

**SALAS O'BRIEN**  
 | expect a difference |  
 305 South 11th Street  
 San Jose, California 95112-2218  
 877.725.2755 | 877.925.1477 (f)  
 WWW.SALASO'BRIEN.COM  
 National Strength.  
 Local Action.

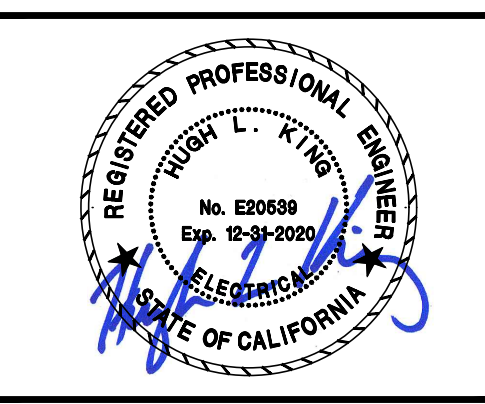
# HUMBOLDT STATE UNIVERSITY

1 HARPST STREET  
 ARCATA, CA 95521

## FORBES GYMNASIUM EMERGENCY GENERATOR

This project has demonstrated conformance with applicable codes and standards established by state and University policy. Based on this determination, the following approvals are:  
**'APPROVED FOR CONSTRUCTION'**  
 Michael Fisher  
 Campus Deputy Building Official  
 Humboldt State University  
 The California State University  
 Date: \_\_\_\_\_  
 Permit #: \_\_\_\_\_  
 (Other approvals as applicable)  
 SPM Approval: \_\_\_\_\_  
 DSA Access Approval: \_\_\_\_\_  
 Science Peer Review: \_\_\_\_\_  
 Mock Peer Review: \_\_\_\_\_

**CALIFORNIA STATE FIRE MARSHAL APPROVED**  
 Approval of this plan does not authorize or approve any construction or deviation from applicable regulations. Final approval is subject to field inspection. Set of approved plans shall be available on the project site at all times.  
 Reviewed by: \_\_\_\_\_  
 Date: \_\_\_\_\_



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### FORBES GYMNASIUM EMERGENCY GENERATOR

ISSUE	MARK	DATE	DESCRIPTION
		05/19/20	PROGRESS SET
		01/07/21	100% CD

SOBE PROJECT NO:	1901734
DATE:	01/05/21
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	

#### SHEET TITLE

### COVER SHEET

SCALE: AS NOTED  
 THIS DRAWING IS 30" X 42" AT FULL SIZE

## G-0.0

SHEET - OF -

THIS DRAWING IS 30" X 42" AT FULL SIZE. 15" X 21" AT HALF SIZE. © 2015 BY SALAS O'BRIEN ENGINEERS, INC.

#### VICINITY MAP

SCALE: N.T.S.



#### APPLICABLE CODES

- UNLESS OTHERWISE INDICATED OR SPECIFIED, PERFORM THE WORK IN CONFORMANCE WITH THE LATEST EDITIONS OF ALL APPLICABLE REGULATORY REQUIREMENTS, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
- CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE (PART 1, TITLE 24): 2019
  - CALIFORNIA BUILDING CODE (PART 2, TITLE 24): 2018 IBC WITH 2019 CA AMENDMENTS
  - CALIFORNIA ELECTRICAL CODE (PART 3, TITLE 24): 2017 NEC WITH 2019 CA AMENDMENTS
  - CALIFORNIA MECHANICAL CODE (PART 4, TITLE 24): 2018 UMC WITH 2019 CA AMENDMENTS
  - CALIFORNIA PLUMBING CODE (PART 5, TITLE 24): 2018 UPC WITH 2019 CA AMENDMENTS
  - CALIFORNIA ENERGY CODE (PART 6, TITLE 24): 2019
  - CALIFORNIA HISTORICAL BUILDING CODE, (PART 8, TITLE 24): 2019
  - CALIFORNIA FIRE CODE (PART 9, TITLE 24): 2018 IFC WITH 2019 CA AMENDMENTS
  - CALIFORNIA EXISTING BUILDING CODE (PART 10, TITLE 24): (2018 INTERNATIONAL EXISTING BUILDING CODE WITH 2019 CA AMENDMENTS)
  - CALIFORNIA GREEN BUILDING STANDARDS CODE OR CAL GREEN (PART 11, TITLE 24): 2019
  - CALIFORNIA REFERENCED STANDARDS CODE (PART 12, TITLE 24): 2019
  - CALIFORNIA CODE OF REGULATIONS PUBLIC SAFETY (TITLE 19), STATE FIRE MARSHAL: CURRENT EDITION
  - NFPA 13 INSTALLATION OF SPRINKLER SYSTEMS: 2019 (CA AMENDED)
  - NFPA 14 INSTALLATION OF STANDPIPE, PRIVATE HYDRANT AND HOSE SYSTEMS: 2019 (CA AMENDED)
  - NFPA 17 DRY CHEMICAL EXTINGUISHING SYSTEM: 2017 EDITION
  - NFPA 17A TO A UL 300 FOR CLASS I HOOD FIRE SUPPRESSION SYSTEM. (WET CHEMICAL EXTINGUISHING SYSTEMS) 2017
  - NFPA 20 INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION: 2019 EDITION
  - NFPA 22 WATER TANKS FOR PRIVATE FIRE PROTECTION: 2018 EDITION
  - NFPA 24 INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES: 2019 EDITION (CA AMENDED)
  - NFPA 25 INSPECTION, TESTING, MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS: 2020 EDITION (CA EDITION)
  - NFPA 72 NATIONAL FIRE ALARM CODE, WITH CA AMENDMENTS: 2019 EDITION (CA AMENDED)
  - NFPA 80 FIRE DOORS AND OTHER OPENING PROTECTIVE: 2019 EDITION
  - NFPA 110 EMERGENCY AND STANDBY POWER SYSTEMS: 2019 EDITION
  - NFPA 170 STANDARD FOR FIRE SAFETY AND EMERGENCY SYMBOLS: 2018 EDITION
  - NFPA 2001 CLEAN AGENT FIRE EXTINGUISHING SYSTEMS 2018
  - ICC 300-12 STANDARD ON BLEACHERS, FOLDING AND TELESCOPIC SEATING AND GRANDSTANDS
  - SFM 12-10-1 POWER OPERATED EXIT DOORS
  - SFM 12-10-2 SINGLE POINT LATCHING OR LOCKING DEVICES
  - SFM 12-10-3 EMERGENCY EXIT & PANIC HARDWARE
  - ASTM STANDARD CHANGES (EXAMPLE: ASTM E648-04 STANDARD TEST METHOD FOR CRITICAL RADIANT FLUX OF FLOOR)
  - UL 38 MANUAL OPERATED SIGNAL BOXES, WITH REVISIONS, LATEST EDITION AS AMENDED
  - UL 268 SMOKE DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
  - UL 268A SMOKE DETECTORS DUCT APPLICATIONS
  - UL 300 FIRE TESTING OF FIRE EXTINGUISHING SYSTEMS FOR PROTECTION OF RESTAURANT COOKING AREAS
  - UL 305 PANIC HARDWARE
  - UL 464 AUDIBLE SIGNAL APPLIANCES
  - UL 521 HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
  - UL 864 CONTROL UNITS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
  - AMERICANS WITH DISABILITIES ACT (A.D.A.) FEDERAL ACCESSIBILITY STANDARDS
  - ACI 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
  - AISC MANUAL OF STEEL CONSTRUCTION
  - ASCE/SEJ 7-16, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
  - NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION

#### SUMMARY OF WORK

- REMOVE EXISTING COGENERATION UNIT NEAR FORBES, HSU BLDG #24A , AND REPLACE WITH DIESEL GENERATOR.
- DEMOLISH ALL ELECTRIC AND GAS CONNECTION.
- FURNISH AND INSTALL NEW TRANSFORMER AND SWITCHBOARD FOR NEW GENERATOR.
- GENERATOR TO BE:
  - 2MW/2.5MVA
  - 277/480V
  - 3-PHASE, 4 WIRE
  - DIESEL WITH 4000G BELLY TANK (+24HRS @ FULL LOAD)
  - OPTIONAL STAND-BY
  - DIESEL PARTICULATE FILTER (DPF).
  - INTEGRATED LOAD BANK

#### DRAWING INDEX

SHEET NO.	DESCRIPTION
G-0.0	COVER SHEET
G-1.1	OVERALL SITE PLAN
E-0.1	SYMBOLS & ABBREVIATIONS
E-0.2	GENERAL NOTES
ES-4.1	PARTIAL SITE PLAN
E-1.1	FIRST FLOOR PLAN
E-4.1	COGEN UNIT FLOOR PLAN - DEMO AND NEW
E-5.1	ELECTRICAL DETAILS
E-5.2	ELECTRICAL DETAILS
E-6.1	FEEDER AND EQUIPMENT SCHEDULES, AND SIGNAL LINE DIAGRAM
ED-7.1	CAMPUS SINGLE LINE DIAGRAM - DEMO
E-7.1	CAMPUS SINGLE LINE DIAGRAM - NEW
E-7.2	PARTIAL FORBES' SINGLE LINE DIAGRAM
MP-0.1	MECHANICAL & PLUMBING GENERAL NOTES, SYMBOLS & ABBREVIATIONS
MS-4.1	MECHANICAL PARTIAL SITE PLAN
MP-5.1	MECHANICAL & PLUMBING DETAILS
S-1.0	STRUCTURAL SPECIFICATIONS AND FOUNDATION PLAN
S-1.1	STRUCTURAL DETAILS

#### EQUIPMENT ANCHORAGE

**M/E/P COMPONENT ANCHORAGE NOTE:**  
 ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON-THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC SECTION 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30:

- ALL PERMANENT EQUIPMENT AND COMPONENTS.
- TEMPORARY OR MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRE) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTION EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
- TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

- COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
- COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

**PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE:**  
 PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP  MD  PP  E  OPTION 1: DETAIL ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP  MD  PP  E  OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #) # \_\_\_\_\_.

#### BUILDING INFORMATION

**FORBES BUILDING**  
**HSU BLDG #24A**

OCCUPANCY CLASSIFICATION & USE: B, GENERAL USE  
 CONSTRUCTION TYPE: TYPE III  
 YEAR CONSTRUCTED: APPROX: 1957  
 NUMBER OF STORIES: 2  
 BUILDING HEIGHT: ± 30 FT

#### PROJECT DATA

**PROJECT ADDRESS:** 1 HARPST STREET  
 ARCATA, CA 95521

**PROJECT OWNER:** HUMBOLDT STATE UNIVERSITY  
 1 HARPST STREET  
 ARCATA, CA 95521

**PROJECT MANAGER:** MICHAEL FISHER  
 DIRECTOR PLANNING, DESIGN & CONSTRUCTION  
 FACILITIES MANAGEMENT / PLANNING & DESIGN  
 PHONE: 707-826-4444

**M/E/P ENGINEER:** SALAS O'BRIEN  
 305 S. 11TH STREET  
 SAN JOSE, CA 95112  
 PHONE: 408-282-1500  
 FAX: 408-297-2995

**STRUCTURAL ENGINEER:** MESITI-MILLER ENGR.  
 224 WALNUT AVE, SUITE B  
 SANTA CRUZ, CA 95060  
 PHONE: 831-426-3186  
 FAX: 831-426-6607



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Local Action.

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**'APPROVED FOR CONSTRUCTION'**

Michael Fisher  
Campus Deputy Building Official  
Humboldt State University  
The California State University

Date: \_\_\_\_\_  
Permit #: \_\_\_\_\_  
(Other approvals as applicable)  
SFM Approval: \_\_\_\_\_  
DIA Accept Approval: \_\_\_\_\_  
Science Peer Review: \_\_\_\_\_  
Mock Peer Review: \_\_\_\_\_

**CALIFORNIA STATE FIRE MARSHAL APPROVED**

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Date: \_\_\_\_\_



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SOBE PROJECT NO: 1901734  
DATE: 01/05/21  
DRAWN BY:  
CHECKED BY:  
APPROVED BY:

SHEET TITLE  
**OVERALL SITE PLAN**

SCALE: AS NOTED  
THIS DRAWING IS 30" X 42" AT FULL SIZE

# G-1.1

SHEET - OF -

THIS DRAWING IS 30" X 42" AT FULL SIZE. 15" X 21" AT HALF SIZE. © 2015 BY SALAS O'BRIEN ENGINEERS, INC.



**1 OVERALL SITE PLAN**  
SCALE: 1" = 120' - 0"



**LEGEND**

- BUILDING WITH WORK INSIDE







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DSE Access Approval: \_\_\_\_\_

Science Peer Review: \_\_\_\_\_

Mock Pipe Review: \_\_\_\_\_

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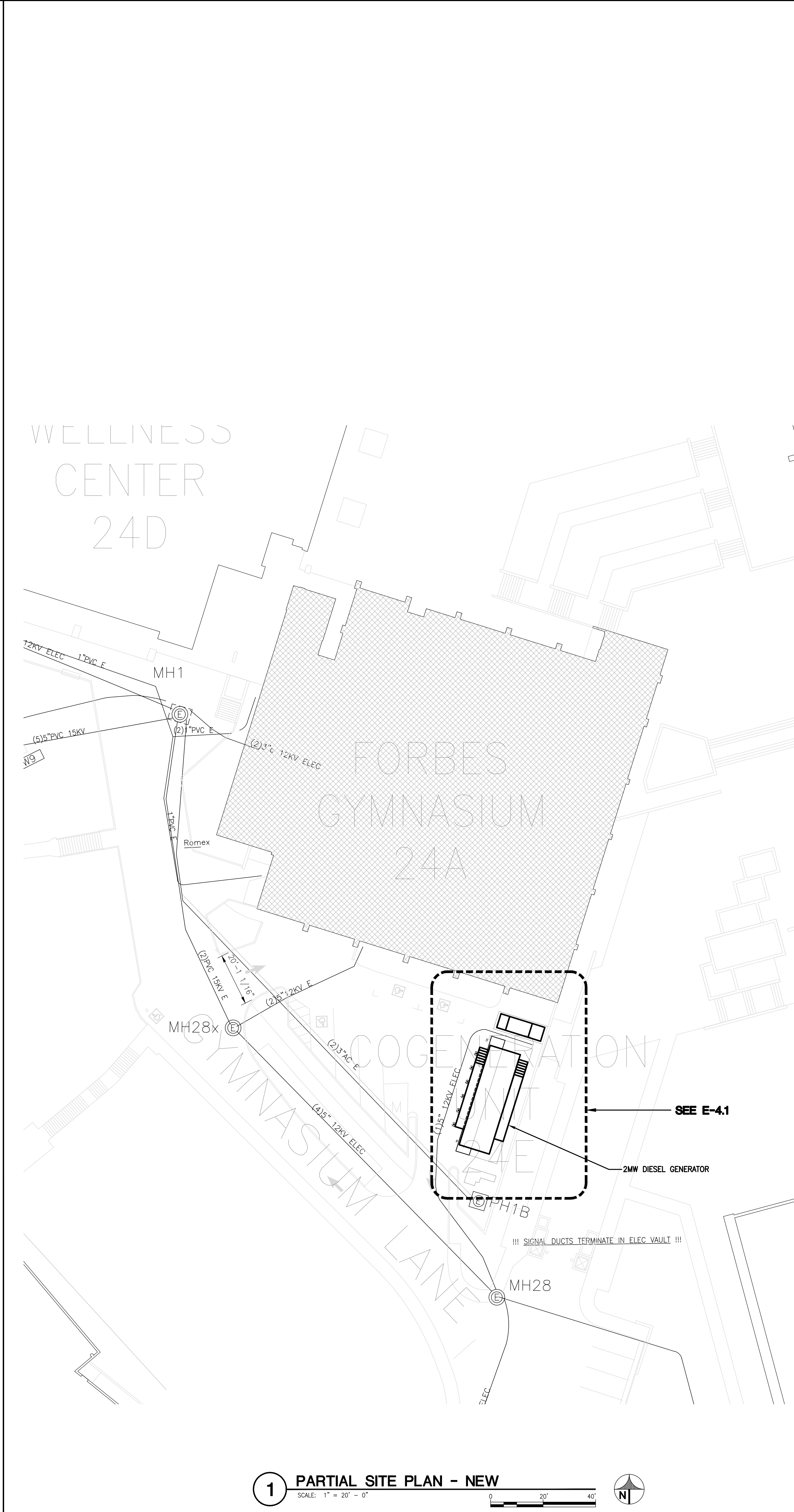
SHEET TITLE  
**PARTIAL SITE PLAN**

SCALE: AS NOTED  
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**ES-4.1**

SHEET - OF -

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**1 PARTIAL SITE PLAN - NEW**  
SCALE: 1" = 20' - 0"



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Other Approvals, as applicable:  
SFM Approval: \_\_\_\_\_  
DSS Access Approval: \_\_\_\_\_  
Science Fair Review: \_\_\_\_\_  
Mock/Fire Review: \_\_\_\_\_

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**GENERAL SHEET NOTES**

- A. PREPARE A SPECIAL METHOD OF PROCEDURE AND COORDINATE THE SHUTDOWN OF ANY DEVICE WITH FACILITIES ENGINEERS. SHUTDOWN MUST BE SCHEDULED. PROVIDE TEMPORARY POWER AS NEEDED.
- B. BEFORE RUNNING ANY FEEDERS TO PANELS BEING RE-CIRCUITED CONFIRM FEEDER SIZE AND ARRANGEMENT (1PHASE, 3 PHASE, 3W, 4W). REPORT DISCREPANCIES TO ENGINEER PRIOR TO CHANGING FEEDERS CALLED FOR ON DRAWINGS.
- C. DEVICE SHOWN AS EXISTING SHALL REMAIN CONNECTED UNLESS OTHERWISE NOTED. WIRING DEVICES THAT MAY BE AFFECTED BY DEMOLITION AND NEW WORK SHALL BE RECONNECTED.
- D. PATCH WALL, ROOF PENETRATION, CEILING AND ANY OTHER OPENINGS LEFT BY DEMO'D EQUIPMENT/CONDUITS, ETC. MATCH ADJACENT CONSTRUCTION AND FINISH.
- E. FIRE SEAL ALL RATED PENETRATIONS.
- F. DISCONNECT TEMPORARY POWER AND EQUIPMENT AFTER ALL WORK IS DONE.
- G. CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE AND ESTIMATING THE WORK INVOLVED IN THE EQUIPMENT INSTALLATION PRIOR TO BIDDING. CAREFULLY INVESTIGATE AREA TO DETERMINE IF SPECIAL INSTALLATION PROVISIONS WILL BE NEEDED SUCH AS DISASSEMBLING OF EQUIPMENT, USE OF CRANES, ETC.
- H. BEFORE ORDERING EQUIPMENT, CONTRACTOR IS RESPONSIBLE FOR NOTIFYING EQUIPMENT MANUFACTURER IF DISASSEMBLY IS REQUIRED. WHEN ASSEMBLING EQUIPMENT IN THE FIELD, CONTRACTOR SHALL HIRE A MANUFACTURER'S REPRESENTATIVE/TECHNICIAN TO SUPERVISE THE ASSEMBLY OF THE EQUIPMENT. EQUIPMENT SHALL BE UL-LISTED AFTER IT HAS BEEN REASSEMBLED.

**REFERENCE SHEET NOTES**

- NEW:**
- 10. CONFIRM EXACT LOCATION IN FIELD.
- 11. EXISTING SWITCHBOARD TO BE MODIFIED. PROVIDE 100A/3P AND 20A/1P CIRCUIT BREAKER, MATCH SCRR RATING OF SWITCHBOARD. PROVIDE NEW BAKELITE LABEL FOR ALL NEW AND EXISTING CIRCUIT BREAKERS. UPDATE CABINET SECTION NAMEPLATE WITH CORRECT VOLTAGE. CORRECT VOLTAGE IS 208 VOLTS.
- 12. ROUTE 1" C. - (4)#12; (2) FOR REMOTE E-STOP AND (2) FOR REMOTE ANNUNCIATOR. CONFIRM FINAL LOCATION OF DEVICES WITH UNIVERSITY.
- 13. PROVIDE AND INSTALL REMOTE ANNUNCIATOR. ANNUNCIATOR SHALL HAVE ALL OF THE REQUIRED VISUAL AND AUDIBLE INDICATORS AND SHUTDOWNS PER NFPA 110 TABLE 5.6.5.2. COORDINATE LOCATION WITH THE UNIVERSITY.

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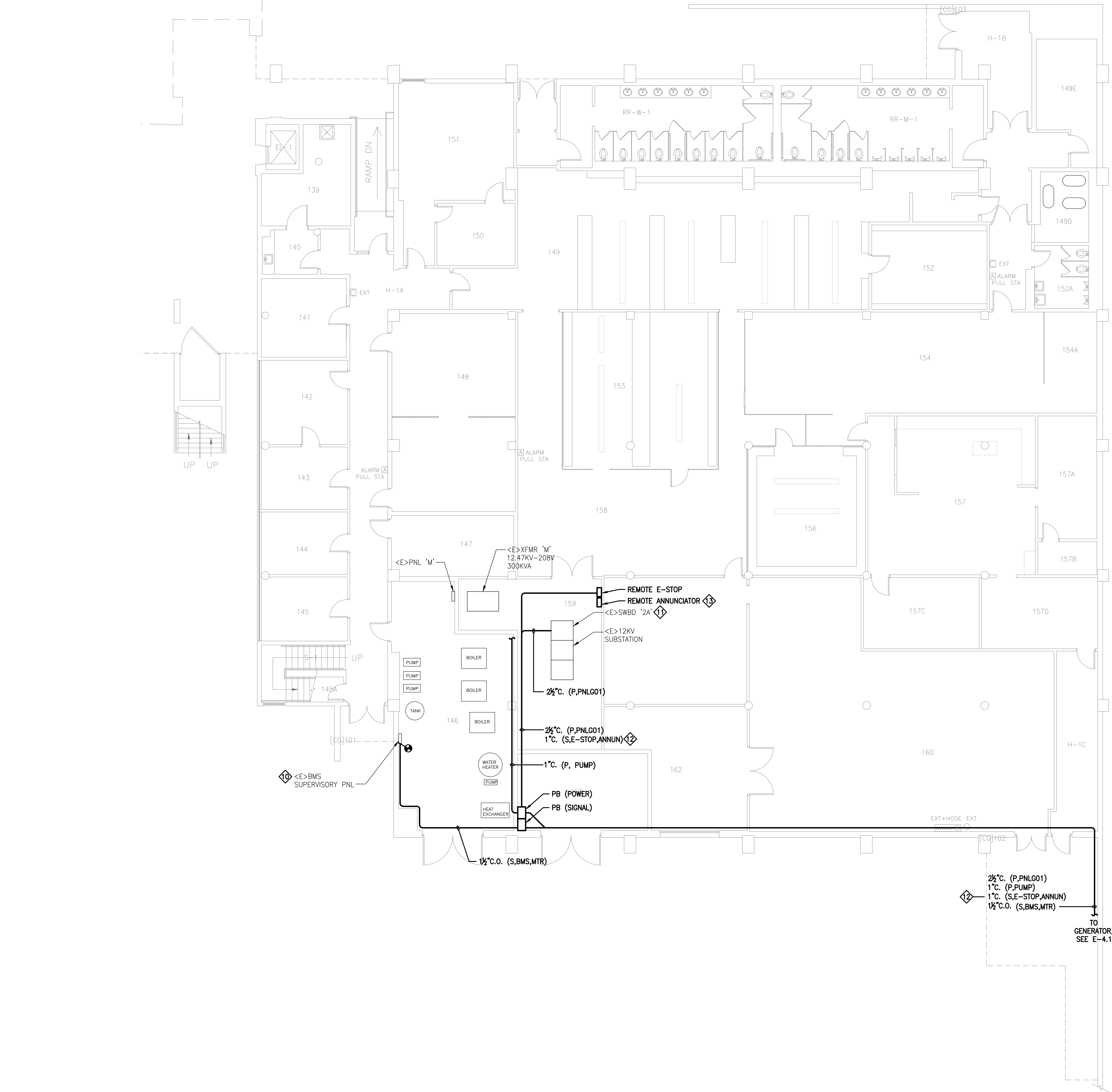
**SHEET TITLE**  
**FORBES  
FIRST FLOOR PLAN**

SCALE: AS NOTED  
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**E-11**

SHEET OF

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**1 FIRST FLOOR PLAN**  
SCALE: 1/8" = 1' - 0"



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SHEET TITLE  
**FORBES GYMNASIUM  
 COGEN UNIT  
 FLOOR PLAN**

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**E-4.1**  
 SHEET - OF -

**GENERAL SHEET NOTES**

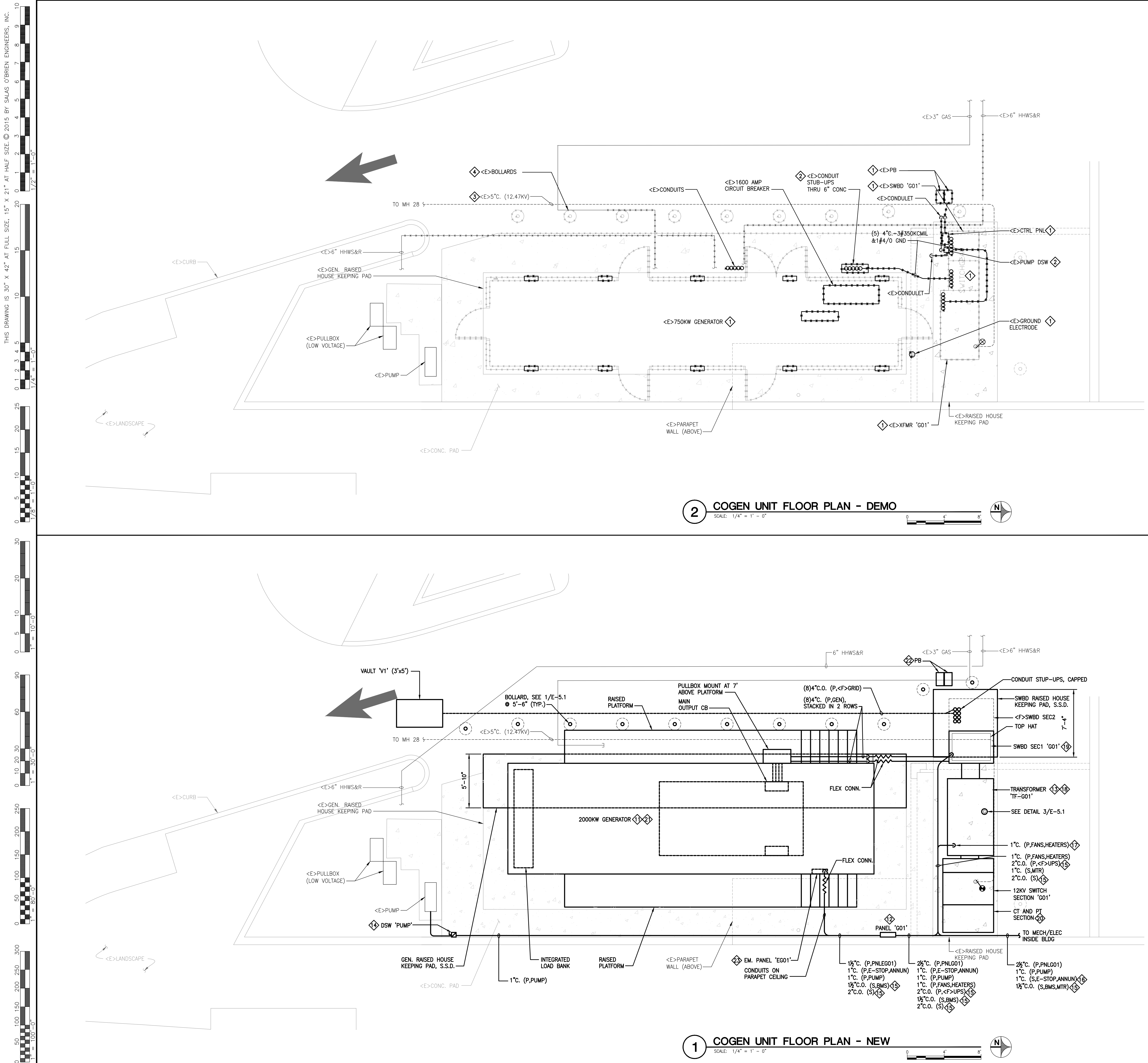
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- CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE AND ESTIMATING THE WORK INVOLVED IN THE EQUIPMENT INSTALLATION PRIOR TO BIDDING. CAREFULLY INVESTIGATE AREA TO DETERMINE IF SPECIAL INSTALLATION PROVISIONS WILL BE NEEDED SUCH AS DISASSEMBLING OF EQUIPMENT, USE OF CRANES, ETC.
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- CUT AND CAP ABANDONED UNDERGROUND CONDUIT FLUSH WITH GRADE.
- BASIS OF DESIGN FOR EQUIP ARE:
  - GENERATORS: CUMMINS
  - MEDIUM AND LOW VOLTAGE SWITCHBOARDS: IEM
  - MEDIUM VOLTAGE TRANSFORMER: REK POWER MAGNETICS.
 IF SUBSTITUTED EQUIPMENT, CONTRACTOR IS RESPONSIBLE, BUT NOT LIMITED, FOR ADJUSTING PAD SIZES AND UPDATING STRUCTURAL CALCULATIONS.
- CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHILE TRENCHING FOR NEW UTILITIES. THESE DRAWINGS HAVE BEEN COMPILED FROM RECORD DOCUMENTS, FIELD SURVEYS AND OTHER AVAILABLE INFORMATION. NOT ALL UTILITIES AND/OR OBSTRUCTIONS ARE SHOWN. CONTRACTOR SHALL VERIFY THE LOCATIONS OF UTILITIES PRIOR TO EXCAVATION, EITHER BY HAND EXCAVATION OR WITH THE ASSISTANCE OF A CERTIFIED UNDERGROUND UTILITY LOCATION SERVICE (USA WILL NOT LOCATE UTILITIES ON THE CAMPUS).
- ROUTE MINIMUM (2)#10 + #10 GND WIRES FOR SINGLE PHASE POWER BRANCH CIRCUITS, U.O.N.

**REFERENCE SHEET NOTES**

- DEMCO:**
- DISCONNECT AND DEMOLISH EXISTING EQUIPMENT. REMOVE CONDUIT AND WIRES BACK TO SOURCE. REFER TO SINGLE LINE DIAGRAM. UNDERGROUND CONDUIT SHALL BE CUT AND CAPPED BELOW GRADE.
  - REMOVE EXISTING WALL MOUNTED PULL BOX.
  - EXISTING UNDERGROUND UTILITY LINES SHALL BE PROTECTED DURING CONSTRUCTION.
  - DEMOLISH EXISTING BOLLARDS. FILL HOLE AND PATCH PAVEMENT.
- NEW:**
- 2000 KW GENERATOR WITH LEVEL 2 ENCLOSURE, CUMMINS #2000D0KAB OR APPROVED EQUAL. PROVIDE WITH DPF, 4,000 GALLON 24-HOUR BELLY TANK, RADIATOR MOUNTED 1000KW LOAD BANK. ALSO, PROVIDE RAISED PLATFORM 100A DISTRIBUTION PANEL, CIRCUIT BREAKER BOX, BATTERIES, RACKS, MODBUS CONTROL AND COOLANT AND ANTI-CONDENSATE HEATER. COLOR SHALL BE ANSI GRAY 61, CONFIRM WITH OWNER.
  - 120/208V, 225A, 3-PHASE, 4W, NEMA 3R PANELBOARD. ROUTE 2-1/2" C. - (4)#4/0 + #4 GND FROM SWBD '2A'.
  - MEDIUM VOLTAGE TRANSFORMER, REFER TO SINGLE LINE DIAGRAM. PROVIDE WITH 1,000W CONDENSATE STRIP HEATERS AND COOLING FANS FOR ADDITIONAL 33% LOAD CAPACITY. TRANSFORMER SHALL BE VPE TYPE (MULTIPLE VPI DIP IMPREGNATION PROCESSES), 60 DEGREE TEMPERATURE RISE, REAR AND FRONT HINGED ACCESS DOORS. BASIS OF DESIGN IS REK POWER MAGNETICS.
  - HEAVY DUTY FUSED DISCONNECT SWITCH. SWITCH SIZE SHALL BE 40AF/60AS/3P RATING. ROUTE 1" C. - (3)#8 + #10 GND. FROM ORIGINAL PANELBOARD IN MECHANICAL ROOM. CONFIRM EXACT LOCATION AND MOTOR VOLTAGE IN FIELD.
  - ROUTE CONDUIT WITH PULL ROPE.
  - ROUTE 1" C. - (4)#12; (2) FOR REMOTE E-STOP AND (2) FOR REMOTE ANNUNCIATOR. CONFIRM FINAL LOCATION OF DEVICES WITH UNIVERSITY.
  - ROUTE 1" C. - (2)#10 + #10 GND.
  - POWER TO HEATERS AND FAN SHALL BE FROM PANELBOARD PANEL 'G01'.
  - SWITCHBOARD SECTION, PROVIDE WITH EXTENDED BUSSING FOR FUTURE SWITCHBOARD CONNECTION, AUXILIARY COMPARTMENT FOR FUTURE RELAYS, PRE-WIRED CABLING FOR PIT'S AND 30000S CT'S ON THE LINE AND LOAD SIDE OF THE MAIN CIRCUIT BREAKER (MCB), MOTORIZED OPERATOR FOR THE MCB, REFER TO DETAIL 2/E-5.2 AND SINGLE LINE DIAGRAM.
  - GENERATOR SHALL BE NFPA 110 LEVEL 1 TYPE 10 AND AT THE TIME OF INSTALLATION, THE CONTRACTOR SHALL TEST THE GENERATOR TO ENSURE COMPLIANCE. THE GENERATOR SHALL BE INSTALLED WITH ALL OF THE LEVEL 1 REQUIREMENTS INCLUDING ALL VISUAL AND AUDIBLE INDICATORS, 24HRS BATT. RECHARGE TIME, ETC.
  - RELOCATED PULLBOX. CONTRACTOR TO FIELD VERIFY BEST LOCATION TO INTERCEPT INCOMING UNDERGROUND FEEDERS.
  - ROUTE 1-1/2" C. - (4)#1 + #6 GND FROM PANEL 'G01'. PROVIDE 100A/3P CIRCUIT BREAKER AT PANEL 'G01'.

**2 COGEN UNIT FLOOR PLAN - DEMO**  
 SCALE: 1/4" = 1' - 0"

**1 COGEN UNIT FLOOR PLAN - NEW**  
 SCALE: 1/4" = 1' - 0"



THIS DRAWING IS 30" X 42" AT FULL SIZE. 15" X 21" AT HALF SIZE. © 2015 BY SALAS O'BRIEN ENGINEERS, INC.  
 10' 0" 5' 0" 0' 0" 5' 0" 10' 0" 15' 0" 20' 0" 25' 0" 30' 0" 35' 0" 40' 0" 45' 0" 50' 0" 55' 0" 60' 0" 65' 0" 70' 0" 75' 0" 80' 0" 85' 0" 90' 0" 95' 0" 100' 0" 105' 0" 110' 0" 115' 0" 120' 0" 125' 0" 130' 0" 135' 0" 140' 0" 145' 0" 150' 0" 155' 0" 160' 0" 165' 0" 170' 0" 175' 0" 180' 0" 185' 0" 190' 0" 195' 0" 200' 0" 205' 0" 210' 0" 215' 0" 220' 0" 225' 0" 230' 0" 235' 0" 240' 0" 245' 0" 250' 0" 255' 0" 260' 0" 265' 0" 270' 0" 275' 0" 280' 0" 285' 0" 290' 0" 295' 0" 300' 0"



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This project has demonstrated conformance with applicable codes and standards established by state and University policy. Based on this determination, the following are:  
**'APPROVED FOR CONSTRUCTION'**  
Michael Fisher  
Campus Deputy Building Official  
Humboldt State University  
The California State University  
Date: \_\_\_\_\_  
Permit #: \_\_\_\_\_  
*(Other approvals as applicable)*  
SFM Approval: \_\_\_\_\_  
DSD Access Approval: \_\_\_\_\_  
Security Plan Review: \_\_\_\_\_  
Mock Pipe Review: \_\_\_\_\_

**CALIFORNIA STATE FIRE MARSHAL APPROVED**  
Approval of this plan does not authorize or approve any installation or deviation from applicable regulations. Final approval is subject to field inspection. Set of approved plans shall be available on the project site at all times.  
Reviewed by: \_\_\_\_\_  
Date: \_\_\_\_\_



**HUMBOLDT STATE UNIVERSITY**

1 HARPST STREET  
ARCATA, CA 95521

**FORBES GYMNASIUM EMERGENCY GENERATOR**

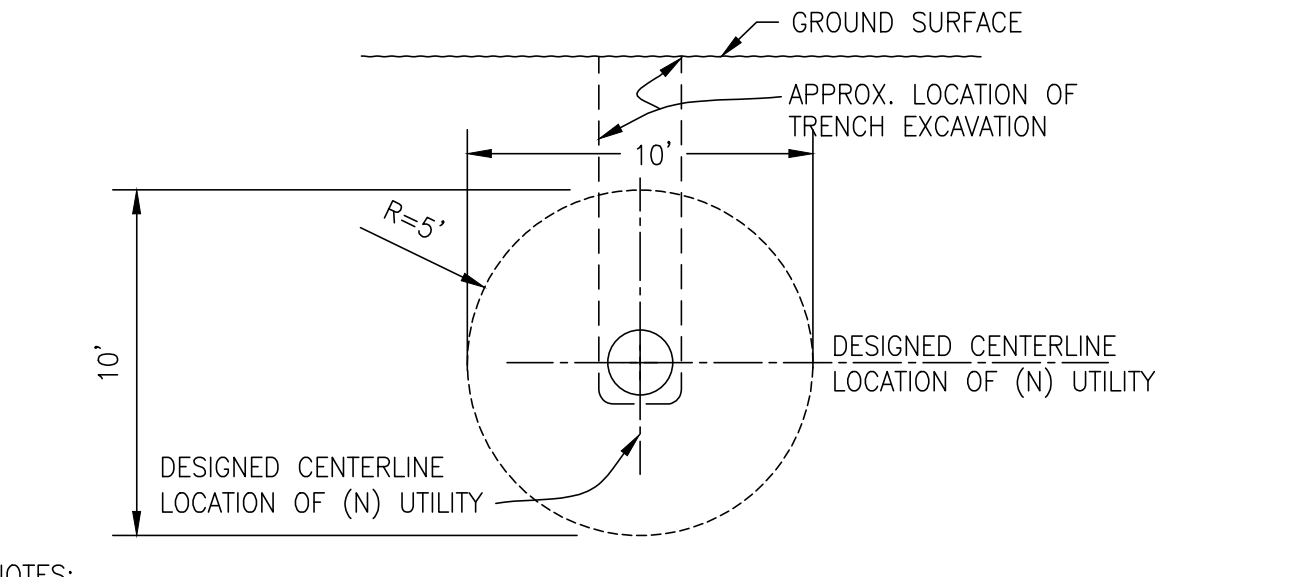
ISSUE	MARK	DATE	DESCRIPTION
		05/19/20	PROGRESS SET
		01/07/21	100% CD

SOBE PROJECT NO: 1901734  
DATE: 01/05/21  
DRAWN BY:  
CHECKED BY:  
APPROVED BY:

**ELECTRICAL DETAILS**

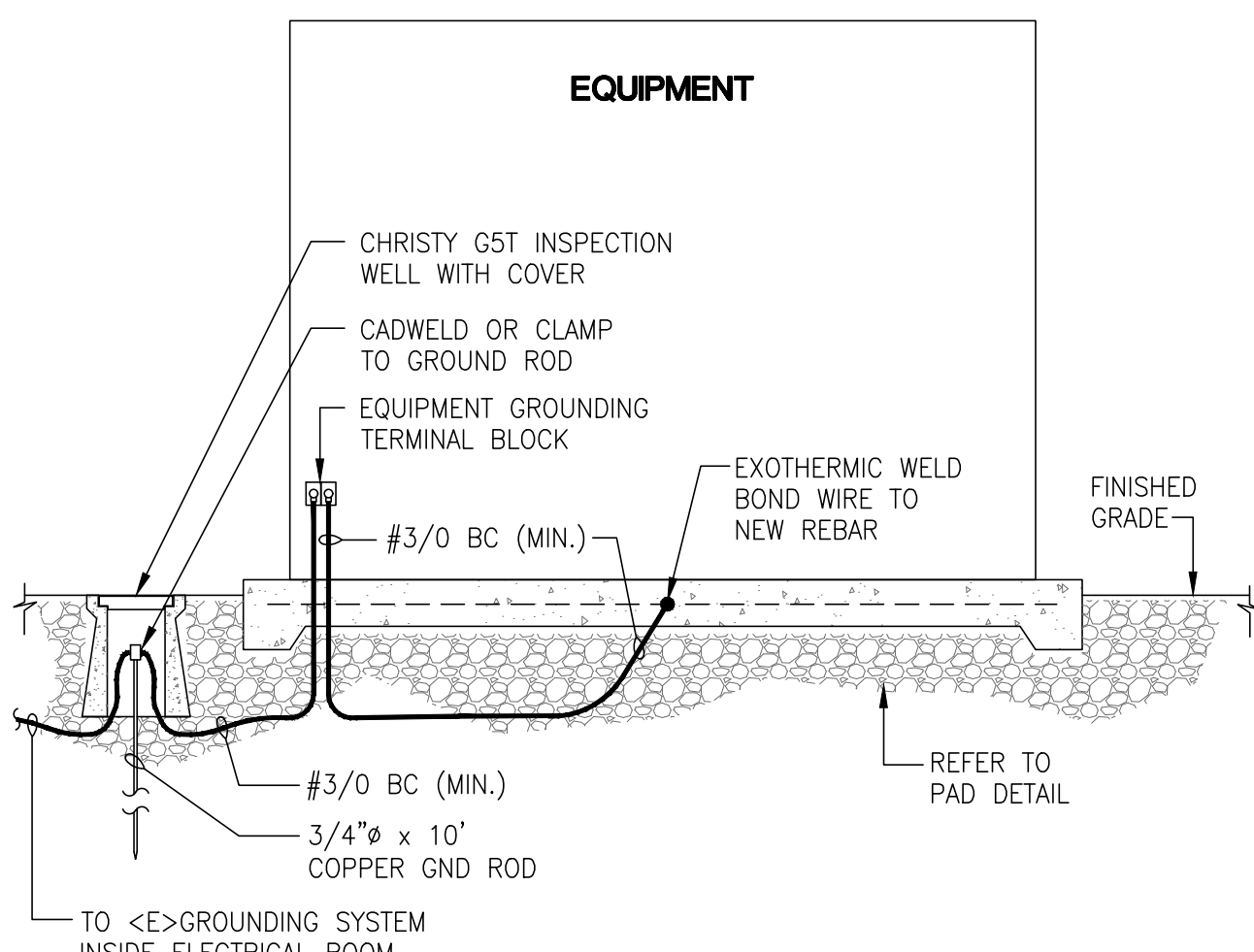
SCALE: AS NOTED  
THIS DRAWING IS 30" X 42" AT FULL SIZE

**E-5.1**  
SHEET OF

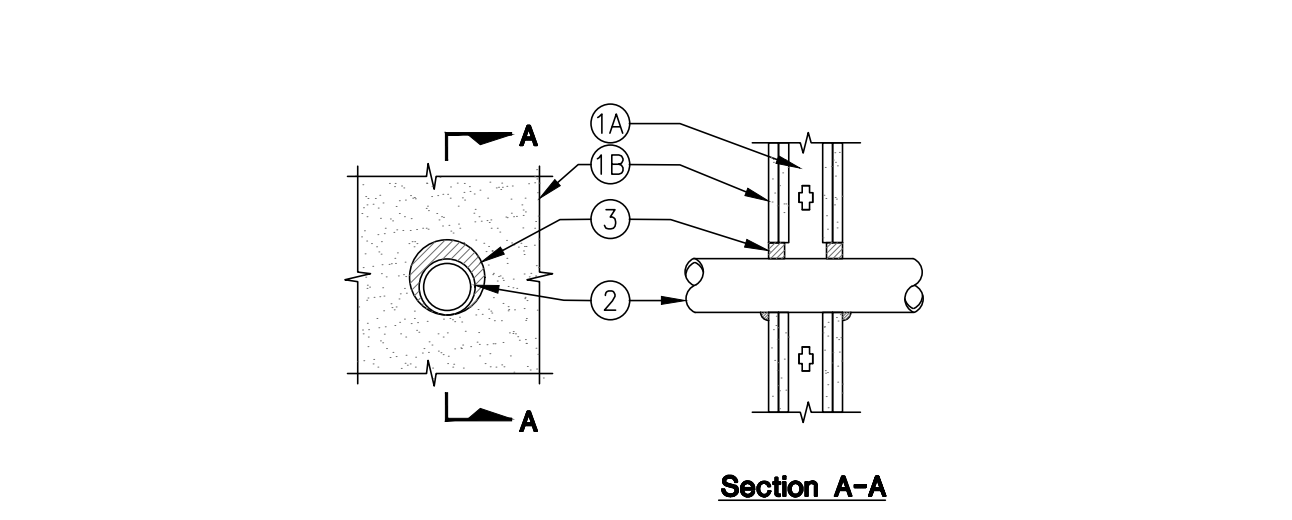


- NOTES:**
- ANY FIELD ADJUSTMENTS TO THE PROPOSED LOCATION OF (N) UTILITIES WITHIN A 5 FOOT RADIUS OF THE DESIGN CENTERLINE LOCATION SHALL BE DONE AT NO ADDITIONAL EXPENSE TO THE OWNER. ALL PROPOSED ADJUSTMENTS SHALL BE SUBJECT TO PRIOR APPROVAL OF THE OWNER. SHOULD THE OWNER AGREE THAT IT IS NECESSARY TO ADJUST THE DESIGN LOCATION OF THE (N) UTILITY TO A POSITION OUTSIDE THE ABOVE 5 FOOT RADIUS, SUCH ADJUSTMENT SHALL BE SUBJECT TO REVIEW AS AN ITEM OF EXTRA EXPENSE OR CREDIT.
  - IF IT IS NECESSARY TO RELOCATE (E) UTILITIES IN ORDER TO ALLOW THE (N) UTILITY TO BE INSTALLED WITHIN A 5 FOOT RADIUS OF ITS DESIGNED CENTERLINE, THEN SUCH RELOCATION OF (E) UTILITIES SHALL BE PAID FOR AS AN ITEM OF EXTRA EXPENSE BY THE CONTRACTOR. ANY SUCH RELOCATION SHALL BE SUBJECT TO PRIOR APPROVAL OF THE OWNER.
  - IN AREAS WHERE SHORING IS NOT REQUIRED AS PER SPECIFICATIONS, THE MAXIMUM DEPTH OF TRENCHING TO AVOID OBSTACLES WITHOUT ADDITIONAL COST SHALL BE 5' BELOW GRADE. IN AREAS WHERE SHORING IS REQUIRED TO MEET DESIGN GRADE, THE LINE MAY BE ADJUSTED AN ADDITIONAL 5' BELOW THAT SHOWN WITH NO INCREASE IN COST.

**4 UTILITY ADJUSTMENT CRITERIA**  
SCALE: N.T.S.



**3 EQUIPMENT GROUNDING SECTION ON NEW PAD**  
SCALE: N.T.S.



System No. W-L-1098  
F Rating - 1, 2, 3 & 4 Hr (See Item 1)  
T Rating - 0 & 1/4 Hr (See Item 2)

- Wall Assembly - The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:  
A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 3-5/8 in. wide and spaced max 24 in. OC.  
B. Wallboard, Gypsum\* - Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 25-3/8 in.

- Through Penetrants - One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min 0 (point contact) in. to max 1-3/8 in. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:  
A. Steel Pipe - The following types and sizes of steel pipes may be used:  
1. Nom 4 in. diam (or smaller) Schedule 7 (or heavier) steel pipe.  
2. Nom 8 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.  
3. Nom 10 in. diam (or smaller) Schedule 20 (or heavier) steel pipe.  
4. Nom 24 in. diam (or smaller) Schedule 40 (or heavier) steel pipe.

- Iron Pipe - Nom 24 in. diam (or smaller) cast or ductile iron pipe. When iron pipe is used T Rating is 1/4 hr.  
When steel or iron pipe is used T Rating is 1/4 hr for nom 4 in. diam (or smaller) and 0 hr for steel or iron pipes greater than nom 4 in. diam.

- Conduit - Nom 4 in. diam (or smaller) steel electrical metallic tubing (EMT). When EMT is used T Rating is 1/4 hr.

- Conduit - Nom 6 in. diam (or smaller) steel conduit. When steel conduit is used T Rating is 1/4 hr.

- Copper Tubing - Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing. When copper tube is used T Rating is 0 hr.

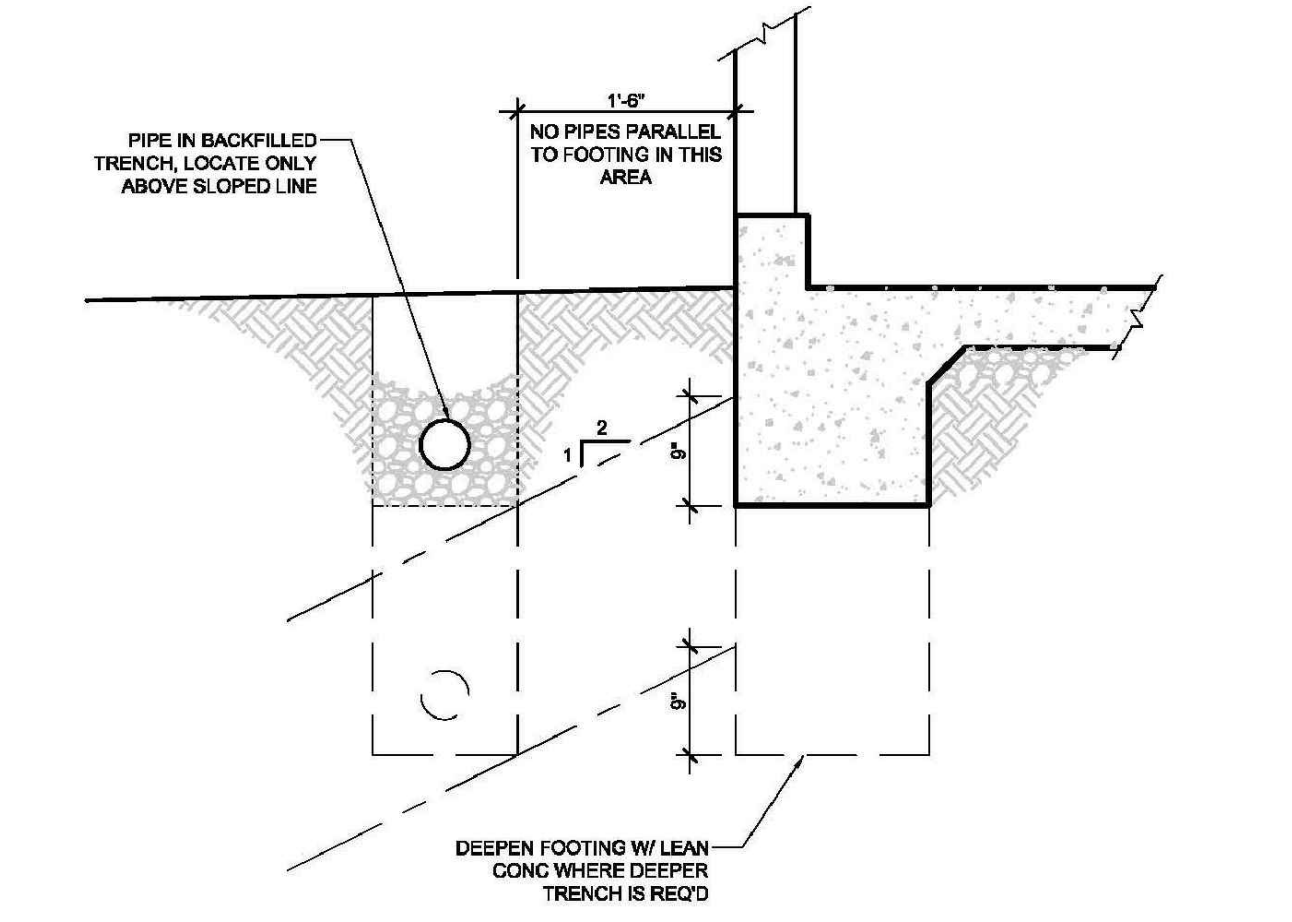
- Copper Pipe - Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe. When copper pipe is used T Rating is 0 hr.

- Fill, Void or Cavity Material\* - Sealant - Min 5/8 in. thickness of fill material for 1 hr rated wall assemblies and 1 in. thickness of fill material for 2, 3 or 4 hr rated wall assemblies, applied within the annulus, flush with both surfaces of wall. At point contact location between penetrant and periphery of opening, a min 1/2 in. diam bead of fill material shall be installed at the wallboard/penetrant interface on both surfaces of wall. Passive Fire Protection Partners\*\* - 4800DW

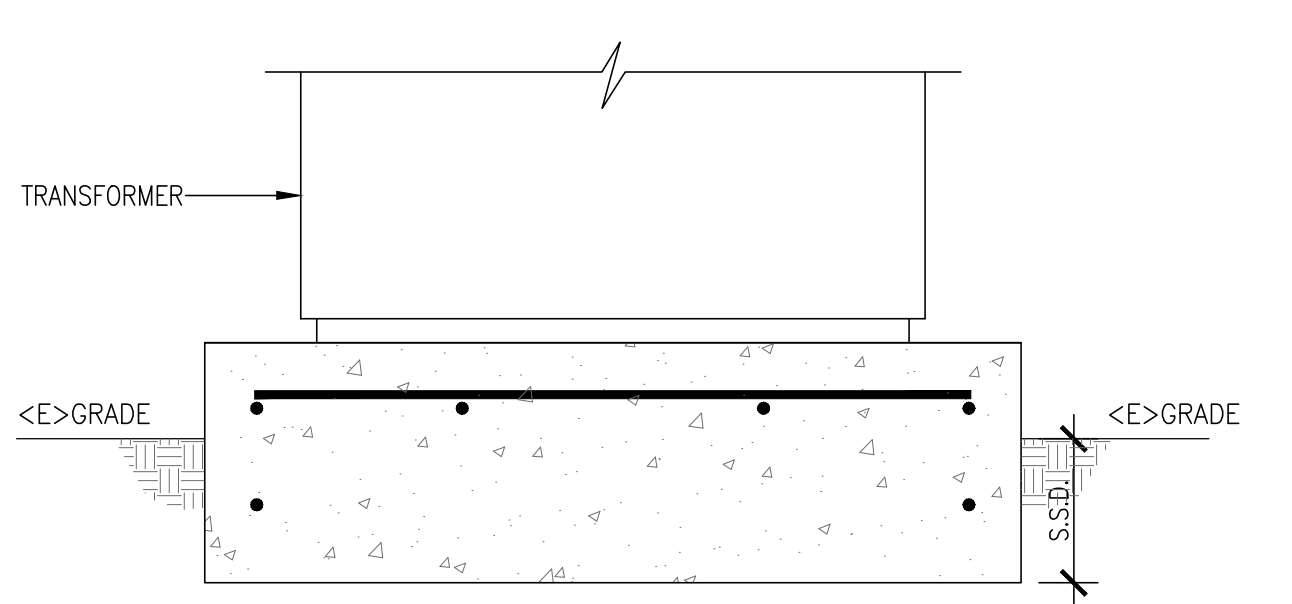
\*Bearing the UL Classification Marking  
\*\* Formerly Firestop Systems Inc.

**7 CONDUIT PENETRATION THROUGH WALL**  
SCALE: N.T.S.

**NOTE:**  
PIPE TRENCHING IS SHOWN DIAGRAMMATICALLY. REFER TO TRENCH DETAIL FOR ALL REQUIREMENTS INCLUDING TRACEABLE TAPE.

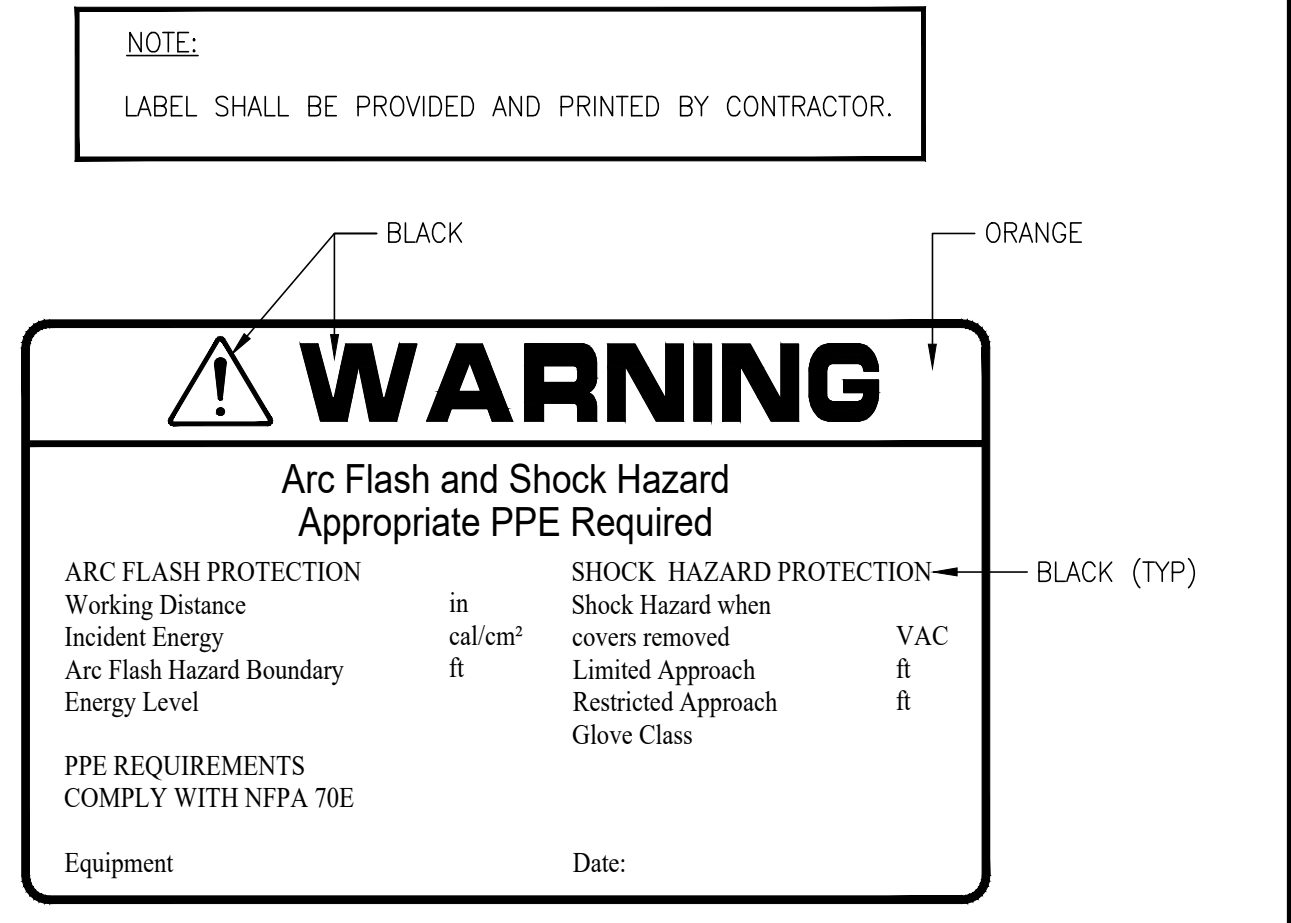


**6 TRENCH ADJACENT TO FOOTING**  
SCALE: N.T.S.

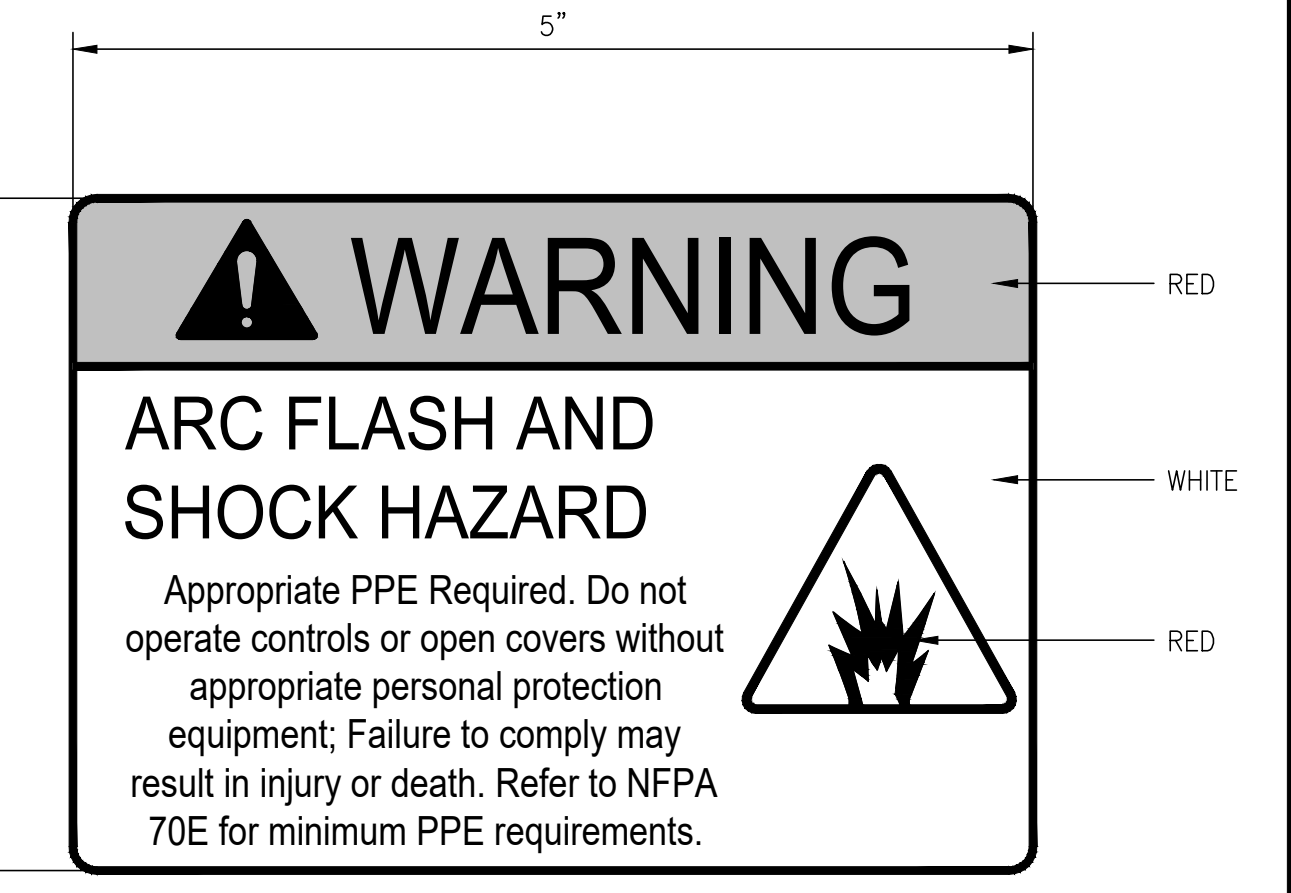


- NOTES:**
- SEE STRUCTURAL DRAWINGS FOR ANCHORAGE REBAR, BACKFILL AND ADDITIONAL REQUIREMENTS.
  - CONTRACTOR SHALL ADJUST PAD DIMENSIONS AND CLEARANCES OF THE EQUIPMENT WITH RESPECT TO ACTUAL EQUIPMENT SUPPLIED.

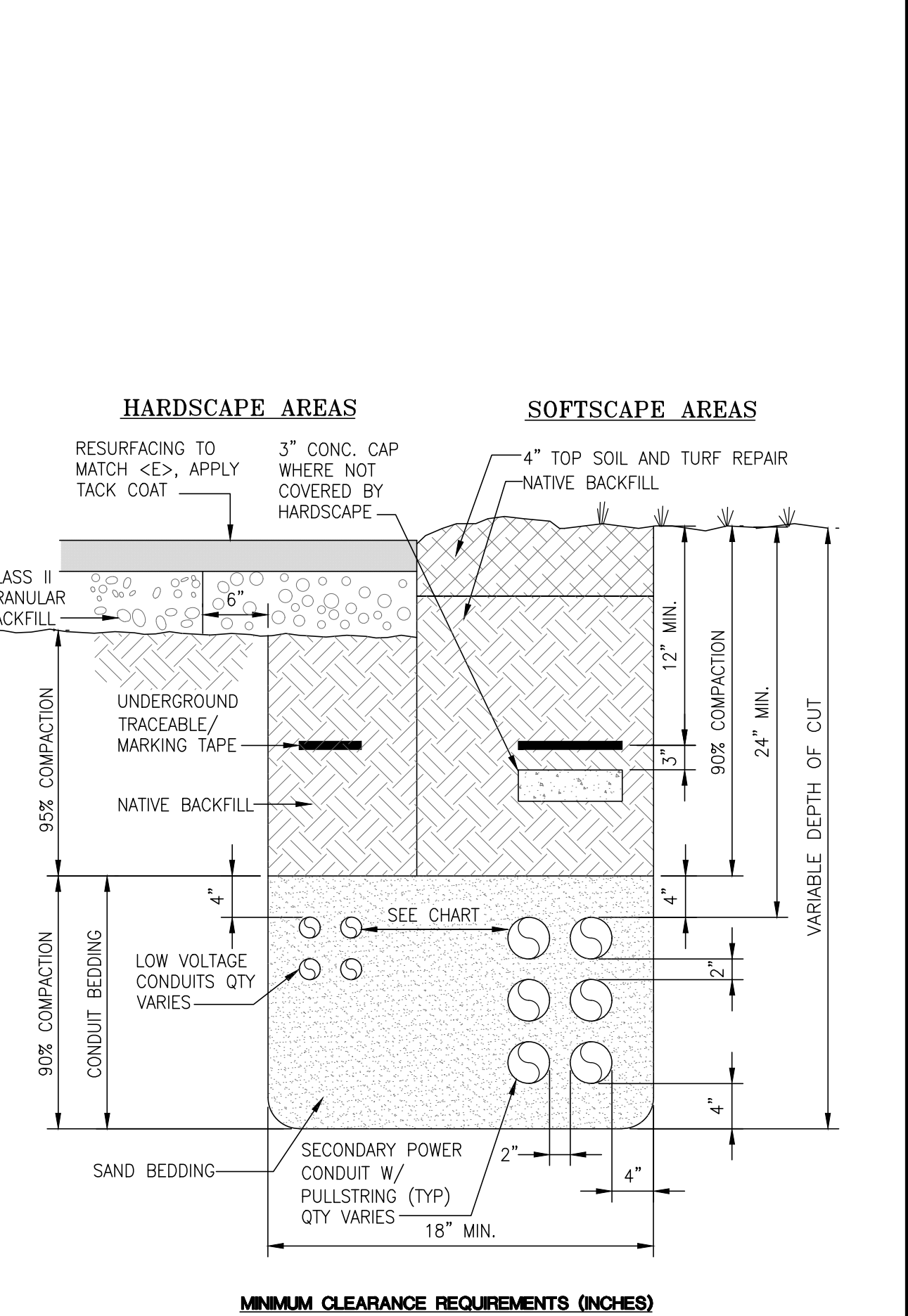
**5 HOUSEKEEPING PAD ON EXISTING GRADE**  
SCALE: N.T.S.



**10 ARC FLASH WARNING LABEL**  
SCALE: N.T.S.



**9 SHOCK HAZARD WARNING LABEL**  
SCALE: N.T.S.



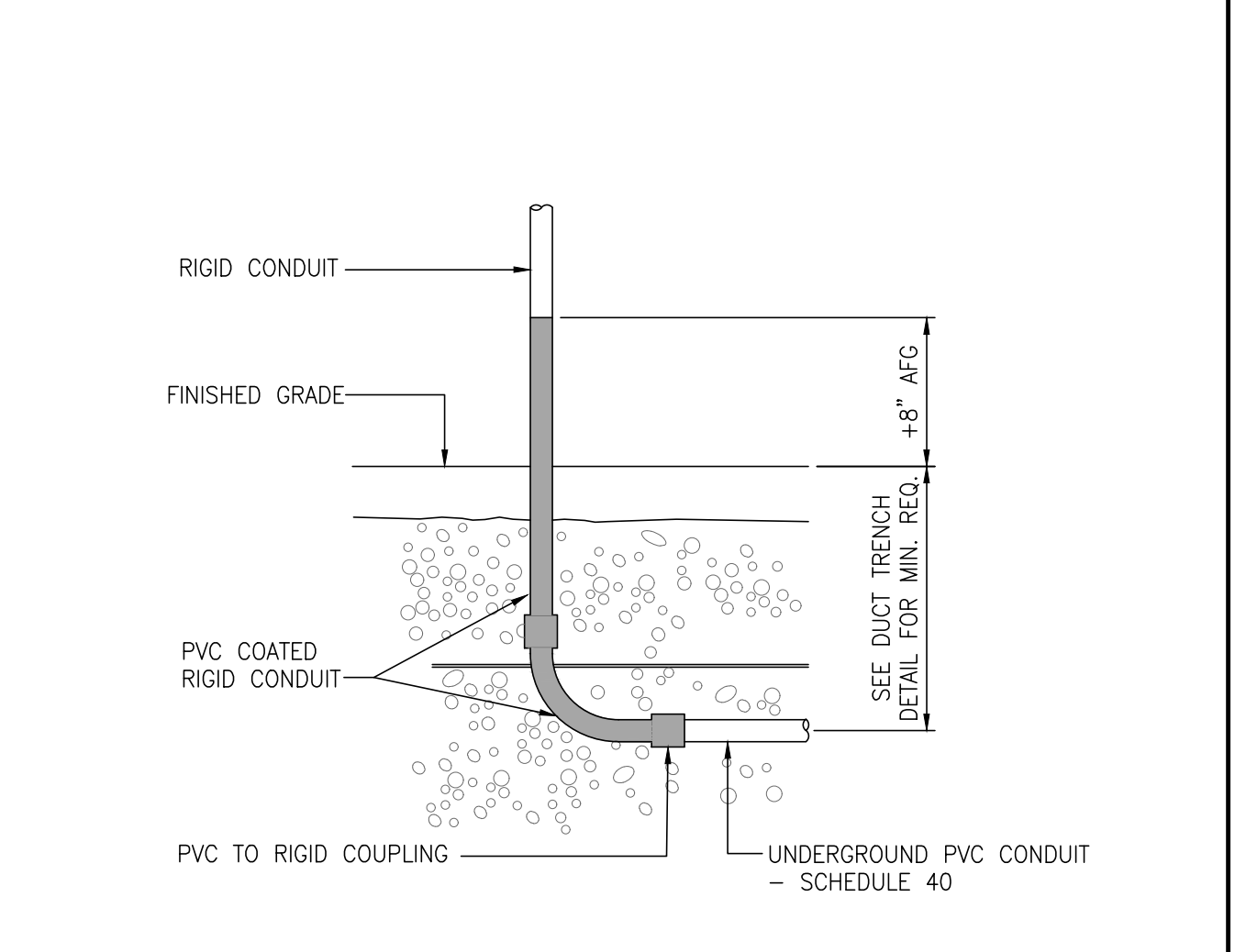
**MINIMUM CLEARANCE REQUIREMENTS (INCHES)**

	PC	SC	G	TEL	TV	LV	W
PRIMARY CONDUIT (60V-22kV) (PC)	6	6	6	6	6	6	6
SECONDARY POWER CONDUIT (0-600V) (SC)	6	6	6	6	6	6	6
GAS (G)	36	12	12	12	12	12	36
TELEPHONE (TEL)	36	12	12	12	12	12	36
COAX (TV)	36	12	12	12	12	12	36
OTHER LOW VOLTAGE (LV)	36	12	12	12	12	12	36
WET UTILITIES (W)	36	36	36	36	36	36	36

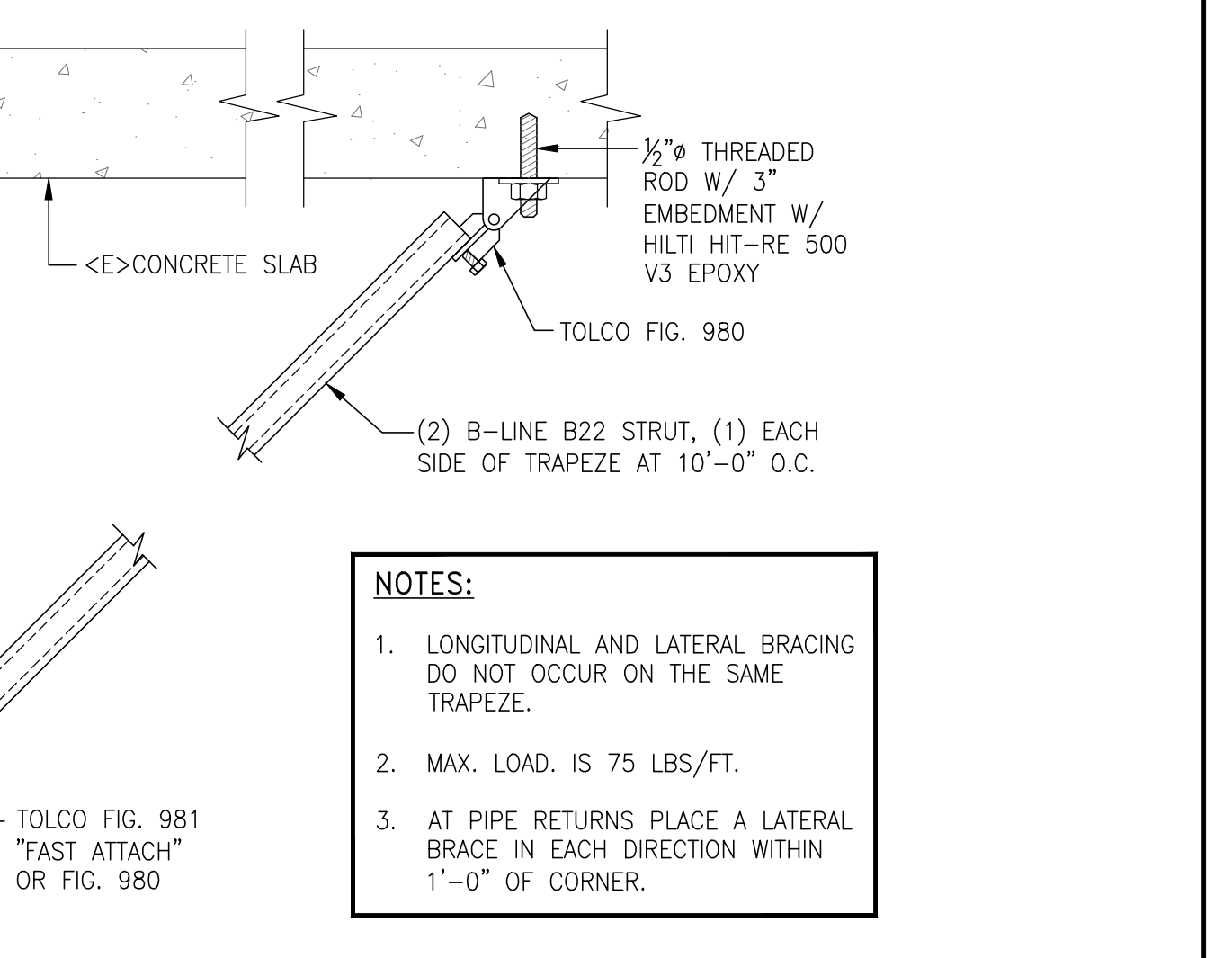
TABLE ONLY APPLIES TO CONDUITS AFTER THE UTILITY POINT OF CONNECTION.

- NOTES:**
- UTILITY OWNED AND END-USER CONDUITS AND TRENCH SHALL NOT BE COMBINED.
  - PROVIDE 12" SEPARATION WHEN CROSSING "WET" UTILITIES.
  - ALL DIMENSIONS ARE MINIMUM.

**8 CONDUIT TRENCHING DETAIL BELOW 600V**  
SCALE: N.T.S.



**13 CONDUIT TRANSITION DETAIL**  
SCALE: N.T.S.

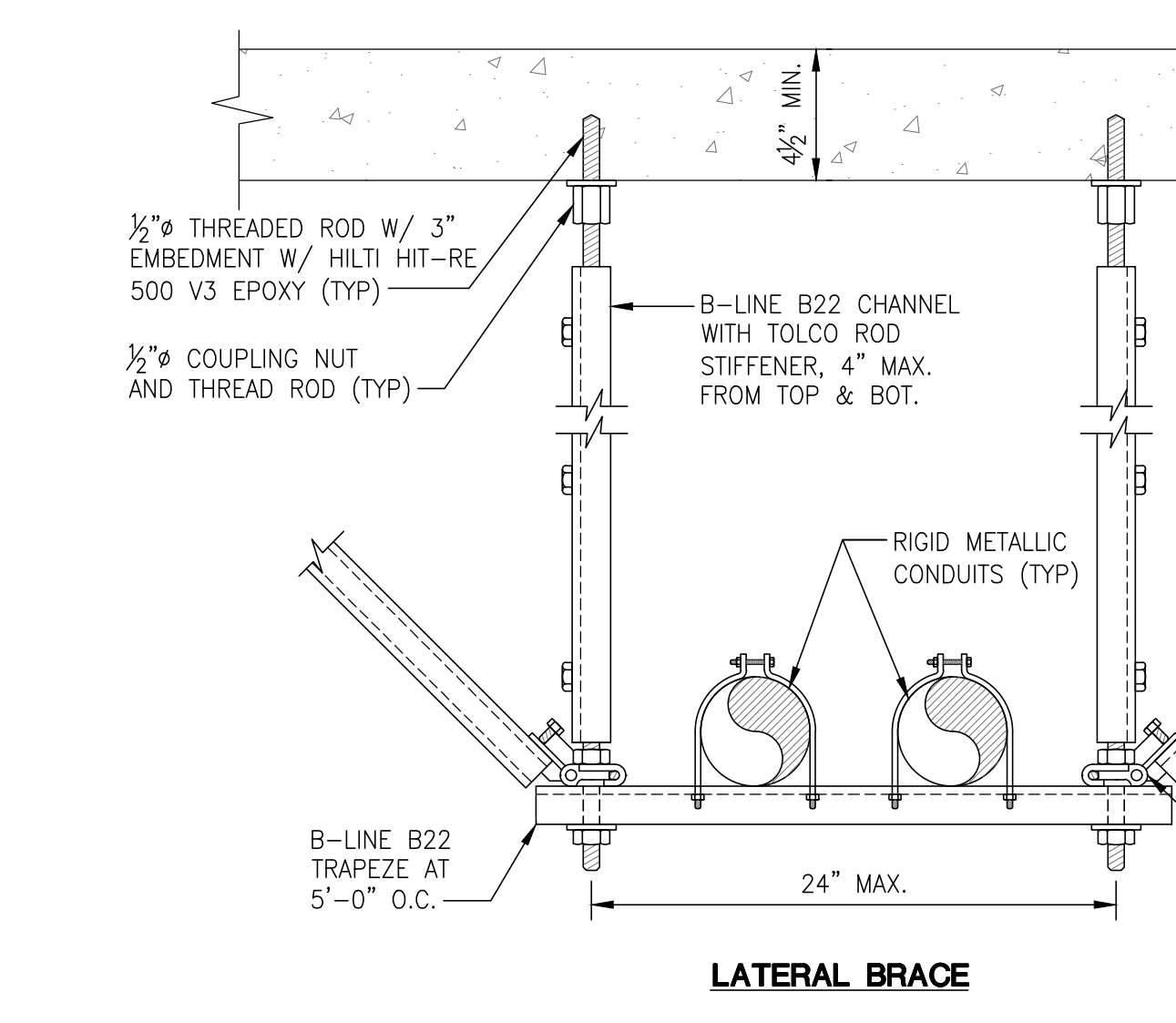
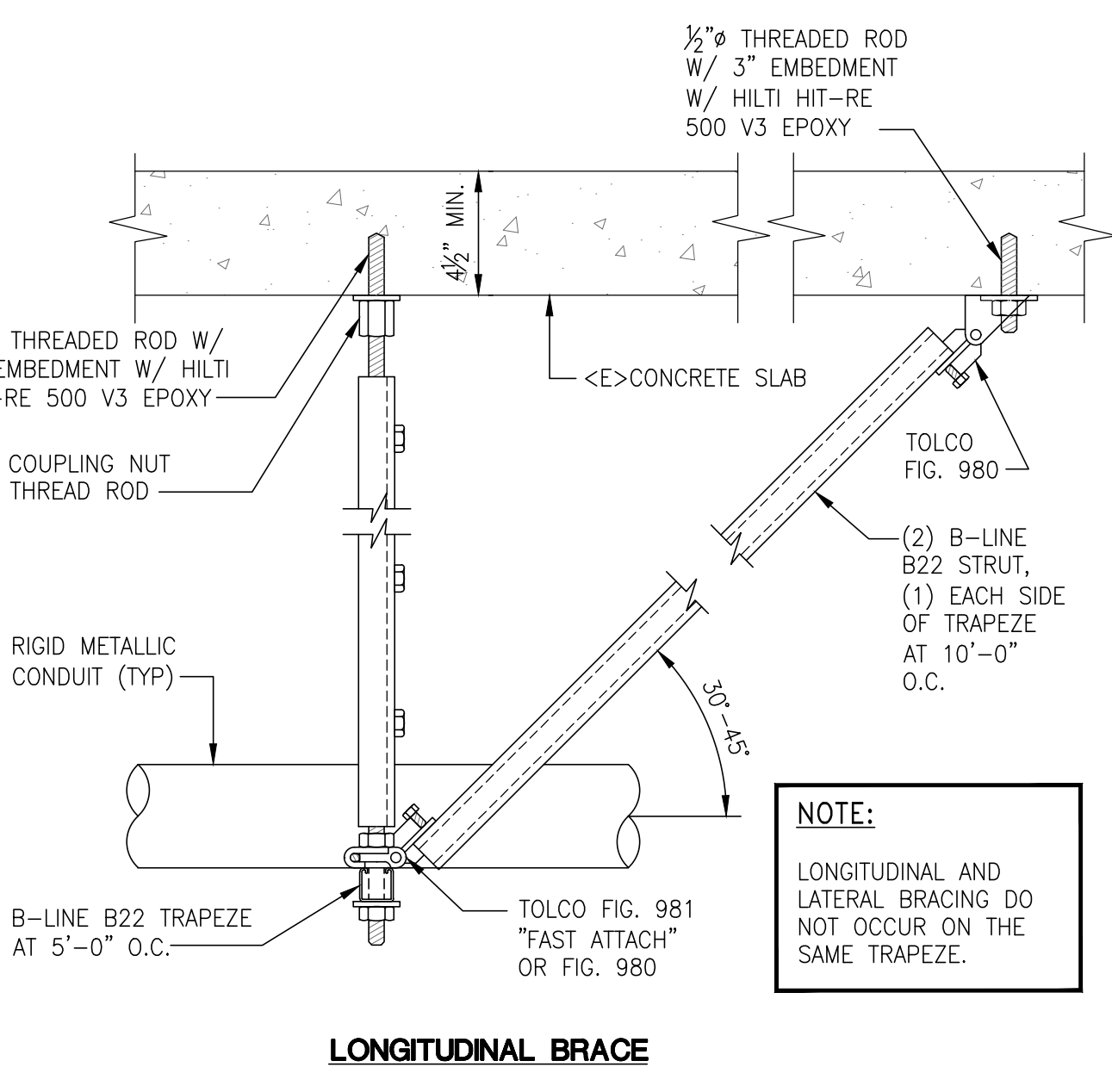


**12 TRAPEZE ATTACHMENT AT CONCRETE**  
SCALE: N.T.S.

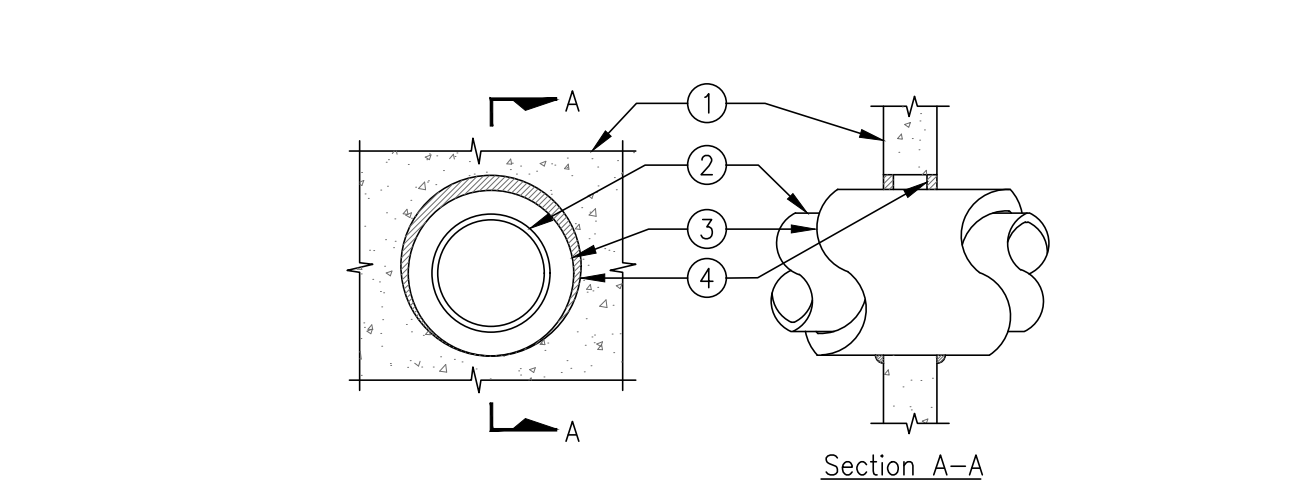
- NOTES:**
- LONGITUDINAL AND LATERAL BRACING DO NOT OCCUR ON THE SAME TRAPEZE.
  - MAX. LOAD IS 75 LBS/FT.
  - AT PIPE RETURNS PLACE A LATERAL BRACE IN EACH DIRECTION WITHIN 1'-0" OF CORNER.

- Through Penetrants - One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:  
A. Steel Pipe - Nom 12 in. diam (or smaller) Schedule 40 (or heavier) steel pipe.  
B. Iron Pipe - Nom 12 in. diam (or smaller) cast or ductile iron pipe.  
C. Conduit - Nom 4 in. diam (or smaller) steel electrical metallic tubing.  
D. Conduit - Nom 6 in. diam (or smaller) steel conduit.  
E. Copper Tubing - Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.  
F. Copper Pipe - Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.  
When penetrants larger than 6 in. are used, wall assembly shall not be more than 2 hour fire rated.

**11 CONDUIT PENETRATION THROUGH WALL**  
SCALE: N.T.S.



**12 TRAPEZE ATTACHMENT AT CONCRETE**  
SCALE: N.T.S.



- Wall Assembly - Min 4-7/8, 6-1/8, 7-3/8 or 8-5/8 in. thick lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks\*. Max diam of opening is 17-3/4 in.  
See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

**11 CONDUIT PENETRATION THROUGH WALL**  
SCALE: N.T.S.

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National Strength.  
Local Action.

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**'APPROVED FOR CONSTRUCTION'**

Michael Fisher  
Campus Deputy Building Official  
Humboldt State University  
The California State University

Date: \_\_\_\_\_

Permit #: \_\_\_\_\_

(Other approvals, as applicable)

SFM Approval: \_\_\_\_\_

DSD Access Approval: \_\_\_\_\_

Science Peer Review: \_\_\_\_\_

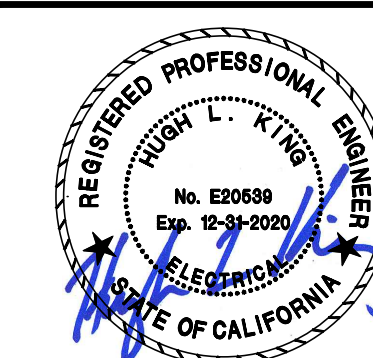
Mock Pipe Review: \_\_\_\_\_

**CALIFORNIA STATE FIRE MARSHAL APPROVED**

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Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_



**HUMBOLDT STATE UNIVERSITY**

1 HARPST STREET  
ARCATA, CA 95521

**FORBES GYMNASIUM  
EMERGENCY GENERATOR**

MARK	DATE	DESCRIPTION
	05/19/20	PROGRESS SET
	01/07/21	100% CD

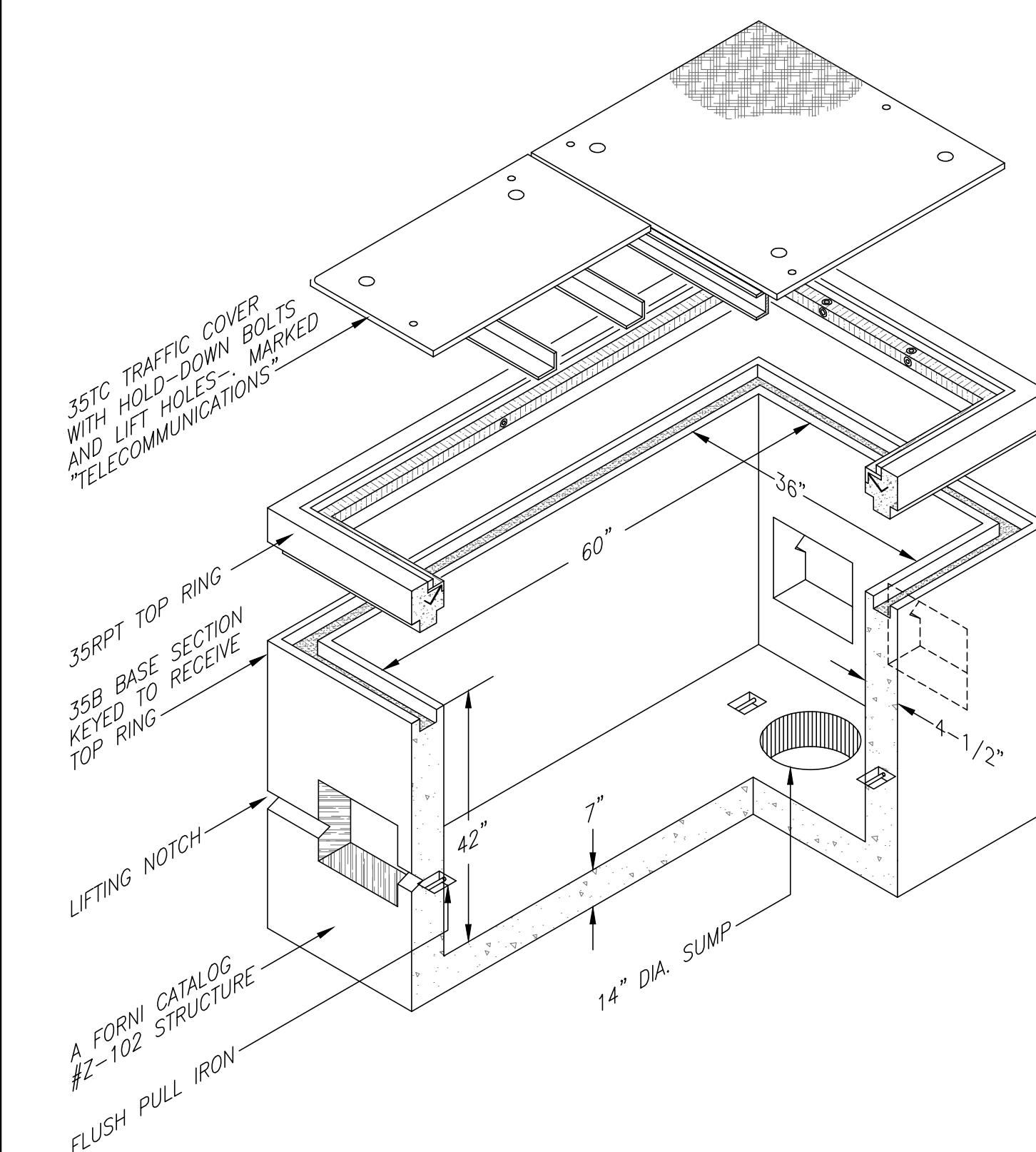
SOBE PROJECT NO: 1901734  
DATE: 01/05/21  
DRAWN BY:  
CHECKED BY:  
APPROVED BY:

SHEET TITLE  
**ELECTRICAL DETAILS**

SCALE: AS NOTED  
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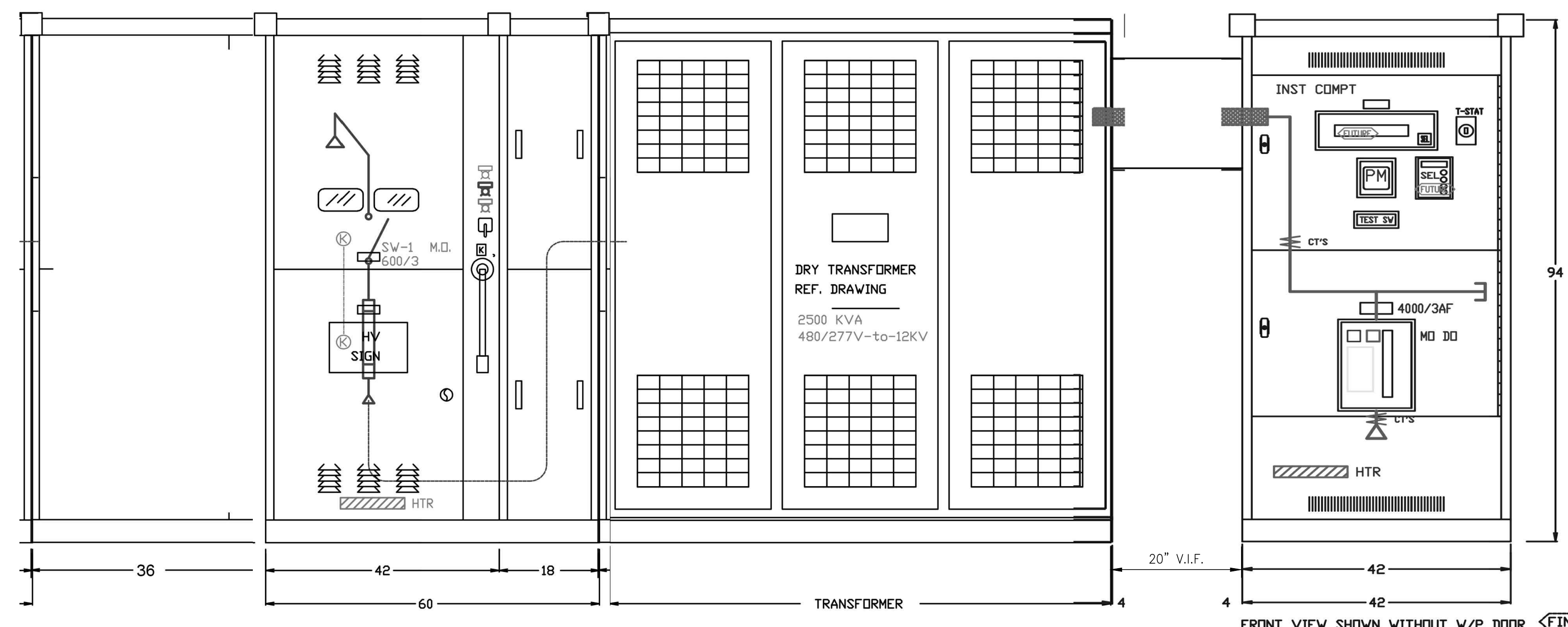
**E-5.2**

SHEET - OF -

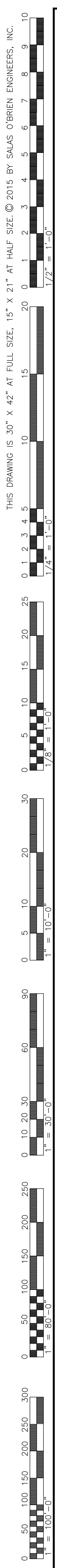


- NOTE**
- DESIGN BASED ON FORNII CORP. STD. PART #Z-102 MANHOLE STRUCTURE
  - COORDINATE INSTALLATION OF MANHOLES WITH SPECIFICATION REQUIREMENTS AND CIVIL DRAWINGS.
  - COORDINATE INSTALLATION OF FIBER OPTIC CABLING WITH SPECIFICATION REQUIREMENTS AND TELECOMMUNICATION DRAWINGS.
  - LABELING AND SUPPORTS NOT SHOWN FOR CLARITY. PROVIDE LABELING AND SUPPORTS IN COORDINATION WITH SPECIFICATION REQUIREMENTS AT EVERY MANHOLE.
  - ALL UNUSED CONDUITS SHALL BE PLUGGED.
  - CABLE SEALANT SHALL BE PROVIDED IN ALL CONDUITS WITH CABLES.
  - REMOVE ALL CONSTRUCTION DEBRIS, MANHOLES SHALL BE LEFT CLEAN.

**2 VAULT DETAIL**  
SCALE: N.T.S.



**1 SWITCHBOARD ELEVATION**  
SCALE: 3/4" = 1" - 0"



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 Mock Peer Review: \_\_\_\_\_)

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Reviewed by: \_\_\_\_\_  
 Date: \_\_\_\_\_



**HUMBOLDT STATE UNIVERSITY**

1 HARPST STREET  
 ARCATA, CA 95521

**FORBES GYMNASIUM  
 EMERGENCY GENERATOR**

ISSUE	MARK	DATE	DESCRIPTION
		05/19/20	PROGRESS SET
		01/07/21	100% CD

SOBE PROJECT NO: 1901734  
 DATE: 01/05/21  
 DRAWN BY:  
 CHECKED BY:  
 APPROVED BY:

SHEET TITLE  
**FEEDER AND EQUIPMENT SCHEDULES, AND SIGNAL LINE DIAGRAM**

SCALE: AS NOTED  
 THIS DRAWING IS 30" X 42" AT FULL SIZE

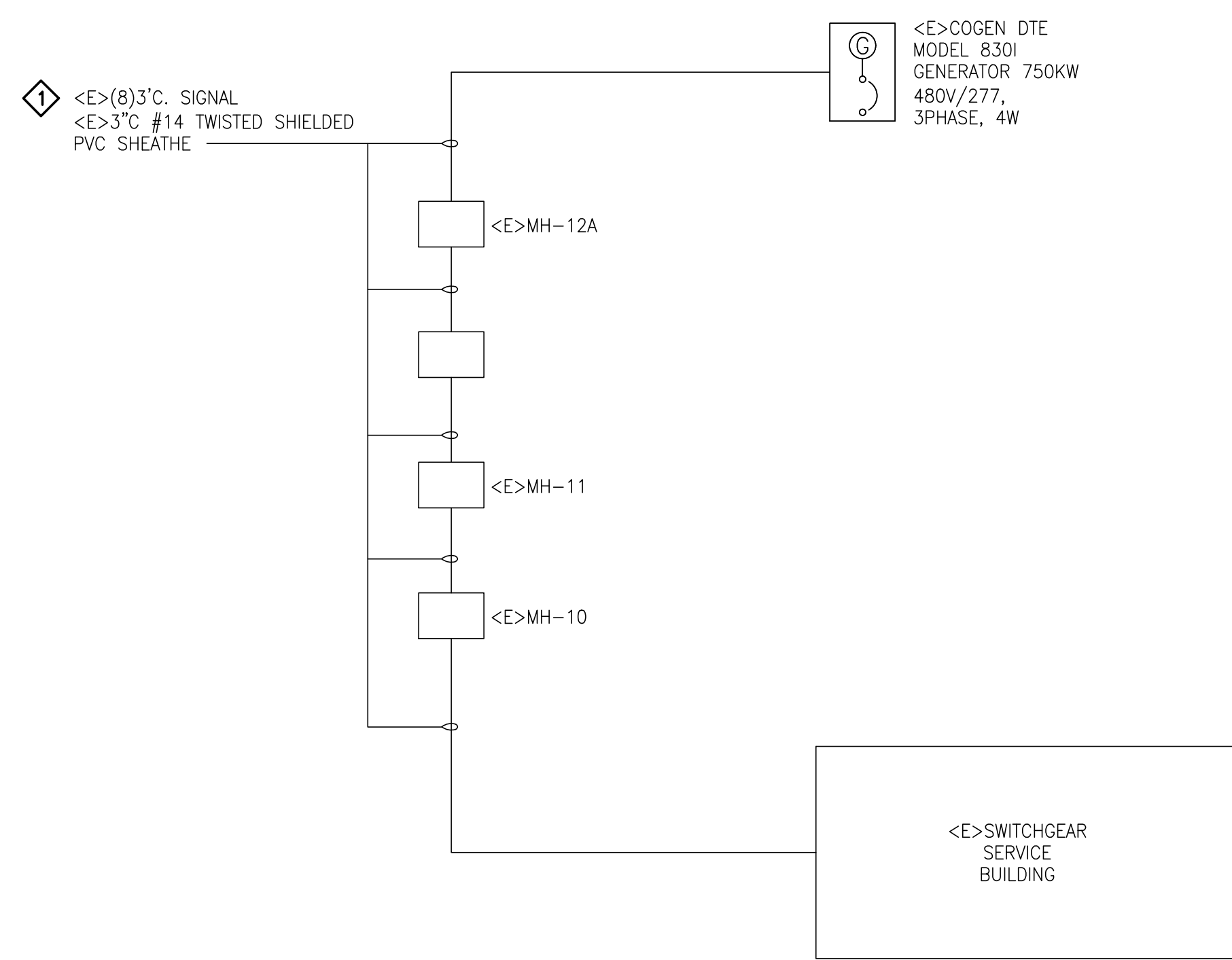
**E-6.1**

SHEET - OF -

LOW VOLTAGE (600V) FEEDER SCHEDULE							
3-PHASE, 3-WIRE				3-PHASE, 4-WIRE			
SYMBOL	CONDUIT	CONDUCTORS	GROUND	SYMBOL	CONDUIT	CONDUCTORS	GROUND
20G	3/4"C	(3) #12	#12	20NG	3/4"C	(4) #12	#12
30G	3/4"C	(3) #10	#10	30NG	3/4"C	(4) #10	#10
40G	1"C	(3) #8	#10	40NG	1"C	(4) #8	#10
50G	1"C	(3) #6	#10	50NG	1"C	(4) #6	#10
60G	1-1/4"C	(3) #4	#10	60NG	1-1/4"C	(4) #4	#10
70G	1-1/4"C	(3) #4	#8	70NG	1-1/4"C	(4) #4	#8
80G	1-1/2"C	(3) #2	#8	80NG	1-1/2"C	(4) #2	#8
90G	1-1/2"C	(3) #2	#8	90NG	1-1/2"C	(4) #2	#8
100G	2"C	(3) #1	#8	100NG	2"C	(4) #1	#8
125G	2"C	(3) #1	#6	125NG	2"C	(4) #1	#6
150G	2"C	(3) #1/0	#6	150NG	2"C	(4) #1/0	#6
175G	2"C	(3) #2/0	#6	175NG	2"C	(4) #2/0	#6
200G	2-1/2"C	(3) #3/0	#6	200NG	2-1/2"C	(4) #3/0	#6
225G	2-1/2"C	(3) #4/0	#4	225NG	2-1/2"C	(4) #4/0	#4
250G	3"C	(3) #250 Kcmil	#4	250NG	3"C	(4) #250 Kcmil	#4
300G	3"C	(3) #350 Kcmil	#4	300NG	3"C	(4) #350 Kcmil	#4
350G	3-1/2"C	(3) #500 Kcmil	#3	350NG	4"C	(4) #500 Kcmil	#3
400G	4"C	(3) #600 Kcmil	#3	400NG	4"C	(4) #600 Kcmil	#3
450G	(2) 2-1/2"C	2 SETS: (3) #4/0	(2) #2	450NG	(2) 2-1/2"C	2 SETS: (4) #4/0	(2) #2
500G	(2) 3"C	2 SETS: (3) #250 Kcmil	(2) #2	500NG	(2) 3"C	2 SETS: (4) #250 Kcmil	(2) #2
600G	(2) 3"C	2 SETS: (3) #350 Kcmil	(2) #1	600NG	(2) 3"C	2 SETS: (4) #350 Kcmil	(2) #1
700G	(2) 3-1/2"C	2 SETS: (3) #500 Kcmil	(2) #1/0	700NG	(2) 4"C	2 SETS: (4) #500 Kcmil	(2) #1/0
800G	(3) 3"C	3 SETS: (3) #300 Kcmil	(3) #1/0	800NG	(3) 3"C	3 SETS: (4) #300 Kcmil	(3) #1/0
1000G	(3) 3"C	3 SETS: (3) #400 Kcmil	(3) #2/0	1000NG	(3) 3-1/2"C	3 SETS: (4) #400 Kcmil	(3) #2/0
1200G	(4) 3"C	4 SETS: (3) #350 Kcmil	(4) #3/0	1200NG	(4) 3"C	4 SETS: (4) #350 Kcmil	(4) #3/0
1600G	(5) 3"C	5 SETS: (3) #400 Kcmil	(5) #4/0	1600NG	(5) 3-1/2"C	5 SETS: (4) #400 Kcmil	(5) #4/0
2000G	(5) 4"C	5 SETS: (3) #600 Kcmil	(5) #250 Kcmil	2000NG	(5) 4"C	5 SETS: (4) #600 Kcmil	(5) #250 Kcmil
2500G	(6) 4"C	6 SETS: (3) #600 Kcmil	(6) #350 Kcmil	2500NG	(6) 4"C	6 SETS: (4) #600 Kcmil	(6) #350 Kcmil
3000G	(8) 4"C	8 SETS: (3) #600 Kcmil	(8) #400 Kcmil	3000NG	(8) 4"C	8 SETS: (4) #600 Kcmil	(8) #400 Kcmil
4000G	(10) 4"C	10 SETS: (3) #600 Kcmil	(10) #500 Kcmil	4000NG	(10) 4"C	10 SETS: (4) #600 Kcmil	(10) #500 Kcmil

**REFERENCE SHEET NOTES**

- REMOVE LOW VOLTAGE WIRING FROM GENERATOR BACK TO MAIN SWITCHGEAR BUILDING. CONTRACTOR TO PULL PULL ROPE BEHIND WIRING AND LABEL POINT TO POINT.



**1 SINGLE LINE DIAGRAM**  
 SCHEMATIC

THIS DRAWING IS 30" X 42" AT FULL SIZE. 15" X 21" AT HALF SIZE. © 2015 BY SALAS O'BRIEN ENGINEERS, INC.  
 0 1 2 3 4 5 6 7 8 9 10  
 1/2" = 1'-0"  
 0 1 2 3 4 5 6 7 8 9 10  
 1/4" = 1'-0"  
 0 1 2 3 4 5 6 7 8 9 10  
 1/8" = 1'-0"  
 0 1 2 3 4 5 6 7 8 9 10  
 1/16" = 1'-0"  
 0 10 20 30 40 50 60 70 80 90  
 1" = 30'-0"  
 0 50 100 150 200 250 300  
 1" = 60'-0"



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**GENERAL SHEET NOTES**

- A. FINAL TERMINATIONS OF CONDUCTORS TO ELECTRICAL EQUIPMENT AND DEVICES SHALL BE MARKED AND TORQUE WRENCH TIGHTENED TO THE MANUFACTURER'S RECOMMENDED SPECIFICATION, NO EXCEPTION. PROVIDE NEUTRAL TEST AND PROOF OF TORQUE DURING FINAL INSPECTION FOR ALL UNITS.
- B. AS REQUIRED, ALL OVERSIZED FEEDERS THAT WERE ADJUSTED IN SIZE TO COMPENSATE FOR VOLTAGE DROP SHALL BE PROVIDED WITH ADAPTER LUGS OR SPLICE BOX. ADAPTER LUGS SHALL BE PROVIDED IF SIZE IS AVAILABLE. OTHERWISE PROVIDE CABLE SPLICES IN THE SPLICE BOX TO REDUCE CABLES TO THE MAXIMUM SIZE THAT THE BREAKER LUGS CAN ACCOMMODATE.

**LEGEND**

- FDR #4
- FDR #5
- FDR #6
- FDR #4, #5, #6 INTERCONNECTIONS

This project has demonstrated conformance with applicable codes and standards established by state and University policy. Based on this determination, approval is granted for construction.

**'APPROVED FOR CONSTRUCTION'**

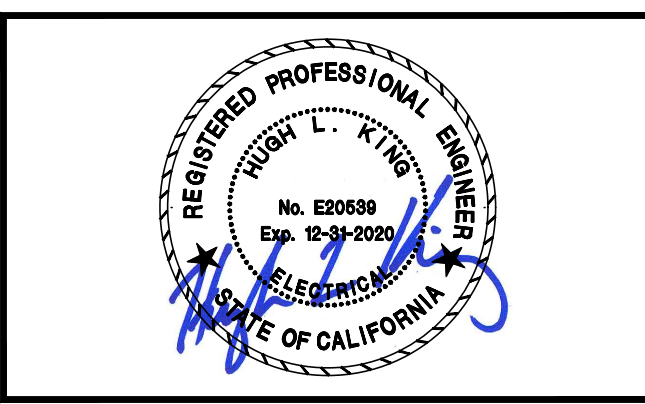
Michael Fisher  
 Campus Deputy Building Official  
 Humboldt State University  
 The California State University

Date: \_\_\_\_\_  
 Permit #: \_\_\_\_\_  
 Other approvals, as applicable: \_\_\_\_\_  
 SPM Approval: \_\_\_\_\_  
 Design Approval: \_\_\_\_\_  
 Safety Peer Review: \_\_\_\_\_  
 Mock Peer Review: \_\_\_\_\_

**CALIFORNIA STATE FIRE MARSHAL APPROVED**

Approval of this plan does not authorize or approve any omission or deviation from applicable regulations. Final approval is subject to field inspection. Set of approved plans shall be available on the project site at all times.

Reviewed by: \_\_\_\_\_  
 Date: \_\_\_\_\_



**HUMBOLDT STATE UNIVERSITY**

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 ARCATA, CA 95521

**FORBES GYMNASIUM EMERGENCY GENERATOR**

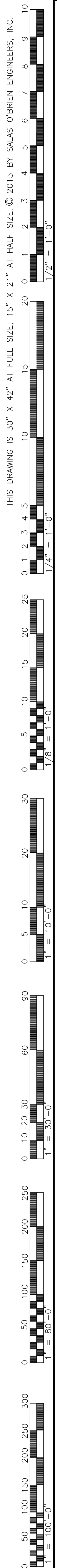
ISSUE	MARK	DATE	DESCRIPTION
		05/19/20	PROGRESS SET
		01/07/21	100% CD

SOBE PROJECT NO: 1901734  
 DATE: 01/05/21  
 DRAWN BY:  
 CHECKED BY:  
 APPROVED BY:

**CAMPUS SINGLE LINE DIAGRAM - DEMO**

SCALE: AS NOTED  
 THIS DRAWING IS 30" X 42" AT FULL SIZE

**ED-7.1**  
 SHEET OF



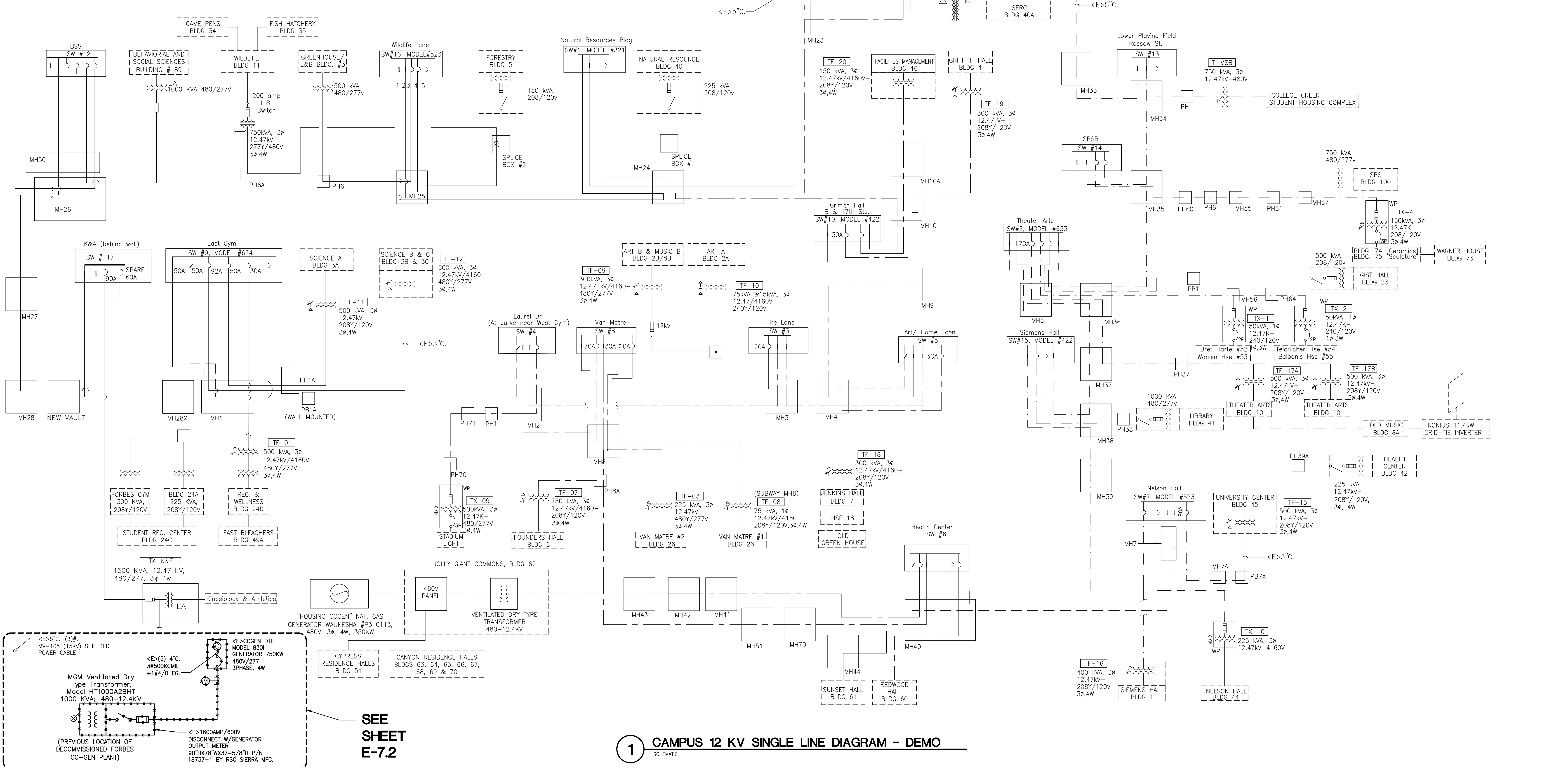
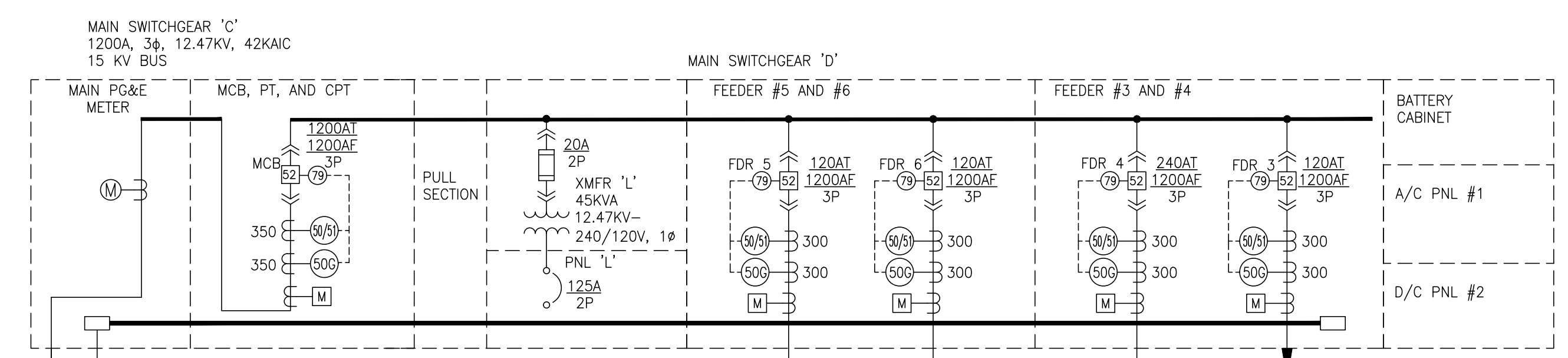
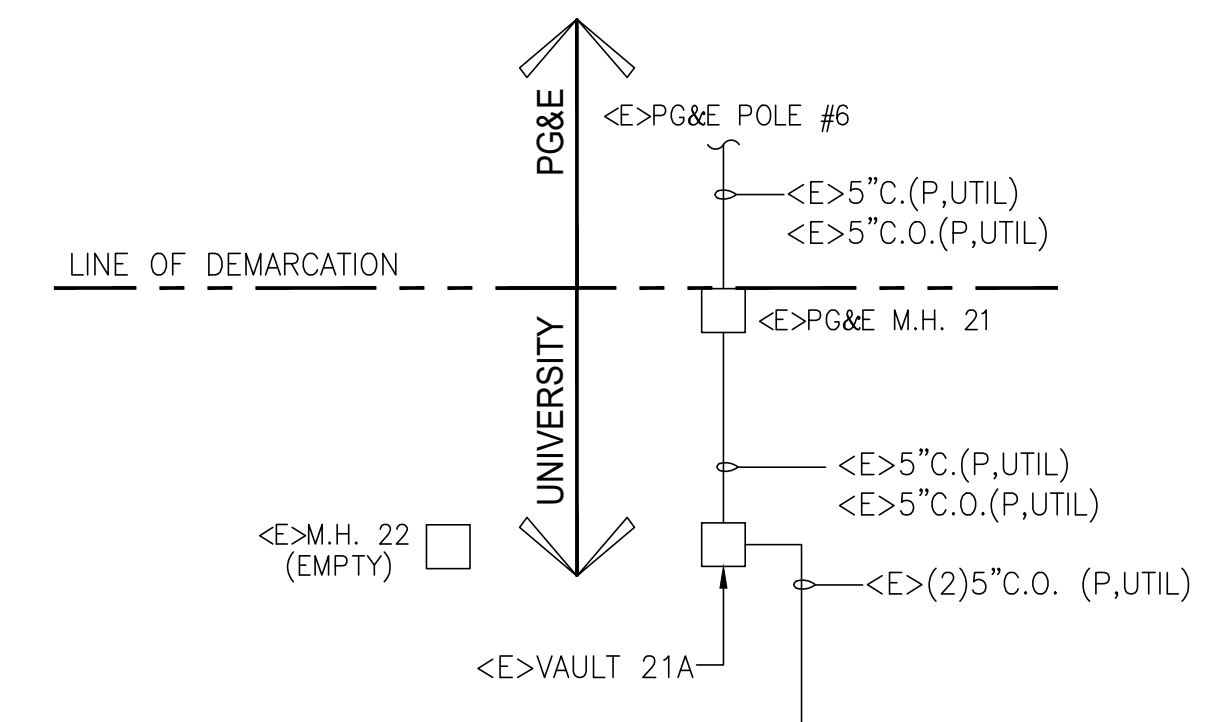
FEEDER #4 LOADS
NATURAL RESOURCES #40
FORESTRY #5
FORESTRY GREENHOUSE
SCIENCE D & E #3
WILDLIFE #11
SCIENCE #3A & #3B
SCIENCE #3C
WEST GYM #24D
FIELDHOUSE #24C
FIELDHOUSE LIGHTING - PRESSBOX
CO-GEN #24E
BEHAVIORAL AND SOCIAL SCIENCES #89

FEEDER #5 LOADS
SBSB #100
COLLEGE CREEK APARTMENTS #50
CERAMICS LAB #74
WAGNER #75
SCULPTURE LAB #75
GIST HALL #23
LIBRARY #41
PARKING & REF CTR #82
HEALTH CENTER #42
THEATRE ARTS #10
SIEMENS HALL #1
UNIVERSITY CENTER #45
NELSON HALL #14
HOUSING COGEN #108

FEEDER #6 LOADS
GRIFFITH HALL #4
PLANT OPERATIONS #46
STADIUM LIGHTING
VAN MATRE HALL #26
FOUNDERS HALL #6
ART & MUSIC #2B & 8B
HOME ECONOMICS #2A
JENKINS HALL #7
BROOKINS HOUSE #18
OLD GREENHOUSE #29
REDWOOD HALL #60
SUNSET HALL #61
SCHATZ ENERGY RESEARCH CENTER #40A



SEE SHEET E-7.2

**1 CAMPUS 12 KV SINGLE LINE DIAGRAM - DEMO**



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GENERAL SHEET NOTES

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LEGEND

- FDR #4
- FDR #5
- FDR #6
- FDR #4, #5, #6 INTERCONNECTIONS

This project has demonstrated conformance with applicable codes and standards established by state and University policy. Based on this determination, approval is granted for construction.

**'APPROVED FOR CONSTRUCTION'**

Michael Fisher  
Campus Deputy Building Official  
Humboldt State University  
The California State University

Date: \_\_\_\_\_  
Permit #: \_\_\_\_\_  
Other approvals as applicable: \_\_\_\_\_  
SFM Approval: \_\_\_\_\_  
DES Approval: \_\_\_\_\_  
Safety Peer Review: \_\_\_\_\_  
Mock Peer Review: \_\_\_\_\_

CALIFORNIA STATE FIRE MARSHAL APPROVED

Approval of this plan does not authorize or approve any omission or deviation from applicable regulations. Final approval is subject to field inspection. Set of approved plans shall be available on the project site at all times.

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_



**HUMBOLDT STATE UNIVERSITY**

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ARCATA, CA 95521

**FORBES GYMNASIUM  
EMERGENCY GENERATOR**

ISSUE	MARK	DATE	DESCRIPTION
		05/19/20	PROGRESS SET
		01/07/21	100% CD

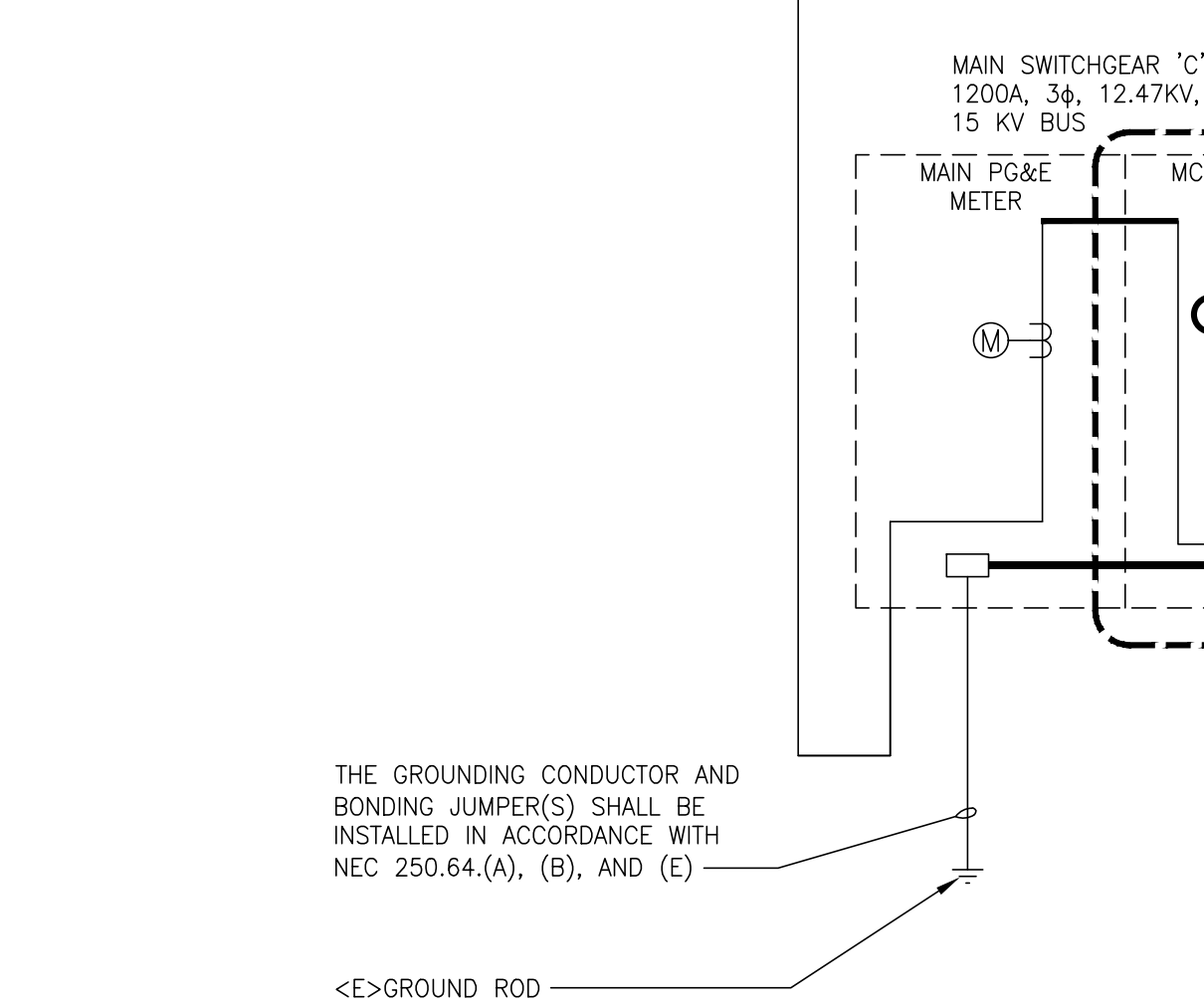
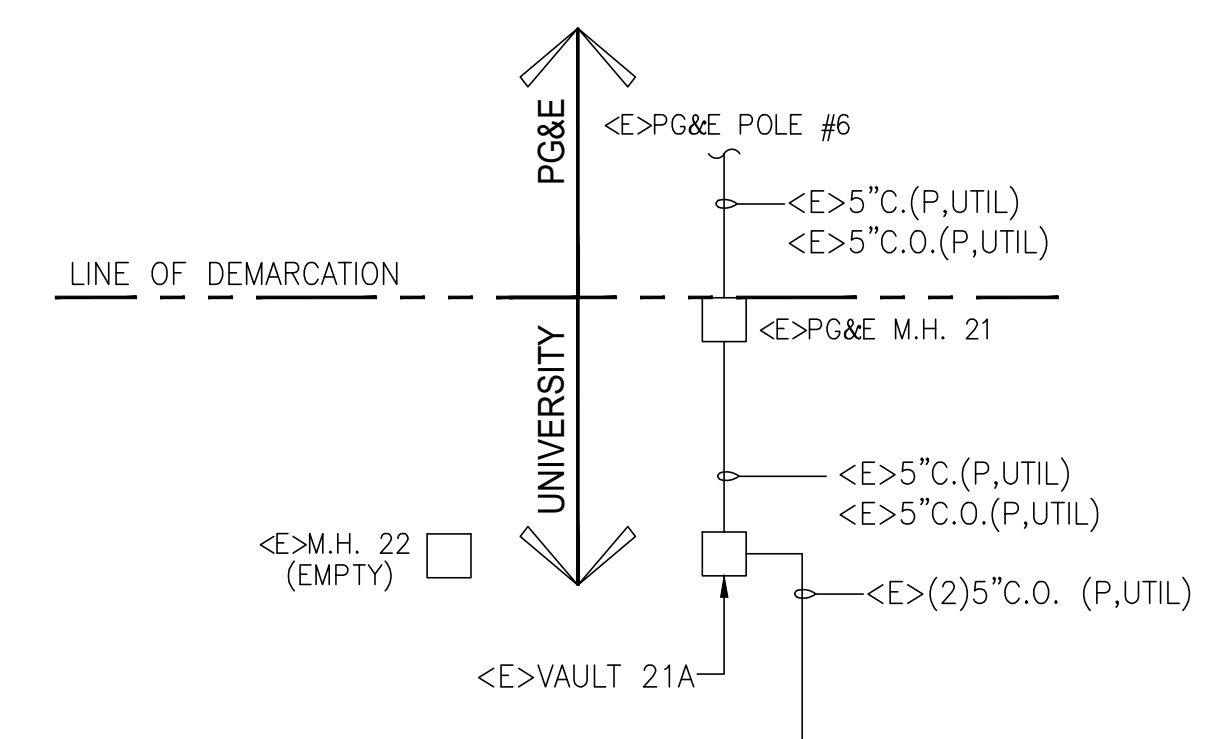
SOBE PROJECT NO: 1901734  
DATE: 01/05/21  
DRAWN BY:  
CHECKED BY:  
APPROVED BY:

SHEET TITLE  
**CAMPUS SINGLE LINE DIAGRAM - NEW**

SCALE: AS NOTED  
THIS DRAWING IS 30" X 42" AT FULL SIZE

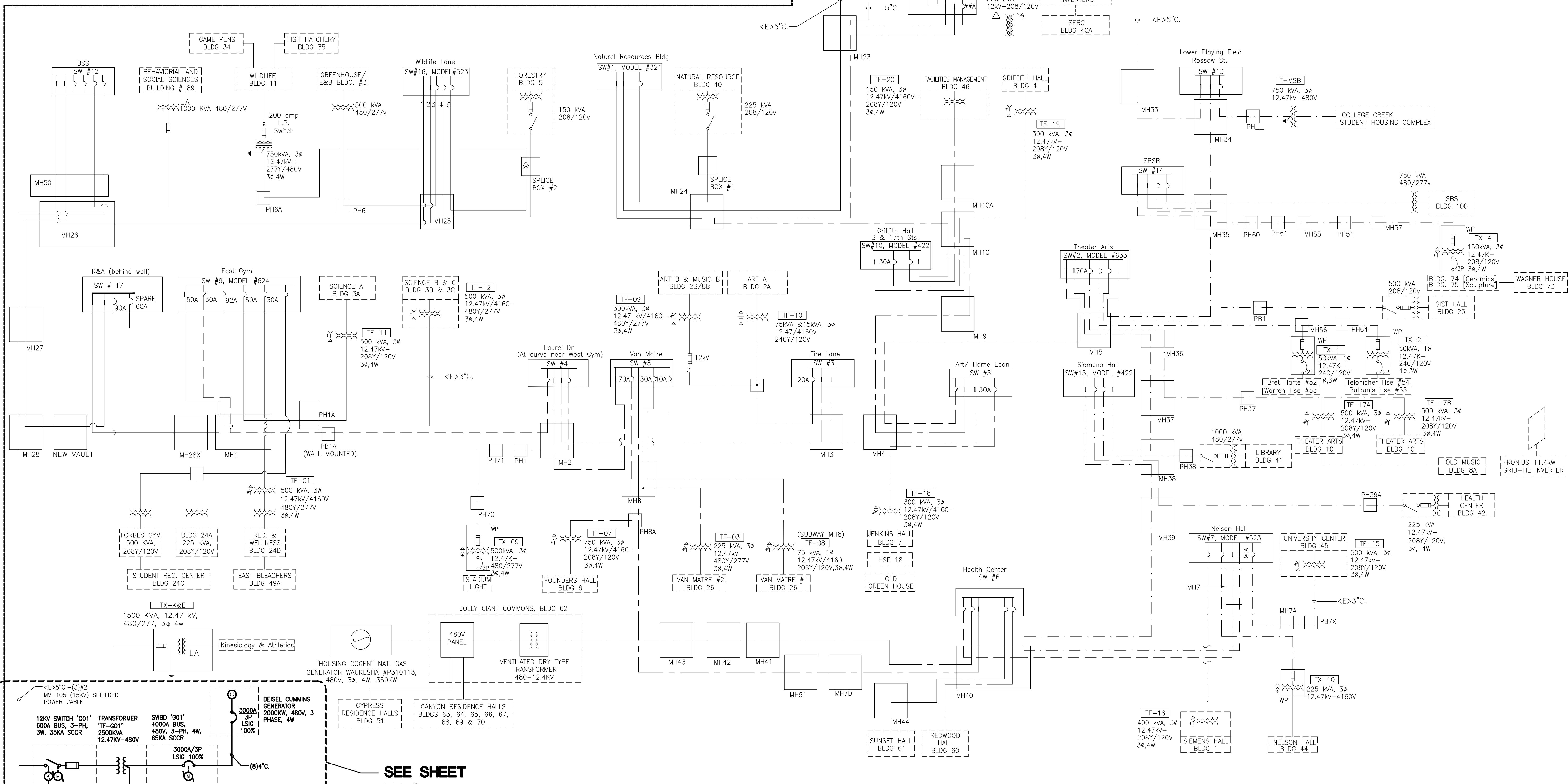
**E-7.1**

SHEET OF



THE GROUNDING CONDUCTOR AND BONDING JUMPER(S) SHALL BE INSTALLED IN ACCORDANCE WITH NEC 250.64(A), (B), AND (E).

FEEDER #4 LOADS
NATURAL RESOURCES #40
FORESTRY #5
FORESTRY GREENHOUSE
SCIENCE D & E #3
WILDLIFE #11
SCIENCE #3A & #3B
SCIENCE #3C
WEST GYM #24D
FIELDHOUSE #24C
FIELDHOUSE LIGHTING - PRESSBOX
CO-GEN #24E
BEHAVIORAL AND SOCIAL SCIENCES #89
FEEDER #5 LOADS
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GIST HALL #23
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HEALTH CENTER #42
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FOUNDERS HALL #5
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HOME ECONOMICS #2A
JENKINS HALL #7
BROOKINS HOUSE #18
OLD GREENHOUSE #29
SUNSET HALL #61
SCHATZ ENERGY RESEARCH CENTER #40A
CHILD DEV LAB #31



SEE SHEET E-7.2

**1 CAMPUS 12 KV SINGLE LINE DIAGRAM - NEW**

SCHEMATIC



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Local Action.**

This project has demonstrated conformance with applicable codes and standards established by statute and University policy. Based on this determination, the following approvals are:

**'APPROVED FOR CONSTRUCTION'**

Michael Fisher  
Campus Deputy Building Official  
Humboldt State University  
The California State University

Date:

Permit #:

*(Other approvals, as applicable)*

SFM Approval:

DSE Access Approval:

Science Peer Review:

Mock Peer Review:

**CALIFORNIA STATE FIRE MARSHAL APPROVED**

Approval of this plan does not authorize or approve any construction or deviation from applicable regulations. Final approval is subject to field inspection. Set of approved plans shall be available on the project site at all times.

Reviewed by:

Date:



**HUMBOLDT  
STATE UNIVERSITY**

1 HARPST STREET  
ARCATA, CA 95521

**FORBES GYMNASIUM  
EMERGENCY GENERATOR**

ISSUE	MARK	DATE	DESCRIPTION
		05/19/20	PROGRESS SET
		01/07/21	100% CD

SOBE PROJECT NO: 1901734  
DATE: 01/05/21  
DRAWN BY:  
CHECKED BY:  
APPROVED BY:

SHEET TITLE  
**PARTIAL FORBES  
SINGLE LINE DIAGRAM**

SCALE: AS NOTED  
THIS DRAWING IS 30" X 42" AT FULL SIZE

**E-7.2**

SHEET - OF -

**GENERAL SHEET NOTES**

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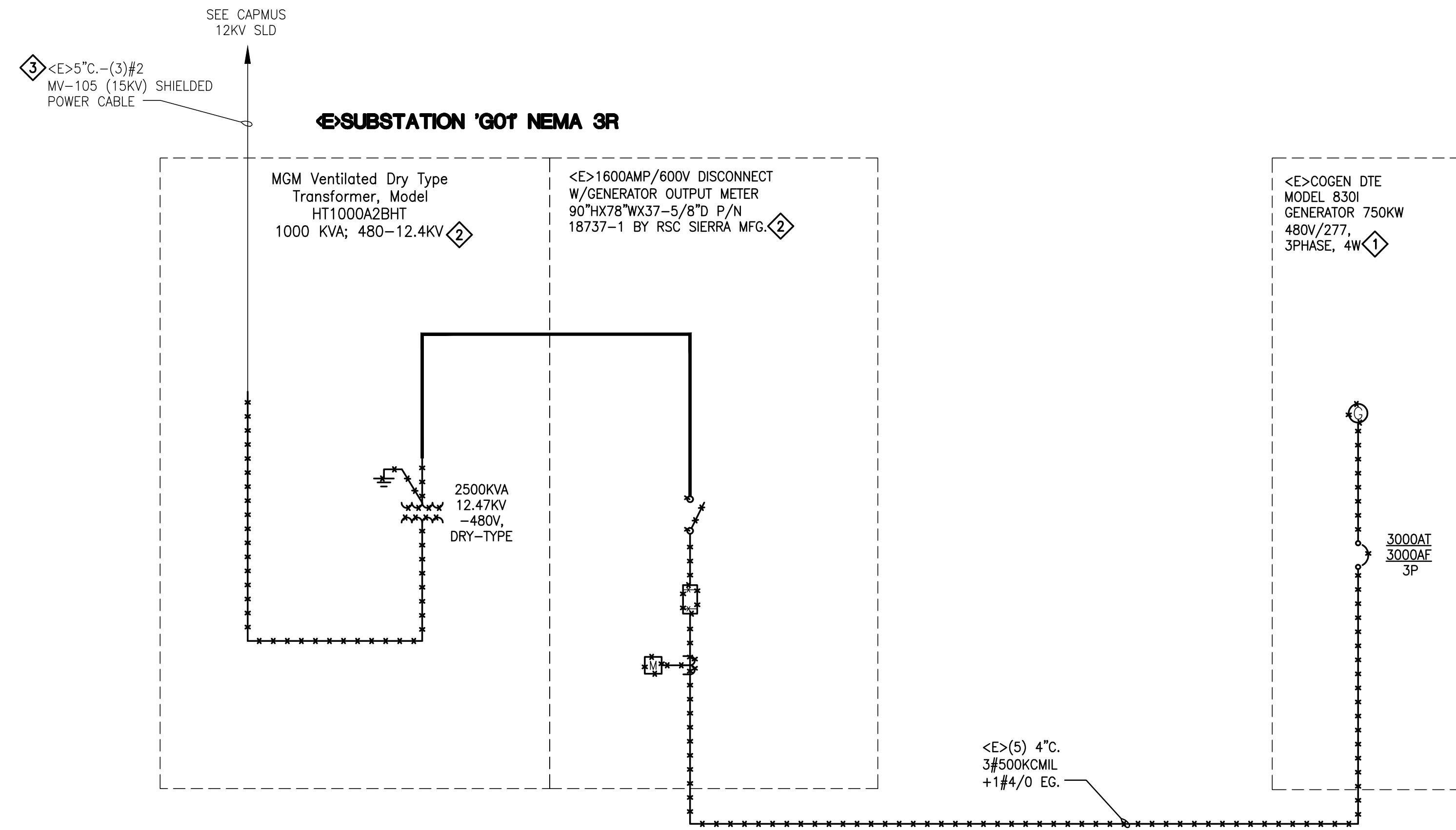
**REFERENCE SHEET NOTES**

**DEMO:**

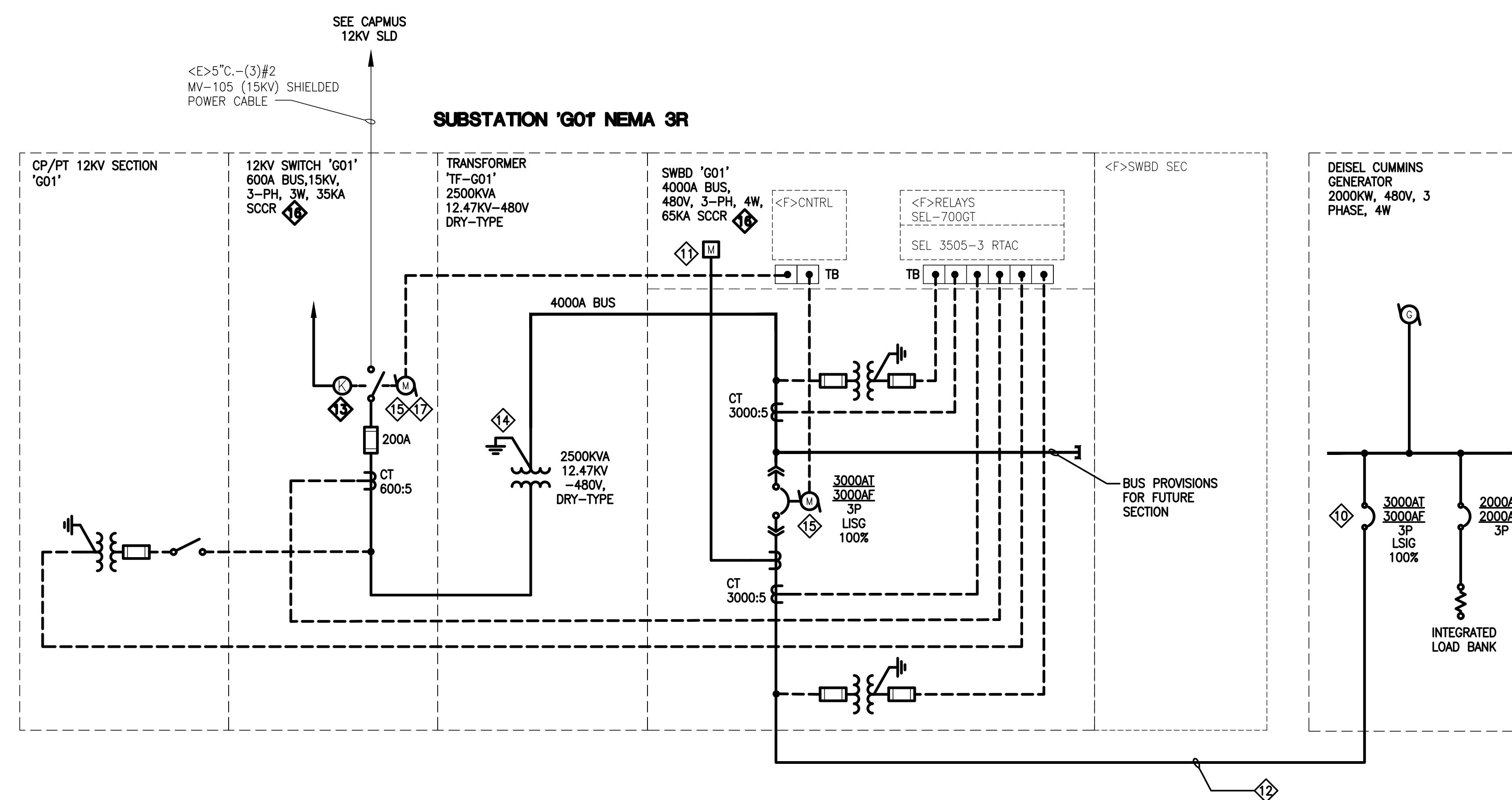
- 1. EXISTING GENERATOR TO BE DEMOLISHED AND REPLACED WITH NEW. DISCONNECT AND DEMOLISH GENERATOR. REMOVE CONDUITS AND WIRES.
- 2. DISCONNECT AND DEMOLISH EXISTING EQUIPMENT. REMOVE CONDUITS AND WIRES BACK TO SOURCE.
- 3. EXISTING 15KV RATED FEEDERS TO BE REUSED.

**NEW:**

- 10. MAIN OUTPUT BREAKER OF GENERATOR SHALL BE RATED 100% RATED.
- 11. PROVIDE AND INSTALL CUSTOMER METER, ELECTRO INDUSTRIES SHARK 200 OR APPROVED EQUAL. PROVIDE ALL NECESSARY HARDWARE AND MOUNTING TO COMPLETE INSTALLATION. PROVIDE DATA CONNECTION TO EMS PANEL. REFER TO FLOOR PLAN FOR EMS PANEL LOCATION. ELECTRO INDUSTRIES REPRESENTATIVE TO PROVIDE PROGRAMMING FOR MONITORING AND RECORDING OF DATA.
- 12. 8 SETS [4°C - (4)500 KCMIL + 400 KCMIL GND]
- 13. KIRK KEY TO BE INTERLOCK WITH MCB AT MAIN SWITCHGEAR, REFER TO 12KV CAMPUS SINGLE LINE DIAGRAM.
- 14. ROUTE #3/0 BARE COPPER TO NEW GROUNDING GROUND ROD. TEST RESISTANCE AND ENSURE IS BELOW 25 OHMS.
- 15. MOTORIZED OPERATOR FOR CIRCUIT BREAKER WITH AUXILIARY CONTACTS AND SHUNT TRIP FOR FUTURE PARALLING CONNECTION WITH MICRO GRID SYSTEM.
- 16. PROVIDE AUXILIARY CONTACTS AT LINE SIDE AND LOAD SIDE OF SWITCH/CIRCUIT BREAKER.
- 17. MOTORIZED OPERATOR SHALL REMAIN NON-OPERATIONAL UNTIL FUTURE MICROGRID SYSTEM IS ACTIVATED. MOTOR SHALL NOT, UNDER ANY SCENARIO, OPERATE IN PARALLEL WITH THE MECHANICAL KIRK KEY.



**2 PARTIAL FORBES SINGLE LINE DIAGRAM - DEMO**



**1 PARTIAL FORBES SINGLE LINE DIAGRAM - NEW**

THIS DRAWING IS 30" X 42" AT FULL SIZE. 15" X 21" AT HALF SIZE. © 2015 BY SALAS O'BRIEN ENGINEERS, INC.

THIS DRAWING IS 30" X 42" AT FULL SIZE. 15" X 21" AT HALF SIZE. © 2015 BY SALAS O'BRIEN ENGINEERS, INC.

SYMBOLS table with symbols for extent of demolition, new to existing connection, revision number, work item (mechanical), work item (plumbing), detail designation, equipment designation, section designation, and to be demolished symbols.

VALVES table with symbols for ball, butterfly, gate, globe, and three way valves.

PIPING SPECIALTIES table with symbols for automatic air vent, manual air vent, air separator, alignment guide, anchor, back flow preventer, ball joint, dirt pocket, expansion joint, expansion loop, flexible connector, filter dryer, flowmeter, hose connector, hose bibb, make up assembly, meter, pot feeder, pressure gauge and cock, pump, strainer, strainer w/blow off, test port (pete's plug), thermometer, thermometer well, steam trap, suction diffuser, and transverse bracing.

ABBREVIATIONS table listing abbreviations for automatic air vent, above finished floor, air separator, all service jacket, boiler, backflow preventer, bottom of pipe, centerline, chemical feed tank, cohen water supply/return, continuation, diameter, differential pressure, differential pressure transducer, existing, elevation, equal, expansion tank, fahrenheit, flow meter, flow switch, gas, heating hot water (return)(supply)(pump) (temperature), hot water pump, heat exchanger, invert elevation, inch, inches water column (pressure), manual air vent, maximum, make-up, make up assembly, new, not to scale, pump, primary hot water (return)(supply), point of connection, pounds per square inch (gauge), remove and relocate, relocated, secondary heating hot water (return)(supply) (temperature), similar, sanitary sewer, to be abandoned, test plug (pete's plug), typical, unless otherwise noted, variable frequency drive, verify in field, water column, weight.

GENERAL NOTES section 1-20 detailing construction requirements, including proposal review, contractor responsibilities, temporary work, fire ratings, dimensions, and safety protocols.

APPLICABLE CODES table listing various codes such as California Building Standards Administrative Code, California Building Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Historical Building Code, California Fire Code, California Existing Building Code, California Green Building Standards Code, California Referenced Standards Code, California Code of Regulations Public Safety, NFPA codes, and ICC standards.

PIPING table with symbols for arrow indicating direction of flow, existing piping (above/below grade), new piping (above/below grade), and pipe to be removed (above/below grade).

ACTUATORS table with symbols for motor, pneumatic, and solenoid.

HEATING table with symbols for boiler blow down, condensate return, city water, fuel oil (return)(supply), fuel oil tank vent, primary/secondary heating hot water (return)(supply), high-temperature hot water (return)(supply), industrial water, low/medium/high pressure steam, low/medium/high pressure condensate return, make up water, pumped condensate return, and vacuum condensate return.

VALVES, SPECIAL DUTY table with symbols for check, swing gate, circuit setter, needle, pressure reducing (number & specify), pressure regulator, relief (r) or safety (s), seismic valve, make up water assembly, back pressure, plug valve, triple duty valve (stop check & balance w/pressure taps), and reduced pressure backflow preventer.

CONTROLS SUMMARY OF WORK section 1-6 detailing intercept, connection, programming, and coordination requirements for the generator control system.

POINTS LIST

CONTROL POINTS table with columns for Equipment Location, Point ID, Control Device, Control Description, Control Device Location, and Notes. Includes subtotals for virtual points and total virtual points.

GRAPHICS section 1-4 detailing requirements for generator control program, real-time values, sample graphics, and data storage.

MECHANICAL & PLUMBING DRAWING INDEX

MECHANICAL & PLUMBING DRAWING INDEX table with columns for Sheet No. and Description, listing sheets for general notes, partial site plan, and details.

SUMMARY OF WORK section 1-5 detailing demolition, repair, and new work for mechanical/plumbing systems.

MECHANICAL & PLUMBING DRAWING INDEX table with columns for Sheet No. and Description, listing sheets for general notes, partial site plan, and details.

MECHANICAL & PLUMBING DRAWING INDEX table with columns for Sheet No. and Description, listing sheets for general notes, partial site plan, and details.

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APPROVED FOR CONSTRUCTION stamp with signature of Michael Fisher, Project Engineer, and permit information.

CALIFORNIA STATE FIRE MARSHAL APPROVED stamp with signature and date.

HUMBOLDT STATE UNIVERSITY logo and address: 1 HARPST STREET, ARCATA, CA 95521

FORBES GYMNASIUM EMERGENCY GENERATOR project title and location information.

ISSUE table with columns for Mark, Date, and Description, showing revision history.

MECHANICAL & PLUMBING GENERAL NOTES, SYMBOLS & ABBREVIATIONS section with sheet title, scale, and drawing information.



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**GENERAL SHEET NOTES**

- A. REFER TO ELECTRICAL SHEETS FOR GENERATOR EQUIPMENT DEMOLITION.
- B. ALL GAS PIPING DISCONNECTED FROM DEMOLISHED GENERATOR SHALL BE CAPPED AND SEALED AIR TIGHT, U.O.N.
- C. IN LOCATIONS WHERE GAS PIPING IS DEMOLISHED, DEMOLISH <E> PIPE SUPPORTS THAT ONLY SUPPORTED GAS PIPING.
- D. ALL HARDSCAPING AND LANDSCAPING DISTURBED FOR DEMOLITION OF <E> PIPING OR INSTALLATION OF NEW PIPING SHALL BE RESTORED TO ITS ORIGINAL CONDITION. MATCH ADJACENT SURFACES.
- E. CONTRACTOR SHALL VERIFY GAS PRESSURE OF <E> GAS PIPING CONNECTED TO AND REPORT VALUE TO ENGINEER.
- F. ALL EXPOSED NUTS, BOLTS, FASTENERS, ANCHORS, UNISTRUT SUPPORT, STRAPS, ETC. SHALL BE HOT-DIPPED GALVANIZED, U.O.N.
- G. ALL EXPOSED NUTS, BOLTS, FASTENERS, ANCHORS, UNISTRUT SUPPORT, STRAPS, ETC. SHALL BE HOT-DIPPED GALVANIZED, U.O.N.

**REFERENCE SHEET NOTES**

- DEMO:**
1. DEMO <E> GAS CONNECTION AND PIPING TO GENERATOR. SEE DETAIL 1/MP-5.1.
  2. PROTECT IN PLACE <E> HHW PUMPS, EXPANSION TANK, AIR SEPARATOR, PIPING, CONCRETE PAD, ETC. SEE DETAIL 1/MP-5.1.
  3. DISCONNECT GAS PIPING TO <E> COGENERATION UNIT IN <E> GAS SHUTOFF VALVE VAULT. CAP PIPING DOWNSTREAM OF EXISTING SHUT OFF VALVE. PIPING SHALL BE CAPPED WITHIN <E> VAULT AND A PLASTIC TAG STATING "ABANDONED" SHALL BE INSTALLED ON THE ABANDONED GAS PIPE TO THE COGENERATION UNIT.
  4. ABANDON <E> GAS PIPING UNDERGROUND.
  5. DEMO <E> HEAT RECOVERY HYDRONIC PIPING AT UNIT. RECONNECT <E> 6" HEAT RECOVERY LOOP PIPING UNDERGROUND. CONTRACTOR SHALL FIELD VERIFY <E> PIPE MATERIAL AND SIZE, AND PROVIDE AND INSTALL APPROPRIATE FITTINGS AND PIPE MATERIAL TO RECONNECT PIPING FOR A FULLY OPERABLE HEAT RECOVERY LOOP SYSTEM.
  6. PROTECT <E> UNDERGROUND HYDRONIC PIPING IN PLACE. LOOP SHALL REMAIN ACTIVE AFTER DEMOLITION OF COGEN UNIT.
  7. <E> HEAT RECOVERY HYDRONIC LOOP TO WILDLIFE BUILDING 11, BIOSCIENCE BUILDING 3B, SCIENCE BUILDING 3A AND SCIENCE BUILDING 3E.
  8. DEMOLISH <E> UNDERGROUND HHWS/R PIPING WHERE IT CONFLICTS WITH NEW GENERATOR PAD FOOTPRINT. CONTRACTOR SHALL FIELD VERIFY EXACT ROUTING WITH RESPECT TO NEW PAD.
- NEW:**
21. INSTALL UNDERGROUND PRE-FABBED (INSULATED & JACKETED) HHWS/R PIPING. ROUTE NEW PIPING TO AVOID FOOTPRINT OF GENERATOR PAD. DEMOLISH <E> ABANDONED GAS PIPING AS REQUIRED, WHERE IT CONFLICTS WITH ROUTING OF NEW HHWS/R PIPING.
  22. INTERCEPT <E> BMS BACKBONE IN MECHANICAL ROOM. <E> BMS UTILIZES MODBUS PROTOCOL. EXTEND RS485 WIRING IN CONDUIT TO NEW GENERATOR. SEE ELECTRICAL DRAWINGS FOR CONDUIT PATHWAY AND NEW GENERATOR LOCATION.

This project has demonstrated conformance with applicable codes and standards established by statute and University policy. Based on this determination, the following are:  
**'APPROVED FOR CONSTRUCTION'**  
 Michael Fisher  
 Campus Deputy Building Official  
 Humboldt State University  
 The California State University  
 Date: \_\_\_\_\_  
 Permit #: \_\_\_\_\_  
 Other approvals as applicable:  
 SFM Approval: \_\_\_\_\_  
 DSA Access Approval: \_\_\_\_\_  
 Science Peer Review: \_\_\_\_\_  
 Mock Pipe Review: \_\_\_\_\_

**CALIFORNIA STATE FIRE MARSHAL APPROVED**  
 Approval of this plan does not authorize or approve any omission or deviation from applicable regulations. Final approval is subject to field inspection. Set of approved plans shall be available on the project site at all times.  
 Reviewed by: \_\_\_\_\_  
 Date: \_\_\_\_\_



**HUMBOLDT STATE UNIVERSITY**

1 HARPST STREET  
 ARCATA, CA 95521

**FORBES GYMNASIUM EMERGENCY GENERATOR**

ISSUE	MARK	DATE	DESCRIPTION
		05/19/20	PROGRESS SET
		01/07/21	100% CD

SOBE PROJECT NO: 1901734  
 DATE: 01/05/21  
 DRAWN BY:  
 CHECKED BY:  
 APPROVED BY:

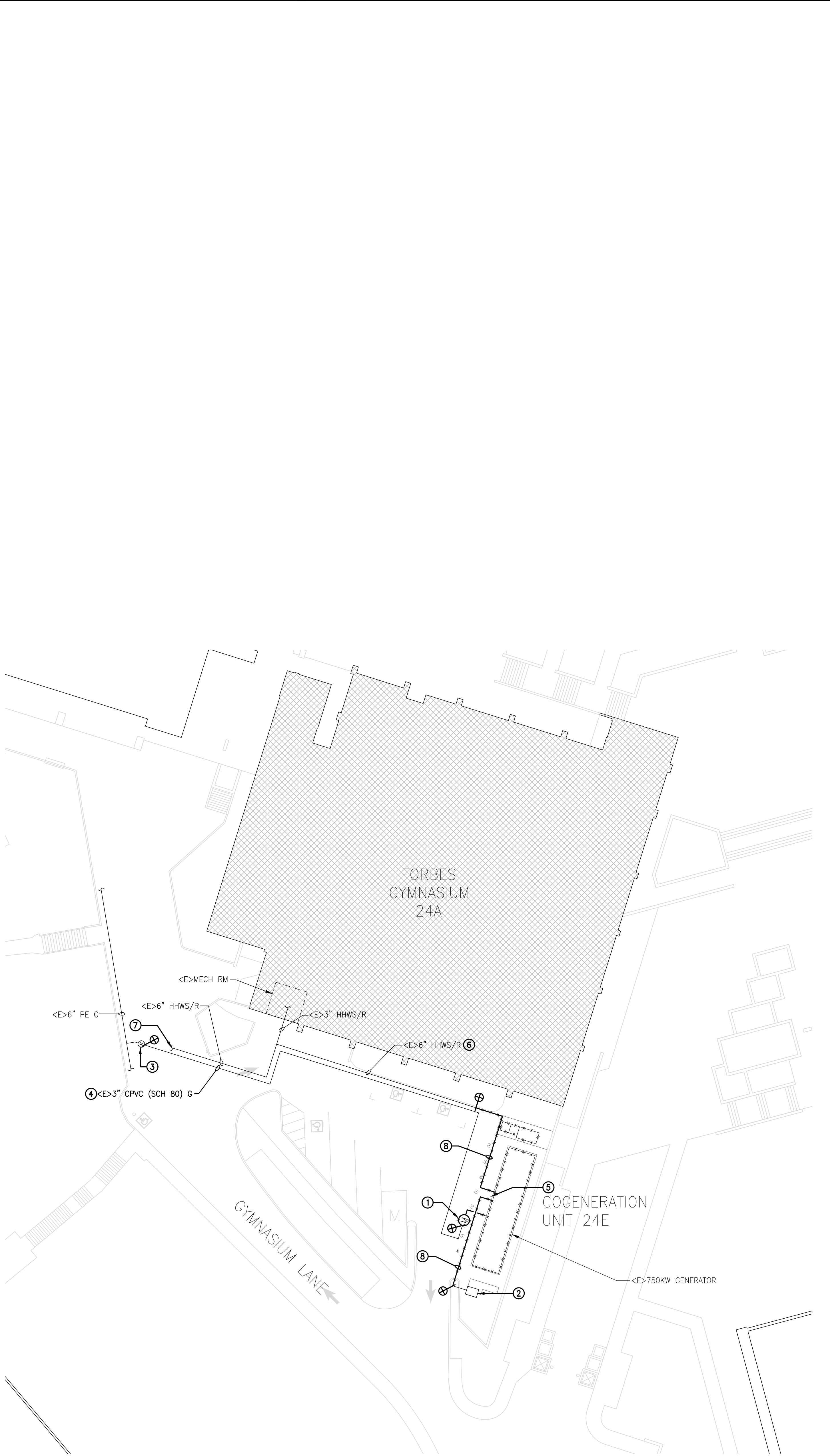
**SHEET TITLE**  
**PARTIAL SITE PLAN**

SCALE: AS NOTED  
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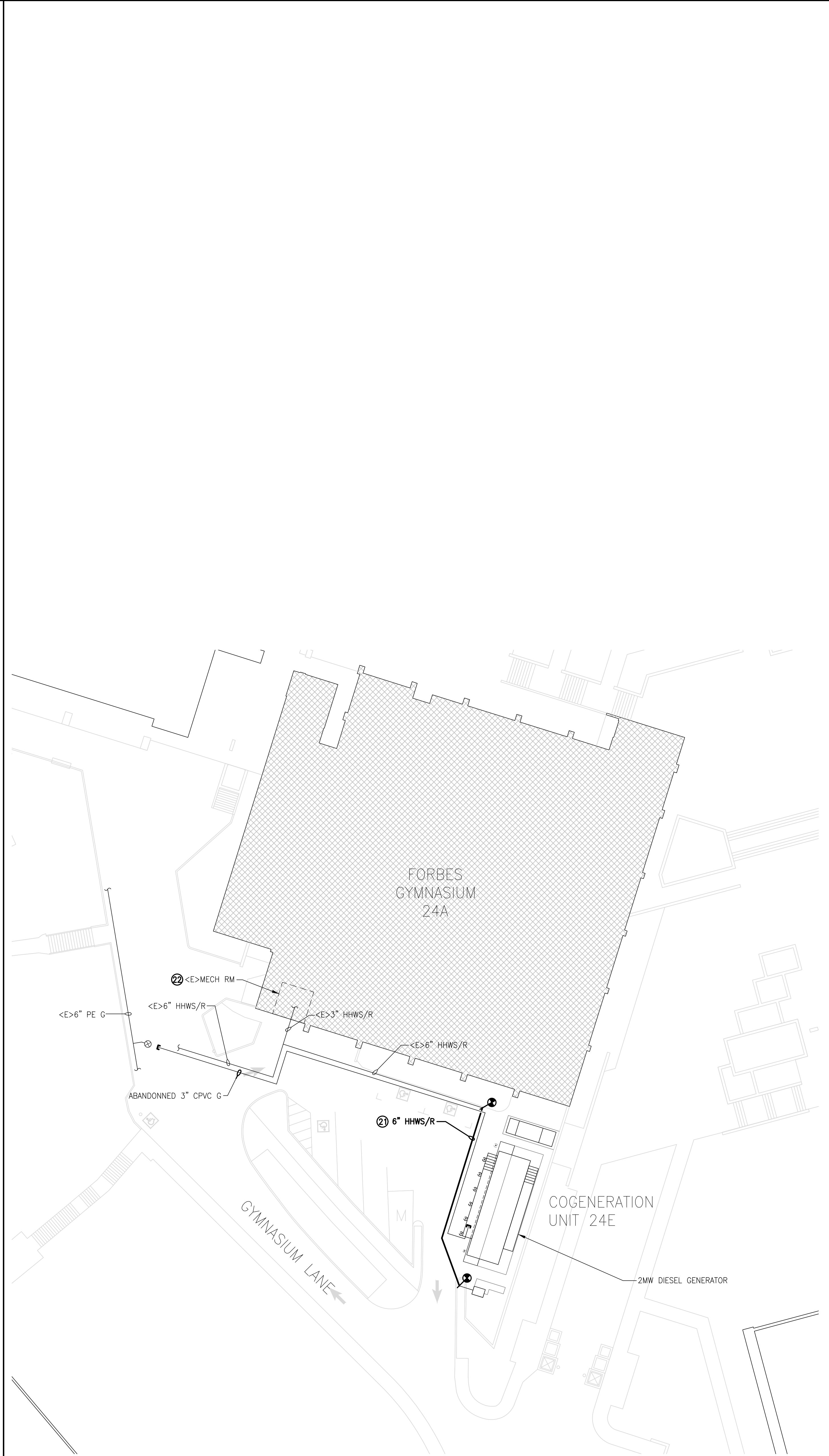
**MS-4.1**

SHEET - OF -

THIS DRAWING IS 30" X 42" AT FULL SIZE. 15" X 21" AT HALF SIZE. © 2015 BY SALAS O'BRIEN ENGINEERS, INC.



**1 PARTIAL SITE PLAN - DEMO**  
 SCALE: 1" = 20' - 0"

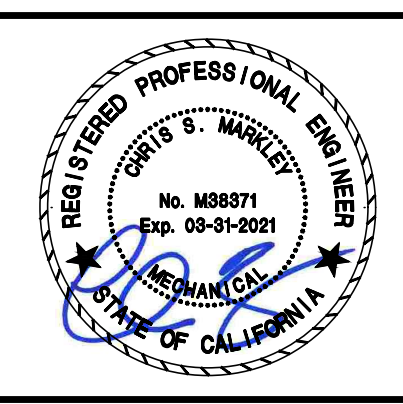


**1 PARTIAL SITE PLAN - NEW**  
 SCALE: 1" = 20' - 0"



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 San Jose, California 95112-2218  
 877.725.2755 | 877.925.1477 (f)  
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 National Strength.  
 Local Action.

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 Permit #: \_\_\_\_\_  
 Other approvals as applicable:  
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 DSH Access Approval: \_\_\_\_\_  
 Science Peer Review: \_\_\_\_\_  
 Mock Peer Review: \_\_\_\_\_  
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 Reviewed by: \_\_\_\_\_  
 Date: \_\_\_\_\_



**HUMBOLDT STATE UNIVERSITY**  
 1 HARPST STREET  
 ARCATA, CA 95521  
**FORBES GYMNASIUM EMERGENCY GENERATOR**

MARK	DATE	DESCRIPTION
	05/19/20	PROGRESS SET
	01/07/21	100% CD

SOBE PROJECT NO: 1901734  
 DATE: 01/05/21  
 DRAWN BY:  
 CHECKED BY:  
 APPROVED BY:

SHEET TITLE  
**MECHANICAL & PLUMBING DETAILS**

SCALE: AS NOTED  
 THIS DRAWING IS 30" X 42" AT FULL SIZE

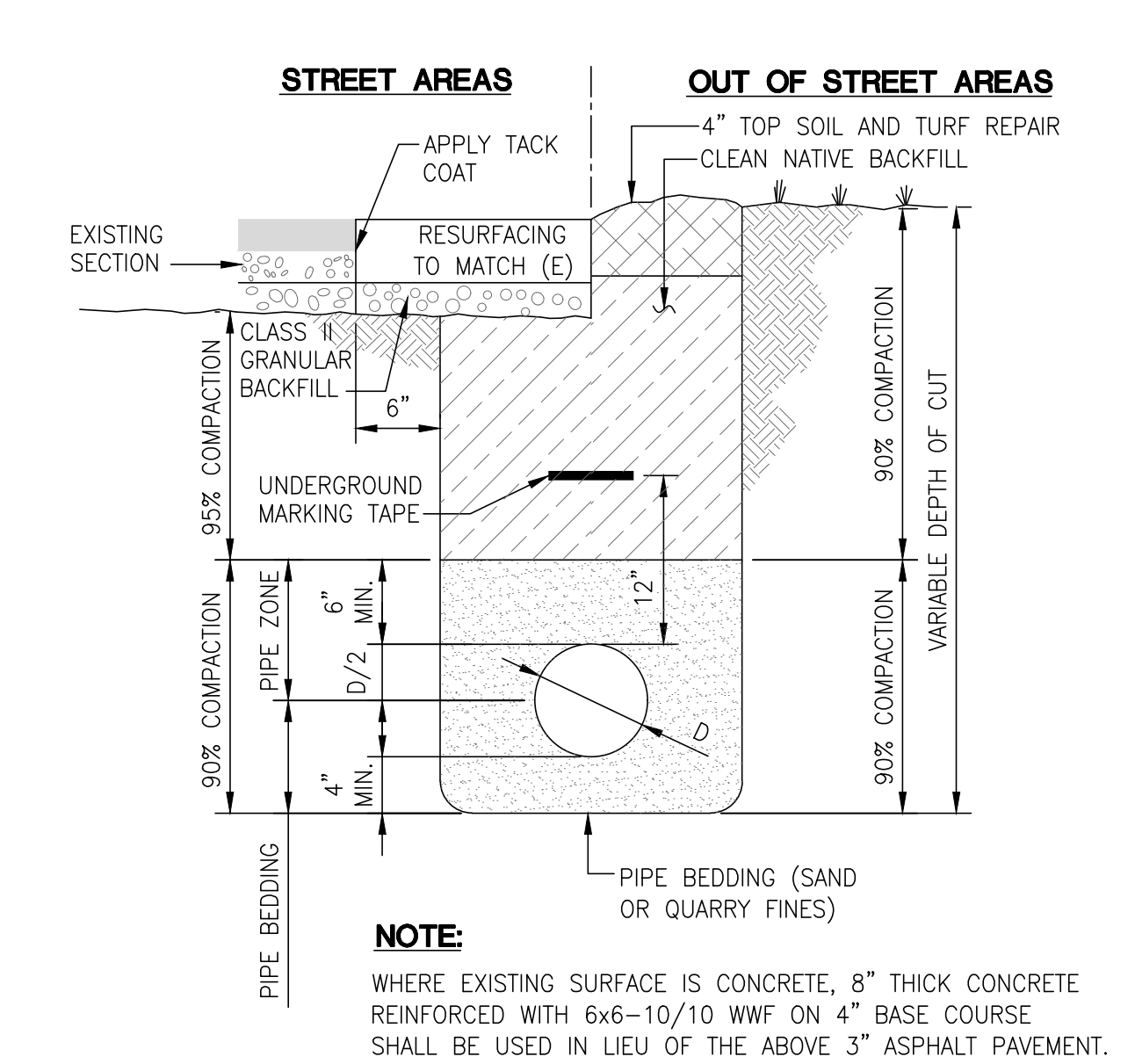
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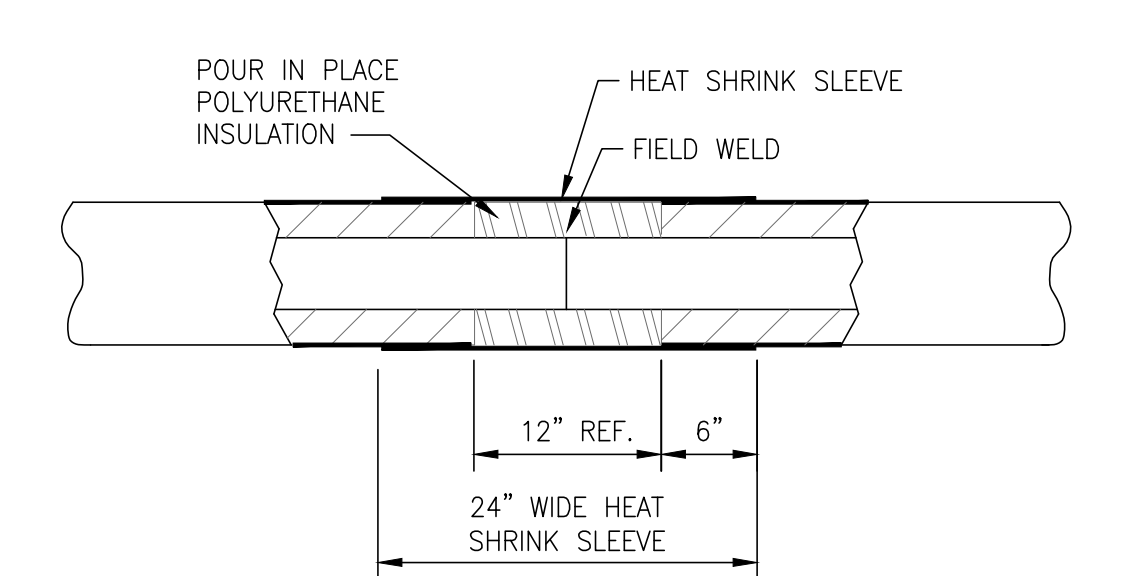
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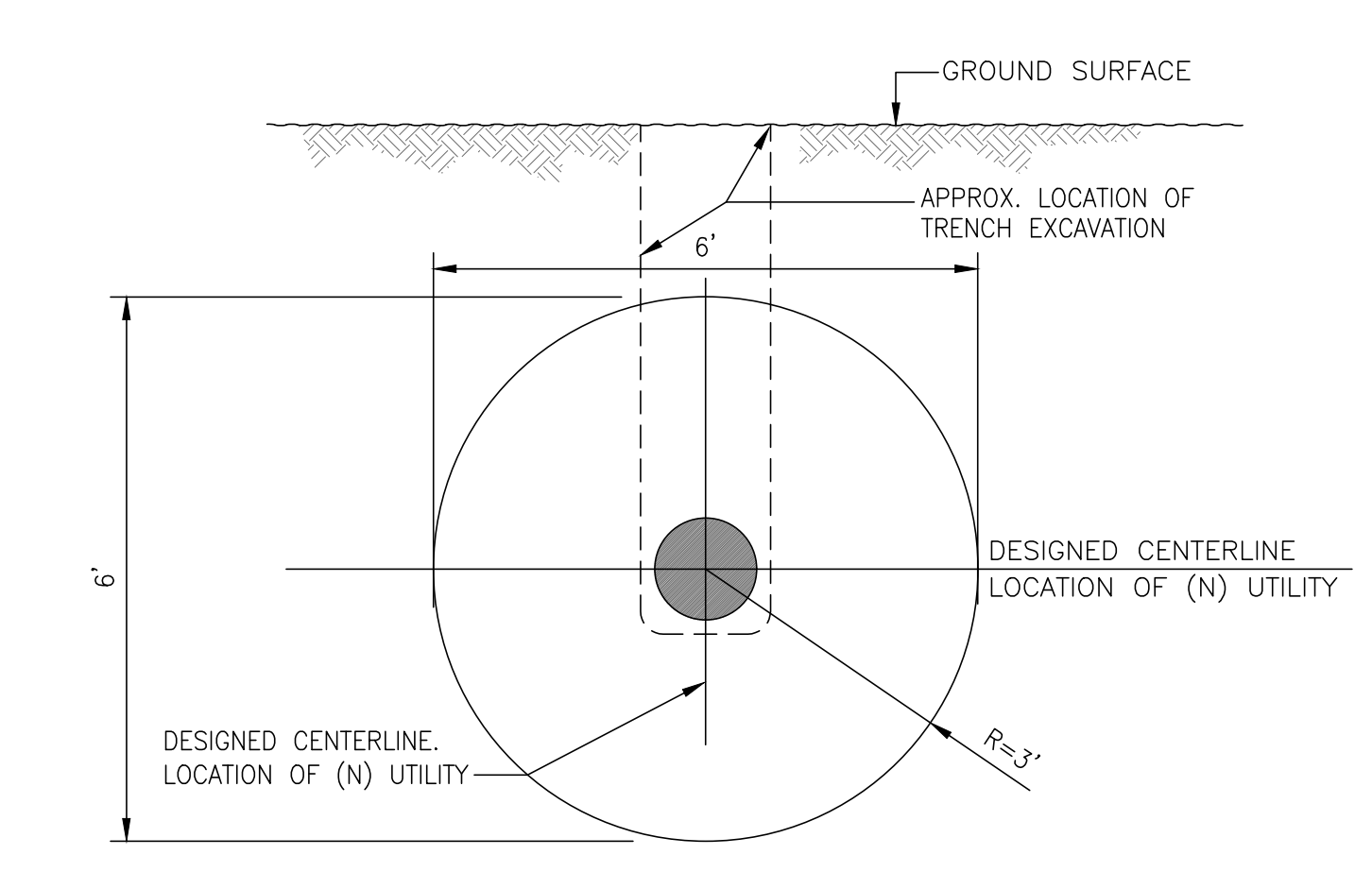


**4 PIPE BEDDING AND BACKFILL**  
 SCALE: N.T.S.



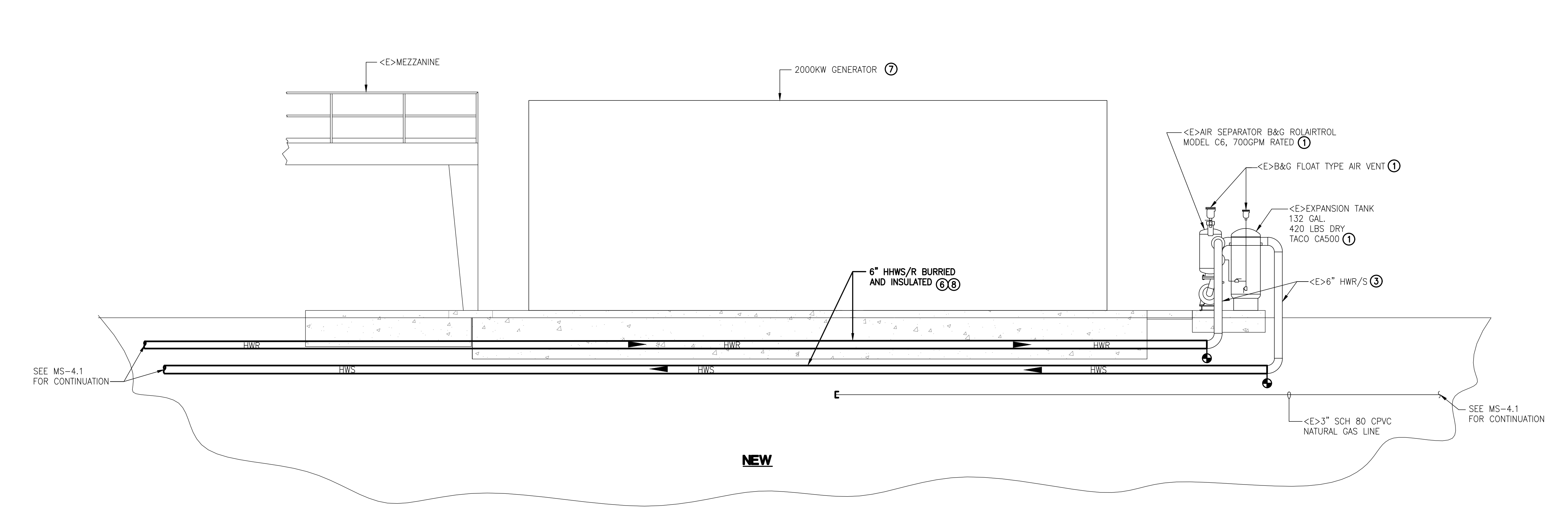
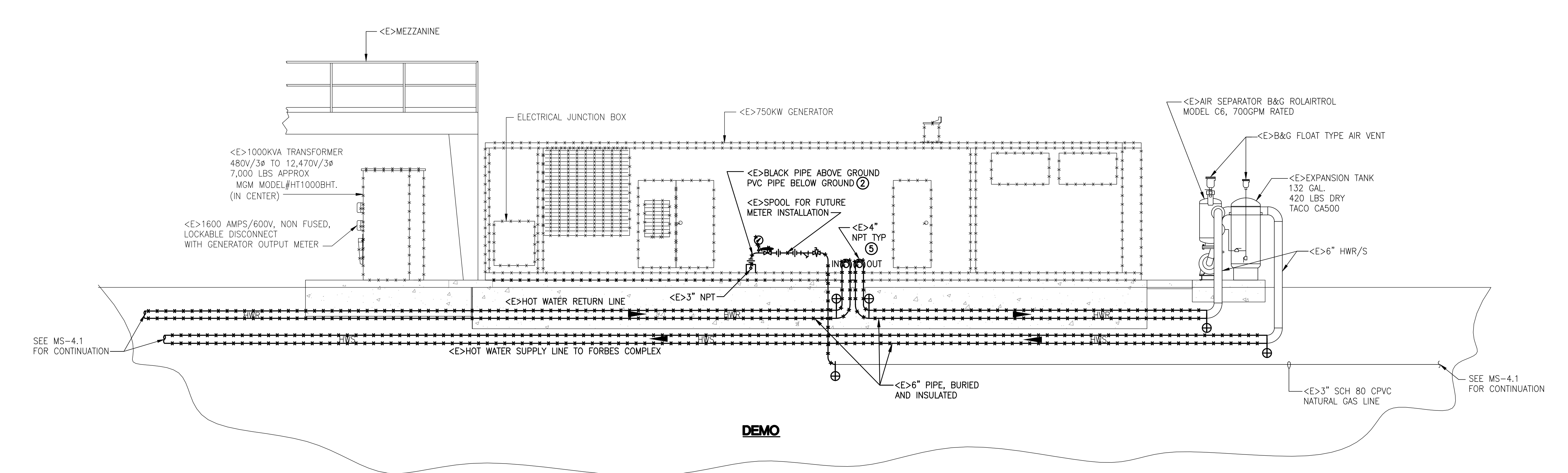
- NOTES:**
1. SOCKET WELD COUPLINGS, IF REQUIRED SUPPLIED BY INSTALLER.
  2. THE FOLLOWING FIELD JOINT MATERIAL SUPPLIED BY PERMA-PIPE POUR IN PLACE POLYURETHANE INSULATION MOLD FOR POUR IN PLACE HEAT SHRINK SLEEVE STORE ALL CHEMICALS AT 60°F TO 85°F.
  3. DIFFERENCES IN HDPE JACKET OD'S BETWEEN PIECES ARE ACCOMMODATED BY A TAPER ACROSS THE FIELD JOINT.

**3 FIELD JOINT FOR PREFABBED PIPING**  
 SCALE: N.T.S.

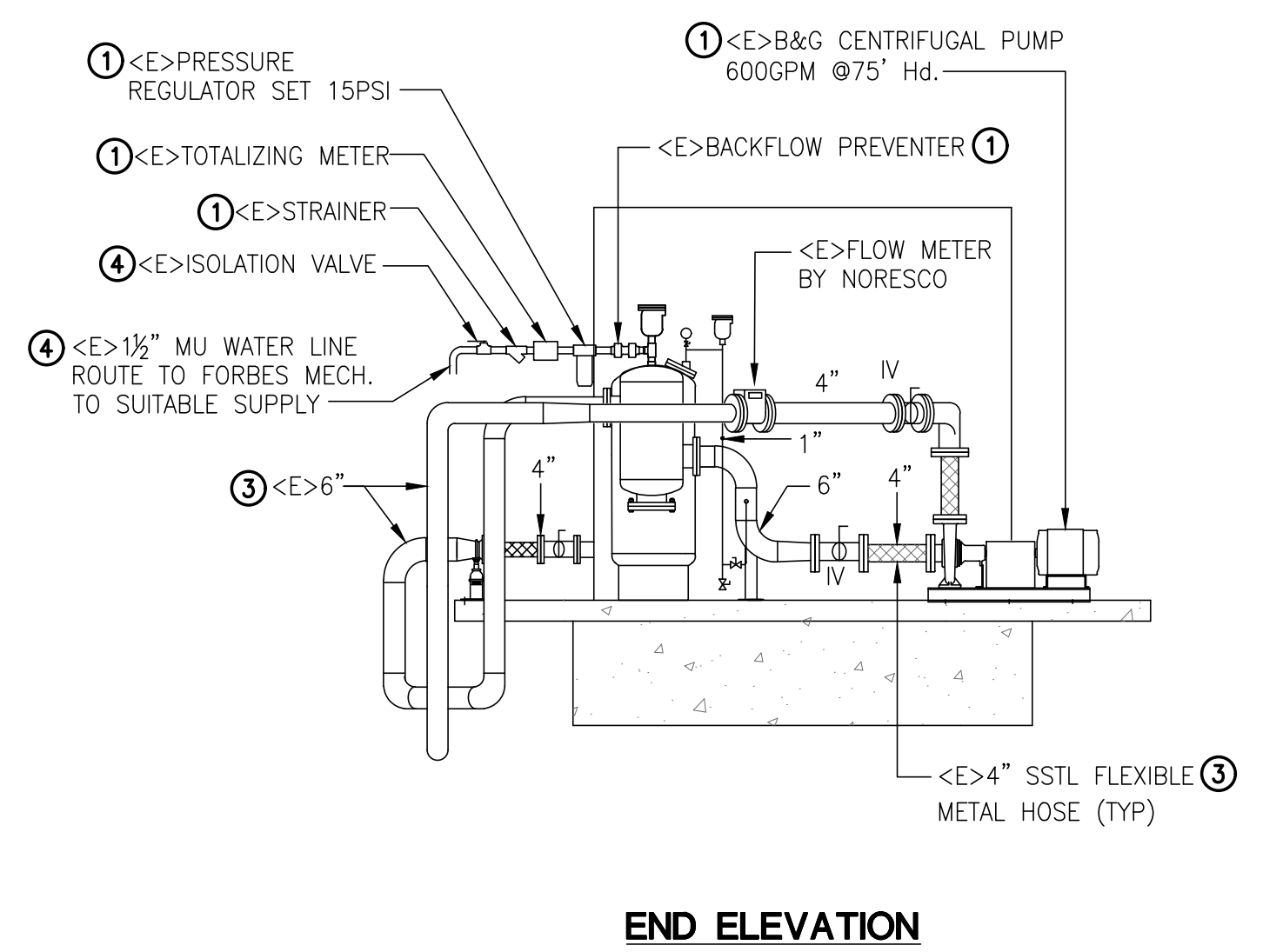


- NOTES:**
1. ANY FIELD ADJUSTMENTS TO THE PROPOSED LOCATION OF (N) UTILITIES WITHIN A 3 FOOT RADIUS OF THE DESIGN CENTERLINE LOCATION SHALL BE DONE AT NO ADDITIONAL EXPENSE TO THE OWNER. ALL PROPOSED ADJUSTMENTS SHALL BE SUBJECT TO PRIOR APPROVAL OF THE OWNER. SHOULD THE OWNER AGREE THAT IT IS NECESSARY TO ADJUST THE DESIGN LOCATION OF THE (N) UTILITY TO A POSITION OUTSIDE THE ABOVE 3 FOOT RADIUS, SUCH ADJUSTMENT SHALL BE SUBJECT TO REVIEW AS AN ITEM OF EXTRA EXPENSE.
  2. IF IT IS NECESSARY TO RELOCATE (E) UTILITIES IN ORDER TO ALLOW THE (N) UTILITY TO BE INSTALLED WITHIN A 3 FOOT RADIUS OF ITS DESIGNED CENTERLINE, THEN SUCH RELOCATION OF (E) UTILITIES SHALL BE PAID FOR AS AN ITEM OF EXTRA EXPENSE. ANY SUCH RELOCATION SHALL BE SUBJECT TO PRIOR APPROVAL OF THE OWNER.
  3. IN AREAS WHERE SHORING IS NOT REQUIRED AS PER THE LINE PROFILE DRAWINGS, THE MAXIMUM DEPTH OF TRENCHING TO AVOID OBSTACLES WITHOUT ADDITIONAL COST SHALL BE 5' BELOW GRADE. IN AREAS WHERE SHORING IS REQUIRED TO MEET DESIGN GRADE, THE LINE MAY BE ADJUSTED AN ADDITIONAL 3' BELOW THAT SHOWN WITH NO INCREASE IN COST.

**2 TYPICAL UTILITY ADJUSTMENT CRITERIA**  
 SCALE: N.T.S.

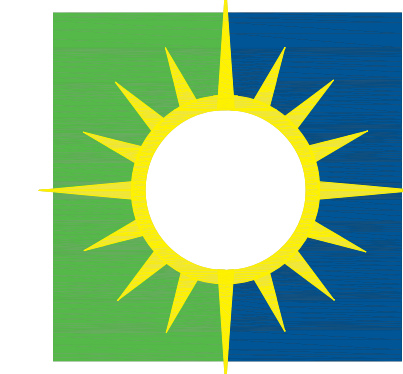


**1 GENERATOR ELEVATION**  
 SCALE: 1/4" = 1'-0"



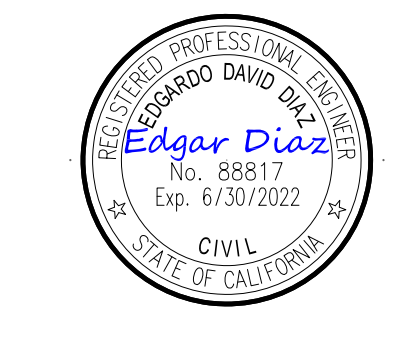
- REFERENCE DETAIL NOTES**
1. PROTECT IN PLACE <E> HEAT RECOVERY EQUIPMENT.
  2. DEMOLISH <E> GAS PIPING CONNECTION TO GENERATOR. CAP <E> GAS PIPING UNDERGROUND.
  3. PROTECT IN PLACE <E> HYDRONIC PIPING. CAP UNDERGROUND.
  4. PROTECT IN PLACE <E> DOMESTIC WATER PIPING BACK TO MECHANICAL ROOM.
  5. DEMOLISH <E> HYDRONIC PIPING CONNECTION TO COGEN UNIT.
  6. INSTALL 6" HHWR, BURIED AND INSULATED, PIPING. SEE DETAIL 3/MP-5.1. PROVIDE & INSTALL NECESSARY FITTINGS TO CONNECT <E> PIPING. CONTRACTOR SHALL FIELD VERIFY <E> PIPE MATERIAL AND MATCH <E> MATERIAL.
  7. PROVIDE & INSTALL CONDUIT AND WIRING FOR GENERATOR CONNECTION TO <E> BMS. INTERCEPT <E> BMS BACKLINE IN MECHANICAL ROOM AND EXTEND TO GENERATOR. SEE POINTS LIST ON MP-0.1.
  8. SEE DETAIL 4/MP-5.1 FOR INSTALLATION OF UNDERGROUND PIPING. REPAIR ALL ASPHALT/CONCRETE AFTER INSTALLATION.





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This project has demonstrated conformance with applicable codes and standards established by state and University policy. Based on this determination these documents are 'APPROVED FOR CONSTRUCTION' Michael Fisher... CALIFORNIA STATE FIRE MARSHAL APPROVED



HUMBOLDT STATE UNIVERSITY

1 HARPST STREET ARCATA, CA 95521

FORBES GYMNASIUM EMERGENCY GENERATOR

ISSUE table with columns: MARK, DATE, DESCRIPTION. Rows include 05/19/20 PROGRESS SET, 08/10/20 ISSUED FOR PERMIT, 12/17/20 ISSUED FOR PERMIT, 1/08/21 ISSUED FOR PERMIT

SOBE PROJECT NO: 1901734 DATE: 03/25/20 DRAWN BY: EDD CHECKED BY: BR APPROVED BY:

SHEET TITLE FORBES GYM SPECIFICATIONS AND FOUNDATION PLAN

SCALE: AS NOTED THIS DRAWING IS 30" X 42" AT FULL SIZE

S-1.0 SHEET - OF -

STRUCTURAL NOTES & SPECIFICATIONS

GENERAL Construction and materials shall be as specified and as required by the 2019 edition of the California Building Code (CBC) and locally enforced codes and authorities. All articles, materials and equipment shall be installed, applied and connected as directed by the manufacturer's latest written specifications...

CONCRETE Work done under this section shall conform with the applicable portions of ACI 318, latest edition. Poured in place concrete work shall be constructed of normal weight, Portland Cement Concrete, having a minimum 28-day compressive strength of 3000 psi. Portland cement concrete shall conform to the requirements of ACI 318, 'Building Code Requirements for Reinforced Concrete', latest edition...

REINFORCEMENT Use Grade 60 deformed reinforcing bars conforming to the requirements of ASTM A615. Stagger all reinforcing bar contact splices. Support horizontal steel at bottom on mortar blocks. Minimum 3-inch clearance for surfaces poured against earth; minimum 1-1/2 inch elsewhere unless noted otherwise.

EARTHWORK Footings shall be embedded into firm native soil or engineered fill as shown in the plans and as specified in Chapter 18 of the current California Building Code. Footings shall extend a minimum of 12 inches into firm native soil or 12 inches below pad grade which ever is lower. Footings are proportioned for an allowable soil pressure of 1500 PSF per Table 1806.2 of the 2019 California Building Code for class 5 material.

POST-INSTALLED ANCHORAGE NOTES: 1. Mechanical unit anchorage - Screw Anchors 1.1. Simpson Titen HD (ESR-2713) Anchors shall have minimum embedment of not less than eight (8) anchor diameters, unless noted otherwise. Torque anchors during installation to the values specified in manufacturer's ICC-ES Report. See Notes Below for special inspection and testing requirements.

TESTING AND SPECIAL INSPECTIONS All inspections shall conform to applicable requirements of Section 1704 of the 2019 California Building Code. Special Inspection shall be performed by an independent testing laboratory approved by the local jurisdiction and paid by the owner. Copies of all reports shall be submitted to the Engineer. See city-specific requirements for further information. 1. See Special Inspection and Testing Agreement. 2. Concrete construction per CBC Table 1705.3 3. Concrete placing; 4. Reinforcement steel placement; 5. Post-installed Anchors and Bars in Concrete

STRUCTURAL DESIGN CRITERIA RISK CATEGORY: (ASCE 7 TABLE 1.5-1) IV SEISMIC DESIGN CATEGORY D SITE CLASS D ANALYSIS PROCEDURE USED D NONSTRUCTURAL COMPONENTS: NONBUILDING STRUCTURE SEISMIC IMPORTANCE FACTOR 1.5 Ss, S1, S0s, S0t N/A, N/A, 1.95, 1.22 WIND DESIGN CRITERIA: (ASCE 7) BASIC WIND SPEED 115 MPH WIND EXPOSURE C IMPORTANCE FACTOR 1.0

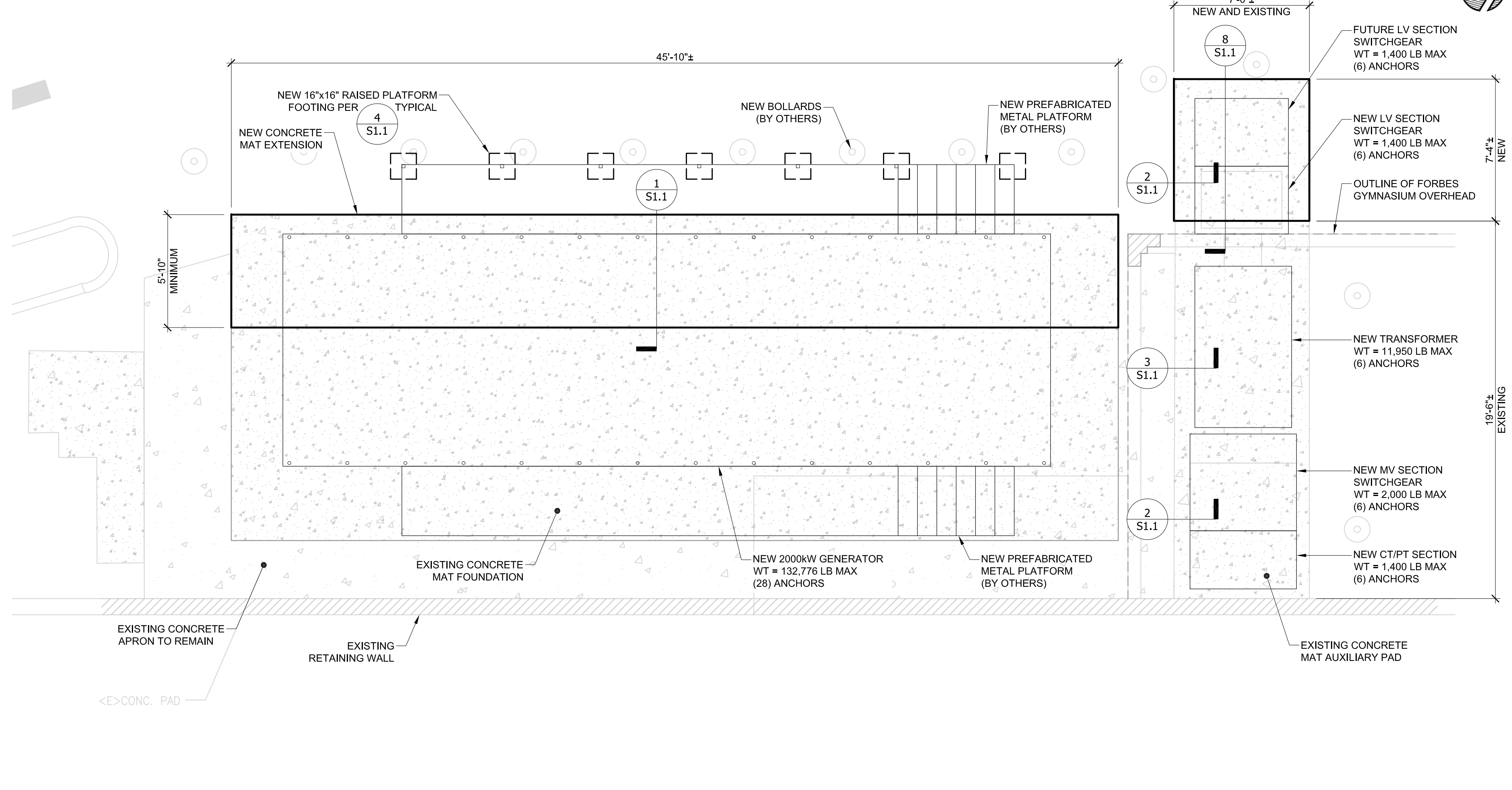
DESIGN CRITERIA table with columns: UNIT, Ap, Rp, Zh, Fp or Cs. Rows include GENERATOR, MV SECTION, TRANSFORMER, LV SECTION, RAISED PLATFORM.

SUBMITTALS Shop drawings shall be submitted to the Engineer, for review, in the following areas of work: 1. Rebar shop drawings for concrete 2. Concrete mix design 3. Prefabricated raised metal platform 4. Altered anchor hole design to Transformer unit

DEFERRED SUBMITTALS: Deferred submittals shall be submitted to the Engineer. The Contractor shall prepare and provide the engineering design for all deferred submittal items. Calculations and drawings submitted for review shall be signed and sealed by a Professional Engineer who is licensed in the State of California. The calculations shall include all design information necessary to determine the adequacy of the deferred submittal item.

ABBREVIATIONS

Table of abbreviations including: AB Anchor Bolt, ACI American Concrete Institute, AISC American Institute of Steel Construction, ATC American Institute of Timber Constr., ALT Alternate, APA American Plywood Association, APPROX Approximately, ARCH Architect, ASTM American Society for Testing & Materials, AVG Average, BLDG Building, BLK(G) Blocking, BM Beam, BN Boundary nailing, BOT Bottom, BTWN Between, BVL Bevel, C Channel, CANT Cantilever, CB Carriage Bolt, CBC California Building Code, CC Center to Center, C/I Control Joint, CL Center Line, CLG Ceiling, CLR Clear, Clearance, CMU Concrete Masonry Unit, COL Column, CJP Complete Joint Penetration, CONC Concrete, CONN Connection, CONT Continuous, CTR Center, CVR Cover, DBL Double, DEG Degree, DET Detail, DF Douglas Fir, DIA Diameter, DIAG Diagonal, DIM Dimension, DL Dead Load, DN Down, DWG Drawing, EA Each, EF Each Face, EL Elevation, ELEV Elevation, EN Edge Nail, ENGR Engineer, EOR Engineer Of Record, ES Each Side, EW Each Way, EX Existing, EXT Exterior, FG Finish Grade, FJ Floor Joist, FLR Floor, FN Field nailing, FDN Foundation, FOC Face Of Concrete, FOS Face Of Steel/Stud, FRMG Framing, FT Foot or Feet, FTG Footing, GA Gauge, GALV Galvanized, GLB Glulam Beam, HD Holddown, HDR Header, HORIZ Horizontal, ID Inside Diameter, IN Inch, JST(S) Joist(s), KP King Post, L Angle, LB Pound, LL Live Load, LTWVT Light Weight, MAX Maximum, MB Machine Bolt, MECH Mechanical, MISC Miscellaneous, MIN Minimum, MTL Metal, NS&FS Near Side And Far Side, NTS Not To Scale, OC On Center, OD Outside Diameter, P Post, PEERT Pre-Engineered Roof Truss, PJP Partial Joint Penetration, PL Plate, PLY Plywood, PMR Per Manufacturers Recommendations, PSF Pounds per Square Foot, PSI Pounds per Square Inch, PTFDF Preservative Treated Douglas Fir, R Radius, RC Relative Compaction, REINF Reinforcement, REQD Required, RET Retaining, R&R Remove And Replace, RR Roof Rafter, RS Rough Sawn, RWDO Redwood, SAO See Architectural Drawings, SCH Schedule, SECT Section, SEL Select, SF Square Foot, SHRWL Shear wall, SHGT Sheathing, SIM Similar, SPEC Specifications, SQ Square, SQR Standard, STD Steel, STL Structural, STRUCT T Tee Section, T&G Tongue And Groove, T&B Top And Bottom, TN Toe Nail, TOC Top Of Concrete, TOF Top Of Footing, TOF Floor, TOS Top Of Steel, TOW Top Of Wall, TYP Typical, UNO Unless Noted Otherwise, VERT Vertical, VIF Verify In Field, W Wide Flange steel beam, WB With, W/O Without, WP Work Point, WWF Welded Wire Fabric



PLAN NOTES: 1. PLAN DIMENSIONS ARE MINIMUMS. REFER TO ELECTRICAL DRAWINGS FOR EXACT FOUNDATION LOCATIONS AND DIMENSIONS. 2. FOOTING SIZES AND DETAILS ARE BASED ON PRELIMINARY INFORMATION AVAILABLE WHEN THIS SET OF DRAWINGS WAS PRINTED. CONTRACTOR IS SOLELY RESPONSIBLE FOR COORDINATING STRUCTURAL DRAWINGS WITH ELECTRICAL DRAWINGS, DEFERRED SUBMITTALS AND ANY REQUIRED CHANGES.

FOUNDATION PLAN - EQUIPMENT PADS

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

THIS DRAWING IS 30" X 42" AT FULL SIZE. 15" X 21" AT HALF SIZE. © 2015 BY SALAS O'BRIEN ENGINEERS, INC. 1/2" = 1'-0" 1/4" = 1'-0" 3/8" = 1'-0" 1/2" = 1'-0" 3/4" = 1'-0" 1" = 1'-0" 1 1/4" = 1'-0" 1 1/2" = 1'-0" 1 3/4" = 1'-0" 2" = 1'-0" 2 1/4" = 1'-0" 2 1/2" = 1'-0" 2 3/4" = 1'-0" 3" = 1'-0" 3 1/4" = 1'-0" 3 1/2" = 1'-0" 3 3/4" = 1'-0" 4" = 1'-0" 4 1/4" = 1'-0" 4 1/2" = 1'-0" 4 3/4" = 1'-0" 5" = 1'-0" 5 1/4" = 1'-0" 5 1/2" = 1'-0" 5 3/4" = 1'-0" 6" = 1'-0" 6 1/4" = 1'-0" 6 1/2" = 1'-0" 6 3/4" = 1'-0" 7" = 1'-0" 7 1/4" = 1'-0" 7 1/2" = 1'-0" 7 3/4" = 1'-0" 8" = 1'-0" 8 1/4" = 1'-0" 8 1/2" = 1'-0" 8 3/4" = 1'-0" 9" = 1'-0" 9 1/4" = 1'-0" 9 1/2" = 1'-0" 9 3/4" = 1'-0" 10" = 1'-0" 10 1/4" = 1'-0" 10 1/2" = 1'-0" 10 3/4" = 1'-0" 11" = 1'-0" 11 1/4" = 1'-0" 11 1/2" = 1'-0" 11 3/4" = 1'-0" 12" = 1'-0" 12 1/4" = 1'-0" 12 1/2" = 1'-0" 12 3/4" = 1'-0" 13" = 1'-0" 13 1/4" = 1'-0" 13 1/2" = 1'-0" 13 3/4" = 1'-0" 14" = 1'-0" 14 1/4" = 1'-0" 14 1/2" = 1'-0" 14 3/4" = 1'-0" 15" = 1'-0" 15 1/4" = 1'-0" 15 1/2" = 1'-0" 15 3/4" = 1'-0" 16" = 1'-0" 16 1/4" = 1'-0" 16 1/2" = 1'-0" 16 3/4" = 1'-0" 17" = 1'-0" 17 1/4" = 1'-0" 17 1/2" = 1'-0" 17 3/4" = 1'-0" 18" = 1'-0" 18 1/4" = 1'-0" 18 1/2" = 1'-0" 18 3/4" = 1'-0" 19" = 1'-0" 19 1/4" = 1'-0" 19 1/2" = 1'-0" 19 3/4" = 1'-0" 20" = 1'-0" 20 1/4" = 1'-0" 20 1/2" = 1'-0" 20 3/4" = 1'-0" 21" = 1'-0" 21 1/4" = 1'-0" 21 1/2" = 1'-0" 21 3/4" = 1'-0" 22" = 1'-0" 22 1/4" = 1'-0" 22 1/2" = 1'-0" 22 3/4" = 1'-0" 23" = 1'-0" 23 1/4" = 1'-0" 23 1/2" = 1'-0" 23 3/4" = 1'-0" 24" = 1'-0" 24 1/4" = 1'-0" 24 1/2" = 1'-0" 24 3/4" = 1'-0" 25" = 1'-0" 25 1/4" = 1'-0" 25 1/2" = 1'-0" 25 3/4" = 1'-0" 26" = 1'-0" 26 1/4" = 1'-0" 26 1/2" = 1'-0" 26 3/4" = 1'-0" 27" = 1'-0" 27 1/4" = 1'-0" 27 1/2" = 1'-0" 27 3/4" = 1'-0" 28" = 1'-0" 28 1/4" = 1'-0" 28 1/2" = 1'-0" 28 3/4" = 1'-0" 29" = 1'-0" 29 1/4" = 1'-0" 29 1/2" = 1'-0" 29 3/4" = 1'-0" 30" = 1'-0"



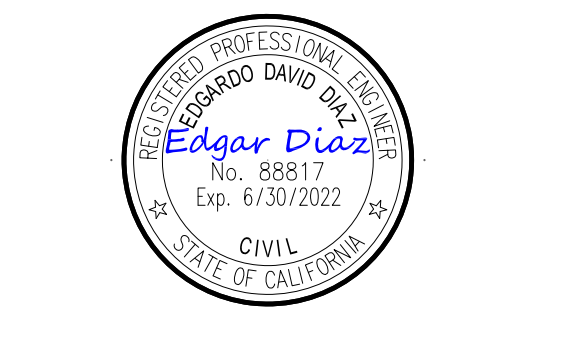
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DSA Access Approval: \_\_\_\_\_  
Seismic Peer Review: \_\_\_\_\_  
Mech Peer Review: \_\_\_\_\_

CALIFORNIA STATE FIRE MARSHAL  
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Reviewed by: \_\_\_\_\_  
Date: \_\_\_\_\_



HUMBOLDT STATE UNIVERSITY

1 HARPST STREET  
ARCATA, CA 95521

FORBES GYMNASIUM  
EMERGENCY GENERATOR

MARK	DATE	DESCRIPTION
	05/19/20	PROGRESS SET
	08/10/20	ISSUED FOR PERMIT
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	1/08/21	ISSUED FOR PERMIT

SOBE PROJECT NO: 1901734  
DATE: 03/25/20  
DRAWN BY: EDD  
CHECKED BY: BR  
APPROVED BY:

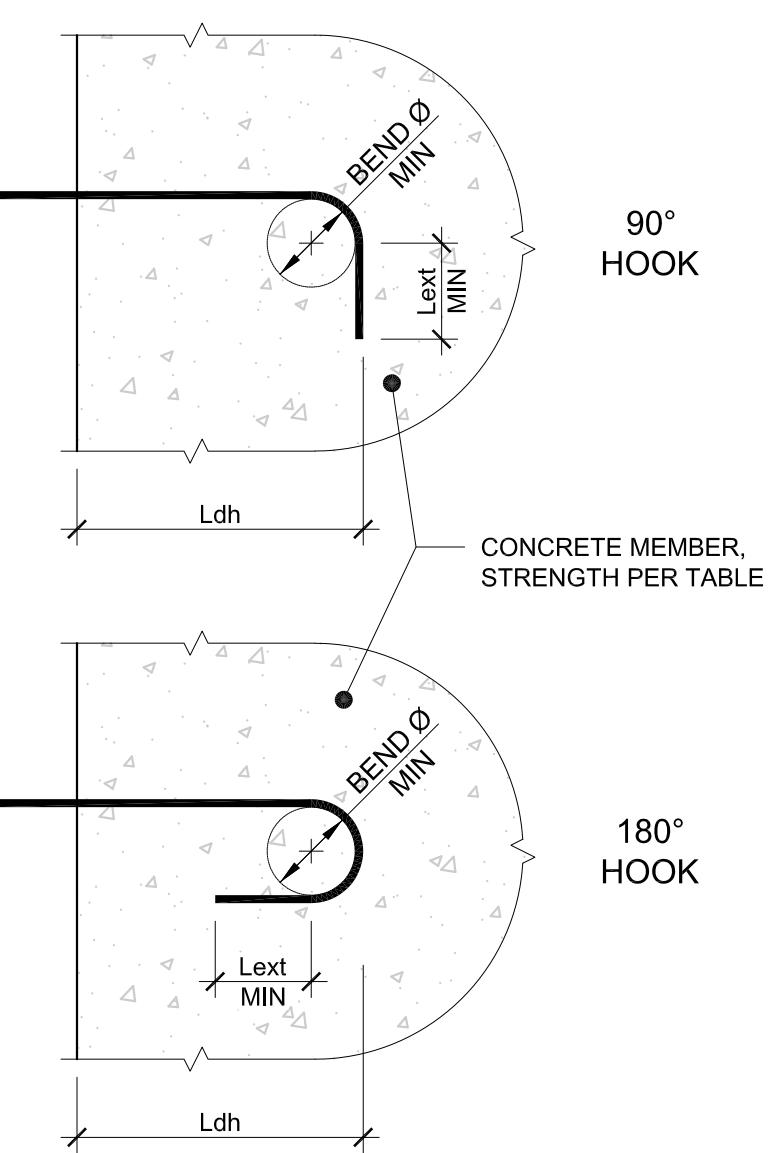
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FORBES GYM  
DETAILS

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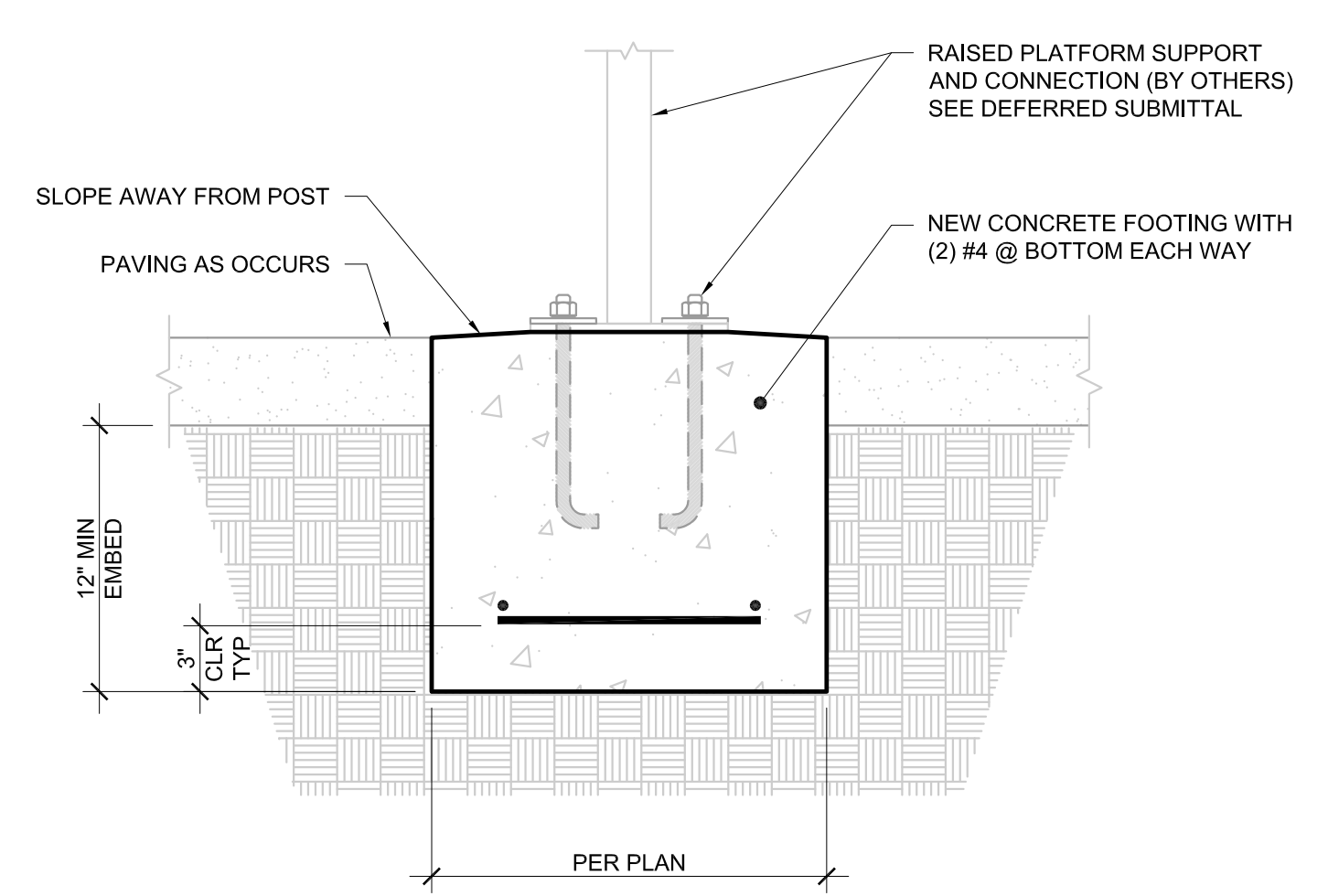
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TABLE VALUES PER ACI 318-14

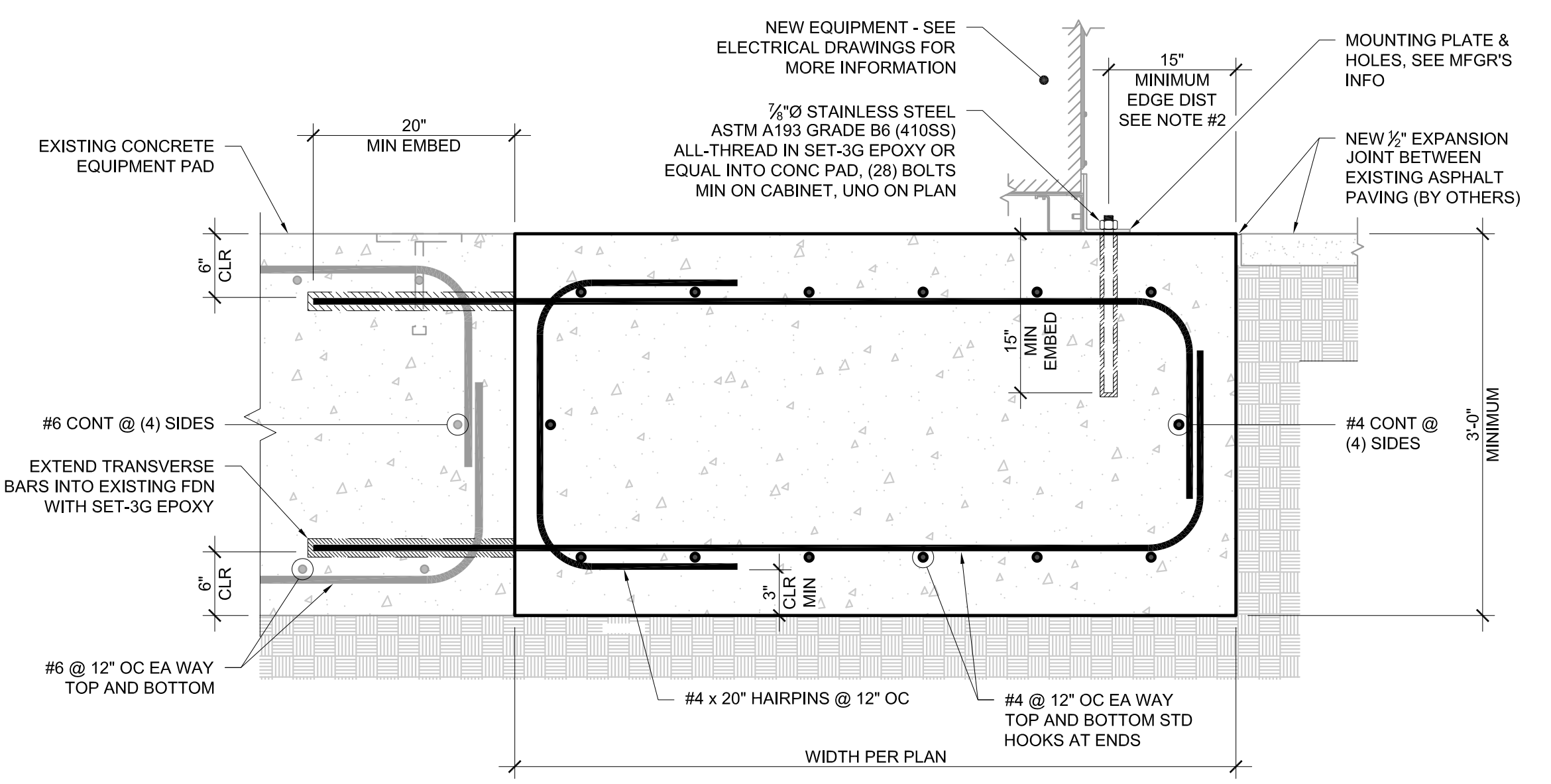
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#4	3"	6"	2.5"	8.4"	
#5	3.75"	7.5"	2.5"	10.5"	
#6	4.5"	9"	3"	13.6"	
#7	5.25"	10.5"	3.5"	14.7"	
#8	6"	12"	4"	16.8"	
#9	9"	13.5"	4.5"	18.9"	
#10	10"	15"	5"	21"	
#11	11"	16.5"	5.5"	23.1"	
#14	17.5"	21"	7"	42"	
#18	22.5"	27"	9"	54"	



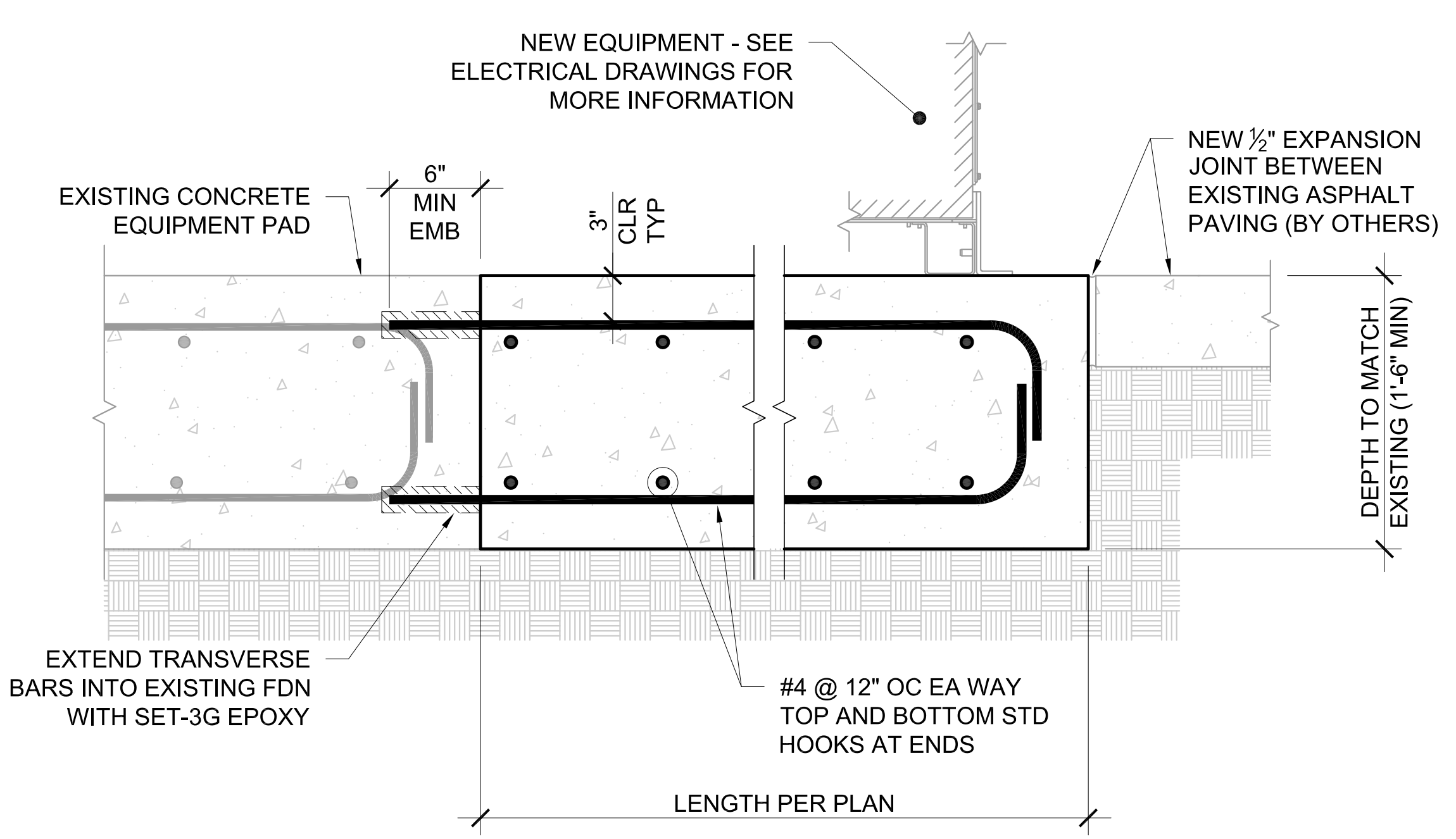
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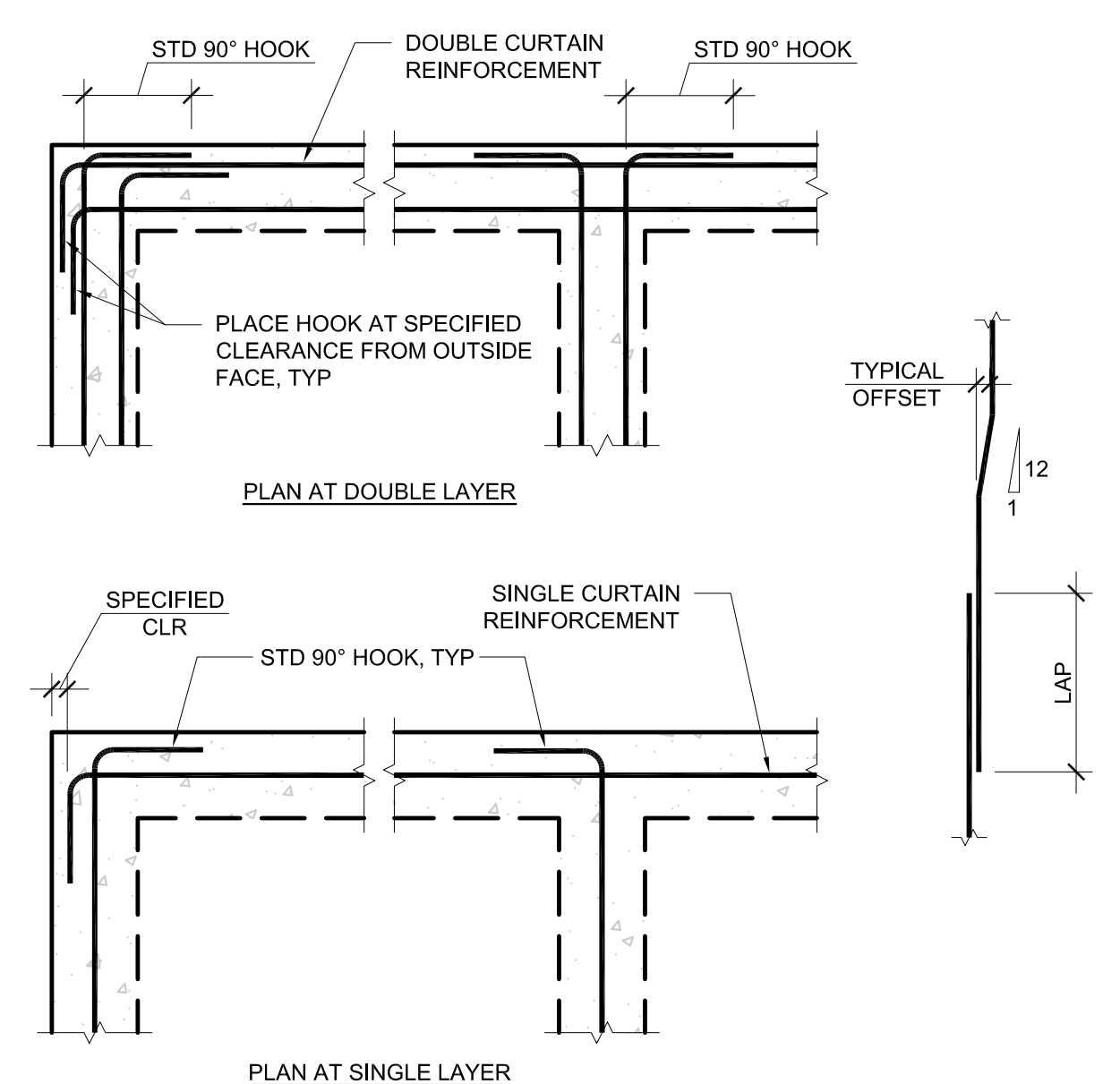
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SCALE: 1 1/2" = 1'-0"



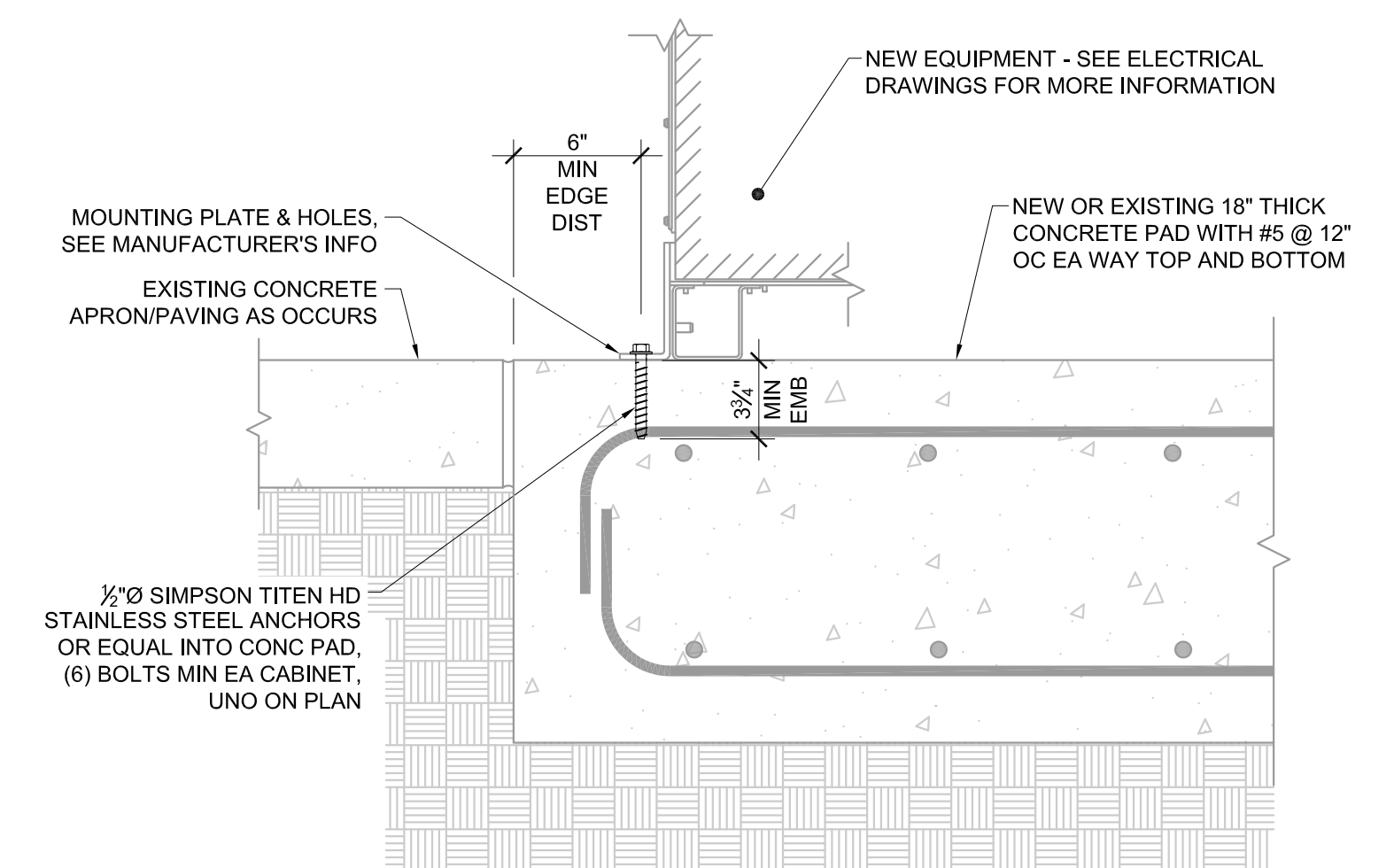
**GENERATOR PAD EXTENSION** 1  
SCALE: 1" = 1'-0"



**NEW TO EXISTING CONCRETE AUXILIARY PAD** 8  
SCALE: 1 1/2" = 1'-0"



**TYP REINF - CONCRETE** 5  
SCALE: NTS



**CT/PT, MV, LV & FUTURE SECTION ANCHORS TO AUXILIARY PAD** 2  
SCALE: 1 1/2" = 1'-0"

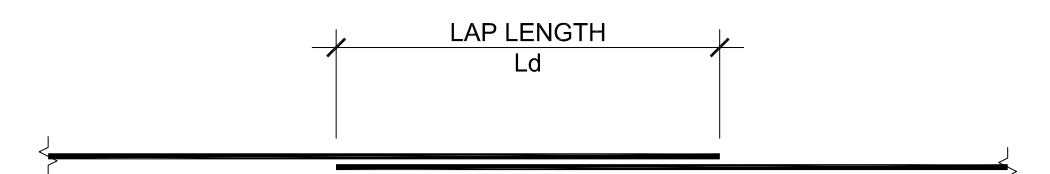
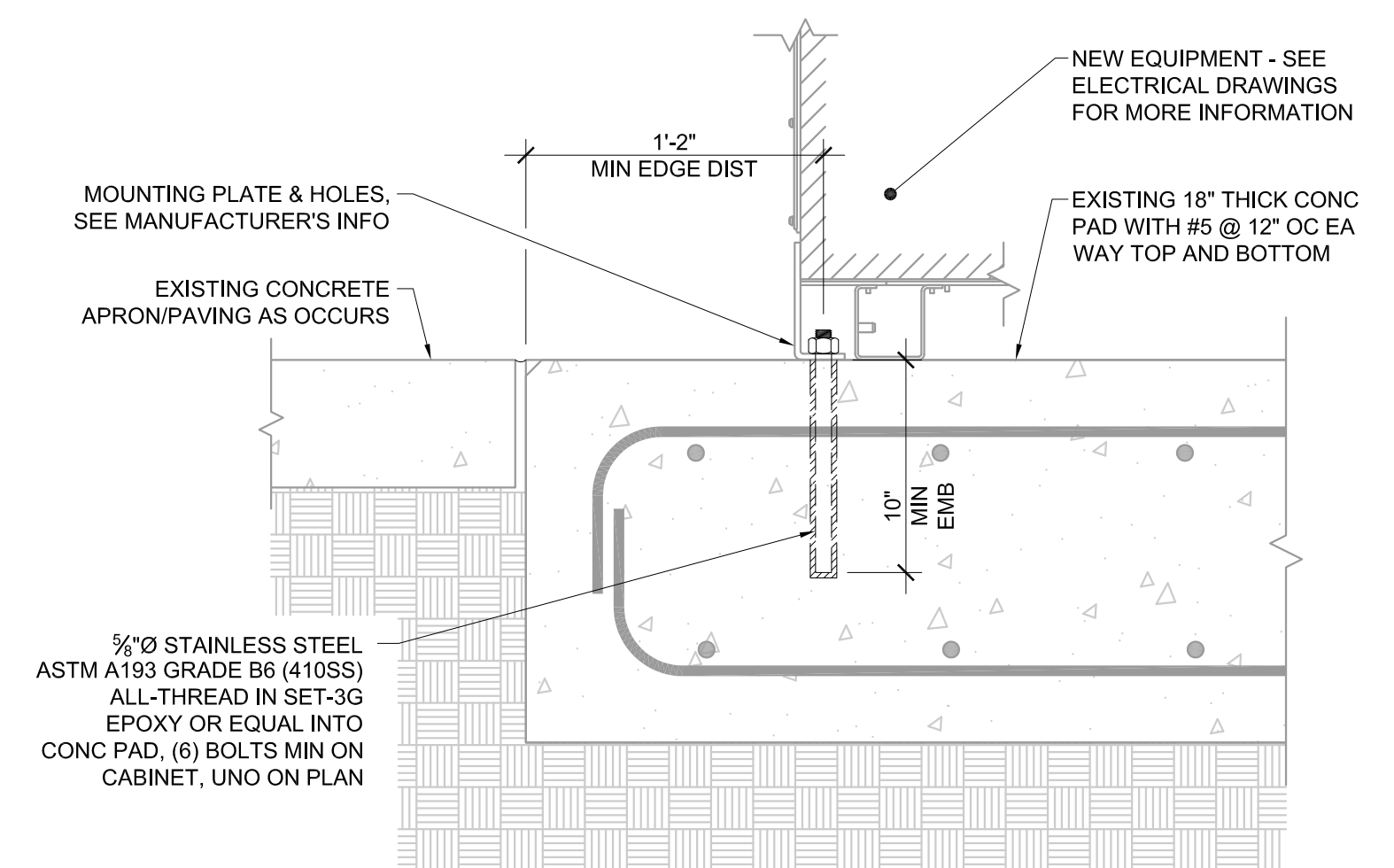


TABLE VALUES PER ACI 318-14

BAR SIZE	BAR Ø	STEEL STRENGTH (fy)	LAP LENGTH (Ld)	
			TOP BARS	OTHER BARS
#3	0.375"	40ksi	21"	16"
#3	0.375"	60ksi	31"	24"
#4	0.500"	60ksi	41"	32"
#5	0.625"	60ksi	51"	39"
#6	0.750"	60ksi	61"	47"
#7	0.875"	60ksi	89"	69"
#8	1.000"	60ksi	102"	78"
#9	1.128"	60ksi	115"	88"

- LENGTHS BASED ON THE FOLLOWING:  
1) ACI 318-14 SECTION 8.1.2  
2) CONCRETE AND STEEL REINFORCING STRENGTHS AS NOTED  
3) NORMAL WEIGHT CONCRETE  
4) NON-EPOXY COATED REINFORCING UNCOATED OR ZINC-COATED (GALVANIZED) ONLY  
5) CLASS 100 MPH WIND  
6) CLEAR SPACING OF BARS AT LEAST 2Ø (1Ø CENTER-TO-CENTER) AND CLEAR COVER OF BARS AT LEAST 1Ø  
7) TOP BARS DEFINED AS BARS WITH MORE THAN 12" OF FRESH CONCRETE PLACED BELOW HORIZONTAL REINFORCEMENT

**TYP REINF - LAP SPLICES** 6  
SCALE: NTS



**TRANSFORMER ANCHORS TO EXISTING AUXILIARY PAD** 3  
SCALE: 1 1/2" = 1'-0"

THIS DRAWING IS 30" X 42" AT FULL SIZE, 15" X 21" AT HALF SIZE. © 2015 BY SALAS O'BRIEN ENGINEERS, INC. 1/2" = 1'-0" 1/4" = 1'-0" 1/8" = 1'-0" 1" = 10'-0" 1" = 30'-0" 1" = 80'-0" 1" = 100'-0" 1" = 250'-0" 1" = 300'-0"