

STORE #724  
FUEL CANOPY ADDITION  
LAKE CITY, FL

<h1>PROJECT DATA</h1> <p>2020 FLORIDA BUILDING CODE 7TH EDITION 2020 FLORIDA PLUMBING CODE 7TH EDITION 2017 NATIONAL ELECTRICAL CODE OF FLORIDA 2020 FLORIDA MECHANICAL CODE 7TH EDITION 2020 FLORIDA FIRE CODE 7TH EDITION</p> <p>NFPA 30 FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE NFPA 30A CODE FOR MOTOR FUEL DISPENSING FACILITIES AND REPAIR GARAGES NFPA 1 UNIFORM FIRE CODE HANDBOOK</p>
<h1>GENERAL SCOPE</h1> <ol style="list-style-type: none"><li>1. ASPHALT, CONCRETE AND PEA GRAVEL REMOVAL.</li><li>2. TRENCING AND CANOPY COLUMN FOOTING INSTALLATION.</li><li>3. STORM DRAINAGE PIPING FROM NEW CANOPY EXPANSION COLUMN.</li><li>4. (2) NEW FUEL DISPENSER SUMPS, DISPENSER ISLANDS, 3+1 DISPENSERS AND HANGING HARDWARE.</li><li>5. (1) REUSE EXISTING RV FUEL DISPENSER, NEW DISPENSER ISLANDS AND 3+1 DISPENSERS UDC.</li><li>6. NEW FRP PRODUCT PIPING.</li><li>7. FRP FITTING INSTALLATION.</li><li>8. CANOPY ADDITION TO EXTEND EXISTING AUTO CANOPY 34FT.</li><li>9. CANOPY COLUMNS, FOOTINGS, STRUCTURAL FRAMING, DECKING AND FASCIA.</li><li>10. ELECTRICAL CONNECTION AT NEW DISPENSERS.</li><li>11. PEA GRAVEL AND CONCRETE WORK.</li><li>12. RE-GRADING AROUND NEW CONCRETE SLAB AREA.</li><li>13. ASPHALT WORK.</li></ol>

SHEET: F-1



## I. GENERAL

## II. WORK DESCRIPTION

- ### III. PIPING SPECIFICATIONS

1. THE SITE PLAN, PIPING PLAN AND THESE SPECIFICATIONS WILL GOVERN THE EXACT LOCATION, NUMBER AND SIZE OF ALL UNDERGROUND PIPING AS WELL AS THE TYPE OF EQUIPMENT TO BE INSTALLED. REFER TO THE DRAWINGS FOR INSTALLATION PROCEDURES TO BE FOLLOWED. NOTE: ALL REFERENCES TO VAPOR LINES ARE APPLICABLE ONLY TO COMMON HEADER SYSTEM FOR VAPOR I, VAPOR II AND VENT, AND THOSE AREAS WHERE INDIVIDUAL VAPOR PHASE I, PHASE II AND VENTS LINES ARE REQUIRED. NON STATE II AREAS DO NOT REQUIRE STAGE II PIPING.
2. REFER TO SECTIONS I, GENERAL, II, CONDITIONS AND III, SCOPE OF WORK OF THESE SPECIFICATIONS FOR INFORMATION AND CONDITIONS APPLICABLE TO THE INSTALLATION OF PIPING (EXCEPT WHERE APPLICABLE TO TANKS ONLY).
3. MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION AND OPERATIONAL TESTING OF PUMPS, FILTERING SYSTEM, TANK GAUGING AND DISPENSERS SHALL BE FOLLOWED TO AVOID POSSIBILITY OF DAMAGE TO EQUIPMENT.
4. ALL INSTALLATIONS SHALL INCLUDE THE INSTALLATION OF AMERON DUALJOY 3000 LXC, VAPOR RECOVERY AND VENTING SYSTEMS SHALL BE SINGLE WALL FRP PIPE, MANUFACTURED BY AMERON OR EQUAL, (EXCEPT CALIFORNIA - REQUIRES DOUBLE WALL), ALL PIPING, FLEXES, AND FITTINGS (EXCEPT FOR VALVES, BOOTS, AND STAINLESS STEEL FLEX CONNECTORS) ARE PROVIDED BY FUEL CONTRACTOR.
5. TRENCH EXCAVATION
  - A. ALL TRENCHES SHALL BE EXCAVATED TO NEAT LINES AND SHALL BE OF SUFFICIENT WIDTH, DEPTH AND ALIGNMENT AS TO PERMIT THE INSTALLATION OF DOUBLE WALL PIPING, FITTINGS, AND LAYING OF PIPES THEREN OR INSTALLATION OF CONDUITS.
  - B. THE DITCH SHALL BE EXCAVATED TO SLOPE FROM THE TANK HOLE AREAS UP TO THE DISPENSER OR VENT AREA (SLOPE 18" PER FOOT) AND ALLOW A 6" PEA GRAVEL BED BENEATH THE PIPING.
  - C. PROVIDE A MINIMUM 24" PEA GRAVEL COVER OVER THE VENT LINES AND CONDUITS. TRENCH DIMENSIONS SHALL ALLOW FOR A 6-INCH PEA GRAVEL ALL AROUND THE PIPES AND CONDUITS. ALL PIPE TRENCHES ARE TO BE LINED WITH FILTER GRAD - PROPEC 2002 OR EQUIVALENT.
6. IF PIPING WORK IS FOR REPLACEMENT AT EXISTING LOCATION, FOLLOW THESE ADDITIONAL GUIDELINES:
  - A. SURVEY THE SITE TO DETERMINE WHERE POSSIBLE, THE LOCATION OF OTHER EXISTING UNDERGROUND FACILITIES SUCH AS SEWER LINES, WATER, CONDUITS ETC., TO MINIMIZE DAMAGE DURING THE EXCAVATION PROCESS. HAND DIG AREAS OF POTENTIAL DAMAGE.
  - B. SAWCUT CLEAN AND SQUARE THE AREAS TO BE EXCAVATED. BREAK OUT AND REMOVE CONCRETE AND PAVING WITHIN CONDUITS LINES. DISPOSE OF ALL DEBRIS TO MINIMIZE INTERFERENCE.
7. TRENCH BACKFILLING
  - A. BED AND BACKFILLING MATERIALS SHALL BE PEA GRAVEL OR OTHER EQUIVALENT MATERIAL DESIGNATED BY THE OWNER ENGINEER.
  - B. REMOVE ALL FORM LUMBER AND CONSTRUCTION DEBRIS PRIOR TO DEPOSITION OF BACKFILL.
  - C. BACKFILL MATERIAL SHALL BE PLACED IN THIN UNIFORM LAYERS AROUND AND OVER PIPING, VENT LINES OR CONDUITS AND THEN COMPACTED. BACKFILL REQUIRED UNDER CONCRETE IN LOCATIONS WHERE HAND TAMPING IS NECESSARY. SHALL BE PLACED IN LAYERS NOT EXCEEDING SIX INCHES OF COMPACTED THICKNESS, MOISTENED AND HAND TAMPED WITH PNEUMATIC OR HAND TAMPERS WEIGHING NO LESS THAN 2-12 POUNDS PER SQUARE INCH OF TAMPED AREA. THOROUGHLY TAMP ENTIRE AREA TO A DENSITY OF 90% MAXIMUM DENSITY.
  - D. ALL BACKFILLING OF ANY EXCAVATION SHALL BE DONE ONLY AFTER TESTING, REQUIRED INSPECTION AND APPROVAL HAVE BEEN OBTAINED FROM PROPER AUTHORITIES AND THE OWNER REPRESENTATIVE.
  - E. BACKFILL OR FILL IN PLANTING AND UNIMPROVED AREAS, MAY BE CONSOLIDATED BY PLYDUNG WITH WATER.
  - F. IN EXISTING OPERATING LOCATIONS, THE CONTRACTOR SHALL RESTORE THE ORIGINAL CONDITION THE AREAS DISTURBED BY TRENCHING AND REGRASS NATURAL AREAS AS REQUIRED TO MATCH EXISTING VEGETATION IN ORDER TO FACILITATE THE PROPER DRAINAGE OF THE SITE.

8. ITEM NOT USED.

- PIPING SYSTEM - FRP
- MATERIALS
- A. ALL PRODUCT PIPING SHALL BE DOUBLE WALL FRP WITH FITTINGS AND BOOTS AS REQUIRED.
- B. ALL UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH NFPA No. 30 AND ALL APPLICABLE LOCAL CODES.
10. PRODUCT PIPING HANDLING AND STORAGE
- REFER TO MANUFACTURER'S CURRENT INSTALLATION MANUALS.
11. SPECIAL INSTRUCTIONS FOR FRP PIPING: (VERY IMPORTANT)
- A. IT IS REQUIRED THAT THE FUEL CONTRACTOR BE A CERTIFIED INSTALLER OF FRP PIPING AND HAVE ON SITE THE CURRENT MANUFACTURER'S INSTALLATION MANUALS, BULLETINS AND LITERATURE PERTAINING TO FRP PIPE.
- CONTRACTOR SHALL STRICTLY ADHERE TO MANUFACTURER'S RECOMMENDED PROCEDURES FOR INSTALLATION. NO DEVIATION FROM THESE SPECIFICATIONS WILL BE ALLOWED.
- B. SPECIAL CARE SHALL BE TAKEN TO PREVENT THE INTERMIXING OF STONES, DIRT CLODS OR OTHER DEBRIS WITH THE CLEAN PEA STONE AROUND THE PIPE.
- C. BY REFERRING TO MECHANICAL DRAWINGS, CONTRACTOR SHALL PERMIT NO STAKES BEING DRIVEN IN THE VICINITY OF ANY FRP UNDERGROUND PIPING.
- D. ALL PIPE RUNS SHALL HAVE DETECTABLE TRACER TAPE INSTALLED.
12. NOT USED
13. NOT USED
14. PIPING SYSTEM - METALLIC

## B. METALLIC PIPE AND FITTING SPECIFICATIONS

- (1) PIPE: ALL PIPE SHALL BE MINIMUM SCHEDULE 40 WELDED OR SEAMLESS STEEL. PIPE PER ASTM A-53 & ASTM-120 SPECIFICATION.
- (2) FITTINGS: ALL SCREWED FITTINGS SHALL BE BLACK IRON 300 LB MALLEABLE IRON PER SPECIFICATION ASTM A 197 AND DIMENSIONAL STANDARD ASA B-620
- i. METAL PRODUCT PIPE FITTINGS IN UNDERGROUND DISPENSER CONTAINMENT SHALL BE STAINLESS STEEL (TEE AND ELBOWS)
- (3) WRAPPING: STREET ELLS AND "ALL THREED" NIPPLES SHALL NOT BE USED. PIPELINES SHALL BE PLACED IN STRAIGHT RUNS, WHEN USING PIPE FITTINGS, THREADS SHALL BE CLEAN, FULL LENGTH, COATED WITH PETROLEUM RESISTANT THREADED LUBRICANT (PERMATEX NO. 2 OR EQUAL), THEN TIGHTENED TO REFUSAL.

#### IV. DISPENSER INSTALLATION

1. DEEP SUMPS MUST BE INSTALLED IN THE DISPENSER CORE HOLES FOR COLLECTION OF LIQUIDS AND GRAVITY DRAINAGE INTO THE DOUBLE WALL PRODUCT PIPING. LIQUIDS WILL EVENTUALLY MIGRATE TO THE TURBINE PUMP CONTAINMENT SUMP AND SET OFF THE MONITORING PROBE IN THAT SUMP.
2. DISPENSERS SHALL BE INSTALLED LEVEL AND ANCHORED TO CONCRETE PUMP ISLANDS WITH A STEEL ANCHORAGE BOX (FURNISHED WITH DISPENSER SUMP UNLESS OTHERWISE SPECIFIED BY THE OWNER REPRESENTATIVE).
3. FURNISH AND INSTALL A 2" SLOTTED PIPE AND A LIQUID DETECTOR TO BE CONNECTED TO THE MONITORING DETECTION SYSTEM.
4. DISPENSER CORE HOLES AND SUMPS SHALL BE LEFT EMPTY OF BACKFILL FOR INSPECTION AND MAINTENANCE. FURNISH AND PADLOCK ALL DISPENSER NOZZLES. KEEP DISPENSER SHIPPING CARTONS OVER DISPENSERS FOR PROTECTION.
5. INSTALL AND ADJUST ALL SIVWELS, HOSES, NOZZLES, NOZZLE HANFERS AND HOODS.
6. UNPLUG MANAGERS KEYPAD TO ALL DISPENSERS
7. DISPENSER INSTALLERS SHALL RE-CALIBRATE DISPENSER 60 DAYS AFTER OPENING OF STORE.

## V. TESTING

1. CONSTRUCTION TESTING
- A. ITEM NOT USED.
- B. PIPING
1. GENERAL CONTRACTOR SHALL GIVE REASONABLE ADVANCE NOTICE TO OWNER'S FIELD REPRESENTATIVE AND ANY OTHER REQUIRED LOCAL AUTHORITIES FOR THEIR INSPECTION OF THE UNDERGROUND TANK INSTALLATION AND LINES PRIOR TO BACKFILLING AND ALSO FOR THEIR PRESENCE DURING THE PRESSURE TESTING OF THE SYSTEM.
  2. THE OWNER REPRESENTATIVE SHALL BE NOTIFIED TWENTY-FOUR HOURS IN ADVANCE OF TESTS.
  3. EACH PIPE SYSTEM SHALL BE FLUSHED CLEAN, TEST THE PRODUCT AN IF APPLICABLE TEST THE VAPOR PIPING BY ISOLATING THE LINES FROM PUMPS, DISPENSERS AND TANKS, THEN APPLY AN AIR PRESSURE OF PSI TO EACH PRIMARY LINE AND TEST ALL JOINTS FOR LEAKS THEN APPLY NO MORE THAN 10 PSI TO EACH SECONDARY LINE AND TEST ALL JOINTS.
  4. ALL PRIMARY AND SECONDARY PIPING SHALL BE TESTED BEFORE BACKFILLING AND CONTINUOUSLY THEREAFTER UNTIL BACKFILL AND PAVING IS COMPLETED AND TEST IS ACCEPTED BY LOVE'S REPRESENTATIVE.
  5. IF NO PERCEPTIBLE CHANGE IN PRESSURE HAS OCCURRED AT THE END OF THE TEST PERIOD, THE SYSTEM SHALL BE CONSIDERED ACCEPTABLE BEFORE BACKFILLING.
  6. NO PRODUCT SHALL BE INTRODUCED INTO THE LINES UNTIL AFTER PAVEMENT IS INSTALLED OVER ALL FUEL LINES. LOCAL ORDINANCES AND REQUIREMENTS SHALL TAKE PRECEDENCE IF MORE SEVERE.
2. PRIOR TO POST CONSTRUCTION TESTING
- A. THE SYSTEM MUST BE BLEED OF AIR AND PRESSURE. TESTED USING GAUGES SUITABLE FOR GASOLINE/DIESEL/DEF SERVICE WITH A MAXIMUM READING OF 60 P.S.I. INSTALLED AT PLUGGED OPENING PROVIDED IN EACH DISPENSER.
- B. THE SYSTEM SHALL BE COMPLETELY PURGED BY DISCHARGING PRODUCT THROUGH ALL DISPENSERS ON EACH PUMP, STARTING WITH THE MOST REMOTE DISPENSER, USING A SUITABLE HOSE CONNECTED TO THE NOZZLE AND RETURN PURGED FUEL INTO THE APPROPRIATE TANK. PURGE A MINIMUM OF 500 GALLONS THROUGH EACH DISPENSER HOSE. OBSERVE THE GAUGE AND CONTINUOUSLY FLOW PRODUCT UNTIL ALL EVIDENCE OF AIR DISAPPEARS. PURGED DEF CANNOT BE RETURNED TO THE TANK OR DISPOSED OF IN THE OIL WATER SEPARATOR.
- C. ONCE THE SYSTEM HAS BEEN PURGED THEN ALL FUEL METERS MUST BE CALIBRATED, DOCUMENTED, AND WIRE CALIBRATION SEAL INSTALLED.
3. POST CONSTRUCTION TESTING AND TEST PROCEDURES
- A. ALL THE POST CONSTRUCTION TESTING MUST BE COMPLETED BY A THIRD PARTY.
- B. LINE TIGHTNESS TEST - PEI, RP100, 11.1.4.
- C. HYDROSTATIC UDC AND SUMP TEST - PEI, RP1200, 6.5.6 OR 6.6.
- D. PIPING ANNUAL TEST (ALL SECONDARY PIPING IS REQUIRED TO BE TESTED INCLUDING SYPHON LINES AND VENT PIPING IF APPLICABLE) - PEI, RP1200, 5.7.
- E. LINE LEAK DETECTOR FUNCTIONALITY TEST PEI, RP1200, 9.2.6.
- F. SENSOR FUNCTIONALITY TEST (ATG PRINT OUTS MUST ACCOMPANY TEST FORM) - PEI, RP1200, 8.3.6.
- G. SHEAR VALVE FUNCTIONALITY TEST - PEI, RP1200, 10.2.5.
- H. TESTING IS NOT LIMITED TO TESTS AND PROCEDURES NOTED ABOVE - VERIFY LOCAL TESTING REQUIREMENTS
4. AFTER POST CONSTRUCTION TESTING
- A. THE IMPACT VALVE PLUG UNDER EACH DISPENSER SHALL BE SEALED WITH A WIRE SEAL THROUGH THE HOLE IN THE PLUG AND AROUND THE VALVE. QUICK CONNECT TEST FITTINGS CANNOT BE LEFT IN THE SHEAR VALVES.
- B. ALL HYDROSTATIC TEST WATER MUST BE DISPOSED OF PROPERLY. CONTACT LOVE'S ENVIRONMENTAL DEPT WITH ANY DISPOSAL QUESTIONS.
- C. ALL SUMPS, UDCs, AND SPILL BUCKETS MUST BE CLEAN, DRY AND FREE OF DEBRIS.
- D. ALL TESTING DOCUMENTS MUST BE SUBMITTED TO THE LOVE'S ENVIRONMENTAL DEPARTMENT BY THE MONDAY PRIOR TO OPENING UNLESS STATE OR LOCAL AUTHORITIES REQUIRE IT TO BE SUBMITTED IN ADVANCE OF THIS DATE.
- E. ALL TESTING OUTLINED IN 7.2 AND INSTALLATION CHECKLIST (NOTED BELOW) MUST BE SUBMITTED TO LOVE'S ENVIRONMENTAL DEPARTMENT BEFORE FINAL PAYMENT IS RELEASED.
1. LOVE'S NOV INSTALLATION CHECKLIST
  2. METER CALIBRATION
  3. ISO CERTIFICATION AND CHECKLIST (IF APPLICABLE)
  4. BRV FUEL PANEL CHECKLIST

## 1. EQUIPMENT

1. THE CONTRACTOR SHALL FURNISH ALL EQUIPMENT AND MATERIALS NOT FURNISHED BY OWNER BUT NECESSARY FOR THE COMPLETION OF THE PROJECT.
2. REFER TO CHART TITLED "MATERIAL FURNISHED BY OWNER" FOR THE LIST OF EQUIPMENT SCHEDULED TO BE FURNISHED BY OWNER. THE CHART ONLY DESCRIBES AND IDENTIFIES THE ITEMS PER MANUFACTURER. CORRELATE THE EQUIPMENT AND MATERIALS TO SYMBOLS SHOWN IN THE REFERENCE DRAWINGS. SEE THE SITE PLAN AND REFERENCE DRAWINGS FOR QUANTITIES REQUIRED.
3. OWNER MAY ELECT TO REQUEST THE CONTRACTOR TO FURNISH ALL OR PART OF THE EQUIPMENT TO BE FURNISHED BY OWNER. SUCH ITEMS WILL BE LISTED IN THE CONTRACT DOCUMENT OR SITE PLAN. NO SUBSTITUTIONS WILL BE ALLOWED UNLESS APPROVED BY THE OWNER REPRESENTATIVE.

## VII. SITE EARTHWORK

1. CONTRACTOR SHALL STOCKPILE ANY CONTAMINATED SOIL ON BACK OF SERVICE STATION LOT AND COVER WITH MEMBRANE AS DIRECTED BY OWNER.
2. BACKFILL WITH THE STOCKPILED EXCAVATION MATERIAL AND/OR OTHER APPROVED NATIVE OR IMPORT SOILS. ALL BACKFILL SHOULD BE SPREAD, WATERED, MIXED AND COMPACTED BY MECHANICAL MEANS IN APPROXIMATE 6 INCH LIFTS. THE DEGREE OF COMPACTION OBTAINED SHOULD BE AT LEAST 90 PERCENT OF THE ASTM-D-1557-76 LABORATORY TEST STANDARD.
3. IMPORTED FILL MATERIALS SHOULD CONSIST OF CLEAN GRANULAR SOILS FREE FROM VEGETATION, DEBRIS, OR ROCKS LARGER THAN 3 INCHES. THE EXPANSION INDEX VALUE SHOULD NOT EXCEED A MAXIMUM OF 20 (NON-EXPANSIVE).
4. ALL EARTHWORK OPERATIONS SHOULD BE SUBJECT TO COMPACTION MONITORING OBSERVATION AND TESTING BY A SOILS ENGINEER.
5. CONTRACTOR SHALL Haul Away and LEGALLY DISPOSE OF ALL EXCESS EXCAVATED MATERIALS, ASPHALT, AND CONCRETE AFTER OWNER CLEARS SOILS.

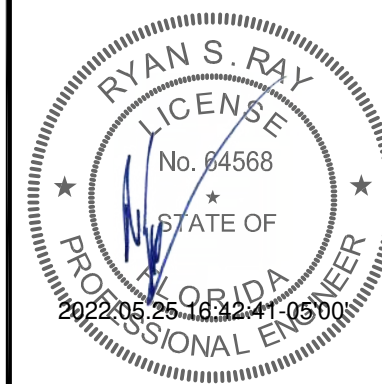


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LAKE CITY, FL  
STORE #724

**Love's**  
**Travel Stop &**  
**Country Stores**



Ryan S. Ray, P.E.  
License #64568  
Harrison French &  
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ISSUE BLOCK


STORE NO.	61
DOCUMENT DATE:	03.30.2017
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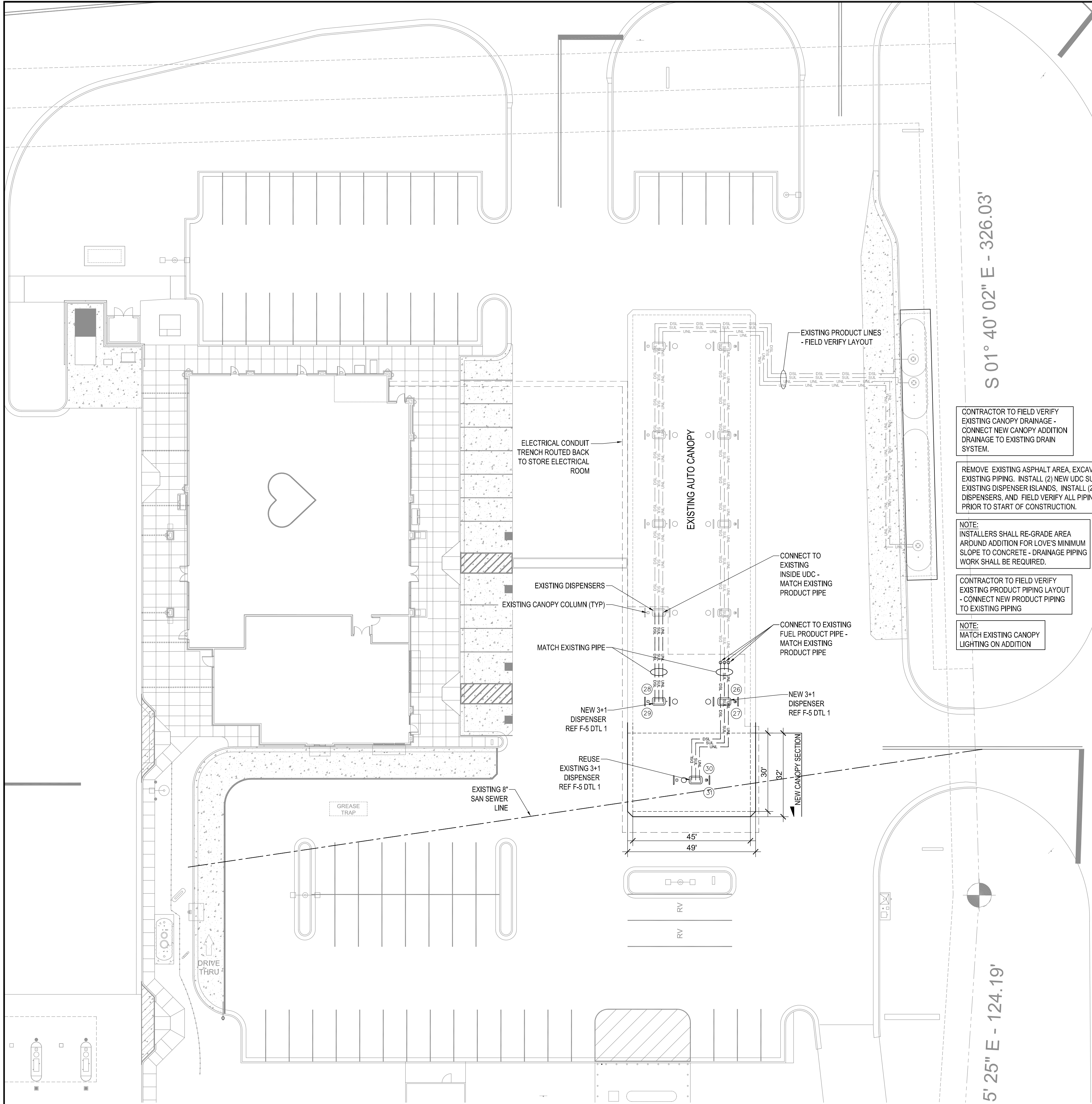
## SPECIFICATIONS, MATERIAL, & EQUIPMENT

SHEET:

F-2



May25.2022-3:50pm - User waylon.barnes  
F:\0707-22-98010 Loves - Lake City, FL 72404-Design\Fuel\Fuel Drawings\F03 UNDERGROUND PIPING PLAN.dwg



**1**  
**FUEL PIPING SCHEMATIC PLAN**  
Scale: 1" = 20'



**GENERAL NOTES:**

- REFER TO "SPECIFICATIONS, MATERIAL & EQUIPMENT" FOR CONDITIONS, INSTALLATION PROCEDURES, MATERIALS, EQUIPMENT AND GENERAL REQUIREMENTS.
- REFER TO THIS PLAN FOR THE INSTALLATION OF PIPING, DISPENSERS, SLABS AND ELECTRICAL DEVICES.
- THE LOCATION OF TANK BOXES AND OTHER APPURTENANCES AS WELL AS THE DEVICES INSIDE THE BUILDING MAY VARY FROM THE PROJECT REQUIREMENTS. REFER TO SPECIFIC PLANS.
- THE CONTRACTOR TO INSTALL CONCRETE CHAIRS IN ALL REINFORCED CONCRETE SLAB CONDITIONS.
- ALL THREAD SEALANT SHALL BE GASOILA E-SEAL THREAD SEALANT.

**PIPING:**

- ALL PRODUCT PIPING SHALL MATCH EXISTING PRODUCT PIPING UNLESS OTHERWISE NOTED. FUEL CONTRACTOR SHALL FIELD VERIFY PRODUCT PIPING ON SITE. (AMERON LCX PIPE)
- ALL PRODUCT PIPING, VAPOR RECOVERY AND VENT LINES SHALL SLOPE A MINIMUM OF 1/8" PER FOOT DOWN TOWARDS THE TANKS. SLOPE MUST BE FIELD VERIFIED BEFORE INSTALL TO CONFIRM UST DEPTH. REFER TO NOTE 4 UNDER EXCAVATION AND TANK BURIAL.
- PIPING TRENCH SIDES AND BOTTOM TO BE LINED WITH FILTER FABRIC - MIAFI #160N GEOTEXTILE 6oz. OR EQUIVALENT.
- ALL PRODUCT PIPING RUNS SHALL HAVE DETECTABLE TAPE BURIED BELOW GRADE.
- ALL ELECTRICAL CONDUIT RUNS SHALL HAVE DETECTABLE TAPE INSTALLED.

CONTRACTOR TO FIELD VERIFY EXISTING CANOPY DRAINAGE - CONNECT NEW CANOPY ADDITION DRAINAGE TO EXISTING DRAIN SYSTEM.

REMOVE EXISTING ASPHALT AREA, EXCAVATED DOWN TO EXISTING PIPING. INSTALL (2) NEW UDC SUMPS; MATCH EXISTING DISPENSER ISLANDS. INSTALL (2) GILBARCO 3+1 DISPENSERS, AND FIELD VERIFY ALL PIPING AND FITTINGS PRIOR TO START OF CONSTRUCTION.

NOTE: INSTALLERS SHALL RE-GRADE AREA AROUND ADDITION FOR LOVE'S MINIMUM SLOPE TO CONCRETE - DRAINAGE PIPING WORK SHALL BE REQUIRED.

CONTRACTOR TO FIELD VERIFY EXISTING PRODUCT PIPING LAYOUT - CONNECT NEW PRODUCT PIPING TO EXISTING PIPING

NOTE: MATCH EXISTING CANOPY LIGHTING ON ADDITION

- LEGEND**
- |     |     |     |                                          |
|-----|-----|-----|------------------------------------------|
| UNL | UNL | UNL | A - ASSIGNED TO UNLEADED 87 OCTANE       |
| SUL | SUL | SUL | B - ASSIGNED TO SUPER UNLEADED 92 OCTANE |
| DSL | DSL | DSL | C - ASSIGNED TO DIESEL                   |

- ABBREVIATIONS**
- |      |   |                  |
|------|---|------------------|
| PR-A | = | PIPING-PRODUCT A |
| PR-B | = | PIPING-PRODUCT B |
| PR-C | = | PIPING-PRODUCT C |
| PR-D | = | PIPING-PRODUCT D |



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LAKE CITY, FL  
STORE #724

**FUELING**

PROJECT NUMBER: 07-22-98010

**Love's**  
**Travel Stop & Country Stores**



Ryan S. Ray, P.E.  
License #84568  
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**ISSUE BLOCK**


STORE NO. 603

DOCUMENT DATE: 03.30.22

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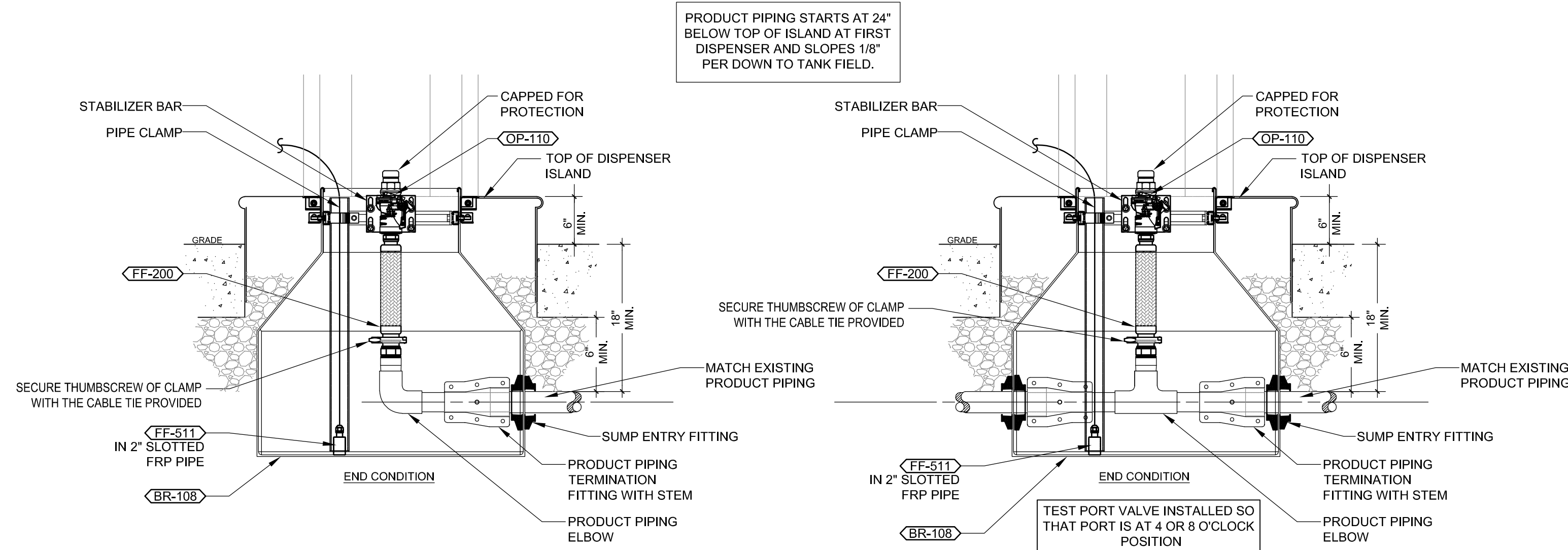
**UNDERGROUND PIPING PLAN FOR GASOLINE, AND DIESEL**

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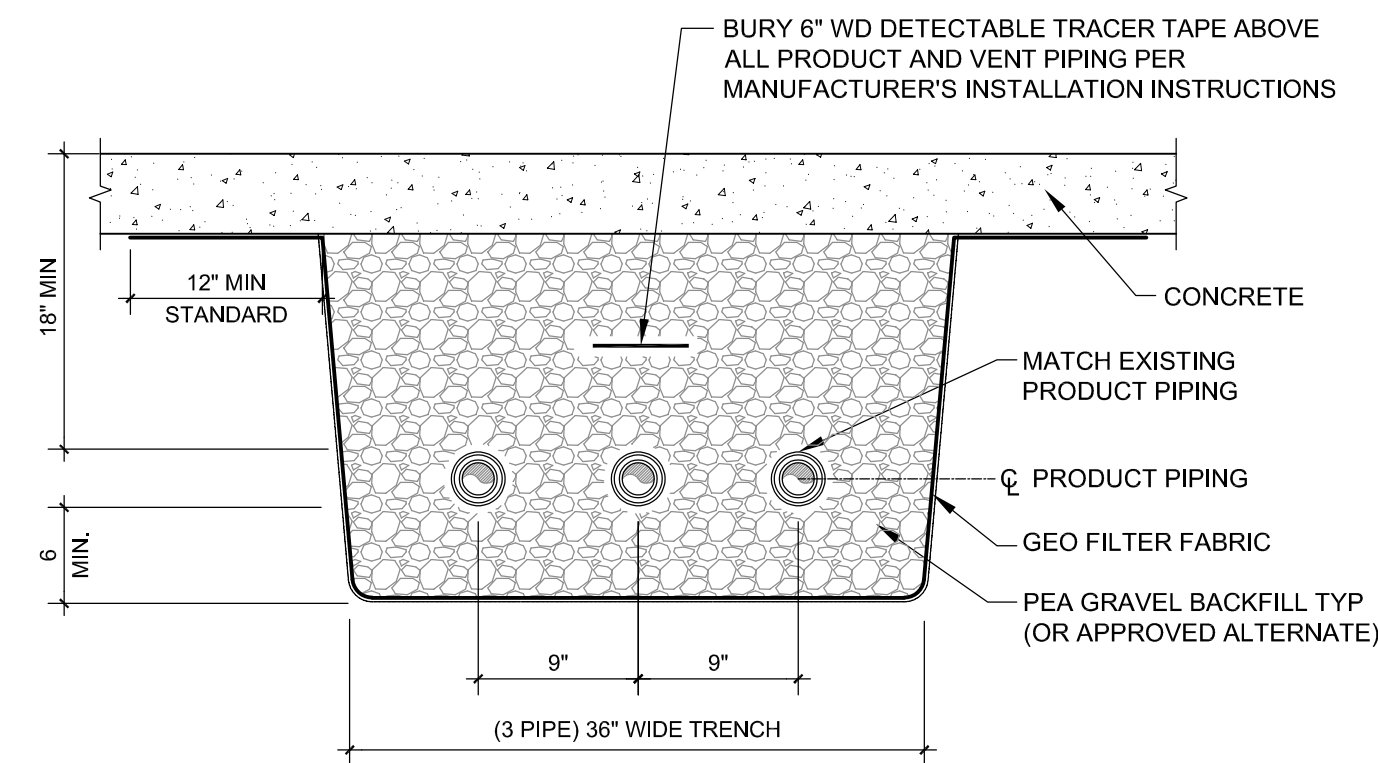
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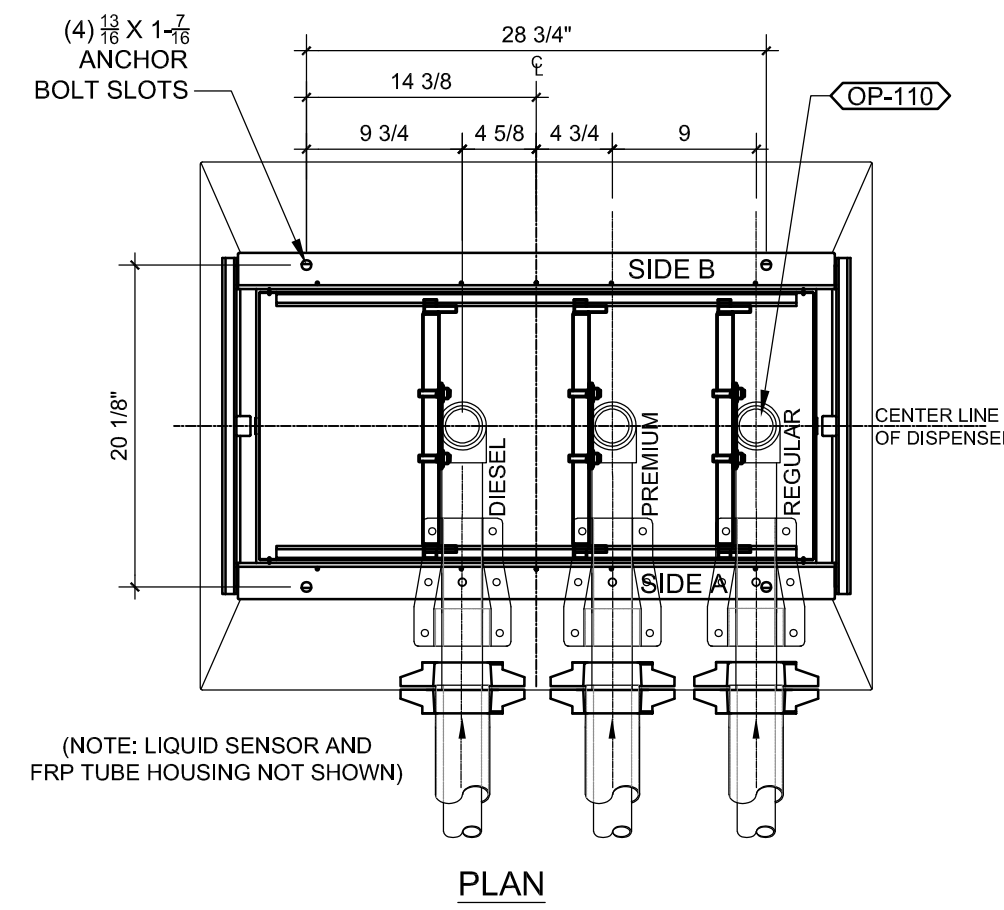
May25.2022-3:15 pm - User waylon.barnes  
F:\0707-22-98010 Loves - Lake City, FL 72404-Design\Fuel\Fuel Drawings\ F04 AUTO DISPENSER PIPING CONNECTION.dwg



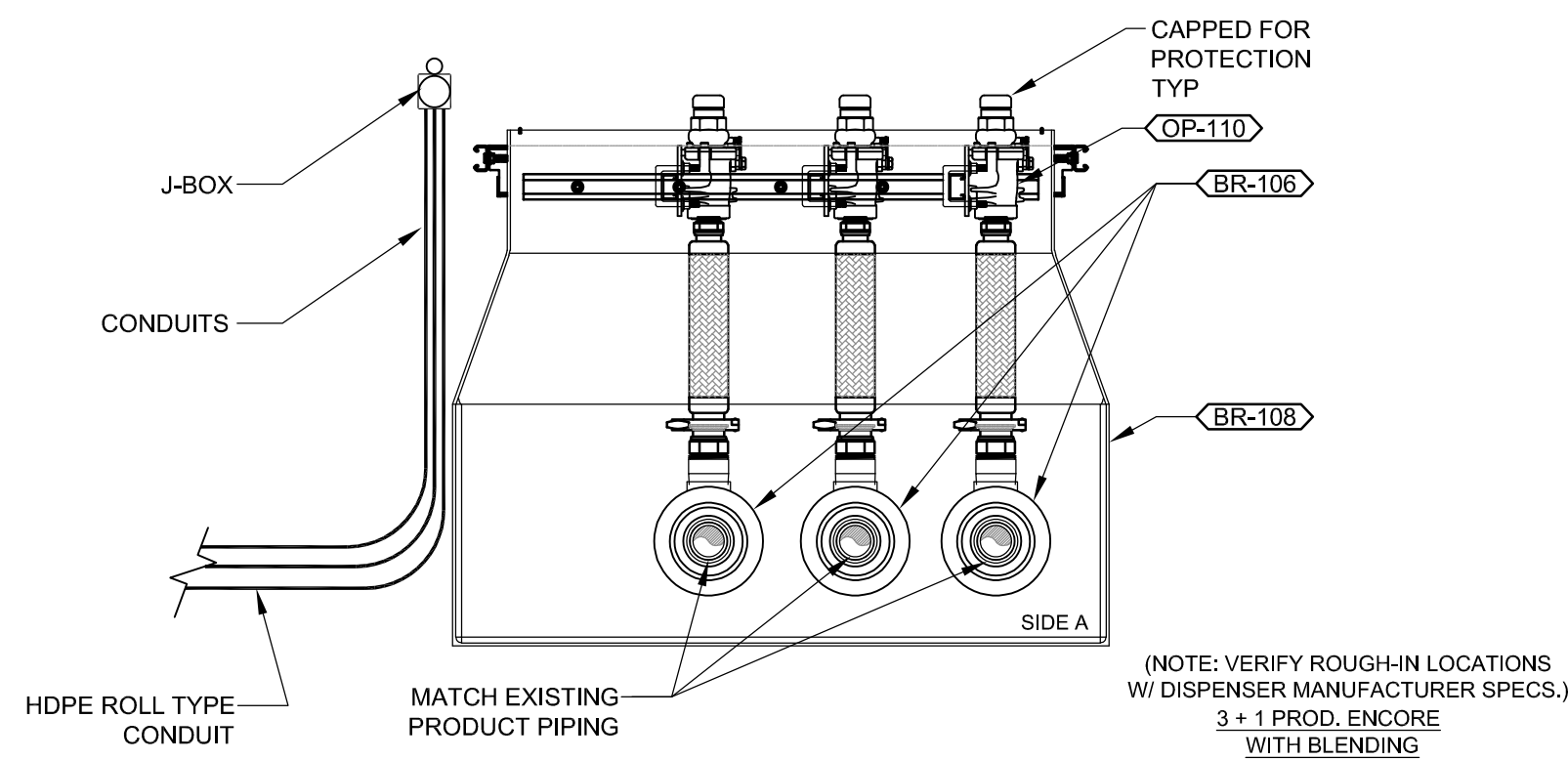
3 STANDARD SECTIONS UNDER AUTO DISPENSER AT CANOPY AREA  
NTS



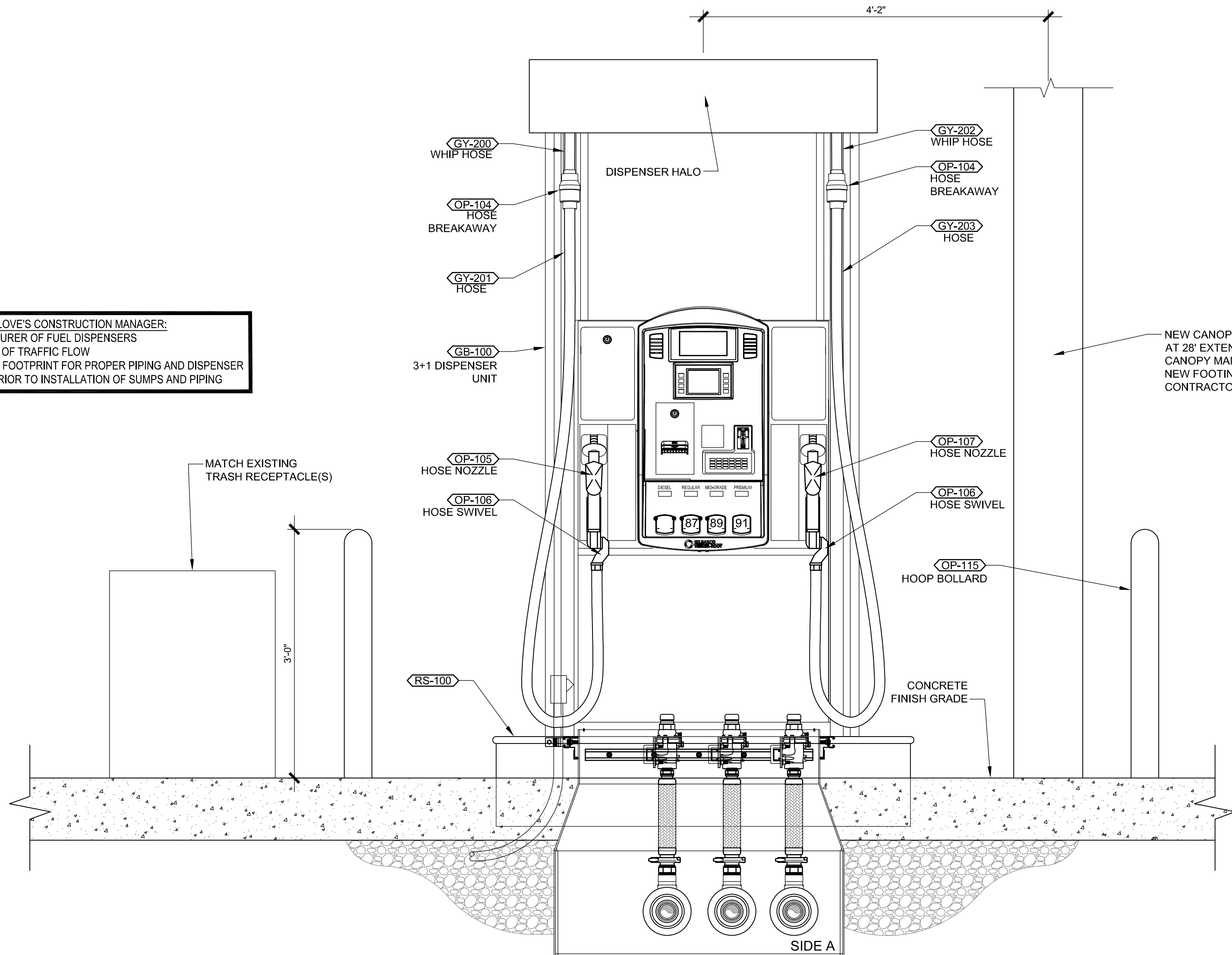
4 PIPING TRENCH DETAILS  
NTS



VERIFY WITH LOVE'S CONSTRUCTION MANAGER:  
A. MANUFACTURER OF FUEL DISPENSERS  
B. DIRECTION OF TRAFFIC FLOW  
C. DISPENSER FOOTPRINT FOR PROPER PIPING AND DISPENSER  
ALIGNMENT PRIOR TO INSTALLATION OF SUMPS AND PIPING



2 STANDARD SECTIONS UNDER CAR DISPENSER UDC  
NTS



1 AUTO DISPENSER DETAIL  
NTS

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LAKE CITY, FL  
STORE #724

FUELING

PROJECT NUMBER: 07-22-98010

Love's  
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ISSUE BLOCK


STORE NO. 603

DOCUMENT DATE: 03.30.22

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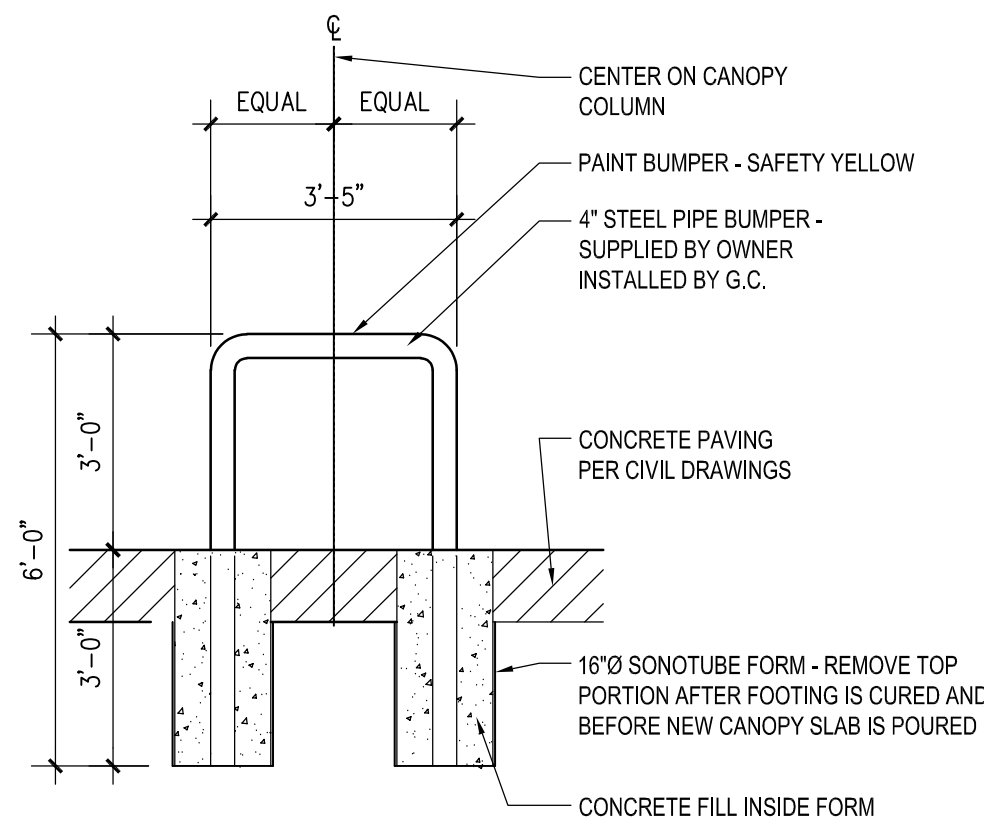
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AUTO PIPING  
CONNECTIONS AT  
DISPENSERS

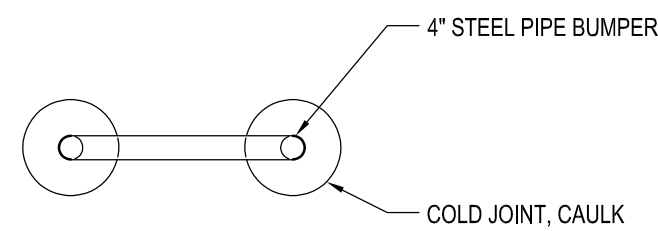
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F-4



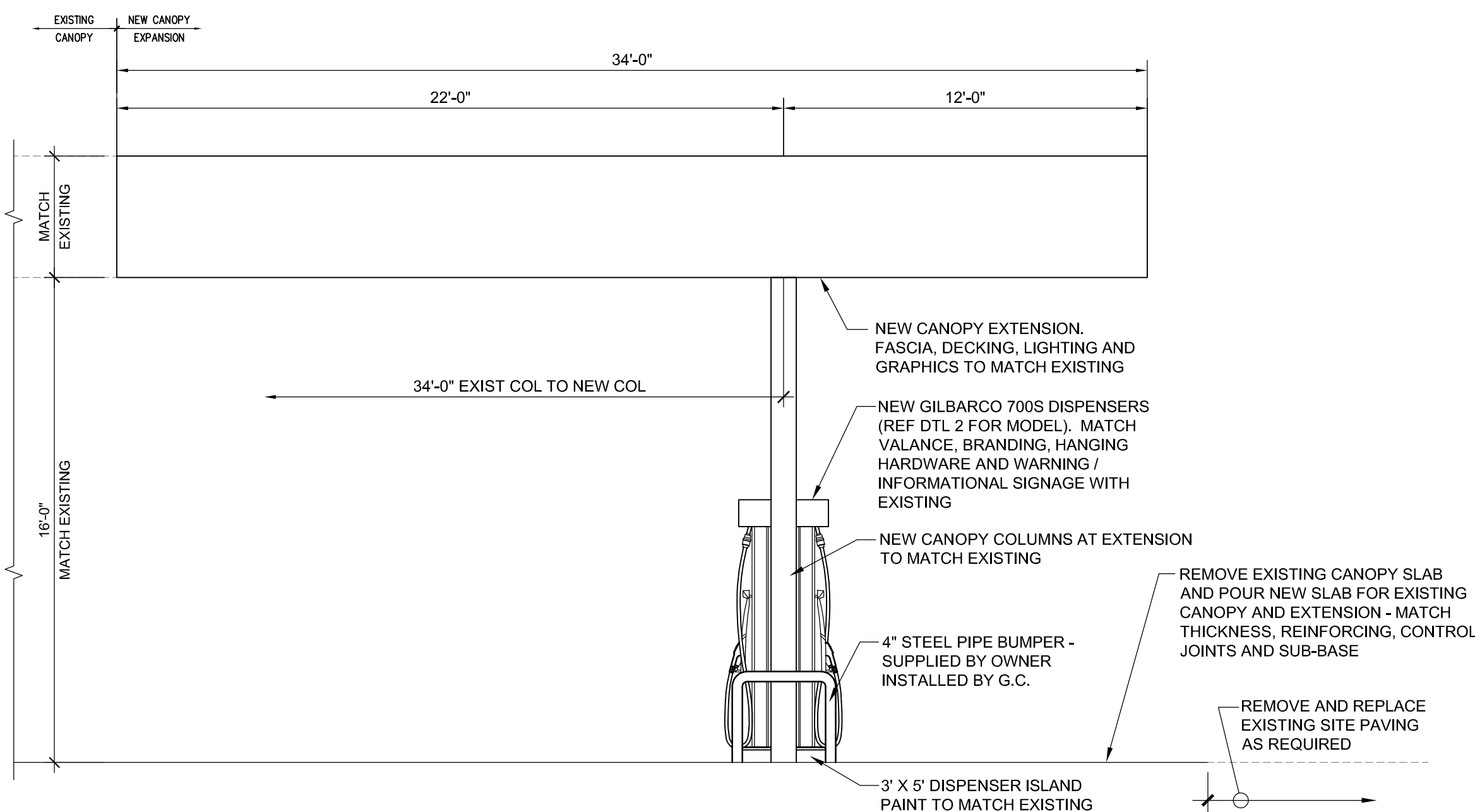


ELEVATION

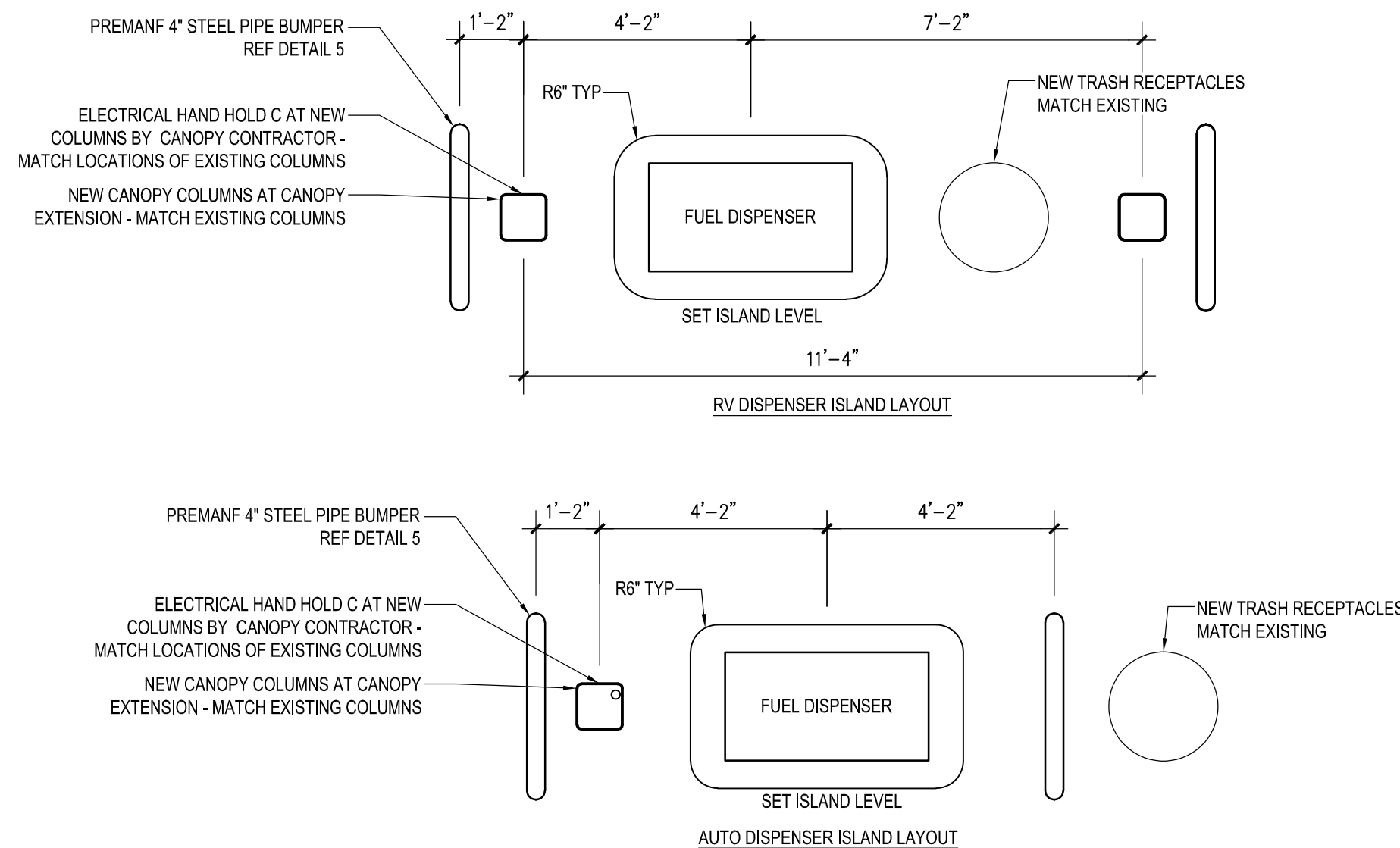


PLAN

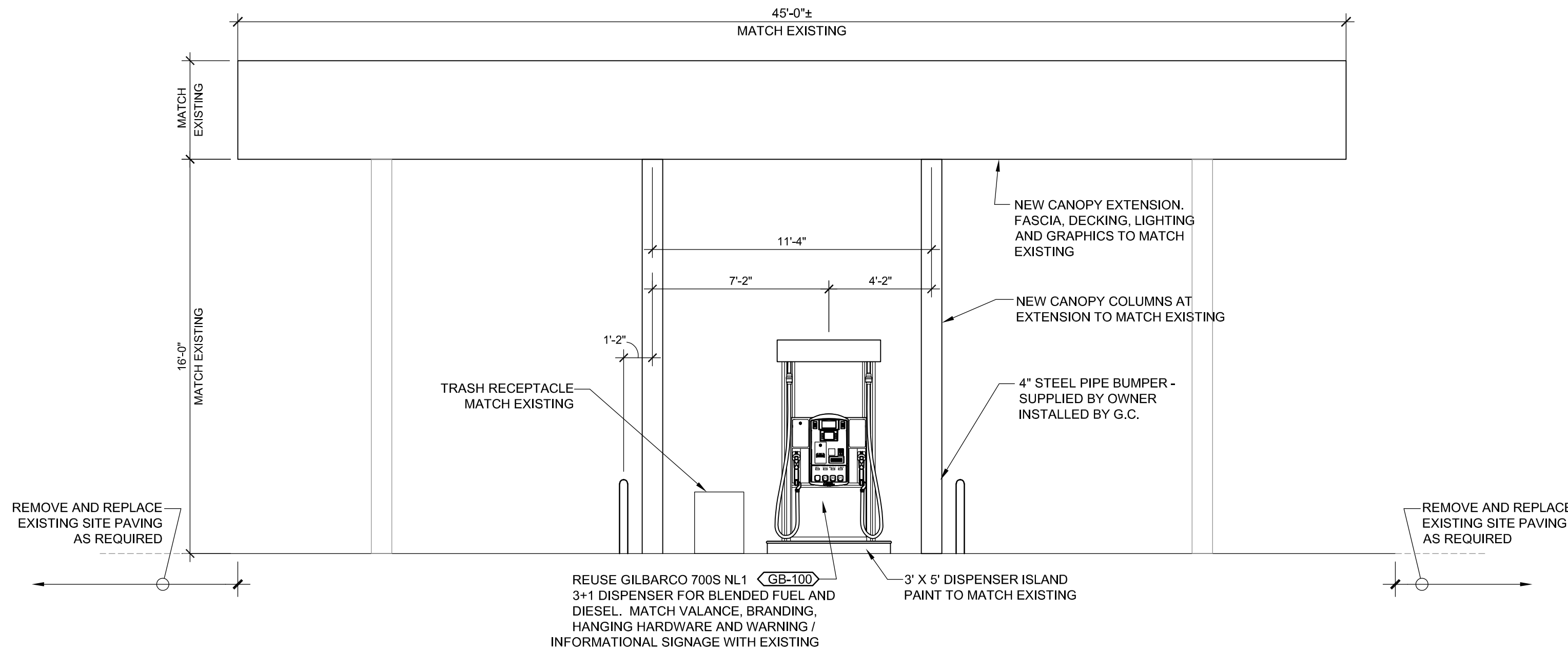
**5 HOOP BOLLARD DETAIL**  
SCALE: 3/8" = 1'-0"



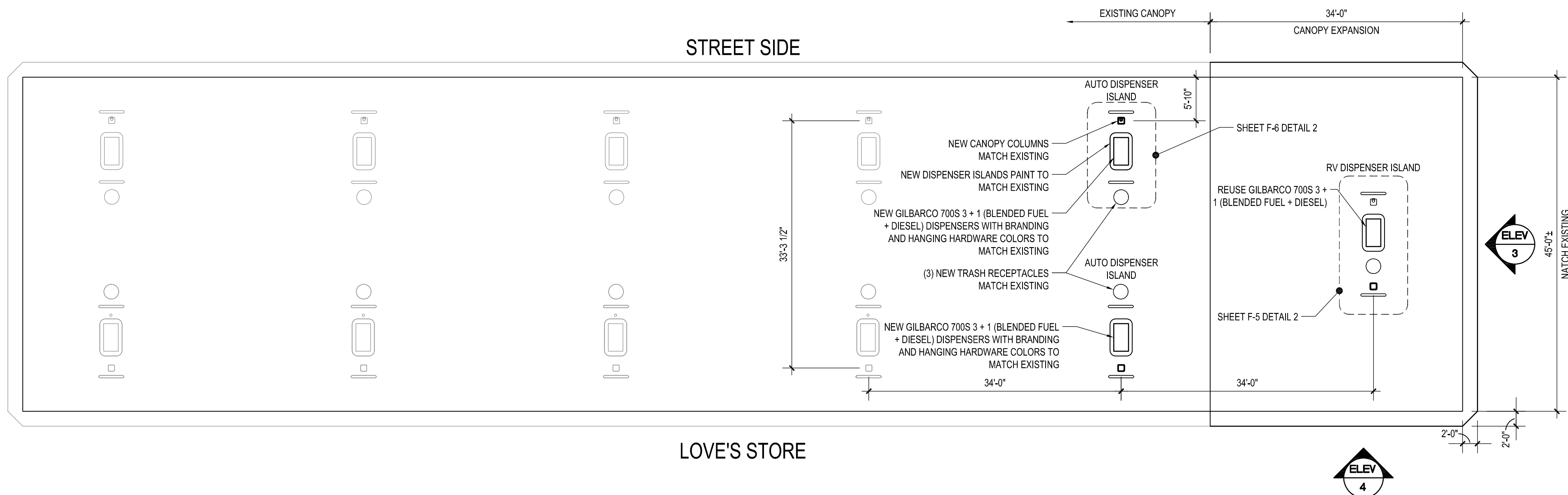
**4 CAR ISLAND ELEVATION**  
SCALE: 1/4" = 1'-0"



**2 DISPENSER LAYOUT DETAIL**  
SCALE: 3/8" = 1'-0"



**3 CAR ISLAND ELEVATION**  
SCALE: 1/4" = 1'-0"



**1 CAR CANOPY ADD'N PLAN**  
SCALE: 3/32" = 1'-0"



AMERON - NOV FITTINGS			
ITEM NO.	PART NO.	DESCRIPTION	SUPPLIED BY
AM-100	AM-00002728	JUMPER TUBE	CONTRACTOR
AM-101	SP-GLUE	ADHESIVE 6.5 OZ. - 8014 SMITH/FIBERGLS	CONTRACTOR
AM-102	SP-FILLER	FILLER FOR SECONDARY FITTINGS	CONTRACTOR
AM-103	AM-PSX-20-1	ADHESIVE 8 OZ. - SINGLE	CONTRACTOR
AM-200	AM-LCX-P-2-34	2" LCX PIPE 34' LENGTH	CONTRACTOR
AM-201	AM-LCX-P-2-32	2" LCX PIPE 32' LENGTH	CONTRACTOR
AM-202	AM-P-2-33	2" PRIMARY SW PIPE 33' LENGTH	CONTRACTOR
AM-203	AM-22469206	2" LCX TEST REDUCER W/ AIR STEM	CONTRACTOR
AM-204	AM-SC-2	2" COUPLING	CONTRACTOR
AM-205	AM-LCXSC-2	2" COUPLING-LCX 2 PIECE	CONTRACTOR
AM-206	AM-T-2	2" TEE	CONTRACTOR
AM-207	AM-LCX2PCT-2	2" TEE LCX - 2 PIECE	CONTRACTOR
AM-208	AM-EL90-2	2" 90 DEGREE ELBOW	CONTRACTOR
AM-209	AM-LCX-EL90-2	2" 90 DEGREE ELBOW - LCX - 2 PIECE	CONTRACTOR
AM-210	AM-SXM-2	2" SPIGOT X MALE ADAPTER	CONTRACTOR
AM-211	AM-BXM-2	2" BELL X MALE ADAPTER	CONTRACTOR
AM-213	AM-EL45-2	2" 45 DEGREE ELBOW	CONTRACTOR
AM-214	AM-LCX2PCEL45-2	2" 45 DEGREE ELBOW LCX - 2 PIECE	CONTRACTOR

BRAVO SYSTEM			
ITEM NO.	PART NO.	DESCRIPTION	SUPPLIED BY
BR-105	F-30-SS-D	3" PASS-THROUGH FITTING (IF NEEDED)	CONTRACTOR
BR-106	F-20-SS-D	2" PASS-THROUGH FITTING	CONTRACTOR
BR-107	BR-EP-100	BRAVO ENTRY FITTING ADHESIVE KIT - 7 OZ	CONTRACTOR
BR-108	B1380-S30	DISPENSER UDC - SW	CONTRACTOR

FRANKLING FUELING			
ITEM NO.	PART NO.	DESCRIPTION	SUPPLIED BY
FF-200	FFUL15X18X20EZF	SS FLEX CONNECTOR 1.5"M X 18" X 2" EZF (OR EQUAL)	CONTRACTOR
FF-511	TSP-ULS	LIQUID ONLY SENSOR	CONTRACTOR

GILBARCO SCHEDULE			
ITEM NO.	PART NO.	DESCRIPTION	SUPPLIED BY
GB-100	700S NL1	ENCORE 700S NL1 BENDER 3+1	OWNER

HANGING HARDWARE			
ITEM NO.	PART NO.	DESCRIPTION	SUPPLIED BY
GY-200	GY-34WHP-G	3/4" X 8" FLEX WHIP, AUTO DIESEL - GREEN	CONTRACTOR
GY-201	GY-3408-G	3/4" X 8" FLEXSTEEL HOSE - GREEN DIESEL	CONTRACTOR
GY-202	GY-34WHP	3/4" X 8" FLEX WHIP - BLACK	CONTRACTOR
GY-203	GY-3408	3/4" X 8" FLEXSTEEL HOSE - BLACK	CONTRACTOR

MISCELLANEOUS PARTS SCHEDULE			
ITEM NO.	PART NO.	DESCRIPTION	SUPPLIED BY
RS-100	3X5X13-GALV	3"W X 5"L X 13"H. ISLAND FORM W/ 6" RADIUS ENDS	CONTRACTOR
RS-102	PIPESLEEVE-8X36-GAL	U-GUARD PIPE SLEEVE 8" DIA. X 36" TALL	CONTRACTOR

OPW SCHEDULE			
ITEM NO.	PART NO.	DESCRIPTION	SUPPLIED BY
OP-104	OPW-68EZR-7575	3/4" BREAKAWAY - RECONNECTABLE	CONTRACTOR
OP-105	OPW-11B-8100-UL	AUTO DIESEL NOZZLE - GREEN, UL2586	CONTRACTOR
OP-106	OPW-45-5060	3/4" SWIVEL	CONTRACTOR
OP-107	OPW-11BP-8400-UL	NEW UNLEADED NOZZLE - BLACK, UL 2586	CONTRACTOR
OP-110	OPW-10BHMP-5830	DOUBLE POPPETED EMERGENCY VALVES	CONTRACTOR
OP-111	OPW-60VSP-1001	POPPETED VAPOR LINE SHEAR VALVE (IF NEEDED)	CONTRACTOR
OP-115	6PGR4-4174	U-SHAPED PIPE GUARD 41"X 74" - SCH. 40	CONTRACTOR

XX-XXX MATCHES ITEMS IN PLANS

EQUIPMENT:

1. FUEL CONTRACTOR TO FIELD VERIFY TYPE AND QUANTITIES OF EQUIPMENT NEEDED TO COMPLETE THE PROJECT.



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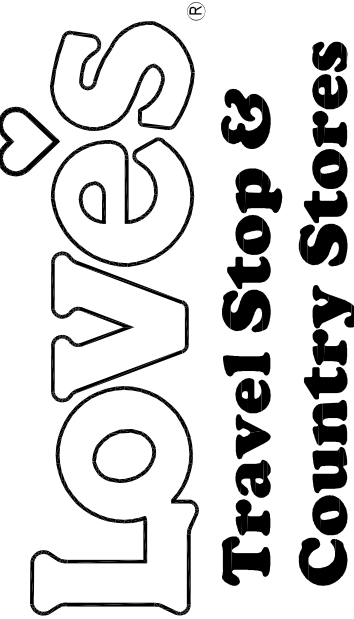
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LAKE CITY, FL  
STORE #724

FUELING

PROJECT NUMBER: 07-22-98010



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License #84568  
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EQUIPMENT  
SCHEDULES

SHEET:

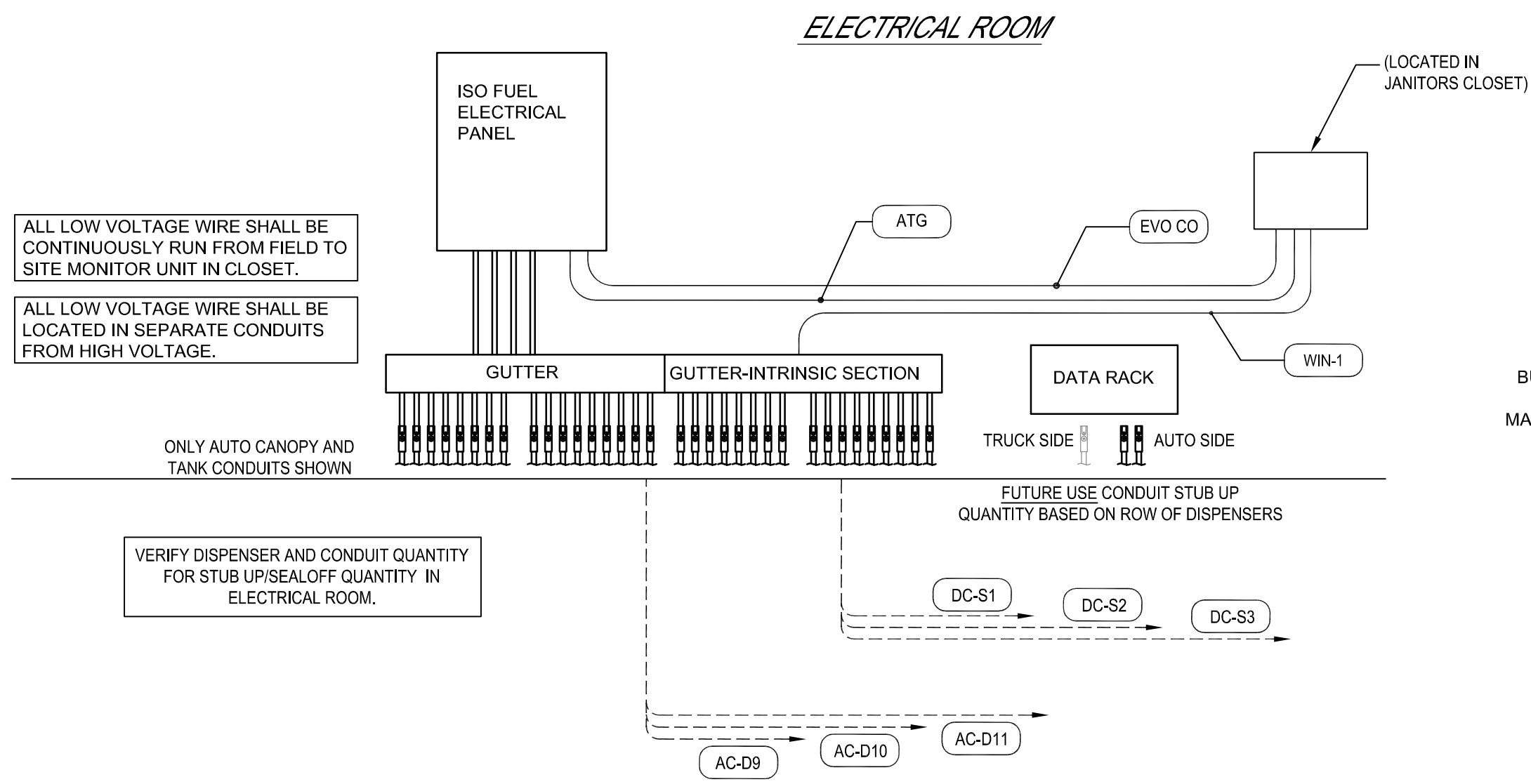
F-6







May/25/2022-3:53pm - User waylon.barnes  
F:\07\07-22-98010 Loves - Lake City, FL 724\04-Design\Fuel\Fuel Drawings\FE2 CAR DISPENSER WIRING.dwg

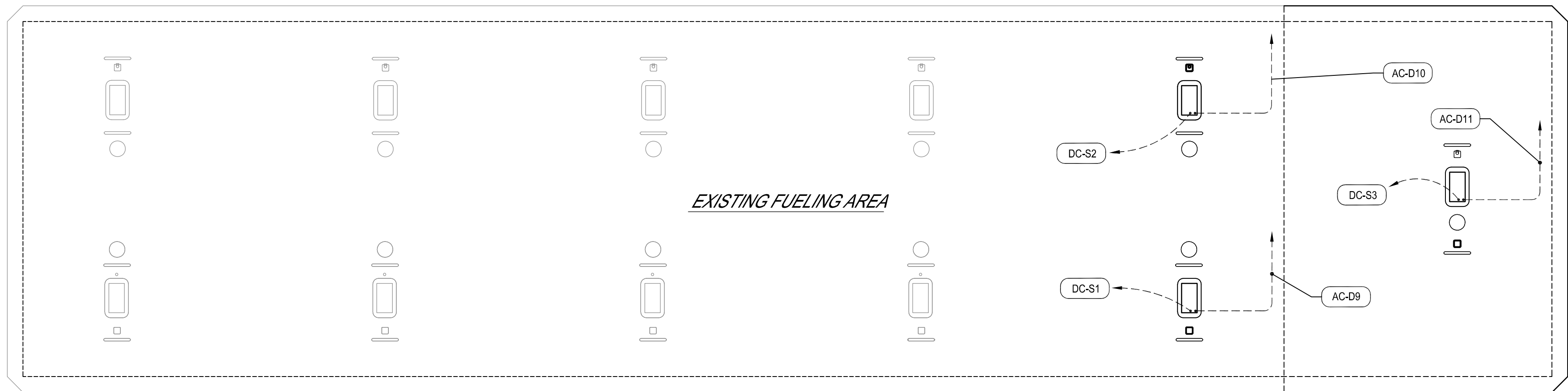


2 ELECTRICAL ROOM AND CONDUIT DETAIL NTS

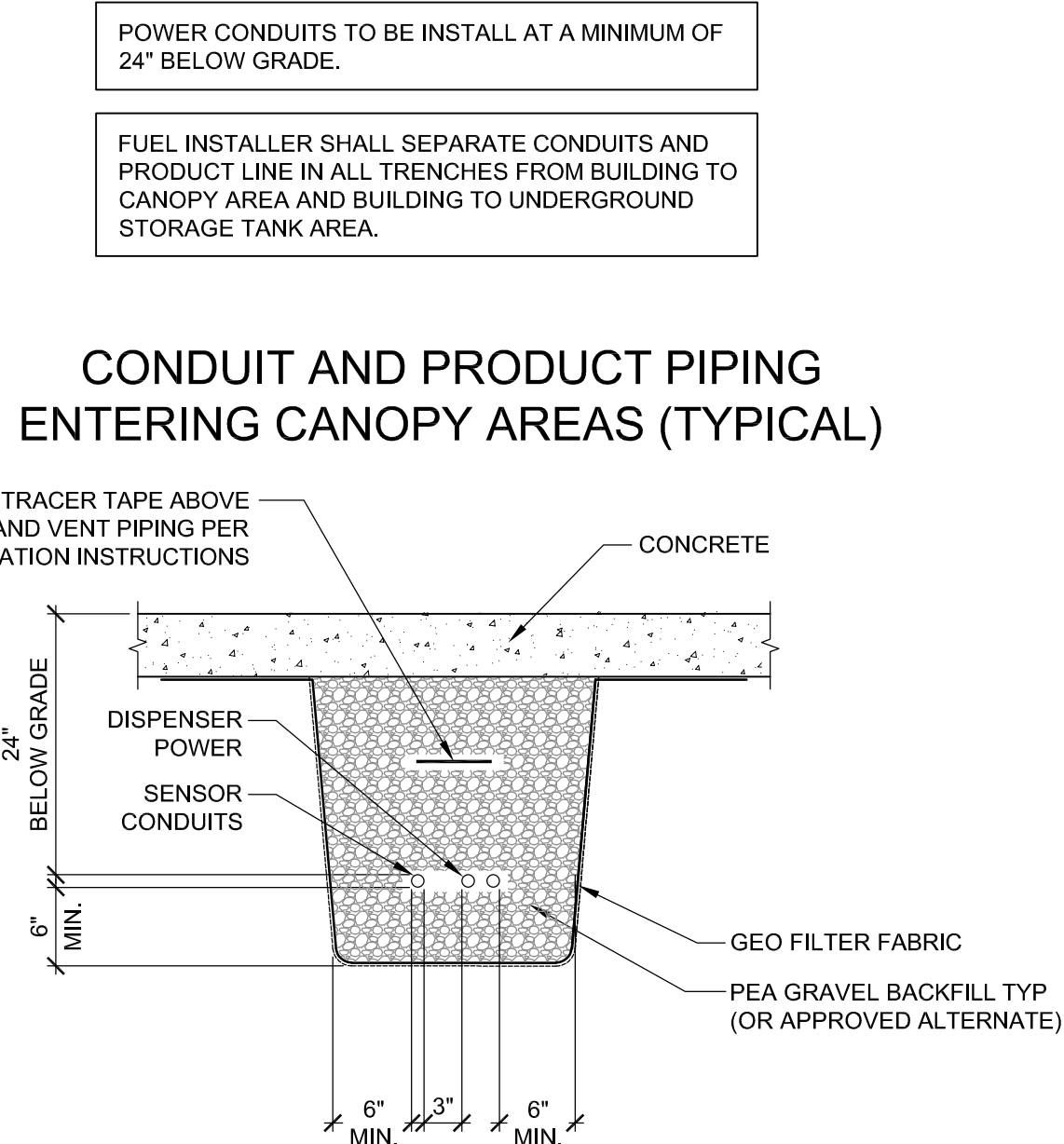
NOTE:  
CONDUIT HOME-RUNS SHALL BE FROM THE DISPENSERS FOR MORE DIRECT ROUTE FROM THE CANOPY AREA TO THE BUILDING TERMINATION POINT. REARRANGE THE CONDUITS I.D. TO MATCH SPECIFIC CONDITIONS BUT MAINTAIN THE SEQUENCE SHOWN HEREON.

NOTE:  
THE FUEL ELECTRICAL CONTRACTOR SHALL VERIFY AND ACCOUNT FOR VOLTAGE DROP BASED ON LENGTH OF WIRE FROM ELECTRICAL ROOM TO TANK FIELD AND DISPENSERS CONNECTIONS. THE FUEL ELECTRICAL CONTRACTOR SHALL ADJUST WIRE SIZES IF STANDARD WIRE SIZED WILL NOT BE SUFFICIENT ENOUGH TO HANDLE THE LOAD BASED ON THE LENGTH OF WIRE.

UDC SENSOR WIRES		
CONDUIT RUN	CONTENTS OF CONDUIT	PAIRS PER CONDUIT
DC-S1	2- COND BELDEN 88760 OR EQUAL	1
DC-S2	2- COND BELDEN 88760 OR EQUAL	1
DC-S3	2- COND BELDEN 88760 OR EQUAL	1



1 FUELING AREA CONDUIT ROUTING  
SCHEMATIC ONLY-VERIFY ACTUAL NUMBER OF FUELING BAYS WITH FUEL CANOPY LAYOUT



3 FUELING AREA CONDUIT TRENCH DETAIL NTS

FUEL CONTRACTOR TO VERIFY CONDUIT SIZE, QUANTITY AND REQUIREMENTS FOR CANOPY LIGHTING, BRANDING, DISPENSER POWER, COMMUNICATIONS, DATA, ETC. WITH THE CONSTRUCTION MANAGER.

REMOVE AND REPLACE EXISTING CANOPY SLAB, DISPENSERS, DISPENSER ISLANDS, DISPENSER SUMPS, PIPING AND FITTINGS. REPLACE EXISTING CONDUIT AND WIRING AS REQUIRED.

SITE MONITORING CONDUIT AND WIRE SCHEDULE - POWER SUPPLY, AUTOMATIC SHUTDOWN (A.C.), LIQUID SENSORS AND LEVEL PROBES (INTRINSIC)				
IDENTIFICATION OF CONDUIT	SIZE OF CONDUIT	ORIGIN	DESTINATION	QUANTITY & SIZE OF WIRES
AC-D9	1"	JUNCTION BOX - A.C. DISPENSER D-9	SEE PANEL MANUFACTURER DRAWINGS FOR CIRCUIT IDENTIFICATION	3-#12 GA. (HOT NEUTRAL GROUND) SIZE PER LENGTH OF WIRE (SEE NOTES)
AC-D10	1"	JUNCTION BOX - A.C. DISPENSER D-10	SEE PANEL MANUFACTURER DRAWINGS FOR CIRCUIT IDENTIFICATION	2 SETS TWISTED PAIR (14 GAUGE) DISPENSER COMMUNICATION & CREDIT CARD READERS TO D-BOX.
AC-D11	1"	JUNCTION BOX - A.C. DISPENSER D-11	SEE PANEL MANUFACTURER DRAWINGS FOR CIRCUIT IDENTIFICATION	4-#14 GA. SWITCH-HOOK (U/L, PREMIUM, DIESEL, & SPARE)
				2 - #14 GA. SPARE
DC-S1	1"	J-BOX DISPENSER #1 SUMP	GUTTER-INTRINSIC SECTION	(1) 2- COND BELDEN 88760 OR EQUAL PER SENSOR EA. SENSOR LOOPED THRU CONDUITS BACK TO ELECTRICAL ROOM
DC-S2	1"	J-BOX DISPENSER #2 SUMP	GUTTER-INTRINSIC SECTION	(1) 2- COND BELDEN 88760 OR EQUAL PER SENSOR EA. SENSOR LOOPED THRU CONDUITS BACK TO ELECTRICAL ROOM
DC-S3	1"	J-BOX DISPENSER #3 SUMP	GUTTER-INTRINSIC SECTION	(1) 2- COND BELDEN 88760 OR EQUAL PER SENSOR EA. SENSOR LOOPED THRU CONDUITS BACK TO ELECTRICAL ROOM
WIN-1	1-1/2"	GUTTER-INTRINSIC SECTION	EVO DISPLAY PANEL MOTOR CONTRL. CENTER	(47) BELDEN 88760 OR EQUAL
EVO CO	CABLE	COMM. ENTRANCE AT EVO PANEL	TPI AT ISO FUEL PANEL	
ATG	1"	A.C. POWER CKTS#	A.C. CKTS. ENTRANCE AT THE EVO PANEL	3-#12
WDT-1	3/4"	A.C. POWER CKTS#	GILBARCO D-BOX	3-#12
DATA	1"	GUTTER-INTRINSIC SECTION	GILBARCO D-BOX	CAT 5 CABLE

#### LEGEND

AC-D(X)	----- (AC) AUTO CANOPY - DISPENSER (X)
DC-S(X)	----- (AC) AUTO CANOPY - DISPENSER SENSOR CONDUIT (X) (MODERN WIRING)
AC-F(X)	----- (AC) AUTO CANOPY - FUTURE DISPENSER CONDUIT (X) (MODERN WIRING)

#### LEGEND

WIN-1	EVO ENTRANCE CONDUIT (INTRINSIC)
EVO CO	EVO COMMUNICATIONS CONDUIT-D.C. (MODERN WIRING)
ATG	EVO A.C. POWER CONDUIT
WDT-1	D-BOX A.C. POWER CONDUIT
DATA	D-BOX DATA CONDUIT

#### GENERAL NOTES:

- THE INSTALLATION MUST CONFORM TO THE REQUIREMENTS OF ARTICLE 501, NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) AND ALL OTHER LOCAL OR APPLICABLE CODES. FURNISH AND INSTALL CONDUIT SEALS PER LATEST N.E.C ARTICLES 510 & 514.
- THE ELECTRICAL DEVICES SHALL BE LOCATED WHERE SHOWN IN THE SITE ELECTRICAL PLAN OR WHERE DESIGNATED BY SITE ENGINEER. THE GENERAL CONTRACTOR SHALL RUN POWER, CONTROLS AND COMMUNICATIONS CONDUITS TO THE SELECTED LOCATION.
- EACH TYPE OF WIRING SYSTEM MUST BE RUN IN ITS OWN DEDICATED CONDUIT. A.C., D.C., DATA AND COMMUNICATIONS CIRCUITS MAY NOT BE COMBINED IN ONE CONDUIT UNLESS SPECIFICALLY NOTED IN THE PLANS.
- ALL WIRING MUST BE RESISTANT TO OIL AND GASOLINE. - TYPE THWN OR THHN.
- ALL CONDUITS RELATED TO THE FUELING SYSTEM SHALL BE A COMBINATION OF RIGID, COATED RIGID, AND HDPE ROLL TYPE CONDUIT. UNDERGROUND CONDUITS SHALL BE PER SCHEDULES ON SHEET FE-2. STP SHALL BE ALL PVC COATED RIGID CONDUIT.
- ALL POWER WIRING SHALL BE A MINIMUM AWG #12. ALL CONTROL WIRING SHALL BE AWG #14, UNLESS OTHERWISE SPECIFIED. DATA SHIELDED CABLES OR OTHER SPECIALTY WIRING SHALL CONFORM TO THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS OR OWNERS INSTRUCTIONS.
- THIS IS A STANDARD DRAWING FOR GENERAL REQUIREMENTS ONLY. REFER TO THE GENERAL ARRANGEMENT PLAN OR ELECTRICAL SITE PLAN FOR CONDUIT RUNS, NUMBER OF DEVICES REQUIRED AND THE EXACT ORIGIN & TERMINATION OF CONDUITS.
- ALL CONDUIT AND WIRES SHALL BE LABEL-IDENTIFIED AS SHOWN HEREIN.
- THE TANK MONITORING SYSTEM SHALL BE LOCATED WHERE SHOWN IN THE SITE ELECTRICAL PLAN OR WHERE DESIGNATED BY THE SITE ENGINEER. THE GENERAL CONTRACTOR SHALL RUN POWER AND PROBE CONDUITS TO THE SELECTED LOCATION.
- ALL INTRINSIC WIRING MUST (VEDDER ROOT) BE RUN IN ITS OWN DEDICATED CONDUIT, SEPARATE FROM ALL OTHER A.C. OR D.C. WIRING.
- ALL CONDUITS RELATED TO THE MONITORING SYSTEM AND POWER SHALL BE RIGID PVC EXCEPT @ CLASSIFIED AREAS 10'-0" MINIMUM FROM SUMPS. CONDUITS IN CLASSIFIED AREAS SHALL BE RIGID METALLIC PVC COATED CONDUITS.
- ALL INTRINSIC WIRING MUST BE AWG#18 UNLESS OTHERWISE SPECIFIED.
- ALL POWER & CONTROL WIRING, EVEN WHEN CONNECTED THROUGH ANY ISOLATING RELAY, MUST BE AWG #12, AND RUN IN THEIR CONDUIT OR OTHER SHARED A.C. CONDUIT.
- FUEL CONTRACTOR SHALL UTILIZE ONLY MANUFACTURER'S AUTHORIZED TECHNICIANS FOR THE INSTALLATION OF THE EQUIPMENT AND THE FINAL TERMINAL CONNECTIONS, POWER UP, CALIBRATION AND TEST OF THE MONITORING EQUIPMENT. THE GENERAL CONTRACTOR SHALL SUBMIT TO OWNER A COMPLETE REPORT OF THE TESTING, SETTINGS AND CALIBRATION. THE FUEL CONTRACTOR SHALL INCLUDE IN HIS QUOTATION THE COST OF START UP.

NOTE:  
FUEL CONTRACTOR SHALL INSTALL EMERGENCY PUMP SHUT-OFF SWITCH PER UNIFORM FIRE CODE DIV IX AND NATIONAL ELECTRICAL CODE ART. 514. ALSO TO INSTALL ACKNOWLEDGMENT SWITCH & OVERFILL ALARM WITH FLASHING RED LIGHT & AUDIBLE HORN. LOCATION SHALL BE INSTALLED OUTSIDE CLASSIFIED AREA OF CLASS I DIV. 2, GROUP D, & WITHIN SIGHT OF U.G TANK STORAGE FILL BY THE LOCAL AUTHORITY OR THE STATE.



**HARRISON FRENCH**  
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LAKE CITY, FL  
STORE #724

**FUELING**

PROJECT NUMBER: 07-22-98010

**Loves**  
Travel Stop &  
Country Stores



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DRAWN BY:	WWB

STANDARD CAR  
DISPENSER WIRING  
A.C., D.C.

SHEET:  
**FE-2**



Apr27, 2022, 4:17pm - User: chris.richardson  
F:\0707-22-98010 Loves - Lake City, FL 72406-CD\AutoCAD\Sheets\400 E1 206.dwg

GENERAL SPECIFICATIONS	
INTRODUCTION	
THE CONTRACTING FOR INSTALLATION OF THE ELECTRICAL SYSTEM WILL BE ACCOMPLISHED IN THE FIELD AT THE DIVISION LEVEL. THESE SPECIFICATIONS ARE TO AID IN PREPARATION OF DIVISION LEVEL STORE PLANS AND CONTRACT DOCUMENTS. IN CASE OF A CONFLICT BETWEEN THIS SPECIFICATION AND THE CONTRACT DOCUMENTS PROVIDED BY THE DIVISION CONSTRUCTION MANAGER, THE DIVISIONS PLANS AND SPECIFICATIONS SHALL PREVAIL.	
DEFINITIONS	
THE FOLLOWING DEFINITIONS APPLY TO THIS PROJECT.	
FURNISH - TO SUPPLY THE MATERIAL NECESSARY TO PERFORM THE TASK.	
INSTALL - TO SUPPLY THE LABOR NECESSARY TO COMPLETE THE TASK.	
PROVIDE - TO FURNISH AND INSTALL MATERIAL AND LABOR TO COMPLETE THE TASK.	
1. SCOPE	
1.1 E.C. TO PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT (U.N.O.) REQUIRED TO EXECUTE WORK PER NEC AND ALL APPLICABLE ELECTRICAL CODES IN FORCE AT THE TIME OF PROJECT COMPLETION.	
1.2 THIS WORK INCLUDES, BUT IS NOT LIMITED TO, ELECTRICAL SERVICE AND DISTRIBUTION SYSTEMS, PANELBOARDS, DISCONNECT SWITCHES, LIGHTING FIXTURES, POWER AND CONTROL WIRING WITH FINAL CONNECTIONS TO ALL EQUIPMENT REQUIRED FOR A COMPLETE SYSTEM.	
1.3 E.C. TO VERIFY TYPE OF POWER SERVICE AVAILABLE (UNDERGROUND OR OVERHEAD)	
1.4 E.C. TO PROVIDE PANELBOARD NAMEPLATES. PROVIDE LAMINATED PLASTIC NAMEPLATES WITH 3/4 INCH MINIMUM CONTRASTING-COLOR ENGRAVED LETTERS IDENTIFYING EACH PANELBOARD.	
2. INSTALLATION	
2.1 THE INSTALLATION SHALL COMPLY WITH ALL LAWS IN EFFECT AT THE TIME OF CONSTRUCTION APPLYING TO ELECTRICAL INSTALLATION, AND WITH THE REGULATIONS OF THE NEC, WHERE SUCH REGULATIONS DO NOT CONFLICT WITH THE LAWS IN EFFECT, AND WITH THE PUBLIC UTILITY COMPANY FURNISHING THE SERVICE.	
2.1.1 THE E.C. SHALL UPGRADE THESE SPECIFICATIONS AS REQUIRED TO MEET COMPLIANCE WITH ALL APPLICABLE CODES IN EFFECT; HOWEVER, WHERE THESE SPECIFICATIONS MAKE STIPULATIONS OVER AND ABOVE THE MINIMUM REQUIREMENTS OF APPLICABLE CODES, THE CONTRACTOR SHALL NOT DOWN-GRADE THESE SPECIFICATIONS TO MINIMUM CODE REQUIREMENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE EOR.	
2.2 E.C. SHALL PROVIDE ALL REQUIRED ELECTRICAL CONDUIT AND WIRING FOR ALL MOTORS, MOTOR STARTERS AND ELECTRICAL CONTROLS, U.N.O. E.C. SHALL MAKE ALL LINE VOLTAGE ELECTRICAL CONNECTIONS AS REQUIRED FOR HVAC SYSTEMS.	
2.5 WIRING	
2.5.1 ALL WORK SHALL BE COMPLETED IN A NEAT AND WORKMAN-LIKE MANNER. THE E.C. SHALL CONTACT THE EOR SHOULD THIS PLAN REQUIRE MODIFICATION TO COMPLY WITH LOCAL CODES.	
2.5.2 ALL CONDUCTORS SHALL BE RUN IN APPROVED METALLIC RACEWAY OR CONDUIT AND SHALL BE UNIFORMLY COLOR CODED THROUGHOUT THE ENTIRE SYSTEM. SPLICES, TAPS, AND TERMINALS SHALL BE MADE ONLY IN J BOXES, OUTLET BOXES AND PANELBOARDS.	
2.5.3 THE E.C. SHALL ENSURE THE CONDUCTORS UTILIZED ARE IN KEEPING WITH GOOD PRACTICE FOR THE CIRCUIT/PROTECTIVE DEVICES EMPLOYED. THE NEUTRAL CONDUCTOR (WHERE USED) SHALL HAVE THE SAME AMPACITY AS THE ASSOCIATED PHASE.	
2.5.4 THE E.C. SHALL ENSURE THAT CIRCUIT AMPACITY AND SHORT CIRCUIT/OVERLOAD PROTECTION IS APPROPRIATE FOR THE EQUIPMENT BEING INSTALLED. UL LISTING CONDITIONS SHALL BE OBSERVED.	
2.5.5 TO COMPLY WITH NECAL LISTING CONDITIONS, ROOFTOP UNITS MAY BE SHOWN WITH FUSED DISCONNECT SWITCHES:	
2.5.5.1 ALL FUSES SERVING MOTOR LOADS WILL BE OF THE DUAL ELEMENT TYPE.	
2.5.5.2 DUE TO DIFFERENT INTERRUPTING CHARACTERISTICS, PANELBOARD CIRCUIT BREAKERS MAY BE RATED HIGHER THAN THE DUAL ELEMENT FUSES THEY SUPPLY TO ENSURE SUFFICIENT STARTING CURRENT.	
3. TESTING AND INSPECTION	
3.1 TESTING:	
3.1.1 THE E.C. SHALL TEST, PRIOR TO ENERGIZING FOR THE FIRST TIME, ALL PIECES OF ELECTRICAL EQUIPMENT TO ASSURE THEY HAVE THE PROPER PHASE TO PHASE AND PHASE TO GROUND INSULATION AND TO BE FREE OF SHORTS, AFTER ENERGIZING, EACH LUMINAIRE SHALL BE LIT AND TESTED.	
3.1.2 MEASURE STEADY STATE LOAD CURRENTS AT EACH PANELBOARD FEEDER; REARRANGE CIRCUITS IN THE PANELBOARD TO BALANCE THE PHASE LOADS WITHIN 20% OF EACH OTHER. MAINTAIN PROPER PHASING FOR MULTI-WIRE BRANCH CIRCUITS	
4. INDUSTRY STANDARDS	
4.1 THE FOLLOWING IS A LIST OF ABBREVIATIONS USED IN THE ELECTRICAL NOTES AND SPECIFICATIONS.	
NEC.....NATIONAL ELECTRIC CODE, REF. COVERSHEET FOR APPLICABLE VERSION NEMA.....NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION UL.....UNDERWRITERS LABORATORIES, INC. H.V.A.C.....HEATING, VENTILATING AND AIR CONDITIONING E.E.F.....INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS G.F.C.I.....GROUND FAULT CIRCUIT INTERRUPTER A.I.C.....AMPERES INTERRUPTING CAPACITY U.N.O.....UNLESS NOTED OTHERWISE E.C.....ELECTRICAL CONTRACTOR G.C.....GENERAL CONTRACTOR G.....GROUND I.G.....ISOLATED GROUND W.P.....WEATHER PROOF COVERPLATE W.R.....WEATHER RESISTANT RECEPTACLE E.T.R.....EXISTING TO REMAIN R.E.L.O.....RELOCATED	

MATERIALS AND METHODS	
PART 1 - GENERAL	
1.1 SUMMARY	
A. SECTION INCLUDES:	
1. IDENTIFICATION	
2. HANGERS AND SUPPORTS	
3. CONDUIT SLEEVES	
PRODUCTS	
1.2 ELECTRICAL IDENTIFICATION	
A. NAMEPLATES: PROVIDE LAMINATED PLASTIC NAMEPLATES WITH 3/4 INCH MINIMUM CONTRASTING_COLOR ENGRAVED LETTERS.	
1.3 HANGERS AND SUPPORTS	
A. CONDUIT AND EQUIPMENT SUPPORTS: HANGERS SHALL BE SERIES P3000 (175 LBS MAX) OR P3300 (80 LBS MAX) CHANNELS BY UNISTRUT DEPENDING ON THE LOAD, ATTACHED AT BOTH ENDS, USE PIPE HANGERS BY MINERALLAC OR CADDY CLIPS BY ERICO ONLY WHERE IMPRACTICAL TO INSTALL UNISTRUT HANGERS.	
B. DO NOT USE FASTENERS WHICH PENETRATE THE ROOF DECK.	
1.4 CONDUIT SLEEVES	
A. SLEEVES: GALVANIZED, BLACK STEEL OR SCHEDULE 40 PVC PIPE.	
1.5 GROUNDING AND BONDING	
A. INSULATED GROUNDING BUSHING: STEEL WITH FEED-THRU LUGS.	
B. INSULATED GROUNDING GROUND WIRE: COPPER.	

WIRING METHODS	
PART 1 - GENERAL	
1.1 SUMMARY	
A. SECTION INCLUDES:	
1. WIRE AND CABLE.	
2. CONDUIT.	
3. OUTLET BOXES AND CONDUIT FITTINGS.	
4. WIRING DEVICES.	
1.2 REFERENCES	
A. THE PUBLICATIONS LISTED BELOW FORM A PART OF THIS SPECIFICATION TO THE EXTENT REFERENCED. PUBLICATIONS ARE REFERENCED WITHIN THE TEXT BY THE BASIC DESIGNATION ONLY.	
B. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):	
1. NFPA 70 - NATIONAL ELECTRICAL CODE (NEC).	
C. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA):	
D. UNDERWRITERS LABORATORIES (UL):	
1. UL 1569 - METAL CLAD CABLES.	
PART 2 - PRODUCTS	
2.1 WIRE AND CABLE	
A. ELECTRICAL COMPONENTS AND DEVICES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A NATIONALLY RECOGNIZED TESTING AGENCY AND MARKED FOR USE.	
B. WIRE AND CABLE SHALL BEAR THE LABEL OF A NATIONALLY RECOGNIZED TESTING LABORATORY AND SHALL CONFORM TO STANDARDS ESTABLISHED FOR SUCH MATERIALS BY NATIONALLY RECOGNIZED AGENCIES.	
C. PROVIDE CODE GAUGE, SOFT ANNEALED COPPER WIRE, NOT LESS THAN 98 PERCENT CONDUCTIVITY AND OF 600 VOLT CLASS.	
D. CONDUCTORS:	
1. INSULATION TYPE SHALL BE ONE OF THE FOLLOWING:	
a. THHN.	
b. THWN.	
c. XHHW.	
d. XHHW-2.	
2. TYPE:	
a. #10 AND SMALLER - STRANDED OR SOLID.	
b. #8 AND LARGER - STRANDED	
E. INTERLOCKED ARMOR METAL CLAD (MC) CABLE: CONTRACTOR'S OPTION AS ALLOWED BY AUTHORITIES HAVING JURISDICTION. MC CABLE SHALL HAVE THE FOLLOWING CHARACTERISTICS:	
1. ALUMINUM MC-LITE OR STANDARD MC.	
2. MINIMUM SIZE CONDUCTOR, #12 AWG COPPER, INCLUDING GREEN INSULATED EQUIPMENT GROUND, SIZED IN ACCORDANCE WITH THE NEC.	
3. OVERALL MOISTURE RESISTANT TAPE.	
4. GALVANIZED STEEL OR ALUMINUM INTERLOCKED CLADDING.	
5. MANUFACTURED IN ACCORDANCE WITH UL 1569.	
F. WIRE SMALLER THAN #12 AWG NOT PERMITTED UNLESS OTHERWISE NOTED. #14 AWG, TYPE MTW OR TFF PERMITTED FOR SIGNAL AND PILOT CONTROL CIRCUITS UNLESS OTHERWISE NOTED.	
G. COLOR CODE	
G.1. 240/120V	
G.1.1. NEUTRAL: WHITE	
G.1.2. PHASE: A - BLACK, B - RED	
G.1.3. GROUND: GREEN	
G.1.4. ISOLATED GROUND - GREEN W/ YELLOW TRACER	
G.2. 208/120V	
G.2.1. NEUTRAL: WHITE	
G.2.2. PHASE: A - BLACK, B - RED, C - BLUE	
G.2.3. GROUND: GREEN	
G.2.4. ISOLATED GROUND - GREEN W/ YELLOW TRACER	
I. COLOR CODE #5 AWG AND SMALLER PHASE AND NEUTRAL CONDUCTORS BY CONTINUOUS OVERCOVERING. CONDUCTORS #4 AWG AND LARGER MAY BE COLOR CODED BY TAPE. TAPE SHALL HAVE MINIMUM OF TWO COMPLETE WRAPS AROUND CONDUCTOR AT 6 INCHES FROM TERMINATIONS, SPLICES, AND JUNCTION POINTS.	
J. IDENTIFY CIRCUIT NUMBERS WITH SYNTHETIC CLOTH OR PLASTIC LABELS AT SPLICE AND JUNCTION POINTS	
2.2 CONDUIT	
A. CONDUIT TYPES SHALL BE AS FOLLOWS AND SHALL BEAR THE LABEL OF A NATIONALLY RECOGNIZED TESTING LABORATORY:	
1. GALVANIZED RIGID METAL CONDUIT (GRC): HOT_DIP GALVANIZED.	
2. INTERMEDIATE METAL CONDUIT (IMC): HOT_DIP GALVANIZED.	
3. ELECTRICAL METALLIC TUBING (EMT): HOT_DIP GALVANIZED.	
4. SCHEDULE 40 HEAVY WALL POLYVINYL CHLORIDE (PVC).	
5. FLEXIBLE METAL CONDUIT: ZINC COATED STEEL OR ALUMINUM.	
6. LIQUID TIGHT FLEXIBLE STEEL CONDUIT WITH PVC JACKET.	
7. MC CABLE: STEEL OR ALUMINUM CLADDING.	
2.3 OUTLET BOXES AND CONDUIT FITTINGS	
A. OUTLET BOXES AND CONDUIT FITTINGS SHALL BEAR THE LABEL OF A NATIONALLY RECOGNIZED TESTING LABORATORY AND BE RATED FOR ENVIRONMENTAL CONDITIONS WHERE INSTALLED.	
B. BOXES: COMPLY WITH NEC IN REGARD TO MAXIMUM ALLOWABLE NUMBER OF CONDUCTORS .	
1. INTERIOR BOXES: HOT_DIP GALVANIZED, 4 INCHES MINIMUM OCTAGON OR SQUARE, UNLESS OTHERWISE NOTED. PROVIDE SINGLE OR MULTIPLE GANG OUTLET BOXES AS REQUIRED FOR FLUSH INSTALLATION IN DRYWALL CONSTRUCTION. PROVIDE MASONRY BOXES FOR OUTLETS INSTALLED FLUSH IN CONCRETE UNIT MASONRY. PROVIDE SINGLE SURFACE, MOUNTED OUTLET BOXES FOR UTILITY TYPE BOXES.	
2. EXTERIOR BOXES: PROVIDE MASONRY BOXES FOR OUTLETS INSTALLED FLUSH IN CONCRETE UNIT MASONRY.	
3. OUTLET BOXES: SUITABLE FOR SUPPORTING LIGHTING FIXTURES IF INTENDED FOR THAT PURPOSE.	
C. CONDUIT FITTINGS:	
1. EMT FITTINGS FOR DRY LOCATIONS: DIECAST OR STEEL SET SCREW TYPE.	
2. EMT FITTINGS FOR WET OR DAMP LOCATIONS: STEEL COMPRESSION TYPE.	
3. GRC, IMC, OR EMT BOX CONNECTORS FOR WET OR DAMP LOCATIONS: WEATHER-TIGHT HUBS.	
4. THREADLESS GRC OR IMC FITTINGS: NOT PERMITTED.	
5. GRC OR IMC CONNECTORS FOR DRY LOCATIONS.	
6. PVC FITTINGS: SOLVENT WELD TYPE FOR PVC CONDUIT.	

MATERIALS AND METHODS	
PART 2 - EXECUTION	
2.1 INSTALLATION	
A. INSTALL SPECIFIED MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS INDICATED ON DRAWINGS.	
B. CUTTING AND PATCHING: WHERE CUTTING IS REQUIRED THROUGH WALLS, FLOORS, OR CEILINGS, MAKE OPENINGS NO LARGER THAN REQUIRED AND REPAIR AFFECTED SURFACES TO MATCH ADJACENT SURFACES.	
C. ELECTRICAL EQUIPMENT SUPPORTS: SUPPORT ELECTRICAL EQUIPMENT WITH HANGERS AND SUPPORTS SPECIFIED ABOVE OR IN ANOTHER APPROVED MANNER WHERE DETAILS ARE NOT INDICATED.	
D. SLEEVES: INSTALL WHERE CONDUITS PASS THROUGH CONCRETE FLOORS. CAULK SLEEVES THROUGH OUTSIDE WALLS ABOVE GRADE WITH SEALANT.	
E. FASTENING AND ANCHORING: FASTEN CONDUIT STRAPS, DISCONNECT SWITCHES, PANELBOARDS, AND OTHER EQUIPMENT SECURED TO WALLS AND SLABS WITH CADMIUM PLATED SCREWS OR BOLTS AND LEAD CINCH ANCHORS OR EXPANSION BOLTS AND INSTALL IN HOLES DRILLED WITH PROPER SIZE MASONRY DRILL. PROPERLY SIZE ANCHORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR LOAD TO BE SUPPORTED.	
F. TORQUE ALL CONDUCTOR CONNECTION TO MANUFACTURER'S RECOMMENDED VALUES. INSPECT PANELBOARDS FOR PHYSICAL DAMAGE, PROPER ALIGNMENT, ANCHORAGE, AND GROUNDING. CHECK PROPER INSTALLATION AND TIGHTNESS OF CONNECTIONS FOR CIRCUIT BREAKERS, FUSIBLE SWITCHES, AND FUSES.	
2.2 GROUNDING	
A. GENERAL: GROUND ALL METALLIC CONDUITS, SUPPORTS, CABINETS, EQUIPMENT, SYSTEM NEUTRALS, METAL BUILDING STRUCTURES, AND OTHER ITEMS REQUIRED TO BE GROUNDED IN ACCORDANCE WITH THE NEC AND OTHER APPLICABLE CODES AND AS INDICATED ON DRAWINGS.	
B. EQUIPMENT GROUNDING:	
1. MAKE CONDUITS ELECTRICALLY CONTINUOUS USING PROPER FITTINGS, CONNECTIONS, GROUNDING BUSHINGS, ETC.	
2. WHERE GALVANIZED RIGID METAL CONDUIT (GRC) PENETRATES THE GRADE OUTDOORS OR PENETRATES THE SLAB, INSTALL INSULATING GROUNDING BUSHINGS.	
3. INSTALL AN INSULATED EQUIPMENT GROUND WIRE AS SPECIFIED ON DRAWINGS.	
C. METAL UNDERGROUND COLD WATER PIPE: CONNECT TO ELECTRICAL SYSTEM IF AVAILABLE AND PERMITTED BY LOCAL CODES. INSTALL JUMPEARS AROUND WATER METERS, VALVES, OR OTHER DEVICES WHICH MIGHT CAUSE AN INTERRUPTION OF CONTINUITY DURING SERVICE.	
D. CONCRETE ENCASED ELECTRODES: WHERE INDICATED ON THE DRAWINGS, FURNISH AND INSTALL ELECTRODES, JUMPEARS, AND APPROVED FITTINGS IN ACCORDANCE WITH GROUNDING ELECTRODE DETAIL .	
E. GROUND RODS: IF GROUND RODS ARE REQUIRED, INSTALL TWO 5/8 INCH MINIMUM DIAMETER COPPERWELD RODS DRIVEN VERTICALLY, NOT LESS THAN 12 FEET APART AND EACH WITH 6 FEET OF LENGTH IN CONTACT WITH THE SOIL.	

WIRING METHODS	
2.4 WIRING DEVICES	
A. BRANCH CIRCUIT SWITCHES: HEAVY DUTY, SPECIFICATION GRADE RATED 20A 120/277V AS FOLLOWS	
A.1. SINGLE POLE - HUBBELL #HBL1221G1V OR EQUAL.	
A.2. 3-WAY - HUBBELL #HBL1223G1V OR EQUAL.	
A.3. 4-WAY - HUBBELL #HBL1224G1V OR EQUAL.	
A.4. SINGLE POLE OCCUPANCY SENSOR - LEVITON #OSSMT-MD-G OR EQUAL.	
B. RECEPTACLES: STRAIGHT BLADE NYLON GROUNDING, BACK OR SIDE WIRED, HEAVY DUTY, SPECIFICATION GRADE AS FOLLOWS:	
B.1. DUPLEX RECEPTACLE, 20A 125V (5-20R) - HUBBELL #HBL5262GY OR EQUAL.	
B.2. DUPLEX RECEPTACLE, 20A 125V (5-20R) ISOLATED GROUND - HUBBELL #IGS262GY OR EQUAL.	
B.3. DUPLEX RECEPTACLE, 20A 125V (5-20R) GFCI - HUBBELL #GFI5GYLA OR EQUAL.	
B.4. DUPLEX RECEPTACLE, 20A, 125V (5-20R) GFCI AND WEATHER RESISTANT - HUBBELLGFTFR15GY OR EQUAL.	
C. COVER PLATES	
A. ELECTRICAL SYSTEM VOLTAGES: THE FOLLOWING VOLTAGES SHALL APPLY UNLESS OTHERWISE NOTED.	
1. RECEPTACLE AND SMALL POWER SYSTEMS: 120/120 VOLT, 3 PHASE, 4 WIRE WYE, 60 HZ, SOLID GROUNDED NEUTRAL.	
PART 2 - PRODUCTS	
2.1 MANUFACTURERS	
A. PANELBOARDS MANUFACTURED BY ONE OF THE FOLLOWING, UNLESS OTHERWISE INDICATED ON DRAWINGS.	
1. CUTLER HAMMER	
2. GENERAL ELECTRIC.	
3. SIEMENS (ITE).	
4. SQUARE D.	
B. EQUIPMENT SHALL BEAR NAME AND TRADEMARK OF MANUFACTURER AS LISTED ABOVE.	
C. SUBSTITUTIONS: NOT PERMITTED.	
2.2 LIGHTING/APPLIANCE PANELBOARDS	
A. PANELBOARDS: INSTALL AS SCHEDULED ON DRAWINGS, INCLUDING VOLTAGE, AMPERAGE, BUS BRACING, AND INTERRUPTING RATINGS.	
1. MAIN LUGS ONLY (MLO), MAIN CIRCUIT BREAKER (MCB), OR MAIN FUSIBLE SWITCH (MFS) PANELBOARD AND BRANCH DEVICES AS INDICATED ON SCHEDULE.	
2. BRANCH CIRCUIT PROTECTIVE DEVICES: PLUG ON BOLTED TYPE THERMAL MAGNETIC CENTER TRIP CIRCUIT BREAKERS OR LOAD CENTER TYPE CONSTRUCTION NOT PERMITTED. CIRCUIT BREAKER AMP INTERRUPTING CAPACITY (AIC) NO LESS THAN VALUES INDICATED ON DRAWINGS. CIRCUIT BREAKER FEEDING EMERGENCY LIGHTS, NIGHT LIGHTS, TIME CLOCK MOTORS, ETC. WILL BE EQUIPPED WITH HANDLE LOCKS WHERE INDICATED ON DRAWINGS, OR REQUIRED BY NFPA 70.	
3. CABINETS: ZINC COATED SHEET STEEL WITH NATIONALLY RECOGNIZED TESTING LABORATORY LISTED AND LABELED BY A MANUFACTURER'S STANDARD COLOR. TRIMS TO BE FITTED WITH HINGED DOORS HAVING COMBINED LOCK AND LATCH. LOCKS WILL BE KEYEYED ALIKE AND FURNISHED WITH TWO KEYS FOR EACH PANELBOARD.	
B. DIRECTORY HOLDER: CONTRACTOR SHALL PROVIDE LEGIBLE TYPEWRITTEN CIRCUIT DIRECTORY PROPERLY IDENTIFYING LOAD(S) ON EACH CIRCUIT MOUNTED UNDER CLEAR PLASTIC COVER. BRANCH CIRCUIT IDENTIFICATION SHALL BE EXACTLY AS INDICATED ON PANEL SCHEDULE.	
PART 3 - EXECUTION	
3.1 EXAMINATION	
A. EXAMINE SURFACES AND ADJACENT AREAS IN WHICH WORK UNDER THIS SECTION IS TO BE PERFORMED. REPORT IN WRITING TO OWNER'S CONSTRUCTION MANAGER PRE-EXISTING CONDITIONS THAT MAY ADVERSELY AFFECT THE PROCEEDING OF THE WORK. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.	
B. STARTUP WORK: CONSTITUTES ACCEPTANCE OF THE EXISTING CONDITIONS AND THE CONTRACTOR SHALL THEN, AT HIS EXPENSE, BE RESPONSIBLE FOR CORRECTING ALL DEFECTS, FACTORY AND DEFECTIVE WORK ENCOUNTERED.	
3.2 INSTALLATION	
A. INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS INDICATED ON DRAWINGS.	

PANELBOARDS	
PART 1 - GENERAL	
1.1 SUMMARY	
A. SECTION INCLUDES:	
1. LIGHTING/APPLIANCE PANELBOARDS.	
B. RELATED REQUIREMENTS:	
1. BASIC ELECTRICAL MATERIALS AND METHODS. GROUNDING.	
1.2 REFERENCES	
A. NATIONAL ELECTRICAL CODE (NFPA-70), AND INTERIM AMENDMENTS IN EFFECT.	
1.3 QUALITY ASSURANCE	
A. COMPLY WITH NATIONAL ELECTRICAL CODE.	
B. COMPLY WITH LOCAL AND STATE, UTILITY REGULATIONS AND LAWS.	
1.4 SYSTEM DESCRIPTION	
A. ELECTRICAL SYSTEM VOLTAGES: THE FOLLOWING VOLTAGES SHALL APPLY UNLESS OTHERWISE NOTED.	
1. RECEPTACLE AND SMALL POWER SYSTEMS: 120/120 VOLT, 3 PHASE, 4 WIRE WYE, 60 HZ, SOLID GROUNDED NEUTRAL.	
PART 2 - PRODUCTS	
2.1 MANUFACTURERS	
A. PANELBOARDS MANUFACTURED BY ONE OF THE FOLLOWING, UNLESS OTHERWISE INDICATED ON DRAWINGS.	
1. CUTLER HAMMER	
2. GENERAL ELECTRIC.	
3. SIEMENS (ITE).	
4. SQUARE D.	
B. EQUIPMENT SHALL BEAR NAME AND TRADEMARK OF MANUFACTURER AS LISTED ABOVE.	
C. SUBSTITUTIONS: NOT PERMITTED.	
2.2 LIGHTING/APPLIANCE PANELBOARDS	
A. PANELBOARDS: INSTALL AS SCHEDULED ON DRAWINGS, INCLUDING VOLTAGE, AMPERAGE, BUS BRACING, AND INTERRUPTING RATINGS.	
1. MAIN LUGS ONLY (MLO), MAIN CIRCUIT BREAKER (MCB), OR MAIN FUSIBLE SWITCH (MFS) PANELBOARD AND BRANCH DEVICES AS INDICATED ON SCHEDULE.	
2. BRANCH CIRCUIT PROTECTIVE DEVICES: PLUG ON BOLTED TYPE THERMAL MAGNETIC CENTER TRIP CIRCUIT BREAKERS OR LOAD CENTER TYPE CONSTRUCTION NOT PERMITTED. CIRCUIT BREAKER AMP INTERRUPTING CAPACITY (AIC) NO LESS THAN VALUES INDICATED ON DRAWINGS. CIRCUIT BREAKER FEEDING EMERGENCY LIGHTS, NIGHT LIGHTS, TIME CLOCK MOTORS, ETC. WILL BE EQUIPPED WITH HANDLE LOCKS WHERE INDICATED ON DRAWINGS, OR REQUIRED BY NFPA 70.	
3. CABINETS: ZINC COATED SHEET STEEL WITH NATIONALLY RECOGNIZED TESTING LABORATORY LISTED AND LABELED BY A MANUFACTURER'S STANDARD COLOR. TRIMS TO BE FITTED WITH HINGED DOORS HAVING COMBINED LOCK AND LATCH. LOCKS WILL BE KEYEYED ALIKE AND FURNISHED WITH TWO KEYS FOR EACH PANELBOARD.	
B. DIRECTORY HOLDER: CONTRACTOR SHALL PROVIDE LEGIBLE TYPEWRITTEN CIRCUIT DIRECTORY PROPERLY IDENTIFYING LOAD(S) ON EACH CIRCUIT MOUNTED UNDER CLEAR PLASTIC COVER. BRANCH CIRCUIT IDENTIFICATION SHALL BE EXACTLY AS INDICATED ON PANEL SCHEDULE.	
PART 3 - EXECUTION	
3.1 EXAMINATION	
A. EXAMINE SURFACES AND ADJACENT AREAS IN WHICH WORK UNDER THIS SECTION IS TO BE PERFORMED. REPORT IN WRITING TO OWNER'S CONSTRUCTION MANAGER PRE-EXISTING CONDITIONS THAT MAY ADVERSELY AFFECT THE PROCEEDING OF THE WORK. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.	
B. STARTUP WORK: CONSTITUTES ACCEPTANCE OF THE EXISTING CONDITIONS AND THE CONTRACTOR SHALL THEN, AT HIS EXPENSE, BE RESPONSIBLE FOR CORRECTING ALL DEFECTS, FACTORY AND DEFECTIVE WORK ENCOUNTERED.	
3.2 INSTALLATION	
A. INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS INDICATED ON DRAWINGS.	

# SAFETY SWITCHES

## PART 1 - GENERAL

### 1.1 SUMMARY

#### A. SECTION INCLUDES:

1. SAFETY DISCONNECT SWITCHES.

### 1.2 REFERENCES

#### A. THE PUBLICATIONS LISTED BELOW FORM A PART OF THIS SPECIFICATION TO THE EXTENT REFERENCED.

THESE ARE REFERENCED WITHIN THE TEXT BY THE BASIC DESIGNATION ONLY.

#### B. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA):

1. NEMA 250 - ENCLOSURES FOR ELECTRICAL EQUIPMENT (1000 VOLTS MAXIMUM).

## PART 2 - PRODUCTS

### 2.1 SAFETY SWITCHES

#### A. SWITCH INTERIOR:

1. DEAD-FRONT CONSTRUCTION WITH HINGED ARC SUPPRESSOR AND SWITCH BLADES WHICH ARE FULLY VISIBLE IN THE OFF POSITION AND WITH DOOR OPEN.

#### B. SWITCH MECHANISM:

1. QUICK-MAKE AND QUICK-BREAK OPERATING HANDLE AND MECHANISM WITH A DELETE DUAL COVER INTERLOCK TO PREVENT UNAUTHORIZED OPENING OF THE SWITCH DOOR IN THE "ON" POSITION OR CLOSING THE SWITCH MECHANISM WHILE THE DOOR IS OPEN.
2. PROVIDE ELECTRICAL INTERLOCK SWITCH TO DE-ENERGIZE CONTROL WIRING AS REQUIRED.
3. LINE AND LOAD TERMINALS OF THE DEVICE RATED 100 AMPERES OR LESS SHALL BE RATED FOR 75 DEGREES C.
4. PROVIDE OPERATING HANDLE WITH PROVISIONS FOR INSTALLATION OF A PADLOCK IN "OFF" OR "ON" POSITIONS.

#### C. RATINGS:

1. SWITCHES HORSEPOWER RATED FOR 600 VOLTS, 60 HZ, HEAVY-DUTY TYPE.
2. WHERE SWITCHES ARE INDICATED TO BE FUSED, FURNISH WITH PROVISIONS FOR FUSES.

#### D. ENCLOSURES:

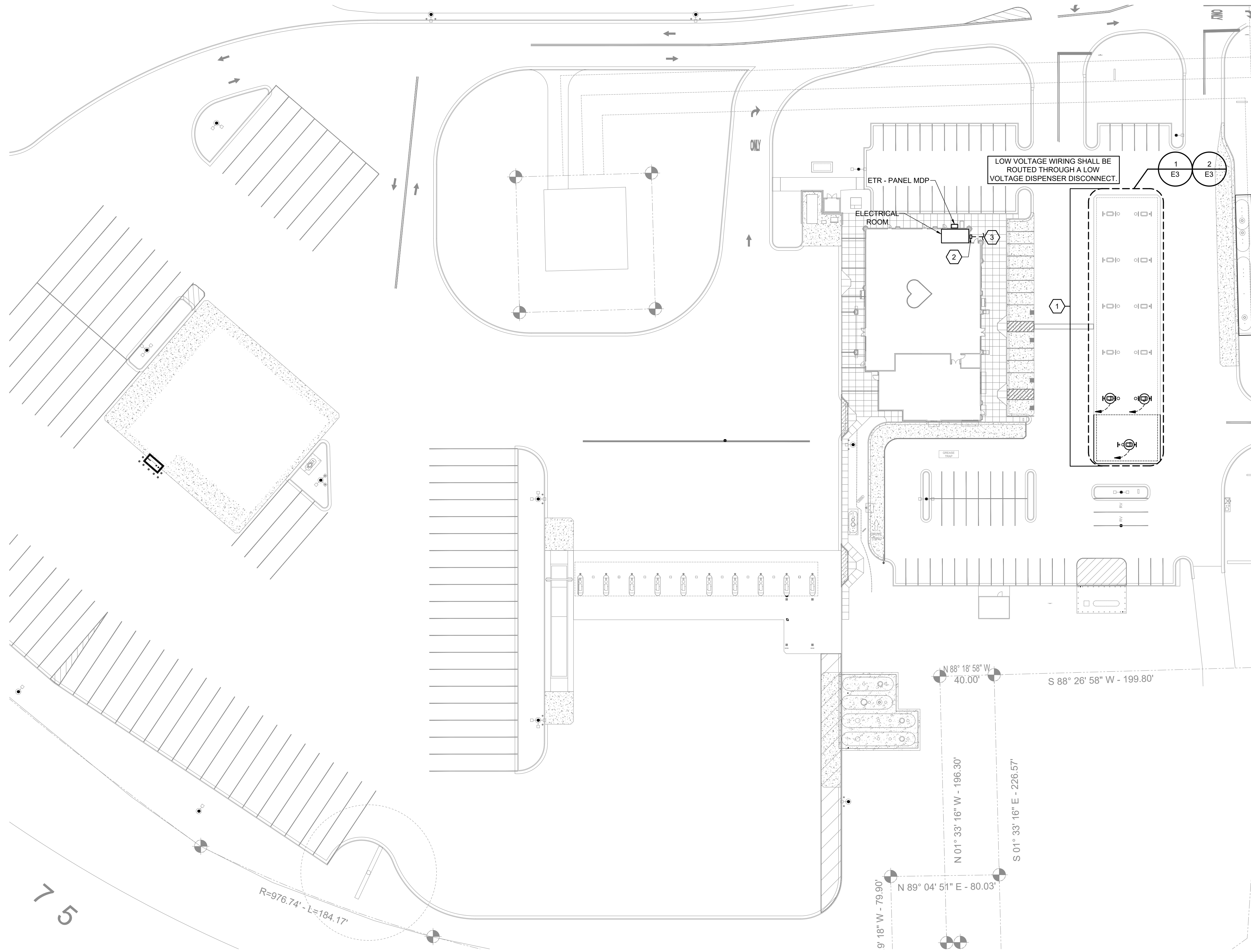
1. NEMA 1, CODE GAUGE SHEET STEEL WITH HINGED COVER, EXCEPT WHERE EXPOSED TO WEATHER.
2. WHERE EXPOSED TO WEATHER, PROVIDE NEMA 3R ENCLOSURE.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

1. INSTALL MOTOR AND CIRCUIT DISCONNECT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. APPLICABLE CODES SHALL TAKE PRECEDENCE OVER DRAWING DETAILS.
2. PROVIDE PROPERLY SIZED GROUNDING LUG AND TERMINATIONS FOR ALL SAFETY SWITCHES.





1 SITE POWER PLAN  
SCALE: 1" = 40'-0"

### GENERAL NOTES

- UNLESS OTHERWISE NOTED, ALL BRANCH CIRCUITS ROUTED ON SITE SHALL BE MINIMUM #10 AWG IN MINIMUM 1" CONDUIT.
- ALL UNDERGROUND CONDUITS SHALL BE PVC, EXCEPT AS NOTED BELOW. ALL RISERS SHALL BE PVC-COATED RIGID GALVANIZED STEEL (RGS). ALL ELLS BELOW GRADE SHALL BE PVC-COATED RIGID GALVANIZED STEEL (RGS). PROVIDE WITH PVC TO STEEL ADAPTER(S) AS NECESSARY. (THIS REQUIREMENT SHALL NOT APPLY TO FIXTURE POLE BASES.) FUEL CONDUIT RUNS AND ALL OTHER CONDUIT RUNS PASSING UNDER THE BOUNDARIES OF CLASS I LOCATIONS SHALL BE THREADED RIGID METAL IN ACCORDANCE WITH NEC ARTICLE 514 AND SHALL MEET THE GROUNDING AND BONDING REQUIREMENTS OF NEC 250.100. IF LOCAL SOILS ARE CORROSIVE, INCLUDE PVC-COATING OR OTHER APPROVED CORROSION PROTECTION. IF CONDUIT RUN SERVES D.E.F. (DIESEL EXHAUST FLUID) SUMPS, PROVIDE "ROBROY" PVC-COATED (COATED INSIDE & OUT) CONDUIT. PVC MAY BE ALLOWED FOR THE UNDERGROUND PORTIONS OF THESE RUNS IF ALL PROVISIONS OF NEC 514.8 EXCEPTION 2 ARE MET.
- PROVIDE LISTED SEALS IN EACH CONDUIT RUN ENTERING OR LEAVING A DISPENSER OR ANY CAVITIES OR ENCLOSURES IN DIRECT COMMUNICATION THEREWITH. THE SEAL FITTING SHALL BE THE FIRST FITTING WITHIN 10' AFTER THE CONDUIT EMERGES FROM THE EARTH OR CONCRETE. CONDUITS PASSING UNDER THE BOUNDARIES OF THE CLASS I LOCATIONS ARE CONSIDERED TO BE IN A CLASS I LOCATION AND SHALL HAVE SEAL FITTINGS ON BOTH ENDS OF THE CONDUIT RUN. THE SEALS TO BE THE FIRST FITTING WITHIN 10' AT THE POINT OF EMERGENCE ON EACH SIDE PER NEC 514.8

### KEYNOTES

- INSTALL FIELD CIRCUITS SHOWN FOR FUEL EQUIPMENT FROM ISO-FUEL PANEL, 'FP' TO THE EQUIPMENT. SEE FUEL ELECTRICAL DRAWINGS FOR SPECIFIC DETAILS.
- ELECTRICAL CONTRACTOR SHALL PROVIDE AN ELECTRICAL GUTTER WITH A INTRINSIC SECTION FOR LOW VOLTAGE WIRING.
- ELECTRICAL CONTRACTOR SHALL STUB-OUT (5) CONDUITS 10'-0" FROM BUILDING FOR AUTO CANOPY. COORDINATE LOCATION AND QUANTITY WITH FUEL DRAWINGS AND CONTRACTOR.  
(3) 1" TO FUEL DISPENSERS FOR POWER AND CONTROLS  
(1) 1" TO FUEL DISPENSERS FOR LIQUID SENSORS AND LEVEL PROBES  
(1) 2" FOR FUTURE USE. PROVIDE SEAL-OFFS IN BUILDING. EXTENSION OF THESE CONDUITS BY FUEL CONTRACTOR. REFERENCE SHEET FE2.  
E.C SHALL INSTALL (6) CONDUITS FROM BUILDING TO AUTO CANOPY FOR THE FOLLOWING:  
(1) 1" FOR FASCIA LIGHTING  
(5) 1" FOR FUTURE USE (CONDUIT ONLY WITH PULL STRING) PROVIDE SEAL-OFFS ON BOTH ENDS. EXTENSION OF THESE CONDUITS BY E.C.

COORDINATE THE EXTENT OF ALL REQUIRED ELECTRICAL DEMOLITION WITH CONSTRUCTION MANAGER

EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. CONTRACTOR SHALL CAREFULLY COORDINATE NEW WORK AND DEMOLITION WITH ALL OTHER DISCIPLINES AND EXISTING CONDITIONS.

EACH SUBCONTRACTOR IS RESPONSIBLE FOR HAVING A THOROUGH KNOWLEDGE OF ALL DRAWINGS AND SPECIFICATIONS IN THEIR RELATED FIELD. THE FAILURE TO ACQUAINT HIMSELF WITH THIS KNOWLEDGE DOES NOT RELIEVE THE RESPONSIBILITY OF PERFORMING HIS WORK PROPERLY. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED BECAUSE OF CONDITIONS THAT OCCUR DUE TO FAILURE TO FAMILIARIZE WORKERS WITH THIS KNOWLEDGE.



HARRISON FRENCH  
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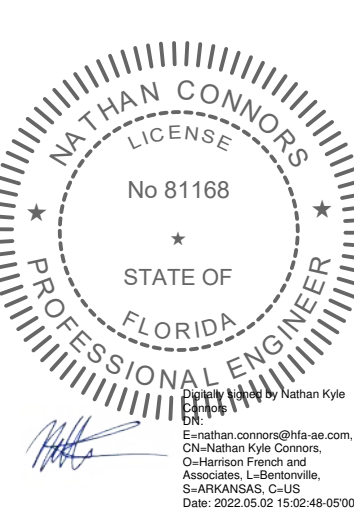
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1705 S. Walton Blvd., Suite 3  
Bentonville, Arkansas 72712  
www.hfa-ac.com

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LAKE CITY, FL  
STORE #724

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Travel Stop &  
Country Stores



Nathan Connors, P.E.  
License #81168  
Harrison French &  
Associates, LTD

### ISSUE BLOCK


STORE NO. 603

DOCUMENT DATE: 03.30.22

CHECKED BY: CAR

DRAWN BY: LJC

ELECTRICAL  
SITE  
POWER  
PLAN

SHEET:  
E2



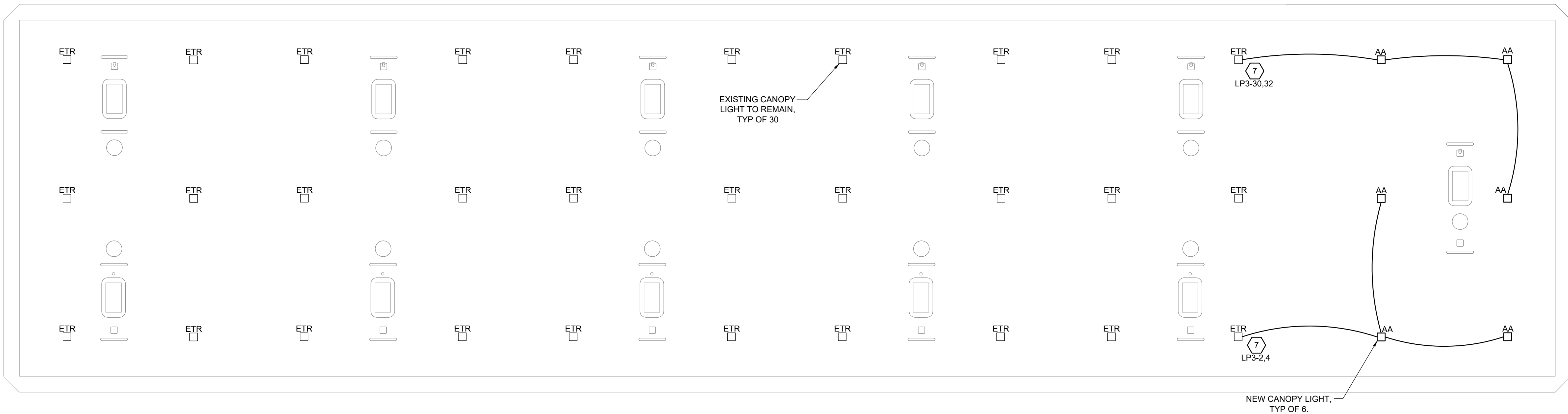
COLUMN	CONDUITS INSIDE COLUMN
(A)	(1) 1" C. FOR LIGHT BOXES (2) 1" C. FOR FUTURE USE
(B)	DOWNSPOUT
(C)	(3) 1" C. FOR FUTURE USE
(D)	DOWNSPOUT

## X KEYNOTES

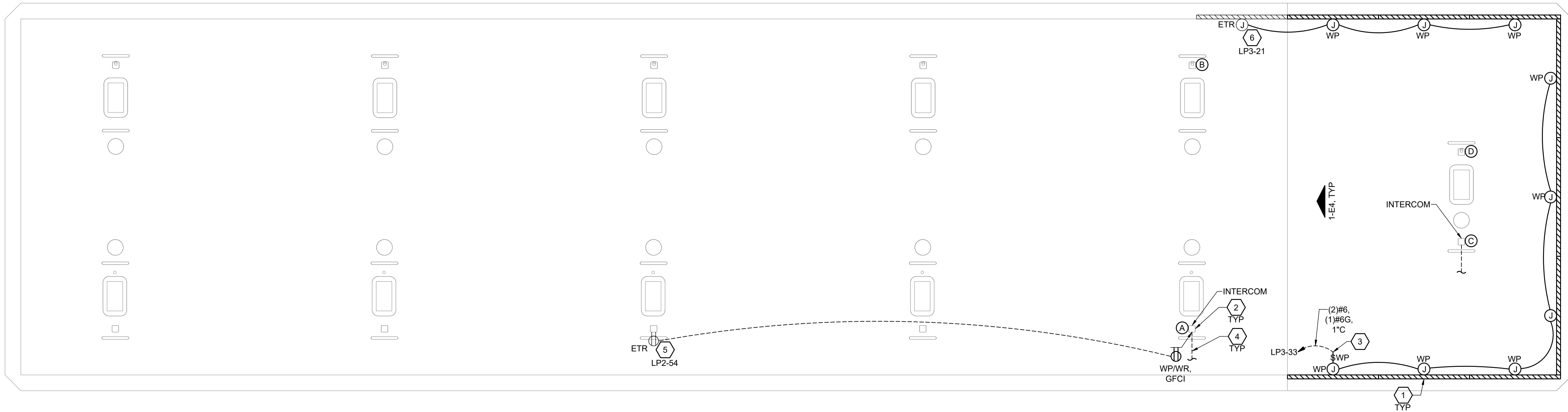
1. BACKLITE FASCIA LIGHT BOXES WILL BE ERECTED BY OWNER UP TO 45'-0" LENGTHS, UP TO (3) 15'-0" SECTIONS AT A TIME. FASCIAS MAY BE LAID OUT STARTING FROM LEFT TO RIGHT. THE ELECTRICAL CONNECTION POINT IS ALWAYS THE TOP CENTER OF THE LEFT BOX.  
  
ELECTRICAL CONTRACTOR SHALL COMPLETE THE "SYSTEM 90 INSTALLATION SUMMARY" LOCATED IN DIVISION 11 OF THE SPECIFICATIONS BOOKLET AN MAIL TO:  
MR. PAUL MAYFIELD  
SHARPLINE CONVERTING  
1520 S. TYLER RD.  
WICHITA, KS 67277  
1-800-888-4888
2. CANOPY COLUMN, TYPICAL, WITH CONDUITS OR OTHER FEATURES AS OTHERWISE NOTED.
3. PROVIDE A WEATHERPROOF SPST SWITCH FOR EACH LIGHT BOX CIRCUIT. LOCATE SWITCH ABOVE CANOPY ROOF AT THE ELECTRICAL CONNECTION POINT.
4. STUB OUT CONDUITS INSIDE COLUMNS TO THIS SIDE OF THE COLUMN UNDER SLAB.
5. CONNECT TO EXISTING CIRCUIT ROUTED CURRENTLY SERVING ANO CANOPY RECEPTACLES. VERIFY EXISTING CIRCUIT CAN ACCOMMODATE NEW LOAD.
6. CONNECT TO EXISTING CIRCUIT ROUTED THROUGH CONTRACTOR CURRENTLY SERVING ANO CANOPY PANAFLEX. VERIFY EXISTING CIRCUIT CAN ACCOMMODATE NEW LOAD.
7. CONNECT TO EXISTING CIRCUIT ROUTED THROUGH CONTRACTOR CURRENTLY SERVING ANO CANOPY LIGHTING. VERIFY EXISTING CIRCUIT CAN ACCOMMODATE NEW LOAD.

## GENERAL NOTES

1. UNLESS OTHERWISE NOTED, ALL BRANCH CIRCUITS ROUTED ON SITE SHALL BE MINIMUM #10 AWG IN MINIMUM 1" CONDUIT.
2. ALL UNDERGROUND CONDUITS SHALL BE PVC, EXCEPT AS NOTED BELOW. ALL RISERS SHALL BE PVC-COATED RIGID GALVANIZED STEEL (RGS). ALL ELLS BELOW GRADE SHALL BE PVC-COATED RIGID GALVANIZED STEEL (RGS). PROVIDE WITH PVC TO STEEL ADAPTER(S) AS NECESSARY. (THIS REQUIREMENT SHALL NOT APPLY TO FIXTURE POLE BASES.) FUEL CONDUIT RUNS AND ALL OTHER CONDUIT RUNS PASSING UNDER THE BOUNDARIES OF CLASS LOCATIONS SHALL BE RIGID GALVANIZED STEEL (RGS). CONDUITS WITH NEC ARTICLE 514 AND SHALL MEET THE GROUNDING AND BONDING REQUIREMENTS OF NEC 250.100. IF LOCAL SOILS ARE CORROSIVE, INCLUDE PVC-COATING OR OTHER APPROVED CORROSION PROTECTION. IF CONDUIT RUN SERVES D E F (DIESEL EXHAUST FUEL) SUMPS, PROVIDE "ROBBERY" PVC-COATED (COATED INSIDE & OUT) CONDUIT. PVC SHALL BE ALLOWED TO BE BELOW GRADE. ALL LOCATIONS OF THESE RUNS IF ALL PROVISIONS OF NEC 514 A EXCEPTION 2 ARE MET.
3. PROVIDE LISTED SEALS IN EACH CONDUIT RUN ENTERING OR LEAVING A DISPENSER OR ANY CAVITIES OR ENCLOSURES IN DIRECT COMMUNICATION THEREWITH. THE SEAL FITTING SHALL BE THE FIRST FITTING WITHIN 10' AFTER THE CONDUIT EMERGES FROM THE EARTH OR CONCRETE. CONDUITS PASSING UNDER THE BOUNDARIES OF THE CLASS I LOCATIONS ARE CONSIDERED TO BE IN A CLASS I LOCATION AND SHALL HAVE SEAL FITTINGS ON BOTH ENDS OF THE CONDUIT RUN. THE SEAL IS TO BE THE FIRST FITTING WITHIN 10' AT THE POINT OF EMERGENCE ON EACH SIDE PER NEC 514.8



2 CAR FUEL ISLAND CONOPY LIGHTING PLAN  
SCALE: 1/8" = 1'-0"



1 CAR FUEL ISLAND CANOPY POWER PLAN  
SCALE: 1/8" = 1'-0"

COORDINATE THE EXTENT OF  
ALL REQUIRED ELECTRICAL  
DEMOLITION WITH  
CONSTRUCTION MANAGER

EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. CONTRACTOR SHALL CAREFULLY COORDINATE NEW WORK AND DEMOLITION WITH ALL OTHER DISCIPLINES AND EXISTING CONDITIONS.

EACH SUBCONTRACTOR IS RESPONSIBLE FOR HAVING A THOROUGH KNOWLEDGE OF ALL DRAWINGS AND SPECIFICATIONS IN THEIR RELATED FIELD. THE FAILURE TO ACQUAINT HIMSELF WITH THIS KNOWLEDGE DOES NOT RELIEVE THE RESPONSIBILITY OF PERFORMING HIS WORK PROPERLY. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED BECAUSE OF CONDITIONS THAT OCCUR DUE TO FAILURE TO FAMILIARIZE WORKERS WITH THIS KNOWLEDGE.

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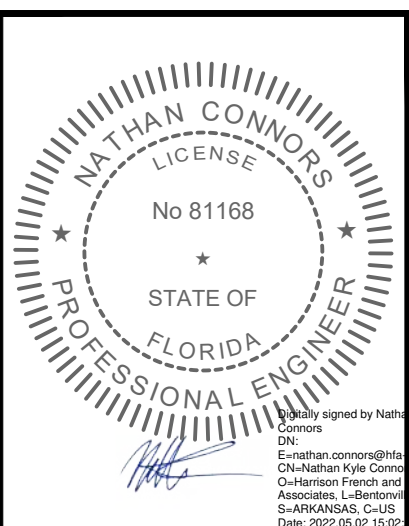
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# ELECTRICAL CANOPY POWER PLAN

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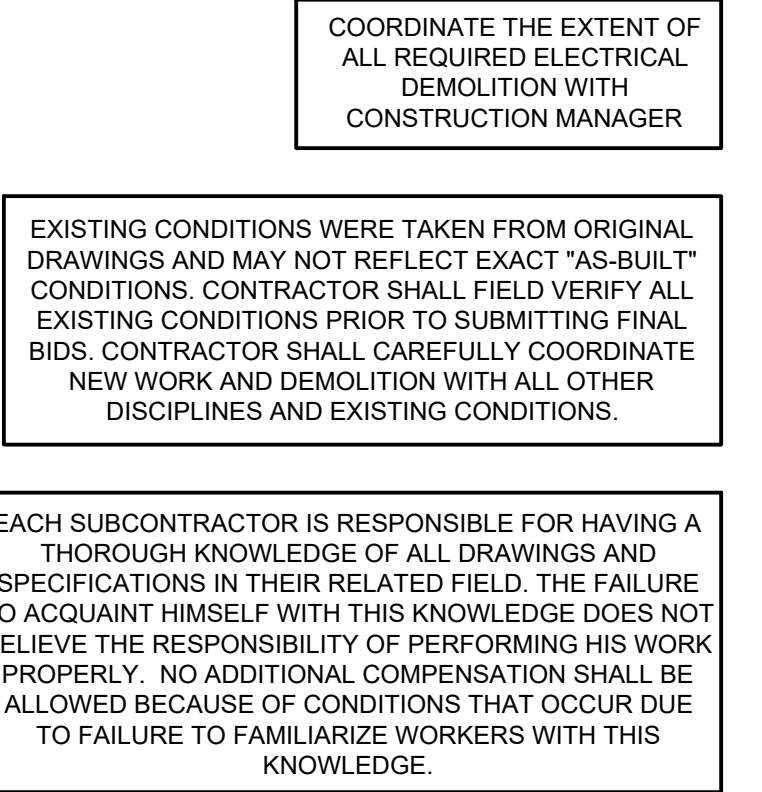
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LIGHTING FIXTURE SCHEDULE							
TYPE	MANUFACTURER	CATALOG #	DESCRIPTION	VOLTS	WATTS	MOUNTING	REMARKS
AA	LSI	CRUS-SC-LED-HO-50-UE-WHT		208	125	CANOPY	NOTE 10
1. LIGHT FIXTURES TO BE PROVIDED BY OWNER, INSTALLED AND CONNECTED BY ELECTRICAL CONTRACTOR. 2. PROVIDE ARROWS AND FACES AS INDICATED ON THE DRAWINGS. 3. ELECTRICAL CONTRACTOR SHALL VERIFY ALL FIXTURE LOCATIONS WITH ARCHITECTURAL ELEVATIONS. 4. ELECTRICAL CONTRACTOR SHALL INSTALL ALL CEILING MOUNTED LIGHTING FIXTURES IN LOCATIONS AS INDICATED ON THE ARCHITECTURAL REFLECTED CEILING PLAN. 5. GENERAL CONTRACTOR SHALL PROVIDE FIREPROOFING AROUND RECESSED FIXTURES INSTALLED IN FIRE RATED CEILING PER U.L. REQUIREMENTS, ELECTRICAL CONTRACTOR SHALL COORDINATE. 6. ALL LIGHT FIXTURES SHALL BE SECURED TO THE CEILING FRAMING SYSTEM BY MECHANICAL MEANS (SUCH AS BOLTS, SCREWS, OR RIVETS) OR BY CLIPS IDENTIFIED FOR USE WITH THE TYPE OF CEILING, FRAMING MEMBER, AND LIGHT FIXTURE. 7. EMERGENCY LIGHTS SHALL HUG CEILINGS. IN NON-CEILING STORAGE ROOMS, LOCATE BOTTOM OF FIXTURES AT 12'-0" AFF. 8. PROVIDE DRYWALL FRAME KIT. 9. EMERGENCY FIXTURE WITH EMERGENCY BATTERY. 10. CANOPY FIXTURES SHALL BE INSTALLED BY CANOPY CONTRACTOR. WIRING BY E.C.							

PANELBOARD NOTES ( )	
(1)	TERMINATE GROUND ON ISOLATED GROUND BUS.
(2)	INSTALL LOCKING DEVICE (LOCK-OFF FOR MAINTENANCE).
(3)	INSTALL LOCKING DEVICE FURNISHED WITH PANELBOARD (LOCK-ON FOR CRITICAL LOAD).
(4)	GFI BREAKER FOR PERSONNEL PROTECTION (5 mA).
(5)	GFI BREAKER FOR EQUIPMENT PROTECTION (30 mA).
(6)	CONDUCTOR SIZE HAS BEEN INCREASED FOR VOLTAGE DROP. SIZE EQUIPMENT GROUNDING CONDUCTOR PROPORTIONALLY PER NEC.
(7)	THRU FUEL CONTACTOR.
(8)	THRU CONTACTOR.
(9)	EXISTING CIRCUIT TO REMAIN.
(10)	EXISTING CIRCUIT BREAKER TO REMAIN. VERIFY CONDITION OF CIRCUIT BREAKER TO ENSURE THAT IT IS OPERATIONAL AND MEETS ALL U.L. RATINGS.
(11)	PROVIDE HANDLE LOCK OFF DEVICE TO LOCK "SPARE" CIRCUIT BREAKER IN THE "OFF" POSITION. IF CIRCUIT BREAKER IS IDENTIFIED AS "EXISTING", FIELD VERIFY CIRCUIT BREAKER INDICATED IS NOT CONNECTED TO ANY LOAD AND UPDATE PANELBOARD CIRCUIT DIRECTORY IDENTIFYING CIRCUIT AS "SPARE".
(12)	TRACE EXISTING CIRCUIT, IDENTIFY LOAD AND PROVIDE COMPLETE TYPEWRITTEN PANELBOARD IDENTIFICATION SCHEDULE AND PLACE ON INTERIOR OF PANELBOARD DOOR. IF CIRCUIT IS A "SPARE" THEN REFER TO PANELBOARD NOTE (11).
(13)	RELOCATE CIRCUIT FROM EXISTING PANELBOARD
(14)	IF WIRE IS #8 OR LARGER ONLY REPLACE CIRCUIT BREAKER AND CONNECT NEW LIGHTS TO EXISTING WIRE IN AUTO CANOPY. IF WIRE IS SMALLER THAN #8 PULL NEW WIRE IN EXISTING CONDUIT.
(N)	NEW
(E)	EXISTING
<p>ALL SWITCHBOARDS AND PANELBOARDS SHALL HAVE A COMMERCIALY PRODUCED PERMANENT LABEL APPLIED TO WARN OF POTENTIAL ARC FLASH HAZARDS. IN ACCORDANCE WITH NEC 110.16 AND NFPA 70E LABELING MAY BE COMPLETED BY EQUIPMENT MANUFACTURER, EQUIPMENT VENDOR/SUPPLIER, OR THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY THAT ALL SWITCHBOARDS AND PANELBOARDS ARE PROPERLY LABELED IN THE FIELD.</p>	

EC SHALL MATCH TYPE AND  
AIC RATINGS OF EXISTING  
CIRCUIT BREAKERS.

[illegible]

Apr 27, 2022 4:17pm - User chris.richardson  
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