MCDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

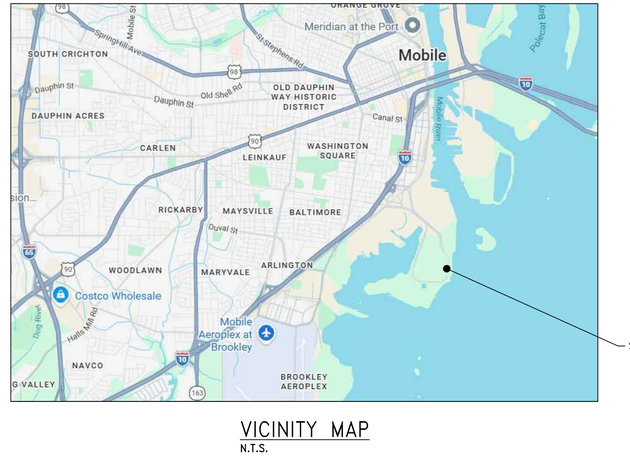


SITE MAP
N.T.S

DRAWING SCHEDULE:

DRAWING SCHEDULE:

4643E-C0	–	COVER SHEET
4643E-G1	–	GENERAL NOTES
4643E-G2	–	GENERAL NOTES
4643E-G3	–	GENERAL NOTES
4643E-G4	–	GENERAL NOTES
4643E-C1	–	NEW ELECTRICAL BUILDING EXISTING SITE PLAN
4643E-C2	–	NEW ELECTRICAL BUILDING NEW SITE PLAN
4643E-C3	–	NEW ELECTRICAL BUILDING ENLARGED SITE PLAN
4643E-F1	–	ELECTRICAL BUILDING FOUNDATION PLAN
4643E-F2	–	NEW ELECTRICAL BUILDING FOUNDATION DETAILS AND SECTIONS
4643E-F3	–	ELECTRICAL BUILDING AUGER CAST PILE DETAILS
4643E-S1	–	ELECTRICAL BUILDING FLOOR PLAN
4643E-S2	–	ELECTRICAL BUILDING GROUTED CELL LAYOUT
4643E-S3	–	ELECTRICAL BUILDING GROUTED CELL LAYOUT
4643E-S4	–	ELECTRICAL BUILDING ROOF FRAMING PLAN
4643E-S5	–	ELECTRICAL BUILDING DETAILS AND SECTIONS
4643E-S6	–	ELECTRICAL BUILDING FENCE & GATE ELEVATIONS
4643E-S7	–	ELECTRICAL BUILDING DETAILS AND SECTIONS
4643E-S8	–	ACCESS RAMP PLAN AND SECTIONS
4643E-M1	–	ELECTRICAL BUILDING HVAC PLAN
4643E-M2	–	ELECTRICAL BUILDING HVAC PLAN
4643E-M3	–	HVAC SPECIFICATIONS
4643E-E1	–	ELECTRICAL SITE PLAN
4643E-E2	–	ELECTRICAL BUILDING LIGHTING FLOOR PLAN
4643E-E3	–	ELECTRICAL BUILDING POWER FLOOR PLAN
4643E-E4	–	ELECTRICAL BUILDING CABLE TRAY FLOOR PLAN
4643E-E5	–	ELECTRICAL BUILDING GROUNDING PLAN
4643E-E6	–	ELECTRICAL SECTIONS AND DETAILS
4643E-E7	–	ELECTRICAL AC-ONE LINE RISER DIAGRAM
4643E-E8	–	ELECTRICAL MOTOR CONTROL CENTER AND PANELBOARD SCHEDULE
4643E-E9	–	ELECTRICAL FEEDER AND CONTROL CONDUCTOR SCHEDULE
4643E-E10	–	ELECTRICAL SPECIFICATION



VICINITY MAP
N.T.S.

REV.	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR BID	09/11/26	ECL	GDEC

11880 Cranston Drive, Ste. 101
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CMG ENGINEERS, INC.

457 St. Michael Street
Mobile, Alabama 36602
(251) 433-1611

PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE
COVER SHEET

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DATE 07/29/26 22x34 REV. A

DRAWING NUMBER 4643E-C0

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GENERAL NOTES

1. NO PROVISION OF ANY REFERENCED STANDARD SPECIFICATION, MANUAL OR CODE (WHETHER OR NOT SPECIFICALLY INCORPORATED BY REFERENCE IN THE CONTRACT DOCUMENTS) SHALL BE EFFECTIVE TO CHANGE THE DUTIES AND RESPONSIBILITIES OF OWNER, CONTRACTOR, ENGINEER, SUPPLIER, OR ANY OF THEIR CONSULTANTS, AGENTS, OR EMPLOYEES FROM THOSE SET FORTH IN THE CONTRACT DOCUMENTS. NOR SHALL IT BE EFFECTIVE TO ASSIGN TO THE STRUCTURAL ENGINEER OF RECORD OR ANY OF THE STRUCTURAL ENGINEER OF RECORD'S CONSULTANTS, AGENTS, OR EMPLOYEES ANY DUTY OR AUTHORITY TO SUPERVISE OR DIRECT THE FURNISHING OR PERFORMANCE OF THE WORK OR ANY DUTY OR AUTHORITY TO UNDERTAKE RESPONSIBILITIES CONTRARY TO THE PROVISIONS OF THE CONTRACT DOCUMENTS.

2. CONTRACT DOCUMENTS INCLUDE, BUT ARE NOT LIMITED TO, THE STRUCTURAL DOCUMENTS (DRAWINGS AND SPECIFICATIONS), BUT DO NOT INCLUDE SHOP DRAWINGS, VENDOR DRAWINGS, OR MATERIAL PREPARED AND SUBMITTED BY THE CONTRACTOR.

3. REFERENCE TO STANDARD SPECIFICATIONS OF ANY TECHNICAL SOCIETY, ORGANIZATION, OR ASSOCIATION OR TO CODES OF LOCAL OR STATE AUTHORITIES, SHALL MEAN THE LATEST STANDARD, CODE, SPECIFICATION OR TENTATIVE SPECIFICATION ADOPTED AT THE DATE OF TAKING BIDS, UNLESS SPECIFICALLY STATED OTHERWISE.

4. CONTRACT DOCUMENTS SHALL GOVERN IN THE EVENT OF A CONFLICT WITH THE CODE OF PRACTICE OR SPECIFICATIONS OF ACI, PCI, AISC, SJI OR OTHER STANDARDS. WHERE A CONFLICT OCCURS WITHIN THE CONTRACT DOCUMENTS, THE STRICTEST REQUIREMENT SHALL GOVERN.

5. MATERIAL, WORKMANSHIP, AND DESIGN SHALL CONFORM TO THE REFERENCED BUILDING CODE.

6. CONTRACTOR SHALL COORDINATE THE STRUCTURAL DOCUMENTS WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND CIVIL DOCUMENTS. ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY OR OMISSION. FOR DIMENSIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS SEE THE ARCHITECTURAL DRAWINGS.

7. CONTRACTOR SHALL OBTAIN AND COORDINATE EDGE OF SLAB DIMENSIONS, OPENING LOCATIONS AND DIMENSIONS, DEPRESSED SLAB LOCATIONS AND EXTENTS, SLAB SLOPES, CURB LOCATIONS, AND CMU WALL LOCATIONS. STRUCTURAL ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY OR OMISSION.

8. CONTRACTOR SHALL VERIFY EXISTING DIMENSIONS, ELEVATIONS, AND SITE CONDITIONS BEFORE STARTING WORK. ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY.

9. CONTRACTOR HAS SOLE RESPONSIBILITY FOR MEANS, METHODS, SAFETY, TECHNIQUES, SEQUENCES, AND PROCEDURES OF CONSTRUCTION.

10. THE STRUCTURE IS STABLE ONLY IN ITS COMPLETED FORM. TEMPORARY SUPPORTS REQUIRED FOR STABILITY DURING ALL INTERMEDIATE STAGES OF CONSTRUCTION SHALL BE DESIGNED, FURNISHED, AND INSTALLED BY THE CONTRACTOR. CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTIBILITY ANALYSIS, AND ERECTION PROCEDURES, INCLUDING DESIGN AND ERECTION OF FALSEWORK, TEMPORARY BRACING, ETC.

11. CONTRACTOR HAS SOLE RESPONSIBILITY TO COMPLY WITH ALL OSHA REGULATIONS.

12. REPRODUCTION OF STRUCTURAL DRAWINGS FOR SHOP DRAWINGS IS NOT PERMITTED. ELECTRONIC DRAWING FILES WILL NOT BE PROVIDED TO THE CONTRACTOR.

13. SUBMIT SHOP DRAWINGS WHICH ADEQUATELY DEPICT THE STRUCTURAL ELEMENTS AND CONNECTIONS SHOWN IN THE CONTRACT DOCUMENTS. REVIEW OF SHOP DRAWINGS SHALL BE FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS REGARDING ARRANGEMENT AND SIZES OF MEMBERS AND THE CONTRACTOR'S INTERPRETATION OF THE DESIGN LOADS AND CONTRACT DOCUMENT DETAILS. REVIEW OF SUBMITTALS OR SHOP DRAWINGS BY THE STRUCTURAL ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF THE SOLE RESPONSIBILITY TO REVIEW AND CHECK ALL SUBMITTALS AND SHOP DRAWINGS BEFORE SUBMITTING TO THE STRUCTURAL ENGINEER. REVIEW OF SUBMITTALS OR SHOP DRAWINGS BY THE STRUCTURAL ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. CONTRACTOR REMAINS SOLELY RESPONSIBLE FOR ERRORS AND OMISSIONS ASSOCIATED WITH THE PREPARATION OF SHOP DRAWINGS AS THEY PERTAIN TO MEMBER SIZES, DETAILS, AND DIMENSIONS SPECIFIED IN THE CONTRACT DOCUMENTS.

14. WHERE A SECTION OR DETAIL IS SHOWN OR DETAILED FOR ONE CONDITION, IT SHALL APPLY TO ALL SIMILAR AND LIKE CONDITIONS. DETAILS LABELED "TYPICAL" ON THE DRAWINGS APPLY TO ALL SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR. THE CONTRACTOR SHALL CONSIDER ALL OF THE CONTRACT DOCUMENTS IN DETERMINING SIMILAR AND LIKE CONDITIONS.

15. SIGNATURE AND REGISTRATION SEAL OF THE STRUCTURAL ENGINEER THAT MAY BE AFFIXED TO THESE DRAWINGS RELATES ONLY TO THE STRUCTURAL DESIGN OF THE PROJECT.

CODE/DESIGN CRITERIA

1. STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE 2018 BUILDING CODE, WITH LATEST AMENDMENTS.

2. GRAVITY LOADS
   2.1 UNIFORM FLOOR LIVE LOADS (REDUCED AS ALLOWED BY THE BUILDING CODE):

FLOOR	80 PSF
STAIRS	100 PSF

WIND LOADS: SEE TABLE ON THIS SHEET

3. ESTIMATED DEFLECTIONS (IN INCHES) ARE AS FOLLOWS:

	LIVE LOAD	DEAD + LIVE LOAD
ROOF MEMBERS:	L/360 OR 1 IN.	L/240
FLOOR MEMBERS:	L/360	L/240

   WHERE, L = SPAN LENGTH (IN INCHES) BETWEEN CENTERLINES OF SUPPORTS. FOR CANTILEVERS, L IS TWICE THE LENGTH OF THE CANTILEVER.)

4. SPECIAL INSPECTIONS:

   4.1 THE FOLLOWING TYPES OF WORK REQUIRE SPECIAL INSPECTION: FOUNDATION ANCHORS & REINFORCING STEEL, STRUCTURAL STEEL, AND LIGHT GAUGE STEEL FRAMING.

REINFORCEMENT

1. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, PREFABRICATED, UNLESS NOTED OTHERWISE. NO FIELD BURNING ALLOWED.

2. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 AND HAVE MINIMUM SIDE AND END LAPS OF 12". CHAIRS TO BE PLACED 2'-0" O.C.. INDIVIDUAL CHAIRS SHOULD BE ABLE TO SUPPORT 200 LB. LOAD WITHOUT CRUSHING. WIRE MUST RETURN TO PROPER PLACEMENT AFTER BEING STEPPED ON.

3. SUBMIT SHOP DRAWINGS WHICH ADEQUATELY DEPICT THE REINFORCING BAR SIZES AND PLACEMENT. WRITTEN DESCRIPTION OF REINFORCEMENT WITHOUT ADEQUATE SECTIONS, ELEVATIONS, AND DETAILS IS NOT ACCEPTABLE.

4. PROVIDE DOWELS FROM FOUNDATIONS THE SAME SIZE AND NUMBER AS THE VERTICAL WALL OR COLUMN REINFORCING, UNLESS NOTED OTHERWISE.

5. PLACE REINFORCEMENT AS FOLLOWS, UNLESS NOTED OTHERWISE:

   5.1 CAST-IN-PLACE (NON POST-TENSIONED) CONCRETE REINFORCEMENT COVER

   PERMANENTLY EXPOSED TO EARTH:
   CAST AGAINST THE EARTH_____ 3" CLEAR

   EXPOSED TO EARTH OR WEATHER:
   FOR BARS LARGER THAN A NO. 5 BAR_____ 2" CLEAR
   NO. 5 BARS OR SMALLER_____ 1-1/2" CLEAR

   5.2 MASONRY REINFORCING STEEL SHALL BE PLACED IN THE CENTER OF CMU CELLS, UNLESS NOTED OTHERWISE.

6. REINFORCEMENT SHALL BE SPLICED ONLY AT LOCATIONS SHOWN OR NOTED IN THE STRUCTURAL DOCUMENTS, EXCEPT REINFORCEMENT MARKED "CONTINUOUS" CAN BE SPLICED AT LOCATIONS DETERMINED BY CONTRACTOR. SPLICES AT OTHER LOCATIONS SHALL BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER. REINFORCING STEEL SPLICES SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:

   CONCRETE REINFORCEMENT: CLASS B TENSION LAP
   MASONRY REINFORCEMENT: 48 BAR DIAMETERS

7. ADHESIVE FOR REINFORCING DOWELS IN EXISTING CONCRETE SHALL BE EITHER THE HIT HY200 INJECTION ADHESIVE SUPPLIED BY HILTI FASTENING SYSTEMS, THE EPCON SYSTEM CERAMIC 6 EPOXY ADHESIVE SUPPLIED BY ITW RAMSET/RED HEAD, POWER-FAST EPOXY INJECTION GEL SUPPLIED BY POWERS FASTENING, OR APPROVED EQUAL. MINIMUM EMBEDMENT LENGTH SHALL BE 24 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

8. REINFORCING STEEL SHALL BE FREE FROM GREASE, MUD, EXCESSIVE RUST OR OTHER COATINGS THAT WILL DESTROY OR REDUCE BOND STRENGTH. REINFORCING STEEL IN ALL FOOTINGS, WALLS, BOND BEAMS AND PILASTERS SHALL BE MADE WITH BENT BARS WITH A MINIMUM SPLICE LENGTH OF 48 BAR DIAMETERS. PROVIDE GALV. ANCHOR BOLTS SET IN CONCRETE FOR ANCHORING STEEL OR WOOD TO CONCRETE.

9. ACI 117 DOES **NOT** APPLY TO THIS PROJECT. FOR TOLERANCES SEE BELOW CRITERIA.

10. TOLERANCES

   10.1 PLACEMENT OF NON-PRESTRESSED REINFORCEMENT.

      10.1.1 MEMBER THICKNESS ≤ 4" – ±1/4"

      10.1.2 MEMBER THICKNESS 4" ≤ 12" – ±3/8"

      10.1.3 MEMBER THICKNESS > 12" – ±1/2"

   10.2 COVER OF REINFORCEMENT.

      10.2.1 MEMBER THICKNESS ≤ 12" – -3/8"

      10.2.2 MEMBER THICKNESS > 12" – -1/2"

      10.2.3 MINIMUM COVER "NO LESS" THAN SHOWN ON DRAWINGS

   10.3 VERTICAL DEVIATION FOR SOG REINFORCEMENT.

      10.3.1 MEMBER THICKNESS ≤ 4" – ± 1/4"

      10.3.2 MEMBER THICKNESS 4" ≤ 12" – ± 3/8"

      10.3.3 MEMBER THICKNESS > 12" – ±1/2"

   10.4 CLEARANCE BETWEEN REINFORCEMENT –1/4 OF THE SPECIFIED DISTANCE NOT TO EXCEED ±1"

      10.4.1 DIST. BETWEEN REINFORCEMENT SHALL NOT BE LESS THAN THE GREATER OF THE BAR DIAMETER OR 1" FOR UNBUNDLED BAR.

      10.4.2 DIST. BETWEEN BUNDLES SHALL NOT BE LESS THAN THE GREATER OF 1" OR A BAR DIAMETER BASED ON THE EQUIVALENT TOTAL AREA OF ALL BARS IN THE BUNDLE.

   10.5 SPACING – ±3" EXCEPT AS NOTED BELOW.

      10.5.1 STIRRUPS – AS SPECIFIED

      10.5.2 COLUMN TIES – AS SPECIFIED

      10.5.3 TOTAL NUMBER OF BARS SHALL NOT BE FEWER THAN SPECIFIED.

      10.5.4 NUMBER OF BARS PER STRCUTURE SHALL EQUAL THE TOTAL SPECIFIED BARS PER DRAWINGS.

   10.6 EMBEDDED LENGTH OF BARS AND LENGTH OF BAR LAPS PER ACI.

      10.6.1 TOTAL EMBED OF ALL BARS SHALL SUM TO THE SPECIFIED EMBEDMENT TOTAL OF BARS OF THAT STRUCTURE.

CAST-IN-PLACE CONCRETE

1. CONCRETE WORK SHALL CONFORM TO ACI 318 AND CRSI STANDARDS.

2. CONCRETE SHALL HAVE THE FOLLOWING MINIMUM SPECIFIED 28-DAY COMPRESSIVE STRENGTH:

   ALL CONCRETE SHALL MEET ALL OF THE FOLLOWING REQUIREMENTS SPECIFIED.

   CLASS "A" CONCRETE SHALL BE USED FOR ALL WORK INCLUDED IN THIS CONTRACT, AND CLASS "AC" SHALL BE USED FOR PUMPING.

3. REFER TO ARCHITECTURAL DRAWINGS FOR MOLDS, GROOVES, ORNAMENTS, CLIPS OR GROUNDS REQUIRED TO BE ENCASED IN CONCRETE AND FOR LOCATION OF FLOOR FINISHES AND SLAB DEPRESSIONS.

4. CONSTRUCTION JOINT LOCATIONS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER. NO HORIZONTAL CONSTRUCTION JOINTS ARE PERMITTED EXCEPT THOSE SHOWN ON THE STRUCTURAL DRAWINGS.

5. DEFECTIVE AREAS IN CONCRETE INCLUDING, BUT NOT LIMITED TO, HONEY-COMBING, SPALLS, AND CRACKS WITH WIDTHS EXCEEDING 0.01 INCH SHALL BE REPAIRED. EXTENT OF DEFECTIVE AREA TO BE DETERMINED BY THE STRUCTURAL ENGINEER.

PROVIDE (1) SET OF CYLINDERS, (4) FROM EACH 50 CUBIC YARDS.

CLASS	MAX. WATER PER BAG OF CEMENT	MIN. CEMENT PER CUBIC YARD	MIN. COMPRESSIVE STRENGTH IN 28 DAYS	SLUMP RANGE
A	5.5	6.5	4,000 PSI	2"-4"
AC	6.0	8.0	4,000 PSI	5"-7"

6. ACI 117 DOES **NOT** APPLY TO THIS PROJECT. FOR TOLERANCES SEE BELOW CRITERIA.

7. TOLERANCES

   7.1 DEVIATION FROM PLUMB.

      7.1.1 HEIGHTS ≤ 83'-4"

         7.1.1.1 GENERAL- THE LESSER OF 0.3% TIMES THE HEIGHT ABOVE THE TOP OF FOUNDATIONS OR ±1"

         7.1.1.2 FOR OUTSIDE CORNER OF EXPOSED CORNER COLUMNS – THE LESSER OF 0.2% TIMES THE HEIGHT ABOVE THE TOP OF FOUNDATIONS / LOWEST SUPPORT LEVEL OR ±1/2"

      7.1.2 VERTICAL EDGES OF OPENINGS LARGER THAN 12" – ±1/2"

   7.2 DEVIATION FROM LOCATION.

      7.2.1 HORIZONTAL DEVIATION

         7.2.1.1 VERTICAL ELEMENTS – ±1/8"

         7.2.1.2 OTHER ELEMENTS – ±1"

         7.2.1.3 EDGE LOCATION OF ALL OPENINGS – ±3/4"

         7.2.1.4 SAW CUT, JOINTS AND WEAKENED PLAN EMBEDMENT'S IN SLABS – ± 3/4"

      7.2.2 VERTICAL DEVIATION

         7.2.2.1 ELEMENTS – ±1/8"

         7.2.2.2 EDGE LOCATION OF ALL OPENINGS – ±1/2"

   7.3 DEVIATION FROM ELEVATION.

      7.3.1 TOP OF SLABS

         7.3.1.1 SLABS-ON-GROUND (SOG) – ±1/8"

         7.3.1.2 SLABS ON STRUCTURAL STEEL OR PRECAST – NO REQUIREMENT

      7.3.2 FORMED SURFACES BEFORE REMOVAL OF SHORING – ± 3/4"

      7.3.3 TOP OF WALLS – ±1/8"

      7.3.4 FINE GRADE OF SOIL IMMEDIATLEY BELOW SOG – ±3/4"

   7.4 DEVIATION FROM CROSS SECTIONAL DIMENSIONS

      7.4.1 THICKNESS OF ELEMENTS EXCEPT SLABS.

         7.4.1.1 SPECIFIED DIMENSIONS ≤ 12" – +3/8" , -1/4"

         7.4.1.2 SPECIFIED DIMENSIONS 12" ≤ 36" – + 1/2" , -3/8"

         7.4.1.3 SPECIFIED DIMENSIONS > 36" – +1", -3/4"

      7.4.2 UNFORMED BEAMS AND WALLS CAST AGAINST SOIL, HORIZONTAL DEVIATION.

         7.4.2.1 SPECIFIED DIMENSIONS ≤ 2' – +3", -1/4"

         7.4.2.2 SPECIFIED DIMENSIONS > 2' – +6", -1/4"

      7.4.3 THICKNESS OF SOG – -1/4"

   7.5 DEVIATION FROM FORMED OPENING WIDTH OF HEIGHT.

      7.5.1 OPENING WIDTH OR HEIGHT – +1", -1/2"

   7.6 DEVIATION FROM SLOPE OR PLANE.

      7.6.1 FORMED SURFACES OVER DISTANCES OF 10'.

         7.6.1.1 ALL CONDITIONS UNO – ±0.3%

         7.6.1.2 OUTSIDE CORNER OF EXPOSED CORNER COLUMNS – ±0.2%

      7.6.2 FORMED SURFACE IRREGULARITIES.

         7.6.2.1 CLASS A – +1/8"

         7.6.2.2 CLASS B – +1/4"

         7.6.2.3 CLASS C – +1/2"

         7.6.2.4 CLASS A – +1"

   7.7 SAWCUT DEPTH IN SOG.

      7.1 DEPTH OF SAWCUT JOINT – ±1/4"

   7.8 EMBEDDED ITEMS

      7.8.1 CLEARANCE TO NEAREST REINFORCEMENT – GREATER OF THE BAR DIAMETER, LARGEST AGGREGATE SIZE OR 1".

      7.8.2 CENTERLINE OF ASSEMBLY.

         7.8.2.1 HORIZONTAL DEVIATION – ±1/4"

         7.8.2.2 VERTICAL DEVIATION – ±1/4"

      7.8.3 ANCHOR BOLTS.

         7.8.3.1 TOP OF ANCHOR BOLT FROM SPECIFIED – ±1/2"

         7.8.3.2 CENTERLINE OF INDIVIDUAL BOLTS FROM SPECIFIED- BASED ON BOLT SIZE.

            7.8.3.2.1 3/4" AND 7/8" – ±1/4"

            7.8.3.2.2 1", 1-1/4" AND 1-1/2" – ±3/8"

            7.8.3.2.3 1-3/4", 2" AND 2-1/2" – ±1/2"

FOUNDATION

1. FOUNDATION DESIGN IS BASED ON AN ALLOWABLE BEARING PRESSURE OF 1,200 PSF AND TIMBER PILE SUPPORTED COLUMN FOOTINGS. STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR SUBSURFACE CONDITIONS ENCOUNTERED IN THE FIELD DIFFERENT FROM THOSE ASSUMED FOR DESIGN.

2. GEOTECHINCAL/INSPECTION AGENCY SHALL CERTIFY THE BEARING MEDIUM.

3. DENSIFY BUILDING AREAS AND A MINIMUM OF 5'-0" OUTSIDE THE BUILDING PERIMETER USING A VIBRATORY ROLLER.

4. SOIL COMPACTION – 100% STANDARD PROCTOR DENSITY. ALL FILL SHALL BE COMPACTED IN 8" LOOSE LIFTS. COMPACTION TESTING SHALL BE PERFORMED ON EACH LIFT. ALL REPORTS SHALL BE SUBMITTED TO THE ENGINEER.

5. BACKFILL SHALL BE A SAND CLAY GRANULAR MATERIAL WITH LESS THAN 30% PASSING THE #200 SIEVE AND A LIQUID LIMIT OF LESS THAN 25.

6. ALL CONCRETE MUST CURE FOR A MINIMUM OF 7 DAYS BEFORE ANY LOAD IS PLACED ON CONCRETE. INSTALL CURING COMPOUND ON ALL EXPOSED CONCRETE SURFACES. CONCRETE SHALL BE CURED WITH MEMBRANE 30% SOLIDS COMPOUND, SPRAY APPLIED.

7. PROVIDE (1) SET OF CYLINDERS, (4) FROM EACH 50 CUBIC YARDS.

8. FOR SITE PREPARATION SEE SOUTHERN EARTH SCIENCES, GEOTECHINCAL REPORT PROJECT #

9. ACI 117 DOES **NOT** APPLY TO THIS PROJECT. FOR TOLERANCES SEE BELOW CRITERIA.

10. TOLERANCES

   10.1 DEVIATION FROM LOCATION (GENERAL FOUNDATIONS).

      10.1.1 HORIZONTAL DEVIATION OF AS-CAST EDGE, DIMENSION ≥ 8'-±2"

      10.1.2 HORIZONTAL DEVIATION OF AS-CAST EDGE, DIMENSION < 8' – THE GREATER OF ±2% OF SPECIFIED DIMENSION OR 1/2".

   10.2 DEVIATION FROM ELEVATION

      10.2.1 TOP OF FOUNDATION – +1/2", -2"

      10.2.2 TOP OF DRILLED PIERS – +1", -3"

   10.3 DEVIATION FROM CROSS SECTIONAL DIMENSION.

      10.3.1 FORMED FOUNDATIONS – +2", 1/2"

      10.3.2 UNFORMED FOUNDATIONS CAST AGAINST SOIL, DIMENSION ≤ 2'- +3",-1/2"

      10.3.3 UNFORMED FOUNDATIONS CAST AGAINST SOIL, DIMENSION > 2'- +6",-1/2"

      10.3.4 ADJUST REBAR CLEARANCES ACCORDINGLY IF LARGER THAN DESIGN.

   10.4 DEVIATION FROM THICKNESS.

      10.4.1 -2% OF SPECIFIED THICKNESS.

REV.	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR BID	09/11/26	ECL	GDEC

11880 Cranston Drive, Ste. 101
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CMG ENGINEERS, INC.

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PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE
GENERAL NOTES

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DATE 06/08/26 22x34 REV. A

DRAWING NUMBER 4643E-G1

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STRUCTURAL STEEL GENERAL NOTES

REFERENCE SPECIFICATIONS

1. STRUCTURAL STEEL WORK SHALL BE IN ACCORDANCE WITH AISC SPECIFICATIONS
2. STRUCTURAL STEEL DESIGN, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS – ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN" (1989) AND "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" (1992).
3. HIGH STRENGTH BOLTING SHALL BE IN ACCORDANCE WITH AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS OR A490 BOLTS" (1994).
4. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS AND IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY STANDARD D1.1, LATEST EDITION.

MATERIALS

8. STRUCTURAL STEEL "W", "WT" AND "S" SHAPES SHALL CONFORM TO ASTM A992, GRADE 50. ALL CHANNELS, ANGLES AND PLATES SHALL CONFORM TO ASTM A572 GR 50 UNLESS NOTED OTHERWISE OR APPROVED EQUAL.
9. HIGH STRENGTH BOLTS, NUTS AND HARDENED WASHERS SHALL CONFORM TO ASTM A325, ASTM A563 DH, AND ASTM F436 RESPECTIVELY. MACHINE BOLTS AND NUTS SHALL CONFORM TO ASTM A307, AND PLAIN WASHERS SHALL CONFORM TO ANSI B18.22.1. BOLTS, NUTS AND WASHERS SHALL BE HOT DIP GALVANIZED.
10. WELDING ELECTRODES USED FOR FIELD CONNECTIONS SHALL CONFORM TO AWS A5.1, CLASS E70XX UNLESS NOTED OTHERWISE ON THE DRAWINGS. WELDING ELECTRODES USED FOR SHOP CONNECTIONS SHALL CONFORM TO AWS A5.1 WITH A MINIMUM ELECTRODE TENSILE STRENGTH OF 70 KSI, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

FABRICATION AND ERECTION

1. NO TEMPORARY ERECTION BOLTS OTHER THAN HIGH STRENGTH BOLTS SHALL BE USED DURING ERECTION OF THE MEMBERS REQUIRING HIGH STRENGTH BOLTS.
2. WHEN CONNECTIONS REQUIRE FIELD PREPARATION OF BOLT HOLES, THE HOLES SHALL BE DRILLED OR PUNCHED, AND THE DIAMETER OF THE BOLT HOLES SHALL BE 1/16 INCH GREATER THAN THE NOMINAL BOLT DIAMETER.
3. FIELD CORRECTING OF FABRICATED STEEL BY GAS CUTTING SHALL NOT BE PERMITTED ON MAJOR STRUCTURAL FRAMING MEMBERS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
4. ALL ANGLE AND STRUCTURAL TEE BRACING SHALL HAVE 1/16 INCH DRAW PER 10 FEET OF LENGTH. MAXIMUM DRAW SHALL BE 3/16 INCH AND NO DEDUCTION SHALL BE MADE FOR LENGTHS LESS THAN 10 FEET.
5. FILLET WELD SIZES, IF NOT CALLED OUT ON THE DRAWINGS, SHALL BE 3/16 INCH MINIMUM UNLESS TABLE J2.4 OF AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS – ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN" REQUIRES A LARGER SIZE.
6. SLIP CRITICAL HIGH STRENGTH BOLTED CONNECTIONS SHALL BE INSTALLED AND TIGHTENED THROUGH THE USE OF "TURN-OF-THE-NUT" TIGHTENING AS PROVIDED IN THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS. ALL NON-SLIP CRITICAL BOLTS MAY BE TIGHTENED TO A "SNUG-TIGHT" CONDITION AS DEFINED BY AISC.
7. THE CONTRACTOR SHALL NOT CUT OR ALTER STRUCTURAL MEMBERS WITHOUT THE APPROVAL OF THE ENGINEER.
8. ERECTOR SHALL PROVIDE ALL TEMPORARY SHORING AND BRACING NEEDED FOR STABILITY UNTIL STRUCTURE IS COMPLETE.
9. PAINTED SURFACES THAT HAVE BEEN DAMAGED BY WELDING, CUTTING, BURNING, SHEARING OR OTHER DAMAGE INCURRED DURING TRANSIT OR ERECTION SHALL BE REPAIRED TO PROVIDE A FINISH IN ACCORDANCE WITH SPECIFICATIONS.

CONNECTIONS

1. BOLTED CONNECTIONS FOR SECONDARY STRUCTURAL MEMBERS (PURLINS, GIRTS, STAIR FRAMING, STAIR BRACING, TOE PLATE, HANDRAIL, LADDERS, ETC) SHALL BE BOLTED WITH HIGH STRENGTH BOLTS CONFORMING TO ASTM A325, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
2. WHEN CONNECTION DETAILS ARE NOT SHOWN ON THE DRAWINGS, CONNECTIONS SHALL BE DESIGNED IN ACCORDANCE WITH AISC SPECIFICATIONS.
3. HIGH STRENGTH BOLT SIZES SHALL BE 3/4 INCH DIAMETER (UNO) EXCEPT THAT TOE PLATES, HANDRAIL AND LADDERS SHALL BE BOLTED WITH 5/8 INCH DIAMETER BOLTS.
4. FIELD CONNECTIONS SHALL BE MADE WITH GALVANIZED ASTM-A325 HIGH STRENGTH BOLTS, BEARING TYPE CONNECTIONS WITH THREADS EXCLUDED FROM SHEAR PLANE. CONNECTIONS SHALL BE MADE WITH 3/4" DIA. BOLTS UNLESS OTHERWISE NOTED.
5. ALL SHOP CONNECTIONS SHALL BE WELDED. BEAM CONNECTIONS SHALL USE TABLE III, CASE 1 WELD A, WITH TABLE II BOLTED CONNECTIONS. WELDING SHALL BE IN ACCORDANCE WITH AISC SPECIFICATIONS AND AWS D1.1 STRUCTURAL WELDING CODE USING E70XX ELECTRODES.
6. MINIMUM NUMBER OF BOLTS IN CONNECTIONS NOT OTHERWISE DETAILED.
   DIAGONAL ANGLE BRACING – 3
   OTHER BRACING – TO DEVELOP 50% OF MEMBER STRENGTH
   BEAMS (WF & CHANNEL) – MAXIMUM NO. MEMBER WILL ACCOMMODATE.
7. ALL WELDED JOINTS SHALL BE WELDED CONTINUOUSLY. MINIMUM WELD SIZE SHALL BE 1/4" FILLET.
8. ALL ANCHOR BOLTS SHALL BE GALVANIZED.

DETAILS

1. HOLES FOR 5/8" BOLTS SHALL BE 1 1/16" DIA., HOLES FOR 3/4" BOLTS SHALL BE 1 5/16" DIA. AND FOR 7/8" BOLTS SHALL BE 1 5/16" DIA. UNLESS NOTED OTHERWISE.
2. BRACING MEMBERS MEETING AT A POINT SHALL HAVE THEIR GRAVITY AXIS MEETING AT ONE POINT IF PRACTICABLE. IF NOT, PROVISIONS SHALL BE MADE FOR BENDING STRESSES DUE TO ECCENTRICITY.
3. CLIP ANGLES AND GUSSET PLATES SHALL BE 3/8" THICK UNLESS NOTED OTHERWISE.
4. COLUMN BASES AND SPLICED ENDS SHALL BE MILLED OR SAW CUT TO PROVIDE FULL BEARING.
5. BRACING: ALL RECESSED DIMENSIONS (i.e. -6, -8 ETC.) ARE NOMINAL DIMENSIONS FOR MEMBER CLEARANCE ONLY. THE FABRICATOR AND DETAILER SHALL PROVIDE FOR CLEARANCE AT BOLTS, PLATES, AND ANY OTHER INTERFERENCES.

COATINGS

1. ALL STEEL SURFACES TO BE PAINTED SHALL BE BLAST CLEANED TO NEAR-WHITE CONDITION IN ACCORDANCE WITH SSPC-SP 10-82.
2. ALL STEEL SURFACES, EXCEPT MACHINED ITEMS, OR NOTED OTHERWISE, SHALL BE PAINTED. PAINTING SYSTEM AS FOLLOWS:
3. PRIME COAT – SHOP APPLIED. PRIME WITH ONE COAT OF INORGANIC ZINC WITH MIL. DFT. CARBO ZINC 11 AS MANUFACTURED BY CARBOLINE, OR AN APPROVED EQUAL.
4. INTERMEDIATE COAT – SHOP APPLIED. ONE COAT OF EPOXY PRIMER WITH 3 TO MIL. DFT. CARBOLINE 893
5. TOP COAT – SHOP APPLIED. TOP COAT IS ONE (1) COAT OF HIGH BUILD VINYL WITH 4 MIL. DFT. POLYCLAD 134HS AS MANUFACTURED BY CARBOLINE, OR AN APPROVED EQUAL.

CONCRETE MASONRY

1. CONCRETE MASONRY WORK SHALL CONFORM TO ACI 530, BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES AND ACI 530.1, SPECIFICATION FOR MASONRY STRUCTURES.
2. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE MASONRY SHALL BE F'M = 2,500 PSI. IN ACCORDANCE W/ASTM C-90 GRADE N1.
3. MORTAR SHALL COMPLY WITH THE BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY USE MOTER TYPE 'M' MIN. COMPRESSIVE STRENGTH 2,500 PSI W/ MIN. 75% WATER RETENTION & MAX. 12% AIR CONTENT IN ACCORDANCE W/ASTM C-270 & ASTM C-91.
4. CONCRETE MASONRY UNITS SHALL BE GROUTED WITH 3,000 PSI COARSE GROUT AS SHOWN IN THE STRUCTURAL DOCUMENTS. GROUT SHALL CONFORM TO ASTM C476.
5. PROVIDE HORIZONTAL JOINT REINFORCEMENT WITH NO. 9 GAGE LONGITUDINAL WIRES (DUR-A-WALL TRUSS TYPE OR ENGINEER APPROVED EQUAL) AT 16" VERTICALLY, UNLESS NOTED OTHERWISE. PROVIDE SPECIAL ACCESSORIES FOR CORNERS, INTERSECTIONS, ETC.
6. MINIMUM VERTICAL WALL REINFORCEMENT SHALL BE #5 UNLESS NOTED OTHERWISE. PROVIDE (3) FULLY GROUTED WITH MINIMUM (1) #5 BAR PER CELL, U.N.O., PER CORNER, AND PROVIDE (4) FULLY GROUTED CELLS WITH MINIMUM (1) #5 BAR PER CELL, U.N.O., PER TEE INTERSECTION.
7. ALL REINFORCING STEEL BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM A615 GRADE 60.
8. INSTALL ALL HILTI CONNECTIONS AS PER MANUFACTURE RECOMMENDATIONS.
9. 8" MINIMUM BEARING FOR CMU AND CONCRETE LINTELS FOR 24" DEEP OR LESS. PROVIDE 16" MINIMUM BEARING FOR CMU AND CONCRETE LINTELS GREATER THAN 24" DEEP.
10. ALL CONCRETE MASONRY BELOW GRADE OR PARTIALLY BELOW GRADE SHALL HAVE EACH CELL FULLY GROUTED. VERTICAL REINFORCING STEEL BARS SHALL BE PROVIDED AS SHOWN IN THE STRUCTURAL DOCUMENTS.
11. MAXIMUM SPACING OF BOND BEAMS SHALL NOT BE GREATER THAN 4'-0" O.C. IN THE VERTICAL DIMENSION. ALL BOND BEAMS SHALL BE CONTINUOUS AROUND THE PERIMETER OF THE BUILDING UNLESS AN OPENING INTERRUPTS CONTINUITY. MINIMUM REINFORCEMENT SHALL BE (1) CONTINUOUS #5 BAR IN CENTER OF THE COURSE, U.N.O.

WIND LOADING NOTES: (ASCE 7-22, ULTIMATE WIND LOADS)

1. BASIC WIND VELOCITY 160 MPH
2. RISK CATEGORY II.
3. WIND EXPOSURE C, MEAN ROOF HEIGHT 16.33 FT
4. INTERNAL PRESSURE COEFFICIENT +/-0.18
5. CORNER DISTANCE, "A" = 4.6 FT

MAIN WIND FORCE WIND RESISTING SYSTEM (MWFRS)

AREA		INTERIOR ZONE	END ZONE
WALLS	WINDWARD	33.22 PSF	50.07 PSF
	LEEWARD	INCLUDED IN WINDWARD	INCLUDED IN WINDWARD
ROOF	WINDWARD	-41.88 PSF	-60.18 PSF
	LEEWARD	-26.48 PSF	-34.18 PSF
OVERHANG "PORCH"		N/A	N/A

COMPONENTS AND CLADDING

ROOF: (LOADING IN PSF)

	ZONE 1 (INTERIOR)		ZONE 2 (EDGE)		ZONE 3 (CORNER)	
TRIBUTARY AREA (ft²)	(+)	(-)	(+)	(-)	(+)	(-)
10	23.2	56.9	23.2	95.4	23.2	143.5
20	21.7	55.4	21.7	85.2	21.7	118.9
100	18.3	52.0	18.3	61.7	18.3	61.7

WALLS: (LOADING IN PSF)

	ZONE 4 (INTERIOR)		ZONE 5 (EDGE/CORNER)	
TRIBUTARY AREA (ft²)	(+)	(-)	(+)	(-)
10	52.0	56.4	52.0	69.4
20	49.7	54.1	49.7	64.8
100	44.4	48.7	44.4	54.1

REV.	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR BID	09/11/26	ECL	GDEC

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CMG ENGINEERS, INC.

457 St. Michael Street
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PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE
GENERAL NOTES

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DATE 06/08/26 22x34 REV. A

DRAWING NUMBER 4643E-G2

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EARTHWORK SPECIFICATIONS

1. GENERAL REQUIREMENTS

1.1. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH THE SPECIFICATIONS STATED HEREIN.

2. SITE CLEARING

2.1. THE WORK INCLUDED UNDER THIS SECTION SHALL CONSIST OF FURNISHING ALL THE LABOR, TOOLS, EQUIPMENT, MATERIAL, SERVICES, AND SUPERVISION NECESSARY FOR THE REMOVAL, CLEARING, GRUBBING, AND DISPOSAL OF EXISTING UTILITY LINES, VEGETATION, FOUNDATIONS, PAVEMENT, MISCELLANEOUS STRUCTURES, DEBRIS, AND OTHER ITEMS WITHIN THE CONTRACT LIMITS SHOWN ON THE DRAWINGS AND SPECIFIED.

2.2. ANY CONCRETE, METAL, PAVEMENT, OR ANY OTHER ITEM, WHICH WILL NOT BECOME PART OF FINAL FACILITY, SHALL BE REMOVED.

2.3. THE REMOVAL AND DISPOSAL WORK REQUIRED UNDER THIS SECTION SHALL BE PERFORMED IN SUCH A MANNER SO AS NOT TO DAMAGE ANY EXISTING STRUCTURES THAT ARE TO REMAIN AND ANY DAMAGE THERETO CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.

2.4. REMOVED MATERIALS AS NOTED HEREIN OR AS MAY BE DESIGNATED BY THE ENGINEER SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE NEATLY STOCKPILED AS DIRECTED. MATERIAL SPECIFIED TO BE DISPOSED OF SHALL BECOME THE CONTRACTOR'S PROPERTY AND SHALL BE DISPOSED OF OFF OWNER'S PROPERTY. CARE SHALL BE TAKEN TO AVOID DROPPING ANY REMOVED MATERIALS IN THE WATER AND ANY SUCH MATERIALS ENTERING THE WATER SHALL BE IMMEDIATELY REMOVED.

2.5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALL NECESSARY DETAILS OF THE EXISTING CONSTRUCTION AS RELATIVE TO ITS EFFECTS ON HIS WORK.

2.6. EROSION CONTROL.

2.6.1. DURING THIS SITE CONSTRUCTION PROCESS AND UNTIL ALL SITE DRAINAGE IMPROVEMENTS ARE OPERATIONAL; THE CONTRACTOR SHALL MAINTAIN AN EROSION CONTROL SYSTEM SATISFACTORY TO THE ENGINEER, OWNER, AND ADEM. EROSION CONTROL SHALL CONSIST OF SILT FENCES, 10' WIDE SEDIMENT DITCH, SEDIMENT TRAPS AROUND INLETS, HAY WATTLES (IF ADDITIONAL BMPS ARE REQUIRED) TO PREVENT THE TRANSPORTATION OF SEDIMENTS IN STORM WATER RUNOFF TO THE SURFACE WATERS.

2.6.2. THE CONTRACTOR SHALL PROVIDE, ESTABLISH, MAINTAIN, AND INSTALL EROSION CONTROL AS REQUIRED BY THE OWNER, MOBILE COUNTY AND ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT.

2.6.3. ALL EROSION CONTROL SHALL BE MAINTAINED AND INSPECTED WEEKLY BY THE ENGINEER (QCP) DURING THE CONTRACT PERIOD, AND UNTIL CONTRACT ACCEPTANCE. ALL DAILY WALK THROUGHS FOR TRASH BY CONTRACTOR.

2.6.3.1. THE CONTRACTOR SHALL EXAMINE THE SITE AND SITE CONDITIONS DAILY AND REPAIR AS REQUIRED.

2.6.3.2. ONCE THE WORK HAS BEGUN ON A SECTION IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTROL ALL EROSION DURING CONSTRUCTION. THIS MAY INCLUDE, BUT IS NOT LIMITED TO, SEEDING, SODDING, FENCES, BERMS, DIKES, DRAINS, NETTING, SAND BAGS, ETC., AS SPECIFIED HEREIN.

2.6.4. ALL PRACTICES AND MATERIALS SHALL CONFORM TO THE ALABAMA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION, AND ALABAMA HANDBOOK FOR EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT ON CONSTRUCTION SITES AND URBAN AREAS, LATEST EDITION.

2.6.5. ALL MATERIALS SHALL COMPLY WITH THE PLANS AND SPECIFICATIONS. CERTAIN MATERIALS CAN BE SUBSTITUTED IF AUTHORIZED BY THE ENGINEER.

2.6.5.1. NO HAY BALES WILL BE USED.

2.6.5.2. SILT FENCES, TYPE "A" SHALL CONSIST OF A WOVEN WIRE FABRIC MOUNTED ON POSTS WITH A POLYMERIC FILTER FABRIC ATTACHED TO THE FENCE FABRIC. FILTER FABRIC SHALL BE A POLYMERIC FABRIC FORMED FROM A PLASTIC YARN OF A LONG CHAIN SYNTHETIC POLYMER COMPOSED OF AT LEAST 85% BY WEIGHT OF PROPYLENE ETHYLENE, AMIDE, ESTER, OR VINYLEDENECHLORIDE AND SHALL CONTAIN STABILIZERS TO MAKE THE FILAMENTS RESISTANT TO DETERIORATION FROM ULTRAVIOLET AND HEAT EXPOSURE FOR AT LEAST SIX MONTHS. FOR INSTALLATION, PLACE BOTTOM 8" OF FABRIC IN A 6" DEEP (MIN) TRENCH LAPPING TOWARD THE UPSLOPE SIDE. THEN IT SHALL BE BACKFILLED WITH COMPACTED SOIL. ALL SILT FENCING IS TO REMAIN IN PLACE UNTIL LANDSCAPING HAS BEEN COMPLETED AND SITE IS FULLY STABILIZED.

2.6.6. PERFORMANCE REQUIREMENTS

2.6.6.1. SAND BAGS SHALL BE SECURELY FASTENED WHEN PLACED. THE BAGS SHALL HAVE A THICKNESS OF APPROXIMATELY 6". SILT FENCES SHALL BE CONSTRUCTED AT LOCATIONS AS REQUIRED. FIELD SPLICES CAN BE MADE BY OVERLAPPING THE FABRIC A MINIMUM OF 3 FT. AND SECURELY FASTENING THE FABRIC TO THE WIRE FENCE. CONTRACTOR SHALL MAINTAIN THE FENCE UNTIL THE CONTRACT HAS BEEN ACCEPTED. IF THE FABRIC SHOULD BECOME DAMAGED AN ADDITIONAL LAYER OF FABRIC CAN BE ATTACHED WITH AT LEAST A 3 FT. OVERLAP.

2.6.6.2. TEMPORARY DRAINAGE SUMPS OR SEDIMENT BASINS CAN BE CONSTRUCTED NEAR THE ENDS OF DRAINAGE STRUCTURES OR DITCHES TO CONTROL SILTING. SUMPS SHALL BE CLEANED PERIODICALLY BY THE REMOVAL OF THE SILT TO KEEP THE SUMP FUNCTIONAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE SITE AND ALL ADJACENT SURFACE WATERS FROM ANY AND ALL EROSION. IF EROSION DOES OCCUR, THE CONTRACTOR SHALL REPAIR ALL DAMAGE AND PROVIDE ALL ADDITIONALLY NEEDED TOPSOIL AT THE CONTRACTOR'S EXPENSE.

2.7. MULCHING & GRASSING IS REQUIRED WITHIN 10 DAYS PRIOR TO COMPLETION OF GRADING.

2.7.1. ALL DISTURBED AREAS, NOT SPECIFICALLY DESIGNATED TO RECEIVE A STONE SURFACE OR IMPERVIOUS AREA, SHALL BE COVERED WITH 4" OF TOPSOIL IN ACCORDANCE WITH SECTION 650 OF THE ALDOT STANDARD SPECIFICATIONS. THE AREAS SHALL THEN BE PREPARED AND FERTILIZED IN ACCORDANCE WITH SECTION 651 OF THE ALDOT STANDARD SPECIFICATIONS. FERTILIZER, COMMERCIAL 8_8_8, SHALL BE PLACED AT THE RATE OF 0.75 TON/ACRE. THE AREAS SHALL BE GRASSED AND MULCHED IN ACCORDANCE WITH SECTIONS 652, 656, 657, OR 658. THE SEED MIX AND MULCH SHALL BE OF A TYPE COMPATIBLE WITH THE TIME OF YEAR OR PLACEMENT AND SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT.

2.7.2. THE AREAS TO BE GRASSED SHALL INCLUDE, BUT ARE NOT LIMITED TO, ALL OF THE DISTURBED AREAS IN THE CONSTRUCTION ZONES.

2.7.3. CONTRACTOR WILL BE REQUIRED TO REMOVE ALL SILT FENCES PRIOR TO SITE STABILIZATION.

3. SITE INFORMATION

3.1. SOIL REPORT – EARTHWORK INCLUDING EXCAVATION/FILL SHALL BE IN ACCORDANCE WITH SESI, GEOTECHNICAL REPORT, PROJECT NO. M25-199.

4. EXCAVATION

4.1. GENERAL.

4.1.1. THE TERM "EXCAVATION" USED HEREINAFTER IS DEFINED AS "UNCLASSIFIED EXCAVATION". EXCAVATION OF EVERY DESCRIPTION, REGARDLESS OF MATERIAL ENCOUNTERED WITHIN THE LIMITS OF THE PROJECT, SHALL BE PERFORMED TO THE LINES AND GRADES INDICATED OR SPECIFIED. SUITABLE EXCAVATED MATERIAL SHALL BE STOCKPILED OR TRANSPORTED TO AND PLACED IN FILL AREAS WITHIN THE LIMITS OF THE WORK. (DURING CONSTRUCTION, EXCAVATION AND FILLING SHALL BE PERFORMED IN A MANNER AND SEQUENCE THAT WILL PROVIDE DRAINAGE AT ALL TIMES.)

4.2. STOCKPILING.

4.2.1. GENERALLY, IT WILL BE NECESSARY TO STOCKPILE EXCAVATED MATERIALS PRIOR TO FINAL PLACEMENT OR DISPOSAL. SUITABLE MATERIALS SHALL BE KEPT SEGREGATED FROM UNSATISFACTORY MATERIALS AND CONTAINED BY SILT FENCING. ONCE EXCAVATED, ALL MATERIALS ARE TO BE TRUCKED OFF-SITE AND SHALL ONLY BE ON SITE LONG ENOUGH TO BE LOADED INTO TRUCK. SINCE THE ENTIRE PROJECT BOUNDARY IS CONTAINED WITH SILT FENCING, NO ADDITIONAL BMPS WILL BE PLACED AROUND THE STOCKPILING. ONCE MATERIAL IS IMPORTED OR EXCAVATED, THE MATERIAL WILL BE GRADED THROUGHOUT THE SITE OR HAULED-OFF SITE AS SOON AS POSSIBLE SO NO ADDITIONAL BMPS ARE REQUIRED.

4.3. STRUCTURES.

4.3.1. EXCAVATION FOR STRUCTURES SHALL BE MADE ACCURATELY TO THE LINES, GRADES, AND ELEVATIONS SHOWN OR AS DIRECTED. TRENCHES AND FOUNDATION PITS SHALL BE OF SUFFICIENT SIZE TO PERMIT THE PLACEMENT AND REMOVAL OF FORMS FOR THE FULL LENGTH AND WIDTH OF STRUCTURE FOOTINGS AND FOUNDATIONS AS SHOWN. EXCAVATION TO THE FINAL GRADE LEVEL SHALL NOT BE MADE UNTIL JUST BEFORE THE CONCRETE IS TO BE PLACED.

4.4. TRENCHES.

4.4.1. GENERAL.

4.4.1.1. PERFORM ALL EXCAVATION OF EVERY DESCRIPTION AND OF WHATEVER SUBSTANCE ENCOUNTERED SO THAT PIPE CAN BE LAID TO THE ALIGNMENT AND DEPTH SHOWN ON THE DRAWINGS. BRACE AND SHORE ALL TRENCHES, WHERE REQUIRED, IN ACCORDANCE WITH THE SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, DEPARTMENT OF LABOR. MAKE ALL EXCAVATIONS BY OPEN CUT UNLESS OTHERWISE SPECIFIED OR INDICATED ON THE DRAWINGS.

4.4.2. WIDTH OF TRENCHES.

4.4.2.1. EXCAVATE TRENCHES SUFFICIENTLY WIDE TO ALLOW PROPER INSTALLATION OF PIPE, FITTINGS, AND OTHER MATERIALS AND NOT LESS THAN 12" CLEAR OF PIPE ON EITHER SIDE AT ANY POINT. DO NOT WIDEN TRENCHES BY SCRAPING OR LOOSENING MATERIALS FROM THE SIDES. WHERE SUPPORTS, SHEETING, AND BRACING ARE REQUIRED, TRENCH MAY BE OF EXTRA WIDTH TO PERMIT THE PLACING OF THE TRENCH SUPPORTING MATERIAL.

4.4.3. TRENCH EXCAVATION IN EARTH.

4.4.3.1. EARTH EXCAVATION INCLUDES ALL EXCAVATION OF WHATEVER SUBSTANCE ENCOUNTERED. IN LOCATIONS WHERE PIPE IS TO BE BEDDED IN EARTH EXCAVATED TRENCHES, FINE GRADE THE BOTTOM OF SUCH TRENCHES TO ALLOW FIRM BEARING FOR THE BOTTOM OF THE PIPE ON UNDISTURBED EARTH. WHERE ANY PART OF THE TRENCH HAS BEEN EXCAVATED BELOW THE GRADE OF THE PIPE, FILL THE PART EXCAVATED BELOW SUCH GRADE WITH PIPE BEDDING MATERIAL AND COMPACT AT THE CONTRACTOR'S EXPENSE.

5. BACKFILL

5.1. GENERAL.

5.1.1. UNLESS OTHERWISE SPECIFIED OR INDICATED ON THE DRAWINGS, USE SUITABLE MATERIAL FOR BACKFILL, WHICH WAS REMOVED IN THE COURSE OF MAKING THE CONSTRUCTION EXCAVATIONS.

5.2. MATERIAL.

5.2.1. APPROVED SELECTED MATERIALS AVAILABLE FROM THE EXCAVATIONS MAY BE USED FOR BACKFILLING AROUND STRUCTURES. OBTAIN MATERIAL NEEDED IN ADDITION TO THAT OF CONSTRUCTION EXCAVATIONS FROM APPROVED SITES OR OTHER APPROVED DEPOSITS. FURNISH ALL BORROW MATERIAL NEEDED FOR THE WORK. PLACE AND COMPACT ALL MATERIAL, WHETHER FROM THE EXCAVATION OR BORROW, TO MAKE A DENSE, STABLE FILL. USE FILL MATERIAL WHICH CONTAINS NO VEGETATION, MASSES OF ROOTS, INDIVIDUAL ROOTS OVER 18" LONG OR MORE THAN ½" IN DIAMETER, STONES OVER 4" IN DIAMETER, OR POROUS MATTER.

5.2.2. THE CONTRACTOR SHALL REPORT ALL QUANTITIES OF BACKFILL MATERIAL TO BRING SUB GRADE TO FINAL LEVEL. BORROW MATERIAL WILL BE USED ONLY WHEN AUTHORIZED OR DIRECTED BY THE ENGINEER.

5.2.3. SELECTION OF BORROW MATERIAL. BORROW MATERIAL SHALL BE A GOOD CLEAN MATERIAL WITH NOT MORE THAN 20% (BY WEIGHT) PASSING THE NO. 200 SIEVE. BORROW MATERIAL SHALL BE OBTAINED FROM APPROVED OFF_SITE SOURCES BY THE CONTRACTOR. SERVICE RECORDS OF THE SOURCE AND ANALYSIS OF THE MATERIAL BY A REPUTABLE LABORATORY SHALL BE SUBMITTED TO THE ENGINEER.

5.3. PLACING BACKFILL.

5.3.1. DO NOT PLACE BACKFILL AGAINST OR ON STRUCTURES UNTIL THEY HAVE ATTAINED SUFFICIENT STRENGTH TO SUPPORT THE LOADS (INCLUDING CONSTRUCTION LOADS) TO WHICH THEY WILL BE SUBJECTED WITHOUT DISTORTION, CRACKING, OR OTHER DAMAGE.

5.3.2. USE THE BEST OF THE EXCAVATED MATERIALS IN BACKFILLING WITHIN 2 FT. OF THE STRUCTURE. AVOID UNEQUAL SOIL PRESSURES BY DEPOSITING THE MATERIAL EVENLY AROUND THE STRUCTURE.

5.3.3. PLACE FILL AND BACKFILL IN LAYERS NOT MORE THAN 6" THICK, EXCEPT AS SPECIFIED OTHERWISE HEREIN, AND COMPACT EACH LAYER EVENLY TO THE SPECIFIED DENSITY. DO NOT BACKFILL AGAINST CONCRETE WITHOUT ENGINEER'S APPROVAL.

5.4. TRENCH BACKFILL

5.4.1. GENERAL.

5.4.1.1. UNLESS OTHERWISE SPECIFIED OR INDICATED ON THE DRAWINGS, USE SUITABLE MATERIAL FOR BACKFILL, WHICH WAS REMOVED IN THE COURSE OF MAKING THE CONSTRUCTION EXCAVATIONS. START BACKFILLING AS SOON AS PRACTICABLE AFTER THE PIPES HAVE BEEN LAID OR THE STRUCTURES HAVE BEEN BUILT AND ARE STRUCTURALLY ADEQUATE TO SUPPORT THE LOADS, INCLUDING CONSTRUCTION LOADS, TO WHICH THEY WILL BE SUBJECTED, AND PROCEED UNTIL ITS COMPLETION. WITH THE EXCEPTION MENTIONED BELOW IN THIS PARAGRAPH, DO NOT BACKFILL TRENCHES AT PIPE JOINTS UNTIL AFTER THAT SECTION OF THE PIPELINE HAS SUCCESSFULLY PASSED ANY SPECIFIED TEST REQUIRED. SHOULD THE CONTRACTOR WISH TO MINIMIZE THE MAINTENANCE OF LIGHTS AND BARRICADES AND THE OBSTRUCTION OF TRAFFIC, HE MAY, AT HIS OWN RISK, BACKFILL THE ENTIRE TRENCH AS SOON AS PRACTICABLE AFTER INSTALLATION OF PIPE, AND THE RELATED STRUCTURES HAVE ACQUIRED A SUITABLE DEGREE OF STRENGTH. HE SHALL, HOWEVER, BE RESPONSIBLE FOR REMOVING AND LATER REPLACING SUCH BACKFILL, AT HIS OWN EXPENSE, SHOULD HE BE ORDERED TO DO SO IN ORDER TO LOCATE AND REPAIR OR REPLACE LEAKING OR DEFECTIVE JOINTS OR PIPE.

5.4.2. MATERIALS.

5.4.2.1. THE NATURE OF THE MATERIALS WILL GOVERN BOTH THEIR ACCEPTABILITY FOR BACKFILL AND THE METHODS BEST SUITED FOR THEIR PLACEMENT AND COMPACTION IN THE BACKFILL. BOTH ARE SUBJECT TO THE APPROVAL OF THE ENGINEER. PLACE NO STONE OR ROCK FRAGMENT LARGER THAN 4" IN GREATEST DIMENSION IN THE BACKFILL. DROP NO LARGE MASSES OF BACKFILL MATERIAL INTO THE TRENCH IN SUCH A MANNER AS TO ENDANGER THE PIPELINE. USE A TIMBER GRILLAGE TO BREAK THE FALL OF MATERIAL DROPPED FROM A HEIGHT OF MORE THAN 5 FEET. EXCLUDE PIECES OF BITUMINOUS PAVEMENT FROM THE BACKFILL UNLESS THEIR USE IS EXPRESSLY PERMITTED.

5.4.3. ZONE AROUND PIPE.

5.4.3.1. PLACE BEDDING MATERIAL TO THE LEVEL SHOWN ON THE DRAWINGS AND WORK MATERIAL CAREFULLY AROUND THE PIPE TO ENSURE THAT ALL VOIDS ARE FILLED. FOR BACKFILL UP TO A LEVEL OF 2 FT. OVER THE TOPS OF THE PIPE, USE ONLY SELECTED MATERIALS CONTAINING NO ROCKS, CLODS, OR ORGANIC MATERIALS. PLACE THE BACKFILL AND COMPACT THOROUGHLY UNDER THE PIPE HAUNCHES AND UP TO THE MID_LINE OF THE PIPE IN LAYERS NOT EXCEEDING 6" IN DEPTH. PLACE EACH LAYER AND TAMP CAREFULLY AND UNIFORMLY SO AS TO ELIMINATE THE POSSIBILITY OF LATERAL DISPLACEMENT. PLACE AND COMPACT THE REMAINDER OF THE ZONE AROUND THE PIPE AND TO A HEIGHT OF 1 FT. ABOVE THE PIPE IN LAYERS NOT EXCEEDING 6" AND COMPACT TO A MAXIMUM DENSITY OF AT LEAST 95% AS DETERMINED BY ASTM D1557 MODIFIED.

5.4.4. TAMPING.

5.4.4.1. DEPOSIT AND SPREAD BACKFILL MATERIALS IN UNIFORM, PARALLEL LAYERS NOT EXCEEDING 12" THICK BEFORE COMPACTION. TAMP EACH LAYER BEFORE THE NEXT LAYER IS PLACED TO OBTAIN A THOROUGHLY COMPACTED MASS. FURNISH AND USE, IF NECESSARY, AN ADEQUATE NUMBER OF POWER-DRIVEN TAMPERS, EACH WEIGHING AT LEAST 20 POUNDS, FOR THIS PURPOSE. TAKE CARE THAT THE MATERIAL CLOSE TO THE BANK, AS WELL AS IN ALL OTHER PORTIONS OF THE TRENCH, IS THOROUGHLY COMPACTED. WHEN THE TRENCH WIDTH AND THE DEPTH TO WHICH BACKFILL HAS BEEN PLACED ARE SUFFICIENT TO MAKE IT FEASIBLE, AND IT CAN BE DONE EFFECTIVELY AND WITHOUT DAMAGE TO THE PIPE, BACKFILL MAY, ON APPROVAL, BE COMPACTED BY THE USE OF SUITABLE ROLLERS, TRACTORS, OR SIMILAR POWERED EQUIPMENT INSTEAD OF BY TAMPING. FOR COMPACTION BY TAMPING (OR ROLLING), THE RATE AT WHICH BACKFILL MATERIAL IS DEPOSITED IN THE TRENCH SHALL NOT EXCEED THAT PERMITTED BY THE FACILITIES FOR ITS SPREADING, LEVELING, AND COMPACTING AS FURNISHED BY THE CONTRACTOR. WET THE MATERIAL BY SPRINKLING, IF NECESSARY, TO ENSURE PROPER COMPACTION BY TAMPING (OR ROLLING). PERFORM NO COMPACTION BY TAMPING (OR ROLLING) WHEN THE MATERIAL IS TOO WET FROM RAIN OR APPLIED WATER TO BE COMPACTED PROPERLY.

5.4.5. TRENCH COMPACTION.

5.4.5.1. COMPACT BACKFILL IN PIPE TRENCHES TO THE MAXIMUM DENSITY AS SHOWN ON THE DRAWINGS OR AS LISTED IN THE SOILS REPORT AND THESE SPECIFICATIONS WITH A MOISTURE CONTENT WITHIN THE RANGE OF VALUES OF MAXIMUM DENSITY AS INDICATED.

6. PREPARATION OF SUBGRADE

6.1. GROUND SURFACE ON WHICH FILL IS TO BE PLACED SHALL BE STRIPPED OF LIVE, DEAD, OR DECAYED VEGETATION, RUBBISH, DEBRIS, BOULDERS, AND OTHER UNSATISFACTORY MATERIAL; PLOWED, DISKED, OR OTHERWISE BROKEN UP; PULVERIZED; AND MOISTENED OR AERATED AS REQUIRED JUST PRIOR TO PLACEMENT OF FILL MATERIALS TO ASSURE ADEQUATE BOND BETWEEN FILL MATERIAL AND THE PREPARED GROUND SURFACE. THE EXPOSED GROUND SURFACE OF AREA GRADED TO ELEVATIONS AS NOTED ABOVE SHALL BE SCREENED AND GRATED TO CLEAN NATIVE SOIL MATERIAL.

6.2. SAND FILL REQUIRED TO ATTAIN DESIGN ELEVATIONS AND PARTICLE SIZE MIX SHALL BE PROVIDED AND INSTALLED.

7. SUBBASE PREPARATION

7.1. CONSTRUCTION.

7.1.1. THE FINAL LIFT FOR SUB GRADE SHALL NOT BE MORE THAN 6" IN DEPTH. SUB GRADE SHALL BE SHAPED TO LINE, GRADE AND CROSS SECTION, AND COMPACTED AS SPECIFIED. THIS OPERATION SHALL INCLUDE PLOWING, DISKING, AND ANY MOISTENING OR AERATING REQUIRED TO OBTAIN PROPER COMPACTION. SOFT OR OTHERWISE UNSATISFACTORY MATERIAL SHALL BE REMOVED AND REPLACED WITH SATISFACTORY EXCAVATED MATERIAL OR OTHER APPROVED MATERIAL AS DIRECTED. AFTER ROLLING, THE SURFACE OF THE SUB BASES FOR BASE SHALL NOT SHOW DEVIATION GREATER THAN ¼" WHEN TESTED WITH A 10' STRAIGHTEDGE APPLIED BOTH PARALLEL AND AT RIGHT ANGLES TO THE CENTERLINE OF THE AREA. THE ELEVATION OF THE FINISHED SUB BASE SHALL NOT VARY MORE THAN 0.05 FT. FROM THE ESTABLISHED GRADE AND APPROVED CROSS SECTION.

7.2. COMPACTION.

7.2.1. COMPACTION SHALL BE ACCOMPLISHED BY SHEEPS FOOT ROLLERS, PNEUMATIC TIRED ROLLERS, STEEL WHEELED ROLLERS, VIBRATORY COMPACTORS, OR OTHER APPROVED EQUIPMENT.

8. FINISHING

8.1. THE SURFACE OF ALL EXCAVATIONS, FILLS, AND SUB GRADES SHALL BE FINISHED TO A REASONABLY SMOOTH AND COMPACT SURFACE SUBSTANTIALLY IN ACCORDANCE WITH THE LINES, GRADES, AND CROSS SECTIONS OR ELEVATIONS SHOWN. THE DEGREE OF FINISH FOR ALL GRADED AREAS SHALL BE WITHIN 0.1 FT. OF THE GRADES AND ELEVATIONS INDICATED.

9. SUBBASE AND FILL PROTECTION

9.1. DURING CONSTRUCTION, FILLS AND EXCAVATIONS SHALL BE KEPT SHAPED AND DRAINED. DITCHES AND DRAINS ALONG SUB GRADE SHALL BE MAINTAINED IN SUCH A MANNER AS TO DRAIN EFFECTIVELY AT ALL TIMES. THE FINISHED SUB GRADE SHALL NOT BE DISTURBED BY TRAFFIC OR OTHER OPERATION AND SHALL BE PROTECTED AND MAINTAINED BY THE CONTRACTOR IN A SATISFACTORY CONDITION UNTIL BASE COURSE IS PLACED. THE STORAGE OR STOCKPILING OF MATERIALS ON THE FINISHED SUB GRADE WILL NOT BE PERMITTED. NO BASE COURSE SHALL BE LAID UNTIL THE SUB GRADE HAS BEEN CHECKED AND APPROVED, AND IN NO CASE SHALL BASE BE PLACED ON A MUDDY, SPONGY, OR FROZEN SUB GRADE.

10. DISPOSAL OF UNSUITABLE OR EXCESS MATERIAL

10.1. GENERAL.

10.1.1. THE CONTRACTOR SHALL DISPOSE OF ALL UNSUITABLE OR EXCESS MATERIALS RESULTING FROM THE EXCAVATION THAT ARE NOT PERMITTED OR REQUIRED IN THE FILLS OR REQUIRED IN OTHER FEATURES OF THE WORK. MATERIALS SHALL BE DISPOSED OF OFF THE OWNER'S PROPERTY.

11. MEASUREMENT

11.1. THE UNIT OF MEASUREMENT FOR MATERIAL WILL BE THE CUBIC YARD FOR ALL "CHANGE ORDER" YARDAGE. "CHANGE ORDER" YARDAGE OF MATERIAL TO BE PAID FOR WILL BE THE NUMBER OF CUBIC YARDS OF MATERIAL BASED UPON TRUCK BED MEASUREMENT AND PAYMENT BY LOAD TICKETS.

11.2. THE UNIT OF MEASUREMENT FOR EXCESS MATERIAL WILL BE THE CUBIC YARD. YARDAGE WILL BE THE NUMBER OF CUBIC YARDS BASED UPON TRUCK BED MEASUREMENT.

12. SUBSIDIARY OBLIGATIONS

12.1. GENERAL.

12.1.1. THE FOLLOWING OPERATIONS AND CONSTRUCTION WILL NOT BE MEASURED FOR DIRECT PAYMENT, BUT WILL BE CONSIDERED SUBSIDIARY OBLIGATIONS OF THE CONTRACTOR, AND WILL BE COVERED UNDER THE CONTRACT PRICES FOR THE STRUCTURES INVOLVED OR UNDER THE UNIT PRICES PER YARD AS SPECIFIED BELOW.

12.2. EXCAVATION.

12.2.1. EXCAVATION FOR DRAINAGE STRUCTURES, FOUNDATIONS, AND OPERATIONS REQUIRED IN CONNECTION THEREWITH, INCLUDING BRACING OR SHEETING, DRAINAGE, AND PUMPING, WILL BE COVERED UNDER THE CONTRACT LUMP SUM PRICE FOR DRAINAGE STRUCTURES OR THE SUBJECT STRUCTURE.

12.3. BACKFILL.

12.3.1. BACKFILL FOR DRAINAGE STRUCTURES AND OTHER STRUCTURES BELOW GRADE, INCLUDING ATTENDANT OPERATIONS, WILL BE COVERED UNDER THE CONTRACT LUMP SUM PRICE FOR DRAINAGE STRUCTURES OR THE SUBJECT STRUCTURE.

12.4. FILL.

12.4.1. FILL CONSTRUCTION INCLUDING THE PREPARATION OF GROUND SURFACE FOR PLACEMENT OF FILL UP TO THE FINISHED SUB GRADE ELEVATION WILL BE COVERED UNDER THE CONTRACT LUMP SUM PRICE FOR EXCAVATION OR BORROW.

12.5. SUB GRADE PREPARATION.

12.5.1. SUB GRADE PREPARATION, INCLUDING DRESSING, SHAPING, WETTING, AERATING, AND COMPACTING OF THE SUB GRADE, WILL BE COVERED UNDER THE CONTRACT LUMP SUM PRICE FOR EXCAVATION OR BORROW.

12.6. WATER

12.6.1. WATER USED FOR SPRINKLING AND WETTING MATERIALS DURING CONSTRUCTION IN CONNECTION WITH COMPACTION OF FILLS, UNLESS OTHERWISE SPECIFIED, WILL BE COVERED UNDER THE CONTRACT LUMP SUM PRICE FOR EXCAVATION OR BORROW.

12.7. DISPOSAL

12.7.1. DISPOSAL OF UNSUITABLE MATERIAL SHALL BE MOVED AND STORED AS DIRECTED BY THE OWNER.

12.8. DEWATERING

12.8.1. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY TYPE OF DEWATERING, IF REQUIRED.

REV.	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR BID	09/11/26	ECL	GDEC

11880 Cranston Drive, Ste. 101
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CMG ENGINEERS, INC.

457 St. Michael Street
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PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE
GENERAL NOTES

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DATE 06/08/26 22x34 REV. A

DRAWING NUMBER 4643E-G3

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AUGER CAST PILING:

1. THE WORK COVERED BY THESE SPECIFICATIONS INCLUDES FURNISHING ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS FOR THE PLACING OF AUGURED (NON-DRIVEN) CAST-IN-PLACE CONCRETE BEARING PILES (AS SHOWN ON THE PLANS AND DESCRIBED IN THESE NOTES).

2. CONTRACTOR SHALL INSPECT THE SITE AROUND THE PROPOSED AUGER CAST PILING FOUNDATION, REVIEW DRAWINGS AND BE THOROUGHLY FAMILIAR WITH ALL PHYSICAL AND DIMENSIONAL REQUIREMENTS AND LIMITATIONS. CONTRACTOR SHALL SATISFY HIMSELF THAT HE CAN ADJUST HIS AUGER DRIVE UNIT, FRAME AND CRANE LEADS AS REQUIRED TO AUGER ON THE CENTER LINE OF AUGER CAST PILE FOUNDATION.

3. THE PILING CONTRACTOR SHALL HAVE AN EXPERIENCED SUPERINTENDENT IN CHARGE OF THE WORK AT ALL TIMES, WHOSE EXPERIENCE SHALL INCLUDE NOT LESS THAN FIVE (5) YEARS WITH AUGURED PILE FOUNDATION WORK.

4. CONCRETE FOR PLACING IN THE AUGURED TYPE BEARING PILES SHALL BE CLASS "AC" (4,000 PSI AT 28 DAYS) AS DESCRIBED IN THE "CONCRETE NOTES".

5. THE AUGER FOR CONSTRUCTION OF AUGURED TYPE CAST-IN-PLACE CONCRETE PILING SHALL BE A HOLLOW SHAFTED CONTINUOUS FLIGHT AUGER, EMPLOYED AS SHOWN ON THE PLANS, RESPECTIVELY. THE AUGER SHALL BE CONTINUOUS WITH NO GAPS FOR THE FULL REQUIRED DEPTH OF PENETRATION.

6. THE HOLLOW SHAFT OF THE AUGER SHALL BE LARGE ENOUGH TO PERMIT THE FREE PASSAGE OF PUMPED CONCRETE, AND THE DISCHARGE HOLE IN THE HOLLOW SHAFT SHALL BE AT THE BOTTOM OF THE AUGER BELOW THE CUTTING TEETH.

7. THE AUGER SHALL BE SUPPORTED BY SUITABLE LEADS, WHICH SHALL BE BRACED AS REQUIRED TO PREVENT TWISTING AND/OR BENDING AND TO MAINTAIN PROPER ALIGNMENT OF THE AUGER.

8. THE PUMP FOR PLACEMENT OF CONCRETE INTO THE PILING SHALL BE A POSITIVE DISPLACEMENT TYPE CONCRETE PUMP WITH AN OPERATING PRESSURE GAUGE AND METER AND SHALL BE CAPABLE OF OPERATING UNDER PRESSURES OF NOT LESS THAN 250 PSI, AND SHALL HAVE A CAPACITY LARGE ENOUGH TO PREVENT DELAY IN THE FOUNDATION CONSTRUCTION.

9. THE PUMP SHALL DISCHARGE THROUGH SUITABLE HOSE OR PIPING TO THE TOP OF THE AUGER AND THROUGH THE AUGER SHAFT INTO THE PILING CONSTRUCTION. SUCH PIPING OR HOSE SHALL NOT BE CONSTRUCTED OF OR LINED WITH ALUMINUM.

10. ALL CONCRETE HANDLING EQUIPMENT SHALL BE CLEAN AND FREE OF RUST, OIL AND OTHER DELETERIOUS MATERIALS BEFORE BEING USED ON THE JOB.

11. THE CONTINUOUS HOLLOW SHAFT FLIGHT AUGER SHALL BE ROTATED INTO THE GROUND TO THE REQUIRED DEPTH OF PENETRATION AS SHOWN ON THE PLANS AND SPECIFIED HEREIN.

12. WHEN THE AUGER HAS PENETRATED TO THE REQUIRED DEPTH, CONCRETE SHALL BE PUMPED THROUGH THE SHAFT UNDER A PRESSURE AT DISCHARGE OF ABOUT 50 PSI. THE AUGER SHALL CONTINUE TO BE ROTATED SLOWLY (3-5 RPM) IN A FORWARD (DIGGING) DIRECTION AND THEN SHALL BE SLOWLY WITHDRAWN, ALLOWING THE CONCRETE UNDER PRESSURE TO FILL THE SHAFT AND TO PENETRATE LATERALLY INTO ANY POROUS SOILS AS THE AUGER IS WITHDRAWN. THE AUGER SHALL NOT BE ALLOWED TO ADVANCE AHEAD OF THE CONCRETE AND ALLOW SOILS TO CAVE INTO THE AUGURED SHAFT SUCH AS MAY BE DETECTED BY A DROP IN PRESSURE AT THE PUMP. THIS PROCEDURE SHALL CONTINUE WITHOUT BREAK FROM BOTTOM TO TOP OF PILING. CENTER REINFORCEMENT BARS, WHERE REQUIRED, MAY BE INSTALLED PRIOR TO PUMPING THROUGH THE HOLLOW AUGER STEM.

13. THE AMOUNT OF CONCRETE PLACED IN EACH PILING SHALL BE RECORDED AND THAT AMOUNT SHALL NOT BE LESS THAN THE THEORETICAL VOLUME OF THE AUGURED HOLE.

14. THE DESIGN BEARING CAPACITY FOR EACH PILING AND THE DESIGNATED PILING LENGTH SHALL BE AS SHOWN ON THE DRAWING. PILES SHALL BE LOCATED AS SHOWN ON THE DRAWINGS. PILE CENTERS SHALL BE LOCATED TO AN ACCURACY OF PLUS OR MINUS TWO (2") INCHES FOR BEARING PILES.

15. SOIL BORINGS HAVE BEEN PERFORMED ON THE CONSTRUCTION SITE AND THE LOGS OF THESE BORINGS ARE ON FILE. THESE BORING LOGS MAY BE INSPECTED BY THE CONTRACTOR, IF DESIRED. HOWEVER, IT SHALL BE NOTED THAT THESE BORINGS ARE MADE AVAILABLE FOR THE CONTRACTOR'S CONVENIENCE ONLY AND NEITHER THE OWNER, ENGINEER/ARCHITECT, NOR THE ENGINEERING LABORATORY STATES OR IMPLIES ANY GUARANTEE AS TO DIFFERENCES THAT MAY OCCUR BETWEEN SOIL CONDITIONS ON THE SITE AND THOSE INDICATED BY THE BORING LOGS.

16. DAILY RECORDS SHALL BE KEPT BY THE CONTRACTOR, TO BE CONFIRMED BY THE ENGINEERING LABORATORY EMPLOYED BY THE OWNER, FOR ALL AUGER CAST PILING AND SHALL CONTAIN THE FOLLOWING INFORMATION REGARDING PILES PLACED. COPIES OF THESE RECORDS SHALL BE FURNISHED AS FOLLOWS:

    1 COPY TO CONCRETE COMPANY
    1 COPY TO CMG ENGINEERS

    1. NUMBER OF PILE (LOCATION SHOWN ON PLANS).
    2. DEPTH OF PILE (CUTOFF ELEVATION OF PILE TIP).
    3. DIAMETER OF PILE.
    4. VOLUME OF CONCRETE MATERIAL PLACED IN EACH PILE.
    5. PRESSURE USED IN PLACING PILE.
    6. TYPE OF REINFORCING PLACED IN PILE.

17. THE CONTRACTOR SHALL OMIT COARSE AGGREGATE FROM THE AUGER CAST PILE CONCRETE. ALL REQUIREMENTS FOR CLASS "AC" CONCRETE AS STATED IN THE "CONCRETE NOTES" SHALL NOT BE REDUCED. THE CONSISTENCY OF THE SAND-CEMENT CONCRETE GROUT SHALL BE CHECKED PERIODICALLY BY AN HP METER AS DESCRIBED IN THE FOLLOWING.

18. THE MATERIALS BEING MIXED SHALL BE CHECKED PERIODICALLY AND THE TIME OF EFFLUX AS MEASURED BY FLOW THROUGH THE HP METER CONSISTS OF A CONICAL SHAPED VESSEL, WHOSE INTERIOR SURFACE SLOPES TOWARD THE VERTEX AT AN ANGLE OF APPROXIMATELY 67 DEGREES, FORMING A RESERVOIR CAPABLE OF CONTAINING 1725 MLS. AT THE SMALL END OF THE VESSEL IS LOCATED AN ORIFICE 19 MM IN DIAMETER AND 2.54 CM IN LENGTH. THE METER SHOULD BE ACCOMPANIED BY A STOP WATCH WHICH HAS AT LEAST A READING OF 0.2 SECONDS.

19. THE FIELD TESTING OF THIS TYPE CONCRETE SHALL BE PERFORMED BY THE USE OF "TEST CUBES" IN LIEU OF THE "TEST CYLINDERS" AS DESCRIBED IN THE FOLLOWING.

20. THE CONCRETE SHALL BE TESTED BY MAKING TWO (2) SETS OF 2" X 2" CUBES FOR EACH DAY DURING WHICH AUGER CAST PILES ARE PLACED. A SET OF CUBES SHALL CONSIST OF SIX (6) CUBES: (2) CUBES

21. TO BE TESTED AT SEVEN (7) DAYS; (2) CUBES TO BE TESTED AT TWENTY-EIGHT (28) DAYS; AND (2) CUBES AVAILABLE FOR ADDITIONAL TESTING, AS REQUIRED. TEST CUBES SHALL BE MADE AND TESTED IN ACCORDANCE WITH ASTM CL09, WITH THE EXCEPTION THAT THE GROUT SHOULD BE RESTRAINED FROM EXPANSION BY A TOP PLATE.

22. AUGER CAST PILE CONCRETE MAY CONTAIN AN ADDITIONAL ADDITIVE(S) INTRODUCED TO OVERCOME THE NATURAL SHRINKAGE OF CONCRETE AND THUS ASSURE BETTER CONTACT AND FRICTIONAL CAPACITY OF THE PILING. ADDITIONAL ADDITIVES TO REASONABLY RETARD GROUT SET AND IMPROVE FLOW ABILITY MAY BE INTRODUCED INTO THE MIX AT THE OPTION OF THE CONTRACTOR. THE ADDITIVE(S) SHALL BE APPROVED MATERIALS WHICH HAVE PROVEN EXPERIENCE RECORDS OF NOT LESS THAN FIVE (5) YEARS.

23. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER/ARCHITECT, FOR APPROVAL, THE MIX WHICH HE PROPOSES TO USE FOR THE AUGER CAST PILING CONCRETE AND ALL REQUISITE LITERATURE AND PRODUCT RECORDS NO LATER THAN ONE (1) WEEK PRIOR TO COMMENCING THE AUGER CAST PILE INSTALLATIONS. A TRIAL BATCH OF THIS MIX SHALL HAVE BEEN MADE AND TESTED BY AN APPROVED LABORATORY AND TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER/ARCHITECT, NO LATER THAN ONE (1) WEEK PRIOR TO TEST PILE PLACEMENT. IN NO CASE SHALL THE AMOUNT OF CEMENT BE LESS THAN EIGHT (8) BAGS PER CUBIC YARD OF CONCRETE AND IN NO CASE SHALL THE CONCRETE ATTAIN A COMPRESSIVE STRENGTH OF LESS THAN 4,000 PSI AN TWENTY-EIGHT (28) DAYS.

24. THE CONTRACTOR SHALL NOT BEGIN ANY EXCAVATION ADJACENT TO ANY AUGER CAST PILES WITHIN 72 HOURS AFTER POURING OPERATIONS OF AUGER CAST PILES.

25. CONSTRUCTION OF PILES, MIX DESIGN, MIX CONSISTENCY AND METHODS OF INSTALLATION SHALL BE SUCH TO ALLOW UNRESTRICTED PLACEMENT OF STEEL REINFORCEMENT PRIOR TO AUGER GROUT SET AND TO PROJECT DIMENSIONS AS SHOWN ON THE DRAWINGS.

26. CONTRACTOR SHALL SUBMIT TO THE ENGINNER/ARCHITECT, SIX (6) COMPLETE SETS OF SHOP DRAWINGS, INCLUDING THE PROPOSED CONSTRUCTION SEQUENCE, METHOD AND SCHEDULE FOR PLACEMENT OF ALL AUGER CAST PILES AND THEIR REINFORCEMENT, PLACEMENT SEQUENCE OF ALL PILE REINFORCING AND ALL OTHER RELATED WORK FOR WRITTEN APPROVAL BY THE ENGINEER/ARCHITECT, ONE (1) WEEK PRIOR TO COMMENCING THE AUGER CAST PILE INSTALLATION. THE SIX (6) SETS SHALL BE DISTRIBUTED AS REQUIRED.

TEST PILE

1. THE CONTRACTOR SHALL FURNISH ALL LOADING PLATFORMS AND APPLIED LOADS, REACTION FRAMES, AND HYDRAULIC JACKS FOR APPLYING TEST LOADS TO THE PILES, CALIBRATED HYDRAULIC GAGES FOR CONNECTION TO THE JACKS, CONTRACTOR QUALITY CONTROL MEASURING INSTRUMENTS AND ANY OTHER SPECIAL EQUIPMENT REQUIRED FOR DETERMINING THE REACTION OF THE TEST PILES; AS WELL AS ALL MATERIALS, LABOR, AND THE USE OF ANY CONSTRUCTION EQUIPMENT TO BE REGULARLY EMPLOYED ON THE JOB WHICH, IN THE OPINION OF THE ENGINEER, IS NECESSARY FOR THE SATISFACTORY PROSECUTION OF THE PILE TESTS AS HEREIN SPECIFIED. TEST LOADS SHALL BE APPLIED BY HYDRAULIC JACKS REACTING AGAINST A LOADED PLATFORM OR REACTION FRAME IN SUCH A MANNER AS TO INSURE CONCENTRIC LOADING AND TO PERMIT DEVELOPING AND HOLDING THE REQUIRED TEST LOADS FOR PERIODS OF TIME AS DIRECTED. THE LOADING EQUIPMENT SHALL BE OF SUFFICIENT CAPACITY TO APPLY A **COMPRESSION TEST LOAD** OF NOT LESS THAN **150 TONS**. THE CONTRACTOR SHALL SUBMIT HIS PROPOSED TEST METHODS TO THE ENGINEER NO LATER THAN SEVEN (7) DAYS PRIOR TO TESTING OF THE SELECTED PROBE PILING.

2. TEST LOADS. THE CONTRACTOR SHALL TEST THE COMPRESSION PILE TO A TEST LOAD OF 120 TONS IN ACCORDANCE WITH THE FOLLOWING SECTIONS.

3. TEST LOADING OF COMPRESSION PILES, THE LOAD TEST WILL BE PERFORMED AS DESCRIBED HEREIN AND IN GENERAL CONFORMANCE WITH ASTM D1143, CYCLIC METHOD. LOADING FRAMES AND EQUIPMENT SHALL BE READY TO PLACE IN OPERATION AS SOON AS THE TEST PILES HAVE BEEN DRIVEN. LOADING OF THE TEST PILE SHALL BE INITIATED WHEN DIRECTED BY THE ENGINEER. IN GENERAL, THE PILE WILL BE REQUIRED TO REMAIN IN PLACE FOR A PERIOD OF APPROXIMATELY 72 HOURS BEFORE LOADING. THE TEST LOAD SHALL BE APPLIED IN INCREMENTS AND AT INTERVALS OF TIME AS DIRECTED BY THE ENGINEER AND AS SPECIFIED HEREIN. EACH INCREMENT OF LOAD SHALL BE MAINTAINED CONSTANT UNTIL PROGRESSIVE SETTLEMENT HAS NOMINALLY STOPPED IN ACCORDANCE WITH ASTM D1143.

4. TEST LOADING OF TENSION PILES, THE LOAD TEST WILL BE PERFORMED AS DESCRIBED HEREIN AND IN GENERAL CONFORMANCE WITH ASTM D3689, CYCLIC METHOD. LOADING FRAMES AND EQUIPMENT SHALL BE READY TO PLACE IN OPERATION AS SOON AS THE TEST PILES HAVE BEEN DRIVEN. LOADING OF THE TEST PILE SHALL BE INITIATED WHEN DIRECTED BY THE ENGINEER. IN GENERAL, THE PILE WILL BE REQUIRED TO REMAIN IN PLACE FOR A PERIOD OF APPROXIMATELY 72 HOURS BEFORE LOADING. THE TEST LOAD SHALL BE APPLIED IN INCREMENTS AND AT INTERVALS OF TIME AS DIRECTED BY THE ENGINEER AND AS SPECIFIED HEREIN. EACH INCREMENT OF LOAD SHALL BE MAINTAINED CONSTANT UNTIL PROGRESSIVE SETTLEMENT HAS NOMINALLY STOPPED IN ACCORDANCE WITH ASTM D3689.

5. THE NORMAL TEST PROCEDURE WILL BE TO APPLY UNITS OF LOAD AND OBTAIN SETTLEMENT OR UPLIFT READINGS OVER A PERIOD OF TIME AT EACH LOAD INCREMENT UNTIL A TOTAL LOAD EQUAL TO THAT SPECIFIED HEREIN IS REACHED. THIS HOLD PERIOD LOAD SHALL BE MAINTAINED FOR A PERIOD OF NOT LESS THAN 48 HOURS AND FOR SUCH ADDITIONAL TIME AS MAY BE NECESSARY UNTIL THERE IS NO OBSERVED SETTLEMENT OR UPLIFT OF THE PILE (OR UNTIL SUCH MINIMAL MAGNITUDES, ACCEPTABLE TO THE ENGINEER, HAS BEEN ACHIEVED) FOR THE LAST 12 HOURS OF THE PERIOD, AFTER WHICH THE LOAD SHALL BE REMOVED IN THE PRESCRIBED UNITS AND INTERVALS OF TIME. AFTER OBSERVATIONS HAVE CONFIRMED THAT REBOUND HAS CEASED, THE TEST WILL BE CONSIDERED COMPLETED. THE ENGINEER RESERVES THE RIGHT TO VARY THE PROCEDURES FROM THOSE PRESCRIBED HEREIN, IF, IN HIS OPINION, THE ACTION OF THE PILES SO WARRANT. ALL TESTS WILL BE CONTINUOUS OPERATIONS.

6. THE LOADING CRITERIA FOR THE **COMPRESSION** PILE TEST SHALL BE AS FOLLOWS, UNLESS AS INDICATED ABOVE VARIATIONS THEREFROM ARE DETERMINED BY THE ENGINEER TO BE WARRANTED:

120 TON (ULTIMATE) LOAD TEST

TEST LOAD	LOADING PERIOD
20.0 TONS	1 HOUR OR LESS
40.0 TONS	1 HOUR OR LESS
60.0 TONS	1 HOUR OR LESS
80.0 TONS	1 HOUR OR LESS
40.0 TONS	0.5 HOURS
0.0 TONS	0.5 HOURS
20.0 TONS	0.5 HOURS
40.0 TONS	0.5 HOURS
60.0 TONS	1 HOUR OR LESS
80.0 TONS	1 HOUR OR LESS
100.0 TONS	1 HOUR OR LESS
120.0 TONS	48 HOURS HOLD
90.0 TONS	0.5 HOURS
60.0 TONS	0.5 HOURS
30.0 TONS	0.5 HOURS
0.0 TONS	1 HOUR MINIMUM

6a. UPON COMPLETION OF THE LOAD TEST THE TEST PILE SHALL BE LOADED TO 150 TONS IN 50 TON INCREMENTS AND HELD FOR 15 MINUTES PER INCREMENT UP TO 150 TONS AND SHALL BE HELD AT 150 TONS FOR 1 HOUR. UNLOAD IN 50 TON INCREMENTS AND 15 MINUTE INTERVALS.

STEEL JOISTS AND JOIST GIRDERS

1. JOIST SYSTEM COMPONENTS MUST CONFORM TO AND BE ERECTED IN ACCORDANCE WITH THE LATEST AISC AND SJI STANDARD SPECIFICATIONS FOR OPEN-WEB STEEL JOISTS, "K" SERIES JOISTS AND JOIST GIRDERS. TOP CHORDS OF JOISTS AND JOIST GIRDERS MUST CONSIST OF ANGLES OR TEES.

2. STEEL JOISTS SHALL BE WELDED TO SUPPORTING MEMBERS UNLESS NOTED OTHERWISE. STEEL JOISTS AND JOIST GIRDERS SHALL BE BOLTED TO SUPPORTS AT COLUMN LOCATIONS.

3. JOIST HORIZONTAL BRIDGING SHALL BE WELDED OR BOLTED TO JOISTS IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS

4. STEEL JOISTS, JOIST GIRDERS AND ACCESSORIES SHALL BE PAINTED WITH ONE SHOP COAT OF 4 MIL WHITE RUST INHIBITIVE PRIMER.

5. STEEL JOISTS AND JOIST GIRDERS HAVE BEEN DESIGNED FOR 15 PSF COLLATERAL LOADING.

6. STEEL JOISTS DESIGNATED WITH THE TERM "ADDLOAD" SHALL BE DESIGNED BY THE MANUFACTURER TO SUPPORT THE "ADDLOAD" LOADING AS INDICATED ON THE ROOF FRAMING PLANS, SECTIONS AND DETAILS IN ADDITION TO THE SPECIFIED DESIGN.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY SUPPORT AND BRACING DURING CONSTRUCTION. TEMPORARY SUPPORT AND BRACING ARE TO BE IN COMPLIANCE WITH STEEL JOIST INSTITUTE RECOMMENDATIONS.

8. DESIGN JOISTS FOR AXIAL FORCES WHERE INDICATED ON THE DRAWINGS. JOISTS BEARING ON TILT WALLS MUST WITHSTAND AXIAL FORCES FOR WIND RESISTANCE AS INDICATED ON THE SECTIONS.

9. REQUIRED STEEL JOIST DIMENSIONS:

9.1. LH-SERIES JOISTS: 24LH09

BEARING SEAT DEPTH = 5"
BEARING SEAT WIDTH = AS REQUIRED BY DESIGN (6" MAX)
CLEAR BEARING LENGTH = 6"
TOTAL LENGTH OF BEARING SEAT = 6.5"

10. JOIST FABRICATOR SHALL SUBMIT SHOP DRAWINGS TO E.O.R. PRIOR TO FABRICATION OF STEEL JOISTS AND JOIST GIRDERS. CHANGES IN FABRICATION DETAILS FROM DESIGN DRAWINGS SHALL BE CLEARLY MARKED AND APPROVED BY E.O.R.

ROOF JOIST LOADING INFORMATION				
JOIST DESIGNATION	DEAD LOAD (PLF)	ROOF LIVE LOAD (PLF)	WIND TOP CHORD AXIAL LOAD (KIP)	DESIGN UPLIFT (PLF) 0.6D+0.6W
24LH06 @ 4'-0"	200	160	0	30

● JOIST FABRICATOR SHALL INCLUDE ROOF EQUIPMENT LOADS AS SHOWN ON DWG 4643E-S4.

STEEL JOIST CAMBER SCHEDULE	
JOIST DESIGNATION	SPECIFIED CAMBER (IN.)
24LH06	2.0"

METAL DECK

1. ROOF DECK SHALL BE 1½" 20 GA GRADE 50 TYPE VL AS MANUFACTURED BY VULCRAFT OR APPROVED EQUAL WITH MINIMUM SECTION PROPERTIES AS FOLLOWS:

    DECK NOMINAL DEPTH = 1½"
    BASE METAL THICKNESS = 0.0358"
    YIELD STRENGTH = 50 KSI
    Id+ = 0.197 IN^4/FT
    Id- = 0.217 IN^4/FT
    Se+ = 0.224 IN^3/FT
    Se- = 0.229 IN^3/FT

1.1 CONCRETE DECK = 4" TOTAL DEPTH (i.e. 2½" TOPPER)

2. THE UNDERSIDE OF ALL EXPOSED METAL ROOF DECK SHALL RECEIVE ONE SHOP COAT OF STANDARD WHITE PRIMER PAINT.

3. ROOF DECK AND FLOOR DECK ACTS AS A DIAPHRAGM IN THE LATERAL LOAD RESISTING SYSTEM.

4. ALL METAL DECK PANELS SHALL SPAN ACROSS A MINIMUM OF 4 JOIST, BEAM OR WALL SUPPORTS RESULTING IN MINIMUM 3 SPANS.

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Arlington, Tennessee 38002
(901) 290-5444

CMG ENGINEERS, INC.

457 St. Michael Street
Mobile, Alabama 36602
(251) 433-1611

PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE
GENERAL NOTES

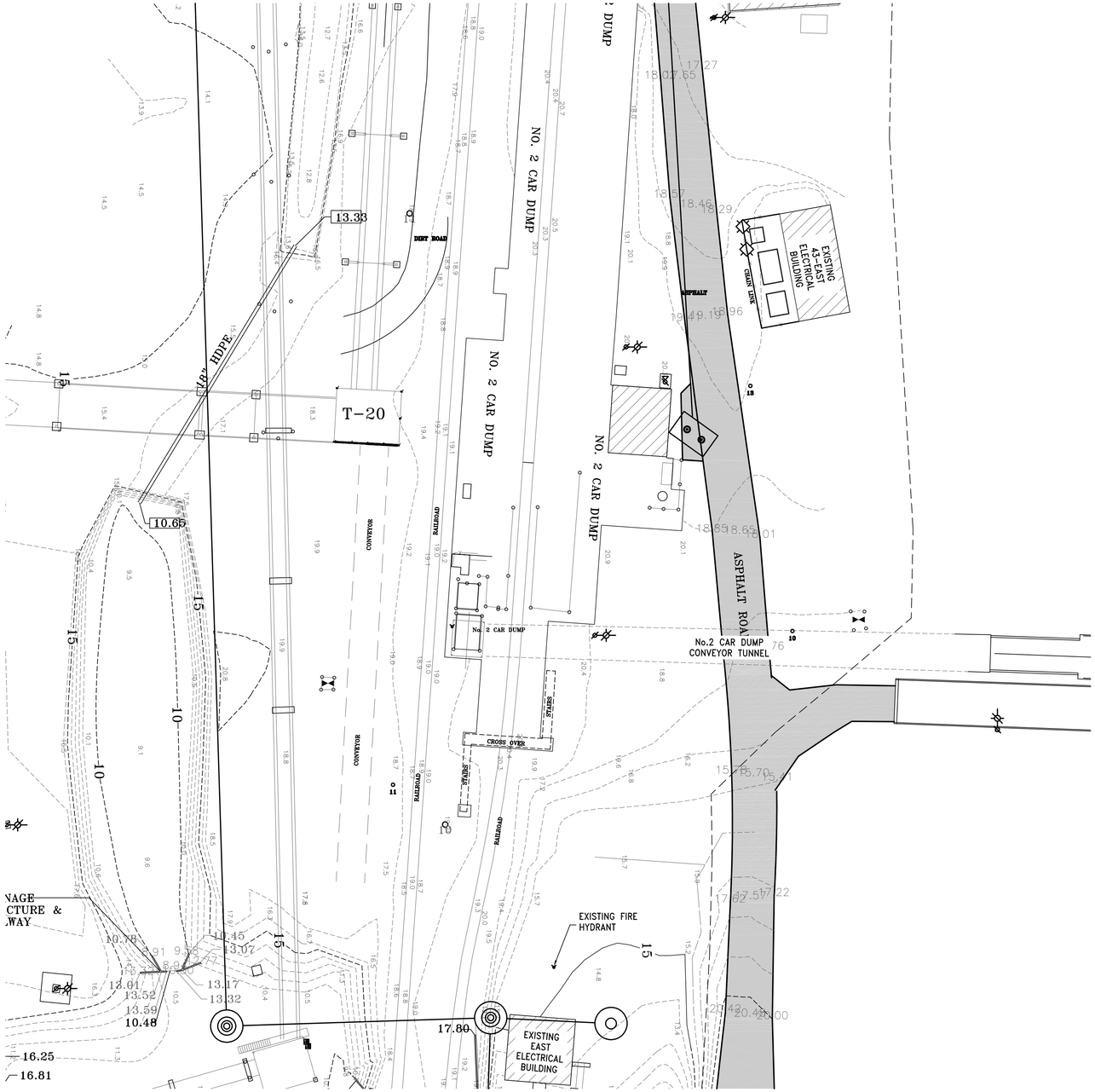
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DATE 06/08/26 22x34 REV. A

DRAWING NUMBER 4643E-G4

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EXISTING SITE PLAN
1"=30'-0"

LEGEND

- = EXISTING CONTOUR MINOR
- = EXISTING CONTOUR MAJOR
- 35.3 = EXIST. SPOT ELEVATION
- = EXISTING BUILDING
- = EXISTING ASPHALT

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MOBILE, ALABAMA

TITLE
NEW ELECTRICAL BUILDING
EXISTING SITE PLAN

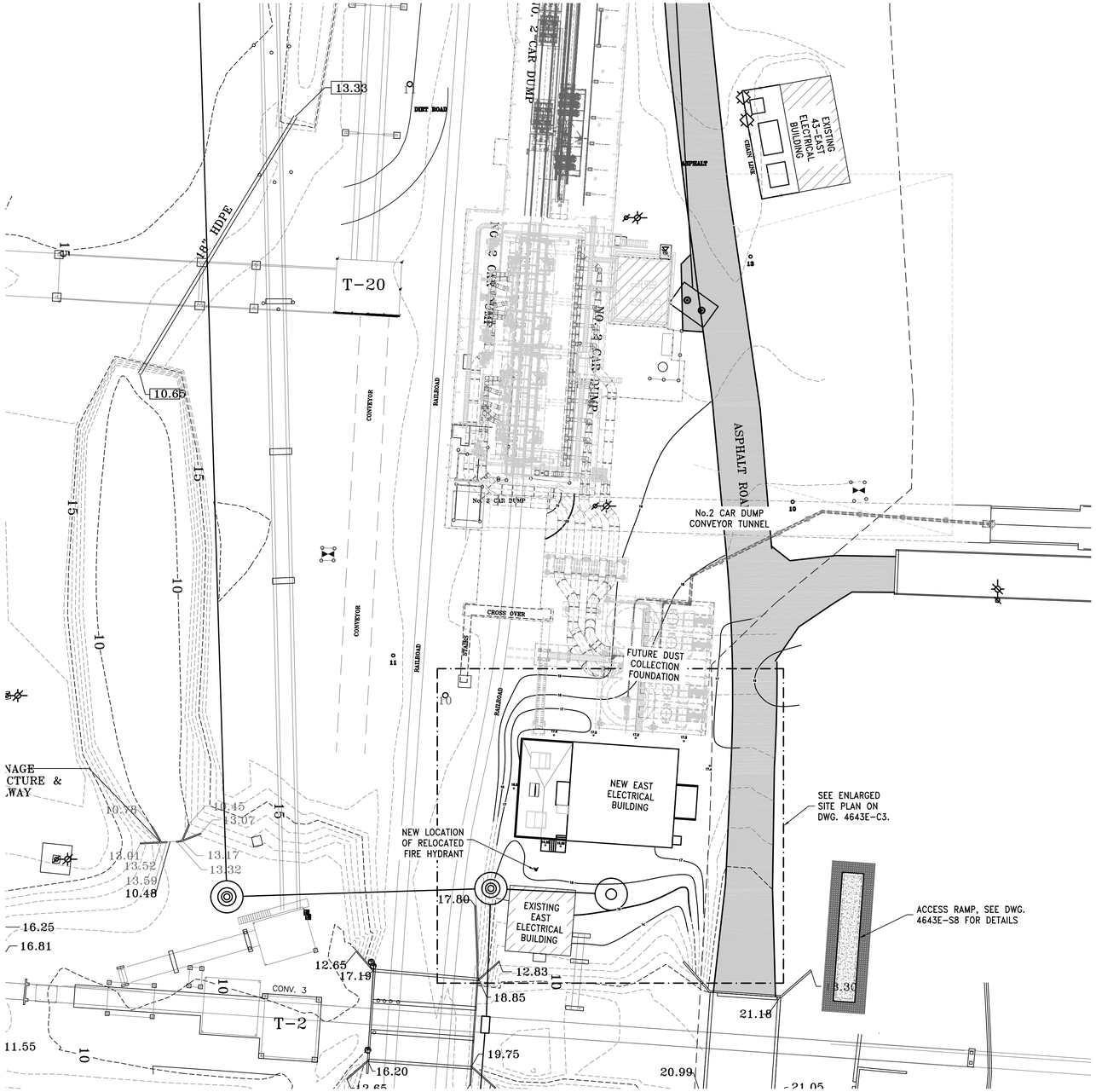
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DATE 06/02/25 22x34 REV. A

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NEW SITE PLAN
1"=30'-0"

LEGEND

- = EXISTING CONTOUR MINOR
- = EXISTING CONTOUR MAJOR
- 35.3 = EXIST. SPOT ELEVATION
- = EXISTING BUILDING
- = EXISTING ASPHALT

REV.	DESCRIPTION	DATE	BY	CHK'D
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PROJECT
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NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE
NEW ELECTRICAL BUILDING
NEW SITE PLAN

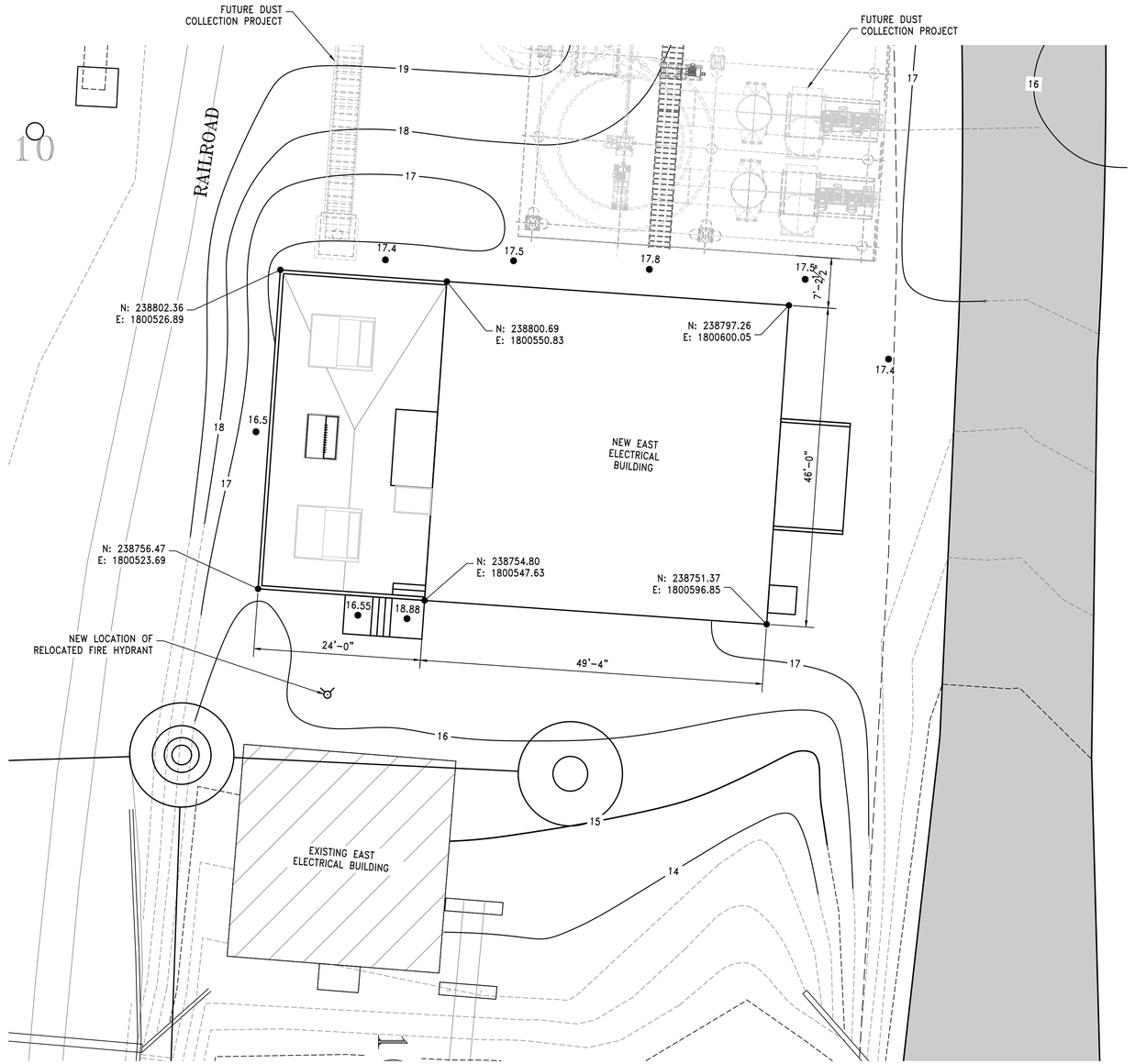
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DATE 06/02/25 22x34 REV. A

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ENLARGED SITE PLAN

SCALE: 1"=10'-0"

NOTES:

1. SEE DRAWING 4643-E1 FOR NEW FOUNDATION AND CONDUIT LAYOUT. (B)
2. PROPOSED GRADE ELEVATIONS DO NOT INCLUDE RIP-RAP.

LEGEND

- = EXISTING CONTOUR MINOR
- = EXISTING CONTOUR MAJOR
- 35.3 = EXIST. SPOT ELEVATION
- = EXISTING BUILDING
- = EXISTING ASPHALT

REV.	DESCRIPTION	DATE	BY	CHK'D
B	REVISED NOTE	10/07/26	TAS	GDEC
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PROJECT

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NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE

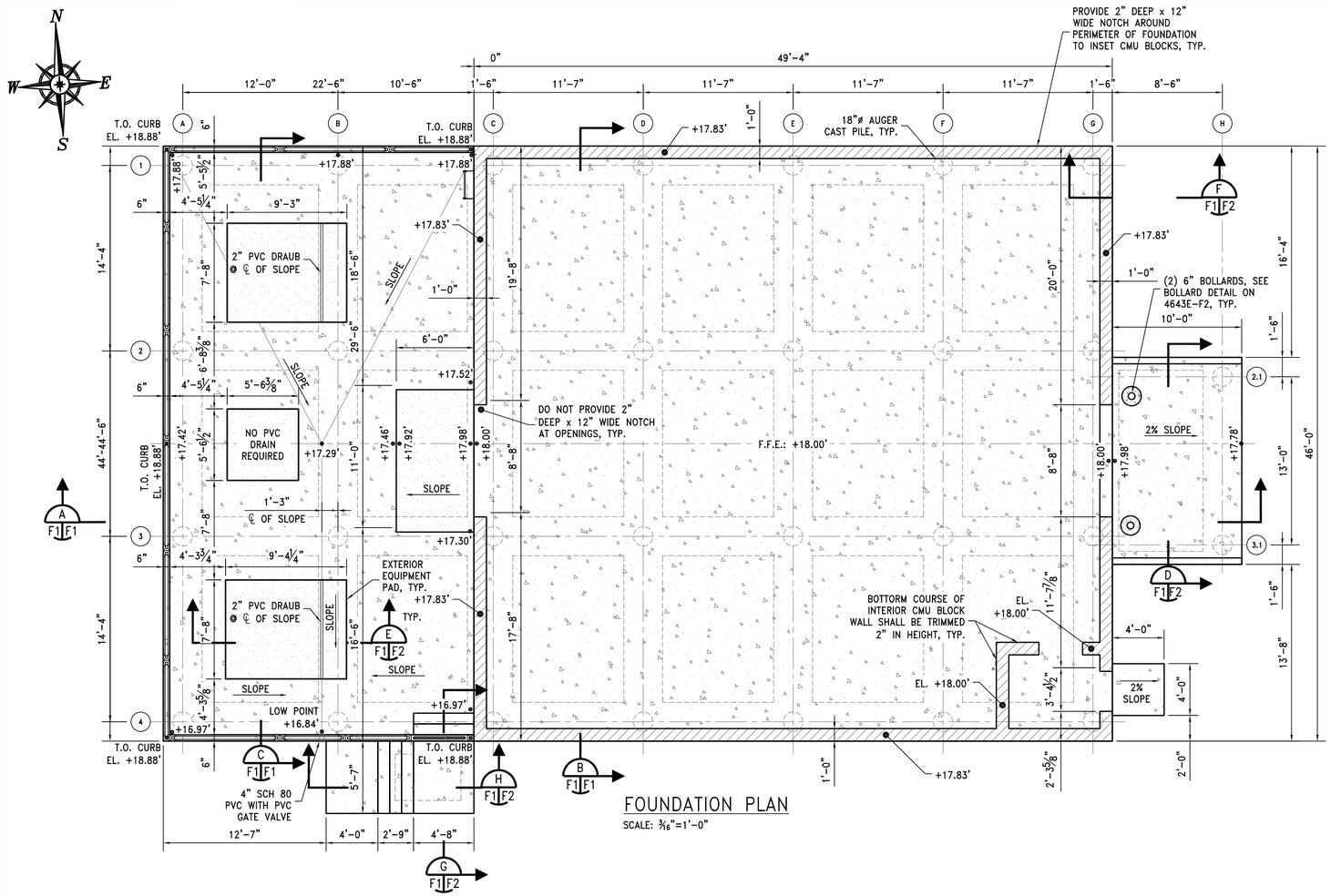
NEW ELECTRICAL BUILDING
ENLARGED SITE PLAN

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DATE 06/02/25 (22x34) REV. B

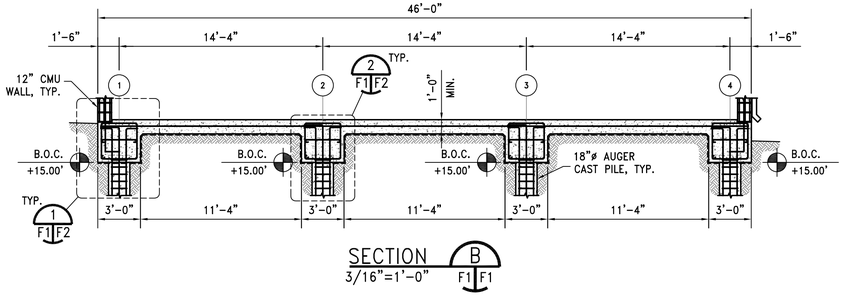
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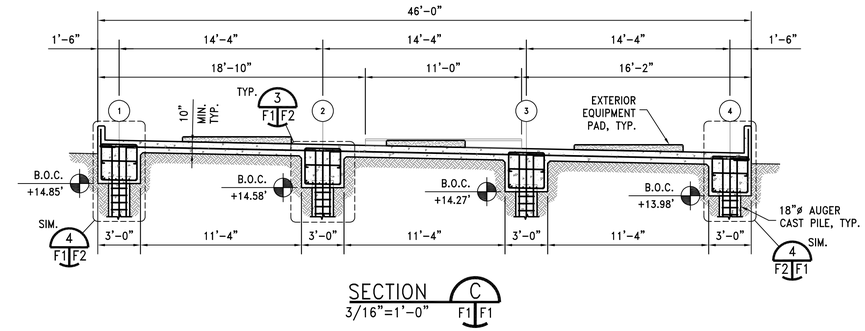
FOUNDATION PLAN

SCALE: 3/16"=1'-0"



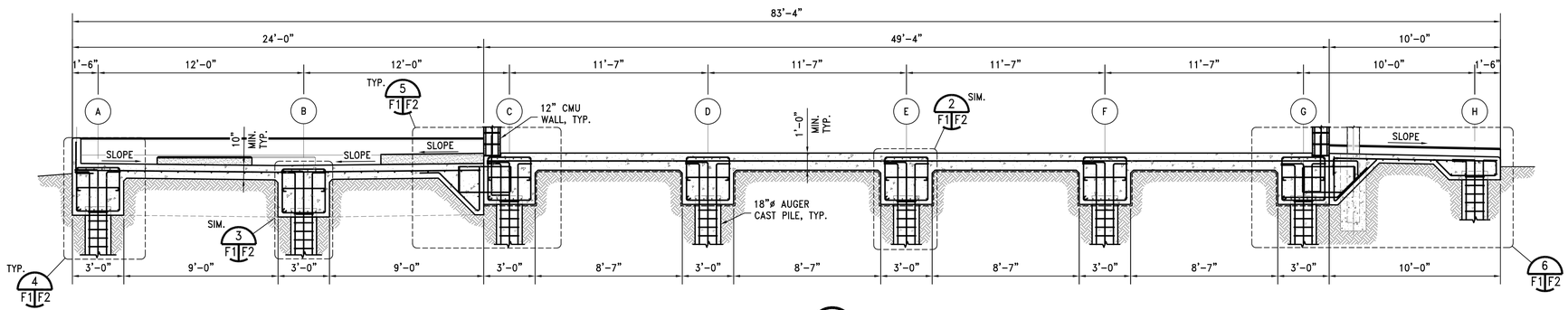
SECTION B

3/16"=1'-0"



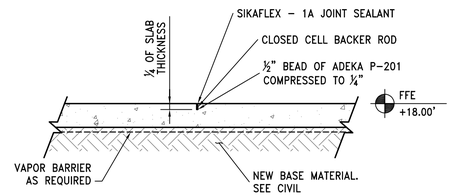
SECTION C

3/16"=1'-0"



SECTION A

1/4"=1'-0"



TYPICAL SAW CUT JOINT DETAIL

SCALE: ¾"=1'-0"

NOTE:
CONTRACTOR SHALL PROVIDE SAW CUT JOINTS @ MINIMUM 10'X10' GRID AND VERIFY LOCATIONS WITH EOR PRIOR TO SAWING, TYP.

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PROJECT

McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE

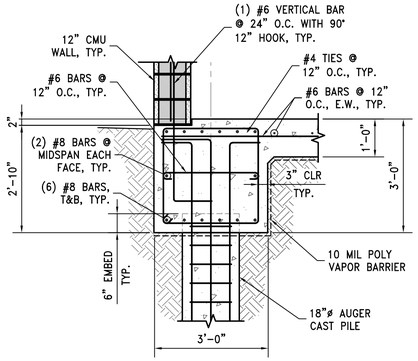
ELECTRICAL BUILDING
FOUNDATION PLAN

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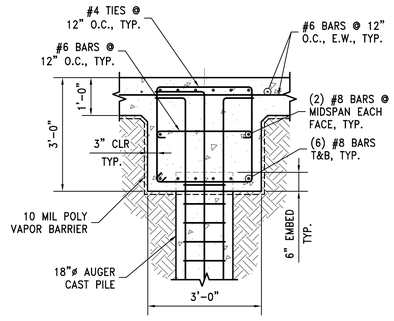
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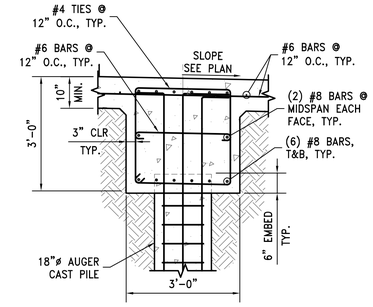
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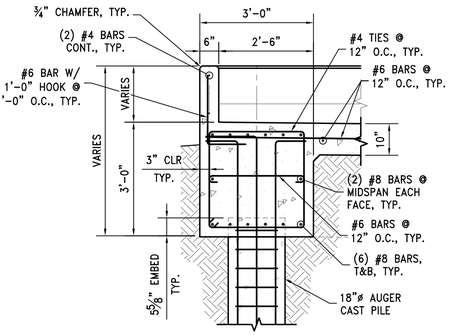
DETAIL 1 — 1/2"=1'-0" — F1 F2



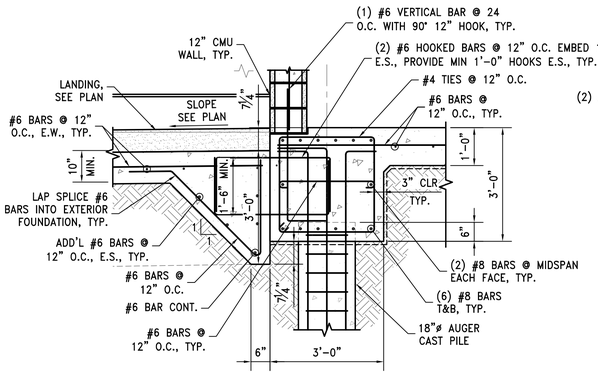
DETAIL 2 — 1/2"=1'-0" — F1 F2



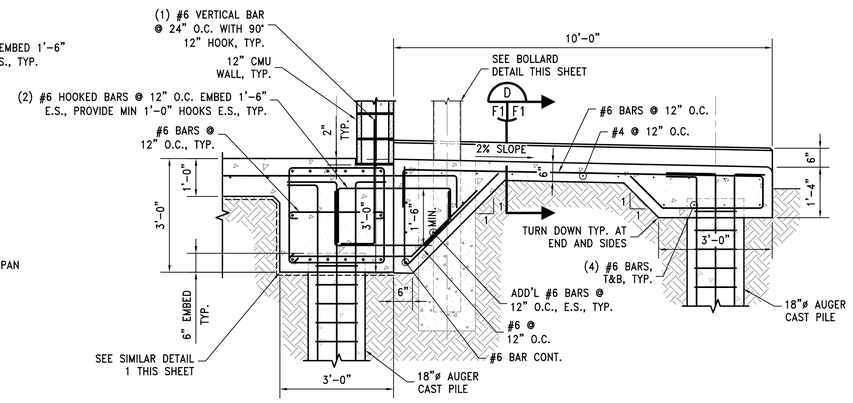
DETAIL 3 — 1/2"=1'-0" — F1 F2



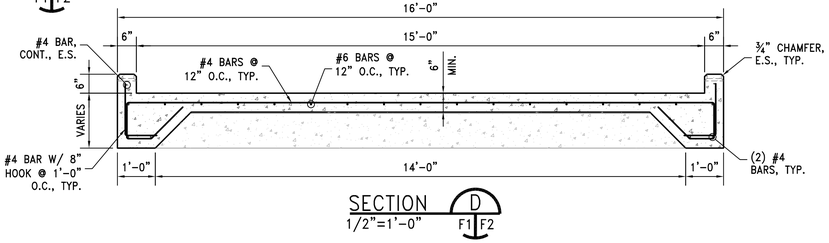
DETAIL 4 — 1/2"=1'-0" — F1 F2



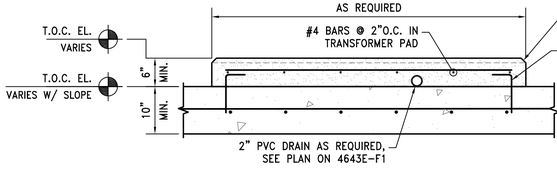
DETAIL 5 — 1/2"=1'-0" — F1 F2



DETAIL 6 — 1/2"=1'-0" — F1 F2

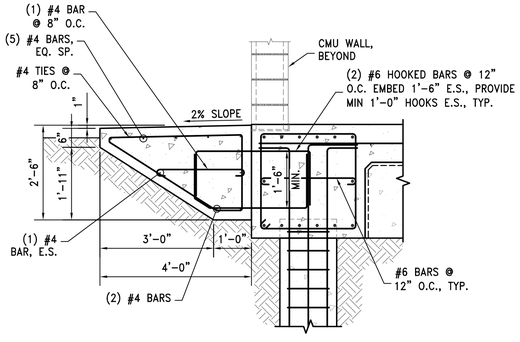


SECTION D — 1/2"=1'-0" — F1 F2

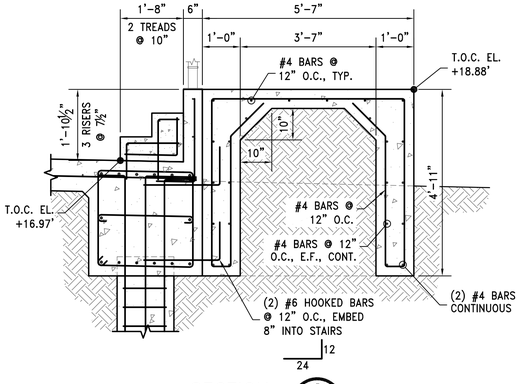


VERIFY FINAL DIMENSIONS WITH MANUFACTURERS CERTIFIED DRAWING PRIOR TO CONSTRUCTION. PAD TO BE 2" WIDER THAN EQUIPMENT BASE. EQUIPMENT NOT SHOWN FOR CLARITY

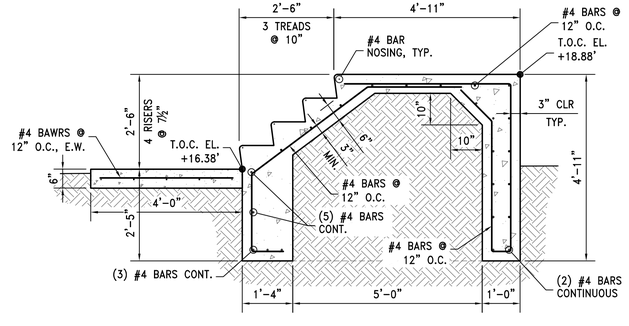
SECTION E — 1/2"=1'-0" — F1 F2



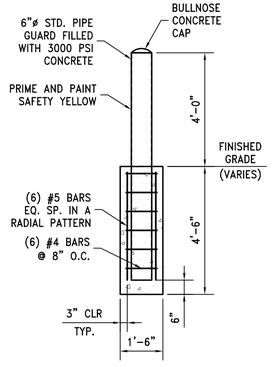
SECTION F — 1/2"=1'-0" — F1 F2



SECTION G — 1/2"=1'-0" — F1 F2



SECTION H — 1/2"=1'-0" — F1 F2



BOLLARD DETAIL — ⅜"=1'-0"

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PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

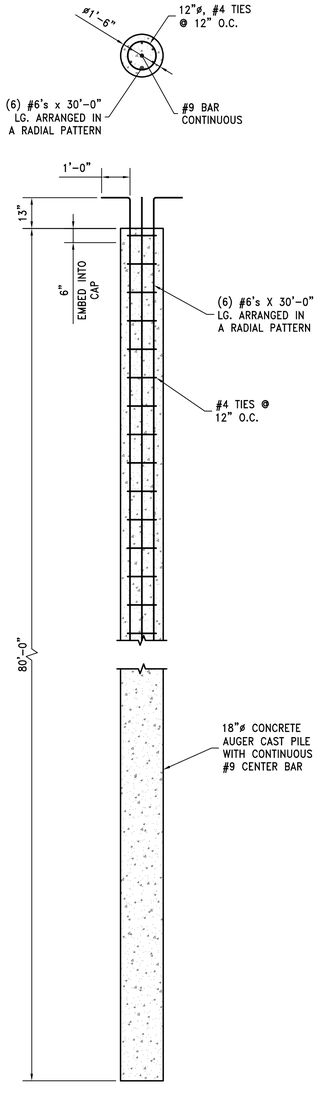
TITLE
ELECTRICAL BUILDING
FOUNDATION DETAILS AND SECTIONS

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18"ø AUGER CAST PILE DETAIL
SCALE: N.T.S.

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NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

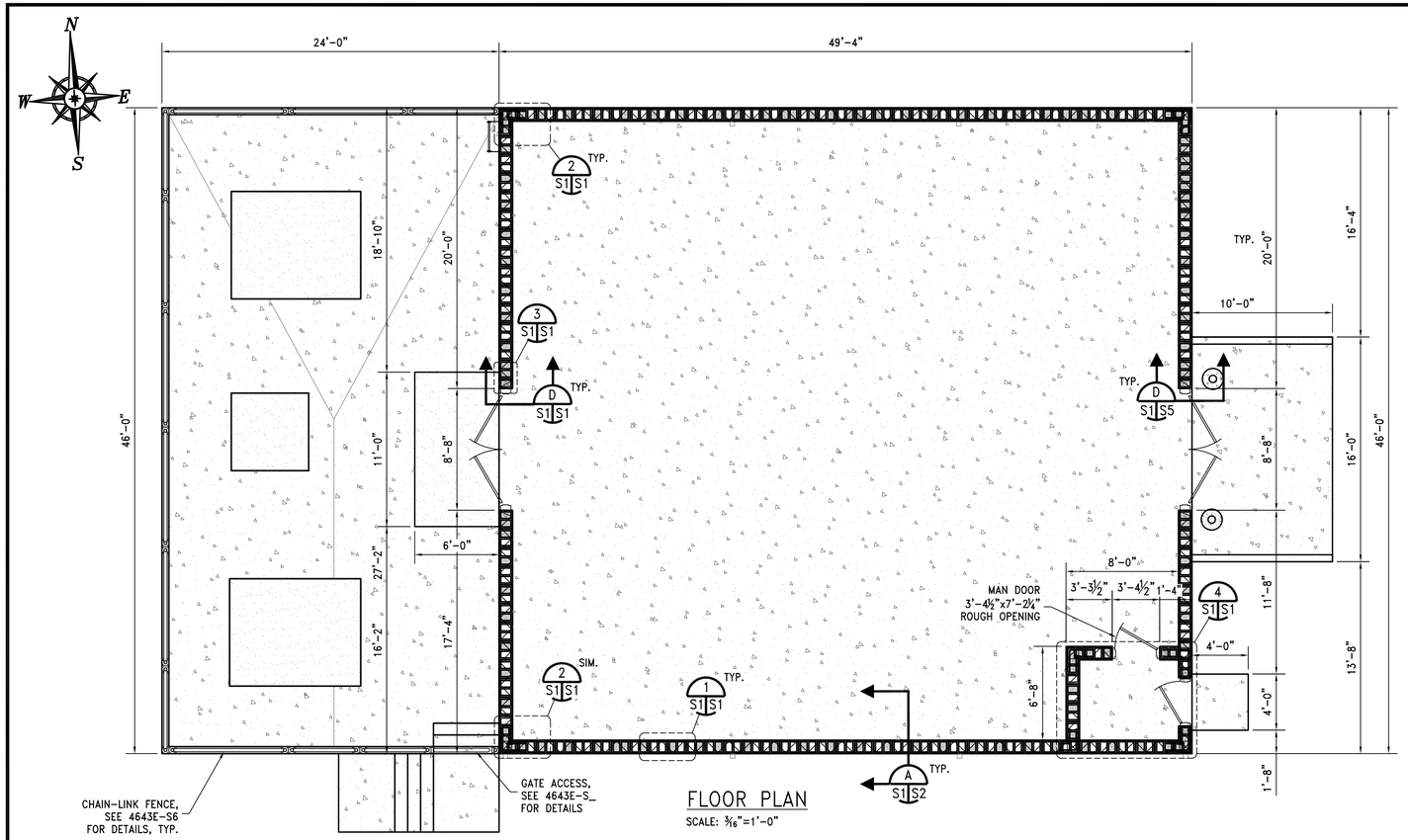
TITLE
ELECTRICAL BUILDING
AUGER CAST PILE DETAILS

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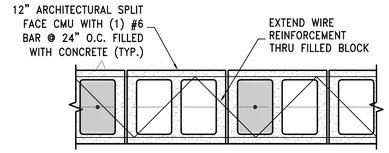
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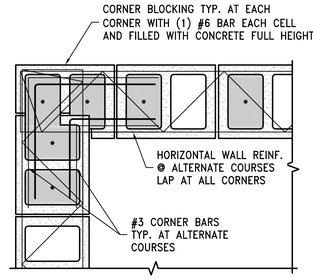
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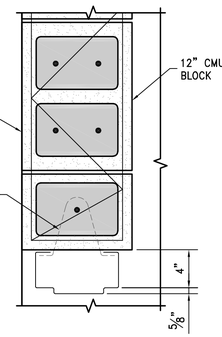
FLOOR PLAN

SCALE: 3/16"=1'-0"



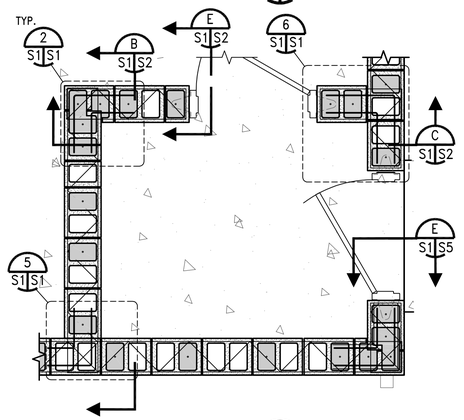


DETAIL 1 (S1 S1) 1"=1'-0"

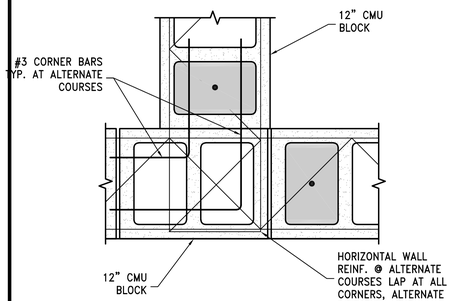


DETAIL 3 (S1 S1) 1"=1'-0"

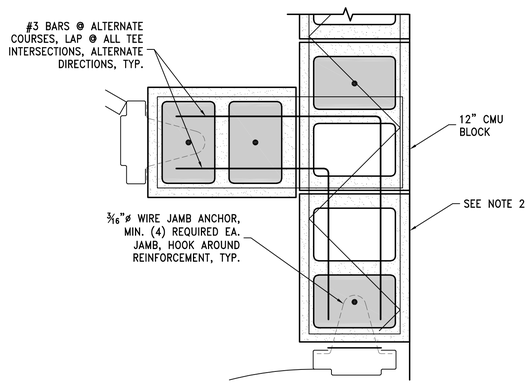
DETAIL 2 (S1 S1) 1"=1'-0"



DETAIL 4 (S1 S1) 1/2"=1'-0"



DETAIL 5 (S1 S1) 1"=1'-0"



DETAIL 6 (S1 S1) 1"=1'-0"

NOTES:

1. FOR 8'-4" WIDE ROUGH OPENINGS, PROVIDE (1) FULLY GROUTED CELL @ JAMB WITH (1) #6 BAR IN CENTER OF CELL AND (2) ADJACENT FULLY GROUTED CELLS WITH (2) #6 BARS EACH CELL, EACH SIDE.
2. FOR 3'-4½" WIDE ROUGH OPENINGS, PROVIDE (1) FULLY GROUTED CELL @ JAMB WITH (1) #6 BAR IN CENTER OF CELL AND (1) ADJACENT FULLY GROUTED CELL WITH (2) #6 BARS, EACH SIDE.
3. PROVIDE BOND BEAMS AROUND PERIMETER OF BUILDING AND VESTIBULE @ MAX. 4'-0" O.C. WITH (1) #6 BAR, TYP.

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McDUFFIE COAL TERMINAL
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TITLE

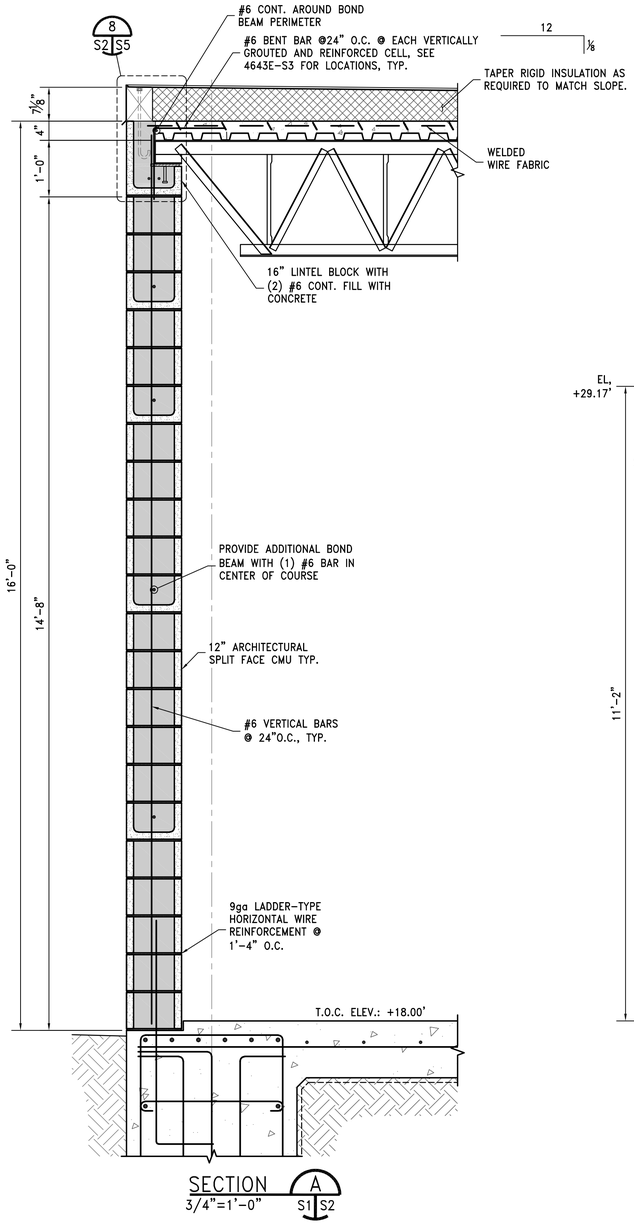
ELECTRICAL BUILDING
FLOOR PLAN

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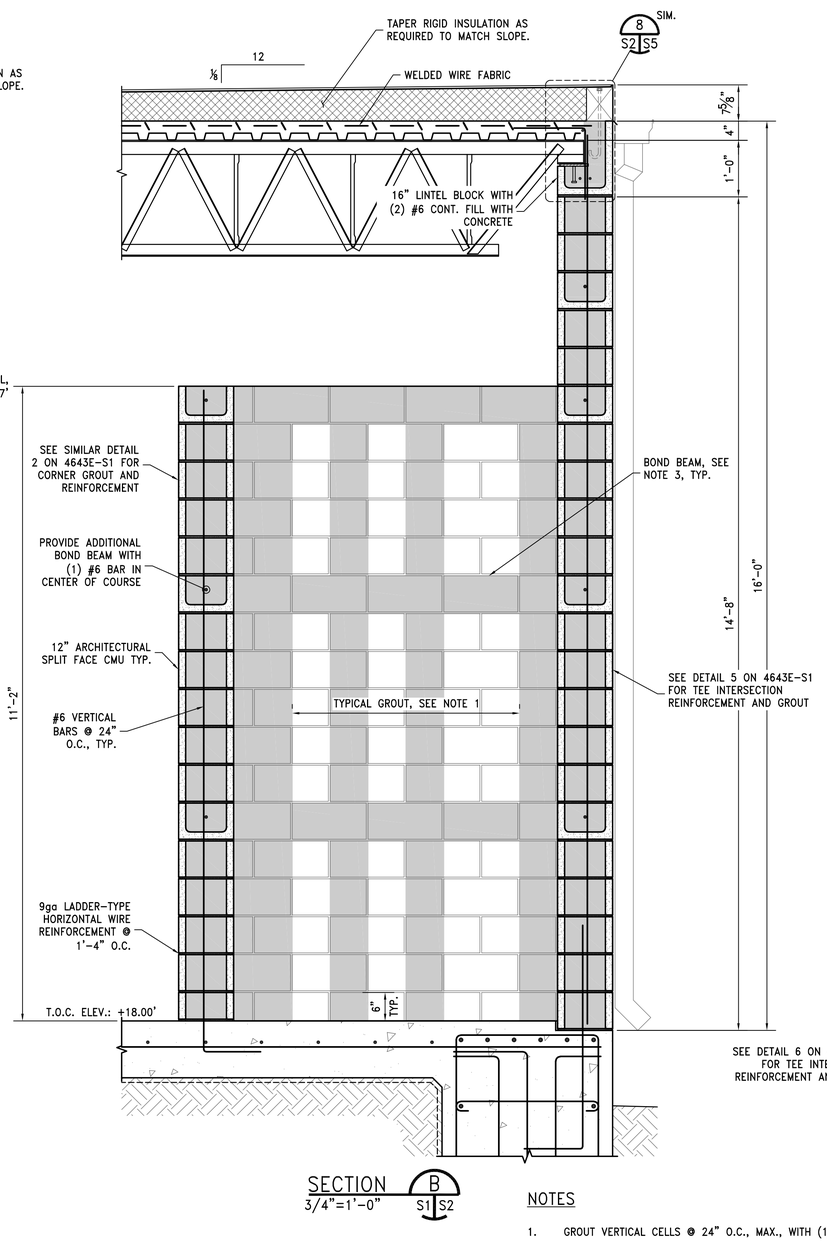
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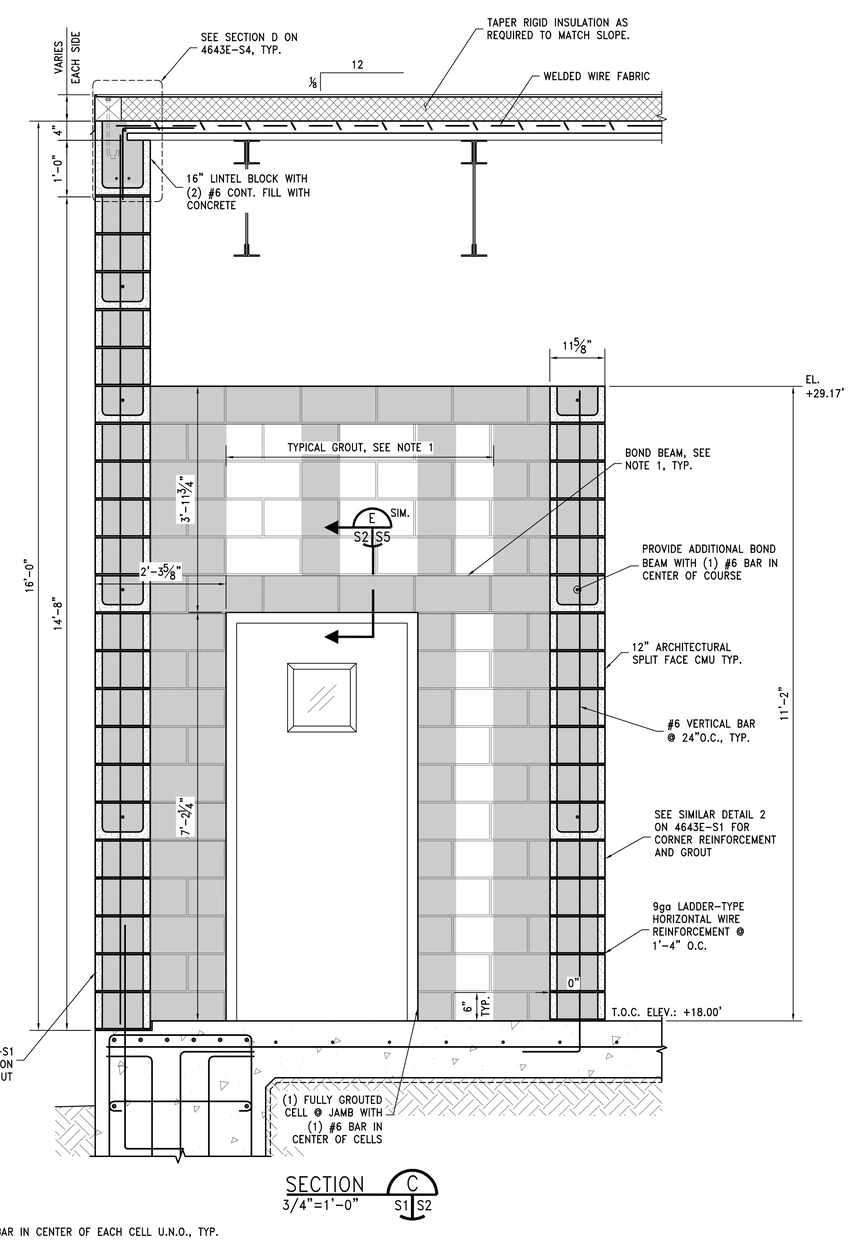
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SECTION A
3/4"=1'-0" S1 S2



SECTION B
3/4"=1'-0" S1 S2



SECTION C
3/4"=1'-0" S1 S2

NOTES

1. GROUT VERTICAL CELLS @ 24" O.C., MAX., WITH (1) #6 BAR IN CENTER OF EACH CELL U.N.O., TYP.
2. CONTRACTOR SHALL LOCATE ALL GROUTED AND REINFORCED CELLS, PILASTERS, LINTELS AND BOND BEAMS AS SHOWN ON THE GROUTED CELL LAYOUT ELEVATIONS. CONTRACTOR SHALL NOTIFY, E.O.R. IF A DISCREPANCY ARISES, TYP.
3. 8" TALL BOND BEAMS SHALL BE LOCATED @ THE 6TH, 12TH, 16TH, 17TH AND 19TH COURSE FROM THE BOTTOM OF WALL ON THE EXTERIOR AND INTERIOR WALLS AND SHALL HAVE (1) #6 BAR IN CENTER OF EACH COURSE. A 1'-4" TALL BOND BEAM SHALL BE PROVIDED @ TOP OF WALL AND SHALL HAVE (2) #6 BARS, TYP.
4. SEE CMG DRAWING 4643E-G2 FOR ADDITIONAL CONCRETE MASONRY NOTES.

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PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

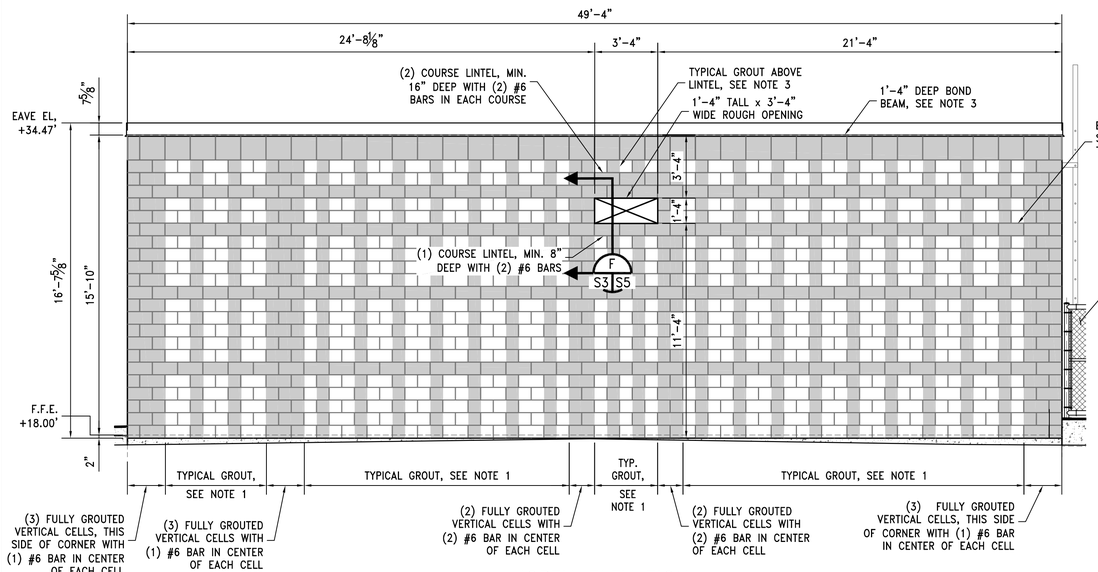
TITLE
ELECTRICAL BUILDING
GROUTED CELL LAYOUT

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DATE 05/27/26 22x34 REV. A

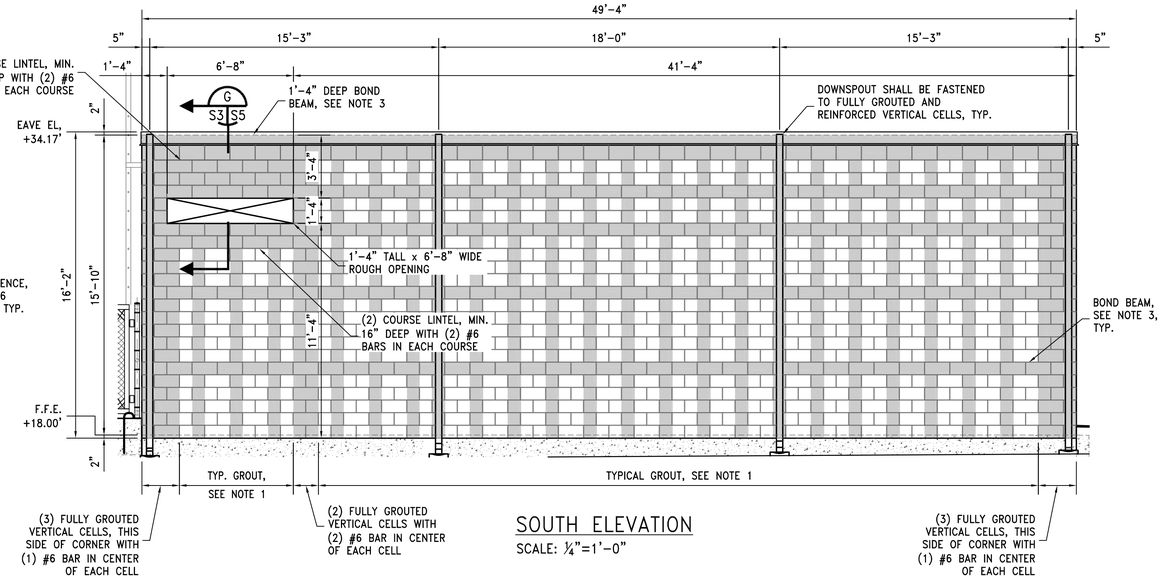
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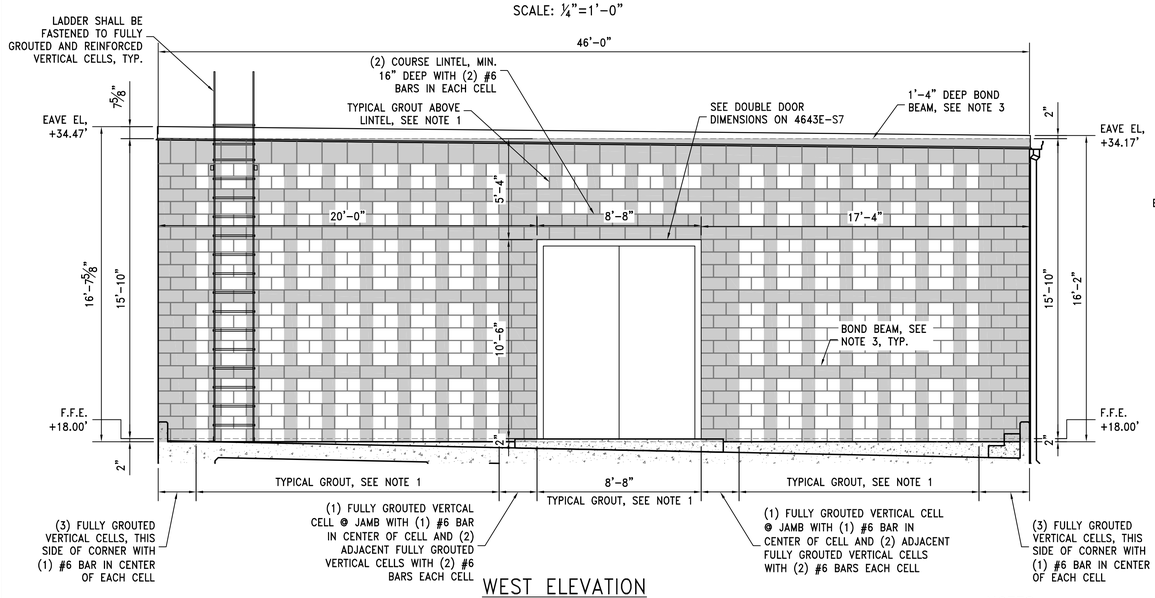
NORTH ELEVATION

SCALE: ¼"=1'-0"



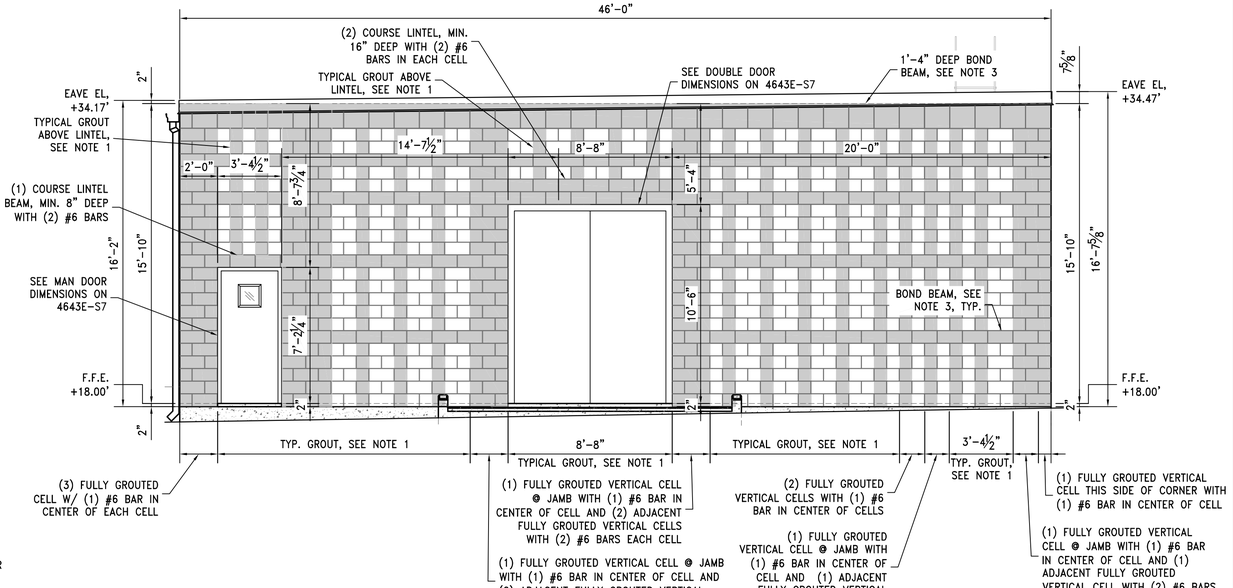
SOUTH ELEVATION

SCALE: ¼"=1'-0"



WEST ELEVATION

SCALE: ¼"=1'-0"



EAST ELEVATION

SCALE: ¼"=1'-0"

LEGEND

GROUTED AND REINFORCED = CELLS, PILASTERS, LINTELS OR BOND BEAMS, SEE NOTE 2

NOTES

1. GROUT VERTICAL CELLS @ 24" O.C., MAX., WITH (1) #6 BAR IN CENTER OF EACH CELL U.N.O., TYP.
2. CONTRACTOR SHALL LOCATE ALL GROUTED AND REINFORCED CELLS, PILASTERS, LINTELS AND BOND BEAMS AS SHOWN ON THE GROUTED CELL LAYOUT ELEVATIONS THIS SHEET. CONTRACTOR SHALL NOTIFY, E.O.R. IF A DISCREPANCY ARISES, TYP.
3. 8" TALL BOND BEAMS SHALL BE LOCATED @ THE 6TH, 12TH, 17TH AND 20TH COURSE FROM THE BOTTOM OF WALL ON THE EXTERIOR AND INTERIOR WALLS AND SHALL HAVE (1) #6 BAR IN CENTER OF EACH COURSE. A 1'-4" TALL BOND BEAM SHALL BE PROVIDED @ TOP OF WALL AND SHALL HAVE (2) #6 BARS, TYP.
4. SEE CMG DRAWING 4643E-G2 FOR ADDITIONAL CONCRETE MASONRY NOTES.

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PROJECT

McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE

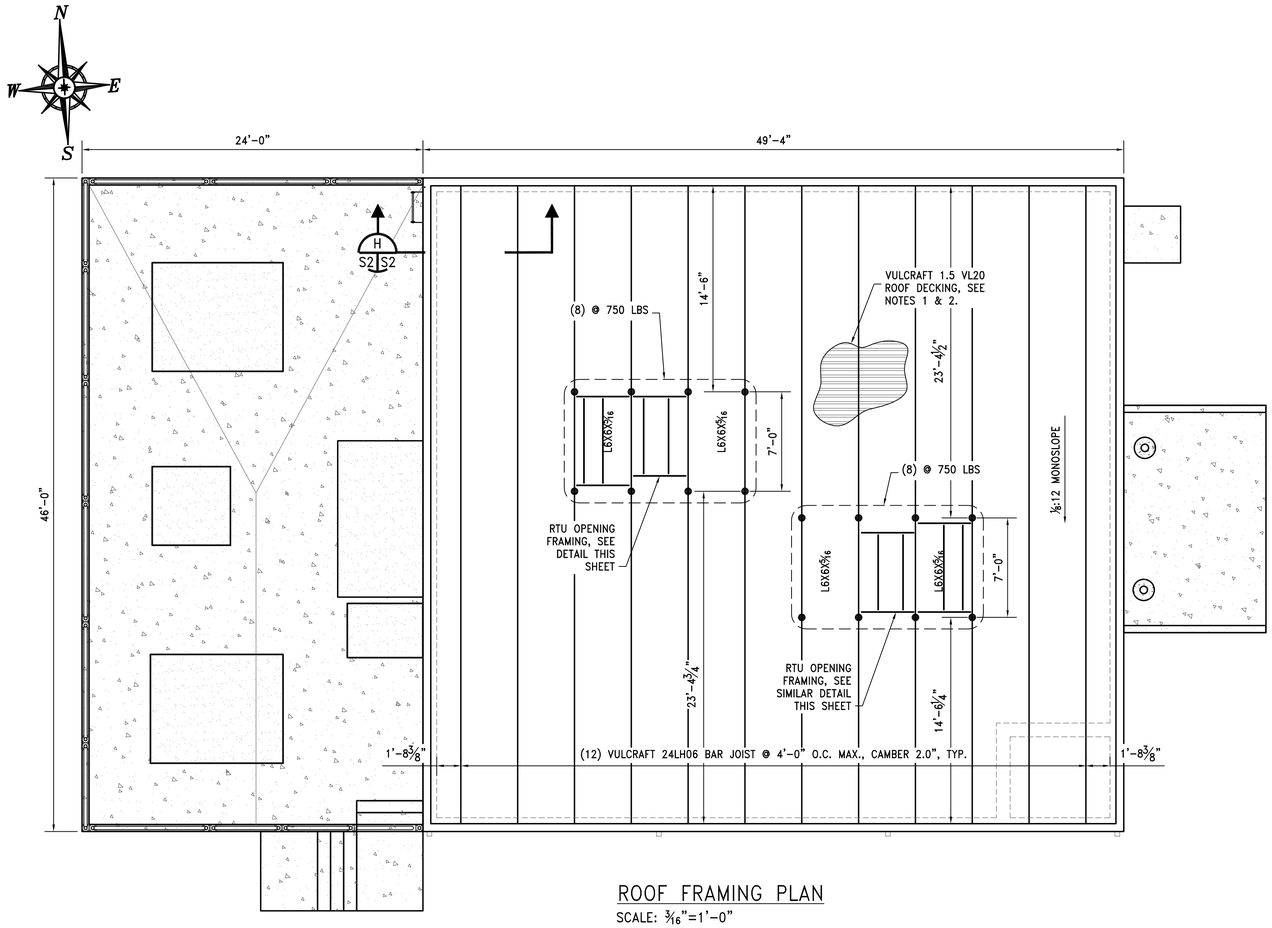
ELECTRICAL BUILDING
GROUTED CELL LAYOUT

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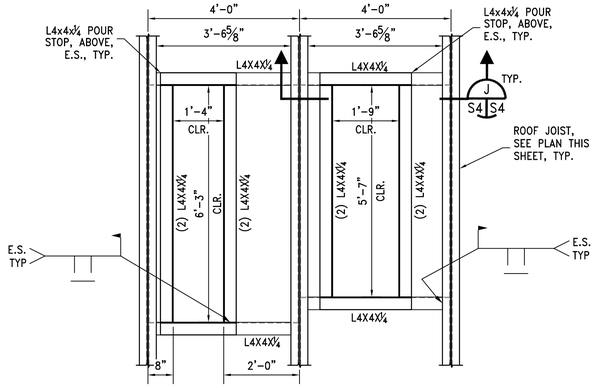
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ROOF FRAMING PLAN

SCALE: 3/16"=1'-0"



TYPICAL RTU OPENING FRAMING

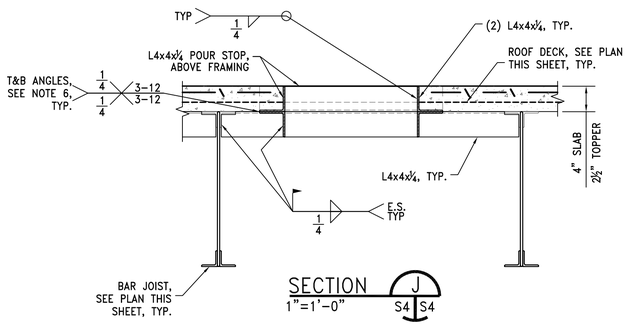
SCALE: ½"=1'-0"

*SEE NOTE 6

NOTES:

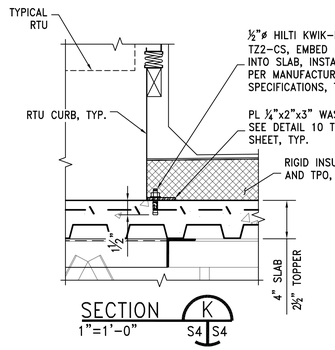
1. ROOF DECK SHALL HAVE 4" CONCRETE DECK (2½" TOPPER) WITH W4xW4 4x4 WWF, TYP.
2. ROOF DECK SHALL BE FASTENED TO STEEL JOIST WITH HILTI X-HSN 24, OR APPROVED EQUAL, ON 36/5 PATTERN, FIELD AND EDGE. SIDELAPS SHALL BE FASTENED WITH HILTI S-SLC01, OR APPROVED EQUAL, @ 18" O.C., TYP.
3. SEE 4643E-G4 FOR ADDITIONAL STEEL JOIST NOTES.
4. 20 YEAR FULL SYSTEM WARRENTY FOR 72 mph WIND SPEED.
5. ADDLOAD NOTES AND MECHANICAL OPENINGS ARE DESIGNED FOR 15 TON TRANE TSK180A4S00 ROOFTOP UNIT W/6-WAY DROP DIFFUSER RSS MODEL 01-578-20, SEE DRAWING 4643E-M1. CONTRACTOR SHALL VERIFY WITH EOR NEW ADDLOAD LOCATIONS AND LOADS PRIOR TO ORDERING AND FABRICATION OF STEEL JOISTS AND VERIFY SIZE OF MECHANICAL OPENINGS IF ALTERNATE MODELS ARE PROPOSED BY CONTRACTOR AND APPROVED BY EOR POST BID ACCEPTANCE.

   ● = ADDLOAD
6. CONTRACTOR SHALL COORDINATE WITH RTU INSTALLER TO ENSURE PROPER POSITIONING AND SIZE OF SUPPLY AIR AND RETURN AIR OPENINGS AND FRAMING. POUR STOP ANGLES MAY BE FIELD WELDED OR SHOP WELDED TO FRAMING ANGLES AT DISCRETION OF CONTRACTOR, TYP.



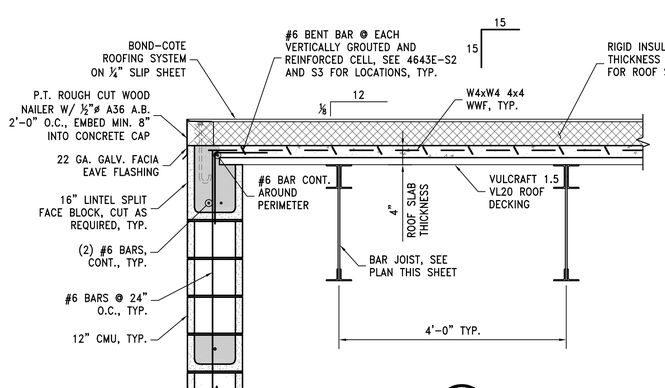
SECTION J

1"=1'-0" S4 S4



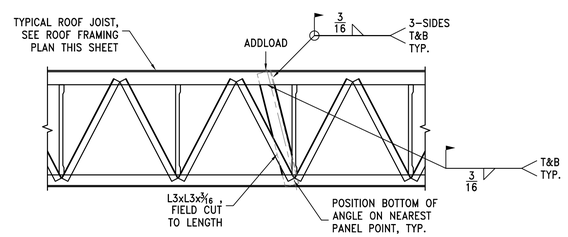
SECTION K

1"=1'-0" S4 S4



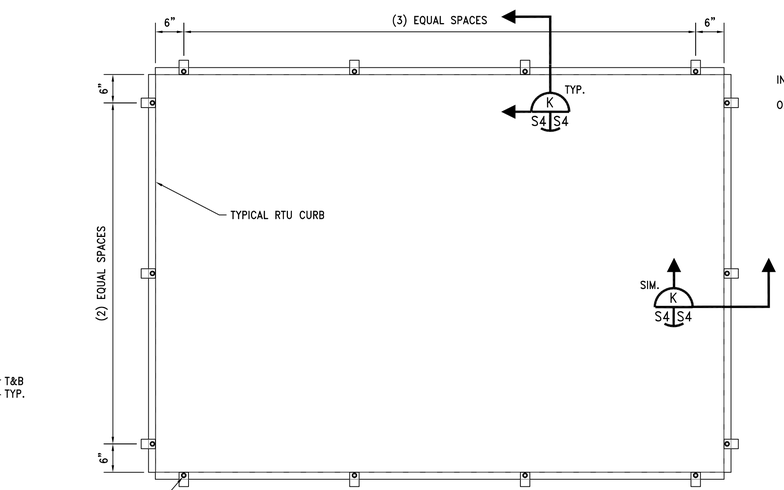
SECTION H

3/4""=1'-0" S2 S2



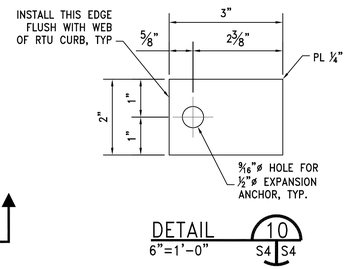
TYPICAL POINT LOAD (ADDLOAD) BRACING BETWEEN PANEL POINTS

SCALE: ¾"=1'-0"



RTU ANCHORAGE PLAN

SCALE: ¾"=1'-0"



DETAIL 10

6"=1'-0" S4 S4

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NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE

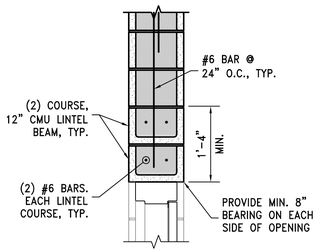
ELECTRICAL BUILDING
ROOF FRAMING PLAN

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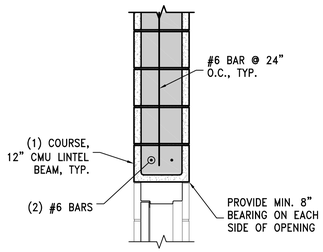
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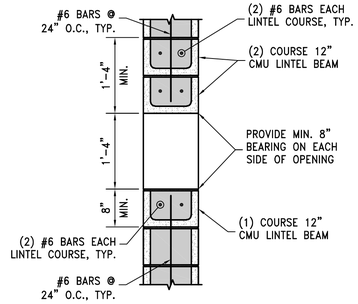
LINTEL FOR 8'-8" WIDE OPENING

SECTION D
3/4"=1'-0" S1 S5

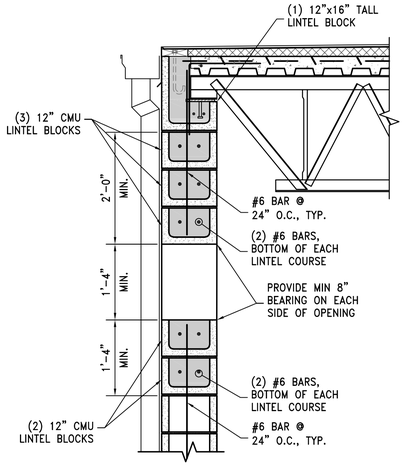


LINTEL FOR 3'-4½" WIDE OPENING

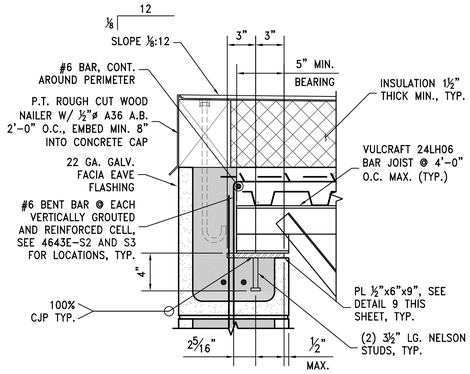
SECTION E
3/4"=1'-0" S1,S2 S5



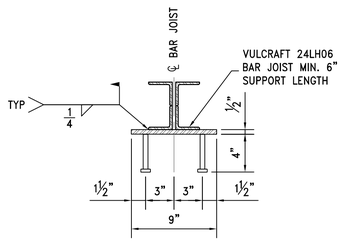
SECTION F
3/4"=1'-0" S3 S5



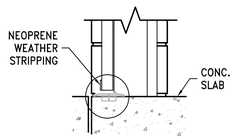
SECTION G
3/4"=1'-0" S3 S5



DETAIL 8
1 1/2"=1'-0" S2 S5

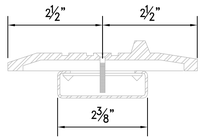


DETAIL 9
1 1/2"=1'-0" S5 S5



SILL
N.T.S.

DOOR 1



THRESHOLD
N.T.S.

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NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

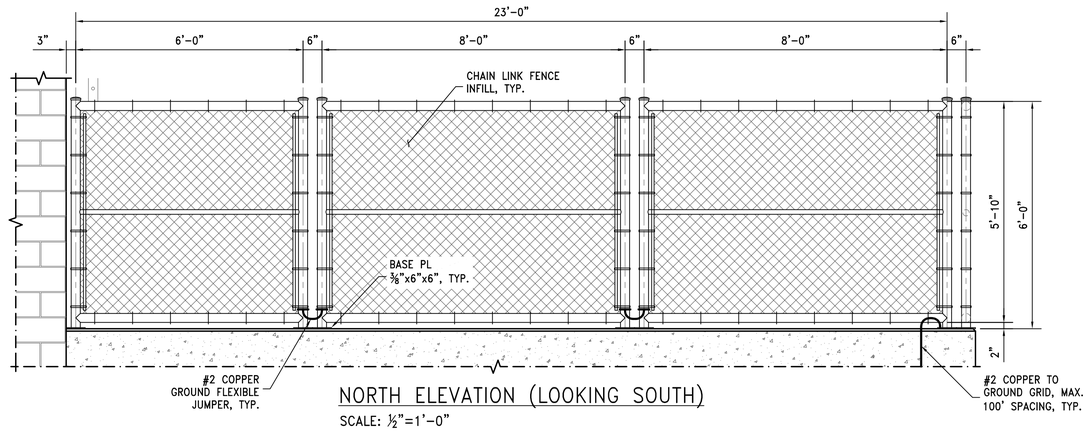
TITLE
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DETAILS AND SECTIONS

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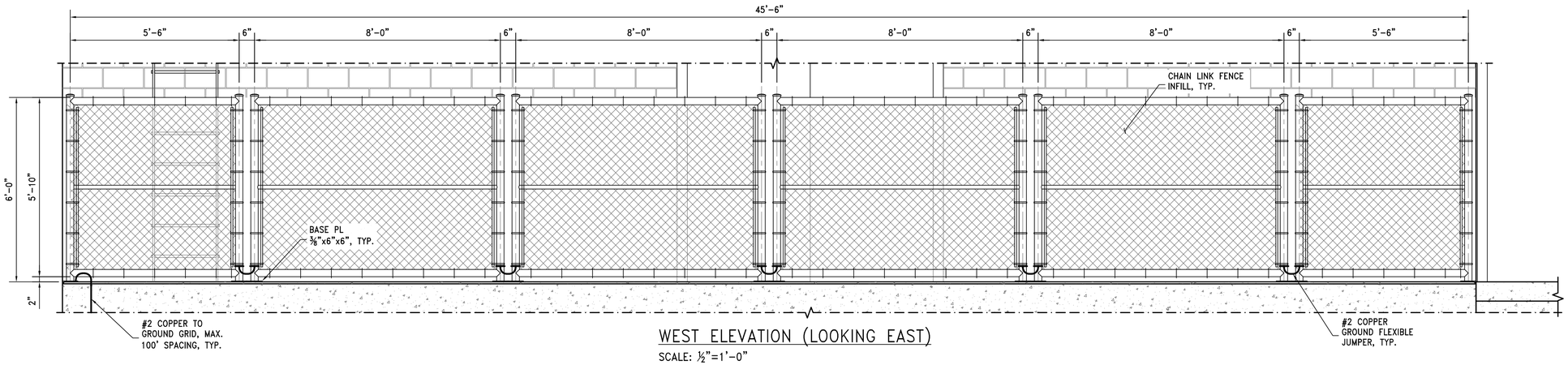
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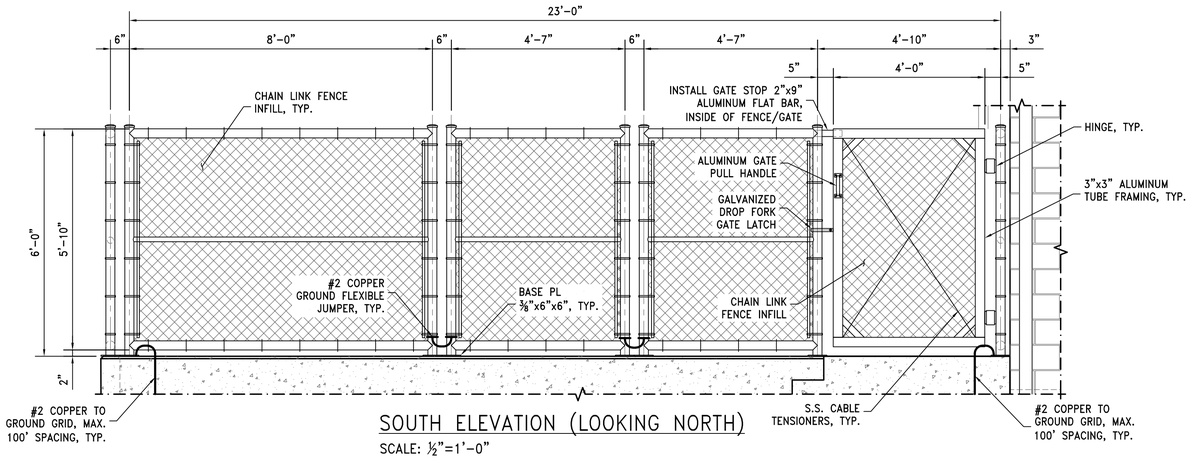
NORTH ELEVATION (LOOKING SOUTH)

SCALE: ½"=1'-0"



WEST ELEVATION (LOOKING EAST)

SCALE: ½"=1'-0"



SOUTH ELEVATION (LOOKING NORTH)

SCALE: ½"=1'-0"

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NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE

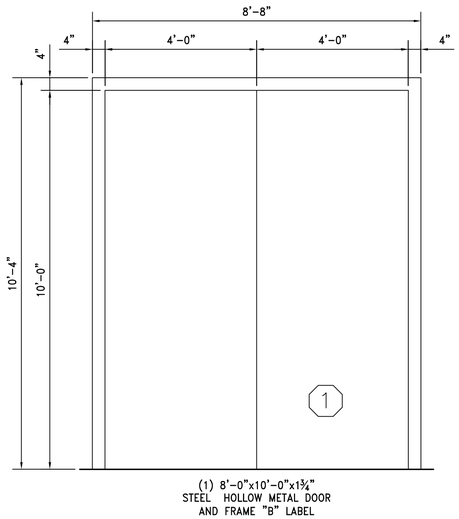
ELECTRICAL BUILDING
FENCE & GATE ELEVATIONS

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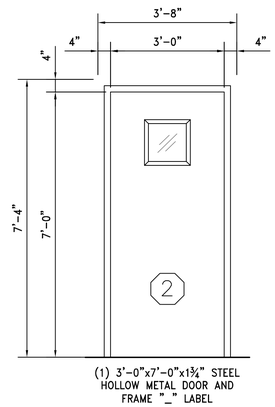
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TYPICAL DOUBLE DOOR



TYPICAL MAN DOOR

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NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE

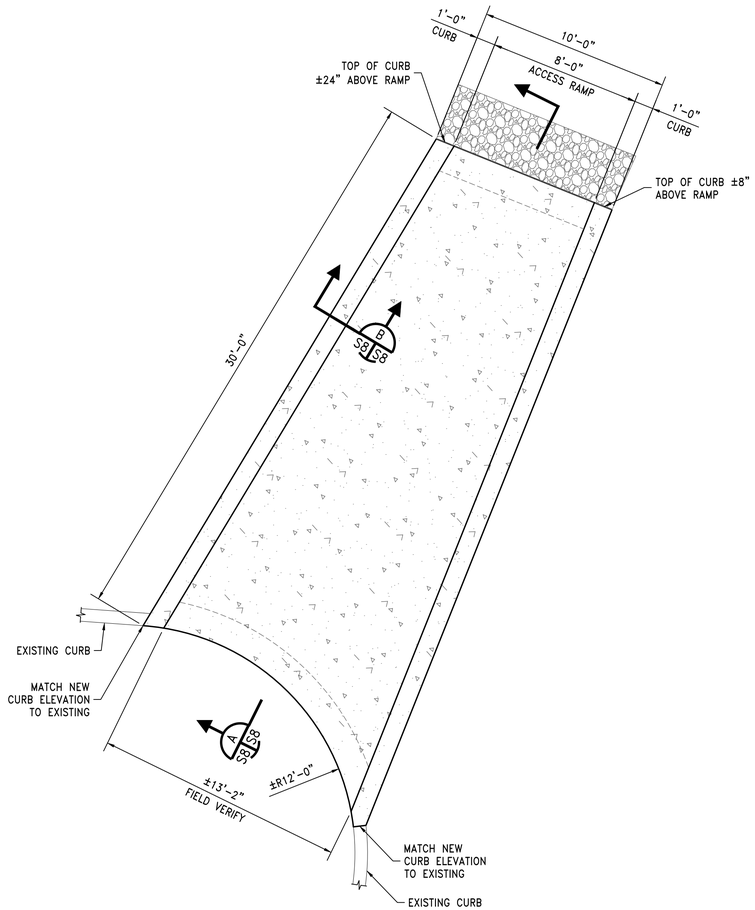
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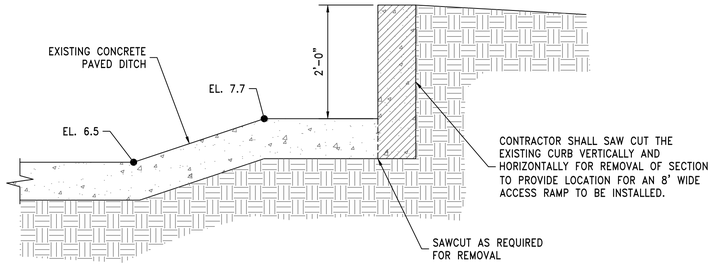
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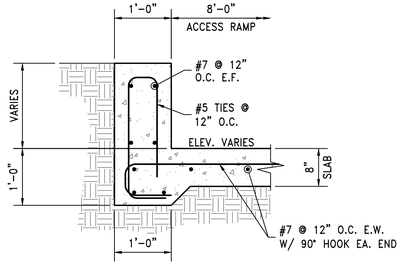


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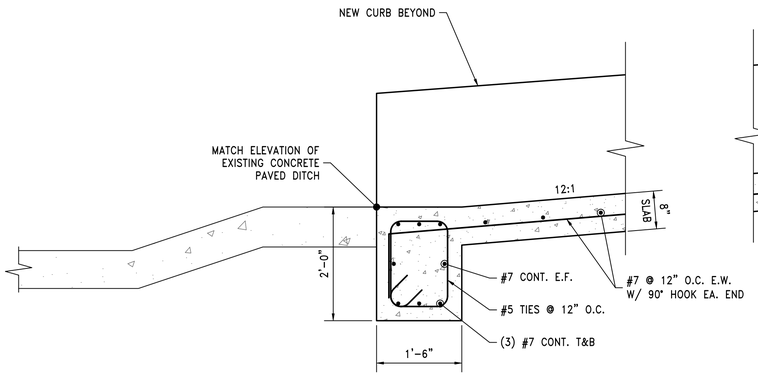
ACCESS RAMP PLAN
SCALE: 1/4" = 1'-0"



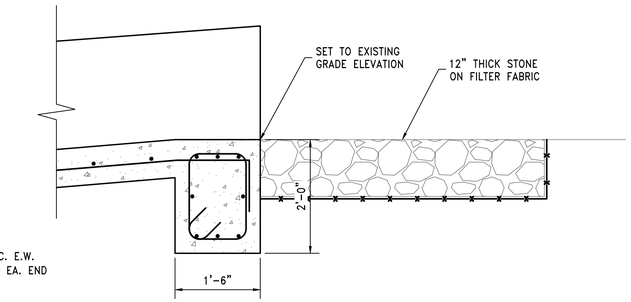
EXISTING SECTION A
3/4"=1'-0"
S8 S8



EXISTING SECTION B
3/4"=1'-0"
S8 S8



NEW SECTION A
3/4"=1'-0"
S8 S8



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PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

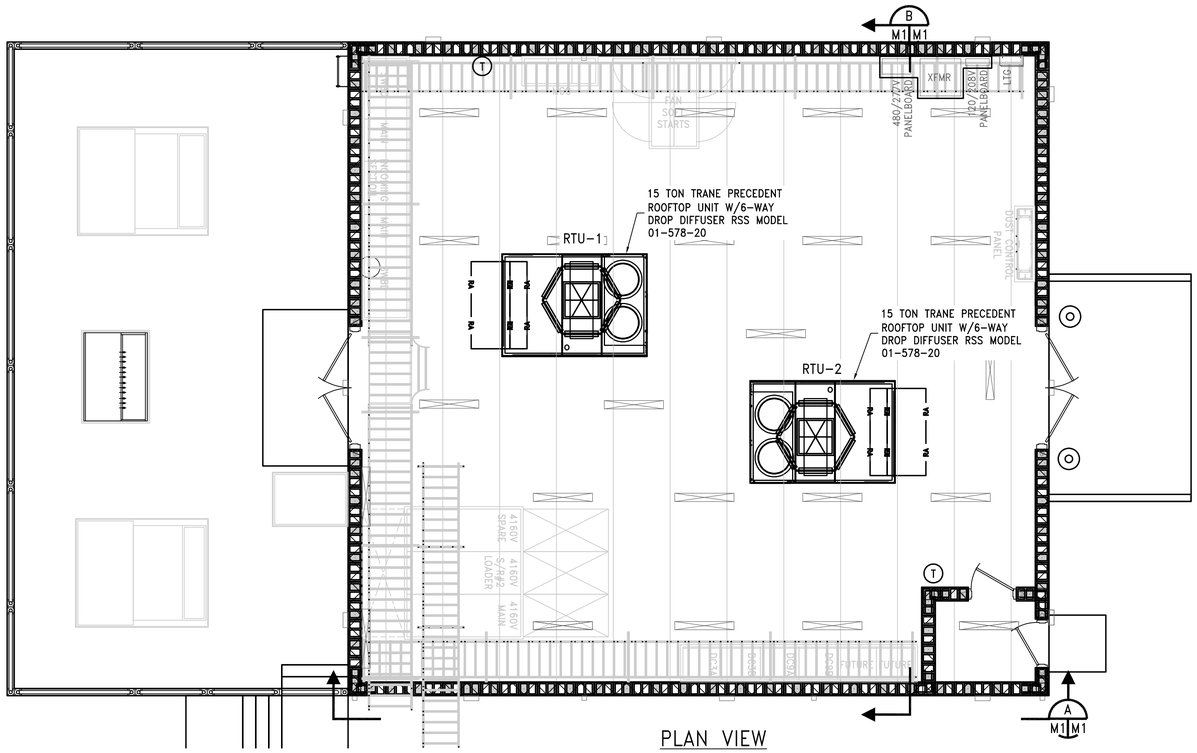
TITLE
ACCESS RAMP
PLAN AND SECTIONS

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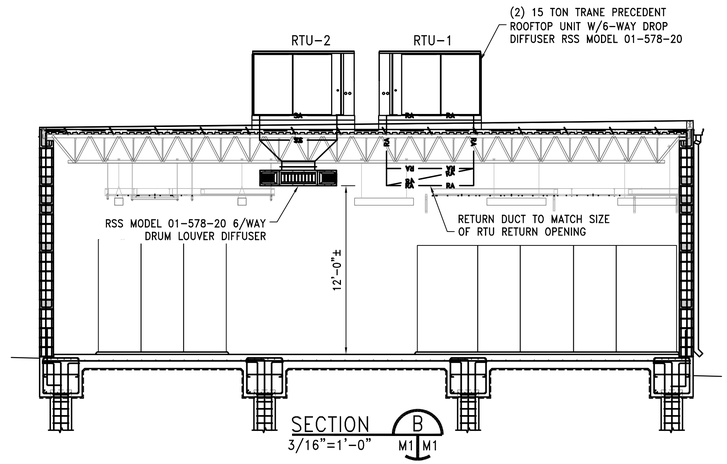
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PLAN VIEW
SCALE: 3/16"=1'-0"



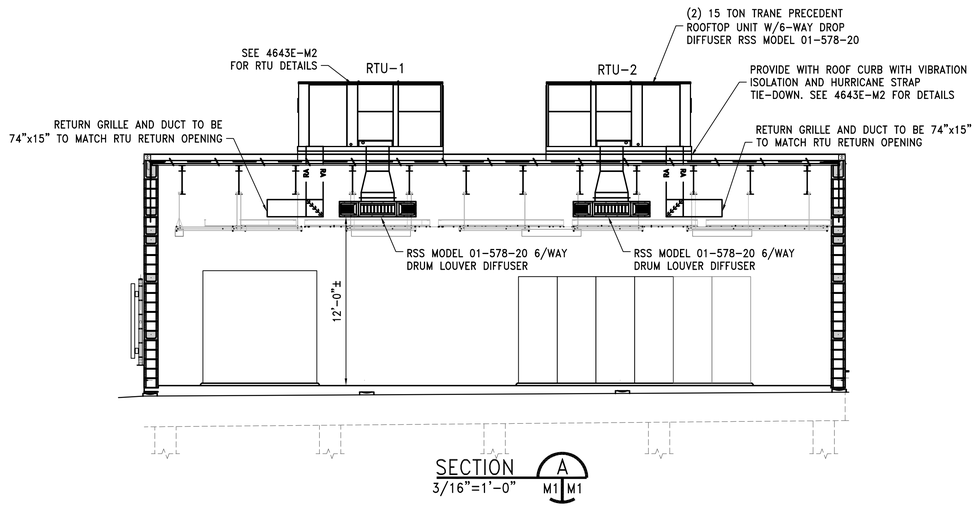
SECTION B
3/16"=1'-0" M1 M1

LEGEND

SA WxH SA — SUPPLY AIR DUCT

RA WxH RA — RETURN AIR DUCT

T — THERMOSTAT



SECTION A
3/16"=1'-0" M1 M1

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PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE
ELECTRICAL BUILDING
HVAC PLAN

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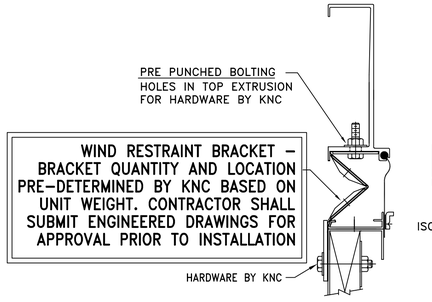
PACKAGED ROOFTOP UNIT SCHEDULE

MARK RTU-#	AHU DATA				COOLING CAPACITY @ ARI STANDARD CONDITIONS					MIN. EER/IEER	RTU MCA/CB	HEAT KW	ELECTRICAL DATA			REMARKS
	TOTAL CFM	OA CFM	ESP	MOTOR HP	EDB °F	EWB °F	AMBIENT °F	TOTAL BTU/HR	SENSIBLE BTU/HR				VOLTS	Hz	PHASE	
RTU-1	6000	–	1.2	3	80	67	95	182,560	140,540	11/14.2	40/50	–	460	60	3	TRANE PRECEDENT TSK180A4S00**B0C1A2B0000
RTU-2	6000	–	1.2	3	80	67	95	182,560	140,540	11/14.2	40/50	–	460	60	3	TRANE PRECEDENT TSK180A4S00**B0C1A2B0000

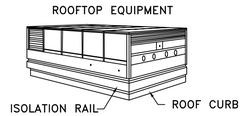
NOTES:
1. **MCA SHOWN ARE ESTIMATED VALUES. CONTRACTOR SHALL VERIFY MINIMUM CIRCUIT REQUIREMENT WITH ACTUAL EQUIPMENT PURCHASED PRIOR TO INSTALLATION.**
2. PROVIDE FACTORY-INSTALLED DISCONNECT SWITCH, PHASE MONITOR, AND 120V SERVICE OUTLET WITH BOTTOM ELECTRICAL ENTRY
3. PROVIDE WITH ROOF CURB WITH VIBRATION ISOLATION AND HURRICANE STRAP TIE-DOWN
4. INSTALL WALL MOUNTED THERMOSTAT FOR EACH UNIT.
5. ALL THERMOSTAT COMMUNICATION AND SENSOR WIRING SHALL BE THE RESPONSIBILITY OF THE INSTALLING CONTROLS CONTRACTOR, ALL POWER WIRING (ABOVE 30VAC).
6. HINGED ACCESS PANELS WITH 2" MERV 8 FILTERS
7. MOTORIZED OUTSIDE AIR DAMPER 0-50%.

NOTES: **(SEE DWG. 4643E-M3 FOR ADDITIONAL SPECIFICATIONS)**

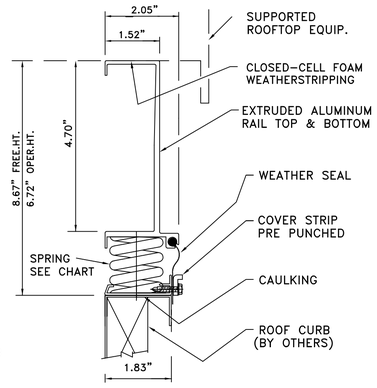
1. ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH INTERNATIONAL MECHANICAL CODES, 2021.
2. AIR FLOW (SUPPLY & RETURN) ARE 1000 FPM & 800 FPM. **FLOW RATE BASED ON 6 AIR CHANGES PER HOUR.**
3. MAIN DUCTWORK SHALL BE GALVANIZED SHEET METAL PER SMACNA STANDARDS. DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS.
4. ALL DUCTWORK SHALL BE FABRICATED AND INSTALLED PER SMACNA STANDARDS. DUCTWORK SHALL INCLUDE BALANCING DAMPER AT EACH SUPPLY/RETURN AND TURNING VANES AS SHOWN AND @ ALL 90° TURNS BOTH VERTICAL AND HORIZONTAL.
5. SEE DWG. **4643E-M3** FOR SYSTEM SCHEDULES. APPROVED MANUFACTURER'S ARE TRANE AND CARRIER. SUBMIT A VALUE ENGINEERED ANALYSIS FOR OTHER MANUFACTURERS WITH BID FOR CONSIDERATION.
6. ALL CONTROL WIRING AND INTERFACES WITH ANCILLARY EQUIPMENT BY CONTRACTOR. HVAC SHALL BE CONTROLLED USING A STANDARD WALL THERMOSTAT CONTROLLER WITH LOCKABLE CLEAR BOX COVER.
7. CONTRACTOR SHALL FURNISH AND INSTALL ALL AC UNITS WITH INTEGRAL CONTROLLERS WITH OVERLOAD PROTECTION AND DISCONNECT FUNCTIONS PER N.E.C.
8. CONTRACTOR SHALL ROUTE CONDENSATE AND DRAIN LINES TO NEAREST LANDSCAPED AREA.



TYPICAL SECTION
SHOWING WIND RESTRAINT



KINETIC NOISE CONTROL MODEL KSR-3.1
OR ENGINEER APPROVED EQUAL



ROOFTOP VIBRATION ISOLATOR/WIND RESTRAINT DETAIL
NTS

REV.	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR BID	09/11/26	PRG	JDG

11880 Cranston Drive, Ste. 101
Arlington, Tennessee 38002
(901) 290-5444

CMG ENGINEERS, INC.

457 St. Michael Street
Mobile, Alabama 36602
(251) 433-1611

PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE
ELECTRICAL BUILDING
HVAC PLAN

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DATE 07/09/26 22x34 REV. A

DRAWING NUMBER 4643E-M2

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PART 1 GENERAL

1.1 SCOPE OF WORK

A. THE WORK CONSISTS OF FURNISHING ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY FOR A COMPLETELY FUNCTIONAL SYSTEM. IN GENERAL, THE WORK SHALL INCLUDE, BUT NOT NECESSARILY BE LIMITED TO THE FOLLOWING MAJOR SUBDIVISIONS.

DUCTWORK, GRILLES, AND DIFFUSERS
STATIONARY LOUVERS
ROOFTOP UNITS

1.2 CODES, FEES, PERMITS

A. THE CONTRACTOR SHALL COMPLY WITH ALL COUNTY, DISTRICT, MUNICIPAL, OR LOCAL BUILDING CODE, INTERPRETATIONS, BUILDING PERMITS AND ASSESSMENTS OF FEES FOR BUILDING PERMITS, AND ORDINANCES.

B. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS, INSPECTIONS, AND CERTIFICATES OF INSPECTION. CERTIFICATES OF INSPECTION SHALL BE DELIVERED TO THE ENGINEER UPON COMPLETION OF THE JOB.

C. THE CONTRACTOR SHALL COMPLY WITH THE LATEST REVISIONS OF ALL COUNTY, DISTRICT, MUNICIPAL, OR LOCAL BUILDING CODES, INTERPRETATIONS, BUILDINGS PERMITS TO INCLUDE BUT NOT BE LIMITED TO:

SMACNA STANDARDS FOR DUCT CONSTRUCTION
INTERNATIONAL BUILDING CODE – 2021
INTERNATIONAL MECHANICAL CODE – 2021
INTERNATIONAL PLUMBING CODE – 2021
INTERNATIONAL ENERGY CONSERVATION CODE – 2015
LOCAL MUNICIPAL CODES

1.3 RESPONSIBILITY OF BIDDER

A. EACH BIDDER SHALL VISIT THE SITE OF THE PROPOSED WORK AND FULLY ACQUAINT HIMSELF WITH CONDITIONS RELATING TO THE CONSTRUCTION REQUIREMENTS SO THAT HE MAY FULLY UNDERSTAND THE FACILITIES, DIFFICULTIES AND RESTRICTIONS CONTINGENT UPON THE EXECUTION OF THE WORK UNDER THIS CONTRACT. THE FAILURE OR OMISSION OF ANY BIDDER TO RECEIVE OR EXAMINE ANY FORM, INSTRUMENT, ADDENDUM OR OTHER DOCUMENT SHALL IN NO WAY RELIEVE ANY BIDDER FROM HIS OBLIGATIONS WITH RESPECT TO HIS BID OR THE CONTRACT. THE SUBMISSION OF A BID SHALL BE TAKEN AS PRIMA FACIA EVIDENCE OF COMPLIANCE WITH THIS PARAGRAPH AND THAT HE HAS INCLUDED IN HIS PROPOSAL EVERY ITEM OF COST NECESSARY FOR A COMPLETE INSTALLATION OF AIR CONDITIONING, HEATING AND VENTILATION OPERATIONS STRICTLY AS PLANNED, SPECIFIED, AND INTENDED.

1.4 SUB-DIVISIONS OF WORK

A. EACH SUB-DIVISION OF WORK INCLUDES FURNISHING AND INSTALLING ALL MATERIALS TO MAKE THAT PART OF WORK COMPLETE, AND SHALL COMPRISE ALL AUXILIARIES, SETTING OF EQUIPMENT, SLEEVES THROUGH BUILDING CONSTRUCTION WHERE REQUIRED AND ETC., ALL IN COMPLETE COORDINATION WITH GENERAL CONTRACTOR AND IN COOPERATION WITH OTHER TRADES. IT IS CONTEMPLATED THAT ALL SUB-DIVISIONS OF WORK WHEN COMPLETED WILL FORM HEATING, AIR CONDITIONING, AND VENTILATION SYSTEM FOR THIS PROJECT.

1.5 DRAWINGS

A. THE DRAWINGS FOR THE HEATING, VENTILATING AND AIR CONDITIONING FOR THIS JOB ARE DIAGRAMMATIC. THE CONTRACTOR SHALL MAKE HIS OWN MEASUREMENTS AT THE SITE AND IN THE BUILDINGS DURING CONSTRUCTION AND INSTALL THE SYSTEMS AS THE WORK PROGRESSES IN SUCH A MANNER THAT THE EQUIPMENT, PIPING, CONDUIT, PANELS, AND DUCTWORK WILL FIT INTO THE FINISHED SPACE PROVIDED MAINTAINING HEADROOM; AND BE NEATLY INSTALLED. ALL EQUIPMENT AND ITS INTERCONNECTING PIPING, DUCTWORK, CONDUIT, ETC., SHALL BE PROVIDED.

B. DUE TO DIFFERENCES BETWEEN VARIOUS MANUFACTURERS, IT IS NOT PRACTICABLE TO SHOW EXACT DIMENSIONS OF UNITS, NOR TO SHOW OR SPECIFY ALL MINOR DETAILS OF EQUIPMENT. CONTRACTOR SHALL PROVIDE ALL VALVES, FITTINGS AND ACCESSORIES AS NECESSARY FOR A COMPLETE INSTALLATION, WHETHER OR NOT SPECIFICALLY MENTIONED OR SHOWN.

C. EQUIPMENT SHALL NOT BE ACCEPTABLE IF OPERATED IN EXCESS OF THE RECOMMENDED AND PUBLISHED RATINGS OF THE MANUFACTURER.

D. CONTRACTOR SHALL SUBMIT ALL HVAC EQUIPMENT FOR ENGINEER APPROVAL PRIOR TO PURCHASING EQUIPMENT.

1.6 FOUNDATIONS

A. THE CONTRACTOR SHALL FURNISH ALL SPECIAL FOUNDATIONS AND SUPPORTS FOR EQUIPMENT, DUCTWORK AND PIPING WHICH HE INSTALLS AND WHICH ARE SEPARATE AND DISTINCT FROM BUILDING CONSTRUCTION AS SHOWN BY ARCHITECTURAL DRAWINGS.

1.7 SAFETY PROVISIONS

A. CONTRACTOR SHALL BE REQUIRED AT ALL TIMES TO PERFORM HIS WORK IN STRICT ACCORDANCE WITH THE WILLIAMS-STEIGER OCCUPATIONAL HEALTH AND SAFETY ACT OF 1970.

B. EQUIPMENT WITH ANY PROJECTING OR ROTATING PARTS SHALL BE TOTALLY ENCLOSED OR PROPERLY GUARDED.

1.8 NOISE AND VIBRATION

A. THIS CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ELIMINATION OF ALL NOISES OR VIBRATIONS TRANSMITTED TO OCCUPIED AREAS FROM EQUIPMENT WHICH HE MAY INSTALL. THIS APPLIES PARTICULARLY TO AIRBORNE NOISES IN DUCTWORK, VIBRATION AND NOISES IN PIPING, AND VIBRATION FROM MECHANICAL EQUIPMENT TRANSMITTED THROUGH BASES TO BUILDING STRUCTURE.

B. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL FLEXIBLE CONNECTORS FOR DUCTWORK CONNECTED TO MOTOR DRIVEN EQUIPMENT.

C. CONTRACTOR SHALL CLOSELY COORDINATE WORK FOR LOCATION OF MECHANICAL EQUIPMENT AND ROOF OPENINGS.

1.9 MOTORS AND STARTERS

A. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE FURNISHING IN PLACE OF ALL ELECTRIC MOTORS REQUIRED FOR THE OPERATION OF ALL HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT. ELECTRICAL CONTRACTOR TO PROVIDE ALL POWER WIRING AND CONDUIT REQUIRED FOR THE OPERATION OF ELECTRICAL MOTORS AS SPECIFIED. ELECTRIC MOTORS SHALL BE SELECTED IN SIZES AS REQUIRED TO PROPERLY OPERATE THE EQUIPMENT FURNISHED BUT IN NO CASE SMALLER THAN THOSE INDICATED ON EQUIPMENT SCHEDULES. VERIFY ALL ELECTRICAL CHARACTERISTICS FROM ELECTRICAL DRAWINGS BEFORE RELEASING MOTORS FOR SHIPMENT. ELECTRIC MOTORS SHALL HAVE A SERVICE FACTOR OF 1.15 AND POWER FACTOR IN ACCORDANCE WITH ASHRAE 90-75.

B. THIS CONTRACTOR SHALL FURNISH ALL MAGNETIC MOTOR STARTERS REQUIRED TO OPERATE HEATING, VENTILATING, AND AIR CONDITIONING EQUIPMENT AND TURN OVER TO THE ELECTRICAL CONTRACTOR FOR INSTALLATION. ALL MOTOR STARTERS SHALL BE PROVIDED WITH:

1. 1 THERMAL OVERLOAD PER PHASE LEG.

2. A 110 VOLT COIL AND A HAND-OFF-AUTOMATIC SWITCH, IF MOTORS ARE SUBJECT TO ELECTRICAL INTERLOCK UNLESS OTHERWISE SPECIFIED.

C. IF EQUIPMENT IS PROVIDED WITH R.L.A. IN EXCESS OF DESIGN CONDITIONS THE MECHANICAL CONTRACTOR SHALL STAND THE EXPENSE OF ASSOCIATED ELECTRICAL CHANGES.

D. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO PROVIDE THERMAL OVERLOADS OF THE PROPER SIZE AS REQUIRED BY THE ACTUAL MOTOR NAMEPLATE AMPS. MOTOR STARTERS SHALL COMPLY WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AND THE LOCAL UTILITY SERVICE COMPANY.

1.10 PAINTING

A. ALL EQUIPMENT FURNISHED WITHOUT FACTORY PAINT OR GALVANIZED FINISH SHALL BE THOROUGHLY CLEANED AND GIVEN A PRIME COAT, THEN A FINISH COAT OF PAINT IN A COLOR AS SELECTED BY ARCHITECT/ENGINEER. ANY EQUIPMENT FINISH THAT IS DAMAGED OR CHIPPED, SHALL BE SPOT PAINTED TO MATCH EXISTING SURFACE. ANY MISCELLANEOUS METALS USED BY THIS CONTRACTOR THAT ARE NOT GALVANIZED SHALL BE GIVEN TWO COATS OF PAINT IN COLOR SPECIFIED BY ARCHITECT. ANY RUSTY OR CORRODED FINISHES SHALL BE THOROUGHLY CLEANED AND PAINTED TWO COATS OF PAINT-ONE PRIME AND ONE FINISH COAT.

1.11 TESTS AND GUARANTEES

A. AFTER COMPLETION OF HIS WORK, AND WHEN THE BUILDING IS READY FOR OCCUPANCY, THIS CONTRACTOR SHALL OPERATE THE AIR CONDITIONING OR HEATING SYSTEM FOR A PERIOD OF TWO DAYS. DURING THE TESTS, THE CONTRACTOR SHALL ADJUST CONTROLS, OUTLETS, ETC.

B. THE CONTRACTOR SHALL REPEAT OPERATIONAL SEQUENCE DURING HEATING AND/OR COOLING SEASON, WHICHEVER HAD NOT BEEN SUBJECT TO PRIOR TEST PERIOD.

1.12 SHOP DRAWINGS

A. MATERIALS AND EQUIPMENT SCHEDULES SHALL BE SUBMITTED AS SOON AS PRACTICABLE BUT NOT LATER THAN THIRTY (30) DAYS AFTER THE DATE OF AWARD OF CONTRACT, AND BEFORE COMMENCEMENT OF INSTALLATION OF ANY MATERIAL OR EQUIPMENT. A COMPLETE SCHEDULE OF THE MATERIAL AND EQUIPMENT PROPOSED FOR INSTALLATION SHALL BE SUBMITTED FOR APPROVAL. THE SCHEDULE SHALL INCLUDE CATALOGS, CUTS, DIAGRAMS, DRAWINGS, SPECIFICATIONS AND SUCH OTHER DESCRIPTIVE DATA AS MAY BE REQUIRED BY THE ENGINEER. ALL MATERIALS REQUIRED TO BE SUBMITTED FOR APPROVAL UNDER THIS SECTION SHALL BE SUBMITTED AT ONE TIME. PARTIAL SUBMITTALS WILL NOT BE CONSIDERED. THEY WILL BE RETURNED AS "NOT APPROVED".

B. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL ON THE FOLLOWING ITEMS OF EQUIPMENT: SUBJECT DRAWINGS SHALL INCLUDE ALL DATA PERTINENT TO THE PERFORMANCE AND INSTALLATION OF ALL EQUIPMENT.

AIR DISTRIBUTION DEVICES – GRILLES, DIFFUSERS, DAMPERS
TEMPERATURE CONTROLS
INSULATION MATERIALS
PACKAGED HEAT PUMPS

1.13 QUALITY OF MATERIALS AND EQUIPMENT

A. IT IS NOT THE INTENT OF THESE SPECIFICATIONS TO LIMIT MATERIAL AND/OR EQUIPMENT SELECTIONS TO ONE MANUFACTURER; HOWEVER, THE ENGINEER RESERVES THE RIGHT TO BE THE FINAL AND SOLE JUDGE WITH REGARD TO EQUALS.

B. APPROVALS OF EQUIPMENT IS BASED ON CAPACITIES, EQUALITY OF WORKMANSHIP AND COMPONENTS, OR GENERAL AND SPECIAL CONSTRUCTION FEATURES. APPROVAL OF EQUIPMENT DOES NOT RELIEVE THE CONTRACTOR OF COORDINATION RESPONSIBILITY WITH OTHER TRADES. EQUIPMENT SHALL FIT WITHIN THE PHYSICAL SPACE OF EQUIPMENT SHOWN AND HAVE SAME GENERAL CONNECTION AS THAT SHOWN ON DRAWINGS. PROPER CLEARANCES SHALL BE MAINTAINED FOR SERVICING AND MAINTAINING EQUIPMENT.

C. WHERE EQUIPMENT SUBMITTED VARIES FROM THE GENERAL ARRANGEMENT OF THAT SPECIFIED, CONTRACTOR SHALL SUBMIT DETAILED SHEET METAL AND EQUIPMENT BROCHURES. SHOP DRAWINGS SHALL INDICATE ANY AND ALL SHEET METAL, ELECTRICAL, PIPING AND STRUCTURAL CHANGES REQUIRED TO FACILITATE CHANGE. ANY AND ALL ADDITIONAL COSTS INCURRED BY CHANGES WILL BE BORNE BY THIS CONTRACTOR.

PART 2 PRODUCTS

2.1 REFRIGERANT PIPING

A. PIPING SHALL BE TYPE "K" HARD DRAWN COPPER, ASTM SPEC. B280, AND SHALL BE MILL CLEANED, DRIED, AND CAPPED.

B. FITTINGS SHALL BE EXTRA HEAVY WROUGHT COPPER IN ACCORDANCE WITH ANSI B9.1 WITH JOINTS SOLDERED USING A HIGH CONTENT SILVER ALLOY SOLDER.

C. INSTALLATION SHALL BE IN ACCORDANCE WITH UNIT MANUFACTURER'S REQUIREMENTS WITH ALL PIPING SECURED TO WALLS AND CEILINGS WITH APPROVED GALVANIZED HANGERS AND CLAMPS. ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH ANSI STANDARD B31.5 FOR REFRIGERANT PIPING.

D. INSULATE REFRIGERANT SUCTION LINE WITH 3/4" WALL FOAMED PLASTIC INSULATION SLIPPED OVER TUBING AND ALL JOINTS THOROUGHLY SEALED. PAINT INSULATION WITH TWO COATS OF ACRYLIC PROTECTIVE PAINT WHERE INSULATION IS EXPOSED TO WEATHER. PROTECT INSULATION WITH METAL SADDLES AND SHIELDS AT ALL HANGER POINTS.

E. ALL REFRIGERANT PIPING ROUTED BELOW GRADE SHALL BE ROUTED IN 6" PVC CONDUIT WITH ENDS SEALED TO BE RODENT PROOF.

F. SUSPEND PIPING AS REQUIRED WITH APPROVED PIPE HANGERS AT 8'-0" ON CENTER.

G. IF FIELD PIPING IS USED, PIPING DIAGRAMS SHALL BE SUBMITTED BY UNIT MANUFACTURER SHOWING PIPE SIZES, TRAPS, SERVICE VALVES, ETC., REQUIRED FOR PROPER OPERATION OF EQUIPMENT. PRE-CHARGED TUBING MAY BE USED AT CONTRACTOR'S OPTION.

H. TEST REFRIGERANT SYSTEM AT 300 PSI BEFORE CHARGING SYSTEM WHERE UNITS ARE TO BE FIELD CHARGED. SYSTEM IS TO BE THOROUGHLY PURGED AND EVACUATED BEFORE CHARGING WITH REFRIGERANT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. IF FACTORY PRE-CHARGED TUBING IS USED, UNIT SHALL BE CHECKED AND MONITORED FOR PROPER CHARGE AND EFFICIENT OPERATION.

2.2 EXHAUST FAN

A. ALL EXHAUST FANS SHALL BEAR THE AMCA SEAL OF APPROVAL AND SHALL BE CURRENTLY LISTED IN THE CURRENT AMCA DIRECTORY.

B. EXHAUST FAN FOR TOILET ROOMS SHALL BE CEILING MOUNTED TYPE FANS WITH 1/2" THICK ACOUSTICAL LINED STEEL HOUSING, DIRECT DRIVE CENTRIFUGAL FAN, BACK DRAFT DAMPER AND INTEGRAL ALUMINUM CEILING GRILLE. FAN CONTROL SHALL BE BY SEPARATE WALL MOUNTED SWITCH. FANS SHALL BE EQUAL TO BROAN LOSONE SELECT.

2.3 CONTROL OPERATIONS

A. GENERAL SPACE TEMPERATURE SHALL BE CONTROLLED BY WALL MOUNTED THERMOSTATS LOCATED WITHIN THE SPACES AS INDICATED ON DRAWINGS. THERMOSTAT SUBBASE SHALL INCLUDE A SYSTEM SELECTOR SWITCH (OFF-HEAT-AUTO-COOL) AND FAN SWITCH (AUTO-ON) AND BE PROVIDED BY THE AIR CONDITIONING EQUIPMENT MANUFACTURER. THERMOSTATS SHALL BE 7-DAY PROGRAMMABLE AND HAVE BATTERY BACK-UP WITH NIGHT LOW AND HIGH LIMIT SETTINGS.

B. WIRING: ALL CONTROL WIRING EXTERNAL TO THE AIR CONDITIONING EQUIPMENT SHALL BE INSTALLED BY THE CONTROL SUB-CONTRACTOR UNDER THE DIRECT SUPERVISION OF THE HVAC SUBCONTRACTOR.

NOTE: ALL WIRING REQUIRED FOR EQUIPMENT OPERATIONS SHALL BE BY THE ELECTRICAL CONTRACTOR. THIS CONTRACTOR SHALL ALSO PROVIDE ALL CONDUIT AS REQUIRED FOR CONTROL WIRING.

C. TEST ALL UNITS FOR TWO (2) 8-HOUR DAYS UNDER THE SUPERVISION OF MANUFACTURER'S REPRESENTATIVE, WHO SHALL MAKE ALL NECESSARY ADJUSTMENTS AND INSTRUCT DESIGNATED OPERATING PERSONNEL IN OPERATION AND MAINTENANCE OF EQUIPMENT AND CONTROLS.

2.4 CONTROLS

A. CONTRACTOR SHALL FURNISH AND INSTALL ALL RELAYS, TRANSFORMERS, CONTACTS, ETC., AS REQUIRED TO CONTROL AUTOMATICALLY THE HEATING AND AIR CONDITIONING EQUIPMENT. SUBMIT CONTROL DRAWINGS FOR APPROVAL. CONTROL DRAWINGS SHALL BE COMPLETE AND SHALL INDICATE COMPLETE CONTROL SEQUENCE OF OPERATION.

B. ALL CONTROL WIRING SHALL BE INSTALLED IN CONDUIT AND SHALL BE SIZED AS RECOMMENDED BY UNIT MANUFACTURER. ALL WIRING SHALL BE COLOR CODED TO MATCH SYSTEM WIRING DIAGRAMS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE ELECTRICAL SECTION OF THIS SPECIFICATION.

2.5 DUCTWORK

A. THE SIZES, RUNS, AND CONNECTIONS OF DUCTS SHALL BE AS INDICATED. ADHERE TO DRAWINGS AS CLOSELY AS POSSIBLE. THE RIGHT IS RESERVED, HOWEVER, IF REQUIRED TO MEET STRUCTURAL OR OTHER INTERFERENCES, TO VARY RUN AND SHAPE OF DUCTS AND OFFSETS DURING PROGRESS OF WORK, AT NO EXTRA COST TO THE OWNER. DUCTWORK SPECIFIED HEREIN SHALL HAVE RECTANGULAR CROSS SECTION, UNLESS OTHERWISE INDICATED.

B. MATERIALS – METHODS OF CONSTRUCTION: DETAILS OF CONSTRUCTION AND MATERIALS NOT SPECIFIED HEREIN SHALL BE IN ACCORDANCE WITH SMACNA LOW VELOCITY AND ASHRAE "GUIDE" RECOMMENDATIONS. FABRICATE DUCTWORK IN WORKMANLIKE MANNER WITH AIRTIGHT JOINTS PRESENTING SMOOTH SURFACE ON INSIDE, NEATLY FINISHED ON OUTSIDE. SEAL ALL DUCT JOINTS AIRTIGHT BEFORE INSULATION IS APPLIED. CONSTRUCT DUCTWORK AIR EXTRACTORS, SPIN-IN TAPS WITH AIR SCOOPS, TURNING VANES, SPLITTER DAMPERS, ETC., TO EASE AIR FLOW AND BALANCING OF AIR. UNLESS OTHERWISE INDICATED, WHERE SQUARE ELBOWS HAVE TO BE USED, PROVIDE FIXED DEFLECTORS. CONSTRUCT, BRACE AND SUPPORT DUCTS IN MANNER THAT THEY WILL NOT SAG OR VIBRATE TO ANY PERCEPTIBLE EXTENT WHEN FANS ARE OPERATING AT MAXIMUM SPEED AND CAPACITY. DUCTWORK SHALL BE GALVANIZED SHEET STEEL UNLESS OTHERWISE SPECIFIED. DISTANCE BETWEEN JOINTS OF ANY SIZE DUCT SHALL NOT EXCEED 8'.

D. FLEXIBLE DUCTWORK SHALL NOT EXCEED 8' IN LENGTH, BE EQUAL TO THERMAFLEX TYPE M-KE-R6 OR J.P. LAMBORN MHP-R6 WITH 1"-1 LB. DENSITY INSULATION WITH METALIZED FILM VAPOR BARRIER, AND CONFORM TO UL-181 AS A CLASS 1 DUCT.

E. SHEET METAL GAUGES FOR RECTANGULAR DUCT CONSTRUCTION SHALL BE:

STEEL U.S. STD.GAUGE	MAXIMUM SIZE INCHES	TYPE OF TRANSVERSE JOINT CONN.	BRACING
26	UP TO 12	S-DRIVE, POCKET OR BAR CLIPS, ON 7'-10" CENTERS	NONE
24	13 TO 24	S-DRIVE, POCKET OR BAR CLIPS, ON 7'-10" CENTERS	NONE
24	25 TO 30	S-DRIVE, POCKET OR BAR CLIPS ON 7'-10" CENTERS	1X1X⅛" ANGLE 4' FROM JOINT

F. DUCT SUPPORT: SUPPORT HORIZONTAL DUCTS WITH HANGERS SPACED NOT MORE THAN 8' APART, PLACE HANGERS AT CHANGES IN DIRECTIONS. USE STRAP HANGERS FOR DUCTS UP TO 30" WIDE, ANGLE HANGERS FOR DUCTS OVER 30" WIDE. MAKE STRAP HANGERS 1" BY 16-GAUGE MINIMUM, EXTENDED DOWN BOTH SIDES OF DUCT AND TURN UNDER BOTTOM 2" MINIMUM, FASTEN SIDES AND BOTTOM WITH SHEET METAL SCREWS.

G. PROVIDE FLEXIBLE DUCT CONNECTIONS BETWEEN DUCTS AND A/C UNIT. CONNECTORS SHALL BE CONSTRUCTED OF 29 OUNCE NEOPRENE-COATED FIBERGLASS APPROXIMATELY 6" WIDE, BORDERED BY CRIMPING TO SHEET METAL AND FASTENED TO DUCTS WITH SCREWS NOT MORE THAN 2" ON CENTERS.

2.6 DAMPERS

A. PROVIDE SPLITTER AND DEFLECTING VANES FOR CONTROL OF AIR VOLUME AND DIRECTION, AND FOR BALANCING SYSTEM WHERE INDICATED, SPECIFIED, DIRECTED OR REQUIRED.

B. DAMPERS OF SAME MATERIALS AS DUCT, AT LEAST ONE GAUGE HEAVIER THAN DUCT, REINFORCED WHERE DIRECTED, SHALL HAVE AN ACCESSIBLE LOCATION INDICATING QUADRANT, LOCKING DEVICE FOR ADJUSTING AND LOCKING DAMPERS IN POSITION.

C. STIFFEN DUCT AT DAMPER LOCATION, INSTALL DAMPER IN MANNER TO PREVENT RATTLING.

2.7 GRILLES AND DIFFUSERS

A. SUPPLY AND RETURN AIR GRILLES AND DIFFUSERS SHALL BE SIZED NOT TO EXCEED A N.C. LEVEL OF (35). GRID CEILING DIFFUSER SHALL BE EQUAL TO TITUS SERIES TDC-AA TYPE WITH 24"X24" LAY-IN PANEL SUPPLY DIFFUSER WITH BALANCING DAMPER OF SIZE, DISCHARGE FLOW PATTERN AND CAPACITY AS INDICATED ON DRAWINGS. GYP. OR RIGID CEILING DIFFUSERS INSTALLED IN RIGID CEILINGS SHALL BE EQUAL TO TITUS SERIES TDC-AA TYPE SUPPLY DIFFUSER BORDER TYPE 1 WITH BALANCING DAMPER OF SIZE AND CAPACITY AS INDICATED ON DRAWINGS. (UNLESS SHOWN ON DRAWINGS.)

B. CEILING RETURN AIR GRILLES SHALL BE EQUAL TO TITUS SERIES 50F. GRILLES SHALL BE OF ALUMINUM CONSTRUCTION WITH 1/2"x1/2"x1/2" ALUMINUM GRID. GRILLE SHALL BE 90% FREE AREA (MINIMUM). PROVIDE WITH OPPOSED BLADE DAMPER. WALL RETURN GRILLES SHALL BE EQUAL TO TITUS 350FL (FILTER GRILL TO BE 350FLF1). SIZE AND CAPACITY SHALL BE AS INDICATED ON DRAWINGS. (UNLESS SHOWN ON DRAWINGS.)

C. SIDEWALL REGISTERS SHALL BE EQUAL TO TITUS SERIES 272RS WITH OPPOSED BLADE DAMPER. (UNLESS SHOWN ON DRAWINGS.)

D. INSTALL AND FASTEN CEILING DIFFUSER AND RETURN AIR GRILLES AS PER MANUFACTURER'S DETAILED DRAWINGS, USE GASKETS TO MAKE AIRTIGHT JOINTS WITH ADJOINING CONSTRUCTION, JOIN NEATLY WITH ADJOINING FINISHED SURFACE.

2.8 INSULATION

A. EXTERIOR DUCT INSULATION SHALL BE APPLIED OUTSIDE OF ALL HEATING AND AIR CONDITIONING DUCTWORK IN ACCORDANCE WITH SMACNA STANDARDS. INSULATION SHALL BE CONSTRUCTED OF GLASS FIBER AND SHALL BE 1 POUND DENSITY, 2" THICK AND COMPLY WITH NFPA BULLETINS 90A AND 90B (MINIMUM R VALUE = 6). INSULATION SHALL BE WRAPPED AND SHALL BE SECURED WITH DUCT BANDS. ALL JOINTS IN INSULATION SHALL BE BUTTED TOGETHER AND BRUSHED WITH ADHESIVE.

2.9 NATURAL GAS PIPING **(N.I.C.)**

A. ALL PIPING ABOVE GRADE SHALL BE SCHEDULE 40 BLACK STEEL ASTM 120. FITTINGS SHALL BE 150 POUNDS BLACK MALLEABLE SCREW PATTERN FOR ALL SIZES 2" AND SMALLER.

B. PIPING BELOW GRADE SHALL BE SCHEDULE 40 BLACK STEEL WITH BLACK WELDED FITTINGS SHALL BE PROTECTED BY MILL WRAPPING, REPUBLIC EXTRU-COAT OR APPROVED EQUAL. FITTINGS AND FIELD JOINTS SHALL BE FIELD WRAPPED AFTER TESTING WITH EXTRU-TAPE OR EQUAL TO 6" ABOVE FINISHED GRADE.

C. ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH NFPA RECOMMENDATIONS AND SOUTHERN STANDARD GAS CODE COMPLETE WITH ALL NECESSARY APPURTENANCES.

D. GAS COCKS SHALL BE INSTALLED BEFORE EACH PIECE OF EQUIPMENT IS CONNECTED TO THE SYSTEM.

E. HORIZONTAL PIPING SHALL GRADE WITH A SLOPE OF 1" IN 40'-0" TO DROP LEGS AT ALL LOW POINTS AS REQUIRED. DRIPS SHALL BE PROVIDED AT ALL LOW POINTS AND AT BOTTOM OF RISERS. DRIPS SHALL BE SAME SIZE AS THE PIPING WHERE INSTALLED AND SHALL BE MINIMUM OF 8" LONG.

F. USE GROUND JOINTS IN ALL SCREW PIPING JOINTS AND 150 POUND FLANGES IN ALL WELDED JOINT PIPING WHERE REQUIRED.

PART 3 EXECUTION

3.1 TESTING AND BALANCING

A. THE HEATING AND VENTILATING SUBCONTRACTOR SHALL SUBMIT TO THE OWNER/ENGINEER A RECORD OF THE CAPACITIES OF EACH GRILLE, REGISTER, AND EQUIPMENT OPENING AS DETERMINED BY THE TEST AFTER FINAL ADJUSTMENTS HAVE BEEN MADE WITH A NOTATION FOR THE FINAL SETTING AND AVERAGE VELOCITY THROUGH EACH OUTLET AS DETERMINED BY READINGS OF A VELOMETER TAKEN AT SEVERAL POINTS AT THE FACE OF THE REGISTER OR OPENING. AIR DELIVERY THROUGH SUPPLY OUTLETS SHALL BE CONSIDERED EQUAL TO THAT QUANTITY AS PUBLISHED IN THE MANUFACTURER'S TABLES. RETURN AIR THROUGH RETURN AIR GRILLES SHALL BE CONSIDERED AS EQUAL TO THE PRODUCT OF THE VELOMETER VELOCITY AND EFFECTIVE AREA OF THE REGISTER. TEST AND BALANCE BOTH HVAC SYSTEMS WITH DUCTWORK PRIOR TO INSTALLATION OF FINISHED CEILING. ONCE CEILINGS HAVE BEEN INSTALLED THE BALANCING DEVICES AND DUCTWORK SHALL NOT BE ACCESSIBLE FOR THIS PROCEDURE.

B. THERMOSTATS FOR THE AIR CONDITIONING EQUIPMENT SHALL BE PROVIDED AS PART OF THAT EQUIPMENT, AND CONNECTED UP BY THE ELECTRICAL SUBCONTRACTOR, AND IS TESTED BY THE HVAC SUBCONTRACTOR.

3.2 CLEANING VENTILATING SYSTEMS

A. ALL DUCTS SHALL BE THOROUGHLY CLEANED AND BLOWN OUT TO PREVENT ANY DEBRIS FROM DAMAGING FAN WHEELS OR DISCHARGING THROUGH DIFFUSERS WHEN SYSTEMS ARE PLACED IN OPERATIONS. ALL TEMPORARY CONNECTIONS REQUIRED FOR BLOWING OUT THE SYSTEM, CHEESECLOTH FOR ALL DUCT OPENINGS, AND ANY OTHER EQUIPMENT OR LABOR FOR CLEANING SHALL BE PROVIDED BY THE HEATING AND VENTILATING SUBCONTRACTOR. ALL FILTERS SHALL BE RENEWED AFTER VENTILATING SYSTEMS HAVE BEEN CLEANED. THE COST OF RENEWAL SHALL BE BORNE BY THE GENERAL CONTRACTOR.

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CMG ENGINEERS, INC.

457 St. Michael Street
Mobile, Alabama 36602
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PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE
HVAC SPECIFICATIONS

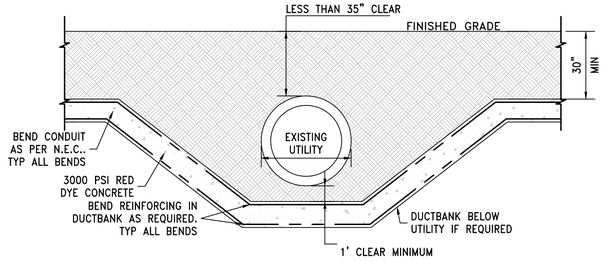
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DATE 07/09/26 22x34 REV. A

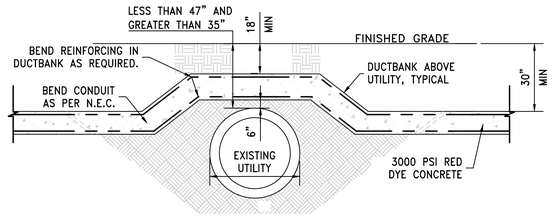
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BELOW UTILITY (ONLY) CROSSING
N.T.S.



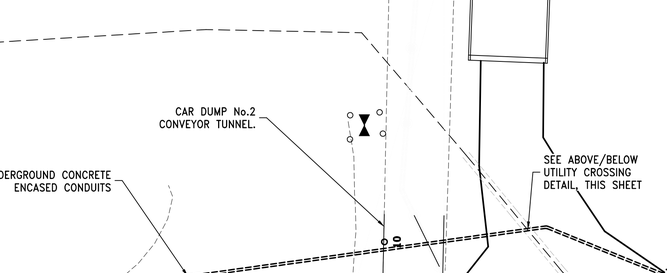
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N.T.S.

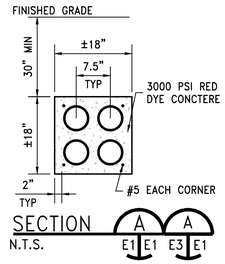
ELECTRICAL NOTES:

1. ALL ELECTRICAL WORK SHALL BE INSTALLED AS REQUIRED BY THE NATIONAL ELECTRIC CODE (N.E.C.) AND ANY STATE, CITY AND/OR LOCAL CODE REQUIREMENTS. THE MORE STRINGENT CODE REQUIREMENT SHALL BE UTILIZED AND VERIFIED WITH THE LOCAL INSPECTION APPROVAL AGENCY. (DEFINITION "CODE" – STATE, CITY AND/OR LOCAL CODE REQUIREMENTS)
2. CONTRACTOR SHALL INSTALL ALL GROUNDING AS REQUIRED BY THE NATIONAL ELECTRIC CODE (N.E.C.) AND ANY STATE, CITY AND/OR LOCAL CODE REQUIREMENTS. THE MORE STRINGENT CODE REQUIREMENT SHALL BE UTILIZED AND VERIFIED WITH THE LOCAL INSPECTION APPROVAL AGENCY.
3. CONTRACTOR SHALL (PRIOR TO BID)
   (a) VISIT THE JOB/CONSTRUCTION SITE AND FIELD VERIFY ALL EXISTING CONDITIONS
   (b) TAKE ALL CONSIDERATIONS INTO ACCOUNT AT THE TIME OF BID. NO CONSIDERATIONS WILL BE GRANTED TO THE CONTRACTOR AFTER THE BID HAS BEEN ACCEPTED.
4. CONTRACTOR SHALL PROVIDE GPR, GROUND PENETRATING RADAR, FOR ALL AREAS THAT REQUIRE EXCAVATION AND SUBMIT FINDINGS TO THE FACILITY ENGINEER PRIOR TO EXCAVATION.

REFERENCES:

4643E-E2 – ELECTRICAL BUILDING LIGHTING FLOOR PLAN
4643E-E3 – ELECTRICAL BUILDING POWER FLOOR PLAN
4643E-E4 – ELECTRICAL BUILDING CABLE TRAY FLOOR PLAN
4643E-E5 – ELECTRICAL BUILDING GROUNDING PLAN
4643E-E6 – ELECTRICAL BUILDING SECTION AND DETAILS
4643E-E7 – ELECTRICAL AC-ONE LINE RISER DIAGRAM
4643E-E8 – ELECTRICAL MOTOR CONTROL CENTER AND PANELBOARD SCHEDULE
4643E-E9 – ELECTRICAL FEEDER AND CONTROL CONDUCTOR SCHEDULE
4643E-E10– ELECTRICAL SPECIFICATIONS





ELECTRICAL SITE PLAN
1"=20'-0"

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A	ISSUED FOR BID	09/11/26	WES	JJM

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PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

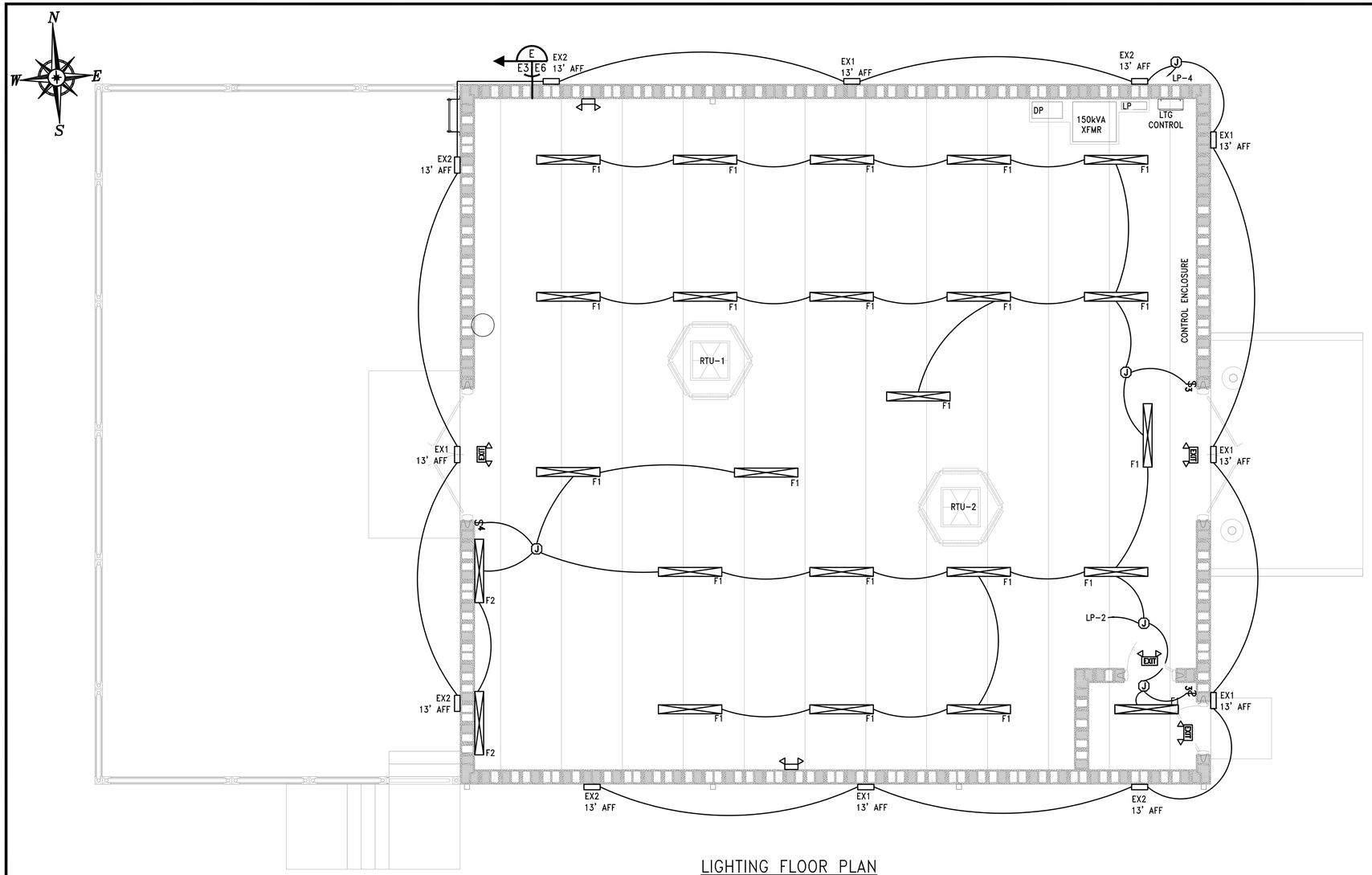
McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE
ELECTRICAL SITE PLAN

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DATE 06/09/2026 22x34 REV. A
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LIGHTING FLOOR PLAN

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

NOTE:
CABLE TRY NOT SHOWN FOR CLARITY. SEE DWG 4663E-E4
FOR CABLE TRAY REQUIREMENTS.

ELECTRICAL NOTES:

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2. CONTRACTOR SHALL INSTALL ALL GROUNDING AS REQUIRED BY THE NATIONAL ELECTRIC CODE (N.E.C.) AND ANY STATE, CITY AND/OR LOCAL CODE REQUIREMENTS. THE MORE STRINGENT CODE REQUIREMENT SHALL BE UTILIZED AND VERIFIED WITH THE LOCAL INSPECTION APPROVAL AGENCY.

3. CONTRACTOR SHALL (PRIOR TO BID)
   (a) VISIT THE JOB/CONSTRUCTION SITE AND FIELD VERIFY ALL EXISTING CONDITIONS
   (b) TAKE ALL CONSIDERATIONS INTO ACCOUNT AT THE TIME OF BID. NO CONSIDERATIONS WILL BE GRANTED TO THE CONTRACTOR AFTER THE BID HAS BEEN ACCEPTED.

4. **ALL LIGHT FIXTURES SHOWN/LISTED IN LIGHTING FIXTURE SCHEDULE SHALL BE 10-DAY PRE-APPROVED BY THE ENGINEER PRIOR TO BID.**

5. ALL ELECTRICAL SWITCHES SHALL BE INSTALLED AS PER N.E.C. ARTICLE 404 AND AS REQUIRED BY CODE. LIGHT SWITCHES SHALL IVORY AND COVERS SHALL BE STAINLESS STEEL.

6. ALL RECEPTACLES AND COVERS SHALL BE INSTALLED AS PER N.E.C. ARTICLE 406 AND AS REQUIRED BY CODE. RECEPTACLE SHALL BE IVORY AND COVERS SHALL BE STANLESS STEEL.

7. ALL ELECTRICAL METALLIC TUBING (EMT), RIGID NON-MATALLIC CONDUIT, FLEXIBLE METALLIC CONDUIT, FLEXIBLE NON-METALLIC CONDUIT, 'SEALTIGHT' TYPE CONDUITS AND ALL OTHER CONDUITS THAT DO NOT CONTAIN A REQUIRED CODE SIZED GROUND WIRE SHALL HAVE A REQUIRED CODE SIZED BOND WIRE INSTALLED WITH THE CIRCUIT CONDUCTORS.

8. CONTRACTOR SHALL FURNISH AND INSTALL WEATHER PROOF G.F.C.I. RECEPTACLE AT AN ACCESSIBLE LOCATION NEAR ALL HVAC EQUIPMENT IN ACCORDANCE WITH N.E.C. ARTICLE 210.63 AND AS REQUIRED BY CODE. CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF THESE RECEPTACLES IN THE FIELD REGARDLESS OF THE PLAN LAYOUT.

9. CONTRACTOR SHALL, PRIOR TO BID AND ROUGH-IN, FIELD VERIFY ALL HVAC ELECTRICAL REQUIREMENTS AGAINST THE PLAN REQUIREMENTS. FAILURE TO VERIFY AND NOTIFY ENGINEER/ARCHITECT PRIOR TO ROUGH-IN SHALL INDICATE THAT THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THE DESIGN AND INSTALLATION REQUIREMENTS.

10. CONTRACTOR SHALL FURNISH AND INSTALL ALL AC UNITS SHALL HAVE INTEGRAL CONTROLLERS WITH OVERLOAD PROTECTION AND DISCONNECT FUNCTIONS PER N.E.C. CONTRACTOR SHALL INSTALL GFI DUPLEX SERVICE RECEPTACLES NEAR CONDENSER UNIT. PROVIDE MOTOR STARTERS WITH OVERLOAD PROTECTION AND DISCONNECT FUNCTIONS FOR AIR HANDLERS, IF NOT PROVIDED BY MECHANICAL CONTRACTOR.

11. EXIT, EXTERIOR EGRESS AND EMERGENCY LIGHT FIXTURES SHALL BE CONNECTED TO PANELBOARD LP, CIRCUIT BREAKER 8. CONTRACTOR SHALL ROUTE ½"ø CONDUIT W/(2)#10AWG & (1)#12AWG GRD FROM PANELBOARD LP TO EACH FIXTURE. CIRCUIT BREAKER SHALL BE RED IN COLOR AND LABELED 'EMERGENCY – DO NOT TURN OFF'.

REFERENCES:

4643E-E1 – ELECTRICAL SITE PLAN
4643E-E3 – ELECTRICAL BUILDING POWER FLOOR PLAN
4643E-E4 – ELECTRICAL BUILDING CABLE TRAY FLOOR PLAN
4643E-E5 – ELECTRICAL BUILDING GROUNDING PLAN
4643E-E6 – ELECTRICAL BUILDING SECTION AND DETAILS
4643E-E7 – ELECTRICAL AC-ONE LINE RISER DIAGRAM
4643E-E8 – ELECTRICAL MOTOR CONTROL CENTER AND PANELBOARD SCHEDULE
4643E-E9 – ELECTRICAL FEEDER AND CONTROL CONDUCTOR SCHEDULE
4643E-E10– ELECTRICAL SPECIFICATIONS

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION
F1	METALUX #BAA-4VT2-LD5-11-DR100-W-UNV-L850-CD1-WL-SSL-VT2-CHAIN/SET-U, 4 FOOT LED VAPOR TIGHT LED FIXTURE, CHAIN HANGING SET, 11,000 LUMENS (85W) OR EQUAL) SEE DRAWING 4643E-E4 FOR MOUNTING HEIGHT, 10'-6", AND SUPPORT.
F2	METALUX #BAA-4SWLED-8OHL-LW-UNV-L840-CD2, 4 FOOT WALL MOUNT LED FIXTURE, 8,060 LUMENS (80W) OR EQUAL) SEE DRAWING 4643E-E4 FOR MOUNTING HEIGHT, 9'-6".
EX1 13'AFF	LUMARK #BBA-XTOR8BRL-MS/DIM-L20-CBP-FSIR-100, WALL MOUNT LED EGRESS FIXTURE, MOTION SENSOR WITH 50% DIMMING AFTER 15 MINUTES, BATTERY BACKUP, 8,635 LUMENS (85 W) OR EQUAL.
EX1 13'AFF	LUMARK #BBA-XTOR12BRL-MS/DIM-L20-CBP-FSIR-100, WALL MOUNT LED EGRESS FIXTURE, MOTION SENSOR FOR 50% DIMMING AFTER 15 MINUTES, 13,455 LUMENS (105 W) OR EQUAL.
J	JUNCTION BOX WITH COVER
	EXITRONIX BARRON #LED-95-WH-G2, WALL MOUNT EMERGENCY FIXTURE OR EQUAL. MOUNT AT 10' ABOVE FINISHED FLOOR
EXIT	EXITRONIX #VLED-U-WH-EL90L-G2-HO, BATTERY BACKUP EXIT LIGHT WITH EMERGENCY LAMPS, WALL MOUNT 12" ABOVE DOOR, OR EQUAL
$3	THREE WAY 120/277V, 20A, ROCKER SWITCH – SURFACE WALL MOUNTED 48" A.F.F. STAINLESS STEEL COVER. OWNER APPROVED.
$4	FOUR WAY 120/277V, 20A, ROCKER SWITCH – FLUSH WALL MOUNTED 48" A.F.F. STAINLESS STEEL COVER OWNER APPROVED.

REV.	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR BID	09/11/26	WES	JJM

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NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

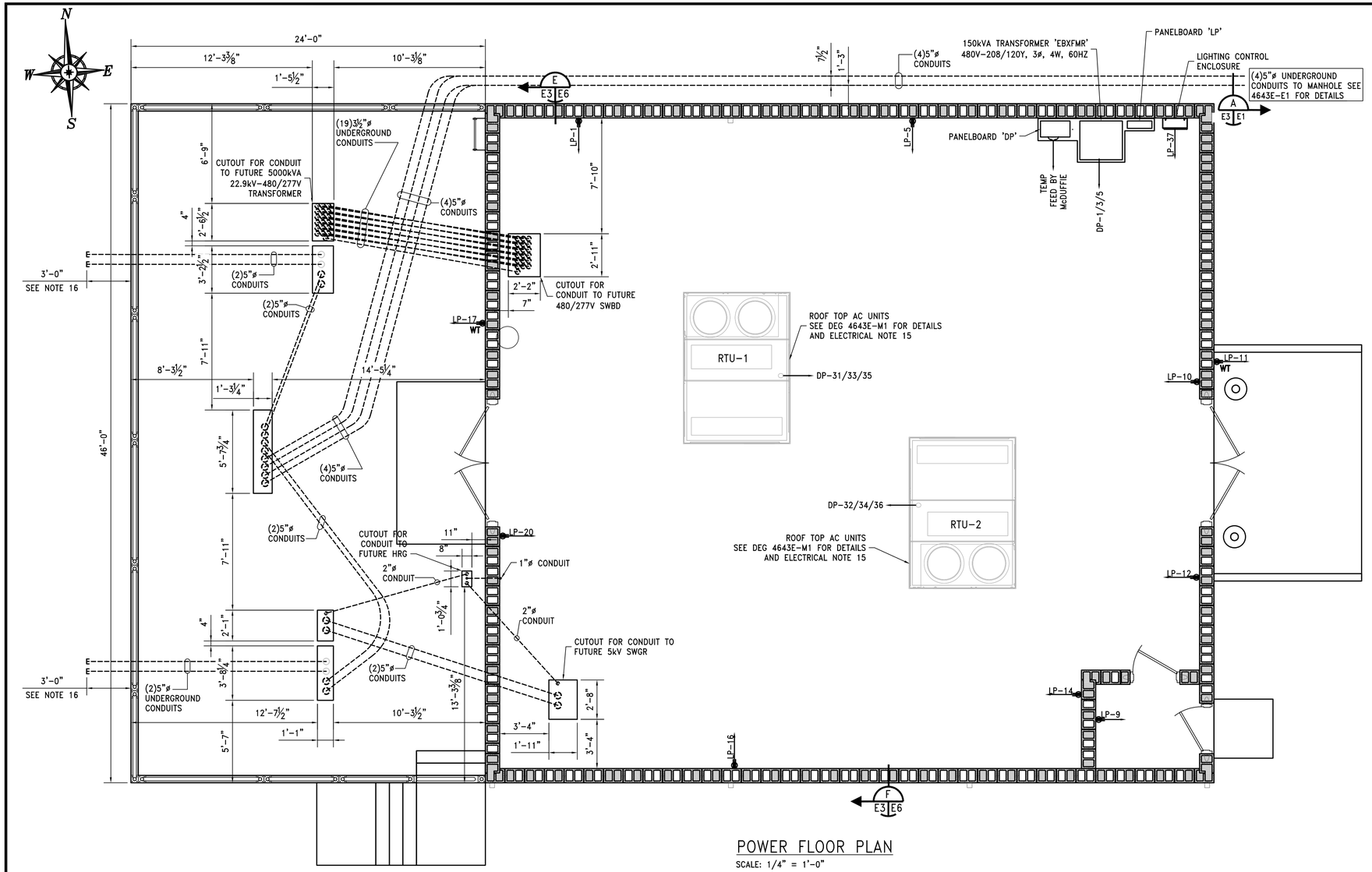
TITLE
ELECTRICAL BUILDING
LIGHTING FLOOR PLAN

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DATE 05/27/26 22x34 REV. A

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POWER FLOOR PLAN

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

ELECTRICAL NOTES:

1. ALL ELECTRICAL WORK SHALL BE INSTALLED AS REQUIRED BY THE NATIONAL ELECTRIC CODE (N.E.C.) AND ANY STATE, CITY AND/OR LOCAL CODE REQUIREMENTS. THE MORE STRINGENT CODE REQUIREMENT SHALL BE UTILIZED AND VERIFIED WITH THE LOCAL INSPECTION APPROVAL AGENCY. (DEFINITION "CODE" – STATE, CITY AND/OR LOCAL CODE REQUIREMENTS)
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3. CONTRACTOR SHALL (PRIOR TO BID)
   (a) VISIT THE JOB/CONSTRUCTION SITE AND FIELD VERIFY ALL EXISTING CONDITIONS
   (b) TAKE ALL CONSIDERATIONS INTO ACCOUNT AT THE TIME OF BID. NO CONSIDERATIONS WILL BE GRANTED TO THE CONTRACTOR AFTER THE BID HAS BEEN ACCEPTED.
4. **ALL LIGHT FIXTURES SHOWN/LISTED IN LIGHTING FIXTURE SCHEDULE SHALL BE 10-DAY PRE-APPROVED BY THE ENGINEER PRIOR TO BID.**
5. ALL ELECTRICAL SWITCHES SHALL BE INSTALLED AS PER N.E.C. ARTICLE 404 AND AS REQUIRED BY CODE. LIGHT SWITCHES SHALL IVORY AND COVERS SHALL BE STAINLESS STEEL.
6. ALL RECEPTACLES AND COVERS SHALL BE INSTALLED AS PER N.E.C. ARTICLE 406 AND AS REQUIRED BY CODE. RECEPTACLE SHALL BE IVORY AND COVERS SHALL BE STANLESS STEEL.
7. ALL ELECTRICAL METALLIC TUBING (EMT), RIGID NON-MATALLIC CONDUIT, FLEXIBLE METALLIC CONDUIT, FLEXIBLE NON-METALLIC CONDUIT, 'SEALTIGHT' TYPE CONDUITS AND ALL OTHER CONDUITS THAT DO NOT CONTAIN A REQUIRED CODE SIZED GROUND WIRE SHALL HAVE A REQUIRED CODE SIZED BOND WIRE INSTALLED WITH THE CIRCUIT CONDUCTORS.
8. CONTRACTOR SHALL FURNISH AND INSTALL WEATHER PROOF G.F.C.I. RECEPTACLE AT AN ACCESSIBLE LOCATION NEAR ALL HVAC EQUIPMENT IN ACCORDANCE WITH N.E.C. ARTICLE 210.63 AND AS REQUIRED BY CODE. CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF THESE RECEPTACLES IN THE FIELD REGARDLESS OF THE PLAN LAYOUT.
9. CONTRACTOR SHALL, PRIOR TO BID AND ROUGH-IN, FIELD VERIFY ALL HVAC ELECTRICAL REQUIREMENTS AGAINST THE PLAN REQUIREMENTS. FAILURE TO VERIFY AND NOTIFY ENGINEER/ARCHITECT PRIOR TO ROUGH-IN SHALL INDICATE THAT THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THE DESIGN AND INSTALLATION REQUIREMENTS.
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11. EXIT, EXTERIOR EGRESS AND EMERGENCY LIGHT FIXTURES SHALL BE CONNECTED TO PANELBOARD LP, CIRCUIT BREAKER 8. CONTRACTOR SHALL ROUTE ½"ø CONDUIT W/(2)#10AWG & (1)#12AWG GRD FROM PANELBOARD LP TO EACH FIXTURE. CIRCUIT BREAKER SHALL BE RED IN COLOR AND LABELED 'EMERGENCY – DO NOT TURN OFF'.
12. ALL 600V CABLES SHALL BE MULTI-CONDUCTOR, CROSS LINKED POLYETHYLENE INSULATION, TYPE TC TRAY CABLES, COPPER CONDUCTOR CABLES OR EQUAL.
13. ALL CONTROL CABLES SHALL BE MULTI-CONDUCTOR, CROSS LINKED POLYETHYLENE INSULATION, 600V RATING, COPPER CONDUCTOR CABLES OR EQUAL. SEE SPECIFICATION.
14. ALL 5KV CABLES SHALL BE MULTI-CONDUCTOR, NLEPR INSULATION 133/100%, IL CPE-TP JACKET, SHIELDED TYPE MV-105, SUNLIGHT RESISTANT, UL TRAY RATED, COPPER CONDUCTOR COMPRESSED 5/8kV CABLES OR EQUAL.
15. 480V SERVICE TO ROOF TOP HVAC UNITS SHALL BE ROUTED UP THROUGH HVAC ACCESS AREA TO THE HVAC UNIT. EACH HVAC ROOF TOP UNIT SHALL BE FURNISHED WITH A DISCONNECT SWITCH AND 120V GFI SERVICE RECEPTACLE WITH STEP-DOWN TRANSFORMER FOR THE 120V REQUIRED.
16. UNDERGROUND CONDUITS SHALL BE CLEANED, CAPPED AND PULL STRING INSTALLED FOR FUTURE USE. CONTRACTOR SHALL MARK CONDUIT ENDS WITH MAGNETIC TAPE INSTALLED 6" ABOVE CONDUIT FOR FUTURE IDENTIFICATION.

REFERENCES:

4643E-E1 – ELECTRICAL SITE PLAN
4643E-E2 – ELECTRICAL BUILDING LIGHTING FLOOR PLAN
4643E-E4 – ELECTRICAL BUILDING CABLE TRAY FLOOR PLAN
4643E-E5 – ELECTRICAL BUILDING GROUNDING PLAN
4643E-E6 – ELECTRICAL BUILDING SECTION AND DETAILS
4643E-E7 – ELECTRICAL AC-ONE LINE RISER DIAGRAM
4643E-E8 – ELECTRICAL MOTOR CONTROL CENTER AND PANELBOARD SCHEDULE
4643E-E9 – ELECTRICAL FEEDER AND CONTROL CONDUCTOR SCHEDULE
4643E-E10– ELECTRICAL SPECIFICATIONS

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION
WT	GROUND FAULT DUPLEX RECEPTACLE, FLUSH WALL MTD. 42" A.F.F. UNLESS NOTED OTHERWISE. WT IS FOR WEATHER TIGHT ENCLOSURE WHERE APPLICABLE

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NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

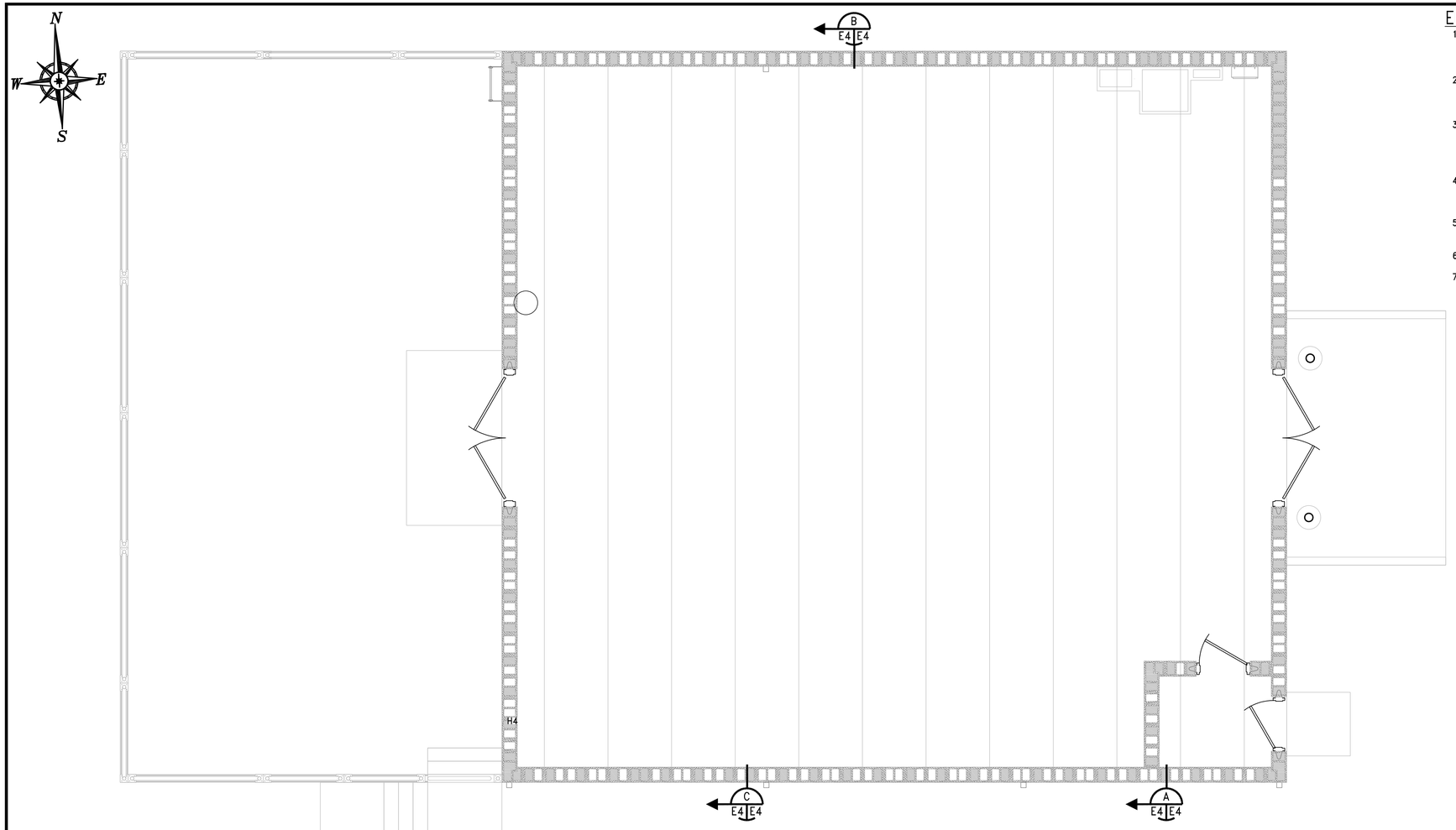
TITLE
ELECTRICAL BUILDING POWER FLOOR PLAN

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ELECTRICAL NOTES:

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3. CONTRACTOR SHALL (PRIOR TO BID)
   (a) VISIT THE JOB/CONSTRUCTION SITE AND FIELD VERIFY ALL EXISTING CONDITIONS
   (b) TAKE ALL CONSIDERATIONS INTO ACCOUNT AT THE TIME OF BID. NO CONSIDERATIONS WILL BE GRANTED TO THE CONTRACTOR AFTER THE BID HAS BEEN ACCEPTED.

4. CONTRACTOR SHALL WEATHERPROOF CABLE TRAY PENETRATIONS THROUGH EXTERIOR WALLS. ALL PENETRATIONS THROUGH EXTERIOR BLOCK WALLS SHALL BE WEATHERPROOF SEALED. CONTRACTOR SHALL SUBMIT WEATHERPROOF METHOD TO OWNER AND ENGINEER PRIOR TO INSTALLATION.

5. CONTRACTOR SHALL FURNISH AND INSTALL CABLE DIVIDER BARRIER IN EACH CABLE TRAY AS REQUIRED TO SEPARATE CONTROL/MONITORING CONDUCTORS AND POWER CONDUCTORS.

6. SEE DRAWING 4643E-E2 FOR LIGHT FIXTURE, F1, REQUIREMENTS.

7. CONTRACTOR SHALL PROVIDE REMOVABLE COVER FOR FUTURE CABLE TRAY OPENING. SEE DRAWING 4643E-S3 FOR DETAILS.

SUPPORT LEGEND

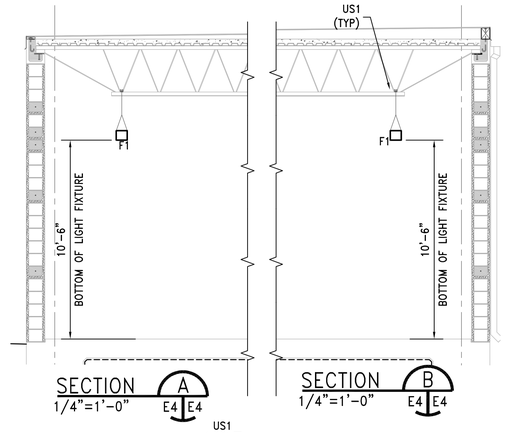
H1 – BLINE B494-48-HDG, WALL MOUNT CABLE TRAY BRACKET

H2 – BLINE B297-42-HDG, WALL MOUNT CABLE TRAY CANTILEVER BRACKET

H3 – BLINE 9P-5530-22SHA, HEAVY DUTY TRAPEZE SUPPORT KIT

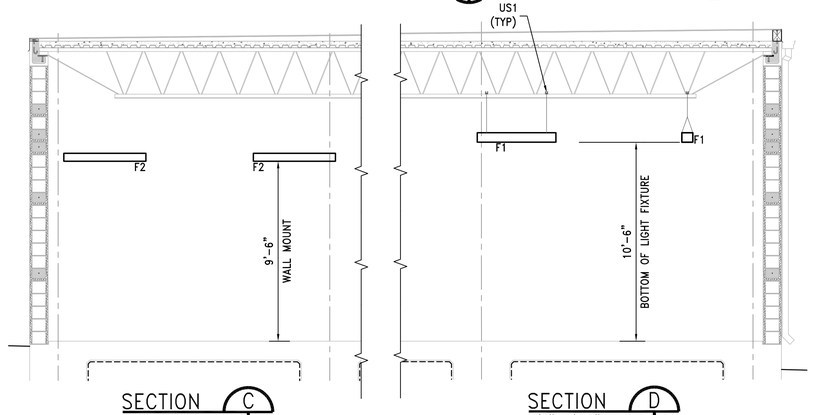
H4 – BLINE B494-36-HDG, WALL MOUNT CABLE TRAY BRACKET

US1 – BLINE UNISTRUT #B12SH-**GLV, 12 GAUGE, 9/16"x1⅛" SLOTTED W/½" ALL-THREAD, NUTS AND WASHERS. ** – LENGTH TO BE VERIFIED AT TIME OF INSTALLATION. UNISTRUT ROSS (2) TRUSSES MINIMUM.



SECTION A 1/4"=1'-0" (E4 E4)

SECTION B 1/4"=1'-0" (E4 E4)



SECTION C 1/4"=1'-0" (E4 E4)

SECTION D 1/4"=1'-0" (E4 E4)

CABLE TRAY FLOOR PLAN

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

REFERENCES:

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McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

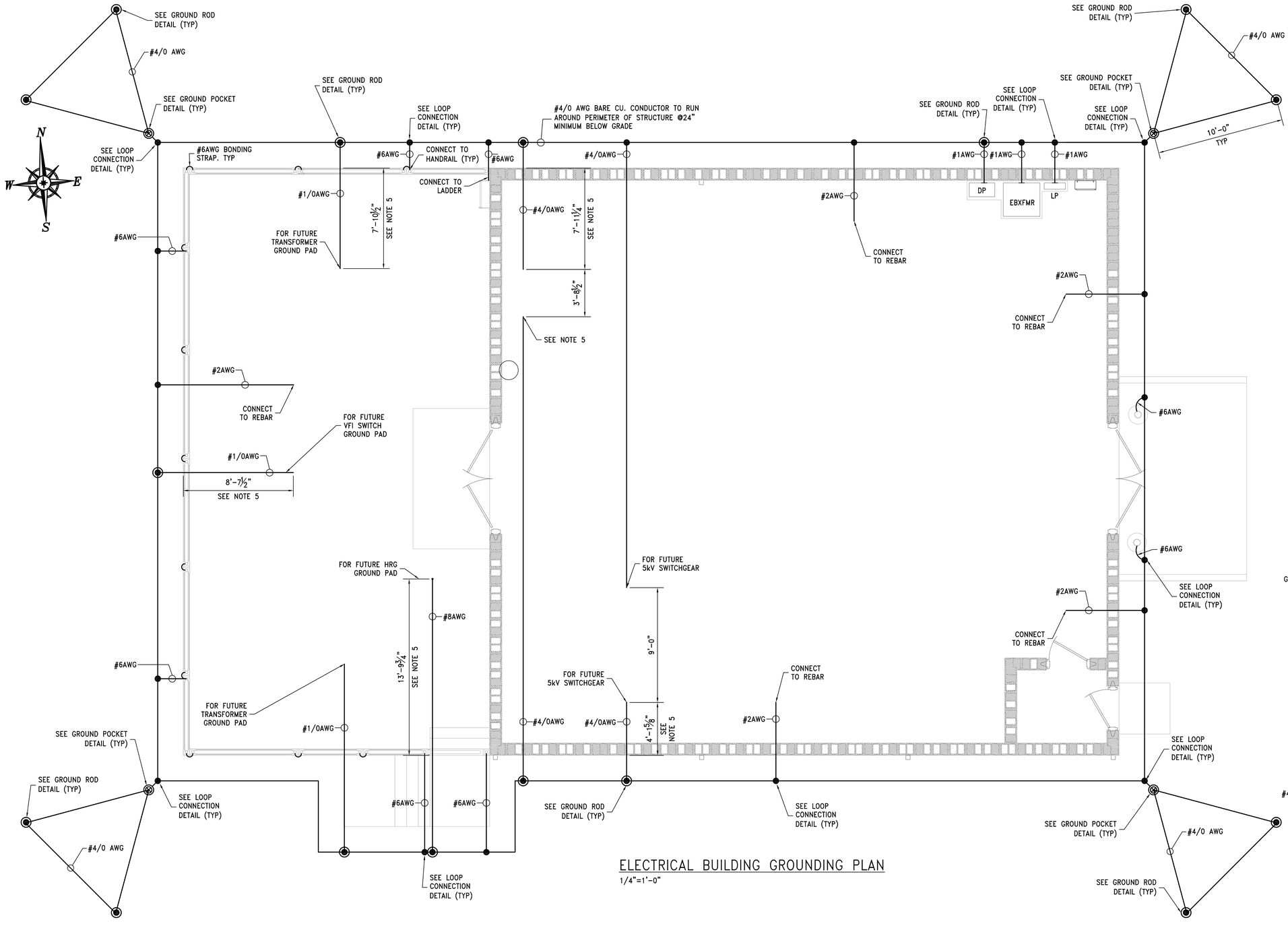
TITLE
ELECTRICAL BUILDING CABLE TRAY FLOOR PLAN (NOT IN CONTRACT)

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DATE 05/27/26 22x34 REV. A

DRAWING NUMBER 4643E-E4

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ELECTRICAL BUILDING GROUNDING PLAN

1/4"=1'-0"

ELECTRICAL NOTES:

1. ALL ELECTRICAL WORK SHALL BE INSTALLED AS REQUIRED BY THE 2020 NATIONAL ELECTRIC CODE (N.E.C.) AND ANY STATE, CITY AND/OR LOCAL CODE REQUIREMENTS. THE MORE STRINGENT CODE REQUIREMENT SHALL BE UTILIZED AND VERIFIED WITH THE LOCAL INSPECTION APPROVAL AGENCY. (DEFINITION "CODE" – STATE, CITY AND/OR LOCAL CODE REQUIREMENTS)

2. CONTRACTOR SHALL INSTALL ALL GROUNDING AS REQUIRED BY THE 2020 NATIONAL ELECTRIC CODE (N.E.C.) SECTION 250 AND ANY STATE, CITY AND/OR LOCAL CODE REQUIREMENTS. THE MORE STRINGENT CODE REQUIREMENT SHALL BE UTILIZED AND VERIFIED WITH THE LOCAL INSPECTION APPROVAL AGENCY.

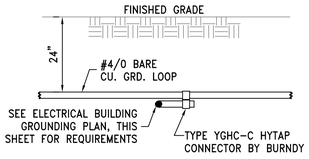
3. CONTRACTOR SHALL (PRIOR TO BID)
   (a) VISIT THE JOB/CONSTRUCTION SITE AND FIELD VERIFY ALL EXISTING CONDITIONS
   (b) TAKE ALL CONSIDERATIONS INTO ACCOUNT AT THE TIME OF BID. NO CONSIDERATIONS WILL BE GRANTED TO THE CONTRACTOR AFTER THE BID HAS BEEN ACCEPTED.

4. HIGH RESISTANCE GROUND SYSTEM SHALL BE INSTALLED AS REQUIRED BY THE 2020 NATIONAL ELECTRICAL CODE, SECTION 250.187, AND ANY STATE, CITY AND/OR LOCAL CODE REQUIREMENTS.

5. BARE COPPER GROUND CONDUCTOR SHALL BE INSTALL IN 1"ø PVC CONDUIT IN FOUNDATION, STUB UP 4" ABOVE FINISHED FLOOR AND STUB OUT 12" FROM FOUNDATION EDGE.

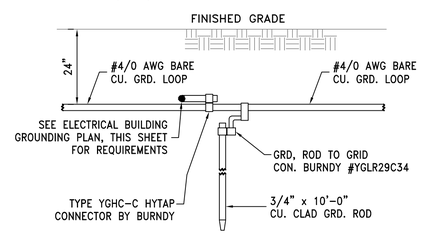
REFERENCES:

4643E-E1 – ELECTRICAL SITE PLAN
4643E-E2 – ELECTRICAL BUILDING LIGHTING FLOOR PLAN
4643E-E3 – ELECTRICAL BUILDING power FLOOR PLAN
4643E-E4 – ELECTRICAL BUILDING CABLE TRAY FLOOR PLAN
4643E-E6 – ELECTRICAL BUILDING SECTION AND DETAILS
4643E-E7 – ELECTRICAL AC-ONE LINE RISER DIAGRAM
4643E-E8 – ELECTRICAL MOTOR CONTROL CENTER AND PANELBOARD SCHEDULE
4643E-E9 – ELECTRICAL FEEDER AND CONTROL CONDUCTOR SCHEDULE
4643E-E10– ELECTRICAL SPECIFICATIONS



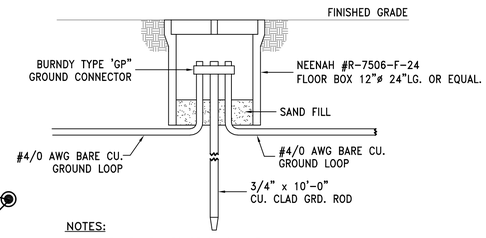
LOOP CONNECTION DETAIL

(N.T.S.)



GRD. ROD CONNECTION DETAIL

(N.T.S.)



NOTES:

1. TOP OF WELL TO BE FLUSH WITH FININISHED GRADE. TOP OF GROUND ROD TO BE AT LEAST 12" BELOW FIN. GRADE.

GROUND POCKET DETAIL

(N.T.S.)

REV.	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR BID	09/11/26	WES	JJM

11880 Cranston Drive, Ste. 101
Arlington, Tennessee 38002
(901) 290-5444

CMG ENGINEERS, INC.

457 St. Michael Street
Mobile, Alabama 36602
(251) 433-1611

PROJECT

McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE

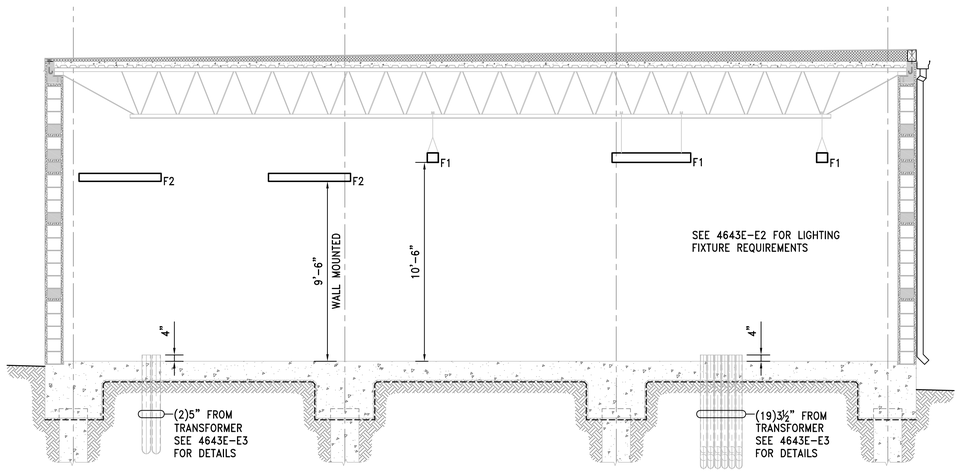
ELECTRICAL BUILDING GROUNDING PLAN

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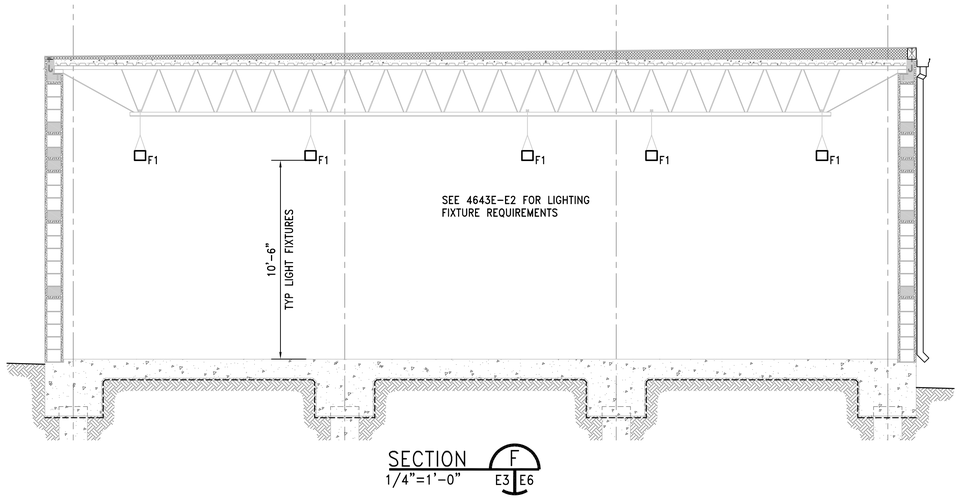
DATE 05/27/26 22x34 REV. A

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SECTION E
1/4"=1'-0" E3 E6



SECTION F
1/4"=1'-0" E3 E6

ELECTRICAL NOTES:

1. ALL ELECTRICAL WORK SHALL BE INSTALLED AS REQUIRED BY THE NATIONAL ELECTRIC CODE (N.E.C.) AND ANY STATE, CITY AND/OR LOCAL CODE REQUIREMENTS. THE MORE STRINGENT CODE REQUIREMENT SHALL BE UTILIZED AND VERIFIED WITH THE LOCAL INSPECTION APPROVAL AGENCY. (DEFINITION "CODE" – STATE, CITY AND/OR LOCAL CODE REQUIREMENTS)

2. CONTRACTOR SHALL INSTALL ALL GROUNDING AS REQUIRED BY THE NATIONAL ELECTRIC CODE (N.E.C.) AND ANY STATE, CITY AND/OR LOCAL CODE REQUIREMENTS. THE MORE STRINGENT CODE REQUIREMENT SHALL BE UTILIZED AND VERIFIED WITH THE LOCAL INSPECTION APPROVAL AGENCY.

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   (b) TAKE ALL CONSIDERATIONS INTO ACCOUNT AT THE TIME OF BID. NO CONSIDERATIONS WILL BE GRANTED TO THE CONTRACTOR AFTER THE BID HAS BEEN ACCEPTED.

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4643E-E4 – ELECTRICAL BUILDING CABLE TRAY FLOOR PLAN
4643E-E5 – ELECTRICAL BUILDING GROUNDING PLAN
4643E-E7 – ELECTRICAL AC-ONE LINE RISER DIAGRAM
4643E-E8 – ELECTRICAL MOTOR CONTROL CENTER AND PANELBOARD SCHEDULE
4643E-E9 – ELECTRICAL FEEDER AND CONTROL CONDUCTOR SCHEDULE
4643E-E10 – ELECTRICAL SPECIFICATIONS

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NEW EAST ELECTRICAL BUILDING

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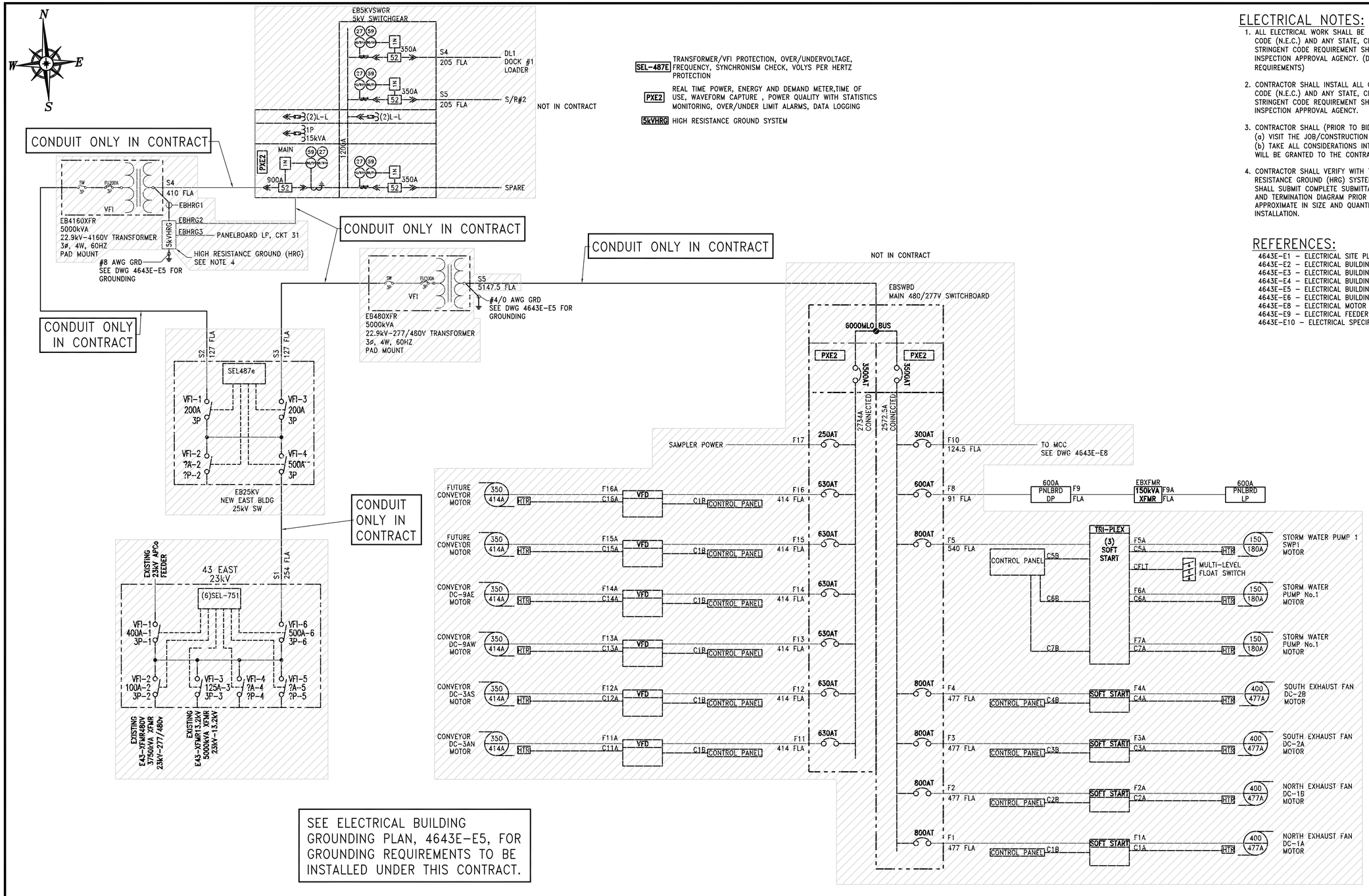
TITLE
ELECTRICAL
SECTION AND DETAILS

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SEL-487E TRANSFORMER/VFI PROTECTION, OVER/UNDERVOLTAGE, FREQUENCY, SYNCHRONISM CHECK, VOLTS PER HERTZ PROTECTION

PXE2 REAL TIME POWER, ENERGY AND DEMAND METER,TIME OF USE, WAVEFORM CAPTURE , POWER QUALITY WITH STATISTICS MONITORING, OVER/UNDER LIMIT ALARMS, DATA LOGGING

5KVHRG HIGH RESISTANCE GROUND SYSTEM

ELECTRICAL NOTES:

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4. CONTRACTOR SHALL VERIFY WITH THE MANUFACTURER THE REQUIREMENTS FOR THE HIGH RESISTANCE GROUND (HRG) SYSTEM PRIOR TO BID AND INSTALLATION. CONTRACTOR SHALL SHALL SUBMIT COMPLETE SUBMITTAL WITH CONDUCTOR REQUIREMENTS, WIRING SCHEMATIC AND TERMINATION DIAGRAM PRIOR TO INSTALLATION. CONDUCTORS SHOWN ARE AN APPROXIMATE IN SIZE AND QUANTITY, AND CONTRACTOR SHALL VERIFY PRIOR TO BID AND INSTALLATION.

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4643E-E9 – ELECTRICAL FEEDER AND CONTROL CONDUCTOR SCHEDULE
4643E-E10 – ELECTRICAL SPECIFICATIONS

SEE ELECTRICAL BUILDING GROUNDING PLAN, 4643E-E5, FOR GROUNDING REQUIREMENTS TO BE INSTALLED UNDER THIS CONTRACT.

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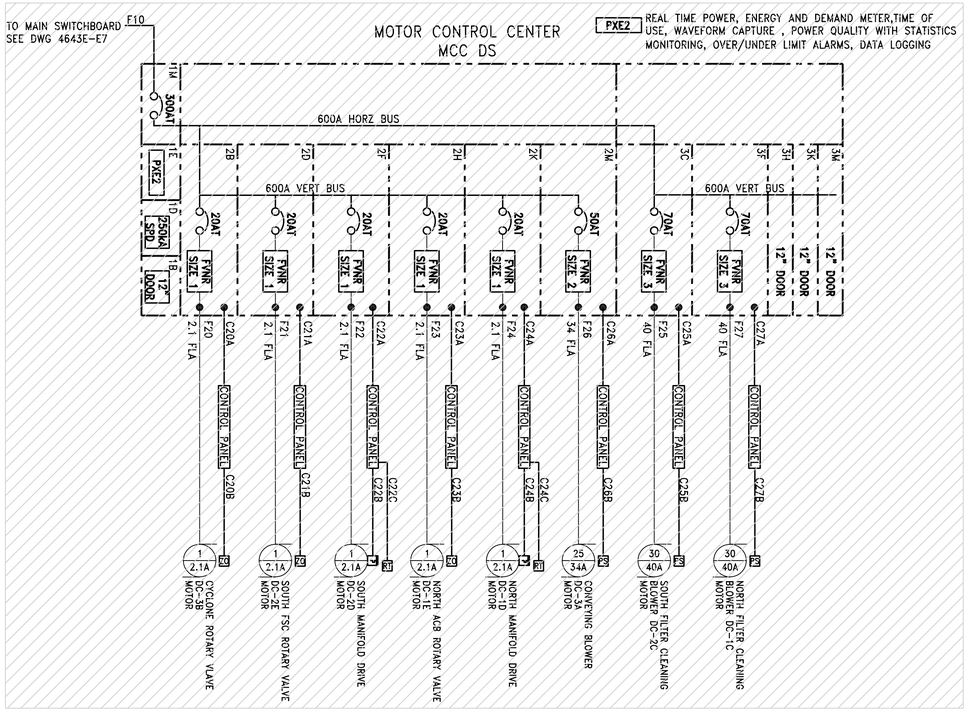
TITLE
ELECTRICAL AC-ONE LINE
RISER DIAGRAM

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DATE 05/27/26 22x34 REV. A

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NOT IN CONTRACT

REFERENCES:

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4643E-E5 – ELECTRICAL BUILDING GROUNDING PLAN
4643E-E7 – ELECTRICAL AC-ONE LINE RISER DIAGRAM
4643E-E8 – ELECTRICAL MOTOR CONTROL CENTER AND PANELBOARD SCHEDULE
4643E-E9 – ELECTRICAL FEEDER AND CONTROL CONDUCTOR SCHEDULE
4643E-E10 – ELECTRICAL SPECIFICATIONS

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PANELBOARD SCHEDULE (277/480V 3ø)

MARK: "DP"

CKT #	LOAD DESCRIPTION	BREAKER P	BREAKER TRIP	FEEDER/CONDUIT FEED	FEEDER/CONDUIT GRD	FEEDER/CONDUIT SIZE	PHASE (VA) A	PHASE (VA) B	PHASE (VA) C	PHASE (VA) A	PHASE (VA) B	PHASE (VA) C	FEEDER/CONDUIT FEED	FEEDER/CONDUIT GRD	FEEDER/CONDUIT SIZE	BREAKER P	BREAKER TRIP	LOAD DESCRIPTION	CKT #
1							50,000			2,100			–	–	–	–	–	NORTH/SOUTH FILTER LTG	2
3	150kVA XFMR	3	250	250	4	2½		50,000			1,500		–	–	–	–	–	ISOLATION VALVE/STAIRS LTG	4
5									50,000			–	–	–	–	–	–	SPACE	6
7							12,500			–			–	–	–	–	–	SPACE	8
9	37.5kVA XFMR PANEL P3	3	40	6	8	1		12,500			–		–	–	–	–	–	SPACE	10
11									12,500			–	–	–	–	–	–	SPACE	12
13	SPACE	–	–	–	–	–	–			–			–	–	–	–	–	SPACE	14
15	SPACE	–	–	–	–	–		–			–		–	–	–	–	–	SPACE	16
17	SPACE	–	–	–	–	–			–			–	–	–	–	–	–	SPACE	18
19	SPACE	–	–	–	–	–	–			–			–	–	–	–	–	SPACE	20
21	SPACE	–	–	–	–	–		–			–		–	–	–	–	–	SPACE	22
23	SPACE	–	–	–	–	–			–			–	–	–	–	–	–	SPACE	24
25	SPACE	–	–	–	–	–	–			–			–	–	–	–	–	SPACE	26
27	SPACE	–	–	–	–	–		–			–		–	–	–	–	–	SPACE	28
29	SPACE	–	–	–	–	–			–			–	–	–	–	–	–	SPACE	30
31							11,085			11,085									32
33	RTU-1	3	50	4	8	1		11,085			11,085		4	8	1	3	50	RTU-2	34
35									11,085			11,085							36
37							4,435			8,335									38
39	I/O RACK	3	20	12	12	½		4,435			8,335		2	6	1	3	60	25kVA 480V-120/208 XFMR SAMPLER TOWER	40
41									4,435			8,335							42
							78,020	78,020	78,020	21,520	20,920	19,420							

TOTAL (kVA) øA 99.54 øB 98.94 øC 97.44
TOTAL CONNECTED LOAD (kVA) 290.92

HIGH PHASE (AMPS) 359.4
TOTAL LOAD (AMPS) 355.9

PANELBOARD SCHEDULE (120/208V 3ø)

MARK: "LP"

CKT #	LOAD DESCRIPTION	BREAKER P	BREAKER TRIP	FEEDER/CONDUIT FEED	FEEDER/CONDUIT GRD	FEEDER/CONDUIT SIZE	PHASE (VA) A	PHASE (VA) B	PHASE (VA) C	PHASE (VA) A	PHASE (VA) B	PHASE (VA) C	FEEDER/CONDUIT FEED	FEEDER/CONDUIT GRD	FEEDER/CONDUIT SIZE	BREAKER P	BREAKER TRIP	LOAD DESCRIPTION	CKT #
1	INTERIOR RECEPT	1	20	12	12	½	180			1,785			12	12	½	1	20	INTERIOR LIGHTING	2
3	INTERIOR RECEPT	1	20	12	12	½		180			1,040		12	12	¾	1	20	EXTERIOR LIGHTING	4
5	INTERIOR RECEPT	1	20	12	12	½			180			1,920	10	12	¾	1	20	INTERFACE CONTROL PANEL PWR	6
7	INTERIOR RECEPT	1	20	12	12	½	180			25			12	12	¾	1	20	EXIT/EMERGENCY LTG	8
9	INTERIOR RECEPT	1	20	12	12	½		180			180		12	12	¾	1	20	INTERIOR RECEPT	10
11	EXTERIOR RECEPT	1	20	12	12	½			180			180	12	12	¾	1	20	INTERIOR RECEPT	12
13	EXTERIOR RECEPT	1	20	12	12	½	180			180			12	12	¾	1	20	INTERIOR RECEPT	14
15	EXTERIOR RECEPT	1	20	12	12	½		180			180		12	12	¾	1	20	INTERIOR RECEPT	16
17	EXTERIOR RECEPT	1	20	12	12	½			180			180	12	12	¾	1	20	INTERIOR RECEPT	18
19	SPACE	–	–	–	–	–	–			180			12	12	¾	1	20	INTERIOR RECEPT	20
21	SPACE	–	–	–	–	–		–			–		–	–	–	–	–	SPACE	22
23	SPACE	–	–	–	–	–			–			–	–	–	–	–	–	SPACE	24
25	SPACE	–	–	–	–	–	–			–			–	–	–	–	–	SPACE	26
27	SPACE	–	–	–	–	–		–			–		–	–	–	–	–	SPACE	28
29	SPACE	–	–	–	–	–			–			–	–	–	–	–	–	SPACE	30
31	HRG CONTROL	1	20	10	12	¾	500			–			–	–	–	–	–	SPACE	32
33	SYSTEM CONTROL PANEL	1	20	10	12	½		1,920			–		–	–	–	–	–	SPACE	34
35	PASSIVE VALVES CP05 PANEL	1	20	10	12	¾			1,200			–	–	–	–	–	–	SPACE	36
37	LTG CONTROL	1	20	12	12	½	500			–			–	–	–	–	–	SPACE	38
39	SPARE	1	20	–	–	–		–			–		–	–	–	–	–	SPACE	40
41	SPARE	1	20	–	–	–			–			180	12	12	¾	1	20	RTU RECEPT	42
							1,540	2,460	1,740	2,170	1,580	2,460							

TOTAL (kVA) øA 3.71 øB 4.04 øC 4.20
TOTAL CONNECTED LOAD (kVA) 11.92

HIGH PHASE (AMPS) 35.0
TOTAL LOAD (AMPS) 33.2

PANELBOARD COORDINATION SCHEDULE

MARK	TYPE	MOUNTING	VOLTAGE	ø	WIRE	MAIN	SERVICE RATED	kAIC RATING	BUS RATING	NEUTRAL RATING	C/B TYPE	FEEDER CONDUCTORS	FEEDER GROUND	FEEDER CONDUIT
DP	NEMA-12	SURFACE	277/480	3	4	MLO	NO	65	600	600	BOLT-ON	(4)#4/0AWG	#1AWG	2½
LP	NEMA-12	SURFACE	120/208	3	4	600M.B.	NO	12	600	600	BOLT-ON	(2)350MCM ø/N	(2)#1AWG	(2)3

PANELBOARD NOTES:

1. ALL BUSSING COPPER, INCLUDING NEUTRAL AND GROUND. ALL LUGS 100 AMPS AND GREATER SHALL BE COPPER. ALL LUGS ON CIRCUIT BREAKERS GREATER THAN 400 AMPS SHALL BE COPPER.

2. CONTRACTOR SHALL FURNISH AND INSTALL NEW ARC-FLASH WARNING LABEL ON NEW ELECTRICAL EQUIPMENT AND ANY EXISTING ELECTRICAL EQUIPMENT THAT HAS BEEN MODIFIED. ELECTRICAL EQUIPMENT IS LISTED AS SWITCHBOARDS, SWITCHGEAR, PANELBOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKET ENCLOSURES AND MOTOR CONTROL CENTERS AS PER NEC 110.16(6)

3. NEW PANELBOARD SUPPLIED BY A FEEDER SHALL BE PERMANENTLY MARKED TO INDICTAE EQUIPMENT WHERE THE POWER ORIGINATES AS PER NEC 480.4(B). THE LABEL SHALL BE PERMANENTLY AFFIXED, OF SUFFICIENT DURABLITY TO WITHSTAND THE ENVIROMENT INVOLVED, AND NOT HANDWRITTEN.

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PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE
ELECTRICAL MOTOR CONTROL CENTER AND PANELBOARD SCHEDULE

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DATE 05/27/26 22x34 REV. A
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ELECTRICAL LOAD SCHEDULE

FEEDER	DESCRIPTION	HP	FULL LOAD AMPS	EQUIPMENT LOCATION	VOLTAGE	PANELBOARD SWITCHBOARD MOTOR CONTROL CENTER	EQUIPMENT ID	BREAKER TRIP	EQUIPMENT FEEDER			REMARKS
									FEEDER	GRD	CONDUIT NOTE 1	
S1	EAST BUILDING 25kV VFI SWITCH	.	.	OUTSIDE	22.9kV	.	EB25KV	500	(3)1000MCM	(1)1/0	5"	22.9kV FEED TO NEW EAST BUILDING VFI SWITCH
S2	EAST BUILDING 5kVA XFMR 4.16kV	.	126	OUTSIDE	22.9kV	.	EB4160XFR	200	(3)#2/0AWG	(1)1	5"	5000kVA 22.9kV-4.16kV TRANSFORMER
S3	EAST BUILDING 5kV XFMR 480/277V	.	126	OUTSIDE	22.9kV	.	EB480XFR	200	(3)#2/0AWG	(1)1	5"	5000kVA 22.9kV-480/277V TRANSFORMER
S4	EAST BUILDING 5kV SWITCHGEAR	.	694	INSIDE	4160	SWITCHGEAR	EB5KVSWGR	900	(2)500MCM ø	(2)2/0	(2)5"	4160V SWITCHGEAR INCOMING MAIN
S5	EAST BUILDING 480/277V SWITCHBOARD	.	6014	INSIDE	480	SWITCHBOARD	EB480SWBD	(2)3500A	(19)500MCM ø	(19)4/0	(19)3.5"	480/277V SWITCHBOARD
S4	DOCK LOADER #1	1250	205	INSIDE	4160	SWITCHGEAR	DL1	350	(3)250MCM	2	3.5"	DOCK LOADER #1 ELECTRICAL SERVICE
S5	STACKER/RECLAIM #2	1250	205	INSIDE	4160	SWITCHGEAR	S/R#2	350	(3)250MCM	2	3.5"	STACKER/RECLAIMER #2 ELECTRICAL SERVICE
EBHRG1	5kV TRANSFORMER NEUTRAL	.	10	OUTSIDE	4160	HRG	5kVHRG	.	(1)#6AWG	.	2"	NEUTRAL FROM TRANSFORMER TO HRG
EBHRG2	HRG SWITCHGEAR CONTROL	.	.	OUTSIDE	120	HRG/SWGR	.	.	7C#12AWG	.	2"	CONTROL CONDUCTORS FROM HRG TO SWGR MAIN BRKR
EBHRG3	HRG CONTROL VOLTAGE 120V	.	10	OUTSIDE	120	HRG/PANELBOARD	LP-31	20	(2)#12AWG	#12	1"	CONTROL VOLTAGE FOR HRG
F1/F1A	NORTH #1 EXHAUST FAN	400	477	OUTSIDE	480	SWITCHBOARD	DC-1A	800	(2)350MCM/ø	(2)3	(2)3"	
F2/F2A	NORTH #2 EXHAUST FAN	400	477	OUTSIDE	480	SWITCHBOARD	DC-1B	800	(2)350MCM/ø	(2)3	(2)3"	
F3/F3A	SOUTH #1 EXHAUST FAN	400	477	OUTSIDE	480	SWITCHBOARD	DC-2A	800	(2)350MCM/ø	(2)3	(2)3"	
F4/F4A	SOUTH #2 EXHAUST FAN	400	477	OUTSIDE	480	SWITCHBOARD	DC-2B	800	(2)350MCM/ø	(2)3	(2)3"	
F5	STORM WATER SYSTEM TRI-PLEX	450	540	OUTSIDE	480	SWITCHBOARD	SFTSRT	800	(2)350MCM/ø	(2)3	(2)3"	TO TRI-PLEX SOFT START
F5A	STORM WATER PUMP 1	150	180	OUTSIDE	480	SFTSRT	SWP1	300	350 MCM	3	3"	TO STORM PUMP 1
F6A	STORM WATER PUMP 2	150	180	OUTSIDE	480	SFTSRT	SWP2	300	350 MCM	3	3"	TO STORM PUMP 2
F7A	STORM WATER PUMP 2	150	180	OUTSIDE	480	SFTSRT	SWP3	300	350 MCM	3	3"	TO STORM PUMP 3
F8	PANELBOARD DP	NA	91	INSIDE	480	SWITCHBOARD	NA	150	1/0 AWG	6	2"	PANELBOARD FEEDER
F9	BUILDING 150kVA 480V-120/208V XFMR	NA	180	INSIDE	480	TRANSFORMER	NA	250	250MCM	4	2.5"	TRANSFORMER PRIMARY
F9A	PANELBOARD LP	NA	416	INSIDE	120/208	PANELBOARD	NA	600	(2)350MCM ø/N	(2)1	(2)3"	PANELBOARD LP/TRANSFORMER SECONDARY
F10	MCC	NA	124.5	INSIDE	480/277	SWITCHBOARD	MCC	300	350MCM	3	3"	MOTOR CONTROL CENTER PRIMARY
F11	CONVEYOR DC-3A	350	414	OUTSIDE	480	SWITCHBOARD	DC-3A	630	(2)#4/0AWG/ø	(2)1	(2)2.5"	
F12	CONVEYOR DC-3B	350	414	OUTSIDE	480	SWITCHBOARD	DC-3A	630	(2)#4/0AWG/ø	(2)1	(2)2.5"	
F13	CONVEYOR DC-9A	350	414	OUTSIDE	480	SWITCHBOARD	DC-3A	630	(2)#4/0AWG/ø	(2)1	(2)2.5"	
F14	CONVEYOR DC-9B	350	414	OUTSIDE	480	SWITCHBOARD	DC-3A	630	(2)#4/0AWG/ø	(2)1	(2)2.5"	
F15	CONVEYOR FUTURE	350	414	OUTSIDE	480	SWITCHBOARD		630			(2)2.5"	FUTURE
F16	CONVEYOR FUTURE	350	414	OUTSIDE	480	SWITCHBOARD		630			(2)2.5"	FUTURE
F17	SAMPLER POWER		250	OUTSIDE	480	SWITCHBOARD		250	300 MCM	4	2.5"	
F20	CYCLONE ROTARY VALVE	1	2.1	OUTSIDE	480	MCC	DC-3B	20	10 AWG	10	1"	
F21	SOUTH FSC ROTARY VALVE	1	2.1	OUTSIDE	480	MCC	DC-2E	20	10 AWG	10	1"	
F22	SOUTH FILTER MANIFOLD DRIVE	1	2.1	OUTSIDE	480	MCC	DC-2D	20	10 AWG	10	1"	
F23	NORTH ACB ROTARY VALVE	1	2.1	OUTSIDE	480	MCC	DC-1E	20	10 AWG	10	1"	
F24	NORTH FILTER MANIFOLD DRIVE	1	2.1	OUTSIDE	480	MCC	DC-1D	20	10 AWG	10	1"	
F25	SOUTH CLEANING BLOWER	30	40	OUTSIDE	480	MCC	DC-2C	70	4 AWG	8	1.25"	
F26	CONVEYING BLOWER	25	34	OUTSIDE	480	MCC	DC-3A	60	6 AWG	8	1"	
F27	NORTH CLEANING BLOWER	30	40	OUTSIDE	480	MCC	DC-1C	70	4 AWG	8	1.25"	

NOT IN CONTRACT

NOT IN CONTRACT

NOT IN CONTRACT

NOTES

1. CONDUIT SIZES SHALL BE VERIFIED AGAINST MULTI-CONDUCTOR CABLE SPECIFICATIONS PRIOR TO INSTALLATION. CONDUIT FILL SHALL BE CALCULATED AS REQUIRED BY CHAPTER 9, TABLE 1, TABLE NOTE 9 PER THE LATEST APPLICABLE EDITION OF N.E.C..

2. ALL 25kV AND 5kV CONDUCTORS SHALL BE SHIELDED.

AC ONE-LINE CONTROL CIRCUIT SCHEDULE

NOT IN CONTRACT

CONTROL REFERENCE	VOLTAGE	CONDUCTOR SIZE & QUANITY	GROUND SIZE	FROM DIVICE	TO DEVICE	CONDUIT NOTE 1
C1A	120V	2C #14AWG	#14AWG	SOFT START	DC-1A MOTOR HEATER, 240W	3/4"
C1B	120V	4C #14AWG	#14AWG	CONTROL PANEL	DC-1A SOFT START MOTOR CONTROLLER	3/4"
C2A	120V	2C #14AWG	#14AWG	SOFT START	DC-1B MOTOR HEATER, 240W	3/4"
C2B	120V	4C #14AWG	#14AWG	CONTROL PANEL	DC-1B SOFT START MOTOR CONTROLLER	3/4"
C3A	120V	2C #14AWG	#14AWG	SOFT START	DC-2A MOTOR HEATER, 240W	3/4"
C3B	120V	4C #14AWG	#14AWG	CONTROL PANEL	DC-2A SOFT START MOTOR CONTROLLER	3/4"
C4A	120V	2C #14AWG	#14AWG	SOFT START	DC-2B MOTOR HEATER, 240W	3/4"
C4B	120V	4C #14AWG	#14AWG	CONTROL PANEL	DC-2B SOFT START MOTOR CONTROLLER	3/4"
C5A	120V	3C #14AWG	#14AWG	VFD	SWP1 MOTOR HEATER, 240W	3/4"
C5B	120V	5C #14AWG	#14AWG	CONTROL PANEL	SWP1 VFD MOTOR CONTROLLER	3/4"
CFLT	120V	7C #14AWG	#14AWG	CONTROL PANEL	STORM WATER MULTI-LEVEL FLOAT CONTROL	3/4"
C6A	120V	3C #14AWG	#14AWG	VFD	SWP2 MOTOR HEATER, 240W	3/4"
C6B	120V	5C #14AWG	#14AWG	CONTROL PANEL	SWP2 VFD MOTOR CONTROLLER	3/4"
C7A	120V	3C #14AWG	#14AWG	VFD	SWP3 MOTOR HEATER, 240W	3/4"
C7B	120V	5C #14AWG	#14AWG	CONTROL PANEL	SWP3 VFD MOTOR CONTROLLER	3/4"
C10A	120V	4C #14AWG	#14AWG	MCC 01FE, DC-3B	CONTROL PANEL	3/4"
C10B	120V	3C #14AWG	#14AWG	CONTROL PANEL	DC-3B ZERO-SPEED SENSOR, BOTTOM OF CYCLONE HOPPER	3/4"
C11A	120V	4C #14AWG	#14AWG	MCC 01FG, DC-2E	CONTROL PANEL	3/4"
C11B	120V	3C #14AWG	#14AWG	CONTROL PANEL	DC-2E ZERO-SPEED SENSOR, BOTTOM SOUTH DUST COLLECTOR	3/4"
C12A	120V	4C #14AWG	#14AWG	MCC 01FI, DC-2D	CONTROL PANEL	3/4"
C12B	120V	2C #14AWG	#14AWG	CONTROL PANEL	DC-2D MOTOR THERMAL SWITCH, TOP SOUTH DUST COLLECTOR	3/4"
C12C	120V	2C #14AWG	#14AWG	CONTROL PANEL	DC-2D PROXIMITY SENSOR, TOP SOUTH DUST COLLECTOR	3/4"
C13A	120V	4C #14AWG	#14AWG	MCC 01FK, DC-1E	CONTROL PANEL	3/4"
C13B	120V	3C #14AWG	#14AWG	CONTROL PANEL	DC-1E ZERO-SPEED SENSOR, BOTTOM DUST COLLECTOR HOPPER	3/4"
C14A	120V	4C #14AWG	#14AWG	MCC 02FA, DC-1D	CONTROL PANEL	3/4"
C14B	120V	2C #14AWG	#14AWG	CONTROL PANEL	DC-1D MOTOR THERMAL SWITCH, INSIDE TOP OF DUST COLLECTOR	3/4"
C14C	120V	2C #14AWG	#14AWG	CONTROL PANEL	DC-1D PROXIMITY SENSOR, TOP OF DUST COLLECTOR	3/4"
C15A	120V	4C #14AWG	#14AWG	MCC 02FC	CONTROL PANEL	3/4"
C15B	24V	(1)SHLD TW.PR #16AWG		CONTROL PANEL	SOUTH CLEAN AIR PRESSURE TRANSDUCER, TOP CLEAN AIR TANK	3/4"
C16A	120V	4C #14AWG	#14AWG	MCC 02FE	CONTROL PANEL	3/4"
C16B	24V	(1)SHLD TW.PR #16AWG		CONTROL PANEL	DC-3A BLOWER PRESSURE TRANSDUCER AT CONVEYING BLOWER	3/4"
C17A	120V	4C #14AWG	#14AWG	MCC 02FH, DC-1C	CONTROL PANEL	3/4"
C17B	24V	(1)SHLD TW.PR #16AWG		CONTROL PANEL	NORTH CLEAN AIR PRESSURE TRANSMITTER AT TOP CLEAN AIR TANK	3/4"

NOTES

1. CONDUIT SIZES SHALL BE VERIFIED AGAINST MULTI-CONDUCTOR CABLE SPECIFICATIONS PRIOR TO INSTALLATION. CONDUIT FILL SHALL BE CALCULATED AS REQUIRED BY CHAPTER 9, TABLE 1, TABLE NOTE 9 PER THE LATEST APPLICABLE EDITION OF N.E.C..

ELECTRICAL NOTES:

1. ALL ELECTRICAL WORK SHALL BE INSTALLED AS REQUIRED BY THE NATIONAL ELECTRIC CODE (N.E.C.) AND ANY STATE, CITY AND/OR LOCAL CODE REQUIREMENTS. THE MORE STRINGENT CODE REQUIREMENT SHALL BE UTILIZED AND VERIFIED WITH THE LOCAL INSPECTION APPROVAL AGENCY. (DEFINITION "CODE" - STATE, CITY AND/OR LOCAL CODE REQUIREMENTS)

2. CONTRACTOR SHALL INSTALL ALL GROUNDING AS REQUIRED BY THE NATIONAL ELECTRIC CODE (N.E.C.) AND ANY STATE, CITY AND/OR LOCAL CODE REQUIREMENTS. THE MORE STRINGENT CODE REQUIREMENT SHALL BE UTILIZED AND VERIFIED WITH THE LOCAL INSPECTION APPROVAL AGENCY.

3. CONTRACTOR SHALL (PRIOR TO BID)
   (a) VISIT THE JOB/CONSTRUCTION SITE AND FIELD VERIFY ALL EXISTING CONDITIONS
   (b) TAKE ALL CONSIDERATIONS INTO ACCOUNT AT THE TIME OF BID. NO CONSIDERATIONS WILL BE GRANTED TO THE CONTRACTOR AFTER THE BID HAS BEEN ACCEPTED.

REFERENCES:

4643E-E1 - ELECTRICAL SITE PLAN
4643E-E2 - ELECTRICAL BUILDING LIGHTING FLOOR PLAN
4643E-E3 - ELECTRICAL BUILDING POWER FLOOR PLAN
4643E-E4 - ELECTRICAL BUILDING CABLE TRAY FLOOR PLAN
4643E-E5 - ELECTRICAL BUILDING GROUNDING PLAN
4643E-E6 - ELECTRICAL BUILDING SECTION AND DETAILS
4643E-E7 - ELECTRICAL AC-ONE LINE RISER DIAGRAM
4643E-E8 - ELECTRICAL MOTOR CONTROL CENTER AND PANELBOARD SCHEDULE
4643E-E9 - ELECTRICAL FEEDER AND CONTROL CONDUCTOR SCHEDULE

REV.	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR BID	09/11/26	WES	JJM

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PROJECT
McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE
ELECTRICAL FEEDER AND CONTROL CONDUCTOR SCHEDULE

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DATE 05/27/26 22x34 REV. A

DRAWING NUMBER 4643E-E9

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ELECTRICAL SPECIFICATIONS:

PART 1 – GENERAL SCOPE

FURNISHING OF ALL LABOR, MATERIAL, EQUIPMENT, SUPPLIES, AND SERVICES NECESSARY TO CONSTRUCT AND INSTALL THE COMPLETE ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN. WORK SHALL INCLUDE BUT IS NOT NECESSARILY LIMITED TO THE FOLLOWING ITEMS:

- 22.9kV–4160V TRANSFORMER/TERMINATION
- 5kV HIGH RESISTANCE GROUND INSTALLATION/TERMINATION
- 22.9kV–480/277V TRANSFORMER/TERMINATION
- MAIN 4160V SWITCHGEAR INSTALLATION/TERMINATION
- MAIN 480/277V SWITCHBOARD INSTALLATION/TERMINATION
- LIGHTING INSTALLATION/TERMINATION
- INTERIOR/EXTERIOR CIRCUIT DISTRIBUTION
- PANELBOARD 480/277V INSTALLATION/TERMINATION
- 480V–120/208V TRANSFORMER INSTALLATION/TERMINATION
- PANELBOARD 120/208V INSTALLATION/TERMINATION
- EQUIPMENT INSTALLATION/TERMINATION
- RECEPTACLE INSTALLATION/TERMINATION
- CONDUIT INSTALLATION
- CONDUCTOR INSTALLATION/TERMINATION
- UNDERGROUND DUCTBANK/EXCAVATION WITH GPR (GROUND PENETRATING RADAR)

JOB CONDITIONS

EXISTING CONDITIONS: ALL UTILITIES, EXISTING SYSTEMS, AND CONDITIONS SHOWN ON THE PLANS AS EXISTING ARE APPROXIMATE, AND THE CONTRACTOR SHALL VERIFY BEFORE ANY WORK IS STARTED.

CODES, PERMITS AND INSPECTIONS

THE INSTALLATION SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL LAWS AND ORDINANCES APPLICABLE TO ELECTRICAL INSTALLATION AND WITH THE REGULATIONS OF THE LATEST ACCEPTED PUBLISHED EDITION OF THE NATIONAL ELECTRICAL CODE (N.E.C. 2017) WHERE SUCH REGULATIONS DO NOT CONFLICT WITH THOSE LAWS AND ORDINANCES. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTION FEES, AND AFTER COMPLETION OF THE WORK, SHALL FURNISH THE ARCHITECT A CERTIFICATE OF FINAL INSPECTION AND APPROVAL FROM THE APPLICABLE LOCAL INSPECTION AUTHORITIES. ANY CHARGES BY A UTILITY FOR PROVIDING SERVICE AS SHOWN SHALL BE INCLUDED IN THE BID AND PAID BY THE CONTRACTOR.

STANDARDS OF MATERIALS AND WORKMANSHIP

ALL MATERIALS SHALL BE NEW AND SHALL BE LISTED AND APPROVED BY THE UNDERWRITERS' LABORATORIES, INC., IN EVERY CASE WHERE A STANDARD HAS BEEN ESTABLISHED FOR A PARTICULAR TYPE OF MATERIAL IN QUESTION. ALL WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT A NEAT APPEARANCE.

SHOP DRAWINGS

THE CONTRACTOR SHALL SUBMIT A LIST OF ITEMS PROPOSED FOR USE. HE SHALL ALSO SUBMIT CATALOG DATA AND SHOP DRAWINGS ON PROPOSED SYSTEMS AND THEIR COMPONENTS, PANELBOARDS, SAFETY SWITCHES, LIGHTING FIXTURES, AND WIRING DEVICES. WHERE SUBSTITUTIONS ALTER THE DESIGN OR SPACE REQUIREMENTS, THE CONTRACTOR SHALL DEFRAY ALL ITEMS OF COST FOR THE REVISED DESIGN AND CONSTRUCTION INCLUDING COSTS TO ALL ALLIED TRADES INVOLVED.

TYPE OF PERMANENT ELECTRICAL SERVICE

EXISTING FACILITY ELECTRICAL SERVICE 22.9kV, 3 PHASE, 3 WIRE SERVED FROM AN EXISTING NORTH 32 BUILDING DISTRIBUTION SWITCH. CONTRACTOR SHALL VERIFY ALL DETAILS OF ELECTRICAL SERVICE WITH THE OWNER PRIOR TO BID. INTERFACE WITH OTHER CONTRACTS IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COOPERATE WITH ALL OTHER CRAFTS WORKING ON THIS PROJECT. ALL CUTTING, TRENCHING, BACKFILL, AND STRUCTURAL REMOVALS TO PERMIT ENTRY OF THE ELECTRICAL SYSTEM COMPONENTS SHALL BE DONE BY THIS CONTRACTOR. ALL PATCHING AND FINISHING SHALL BE DONE BY THE GENERAL CONTRACTOR.

EQUIPMENT FURNISHED UNDER OTHER SECTIONS

THE CONTRACTOR SHALL FURNISH AND INSTALL COMPLETE ELECTRICAL ROUGHING–IN AND CONNECTION TO ALL EQUIPMENT FURNISHED UNDER OTHER SECTIONS AS INDICATED ON DRAWINGS. THE CONTRACTOR SHALL VERIFY AND INSTALL PROPER SIZE SERVICE AS REQUIRED FOR ALL ACTUAL EQUIPMENT PURCHASED. ALL SUCH EQUIPMENT SHALL BE SET IN PLACE AS WORK OF OTHER SECTIONS.

FIRE ALARM SYSTEM

CONTRACTOR SHALL FURNISH AND INSTALL FIRE DETECTION SYSTEM AS REQUIRED BY THE NATIONAL FIRE PROTECTION ASSOCIATION. SYSTEM SHALL HAVE VISUAL AND HORN NOTIFICATION. FIRE DETECTION SYSTEM SHALL HAVE ALARM BELLS/HORNS AS REQUIRED BY LOCAL FIRE MARSHALL OR A.H.J.. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY DRAWINGS TO OBTAIN PERMITS FOR FIRE SYSTEM INSTALLATION. AN ELECTRONIC AUTOCAD FILE OF THE FLOOR PLAN WILL BE PROVIDED TO THE CONTRACTOR FOR LOCATING ALL FIRE DETECTION SYSTEM ALARM BELLS, PULL STATIONS, CONTROL PANELS, ETC. ALL FIRE ALARM CONTRACTORS MUST SUBMIT THROUGH A BIDDING ELECTRICAL CONTRACTOR WHO SHALL INCLUDE ALL BOXES, CONDUIT, WIRE, ETC. TO COMPLETE THE FIRE ALARM PACKAGE. THE ALARM CONTRACTOR IS REQUIRED TO SUBMIT TO THE ARCHITECT AND THE LOCAL CITY FIRE INSPECTOR SHOP DRAWINGS OF THE CODE COMPLIANT SYSTEM STAMPED BY A QUALIFIED FIRE ALARM ENGINEER/DESIGNER ACCEPTABLE TO THE LOCAL FIRE INSPECTOR.

GROUNDING

PROVIDE GROUNDING AND BONDING SYSTEMS IN STRICT ACCORDANCE WITH THE LATEST ACCEPTED PUBLISHED EDITION OF THE NATIONAL ELECTRICAL CODE (N.E.C. 2017), EXCEPT WHERE MORE STRINGENT REQUIREMENTS ARE SPECIFIED HEREIN. INTER–CONNECTION OF NEUTRAL AND GROUND IS NOT PERMITTED EXCEPT AT SERVICE ENTRANCE EQUIPMENT. INSTALL GROUNDING CONDUCTORS TO PERMIT SHORTEST AND MOST DIRECT PATH TO GROUND. CONCEALED JOINTS SHALL BE MADE BY CADWELD METHOD. WHERE GROUNDING CONDUCTORS ARE IN RACEWAY, BOND CONDUCTOR AND RACEWAY AT BOTH ENDS. GROUNDING AND BONDING FITTINGS USED SHALL BE UL LISTED AND BE COMPATIBLE WITH METALS USED IN SYSTEM. SHEET METAL TYPE STRAP ARE NOT ACCEPTABLE.

A GREEN INSULATED GROUND CONDUCTOR SHALL BE RUN IN ALL BRACH CIRCUIT AND FEEDER CONDUIT WITH PHASE AND/OR NEUTRAL CONDUCTORS. GROUND CONDUCTOR SHALL BE SIZED PER NEC OR AS NOTED ON DRAWINGS. MINIMUM SIZE #12 AWG. CONDUIT BOX TO DEVICE STRAP OR YOKE SCREW CONNECTION IS NOT SUFFICIENT. PROVIDE AN INSULATED GROUNDING JUMPER FOR RECEPTACLE CIRCUITS.

GUARANTEE AND SERVICE

UPON COMPLETION OF ALL TESTS AND ACCEPTANCE, THE CONTRACTOR SHALL FURNISH THE OWNER OF A WRITTEN GUARANTEE COVERING THE ELECTRICAL WORK DONE FOR A PERIOD OF TWO (2) YEARS FROM DATE OF ACCEPTANCE. GUARANTEE INCLUDES EQUIPMENT CAPACITY AND PERFORMANCE RATINGS SPECIFIED WITHOUT EXCESSIVE NOISE LEVELS. UPON NOTICE FROM THE ARCHITECT OR THE OWNER, THE CONTRACTOR SHALL, DURING THE GUARANTEE PERIOD, RECTIFY AND REPLACE ANY DEFECTIVE MATERIAL OR WORKMANSHIP AND REPAIR ANY DAMAGE CAUSED THEREBY WITHOUT ADDITIONAL COST.

PART 2 – PRODUCTS

GENERAL

ALL EQUIPMENT AND MATERIALS SHALL HAVE RATINGS ESTABLISHED BY THE RECOGNIZED INDEPENDENT AGENCY OR LABORATORY. THE CONTRACTOR SHALL APPLY THE ITEMS USED ON THE PROJECT WITHIN THE RATINGS AND SUBJECT TO ANY STIPULATIONS OR EXCEPTIONS ESTABLISHED BY THE INDEPENDENT AGENCY OR LABORATORY. USE OF EQUIPMENT OR MATERIALS IN APPLICATIONS BEYOND THAT CERTIFIED BY THE AGENCY OR BEYOND THAT RECOMMENDED BY THE MANUFACTURER SHALL BE CAUSE FOR REMOVAL AND REPLACEMENT OF SUCH MISAPPLIED ITEMS.

RACEWAY AND FITTINGS

CONDUIT SYSTEMS: ACCEPTABLE TYPES OF CONDUIT:

HOT DIPPED GALVANIZED RIGID STEEL (GRS)	(1/2" MIN. TRADE SIZE)
ELECTRICAL METALLIC TUBING (EMT)	(1/2" MIN. TRADE SIZE)
POLYVINYL CHLORIDE – SCHEDULE 40 (PVC 40)	(1/2" MIN. TRADE SIZE)
FLEXIBLE METALLIC CONDUIT (FLEX)	(1/2" MIN. TRADE SIZE)
LIQUID TIGHT FLEXIBLE METALLIC CONDUIT (LQFLEX)	(1/2" MIN. TRADE SIZE)
MC METAL CLAD CABLE (MC)	(#12AWG MIN TRADE SIZE)

CABLE TRAY AND FITTINGS (NOT IN CONTRACT)

- 24" WIDE WITH 6" SIDE RAIL AND 5" LOADING DEPTH AND FITTINGS
- 36" WIDE WITH 6" SIDE RAIL AND 5" LOADING DEPTH AND FITTINGS

EMT OR GRS SHALL BE THE MAIN HOME RUN RACEWAY FOR ELECTRICAL CIRCUITS FROM PANELBOARDS TO ELECTRICAL DEVICES AND/OR JUNCTION BOX. MC CABLE CAN BE USED AS A SECONDARY INTERIOR CIRCUIT RACEWAY FROM THE MAIN HOME RUN JUNCTION BOX TO RECEPTACLES AND/OR LIGHT FIXTURE. CONDUITS INSTALLED IN EARTH FILL, IN CONCRETE, OR IN SOLID MASONRY STRUCTURES SHALL BE PVC 40. WHERE PVC 40 IS USED, THE 90° ELBOWS RISING ABOVE GRADE OR EXTENDING THROUGH THE CONCRETE ENVELOPE SHALL BE GRS. CONDUITS INSTALLED IN MOIST AND/OR DAMP LOCATIONS SHALL BE PVC 40. CONDUITS SUBJECT TO MECHANICAL INJURY SHALL BE GRS. CONDUITS RUN CONCEALED IN THE HOLLOW SPACE OF NON–MASONRY WALL OR ABOVE SUSPENDED CEILINGS SHALL BE EMT. IN ALL CASES, CONDUITS/MC SHALL BE RUN AT RIGHT ANGLES TO OR PARALLEL WITH BUILDING LINES AND EXPOSED STRUCTURE. IN ALL CASES, CONDUIT/MC RUNS SHALL BE GROUPED TOGETHER WHERE POSSIBLE AND SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE, NOT FOR ANY SUSPENDED CEILING SUPPORT SYSTEM.

CONDUCTORS: ALL LOW VOLTAGE CONDUCTORS SHALL BE INSTALLED IN CONDUIT/MC. CONDUCTORS FOR BUILDING WIRING SHALL HAVE THHN/THWN, 600 VOLT INSULATION AND SHALL BE SOFT–DRAWN COPPER OF STANDARD AMERICAN WIRE GAUGE (AWG) SIZE. MINIMUM SIZE SHALL BE NO. 12. ALL WIRE NO. 8 AND LARGER SHALL BE STRANDED. ALL BRANCH CIRCUITS NO. 10 AND SMALLER SHALL BE WIRED WITH COLOR–CODED WIRE WITH THE SAME COLOR USED FOR A SYSTEM THROUGHOUT THE BUILDING. POWER FEEDERS AND BRANCH CIRCUITS LARGER THAN NO. 10 SHALL EITHER BE FULLY COLOR CODED OR SHALL HAVE BLACK INSULATION AND BE SIMILARLY COLOR CODED WITH TAPE OR PAINT IN ALL JUNCTION BOXES AND PANELS. TAPE OR PAINT SHALL COMPLETELY COVER THE FULL VISIBLE LENGTH OF CONDUCTOR INSULATION WITHIN THE BOX OR PANEL. COLOR CODING OF ALL CONDUCTORS SHALL BE AS FOLLOWS:

GROUNDING:	BARE, GREEN OR GREEN W/YELLOW STRIP
120/208V 3ø CONDUCTORS:	øA–BLACK, øB–RED, øC–BLUE
277/480V 3ø CONDUCTORS:	øA–BROWN, øB–ORANGE, øC–YELLOW
120/208V NEUTRAL:	WHITE
277/480V NEUTRAL:	GRAY

MEDIUM VOLTAGE CONDUCTORS SHALL BE IDENTIFIED BY THE INSULATION TYPE, EPR/PVC, AND RATING, MANUFACTURER LABEL, VOLTAGE RATING. PHASE COLOR SHALL BE ADDED BY THE CONTRACTOR AT THE TIME OF INSULATION TO HELP KEEP THE PHASES IN THE CORRECT INSTALLATION ORDER.

PART 3 – EXECUTION

PAINTING

CONTRACTOR SHALL TOUCH–UP OR REFINISH ALL ITEMS OF ELECTRICAL EQUIPMENT FURNISHED WITH A FACTORY FINISH COAT OF PAINT AND WHICH MAY HAVE BEEN DAMAGED REGARDLESS OF CAUSE.

TESTING AND BALANCING

BALANCE ALL SINGLE PHASE LOADS CONNECTED TO ALL PANELBOARDS TO ENSURE AN APPROXIMATE EQUAL DIVISION ON THESE LOADS ON MAIN POWER SUPPLY SERVING BUILDING. ALL TESTS SHALL BE MADE IN ACCORDANCE WITH THE LATEST STANDARDS OF THE IEEE AND THE NEC. THE INSTALLATION SHALL BE TESTED FOR PERFORMANCE, GROUNDS AND INSULATION RESISTANCE. "MEGGER" TYPE INSTRUMENTS SHALL BE USED. CONTRACTOR SHALL PERFORM CIRCUIT CONTINUITY AND OPERATIONAL TESTS ON ALL EQUIPMENT FURNISHED OR CONNECTED BY CONTRACTOR. THE TESTS SHALL BE MADE PRIOR TO FINAL INSPECTION. THE CONTRACTOR SHALL PROVIDE ALL TESTING EQUIPMENT AND ALL COSTS SHALL BE BORNE BY HIM. WRITTEN REPORTS SHALL BE MADE OF ALL TESTS. THESE REPORTS SHALL BE TURNED OVER TO THE ARCHITECT AT TIME OF FINAL INSPECTION. ALL FAULTS SHALL BE CORRECTED IMMEDIATELY.

CLEANING UP

THE CONTRACTOR SHALL REMOVE ALL OIL, GREASE, OR OTHER STAINS RESULTING FROM HIS WORK PERFORMED IN THE BUILDING OR THE EXTERIOR THEREOF.

REV.	DESCRIPTION	DATE	BY	CHK'D
A	ISSUED FOR BID	09/11/26	WES	JJM

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PROJECT

McDUFFIE COAL TERMINAL
NEW EAST ELECTRICAL BUILDING

McDUFFIE COAL TERMINAL
MOBILE, ALABAMA

TITLE

ELECTRICAL SPECIFICATION

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