301	0-100
PI-302	0-100
PI-303	0-100
PI-305	0-60
PI-307	0-100
PI-308	0-100
PI-309	0-60
PI-310	0-60
PI-311	0-60

AS-BUILT
DATE 12/2021

1 I–6 POTABLE AND NON–POTABLE WATER SYSTEM P&ID (MECHANICAL EQUIPMENT PACKAGE)

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STATE OF MARYLAND · STEVEN E. ANDERSON · NO. 33925 · PROFESSIONAL ENGINEER · 6/16/20

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
CHIEF, BUREAU OF UTILITIES — DATE 1/27/16
CHIEF, BUREAU OF ENGINEERING — DATE 2/8/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/8/17

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DRN:	JFW					
CHK:	SEA					
DATE:	AUG, 2016	BY	NO.	REVISION	DATE	

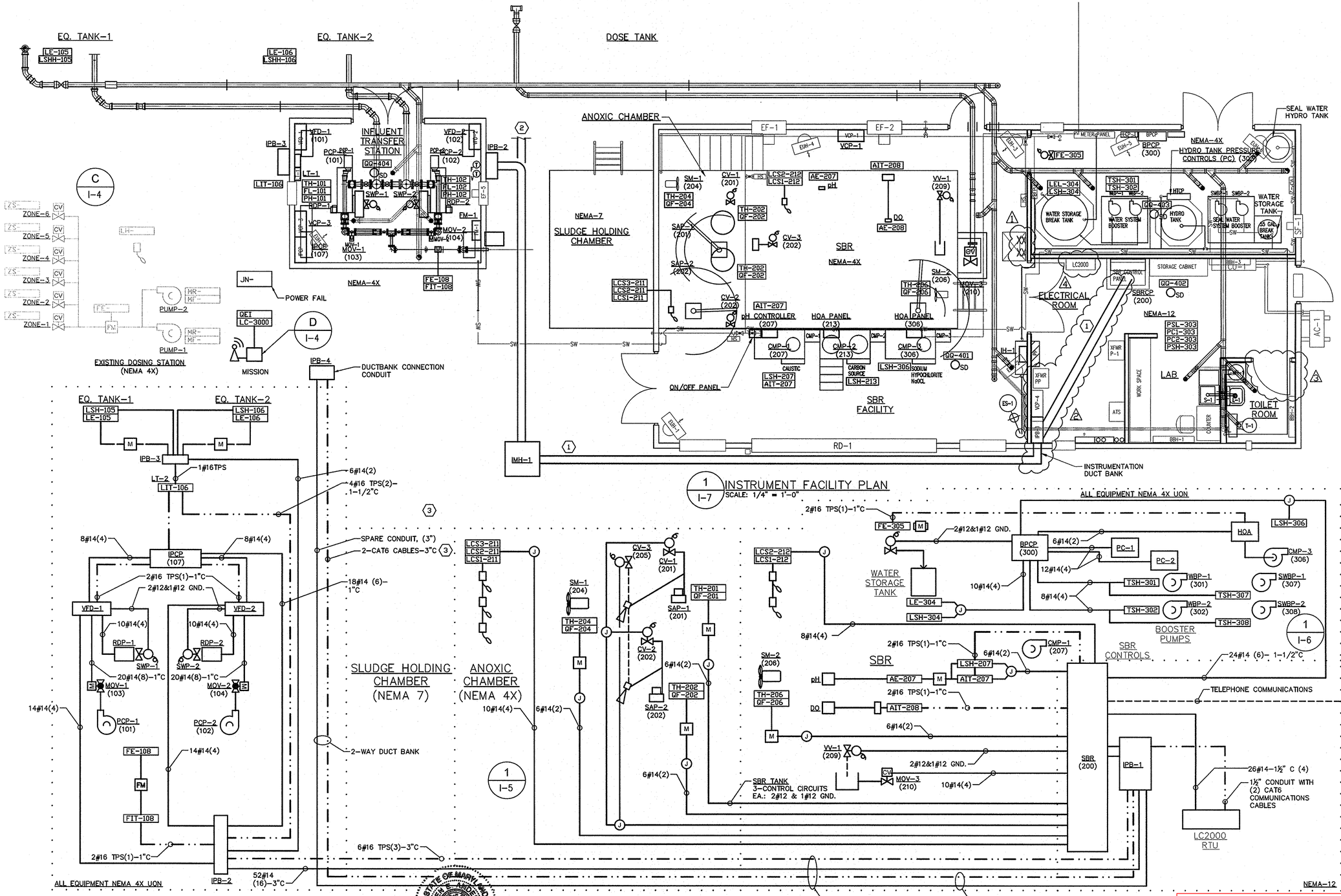
AUXILIARY SYSTEMS P&ID

600' SCALE MAP NO. 40–41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

I–6
SCALE AS SHOWN
SHEET 36 OF 43

Jun 12, 2020 - 4:49pm User: jordan.wolfe
M:\2007\01007378\08\Drawings\I-06 AUX SYSTEMS P&ID.dwg



GENERAL NOTES:

1. PROVIDE 24-INCHES SLACK WIRE AT EACH END OF ALL SPARE INSTRUMENTATION WIRES.
2. SEE SYSTEM P&I DIAGRAMS AND ECD DETAILS FOR CONTROL WIRE IDENTIFICATIONS.
3. CONDUIT CONTAINING #16 TPS (4-20mA) WIRE SHALL BE LOCATED 6-INCHES (MINIMUM) AWAY FROM CONDUIT CONTAINING POWER CONDUCTORS AND CONDUIT CONTAINING #14 OR #12 POWER AND DIGITAL SIGNAL WIRE.
4. ALL CONDUIT SHALL BE 3/4-INCH IN SIZE UNLESS OTHERWISE NOTED ON INSTRUMENT RISER DIAGRAMS.
5. SYSTEM INTEGRATOR SHALL VERIFY ALL APPROVED EQUIPMENT AND TERMINATIONS PRIOR TO INSTALLATION. THE SYSTEMS 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.
6. SYSTEMS INTEGRATOR SHALL COORDINATE ANALOG SIGNAL CONDUIT QUANTITIES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

CONSTRUCTION NOTE:

1. SIGNAL CONDUITS SHALL BE SUB-SURFACED FROM SBRCP TO IPB-1. A 4-WAY DUCT BANK SHALL BE FURNISHED IN ACCORDANCE WITH I-3 INSTRUMENTATION SITE PLAN.
2. A 2-WAY DUCT BANK SHALL BE FURNISHED IN ACCORDANCE WITH I-3 DETAILS.
3. SBR MANUFACTURER SHALL COORDINATE HIGH SPEED COMMUNICATIONS WITH THE COUNTY LC3000 AND LC2000 RTU.

CONDUIT LEGEND:

A#14-B C (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)

LEGEND:

- INSTRUMENTATION (DISCRETE SIGNALS)
- ANALOG SIGNAL CONDUIT
- EXISTING WORK
- TELEPHONE COMMUNICATION LINK
- M MANUFACTURERS CABLE

PANEL LEGEND:

- MFSP METHANOL FILL STATION PANEL
- MSCP METHANOL SYSTEM CONTROL PANEL

EQUIPMENT LEGEND:

- ESP EMERGENCY SHOWER PACKAGE
- FV-X FILL VALVE
- MMP-X METHANOL METERING PUMP

INFLUENT PUMP STATION (NEMA 4X) 1 I-4

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 MARYLAND, LICENSE NO. 33925, EXPIRATION DATE: 01/15/21

STATE OF MARYLAND STEVEN E. ANDERSON NO. 33925 PROFESSIONAL ENGINEER

6/16/20

AS-BUILT
DATE 12/2021

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

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/3/17
CHIEF, BUREAU OF UTILITIES — DATE 1/27/17
CHIEF, BUREAU OF ENGINEERING — DATE 2/3/17
CHIEF, UTILITY DESIGN DIVISION — DATE 2/3/17

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STATE OF MARYLAND STEVEN E. ANDERSON NO. 33925 PROFESSIONAL ENGINEER 10/24/16

DES: JFW
DRN: JFW
CHK: SEA
DATE: AUG, 2016

BY	NO.	REVISION	DATE
JFW	4	RFI #002	6/20
JFW	3	BUILDING PERMIT COMMENTS - HO. CO. DILP	6/20
JFW	2	ADDENDUM 1	6/20
GW	1	NOVEMBER 21, 2018	

INSTRUMENT PLAN AND RISER DETAILS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 37 OF 43
I-7

Jun 16, 2020 - 11:35am User: jordan.wolfe
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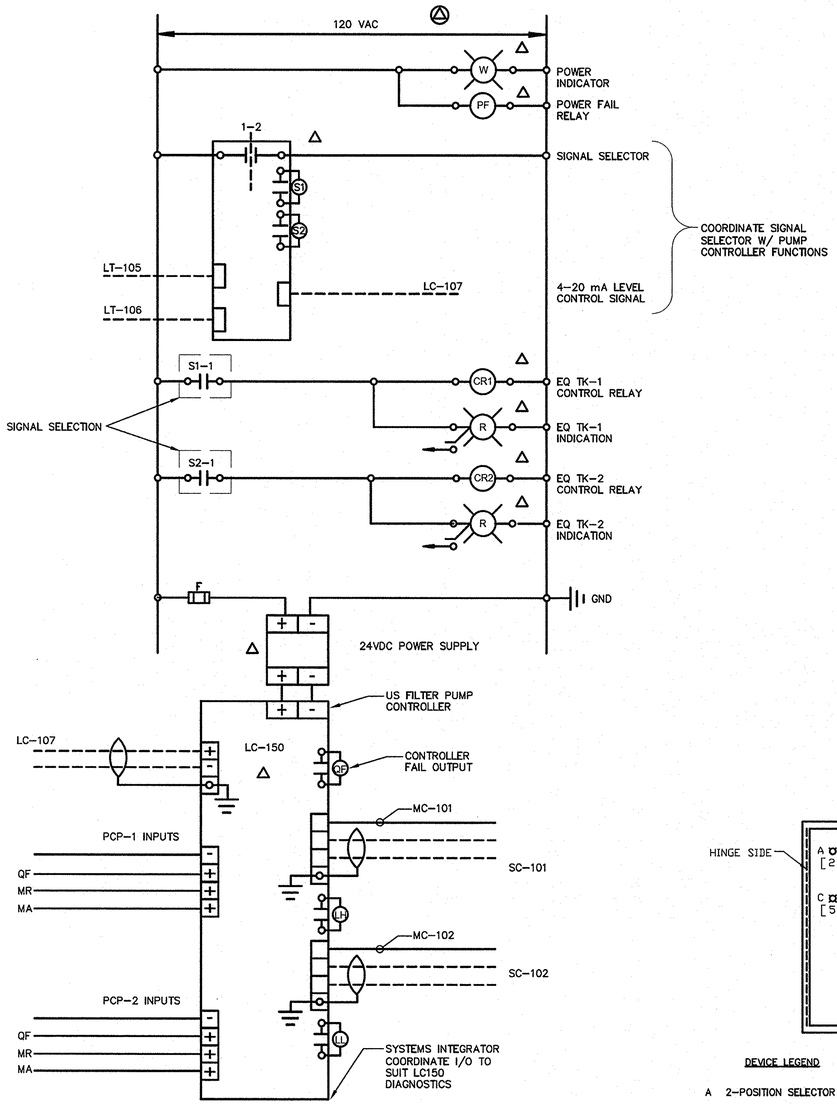
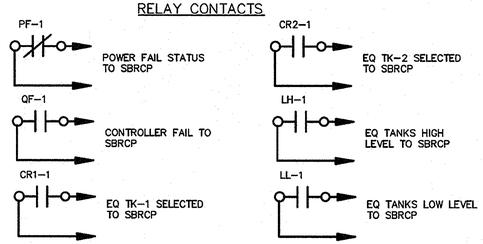
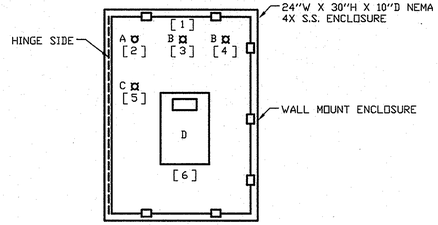


RELAY CONTACTS

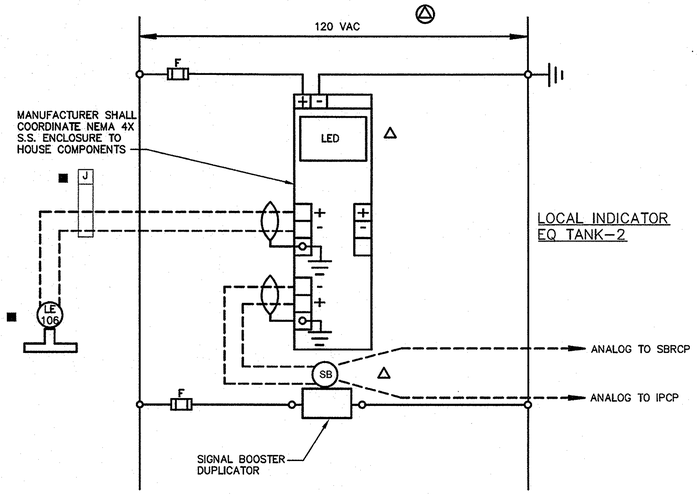


1 / 1-8 IPCP DIAGRAM

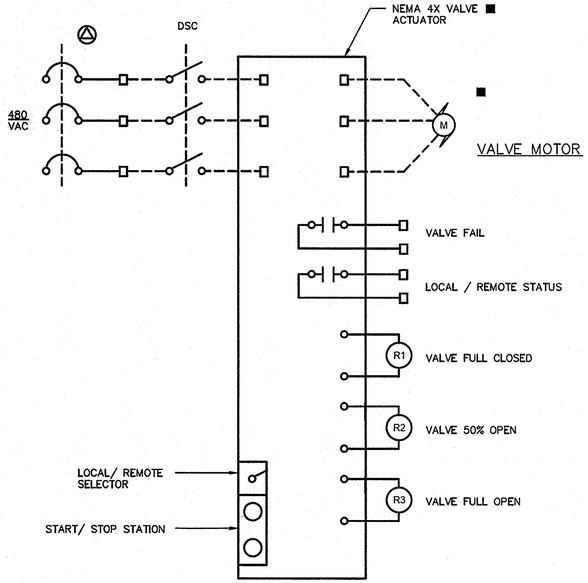


DEVICE LEGEND		NAMEPLATE LEGEND	
A	2-POSITION SELECTOR SWITCH	1	INFLUENT PUMP CONTROL PANEL
B	INDICATOR LAMP (RED)	2	EQ TANK SELECTOR
C	INDICATOR LAMP (WHITE)	3	EQ TANK-1
D	LC150 CONTROLLER	4	EQ TANK-2
		5	POWER IND.
		6	PUMP CONTROLLER

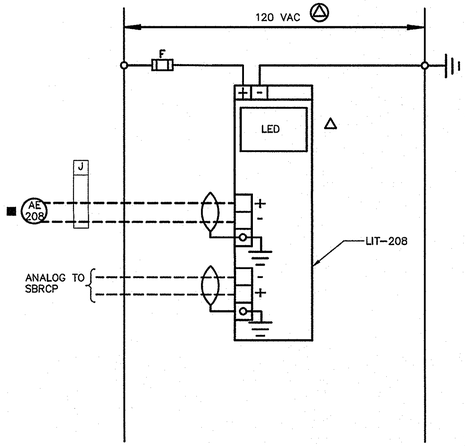
A / 1-8 IPCP ELEVATION
SCALE 1 - 1/2" = 1'-0"



2 / 1-8 TRANSMITTER DETAIL (LT-1)



3 / 1-8 TYPICAL MOTOR OPERATED VALVE (MOV)



4 / 1-8 DO-ANALYZER
TYPICAL: LT-1(105)

GENERAL NOTES:

1. SEE SYSTEM P&I DIAGRAMS FOR PROCESS CONTROL IDENTIFICATIONS.

CONSTRUCTION NOTES:

1. ALL RELAYS SHALL HAVE L.E.D.S.
2. ALL FUSES AND BREAKERS SHALL BE SIZED IN ACCORDANCE WITH THE ELECTRICAL DRAWINGS AND THE MCC MANUFACTURERS RECOMMENDATIONS.
3. VFD SHALL SELECT 4-20mA SPEED REFERENCE INPUT BASED ON HIGH/ LOW CURRENT VALVE. PLC-IP1 SHALL BE PRIMARY AND PLC-IP2 SHALL BE SECONDARY. SYSTEMS INTEGRATOR COORDINATE VFD PROGRAMMING FOR CURRENT LEVEL SELECTION OR DIGITAL ONLINE STATUS FROM PLC-IP1 AND PLC-IP2.
4. ALL SBRCP COMMUNICATIONS REQUIRE HMI GRAPHICS.
5. SYSTEMS INTEGRATOR SHALL COORDINATE ANALOG SPEED CONTROL AND FEEDBACK LOOPS TO SUIT CONTROLLER OPERATIONS.

ELECTRICAL CONTROL DIAGRAM LEGEND (ECD):

- ■ REMOTE
- □ AT PLC CABINET
- △ AT LOCAL PANEL
- ▲ AT MOTOR CONTROL PANEL (VFD)
- ⓐ PANEL BOARD
- ⓐ AT SYSTEM CONTROL PANEL

ELECTRICAL CONTROL DIAGRAM TERMINALS (ECD):

- ○ PANEL WIREWAY TERMINATIONS
- ● WIRING CONNECTIONS
- □ REMOTE TERMINATIONS
- ——— PANEL CONNECTIONS
- - - - - - REMOTE CONNECTIONS
- ⊕ POWER SUPPLY CONNECTION

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 MARYLAND, LICENSE NO. 33925 EXPIRATION DATE: 01/15/21

STATE OF MARYLAND · STEVEN E. ANDERSON · NO. 33925 · PROFESSIONAL ENGINEER — 6/16/20

AS-BUILT
DATE 12/2021

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HOWARD COUNTY, MARYLAND

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DES: JFW				
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DATE: AUG, 2016	BY	NO.	REVISION	DATE

WIRING DIAGRAM – 1

600' SCALE MAP NO. 40-41 BLOCK NO. 12

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I-8 | SCALE AS SHOWN | SHEET 38 OF 43

Jun 16, 2020 - 11:47am User: jacobs.wolfe
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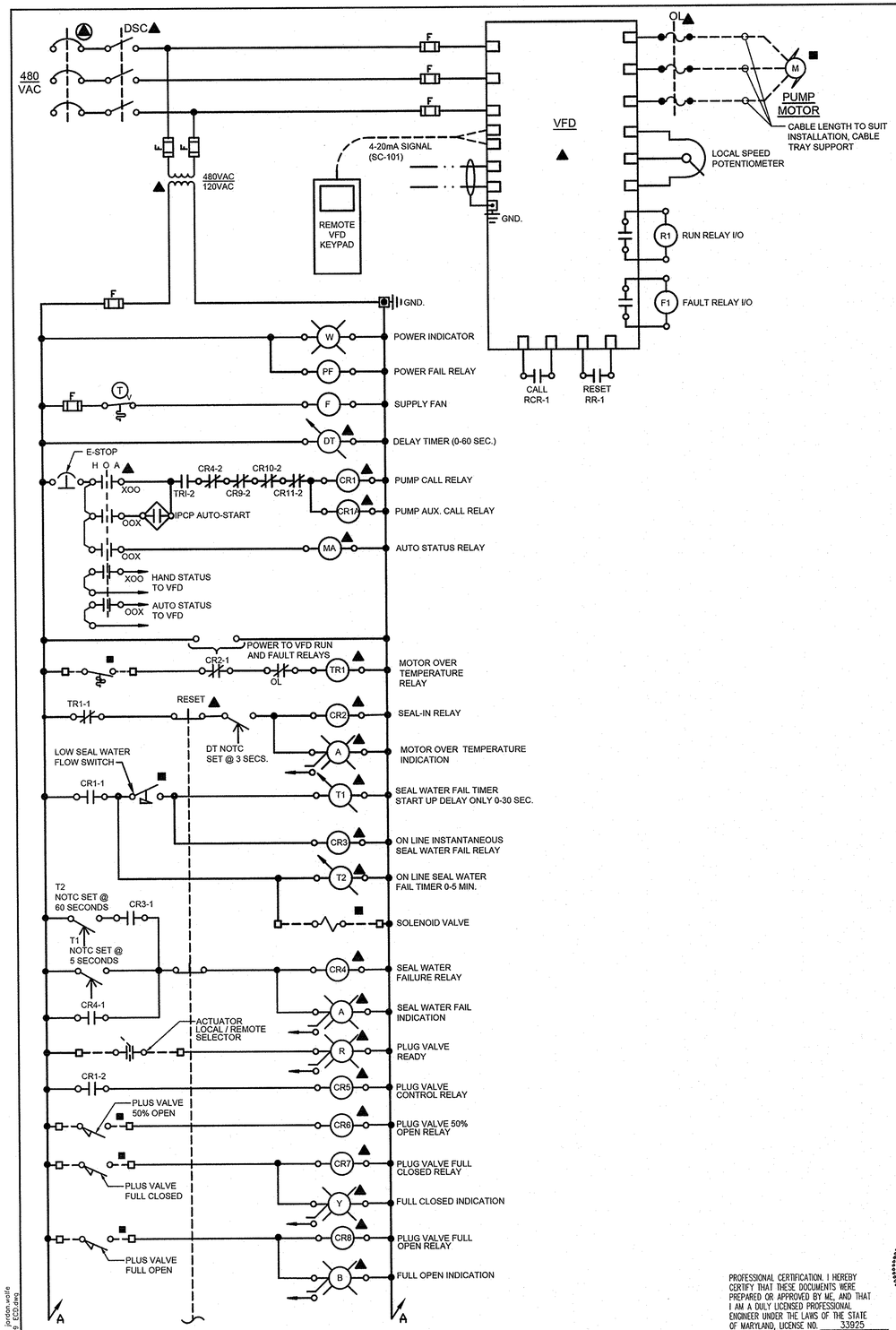
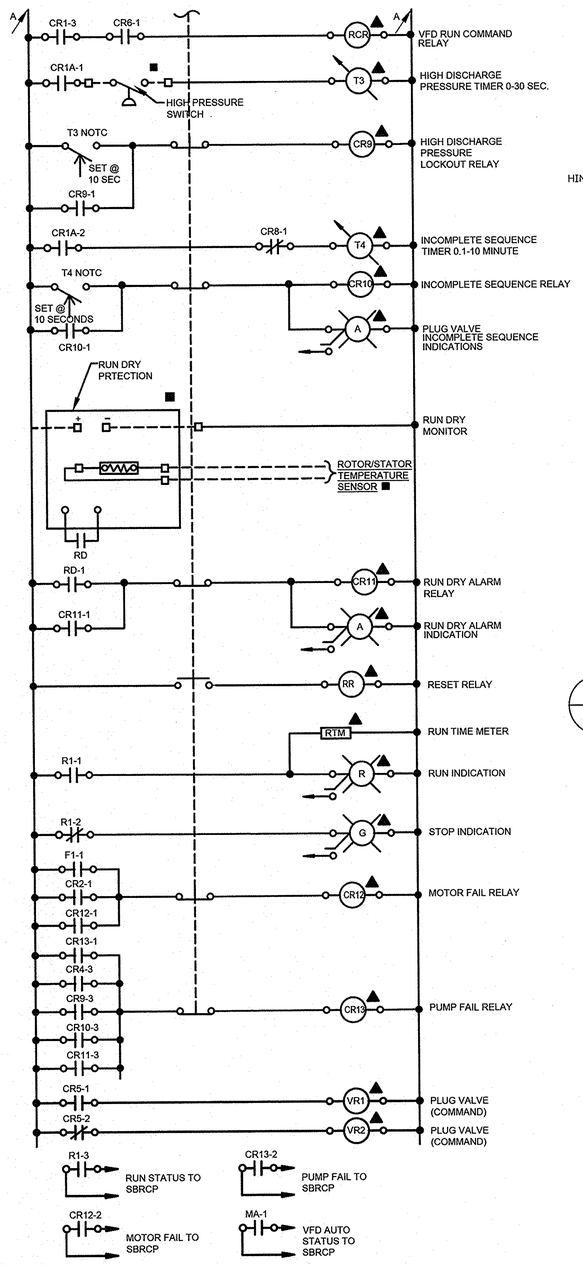
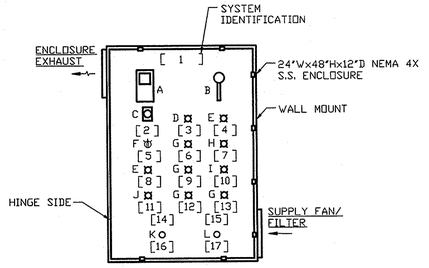




1 I–9 INFLUENT PUMP VFD (PCP–1)
TYPICAL OF: (PCP–2)



NAMEPLATE LEGEND:

1	INFLUENT PUMP VFD-1
2	RUN-HOURS
3	POWER
4	VALVE READY
5	HOA
6	MOTOR FAIL
7	VALVE CLOSED
8	PUMP RUN
9	SEAL-WATER FAIL
10	VALVE OPEN
11	PUMP STOP
12	RUN DRY ALARM
13	INCOMPLETE SEQUENCE
14	VFD
15	MOTORIZED PLUG VALVE
16	RESET
17	E-STOP

DEVICE LEGEND:

A	VFD KEYPAD
B	MAIN BREAKER
C	ETM-ELAPASED TIME METER
D	IND. LAMP (WHITE)
E	IND. LAMP (RED)
F	3-POSITION SELECTOR SWITCH
G	IND. LAMP (AMBER)
H	IND. LAMP (YELLOW)
I	IND. LAMP (BLUE)
J	IND. LAMP (GREEN)
K	MOMENTARY PUSHBUTTON
L	MAINTAIN PUSH-PULL BUTTON

A I–9 PCP VFD CONTROL PANEL ELEVATION
TYPICAL OF: (INFLUENT PUMP VFD–2)
SCALE: 1"=1'–0"

GENERAL NOTES:

1. SEE SYSTEM P&I DIAGRAMS FOR PROCESS CONTROL IDENTIFICATIONS.

CONSTRUCTION NOTES:

1. ALL RELAYS SHALL HAVE L.E.D.S.
2. ALL FUSES AND BREAKERS SHALL BE SIZED IN ACCORDANCE WITH THE ELECTRICAL DRAWINGS AND THE MCC MANUFACTURERS RECOMMENDATIONS.
3. AT THE INTEGRATORS OPTIONS, PERMISSIVE ALARM SEQUENCES CAN BE INCLUDED WITHIN THE VFD PROCESSOR. VFD CONTROLS SHALL BE COORDINATED WITH ALL EXTERNAL INSTRUMENTS AND SEQUENCED EQUIPMENT FOR PROPER OPERATIONS.

ELECTRICAL CONTROL DIAGRAM LEGEND (ECD):

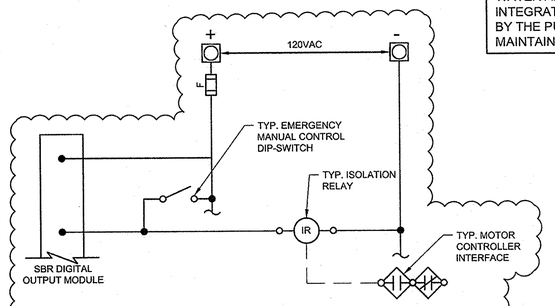
- REMOTE
- AT PLC CABINET
- AT LOCAL PANEL
- AT MOTOR CONTROL PANEL (VFD)
- PANEL BOARD
- AT SYSTEM CONTROL PANEL

ELECTRICAL CONTROL DIAGRAM TERMINALS (ECD):

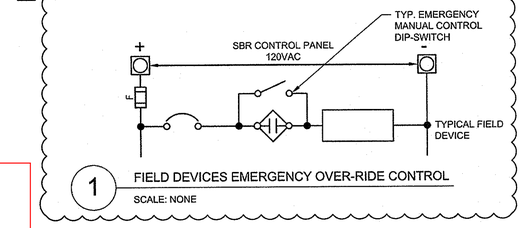
- PANEL WIREWAY TERMINATIONS
- WIRING CONNECTIONS
- REMOTE TERMINATIONS
- PANEL CONNECTIONS
- REMOTE CONNECTIONS
- POWER SUPPLY CONNECTION

NOTE:

VFD CONTROLS INCLUDING SEAL WATER AND RUN DRY PROTECTION INTEGRATION SHALL BE APPROVED BY THE PUMP MANUFACTURER TO MAINTAIN EQUIPMENT WARRANTY.



2 MOTOR CONTROLLERS EMERGENCY OVER-RIDE CONTROL
SCALE: NONE



1 FIELD DEVICES EMERGENCY OVER-RIDE CONTROL
SCALE: NONE

GRAPHIC SCALE
0 1 2
1 6" 0 1
SCALE: 1"=1'–0"

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STATE OF MARYLAND · STEVEN E. ANDERSON · 33925 · PROFESSIONAL ENGINEER
6/16/20

AS-BUILT
DATE 12/2021

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HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/6/17
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10/27/16

DES:	JFW
DRN:	JFW
CHK:	SEA
DATE:	AUG, 2016

GW	1	NOVEMBER 21, 2018	
BY	NO.	REVISION	DATE

WIRING DIAGRAM –2

600' SCALE MAP NO. 40–41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

I–9
SCALE AS SHOWN
SHEET 39 OF 43

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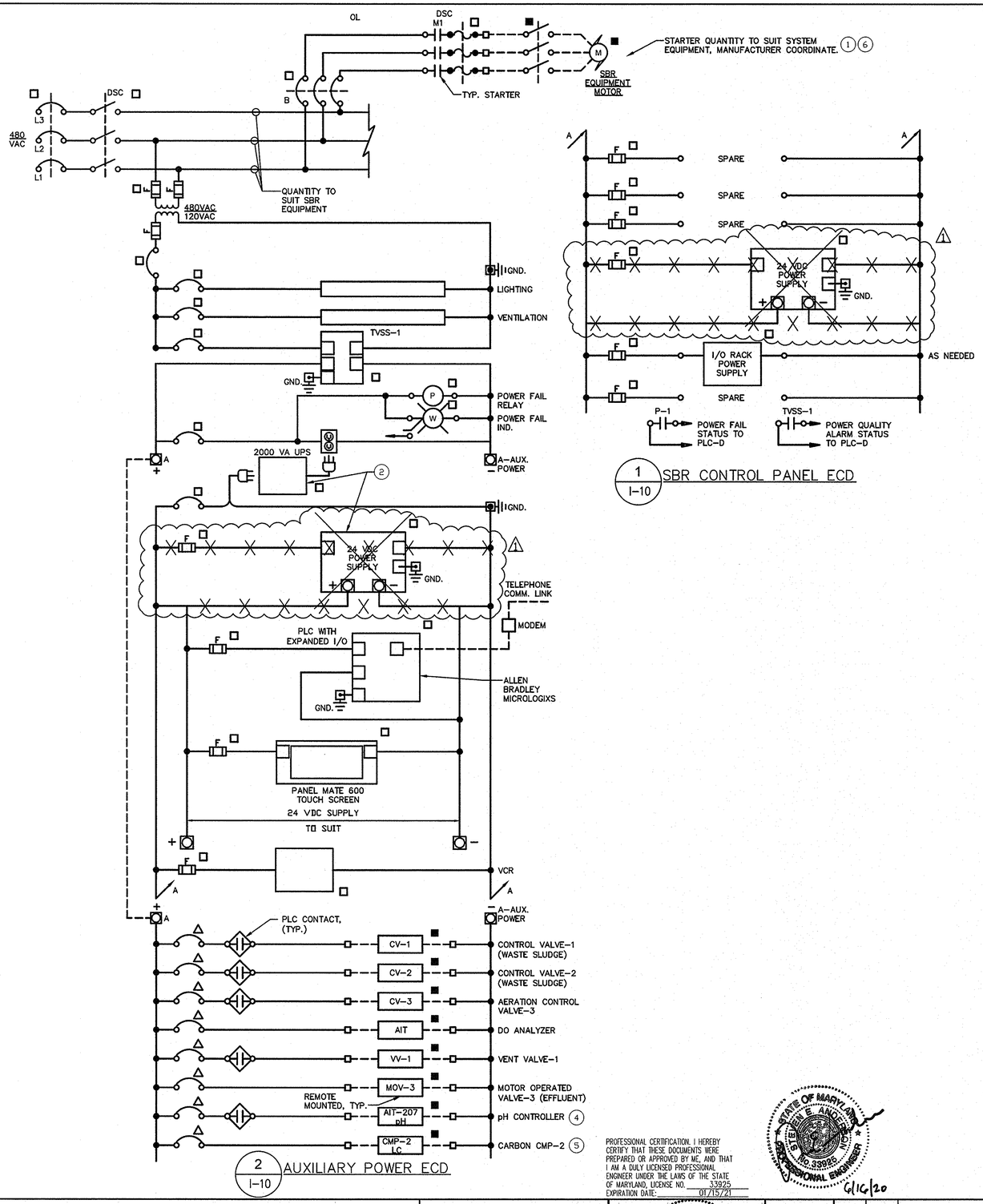
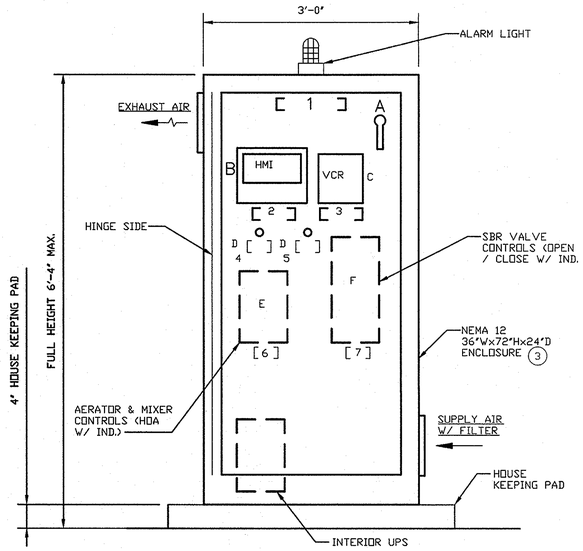


2 / I-10 AUXILIARY POWER ECD

1 / I-10 SBR CONTROL PANEL ECD



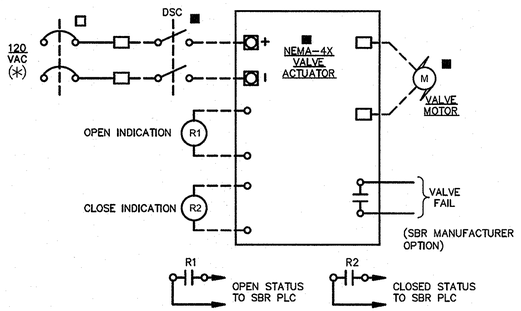
NAMEPLATE LEGEND:

1	SBR CONTROL PANEL
2	SYSTEM SCREEN
3	PROCESS RECORDER
4	RESET
5	ACKNOWLEDGE
6	SBR EQUIPMENT
7	SBR CONTROL VALVES

DEVICE LEGEND:

A	MAIN PANEL BREAKER
B	HMI TOUCH SCREEN
C	VIDEO CHART RECORDER
D	MOMENTARY PUSH-BUTTON
E	AERATOR / MIXER CONTROLS
F	VALVE CONTROLS

A / I-10 SBR CONTROL PANEL ELEVATION
SCALE: 1"=1'-0"



B / I-10 TYPICAL CONTROL VALVE ECD

GENERAL NOTES:

1. SEE SYSTEM P&I DIAGRAMS FOR PROCESS CONTROL IDENTIFICATIONS.

CONSTRUCTION NOTES:

1. ALL RELAYS SHALL HAVE L.E.D.S.
2. ALL FUSES AND BREAKERS SHALL BE SIZED IN ACCORDANCE WITH THE ELECTRICAL DRAWINGS AND THE MCC MANUFACTURERS RECOMMENDATIONS.

ELECTRICAL CONTROL DIAGRAM LEGEND (ECD):

- REMOTE
- AT PLC CABINET
- AT LOCAL PANEL
- AT MOTOR CONTROL PANEL (VFD)
- PANEL BOARD
- AT SYSTEM CONTROL PANEL

ELECTRICAL CONTROL DIAGRAM TERMINALS (ECD):

- PANEL WIREWAY TERMINATIONS
- WIRING CONNECTIONS
- REMOTE TERMINATIONS
- PANEL CONNECTIONS
- REMOTE CONNECTIONS
- POWER SUPPLY CONNECTION

NOTES

1. INDIVIDUAL STARTER ALARMS IDENTIFIED ON THE P&ID'S SHALL BE TERMINATED FOR COUNTY USE AS SHOWN.
2. SBR MANUFACTURER SHALL CUSTOMIZE THE BACKUP POWER AND I/O MODULE POWER/ISOLATION RELAYS TO SUIT PLC EQUIPMENT PROVIDED.
3. THE SBR CONTROL PANEL ELEVATION DETAILS MINIMUM LAYOUT AND INDICATIONS REQUIRED FOR OPERATOR INTERFACE AND FACILITY HMI. RESPECTIVE MANUFACTURER'S SHALL CUSTOMIZE THIS PANEL TO SUIT THEIR SYSTEM COMPONENTS.
4. SBR POWER SHALL BE FURNISHED TO THE ANALYZER HOA/RECEPTICAL PANEL, SEE SHEET I-11 DETAILS.
5. SBR POWER SHALL BE FURNISHED TO THE CARBON METERING PUMP HOA/RECEPTICAL PANEL, SEE SHEET I-11 DETAILS.
6. SBR MANUFACTURER SHALL PROVIDE EQUIPMENT LABELS FOR ALL BREAKERS.

AS-BUILT
DATE 12/2021

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STATE OF MARYLAND STEVEN E. ANDERSON NO. 33925 PROFESSIONAL ENGINEER 6/16/20

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 2/3/17
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STATE OF MARYLAND STEVEN E. ANDERSON NO. 33925 PROFESSIONAL ENGINEER 10/22/16

DES: JFW				
DRN: JFW				
CHK: SEA				
DATE: AUG, 2016	GW	1	NOVEMBER 21, 2018	
	BY	NO.	REVISION	DATE

WIRING DIAGRAMS-3

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

I-10
SCALE AS SHOWN
SHEET 40 OF 43

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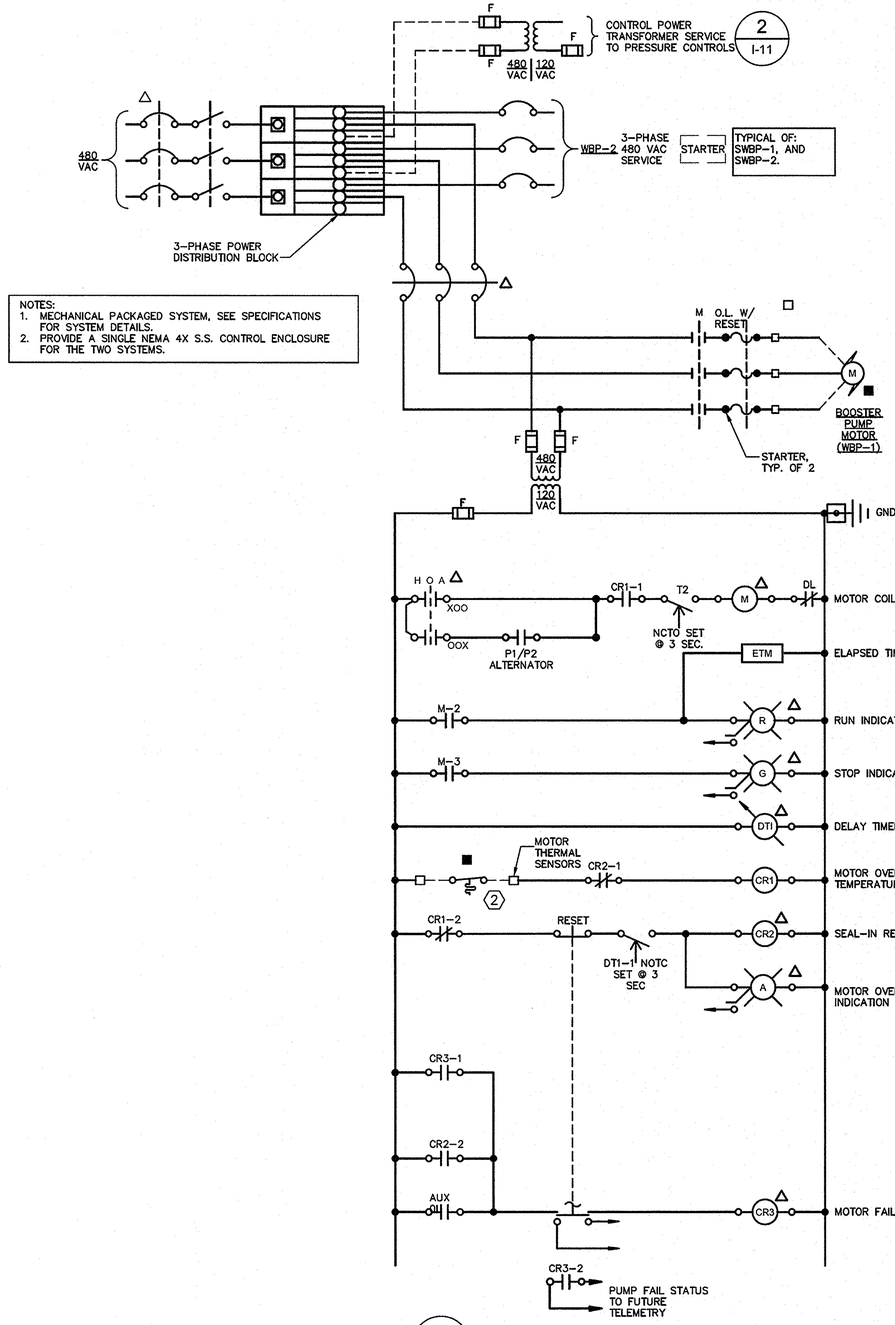
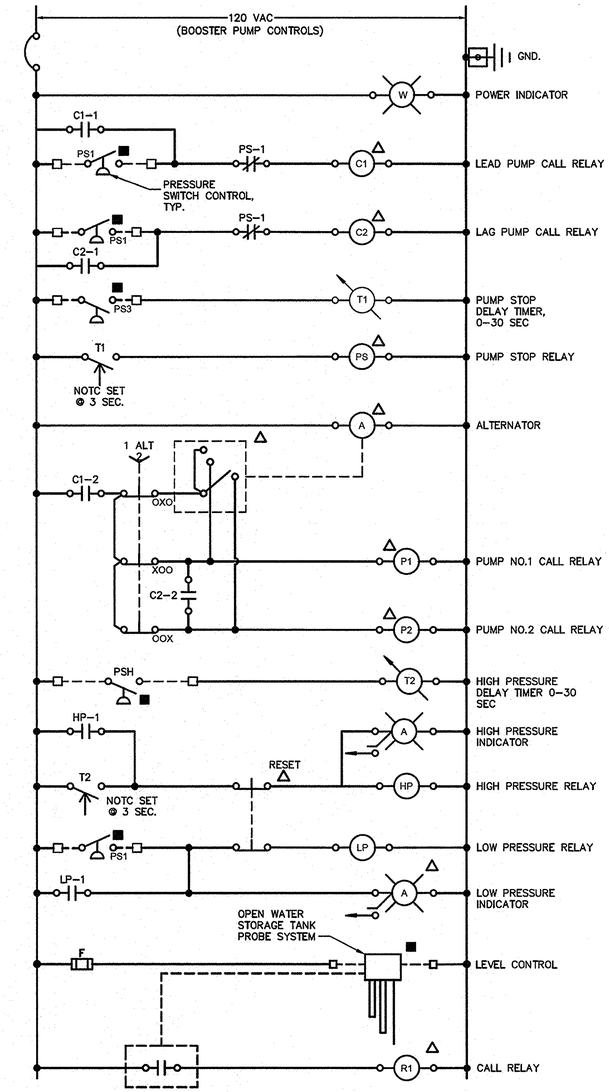


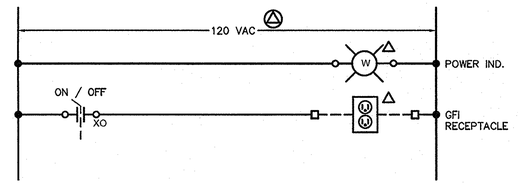
1 / I-11 WATER BOOSTER PUMP CONTROL PANEL-1 ECD



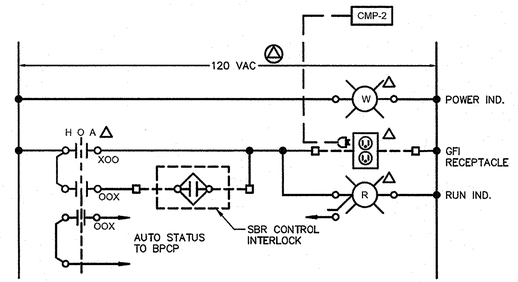
PRESSURE SWITCH LEGEND:

PS1	LEAD PUMP START
PS2	LAG PUMP START
PS3	PUMPS STOP

2 / I-11 TYPICAL PRESSURE CONTROLS (PC-1 & PC-2)



3 / I-11 CMP-1 CONTROL ECD



NOTE:
1. FOR CMP-3 BOOSTER SYSTEM INTERLOCK (R1-2).

4 / I-11 CMP-2 CONTROL ECD (TYP. CMP-3)

GENERAL NOTES:

1. SEE SYSTEM P&I DIAGRAMS FOR PROCESS CONTROL IDENTIFICATIONS.

CONSTRUCTION NOTES:

1. ALL RELAYS SHALL HAVE L.E.D.S.
2. ALL FUSES AND BREAKERS SHALL BE SIZED IN ACCORDANCE WITH THE ELECTRICAL DRAWINGS AND THE MCC MANUFACTURERS RECOMMENDATIONS.

ELECTRICAL CONTROL DIAGRAM LEGEND (ECD):

- REMOTE
- AT PLC CABINET
- AT LOCAL PANEL
- AT MOTOR CONTROL PANEL (VFD)
- PANEL BOARD
- AT SYSTEM CONTROL PANEL

ELECTRICAL CONTROL DIAGRAM TERMINALS (ECD):

- PANEL WIREWAY TERMINATIONS
- WIRING CONNECTIONS
- REMOTE TERMINATIONS
- PANEL CONNECTIONS
- REMOTE CONNECTIONS
- POWER SUPPLY CONNECTION

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 MARYLAND, LICENSE NO. 33925
EXPIRATION DATE: 01/15/21

STATE OF MARYLAND · STEVEN E. ANDERSON · No. 33925 · PROFESSIONAL ENGINEER
6/16/20

AS-BUILT
DATE 12/2021

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HOWARD COUNTY, MARYLAND

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10/24/16

DES: JFW					
DRN: JFW					
CHK: SEA					
DATE: AUG, 2016	BY	NO.	REVISION	DATE	600' SCALE MAP NO. 40-41 BLOCK NO. 12

WIRING DIAGRAMS-4

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

I-11
SCALE AS SHOWN
SHEET 41 OF 43

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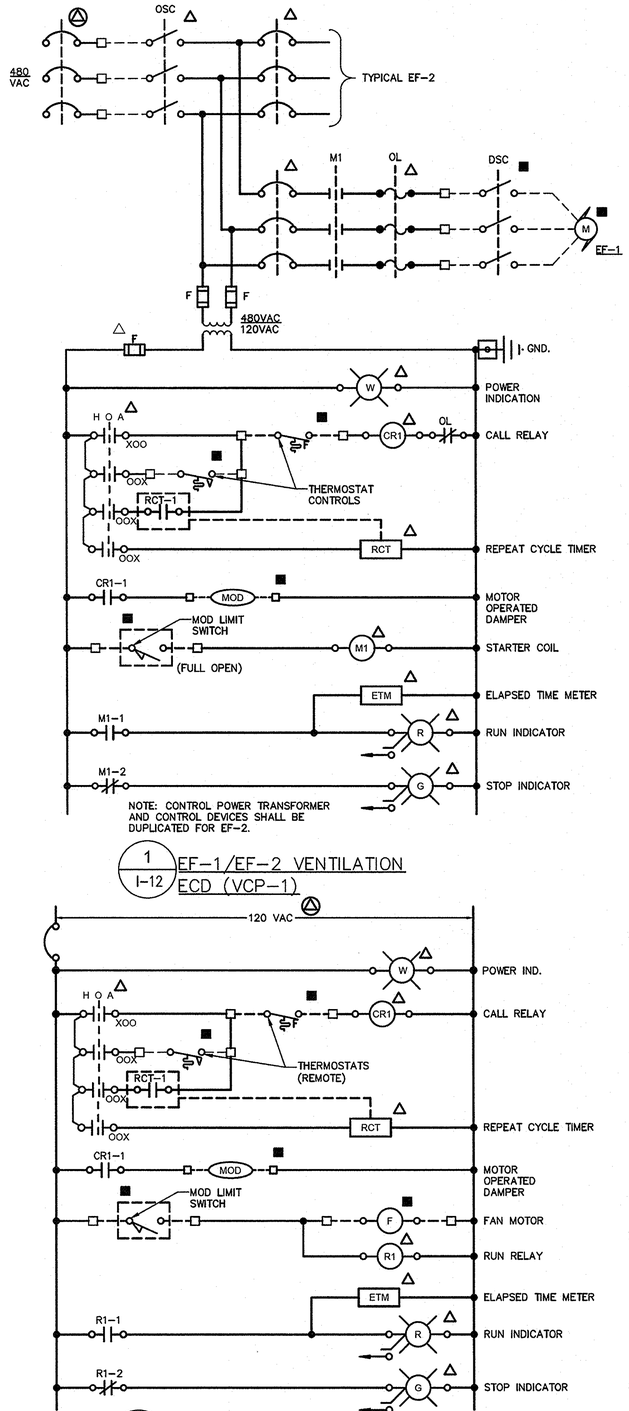
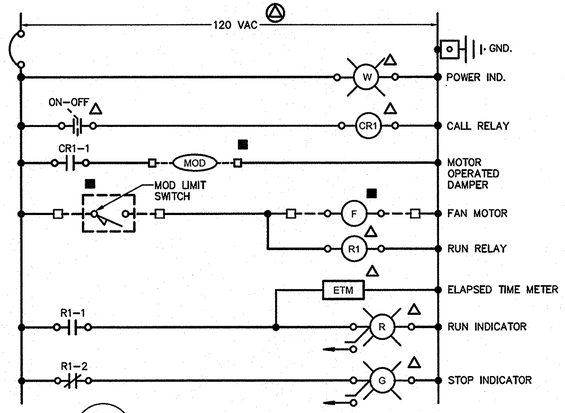
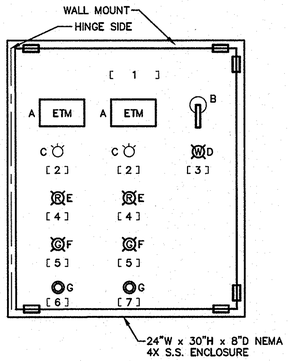


1 / I-12 EF-1/EF-2 VENTILATION ECD (VCP-1)

2 / I-12 VCP-2 (SF-1) VENTILATION ECD (TYP. VCP-3 EF-5)



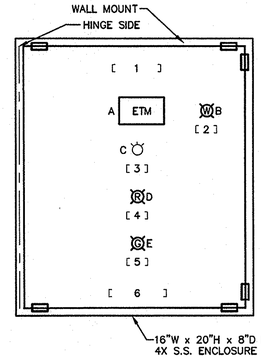
3 / I-12 VCP-4 (EF-3) FUME CONTROL ECD



DEVICE LEGEND:

		NAMEPLATE LEGEND:	
A	ELAPSED TIME METER	1	VENTILATION CONTROL PANEL
B	MAIN PANEL DISCONNECT	2	HOA
C	3-POSITION SELECTOR SWITCH	3	POWER
D	INDICATION LAMP (WHITE)	4	RUN
E	INDICATION LAMP (RED)	5	STOP
F	INDICATION LAMP (GREEN)	6	EXHAUST FAN-1
G	STARTER OL-PUSH BUTTON	7	EXHAUST FAN-2

A / I-12 VCP-1 ELEVATION

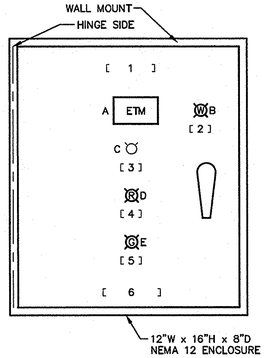


DEVICE LEGEND:

		NAMEPLATE LEGEND:	
A	ELAPSED TIME METER	1	VENTILATION CONTROL PANEL
B	INDICATION LAMP (WHITE)	2	POWER
C	3-POSITION SELECTOR SWITCH	3	HOA
D	INDICATION LAMP (RED)	4	RUN
E	INDICATION LAMP (GREEN)	5	STOP
		6	FAN I.D. (VARIES)

NOTE: MODIFY DEVICES TO SUIT VENTILATION ECD

B / I-12 TYPICAL SINGLE PHASE VCP-2 & 3 ELEVATION



DEVICE LEGEND:

		NAMEPLATE LEGEND:	
A	ELAPSED TIME METER	1	FUME CONTROL VENTILATION
B	INDICATION LAMP (WHITE)	2	POWER
C	2-POSITION SELECTOR SWITCH	3	ON-OFF
D	INDICATION LAMP (RED)	4	RUN
E	INDICATION LAMP (GREEN)	5	STOP
		6	EXHAUST FAN-3

C / I-12 FUME CONTROL VCP-4 ELEVATION

GENERAL NOTES:

1. SEE SYSTEM P&I DIAGRAMS FOR PROCESS CONTROL IDENTIFICATIONS.

CONSTRUCTION NOTES:

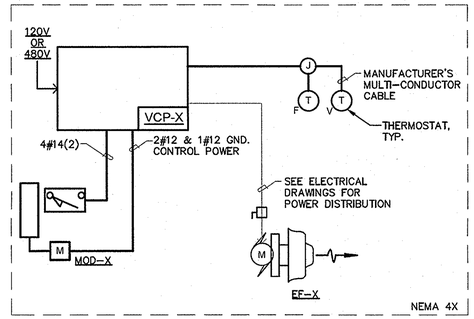
1. ALL RELAYS SHALL HAVE L.E.D.S.
2. ALL FUSES AND BREAKERS SHALL BE SIZED IN ACCORDANCE WITH THE ELECTRICAL DRAWINGS AND THE MCC MANUFACTURERS RECOMMENDATIONS.

ELECTRICAL CONTROL DIAGRAM LEGEND (ECD):

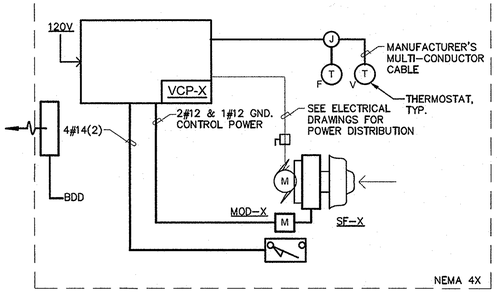
- REMOTE
- AT PLC CABINET
- AT LOCAL PANEL
- AT MOTOR CONTROL PANEL (VFD)
- PANEL BOARD
- AT SYSTEM CONTROL PANEL

ELECTRICAL CONTROL DIAGRAM TERMINALS (ECD):

- PANEL WIREWAY TERMINATIONS
- WIRING CONNECTIONS
- REMOTE TERMINATIONS
- PANEL CONNECTIONS
- REMOTE CONNECTIONS
- POWER SUPPLY CONNECTION



D / I-12 TYPICAL EXHAUST RISER DIAGRAM (SIMILAR NEMA-12 ARRANGEMENT FOR THE FUME CONTROL SYSTEM)



E / I-12 TYPICAL SUPPLY RISER DIAGRAM

AS-BUILT
DATE 12/2021

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STATE OF MARYLAND STEVEN E. ANDERSON No. 33925 PROFESSIONAL ENGINEER 6/16/20

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND STEVEN E. ANDERSON No. 33925 PROFESSIONAL ENGINEER 10/24/16

DES: JFW	BY	NO.	REVISION	DATE
DRN: JFW				
CHK: SEA				
DATE: AUG, 2016				

VENTILATION CONTROLS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

I-12
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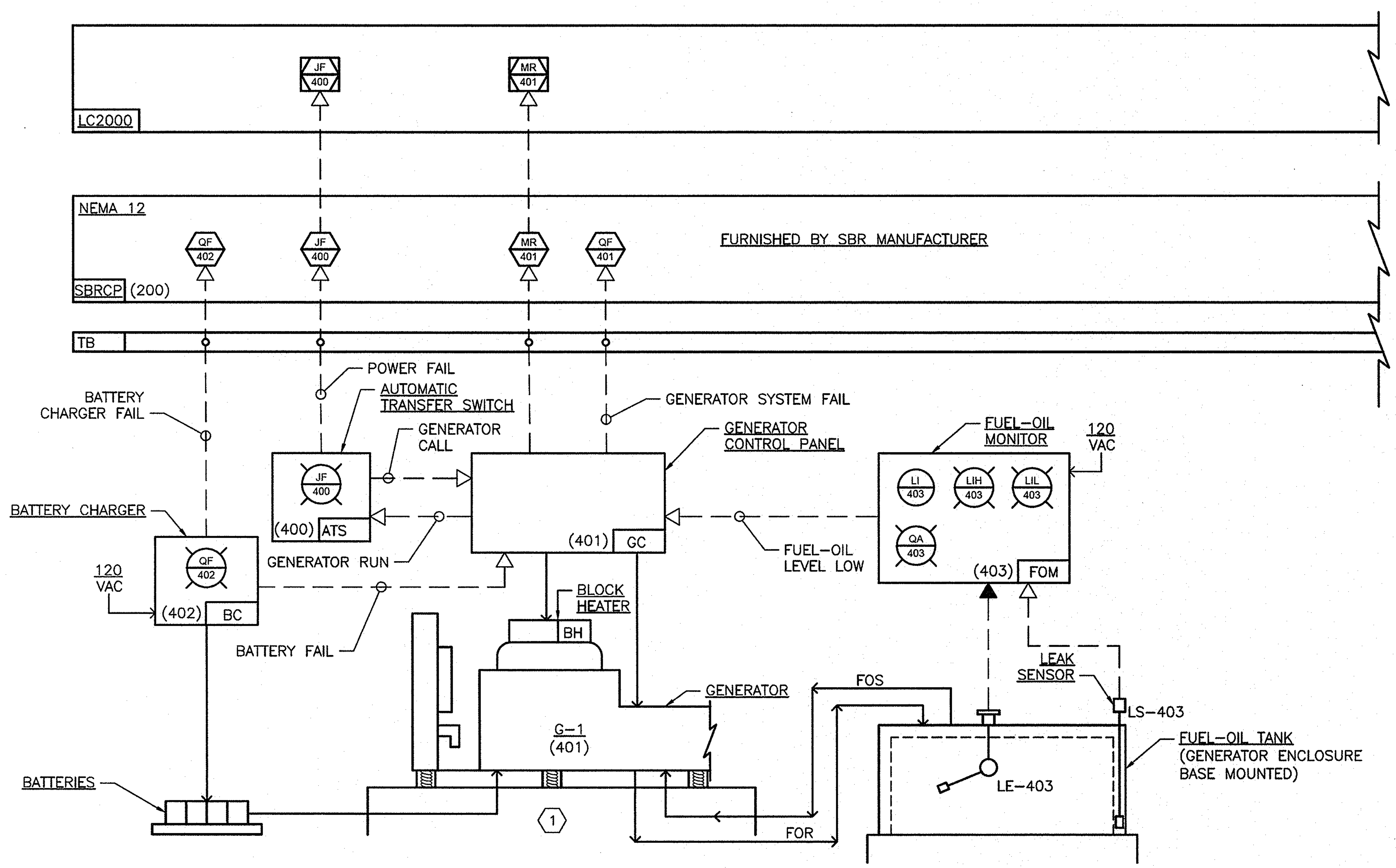
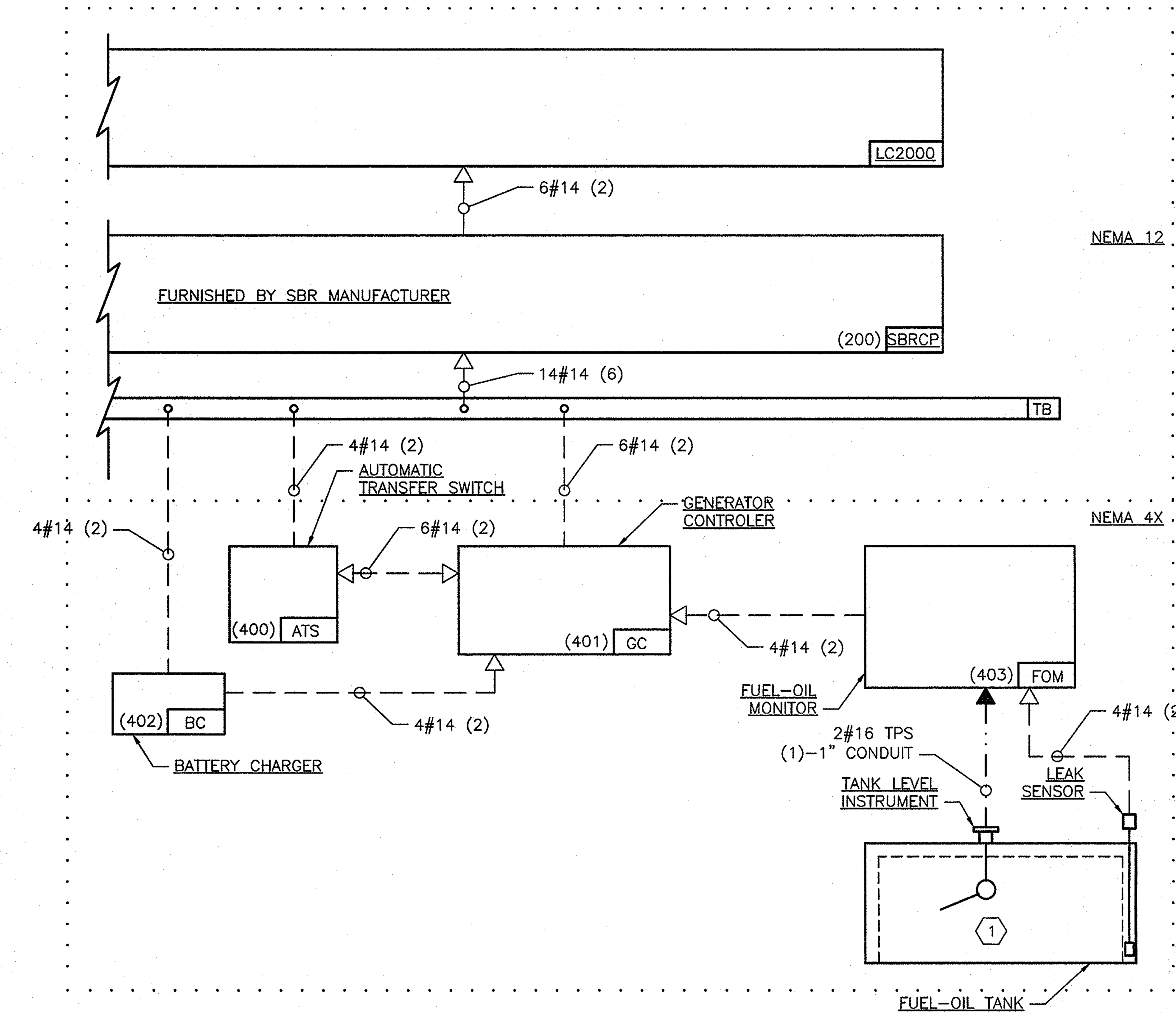


1 I-13 GENERATOR SYSTEM – P&ID
SCALE: NONE



2 I-13 GENERATOR SYSTEM – RISER DIAGRAM
SCALE: NONE

GENERAL NOTES:

1. PROVIDE 24-INCHES SLACK WIRE AT EACH END OF ALL SPARE INSTRUMENTATION WIRES.
2. SEE SYSTEM P&I DIAGRAMS AND ECD DETAILS FOR CONTROL WIRE IDENTIFICATIONS.
3. CONDUIT CONTAINING #16 STP (4-20mA) WIRE SHALL BE LOCATED 6-INCHES (MINIMUM) AWAY FROM CONDUIT CONTAINING POWER CONDUCTORS AND CONDUIT CONTAINING #14 OR #12 POWER AND DIGITAL SIGNAL WIRE.
4. ALL CONDUIT SHALL BE 3/4-INCH IN SIZE UNLESS OTHERWISE NOTED ON INSTRUMENT RISER DIAGRAMS.
5. SYSTEM INTEGRATOR SHALL VERIFY ALL APPROVED EQUIPMENT AND TERMINATIONS PRIOR TO INSTALLATION. THE SYSTEMS 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.
6. SYSTEMS INTEGRATOR SHALL COORDINATE ANALOG SIGNAL CONDUIT QUANTITIES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. SEE I-001 FOR EQUIPMENT AND PANEL DESIGNATIONS.

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)

LEGEND:

————	I&C DEVICES
— — —	DIGITAL COMMUNICATIONS
————	ELECTRICAL
—·· —	I&C ANALOG COMMUNICATIONS
· · · · ·	CLASSIFICATION BOUNDARY

SHEET KEY NOTES:

1 GENERATOR AND FUEL-OIL STORAGE ARE ACOUSTICAL ENCLOSURE MOUNTED AS A PACKAGE.

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 MARYLAND, LICENSE NO. 33925 EXPIRATION DATE: 01/15/21

STATE OF MARYLAND STEVEN E. ANDERSON No. 33925 PROFESSIONAL ENGINEER 6/16/20

AS-BUILT
DATE 12/2021

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS 2/1/17 DATE
CHIEF, BUREAU OF ENGINEERING 2/3/17 DATE
CHIEF, BUREAU OF UTILITIES 1/25/17 DATE
CHIEF, UTILITY DESIGN DIVISION 2/3/17 DATE

KCI TECHNOLOGIES
ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD SPARKS, MARYLAND 21152 TELEPHONE: (410) 316-7800 FAX: (410) 316-7818 www.kci.com

STATE OF MARYLAND STEVEN E. ANDERSON No. 33925 PROFESSIONAL ENGINEER 10/24/16

DES: JFW
DRN: JFW
CHK: SEA
DATE: AUG. 2016

BY | NO. | REVISION | DATE

GENERATOR CONTROLS

600' SCALE MAP NO. 40-41 BLOCK NO. 12

ASHLEIGH KNOLLS
SHARED SEWAGE DISPOSAL FACILITY
CAPITAL PROJECT No. S-6269
CONTRACT No. 50-4972
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

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SCALE AS SHOWN
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