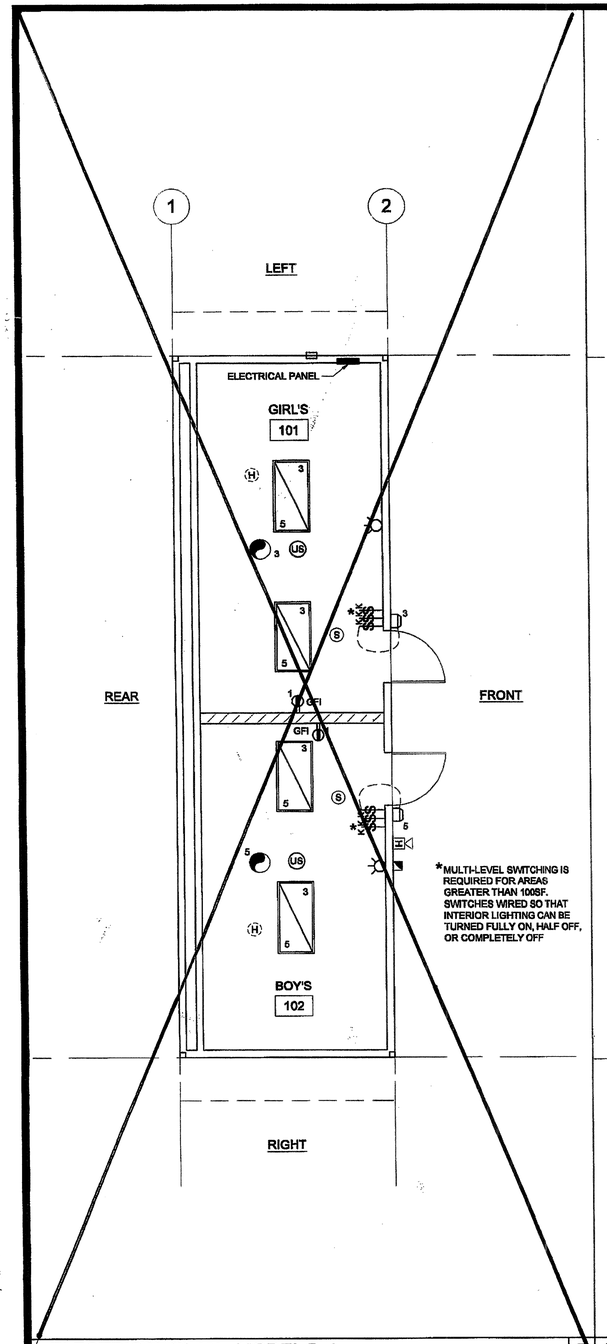
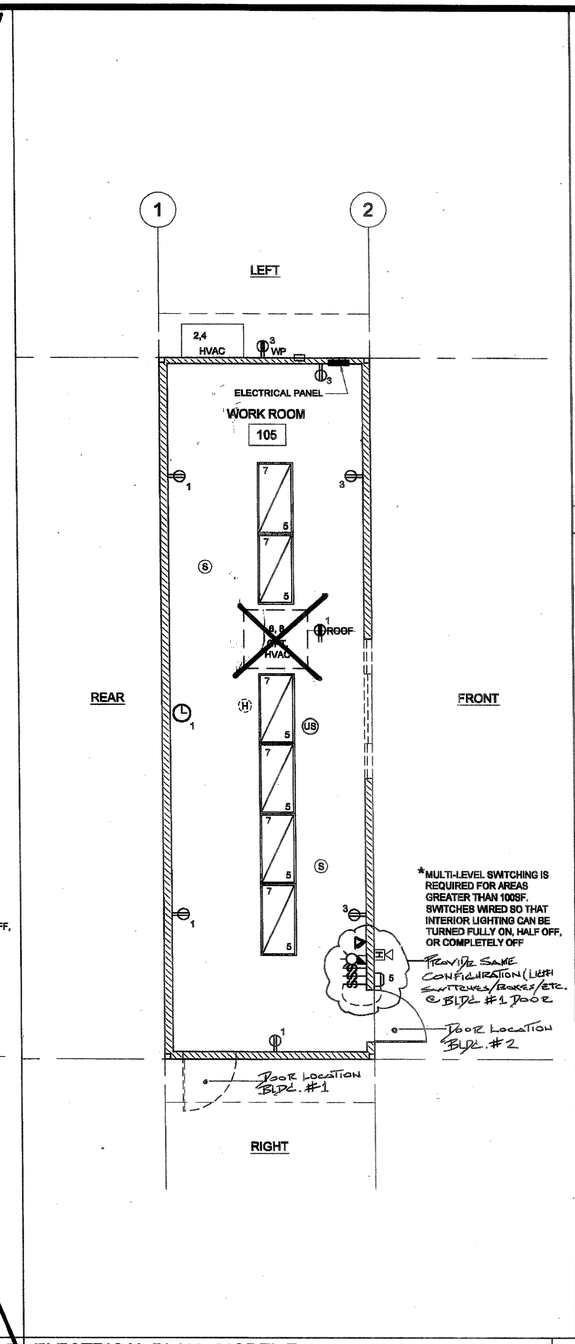
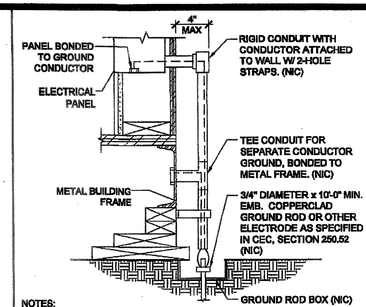



## ELECTRICAL PLAN - MODEL D-1 | 5




## ELECTRICAL PLAN - MODEL E

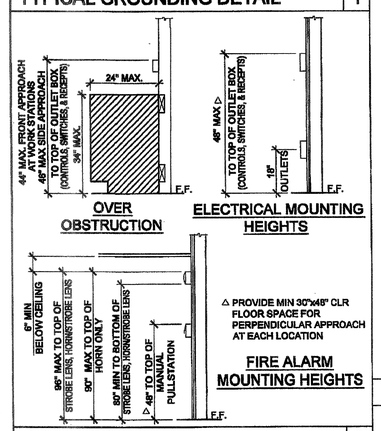
SCALE: 1/4" = 1'-0"



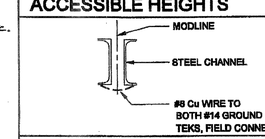

NOTES:

1. SIZE OF CONDUCTORS SHALL COMPLY WITH CEC TABLE 250.66
2. ELEC. TRADE SHALL CHECK AREA FOR EXISTING CONDUITS, SEWER, GAS & WATER PIPING BEFORE DRIVING GROUND RODS.
3. BOND SEPARATE CONDUCTORS FROM GROUND ROD TO ELEC'L. PANEL & TO METAL BUILDING FRAME (CEC 250.52) IN ADDITION TO THE DETAIL SHOWN ABOVE, BOND THE ELECTRICAL GROUND TO METAL UNDERGROUND WATER PIPE IN DIRECT CONTACT WITH THE EARTH FOR 10 FT. OR MORE, IF AVAILABLE (CEC 250.52)
4. ALL MODULES OF METAL FRAME BLDGS. SHALL BE ELECTRICALLY BONDED TOGETHER (BOLTING ONLY IS NOT ACCEPTABLE BONDING). BONDING SHALL INCLUDE METAL RAMP.
5. CHECK RESISTANT TO GROUND ROD, IF RESISTANCE EXCEEDS 25 OHMS, INSTALL ADDITIONAL GROUND RODS WITH CONDUCTORS AS SHOWN SEPARATED AT LEAST 6'-0" UNTIL RESISTANCE IS REDUCED TO 25 OHMS OR LESS (CEC 250.56).

## TYPICAL GROUNDING DETAIL | 1




## ACCESSIBLE HEIGHTS | 2




## GROUND JUMPER AT MODLINE | 3

### GENERAL GROUNDING NOTES

EACH BUILDING SHALL BE SEPARATELY GROUNDED WITH A 3/4" RD. X 8' COPPERCLAD STEEL GROUND ROD, WHERE ROCK BOTTOM IS ENCOUNTERED, ROD SHALL BE DRIVEN AT AN ANGLE NOT TO EXCEED 45 DEGREE'S FROM THE VERTICAL OR SHALL BE BURIED IN A TRENCH THAT IS AT LEAST 30" DEEP (BY SITE ELECTRICAL).

TESTING: TEST FOR RESISTANCE TO GROUND, IF RESISTANCE EXCEEDS 25 OHMS. INSTALL ADDITIONAL GROUND RODS SEPARATED AT LEAST 6'-0" UNTIL RESISTANCE IS REDUCES TO 25 OHMS OR LESS. (BY SITE ELECTRICAL).

APPROVAL OF THIS PLAN DOES NOT CONSTITUTE APPROVAL OF THIS FIRE ALARM FOR ALL SITES. THE FIRE ALARM SYSTEM AND/OR COMPONENTS MAYBE REQUIRED TO BE CHANGED DUE TO SITE LOCATION EXISTING CONDITIONS OR INCOMPATIBLE COMPONENTS.

GROUND MG TEST SHALL BE DONE IN THE PRESENCE OF THE PROJECT INSPECTOR. ALL GROUNDING SHALL BE IN ACCORDANCE WITH CEC ARTICLE 250.

## SCHOOL EQUIPMENT ANCHORAGE

ALL MECHANICAL, PLUMBING AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2010 CBC, SECTIONS 1615A.1.12 THROUGH 1615A.1.22 AND ASCE 7-05 CHAPTER 6 AND 13.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
3. MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

THE ATTACHMENT OF THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
B. 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.

FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD AND THE DSA DISTRICT STRUCTURAL ENGINEER. 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 7-05 SECTION 13.3 AS DEFINED IN ASCE 7-05 SECTION 13.6.8, 13.6.7, 13.6.5.6 AND 2010 CBC SECTIONS 1615A.1.20, 1615A.1.21 AND 1615A.1.22.

THE BRACING AND ATTACHMENTS TO THE STRUCTURE SHALL BE DETAILED ON THE APPROVED DRAWINGS OR THEY SHALL COMPLY WITH ONE OF THE OSHPD PRE-APPROVALS (OPA #) AS MODIFIED TO SATISFY ANCHORAGE REQUIREMENTS OF ACI 318, APPENDIX D.

COPIES OF THE MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF HANGING AN BRACING OF THE PIPE, DUCTWORK AND ELECTRICAL DISTRIBUTION SYSTEMS.

THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

## FIRE ALARM NOTES

1. SMOKE AND HEAT DETECTOR SHALL BE CONNECTED TO FIRE ALARM SYSTEM BY OTHERS
2. PROVIDE DEDICATED FIRE ALARM 120 VOLT CIRCUIT CONNECTED TO LOCKED-ON BREAKER. THE CIRCUIT BREAKER SHALL BE LOCKED-ON WITH APPROVED LOCKING DEVICE, MARKED RED AND IDENTIFIED AS "FIRE ALARM CONTROL CIRCUIT". NFPA 72 4.4.1.4.2.2

## CONDUIT FILL AND CONDUCTOR CAPACITY TABLE

(ALL CONDUCTORS SHALL BE TYPE THHN/THWN 75°C. COPPER)

| WIRE SIZE | CAPACITY | WIRE TYPE | NO. OF CONDUCTOR PERMITTED 1/2" C | 3/4" C | 1" C | 1 1/4" C |
|---|---|---|---|---|---|---|
| #12 | 20A | THHN | 9 | 16 | 25 | 45 |
| #10 | 30A | THHN | 5 | 10 | 16 | 28 |
| #8 | 45A | THHN | 2 | 5 | 8 | 14 |
| #6 | 65A | THHN | 1 | 3 | 5 | 10 |
| #4 | 85A | THHN | 1 | 2 | 4 | 7 |

## JUNCTION BOX SIZE TABLE

| BOX | SIZE | CU. IN. | MAX NO. OF CONDUCTORS #12 | #10 | #8 | #6 |
|---|---|---|---|---|---|---|
| 4SS | 1 1/4" x 4" SQ | 18.0 | 8 | 7 | 6 | 0 |
| 4S | 1 1/2" x 4" SQ | 21.0 | 9 | 8 | 7 | 0 |
| 4SD | 2 1/8" x 4" SQ | 30.3 | 13 | 12 | 10 | 6 |
| 4SX | 2 7/8" x 4" SQ | 43.5 | 23 | 21 | 17 | 10 |
| 5SD | 2 1/8" x 4-11/16" SQ | 42.0 | 18 | 16 | 14 | 9 |
| 5SX | 3 7/8" x 4-11/16" SQ | 88.0 | 38 | 34 | 28 | 17 |
| 664 | 4" x 6" SQ | 144.0 | 64 | 57 | 46 | 28 |

* DEDUCT ONE CONDUCTOR FOR (1) OR MORE GROUNDING CONDUCTORS ENTERING THE BOX

## LEGEND

- 2x4 CEILING LIGHT WITH (3) T-8 LAMPS, LAY-IN FLUORESCENT LIGHT FIXTURE WITH ELECTRONIC BALLAST ORACLE LIGHTING - MODEL 24.OT.332.2.T8A12.L41K.C4 WATTAGE: 32W T8 (48"LG) OR EQUAL
- OPTIONAL 1x4 CEILING LIGHT WITH (1) T-8 LAMP, LAY-IN FLUORESCENT LIGHT FIXTURE WITH ELECTRONIC BALLAST
- ELECTRICAL PANEL AT +80" AFF TO CENTERLINE OF MAIN CIRCUIT BREAKER WITH 1 1/2" DIA POWER STUB OUT
- US CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR. WATTSTOPPER W-500A OR EQUAL. SENSOR TO BE CONNECTED TO LIGHT SWITCHES FOR MANUAL OVERRIDE.
- WALL MOUNTED INTERIOR LIGHT FIXTURE AT +93" A.F.F. W/ 60W LIGHT BULB
- $ LIGHT SWITCH. MOUNT AT +44" AFF TO CENTERLINE OF DEVICE
- $K KEYED SWITCH AT +44" AFF TO CENTERLINE OF DEVICE
- DUPLEX (WALL MOUNTED) RECEPTACLE 15A - 125V - 3 WIRE. MOUNT AT +18" AFF U.O.N. TO CENTERLINE OF DEVICE
- GFI GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE AT +18" AFF U.O.N. WITHIN 6'-0" OF ALL SINKS
- EXTERIOR LIGHT FIXTURE. MOUNT AT +93" AFF
- CLOCK OUTLET AT +60" AFF TO CENTERLINE OF DEVICE
- 4SD J-BOX FOR FIRE ALARM PULLSTATION (DEVICE BY OTHERS). MOUNT AT +48" AFF TO TOP OF DEVICE WITH 3/4" CONDUIT TO FIRE ALARM STROBE WITH PULLSTRING
- 4SD J-BOX FOR FIRE ALARM STROBE (DEVICE BY OTHERS). MOUNT AT +80" AFF TO BOTTOM OF DEVICE WITH 3/4" CONDUIT TO EXTERIOR FIRE ALARM HORN WITH PULLSTRING
- H 4SD J-BOX FOR EXTERIOR FIRE ALARM HORN (DEVICE BY OTHERS). MOUNT AT +80" AFF TO TOP OF DEVICE WITH 3/4" CONDUIT TO FIRE ALARM BACKBOX WITH PULLSTRING
- RECESSED 4SD J-BOX W / COVER PLATE FOR FUTURE FIRE ALARM SYSTEM BY OTHERS. MOUNT AT +18" AFF U.O.N. TO CENTERLINE OF BOX AND PROVIDE 1" CO STUB TO ATTIC SPACE WITH PULLSTRING
- S 4SD J-BOX IN ATTIC FOR CEILING MOUNTED SMOKE DETECTOR (DEVICE BY OTHERS). MAXIMUM 21'-0" FROM ANY POINT IN ROOM AND 30'-0" BETWEEN THEM. PROVIDE A 6'-0" CONDUIT FROM EACH J-BOX TO SMOKE DETECTOR LOCATION. PROVIDE 3/4" CONDUIT FROM J-BOX TO FIRE ALARM BACKBOX WITH PULLSTRING (ALARM NOTE #1)
- H 4SD J-BOX IN ATTIC FOR ATTIC MOUNTED HEAT DETECTOR (DEVICE BY OTHERS). MAXIMUM 35'-0" FROM ANY POINT IN ATTIC AND 50'-0" BETWEEN THEM. PROVIDE A 6'-0" CONDUIT FROM EACH J-BOX TO HEAT DETECTOR LOCATION. PROVIDE 3/4" CONDUIT FROM J-BOX TO FIRE ALARM BACKBOX WITH PULLSTRING (ALARM NOTE #1)
- 300 CFM CEILING MOUNTED EXHAUST FAN

△ 4SD J-BOX - 3/4" CO INTO ATTIC SPACE. @ 48" AFF FOR FUTURE PHONE (PHONE - CONNECTION BY OTHERS.)

## ELECTRICAL PANEL

VOLTS: 120/208 V | PANEL: "D-1" | FEED: REAR
MAIN: 100A | LOCATION: INTERIOR ACCESS | MOUNTING: FLUSH

| LOAD | QTY | WATTS AØ | WATTS BØ | BREAKER Amps | P | Circuit | A | B | Circuit | BREAKER Amps | P | WATTS AØ | WATTS BØ | QTY | LOAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RECEPTACLES / GFI | 2 | 360 | | 20 | 1 | 1 | | | 2 | | | | | | |
| INTERIOR/EXTERIOR LIGHTING/EXHAUST FAN | 6 | | 400 | 20 | 1 | 3 | | | 4 | | | | | | |
| INTERIOR/EXTERIOR LIGHTING/EXHAUST FAN | 6 | 400 | | 20 | 1 | 5 | | | 6 | | | | | | |
| | | | | | | 7 | | | 8 | | | | | | |
| | | | | | | 9 | | | 10 | | | | | | |
| | | | | | | 11 | | | 12 | 20 | 1 | | 40 | | ALARM |
| A = 760 WATTS / PHASE | | 760 | 400 | | | | | | | | | | 40 | | B = 440 WATTS / PHASE |
| TOTAL = 1200 WATTS | | 5 | | AMPS | | 120/208 | | | VOLTS | | | 1 Ø | | 3 | WIRE |

## ELECTRICAL PANEL

VOLTS: 120/208 V | PANEL: "E" | FEED: REAR
MAIN: 100A | LOCATION: INTERIOR ACCESS | MOUNTING: FLUSH

| LOAD | QTY | WATTS AØ | WATTS BØ | BREAKER Amps | P | Circuit | A | B | Circuit | BREAKER Amps | P | WATTS AØ | WATTS BØ | QTY | LOAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RECEPTACLES / GFI | 5 | 540 | | 20 | 1 | 1 | | | 2 | 40 | 2 | 4680 | | 1 | 2 TON WALL MOUNTED HVAC UNIT |
| RECEPTACLES / GFI | 4 | | 360 | 20 | 1 | 3 | | | 4 | - | - | | 4680 | - | |
| INTERIOR/EXTERIOR LIGHTING | 7 | 380 | | 20 | 1 | 5 | | | 6 | 25 | 2 | - | | 1 | ~~2 TON ROOF MOUNTED HVAC UNIT (OPTIONAL)~~ |
| INTERIOR/EXTERIOR LIGHTING | 6 | | 320 | 20 | 1 | 7 | | | 8 | - | - | | - | - | |
| | | | | | | 9 | | | 10 | | | | | | |
| | | | | | | 11 | | | 12 | 20 | 1 | | 40 | | ALARM |
| A = 5600 WATTS / PHASE | | 920 | 680 | | | | | | | | | 4680 | 4720 | | B = 5400 WATTS / PHASE |
| TOTAL = 11000 WATTS | | | | 45.8 | | AMPS | 120/208 | | VOLTS | | | 1 Ø | | 3 | WIRE |

## LIGHTING SCHEDULE

MODEL D-1

GIRLS 101: (1 LIGHT FIXTURE) = 62 SYSTEM WATTS

(2) 62 SYSTEM WATTS X .80 = 99.2 / 204 S.F. ROOM = .49 LUMINAIRE WATTS/SF

BOYS 102: (1 LIGHT FIXTURE) = 62 SYSTEM WATTS

(2) 62 SYSTEM WATTS X .80 = 99.2 / 190 S.F. ROOM = .52 LUMINAIRE WATTS/SF

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SILVER CREEK
195 EAST MORGAN PERRIS, CALIFORNIA 92571
PHONE: 951-943-5393 FAX: 951-943-2211

PROJECT NAME:

# CLASS LEASING

SHEET TITLE:

## ELECTRICAL PLAN AND SCHEDULE MODEL D-1 MODEL E

TAVARES & ASSOCIATES
DESIGN CONSULTING PROJECT MGT
Lic. No. C-28354
Exp. 10-31-2013
12/23/2011

ARCHITECT OF RECORD SUBMISSION DATE
REGISTERED ARCHITECT ROBERT A. McNEFF C-10329 STATE OF CALIFORNIA
2-25-14

PROJECT SPECIFIC STATE AGENCY APPROVAL
IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES
04 116975
DATE MAR 2 1 2014

ORIGINAL PC STATE AGENCY APPROVAL
PRE-CHECK (PC) DOCUMENT CONSTRUCTION PROJECT A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED
IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES
PC 04 112137
DATE DEC 2 8 2011

REVISIONS
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12' x 40' PC

PROJECT NO:
DRAWN BY:
SCALE: AS NOTED
DATE: 6-17-11

P.C. SHEET NUMBER
E-1.04

STAMP DIV. OF THE STATE ARCHITECT
APP03 116975
AC FLS SS
DATE MAY 2 4 2016