GENERAL NOTES

ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH ALL LOCAL, STATE AND FEDERAL CODES.

THESE DRAWINGS ARE A GENERAL GUIDE AND DO NOT REFLECT SPECIFIC SITE LAYOUTS OR CONDITIONS. REFER TO THE SITE PLAN AND SCOPE OF WORK FOR SITE SPECIFIC INFORMATION. THESE DRAWINGS DO NOT FREE THE CONTRACTOR OF THE RESPONSIBILITIES IN THE SCOPE OF WORK.

THE CONTRACTOR SHALL NOT SCALE THE DRAWINGS; STATED DIMENSIONS SHALL GOVERN. SHOULD THE CONTRACTOR HAVE ANY QUESTIONS ABOUT ANY INFORMATION ON THE DRAWINGS, HE SHALL BE RESPONSIBLE FOR CONTACTING THE PETROLEUM FOREMAN FOR CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK.

CONTACTS

SHEETZ PETROLEUM PROJECT MANAGER:
MAX HOLDEN: (814) 239-6068 OFFICE
(814) 553-1987 CELL

SHEETZ WAREHOUSE
351 SHEETZ WAY
CLAYSBURG, PA 16625

LEGEND

DETAIL REFERENCE

X / XXX — DETAIL NUMBER / DRAWING NUMBER

EQUIPMENT REFERENCE

XX — EQUIPMENT NUMBER SEE SHEETS FG3 SERIES FOR EQUIPMENT LIST

MATERIAL SYMBOLS

- CONCRETE
- EARTH / COMPACT FILL
- PEA GRAVEL

COMMON ABBREVIATIONS

C.L.	CENTER LINE
MFR.	MANUFACTURER
NPT	NATIONAL PIPE THREAD
REQ.	REQUIRED
TYP.	TYPICAL
UST(S)	UNDERGROUND STORAGE TANK(S)
FRP	FIBERGLASS REINFORCED PLASTIC

FRESH FOOD
SHEETZ®
MADE TO ORDER®

SHEETZ, INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PA 16602
(814) 946-3611

UNDERGROUND STORAGE TANK SYSTEM INSTALLATION DRAWINGS

SHEETZ #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

LOCATION MAP

ONE CALL

CALL UNDERGROUND SERVICE ALERT

811®

NOT LESS THAN THREE (3) WORKING DAYS BEFORE YOU DIG CALL NORTH CAROLINA 811 AT 1.800.632.4949 OR DIAL "811" IF YOU WITHIN NORTH CAROLINA.

SITE DRAWING BASED ON PLANS DESIGNED BY:

RIVERS & ASSOCIATES, INC.
107 EAST 2ND SECOND STREET
GREENVILLE, NC 27858
252.752.4135

INDEX OF DRAWINGS

SHEET #	SHEET TITLE	DATE
FG1.0	TITLE SHEET	3/5/2021
FG2.0	SCOPE OF WORK (PART 1)	3/5/2021
FG2.1	SCOPE OF WORK (PART 2)	3/5/2021
FG2.2	SCOPE OF WORK (PART 3)	3/5/2021
FG3.0	EQUIPMENT LIST (PART 1)	3/5/2021
FG3.1	EQUIPMENT LIST (PART 2)	3/5/2021
FO	FACILITIES AND OPERATIONS PLAN	3/5/2021
FT1.0	FUEL PIPING PLAN	3/5/2021
FT1.1	HAZARDOUS AREAS CLASSIFICATION SITE PLAN	3/5/2021
FT1.2	HAZARDOUS AREAS CLASSIFICATION DETAILS	3/5/2021
FT2.0	CONCRETE SPECIFICATIONS AND DETAILS	3/5/2021
FT2.1	CONCRETE CONTROL JOINT LAYOUT AND TANK LAYOUT PLAN	3/5/2021
FT3.0	TANK LAYOUT DETAILS	3/5/2021
FT4.0	TANK INSTALLATION DETAILS	3/5/2021
FT6.0	TANK SUMP DETAILS	3/5/2021
FT6.1	TANK SUMP DETAILS	3/5/2021
FT7.0	FUEL SYSTEM ACCESSORIES	3/5/2021
FD1.0	CANOPY COLUMN ANCILLARY DETAILS	3/5/2021
FD2.0	ENCORE (5+0) DISPENSER INSTALLATION	3/5/2021
FD3.0	ENCORE (3+1+1) DISPENSER INSTALLATION	3/5/2021
FE1.0	CONDUIT ROUTING PLAN	3/5/2021
FE1.1	SUB SYSTEM CONDUIT PLAN	3/5/2021
FE2.0	CONDUIT SCHEDULE	3/5/2021
FE2.1	CANOPY LIGHTING SCHEME	3/5/2021
FE3.0	TYPICAL TLS-450 PLUS INSTALLATION	3/5/2021

REFERENCE DRAWING INDEX

SHEET #	SHEET TITLE	DATE
FG4.0	WELL INFORMATION (PART 1)	3/5/2021
FG4.1	WELL INFORMATION (PART 2)	3/5/2021
FT5.0	OPW (FTS) TANK SUMP MANUFACTURER INSTALLATION DETAILS (PART 1)	3/5/2021
FT5.1	OPW (FTS) TANK SUMP MANUFACTURER INSTALLATION DETAILS (PART 2)	3/5/2021
FT5.2	OPW (FTS) TANK SUMP MANUFACTURER INSTALLATION DETAILS (PART 3)	3/5/2021
FT5.3	FIBRELITE TANK SUMP MANUFACTURER INSTALLATION DETAILS	3/5/2021
FT8.0	OPW FLEXWORKS MANUFACTURER INSTALLATION DETAILS	3/5/2021
FT8.1	DUALOY 3000/LCX MANUFACTURER INSTALLATION DETAILS	3/5/2021
FT8.2	DUALOY 3000/L MANUFACTURER INSTALLATION DETAILS	3/5/2021
FE4.0	MANUFACTURER ELECTRICAL WIRING DETAILS	3/5/2021
FE5.0	MANUFACTURER ELECTRICAL WIRING DETAILS	3/5/2021
FE6.0	SQUARE D MANUFACTURER ELECTRICAL DRAWINGS	3/5/2021
FE6.1	SQUARE D MANUFACTURER ELECTRICAL DRAWINGS	3/5/2021
FE6.2	SQUARE D MANUFACTURER ELECTRICAL DRAWINGS	3/5/2021
FE6.3	SQUARE D MANUFACTURER ELECTRICAL DRAWINGS	3/5/2021
FE6.4	SQUARE D MANUFACTURER ELECTRICAL DRAWINGS	3/5/2021
FE6.5	SQUARE D MANUFACTURER ELECTRICAL DRAWINGS	3/5/2021

NORTH CAROLINA TANK INSTALLATION SUMMARY

RESPONSIVE TO NCDEQ FORM UST-6

ITEM	DESCRIPTION	RESPONSE	COMMENT
1	PREPARED BY NC PE	YES	ROBERT W. WELLERT REG #051765
	SCHEDULE OF MATERIALS	YES	SEE SHEET FG3.0, FG3.1
	TANKS	YES	SEE SHEET FT3.0, FT4.0
	PIPING	YES	SEE SHEET FT1.0, FT8.0, FT8.1, FT8.2
	LEAK DETECTION		SEE SHEET FT3.0, FT4.0, FT6.0, FT6.1, FT7.0, FD2.0, FD3.0, FE3.0
	SPILL PREVENTION		SEE SHEET FT6.0, FT6.1, FT7.0
	OVERFILL PREVENTION		SEE SHEET FT7.0
	VAPOR RECOVERY EQUIPMENT		SEE SHEET FT1.0, FT6.0, FT6.1, FT7.0
2	SCALED DRAWING (NO LARGER THAN 11" x 17") SHOWING THE FOLLOWING UST SYSTEM FEATURES		
A	NAME AND ADDRESS OF UST SYSTEM SITE		ON EACH SHEET
B	TANK SIZE AND METHOD OF ANCHORING (IF DEADMAN/BOTTOM OF HOLD-DOWN PAD IS USED)	DEADMEN	SEE SHEET FT4.0
B I	THE ENGINEERING STANDARD USED	PEI-RP-100	SEE SHEET FT3.0
B II	THE DIAMETER IN FEET	SHOWN	SEE SHEET FT3.0
B III	THE CAPACITY IN GALLONS	SHOWN	SEE SHEET FT3.0
B IV	THE MATERIALS OF CONSTRUCTION OF THE INNER AND OUTER WALLS OF THE TANK INCLUDING COATINGS	DOUBLE-WALL TANK BRINE FILLED	SEE SHEET FT3.0
C	PIPING LOCATION (INCLUDING VENT LINES)	INDICATED ON DRAWINGS	SEE SHEET FT1.0
C I	DEVICE OR METHOD USED TO ALLOW THE PIPING TO BE LOCATED AFTER IT IS BURIED	DETECT-A-TAPE	SEE SHEET FT8.0, FG3.0, FG3.1
D	DISPENSERS	GILBARCO	SEE SHEET FD2.0, FD3.0
E	LEAK DETECTION SYSTEM(S) WITH INTENDED MONITORING POINTS AND SENSOR LOCATIONS	VEEDER-ROOT TLS-450PLUS	SEE SHEET FT1.0, FT6.0, FT6.1, FT7.0, FE1.0, FE1.1, FE3.0
F	FLEXIBLE CONNECTOR LOCATIONS,	NOT SHOWN	NO FLEX CONNECTOR USED
G	IF THE EQUIPMENT HAS SINGLE-WALLED OR DOUBLE-WALLED CONSTRUCTION	DOUBLE-WALL	SEE SHEET FG3.0, FG3.1, FT3.0, FT4.0, FT6.0, FT6.1, FT8.0, FT8.1, FD2.0, FD3.0
H	VAPOR RECOVERY,	YES	SEE SHEET FT1.0, FT6.0, FT6.1, FT7.0
I	CONTAINMENT SUMPS,	PROVIDED	SEE SHEET FT4.0, FT5.0, FT6.0, FT6.1, FD2.0, FD3.0
J	OVERFILL PREVENTION AND SPILL CONTAINMENT EQUIPMENT	PROVIDED	SEE SHEET FT7.0
K	ADJACENT ROADWAY	YES	SEE SHEET FG1.0, FT1.0
L	ONSITE STRUCTURES, UTILITIES AND MONITORING WELLS	YES	SEE SHEET FG1.0, FT1.0
M	ONSITE WATER SUPPLY WELLS	YES	SEE SHEET FG4 SERIES
3	IF THE UST SYSTEM WILL STORE AN ETHANOL BLEND OF GREATER THAT 10% OR A BIODIESEL BLEND GREATER THAN 20% THEN YOU MUST ENSURE THE UST SYSTEM IN YOUR DESIGN WILL BE COMPATIBLE. AFTER INSTALLATION YOU MUST COMPLETE A SUST020, ALTERNATIVE FUEL COMPATIBILITY CHECKLIST FORM AND SUBMIT WITH YOUR UST-6B, APPLICATION TO INSTALL OR REPLACE UNDERGROUND STORAGE TANK SYSTEM (POST INSTALLATION), FORM	YES	SEE FT1.0

ISSUED FOR

DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 051765 ROBERT W. WELLERT

CONSULTANT:
Engineers • Planners • Surveyors
Wellert Corporation
5136 Beach Road • Medina, Ohio 44256
t: 330.239.2699 • f:330.239.0272

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

TITLE SHEET

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FG1.0

SHEETZ, INC.
STORE #716 - "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SUMMARY

- This section describes requirements for providing the equipment, labor and materials necessary to furnish and install petroleum storage tank system(s). Requirements include furnishing and installing all equipment and accessories necessary to complete systems for the storage and dispensing of gasoline, E85 and diesel.
- Labor and/or materials required to complete the work called for on the drawings and not mentioned in the specifications or vice-versa, are to be performed and/or furnished in as faithful and thorough a manner as is fully noted by both.
- If work is required in a manner to make it impossible to produce first class work, or should discrepancy appear among Contract Documents, request interpretation before proceeding with work. If Contractor fails to make such request, no excuse will thereafter be entertained for failure to carry out work in satisfactory manner. Should conflict occur in or between drawings and in or between drawings and specifications, Contractor is deemed to have estimated on more expensive way of doing work unless he shall have asked for and obtained written decision before submission of Proposal as to which method or materials will be required.
- The Contractor shall provide all labor and material and perform all work as described in the accompanying Sections of the Specifications and/or shown on the drawings both as enumerated generally in the Index to Specifications and the Index to Drawings.
- The Contract will be based upon the completion of the work according to the drawings and specifications. It is the purpose of the plans and specifications to provide Sheetz, Inc. a completed building or project. The Contractor will furnish and install all items, whether specifically shown or specified, that are necessary.
- Specified in the UST System Plans certain equipment, materials, parts, and UST System components shall be provided by the Owner and installed by the Contractor (refer to materials section).
- The Contractor is responsible to:
  - ➢ Provide adequate notice to Sheetz, Inc. or specified supplier to coordinate delivery schedules
  - ➢ Be present at delivery destination specified by Sheetz Inc. to verify delivered quantities are accurate, receive and inspect materials for damage, defects, etc.
  - ➢ Notify Sheetz, Inc. or specified supplier of inaccuracies in shipped quantities, damaged or defective materials, improper shipments at time of delivery.
  - ➢ Provide secure storage for received materials at all times.
  - ➢ Materials discovered to be damaged, missing, or defective after the Contractor receives shipment, will be the responsibility of the contractor to provide or replace if not properly verified and inspected at shipment, stored in a secure location, etc. at the discretion of Sheetz, Inc.

DEFINITIONS

- AGREEMENT - the conditions of the contract between the Owner and the Contractor, including referenced specifications, drawings and related documents.
- CONSTRUCTION DOCUMENTS - the general and supplemental conditions, specifications, drawings, and any addenda issued prior to bidding.
- CONTRACTOR - the person, firm, or corporation with whom the Owner has entered into the Agreement.
- EPA - abbreviation for the Environmental Protection Agency.
- FURNISH - means the Contractor shall supply the item specified, at the job site, unloaded, and secured against damage, vandalism or theft.
- FRP - abbreviation for fiberglass reinforced plastic pipe.
- I.S. - abbreviation for intrinsically safe wiring circuit.
- INSTALL - means the Contractor shall perform all work required to place the equipment specified in operation, including testing, calibration, and start-up.
- INTERSTITIAL - refers to any space between primary and secondary containment of tanks as well as containment sumps and piping.
- LEAK MODE TESTING - refers to testing the integrity of the tanks in accordance with the test device manufacturer's instructions and U.S. EPA Technical Standards.
- LIQUID TIGHT - means prevention of the infiltration of ground or surface water into a contained space, or the release of product from contained spaces into the surrounding soil.
- OWNER - is the person or entity identified as such in the Agreement.
- PRODUCT - means the gasoline, kerosene or diesel stored and dispensed from the tank.
- PROVIDE - means the Contractor shall furnish and install the equipment specified, and perform all work necessary to provide a complete and functional system.
- SPOIL - means all material removed by demolition or excavating.
- STI - is the Steel Tank Institute located at 570 Oakwood Drive, Lake Zurich, IL 60047, telephone (847) 438-8265.
- SUBSTANTIAL COMPLETION - is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently completed in accordance with the Contract Documents so the Owner can utilize the Work for its intended use.
- UST - Underground Storage Tank
- UDC - Under Dispenser Containment
- WORK - means all materials, equipment, construction and services required by the Contract, whether completed or partially completed.

GENERAL REQUIREMENTS

- Unless otherwise specified, equipment furnished under this section shall be fabricated and installed in compliance with the instructions of the manufacturer.
- If manufacturers require certification and/or offers training, contractor must obtain these certifications and/or training prior to the start of petroleum construction.
- Contractor shall ensure that all equipment, accessories and installation materials comply with the specification and that adequate provision is made in the tank design and fabrication for mounting the specified system equipment and accessories.
- Contractor is solely responsible for construction means, methods, techniques, sequences and procedures and for safety precautions and programs.
- To avoid delays in construction, Contractor shall ensure that all components of the system are available at the time of installation.
- Contractor shall coordinate his work with other work being performed at the site as to minimize interference with the Owner's normal activities that may continue during construction.
- Contractor shall obtain necessary permits, licensees, arrange for inspections and obtain approval of the appropriate authority having jurisdiction over the work described.

STANDARDS

- Work shall be performed in accordance with applicable federal, state and local fire protection, environmental and safety codes and regulations and the latest version of the following industry standards:
- Recommended practices for Installation of Underground Storage Liquid Storage Systems, PEI/RP100; Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Fueling Sites, PEI/RP300; Petroleum Equipment Institute, P.O. Box 2380, Tulsa, OK 74101.
- Installation of Underground Petroleum Storage Systems, API/1615, Cathodic Protection of Underground Petroleum Storage Tank and Piping Systems, API/1632, American Petroleum Institute, 1220 L Street, Washington, DC 20005.
- Flammable and Combustible Liquid Code NFPA/30, Automotive and Marine Service Station Code, NFPA/30A, National Electrical Code, NFPA/70, and Underground Leakage of Flammable and Combustible Liquids, NFPA/329, National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9904.
- Article 79 Flammable and Combustible Liquids, Uniform Fire Code, 1994 Edition, International Fire Code Institute, 5360 Workman Mill Rd., Whittier, CA 90601, telephone (310) 699-0124.
- Hazardous Waste Operations and Emergency Response and Excavating, OSHA/29 CFR 1910.120 and 29 CFR 1926 Subpart P., Occupational Safety and Health Administration, U.S. Department of Labor, Region V, 230 S. Dearborn Street, Room 3244, Chicago, IL 60604.
- Occupational Safety and Health Standards, Flammable and Combustible Liquids, 29CFR 1910.106, Personal Protective Equipment 29CFR 1910 Subpart 1, Refer to OSHA Standard 29 CFR 1926.1153 (Crystalline Silica Standard for Construction) for cutting, hammering, etc, Excavations 29CFR 1926.650 Subpart P, U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), Washington, DC.
- Control of External Corrosion of Metallic Buried, Partially Buried, and Submerged Liquid Storage Systems, NACE Recommended Practice RP0285-95; Control of External Corrosion of Submerged Metallic Piping Systems, NACE Recommended Practice RP0169-02; National Association of Corrosion Engineers, P.O. Box 218340, Houston, TX 77213.
- Installation Instructions, ACT-100 R913; Steel Tank Institute Recommended Practices for Corrosion Protection of Underground Piping Networks Associated with Liquid Storage and Dispensing Systems, R892; Steel Tank Institute Standard for Dual Wall Underground Steel Storage Tanks, F841; Steel Tank Institute, 570 Oakwood Road, Lake Zurich, IL 60047, telephone (847) 438-8265.
- UL Standard 58, "Steel Underground Tanks for Flammable and Combustible Liquids", 1996, "Control Equipment for Use With Flammable Liquid Dispensing Devices", UL1238, "Pipe Connectors for Flammable and Combustible Liquids and LP Gas", UL 567, "Pipe Unions for Flammable and Combustible Liquids and LP Gas", UL567, "Powered-operated Dispensing Devices for Petroleum Products", UL87, "Valves for Flammable Fluids" UL842, "Corrosion Protection for Underground Storage Tanks" UL1746, "UL Listed Non-Metal Pipe", UL971, UL 1316, "Glass-Fiber Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols, and Alcohol-Gasoline Mixtures." Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062, telephone (847) 272-8800.
- UL Standard 58, "Steel Underground Tanks for Flammable and Combustible Liquids", 1996, "Control Equipment for Use With Flammable Liquid Dispensing Devices", UL1238, "Pipe Connectors for Flammable and Combustible Liquids and LP Gas", UL 567, "Pipe Unions for Flammable and Combustible Liquids and LP Gas", UL567, "Powered-operated Dispensing Devices for Petroleum Products", UL87, "Valves for Flammable Fluids" UL842, "Corrosion Protection for Underground Storage Tanks" UL1746, "UL Listed Non-Metal Pipe", UL971. Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062, telephone (847) 272-8800.
- Underground Storage Tanks; Technical Requirements and State Program Approval; Final Rules, 40 CFR Parts 280 and 281, Part II, Federal Register, Wednesday, July 15, 2015, Musts for UST's: A Summary of the New Regulations for Underground Storage Tank Systems, and Hazardous Waste Management Standards, Federal Register July 14, 1986. U.S. Environmental Protection Agency, Office of Underground Storage Tanks, 401 M. Street, S.W. Washington, DC 20460.
- Where differences exist between standards, the Contractor shall use the most conservative. If in doubt, describe differences in writing to the Owner for approval before performing the work.

The codes and standards listed are the latest as of this publication. Codes and standards are continuously updated. Contractor shall confirm the construction standard edition enforced by the authority having jurisdiction.

See UST Installation Plans and other documents for:

- Canopy Manufacturer's Foundation Plan
- UST Installation Drawings
- Typical UST System / Dispenser Canopy Installation Schedule
- Geotechnical Report - Bids are to include provisions to deal with conditions identified in the geotechnical report incorporated in this bid package.
- Dispenser Canopy Drain Installation mark-up

TANK EXCAVATION

- Excavate to the area shown in the UST Installation Plans and other documentation to install UST(s) per current OSHA guidelines and standards:
  - ➢ Minimum 15ft Depth as measured from lowest point of proposed finished grade elevation at tank pad.
  - ➢ Contractor is responsible to ensure that UST burial shall be of sufficient depth to avoid the need for a liquid trap in the Vent Line(s) if possible.
  - ➢ Provide minimum 6" clearance between top of containment sump lid and bottom of manhole cover
- Contractor is responsible to obtain, provide and install an engineered shoring system per bid info, plans and geotechnical report. Contractor is responsible to include all conditions identified in geotechnical report in his quote, including but not limited to rock removal, ground water, etc. Contractor is not responsible for conditions related contaminated soils, contaminated groundwater, etc.
- Contractor will provide equipment to load and transport non-contaminated excavated spoils off site for disposal. Excavated spoils will be removed from the site immediately, unless otherwise approved by Sheetz, Inc.
- The Contractor is responsible for all fees, engineering, permits, E and S control, etc. required by local, state and federal laws and codes at his/her dump site. Contractor shall indemnify and hold Sheetz harmless for any and all local, state or federal violations that may occur at the Contractor's dump site.
- UST contractor to provide documentation of approved dump site prior to any soil leaving the site.
- Place UST Deadman Anchors supplied by Sheetz, Inc. per UST System Installation Plans and UST manufacturer's installation instructions in the UST excavation.

TANKS

- Verify and record presence of brine solution in the brine reservoir and UST interstice, and the lack of brine solution in the primary of the UST and on exterior of the UST. Contact Sheetz Project Manager if brine levels are questionable before unloading.
- Verify and record that all USTs have held the interstitial vacuum that was recorded by the tank hauler. Contact Sheetz Project Manager if vacuums are questionable before unloading.
- Unload and secure Double-Wall USTs and all associated tank materials.
- Provide a bed of clean pea gravel to set tanks on above grade, until they can be set in the UST excavation.
- Install USTs per Sheetz UST slope requirements (not < 1" or > 2" toward UST fill) and tank manufacturer's installation instructions in level excavated tank hole per UST System Installation Plans.
- With transit/level and gauge pole Contractor will shoot exterior top of UST to determine that tanks are sloped to Sheetz specifications toward the fill end of the tank. Contractor will document all field measurements and provide to Sheetz Site Manager for his sign off.
- In addition to shooting tank elevations with transit/level the Contractor will also provide and fill each tank at center bung with app. 5 gallons of potable water to accumulate in fill end of tank and verify that tank is sloped to Sheetz specifications toward the fill end of tank.
- Install FRP tank straps and turn buckles supplied by Sheetz, Inc. per tank drawings, for UST hold down.
- Supply and Install 12" x 16' factory slotted PVC topped with "Fernco" cap at low corner of tank field and cover with a Fibrelite manhole. Bottom will be capped in a suitable manner.
- Supply and Install 4" x 16' factory slotted PVC monitoring wells (keep plumb) in corner of tank field and cover with a Fibrelite manhole per UST System Installation Plans.
- Backfill entire UST excavation per UST Manufacturer's Instructions and ASTM C-33. Provide documentation from stone supplier that material supplied meets tank manufacturer's criteria.
- Place and compact backfill material evenly to top of UST.
- Supply, Install and maintain temporary vent pipes (2") in tanks/compartments until permanent vent lines are in place.
- Immediately after UST's are backfilled, UST installer will supply and fill UST's to 95% full volume with potable water ballast for UST hold down during installation.
- Contractor is responsible to secure the USTs and excavation against flooding in the event of high water conditions during construction to prevent movement, float out or water from entering tanks.
- UST Installation contractor is responsible to overfill the brine reservoir to top of 4" riserbrine for the 3rd party inspector to witness at pre-bury inspection to verify integrity of the riser and connection to the brine reservoir.
- UST Installation contractor is responsible to set the level of brine specified on drawing page FT6.1 after the 3rd party tester certifies the integrity.
- Verify Brine level, as applicable in interstice reservoirs until tanks are backfilled to subgrade and interstitial sensors are installed.
- Maintain vacuum on tank interstice risers until tanks are backfilled to sub-grade and interstitial sensors are installed. Vacuum gauges will be covered and protected while tanks are backfilled.

BALLAST WATER / FUEL DELIVERY

- UST Installation contractor is responsible to provide potable water to ballast UST to 95% capacity of tank volume.
- Water ballast drop into the tank is to be scheduled to immediately follow completion of backfill of UST excavation and air testing of the UST per UST manufacturer's installation requirements.
- After water ballast has been installed, contractor will measure and record water levels at both ends of tank to determine that tanks are set to Sheetz slope specifications. Contractor will document all field measurements and provide to Sheetz Site Manager for his sign off. Tanks that do not meet Sheetz slope specifications will be corrected at Contractors expense in a manner approved by Sheetz Site Manager and UST manufacturer.
- Before the water is placed in the tank
  - ➢ The Contractor shall verify and certify that the water is considered potable water by the local Water Authority. The water may not come from a dead-end hydrant.
  - ➢ Water used to ballast UST's will be filtered thru a 5 micron or less filter prior to placing the water into the UST The filter housing will have a minimum 2" to maximum 3" discharge from the filter housing.
  - ➢ The discharge will be loose into the UST's 4" bung, contractor will open additional 4" bungs to ensure UST is not over pressurized.

Water Ballast Removal

- Water ballast will be removed after UST pad is poured and fuel transport tankers have access to UST's to drop product immediately after water is removed.
- The UST contractor is responsible to remove all ballast water from the UST to < ¼" at fill end of tank (lowest sloped end)
- After the water ballast is removed
  - ➢ The Contractor will visually inspect the tank via a camera to ensure that all debris, sediment, and contaminants are removed.
  - ➢ If the tank is deemed cleaned by the Sheetz Inc.
    - ▪ The Contractor can proceed with the fuel drop
  - ➢ If the tank is not deemed cleaned by the Sheetz, Inc.
    - ▪ At contractor expense,
    - ▪ The Contractor shall disassemble the manway and prepare UST(s) for 3rd party entry and cleaning approved / or provided by Sheetz, Inc.
    - ▪ After the UST(s) are cleaned and dried, then the contractor shall reassemble the manway of the tank
    - ▪ All costs incurred or associated with failure to provided or drop clean potable water ballast will be the responsibility of the UST contractor, including but not limited to UST entry, UST cleaning, fuel polishing / cleaning, premature dispenser filter changes due to poor GPM
    - ▪ The tanks shall be retested via a camera and if they are deemed clean by the Sheetz CPM, the contractor can proceed with the fuel drop
- Do not install STP internal or submerged components in water ballast

FUEL DELIVERY

- UST Installation Contractor is be present at site with certified technical specialist to assist CLI during initial fuel drop.

TANK FITTINGS AND ACCESSORIES

- All Tank Risers to be 304 Grade SS- All Tank Top fittings to be 304 Grade SS, except on union fittings use black iron
- Install TWO 4" x 4" x 2" vent extractors, one in 10,000 E85 compartment manway and one in 10,000 E0 compartment manway. See UST Installation Drawings.
- Install THREE 4" x 4" x 3" vent extractors, one in 20,000 87 compartment manway, one in 10,000 93 octane compartment manway and one in 10,000 Diesel compartment manway. See UST Installation Drawings.
- At vent extractors, instead of installing pipe plug, install 4" Stainless Steel 304 pipe nipple 4"-6" in length, (6" maximum), with thread on brass adapter and thread on tight seal cap. Apply pipe dope only to nipple ends. Upon completion, brass cap should be secured to brass base with a plastic zip tie. See UST Installation Drawings.
- Supply and Install 4" fill risers and wrap with protective coating (two fills each, in 20,000 87 Tank and Diesel Tank.)
- Supply and Install 4" tank risers for monitoring probes in 9" offset bung of manways. See UST Installation Drawings.
- Supply and Install one (1) 3" FRP remote Stage I vapor hookup line from Gasoline vent manifold. Increase to 4" Stainless Steel grade 304 and wrap with protective coating.
- Install containment manholes on Fills, Stage I riser, Remote Stage I riser.
- Install riser locks on all fill and Stage I risers.
- Install overfill prevention valves in all fill containment manholes.
  - ➢ All drop tubes to be installed no less than 94% and no more than 95%-If determined at time of post bury that the drop tubes are set to incorrect measurements, drop tubes will be replaced at the expense of the installation contractor to meet specifications.
  - ➢ Lower tube shall be trimmed to be within 6" of tank bottom +/- 1/4".
- Install one (1) Diffuser device in each overfill prevention valve.
- Install fill adapters and vapor recovery adapters, with caps on risers.
- Supply and Install a 4" Dualoy 3000 Fiberglass Pipe for Interstitial Sensor risers, and cover with a 15" containment manhole on all tanks. 4" riser to be one continuous straight length.
- Preset all manholes as specified on UST Installation Drawings and POUR TANK TANKFIELD CONCRETE PAD (see attached concrete spec sheet and mix design on UST Installation Drawings.) Contractor is responsible for keeping manhole rims true and concentric for ready cover fitment. Poor fitment will be rejected.
- Install monitoring well caps.
- Install pad locks on monitoring well caps.
- Supply and install bentonite pellets around all monitoring and pump-out wells. Bentonite to be hydrated per Manufacturers instructions. After bentonite installation is approved by site manager, cap with concrete per detail in UST Installation Drawings.
- Install fill tags, vapor recovery tags, monitoring well tags, and STP routing tags.
- For sites with 7 or more dispensers, install 3" SW FRP Chase pipe between T1 STP#1 & T1 STP#2-Both ends tohave Fernco cap installed.

TANK SUMPS

- Install and attach containment sumps to UST at tank entry manways per UST System Installation Plans and equipment manufacturer's installation instructions.
- Maintain 6" minimum clearance between top of containment sump lid and bottom of manhole cover, or greater if required by equipment manufacturer.
- Preset all manhole, containment bucket, etc elevations as specified in the UST System Installation Plans and POUR TANK TANKFIELD CONCRETE PAD (see attached concrete spec sheet and mix design in UST System Installation Plans.)
- Contractor is responsible for keeping manhole rims true and concentric for ready cover fitment. Poor fitment will be rejected and replaced at the Contractor's expense.

SUBMERSIBLE TURBINE PUMPS

- While water ballast is in UST, only the riser and manifold portion of the STP may be installed to connect product piping, electrical conduits, etc. After water ballast has been removed, the UST installation contractor may install the extractable portion of the STP motor in the UST. Contractor assumes responsibility to clean and remove corrosion from extractable portion of STP installed in water or during storage prior to installation in fuel.
- The UST installation contractor is responsible to protect the exposed manifold surfaces and complete surface preparation to remove dirt, corrosion, etc. prior to extractable reinstallation.
- Install 4 HP motors in 24,000 gallon 87 tank compartment per UST Installation Drawings.
- Install 4 HP motor in 12,000 gallon 93 tank compartment per UST Installation Drawings.
- Install 4 HP motor in 12,000 gallon E85 tank compartment per UST Installation Drawings.
- Install 3/4 HP motor in 12,000 gallon EFREE tank compartment per UST Installation Drawings.
- Install 3/4 HP motor in 12,000 gallon Auto-Diesel tank compartment per UST Installation Drawings.
- Install one (1) Electronic Line Leak Detector in each STP.

ISSUED FOR

DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031765

CONSULTANT:
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CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
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SCOPE OF WORK (PART 1)

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

SHEETZ, INC.
STORE #716 - "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

UST SYSTEM PI**PING AND DISPENSER ISLANDS**

- Contractor will provide excavated trenching for UST System related piping per manufacturer's guidelines and installation procedures.
- Contractor is to utilize Angle Iron to support dispenser island and dispenser sump during installation. (Wood and Kindorf is not acceptable)
- Contractor is to build a "table" by welding angle iron together to support each dispenser sump during installation. Angle iron is to be extended to canopy column; angle iron must be welded to canopy column for support under brick ledge.
- Contractor will provide equipment to load and transport non-contaminated excavated spoils off site for disposal. Excavated spoils will be removed from the site immediately, unless otherwise approved by Sheetz, Inc.
- Install stainless steel dispenser island form and dispenser sump per UST System Installation Plans.
  - ➢ Dispenser island form is to be set level per site grading plan elevations provided, allowing for 5" of island reveal at centerline of dispenser with drive pad concrete. Request direction from Sheetz Site Manager if site grading plan does not identify 5" reveal.
  - ➢ UST installation contractor is responsible to complete cleaning and polishing of all Stainless Steel finishes for Construction Complete inspection, including island forms, bollards, dispensers, etc... If surfaces are not acceptable at Construction Complete inspection the contractor will be responsible to clean for inspection approval.
- Install 4" retractable duct conduit from STP sumps to dispenser sumps; continue on between remaining dispenser sumps for product piping.
- Install flexible product line(s) to dispenser islands from REG (87)-1 STP per UST System Installation Plans.
- Install flexible product line(s) to dispenser islands from REG (87)-2 STP per UST System Installation Plans.
  - ➢ Note: 87 product line is to be closest to store.
- Install flexible product line(s) to dispenser islands from PREM (93) STP per UST System Installation Plans.
- Install flexible product line(s) to dispenser islands from E85 STP sump per UST System Installation Plans.
- Install flexible product line(s) to dispenser islands from E0 STP sump per UST System Installation Plans.
- Install flexible product line(s) to dispenser islands from Diesel STP sump for active and future Auto-Diesel dispenser locations identified per UST System Installation Plans.
- Install flexible product line(s) to Auto-Diesel dispenser locations identified per UST System Installation Plans.
- Install 1-1/2" flex connectors from product line tees to impact valves (transition sumps.) (NOTE: OPW sumps shall be shipped pre-assembled.)
- Install 1-1/2" Stainless Steel Grade 304 Pipe (Gasoline/Diesel/E85) from product line elbows to impact valves (termination sumps.) (NOTE: OPW sumps shall be shipped pre-assembled.)
- Install double poppet impact valves on all ACTIVE Dispenser supply lines. (NOTE: OPW sumps shall be shipped pre-assembled.) Test ports shall be accessible.
- Install cap off fitting on all pre-piped future use product lines at stabilizer bar.
- Supply and Install a straight 3" FRP single-wall line between 87 tank sumps for future use. Install Fernco cap with clamp on both ends to prevent liquid transfer between sumps (7 or more dispensers).
- Supply and Install one 2" FRP LCX double-wall pipe with test boots between 20,000 87 tank manway and 10,000 E85 compartment manway. Connect high-point of LCX double-wall future use chase to 20,000 gal 87 STP.
- Assemble and install cross over tubes with ball valve and tee fittings in dispenser sumps to open or close secondary system for testing.
- Pressurize all product piping to 50psi and soap test. Maintain and Monitor daily at 40psi until finished concrete or dispensers are set, whichever occurs last. Test gauges are to be located in dispenser sumps easily accessible for view. *See note in TESTING section*.
- Install Four (4) 3.5" dia. x 72" Polished stainless steel bollards at 30" from top of island to top of bollard. Two (2) per dispenser island, two (2) store side canopy column & two (2) street side canopy column. *These posts are to be set in 6" dia. x 2'-6" PVC sleeves, packed with sand and sealed with Sikaflex caulking (top 2 inches - see detail.)* (see detail)
- Supply, place and compact clean stone backfill in 8" lifts for all trenches to sub-grade
- Pour 6" concrete for all islands forms after canopy columns are set, concrete is to be steel troweled with a SMOOTH finish.
- Supply and pour a 2" minimum concrete cap and overall product piping, vapor, and vent line trenches (see UST System Installation Plans)
- Place detectable tracer tape over all product piping and vent line trenches (see UST System Installation Plans - only required for NC installations)
- Install one (1) Trash Can / Windshield Wash Center on each dispenser island. See Dispenser sheets of UST Installation Drawings.
- Install one (1) cabinet with fire extinguisher at applicable dispenser islands on the canopy column per locations designated in UST System Installation Plans.
- Install all dispenser decals. See Dispenser sheets of UST Installation Drawings.
- Install two (2) ADA signs per dispenser island on canopy column wraps. See Dispenser sheets of UST Installation Drawings.
- Place Spill Box(es) at Islands, as determined by Sheetz Petroleum Construction Manager.
- Install Fire Marshal Signage as required on canopy column wraps. See Dispenser sheets of UST Installation Drawings.

UST VENT

- All Vent Riser piping to be Schedule 40 Galvanized steel piping.
- All vent piping to be Ameron Dualoy 3000L single-wall FRP.
- Supply and install materials, less U-Posts, for vent pad and support structure. VENT RISERS WILL BE RUN TO CURB OR CANOPY TOP PER UST Installation Drawings.
- Supply and Install One 3" FRP Single Wall Vent from one (1) 20,000 gallon UST (87 oct.) and one (1) 10,000 gallon compartment (93 oct.),
- Supply and Install one (1) 2" FRP Single Wall Vent from 10,000 gallon E85 compartment.
- Supply and Install one (1) 2" FRP Single Wall Vent from 10,000 gallon E0 compartment.
- Supply and Install one (1) 3" FRP Single Wall vent line from the Auto Diesel tank.
- Terminate 3" gasoline vent riser and 3" Auto-Diesel vent riser a minimum of 13' above grade, behind curb-line, close to tank field, with Galvanized Steel Schedule 40 pipe.
- Terminate 2" E85 riser and 2" E0 riser a minimum 13' above grade, behind curb-line, close to tank field, with Galvanized Steel Schedule 40 pipe.
- Supply and run a ¾" rigid PVC high voltage conduit for future use with pull string.
- Supply and run a ¾" RMC low voltage conduit for future use with pull string.
- Perform blockage test prior to backfilling.
- Vent tanks after testing.
- Install two (2) 4" x 54" wide x 55" high carbon steel "U-shaped posts in Vent Riser Pad at 30" from top of vent pad, to top of bumper post (see detail.)
- Complete surface preparation, application of primer and paint on all U-posts at vent pad with Jones Blair "Sheetz DK Bronze" paint. Product #: A2NS-D81327 For Information call Jones Blair - (214) 676-8542.
- Complete surface preparation, application of primer and paint on vent pipes and vent pipe support structure with Jones Blair "Sheetz DK Bronze" paint. Product #: A2NS-D81327 For Information call Jones Blair - (214) 676-8542.

CANOPY FOOTINGS AND DRAINS

- At UST System Installer's expense, layout canopy foundations according to canopy manufacturer's approved Construction Documents and Sheetz Canopy Layout.
- Excavate and Install canopy foundations per manufacturer's specifications and canopy foundation elevations provided. Finished foundation elevation to be +/- 1/2" of elevation provided.
- Contractor will provide equipment to load and transport non-contaminated excavated spoils off site for disposal. Excavated spoils will be removed from the site immediately, unless otherwise approved by Sheetz, Inc.
- Schedule Concrete testing using company contracted by Sheetz, Inc.'s Project Manager. Provide written confirmation to Erector that footings have attained 70% strength prior to steel erection.
- Anchor bolts, templates and drawings furnished by canopy manufacturer.
- If the geotechnical report identifies conditions that require additional excavation slope, over excavation, shoring or cast in place concrete forms to meet O.S.H.A. guidelines. Contractor is responsible to include all conditions identified in Geotechnical report in his quote, including but not limited to rock removal, ground water, etc. Contractor is not responsible for conditions related contaminated soils, contaminated groundwater, etc.
- Haul non-contaminated excavated material off site for disposal.
- Concrete: To be designed for a compressive strength of 3500 psi at 28 days.
- Assume average size of each of the canopy footings is 5' x 5' x 5' @ 3' burial, unless canopy manufacturer's foundation plan is provided with bid package.
- Contractor is to provide steel culvert piping to install in canopy footer excavation.
- Supply and install Schedule 40 PVC pipe main trunk line, per Civil Engineer's plans provided, to termination as indicated on mark-up plan on CD.
- Supply and install a Tee fitting in main trunk line to accommodate Line from building, per civil plan.
- Supply and Install 4" schedule 40 PVC pipe at each canopy footing and tie into main trunk.
  - ➢ Wye fittings shall be used at all junctions.
- Clean-outs, if indicated on drawings, are to be terminated at grade with "Sioux Chief Manuf. Part # 852-4PBR-S (storm)" or equivalent fitting.
- Supply & place non-shrink grout under canopy columns, per information provided on canopy manufacturer's plans, after columns have been set by canopy contractor.
  - ➢ NOTE: *Any deviation to canopy drain routing as shown on Civil plans must be approved by Sheetz, Civil Engineer, and Local Authority.

TANK MONITOR

- Mount Tank Monitor console in Manager's Office under electrical trough supplied and
- installed by others. See site specific building plans for mounting details.
- Connect the Tank Monitor to trough above with four (4) 1-1/4" conduit nipples.
- Install one (1) MAG 1 probe in each tank/compartment (see UST Installation Drawings.)
- Install one (1) Position Sensitive, Non-Discriminating sensor in each dispenser sump, active STP sump, and in each siphon sump (see UST Installation Drawings.)
- Supply and Install 2" FRP and approved mounting bracket to secure sensors in upright, accessible position at lowest point of each containment sump.
- Install one (1) Interstitial Sensor in each tank interstice/bulkhead.
- Install one (1) Electronic Line Leak Detector in each STP.

UST SYSTEM TESTING - PROVIDED BY CONTRACTOR (PRE-BURY)

- Prior to backfill and Pre-bury Test Evaluation, the UST contractor will complete a passing test of the entire tank top area and tank manway after all risers, fittings and sumps have been installed an confirmed ready for Pre-bury Test Evaluation.
- Prior to backfill and Pre-bury Test Evaluation, hydrostatic test all spill containment manholes. Complete installation checklist and provide documentation to Sheetz, Inc.
- Prior to backfill and Pre-bury Test Evaluation, perform a hydrostatic test on all UDC, Tank sumps per manufacturer's installation instructions and specifications. Complete installation checklist and provide documentation to Sheetz, Inc.
- UST Installation contractor is responsible to overfill the brine reservoir to top of 4" riser brine for the 3rd party inspector to witness at pre-bury inspection to verify integrity of the riser and connection to the brine reservoir.
- UST Installation contractor is responsible to set the level of brine specified on drawing page FT6.1 after the 3rd party tester certifies the integrity.

UST SYSTEM TESTING - PROVIDED BY SHEETZ, INC (PRE & POST BURY)
Please see specific test protocol preparation and testing parameter documents provided with Bid Package

- Contractor's responsibilities in regards to 3rd Party Testing provided by Sheetz, Inc.
  - ➢ Provide minimum two week notice of desired testing date.
  - ➢ Update the 3rd Party Testing contact as needed if UST Installation will not be ready for testing on desired date. Testing date should be adjusted as needed.
  - ➢ The contractor will have a minimum of two qualified personnel, tools, and equipment on site to assist Testers, and make any repairs as testing requires.
  - ➢ UST System Installer will be responsible for additional charges for additional testing, retesting, travel time, hotel, per diem, etc. as a result of:
    - ▪ UST System Installation is not complete by scheduled testing date.
    - ▪ UST System Installation fails 3rd Party Testing due to poor workmanship, improper equipment installation, etc.
- The Contractor is responsible to ensure that entire UST System Installation is ready for testing, prior to the scheduled date of Third Party Testing. This includes work completed by others contracted or provided through an agreement of Sheetz, Inc. and not contracted UST System Installer. Including, but not limited to:
  - ▪ Gilbarco / Veeder Root - ASC / CSC
  - ▪ Equipment Manufacturer's Authorized Technicians
  - ▪ Electricians
  - ▪ POS Installation
  - ▪ Equipment Distributor / Manufacturer
  - ➢ The Contractor is responsible to present any concerns over delays or incomplete work by others contracted or provided through an agreement of Sheetz, Inc., that impedes the contractor's ability to schedule the Third Party Testing prior to said scheduling or at discovery of concern or perceived delay.

UST SYSTEM TESTING - PROVIDED BY CONTRACTOR (POST-BURY)

- UST contractor will schedule the Third Party Post-bury Test contractor through Sheetz, Inc. for a Post-bury Test Evaluation of the UST system (USTs, product piping, vent, containment sumps, sump equipment, TLS Operation and set-up, etc.)
- Finished concrete is required to be in place and deemed to be complete over the entire UST System prior to Post-bury testing completion. This includes UST's, product piping, UST vent piping, UST vent pad, etc.
- The Contractor is responsible to ensure that entire UST System Installation is ready for testing, prior to the scheduled date of Third Party Testing. This includes work completed by others contracted or provided through an agreement of Sheetz, Inc. and not contracted UST System Installer. Including, but not limited to:
  - ▪ STP operation, Product Line Purging
  - ▪ Dispenser start-up completion, calibration, operation, etc.
  - ▪ Tank Monitor System start-up, set-up, operation
    - ❖ Including but not limited to: PLLD, Probes, All Sensors
  - ▪ Equipment Distributor / Manufacturer
  - ➢ The Contractor is responsible to present any concerns over delays or incomplete work by others contracted or provided through an agreement of Sheetz, Inc., that impedes the contractor's ability to schedule the Third Party Testing prior to said scheduling or at discovery of concern or perceived delay.

ELECTRICAL

- All Circuit Breaker, Contactor, etc. connections are to torqued to manufacturers specifications.
- Sheetz supplies all breaker panels, breakers, emergency stop switch, LVDD, PLC and contactor panel for canopy and area lighting, and dispenser surge suppressors.
- All relays, contactors, relay boxes, wire, wire connectors and all other associated electrical materials other than those outlined are the responsibility of the Petroleum contractor to supply and install.
- Supply and install Rigid PVC* conduit, starting at five (5) feet from building, to termination of the equipment. See attached conduit and wiring quantities sheet. Note: Keep Low Voltage, Intrinsically Safe Low Voltage and High Voltage conduits in separate wiring troughs. Last TEN (10) feet of all conduit runs to be rigid metal.
- ALL RIGID METAL ELECTRICAL CONDUITS, JUNCTION BOXES & FITTINGS INSIDE STP SUMPS AND LAST 10 FEET OF RIGID METAL CONDUIT ARE TO HAVE PVC COATING FOR CORROSION PROTECTION.
- ALL SUBMERSIBLE PUMP POWER CONDUITS ARE TO BE RIGID METAL FROM STP SUMP TO BUILDING.
- Terminate electrical wiring in Electrical Panels G-1 and G-2 per panel schedules in UST System Installation plans, deviations or changes to be approved by Sheetz, Inc. Accurately and legibly mark panel schedules in Panels G-1 and G-2, as wired. Open breakers to labeled "Spare" on panel schedule. "Spare" conduits are to have a pull string through for future use.
- Install Veeder Root TLS-450 Plus Tank Monitor in manager's office under wiring trough per UST Installation Plans.
- Label sensor schedule, legibly, inside display door of TLS-450 Plus per UST Installation Plans, deviations from plan schedule to be approved by Sheetz, Inc.
- Installer will reserve an 22" W x 45" H area by electrical panels for the Panther Controller and battery back-up module and install two (2) 1" metallic lined liquid-tight" conduits from the High Voltage trough for Crind and Data communication from the dispensers.
- Install a Gilbarco Distribution box at locations with Truck Diesel.
- Install and make all final connections to the Panther Fuel Controller Box.
- All twisted wire pairs for Crind and Data communication from dispenser to Panther Controller to be 14 AWG per Sheetz specification.
- Install integrated power center per manufacturer's specifications
- Supply and install all E-stop contactors.
- Install Emergency Stop Switch (es) under counter and exterior as required by local authorities. See the UST Installation Plans.
- UST contractor to notify building electrician of e-stop locations per UST drawings.
- Supply and install all 1" Lighting conduits to top of canopy and terminate with 8" x 8" watertight box.
- Supply and install all 2" camera conduits to top of canopy and terminate with 8" x 8" watertight box.
- Supply and install all 1" conduit with seal-tite whip ends to Canopy down-light fixtures from 8" x 8" boxes.
- Supply and install 3/4" conduit to top of canopy for Muzak speaker installation by others, installer will loop specified wire to each street-side canopy column and leave enough wire for column wrap installer to pull wire through column wrap at 12' above dispenser island for speaker installation by others.
- Install intercom system on front checkout counter and install one microphone at each POS terminal, after POS terminal is set by Sheetz, Inc. (typically three POS terminals per store.)
- Loop future Media Client conduit from store-side canopy column to Encore dispenser sump. One per column.
- Petroleum Contractor will supply labor to install 1" conduits for area lighting, pole sign, and flag lighting, that run in petroleum conduit trenching to 5' beyond petroleum equipment (re: UST System, Canopy, etc.) Materials to be supplied by building electrician, Total of six (6) 1" conduits.

  *FOLLOW APPLICABLE CODES FOR TERMINATON POINTS

- Pull electrical wiring and connect to the following equipment:
  - ➢ Dispensers.
  - ➢ Dispenser Intercom speakers (each dispenser speaker wired separately to trough.)
  - ➢ STP's.
  - ➢ Electronic Line Leak Detectors (PLLD.)
  - ➢ STP Non-Discriminating sump sensors.
  - ➢ Dispenser Non-Discriminating sump sensors.
  - ➢ Mag Plus Probes.
  - ➢ Double-Wall tank interstitial sensors.
  - ➢ Fill Double-Wall Spill Buckets Interstitial Sensors
  - ➢ Isolation Relays.
  - ➢ Auto-Diesel
  - ➢ Emergency relays.
  - ➢ Contactors.
  - ➢ Low Voltage Dispenser Disconnect system
  - ➢ I/C boxes.
  - ➢ Panther Fuel Controller Box.
  - ➢ Applause Media System.
  - ➢ 3M intercom system and microphones.
  - ➢ Programmable logic controller (PLC) lighting contactors.
  - ➢ Oil / Water Separator Probe.
  - ➢ Air machine (One unit typical per site).
    - ▪ Supply and Install two (2) 4" x 4" x 5' steel bumper posts and pour 3' x 3' x 3' pad for Air machine.
    - ▪ Install Air machine on 3' x 3' x 3' pad.
  - ➢ Canopy down lights; See canopy manufacturer and construction documents for circuit count and fixture count.
    - ▪ All canopy down lighting and awning lighting circuits to be #10 THHN stranded wire.
    - ▪ All electrical conduit sections atop canopy shall begin and/or terminate with a 2' section of seal-tite and be fastened in such a manner to allow for thermal contraction and expansion.
- Pull electrical wiring only to the following:
  - ➢ Canopy awning lights, * Purple wire is to be utilized for easy identification. See canopy manufacturer and construction documents for Awning circuits and Awning Copy circuits.
  - ➢ Auto-Diesel column Price/Locator signs - 1 circuit per dispenser island (Looped.)
  - ➢ Muzak sound system (looped to street-side dispenser canopy columns.)
  - ➢ Gilbarco Distribution Box
- Connect wiring only to the following equipment:
  - ➢ Dispenser surge protectors supplied by Sheetz, Inc.

ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 051765 ROBERT W. WELLERT

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SCOPE OF WORK (PART 2)

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FG2.1

SHEETZ, INC.
STORE #716 - "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

DISPENSERS

- Set All Dispenser Sump Fittings to be 304 grade stainless steel, except on union fittings use black iron
- Set Gilbarco Encore S - NF1 5+0 fixed blenders with CRIND, CSC Readers, EPP Keypads, (See UST Installation Drawings for specific locations.)
- Set Gilbarco Encore S - NL3 3+1+1 fixed blenders with CRIND, CSC Readers, EPP Keypads, (See UST Installation Drawings for specific locations.)
- Bolt dispensers on islands per manufacturer's directions.
- Complete connections from dispenser inlets to product piping.
- Install breakaway hoses, breakaways, hoses, swivels, and nozzles.
- Install Encore S Brandview dispenser canopies, one (1) per dispenser. Lower doors, (2) per dispenser.
- Contractor is responsible to verify that a flow rate of 10 GPM is achieved at each dispenser nozzle prior to meter calibration.
- Prior to dispenser meter calibration the Gilbarco ASC will remove and dispose of existing dispenser filters, clean screen strainers, and reinstall screen strainers with new dispenser filters.
- All filters are to be legibly labeled with installation technician's name and the installation date the new filter was installed.
- Contractor is to arrange for calibration of all dispenser meters (5gal fast flow, 5gal slow flow) to be completed by a Gilbarco ASC (Authorized Service Contractor) approved by Sheetz, Inc. that is state certified.
- Contractor is responsible notify appropriate local / state authority that dispensers will be put into service.
- Dispenser meter calibration is to be documented, and records are to be forwarded to Sheetz, Inc. with Contractor's invoice request for payment.
- Gilbarco ASC is to hook up Sheetz 2 Wire (yellow/red or yellow/blue) to the CRIND NODE in each dispenser. Once 2 Wire is connected ensure light is on for that dispenser location in the Panther Box.

PURGING OF DISPENSERS AND PRODUCT LINES

- Prior to purging fuel through system, remove factory filters and confirm that the screen strainers are in place and of quality condition. If so, reinstall factory filters with screen strainers, if not contact Sheetz PCM for direction.
- Initial Dispensers purging is to be completed per most current Gilbarco Start-up / Service Manual Instructions and per the requirements of the Sheetz Scope of Work. This requires purging through the shear valve test port prior to purging fuel through the dispenser meter. (Encore Dispenser MDE-3804)
- The contractor shall purge dispensers and product lines by running 200 gals / nozzle through each 87 octane, 93 octane, Diesel, and E0 dispenser meters.
- The contractor shall purge 89 octane by running 20gal / nozzle from each hose.
- The contractor is responsible to ensure that no debris is returned to UST during purging process.
- Sheetz requires that the contractor remove all air from product lines through the shear valve port at very end of piping run from stp motor and in addition purge approximate 1 gallon of fuel per 10' of product line through each shear valve port to remove construction debris from line prior to purging fuel through dispenser meter.
- The contractor is responsible to change out the filters after the dispenser calibration is completed.
- The contractor is responsible to drain all filtered product back to its selective tank.

GRADING

- Site will be graded to approximately 14" below Finished Concrete Grade.
- Fill, Fine Grade, and compact Drive Pad (within Canopy outline including radius front) with stone sub base material to finished sub-grade for 8" concrete slab (concrete to be placed and finished by others).
- Fill, Grade, and compact Tank pad area to finished sub-grade for 10" concrete slab (6" concrete slab for tank-field slope / over dig areas if applicable.)
- Shoring per OSHA and / or confined space requirements is the responsibility of the UST installation contractor.

TANK FIELD CONCRETE PAD

- Refer to UST Installation Plans.

MISCELLANEOUS

- Supply and install one (1) 50 lb. bag of sand, in each TC/WW center, to anchor. Sand is to remain in bags.
- Install restricted parking space sign on driver's side bollard of each designated stall.
- Paint all manholes to API color codes as required. See UST Installation Drawings.
- Complete surface preparation, application of primer and paint on all Air Machine Bollards and ESTOP Bollards with Jones Blair "Sheetz DK Bronze" paint. Product #: A2NS-D81327. For information call Jones Blair (214) 353-1604
- Supply and Install 16' of Schedule 40 - 2" PVC pipe, cap, cleanout with plug and (3) 2" RIGID one hole strap (Jiffy Part # MED90) for UST gauge poles. Clean PVC with lacquer thinner and paint Bronze. Mounting location determined in field.
- Clean all debris from job site daily.
- Perform dispenser, Tank Monitor, and Applause Media startups or schedule with local Gilbarco/Veeder-Root authorized service contractor(s).
- Ensure all Startup documentation is provided to Sheetz Petroleum Construction Manager.
- Program all dispensers and CRINDs to Sheetz pump numbers, IP addresses, etc as provided by Sheetz, Inc.
- Schedule, assist, witness and document all petroleum related inspections (may or may not include the following):
  - Labor and Industry
  - Weights and Measures.
  - Electrical.
  - UST system inspections (State Environmental Agency, Local Municipality, etc.)
  - Fire Marshall (State, Local, etc.)
  - Soil bearing inspection.
  - Foundation inspections, concrete test cylinders.
  - Dispenser Canopy Roof Drains inspections or testing.
  - All others necessary or required for completion of the UST system installation.

UST Contractor to keep set of latest plans on site at all times.

FINAL SITE CLEAN UP

- Petroleum contractor is responsible for final cleanup of all petroleum equipment installed. Final clean up and wipe down needs to be coordinated with Sheetz onsite Construction Manager (CM). Wiping down of dispensers, dispenser islands, bollards, U-posts, vent stacks, air machines, E-stop bollards, etc. needs to be completed after site power washing has been completed. If deemed necessary at this time, all stainless steel surfaces need to be polished using a metal cleaning agent.
- Petroleum contractor needs to coordinate UST Field Spill Bucket painting with Sheetz onsite CM. Painting needs to be completed after site power washing is completed
- Petroleum contractor are to confirm all equipment is cleaned and wiped down at the time of Turn Over to Store Operations.

INFORMATION TO BE PROVIDED WITH CONTRACTOR INVOICING TO RECEIVE PAYMENT
The following documentation and information is required to be submitted with Contractor invoicing, invoices will be returned that do not have specified information attached or included

Invoice #1

- Quality pictures of the UST System installation to date. (In electronic JPEG format on an appropriately labeled CD.) Pictures will be taken in a manner to provide future reference to UST System components location and the manner in which they were installed. Pictures are required of the items listed below:
  - UST Excavation complete with deadman anchors and bedding, prior to tank installation.
  - UST's set in excavation withhold straps installed prior to backfilling excavation. Pictures will show UST's in relation to all excavation walls, and space between UST's.
  - Canopy footing excavations complete to canopy manufacturer's specification prior to concrete installation.
  - Reference pictures for any Change Order Directives requested, Sheetz supplied equipment that is received as damaged.
- Completed Sheetz Installation Checklists from Contractors Folder. (UST, Canopy Footing, Piping and Sump.)
- Completed manufacturer's installation checklists and warranty documents.
- Copies of any registrations, permits, applications, etc. required to be completed by Contractor for local, state, or federal UST registrations and related paperwork.
- Copies of any permits obtained by the Contractor for the UST installation.
- Packing Lists for any equipment received to date by Contractor from Sheetz or Sheetz specified distributor. Contractor will sign off that he has verified all quantities received against Packing List.

Invoice #2

- Quality pictures of the UST System installation to date. (In electronic JPEG format on an appropriately labeled CD.) Pictures will be taken in a manner to provide future reference to UST System components location and the manner in which they were installed. Pictures are required of the items listed below:
  - Entire completed UST System prior to backfill to include, but not limited to:
    - Exterior / Interior view of UST/Dispenser sumps.
    - UST product and vent piping trenches.
    - Canopy roof drains from dispenser canopy to termination point.
    - Conduit trenches from building to dispenser canopy and UST's.
    - Aerial view of UST Piping System from top of canopy and top of building.
    - UST risers and containment.
  - Reference pictures for any Change Order Directives requested, Sheetz supplied equipment that is received as damaged.
- Completed Sheetz Installation Checklists from Contractors Folder (UST, Canopy Footing, Piping and Sump.)
- Completed manufacturer's installation checklists and warranty documents.
- Copies of any registrations, permits, applications, etc. required to be completed by Contractor for local, state, or federal UST registrations and related paperwork.
- Copies of any permits obtained by the Contractor for the UST installation.
- Packing Lists for any equipment received to date by Contractor from Sheetz or Sheetz specified distributor. Contractor will sign off that he has verified all quantities received against Packing List.
- As-built drawing of UST System on Sheetz provided plan.
- Waiver of Lien forms from CONTRACTOR's laborers, material men, subcontractors or other creditors for services and materials.

Invoice #3

- Quality pictures of the UST System installation to date. (In electronic J-PEG format on an appropriately labeled CD.) Pictures will be taken in a manner to provide future reference to UST System components location and the manner in which they were installed.
  - Reference pictures for any Change Order Directives requested, Sheetz supplied equipment that is received as damaged.
- Completed Sheetz Installation Checklists from Contractors Folder. (UST, Canopy Footing, Piping and Sump.)
- Completed manufacturer's installation checklists and warranty documents.
- Copies of any registrations, permits, applications, etc. required to be completed by Contractor for local, state, or federal UST registrations and related paperwork.
- Copies of any permits obtained by the Contractor for the UST installation.
- Packing Lists for any equipment received to date by Contractor from Sheetz or Sheetz specified distributor. Contractor will sign off that he has verified all quantities received against Packing List.
- Bills of Lading for fuel deliveries received.
- Copies of initial dispenser calibration reports.
- Copies of Gilbarco/Veeder-Root Commissioning Checklists from equipment start-up contractor.
- Waiver of Lien forms from CONTRACTOR's laborers, material men, subcontractors or other creditors for services and materials.

FINAL INSPECTIONS AND CERTIFICATIONS

Invoice #4

- Satisfactory completion of final Construction Complete Inspection and correction of deficient punch list items
- Final completed as-built drawings showing tank layout, product line piping, vent piping, canopy drains, conduit trenches, site wells and any other equipment associated with the UST system or installation on Sheetz provided plan.
- Copies of initial dispenser calibration reports, dispenser GPM documentation and filter change dates
- Copies of Gilbarco/Veeder-Root Commissioning Checklists from equipment start-up contractor.
- Copies of any permits obtained by the petroleum contractor for the installation.
- Completed manufacturer's product checklists and warranty documents.
- Quality pictures of the UST System installation to date. (In electronic JPEG format on an appropriately labeled CD) Pictures will be taken in a manner to provide future reference to UST System components location and the manner in which they were installed. Pictures are required of the items listed below:
  - Total completed UST and Piping system sumps, spill containment, site wells, etc.
  - UST vent pad.
  - Dispenser canopy, dispenser islands, dispensers.
  - Tank monitor, electrical room, intercom system, e-stop, air machine.
  - Reference pictures for any Change Order Directives requested, Sheetz supplied equipment that is received as damaged.
- Completed state, local and federal UST registrations and related paperwork.
- Construction diary on a week by week basis from start to end of petroleum installation.
- Provide a list of any materials that were substituted from the "Contractor Supplied Equipment List" on "UST SYSTEM EQUIPMENT SCHEDULE" included with this package. Provide manufacturer name, distributor, contact name and phone #, and part # for each item.
- Waiver of Lien forms from CONTRACTOR's laborers, material men, subcontractors or other creditors for services and materials.
- All items under Final Inspections and Certifications are to be sent to the Sheetz Petroleum Construction Foreman, within (2) weeks after completion of total UST system. Release of final 10% of Petroleum Contract amount is contingent upon receipt.

ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:

CONSULTANT:
Engineers • Planners • Surveyors
Weilert Corporation

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

SCOPE OF WORK (PART 3)

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FG2.2

ITEM	MANUFACTURER	MODEL	PART #	DESCRIPTION	SIZE	QTY (*=AS APPLICABLE)	OPTIONAL	REFERENCE	APPLICATION	EQUIPMENT/ MATERIAL SUPPLIER	SHIP
1	NOV FIBERGLASS SYSTEMS		DUALOY 3000/LCX	COAXIAL FIBERGLASS PIPE	3"	*	NONE	VENT/STAGE II	UST VENT / STAGE II PIPING	CONTRACTOR	
5	NOV FIBERGLASS SYSTEMS		DUALOY 3000/LCX	COAXIAL FIBERGLASS PIPE	2"	*	NONE	VENT/ STAGE II / SIPHON	UST VENT / STAGE II PIPING	CONTRACTOR	
8	NOV FIBERGLASS SYSTEMS		DUALOY 3000/L	SINGLE WALL FIBERGLASS PIPE	3"	*	NONE	VENT	UST VENT / STAGE II PIPING	CONTRACTOR	
9	NOV FIBERGLASS SYSTEMS		DUALOY 3000/L	SINGLE WALL FIBERGLASS PIPE	2"	*	NONE	VENT	UST VENT / STAGE II PIPING	CONTRACTOR	
10	NOV FIBERGLASS SYSTEMS		22372108	PRIMARY 90 ELBOW	2"	*	NONE	PRODUCT PIPE	PIPING	CONTRACTOR	
11	NOV FIBERGLASS SYSTEMS		22378007	PRIMARY TEE	2"	*	NONE	PRODUCT PIPE	PIPING	CONTRACTOR	
12	NOV FIBERGLASS SYSTEMS		22850203	NRP PRIMARY ADAPTER BELL FEMALE	2"	*	NONE	UST	PIPING	CONTRACTOR	
13			GRADE 304	STAINLESS STEEL / FITTINGS	1"	*	NONE	E-85	UST VENT / STAGE II PIPING	CONTRACTOR	
17			GRADE 304	STAINLESS STEEL / FITTINGS	1-1/2"	*	NONE	E-85	UST VENT / STAGE II PIPING	CONTRACTOR	
21			GRADE 304	STAINLESS STEEL / FITTINGS	2"	*	NONE	E-85	UST VENT / STAGE II PIPING	CONTRACTOR	
25			GRADE 304	STAINLESS STEEL / FITTINGS	3"	*	NONE	E-85	UST VENT / STAGE II PIPING	CONTRACTOR	
29			GRADE 304	STAINLESS STEEL / FITTINGS	4"	*	NONE	E-85	UST VENT / STAGE II PIPING	CONTRACTOR	
33	NOV FIBERGLASS SYSTEMS		DUALOY 3000/LCX	COAXIAL FIBERGLASS CLAMSHELL FITTINGS & TERMINATION FITTINGS W/ TEST PORT	2" / 3"	*	NONE		UST VENT / STAGE II PIPING	CONTRACTOR	
37	NOV FIBERGLASS SYSTEMS		DUALOY 3000/L	SINGLE WALL FIBERGLASS ADAPTERS, COUPLERS & TERMINATION FITTINGS	2" / 3" / 4"	*	NONE		UST VENT / STAGE II PIPING	CONTRACTOR	
41	NOV FIBERGLASS SYSTEMS		DUALOY 3000/L	SINGLE WALL FIBERGLASS PIPE	3"	*	NONE	VENT TUBING CHASES	UST VENT / STAGE II PIPING	CONTRACTOR	
45			GRADE 304	STAINLESS STEEL PIPE /FITTINGS	1"	*	NONE	RISERS/SUMPS	UST VENT / STAGE II PIPING	CONTRACTOR	
49			GRADE 304	STAINLESS STEEL PIPE /FITTINGS	1-1/2"	*	NONE	RISERS/SUMPS	UST VENT / STAGE II PIPING	CONTRACTOR	
53			GRADE 304	STAINLESS STEEL PIPE /FITTINGS	2"	*	NONE	RISERS/SUMPS	UST VENT / STAGE II PIPING	CONTRACTOR	
54			SCHEDULE 40	GALVANIZED STEEL PIPE /FITTINGS	2"	*	NONE	VENT STACKS	UST VENT / STAGE II PIPING	CONTRACTOR	
57			GRADE 304	STAINLESS STEEL PIPE /FITTINGS	3"	*	NONE	RISERS/SUMPS	UST VENT / STAGE II PIPING	CONTRACTOR	
58			SCHEDULE 40	GALVANIZED STEEL PIPE /FITTINGS	3"	*	NONE	VENT STACKS	UST VENT / STAGE II PIPING	CONTRACTOR	
61			GRADE 304	STAINLESS STEEL PIPE /FITTINGS	4"	*	NONE	RISERS/SUMPS	UST VENT / STAGE II PIPING	CONTRACTOR	
62			SCHEDULE 40	GALVANIZED STEEL PIPE /FITTINGS	4"	*	NONE	VENT STACKS	UST VENT / STAGE II PIPING	CONTRACTOR	
63			GRADE 304	STAINLESS STEEL PIPE /FITTINGS	2" x 4"	*	NONE	RISERS/SUMPS	UST VENT / STAGE II PIPING	CONTRACTOR	
65		IRON	SCHEDULE 40	2" SCHEDULE 40 IRON CAP MALE	2"	*			UST	CONTRACTOR	
67	3M	SCOTCH HEAVY DUTY MINING TAPE	TAPE 31	HEAVY DUTY MASTIC BASED PROTECTIVE TAPE COATING	2" X 10'	*	NONE	RISER PIPES	UST RISER PIPING	CONTRACTOR	
73	GASOILA	E-SEAL	GE-04, GE-16	ETHANOL COMPATIBLE PIPE THREAD SEALANT		*	NONE		UST VENT / STAGE II PIPING	CONTRACTOR	
74	JONES BLAIR		3090	WHITE PRIMER	1 GALLON	*	NONE			CONTRACTOR	
75	JONES BLAIR		3091	GRAY PRIMER	1 GALLON	*	NONE			CONTRACTOR	
76	JONES BLAIR		A2NS-D81327	SHEETZ DARK BRONZE	1 GALLON	*	NONE			CONTRACTOR	
77	JONES BLAIR		A2NS-D11304	SHEETZ RED	1 GALLON	*	NONE			CONTRACTOR	
78	JONES BLAIR		45051	SEMI-GLOSS WHITE	1 GALLON	*	NONE			CONTRACTOR	
79		STEEL		BUMPER POST	4" x 4" x 5'	4	NONE	AIR MACHINE	AIR MACHINE	CONTRACTOR	
81		STEEL		BUMPER POST	4" x 4" x 5'	4	NONE	OAP	AIR MACHINE	CONTRACTOR	
85		Factory Slotted PVC	SCHEDULE 40	PUMP OUT CULVERT W BOTTOM CAP	12" MIN. X 16'	1			UST	CONTRACTOR	
89	FERNCO		QC-112	RUBBER QUICK CAP W/ SS CLAMP	12"	1	NONE	PUMPOUT	UST	CONTRACTOR	
93	UNIVERSAL VALVE		U-650-4016	4" x 16' PVC MONITORING WELL PIPE	4" x 16'	1	NONE		UST	CONTRACTOR	
97	MORRISON BROS.		678XA	MONITORING WELL CAP	4"	1	NONE		UST	CONTRACTOR	
98		PVC	SCHEDULE 40	4" SCHEDULE 40 CROSS / TEE FITTINGS	4"		NONE	MD Vent app only	UST	CONTRACTOR	
99		PVC	SCHEDULE 40	2" SCHEDULE 40 PVC / FITTINGS	2"		NONE	MD Vent app only	UST	CONTRACTOR	
100		PVC		4"x2" PVC REDUCER FITTING	4"		NONE	MD Vent app only	UST	CONTRACTOR	
101				ROD, GROUNDING, 3/4" X 10' COPPER-CLAD STEEL		*		TANK GROUNDING SYSTEM	UST	CONTRACTOR	
105	BARON			GALVANIZED, FORGED STEEL, REGULAR NUT EYE BOLT W.L.L- 13300	24-1 X 12'	*		PER SCOPE / PLANS	UST	CONTRACTOR	
109	BAROID	BENSEAL		BENTONITE PELLETS		*	NONE	PER SCOPE / PLANS	UST	CONTRACTOR	
113	NOV FIBERGLASS SYSTEMS		DUALOY 3000/L	SINGLE WALL FIBERGLASS PIPE	4"	*	NONE	FRP/UST BRINE RESERVOIR RISER	UST	CONTRACTOR	
114	NOV FIBERGLASS SYSTEMS		DUALOY 3000/L 4470202	SINGLE WALL FIBERGLASS 4" BELL x MALE FITTING	4"	*	NONE	FRP/UST BRINE RESERVOIR RISER	UST	CONTRACTOR	
115	OPW		206121	RISER EXTENTION ADAPTER	4"	*	NONE	FRP/UST BRINE RESERVOIR RISER	UST	SHEETZ	
116	NOV FIBERGLASS SYSTEMS		DUALOY 3000/L 80210101	NOV ADH4700 PSX-20 ADHESIVE KIT	4"	*	NONE	FRP/UST BRINE RESERVOIR RISER	UST	CONTRACTOR	
117	O-Z-GEDNEY	GRC	GRC-75-10B	GROUND ROD CLAMP		*	NONE	TANK GROUNDING SYSTEM	UST	CONTRACTOR	
121	O-Z-GEDNEY	TYPE G	G-500B	UNIVERSAL GROUND CLAMP SYSTEM	4"	*	NONE	TANK GROUNDING SYSTEM	UST	CONTRACTOR	
125				WIRE, #8, SOLID, GROUNDING		*	NONE	TANK GROUNDING SYSTEM	UST	CONTRACTOR	
129		PVC		CONDUIT		*	NONE	PER SCOPE / PLANS	ELECTRICAL	CONTRACTOR	
133		RIGID METAL		CONDUIT	3/4" / 1" / 2"	*	NONE	PER SCOPE / PLANS	ELECTRICAL	CONTRACTOR	
137	APPLETON	ELBY		CAPPED EXPLOSION PROOF ELBOW	3/4" / 1"	*	EQUIVALENT	PER SCOPE / PLANS	ELECTRICAL	CONTRACTOR	
141	CROUSE HINDS	EYS-xx	VERTICAL / HORIZONTAL	CONDUIT SEAL OFF FITTING	3/4" / 1" / 2"	*	EQUIVALENT	PER SCOPE / PLANS	ELECTRICAL	CONTRACTOR	
145	CROUSE HINDS	GUP215		EXPLOSION PROOF JUNCTION BOX		*	EQUIVALENT	PER SCOPE / PLANS	ELECTRICAL	CONTRACTOR	
147	SQUARE-D	IPC1	RF10241701	INTEGRATED POWER CENTER 1 - CIRCUIT MANAGER		1	NONE	PER SCOPE / PLANS	ELECTRICAL	SHEETZ	
147	SQUARE-D	LVDD	LVDD-V-8/12	LOW VOLTAGE DISPENSER DISCONNECT	28" x 20"	1	NONE	PER SCOPE / PLANS	ELECTRICAL	SHEETZ	
149	SQUARE-D	0	8910DPA34V02	4 POLE CONTACTOR DEFINITE PURPOSE	30 AMP	6	NONE	PER SCOPE / PLANS	ELECTRICAL	CONTRACTOR	
150	SQUARE-D	SINGLE PHASE	8910DP12V02	2 POLE CONTACTOR DEFINITE PURPOSE	20 AMP	2	NONE	PER SCOPE / PLANS	ELECTRICAL	CONTRACTOR	
151	SQUARE-D	THREE PHASE	8910DPA13V09	3 POLE CONTACTOR DEFINITE PURPOSE	20 AMP	3	NONE	PER SCOPE / PLANS	ELECTRICAL	CONTRACTOR	
153		PVC	SCHEDULE 40	CANOPY DRAIN LEADERS / TRUNK LINE	4" / 6"	*		PER SCOPE / SITE PLAN	CANOPY DRAINS	CONTRACTOR	
157	SIOUX CHIEF MANUFACTURING	CAST BRASS	852-4PBRS	4" ADJUSTABLE CLEANOUT (STAMPED " ST ")		*	EQUIVALENT	PER SCOPE / SITE PLAN	CANOPY DRAINS	CONTRACTOR	
161		PVC	SCHEDULE 40	PIPE FITTINGS (WYE'S, TEE'S, CLEAN-OUTS)		*		PER SCOPE / SITE PLAN	CANOPY DRAINS	CONTRACTOR	
169	XERXES	667-250	10' X 65'-5 1/4"	24,000 / 12,000 GAL FRP DOUBLEWALL SPLIT COMPARTMENT TANK-BRINE FILLED (2 MANWAYS)	36,000 GAL	1	NONE	PER SCOPE / SITE PLAN	UST	SHEETZ	
181	XERXES	667-121	10' X 65'-3 1/4"	12,000 / 12,000 / 12,000 GAL FRP DOUBLEWALL SPLIT COMPARTMENT TANK-BRINE FILLED (3 MANWAYS)	36,000 GAL	1	NONE	PER SCOPE / SITE PLAN	UST	SHEETZ	

ITEM	MANUFACTURER	MODEL	PART #	DESCRIPTION	SIZE	QTY (*=AS APPLICABLE)	OPTIONAL	REFERENCE	APPLICATION	EQUIPMENT/ MATERIAL SUPPLIER	SHIP
218	GILBARCO	ENCORE	NF1	5+0 GAS/E15 DISP. W/ CRIND , RFID, EPP KEYPAD, TRIPLE DES		4	NONE	GASOLINE / AUTODIESEL/E85	DISPENSER	SHEETZ	
219	GILBARCO	ENCORE	NL3	3+1+1 GAS/E-FREE/DIESEL DISP. W/ CRIND , RFID, EPP KEYPAD, TRIPLE DES		2	NONE	GASOLINE / ETHANOL FREE / AUTODIESEL	DISPENSER	SHEETZ	
220	GILBARCO	ENCORE	NF4	4+1 GAS/E15/DSL DISP. W/ CRIND , RFID, EPP KEYPAD, TRIPLE DES		0	NONE	GASOLINE / AUTODIESEL/E85	DISPENSER	SHEETZ	
225	NCR			PANTHER FUEL CONTROLLER		1			DISPENSER EQUIPMENT	SHEETZ	
233	IT		SPIU-2	ENCORE DISPENSER SURGE PROTECTION		6		GASOLINE / AUTO-DIESEL	DISPENSER EQUIPMENT	SHEETZ	
237	FORTE		8001461	SIDEKICK MULTIPURPOSE WASTE/WINDSHIELD SERVICE CENTER	40 GAL.	6		DISPENSER ISLAND	DISPENSER ISLAND EQUIPMENT	SHEETZ	
241	ENDAGRAPH		N/A	FIRE MARSHAL WARNING DECAL		6		DISPENSER ISLAND	DISPENSER ISLAND EQUIPMENT	SHEETZ	
245		B441	10#, 4A:80:B:C	DISPENSER ISLAND FIRE EXTINGUISHER		6		DISPENSER ISLAND	DISPENSER ISLAND EQUIPMENT	SHEETZ	
249	BROOKS		M2M	FIRE EXTIGUISHER CABINET		6		DISPENSER ISLAND	DISPENSER ISLAND EQUIPMENT	SHEETZ	
250				SPILL BOX	38" x 29 3/4"	2		DISPENSER ISLAND	DISPENSER ISLAND EQUIPMENT	CANOPY MANU.	
253	VEEDER ROOT	TLS-450 PLUS	860091-301	TANK MONITOR CONSOLE WITH INTEGRAL PRINTER AND 7.4" VGA LCD W/ TOUCH SCREEN		1			TANK MONITOR	SHEETZ	
256	VEEDER ROOT		332812-001	UNIVERSAL SENSOR / PROBE MODULE		2			TANK MONITOR	SHEETZ	
257	VEEDER ROOT		332813-001	UNIVERSAL INPUT / OUTPUT INTERFACE MODULE		1			TANK MONITOR	SHEETZ	
261	VEEDER ROOT	MAG PLUS HGP	846397-110	STAINLESS STEEL TANK PROBE (ATG) W/ FLOAT KIT (STAINLESS STEEL)	10'-6"	4		120" DIA. UST	TANK MONITOR	SHEETZ	
263	VEEDER ROOT	MAG PLUS	846391-410/ 846400-004	STAINLESS STEEL TANK PROBE (ATG) W/ FLOAT KIT E85	10'-6"	1		120" DIA. UST E85	TANK MONITOR	SHEETZ	
265	VEEDER ROOT	NON-DISCRIMIN ATING	794380-323	PAN SUMP SENSOR POSITION SENSITIVE NON-DISCRIMINATING LIQUID SENSOR	12"	11		DISPENSER / UST SUMPS	TANK MONITOR	SHEETZ	
273	GEMS		607215- A1004-001SEN	LS-7 STAINLESS STEEL LEVEL SWITCH INTERSTITIAL SENSOR FOR DOUBLE-WALL SPILL BUCKETS		7		EMCO WHEATON DOUBLE-WALL STAINLESS STEEL SPILL BUCKET (NORTH CAROLINA ONLY)	TANK MONITOR	SHEETZ	
277	VEEDER ROOT	FRP TANK	794380-303	DUAL FLOAT HYDROSTATIC RESERVOIR SENSOR		2		FOR FIBERGLASS TANKS	TANK MONITOR	SHEETZ	
281	VEEDER ROOT		312020-952	CAP & RING KIT	4"	5		ATG RISER	TANK MONITOR	SHEETZ	
289	VEEDER ROOT	FRP TANK	330020-435 / 312020-990	PLASTIC RISER KIT/SENSOR INSTALL KIT	4"	2		FOR FIBERGLASS TANKS	TANK MONITOR	SHEETZ	
293	VEEDER ROOT	PLLD	859080-001	SMART DIGITAL PRESSURE LINE LEAK DETECTOR (NO SWIFT CHECK)		5			TANK MONITOR	SHEETZ	
297	CH HANSEN	DETECTABLE	16632	DIRECT BURY TRACER TAPE WITH IMPRINT "CAUTION BURIED GAS PIPE"	6" x 1000'	2		NC ONLY	TANK MONITOR	SHEETZ	
301	ETA			PLC STAGE LIGHTING CONTROL		1		ELECTRICAL ROOM	PLC	SHEETZ	
305	ETA			PLC STAGE LIGHTING CONTACTOR BOX		1		ELECTRICAL ROOM	PLC	SHEETZ	
313	ESCO	LOB-1038	935-0041	EMERGENCY STOP W/ ALARM & GUARD MAINTAINED PUSHBUTTON		1		FRONT COUNTER	FRONT COUNTER EQUIPMENT	SHEETZ	
321	POWER INTEGRITY	IA-ESOC/T		EXTERIOR EMERGENCY STOP CONTROL W/ COVER PUSH TO ACTIVATE AND TWIST TO RELEASE		2		WHERE APPLICABLE	EXTERIOR BUILDING	SHEETZ	
322	POWER INTEGRITY	IA-ESOC/T		EXTERIOR EMERGENCY STOP CONTROL W/ COVER MOUNTED TO BOLLARD		0		WHERE APPLICABLE	EXTERIOR BUILDING	SHEETZ	
333	MUSAK			DISPENSER ISLAND MUSIC SYSTEM SPEAKERS		8			EXTERIOR BUILDING	SHEETZ	
337	BLAIR SIGN CO.			BACK-LIT VINYL AWNING	APPROXIMATE FOOTAGE	390	MC SIGN CO.	MAX. 72' PER CIRCUIT	EXTERIOR BUILDING	SHEETZ	
351	OPW	FLEXWORKS	DSLFR-SPXXX-1836-1234-568	ENCORE DISPENSER SUMP		1	NONE	ENCORE PASS THRU (E85 TERM. B SIDE) 5+0 DISPENSER	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
352	OPW	FLEXWORKS	DSLFR-SP131-1836-1234-5678	ENCORE DISPENSER SUMP		2	NONE	ENCORE THROUGH 5+0 DISPENSERS	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
353	OPW	FLEXWORKS	DSLFR-SPXXX-1836-124-5678	ENCORE DISPENSER SUMP		1	NONE	ENCORE PASS THRU (E85 TERM. A SIDE) 5+0 DISPENSER	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
354	OPW	FLEXWORKS	DSLFR-SPXXX-1836-1234	ENCORE DISPENSER SUMP		1	NONE	ENCORE TERMINATING B SIDE 3+1+1 DISPENSER	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
355	OPW	FLEXWORKS	DSLFR-SPXXX-1836--5678	ENCORE DISPENSER SUMP		1	NONE	ENCORE TERMINATING A SIDE 3+1+1 DISPENSER	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
379	OPW	FLEXWORKS	REF-4015	DUCTED ENTRY BOOT - 1.50'' SC PIPE (AIR TESTABLE)	4.00'' X 1.50''	6	NONE	GASOLINE / FUTURE E85	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
380	OPW	FLEXWORKS	REF-4015	DUCTED ENTRY BOOT - 1.50'' SC PIPE (AIR TESTABLE)	4.00'' X 1.50''	2	NONE	DIESEL / KEROSENE	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
381	FRANKLIN FUELING APT	RIGID	REB-C-0075	RIGID ENTRY BOOT - CONDUIT	3/4"	12	NONE	GASOLINE / DIESEL/ KEROSENE	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
382	FRANKLIN FUELING APT	RIGID	REB-C-0100	RIGID ENTRY BOOT - CONDUIT	1"	10	NONE	GASOLINE / DIESEL/ KEROSENE	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
383	FRANKLIN FUELING APT	RIGID	REB-C-0075	RIGID ENTRY BOOT - CONDUIT	3/4"	2	NONE	INTERSTITIAL MONITORING SUMP CONDUIT BOOTS	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
385	BRAVO	FF SERIES	F-20-FF	RIGID ENTRY FITTING - 2.00" FIBERGLASS SW PIPE	2"	2	NONE	UST VENT / STAGE II	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
389	BRAVO	FF SERIES	F-30-FF	RIGID ENTRY FITTING - 3.00" FIBERGLASS SW PIPE	3"	3	NONE	UST VENT / STAGE II / 87 UST STP CROSSOVER	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
393	BRAVO	FF SERIES	F-20-FF-LCX	RIGID ENTRY FITTING - 2.00" FIBERGLASS LCX PIPE	2"	2	NONE	MANIFOLD / UST VENT / STAGE II	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
394	BRAVO	FF SERIES	F-30-FF-LCX	RIGID ENTRY FITTING - 3.00" FIBERGLASS LCX PIPE	3"	0	NONE	MANIFOLD / UST VENT / STAGE II	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
401	OPW		FTSD-4837CR	FLAT SIDED TWO PIECE FACETED TURBINE SUMP FOR 48" TANK COLLAR	46" X 40" DEPTH 42" COVER	1	NONE	FG STP / PROBE / FUTURE E85	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
402	FIBRELITE		S15CR-2-WT-33	FLAT SIDED TWO PIECE FACETED TURBINE SUMP FOR 54" TANK COLLAR	45"x33" DEPTH 42" COVER	4	NONE	FG STP	UST / DISPENSER SUMP & EQUIPMENT	SHEETZ	1
413	BOSTIK		TC- BOSTIK	POLYETHELENE SEALER	TUBE	24	NONE	ENTRY BOOT	UST / DISPENSER SUMPS & EQUIPMENT	SHEETZ DISTRIBUTOR	1
418	OPW	FLEXWORKS	C-15A-XXX	FLEXIBLE PIPING	1.50''	765	NONE	GASOLINE	PRODUCT / VENT PIPING	SHEETZ DISTRIBUTOR	1
422	OPW	FLEXWORKS	C-15A-XXX	FLEXIBLE PIPING	1.50''	240	NONE	E85 / FUTURE E85	PRODUCT / VENT PIPING	SHEETZ DISTRIBUTOR	1
426	OPW	FLEXWORKS	C-15A-XXX	FLEXIBLE PIPING	1.50''	265	NONE	DIESEL	PRODUCT / VENT PIPING	SHEETZ DISTRIBUTOR	1
434	OPW	FLEXWORKS	APX40	4" CORRUGATED RETRACTIBLE DUCTING	4.00"	1270	NONE	GASOLINE / E85 / DIESEL/ KEROSENE	PRODUCT / VENT PIPING	SHEETZ DISTRIBUTOR	1
447	OPW	FLEXWORKS	TCT-2509	TEST TUBE JUMPER KIT FOR DOUBLE-WALL COUPLING	4.00"	14	NONE	PIPE SECONDARY TESTING	PRODUCT / VENT PIPING	SHEETZ DISTRIBUTOR	1
448	OPW	FLEXWORKS	TTT-2536	TEST TUBE TERMINATION KIT FOR DOUBLE-WALL COUPLING	4.00"	20	NONE	PIPE SECONDARY TESTING	PRODUCT / VENT PIPING	SHEETZ DISTRIBUTOR	1
462	OPW	FLEXWORKS	DPC-2015A	DOUBLE-WALL PIPE COUPLING	1.50''	28	NONE	GASOLINE	PRODUCT / VENT PIPING	SHEETZ DISTRIBUTOR	1
466	OPW	FLEXWORKS	DPC-2015A	DOUBLE-WALL PIPE COUPLING	1.50''	8	NONE	FUTURE E85	PRODUCT / VENT PIPING	SHEETZ DISTRIBUTOR	1
470	OPW	FLEXWORKS	DPC-2015A	DOUBLE-WALL PIPE COUPLING	1.50''	12	NONE	DIESEL / KEROSENE	PRODUCT / VENT PIPING	SHEETZ DISTRIBUTOR	1
471	OPW	FLEXWORKS	STC-0200	TERMINATION CAP	1.50''	0	NONE	PREPIPE TERMINATIONS	TERMINATING PLUG	SHEETZ DISTRIBUTOR	1

NOTE:
THIS SHOULD NOT BE CONSIDERED A COMPLETE LIST OF MATERIALS THAT ARE REQUIRED TO COMPLETE THE WORK. THE BID SHOULD INCLUDE ALL MATERIALS HEREIN OR REQUIRED TO COMPLETE THE WORK OUTLINED IN THE SCOPE AND DRAWING DOCUMENTS

ISSUED FOR

DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 051765

CONSULTANT:
Engineers • Planners • Surveyors
Wellert Corporation
5136 Beach Road • Medina, Ohio 44256
t: 330.239.2699 • f:330.239.0272

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
(814) 946-3611

EQUIPMENT LIST (PART 1)

SHEETZ INC. #716 "SAWYER"

283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE: N/A
DATE: 3/5/2021
DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: RWW
JOB NUMBER: XXXXXX

FG3.0

ITEM	MANUFACTURER	MODEL	PART #	DESCRIPTION	SIZE	QTY (*=AS APPLICABLE)	OPTIONAL	REFERENCE	APPLICATION	EQUIPMENT/ MATERIAL SUPPLIER	SHIP
513	FE PETRO	VARIABLE SPEED	STP-MRVS4-VL2-24	4 H.P. VARIABLE SPEED STP W/ SIPHON ASSEMBLY & PRECISION CHECK VALVE		2	NONE	GASOLINE	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
514	FE PETRO	VARIABLE SPEED	ISTMRVS4-VL2-24	4 H.P. VARIABLE SPEED STP W/SIPHON ASSEMBLY & PRECISION CHECK VALVE		1	NONE	E85 ONLY	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
517	FE PETRO	FIXED SPEED	STP75-VL2-24	3/4 H.P. STP W/PRECISION CHECK VALVE		2	NONE	AUTO-DIESEL	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
525	FE PETRO	VARIABLE SPEED	MAG-VFC	MAG VARIABLE FREQUENCY CONTROLLER		3	NONE	GASOLINE	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	2
533	FE PETRO	FIXED SPEED	STP-SC1	STP CONTROL BOX		2	NONE	AUTO-DIESEL / KEROSENE	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	2
549	FLEXING	FIREFLEX	FFUL30X12MXM	3" x 12" FLEX CONNECTOR FIREFLEX	3" x 12"	0	NONE	GASOLINE/DIESEL VENTS	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
557	FLEXING	FIREFLEX	FF20X12HMXM346	2" x 12" FLEX CONNECTOR FIREFLEXSAFE (SWIVEL)	2" x 12"	0	NONE	E85/KERO VENTS	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
561	AUSTIN ENGINEERING		AE-436ZB	4" ISOLATION BOOT (W/ ZIPPER), CLAMPS, ADHESIVE	3"	0	NONE	GASOLINE / DIESEL	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
565	AUSTIN ENGINEERING		AE-436ZB	4" ISOLATION BOOT (W/ ZIPPER), CLAMPS, ADHESIVE	2"	0	NONE	KEROSENE/ FUTURE-E85	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
567	MORRISON BROS.	178	178---1600AC	BRB/BRC THREAD ON-TIGHT SEAL CAP	4"	5	NONE	GASOLINE/DIESEL/ KEROSENE VENTS	VENT EXTRACTORS	SHEETZ DISTRIBUTOR	
568	OPW		FSA-400	4"x 4" ADAPTER	4" x 4"	5	NONE	GASOLINE/DIESEL/ KEROSENE VENTS	VENT EXTRACTORS	SHEETZ DISTRIBUTOR	
569	OPW	233 series	233-4430	4" x 4" x 3" EXTRACTOR FITTING	4" x 3"	3	MORRISON BROS.	Reg / DIESEL VENT/ 10k 93	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
573	OPW	233 series	233-4420	4' x 4" x 2" EXTRACTOR FITTING	4" x 2"	2	MORRISON BROS.	KERO VENT/10k 87/STAGE 1	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
574			1505928	3" X 3" FLANGE FITTING	3" X 3"	3	NONE	RISERS/SUMPS	UST VENT / STAGE II PIPING	SHEETZ DISTRIBUTOR	
575			1619457	2" X 2" FLANGE FITTING	2" X 2"	2	NONE	RISERS/SUMPS	UST VENT / STAGE II PIPING	SHEETZ DISTRIBUTOR	
581	FRANKLIN FUELING	DEFENDER SERIES	708592901	OVERFILL VALVE 10' BURY, 10' TANK	10' DIAMETER UST	6	NONE		UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
583	FRANKLIN FUELING	DEFENDER SERIES	708592921	OVERFILL VALVE 10' BURY, 10' TANK, E85 ONLY	10' DIAMETER UST	1	NONE	E-85 ONLY	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
587	OPW		C04455	E85 DIFFUSER ADAPTER	10'DIAMETER UST	1	NONE	E85 ONLY	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
589	OPW	623 SERIES	623V-3203	3" VENT CAP - THREADED (NPT) (UL-20K/S-10K COMMON VENT)	3"	1	NONE	GASOLINE	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
593	OPW	623 SERIES	623V-2203	2" VENT CAP - THREADED (NPT) (UL-10K [FUTURE E85 VENT])	2"	2	NONE	GASOLINE	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
597	OPW		23-0055	3" VENT CAP	3"	1	NONE	DIESEL	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
606	FRANKLIN FUELING		SWV-101-SS	STAGE I VAPOR RECOVERY ADAPTOR (HARD COAT ALUMINUM)		3	NONE	GASOLINE	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
607	OPW		1711TT-7085	CAP FOR VAPOR RECOVERY ADAPTOR	4"	3	NONE	GASOLINE	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
618	FRANKLIN FUELING		SWF-100-SS	4" x 4" FILL ADAPTER	4" x 4"	7	NONE	GASOLINE / DIESEL	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
622	OPW		634TT-7085	4" FILL CAP	4"	6	NONE	GASOLINE / DIESEL	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
623	EMCO WHEATON		A0097-005LC	ETHANOL FREE 4" FILL CAP	4"	1	NONE	ETHANOL FREE	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
637	EMCO-WHEATON		A0028-001	RISER LOCK		10	NONE		UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
641	FLEXING		HMEZFITSR90TEE	EZ-FIT SHORT TEE AND ELBOW ASSY W/COUPLING	2"	5	NONE	STP SUMPS	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
645	FLEXING		HMEZFITSR90	EZ-FIT SHORT ELBOW W/COUPLING	2"	0	NONE	STP SUMPS	UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
649	JOMAR	T-SS-1001N	100-968	2" STAINLESS STEEL BALL VALVE (FULL PORT)	2"	10	APOLLO		UST / VENT LINE PARTS & MATERIALS	SHEETZ DISTRIBUTOR	1
655	OPW	FLEXWORKS	SMA-1520	FLEXWORKS 1.50'' X NPT 2.00'' THREAD ADAPTER	1.50'' x 2.00''	10	APOLLO	BALL VALVE ADAPTER	UST / PRODUCT LINE ADAPTERS	SHEETZ DISTRIBUTOR	1
657	RIVERSIDE STEEL	STAINLESS STEEL		ISLAND FORM W/ 304L GRADE / #4 POLISH S. S.	3' x 5' x 13''	6	NONE	CONV. LAYOUT	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	1
669	FRANKLIN FUELING	4" O.D. PIPE	BGU405.256614	U-POST W/ 12" RADIUS BENDS (SCH 40)	55.25" W x 56" H	2	NONE	VENT PAD	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	1
671	FOLGLEMAN	4.0 INCH O.D. SS PIPE		4.0 INCH STAINLESS STEEL BOLLARD W/CAP (GRADE 304/#4 POLISH)	4.0 IN X 72 IN H	48	NONE	INNER PART OF ISLANDS	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	1
673	FRANKLIN FUELING	3.5" O.D. SS PIPE	BGU40367214	U-POST BOLLARD STAINLESS STEEL (GRADE 304 / #4 POLISH)	36" W x 72" H	0	NONE	OUTER EDGE OF ISLANDS	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	1
677	OPW		FFS-50	SUMP FLAME ARRESTOR (DISPENSER)	50 CUBIC FEET	0	NONE	PA STORES ONLY	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2

ITEM	MANUFACTURER	MODEL	PART #	DESCRIPTION	SIZE	QTY (*=AS APPLICABLE)	OPTIONAL	REFERENCE	APPLICATION	EQUIPMENT/ MATERIAL SUPPLIER	SHIP
702	PETROCLEAR		4051A-AD	"ALERT" BLUE - PARTICULATE REMOVAL / PHASE SERPERATION	MAX 20 GPM	12		GASOLINE E10	DISPENSER	SHEETZ DISTRIBUTOR	
703	PETROCLEAR		40510W-AD	BROWN – WATER SENSING / PARTICULATE REMOVAL	MAX 20 GPM	4		AUTO-DIESEL / EFREE	DISPENSER	SHEETZ DISTRIBUTOR	
705	OPW	UNLEADED	11-B BLACK	PRESSURE SENSING AUTOMATIC GASOLINE NOZZLE W/ SPLASH GUARD (BLACK)	UNLEADED SPOUT 13/16" OD	12	NONE	GASOLINE NON VAPOR VAC	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
706	PETROCLEAR		70991	WHITE-E85 MICROGLASS FILTERS	MAX 20 GPM	4	NONE	E85 ONLY	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
709	OPW	LEADED	14C-0100 GREEN	PRESSURE SENSING AUTOMATIC AUTO-DIESEL NOZZLE W/ SPLASH GUARD (GREEN)	LEADED SPOUT 15/16" OD	4	NONE	AUTO-DIESEL	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
715	OPW	E85	11BP-0992-E85	E85 OPW YELLOW NOZZLE W/SPLASH GUARD		8	NONE	E85 ONLY	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
716	OPW	E15	11BP-0500-E25	E15 OPW BLUE NOZZLE W/SPLASH GUARD		8	NONE	E15 ONLY	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
717	CATLOW		C720-3/4	3/4" MULTI PLANE SWIVEL	3/4" M X 3/4" F	20	NONE		DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
719	CATLOW	E85	C720-3/4-E85	3/4" MULTI PLANE SWIVEL	3/4" M X 3/4" F	16	NONE	E85 ONLY	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
721	CATLOW		CTM75-HD	3/4" CAM TWIST MAG BREAKAWAY-HEAVY DUTY		20	NONE		DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
723	CATLOW	E85	CTM75-E85	E85 3/4" CAM TWIST MAG BREAKAWAY-HEAVY DUTY		16	NONE	E85 ONLY	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
725	FRANKLIN FUELING		FLHFR100009	BLACK WHIP HOSE	5/8" x 9"	12	NONE	GASOLINE	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
729	FRANKLIN FUELING		FLHFR100806	BLACK HOSE (FOR GASOLINE)	5/8" x 8.5'	12	NONE	GASOLINE	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
733	FRANKLIN FUELING		FLHFR100806GR	GREEN HOSE (FOR AUTO-DIESEL)	5/8" x 8.5'	4	NONE	AUTO DIESEL	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
737	FRANKLIN FUELING		FLHFR1000009GR	GREEN WHIP HOSE (FOR AUTO-DIESEL)	5/8" x 9"	4	NONE	AUTO-DIESEL	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
738	FRANKLIN FUELING		FLHFR100806BL	BLUE HOSE	5/8" x 8.5'	8	NONE	E15 ONLY	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
739	FRANKLIN FUELING		FLHFR100009BL	BLUE WHIP HOSE	5/8" x 9"	8	NONE	E15 ONLY	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
743	FRANKLIN FUELING	E85	FLXE200806	BLACK WITH YELLOW STRIPE HOSE (FOR E85)	3/4" x 8.5'	8	NONE	E85 ONLY	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
744	FRANKLIN FUELING	E85	FLXE200009	BLACK WITH YELLOW STRIPE WHIP HOSE (FOR E85)	3/4" x 9"	8	NONE	E85 ONLY	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
745	OPW	UNLEADED	11-B RED	PRESSURE SENSING AUTOMATIC GASOLINE NOZZLE W/ SPLASH GUARD (RED) (ETHANOL FREE)	UNLEADED SPOUT 13/16" OD	4	NONE	GASOLINE NON VAPOR VAC	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
746	FRANKLIN FUELING		FLHFR100009RD	RED WHIP HOSE (FOR ETHANOL FREE)	5/8" x 9"	4	NONE	GASOLINE	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
747	FRANKLIN FUELING		FLHFR100806RD	RED HOSE (FOR ETHANOL FREE)	5/8" x 8.5'	4	NONE	GASOLINE	DISPENSER / ISLAND EQUIPMENT	SHEETZ DISTRIBUTOR	2
765	3M	481-BA	3M-D-20	3M 6- CHANNEL INTERCOM		1	NONE		FRONT COUNTER EQUIPMENT	SHEETZ DISTRIBUTOR	2
769	3M		78-8117-3921-4	3M D-20 INTERCOM PEDSTAL		1	NONE		FRONT COUNTER EQUIPMENT	SHEETZ DISTRIBUTOR	2
781	SHURE		SM-515SB6-18X	DYNAMIC MICROPHONE W/SWITCH		3	NONE		FRONT COUNTER EQUIPMENT	SHEETZ DISTRIBUTOR	2
785	EXCEL TIRE GAUGE	STAINLESS STEEL	SC05-HTR	AIR MACHINE W/ HEATER		2	NONE		AIR MACHINE	SHEETZ DISTRIBUTOR	2
793	FIBRELITE		FL100BLACK - SK10 - 46	FLAT SEALED COVER W/COMPOSITE FRAME & 46" WIDE FLARED SKIRT (FACTORY ASSEMBLED)	40" COVER / 46" SKIRT	5	NONE	UST PROBE / STP	SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
797	FIBRELITE		FL7A	COVER LIFT HANDLE W/ FOOT LEVER		1	NONE		SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
805	EMCO WHEATON	EVOLUTION SERIES	A1005-517GCM-1Z	DW, 5 GALLON, SLIP-ON, S.S. PRIMARY, NO DRAIN, 16"Ø, CAST IRON RIM & LID, POWDERCOATED TO API COLORS, S.S. FLANGE ADAPTOR, RISER I.D. TAG, (REGULAR / WHITE)	5 GAL	2	NONE	UST REGULAR UNLEADED FILL MANHOLE (NC ONLY)	SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
806	EMCO WHEATON	EVOLUTION SERIES	A1005-517GCM-2Z	DW, 5 GALLON, SLIP-ON, S.S. PRIMARY, NO DRAIN, 16"Ø, CAST IRON RIM & LID, POWDERCOATED TO API COLORS, S.S. FLANGE ADAPTOR, RISER I.D. TAG, (PREMIUM / RED)	5 GAL	1	NONE	UST PREMIUM UNLEADED FILL MANHOLE (NC ONLY)	SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
807	EMCO WHEATON	EVOLUTION SERIES	A1005-517GCM-6Z	DW, 5 GALLON, SLIP-ON, S.S. PRIMARY, NO DRAIN, 16"Ø, CAST IRON RIM & LID, POWDERCOATED TO API COLORS, S.S. FLANGE ADAPTOR, RISER I.D. TAG, (E85 / COPPER)	5 GAL	1	NONE	UST E85 FILL MANHOLE (NC ONLY)	SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
808	EMCO WHEATON	EVOLUTION SERIES	A1005-517GCM-3Z	DW, 5 GALLON, SLIP-ON, S.S. PRIMARY, NO DRAIN, 16"Ø, CAST IRON RIM & LID, POWDERCOATED TO API COLORS, S.S. FLANGE ADAPTOR, RISER I.D. TAG, (DIESEL / YELLOW)	5 GAL	2	NONE	UST DIESEL FILL MANHOLE (NC ONLY)	SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
809	EMCO WHEATON	EVOLUTION SERIES	A1005-517GCM-4Z	DW, 5 GALLON, SLIP-ON, S.S. PRIMARY, NO DRAIN, 16"Ø, CAST IRON RIM & LID, POWDERCOATED TO API COLORS, S.S. FLANGE ADAPTOR, RISER I.D. TAG, (VAPOR / ORANGE)	5 GAL	3	NONE	STAGE I	SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
811	EMCO WHEATON	EVOLUTION SERIES	A1005-517GCM-CZ	DW, 5 GALLON, SLIP-ON, S.S. PRIMARY, NO DRAIN, 16"Ø, CAST IRON RIM & LID, POWDERCOATED TO API COLORS, S.S. FLANGE ADAPTOR, RISER I.D. TAG, (E0-90 / RED)	5 GAL	1	NONE	UST ETHANOL FREE FILL MANHOLE (NC ONLY)	SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
817	FIBERLITE	WATER TIGHT	FL120WHITE-MW-SK12	MONITORING WELL W/SKIRT, WHITE COMPOSITE COVER	12"	1	NONE		SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
825	FIBRELITE	WATER TIGHT	FL180BLACK-SK12	INTERSTITIAL SENSOR MANHOLE W/COMPOSITE COVER W/ SKIRT & FRAME	18"	2	NONE	FRP TANKS	SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
829	FIBERLITE	WATER TIGHT	FL600WHITE-MW-SK12	SEALED COMPOSITE COVER, WHITE, LABELED MONITORING WELL, W/SKIRT & FRAME	24"	1	NONE		SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
837	MORRISON BROS.	OPEN END	539TO-0400AD	UST DIFFUSER		6	NONE		SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
839	MORRISON BROS.	OPEN END	539TO-0400ADA	UST DIFFUSER E85		1	NONE	E85 ONLY	SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	1
857			4FL-16	16' FOLDABLE UST GAUGE STICK	16'	2	NONE		SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	2
882	EMCO WHEATON		A0097-002	GALLONAGE KIT (1 FOR EVERY TAG)		10	NONE		SPILL BUCKETS / MANHOLES	SHEETZ DISTRIBUTOR	2
883	FASTENAL		47950	2" PIPE SPLIT RING STAND OFF HANGER	2"	5	NONE		UST	SHEETZ DISTRIBUTOR	
885	FASTENAL		49598	1" PIPE SPLIT RING STAND OFF HANGER	1"	5	NONE		UST	SHEETZ DISTRIBUTOR	
887	FASTENAL		47061	3/8"-16X 3ft ASTM A307 Gr A ZINC Plated low carbon Steel	3/8"-16X 3'	5	NONE		UST	SHEETZ DISTRIBUTOR	

NOTE:
THIS SHOULD NOT BE CONSIDERED A COMPLETE LIST OF MATERIALS THAT ARE REQUIRED TO COMPLETE THE WORK. THE BID SHOULD INCLUDE ALL MATERIALS HEREIN OR REQUIRED TO COMPLETE THE WORK OUTLINED IN THE SCOPE AND DRAWING DOCUMENTS

ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 051765

CONSULTANT:
Engineers • Planners • Surveyors
Wellert Corporation
5136 Beach Road • Medina, Ohio 44256
t: 330.239.2699 • f:330.239.0272

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

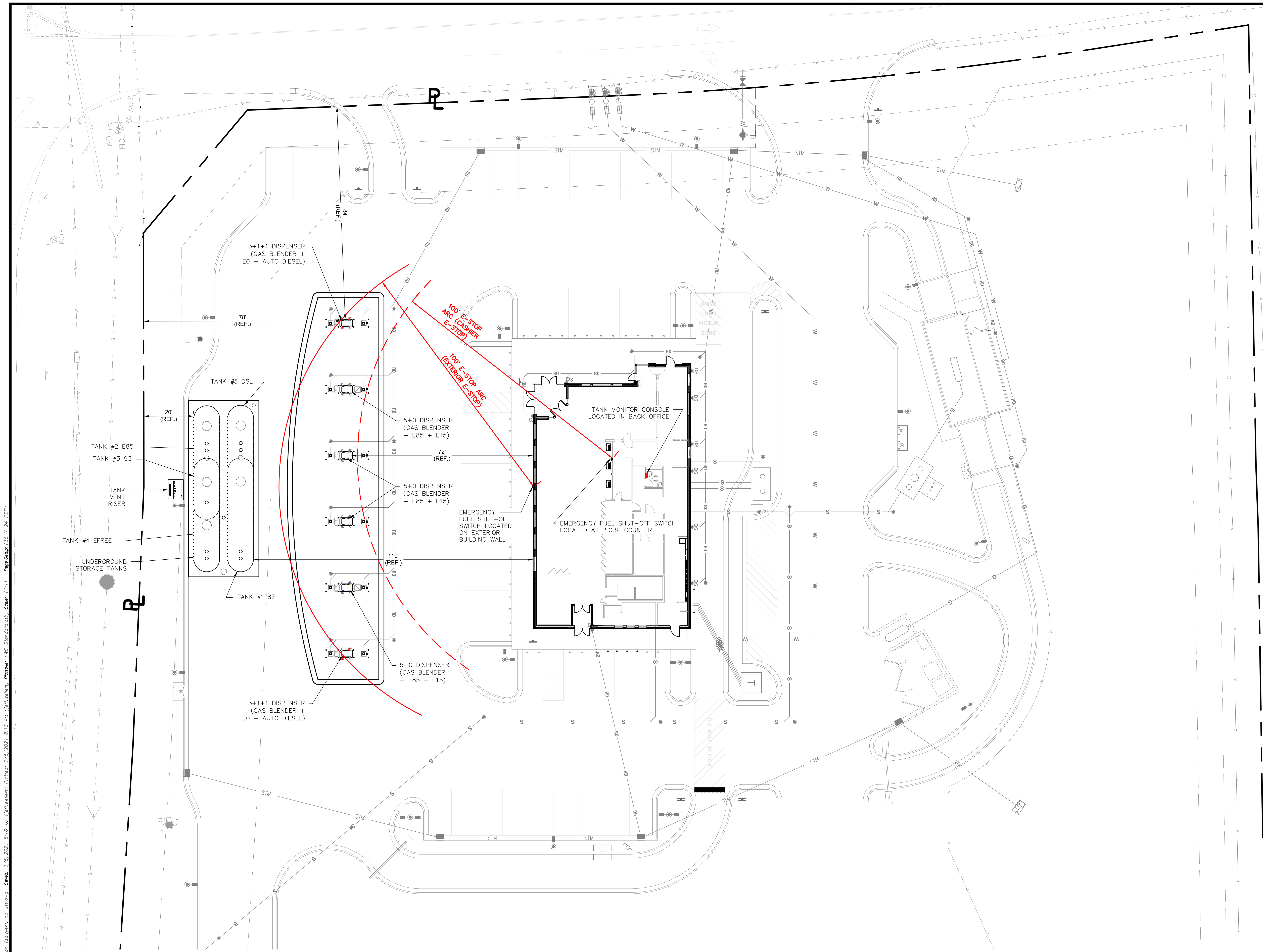
SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

EQUIPMENT LIST (PART 2)

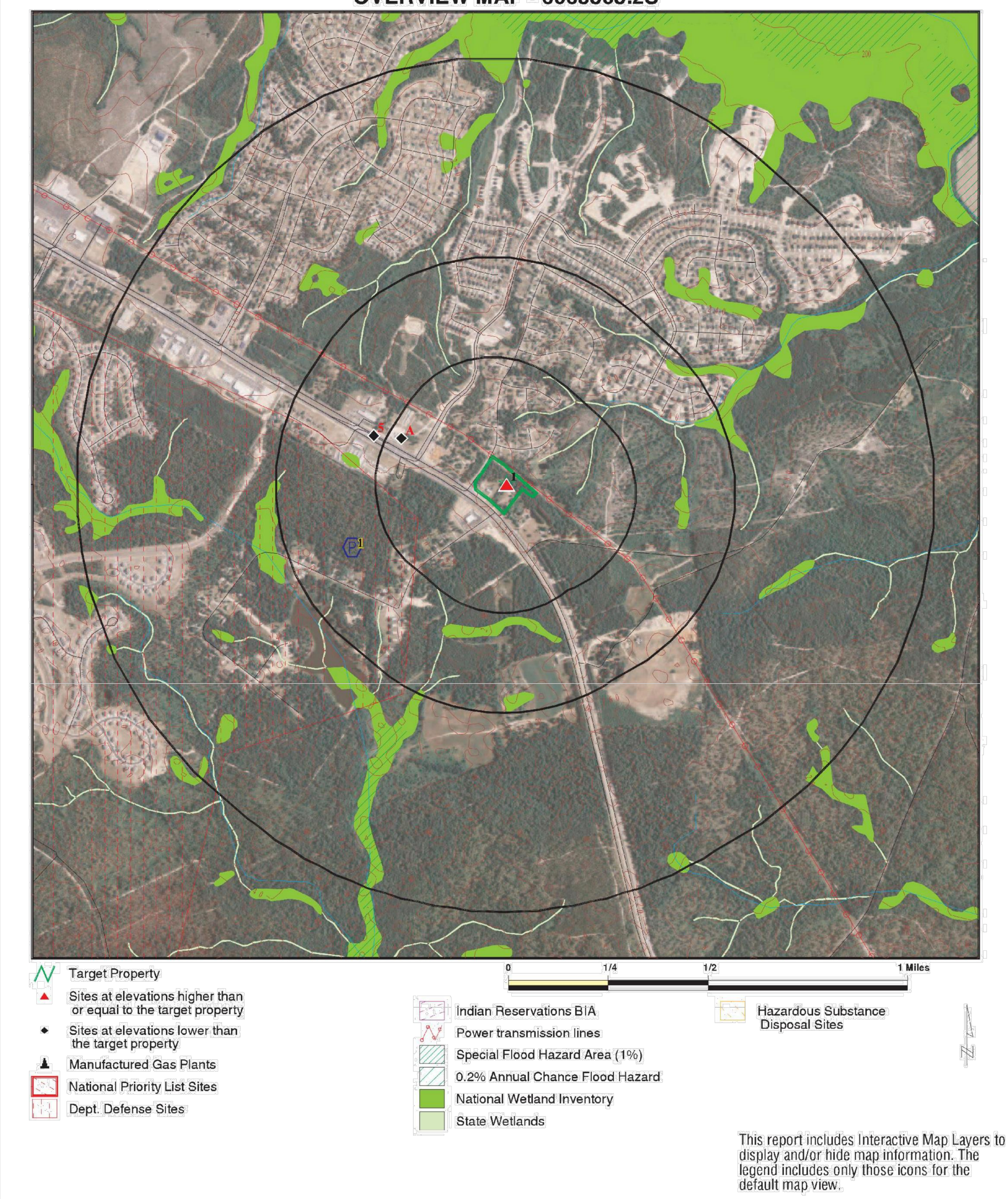
SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE: N/A
DATE: 3/5/2021
DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: RWW
JOB NUMBER: XXXXXX

FG3.1



OVERVIEW MAP - 6063303.2S



SITE NAME: Proposed Sheetz Location ADDRESS: 283 North Carolina 87 Cameron NC 28326 LAT/LONG: 35.252441 / 79.026235	CLIENT: EnviroTrac CONTACT: Elizabeth Taccone INQUIRY #: 6063303.2s DATE: May 13, 2020 5:55 pm

SITE WELL LOCATION

N.T.S.

WELL #A1: TARGET PROPERTY	WELL #A2: 1/8 - 1/4 MILE WNW FROM SITE	WELL #A4: 1/8 - 1/4 MILE WNW FROM SITE
WELL DOD: 1/8 - 1/4 MILE WSW FROM SITE	WELL #A3: 1/8 - 1/4 MILE WNW FROM SITE	WELL #5: 1/4 - 1/2 MILE WNW FROM SITE

NOTE:
THIS INFORMATION WAS PROVIDED BY SHEETZ AND IS FOR REFERENCE ONLY.
SEE REFERENCE DRAWINGS- FG4.0 FOR MORE WELL INFORMATION.

LOCATION MAP

SITE DRAWING BASED ON
PLANS DESIGNED BY:

RIVERS & ASSOCIATES, INC.
107 EAST 2ND SECOND STREET
GREENVILLE, NC 27858
252.752.4135

A FACILITY OPERATIONS PLAN
SCALE: 1" = 20'

NORTH

SCALE (IN FEET)
1 inch = 20 ft.

DATE	BY	ISSUED FOR DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 051765

CONSULTANT: Weller Corporation, Engineers • Planners • Surveyors, 5136 Beach Road • Medina, Ohio 44256

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

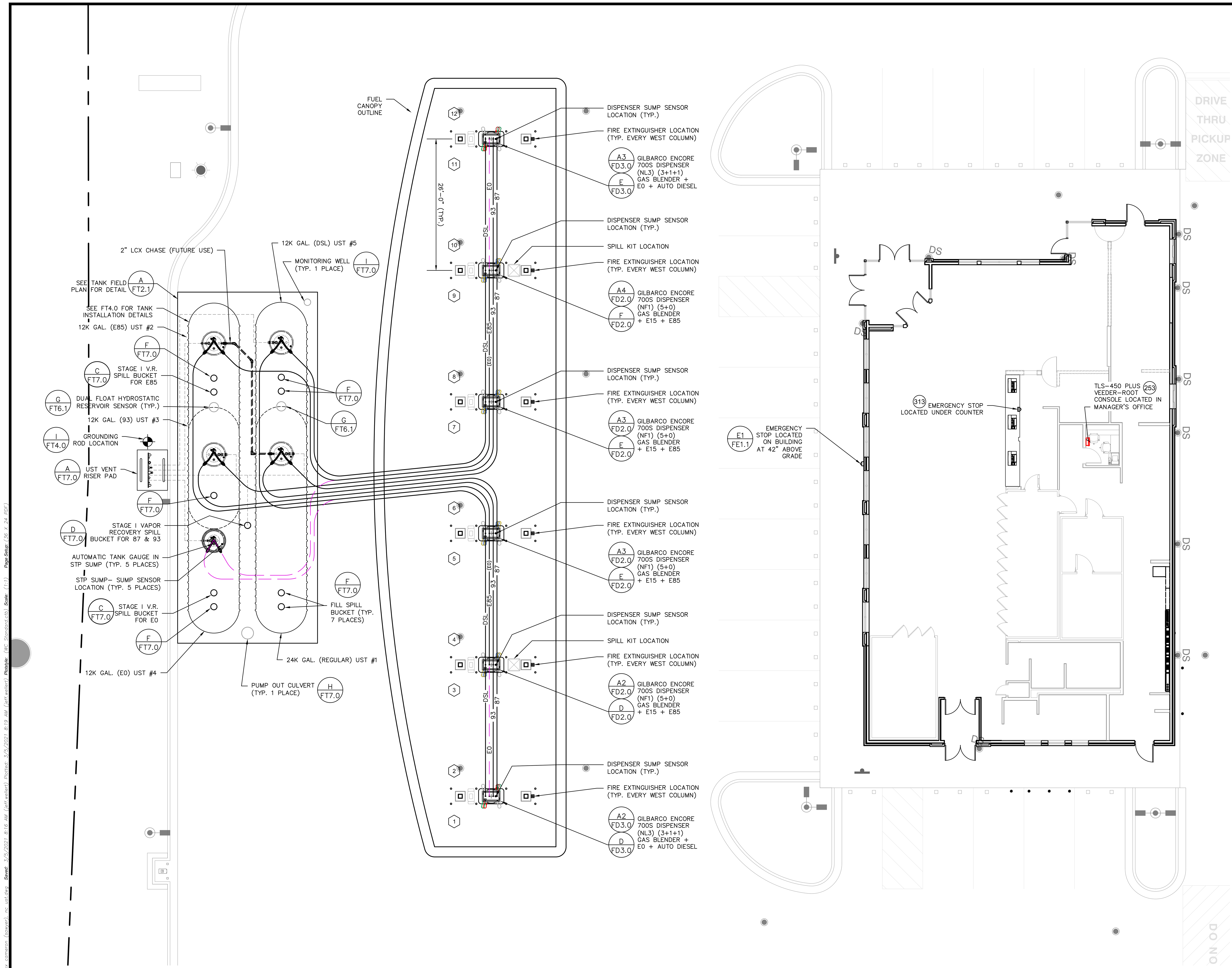
SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

FACILITIES & OPERATION PLAN

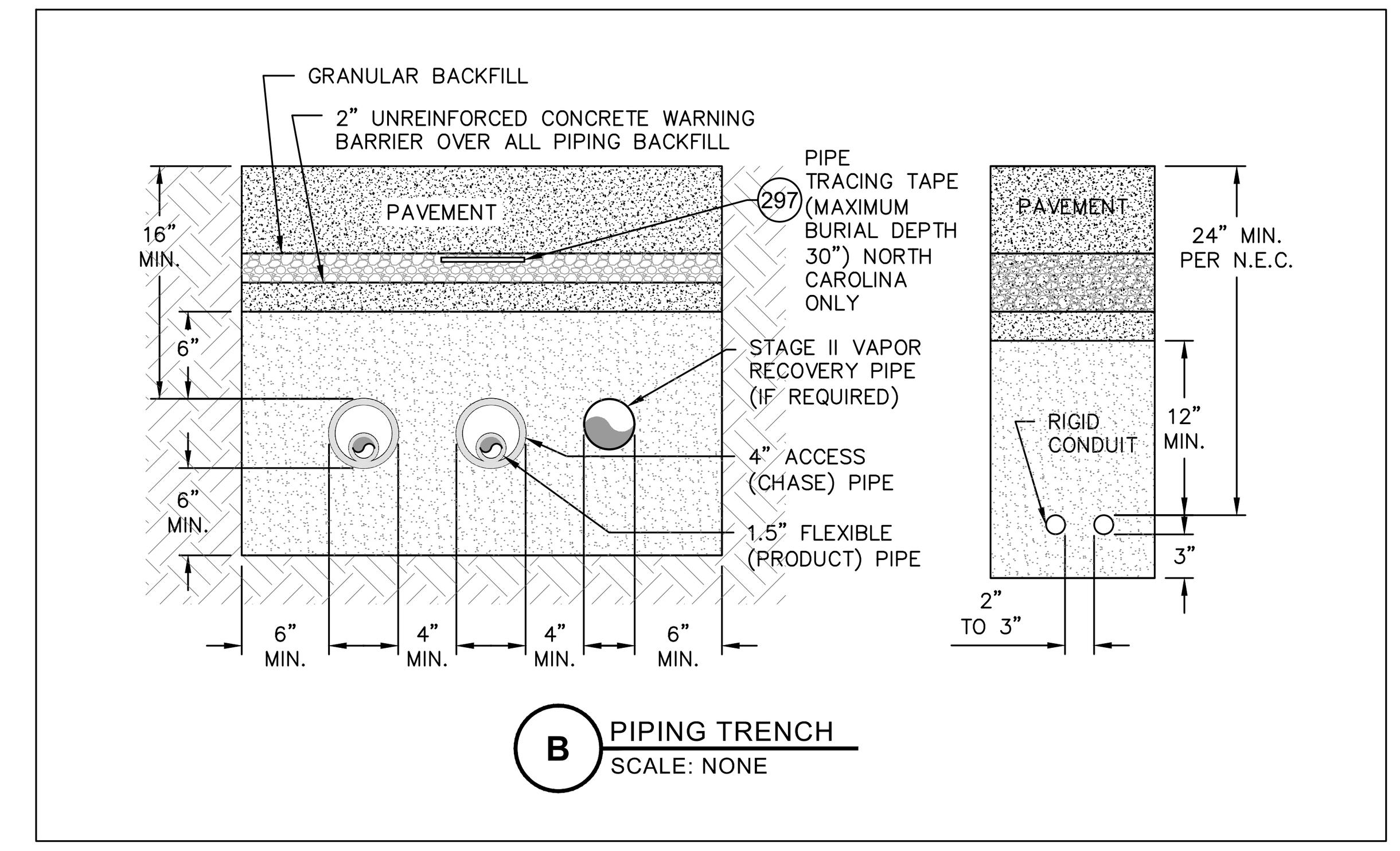
SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	1" = 20'
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

F.O.



A FUEL PIPING PLAN
SCALE: 1" = 10'



B PIPING TRENCH
SCALE: NONE

SITE DRAWING BASED ON PLANS DESIGNED BY:

RIVERS & ASSOCIATES, INC.
107 EAST 2ND SECOND STREET
GREENVILLE, NC 27858
252.752.4135

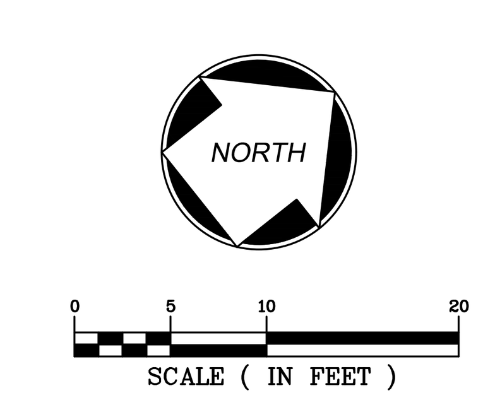
TANK 1 - 24,000 87
FUELING POSITIONS 1 - 6 = ESTIMATED 120'
FUELING POSITIONS 7 - 12 = ESTIMATED 110'

TANK 2 - 12,000 E85
FUELING POSITIONS 3 - 6 = ESTIMATED 125'
FUELING POSITIONS 7 - 10 = ESTIMATED 115'

TANK 3 - 12,000 93
FUELING POSITIONS 1 - 6 = ESTIMATED 130'
FUELING POSITIONS 7- 12 = ESTIMATED 125'

TANK 4 - 12,000 EFREE
FUELING POSITIONS 1/2 = ESTIMATED 140'
FUELING POSITIONS 11/12 = ESTIMATED 140'

TANK 5 - 12,000 AUTO-DIESEL
FUELING POSITIONS 1 - 6 = ESTIMATED 140'
FUELING POSITIONS 7 - 12 = ESTIMATED 125'



DATE	BY	DESCRIPTION (ISSUED FOR)
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 051765

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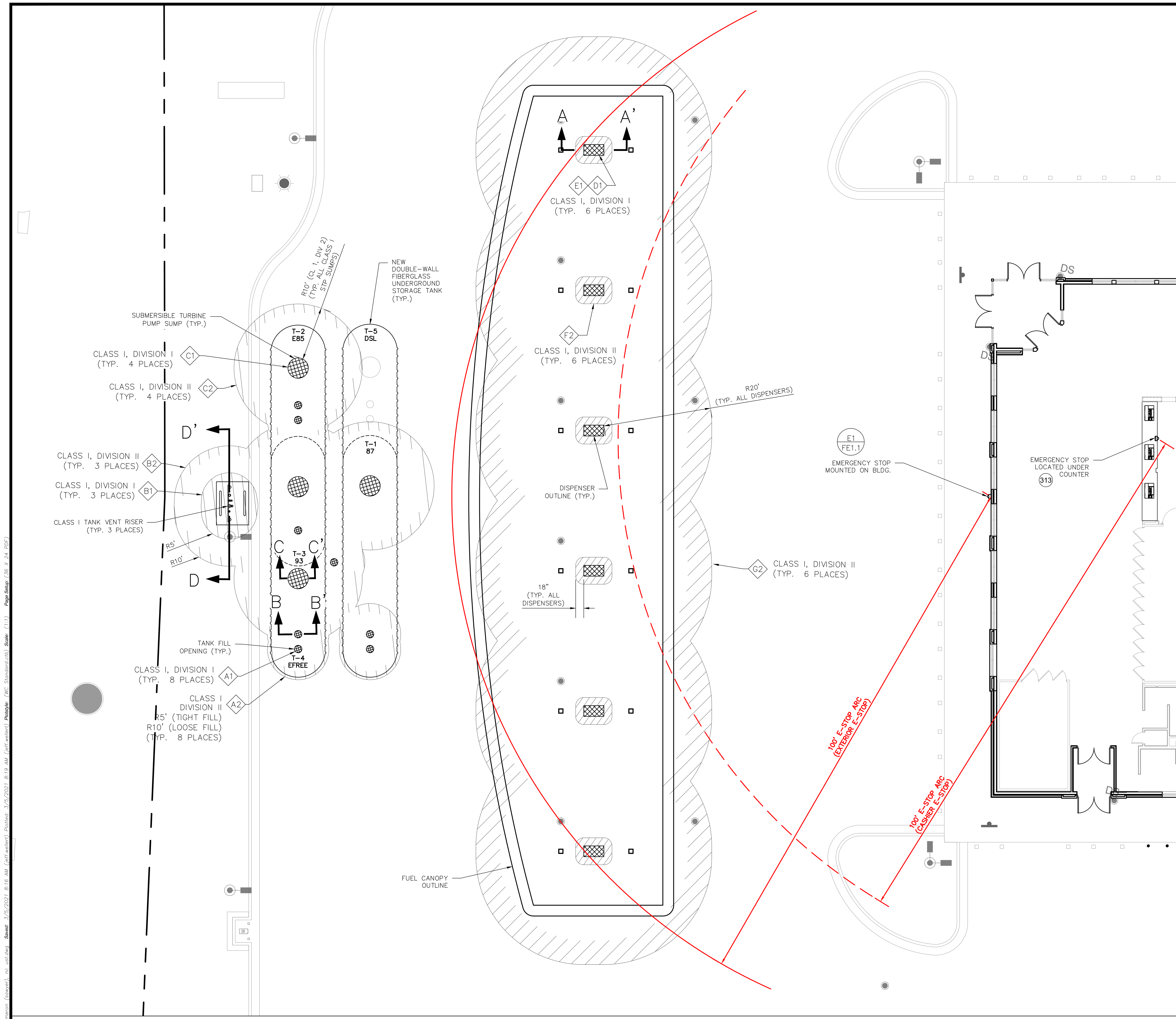
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

FUEL PIPING PLAN

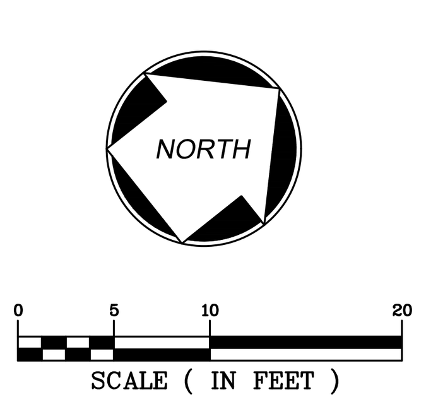
SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	1" = 10'
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FT1.0



A CLASS I HAZARDOUS AREAS CLASSIFICATION SITE PLAN (FOR CLASS I LIQUIDS)
SCALE: 1" = 10'



NOTE:
NFPA 30A 8.3.3 STATES THAT A DESIGNATED CLASSIFIED AREA, AS SPECIFIED IN TABLE 8.3.2 (NFPA 30A), SHALL NOT EXTEND BEYOND A FLOOR, WALL, ROOF, OR OTHER SOLID PARTITION THAT HAS NO OPENING.

STORED LIQUIDS CLASSIFICATION

COMMON NAME	CLASSIFICATION PER NFPA 30 §4.3
REGULAR (GASOLINE)	CLASS I B FLAMMABLE
PREMIUM (GASOLINE)	CLASS I B FLAMMABLE
DIESEL (#2 ON-ROAD)	CLASS II COMBUSTIBLE
E85	CLASS I B FLAMMABLE

NOTE:
NFPA CLASS I FLAMMABLE LIQUIDS INCLUDE GASOLINE (RUL & PUL) AND E85. DIESEL FUEL AND KEROSENE ARE NFPA CLASS II COMBUSTIBLE LIQUIDS. DEF IS A NON-FLAMMABLE, NON-COMBUSTIBLE LIQUID.

LEGEND

CLASS 1 DIVISION 1 AREA

CLASS 1 DIVISION 2 AREA

A — TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (UNDERGROUND TANK - FILL OPENING)

A1 EXTENT OF CLASS I, GROUP D, DIVISION I LOCATION:
ANY PIT, BOX, OR SPACE BELOW GRADE LEVEL, ANY PART OF WHICH IS WITHIN THE DIVISION I OR II CLASSIFIED LOCATION.

A2 EXTENT OF CLASS I, GROUP D, DIVISION II LOCATION:
UP TO 18 INCHES ABOVE GRADE LEVEL WITHIN A HORIZONTAL RADIUS OF 10 FEET FROM A LOOSE FILL CONNECTION AND WITHIN A HORIZONTAL RADIUS OF 5 FEET FROM A TIGHT FILL CONNECTION.

B — TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (UNDERGROUND TANK - VENT DISCHARGING UPWARD)

B1 EXTENT OF CLASS I, GROUP D, DIVISION I LOCATION:
WITHIN 5 FEET OF OPEN END OF VENT, EXTENDING IN ALL DIRECTIONS.

B2 EXTENT OF CLASS I, GROUP D, DIVISION II LOCATION:
SPACE BETWEEN 5 FEET AND 10 FEET OF OPEN END OF VENT, EXTENDING IN ALL DIRECTIONS.

C — TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (REMOTE PUMP - OUTDOOR)

C1 EXTENT OF CLASS I, GROUP D, DIVISION I LOCATION:
ANY PIT, BOX, OR SPACE BELOW GRADE LEVEL IF ANY PART IS WITHIN A HORIZONTAL DISTANCE OF 10 FEET FROM ANY EDGE OF PUMP.

C2 EXTENT OF CLASS I, GROUP D, DIVISION II LOCATION:
WITHIN 3 FEET OF ANY EDGE OF PUMP, EXTENDING IN ALL DIRECTIONS, ALSO UP TO 18 INCHES ABOVE GRADE LEVEL WITHIN 10 FEET HORIZONTALLY FROM ANY EDGE OF PUMP.

D — TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (DISPENSING DEVISE - PITS)

D1 EXTENT OF CLASS I, GROUP D, DIVISION I LOCATION:
ANY PIT, BOX, OR SPACE BELOW GRADE LEVEL, ANY PART OF WHICH IS WITHIN THE DIVISION I OR II CLASSIFICATION LOCATION.

E — TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (DISPENSING DEVICE - DISPENSER)

E1 EXTENT OF CLASS I, GROUP D, DIVISION I LOCATION:
SPACE CLASSIFICATION INSIDE THE DISPENSER ENCLOSURE IS COVERED IN ANSI/UL 87, "POWER OPERATED DISPENSING DEVICES FOR PETROLEUM PRODUCTS."

F — TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (DISPENSING DEVICE - DISPENSER)

F2 EXTENT OF CLASS I, GROUP D, DIVISION II LOCATION:
WITHIN 18 INCHES HORIZONTALLY IN ALL DIRECTIONS EXTENDING TO GRADE FROM (I) THE DISPENSER ENCLOSURE OR (2) THAT PORTION OF THE DISPENSER ENCLOSURE CONTAINING LIQUID HANDLING COMPONENTS. SPACE CLASSIFICATION INSIDE THE DISPENSER ENCLOSURE IS COVERED IN ANSI/UL 87, "POWER OPERATED DISPENSING DEVICES FOR PETROLEUM PRODUCTS."

G — TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (DISPENSING DEVICE - OUTDOOR)

G2 EXTENT OF CLASS I, GROUP D, DIVISION II LOCATION:
UP TO 18 INCHES ABOVE GRADE LEVEL WITHIN 20 FEET HORIZONTALLY OF ANY EDGE OF ENCLOSURE.

OSHA HAZARDOUS CONFINED SPACES AWARENESS

POSSIBLE CONFINED SPACES ON SITE:	IDENTIFY OSHA CLASSIFICATION OF SPACE TO BE USED	SUSPECTED PHYSICAL HAZARDS	P. H. ISOLATION METHOD	SUSPECTED ATMOSPHERIC HAZARDS	A. H. ISOLATION METHOD
ANY LOCATION	ANY	ANY	IMMEDIATELY EVACUATE SPACE AND ALERT CONTROLLING CONTRACTOR	ANY	IMMEDIATELY EVACUATE SPACE AND ALERT CONTROLLING CONTRACTOR
ANY LOCATION	ANY	CRUSHING OR CUTTING OF CONCRETE	FOLLOW OSHA REGULATIONS FOR CUTTING AND DUST CONTAINMENT 29 CFR 1926.55	AIRBORNE CRYSTALLINE SILICA	IMMEDIATELY EVACUATE SPACE AND ALERT CONTROLLING CONTRACTOR
INSIDE TANK SUMPS	IHCS, CACS, PHCS, CS-PRCS	MAN-WAY LID DISLODGING	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
INSIDE UNDERGROUND STORAGE TANKS	IHCS, CACS, PHCS, CS-PRCS	CAVE-INS, OVERHEAD DANGERS, EVACUATION DANGERS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
INSIDE ABOVEGROUND STORAGE TANKS	IHCS, CACS, PHCS, CS-PRCS	CAVE-INS, OVERHEAD DANGERS, EVACUATION DANGERS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
IN TANK EXCAVATION	IHCS, CACS, PHCS, CS-PRCS	CAVE-INS, OVERHEAD DANGERS, EVACUATION DANGERS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
UNDER BUILDINGS	IHCS, CACS, PHCS, CS-PRCS	FLOODING, ACTIONS OF OTHER WORKERS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
IN CANOPY FOOTING EXCAVATION	IHCS, CACS, PHCS, CS-PRCS	ENTRAPMENT HAZARD	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	LOW OXYGEN LEVELS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
IN UTILITY EXCAVATIONS	IHCS, CACS, PHCS, CS-PRCS	CAVE-INS, STRIKING UNMARKED BURIED UTILITIES, BIOHAZARDS, HISTORICAL ARTIFACTS, FLOODING	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	LOW OXYGEN LEVELS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
ELECTRICAL ROOMS	IHCS, CACS, PHCS, CS-PRCS	TRIP FALL HAZARDS, ELECTROCUTION HAZARD	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
CANOPY AND ROOF TOPS	IHCS, CACS, PHCS, CS-PRCS	TRIP FALL HAZARDS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
BUILDING VENTILATION DUCTWORK	IHCS, CACS, PHCS, CS-PRCS	EVACUATION HAZARDS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	LOW OXYGEN LEVELS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
CONFINED SPACE SITUATIONS CREATED BY OTHER WORKERS	IHCS, CACS, PHCS, CS-PRCS	TRIP FALL HAZARDS, SLIPPERY CONDITIONS, EVACUATION HAZARDS, CAVE-INS, OVERHEAD DANGERS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS

ALL SITES ACTIVITIES SHOULD BE COORDINATED WITH THE CONTROLLING CONTRACTOR ON SITE AND COMMUNICATION PROTOCOL IDENTIFIED AND DOCUMENTED

ISSUED FOR

DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 051765 ROBERT W. WELLERT

CONSULTANT:
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Wellert Corporation
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CONVENIENCE ARCHITECTURE AND DESIGN P.C.
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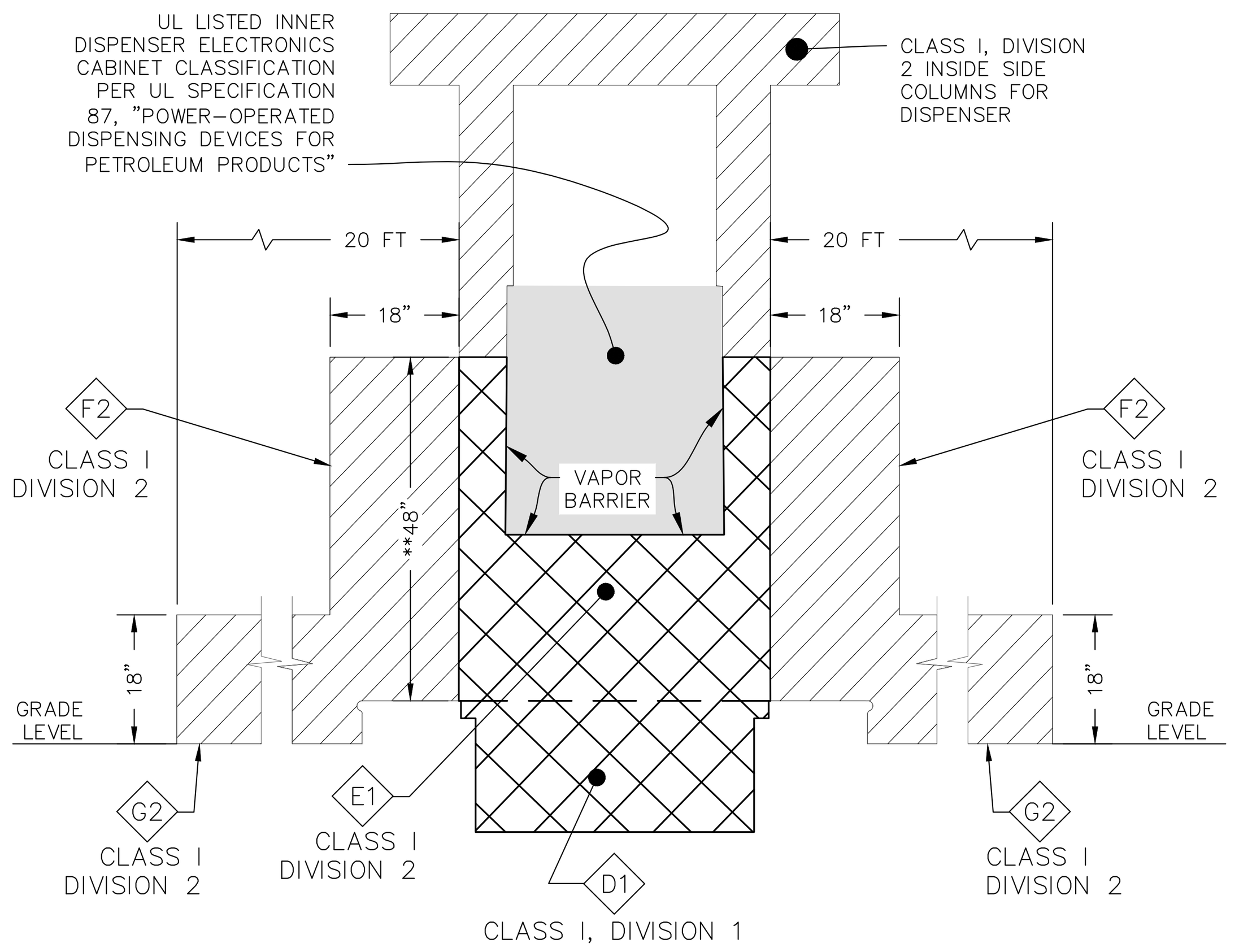
SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

HAZARDOUS AREAS CLASSIFICATION SITE PLAN

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	1" = 10'
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FT1.1

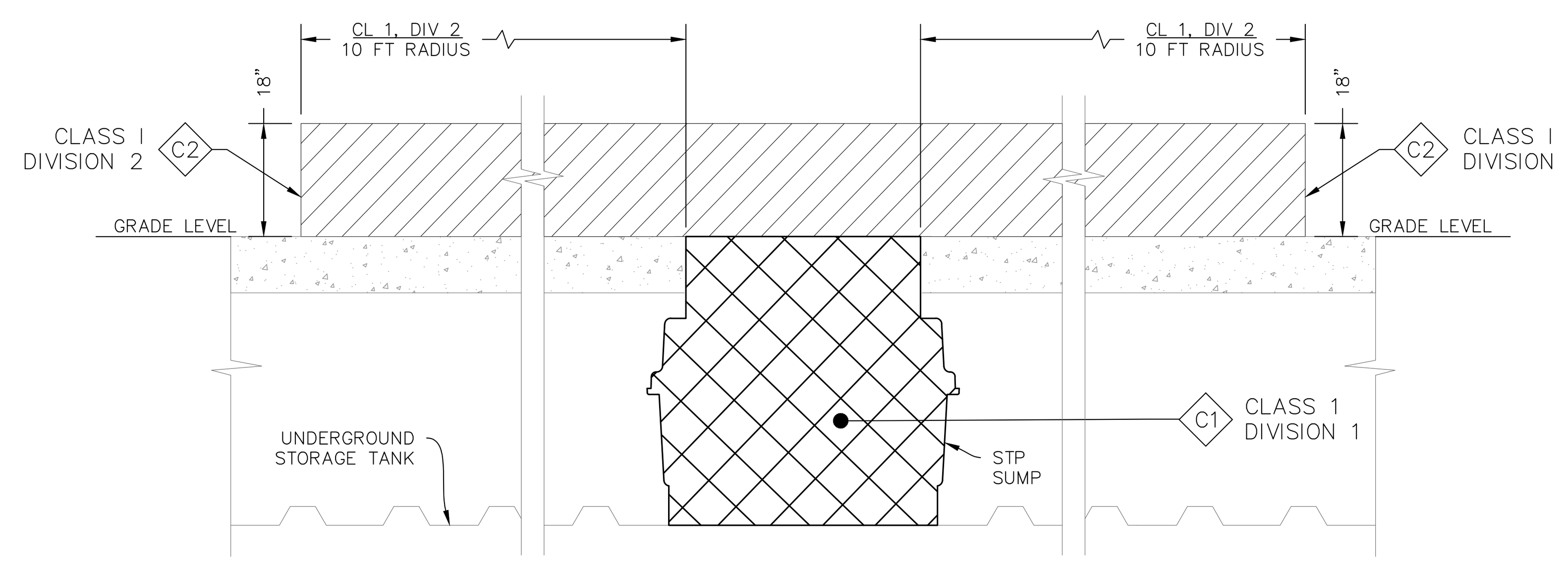


** PER GILBARCO ENCORE SERIES INSTALLATION MANUAL (LATEST EDITION)

NOTE: NFPA CLASS I FLAMMABLE LIQUIDS INCLUDE GASOLINE (RUL & PUL) AND E85. DIESEL FUEL AND KEROSENE ARE NFPA CLASS II COMBUSTIBLE LIQUIDS

TYPICAL SECTION A-A'
TYPICAL CLASS I DISPENSER AREA DETAIL (FOR CLASS I LIQUIDS)

N.T.S.



NOTE: NFPA CLASS I FLAMMABLE LIQUIDS INCLUDE GASOLINE (RUL & PUL) AND E85. DIESEL FUEL AND KEROSENE ARE NFPA CLASS II COMBUSTIBLE LIQUIDS

TYPICAL SECTION C-C'
TYPICAL CLASS I TANK STP SUMP (REMOTE OUTDOOR PUMP) AREA DETAIL (FOR CLASS I LIQUIDS)

N.T.S.

OSHA HAZARDOUS CONFINED SPACES AWARENESS					
POSSIBLE CONFINED SPACES ON SITE:	IDENTIFY OSHA CLASSIFICATION OF SPACE TO BE USED	SUSPECTED PHYSICAL HAZARDS	P. H. ISOLATION METHOD	SUSPECTED ATMOSPHERIC HAZARDS	A. H. ISOLATION METHOD
ANY LOCATION	ANY	ANY	IMMEDIATELY EVACUATE SPACE AND ALERT CONTROLLING CONTRACTOR	ANY	IMMEDIATELY EVACUATE SPACE AND ALERT CONTROLLING CONTRACTOR
ANY LOCATION	ANY	CRUSHING OR CUTTING OF CONCRETE	FOLLOW OSHA REGULATIONS FOR CUTTING AND DUST CONTAINMENT 29 CFR 1926.55	AIRBORNE CRYSTALLINE SILICA	IMMEDIATELY EVACUATE SPACE AND ALERT CONTROLLING CONTRACTOR
INSIDE TANK SUMPS	IHCS, CACS, PHCS, CS-PRCS	MAN-WAY LID DISLODGING	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
INSIDE UNDERGROUND STORAGE TANKS	IHCS, CACS, PHCS, CS-PRCS	CAVE-INS, OVERHEAD DANGERS, EVACUATION DANGERS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
INSIDE ABOVEGROUND STORAGE TANKS	IHCS, CACS, PHCS, CS-PRCS	CAVE-INS, OVERHEAD DANGERS, EVACUATION DANGERS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
IN TANK EXCAVATION	IHCS, CACS, PHCS, CS-PRCS	CAVE-INS, OVERHEAD DANGERS, EVACUATION DANGERS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
UNDER BUILDINGS	IHCS, CACS, PHCS, CS-PRCS	FLOODING, ACTIONS OF OTHER WORKERS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
IN CANOPY FOOTING EXCAVATION	IHCS, CACS, PHCS, CS-PRCS	ENTRAPMENT HAZARD	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	LOW OXYGEN LEVELS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
IN UTILITY EXCAVATIONS	IHCS, CACS, PHCS, CS-PRCS	CAVE-INS, STRIKING UNMARKED BURIED UTILITIES, BIOHAZARDS, HISTORICAL ARTIFACTS, FLOODING	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	LOW OXYGEN LEVELS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
ELECTRICAL ROOMS	IHCS, CACS, PHCS, CS-PRCS	TRIP FALL HAZARDS, ELECTROCUTION HAZARD	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
CANOPY AND ROOF TOPS	IHCS, CACS, PHCS, CS-PRCS	TRIP FALL HAZARDS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
BUILDING VENTILATION DUCTWORK	IHCS, CACS, PHCS, CS-PRCS	EVACUATION HAZARDS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	LOW OXYGEN LEVELS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
CONFINED SPACE SITUATIONS CREATED BY OTHER WORKERS	IHCS, CACS, PHCS, CS-PRCS	TRIP FALL HAZARDS, SLIPPERY CONDITIONS, EVACUATION HAZARDS, CAVE-INS, OVERHEAD DANGERS	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS	EXPLOSIVE ATMOSPHERE	FOLLOW OSHA/INDUSTRY APPROVED STANDARDS
ALL SITES ACTIVITIES SHOULD BE COORDINATED WITH THE CONTROLLING CONTRACTOR ON SITE AND COMMUNICATION PROTOCOL IDENTIFIED AND DOCUMENTED					

A TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (UNDERGROUND TANK - FILL OPENING)

A1 EXTENT OF CLASS I, GROUP D, DIVISION I LOCATION:
ANY PIT, BOX, OR SPACE BELOW GRADE LEVEL, ANY PART OF WHICH IS WITHIN THE DIVISION I OR II CLASSIFIED LOCATION.

A2 EXTENT OF CLASS I, GROUP D, DIVISION II LOCATION:
UP TO 18 INCHES ABOVE GRADE LEVEL WITHIN A HORIZONTAL RADIUS OF 10 FEET FROM A LOOSE FILL CONNECTION AND WITHIN A HORIZONTAL RADIUS OF 5 FEET FROM A TIGHT FILL CONNECTION.

B TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (UNDERGROUND TANK - VENT DISCHARGING UPWARD)

B1 EXTENT OF CLASS I, GROUP D, DIVISION I LOCATION:
WITHIN 5 FEET OF OPEN END OF VENT, EXTENDING IN ALL DIRECTIONS.

B2 EXTENT OF CLASS I, GROUP D, DIVISION II LOCATION:
SPACE BETWEEN 5 FEET AND 10 FEET OF OPEN END OF VENT, EXTENDING IN ALL DIRECTIONS.

C TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (REMOTE PUMP - OUTDOOR)

C1 EXTENT OF CLASS I, GROUP D, DIVISION I LOCATION:
ANY PIT, BOX, OR SPACE BELOW GRADE LEVEL IF ANY PART IS WITHIN A HORIZONTAL DISTANCE OF 10 FEET FROM ANY EDGE OF PUMP.

C2 EXTENT OF CLASS I, GROUP D, DIVISION II LOCATION:
WITHIN 3 FEET OF ANY EDGE OF PUMP, EXTENDING IN ALL DIRECTIONS, ALSO UP TO 18 INCHES ABOVE GRADE LEVEL WITHIN 10 FEET HORIZONTALLY FROM ANY EDGE OF PUMP.

D TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (DISPENSING DEVISE - PITS)

D1 EXTENT OF CLASS I, GROUP D, DIVISION I LOCATION:
ANY PIT, BOX, OR SPACE BELOW GRADE LEVEL, ANY PART OF WHICH IS WITHIN THE DIVISION I OR II CLASSIFICATION LOCATION.

E TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (DISPENSING DEVICE - DISPENSER)

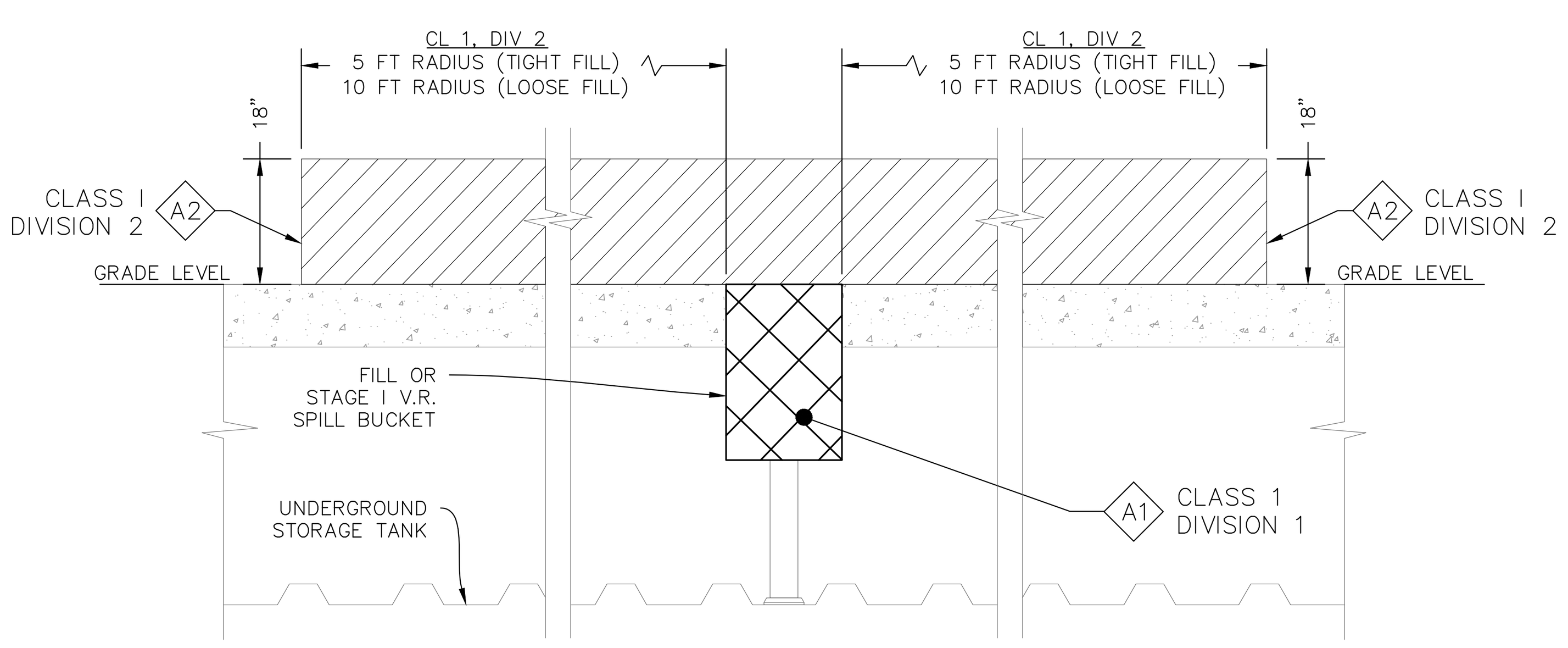
E1 EXTENT OF CLASS I, GROUP D, DIVISION I LOCATION:
SPACE CLASSIFICATION INSIDE THE DISPENSER ENCLOSURE IS COVERED IN ANSI/UL 87, "POWER OPERATED DISPENSING DEVICES FOR PETROLEUM PRODUCTS."

F TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (DISPENSING DEVICE - DISPENSER)

F2 EXTENT OF CLASS I, GROUP D, DIVISION II LOCATION:
WITHIN 18 INCHES HORIZONTALLY IN ALL DIRECTIONS EXTENDING TO GRADE FROM (I) THE DISPENSER ENCLOSURE OR (2) THAT PORTION OF THE DISPENSER ENCLOSURE CONTAINING LIQUID HANDLING COMPONENTS. SPACE CLASSIFICATION INSIDE THE DISPENSER ENCLOSURE IS COVERED IN ANSI/UL 87, "POWER OPERATED DISPENSING DEVICES FOR PETROLEUM PRODUCTS."

G TYPICAL N.E.C. ARTICLE 514 CLASS I LOCATION (DISPENSING DEVICE - OUTDOOR)

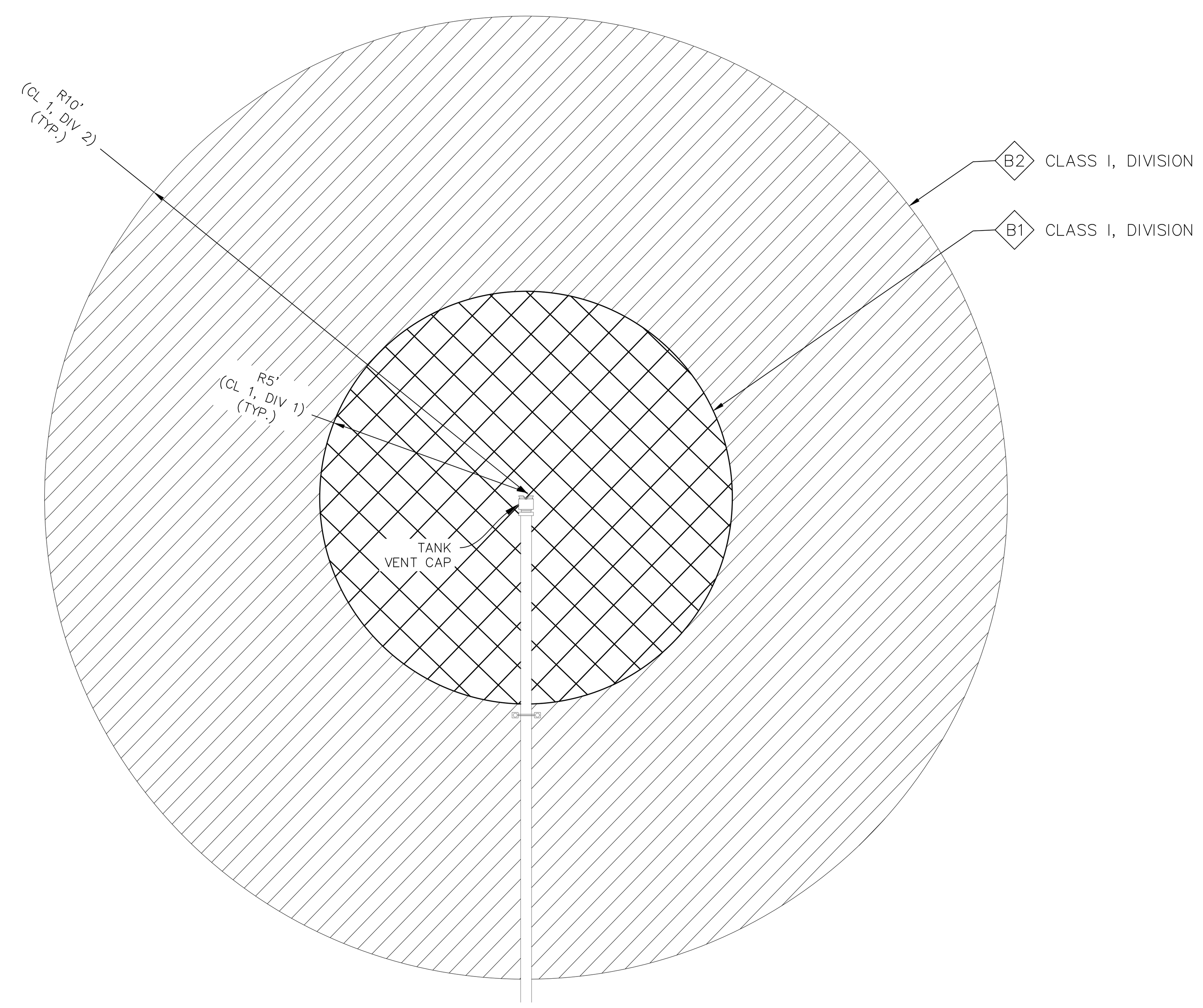
G2 EXTENT OF CLASS I, GROUP D, DIVISION II LOCATION:
UP TO 18 INCHES ABOVE GRADE LEVEL WITHIN 20 FEET HORIZONTALLY OF ANY EDGE OF ENCLOSURE.



NOTE: NFPA CLASS I FLAMMABLE LIQUIDS INCLUDE GASOLINE (RUL & PUL) AND E85. DIESEL FUEL AND KEROSENE ARE NFPA CLASS II COMBUSTIBLE LIQUIDS

TYPICAL SECTION B-B'
TYPICAL CLASS I TANK FILL OPENING AREA DETAIL (FOR CLASS I LIQUIDS)

N.T.S.



NOTE: NFPA CLASS I FLAMMABLE LIQUIDS INCLUDE GASOLINE (RUL & PUL) AND E85. DIESEL FUEL AND KEROSENE ARE NFPA CLASS II COMBUSTIBLE LIQUIDS

TYPICAL SECTION D-D'
TYPICAL CLASS I TANK VENT DETAIL (FOR CLASS I LIQUIDS)

N.T.S.

NOTE: NFPA CLASS I FLAMMABLE LIQUIDS INCLUDE GASOLINE (RUL & PUL) AND E85. DIESEL FUEL AND KEROSENE ARE NFPA CLASS II COMBUSTIBLE LIQUIDS. DEF IS A NON-FLAMMABLE, NON-COMBUSTIBLE LIQUID.

LEGEND

CLASS 1 DIVISION 1 AREA

CLASS 1 DIVISION 2 AREA

NOTE:
NFPA 30A 8.3.3 STATES THAT A DESIGNATED CLASSIFIED AREA, AS SPECIFIED IN TABLE 8.3.2 (NFPA 30A), SHALL NOT EXTEND BEYOND A FLOOR, WALL, ROOF, OR OTHER SOLID PARTITION THAT HAS NO OPENING.

STORED LIQUIDS CLASSIFICATION	
COMMON NAME	CLASSIFICATION PER NFPA 30 §4.3
REGULAR (GASOLINE)	CLASS I B FLAMMABLE
PREMIUM (GASOLINE)	CLASS I B FLAMMABLE
DIESEL (#2 ON-ROAD)	CLASS II COMBUSTIBLE
E85	CLASS I B FLAMMABLE

ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 051765

CONSULTANT:
Engineers • Planners • Surveyors
Wellert Corporation
5136 Beach Road • Medina, Ohio 44256
t: 330.239.2699 • f:330.239.0272

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

HAZARDOUS AREAS CLASSIFICATION DETAILS

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FT1.2

SUBGRADE PREPARATION

1. CLEARING

A. THE CONTRACTOR SHALL REMOVE ALL VEGETATION, SURPLUS SOIL, DEMOLITION RUBBLE, AND OTHER UNDESIRABLE MATERIALS. SUCH MATERIALS SHALL BE PROMPTLY HAULED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH GOVERNING LAWS AND CODES. THE CONTRACTOR SHALL SHAPE THE SUBGRADE IN ACCORDANCE WITH THE GRADING PLAN, TAKING INTO ACCOUNT THE THICKNESS OF THE PAVING SYSTEM. THE TOLERANCE OF THIS ROUGH GRADING SHALL BE WITHIN ½" HIGH TO 1" LOW.

B. DURING THIS OPERATION, THE CONTRACTOR SHALL NOTE ANY SOFT AREAS THAT BECOME APPARENT AFTER TRAFFIC BY CONSTRUCTION EQUIPMENT AND LOADED TRUCKS. SUCH SOFT AREAS SHALL BE REPORTED TO SHEETZ , INC FOR DETERMINING THE METHOD OF TREATMENT REQUIRED, IF ANY. FAILURE TO RECTIFY UNSATISFACTORY SUBGRADE WHICH RESULTS IN PAVING FAILURE WILL BE ASSESSED AS THE LIABILITY OF THE CONTRACTOR.

2. MAINTAINING DRY SITE CONDITIONS

A. DURING PREPARATION OF THE SUBGRADE AND UNTIL THE PAVING IS IN PLACE, THE CONTRACTOR SHALL TAKE REASONABLE MEASURES TO OBTAIN AND TO MAINTAIN A DRY SITE CONDITION. SUCH MEASURES SHALL INCLUDE PUMPING OF FREE SURFACE WATER, MINOR HAND AND/OR MACHINE SHAPING TO FACILITATE WATER REMOVAL, AND OTHER OPERATIONS TO SPEED DRYING.

CONCRETE SLABS AND ISLANDS

1. CONCRETE MIX DESIGN

EXTERIOR SITE CONCRETE

STRENGTH 4000 PSI	(PER ACI 318)
MINIMUM CEMENT FACTOR	588# (6.25 BGS.)
MAXIMUM W/C	0.45
ENTRAINED AIR	4.5 - 7.5%
SLUMP	4" MAX. UNLESS HRWR OR MID RANGE WR THEN 6"-8"
WATER RETARDER	NORMAL TYPE A
RETARDER	NORMAL TYPE D AS NEEDED (REQUIRED IF CONCRETE TEMPERATURE EXCEEDS 85 F)
CONCRETE TEMPERATURE	50-90 F
ACCELERATOR	NON CHLORIDE TYPE ONLY

THE USE OF CALCIUM CHLORIDE IS PROHIBITED!

FIBER *1-1/2" @ 1.5 # / C.Y. (AS FIBERMESH 300 OR EQUIVALENT)

*NOTE: FIBER REQUIREMENT MAY BE WAIVED, SITE SPECIFIC, AT OWNER'S DISCRETION

FOOTINGS

STRENGTH	3500 PSI
MINIMUM CEMENT FACTOR	572# (6.1 BGS.)
MAXIMUM W/C	0.48
NON-AIR ENTRAINED	
SLUMP	5" MAXIMUM

ALL OTHER REQUIREMENTS AS LISTED ABOVE.

2. REQUIRED SUBMITTALS

A. FORMAL MIX DESIGN.

B. SUPPORTING STRENGTH DATA PER ACI 318.

C. CEMENT MILL CERTIFICATION.

D. ADMIXTURE CERTIFICATION AND CATALOG CUTS.

E. FIBER TYPE AND DATA SHEETS.

F. AGGREGATE CERTIFICATION AND GRADATION (COARSE AND FINE).

G. READY MIX SUPPLIER TO TEST FIRST LOAD ON SITE TO CONFIRM ENTRAINED AIR*, SLUMP, AND TEMPERATURE (* INFORMATION ONLY FOR NON-AIR CONCRETE).

H. ANY ADDED WATER MUST BE RECORDED ON DELIVERY TICKET

THE ABOVE-LISTED SUBMITTAL DATA ARE IN GENERAL COMPLIANCE WITH THE GUIDELINES GIVEN IN ACI 301 AND ACI 318. THE CONCRETE SUPPLIER MUST BE FAMILIAR WITH THESE DOCUMENTS.

3. SUBBASE

PART 1 - GENERAL

1.1 DESCRIPTION

1. WORK INCLUDED: PLACE SUB-BASE STONE, COMPACT AND GRADE THE SITE TO THE ELEVATIONS SHOWN ON THE DRAWINGS, AS SPECIFIED HEREIN, AND AS NEEDED TO MEET THE REQUIREMENTS OF THE CONSTRUCTION.

2. RELATED WORK: PREPARATION OF AN ACCEPTABLE SUB-GRADE TRUE TO LINE AND GRADE.

1.2 QUALITY ASSURANCE

1. USE ADEQUATE NUMBERS OF SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK OF THIS SECTION.

2. USE EQUIPMENT ADEQUATE IN SIZE, CAPACITY AND NUMBERS TO ACCOMPLISH THE WORK OF THIS SECTION IN A TIMELY MANNER.

3. IN ADDITION TO COMPLYING WITH REQUIREMENTS OF GOVERNMENTAL AGENCIES HAVING JURISDICTION, COMPLY WITH THE DIRECTIONS OF THE OWNER OR THE OWNER'S ENGINEER.

1.3 PRODUCT HANDLING

1. AGGREGATE IS TO BE DELIVERED TO THE SITE FROM THE SUPPLIER. IF STOCKPILING IS REQUIRED, A PREPARED AREA IS TO BE USED TO INSURE THE AGGREGATE IS KEPT FREE OF CLAY, SILT, VEGETABLE MATTER AND OTHER OBJECTIONABLE MATERIAL.

PART 2 - PRODUCT

2.1 SUBBASE MATERIAL

1. SUB-BASE AGGREGATE IS TO BE PADOT 2A OR 2A MODIFIED MEETING THE FOLLOWING SIZE AND GRADING REQUIREMENTS:

PADOT 2A	SIEVE SIZE	PERCENT PASSING
	2"	100
	3/4"	52-100
	3/8"	36-70
	#4	24-50
	#16	10-30
	#200	0-10

PADOT 2A MODIFIED	SIEVE SIZE	PERCENT PASSING
	3"	100
	1"	50-100
	3/8"	25-90
	#4	20-65
	#10	10-50
	#40	8-30
	#100	0-20

2. ANY REQUESTS FOR MATERIAL SUBSTITUTION MUST BE ACCOMPANIED BY APPROPRIATE TESTING RESULTS AND ARE SUBJECT TO THE OWNER'S APPROVAL.

2.2 OTHER MATERIALS

1. PROVIDE OTHER MATERIALS NOT SPECIFICALLY DESCRIBED BUT REQUIRED FOR A COMPLETE AND PROPER INSTALLATION, AS SELECTED BY THE CONTRACTOR SUBJECT TO THE APPROVAL OF THE OWNER.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

1. EXAMINE THE SUB-GRADE CONDITIONS IN THE AREA WHERE THE WORK OF THIS SECTION WILL BE PERFORMED. CORRECT CONDITIONS DETRIMENTAL TO TIMELY COMPLETION OF THE WORK. DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED.

3.2 FINISH ELEVATIONS AND LINES

1. CONTROL THE ELEVATION AND EPTH OF THE SUB-BASE AS SHOWN ON THE DRAWINGS.

3.3 PROCEDURES

1. USE MEANS NECESSARY TO PREVENT DUST BECOMING A NUISANCE TO THE PUBLIC, TO NEIGHBORS, AND TO OTHER WORK BEING PERFORMED ON OR NEAR THE SITE.

2. MAINTAIN ACCESS TO ADJACENT AREAS AT ALL TIMES.

3.4 PLACING OF SUBBASE

1. THE CRUSHED AGGREGATE SUB-BASE MATERIAL SHALL BE PLACED ON THE MOISTENED SUB-GRADE IN LAYERS OF UNIFORM THICKNESS WITH A MECHANICAL SPREADER.

2. THE MAXIMUM DEPTH OF A COMPACTED LAYER SHALL BE 6 INCHES. IF THE TOTAL DEPTH OF THE COMPACTED MATERIAL IS MORE THAN 6 INCHES, IT SHALL BE CONSTRUCTED IN TWO OR MORE LAYERS. IN MULTI-LAYER CONSTRUCTION, THE SUB-BASE COURSE SHALL BE PLACED IN APPROXIMATELY EQUAL DEPTH LAYERS.

3. THE PREVIOUSLY CONSTRUCTED LAYER SHOULD BE CLEANED OF LOOSE AND FOREIGN MATERIAL PRIOR TO PLACING THE NEXT LAYER. THE SURFACE OF THE COMPACTED MATERIAL SHALL BE KEPT MOIST UNTIL COVERED WITH THE NEXT LAYER.

4. DO NOT PLACE SUB-BASE OR FILL MATERIAL ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAINING FROST OR ICE.

5. PLACE SUB-BASE AND FILL MATERIALS EVENLY ADJACENT TO STRUCTURES, TO REQUIRED ELEVATIONS.

6. TAKE CARE TO PREVENT WEDGING ACTION OF SUB-BASE AGAINST STRUCTURES BY CARRYING THE MATERIAL UNIFORMLY AROUND THE STRUCTURE TO APPROXIMATELY THE SAME ELEVATION IN EACH LIFT.

3.5 GRADING

1. UNIFORMLY GRADE THE AREAS WITHIN THE LIMITS OF GRADING UNDER THIS SECTION, INCLUDING ADJACENT TRANSITION AREAS.

2. SMOOTH THE FINISHED SURFACES WITHIN SPECIFIED TOLERANCES.

3. COMPACT WITH UNIFORM LEVELS OR SLOPES BETWEEN POINTS WHERE ELEVATIONS ARE SHOWN ON THE DRAWINGS, OR BETWEEN SUCH POINTS AND GRADES AS ESTABLISHED IN THE FIELD.

4. THE FINISHED SURFACE IS TO BE FREE FROM IRREGULAR SURFACE CHANGES, AND:

- SHAPE THE SURFACE OF AREAS SCHEDULED TO BE UNDER PAVEMENT TO LINE, GRADE AND CROSS SECTION, WITH FINISHED SURFACE NOT MORE THAN ½ INCH ABOVE OR BELOW THE REQUIRED ELEVATION WHEN TESTED WITH A 16 FT. STRAIGHT EDGE.
- DIG ONE TEST HOLE TO FILL DEPTH OF COMPACTED SUB-BASE FOR EACH 2000 SQUARE YARDS OF COMPLETED SUB-BASE. DEFICIENCIES OF SPECIFIED DEPTH OVER ½ INCH WILL BE CORRECTED.

3.6 COMPACTING

1. CONTROL SOIL COMPACTION DURING CONSTRUCTION TO PROVIDE THE MINIMUM PERCENTAGE OF DENSITY SPECIFIED EACH AREA AS DETERMINED ACCORDING TO ASTM D1557.

2. IMMEDIATELY UPON COMPLETION OF THE SPREADING OPERATIONS, THE CRUSHED AGGREGATE SHALL BE THOROUGHLY COMPACTED. THE NUMBER, TYPE AND WEIGHT OF ROLLERS SHALL BE SUFFICIENT TO COMPACT THE MATERIAL TO THE REQUIRED DENSITY.

3. THE MOISTURE CONTENT OF THE MATERIAL DURING PLACING OPERATIONS SHALL NOT BE BELOW, NOR MORE THAN 1 - 1.2 PERCENTAGE POINTS ABOVE, THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D157.

4. AGGREGATE SUB-BASE SHALL BE TESTED FOR DENSITY FOR EACH 2000 SQUARE YARDS OF MATERIAL IN PLACE. A COMPACTION OF 95% OF MAXIMUM DENSITY IS REQUIRED FOR ACCEPTANCE.

3.7 MAINTENANCE

1. PROTECT NEWLY GRADED AREAS FROM TRAFFIC AND EROSION AND KEEP FREE FROM TRASH.

2. REPAIR AND REESTABLISH GRADES IN SETTLED, ERODED AND RUTTED AREAS TO THE SPECIFIED TOLERANCES.

- WHERE COMPLETED COMPACTED AREAS ARE DISTURBED BY SUBSEQUENT CONSTRUCTION OPERATIONS OR ADVERSE WEATHER, SCARIFY THE SURFACE, RESHAPE AND COMPACT TO THE REQUIRED DENSITY PRIOR TO FURTHER CONSTRUCTION.

4. FORMWORK

A. ALL WOODEN FORMS TO BE NO LESS THAN THE SPECIFIED DEPTH OF THE SLAB TO BE POURED, AND NOT LESS THAN NOMINAL 2' X 4' SIZE. STAKING FOR STRAIGHT SECTIONS SHALL OCCUR NOT LESS FREQUENTLY THAN EVERY FOUR FEET AND SHALL BE BOTH INSIDE AND OUTSIDE OF THE FORM. FOR CURVES, STAKING SHALL OCCUR NOT LESS THAN EVERY FOOT, AND SHALL BE BOTH INSIDE AND OUTSIDE OF THE FORM. STEEL FORMS SHALL BE STAKED ACCORDING TO THEIR DESIGN REQUIREMENTS. ALL REMOVABLE FORMS SHALL BE COATED WITH FORM - RELEASE OIL PRIOR TO PLACEMENT OF CONCRETE. CYLINDRICAL FORMS SHALL BE OF NEW SONOTUBE OR EQUIVALENT DISPOSABLE MATERIALS. THESE MATERIALS MUST BE REMOVED COMPLETELY AFTER USE.

B. ALL EDGES CREATED BY REMOVABLE FORMS SHALL BE TOOL-RADIUSED AFTER SURFACE FINISHING TO PROVIDE A SMOOTH BORDER ON ALL SLABS.

C. FORMS SHALL BE REMOVED NO SOONER THAN 24 HOURS FROM THE TIME OF THE POUR.

5. TANK FIELD CONCRETE PAD

A. SUPPLY ALL MATERIALS.

B. VERIFY ALL ELEVATIONS.

C. SCHEDULE CONCRETE TESTING USING COMPANY CONTRACTED BY SHEETZ, INC.'S CONSTRUCTION MANAGER.

D. SUPPLY ALL NECESSARY TOOLS TO COMPLETE JOB

E. SUPPLY AND CONSTRUCT ALL FORM MATERIAL. REMOVE AFTER CONCRETE IS SUFFICIENTLY SET.

F. PLACE AND BROOM FINISH TANK FIELD FOOT PRINT TO A 10" DEPTH OF 4,000 PSI CONCRETE W/FIBER, OVER TANK FIELD.

G. MIX WILL INCLUDE A MID-RANGE WATER REDUCER AND NOT EXCEED A SIX (6) INCH SLUMP. USE ALL NON-CHLORIDE ACCELERATORS.

H. ALL CONSTRUCTION JOINTS ARE TO BE SMOOTH DOWELED AT THREE (3') FEET ON CENTERS.

I. DOWEL ROD SPECIFICATION: SMOOTH DOWELS ¾" DIA. X 12" LENGTH

J. GREASE ONE END.

K. ALL CONTROL JOINTS ARE TO BE SAWED WITHIN THE FIRST TWELVE (12) HOURS. JOINTS ARE NOT TO EXCEED TWELVE (12) FEET ON CENTERS. SEE CONTROL JOINT LAYOUT ON SECTION. EITHER SOFT CUT OR CONVENTIONAL SAW CAN BE USED.

L. ALL CONCRETE WORK IS TO COMPLY ACI FLATWORK FINISHER SPECIFICATIONS.

M. WINTER COVER WILL BE ADDRESSED AS NEEDED.

6. PLACEMENT OF CONCRETE

A. ASSURE SUFFICIENT MANPOWER TO COMPLETE THE SLAB WORK ALLOTTED ON THE POUR SCHEDULE. DO NOT BEGIN SLAB WORK IF SIGNIFICANT RAINFALL IS EXPECTED WITHIN TWO HOURS OF THE PLACEMENT OF CONCRETE. PROVIDE SUFFICIENT POLYETHYLENE SHEETING TO A HEIGHT OF 8'-0" WHENEVER PLACEMENT OF CONCRETE IS WITHIN 15' OF BUILDING. PROVIDE DRAINAGE CHANNELS FOR RUNOFF IN CASE OF RAIN. DO NOT POUR CONCRETE SLABS WHEN DAYTIME TEMPERATURES ARE EXPECTED BELOW 30 DEGREES FAHRENHEIT. PROTECT CONCRETE FOR 72 HOURS FROM FREEZING.

B. PLACE ONLY FULL SLABS AS INDICATED ON THE PLAN. DO NOT BEGIN A SLAB UNLESS SUFFICIENT QUANTITIES OF CONCRETE ARE AVAILABLE TO COMPLETE THE SLAB. IF POURING ADJACENT TO AN EXISTING SLAB, ASPHALT SECTION, OR OTHER STRUCTURE, MASKING OR OTHER PROVISIONS MUST BE TAKEN TO ASSURE THAT NO SPLATTER IS LEFT BEHIND. FAILURE TO PREVENT SPLATTER WILL RESULT IN THE REJECTION OF DAMAGED WORK AND LIABILITY FOR SAME TO BE BORNE BY THE CONTRACTOR.

C. CONCRETE VIBRATORS SHALL NOT BE USED FOR ANY CURB OR SLAB WORK. THEY SHOULD BE USED FOR PLACEMENT OF CONCRETE IN THE BOLLARDS. MANUALLY HAMMER-TAP SIDES OF CURB AND SLAB FORMS TO REDUCE HONEYCOMBING.

D. SCREED ALL SLAB CONCRETE IMMEDIATELY UPON PLACEMENT TO ASSURE PROPER GRADES. BULL-FLOAT SLABS IMMEDIATELY AFTER SCREEDING. AS SOON AS THE PLACED CONCRETE WILL ALLOW, MAKE FIRST T-JOINT GROOVES, AND FIRST EDGING PASSES. WHEN THE SURFACE HAS DRIED SUFFICIENTLY TO BEAR THE WEIGHT OF A BROOM WITHOUT EXCESSIVE BUILDUP, CREATE LIGHT BROOM STROKES ACROSS THE CONCRETE IN A DIRECTION PERPENDICULAR TO THE DIRECTION OF TRAFFIC. RE-TOOL EDGES AND T-JOINTS AFTER COMPLETION OF BROOM FINISH. CAUTION: DO NOT OVERWORK CONCRETE SURFACE! LESS IS MORE!

E. POUR ISLAND FORMS, STEEL TROWEL, WITH VERY LIGHT BROOM FINISH.

F. PROTECT CONCRETE FROM EXCESSIVE HEAT AND PREMATURE DRYING BY THE USE OF KRAFT PAPER AND WATER MIST. COAT CONCRETE AFTER ALL FINISHING IS COMPLETE USING THE SPECIFIED CURATIVE AGENTS.

G. DO NOT ALLOW CLAY OR SALT TO CONTACT FINISHED CONCRETE FOR 30 DAYS. AVOID ALLOWING CONSTRUCTION VEHICLES TO CROSS THE SLABS FOR THE REMAINDER OF THE PROJECT. DO NOT ALLOW VIBRATORY ROLLERS WITHIN ON FOOT OF CONCRETE EDGES.

H. IF SAW CUTTING IS EMPLOYED, IT MUST OCCUR FROM 8-12 HOURS AFTER INITIAL SET. SPALLING DUE TO SAW CUTTING ACTIONS MAY RESULT IN REJECTION OF THE CONCRETE WORK.

I. NO VEHICULAR TRAFFIC SHALL BE ALLOWED FOR 7 DAYS AFTER CONCRETE PLACEMENT. UNSATISFACTORY CONCRETE SHALL BE REMOVED AND REPLACED WITHOUT COST TO SHEETZ, INC. AT THE DISCRETION OF ITS SITE INSPECTORS.

7. CONCRETE SEALING

A. CONTRACTOR TO PROVIDE **CHEMTEC ONE™CT-001** CONCRETE SEALER AND **W.R. MEADOWS CS-309 -25TH** CURING AND SEALING COMPOUND. COAT ALL CONCRETE WITH SEALANT, CONSULT WITH MANUFACTURER FOR APPLICATION DIRECTIONS.

8. COLD WEATHER CONCRETE INSTALLATION

A. PER ACI RECOMMENDATIONS AND ACCELERATOR SPECIFICATION.

9. CONCRETE LAYOUT AND JOINTING

A. LAYOUT JOINTS TO FORM APPROXIMATELY SQUARE PANELS, AS SHOWN. TYPICAL SLABS SHOULD BE PROVIDED WITH SAW CUTS AT 12' MAXIMUM INTERVALS.

B. CONTROL JOINTS SHOULD HAVE A DEPTH OF AT LEAST ONE-FOURTH (1/4) THE SLAB THICKNESS, E.G. 1-1/2 INCH FOR A 6" SLAB.

C. JOINTS SHOULD RUN CONTINUOUSLY AND EXTEND THROUGH INTEGRAL CURBS. JOINTS MAY BE TERMINATED AND OFFSET AT ISOLATION JOINTS. USE EXPANSION JOINTS WHERE ABUTTING EXISTING CURBING.

D. ADJUST JOINTING LAYOUT OR LOCATION OF MANHOLES, CATCH BASINS, SMALL FOUNDATIONS AND OTHER BUILT-IN STRUCTURES. TYPICALLY CATCH BASINS, BOLLARDS AND ANYTHING HAVING A FOUNDATION OR DIFFERENT CROSS-SECTION THAN THE SURROUNDING PAVING SHALL BE ISOLATED USING GREENSTREAK PLASTIC EXPANSION BOARD WITH G-SEAL CAPPING OR ½ INCH THICK FOAM WITH SIKA-FLEX POURED CAPPING, WHERE RADIUSES DO NOT ALLOW THE USE OF THE GREENSTREAK PRODUCTS. HAMMER-TAP SIDES OF CURB AND SLAB FORMS TO REDUCE HONEYCOMBING.

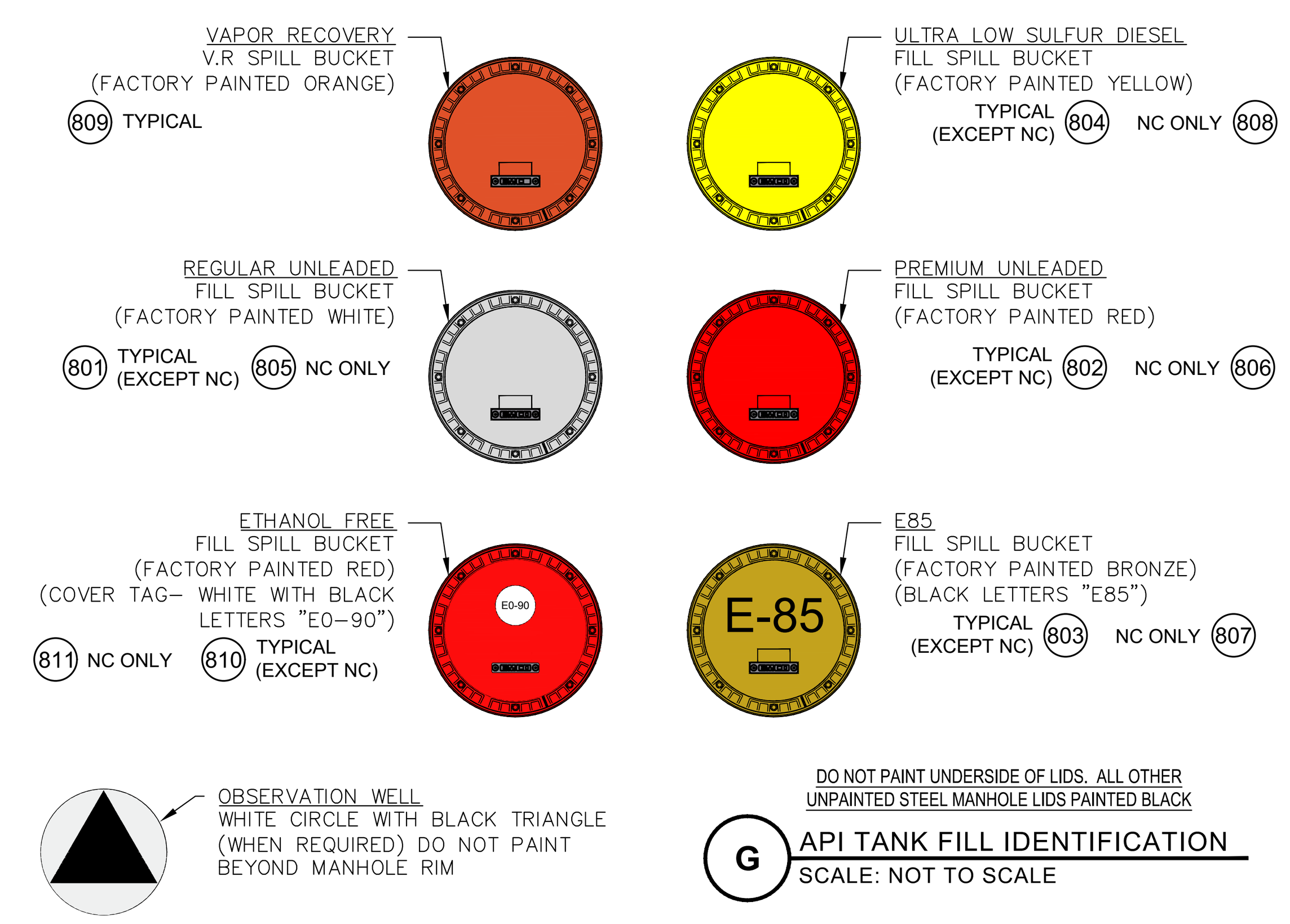
E. ORIENT CONTROL JOINTS TO AVOID ACUTE ANGLES OR SMALL PIECES OF SLAB AT CURVES. OFFSETS SHOULD BE AT LEAST 18". JOINT MATERIAL SHOULD RADIALLY TIE INTO CURVED FEATURES.

F. DOWELED JOINTS SHALL BE LOCATED ON 3' CENTERS, ALONG THE INSIDE OF THE MOST EXTERIOR SLABS. DOWELS SHALL BE SMOOTH TYPE. THE DOWEL IS LOCATED AT MID-SLAB DEPTH AND HELD IN PLACE LEVEL AND PERPENDICULAR TO THE JOINT USING THE SPEED DOWEL, WHICH REMAINS WITH THE FORM. AFTER THE FORMS ARE STRIPPED, THE DOWELS ARE CHECKED TO ASSURE FULL INSERTION AND ALIGNMENT IN THE INITIAL SLAB BEFORE POURING THE ADJACENT SLAB. DOWELS OCCURRING UNDER AND PARALLEL TO CONTROL JOINTS SHOULD BE DELETED. SEE DETAIL.

OUT PARCEL SITES

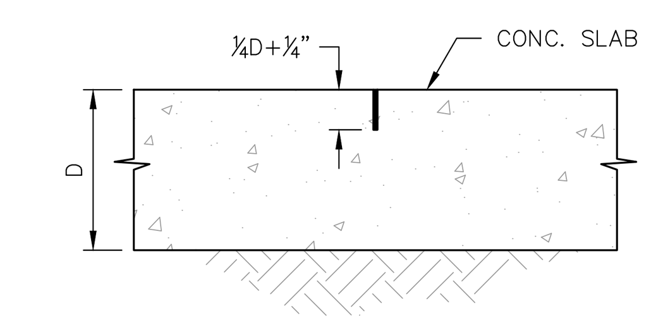
WHERE THE CIVIL CONSULTANT SPECIFIES CONCRETE EXTENTS DIFFERENT FROM THE STANDARD DEPICTED ON THIS PAGE, THE FOLLOWING GUIDELINES SHALL BE FOLLOWED:

1. DOWEL THE FUELING SLAB TO ADJACENT FLAT WORK.
2. NO SECTIONS SHALL BE SHAPED AS CONCAVE POLYGONS.
3. NO SLAB EDGE ANGLES OF LESS THAN 45 DEGREES
4. CONTROL JOINTS SPACED NO MORE THAN EVERY 12' IN EACH DIRECTION, MAINTAIN PARALLEL GRID WITH FUELING SLAB.
5. THE CONTRACTOR SHALL REVIEW HIS PROPOSED SLAB ARRANGEMENT WITH THE OWNER'S FIELD REPRESENTATIVE AND SHALL DOCUMENT THE FINAL ARRANGEMENT ON THE AS-BUILT PLANS.

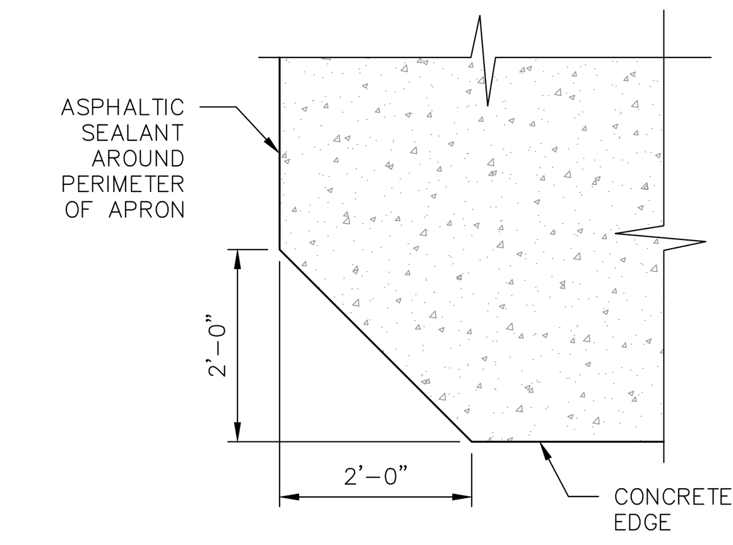


DO NOT PAINT UNDERSIDE OF LIDS. ALL OTHER UNPAINTED STEEL MANHOLE LIDS PAINTED BLACK

G API TANK FILL IDENTIFICATION
SCALE: NOT TO SCALE

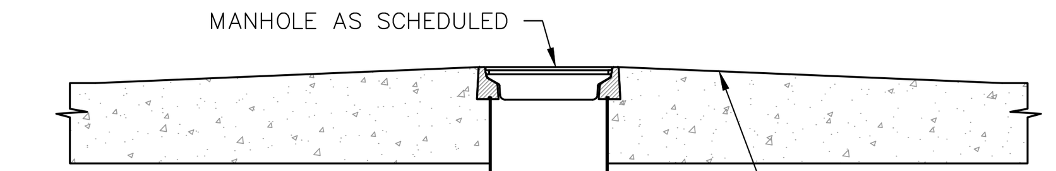


D SAWCUT CONTROL JOINT
SCALE: 1" = 1'-0"



NOTE: CHAMFER CORNERS ONLY WHEN ABUTTING ASPHALT PAVEMENT

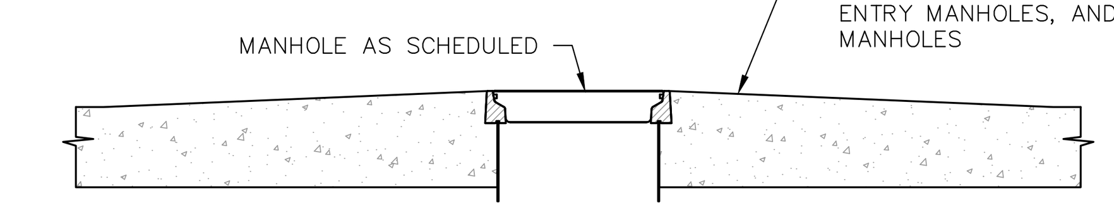
E CHAMFER DETAIL
SCALE: ½" = 1'-0"



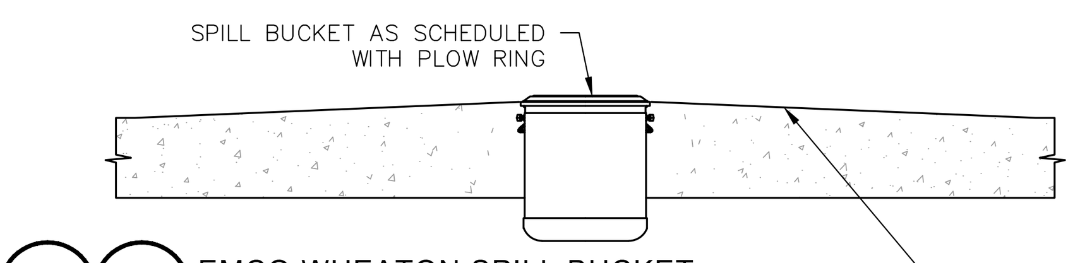
C1 MONITOR WELL
SCALE: ½" = 1'-0"

SLOPE ½" PER FOOT TO 1" RISE FROM OUTSIDE EDGE OF MANHOLE FOR UST FILLS, STAGE I, UST SUMP ENTRY MANHOLES, AND UST INTERSTITIAL RISER MANHOLES

SLOPE ½" PER FOOT TO 2" RISE FROM OUTSIDE EDGE OF MANHOLE FOR UST FILLS, STAGE I, UST SUMP ENTRY MANHOLES, AND UST INTERSTITIAL RISER MANHOLES

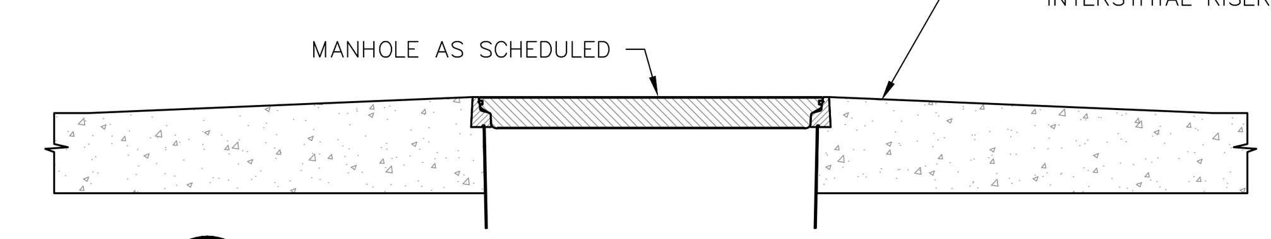


C2 INTERSTITIAL MANHOLE
SCALE: ½" = 1'-0"



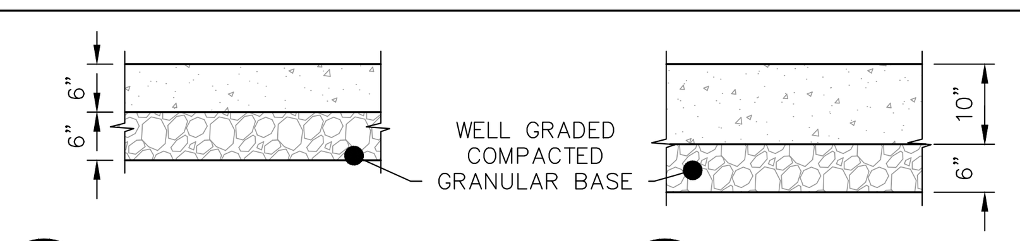
C3 C4 EMCO WHEATON SPILL BUCKET
SCALE: ½" = 1'-0"

SLOPE ½" PER FOOT TO 2" RISE FROM OUTSIDE EDGE OF MANHOLE FOR UST FILLS, STAGE I, UST SUMP ENTRY MANHOLES, AND UST INTERSTITIAL RISER MANHOLES



C5 FIBRELITE FL100 MANHOLE
SCALE: ½" = 1'-0"

C CROWN DETAILS
SCALE: ½" = 1'-0"



B1 6" CONCRETE PAVING
SCALE: ½" = 1'-0"

B2 10" CONCRETE PAVING
SCALE: ½" = 1'-0"

B CONCRETE PAVING DETAILS
SCALE: ½" = 1'-0"

ISSUED FOR

DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031765 ROBERT W. WELLERT

CONSULTANT: Wellert Corporation
Engineers • Planners • Surveyors
5136 Beach Road • Medina, Ohio 44256
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CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

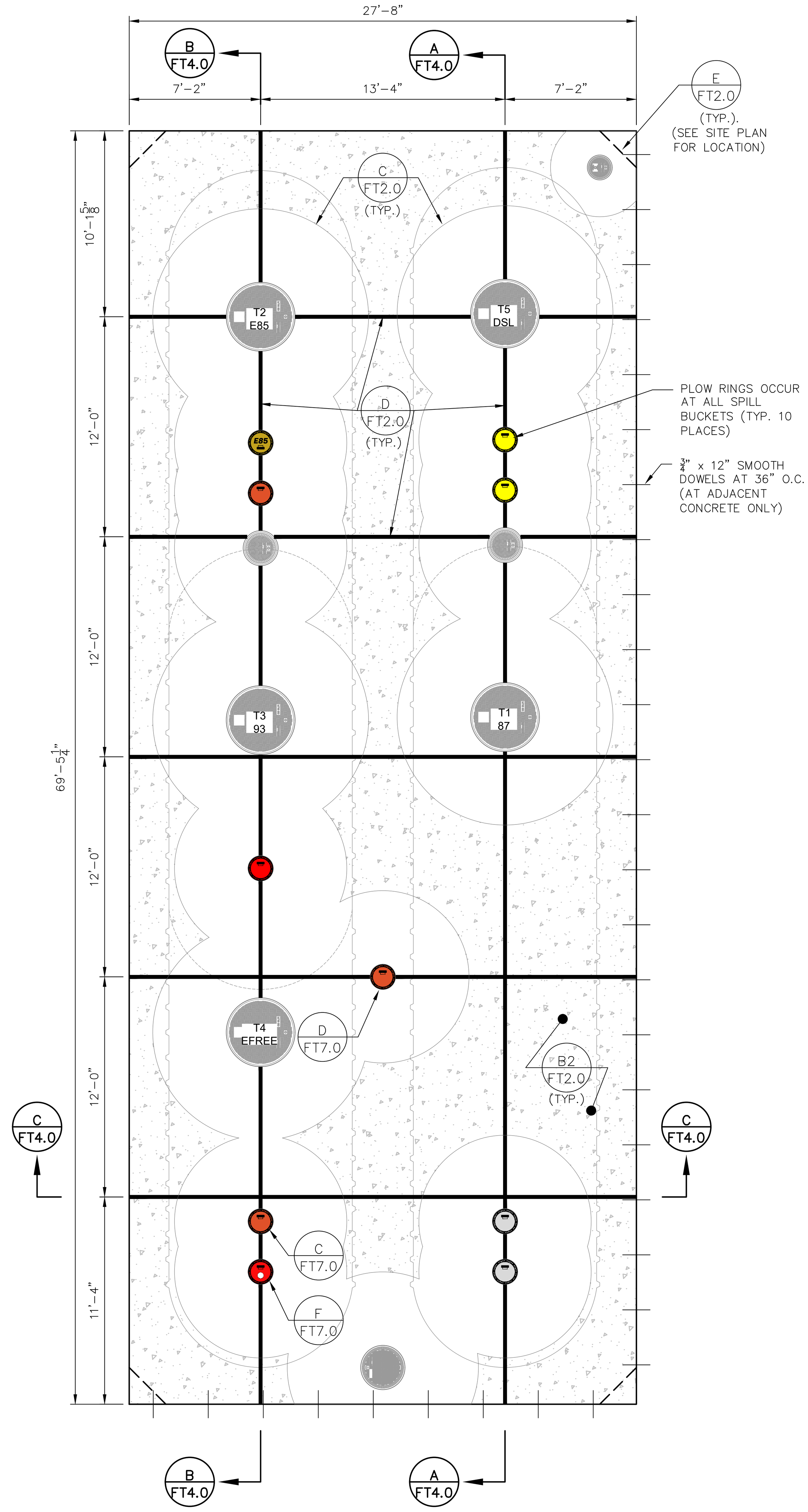
CONCRETE SPECIFICATIONS AND DETAILS

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	NOTED
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

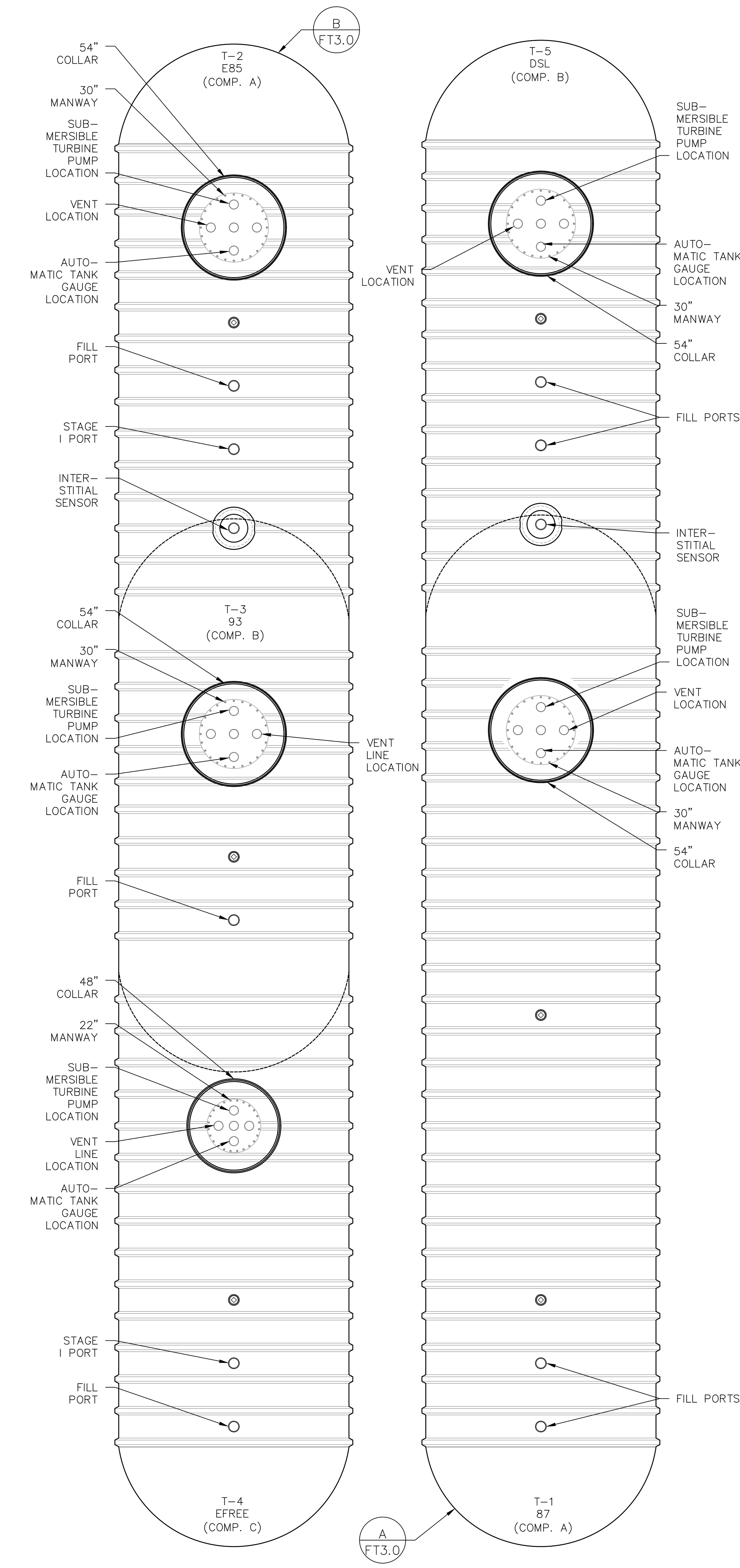
FT2.0

File: k:\sheetz\#7xx cameron (sawyer), nc\dwg\#7xx cameron (sawyer), nc ust.dwg Saved: 3/5/2021 8:16 AM (jeff.wellert) Plotted: 3/5/2021 8:20 AM (jeff.wellert) Plotstyle: (WC Standard.ctb) Scale: (1:1) Page Setup: (36 X 24 PDF)



NOTE:
CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR DURING TANK PAD CONSTRUCTION

A TYPICAL TANK CONCRETE PAD LAYOUT PLAN
SCALE: 3/16" = 1'-0"



B TANK FIELD PLAN
SCALE: ¼" = 1'-0"

DATE	BY	ISSUED FOR DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:

CONSULTANT:
Engineers • Planners • Surveyors
Weller Corporation

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

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5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
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CONCRETE CONTROL JOINT LAYOUT AND TANK LAYOUT PLAN

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	NOTED
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FT2.1

XERXES BY SHAWCOR	DEADMAN BURIAL WATER AT GRADE	Sheetz -	
TANK DATA		**INSTALLATION**	
NOM. CAP. (GAL.)	36000 (24k x 12k)	TOTAL COVER INCLUDING SOIL & TOP SLAB (FT)	4.00
TYPE (SINGLEWALL=1;DW=3)	3	TOP SLAB THICKNESS (IN)	10.00
DRY=1; WET=2	2	TOP SLAB LENGTH (FT)	67.44
NOM. TANK DIA. (FT.)	10	TOP SLAB WIDTH (FT)	12.00
**		DEADMAN LNG (FT)	66.00
PROD. STORED (GAL)	0	DEADMAN WID (IN)	18.00
SPEC. GRAV. USED	1.00	DEADMAN THK (IN)	8.75
	0		
SAFETY FACTOR		# OF 48" DIAMETER SUMPS	2
DOWN FORCE/UP FORCE =	**1.35 :1**	# OF 54" DIAMETER SUMPS	1

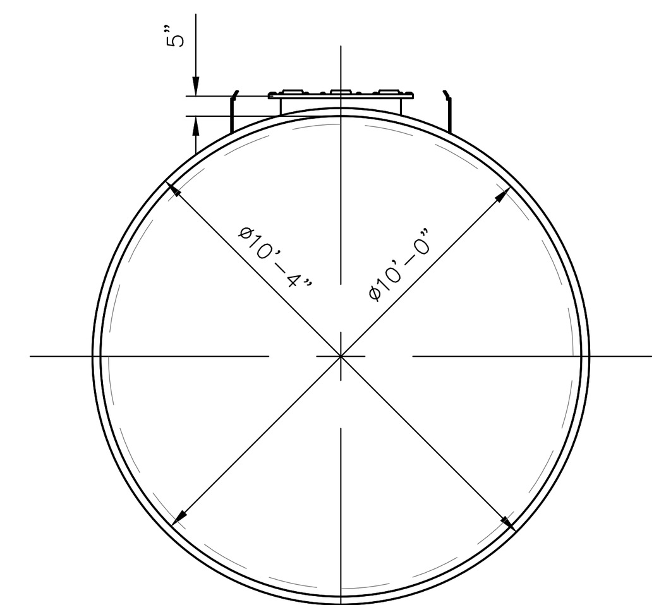
TOTAL WEIGHTS			
DOWN FORCES			
CONCRETE WEIGHT	72050.00 LBS.		
BACKFILL WEIGHT	332961.72 LBS.		
TANK WEIGHT	22300.00 LBS.		
PRODUCT WEIGHT	0.00 LBS.		
	TOTAL DOWN FORCE-----	427311.72 LBS.	
UP FORCES			
TANK DISP. FORCE	316380.06 LBS.		
	TOTAL UP FORCE-----	316380.06 LBS.	

WORKSHEET			
TANK DATA			
SHELL DIAMETER-------------	10.00 FT. *	ACTUAL CAP (GAL)	35703.00
SHELL LENGTH-----------------	55.44 FT. *	TANK WT. (LBS.)	22300.00
DOME PROJECTION-----------	5.00 FT. *	O.A.L. (FT.)	65.44
MID POINT HEIGHT-----------	8.17 FT. *	NUMBER OF RIBS	42.00
COLUMN HEIGHT--------------	13.17 FT. *	**	
RIB VOLUME---------------------	2631.00 CU. IN.	DOME A. (SQ FT)	78.54
		DOME VOL. (CU FT)	523.60

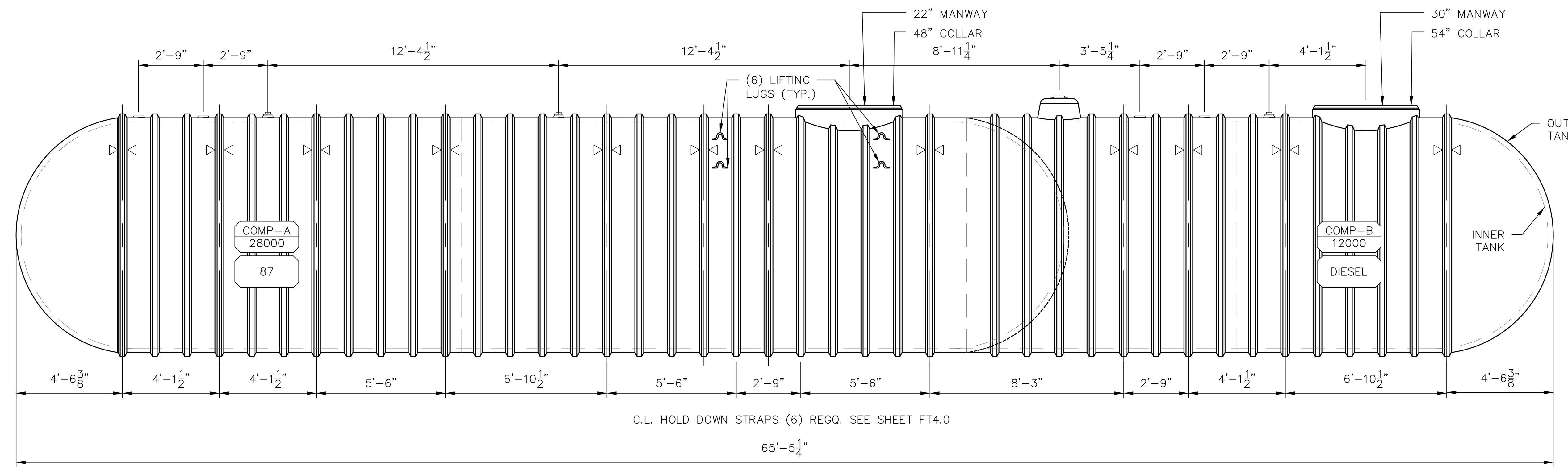
REINFORCED CONCRETE VOLUMES (CU. FT.)			
TOP SLAB-------------------	674.38	DEADMEN	144.38
FORCE = VOL. X 88 LBS/CF	59345.00	**FORCE (LBS) = VOL. X 88 LBS/CF**	12705.00
TOP SLAB & DEADMEN FORCE	72050.00 LBS.		

BACKFILL VOLUMES (CU. FT.)			
OVER TANK SHELL------------	2220.42	OVER DEADMEN	2607.00
OVER TANK DOMES---------	379.61	END WEDGE	342.33
TOTAL WET VOLUME	5549.36		
	FORCE = VOL. X 60 LBS/CF	332961.72 LBS.	

BUOYANCY			
SHELL VOLUME---------------	4484.01 CUBIC FT.		
DOME VOLUME---------------	523.60 CUBIC FT.		
RIB VOLUME------------------	63.95 CUBIC FT.		
TOTAL VOLUME	5071.56 CUBIC FT.		
VOL X 7.48 GAL/CU.FT.	37935.26 GALLONS		
	FORCE = GAL X 8.34 (LBS./GAL.)	316380.06 LBS.	



END VIEW



ELEVATION

A 36,000 GALLON XERXES DOUBLE-WALL BRINE FILLED DOUBLE COMPARTMENT TANK (24K/12K) (3 STP MANWAYS)
SCALE: ¼" = 1'-0"

TANK BUOYANCY CALCULATIONS WERE COMPLETED UNDER PEI/RP 100-17 MANUAL. BUOYANCY CALCULATIONS WERE COMPLETED WITH THE FOLLOWING FACTORS: EMPTY TANK, 4 FEET BURIAL DEPTH, TANK ANCHORING WITH XERXES SUPPLIED CONCRETE DEADMAN, 10" CONCRETE TANK PAD, AND A WATER TABLE AT FINISHED GRADE.

TANK BUOYANCY CALCULATIONS WERE PROVIDED BY XERXES

XERXES BY SHAWCOR	DEADMAN BURIAL WATER AT GRADE	Sheetz -	
TANK DATA		**INSTALLATION**	
NOM. CAP. (GAL.)	36000 (12k x 12k x 12k)	TOTAL COVER INCLUDING SOIL & TOP SLAB (FT)	4.00
TYPE (SINGLEWALL=1;DW=3)	3	TOP SLAB THICKNESS (IN)	10.00
DRY=1; WET=2	2	TOP SLAB LENGTH (FT)	67.27
NOM. TANK DIA. (FT.)	10	TOP SLAB WIDTH (FT)	12.00
**		DEADMAN LNG (FT)	66.00
PROD. STORED (GAL)	0	DEADMAN WID (IN)	18.00
SPEC. GRAV. USED	1.00	DEADMAN THK (IN)	8.75
	0		
SAFETY FACTOR		# OF 48" DIAMETER SUMPS	1
DOWN FORCE/UP FORCE =	**1.35 :1**	# OF 54" DIAMETER SUMPS	2

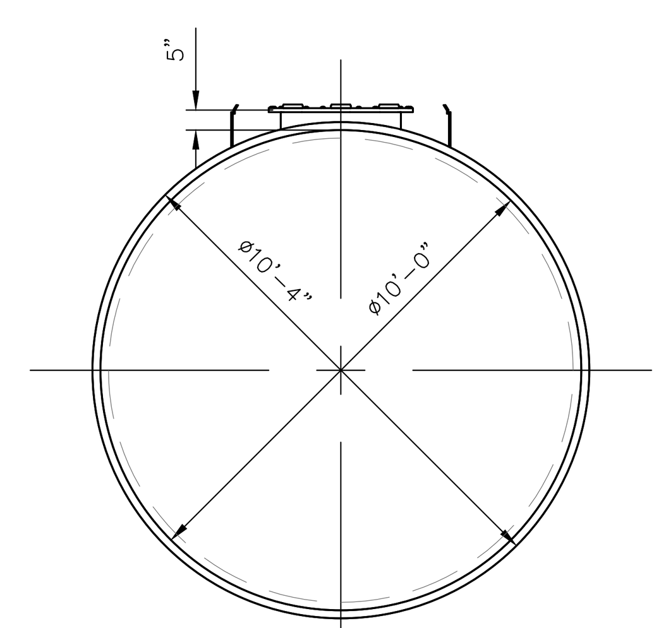
TOTAL WEIGHTS			
DOWN FORCES			
CONCRETE WEIGHT	71903.33 LBS.		
BACKFILL WEIGHT	331903.55 LBS.		
TANK WEIGHT	23700.00 LBS.		
PRODUCT WEIGHT	0.00 LBS.		
	TOTAL DOWN FORCE-----	427506.88 LBS.	
UP FORCES			
TANK DISP. FORCE	316222.86 LBS.		
	TOTAL UP FORCE-----	316222.86 LBS.	

WORKSHEET			
TANK DATA			
SHELL DIAMETER-------------	10.00 FT. *	ACTUAL CAP (GAL)	35609.00
SHELL LENGTH-----------------	55.27 FT. *	TANK WT. (LBS.)	23700.00
DOME PROJECTION-----------	5.00 FT. *	O.A.L. (FT.)	65.27
MID POINT HEIGHT-----------	8.17 FT. *	NUMBER OF RIBS	42.00
COLUMN HEIGHT--------------	13.17 FT. *	**	
RIB VOLUME---------------------	2631.00 CU. IN.	DOME A. (SQ FT)	78.54
		DOME VOL. (CU FT)	523.60

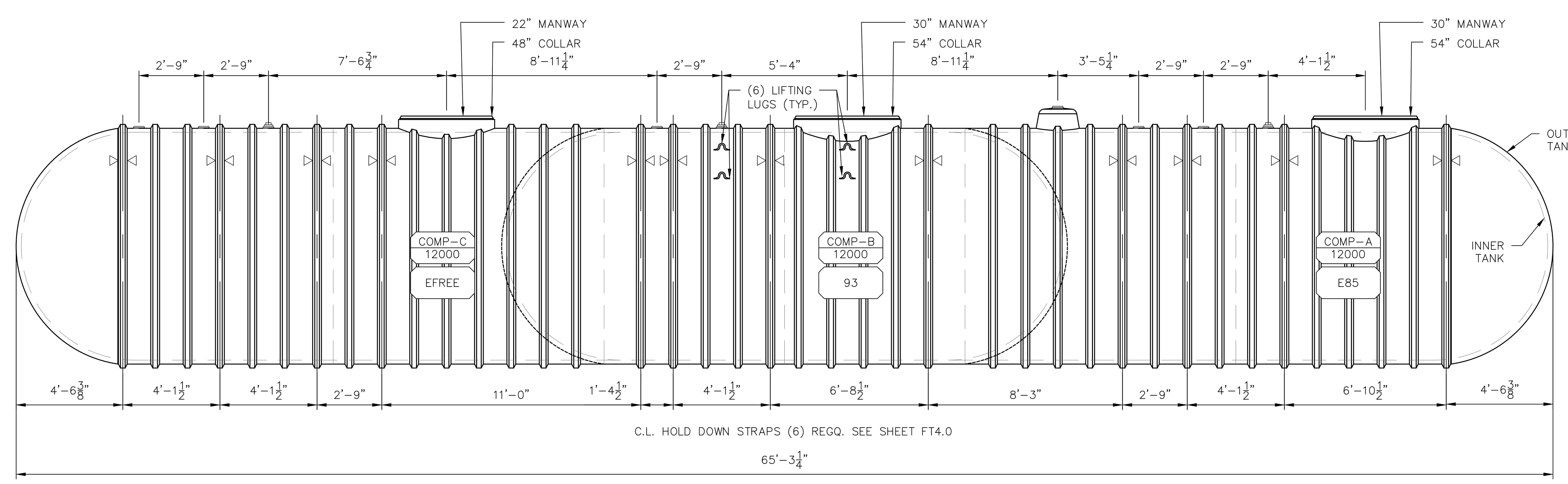
REINFORCED CONCRETE VOLUMES (CU. FT.)			
TOP SLAB-------------------	672.71	DEADMEN	144.38
FORCE = VOL. X 88 LBS/CF	59198.33	**FORCE (LBS) = VOL. X 88 LBS/CF**	12705.00
TOP SLAB & DEADMEN FORCE	71903.33 LBS.		

BACKFILL VOLUMES (CU. FT.)			
OVER TANK SHELL------------	2202.78	OVER DEADMEN	2607.00
OVER TANK DOMES---------	379.61	END WEDGE	342.33
TOTAL WET VOLUME	5531.73		
	FORCE = VOL. X 60 LBS/CF	331903.55 LBS.	

BUOYANCY			
SHELL VOLUME---------------	4481.49 CUBIC FT.		
DOME VOLUME---------------	523.60 CUBIC FT.		
RIB VOLUME------------------	63.95 CUBIC FT.		
TOTAL VOLUME	5069.04 CUBIC FT.		
VOL X 7.48 GAL/CU.FT.	37916.41 GALLONS		
	FORCE = GAL X 8.34 (LBS./GAL.)	316222.86 LBS.	



END VIEW



ELEVATION

B 36,000 GALLON XERXES DOUBLE-WALL BRINE FILLED TRIPLE COMPARTMENT TANK (12K/12K/12K) (3 STP MANWAYS)
SCALE: ¼" = 1'-0"

TANK BUOYANCY CALCULATIONS WERE COMPLETED UNDER PEI/RP 100-17 MANUAL. BUOYANCY CALCULATIONS WERE COMPLETED WITH THE FOLLOWING FACTORS: EMPTY TANK, 4 FEET BURIAL DEPTH, TANK ANCHORING WITH XERXES SUPPLIED CONCRETE DEADMAN, 10" CONCRETE TANK PAD, AND A WATER TABLE AT FINISHED GRADE.

TANK BUOYANCY CALCULATIONS WERE PROVIDED BY XERXES

ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 051765

CONSULTANT: Engineers • Planners • Surveyors — Weiler Corporation

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

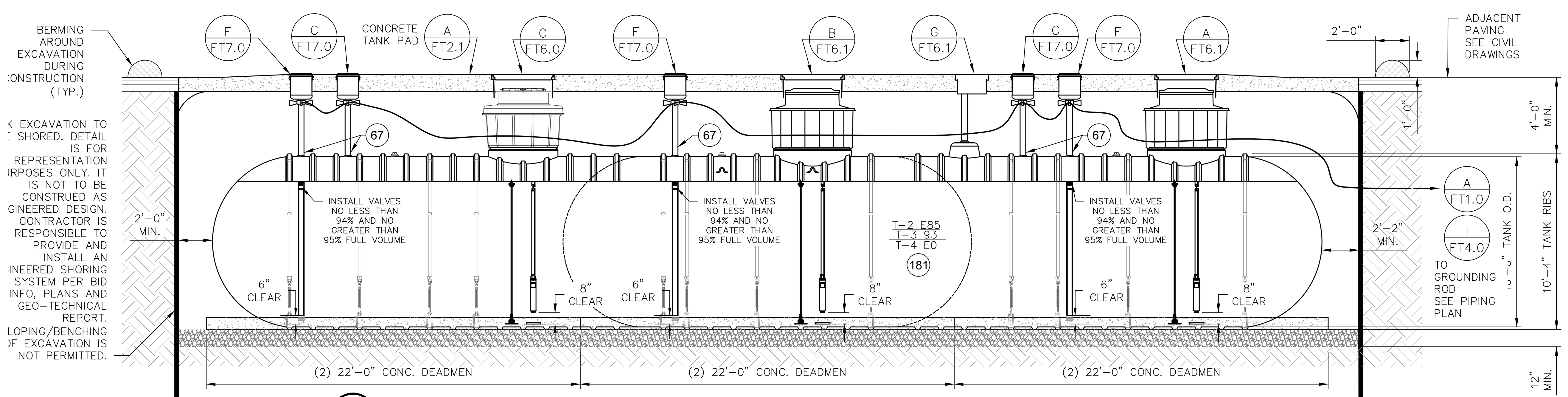
SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
(814) 946-3611

TANK LAYOUT DETAILS

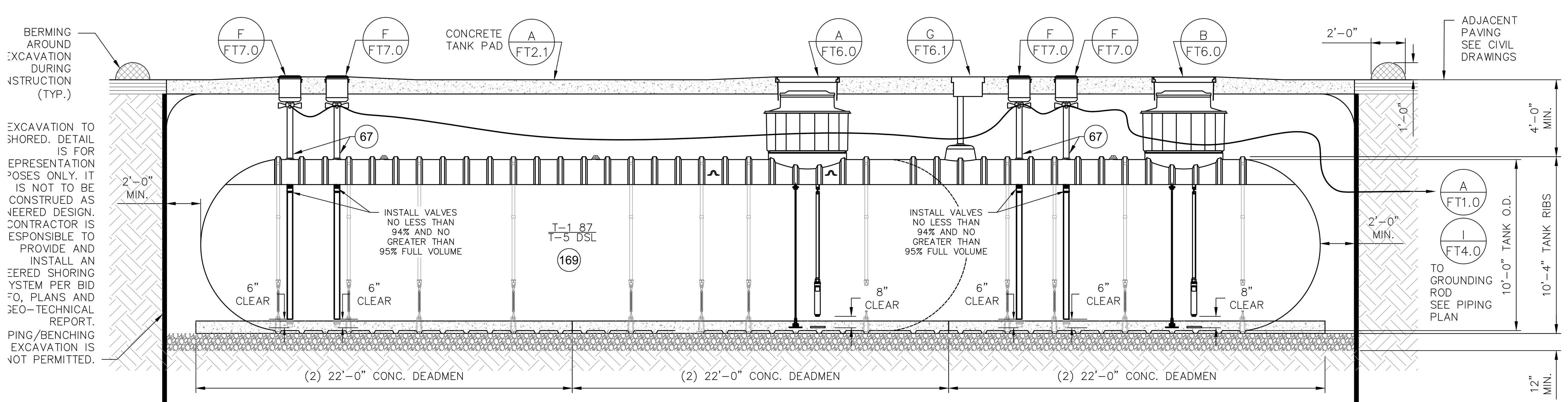
SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	¼" = 1'-0"
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

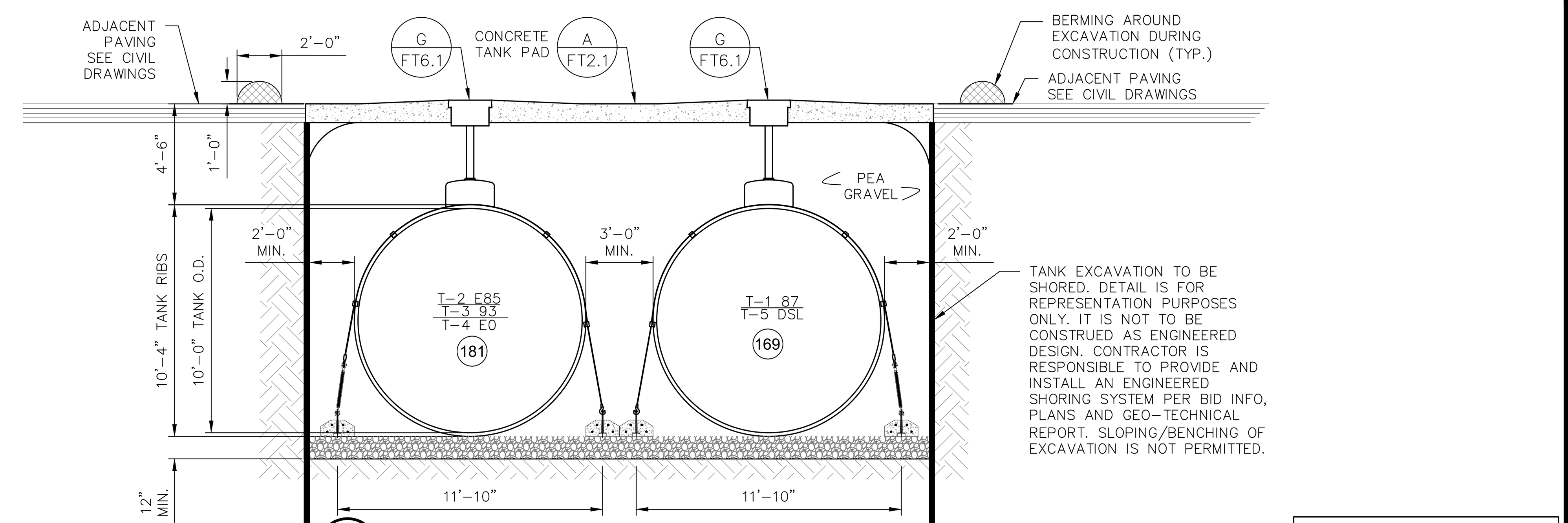
FT3.0



A TYPICAL XERXES 36,000 GAL. (24K/12K) DOUBLE COMPARTMENT TANK INSTALLATION
SCALE: 3/16" = 1'-0"



B TYPICAL XERXES 36,000 GAL. (12K/12K/12K) TRIPLE COMPARTMENT TANK INSTALLATION
SCALE: 3/16" = 1'-0"



D TYPICAL SECTION AT XERXES 36K COMPARTMENT TANKS
SCALE: 3/16" = 1'-0"

TANK BACKFILL AND COMPACTION NOTES:

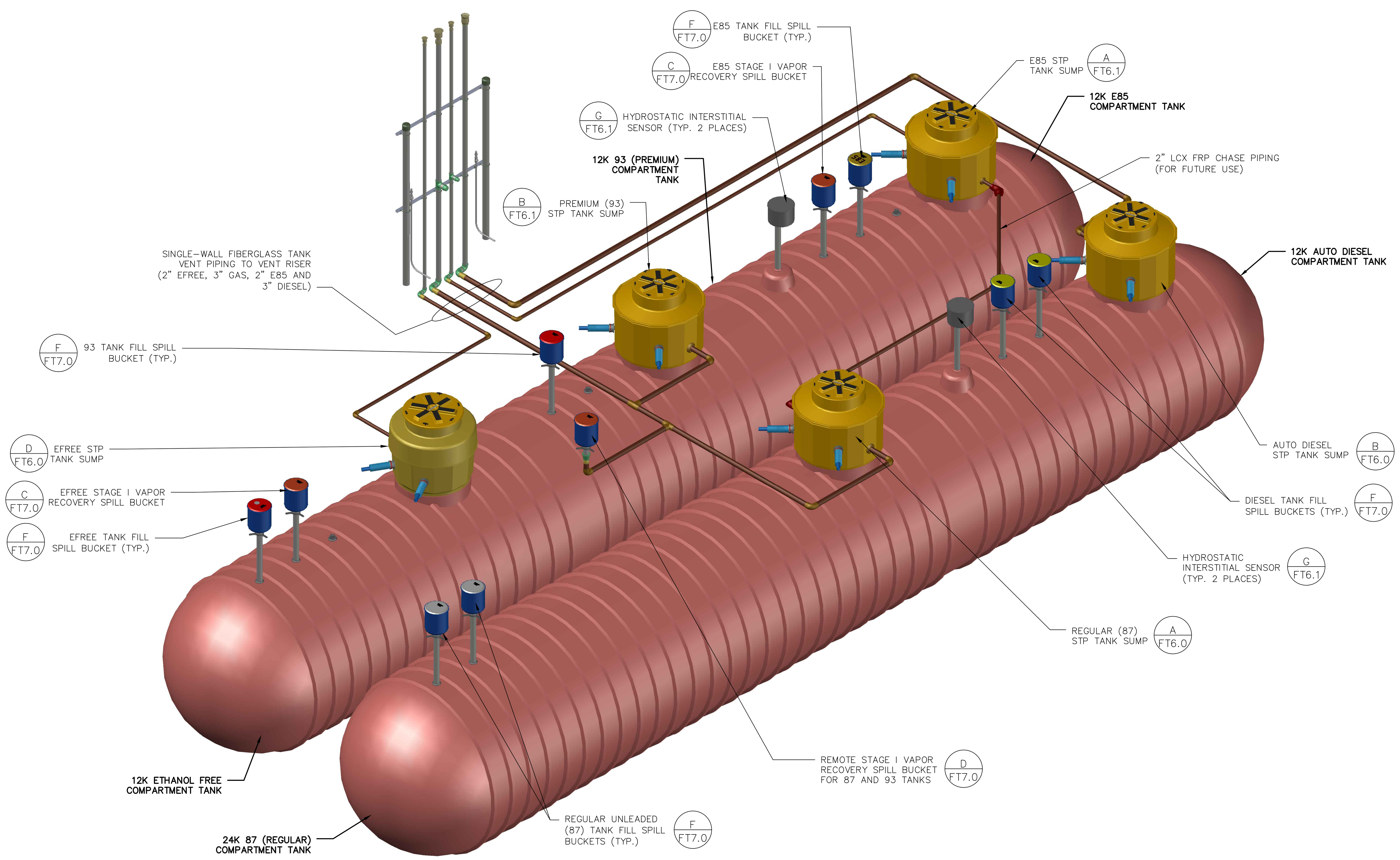
1. THE BOTTOM OF THE EXCAVATION SHALL BE COVERED WITH A MINIMUM OF 12 INCHES (305 MM) OF BEDDING, SUITABLY GRADED AND LEVELED. BEDDING AND BACKFILL MATERIAL SURROUNDING THE TANK, TO A WIDTH AND DEPTH OF 12 INCHES (305 MM) ALL AROUND THE TANK, SHALL BE CLEAN MATERIAL.
2. BEDDING AND BACKFILL MATERIAL SHALL CONSIST OF HOMOGENOUS PEA GRAVEL OR CRUSHED STONE, CRUSHED STONE SHALL BE CAPABLE OF PASSING 100% THROUGH A 1/2 INCH (13 MM) SIEVE AND NO MORE THAN 12% BY DRY WEIGHT THROUGH A #200 SIEVE (0.0029 INCH (0.0754 MM)). PEA GRAVEL SHALL BE NO LARGER THAN 3/4-INCH (19 MM). THE MATERIALS SHALL BE FREE OF ALL FOREIGN MATERIALS; SUCH AS BUT LIMITED TO: BRICKS, METALS, CONCRETE AND PLASTICS.
3. HOMOGENEOUS BACKFILL MATERIAL SIMILAR TO THE BEDDING MATERIAL SHALL BE CAREFULLY PLACED AROUND THE ENTIRE TANK TO CREATE A UNIFORM HOMOGENEOUS ENVIRONMENT. AVOID DAMAGE TO CLADDING ESPECIALLY WHERE TAMPING IS REQUIRED.
4. INSTALLING AND TAMPERING BACKFILL ALONG THE BOTTOM SIDES OF THE TANK SHALL ENSURE THAT THE TANK IS FULLY AND EVENLY SUPPORTED AROUND THE BOTTOM QUADRANT.
5. HOMOGENOUS BACKFILL SHALL BE DEPOSITED CAREFULLY AROUND THE TANK AND TO A DEPTH OF AT LEAST TWO FEET.
6. BACKFILL SHALL BE COMPACTED TO 98% RELATIVE DENSITY.

TANK EXCAVATION SHORING NOTES:

1. TANK HOLE EXCAVATION IS TO BE SHORING.
2. TANK SHORING SHOWN IS FOR REPRESENTATION PURPOSES ONLY AND IS NOT TO BE CONSTRUED AS DESIGN.
3. CONTRACTOR IS RESPONSIBLE TO OBTAIN AND PROVIDE AND INSTALL AN ENGINEERED SHORING SYSTEM PER BID INFO, PLANS AND GEO-TECHNICAL REPORT.
4. SLOPING / BENCHING OF EXCAVATION IS NOT PERMITTED.

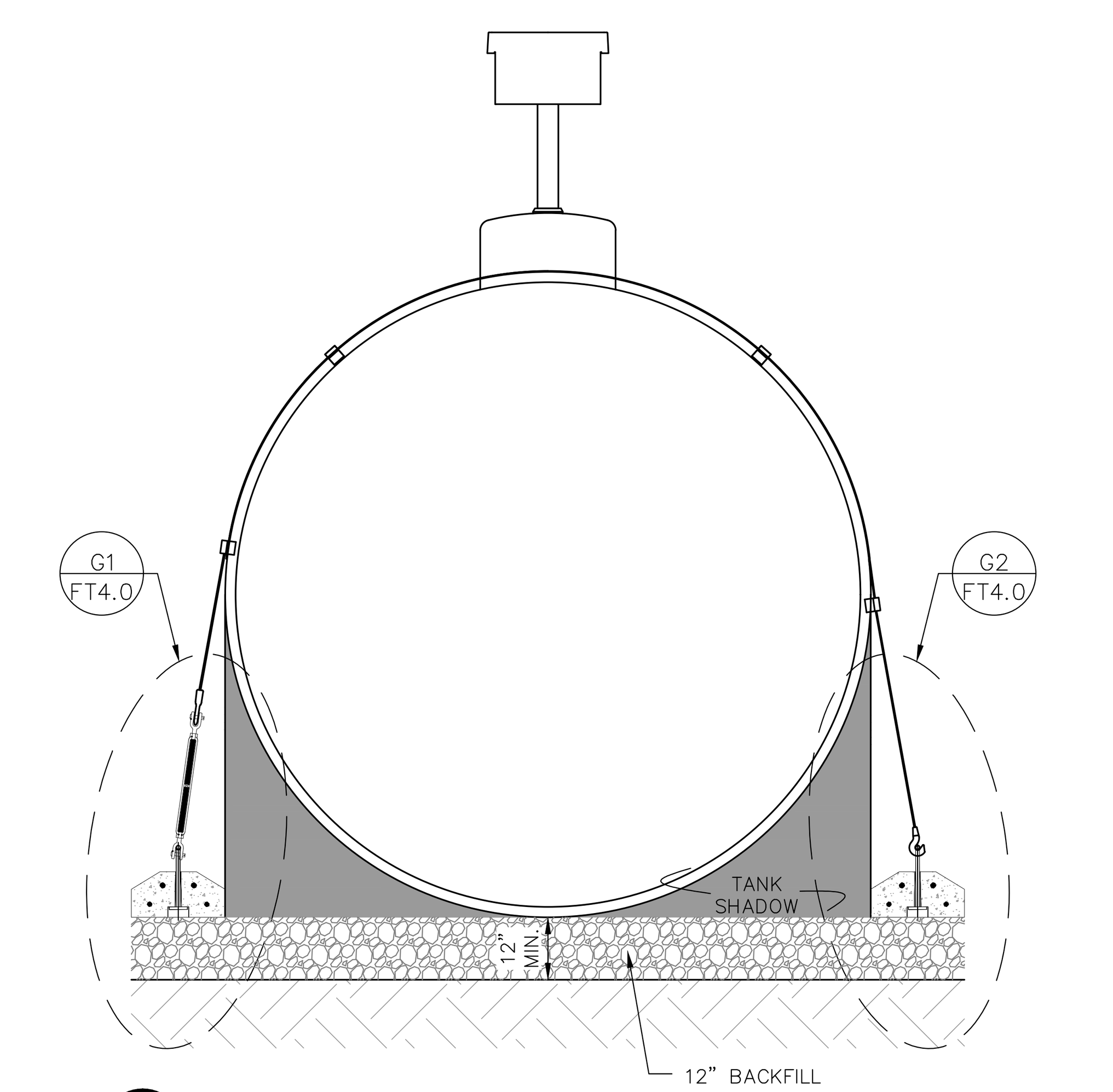
TANK ANCHORING NOTES:

1. WHEN WORKING BELOW GRADE, EXTREME CARE MUST BE TAKEN TO ASSURE WORKMEN SAFETY. SLOPING AND SHORING SHALL COMPLY WITH OSHA CONSTRUCTION INDUSTRY STANDARDS 29 CFR PART 1926 SUBPART P, OSHA STANDARDS-EXCAVATIONS; FINAL RULE OCT. 1, 89. HARD-HATS SHALL BE WORN BY ALL WORKMEN OPERATING IN EXCAVATING OR WHERE OVERHEAD WORK IS IN PROGRESS.
2. TANK ANCHORING IS REQUIRED FOR ALL PROJECTS.
3. ALL DEADMEN MUST BE INSTALLED PLUMB, LEVEL AND PARALLEL TO THEIR RESPECTIVE TANK.
4. STRAPS TO BE LOCATED AS INDICATED ON THE DRAWINGS.
5. CONNECT ALL SLINGS TO STRAPS WITH TURNBUCKLES, THEN TIGHTEN UNIFORMLY WITH OTHER STRAPS. STRAPS SHOULD BE SNUG BUT CAUSE NO DEFLECTIONS. DEFLECTION CAN BE DETECTED BY CHECKING TANK'S DIAMETER WITH GAUGE STICK BEFORE AND AFTER SNUGGING STRAPS.
6. BALLAST TANKS WITH CLEAN, POTABLE WATER CAPACITY.
7. ANCHOR STRAPS AND DEADMEN ANCHORS ARE SUPPLIED BY TANK MANUFACTURER.
8. PLACE DEADMEN WITH BOTTOM OF DEADMAN FLUSH WITH THE BOTTOM OF TANK.
9. DEADMEN MUST BE POSITIONED SO EDGES OF THE DEADMEN ARE ALIGNED WITH THE TANK SHADOW. (DEADMEN MUST BE POSITIONED OUTSIDE THE TANK SHADOW.)
10. REFER TO DEADMEN ANCHORS AND TURNBUCKLES INSTALLATION AND SPECIFICATION MANUAL.

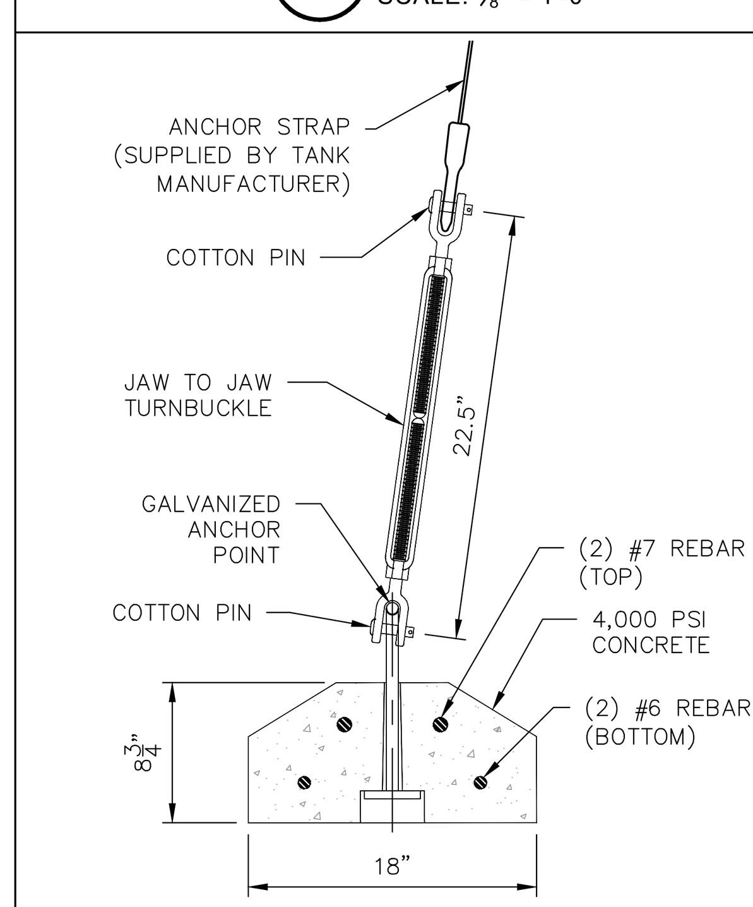


E TYPICAL XERXES 36K COMPARTMENT TANKS 3D ISOMETRIC VIEW
SCALE: 1/4" = 1'-0"

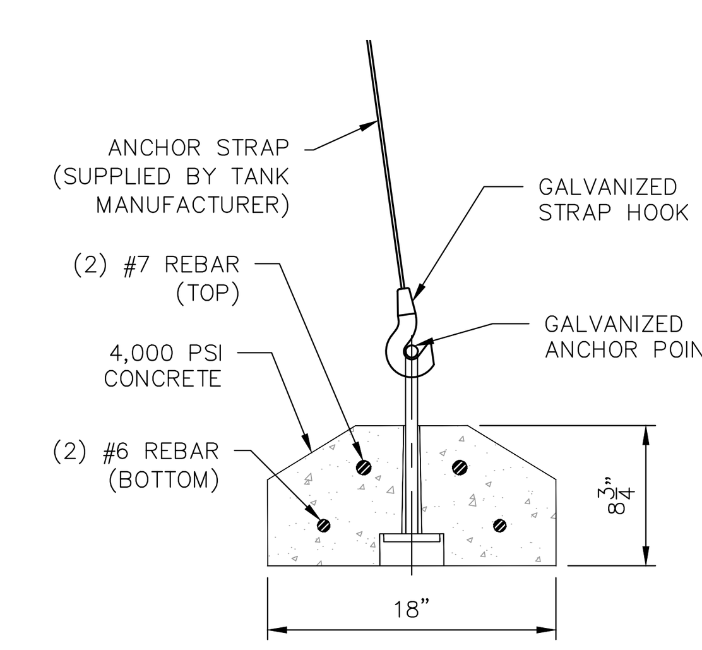
(PRODUCT PIPING NOT SHOWN FOR CLARITY)



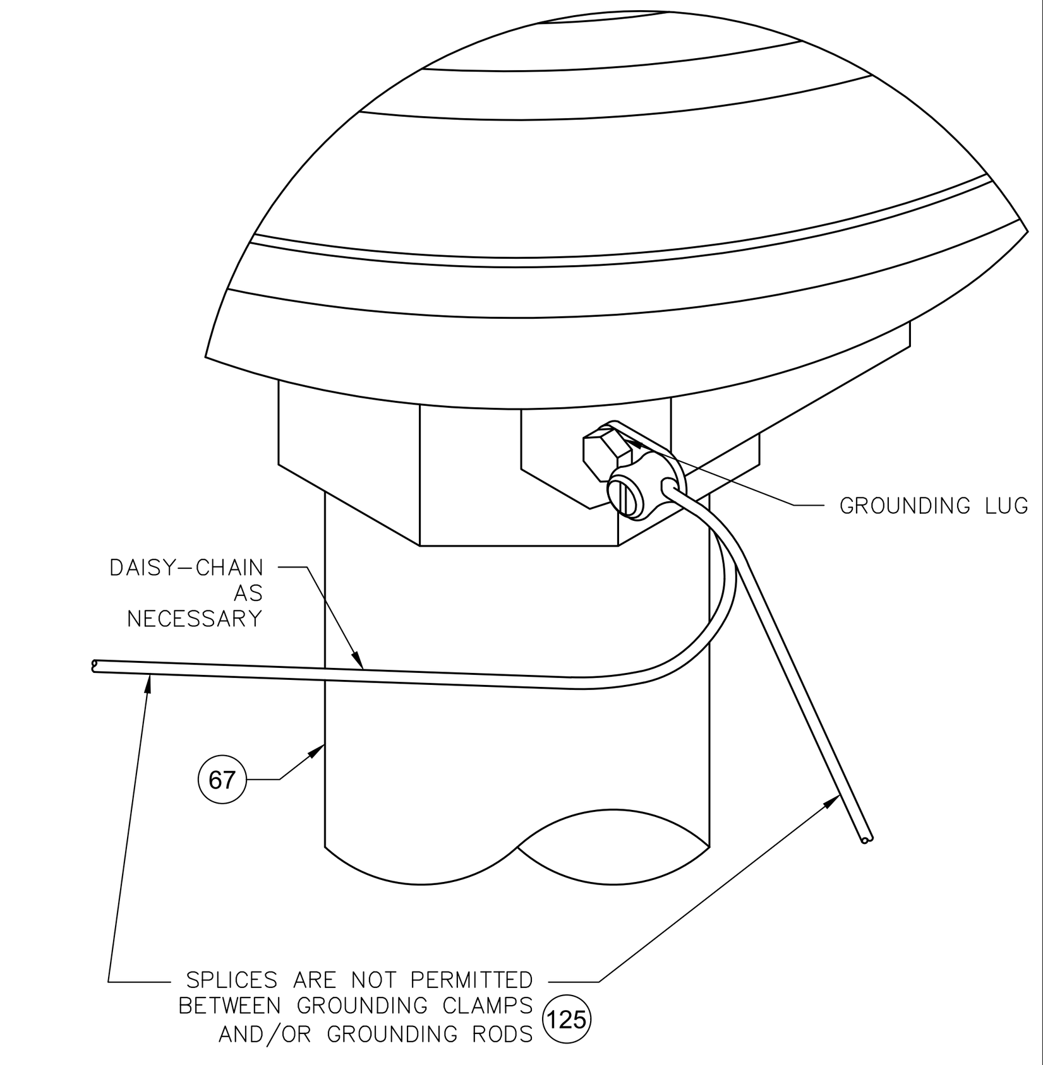
F TYPICAL TANK END SECTION VIEW
SCALE: 3/8" = 1'-0"



G1 TYPICAL DEADMAN TURNBUCKLE DETAIL
SCALE: 1" = 1'-0"

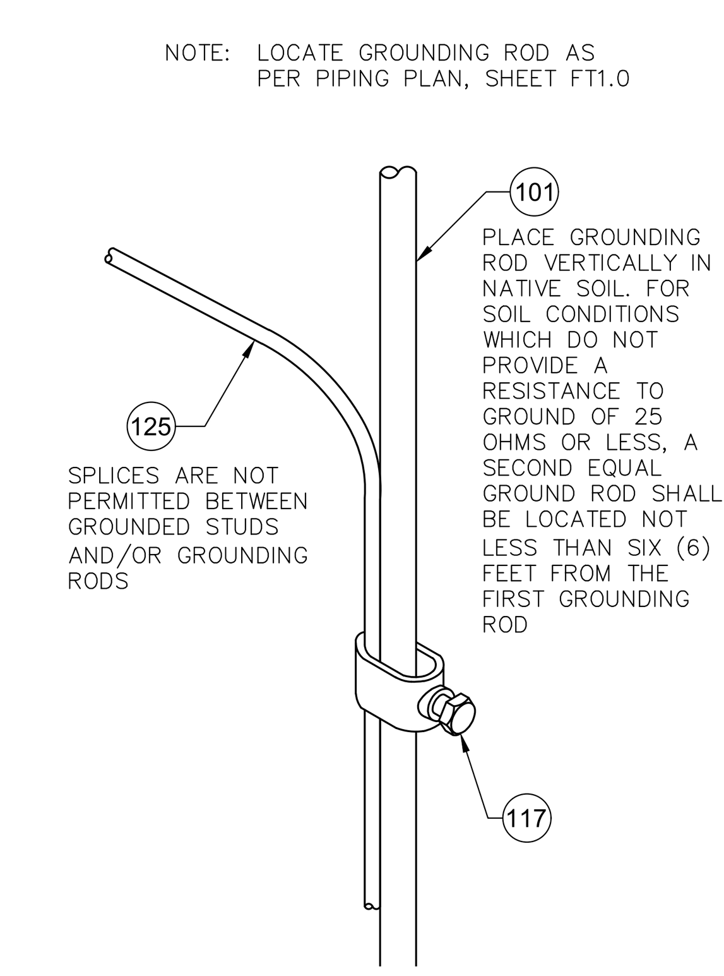


G2 TYPICAL DEADMAN STRAP HOOK DETAIL
SCALE: 1" = 1'-0"



H GROUNDING AT SPILL BUCKET DETAIL
SCALE: 6" = 1'-0"

NOTE: LOCATE GROUNDING ROD AS PER PIPING PLAN, SHEET FT1.0



I TYPICAL GROUNDING ROD DETAIL
SCALE: 3" = 1'-0"

ISSUED FOR			
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03-01-21	JW	ISSUED FOR OWNER REVIEW	
03-05-21	JW	ISSUED FOR PERMIT	

SEAL:

CONSULTANT:

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5136 Beach Road • Medina, Ohio 44256
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TANK INSTALLATION DETAILS

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	NOTED
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
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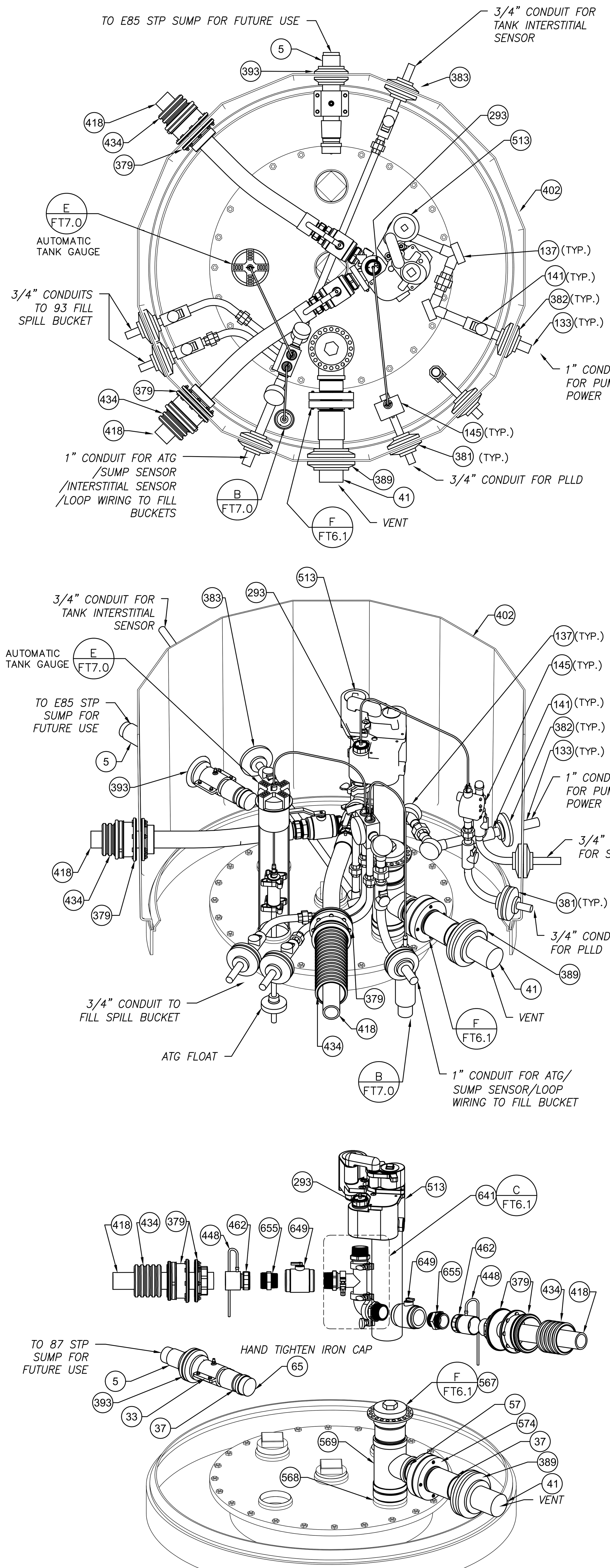
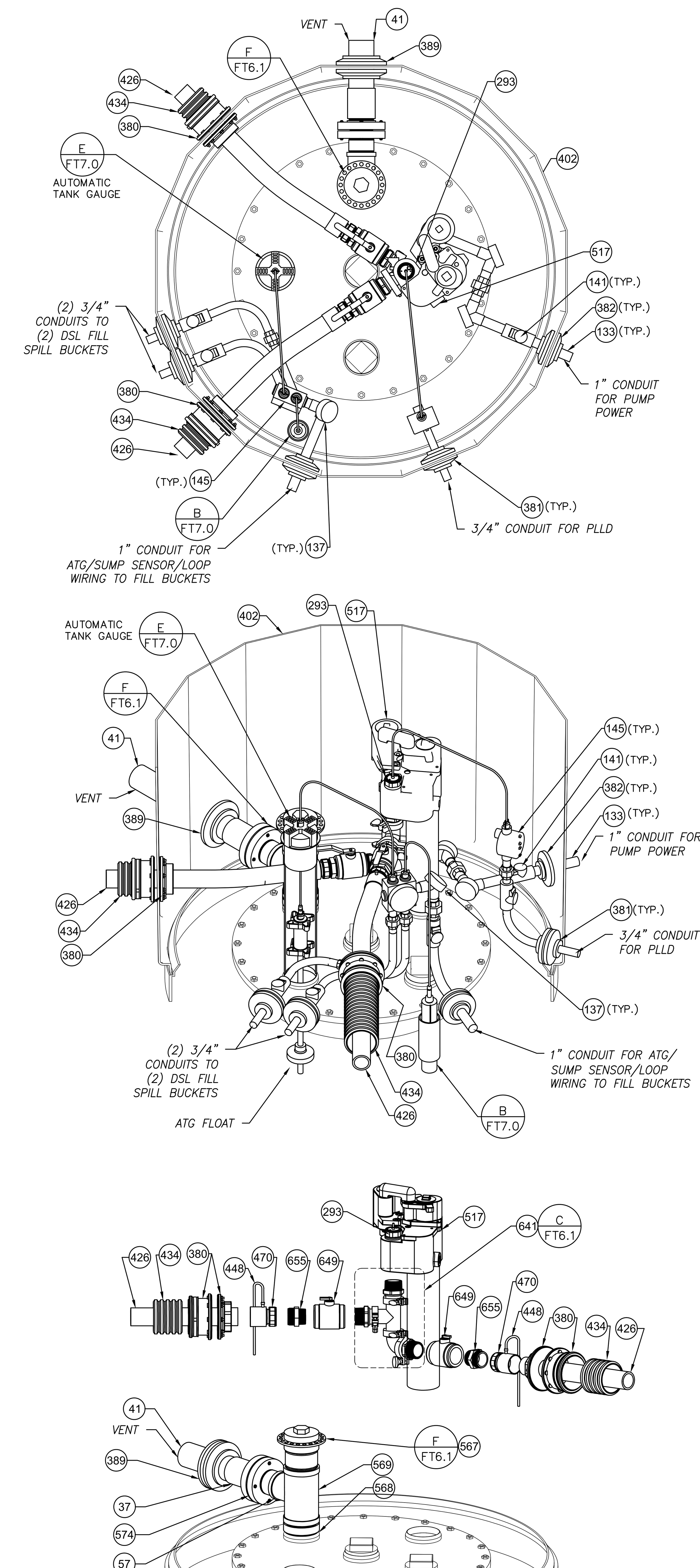
FT4.0



NOTES:

- THE STP SUMP DETAILS ARE FOR REFERENCE ONLY. REFER TO SHEETS FT1.0 AND FT3.0 FOR SITE SPECIFIC DETAILS.
- THE ROTATION OF THE ASSEMBLY SHOWN MAY VARY DEPENDING ON THE PLACEMENT OF THE TANKS RELATIVE TO THE DISPENSERS.
- TANK GAUGE AND ELECTRICAL ITEMS OMITTED FROM THE EXPLODED VIEW FOR CLARITY.
- *DOUBLE WALL VENT PIPING WHERE APPLICABLE

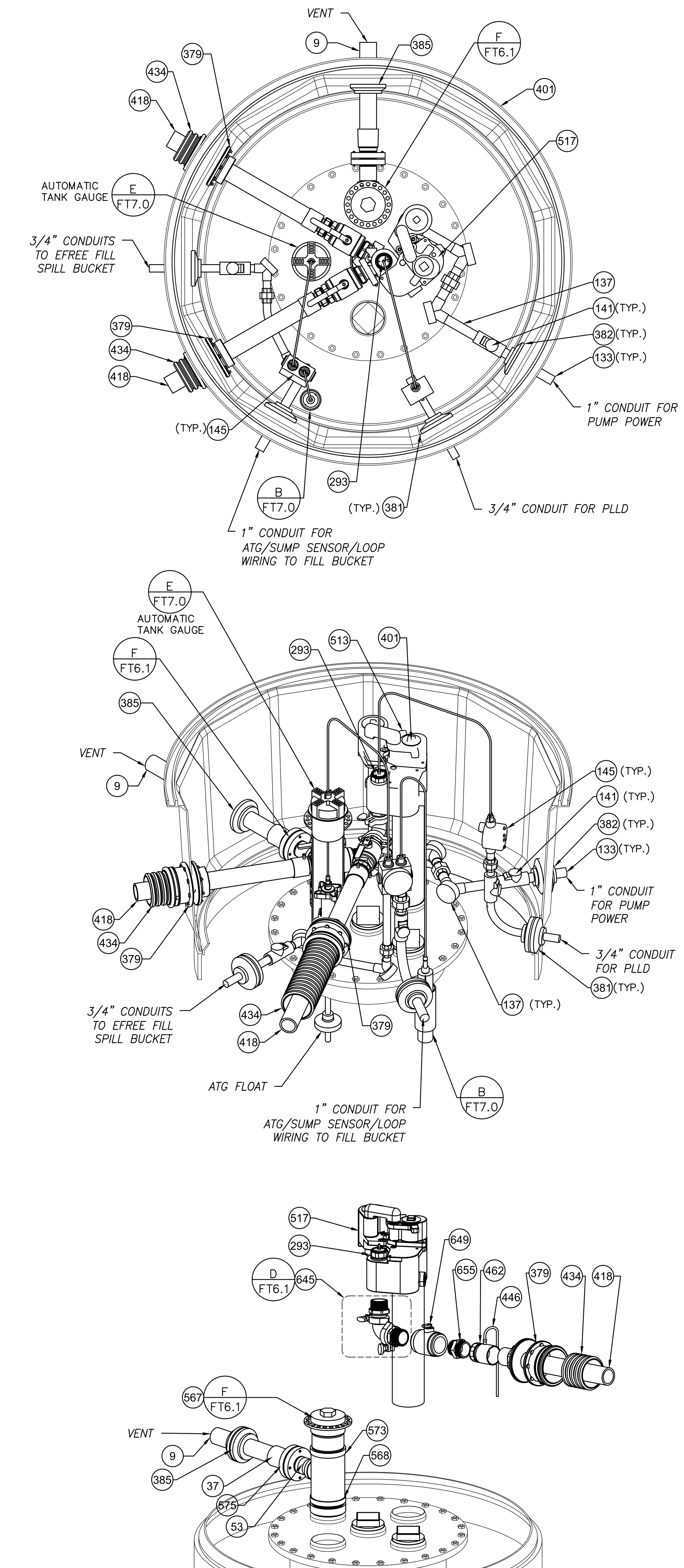
A TYPICAL REGULAR (87) TANK STP SUMP
SCALE: 1" = 1'-0"



NOTES:

- THE STP SUMP DETAILS ARE FOR REFERENCE ONLY. REFER TO SHEETS FT1.0 AND FT3.0 FOR SITE SPECIFIC DETAILS.
- THE ROTATION OF THE ASSEMBLY SHOWN MAY VARY DEPENDING ON THE PLACEMENT OF THE TANKS RELATIVE TO THE DISPENSERS.
- TANK GAUGE AND ELECTRICAL ITEMS OMITTED FROM THE EXPLODED VIEW FOR CLARITY.
- *DOUBLE WALL VENT PIPING WHERE APPLICABLE
- SEE FT3.0 FOR EQUIPMENT LOCATIONS

B TYPICAL AUTO-DIESEL TANK STP SUMP
SCALE: 1" = 1'-0"



NOTES:

- THE STP SUMP DETAILS ARE FOR REFERENCE ONLY. REFER TO SHEETS FT1.0 AND FT3.0 FOR SITE SPECIFIC DETAILS.
- THE ROTATION OF THE ASSEMBLY SHOWN MAY VARY DEPENDING ON THE PLACEMENT OF THE TANKS RELATIVE TO THE DISPENSERS.
- TANK GAUGE AND ELECTRICAL ITEMS OMITTED FROM THE EXPLODED VIEW FOR CLARITY.
- SEE FT3.0 FOR EQUIPMENT LOCATIONS

C TYPICAL EFREE TANK STP SUMP
SCALE: 1" = 1'-0"

ISSUED FOR

DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 051765 ENGINEER

CONSULTANT:
Engineers • Planners • Surveyors
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CONVENIENCE ARCHITECTURE AND DESIGN P.C.
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TANK SUMP DETAILS

SHEETZ INC. #716
"SAWYER"
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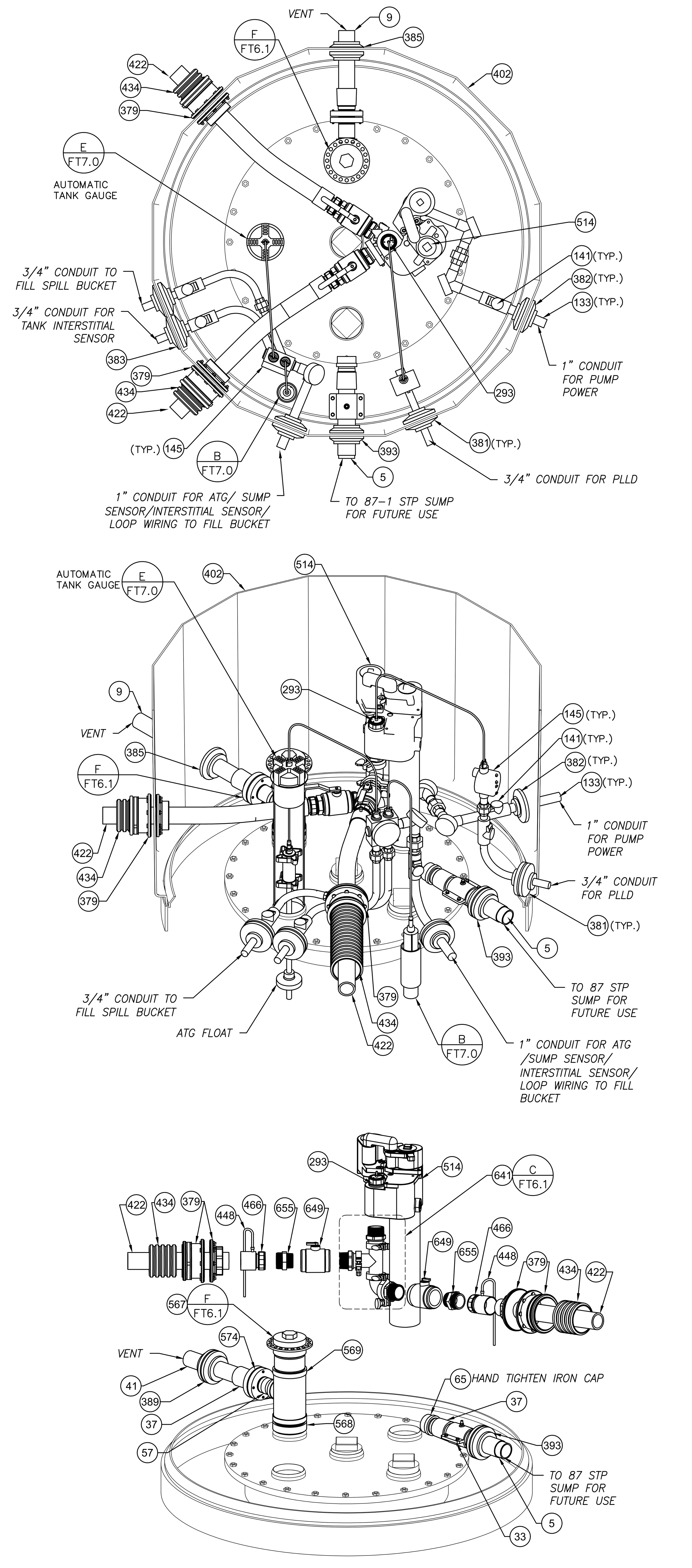
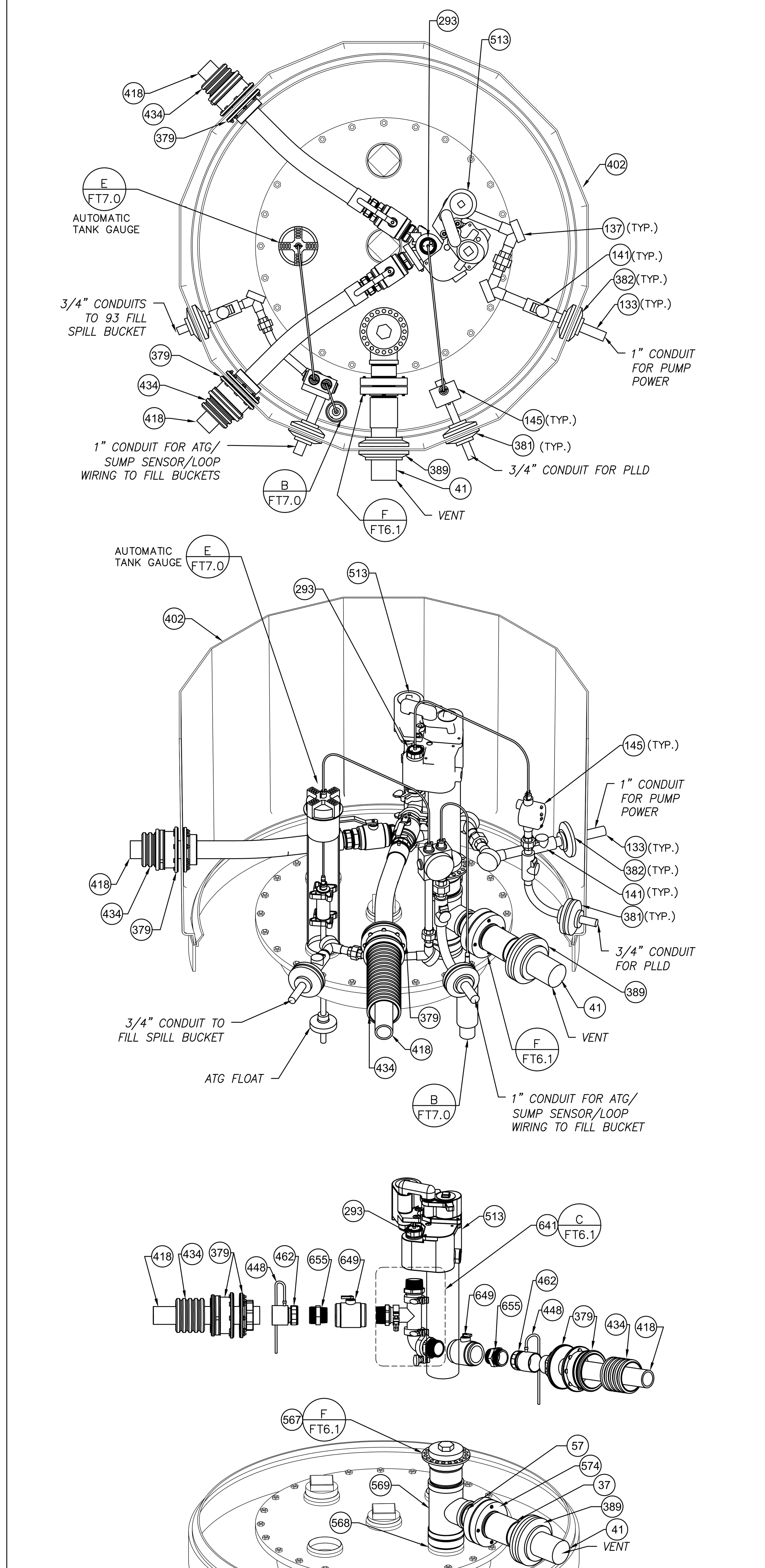
HARNETT COUNTY

SCALE:	NOTED
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FT6.0



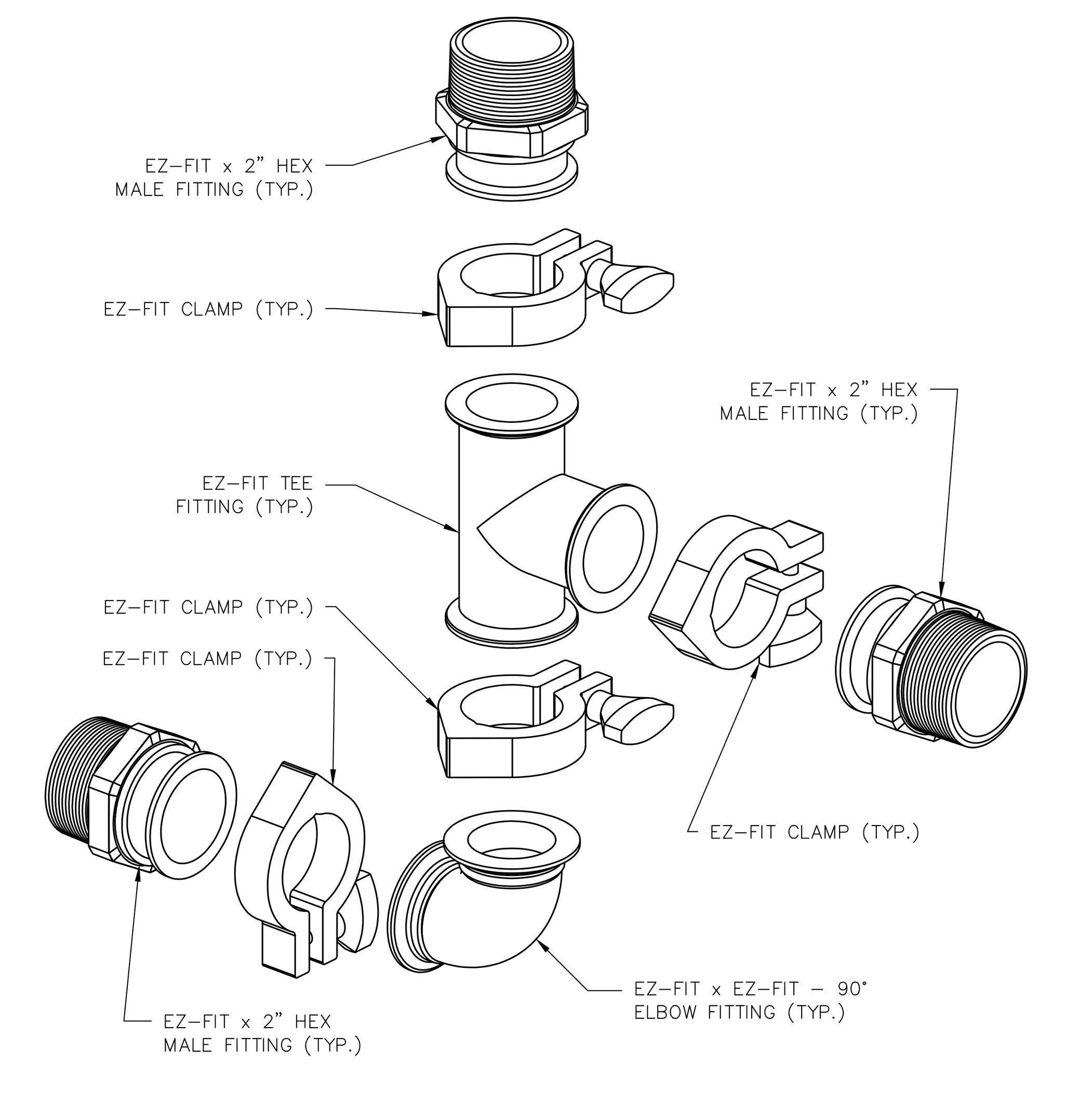
A TYPICAL E-85 TANK STP SUMP
SCALE: 1" = 1'-0"



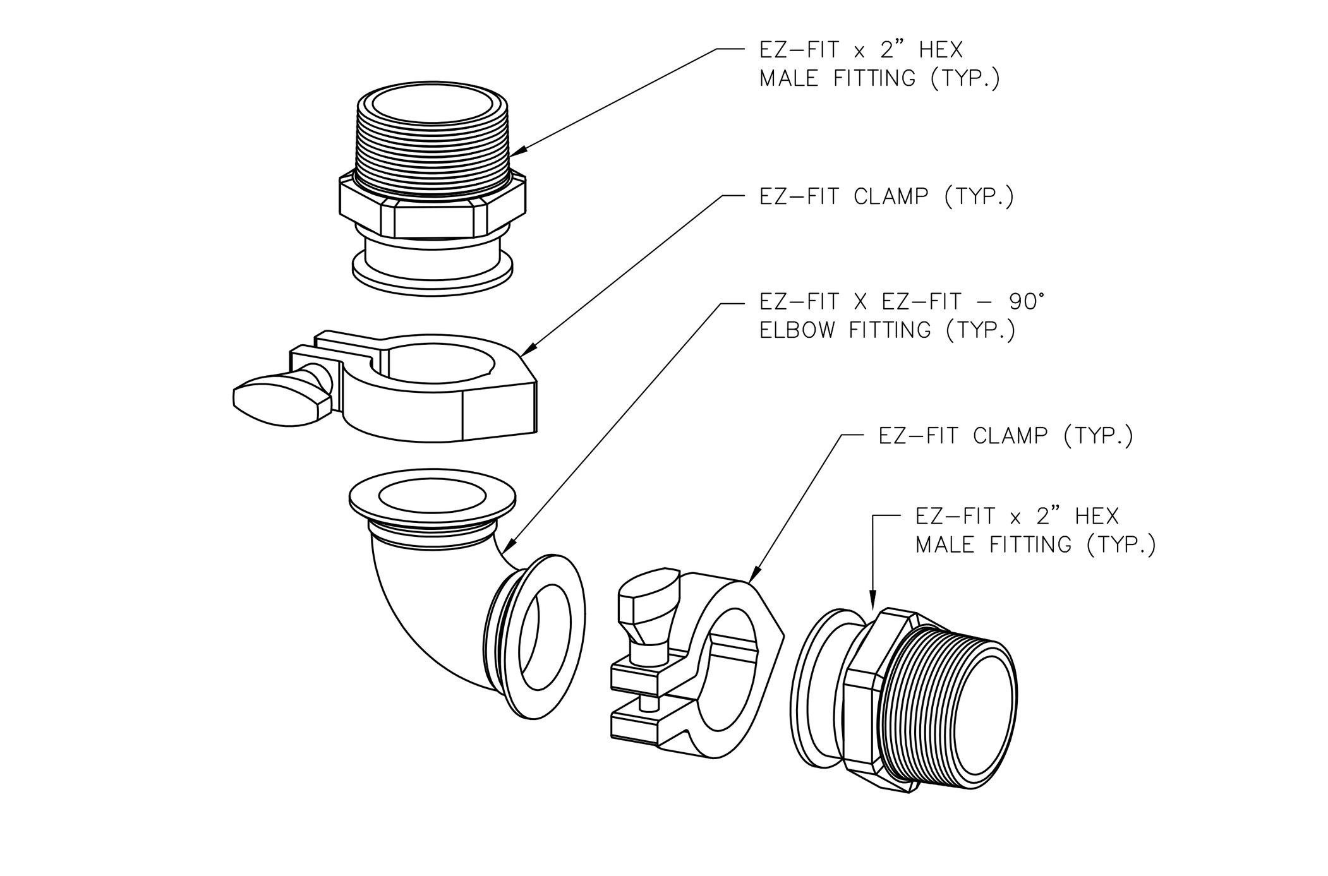
NOTES:

- THE STP SUMP DETAILS ARE FOR REFERENCE ONLY. REFER TO SHEETS FT1.0 AND FT3.0 FOR SITE SPECIFIC DETAILS.
- THE ROTATION OF THE ASSEMBLY SHOWN MAY VARY DEPENDING ON THE PLACEMENT OF THE TANKS RELATIVE TO THE DISPENSERS.
- TANK GAUGE AND ELECTRICAL ITEMS OMITTED FROM THE EXPLODED VIEW FOR CLARITY.
- *DOUBLE WALL VENT PIPING WHERE APPLICABLE

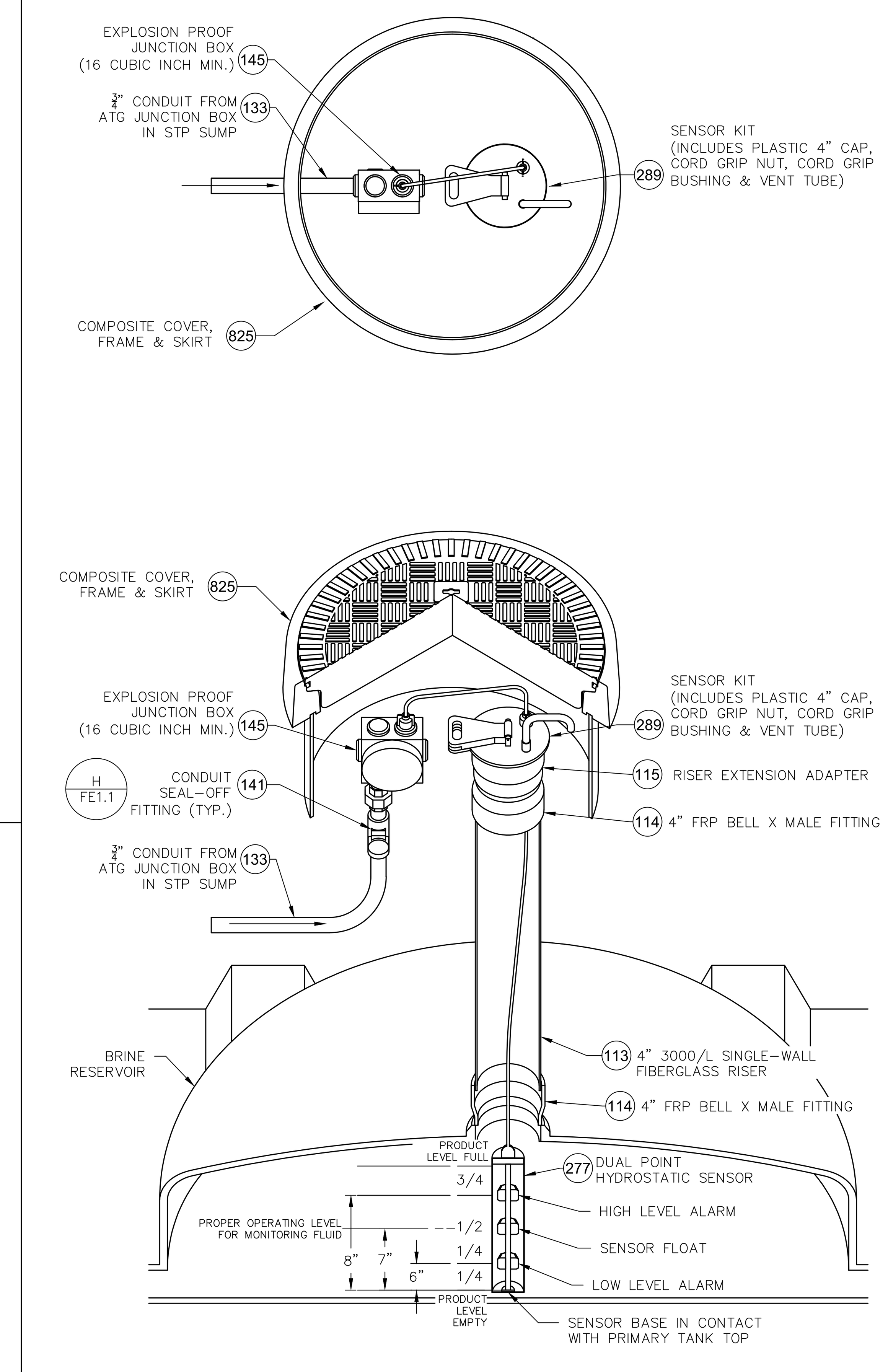
B TYPICAL PREMIUM (93) TANK STP SUMP
SCALE: 1" = 1'-0"



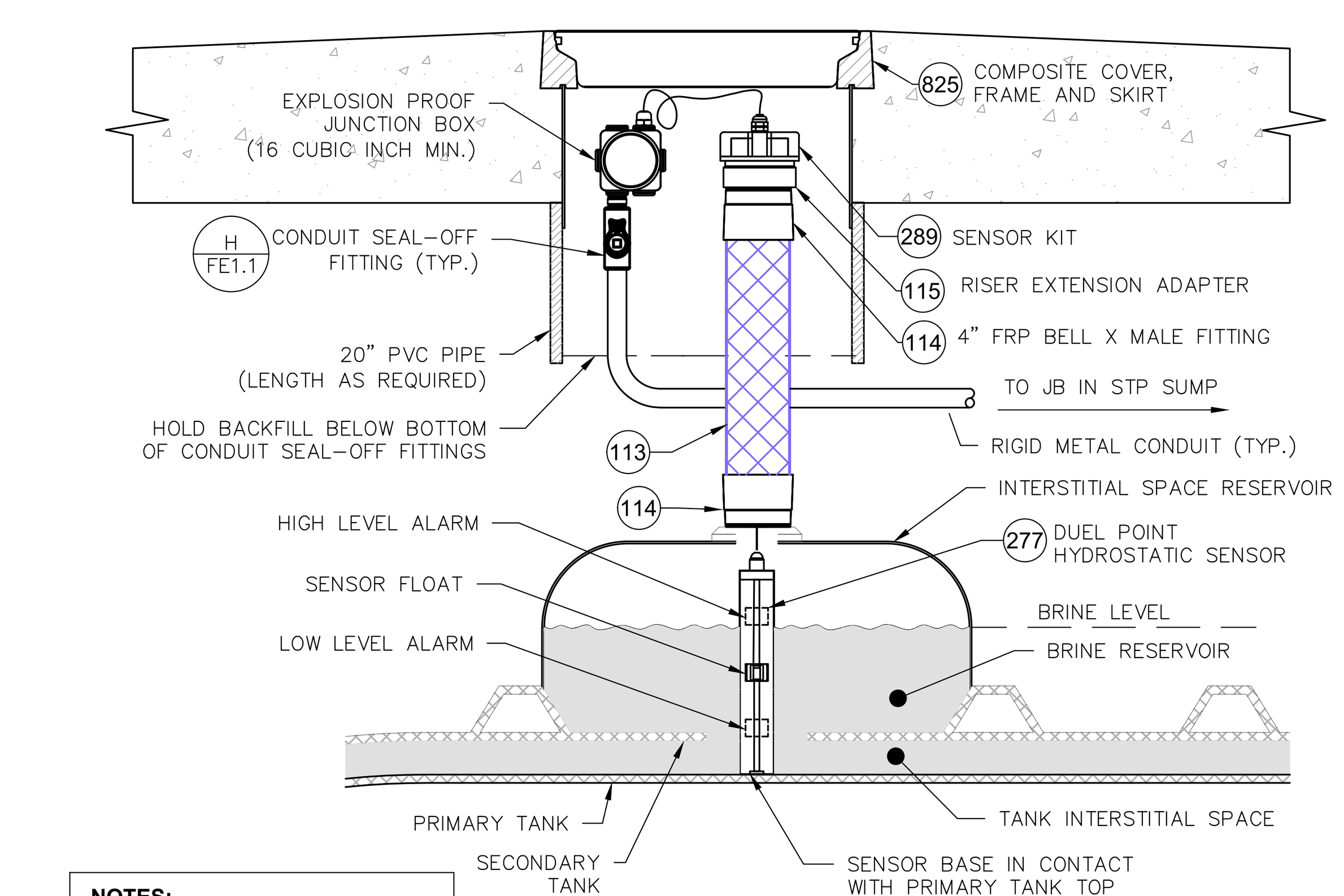
C ITEM #641: FLEX-ING EZ-FIT SHORT TEE & ELBOW ASSEMBLY W/COUPLINGS EXPLODED ASSEMBLY
SCALE: NOT TO SCALE



D ITEM #645: FLEX-ING EZ-FIT SHORT ELBOW W/ COUPLING EXPLODED ASSEMBLY
SCALE: NOT TO SCALE



G1 TYPICAL INTERSTITIAL SENSOR RISER, COVER & SKIRT
SCALE: NOT TO SCALE

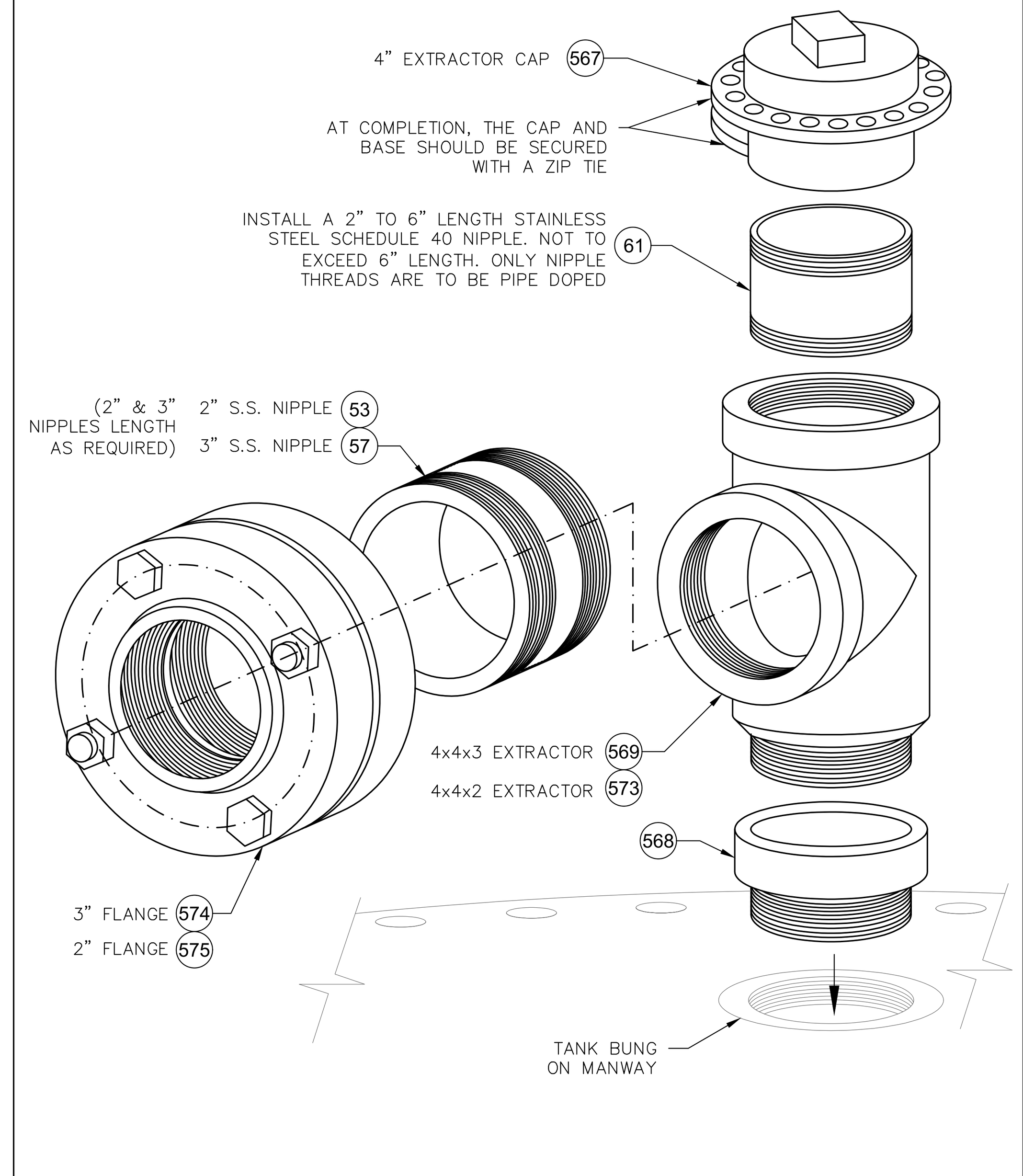


NOTES:
1. UST INSTALLER IS RESPONSIBLE TO OVERFILL BRINE RESERVOIR AND RISER FOR PRE-BURY INSPECTION.
2. UST INSTALLER IS RESPONSIBLE TO SET BRINE LEVEL PER UST MANUFACTURER'S REQUIREMENTS PRIOR TO FINAL PRECISION TESTING.

TANK DIAMETER	RESERVOIR FLUID LEVEL MEASUREMENT		
	TANK LEVEL EMPTY - 1/4 FULL	TANK LEVEL 1/4 - 1/2 FULL	TANK LEVEL 3/4 - FULL
10'	6"	7"	8"

THIS INFORMATION WAS OBTAINED FROM THE XERXES INSTALLATION MANUAL AND OPERATIONS GUIDE IMOG DATED 4/1/18 ON PAGES 26 AND 27

G2 TYPICAL INTERSTITIAL BRINE LEVEL & SENSOR DETAIL
SCALE: NOT TO SCALE



F TYPICAL TANK VENT EXTRACTOR ASSEMBLY AT TANK MANWWAY
SCALE: NOT TO SCALE

ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 051765

CONSULTANT:
Engineers • Planners • Surveyors
Wellert Corporation
5136 Beach Road • Medina, Ohio 44256
t: 330.239.2699 • f:330.239.0272

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

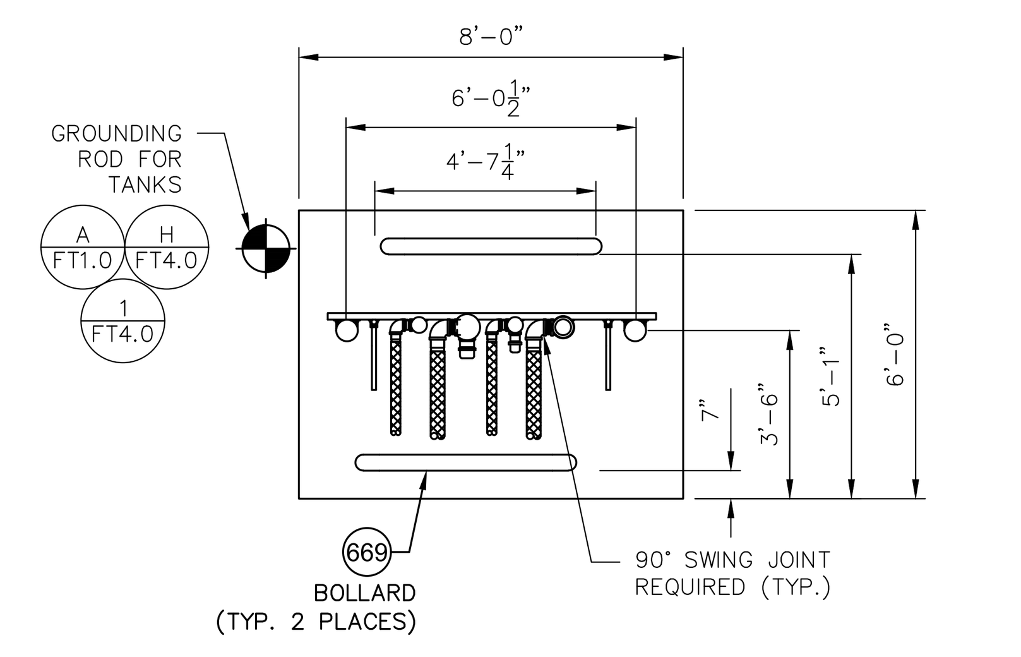
TANK SUMP DETAILS

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

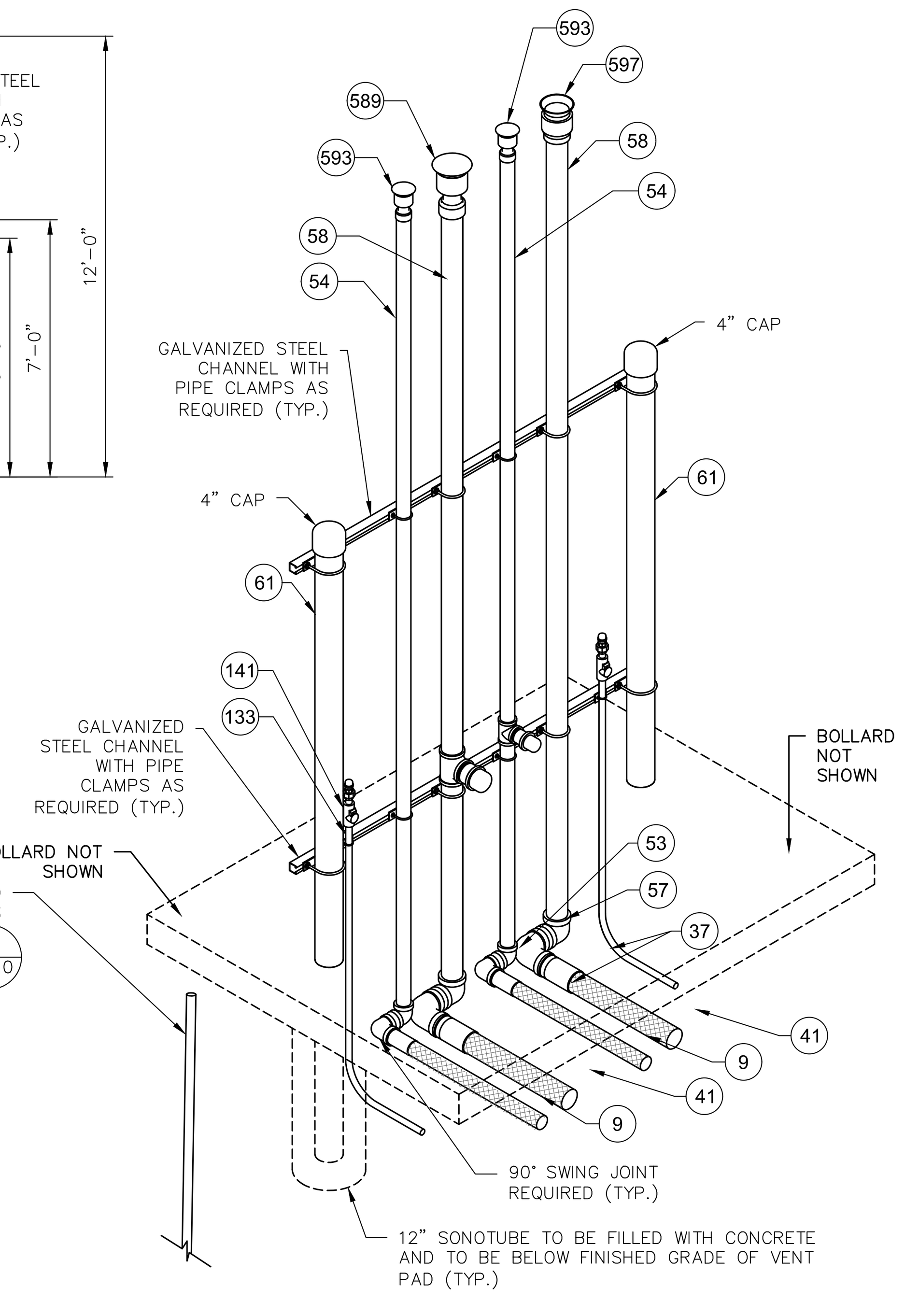
SCALE:	NOTED
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FT6.1

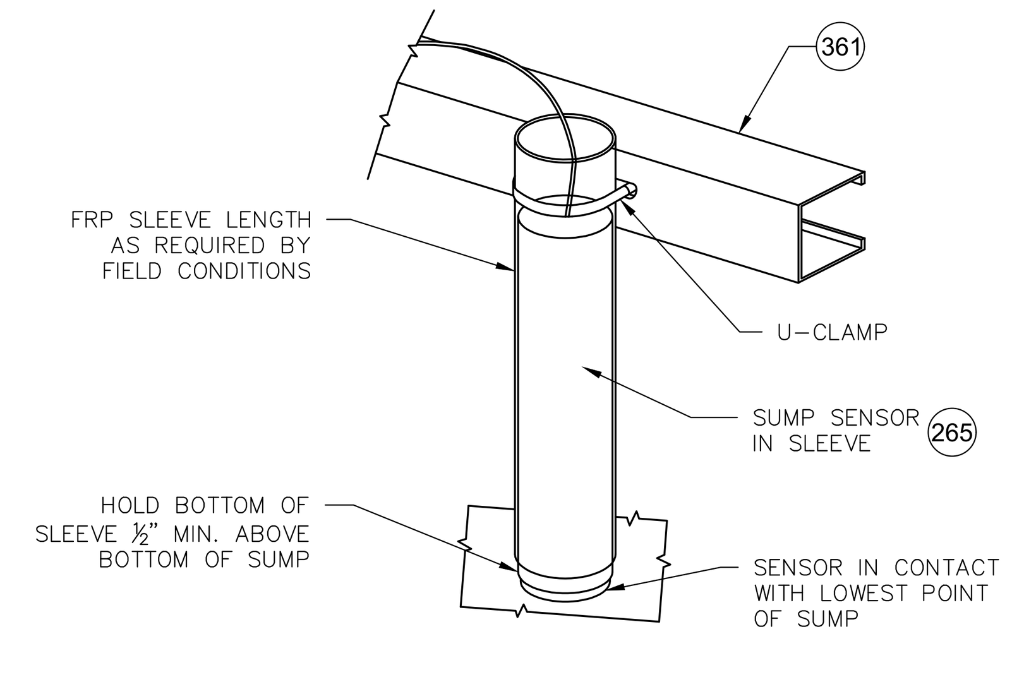
JONE'S BLAIR PAINT SPECIFICATIONS	
COLOR:	SPECIFICATIONS
SEMI-GLOSS WHITE	45051
SHEETZ DK BRONZE	A2NS-D81327
SHEETZ RED	A2NS-D11304
BLACK	45637-CA



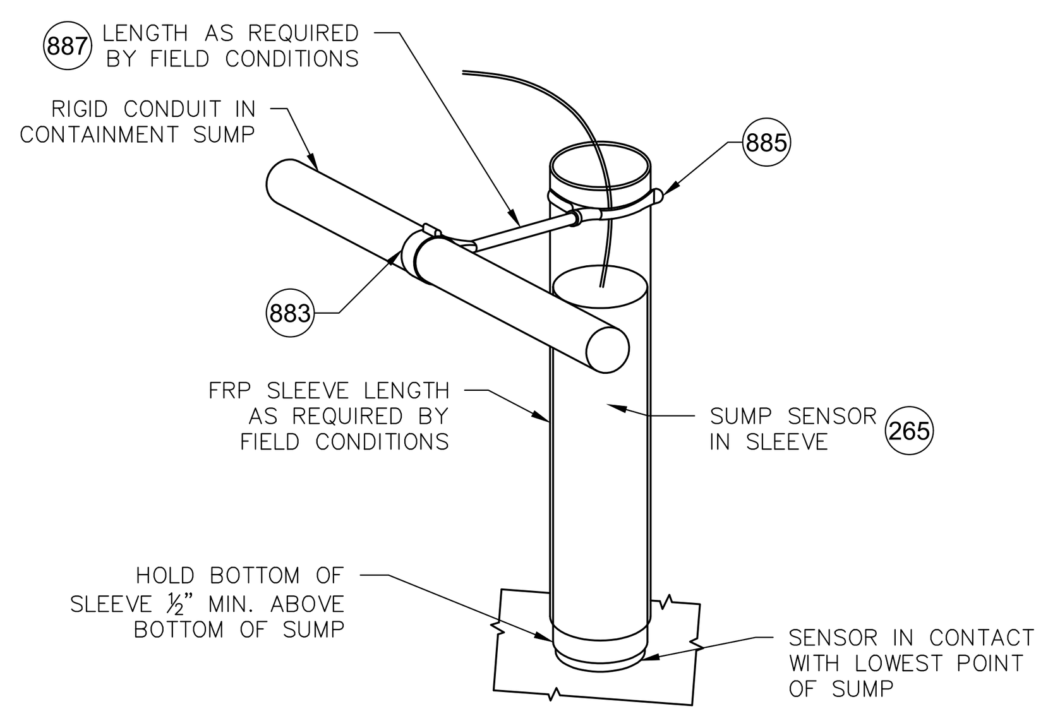
A TYPICAL UST VENT RISER DETAILS
SCALE: ¼" = 1'-0"



A1 TYPICAL UST VENT RISER ISOMETRIC VIEW
SCALE: ½" = 1'-0"

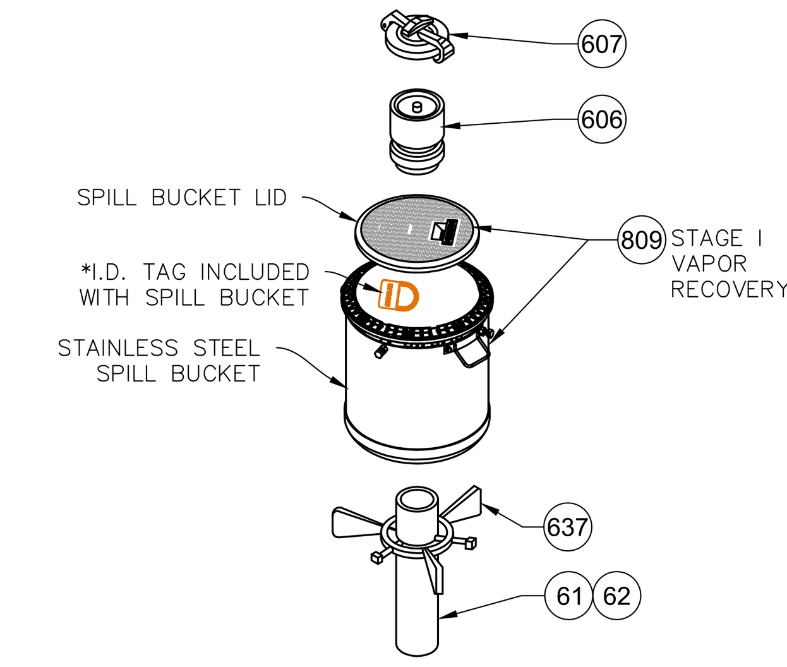


B1 TYPICAL DISPENSER SUMP SENSOR ASSEMBLY
SCALE: NOT TO SCALE

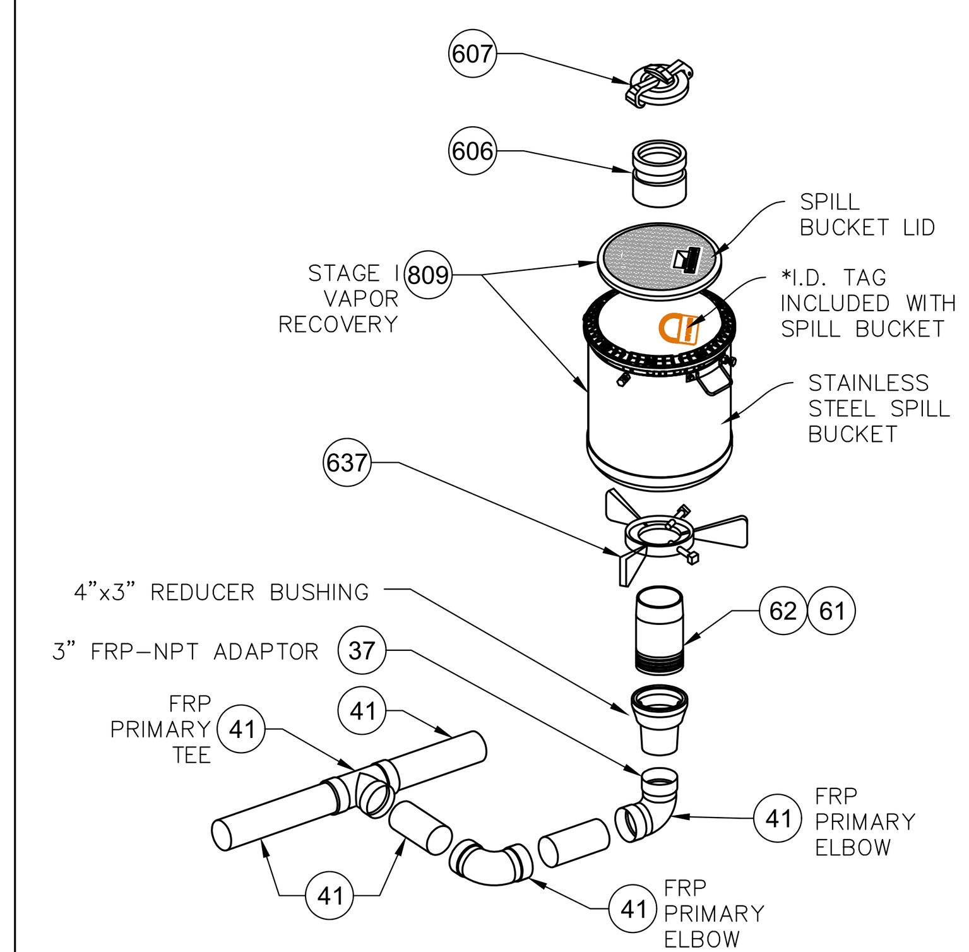


B2 TYPICAL TANK SUMP SENSOR ASSEMBLY
SCALE: NOT TO SCALE

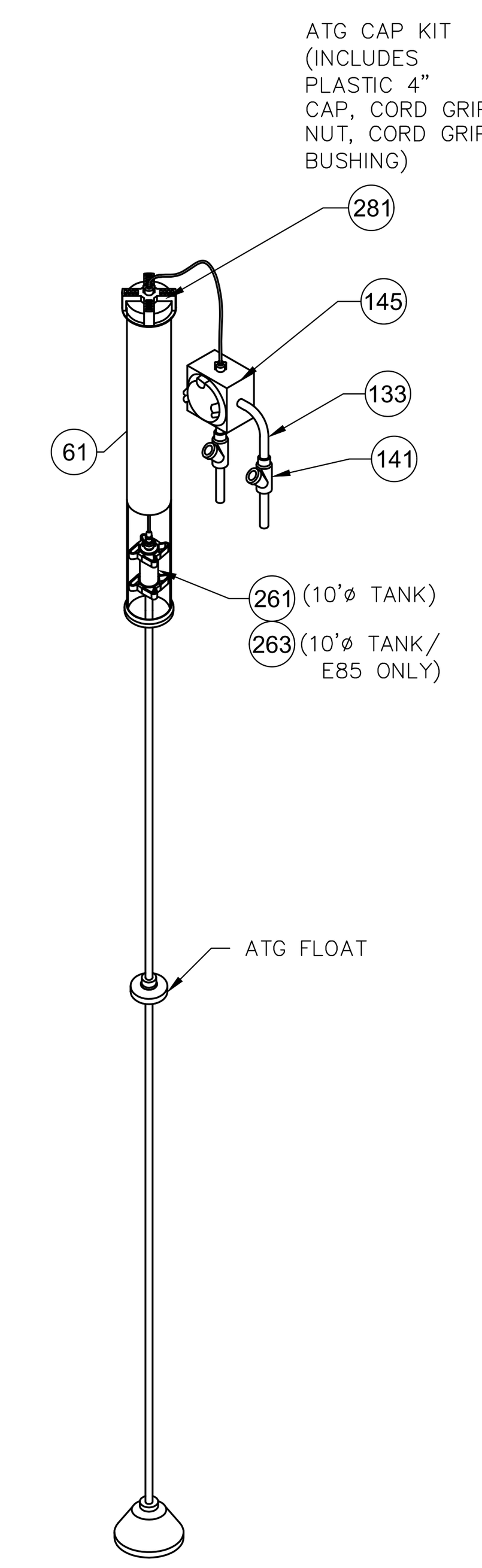
B TYPICAL CONTAINMENT SUMP SENSOR ASSEMBLY
SCALE: NOT TO SCALE



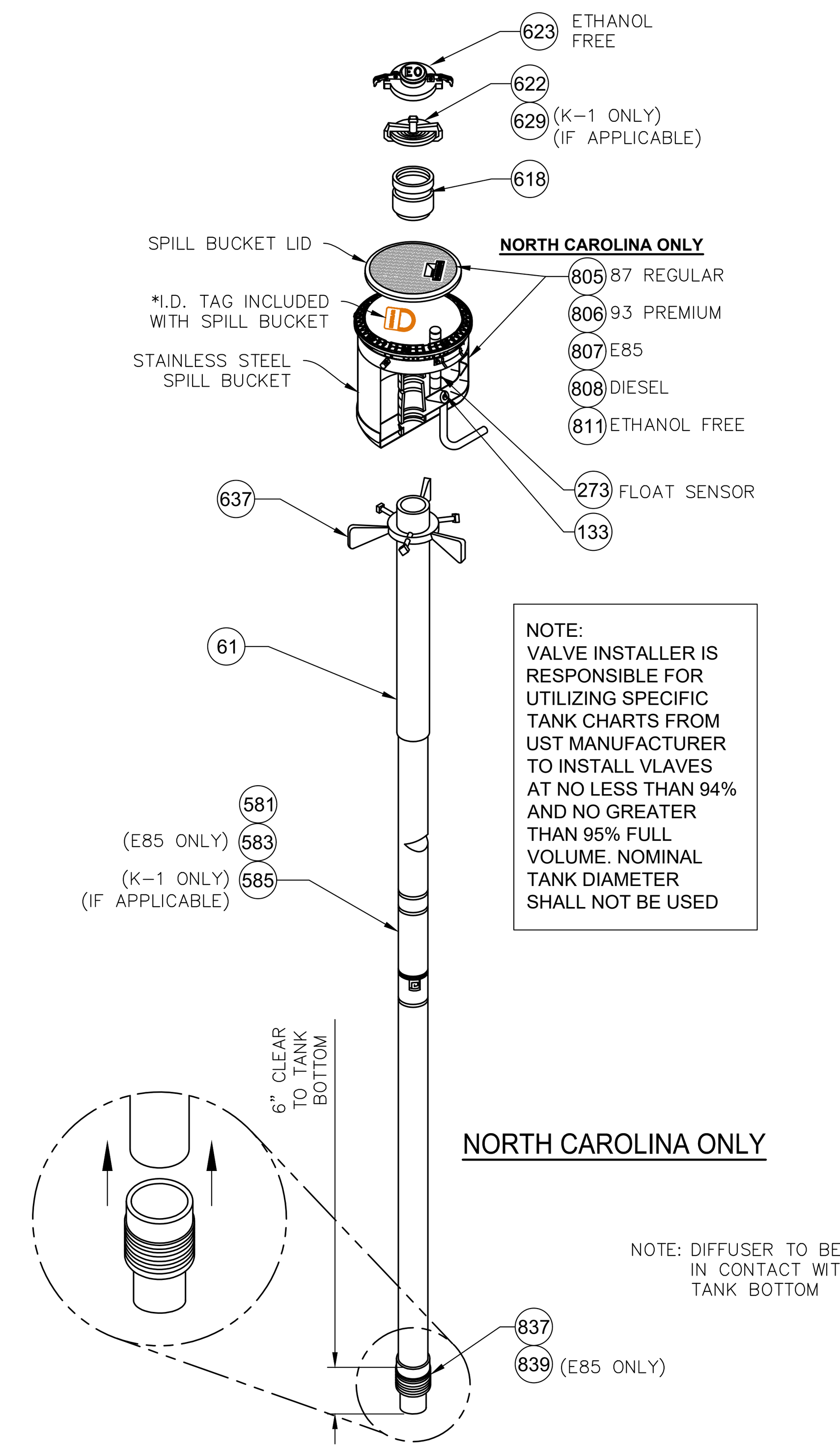
C TYPICAL STAGE I VAPOR RECOVERY RISER ASSEMBLY @ V.R. SPILL BUCKET
SCALE: NOT TO SCALE



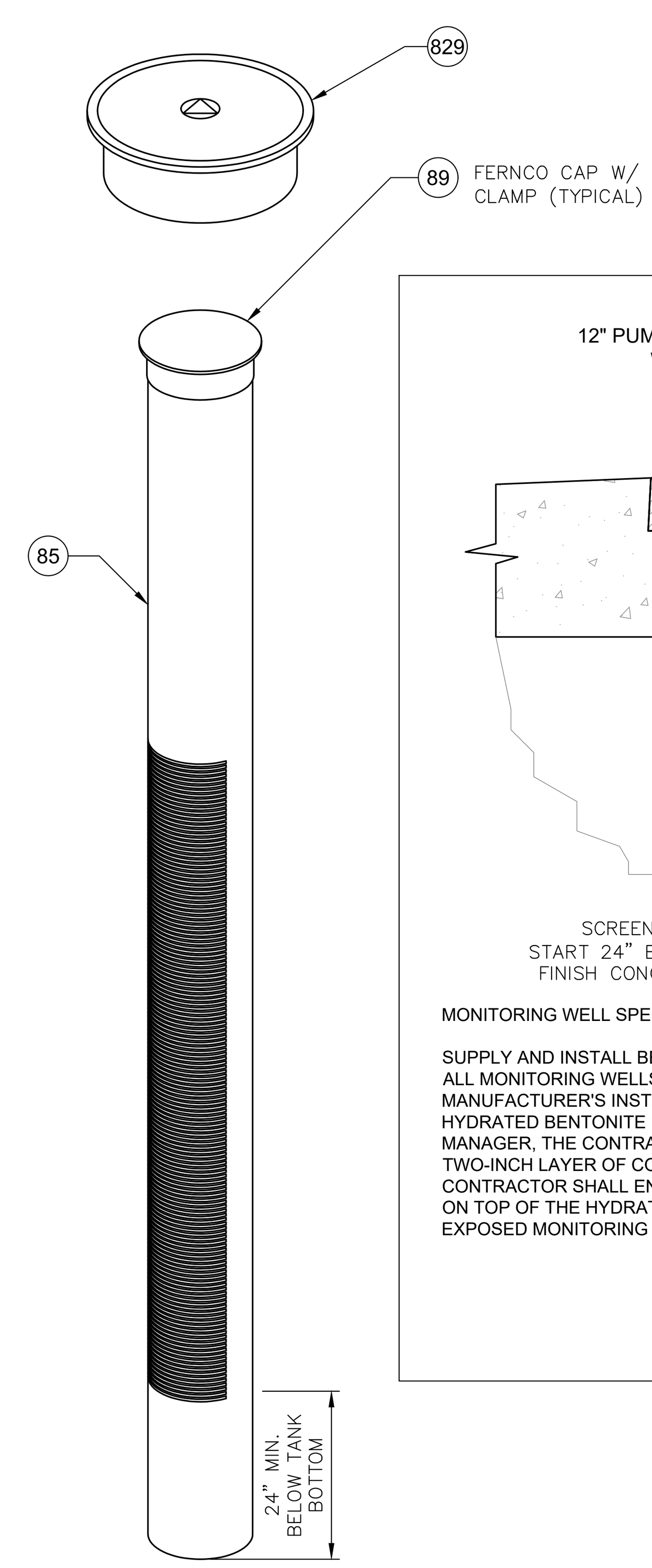
D TYPICAL VAPOR RECOVERY SPILL BUCKET
SCALE: NOT TO SCALE



E TYPICAL AUTOMATIC TANK GAUGE ASSEMBLY
SCALE: NOT TO SCALE

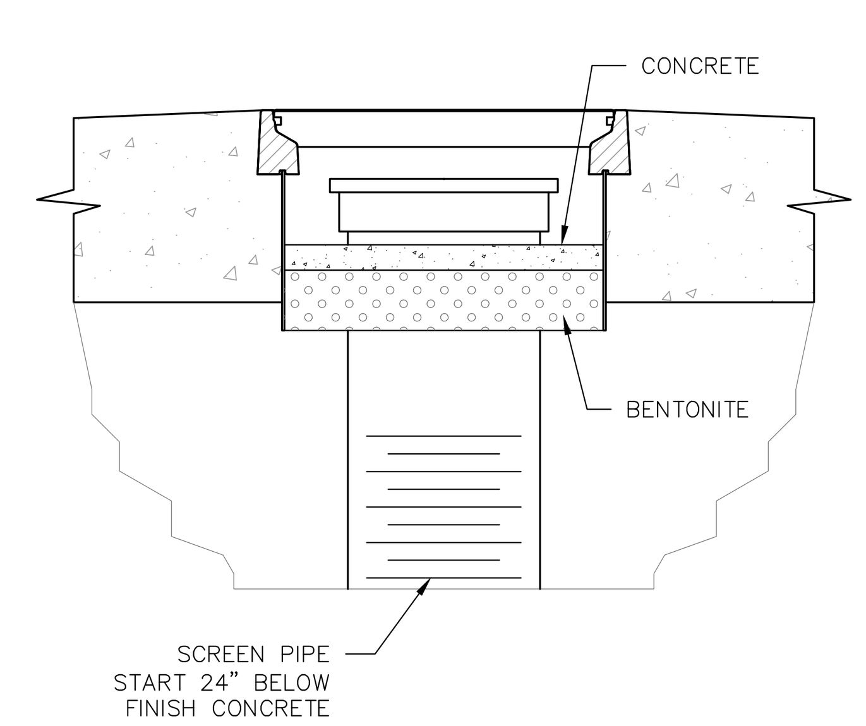


F (NORTH CAROLINA) TANK FILL SPILL BUCKET ASSEMBLY
SCALE: NOT TO SCALE



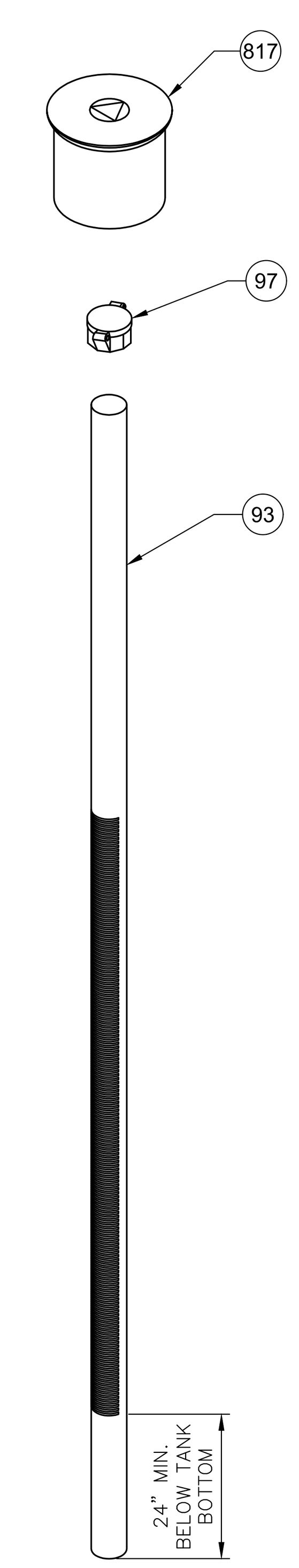
H TYPICAL PUMP OUT CULVERT
SCALE: NOT TO SCALE

12" PUMP OUT CULVERT AND MONITORING WELL INSTALLATION DETAIL



MONITORING WELL SPECIFIC INSTALLATION DIMENSION INSTRUCTIONS:

SUPPLY AND INSTALL BENTONITE AROUND PUMP OUT CULVERT WELL AND ALL MONITORING WELLS. BENTONITE IS TO BE HYDRATED PER MANUFACTURER'S INSTRUCTIONS. FOLLOWING THE INSPECTION OF THE HYDRATED BENTONITE BY THE SHEETZ PETROLEUM CONSTRUCTION MANAGER, THE CONTRACTOR SHALL UPON VERBAL APPROVAL, INSTALL A TWO-INCH LAYER OF CONCRETE ON TOP OF THE HYDRATED BENTONITE. CONTRACTOR SHALL ENSURE THAT THE FINAL GRADE OF THE CONCRETE ON TOP OF THE HYDRATED BENTONITE LEAVES TWO TWO INCHES OF EXPOSED MONITORING WELL PIPE ABOVE THE TOP OF THE CONCRETE.



I TYPICAL MONITORING WELL ASSEMBLY
SCALE: NOT TO SCALE

ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 051765

CONSULTANT: Weller Corporation — Engineers • Planners • Surveyors — 5136 Beach Road • Medina, Ohio 44256 — t.330.239.0699 • f.330.239.0272

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

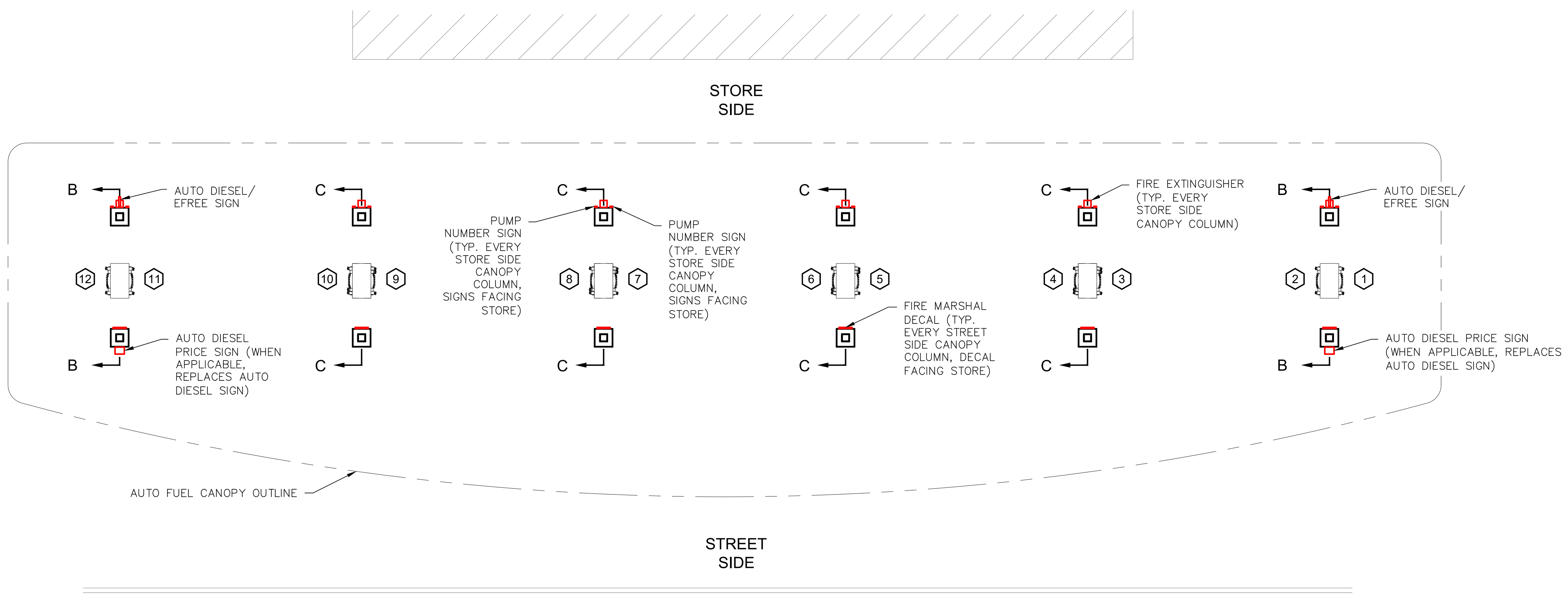
SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
(814) 946-3611

FUEL SYSTEM ACCESSORIES

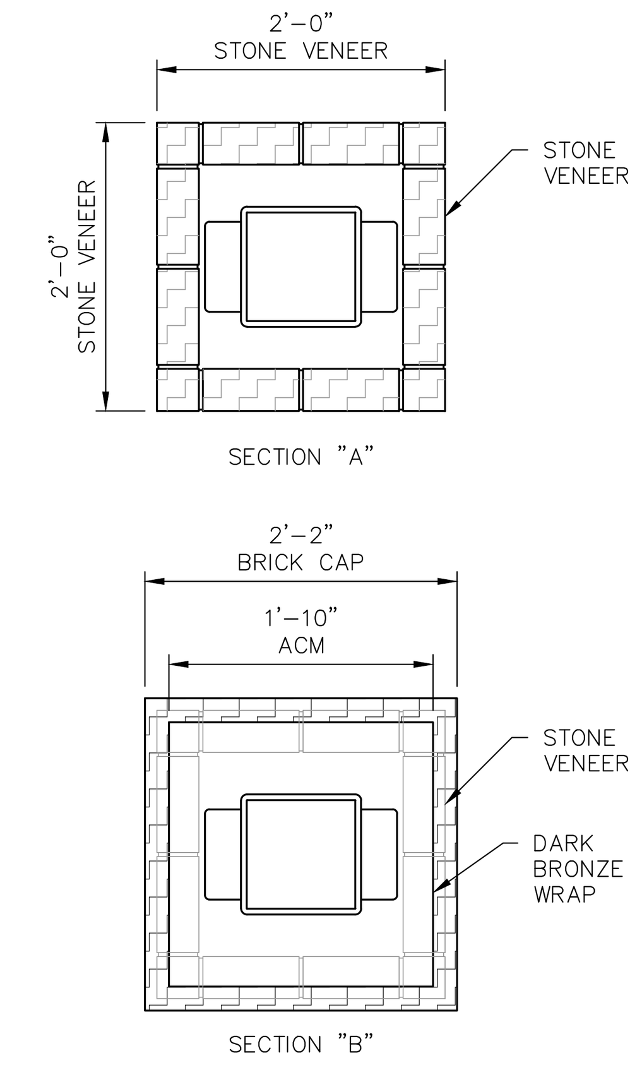
SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	NOTED
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

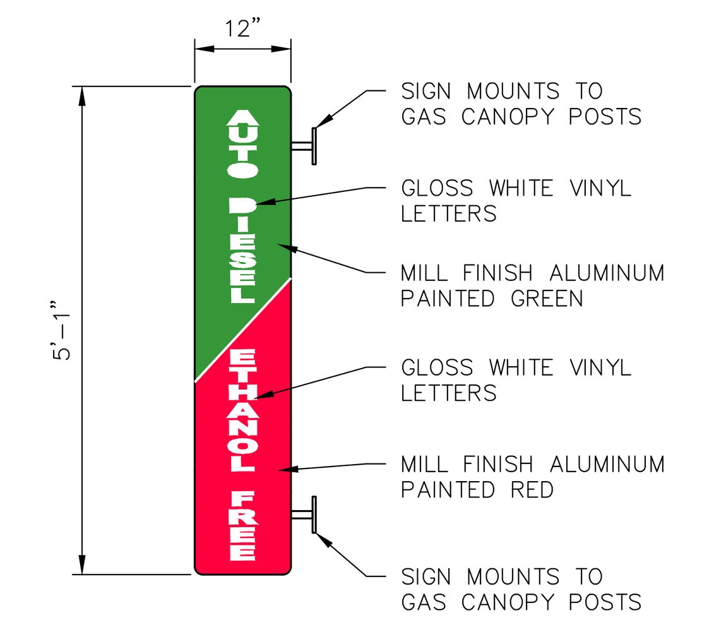
FT7.0



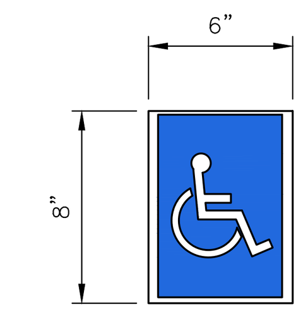
A CANOPY PLAN VIEW
SCALE: 1" = 10'



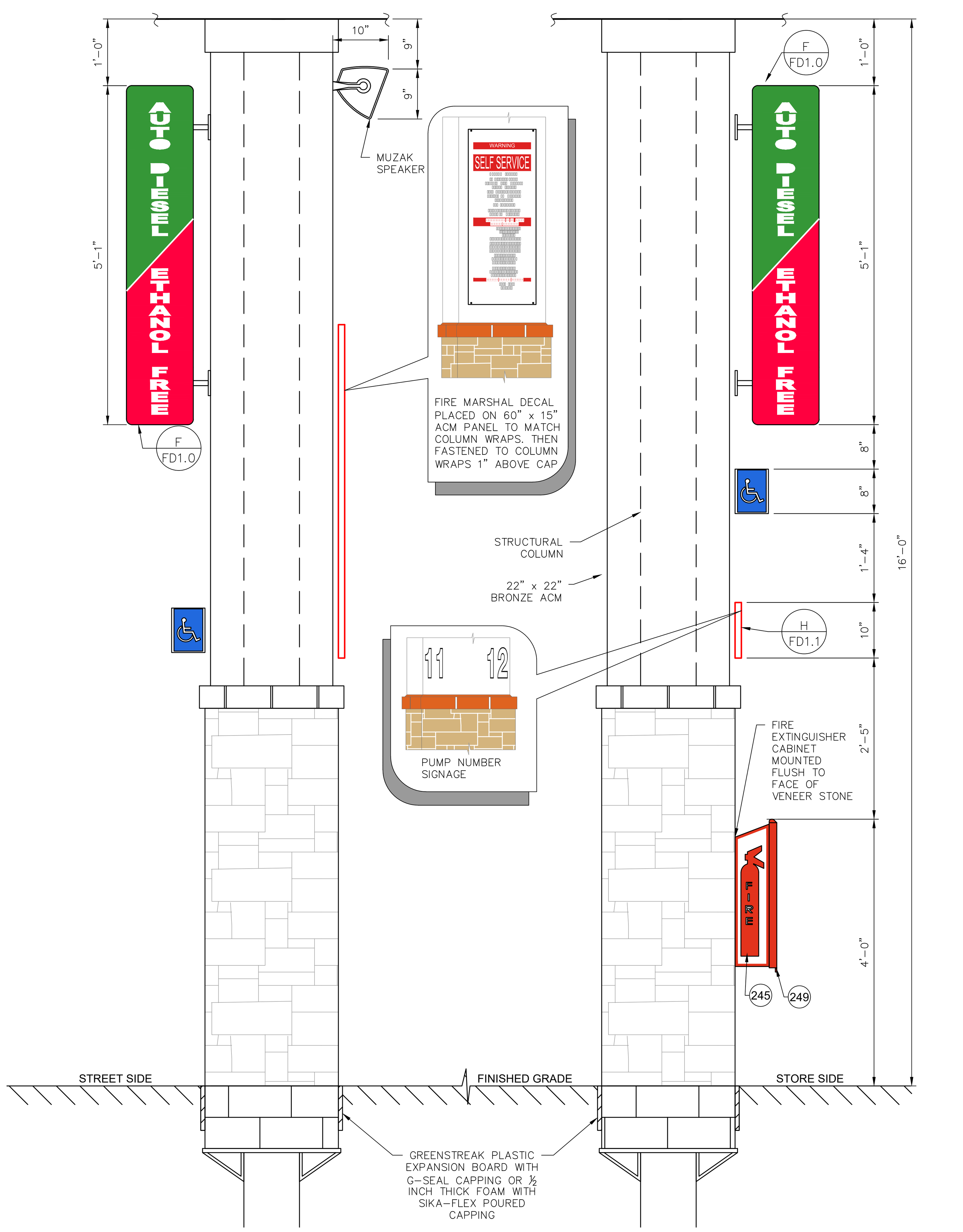
I HORIZONTAL SECTION COLUMNS
SCALE: 3/4" = 1'-0"



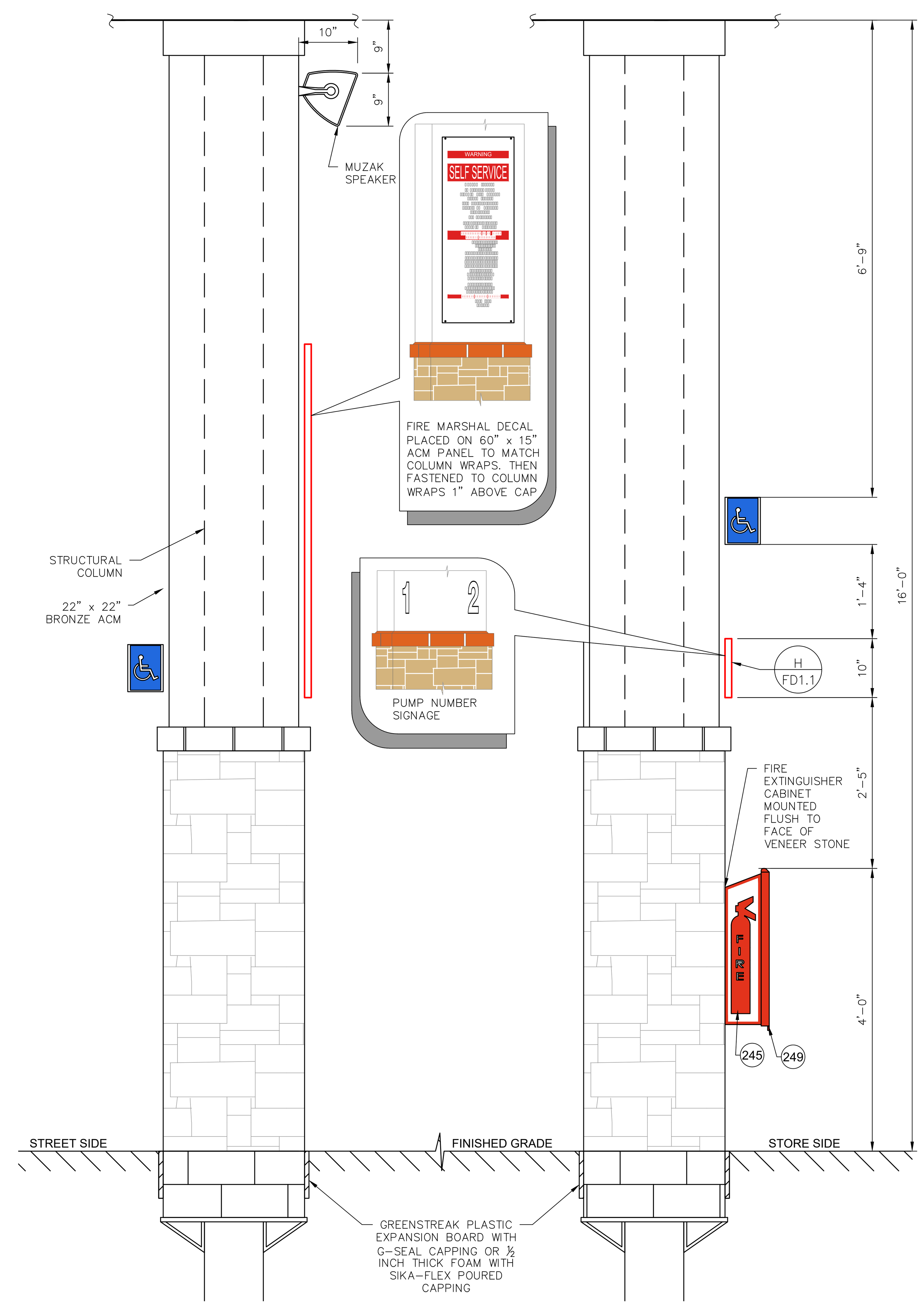
F AUTO DIESEL/ETHANOL FREE SIGN DETAIL
SCALE: 1/2" = 1'-0"



H HANDICAPPED SIGN DETAIL
SCALE: 1-1/2" = 1'-0"



B TYPICAL CANOPY COLUMN SECTION B-B'
SCALE: 3/4" = 1'-0"



NOTE: ADA & PUMP NUMBER SIGNAGE SUPPLIED BY SHEETZ

C TYPICAL CANOPY COLUMN SECTION C-C'
SCALE: 3/4" = 1'-0"

ISSUED FOR DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:

CONSULTANT:
Weilert Corporation
Engineers • Planners • Surveyors
5136 Beach Road • Medina, Ohio 44256

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

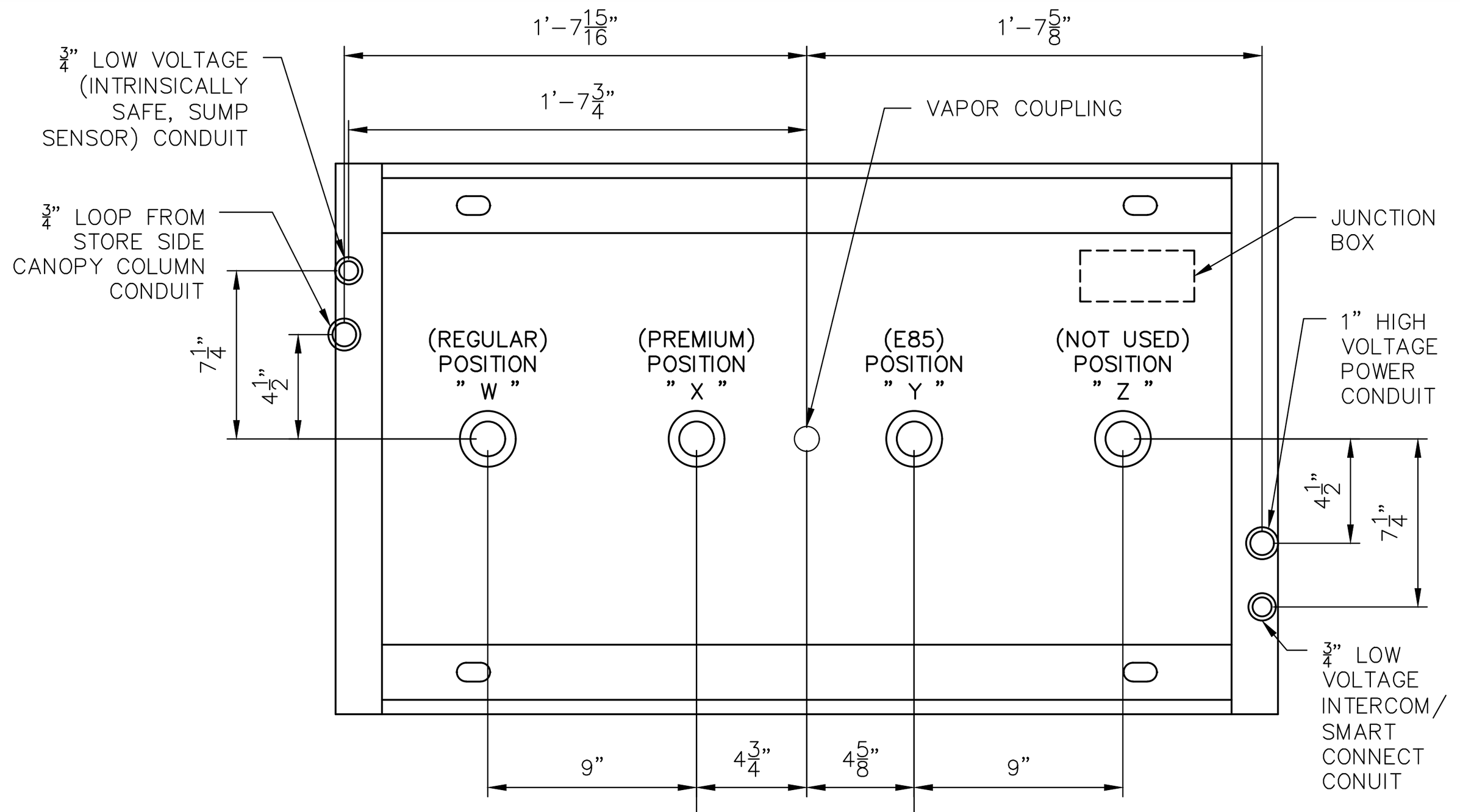
SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
(814) 946-3611

CANOPY COLUMN ANCILLARY DETAILS

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE: NOTED
DATE: 3/5/2021
DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: RWW
JOB NUMBER: XXXXXX

FD1.0



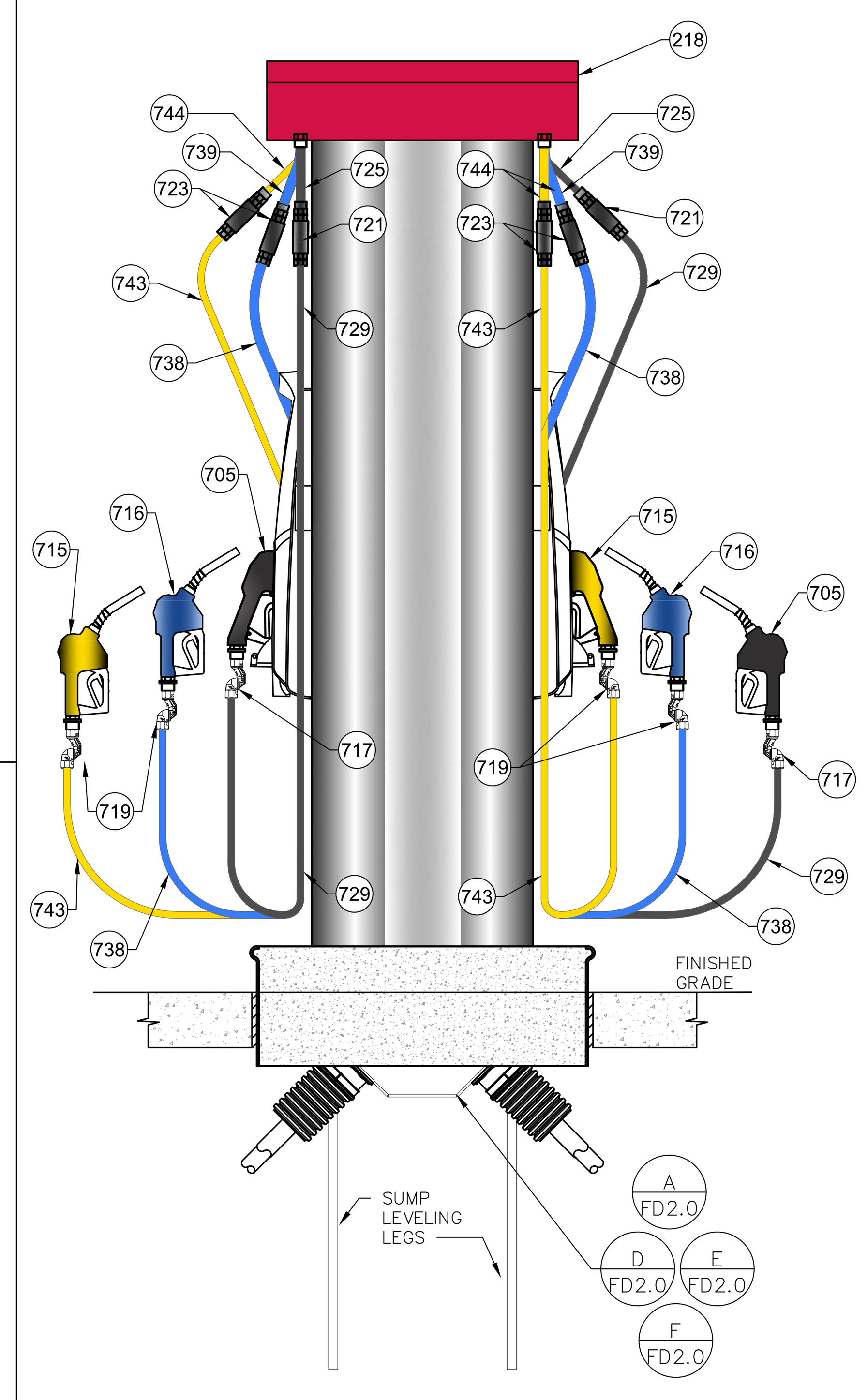
A1 TYPICAL DISPENSER FOOTPRINT ROUGH IN
SCALE: 1 ½" = 1'-0"

	PREM.	REG.
OCTANE RATIO	93 35%	87 65%

PLUS GRADE BLENDING RATIOS

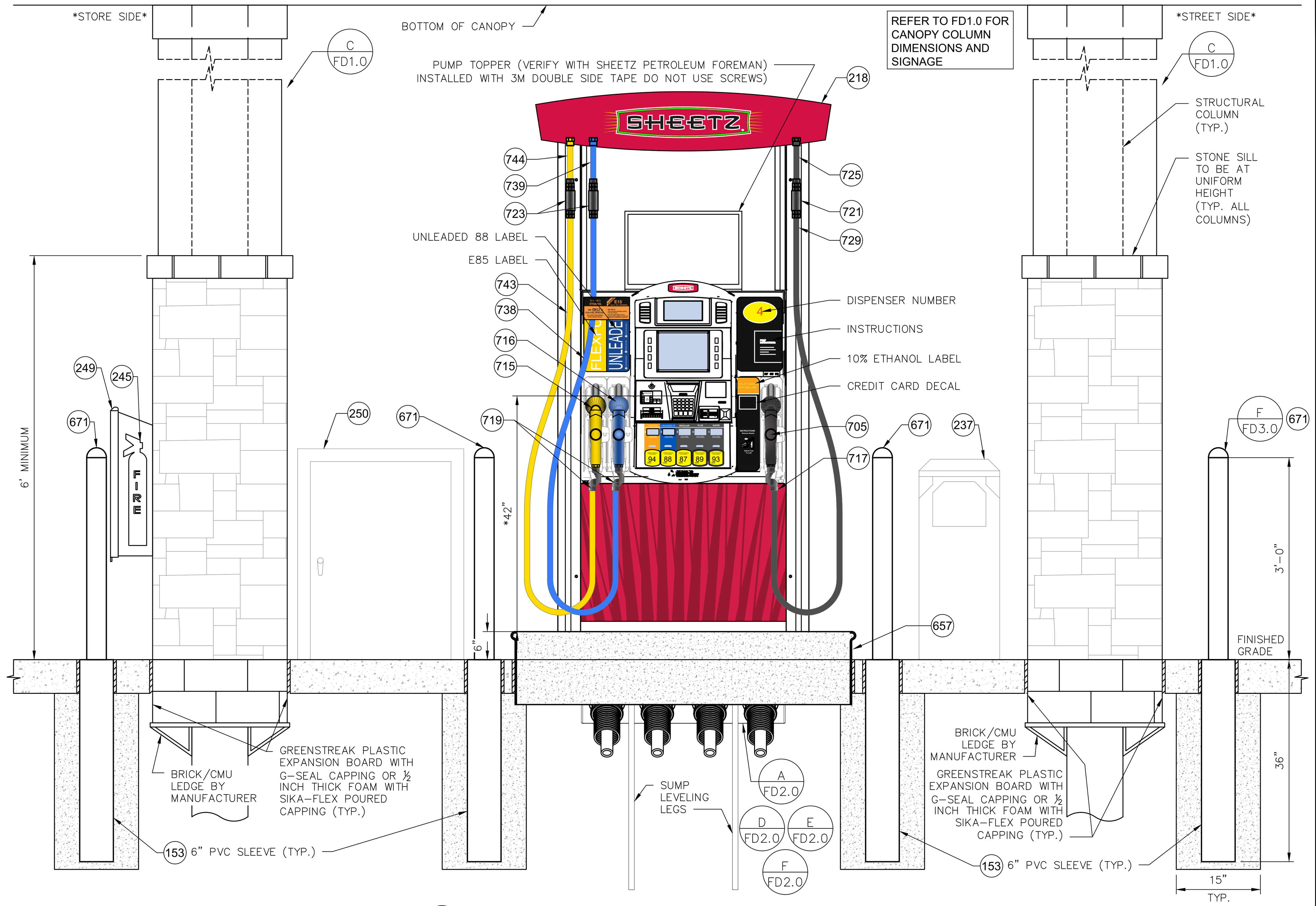
PIPING THROUGH PRODUCT SEQUENCE STARTING WITH CLOSEST TO STORE POSITION

PRODUCT	PIPING POSITION	NL3	NF1	NF4
REGULAR	1	W	W	W
PREMIUM	2	X	X	X
E85	3	-	Y	Y
E0	3	Y	-	-
DIESEL	4	Z	-	Z

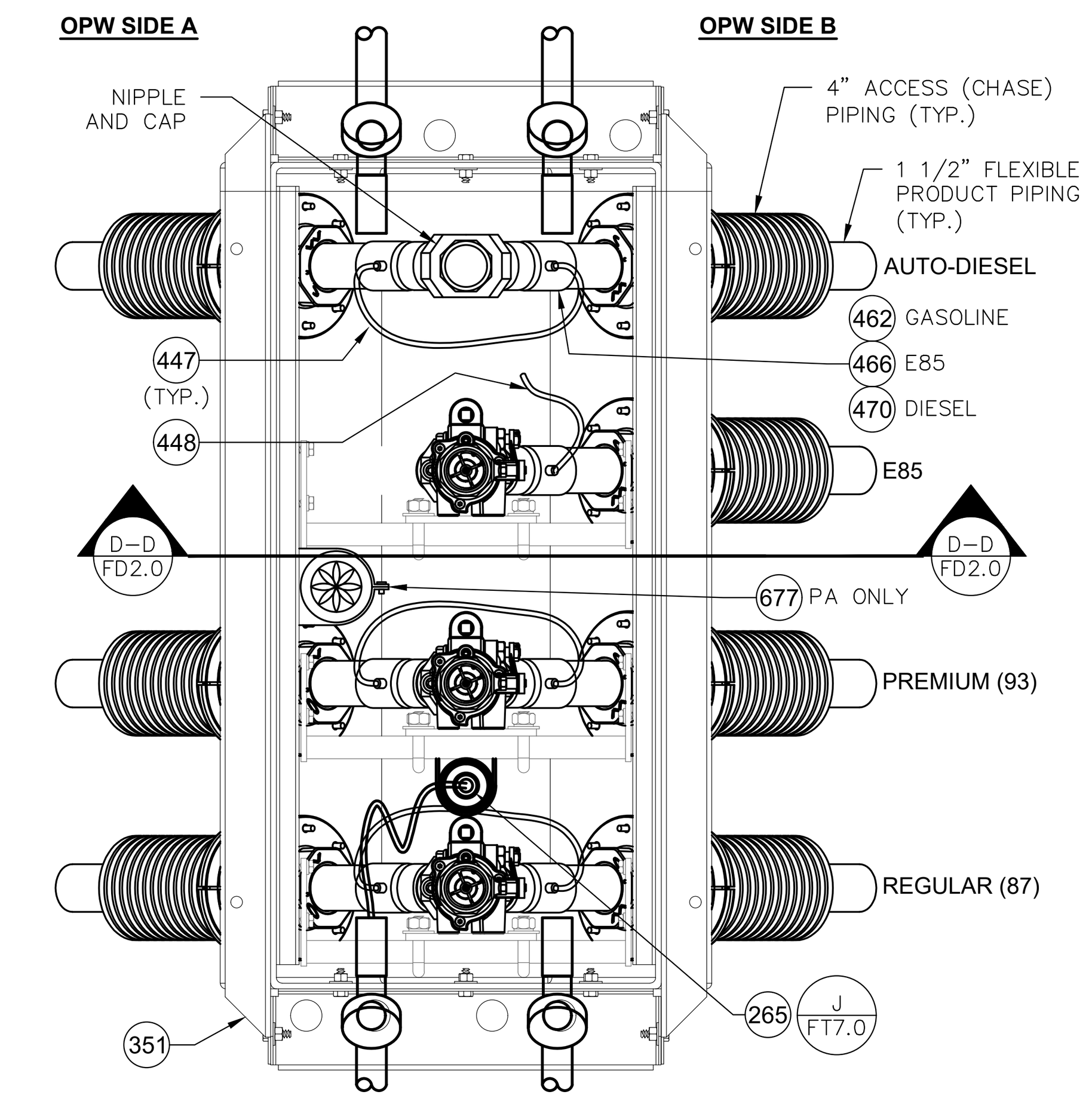


NOTE: PLEASE SEE FT1.0 FOR LOCATION OF SPILL BOXES AND FIRE EXTINGUISHERS

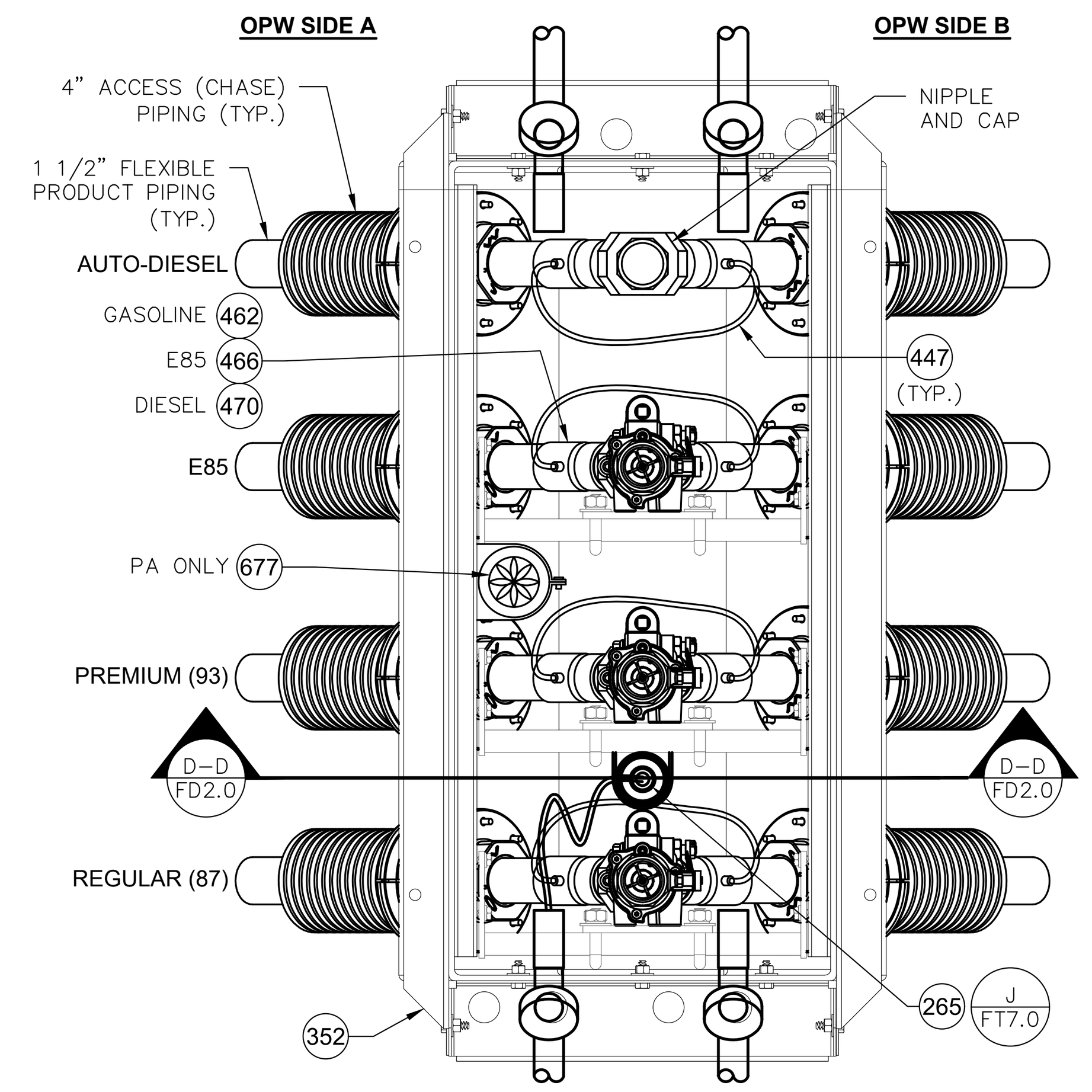
* CENTER OF ISLAND
** ADA REACH RANGE COMPLIANCE LINE



C TYPICAL 5+0 DISPENSER ISLAND ELEVATION VIEW
SCALE: ¾" = 1'-0"



A2 "PASS THRU (E85 TERM. SIDE B)" 5+0 DISPENSER SUMP PLAN VIEW
SCALE: 1 ½" = 1'-0"

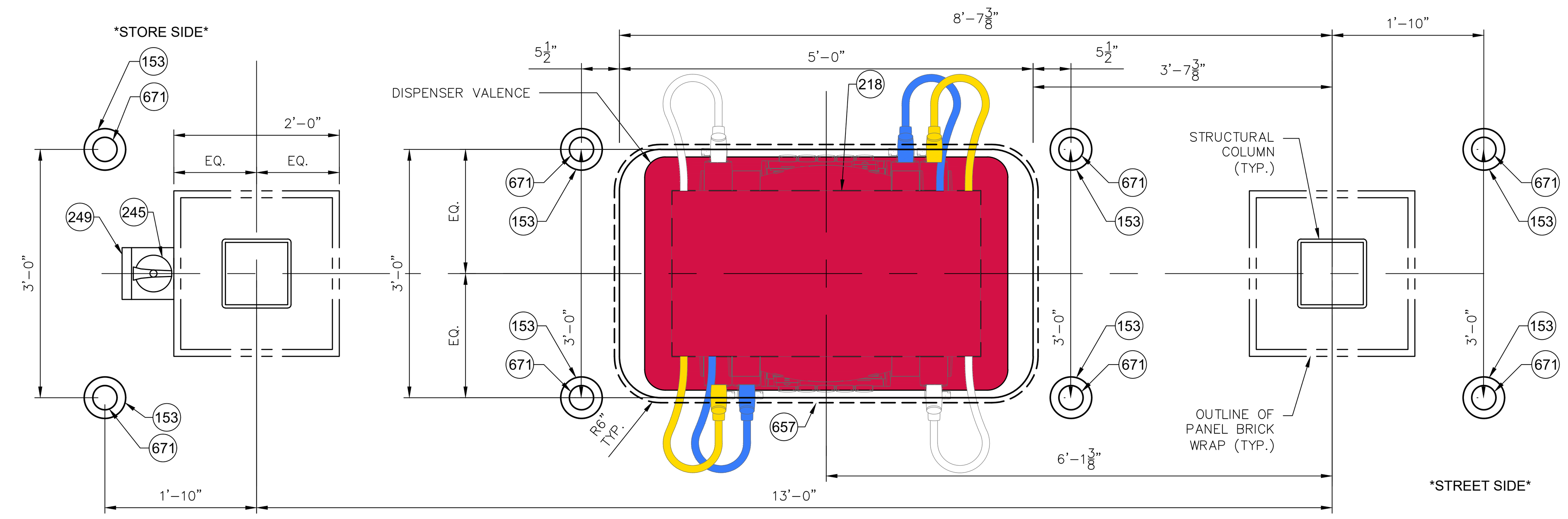


A3 TYPICAL "PASS THROUGH" 5+0 DISPENSER SUMP PLAN VIEW
SCALE: 1 ½" = 1'-0"

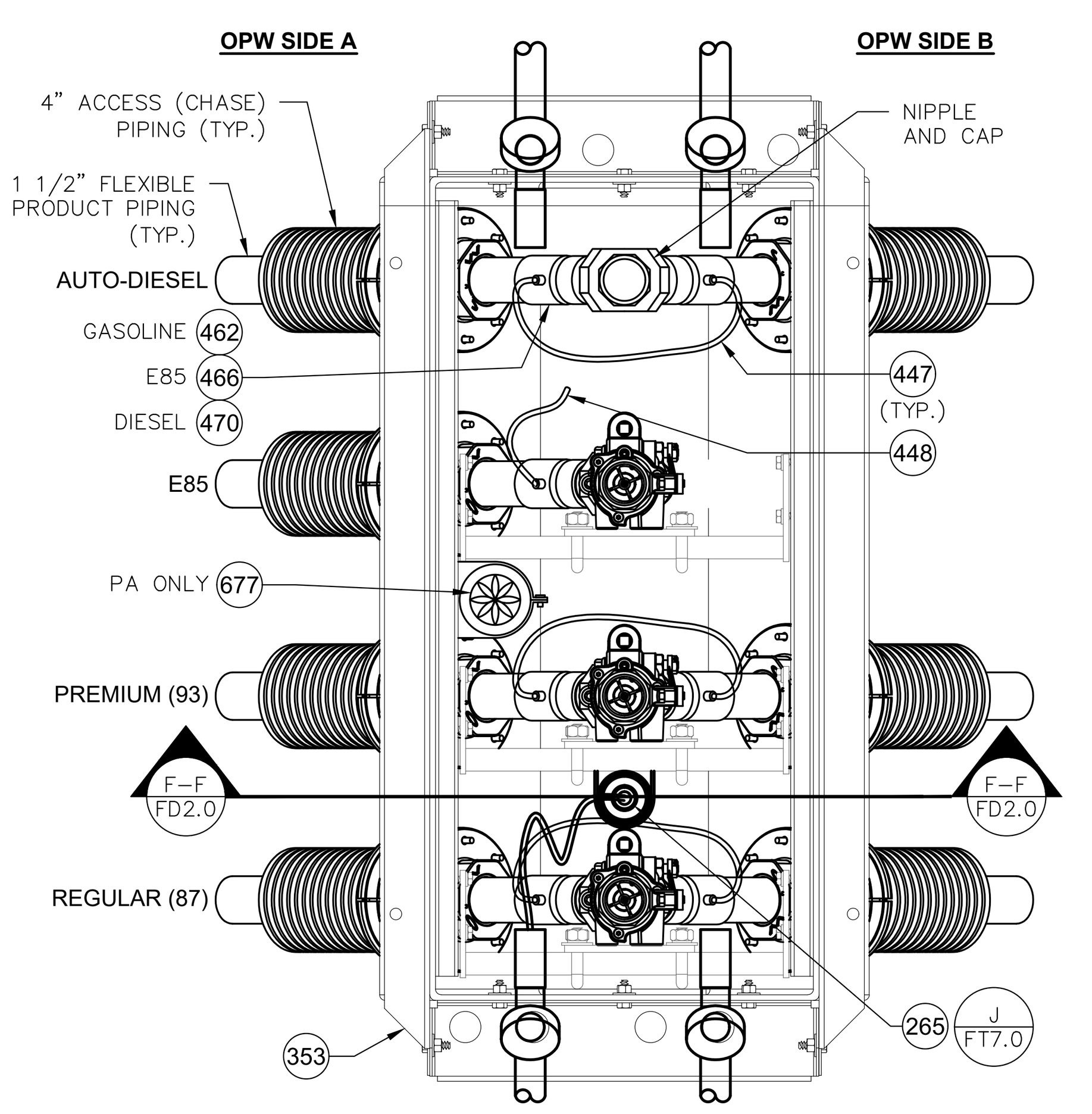
NOTE: CONTRACTOR TO PROVIDE NECESSARY CONDUIT BRACKETS FOR MOUNTING CONDUIT TO UNISTRUT

NOTE: WELD ANGLE IRON FRAME TO HOLD DISPENSER SUMP IN PLACE WHILE INSTALLING.

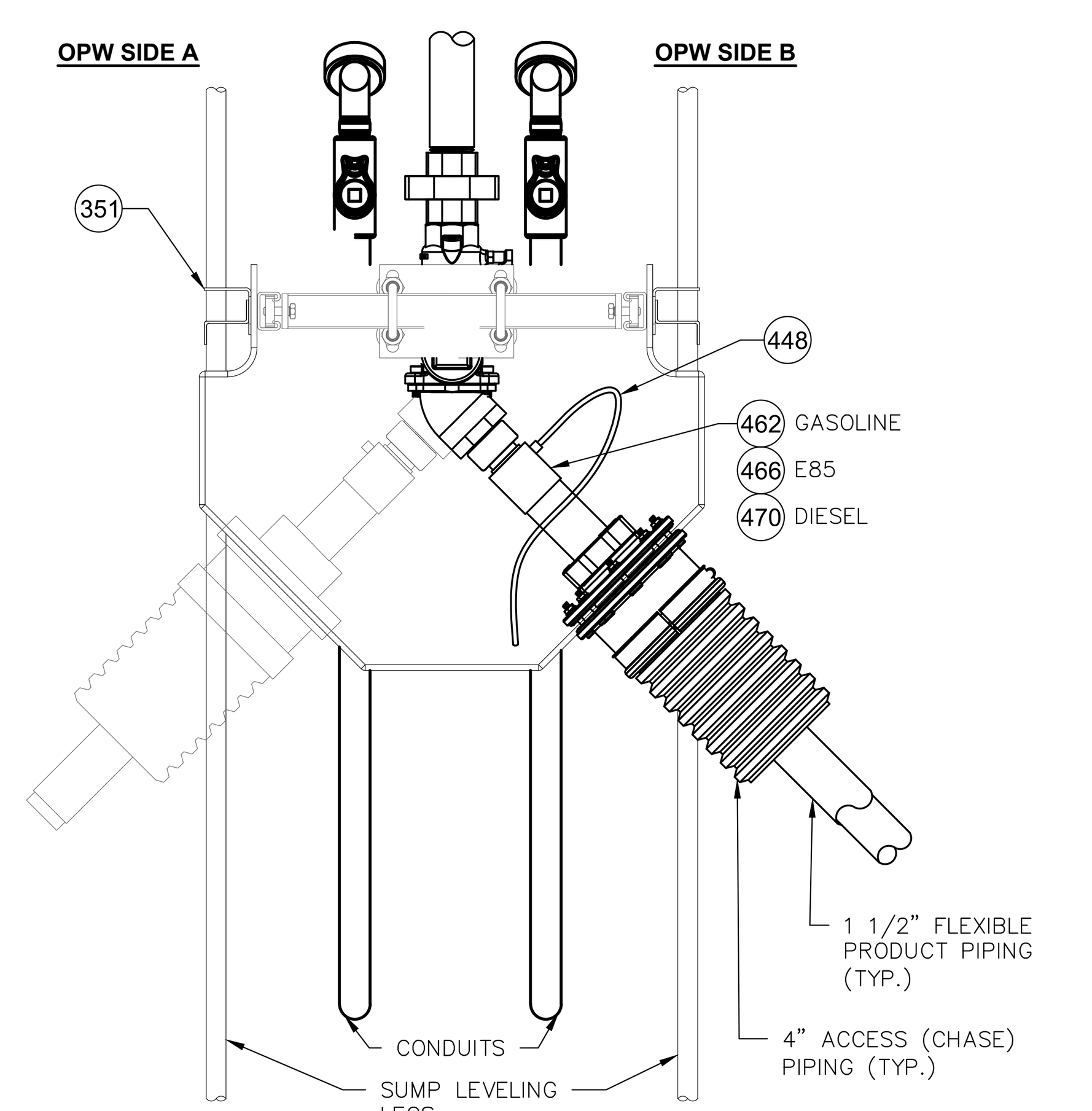
NOTE: SEE FT8.0 FOR LIST OF SPECIFIC PARTS INCLUSIVE OF LOOP SUMP PACKAGE OPW SUPPLIED PARTS.



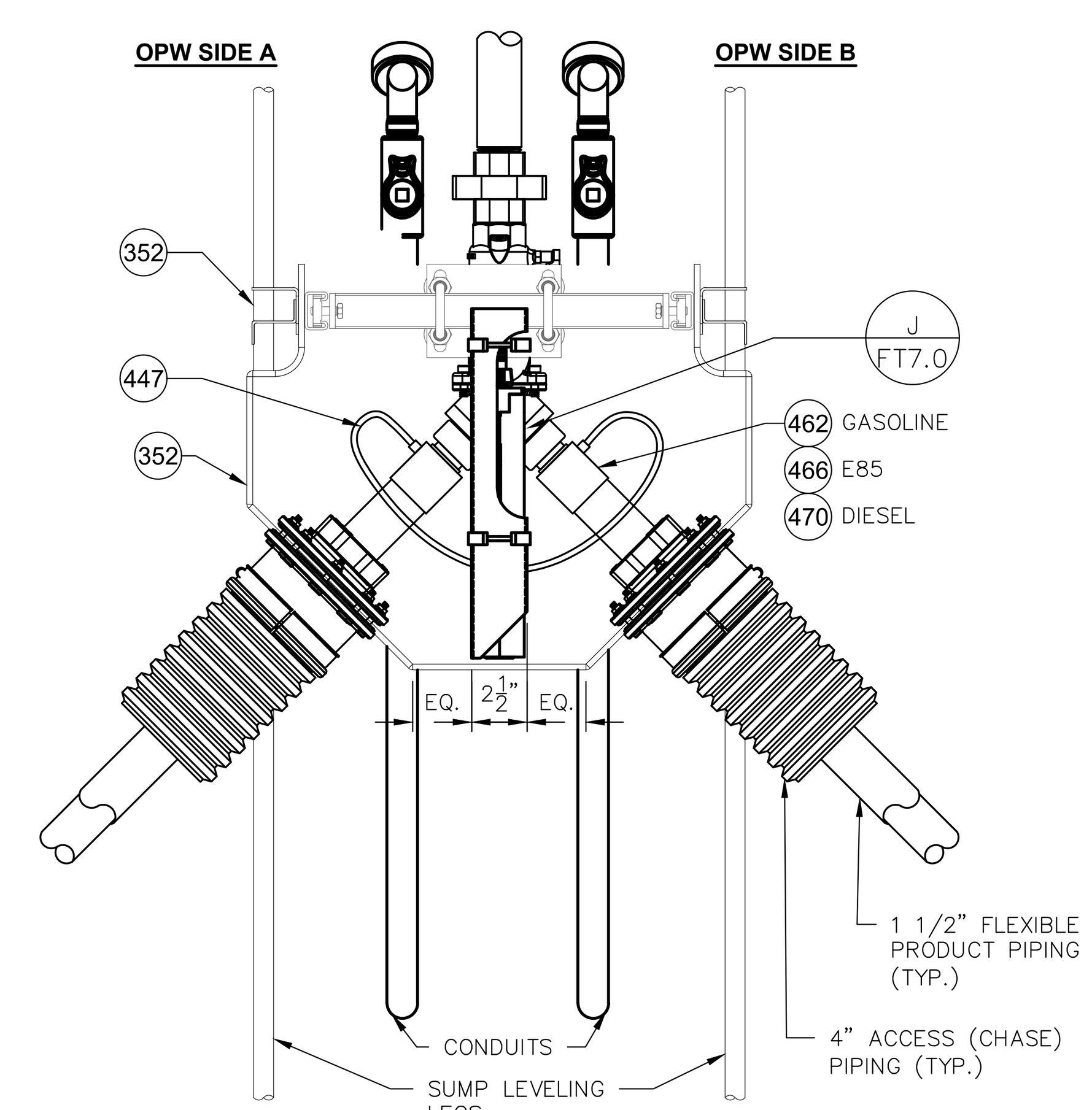
B TYPICAL 5+0 DISPENSER ISLAND PLAN VIEW
SCALE: ¾" = 1'-0"



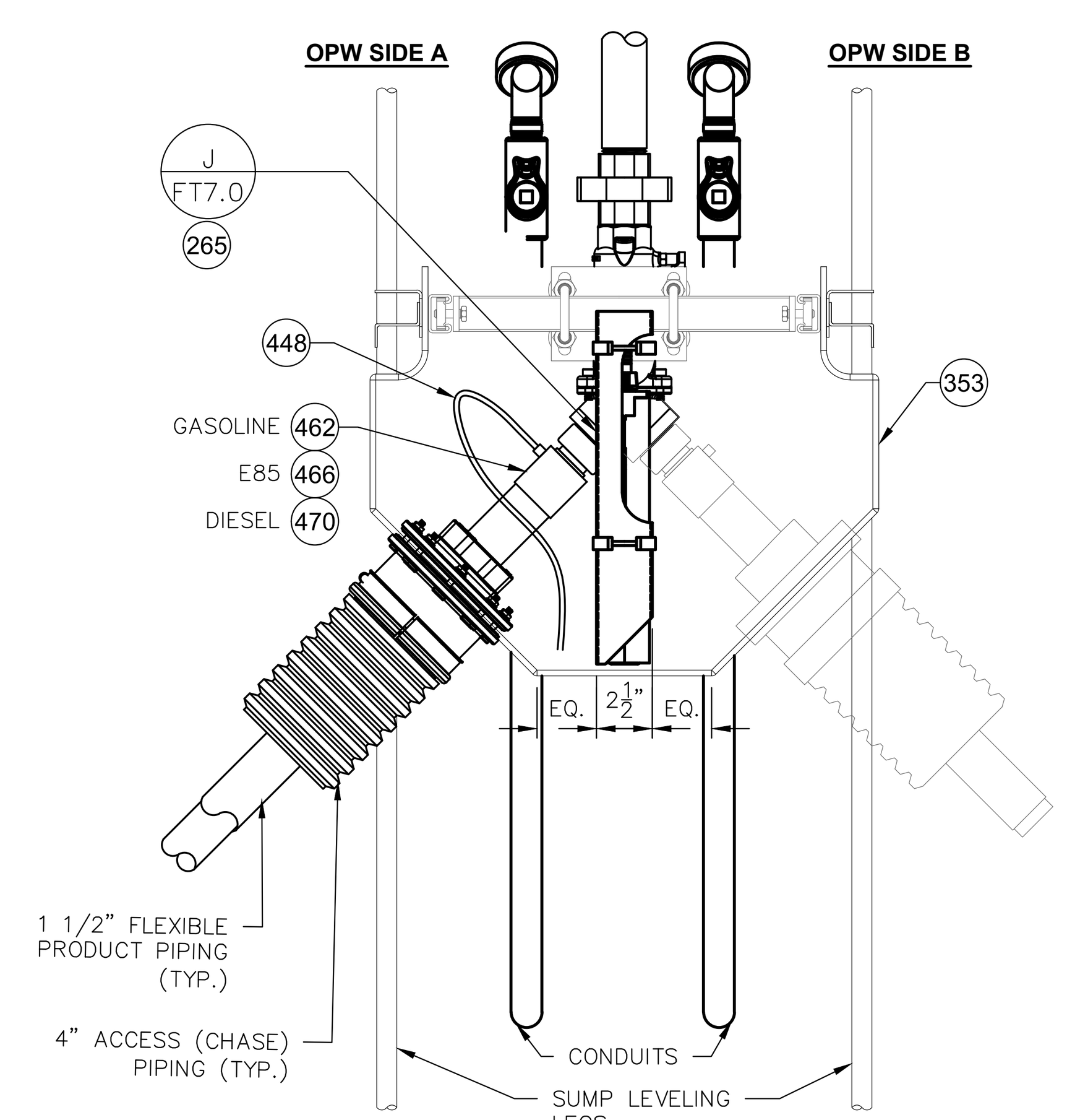
A4 "PASS THRU (E85 TERM. SIDE A)" 5+0 DISPENSER SUMP PLAN VIEW
SCALE: 1 ½" = 1'-0"



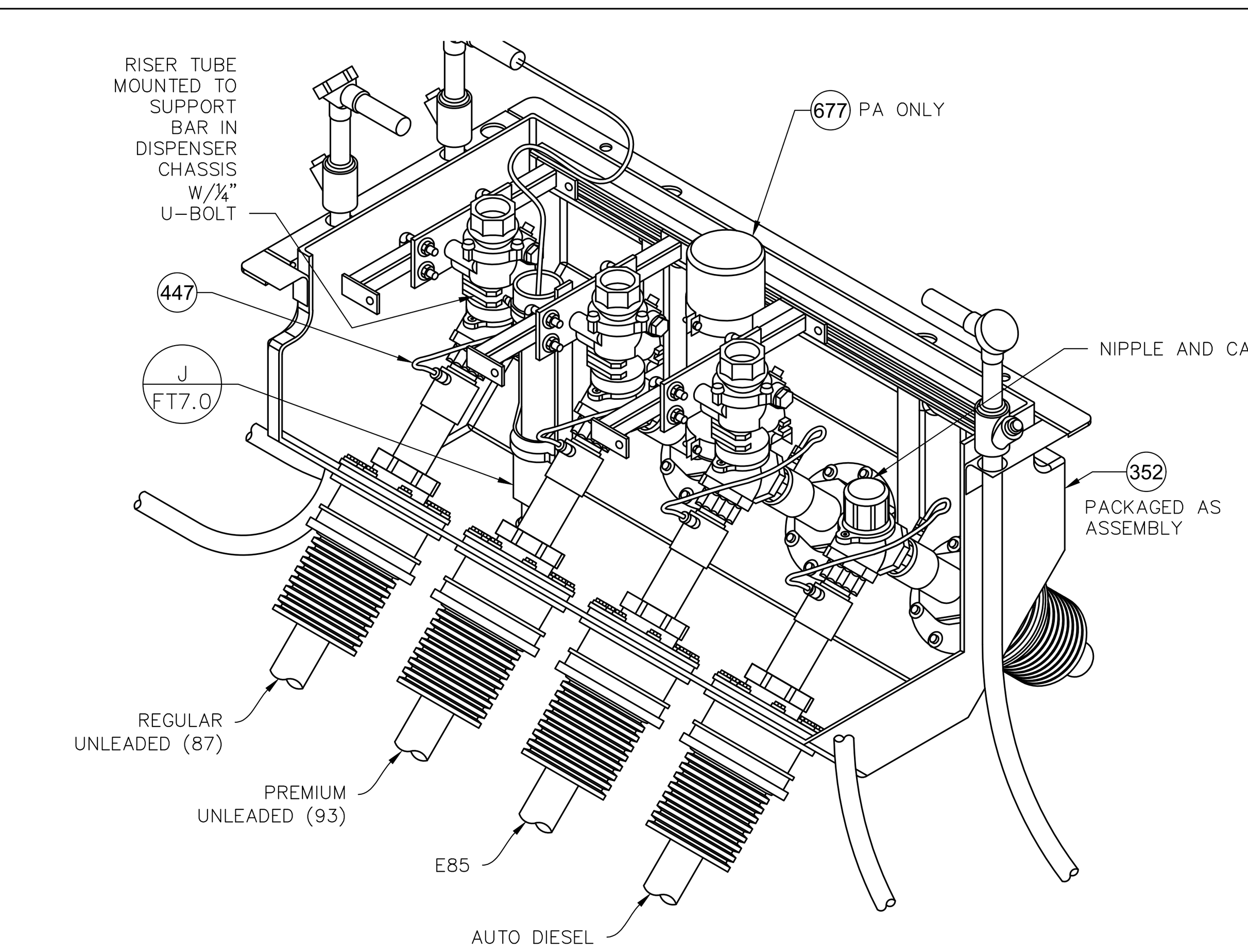
SECTION D-D
D "PASS THRU (E85 TERM. SIDE B)" 5+0 DISPENSER SUMP SECTION
SCALE: 1 ½" = 1'-0"



SECTION E-E
E TYPICAL "PASS THROUGH" 5+0 DISPENSER SUMP SECTION
SCALE: 1 ½" = 1'-0"



SECTION F-F
F "PASS THRU (E85 TERM. SIDE A)" 5+0 DISPENSER SUMP SECTION
SCALE: 1 ½" = 1'-0"

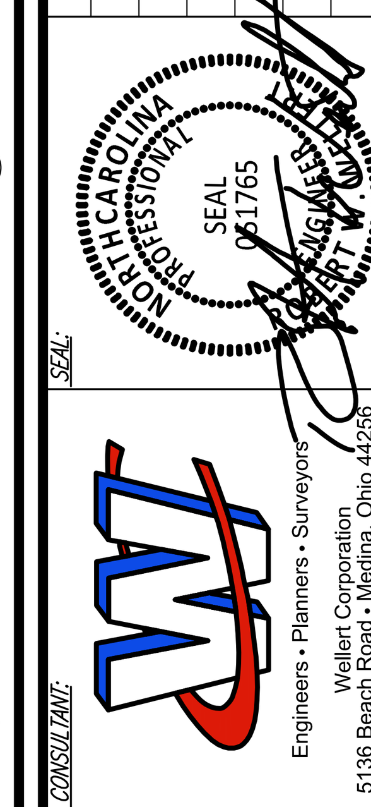


E1 TYPICAL "PASS THROUGH" 5+0 DISPENSER SUMP ISOMETRIC VIEW
SCALE: NOT TO SCALE

ISSUED FOR:

DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:



CONSULTANT:
Weilert Corporation
Engineers • Planners • Surveyors

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

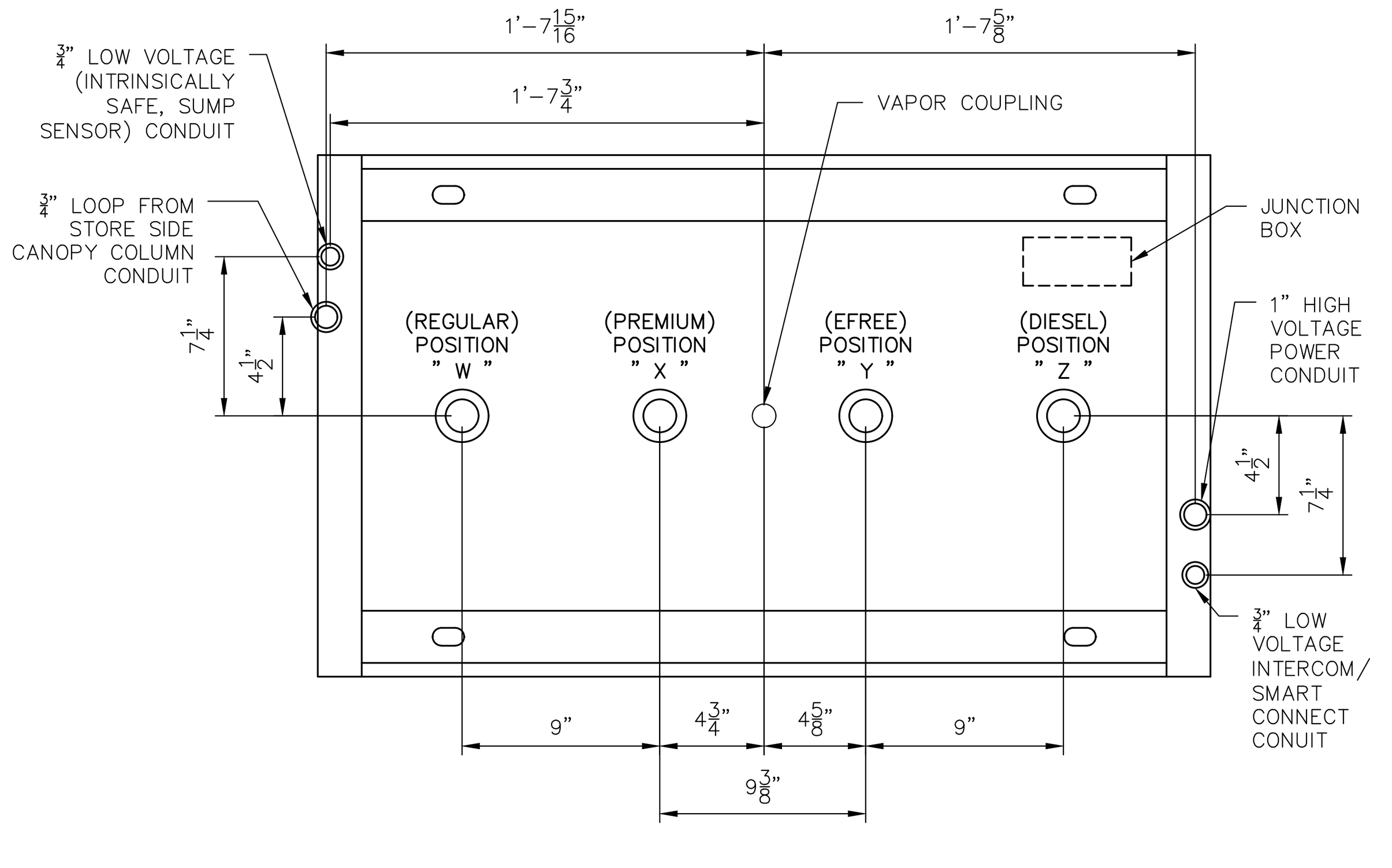
SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
(814) 946-3611

ENCORE (5+0) DISPENSER INSTALLATION

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	NOTED
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FD2.0



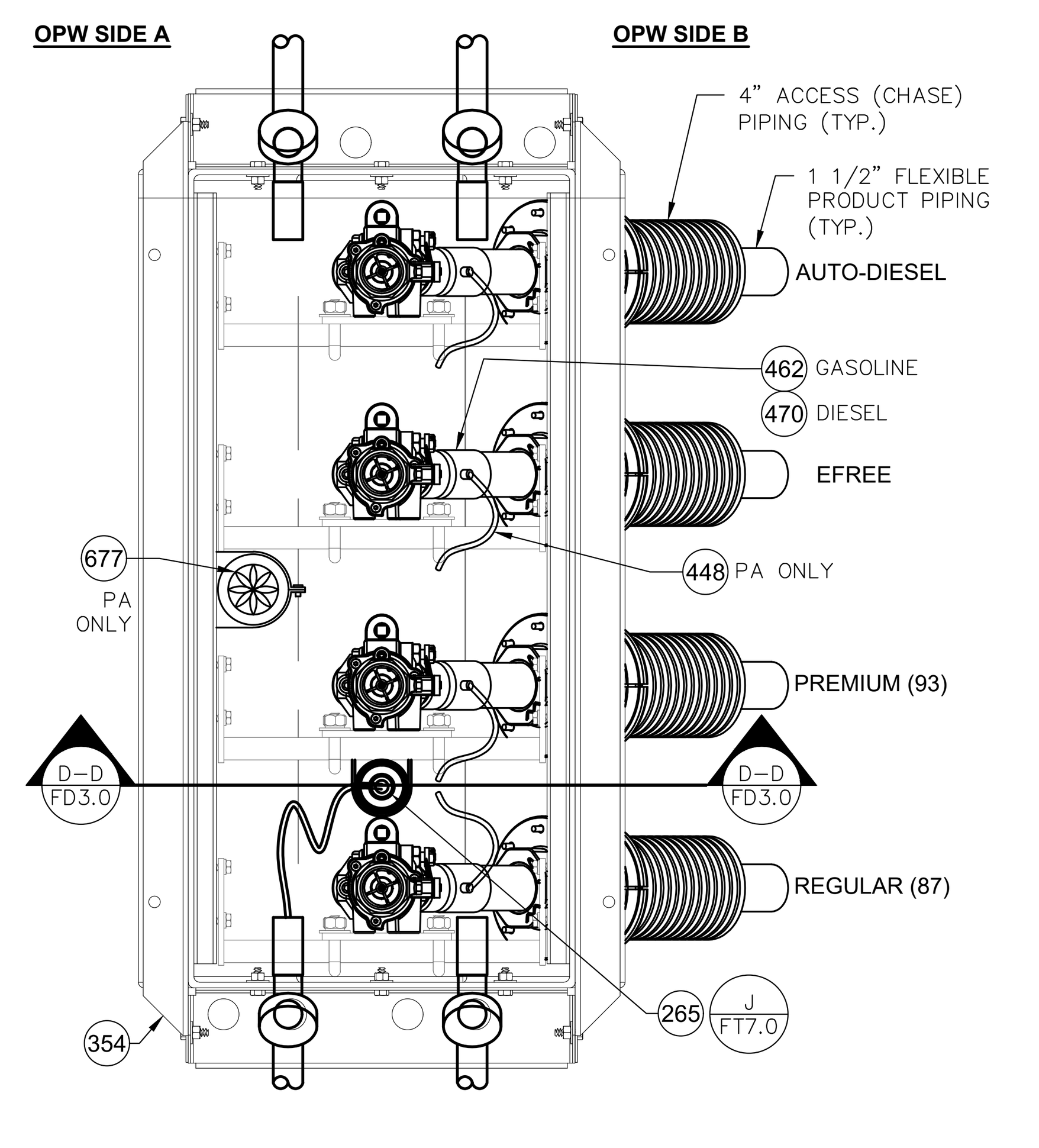
A1 TYPICAL DISPENSER FOOTPRINT ROUGH IN
SCALE: 1 ½" = 1'-0"

	PREM.	REG.
OCTANE RATIO	93 35%	87 65%

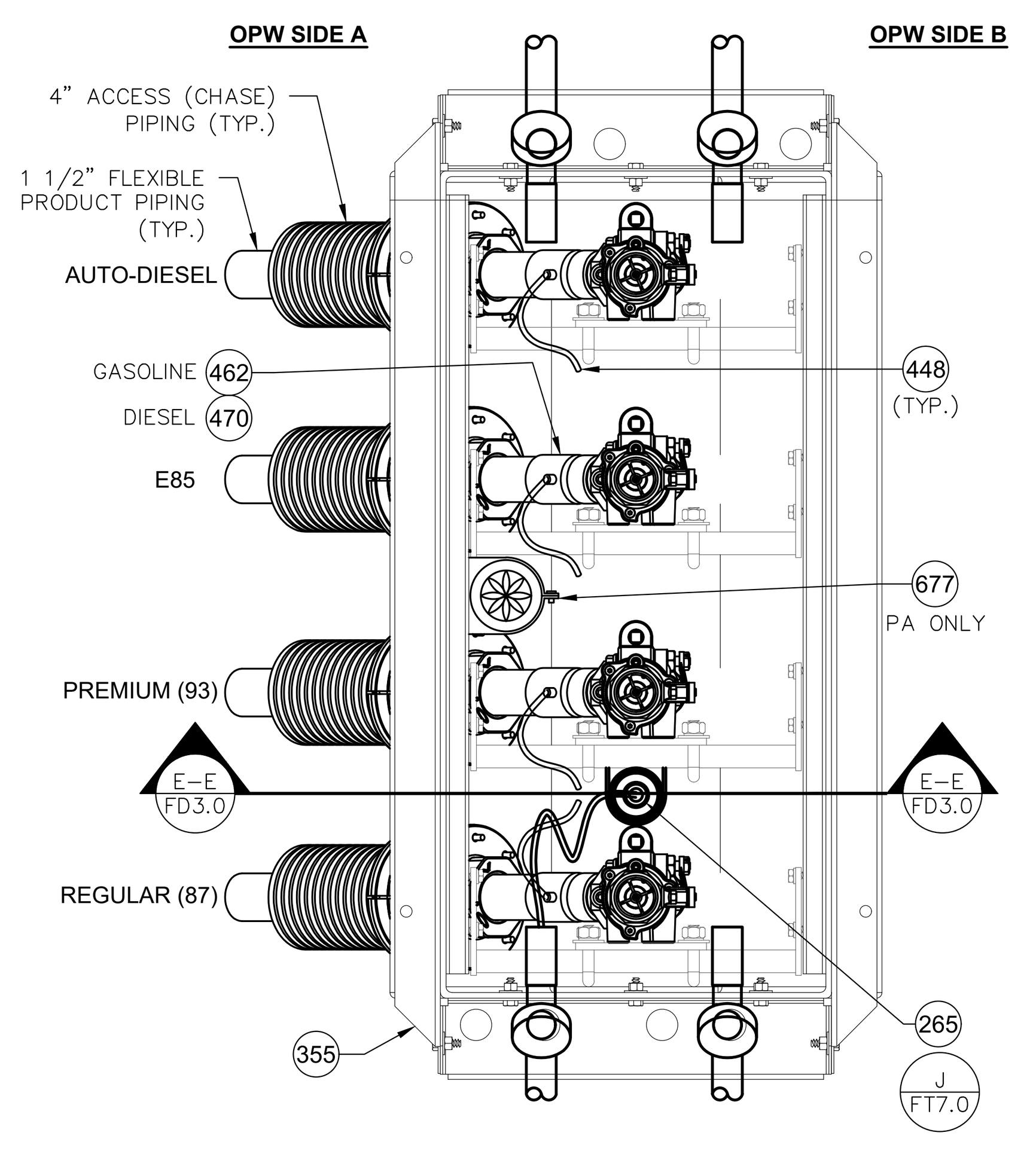
PLUS GRADE BLENDING RATIOS

PIPING THROUGH PRODUCT SEQUENCE STARTING WITH CLOSEST TO STORE POSITION

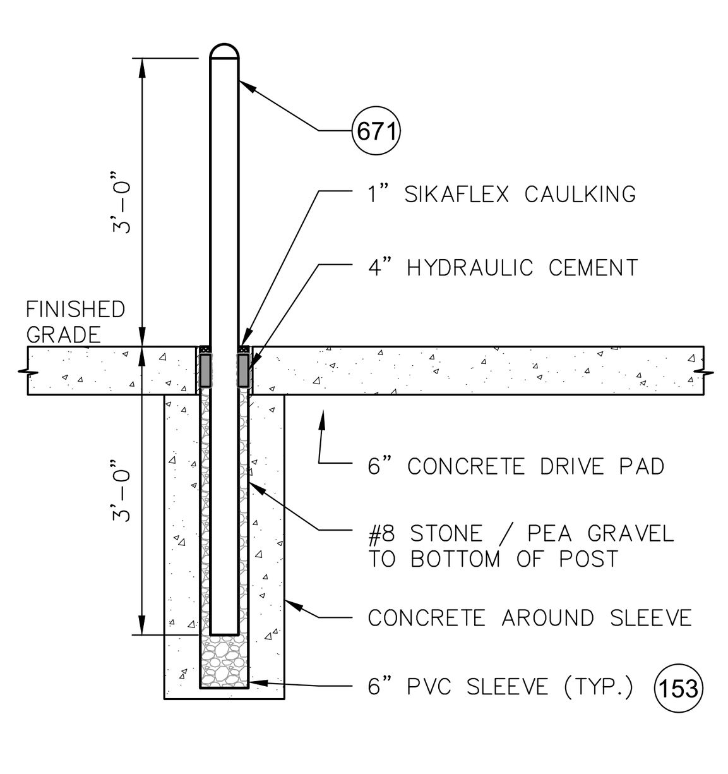
PRODUCT	PIPING POSITION	NL3	NF1	NF4
REGULAR	1	W	W	W
PREMIUM	2	X	X	X
E85	3	-	Y	Y
E0	3	Y	-	-
DIESEL	4	Z	-	Z



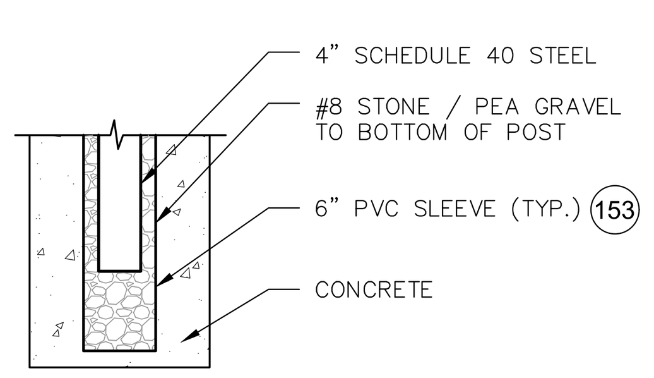
A2 "TERMINATING SIDE B" 3+1+1 DISPENSER SUMP PLAN VIEW
SCALE: 1 ½" = 1'-0"



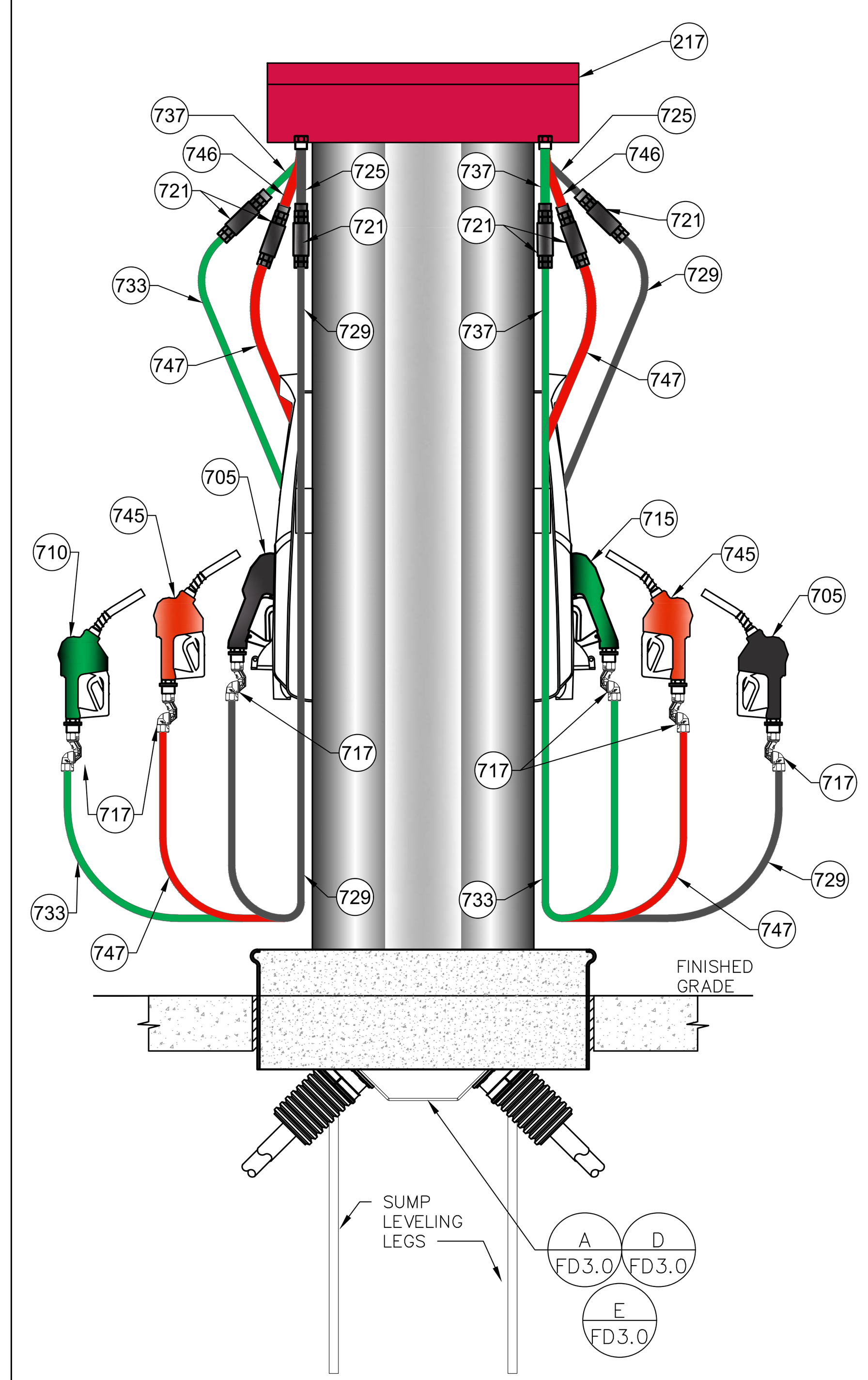
A3 "TERMINATING SIDE A" 3+1+1 DISPENSER SUMP PLAN VIEW
SCALE: 1 ½" = 1'-0"

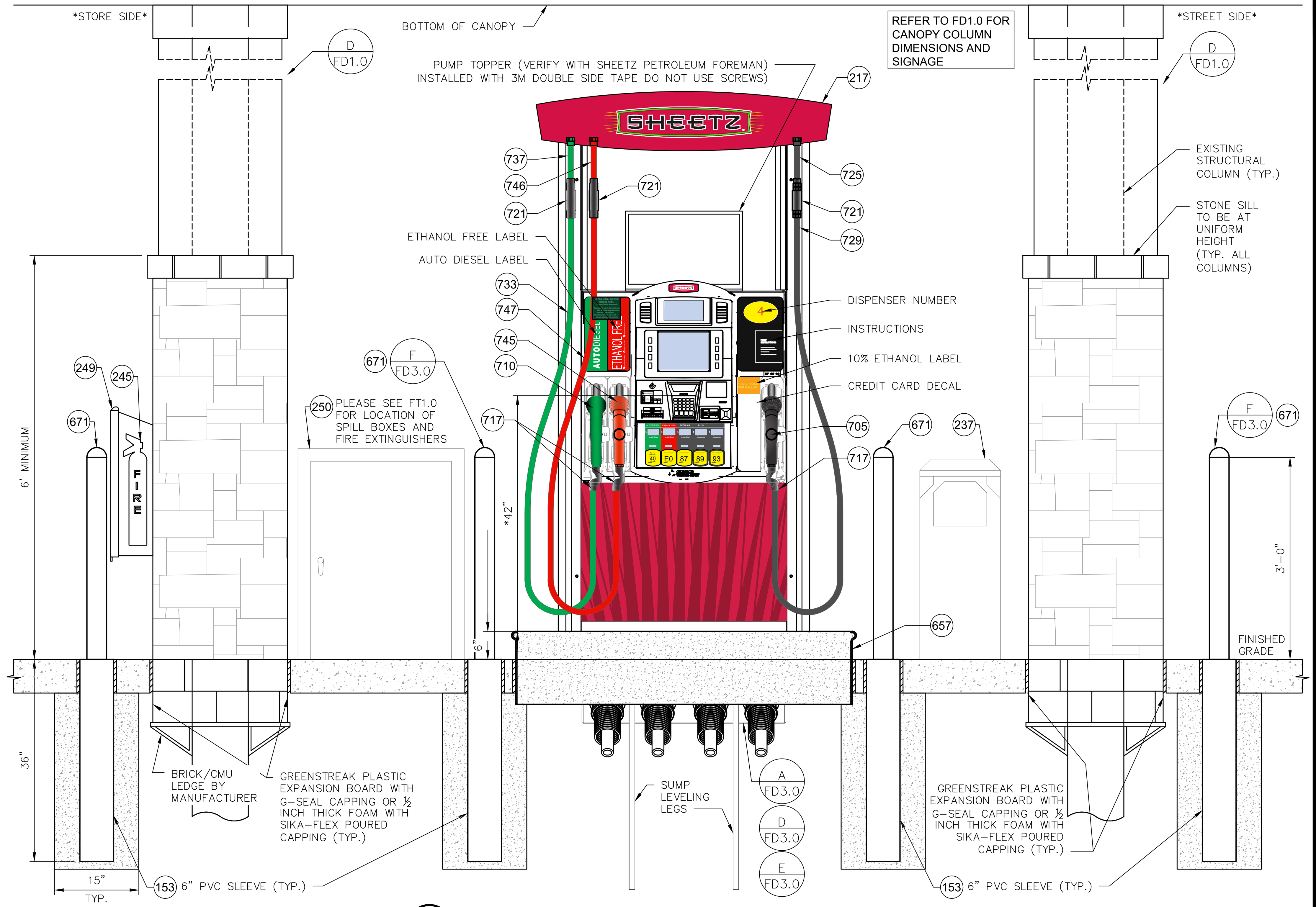


F TYPICAL POST BOLLARD DETAIL
SCALE: ½" = 1'-0"



H TYPICAL BOLLARD POST DETAIL VIEW
SCALE: ¾" = 1'-0"





C TYPICAL 3+1+1 DISPENSER ISLAND ELEVATION VIEW
SCALE: ¾" = 1'-0"

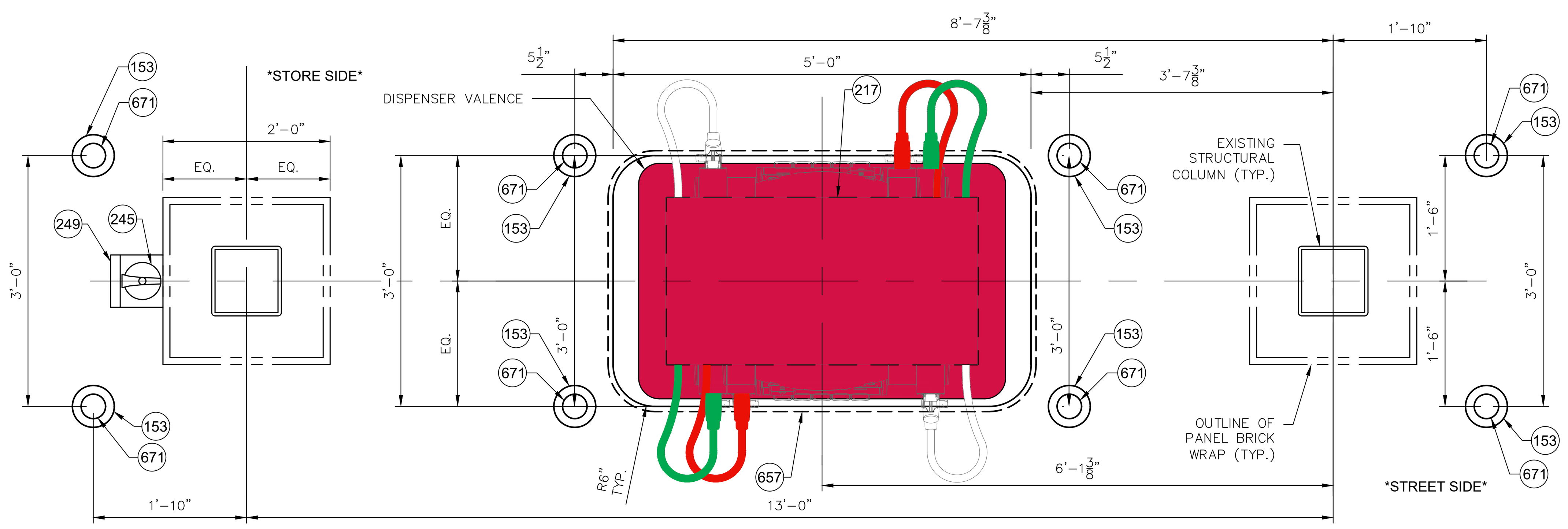
NOTE: PLEASE SEE FT1.0 FOR LOCATION OF SPILL BOXES AND FIRE EXTINGUISHERS

* CENTER OF ISLAND
** ADA REACH RANGE COMPLIANCE

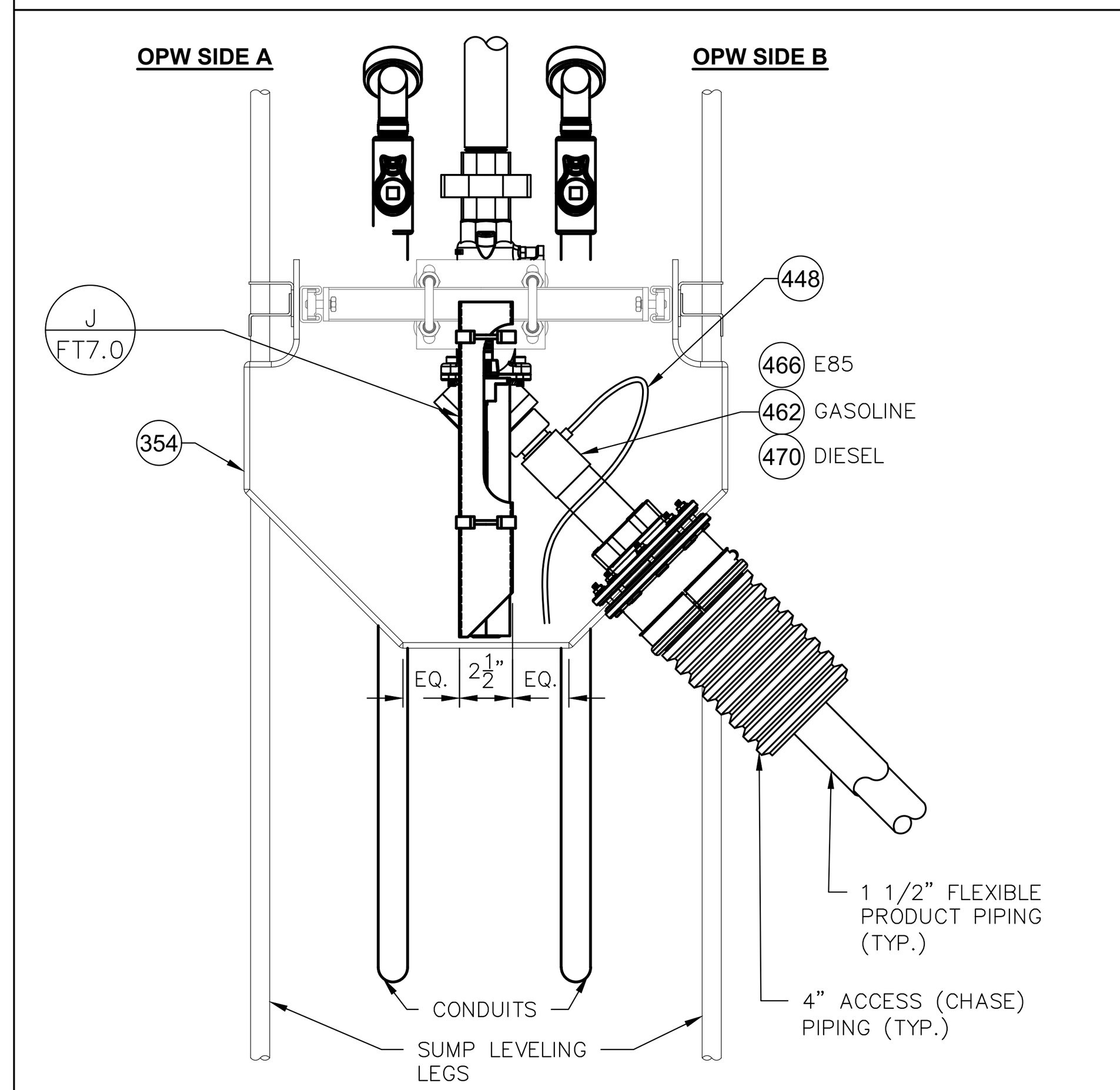
NOTE: CONTRACTOR TO PROVIDE NECESSARY CONDUIT BRACKETS FOR MOUNTING CONDUIT TO UNISTRUT

NOTE: WELD ANGLE IRON FRAME TO HOLD DISPENSER SUMP IN PLACE WHILE INSTALLING.

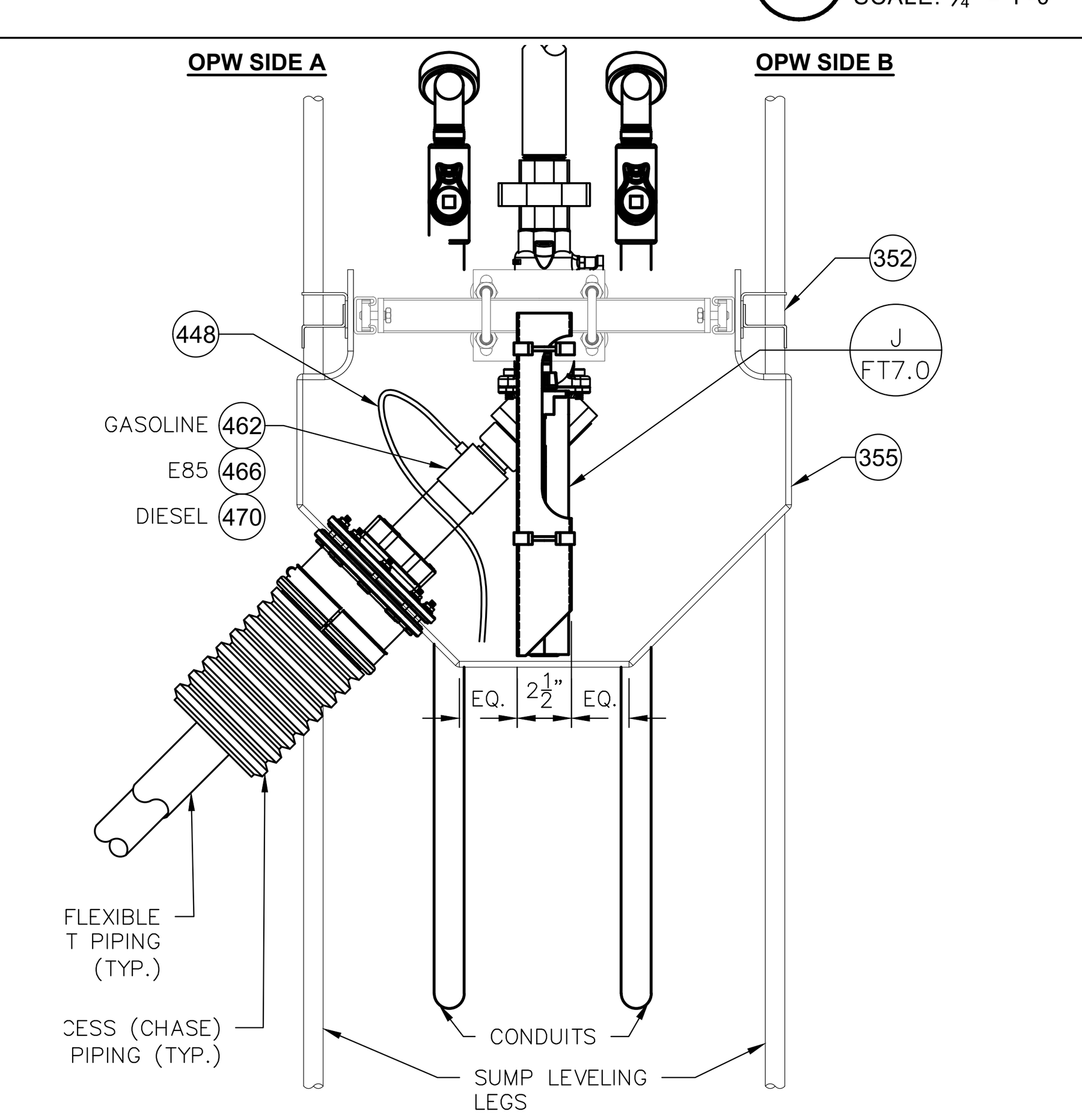
NOTE: SEE FT8.0 FOR LIST OF SPECIFIC PARTS INCLUSIVE OF LOOP SUMP PACKAGE OPW SUPPLIED PARTS.



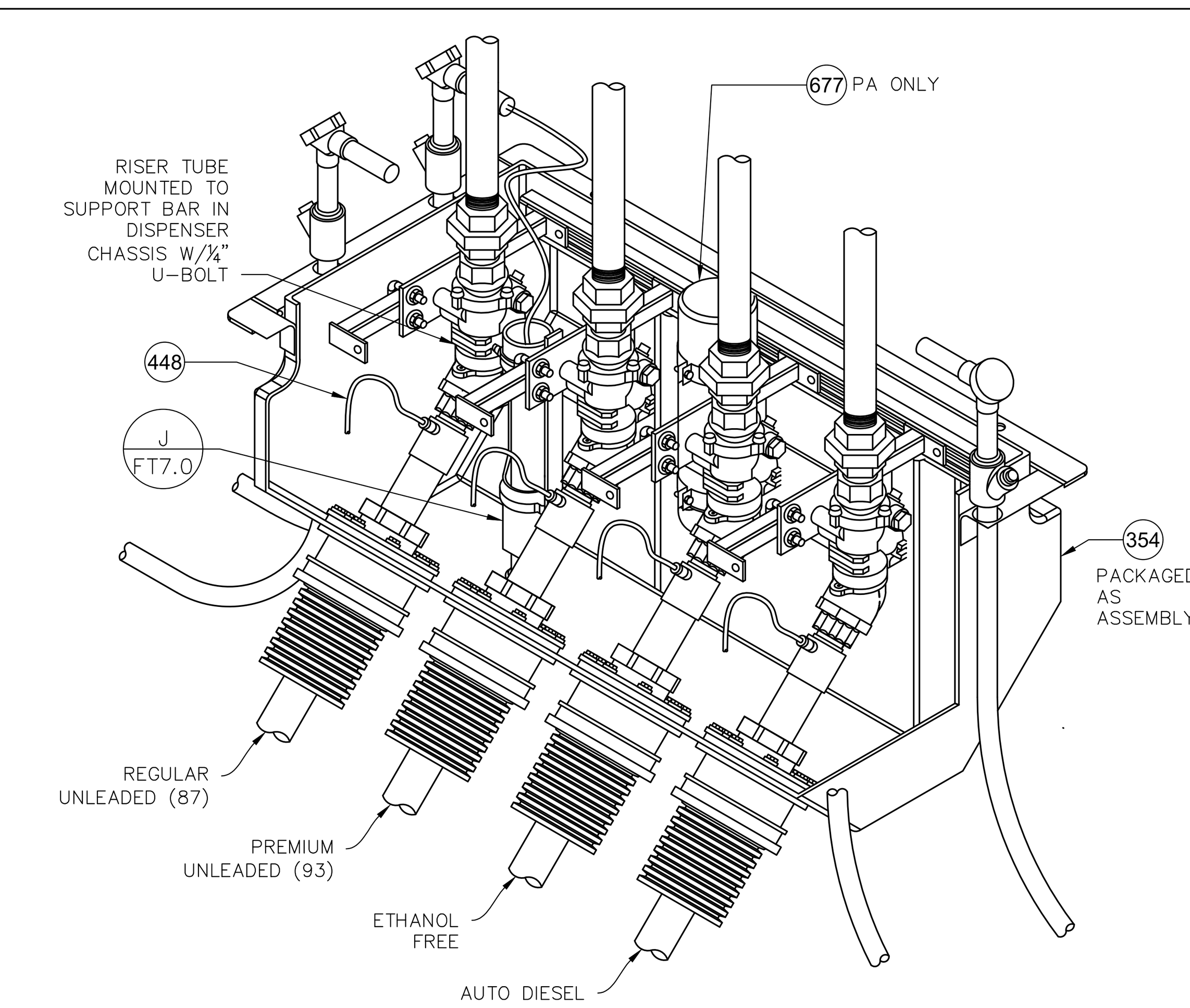
B TYPICAL 3+1+1 DISPENSER ISLAND PLAN VIEW
SCALE: ¾" = 1'-0"



SECTION D-D
D "TERMINATING SIDE B" 3+1+1 DISPENSER SUMP SECTION
SCALE: 1 ½" = 1'-0"



SECTION E-E
E "TERMINATING SIDE A" 3+1+1 DISPENSER SUMP SECTION
SCALE: 1 ½" = 1'-0"



D1 "TERMINATING SIDE B" 3+1+1 DISPENSER SUMP ISOMETRIC VIEW
SCALE: NOT TO SCALE

ISSUED FOR	DATE	BY	DESCRIPTION
	03-01-21	JW	ISSUED FOR OWNER REVIEW
	03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 051765

CONSULTANT:
Engineers • Planners • Surveyors
Wellert Corporation
5136 Beach Road • Medina, Ohio 44256
330.239.2699 • 330.239.0272

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

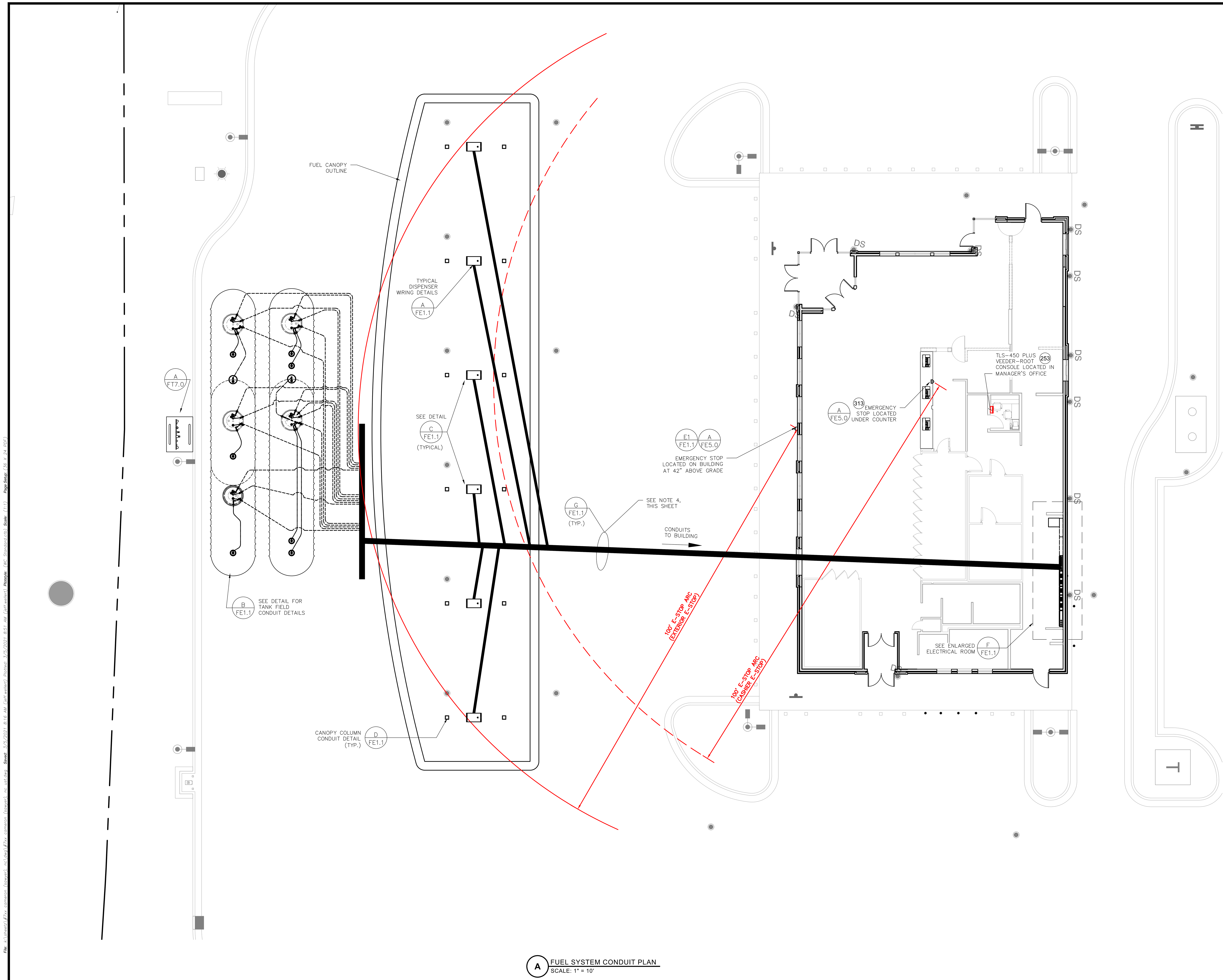
SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
(814) 946-3611

ENCORE (3+1+1) DISPENSER INSTALLATION

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	NOTED
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FD3.0



A FUEL SYSTEM CONDUIT PLAN
SCALE: 1" = 10'

NOTES:

1. ALL ELECTRICAL CONDUITS ARE TO HAVE CONDUIT SEAL OFF FITTINGS. PER NEC 514-8, EXCEPTION 2.
2. THIS DRAWING IS FOR ELECTRICAL CONDUIT SCHEME ONLY. SEE CIVIL SITE PLAN FOR SPECIFIC LAYOUT.
3. LAST 10 FEET OF ALL CONDUIT RUNS ARE TO BE R.M.C. (RIGID METAL CONDUIT.)
4. UST HIGH AND LOW VOLTAGE CONDUITS ARE TO BE INSTALLED IN SEPARATE TRENCHES. MINIMUM DISTANCE BETWEEN UST HIGH AND LOW VOLTAGE CONDUITS IS 7 1/2" PER N.E.C.
5. ALL UST PUMP POWER CONDUITS ARE TO BE 1" RIGID METAL CONDUIT FROM STP SUMP TO BUILDING AND HAVE PERMA-COTE (OR EQUAL) COATING.
6. SEE CONDUIT COUNT (SHEET FE2.0) FOR ACTUAL CONDUIT QUANTITIES.
7. CONTRACTOR TO SUE PRIMER AND GLUE OR GLUE THAT CONTAINS PRIMER ON ALL PVC CONDUIT JOINTS.
8. ALL RIGID METAL ELECTRICAL CONDUITS, JUNCTION BOXES & FITTINGS INSIDE STP SUMPS AND LAST 10 FEET OF RIGID METAL CONDUIT ARE TO HAVE PVC COATING FOR CORROSION PROTECTION.

NORTH

SCALE (IN FEET)
1 inch = 10 ft.
0 5 10 20

DATE	BY	ISSUED FOR DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 031765

CONSULTANT: Weilert Corporation, Engineers • Planners • Surveyors, 5136 Beach Road • Medina, Ohio 44256

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

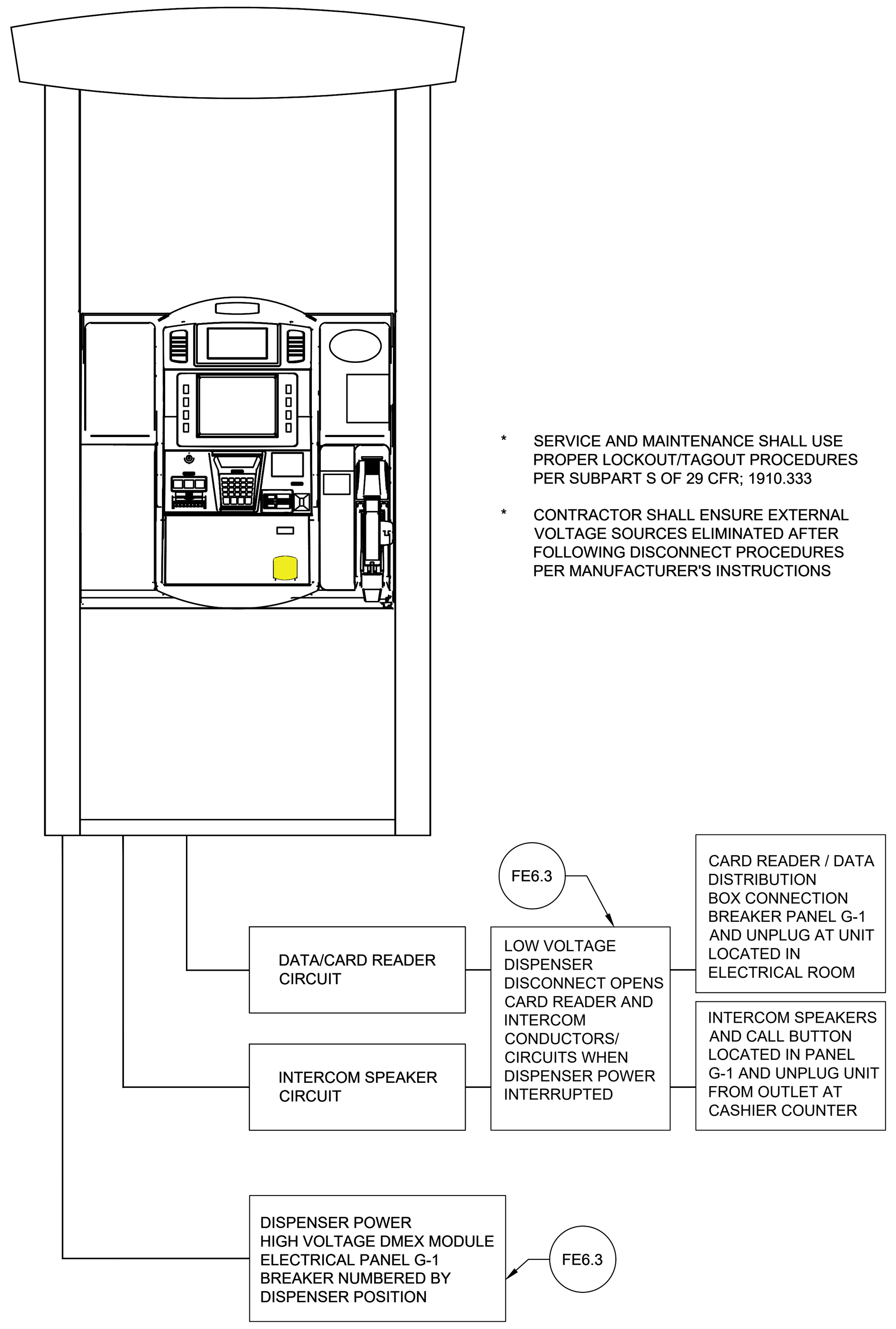
SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
(814) 946-3611

CONDUIT ROUTING PLAN

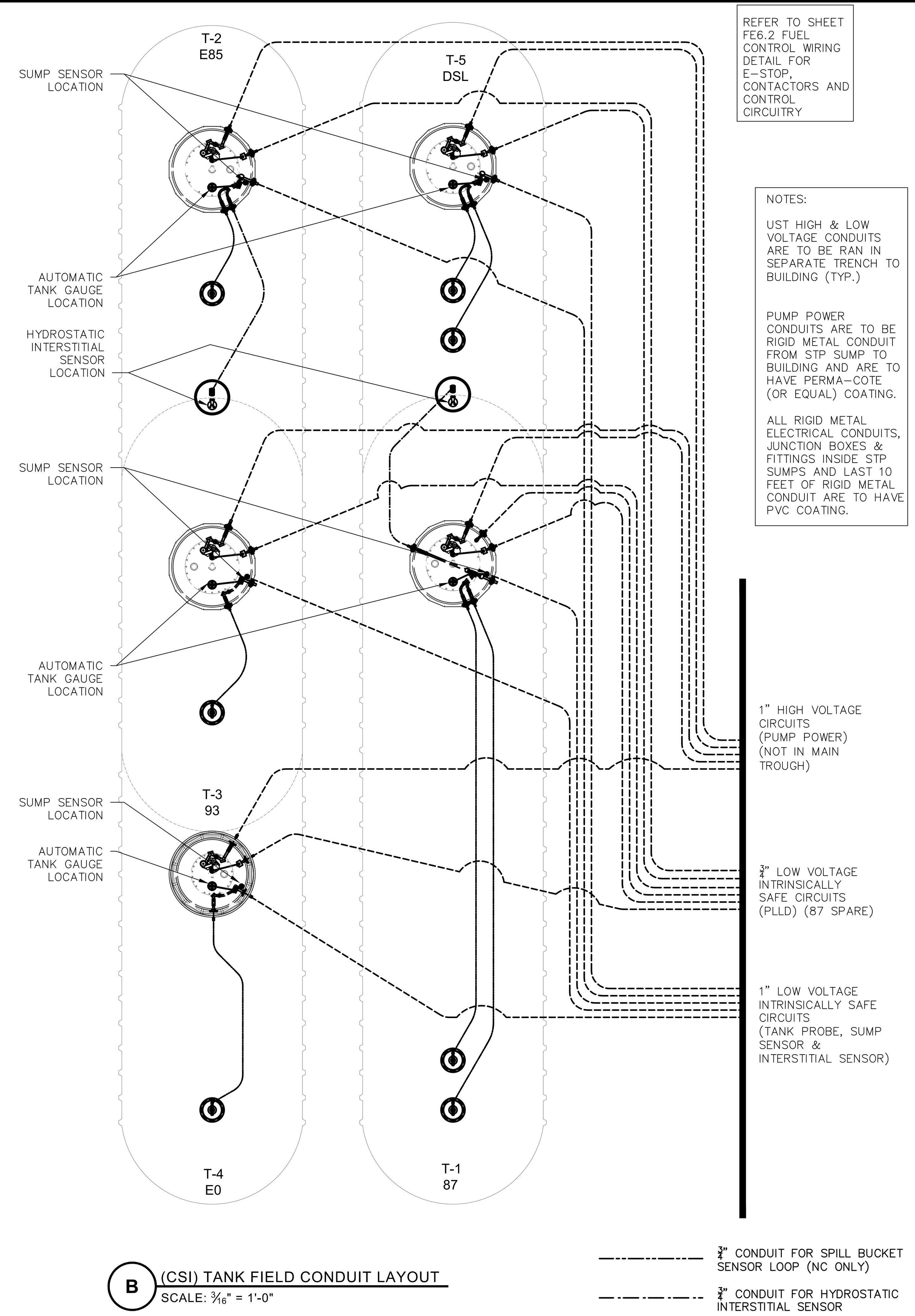
SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	1" = 10'
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

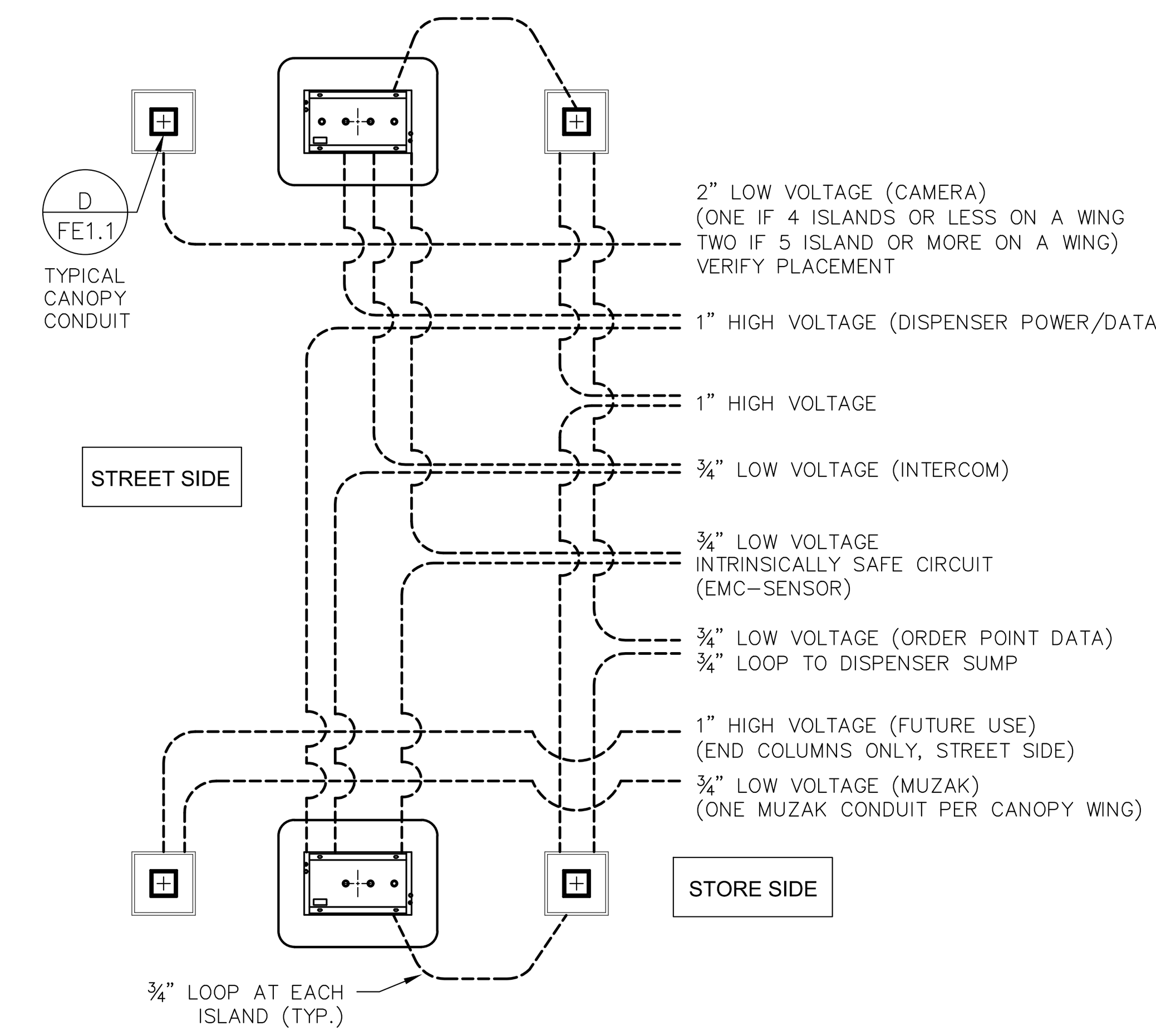
FE1.0



A SERVICE AND MAINTENANCE DISCONNECT DIAGRAM FOR DISPENSING POINTS PER NEC 514.11, 514.13
SCALE: NOT TO SCALE



B (CSI) TANK FIELD CONDUIT LAYOUT
SCALE: 3/16" = 1'-0"

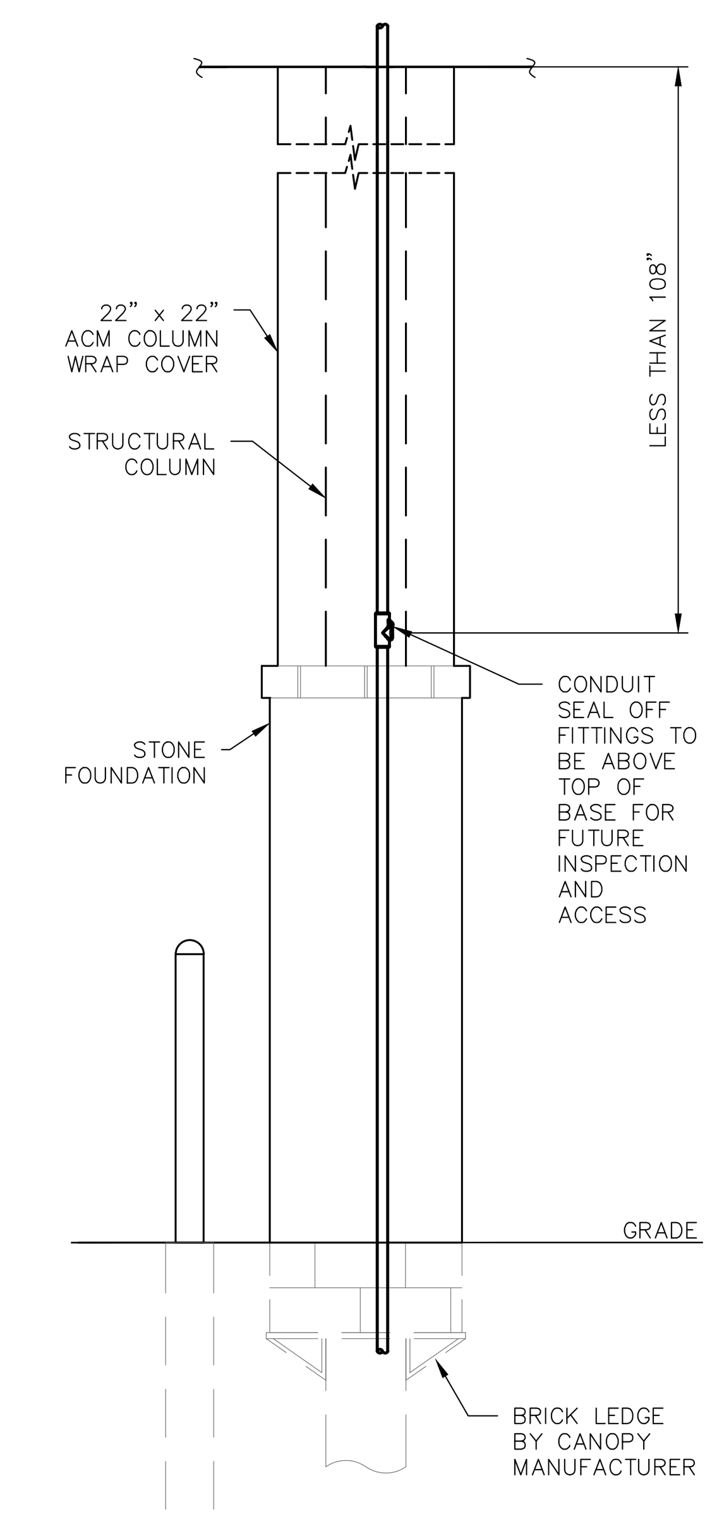


NOTE:
DISPENSER & CANOPY COLUMN AREA CONDUIT LAYOUT SHOWN IS DIAGRAMMIC AND IS PER STANDARD SHEETZ DISPENSER & COLUMN CONDUIT DESIGN. ACTUAL FIELD INSTALLATION MAY VARY DUE TO MECHANICAL INTERFERENCE AND/OR ACTUAL LOCATION OF EXISTING UNDERGROUND CONDUITS AND QUANTITY. PULL BOXES MAY BE REQUIRED DUE TO EXCESSIVE WIRE AND CONDUIT LENGTHS. ALL CONDUIT INSTALLATION IS TO COMPLY WITH THE NATIONAL ELECTRIC CODE, LATEST EDITION.

NOTES:

1. SECURE CONDUIT AT CANOPY COLUMNS ALONG THE FACE OF THE COLUMN, WITHIN BRICK WRAP, CONDUITS SHALL BE LOCATED AS TO NOT INTERFERE WITH BRICK WRAP BRACING.
2. SEE DETAIL -A, SHEET FD2.0 & FD3.0, FOR EXACT CONDUIT LOCATIONS AT DISPENSER SUMPS.
3. WHEN COLUMNS HAVE A BRICK BASE - ALL CONDUIT SEAL-OFFS ARE TO BE LESS THAN 108" FROM CANOPY DECKING SO THEY ARE ACCESSIBLE FOR FUTURE INSPECTION AND/OR ELECTRICAL WORK.
4. SUPPLY AND INSTALL ALL 1" HIGH VOLTAGE LIGHTING CONDUITS TO TOP OF CANOPY AND TERMINATE WITH 8" x 8" WATERTIGHT OX.
5. SUPPLY AND INSTALL ALL 2" CAMERA CONDUITS TO TOP OF CANOPY AND TERMINATE WITH 8" x 8" WATERTIGHT BOX.
6. SUPPLY AND INSTALL ALL 1" HIGH VOLTAGE CONDUIT WITH SEAL-TITE WHIP ENDS TO CANOPY DOWN LIGHT FIXTURES FROM 8" x 8" BOXES.
7. SUPPLY AND INSTALL ¾" CONDUIT TO ONE STORE SIDE CANOPY COLUMN PER CANOPY FOR MUZAK SOUND SYSTEM. UST INSTALLER WILL LOOP WIRE FOR MUZAK SPEAKERS TO STORE SIDE CANOPY COLUMNS UNDERGROUND PRIOR TO COLUMN WRAP INSTALLATION.

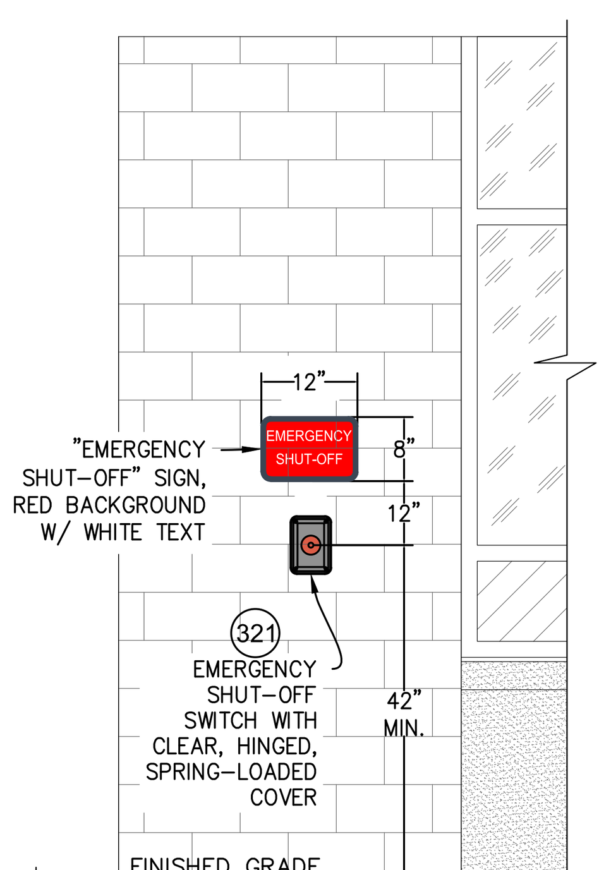
C TYPICAL ISLAND CONDUIT SCHEMATIC
SCALE: NOT TO SCALE



D CANOPY CONDUIT ELEVATION
SCALE: ½" = 1'-0"

NOTES:

1. LOCATE EMERGENCY SHUT-OFF SWITCH WITHIN 100 FEET AND NO LESS THAN 20 FEET FROM DISPENSERS. SEE SHEET FE1.0 FOR ACTUAL LOCATION.
2. COORDINATE LOCATION OF E-STOPS WITH BUILDING ARCHITECTURAL PLANS.
3. INSTALL A SEAM OF CAULK AROUND EDGES OF E-STOP ENCLOSURE TO ENSURE WATERPROOF SEAL TO BUILDING STONE OR BRICK.



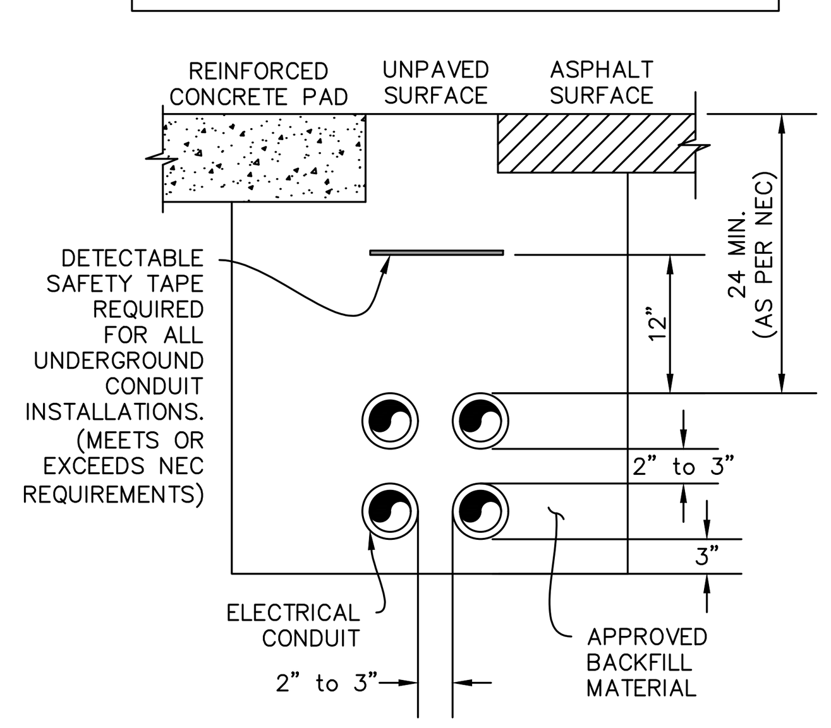
E1 E-STOP EXTERIOR BUILDING WALL MOUNTED DETAIL
SCALE: ½" = 1'-0"

NOTE:
ALL PUMP POWER CONDUITS ARE TO BE RIGID METAL CONDUIT FROM STP SUMP TO BUILDING AND ARE TO BE COATED WITH PERMA-COTE (OR EQUAL) COATING.

NOTE:
ALL RIGID METAL CONDUITS, JUNCTION BOXES & FITTINGS INSIDE ALL STP SUMPS AND LAST 10 FEET OF RIGID METAL CONDUIT ARE TO HAVE PVC COATING TO PREVENT AGAINST CORROSION.

NOTE:
HIGH AND LOW VOLTAGE UNDERGROUND ELECTRICAL CONDUITS FROM UST TO BUILDING ARE TO BE INSTALLED IN SEPARATE TRENCHES. MINIMUM DISTANCE BETWEEN UST HIGH AND LOW VOLTAGE CONDUITS IS 7 1/2" PER N.E.C.

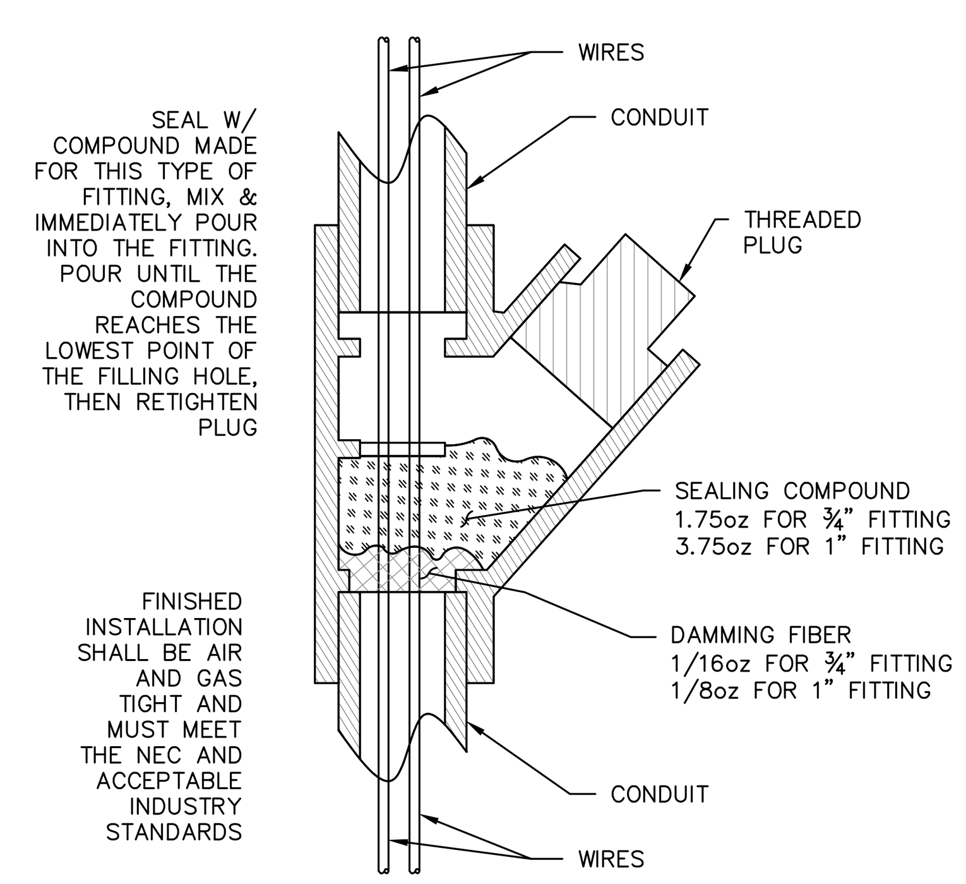
NOTE:
CONDUIT BEDDING AND BACKFILL IN ACCORDANCE WITH CONDUIT MANUFACTURER'S REQUIREMENTS. ALL INSTALLATIONS TO COMPLY WITH NEC



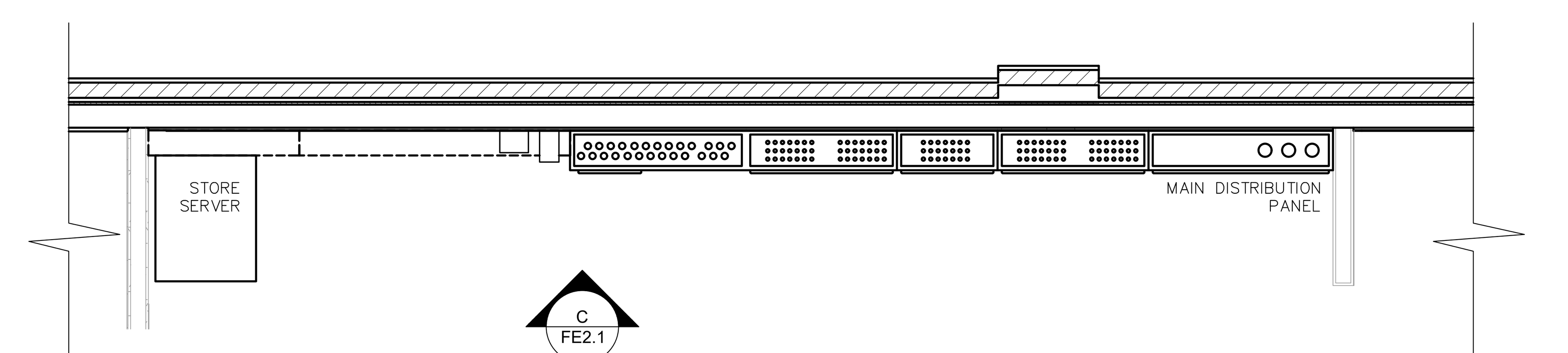
G MIN. UNDERGROUND CONDUIT BACKFILL REQUIREMENTS
SCALE: NOT TO SCALE

NOTES:

1. EACH RUN OF CONDUIT FROM A HAZARDOUS LOCATION TO A NONHAZARDOUS LOCATION MUST BE SEALED TO MINIMIZE THE GASES AND VAPORS COMMUNICATED BEYOND THE SEAL.
2. SELECT THE PROPER SEALING FITTING FOR THE HAZARDOUS GAS/VAPOR INVOLVED AND THE PROPER USE IN RESPECT TO MOUNTING POSITION. SOME SEALS ARE DESIGNED TO BE MOUNTED IN ANY POSITION; OTHERS ARE RESTRICTED TO VERTICAL MOUNTING.
3. SEALING COMPOUNDS SHALL BE APPROVED FOR THE PURPOSE AND SHALL NOT BE AFFECTED BY THE SURROUNDING ATMOSPHERE OR LIQUIDS, AND SHALL NOT HAVE A MELTING POINT OF LESS THAN 93°C. (200°F.).
4. IN THE COMPLETE SEAL, THE MINIMUM THICKNESS OF THE SEALING COMPOUND SHALL NOT BE LESS THAN THE TRADE SIZE OF THE CONDUIT, AND IN NO CASE LESS THAN 5/8 INCH. THE AMOUNT OF SEALING COMPOUND AND PACKING FIBER REQUIRED FOR ANY SEAL IS DETERMINED BY VOLUME HUB SIZE AND MOUNTING POSITION OF THE SEAL. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. PACKING FIBER (MATERIAL) MUST BE PROPERLY INSTALLED TO ELIMINATE PENETRATION OF THE SEALING COMPOUND INTO THE ADJACENT CONDUIT(S).



H TYPICAL CONDUIT SEAL-OFF FITTING
SCALE: NOT TO SCALE



NOTE:
UTILITY ROOM ORIENTATION MAY VARY.
FIELD VERIFY EXACT LAYOUT WITH ARCHITECTURAL AND ELECTRICAL DRAWINGS

F ENLARGED UTILITY ROOM
SCALE: 3/8" = 1'-0"

NOTES:

1. ALL ELECTRICAL CONDUITS ARE TO HAVE CONDUIT SEAL OFF FITTINGS. PER NEC 514-8, EXCEPTION 2.
2. THIS DRAWING IS FOR ELECTRICAL CONDUIT SCHEME ONLY. SEE CIVIL SITE PLAN FOR SPECIFIC LAYOUT.
3. LAST 10 FEET OF ALL CONDUIT RUNS ARE TO BE R.M..C. (RIGID METAL CONDUIT.)
4. SEE CONDUIT COUNT (SHEET FE2.0) FOR ACTUAL CONDUIT QUANTITIES.
5. CONTRACTOR TO USE PRIMER AND GLUE OR GLUE THAT CONTAINS PRIMER ON ALL PVC CONDUIT JOINTS.

ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 051765 ROBERT W. WELLERT

CONSULTANT:
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CONVENIENCE ARCHITECTURE AND DESIGN P.C.
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SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

SUB SYSTEM CONDUIT PLAN

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

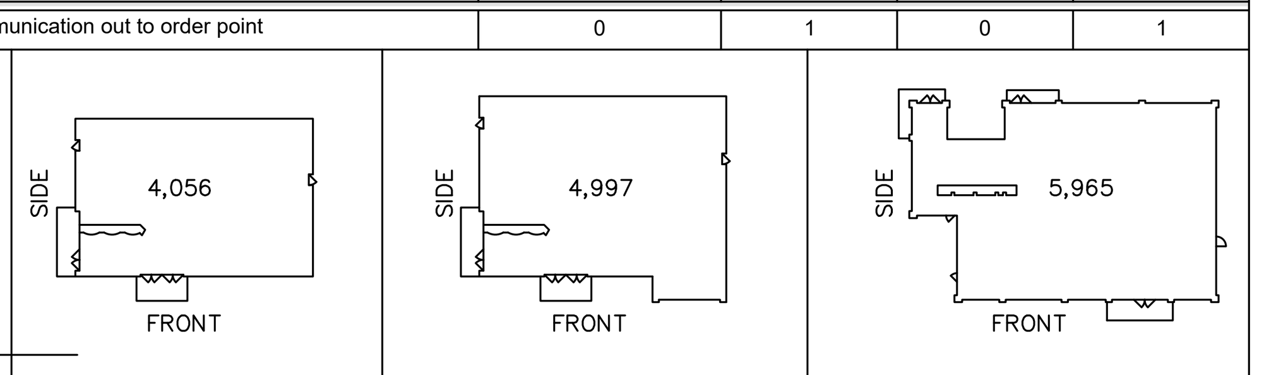
SCALE:	NOTED
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FE1.1

Sheetz #716 Cameron, NC	26-JAN-21			
CONDUIT EXIT POINT BREAKDOWN				
1" Rigid PVC High Voltage (no color)	FRONT	SIDE	OTHER	TOTAL
MPD power	6	0	X	6
High Flow Diesel Dispenser Power	0	0	X	0
1" Rigid PVC High Voltage (no color)	FRONT	SIDE	OTHER	TOTAL
Area Lights/Flag Lights	2	1	2	5
Dumpster Pad	0	0	0	0
Drive Thru Order Point	0	1	0	1
Pole sign	2	0	0	2
Store Side Canopy Column	6	0	0	6
Street Side Canopy Column (Exterior -Future Use)	2	0	0	2
Street Side Canopy Column (Interior - Truss Canopy Lighting)	0	0	0	0
3/4" Rigid PVC High Voltage (no color)	FRONT	SIDE	OTHER	TOTAL
Kero dispenser power	0	0	X	0
3/4" Rigid PVC High Voltage (no color)	FRONT	SIDE	OTHER	TOTAL
Kero STP power	0	0	0	0
Diesel STP power	0	0	0	0
UST Vent Pad (future)	1	0	X	1
Air Machine power/Car wash Vacuum power	1	0	1	2
Spare / Grinder Pump	0	0	0	0
Exterior Emergency Estop on Post	0	0	0	0
1" Rigid PVC Low Volt. Intrinsically Safe (#1-Blue)	FRONT	SIDE	OTHER	TOTAL
STP: Probe/Sump Sensor/Interstitial Sensor	5	0	0	5
3/4" Rigid PVC Low Volt. Intrinsically Safe (#1-Blue)	FRONT	SIDE	OTHER	TOTAL
STP sumps (PLLD)	5	0	0	5
MPD sump sensors	6	0	X	6
Kero dispenser sump sensor	0	0	X	0
87-1 Tank STP/Probe Sump	1	0	0	1
UST Vent Pad (future)	1	0	0	1
Oil-Water Separator	0	0	0	0
3/4" Rigid PVC Low Voltage Intercom (#2-Green)	FRONT	SIDE	OTHER	TOTAL
Gas Price Sign control	2	0	0	2
3/4"Rigid PVC Low Volt. Intercom (#2-Green)	FRONT	SIDE	OTHER	TOTAL
MPD intercom	6	0	X	6
3/4" Rigid PVC Low Volt. Intercom (#2-Green)	FRONT	SIDE	OTHER	TOTAL
Grinder pump alarm	0	0	0	0
Muzak	1	0	X	1
3/4"Rigid PVC Low Volt. Order-Point (#3-Red)	FRONT	SIDE	OTHER	TOTAL
Order-Point communication	6	0	X	6
1" Rigid RMC High Volt. NO TROUGH (#4-Orange)	FRONT	SIDE	OTHER	TOTAL
Gasoline / Diesel STP power	5	0	0	5
High Flow Diesel STP power	0	0	0	0
1 1/2" Rigid PVC NO TROUGH (no color)	FRONT	SIDE	OTHER	TOTAL
Communication to Car Wash TELLER	0	0	1	1
Communication to Car Wash Utility Room	0	0	1	1
2" Rigid PVC NO TROUGH (#6 - Purple)	FRONT	SIDE	OTHER	TOTAL
Island Cameras	2	0	X	2
1 1/2" Rigid PVC NO TROUGH (#6 - Purple)	FRONT	SIDE	OTHER	TOTAL
Drive-Thru Communication out to order point	0	1	0	1

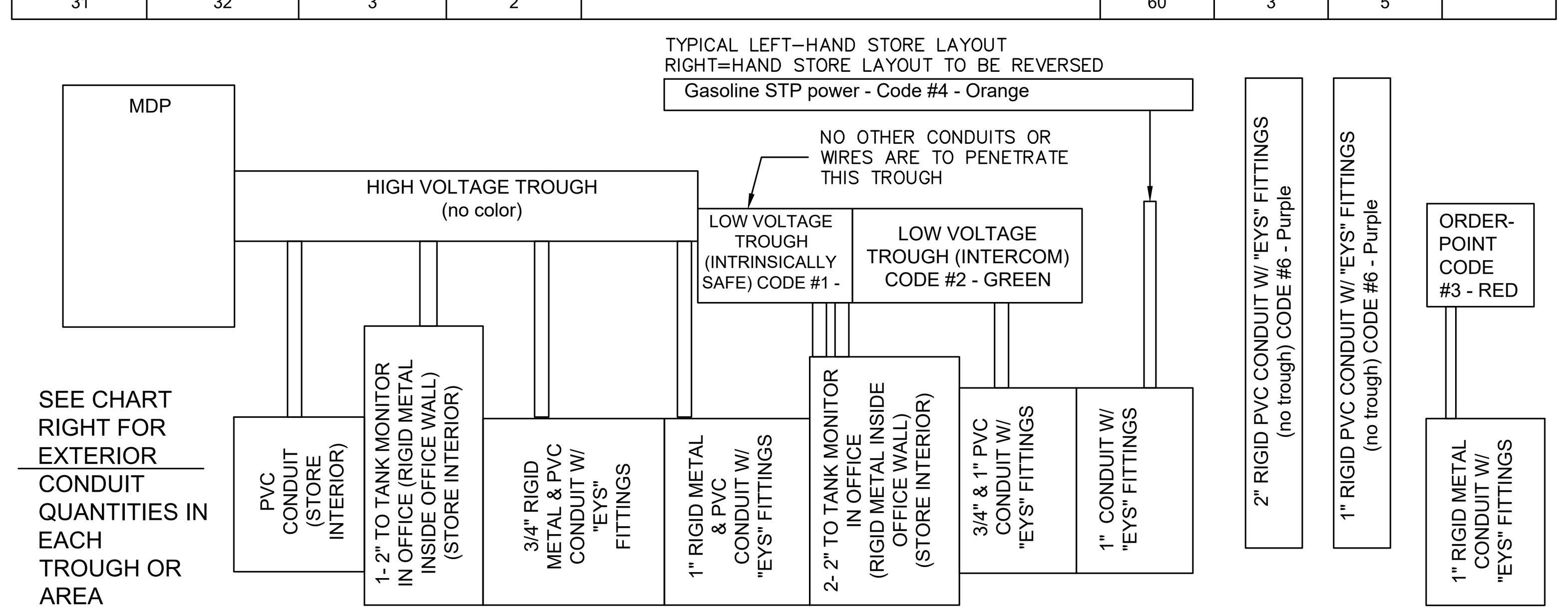
stores shown are "left-hand"

"right-hand" will be mirrored side to side



conduit that Petroleum Contractor will not run	1	Total	68
conduit supplied by Electrical Contractor that Petroleum Contractor may run	14	Elec Contractor	15
		Petro Contractor	53

STORE #	Sheetz #716 Cameron, NC					1/26/2021			
THE FIRST AND LAST 10' OF ALL CONDUIT IS TO BE RIGID METAL CONDUIT AND THEN EITHER CHANGED TO PVC OR CONTINUED IN RIGID METAL CONDUIT									
TOTAL NUMBER OF CONDUIT TO BE STUBBED OUT OF BUILDING BY ELECTRICAL CONTRACTOR									68
						LOCATION OF EXIT			
Size & Type (between first & last 10')				Trough Designation	Color Code	FRONT	SIDE	OTHER	TOTAL
3/4" PVC				High Voltage	(no color)	2	0	1	3
	1" PVC			High Voltage	(no color)	18	2	2	22
3/4" PVC				Low Voltage Intrinsically Safe	# 1-Blue	13	0	0	13
	1" PVC			Low Voltage Intrinsically Safe	# 1-Blue	5	0	0	5
3/4" PVC				Low Voltage Intercom	# 2-Green	9	0	0	9
3/4" PVC				Order-Point	# 3-Red	6	0	0	6
	1" RMC			NO TROUGH	# 4-Orange	5	0	0	5
		1 1/2" PVC		NO TROUGH	(no color)	0	0	2	2
		1 1/2" PVC		NO TROUGH	#6-Purple	0	1	0	1
			2" PVC	NO TROUGH	#6-Purple	2	0	0	2
TOTAL CONDUIT BY SIZE (above)						TOTAL CONDUIT BY EXIT			
31	32	3	2			60	3	5	



ELECTRICAL CONDUIT LOCATIONS AND WIRING SCHEDULE

Sheetz #716 Cameron, NC — 26-JAN-21

LOCATION	Conduit Quantities per Location from Building (except loops)			WIRES NEEDED PER CONDUIT
ENCORE NJ5 5+0 DISPENSER (GASOLINE/E85)		RMC	PVC	
3/4" LOW VOLTAGE (INTERCOM SPEAKER/APPLAUSE MEDIA) **	1	X	PVC	1-18/3 Shielded Cable / 1 GBCO Q13221 Twisted pr - 14 GA
3/4" LOW VOLTAGE (SENSOR) (I.S.) **	1	X	x	2-18/3 SHIELDED CABLE
3/4" (MEDIA CLIENT LOOP TO STORE SIDE CANOPY COLUMN) **	1*	X	x	PULL-STRING
1" HIGH VOLTAGE (POWER) **	1	X	x	8 - 12 GA / 2-GBCO Q13221 twisted pr-14 GA
ENCORE NL1 3+1 DISPENSER (GASOLINE / AUTO-DIESEL)		RMC	PVC	
3/4" LOW VOLTAGE (INTERCOM SPEAKER) **	1	X	X	1-18/3 Shielded Cable /1 GBCO Q13221 Twisted pr - 14 GA
3/4" LOW VOLTAGE (SENSOR) (I.S.) **	1	X	X	3-18/3 SHIELDED CABLE
3/4" (MEDIA CLIENT LOOP TO STORE SIDE CANOPY COLUMN) **	1*	X	X	PULL-STRING
1" HIGH VOLTAGE (POWER) **	1	X	X	8 - 12 GA / 2-GBCO Q13221 twisted pr-14 GA
LEGACY JHA100 DISPENSER (KEROSENE)		RMC	PVC	
3/4" HIGH VOLTAGE	1	X	X	6 - 12 GA /1-GBCO Q13221 twisted pr-14 GA
3/4" LOW VOLTAGE (SENSOR) (I.S.)	1	X	X	1-18/3 SHIELDED CABLE
AIR MACHINE		RMC	PVC	
3/4" HIGH VOLTAGE (not applicable if site has carwash)	1		X	3 - 10 GA THHN
15" PUMP OUT CULVERT		RMC	PVC	
			X	
			X	
4" MONITORING WELLS (FRONT)		RMC	PVC	
			X	
4" MONITORING WELL(S) (REAR)		RMC	PVC	
			X	
STP SUMPS (See note below for future E-85 STP)		RMC	PVC	
1" HIGH VOLTAGE (POWER) (10 GA from breaker to VFC / 12 GA from VFC to MOTOR)	1		X	4 - 12 GA THHN
3/4" LOW VOLTAGE (I.S) (PLLD)	1	X	X	1-18/3 SHIELDED CABLE
3/4" LOW VOLTAGE (I.S)	1	X	X	1-18/3 SHIELDED CABLE
1" LOW VOLTAGE (PROBE/SENSORS/SCVS MODULE) (I.S.)	1	X	X	4-18/3 SHIELDED CABLE
3/4" LOW VOLTAGE (LOOP to Interstitial Riser) (SENSOR) (I.S.)	1***	X	X	1-18/3 SHIELDED CABLE (LOOPED)
3/4" LOW VOLTAGE (LOOP to SPILL BUCKET)(SENSOR)(I.S.)-(one per SPILL BUCKET - NC only)		X	X	1-18/3 SHIELDED CABLE (LOOPED
STP SUMP (87 Tank -1 only - Additional to above)		RMC	PVC	
3/4" LOW VOLTAGE (SENSOR) (I.S.)			X	1-18/3 SHIELDED CABLE
CANOPY COLUMN (PER STREET SIDE COLUMN)		RMC	PVC	
1" HIGH VOLTAGE	1		X	PULL-STRING
1" HIGH VOLTAGE (LIGHTING - ATTACH TO INTERNAL CANOPY COLUMN CONDUIT) - TRUSS CANOPY ONLY	1	X	X	2- 10 GA THHN (PER DOWN LIGHT CIRCUIT)+10 GA gnd
3/4" LOW VOLTAGE (MUSAK SYSTEM) PER WING	1		X	WEST PENN 25224B (2 CONDUCTOR / 18 GA)
CANOPY COLUMN (PER STORE SIDE COLUMN)		RMC	PVC	
1" HIGH VOLTAGE (LIGHTING & TOUCH SCREEN ORDER POINT)	1		X	2- 10 GA THHN (PER DOWN LIGHT CIRCUIT)+10 GA gnd
(SEE SCOPE FOR TOTAL NUMBER OF AWNING & CANOPY CIRCUITS)				2 - 10 GA THHN (PER AWNING CIRCUIT)+10 GA gnd
(TOUCH SCREEN ORDER POINT-POWER) 1 - PER WING SEE NOTE BELOW				3 - 10 GA THHN per circuit
3/4" LOW VOLTAGE MEDIA CLIENT (TOUCH SCREEN ORDER POINT - DATA)	1	X	X	PULL-STRING
3/4" (MEDIA CLIENT LOOP FROM ENCORE DISPENSER SUMP)	1*	X	X	PULL-STRING
TANK INTERSTITIAL SENSOR RISERS		RMC	PVC	
3/4" LOW VOLTAGE (SENSOR) (I.S.)(LOOP from STP SUMP)	1***	X	X	1 - 18/3 SHIELDED CABLE (LOOPED)
1" FUTURE SCVS VAC TUBING CHASE (LOOP from STP SUMP)	1****			
TANK FILL DOUBLE WALL SPILL BUCKET SENSOR (NC ONLY)		RMC	PVC	
3/4" LOW VOLTAGE (SENSOR) (I.S.)(LOOP from STP SUMP)	1***	X	X	1 - 18/3 SHIELDED CABLE (LOOPED)
CANOPY CAMERAS (to STREET-SIDE columns)(2 cameras per Island)		RMC	PVC	
2" (NOT IN TROUGH) AT DESIGNATED COLUMNS	2		X	PULL STRING
ARID Permeator (When Applicable: refer to "Breakdown" sheet)		RMC	PVC	
3/4" HIGH VOLTAGE	1		X	4 - 10 GA THHN
3/4" LOW VOLTAGE (SENSORS) (I.S.)	1	X	X	3-18/3 SHIELDED CABLE
EXTERIOR ESTOP ON BOLLARD (When Applicable: refer to "Breakdown" sheet)		RMC	PVC	
3/4" HIGH VOLTAGE	1	X	X	4 - 10 GA THHN
				3-18/3 SHIELDED CABLE
Oil / Water Separator Sensor		RMC	PVC	
3/4" LOW VOLTAGE (PROBE/SENSORS) (I.S.)	1	X	X	2-18/3 SHIELDED CABLE

TOTAL CONDUITS FROM BUILDING TO TERMINATION, SUPPLIED AND INSTALLED BY PETROLEUM CONTRACTOR.	RMC	PVC	MAXIMUM NUMBER OF ADDITIONAL CONDUITS THAT MAY BE INSTALLED ONLY BY PETROLEUM CONTRACTOR TO EXTENTS OF PETROLEUM INSTALLATION. MAY BE LESS DUE TO ROUTING. (SUPPLIED BY BUILDING ELECTRICIAN)	
3/4" HIGH VOLTAGE		1		
3/4" LOW VOLTAGE		26		
1" HIGH VOLTAGE	5	14		PVC
1" LOW VOLTAGE		5	3/4"	4
2" LOW VOLTAGE		2	1"	8
TOTAL CONDUITS FROM BUILDING SUPPLIED & INSTALLED BY PETROLEUM CONTRACTOR	5	48	1-1/2"	3

Specification for Gilbarco Q13221 Twisted Pair Wire: 0

600 Volt Stranded, Anealed Copper Tinned with PVC Insulation. Type TFFN or MTW, UL Approved Gasoline and Oil Resistant. 18 AWG Wire with 10 to 12 Twists per foot. Manufactured by: C&M Wire Corp, 51 S. Walnut St., Waukegan, CT 06387 (203) 774-4812 Manufacturers Part # 27525 - SHEETZ REQUIRES ALL TWISTED PAIR WIRE TO BE 14 GA IN ADDITION TO GILBARCO SPECIFICATIONS.

FUTURE E-85 STP NOTE

Electrical circuit for future E-85 STP is to be installed completely to the sump. Wires will be terminated in an explosion proof box and capped. Enough wire is to be left to be able to be terminated in future STP without splicing additional wire to the home-run. A Circuit-breaker lock is to be installed on the 3-pole E-85 STP Circuit-breaker

TOUCHSCREEN ORDER-POINT POWER

A Circuit-breaker lock is to be installed on the Touch Screen Order-point power Circuit-breakers

All Sensor / Probe Wiring is to be Belden 88760. NO SUBSTITUTIONS

* ENTRIES FROM ENCORE DISPENSERS AND CANOPY COLUMN(STORE-SIDE) ARE ONE IN THE SAME

** CONDUITS ARE RUN TO SUMP FLANGE, NO ENTRIES INTO SUMP ARE REQUIRED

*** ENTRIES FROM STP SUMP AND TANK INTERSTITIAL SENSOR RISERS ARE ONE IN THE SAME

**** ENTRIES FROM STP SUMP AND TANK INTERSTITIAL SENSOR RISERS ARE ONE IN THE SAME

ISSUED FOR

DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 051765

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SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
(814) 946-3611

CONDUIT SCHEDULE

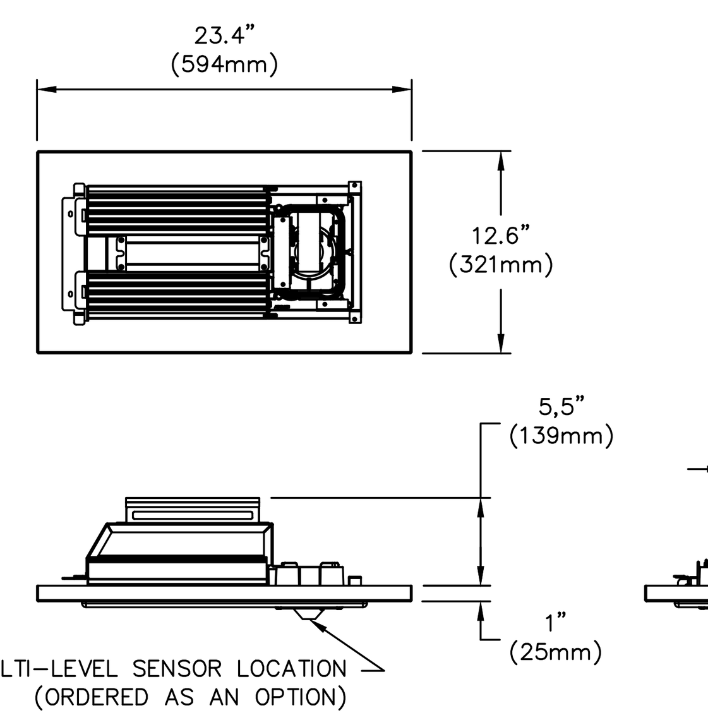
SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

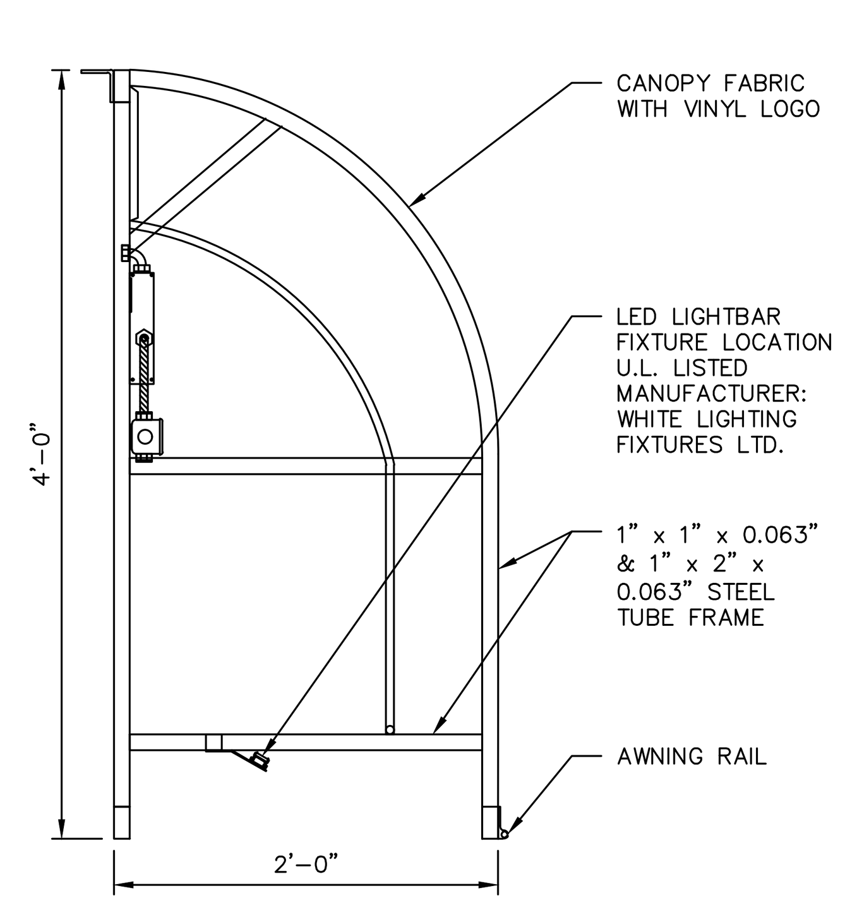
SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FE2.0

Saved: 3/5/2021 8:16 AM (jeff.wellert) Plotted: 3/5/2021 8:53 AM (jeff.wellert) Plotstyle: (WC Standard.ctb) Scale: (1:1) Page Setup: (36 X 24 PDF)

MANUFACTURER: CREE
PART NUMBER: CAN-228-PS-RT6-06-E-UL-WH-700MA



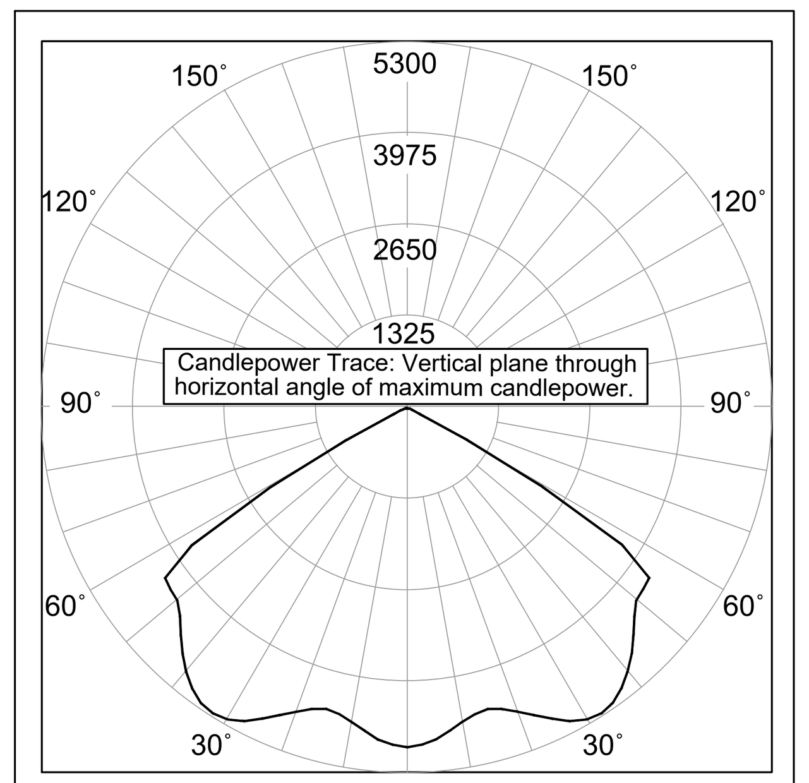


B GAS CANOPY SECTION
SCALE: 1" = 1'-0"

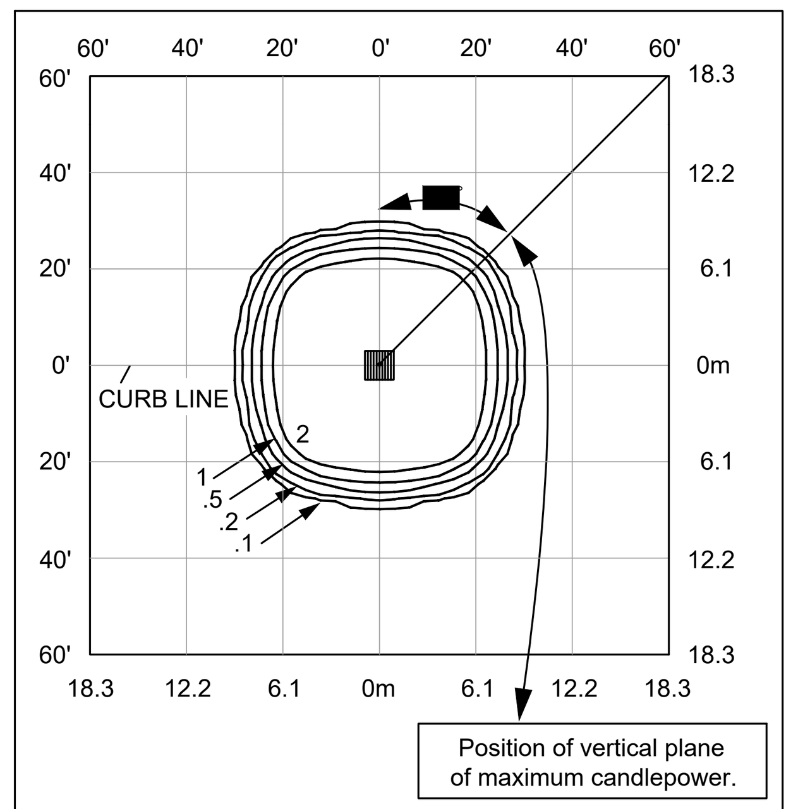
Lumen Output, Electrical and Lumen Maintenance Data

Petroleum Symmetric Distribution												
LED Count (x10)	5700K		4000K		System Watts 120-480V	TOTAL CURRENT						50K Hours Projected Lumen Maintenance Factor @ 15° C (59° F)**
	Initial Delivered Lumens	BUG Ratings** Per TM-15-11	Initial Delivered Lumens	BUG Ratings** Per TM-15-11		120V	208V	240V	277V	347V	480V	
700mA @ 25° C (77° F)												93%
06	14,225	B3 U1 G0	13,698	B3 U1 G0	132	1.11	0.66	0.57	0.50	0.39	0.28	

PS

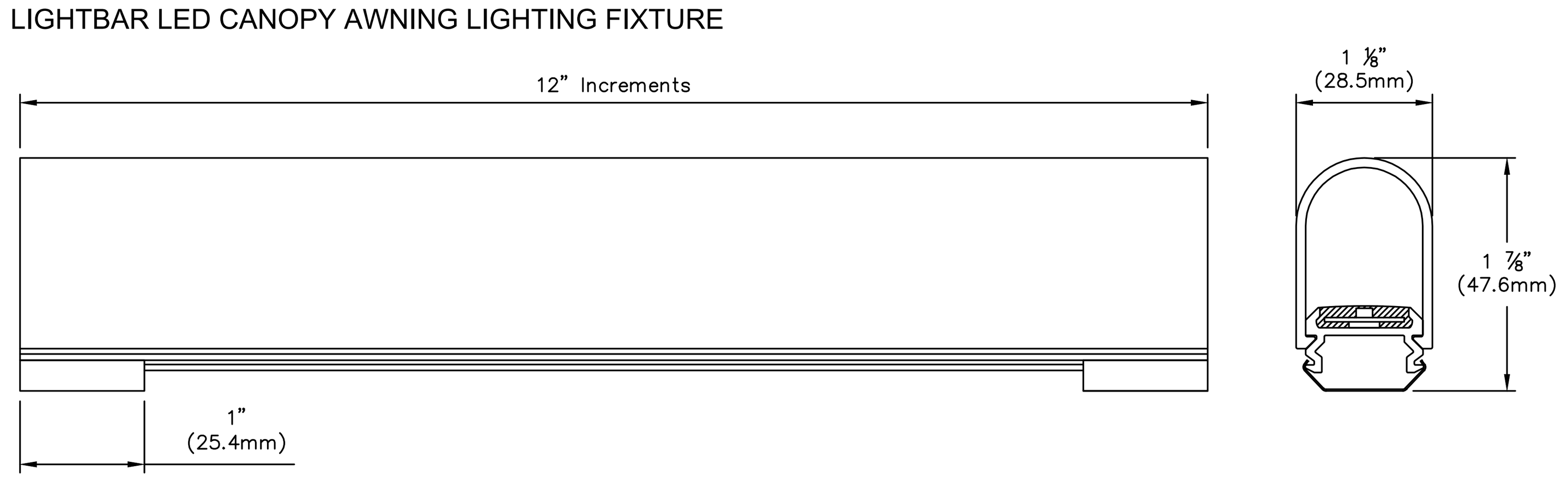


RESTL Test Report #: PL05998-001
CAN-228-PS-RT*-06-E-UL-700-40K
Initial Delivered Lumens: 13,261

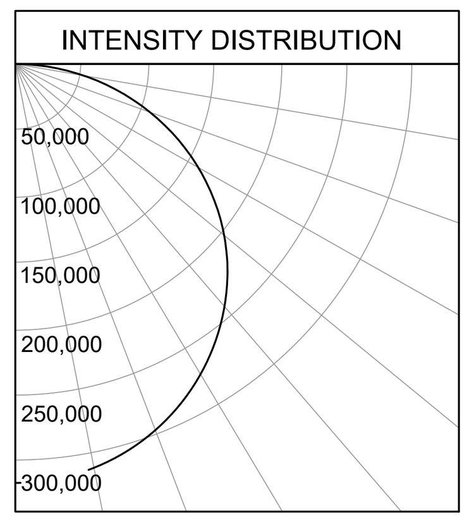


CAN-228-PS-***-06-E-UL-700-40K
Mounting Height: 15' (4.6m) A.F.G.
Initial Delivered Lumens: 13,698
Initial FC at grade

MANUFACTURER: WHITE LIGHTING FIXTURES LTD
LIGHTBAR LED CANOPY AWNING LIGHTING FIXTURE

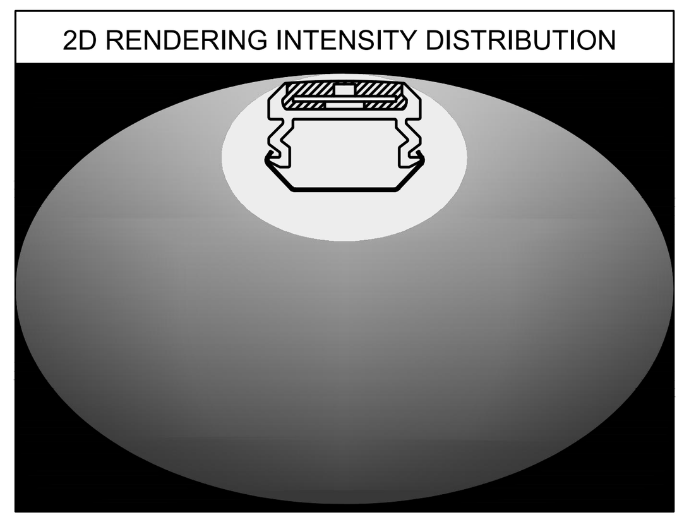


INTENSITY DISTRIBUTION



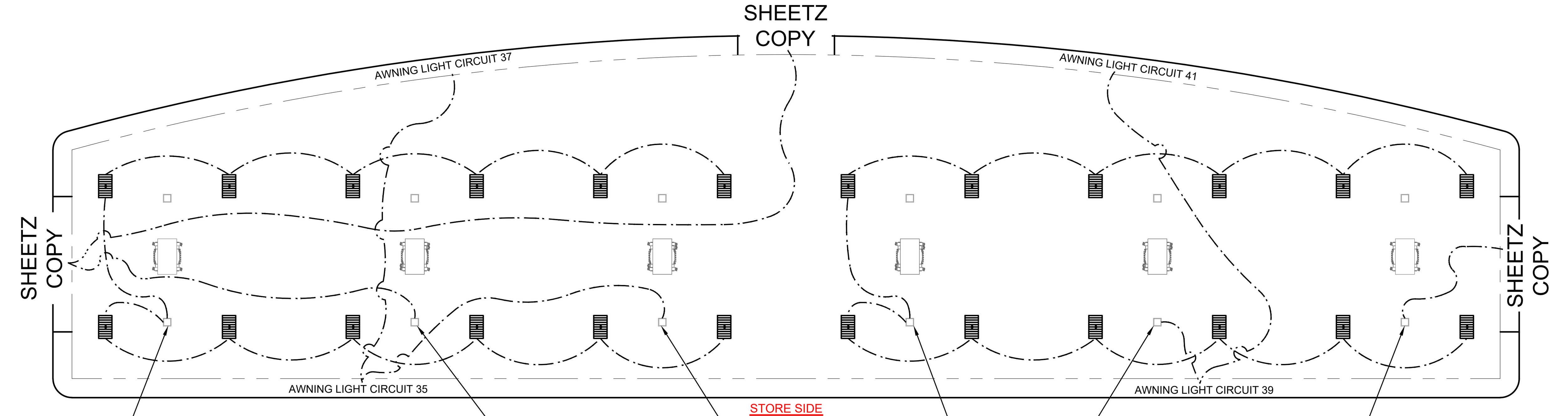
Report No:
Output lumens: 2600
CCT: 4000°
Input watts: 28 watts
Efficacy: 93 lumens/ watts
CRI: 70 min

2D RENDERING INTENSITY DISTRIBUTION



CONE OF LIGHT DIAGRAM

Illuminance at a Distance		Beam Width	
	Center Beam (Lux)	(m)	
0.2M	11,476.80	0.5	0.6
0.3M	2,869.20	1.1	1.1
0.5M	1,275.20	1.6	1.7
0.7M	717.30	2.2	2.2
0.8M	459.07	2.7	2.8
1.0M	318.80	3.3	3.3
Vertical Spread: 116.8	Horizontal Spread: 118.4		



STAGE I CIRCUITS
G2 - SP-1 - STREETSIDE DOWNLIGHTS

STAGE II CIRCUITS
G2 - SP-5 - STORESIDE DOWNLIGHTS

STAGE I CIRCUITS
G2 - SP-25 - AWNING COPY LIGHTS

STAGE III CIRCUITS
G2 - SP-35,37 - AWNING LIGHTS

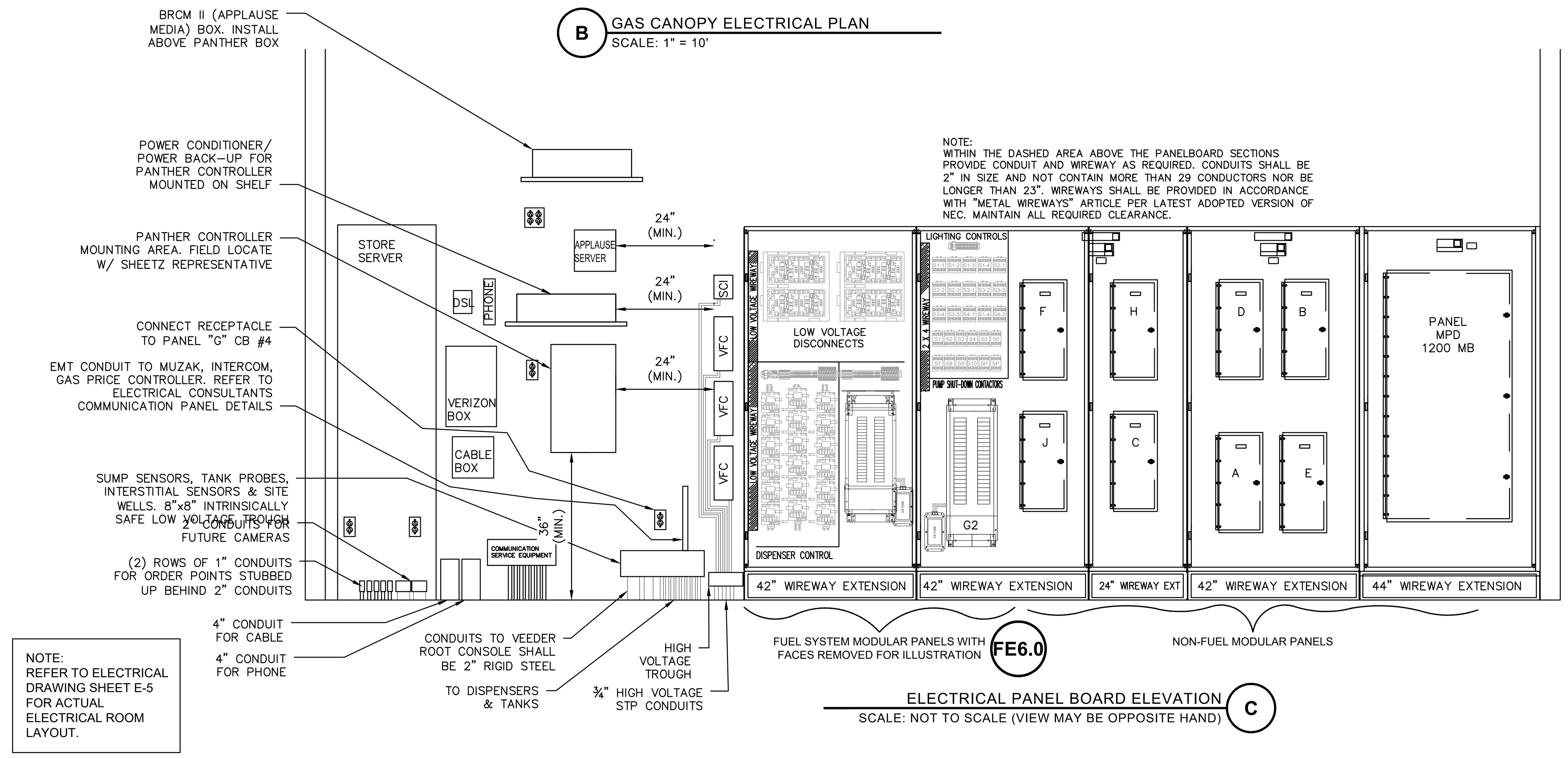
STAGE I CIRCUITS
G2 - SP-3 - STREETSIDE DOWNLIGHTS

STAGE II CIRCUITS
G2 - SP-7 - STORESIDE DOWNLIGHTS

STAGE III CIRCUITS
G2 - SP-39,41 - AWNING LIGHTS

STAGE I CIRCUITS
G2 - SP-27 - AWNING COPY LIGHTS

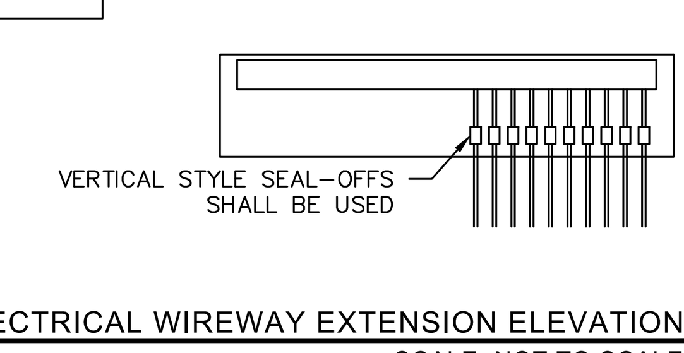
B GAS CANOPY ELECTRICAL PLAN
SCALE: 1" = 10'



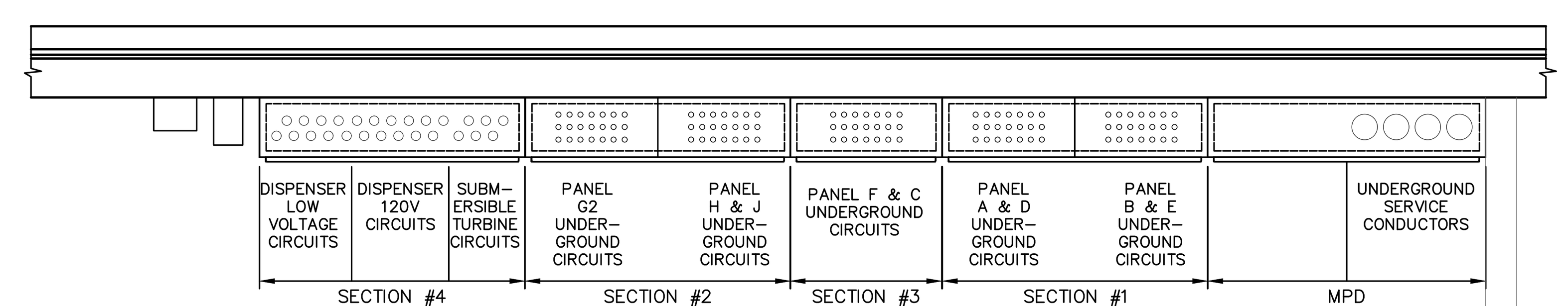
NOTE:
WITHIN THE DASHED AREA ABOVE THE PANELBOARD SECTIONS PROVIDE CONDUIT AND WIREWAY AS REQUIRED. CONDUITS SHALL BE 2" IN SIZE AND NOT CONTAIN MORE THAN 29 CONDUCTORS NOR BE LONGER THAN 23". WIREWAYS SHALL BE PROVIDED IN ACCORDANCE WITH "METAL WIREWAYS" ARTICLE PER LATEST ADOPTED VERSION OF NEC. MAINTAIN ALL REQUIRED CLEARANCE.

NOTE:
REFER TO ELECTRICAL DRAWING SHEET E-5 FOR ACTUAL ELECTRICAL ROOM LAYOUT.

ELECTRICAL PANEL BOARD ELEVATION C
SCALE: NOT TO SCALE (VIEW MAY BE OPPOSITE HAND)



ELECTRICAL WIREWAY EXTENSION ELEVATION D
SCALE: NOT TO SCALE



FE6.0 CONDUIT ENTRY SCHEME (BOTTOM VIEW) SEE

6-MPD VINYL FASCIA-4HP-PLLD

SPACE	CB	POLES	LOADS	PHASE	SPACE	CB	POLES	LOADS
1	SWN	1	MPD #1 & #2 - 5.5A		2	20	1	INTERCOM 2.0A
3	20				4	20	1	PANTHER BOX RECEPTACLE 2.0A
5	SWN	1	MPD #3 & #4 - 5.5A		6	20	1	AIR Machine 13.0A
7	20				8	20	1	GAS EMERGENCY SW.
9	SWN	1	MPD #5 & #6 - 5.5A		10	20	1	SPARE
11	20				12	20	1	TANK MONITOR
13	SWN	1	MPD #7 & #8 - 5.5A		14	20	1	TVSS PILOT LIGHT
15	20				16	20	1	87 PLLD
17	SWN	1	MPD #9 & #10 - 5.5A		18	SWN		
19	20				20	20	1	DIESEL PLLD
21	SWN	1	MPD #11 & #12 - 5.5A		22	SWN		
23	20				24	20	1	93 PLLD
25	SWN	1	SPARE		26	SWN		
27	20				28	20	1	E85 PLLD
29	SWN	1	SPARE		30	SWN		
31	20				32	20	1	EFREE PLLD
33	SWN	1	SPARE		34	SWN		
35	20				36	20	1	SPARE
37	20	1	GAS PRICE SIGN CONTROL 3.0A		38	SWN		
39	20	1	GAS PRICE SIGN 12.0A		40	30	2	CAT. NO. PTX080-1S101 120/240 Split Ø 3 WIRE + GRND.
41	20	1	AIR Machine 13.0A		42			

PANEL BOARD 'G1'
225 AMPERE MCB
120/208 VOLT SINGLE PHASE THREE WIRE

SHADED BREAKERS MUST BE ON SAME PHASE

6-MPD VINYL FASCIA-4HP-PLLD

SPACE	CB	POLES	LOADS	PHASE	SPACE	CB	POLES	LOADS
1	20	1	CANOPY STREET-SIDE LIGHTS 110V-1PH-12.0A	A	2	30	3	87 FEPetro STP 4hp Variable speed 208 3Ø
3	20	1	CANOPY STREET-SIDE LIGHTS 110V-1PH-12.0A	B	4			
5	20	1	CANOPY STORE-SIDE LIGHTS 110V-1PH-12.0A	C	6			
7	20	1	CANOPY STORE-SIDE LIGHTS 110V-1PH-12.0A	A	8	20	2	DIESEL STP 208V-1Ø 4.0A
9	20	1		B	10			
11	20	1		C	12	20	1	SPARE
13	20	1		A	14	30	3	93 FEPetro STP 4hp Variable speed 208 3Ø
15	20	1		B	16			
17	20	1		C	18			
19	20	1		A	20	30	3	E85 FEPetro STP 4hp Variable speed 208 3Ø
21	20	1		B	22			
23	20	1		C	24			
25	20	1	COPY LIGHTS 10.0A	A	26	20	2	EFREE STP 208V-1Ø 4.0A
27	20	1	COPY LIGHTS 10.0A	B	28			
29	20	1		C	30	20	1	SPARE
31	20	1		A	32	20	1	TVSS PILOT LIGHT
33	20	1		B	34	20	1	SHEETZ I.D. SIGN 12.0A
35	20	1	AWNING LIGHTS 10.0A	C	36	20	1	SHEETZ SIGN 12.0A
37	20	1	AWNING LIGHTS 10.0A	A	38	30	3	CAT. NO. PTX080-3Y101 120/208 3Ø Y/STAR 4 WIRE + GRND.
39	20	1	AWNING LIGHTS 10.0A	B	40			
41	20	1	AWNING LIGHTS 10.0A	C	42			

PANEL BOARD 'G2'
225 AMPERE MLO
120/208 VOLT THREE PHASE FOUR WIRE

P PETROLEUM PANEL BOARDS
SCALE: NOT TO SCALE

DATE	BY	ISSUED FOR DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 051765

CONSULTANT:
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t: 330.239.2699 • f:330.239.0272

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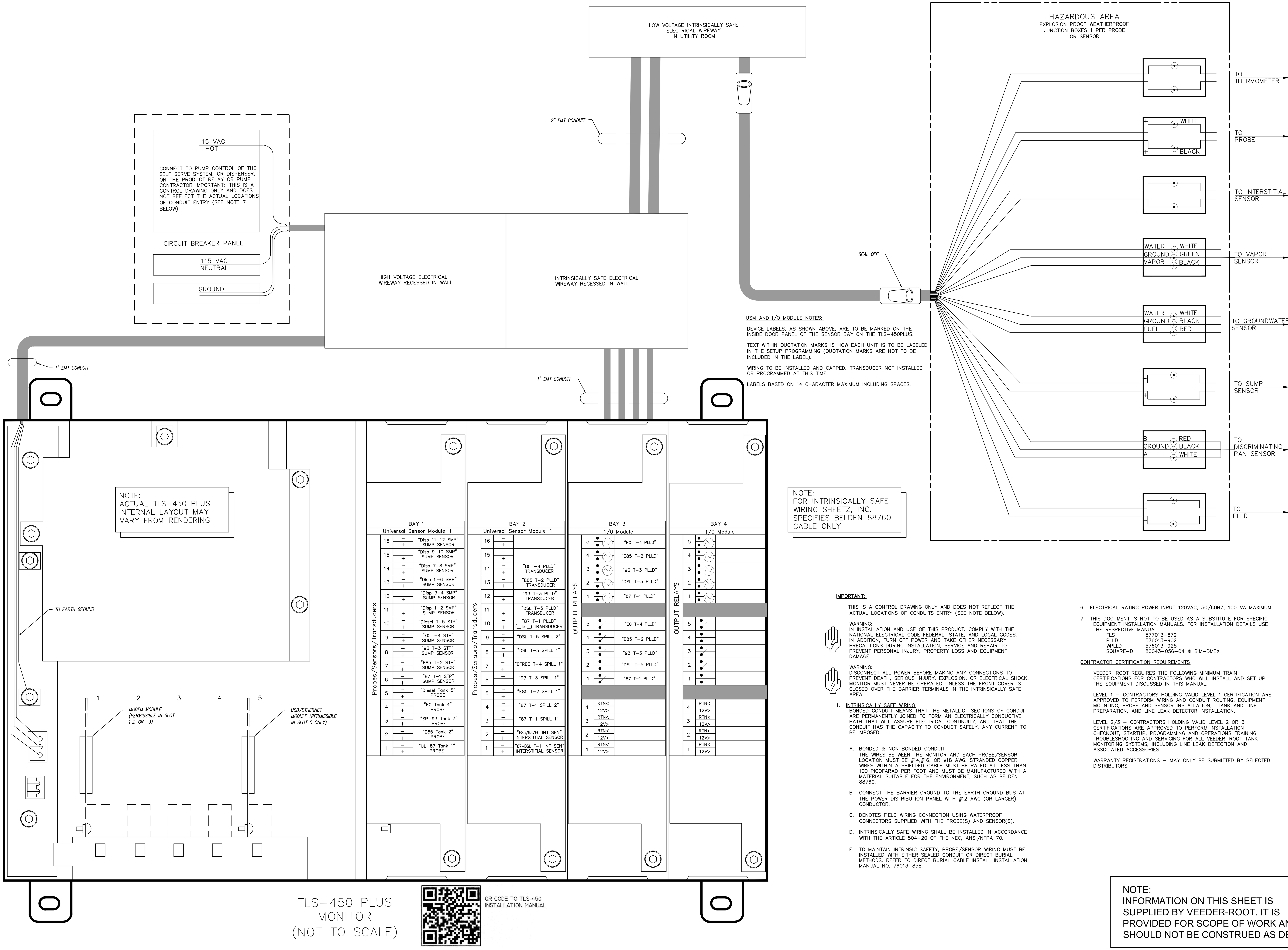
SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

CANOPY LIGHTING SCHEME

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	NOTED
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FE2.1



BAY 1 — Universal Sensor Module-1 (Probes/Sensors/Transducers)

16	– / +	"Disp 11-12 SMP" SUMP SENSOR
15	– / +	"Disp 9-10 SMP" SUMP SENSOR
14	– / +	"Disp 7-8 SMP" SUMP SENSOR
13	– / +	"Disp 5-6 SMP" SUMP SENSOR
12	– / +	"Disp 3-4 SMP" SUMP SENSOR
11	– / +	"Disp 1-2 SMP" SUMP SENSOR
10	– / +	"Diesel T-5 STP" SUMP SENSOR
9	– / +	"E0 T-4 STP" SUMP SENSOR
8	– / +	"93 T-3 STP" SUMP SENSOR
7	– / +	"E85 T-2 STP" SUMP SENSOR
6	– / +	"87 T-1 STP" SUMP SENSOR
5	– / +	"Diesel Tank 5" PROBE
4	– / +	"E0 Tank 4" PROBE
3	– / +	"SP-93 Tank 3" PROBE
2	– / +	"E85 Tank 2" PROBE
1	– / +	"UL-87 Tank 1" PROBE

BAY 2 — Universal Sensor Module-1 (Probes/Sensors/Transducers)

16	– / +	
15	– / +	
14	– / +	"E0 T-4 PLLD" TRANSDUCER
13	– / +	"E85 T-2 PLLD" TRANSDUCER
12	– / +	"93 T-3 PLLD" TRANSDUCER
11	– / +	"DSL T-5 PLLD" TRANSDUCER
10	– / +	"87 T-1 PLLD" (__ to __) TRANSDUCER
9	– / +	"DSL T-5 SPILL 2"
8	– / +	"DSL T-5 SPILL 1"
7	– / +	"EFREE T-4 SPILL 1"
6	– / +	"93 T-3 SPILL 1"
5	– / +	"E85 T-2 SPILL 1"
4	– / +	"87 T-1 SPILL 2"
3	– / +	"87 T-1 SPILL 1"
2	– / +	"E85/93/E0 INT SEN" INTERSTITIAL SENSOR
1	– / +	"87-DSL T-1 INT SEN" INTERSTITIAL SENSOR

BAY 3 — 1/0 Module (Output Relays)

5		"E0 T-4 PLLD"
4		"E85 T-2 PLLD"
3		"93 T-3 PLLD"
2		"DSL T-5 PLLD"
1		"87 T-1 PLLD"
5		"E0 T-4 PLLD"
4		"E85 T-2 PLLD"
3		"93 T-3 PLLD"
2		"DSL T-5 PLLD"
1		"87 T-1 PLLD"
4	RTN< / 12V>	
3	RTN< / 12V>	
2	RTN< / 12V>	
1	RTN< / 12V>	

BAY 4 — 1/0 Module (Output Relays)

5		
4		
3		
2		
1		
5		
4		
3		
2		
1		
4	RTN< / 12V>	
3	RTN< / 12V>	
2	RTN< / 12V>	
1	RTN< / 12V>	

TLS-450 PLUS MONITOR (NOT TO SCALE)

QR CODE TO TLS-450 INSTALLATION MANUAL

USM AND I/O MODULE NOTES:

DEVICE LABELS, AS SHOWN ABOVE, ARE TO BE MARKED ON THE INSIDE DOOR PANEL OF THE SENSOR BAY ON THE TLS-450PLUS.

TEXT WITHIN QUOTATION MARKS IS HOW EACH UNIT IS TO BE LABELED IN THE SETUP PROGRAMMING (QUOTATION MARKS ARE NOT TO BE INCLUDED IN THE LABEL).

WIRING TO BE INSTALLED AND CAPPED. TRANSDUCER NOT INSTALLED OR PROGRAMMED AT THIS TIME.

LABELS BASED ON 14 CHARACTER MAXIMUM INCLUDING SPACES.

IMPORTANT:

THIS IS A CONTROL DRAWING ONLY AND DOES NOT REFLECT THE ACTUAL LOCATIONS OF CONDUITS ENTRY (SEE NOTE BELOW).

WARNING:
IN INSTALLATION AND USE OF THIS PRODUCT. COMPLY WITH THE NATIONAL ELECTRICAL CODE FEDERAL, STATE, AND LOCAL CODES. IN ADDITION, TURN OFF POWER AND TAKE OTHER NECESSARY PRECAUTIONS DURING INSTALLATION, SERVICE AND REPAIR TO PREVENT PERSONAL INJURY, PROPERTY LOSS AND EQUIPMENT DAMAGE.

WARNING:
DISCONNECT ALL POWER BEFORE MAKING ANY CONNECTIONS TO PREVENT DEATH, SERIOUS INJURY, EXPLOSION, OR ELECTRICAL SHOCK. MONITOR MUST NEVER BE OPERATED UNLESS THE FRONT COVER IS CLOSED OVER THE BARRIER TERMINALS IN THE INTRINSICALLY SAFE AREA.

1. INTRINSICALLY SAFE WIRING
BONDED CONDUIT MEANS THAT THE METALLIC SECTIONS OF CONDUIT ARE PERMANENTLY JOINED TO FORM AN ELECTRICALLY CONDUCTIVE PATH THAT WILL ASSURE ELECTRICAL CONTINUITY, AND THAT THE CONDUIT HAS THE CAPACITY TO CONDUCT SAFELY, ANY CURRENT TO BE IMPOSED.

   A. BONDED & NON BONDED CONDUIT
   THE WIRES BETWEEN THE MONITOR AND EACH PROBE/SENSOR LOCATION MUST BE #14,#16, OR #18 AWG. STRANDED COPPER WIRES WITHIN A SHIELDED CABLE MUST BE RATED AT LESS THAN 100 PICOFARAD PER FOOT AND MUST BE MANUFACTURED WITH A MATERIAL SUITABLE FOR THE ENVIRONMENT, SUCH AS BELDEN 88760.

   B. CONNECT THE BARRIER GROUND TO THE EARTH GROUND BUS AT THE POWER DISTRIBUTION PANEL WITH #12 AWG (OR LARGER) CONDUCTOR.

   C. DENOTES FIELD WIRING CONNECTION USING WATERPROOF CONNECTORS SUPPLIED WITH THE PROBE(S) AND SENSOR(S).

   D. INTRINSICALLY SAFE WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THE ARTICLE 504-20 OF THE NEC, ANSI/NFPA 70.

   E. TO MAINTAIN INTRINSIC SAFETY, PROBE/SENSOR WIRING MUST BE INSTALLED WITH EITHER SEALED CONDUIT OR DIRECT BURIAL METHODS. REFER TO DIRECT BURIAL CABLE INSTALL INSTALLATION, MANUAL NO. 76013-858.

6. ELECTRICAL RATING POWER INPUT 120VAC, 50/60HZ, 100 VA MAXIMUM

7. THIS DOCUMENT IS NOT TO BE USED AS A SUBSTITUTE FOR SPECIFIC EQUIPMENT INSTALLATION MANUALS. FOR INSTALLATION DETAILS USE THE RESPECTIVE MANUAL:

TLS	577013-879
PLLD	576013-902
WPLLD	576013-925
SQUARE-D	80043-056-04 & BIM-DMEX

CONTRACTOR CERTIFICATION REQUIREMENTS

VEEDER-ROOT REQUIRES THE FOLLOWING MINIMUM TRAIN CERTIFICATIONS FOR CONTRACTORS WHO WILL INSTALL AND SET UP THE EQUIPMENT DISCUSSED IN THIS MANUAL.

LEVEL 1 – CONTRACTORS HOLDING VALID LEVEL 1 CERTIFICATION ARE APPROVED TO PERFORM WIRING AND CONDUIT ROUTING, EQUIPMENT MOUNTING, PROBE AND SENSOR INSTALLATION, TANK AND LINE PREPARATION, AND LINE LEAK DETECTOR INSTALLATION.

LEVEL 2/3 – CONTRACTORS HOLDING VALID LEVEL 2 OR 3 CERTIFICATIONS ARE APPROVED TO PERFORM INSTALLATION CHECKOUT, STARTUP, PROGRAMMING AND OPERATIONS TRAINING, TROUBLESHOOTING AND SERVICING FOR ALL VEEDER-ROOT TANK MONITORING SYSTEMS, INCLUDING LINE LEAK DETECTION AND ASSOCIATED ACCESSORIES.

WARRANTY REGISTRATIONS – MAY ONLY BE SUBMITTED BY SELECTED DISTRIBUTORS.

NOTE:
INFORMATION ON THIS SHEET IS SUPPLIED BY VEEDER-ROOT. IT IS PROVIDED FOR SCOPE OF WORK AND SHOULD NOT BE CONSTRUED AS DESIGN

ISSUED FOR

DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031765

CONSULTANT:
Engineers • Planners • Surveyors
Wellert Corporation
5136 Beach Road • Medina, Ohio 44256
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CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

TYPICAL TLS-450 PLUS INSTALLATION

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FE3.0

OVERVIEW MAP - 6063303.2S

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Proposed Sheetz Location ADDRESS: 283 North Carolina 87 Cameron NC 28326 LAT/LONG: 35.252441 / 79.026235	CLIENT: EnviroTrac CONTACT: Elizabeth Taccone INQUIRY #: 6063303.2s DATE: May 13, 2020 5:55 pm

DETAIL MAP - 6063303.2S

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Proposed Sheetz Location ADDRESS: 283 North Carolina 87 Cameron NC 28326 LAT/LONG: 35.252441 / 79.026235	CLIENT: EnviroTrac CONTACT: Elizabeth Taccone INQUIRY #: 6063303.2s DATE: May 13, 2020 5:56 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
NC HSDS	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
DEBRIS	0.500		0	0	0	NR	NR	0
OLI	0.500		0	0	0	NR	NR	0
LCID	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
State and tribal leaking storage tank lists								
LUST	0.500		0	2	0	NR	NR	2
LAST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
LUST TRUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	1	NR	NR	NR	1
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
HIST LF	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
IMD	0.500		0	2	1	NR	NR	3

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SPILLS 90	TP		NR	NR	NR	NR	NR	0
SPILLS 80	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	1	0	0	NR	1
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
ASBESTOS	TP		NR	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
NPDES	TP	1	NR	NR	NR	NR	NR	1
UIC	TP		NR	NR	NR	NR	NR	0
AOP	TP		NR	NR	NR	NR	NR	0
CCB	0.500		0	0	0	NR	NR	0
MINES MRDS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
PCSRP	0.500		0	0	0	NR	NR	0
SEPT HAULERS	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA HWS	TP		NR	NR	NR	NR	NR	0
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		1	0	6	1	0	0	8

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
1 **Target Property**	**HIGHWAY 87 COMMERCIAL CENTER** **283 NC 87** **CAMERON, NC**	**NPDES**	**S120917965** **N/A**

Actual: **332 ft.**

NPDES:

Name:	HIGHWAY 87 COMMERCIAL CENTER
Address:	283 NC 87
City,State,Zip:	CAMERON, NC
Permit Number:	SW6170101
Permit Status:	Active
Permit Type:	State Stormwater
Issue Date:	02/16/2017
Region:	Fayetteville
Owner Name:	Not reported
Class:	Not reported
Applied:	Not reported
Drafted:	Not reported
Expires:	02/16/2025
Subbasin:	Not reported
Receiving Stream:	Not reported
Comments:	Not reported
As-Built Flow (GPD):	Not reported
Domestic %:	Not reported
Industrial %:	Not reported
stormwtr %:	Not reported
Permitted Flow (GPD):	Not reported
Program Category:	Not reported
Project Type:	Not reported
Is Major Permit:	Not reported
Date Assigned:	Not reported
Organization Name:	Not reported
Outfall:	Not reported
Discharge Via:	Not reported
Stream Classification:	Not reported
Regulated Activity:	State Stormwater - HD - Infiltration
Owner Type:	Not reported
Effective Date:	02/16/2017
Basin Name:	Not reported

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
DOD **Region** **WSW** **1/8-1/4** **859 ft.**	**FORT BRAGG MILITARY RESERVATION** **FORT BRAGG MILITARY RESER (County), NC**	**DOD**	**CUSA139814** **N/A**

DOD:

Feature 1:	Army DOD
Feature 2:	Not reported
Feature 3:	Not reported
URL:	Not reported
Name 1:	Fort Bragg Military Reservation
Name 2:	Not reported
Name 3:	Not reported
State:	NC
DOD Site:	Yes
Tile name:	NCHOKE

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
A2 **WNW** **1/8-1/4** **0.215 mi.** **1133 ft.**	**SUPER MART #2** **1943 NC HIGHWAY 24/87 NORTH** **CAMERON, NC 28326** **Site 1 of 3 in cluster A**	**LUST** **IMD**	**S121974142** **N/A**

Relative: **Lower**

Actual: **328 ft.**

LUST:

Name:	SUPER MART #2
Address:	1943 NC HIGHWAY 24/87 NORTH
City,State,Zip:	CAMERON, NC 28326
Facility ID:	0-003528
UST Number:	FA-7841
Incident Number:	42106
Contamination Type:	NO
Source Type:	Leak-underground
Product Type:	P
Date Reported:	03/26/2018
Date Occur:	03/23/2018
Cleanup:	03/23/2018
Closure Request:	Not reported
Close Out:	02/19/2019
Level Of Soil Cleanup Achieved:	Soil to Groundwater
Tank Regulated Status:	R
# Of Supply Wells:	0
Commercial/NonCommercial UST Site:	COMMERCIAL
Risk Classification:	U
Risk Class Based On Review:	L
Corrective Action Plan Type:	Not reported
NOV Issue Date:	Not reported
NORR Issue Date:	Not reported
Site Priority:	Not reported
Phase Of LSA Req:	Not reported
Site Risk Reason:	Not reported
Land Use:	Not reported
MTBE:	No
MTBE1:	Unknown
Flag:	No
Flag1:	Not reported
LUR Filed:	Not reported
Release Detection:	Not reported
Current Status:	File Located in Archives
RBCA GW:	N
PETOPT:	3
RPL:	True
CD Num:	Not reported
Reel Num:	Not reported
RPOW:	False
RPOP:	False
Error Flag:	Not reported
Error Code:	N
Valid:	False
Lat/Long Decimal:	35.2541 -79.0309
Testlat:	Not reported
Regional Officer Project Mgr:	SBB
Region:	FAY
Company:	mana vishal, LLC
Contact Person:	Not reported
Telephone:	9172089000
RP Address:	153 Presidents Walk Lane

ISSUED FOR

DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:

CONSULTANT:

Engineers • Planners • Surveyors
Wellert Corporation
5136 Beach Road • Medina, Ohio 44256
t: 330.239.2699 • f:330.239.0272

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
(814) 946-3611

WELL INFORMATION (PART 1)

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	1" = 10'
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FG4.0

MAP FINDINGS

Map ID / Direction / Distance / Elevation | Site | Database(s) | EDR ID Number / EPA ID Number

SUPER MART #2 (Continued) **S121974142**

RP City,St,Zip: Cary, NC 27519
RP County: Not reported
Comments: The site is commercial and surrounding properties are commercial and residential. Estimated benzene (0.0917 J mg/kg) in SB-1 exceeded soil to water MCC.
5 Min Quad: Not reported

PIRF:
Facility Id: 42106
Date Occurred: Not reported
Date Reported: Not reported
Description Of Incident: Release discovered during site check due to a failed spill bucket
Owner/Operator: Not reported
Ownership: 4
Operation Type: 6
Type: 3
Location: 1
Site Priority: Not reported
Priority Update: Not reported
Wells Affected Y/N: N
Samples Include: Not reported
7#5 Minute Quad: Y
5 Minute Quad: Not reported
Pirf/Min Soil: Not reported
Release Code: Not reported
Source Code: Not reported
Err Type: 1
Cause: 7
Source: 3
Ust Number: P

Last Modified: 2/19/2019
Incident Phase: **Closed Out**
NOV Issued: Not reported
NORR Issued: Not reported
45 Day Report: Not reported
Public Meeting Held: Not reported
Corrective Action Planned: Not reported
SOC Signed: Not reported
Reclassification Report: Not reported
RS Designation: Not reported
Closure Request Date: Not reported
Close-out Report: Not reported

Click here to access the North Carolina DEQ records for this facility:

IMD:
Name: SUPER MART #2
Address: 1943 NC HIGHWAY 24/87 NORTH
City: CAMERON
Region: Not reported
Facility ID: 42106
Date Occurred: Not reported
Submit Date: Not reported
GW Contam: Not reported
Soil Contam: Not reported
Incident Desc: Release discovered during site check due to a failed spill bucket

MAP FINDINGS

Map ID / Direction / Distance / Elevation | Site | Database(s) | EDR ID Number / EPA ID Number

SUPER MART #2 (Continued) **S121974142**

Operator: Not reported
Contact Phone: Not reported
Owner Company: Not reported
Operator Address: Not reported
Operator City: Not reported
Oper City,St,Zip: Not reported
Ownership: Private
Operation: Commercial
Material: Not reported
Qty Lost 1: Not reported
Qty Recovered 1: Not reported
Source: Not reported
Type: Gasoline/diesel
Location: Facility
Setting: Not reported
Risk Site: Not reported
Site Priority: Not reported
Priority Code: Not reported
Priority Update: Not reported
Dem Contact: Not reported
Wells Affected: No
Num Affected: Not reported
Wells Contam: Not reported
Sampled By: Y
Samples Include: Not reported
7.5 Min Quad: Not reported
5 Min Quad: Not reported
Latitude: 35.254178000000003
Longitude: -79.030901
Latitude Number: Not reported
Longitude Number: Not reported
Latitude Decimal: Not reported
Longitude Decimal: Not reported
GPS: Not reported
Agency: Not reported
Facility ID: 42106
Last Modified: 2/19/2019
Incident Phase: Closed Out
NOV Issued: Not reported
NORR Issued: Not reported
45 Day Report: Not reported
Public Meeting Held: Not reported
Corrective Action Planned: Not reported
SOC Sighned: Not reported
Reclassification Report: Not reported
RS Designation: Not reported
Closure Request Date: Not reported
Close-out Report: Not reported

MAP FINDINGS

Map ID / Direction / Distance / Elevation | Site | Database(s) | EDR ID Number / EPA ID Number

A3 **SUPER MART #2** **UST** **U004129001**
WNW **1943 NC 24/87 NORTH** **N/A**
1/8-1/4 **CAMERON, NC 28326**
0.216 mi.
1142 ft. **Site 2 of 3 in cluster A**

Relative: **Lower**
Actual: **328 ft.**

UST:
Name: SUPER MART #2
Address: 1943 NC 24/87 NORTH
City,State,Zip: CAMERON, NC 28326
Facility Id: 00-0-0000035289
Contact: RAL OF RALEIGH LLC
Contact Address1: 122 QUARTERMASTER DRIVE
Contact Address2: Not reported
Contact City/State/Zip: SANFORD, NC 27330-1048
FIPS County Desc: Harnett
Latitude: 35.25415
Longitude: -79.03090

Tank Id: 1
Tank Status: Current
Installed Date: 10/17/1996
Perm Close Date: Not reported
Product Name: Gasoline, Gas Mix
Tank Capacity: 12000
Root Tank Id: 209893
Main Tank: Yes
Compartment Tank: Yes
Manifold Tank: 0
Commercial: Yes
Regulated: Yes
Other CP Tank: Not reported
Overfill Protection Name: Overfill Alarm
Spill Protection Name: Catchment Basin
Leak Detection Name: MLLD
Decode for TCONS_KEY: Single Wall Steel
Decode for PCONS_KEY: Single Wall FRP
Decode for PSYS_KEY: Pressurized System

Tank Id: 1A
Tank Status: Current
Installed Date: 10/17/1996
Perm Close Date: Not reported
Product Name: Gasoline, Gas Mix
Tank Capacity: 8000
Root Tank Id: 209893
Main Tank: No
Compartment Tank: Yes
Manifold Tank: 0
Commercial: Yes
Regulated: Yes
Other CP Tank: Not reported
Overfill Protection Name: Overfill Alarm
Spill Protection Name: Catchment Basin
Leak Detection Name: MLLD
Decode for TCONS_KEY: Single Wall Steel
Decode for PCONS_KEY: Single Wall FRP
Decode for PSYS_KEY: Pressurized System

MAP FINDINGS

Map ID / Direction / Distance / Elevation | Site | Database(s) | EDR ID Number / EPA ID Number

A4 **SAWYER'S GROCERY** **LUST** **S104547291**
WNW **HWY 87 NORTH** **IMD** **N/A**
1/8-1/4 **CAMERON, NC 28324**
0.217 mi.
1148 ft. **Site 3 of 3 in cluster A**

Relative: **Lower**
Actual: **325 ft.**

LUST:
Name: SAWYER'S GROCERY
Address: HWY 87 NORTH
City,State,Zip: CAMERON, NC 28324
Facility ID: 00-0-000
UST Number: FA-1125
Incident Number: 21801
Contamination Type: GW
Source Type: Leak-underground
Product Type: P
Date Reported: 11/18/1994
Date Occur: 11/18/1994
Cleanup: 11/18/1994
Closure Request: Not reported
Close Out: 09/12/2005
Level Of Soil Cleanup Achieved: Not reported
Tank Regulated Status: R
Of Supply Wells: 0
Commercial/NonCommercial UST Site: COMMERCIAL
Risk Classification: H
Risk Class Based On Review: L
Corrective Action Plan Type: Not reported
NOV Issue Date: Not reported
NORR Issue Date: 09/28/2001
Site Priority: Not reported
Phase Of LSA Req: Not reported
Site Risk Reason: Not reported
Land Use: Residential
MTBE: No
MTBE1: Unknown
Flag: No
Flag1: No
LUR Filed: Not reported
Release Detection: 0
Current Status: File Located in Archives
RBCA GW: Not reported
PETOPT: 3
RPL: True
CD Num: 361
Reel Num: 0
RPOW: True
RPOP: False
Error Flag: 0
Error Code: N
Valid: True
Lat/Long Decimal: 35.2537 -79.0312
Testlat: Not reported
Regional Officer Project Mgr: JWB
Region: FAY
Company: SAWYER'S GROCERY
Contact Person: DAVID E. SAWYER
Telephone: Not reported
RP Address: 390 VICK KEITH ROAD

MAP FINDINGS

Map ID / Direction / Distance / Elevation | Site | Database(s) | EDR ID Number / EPA ID Number

SAWYER'S GROCERY (Continued) **S104547291**

RP City,St,Zip: SANFORD, NC 28330
RP County: Harnett
Comments: County water is avaliable. When the tank closure was performed in 1994 there was only one hit in the gasolline range of 40ppm all other samples at the time was BDL. On 9/12/2005 we receive new soil sample from the tank basin and TPH came back BDL so site was closed with unrestricted NFA.
5 Min Quad: Not reported
Last Modified: 9/12/2005
Incident Phase: **Closed Out**
NOV Issued: Not reported
NORR Issued: Not reported
45 Day Report: Not reported
Public Meeting Held: Not reported
Corrective Action Planned: Not reported
SOC Signed: Not reported
Reclassification Report: Not reported
RS Designation: Not reported
Closure Request Date: Not reported
Close-out Report: Not reported

Click here to access the North Carolina DEQ records for this facility:

IMD:
Name: SAWYER'S GROCERY
Address: HWY 87 NORTH
City: CAMERON
Region: FAY
Facility ID: 21801
Date Occurred: 11/18/1994
Submit Date: 6/8/2000
GW Contam: Yes, Groundwater Contamination has been detected
Soil Contam: No
Incident Desc: RELEASE FROM UST'S CONTAM SOILS 11/18/94. 10/07/99. 3 USTS WERE REMOVED. NEAREST WELL IS 400 FT FROM THE SITE.
Operator: DAVID E. SAWYER
Contact Phone: Not reported
Owner Company: SAWYER'S GROCERY
Operator Address: RT 2 BOX 132
Operator City: CAMERON
Oper City,St,Zip: CAMERON, NC 28326
Ownership: Not reported
Operation: Not reported
Material: PETROLEUM PRODUCTS
Qty Lost 1: Not reported
Qty Recovered 1: UNKNOWN
Source: Leak-underground
Type: Gasoline/diesel
Location: Facility
Setting: Rural
Risk Site: H
Site Priority: HIGH
Priority Code: H
Priority Update: 7/10/2000
Dem Contact: JWB
Wells Affected: No
Num Affected: Not reported

MAP FINDINGS

Map ID / Direction / Distance / Elevation | Site | Database(s) | EDR ID Number / EPA ID Number

SAWYER'S GROCERY (Continued) **S104547291**

Wells Contam: Not reported
Sampled By: Responsible Parties
Samples Include: Soil Samples
7.5 Min Quad: Not reported
5 Min Quad: Not reported
Latitude: Not reported
Longitude: Not reported
Latitude Number: Not reported
Longitude Number: Not reported
Latitude Decimal: Not reported
Longitude Decimal: Not reported
GPS: NOD
Agency: Not reported
Facility ID: 21801
Last Modified: 9/12/2005
Incident Phase: Closed Out
NOV Issued: Not reported
NORR Issued: Not reported
45 Day Report: Not reported
Public Meeting Held: Not reported
Corrective Action Planned: Not reported
SOC Sighned: Not reported
Reclassification Report: Not reported
RS Designation: Not reported
Closure Request Date: Not reported
Close-out Report: Not reported

5 **ATKINS ESTATE** **IMD** **S106936264**
WNW **1147/1149 NC HIGHWAY 24 WEST** **N/A**
1/4-1/2 **CAMERON, NC**
0.280 mi.
1480 ft.

Relative: **Lower**
Actual: **326 ft.**

IMD:
Name: ATKINS ESTATE
Address: 1147/1149 NC HIGHWAY 24 WEST
City: CAMERON
Region: Not reported
Facility ID: 29168
Date Occurred: 6/15/2004
Submit Date: 6/18/2004
GW Contam: No Groundwater Contamination detected
Soil Contam: Yes
Incident Desc: Contamination discovered during tank removal
Operator: Edgar Bain, Trustee
Contact Phone: 9108935111
Owner Company: Atkins Estate
Operator Address: 65 Bain Street
Operator City: Lillington
Oper City,St,Zip: Lillington, NC 27546
Ownership: Private
Operation: Commercial
Material: Not reported
Qty Lost 1: Not reported
Qty Recovered 1: Not reported
Source: Leak-underground
Type: Gasoline/diesel

MAP FINDINGS

Map ID / Direction / Distance / Elevation | Site | Database(s) | EDR ID Number / EPA ID Number

ATKINS ESTATE (Continued) **S106936264**

Location: Residence
Setting: Not reported
Risk Site: Unknown
Site Priority: Not reported
Priority Code: Not reported
Priority Update: Not reported
Dem Contact: JWB
Wells Affected: No
Num Affected: Not reported
Wells Contam: Not reported
Sampled By: y
Samples Include: Not reported
7.5 Min Quad: Not reported
5 Min Quad: Not reported
Latitude: Not reported
Longitude: Not reported
Latitude Number: Not reported
Longitude Number: Not reported
Latitude Decimal: Not reported
Longitude Decimal: Not reported
GPS: NOD
Agency: DWM
Facility ID: Not reported
Last Modified: Not reported
Incident Phase: Not reported
NOV Issued: Not reported
NORR Issued: Not reported
45 Day Report: Not reported
Public Meeting Held: Not reported
Corrective Action Planned: Not reported
SOC Sighned: Not reported
Reclassification Report: Not reported
RS Designation: Not reported
Closure Request Date: Not reported
Close-out Report: Not reported

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

Count: 0 records.

ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

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5700 SIXTH AVENUE
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WELL INFORMATION (PART 2)

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	1" = 10'
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FG4.1

FlexWORKS
BY OPW FUELING CONTAINMENT SYSTEMS

Installation Instructions
Fiberglass Tank Sumps
FTS / FCS Series

IMPORTANT INFORMATION – FOLLOW ALL INSTRUCTIONS

Please read these warnings and use and assembly instructions completely and carefully before starting. Failure to do so may cause product failure, or result in environmental contamination due to liquid leakage into the soil, creating hazardous spill conditions.

OPW Standard Product Warranty Tag: Notice: Flex-Works by OPW, Inc., VAPORSAVER™ and all other OPW products must be used in compliance with all applicable federal, state, provincial and local laws, rules and regulations. Product selection is the sole responsibility of the customer and/or its agents and must be based on physical specifications and limitations, compatibility with the environment and material to be handled. All illustrations and specifications in this literature are based on the latest production information available at the time of publication. Prices, materials and specifications are subject to change at any time, and models may be discontinued at any time, in either case, without notice or obligation.

OPW warrants solely to its customer (the initial purchaser and any subsequent purchasers within the warranty period) that the following products sold by OPW will be free from defects in materials and workmanship under normal use and conditions for the periods indicated:

PRODUCT	WARRANTY PERIOD
FlexWorks Primary Pipe	10 years from date of manufacture
All Products and replacement parts installed in the State of California Certified to California CP -201 and/or CP-206 Standards*	1 year from date of installation (proof of purchase from certified contractors/ technicians required) OPW warrants ongoing compliance with the standards and specifications for the duration of the warranty period required by the State of California; this limited warranty is under the condition the equipment was installed and maintained by trained and certified contractors/ technicians unless noted in Installation Manual.
All other Products and replacement parts	1 year from date of manufacture**
*Products certified to California CP-201 and/or CP-206 Standards have been factory tested and met all applicable performance standards and specifications and will have an OPW registration card enclosed/attached to the product.	

OPW's exclusive obligation under this limited warranty is, at its option, to repair, replace or issue credit (in an amount not to exceed the list price for the product) for future orders for any product that may prove defective within the applicable warranty period. (Parts repaired or replaced under warranty are subject to prorated warranty coverage for remainder of the original warranty period). Complete and proper warranty claim documentation and proof of purchase required. All warranty claims must be made in writing and delivered during the applicable warranty period to OPW at OPW 9393 Princeton-Glendale Road Hamilton, Ohio, USA 45011, Attention: Customer Service Manager. No products may be returned to OPW without its prior written authority.

This limited warranty shall not apply to any FlexWorks or VAPORSAVER™ product unless it is installed by an OPW attested installer and all required site and warranty registration forms are completed and received by OPW within 60 days of installation. This limited warranty also shall not apply to any FlexWorks, VAPORSAVER™ or other OPW product: unless all piping connections are installed with a nationally-recognized or state-approved leak detection device in each tank and dispenser sump (which are not for storage and from which all discharge hydrocarbons must be removed, and the systems completely cleaned, within 24 hours); unless testable sumps utilize FlexWorks pipe and access fittings; unless a sump inspection log or an EPA recommended/required checklist is maintained and the results are furnished to OPW upon request; and unless OPW is notified within 24 hours of any known or suspected product failure and is provided with unrestricted access to the product and the site. This limited warranty also shall not apply to any product which has been altered in any way, which has been repaired by anyone other than a service representative authorized by OPW, or when failure or defect is due to: improper installation or maintenance (including, without limitation, failure to follow FlexWorks Quick Reference Manual Installation Guide and all product warning labels); abuse or misuse; violation of health or safety requirements; use of another manufacturer's, or otherwise un-authorized, substances or components; soil or other surface or subsurface conditions; or fire, flood, storm, lightning, earthquake, accident or any other conditions, events or circumstances beyond OPW's control.

THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND ALL OTHER WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXCLUDED.

OPW shall have no other liability whatsoever, whether based on breach of contract, negligence, gross negligence, strict liability or any other claim, including, without limitation, for special, incidental, consequential or exemplary damages or for the cost of labor, freight, excavation, clean-up, downtime, removal, reinstallation, loss of profit, or any other cost or charges. No person or entity is authorized to assume on behalf of OPW any liability beyond this limited warranty. This limited warranty is not assignable.

IMPORTANT
Read these assembly and installation instructions completely and carefully prior to starting. Check to make sure all parts have been supplied. Use only the parts supplied; substitution of parts may cause product failure.

IMPORTANT: Please read all warnings and follow the installation instructions completely and carefully. Failure to do so will void all warranties and may cause product failure, result in environmental contamination due to liquid leakage into the soil, creating hazardous spill conditions.

WARNING - DANGER: Using electrically operated equipment near gasoline or gasoline vapors may result in fire or explosion, causing personal injury and property damage. Be sure that the working area is free from such hazards, and always use proper precautions.

Tank Sumps
OPW Fibrelite FlexWorks FibreTite / ElectroTite Primary Tank Sumps for automotive fuels are installed below grade on top of UST's to provide secondary containment of and access to underground equipment such as submersible pumps, tank bung fittings, and various piping connections. Tank Sumps extend from the top of the tank to just below a manhole cover at grade level. The sump cover must be located within the grade level manhole skirt just under the manhole cover. If the tank is too deep to allow for this, a deeper sump must be used. FTS / FCS series fiberglass tank sumps are available with three different base options (collar ring, solid bottom, and reverse flange) in both 42" and 48" diameters.

Maximum Sump Burial Depth w/extensions: 84" (7 ft)
FCSM / FTSM Max 56" (4.7 ft) without extensions
FCSD / FTSD Max 64" (5.3 ft) without extensions

NOTE:
Do not store sumps on their sides prior to installation. Failure to do so may cause sump to deform preventing installation on the round tank collar.

IMPORTANT:
For best results, Flexworks / Fibrelite Fiberglass Tank Sumps should be installed when the ambient temperature is at least 50°F to allow proper curing of the epoxy resin adhesive. (See RK-5000 Resin Kit Instruction Sheet).

NOTE: Sump must be assembled and installed by a qualified person. The use of non-qualified personnel or any deviations from these recommended procedures could result in damage or leakage.

NOTE:
Sumps have been evaluated per UL for use with REF, SMF, TFA, TMA, and AXP series of products. Failure to use recommended combinations of sump products in a completed assembly may cause damage or leakage.

Sumps have also been evaluated per ULC for use with REF, CEJ, DEB, and EBF series of products.

NOTE:
Sump products are not intended for storage in excessive temperatures or direct sunlight. Rough handling may cause damage and leaking in use. Visually inspect sump prior to installation to ensure no damage. Damaged sumps shall not be used.

TOOLS NEEDED FOR INSTALLATION AND ASSEMBLY:

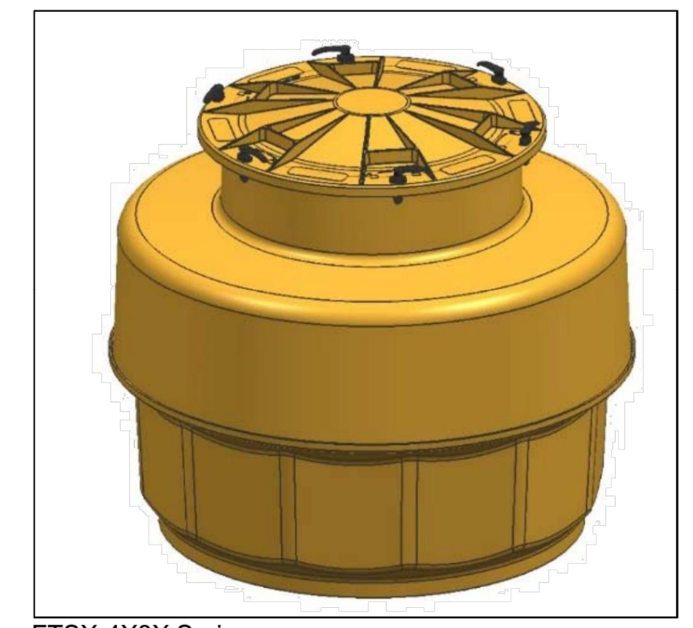
1. String line
2. Tape measure
3. Level
4. Permanent marker
5. Cutting tool (saber saw, circular saw, jigsaw, or angle grinder with a diamond grit blade)
6. Heavy grit sandpaper
7. Acetone

Items needed for FCS series only:

8. Torque wrench (in-lb)
9. Ratchet and sockets including: 7/16" socket and 1/2" socket
10. Pipe wrench

Items needed for L-handle adjustment:

11. 17 mm combination wrench
12. Ratchet / torque wrench with 17 mm socket



FTSX-4X3X Series

STEP 1: INSTALL STRING LINE

Install string lines at finished grade level (manhole grade level) as shown in Figure 1 in order to accurately measure the distance from top of the tank to the tank.

Note: The cover frame / ring will be set 1 inch minimum (for slope) above the final grade position.

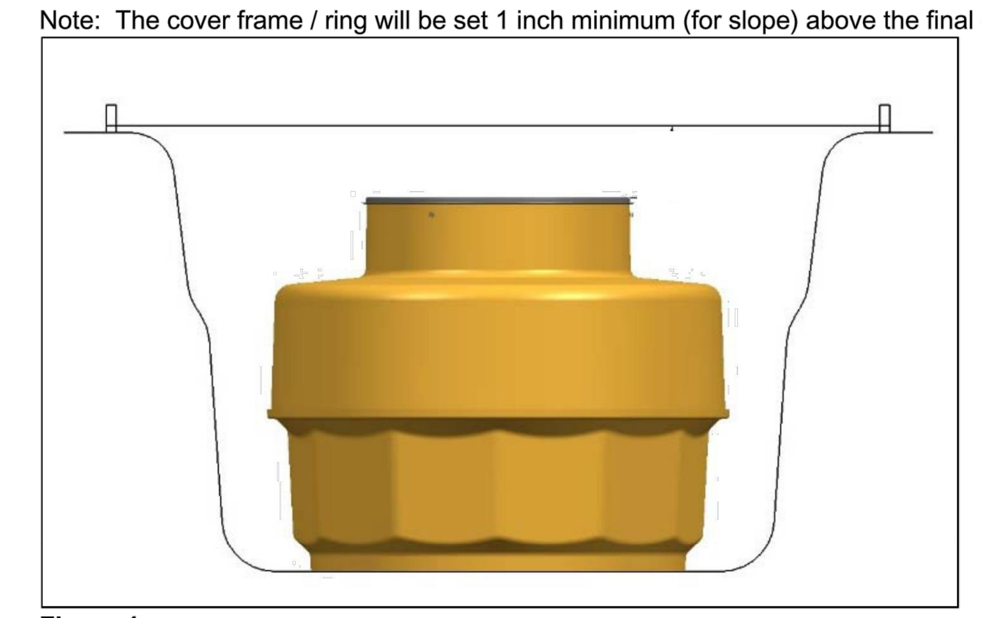


Figure 1

STEP 2: MEASURE TO TANK

Measure "Dimension A" from string line at finished grade level to tank. **Dimension A =** __________ inch

For collar ring models measure to stop on collar as shown in Figure 2 below.
For reverse flange models measure to tank flange.
For solid bottom models measure to top of bung as shown in Figure 2 below.

Note: For a sample calculation see Appendix A.
"Dimension A" cannot exceed maximum burial depth for sump of 84" (7 ft).

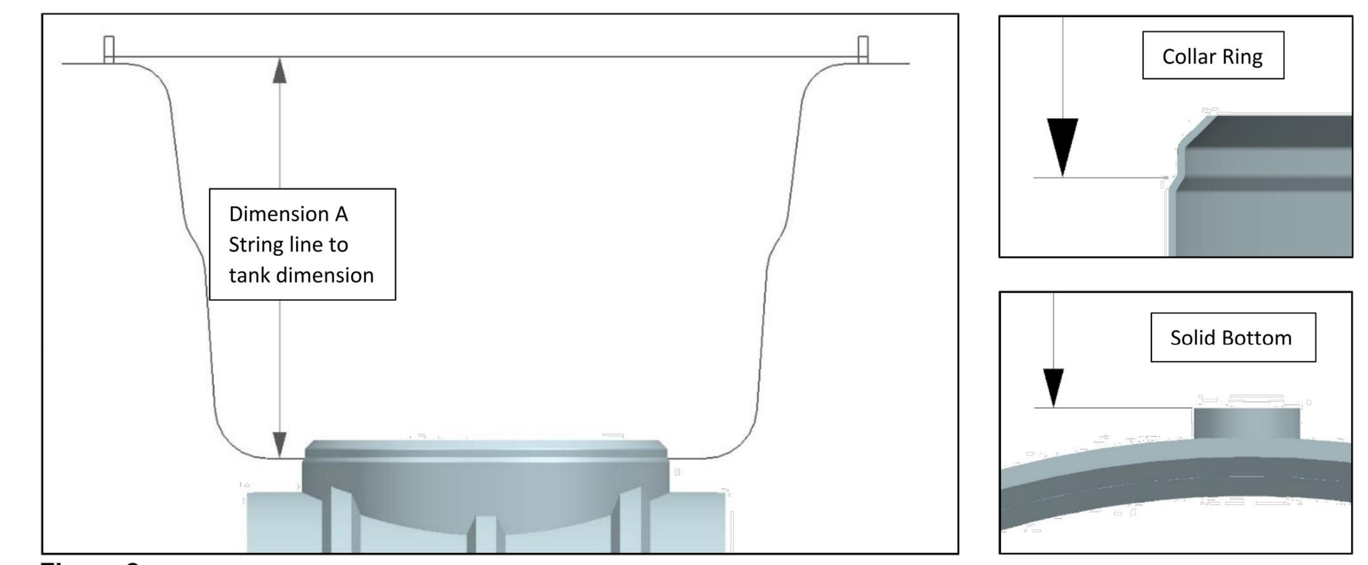


Figure 2

STEP 3: DETERMINE STRING LINE TO TOP HAT DIMENSION

A minimum 3 inch clearance is required between any load-bearing item and the tank sump. Determine "Dimension B" from finish grade string line to top hat. See Figure 3. This is the minimum distance necessary to ensure 3" minimum clearance between underside of manhole cover / tank sump cover and bottom of skirt / top hat. Common "Dimension B" distances for OPW manholes can be found in the table below as illustrated in Appendices B and C. Table assumes the manhole ring is set 1" above string line for slope. If slope will be over 1", calculation can be adjusted accordingly.

In general "Dimension B" can be calculated by measuring the manhole thickness (including ribs on underside), subtracting 1" for slope from grade, adding 2.5" for tank sump cover height, and adding 3" for clearance between underside of manhole cover / tank sump cover. Skirt clearance can affect this dimension and also needs to be taken into account to ensure adequate clearance.

OPW Manhole Style	Tank Sump Style	Dimension B (inch)	Notes
39CD / 44CD –XX10	FTSM / FTSD	5.3	
37MAT / 42MAT	FTSM / FTSD	5.8	
FL90 / FL100 –BSK12	FTSM / FTSD	8.2	
39CD / 44CD –XX10	FCSM / FCSD	5.5	Requires notch in manhole skirt, see Step 16.
39CD / 44CD –XX10	FCSM / FCSD	8.0	No notch in manhole skirt
37MAT / 42MAT	FCSM / FCSD	5.5	Requires notch in manhole skirt, see Step 16.
37MAT / 42MAT	FCSM / FCSD	10.0	No notch in manhole skirt
FL90 / FL100 –BSK12	FCSM / FCSD	8.2	Requires notch in manhole skirt, see Step 16.
FL90 / FL100 –BSK12	FCSM / FCSD	12.4	No notch in manhole skirt

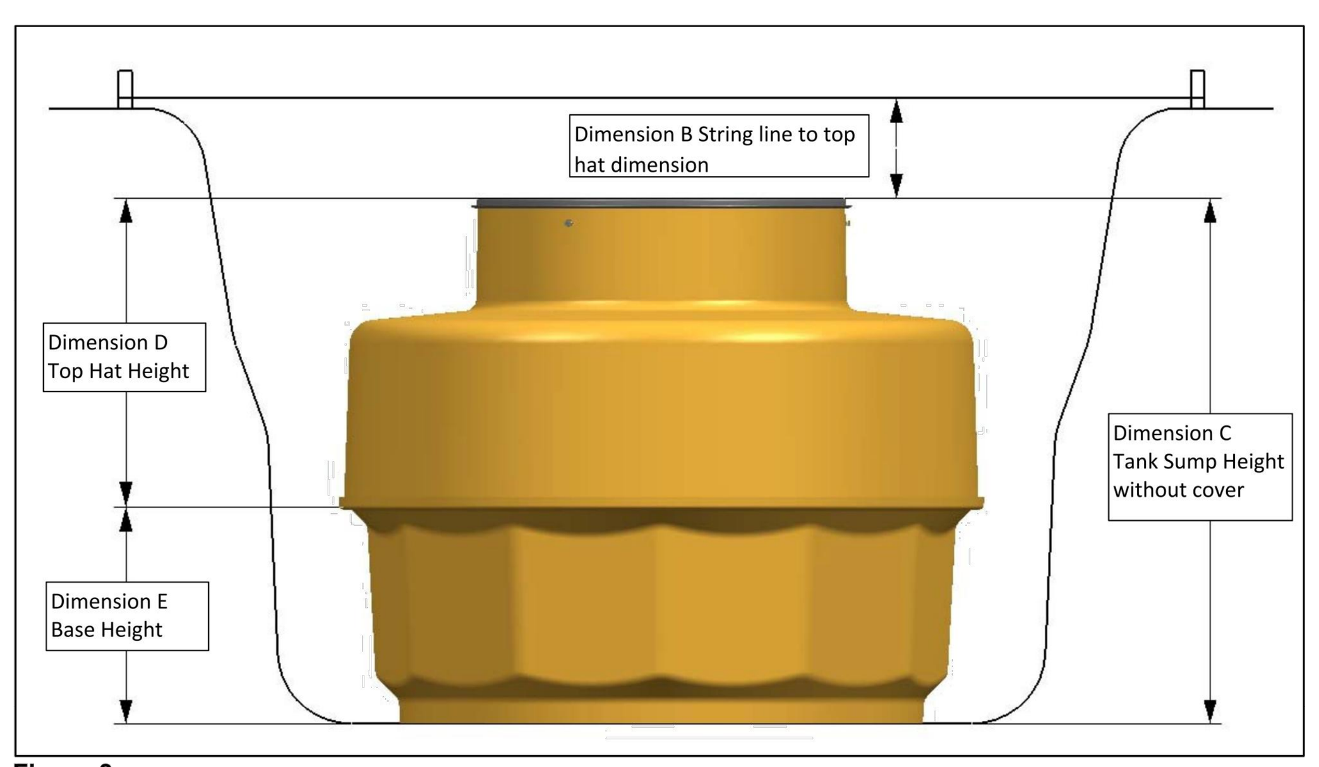


Figure 3

STEP 4: CALCULATE TANK SUMP HEIGHT WITHOUT COVER

Calculate "Dimension C", required tank sump height (without tank sump cover) by subtracting "Dimension B" from "Dimension A". See Figure 3. The height calculation for solid bottom models needs to account for the height of the sump mounting flange. Use appropriate calculation below to determine tank sump height without cover.

Calculation for Collar Ring and Reverse Flange Models

Dimension C, Tank Sump Height = __________ - __________ = __________ inch
without cover Dimension A – Dimension B = Dimension C

Calculation for Solid Bottom Models Only

Note: For solid bottom models the installed height of different mounting flange models can be found in the table below.

Mounting Flange	Installed Height (inches)
TFA-4090	2.0
SMF-4E Series	4.0
SMF-6	3.0

Dimension C, Tank Sump Height = __________ - __________ - __________ = __________ inch
without cover Dimension A – Dimension B Mounting Flange Dimension C

STEP 5: CHECK TANK SUMP HEIGHT WITHOUT COVER

Confirm calculated "Dimension C", tank sump height (without cover), matches height range in table below for sump series and does not exceed maximum burial depth. If height does not match a different sump may be required.

Tank Sump Model	Maximum Height (inches), without extensions	Minimum Trimmed Height (inches)
FTSM Series	43.5	30
FTSD Series	51	37.5
FCSM Series	43.5	35.5
FCSD Series	51	43

Note: Minimum height for solid bottom models is 1" taller than listed in the table.

Note: FCS4X-EX12 can be used to increase height. See Appendix D for sample calculation with extensions along with calculation adjustments needed when using extensions. Extension is available in 12" height. Maximum of 3 extensions per sump can be used up to a maximum burial depth of 84". See Step 9 Method 2 for extension attachment.

STEP 6: CALCULATE TANK SUMP TOP HAT HEIGHT

Calculate "Dimension E" tank sump top hat height by subtracting "Dimension D" base height from "Dimension C" tank sump height (without cover). See Figure 3. "Dimension D" base heights can be found in the table below. As received top hats are 25 inch height.

FTSM / FTSD series top hats can be trimmed a maximum of 12.5" to an overall height of 12.5". See Figure 4.
FCSM / FCSD series top hats can be trimmed a maximum of 7" to an overall height of 18". See Figure 5.

Tank Sump Model	Dimension D Base Height (inches)
FXSM, Medium, Collar Ring	17.5
FXSM, Medium, Reverse Flange & Solid Bottom	18.5
FXSD, Deep, Collar Ring	25
FXSD, Deep, Reverse Flange & Solid Bottom	26

Dimension E, Top Hat Height = ______________ - __________ = __________ inch
Dimension C Dimension D
Tank Sump Height – Base Height

Calculate "Dimension F" top hat trim distance for use in Step 9 by subtracting "Dimension E" from 25 inch.

Dimension F, Top Hat Trim Distance = 25 inch - ______________________ = __________ inch
Dimension E, Top Hat Height

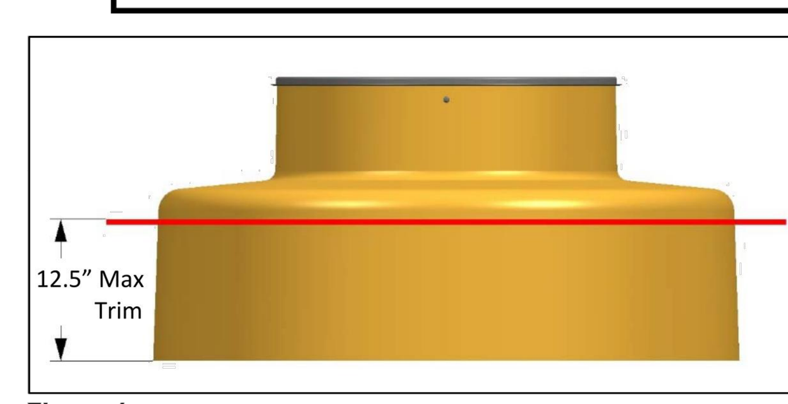


Figure 4

Note: See Appendix D for calculation adjustments needed when using extensions.

STEP 7: MOUNT BASE

Mount the tank sump base to the UST. Flexworks FTS / FCS series fiberglass tank sumps are available with three different base options (collar ring, solid bottom, and reverse flange). Use the appropriate method to mount the tank sump base.

Method 1: Solid Bottom, Mounting Flanges (not shown)

Attach the base of the sump to the tank bung fittings using Flexworks Sump Mounting Flanges – Flexworks product numbers:

SMF-4E 4" NPT Mounting Flange
SMF-4EFT 4" NPT Mounting Flange
SMF-6 6" NPT Mounting Flange
TFA-4090 4" No Bolt Style

* See Installation Instructions supplied with Flexworks Sump Mounting Flanges. Ensure sump is level as described in Method 3c and Figure 7.

Note: As mentioned in mounting flange instructions ensure proper backfill with no voids under tank sump bottom.

Method 2: Reverse Flange (not shown)

Attach the base of the sump to the tank flange per tank manufacturers instructions. Reverse flange sumps have 24 bolt holes on a 32" bolt circle with a 29.25" ID. Ensure sump is level as described in Method 3c and Figure 7.

Method 3: Collar Ring

Measure across the tank collar to confirm if it is 42" or 48" and confirm tank sump matches. Attach sump base to collar using a FlexWorks Resin Adhesive Kit (product number RK-5000, sold separately). One RK-5000 kit will be needed for collar attachment (42" or 48" diameter). Tank sumps evaluated per UL / ULC as a complete assembly using RK-5000.

NOTICE: Many mounting kits supplied by OPW manufacturers are not warranted by OPW. OPW bears no responsibility whatsoever for the integrity of joints using alternate tank sump mounting systems.

a) Using heavy grit sandpaper, completely roughen the surface of both the sump collar and the sump base where they will be joined with the resin adhesive kit. All sanded surfaces must be wiped clean with acetone and a clean cloth immediately prior to bonding to ensure that no dust, dirt, grease, or oil are present on the surfaces. The surfaces must be free from moisture and other contaminants.

b) Immediately after cleaning install the tank sump onto the tank collar. Prior to attaching the sump to the collar, dry fit it onto the collar and position so that the sump facets align perpendicular with the pipework exit / entry points. See Figure 6.

For FCS series ensure that pipe entry points will not interfere with desired Kwik Wire junction box location.

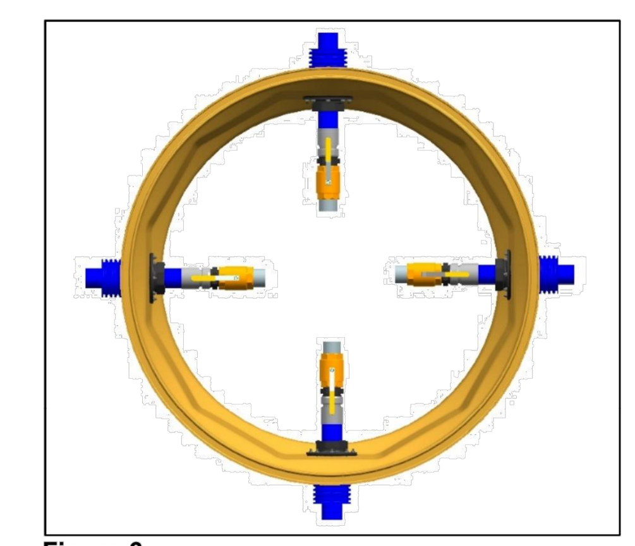


Figure 6

c) Use a level to set the sump base on the collar as shown in Figure 7.

CAUTION: The sump base must be set level to ensure that the adhesive will fill the trough evenly around the entire diameter of the middle joint to be assembled in Step 10.

Double check sump height calculations before proceeding.

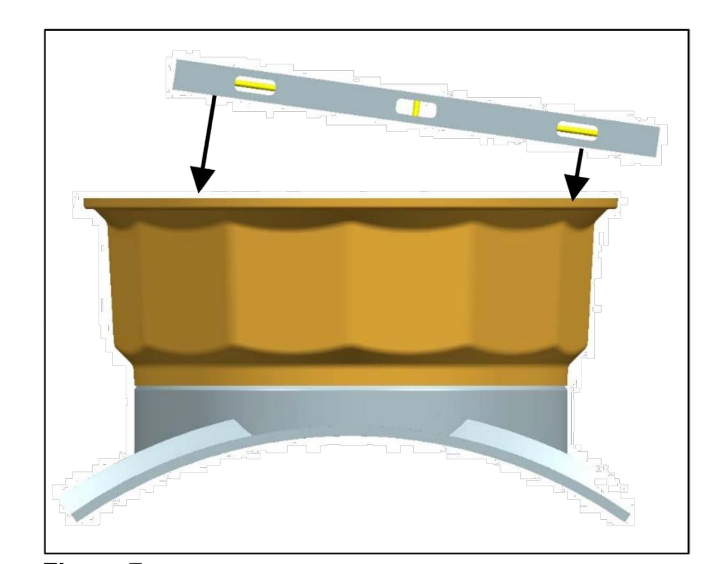


Figure 7

NOTE:
THIS DRAWING IS A COMPILATION OF OPW (FTS) TANK SUMP INSTALLATION MANUAL. IT IS INTENDED AS A REFERENCE FOR REGULATORS, QUALIFIED INSTALLERS AND BIDDERS. IT IS NOT A SUBSTITUTE FOR FACTORY QUALIFICATION OF INSTALLERS OR A THOROUGH REVIEW OF THE ENTIRETY OF THE MANUFACTURER DOCUMENTATION AND PROCEDURES. THIS DRAWING IS FOR REFERENCE ONLY AND IS NOT A DESIGN DRAWING.

ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:

CONSULTANT:
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OPW (FTS) TANK SUMP MANUFACTURER INSTALLATION DETAILS (PART 1)

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE: N/A
DATE: 3/5/2021
DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: RWW
JOB NUMBER: XXXXXX

FT5.0

d) After leveling the sump base, apply duct tape around the outside of the joint between the sump base and the collar to prevent the adhesive from running out of the joint before it hardens. See Figure 8.

Note: Instead of duct tape the outside of the collar can be glassed on using the S-CR-FGK kit. Detailed tank collar fiberglass instructions are packed in the S-CR-FGK kit. Even when outside of collar is glassed on RK-5000 must be used on inner collar joint.

e) Mix RK-5000 resin adhesive kit following the detailed instructions (p/n ERAI-0001) packed with kit

For best results, the adhesive resin kit should be stored and mixed at room temperature. If the temperature is below 60°F, the adhesive must be warmed and mixed indoors. Pour the entire contents of Part A and Part B into mixing container. Thoroughly mix the adhesive with the provided mixing stick or with a drill mounted mixing paddle at low speed for a minimum of three (3) minutes. Be sure to scrape the bottoms and sides of the container to ensure proper and complete mixing.

Pour the entire mixture into the joint between the tank collar and the tank sump. See Figure 8. Allow adhesive to set up undisturbed until it is hard.

Important: Resin Set-up Times
After joining the sump base to the collar allow the resin adhesive to harden before proceeding. Carefully follow the instructions supplied with the RK-5000 resin adhesive kit and observe minimum set-up times before proceeding.

DO NOT BACKFILL OR CONTINUE WORK IN OR AROUND THE SUMP UNTIL THE RESIN IS COMPLETELY CURED.

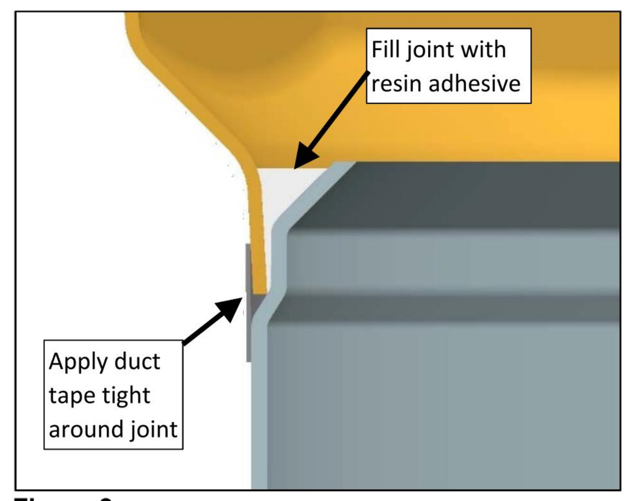


Figure 8

STEP 8: INSTALL ENTRY FITTINGS

Install the appropriate FlexWorks pipe and conduit entry fittings into the flats around the tank sump base at the proper locations (Refer to the appropriate FlexWorks Entry Fitting Installation Instructions).

Note: Conduit entry fittings should not be needed with FCS series sumps with Kwik Wire junction box. Ensure that pipe entry points will not interfere with desired Kwik Wire junction box location.

To ease installation, it is recommended to install motor and piping prior to setting the top hat.

Determining Pipe Entry Height
Pipe entries are generally located as close to the bottom of the tank sump as possible. The lower the pipe entry into the tank sump wall, the easier it will be to maintain the proper piping slope back to the UST from the dispensers.

STEP 9: HEIGHT ADJUSTMENT

If necessary, the height of FlexWorks tank sumps can be adjusted in the field. A portion of the sump top hat can be cut off to shorten the sump height or FCS4X-EX12 extensions can be used to increase the height of the tank sump. To shorten the tank sump use Method 1 below. To extend the tank sump use Method 2 below. If "Dimension F" calculated in Step 6 is zero proceed to Step 10.

Method 1: Shorten Tank Sump Top Hat

Using "Dimension F" calculated in Step 6 mark the top hat trim distance on the top hat. Do not exceed maximum trim distances as shown in Figures 4 & 5. Double check sump height calculations before cutting top hat. Using a saber saw, circular saw, jigsaw, or angle grinder with a diamond grit blade cutoff the necessary portion of the top section **making sure the cut is square**. Before proceeding, test fit the top hat by placing it in the trough on the sump base. Verify that the correct sump height, "Dimension C", has been attained and the cut has been made square. See Figures 9 & 10.

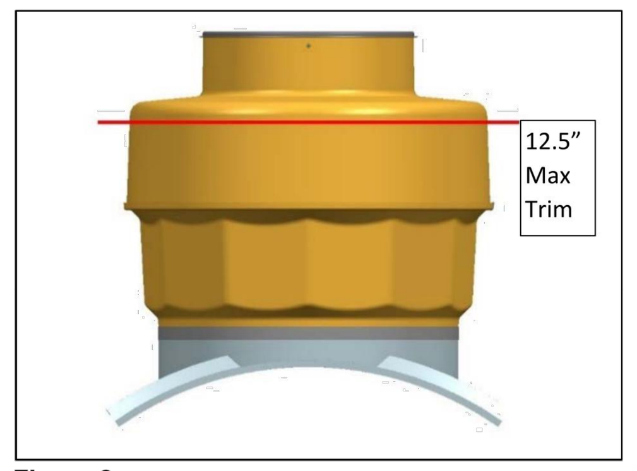


Figure 9

Method 2: Extend Tank Sump Top Hat

Using the FCS4X-EX12 extension can extend the top hat in 12" increments. Maximum of 3 extensions per sump can be used up to a maximum burial depth of 84". Using "Dimension E" and "Dimension F" calculated in Appendix D for extensions mark the top hat trim distance on the top hat. Do not exceed maximum trim distances as shown in Figures 4 & 5. Double check sump height calculations before cutting top hat. Using a saber saw, circular saw, jigsaw, or angle grinder with a diamond grit blade cutoff the necessary portion of the top section **making sure the cut is square**. Before proceeding, test fit the extension(s) and top hat by placing it in the trough on the sump base. Extension(s) is placed between sump base and top hat. Verify that the correct sump height, "Dimension C", has been attained and the cut has been made square. See Figure 11.

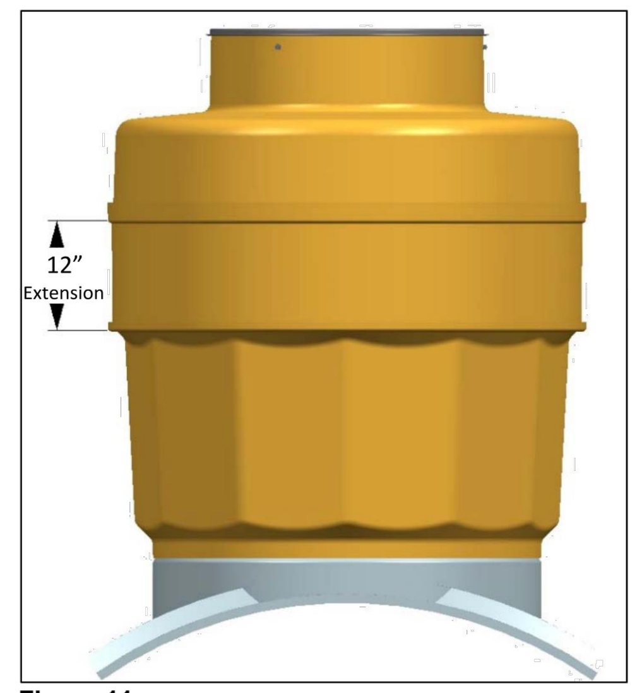


Figure 11

STEP 10: MIDDLE JOINT

After test fitting the top hat remove it from the sump.

Prepare top hat (or extension) for attachment to sump base.

Note: When using an FCS4X-EX12 extension the extension will be attached to the sump base.

Using heavy grit sandpaper, completely roughen the surface of both the sump base and top hat (or extension) where they will be joined with the resin adhesive kit. All sanded surfaces must be wiped clean with acetone and a clean cloth immediately prior to bonding to ensure that no dust, dirt, grease, or oil are present on the surfaces. The surfaces must be free from moisture and other contaminants.

Immediately after cleaning install the top hat (or extension) onto the tank sump base.

As previously mentioned, for FCS series ensure that final Kwik Wire junction box location aligns with conduit location.

RK-5000 resin adhesive kit (sold separately) required for this joint. For 42" diameter models one RK-5000 kit needed for this joint. For 48" diameter models 1.5 RK-5000 kits needed for this joint.

Mix RK-5000 resin adhesive kit following the detailed instructions (p/n ERAI-0001) packed with kit

For best results, the adhesive resin kit should be stored and mixed at room temperature. If the temperature is below 60°F, the adhesive must be warmed and mixed indoors. Pour the entire contents of Part A and Part B into mixing container. Thoroughly mix the adhesive with the provided mixing stick or with a drill mounted mixing paddle at low speed for a minimum of three (3) minutes. Be sure to scrape the bottoms and sides of the container to ensure proper and complete mixing.

Pour the entire mixture into the trough on the sump base. See Figure 13. Allow adhesive to set up undisturbed until it is hard.

Important: Resin Set-up Times
After joining the top hat (or extension) to the sump base allow the resin adhesive to harden before proceeding. Carefully follow the instructions supplied with the RK-5000 resin adhesive kit and observe minimum set-up times before proceeding.

Note: For added protection, a bead of FlexWorks SL-1100 can be applied to joint after epoxy cures.

DO NOT BACKFILL OR CONTINUE WORK IN OR AROUND THE SUMP UNTIL THE RESIN IS COMPLETELY CURED.

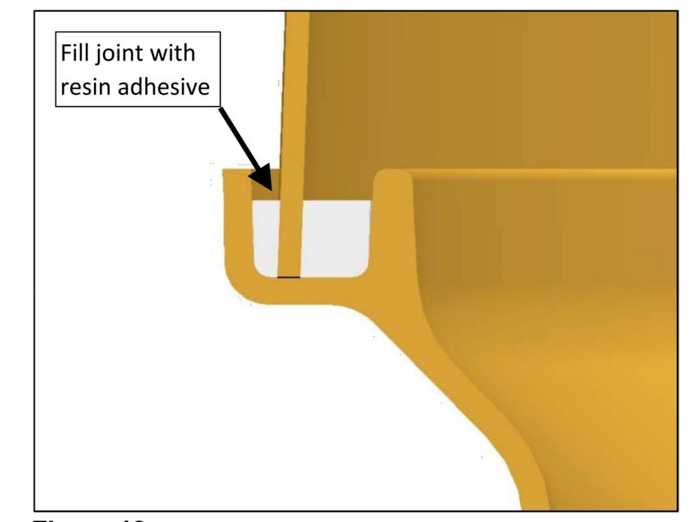


Figure 13

STEP 11: EXTENSION ATTACHMENT – optional

This Step only applies to installations requiring an extension. Proceed to Step 12 if extension is not needed.

Sand and clean top hat and extension as done previously in Steps 7 & 10. The bell end of each extension **must** be joined with both an RK-5000 resin adhesive kit and fiberglass. Each extension joint (both 42" and 48" diameter) requires one RK-5000 resin adhesive kit per joint (sold separately). Mix and pour as done previously in Steps 7 & 10. The S-TH-FGK or S-CR-FGK kit (sold separately) can be used to glass the joint. Detailed fiberglass instructions are packed in fiberglassing kit. After sanding and cleaning, mix resin and paint onto sanded surfaces followed by three layers of fiberglass tape and a final coat of resin. See Figure 14. Repeat steps for additional extensions. Allow a minimum of one hour for the resin to cure before proceeding with any other work on the tank sump. Allow 24 hours before putting any stress on sump.

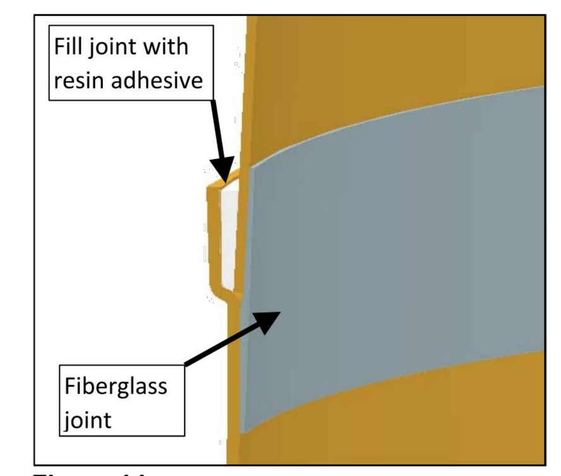


Figure 14

STEP 13: LEAK TESTING

OPW recommends the following procedure for hydrostatic testing of tank sumps:

1) Visually inspect all entry boots for band clamps, compression rings and donuts for possible leak points prior to testing. Ensure all band clamps are tight. Ensure REF grommet is flush with end of entry fitting nut. Correct as needed.

Note: For FCS series verify torque on Kwik Wire junction box external bolts as described in Step 12a.

2) Be sure all test tubes, connector tubes or any other open secondaries into the sump are sealed and liquid tight.

3) Fill all sumps to a minimum of 1" above the highest penetration fitting or sump joint. Mark the liquid level with a permanent marker.

Note: For FCS series, the Kwik Wire junction box is factory installed and testing may not be required above the box. Local requirements are determined by the AHJ.

4) Hydrostatic test should be held for 1 hour or per local regulations.

5) Be sure all water is disposed of properly after completing the test.

Note: Should the liquid level drop during testing, visually identify the leak source. Remove water and tighten band clamps to 30 in/lbs. Entry boot compression rings should be tightened in a clockwise manner until each stud reaches 60 in/lbs. Repeat testing procedure.

As an alternate to a hydrostatic test a vacuum test can be performed on the tank sump.

WARNING: If vacuum testing, test the sump at a maximum of 30" inch water column or irreparable damage may occur.

STEP 16: INSTALL COVER

Ensure all L-handles on the cover are in the "Unlocked" position. The tank sump cover has molded in "Locked" and "Unlocked" logos as shown in Figures 22 and 23. Seat the cover on the stainless steel ring on the top hat. Press down on the cover. Turn the L-handles 180 degrees to the "Locked" position to lock the latch beneath the stainless steel ring on the top hat.

Figure 22 – Unlocked Position

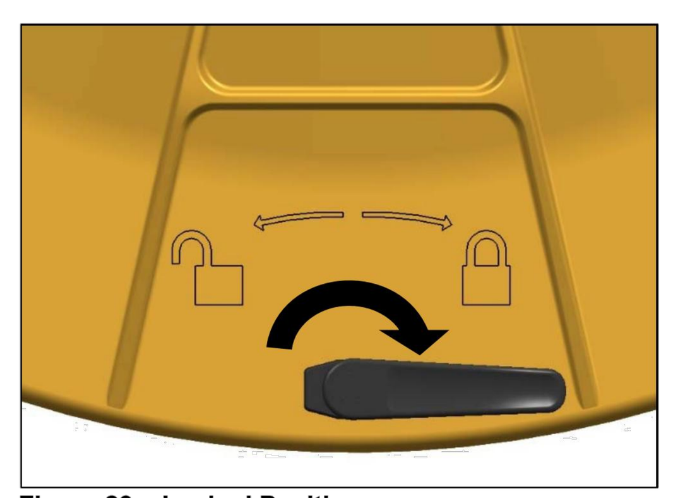


Figure 23 – Locked Position

If the L-handle fails to engage it may be necessary to adjust the 'cam-lock' height. See Figure 24.

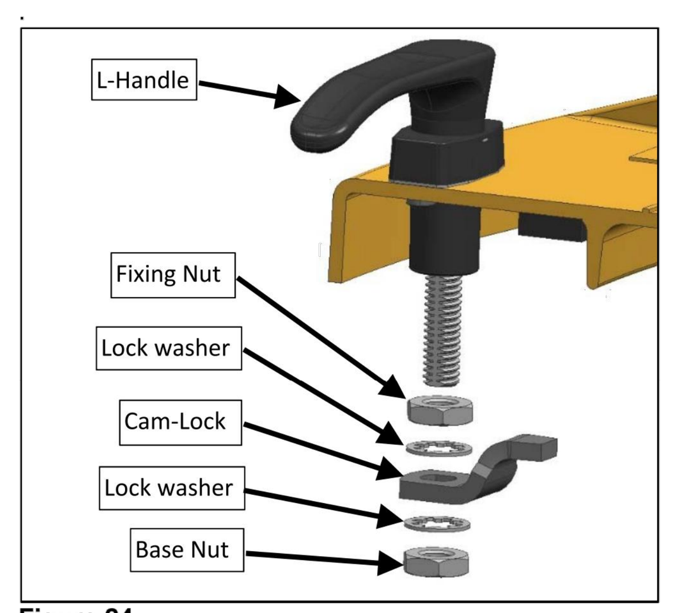


Figure 24

If the L-handle is not fully engaging it means the cam-lock needs to be lowered. Loosen the base nut to a lower position. Pull the cam-lock down to rest onto the base nut. Lower and tighten the fixing nut to 177 in-lbs max to secure the cam-lock. See Figure 25.

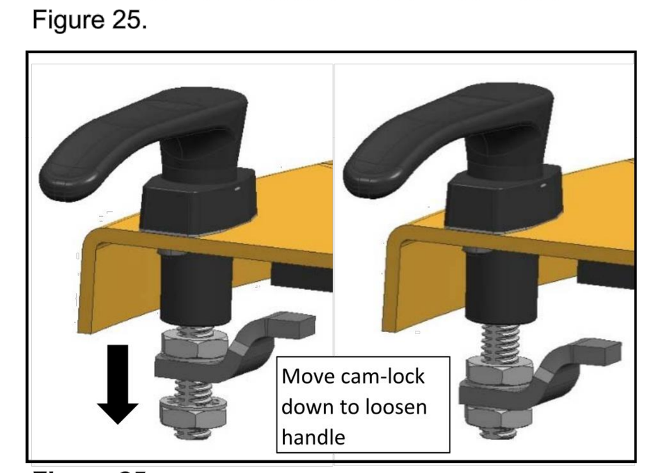


Figure 25

If the cover is not compressing the gasket tightly against the stainless steel ring it means the cam-lock needs to be raised. Loosen the base nut and pull the cam-lock down to rest onto the base nut and raise the fixing nut. Push the cam-lock up to the fixing nut and tighten the base nut to 177 in-lbs max to secure the cam-lock. See Figure 26.

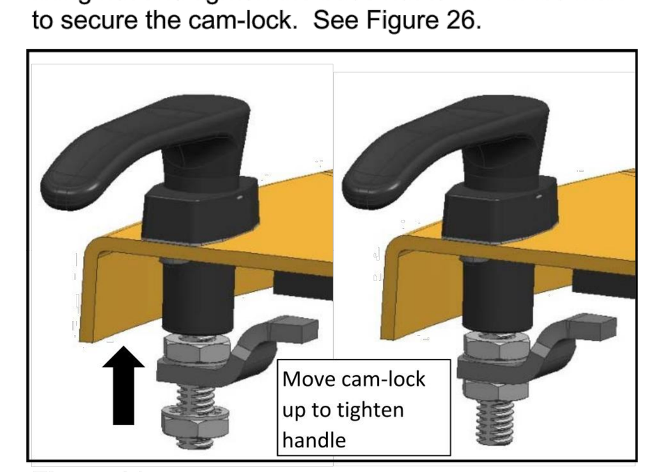


Figure 26

Once the cam-lock is secure refit the cover. See Figure 27.

Note: It may be necessary to further adjust the cam-lock height until the optimal position is located.

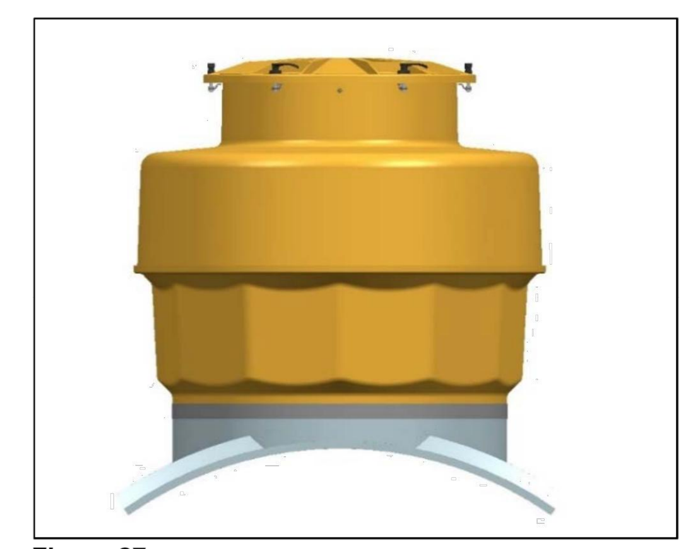


Figure 27

STEP 15: BACKFILL
Once the sump and top hat have successfully passed tightness testing, the area around the sump can be carefully backfilled. Rounded pea gravel with a minimum diameter of 1/8"and a maximum diameter of 3/4" must be used for backfill around OPW Fibrelite / FibreTite
To prevent sump damage, avoid dumping pea gravel directly onto the Tank Sump when backfilling. Backfill equally around the sump in layers to prevent damage or deformation. Ensure proper backfill with no voids under tank sump bottom, middle joint, and

STEP 16: NOTCH MANHOLE SKIRT – optional

This Step only applies to FCS series sump installations with Kwik Wire Junction Box. Proceed to Step 17 for FTS series sumps.

As previously mentioned in the table in Step 3, it may be necessary to notch the manhole skirt to ensure the required minimum 3 inch clearance between any load-bearing item and the tank sump is met. See Appendix C for figures with the exact notch dimensions required for OPW / Fibrelite manholes. Notch manhole accordingly to ensure adequate clearance. See table below for summary of notch sizes required with OPW manholes.

OPW / Fibrelite Manhole Style	**Dimension B** (inch)	Notch Size
39CD / 44CD –XX10	5.5 to 8	26" wide x 2.5"
37MAT / 42MAT	5.5 to 10	26.3" wide x 4.6"
FL90 / FL100 –BSK12	8.2 to 12.4	26.3" wide x 4.2"

STEP 17: SET MANHOLE SKIRT

Set manhole skirt and ensure adequate clearance. A minimum 3 inch vertical clearance is required between any load-bearing item and the tank sump. A minimum of 1.5 inches clearance between top hat and skirt is highly recommended on all sides to allow adequate water migration away from sumps. See Figures 29 & 30.

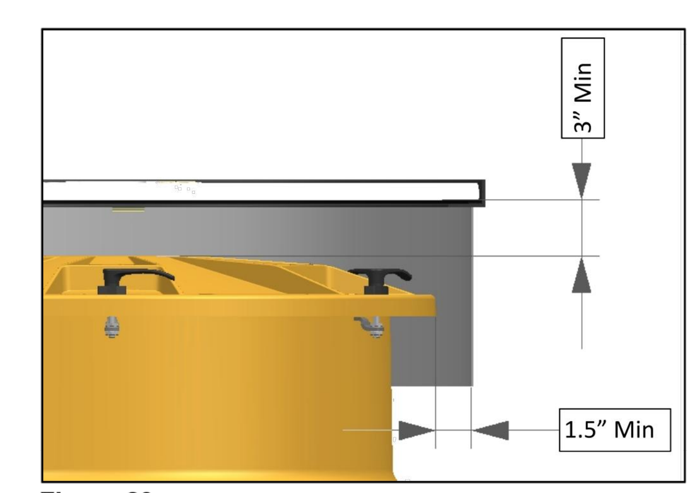


Figure 29

NOTE:
THIS DRAWING IS A COMPILATION OF OPW (FTS) TANK SUMP INSTALLATION MANUAL. IT IS INTENDED AS A REFERENCE FOR REGULATORS, QUALIFIED INSTALLERS AND BIDDERS. IT IS NOT A SUBSTITUTE FOR FACTORY QUALIFICATION OF INSTALLERS OR A THOROUGH REVIEW OF THE ENTIRETY OF THE MANUFACTURER DOCUMENTATION AND PROCEDURES. THIS DRAWING IS FOR REFERENCE ONLY AND IS NOT A DESIGN DRAWING.

ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:

CONSULTANT:
Engineers • Planners • Surveyors
Wellert Corporation
5136 Beach Road • Medina, Ohio 44256
t: 330.239.2699 • f:330.239.0272

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

OPW (FTS) TANK SUMP MANUFACTURER INSTALLATION DETAILS (PART 2)

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FT5.1

Operation and Maintenance:

The FlexWorks System is designed to provide reliable underground fuel transfer and short-term secondary containment of leaked petroleum product. FlexWorks sumps and secondary containment pipes are not intended for long term storage of petroleum products. Liquid that accumulates in the secondary containment system must be promptly removed and properly disposed of. Operational third party approved liquid sensors should be installed and maintained in each sump to reliably indicate to the operator that liquid is present in the secondary containment system. Once a leak is detected, the system must be shut down immediately and the source of the leak must be repaired. All liquid must be thoroughly flushed and cleaned out of the secondary containment system at once. Inspect all system components at least monthly for leaks or damage, and repair or replace any suspect component as necessary.

Visual inspections of all containment sumps and components should be made on a routine basis to check for damage, water infiltration or for any signs of leaking product. An electronic or mechanical shut-off leak detection system is recommended for all containment sumps. Sumps are to be kept free of debris and spilled fuel.

NOTE:
Failure to remove fuel and liquids from containment sumps may compromise the performance and integrity of the sump and its associated fittings and seals over prolonged periods of time.

Note: Common sense and good judgment should always be exercised. The contractor's understanding of all related site conditions prior to starting the project is essential. If the contractor does not have a clear understanding of the required work and site conditions, the contractor is advised to seek clarification prior to starting any portion of the project.

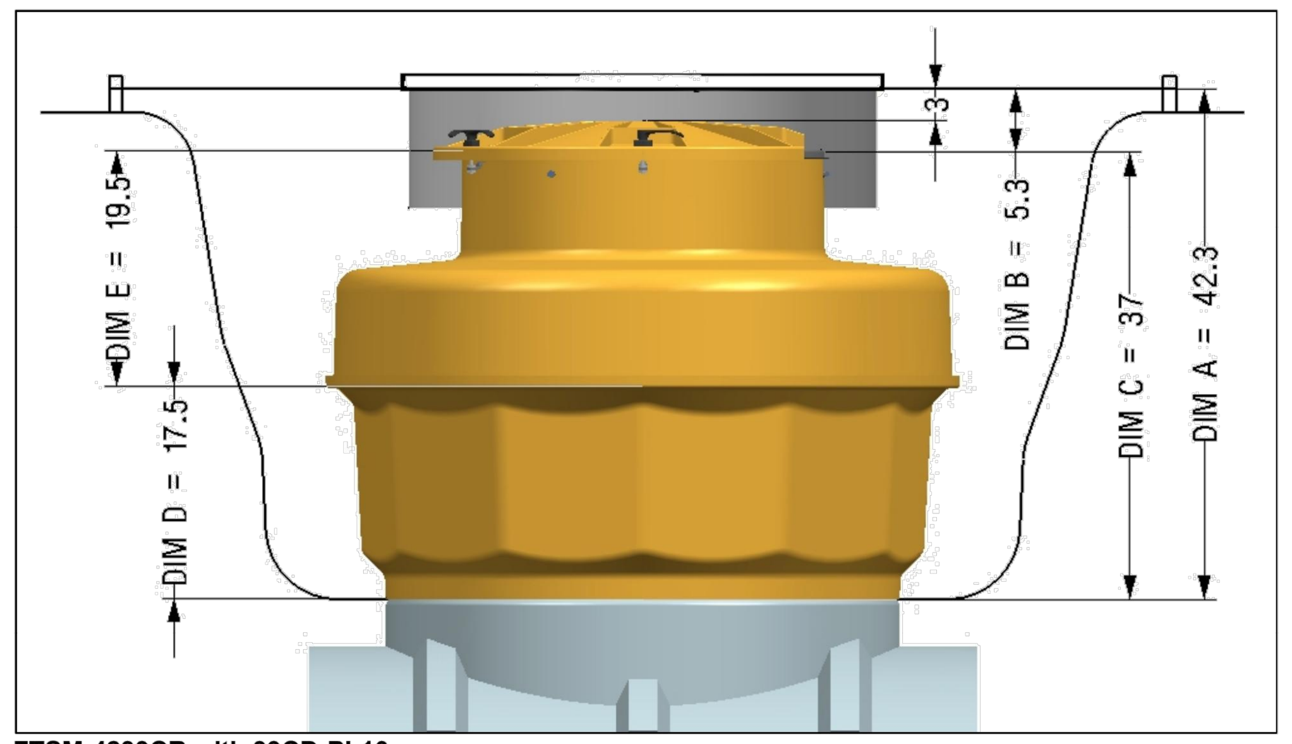
Important: Leave these instructions with Station Operator

Appendix A

Sample Height Calculations (no extensions)

Sample Calculation #1
Sump Model = FTSM-4233CR
Manhole Model = 39CD-PL10

Dimension A, string line to tank	=	42.3 inch
Dimension B, string line to top hat dimension from table	=	5.3 inch
Dimension C, tank sump height without cover, A-B, 42.3-5.3	=	37 inch
Check dimension C, 37 inch is in range of 30 inch to 43.5 inch	=	CHECK
Dimension D, base height from table	=	17.5 inch
Dimension E, tank sump top hat height, C-D, 37-17.5	=	19.5 inch
Dimension F, trim distance, 25-E, 25-19.5	=	5.5 inch



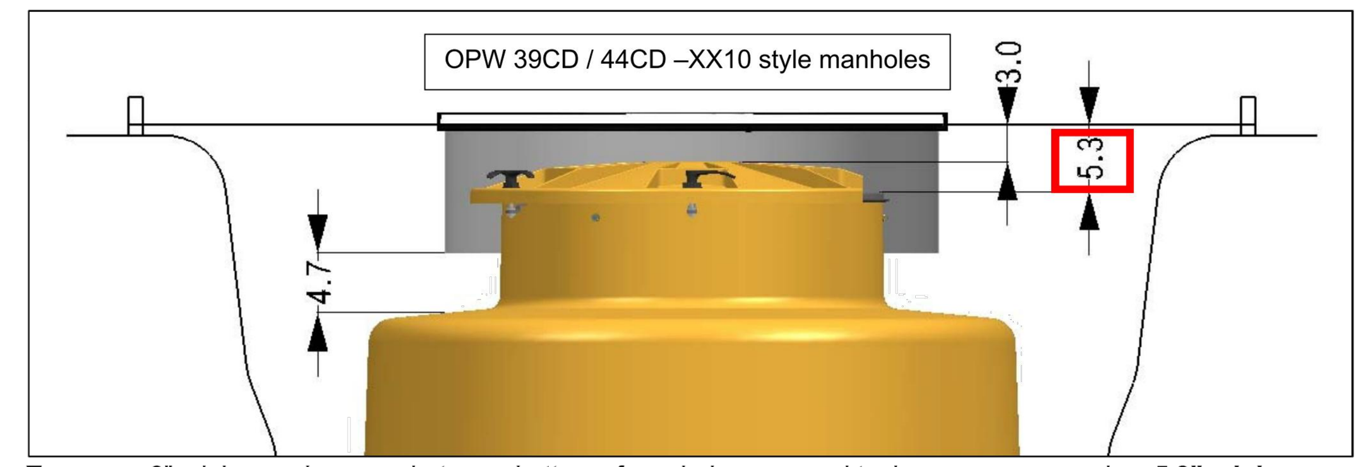
FTSM-4233CR with 39CD-PL10

Sample Calculation #2
Sump Model = FCSD-1-4233SB
Manhole Model = FL90-BSK12
Mounting Flange = TFA-4090

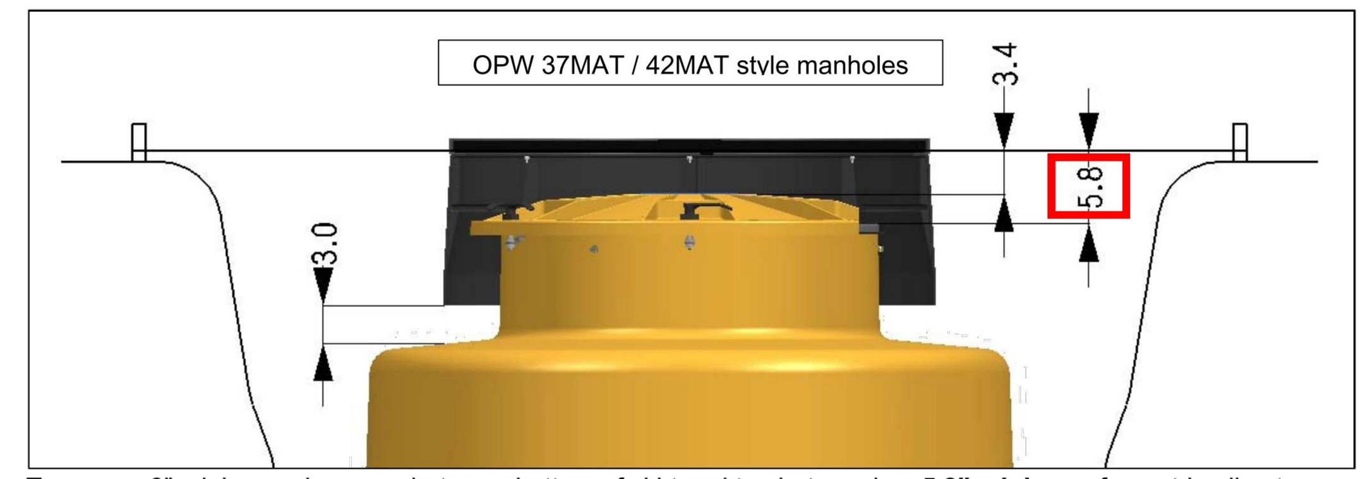
Dimension A, string line to tank	=	61.2 inch
Dimension B, string line to top hat dimension from table	=	8.2 inch
Dimension C, tank sump height without cover, A-B-2, 61.2-8.2-2	=	51 inch
Check dimension C, 51 inch is in range of 42 inch to 51 inch	=	CHECK
Dimension D, base height from table	=	26 inch
Dimension E, tank sump top hat height, C-D, 51-26	=	25 inch
Dimension F, trim distance, 25-E, 25-25	=	0 inch (no trim needed)

Appendix B
Required Minimum Clearances for FTSM and FTSD series.

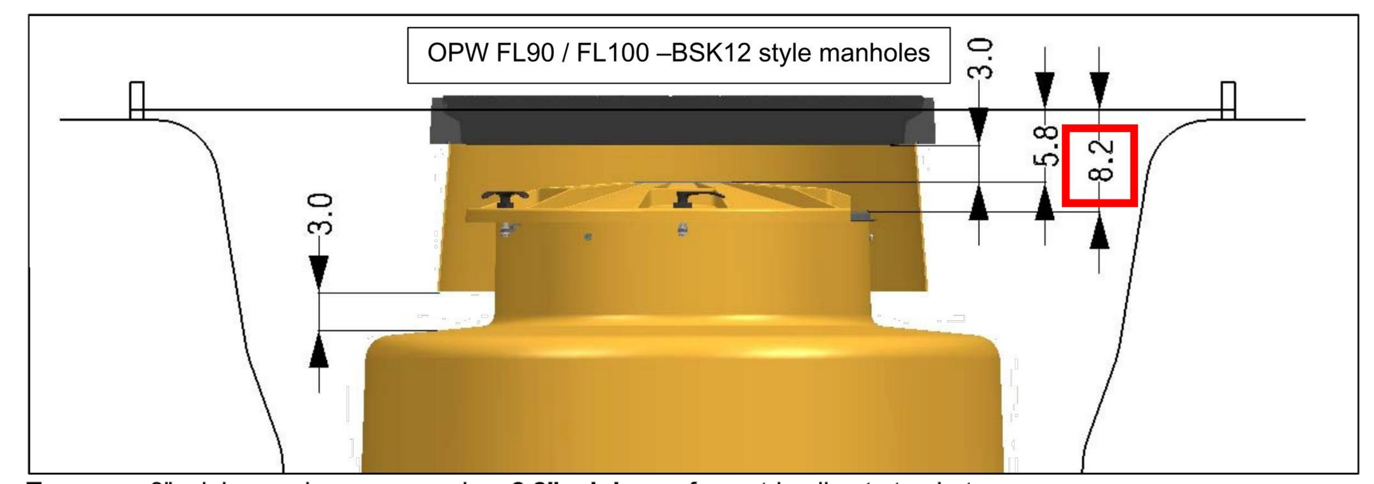
For all scenarios shown below the manhole ring is set 1" above string line for slope.



To ensure 3" minimum clearance between bottom of manhole cover and tank sump cover requires **5.3" minimum** from string line to top hat.



To ensure 3" minimum clearance between bottom of skirt and top hat requires **5.8" minimum** from string line to top hat.



To ensure 3" minimum clearance requires **8.2" minimum** from string line to top hat.

Appendix D

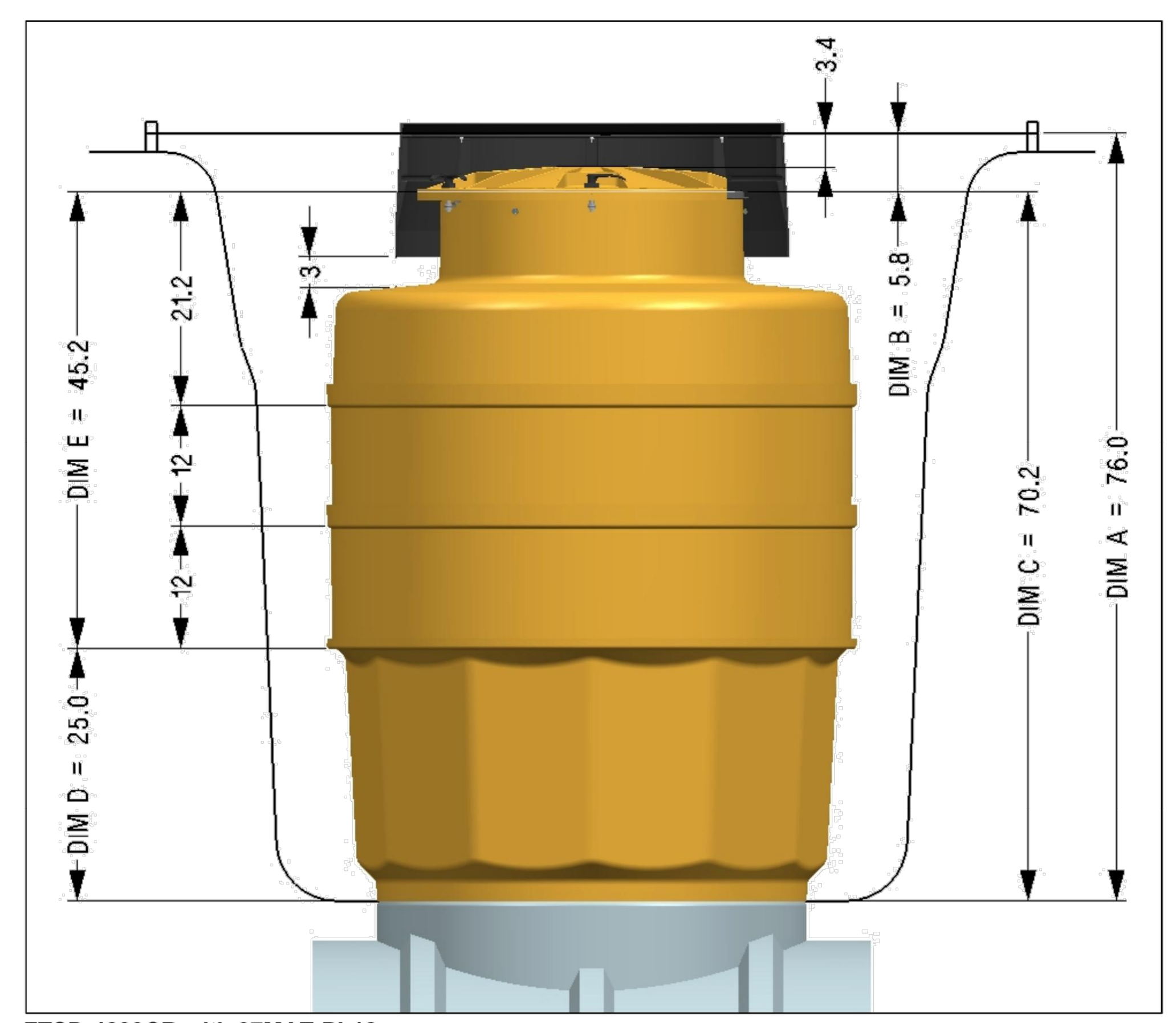
Sample Height Calculation with Extensions.

Sample Calculation
Sump Model = FTSD-4233CR
Manhole Model = 37MAT-PL12

Dimension A, string line to tank	=	76 inch
Dimension B, string line to top hat dimension from table	=	5.8 inch
Dimension C, tank sump height without cover, A-B, 76-5.8	=	70.2 inch
Check dimension C, 70.2 inch is out of range of 30 to 43.5 inch	=	EXCEEDS, extension needed
FCS42-EX12 extension will be needed.		
Dimension D, base height from table	=	25 inch
Dimension E, tank sump top hat height, C-D, 70.2-25	=	45.2 inch

Determine number of extensions needed to extend standard 25" top hat to meet Dimension E.
Extensions are available in 12 inch increments.
For this configuration 45.2 inch – 24 inch (2 extensions) = 21.2 inch top hat height. Trim top hat to match.

Dimension F, trim distance, 25-E, 25-21.2	=	3.8 inch



FTSD-4233CR with 37MAT-PL12

PEI MEMBER

OPW RETAIL FUELING
3250 US 70 Business West
Smithfield, NC 27577
Customer Service:1-(800) 422-2525
Technical Service and Questions:
1-(877) OPW-TECH
www.opwglobal.com

Part Number: 212496
Issue Date: 5/17/2019 Rev B

NOTE:
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ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:

CONSULTANT:
Weller Corporation
Engineers • Planners • Surveyors
5136 Beach Road • Medina, Ohio 44256
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SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
(814) 946-3611

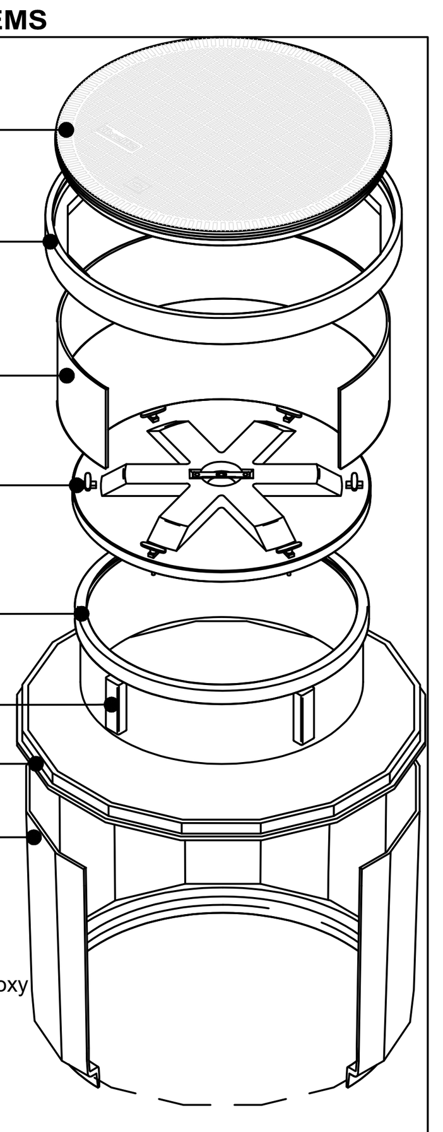
OPW (FTS) TANK SUMP MANUFACTURER INSTALLATION DETAILS (PART 3)

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FT5.2

INSTALLATION INSTRUCTIONS S15CR WT TANK SUMP SYSTEMS



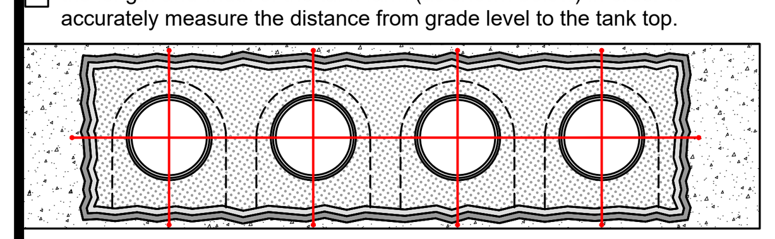
INSPECTING PARTS AND ACHIEVING CORRECT SUMP HEIGHT

DO NOT STORE SUMPS ON THEIR SIDES PRIOR TO INSTALLATION

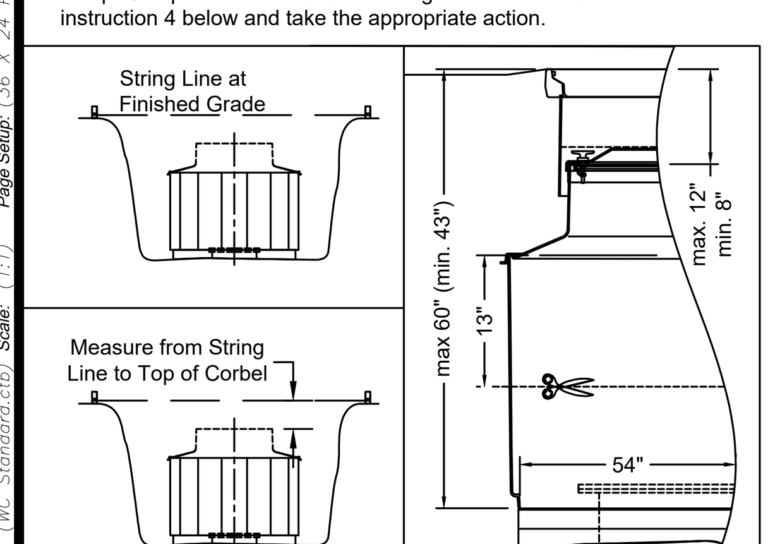
STOP Failure to follow this instruction may cause the sumps to deform and become "out of round." When installed onto the tank collar, the out-of-round sump base may be difficult to connect to the round tank sump corbel. Store sumps on either round end to prevent this from happening.

1 Using the packing list and the drawing on the front page of these instructions as a reference, CONFIRM THAT ALL SUMPS, MANHOLES AND RELATED PARTS AND ACCESSORIES HAVE BEEN RECEIVED.

2 Install string lines at finished grade level (manhole grade level) across the length and width of the tank farm (as shown below) in order to accurately measure the distance from grade level to the tank top.



3 Place the sump base onto each of the tank collars and place the corbels onto the sump bases ("dry fit" the sump bases and corbels at this stage). Use a marker to mark each sump to reflect the tank it is installed on. Measure the distance from grade level to the top of the sump corbel fro each sump and note the measurement in a log or on the side of the sump. Compare each measurement against the measurement chart in instruction 4 below and take the appropriate action.



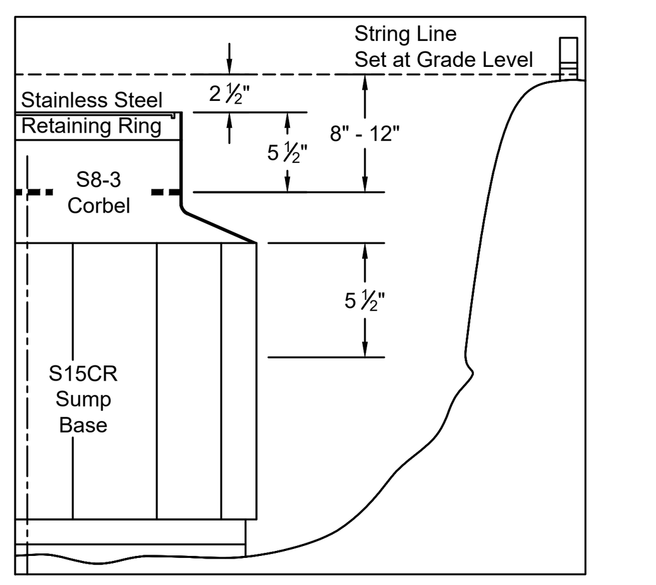
4

Distance from Grade Level	Action
Min. 8" Max. 12"	No trimming or extensions required, proceed with installation.
Less than 8"	Sump base only (do not trim corbel) must be trimmed to allow for minimum 8" clearance - follow instructions below. DO NOT TRIM MORE THAN 13" FROM SUMP BASE - CONTACT DISTRIBUTOR FOR SHORTER BASE IF REQUIRED.
More than 12"	Install 12" extension to sump base - contact distributor and order S8-EXT12 extension. Follow "Bonding the Extension" instructions.

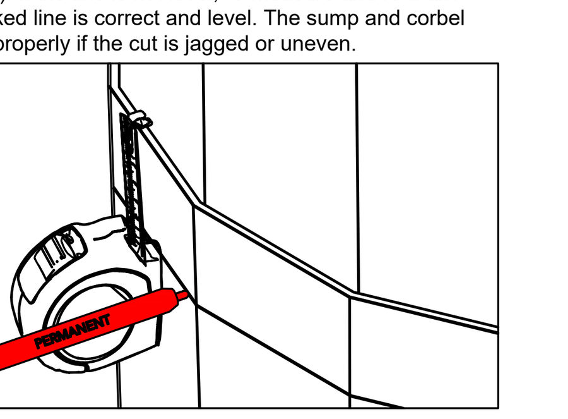
TRIMMING SUMP BASE TO ACHIEVE CORRECT SUMP HEIGHT

5 As shown in the drawing below, the top of the tank sump corbel must be approximately 8" to 12" below finished grade. In the example shown in the drawing, the top of the sump corbel is only 2 ½" below grade level. As a result, the sump base will need to be trimmed down by at least 5 ½".

STOP NOTE: Never trim the corbel with the factory-installed stainless steel retaining ring. Never trim more than 13" down from the top of the sump base. (contact Fibrelite technical service with any questions).

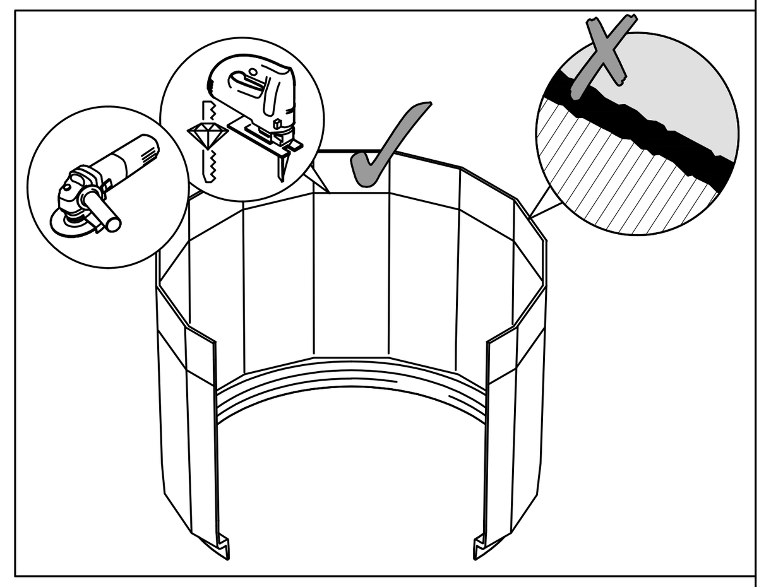


6 As shown in the drawing below, mark the trim line on the sump base using an indelible marker - make sure to mark a level line on the tank sump for cutting (use a locked tape measure as shown below). If the line is not level, re-measure and re-mark until the marked line is correct and level. The sump and corbel will not seal properly if the cut is jagged or uneven.



7 Use an appropriate cutting tool and blade such as a diamond blade cutter (as shown in the drawing below) to ensure that the sum is cut evenly.

A jagged or uneven cut made with a reciprocating saw will be difficult to seal when the corbel is installed.

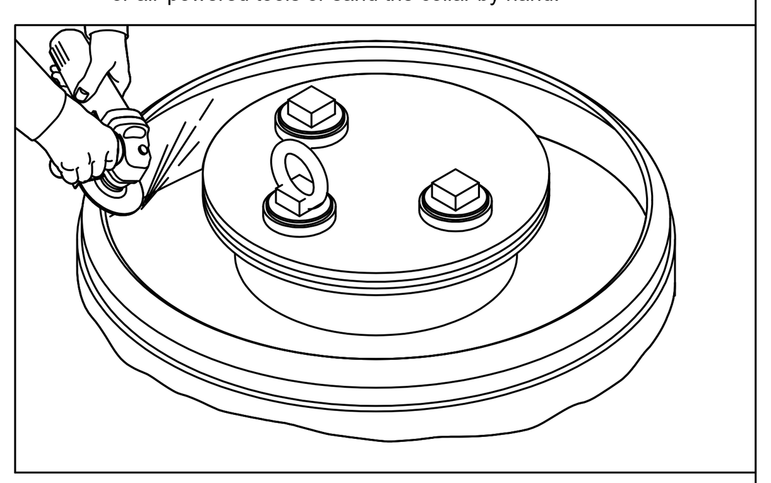


PREPARING TANK COLLAR AND SUMP BASE FOR FIBERGLASSING

NOTE: CORRECT PREPARATION IS ESSENTIAL! FAILURE TO CORRECTLY PREPARE THE SURFACE PRIOR TO BONDING MAY RESULT IN "WEAK" JOINT AND SUBSEQUENT FAILURE.

8 The surface of the tank collar must be prepared properly prior to bonding - use an angle grinder to expose the fiberglass surface to ensure good bonding. If grinding is not possible, sand by hand - use heavy grit sandpaper to ensure that the fiberglass surface is properly exposed. (see below)

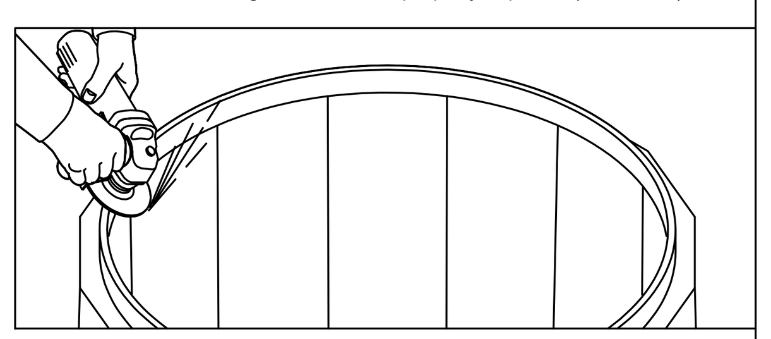
STOP Do not grind the tank collar with an electric grinder unless all appropriate safety procedures for open tank pits have been followed. If there is any risk that gasoline vapors may be present in the tank pit, use only explosion-proof or air-powered tools or sand the collar by hand.



The surface of the tank sump collar must also be properly prepared prior to bonding.

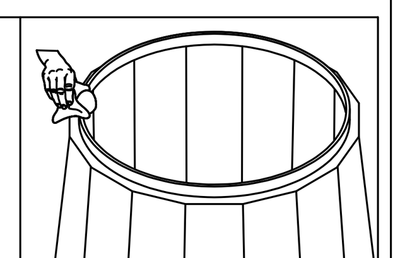
9 Sand both the internal and external sides of the collar.

If grinding is not possible, sand by hand - use heavy grit sandpaper to ensure that the fiberglass surface is properly exposed (see below)



10 All abraided surfaces must be wiped clean with acetone (or equivalent replacement) immediately prior to bonding to ensure that no dust or dirt is present on the surfaces. (see below)

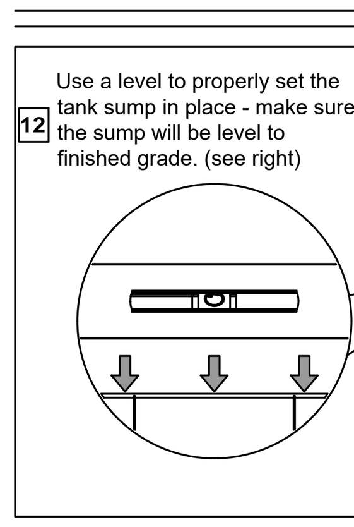
11 Immediately after cleaning, install the tank sump onto the tank collar. (see right)



11a NOTE: Prior to fiberglassing the sump to the tank collar, dry fit it onto the collar and position so that the sump facets align perpendicular with the pipework exit/entry points (see right)

PLAN VIEW OF MANWAY

12 Use a level to properly set the tank sump in place - make sure the sump will be level to finished grade. (see right)

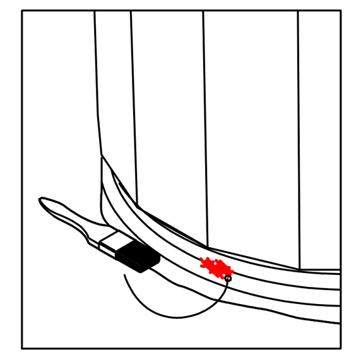


FIBERGLASSING THE SUMP BASE TO THE TANK COLLAR

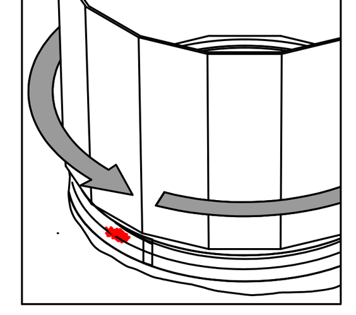
S/CR/FGK Fiberglassing Kit: (2) gallon jugs of polyester resin; (2) 50ml containers of catalyst; 100' roll of 3" wide fiberglass tape; Stirring sticks; (2) paint buckets; Brushes; Gloves

13 At 60°F, mix 1 quart resin with 15ml catalyst and stir well. Note: Detailed tank collar fiberglass instructions are packed in fiberglassing kit. (see below)

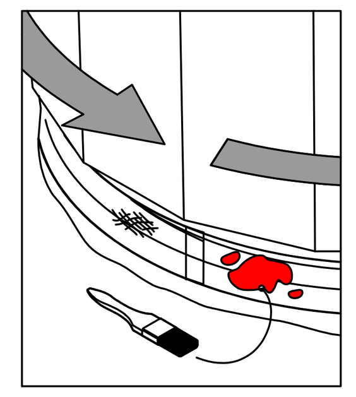
14 Using brush, paint resin onto sanded surfaces at the tank collar joint. Apply resin around circumference of the tank collar. (see right)



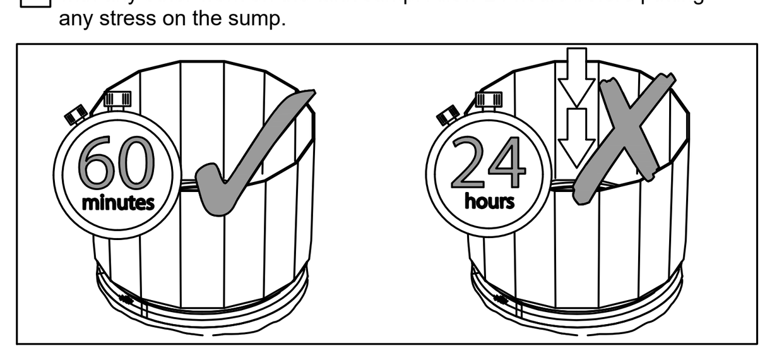
15 Apply a layer of fiberglass tape by centering it on the tank collar joint and unrolling it completely around the sump keeping it centered over joint (this will require 2 people). Cut the tape once the first layer is applied." (see right)



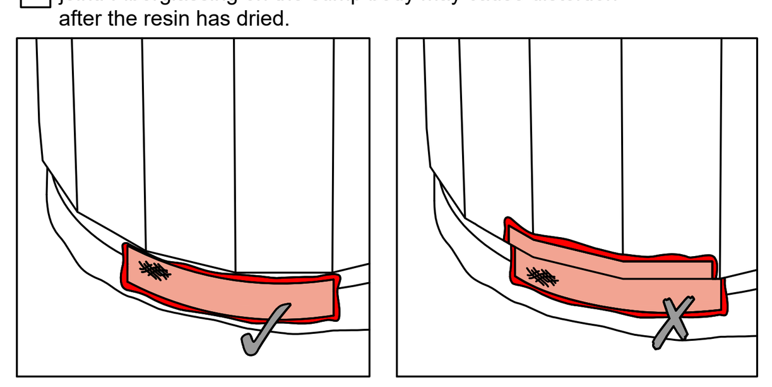
16 Apply a second and third layer of fiberglass tape by repeating steps 14 and 15 ensuring that all joints are staggered and overlap by a minimum of 2. Paint a final layer of resin onto the third layer of fiberglass and use the brush to flatten out any bubbles or air pockets (see right)



17 Allow approximately one hour for the resin to cure before proceeding with any other work on the tank sump. Allow 24 hours before putting any stress on the sump.



18 Apply fiberglass tape only at the tank collar to tank sump joint. Fiberglassing on the sump body may cause distortion after the resin has dried.



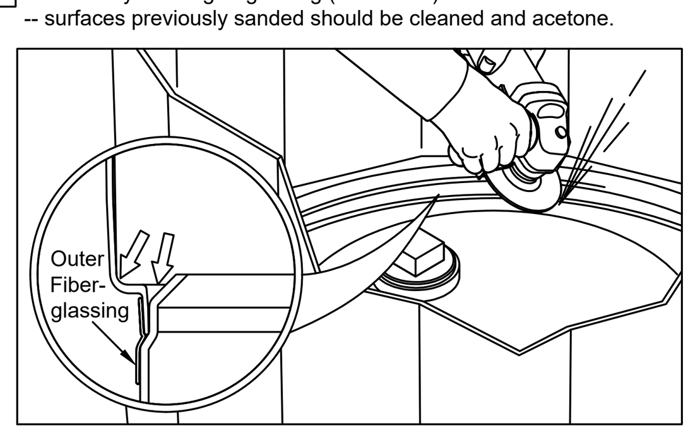
SPECIAL NOTES: Fiberglassing the Tank Collar Joint: Fibrelite recommends fiberglassing the outside of the tank collar joint with 3 layers of glass as an added precaution against water intrusion (especially in high water areas).

POURING THE INNER TANK COLLAR JOINT

RK-5000 Epoxy Resin Kit: Part A; Part B; Bucket

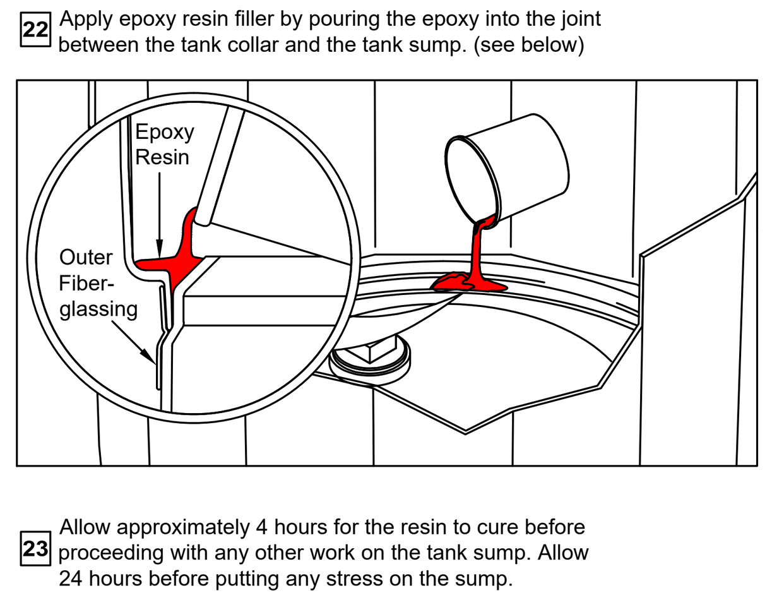
19 *In addition to fiberglassing the outside tank collar joint, the inner tank collar joint should be filled with an epoxy resin to ensure that the joint will be watertight. Use part # RK-5000 Epoxy Resin Kit and follow detailed instructions packed with kit.*

20 Prepare the inner tank collar joint and tank sump mating surfaces by sanding or grinding (see below) -- surfaces previously sanded should be cleaned and acetone.

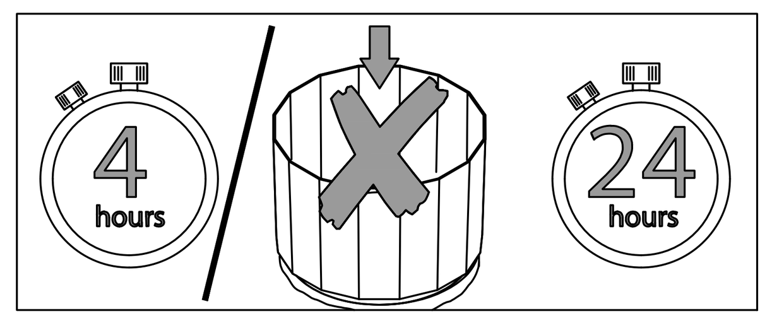


21 *Prepare epoxy resin by thoroughly mixing Part A and Part B in the mixing bucket. Keep material above 60°F until immediately prior to use. (see below)*

22 Apply epoxy resin filler by pouring the epoxy into the joint between the tank collar and the tank sump. (see below)



23 Allow approximately 4 hours for the resin to cure before proceeding with any other work on the tank sump. Allow 24 hours before putting any stress on the sump.



INSTALLING PENETRATION FITTINGS

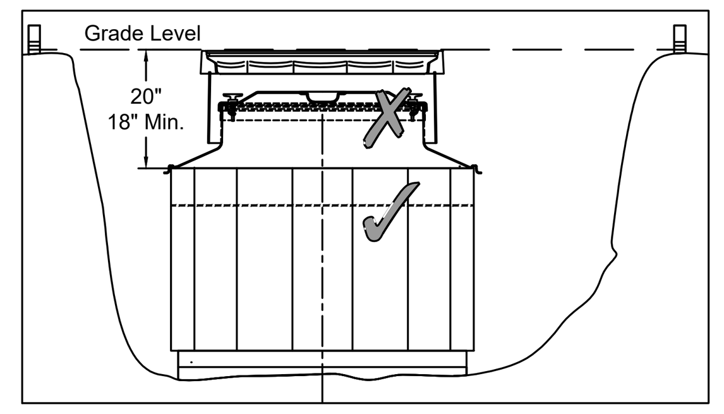
Drill (6" dia. hole saw); Jigsaw + Diamond tipped blades; Gloves; Safety Goggles; Face Mask

24 **WARNING** Care must be taken to position the pipework and conduit so it exits the sump at 90° angle to the sump wall. Otherwise undue stress will be placed on the sump wall and entry boot, which may lead to leaks in the future. (see below)

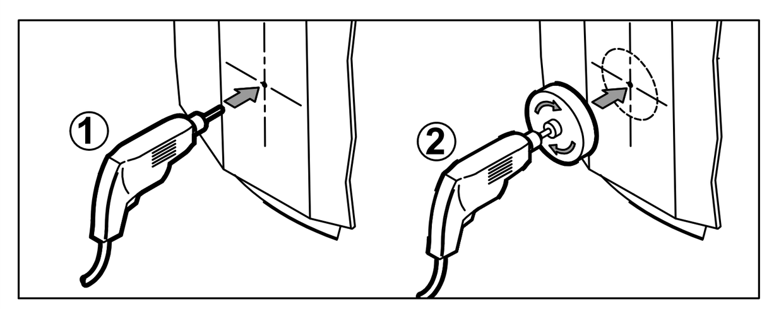
Position pipeway at 90° angles to the sump wall; Ensure pipe entry boot is positioned away from the joints

Prior to installing pipework, install a string line at grade level and determine if the sump base will first need to be trimmed. (see below)

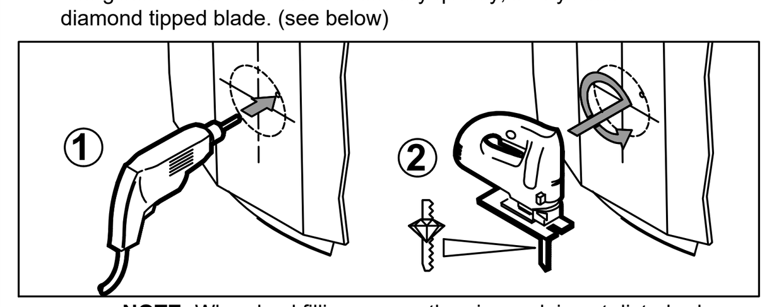
25 All height adjustments must be made to the sump base and not to the corbel. To allow sufficient clearance for the corbel and watertight lid under the manhole cover, the top of the sump base must be at least 18" and ideally 20" below grade. Refer to the measurement chart located on at step #4 on this sheet for more detail instructions



26 Mark a center point in the center of a sump panel. Drill a pilot hole to ensure the hole saw can be positioned and used safely. (see below)



27 For holes larger than 6" diameter, we recommend using a jigsaw to cut the hole. Drill a pilot hole prior to inserting the jigsaw blade. As fiberglass will blunt normal blades very quickly, always use a diamond tipped blade. (see below)



NOTE: When backfilling ensure the pipework is not disturbed.
WARNING: Do not backfill until the sump has been vacuum tested.

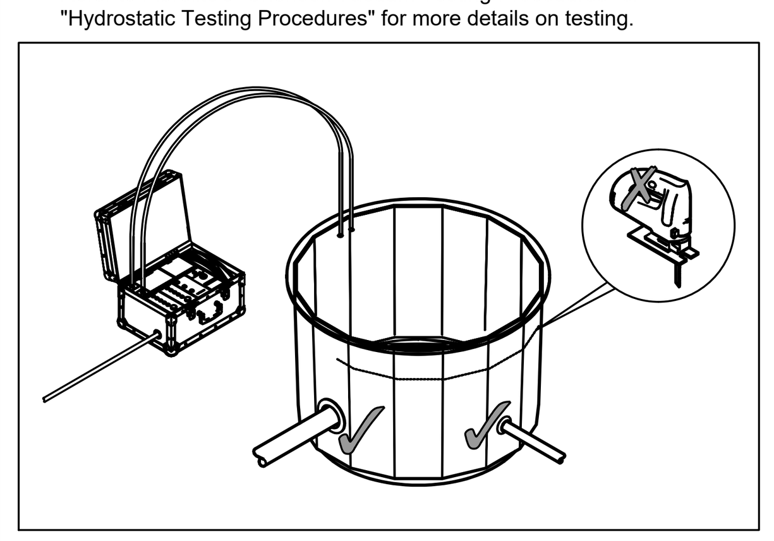
PIPE SEAL KITS FITTING INSTRUCTIONS

A PEC Kits - Refer to pipe entry boot instructions on positioning of the hole. Conduit must be installed at 90° angle to the sidewall. Use Fibrelite entry seal kit Model PEC/32 to fit UPP + NUPI 32mm conduit. PEC/27, PEC/33, PEC/55 to fit metal conduit sizes ¾", 1" and 1 ½" respectively. (see below)

SUMP TESTING

After all piping and conduit penetration fittings have been installed into the sump base, the sump may be tested using either vacuum or hydrostatic testing. (see below)

Refer to Fibrelite's "Sherlock Vacuum Testing Procedures" or "Hydrostatic Testing Procedures" for more details on testing.

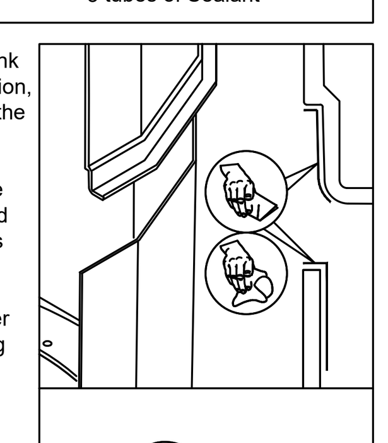


BONDING THE EXTENSION TO THE SUMP BASE - REQUIRED ONLY FOR DEEP BURIAL

S8/EXT12 extension; 3 tubes of Sealant

NOTE: If the burial depth of the tank requires the use of a sump extension, contact your distributor and order the appropriate extension.

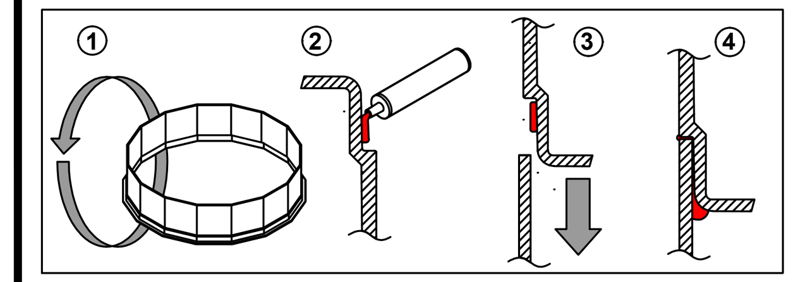
29 Prepare the mating surfaces of the tank sump base and the downward facing groove on the extension (as shown right). Use heavy grit sandpaper to ensure that the fiberglass surface is exposed. After sanding, clean both surfaces using acetone (or equivalent solvent).



30 Cut nozzle of the adhesive sealant tube to approximately Ø5⁄16". (see right)

31 To permanently fix the extension, invert the extension and apply a bead of adhesive sealant to the vertical wall of the extension recess.

Position the extension(s) onto the chamber, ensure the extension is horizontal and press down uniformly. (see below)

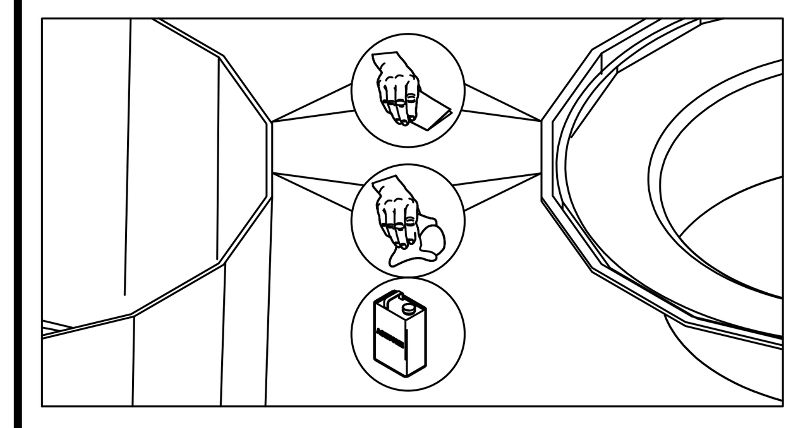


32 Remove excessive adhesive sealant from the internal joint with a scraper and smooth off.

Apply a bead of adhesive sealant (same nozzle size) to the external horizontal joint and smooth off.

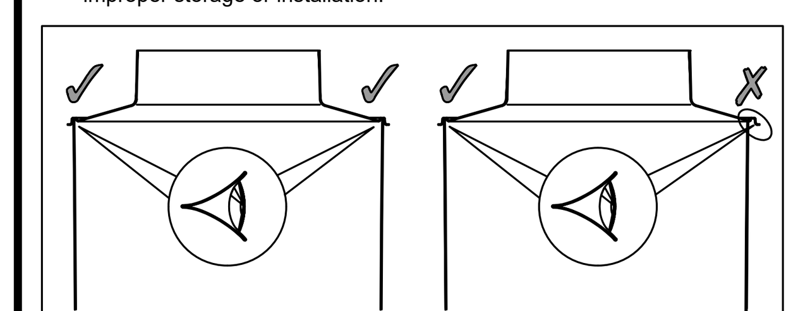
BONDING THE CORBEL TO THE SUMP BASE OR EXTENSION

33 Prepare the mating surfaces of the tank sump base (or extension) and the downward facing groove on the corbel (as shown below). Use heavy grit sandpaper to ensure that the fiberglass surface is exposed. After sanding, clean both surfaces using acetone (or equivalent solvent).

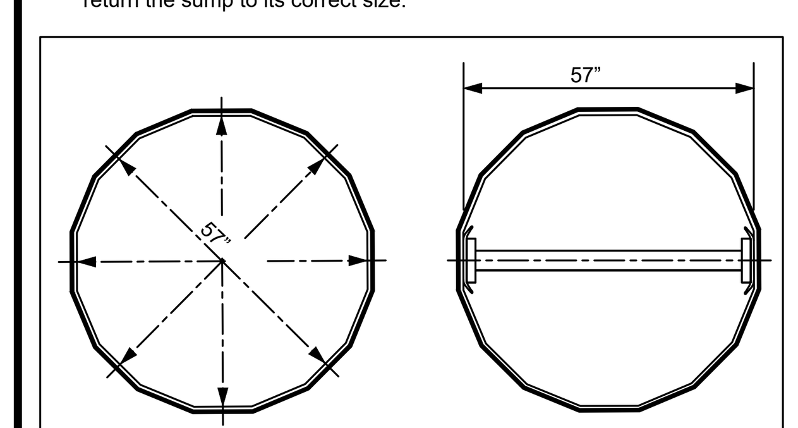


Dry fit the corbel on the sump to ensure it fits - push corbel groove onto sump wall,

34 If the corbel does not fit properly onto the sump wall, measure inside diameter of the sump walls (as shown below). The measurement should be between 45 ½" and 46" (± ½"). If the measurement is not within these specifications, the sump may have become out-of-round due to improper storage or installation.

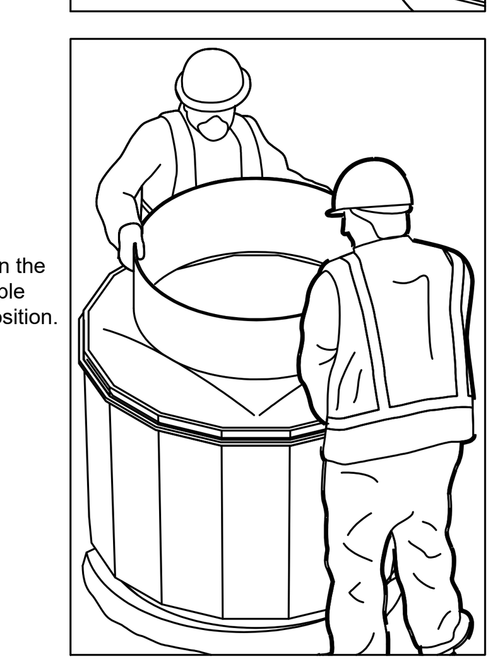


35 To fix an out-of-round sump base, first find the shortest distance between any 2 sump walls. Using a wooden 2x4 cut to 45 ½" length, install the 2x4 at an angle into the sump and use it to brace out the sump walls to the correct size. Repeat this motion on all sump walls to return the sump to its correct size.



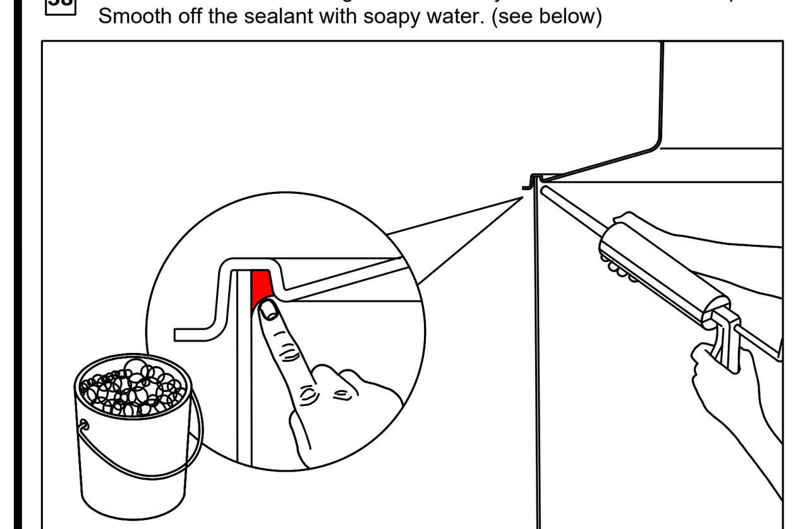
36 Apply 2 tubes of sealant in the groove of the corbel. Sealant should fill half the groove. (see right)

37 Place the corbel on the sump using 2 people and push it into position.



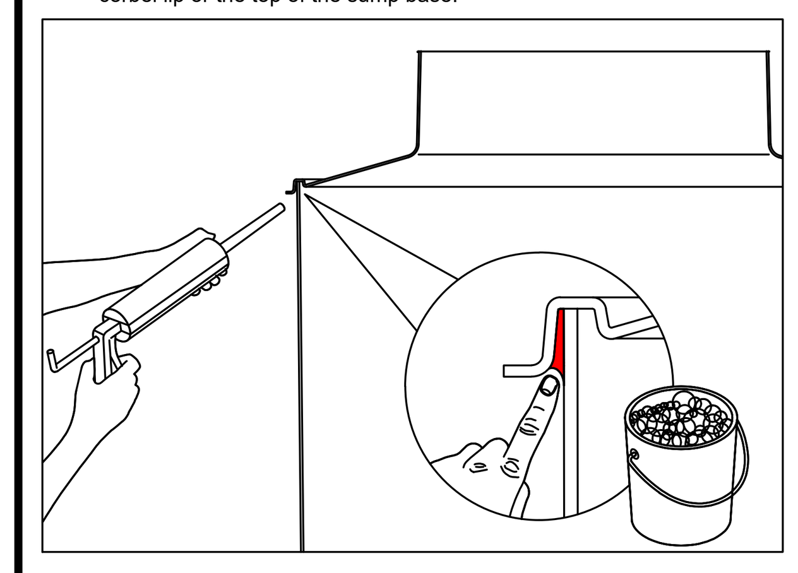
BONDING THE CORBEL

38 Seal around the inside edge of the corbel joint from inside the sump. Smooth off the sealant with soapy water. (see below)



39 Seal around the outside joint and smooth off sealant with soapy water. (see below)

NOTE: If also fiberglassing the outside corbel joint as set forth in steps 41 to 46, clean off any residual sealant on the flat surface of either the corbel lip or the top of the sump base.



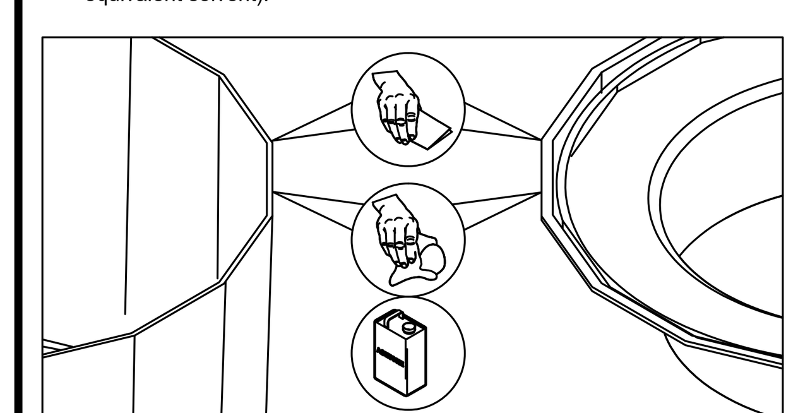
FIBERGLASSING THE CORBEL TO THE SUMP BASE

S/CR/FGK Fiberglassing Kit: (2) gallon jugs of polyester resin; (2) 50ml containers of catalyst; 100' roll of 3" wide fiberglass tape; Stirring sticks; (2) paint buckets; Brushes; Gloves

40 At 60°F, mix 1 quart resin with 15ml catalyst and stir well. (see right)

Prepare the mating surface of the tank sump base (or extension) and the downward facing groove on the corbel (as shown below).

41 Use heavy grit sandpaper to ensure that the fiberglass surface is exposed. After sanding, clean both surfaces using acetone (or equivalent solvent).



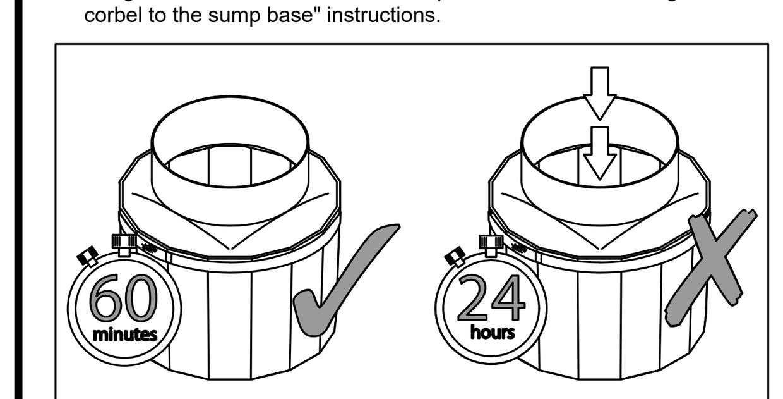
42 Using brush paint resin onto sanded surfaces at the corbel to sump base joint. Apply resin around the surface of the corbel.

43 Apply a layer of fiberglass tape by centering it on the corbel to sump base joint and unrolling it completely around the sump keeping it centered over the joint (this will require 2 people). Cut the tape once the first layer is applied.

44 Apply a second and third layer of fiberglass tape by repeating the previous 2 steps ensuring that all joints are staggered and overlap by a minimum of 2. Paint a final layer of fiberglass and use the brush to flatten out any bubbles or air pockets.

45 Allow approximately one hour for the resin to cure before proceeding with any other work on the tank. Allow 24 hours before putting any stress on the sump or performing any testing. (see below)

IMPORTANT: As a final step, always seal the inside joint of the corbel using Fibrelite sealant. Follow the steps shown in the "Bonding the corbel to the sump base" instructions.

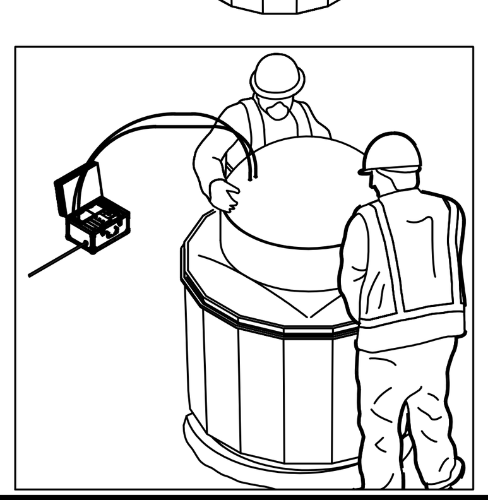


PERFORMING CORBEL VACUUM TEST

B Wait a minimum of 12 hours before vacuum testing, preferably overnight to allow sealant to set before vacuum testing. Do not disturb the sump during this time.

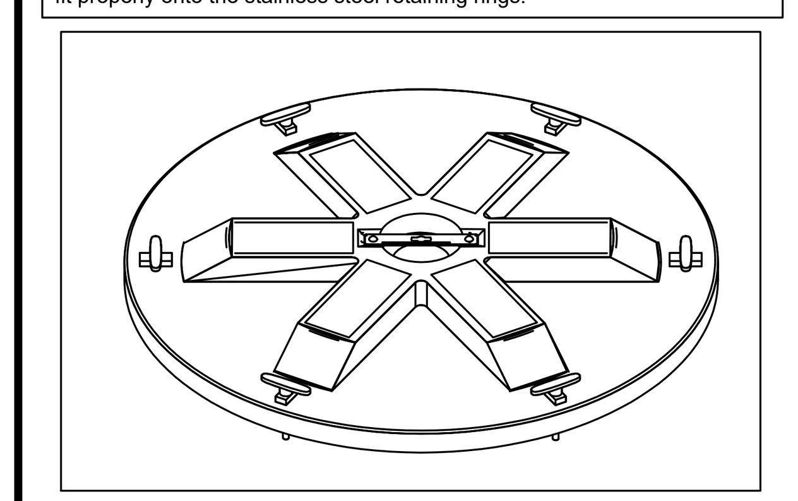
C Ensure all pipework and electrical entries have been completed before vacuum testing, this is the final test for all penetrations in the sump.

WARNING: Test the corbel at a 24" depth setting only or irreparable damage may occur. Refer to vacuum testing instructions for correct method.



INSTALLING WATERTIGHT LIDS

Installation of Watertight Lids: Once the sumps are properly installed and tested, the watertight lids should be installed to ensure that the lids fit properly onto the stainless steel retaining rings.

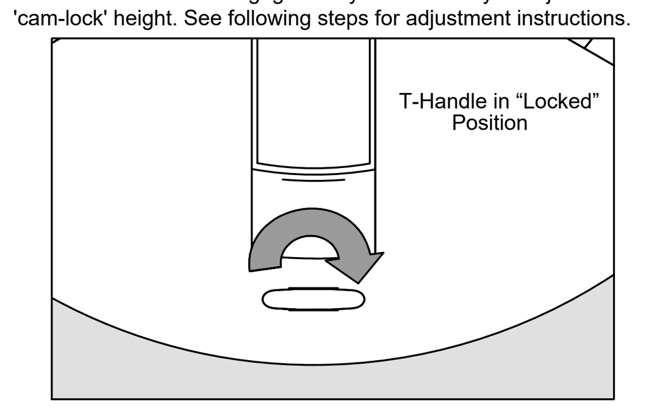


46 Turn all T-handles on the top of the lid fully counterclockwise to the open position (as shown in the drawing to the right) - the cam-lock latches on the underside should be 90 degrees opposed from the edge of the platform (as shown below).

Cam-lock Latch in "Open" Position; 90°; T-Handle in "Open" Position

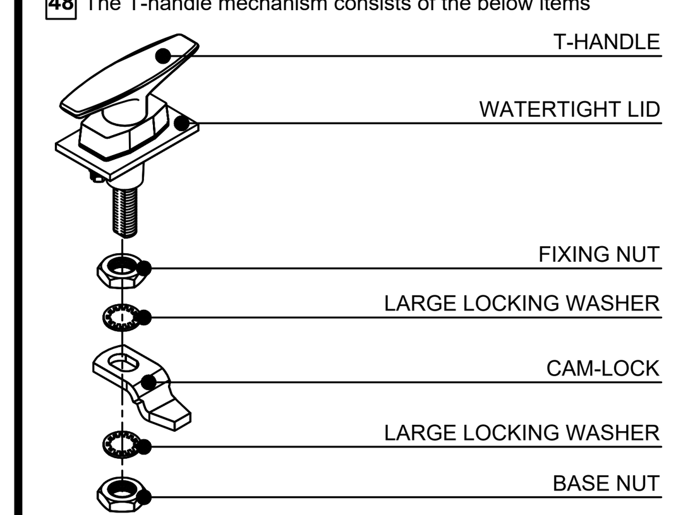
47 Seat the watertight lid on the stainless steel ring. Turn the T-handle fully clockwise to lock the latch beneath the stainless steel ring (T-handle should be as shown in the drawing below). When the T-handle is in this position, the lid should be pulled down onto the stainless steel retaining ring so that the gasket on the lid is tightly compressed between the underside of the cover and the ring.

If the T-handle fails to engage it may be necessary to adjust the 'cam-lock' height. See following steps for adjustment instructions.



ADJUSTING THE CAM-LOCK HEIGHT

48 The T-handle mechanism consists of the below items



49 If the T-handle is not fully engaging in means the cam-lock needs to be lowered. Loosen the base nut to a lower position and go to step 50a. If the lid is not compressing the gasket tightly against the stainless steel ring it means the cam-lock needs to be raised. Loosen the base nut and go to step 50b. BASE NUT

50a Pull the cam-lock down to rest onto the base nut. Lower and tighten the fixing nut until the cam-lock is secure as per step 51

50b Pull the cam-lock down to rest onto the base nut and raise the fixing nut. Push the cam-lock up to the fixing nut and tighten the base nut until the cam-lock is secure as per step 51.

51 Once the cam-lock is secure refit the watertight spill platform as per steps 46 and 47.

NOTE: It may be necessary to further adjust the cam-lock height until the optimal position is located.

NOTE: If the T-handle cannot be fully engaged or if the lid is not compressing the gasket tightly against the stainless steel ring contact Fibrelite technical support.

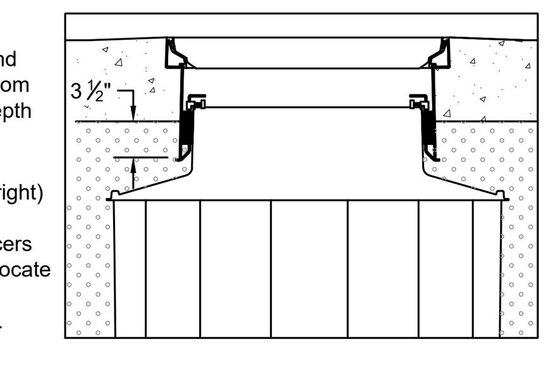
BACKFILLING

52 Once the sump and corbel have successfully passed vacuum or hydrostatic tightness testing, the area around the sump can be carefully backfilled with peagravel or sand. Back-fill equally around the sump in layers to prevent damage or deformation. (see below)

CONCRETING

56 Ensure the void between corbel and skirt is kept free from concrete and a depth of 3 ½" overlap minimum is maintained. (see right)

Ensure foam spacers are in position to locate the skirt centrally around the corbel.



57 Complete backfilling to appropriate level. Frame must be supported by a minimum depth of 8" of concrete.

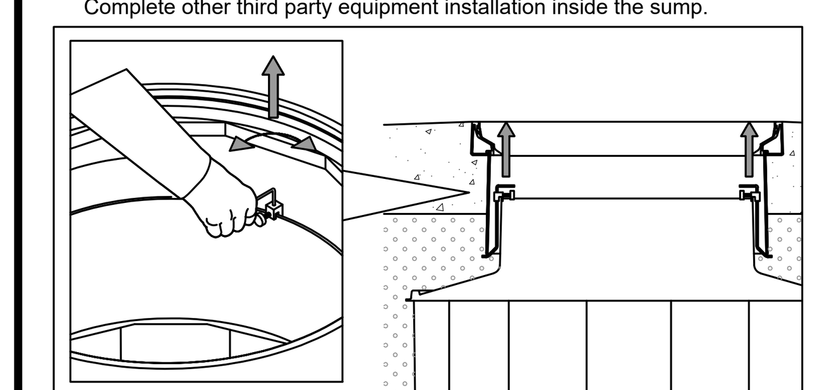
Concrete reinforcement must be positioned as close to the frame as possible. Minimum block of 20" square around the frame. Joint must be tied as per diagram. Continuous pour preferred if possible.

VERY IMPORTANT

To allow for drainage, Fibrelite recommends that the concrete be sloped away from the top outer edge of the frame (A) a minimum of ⅛" over a 12" distance. Do not expose the top outer edge of the frame (A) - the concrete pad must be flush with the top outer edge of the frame.

58 After minimum concrete cure time, hangers can be removed. Loosen the "T" knob, push down on the rod, turn the rod through 90° and pull rod up to remove. (see below)

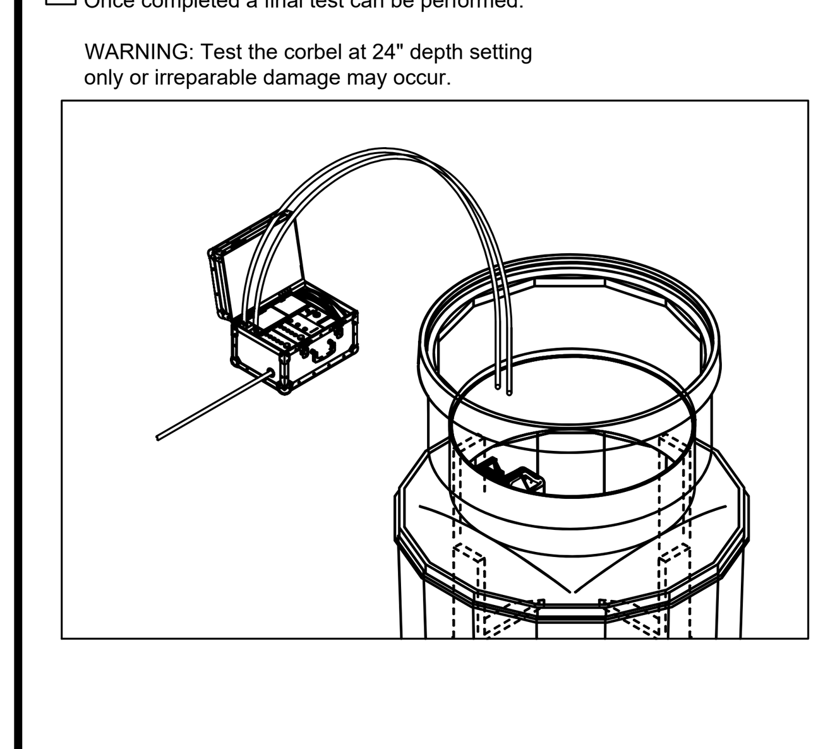
Complete other third party equipment installation inside the sump.



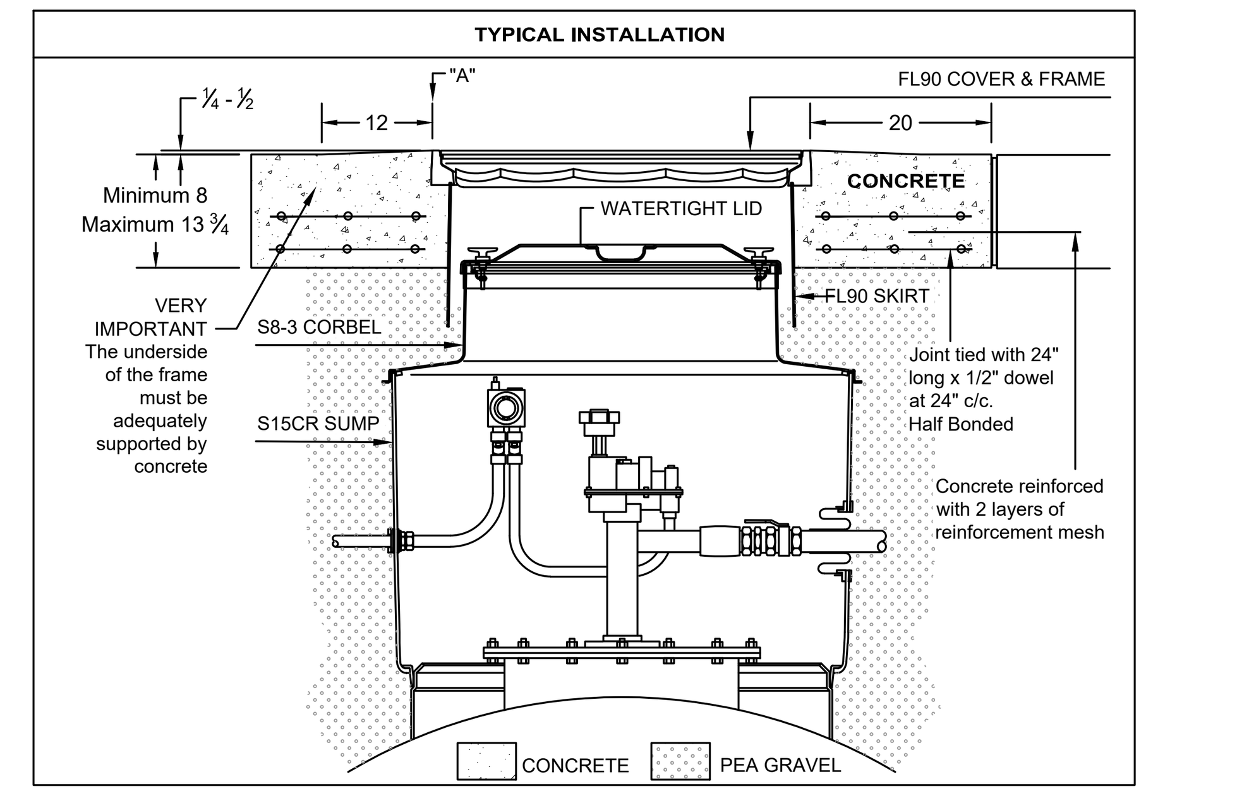
OPTIONAL VACUUM TEST ON CORBEL.

59 Once completed a final test can be performed.

WARNING: Test the corbel at 24" depth setting only or irreparable damage may occur.



TYPICAL INSTALLATION



NOTE:
THIS DRAWING IS A COMPILATION OF FIBERLITE TANK SUMP INSTALLATION MANUAL. IT IS INTENDED AS A REFERENCE FOR REGULATORS, QUALIFIED INSTALLERS AND BIDDERS. IT IS NOT A SUBSTITUTE FOR FACTORY QUALIFICATION OF INSTALLERS OR A THOROUGH REVIEW OF THE ENTIRETY OF THE MANUFACTURER DOCUMENTATION AND PROCEDURES. THIS DRAWING IS FOR REFERENCE ONLY AND IS NOT A DESIGN DRAWING.

ISSUED FOR DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:

CONSULTANT:
Wellert Corporation
Engineers • Planners • Surveyors
5136 Beach Road • Medina, Ohio 44256
t 330.239.2699 • f 330.239.0272

CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
(814) 946-3611

FIBRELITE TANK SUMP MANUFACTURER INSTALLATION DETAILS

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FT5.3

IMPORTANT INFORMATION - FOLLOW ALL INSTRUCTIONS:

PLEASE CONTACT YOUR OPW FUELING CONTAINMENT SYSTEM SALES REPRESENTATIVE OR CUSTOMER SERVICE REPRESENTATIVE AT 1-800-422-2525 FOR FLEXWORKS PRODUCT INSTALLATION PROCEDURES. ALL OPW FCS LITERATURE INCLUDING INSTALLATION INSTRUCTION SHEETS AND MANUALS CAN BE ACCESSED FROM THE OPW FCS WEBSITE AT: WWW.OPWFCS.COM.

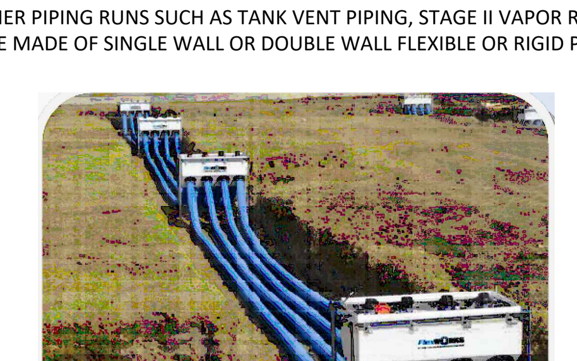
INTRODUCTION

- IMPORTANT: THE PATENTED LOOP SYSTEM™ COMPONENTS MAY ONLY BE INSTALLED BY FACTORY TRAINED AND ATTESTED INSTALLERS IN ORDER FOR THE SYSTEM WARRANTY TO BE VALID. THE USE OF NON-TRAINED PERSONNEL OR ANY DEVIATIONS FROM THESE RECOMMENDED PROCEDURES COULD RESULT IN DAMAGE OR LEAKAGE OF THE SYSTEM AND THUS VOID THE PRODUCT WARRANTY. CONTACT OPW'S CUSTOMER SERVICE DEPARTMENT AT 1-800-422-2525 FOR MORE INFORMATION.
- UL LISTINGS:
  - UNDERWRITERS LABORATORIES INC. OF NORTHBROOK, IL. HAS CREATED A STANDARD FOR UNDERGROUND FUEL PIPING. THIS UL STANDARD 971 IS TITLED NONMETALLIC UNDERGROUND PIPING FOR FLAMMABLE LIQUIDS.
  - FLEXWORKS DOUBLE WALL PIPING IS LISTED WITH UNDERWRITER'S LABORATORIES (UL®) UNDER FILE #MH16678 AND LABELED AS FOLLOWS: MOTOR VEHICLE FUELS, HIGH BLEND FUELS, CONCENTRATED FUELS AND AVIATION AND MARINE.
  - LISTED FUELS: BELOW ARE THE FUELS THAT HAVE BEEN TESTED UNDER UL971 AND ARE WARRANTED FOR USE WITH FLEX-WORKS FLEXIBLE DOUBLE WALL PIPING.

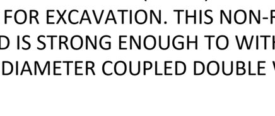
MOTOR VEHICLE FUELS	CONCENTRATED FUELS
100% ASTM REFERENCE FUEL NO.2	100% METHANOL
100% ASTM REFERENCE FUEL C	100% ETHANOL
85% REFERENCE FUEL C - 15% MTBE	100% TOLUENE
70% REFERENCE FUEL C - 30% ETHANOL	AVIATION & MARINE FUELS
85% REFERENCE FUEL C - 15% METHANOL	100% PREMIUM LEADED GAS
HIGH BEND FUELS	100% KEROSENE
50% REFERENCE FUEL C - 50% METHANOL	
50% REFERENCE FUEL C - 50% ETHANOL	

PIPING SPECIFICATIONS

- LOOP SYSTEM SUPPLY PIPING
  - THE LOOP SYSTEM SPECIFIES THAT ALL SUPPLY PIPING RUNS BE EITHER 1-1/2" AND/OR 2" DOUBLE WALL FLEXIBLE PIPING CONTAINED WITHIN 4" ACCESS PIPE CHASE PIPING FOR FUTURE INSPECTION OR REPLACEMENT CAPABILITIES. OTHER PIPING RUNS SUCH AS TANK VENT PIPING, STAGE II VAPOR RECOVERY PIPING AND REMOTE FILL PIPING CAN BE MADE OF SINGLE WALL OR DOUBLE WALL FLEXIBLE OR RIGID PIPING THAT MAY BE DIRECTLY BURIED.



- ACCESS PIPE
  - THIS FLEXIBLE CORRUGATED CHASE PIPING (4" I.D.) IS USED TO ENABLE THE REPLACEMENT OF THE FLEXWORKS PIPING WITHOUT THE NEED FOR EXCAVATION. THIS NON-REGULATED CHASE PIPING IS CONSTRUCTED OF A HIGH DENSITY POLYETHYLENE AND IS STRONG ENOUGH TO WITHSTAND H-20 LOADING REQUIREMENTS. IT ACCOMMODATES UP TO 2" DIAMETER COUPLED DOUBLE WALL PIPE SECTIONS.



A ACCESS PIPE
SCALE: NONE

- OPERATING PRESSURES & VACUUMS
  - FLEXWORKS FLEXIBLE PIPING AND ITS ASSOCIATED FITTING SYSTEMS ARE DESIGNED TO HAVE A MINIMUM FIVE TO ONE (5:1) SAFETY FACTOR ABOVE THE MAXIMUM OPERATING PRESSURE FOR RATED PRESSURE FOR THE PRIMARY PIPE. THE 1-1/2" AND 2" FLEXIBLE PIPE AND THEIR ASSOCIATED COUPLINGS AND FITTINGS HAVE A RATED MAXIMUM WORKING PRESSURE OF 100 PSI FOR 1-1/2" AND 75 PSI FOR 2". THE SECONDARY HAS A 10 PSI RATING. FOR SUCTION SYSTEMS THE PIPE SHALL BE CAPABLE OF WITHSTANDING 29" MERCURY VACUUM.
- ALLOWABLE BEND RADIUS
  - FLEXWORKS FLEXIBLE PIPING IS S FLEXIBLE PIPE AND SHOULD NEVER BE BENT AT A RADIUS OF LESS THAN THE DESIGNED BEND RADIUS. IF A SECTION OF PIPE BECOMES KINKED, THE KINKED SECTION SHOULD BE CUT-OUT OF A PIPING LENGTH AND IT SHOULD BE DISCARDED. FOR THE LOOP SYSTEM, OPW RECOMMENDS RUNS OF PIPE LEAVE THE SUMP FOR 5' MINIMUM BEFORE BENDING.
- SECONDARY INTERSTICE:
  - FLEXWORKS DOUBLE WALL PIPING HAS A SECONDARY JACKET WITH INTERNAL STAND-OFF RIBS OR LEGS WHICH CREATES A NON-COLLAPSING "INTERSTITIAL SPACE" THAT HAS EXCELLENT FLUID FLOW CHARACTERISTICS IN ALL DIRECTIONS.
- PIPE EXPANSION & CONTRACTION
  - UNDERGROUND PIPING CAN EXPAND AND CONTRACT DUE TO INTERNAL PRESSURES, AND VARIATIONS IN TEMPERATURE. THE AMOUNT OF EXPANSION OR CONTRACTION OF PIPING NEEDS TO BE COMPENSATED FOR BY DESIGN OF THE PIPING SYSTEM. FOR LONG PIPING RUNS IN EXCESS OF 30 FEET. "SNAKING" THE PIPE WITHIN THE PIPE TRENCH WILL HELP COMPENSATE FOR THESE CHARACTERISTICS. THERE IS ENOUGH ROOM WITHIN THE ACCESS PIPE CHASE PIPING TO COMPENSATE FOR EXPANSION AND CONTRACTION FOR SHORT PIPING RUNS LESS THAN 30 FEET IN LENGTH.
- NOTICE: DO NOT USE KNIVES OR RAZOR BLADES TO OPEN CARTON AS DAMAGE TO PIPING COULD OCCUR.
- STORAGE: OPW REQUIRES THAT ALL PIPING, FITTINGS AND SYSTEM COMPONENTS BE STORED IN SUCH A MANNER THAT THEY WILL NOT BE SUBJECT TO DIRECT SUNLIGHT AND/OR EXCESSIVE ENVIRONMENTAL CONDITIONS FOR AN EXTENDED PERIOD OF TIME. PLEASE REVIEW THE BELOW NOTED WARNINGS DURING PRODUCT STORAGE.
  - COVER ALL PRODUCTS WITH UV PROTECTIVE TARPS IF STORED OUTSIDE FOR LONG PERIODS.
  - IF TARPS ARE UNAVAILABLE, STORE IN A TRAILER AT THE BUILDING LOCATION UNTIL USE.
- HANDLING:
  - OPW REQUIRES THAT THE PIPING, FITTINGS AND SYSTEMS ARE HANDLED IN SUCH A MANNER THAT IT WILL NOT CAUSE DAMAGE TO THE SYSTEM COMPONENTS. PLEASE REVIEW THE WARNINGS BELOW.
    - DO NOT DROP, CUT OR CAUSE SEVERE IMPACT TO ANY OF THE COMPONENTS.
    - KEEP ALL PIPING, FITTINGS, AND OTHER COMPONENTS IN THE ORIGINAL PACKAGING UNTIL READY FOR USE.
    - KEEP ALL COUPLING PROTECTOR CAPS/COVERS ON COUPLINGS AND FITTINGS UNTIL ASSEMBLY.

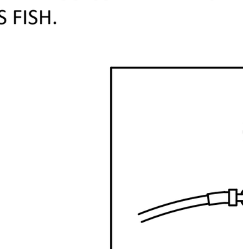
PIPING CONNECTIONS

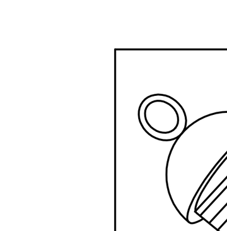
- THE LOOP SYSTEM™ REQUIRES THE USE OF DOUBLE WALL SWIVEL COUPLINGS WITH SINGLE WALL SWIVEL ADAPTERS, SWIVEL FITTINGS AND ANGLED SHEAR VALVES.
- DOUBLE WALL SWIVEL COUPLINGS
  - DOUBLE WALL PIPE COUPLINGS ARE FITTED TO THE ENDS OF ALL SUPPLY PIPE SECTIONS. THERE IS AN INTERSTITIAL FLUID PATH AND THREADED ACCESS PORT BUILT RIGHT INTO THE COUPLING ITSELF FOR DIRECT ATTACHMENT OF INTERSTITIAL CONNECTOR TEST TUBES. DOUBLE WALL SWIVEL COUPLINGS REQUIRE THE USE OF THE OPW COUPLING MACHINE TO INTERNALLY EXPAND THE COUPLING TO THE END OF THE PIPE SECTION. THESE PIPE COUPLINGS ARE AVAILABLE IN 1-1/2" AND 2".
- PIPE ADAPTORS
  - WITHIN THE TANK SUMP, SUPPLY PIPING LINES ORIGINATE BY CONNECTING THE FIRST PIPE SECTION FITTED WITH A DOUBLE WALL SWIVEL COUPLING TO THE PIPE ADAPTER. THE PIPE ADAPTER HAS MALE NPT TAPERED THREADS ON ONE END AND MALE NPSH STRAIGHT THREADS ON THE OTHER END FOR CONNECTION TO A DOUBLE WALL SWIVEL COUPLING.
- JUNCTION SAFETY VALVES
  - ALL JUNCTION DISPENSER SUMPS COME WITH FACTORY INSTALLED JUNCTION SAFETY VALVES. THE PIPE SECTIONS CONNECT DIRECTLY TO THE INLET AND OUTLET OF THIS SAFETY VALVE.
- TERMINATING SAFETY VALVES
  - ALL TERMINATING DISPENSER SUMPS COME WITH FACTORY INSTALLED TERMINATING SAFETY VALVES. THE LAST INSTALLED COUPLING SECTION OF A PIPING RUN CONNECTS DIRECTLY TO THIS SAFETY VALVE.
- JUMPER AND TEST TUBE ASSEMBLIES
  - THESE SMALL DIAMETER FLEXIBLE TUBE ASSEMBLIES ARE CONNECTED TO THE THREADED INTERSTITIAL ACCESS PORT OF THE DOUBLE WALL SWIVEL COUPLING. THE CONNECTOR TUBES ARE USED TO BYPASS THE JUNCTION SAFETY VALVE AND CONNECT THE INTERSTICE OF THE INLET PIPE SECTION TO THE OUTLET PIPE SECTION. THE TEST TUBES ARE USED AT THE BEGINNING AND/OR END OF A PIPING RUN FOR INTERSTITIAL TESTING PURPOSES.

INSTALLER TOOLS

- OPW OFFERS A VARIETY OF INSTALLER TOOLS FOR INSTALLING CONTRACTORS FOR INSTALLATIONS. TO INSURE PROPER INSTALLATION AND PRODUCT WARRANTY COVERAGE, ONLY OPW PIPE COUPLING EQUIPMENT AND PIPE FABRICATING TOOLS SHOULD BE USED. ALL TOOLS SHOULD BE MAINTAINED IN GOOD CONDITION AT ALL TIMES TO ENSURE PROPER PERFORMANCE.
- PIPER CUTTER
  - THE FLEXIBLE PIPE CUTTER IS DESIGNED TO PRODUCE THE CLEAN AND EVEN PIPE CUTS THAT ARE NECESSARY FOR PROPER COUPLING ATTACHMENT.

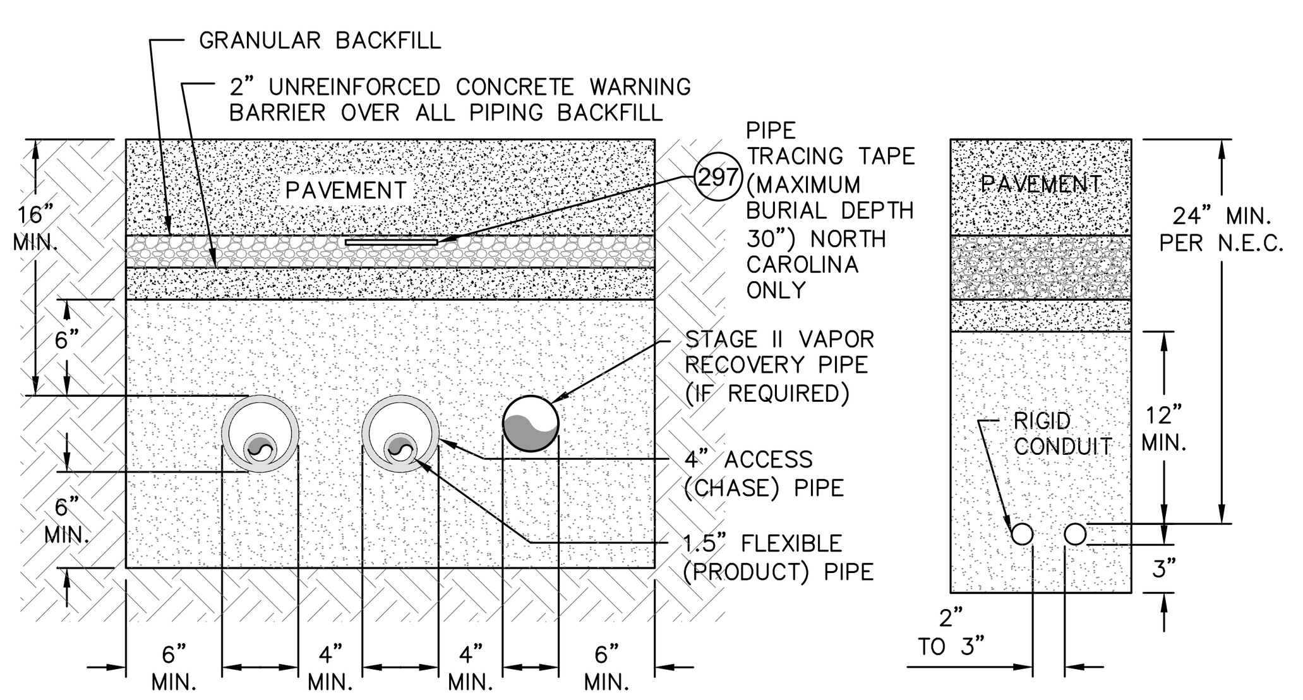
- COUPLING MACHINE
  - THE OPW COUPLING MACHINE IS REQUIRED FOR THE INSTALLATION OF DOUBLE WALL PIPE COUPLINGS. THIS ELECTRICALLY DRIVEN HYDRAULIC MACHINE IS DESIGNED To INTERNALLY EXPAND THE METAL PIPE INSERT INSTALLED AT THE END OF A FLEXIBLE PIPE SECTION. THESE COUPLING MACHINES ARE AVAILABLE TN BOTH 110 AND 220 VOLT MODELS. CONSULT YOUR LOCAL OPW DISTRIBUTOR FOR AVAILABILITY FOR RENTAL 0R PURCHASE OF THE COUPLING MACHINES.
- WARNING: THE OPW FCS COUPLING MACHINE IS NOT INTRINSICALLY SAFE AND MUST BE-OPERATED IN AN OPEN AREA FREE FROM GASOLINE VAPORS.
- NOTICE: THE DPC COUPLING NUTS SHOULD BE HAND TIGHTENED THEN A 1/4 TURN WITH THE SWIVEL WRENCH FOR PROPER INSTALLATION. OVER-TIGHTENING 0F THE SWIVEL NUT COULD DAMAGE THE COUPLING GASKET.
- PIPE TEST CAPS & PLUGS
  - THESE CUSTOM THREADED PLUGS HAVE A 1/4" NPT PORT IN THE END FOR ATTACHMENT OF AN AIR GAUGE OR A VALVE STEM (NOT INCLUDED). SWIVEL TEST CAPS ARE USED TO TEST EACH PIPE SECTION PRIOR TO INSTALLATION, ONLY THE PRIMARY PIPE OF A DOUBLE WALL PIPE SECTION CAN BE TESTED WITH THE SWIVEL TEST CAP.
- TEST GAUGE ASSEMBLY
  - THIS AIR GAUGE ASSEMBLY PROVIDES A MEANS OF TESTING ONLY THE INTERSTITIAL SPACE OF THE DOUBLE WALL PIPING. THESE GAUGES CONNECT TO THE END' OF THE INTERSTITIAL TEST TUBES HAVE A MAXIMUM PRESSURE RATING OF I5 PSI.
- FISHING BULLNOSE
  - THE FISHING BULLNOSE ATTACHES TO THE END OF A FLEXIBLE PIPE SECTION IN ORDER (PUSH TO OR PULL) THE FLEXIBLE PIPE SECTION THROUGH THE ACCESS PIPE CHASE PIPING. ITS ROUNDED NOSE PROVIDES EASY FEEDING THROUGH THE ACCESS PIPE. THE SWIVEL BULLNOSES ARE FITTED WITH A METAL EYELET FOR ATTACHMENT OF A PLUMBER'S FISH.





PIPE BURIAL REQUIREMENTS

- PIPE TRENCH SIZING
  - PIPING TRENCHES SHOULD BE DUG IN SUCH A MANNER THAT THE TRENCH WIDTH IS EQUAL TO AT LEAST TWICE THE WIDTH OF ALL THE FLEXIBLE PIPES CONTAINED WITHIN. ALL PIPING SHOULD BE POSITIONED IN THE TRENCH SO ALL ARE A MINIMUM OF ONE PIPE WIDTH APART (EXAMPLE: 2" SEPARATION FOR 2" WIDE PIPING ETC.).
  - TRENCH TURNS SHOULD BE SWEEPING RATHER THAN SHARP ANGLES. THE BOTTOM OF THE TRENCH SHOULD BE UNIFORM AS POSSIBLE TO ELIMINATE HIGH SPOTS TO INSURE AN EVEN LAYER OF BEDDING MATERIAL UNDER THE PIPE. REMOVE ALL SHARP ROCKS AND DEBRIS FROM THE TRENCH BOTTOM BEFORE BEDDING MATERIAL IS INSTALLED.

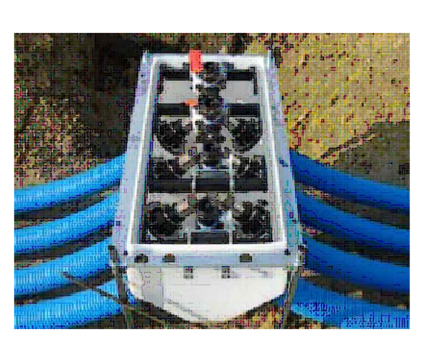


B PIPING TRENCH
SCALE: NONE

- BEDDING & BACKFILL MATERIALS
  - APPROVED BEDDING AND BACKFILL MATERIALS FOR THE FLEXIBLE PIPING AND CHASE PIPING SHALL MEET THE FOLLOWING SPECIFICATIONS:
    - PEA GRAVEL: ROUNDED PEA GRAVEL IS PERMITTED WITH A MINIMUM DIAMETER OF 1/8" AND A MAXIMUM DIAMETER 0F 3/4"
    - CRUSHED STONE: CRUSHED STONE IS PERMITTED PROVIDING IT SHALL BE WASHED CLEAN AND BE FREE FLOWING TYPE WITH AN ANGULAR STONE SIZE BETWEEN 1/8" AND 1/2". (MEETS ASTM C-33 PARAGRAPH 9.1 REQUIREMENTS.)
- NOTICE: A MINIMUM OF 6" (150MM) OF APPROVED BEDDING MATERIAL SHALL BE SPREAD EVENLY ALONG THE BOTTOM OF THE PIPING TRENCH. ALL BEDDING AND BACKFILL MATERIAL SHOULD BE DRY AND FREE FROM ALL ICE AND SNOW AND DEBRIS. USING MATERIAL OTHER THAN THOSE DESCRIBED ABOVE WITHOUT WRITTEN APPROVAL FROM OPW FUELING CONTAINMENT SYSTEM WILL VOID THE PRODUCT WARRANTY.
- CAUTION: USE EXTRA CAUTION WHEN BACKFILLING PIPING IN SHALLOW TRENCHES 0R OPEN EXCAVATIONS SO AS NOT TO DAMAGE OR CRUSH THE PIPING OR ANY ASSOCIATED FITTINGS AVOID SUDDEN IMPACTS FROM DUMPING BACKFILL MATERIALS. SPREAD BACKFILL GRADUALLY AND EVENLY. FAILURE TO DO S0 COULD CAUSE IMMEDIATE OR LONG-TERM DAMAGE TO THE PIPING.

REQUIREMENTS AND OPTIONS

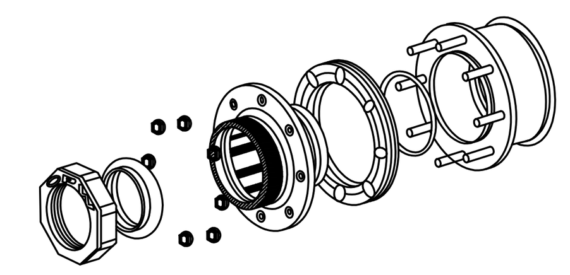
- DOUBLE ENTRY BOOTS / RIGID ENTRY FITTINGS
  - ALL DISPENSER SUMPS ARE OUTFITTED AT THE FACTORY WITH 4" DOUBLE ENTRY BOOTS OR RIGID ENTRY FITTINGS. TANK SUMPS MUST BE FIELD FABRICATED AND INSTALLED WITH THESE SAME ENTRY BOOTS PLUS THOSE DOUBLE ENTRY BOOTS OR RIGID ENTRY FITTINGS THAT SEAL CONDUIT ENTRIES AND VENT AND VAPOR PIPING ENTRIES.
- QUICK CONNECT DISPENSER SUMPS
  - THE LOOP SYSTEM™ IS DESIGNED TO BE INSTALLED WITH OPW-QUICK CONNECT DISPENSER SUMPS. THESE FACTORY EQUIPPED DISPENSER 'SUMPS INCLUDE A SHALLOW SURF WITH INSTALLED:
    - (A) MOUNTING FRAME;
    - (B) DOUBLE ENTRY BOOTS/RIGID ENTRY FITTINGS;
    - (C) STABILIZER BARS; AND
    - (D) PRODUCT SHEAR VALVES.
- ALL DISPENSER SUMPS COME PACKAGED IN A CARTON WITH FOUR (4) HEIGHT ADJUSTABLE LEGS. FACTORY OUTFITTED DISPENSER SUMPS ARE AVAILABLE TO ACCOMMODATE A VARIETY OF RETAIL FUEL DISPENSER MODELS AND ASSOCIATED FOOTPRINTS.



- NOTICE: FOR NPT THREAD CONNECTIONS, USE ONLY UL CLASSIFIED THREAD SEALANT SPECIFICALLY FORMULATED FOR GASOLINE AND PETROLEUM PRODUCTS. DO NOT OVERTIGHTEN THE ADAPTER AS IT COULD CAUSE DAMAGE TO THE NPT THREADS. NEVER APPLY THREAD SEALANT TO THE ADAPTER AND COUPLING CONNECTION JOINT LOCATED ON THE OTHER END OF THE TRANSITION ADAPTER.

INSTALL PIPE ENTRY FITTINGS

- REGARDLESS OF MANUFACTURER, THE TANK SUMP IS MOUNTED TO THE UNDERGROUND STORAGE TANKS. THE LOOP SYSTEM™ REQUIRES THAT OPW FLEXWORKS ENTRY FITTINGS BE USED FOR SEALING THE DOUBLE WALL FLEXIBLE PIPE AND ACCESS PIPE CHASE PIPING PENETRATIONS INTO THE TANK SUMPS
- FLEXWORKS ENTRY FITTINGS
  - THE LOOP SYSTEM REQUIRES THE USE OF FLEXWORKS ENTRY FITTINGS TO SEAL THE ACCESS PIPE AND FLEXWORKS SUMP WALL PENETRATIONS. ANY VENT AND VAPOR PIPING PENETRATIONS INTO THE TANKS SUMP WALL SHOULD BE SEALED USING THE APPROPRIATE SIZED ENTRY FITTINGS. FLEXWORKS ENTRY FITTINGS ARE TWO-PIECE ENTRY FITTINGS DESIGNED TO SEAL 4" ACCESS PIPE TO THE OUTSIDE OF THE TANK SUMP WALL AND SEAL THE I-I/2" AND 2" DOUBLE WALL PIPING ON THE INSIDE OF THE TANK SUMP WALL.
- ACCESS PIPE ENTRY FITTING INSTALLATION STEPS
  - ONLY AFTER (A) THE FUEL DELIVERY PUMP HAS BEEN INSTALLED WITHIN THE TANK SUMP (B) THE PLUMBING TREE HAS BEEN CONFIGURED AND CONNECTED TO THE PUMP (C) AND THE EXACT EXIT CENTER-POINT FOR THE FLEXIBLE PIPING HAS BEEN LOCATED ON THE SIDE WALL OF THE TANK SUMP SHOULD INSTALLATION OF THE ENTRY FITTING BEGIN.
    - STEP #I: LOCATE THE CENTER ENTRY POINT IN THE PLAT WALL SECTION OF THE TANK SUMP BASE AND DRILL A 5/16" HOLE. INSTALL THE ENTRY BOOT TEMPLATE TO THE SUMP BASE WALL USING A 1/4" BOLT AND NUT DRILL BIT. INSERT A SECOND 1/4" BOLT AND NUT THROUGH THIS HOLE TO SECURE THE TEMPLATE. CONTINUE TO DRILL THE REMAINING HOLES OF THE BOOT HOLE PATTERN. AFTER DRILLING, REMOVE THE TEMPLATE FROM THE SUMP BASE WALL.
    - STEP #2: DRILL OUT THE ENTRY FITTING OPENING BY USING A 4" HOLE SAW. AFTER DRILLING OUT THE OPENING, CLEAN ANY ROUGH EDGES WITH A RAZOR KNIFE OR DEBURING TOOL.
    - STEP #3: INSTALL THE OUTER 4" ACCESS PIPE ENTRY FITTING FROM OUTSIDE THE SUMP BY INSERTING THE STUDS THROUGH THE BOLT HOLES. FROM THE INSIDE OF THE SUMP. INSTALL THE APPROPRIATE SIZED (1-1/2" OR 2") INNER SNOUT COMPRESSION RING AND NUTS AS SHOWN.
    - STEP #4: USING A 7/16" NUT DRIVER, TIGHTEN ALL OF THE NUTS EVENLY AND FIRMLY. TO PREVENT DEFORMING ENTRY FITTINGS, DO NOT OVER TIGHTEN NUTS. IF A TORQUE WRENCH IS USED, THE SETTING SHOULD BE 60 INCH POUNDS.
    - STEP #5: FROM OUTSIDE THE SUMP, INSERT THE END OF ACCESS PIPE COMPLETELY INTO THE OUTER FITTING UNTIL IT STOPS. USING A SCREW DRIVER OR NUT DRIVER TIGHTEN DOWN EACH BAND CLAMP WHEN APPLICABLE TO 30 INCH POUNDS.
    - STEP #6: AFTER THE DOUBLE WALL FLEXIBLE PIPING SECTION HAS BEEN COUPLED AND FISHED THROUGH THE ACCESS PIPE AND CONNECTED TO THE PUMP'S PLUMBING TREE, THE INNER ENTRY FITTING CAN BE TIGHTENED DOWN. USING A SCREW DRIVER OR NUT DRIVE, TIGHTEN DOWN EACH BAND CLAMP (WHEN APPLICABLE) TO 30 INCH POUNDS.
- WARNING: KEEP ALL FIBERGLASS CLEANING SOLVENTS AWAY FROM ENTRY FITTINGS. THESE TYPES OF SOLVENTS AND OTHER CLEANERS COULD CAUSE SEVERE DAMAGE TO THE FITTINGS.
- IMPORTANT: THE RECOMMENDED HOLE SAW SIZE MUST ALWAYS BE USED FOR PROPER INSTALLATION OF THE ENTRY FITTING AND TO MAINTAIN THE PRODUCT WARRANTY.
- RIGID ENTRY FITTINGS
  - ALL DISPENSER SUMPS ARE OUTFITTED AT THE FACTORY WITH 4" DOUBLE ENTRY BOOTS OR RIGID ENTRY FITTINGS. TANK SUMPS MUST BE FIELD FABRICATED AND INSTALLED WITH THESE SAME ENTRY BOOTS. FOR PROPER INSTALLATION, A TEMPLATE (SUPPLIED WITH FITTING) MUST BE USED FOR ACCURATE HOLE DRILLING. RIGID FITTINGS CANNOT BE INSTALLED ON ROUND SURFACES. PLEASE SEE OPW PUBLICATION RIGID ENTRY FITTING (REF) INSTALLATION INSTRUCTIONS (PUBLICATION REF-001, PART NUMBER 205913) FOR FURTHER INFORMATION AND INSTALLATION INSTRUCTIONS.



C RIGID ENTRY FITTING
SCALE: NONE

INSTALLING DISPENSER SUMPS

- THE LOOP SYSTEM™ REQUIRES FACTORY FABRICATED DISPENSER SUMPS. INSTALLATION OF THESE PRE-ASSEMBLED SHALLOW DISPENSER SUMPS ARE FAST AND EASY BECAUSE MOST OF THE FABRICATION AND INSTALLATION WORK IS DONE AT THE FACTORY. FOLLOW THESE PRE-INSTALLATION AND INSTALLATION STEPS FOR PROPER INSTALLATION:
  - PRE-INSTALLATION INSPECTION
    - ALL FULLY FABRICATED AND ASSEMBLED LOOPS SUMPS COME DELIVERED FROM THE FACTORY IN AN ENGINEERED BOX. REMOVE THE DISPENSER SUMP FROM ITS CARTON. INSPECT ALL SUMP COMPONENTS FOR ANY SHIPPING DAMAGE.
  - SUMP HEIGHT ADJUSTABILITY
    - FOUR (4) RIGID CONDUIT LEGS ARE PROVIDED WITH EACH DISPENSER SUMP FOR ADJUSTING THE SUMP FRAME (FLANGE) TO THE PREDETERMINED HEIGHT OF THE ISLAND (OR PAVEMENT WITH NO ISLAND). PLACE THE SUMP IN THE TRENCH AND HAMMER THE RIGID CONDUIT LEGS THROUGH THE HOLES IN THE FRAME. LIFT THE SUMP UP TO THE DESIRED HEIGHT AND CLAMP IT IN PLACE BY TIGHTENING THE CORNER BRACKETS.

INSTALLING CHASE PIPING

- ACCESS PIPE CHASE PIPING IS A LARGER DIAMETER CORRUGATED FLEXIBLE PIPING THAT ADDS ADDITIONAL PROTECTION TO THE FLEXWORKS FLEXIBLE SUPPLY PIPING AND ALLOWS THE INNER PIPE TO BE REMOVED AND REPLACES WITHOUT THE NEED FOR EXCAVATION. MEASURING AND CUTTING THE CHASE PIPING SHOULD BE COMPLETED PRIOR TO MEASURING AND INSTALLATION OF THE FLEXIBLE SUPPLY PIPING. FOLLOW THESE INSTALLATION PROCEDURES FOR THE ACCESS PIPE CHASE PIPING.
- ACCESS PIPE MEASURING
  - PRIOR TO MEASURING FOR THE CORRUGATED AND FLEXIBLE CHASE PIPE, INSTALL THE SPECIFIED AND SUPPLIED ACCESS PIPE ENTRY BOOT INTO THE SIDEWALL OF THE TANK SUMP AS SPECIFIED IN RIGID ENTRY FITTINGS.
- BETWEEN TANK SUMPS AND DISPENSER SUMPS:
  - FOR THE FIRST ACCESS PIPE CHASE SECTION, MEASURE THE DISTANCE FROM THE TANK SUMP WALL TO THE WALL OF THE FIRST DISPENSER SUMP WHILE MAKING SURE TO FOLLOW THE CONTOUR OF THE PIPING TRENCH. MAKE AN ALLOWANCE IN YOUR MEASUREMENT FOR THE ACCESS PIP TO GRADUALLY WEAVE SIDE TO SIDE WITHIN THE TRENCH TO ALLOW FOR FUTURE THERMAL EXPANSION AND CONTRACTION OF THE FLEXIBLE SUPPLY PIPE CONTAINED WITHIN.

FLEXIBLE SUPPLY PIPE FABRICATION

- IMPORTANT: ONLY CERTIFIED INSTALLERS WITH A VALID FACTORY CERTIFICATION CARD ARE AUTHORIZED TO INSTALL OPW PIPING SYSTEMS.
- WARNING: NEVER DRAG, CUT OR SCRAPE THE PIPE DURING INSTALLATION TO AVOID DAMAGE TO THE EXTERNAL SURFACE OF THE PIPING. USE ONLY OPW APPROVED BACKFILL MATERIAL.
- COLD WEATHER PIPE HANDLING
  - FLEXWORKS FLEXIBLE PIPING CAN BE INSTALLED IN AMBIENT TEMPERATURES AS LOW AS ZERO DEGREES, PROVIDED THAT THE FLEXIBLE PIPING HAS BEEN SUFFICIENTLY WARMED PRIOR TO UNROLLING. IF THE PIPE IS UNROLLED AND STRAIGHTENED WHILE IT IS WARM, IT WILL COOL IN A STRAIGHTER POSITION MAKING IT EASIER TO INSTALL. FOR COLD WEATHER INSTALLATIONS WHERE THE AMBIENT TEMPERATURE IS BELOW 40 F (5 C), IT IS RECOMMENDED THAT THE PIPING CARTONS BE PLACED IN A WARM ROOM FOR 8 HOURS DIRECTLY PRIOR TO INSTALLATION.
- WARNING: NEVER HEAT THE PIPE DIRECTLY WITH AN OPEN FLAME OR HIGH DIRECT HEAT.
- ROLLING OUT FLEXIBLE PIPE
  - IN A CLEARED AND FLAT AREA FREE OF DEBRIS, SHARP ROCKS AND EQUIPMENT, UNROLL A DESIRED LENGTH OF FLEXIBLE PIPING. IT MAY BE NECESSARY TO SECURE ONE OR BOTH ENDS WHILE THE FLEXIBLE PIPING BEGINS TO RELAX. KEEP THE UNROLLED SECTION OF PIPE AS STRAIGHT AS POSSIBLE FOR ACCURATE MEASURING AND MARKING FOR CUTTING PURPOSES.
- CUTTING FLEXIBLE PIPE
  - WHEN CUTTING FLEXIBLE PIPING INTO PIPE SECTIONS, CUT THE PIPE AT THE MEASURED CUT MARK USING THE PIPE CUTTER TOOL. THIS CUTTING TOOL IS DESIGNED TO MAKE CLEAN AND EVEN CUTS IN THE FLEXIBLE PIPING. CLEAN AND EVEN PIPING CUTS ARE NECESSARY FOR THE PROPER INSTALLATION OF SWIVEL PIPE COUPLINGS.
    - STEP 1 CUTTER POSITIONING: LOCATE THE CUTTER BLADE AT THE MEASURED MARK ON THE PIPE.
    - STEP 2 BLADE ACTIVATION: SQUEEZE THE HANDLES UP AND DOWN TO ACTIVATE THE MOVEMENT OF THE BLADE. CONTINUE UNTIL THE BLADE WILL NO LONGER CONTINUE TO ACTIVATE. THE PROCEDURE WILL SLIGHTLY COMPRESS THE PIPE.
    - STEP 3 PIPE CUTTING: ROTATE THE ENTIRE PIPE CUTTER ¼ TURN TO PERMIT THE BLADE TO PENETRATE THE WALL OF THE PIPE. CONTINUE TO SQUEEZE THE HANDLES UP AND DOWN TO COMPLETE THE ENTIRE PIPE CUT. INSPECT THE CUT TO MAKE SURE IT IS EVEN.
- NOTICE: DO NOT ROTATE BLADE MORE THAN 1/4" TURN. INSPECT EDGE INSIDE OF THE PIPING AFTER CUTTING.
- IMPORTANT: FLEXWORKS DOUBLE WALL FLEXIBLE PIPING SYSTEMS USING DOUBLE WALL SWIVEL COUPLINGS AND DOUBLE WALL BOLT-ON COUPLINGS DO NOT REQUIRE THE USE OF RUBBER TEST BOOTS. THEREFORE, THERE IS NO REASON TO CUT BACK THE SECONDARY STANDOFF JACKET WHEN USING EITHER STYLE OF COUPLINGS.

COUPLING FLEXIBLE PIPING

- THE LOOP SYSTEM™ FLEXIBLE SUPPLY PIPING SYSTEM REQUIRES THE USE OF THE OPW COUPLING MACHINE FOR PROPER INSTALLATION OF THE DOUBLE WALL SWIVEL COUPLINGS ONTO THE ENDS OF THE FLEXIBLE SUPPLY PIPING SECTIONS. DOUBLE WALL SWIVEL COUPLINGS REQUIRE THE USE OF THE CORRECT FACE PLATE FOR THE COUPLING MACHINE THAT ACCOMMODATES THE 1-1/2" OR 2" COUPLINGS. SEE OPW LOOP SYSTEM INSTALLATION MANUAL LSM 0001 FOR DETAILS.
- NOTICE: USING THE OPW COUPLING MACHINE WITH COUPLINGS OR PIPING NOT MANUFACTURED BY OPW SHALL VOID THE COUPLING MACHINE WARRANTY. INSTALLING OPW COUPLINGS AND PIPING WITH COUPLING MACHINES MANUFACTURED BY OTHERS WILL VOID OUR PIPING WARRANTY.

PIPE COUPLING CONNECTIONS

- AFTER THE COUPLED FLEXIBLE PIPE SECTION HAS BEEN FISHED FROM ONE CONTAINMENT SUMP TO THE NEXT REMOVE THE PROTECTIVE PLASTIC CAP FROM THE END OF THE COUPLING.
- FOLLOW THESE COUPLING CONNECTION INSTRUCTIONS:
  - IMPORTANT: PRIOR TO CONNECTION, INSPECT THE PIPE COUPLINGS TO MAKE SURE ALL VITON GASKETS LOCATED INSIDE THE SWIVEL NUT ARE PROPERLY SEATED. LOOK FOR ANY DAMAGE TO THE GASKET WHICH MAY HAVE OCCURRED DURING THE COUPLING OR FISHING PROCEDURE. ALSO, INSPECT THE SEALING FACE OF THE SWIVEL ADAPTER, FITTING OR ANGLED SHEAR VALVE TO MAKE SURE THEY ARE CLEAN, SMOOTH AND UNDAMAGED.
- MAKING SWIVEL CONNECTIONS:
  - DOUBLE WALL SWIVEL COUPLINGS MAKE COMPRESSION GASKET SEALED CONNECTIONS. A FLAT VITON RING GASKET IS TIGHTLY COMPRESSED BETWEEN TWO (2) SEALING FACES; ONE LOCATED ON THE END OF THE COUPLING AND ONE ON THE END OF AN ADAPTER, FITTING OR ANGLED SHEAR VALVE. DOUBLE WALL SWIVEL COUPLINGS MAKE CONNECTION TO THE FOLLOWING:
    - SWIVEL PIPE ADAPTERS 1-1/2" AND 2"
    - JUNCTION SHEAR VALVES 1-1/2" AND 2"
    - TERMINATING SHEAR VALVES 1-1/2" AND 2"

- PRE-CONNECTION
  - REMOVE THE PROTECTIVE CAN FROM THE DOUBLE WALL SWIVEL PIPE COUPLING AND VERIFY THAT THE FLAT RING GASKET IS PROPERLY SEATED IN THE BACK INSIDE OF THE SWIVEL NUT. REMOVE THE PLASTIC PROTECTIVE CAP FROM THE METALLIC SWIVEL ADAPTER, FITTING OR ANGLED SHEAR VALVE AND THEN INSPECT THE SEALING FACE TO MAKE SURE THAT IT IS SMOOTH AND UNDAMAGED.
- HAND TIGHTENING OF SWIVEL NUT
  - POSITION THE DOUBLE WALL SWIVEL COUPLING TO THE MALE THREADED OPENING OF THE ADAPTER, FITTING OR SHEAR VALVE. THIS CONNECTION HAS PROPRIETARY THREADS AND DOES NOT REQUIRE THE USE OF PIPE DOPE OR SEALANT. HAND-TIGHTEN THE FEMALE THREADED SWIVEL NUT ONTO THE MALE THREADED OPENING UNTIL IT CAN NO LONGER BE TURNED BY HAND.
- FINAL TIGHTENING OF SWIVEL NUT
  - USING ONLY AN OPW SHORT HANDLED SWIVEL WRENCH, TIGHTEN THE COUPLINGS SWIVEL NUT AN ADDITIONAL QUARTER (1/4") TURN BEYOND HAND TIGHT.
- CAUTION: OVER-TIGHTENING OF THE SWIVEL NUT BEYOND 200 IN/LBS COULD CAUSE DAMAGE TO THE SEALING GASKET POSSIBLY RESULTING IN A FUEL LEAK DUE TO THE LACK SUFFICIENT SEALING COMPRESSION.
- CAUTION: NEVER USE PIPE DOPE OR SEALANT INSIDE SWIVEL COUPLINGS OR ON THE CONNECTION THREADS THAT CAN CAUSE DAMAGE TO THE GASKET SEAL AND CAUSE IT TO FAIL.

INTERSTITIAL TUBE ASSEMBLIES

- THE DOUBLE WALL SWIVEL COUPLINGS ATTACHED TO THE ENDS OF THE FLEXIBLE SUPPLY PIPE SECTIONS HAVE THREADED (1/8" NPT) INTERSTITIAL ACCESS PORTS ON THEIR FERRULE OR SBC CLAMP FOR CONNECTION TO INTERSTITIAL TUBE ASSEMBLIES THAT COME IN VARIOUS COUPLINGS AND FITTINGS.
- TEST TUBES
  - TEST TUBES ARE CONNECTED TO THE DOUBLE WALL SWIVEL COUPLINGS LOCATED WITHIN TANK SUMPS AND THE LAST DISPENSER SUMP IN A SERIES PIPING RUN. THESE 36' (900MM) LONG TUBE ASSEMBLIES ARE USED TO PROVIDE A MEANS OF AIR PRESSURE INTEGRITY TESTING OF THE PIPE INTERSTITIAL SPACE AFTER INSTALLATION. THEY CAN BE CUT TO ANY DESIRED LENGTH. INSTALLED INSIDE A TERMINATING DISPENSER SUMP THEY ARE USED AS ANOTHER MEANS OF TESTING THE INTERSTITIAL SPACE. WHEN NO USED FOR TESTING PURPOSES THEY MAY BE PLUGGED OR LEFT OPEN DEPENDING ON THE PIPE INTERSTITIAL MONITORING APPLICATION.
- CONNECTING TUBES
  - CONNECTOR TUBES ARE CONNECTED TO THE DOUBLE WALL SWIVEL COUPLINGS LOCATED WITHIN DISPENSER SUMPS AND ARE 9" LONG. INSTALLED INSIDE JUNCTION DISPENSER SUMPS, CONNECTOR TUBES ARE USED TO INTERCONNECT THE INTERSTICE OF ONE PIPE SECTION TO THE NEXT BY BYPASSING THE JUNCTION SAFETY VALVE.
- INTERSTITIAL TUBE CONNECTIONS
  - THE STEPS REQUIRED FOR CONNECTING THE CONNECTOR TUBES AND/OR TEST TUBES TO THE THREADED INTERSTITIAL ACCESS PORTS OF THE DOUBLE WALL SWIVEL COUPLINGS IS AS FOLLOWS:
    - STEP 1: APPLY TEFLON TAPE TO ONLY THE NPT THREADS OF THE ADAPTER.
    - STEP 2: THREAD THE ADAPTER INTO THE NPT THREADED INTERSTITIAL ACCESS PORT.
    - STEP 3: CUT THE TUBE EVENLY TO THE DESIRED LENGTH.
    - STEP 4: SLIDE THE COMPRESSION NUT ONTO THE TUBING
    - STEP 5: SLIDE THE FERRULE ONTO THE TUBING
    - STEP 6: INSERT TUBE END INTO PREINSTALLED ADAPTER
    - STEP 7: SLIDE DOWN AND THREAD ON COMPRESSION NUT TO ADAPTER BY HAND
    - STEP 8: COMPLETE TIGHTENING COMPRESSION NUT WITH A ½" WRENCH
- AIR PRESSURE TESTING PROCEDURES
  - THE AIR PRESSURE INTEGRITY TEST PROCEDURE FOR THE FLEXIBLE SUPPLY PIPING IS ONE AND ONE HALF (1-1/2) TIMES THE NORMAL OPERATING PRESSURE OF THE FUEL PUMP, NOT TO EXCEED SIXTY POUNDS PER SQUARE INCH (60 PSI). MAKE SURE THE FLEXIBLE PIPELINE IS ISOLATED FROM BOTH THE UNDERGROUND STORAGE TANK AND THE ABOVE GROUND PRODUCT DISPENSER WHEN CONDUCTING THIS TEST. ALL PRESSURE TESTING SHOULD BE CONDUCTED BY QUALIFIED AND EXPERIENCED PERSONNEL. DO NOT ATTEMPT TO DISCONNECT COUPLINGS, CAPS, OR PLUGS UNLESS THE AIR PRESSURE HAS BEEN RELEASED. COMPLY WITH THE FOLLOWING TEST PROCEDURES FOR THE PRIMARY AND SECONDARY OF THE FLEXIBLE DOUBLE WALL PIPING.
- CAUTION: INTEGRITY TESTING WITH AIR, GAS, OR WATER CAN BE DANGEROUS AND IT IS VERY IMPORTANT THAT THE PROPER TESTING EQUIPMENT BE USED AND THAT THE PRE-TESTING PROCEDURES BE READ. OPW ONLY QUALIFIED AND EXPERIENCED PERSONNEL SHOULD CONDUCT THE AIR PRESSURE TESTING. NEVER DISCONNECT COUPLINGS, CAPS OR PLUGS UNLESS THE AIR PRESSURE HAS BEEN RELEASED.
- NOTICE: ALL TESTING REQUIREMENTS, OPERATIONS AND PROCEDURES MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE CODES.
- CAUTION: ALWAYS MAKE SURE THE UNDERGROUND STORAGE TANK IS ISOLATED FROM THE PIPING SYSTEM WHEN CONDUCTING PIPE AIR PRESSURE TESTS.
- NOTICE: SIGNIFICANT TEMPERATURE CHANGES CAN RESULT IN A PRESSURE READING DIFFERENTIAL.
- PRE-BACKFILL AIR PRESSURE TESTING:
  - BEFORE BACKFILL, AN AIR PRESSURE HOLD & SOAP TEST IS RECOMMENDED.
  - PRESSURIZE THE PRIMARY PIPE TO ONE AND ONE HALF (1-1/2) TIMES THE NORMAL OPERATING PRESSURE OF THE FUEL PUMP, NOT TO EXCEED SIXTY POUNDS PER SQUARE INCH (60 PSI). GRADUALLY APPLY AIR PRESSURE INTO THE FLEXIBLE PIPING LINE AND MAINTAIN THIS PRESSURE UNTIL THE SOAP TEST IS COMPLETED. DURING THE PRESSURIZING PERIOD, APPLY A SOAPY WATER SOLUTION TO ALL PIPING CONNECTIONS AND INSPECT FOR AIR BUBBLES.
- POST BACKFILL AIR PRESSURE TESTING:
  - AFTER BACKFILLING, AN AIR PRESSURE HOLD TEST IS REQUIRED. PRESSURIZE THE PRIMARY TO ONE AND ONE HALF (1-1/2) TIMES THE NORMAL OPERATING PRESSURE OF THE SUBMERSIBLE PUMP. NOT TO EXCEED SIXTY POUNDS PER SQUARE INCH (60 PSI). GRADUALLY APPLY AIR PRESSURE INTO THE FLEXIBLE PIPING LINE AND MAINTAIN THIS PRESSURE FOR A MINIMUM OF THREE (3) HOURS, MAKING SURE THAT THERE IS NO DROP IN PRESSURE.
- DOUBLE WALL PIPE AIR PRESSURE TESTING
  - INTEGRITY TESTING FOR DOUBLE WALL PIPING IS DIFFERENT THAN FOR SINGLE WALL PIPING. FOR THIS TESTING APPLICATION THE INTERSTITIAL TEST TUBE SHOULD BE CONNECTED TO AN AIR PRESSURE GAUGE ASSEMBLY AND THE REST OF THE PIPE INTERSTICE SHOULD BE CONNECTED AND CLOSED, AND TESTED TO TEN POUNDS PER SQUARE INCH (10 PSI).
- NOTICE: DURING PRESSURIZING, CHECK THE READING ON THE INTERSTITIAL TEST GAUGE THAT SHOULD BE SECURELY CONNECTED TO THE INTERSTITIAL TEST TUBE. ANY INCREASE IN PRESSURE WILL INDICATE A LEAK IN THE PRIMARY PIPE OR DOUBLE WALL PIPE FITTINGS.
- HYDROSTATIC TESTING PROCEDURE (IF REQUIRED) IF A HYDROSTATIC TEST IS REQUIRED, THEN COMPLY WITH THE FOLLOWING HYDROSTATIC TESTING PROCEDURES FOR THE PRIMARY AND SECONDARY OF THE FLEXIBLE DOUBLE WALL PIPING.
- CAUTION: INTEGRITY TESTING WITH AIR, GAS OR WATER CAN BE DANGEROUS AND IT IS VERY IMPORTANT THAT THE PROPER TESTING EQUIPMENT BE USED AND THAT THE PRE-TESTING PROCEDURES BE READ. SHEETZ ASSUMES NO REASONABILITY OR LIABILITY FOR THE CONSEQUENCES OF ANY TESTING PRACTICES. ONLY QUALIFIED AND EXPERIENCED PERSONNEL SHOULD CONDUCT THE AIR PRESSURE TESTING. NEVER DISCONNECT COUPLINGS, CAPS, OR PLUGS UNLESS THE AIR PRESSURE HAS BEEN RELEASED.
- NOTICE: ALL TESTING REQUIREMENTS, OPERATIONS, AND PROCEDURES MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE CODES.
- CAUTION: ALWAYS MAKE SURE THE UNDERGROUND STORAGE TANK IS ISOLATED FROM THE PIPING SYSTEM WHEN CONDUCTING PIPE AIR PRESSURE TESTS.
- WATER FILLING:
  - GRADUALLY INTRODUCE WATER AT THE LOWEST POINT INTO THE PIPING SYSTEM AND BLEED OFF AIR AT THE HIGHEST POINT IN THE PIPING SYSTEM THROUGH AN OPEN VALVE. THE HYDROSTATIC PRESSURE APPLIED SHOULD BE NO GREATER THAN ONE-AND-ONE HALF (1-1/2) TIMES THE NORMAL OPERATING PRESSURE OF THE SUBMERSIBLE PUMP, NOT TO EXCEED SIXTY POUNDS PER SQUARE INCH (60 PSI).
- HYDROSTATIC TESTING OF DISPENSER SUMPS
  - OPW FUELING CONTAINMENT SYSTEMS RECOMMENDS THE FOLLOWING PROCEDURE FOR HYDROSTATIC TESTING OF DISPENSERS SUMPS, TANK SUMPS AND SPECIALTY APPLICATION SUMPS.
    - VISUALLY INSPECT ALL ENTRY BOOTS FOR BAND CLAMPS, COMPRESSION RINGS AND DONUTS FOR POSSIBLE LEAK POINTS PRIOR TO CONNECTING, CORRECT AS NEEDED.
    - BE SURE ALL TEST TUBES, CONNECTOR TUBERS OR ANY OTHER OPEN SECONDARIES INTO THE SUMP ARE SEALED AND LIQUID TIGHT.
    - FILL ALL SUMPS TO A MINIMUM OF 1" ABOVE THE HIGHEST PENETRATION FITTING OR SUMP JOINT. MARK THE LIQUID LEVEL WITH A PERMANENT MARKER.
    - HYDROSTATIC TEST SHOULD BE HELD FOR 1 HOUR OR PER LOCAL REGULATIONS.
    - BE SURE ALL WATER IS DISPOSED OF PROPERLY AFTER COMPLETING THE TEST.
- NOTE: SHOULD THE LIQUID LEVEL DROP DURING TESTING, VISUALLY IDENTIFY THE LEAK SOURCE, REMOVE WATER AND TIGHTEN BAND CLAMPS TO 30 IN/LBS. ENTRY BOOT COMPRESSION RING SHOULD BE TIGHTENED IN A CLOCKWISE MANNER UNTIL EACH STUD REACHES 60 IN/LBS. REPEAT TESTING PROCEDURE.
- IF YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO CALL OUR CUSTOMER SERVICE DEPARTMENT AT 1-800-422-2525 FOR MORE DETAILS.

DSLFR-SP131-1836-1234-5678 (5+0 THROUGH) 352			
BOM #	PART #	DESCRIPTION	QTY.
1	DSLB-186-12345678	DRILLED FIBERGLASS BASE	1
2	DSLP-1836	POLY, LOOP TOP	1
3	SA-REF-4015	RIGID ENTRY FITTING	8
4	SA-REF0150	1.5" REF COMPONENT KIT	8
5	H13152M	1/4-20 FLANGE NUT	64
6	SVD-1522	SHEAR VALVE ASSEMBLY JUNCT.	3
7	CO4900M	SPACER PLATES (AS NEEDE)	N/A
8	SBK-1800	STABILIZER BAR KIT	3
9	HC-PFY-150	PASS THROUGH FITTING	1
10	HW-CM-4800	48" CONDUIT LEG	4
11	DFL-1836	1836 LOOP DISPENSER FRAME	1
12	HW-22-1836	1836 SIDE STRUT	2
13	HW-BF-1836	LEG BRACKET	4
14	FG-BF-0038	3/8-16 X 2" STEEL BOLT	4
15	H14353M	8-32 X 1" TRUSS HEAD SCREW	20
16	H140693	8-32 STEEL WING NUT	20
17	H11853M	3/8-16 BOLT	14
18	H13895M	$\frac{3}{8}$ WASHER	14
19	H05509M	3/8-16 NUT	18
20	H13946	ANCHOR BOLT KIT	2
21	PM-CB-0070	SIDE FILLER	2
22	PM-CB-4621	TOP FILLER	1
23	PM-CB-1815	LOOP SUMP BOX	1

DSLFR-SP133-1836-5678 (3+1 TERMINATING) 356			
BOM #	PART #	DESCRIPTION	QTY.
1	DSLB-186-12345678	DRILLED FIBERGLASS BASE	1
2	DSLP-1836	POLY, LOOP TOP	1
3	SA-REF-4015	RIGID ENTRY FITTING	8
4	SA-REF0150	1.5" REF COMPONENT KIT	8
5	H13152M	1/4-20 FLANGE NUT	64
6	SVD-1522	SHEAR VALVE ASSEMBLY JUNCT.	3
7	CO4900M	SPACER PLATES (AS NEEDE)	N/A
8	SBK-1800	STABILIZER BAR KIT	3
9	HC-PFY-150	PASS THROUGH FITTING	1
10	HW-CM-4800	48" CONDUIT LEG	4
11	DFL-1836	1836 LOOP DISPENSER FRAME	1
12	HW-22-1836	1836 SIDE STRUT	2
13	HW-BF-1836	LEG BRACKET	4
14	FG-BF-0038	3/8-16 X 2" STEEL BOLT	4
15	H14353M	8-32 X 1" TRUSS HEAD SCREW	20
16	H140693	8-32 STEEL WING NUT	20
17	H11853M	3/8-16 BOLT	14
18	H13895M	$\frac{3}{8}$ WASHER	14
19	H05509M	3/8-16 NUT	18
20	H13946	ANCHOR BOLT KIT	2
21	PM-CB-0070	SIDE FILLER	2
22	PM-CB-4621	TOP FILLER	1
23	PM-CB-1815	LOOP SUMP BOX	1

DSLFR-SP138-1836-1234 (3+1 TERMINATING) 360			
BOM #	PART #	DESCRIPTION	QTY.
1	DSLB-186-12345678	DRILLED FIBERGLASS BASE	1
2	DSLP-1836	POLY, LOOP TOP	1
3	SA-REF-4015	RIGID ENTRY FITTING	8
4	SA-REF0150	1.5" REF COMPONENT KIT	8
5	H13152M	1/4-20 FLANGE NUT	64
6	SVD-1522	SHEAR VALVE ASSEMBLY JUNCT.	3
7	CO4900M	SPACER PLATES (AS NEEDE)	N/A
8	SBK-1800	STABILIZER BAR KIT	3
9	HC-PFY-150	PASS THROUGH FITTING	1
10	HW-CM-4800	48" CONDUIT LEG	4
11	DFL-1836	1836 LOOP DISPENSER FRAME	1
12	HW-22-1836	1836 SIDE STRUT	2
13	HW-BF-1836	LEG BRACKET	4
14	FG-BF-0038	3/8-16 X 2" STEEL BOLT	4
15	H14353M	8-32 X 1" TRUSS HEAD SCREW	20
16	H140693	8-32 STEEL WING NUT	20
17	H11853M	3/8-16 BOLT	14
18	H13895M	$\frac{3}{8}$ WASHER	14
19	H05509M	3/8-16 NUT	18
20	H13946	ANCHOR BOLT KIT	2
21	PM-CB-0070	SIDE FILLER	2
22	PM-CB-4621	TOP FILLER	1
23	PM-CB-1815	LOOP SUMP BOX	1

NOTE:
THIS DRAWING IS A COMPILATION OF OPW FUELING CONTAINMENT SYSTEM INSTALLATION MANUAL. IT IS INTENDED AS A REFERENCE FOR REGULATORS, QUALIFIED INSTALLERS AND BIDDERS. IT IS NOT A SUBSTITUTE FOR FACTORY QUALIFICATION OF INSTALLERS OR A THOROUGH REVIEW OF THE ENTIRETY OF THE MANUFACTURER DOCUMENTATION AND PROCEDURES. THIS DRAWING IS FOR REFERENCE ONLY AND IS NOT A DESIGN DRAWING.

ISSUED FOR

DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:

CONSULTANT:
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Engineers • Planners • Surveyors
5136 Beach Road • Medina, Ohio 44256
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CONVENIENCE ARCHITECTURE AND DESIGN P.C.
351 SHEETZ WAY, CLAYSBURG, PA 16625 (814) 239-0613

SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

OPW FLEXWORKS MANUFACTURER INSTALLATION DETAILS

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE: N/A
DATE: 3/5/2021
DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: RWW
JOB NUMBER: XXXXXX

FT8.0

File: k:\sheetz\#7xx cameron (sawyer), nc\dwg\#7xx cameron (sawyer), nc ust.dwg Saved: 3/5/2021 8:16 AM (jeff.wellert) Plotted: 3/5/2021 8:54 AM (jeff.wellert) Plotstyle: (WC Standard.ctb) Scale: (1:1) Page Setup: (36 X 24 PDF)

TRAINING FOR NOV FIBERGLASS SYSTEMS DUALOY® PIPING SYSTEMS

- INSTALLATION TRAINING FOR NOV FIBERGLASS SYSTEMS DUALOY 3000/L PIPING SYSTEMS, INCLUDING SECONDARILY CONTAINED SYSTEMS AND DUALOY 3000/LCX, SHALL BE DONE BY AN NOV FIBERGLASS SYSTEMS EMPLOYEE, SALES REPRESENTATIVES OR DISTRIBUTOR.
- TRAINING SHALL, AT MINIMUM, CONSIST OF A THOROUGH REVIEW OF THE INSTALLATION INSTRUCTIONS (BULLETINS, 7501, 8702 AND/OR 9903) AS APPLICABLE FOR THE SYSTEMS ON WHICH THE INSTALLER IS TO BE CERTIFIED. IT IS RECOMMENDED THAT AN INSTALLATION VIDEO, (SUCH AS DUALOY 3000/LCX INSTALLATION) BE USED DURING THE TRAINING SESSION. ALSO RECOMMENDED IS AN EXAMINATION OF THE INSTALLATION TOOLS, A DEMONSTRATION OF THE JOINT PREPARATION AND BONDING AND, IF POSSIBLE, A "HANDS-ON" EXECUTION OF THE INSTALLATION PROCEDURES FOR A SAMPLE CONNECTION. UPON COMPLETION OF THE TRAINING, EACH INDIVIDUAL BEING TRAINED SHALL COMPLETE THE WRITTEN EXAMINATION FOR THE SYSTEMS ON WHICH THEY ARE TO RECEIVE QUALIFICATION.
- THE EXAMINATIONS WILL BE SIGNED BY THE TRAINEE AND THE INSTRUCTOR AND FORWARDED TO NOV FIBERGLASS SYSTEMS FOR GRADING AND REGISTERING OF THE INDIVIDUAL AS A "CERTIFIED INSTALLER."
- NOV FIBERGLASS SYSTEMS WILL ISSUE A TRAINING CERTIFICATE WITH THE INDIVIDUAL IDENTIFIED AND WILL INCLUDE THEIR NAME ON A REGISTRATION LIST. WALLET-SIZED CERTIFICATES AND HARD STICKERS MAY ALSO BE PROVIDED. TRAINING CERTIFICATES ARE VALID FOR THREE YEARS.

LISTINGS AND APPROVALS

- DUALOY 3000/LCX IS LISTED IN THE UNITED STATES WITH UNDERWRITERS LABORATORIES FOR NONMETALLIC UNDERGROUND PIPING FOR MOTOR VEHICLE FUELS (MV), CONCENTRATED FUELS (CF), HIGH BEND FUELS (HB) AND AVIATION AND MARINE FUELS (AM). IT IS ALSO LISTED WITH UNDERWRITERS LABORATORIES CANADA (ULC) FOR THE SAME FUEL CATEGORIES. IT CAN BE USED FOR INTEGRAL PRIMARY/SECONDARY (PS) SERVICES WHERE BOTH LAYERS ARE COMBINED INTO ONE UNIT UNDER UL FILE NO. MH 15596. THE ULC FILE NO. IS CMH 715.

INSPECTION, HANDLING AND STORAGE

- INSPECTION
  - CAREFUL INSPECTION OF THE OUTER (SECONDARY) LAYER OF PIPE IS ESPECIALLY IMPORTANT ON COAXIAL CONTAINMENT INSTALLATIONS. SINCE DAMAGE TO THE PRIMARY IS NOT VISIBLE ONCE THE PIPE IS INSTALLED, IT IS ESSENTIAL TO CHECK THE OUTER PIPE JACKET FOR DAMAGE. TESTING AND EXPERIENCE HAS PROVEN THAT NO DAMAGE WILL OCCUR TO THE PRIMARY PIPE WITHOUT AN INDICATION OF DAMAGE ON THE OUTER JACKET.
  - UPON RECEIPT AT THE JOB SIT, INSPECT THE PIPE FULLY. LOCATE, CUT OUT, REPAIR OR REPLACE DAMAGED PIPE. IMPACT DAMAGE IS USUALLY RECOGNIZABLE AS ROUNDED PALE AREAS JUST UNDER THE SURFACE OR AS DEEP GOUGES, SCRATCHES OR CRACKS. REMOVE END PROTECTORS TO INSPECT TAPERS FOR DAMAGE AND THEN REPLACE PROTECTORS.
- HANDLING
  - DUALOY 3000/LCX HAS HIGHER IMPACT RESISTANCE THAN SINGLE-WALL PIPE, HOWEVER, FIBERGLASS PIPE IS SUSCEPTIBLE TO DAMAGE IF HANDLED IMPROPERLY. ADHERE TO THE FOLLOWING RECOMMENDATIONS WHEN HANDLING:
    - DO NOT TRANSPORT PIPE WITHOUT PROPER PROTECTION AGAINST IMPACT.
    - TRUCK PIPE RACKS SHOULD BE PADDED WITH CARPETING OR LIKE MATERIAL TO PREVENT DAMAGE.
    - TIE THE PIPE DOWN DURING TRANSPORT TO PREVENT IT FROM BOUNCING ON THE RACKS.
    - DO NOT USE CHAINS TO TIE DOWN THE PIPE ON A TRUCK: USE NYLON STRAPS OR HEMP ROPE.
    - DO NOT DROP THE PIPE FROM TRUCK BED WHEN STRINGING: LAY THE PIPE DOWN BY HAND.
    - PIPE LOADS THAT ARE PROPERLY SEPARATED AND SUPPORTED CAN BE UNLOADED BY PADDED FORKLIFTS.
- STORAGE
  - DUALOY 3000/LCX PIPE INCORPORATES A RESIN-RICH OUTER COATING WHICH PROVIDES OUTSTANDING UV RESISTANCE. PIPE STORED OUT-OF-DOORS FOR EXTENDED PERIODS MAY ASSUME A CHALKY APPEARANCE. HOWEVER, THIS CHANGE IN APPEARANCE IS SUPERFICIAL AND DOES NOT AFFECT THE PIPE'S PERFORMANCE. PROTECT STORED PIPE FROM IMPACT DAMAGE BY STACKING ON PADDED RACKS.

MATERIALS

- PIPE
  - MANUFACTURER TALLIES PIPE ON THE BASIS OF OVERALL LENGTH. ALLOW FOR CUTTING LOSSES AND WASTAGE WHEN ORDERING.
- FITTINGS
  - CONTAINED FITTING ASSEMBLIES ARE SOLD IN THE FOLLOWING BOXED QUANTITIES

CLAMSHELL FITTINGS PER SHIPPING BOX						
NOMINAL SIZE		90° ELBOWS	45° ELBOWS	TEES	SLEEVE COUPLINGS	TERMINATION SLEEVES
(IN)	(MM)					
2	50	5	5	5	10	10
3	80	5	5	5	10	10
4	100	5	5	5	10	10
NOTE: FASTENERS ARE INCLUDED WITH FITTINGS						

- ADHESIVES
  - NOV FIBERGLASS SYSTEM SUPPLIES PSK20 AND PSK34 ADHESIVES. PSX20 AND PSX 34 ADHESIVES ARE POLYSILOXANE-MODIFIED EPOXY FORMULATIONS. BOTH ARE DESIGNED TO MAKE PERMANENT BONDS IN PRIMARY OR CONTAINMENT SYSTEMS TRANSFERRING MV, CF, HB, OR A&M FUELS. THEY ARE ALSO APPROVED FOR USE WITH MTBE FLUIDS. EACH IS SUPPLIED AS A TWO PART SYSTEM CONSISTING OF A RESIN AND A HARDENER.
  - EACH ADHESIVE KIT CONTAINS:
    - RESIN
    - HARDENER
    - MIXING STICK
    - SPATULA AND BRUSH
    - DETAILED USAGE INSTRUCTIONS
    - EMERY PAPER
    - GLOVES
    - PAPER TOWELS
  - REFER TO THE LAYOUT DRAWINGS TO ESTIMATE THE NUMBER OF ADHESIVE KITS REQUIRED. INCLUDE BONDS FOR ALL FITTINGS, ELBOWS, TEES, REDUCERS, ADAPTERS AND COUPLINGS PLUS A WASTE FACTOR. SHORT POT LIFE AT HIGHER TEMPERATURES MAY NOT ALLOW AS MANY BONDS TO BE MADE AS INDICATED IN THE TABLE: ALLOW A GREATER WASTE TABLE AT HIGHER TEMPERATURES. FOR FURTHER INFORMATION REFER TO THE ADHESIVE PRODUCT DATA SHEET.

PRIMARY BONDS PER KIT[1]				
NOMINAL PIPE SIZE		ADHESIVE KIT SIZE		
(IN)	(MM)	3 OZ.[2]	5 OZ.[2]	8 OZ.[2,3]
2	50	6	12	-
3	80	3	8	14
4	100	2	6	9
1. THE AVERAGE NUMBER OF PRIMARY SYSTEM BONDS OBTAINABLE BY AN EXPERIENCED CREW AT 75° F. 2. AVAILABLE IN SIX-PAK KITS. 3. EXCESSIVE WASTE MAY RESULT WHEN USING 8-OZ. KIT TO MAKE 2-INCH BONDS.				

CONTAINMENT BONDS PER KIT[1]				
NOMINAL NOMIMAL SIZE		ADHESIVE KIT SIZE		
(IN)	(MM)	3 OZ.[2]	5 OZ.[2]	8 OZ.[2,3]
2	50	1	3[3]	4
3	80	1[3]	1	2
4	100	1/2	1/2	1
1. THE AVERAGE NUMBER OF PRIMARY SYSTEM BONDS OBTAINABLE BY AN EXPERIENCED CREW AT 75° F. 2. AVAILABLE IN SIX-PAK KITS. 3. FEWER BONDS ON TEES WOULD BE TYPICAL, MORE FOR TERMINATION SLEEVES				

- TOOLS
  - THE FOLLOWING TOOLS ARE RECOMMENDED TO INSTALL DUALOY 3000/LCX PIPING:
    - 1 ½ INCH DIAMETER BY 1 INCH WIDE COARSE-GRIT FLAPPER SANDER
    - 3/8 INCH ELECTRIC DRILL OR EQUIVALENT AIR-DRIVEN MOTOR.
    - FINE BLADE HACKSAW, RADIAL CUT OFF SAW OR CIRCULAR SAW
    - 6-INCH HOLE SAW FOR INSTALLING SUMP PENETRATION FITTINGS.
    - LARGE PLIERS CAPABLE OF GRIPPING A 4-INCH OBJECT
    - CONTAINMENT JACKET STRIPPING TOOL
    - 1 ½ INCH DISC GRINDER WHEEL FOR ABRADING SUMP WALL AT PENETRATION
    - HEAT BLANKETS, HEAVY-DUTY HEAT GUNS, OR HOT AIR BLOWERS FOR COOL/COLD-WEATHER INSTALLATION.

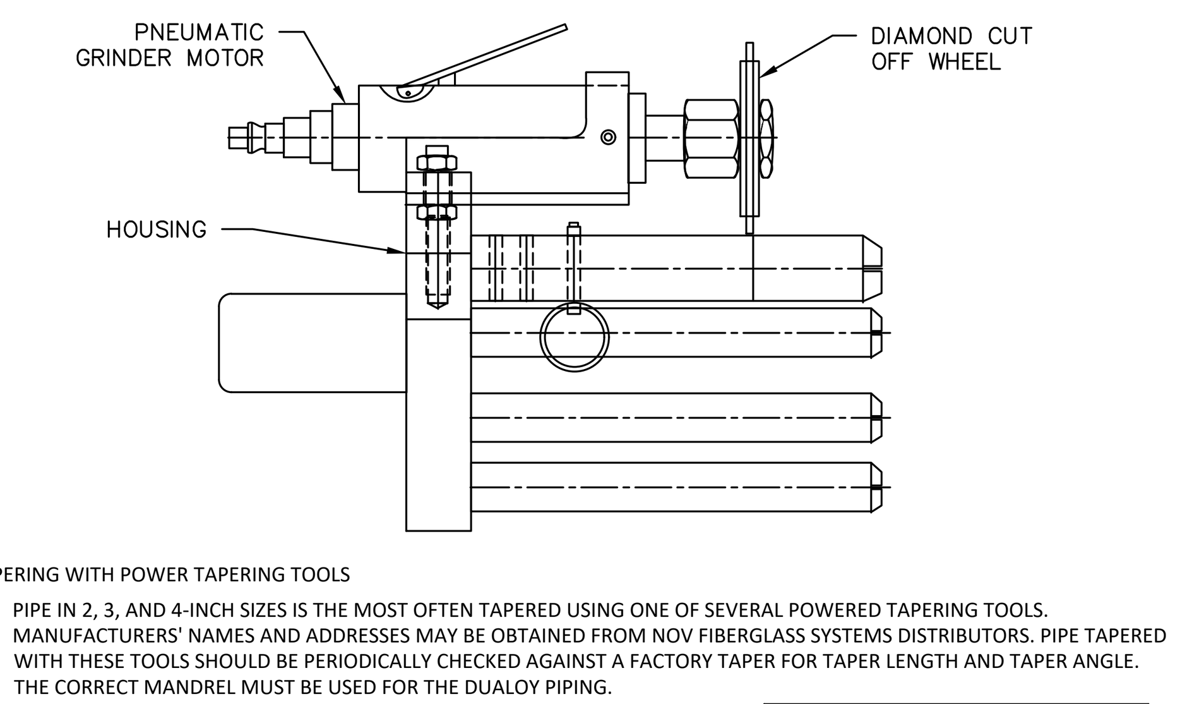
FIELD CUTTING AND TAPERING PRIMARY PIPE

- CUTTING
  - USE A FINE-BLADE HACKSAW, RADIAL CUT-OFF SAW OR CIRCULAR SAW WITH ABRASIVE WHEEL TO CUT PIPE IN THE FIELD. THE CUT END MUST BE SQUARE TO WITHIN 3/16 INCH (5 MM).
  - HOLD PIPE SECURELY FOR ALL CUTTING AND TAPERING. WHEN USING A PIPE VISE, ALWAYS WRAP THE PIPE WITH A PROTECTIVE MATERIAL SUCH AS A ¼-INCH THICK RUBBER PAD. TAKE CARE NOT TO DAMAGE OR OVER-DEFLECT THE PIPE WHEN TIGHTENING THE VISE.
- REMOVING CONTAINMENT WITH JACKET CUTTING TOOL
  - THE JACKET CUTTING TOOL US USED TO QUICKLY REMOVE THE CONTAINMENT LAYER FROM THE END OF THE PIPE. THE TOOL MAKES TAPERING OF THE PIPE EASIER, REDUCES WEAR CONTAINMENT. THE TOOL CONSISTS OF A PNEUMATIC GRINDER EQUIPPED WITH A DIAMOND CUT OFF WHEEL. IT IS ADJUSTABLE TO ALLOW IT TO BE SET AT THE DESIRED HEIGHT TO CUT THROUGH THE CONTAINMENT WITHOUT ANY RISK OF CUTTING INTO THE PRIMARY PIPE.
  - THE JACKET CUTTING TOOL CAN EITHER BE CLAMPED INTO A VISE OR CAN BE HAND OPERATED IF THE PIPE IS CLAMPED INTO A PIPE VISE.

NOMINAL PIPE SIZE		CONTAINMENT REMOVED TO BOND INTO FITTING		CONTAINMENT LENGTH REMOVED TO USE TERMINATION SLEEVE	
(IN)	(MM)	(IN)	(MM)	(IN)	(MM)
2	50	2.75	70	4.5	114
3	80	2.75	70	4.5	114
4	100	3.5	91	5.75*	146
* ADJUST GRINDER MOTOR POSITION BY LOOSENING SET SCREW, MOVE MOTOR 1.25" (32MM) THEN TIGHTEN SET SCREW, RE-ADJUST WHEN FINISHED MAKING TERMINATION CUTS.					

  - REMOVE THE CONTAINMENT BY ACTIVATING THE GRINDER AND INSERTING THE END OF THE PIPE INTO THE HOUSING.
  - PUSH THE PIPE INTO (OR ONTO) THE TOOL TO CUT A LONGITUDINAL GROOVE IN THE CONTAINMENT.
  - WHEN THE END OF THE PIPE REACHES THE STOP AT THE BACK OF THE TOOL, ROTATE THE PIPE (OR TOOL), CUTTING THE CONTAINMENT CIRCUMFERENTIALLY.
- REMOVING CONTAINMENT WITH JACKET CUTTING TOOL (CONT.)
  - WHEN CUTTING THE JACKET OF A PIPE TO BE USED WITH A TERMINATION SLEEVE, A LONGER CUT OF THE JACKET IS NEEDED TO ALLOW ENOUGH ROOM TO BOND TO BOTH THE PRIMARY AND CONTAINMENT PIPE. MINIMUM DIMENSIONS ARE SHOWN IN THE TABLE ABOVE.
  - ROTATE BACK TO THE STARTING POSITION AND REMOVE THE PIPE FROM THE TOOL.
  - PHYSICALLY REMOVE THE CONTAINMENT LAYER BY PRYING IT OPEN SLIGHTLY AND PULLING IT OFF THE PRIMARY. USE CARE TO NOT DAMAGE THE PRIMARY PIPE DURING THIS OPERATION.

NOTE: THE CUT OFF WHEEL WILL WEAR DOWN EVENTUALLY AND MAY NEED READJUSTMENT TO CUT THROUGH THE CONTAINMENT. TO ADJUST, SET THE DEPTH SO THAT THE WHEEL CUTS JUST TO THE TAPE LAYER AND NOT INTO THE LAYER OF GLASS BEADS. THIS WILL MINIMIZE WEAR ON THE WHEEL.

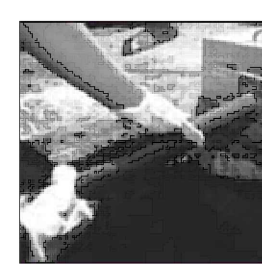


TAPERING WITH POWER TAPERING TOOLS

- PIPE IN 2, 3, AND 4-INCH SIZES IS THE MOST OFTEN TAPERED USING ONE OF SEVERAL POWERED TAPERING TOOLS. MANUFACTURERS' NAMES AND ADDRESSES MAY BE OBTAINED FROM NOV FIBERGLASS SYSTEMS DISTRIBUTORS. PIPE TAPERED WITH THESE TOOLS SHOULD BE PERIODICALLY CHECKED AGAINST A FACTORY TAPER FOR TAPER LENGTH AND TAPER ANGLE. THE CORRECT MANDREL MUST BE USED FOR THE DUALOY PIPING.
- OBSERVE THE FOLLOWING PROCEDURES WHEN OPERATING THE TAPER MAKER.
  - CHECK BLADE ANGLE BY USING A FACTORY TAPER AS A GUIDE. WHEN PROPERLY ADJUSTED, THE BLADE SHOULD BE IN CONTACT WITH THE TAPER OVER THE ENTIRE TAPER LENGTH. IF ADJUSTMENT IS REQUIRED, LOOSEN THE BLADE RETAINING SCREWS AND ADJUST THE BLADE ANGLE WITH THE SET SCREW.
  - MARK THE REQUIRED TAPER LENGTH ON THE PIPE. REFER TO THE TAPER LENGTH TABLE BELOW.
  - INSERT THE THREADED COLLET SHAFT THROUGH THE BASE CASTING AND THE MANDREL.
  - SELECT THE APPROPRIATE SIZE COLLET AND SLIDE IT ONTO THE MANDREL, MAKING SURE THE KEY INSIDE THE COLLET ENGAGES THE SLOT OF THE MANDREL.

TAPER LENGTHS			
NOMINAL SIZE		TAPER LENGTH	
(IN)	(MM)	(IN)	(MM)
2	50	1 ½	38
3	80	1 ¾	44
4	100	1 ⅞	48
6	150	2 ¾	70

  - HOLD THE COLLET AND TURN THE COLLET CONTROL KNOB CLOCKWISE UNTIL THE COLLET BEGINS TO EXPAND. NOTE THAT IT MAY BE NECESSARY TO ADJUST THE CUTTING HEAD TO ACCOMMODATE DIFFERENT SIZE COLLETS.
  - INSERT THE COLLET INTO THE PIPE UNTIL THE BACK END IS FLUSH WITH THE END OF THE PIPE.
  - EXPAND THE COLLET TO GRIP THE INSIDE OF THE PIPE BY TURNING THE COLLET CONTROL KNOB CLOCKWISE.
  - LOWER THE CUTTING BLADE UNTIL IT CONTACTS THE PIPE BY TURNING THE CUTTING HEAD ADJUSTMENT HANDLE CLOCKWISE.
  - USING THE RATCHET HANDLE, TURN THE TOOL CLOCKWISE, GRADUALLY LOWERING THE CUTTING BLADE BY TURNING THE CUTTING HEAD ADJUSTMENT HANDLE CLOCKWISE. CONTINUE UNTIL A SMOOTH TAPER OF THE PROPER LENGTH IS OBTAINED. THE THIN EDGE OF THE COMPLETED TAPER SHOULD BE NO LESS THAN 1/32 INCH (0.75 MM) THICK.
- FOR COMPLETE OPERATING INFORMATION, REFER TO THE APPROPRIATE TAPER MAKER PRODUCT DATA/OPERATING INSTRUCTIONS.

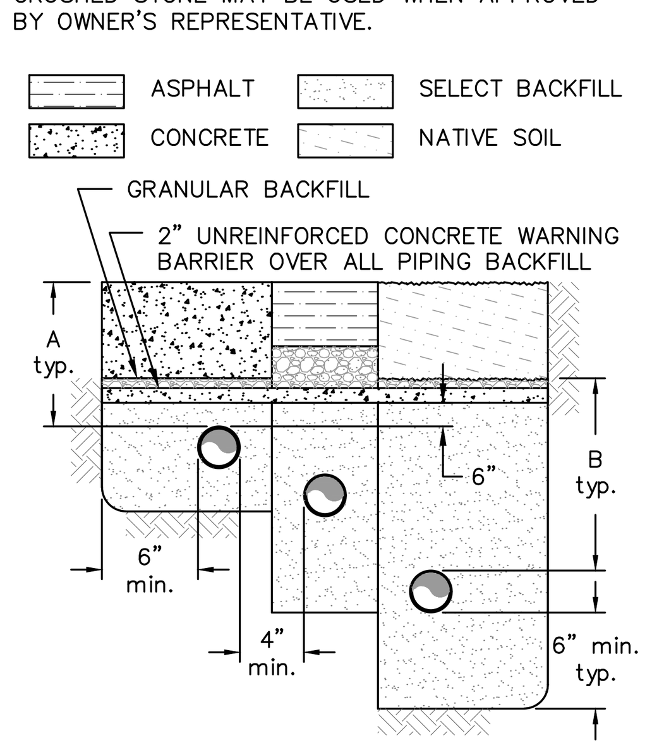


PIPING SYSTEM LAYOUT

- TRENCHING, BEDDING AND BACKFILLING
  - THE SMALLER OUTSIDE DIAMETER OF THE DUALOY 3000/LCX COAXIAL PIPE WILL SAVE ON TRENCHING AND BACKFILLING COSTS. THE ABILITY TO FABRICATE CLOSE "JUMP-OVER" FITTINGS ALSO HELPS REDUCE THE DEPTH OF EXCAVATION NEEDED TO MAINTAIN TRENCH SLOPE. ALTHOUGH FIBERGLASS PIPE HAS EXCELLENT STRENGTH, IT MUST BE PROTECTED AGAINST IMPACT WHICH MAY OCCUR FROM IMPROPER HANDLING OR DURING BACKFILLING.
    - PROVIDE A TRENCH WIDTH EQUAL TO THE PIPE DIAMETER PLUS SIX INCHES ON EACH SIDE. SEPARATE MULTIPLE LINES BY AT LEAST 4 INCHES.
    - PROVIDE A MINIMUM OF 18 INCHES OF SELECT BACKFILL BETWEEN THE TOP OF THE PIPE AND UNPAVED GROUND SURFACES.
    - PROVIDE A MINIMUM OF 4 INCHES OF SELECT BACKFILL BETWEEN THE TOP OF THE PIPE AND REINFORCED CONCRETE PAVEMENT (4 INCHES MINIMUM THICKNESS)
    - PROVIDE A MINIMUM OF 8 INCHES OF SELECT BACKFILL BETWEEN THE TOP OF THE PIPE AND ASPHALT PAVEMENT (2 INCHES MINIMUM THICKNESS).
    - SLOPE THE TRENCH BOTTOM EVENLY FROM THE DISPENSERS BACK TO SUMPS OR TANKS AT A MINIMUM SLOPE OF 1/8 IN/FT. THE USE OF BATTER BOARDS IS A VERY GOOD WAY TO ACHIEVE A PROPER SLOPE.
    - THE TRENCH BOTTOM MUST BE FREE OF HARD OR SHARP OBJECTS.
    - GRADE THE TRENCH BOTTOM WITH AT LEAST 6 INCHES OF SELECT BACKFILL TO PROVIDE FIRM, EVEN SUPPORT FOR THE PIPE. COMPACT THE SUBGRADE WELL TO PREVENT DIFFERENTIAL SETTLING.
    - PROTECT THE PIPE FROM IMPACT DURING BACKFILLING AND ABRASION DURING OPERATION BY SURROUNDING IT WITH FOUR TO SIX INCHES OF SELECT BACKFILL SUCH AS WASHED SAND, PEA GRAVEL (3/4-INCH MAXIMUM) OR CRUSHED STONE (1/2-INCH MAXIMUM).

SEE MANUFACTURER'S INSTRUCTIONS FOR ADDITIONAL DETAILS AND COMPACTION SPECIFICATIONS.

SELECT BACKFILL MATERIAL SHALL BE ⅛" TO ¾" PEA GRAVEL. CLEAN SAND, OR ⅛" TO ½" WASHED CRUSHED STONE MAY BE USED WHEN APPROVED BY OWNER'S REPRESENTATIVE.

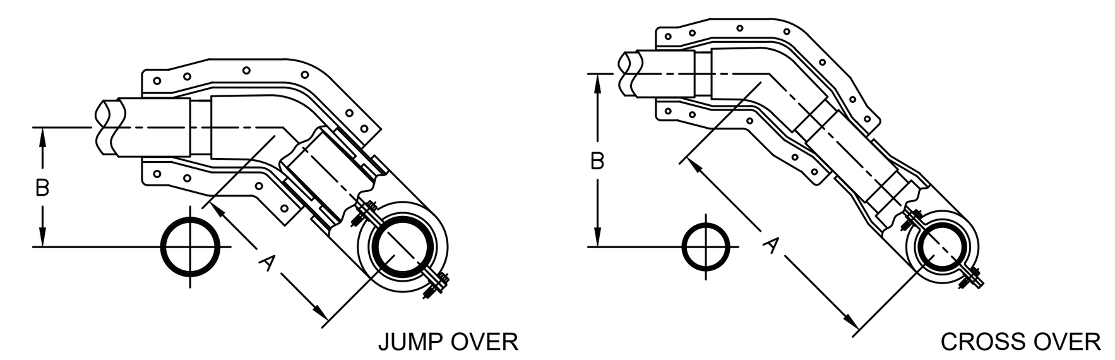


PIPE SIZE (in.)	SURFACE CONDITION	- A - Min. BURIAL DEPTH (in)	- B - Min. BACK-FILL (in)
2	UNPAVED	18	12
	PAVED, min. 4" ASPHALT	12	8
	PAVED, min. 4" CONCRETE	9	5
	PAVED, min. 6" CONCRETE	9	3
3	UNPAVED	20	14
	PAVED, min. 4" ASPHALT	13	9
	PAVED, min. 4" CONCRETE	11	7
	PAVED, min. 6" CONCRETE	10	4
4	UNPAVED	20	14
	PAVED, min. 4" ASPHALT	14	10
	PAVED, min. 4" CONCRETE	11	7
	PAVED, min. 6" CONCRETE	10	4

A PIPING TRENCH
SCALE: NONE

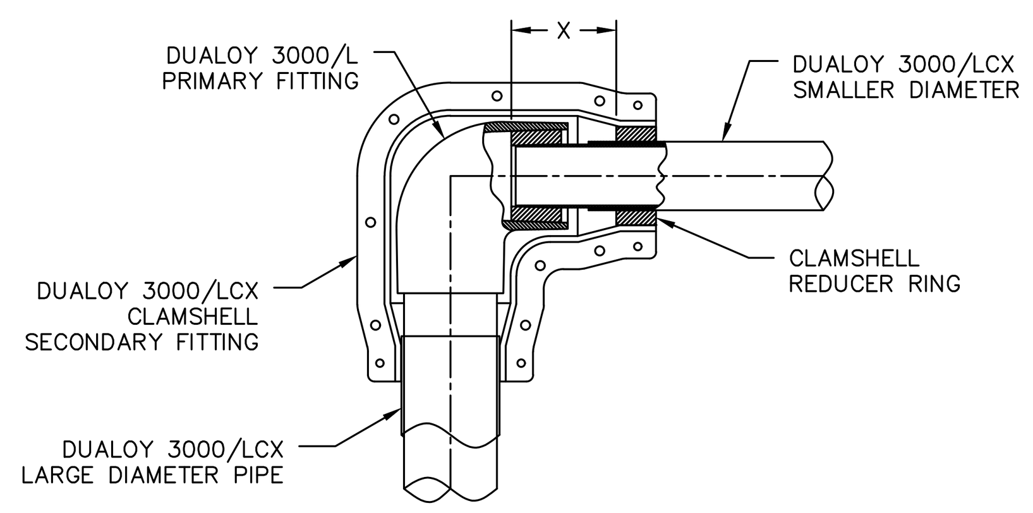
- JUMP-OVER AND CROSS-OVERS
  - ASSEMBLIES FOR CROSSING LINES CAN BE MADE IN ONE OF TWO WAYS. FOR LINES WHERE THE TEE AND 45° ELBOW NEED TO BE VERY CLOSE (A JUMP-OVER) THE CLAMSHELL FITTINGS CAN BE CUT AT THE BEGINNING OF THE TAPERED PORTION ON THE BRANCH OF THE TEE AND ONE LEG OF THE ELBOW. A PIECE OF SINGLE WALL PIPE OF THE NEXT LARGER SIZE CAN BE USED TO CONNECT THE CLAMSHELL FITTINGS. FOR LINES WHERE THERE IS SUFFICIENT DISTANCE BETWEEN THE TEE AND 45° ELBOW TO ALLOW FOR THE FULL CLAMSHELL FITTINGS, THE CROSS-OVER CAN BE MADE BY SIMPLY BONDING THE FITTINGS AND CLAMSHELLS TO A PIECE OF STANDARD COAXIAL PIPE.

NOMINAL PIPE DIAMETER		MINIMUM LENGTH (A)				MINIMUM HEIGHT (B)			
		JUMP-OVER		CROSS-OVER		JUMP-OVER		CROSS-OVER	
(IN)	(MM)	(IN)	(MM)	(IN)	(MM)	(IN)	(MM)	(IN)	(MM)
2	50	7 1/2	190	12 5/8	320	5 1/4	135	9	227
3	80	9 3/4	250	14 3/4	375	6 7/8	175	10 1/2	265
4	100	10 1/4	250	16 1/2	420	7 1/4	185	11 5/8	295



- REDUCERS
  - THE DUALOY 3000/LCX COAXIAL PIPING SYSTEM CAN BE REDUCED FROM 3" TO 2", 4" TO 3" AND 4" TO 2".
  - MARK THE "X" DIMENSION ON THE OUTSIDE OF SMALLER SECONDARY PRIOR TO BONDING PRIMARY:
    - SAND BONDING SURFACE OF JACKET.
    - APPLY ADHESIVE AND PLACE CLAMSHELL REDUCER RING IN PLACE. ALLOW ADHESIVE TO CURE.
    - AFTER ALL PRIMARY BONDING, CURING AND TESTING IS COMPLETE, BOND CLAMSHELL CONTAINMENT FITTING IN PLACE ON LARGER SECONDARY PIP AND CLAMSHELL REDUCER RING.

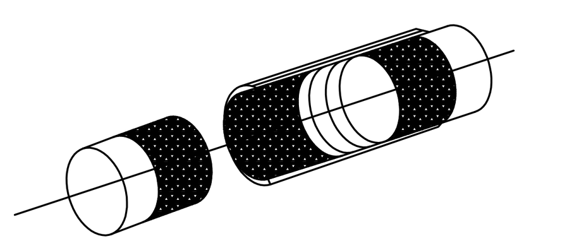
REDUCTION	(X)
3" - 2"	3.75
4" - 3"	4.25
4" - 2"	4.25



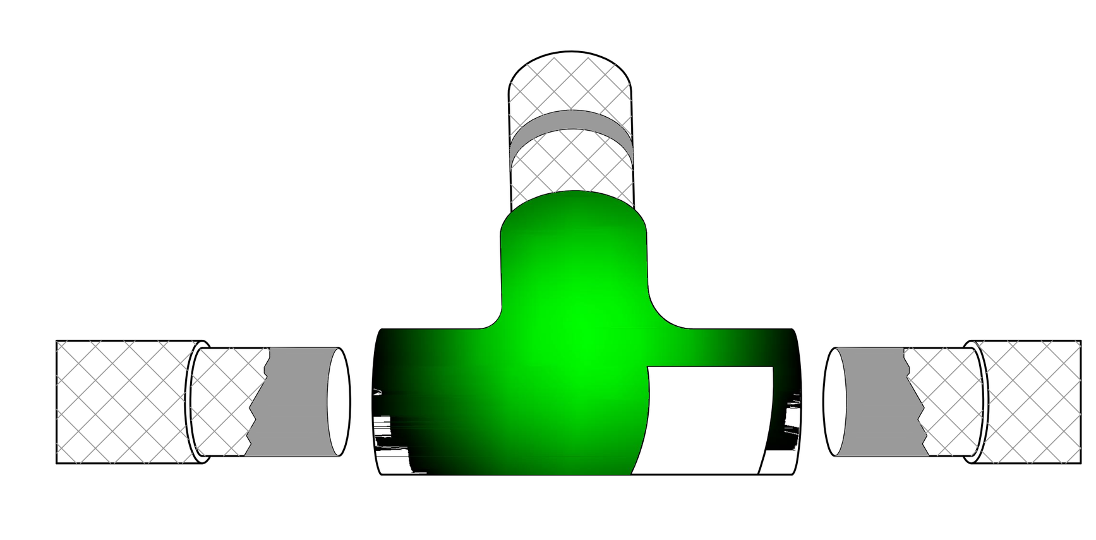
BONDING PRIMARY SYSTEMS

- JOINT PREPARATION
  - ALL TAPERED SYSTEMS MUST BE CLEAN, DRY AND WARM FOR A PROPER BOND.
    - CLEAN: PIPE IS SHIPPED FROM THE FACTORY WITH END PROTECTORS. AVOID CONTAMINATION FROM FINGERPRINTS, PETROLEUM FUMES, MIST AND CONDENSATION AS THESE ARE ADVERSE TO GOOD BONDING. IF A TAPER BECOMES DIRTY, SAND IT WITH EMERY CLOTH. NEVER TOUCH THE BONDING SURFACE WITH BARE HANDS AFTER CLEANING OR SANDING AS THIS WILL LEAVE AN OILY DEPOSIT.
    - DRY: ADHESIVE WILL NOT BOND TO A WET SURFACE IF THE TAPER IS WET OR MOIST, DRY IT WITH A BLOW DRYER OR HEAT GUN. DO NOT OVERHEAT OR BURN THE PIPE.
    - WARM: BELOW 50°F (10°C), WARM THE TAPER WITH A BLOW DRYER OR HEAT GUN. FOR BEST RESULTS, ADHESIVE SHOULD BE AT LEAST 50°F WHEN USED. DO NOT STORE KITS IN AREAS ABOVE 100°F (38°C), BELOW 32°F (0°C) OR IN THE DIRECT SUNLIGHT DURING WARM WEATHER. IN COLD WEATHER, WARM THE RESIN TO AT LEAST 50°F BUT NOT ABOVE 100°F TO PERMIT GOOD MIXING AND EASIER APPLICATION.
- MIXING NOV FIBERGLASS SYSTEMS ADHESIVE
  - COMBINE ALL OF BOTH COMPONENTS IN THE MIXING CONTAINER IN THE SUPPLIED PROPORTIONS.
  - NEVER TRY TO SPLIT A KIT.
  - MIX THOROUGHLY WITH THE MIXING STICK UNTIL ALL STREAKS ARE GONE AND THE ADHESIVE HAS A SMOOTH, UNIFORM COLOR. MIXED ADHESIVE COLOR IS DARK RED.
  - DO NOT ALLOW MOISTURE TO GET INTO THE CAN.

  NOTE: IF THE MATERIAL IN EITHER CONTAINER CANNOT BE MIXED, THE KIT SHOULD NOT BE USED. GRIT IN ADHESIVE MAY BE SITTING ON TOP OF RESIN COMPONENT. IT WILL MIX IN READILY.
- APPLYING NOV FIBERGLASS SYSTEMS ADHESIVE
  - PSX 20 AND PSX 34 ADHESIVES CONTAIN FRIT TO AID IN INSTALLATION. EXCESSIVE AMOUNTS OF ADHESIVE MAY (1) CAUSE FLOW RESTRICTION INSIDE THE PIPE WHEN THE ADHESIVE HAS CURED, (2) BLOCK THE OPENING OF THE CONTAINMENT PIPE, OR (3) RESULT IN 'HYDRAULIC BACKOUT' AS THE ADHESIVE CURES. HYDRAULIC BACKOUT OCCURS WHEN EXCESS ADHESIVE PREVENTS THE JOINT FROM MAINTAINING AN INTERFERENCE FIT AND THE SPIGOT BACKS OUT OF THE BELL DURING CURE. THE INCLUSION OF GRIT REDUCES THIS POSSIBILITY SIGNIFICANTLY.
  - COAT THE TAPERED SURFACE AND COAT END OF THE PRIMARY PIPE OR THE ENTIRE TAPERED SECTION OF ADAPTERS WITH ADHESIVE. APPLY A THIN, EVEN COAT OF MIXED ADHESIVE TO THE INSIDE OF THE BELL OF FITTINGS. COMPLETELY WET ALL MATCHING SURFACES WITH THE ADHESIVE. WIPE OFF EXCESS, ADHESIVE WITH THE SPATULA OR BRUSH PROVIDED IN THE KIT.
  - AT FITTINGS WHERE THE CONTAINMENT IS TO BE TERMINATED, TAKE CARE WHEN APPLYING ADHESIVE SO EXCESS ADHESIVE DOES NOT GET ON PRIMARY PIPE WHERE TERMINATION SLEEVES WILL NEED TO SEAL.



- MAKING THE JOINT
  - AFTER ALIGNING THE MATING SURFACES SO THAT THEY MAY BE BROUGHT TOGETHER IN A STRAIGHT LINE:
    - INSERT SPIGOT ALL THE WAY INTO THE BELL.
    - TWIST ONE QUARTER OF A TURN, WHEN POSSIBLE, WHILE PUSHING TOGETHER TO DISTRIBUTE ADHESIVE EVENLY AND TO ACHIEVE AN INTERFERENCE FIT. A SLIGHT REVERSE TWIST WILL THEN LOCK THE JOINT.
    - REMOVE ANY EXCESS ADHESIVE.
    - DO NOT COCK THE JOINT.
    - OVER-INSERTION OF THE JOINT MAY COLLAPSE THE SPIGOT AND CAUSE A LEAKY JOINT.
    - UNDER-INSERTION OF THE JOINT MAY ALSO CAUSE A LEAKY JOINT.
    - DO NOT DRIVE THE JOINT TOGETHER WITH A HAMMER. IF LOCKING CANNOT BE DONE AS DESCRIBED ABOVE, PLACE A SOFT OBJECT, SUCH AS A 2 X 4 ON THE FITTING AND LIGHTLY RAP IT.
    - DO NOT DISTURB THE JOINT WHILE THE ADHESIVE IS UNCURED.
    - DO NOT MOVE ADJACENT PIPE AND FITTINGS UNTIL ADHESIVE HAS SET.



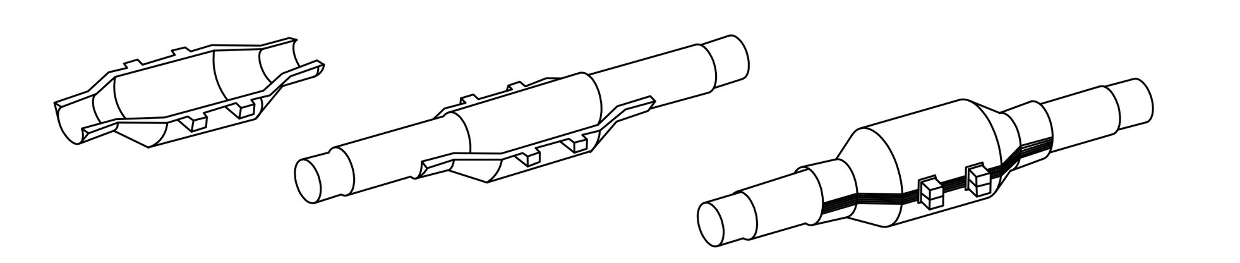
- POT LIFE/CURE TIMES FOR NOV FIBERGLASS SYSTEMS ADHESIVE
  - POT LIFE IS MEASURED FROM THE TIME THE HARDENER AND RESIN ARE FIRST MIXED UNTIL THE ADHESIVE STARTS TO THICKEN AND HARDEN AND NO LONGER CAN BE USED. DO NOT USE ADHESIVE ONCE THE CAN HAS BECOME HOT.
  - THE TABLE BELOW INDICATES THE ADHESIVE POT LIFE UNDER VARIOUS TEMPERATURE CONDITIONS. IN HOT WEATHER, POT LIFE MAY BE EXTENDED BY WRAPPING A DAMP RAG AROUND THE CAN OF MIXED ADHESIVE OR BY SPREADING THE ADHESIVE ON ALUMINUM FOIL TO DISSIPATE THE HEAT.

POT LIFE/CURE TIMES FOR NOV FIBERGLASS SYSTEMS PSX20 ADHESIVE			
MINIMUM AMBIENT TEMPERATURE		ADHESIVE POT LIFE	MINIMUM JOINT CURE TIME*
(°F)	(°C)	(MINUTES)	(HOURS)
40	5	70	12
65	18	40	5
75	24	30	4
95	35	20	3
*CUMULATIVE TOTALS. CURE TIME AT LISTED TEMPERATURES NEED NOT BE UNINTERRUPTED, BUT TOTAL TIME MUST EQUAL THE TABULATED TIME BEFORE.			

- FORCE CURING ADHESIVE
  - AT TEMPERATURES BELOW 50°F (10°C) OR IF THE TEMPERATURE WILL NOT BE ABOVE 50°F (10°C) DURING THE ENTIRE PERIOD OF CURE, AN EXTERNAL HEAT SOURCE MUST BE USED TO FORCE CURE THE ADHESIVE. THE ADHESIVE AND THE BONDING SURFACES SHOULD BE WARMED TO 50°F (10°C) BEFORE MIXING AND APPLYING THE ADHESIVE.
  - BELOW 50°F (10°C) FORCE CURE THE ADHESIVE WITH AN EXTERNAL HEAT SOURCE SUCH AS:
    - NOV FIBERGLASS SYSTEMS LCX HEATING BLANKET
    - FORCED AIR HEATER IF THE TRENCH IS COVERED TO CONTAIN THE HEAT
    - HOT AIR GUN
- USING NOV FIBERGLASS SYSTEMS HEATING BLANKETS
  - THE HEATING BLANKET REACHES A MAXIMUM TEMPERATURE OF 250°F (120°C), WHICH WILL CUTE NOV FIBERGLASS SYSTEMS ADHESIVE IN APPROXIMATELY 30 TO 40 MINUTES. DETAILED INSTRUCTIONS ARE INCLUDED WITH THE BLANKET. OBSERVE THE FOLLOWING POINTS:
    - USE ON HEATING PER BOND.
    - TIE THE BLANKET IN PLACE WITH NONCONDUCTING TIES.
    - BEFORE CONNECTING TO A POWER SOURCE, INSPECT THE BLANKET AND CORD FOR LOOSE WERE CONNECTIONS AND BARE WIRES.
    - DO NOT PLUG THE CORD INTO A POWER SOURCE WHEN STANDING IN WATER OR ON A WET SURFACE.
    - CHECK THAT THE HEATING BLANKET HAS THE CORRECT AC VOLTAGE RATING FOR YOUR LOCALITY. DO NOT USE DIRECT CURRENT.
    - MARK THE STARTING AND DISCONNECT TIME ON THE PIPE WITH A GREASE PENCIL SO THAT YOU WILL HAVE A RECORD OF CURE FOR EACH JOINT.
    - VERIFY THAT THE BLANKET ACTUALLY HEATS UP AFTER BEING PLUGGED IN.
    - DO NOT MOVE OR DISTURB THE JOINT DURING CURE.

BONDING CONTAINMENT PIPING

- JOINT PREPARATION
  - INSPECT ALL SEALINGS SURFACES TO INSURE THEY ARE FREE OF ANY FOREIGN MATERIAL SUCH AS DIRT, SAND, OR ADHESIVE. (COMPRESSED AIR WORKS VERY WELL FOR REMOVING FOREIGN MATERIAL.) INSPECT ALL SEALING SURFACES TO INSURE THERE ARE NO CUTS, SCRATCHES, OR NICKS WHICH COULD PREVENT THE JOINT FROM SEALING PROPERLY.
- ADHESIVE FOR CONTAINMENT PIPING
  - THE SAME PSX 20 ADHESIVE USED FOR PRIMARY BONDING IS USED FOR BONDING CONTAINMENT FITTINGS.
- SEALING CONTAINMENT PIPING
  - BOND CONTAINMENT ONLY AFTER PRIMARY LINES HAVE BEEN TESTED. INSPECTED AND APPROVED.
  - ALL BONDING SURFACES MUST BE FREE FROM WATER, SOAP, OIL, GREASE, DIRT AND OTHER CONTAMINATES AND SHOULD BE SANDED BEFORE APPLYING ADHESIVE.
  - APPLY A UNIFORM COATING OF ADHESIVE TO THE FLANGES OF EACH OF THE CONTAINMENT FITTING HALVES, TO THE OUTSIDE OF THE CONTAINMENT PIPE AND TO THE CURVED SURFACE OF THE FITTING WHERE THE PIPE WILL FIT. KEEP ADHESIVE OFF THE LAST ½ INCH OF THE PIPE JACKET WHEN APPLYING IT TO THE PIPE.
  - PLACE THE CONTAINMENT HALF-SHELLS AROUND THE PRIMARY FITTING. SINCE THE PRIMARY ASSEMBLY OF THE DUALOY 3000/LCX IS RIGID RELATIVE TO THE CONTAINMENT PIPING, THE CONTAINMENT FITTINGS WILL NOT HAVE TO BE HELD SO TIGHTLY THAT THEY MUST RESIST CONTAINMENT PIPE MOVEMENT. ONCE IN PLACE, ASSEMBLE FASTENERS SUPPLIED WITH THE FITTINGS TO HOLD THE HALVES IN PLACE UNTIL THE ADHESIVE CURES. SEE FIGURE 8-2.
  - CONTAINMENT FITTINGS ARE THEN JOINED WITH BOLTS. INSERT AND BEGIN THREADING EACH BOLT INTO THE PRE-INSERTED NUT BY HAND. A NUT DRIVER OR POWERED DEVICE CAN BE USED TO ASSEMBLE THE BOLTS. IF A POWER TOOL IS USED TO TIGHTEN THE BOLTS, CONFIRM TIGHTNESS OF EACH BOLT WITH A NUT DRIVER.

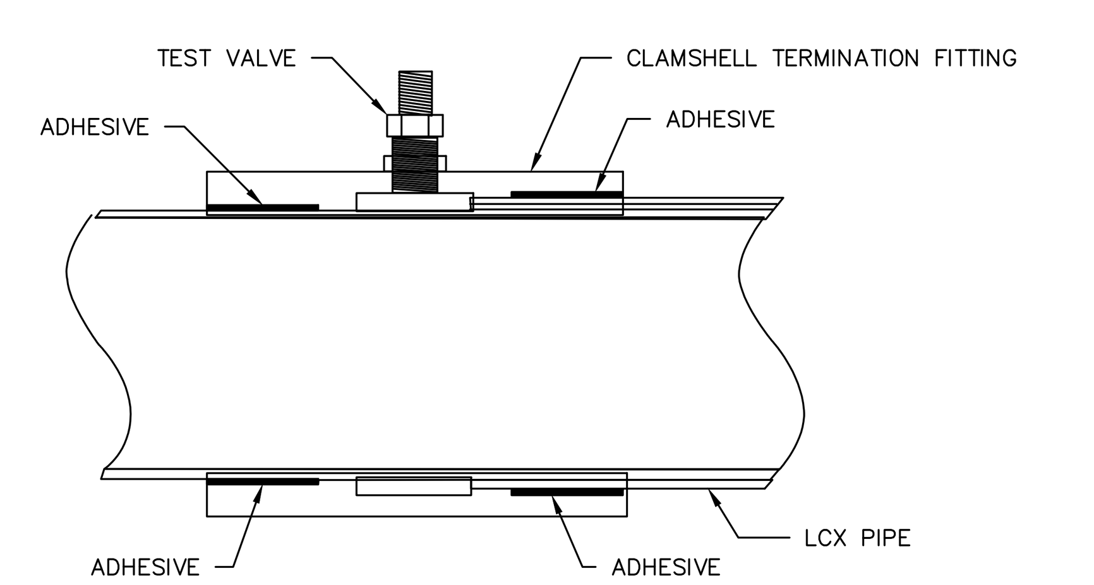


APPLYING ADHESIVE TO THE FLANGES AND THE CURVED SURFACE OF THE FITTING WHERE THE PIPE WILL FIT.

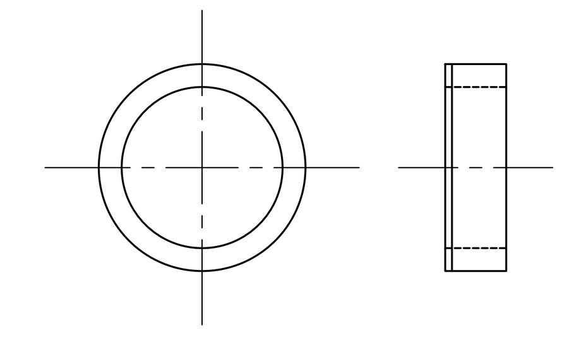
ADHESIVE APPLIED TO THE OUTSIDE OF THE CONTAINMENT PIPE.

COMPLETED CONNECTION WITH BOLTS IN PLACE.

- TERMINATING THE SECONDARY CONTAINMENT
  - CLAMSHELL TERMINATION ASSEMBLY:
    - APPLY ADHESIVE TO ALL BONDING SURFACES AFTER SANDING, AS DESCRIBED ABOVE. POSITION THE CLAMSHELL TERMINATION ASSEMBLY OVER THE CUT JACKET SO THAT THE JACKET END IS CENTERED IN THE CLAMSHELL. PARTICULAR CARE MUST BE GIVEN TO ASSURE EXCESS ADHESIVE IS NOT USED AS IT MAY CAUSE SEALING OF THE CONTAINMENT.



- TERMINATING INSIDE THE SUMP
  - FOR SERIES LAY-OUT PATTERNS, THE MEANS OF TERMINATING THE CONTAINMENT OF THE BRANCH LEG OF THE IN-SUMP TEE OR ELBOW IS WITH A BONDED TERMINATION ADAPTER. THE ADAPTER IS BONDED TO THE EXTERIOR OF THE FITTING LEG TO BE TERMINATED. PRIOR TO THE CLAMSHELL CONTAINMENT FITTING BEING PLACED ON THE ASSEMBLY.
    - LIGHTLY SAND THE OUTSIDE SURFACE OF THE LEG OF THE PRIMARY FITTING ON WHICH THE TERMINATION IS TO BE DONE.
    - ABRADE THE INNER SURFACE OF THE TERMINATION ADAPTER ALSO, TO PROVIDE A FRESH SURFACE TO WHICH TO BOND.
    - CUT THE TAPERED END PORTION OF THE CONTAINMENT FITTING LEG WHICH IS TO BE TERMINATED ABRADE THE INNER SURFACE OF THE SHORTENED LEG OF THE CONTAINMENT FITTINGS TO PREPARE IT FOR LATER BONDING.
    - APPLY A MODERATE COATING OF ADHESIVE TO OUTER SURFACE OF THE PRIMARY FITTING AND THE INNER SURFACE OF THE TERMINATION ADAPTER. KEEP THE OUTER SURFACE OF THE ADAPTER DRY AND FREE OF ADHESIVE.
    - FIT THE ADAPTER ONTO THE PRIMARY FITTING.
    - DRY FIT TAPERED DUALOY 3000/LCX PIPE LEGS INTO THE BELL ENDS OF THE PRIMARY FITTINGS WHICH ARE NOT TO BE TERMINATED.
    - PLACE THE CLAMSHELL CONTAINMENT FITTING OVER THE PRIMARY FITTING-ADAPTER ASSEMBLY AND HOLD IN PLACE WITH BOLTS WHILE THE ADHESIVE CURES. THIS WILL ASSURE PROPER ALIGNMENT OF THE ADAPTER FOR FINAL ASSEMBLY. CARE SHOULD BE TAKEN TO ASSURE ADHESIVE DOES NOT TOUCH THE CLAMSHELL FITTING AT THIS POINT AS IT IS TO BE REMOVED WHEN THE ADHESIVE BETWEEN THE PRIMARY FITTING AND THE ADAPTER IS CURED.
    - ONCE THE ADHESIVE HAS CURED, REMOVE THE BOLTS AND THE CLAMSHELL FITTING. INSTALL THE ASSEMBLED PRIMARY FITTING INTO THE PRIMARY SYSTEM.
    - USE THE PREPARED CLAMSHELL FITTING TO CLOSE THE CONTAINMENT SYSTEM WHEN PRIMARY TESTING AND INSPECTION IS DONE.



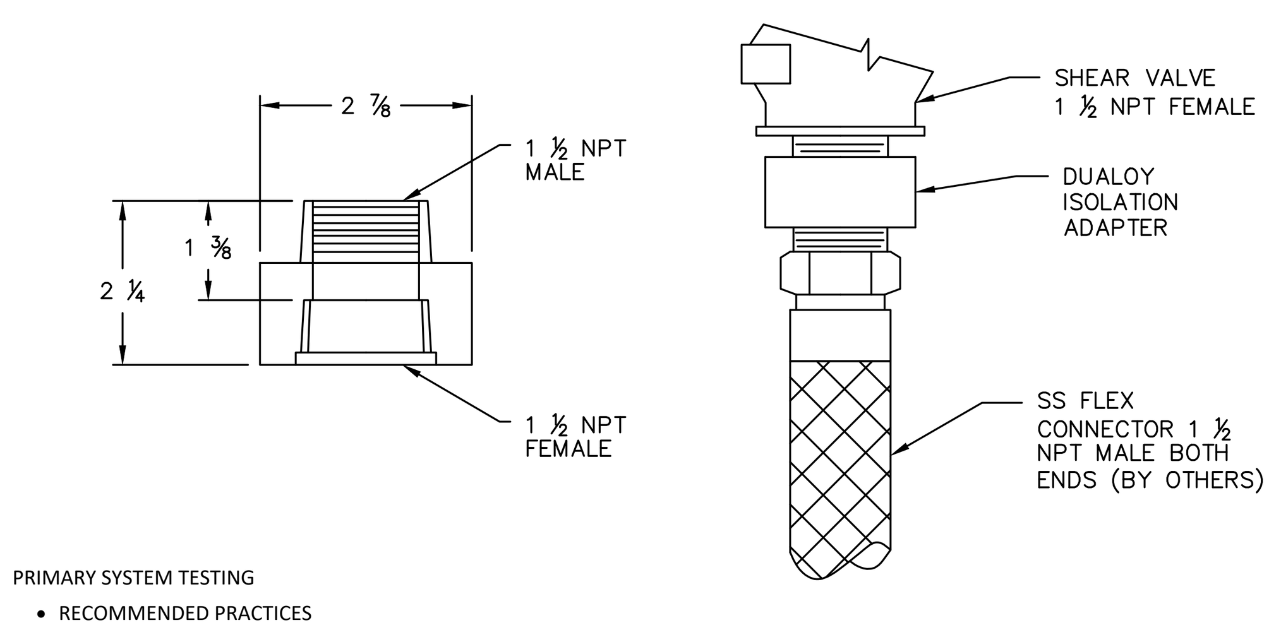
CLAMSHELL TERMINATION ADAPTER (FRONT AND SIDE)

NPT THREADED CONNECTIONS

- THREAD PREPARATION
  - INSPECT THREADS ON FIBERGLASS ADAPTERS AND THREADED BUSHINGS. DO NOT USE IF THREADS ARE DAMAGED.
  - INSPECT THREADS ON STEEL FITTINGS FOR BURRS.
  - REMOVE BURRS FROM STEEL FITTINGS BY MAKING UP TO MATING STEEL THREADS. UNMAKE THE STEEL FITTING AND REINSPECT.
  - ALWAYS DRY FIT FIBERGLASS AND STEEL THREADS WITHOUT SEALING COMPOUND. IT SHOULD BE POSSIBLE TO DRY FIT THE THREADS AS SHOWN IN THE FOLLOWING TABLE. IF THE PROPER NUMBER OF THREADS CANNOT BE MADE UP, SELECT A NEW STEEL FITTING.
- MAKING THE JOINT
  - THREADS MUST BE CLEAN AND DRY BEFORE APPLYING THREAD-SEALING COMPOUND.
  - USE A NONHARDENING, SOLVENT-FREE TEFLON BASED THREAD SEALANT SUCH AS JOMAR SEAL "THE HEAVYWEIGHT" OR GASOILA SOFT SET PIPE SEALANT.
  - APPLY SEALING COMPOUND TO MALE AND FEMALE THREADS.
  - HAND TIGHTEN THE JOINT, THEN USE A WRENCH TO GET FULL MAKE-UP. STANDARD PIPE WRENCHED CAN BE USED WITH CARE ON FIBERGLASS ADAPTERS. DO NOT OVERTIGHTEN.
  - THE PARTS SHOULD MAKE UP THE NUMBER OF THREADS SHOWN IN THE TABLE ABOVE. OTHERWISE, A PROPER SEAL MAY NOT BE AFFECTED WHEN TIGHTENED.

THREADS TO DRY FIT AND TO SEAL				
NORMAL PIPE SIZE		THREADS TO DRY FIT	ADDITIONAL THREADS TO SEAL	APPROX. TORQUE REQ. (FT. LBS)
(IN)	(MM)			
1 1/2	40	4-5	3	100*
2	50	4-5	3	110
3	80	5-6	3	130
4	100	6-7	2	180
6	150	7-8	2	250
*25 FT.LB. MAXIMUM TORQUE FOR ISOLATION BUSHINGS				

- ISOLATING FLEX CONNECTORS AT THE SHEAR VALVE
  - WHEN FLEX CONNECTORS ARE DIRECTLY BURIED AT THE DISPENSER, REGULATIONS FREQUENTLY REQUIRE THAT THEY BE CATHODICALLY PROTECTED AND PROVISIONS BE MADE TO AVOID STRAY CURRENT ELECTROLYSIS AND CORROSION. IN SUCH CASES THE FLEX CONNECTOR MUST BE ELECTRONICALLY ISOLATED FROM THE SHEAR VALVE AND FROM OTHER METALLIC COMPONENTS IN THE SYSTEM. EXPERIENCE HAS SHOWN THAT NYLON ISOLATION ADAPTERS DO NOT PERFORM WELL INASMUCH AS THE POOR MECHANICAL STRENGTH OF THE MATERIAL RESULTS IN CREEP OR THREAD DEFORMATION WITH SUBSEQUENT LEAKAGE.
  - NOV FIBERGLASS SYSTEMS MANUFACTURES A 1 ½ NPT FEMALE X 1 ½ NPT MALE FLEX CONNECTOR AND THE SHEAR VALVE. FOLLOW THE SAME GENERAL INSTALLATION PROCEDURES AS WITH OTHER NPT THREADED FITTINGS. AFTER APPLYING THE SEALING COMPOUND, HAND TIGHTEN THE ADAPTER. FINAL MAKE-UP REQUIRES 1 ½ TO 2 ADDITIONAL TURNS.



PRIMARY SYSTEM TESTING

- RECOMMENDED PRACTICES
  - PLAN TESTS CAREFULLY AND CARRY THEM OUT WITH ALL DUE PRECAUTIONS. PRESSURIZING EQUIPMENT SHOULD BE SUITED TO THE SIZE OF THE SYSTEM AND THE PRESSURE REQUIRED AND SHOULD BE OPERATED BY QUALIFIED AND EXPERIENCED PERSONNEL ONLY.
    - PRESSURE SOURCES SHOULD BE CAPABLE OF APPROACHING TEST PRESSURE GRADUALLY.
    - USE GAUGES WITH A FULL-SCALE READING OF NO MORE THAN TWICE THE TEST PRESSURE. DO NOT USE A 100 PSI GAUGE FOR A 10 PSI TEST. USE RELIABLE GAUGES CALIBRATED AGAINST A DEAD WEIGHT TESTER AND ZEROED FOR ATMOSPHERIC PRESSURE.
    - ISOLATE TANKS FROM THE PIPING WHEN PRESSURE TESTING
    - THE RECOMMENDED HYDROSTATIC PRESSURE IS 150% OF EXPECTED OPERATING PRESSURE AND SHOULD BE MAINTAINED AT LEAST 10 MINUTES.
    - DO NOT EXCEED 150% OF SYSTEM RATING. CHECK THE PRESSURE RATING OF ALL THE COMPONENTS OF THE SYSTEM-NOT JUST THE PIPE BECAUSE HOSES AND FLEXIBLE CONNECTORS ARE ALMOST ALWAYS RATED LOWER THAN THE PIPE.
    - DO NOT ADJUST FITTINGS WHILE SYSTEM IS UNDER PRESSURE. IF THREADED ADAPTERS OR BUSHINGS LEAK, RELEASE THE PRESSURE BEFORE ATTEMPTING TO TIGHTEN.
    - TEMPERATURE CHANGES CAN AFFECT THE PRESSURE IN THE TEST LINE. SUBSTANTIAL PRESSURE INCREASE MAY OCCUR IN CLOSED SYSTEMS EXPOSED TO THE SUN. CONVERSELY, OVERNIGHT DECREASES IN PRESSURE DUE TO COOLING FROM AFTERNOON TO EARLY MORNING ARE NORMAL AND DO NOT NECESSARILY INDICATE A LEAK.
    - AFTER TESTING, MAINTAIN 5 TO 10 PSI (35 TO 70 KPA) IN THE SYSTEM DURING SUBSEQUENT CONSTRUCTION SO THAT DAMAGE CAUSED BY STAKES, EXCAVATION EQUIPMENT, ETC,. CAN BE DETECTED AND CORRECTED BEFORE PAVEMENT IS INSTALLED OR PRODUCT IS PUMPED.

CONTAINMENT SYSTEM TESTING

- PNEUMATIC TESTING
  - PLAN TESTS CAREFULLY AND CARRY THEM OUT WITH ALL DUE PRECAUTIONS. PRESSURIZING EQUIPMENT SHOULD BE SUITED TO THE SIZE OF THE SYSTEM AND THE PRESSURE REQUIRED AND SHOULD BE OPERATED BY QUALIFIED AND EXPERIENCED PERSONNEL ONLY. PRESSURE SOURCES SHOULD BE CAPABLE OF APPROACHING TEST PRESSURE GRADUALLY.
  - USE GAUGES WITH A FULL-SCALE READING OF NO MORE THAN TWICE THE TEST PRESSURE. DO NOT USE A 100 PSI GAUGE FOR A 10 PSI TEST. USE RELIABLE GAUGES CALIBRATED AGAINST A DEAD WEIGHT TESTER ZEROED FOR ATMOSPHERIC PRESSURE.
  - THE VOLUME OF AIR IN THE INTERSTITIAL SPACE IS VERY SMALL, SO USE OF A PNEUMATIC TESTING AT APPROXIMATELY 30 PSI IS RECOMMENDED AND IS THE PREFERRED METHOD OF TESTING CONTAINMENT PIPING.
  - PNEUMATIC TESTING AT APPROXIMATELY 30 PSI IS RECOMMENDED AND IS THE PREFERRED METHOD OF TESTING CONTAINMENT PIPING.
- PROVISIONS FOR TESTING AND MONITORING
  - THE CLAMSHELL TERMINATION SLEEVES WITH TEST VALVES ARE EQUIPPED WITH A ¼ INCH SCHRADER VALVE WHICH CAN BE USED TO ATTACH PRESSURIZING EQUIPMENT. IT MAY BE NECESSARY TO REMOVE THE INTERNAL VALVE PRIOR TO ATTACHING PRESSURIZATION EQUIPMENT. USE PROPER TOOL TO DO SO.
  - SHOULD GAUGE READINGS FAIL TO REMAIN STABLE AND THE TESTING IS BEING DONE PNEUMATICALLY, USE A SOAP SOLUTION TO LOCATE LEAKAGE.

NOTE: THE PROCEDURES PROVIDED ON THIS SHEET ARE AS REQUIRED BY NOV FIBERGLASS SYSTEMS INTERNATIONAL. FAILURE TO FOLLOW THESE REQUIREMENTS MAY RESULT IN FAILURE OF THE PIPING SYSTEM. THE INSTALLING CONTRACTOR SHALL WARRANT THE SYSTEM TO BE FREE OF DEFECTS FOR (ONE) YEAR FOLLOWING INITIAL IN-SERVICE DATE. THIS WARRANTY SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY TO REPAIR OR REPLACE DEFECTIVE ITEMS, ALONG WITH RESTORATION OF PRIOR CONDITIONS, ALL TO THE SATISFACTION OF THE OWNER.

NOTE:
THIS DRAWING IS A COMPILATION OF NOV FIBERGLASS SYSTEMS INTERNATIONAL DUALOY 3000/LCX FIBERGLASS PIPING INSTALLATION PROCEDURES. IT IS INTENDED AS A REFERENCE FOR REGULATORS, QUALIFIED INSTALLERS AND BIDDERS. IT IS NOT A SUBSTITUTE FOR FACTORY QUALIFICATION OF INSTALLERS OR A THOROUGH REVIEW OF THE ENTIRETY OF THE MANUFACTURER DOCUMENTATION AND PROCEDURES. THIS DRAWING IS FOR REFERENCE ONLY AND IS NOT A DESIGN DRAWING.

ISSUED FOR		
DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:

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DUALOY 3000/LCX MANUFACTURER INSTALLATION DETAILS

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
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JOB NUMBER:	XXXXXX

FT8.1

TRAINING FOR NOV FIBERGLASS SYSTEMS DUALOY® PIPING SYSTEMS

- INSTALLATION TRAINING FOR NOV FIBERGLASS SYSTEMS DUALOY 3000/L PIPING SYSTEMS, INCLUDING SECONDARILY CONTAINED SYSTEMS AND DUALOY 3000/LCS, SHALL BE DONE BY AN NOV FIBERGLASS SYSTEMS EMPLOYEE, SALES REPRESENTATIVE OR DISTRIBUTOR.
- TRAINING SHALL, AT MINIMUM, CONSIST OF A THOROUGH REVIEW OF THE INSTALLATION INSTRUCTIONS (BULLETINS, 7501, 8702 AND/OR 9903) AS APPLICABLE FOR THE SYSTEMS ON WHICH THE INSTALLER IS TO BE CERTIFIED. IT IS RECOMMENDED THAT AN INSTALLATION VIDEO, (SUCH AS DUALOY 3000/LCX INSTALLATION) BE USED DURING THE TRAINING SESSION. ALSO RECOMMENDED IS AN EXAMINATION OF THE INSTALLATION TOOLS, A HANDS-ON EXECUTION OF THE INSTALLATION PROCEDURES FOR A SAMPLE CONNECTION.
- UPON COMPLETION OF THE TRAINING, EACH INDIVIDUAL BEING TRAINED SHALL COMPLETE THE WRITTEN EXAMINATION FOR THE SYSTEMS ON WHICH THEY ARE TO RECEIVE QUALIFICATION.
- THE EXAMINATIONS WILL BE SIGNED BY THE TRAINEE AND THE INSTRUCTOR AND FORWARDED TO NOV FIBERGLASS SYSTEMS FOR GRADING AND REGISTERING OF THE INDIVIDUAL AS A CERTIFIED INSTALLER.
- NOV FIBERGLASS SYSTEMS WILL ISSUE A TRAINING CERTIFICATE WITH THE INDIVIDUAL IDENTIFIED AND WILL INCLUDE THEIR NAME ON A REGISTRATION LIST. WALLET-SIZED CERTIFICATES AND HARD HAT STICKERS MAY ALSO BE PROVIDED. TRAINING CERTIFICATIONS ARE VALID FOR 3 YEARS.

LISTINGS AND APPROVALS

- DUALOY 3000/L IS LISTED IN THE UNITED STATES WITH UNDERWRITERS LABORATORIES INC. (UL) FOR NONMETALLIC UNDERGROUND PIPING FOR MOTOR VEHICLE FUELS (MV), CONCENTRATED FUELS (CF), HIGH BLEND FUELS (HB) AND AVIATION AND MARINE FUELS (AM). IT IS ALSO LISTED WITH UNDERWRITERS LABORATORIES CANADA (ULC) FOR THE SAME FUEL CATEGORIES. IT CAN BE USED FOR PRIMARY CARRIER (PC), NORMAL VENT (NV) AND VAPOR RECOVERY (VR) UNDER UL FILE NO. MH 9172. IT CAN BE USED FOR SECONDAY CONTAINMENT (SC) UNDER UL FILE NO. MH 15596. THE ULC FILE NUMBER IS CMH 715.

INSPECTION, HANDLING AND STORAGE

- INSPECTION
  - UPON RECEIPT AT THE JOBSITE, INSPECT THE PIPE FULLY. LOCATE, CUT OUT, REPAIR OR REPLACE DAMAGED PIPE. IMPACT DAMAGE IS USUALLY RECOGNIZABLE AS ROUNDED PALE AREAS JUST UNDER THE SURFACE OR AS DEEP GOUGES, SCRATCHES OR CRACKS. REMOVE END PROTECTORS TO INSPECT TAPERS FOR DAMAGE AND THEN REPLACE PROTECTORS.
- HANDLING
  - FIBERGLASS PIPE IS SUSCEPTIBLE TO DAMAGE IF HANDLED IMPROPERLY. ADHERE TO THE FOLLOWING RECOMMENDATIONS WHEN HANDLING:
    - DO NOT TRANSPORT PIPE WITHOUT PROPER PROTECTION AGAINST IMPACT.
    - TRUCK PIPE RACKS SHOULD BE PADDED WITH CARPETING, INNER TUBES, OR THE LIKE TO PREVENT DAMAGE
    - TIE THE PIPE DOWN DURING TRANSPORT TO PREVENT IT FROM BOUNCING ON THE RACKS AND SUFFERING IMPACT DAMAGE.
    - DO NOT USE CHAINS TO TIE DOWN THE PIPE ON A TRUCK: USE NYLON STRAPS OR HEMP ROPE.
    - DO NOT DROP THE PIPE FROM TRUCK BED WHEN STRINGING. LAY THE PIPE DOWN BY HAND.
    - PIPE LOADS THAT ARE PROPERLY SEPARATED AND SUPPORTED CAN BE UNLOADED BY PADDED FORKLIFTS.
- STORAGE
  - DUALOY 3000/L PIPE INCORPORATES A RESIN-RICH REINFORCED OUTER COATING WHICH PROVIDES OUTSTANDING UV RESISTANCE. PIPE STORED OUT-OF-DOORS FOR EXTENDED PERIODS MAY ASSUME A CHALKY APPEARANCE. HOWEVER, THIS CHANGE IN APPEARANCE IS SUPERFICIAL AND DOES NOT AFFECT THE PIPE'S PERFORMANCE. PROTECT STORED PIPE FROM IMPACT DAMAGE BY STACKING ON PADDED RACKS.

MATERIALS

- PIPE
  - MANUFACTURER TALLIES PIPE ON THE BASIS OF OVERALL LENGTH. ALLOW FOR CUTTING LOSSES AND WASTAGE WHEN ORDERING.
- FITTINGS
  - PRIMARY PIPE FITTINGS ARE SOLD IN THE FOLLOWING BOXED QUANTITIES.

PRIMARY FITTINGS PER SHIPPING BOX								
NOMINAL SIZE		90° ELBOWS	45° ELBOWS	TEES	SLEEVE COUPLINGS	ADAPTERS	NIPPLES	BUSHINGS
(IN)	(MM)							
2	50	10	10	10	15	15	15	15
3	80	5	5	5	10	5	10	10

- ADHESIVES
  - NOV FIBERGLASS SYSTEMS SUPPLIES PSK20 NAD PSK34 ADHESIVES. PSX20 AND PSX 34 ADHESIVES ARE POLYSILOXANE-MODIFIED EPOXY FORMULATIONS. BOTH ARE DESIGNED TO MAKE PERMANENT BONDS IN PRIMARY SYSTEMS TRANSFERRING MV, CF, HB PR A8M FUELS. THEY ARE ALSO APPROVED FOR USE WITH MTBE FLUIDS. EACH IS SUPPLIED AS A TWO PART SYSTEM CONSISTING OF A RESIN AND A HARDENER. PSK20 IS PREFERRED FOR TAPERED JOINTS AND WILL BE ASSUMED FOR FURTHER REFERENCES.
  - EACH ADHESIVE KIT CONTAINS:
    - RESIN
    - HARDENER
    - MIXING STICK
    - SPATULA AND BRUSH
    - DETAILED USAGE INSTRUCTIONS
    - EMERY PAPER
    - GLOVES
    - PAPER TOWELS
  - REFER TO THE LAYOUT DRAWINGS TO ESTIMATE THE NUMBER OF ADHESIVE KITS REQUIRED. INCLUDING BONDS FOR ALL FITTINGS, ELBOWS, TEES, REDUCERS, ADAPTERS AND COUPLINGS PLUS A WASTE FACTOR. SHORT POT LIFE AT HIGHER TEMPERATURES MAY NOT ALLOW AS MANY BONDS TO BE MADE AS INDICATED IN THE TABLE: ALLOW A GREATER WASTE TABLE AT HIGHER TEMPERATURES. FUR FURTHER INFORMATION REFER TO THE ADHESIVE PRODUCT DATA SHEET.

PRIMARY BONDS PER KIT [1]				
NOMINAL PIPE SIZE		ADHESIVE KIT SIZE		
(IN)	(MM)	3 OZ. [2]	5 OZ. [2]	8 OZ. [2,3]
2	50	7	12	-
3	80	4	8	14
4	100	3	6	9
6	150	1	2	4

1. THE AVERAGE NUMBER OF PRIMARY SYSTEM BONDS OBTAINABLE BY AN EXPERIENCED CREW AT 75° F.

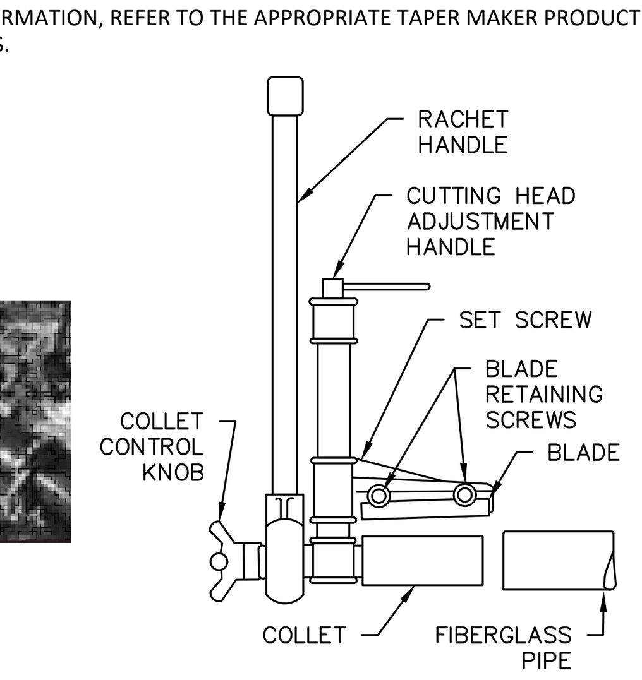
2. AVAILABLE IN SIX-PAK KITS.

3. EXCESSIVE WASTE MAY RESULT WHEN USING 8-OZ. KIT TO MAKE 2-INCH BONDS.

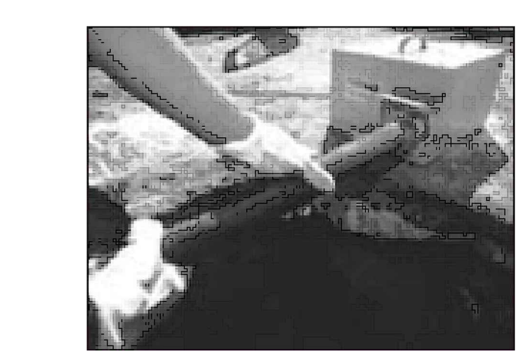
- TOOLS
  - THE FOLLOWING TOOLS ARE RECOMMENDED TO INSTALL DUALOY 3000/L PIPING:
    - 3/8 INCH ELECTRIC DRILL OR EQUIVALENT AIR-DRIVEN MOTOR.
    - 4 INCH HOLE SAW FOR INSTALLING SUMP PENETRATION FITTINGS.
    - HEAVY DUTY HEAT GUNS, HOT AIR BLOWERS, HEAT BLANKETS OR CHEM CURE PAKS FOR COOL OR COLD WEATHER INSTALLATION.
    - 1 ½ INCH DIAMETER BY I INCH WIDE COARSE GRIT FLAPPER SANDER.

FIELD CUTTING AND TAPERING PRIMARY PIPE

- CUTTING
  - USE A FINE-BLADE HACKSAW, RADIAL CUT-OFF SAW OR CIRCULAR SAW WITH ABRASIVE WHEEL TO CUT PIPE IN THE FIELD. THE CUT END MUST BE SQUARE TO WITHIN 3/16 INCH (5 MM).
  - HOLD PIPE SECURELY FOR ALL CUTTING AND TAPERING. WHEN USING A PIPE VISE, ALWAYS WRAP THE PIPE WITH A PROTECTIVE MATERIAL SUCH AS A 1/4 -INCH THICK RUBBER PAD. TAKE CARE NOT TO DAMAGE OR OVER-DEFLECT THE PIPE WHEN TIGHTENING THE VISE.
- TAPERING WITH NOV FIBERGLASS SYSTEMS TAPER MAKER
  - PIPE ENDS MAY BE TAPERED IN 2 THROUGH 6-INCH SIZES USING THE NOV FIBERGLASS SYSTEMS TAPER MAKER. THE TAPER MAKER EMPLOYS A SINGLE CARBIDE BLADE ON A MOVABLE HEAD AT AN ANGLE OF 13/4° TO THE AXIS OF THE PIPE. AFTER THE BLADE HAS BEEN ADJUSTED TO TOUCH THE PIPE SURFACE, THE END IS TAPERED BY ROTATING THE TOOL CLOCKWISE UNTIL THE PROPER TAPER LENGTH IS OBTAINED.
  - OBSERVE THE FOLLOWING PROCEDURES WHEN OPERATING THE TAPER MAKER.
  - CHECK BLADE ANGLE BY USING A FACTORY TAPER AS A GUIDE. WHEN PROPERLY ADJUSTED, THE BLADE SHOULD BE IN CONTACT WITH THE TAPER OVER THE ENTIRE TAPER LENGTH. IF ADJUSTMENT IS REQUIRED, LOOSEN THE BLADE RETAINING SCREWS AND ADJUST THE BLADE ANGLE WITH THE SET SCREW.
  - NOTE THAT THE CUTTING BLADE HAS FOUR CUTTING EDGES.
  - MARK THE REQUIRED TAPER LENGTH ON THE PIPE. REFER TO THE TAPER LENGTH TABLE BELOW.
  - INSERT THE THREADED COLLET SHAFT THROUGH THE BASE CASTING AND THE MANDREL.
  - SELECT THE APPROPRIATE SIZE COLLET AND SLIDE IT ONTO THE MANDREL, MAKING SURE THE KEY INSIDE THE COLLET ENGAGES THE SLOT OF THE MANDREL.
  - HOLD THE COLLET AND TURN THE COLLET CONTROL KNOB CLOCKWISE UNTIL THE COLLET BEGINS TO EXPAND. NOTE THAT IT MAY BE NECESSARY TO ADJUST THE CUTTING HEAD TO ACCOMMODATE DIFFERENT SIZE COLLETS.
  - INSERT THE COLLET INTO THE PIPE UNTIL THE BACK END IS FLUSH WITH THE END OF THE PIPE.
  - EXPAND THE COLLET TO GRIP THE INSIDE OF THE PIPE BY TURNING THE COLLET CONTROL KNOB CLOCKWISE.
  - LOWER THE CUTTING BLADE UNTIL IT CONTACTS THE PIPE BY TURNING THE CUTTING HEAD ADJUSTMENT HANDLE CLOCKWISE.
  - USING THE RATCHET HANDLE, TURN THE TOOL CLOCKWISE, GRADUALLY LOWERING THE CUTTING BLADE BY TURNING THE CUTTING HEAD ADJUSTMENT HANDLE CLOCKWISE. CONTINUE UNTIL A SMOOTH TAPER OF THE PROPER LENGTH IS OBTAINED. THE THIN EDGE OF THE COMPLETED TAPER SHOULD BE NO LESS THAN 1/32 INCH (0.75 MM) THICK.
  - FOR COMPLETE OPERATING INFORMATION, REFER TO THE APPROPRIATE TAPER MAKER PRODUCT DATA/OPERATING INSTRUCTIONS.



- TAPERING WITH POWER TAPERING TOOLS
  - PIPE IN 2, 3 AND 4-INCH SIZES IS MOST OFTEN TAPERED USING ONE OF SEVERAL POWERED TAPERING TOOLS. MANUFACTURERS' NAMES AND ADDRESSES MAY BE OBTAINED FROM NOV FIBERGLASS SYSTEMS DISTRIBUTORS. PIPE TAPERED WITH THESE TOOLS SHOULD BE PERIODICALLY CHECKED AGAINST A FACTORY TAPER FOR TAPER LENGTH AND TAPER ANGLE. THE CORRECT MANDREL MUST BE USED FOR DUALOY PIPING.



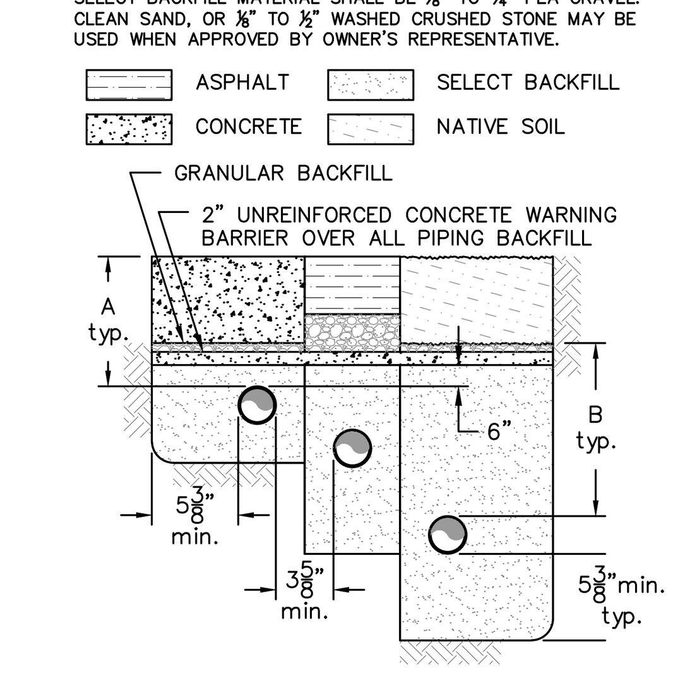
TAPER LENGTHS			
NOMINAL SIZE		TAPER LENGTH	
(IN)	(MM)	(IN)	(MM)
2	50	1 ½	38
3	80	1 ¾	44
4	100	1 ⅞	48
6	150	2 ¾	70

PIPING SYSTEM LAYOUT

- TRENCHING, BEDDING AND BACKFILLING
  - ALTHOUGH FIBERGLASS PIPE HAS EXCELLENT STRENGTH, IT MUST BE PROTECTED AGAINST IMPACT WHICH MAY OCCUR FROM IMPROPER HANDLING OR DURING BACKFILLING.
  - PROVIDE A TRENCH WIDTH EQUAL TO THE PIPE DIAMETER PLUS SIX INCHES ON EACH SIDE. SEPARATE MULTIPLE LINES BY AT LEAST 4 INCHES.
  - PROVIDE A MINIMUM OF 18 INCHES OF SELECT BACKFILL BETWEEN THE TOP OF THE PIPE AND UNPAVED GROUND SURFACES.
  - PROVIDE A MINIMUM OF 4 INCHES OF SELECT BACKFILL BETWEEN THE TOP OF THE PIPE AND REINFORCED CONCRETE PAVEMENT (4 INCHES MINIMUM THICKNESS).
  - PROVIDE A MINIMUM OF 8 INCHES OF SELECT BACKFILL BETWEEN THE TOP OF THE PIPE AND ASPHALT PAVEMENT (2 INCHES MINIMUM THICKNESS).
  - SLOPE THE TRENCH BOTTOM EVENLY FROM THE DISPENSERS BACK TO SUMPS OR TANKS AT A MINIMUM 1/8 IN/FT IF SLOPE. THE USE OF BATTER BOARDS IS A VERY GOOD WAY TO ACHIEVE A PROPER SLOPE.
  - THE TRENCH BOTTOM MUST BE FREE OF HARD OR SHARP OBJECTS.
  - GRADE THE TRENCH BOTTOM WITH AT LEAST 6 INCHES OF SELECT BACKFILL TO PROVIDE FIRM, EVEN SUPPORT FOR THE PIPE. COMPACT THE SUBGRADE WELL TO PREVENT DIFFERENTIAL SETTLING.
  - PROTECT THE PIPE FROM IMPACT DURING BACKFILLING AND ABRASION DURING OPERATION BY SURROUNDING IT WITH A MINIMUM OF FOUR INCHES OF SELECT BACKFILL SUCH AS WASHED SAND, PEA GRAVEL (3/4-INCH MAXIMUM) OR CRUSHED STONE (1/2-INCH MAXIMUM).

SEE MANUFACTURER'S INSTRUCTIONS FOR ADDITIONAL DETAILS AND COMPACTION SPECIFICATIONS.

SELECT BACKFILL MATERIAL SHALL BE ⅛" TO ¾" PEA GRAVEL. CLEAN SAND, OR ⅛" TO ½" WASHED CRUSHED STONE MAY BE USED WHEN APPROVED BY OWNER'S REPRESENTATIVE.



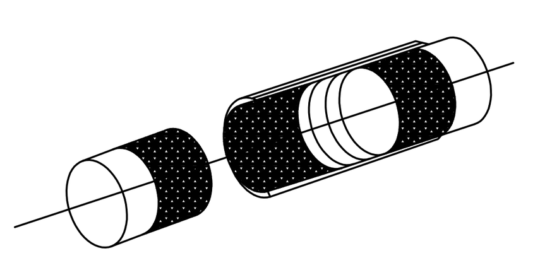
PIPE SIZE (in.)	SURFACE CONDITION	- A - Min. BURIAL DEPTH (in)	- B - Min. BACK-FILL (in)
2	UNPAVED	18	12
	PAVED, min. 4" ASPHALT	12	8
	PAVED, min. 4" CONCRETE	9	5
	PAVED, min. 6" CONCRETE	9	3
3	UNPAVED	20	14
	PAVED, min. 4" ASPHALT	13	9
	PAVED, min. 4" CONCRETE	11	7
	PAVED, min. 6" CONCRETE	10	4
4	UNPAVED	20	14
	PAVED, min. 4" ASPHALT	14	10
	PAVED, min. 4" CONCRETE	11	7
	PAVED, min. 6" CONCRETE	10	4

A PIPING TRENCH
SCALE: NONE

- SUPPORTING VALVES ACCESSORIES AND VENT LINES
  - DO NOT USE FIBERGLASS PIPE TO SUPPORT THE WEIGHT OF HEAVY ITEMS IN A LINE SUCH AS VALVES STRAINERS AND STEEL VENT RISER PIPES. PROVIDE SEPARATE SUPPORTS FOR VALVES AND ACCESSORIES. NEVER USE METAL SWING JOINTS.
- PRECISE ALIGNMENT AND MAKE-UP
  - THE MATCHED TAPER BELL AND SPIGOT JOINT DOES NOT ALWAYS RESULT IN A PRECISE AND PREDICTABLE INSERTION DEPTH. THIS VARIATION RESULTS FROM:
    - MANUFACTURING TOLERANCES IN THE BELL
    - DIFFERENCES IN LENGTH OF TAPERS PREPARED ON THE JOBSITE
    - DIFFERENCE OF INSERTION DEPTH WHEN DRY FIT AND AFTER ADHESIVE HAS BEEN APPLIED.

BONDING PRIMARY SYSTEMS

- JOINT PREPARATION
  - ALL TAPERED SYSTEMS MUST BE CLEAN, DRY AND WARM FOR A PROPER BOND.
  - CLEAN: PIPE IS SHIPPED FROM THE FACTORY WITH END PROTECTORS. AVOID CONTAMINATION FROM FINGERPRINTS, PETROLEUM FUMES, MIST AND CONDENSATION AS THESE ARE ADVERSE TO GOOD BONDING. IF A TAPER BECOMES DIRTY, SAND IT WITH EMERY CLOTH, NEVER TOUCH THE BONDING SURFACE WITH BARE HANDS AFTER CLEANING OR SANDING AS THIS WILL LEAVE AN OILY DEPOSIT.
  - DRY: ADHESIVE WILL NOT BOND TO A WET SURFACE. IF THE TAPER IS WET OR MOIST. DRY IT WITH A BLOW DRYER OR HEAT GUN. DO NOT OVERHEAT OR BURN THE PIPE.
  - WARM: BELOW 50°F (10° C), WARM THE TAPER WITH A BLOW DRYER OR HEAT GUN. FOR BEST RESULTS, ADHESIVE SHOULD BE AT LEAST 50° F WHEN USED. DO NOT STORE KITS IN AREAS ABOVE 100° F (38°C), BELOW 32° F (O°C), OR IN THE DIRECT SUNLIGHT DURING WARM WEATHER IN COLD WEATHER WARM THE RESIN TO AT LEAST 50°F BUT NOT ABOVE 110° F TO PERMIT GOOD MIXING AND EASIER APPLICATION
- MIXING NOV FIBERGLASS SYSTEMS PSK20 ADHESIVE
  - THE HARDENER CONTAINED IN THE ADHESIVE KIT MAY BURN THE SKIN. AVOID INHALING THE VAPORS. READ AND OBSERVE THE LABEL PRECAUTIONS.
  - COMBINE ALL OF BOTH COMPONENTS IN THE MIXING CONTAINER IN THE SUPPLIED PROPORTIONS.
  - NEVER TRY TO SPLIT A KIT.
  - MIX THOROUGHLY WITH THE MIXING STICK UNTIL ALL STREAKS ARE GONE AND THE ADHESIVE HAS A SMOOTH, UNIFORM COLOR. MIXED ADHESIVE COLOR IS RED.
  - DO NOT ALLOW MOISTURE TO GET INTO THE CAN.
- BEGIN BY COATING THE CUT ENDS OF THE PIPE WITH ADHESIVE. THEN APPLY A THIN, EVEN COAT OF MIXED ADHESIVE TO THE INSIDE OF THE BELL AND TO THE TAPERED SPIGOT ENDS (INDICATED BY SHADING) OR TO THE ENTIRE TAPERED SECTION IN FITTINGS OR ADAPTERS, COMPLETELY WETTING ALL MACHINED SURFACES WITH THE ADHESIVE. WIPE OFF EXCESS ADHESIVE WITH THE SPATULA OR BRUSH PROVIDED IN THE KIT.
- APPLYING NOV FIBERGLASS SYSTEMS PSX20 ADHESIVE
  - EXCESSIVE AMOUNTS OF ADHESIVE MAY CAUSE FLOW RESTRICTION INSIDE THE PIPE WHEN THE ADHESIVE HAS CURED, OR MAY RESULT IN HYDRAULIC BACKOUT AS THE ADHESIVE CURES. HYDRAULIC BACKOUT OCCURS WHEN EXCESS ADHESIVE PREVENTS THE JOINT FROM MAINTAINING AN INTERFERENCE FIT AND THE SPIGOT BACKS OUT OF THE BELL DURING CURE.



- MAKING THE JOINT
  - AFTER ALIGNING THE MATING SURFACES SO THAT THEY MAY BE BROUGHT TOGETHER IN A STRAIGHT LINE:
    - INSERT SPIGOT ALL THE WAY INTO THE BELL.
    - TWIST ONE QUARTER OF A TURN WHEN PUSHING TOGETHER TO DISTRIBUTE ADHESIVE EVENLY AND TO ACHIEVE AN INTERFERENCE FIT. A SLIGHT REVERSE TURN WILL THEN LOCK THE JOINT.
    - DO NOT COCK THE JOINT.
    - OVER-INSERTION OF THE JOINT MAY COLLAPSE THE SPIGOT AND CAUSE A LEAKY JOINT.
    - UNDER-INSERTION OF THE JOINT MAY ALSO CAUSE A LEAKY JOINT.
    - DO NOT DRIVE THE JOINT TOGETHER WITH A HAMMER. IF LOCKING CANNOT BE DONE AS DESCRIBED ABOVE, PLACE A SOFT OBJECT, SUCH AS A 2X4 ON THE FITTING AND LIGHTLY RAP IT.
    - DO NOT DISTURB THE JOINT WHILE THE ADHESIVE IS UNCURED.
    - DO NOT MOVE ADJACENT PIPE AND FITTINGS UNTIL ADHESIVE HAS SET.
    - DO NOT DIRECTLY STRIKE THE JOINT WITH ANY TYPE OF HAMMER OR MALLET TO MAKE IT UP.
- POT LIFE/CURE TIMES FOR NOV FIBERGLASS SYSTEMS PSX20 ADHESIVE
  - POT LIFE IS MEASURED FROM THE TIME THE HARDENER AND RESIN ARE FIRST MIXED UNTIL THE ADHESIVE STARTS TO THICKEN AND HARDEN AND NO LONGER CAN BE USED. DO NOT USE ADHESIVE ONCE THE CAN HAS BECOME HOT.
  - THE TABLE BELOW INDICATES THE ADHESIVE POT LIFE UNDER VARIOUS TEMPERATURE CONDITIONS. IN HOT WEATHER, POT LIFE MAY BE EXTENDED BY WRAPPING A DAMP RAG AROUND THE CAN OF MIXED ADHESIVE OR BY SPREADING THE ADHESIVE ON ALUMINUM FOIL TO DISSIPATE THE HEAT.

POT LIFE/CURE TIMES FOR NOV FIBERGLASS SYSTEMS PSX20 ADHESIVE			
MINIMUM AMBIENT TEMPERATURE		ADHESIVE POT LIFE	MINIMUM JOINT CURE TIME*
(°F)	(°C)	(MINUTES)	(HOURS)
40	5	70	12
65	18	40	5
75	24	30	4
95	35	20	3
*CUMULATIVE TOTALS. CURE TIME AT LISTED TEMPERATURES NEED NOT BE UNINTERRUPTED, BUT TOTAL TIME MUST EQUAL THE TABULATED TIME BEFORE.			

- FORCE CURING ADHESIVE
  - AT TEMPERATURES BELOW 50°F (10°C) OR IF THE TEMPERATURE WILL NOT BE ABOVE 50°F (10°C) DURING THE ENTIRE PERIOD OF CURE, AND EXTERNAL HEAT SOURCE MUST BE USED TO FORCE CURE THE ADHESIVE. THE ADHESIVE AND THE BONDING SURFACES SHOULD BE WARMED TO 50°F (10°C) BEFORE MIXING AND APPLYING THE ADHESIVE.
  - BELOW 50°F (10°C) FORCE CURE THE ADHESIVE WITH AN EXTERNAL HEAT SOURCE SUCH AS:
    - CHEM CURE PAK (US PAT. NO. 3,475,239)
    - NOV FIBERGLASS SYSTEMS HEATING BLANKET SUFFICIENTLY LARGE TO COVER THE JOINT
    - FORCED AIR HEATER IF THE TRENCH IS COVERED TO CONTAIN THE HEAT
    - HOT AIR GUN
- USING CHEM CURE PAK WITH NOV FIBERGLASS SYSTEMS PSX20 ADHESIVE
  - THE CHEM CURE PAK IS A SELF-CONTAINED, NONELECTRICAL HEAT SOURCE FOR CURING ADHESIVE-BONDED JOINTS. INSTRUCTIONS ARE PRINTED ON THE PAK WRAPPER. THE PAK IS DESIGNED SO THAT SUFFICIENT HEAT IS GENERATED TO CURE NOV FIBERGLASS SYSTEMS PSX20 ADHESIVE IN ONE HOUR AT AMBIENT TEMPERATURES AS LOW AS 0°F (-18°C). THE CHEM CURE PAK IS MANUFACTURED IN DIFFERENT SIZES CORRESPONDING TO THE DIAMETER OF THE PIPING BEING INSTALLED. USE THE CORRECT SIZE PAK FOR YOUR INSTALLATION.
  - IN COLD WEATHER, WRAP INSULATION AROUND THE PAK AS SOON AS IT HAS STOPPED STEAMING. FOR LOWER TEMPERATURES OR WHEN INSTALLING EXTRA-HEAVY FITTINGS, CONSULT NOV FIBERGLASS SYSTEMS FOR SPECIFIC RECOMMENDATIONS.
    - ASSEMBLE PIPE AND FITTINGS USING STANDARD FIELD INSTALLATION PROCEDURES.
    - MIX THE CHEMICALS THOROUGHLY AS DIRECTED ON THE PAK WRAPPER.
    - WRAP THE PAK AROUND THE CONNECTIONS, CENTERING IT OVER THE TAPERED SECTION OF THE JOINT, NOT OVER THE END OF THE FITTING. COVER THE ENTIRE BONDING AREA TO WHICH ADHESIVE HAS BEEN APPLIED.
    - USE ONE PAK PER BOND; SLEEVE COUPLINGS IN 3-INCH SIZES AND LARGER REQUIRE TWO PAKS. HOWEVER, A SINGLE PAK IS SUFFICIENT FOR CURING BOTH BONDS IN A 2-INCH SLEEVE COUPLING.
    - SECURE THE PAK WITH TIE WIRES.
    - CUT ONE SLIT AT LEAST 1 INCH WIDE (25 MM) ON EACH UPPER SIDE OF THE PAK.
    - INJECT WATER INTO THE SLITS WITH THE ACTIVATOR SYRINGE - APPROXIMATELY ONE HALF INTO EACH SIDE.
    - ALUMINUM FOIL MAY BE WRAPPED DIRECTLY OVER THE JOINT TO PREVENT THE PAK FROM STICKING IF IT IS NECESSARY THAT THE EXPENDED PAK BE REMOVED FROM THE TRENCH.
    - USING CHEM CURE PAK WITH NOV FIBERGLASS SYSTEMS PSX20 ADHESIVE (CONT.)
    - FOLLOW THE PRECAUTIONS PRINTED ON THE CHEM CURE PAK WRAPPER.
    - DO NOT GET INGREDIENTS ON SKIN, IN EYES, OR ON CLOTHING.
    - DO NOT BREATHE DUST OR VAPOR.
    - USE ONLY OUTDOORS WHERE ADEQUATE VENTILATION IS PROVIDED.
    - DO NOT TAKE INTERNALLY.
    - KEEP OUT OF REACH OF CHILDREN.
- USING HEATING BLANKETS
  - NOV FIBERGLASS SYSTEMS HEATING BLANKETS PROVIDE AN EFFICIENT MEANS FOR CURING ADHESIVE-BONDED JOINTS. TWO SIZES ARE NEEDED FOR INSTALLING DUALOY 3000/L SYSTEMS. REFER TO TABLE TO THE RIGHT WHEN ORDERING.
  - THE HEATING BLANKET REACHES A MAXIMUM TEMPERATURE OF 250°F (120°C), WHICH WILL CURE NOV FIBERGLASS SYSTEMS PSX20 ADHESIVE IN APPROXIMATELY 30 TO 40 MINUTES. DETAILED INSTRUCTIONS ARE INCLUDED WITH THE BLANKET. OBSERVE THE FOLLOWING POINTS:

CHEM CURE PAK QUANTITIES AND HEATING BLANKET SIZES			
NOMINAL PIPE SIZE		CHEM CURE PAK	HEATING BLANKET
(IN)	(MM)	UNITS PER CARTON	SIZE
2	50	30	I
3	80	30	I
4	100	20	I
6	150	20	II

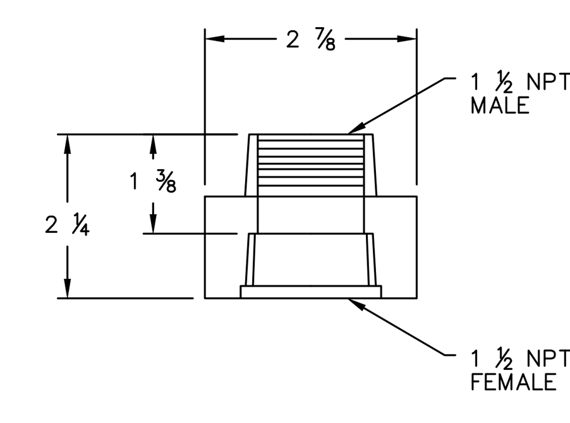
    - USE ONE HEATING BLANKET PER BOND: SLEEVE COUPLINGS IN 3-INCH SIZES AND LARGER WILL REQUIRE TWO BLANKETS. HOWEVER, A SINGLE BLANKET IS SUFFICIENT FOR CURING BOTH BONDS IN A 2-INCH SLEEVE COUPLING.
    - TIE THE BLANKET IN PLACE WITH NONCONDUCTING TIES.
    - BEFORE CONNECTING TO A POWER SOURCE, INSPECT THE BLANKET AND CORD FOR LOOSE WIRE CONNECTIONS AND BARE WIRES.
    - DO NOT PLUG THE CORD INTO A POWER SOURCE WHEN STANDING IN WATER OR ON A WET SURFACE.
    - CHECK THAT THE HEATING BLANKET HAS THE CORRECT AC VOLTAGE RATING FOR YOUR LOCALITY. DO NOT USE DIRECT CURRENT.
    - MARK THE STARTING AND DISCONNECT TIME ON THE PIPE WITH A GREASE PENCIL SO THAT YOU WILL HAVE A RECORD OF CURE FOR EACH JOINT.
    - VERIFY THAT THE BLANKET ACTUALLY HEATS UP AFTER BEING PLUGGED IN.
- CONNECTING TO NON-NOV FIBERGLASS SYSTEMS FIBERGLASS PIPING.
  - CONNECT DUAL0Y 3000/L FIBERGLASS PIPING AND NON-NOV FIBERGLASS SYSTEMS UL-LISTED FIBERGLASS PIPING BY MEANS OF THREADED ADAPTERS. DO NOT ADHESIVE BOND NOV FIBERGLASS SYSTEMS PIPING TO THAT OF ANOTHER MANUFACTURER. BOND THE APPROPRIATE ADAPTER FROM EACH MANUFACTURER TO THE MANUFACTURER'S PIPE USING THAT MANUFACTURER'S ADHESIVE. COMPLETE THE THREADED CONNECTION USING THREAD SEALANT, NOT PIPE ADHESIVE. BY FOLLOWING THIS PROCEDURE YOU CAN USE DUALOY 3000/L PIPING TO EXTEND AN EXISTING LINE THAT EMPLOYS THE PIP FROM ANOTHER MANUFACTURER WITHOUT VOIDING THE UL LISTING OF EITHER SYSTEM.

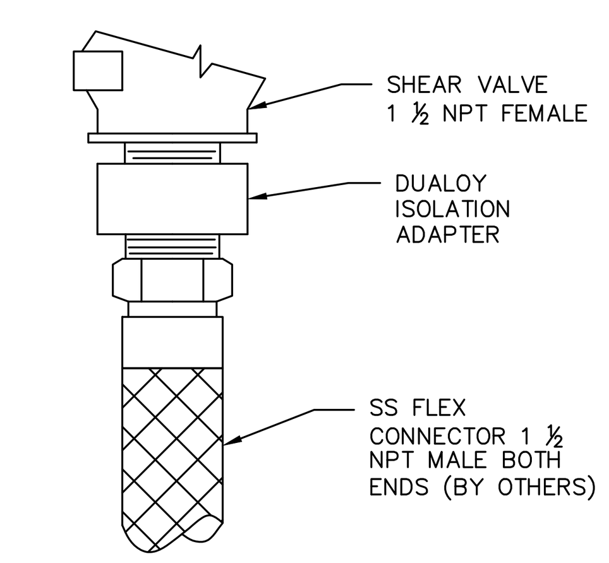
NPT THREADED CONNECTIONS

- THREAD PREPARATION
  - INSPECT THREADS ON FIBERGLASS ADAPTERS AND THREADED BUSHINGS.
  - DO NOT USE IF THREADS ARE DAMAGED.
  - INSPECT THREADS ON STEEL FITTINGS FOR BURRS.
  - REMOVE BURRS FROM STEEL FITTINGS BY MAKING UP TO MATING STEEL THREADS. UNMAKE THE STEEL FITTING AND REINSPECT.
  - ALWAYS DRY FIT FIBERGLASS AND STEEL THREADS WITHOUT SEALING COMPOUND. IT SHOULD BE POSSIBLE TO DRY FIT THE THREADS AS SHOWN IN THE FOLLOWING TABLE. IF THE PROPER NUMBER OF THREADS CANNOT BE MADE UP, SELECT A NEW STEEL FITTING.
  - IN GENERAL, THREADED CONNECTIONS SHOULD BE MADE UP BEFORE ADHESIVE-BONDED JOINTS TO MINIMIZE THE POSSIBILITY OF DAMAGE TO BONDED JOINTS CAUSED BY TORQUING THE THREADED CONNECTIONS. HOWEVER, WHEN INSTALLING MOLDED THREADED BUSHINGS (TAPERED MAJOR NOMINAL PIPE SIZE X THREADED MINOR NOMINAL PIPE SIZE) MAKE THE TAPERED BONDED JOINT FIRST AND ALLOW IT TO CURE BEFORE MAKING UP THE THREADED JOINT. THIS ORDER OF JOINT MAKE-UP WILL PREVENT DAMAGE TO THE BUSHING.
- MAKING THE JOINT
  - THREADS MUST BE CLEAN AND DRY BEFORE APPLYING THREAD-SEALING COMPOUND.
  - USE A NONHARDENING, SOLVENT-FREE TEFLON BASED THREAD SEALANT SUCH AS JOMAR SEAL THE HEAVYWEIGHT OR GASOILA SOFT SET PIPE SEALANT.
  - APPLY SEALING COMPOUND TO MALE AND FEMALE THREADS.
  - HAND TIGHTEN THE JOINT, THEN USE A WRENCH TO GET FULL MAKEUP. STANDARD PIPE WRENCHES CAN BE USED WITH CARE ON FIBERGLASS ADAPTERS: DO NOT OVERTIGHTEN
  - THE PARTS SHOULD MAKE UP THE NUMBER OF THREADS SHOWN IN THE TABLE BELOW.

THREADS TO DRY FIT AND TO SEAL				
NORMAL PIPE SIZE		THREADS TO DRY FIT	ADDITIONAL THREADS TO SEAL	APPROX. TORQUE REQ. (FT. LBS)
(IN)	(MM)			
1 1/2	40	4-5	3	100*
2	50	4-5	3	110
3	80	5-6	3	130
4	100	6-7	2	160
6	150	7-8	2	200
*25 FT.LB. MAXIMUM TORQUE FOR ISOLATION BUSHINGS				

- ISOLATING FLEX CONNECTORS AT THE SHEAR VALVE.
  - WHEN FLEX CONNECTORS ARE DIRECTLY BURIED AT THE DISPENSER, REGULATIONS FREQUENTLY REQUIRE THAT THEY BE CATHODICALLY PROTECTED AND PROVISIONS BE MADE TO AVOID STRY CURRENT ELECTROLYSIS AND CORROSION. IN SUCH CASES THE FLEX CONNECTOR MUST BE ELECTRICALLY ISOLATED FROM THE SHEAR VALVE AND FROM OTHER METALLIC COMPONENTS IN THE SYSTEM. EXPERIENCE HAS SHOWN THAT NYLON ISOLATION ADAPTERS DO NOT PERFORM WELL IN AS MUCH AS THE POOR MECHANICAL STRENGTH OF THE MATERIAL RESULTS IN CREEP OR THREAD DEFORMATION WITH SUBSEQUENT LEAKAGE.
  - NOV FIBERGLASS SYSTEMS MANUFACTURES AN 1 ½ NPT FEMALE X 1 ½ NPT MALE FIBERGLASS REINFORCED ISOLATION ADAPTER WHICH MAY BE MOUNTED BETWEEN THE FLEX CONNECTOR AND THE SEAR VALVE. FOLLOW THE SAME GENERAL INSTALLATION PROCEDURES AS WITH OTHER NPT THREADED FITTINGS. AFTER APPLYING THE SEALING COMPOUND, HAND TIGHTEN THE ADAPTER. FINAL MAKE-UP REQUIRES 1 ½ TO 2 ADDITIONALTURNS.





REPAIR PROCEDURES

- NOV FIBERGLASS SYSTEMS PRODUCES REPAIR COUPLINGS IN 2 THROUGH 6-INCH SIZES. THESE COUPLINGS ARE LISTED BY UNDERWRITERS LABORATORIES, INC. FOR USE IN BURIED FUEL SYSTEMS AND CAN BE INSTALLED WITHOUT IN-TRENCH TAPERING.
- MINOR DAMAGE (DELAMINATED AREAS UNDER 1 INCH IN DIAMETER)
  - MINOR DAMAGE IS TYPICALLY CAUSED BY IMPACT AND APPEARS IN THE FORM OF WHITISH DISCOLORATION OR SMALL CIRCUMFERENTIAL CRACKS. MINOR REPAIRS CAN BE MADE USING HALF-COUPLINGS OR FULL COUPLINGS.
  - WHEN REPAIRING LINES WHICH HAVE ALREADY BEEN IN SERVICE AND WHICH MAY CONTAIN FLAMMABLE FUMES, DO NOT USE ELECTRIC DRILLS OR OTHER TOOLS WHICH MAY CONSTITUTE A SPARK HAZARD NEAR THE PIPE.
    - REMOVE THE AFFECTED AREA WITH A 1 ½ INCH HOLE SAW.
    - CLEAN ALL BURRS FROM EDGE OF HOLE
    - USING A FLAPPER SANDER OR EMERY CLOTH, ABRADE THE PIPE WHERE IT WILL CONTACT THE REPAIR COUPLING HALVES AND THE ENTIRE INNER SURFACE OF THE COUPLING.
    - APPLY ADHESIVE TO THE CUT EDGE OF THE HOLE AND TO THE SANDED AREAS.
    - POSITION THE COUPLING HALVES SO THAT THE HOLE IS CENTERED AND 90° AWAY FROM THE FLANGES.
    - AFTER BOLTING THE HALVES TOGETHER, AND ADHESIVE BEAD SHOULD BE VISIBLE AROUND THE EDGES OF THE COUPLING HALVES.
    - ALLOW THE ADHESIVE TO CURE BEFORE PRESSURIZING THE SYSTEM.
- MODERATE DAMAGE (UNDER 3 INCHES IN LENGTH)
  - IF CRACKS AND DELAMINATED AREAS ARE TOO EXTENSIVE TO BE ENCOMPASSED BY A HOLE SAW, REMOVAL OF A SHORT SECTION OF PIPE IS NECESSARY. FOR DAMAGE THREE INCHES OR LESS IN LENGTH, A COUPLING CAN BE USED TO MAKE THE REPAIR.
    - IF USING A HALF-COUPLING, ALIGN IT PRECISELY TO MAINTAIN SPACING REQUIREMENTS. THE USE OF A FULL COUPLING IS RECOMMENDED.
    - CENTER THE COUPLING AROUND THE GAP IN THE PIPE.
    - ABRADE ALL BONDING SURFACES BEFORE APPLYING ADHESIVE.
    - COAT THE CUT ENDS OF THE PIPE AND BONDING SURFACES WITH ADHESIVE, THEN BOLT THE COUPLING HALVES TOGETHER.
    - THE ENDS OF THE PIPE MUST BE WITHIN 3 INCHES OF EACH OTHER FOR THIS REPAIR PROCEDURE TO MAINTAIN THE UL LISTING. SIMILARLY, PIPE INSERTION OF AT LEAST 1 INCH IN THE REPAIR COUPLINGS MUST BE MAINTAINED.
- MAJOR DAMAGE (OVER 3 INCHES IN LENGTH)
  - DAMAGE IN WHICH MORE THAN THREE INCHES OF PIPE MUST BE REMOVED IS CONSIDERED MAJOR, MAJOR DAMAGE IS TYPICALLY CAUSED BY EXCAVATION EQUIPMENT OR LARGE OBJECTS STRIKING THE PIPE. REPAIR MAJOR DAMAGE WITH A REPLACEMENT NIPPLE AND ONE OR MORE REPAIR COUPLINGS.
    - FOR DAMAGE LESS THAN 12 INCHES IN LENGTH, A SINGLE FULL-SIZE, 14-INCH LONG COUPLING WILL PROVIDE THE REQUIRED 1 INCH PIPE INSERTION AT EACH END.
    - TO MAKE REPAIRS GREATER THAN 12 INCHES IN LENGTH, USE TWO FULL-SIZE OR HALF-COUPLINGS TO JOIN THE REPLACEMENT NIPPLE WITH THE EXISTING LINE.
    - FOLLOW THE GUIDELINES GIVEN FOR MINOR DAMAGE. ABRADE ALL BONDING SURFACES, COAT ALL CUT PIPE ENDS WITH ADHESIVE AND OBSERVE SPACING AND INSERTION DEPTH REQUIREMENTS.
- CUTTING REPAIR COUPLINGS
  - ON 2-INCH COUPLINGS THE CENTER HOLES HAVE BEEN LOCATED NEAR THE MIDDLE OF THE COUPLING. CUT EXACTLY BETWEEN THESE TWO HOLES. THE RESULTING HALF-COUPLINGS ARE 7 INCHES LONG. TWO CUTS ARE NECESSARY WHEN MAKING 3 AND 4 INCH HALF COUPLINGS. THE RESULTING HAL COUPLINGS ARE 5 ½ INCHES LONG.

PRIMARY SYSTEM TESTING

- RECOMMENDED PRACTICES
  - PLAN TESTS CAREFULLY AND CARRY THEM OUT WITH ALL DUE PRECAUTIONS. PRESSURIZING EQUIPMENT SHOULD BE SUITED TO THE SIZE OF THE SYSTEM AND THE PRESSURE REQUIRED AND SHOULD BE OPERATED BY QUALIFIED AND EXPERIENCED PERSONNEL ONLY.
  - THE FOLLOWING RECOMMENDATIONS ARE OFFERED ONLY AS A GUIDE. NOV FIBERGLASS SYSTEMS ASSUMES NO RESPONSIBILITY OR LIABILITY FOR THE CONSEQUENCES OF ANY TESTING PRACTICES.
    - PRESSURE SOURCES SHOULD BE CAPABLE OF APPROACHING TEST PRESSURE GRADUALLY.
    - USE GAUGES WITH A FULL-SCALE READING OF NO MORE THAN TWICE THE TEST PRESSURE: DO NOT USE A 100 PSI GAUGE FOR A 10 PSI TEST. USE RELIABLE GAUGES CALIBRATED AGAINST A DEAD WEIGHT TESTER AND ZEROED FOR ATMOSPHERIC PRESSURE.
    - ISOLATE TANKS FROM THE PIPING WHEN PRESSURE TESTING.
    - THE RECOMMENDED HYDROSTATIC PRESSURE IS 150% OF EXPECTED OPERATING PRESSURE AND SHOULD BE MAINTAINED AT LEAST 10 MINUTES.
    - DO NOT EXCEED 150% OF SYSTEM RATING. CHECK THE PRESSURE RATING OF ALL THE COMPONENTS OF THE SYSTEM--NOT JUST THE PIPE--BECAUSE HOSES AND FLEXIBLE CONNECTORS ARE ALMOST ALWAYS RATED LOWER THAN THE PIPE.
    - DO NOT ADJUST FITTINGS WHILE SYSTEM IS UNDER PRESSURE. IF THREADED ADAPTERS OR BUSHINGS LEAK, RELEASE THE PRESSURE BEFORE ATTEMPTING TO TIGHTEN.
    - TEMPERATURE CHANGES CAN AFFECT THE PRESSURE IN THE TEST LINE. SUBSTANTIAL PRESSURE INCREASES MAY OCCUR IN CLOSED SYSTEMS EXPOSED TO THE SUN. CONVERSELY, OVERNIGHT DECREASES IN PRESSURE DUE TO COOLING FROM AFTERNOON TO EARLY MORNING ARE NORMAL AND DO NOT NECESSARILY INDICATE A LEAK.
    - AFTER TESTING, MAINTAINS 5 TO 10 PSI (35 TO 70 KPS) IN THE SYSTEM DURING SUBSEQUENT CONSTRUCTION SO THAT DAMAGE CAUSED BY STAKES, EXCAVATION EQUIPMENT, ETC. CAN BE DETECTED AND CORRECTED BEFORE PAVEMENT IS INSTALLED OR PRODUCT IS PUMPED.

NOTE: THE PROCEDURES PROVIDED ON THIS SHEET ARE AS REQUIRED BY NOV FIBERGLASS SYSTEMS INTERNATIONAL. FAILURE TO FOLLOW THESE REQUIREMENTS MAY RESULT IN FAILURE OF THE PIPING SYSTEM. THE INSTALLING CONTRACTOR SHALL WARRANT THE SYSTEM TO BE FREE OF DEFECTS FOR (ONE) YEAR FOLLOWING INITIAL IN-SERVICE DATE. THIS WARRANTY SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY TO REPAIR OR REPLACE DEFECTIVE ITEMS, ALONG WITH RESTORATION OF PRIOR CONDITIONS, ALL TO THE SATISFACTION OF THE OWNER.

NOTE:
THIS DRAWING IS A COMPILATION OF NOV FIBERGLASS SYSTEMS INTERNATIONAL DUALOY 3000/L FIBERGLASS PIPING INSTALLATION PROCEDURES. IT IS INTENDED AS A REFERENCE FOR REGULATORS, QUALIFIED INSTALLERS AND BIDDERS. IT IS NOT A SUBSTITUTE FOR FACTORY QUALIFICATION OF INSTALLERS OR A THOROUGH REVIEW OF THE ENTIRETY OF THE MANUFACTURER DOCUMENTATION AND PROCEDURES. THIS DRAWING IS FOR REFERENCE ONLY AND IS NOT A DESIGN DRAWING.

ISSUED FOR

DATE	BY	DESCRIPTION
03-01-21	JW	ISSUED FOR OWNER REVIEW
03-05-21	JW	ISSUED FOR PERMIT

SEAL:

CONSULTANT:

Engineers • Planners • Surveyors
Wellert Corporation
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SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

DUALOY 3000/L MANUFACTURER INSTALLATION DETAILS

SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FT8.2

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BREAKER PANEL G-1
INTEGRATED FUEL MANAGEMENT PANEL
DISPENSER CONTROL MODULES AND DISCONNECTS DMEX (1-12 AS NEEDED)
LOW VOLTAGE DISPENSER/ SENSOR DISCONNECTS
PANTHER
ESTOP (FRONT COUNTER)
ESTOP (OUTSIDE BUILDING)
ESTOP (OUTSIDE BUILDING)
ELECTRICAL SEAL OFF (TYP.)
FE6.0 FUEL SYSTEM MODULAR PANEL
PANEL GPD
UST MONITORING CONSOLE
PUMP SHUTDOWN CONTRACTORS
S1 S2 S3
S4 S5 S6
VFC
WIRE FROM CIRCUIT BREAKER TO VFC CONTROL IS TO BE #10 THHN
WIRE FROM VFC CONTROL TO MOTOR IS TO BE #12 THHN
BREAKER PANEL G-2
LIGHTING CONTRACTORS
PHASED LIGHTING CONTROLLER
DISPENSER #1
DISPENSER #2
DISPENSER #3
POWER
CONTROL
SUMP LIQUID SENSOR
DATA
1" CONDUIT
¾" CONDUIT
ALL TWISTED PAIR WIRE TO BE 14 AWG
REPEAT FOR ADDITIONAL DISPENSERS AS APPLICABLE
THIS DOCUMENT IS FOR REFERENCES PURPOSES ONLY. ALWAYS FOLLOW MANUFACTURERS INSTALLATION INSTRUCTIONS. THIS DRAWING DOES NOT INCLUDE ANY TRUCK FUELING COMPONENTS.
ALL SPARE CONDUITS TO HAVE STRING PULL THROUGH FOR FUTURE USE
EXPLOSIVE PROOF JUNCTION BOX (TYP.)
PLLD TRANSDUCER
FILL SUMP LIQUID SENSOR
INTERSTITIAL SENSOR
EPOXY SEALED CONNECTIONS IN A WEATHER-PROOF JUNCTION BOX
M3 M1 M2 GND
SUBMERSIBLE PUMP
TANK LEVEL MONITOR
SUMP LIQUID SENSOR
87-1 TANK
87-2 TANK WHEN USED
93 TANK
E85 TANK WHEN USED
DIESEL TANK
ADDITIONAL KEROSENE TANK TO MATCH DIESEL TANK WHEN APPLICABLE
ADDITIONAL TRUCK DIESEL TANK TO MATCH DIESEL TANK WHEN APPLICABLE
CANOPY LIGHTS
STAGE I
STAGE II
STAGE III
COPY LIGHTS
CAMERA
NOTE: THIS DRAWING IS A COMPILATION OF MANUFACTURER ELECTRICAL WIRING DETAILS AND IS FOR REFERENCE ONLY. IT IS NOT A DESIGN DRAWING

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SHEETZ INCORPORATED
5700 SIXTH AVENUE
ALTOONA, PENNSYLVANIA 16602
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MANUFACTURER ELECTRICAL WIRING DETAILS

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
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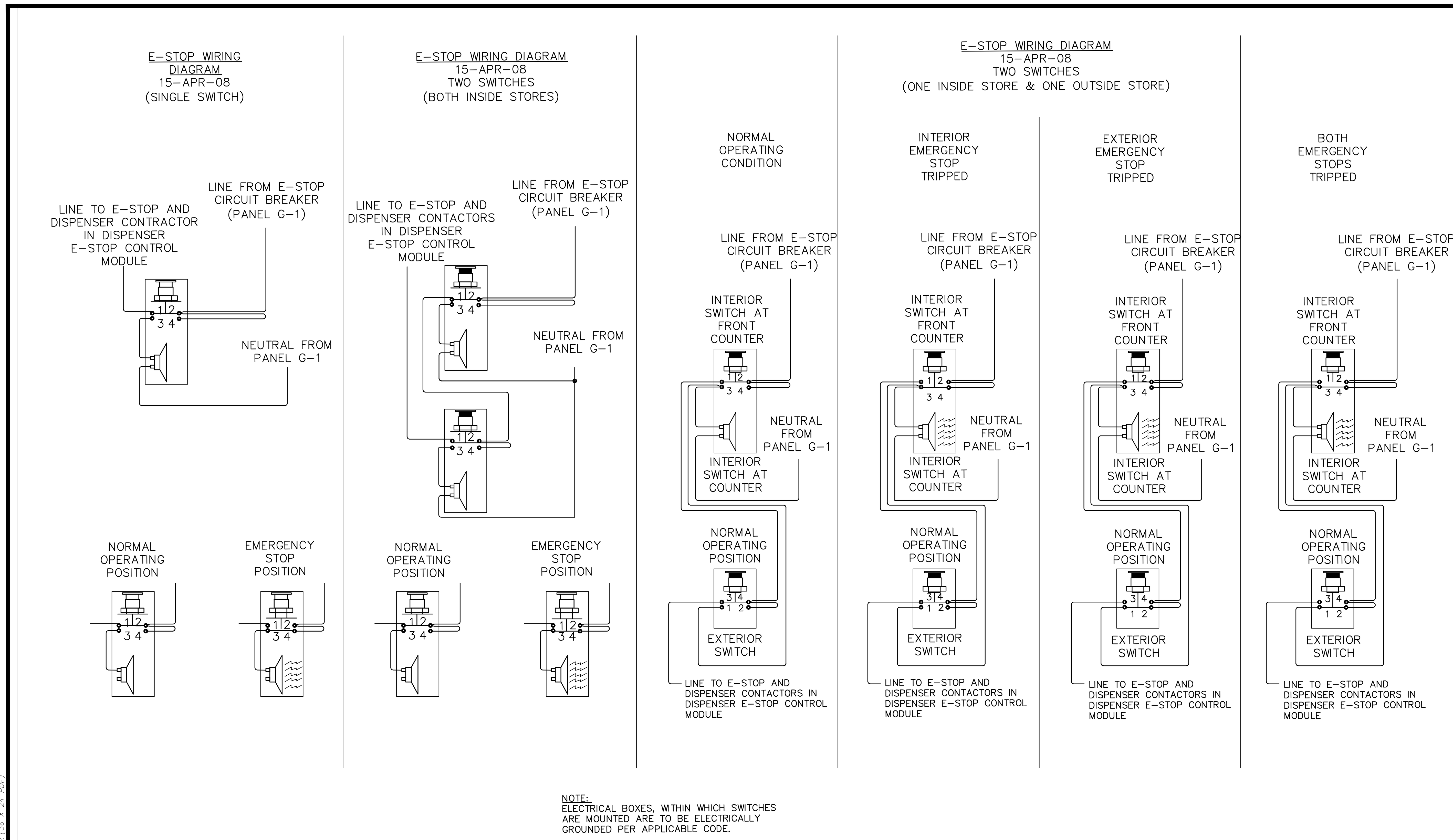
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FE4.0



A EMERGENCY SWITCH WIRING DIAGRAMS
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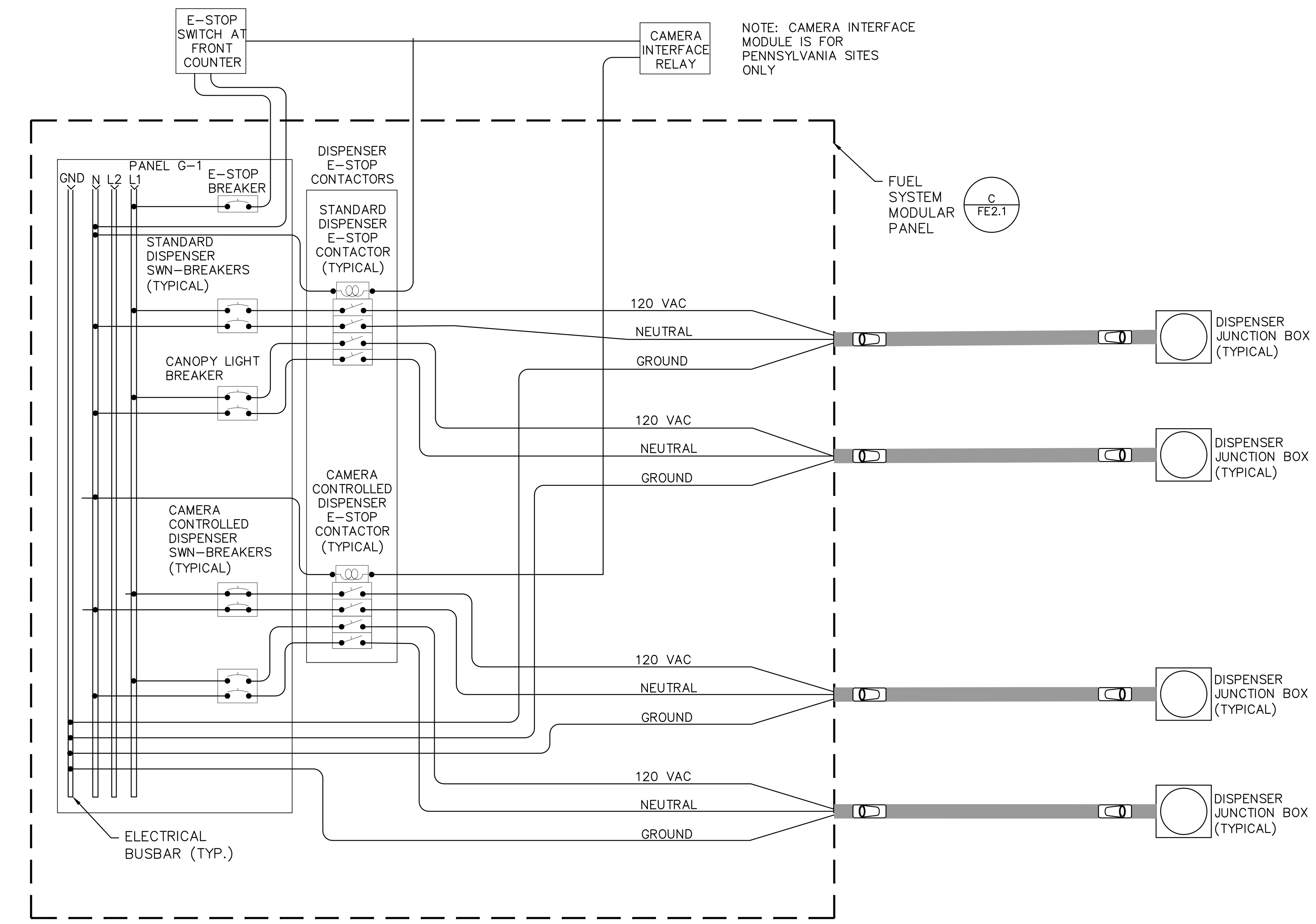
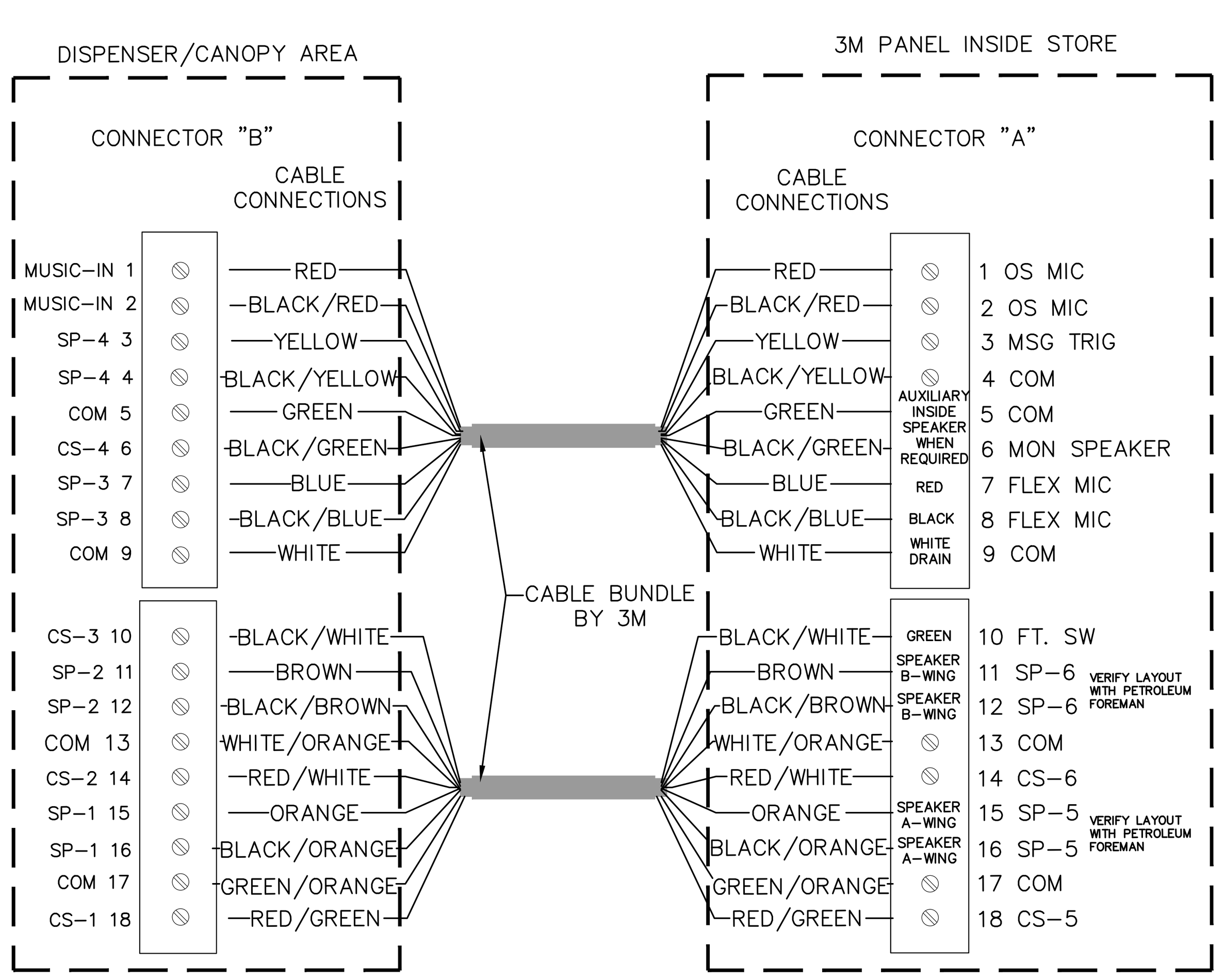
15 APR 08



B PARTIAL - SITE DISPENSER CAMERA CONTACTORS
SCALE: NOT TO SCALE
1 JAN 05



SP - SPEAK
CS - CALL SWITCH
OS-MIC - OUTSIDE MIC
FLEX MIC - FLEXIBLE MIC

3M INSTALLATION INSTRUCTIONS:

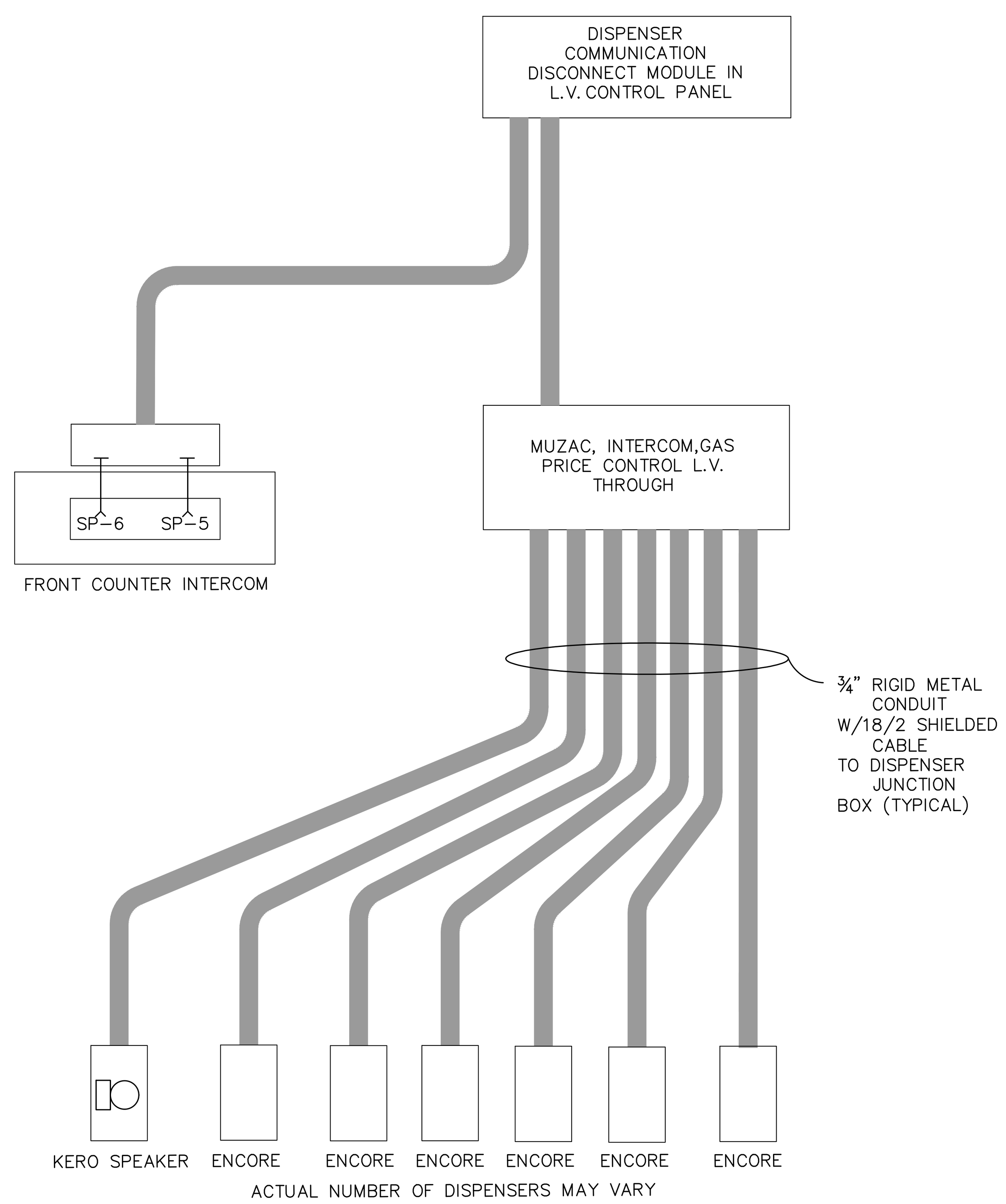
D-20 SELECT OPTION CHECKLIST
1. SINGLE CALL ALERT TONE IN STANBY
2. USING EXTERNAL FLEX MIC (HIGH GAIN)

SW203 CLOSED
SW202 OPEN

* PETROLEUM INSTALLATION CONTRACTOR MUST CHECK AND CHANGE TO ABOVE SETTINGS ON INTERCOM UNIT.

PETROLEUM CONTRACTOR TO REFER TO CIVIL CONSULTANT PLANS FOR 3M PANEL LOCATION INSIDE STORE.

C 3M INTERCOM CABLE CONNECTIONS
SCALE: NOT TO SCALE
05 AUG 05



NOTE:
INTERCOM I.S. WIRING IS TO BE PROPERLY GROUNDED THOUGHOUT GAS STATION

D INTERCOM WIRING SCHEMATIC
SCALE: NOT TO SCALE
1 MAR 07

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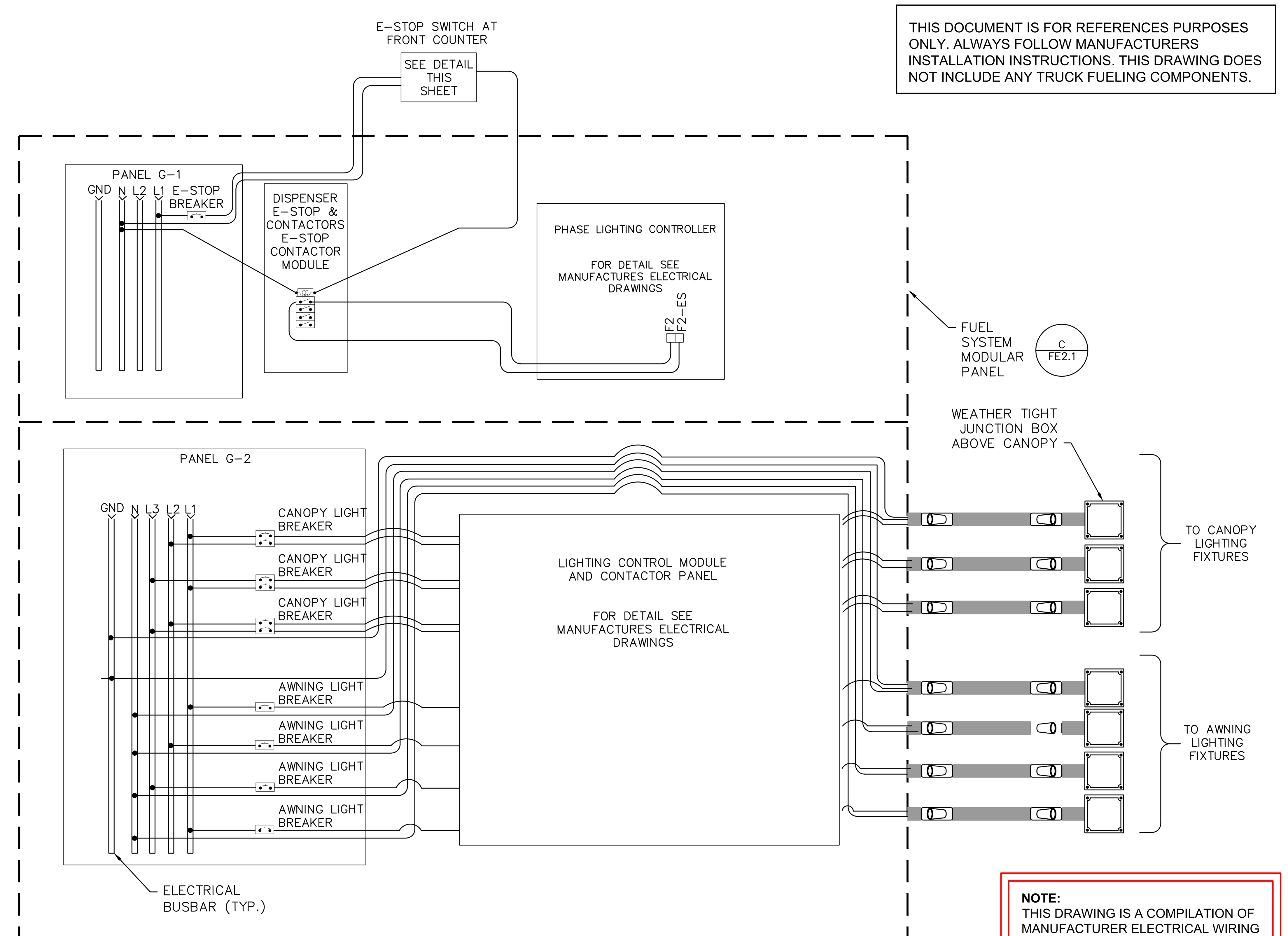

E CANOPY LIGHTING CIRCUITS
SCALE: NOT TO SCALE
25 AUG 04

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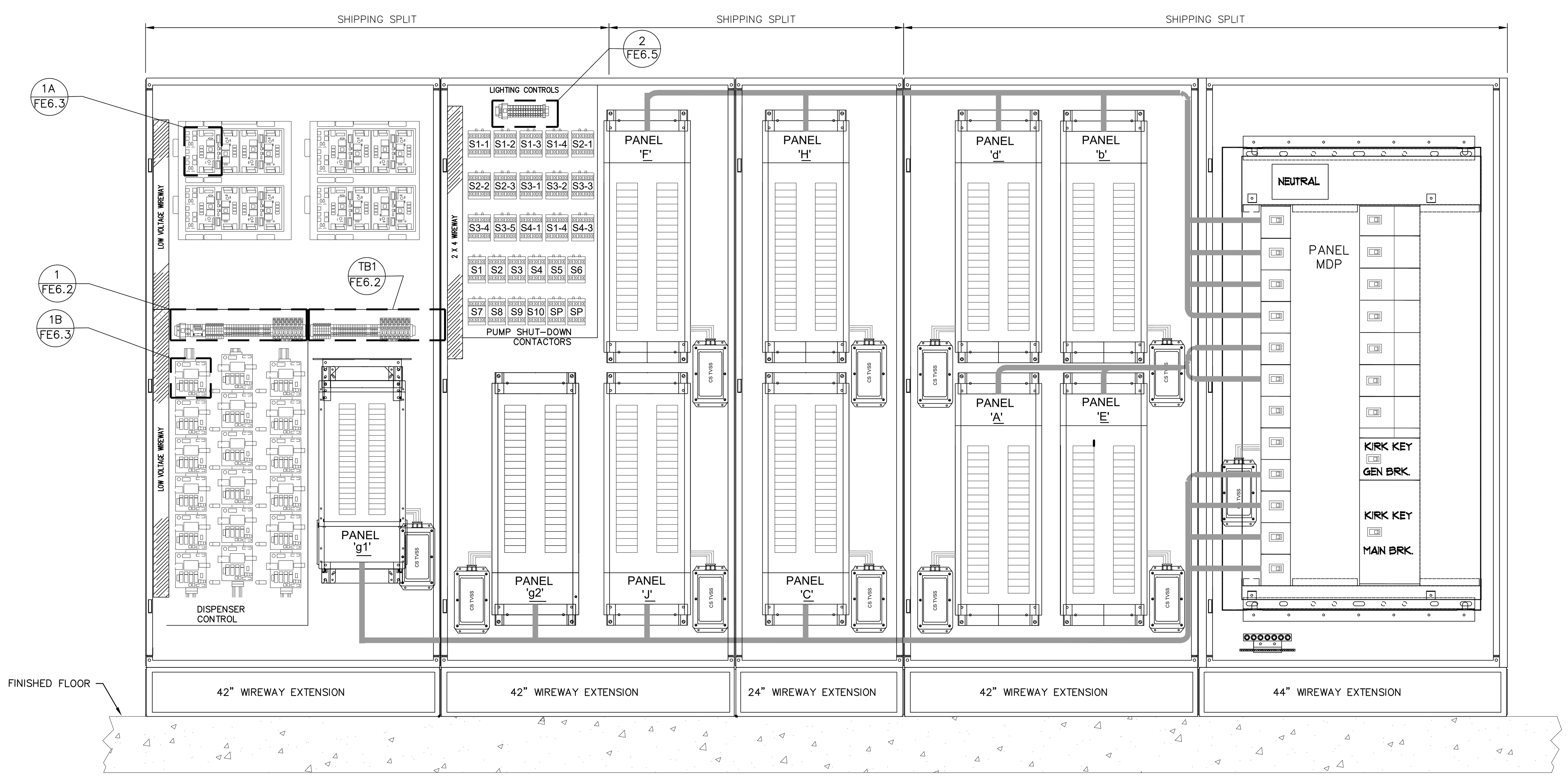
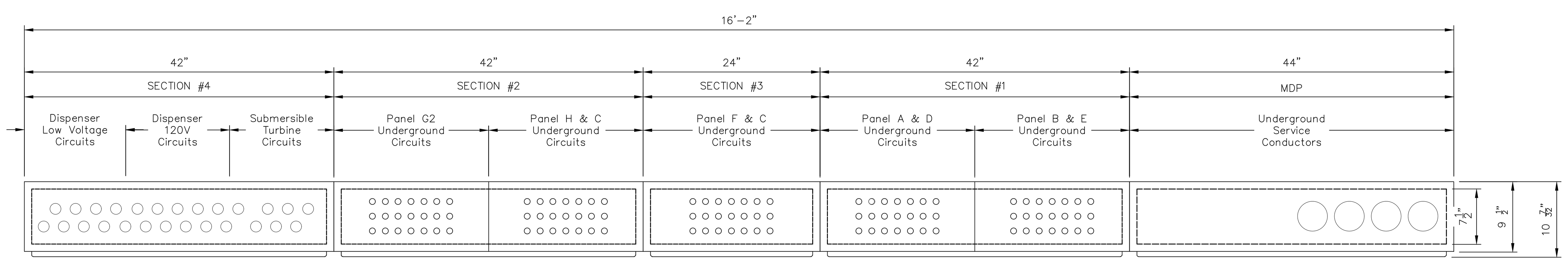
CABINET INTERIOR LAYOUT

PANELBOARDS, OUTSIDE LIGHTING, DISPENSER, LOW VOLTAGE AND PUMP CONTROLS





TYPICAL UNDERGROUND CONDUIT ENTRY LOCATIONS

(Conduits shown are typical. Actual requirements may vary)

PANEL SCHEDULE NOTES:

P – CIRCUIT IS PREWIRED BY SQUARE D IPaCS TO ITS POINT OF UTILIZATION WITHIN THE IPaCS PANEL.

S – CIRCUIT REQUIRES A SWITCHED NEUTRAL BREAKER.

IC – CIRCUIT REQUIRES AN ISOLATED GROUND.

L – CIRCUIT REQUIRES A BREAKER LOCKING DEVICE.

D– PREWIRED FROM BREAKER THRU CONTACTOR TO TERMINAL STRIP. CONTACTOR IS CONTROLLED BY THE PUMP/DISPENSER CONTROL SYSTEM.

T – PREWIRED FROM BREAKER TO TERMINAL STRIP MARKED BY BREAKER I.D. NUMBER (NON–CONTROLLED).

X – CONTRACTOR WIRES DIRECTLY TO THE BREAKER.

M – MOTOR OVERLOAD PROTECTION IS IS TO BE INTEGRAL TO MOTOR OR PROVIDED BY OTHERS. MOTOR OVERLOAD PROTECTION IS NOT PROVIDED BY SQUARE D IPaCS.

G – CIRCUIT REQUIRES A GROUND FAULT (GFCI) BREAKER.

SH – SHUNT TRIP BREAKER REQUIRED. ALL SHUNT TRIP COILS ARE TO BE FIELD WIRED.

SW – CONTACTORS WILL BE CONTROLLED BY A REMOTE MOUNTED WALL SWITCH WHICH WILL BE FIELD WIRED TO IPaCS CABINET AND TERMINATED TO TERMINAL BLOCKS LABELED "SW". BRANCH CIRCUITS ARE PREWIRED FROM BREAKER TO LINE SIDE OF CONTACTOR. FIELD CONNECTION IS TO LOAD SIDE TERMINALS OF CONTACTOR.

IL – CONTACTOR IS CONTROLLED BY THE SWITCH IN THE CASHIER CONTROL PANEL. BRANCH CIRCUITS ARE PREWIRED FROM BREAKER TO LINE SIDE OF CONTACTOR.

SPL – CIRCUIT REQUIRES A BREAKER LOCKING DEVICE THAT CAN BE PADLOCKED.

ES – CONTACTOR IS CONTROLLED BY THE EMERGENCY SHUT DOWN OF THE DISPENSER SCREEN. BRANCH CIRCUITS ARE PREWIRED FROM BREAKED TO LINE SIDE OF CONTACTOR. FIELD CONNECTION IS TO LOAD SIDE TERMINALS OF CONTACTOR.

FACTORY INSTALLED POWER CABLES

CONNECT TO	PHASE WIRE SIZE	NEUTRAL WIRE SIZE	QTY PER PHASE
PANEL MDP (225A/3P-CKT #1) TO PANEL H (MLO)	4/0	4/0	1
PANEL MDP (225A/3P-CKT #3) TO PANEL F (MLO)	4/0	4/0	1
PANEL MDP (225A/3P-CKT #5) TO PANEL D (MLO)	4/0	4/0	1
PANEL MDP (225A/3P-CKT #7) TO PANEL B (MLO)	4/0	4/0	1
PANEL MDP (225A/3P-CKT #9) TO PANEL A (MLO)	4/0	4/0	1
PANEL MDP (225A/3P-CKT #11) TO PANEL E (MLO)	4/0	4/0	1
PANEL MDP (225A/3P-CKT #17) TO PANEL C (MLO)	4/0	4/0	1
PANEL MDP (225A/3P-CKT #19) TO PANEL J (MLO)	4/0	4/0	1
PANEL MDP (225A/3P-CKT #21) TO PANEL G2 (MLO)	4/0	4/0	1
PANEL MDP (225A/3P-CKT #23) TO PANEL G1 (MLO)	4/0	4/0	1

FEEDERS TO SECTIONS #1, #2 & #3 WILL NEED TO BE TAGGED & DISCONNECTED FOR SHIPMENT

NOTE:
BRANCH CIRCUIT WIRING DONE BY SQUARE D WILL BE COLOR CODED!
208V/120V

A PHASE – BLACK
B PHASE – RED
C PHASE – BLUE
NEUTRAL – WHITE

ALL WIRING ABOVE #10 AWG TO BE PHASE COLORED ON EACH END.

NOTE:
BRANCH CIRCUIT WIRING DONE BY SQUARE D WILL BE COLOR CODED!
208V/120V

A PHASE – BLACK
B PHASE – RED
NEUTRAL – WHITE

ALL WIRING ABOVE #10 AWG TO BE PHASE COLORED ON EACH END.

NOTE:
* BEFORE WIRING BRANCH CIRCUITS. REFER TO PANELBOARD SCHEDULES TO DETERMINE THE PHASE COLORS TO BE USED.
* ALL MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION SHALL BE PROVIDED BY OTHERS.

WIRING LEGEND

————	IPaCS FACTORY WIRING.
— — — —	CONTRACTOR FIELD WIRING.

WHEN BREAKER LOCKING DEVICES ARE FACTORY INSTALLED, THEY SHOULD BE INSTALLED WITH THE BREAKER IN THE "OFF" POSITION FOR SHIPMENT. IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO REMOVE THE LOCKING DEVICE, ENERGIZE THE CIRCUIT, AND INSTALL THE LOCKING DEVISE IN THE "ON POSITION AT THE JOBSITE.

NOTES:

1 – THE SCHNEIDER ELECTRIC INTEGRATED POWER CENTER IS INSTALLED BY THE ELECTRICAL CONTRACTOR AND FURNISHED BY THE OWNER OR AS SPECIFIED.

– THIS EQUIPMENT INCLUDES ALL SQUARE D PANELBOARDS, BREAKERS, LIGHTING CONTROLS, DISPENSER AND SUBMERSIBLE PUMP CONTROLS, PILOT LIGHTS, SWITCHES, TERMINAL STRIPS, AND LOW VOLTAGE DISCONNECT DEVICES WHICH ARE PREINSTALLED AND INTERNALLY PREWIRED.

– THE ENCLOSURE MATERIAL IS 1/8" ALUMINUM.

– THE ENTIRE BOTTOM OF CABINET IS OPEN EXCEPT FOR A 1" FLANGE ON EACH SECTION.

– THE ENTIRE TOP OF CABINET IS SOLID. HOLE CAN BE KNOCKED OUT FOR CONDUIT ENTRY EVERYWHERE EXCEPT WHERE CABINETS JOIN TOGETHER.

2 – THE METER CABINET, AND PULL SECTION EQUIPMENT LOCATED OUTSIDE THE BUILDING IS NOT A PART OF THE SQUARE D IPaCS SYSTEM IF APPLICABLE.

3 – THE SQUARE D IPaCS SYSTEM IS UL LISTED AS A COMPLETE ASSEMBLY. THE STANDARD FAULT CURRENT RATING OF THE SYSTEM IS 65,000 AIC.

4 – QUESTIONS REGARDING THE OPERATION OR INSTALLATION OF THE SQUARE D IPaCS SYSTEM SHOULD BE DIRECTED TO SCHNEIDER ELECTRIC – TECHNICAL SUPPORT AT 1-800-868-9662.

SQUARE D

NOTE:
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SQUARE D MANUFACTURER ELECTRICAL DRAWINGS

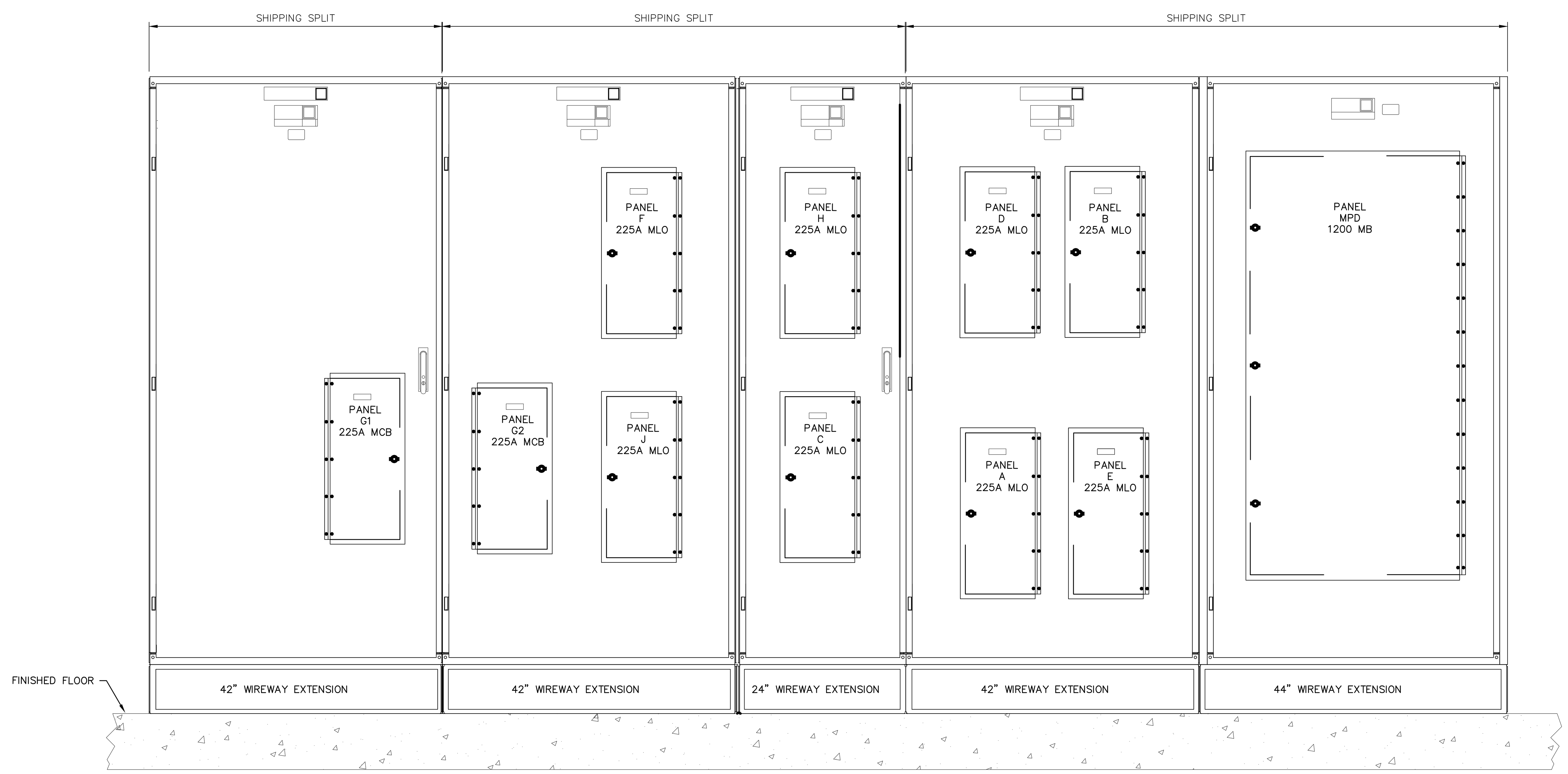
SHEETZ INC. #716
"SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

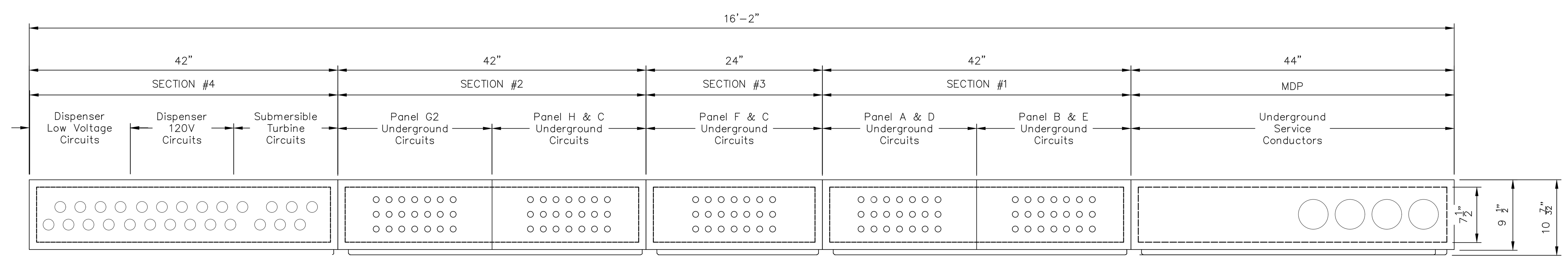
SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FE6.0

CABINET INTERIOR LAYOUT

PANELBOARDS, OUTSIDE LIGHTING, DISPENSER, LOW VOLTAGE AND PUMP CONTROLS





TYPICAL UNDERGROUND CONDUIT ENTRY LOCATIONS
(Conduits shown are typical. Actual requirements may vary)

NOTES:

1 – THE SCHNEIDER ELECTRIC INTEGRATED POWER CENTER IS INSTALLED BY THE ELECTRICAL CONTRACTOR AND FURNISHED BY THE OWNER OR AS SPECIFIED.

– THIS EQUIPMENT ALL SQUARE D PANELBOARDS, BREAKERS, LIGHTING CONTROLS. DISPENSER AND SUBMERSIBLE PUMP CONTROLS, PILOTS LIGHTS, SWITCHES, TERMINAL STRIPS, AND LOW VOLTAGE DISCONNECT DEVICES WHICH ARE PRE-INSTALLED AND INTERNALLY PRE-WIRED.

– THE ENCLOSURE MATERIAL IS 1/8" ALUMINUM.

– THE ENTIRE BOTTOM OF CABINET IS OPEN EXCEPT FOR A 1" FLANGE ON EACH SECTION.

– THE ENTIRE TOP OF CABINET IS SOLID. HOLES CAN BE KNOCKED OUT FOR CONDUIT ENTRY EVERYWHERE EXCEPT WHERE CABINETS JOIN TOGETHER.

2 – THE METER CABINET, AND PULL SECTION EQUIPMENT LOCATED OUTSIDE THE BUILDING IS NOT A PART OF THE SQUARE D IPaCS SYSTEM IF APPLICABLE.

3 – THE SQUARE D IPaCS SYSTEM IS UL LISTED AS A COMPLETE ASSEMBLY. THE STANDARD FAULT CURRENT RATING OF THE SYSTEM IS 65,000 AIC.

4 – QUESTIONS REGARDING THE OPERATION OR INSTALLATION OF THE SQUARE D IPaCS SYSTEM SHOULD BE DIRECTED TO SCHNEIDER ELECTRIC – TECHNICAL SUPPORT AT 1-500-868-9662.

SQUARE D

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JOB NUMBER:	XXXXXX

FE6.1

SECTION 5

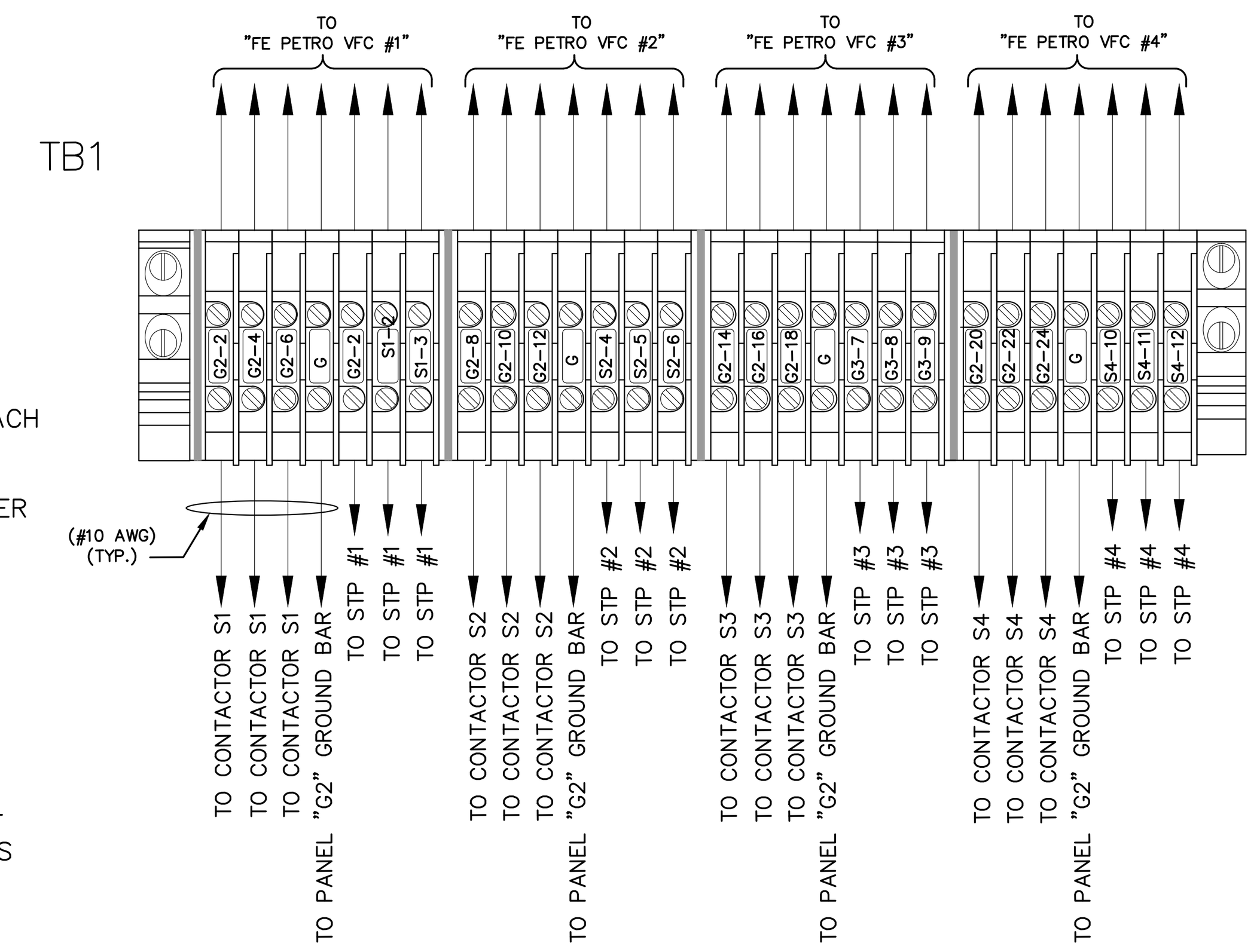
TANK MONITOR/PUMP SHUTDOWN OPTION WITH CONVENTIONAL SUBMERSIBLE PUMPS

1. WHEN INDIVIDUAL SHUTDOWN OF DISPENSERS THRU THE TANK MONITOR IS REQUIRED REMOVE THE FACTORY INSTALLED "REMOTE OFF" JUMPERS FROM THE DM-EX MODULES. CONNECT THESE TERMINALS TO RELAY OUTPUT MODULE AS SHOWN. THIS WILL ALLOW THE MONITOR TO SHUTDOWN ANY DISPENSER THROUGH THE RELAY OUTPUT MODULE.
2. REFER TO TANK MONITOR MANUAL FOR ALL WIRING CONNECTIONS AND OTHER SPECIFICATIONS REQUIRED BY MANUFACTURER.
3. THE TANK MONITOR IS TYPICALLY MOUNTED OUTSIDE THE POWER BOX ENCLOSURE ON AN ADJACENT WALL.
4. THE TANK MONITOR SHOWN IS FOR A TYPICAL "PUMP SHUTDOWN" RELAY BOARD ONLY. FOR "LINE PRESSURE" SYSTEMS SEE DETAIL SHEETS.
5. THIS DETAIL IS TO ILLUSTRATE WIRING OF (1) CONVENTIONAL PUMP.
6. THE TERMINAL STRIP SHOWN IS THE STANDARD DM-EX DESIGN. THE STANDARD DM-EX DESIGN MAY BE CUSTOMIZED FOR ADDITIONAL PUMP DEVICES, THERE BY ALTERING THE STANDARD DESIGN SHOWN. PLEASE REFER TO ALL INFORMATION TO DETERMINE THE NUMBER OF DEVICES FOR EACH JOB LOCATION.

DISPENSER FIELD WIRING

NOTES:

18. WIRING IS TYPICAL OF ALL DISPENSERS. GROUND CONDUCTOR (#12 AWG) MUST ALSO BE RUN FROM EACH DISPENSER TO THE GROUND BAR OF THE DISPENSER/PUMP CONTROL PANEL.
19. DISPENSER "AC" (POWER) AND "DC" (DATA) TYPICALLY RUN IN SEPARATE CONDUITS, OR PER DISPENSER MANUFACTURERS REQUIREMENTS.
20. SEE DISPENSER INSTALLATION DIAGRAMS FOR TERMINATION LABELING.
21. ALL FIELD WIRING TERMINALS MUST BE WIRED WITH A MINIMUM INSULATION RATING OF 60°C
22. FACTORY INSTALLED "REMOTE OFF" JUMPERS ON DM-EX MODULES MUST REMAIN IN PLACE DURING NORMAL OPERATIONS. REMOVING THIS JUMPER AND WIRING INTO A "PAN SENSOR" SYSTEM PROVIDES INDIVIDUAL SHUTDOWN OF EACH DISPENSER.
23. THE WIRE SIZE AND NUMBER OF CONDUCTORS REQUIRED FOR COMMUNICATION/DATA (DC) WIRING MUST BE DETERMINED BY THE SPECIFICATIONS OF THE DISPENSER MANUFACTURER. TYPICALLY 2 CONDUCTORS (NORMALLY SHIELDED CABLE) ARE REQUIRED WHEN CARD READERS IN THE DISPENSER ARE USED.



120/208 VOLT COLOR CHART

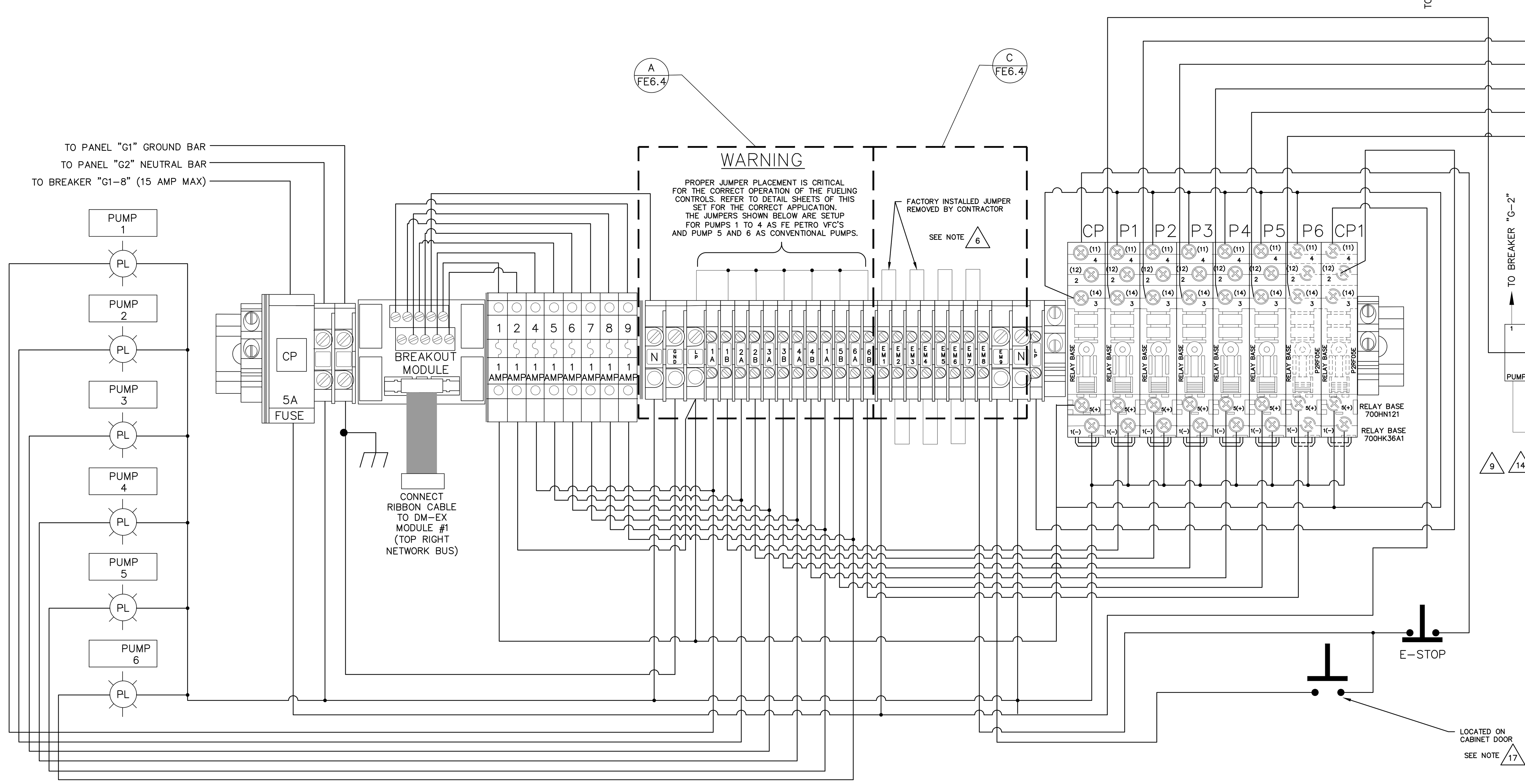
NOTE

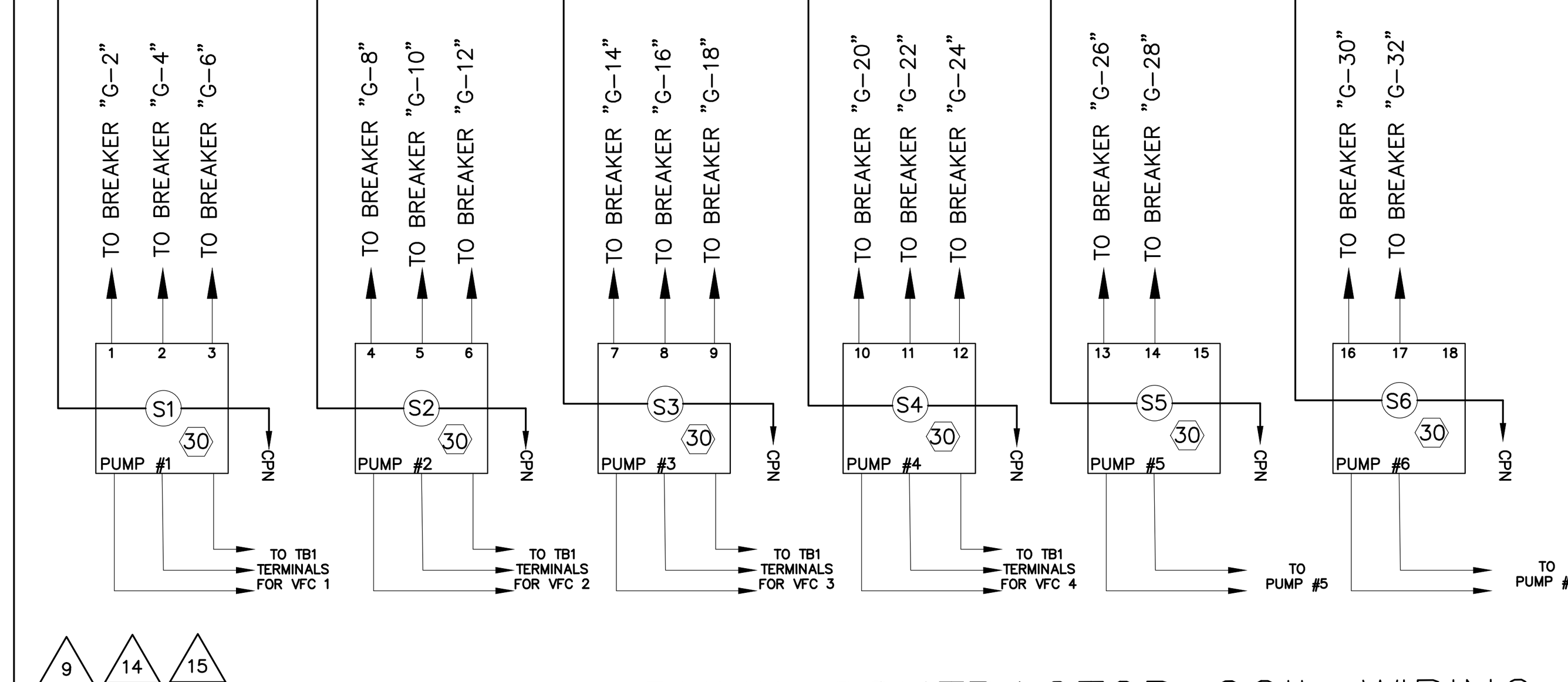
BRANCH CIRCUIT WIRING DONE BY SQUARE D IPaCS WILL BE COLOR CODED!

A PHASE – BLACK WIRE
B PHASE – RED WIRE
C PHASE – BLUE WIRE

ALL SINGLE PHASE WIRING IN BLACK
ALL WIRING ABOVE #10 AWG TO BE PHASE COLORED ON EACH END

NOTE:
* BEFORE WIRING BRANCH CIRCUITS REFER TO PANELBOARD SCHEDULES TO DETERMINE THE PHASE COLORS TO BE USED.
* ALL MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION SHALL BE PROVIDED BY OTHERS.





PUMP CONTRACTOR COIL WIRING

6-DPA33Y122Y236 CONTACTORS

SUBMERSIBLE PUMP EQUIPMENT SHEET

RF #	EQUIPMENT	VOLTS	CONTACTOR NUMBER	CONTACTOR AMPS	PANEL CIRCUITS	PUMP CONTACTOR
1	87 FE PETRO STP (PUMP #1)	208	1	30	G2-2	S1
2					G2-4	
3					G2-6	
4	87 FE PETRO STP (PUMP #2)	208	2	30	G2-8	S1
5					G2-10	
6					G2-12	
7	92/93 FE PETRO STP (PUMP #3)	208	3	30	G2-14	S1
8					G2-16	
9					G2-18	
10	FUTURE E85 FE PETRO STP (PUMP #4)	208	4	30	G2-20	S1
11					G2-22	
12					G2-24	
13	DIESEL STP (1PH) (PUMP #5)	208	5	30	G2-26	S1
14					G2-28	
15					–	
16	SPARE (PUMP #6)	208	6	30	G2-30	S1
17					G2-32	
18					–	

WIRING LEGEND

———	IPaCS FACTORY WIRING.
— — —	CONTRACTOR FIELD WIRING.

GENERAL NOTES FOR DISPENSER/PUMP CONTROLS:

7. BEFORE STARTING THE ASSEMBLY PLEASE READ ALL NOTES.
8. ALL FIELD WIRING TERMINALS MUST BE WIRED WITH A MINIMUM INSULATION RATING OF 60°C IF CIRCUIT IS RATED LESS THAN 100 AMPS. OR A MINIMUM INSULATION RATING OF 75°C IF CIRCUIT IS RATED OVER 100 AMPS.
9. WHEN CONTROLLED LOAD IS A MOTOR, CIRCUITS MUST HAVE THERMAL PROTECTION INTEGRAL TO MOTOR OR PROVIDED BY OTHERS.
10. THIS DRAWING CONTAINS ALL THE FACTORY WIRING REQUIRED TO ASSEMBLE THESE CONTROLS. PLEASE SEE THE DETAIL DRAWING IN THIS SET.
11. THE WIRE GAUGE USED TO ASSEMBLE THESE CONTROLS VARIES THROUGHOUT. TO DETERMINE WIRE SIZE THAT SHOULD BE USED PLEASE CHECK THE AMPERAGE OF THE CIRCUIT CONTROLLING THESE COMPONENTS. THE AMPERAGE CAN BE OBTAINED FROM THE PANELBOARD SCHEDULE DRAWING LOCATED IN THIS SET.
12. IF THERE ARE ANY QUESTIONS ABOUT THE PLACEMENT OF ANY NON-STANDARD DEVICES ON THE DISPENSER/PUMP CONTROLS SCREEN PLEASE CONTACT THE DRAFTING DEPARTMENT TO DETERMINE PROPER PLACEMENT.
13. WHEN "IST-VFC" SYSTEMS ARE FACTORY INSTALLED, THE EQUIPMENT SHOULD BE MOUNTED IN THE TOP OF THE DISPENSER/PUMP CONTROLS SECTION. WHEN MOUNTED OUTSIDE OF THE SQUARE D IPaCS BOX PLACEMENT OF THESE DEVICES SHOULD BE DETERMINED BY THE CONTRACTOR.
14. THE STANDARD DM-EX DISPENSER SCREEN MODULES ARE:
    DM-4D-4P EXPANDABLE TO 6D-6P
    DM-6D-4P EXPANDABLE TO 8D-6P
    DM-8D-4P EXPANDABLE TO 12D-6P
15. THE DISPENSER CONTROL WIRING SHOWN ON THIS DRAWING IS FOR ONE DISPENSER. ALTHOUGH THE NUMBER OF DISPENSERS USED FOR EACH JOB MAY VARY THE WIRING SHOWN IS TYPICAL OF ALL DISPENSERS.
16. THE PILOT LIGHTS SHOWN ON THIS DRAWING ARE TO VISUALLY VERIFY THE OPERATION OF EACH PUMP. ALL PILOT LIGHTS SHOWN SHOULD BE MOUNTED ON THE DOOR OF THE DISPENSER/PUMP CONTROLS SECTION.
17. THE MOMENTARY SWITCHES FOR "FUEL SHUTDOWN" AND "FUEL RESET" SHOWN ON THIS DRAWING SHOULD BE MOUNTED ON THE DOOR OF THE DISPENSER/PUMP CONTROLS SECTION.

SQUARE D

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283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

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CHECKED BY:	RWW
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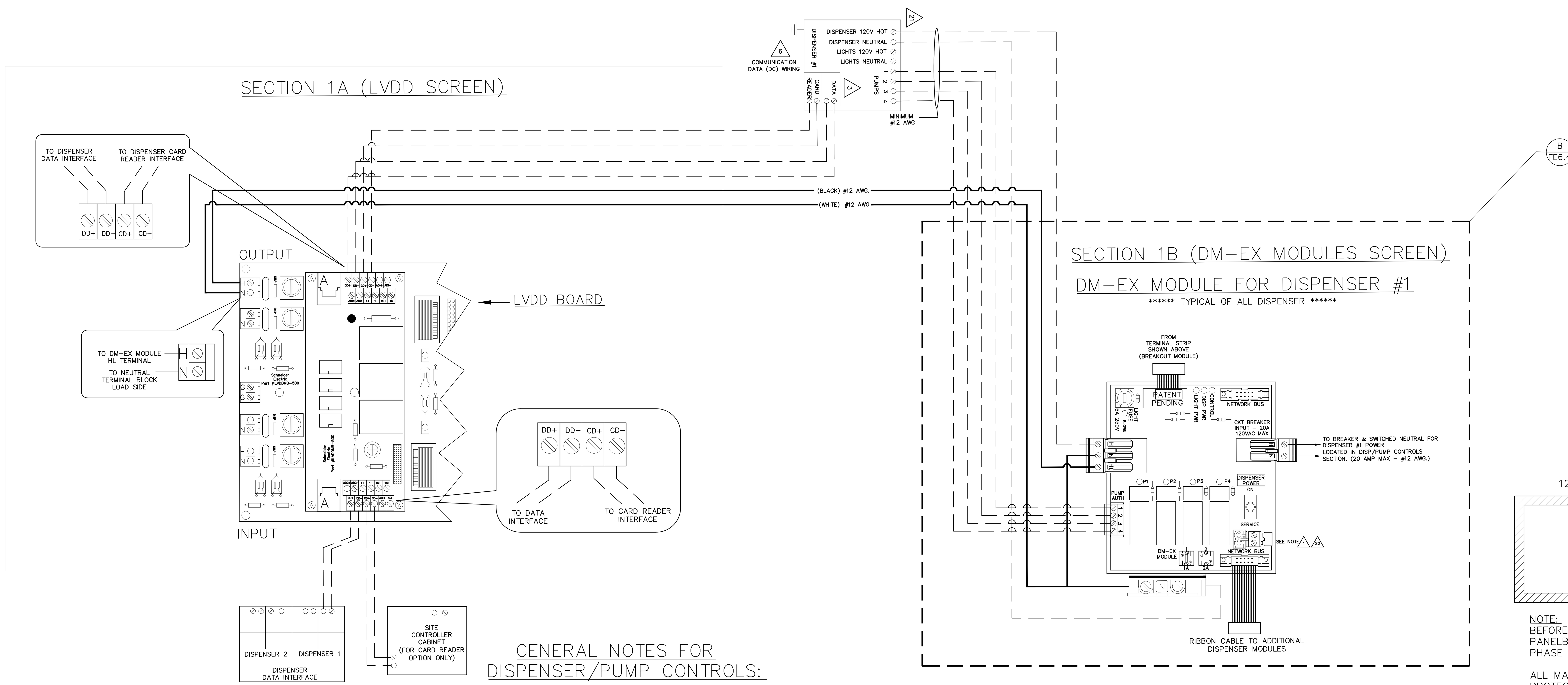
SECTION 1
LVDD & DM–EX MODULE WIRING



120/208 VOLT COLOR CHART

NOTE:
BRANCH CIRCUIT WIRING DONE BY SQUARE D IPaCS WILL BE COLOR CODED!

A PHASE – BLACK WIRE
B PHASE – RED WIRE
C PHASE – BLUE WIRE

ALL SINGLE PHASE WIRING IN BLACK
ALL WIRING ABOVE #10 AWG TO BE PHASE COLORED ON EACH END.

NOTE:
BEFORE WIRING BRANCH CIRCUITS REFER TO PANELBOARD SCHEDULES TO DETERMINE THE PHASE COLORS TO BE USED.

ALL MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION SHALL BE PROVIDED BY OTHERS.

TANK MONITOR/PUMP SHUTDOWN OPTION WITH CONVENTIONAL SUBMERSIBLE PUMPS

1 – WHEN INDIVIDUAL SHUTDOWN OF DISPENSERS THRU THE MONITOR IS REQUIRED REMOVE THE FACTORY INSTALLED "REMOTE OFF" JUMPERS FROM THE DM–EX MODULES. CONNECT THESE TERMINALS TO RELAY OUTPUT MODULE AS SHOWN. THIS WILL ALLOW THE TANK MONITOR TO SHUTDOWN ANY DISPENSER THROUGH THE RELAY OUTPUT MODULE.

2 – REFER TO TANK MONITOR MANUAL FOR ALL WIRING CONNECTIONS AND OTHER SPECIFICATIONS REQUIRED BY MANUFACTURER.

3 – THE TANK MONITOR IS TYPICALLY MOUNTED OUTSIDE THE POWER BOX ENCLOSURE ON AN ADJACENT WALL.

4 – THE TANK MONITOR SHOWN IS FOR A TYPICAL "PUMP SHUTDOWN" RELAY BOARD ONLY. FOR "LINE PRESSURE" SYSTEMS SEE DETAIL SHEETS.

5 – THIS DETAIL IS TO ILLUSTRATE WIRING OF (1) CONVENTIONAL PUMP.

6 – THE TERMINAL STRIP SHOWN IS FOR THE STANDARD DM–EX DESIGN. THE STANDARD DM–EX DESIGN MAY BE CUSTOMIZED FOR ADDITIONAL PUMP DEVICES, THERE BY ALTERING THE STANDARD DESIGN SHOWN. PLEASE REFER TO ALL INFORMATION TO DETERMINE THE NUMBER OF DEVICES FOR EACH JOB LOCATION.

GENERAL NOTES FOR DISPENSER/PUMP CONTROLS:

7 BEFORE STARTING THE ASSEMBLY PROCESS PLEASE READ ALL NOTES.

8 ALL FIELD WIRING TERMINALS MUST BE WIRED WITH A MINIMUM INSULATION RATING OF 60°C IF CIRCUIT IS RATED LESS THAN 100 AMPS. OR A MINIMUM INSULATION RATING OF 75° IF CIRCUIT IS RATED OVER 100 AMPS.

9 WHEN CONTROLLED LOAD IS A MOTOR, CIRCUITS MUST HAVE THERMAL PROTECTION INTEGRAL TO MOTOR OR PROVIDED BY OTHERS.

10 THIS DRAWING CONTAINS ALL THE FACTORY WIRING REQUIRED TO ASSEMBLE THESE CONTROLS. FOR A COMPLETE EXAMPLE OF ALL FIELD WIRING TO THESE CONTROLS PLEASE SEE THE DETAILS DRAWING IN THIS SET.

11 THE WIRE GAUGE USED TO ASSEMBLE THESE CONTROLS VARIES THROUGHOUT. TO DETERMINE WIRE SIZE THAT SHOULD BE USED PLEASE CHECK THE AMPERAGE OF THE CIRCUIT CONTROLLING THESE COMPONENTS. THE AMPERAGE CAN BE OBTAINED FROM THE PANELBOARD SCHEDULES DRAWINGS LOCATED IN THIS SET.

12 IF THERE ARE ANY QUESTIONS ABOUT THE PLACEMENT OF ANY NON–STANDARD DEVICES ON THE DISPENSER/PUMP CONTROLS SCREEN PLEASE CONTACT THE DRAFTING DEPARTMENT TO DETERMINE PROPER PLACEMENT.

13 WHEN "IST–VFC" SYSTEMS ARE FACTORY INSTALLED, THE EQUIPMENT SHOULD BE MOUNTED IN THE TOP OF THE DISPENSER/PUMP CONTROLS SECTION. WHEN MOUNTED OUTSIDE OF THE P.B.S. BOX PLACEMENT OF THESE DEVICES SHOULD BE DETERMINED BY THE CONTRACTOR.

14 THE STANDARD DM–EX DISPENSER SCREEN MODELS ARE:
DM–40–4P EXPANDABLE TO 60–6P
DM–60–4P EXPANDABLE TO 80–6P
DM–80–4P EXPANDABLE TO 120–6P

15 THE DISPENSER CONTROL WIRING SHOWN ON THIS DRAWING IS FOR ONE DISPENSER. ALTHOUGH THE NUMBER OF DISPENSERS USED FOR EACH JOB MAY VERY THE WIRING SHOWN IS TYPICAL OF ALL DISPENSERS.

16 THE PILOT LIGHTS SHOWN ON THIS DRAWING ARE TO VISUALLY VERIFY THE OPERATION OF EACH PUMP. ALL PILOT LIGHTS SHOWN SHOULD BE MOUNTED ON THE DOOR OF THE DISPENSER/PUMP CONTROLS SECTION.

17 THE MOMENTARY SWITCHES FOR "FUEL SHUTDOWN" AND "FUEL RESET" SHOWN ON THIS DRAWING SHOULD BE MOUNTED ON THE DOOR OF THE DISPENSER/PUMP CONTROLS SECTION.

DISPENSER FIELD WIRING

NOTES:

18 WIRING IS TYPICAL OF ALL DISPENSERS. GROUND CONNECTOR (#12 AWG.) MUST ALSO BE THE RUN FROM EACH DISPENSER TO THE GROUND BAR OF THE DISPENSER/PUMP CONTROL PANEL.

19 DISPENSER "AC" (POWER) AND "DC" (DATA) TYPICALLY RUN IN SEPARATE CONDUITS, OR PER DISPENSER MANUFACTURES REQUIREMENTS.

20 SEE DISPENSER INSTALLATION DIAGRAMS FOR TERMINATION LABELING.

21 ALL FIELD WIRING TERMINALS MUST BE WIRED WITH A MINIMUM INSULATION RATING OF 60°C.

22 FACTORY INSTALLED "REMOTE OFF" JUMPERS ON DM–EX MODULES MUST REMAIN IN PLACE DURING NORMAL OPERATION. REMOVING THIS JUMPER AND WIRING INTO A "PAN SENSOR" SYSTEM PROVIDES INDIVIDUAL SHUTDOWN OF EACH DISPENSER.

23 THE WIRE SIZE AND NUMBER OF CONDUCTORS REQUIRED FOR COMMUNICATION/DATA (DC) WIRING MUST BE DETERMINED BY THE SPECIFICATIONS OF THE DISPENSER MANUFACTURER.
TYPICALLY 2 CONDUCTORS NORMALLY SHIELDED CABLES ARE REQUIRED WHEN CARD READERS IN THE DISPENSER ARE USED.

DISPENSER DM–EX MODULE CHART

DISP. NUMBER	BREAKER DESCRIPTION	VOLTS	AMPS	PANEL CIRCUITS	SWN POSITION
DM–EX #1	MPD #1 & #2	120	20	G1–3	G1–1
DM–EX #2	MPD #3 & #4	120	20	G1–7	G1–5
DM–EX #3	MPD #5 & #6	120	20	G1–11	G1–9
DM–EX #4	MPD #7 & #8	120	20	G1–15	G1–13
DM–EX #5	MPD #9 & #10	120	20	G1–19	G1–17
DM–EX #6	MPD #11 & #12	120	20	G1–23	G1–21
DM–EX #7	MPD #13 & #14	120	20	G1–27	G1–25
DM–EX #8	MPD #15 & #16	120	20	G1–31	G1–29
DM–EX #9	MPD #17 & #18	120	20	G1–35	G1–33

WIRING LEGEND

IPaCS FACTORY WIRING.
CONTRACTOR FIELD WIRING.

SQUARE D

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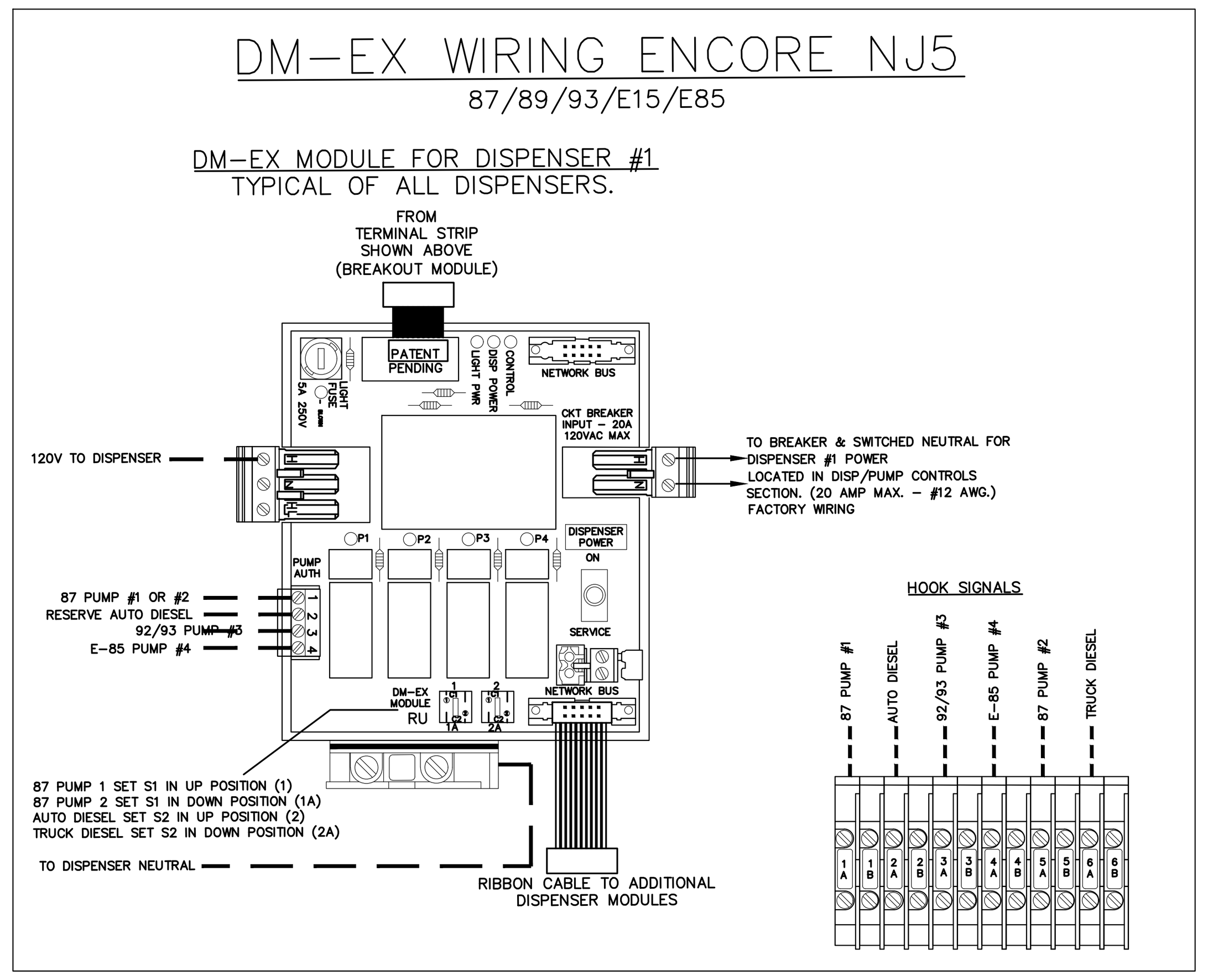
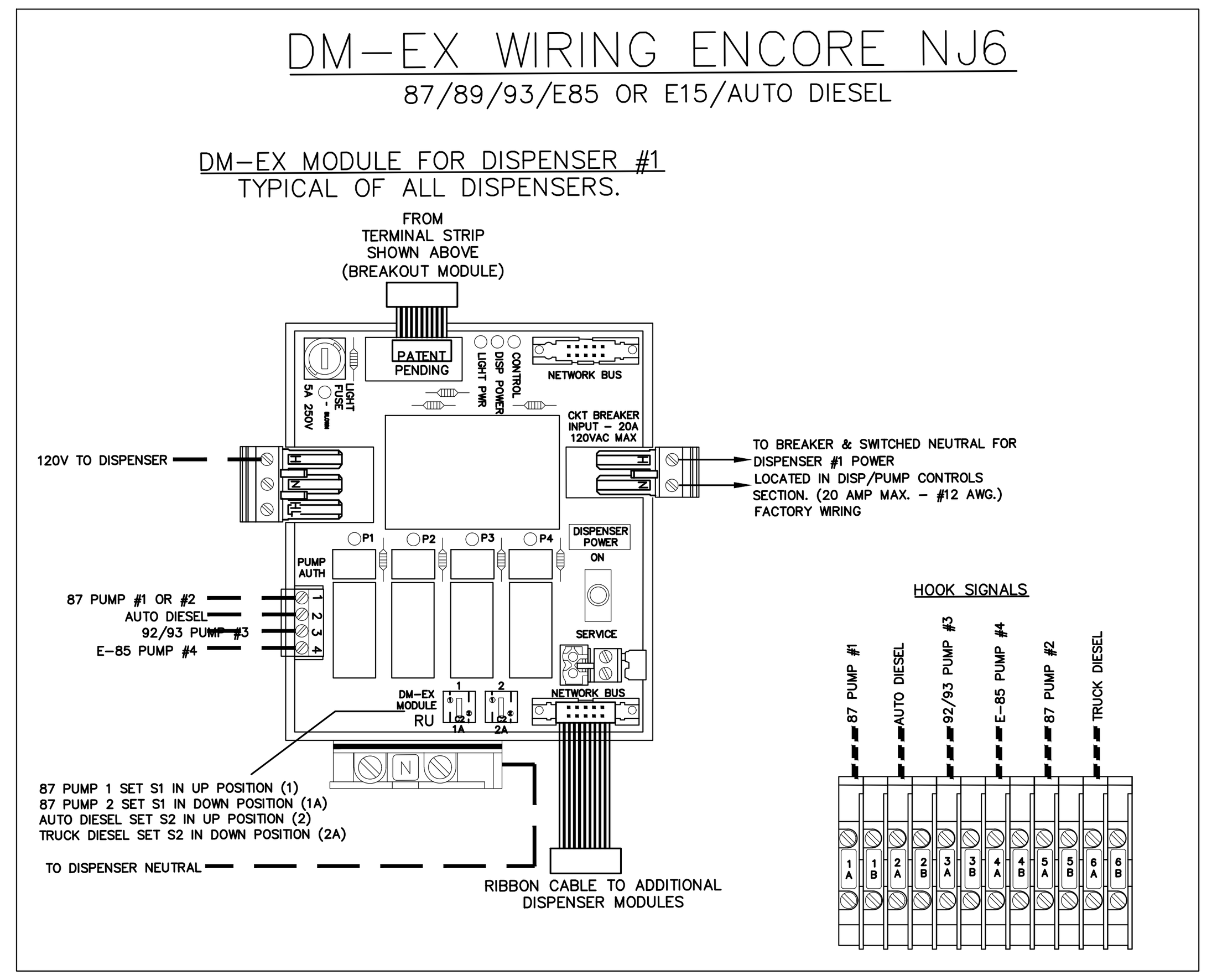
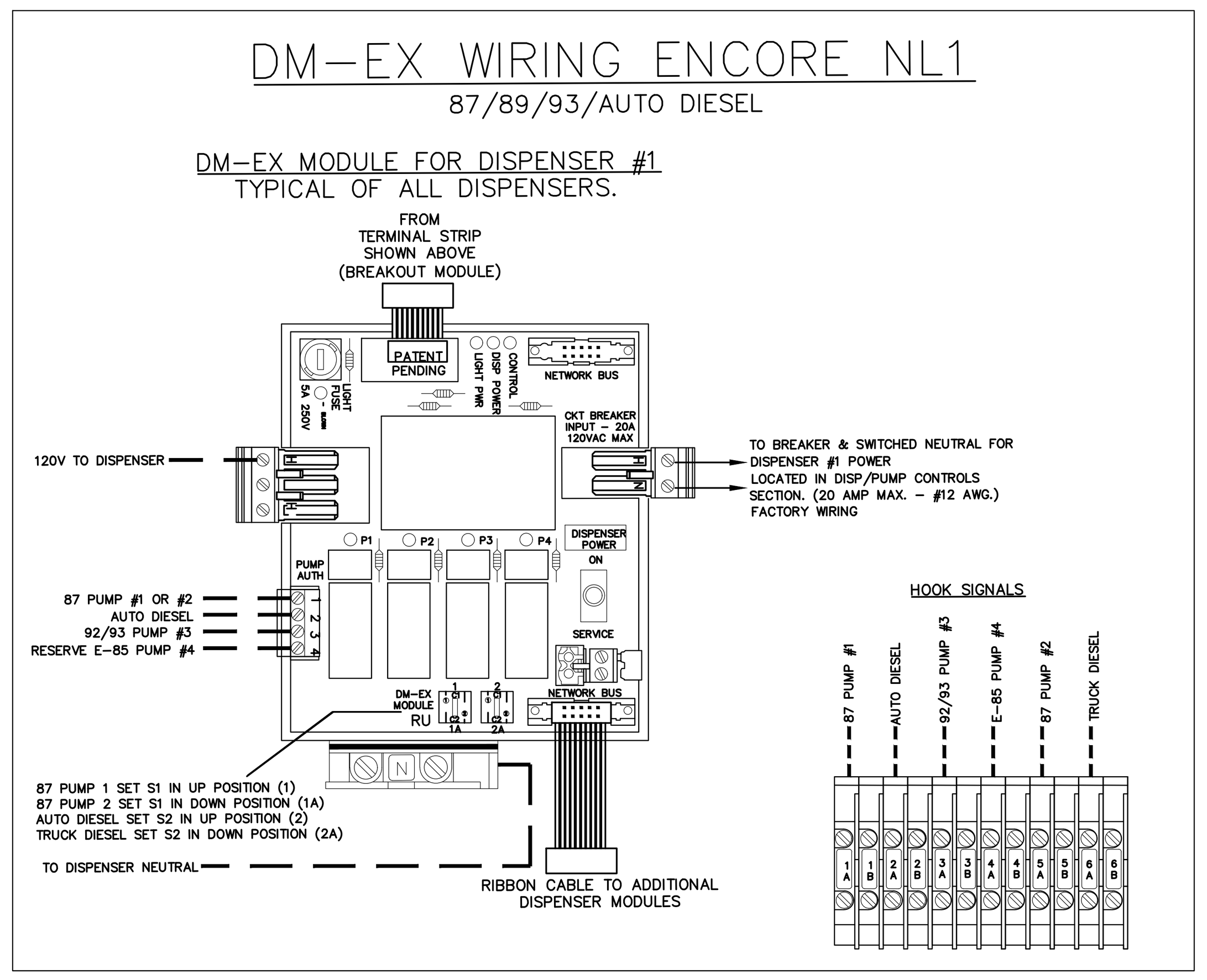
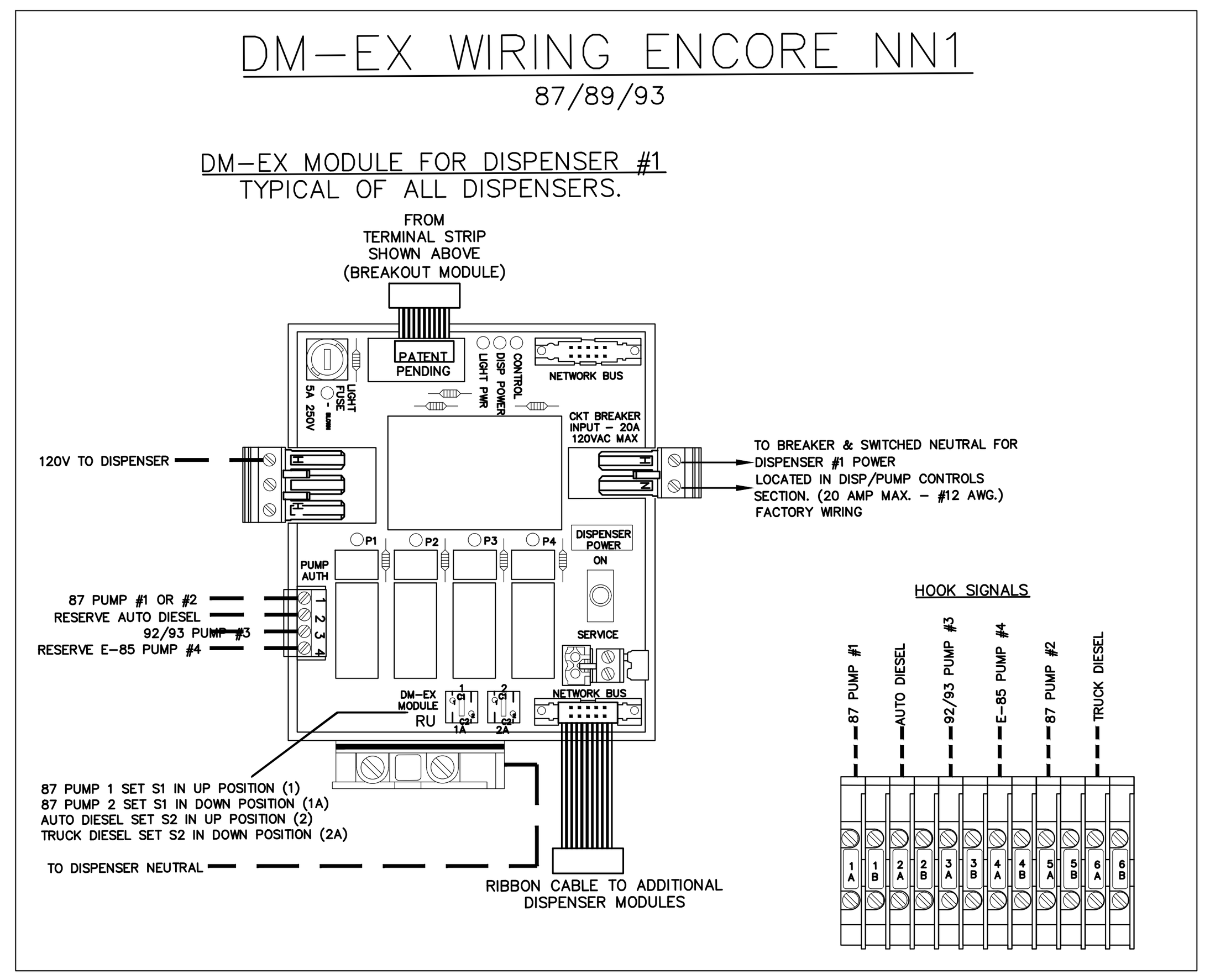
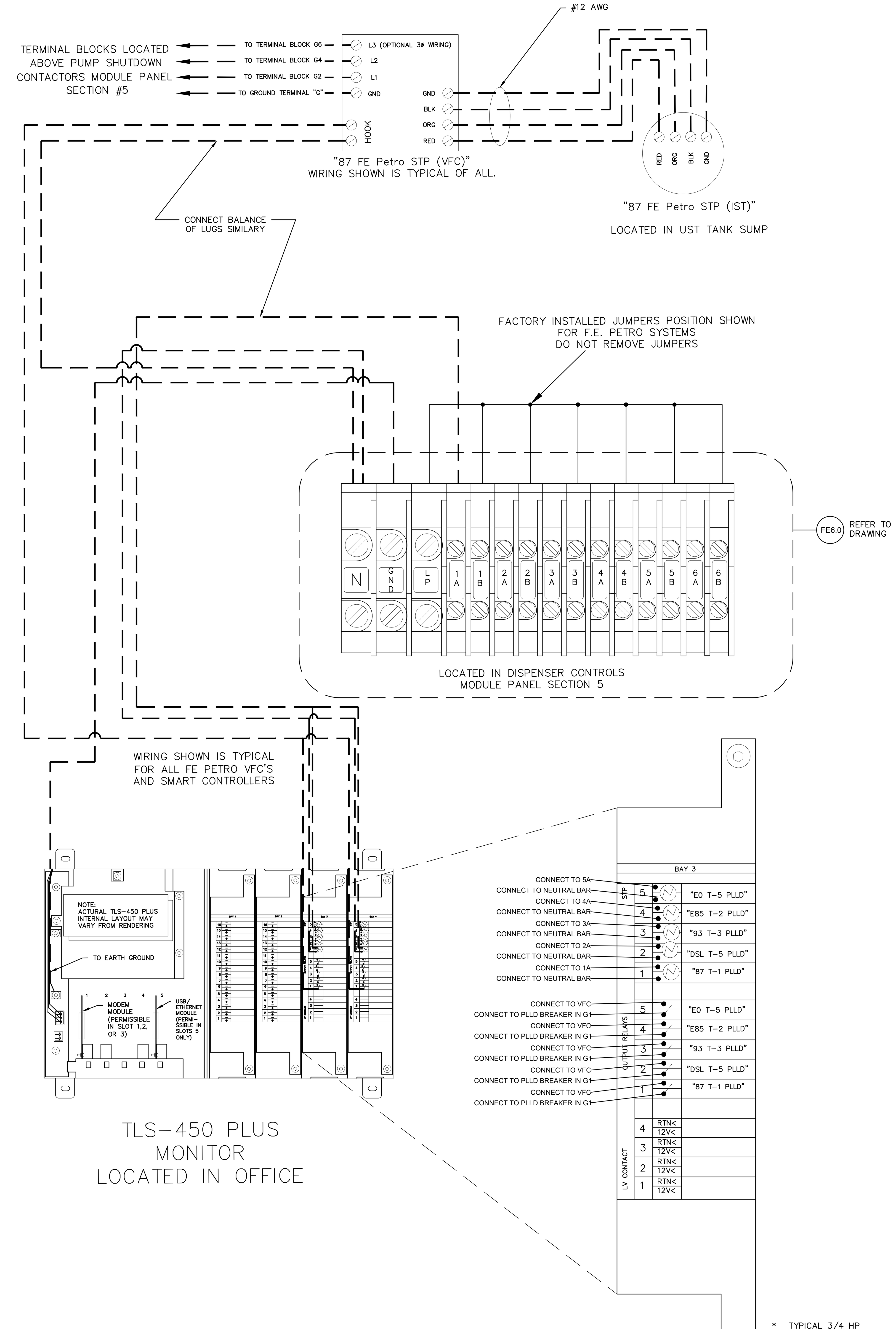


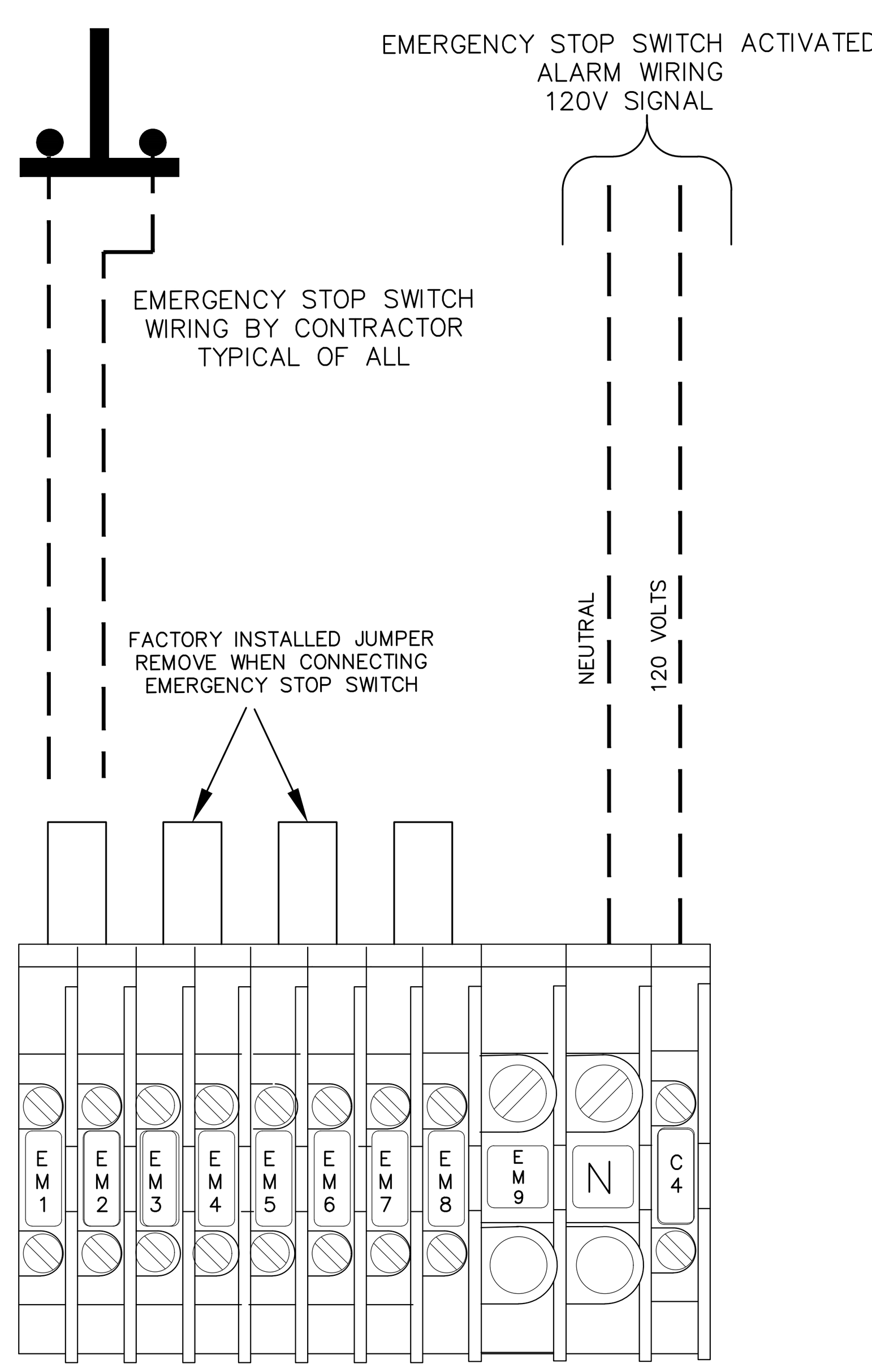








A PUMP INTERFACE WIRING
SCALE: NOT TO SCALE



C E-STOP WIRING
SCALE: NOT TO SCALE

WIRING LEGEND	
————	IPaCS FACTORY WIRING.
— — — —	CONTRACTOR FIELD WIRING.

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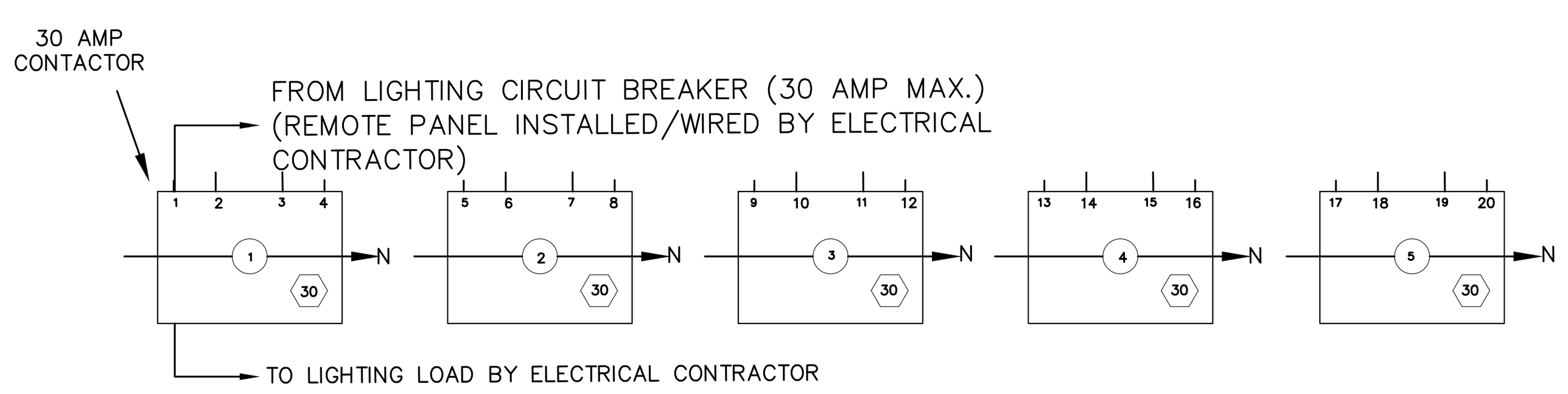
FE6.4

OUTSIDE LIGHTING CONTROL DETAIL



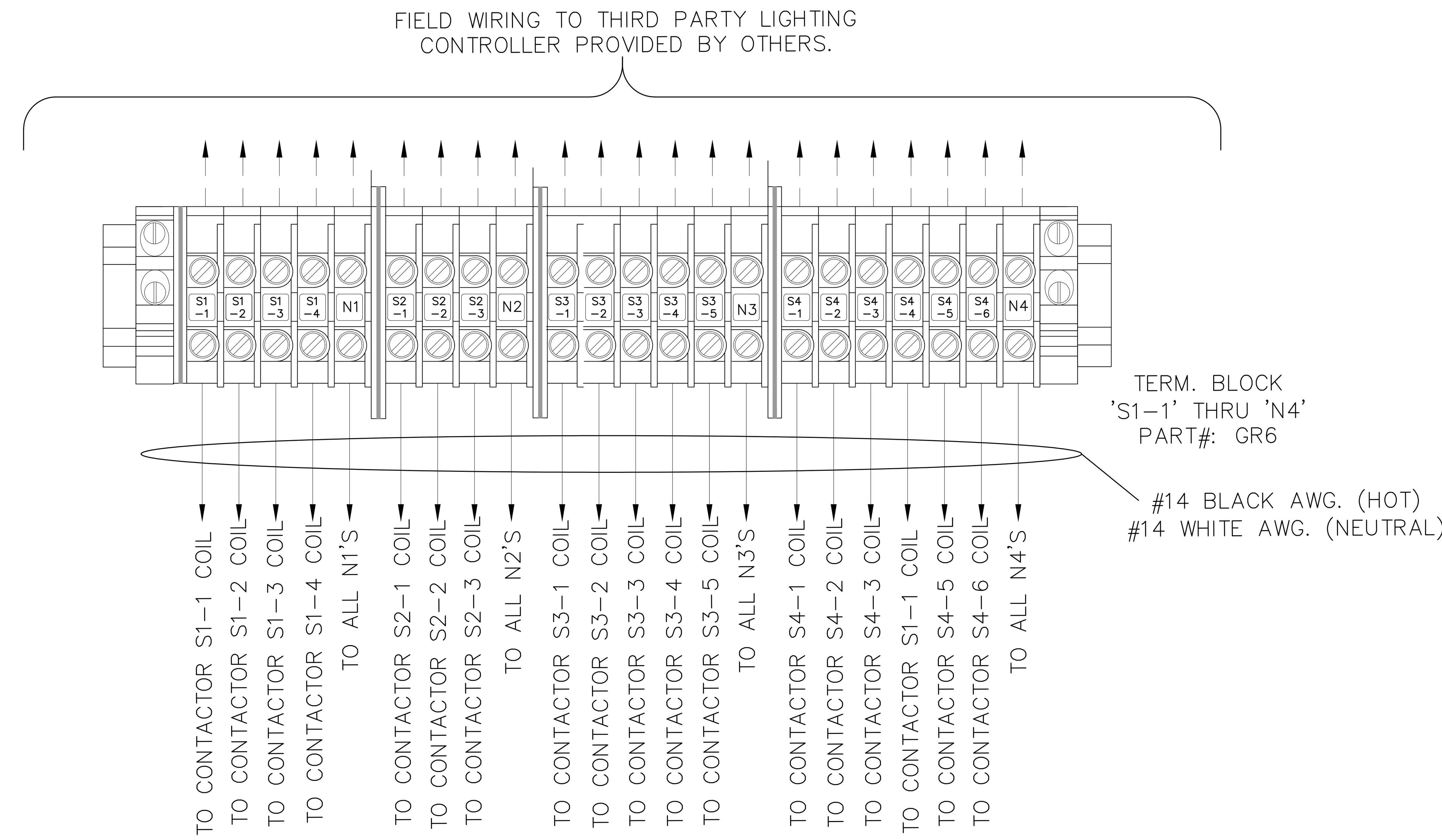
1. OVERCURRENT PROTECTION FOR EACH LIGHTING CIRCUIT TO BE CONTROLLED BY THE REMOTE MOUNTED CONTROLLER IS PROVIDED BY OTHERS. THIS OVERCURRENT PROTECTION SHALL BE LIMITED TO 30 AMPS MAXIMUM FOR EACH CIRCUIT UNLESS OTHERWISE SPECIFIED.
2. N/A
3. N/A
4. THE WIRES FROM ALL CONTACTORS MUST BE NUMBERED AT THE OUTPUT TERMINAL BLOCK INTERFACE.
5. THERE SHOULD ONLY BE A TOTAL OF (4) WIRES LOCATED UNDER ANY ONE TERMINAL BLOCK ON THE INTERFACE TERMINAL STRIP. FAILURE TO COMPLY TO THIS WARNING MAY CAUSE EXCESSIVE HEATING AND IMPROPER OPERATION OF THIS LIGHTING CONTROL SYSTEM.
6. BEFORE WIRING ANY BRANCH CIRCUITS TO THE LUGS ON THE LIGHTING CONTACTORS REFER TO THE PANELBOARD SCHEDULE DRAWING IN THIS SET TO DETERMINE WHAT COLOR WIRE TO USE FOR EACH CIRCUIT. (SEE COLOR CODE CHART).
7. ALL CONTROLLED OUTSIDE LIGHTING CIRCUIT WIRES SHOULD BE TAGGED ON THE LINE SIDE BRANCH WIRE WITH THE CIRCUIT BREAKER NUMBER AT SQUARE D IPaCS USING WIRE–TIE LABELS.
8. N/A
9. ALL DASHED LINES REPRESENT FIELD WIRING.
10. N/A
11. N/A
12. WHEN CONTROLLED LOAD IS A MOTOR, CIRCUITS MUST HAVE TERMINAL PROTECTION INTEGRAL TO MOTOR OR PROVIDED BY OTHERS.

LIGHTING CONTROL EQUIPMENT SHEET

RF #	CONTACTOR NUMBER	CONTACTOR AMPS	PANEL CIRCUITS	OUT PUT
1	S1–1	30	G2–1	S1
2			G2–3	
3				
4				
5	S1–2	30	G2–11	S1
6			G2–13	
7			G2–15	
8				
9	S1–3	30	G2–21	S1
10			G2–23	
11			G2–25	
12			G2–27	
13	S1–4	30	**B–35	S1
14			**B–37	
15			**B–39	
16			**B–41	
17	S2–1	30	G2–5	S2
18			G2–7	
19			G2–9	
20				
21	S2–2	30		S2
22				
23				
24				
25	S2–3	30		S2
26				
27				
28				
29	S3–1	30	G2–29	S3
30			G2–31	
31			G2–33	
32			G2–35	
33	S3–2	30		S3
34				
35				
36				
37	S3–3	30		S3
38				
39				
40				
41	S3–4	30		S3
42				
43				
44				
45	S3–5	30		S3
46				
47				
48				
49	S4–1	30	*F–30	S4
50			*F–32	
51			*F–34	
52			*F–36	
53	S4–2	30	**A–15	S4
54			**A–33	
55			**A–36	
56				
57	S4–3	30	**A–14	S4
58			**A–16	
59				
60				
61	S4–4	30	*F–22	S4
62				
63				
64				
65	S4–5	30		S4
66				
67				
68				
69	S4–6	30		S4
70				
71				
72				

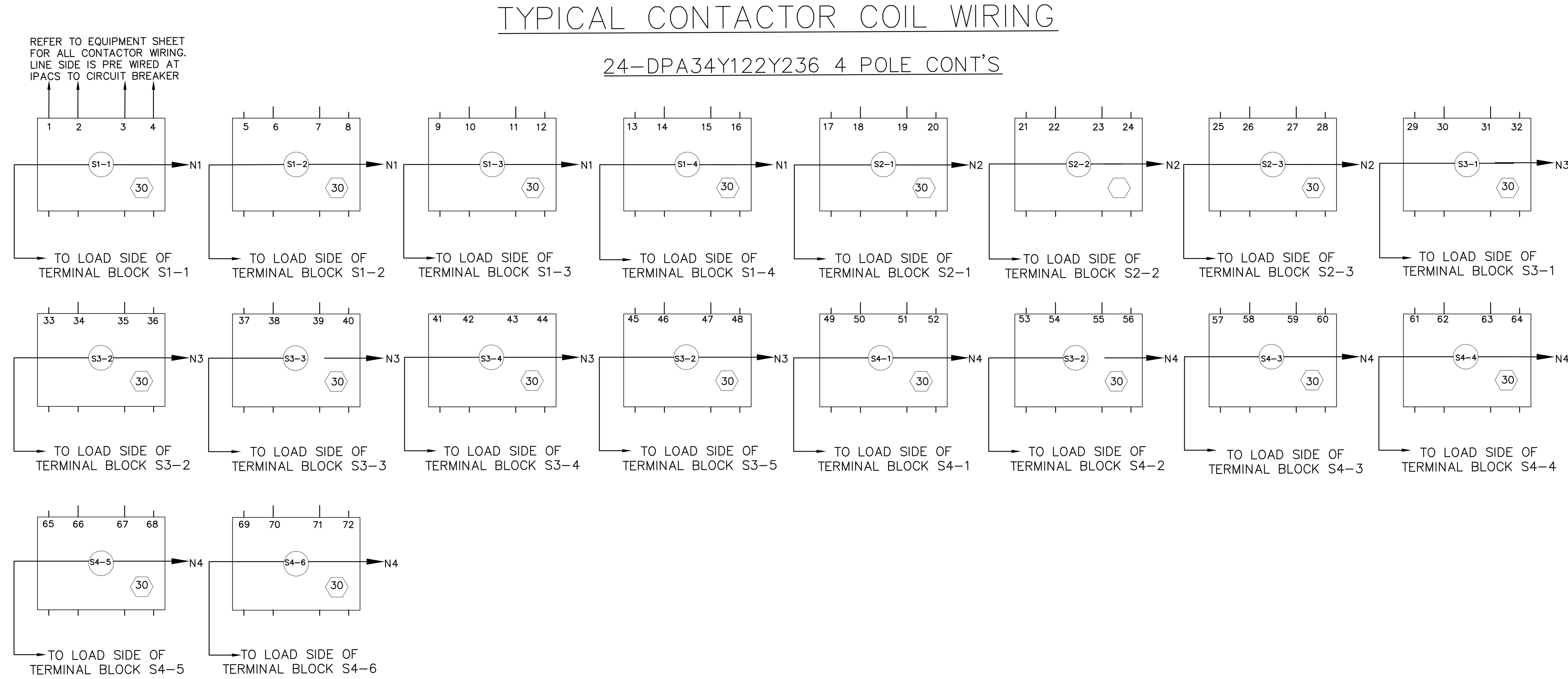
(*) = TAG & ROLL–UP 12FT. OF #12 AWG. (TO BE RE–CONNECTED TO BREAKER AFTER EQUIPMENT IS SET IN PLACE AT JOBSITE).

(**) = TAG & ROLL–UP 15FT. OF #12 AWG. (TO BE RE–CONNECTED TO BREAKER AFTER EQUIPMENT IS SET IN PLACE AT JOBSITE).



TYPICAL CONTACTOR COIL WIRING

24–DPA34Y122Y236 4 POLE CONT'S



120/208 VOLT COLOR CHART

NOTE
BRANCH CIRCUIT WIRING DONE BY SQUARE D IPaCS WILL BE COLOR CODED!

A PHASE – BLACK WIRE
B PHASE – RED WIRE
C PHASE – BLUE WIRE

ALL SINGLE PHASE WIRING IN BLACK
ALL WIRING ABOVE #10 AWG TO BE PHASE COLORED ON EACH END

NOTE:

* BEFORE WIRING BRANCH CIRCUITS REFER TO PANELBOARD SCHEDULES TO DETERMINE THE PHASE COLORS TO BE USED.
* ALL MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION SHALL BE PROVIDED BY OTHERS.

WIRING LEGEND

—————— IPaCS FACTORY WIRING.
— — — — CONTRACTOR FIELD WIRING.

SQUARE D

NOTE:
THIS DRAWING WAS PROVIDED BY SQUARE D SCHNEIDER ELECTRIC AND IS FOR REFERENCE ONLY. IT IS NOT A DESIGN DRAWING

ISSUED FOR

DATE	BY	DESCRIPTION
03–01–21	JW	ISSUED FOR OWNER REVIEW
03–05–21	JW	ISSUED FOR PERMIT

SEAL:

CONSULTANT:
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5136 Beach Road • Medina, Ohio 44256
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ALTOONA,
PENNSYLVANIA 16602
(814) 946-3611

SQUARE D MANUFACTURER ELECTRICAL DRAWINGS

SHEETZ INC. #716 "SAWYER"
283 NC 87
CAMERON, NC 28326
HARNETT COUNTY

SCALE:	N/A
DATE:	3/5/2021
DESIGNED BY:	JW
DRAWN BY:	JW
CHECKED BY:	RWW
JOB NUMBER:	XXXXXX

FE6.5