

VOLUME 2 OF 2 (PART J)
CONTRACT DOCUMENTS
FOR

ORANGE COUNTY LANDFILL WESTERN BORROW AREA
ELECTRICAL SYSTEM

BOARD OF COUNTY COMMISSIONERS

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JAMES W. BECKER
SOLID WASTE DIVISION MANAGER

JAMES W. FLYNT, PE
CHIEF ENGINEER, SOLID WASTE DIVISION

UTILITIES SOLID WASTE DIVISION
ORANGE COUNTY, FLORIDA

SYMBOL	DESCRIPTION
ONE LINE DIAGRAMS-1	
	CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE, UNLESS OTHERWISE NOTED.
	CABLE OR BUS CONNECTION POINT
	AC MOTOR, SQUIRREL CAGE INDUCTION - HORSEPOWER INDICATED
	UTILITY REVENUE METER
	GROUND
	TRANSFORMER, SIZE, VOLTAGE RATINGS, AND PHASE INDICATED
	SURGE PROTECTION DEVICE
	TERMINAL BLOCK LUG
	DELTA CONNECTION
	WYE GROUNDED CONNECTION, SOLID GROUND
POWER SYSTEM PLAN-1	
	CONNECTION POINT TO EQUIPMENT SPECIFIED, RACEWAY, CONDUCTOR, TERMINATION AND CONNECTION IN THIS DIVISION.
	PANELBOARD - SURFACE MOUNTED
	PANELBOARD LETTER OR NUMBER FACILITY NUMBER LP - LOW VOLTAGE PANEL DP - DISTRIBUTION PANEL
	TERMINAL JUNCTION BOX
	MOTOR, SQUIRREL CAGE INDUCTION
	HOME RUN - DESTINATION SHOWN
	EXPOSED CONDUIT AND CONDUCTORS*
	CONCEALED CONDUIT AND CONDUCTORS*
	CONDUIT AND CONDUCTOR CALLOUT, 3/4 INCH CONDUIT WITH THREE #12 AWG PHASE CONDUCTORS AND ONE #12 GROUND CONDUCTOR, OR MANUFACTURER SUPPLIED CABLE, UNLESS OTHERWISE NOTED.
	CONDUIT DOWN
	CONDUIT UP
	CONDUIT, STUBBED AND CAPPED
	CONCRETE ENCASED CONDUIT
	DIRECT BURIED CONDUIT
	TRANSFORMER
	GENERAL CONTROL OR WIRING DEVICE, LETTER SYMBOLS OR ABBREVIATIONS INDICATE TYPE OF DEVICE
	CONTROL STATION, SEE CONTROL DIAGRAMS FOR CONTROL DEVICE(S) REQUIRED.
	NONFUSED DISCONNECT SWITCH, CURRENT RATING INDICATED, 3 POLE
	FUSED DISCONNECT SWITCH, CURRENT RATING INDICATED (60/40, 60=SWITCH RATING / 40=FUZE RATING) 3 POLE
	COMBINATION CIRCUIT BREAKER AND MAGNETIC STARTER, NEMA SIZE INDICATED
	UTILITY REVENUE METERING FACILITY

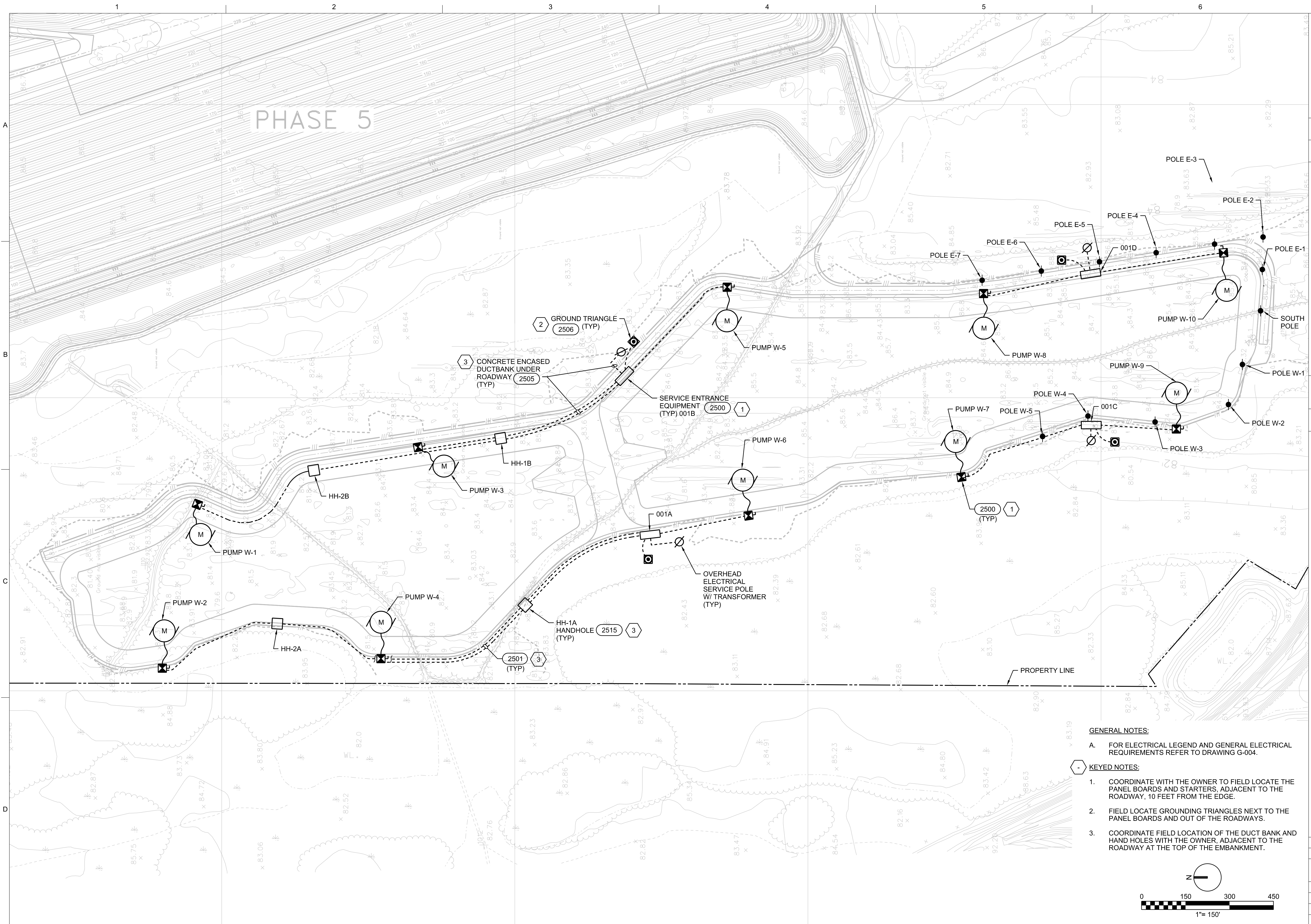
SYMBOL	DESCRIPTION
GROUND SYSTEM PLAN	
	GROUND ROD
	GROUND ROD IN TEST WELL
	GROUNDING CONDUCTOR, SIZE AS INDICATED
	PIGTAIL FOR CONNECTION TO EQUIPMENT CABINET OR FRAME
GENERAL ELECTRICAL REQUIREMENTS	
1.	EXPOSED CONDUITS SHALL BE RIGID GALVANIZED STEEL CONDUITS (RGS), MEETING REQUIREMENTS OF NEMA C80.1 AND UL6.
2.	CONCRETE ENCASED AND DIRECT BURIED CONDUITS SHALL BE SCHEDULE 40 PVC CONDUIT, MEETING REQUIREMENTS OF NEMA TC2 AND UL 651. UL LISTED FOR CONCRETE ENCASEMENT, UNDERGROUND DIRECT BURIAL, CONCEALED OR DIRECT SUNLIGHT EXPOSURE, AND 90 DEGREES C INSULATED CONDUCTORS.
3.	PAINT THREADS AND CUT ENDS, BEFORE ASSEMBLY OF FITTING AND RGS CONDUIT WITH ZINC-RICH PAINT OR LIQUID GALVANIZING COMPOUND.
4.	METAL CONDUIT SHALL BE REAMED, BURRS REMOVED AND CLEANED BEFORE INSTALLATION OF CONDUCTORS, WIRES OR CABLES.
5.	TRANSITION FROM UNDERGROUND TO EXPOSED WITH RGS CONDUIT A MINIMUM OF 12 INCHES BELOW GRADE.
6.	TERMINATE CONDUITS AT ENCLOSURE UTILIZING MYERS CONDUIT HUBS.
7.	RGS CONDUIT EMBEDDED IN CONCRETE SHALL BE COATED WITH THREE COATS OF BITUMASTIC, 6 INCHES ABOVE AND 6 INCHES BELOW CONCRETE.
8.	CONDUIT DUCT BANKS UNDER ROADWAYS SHALL BE CONCRETE ENCASED PER DETAIL 2505. CONCRETE ENCASEMENT SHALL EXTEND A MINIMUM OF 10 FEET PAST THE EDGE OF THE ROAD WAY ON BOTH SIDES. CONCRETE COLOR: RED.
9.	CONCRETE 28 DAY STRENGTHS: - TYPICAL, UNLESS OTHERWISE SPECIFIED: 4,000 PSI - DUCT BANK: 3,500 PSI
10.	ALL CONDUITS OF A GIVEN TYPE SHALL BE THE PRODUCT OF ONE MANUFACTURER.
11.	OUTDOOR ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE NEMA 4X STAINLESS STEEL, LOCKABLE.
12.	ALL CONDUCTORS SHALL BE STRANDED COPPER WITH TYPE XHHW-2 INSULATION.
13.	CONDUCTORS SHALL NOT BE SPLICED.
14.	ALL CONDUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR SIZED PER TABLE 250.122 OF THE NATIONAL ELECTRICAL CODE (NEC) UNLESS OTHERWISE NOTED.
15.	ALL WORK SHALL COMPLY WITH THE NEC AND LOCAL CODES.
16.	SUBMIT SHOP DRAWING, IN ACCORDANCE WITH SPEC SECTION 1300 FOR THE FOLLOWING EQUIPMENT: A. CONDUITS AND FITTING B. CONDUCTORS C. REBAR AND CONCRETE D. GROUND RODS E. GROUND TEST WELL F. EQUIPMENT SUPPORT CHANNELS G. PANELBOARDS H. MAIN BREAKERS I. COMBINATION MOTOR STARTERS J. SPDs K. DISCONNECT SWITCHES L. HAND HOLES
17.	INSTALL ARC AND FIRE PROOFING TAPE ON SINGLE CONDUCTORS THROUGHOUT ENTIRE EXPOSED LENGTH IN HAND HOLES.
<p>NOTE: ALL UNMARKED CONDUIT RUNS CONSIST OF TWO NO. 12, ONE NO. 12 GROUND CONDUCTORS IN 3/4" CONDUIT. RUNS MARKED WITH CROSSHATCHES INDICATE NUMBER OF NO. 12 CONDUCTORS. CROSSHATCH WITH SUBSCRIPT "G" INDICATES GREEN GROUND WIRE.</p>	

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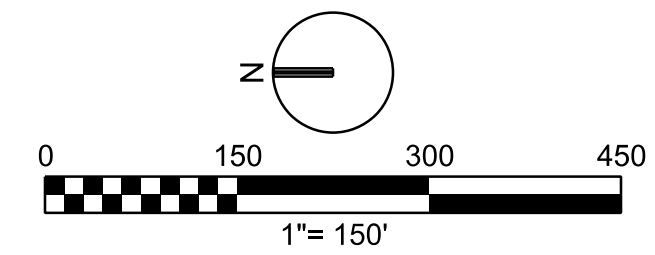
NEEL-SCHAFFER <small>SOLUTIONS YOU CAN BUILD UPON</small>	
ORANGE COUNTY LANDFILL WESTERN BORROW AREA ELECTRICAL SYSTEM UTILITIES SOLID WASTE DIVISION ORANGE COUNTY, FLORIDA	D NICHOLSON A CLOUGH B BRUNER D NICHOLSON
CH2MHILL GENERAL	ELECTRICAL LEGEND
VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	MAY 2015
PROJ	456975
DWG	G-004
SHEET	1 of 5

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PHASE 5

- GENERAL NOTES:**
- FOR ELECTRICAL LEGEND AND GENERAL ELECTRICAL REQUIREMENTS REFER TO DRAWING G-004.
- KEYED NOTES:**
- COORDINATE WITH THE OWNER TO FIELD LOCATE THE PANEL BOARDS AND STARTERS, ADJACENT TO THE ROADWAY, 10 FEET FROM THE EDGE.
 - FIELD LOCATE GROUNDING TRIANGLES NEXT TO THE PANEL BOARDS AND OUT OF THE ROADWAYS.
 - COORDINATE FIELD LOCATION OF THE DUCT BANK AND HAND HOLES WITH THE OWNER, ADJACENT TO THE ROADWAY AT THE TOP OF THE EMBANKMENT.



CH2MHILL®

ELECTRICAL

SITE PLAN

NEEL-SCHAFFER
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ORANGE COUNTY LANDFILL
WESTERN BORROW AREA ELECTRICAL SYSTEM
UTILITIES SOLID WASTE DIVISION
ORANGE COUNTY, FLORIDA

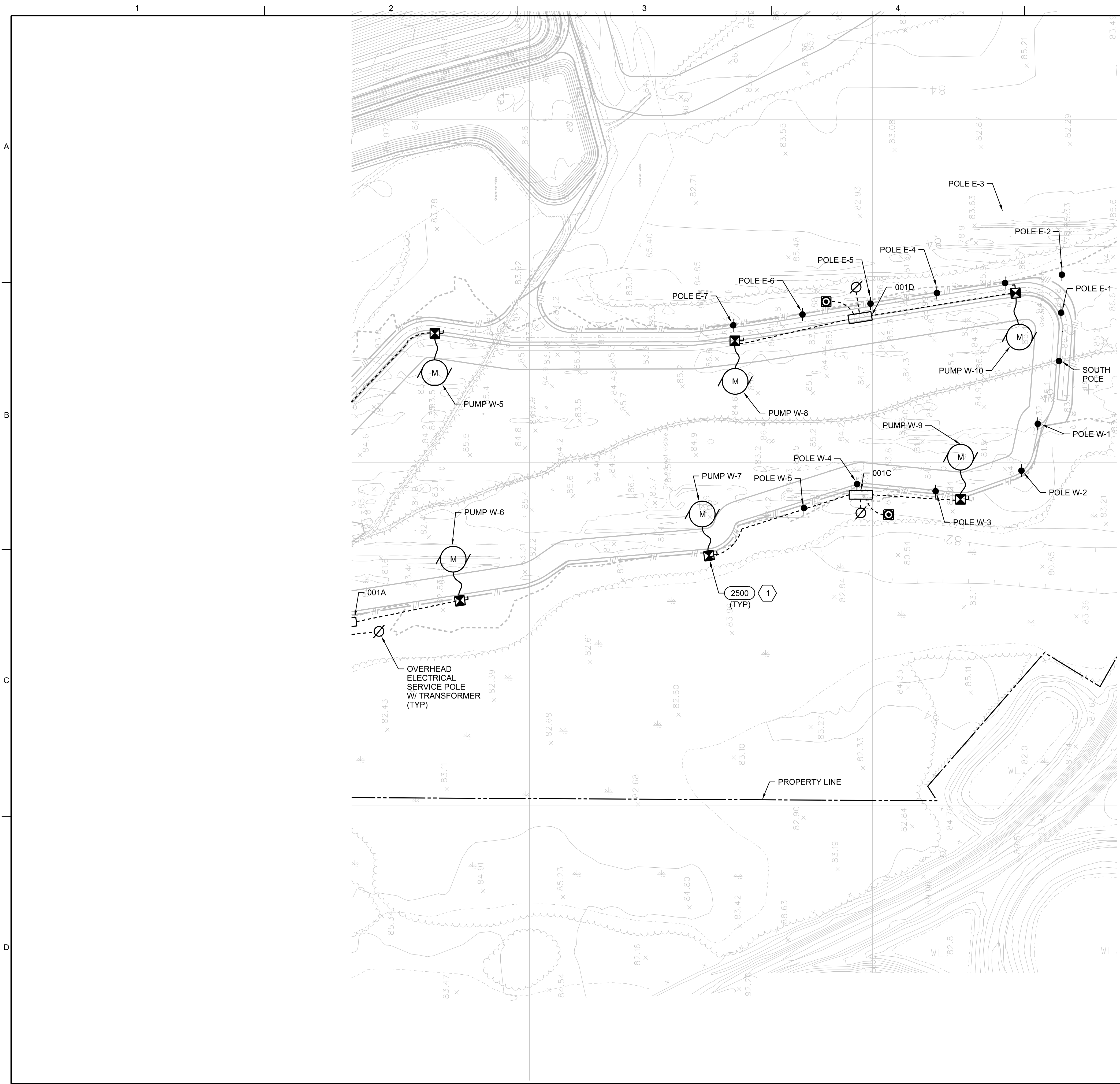
NO.	DATE	DR	REVISION	CHK	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 150 300 450
1"= 150'

DATE: MAY 2015
PROJ: 456975
DWG: E-001
SHEET: 2 of 5

ORANGE COUNTY, FLORIDA
D NICHOLSON
AL CLOUGH
B BRUNER
D NICHOLSON

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SES CELLS 9-10 CLOSURE
 OC SOLID WASTE MANAGEMENT FACILITY
 UTILITIES SOLID WASTE DIVISION
 ORANGE COUNTY, FLORIDA

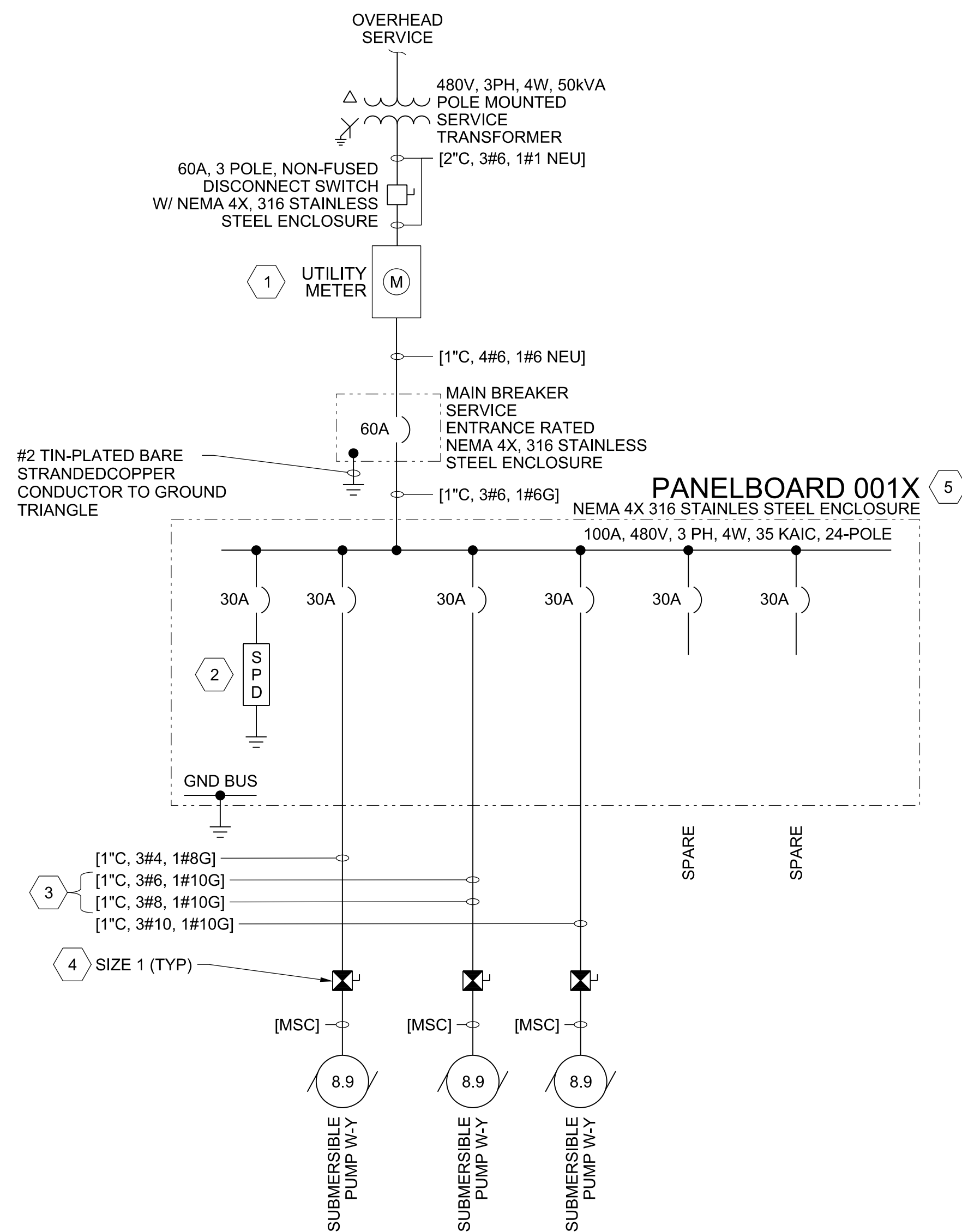
ELECTRICAL
 SITE PLAN

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	MAY 2015
PROJ	456975
DWG	E-001
SHEET	3 of 5

ISSUED FOR REVIEW

NO.	DATE	DR	REVISION	CHK	BY	APVD
DSGN		D NICHOLSON		AL CLOUGH	B BRUNER	D NICHOLSON

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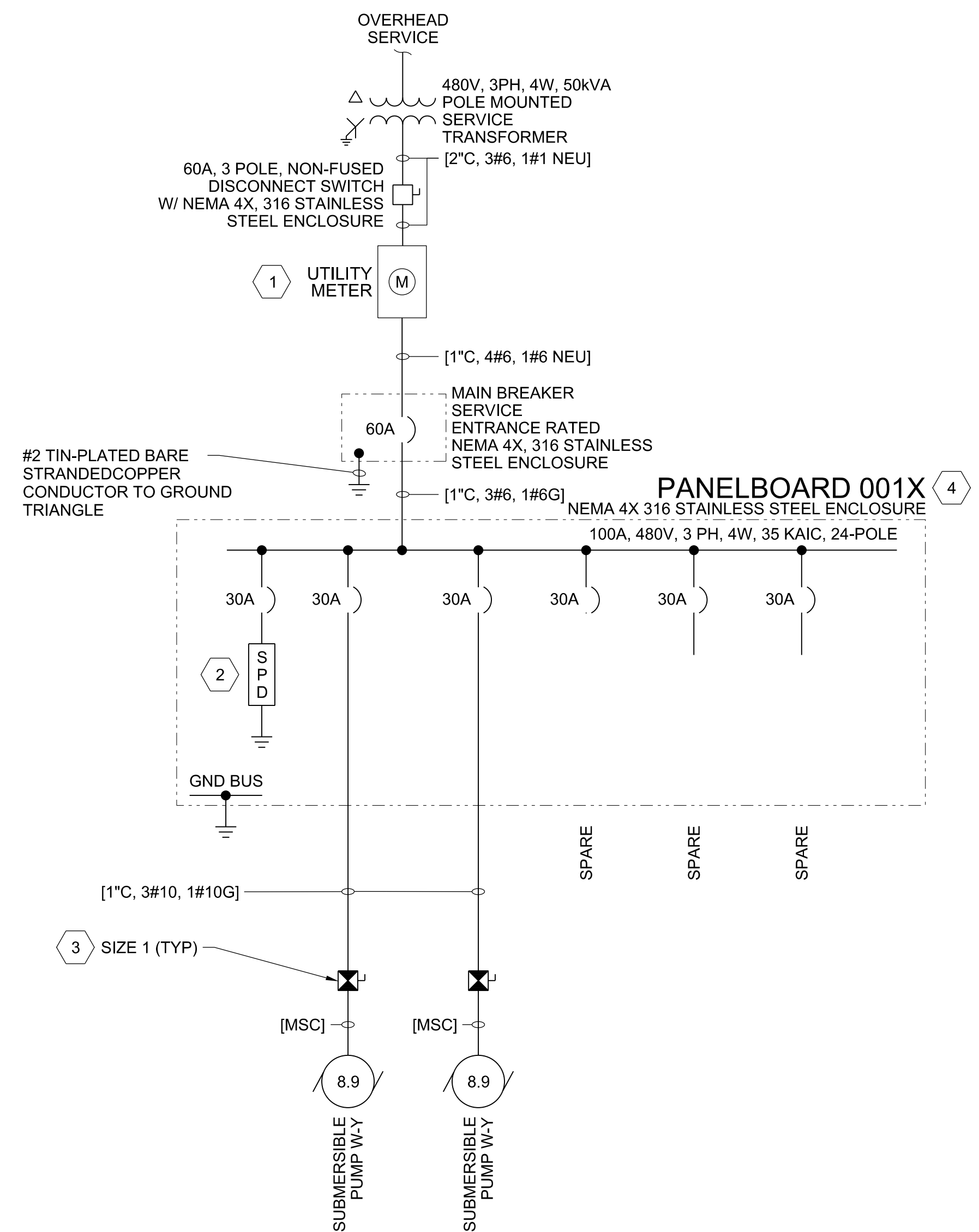


SERVICE ENTRANCE EQUIPMENT 001A & 001B - ONE-LINE DIAGRAM

(X= A, Y= 2, 4, 6)
(X= B, Y= 1, 3, 5)

KEYED NOTES:

1. CONTRACTOR SHALL COORDINATE WITH POWER COMPANY FOR ALL SERVICE REQUIREMENTS.
2. PROVIDE CATEGORY C3, 10-MODE, 120 KA PER MODE SURGE PROTECTIVE DEVICES (SPD) INSIDE THE PANELBOARD ENCLOSURE OR IN A SEPARATE NEMA 4X STAINLESS STEEL ENCLOSURE WITH CONNECTING CONDUCTORS MAXIMUM OF 12" LONG.
3. PROVIDE #6AWG CONDUCTORS FOR PUMP W-4 AND #8AWG CONDUCTORS FOR PUMP W-3.
4. COMBINATION MOTOR STARTER WITH ELAPSED TIME METER (ETM), ON/OFF SELECTOR SWITCH, RUN INDICATOR LIGHT (RED) AND NEMA 4X STAINLESS STEEL ENCLOSURE.
5. SQUARE D NF PANELBOARD WITH BOLT-ON CIRCUIT BREAKERS OR APPROVED EQUAL.

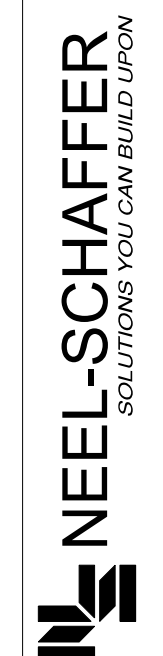


SERVICE ENTRANCE EQUIPMENT 001C & 001D - ONE-LINE DIAGRAM

(X= C, Y= 7, 9)
(X= D, Y= 8, 10)

KEYED NOTES:

1. CONTRACTOR SHALL COORDINATE WITH POWER COMPANY FOR ALL SERVICE REQUIREMENTS.
2. PROVIDE CATEGORY C3, 10-MODE, 120 KA PER MODE SURGE PROTECTIVE DEVICES (SPD) INSIDE THE PANELBOARD ENCLOSURE OR IN A SEPARATE NEMA 4X STAINLESS STEEL ENCLOSURE WITH CONNECTING CONDUCTORS MAXIMUM OF 12" LONG.
3. COMBINATION MOTOR STARTER WITH ELAPSED TIME METER (ETM), ON/OFF SELECTOR SWITCH, RUN INDICATOR LIGHT (RED) AND NEMA 4X STAINLESS STEEL ENCLOSURE.
4. SQUARE D NF PANELBOARD WITH BOLT-ON CIRCUIT BREAKERS OR APPROVED EQUAL.



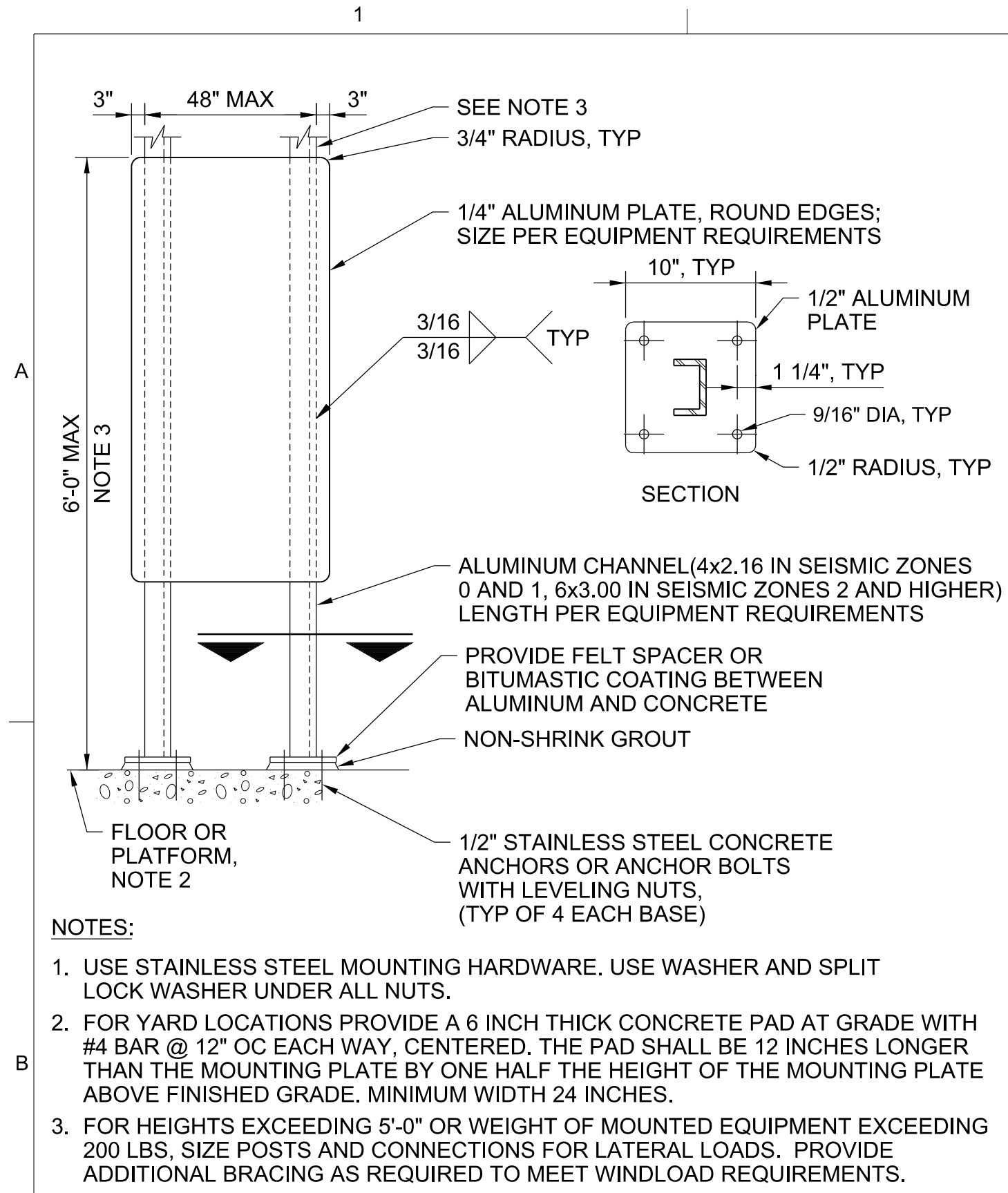
ORANGE COUNTY LANDFILL
WESTERN BORROW AREA ELECTRICAL SYSTEM
UTILITIES SOLID WASTE DIVISION
ORANGE COUNTY, FLORIDA



ELECTRICAL
ONE-LINE DIAGRAM

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	MAY 2015
PROJ	456975
DWG	E-002
SHEET	4 of 5

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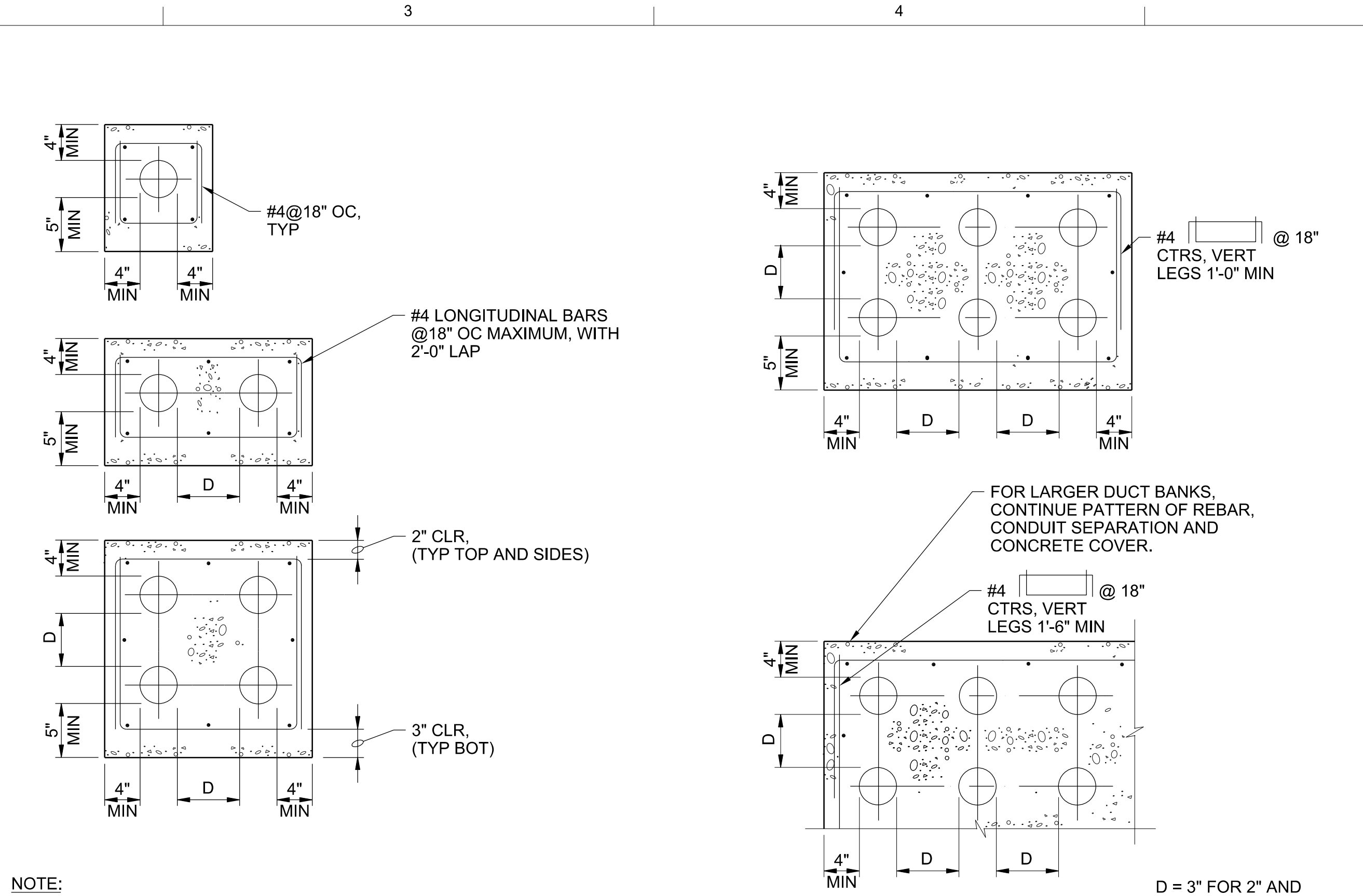


ELECTRICAL EQUIPMENT SUPPORT

NTS

2500

- NOTES:**
- USE STAINLESS STEEL MOUNTING HARDWARE. USE WASHER AND SPLIT LOCK WASHER UNDER ALL NUTS.
 - FOR YARD LOCATIONS PROVIDE A 6 INCH THICK CONCRETE PAD AT GRADE WITH #4 BAR @ 12" OC EACH WAY, CENTERED. THE PAD SHALL BE 12 INCHES LONGER THAN THE MOUNTING PLATE BY ONE HALF THE HEIGHT OF THE MOUNTING PLATE ABOVE FINISHED GRADE. MINIMUM WIDTH 24 INCHES.
 - FOR HEIGHTS EXCEEDING 5'-0" OR WEIGHT OF MOUNTED EQUIPMENT EXCEEDING 200 LBS, SIZE POSTS AND CONNECTIONS FOR LATERAL LOADS. PROVIDE ADDITIONAL BRACING AS REQUIRED TO MEET WINDLOAD REQUIREMENTS.



TYPICAL DUCT BANK DETAILS

NTS

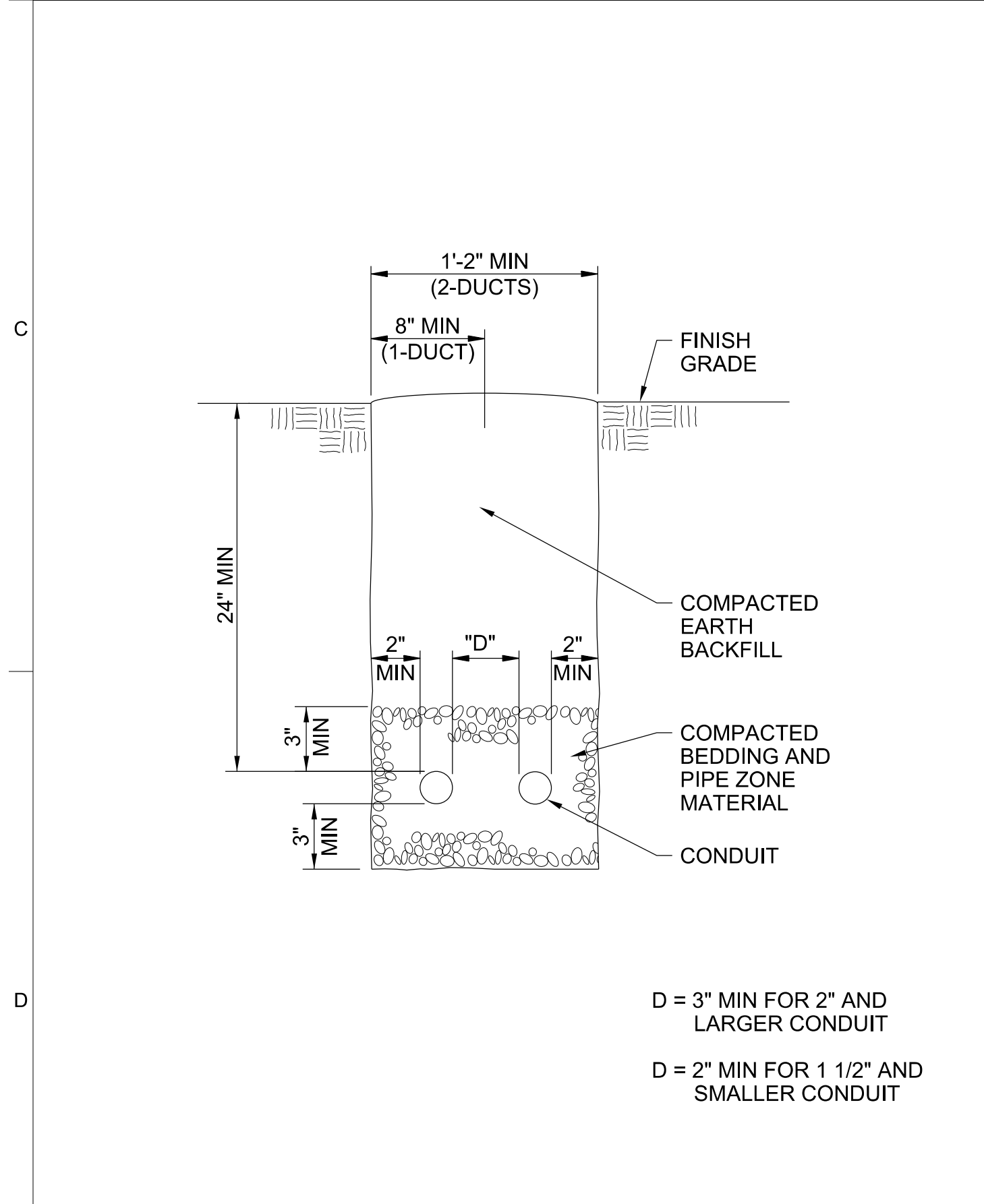
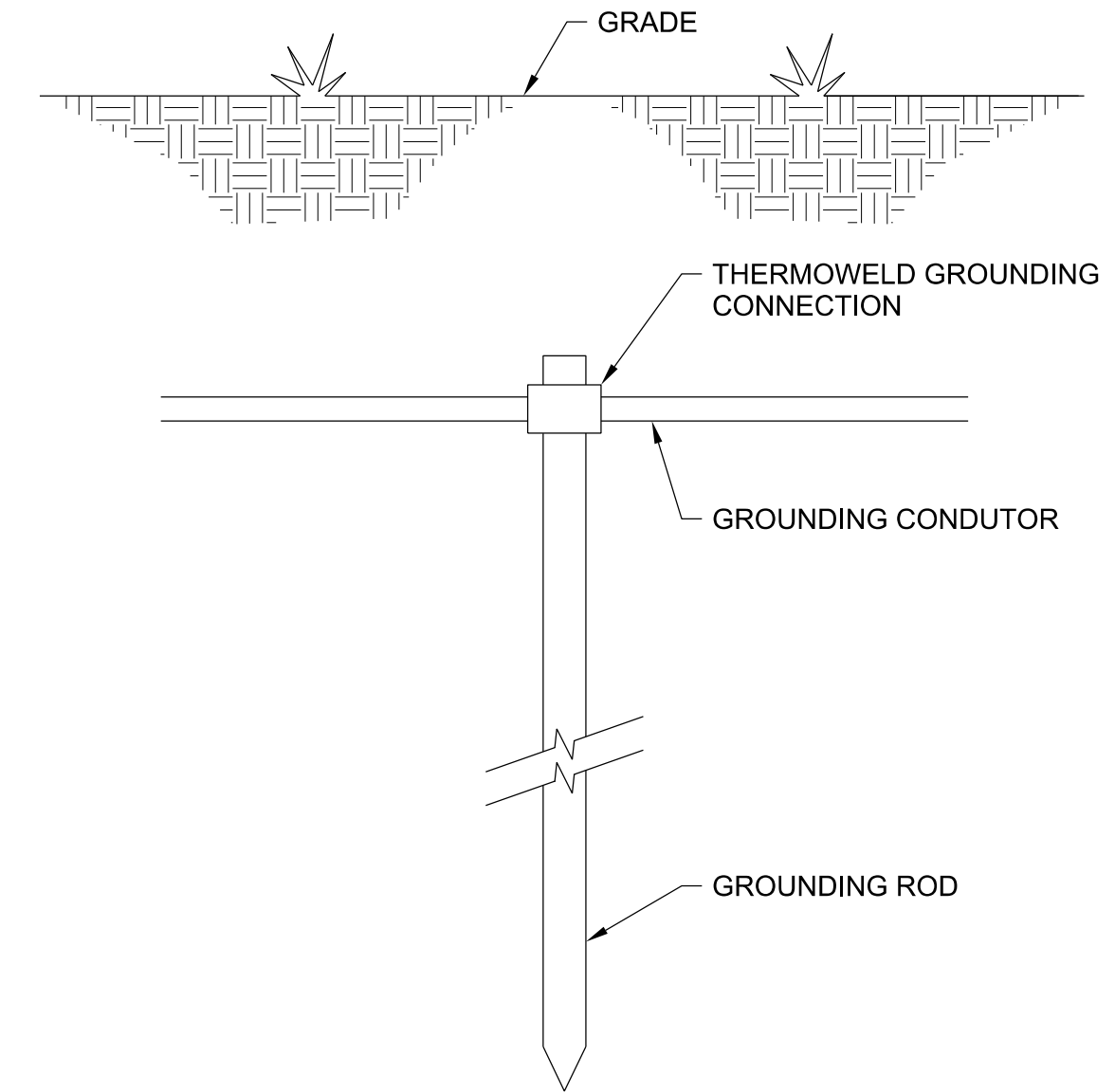
2500

NOTE:
PROVIDE 6" MINIMUM COMPACTED GRAVEL, 3/4" MINUS, UNDER ALL CONCRETE ENCASED DUCT RUNS.

GROUND ROD CONNECTION

NTS

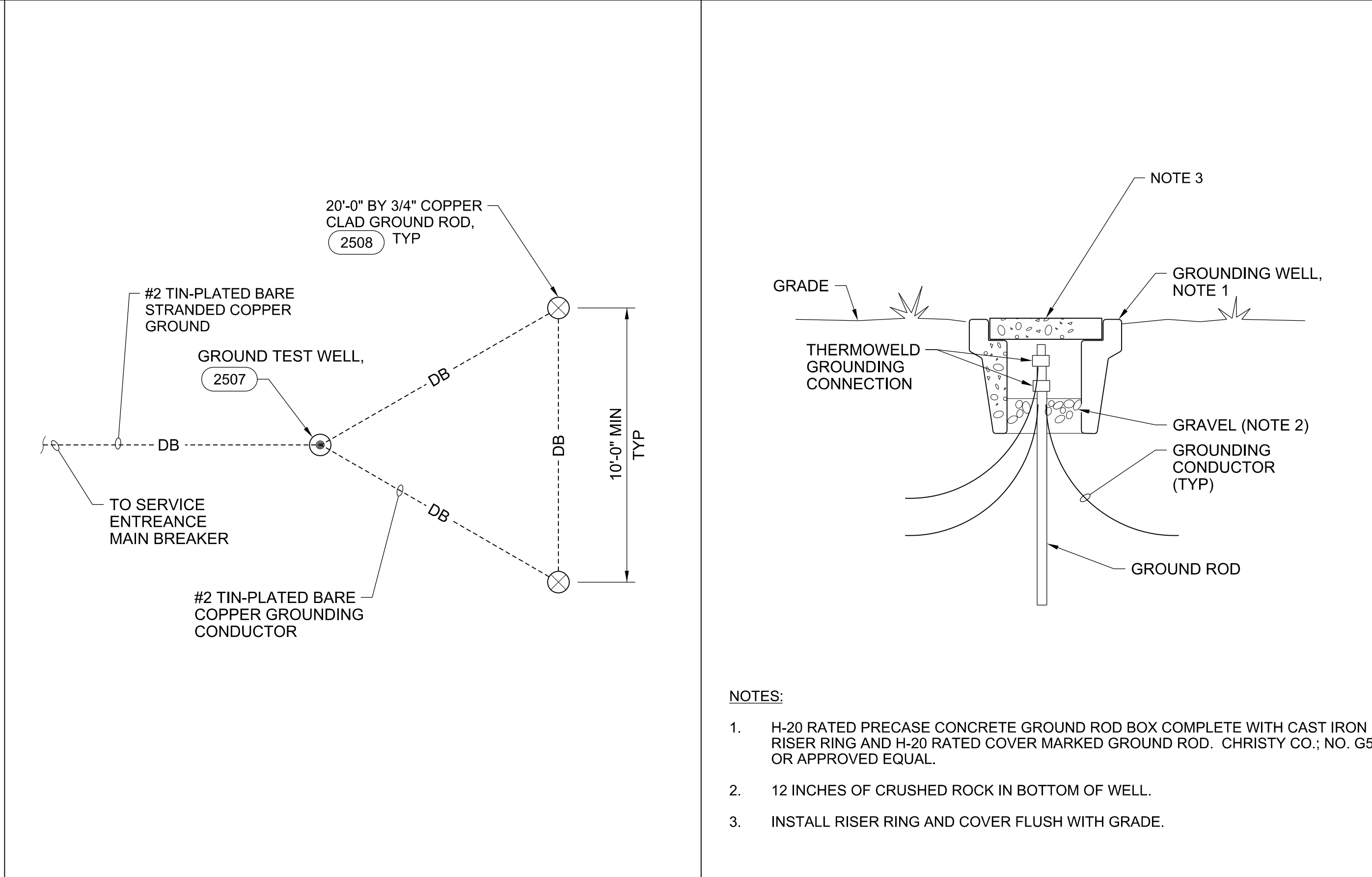
2508



TRENCH AND CONDUIT PLACEMENT

NTS

2501



GROUND TRIANGLE

NTS

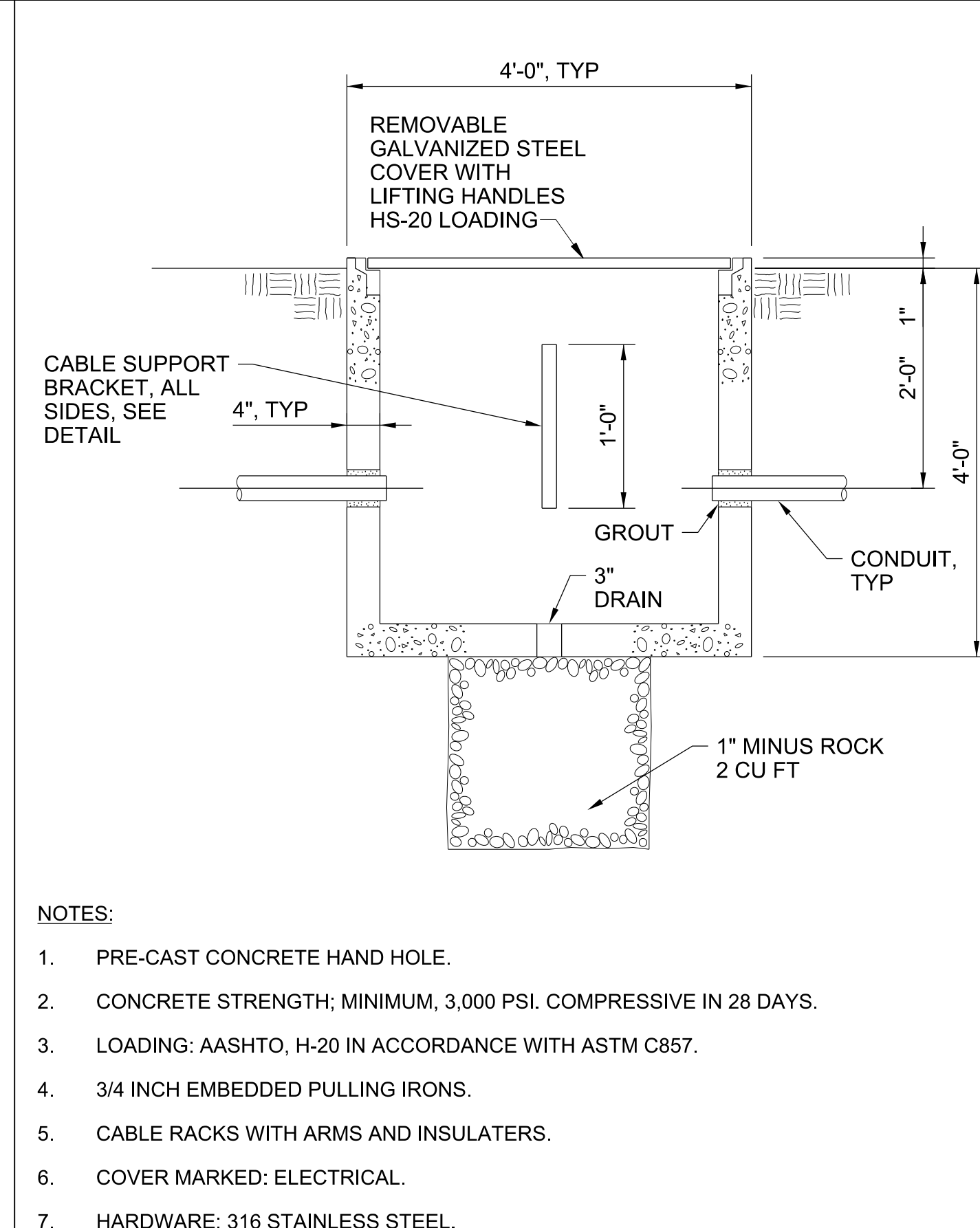
2506

- NOTES:**
- H-20 RATED PRECAST CONCRETE GROUND ROD BOX COMPLETE WITH CAST IRON RISER RING AND H-20 RATED COVER MARKED GROUND ROD. CHRISTY CO.; NO. G5 OR APPROVED EQUAL.
 - 12 INCHES OF CRUSHED ROCK IN BOTTOM OF WELL.
 - INSTALL RISER RING AND COVER FLUSH WITH GRADE.

GROUND TEST WELL

NTS

2507



TYPICAL HANDHOLE DETAIL

NTS

2515

- NOTES:**
- PRE-CAST CONCRETE HAND HOLE.
 - CONCRETE STRENGTH; MINIMUM, 3,000 PSI. COMPRESSIVE IN 28 DAYS.
 - LOADING: AASHTO, H-20 IN ACCORDANCE WITH ASTM C857.
 - 3/4 INCH EMBEDDED PULLING IRONS.
 - CABLE RACKS WITH ARMS AND INSULATORS.
 - COVER MARKED: ELECTRICAL.
 - HARDWARE: 316 STAINLESS STEEL.

CH2MHILL®
ELECTRICAL
STANDARD DETAILS

ORANGE COUNTY LANDFILL
WESTERN BORROW AREA ELECTRICAL SYSTEM
UTILITIES SOLID WASTE DIVISION
ORANGE COUNTY, FLORIDA

NO.	DATE	DR	REVISION	BY

DATE: MAY 2015
PROJ: 456975
DWG: E-003
SHEET: 5 of 5

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