

ARCHITECTURE ENGINEERING CONSTRUCTION

REDESIGN UPGRADE

STATION GENERATOR SYSTEM - PSDM

PROJECT NUMBER: 438-18-100

INDEX OF DRAWINGS			SITE PLAN		GENERAL NOTES	
DWG NO.	DRAWING TITLE	SHEET OF #			<p>1. CONTRACTOR SHALL VISIT ALL AREAS OF WORK, INCLUDING WALKING THE SITE, MEASURING EXISTING DIMENSIONS AND OBSERVING EXISTING CONDITIONS BEFORE BIDDING WORK, ORDERING MATERIALS, OR STARTING ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS OF EXISTING SITE CONDITION PRIOR TO START OF WORK AND ORDERING OF MATERIALS.</p> <p>2. CONTRACTOR SHALL RECYCLE REMOVED MATERIALS WHENEVER POSSIBLE. SEE SPECIFICATION SECTION 01 74 19.</p> <p>3. CONTRACTOR TO PROTECT AREA ADJACENT TO THE DEMOLITION AND NEW CONSTRUCTION WORK TO PREVENT DAMAGES. (IF DAMAGED, REPAIR, RE-PATCH, SAND SMOOTH AND REFINISH TO MATCH EXISTING.)</p> <p>4. CONTRACTOR SHALL REPORT TO COR IMMEDIATELY WHEN DISCREPANCIES TO THE DRAWINGS ARE FOUND IN THE FIELD.</p>	
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SIGNATURE BLOCK	
MEDICAL CENTER DIRECTOR	DATE
ASSOCIATE MEDICAL CENTER DIRECTOR	DATE
CHIEF OF STAFF	DATE
ASSOCIATE DIRECTOR PATIENT CARE SERVICES	DATE
CHIEF, ENGINEERING SERVICES	DATE
SAFETY OFFICER	DATE
INDUSTRIAL HYGIENIST	DATE
INFECTION CONTROL OFFICER	DATE
PRESIDENT AFGE 2250	DATE
ENERGY ENGINEER	DATE

PHASING	
SEE PHASING PLANS ON SHEETS EP101-EP105 FOR PHASING INFORMATION.	

VA PROJECT TEAM	
OWNER: VETERANS AFFAIRS VA NEBRASKA WESTERN IOWA HEALTH CARE SYSTEM NETWORK 23 CONTRACTING OFFICE (NCO 23) 111 SOUTH 18TH PLAZA, SUITE C38 OMAHA, NE 68102-2077	OWNER'S CONTRACTING OFFICER REPRESENTATIVE: TIMOTHY A. WAKEFIELD - CONTRACTING OFFICER REPRESENTATIVE ENGINEERING SERVICE SIOUX FALLS VA MEDICAL CENTER 2501 WEST 22ND ST. SIOUX FALLS, SD 57105

ABBREVIATIONS	
EX (N) N.I.C. E.T.S. N.T.S. NTS SIM. BLDG.A. PH. INC. S. DL GPM O.C. FDC	EXISTING NEW NOT IN CONTRACT EXPOSED TO STRUCTURE NOT TO SCALE NOT TO SCALE SIMILAR BUILDING PHONE INCORPORATED SOUTH DEAD LEG GALLONS PER MINUTE ON CENTER FIRE DEPARTMENT CONNECTION
DR. ST. CMU EQ. STL. NR. A.F.F. EJ CJ Q.R.S. °F ICRA COR	DRIVE STREET CONCRETE MASONRY UNIT EQUAL STAINLESS NOT RATED ABOVE FINISHED FLOOR EXPANSION JOINT CONTROL JOINT QUICK RELEASE SPRINKLER DEGREES FAHRENHEIT INFECTION CONTROL RISK ASSESSMENT CONTRACTING OFFICER REPRESENTATIVE

100% CONSTRUCTION DOCUMENTS

<div>CONSULTANTS:</div>			PROJECT MANAGER:		ACG Project Number: 18-024 CEMS Project Number: 17157A	Office of Construction and Facilities Management VA U.S. Department of Veterans Affairs	Drawing Title GENERAL INFORMATION		Project Title UPGRADE STATION GENERATOR SYSTEM - PSDM REDESIGN		VA PROJECT NUMBER 438-18-100				
			APOGEECEMS Joint Venture An Alliance for Success <small>1151 Kidlare Farm Rd. Suite 120 Cary, NC 27511 www.apogeececms.com (919)558-7420</small>		108 Bentons Lodge Road Suite B Summersville, SC 29485 www.cemsi-sc.com (843)875-3037		Location 2501 W 22ND ST SIOUX FALLS, SD 57105		Approved: Date JULY 30, 2021		Checked JAV		Drawing Number G-001		
			# Revisions:		Date						Dwg. 1 of 2				

Pre-Construction Risk Assessment	
Infection Control / Safety Construction Permit	
Project Title and Number: Upgrade Station Generator System of the Sioux Falls VA Medical Center	Project Start Date:
Project COR: Tim Winkler	Estimated Duration:
Contractor Performing Work: ISO	Location of Construction: Sioux Falls VA Medical Center, South of Building 28
Supervisor: Tim Winkler	COR Telephone: 605-336-3204 x1029
Description of project: Add 2 new 2MW generators, provide new 15KV service switchgear in a new metal enclosure with storage room and an office, connect new parallel switchgear into existing electrical system, replace junction box JB #1 and upgrade terminations, install new fuel tanks for both existing generator and new generators, install new duct bank for future generator installations, remove existing switchgear after new systems brought on line.	
Construction Activities	
The following must be addressed and put in place prior to any construction activities:	
• Fire Seal All Penetrations	
• Separation wall must be constructed prior to project beginning, or secure an existing barrier. Contractor shall consider need for plastic or hard barriers and consider sprinkler heads and smoke detector requirements.	
• Contractor shall place all construction signage needed for the project.	
• Fire protection systems must remain intact.	
• Provide extra fire extinguishers in the work areas.	
• Maintain exit lights in work areas.	
• Maintain negative air in construction area (24/7) through duration of project when necessary.	
• There cannot be any return air from within the construction area to the rest of the building.	
• Ensure public exiting does not go through the construction area.	
• Maintain daily logs, daily hot work permits, daily confined entry permit, etc.	
• Place sticky mats at doors exiting construction area. (Inside and Outside Entrance to Site)	
• All debris must be removed by covered cart on a daily basis.	
• Maintain clean and orderly work area on a daily basis.	
• Activity Hazard Analysis (AHA), and Safety Plan required from all contractors.	
• The COR shall perform a site walk through & document pre-construction conditions, note equipment to track/ move. Ensure all doors are functioning correctly.	
Yes	No
Will there be noise generated that will impact a department adjacent to, above, or below the construction area?	
<input type="checkbox"/>	<input type="checkbox"/>
a. If so, these departments must be notified.	
<input type="checkbox"/>	<input type="checkbox"/>
b. How are you going to reduce the noise to an acceptable level?	
Yes	No
Will there be vibration generated that will impact a department adjacent to, above, or below the construction area?	
<input type="checkbox"/>	<input type="checkbox"/>
a. If so, these departments must be notified.	
<input type="checkbox"/>	<input type="checkbox"/>
b. How are you going to reduce the vibration to an acceptable level?	
Yes	No
Are Emergency Procedures in place and posted on each job for accidental events that could greatly impact Patient Care or Life Safety to the facility? Included in these procedures are such things as:	
<input type="checkbox"/>	<input type="checkbox"/>
• Emergency telephone numbers of key departments.	
• A plan that describes where main valves, switches, and controls are for the area in case of an emergency.	
• A plan for unexpected outages.	
Environment	
Yes	No
Are any of the following environmental hazards present?	
<input type="checkbox"/>	<input type="checkbox"/>
Will hazardous chemicals be used on this project? How will fumes and odors be controlled? SDS Sheets are required.	
All chemicals will be outside of any occupied building or space.	
<input type="checkbox"/>	<input type="checkbox"/>
Is asbestos abatement required on this job? If so, notify Safety and Maintenance of the abatement.	
<input type="checkbox"/>	<input type="checkbox"/>
Will there be hot work done on this project? If there are, then a hot work permit must be posted on the job site. All hot work must have a fire watch assigned to each area while the hot work is being performed.	
<input type="checkbox"/>	<input type="checkbox"/>
Will there be a Confined Space Entry required on this project? If so, the CAME confined space entry program must be followed.	
<input type="checkbox"/>	<input type="checkbox"/>
Contractor shall follow all requirements for concrete demolition and precaution for silica dust hazard.	
Yes	No
Utility Outages - Will any of the following systems be out of service at any time during the project?	
<input type="checkbox"/>	<input type="checkbox"/>
• Fire alarm (If out for more than 4 hours, Interim Life Safety Measures must be implemented.)	
<input type="checkbox"/>	<input type="checkbox"/>
• Sprinkler (If out for more than 4 hours, Interim Life Safety Measures must be implemented.)	
<input type="checkbox"/>	<input type="checkbox"/>
• Electrical	
<input type="checkbox"/>	<input type="checkbox"/>
• Domestic water	
<input type="checkbox"/>	<input type="checkbox"/>
• Oxygen	
<input type="checkbox"/>	<input type="checkbox"/>
• Sewage	
<input type="checkbox"/>	<input type="checkbox"/>
• HVAC	
<input type="checkbox"/>	<input type="checkbox"/>
Yes	No
Will there be any work that will require activation of the Interim Life Safety Measures during this project? Some things that will	
<input type="checkbox"/>	<input type="checkbox"/>
• Any construction that impacts an EXIT or stairs.	
• Any construction that impacts major breaches in a fire or smoke wall.	
• Taking the main fire protection system out of service (sprinkler).	
• Taking the main fire alarm system out of service.	
• Taking the "red" fire or fire alarm systems out of service for more than 4 hours within a 24-hour period.	
<input type="checkbox"/>	<input type="checkbox"/>
Implementation of the ILSM requires a fire watch and the ILSM forms to be completed.	

GROUP 1 LOWEST	GROUP 2 MEDIUM	GROUP 3 MEDIUM HIGH	GROUP 4 HIGHEST
1) Any building where patient care is NOT performed and does not have occupied offices. 2) Outdoor areas with no regular foot traffic.	•Admitting •Outpatient Clinics/Office •Outpatient waiting areas •Cafeteria •Laboratory •Physical Therapy •Occupied office space	•Inpatient/Residential units •Emergency room •Radiology/Nuc.Med./MRI •Echocardiography •Dialysis •Pharmacy •Central Supply/WDU •Dental •Microbiology •Women's Health/Clinical rooms	•OR Suites and Corridors •Sterile Core and connecting rooms •Day Surgery, Cystoscopy/GUI/GI •Pneumology/Holding (PACU/ASU) •Cardiac Cath Lab •Intensive Care Units •Pharmacy administration •Oncology •Interventional Radiology/INR •Sterile Processing/Supply/Storage •Pain Clinic Intervention Rooms

CONSTRUCTION ACTIVITY (from previous page)		INFECTION CONTROL RISK GROUP (see above)	
Check type of activity		Check risk group	
<input type="checkbox"/>	TYPE A: Inspection, non-invasive activity	<input type="checkbox"/>	GROUP 1: Lowest Risk
<input type="checkbox"/>	TYPE B: Small scale, short duration projects	<input type="checkbox"/>	GROUP 2: Medium Risk
<input type="checkbox"/>	TYPE C: Activity generates moderate to high levels of dust, requiring >1 work shift for completion	<input type="checkbox"/>	GROUP 3: High Risk
<input type="checkbox"/>	TYPE D: Major duration and construction activities requiring consecutive work shifts	<input type="checkbox"/>	GROUP 4: Highest Risk

CLASSIFICATION OF REQUIRED PREVENTIVE MEASURES				
CONSTRUCTION ACTIVITY -> INFECTION CONTROL RISK GROUP	TYPE "A"	TYPE "B"	TYPE "C"	TYPE "D"
LOW (Risk Group 1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MEDIUM (Risk Group 2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MEDIUM HIGH (Risk Group 3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HIGHEST (Risk Group 4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

An Infection Control-Safety Construction Permit is required for Class II or higher projects. Refer to shaded area on Construction Activity/Risk Group Matrix (above).

CLASS I	1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace any ceiling tile displaced for visual inspection.	3. Provide active means to prevent air-borne dust from dispersing into atmosphere. 4. Water mist work surfaces to control dust while cutting. 5. Seal unused doors with duct tape. 6. Block off and seal air vents. 7. Remove or isolate HVAC system in areas where work is being performed.
CLASS II	1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of the duct system. 3. Complete all critical barriers before construction begins. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Contain construction waste before and during transport in tightly covered containers. 5. Seal holes, pipes, conduits, etc. appropriately.	6. Contain construction waste before and during transport in tightly covered containers. 7. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 8. Place dust mat at entrance and exit of work area as needed. 9. Remove or isolate HVAC system in areas where work is being performed. 10. Place dust mat at entrance and exit of work area. Replace as needed. 11. Do not remove barriers from work area until completed project is inspected by Safety and Infection Control Depts. and thoroughly cleaned. After work is completed: 9. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 10. Remove isolation of HVAC system.
CLASS III	1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 5. Seal holes, pipes, conduits, and punctures appropriately. 6. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site.	7. Place dust mat at entrance and exit of work area. Replace as needed. 8. Do not remove barriers from work area until completed project is inspected by Safety and Infection Control Depts. and thoroughly cleaned. After work is completed: 9. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 10. Remove isolation of HVAC system.
Class IV	1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 5. Seal holes, pipes, conduits, and punctures appropriately. 6. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site.	7. Place dust mat at entrance and exit of work area. Replace as needed. 8. Contain construction waste before and during transport in tightly covered containers. Cover transport receptacles or carts. Tape covering. 9. Do not remove barriers from work area until completed project is inspected by Safety and Infection Control Depts. and thoroughly cleaned. After work is completed: 10. Vacuum work area with HEPA filtered vacuums. 11. Wet mop with disinfectant. 12. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 13. Remove isolation of HVAC system.

Additional Safety Concerns	
Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
Will construction affect exit routes from occupied areas adjacent to construction site?	
<input type="checkbox"/>	<input type="checkbox"/>
Will project affect traffic patterns in area? If yes, explain plan.	
<input type="checkbox"/>	<input type="checkbox"/>
The following must be completed prior to any construction activities.	
• Separation wall must be constructed prior to project beginning.	
• Fire protection systems must remain intact.	
• Provide extra fire extinguishers in work areas.	
• Maintain exit lights in work area.	
• Maintain negative air in construction area (24/7) through duration of project.	
• There cannot be any return air from within the construction area to the rest of the building.	
• Redirect exiting not to go through construction area.	
• Put signs on doors into construction area "Construction Area - Do Not Enter".	
• Maintain daily logs and keep a current Hot Work Permit.	
• Place sticky mats at doors exiting construction area.	
• All debris removal must be by covered cart.	
• Maintain clean and orderly work area.	
• How will this project affect the departments above, below and adjacent to this project?	
Air Quality and Infection Control	
The construction activity types are defined by the amount of dust that is generated, the duration of the activity, and the amount of shared HVAC systems. Contact CAMAC's Safety Department and Clinical Epidemiology Department if any activity is questionable under these guidelines.	
Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
Will dust be generated during this project?	
<input type="checkbox"/>	<input type="checkbox"/>
If yes, explain location of and plan for interim dust barriers or attach floor plan with barriers clearly marked.	
<input type="checkbox"/>	<input type="checkbox"/>
Will debris removal be necessary? If yes, explain plan for debris removal and control.	
<input type="checkbox"/>	<input type="checkbox"/>
Any minimal debris that is created in the building 28 generator room and storage room will be routed directly outside from the generator room to the dumpster.	
<input type="checkbox"/>	<input type="checkbox"/>
Negative airflow ventilation and filtration in place and assessed for effectiveness.	
<input type="checkbox"/>	<input type="checkbox"/>
Exhaust fans in place and functioning.	
<input type="checkbox"/>	<input type="checkbox"/>
Is supply duct to area closed and HEPA filtration unit in place and functioning in adjacent patient care area?	
<input type="checkbox"/>	<input type="checkbox"/>
Will work be done in a sterile area? If so, how are you going to maintain sterile atmosphere in work area and access to and from work area?	
<input type="checkbox"/>	<input type="checkbox"/>
Type A	
Inspections and Non-Invasive Activities or Small scale, short duration activities	
Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
Removal of ceiling tiles for VISUAL INSPECTION (limited to 1 tile per 50 square feet)	
<input type="checkbox"/>	<input type="checkbox"/>
Painting (but not sanding) and Wall covering—Describe work to be done.	
<input type="checkbox"/>	<input type="checkbox"/>
Electrical trim work. Describe: Pulling new fiber cable to a new panel in a storage room in a generator room accessed directly from outside.	
<input type="checkbox"/>	<input type="checkbox"/>
Minor plumbing. Describe:	
<input type="checkbox"/>	<input type="checkbox"/>
Outdoor construction that does not involve major earth movement.	
<input type="checkbox"/>	<input type="checkbox"/>
Type B	
Small scale, short duration activities that create minimal dust.	
Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
Installation of telephone and computer cabling	
<input type="checkbox"/>	<input type="checkbox"/>
Access to chase spaces	
<input type="checkbox"/>	<input type="checkbox"/>
Sanding of walls for painting or wall covering (minor repairs—not sanding for drywall finishing)	
<input type="checkbox"/>	<input type="checkbox"/>
Type C	
Any work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies. (May require approval from VA Safety and Infection Control prior to beginning project)	
Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
Sanding of walls—drywall finishing	
<input type="checkbox"/>	<input type="checkbox"/>
Removal of floor coverings. Ceiling tiles. Casework. Describe:	
<input type="checkbox"/>	<input type="checkbox"/>
Cutting of walls or ceiling. Describe:	
<input type="checkbox"/>	<input type="checkbox"/>
New wall construction	
<input type="checkbox"/>	<input type="checkbox"/>
Minor ductwork or electrical work above ceilings	
<input type="checkbox"/>	<input type="checkbox"/>
Major cabling activities	
<input type="checkbox"/>	<input type="checkbox"/>
Activity cannot be completed within a single work shift	
<input type="checkbox"/>	<input type="checkbox"/>
Has approval been obtained from State Fire Marshal and Health Department?	
<input type="checkbox"/>	<input type="checkbox"/>
Type D	
Major demolition and construction projects. (Authority Having Jurisdiction)	
Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
Will require heavy demolition or removal of a complete ceiling system	
<input type="checkbox"/>	<input type="checkbox"/>
New construction	
<input type="checkbox"/>	<input type="checkbox"/>
Has approval been obtained from VA Safety and Infection Control?	

Additional concerns for all classes:

1. Maintain manpower and equipment including dust mops, wet mops, brooms, buckets, and clean wiping rags for cleaning fine dust from floors and adjacent occupied areas.
2. Contain work areas outside of construction barriers, including spaces above ceilings, with full height polyethylene sheet barrier, tightly taped.
3. Clean up dust tracked outside of construction area immediately.
4. Temporary construction barriers and closures above ceiling must be dust tight.
5. Removal of debris must be in covered containers.

Additional Requirements or Concerns:

The portion of work that is inside building 28 is isolated to a storage room accessed from a generator room. The spaces are isolated from the rest of the research building with full height partitions. No persons are in the spaces unless maintenance is being performed. Dust will be zero to minimal due to the nature of running new fiber cable to a new panel in the storage room. Access to the room will be directly from outside, so construction activity will not be in the same spaces as building users/occupants.

Project COR:	Projects Section Supervisor:	Safety Section Approval:
Date:	Date:	Date:
Infection Control Representative Approval:	Chief, Engineering Service Approval:	VA Police Representative Approval:
Date:	Date:	Date:
M&O Supervisor (As Required) Approval:	Patient Safety (As Required) Approval:	Additional (POC) Approval:
Date:	Date:	Date:

CONSULTANTS:		PROJECT MANAGER: ACG Project Number: 18-024 CEMS Project Number: 17157A		Office of Construction and Facilities Management		Drawing Title PCRA FORM		Project Title UPGRADE STATION GENERATOR SYSTEM - PSDM REDESIGN		VA PROJECT NUMBER 438-18-100	
						Location 2501 W 22ND ST SIOUX FALLS, SD 57105		Approved:		Building Number 28	
								Date JULY 30, 2021		Drawing Number G-002	
								Checked TJS		Dwg. 2 of 2	
								Drawn EFJ, WLF			
# Revisions:											
Date											

A

B

C

D

E

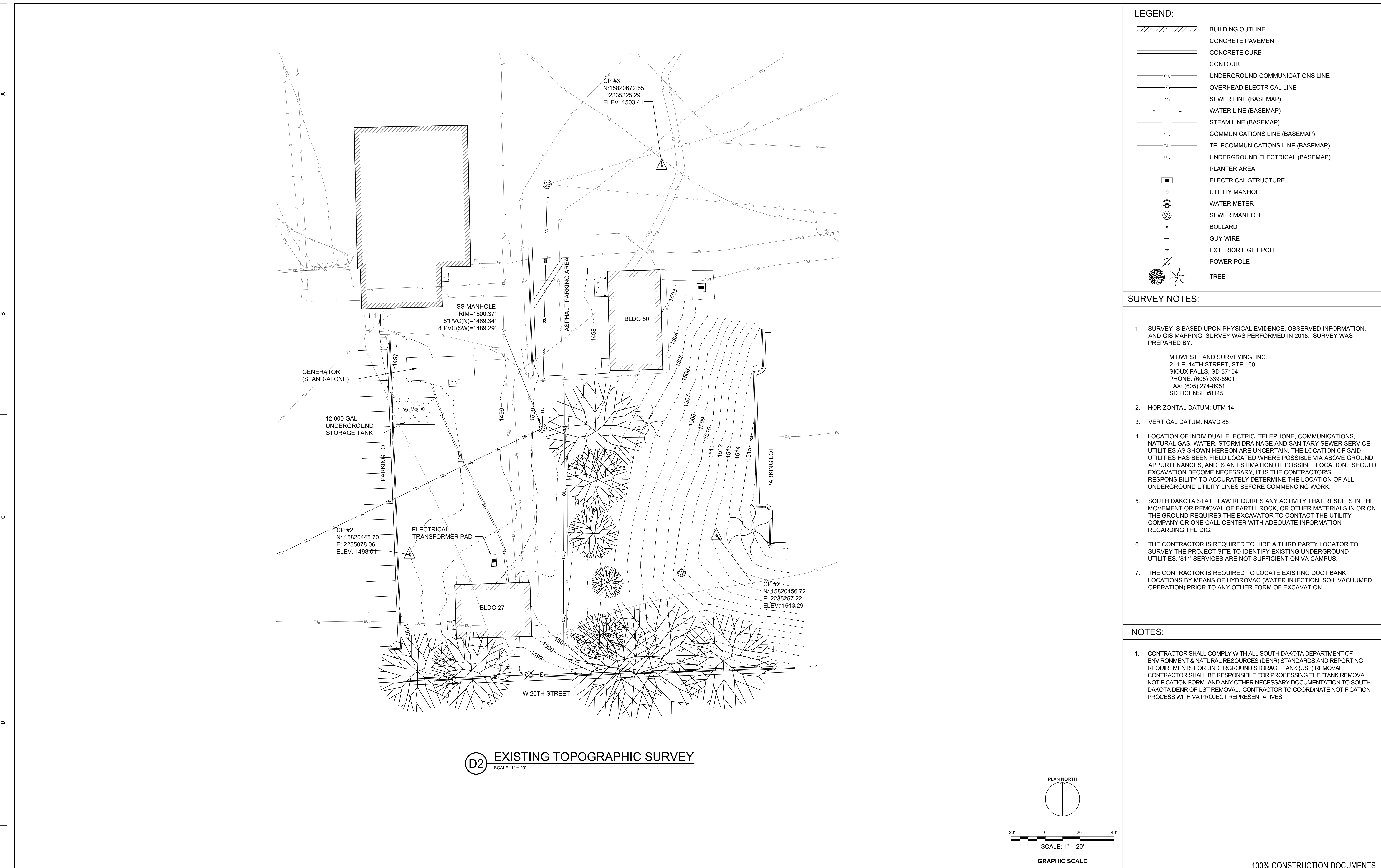
A

B

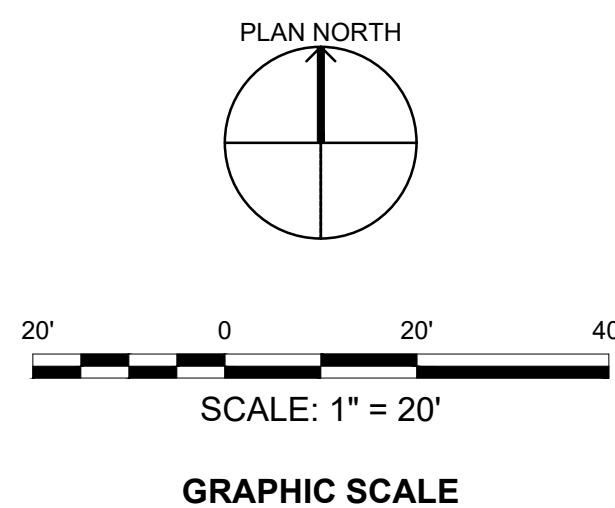
C

D

E



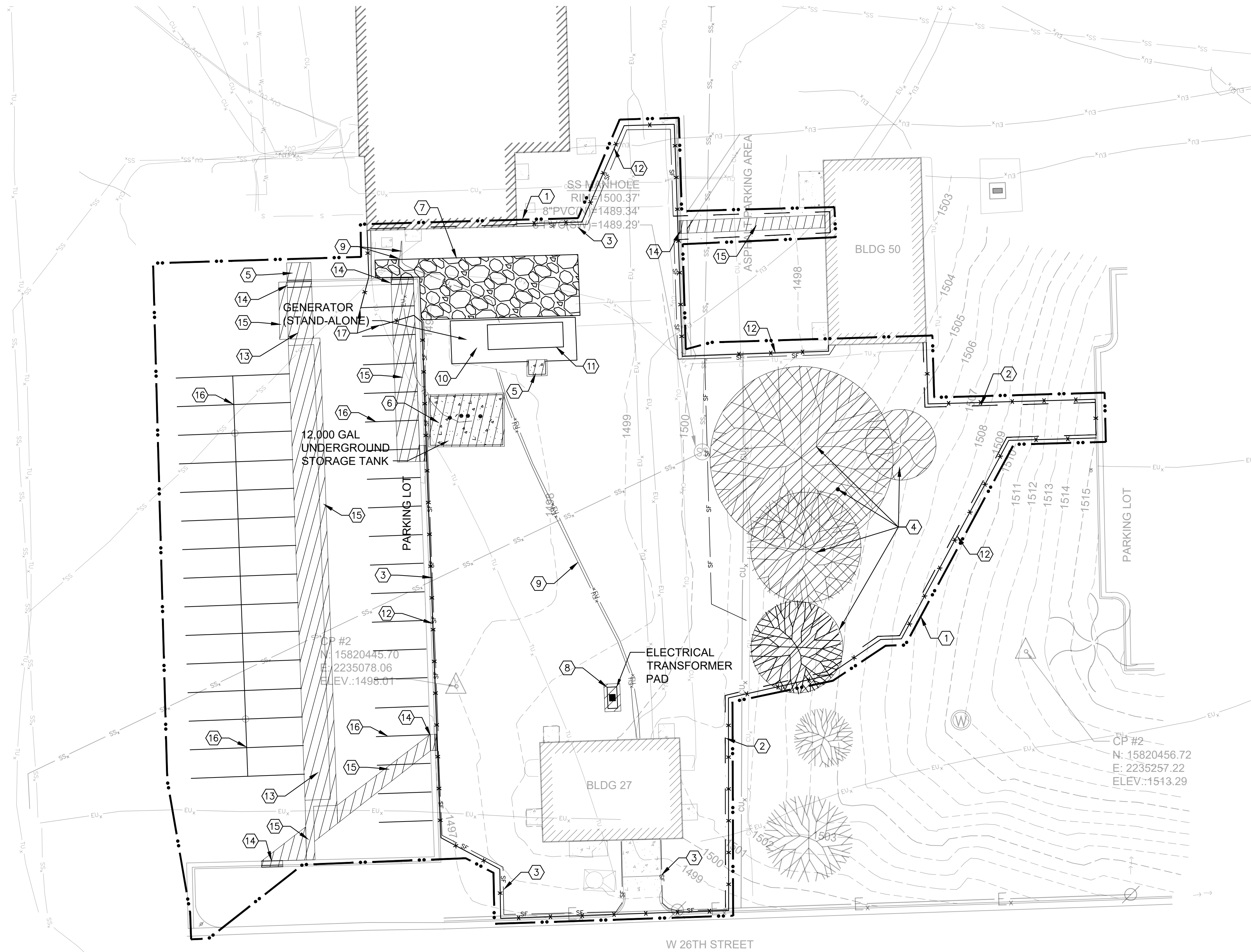
D2 EXISTING TOPOGRAPHIC SURVEY
SCALE: 1" = 20'



			CONSULTANTS:				PROJECT MANAGER:		ACG Project Number: 18-024 CEMS Project Number: 17157A		Office of Construction and Facilities Management		Drawing Title EXISTING TOPOGRAPHIC SURVEY		Project Title UPGRADE STATION GENERATOR SYSTEM - PSDM REDESIGN		VA PROJECT NUMBER 438-18-100	
							<div><div>APOGEECEMS</div><div>Joint Venture An Alliance for Success</div><div>1151 Kildaire Farm Rd. Suite 120 Cary, NC 27511 www.acg-pa.com (919)559-7420</div><div>108 Bentons Lodge Road Suite B Summerville, SC 29485 www.cems-sa.com (843)875-3637</div><div>© COPYRIGHT Apogee - CEMS JV, LLC</div></div>						Location 2501 W 22ND ST SIOUX FALLS, SD 57105		Approved:		Building Number 27	
											VA U.S. Department of Veterans Affairs		Date JULY 30, 2021		Checked		Drawing Number VF101	
# Revisions: Date																	Dwg. 1 of 5	



A1 HAUL ROUTE AND SITE ACCESS
NOT TO SCALE



D1 DEMOLITION AND EROSION CONTROL PLAN
SCALE: 1" = 20'

NOTES:

- SEE SHEET C-501 FOR CIVIL DETAILS.
- DEMOLITION/ CONSTRUCTION OPERATIONS SHALL COMPLY WITH PHASING PLANS. EXISTING FUEL TANK AND GENERATOR SHALL BE REMOVED/ RELOCATED PER PHASING PLANS AS EQUIPMENT IS CRITICAL TO VA FACILITY.
- TREE REMOVAL SHALL INCLUDE THE REMOVAL OF TREE ROOTS TO BEST EXTENT POSSIBLE.
- ALL DISTURBED AREAS TO BE GRADED FOR POSITIVE DRAINAGE TO EXISTING STORM INLETS.
- ALL AREAS WHERE EXISTING CONCRETE SLABS, SITE FEATURES, AND FOUNDATIONS ARE REMOVED SHALL BE FILLED TO EXISTING GRADE AND SLOPED FOR POSITIVE DRAINAGE.
- ALL DEMOLITION DEBRIS SHALL BE HAULED OFF-SITE. CONTRACTOR SHALL FOLLOW THE WASTE PREVENTION AND RECYCLING PROGRAM INCLUDING BUT NOT LIMITED TO REPORTING ACCORDING TO VA DIRECTIVE HANDBOOK 0083.
- THE LOCATION, SIZES, AND DEPTHS OF EXISTING UTILITIES, INCLUDING SERVICE LATERALS, AND DRAINAGE STRUCTURES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZES, AND DEPTHS OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT, AND PROTECT THE SAME DURING CONSTRUCTION.
- THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN HEREON ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY OTHERS. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE.
- CONTRACTOR TO COORDINATE LOCATION/MARKING OF EXISTING SITE UTILITIES IN AREAS WHERE WORK IS CONDUCTED, AND ENSURE THEY ARE TURNED OFF PROPERLY BEFORE BEGINNING CONSTRUCTION.
- THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE DONE TO ANY NEW AND EXISTING SITE ITEMS IN THE EXECUTION OF HIS WORK UNDER THIS SECTION.
- THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND BE PREPARED TO ADEQUATELY CARE FOR AND SAFEGUARD HIMSELF AND THE GOVERNMENT FROM DAMAGE.
- SAFETY AND ACCIDENT PREVENTION MEASURES SHALL BE IMPLEMENTED FOR CONSTRUCTION PERSONNEL FOR THE DURATION OF DEMOLITION AND CONSTRUCTION WORKS IN ACCORDANCE WITH ACCIDENT PREVENTION PLAN AND OSHA REQUIREMENTS.
- CONTRACTOR IS HEREBY CAUTIONED THAT IRRIGATION SYSTEM IS WITHIN THE PROJECT AREA. CONTRACTOR RESPONSIBLE FOR LOCATION PRIOR TO CONSTRUCTION AND SHALL REPAIR ANY IRRIGATION (SPRINKLER SYSTEM) BROKEN OR DISTURBED DURING CONSTRUCTION.
- CONTRACTOR TO PROVIDE TEMPORARY SECURITY FENCE AROUND PROJECT AREA FOR THE DURATION OF THE CONSTRUCTION. FENCING SHALL BE OF A CHAIN LINK MATERIAL WITH A MINIMUM HEIGHT OF 8 FOOT. FENCING SHALL BE ERECTED AS SUCH TO LIMIT ACCESS TO PUBLIC.**
- CONTRACTOR SHALL COMPLY WITH ALL SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT & NATURAL RESOURCES (DENR) STANDARDS AND REPORTING REQUIREMENTS FOR UNDERGROUND STORAGE TANK (UST) REMOVAL. CONTRACTOR SHALL BE RESPONSIBLE FOR PROCESSING THE "TANK REMOVAL NOTIFICATION FORM" AND ANY OTHER NECESSARY DOCUMENTATION TO SOUTH DAKOTA DENR OF UST REMOVAL. CONTRACTOR TO COORDINATE NOTIFICATION PROCESS WITH VA PROJECT REPRESENTATIVES.

LEGEND:

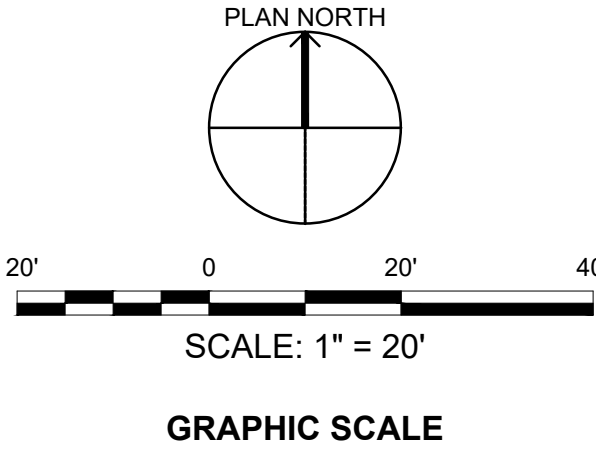
EXISTING	NEW
	BUILDING OUTLINE
	CONCRETE PAVEMENT
	CONCRETE CURB
	CONTOUR
	UNDERGROUND COMMUNICATIONS LINE
	OVERHEAD ELECTRICAL LINE
	SEWER LINE (BASEMAP)
	WATER LINE (BASEMAP)
	STEAM LINE (BASEMAP)
	COMMUNICATIONS LINE (BASEMAP)
	TELECOMMUNICATIONS LINE (BASEMAP)
	UNDERGROUND ELECTRICAL (BASEMAP)
	PLANTER AREA
	LIMITS OF CONSTRUCTION
	LIMITS OF DISTURBANCE
	SILT FENCE
	ELECTRICAL STRUCTURE
	UTILITY MANHOLE
	WATER METER
	SEWER MANHOLE
	BOLLARD
	GUY WIRE
	EXTERIOR LIGHT POLE
	POWER POLE
	TREE
	GRAVEL CONSTRUCTION ENTRANCE
	TO BE REMOVED
	TEMPORARY CHAIN LINK FENCE

SHEET KEYNOTES:

- LIMITS OF CONSTRUCTION
- LIMITS OF DISTURBANCE
- SILT FENCE
- TREE REMOVAL
- REMOVE CONCRETE PAD / SIDEWALK
- REMOVE EXISTING 12,000 GAL UNDERGROUND FUEL STORAGE TANK (UST), CONCRETE PAD, MANHOLE COVERS, ALL ASSOCIATED PIPING, ETC. (SEE NOTE 2 AND 15)
- GRAVEL CONSTRUCTION ENTRANCE
- REMOVE EXISTING TRANSFORMER PAD (SEE SHEET EP103 FOR EQUIPMENT REMOVAL)
- ELECTRICAL LINE REMOVAL / ABANDON (SEE SHEET ED101)
- EXISTING GENERATOR PAD TO BE REMOVED (SEE NOTE 2)
- EXISTING GENERATOR TO BE RELOCATED TO "POSITION-1" (SEE NOTE 2 AND SHEET CS101)
- TEMPORARY CHAIN LINK SECURITY/CONSTRUCTION FENCING (SEE NOTE 2 AND 14)
- EXISTING ASPHALT PAVEMENT TO BE REMOVED
- EXISTING CONCRETE CURB TO BE REMOVED
- EXISTING ASPHALT PAVEMENT AND BASE TO BE REMOVED
- EXISTING STRIPPING TO BE REMOVED
- TEMPORARY DOUBLE SWING GATE FOR CONSTRUCTION ACCESS

LAND DISTURBANCE NOTES:

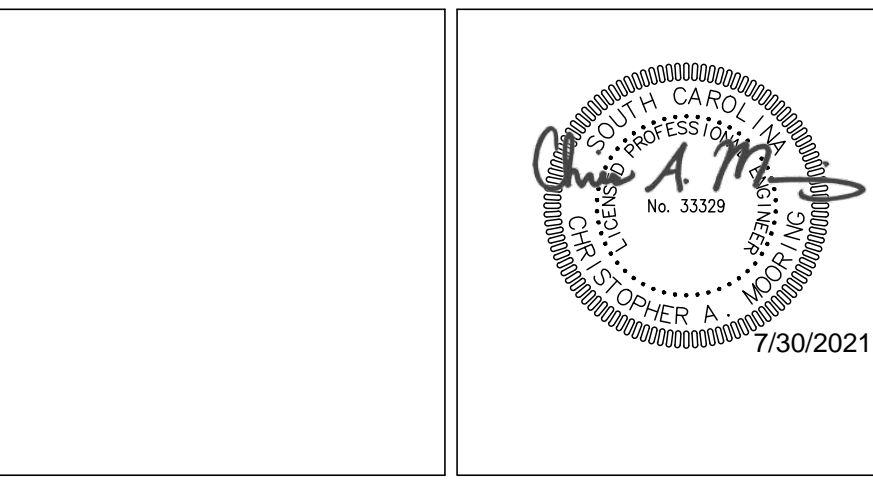
- THE PROJECT AREA IS APPROXIMATELY 1.05 ACRES AS SHOWN BY THE LIMITS OF CONSTRUCTION. DISTURBED AREA IS APPROXIMATELY 0.62 ACRES AS SHOWN BY SILT FENCE UNLESS OTHERWISE SHOWN BY THE LIMITS OF DISTURBANCE.
- ALL AREAS DISTURBED BY CONSTRUCTION OPERATIONS AND NOT PAVED SHALL BE SODDED/GRASSED. PROVIDE PERMANENT AND TEMPORARY SEEDING PER SDDOT REQUIREMENTS, SEE SHEET C-501.
- THE PROPERTY IS LOCATED WITHIN MINNEHAHA COUNTY, SOUTH DAKOTA AND PART OF THE MISSOURI RIVER BASIN.
- THE DISTURBED ACREAGE IS 0.62 ACRES, OF WHICH 0.10 ACRES IS NEW IMPERVIOUS AREA THAT WILL BE CONSTRUCTED IN PROJECT AREA. THEREFORE, DOES NOT REQUIRE SOUTH DAKOTA PERMITTING FOR SEDIMENT & EROSION CONTROL AND STORM WATER.



100% CONSTRUCTION DOCUMENTS

#	Revisions:	Date

CONSULTANTS:



PROJECT MANAGER: ACG Project Number: 18-024
CEMS Project Number: 17157A

APOGEECEMS
Joint Venture
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1161 Kidshire Farm Rd. Suite 120
Cary, NC 27511
www.apogeecems.com
(919)859-7420

108 Bentons Lodge Road Suite B
Summerville, SC 29485
www.cems-sd.com
(843)875-3637

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Office of
Construction
and Facilities
Management

VA U.S. Department
of Veterans Affairs

Drawing Title
**DEMOLITION AND EROSION
CONTROL PLAN**

Location
2501 W 22ND ST
SIOUX FALLS, SD 57105

Project Title
**UPGRADE STATION
GENERATOR SYSTEM -
PSDM REDESIGN**

Approved:

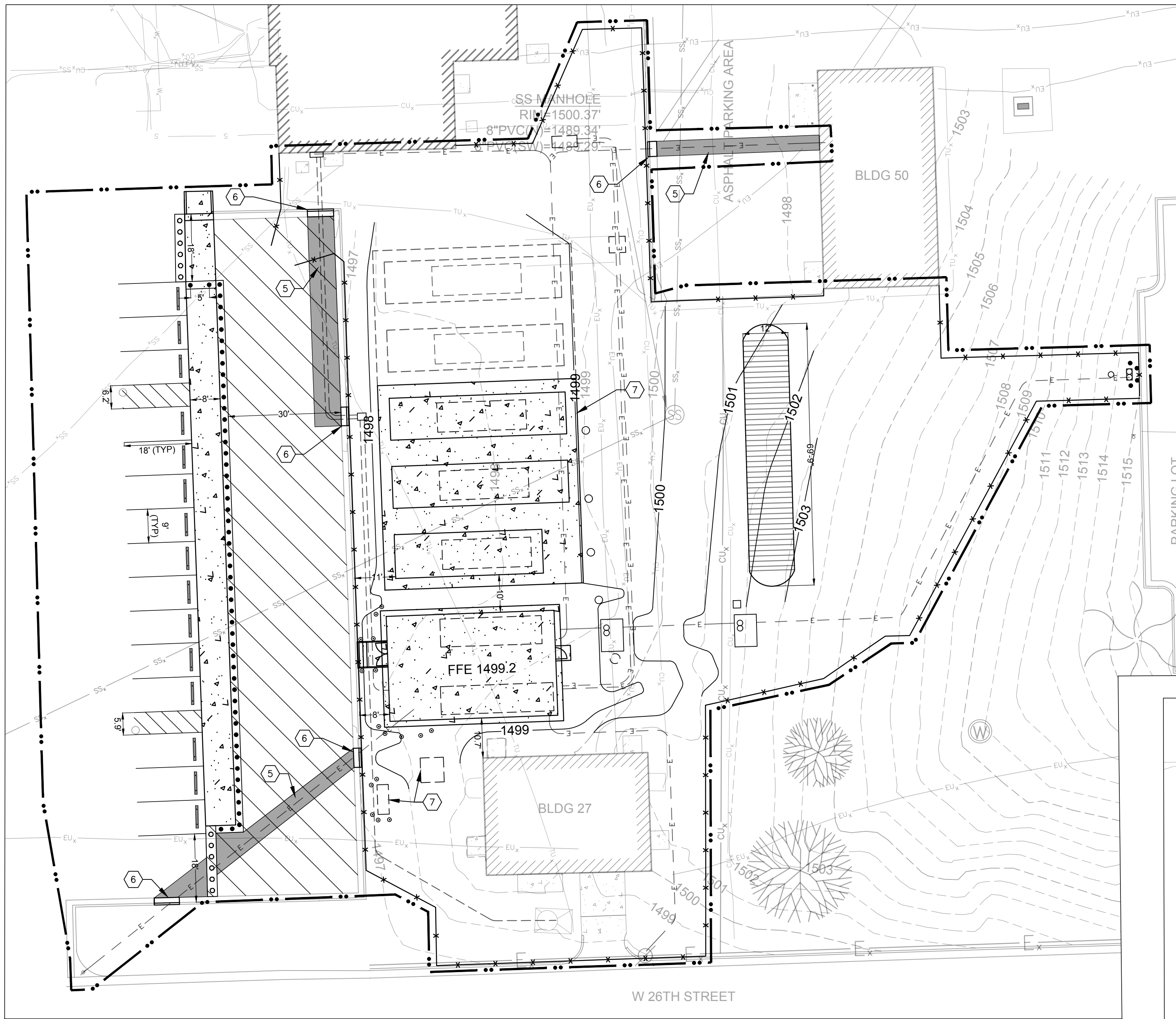
Date JULY 30, 2021	Checked CAM	Drawn JAC
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VA PROJECT NUMBER
438-18-100

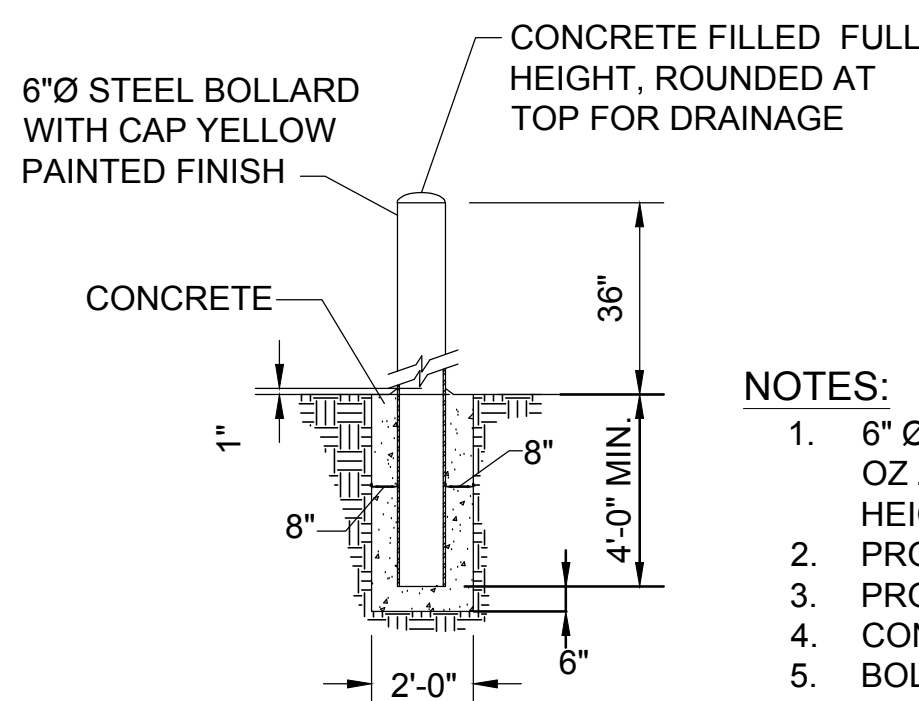
Building Number
27

Drawing Number
CD101

Dwg. 2 of 5



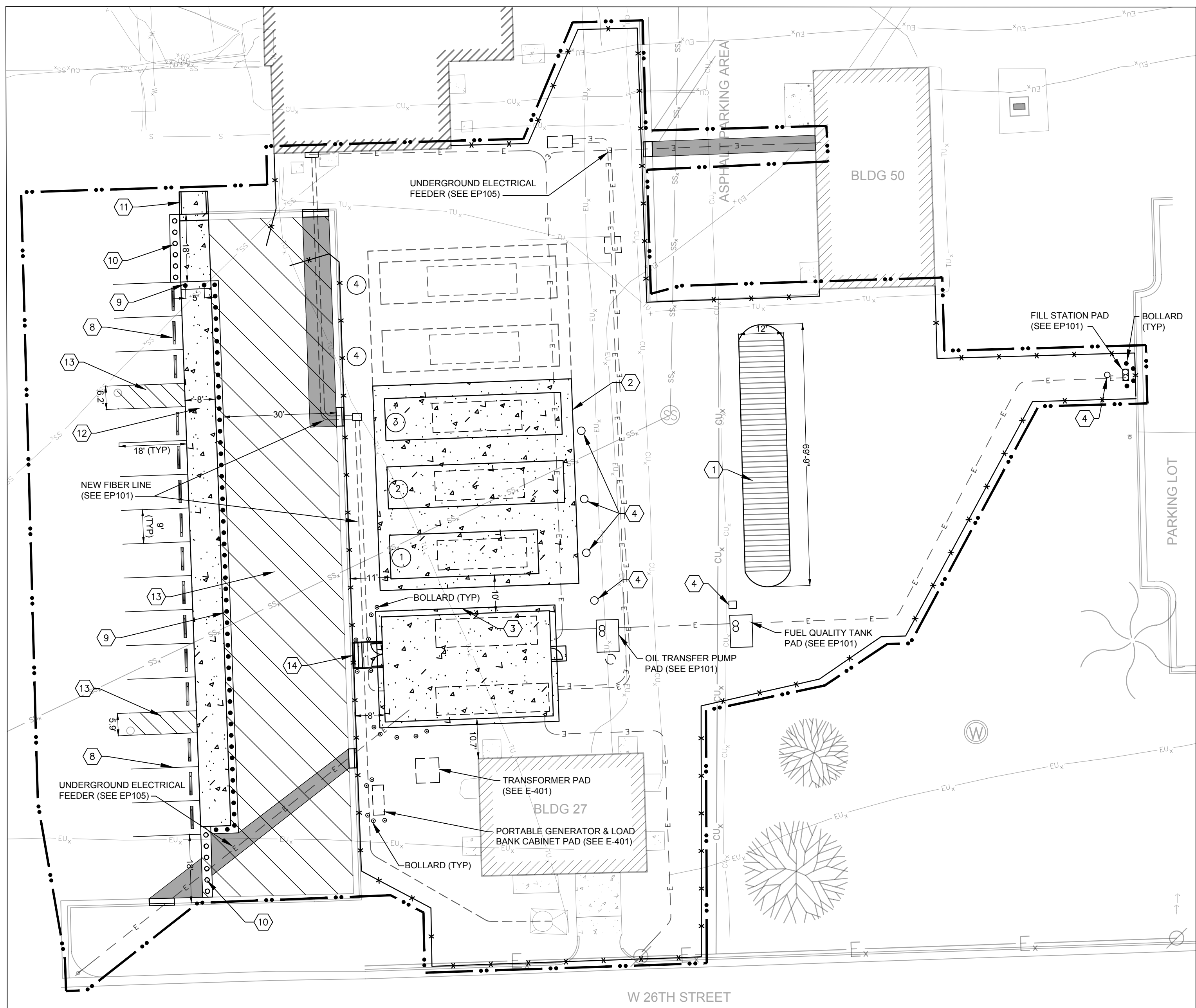
C1 GRADING PLAN
SCALE: 1" = 20'



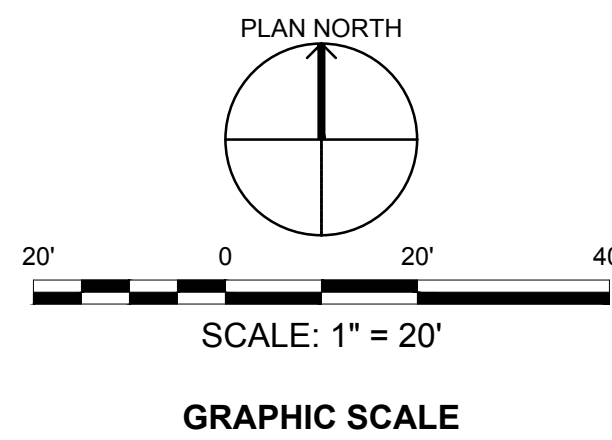
D1 BOLLARD (TYP) DETAIL
SCALE: NOT TO SCALE

- NOTES:
- 6" Ø STEEL PIPE TO BE GALVANIZED (2.0 OZ ZINC/SQ FT) CONCRETE FILLED (FULL HEIGHT) W/ CAP-MILL FINISH.
 - PROVIDE MIN WALL THICKNESS OF 0.322"
 - PROVIDE YELLOW PAINTED FINISH.
 - CONCRETE SHALL BE 4000 PSI, AT 28 DAYS
 - BOLLARDS SHALL BE SPACED 3 FT ON CENTER AND OFFSET 3 FT FROM BUILDING

DETAIL ONLY USE AROUND ELECTRICAL EQUIPMENT. SEE C-502 FOR CRASH RATED BOLLARDS



D3 SITE PLAN
SCALE: 1" = 20'



NOTES:

- SEE SHEET C-501 FOR CIVIL DETAILS.
- NEW ELECTRICAL LINES SHALL BE INSTALLED PER SHEET EP101.
- NEW FUEL PIPING SHALL BE INSTALLED PER SHEET P101.
- REFERENCE ELECTRICAL SHEET E-401 FOR GENERATOR AND SWITCHGEAR EQUIPMENT LAYOUT.
- ALL PROPOSED EQUIPMENT INFORMATION SHOWN ON PLANS INDICATES A ROUGH ORDER OF MAGNITUDE, SIZE, INSTALLATION, AND LAYOUT SHALL COMPLY WITH SELECTED PRODUCT AND MANUFACTURE'S RECOMMENDATION.
- THE EXISTING GENERATOR TO BE RELOCATED TO "POSITION-1" FURTHEST SOUTH (NEAR BUILDING-27). ONCE EXISTING GENERATOR IS OPERATIONAL, CONTRACTOR SHALL REMOVE EXISTING UNDERGROUND FUEL TANK, ACCESSORIES, AND GENERATOR PAD.
- THE NEW GENERATION UNITS SHALL BE INSTALLED AT "POSITION-2" AND "POSITION-3".
- REFERENCE SHEET L-101 FOR LANDSCAPING REQUIREMENTS ONCE SITE HAS BEEN STABILIZED AND GRADED TO FINISH GRADE.
- GRADE SLOPE SHALL BE GRADED TO MATCH EXISTING TERRAIN AND/OR MINIMUM 3:1 SLOPES. SLOPE SHALL RECEIVE PERMANENT MATTING TO REDUCE EROSION AND AID VEGETATION GROWTH.
- PROJECT AREA CONTAINS UNDERGROUND UTILITIES, SUCH AS TELECOMMUNICATION, FIBER LINES, ELECTRICAL, FUEL LINES, WATER, SEWER, ETC. UTILITIES SHALL BE PROTECTED DURING CONSTRUCTION AND PROPERLY BEDDED/COMPACTED.
- SAFETY AND ACCIDENT PREVENTION MEASURES SHALL BE IMPLEMENTED FOR CONSTRUCTION PERSONNEL FOR THE DURATION OF DEMOLITION AND CONSTRUCTION WORKS IN ACCORDANCE WITH ACCIDENT PREVENTION PLAN AND OSHA REQUIREMENTS.

LEGEND:

EXISTING	NEW	
		BUILDING OUTLINE
		CONCRETE PAVEMENT
		CONCRETE CURB
		CONTOUR
		UNDERGROUND COMMUNICATIONS LINE
		OVERHEAD ELECTRICAL LINE
		PLANTER AREA
		SEWER LINE (BASEMAP)
		WATER LINE (BASEMAP)
		STEAM LINE (BASEMAP)
		COMMUNICATIONS LINE (BASEMAP)
		TELECOMMUNICATIONS LINE (BASEMAP)
		UNDERGROUND ELECTRICAL (BASEMAP)
		EQUIPMENT FOOTPRINT
		UNDERGROUND FUEL TANK
		LIMITS OF CONSTRUCTION
		SILT FENCE
		ELECTRICAL STRUCTURE
		UTILITY MANHOLE
		WATER METER
		SEWER MANHOLE
		BOLLARD
		GUY WIRE
		EXTERIOR LIGHT POLE
		POWER POLE
		TREE

SHEET KEY NOTES:

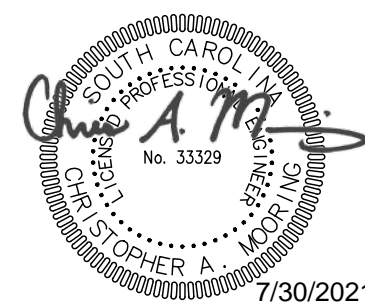
- UNDERGROUND FUEL STORAGE TANK (SEE UST NOTES)
12" DIAMETER x 69'-9" LONG
50,000 GAL CAPACITY
- CONCRETE GENERATOR PAD AND LAYOUT (SEE STRUCTURAL - SHEET S-101)
 - "POSITION-1" - EXISTING GENERATOR (SEE NOTES BELOW)
 - "POSITION-2" - NEW GENERATOR (SEE NOTES BELOW)
 - "POSITION-3" - NEW GENERATOR (SEE NOTES BELOW)
 - "POSITION-4" & "5" - FUTURE GENERATORS ("NOT IN CONTRACT")
- SWITCHGEAR PAD (SEE STRUCTURAL - SHEET S-101)
- SUMP PITS (SEE PIPING - SHEET P-101)
PROVIDE MIN. 6" CONCRETE APRON / COLLAR AROUND EACH SUMP.
- ASPHALT PAVEMENT REPAIR (MATCH EXISTING)
- CONCRETE CURB AND GUTTER [SDDOT, TYPE B66] (MATCH EXISTING)
- CONCRETE PAD ELEVATION TO BE MINIMUM 6" ABOVE FINISHED GRADE
- 9' X 18' PARKING SPACES, 4" MARKINGS [SDDOT SPEC 633] WITH CONCRETE WHEEL STOPS
- (53) CRASH RATED BOLLARDS 3' O.C. WITHIN 2' WIDE CONCRETE FOUNDATION, SEE DETAIL AND NOTES ON C-502
- (12) REMOVABLE CRASH RATED BOLLARDS 3' O.C. WITHIN 2' WIDE CONCRETE FOUNDATION, SEE DETAIL AND NOTES ON C-502
- 8' WIDE ADA RAMP
- 8' WIDE FLUSH CONCRETE SIDEWALK
- 4" MARKINGS SDDOT PAVEMENT MARKINGS 2' O.C. [SPEC 633]
- (4) STEPS FROM THE EXISTING PAVEMENT ELEVATION W/ HANDRAILS

UST NOTES:

- NEW UNDERGROUND FUEL STORAGE TANK SHALL BE A 12" DIAMETER DOUBLE WALL FIBERGLASS TANK WITH A 50,000 GALLON CAPACITY. TANK SHALL BE EQUIPPED AT A MINIMUM WITH ACCESS MANHOLE AND MONITOR/TEST PORT.
- TANK DESIGN TO BE CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF SOUTH DAKOTA. **CONTRACTOR SHALL SUBMIT TANK DOCUMENTS (CERTIFICATION, BUOYANCY CALCULATIONS, SPECS, DRAWINGS, GUIDELINES) TO VA AND APOGEE EOR FOR REVIEW AND APPROVAL.**
- CONTRACTOR SHALL COMPLY WITH THE REGULATIONS OUTLINED IN THE ADMINISTRATIVE RULES OF SOUTH DAKOTA (ARSD), CHAPTER 74:56:01 FOR THE DESIGN AND INSTALLATION OF NEW UNDERGROUND STORAGE TANKS (UST). CONTRACTOR SHALL COMPLY WITH ALL SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT & NATURAL RESOURCES (DENR) STANDARDS AND REPORTING REQUIREMENTS FOR NEW UST. CONTRACTOR SHALL BE RESPONSIBLE FOR PROCESSING THE "NOTIFICATION FOR UNDERGROUND STORAGE TANK FORM" AND ANY OTHER NECESSARY DOCUMENTATION TO SOUTH DAKOTA DENR. FOR INSTALL OF NEW STORAGE TANK. CONTRACTOR TO COORDINATE NOTIFICATION PROCESS WITH VA PROJECT REPRESENTATIVES.
- TANK INSTALLATION SHALL BE PER MANUFACTURER'S STRICT GUIDELINES AND PROCEDURES.
- BEDDING AND BACKFILL MATERIAL SHALL FOLLOW THE STRICT GUIDELINES OF MANUFACTURER INSTALLATION MANUAL.
- A LAYER OF GEOTEXTILE FILTER FABRIC SHALL BE INSTALLED OVER BEDDING MATERIAL AND TANK TRENCH (SIDES & BOTTOM).
- SPACING IN TRENCH SHALL BE ADEQUATE TO INSTALL TANK, BACKFILL, AND ANCHORS. PROVIDE MINIMUM 18-INCH SPACING AROUND TANK IN STABLE SOIL CONDITIONS FROM SIDE OF EXCAVATION. PROVIDE MINIMUM SPACING EQUAL TO HALF THE TANK DIAMETER IN UNSTABLE SOIL CONDITIONS.
- ANCHORS/DEADMEN AND STRAPS SHALL BE PROVIDED TO PROPERLY SECURE TANK FROM MOVEMENT. INSTALLATION SHALL BE PER MANUFACTURER'S GUIDELINES.

100% CONSTRUCTION DOCUMENTS

CONSULTANTS:



PROJECT MANAGER:

ACG Project Number: 18-024
CEMS Project Number: 17157A

APOGEECEMS
Joint Venture
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1151 Kidshire Farm Rd. Suite 120
Cary, NC 27511
www.acg-pa.com
(919)559-7425

108 Bentons Lodge Road Suite B
Summerville, SC 29485
www.cems-va.com
(843)875-3637

Office of
Construction
and Facilities
Management

VA U.S. Department
of Veterans Affairs

Drawing Title
GRADING AND SITE PLAN

Location
**2501 W 22ND ST
SIOUX FALLS, SD 57105**

Project Title
**UPGRADE STATION
GENERATOR SYSTEM -
PSDM REDESIGN**

Approved:
Date
JULY 30, 2021

Checked
CAM

Drawn
JAC

VA PROJECT NUMBER
438-18-100
Building Number
27

Drawing Number
CS101
Dwg. 3 of 5

1. IF NECESSARY, SLOPES, WHICH EXCEED EIGHT (8) VERTICAL FEET SHOULD BE STABILIZED WITH SYNTHETIC OR VEGETATIVE MATS, IN ADDITION TO HYDROSEEDING. IT MAY BE NECESSARY TO INSTALL TEMPORARY SLOPE DRAINS DURING CONSTRUCTION. TEMPORARY BERMS MAY BE NEEDED UNTIL THE SLOPE IS BROUGHT TO GRADE.
2. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED, EXCEPT AS STATED BELOW.
 - WHERE STABILIZATION BY THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICABLE.
 - WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.
3. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED ONCE EVERY CALENDAR WEEK, IF PERIODIC INSPECTION OR OTHER INFORMATION INDICATES THAT A BMP HAS BEEN INAPPROPRIATELY, OR INCORRECTLY INSTALLED, THE PERMITTEE MUST ADDRESS THE NECESSARY REPLACEMENT OR MODIFICATION REQUIRED TO CORRECT THE BMP WITHIN 48 HOURS OF IDENTIFICATION.
4. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE UTILITY INSTALLATION. FILL, COVER, AND TEMPORARY SEEDING AT THE END OF EACH DAY ARE RECOMMENDED. IF WATER IS ENCOUNTERED WHILE TRENCHING, THE WATER SHOULD BE FILTERED TO REMOVE ANY SEDIMENTS BEFORE BEING PUMPED BACK INTO THE WATERS OF THE STATE.
5. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
6. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO PAVED ROADWAY(S) FROM CONSTRUCTION AREAS AND THE GENERATION OF DUST. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT, AS DIRECTED BY COR.
7. TEMPORARY DIVISION BERMS AND/OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR DIVERT SEDIMENT-LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.
8. ALL WATERS OF THE STATE (WOS), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE IS TO BE INSTALLED IN ALL AREAS WHERE A 50-FOOT BUFFER CAN'T BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL WOS. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WOS.
9. LITTER, CONSTRUCTION DEBRIS, OILS, FUELS AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORM WATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE IN STORM WATER DISCHARGES.
10. A COPY OF THE SWPPP, INSPECTIONS RECORDS, AND RAINFALL DATA MUST BE RETAINED AT THE CONSTRUCTION SITE OR A NEARBY LOCATION EASILY ACCESSIBLE DURING NORMAL BUSINESS HOURS, FROM THE DATE OF COMMENCEMENT OF CONSTRUCTION ACTIVITIES TO THE DATE THAT FINAL STABILIZATION IS REACHED.
11. INITIATE STABILIZATION MEASURES ON ANY EXPOSED STEEP SLOPE (3H:1V OR GREATER) WHERE LAND-DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED, AND WILL NOT RESUME FOR A PERIOD OF 7 CALENDAR DAYS.
12. MINIMIZE SOIL COMPACTION AND, UNLESS INFEASIBLE, PRESERVE TOPSOIL.
13. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING. WHEEL WASH WATER, EQUIPMENT WASH WATERS, WASH WATERS MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUIVALENT OR BETTER TREATMENT PRIOR TO DISCHARGE.
14. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM DEWATERING OF TRENCHES AND EXCAVATED AREAS. THESE DISCHARGES ARE TO BE ROUTED THROUGH APPROPRIATE BMPS (SEDIMENT BASIN, FILTER BAG, ETC.).

- THE FOLLOWING DISCHARGES FROM SITES ARE PROHIBITED:
- WASTEWATER FROM WASHOUT OF CONCRETE, UNLESS MANAGED BY AN APPROPRIATE CONTROL;
 - WASTEWATER FROM WASHOUT AND CLEANOUT OF STUCCO, PAINT, FORM RELEASE OILS, CURING
 - COMPOUNDS AND OTHER CONSTRUCTION MATERIALS;
 - FUELS, OILS, OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND
 - MAINTENANCE; AND
 - SOAPS OR SOLVENTS USED IN VEHICLE AND EQUIPMENT WASHING.
16. AFTER CONSTRUCTION ACTIVITIES BEGIN, INSPECTIONS MUST BE CONDUCTED AT A MINIMUM OF AT LEAST ONCE EVERY CALENDAR WEEK AND MUST BE CONDUCTED UNTIL FINAL STABILIZATION IS REACHED ON ALL AREAS OF THE CONSTRUCTION SITE.
17. IF EXISTING BMPs NEED TO BE MODIFIED OR IF ADDITIONAL BMPs ARE NECESSARY TO COMPLY WITH THE REQUIREMENTS OF THIS PERMIT AND/OR SOUTH DAKOTA WATER QUALITY STANDARDS, IMPLEMENTATION MUST BE COMPLETED BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICABLE, THE SITUATION MUST BE DOCUMENTED IN THE SWPPP AND ALTERNATIVE BMPs MUST BE IMPLEMENTED AS SOON AS REASONABLY POSSIBLE.
18. A PRE-CONSTRUCTION CONFERENCE MUST BE HELD FOR EACH CONSTRUCTION SITE WITH AN APPROVED ON-SITE SWPPP PRIOR TO THE IMPLEMENTATION OF CONSTRUCTION ACTIVITIES. FOR NON-LINEAR PROJECTS THAT DISTURB 10 ACRES OR MORE THIS CONFERENCE MUST BE HELD ON-SITE UNLESS THE DEPARTMENT HAS APPROVED OTHERWISE.
- ## CONSTRUCTION SEQUENCE:
1. A LAND DISTURBANCE PRE-CONSTRUCTION CONFERENCE IS REQUIRED PRIOR TO ANY DISTURBANCE ACTIVITIES ON THE SITE. THE CONTRACTOR SHALL SCHEDULE THE MEETING TO OCCUR AT LEAST 48 HOURS PRIOR TO ANY DISTURBANCE ON THE SITE.
 2. INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCE.
 3. INSTALL SILT FENCE AND OTHER TEMPORARY CONTROL MEASURES WHERE INDICATED ON THE PLANS.
 3. INSTALL TEMPORARY SECURITY FENCING AND ACCESS GATES.
 4. REMOVAL OF ALL SITE FEATURES, TREES, ETC. WITHIN THE WORK AREA OF NEW UST.
 5. EXCAVATION AND INSTALLATION OF 50,000 GAL UNDERGROUND FUEL STORAGE TANK AND ASSOCIATED INFRASTRUCTURE. FILL AND COMPACT TO FINAL GRADE.
 6. PREPARE AND INSTALL CONCRETE GENERATOR PAD PER ELECTRICAL PHASING PLAN. (ORDER BELOW)
 - 6.1. 'POSITION-2'
 - 6.2. 'POSITION-3'
 - 6.3. 'POSITION-1' (FOR EXISTING GENERATOR)
 7. PREPARE AND INSTALL SWITCHGEAR PAD DURING INSTALL OF 'POSITION-2' PAD.
 8. CONSTRUCTION / DEMOLITION PHASING:
 - 8.1. CONSTRUCTION SHALL BE PHASED IN ORDER TO LEAVE EXISTING GENERATOR AND UST IN OPERATION UNTIL NEW FACILITIES ARE INSTALLED. SEE ELECTRICAL PHASING PLANS.
 - 8.2. REMOVE ALL CONCRETE PADS, UNDERGROUND STORAGE TANK (12,000 GAL), AND EXISTING GENERATOR PAD PRIOR TO INSTALLATION OF 'POSITION-3' PAD.
 9. INSTALL PARKING LOT SECURITY (BOLLARDS), PAVEMENT MARKINGS, SIDEWALK, AND PAVEMENT PATCHING IMPROVEMENTS.
 10. TEMPORARILY SEED ALL DISTURBED AREAS WITH GOOD GRASS PER GROUND COVER REQUIREMENTS IN SDDQC EROSION CONTROL DESIGN MANUAL (SEE THIS SHEET).
 11. PERMANENTLY SEED ALL DISTURBED AREAS WITH GOOD GRASS PER GROUND COVER REQUIREMENTS IN SDDQC MANUAL, ONCE ALL WORK IS COMPLETE.
 12. MAINTAIN SEDIMENT TRAPPING DEVICES UNTIL SITE HAS BEEN STABILIZED. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE INSPECTIONS OF ALL CONTROL MEASURES ON A WEEKLY BASIS AND AFTER PERIODS OF RAINFALL. CONTRACTOR RESPONSIBLE FOR REPAIRING CONTROL MEASURES IMMEDIATELY UPON DISCOVERY.
 13. WHEN CONSTRUCTION IS COMPLETE AND THE GROUND COVER IS ESTABLISHED, CALL FOR INSPECTION.
 14. WHEN SITE IS APPROVED BY CONTRACTING OFFICER, REMOVE SILT FENCE PER THE SILT FENCE MAINTENANCE NOTES ON THIS SHEET.

1. A LAND DISTURBANCE PRE-CONSTRUCTION CONFERENCE IS REQUIRED PRIOR TO ANY DISTURBANCE ACTIVITIES ON THE SITE. THE CONTRACTOR SHALL SCHEDULE THE MEETING TO OCCUR AT LEAST 48 HOURS PRIOR TO ANY DISTURBANCE ON THE SITE.
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 - 8.2. REMOVE ALL CONCRETE PADS, UNDERGROUND STORAGE TANK (12,000 GAL), AND EXISTING GENERATOR PAD PRIOR TO INSTALLATION OF 'POSITION-3' PAD.
9. INSTALL PARKING LOT SECURITY (BOLLARDS), PAVEMENT MARKINGS, SIDEWALK, AND PAVEMENT PATCHING IMPROVEMENTS.
10. TEMPORARILY SEED ALL DISTURBED AREAS WITH GOOD GRASS PER GROUND COVER REQUIREMENTS IN SDOEQ EROSION CONTROL DESIGN MANUAL. (SEE THIS SHEET).
11. TEMPORARILY SEED ALL DISTURBED AREAS WITH GOOD GRASS PER GROUND COVER REQUIREMENTS IN SDOEQ MANUAL. ONCE ALL WORK IS COMPLETE.
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<u>SPECIES</u>	<u>RATE</u>
KENTUCKY BLUEGRASS	60 LBS./AC.
PERENNIAL RYEGRASS	60 LBS./AC.
CREeping RED FESCUE	60 LBS./AC.
CHEWINGS FESCUE	60 LBS./AC.
ALKAU GRASS	60 LBS./AC.
FERTILIZER 13-13-13	1000 LBS./AC.
FERTILIZER 11-52-0 (SOD)	1000 LBS./AC.

**** LIMITATIONS:**

- PERMANENT SEEDING: NO SEEDING BETWEEN JUNE 1 AND AUGUST 1
- PERMANENT SODDING: NO PLANTING BETWEEN JUNE 1 AND AUGUST 1

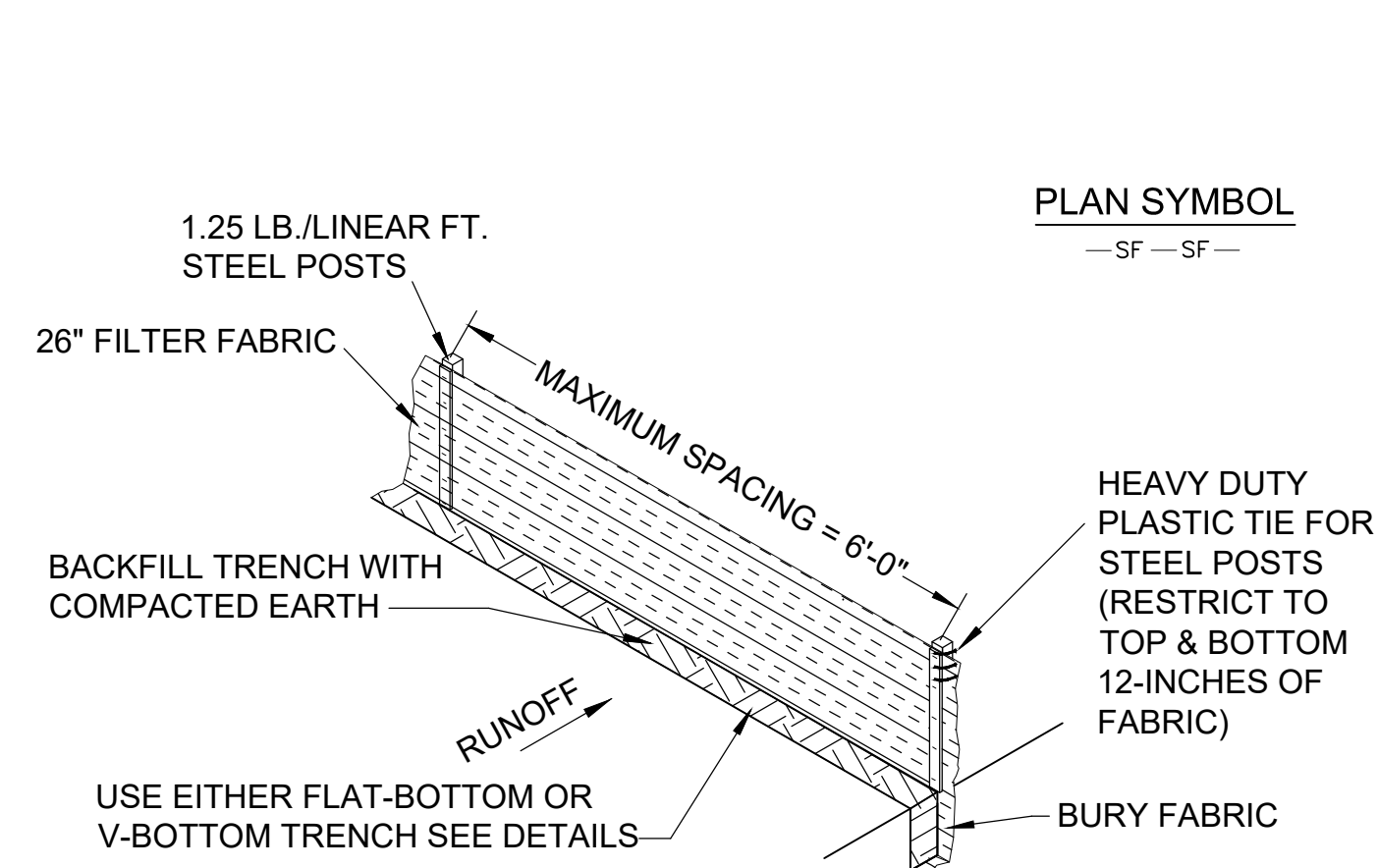
COVER ALL TEMPORARY AND PERMANENT SEEDED AREAS WITH MULCH IMMEDIATELY UPON COMPLETION OF THE SEEDING APPLICATION TO RETAIN SOIL MOISTURE AND REDUCE EROSION DURING ESTABLISHMENT OF VEGETATION. APPLY THE MULCH EVENLY IN SUCH A MANNER THAT IT PROVIDES A MINIMUM OF 90% COVERAGE. TYPICAL MULCH APPLICATIONS INCLUDE STRAW, WOOD FIBER, HYDROMULCHES, BFM AND FGM.

THE MOST COMMONLY ACCEPTED MULCH USED IN CONJUNCTION WITH PERMANENT SEEDING IS SMALL GRAIN STRAW. SELECT STRAW THAT IS DRY AND FREE FROM MOLD DAMAGE AND NOXIOUS WEEDS. THE STRAW MAY NEED TO BE ANCHORED WITH NETTING OR ASPHALT EMULSIONS TO PREVENT IT FROM BEING BLOWN OR WASHED AWAY. APPLY STRAW MULCH BY HAND OR MACHINE AT THE RATE 2 TONS PER ACRE (90 POUNDS PER 100 SQUARE FEET). FREQUENT INSPECTIONS ARE NECESSARY TO CHECK THAT CONDITIONS FOR GROWTH ARE GOOD.

USE HYDROMULCHES WITH A MINIMUM BLEND OF 90% WOOD FIBERS, 9% NATURAL BINDER, AND 1% ORGANIC/MINERAL ACTIVATORS.

COMPLY WITH LATEST STANDARDS
OF SDDOT EROSION & SEDIMENT
CONTROL DESIGN MANUAL AND
SPECIFICATIONS

SCALE: NOT TO SCALE



(C4) SCALE: NOT TO SCALE

1. DO NOT PLACE SILT FENCE ACROSS CHANNELS OR IN OTHER AREAS SUBJECT TO CONCENTRATED FLOWS. SILT FENCE SHOULD NOT BE USED AS A VELOCITY CONTROL BMP. CONCENTRATED FLOWS ARE ANY FLOWS GREATER THAN 0.5 CFS.
2. MAXIMUM SHEET OR OVERLAND FLOW PATH LENGTH TO THE SILT FENCE SHALL BE 100-FEET.
3. MAXIMUM SLOPE STEEPNESS (NORMAL [PERPENDICULAR] TO THE FENCE LINE) SHALL BE 2:1.
4. SILT FENCE JOINTS, WHEN NECESSARY, SHALL BE COMPLETED BY ONE OF THE FOLLOWING OPTIONS: WRAP EACH FABRIC TOGETHER AT A SUPPORT POST WITH BOTH ENDS FASTENED TO THE POST, WITH A 1-FOOT MINIMUM OVERLAP;
 - OVERLAP SILT FENCE BY INSTALLING 3-FEET PASSED THE SUPPORT POST TO WHICH THE NEW SILT FENCE ROLL IS ATTACHED. ATTACH OLD ROLL TO NEW ROLL WITH HEAVY-DUTY PLASTIC TIES; OR,
 - OVERLAP ENTIRE WIDTH OF EACH SILT FENCE ROLL FROM ONE SUPPORT POST TO THE NEXT SUPPORT POST;
5. ATTACH FILTER FABRIC TO THE STEEL POSTS USING HEAVY-DUTY PLASTIC TIES THAT ARE EVENLY SPACED WITHIN THE TOP AND BOTTOM 12-INCHES OF THE FABRIC.
6. INSTALL THE SILT FENCE PERPENDICULAR TO THE DIRECTION OF THE STORMWATER FLOW, AND PLACE THE SILT FENCE THE PROPER DISTANCE FROM THE TOE OF STEEP SLOPES TO PROVIDE SEDIMENT STORAGE AND ACCESS FOR MAINTENANCE AND CLEANOUT.
7. INSTALL SILT FENCE CHECKS (TIE-BACKS) EVERY 50-100 FEET, DEPENDENT ON SLOPE, ALONG SILT FENCE THAT IS INSTALLED WITH SLOPE AND WHERE CONCENTRATED FLOWS ARE EXPECTED OR ARE DOCUMENTED ALONG THE PROPOSED/INSTALLED SILT FENCE.

1. SILT FENCE MUST BE COMPOSED OF WOVEN GEOTEXTILE FILTER FABRIC THAT CONSISTS OF THE FOLLOWING REQUIREMENTS:
 - COMPOSED OF FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS OF AT LEAST 85% BY WEIGHT OF POLYOLEFINS, POLYESTERS, OR POLYAMIDES THAT ARE FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY
 - ADDITIVE TO ENHANCE RESISTANCE TO BIODEGRADATION
 - FREE OF ANY TREATMENT OR COATING WHICH MIGHT ADVERSELY ALTER ITS PHYSICAL PROPERTIES AFTER INSTALLATION;
 - FREE OF ANY DEFECTS OR FLAWS THAT SIGNIFICANTLY AFFECT ITS PHYSICAL AND/OR FILTERING PROPERTIES; AND,
 - HAVE A MINIMUM WIDTH OF 36-INCHES.
2. USE ONLY FABRIC APPEARING ON SD DOT'S QUALIFIED PRODUCTS LISTING (QPL), MEETING THE REQUIREMENTS OF THE MOST CURRENT EDITION OF THE SD DOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES CONSTRUCTION.
3. 12-INCHES OF THE FABRIC SHOULD BE PLACED WITHIN EXCAVATED TRENCH AND TOED IN WHEN THE TRENCH IS BACKFILLED.
4. FILTER FABRIC SHALL BE PURCHASED IN CONTINUOUS ROLLS AND CUT TO THE LENGTH OF THE BARRIER TO AVOID JOINTS.
5. FILTER FABRIC SHALL BE INSTALLED AT A MINIMUM OF 26-INCHES ABOVE THE GROUND.
6. INSTALL 8" STAPLES AT EACH POST TO SECURE THE SILT FENCE TO THE BOTTOM OF TRENCH. ADD 12" STAPLES TO THE TOP OF THE POSTS AT 12-INCH MAX. VERTICAL SPACING ON POSTS.
7. FILTER FABRIC SHALL BE OVERLAPPED MIN. 2" ON TOP. FABRIC THAT OVERLAPS THE TOP OF FENCE SHALL BE PLACED BETWEEN POSTS AND WOVEN WIRE FENCE.

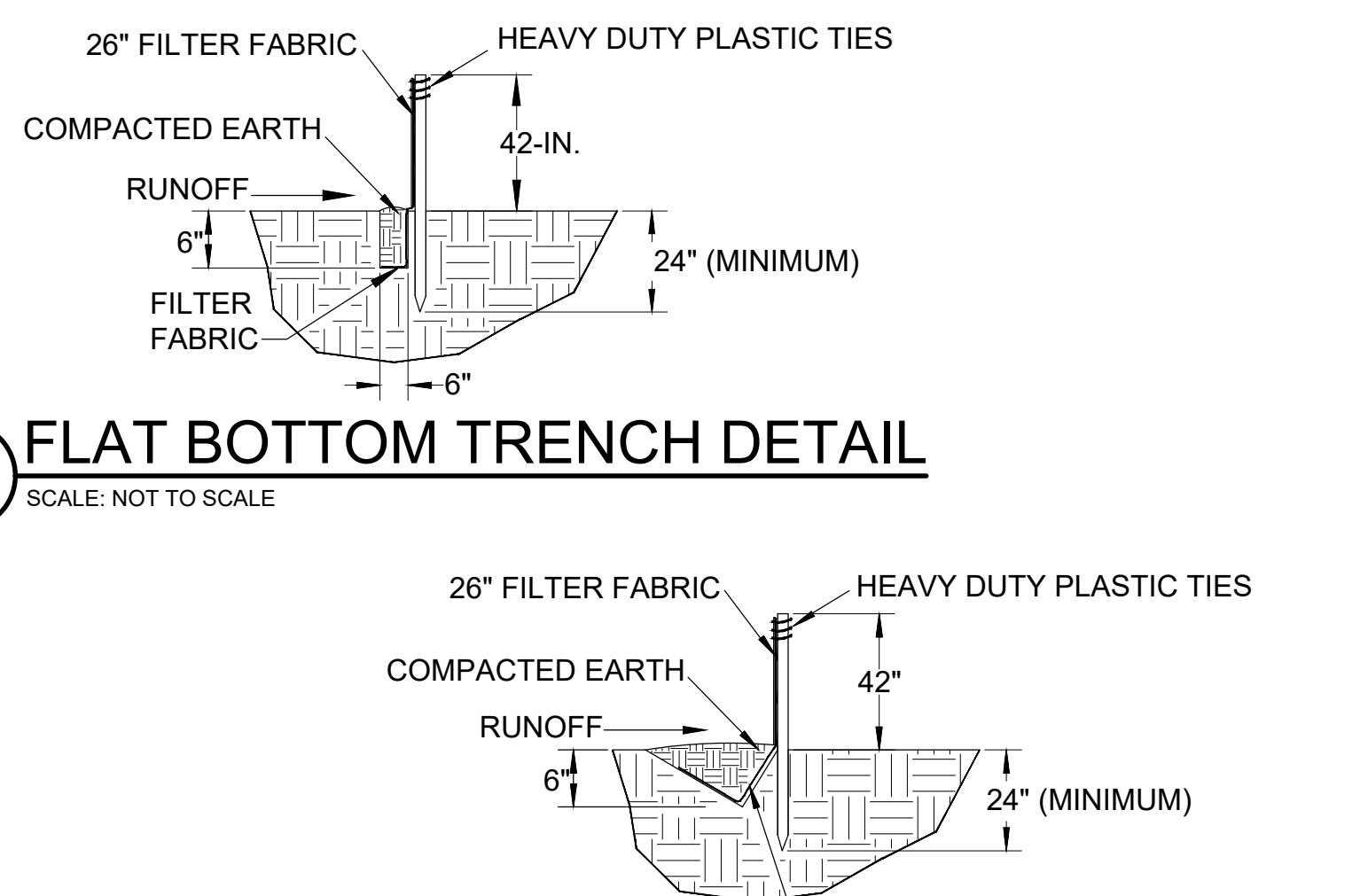
SEEDING:
APPLY AT A RATE OF NO MORE THAN 1,000 POUNDS PER ACRE (IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATION) OF A COMPLETE 13-13-13 FERTILIZER (34 POUNDS PER 1,000 SQUARE FEET) OR EQUIVALENT DURING PERMANENT SEEDING OF GRASSES UNLESS A SOIL TEST INDICATES A DIFFERENT REQUIREMENT. FERTILIZER SHALL BE IN A GRANULAR FORM. SPREAD UNIFORMLY AND INCORPORATED INTO THE SOIL PRIOR TO PLANTING. INCORPORATE FERTILIZER AND LIME (IF USED) INTO THE TOP 4-6 INCHES OF THE SOIL BY DISKING OR OTHER MEANS WHERE CONDITIONS ALLOW. DO NOT MIX THE LIME AND THE FERTILIZER PRIOR TO THE FIELD APPLICATION.

SODDING:
APPLY AT A RATE OF NO MORE THAN 1,000 POUNDS PER ACRE (IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATION) OF A COMPLETE 11-52-0 FERTILIZER (3 POUNDS PER 1,000 SQUARE FEET) OR EQUIVALENT DURING PERMANENT SODDING. APPLY TO AREAS IMMEDIATELY BEFORE PLACEMENT AND INCORPORATE INTO SOIL DEPTH OF 2".

SEEDING
LOOSEN THE SURFACE OF THE SOIL JUST BEFORE APPLYING THE SEED. EVENLY APPLY SEED BY THE MOST CONVENIENT METHOD AVAILABLE FOR THE TYPE OF SEED APPLIED AND THE LOCATION OF THE SEEDING. TYPICAL APPLICATION METHODS INCLUDE BUT ARE NOT LIMITED TO PRESS DRILL, CYCLONE SEEDERS, ROTARY SPREADERS, DROP SPREADERS, SPREADERS, HAND SPREADERS, CULTPACKER SEEDER, AND HYDRO-SEEDERS. COVER APPLIED SEED BY RAKING OR DRAGGING A CHAIN OR BRUSH MAT, AND THEN LIGHTLY FIRM THE AREA WITH A ROLLER OR CULTPACKER. DO NOT ROLL SEED THAT IS APPLIED WITH A HYDROSEEDER AND HYDRO-MULCH.

- NOTES:
1. TEMPORARY SEEDING USED TO STABILIZE DISTURBED AREAS THAT HAVE NOT REACHED FINAL GRADE. AREAS LEFT INACTIVE FOR 14 DAYS OR MORE MUST BE SEEDED AND MULCHED.
 2. PERMANENT SEEDING USED ON DISTURBED AREAS WITHIN 14 DAYS OF REACHING FINAL GRADE IF NOT TEMPORARY COVER IS APPLIED.

SCALE: NOT TO SCALE



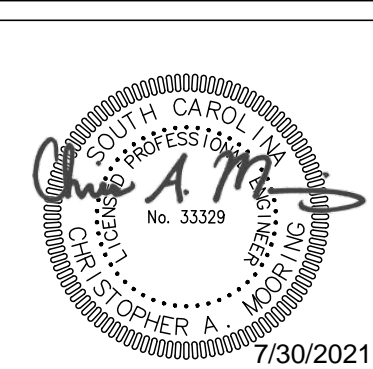
(C6) SCALE: NOT TO SCALE

1. SILT FENCE POSTS MUST BE 60-INCH LONG STEEL T POSTS THAT MEET, AT A MINIMUM, THE FOLLOWING PHYSICAL CHARACTERISTICS.
 - COMPOSED OF A HIGH STRENGTH STEEL WITH A MINIMUM YIELD STRENGTH OF 50,000 PSI.
 - INCLUDE A STANDARD "T" SECTION WITH A NOMINAL FACE WIDTH OF 1.38-INCHES AND A NOMINAL "T" LENGTH OF 1.48-INCHES.
 - WEIGH 1.25 POUNDS PER FOOT (± 8%)
2. POSTS SHALL BE EQUIPPED WITH PROJECTIONS TO ALLOW IN FASTENING OF FILTER FABRIC.
3. STEEL POSTS MAY NEED TO HAVE A METAL SOIL STABILIZATION PLATE WELDED NEAR THE BOTTOM WHEN INSTALLED ALONG STEEP SLOPES OR INSTALLED IN LOOSE SOILS. THE PLATE SHOULD HAVE A MINIMUM CROSS SECTION OF 17-SQUARE INCHES AND BE COMPOSED OF 15 GAUGE STEEL, AT A MINIMUM. THE METAL SOIL STABILIZATION PLATE SHOULD BE COMPLETELY BURIED.
4. INSTALL POSTS AT A MINIMUM OF 24-INCHES, A MINIMUM HEIGHT OF 1- TO 2- INCHES ABOVE THE FABRIC SHALL BE MAINTAINED, AND A MAXIMUM HEIGHT OF 3.5 FEET SHALL BE MAINTAINED ABOVE THE GROUND.
5. POST SPACING SHALL BE AT A MAXIMUM OF 6-FEET ON CENTER.

1. THE KEY TO FUNCTIONAL SILT FENCE IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR SEDIMENT REMOVAL.
2. REGULAR INSPECTIONS OF SILT FENCE SHOULD BE CONDUCTED ONCE EVERY CALENDAR WEEK AND, AS RECOMMENDED, WITHIN 24-HOURS AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2-INCH OR MORE OF PRECIPITATION.
3. ATTENTION TO SEDIMENT ACCUMULATIONS ALONG THE SILT FENCE IS EXTREMELY IMPORTANT. ACCUMULATED SEDIMENT SHOULD BE CONTINUALLY MONITORED AND REMOVED WHEN NECESSARY.
4. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES 1/3 THE HEIGHT OF THE SILT FENCE.
5. REMOVED SEDIMENT SHALL BE PLACED IN STOCKPILE STORAGE AREAS OR SPREAD THINLY ACROSS DISTURBED AREA. STABILIZE THE REMOVED SEDIMENT AFTER IT IS RELOCATED.
6. CHECK FOR AREAS WHERE STORMWATER RUNOFF HAS ERODED A CHANNEL BENEATH THE SILT FENCE, OR WHERE THE FENCE HAS SAGGED OR COLLAPSED DUE TO RUNOFF OVERTOPPING THE SILT FENCE. INSTALL CHECKS/TIE-BACKS AND/OR REINSTALL SILT FENCE, AS NECESSARY.
7. CHECK FOR TEARS WITHIN THE SILT FENCE, AREAS WHERE SILT FENCE HAS BEGUN TO DECOMPOSE, AND FOR ANY OTHER CIRCUMSTANCE THAT MAY RENDER THE SILT FENCE INEFFECTIVE. REMOVED DAMAGED SILT FENCE AND REINSTALL NEW SILT FENCE IMMEDIATELY.
8. SILT FENCE SHOULD BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION IS ACHIEVED AND ONCE IT IS REMOVED, THE RESULTING DISTURBED AREA SHALL BE PERMANENTLY STABILIZED.

SCALE: NOT TO SCALE

#	Revisions:	Date

[illegible]

APOGEECEMS
 Joint Venture
 An Alliance for Success

1151 Kildaire Farm Rd., Suite 120
 Cary, NC 27511
www.acg-ps.com
 (919) 858-7420

108 Bontons Lodge Road Suite 204
 Summerville, SC 29486
www.cems-ac.com
 (843) 867-3673

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A U.S. Department
of Veterans Affairs

location

2501 W 22ND ST
SIOUX FALLS, SD 57105

UPGRADE STATION GENERATOR SYSTEM PSDM REDESIGN

Approved:

Date

☒ Checked

Drawn

VA PROJECT NUMBER
438-18-100

Building Number
27

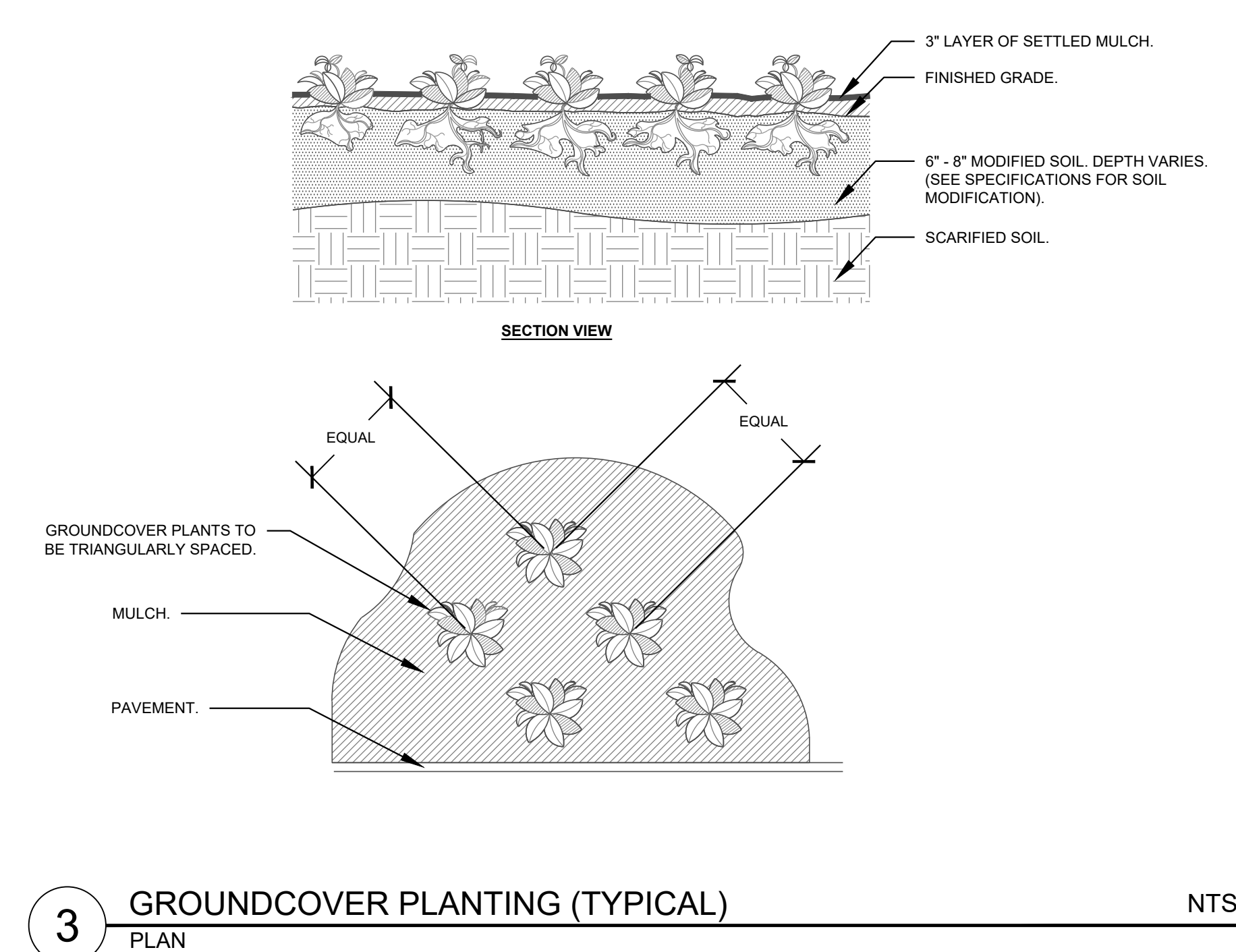
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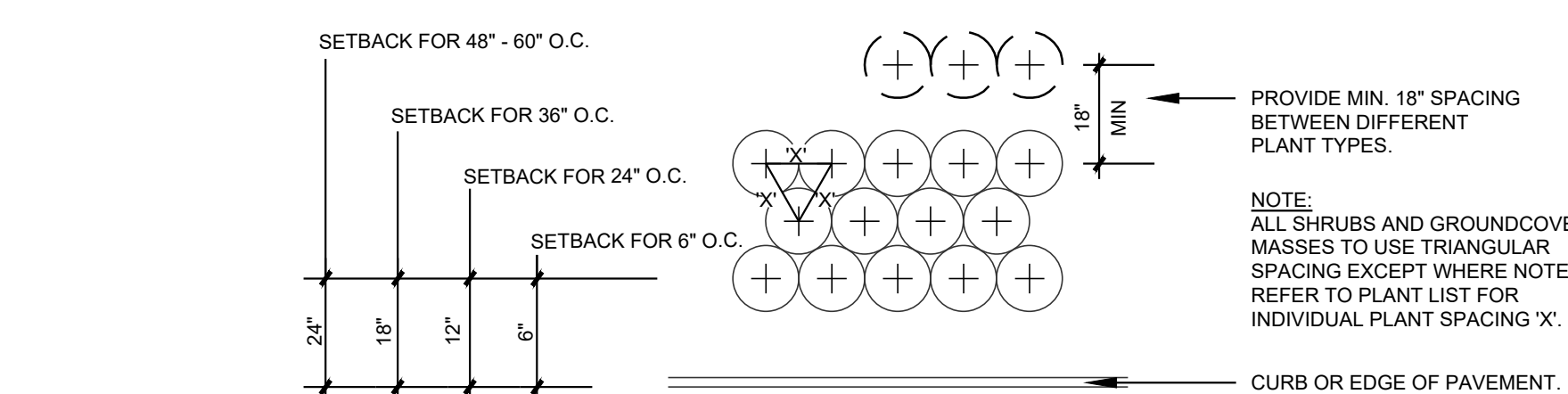
C-501

Dwg. 4 of

Approved:			Drawing Number
			L-101
Date	Checked	Drawn	Dwg. 1 of 3
MARCH 15, 2021	JAV	SS	



1. DO NOT STAKE TREES EXCEPT WHERE SPECIFIED BY LANDSCAPE ARCHITECT. STAKING IS REQUIRED FOR TREES PLANTED ON SLOPES.
2. WHERE SEVERAL TREES WILL BE PLANTED CLOSE TOGETHER SUCH AS THEY WILL, THEY WILL SHARE ROOT SPACE. TREE ADJUSTMENTS TO A DEPTH OF 4'-6" OVER THE ENTIRE AREA.
3. FOR CONTAINER GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL, THEN CUT PULL AWAY ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
4. FOR FIELD GROWN TREES, CUT BURLAP, ROPE AND WIRE BASKET AWAY FROM TOP AND SIDES OF ROOT BALL.
5. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT POTTING SOIL, SEVEN DAYS PRIOR TO THE FIRST PLANTING AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
6. THE PLANTING PROCESS IS SIMILAR FOR DECIDUOUS AND EVERGREEN TREES.
7. DO NOT WRAP TRUNK. MARK NORTH SIDE OF TREE IN THE GARDEN AND LOG LOCATE TO THE NORTH IN THE FIELD.
8. DO NOT STAKE TREES EXCEPT WHERE SPECIFIED BY LANDSCAPE ARCHITECT. STAKING IS REQUIRED FOR TREES PLANTED ON SLOPES.
9. BEFORE PLANTING, ADD 3-4" OF WELL COMPOSTED LEAVES, COMPOSTED YARD WASTE OR OTHER COMPOST AND TILL INTO 6" OF PREPARED SOIL. ADD COMPOST AT 20-35% BY VOLUME TO BACKFILL.
10. PERFORM PERCOLATION TEST FOR EACH TREE PLANT TO CONFIRM THAT WATER DRAINING OUT OF THE SOIL. PROVIDE GRAVEL SUMPS, FILTER FABRIC & VENT PIPE IF DRAINAGE DOES NOT OCCUR WITHIN 24 HOURS, INCLUDING 12 HOURS OF RAIN. THERE SHOULD SUFFICIENT BUT NOT NECESSARY AFTER PERCOLATION TEST. PROVIDE CHANGE ORDER DUE TO OWNER.
11. IF PLANTING Holes ARE DUG WITH A LARGE AUGER BREAKING DOWN THE SIDES WITH A BACKHOE, AN ELIMINATE GLAZING AND CREATE THE PREFERRED SLOPING SIDE.
12. TREES SHALL HAVE SINGLE LEADERS. TREES WITH 2 LEADERS WILL BE REJECTED.
13. DO NOT PLANT MULCH IN CONTACT WITH TRUNK.
14. PROVIDE GATOR BAGS FOR ALL TREES WHERE IRRIGATION IS NOT PROVIDED.



- ## 6 PLANTING NOTES

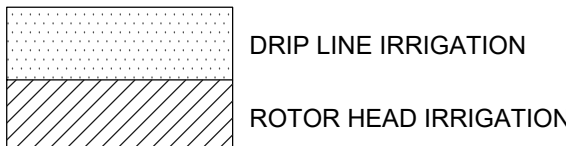
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- Diagram illustrating the placement of a boulder on a compacted subgrade. The boulder is shown resting on the subgrade. A circular inset shows a cross-section of the boulder, indicating that the top surface should be level as appropriate. The subgrade is labeled "COMPACTED SUBGRADE". A dashed line indicates the top surface of the boulder. A note points to the top of the boulder: "THE TOP OF BOULDER TO BE LEVEL AS APPROPRIATE." Another note points to the bottom of the boulder: "BURY SECTIONS OF BOULDER THAT TURN IN." A third note points to the right side of the boulder: "SEE NOTE #5".

- $$\frac{3}{4}'' = 1'-0''$$

[illegible]

1 2 3 4 5 6 7

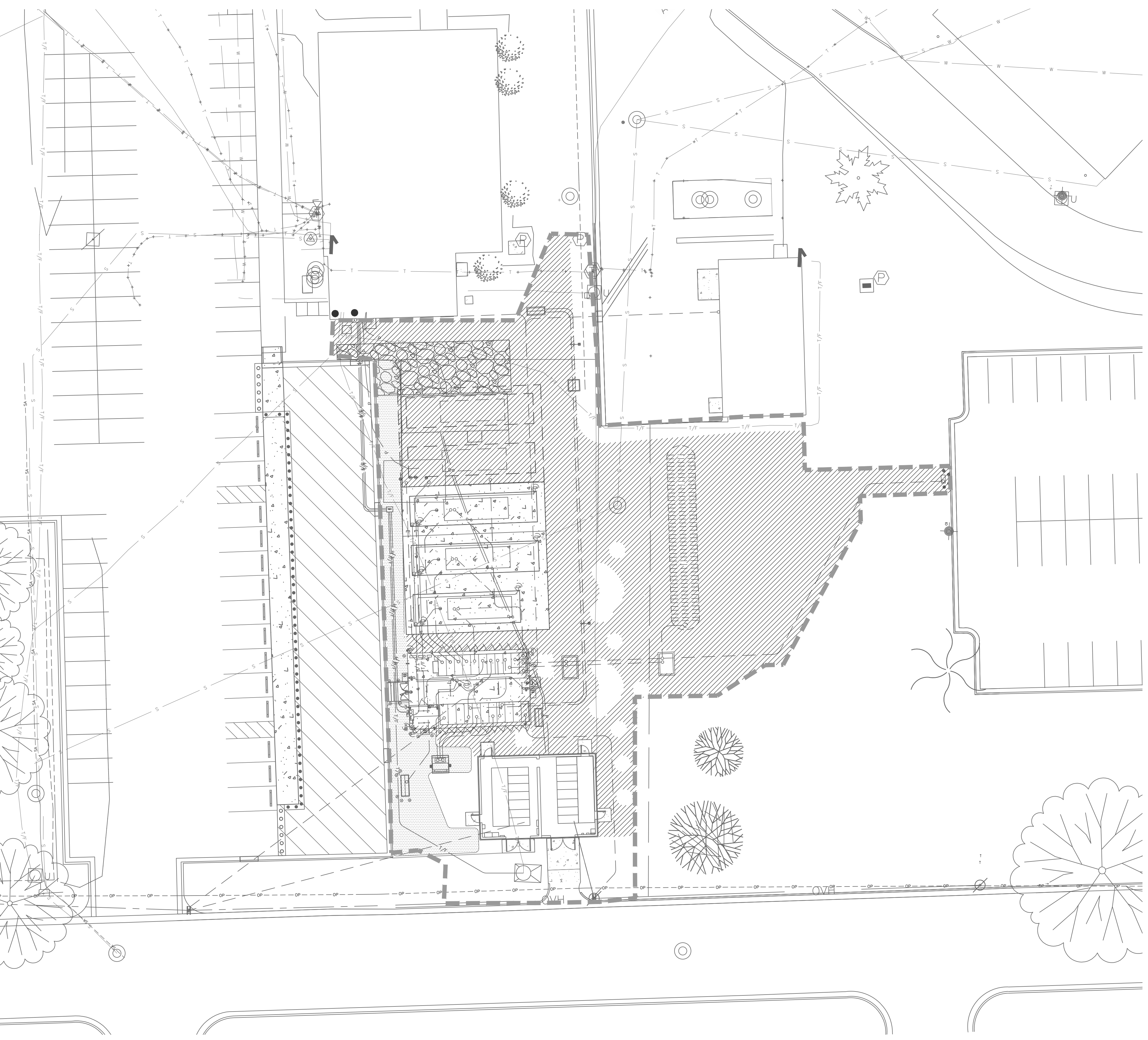
SHEET NOTES:



NOTE: ROTOR HEADS MUST BE CAPABLE OF AN OPERATING PRESSURE OF 30 PSI AT A PRECIPITATION RATE OF 2.5 INCHES PER HOUR
STANDARD OUTPUT 18 GPM FOR 1-3 DAYS AS NEEDED
COORDINATE SPRINKLERS TIE-IN LOCATION WITH VA GROUNDS.

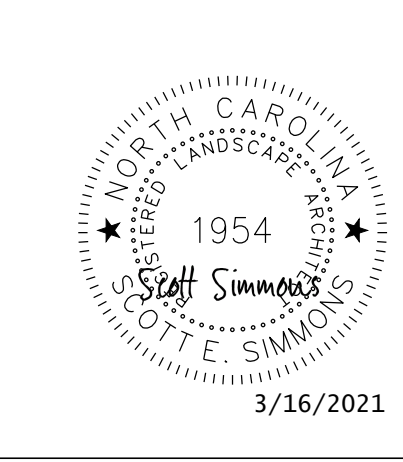
SHEET KEY NOTES:

100% CONSTRUCTION DOCUMENTS



CONSULTANTS:

#	Revisions:	Date



PROJECT MANAGER:

APOGEECEMS

Joint Venture
An Alliance for Success

1151 Kiddare Farm Rd, Suite 120
Cary, NC 27511
www.apogeece.com
(919)558-7420

108 Bentons Lodge Road Suite B
Summerville, SC 29485
www.cemils.com
(843)875-3037

ACG Project Number: 18-024
CEMS Project Number: 17157A

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Office of
Construction
and Facilities
Management

VA U.S. Department
of Veterans Affairs

Drawing Title
IRRIGATION PLAN

Location
**2501 W 22ND ST
SOUIX FALLS, SD 57105**

Project Title
**REDESIGN UPGRADE
STATION GENERATOR
SYSTEM--PSDM**

Approved:
Date
MARCH 15, 2021

Checked
JAV

Drawn
SS

VA PROJECT NUMBER
438-18-100

Building Number
27

Drawing Number
LI101

Dwg. 3 of 3

(A1) TYPICAL EMBED PLATE SCALE: 1" = 1'-0"

(A2) MATING EMBED PLATE SCALE: 1" = 1'-0"

(A2) MATING EMBED PLATE
SCALE: 1" = 1'-0"

(B1) SWITCHGEAR FOUNDATION PLAN
SCALE: 3/16" = 1'-0"

EQUIPMENT PAD DETAIL

(D1) SWITCHGEAR BUILDING SECTION @ DOORWAY
SCALE: 3/4" = 1'-0"

B4 GENERATOR FOUNDATION PLAN
SCALE: 3/16" = 1'-0"

C3 GENERATOR FOUNDATION SECTION
SCALE: 3/4" = 1'-0"

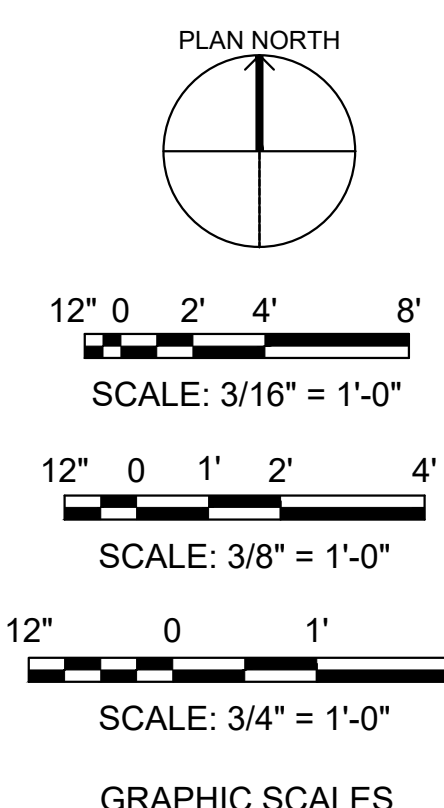
D3 SWITCHGEAR BUILDING SECTION
SCALE: 3/4" = 1'-0"

C5 CONSTRUCTION JOINT DETAIL
SCALE: 3/4" = 1'-0"

D5 SWITCHGEAR BUILDING SECTION @ DOORWAY
SCALE: 3/4" = 1'-0"

- X SHEET KEY NOTES:**
- 51 1'-6" THICK CONCRETE FOUNDATION W/ #6 @ 12" O.C. TOP BOTTOM EACH WAY. SEE CIVIL DRAWINGS FOR TOP OF FOUNDATION ELEVATION. SEE SECTION C3/S-101.
- 52 1'-6" THICK CONCRETE FOUNDATION W/ #6 @ 12" O.C. TOP BOTTOM EACH WAY OVER 15 MIL VAPOR RETARDER. SEE CIVIL DRAWINGS FOR TOP OF FOUNDATION ELEVATION. SEE SECTIONS D3/S-101.
- 53 PERIMETER OF GENERATOR ENCLOSURE.
- 54 PERIMETER OF SWITCHGEAR BUILDING.
- 55 CONSTRUCTION JOINT. CONTRACTOR TO COORDINATE WITH ELECTRICAL INSTALLATION PHASING PLANS. SEE DETAIL C5/S-101.
- 56 1'-0" THICK CONCRETE LANDING W/ #5 @ 12" O.C. TOP & BOTTOM EACH WAY. LANDING OUTSIDE OF EXTERIOR SEE CIVIL DRAWINGS FOR TOP OF SWITCHGEAR BUILDING FOUNDATION ELEVATION. SEE SECTIONS D1/S-101 AND D5/S-101.
- 57 MINIMUM RECOMMENDED EMBED PLATE LOCATIONS FOR BUILDING ANCHORAGE AT EACH CORNER AND TWO ADDITIONAL, EACH SIDE. SEE A1/S-101, VERIFY WITH SWITCHGEAR BUILDING SUPPLIER.
- 58 MINIMUM RECOMMENDED EMBED PLATE LOCATION FOR BUILDING ANCHORAGE AT MATTING. SEE A2/S-101, VERIFY WITH SWITCHGEAR BUILDING SUPPLIER.

- ## SHEET NOTES:
1. GENERAL CONTRACTOR SHALL COORDINATE WITH GENERATOR MANUFACTURER FOR DIMENSIONS OF GENERATORS AND CLEARANCE REQUIREMENT BETWEEN GENERATORS.
 2. SWITCHGEAR BUILDING AND FOUNDATION SIZE AND DETAILS ARE APPROXIMATE AND CONCEPTUAL. GENERAL CONTRACTOR SHALL COORDINATE WITH SWITCHGEAR AND SWITCHGEAR BUILDING SUPPLIER(S) FOR FINAL SIZE CONFIGURATION AND ANCHORAGE REQUIREMENTS OF THE SWITCHGEAR BUILDING.
 3. SEE C1/S-101 FOR TYP. EQUIPMENT PAD DETAIL FOR EQUIPMENT NOT SHOWN ON STRUCTURAL DRAWINGS. CONTRACTOR TO COORDINATE WITH CIVIL DRAWINGS, ELECTRICAL DRAWINGS AND EQUIPMENT MANUFACTURER DOCUMENTS FOR EQUIPMENT PAD SIZES, CONDUIT OPENING SIZES/QUANTITY, LOCATIONS AND TOP OF PAD ELEVATION.
 4. SEE SHEET S-001 FOR GENERAL NOTES.
 5. SEE SHEET S-401 FOR SWITCHGEAR BUILDING LAYOUT.

[illegible]

SITE SYMBOL LEGEND

—T/F—	UNDERGROUND TELECOM/FIBER
—P—	UNDERGROUND POWER LINE
—S—	UNDERGROUND SANITARY LINE
—OP—	OVERHEAD POWER
—OVH—	OVERHEAD LINE

ELECTRICAL LEGEND

	120V DUPLEX RECEPTACLE: 18" AFF STANDARD, UNO RECEPTACLE MODIFIERS: GFCI - GROUND FAULT CIRCUIT INTERRUPTER WP - WEATHERPROOF DED - DEDICATED
	TELEPHONE OUTLET
	JUNCTION BOX, PURPOSE AS NOTED
	JUNCTION BOX IN WALL, PURPOSE AS NOTED: 18" AFF STANDARD UNO
	DISCONNECT SWITCH NON-FUSED
	DISCONNECT SWITCH FUSED
	SWITCH: 44" AFF STANDARD UNO SWITCH MODIFIERS: M - MOTOR RATED 3 - THREE-WAY LV - LOW-VOLTAGE (0-10V) DIMMER
	VACANCY SENSOR, DUAL TECHNOLOGY - CEILING MOUNTED
	PANELBOARD
	VARIABLE FREQUENCY DRIVE, PROVIDED BY MECHANICAL CONTRACTOR
	POWER METER/MONITOR
	CONTACTOR OR MOTOR STARTER
	EQUIPMENT ELECTRICAL CONNECTION
	HOMERUN - 120V OR 277V
	HOMERUN - 208V OR 480V
	KIRK-KEY MANUAL INTERLOCK
	LOAD BREAK JUNCTION
	CABLE TRAY
	UNDERGROUND ELECTRICAL
	POINT OF DEMOLITION FOR EXISTING CONDUIT, CABLE TRAY, JUNCTION BOXES ETC.
	CONNECTION POINT FOR NEW TO EXISTING CONDUIT, CABLE TRAY, JUNCTION BOXES ETC.
	FIRE SYSTEM SMOKE DETECTOR AS INDICATED
	DISCONNECT SWITCH RATINGS (AMP RATING / FUSE RATING / NUMBER OF POLES VOLTAGE CLASS / NEMA RATING)
	CONDUIT ENCASED IN CONCRETE

GENERAL NOTES

- ALL ELECTRICAL DEVICES, FIXTURES, EQUIPMENT AND FEEDERS SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, THE MANUFACTURER'S RECOMMENDED PROCEDURES, ALL APPLICABLE LOCAL AND STATE CODES, AMERICANS WITH DISABILITIES ACT, THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND THE VA STANDARDS.
- PROVIDE ADDITIONAL SUPPORT FOR DEVICES, FIXTURES, EQUIPMENT AND FEEDERS WHERE THE BUILDING CONSTRUCTION IS NOT SUITABLE FOR DIRECT MOUNTING.
- FIRESTOP, DRAFTSTOP, SMOKESTOP AND/OR PROTECT THE ANNULAR SPACE AROUND ALL PENETRATIONS THROUGH WALLS, PARTITIONS, FLOORS, CEILINGS AND ROOFS IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, UL LISTINGS REQUIREMENT AND THE APPLICABLE BUILDING CODES.
- VERIFY CEILING SYSTEMS AND PROVIDE MOUNTING ACCESSORIES, TRIMS AND ALL REQUIRED MOUNTING HARDWARE TO SUIT THE PARTICULAR INSTALLATION.
- PROTECT EXISTING UNDERGROUND AND BUILDING INTERIOR UTILITIES DURING CONSTRUCTION.
- BRANCH CIRCUIT CONDUCTORS SHALL BE 12 AWG COPPER MINIMUM.
- COORDINATE ANY AND ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION SO AS TO AVOID CONFLICT DURING CONSTRUCTION, COORDINATE INSTALLATION WITH OTHER TRADES ACCORDING TO PHASING PLANS.
- ALL PANELS SHALL HAVE TYPED, COMPLETED DIRECTORIES.
- MANUFACTURER'S NAME AND MODEL NUMBER ARE GIVEN FOR DESCRIPTIVE PURPOSES, TO INDICATE A QUALITY STANDARD, AND ARE NOT INTENDED TO LIMIT PRODUCTS TO A PARTICULAR MANUFACTURER. PRODUCTS DEEMED EQUAL AND APPROVED BY THE DESIGNER WILL BE ACCEPTED. ALL PRODUCTS MUST COMPLY WITH "BUY AMERICAN ACT".
- ALL FEEDERS AND CIRCUITRY SHALL BE TORQUED PER THE PANEL, BREAKER OR PARTICULAR EQUIPMENT MANUFACTURER'S SPECIFICATIONS.
- CIRCUITRY TO SWITCHES, RECEPTACLES, AND ALL OTHER DEVICES SHALL BE TERMINATED ON THE DEVICE'S SCREW TERMINALS.
- MOUNTING HEIGHTS INDICATED ARE TO CENTER OF DEVICE, OUTLET, FIXTURE, OR EQUIPMENT UNLESS NOTED OTHERWISE.
- ALL WIRE TERMINATIONS SHALL BE RATED FOR 75 DEGREES C.
- ALL CONDUCTORS SHALL HAVE THHN/THWN INSULATION, UNLESS OTHERWISE NOTED.
- ALL CONDUIT SHALL BE RGS OR EMT UNLESS OTHERWISE NOTED. FMC CONDUIT MAY BE USED ON VIBRATING EQUIPMENT.
- ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES AND EQUIPMENT SHALL BE LABEL LISTED BY AN APPROVED THIRD PARTY TESTING AGENCY.
- DIMENSIONS, QUANTITIES AND LOCATIONS OF EXISTING CONDUIT AND EQUIPMENT AS SHOWN ON THESE DRAWINGS ARE BASED ON RECORD DRAWINGS AND CASUAL OBSERVATION AND ARE NOT NECESSARILY COMPLETELY ACCURATE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ANY AND ALL EXISTING EQUIPMENT AND CONDITIONS THAT MIGHT AFFECT THE WORK.
- SEE SPECIFICATION SECTION 01 00 00 GENERAL REQUIREMENTS FOR BID DEDUCT DESCRIPTIONS.

SOUND LEVEL REQUIREMENT

GENERATION UNITS SHALL BE FULLY-ENCLOSED IN WEATHER-PROOF, SOUND-ATTENUATING ENCLOSURES. MAXIMUM SOUND LEVEL SHALL BE:

75dBA AT 23-FEET (7-METERS)

BLAST RATING FOR ENCLOSURE:

BUILDING VENDOR SHALL SUBMIT BLAST ANALYSIS REPORT CERTIFYING THE BLAST RESISTANCE OF THE ENCLOSURE MEETS THE DESIGN BLAST LOAD REQUIREMENTS. THE REPORT SHALL INCLUDE P4 GRAPHS FOR THE BUILDING ENVELOPE AND SHALL BE SEALED BY A PROFESSIONAL ENGINEER. THE ANALYSIS SHALL BE PERFORMED IN ACCORDANCE WITH BLAST PROTECTION OF BUILDINGS (ASCE/SEI 58-11) AS WELL AS THE PHYSICAL SECURITY AND RESILIENCY DESIGN MANUAL, 2020 EDITION.(REPORT SHALL BE VALIDATED BY A/E)

DESIGN BLAST LOADS
• SIDE-ON BLAST PRESSURE 13.5 PSI
• POSITIVE PHASE DURATION 7.6 MS

RESPONSE CRITERIA
• PRIMARY FRAMING - SUPERFICIAL DAMAGE LIMIT
• SECONDARY FRAMING - MODERATE DAMAGE LIMIT

MINIMUM DESIGN PARAMETERS
• EXTERIOR WALL AND ROOF PANELS SHALL HAVE A MINIMUM THICKNESS OF 10 GAUGE UNLESS SPECIFIC BLAST CALCULATIONS DETERMINE OTHERWISE. EXTERIOR WALL PANELS SHALL HAVE SUFFICIENT STIFFNESS TO RESIST THE DESIGN BLAST LOAD WITH SPECIFIC CONSIDERATION TO P-DELTA EFFECTS.

• ALL WELDED CONNECTIONS SHALL BE DESIGNED SUCH THAT THE CAPACITY OF THE WELD IS GREATER THAN THE YIELD STRENGTH OF THE CONNECTING MEMBERS.

• BASE PLATES SHALL BE PROVIDED IN THE CONFIGURATION SHOWN IN CIVIL DRAWINGS AND SHALL HAVE A MINIMUM THICKNESS OF 1/2".

• PERSONNEL DOORS SHALL CONSIST OF BLAST RESISTANT DOOR ASSEMBLIES WITH A CATEGORY III RESPONSE FOR THE DOOR, FRAME, AND HARDWARE.

• EQUIPMENT DOORS SHALL HAVE A MINIMUM THICKNESS OF 12 GA. FRAMES SHALL HAVE A MINIMUM OF 10 GA. THICKNESS UNLESS SPECIFIC BLAST CALCULATIONS DEMONSTRATE OTHERWISE.

ELECTRICAL ABBREVIATIONS

Δ	DELTA	H	HIGH / HEIGHT
1PH	SINGLE-PHASE	HID	HIGH INTENSITY DISCHARGE
1P	SINGLE POLE	HOA	HAND-OFF-AUTOMATIC
2/C	TWO-CONDUCTOR	HP	HORSEPOWER
3/C	THREE-CONDUCTOR	HT	HEIGHT
3PH	THREE-PHASE	HZ	HERTZ
4/C	FOUR-CONDUCTOR	IMC	INTERMEDIATE METAL CONDUIT
4W	FOUR-WIRE	IR	INFRARED
A/C UNIT	AIR CONDITIONING UNIT	J-BOX	JUNCTION BOX
A/E	ARCHITECT/ENGINEER	KV	KILOVOLT
AAP	ALARM ANNUNCIATOR PANEL	KVA	KILOVOLT AMPERE
AC	ALTERNATING CURRENT OR ARMORED CABLE	KVAH	KILOVOLT AMPERE PER HOUR
ACC	ACCESSIBLE	KW	KILOWATT
ADDL	ADDITIONAL	KWH	KILOWATT HOUR
ADJ	ADJACENT, ADJOINING	KWHM	KILOWATT HOUR METER
ADO	AUTOMATIC DOOR OPENER		
AF	AMPERE FRAME OR AMP FUSE		
AFC	ABOVE FINISHED COUNTER, AUTOMATIC FREQUENCY CONTROL, OR AVAILABLE FAULT CURRENT	LED	LIGHT EMITTING DIODE
AFG	ABOVE FINISHED FLOOR	LF	LINEAR FEET (FOOT)
AHJ	AUTHORITY HAVING JURISDICTION	LCL	LOCAL
AIC	AMPERE INTERRUPTING CAPACITY	LRA	LOCKED ROTOR AMPS
ALT	ALTERNATE	LTC	LOCAL TEMPERATURE CONTROL PANEL
AMB	AMBIENT	LTCP	LIGHTING
AMP OR A	AMPERE	LTNG	LIGHTNING
AMP	AMPS SHORT CIRCUIT	LV	LOW VOLTAGE
ASC	AMPERE TRIP		
AT	AUTOMATIC TRANSFER SWITCH	MAX	MAXIMUM
ATS	AUTOMATIC	MC	METAL-CLAD
AUTO	AUDIO VISUAL	MCA	MINIMUM CIRCUIT AMPS
AV		MCB	MAIN CIRCUIT BREAKER
BATT	BATTERY	MCC	MOTOR CONTROL CENTER
BC	BARE COPPER	MDP	MAIN DISTRIBUTION PANEL
BD	BOARD	MECH	MECHANICAL
BFF	BELOW FINISH FLOOR	MG	MOTOR GENERATOR
BFIN	BELOW FINISH GRADE	MH	MANHOLE
BLDG	BUILDING	MIN	MINIMUM
BMS	BUILDING MANAGEMENT SYSTEM	MOC	MAXIMUM OVERCURRENT PROTECTION
BPP	BOILER PLANT INSTRUMENTATION PANEL	MLO	MAIN LUGS ONLY
BRKR	BREAKER	MTD	MOUNTED
BYP	BYPASS	MTG	MOUNTING
		MTS	MANUAL TRANSFER SWITCH
C	CONDUIT	MV	MEDIUM VOLTAGE
CAB	CABINET	MVA	MEGAVOLT-AMPERE
CALC	CALCULATE	MW	MEGAWATT OR MICROWAVE
CAP	CAPACITY		
CATV	COMMUNITY ANTENNA TELEVISION	NA	NOT APPLICABLE
CCTV	CLOSED CIRCUIT TELEVISION	NC	NORMALLY CLOSED
CD	CONSTRUCTION DOCUMENTS	NEC	NATIONAL ELECTRICAL CODE
CF	CONTRACTOR FURNISHED	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
CF/CI	CONTRACTOR FURNISHED/CONTRACTOR INSTALLED		
CF/OI	CONTRACTOR FURNISHED/OWNER INSTALLED	NEUT OR N	NEUTRAL
CFC	CONTRACTOR FURNISHED EQUIPMENT	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
CHW	CHILLED WATER	NIC	NOT IN CONTRACT
CHWP	CHILLED WATER PUMP	NI	NOT IN CONTRACT
CKT	CIRCUIT	NL	NIGHT LIGHT
CLG	CEILING	NO	NORMALLY OPEN
CMU	CONCRETE MASONRY UNIT	NTS	NOT TO SCALE
COAX	COAX CABLE	OC	ON CENTER
COMM	COMMUNICATION	P	POLE
CONC	CONCRETE	PA	PUBLIC ADDRESS
CONT	CONTINUE	PB	PANELBOARD, PULL BOX, OR PUSHBUTTON
CONTR	CONTRACTOR	PCB	POLYCHLORINATED BIPHENYL
COORD	COORDINATE	PC	PHOTOELECTRIC CELL
CRI	COLOR RENDERING INDEX	PF	POWER FACTOR
CT	CURRENT TRANSFORMER	PH	PHASE
CTV	CABLE TELEVISION	PNL	PANEL
CU	COPPER	POD	POWER OPERATED DAMPER
CU FT	CUBIC FEET	POS	POSITION
CUR	CURRENT	PRI, PRIM	PRIMARY
		PVC	POLYVINYL CHLORIDE (PLASTIC)
D	DEEP / DEPTH	REC	RECESSED
DB	DECIBEL OR DIRECT BURIAL	RECP	RECEPTACLE
DIRECT	DIRECT CURRENT	RGS	RIGID GALVANIZED STEEL
DEG C	DEGREES CELSIUS	RM	ROOM
DEG F	DEGREES FAHRENHEIT	RMS	ROOT MEAN SQUARE
DEMO	DEMOLITION	REQD	REQUIRED
DIAG	DIAGRAM	SCC	SHORT CIRCUIT CAPACITY
DISC	DISCONNECT	SEC	SECONDARY
DISTR	DISTRIBUTION	SES	SERVICE ENTRANCE SECTION
DN	DOWN	SD	SMOKE DETECTOR
DPDT	DOUBLE POLE, DOUBLE THROW	SF	SQUARE FOOT (FEET)
DPST	DOUBLE POLE, SINGLE THROW	SHT	SHEET
DRSW	DOOR SWITCH	SI	INTERNATIONAL SYSTEM OF UNITS
DS	DISCONNECT SWITCH	SPEC	SPECIFICATION
DWG	DRAWING	SFST	SINGLE POLE, SINGLE THROW
		SWBD	SWITCHBOARD
EC	EMPTY CONDUIT	SWGR	SWITCHGEAR
EG	EQUIPMENT GROUND		
EL	ELEVATION	TEL	TELEPHONE
ELEC	ELECTRIC OR ELECTRICAL	TP	TWISTED PAIR
ELEV	ELEVATOR	TPS	TWISTED PAIR SHIELDED
EMI	ELECTROMAGNETIC INTERFERENCE	TTB	TELEPHONE TERMINAL BOARD
EMT	ELECTRICAL METALLIC TUBING	TV	TELEVISION
ENCL	ENCLOSURE	TYP	TYPICAL
EPO	EMERGENCY POWER OFF	UGND	UNDERGROUND
ESMT	EASEMENT	UL	UNDERWRITERS LABORATORY
EWC	ELECTRIC WATER COOLER	UNO	UNLESS NOTED OTHERWISE
EWH	ELECTRIC WATER HEATER	UPS	UNINTERRUPTIBLE POWER SUPPLY
EX, EXIST	EXISTING	UTIL	UTILITY
FA	FIRE ALARM	V	VOLT
FAAP	FIRE ALARM ANNUNCIATOR PANEL	VA	VOLT AMPERE
FACP	FIRE ALARM CONTROL PANEL	VAR	VOLT AMPERE REACTIVE
FLA	FULL LOAD AMPS	VFD	VARIABLE FREQUENCY DRIVE
FMC	FLEXIBLE METALLIC CONDUIT	VOLT	VOLTAGE
FP	FIRE PROTECTION	W	WATT OR WIDTH IN DIMENSION STRING
FT	FEET OR FOOT	WH	WATER HEATER
FS	FUSED SWITCH	WP	WEATHERPROOF
FVNR	FULL VOLTAGE NON-REVERSING	WOMP	WATER QUALITY MONITORING PANEL
FVR	FULL VOLTAGE REVERSING	XFER	TRANSFER
G OR GND	GROUND	XFMR	TRANSFORMER
GEN	GENERATOR		
GFCI	GROUND FAULT CIRCUIT INTERRUPTER		
GRS	GALVANIZED RIGID STEEL		
GTB	GROUND TERMINAL BOX		

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		CONSULTANTS:		 Riyad S Bannourah BICS1 ID# 263136 Expires 12-31-23 7/29/2021		 7/29/2021		PROJECT MANAGER: APOGEECEMS Joint Venture An Alliance for Success 1151 Kildare Farm Rd, Suite 120 Cary, NC 27511 www.apogeece.com (919)558-7420 © COPYRIGHT Apogee - CEMS JV, LLC		ACG Project Number: 18-024 CEMS Project Number: 17157A Office of Construction and Facilities Management U.S. Department of Veterans Affairs		Drawing Title ELECTRICAL LEGEND, NOTES, AND ABBREVIATIONS Location 2501 W 22ND ST SIOUX FALLS, SD 57105		Project Title UPGRADE STATION GENERATOR SYSTEM - PSDM REDESIGN Approved: Date JULY 30, 2021 Checked JAV Drawn EFJ		VA PROJECT NUMBER 438-18-100 Building Number 27 Drawing Number E-001 Dwg. 1 of 10	
#	Revisions:	Date															

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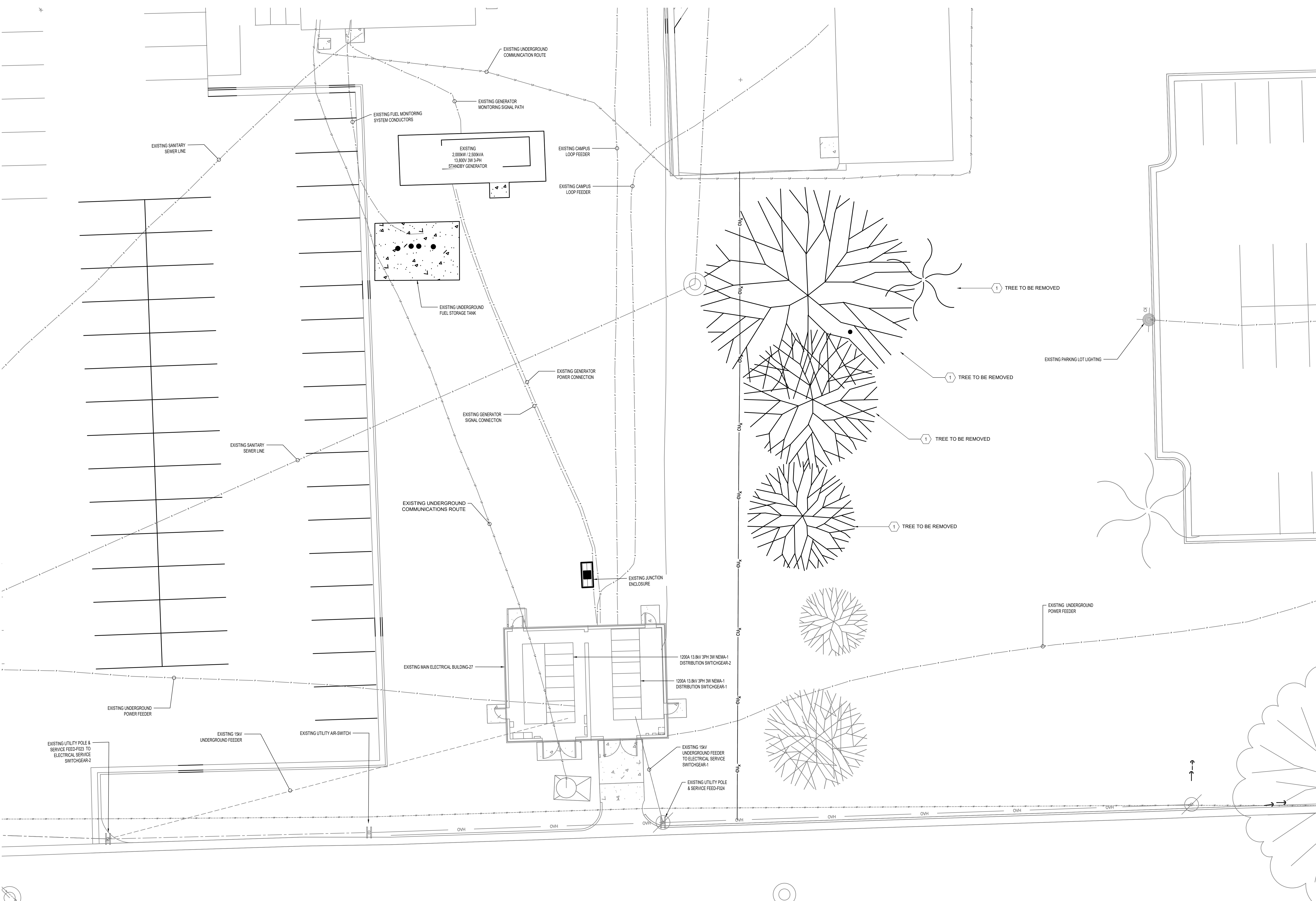
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SHEET NOTES:

- A. LOCATE AND PROTECT EXISTING IRRIGATION WATER VALVES. REPAIR IRRIGATION DAMAGED DURING COURSE OF CONSTRUCTION. SEE LANDSCAPE PLANS FOR ADDITIONAL INFORMATION.

X SHEET KEY NOTES:

1. EXISTING TREES TO BE REMOVED AS PART OF CIVIL AND LANDSCAPE MODIFICATIONS. SEE CIVIL AND LANDSCAPE PLANS FOR DETAILS.



1 EXISTING GENERATOR SITE CONDITIONS PHASE 1
SCALE: 1" = 10'-0"

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#	Revisions:	Date

CONSULTANTS:



PROJECT MANAGER: ACG Project Number: 18-024
CEMS Project Number: 17157A

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1151 Kildare Farm Rd. Suite 120
Cary, NC 27511
www.apogeece.com
(919)558-7420

108 Bentons Lodge Road Suite B
Summerville, SC 29485
www.cemssd.com
(843)875-3037

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Office of
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VA U.S. Department
of Veterans Affairs

Drawing Title
**PHASE-1: ELECTRICAL
INSTALLATION**

Location
**2501 W 22ND ST
SIOUX FALLS, SD 57105**

Project Title
**UPGRADE STATION
GENERATOR SYSTEM -
PSDM REDESIGN**

Approved:

Date
JULY 30, 2021

Checked
JAV

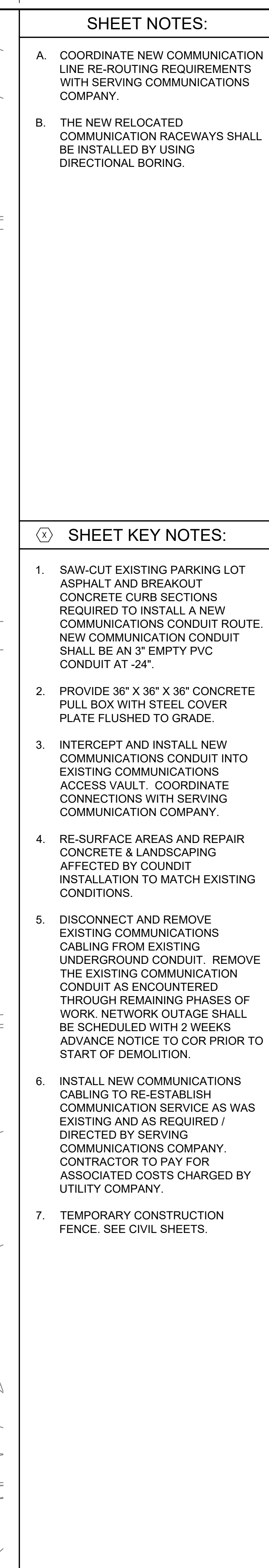
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EFJ

VA PROJECT NUMBER
438-18-100

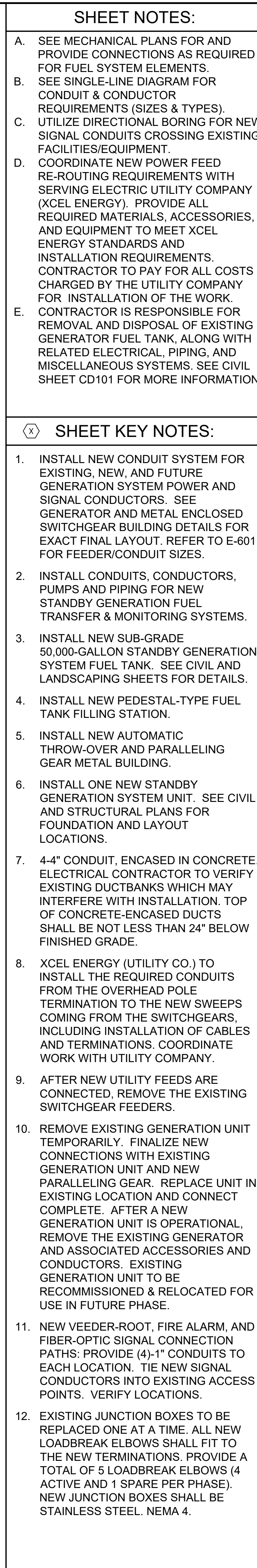
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Drawing Number
EP101

Dwg. 2 of 10

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VA PROJECT NUMBER 438-18-100
Building Number 27
Drawing Number EP103 Dwg. 4 of 10

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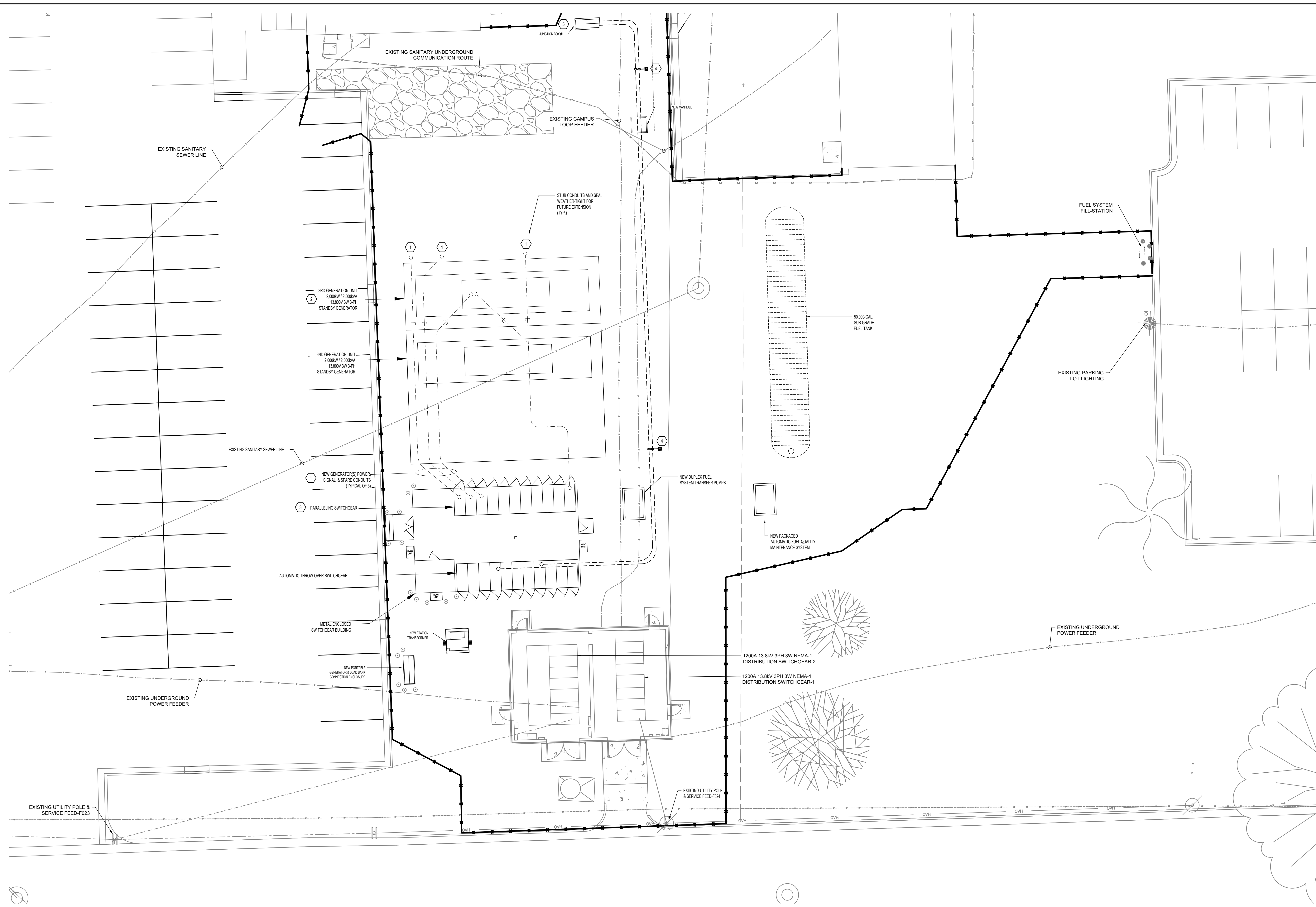
SHEET NOTES:

- A. COORDINATE INSTALLATION WITH OTHER TRADES ACCORDING TO PHASING PLANS.
- B. SEE SINGLE-LINE DIAGRAM FOR CONDUIT & CONDUCTOR REQUIREMENTS (SIZES & TYPES).

X SHEET KEY NOTES:

1. INSTALL NEW CONDUIT SYSTEM FOR EXISTING, NEW, AND FUTURE GENERATION SYSTEM POWER AND SIGNAL CONDUCTORS. SEE GENERATOR AND METAL ENCLOSED SWITCHGEAR BUILDING DETAILS FOR EXACT FINAL LAYOUT.
2. INSTALL 2ND NEW STANDBY GENERATION SYSTEM UNIT. SEE CIVIL AND STRUCTURAL PLANS FOR FOUNDATION AND LAYOUT LOCATIONS.
3. CONNECT NEW GENERATOR-3 TO NEW PARALLELING GEAR.
4. 4-4" CONDUIT, ENCASED IN CONCRETE. ELECTRICAL CONTRACTOR TO VERIFY EXISTING DUCTBANKS WHICH MAY INTERFERE WITH INSTALLATION. TOP OF CONCRETE-ENCASED DUCTS SHALL BE NOT LESS THAN 24" BELOW FINISHED GRADE.
5. EXISTING JUNCTION BOXES TO BE REPLACED ONE AT A TIME. ALL EXISTING LOADBREAK ELBOWS SHALL FIT TO THE NEW TERMINATIONS.

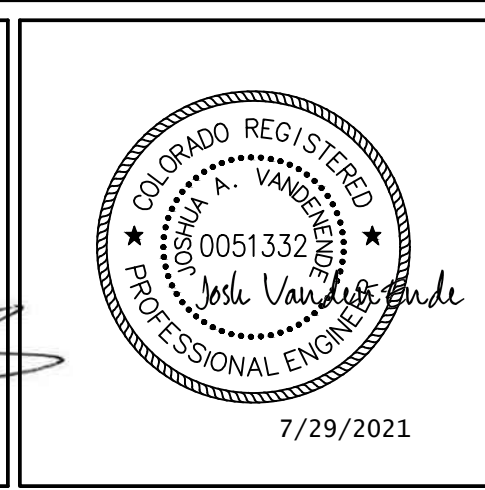
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1 GENERATOR EQUIPMENT SITE LAYOUT PHASE 4
SCALE: 1" = 10'-0"

#	Revisions:	Date

CONSULTANTS:



PROJECT MANAGER: ACG Project Number: 18-024
CEMS Project Number: 17157A

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1151 Kildare Farm Rd. Suite 120
Cary, NC 27511
www.aeg-va.com
(919)558-7420

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Drawing Title
**PHASE-4: ELECTRICAL
INSTALLATION**

Location
**2501 W 22ND ST
SIOUX FALLS, SD 57105**

Project Title
**UPGRADE STATION
GENERATOR SYSTEM -
PSDM REDESIGN**

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Date
JULY 30, 2021

Checked
JAV

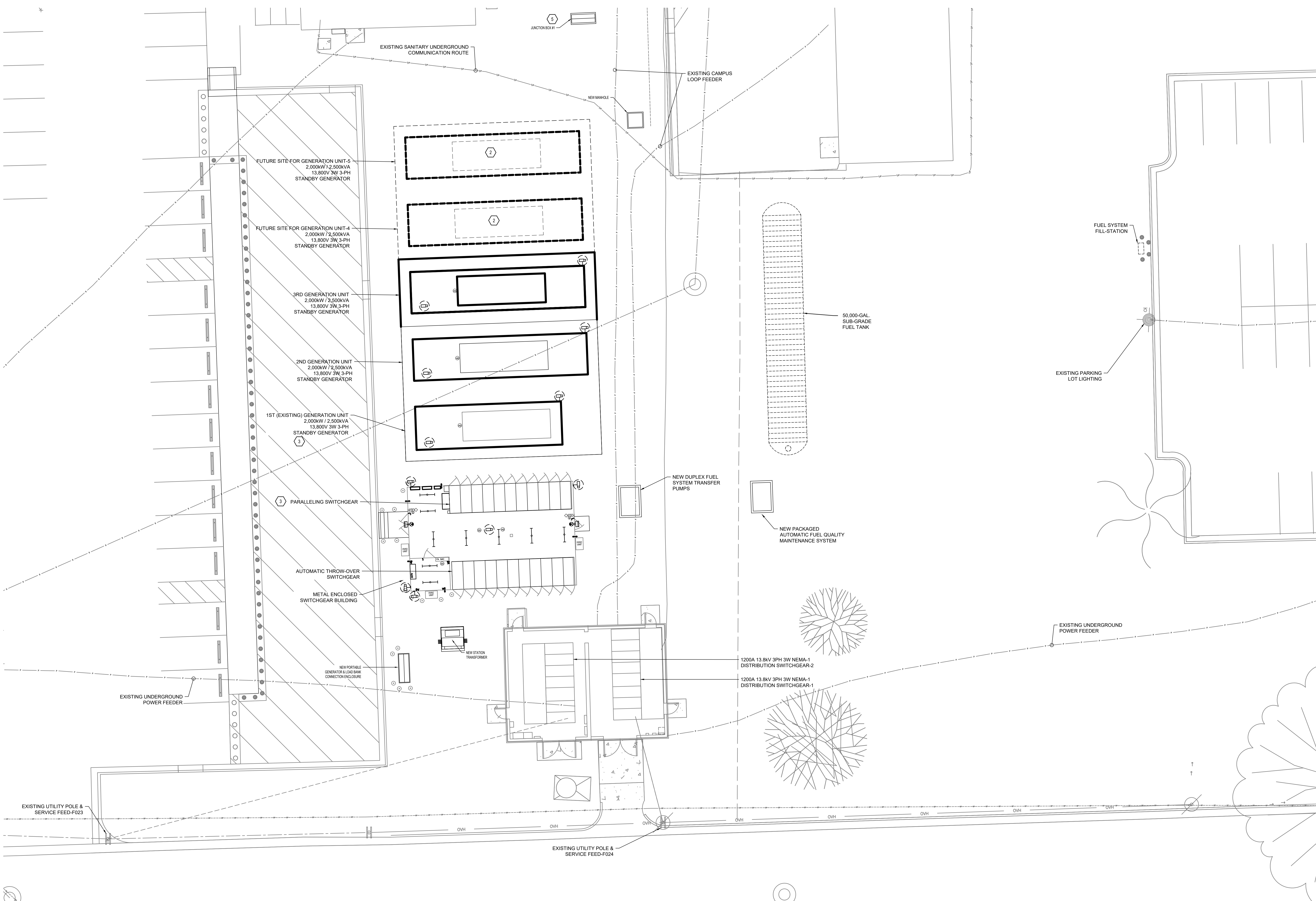
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VA PROJECT NUMBER
438-18-100

Building Number
27

Drawing Number
EP104

Dwg. 5 of 10



SHEET NOTES:

- A. COORDINATE INSTALLATION WITH OTHER TRADES ACCORDING TO PHASING PLANS.
- B. SEE SINGLE-LINE DIAGRAM FOR CONDUIT & CONDUCTOR REQUIREMENTS (SIZES & TYPES).
- C. SEE SHEET E-501 AND E-502 FOR MORE INFORMATION REGARDING FIRE ALARM AND PHYSICAL SECURITY.

 SHEET KEY NOTES:

1. INSTALL NEW CONDUIT SYSTEM FOR EXISTING, NEW, AND FUTURE GENERATION SYSTEM POWER AND SIGNAL CONDUCTORS. SEE GENERATOR AND METAL ENCLOSED SWITCHGEAR BUILDING DETAILS FOR EXACT FINAL LAYOUT.
2. SPACE RESERVED FOR FUTURE GENERATION UNITS
3. INSTALL THE EXISTING GENERATION UNIT IN FINAL LOCATION. COMPLETE NEW CONNECTIONS WITH EXISTING GENERATION UNIT AND NEW PARALLELING GEAR.
4. EXISTING JUNCTION BOXES TO BE REPLACED ONE AT A TIME. ALL EXISTING LOADBREAK ELBOWS SHALL FIT TO THE NEW TERMINATIONS.

1 FINAL CONDITIONS GENERATOR EQUIPMENT SITE LAYOUT PHASE 5
SCALE: 1/8" = 1'

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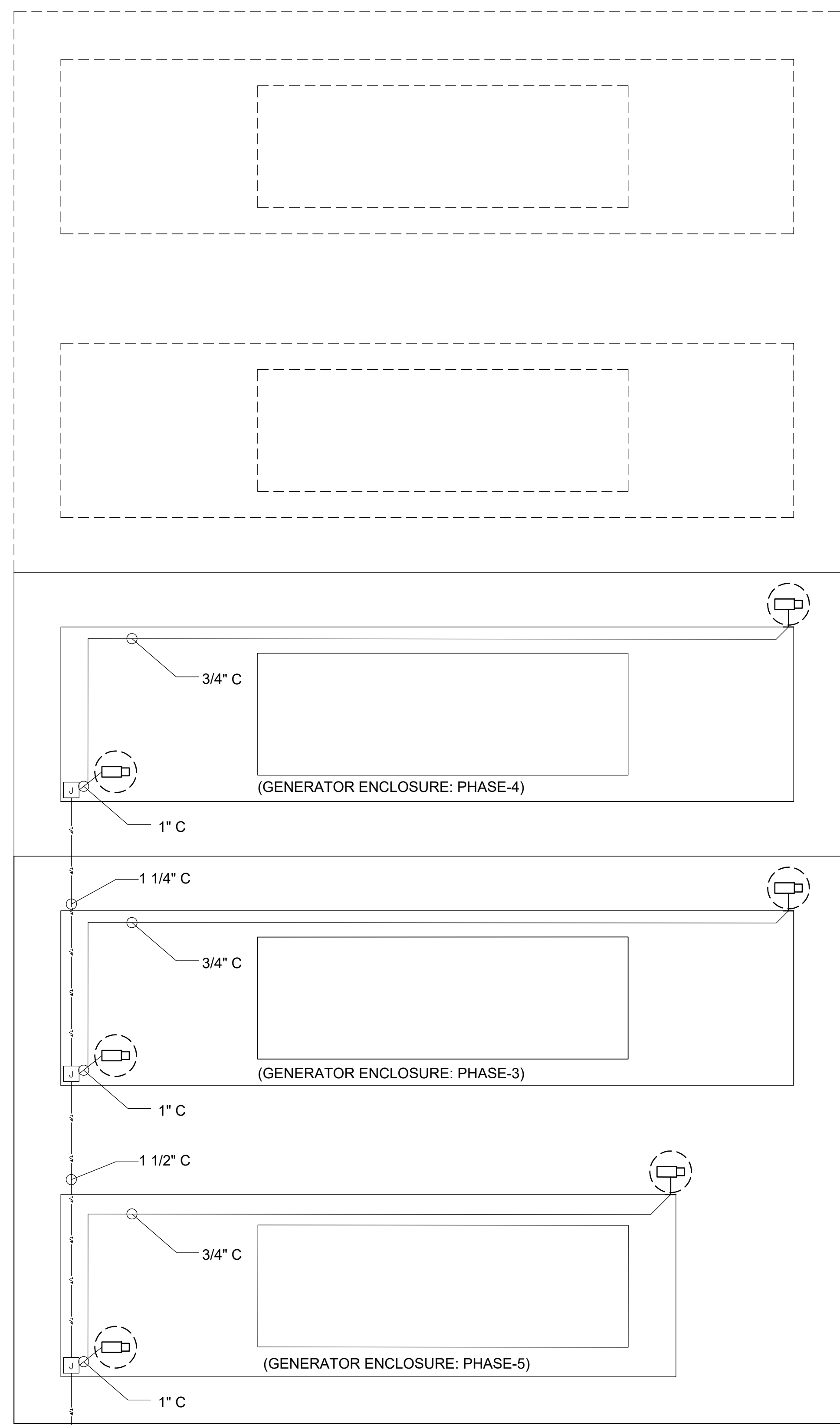
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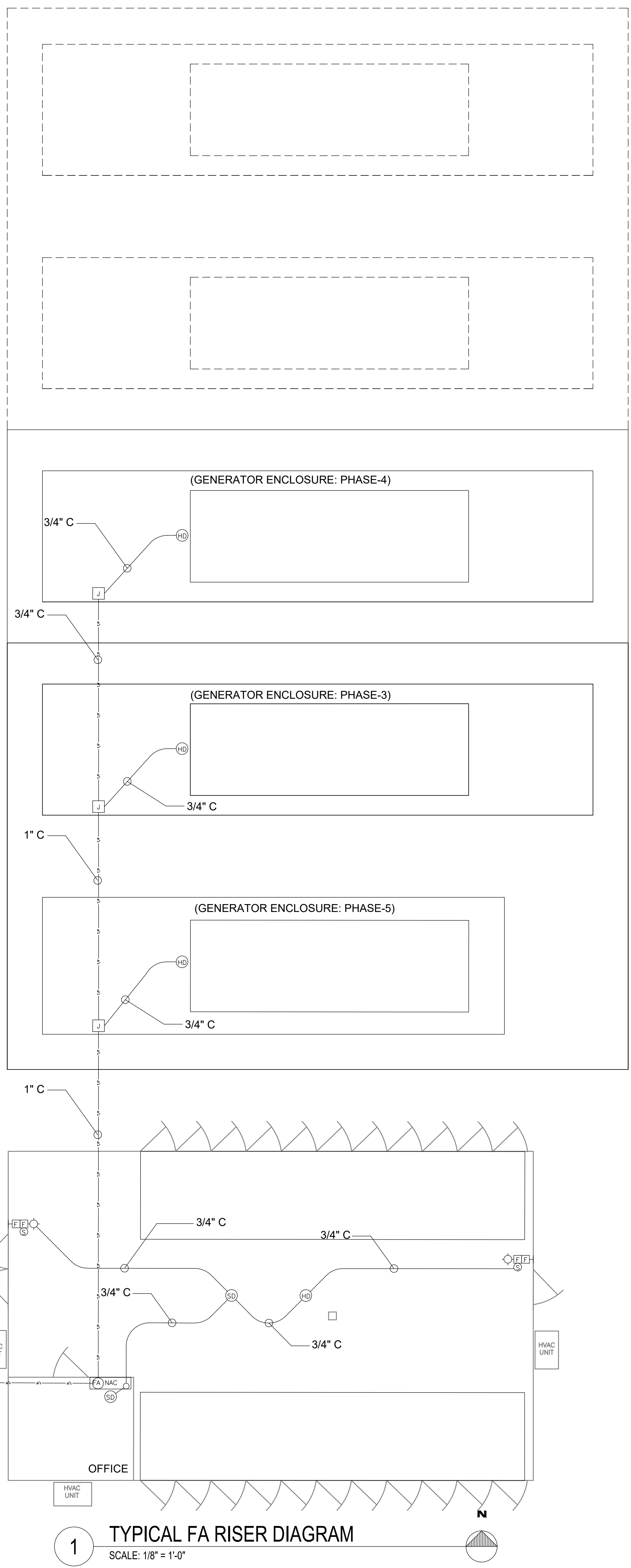
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2 TYPICAL CCTV RACEWAY SYSTEM
SCALE: 1/8" = 1'-0"

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1 TYPICAL FA RISER DIAGRAM
SCALE: 1/8" = 1'-0"

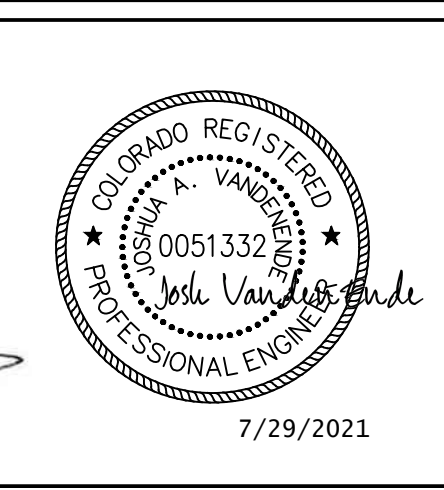
- SHEET NOTES:**
- A. COORDINATE INSTALLATION WITH OTHER TRADES ACCORDING TO PHASING PLANS.
 - B. VERIFY EXACT DIMENSIONS WITH FIELD CONDITIONS AND WITH SUBMITTED EQUIPMENT.
 - C. ALL CCTV AND FIRE ALARM CONDUIT AND JUNCTION BOX ASSEMBLIES SHALL BE PRE-ROUTED WITHIN THE PRE-FABRICATED ENCLOSURES.

SHEET KEY NOTES:

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#	Revisions:	Date

CONSULTANTS:



PROJECT MANAGER: ACG Project Number: 18-024
CEMS Project Number: 17157A

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1151 Kiddare Farm Rd. Suite 120
Cary, NC 27511
www.aeg-jv.com
(919)558-7420

108 Bentons Lodge Road Suite B
Summerville, SC 29485
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(843)875-3037

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Drawing Title
ELECTRICAL DETAILS

Location
2501 W 22ND ST
SIOUX FALLS, SD 57105

Project Title
UPGRADE STATION
GENERATOR SYSTEM -
PSDM REDESIGN

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EFJ

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Drawing Number
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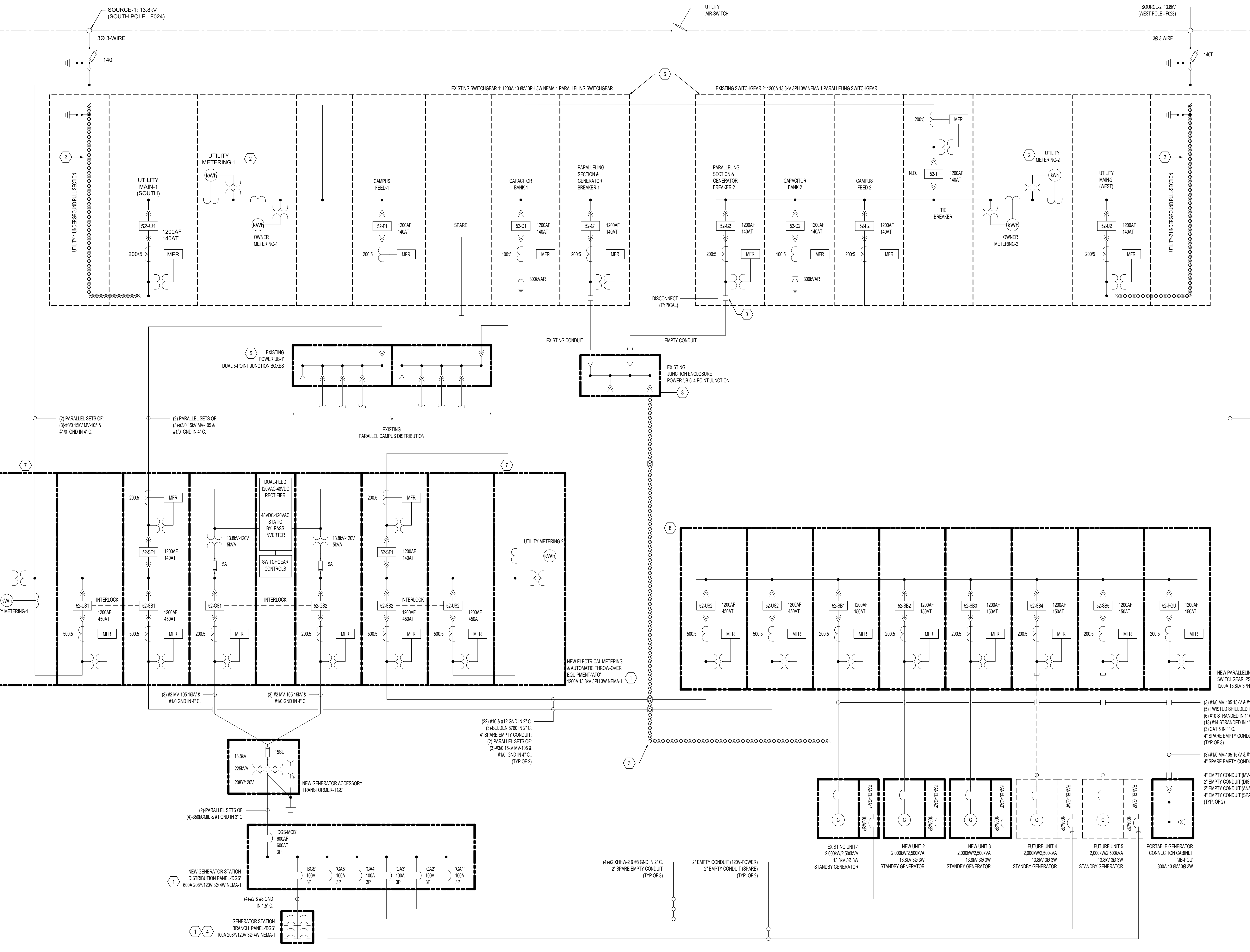
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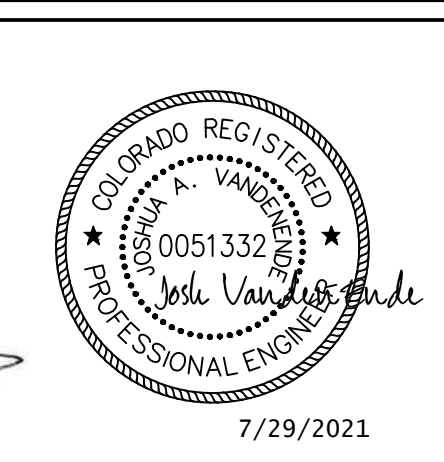


- SHEET NOTES:**
- A. COORDINATE UTILITY DISCONNECTS, EQUIPMENT AND RE-CONNECTS WITH SERVING UTILITY COMPANY (XCEL ENERGY).
 - B. CONTRACTOR TO COORDINATE AND PROVIDE A SEQUENCE OF OPERATION TO ENSURE AUTOMATIC TRANSITION BETWEEN POWER SOURCES (UTILITY, STANDBY GENERATION SYSTEM) AND EXISTING EQUIPMENT (EXISTING SWITCHGEAR) THAT ALLOWS THE CAMPUS TO CONNECT TO RELIABLE ELECTRICAL SERVICE IN CASES OF UTILITY OUTAGES (SHORT-TERM AND PROLONGED). ENSURE SAFETIES AND REDUNDANT SYSTEMS ARE EMPLOYED FOR CONTROL AND MONITORING.
 - C. ENGAGE AND RETAIN EXISTING SWITCHGEAR MANUFACTURER (STATS MANUFACTURING) FOR MODIFICATIONS NECESSARY TO INTEGRATE NEW SWITCHGEAR WITH EXISTING SWITCHGEAR SEQUENCE OF OPERATION.
- SHEET KEY NOTES:**
- 1. INSTALL NEW METAL BUILDING ENCLOSED SWITCHGEAR SECTIONS. PROVIDE NEW UTILITY CONNECTIONS AS REQUIRED BY UTILITY COMPANY STANDARDS.
 - 2. AFTER NEW METERING - ATO OPERATIONAL, REMOVE EXISTING UTILITY METERING AND CONDUCTORS.
 - 3. AFTER NEW GENERATION SET-#2 HAS BEEN INSTALLED AND IS OPERATIONAL, DISCONNECT EXISTING GENERATOR-#1 AND REMOVE CONDUCTORS. REMOVE EXISTING JUNCTION ENCLOSURE AND REMOVE CONNECTIONS TO SWITCHBOARD-2.
 - 4. PROVIDE SUFFICIENT BRANCH DISTRIBUTION AND CIRCUIT BREAKERS FOR STATION POWER REQUIREMENTS. INCLUDE (AT A MINIMUM) A 42-CIRCUIT PANELBOARD, FILLED WITH 20A 1-POLE BREAKERS. MODIFY AND CONFIGURE CIRCUIT BREAKERS AS NECESSARY FOR REQUIRED DISTRIBUTION.
 - 5. EXISTING PULL BOXES TO BE REPLACED. SEE KEYNOTE NO. 10 ON EP103.
 - 6. EXISTING 15 KV SWITCHGEAR TO BE DISCONNECTED AND REMOVED AFTER NEW SWITCHGEARS ARE ENERGIZED. CIRCUIT BREAKERS AND MISCELLANEOUS METERING DEVICES SHALL BE CLEANED AND SURRENDERED TO VA FACILITIES.
 - 7. INCOMING AND METERING SECTION TO BE IN COMPLIANCE WITH XCEL'S SPECIFICATIONS. SEE SPECIFICATION BOOKLET.
 - 8. EACH SET OF TERMINATIONS FOR THE SWITCHGEAR SHALL BE EQUIPPED WITH THERMAL MONITORING SENSORS. INCLUDE ENVIRONMENTAL SENSORS WITHIN THE SWITCHGEAR BUILDING. SENSORS SHALL BE NETWORKED TO A CENTRAL HMI AND FACTORY INSTALLED WITHIN THE SWITCHGEAR. BASIS OF DESIGN FOR THERMAL MONITORING SYSTEM IS OKKEN BY SCHNEIDER ELECTRIC. PROVIDE NETWORK CONNECTION TO BUILDING 20 AND ALL ASSOCIATED PROGRAMING TO CONNECT THE SYSTEM TO THE CAMPUS BUILDING AUTOMATION SYSTEM.

1 ELECTRICAL SINGLE-LINE DIAGRAM
SCALE: NOT TO SCALE

100% CONSTRUCTION DOCUMENTS

CONSULTANTS:



PROJECT MANAGER: ACG Project Number: 18-024
CEMS Project Number: 17157A

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www.apogeecems.com
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Drawing Title
**ELECTRICAL SINGLE-LINE
DIAGRAM**

Location
**2501 W 22ND ST
SIOUX FALLS, SD 57105**

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**UPGRADE STATION
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Building Number
27

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E-601

Dwg. 10 of 10

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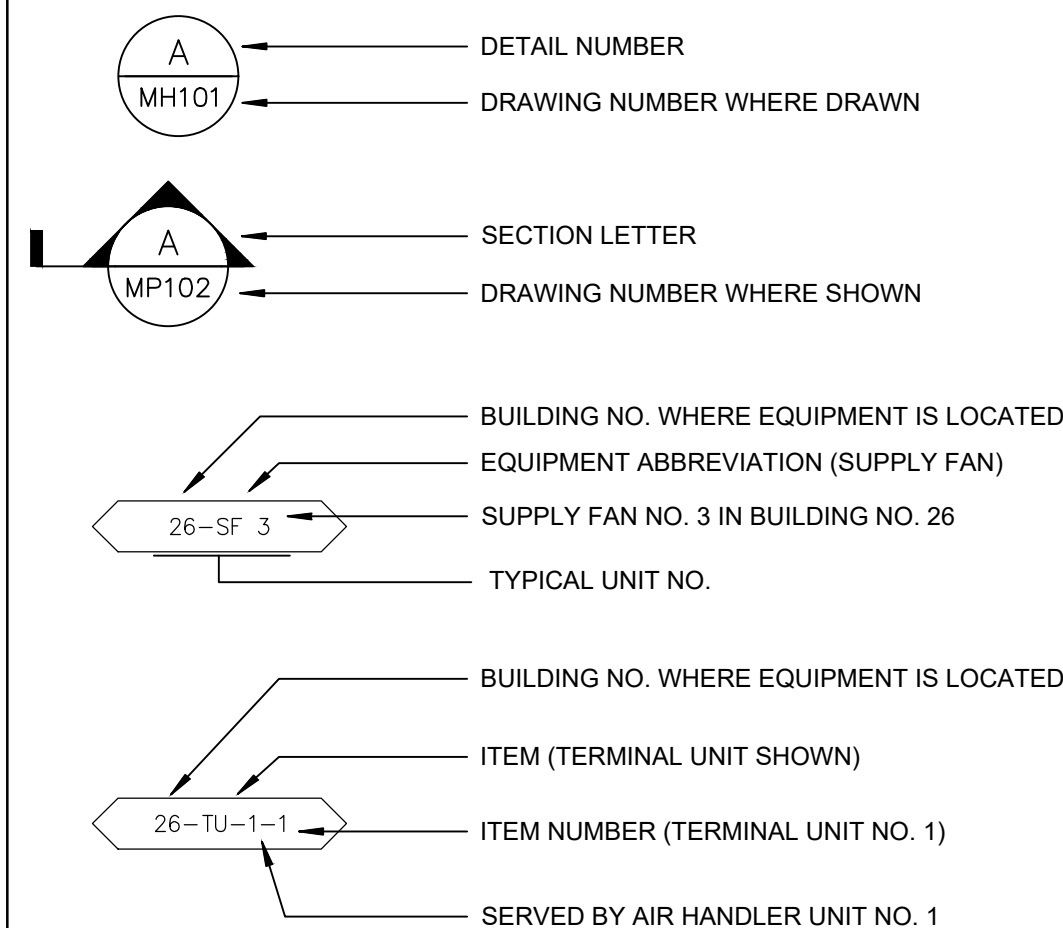
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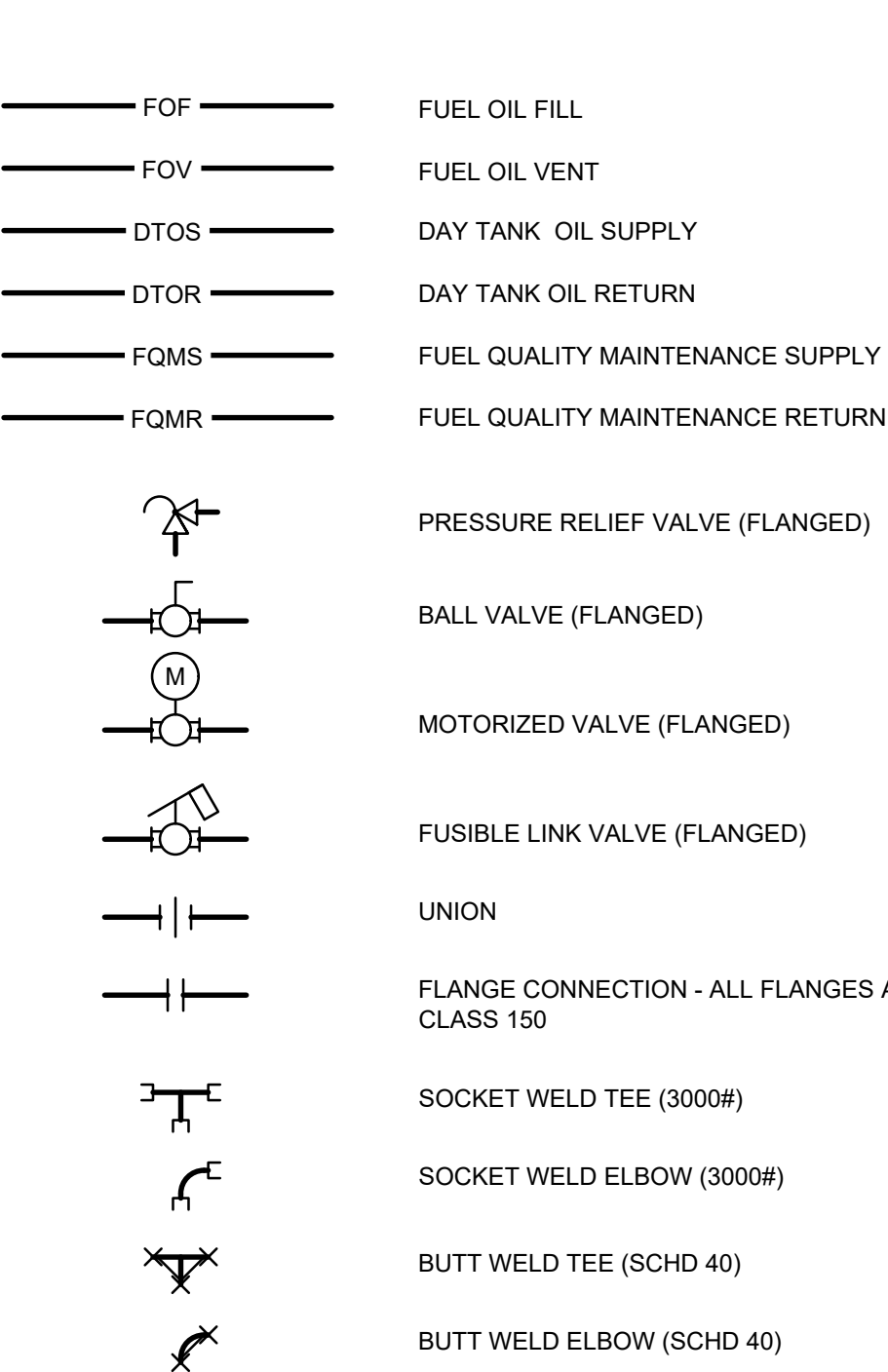
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DRAWING SYMBOLS



VALVE AND PIPING SYMBOLS

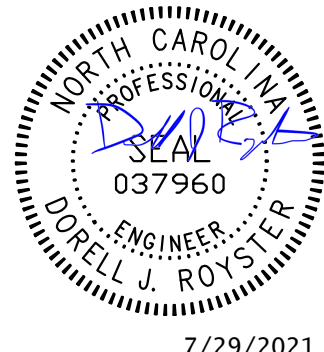


ABBREVIATIONS

A/E	ARCHITECT / ENGINEER	D	DAMPER - AUTOMATIC	HD	HOOD	MH	MANHOLE	SD	SUPPLY AIR DIFFUSER
AAHX	AIR TO AIR HEAT EXCHANGER	D-1	OUTDOOR AIR DAMPER	HOA	HAND/OFF/AUTOMATIC	MHP	MOTOR HORSEPOWER	SDR	SMOKE DAMPER
AB	AIR BLENDER	D-2	RETURN AIR DAMPER	HP	HEAT PUMP	MN	MINIMUM	SDR	SMOKE DAMPER (RETURN)
AV	AUTOMATIC AIR VENT	D-3	RELIEF AIR DAMPER	HP	HORSEPOWER	MM	MILLIMETER	SDS	SMOKE DAMPER (SUPPLY)
ACC	AIR COOLED CONDENSER	DB	DECIBELS	HPDT	HIGH PRESSURE DRIP TRAP	MOV	MOTOR OPERATED VALVE	SEN	SENSIBLE HEAT
ACCH	AIR COOLED CHILLER	DB	DRY-BULB TEMPERATURE	HPR	HIGH PRESSURE RETURN (STEAM CONDENSATE)	MPR	MEDIUM PRESSURE RETURN (STEAM CONDENSATE)	SP	SUPPLY FAN
ACCU	AIR-COOLED CONDENSING UNIT	DDC	DIRECT DIGITAL CONTROLS	HPS	HIGH PRESSURE SUPPLY (STEAM CONDENSATE)	MPS	MEDIUM PRESSURE STEAM	SG	SUPPLY AIR GRILLE
ACU	AIR CONDITIONING UNIT	DEG	DEGREE	HRC	HEAT RECOVERY COIL	MRI	MAGNETIC RESONANCE IMAGING	SH	STEAM HUMIDIFIER
ACD	AUTOMATIC CONTROL DAMPER, TWO POSITION	DIA	DIAMETER	HRD	HEAT RECOVERY DEVICE	MTD	MEAN TEMPERATURE DIFFERENCE	SHC	STEAM HEATING COIL
ACD-TP	AUTOMATIC CONTROL DAMPER, TWO POSITION	DIW	DEIONIZED WATER	HRP	HYDRONIC RADIANT (CEILING) PANEL	MVD	MANUAL VOLUME DAMPER	SI	SQUARE INCHES
AD	ACCESS DOOR	DP	DEW POINT TEMPERATURE	HRW	HEAT RECOVERY WHEEL	MZ	MULTI-ZONE	SP	STATIC PRESSURE
AF	AFTER FILTER	DPA	DIFFUSER PLATE	HSTAT	HUMIDISTAT	NA	NOT APPLICABLE	SP GR	SPECIFIC GRAVITY
AFV	AIR FLOW CONTROL VALVE	DPS	DIFFERENTIAL PRESSURE ASSEMBLY	HTM	HUMIDIFIER TERMINAL	NC	NOISE CRITERIA	SPR	SUPPLY PROCESS AND DISTRIBUTION
AFF	ABOVE FINISHED FLOOR	DPS	DIFFERENTIAL PRESSURE SENSOR	HUM	HUMIDIFIER UNIT MOUNTED	NC	NOISE CRITERIA	SPRV	STEAM PRESSURE REDUCING VALVE
AFMD	AIR FLOW MEASURING DEVICE	DX	DIRECT EXPANSION	HVJ	HEATING AND VENTILATING UNIT	NG	NATURAL GAS	SPS	STATIC PRESSURE SENSOR
AFW	AIR FOIL WHEEL (FAN)	DXCC	DIRECT EXPANSION COOLING COIL	HW	HOT WATER	NGF	NATURAL GAS FLOWMETER	SQ FT	SQUARE FOOT (FEET)
AHU	AIR HANDLING UNIT	EA	EXHAUST AIR	HWC	HOT WATER COIL	NO	NORMALLY OPEN	SS	STAINLESS STEEL
AMP	AMPERAGE	EAT	ENTERING AIR TEMPERATURE	HWP	HEATING HOT WATER PUMP	NOAA	NATIONAL OCEANIC & ATMOSPHERIC	SSHX	STEAM TO STEAM HEAT EXCHANGER
AP	ACCESS PANEL	EC	EVAPORATIVE COOLER	HWR	HEATING HOT WATER RETURN	NOM	ADMINISTRATION	SSR	SOLID SEPARATOR
APD	AIR PRESSURE DROP	ECU	ENGINEERING CONTROL CENTER	HWS	HEATING HOT WATER SUPPLY	NPLV	NON-STANDARD PART LOAD VALUE	ST	STEAM TRAP
ARI	AIR CONDITIONING AND REFRIGERATION INSTITUTE	EDH	EVAPORATIVE CONDENSER UNIT	HVUH	HOT WATER UNIT HEATER	NPSH	NET POSITIVE SUCTION HEAD	SUH	STEAM UNIT HEATER
AS	AIR SEPARATOR	EF	ELECTRIC DUCT HEATER	HVD	HOISTWAY VENT DAMPER	NTS	NET POSITIVE SUCTION HEAD	SV	STEAM PRESSURE REDUCING VALVE
ASME	AIR SEPARATOR	EF	ELECTRIC DUCT HEATER	HV	HEAT EXCHANGER	NTS	NOT TO SCALE	SVS	STEAM VENT SILENCER
AW	AIR WASHER	EG	EXHAUST FAN	HZ	HERTZ	OA	OUTSIDE AIR	SWHX	STEAM TO WATER HEAT EXCHANGER
AXF	AXIAL FLOW	EGS	EXHAUST GRILLE	I/O	INPUT/OUTPUT	OAG	OUTSIDE AIR GRILLE	T & PCV	TEMPERATURE AND PRESSURE CONTROL VALVE
B	BOILER	EGT	EMERGENCY GAS SHUTOFF	IAQ	INDOOR AIR QUALITY	OAI	OUTSIDE AIR INTAKE	TAB	TESTING, ADJUSTING, BALANCE
BD	BUTTERFLY DAMPER	EGH	ENTERING GLYCOL TEMPERATURE	IBT	INVERTED BUCKET TRAP	OD	OUTSIDE DIAMETER	TAB	TESTING, ADJUSTING, BALANCE
BDD	BACKDRAFT DAMPER	EH	EXHAUST HOOD	ICF	IN-LINE CENTRIFUGAL FAN	OFM	OPERATING ROOM	TD	TOTAL DYNAMIC HEAD
BDR	BASE BOARD RADIATOR	EMD	END OF MAIN DRIP (STEAM)	ICU	INTENSIVE CARE UNIT	OR	OPERATING ROOM	TDH	TOTAL DISSOLVED SOLIDS
BFP	BACKFLOW PREVENTER	ENT	ENTERING	IFB	INTEGRAL FACE AND BYPASS	P	PUMP	TS	TRANSFER GRILLE
BFT	BOILER FILL	ER	EXHAUST REGISTER	IN	INCHES	PA	PASCAL	TP	TRAP
BG	BOTTOM GRILLE	ERC	ELECTRIC REHEAT COIL	IN HG	INCHES OF MERCURY	PCF	POUNDS PER CUBIC FOOT (FEET)	TSP	TOTAL STATIC PRESSURE
BHP	BRAKE HORSEPOWER	ERP	ELECTRIC RADIANT PANEL	IN WC	INCH WATER COLUMN	PD	PRESSURE DROP	TSTAT	THERMOSTAT
BHW	HOT WATER HEATING BOILER	ESP	EXTERNAL STATIC PRESSURE	IN WG	INCH WATER GAUGE	PEF	PREFILTER (TYPE) EXHAUST FAN	TU	TERMINAL UNIT
BHX	BOILER BLOWDOWN HEAT EXCHANGER	ET	EXPANSION TANK	IN-LB	INCH POUND	PF	PRE-FILTER	TWU	THRU-WALL UNIT
BIW	BACKWARD INCLINED WHEEL (FAN)	EUH	ELECTRIC UNIT HEATER	IRH	INFRARED HEATER	PG	PRESSURE GAGE	UC	UNDER CUT
BMT	BONE MARROW TRANSPLANT	EWC	EVAPORATIVE WATER COOLER	IS	INSECT SCREEN	PCW	PROPYLENE GLYCOL-WATER (SOLUTION)	UC	UNIT COOLER
BR	BOTTOM REGISTER	EW	ENTERING WATER TEMPERATURE	IU	INDUCTION UNIT	PHC	PREHEAT COIL	UH	UNIT HEATER
BSC	BIOLOGICAL SAFETY CABINETS	EX	EXISTING	IV	INLET VANES	PPM	PARTS PER MILLION	UL	UNDERWRITERS LABORATORY
BT	BLOWOFF TANK	F	FAHRENHEIT	kg	KILOGRAM	PRV	PRESSURE REGULATING VALVE	URV	UPRIST UNIT VENTILATOR
BTU	BRITISH THERMAL UNIT	F&T	FLOAT AND THERMOSTATIC	kg/hr	KILOGRAM PER HOUR	PSI	POUNDS PER SQUARE INCH	V	VALVE
BTUH	BRITISH THERMAL UNIT PER HOUR	F/SDPR	COMBINATION FIRE SMOKE DAMPER	KPa	KILOPASCAL	PSIA	POUNDS PER SQUARE INCH - ABSOLUTE	VAF	VANE-AXIAL FAN
BWT	BOILER PLANT WATER TUBE	FA	FREE AREA	KW	KILOWATT	PSIG	POUNDS PER SQUARE INCH - GAGE	VAV	VARIABLE AIR VOLUME
CC	CENTIGRADE (CELSIUS)	FC	FLEXIBLE CONNECTION	kWh	KILOWATT HOUR	PSS	PRIMARY SECONDARY SYSTEM	VD	VARIABLE FREQUENCY DRIVE
CCD	COOLING COIL	FCU	FAN COIL UNIT (4 PIPE)	L	LITER	PSV	PRESSURE SAFETY VALVE	VFD	VARIABLE FREQUENCY DRIVE
CCU	COOLING COIL CONDENSATE DRAIN	FD	FAN COIL UNIT COOLING ONLY	L/h	LITERS PER HOUR	PTAC	PACKAGED TERMINAL AIR CONDITIONER	VHA	VETERANS HEALTH ADMINISTRATION
CD	CEILING DIFFUSER	FCUH	FAN COIL UNIT HEATING ONLY	L/m	LITERS PER MINUTE	RA	RETURN OR EXHAUST	VIV	VARIABLE INLET VANES
CENT	CENTRIFUGAL	FD	FORWARD CURVED WHEEL (FAN)	L/s	LITERS PER SECOND	RAD	REFRIGERANT AIR DRYER	VP	VACUUM PUMP
CFH	CUBIC FEET PER HOUR	FF	FIRE DAMPER	LAT	LEAVING AIR TEMPERATURE	RAF	RADIO FREQUENCY	VPS	VARIABLE PRIMARY SYSTEM
CFM	CUBIC FEET PER MINUTE	FFH	FINAL FILTER	LB/SHR	POUNDS PER HOUR	RAHX	ROTARY AIR HEAT EXCHANGER	VR	VACUUM (STEAM CONDENSATE) RETURN
CFT	CUBIC FEET	FXH	FLUE GAS/FEEDWATER HEAT EXCHANGER	LG	LEAVING GLYCOL TEMPERATURE	RAT	RETURN AIR TEMPERATURE	VSD	VARIABLE SPEED DRIVE
CFF	CHEMICAL FEED PUMP	FM	FLOW METER	LH	LATENT HEAT	RCCH	REMOTE CONDENSER CHILLER	VUH	VERTICAL UNIT HEATER
CG	CEILING GRILLE	FOP	FUEL OIL PUMP	LPG	LIQUID PROPANE GAS	RCU	RECIPROCATING CHILLER UNIT	W	WATTS
CH	CHILLER	FOT	FUEL OIL TANK	LPR	LOW PRESSURE RETURN (STEAM CONDENSATE)	RDS	REFRIGERANT DISCHARGE	WAG	WASTE ANESTHESIA GAS
CHP	CHILLED WATER PUMP	FOHX	FUEL OIL HEAT EXCHANGER	LPRC	LOW PRESSURE STEAM RETURN (CLEAN)	REA	RELIEF AIR	Wb	WET-BULB (TEMPERATURE)
CHW	CHILLER WATER	FPM	FEET PER MINUTE	LLHX	LIQUID TO LIQUID HEAT EXCHANGER	RF	RETURN FAN	WC	WATER COOLED
CHR	CHILLED WATER RETURN	FPS	FEET PER SECOND	LPS	LOW PRESSURE STEAM	RFG	RETURN GRILLE	WCCH	WATER COOLED CHILLER
CHS	CHILLED WATER SUPPLY	FPTU	FAN POWERED TERMINAL UNIT	LPSC	LOW PRESSURE STEAM (CLEAN)	RH	RELATIVE HUMIDITY	WCCU	WATER COOLED CONDENSING UNIT
CI	CAST IRON	FR	FLOOR REGISTER	LSO	LINEAR SLOT DIFFUSER	RHC	REHEAT COIL	WCHF	WATER COOLED HEAT PUMPS
CM	CARBON MONOXIDE	FRP	FIBER REINFORCED POLYESTER	LTC	LOCAL TEMPERATURE CONTROL PANEL	RHG	REFRIGERANT HOT GAS	WCPU	WATER COOLED PACKAGED UNIT
CM	CUBIC METER	FS	FLOW SWITCH	LTV	LEAVING WATER TEMPERATURE	RL	REFRIGERANT LIQUID LINE	WEF	WALL EXHAUST FAN
CM/S	CUBIC METER PER SECOND	FSTAT	FREEZESTAT	LTV	LEAVING WATER TEMPERATURE	RLA	REFRIGERANT LIQUID LINE	WF	WATER FILTER
CO	CLEAN OUT	FT	FEET	LWT	LEAVING WATER TEMPERATURE	RPM	REVOLUTIONS PER MINUTE	WFCV	WATER FLOW CONTROL VALVE
CO2	CARBON DIOXIDE	FT-LB	FOOT-POUND	LVT	LEAVING WATER TEMPERATURE	RR	RETURN REGISTER	WFM	WATER FLOWMETER
COMP	COMPRESSOR UNIT	FTR	FAN TUBE RADIATION	LWG	LEAVING WATER TEMPERATURE	RS	REFRIGERANT SUCTION	WFD	WATER FLOW MEASURING DEVICE
COP	COEFFICIENT OF PERFORMANCE	FV	FACE VELOCITY	M	METER, SI UNIT	RTU	ROOF TOP UNIT	WFO	WATER FLOW
CP	CONDENSATE PUMP	GA	GAUGE	M/s	METERS PER SECOND (OR METERS/SECOND)	SA	SUPPLY AIR	WPD	WATER SIDE PRESSURE DROP
CR	CEILING REGISTER	GAL	GALLONS	MA	MIXED AIR	SV	RELIEF VALVE	YR	YEAR
CS	CONDENSATE STORAGE TANK	GH	GRAVITY HOOD	MAT	MIXED AIR TEMPERATURE	SAD	SOUND ATTENUATING DEVICE		
CSG	CLEAN STEAM GENERATOR	GPD	GALLONS PER DAY	MAU	MAKE-UP AIR UNIT	SAT	SUPPLY AIR TEMPERATURE		
CT	COOLING TOWER	GPH	GALLONS PER HOUR	MAV	MANUAL AIR VENT	SC	SHADING COEFFICIENT		
CU	CONDENSING UNIT	GPM	GALLONS PER MINUTE	MAX	MAXIMUM	SCFM	STANDARD CUBIC FEET PER MINUTE		
CUH	CABINET UNIT HEATER	GPR	GAS PRESSURE REGULATOR	MB	MIXING BOX	SCI	SPINAL CODE INJURY		
CV	CONSTANT VOLUME	GS	GALVANIZED STEEL	MBH	1000 BTUH	SCR	SILICON CONTROLLED RECTIFIER		
CW	COLD WATER (POTABLE)	H	HUMIDIFIER	MCA	MECHANICAL EQUIPMENT ROOM	SD	SMOKE DETECTOR		
CWCC	CHILLED WATER COOLING COIL	H&CW	HOT & COLD WATER	MER	MECHANICAL EQUIPMENT ROOM				
CWP	CONDENSER WATER PUMP	HAC	HOUSEKEEPING AID CLOSET						
CWR	CONDENSER WATER RETURN (TO COOLING TOWER)	HC	HEATING COIL						
CWS	CONDENSER WATER SUPPLY (FROM COOLING TOWER)	HD	HEAD						

100% CONSTRUCTION DOCUMENTS

CONSULTANTS:



7/29/2021

PROJECT MANAGER:

ACG Project Number: 18-024
CEMS Project Number: 17157A

APOGEECEMS
Joint Venture
An Alliance for Success

1151 Kidlane Farm Rd. Suite 120
Cary, NC 27511
www.apogeece.com
(919)558-7420

108 Bentons Lodge Road Suite B
Summerville, SC 29485
www.cems-sa.com
(803)875-3037



U.S. Department of Veterans Affairs

Office of Construction and Facilities Management

Drawing Title
MECHANICAL LEGEND, NOTES, AND ABBREVIATIONS

Location
**2501 W 22ND ST
SIOUX FALLS, SD 57105**

Project Title
**UPGRADE STATION
GENERATOR SYSTEM -
PSDM REDESIGN**

Approved:

Date
JULY 30, 2021

Checked
DJR

Drawn
MRA, WLF

VA PROJECT NUMBER
438-18-100

Building Number
27

Drawing Number
M-001

Dwg. 1 of 5

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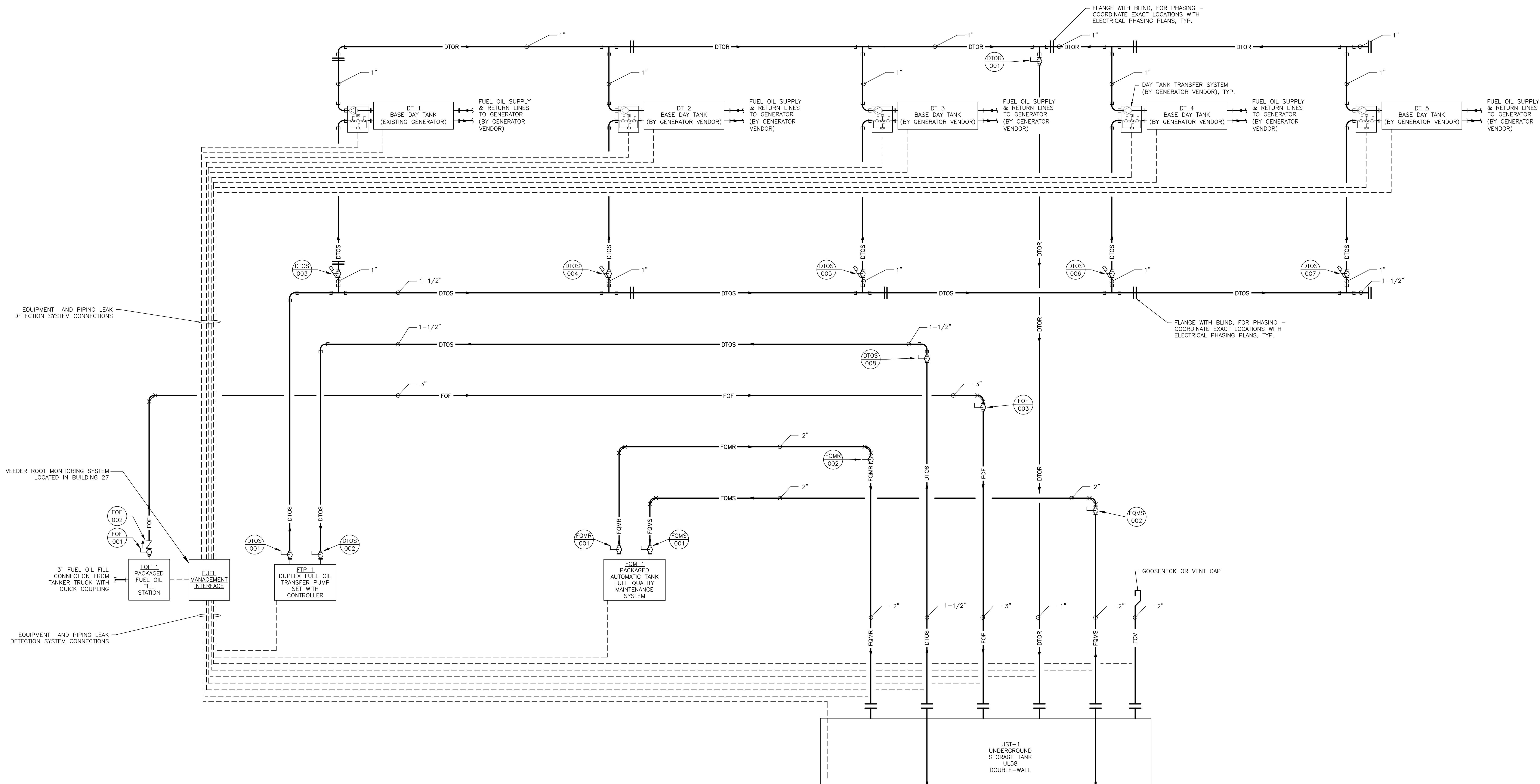
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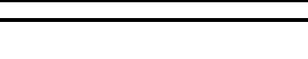
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1 FUEL OIL PIPING SCHEMATIC
SCALE: NOT TO SCALE

100% CONSTRUCTION DOCUMENTS

			CONSULTANTS:			PROJECT MANAGER:		ACG Project Number: 18-024 CEMS Project Number: 17157A	Office of Construction and Facilities Management	VA U.S. Department of Veterans Affairs	Drawing Title FUEL OIL PIPING SCHEMATIC		Project Title UPGRADE STATION GENERATOR SYSTEM - PSDM REDESIGN		VA PROJECT NUMBER 438-18-100	
						APOGEECEMS Joint Venture An Alliance for Success		1151 Kildaire Farm Rd. Suite 120 Cary, NC 27511 www.apogeececms.com (919)558-7420 © COPYRIGHT Apogee - CEMS JV, LLC			108 Bentons Lodge Road Suite B Summerville, SC 29485 www.cems-iae.com (843)875-3637		Location 2501 W 22ND ST SIOUX FALLS, SD 57105		Approved: Date JULY 30, 2021 Checked DJR Drawn MRA, WLF	
#	Revisions:	Date														

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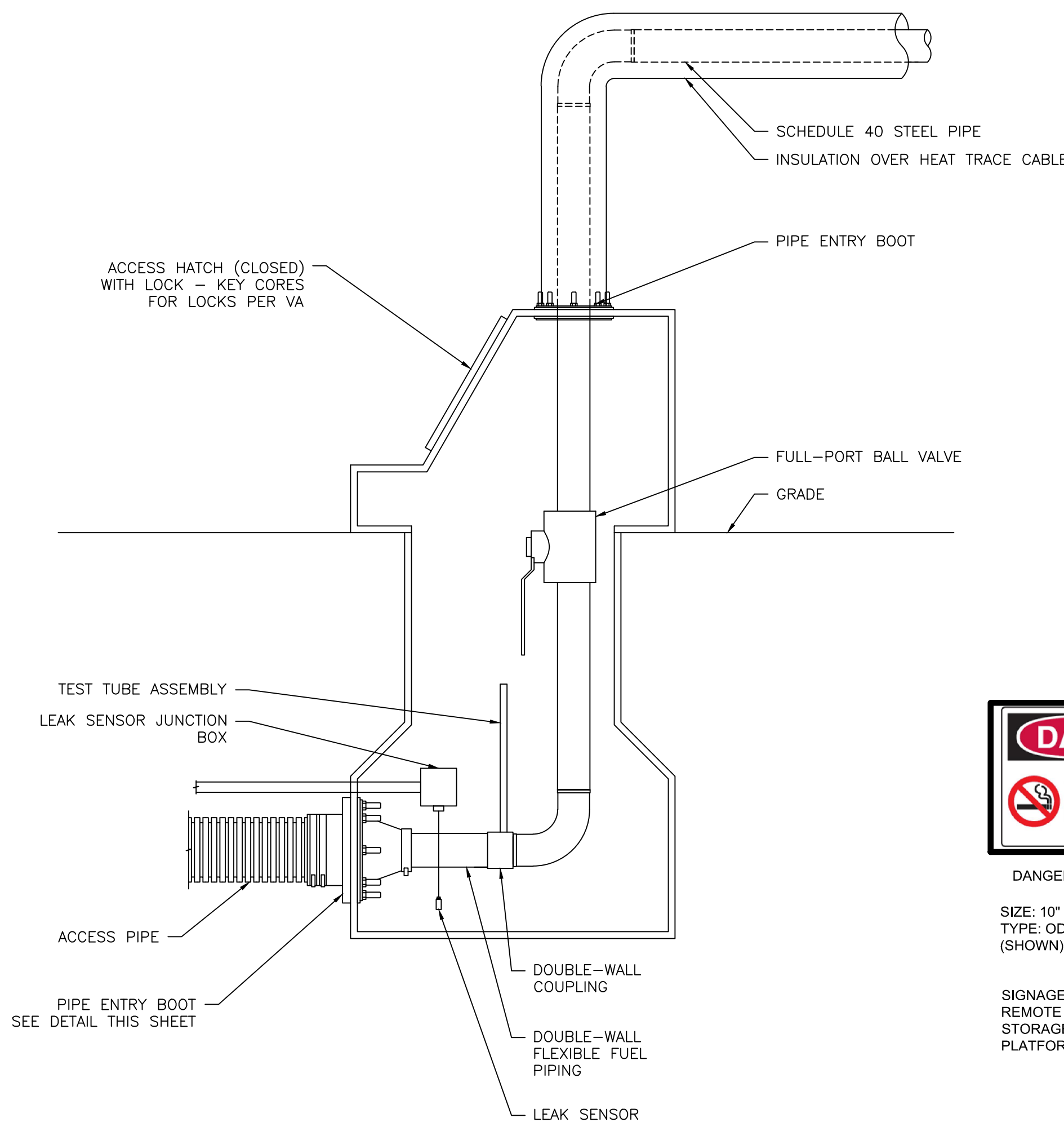
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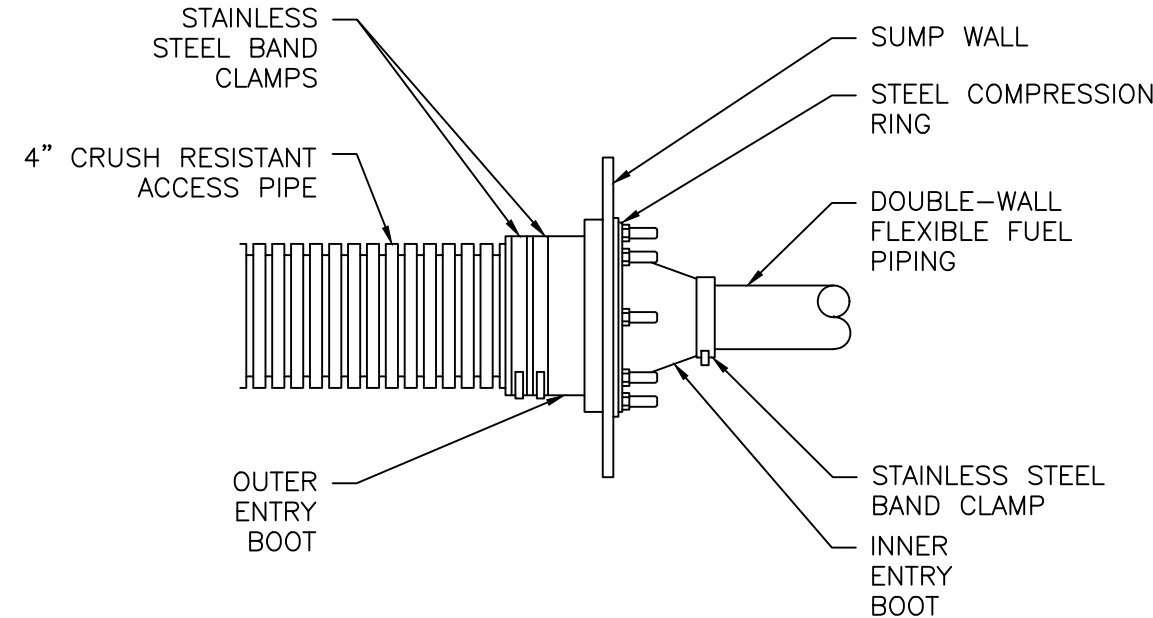
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1 TRANSITION SUMP DETAIL
M-601 SCALE: NTS

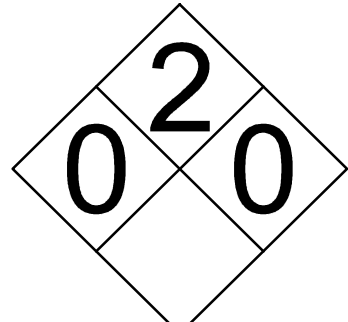


2 PIPE ENTRY BOOT DETAIL
M-601 SCALE: NTS



DANGER, NO SMOKING
SIZE: 10" W x 7" H
TYPE: ODE-2107 OR ADE-2107 (SHOWN)

SIGNAGE TO BE PLACED ON LID OF REMOTE FILL STATION & ON FUEL STORAGE TANK, VIEWABLE FROM PLATFORM LADDER



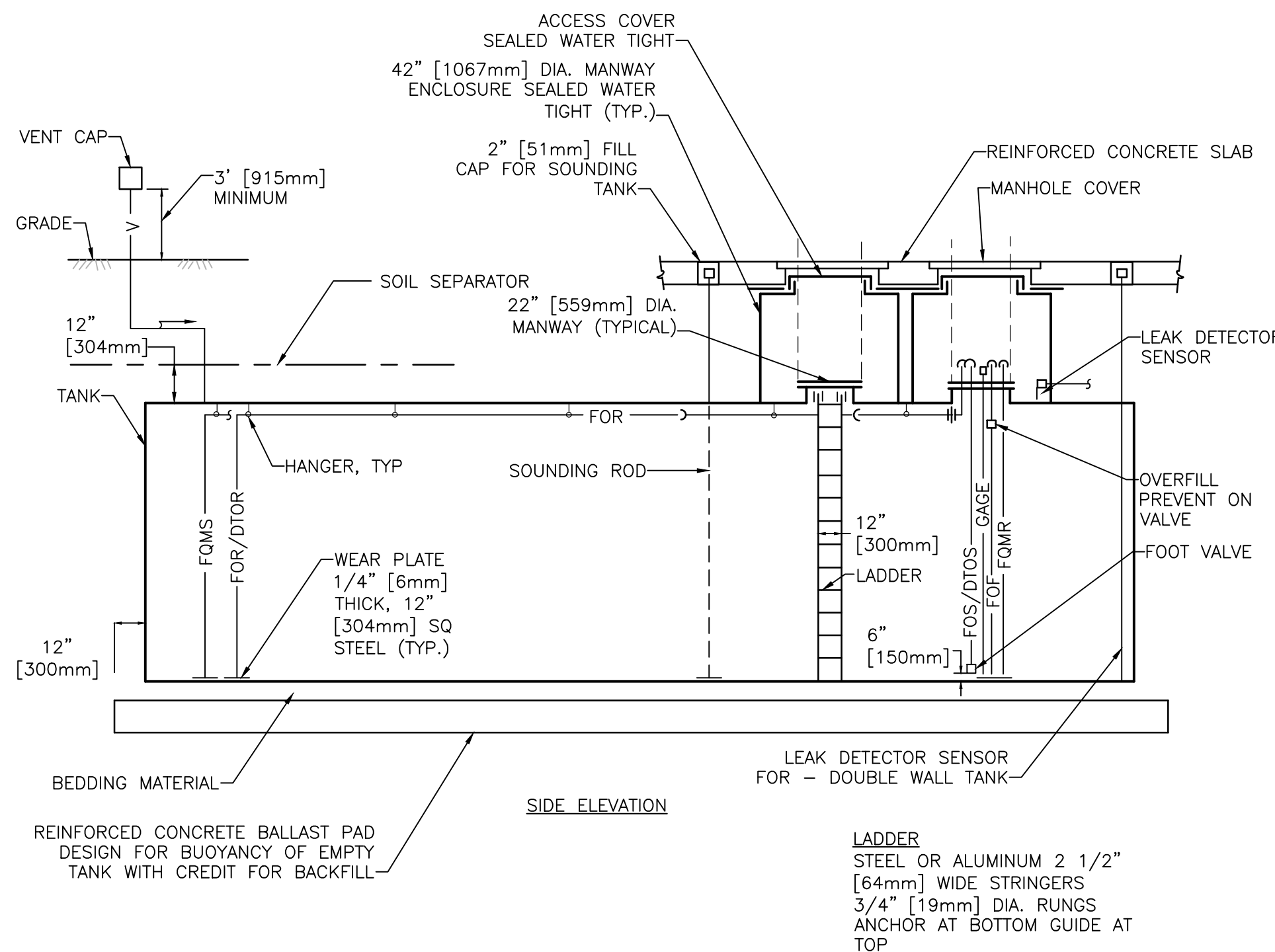
NFPA 704 HAZMAT PLACARD
SIZE: 6" SIDE (A) WITH 2" NUMERALS (VIEWABLE @ 75')
TYPE: BLACK LETTERS ON COLORED BACKGROUNDS PER NFPA 704 ART. 9.1

HAZMAT DIAMOND TO BE PLACED ON FUEL STORAGE TANK, VIEWABLE FROM PLATFORM LADDER

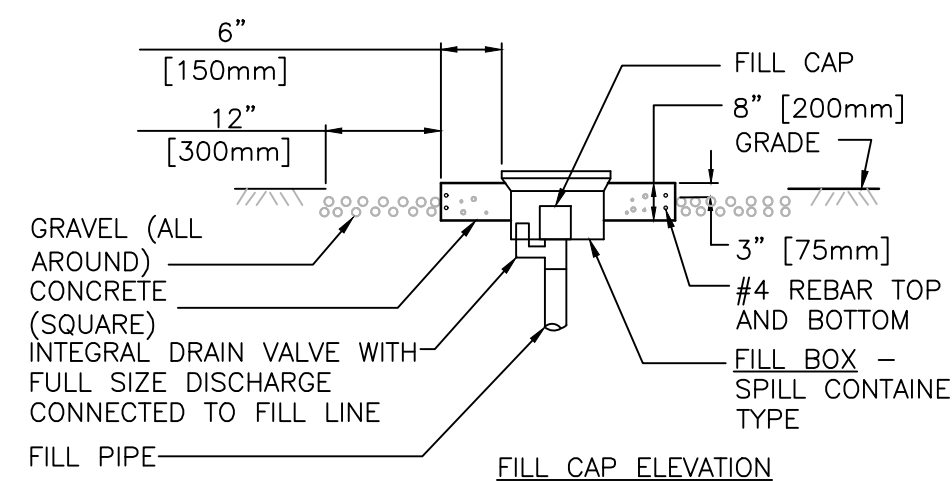
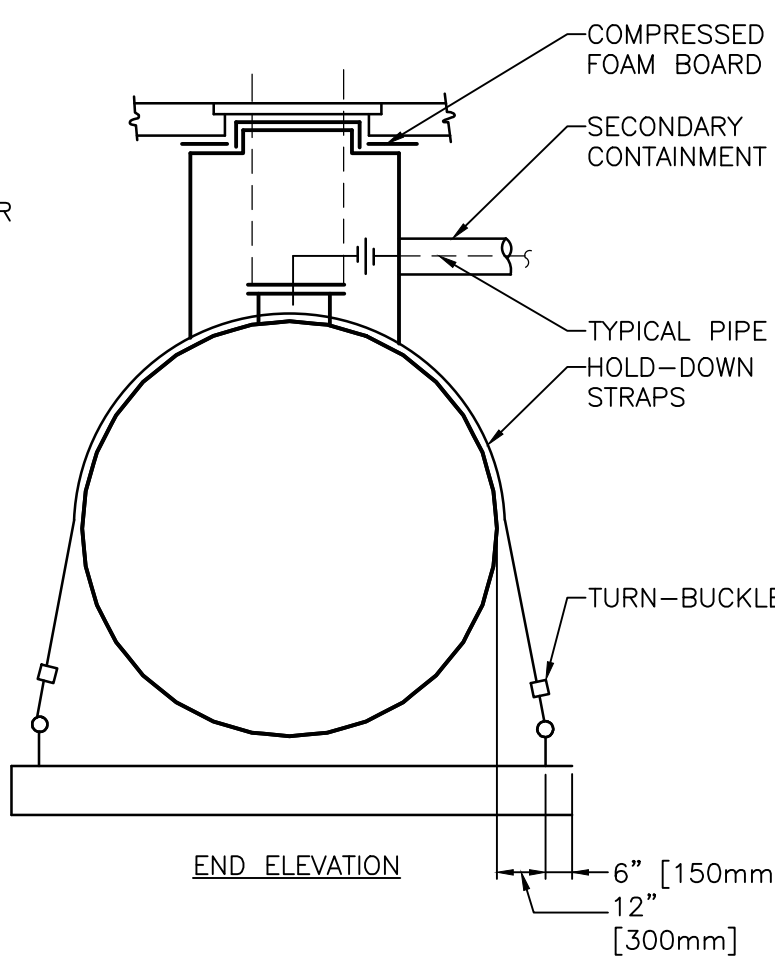
WHEN ALARM SOUNDS - FUEL TANK FILLED TO CAPACITY - DO NOT OVERFILL

SIGNAGE TO BE PLACED ON LID OF REMOTE FILL STATION.

3 FUEL SYSTEM SIGNAGE
M-601 SCALE: NTS



4 UNDERGROUND FUEL OIL STORAGE TANK DETAIL
M-601 SCALE: NOT TO SCALE



EQUIPMENT SCHEDULE																				
MARK	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	TYPE	INLET SIZE		DISCHARGE SIZE		CIRCULATING FLUID						ELECTRICAL DATA				REMARKS	
					IN.	[MM]	IN.	[MM]	FLUID	FLOW		HEAD		TEMPERATURE		NOMINAL MOTOR HP	[kW]	PHASE		VOLT
										GPM	[L/s]	FT	[kPa]	°F	[°C]					
FTP 1	YARD	MAIN TANKS	TRANSFER PUMP	PACKAGED	1.5	[38]	1.5	[38]	DIESEL	15	[1]	60	[960]	93	[34]	2	[1.5]	3	208	NOTES 1,3
FQM 1	YARD	ALL TANKS	FUEL QUALITY	PACKAGED	2	[51]	2	[51]	DIESEL	40	[3]	30	[480]	93	[34]	3	[2.2]	3	208	NOTES 1,3
FOF 1	YARD	FUEL OIL FILL	MAIN TANK FILL	PACKAGED	3	[76]	3	[76]	DIESEL	35	[2]	20	[320]	93	[34]	5	[3.7]	3	208	NOTES 1,3
FCP 1	YARD	FUEL OIL TANKS	FUEL CONTROL PANEL	PACKAGED	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	120	NOTE 3
HTCP 1	BUILDING 27	FUEL OIL PIPING	PIPING HEAT TRACE CONTROL PANEL	PACKAGED	NA	NA	NA	NA	DIESEL	NA	NA	NA	NA	40	[4]	NA	NA	1	120	NOTE 4
NOTES: 1. FLOW RATE LISTED IS MINIMUM REQUIRED FLOW. 2. WITH OIL GUARD CONTROL SYSTEM TO PREVENT OPERATION AND SOUND ALARM ON DETECTION OF OIL ON THE WATER. 3. PACKAGED SYSTEM. EXACT REQUIREMENTS TO BE COORDINATED WITH EQUIPMENT USED. 4. 1-CIRCUIT PANEL , 30 AMPS.																				

STANDBY GENERATOR PLANT • FUEL OIL TANKS SCHEDULE										
MARK	LOCATION	SYSTEM AND/OR SERVICE	QUANTITY	FUEL OIL TYPE NO	NOM CAPACITY		DIMENSIONS	ALARM SYSTEM	LEVEL INDICATOR	REMARKS
					GAL	[L]				
UST 1	YARD	UNDERGROUND MAIN STORAGE	1	DIESEL	50,000	[190000]	68'-1" x 22' x 11'11" H	PACKAGED	YES	NOTE 4, SEE DETAILS FOR CONSTRUCTION AND CONNECTIONS
DT 1	YARD	GENERATOR DAY TANK	1	DIESEL	NA	NA	EXISTING	PACKAGED	YES	EXISTING UNIT, NOTE 2
DT 2	YARD	GENERATOR DAY TANK	1	DIESEL	1700	[6400]	NOTE 1	PACKAGED	YES	NOTES 1, 2, 3
DT 3	YARD	GENERATOR DAY TANK	1	DIESEL	1700	[6400]	NOTE 1	PACKAGED	YES	NOTES 1, 2, 3
DT 4	YARD	GENERATOR DAY TANK	1	DIESEL	1700	[6400]	NOTE 1	PACKAGED	YES	FUTURE UNIT, NOTES 1, 2, 3
DT 5	YARD	GENERATOR DAY TANK	1	DIESEL	1700	[6400]	NOTE 1	PACKAGED	YES	FUTURE UNIT, NOTES 1, 2, 3
NOTES: 1. TANK SIZE AND CAPACITY TO BE DETERMINED BY GENERATOR MANUFACTURER TO PROVIDE 12-HOUR RUN TIME AT 100% GENERATOR CAPACITY. 2. LOCATION: ABOVE GROUND. 3. SUPPLIED WITH GENERATOR PACKAGE. 4. LOCATION: UNDERGROUND.										

VALVE SCHEDULE										
Valve Tag Number	System	Number	Function	Valve Type	Valve Size, NPS (in.)	Connection Type	Class Rating	Normal Position (NO or NC)	Actuator Type	Comments
FOF-001	FOF	001	ISOLATION	BALL	3	FLANGED	150	NO	HANDLE	Supplied by Contractor
FOF-002	FOF	002	CHECK	CHECK	3	FLANGED	150	N/A	SWING	Supplied by Contractor
FOF-003	FOF	003	ISOLATION	BALL	3	FLANGED	150	NO	HANDLE	Supplied by Contractor
FQMS-001	FQMS	001	ISOLATION	BALL	2	FLANGED	150	NO	HANDLE	Supplied by Contractor
FQMS-002	FQMS	002	ISOLATION	BALL	2	FLANGED	150	NO	HANDLE	Supplied by Contractor
FQMR-001	FQMR	001	ISOLATION	BALL	2	FLANGED	150	NO	HANDLE	Supplied by Contractor
FQMR-002	FQMR	002	ISOLATION	BALL	2	FLANGED	150	NO	HANDLE	Supplied by Contractor
DTOS-001	DTOS	001	ISOLATION	BALL	1-1/2	FLANGED	150	NO	HANDLE	Supplied by Contractor
DTOS-002	DTOS	002	ISOLATION	BALL	1-1/2	FLANGED	150	NO	HANDLE	Supplied by Contractor
DTOS-003	DTOS	003	ISOLATION	FUSIBLE LINK	1	FLANGED	150	NO	LINK	Supplied by Contractor
DTOS-004	DTOS	004	ISOLATION	FUSIBLE LINK	1	FLANGED	150	NO	LINK	Supplied by Contractor
DTOS-005	DTOS	005	ISOLATION	FUSIBLE LINK	1	FLANGED	150	NO	LINK	Supplied by Contractor
DTOS-006	DTOS	006	ISOLATION	FUSIBLE LINK	1	FLANGED	150	NO	LINK	Supplied by Contractor
DTOS-007	DTOS	007	ISOLATION	FUSIBLE LINK	1	FLANGED	150	NO	LINK	Supplied by Contractor
DTOS-008	DTOS	008	ISOLATION	BALL	1-1/2	FLANGED	150	NO	HANDLE	Supplied by Contractor
DTOR-001	DTOR	001	ISOLATION	BALL	1	FLANGED	150	NO	HANDLE	Supplied by Contractor

GENERATOR FUEL CONSUMPTION CALCULATIONS				
INDIVIDUAL GENERATOR:				
GENERATOR OR FUEL CONSUMPTION AT 100% LOAD	138	GAL/Hr	520	L/Hr
GENERATOR DAY TANK CAPACITY	1700	GALLONS	6400	LITERS
CALCULATED GENERATOR RUN TIME (12-HOURS MINIMUM)	12.3	HOURS		
ALL GENERATORS RUNNING:				
TOTAL NUMBER OF GENERATORS RUNNING	4			
TOTAL CONSUMPTION RATE	552	GAL/Hr	2100	L/Hr
MAIN FUEL TANK CAPACITY	50293	GALLONS	190000	LITERS
MAIN FUEL TANK RUN TIME AT 100% LOAD	91.1	HOURS		
TOTAL GENERATOR SYSTEM RUN TIME	103.4	HOURS		

100% CONSTRUCTION DOCUMENTS

CONSULTANTS:		PROJECT MANAGER: ACG Project Number: 18-024 CEMS Project Number: 17157A		Office of Construction and Facilities Management		Drawing Title MECHANICAL SCHEDULES AND DETAILS		Project Title UPGRADE STATION GENERATOR SYSTEM - PSDM REDESIGN		VA PROJECT NUMBER 438-18-100	
		APOGEECEMS Joint Venture An Alliance for Success		1151 Kidlare Farm Rd. Suite 120 Cary, NC 27511 www.apogeece.com (919)558-7420		108 Bentons Lodge Road Suite B Summerville, SC 29485 www.cemssci.com (843)875-3037		Location 2501 W 22ND ST SIOUX FALLS, SD 57105		Building Number 27	
		North Carolina Professional Engineer J. ROYCE 037960 7/29/2021		VA		Location		Approved:		Drawing Number M-601	
								Date JULY 30, 2021		Checked DJR	
								Drawn MRA, WLF		Dwg. 4 of 5	

SEQUENCE OF OPERATION

1. FUEL FILTRATION SYSTEM
- 1.1. GENERAL: THE AUTOMATED FUEL FILTRATION SYSTEM SHALL BE CAPABLE OF TWO PRIMARY FUNCTIONS:
- 1.1.1. FILTRATION OF FUEL IN STORAGE TANK.
- 1.1.2. FUEL TRANSFER FROM TANK TO TANK VIA THE FILTRATION PROCESS. (MULTI-TANK SYSTEMS ONLY.)
- 1.1.3. FILTRATION AND FUEL TRANSFER IS DRIVEN BY THE ONBOARD FUEL PUMP. THE FUEL PASSES THROUGH A STRAINER, THEN PASSES THROUGH A STRAINER, THEN PASSES THROUGH A PARTICULATE FILTER FOLLOWED BY A COALESCING SEPARATOR BEFORE RETURNING TO THE STORAGE TANK.
- 1.1.4. SYSTEM SHALL BE TIED INTO THE EXISTING VEEDER ROOT MONITORING SYSTEM AND TIED TO BUILDING 28. COORDINATE WORK WITH VA VEEDER ROOT MAINTENANCE COMPANY (DOCK AND DORF).
- 1.2. FILTRATION: THE FILTRATION CYCLE SHALL BE ACCOMPLISHED EITHER BY MANUALLY STARTING AND STOPPING THE FILTRATION CYCLE AT THE GRAPHIC FILTRATION CONTROL PANEL, OR A REGULAR SCHEDULE PROGRAMMED INTO THE SYSTEM AT THE TOUCH SCREEN CONTROLLER (AUTO MODE).
- 1.2.1. MANUAL MODE:
- 1.2.1.1. IN MANUAL MODE, THE FILTRATION SYSTEM SHALL FILTER EITHER A SET AMOUNT OF FUEL OR RUN MANUALLY UNTIL STOPPED.
- 1.2.1.2. UPON START, THE PUMP SHALL START.
- 1.2.1.3. A FLOW SWITCH SHALL ESTABLISH FLOW IN THE SYSTEM. IF NO FLOW IS ESTABLISHED IN 30 SECONDS, THE PUMP SHUTS DOWN, AND A LOSS OF FLOW ALARM IS ACTIVATED AT THE TOUCH SCREEN CONTROLLER.
- 1.2.2. AUTO MODE:
- 1.2.2.1. IN AUTO MODE, THE FILTRATION SYSTEM SHALL TO FILTER THE STORAGE TANK ON A REGULAR PRE-PROGRAMMED FILTRATION SCHEDULE. THE TOUCH SCREEN SHALL ACCEPT THE FOLLOWING OPERATOR ENTERED PARAMETERS:
- 1.2.2.1.1. SELECT AUTO MODE
- 1.2.2.1.2. DAY OF WEEK TO FILTER
- 1.2.2.1.3. START TIME
- 1.2.2.1.4. FILTRATION DURATION (HOURS)
- 1.3. AUTOMATIC WATER DRAIN: WHEN THE WATER LEVEL IN THE COALESCER REACHES A HIGH LEVEL, THE WATER DRAIN SOLENOID SHALL AUTOMATICALLY OPEN AND DRAIN THE WATER INTO THE WATER HOLDING TANK. THE WATER DRAIN SOLENOID SHALL AUTOMATICALLY CLOSES WHEN THE WATER REACHES THE LOW LEVEL SENSOR IN THE COALESCER.
- 1.3.1. IF THE WATER LEVEL IN THE WATER HOLDING TANK REACHES A HIGH LEVEL, THE ENTIRE SYSTEM SHALL BE DISABLED UNTIL THE WATER IS REMOVED FROM THE HOLDING TANK.
- 1.4. LEAK IN CONTAINMENT PAN: THE ENTIRE SYSTEM IS HOUSED WITHIN A LIQUID TIGHT CONTAINMENT PAN. THE CONTAINMENT PAN SHALL BE MONITORED BY LEAK SENSOR. UPON SENSING A LEAK, THE ENTIRE SYSTEM SHALL BE DISABLED UNTIL THE LEAK IS CORRECTED AND THE LIQUID REMOVED FROM THE CONTAINMENT PAN.
- 1.5. ALARM CONDITIONS: ALARM CONDITIONS SHALL BE INDICATED ON THE TOUCH SCREEN AND ALARM HORN ON THE GRAPHIC PANEL DISPLAY FOR THE FOLLOWING CONDITIONS. THE ALARM HORN MAY BE SILENCED BY ACTIVATING THE SILENCE BUTTON ON THE PANEL FACE.
- 1.5.1. PUMP LOSS OF FLOW
- 1.5.2. TANK HIGH FUEL
- 1.5.3. TANK FUEL LOW
- 1.5.4. LEAK IN CONTAINMENT PAN
- 1.5.5. SERVICE PREFILTER (PREFILTER HIGH DIFFERENTIAL PRESSURE)
- 1.5.6. SERVICE COALESCER (COALESCER HIGH DIFFERENTIAL PRESSURE)
- 1.5.7. SYSTEM OVERPRESSURE
- 1.5.8. HOLDING TANK HIGH LEVEL
- 1.5.9. FUEL IN WATER LINE.
- 1.6. SYSTEM RESET: SUBSEQUENT TO ALARMS AND SHUT DOWN CONDITIONS, THE SYSTEM SHALL REQUIRE RESET BY ACTIVATING THE RESET BUTTON. THE RESET BUTTON SHALL RESTORE NORMAL SYSTEM OPERATION AND CLEAR ALARM INDICATIONS ON THE GRAPHIC PANEL FACE AND TOUCH SCREEN.
- 1.7. EMERGENCY STOP: THE CONTROL PANEL SHALL BE CONFIGURABLE TO ACCEPT A CUSTOMER SUPPLIED EMERGENCY STOP INPUT.

100% CONSTRUCTION DOCUMENTS

		CONSULTANTS:						PROJECT MANAGER: ACG Project Number: 18-024 CEMS Project Number: 17157A		Office of Construction and Facilities Management		Drawing Title FUEL OIL CONTROLS		Project Title UPGRADE STATION GENERATOR SYSTEM - PSDM REDESIGN		VA PROJECT NUMBER 438-18-100							
								APOGEECEMS Joint Venture An Alliance for Success 1151 Kiddare Farm Rd, Suite 120 Cary, NC 27511 www.apogeece.com (919)558-7420 © COPYRIGHT Apogee - CEMS JV, LLC		108 Bentons Lodge Road Suite B Summerville, SC 29485 www.cemsva.com (843)875-3037		Location 2501 W 22ND ST SIOUX FALLS, SD 57105		Approved:		Building Number 27							
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