MESA ELEMENTARY SCHOOL
RELOCATION OF MODULAR CLASSROOMS

409 S. BARRANCA AVE, COVINA, CA 91722

COVINA-VALLEY UNIFIED SCHOOL DISTRICT

DSA NOTES

1. DETERIORATION OR EXISTING NON-COMPLIANT CONSTRUCTION: IF ANY CONDITION IS DISCOVERED WHICH, IF LEFT UNCORRECTED, WOULD MAKE THE BUILDING NON-COMPLIANT WITH THE REQUIREMENTS OF THE EDITION OF THE CBC IN FORCE AT THE TIME OF ORIGINAL CONSTRUCTION, THE CONDITION MUST BE CORRECTED IN ACCORDANCE WITH CURRENT CODE REQUIREMENTS. A CONSTRUCTION CHANGE DOCUMENT (CCD TYPE A), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS DETAILING AND SPECIFYING THE REQUIRED REPAIR WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE REPAIR WORK.

2. THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE SHALL SUBMIT A LETTER CERTIFYING THAT THE BUILDING CONFORMS THE ORIGINALLY APPROVED PLANS AND SPECIFICATIONS AND HAS NOT SUFFERED STRUCTURAL DETERIORATION OR BEEN STRUCTURALLY ALTERED PER DSA IR 16-1.

3. THE FOLLOWING DOCUMENTS SHALL BE ON THE JOBSITE PRIOR TO INSTALLATION OF THE UNIT(S), INCLUDING THE SERIAL NUMBER FOE EACH UNIT.
   - A. IN-PLANT VERIFIED REPORT
   - B. LABORATORY VERIFIED REPORT
   - C. WELDING VERIFIED REPORT

   THE SITE INSPECTOR SHALL VERIFY THE ABOVE DOCUMENTS ARE APPLICABLE TO EACH UNIT PRIOR TO INSTALLATION OF THE UNIT(S).

4. NOTIY ARCHITECT AND THE DIVISION OF THE STATE ARCHITECT FIELD ENGINEER IF ANY DISCREPANCIES OCCUR.

5. IN-PLANT INSPECTOR AND MANUFACTURER SHALL FOLLOW THE REQUIREMENTS OF DSA IR16-1.13 AND INCLUDE THE FOLLOWING INFORMATION ON ID TAG OF SHOP FABRICATED RELOCATABLE STRUCTURES:

a. THE DSA APPLICATON NUMBER AND CBC EDITION UNDER WHICH THE BUILDING CONSTRUCTION WAS AUTHORIZED
b. THE MANUFACTURER OR BUILDER'S NAME:
c. THE SERIAL NUMBER
d. THE DESIGN CLIMATE ZONES
e. THE DESIGN LIVE LOADS FOR THE ROOF AND FLOOR
f. THE DESIGN WIND SPEED AND EXPOSURE CATEGORY
g. THE SEISMIC DESIGN PARAMETER Ss.

ABBREVIATIONS

&	AND	F.O.F.	FACE OF FINISH	R.	RISER
∠	ANGLE	F.O.M.	FACE OF MASONRY	R.B.	RUBBER BASE
@	AT	F.O.S.	FACE OF STUD	RAD.	RADIUS
℄	CENTERLINE	F.O.V.	FACE OF VENEER	REDWD.	REDWOOD
ø	DIAMETER OR ROUND	F.R.A.	FIRE RATED ASSEMBLY	REF.	REFERENCE
		F.R.P.	FIBERGLASS REINFORCED PANELS		
A.B.	ANCHOR BOLT	F.S.	FLOOR SINK	REFR.	REFRIGERATOR
A.F.F.	ABOVE FINISH FLOOR	FT.	FOOT OR FEET	REG.	REGISTER
A.C.	ASPHALTIC CONCRETE	FURR.	FURRING	REINF.	REINFORCEMENT
ADJ.	ADJACENT	GA.	GAUGE	REQ'D.	REQUIRED
ALUM.	ALUMINUM	GALV.	GALVANIZE	RESIL.	RESILIENT
APPROX.	APPROXIMATELY	G.I.	GALVANIZED IRON	REV.	REVERSE
ARCH.	ARCHITECT			RM.	ROOM
BD.	BOARD	GL.	GLASS	R.O.	ROUGH OPENING
BET.	BETWEEN	GLU. LAM.	GLUE LAMINATED	RO.	ROUGH
BLDG.	BUILDING	GND.	GROUND	S.	SOUTH
BLK.	BLOCK	GR.	GRADE	S.B.	SPLASH BLOCK
BLKG.	BLOCKING	GYP.	GYPSUM	S.D.	STORM DRAIN
BM.	BEAM			S.C.	SOLID CORE
CAB.	CABINET	H.B.	HOSE BIBB	SCHED.	SCHEDULE
C.B.	CATCH BASIN	H.M.	HOLLOW METAL	SECT.	SECTION
C.F.	CURB FACE	HORIZ.	HORIZONTAL	SHT.	SHEET
		HR.	HOUR	SIM.	SIMILAR
C.I.	CAST IRON	HT.	HEIGHT	SLI'G.	SLIDING
C.J.	CONTROL JOINT	HTG.	HEATING	SM. F.	SMOOTH FACE
CLG.	CEILING	HDWD.	HARDWOOD	S.M.S.	SHEET-METAL SCREW
C.O.	CONCRETE OPENING	I.D.	INSIDE DIAMETER	SPEC.	SPECIFICATIONS
COL.	COLUMN	INSUL.	INSULATION	SP. F.	SPLIT FACE
COMPO.	COMPOSITION	INT.	INTERIOR	SQ.	SQUARE
CONC.	CONCRETE	INV.	INVERT	S.S.	SERVICE SINK
C.M.U.	CONCRETE MASONRY UNITS	JAN.	JANITOR	SST.	STAINLESS STEEL
CONT.	CONTINUOUS	JT.	JOINT	STAT.	STATIONARY
CONTR.	CONTRACTOR			STD.	STANDARD
CORR.	CORRIDOR	KIT.	KITCHEN	STL.	STEEL
				STRUCT.	STRUCTURAL
DET.	DETAIL	LAB.	LABORATORY	SUSP.	SUSPENDED
D.F.	DRINKING FOUNTAIN	LAM. PLAS.	LAMINATED PLASTIC	S.W.W.	STEEL WINDOW WALL
D.G.	DECOMPOSED GRANITE	LAV.	LAVATORY	SYM.	SYMMETRICAL
DIA.	DIAMETER	LVR.	LOUVER		
DIM.	DIMENSION			T.	TREAD
DIS.	DISPENSER	MAR.	MARBLE	T.B.	TACKBOARD
DIV.	DIVISION	MAT'L.	MATERIAL	T. & B.	TOP & BOTTOM
DN.	DOWN	MAX.	MAXIMUM	T.C.	TOP OF CURB
DBL.	DOUBLE	M.C.	MEDICINE CABINET	T.D.	TOWEL DISPENSER
DFTN.	DRINKING FOUNTAIN	M.C.B.	METAL CORNER BEAD	T.G.	TOP OF GRATE
DRY'S.	DRY STANDPIPE	MECH.	MECHANICAL	T. & G.	TONGUE & GROOVE
D.S.	DOWNSPOUT			T.O.M.	TOP OF MASONRY
DWG.	DRAWING	MET.	METAL	T.O.P.	TOP OF PLATE AT PARAPET
(E)	EXISTING	MFR.	MANUFACTURER	T.O.R.	TOP OF ROOFING
EA.	EACH	MIN.	MINIMUM	T.O.S.	TOP OF SHEATING
E.J.	EXPANSION JOINT	MISC.	MISCELLANEOUS	T.P	TOP OF PAVING
ELEC.	ELECTRIC	M.O.	MASONRY OPENING	T.W.	TOP OF WALL
ELEV.	ELEVATION	MTD.	MOUNTED	TEL.	TELEPHONE
ENT.	ENTRANCE	MUL.	MULLION	TEMP.	TEMPERATURE
EMER.	EMERGENCY			TERR.	TERRAZZO
ENCL.	ENCLOSURE	N.	NORTH	TR.	TRANSOM
EQ.	EQUAL	NAT.	NATURAL	TRANSF.	TRANSFORMER
EQUIP.	EQUIPMENT	N.G.	NATURAL GRADE	TYP.	TYPICAL
EXIST.	EXISTING	N.I.C.	NOT IN CONTRACT		
E.G.	EXISTING GRADE	NO. / #	NUMBER	U.N.O.	UNLESS NOTED OTHERWISE
EXPO.	EXPOSED	NOM.	NOMINAL	U.O.F.	UNDERSIDE OF FRAME
EXP.	EXPANSION	N.T.S.	NOT TO SCALE	UR.	URINAL
EXT.	EXTERIOR				
F.D.	FLOOR DRAIN	O.A.	OVERALL	V.	VENT
F.E.	FIRE EXTINGUISHER	OBS.	OBSCURE	VAR.	VARIES
F.E.C.	FIRE EXTINGUISHER & CABINET	O.C.	ON CENTER	V.C.T.	VINYL COMPOSITION TILE
F.F.	FINISH FLOOR	O.D.	OUTSIDE DIAMETER	VERT.	VERTICAL
F.G.	FINISH GRADE	O.H.	OPPOSITE HAND	VEST.	VESTIBULE
F.H.	FIRE HYDRANT	OPG.	OPENING	V.F.W.C.	VINYL FABRIC WALL COVERING
F.H.W.S.	FLATHEAD WOOD SCREWS	OSA.	OUTSIDE AIR	V.G.D.F.	VERTICAL GRAIN DOUGLAS FIR
FIN.	FINISH	PART.	PARTITION		
F.L.	FLOW LINE	P.C.C.	PORTLAND CEMENT CONCRETE		
FLASH.	FLASHING	P.H.	PANIC HARDWARE	W.	WEST
F.L.F.D.	FUSIBLE LINK FIRE DAMPER	PL.	PLATE	W/	WITH
FLUOR.	FLUORESCENT	P.L.	PROPERTY LINE	W.C.	WATER CLOSET
F.O.C.	FACE OF CONCRETE	PLAS.	PLASTER	WD.	WOOD
				W. GL.	WIRE GLASS
		PLYWD.	PLYWOOD	W.I.	WROUGHT IRON
		PR.	PAIR	W.M.P.	WIRE MESH PARTITION
		P.J.	PLASTIC CONTROL JOINT	WP.	WATERPROOF

SYMBOLS

Detail # / Sheet # — X / XXXX — DETAIL NUMBER

Elevation # / Sheet # — XX / XXXX — EXTERIOR ELEVATION

RENOV/DEMO GENERAL NOTES

1. COORDINATE ALL DEMOLITION WORK WITH REPAIR WORK. COORDINATE ARCHITECTURAL, ELECTRICAL AND MECHANICAL WORK, EACH WITH THE OTHERS, FOR LOCATIONS, EXTENT OF WORK AND SIZES.

2. COORDINATE NEW OPENINGS IN EXISTING WALLS AND FLOORS FOR PIPES AND CONDUITS WITH MECHANICAL AND ELECTRICAL CONSTRUCTION.

3. THE CONTRACTOR SHALL DISPOSE OF ALL REMOVED AND/OR DEMOLISHED MATERIAL, WASTE AND DEBRIS CAUSED BY THE NEW WORK. THIS MATERIAL SHALL BE REMOVED FROM THE PROPERTY AND TAKEN TO A LEGALLY OPERATED DISPOSAL SITE.

4. REMOVAL OF ALL DEBRIS SHALL BE DONE CAREFULLY AND NOT ALLOWED TO FALL AND TO IMPACT EXISTING STRUCTURE, WORK AND/OR FINISHES. REPAIR ANY DAMAGE AFTER REPORTING AND RECEIVING INSTRUCTIONS FOR REMEDIAL WORK.

5. BEFORE PROCEEDING WITH DEMOLITION, THE CONTRACTOR SHALL VERIFY THAT THE REMOVAL OF EXISTING BUILDING COMPONENTS DOES NOT REQUIRE SHORING AND/OR BRACING. WHERE DEMOLITION WORK NECESSITATES THE PROVISION OF SHORING AND/OR BRACING, THE CONTRACTOR SHALL PROVIDE SUCH UNLESS SPECIFICALLY SHOWN OTHERWISE.

6. MATERIALS, EQUIPMENT OR CONSTRUCTIONS NOT NOTED IN THE CONSTRUCTION DOCUMENTS, ARE A PART OF THE WORK, AND IF DISCOVERED DURING THE COURSE OF THE WORK, SHALL BE REPORTED FOR INSTRUCTIONS PRIOR TO REMOVAL OR ABANDON IN PLACE.

7. IN ADDITION TO DEMOLITION SHOWN, CUT, MOVE, DISMANTLE OR SALVAGE ITEMS NECESSARY TO PROVIDE ACCESS TO ALLOW REPAIR WORK TO PROCEED. INCLUDE SUCH ITEMS SUCH AS :
   - A. REPAIR OR REMOVAL OF HAZARDOUS OR UNSANITARY CONDITIONS.
   - B. REMOVAL OF ABANDONED ITEMS AND ITEMS SERVING NO USEFUL PURPOSE SUCH AS ALL ABANDONED PIPING, CONDUIT AND WIRING.
   - C. REMOVAL OF UNSUITABLE OR EXTRANEOUS MATERIALS NOT INDICATED FOR SALVAGE, SUCH AS ABANDONED FURNISHINGS AND EQUIPMENT, AND DEBRIS SUCH AS ROTTED WOOD, RUSTED METALS AND DETERIORATED CONCRETE.
   - D. CLEANING OF ALL SURFACES AND REMOVAL OF SURFACE FINISHES AS NEEDED TO INSTALL NEW WORK AND FINISHES.

8. PATCH, REPAIR AND REFINISH EXISTING ITEMS TO REMAIN TO THE SPECIFIED CONDITION FOR EACH MATERIAL, WITH A CRAFTSMAN LIKE TRANSITION TO ADJACENT NEW ITEMS AND CONSTRUCTION.

9. PATCH AND EXTEND REPAIR WORK TO MEET AND MATCH EXISTING WORK USING SKILLED MECHANICS WHO ARE CAPABLE OF MATCHING EXISTING QUALITY OF WORKMANSHIP. QUALITY OF PATCHED OR EXTENDED WORK SHALL NOT BE LESS THAN THAT SPECIFIED FOR THE NEW WORK.

10. PRODUCTS FOR PATCHING, EXTENDING AND MATCHING: PROVIDE SAME PRODUCT OF TYPES OF CONSTRUCTION AS THAT IN EXISTING STRUCTURE, AS NEEDED TO PATCH, EXTEND OR MATCH EXISTING WORK. GENERALLY CONTRACT DOCUMENTS WILL NOT DEFINE PRODUCTS OF STANDARDS OR WORKMANSHIP PRESENT IN EXISTING CONSTRUCTION. CONTRACTOR SHALL DETERMINE PRODUCTS BY INSPECTION AND TESTING. WORKMANSHIP SHALL MATCH IN ALL RESPECTS THE EXISTING AS A SAMPLE OF COMPARISON.

11. THE PRESENCE OF A PRODUCT, FINISH, OR TYPE OF CONSTRUCTION REQUIRES THAT PATCHING, EXTENDING OR MATCHING SHALL BE PERFORMED AS NECESSARY TO MAKE WORK COMPLETE AND CONSISTENT TO IDENTICAL STANDARDS OF QUALITY.

12. PATCH OR REPLACE ANY PORTION OF AN EXISTING FINISHED SURFACE WHICH IS FOUND TO BE DAMAGED, LIFTED, DISCOLORED OR SHOWS OTHER IMPERFECTIONS WITH MATCHING MATERIAL.
   - A. PROVIDE ADEQUATE SUPPORT OF SUBSTRATE PRIOR TO PATCHING THE FINISH.
   - B. REFINISH PATCHED PORTIONS OF PAINTED OR COATED SURFACES IN A MANNER TO PRODUCE UNIFORM COLOR AND TEXTURE OVER THE ENTIRE SURFACE.
   - C. WHEN EXISTING SURFACE FINISH CANNOT BE MATCHED, REFINISH ENTIRE SURFACE TO NEAREST INTERSECTIONS.

13. WHEN NEW WORK ABUTTS OR FINISHES FLUSH WITH EXISTING WORK, MAKE A SMOOTH AND CRAFTMAN LIKE TRANSITION. PATCHED WORK SHALL MATCH EXISTING AND ADJACENT WORK IN THE MATERIAL, FINISH, TEXTURE AND APPEARANCE SO THE PATCH AND TRANSITION IS INVISIBLE AT A DISTANCE OF SIX FEET WHEN VIEWED FROM ALL ANGLES BETWEEN 90 AND 45 DEGREES TO THE PLANE OF THE HATCH.

14. ALL ADJACENT WORK AND CONSTRUCTIONS DAMAGED DUE TO DEMOLITION SHALL BE REPAIRED AS PART OF THIS CONTRACT.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXPOSED EXISTING STRUCTURES AT THE WORK AREA FROM WEATHER AND OTHER INCLEMENT CONDITIONS AND FROM THE INSTALLATION OF OTHER WORK. ANY DAMAGE INCURRED DUE TO FAILURE BY THE CONTRACTOR TO PROPERLY PROTECT SUCH WORK, SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.

16. CONTRACTOR SHALL INCLUDE THE REMOVAL OF ALL ITEMS WITHIN THE WALLS, OR PORTIONS OF WALLS BEING REMOVED IN HIS SCOPE OF WORK. ABANDONED CONDUIT AND PIPING EXTENDING FROM THE CONCRETE SLAB SHALL BE REMOVED AND CAPPED PROPERLY.

GENERAL NOTES

1. VERIFY ALL DIMENSIONS, LOCATIONS OF EXISTING UTILITIES, AND CONDITIONS ON THE JOB SITE PRIOR TO THE START OF WORK OR PORTIONS OF THE WORK. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THE ACTUAL FIELD CONDITIONS AND THE CONSTRUCTION DOCUMENTS. EXISTING CONDITIONS ARE INDICATED AS A RESULT OF FIELD OBSERVATIONS, INFORMATION SHOWN ON AVAILABLE DOCUMENTS AND FIELD CONDITIONS AT THE TIME OF PREPARATION.

2. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ALL GOVERNING CODES, ORDINANCES, REGULATIONS AND LAWS.

3. THE DESIGN ADEQUACY AND SAFETY OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS AND SCAFFOLDING IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

4. WHERE ANY CONFLICT OCCURS BETWEEN THE REQUIREMENTS OF LAWS, CODES, ORDINANCES, RULES AND REGULATIONS, THE MOST STRINGENT SHALL GOVERN.

5. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS.

6. DETAILS MARKED 'TYPICAL' SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY NOTED OTHERWISE.

7. WHERE NO SPECIFIC DETAIL IS SHOWN, THE FRAMING OR CONSTRUCTION SHALL BE IDENTICAL OR SIMILAR TO THAT INDICATED FOR LIKE CASES OF CONSTRUCTION.

8. ENACT ALL MEASURES TO PROTECT AND SAFEGUARD ALL EXISTING ELEMENTS TO REMAIN FROM BEING DAMAGED. REPLACE OR REPAIR EXISTING ELEMENTS DAMAGED BY THE EXECUTION OF THIS CONTRACT TO EQUAL OR BETTER CONDITION.

9. CONTRACTOR SHALL COORDINATE BETWEEN THE REQUIREMENTS OF ALL DISCIPLINES HEREIN AND BETWEEN DRAWING AND SPECIFICATION REQUIREMENTS IN ORDER THAT ALL ITEMS RELATE TO ONE ANOTHER. NOTIFY ARCHITECT IMMEDIATELY REGARDING ANY ITEMS NOT COORDINATED.

10. KEYNOTES DO NOT DESCRIBE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES. NO TRADE JURISDICTIONAL ALLOCATION OF THIS WORK IS INTENDED BY THE SUBDIVISION OF THE KEYNOTES. IT SHALL BE THE CONTRACTORS SOLE RESPONSIBILITY TO SUBDIVIDE THE WORK IN THE MANNER HE DEEMS NECESSARY.

11. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS TO WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR). SHOULD ANY EXISTING CONDITIONS DEVELOP NOT COVERED BY THE CONTRACT DOCUMENTS SUCH THAT THE FINISHED WORK WILL NOT COMPLY WITH SAID TITLE 24, CALIFORNIA CODE OF REGULATIONS, A CHANGE ORDER DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA-AC'S BEFORE PROCEEDING WITH THE WORK.

12. CONTRACTOR SHALL STOP WORK AND NOTIFY ARCHITECT IMMEDIATELY IF ANY ASBESTOS CONTAINING MATERIAL (ACM) OR SUSPECTED ACM IS FOUND DAMAGED OR DISTURBED.

13. CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE TO AVOID EXISTING DUCTS, PIPING, CONDUIT, ETC. AND TO PREVENT HAZARD TO PERSONNEL AND/OR TO EXISTING UNDERGROUND UTILITIES OR STRUCTURES. THE DESIGN PROFESSIONALS ARE NOT RESPONSIBLE FOR THE LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES, WHETHER OR NOT SHOWN ON AND INSTALLED BY THESE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DISTRICT SHOULD SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED. THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.

14. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY A CONSTRUCTION CHANGE DIRECTIVE (CCD) APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR.

15. A CLASS 1 PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTIONS 4-342, PART 1, TITLE 24, CCR.

16. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.

17. UNLESS SPECIFICALLY SHOWN ON THESE PLANS NO STRUCTURAL MEMBER SHALL BE CUT, NEITHER DRILLED NOR NOTCHED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE STRUCTURAL ENGINEER AND THE DIVISION OF THE STATE ARCHITECT.

18. PROVIDE CONSTRUCTION AND FIRE SAFETY PER CFC & CBC CHAP. 33.

19. A COMPLETE AND LEGIBLE COPY OF TITLE 24, PARTS 1 THROUGH 5, CCR, MUST BE KEPT ON SITE DURING CONSTRUCTION.

20. ALL WORK SHALL CONFORM TO TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)

SHEET INDEX

TOTAL SHEETS: 36

GENERAL
G001 TITLE SHEET
G002 FIRE ACCESS SITE PLAN

CIVIL
C001 FIRE HYDRANT INSTALLATION PLAN
C002 FIRE HYDRANT INSTALLATION DETAILS
C003 FIRE HYDRANT INSTALLATION PLAN – SPECIFICATIONS
C004 FIRE HYDRANT INSTALLATION PLAN – SPECIFICATIONS
C005 FIRE HYDRANT INSTALLATION PLAN – SPECIFICATIONS

ARCHITECTURAL
A001 OVERALL SITE PLAN
A002 ENLARGED SITE PLAN AND SITE DETAILS
A003 SITE DETAILS
A301 ENLARGED PLANS AND INTERIOR ELEVATIONS

ELECTRICAL
E000 ELECTRICAL SYMBOLS LIST
E001 SITE ELECTRICAL PLAN
E101 RELOCATABLE BUILDINGS ELECTRICAL PLAN
E201 SINGLE LINE DIAGRAM
E301 DETAILS
E401 ELECTRICAL SPECIFICATIONS
E402 ELECTRICAL SPECIFICATIONS
E403 ELECTRICAL SPECIFICATIONS
EFA001 FIRE ALARM SYMBOLS LIST AND GENERAL NOTES
EFA002 FIRE ALARM SYSTEM DETAILS
EFA003 FIRE ALARM RISER DIAGRAM AND SYSTEM CALCULATIONS
EFA101 RELOCATABLE BUILDINGS FIRE ALARM PLAN
SCS001 FACEPLATE AND IDF RACK DETAILS
SCS101 LOW VOLTAGE SYSTEMS BLOCK DIAGRAMS AND NOTES

MODULAR DRAWINGS RELOCATE BUILDING 24'X40' (A#61957, STOCKPILE#13, SERIAL# 14602-03, 14592-93, 14596-97, 14598-99)
A0 TITLE SHEET
A1.0 FLOOR PLAN/ROOF PLAN
A2.0 INT/EXTERIOR ELEVATIONS
A6.0 WALL FRAMING DETAILS
S2.0 ROOF/FLOOR FRAMING PLAN
S3.0 STRUCTURAL ELEVATIONS AND DETAILS
S4.0 STRUCTURAL DETAILS
M1.0 MECHANICAL PLAN
E1.0 ELECTRICAL PLAN

SITE RELOCATION PLANS – CONCRETE FOUNDATIONS (PC#04-113776)
C1.0 STOCKPILE CLASSROOM RELOCATION FOUNDATION PLAN AND DETAILS
C2.1 24X50 – 50+20 PSF FOUNDATION PLAN AND DETAILS

A/E STATEMENT

FOR ARCHITECTS/ENGINEERS WHO UTILIZE PLANS, INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, PREPARED BY OTHER LICENSED DESIGN PROFESSIONALS AND/OR CONSULTANTS

APPLICATION NO. 61957

■ THE DRAWINGS OR SHEETS LISTED ON THE COVER OR INDEX SHEET
☐ THIS DRAWING, PAGE OF THE SPECIFICATIONS/CALCULATIONS

HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAS BEEN EXAMINED BY ME FOR:

1. DESIGN INTENT AND APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS AND THE PROJECT SPECIFICATIONS PREPARED BY ME, AND
2. COORDINATION WITH MY PLANS AND SPECIFICATIONS AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT.

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS, DUTIES AND RESPONSIBILITIES UNDER SECTIONS 17302 AND 81138 OF THE EDUCATION CODE AND SECTIONS 4-336, 4-341 AND 4-344" OF TITLE 24, PART 1. (TITLE 24, PART 1, SECTION 4-317 (b)).

I FIND THAT ■ ALL DRAWINGS LISTED ON THE COVER OR INDEX SHEET ☐ THIS DRAWING OR PAGE

■ IS/ARE IN CONFORMANCE WITH THE PROJECT DESIGN, AND HAS BEEN COORDINATED WITH THE PROJECT PLANS AND SPECIFICATIONS

SIGNATURE — DATE 9.20.16

ARCHITECT OR ENGINEER DESIGNATED TO BE IN RESPONSIBLE CHARGE

DAVID M. BANNON — PRINT NAME

C25904 — LICENSE NUMBER

JULY 31, 2017 — EXPIRATION DATE

☐ IS/ARE IN GENERAL CONFORMANCE WITH THE PROJECT DESIGN INTENT, AND ☐ HAS/HAVE BEEN COORDINATED WITH THE PROJECT PLANS AND SPECIFICATIONS

SIGNATURE — DATE

ARCHITECT OR ENGINEER DELEGATED RESPONSIBILITY FOR THIS PORTION OF THE WORK

PRINT NAME

LICENSE NUMBER — EXPIRATION DATE

APPLICABLE CODES

PARTIAL LIST OF APPLICABLE CODES AS OF January 1, 2014

2013 California Building Standards Administrative Code, Part 1, Title 24 C.C.R.
2013 California Building Code (CBC), Part 2, Title 24 C.C.R.
(2012 International Building Code 2013 California Amendments)
2013 California Electrical Code (CEC), Part 3, Title 24 C.C.R.
(2011 National Electrical Code and 2013 California Amendments)
2013 California Mechanical Code (CMC), Part 4, Title 24 C.C.R.
(2012 Uniform Mechanical Code and 2013 California Amendments)
2013 California Plumbing Code (CPC), Part 5, Title 24 C.C.R.
(2012 Uniform Plumbing Code and 2013 California Amendments)
2013 California Energy Code (CEC), Part 6, Title 24 C.C.R.
2013 California Fire Code, Part 9, Title 24 C.C.R.
(2012 International Fire Code and 2013 California Amendments)
2013 California Green Building Standard Code (CALGreen), Part 11, Title 24 C.C.R.
2013 California Referenced Standards Code, Part 12, Title 24 C.C.R.
Title 19, C.C.R., Public Safety, State Fire Marshall Regulations

PARTIAL LIST OF APPLICABLE STANDARDS

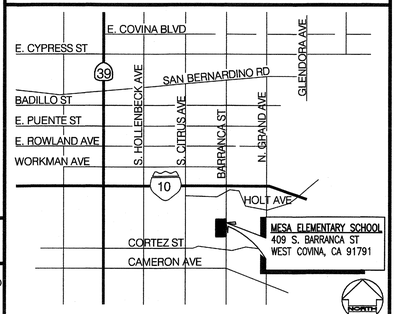
NFPA 13 – Automatic Sprinkler Systems,	2013 Edition
NFPA 14 – Standpipes Systems, (CA Amended)	2013 Edition
NFPA 17o – Wet Chemical Systems	2013 Edition
NFPA 20 – Stationary Pumps	2013 Edition
NFPA 24 – Private Fire Mains, (CA Amended)	2013 Edition
NFPA 72 – National Fire Alarm Codes, (CA Amended)	2013 Edition
NFPA 80 – Fire Door and Other Opening Protectives	2013 Edition
NFPA 2001 – Clean Agent Fire Extinguishing Systems	2012 Edition

Reference code section for NFPA Standards– 2013 CBC (SFM) Chapter 35. See Chapeter 35 for State of California amendments to NFPA standars.

PROJECT DESCRIPTION

RELOCATION OF FOUR (4) 24'X40' RELOCATABLE CLASSROOM BUILDINGS. (A#61957, SERIAL#'S 14602-03, 14592-93, 14596-97, 14598-99) FROM STOCKPILE#13 TO MESA ELEMENTARY SCHOOL. SCOPE OF WORK INCLUDES ASSOCIATED SITE WORK, ELECTRICAL, POWER AND SIGNAL, AND FIRE ALARM AS IDENTIFIED IN THE DRAWINGS. RESTROOM UPGRADES TO BUILDING B MENS AND WOMENS RESTROOMS AND BUILDING D BOYS AND GIRLS RESTROOMS.

VICINITY MAP



DIRECTORY

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TEL: 626.974.7076
CONTACT: JEFF BLOEDORN

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GHATAODE BANNON ARCHITECTS
760 W. 16TH STREET, UNIT B
COSTA MESA, CA 92627
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FAX: 714.665.8029
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GHATAODE BANNON ARCHITECTS
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IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP 03 117500
AC FLS ESS BY
Date SEP 21 2016

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA ST, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

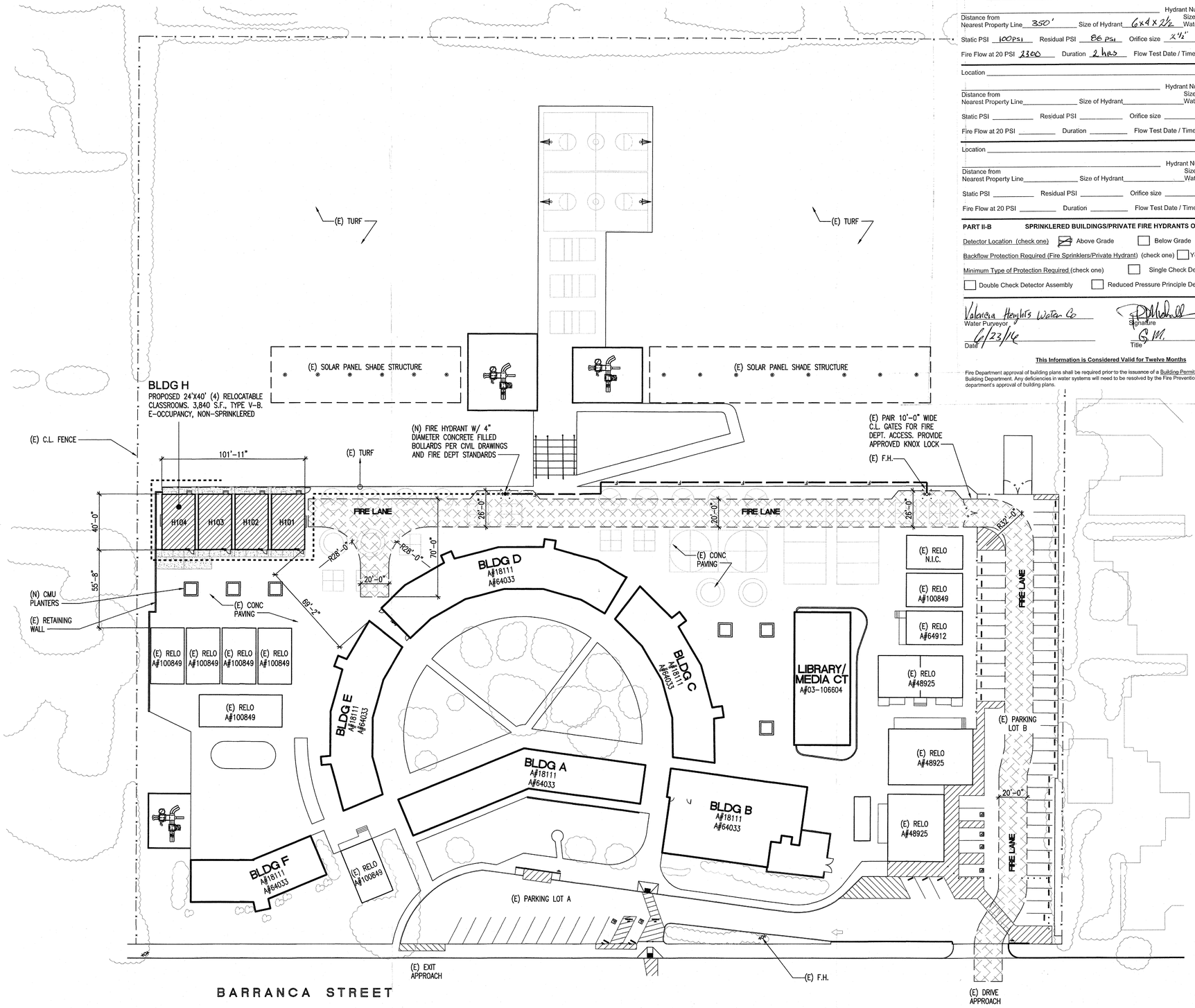
TITLE SHEET

REVISIONS:
1
2
3
4
5
6
7
8

Date: 09/21/16
Job: 1633
Scale: N.T.S.
Drawn:

G001

SHEET OF XXX
XREF:



'PLAN REVIEWED'
By
PE Consulting Group
X Approved ☐ Not Approved
By: [signature] Date: 9-2-16

PART II-A **INFORMATION ON FIRE FLOW AVAILABILITY**
(To be completed by Water Purveyor)

Location 409 S. Barranca St. Rear of school
Hydrant Number —
Distance from Nearest Property Line 350' Size of Hydrant 6x4x2½ Size of Water main 8" line
Static PSI 100psi Residual PSI 86 psi Orifice size 2½" Pitot 30
Fire Flow at 20 PSI 2300 Duration 2 hrs Flow Test Date / Time 6/23/16

Location
Hydrant Number
Distance from Nearest Property Line Size of Hydrant Size of Water main
Static PSI Residual PSI Orifice size Pitot
Fire Flow at 20 PSI Duration Flow Test Date / Time

Location
Hydrant Number
Distance from Nearest Property Line Size of Hydrant Size of Water main
Static PSI Residual PSI Orifice size Pitot
Fire Flow at 20 PSI Duration Flow Test Date / Time

PART II-B **SPRINKLERED BUILDINGS/PRIVATE FIRE HYDRANTS ONLY**

Detector Location (check one) ☒ Above Grade ☐ Below Grade ☐ Either
Backflow Protection Required (Fire Sprinklers/Private Hydrant) (check one) ☐ Yes ☐ No N/A
Minimum Type of Protection Required (check one) ☐ Single Check Detector Assembly
☐ Double Check Detector Assembly ☐ Reduced Pressure Principle Detector Assembly

Valencia Heights Water Co — Water Purveyor
[signature] — Signature
6/23/16 — Date
GM — Title

This Information is Considered Valid for Twelve Months

Fire Department approval of building plans shall be required prior to the issuance of a Building Permit by the jurisdictional Building Department. Any deficiencies in water systems will need to be resolved by the Fire Prevention Division only prior to this department's approval of building plans.

LOCAL FIRE AUTHORITY REVIEW

DSA 810

LOCAL FIRE AUTHORITY REVIEW

To facilitate the Division of the State Architect's (DSA) approval of the Fire/Life Safety portion of a project, DSA requires Local Fire Authority (LFA) review of certain elements as identified in this form. Use of this form is mandatory for projects that add square footage to a campus or if any item on this form is relevant to the project. For additional information, see DSA 810 Instructions and DSA Policy 09-01.

PROJECT INFORMATION

School District/Owner: COVINA-VALLEY UNIFIED SCHOOL DISTRICT
Project Name/School: MESA ELEMENTARY SCHOOL MODULAR CLASSROOMS
Project Address: 409 S. BARRANCA AVENUE, WEST COVINA CA 91791

LOCAL FIRE AUTHORITY (LFA)

LFA Agency Name: West Covina Fire Department
LFA Reviewer Name: Title:
Email: Telephone Number:
I have reviewed and responded to the applicable items for this project as listed below.
Note: Only sign this form when it is imaged onto the site plan. A loose form is not acceptable to DSA.
LFA Reviewer's Signature: **Date:**
Review Key: "Y" = Complies with LFA requirements "N" = Not approved (complete Section 8)
"NA" = Not applicable to the project "NR" = LFA elects not to review

	Description	Y	N	NA	NR
1	Where an elevator does not meet medical emergency service cab size, per the California Building Code (CBC), use of stairways for emergency rescue and patient transport is acceptable.			X	
2	Access roads, fire lane markings, pavers and gate entrances are in accordance with Title 19, California Code of Regulations and the California Fire Code, Chapter 5.	X			
3	Fire hydrant location and distribution complies with the California Fire Code (or see # 4).	X			
4	Fire hydrant location and distribution complies with NFPA 1142, "Alternate Means." If "NR" is checked, DSA can only approve on-site water storage as an alternate. The signature of the school district official is required to acknowledge the use of alternate means.			X	
	Signature of School District Official: **Date:** **Print the School District Official's Name:**				
5	The location(s) of the proposed post indicator valve and fire department connection meet the requirements of this jurisdiction.			X	
6	The location(s) of the detector check valve assembly meet the requirements of this jurisdiction.			X	
7	Is the project located in a hazard severity zone area? (CBC, Chapter 7A, Section 701A.) ☐ Yes ☒ No Check type if "Yes": ☐ Moderate ☐ High ☐ Very High ☐ WIFA (if one of these boxes is checked, the project design must meet the requirements of Chapter 7A.)				
8	COMMENTS (note deficiencies):				

DSA 810 (rev 05-12-14) DIVISION OF THE STATE ARCHITECT — DEPARTMENT OF GENERAL SERVICES — Page 1 of 1 STATE OF CALIFORNIA

SITE PLAN LEGEND

- EXISTING BUILDINGS – NOT IN SCOPE
- PROPOSED PRE-MANUFACTURED MODULAR BUILDINGS
- (E) FIRE LANE – 20'-0" WIDE MIN.
  1. FIRE LANE SHALL BE PAINTED OSHA SAFETY RED, 4" WIDE STRIPING.
  2. "FIRE LANE – NO PARKING" SHALL BE PAINTED ON TOP OF FIRE LANE STRIPING IN 3" WHITE LETTERING AT A SPACING OF 30' ON CENTER OR PORTION THEREOF, PER GRAPHIC BELOW.

4" 3" FIRE LANE – NO PARKING

- EXISTING FIRE HYDRANT
- NEW FIRE HYDRANT – SEE CIVIL DRAWINGS
- THEORETICAL 400' HYDRANT HOSE RUN PER CFC 507.5.1
- F—F (N) 6" UNDERGROUND FIREWATER PIPING

FIRE ACCESS NOTES

1. 13'-6" MIN. HEIGHT OVER FIRE LANE.
2. FIRE ACCESS LANE ON PAVED ROAD ONLY.
3. FIRE LANE TURN AROUND RADIUS 32' MIN.
4. FIRE LANE WIDTH – 20' MIN.

BUILDING FIRE FLOW DATA

BUILDING:	AREA (SF):
BUILDING H	3,840 S.F.
FIRE FLOW REQ. (CFC TABLE B105.1)	1,750 GPM
QTY. OF HYDRANTS REQ. (CFC C105.1)	1
AVAILABLE FLOW ONSITE	2,300 GPM @ 20psi . . OK

West Covina Fire Prevention Bureau
Approval (Conditional)
This certifies that these plans or specifications have been checked for substantial compliance with the applicable codes, laws, and regulations. This approval shall not be construed as granting violation of any applicable code, law, or regulation and shall not prevent the Fire Official from requiring the correction of errors in said plans or specifications thereafter.
Certified by: [signature] Date: 9/1/16

FIRE ACCESS SITE PLAN | 1 | 1"=30'-0"

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8/31/16

Architect Seal

Consultant Seal

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP 03 117500
AC FLS SS
Date SEP 21 2016

FIRE EXPEDITE

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA ST, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

FIRE ACCESS SITE PLAN
JOB COPY

RESUBMITTAL 2nd

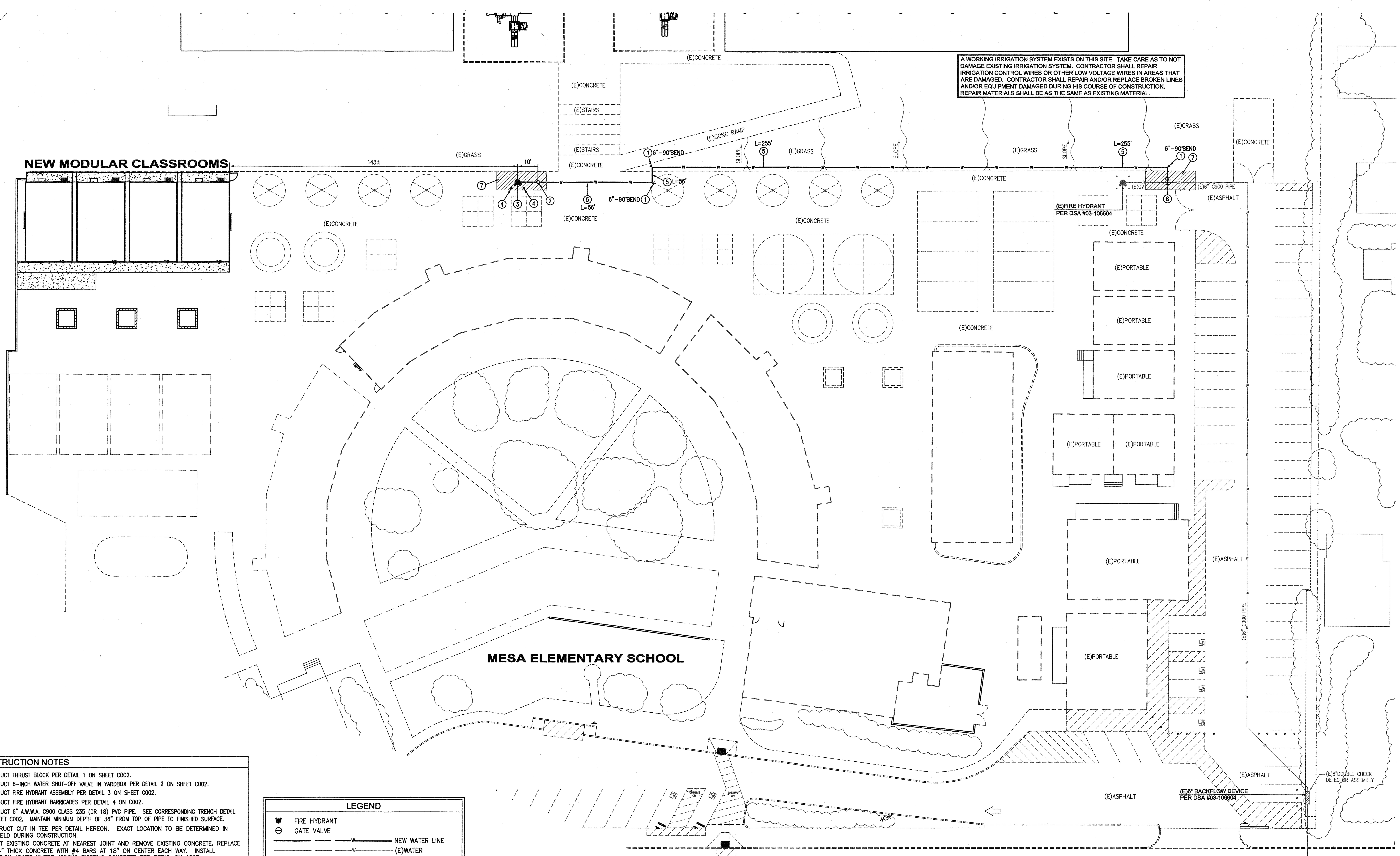
REVISIONS:
1 2 3 4 5 6 7 8

Date: 08/24/16
Job: 1633
Scale:
Drawn:

G002

SHEET – OF XXX
XREF:

File - D333



A WORKING IRRIGATION SYSTEM EXISTS ON THIS SITE. TAKE CARE AS TO NOT DAMAGE EXISTING IRRIGATION SYSTEM. CONTRACTOR SHALL REPAIR IRRIGATION CONTROL WIRES OR OTHER LOW VOLTAGE WIRES IN AREAS THAT ARE DAMAGED. CONTRACTOR SHALL REPAIR AND/OR REPLACE BROKEN LINES AND/OR EQUIPMENT DAMAGED DURING HIS COURSE OF CONSTRUCTION. REPAIR MATERIALS SHALL BE AS THE SAME AS EXISTING MATERIAL.

CONSTRUCTION NOTES

1. CONSTRUCT THRUST BLOCK PER DETAIL 1 ON SHEET C002.
2. CONSTRUCT 6-INCH WATER SHUT-OFF VALVE IN YARDBOX PER DETAIL 2 ON SHEET C002.
3. CONSTRUCT FIRE HYDRANT ASSEMBLY PER DETAIL 3 ON SHEET C002.
4. CONSTRUCT FIRE HYDRANT BARRICADES PER DETAIL 4 ON C002.
5. CONSTRUCT 6" A.W.W.A. C900 CLASS 235 (DR 18) PVC PIPE. SEE CORRESPONDING TRENCH DETAIL ON SHEET C002. MAINTAIN MINIMUM DEPTH OF 36" FROM TOP OF PIPE TO FINISHED SURFACE.
6. CONSTRUCT CUT IN TEE PER DETAIL HEREON. EXACT LOCATION TO BE DETERMINED IN THE FIELD DURING CONSTRUCTION.
7. SAWCUT EXISTING CONCRETE AT NEAREST JOINT AND REMOVE EXISTING CONCRETE. REPLACE WITH 4" THICK CONCRETE WITH #4 BARS AT 18" ON CENTER EACH WAY. INSTALL EXPANSION JOINTS WHERE JOINING EXISTING CONCRETE PER DETAIL ON A003.

LEGEND

- FIRE HYDRANT
- GATE VALVE
- NEW WATER LINE
- (E)WATER

NOTES FOR UNDERGROUND PIPING FOR PRIVATE HYDRANTS

1. INSPECTIONS ARE REQUIRED: 1) PRIOR TO POURING THRUST BLOCKS, 2) FOR HDYROSTATIC TESTING, AND 3) FOR FLUSH.
2. INSTALLATION, INSPECTION, AND TESTING SHALL CONFORM TO 2013 EDITIONS CFC, NFPA 13 AND NFPA 24.
3. FIRE HYDRANT SUPPLY PIPING SHALL BE A MINIMUM OF SIX INCHES IN DIAMETER. THE CENTER OF THE HOSE OUTLET SHALL BE NOT LESS THAN 18" ABOVE FINAL GRADE OR, WHERE LOCATED IN A HOUSE, 12" ABOVE THE FLOOR. NFPA 24, 7.1.1 & 7.3.3.
4. A KEYED GATE VALVE SHALL BE PROVIDED FOR EACH HYDRANT IN AN ACCESSIBLE LOCATION. VALVES SHALL NOT BE LOCATED IN PARKING STALLS. NFPA 24, 7.1.1.1.
5. ALL BOLTED JOINTS SHALL BE CLEANED AND THOROUGHLY COATED WITH ASPHALT OR OTHER CORROSION RETARDING MATERIAL AFTER INSTALLATION. NFPA 24, 10.3.6.2.
6. BACKFILL SHALL BE WELL TAMPED LAYERS TO CONSIST OF 6" MINIMUM BED OF CLEAN FILL SAND OR PEA GRAVEL BELOW AND 12" ABOVE THE PIPE (TOTAL 18" MINIMUM). NFPA 24, 10.9.1.
7. FITTINGS SHALL BE OF AN APPROVED TYPE. NFPA 24, 10.2.1.
8. A MINIMUM OF 30" OF COVER, FROM FINISH GRADE TO THE TOP OF THE PIPE, SHALL BE PROVIDED. WHEN SURFACE LOADS ARE EXPECTED, A MINIMUM OF 36" COVER SHALL PROVIDED. NFPA 24, 10.4.4.
9. THRUST BLOCKS, OR OTHER APPROVED METHOD OF THRUST RESTRAINT, SHALL BE PROVIDED WHEREVER PIPE CHANGES DIRECTION. BACK-FILL BETWEEN THE JOINTS TO PREVENT MOVEMENT OF THE PIPE. PROVIDE DETAILS AND CALCULATIONS FOR SIZING THRUST BLOCKS BASE ON ACTUAL SOIL CONDITIONS. NFPA 24, 10.8.
10. A HYDROSTATIC TEST (200 PSI FOR TWO HOURS OR 50 PSI OVER MAXIMUM STATIC PRESSURE, WHICHEVER IS GREATER) SHALL BE PERFORMED. NFPA 24, 10.10.2.2.1.
11. TEST SHALL BE MADE BY THE INSTALLING CONTRACTOR IN THE PRESENCE OF THE (AHJ). PROVIDE A COMPLETED CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING TO DSA. NFPA 24, 10.10.1 & 14.1, CFC 901.5 & 6.

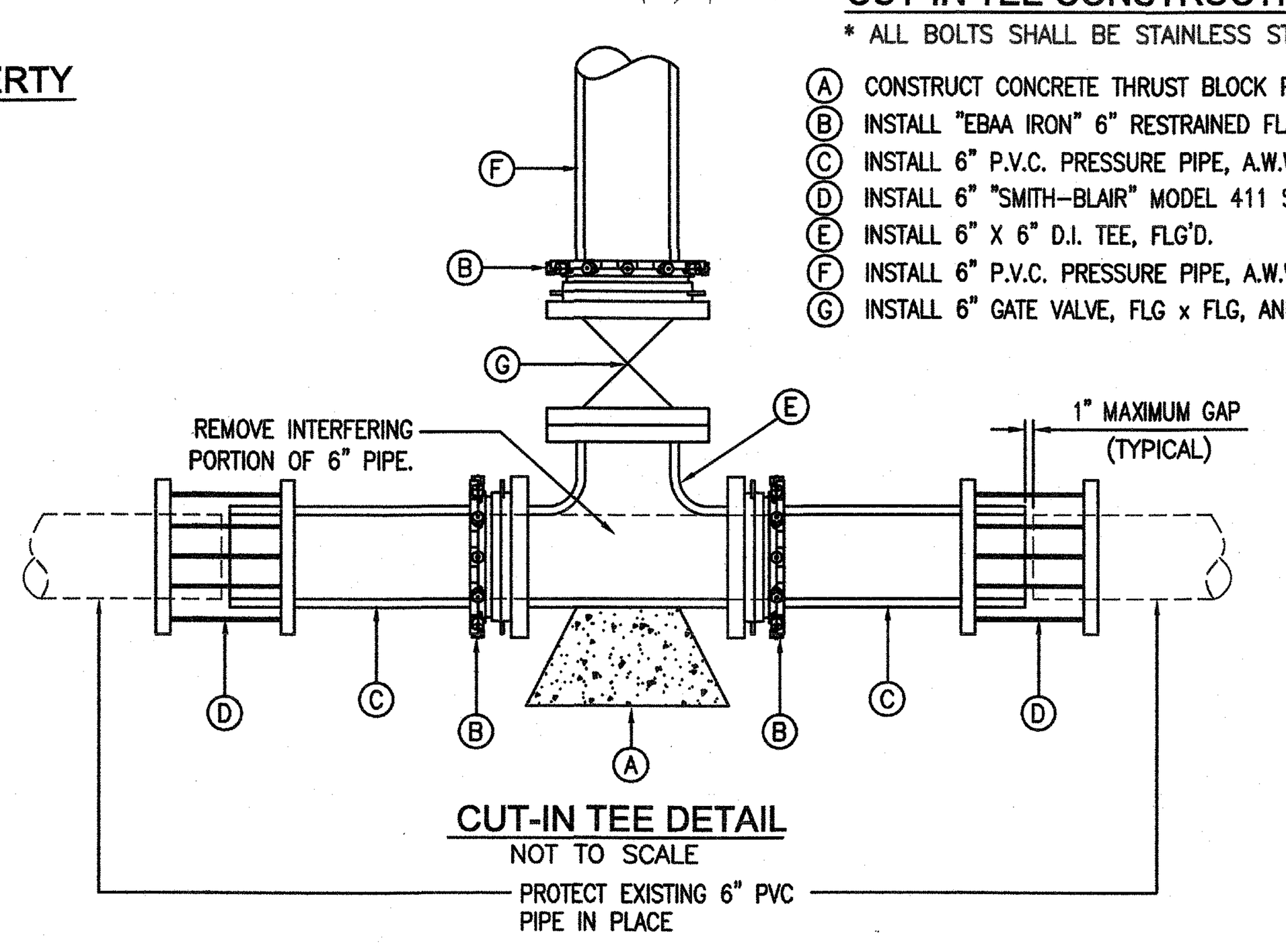
2013 NFPA 24 UNDERGROUND FIRE SERVICE NOTES ON SCHOOL PROPERTY

1. NFPA 24, SEC. 10.1.6, TABLE 10.1.1: ALL FERROUS METAL PIPE SHALL BE LINED, AND STEEL PIPE SHALL BE COATED AND WRAPPED WITH JOINTS FIELD-COATED AND WRAPPED AFTER ASSEMBLY, FOR BURIED PIPE, GALVANIZING, INTERNALLY OR EXTERNALLY, DOES NOT MEET THE REQUIREMENTS OF THIS SECTION.
2. NFPA 24, SEC. 10.3.5.2: ALL BOLTED JOINT ACCESSORIES SHALL BE CLEANED AND THOROUGHLY COATED WITH ASPHALT OR OTHER CORROSION-RETARDING MATERIAL AFTER INSULATION.
3. NFPA 24, SEC. 10.8.3.5: AFTER INSTALLATION, RODS, NUTS, BOLTS, WASHERS, CLAMPS, AND OTHER RESTRAINING DEVICES, EXCEPT THRUST BLOCKS, SHALL BE CLEANED AND THOROUGHLY COATED WITH A BITUMINOUS OR OTHER ACCEPTABLE CORROSION RETARDING MATERIAL.
4. NFPA 24, SEC. 10.8.2: THRUST BLOCKS SHALL BE A CONCRETE MIX NOT LEANER THAN ONE PART CEMENT, TWO AND ONE-HALF PARTS SAND, AND FIVE PARTS STONE. THRUST BLOCKS SHALL BE PLACED BETWEEN UNDISTURBED EARTH AND THE FITTING TO BE RETRAINED, AND SHALL BE BEARING AS TO ENSURE ADEQUATED RESISTANCE TO THE THRUST TO BE ENCOUNTERED. IN GENERAL, THRUST BLOCKS SHALL BE SO PLACED THAT THE JOINTS WILL BE ACCESSIBLE FOR INSPECTION AND REPAIR.
5. NFPA 24, SEC. 10.10.1: UNDERGROUND MAINS SHALL BE COMPLETELY FLUSHED TO REMOVE FOREIGN MATERIALS THAT MIGHT HAVE ENTERED THE MAIN DURING THE COURSE OF THE INSTALLATION PER TABLE 10.10.1 TO PRODUCE A VELOCITY OF 10 FEET PER SECOND IN PIPES (WITNESSED BY THE INSPECTOR OF RECORD). LOCAL FIRE JURISDICTION SHALL BE NOTIFIED OF DATE AND TIME OF TESTING SO THEY MAY OBSERVE THE TESTING WHEN DESIRED.
6. NFPA 24, SEC. 10.10.2.2.4, FIGURE 10.10.1: ALL NEW PRIVATE UNDERGROUND FIRE SERVICE MAINS SHALL BE TESTED HYDROSTATICALLY AT NOT LESS THAN 200-PSI PRESSURE FOR A MINIMUM OF TWO HOURS (WITNESSED BY THE INSPECTOR OF RECORD). LOCAL FIRE JURSDICTION SHALL BE NOTIFIED OF DATE AND TIME OF TESTING AND SHALL OBSERVE AND/OR ASSIST IOR WHEN POSSIBLE. THE AMOUND OF LEAKAGE IN BURIED PIPING SHALL BE MEASURED AT THE SPECIFIED TEST PRESSURE BY PUMPING FROM CALIBRATED CONTAINER, FOR NEW PIPE, THE AMMOUNT OF LEAKAGE AT THE JOINTS SHALL NOT EXCEED TWO-QUARTS PER HOUR PER 100 GASKETS OR JOINTS IRRESPECTIVE OF PIPE DIAMETER. NO VISIBLE LEAKAGE SHALL BE ALLOWED IN ABOVEGROUND PIPING. HYDROSTATIC TESTS SHALL BE MADE BEFORE THE JOINTS ARE COVERED SO THAT ANY LEAKS MAY BE READILY DETECTED.
7. NFPA 24, SEC. 10.10.1: BEFORE ASKING FINAL APPROVAL OF AN INSTALLATION BY THE IOR, RETRAINING DEVICES, EXCEPT THRUST BLOCKS SHALL BE CLEANED AND TESTED AND MATERIAL AND TEST CERTIFICATE SUBMITTED TO THE IOR. A TYPICAL CERTIFICATED IS SHOWN IN FIGURE 10.10.1 THIS FORM SHALL BE GIVEN TO THE IOR.

CUT-IN TEE CONSTRUCTION NOTES:

* ALL BOLTS SHALL BE STAINLESS STEEL TYPE 316.

- (A) CONSTRUCT CONCRETE THRUST BLOCK PER DETAIL 1 ON C002.
- (B) INSTALL "EBAA IRON" 6" RESTRAINED FLANGE ADAPTER, SERIES 2106.
- (C) INSTALL 6" P.V.C. PRESSURE PIPE, A.W.W.A. C900, CL-235, MINIMUM LENGTH 18"
- (D) INSTALL 6" "SMITH-BLAIR" MODEL 411 STEEL COUPLING WITH 10" SLEEVE, OR EQUAL.
- (E) INSTALL 6" X 6" D.I. TEE, FLG'D.
- (F) INSTALL 6" P.V.C. PRESSURE PIPE, A.W.W.A. C900, CL-235.
- (G) INSTALL 6" GATE VALVE, FLG x FLG, AND VALVE BOX ASSEMBLY PER DETAIL 2 ON C002.



CUT-IN TEE DETAIL
NOT TO SCALE

NOTE: MECHANICAL RESTRAINT DEVICES & COUPLINGS SHALL BE WRAPPED WITH 3 LAYERS OF 8-MIL POLYETHYLENE AFTER ASSEMBLY.

BARRANCA STREET

SCALE: 1" = 20'

CONTRACTOR SHALL RESTRIPE ALL AREAS OF PAVEMENT DAMAGED OR REMOVED DURING THE COURSE OF HIS CONSTRUCTION TO MATCH EXISTING.

WARNING: CONTRACTOR TO TAKE EXTREME CARE NOT TO DISTURB EXISTING UNDERGROUND PIPES / CONDUITS IN AREAS OF NEW WORK.

NOTE: CONTRACTOR IS REQUIRED TO RESTORE ALL EXISTING IMPROVEMENTS TO THE SAME CONDITION, THAT ARE NOT PART OF THIS PROJECT, THAT EXISTED PRIOR TO HIS STARTING CONSTRUCTION.

FIRE SERVICE NOTE: INSTALLATION, INSPECTION, AND TESTING OF UNDERGROUND FIRE WATER PIPING SHALL CONFORM TO 2013 EDITIONS OF NFPA 13 AND NFPA 24.

PLAN PREPARED BY:
FPL and Associates, Inc.
Traffic • Transportation • Civil • CAD
10 Corporate Park, Suite 310
Irvine, CA 92606
Phone: 949-252-1688

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Architecture • Planning • Interior Design

Architect Seal
Consultant Seal

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MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

FIRE HYDRANT INSTALLATION PLAN

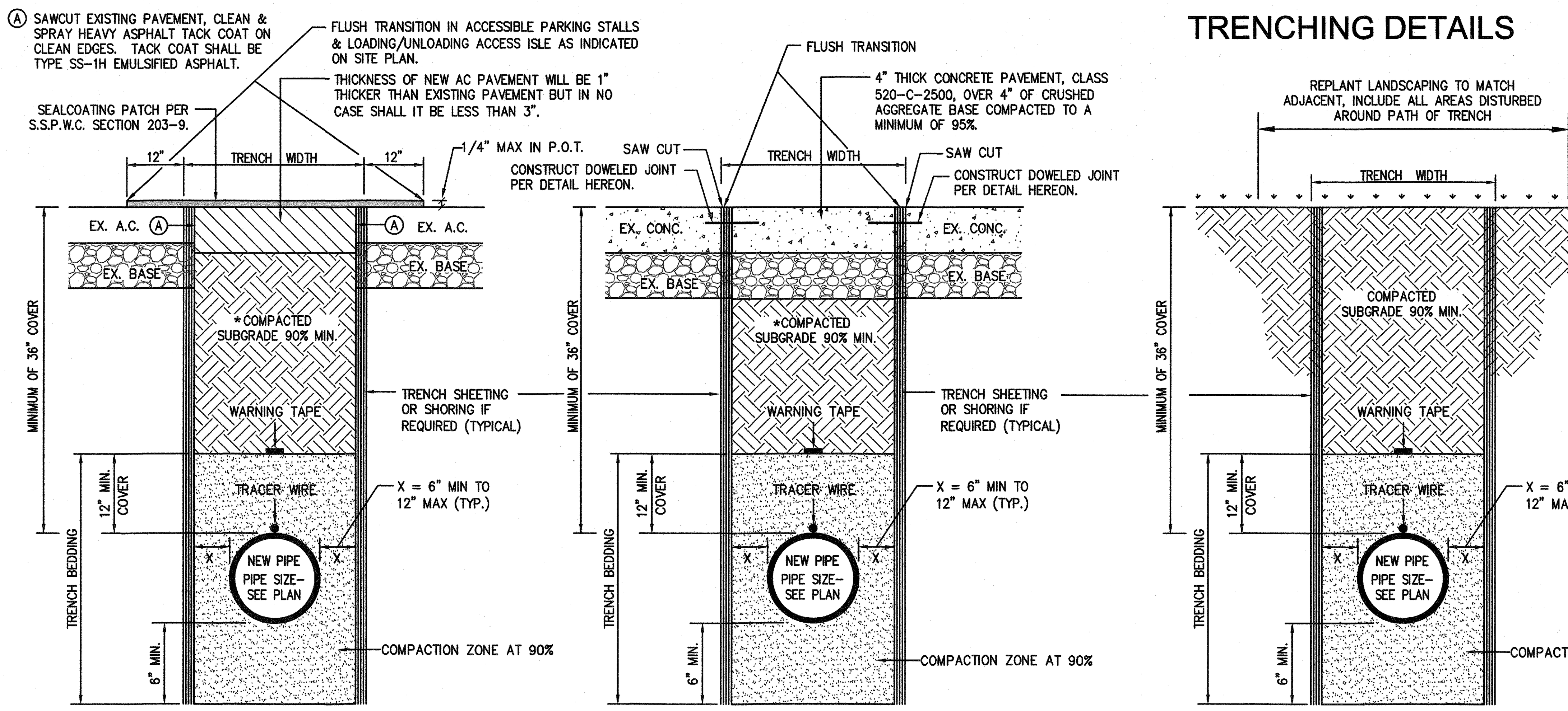
REVISIONS:

Date: 09/14/16
Job: 1633
Scale: AS NOTED HEREON
Drawn:

C001

SHEET
XREF:

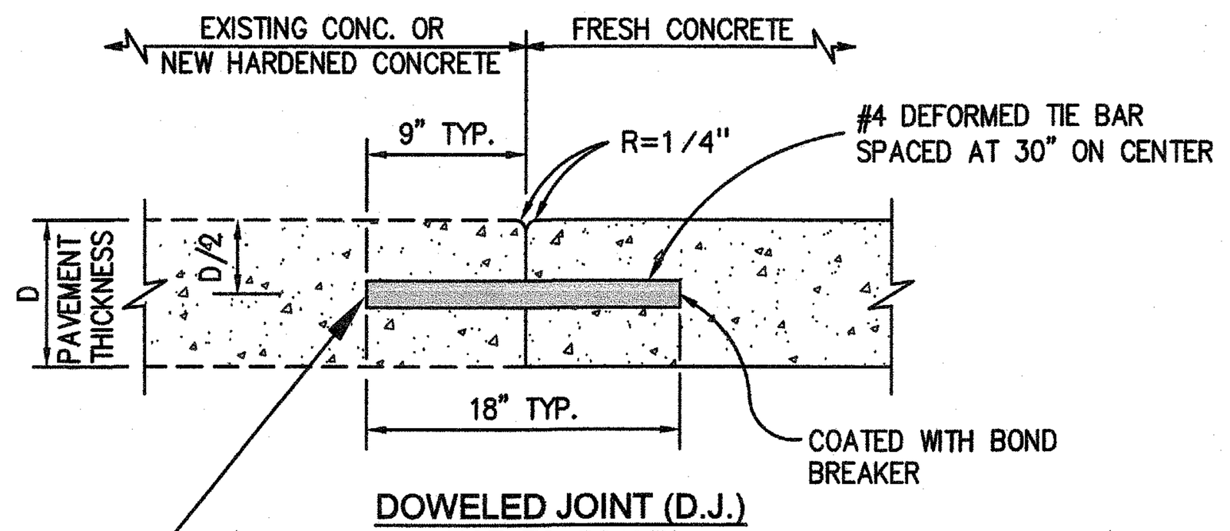
TRENCHING DETAILS



EXISTING ASPHALT AREAS
N.T.S.

EXISTING CONCRETE AREAS
N.T.S.

NEW OR EXISTING LANDSCAPED AREAS
N.T.S.



DOWELED JOINT (D.J.)
NOT TO SCALE

DRILL 5/8" DIA HOLE INTO EXISTING CONCRETE. APPLY SIMPSON STRONG-TIE SET-XP EPOXY ADHESIVE (OR APPROVED EQUAL), MEETING ICC-ES-ESR-2508, TO BOND THE BAR TO EXISTING CONCRETE PAVEMENT.

TRENCH EXCAVATION, BEDDING, & BACKFILL NOTES:

EXCAVATION NOTE: EXCAVATION 5.0 FEET AND DEEPER SHALL BE SUPPORTED AS SET FORTH IN THE RULES, ORDERS AND REGULATIONS OF THE CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS, DIVISION OF INDUSTRIAL ACCIDENTS. THE CONTRACTOR SHALL SUBMIT A DETAIL SHOWING THE DESIGN OR SHORING; BRACING SLOPING OR OTHER PROVISIONS TO BE MADE FOR WORKER PROTECTION FROM THE HAZARDS OF CAVING GROUND DURING THE EXCAVATION. THE PLAN SUBMITTED SHALL BE SIGNED BY A REGISTERED CIVIL OR STRUCTURAL ENGINEER CERTIFIED THAT THE PLAN COMPLIES WITH ALL OSHA CONSTRUCTION SAFETY ORDERS.

PIPE BEDDING: COARSE SAND WITH SAND EQUIVALENT OF 35 OR GREATER IS REQUIRED IN PIPE BEDDING. NO ANGULAR STONES OR PEA GRAVELS WILL BE ALLOWED IN BEDDING.

BEDDING & BACKFILL SHALL BE PLACED IN ACCORDANCE WITH SECTION 306-1.2.1 AND 306-1.3 OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (S.S.P.W.C.), LATEST EDITION" AND AS SUPPLEMENTED HEREIN. TRENCH BACKFILL SLURRY PER SECTION 201-1. EXISTING SITE SOILS, WHERE CONDITIONS DICTATE HEREIN, ARE CONSIDERED SUITABLE FOR BACKFILLING OF UTILITY TRENCHES PROVIDED THEY ARE FREE OF DEBRIS, PARTICLES GREATER THAN 4 INCHES IN MAXIMUM DIMENSION, ORGANIC MATTER OR OTHER DELETERIOUS MATERIALS. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO CONDUITS, PIPES, AND ANY APPURTENANCES. PER SECTION 306-1.2.1 OF S..S.P.W.C., IF SOFT, SPONGY, UNSTABLE OR OTHER UNSUITABLE MATERIAL IS ENCOUNTERED UPON WHICH THE BEDDING MATERIAL OR PIPE IS TO BE PLACED, THIS MATERIAL SHALL BE REMOVED TO A DEPTH ORDERED BY THE CIVIL ENGINEER AND REPLACED WITH BEDDING MATERIAL SUITABLY DENSIFIED.

COMPACTION METHODS: ALL BEDDING & BACKFILL COMPACTION SHALL BE BY HAND-OPERATED, PLATE-TYPE, VIBRATORY, OR OTHER SUITABLE HAND-TAMPERS IN AREAS NOT ACCESSIBLE TO LARGER ROLLERS OR COMPACTERS. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO CONDUITS, PIPES, AND ANY APPURTENANCES. WATER DENSIFICATION BY INUNDATION OR JETTING SHALL NOT BE PERMITTED WITHOUT PRIOR WRITTEN APPROVAL FROM CIVIL ENGINEER.

SHEETING: WHEN EXCAVATION DEPTHS OR SOIL CONDITIONS REQUIRE SHORING OR USE OF A TRENCH BOX, THE BOTTOM OF THE SHORING OR TRENCH BOX SHOULD BE PLACED NO LOWER THEN THE TOP OF THE PIPE. THIS PREVENTS DISRUPTION OF THE BACKFILL ENVELOPE WHEN REMOVING THE SHORING OR TRENCH BOX. IF THIS PRACTICE CANNOT BE FOLLOWED, CONSIDERATION SHOULD BE GIVEN TO LEAVING THE SHORING IN PLACE.

* GENERAL NOTES:

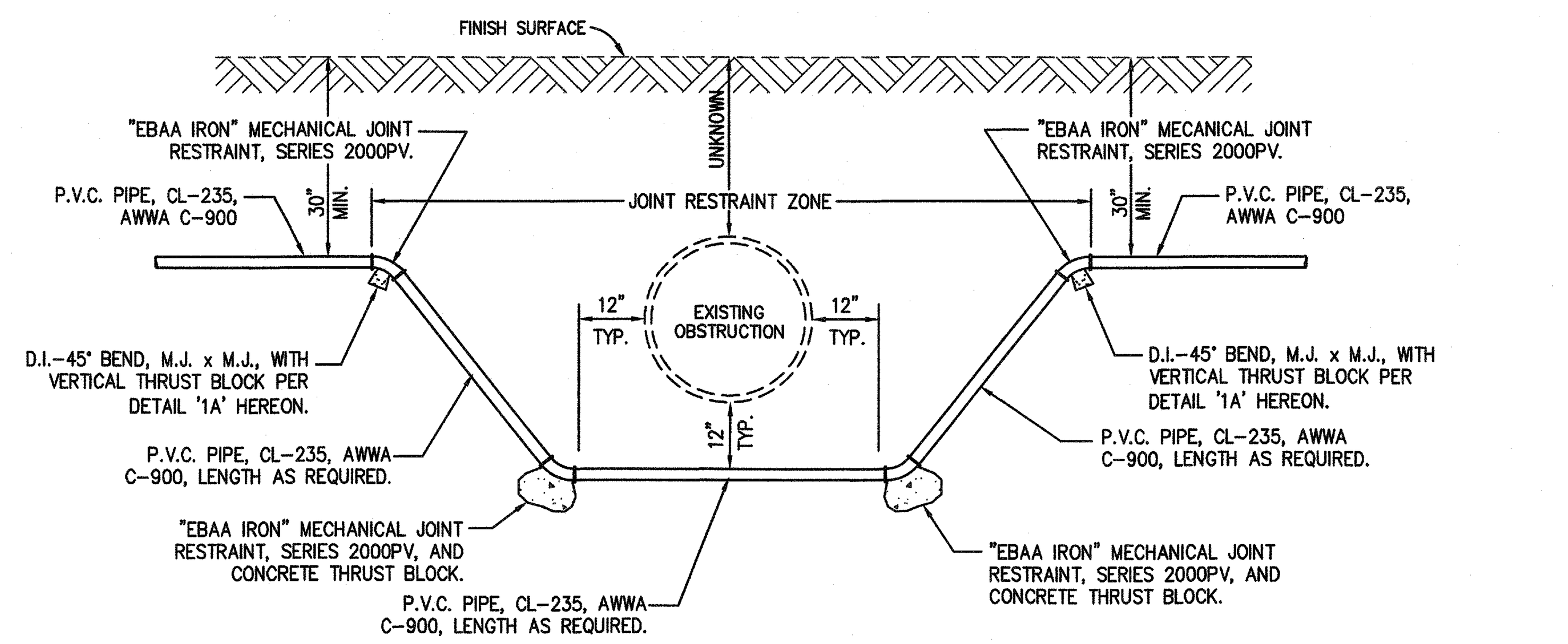
IF 90% COMPACTION IS NOT ATTAINABLE DURING CONSTRUCTION THE USE OF A SLURRY BACKFILL MAY BE SUBSTITUTED. SAND SLURRY SHALL CONSIST OF 1 SACK PORTLAND CEMENT (CLASS 100-E-100) PER CUBIC YARD OF SAND SLURRY MIX.

WARNING TAPE NOTES (ON-SITE WATER):

A METALLIC LINED TAPED FOR UNDERGROUND PIPES, MARKED "CAUTION BURIED WATER LINE BELOW", IN POLYETHYLENE FILM COLOR BLUE, INSTALLED ABOVE PIPE, 6" WIDE.

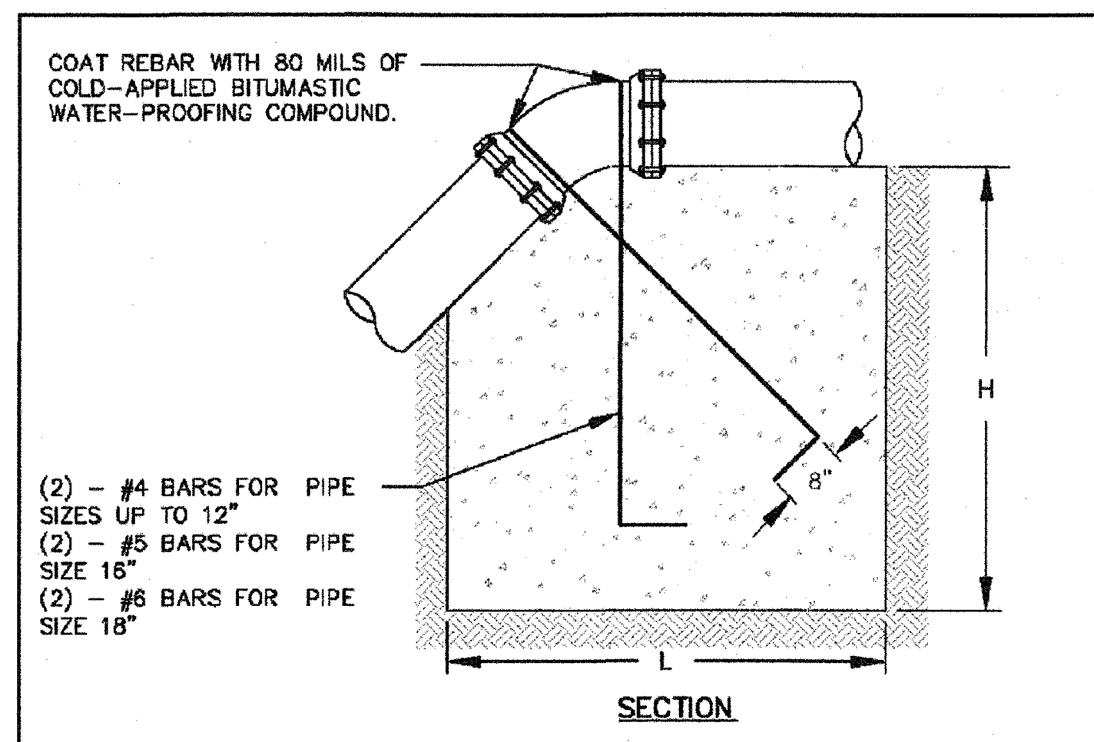
TRACER WIRE NOTES:

COPPER TRACER WIRE SHALL BE INSTALLED ON ALL NON-METALLIC PIPELINES, 2" AND GREATER, JUST ABOVE THE HORIZONTAL CENTERLINE OF THE PIPE. THE COPPER WIRE SHALL BE #14 AWG.



CONSTRUCT WHERE CONDITIONS REQUIRE WATER MAIN VERTICAL OFFSET DUE TO EXISTING OBSTRUCTION

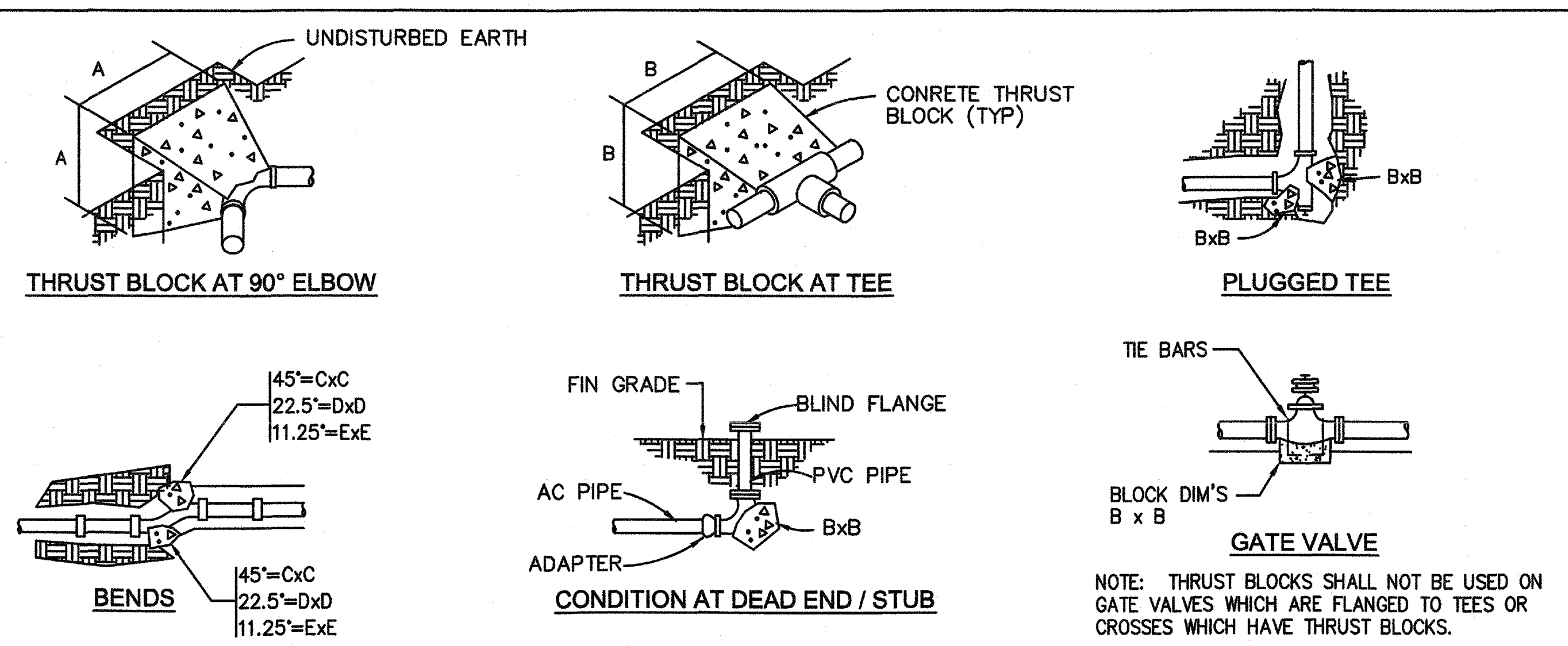
WATER MAIN VERTICAL OFFSET
NOT TO SCALE



VERTICAL BEND ANCHOR						
PIPE SIZE	22 1/2° BEND L,H, AND W(IN)	VOLUME (YD³)	THRUST (LBS)	45° BEND L,H, AND W(IN)	VOLUME (YD³)	THRUST (LBS)
4"	26	0.4	1104	32	0.7	2165
6"	34	0.8	2483	42	1.6	4871
8"	41	1.5	4414	51	2.8	8659
10"	47	2.2	6897	59	4.4	13529
12"	53	3.2	9932	67	6.4	19482
16"	64	5.6	17657	81	11.4	34635
18"	70	7.4	22347	87	14.1	43835

VERTICAL BEND ANCHOR

1A VERTICAL THRUST BLOCK DETAILS
NOT TO SCALE



NOTE: THRUST BLOCKS SHALL NOT BE USED ON GATE VALVES WHICH ARE FLANGED TO TEES OR CROSSES WHICH HAVE THRUST BLOCKS.

PIPE SIZE (INCHES)	90° ELBOW	TEE / STUB	45° BEND	22.5° BEND	11.25° BEND
	A	B	C	D	E
2	17"	14"	13"	9"	6"
3	25"	21"	18"	13"	10"
4	34"	28"	25"	18"	13"
6	48"	41"	36"	26"	18"
8	63"	53"	47"	33"	24"
10	77"	65"	57"	41"	29"
12	92"	77"	68"	48"	34"

1 CONCRETE THRUST BLOCK DETAILS
NOT TO SCALE

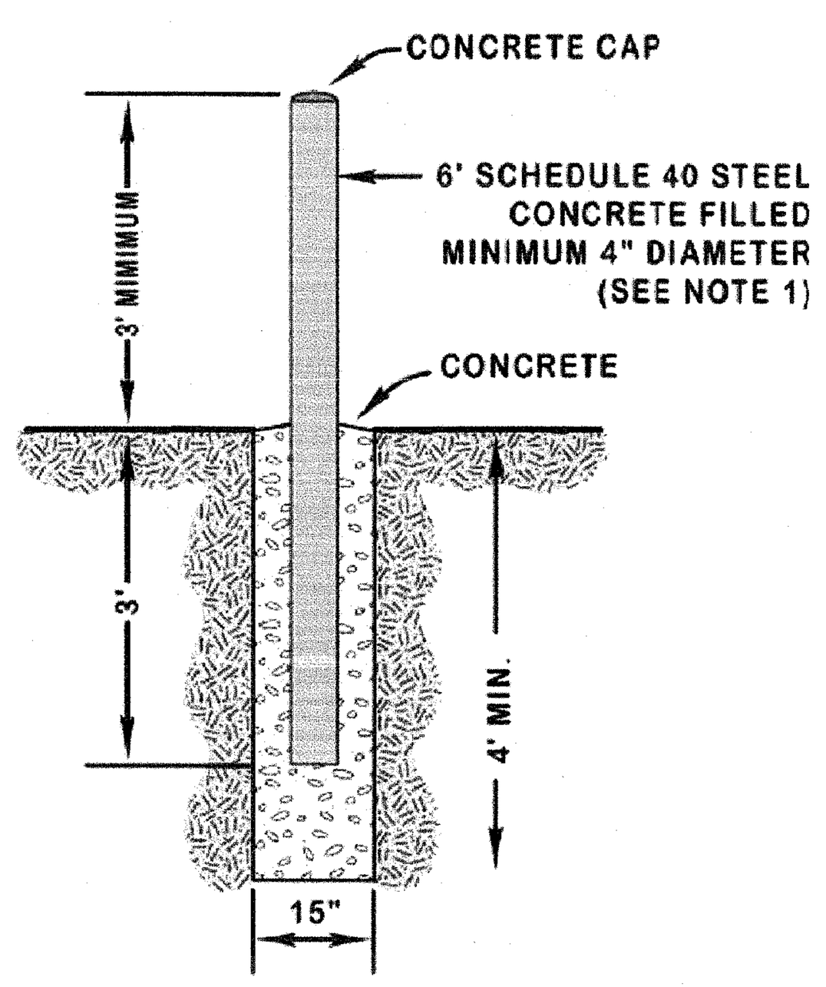
GENERAL NOTES:

1. ALL DUCTILE IRON FITTINGS BURIED UNDERGROUND SHALL BE PROTECTED WITH PLASTIC FILM WRAP IN ACCORDANCE WITH AWWA C105. WRAP SHALL BE A LOOSE 8'-MIL-THICK POLYETHYLENE TUBE. ALL JOINTS BETWEEN PLASTIC TUBES SHALL BE WRAPPED WITH 2-INCH-WIDE POLYETHYLENE ADHESIVE TAPE, POLYKEN 900, SCOTCH WRAP 50, OR APPROVED EQUAL.
2. THRUST BLOCK AREAS ARE BASED ON 200 PSI PRESSURE AND 1,000 PSF ALLOWABLE SOIL BEARING PRESSURE & SIZED PER N.F.P.A. 13, ANNEX A, TABLE A.10.8.2(a), 2013 EDITION.
3. ALL BOLTS AND STUDS SHALL BE TYPE 316 STAINLESS STEEL PER ASTM A193 GRADE B8M. NUTS AND WASHERS SHALL BE TYPE 316 STAINLESS STEEL PER ASTM A194 GRADE 8M.
4. THRUST BLOCKS SHALL BE INSTALLED AT EVERY CHANGE OF DIRECTION.
5. ALL THRUST BLOCKS SHOULD, WHERE POSSIBLE, BE PLACED AGAINST UNDISTURBED SOIL. WHERE IT IS NOT POSSIBLE TO PLACE THE BEARING SURFACE AGAINST UNDISTURBED SOIL, THE FILL BETWEEN THE BEARING SURFACE AND UNDISTURBED SOIL MUST BE COMPACTED TO AT LEAST 90% STANDARD PROCTOR DENSITY (PER N.F.P.A. 13, ANNEX A.10.8.2, 2013 EDITION. THEY SHALL BE CENTERED VERTICALLY AND HORIZONTALLY ABOUT THE DIRECTION OF THE THRUST.
6. THRUST BLOCKS SHALL BE CONCRETE CLASS 520-C-2500 PER THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2012 EDITION, SECTION 201-1 WITH TYPE II CEMENT.
7. WHERE WATER MAIN DEAD ENDS ARE BLIND FLANGED OR CAPPED, THE THRUST BLOCK SHALL EXTEND A MINIMUM DISTANCE OF 6" INTO BOTH SIDES OF THE TRENCH.
8. CONCRETE POURED AGAINST PIPE FITTINGS SHALL BE PLACED SO THAT VALVES AND FITTINGS ARE ACCESSIBLE FOR REPAIR.
9. TIE BARS SHALL BE #4 REBAR (PER ASTM 767 AND D3963) OR STAINLESS STEEL WITH ACI HOOKED ENDS. WHEN TIE BARS ARE NOT EMBEDED IN CONCRETE THEY SHALL BE COATED WITH KOPPERS CO. BITUMASTIC NO. 50 OR EQUIVALENT.
10. ALL EXPOSED FLANGES AND OTHER METAL SURFACES AND ALL DAMAGED COATINGS SHALL BE COATED AFTER ASSEMBLY WITH A MASTIC, PER SPECIFICATIONS.
11. CONCRETE SHALL HAVE 3" MINIMUM CLEARANCE AROUND ALL JOINTS.

COUNTY OF LOS ANGELES FIRE DEPARTMENT
FIRE PREVENTION DIVISION

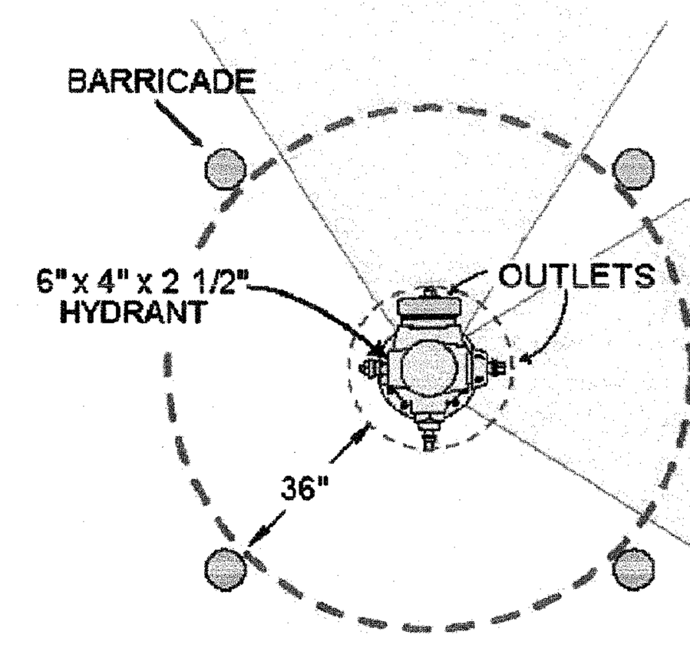
REV 04/03

STANDARD FIRE HYDRANT BARRICADE



BARRICADE DETAILS

Figure 1



PLAN
FIRE HYDRANT BARRICADES
(TYPICAL)

Figure 2

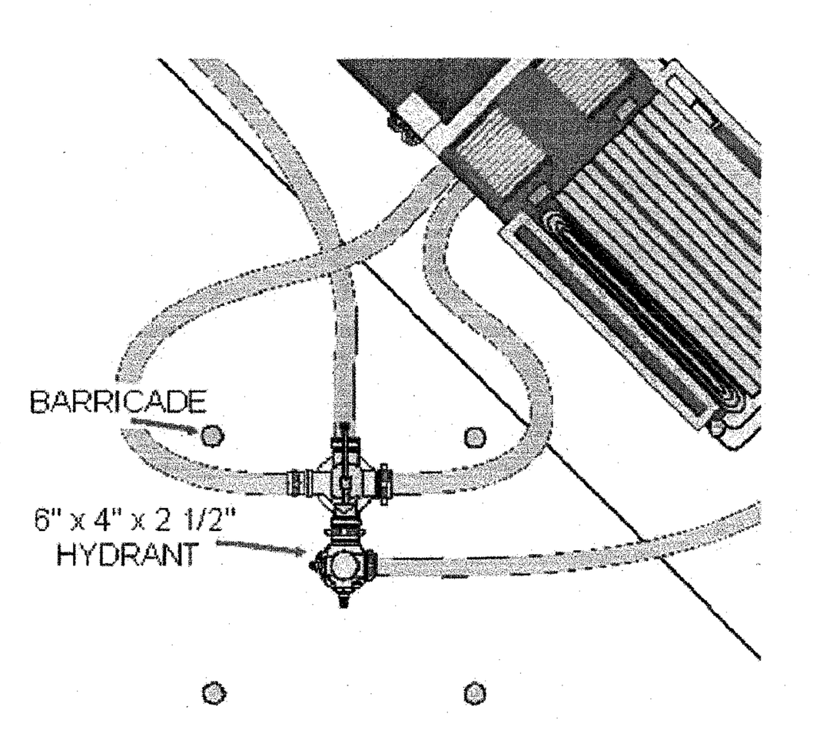
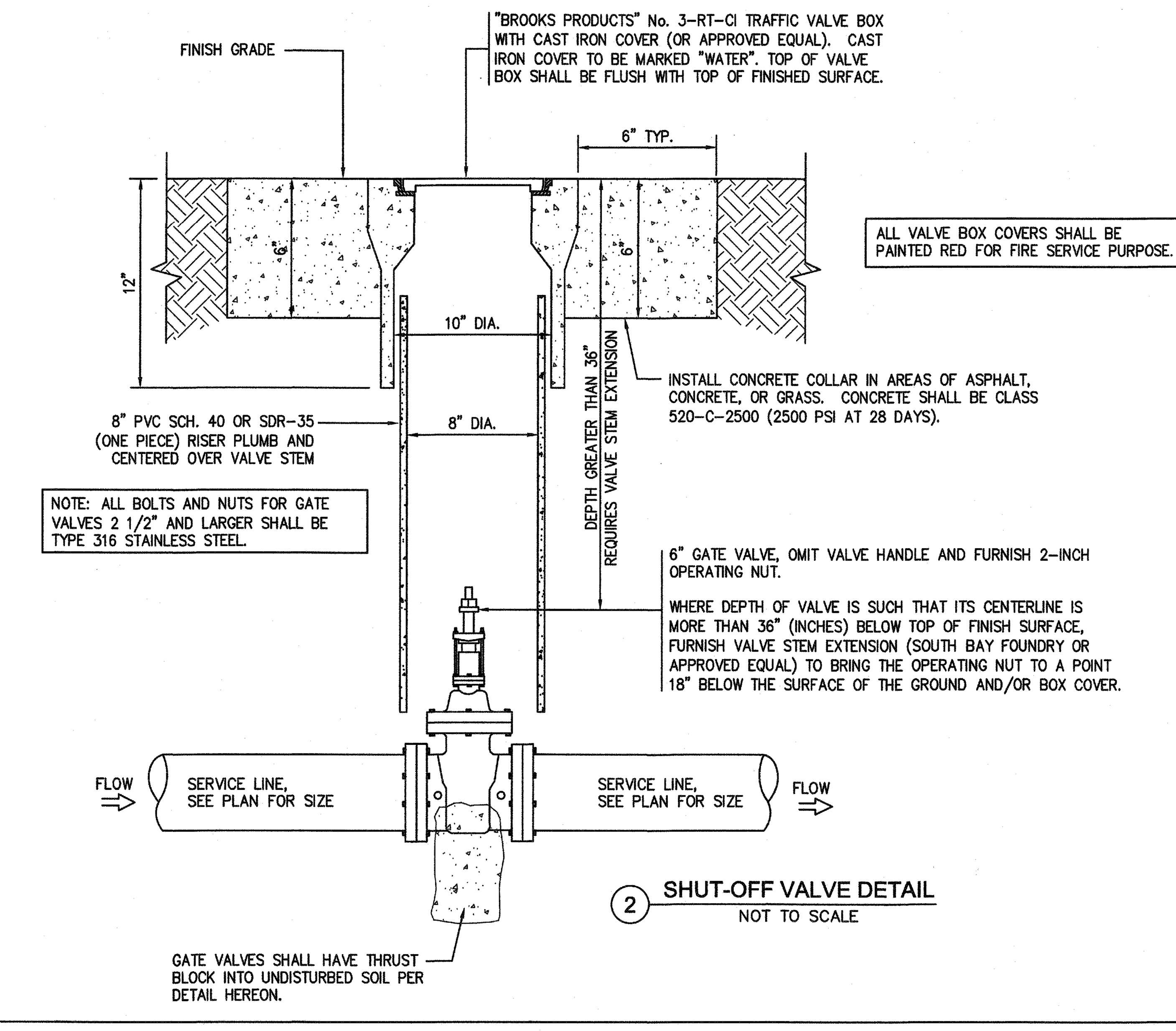


Figure 3

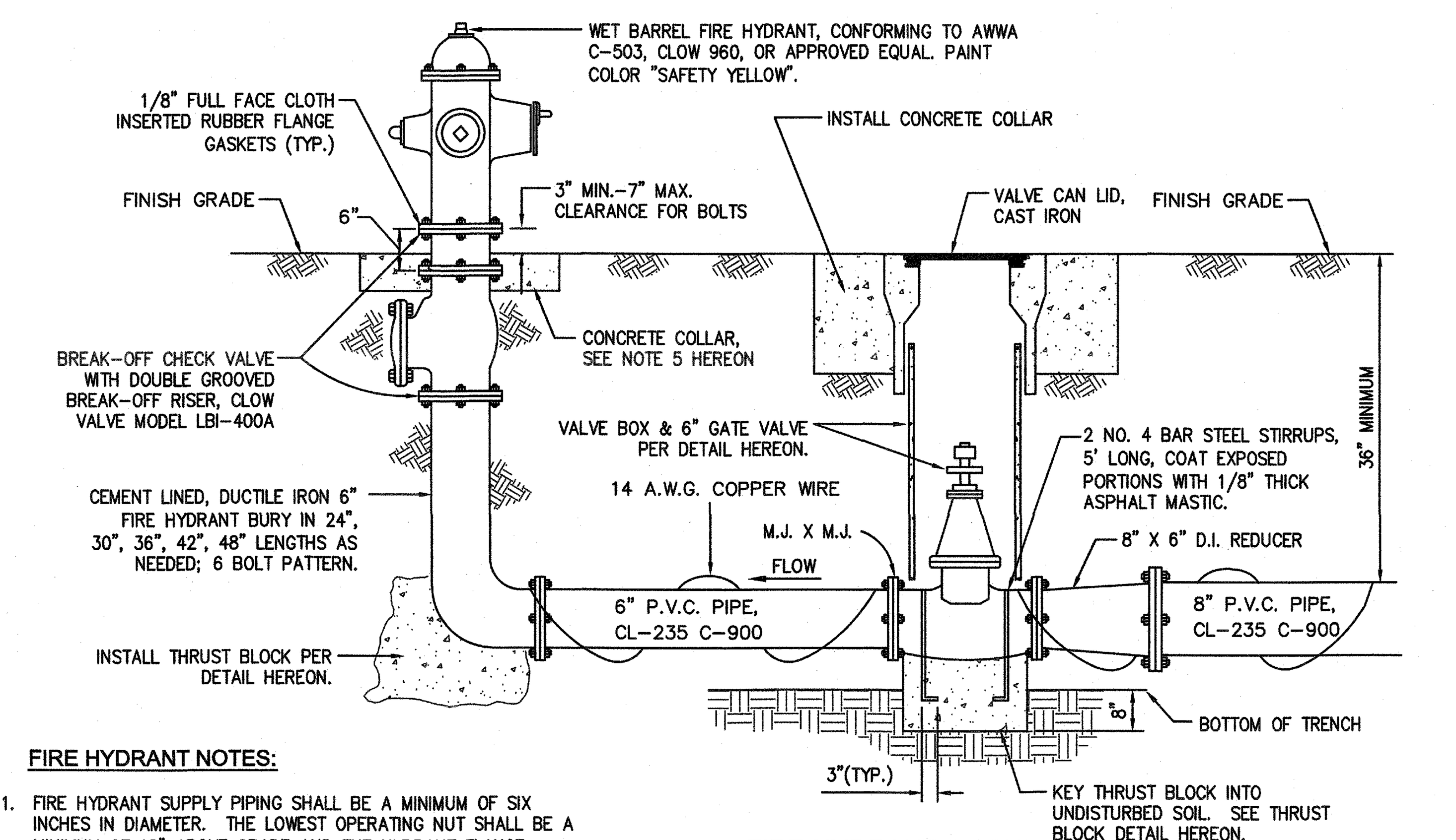
Notes:

1. Figure 1: 6 inch diameter pipe if heavy truck traffic is anticipated. Schedule 40 steel and concrete filled.
2. Posts, fences, vehicles, growth, trash storage and other materials or things shall not be placed or kept near fire hydrants in a manner than would prevent fire hydrants from being immediately discernable.
3. If hydrant to be barricaded; no barricade shall be constructed in front of hydrant outlets. (Figure 2, shaded area)
4. The exact location of barricades may be changed by the Fire Inspector in the field.
5. The steel pipe above ground shall be painted a minimum of two field coats of primer.
6. Two finish coats of "Traffic Signal Yellow" shall be used for Fire Hydrant Barricades.
7. Figure 3 shows hydrant hook up during fire ground operations. Notice apparatus (Hydra-Assist Value) connected to hydrant and the required area. Figure 3 shows the importance of not constructing Barricades or other obstructions in front of hydrant outlets.

4 FIRE HYDRANT BARRICADE DETAIL
NOT TO SCALE



2 SHUT-OFF VALVE DETAIL
NOT TO SCALE



3 FIRE HYDRANT DETAIL
NOT TO SCALE

FIRE HYDRANT NOTES:

1. FIRE HYDRANT SUPPLY PIPING SHALL BE A MINIMUM OF SIX INCHES IN DIAMETER. THE LOWEST OPERATING NUT SHALL BE A MINIMUM OF 18" ABOVE GRADE AND THE HYDRANT FLANGE SHALL BE A MINIMUM OF 2" ABOVE GRADE.
2. HYDRANTS SHALL BE PROVIDED WITH THREE-FOOT UNOBSTRUCTED CLEARANCE ON ALL SIDES.
3. BREAK-AWAY FEATURES OTHER THAN BOLTS WILL NOT BE ACCEPTED.
4. CONCRETE COLLAR TO BE USED WHEN THERE IS NO SIDEWALK OR ASPHALT SURROUNDING THE BURY. COLLAR SHALL BE 4' X 4' X 8" DEEP. CONCRETE SHALL BE CLASS 520-C-2500.
5. ALL UNDERGROUND BOLTS TO BE COATED WITH KOPPERS BITUMASTIC #50 OR EQUAL.

PLAN PREPARED BY:
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Traffic • Transportation • Civil • CAD
10 Corporate Park, Suite 310
Irvine, CA 92606
Phone: 949-252-1688

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760 W. 16TH STREET, UNIT B
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Architect Seal: LICENSED ARCHITECT, DAVID M. BANNON, NO. C-25904, EXP. JULY 31, 2017, STATE OF CALIFORNIA

Consultant Seal: REGISTERED PROFESSIONAL ENGINEER, ALAN WING-CHI LEE, No. C-34971, Exp. 09-30-17, CIVIL, STATE OF CALIFORNIA

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP03 117500
AC FLS SS
Date SEP 21 2016

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

FIRE HYDRANT INSTALLATION DETAILS

REVISIONS:
1
2
3
4
5
6
7
8

Date: 09/14/16
Job: 1633
Scale: AS NOTED HEREON
Drawn:

C002

SHEET
XREF:

SECTION 33 10 00

WATER UTILITIES

WATER SERVICE NOTE: WATER SERVICE MUST BE MAINTAINED TO ALL USERS WITHIN THE CONSTRUCTION AREA AT ALL TIMES. IF THE PRIMARY SOURCE OF WATER IS INTERRUPTED, A TEMPORARY SECONDARY SOURCE SHALL BE SUPPLIED BY THE CONTRACTOR, APPROVED BY THE LOCAL WATER DEPARTMENT. ANY EXPENDITURES INCIDENTAL THERETO SHALL BE BORNE BY THE CONTRACTOR. THE WATER SHALL BE SAFE FOR DRINKING IN ACCORDANCE WITH PUBLIC HEALTH SERVICE DRINKING WATER STANDARDS.

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes general requirements, products, and methods of execution relating to on-site fire water systems serving all buildings and appurtenances.

B. Contractor shall furnish all labor, materials, services, testing, transportation and equipment necessary for the completion of all plumbing and piping and including the demolition and removal of certain equipment, piping and appurtenances all as required and as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

C. Section Includes:

1. Piping and specialties for underground fire piping outside the buildings.
2. Trenching Requirements.
3. Hydrostatic Pressure, Leakage & Disinfection Testing.

1.02 SUBMITTALS

A. Product Data: Manufacturer's catalog data for materials. Include technical data for piping, gaskets, joints and couplings, fire hydrants, gate valves, and valve boxes.

1.03 LICENSES, PERMITS & FEES

A. The Contractor performing the work must have a Class "C-34" Pipeline Contractors license or a Class A General Engineering Contractors License valid in the State of California.

B. The Contractor shall obtain all necessary permits, licenses, or agreements required by any legally constituted agency, pay for all fees and give all necessary notices required for the construction of the work. The Owner shall reimburse the contractor for all necessary permits or inspection fees by any legally constituted agency.

1.04 QUALITY ASSURANCE

A. California Plumbing Code, CPC, 2013 Edition.

B. Comply with NFPA 24, "Standard for the Installation of Private Fire Service Mains and Their Appurtenances," 2013 Edition for materials, installations, tests, flushing, and valve and hydrant supervision.

C. The work provided herein shall conform to and be in accordance with the Contract Plans, General Conditions/Specifications and Special Provisions, as well as the Standard Specifications for Public Works Construction ("Green Book"), Latest Edition, adopted by the Southern California Chapter, American Public Works Association; herein referred to as the "Standard Specifications". In case of conflict between the "Standard Specifications", the General Conditions/Specifications and these Special Provisions, the General Conditions/Specifications and these Special Provisions shall have precedence.

1.05 SEQUENCING AND SCHEDULING

A. Coordinate with other utility work.

1.06 DIG ALERT NOTIFICATION

A. Before any excavation in or near the public right-of-way, the Contractor must contact the Underground Service Alert of Southern California (Dig Alert) at 811 for information on buried utilities and pipelines.

B. Delineation of the proposed excavation site is mandatory. Mark the area to be excavated with water soluble or chalk based white paint on paved surfaces or with other suitable markings such as flags or stakes on unpaved areas.

C. Call at least Two (2) full working days prior to digging.

D. If the members (utility companies) have facilities within the work area, they will mark them prior to the start of your excavation and if not, they will let you know there is no conflict. A different color is used for each utility type (electricity is marked in red, gas in yellow, water in blue, sewer in green, telephone and cable TV in orange).

E. The Law requires you to hand expose to the point of no conflict 24" (inches) on either side of the underground facility, so you know its exact location before using power equipment.

F. If caught digging without a Dig Alert ticket you can be fined as much as $50,000 per California government code 4216.

1.07 PRODUCT HANDLING

A. Store items above ground on platforms, skids or other approved supports.

B. Deliver piping with factory-applied end-caps. Maintain end-caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

C. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

D. Handling: Use sling to handle valves and fire hydrants whose size requires handling by crane or lift. Rig valves to avoid damage to exposed valve parts. Do not use hand wheels or stems as lifting or rigging pongs.

E. Protect coating and linings on pipes, fittings and accessories from damage. Do not drag pipe to trench. Repair coatings or linings damaged.

1.08 DISPOSAL OF REMOVED MATERIALS

A. All removed materials, except those indicated on the plans or described herein to remain the property of the Owner, shall become the property of the Contractor and shall be disposed in accordance with local, state, and federal laws. Should any of those materials be considered as hazardous the Contractor shall provide the Owners Inspector with paper custody trail documentation of the disposal.

1.09 DRAWINGS

A. Because of the small scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his acceptance. Only when Architect's acceptance is given, in writing, shall Contractor proceed with installation of the work.

C. In case of a difference in the specifications or drawings, or between the specifications and the drawings or in the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.10 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.11 PROJECT CONDITIONS

A. Existing utilities: The Contractor shall locate existing underground utilities in all areas of work prior to excavation or commencement of work. If utilities are to remain in place provide adequate means of protection during earthwork operations.

1. Should uncharted, or incorrectly charted piping or other utilities be encountered during excavation, consult Utility Owner immediately for direction. Cooperate with Owner and Utility companies in keeping respective services and facilities in operation. Repair damaged utilities to the satisfaction of Utility Company.
2. Do not interrupt existing utilities serving facilities occupied or used by Owner, or others, except when permitted in writing by Owner's Representative, and then only after acceptable temporary services have been provided.
3. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies for shut off of services if lines are active.

B. Noise and Dust Abatement: Exercise all reasonable and necessary means to abate dust, dirt rising and undue noise. Perform necessary sprinkling and wetting of construction site to allay dust as required by applicable codes and ordinances.

C. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area. Any water entering an excavation shall be immediately pumped out and the exposed excavation allowed to dry

1.12 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid confliction and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

1.13 INSPECTION

A. Notice shall be given to the Owner's Inspector at least 48 hours before starting construction.

B. Contractor shall not allow or cause any of his work to be covered up before it has been duly inspected, tested and approved by the Owner, Architect or any other authorized inspectors having legal jurisdiction over his work. Should he fail to observe the above, he shall uncover the work and, after it has been inspected, tested and approved, recover it at his own expense.

C. Inspection of the work shall not relieve the contractor of any obligations to complete the work as prescribed by the standard specifications. Any known defective work shall be corrected before testing or final inspection will be permitted. Unsuitable materials may be rejected even if these materials have been previously overlooked by the Inspector.

D. The Owner shall have the authority to suspend the work completely or in part for such time as it may deem necessary if the contractor fails to carry out instructions given by the Owner, or to perform any required provisions of the plans and specifications. The contractor shall immediately comply with a written order of the Owner to suspend the work completely or in part. The work shall be resumed when improper methods or defective work are corrected as ordered and approved in writing by the Owner.

1.14 SUBSTITUTIONS

A. The Contractor assumes full responsibility that alternate manufacturers, items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures which ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications or which indicate proposed alternates were selected without proper regard to the requirements of the job, will not be approved. No more than one proposed alternate will be considered for each item.

B. This Contractor is responsible to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved and resubmittal will not be allowed.

C. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures or materials and decisions of the Architect or that of his representative shall be final and conclusive.

1.15 RECORD DRAWINGS

A. Contractor shall provide and keep up-to-date a complete "as-built" record set of redline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Bedding Material for Trenches:

1. Bedding sand shall be as defined by Standard Specifications, Section 200-1.5, and shall be free of expansive material and organic matter. Bedding material for utility lines outside the property lines shall be as required by the agency having jurisdiction. On-site soils are not considered suitable for bedding or shading of utilities.
2. Sand, providing a sand equivalent of at least 30. All of the sand bedding shall be compacted to a minimum of 90 percent of maximum density as indicated in the Contract Documents by mechanical means. Flooding and jetting shall not be

permitted without prior written approval from the Geotechnical Engineer. Where sheeting or shoring is used densification of the bedding shall be accomplished after the sheeting or shoring has been removed from the bedding zone, unless the sheeting or shoring is to be cut off or left in place. Pipe bedding material shall be placed in horizontal layers not exceeding (8) eight inches.

B. Backfill Material for Trenches:

1. The on-site soils have been determined to be suitable for being used for backfilling purposes in trenches. Utility trenches should be backfilled with granular materials and mechanically compacted to at least 90% of the maximum dry density of the soils.

C. Pipe:

1. Fire Water Distribution Main (pipe size 4 inches and larger).
   a. Ductile Iron Pipe (DIP): Pressure Class 350 pipe conforming to AWWA/ANSI C151/A21.5, cement-mortar lining conforming to AWWA/ANSI C104/A21.4, with standard thickness per AWWA/ANSI C150/A21.50. U.S. Pipe, American Cast Iron Pipe Company (ACIPCO), or approved equivalent.
   b. Polyvinyl Chloride Pipe (PVC): Pressure Class 235, DR 18, spigot and gasket bell end, conforming to AWWA C900, with equivalent cast-iron pipe outer diameter (O.D.). Acceptable manufacturers: J-M Manufacturing Blue Brute, Vinyl Tech, Diamond Plastic, PW Pipe, or approved equal.

D. Fittings:

1. Ductile Iron: Ductile iron fittings shall be supplied in accordance with AWWA Standard C110, Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. for Water and Other Liquids", or AWWA Standard C153, "Ductile Iron Compact Fittings, 3 In. Through 24 In for Water Service". All fittings shall have mechanical joints unless otherwise specified on Construction Plans.
   a. Mechanical joints shall conform to the requirements of AWWA Standard C111, "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings."
   b. Flanged fittings shall conform to the requirements of AWWA Standard C110 or C153. Flanges shall be drilled to ANSI B16.1, 125 lb standard bolt template. The 250 lb. Flanges, when required, shall be drilled to ANSI B16.1, 250 lb. standard bolt template.
   c. Where restrained joints are indicated on the plans, push-on "Tyton" joints shall be restrained with "Field-Lok" gaskets as manufactured by U.S. Pipe or approved equal.
   d. Ductile iron pipe fittings shall be manufactured or supplied by American Ductile Iron Pipe (a division of American Cast Iron Pipe Company, Birmingham, Alabama), U.S. Pipe & Foundry Company, Tyler

Pipe/Union Foundry, Griffin Pipe Products Company, Sigma Corporation, Star Pipe Products Co., or approved equal.

E. Gaskets for Ductile Iron Pipe:

1. Gaskets for Ductile Iron Pipe: Gaskets for flanged joints shall be full faced, cut from 1/8 inch thick Nitrile Rubber (Buna-N), bolt holes pre-punched, conforming to the requirements of ANSI /ASME B16.2.1. Gaskets shall be manufactured or supplied by Tripac Fasteners, Long Beach Industrial Gaskets, or approved equal.

F. PVC & Mechanical Pipe Couplings, Joints and Jointing Materials:

1. PVC C-900 Pipe: joints shall be integral, bell and spigot gasketed joints.
   a. Provide each PVC C-900 Pipe joint connection with an elastomeric gasket suitable for the bell or coupling installation.
   b. An elastomeric gasket shall be designed with a retainer ring which "locks" the gasket into integral bell groove and shall be installed at the point of manufacturer. Gasket shall be in conformance with ASTM F477.
   c. Gaskets for push on joints and compression type joints or mechanical joints for connections between pipes and metal fittings, valves, and other accessories shall be as specified in AWWA C111/A21.11.
   d. Solvent weld joints are NOT PERMITTED.
2. Joints between pipe and metal fittings, valves, and other accessories shall be mechanical joints as specified in AWWA C111/A21.11 unless otherwise noted on Construction Documents.

G. Lining and Coating for Ductile Iron & Fittings:

1. The interior of all ductile iron pipe and fittings shall be factory cement mortar lined in accordance with AWWA Standard C104. Lining materials shall conform to ASTM C-150, Type II.
2. All buried ductile iron pipe and fittings shall have a factory applied bituminous coating of not less than 1 mil in thickness as specified in AWWA C151. The coating shall be free from blisters and holes; shall adhere to the metal surface at ambient temperatures encountered in the field.
3. Cement mortar lining and bituminous coating of pipe or fittings in the field is not permitted.

H. Bolts and Nuts for Mechanical Joints, Flanged Fittings, Flexible Couplings & Restraint Devices:

1. All bolts and studs shall be Type 316 Stainless Steel per ASTM A193 Grade B8M, project ends of bolts ¼ to 3/8 inch beyond nut.

2. All nuts and washers shall be Type 316 Stainless Steel per ASTM A194 Grade 8M, provide 1 washer per nut.
3. All exposed flanges and other metal surfaces and all damaged coatings shall be coated after assembly with a mastic, Minnesota Mining and Manufacturing EC 244, Koppers Bitumastic (Super-Tank) 505, or an approved equal.
4. Stainless steel parts shall not be coated except for the threaded portion, which will be assembled with a liberal coat of anti-seize compound.
5. All bolts shall be lubricated with anti-seize compound.

I. Gate Valves:

1. Gate valves 2½" or larger: Resilient seated gate valves shall be ductile iron and coated with a fusion bonded epoxy. Gate valves shall have non-rising stems (NRS) and shall be manufactured to meet or exceed the requirements of AWWA Standard C509, with fully encapsulated disk. The following parts of the valve shall be made of ductile iron: bonnet, body, yoke, wrench nut, O-ring packing plate or seal plate, gland follower, and gate. Omit valve handle and furnish with 2-inch operating unit.
   a. Approved gate valve manufacturer / model:
      1) American AVK Series 25
      2) American Flow Control Series 2500
      3) Clow F-6100
      4) Kennedy 4571
      5) Mueller A-2360
      6) M & H Valve Company
   b. All gate valves shall be provided with a stem extension if depth of valve nut exceeds 3 feet. All valve extensions shall be centered in the valve well by use of a guide and shall operate freely without binding after installation. All valves shall open by turning the wrench nut left (counter-clockwise).
   c. Gate valves must be U.L. Listed & FM approved: minimum of 200psi.
   d. All gate valves shall be wrapped with 3 layers of 8-mil polyethylene.

J. Valve Boxes, Risers and Lids for Buried Valves:

1. Valve boxes and cover shall be as shown on Construction Documents.
2. Valve riser material, where applicable, shall be 10-inch Schedule 80 PVC, or 10-inch SDR 35 PVC pipe

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MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

FIRE HYDRANT INSTALLATION PLAN - SPECIFICATIONS

REVISIONS:
1
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Date: 09/14/16
Job: 1633
Scale: AS NOTED HEREON
Drawn:

PLAN PREPARED BY:
FPL and Associates, Inc.
Traffic • Transportation • Civil • CAD
10 Corporate Park, Suite 310
Irvine, CA 92606
Phone: 949-252-1688

C003

SHEET
XREF:

3. Tops of boxes shall be set flush with finished turf grade or 2" above ground grades in shrubbery or groundcover areas.

4. Paint fire system valve box lids on school property with 2 coats of red enamel.

5. Valve boxes shall be marked "WATER" embossed above surface.

K. Thrust Restraining Materials: All pipe bends and tees 2.5-inches and greater shall be restrained from movement by either the use of concrete thrust blocks or mechanical joint restraints. Restraint systems to be used on PVC C-900 pipe shall meet or exceed A.S.T.M. Standard F1674-96, "Standard Test Methods for Joint Restraint Products for Use with PVC Pipe," or the latest revision thereof. Restraint systems used on ductile pipe shall meet or exceed U.L. Standard 194. Underwriter Laboratories (U.L.) and/or Factory Mutual (FM) certifications are required on all restraint systems. All mechanical restraint devices shall be wrapped with 3 layers of 8-mil polyethylene after assembly.

1. Mechanical Joint Fittings:

a. Restrainer mechanism shall be integrated into the design of the follower gland. As the mechanism is activated, multiple wedging action shall be imparted against the pipe increasing its resistance as internal pressure increases. After burial of the restraining mechanism, joint flexibility shall be maintained. The actuating bolt shall be threaded into the restraining wedge and have a 1-1/4" across the flats hex head. The actuating bolt system shall have a torque-limiting head designed to break off at preset torque levels, thus insuring proper action of the restraining device. After removal of the torque-limiting head, a 1 1/4" hex head shall remain to facilitate the removal and re-assembly of the gland. Glands shall be manufactured of high strength ductile iron in accordance with ASTM A536, Grade 65-45-12 requirements. Wedge mechanisms shall be heat-treated ductile iron, hardened to at least 370 BHN hardness. The restraining mechanism shall have a pressure rating equal to that of the pipe on which it is used and shall have a safety factor of at least 2:1. The restraining gland shall conform to the requirements of ASTM F 1674, and UNI-B-13-94, "Recommended Performance Specification For Joint Restraint Devices For Use With Polyvinyl Chloride (PVC) Pipe."

b. The following qualified product list identifies specified manufacturers models approved for installation in this water distribution system:

Manufacturer	PVC C-900 Pipe	Ductile Iron Pipe
EBBA Iron Sales, In	2000 PV	Megalug 1100
Romac Industries, In	Romagrip PVC	Romagrip DI
Star Pipe Products	Stargrip Series 4000	StargripSeries 3000
Uni-Flange Corporatio	Series 1500	Series 1400

2. Bell and Spigot Harness:

a. Restraint Devices for bell and spigot joints of PVC Pipe shall consist of split restraint rings, one installed on the spigot, connected to one installed on the pipe barrel behind the bell. The restraint devices shall incorporate

a series of machined serrations (not "as cast") on the inside diameter to provide positive restraint, exact fit, 360° contact and support of the pipe wall. Restraint Devices shall be of ductile iron, ASTM A536, Grade 65-45-12 and connecting rods shall be of high strength, low alloy material in accordance with ANSI / AWWA C111/A21.11 unless specified as stainless steel in these specifications.

b. All Restraint Devices shall have a water working pressure rating equivalent to the full rated pressure of the PVC Pipe they are installed on, with a minimum 2:1 safety factor in any nominal pipe size. In addition, they shall meet or exceed the requirements of Uni-B-13-94, "Recommended Performance Specification For Joint Restraint Devices For Use With Polyvinyl Chloride (PVC) Pipe." Notarized certification from the manufacturer of the restraint device shall be provided with submittals.

c. The following qualified product list identifies specified manufacturers models approved for installation in this water distribution system:

Manufacturer	PVC C-900 Pipe	Ductile Iron Pipe
EBBA Iron Sales, In	1600 Series	1700 Series
Romac Industries, In	611 Series	611 Series
Star Pipe Products	1100 Series	Not Approved
Uni-Flange Corporation	Series 1390	Not Approved

3. Push-On Pipe Bells & Plain End Pipe: Where restrained joints are indicated on the Construction Drawings for ductile iron pipe, push-on joints shall be restrained with "Field-Lok 350" gaskets as manufactured by U.S. Pipe or approved equal. "TR-Flex" restrained joint pipe as manufactured by U.S. Pipe or approved equal is also an acceptable option for restrain of push-on joints. Restrained push-on joint pipe and fittings shall be capable of being deflected after assembly.

4. Flange Adapters:

a. Flange Adapters shall be manufactured from ductile iron per ASTM A536, Grade 65-42-12 and shall have bolt circles and bolt holes to meet ANSI B16.1 – Class 125 or Class 250 if required and shown on plans.

b. The following qualified product list identifies specified manufacturers models approved for installation in this water distribution system:

Manufacturer	PVC C-900 Pipe	Ductile Iron Pipe
EBBA Iron Sales, In	2100 Series	2100 Series
Romac Industries, In	Not Approved	Field Flange
Star Pipe Products	Not Approved	Series 200
Uni-Flange Corporation	Not Approved	Series 200/400/420

5. Concrete: Concrete for thrust blocks shall conform to Concrete Class 520-C-2500. If thrust block is to be disturbed or backfill is to be placed prior to

developing its required strength, additional mechanical thrust restraining devices approved by the Civil Engineer shall be installed.

L. Detectable Warning Tape: Acid and alkali-resistant polyethylene film metallic warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick minimum, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 36 inches deep.

1. Tape Colors: Provide tape colors to utilities as follows:

a. Blue: Water systems, with "Caution: Water Line Below."

M. Tracer Wire for Nonmetallic Pipes: Tracer wires shall be electrically continuous #14 soft drawn copper wire, Type TW, RED plastic covered for water system. Provide in sufficient length to be continuous over each installed section of nonmetallic pipe.

N. Polyethylene Encasement Film Wrap: All ductile iron pipe and fittings buried underground shall be protected with double wrapped plastic film in accordance with AWWA C105 "American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems" and each wrap shall be a minimum thickness of 0.008 in. (8 mils). All joints between plastic tubes shall be taped and secured with general purpose polyethylene tape, 2 inches wide and 10 mils thick (Scotchrap No. 50, Plicoflex No. 340, Protecto Wrap No. 200, Polyken No. 900, or approved equal).

O. Sleeve-type Flexible Transition & Flanged Couplings:

1. Sleeve-type couplings shall be in accordance with ANSI/AWWA C219 - Standard for Bolted Sleeve-type couplings for Plain-End Pipe, and shall be of stainless steel or ductile iron with stainless steel bolts, without pipe stop, and be of sizes to fit the pipe and fittings indicated. The middle ring shall be not less than 1/4-inch in thickness and shall be either 5 of 7 inches long for sizes up to and including 30 inches and 12 inches long for sizes greater than 30 inches, for standard steel couplings, and 16 inches long for long-sleeve couplings. The followers shall be single-piece contoured mill sections welded and cold-expanded as required for the middle rings, and of sufficient strength to accommodate the number of bolts necessary to obtain adequate gasket pressures without excessive rolling. The shape of the follower shall be of such design as to provide positive confinement of the gasket.

2. Gaskets for sleeve-type couplings shall be rubber-compound material that will not deteriorate from age or exposure to air under normal storage or use conditions. Gaskets for wastewater and sewerage applications shall be Buna "N," Grade 60, or equivalent suitable elastomer.

3. The gaskets shall be immune to attack by impurities normally found in water or wastewater. All gaskets shall meet the requirements of ASTM D2000 - Classification System for Rubber Products in Automotive applications, AA709Z, meeting Suffix B13 Grade 3. All gaskets shall be compatible with the piping service and fluid utilized.

4. Bolts, nuts, & washers for couplings shall meet the requirements listed in Section 2.01H, herein. All cast components shall be fusion bonded epoxy coated per AWWA C213. After installation couplings shall be wrapped with 8-mil polyethylene wrap per AWWA C-105 and section 2.01O requirements listed herein.

5. Where insulating couplings are required, both ends of the coupling shall have a wedge-shaped gasket, which assembles over a rubber sleeve of an insulating compound in order to obtain insulation of all coupling metal parts from the pipe.

6. All sleeve-type couplings on pressure lines shall be harnessed unless thrust restraint is provided by other means. Harnesses shall be in accordance with the AWWA M11 standard, or as indicated.

7. The following qualified product list identifies specified manufacturers models approved for:

Straight & Transition Couplings

Romac Industries, Inc.:	Style "501"
Ford Meter Box Co.:	Style "FC1" or "FC2A"
Smith-Blair:	400 Series
JCM Industries:	200 Series
Dresser	Style 62 or 162

Flanged Coupling Adapters

Romac Industries, Inc.:	Style "FCA 501" or "FC400"
Ford Meter Box Co.:	Style "FFCA"
JCM Industries:	300 Series
Smith-Blair:	Style "913"
Dresser	Style 227.

PART 3 - EXECUTION

3.01 CLEARANCES OF WATER LINE

A. Buildings: 3 feet.

B. Parallel to Sewer Line:

1. Water mains larger than 4 inches in diameter shall be separated from the Project site sanitary sewer, receiving more than one building sanitary drain or acid pipeline, in accordance with the requirement of the State of California, Human and Welfare Agency, Department of Health Services.

C. Crossing Sewer Line:

1. A water main shall be separated from sanitary sewer in accordance with the requirements of the State of California Administrative Code, Title 22, Section 64630(e)(2), unless modified herein.

2. Install water main a minimum of 12 inches clear, above or below a sanitary sewer.

3. A water main greater than 4 inches in diameter, crossing under a sanitary sewer line, shall be installed with all their joints located at least 10 feet away from each side of the sanitary sewer line.

4. A water main greater than 4 inches in diameter, crossing over a sanitary sewer line, shall be installed with all their joints located at least 5 feet away from each side of the sanitary sewer line.

3.02 EXCAVATION, BACKFILL & COMPACTION FOR UTILITIES

A. Field conditions may require deviations from information indicated on Drawings. Such changes in work shall be covered by a Change Order, indicating an increase or decrease in the Contract sum.

B. Before excavation, Contractor shall contact the "Underground Service Alert of Southern California" (USASC) for information on buried utilities and pipelines.

C. When connections are to be made to any existing pipe, conduit, or other appurtenances, the actual elevation or position of which cannot be determined without excavation, the Contractor shall excavate for, and expose, the existing improvement before laying any pipe or conduit. The Engineer shall be given the opportunity to inspect the existing pipe or conduit before connection is made. Any adjustments in line or grade which may be necessary to accomplish the intent of the plans will be made, and the Contractor will be paid for any additional work resulting from such change in line or grade.

D. Trenches over 5'-0" in depth shall conform to the Construction Safety Orders of the California Division of Industrial Safety.

E. Safe and suitable ladders which project 2 feet above the top of the trench shall be provided for all trenches over 4 feet in depth. One ladder shall be provided for each 50 feet of open trench, or fraction thereof, and be so located that workers in the trench need not move more than 25 feet to a ladder.

F. Where indicated and/or required to excavate in lawn areas, protect adjoining lawn areas outside of the Work area. Replace or install removed sod upon completion of backfill by installing sod level with adjacent lawns. If installation of removed sod fails, furnish sod and install to match existing lawns.

G. All trenches should be backfilled with approved fill material compacted to relative compaction of not less than 90 percent of maximum density determined in accordance with ASTM D 1557. Backfill shall be placed in layers not exceeding 8" (inches) in thickness.

H. Backfill over excavations to the required elevations with earth, gravel, sand, or concrete and compact as required. Provide excavations free from standing water by pumping, draining, or providing protection against water intrusion. Slope adjacent grades away from excavations to minimize entry of water.

I. Do not excavate trenches parallel to footings closer than 18" from the face of the footing or below a plane having a downward slope of 2 horizontal to one vertical, from a line 9" above bottom of footings.

J. If soft, spongy, unstable, or other unsuitable material is encountered upon which the bedding material or pipe is to be placed, this material shall be removed to a depth ordered by the Engineer and replaced with bedding material suitably densified. Additional bedding so ordered, over the amount required by the Plans or Specifications, will be paid for as provided in the Bid. If the necessity for such additional bedding material has been caused by an act of failure on the part of the Contractor or is required for control of groundwater, the Contractor shall bear the expense of the additional excavation and bedding.

K. Unless indicated otherwise on the plans are within this specification, excavate trenches to the required depths for utilities, such as pipes, conduit and tanks, with minimum allowances of 6 inches at the bottom and 6 inches at the sides for bedding of unprotected piping or as required for concrete encasement of conduits as indicated on Drawings. Maximum allowances at the sides for trenching shall be 12 inches. Grade bottom of trenches to a uniform smooth surface. Remove loose soil from the excavation before installing sand bedding or concrete encasement.

L. Where portions of existing structures, walks, paving, etc. must be removed or cut for pipe or conduit installation, replace the material with equal quality, finished to match adjacent work.

M. Provide a minimum clear dimension of 6 inches from sides of wall excavation to outer surfaces of buried pipes or conduits installed in the same trench or outside surfaces of containers and/or tanks.

N. DO NOT place backfill until the bedding and pipe work installed has been inspected, tested and approved by the Inspector. Remove excavated rocky material unsuitable for backfill from the site prior to final backfilling.

O. Bedding material immediately around a utility line and to a point 12 inches above the line should consist of sand to support the line and protect it.

P. Bedding zone shall be defined as the area containing the material specified that is supporting, surrounding, and extending to 12" (inches) above the top of pipe for sewer and water and 6" (inches) above the top of pipe. Compaction requirements in this area must meet 90%.

Q. Bedding material shall first be placed on a firm and unyielding subgrade so that the pipe is supported for the full length of the barrel. There shall be 6" (inch) minimum of bedding below the pipe barrel and 1" (inch) clearance below a projecting bell for water pipe. The material in the bedding zone shall be placed and densified by mechanical compaction only.

R. Mechanically compacted backfill shall comply with section 306-1.3.2 of the Standard Specifications for Public Works Construction.

S. Above the bedding, up to finished subgrade at areas other than landscape areas and up to one foot below flatwork and pavements, utility trenches should be backfilled with granular materials and mechanically compacted to at least 90%.

T. Below pavements, a minimum relative compaction of 90% will be required in the upper on foot of the backfill.

U. Concrete backfill trenches that carry below or pass under footings and that are excavated within 18 inches of footings. Place concrete to level of bottom of footings.

V. Fill voids with approved backfill materials as shoring bracing and sheeting is removed.

W. Pipe will be inspected in the field before and after laying. If any cause for rejection is discovered in a pipe after it has been laid, it shall be subject to rejection. Any corrective work shall be approved by the Engineer and shall be at NO cost to the Owner.

X. The Inspector or Geotechnical Engineer will inspect all subgrades and excavations prior to placing bedding & backfill materials.

Y. DO NOT place backfill until the bedding and pipe work installed has been inspected, tested and approved by the Inspector. Remove excavated rocky material unsuitable for backfill from the site prior to final backfilling.

Z. Utility backfill compaction test shall be performed in accordance with ASTM D1557, method "C".

AA. Utility backfill in place density test per ASTM D 1556 (sand cone) or other test method as considered appropriate by the Geotechnical Engineer.

BB. Hydrostatic pressure tests shall be done only after backfill has been placed and final compaction has been achieved.

3.03 LAYING OF PVC PRESSURE PIPE

A. Installations of pipe, bends, and fittings shall be in accordance with Section 3.3 for ductile iron bends and fittings and AWWA C-605, "Underground Installation of (PVC) Pressure Pipe and Fittings for Water" and/or the Uni-bell guideline UNI-PUB-9, "Installation Guide for PVC Pressure Pipe". PVC bends and fittings are not allowed. The Uni-Bell Handbook of PVC Pipe-Design and Construction shall be used for details of pipe installation practice except as follows and where noted otherwise on plans. Longitudinal bending of pipe sections is prohibited. Any directional change shall be accomplished through manufacturer approved 1 degree deflection of push on joints, 5 degree deflection with Certainteed – couplings, or ductile iron bends capable of withstanding 250 psi loads.

B. Acceptable line and grade for piping: The pipe shall be laid true to the line and grade shown on the plans within acceptable tolerances. The tolerance on grade is 1 inch. The tolerance on line is 2 inches.

C. A number 14 gauge, solid, soft drawn insulated copper tracer wire is required for PVC pipe installation on lines 2" and greater. The tracer wire shall be wrapped around the pipe at 10-foot intervals and brought up inside each valve can to within 6 inches of the valve cover.

D. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the trench. If the pipe-laying crew cannot put the pipe into the trench and in place without getting soil into it, the Engineer may require that before lowering the

pipe into the trench, a temporary plug be placed over each end and left there until the connection is to be made to the adjacent pipe. During the laying operations, no debris, tools, clothing or other materials shall be left in the pipe.

E. At times when pipe laying is not in progress, the open ends of pipe shall be closed by watertight plug or other means approved by the Inspector. This provision shall apply during the lunch-hour breaks as well as overnight. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry.

F. The cutting of pipe for inserting tees, fittings or closure pieces shall be done in a neat workmanlike manner without damage to the pipe or cement lining and so as to leave a smooth end at right angles to the axis of the pipe. The beveled end of any PVC pipe shall be cut off before the pipe is inserted into a mechanical joint bend or fitting. No pipe shall be laid in water or when, in the opinion of the Engineer, trench conditions are unsuitable.

G. Should structural difficulties or Work of other trades prevent the running of pipes or the setting of equipment as indicated by Drawings, the necessary deviation will be allowed by the Owner's Inspector.

H. All water piping shall be adequately supported. Burred ends shall be reamed to the full bore of the pipe or tube. Change in direction shall be made by the appropriate use of fittings. All piping, equipment, appurtenances and devices shall be installed in conformity with the provisions and intent of the California Plumbing Code.

I. When connecting plastic pipe to copper, brass, or steel material, provide a schedule 80 PVC nipple.

J. Cure welded joints at least 15 minutes before moving or handling, and at least 24 hours before applying pressure to system, unless otherwise recommended by joint solvent manufacturer.

K. Field inspection for plastic pipe and fittings shall follow section 306-1.2.12, Standard Specifications for Public Works Construction, latest edition.

3.04 CONNECTIONS TO EXISTING UTILITIES

A. All tie-in locations shall be excavated a minimum of TWO (2) working days in advance of final connection to expose the affected portions of existing pipelines and to allow time for the necessary measurements, assembling of materials and equipment, and assuring that all pre-assembled piping and fittings will be compatible with the existing main.

B. Changes or delays caused by the Contractor's failure to perform "Potholing" and interference location work shall not be eligible for extra work, compensation, or time extension.

C. The Contractor shall immediately notify the Owner's Inspector in writing, upon learning of the existence or location of any utility facility omitted from or shown incorrectly on the contract drawings, or improperly marked or otherwise indicated. The Contractor shall provide full details as to depth, location, size and function of the utility in writing to the IOR and note it on the "as-built" plans.

D. The Contractor shall furnish and place the necessary protection around a utility when protection is called for on the contract drawings, visible to the Contractor, or marked as

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Architect Seal

Consultant Seal

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Date SEP 21 2016

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409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

FIRE HYDRANT INSTALLATION PLAN – SPECIFICATIONS

REVISIONS:
1
2
3
4
5
6
7
8

Date: 09/14/16
Job: 1633
Scale: AS NOTED HEREON
Drawn:

C004

SHEET
XREF:

PLAN PREPARED BY:
FPL FPL and Associates, Inc.
Traffic • Transportation • Civil • CAD
10 Corporate Park, Suite 310
Irvine, CA 92606
Phone: 949–252–1688

such. The Contractor shall install the utility protection at no additional expense to the Owner.

E. Shutdown of City Mains: All work necessary to shut down an existing public water main for the benefit of a Contractor shall be by the local water purveyor personnel. Unless at the direct supervision of the local water purveyor, under no circumstances shall the Contractor operate valves, hydrants, and other appurtenant equipment on the existing public system. It shall be the Contractor's responsibility to coordinate the necessary shutdown schedules through the local water purveyor. Scheduled shutdowns shall require sufficient time to allow operations personnel to review, approve, and develop an appropriate Operation Program. The Contractor shall be responsible for maintaining all schedules current and coordinating all deviations which may occur from time to time with the local water purveyor.

3.05 VALVES

A. Water valves shall be installed at locations shown on the Construction Drawing, or as directed by the Inspector. Valves shall be set plumb, and shall be stabilized and supported separately from the pipeline. Information regarding size, type, make, and number of turns to close shall be supplied to the Utility. All valves shall be covered with a valve box assembly. Valve boxes shall be plumb, centered over the valve nut, and supported separately from the valve body. Valve boxes shall be lowered to below paving grade level prior to street paving, and after final grade has been established by the final grade. In any event, Contractor shall ensure that all valve boxes will provide access to the operation of the valve by the Utilities' personnel. Valve boxes shall be flagged or barricaded during construction to divert traffic around their location.

B. Wrap buried valves, 2-½ inches and larger, with two layers of 8-mil polyethylene wrap per AWWA C105.

C. All exposed flanges and other metal surfaces and all damaged coatings shall be coated after assembly with a mastic, Minnesota Mining and Manufacturing EC 244, Koppers Bitumastic (Super-Tank) 505, or an approved equal.

D. Stainless steel parts shall not be coated except for the threaded portion, which will be assembled with a liberal coat of anti-seize compound.

3.06 PROTECTION OF METAL SURFACES

A. All exposed surfaces of the valves, flanges, bolts, nuts, tie-rods, turn buckles, etc. in contact with the earth and backfill materials shall be coated with a minimum of 30 mils of bitumastic coating prior to backfilling. In addition to this bitumastic coating, all iron or steel surfaces such as valves, flanges, bolts, nuts, couplings, shall be encased in 8 mil polyethylene wrapping in accordance with AWWA C105 "American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems".

3.07 PIPELINE FLUSHING & HYDROSTATIC TESTING

A. General Requirements

1. Hydrostatic testing and disinfecting (chlorination and flushing) of newly laid or repaired pipelines and appurtenances must be completed before the pipelines can be connected to the existing water distribution system. Pipelines and

appurtenances shall remain isolated from the existing water distribution system during hydrostatic testing and disinfecting.

B. Temporary Piping and Appurtenances for Flushing, Testing, and Disinfecting

1. The Contractor and/or subcontractor shall supply all temporary piping, corporation and curb stops, test plates, bulkheads, plugs, pipe end caps, valves, fittings, calibrated meters, equipment, labor and method necessary for pressure testing, chlorinating, and flushing of the newly laid pipeline. The Contractor shall also provide any temporary piping, and appurtenances needed to carry potable water to the section of pipeline being flushed, pressure tested, or disinfected.

2. Corporation and curb stop taps used for flushing, pressure testing, and disinfecting shall comply with service tap requirements for ductile iron pipe. Unless specified otherwise, the tap shall be made at the top of pipe.

C. Private fire service mains and lead-in connections to system risers shall be flushed thoroughly before connection is made to building system piping in order to remove foreign materials that might have entered the main during the course of the installation or that might have been present in existing piping. The minimum rate of flow shall be not less than the water demand rate of the system, which is determined by the system design, or not less than that necessary to provide a velocity of 10 ft/s, whichever is greater. For all systems, the flushing operations shall be continued for a sufficient time to ensure thorough cleaning. The General Contractor & Owner's Inspector shall be present during the flushing.

D. It is the responsibility of the Contractor to dispose of the flushed water from the project area. The Contractor shall take all precautions necessary in providing for adequate drainage from the site. The disposal of water is described later in this Section.

1. Underground fire mains shall be flushed at the flow rates specified below per N.F.P.A. 24 10.10.2.1.3 according to the maximum pipe size in the line. While conducting the flushing operation, the Contractor shall exercise care that the water does not create any damage. The Contractor shall be responsible for any damage caused by this operation.

Flow required to produce a velocity of 10 ft per second in pipes:

4" – 390 GPM	8" – 1560 GPM
6" – 880 GPM	10" - 2440 GPM

3.08 HYDROSTATIC (PRESSURE) TESTING FOR (PRIVATE) FIRE PROTECTION SYSTEM

A. Unless specified differently on the plans or as supplemented herein, hydrostatic testing shall comply with NFPA 24, "Installation of Private Fire Service Mains and Their Appurtenances," 2013 Edition. After completion of the hydrostatic testing, the sub-contractor shall fill out the certificate shown in Figure 10.10.1, N.F.P.A. 24, 2013 Edition, located at the end of this specification. The General Contractor & Inspector shall be present during the testing.

B. Preparation for the Hydrostatic Test

1. All concrete anchor and thrust blocks associated with sections of the pipelines to be tested, shall have cured for a minimum time of 72 hours prior to any flushing or pressurizing of the pipeline. Restrained joints or other methods of pipe support may be used to reduce this time if approved by the Inspector.

2. The Contractor shall flush the pipeline with potable water to remove dirt and debris. Flushing and disposal of water is discussed elsewhere in this Section.

3. The amount of pipeline footage to be tested at one time shall be determined by the Inspector and shall not exceed 1,000 feet in length. Test plates (bulkheads), corporation stops, and other temporary facilities required for testing purposes shall be installed at the Contractor's expense. Testing against valves is not permitted unless approved by the Inspector.

4. Each hydrant shall be fully opened and closed under system water pressure to ensure proper operation.

C. Procedures for Hydrostatic Testing

1. Each section of pipeline and all fire hydrants, services, and appurtenances connected thereto, shall be subjected to the hydrostatic test. The pipeline shall be filled with potable water. Care shall be exercised to see that provisions are made for the escape of air at high points and ends of laterals. Contractor shall see that all combination air release valves are open and operating. After the line has been completely filled, it shall be allowed to stand at 40 psi minimum pressure for a sufficient length of time to permit the escape of any pockets of air and allow the mortar lining to absorb the maximum moisture. During this time, all visible pipe, fittings and joints shall be inspected for leakage.

2. All new private fire service mains shall be tested hydrostatically at not less than 200 psi pressure for two hours or at 50 psi in excess of the maximum static pressure when the maximum static pressure is in excess of 150 psi.

D. Repetition of Hydrostatic Test

1. If the leakage in the section of pipeline being tested exceeds the maximum allowable rate specified herein, such section will be considered defective. The plumbing contractor shall determine the points of leakage and make the necessary repairs at his expense. The subcontractor will then conduct another hydrostatic test. This procedure shall be continued until the leakage falls below the allowed maximum.

2. The amount of leakage in buried piping shall be measured at the specified test pressure by pumping from a calibrated container. For new pipe, the amount of leakage at the joints shall not exceed two quarts per hour (1.89L/h) per 100 gaskets or joints irrespective of pipe diameter.

3. The amount of allowable leakage shall be permitted to be increased by one fluid ounce per inch valve diameter per hour (30 ml / 25 mm/h) for each metal seated valve isolating the test section.

4. Tests shall be made by the contractor in the presence of the authority having jurisdiction or the representative of the owner. Contractor shall fill out the certificate shown in Figure 10.10.1, N.F.P.A. 24, 2013 Edition, located at the end of this specification.

E. After Satisfactory Hydrostatic Test

1. All valves shall be tested for leak proof tightness after the pipeline hydrostatic test with the test pressure on one side of the valve and atmospheric pressure on the other side.

2. Regardless of the hydrostatic test results, the Contractor shall repair all detectable leaks.

3.09 DISINFECTION PROCEDURES

A. Disinfection of all waterlines is not required.

3.10 DISPOSAL OF TEST WATER

A. The disposal of all water used in flushing, hydrostatic testing, and disinfecting the sections of pipeline shall be the sole responsibility of the Contractor. The disposal of water shall, in all cases, be carried out in strict observance of the water pollution control requirements of the California Regional Water Quality Control Board.

B. The Contractor shall apply a reducing agent to the solution to neutralize residual chlorine or chloramines remaining in the water. Additionally, the flow of water from the sections of pipeline shall be controlled to prevent erosion of surrounding soil, damage to vegetation, altering of ecological conditions in the area, and damage to any construction or maintenance activity occurring in any ditch or storm drain downstream of discharge.

3.11 CONNECTING TO EXISTING DISTRIBUTION SYSTEM

A. After all hydrostatic tests and disinfecting has been completed and demonstrated to comply with the Specifications, the Contractor shall connect newly laid pipeline to the existing distribution system.

B. Where connections are to be made to an existing potable water system, swab or spray the interior surfaces of all pipe and fittings used in making the connections with a five (5) percent or greater hypochlorite solution as directed by the Inspector.

C. As soon as the connection is completed, thorough flushing is required until all discolored water is removed.

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COVINA-VALLEY UNIFIED SCHOOL DISTRICT

FIRE HYDRANT INSTALLATION PLAN - SPECIFICATIONS

REVISIONS:
1
2
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5
6
7
8

Date: 09/14/16
Job: 1633
Scale: AS NOTED HEREON
Drawn:

C005

SHEET
XREF:

PLAN PREPARED BY:
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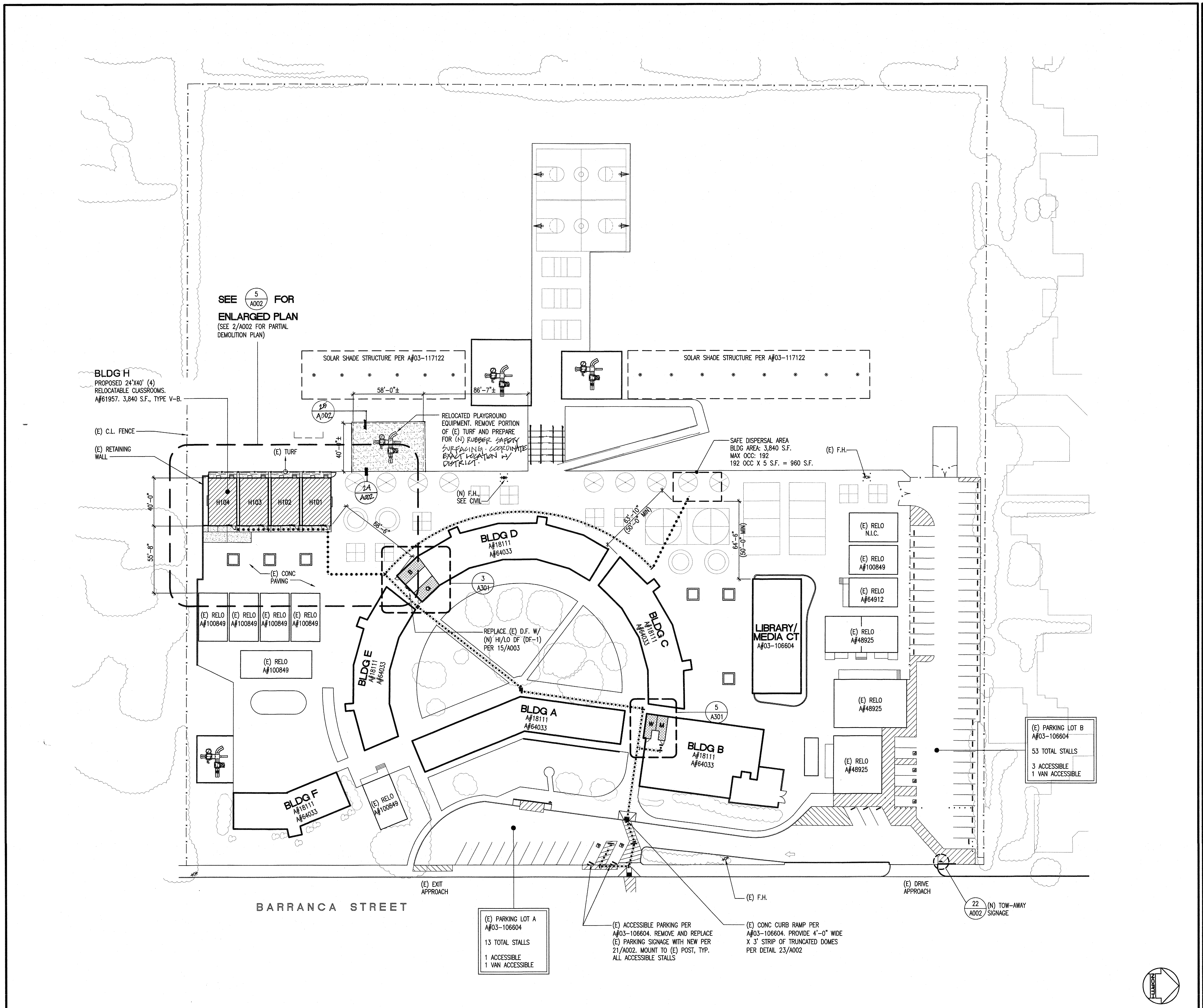

OVERALL SITE PLAN 1
1"=30'-0"

CODE ANALYSIS

CODE REF:	DESCRIPTION	ALLOWABLE	ACTUAL
	E OCCUPANCY		
Table 503	Type V – B	9,500 SF	
Section 506	(N) 24X40 RELO'S (4)		3,840 SF
	TOTAL AREA	9,500 SF	3,840 SF

SITE NOTES

1. FOR TYPICAL SYMBOLS AND ABBREVIATIONS, SEE SHEET G001.
2. PROTECT AND SAFEGUARD FROM DAMAGES ALL EXISTING CONSTRUCTION AND FINISHES TO REMAIN.
3. PROVIDE TEMPORARY 6' HIGH CHAIN LINK FENCE ENCLOSURES WITH LOCKABLE GATES AS REQUIRED FOR CONSTRUCTION ACCESS AT CONTRACTOR'S STAGING AREA AND AROUND ALL CONSTRUCTION SITES.
4. WHERE ASPHALT PAVING IS DAMAGED BY THE EXECUTION OF THIS CONTRACT, PATCH & REPAIR TO ORIGINAL OR BETTER CONDITION. WHERE (E) LAWNS ARE DAMAGED BY THE EXECUTION OF THIS CONTRACT, FILL, COMPACT, AND REPLANT AREA TO MATCH EXISTING TURF AREA.
5. CONTRACTOR SHALL MAINTAIN EXISTING PLANTING WITHIN THE JOB SITE FENCE ENCLOSURE DURING DEMOLITION AND CONSTRUCTION PHASES. EXISTING IRRIGATION SYSTEMS SHALL EITHER REMAIN OPERATIONAL FOR CONTRACTOR'S USE OR CONTRACTOR SHALL HAND WATER EXISTING PLANT MATERIALS AT LEAST ONCE A WEEK.
6. REPAIR EXISTING IRRIGATION SYSTEMS DAMAGED DURING THE EXECUTION OF THIS CONTRACT. REPLACE PLANT MATERIALS DAMAGED DURING THE CONSTRUCTION PERIOD WITH THE SAME SPECIES OF EQUAL OR GREATER SIZE.

SITE PLAN LEGEND

(E) BUILDINGS NOT IN SCOPE

PROPOSED MODULAR BUILDINGS

(E) ACCESSIBLE RESTROOMS
G=GIRLS B=BOYS
M=MENS W=WOMENS

4" THICK CONCRETE PAVING W/ #4 @18" O.C.

E.J. CONCRETE PAVING EXPANSION JOINT PER 16/A003

C.J. CONCRETE PAVING CONTROL JOINT PER 18/A003

(E) ACCESSIBLE PATH OF TRAVEL (P.O.T.) PER A#03-106604. CLOSED AND CERTIFIED 6/13/2006

POT – PATH OF TRAVEL

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT: THE POT INDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS, AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE POT WAS EXAMINED AND ANY ELEMENTS, COMPONENTS, OR PORTIONS OF THE POT THAT WERE DETERMINED TO BE NONCOMPLIANT 1) HAVE BEEN IDENTIFIED AND 2) THE DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS, OR PORTIONS OF THE POT THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS. DURING CONSTRUCTION, IF POT ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

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APP 03 117500
AC FLS SS
Date SEP 21 2016

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS

409 S. BARRANCA STREET, WEST COVINA, CA 91791

COVINA-VALLEY UNIFIED SCHOOL DISTRICT

OVERALL SITE PLAN

REVISIONS:
1
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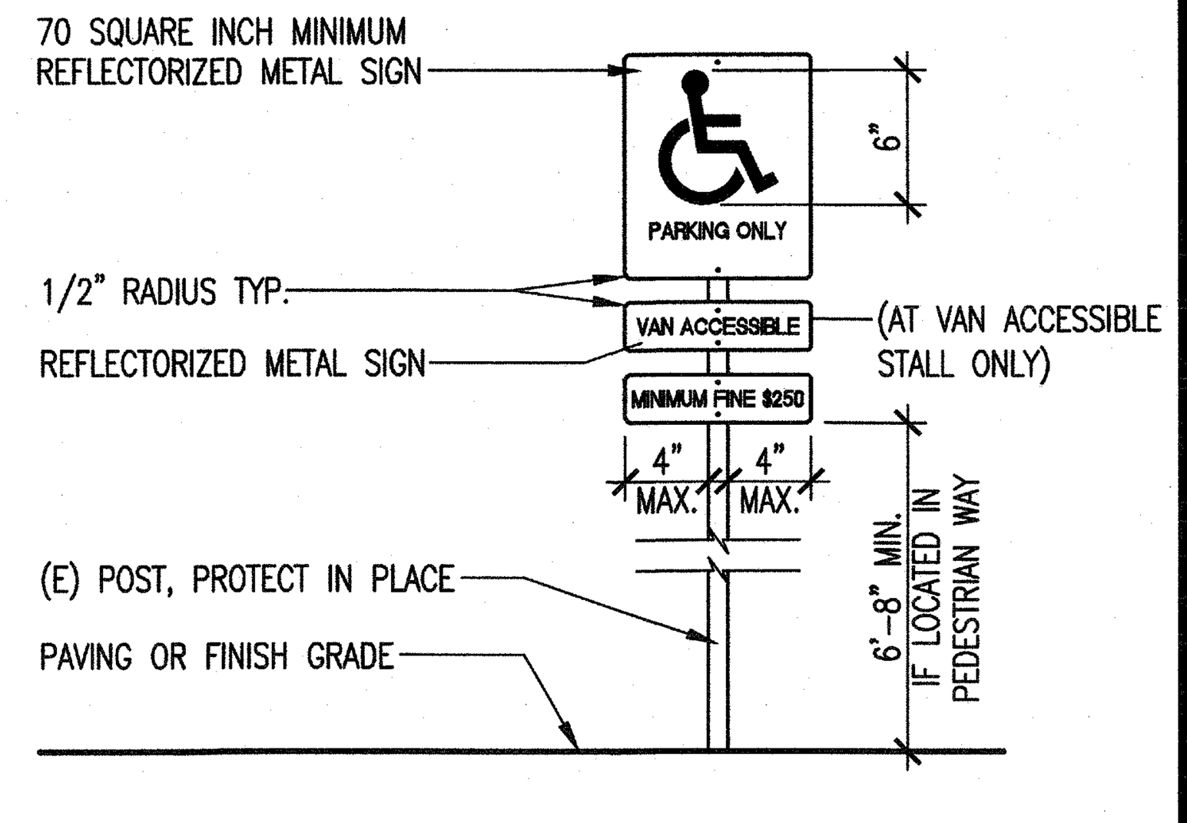
3
4
5
6
7
8

Date: 09/21/16
Job: 1633
Scale:
Drawn:

A001

SHEET – OF XXX
XREF:

SIGN NOTES:
EACH PARKING SPACE RESERVED FOR PERSONS WITH DISABILITIES SHALL BE IDENTIFIED BY A REFLECTORIZED SIGN PERMANENTLY POSTED IMMEDIATELY ADJACENT TO AND VISIBLE FROM EACH STALL OR SPACE, CONSISTING OF A PROFILE VIEW OF A WHEELCHAIR WITH OCCUPANT IN WHITE ON A DARK BLUE BACKGROUND. THE SIGN SHALL NOT BE SMALLER THAN 70 SQUARE INCHES IN AREA, AND WHEN IN A PATH OF TRAVEL, SHALL BE POSTED AT A MINIMUM HEIGHT OF 80" FROM THE BOTTOM OF THE SIGN TO THE PARKING SPACE FINISH GRADE. SPACES COMPLYING WITH C.B.C. SECTION 1129.B.3, ITEM 2 SHALL HAVE AN ADDITIONAL REFLECTORIZED SIGN STATING "VAN ACCESSIBLE" IN WHITE ON A DARK BLUE BACKGROUND MOUNTED BELOW THE SYMBOL OF ACCESSIBILITY. DARK BLUE BACKGROUND COLOR SHALL BE EQUAL TO COLOR NUMBER 15090 IN FEDERAL STANDARD 595B. ALL LETTERING SHALL BE WHITE AND A MINIMUM OF 1" IN HEIGHT. SIGN SHALL NOT OBSTRUCT PASSAGE BETWEEN STALL AND ANY ACCESSIBLE WALKWAY. PROVIDE "MINIMUM FINE $250" SIGN. PROVIDE SIGNS ON BOTH SIDES OF POST WHERE REQUIRED. SEE SITE PLAN FOR LOCATIONS.



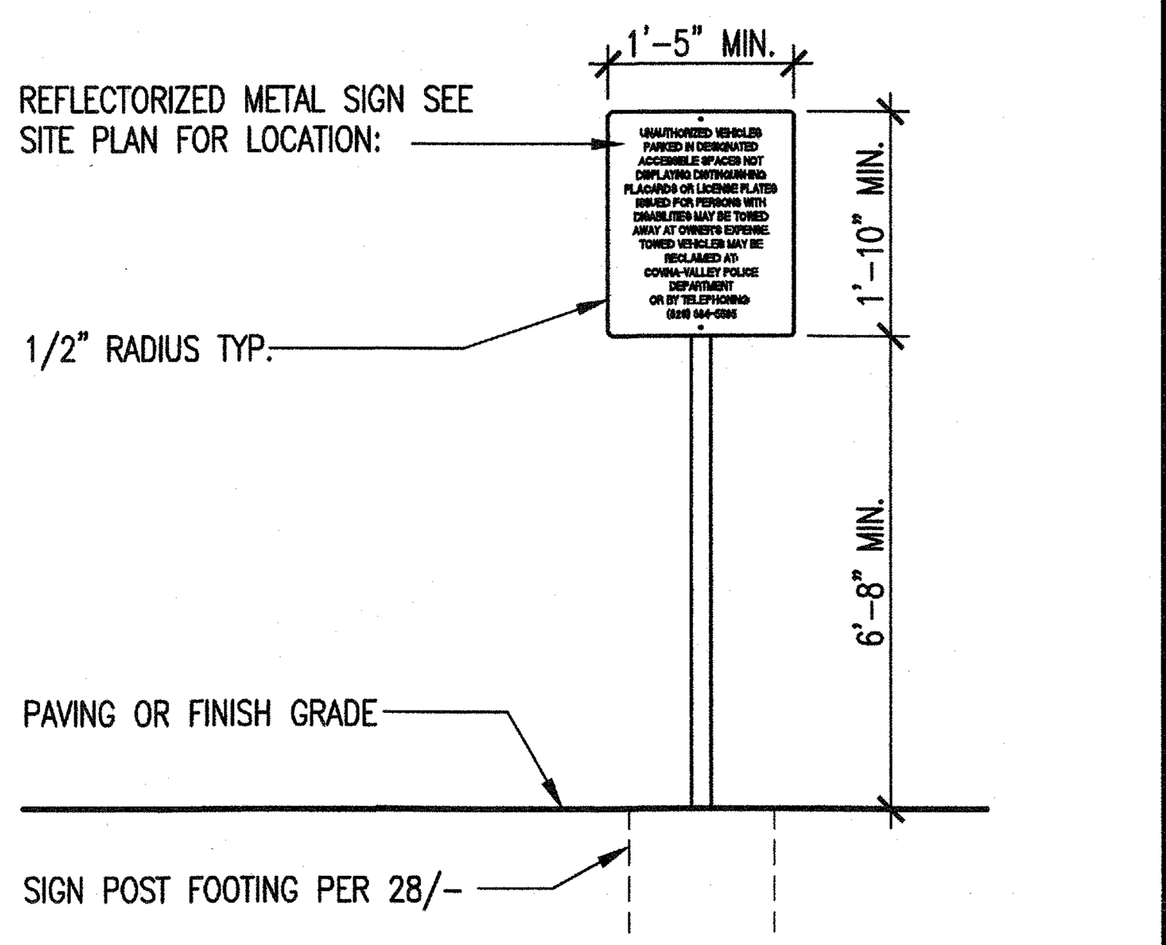
10440-23.DWG

ACCESSIBLE PARKING STALL SIGN | 21 | N.T.S.

SIGN NOTES:
A REFLECTORIZED SIGN SHALL BE PERMANENTLY POSTED IN A CONSPICUOUS PLACE AT EACH ENTRANCE TO OFF-STREET PARKING FACILITIES, OR IMMEDIATELY ADJACENT TO AND VISIBLE FROM EACH STALL OR SPACE. THE SIGN SHALL NOT BE LESS THAN 17" BY 22" IN SIZE WITH WHITE LETTERING NOT LESS THAN 1" IN HEIGHT ON A DARK BLUE BACKGROUND, WHICH CLEARLY AND CONSPICUOUSLY STATES THE FOLLOWING:

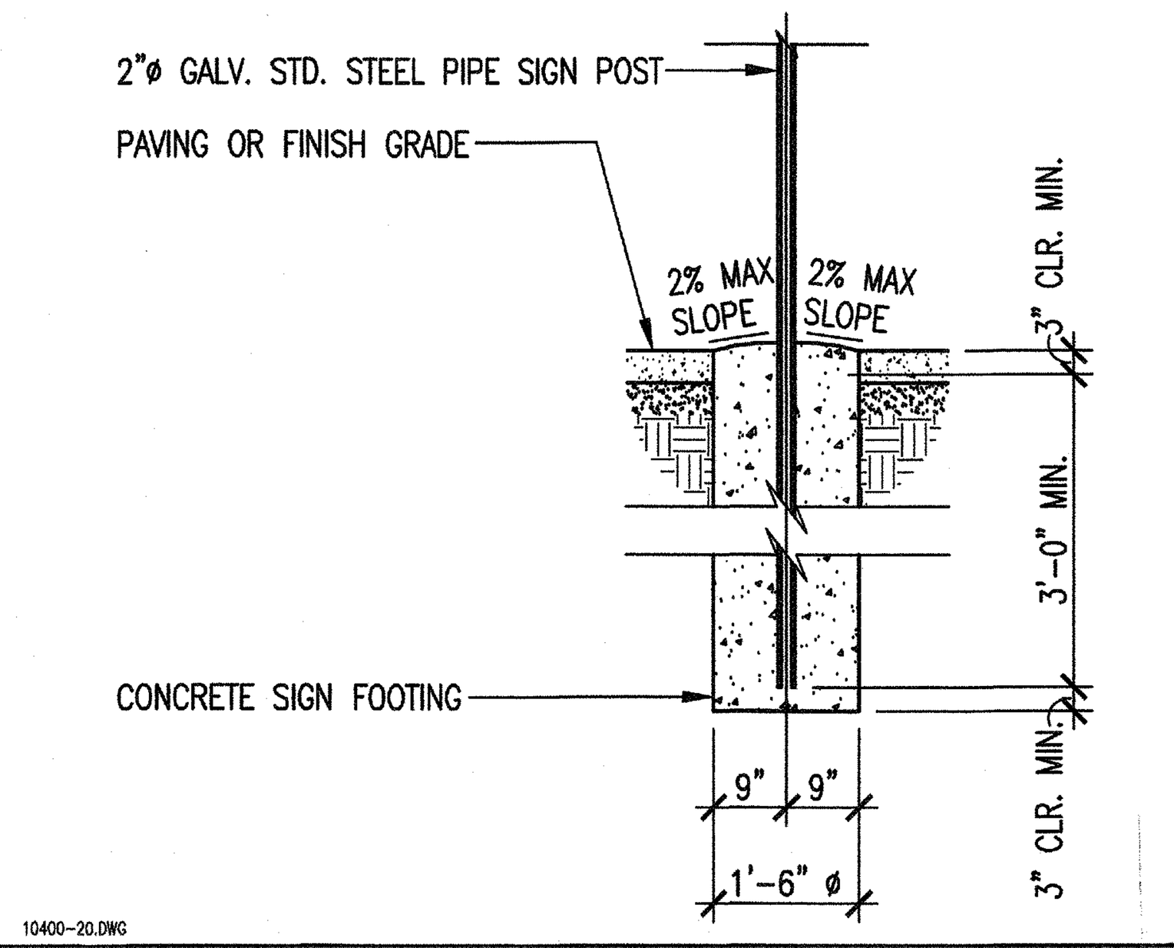
"UNAUTHORIZED VEHICLES PARKED IN DESIGNATED ACCESSIBLE SPACES NOT DISPLAYING DISTINGUISHING PLACARDS OR SPECIAL LICENSE PLATES ISSUED FOR PERSONS WITH DISABILITIES WILL BE TOWED AWAY AT THE OWNER'S EXPENSE. TOWED VEHICLES MAY BE RECLAIMED AT COVINA-VALLEY POLICE DEPARTMENT OR BY TELEPHONING 626-384-5595."

RECLAMATION ADDRESS AND TELEPHONE NUMBER SHALL BE PROVIDED AS A PERMANENT PART OF THIS SIGN. DARK BLUE BACKGROUND COLOR SHALL BE EQUAL TO COLOR NUMBER 15090 IN FEDERAL STANDARD 595B. SIGN SHALL NOT OBSTRUCT PASSAGE BETWEEN STALL AND ANY ACCESSIBLE WALKWAY. SEE SITE PLAN FOR LOCATIONS.



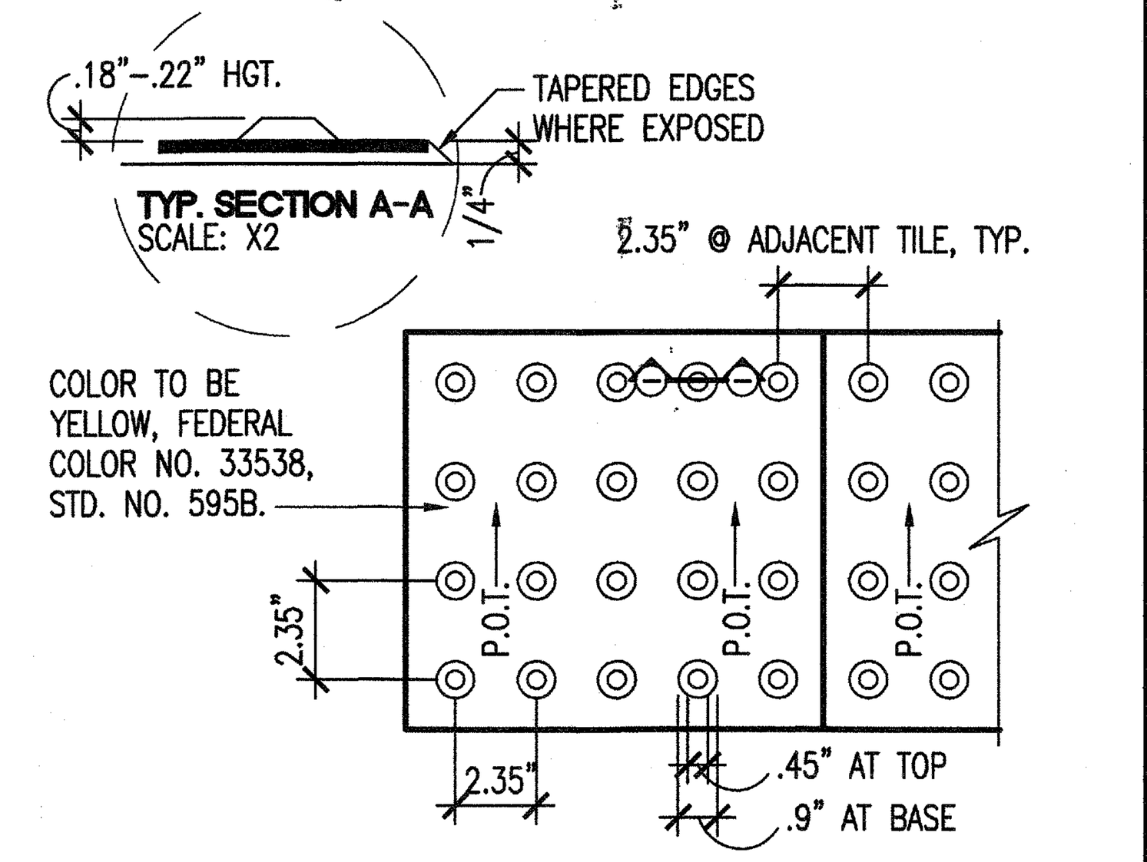
10400-22.DWG

SITE ENTRANCE SIGN | 22 | N.T.S.



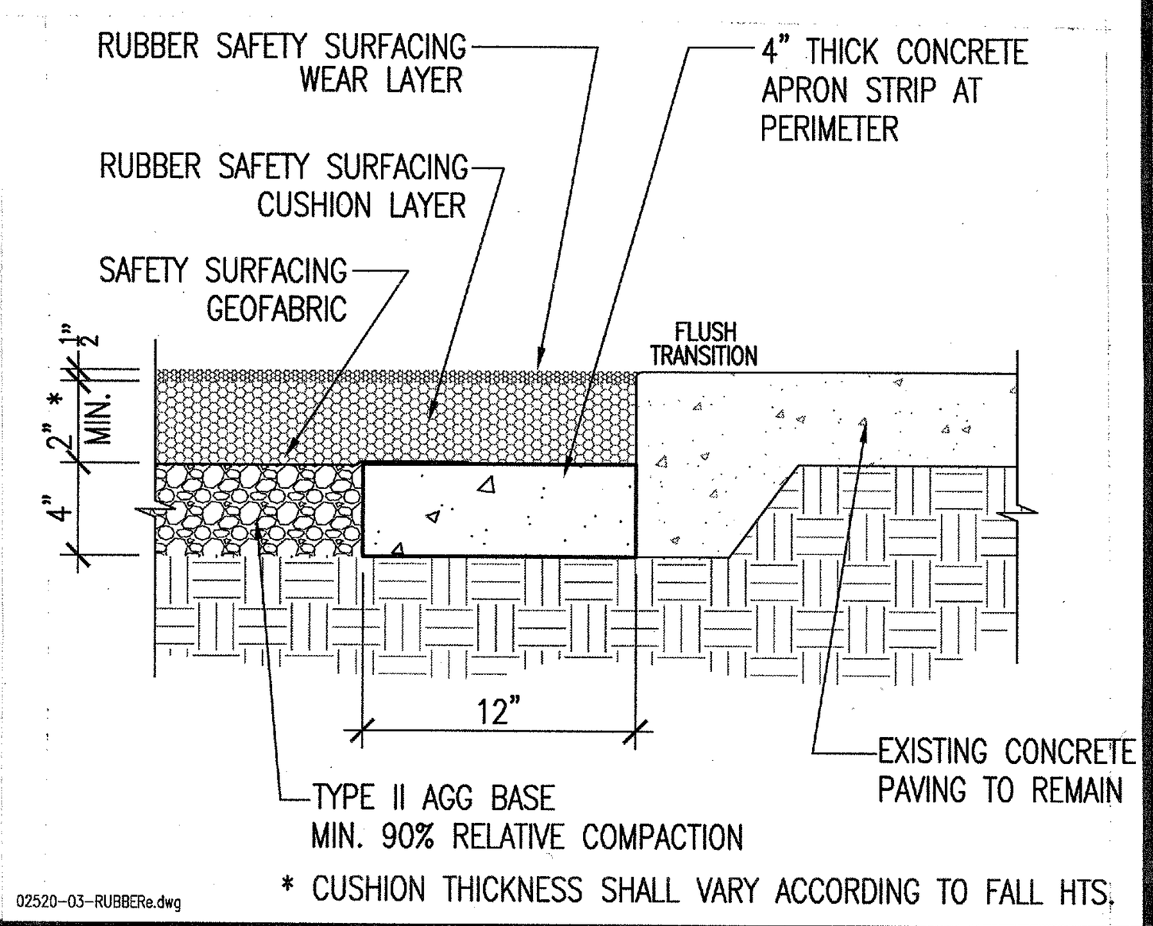
10400-20.DWG

SIGN FOOTING | 28 | 1/2"=1'-0"

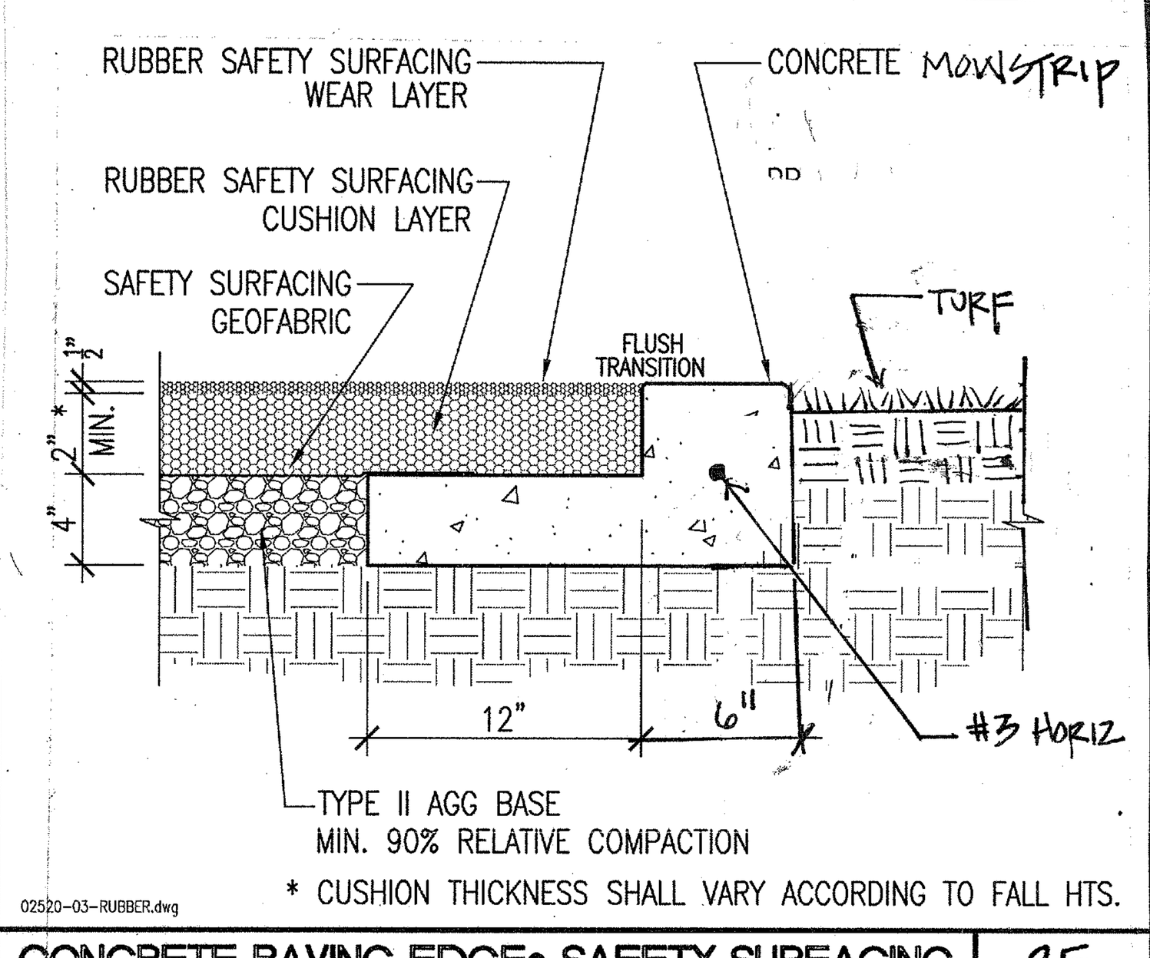


02520-23.dwg

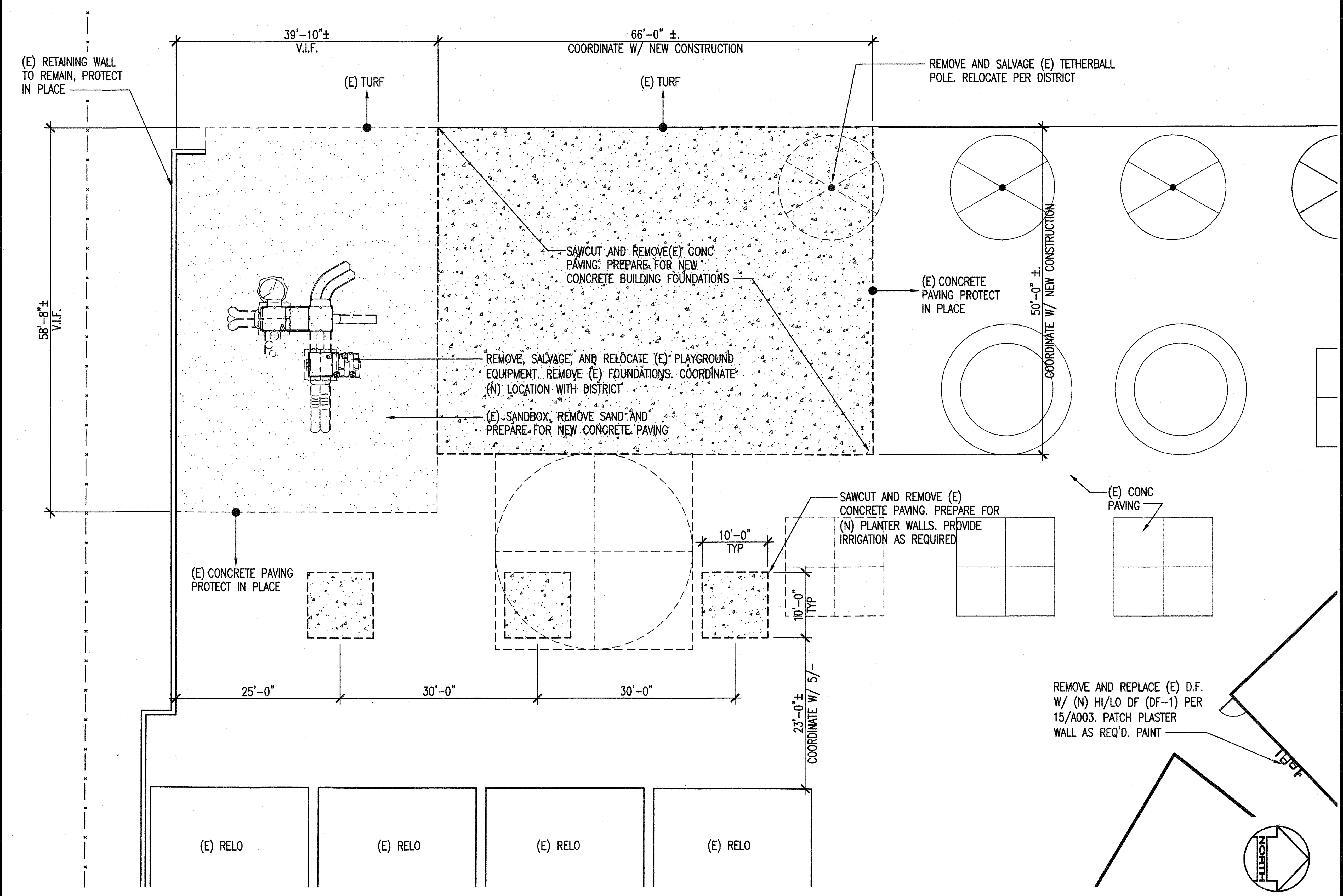
DETECTABLE WARNING | 23 | 3"=1'-0"



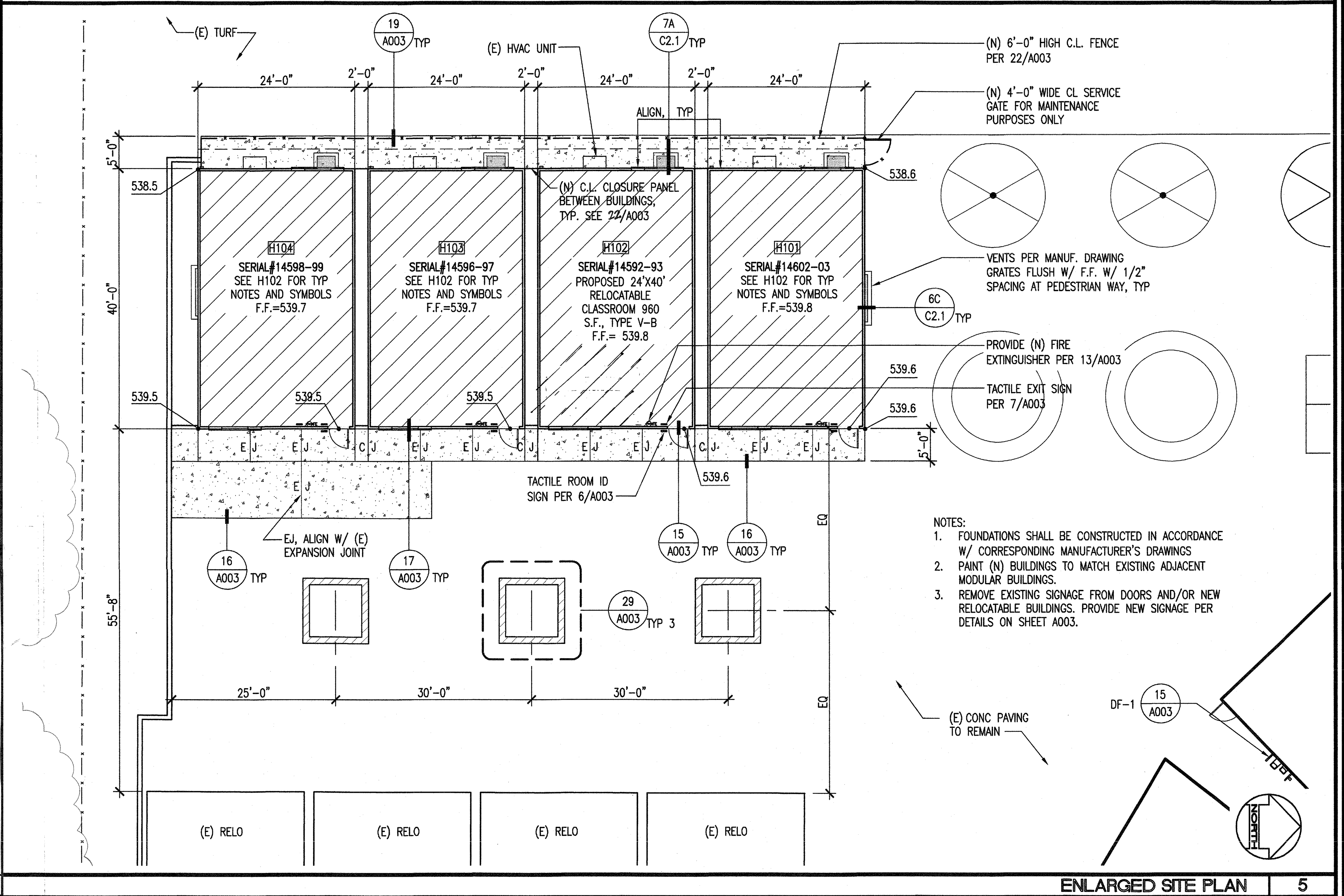
| 29 | **CONCRETE PAVING EDGE• SAFETY SURFACING** | 24 | 1 1/2" = 1'-0" |



| 30 | **CONCRETE PAVING EDGE• SAFETY SURFACING** | 25 | 1 1/2" = 1'-0" |



PARTIAL DEMOLITION SITE PLAN | 2 | 1"=10'-0"



NOTES:
1. FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE W/ CORRESPONDING MANUFACTURER'S DRAWINGS
2. PAINT (N) BUILDINGS TO MATCH EXISTING ADJACENT MODULAR BUILDINGS.
3. REMOVE EXISTING SIGNAGE FROM DOORS AND/OR NEW RELOCATABLE BUILDINGS. PROVIDE NEW SIGNAGE PER DETAILS ON SHEET A003.

ENLARGED SITE PLAN | 5 | 1"=10'-0"

KEYNOTES GENERALLY CORRESPOND TO SPECIFICATION SECTIONS BY MEANS OF THE FIVE-DIGIT NUMBER IDENTIFYING THE SPECIFICATION SECTION AS A MATTER OF REFERENCE AND CONVENIENCE. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL WORK INDICATED HEREIN PURSUANT TO THE GENERAL CONDITIONS AND TECHNICAL SPECIFICATIONS OF THE CONTRACT, REGARDLESS OF WHETHER OR NOT THE KEYNOTE(S) SPECIFICALLY CORRESPOND TO ANY SPECIFICATION DIVISION PROVIDED IN THE TECHNICAL SPECIFICATIONS.

DEMOLITION LEGEND

(hatch)	SAWCUT & REMOVE EXISTING CONCRETE PAVING
(hatch)	REMOVE EXISTING SAND BOX
— — —	DEMOLISH EXISTING
———	EXISTING TO REMAIN

SITE NOTES

1. FOR TYPICAL SYMBOLS AND ABBREVIATIONS, SEE SHEET G001.
2. PROTECT AND SAFEGUARD FROM DAMAGES ALL EXISTING CONSTRUCTION AND FINISHES TO REMAIN.
3. PROVIDE TEMPORARY 6' HIGH CHAIN LINK FENCE ENCLOSURES WITH LOCKABLE GATES AS REQUIRED FOR CONSTRUCTION ACCESS AT CONTRACTOR'S STAGING AREA AND AROUND ALL CONSTRUCTION SITES.
4. WHERE ASPHALT PAVING IS DAMAGED BY THE EXECUTION OF THIS CONTRACT, PATCH & REPAIR TO ORIGINAL OR BETTER CONDITION. WHERE (E) LAWNS ARE DAMAGED BY THE EXECUTION OF THIS CONTRACT, FILL, COMPACT, AND REPLANT AREA TO MATCH EXISTING TURF AREA.
5. CONTRACTOR SHALL MAINTAIN EXISTING PLANTING WITHIN THE JOB SITE FENCE ENCLOSURE DURING DEMOLITION AND CONSTRUCTION PHASES. EXISTING IRRIGATION SYSTEMS SHALL EITHER REMAIN OPERATIONAL FOR CONTRACTOR'S USE OR CONTRACTOR SHALL HAND WATER EXISTING PLANT MATERIALS AT LEAST ONCE A WEEK.
6. REPAIR EXISTING IRRIGATION SYSTEMS DAMAGED DURING THE EXECUTION OF THIS CONTRACT. REPLACE PLANT MATERIALS DAMAGED DURING THE CONSTRUCTION PERIOD WITH THE SAME SPECIES OF EQUAL OR GREATER SIZE.

SITE PLAN LEGEND

	(E) BUILDINGS NOT IN SCOPE
	PROPOSED MODULAR BUILDINGS
	(E) ACCESSIBLE RESTROOMS G=GIRLS B=BOYS M=MENS W=WOMENS
	4" THICK CONCRETE PAVING W/ #4 @18" O.C.
E.J.	CONCRETE PAVING EXPANSION JOINT PER 16/A003
C.J.	CONCRETE PAVING CONTROL JOINT PER 18/A003

PLUMBING FIXTURE LEGEND

DF-1	DRINKING FOUNT, ADA COMPLIANT	ELKAY #EDFPVR217FC, WALL HUNG, DUAL HEIGHT, 18 GAUGE STAINLESS STEEL, SATIN FINISH, SAFETY BUBBLERS, VANDAL RESISTANT PUSH BUTTONS, INTEGRAL FLOW REGULATOR, VANDAL RESISTANT BUBBLERS. A.B. 1953 COMPLIANT.

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ENLARGED SITE PLAN AND SITE DETAILS

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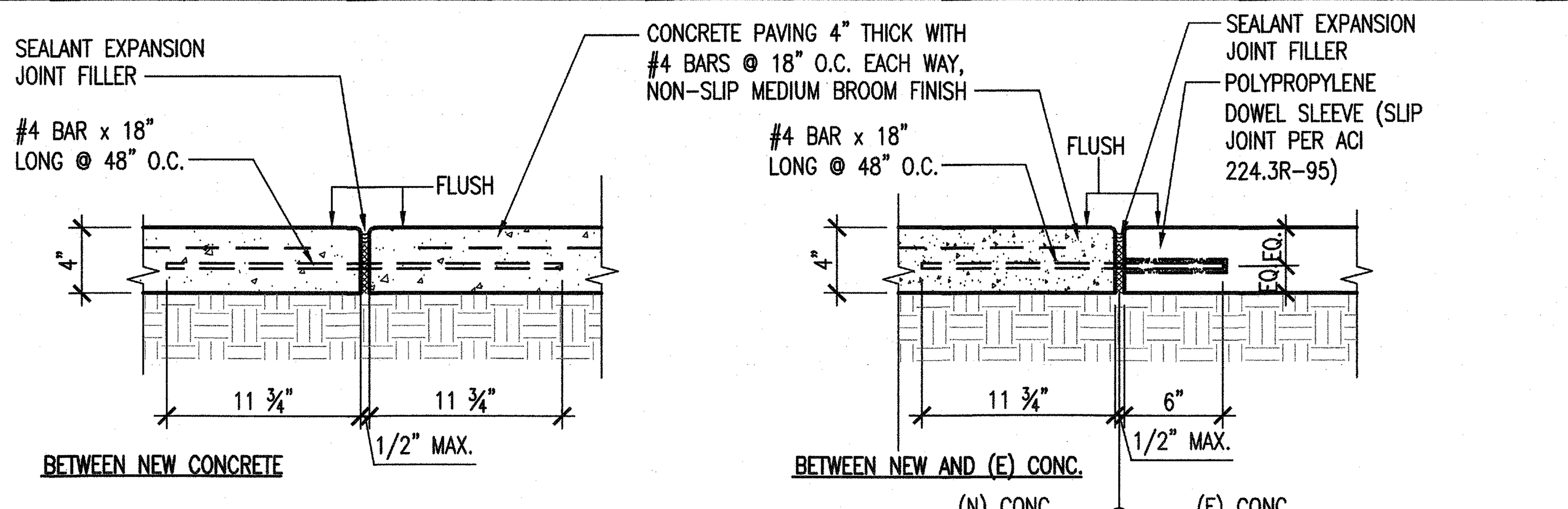
Scale:
Drawn:

A002

SHEET - OF XXX
XREF:

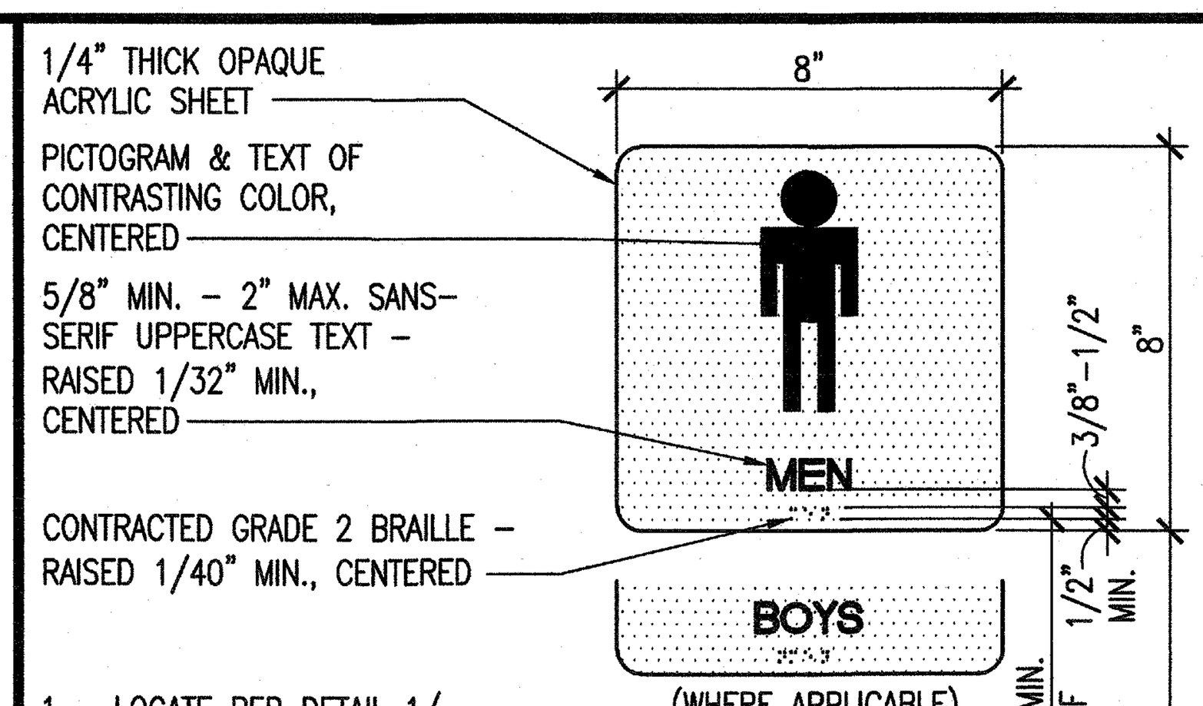
16 CONCRETE PAVING EXPANSION JOINT DETAILS — 1/2" = 1'-0"



NOTE:
PLACE EXPANSION JOINT @ 16'-0" E.W. MAX. U.N.O. SEE SITE PLAN FOR LOCATIONS

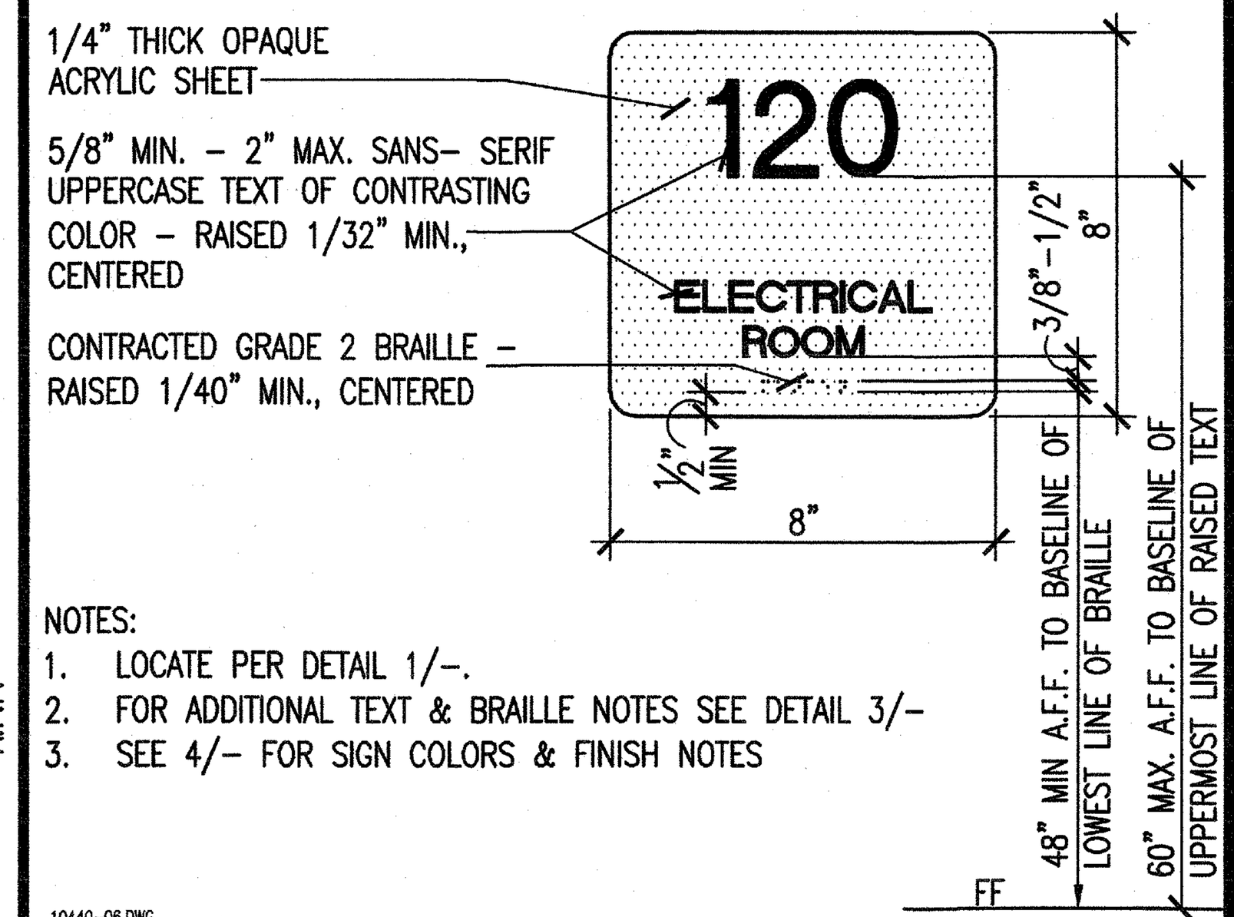
NOTE
1. VERTICAL CHANGE IN ELEVATION ALONG ACCESSIBLE PATH OF TRAVEL CANNOT EXCEED 1/4" PER CBC 11B-303.2
2. LEVEL CHANGE BETWEEN 1/4"-1/2" MUST BE BEVELED @ 1:2 MAX PER CBC 11B-303.3.

11 WALL MOUNTED RESTROOM SIGNAGE — 3"=1'-0"
MENS/BOYS RESTROOMS



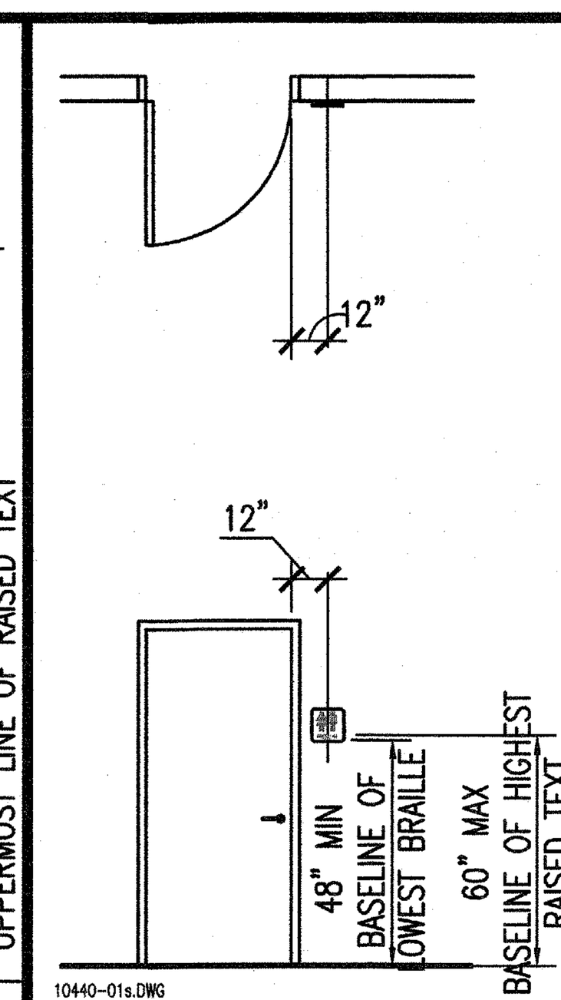
1. LOCATE PER DETAIL 1/-.
2. PROVIDE SIGN AT ALL MENS/BOYS RESTROOM DOORS U.N.O.
3. FOR ADDITIONAL TEXT & BRAILLE NOTES SEE DETAIL 3/-.
4. SEE 4/- FOR SIGN COLORS & FINISH NOTES.
5. *48" MIN. TO BOTTOM OF LOWEST BASELINE OF BRAILLE CELLS

6 ROOM IDENTIFICATION SIGNAGE — 3"=1'-0"



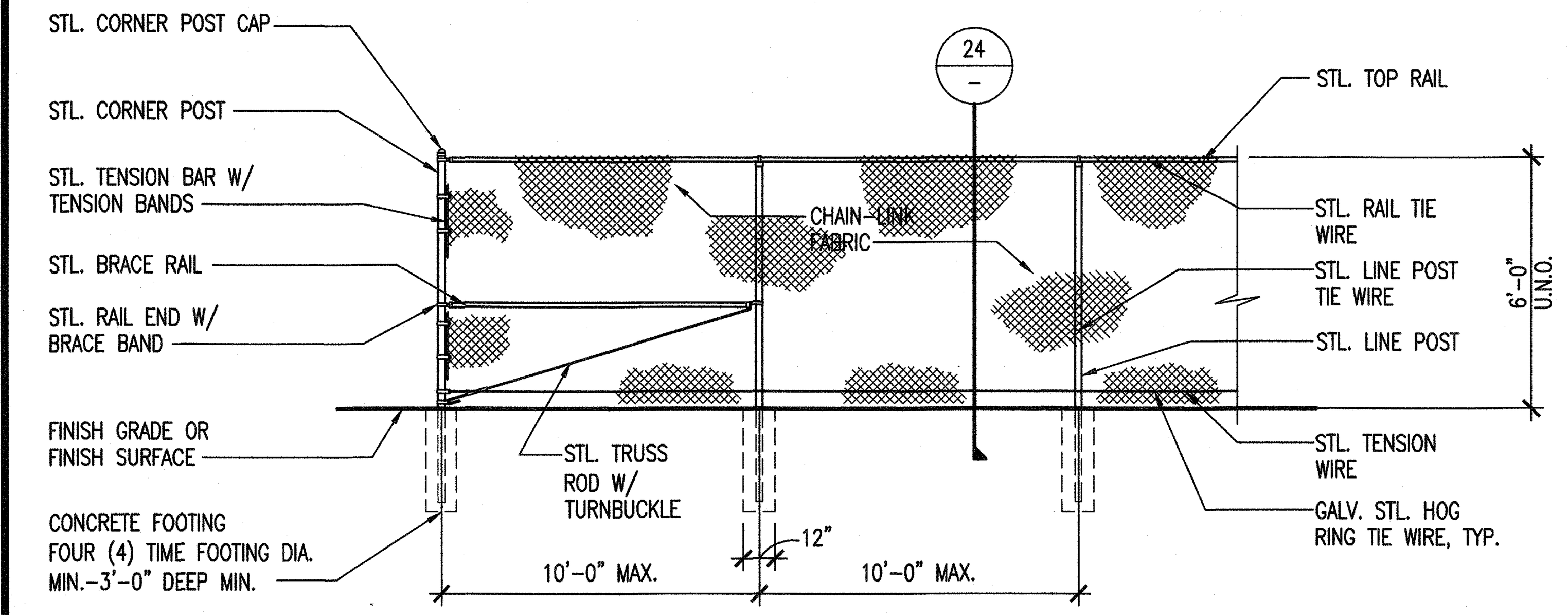
NOTES:
1. LOCATE PER DETAIL 1/-.
2. FOR ADDITIONAL TEXT & BRAILLE NOTES SEE DETAIL 3/-
3. SEE 4/- FOR SIGN COLORS & FINISH NOTES

1 WALL MOUNTED SIGNAGE LOCATION — 1/4" = 1'-0"

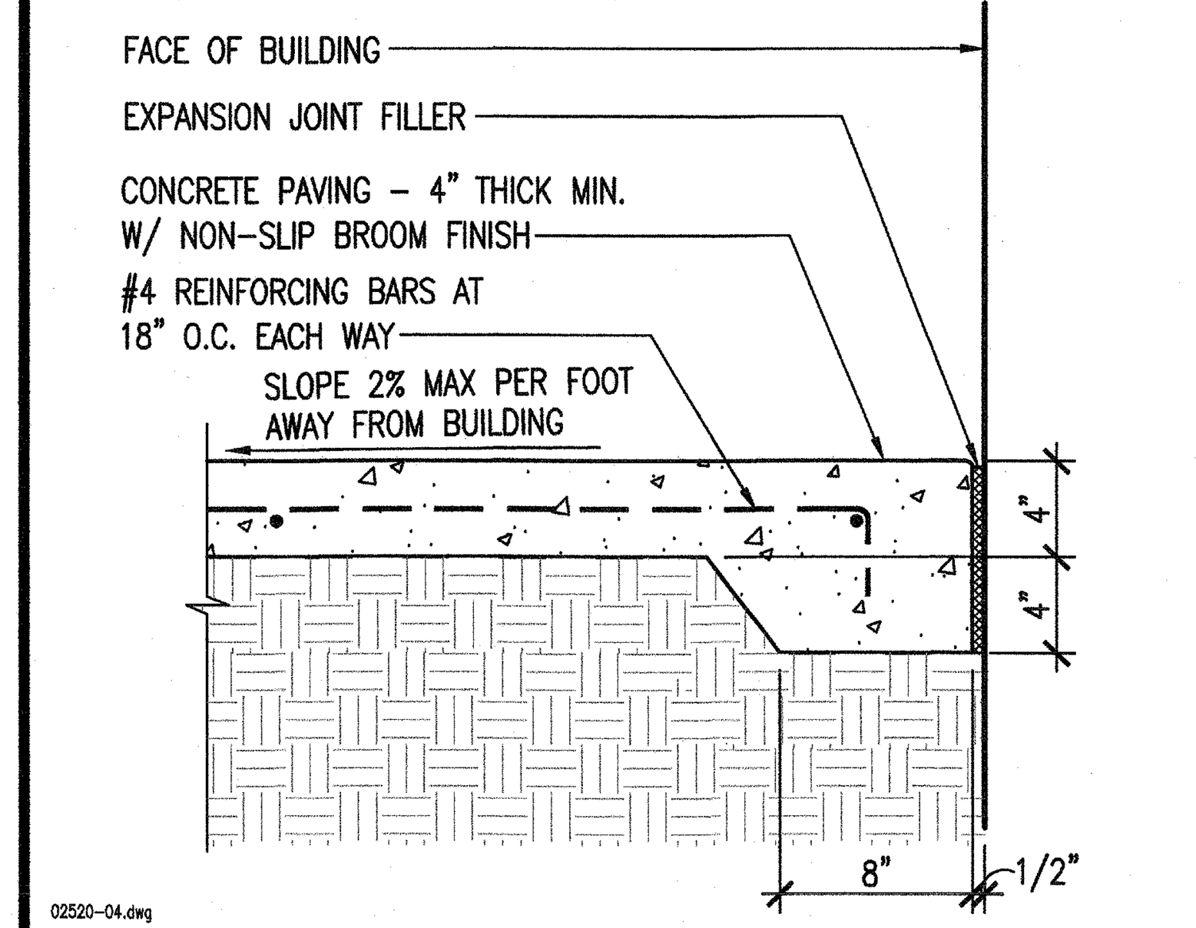


NOTES:
SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE, INCLUDING DOUBLE LEAF DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL, PREFERABLY ON THE RIGHT. MOUNTING HEIGHT SHALL BE 60" MAX TO THE BASELINE OF THE HIGHEST LINE OF RAISED CHARACTERS AND 48" TO THE BASELINE OF THE LOWEST LINE OF BRAILLE (CBC SECTION 11B-703.4.1). MOUNTING LOCATION SHALL BE DETERMINED SO THAT A PERSON MAY APPROACH WITHIN 3" OF SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING OF A DOOR. FOR PAIRS OF DOORS WHERE DOOR SWING IS LIMITED TO 90° MOUNT SIGN 12" FROM EDGE OF DOOR. FOR PAIRS OF DOORS WHERE DOOR SWING EXCEEDS 90° MOUNT SIGN DOOR WIDTH PLUS 12" FROM EDGE OF DOOR.

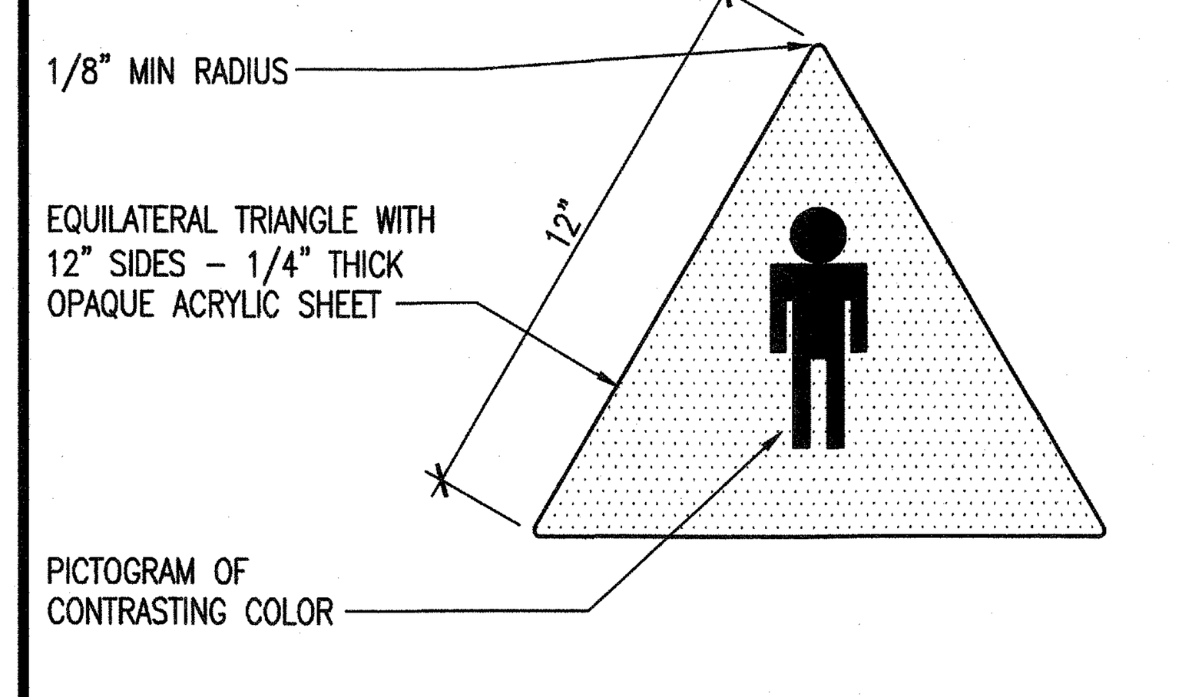
22 CHAIN LINK FENCE — 1/4"=1'-0"



17 CONCRETE ASPHALT PAVING JOINT — 1/2" = 1'-0"

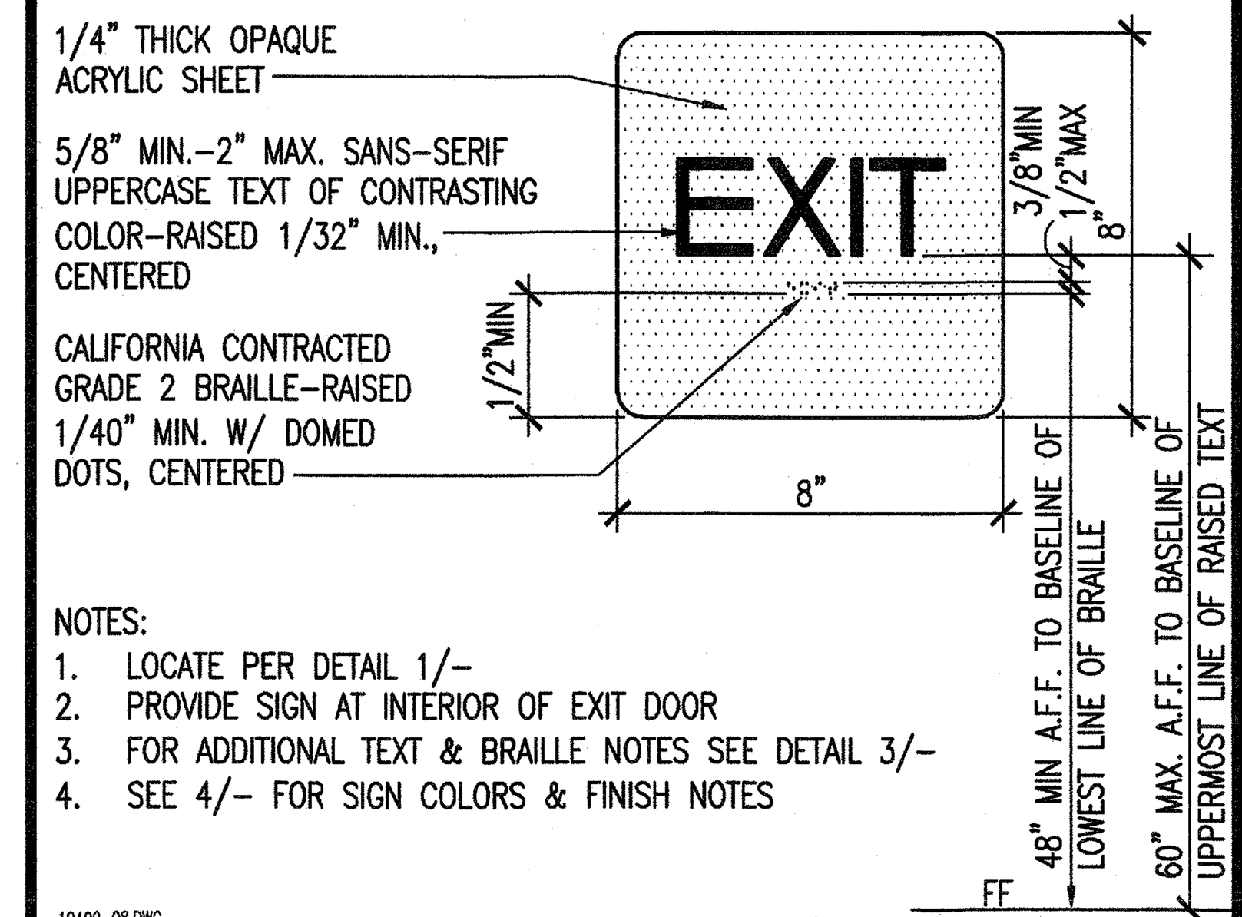


12 DOOR MOUNTED RESTROOM SIGNAGE — 3"=1'-0"
MENS/BOYS RESTROOMS



1. PROVIDE SIGN AT ALL MENS/BOYS RESTROOM DOORS, U.N.O. LOCATE PER DETAIL 2/-
2. SIGN COLOR SHALL DISTINCTLY CONTRAST WITH DOOR COLOR. SEE 4/-.

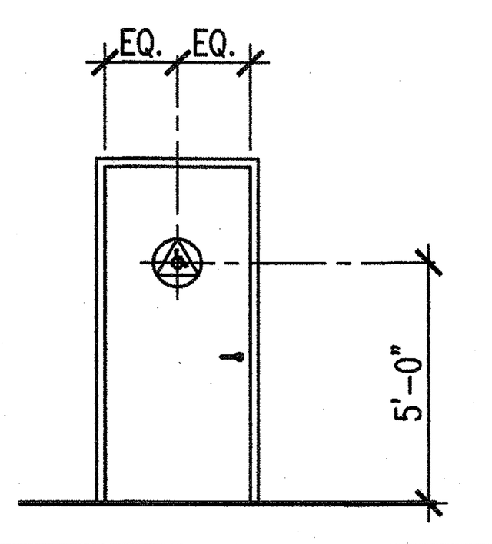
7 TACTILE EXIT SIGNAGE — 3"=1'-0"



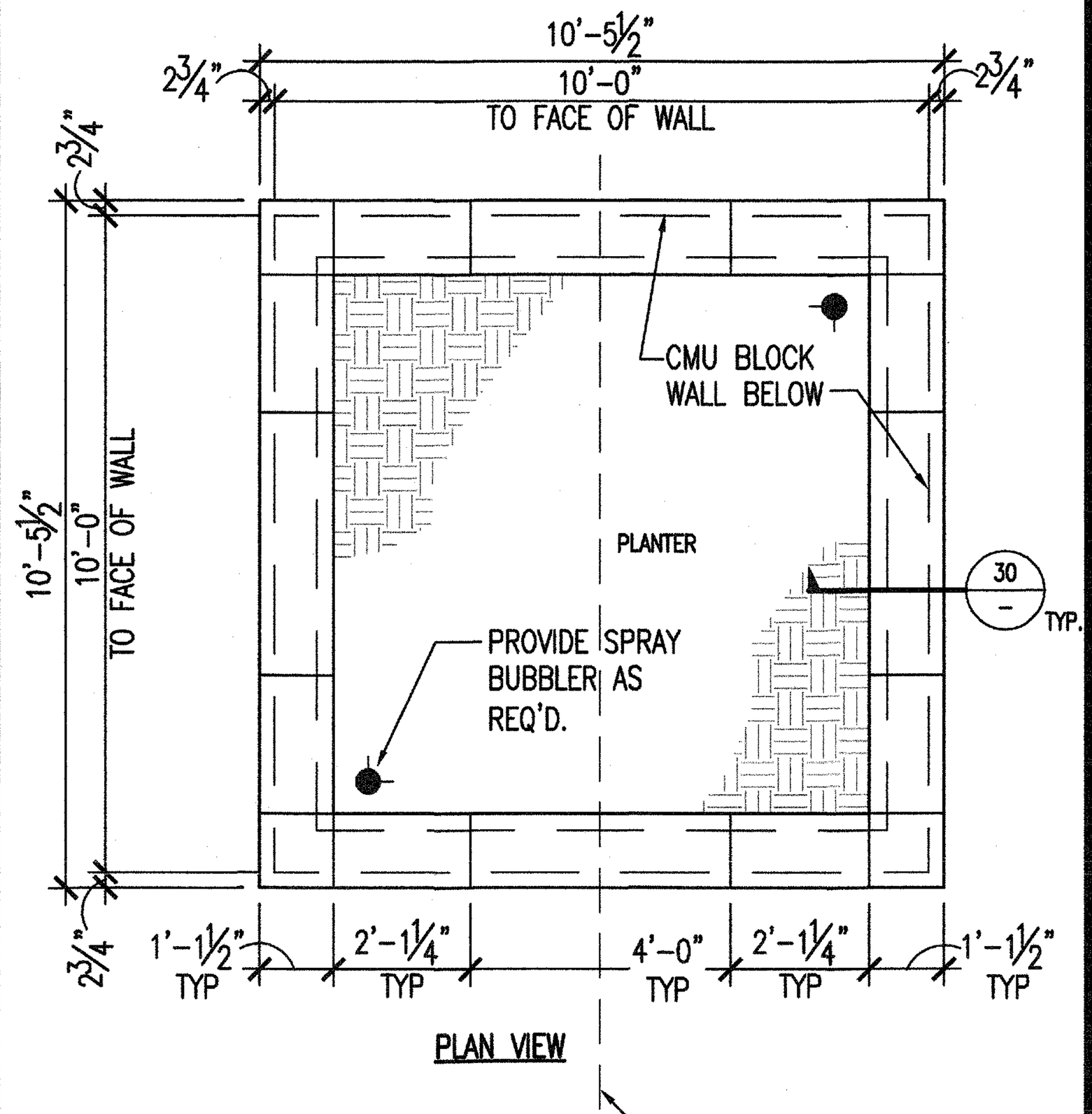
NOTES:
1. LOCATE PER DETAIL 1/-
2. PROVIDE SIGN AT INTERIOR OF EXIT DOOR
3. FOR ADDITIONAL TEXT & BRAILLE NOTES SEE DETAIL 3/-
4. SEE 4/- FOR SIGN COLORS & FINISH NOTES

2 DOOR MOUNTED SIGNAGE LOCATION — 1/4"=1'-0"

NOTES:
SIGNS SHALL BE INSTALLED CENTERED ON THE DOOR. MOUNTING HEIGHT SHALL BE 60" ABOVE THE FINISH FLOOR TO THE CENTERLINE OF THE SIGN. THE COLOR AND CONTRAST OF THE SIGN SHALL BE DISTINCTLY DIFFERENT FROM THE COLOR AND CONTRAST OF THE DOOR.

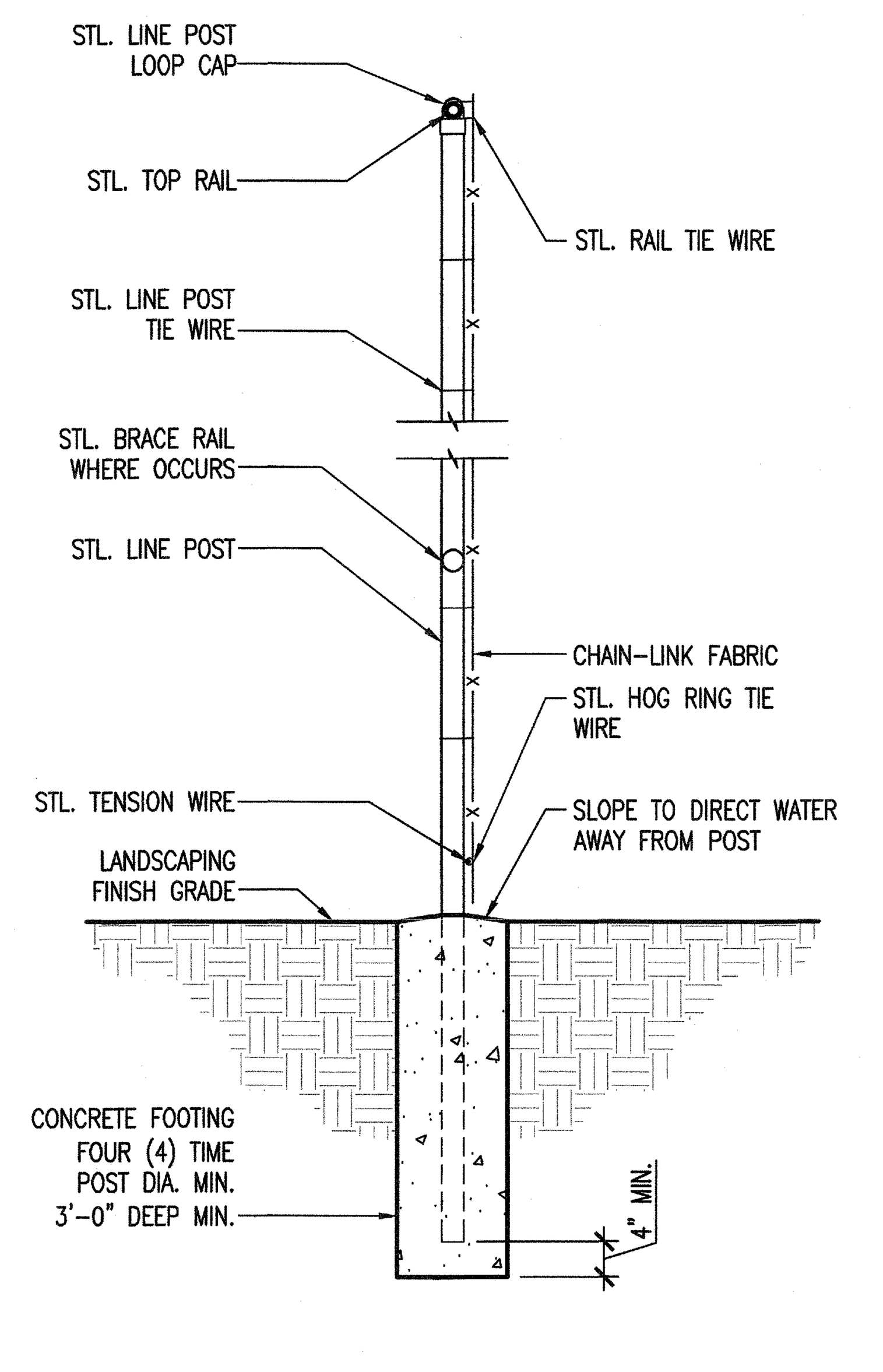


29 PLANTER SEATWALL — 3/8"=1'-0"



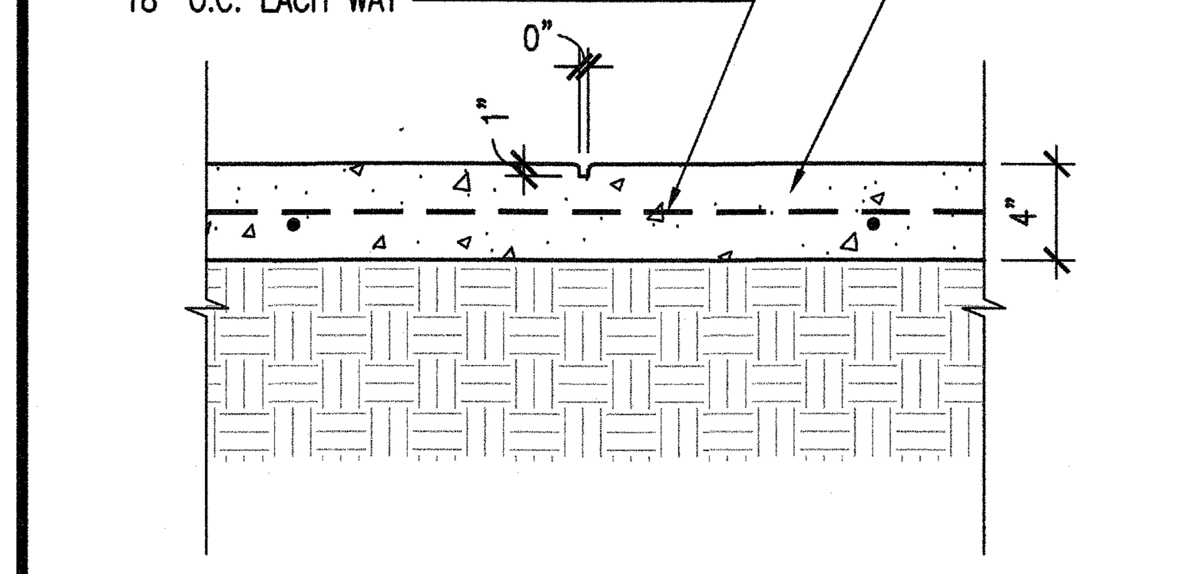
PROVIDE PVC PIPE 3/4"-2" SCH. 40 AS LATERAL LINES 12" BELOW GRADE. PLACE BELOW ALL PAVING, HARDSCAPE, ETC., AND AS DIRECTED BY OWNER'S AUTHORIZED REPRESENTATIVE.

24 CHAIN-LINK FENCE — 3/4"=1'-0"

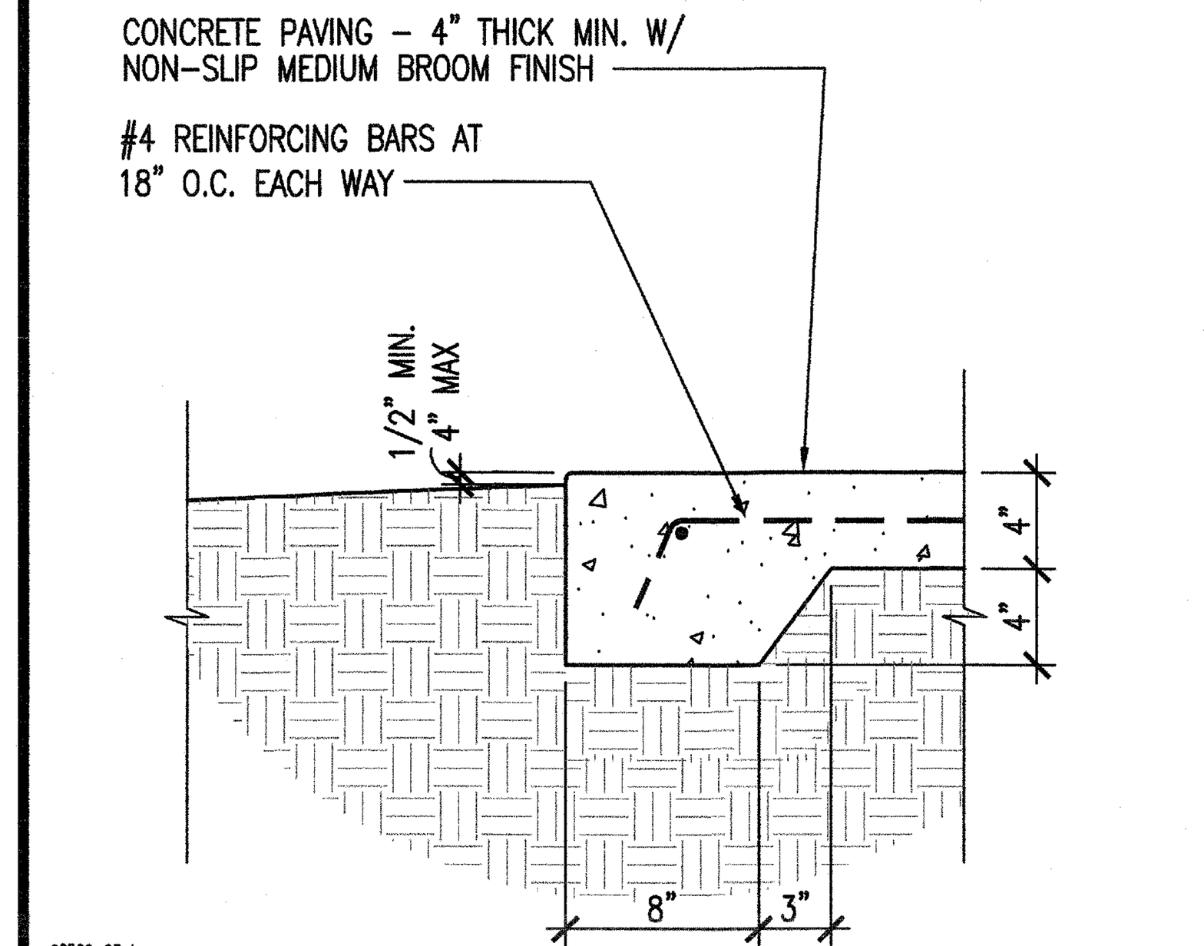


18 CONCRETE PAVING CONTROL JOINT — 1 1/2" = 1'-0"

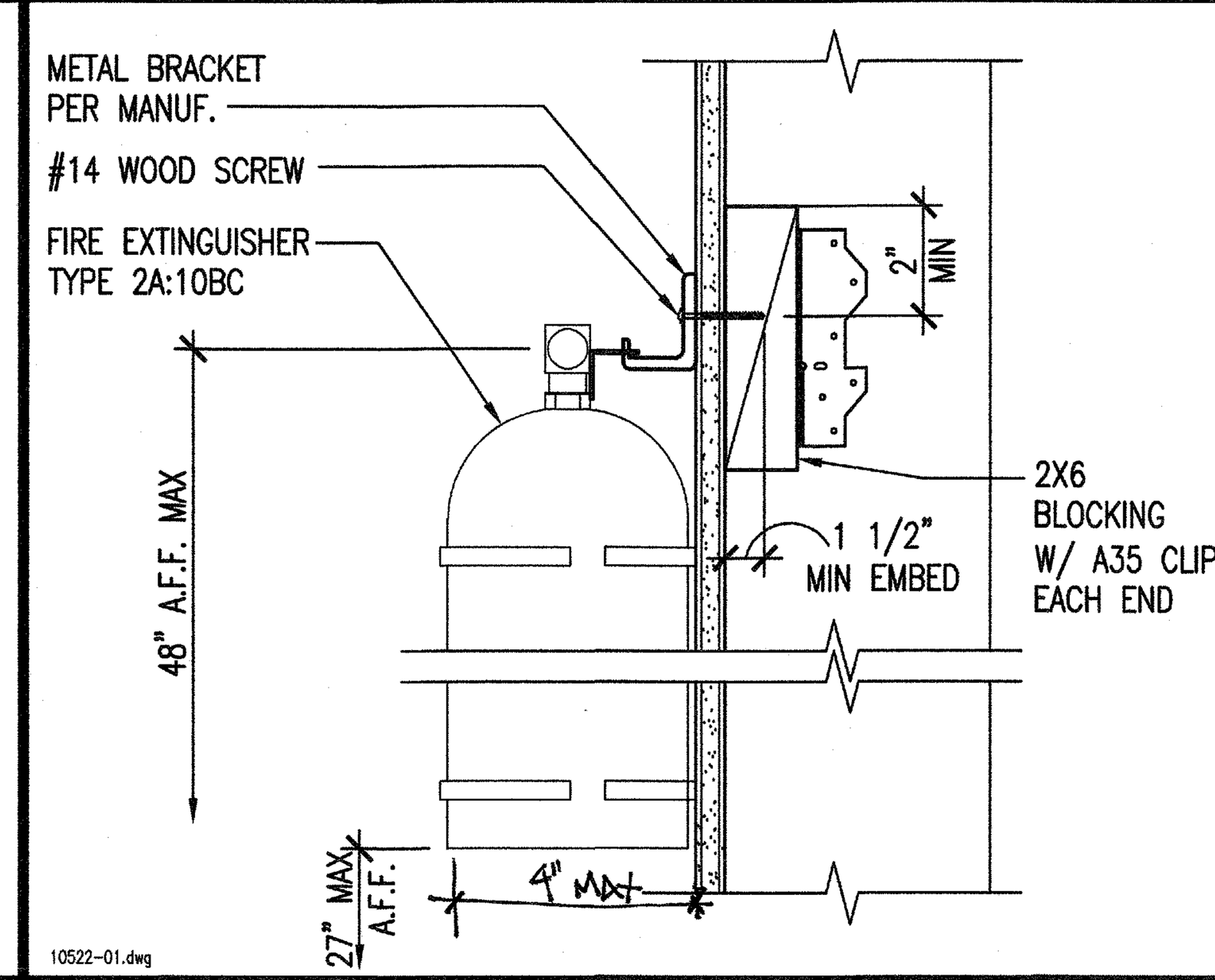
NOTE: PLACE CONTROL JOINTS AT 8'-0" EACH WAY MAXIMUM U.N.O. - SEE SITE PLAN FOR LOCATIONS



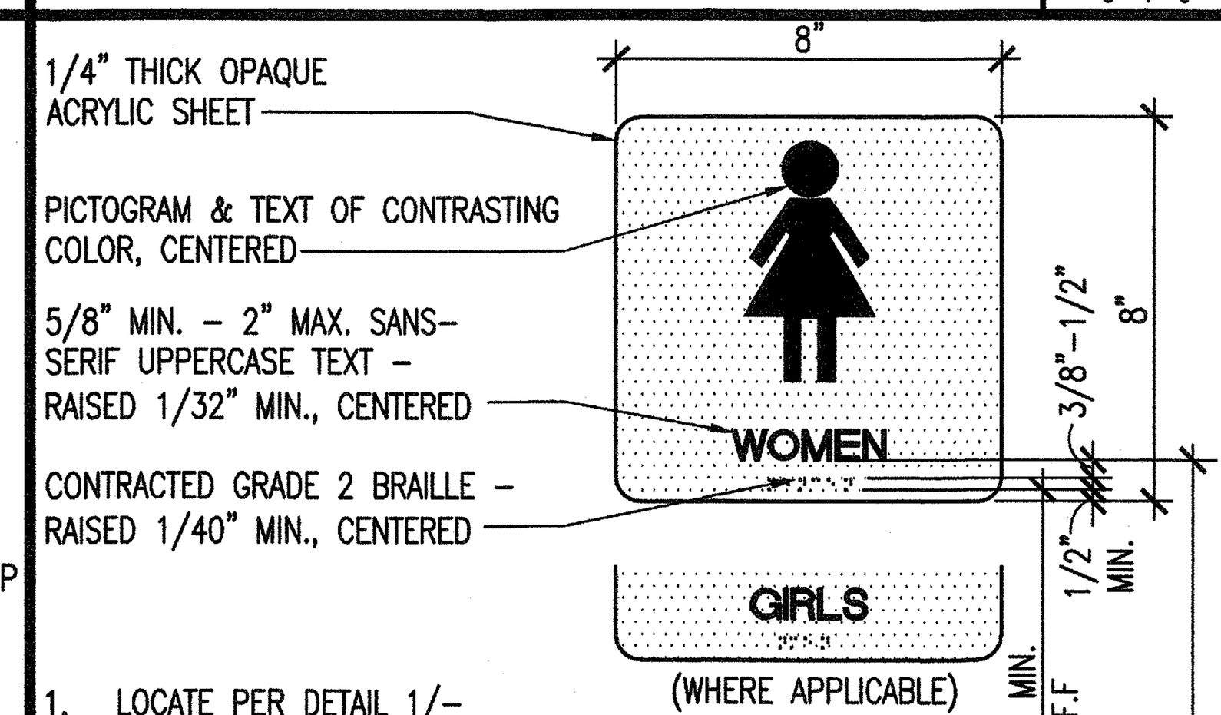
19 CONCRETE PAVING EDGE — 1 1/2" = 1'-0"



13 WALL MOUNTED FIRE EXTINGUISHER — 3"=1'-0"



8 WALL MOUNTED RESTROOM SIGNAGE — 3"=1'-0"
WOMEN/GIRLS RESTROOMS



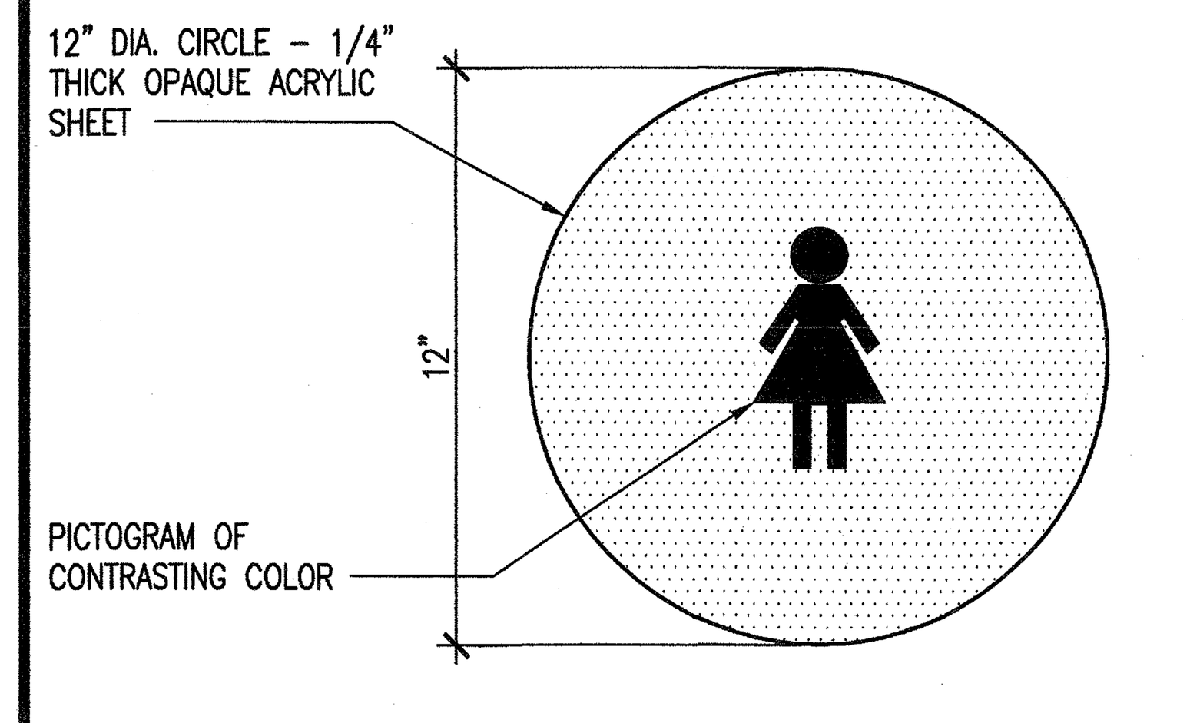
1. LOCATE PER DETAIL 1/-
2. PROVIDE SIGN AT ALL WOMENS/GIRLS RESTROOM DOORS, U.N.O.
3. FOR ADDITIONAL TEXT & BRAILLE NOTES SEE DETAIL 3/-
4. SEE 4/- FOR SIGN COLORS & FINISH NOTES
5. *48" MIN. TO BOTTOM OF LOWEST BASELINE OF BRAILLE CELLS

3 TEXT & BRAILLE SYMBOL NOTES — N.T.S.

TEXT:
LETTERS AND NUMBERS SHALL HAVE A WIDTH TO HEIGHT RATIO BETWEEN 3:5 AND 1:1 AND A STROKE WIDTH TO HEIGHT RATIO BETWEEN 1:5 AND 1:10. LETTERS AND NUMBERS ON SIGNS SHALL BE RAISED 1/32" MINIMUM AND SHALL BE SANS-SERIF UPPERCASE CHARACTERS ACCOMPANIED BY GRADE 2 CONTRACTED BRAILLE. RAISED CHARACTERS OR SYMBOLS SHALL BE A MINIMUM OF 5/8" HIGH AND A MAXIMUM OF 2" HIGH. THE MINIMUM AND MAXIMUM HEIGHT IS MEASURED USING AN UPPERCASE X. VERIFY TEXT WITH DOOR SCHEDULE.

BRAILLE SYMBOLS:
CONTRACTED GRADE 2 BRAILLE SHALL BE USED WHEREVER BRAILLE SYMBOLS ARE REQUIRED BY THE CALIFORNIA BUILDING CODE. BRAILLE SHALL BE LOCATED A MINIMUM OF 3/8" & 1/2" MAX. PER CBC 11B-703.3.2 BELOW TACTILE CHARACTERS. BRAILLE DOTS SHALL BE 1/10" ON CENTERS IN EACH CELL WITH 2/10" SPACE BETWEEN CELLS. BRAILLE DOTS SHALL BE RAISED 1/40" MINIMUM ABOVE THE BACKGROUND, WITH DOMED DOTS.

9 DOOR MOUNTED RESTROOM SIGNAGE — 3"=1'-0"
WOMEN/GIRLS RESTROOMS



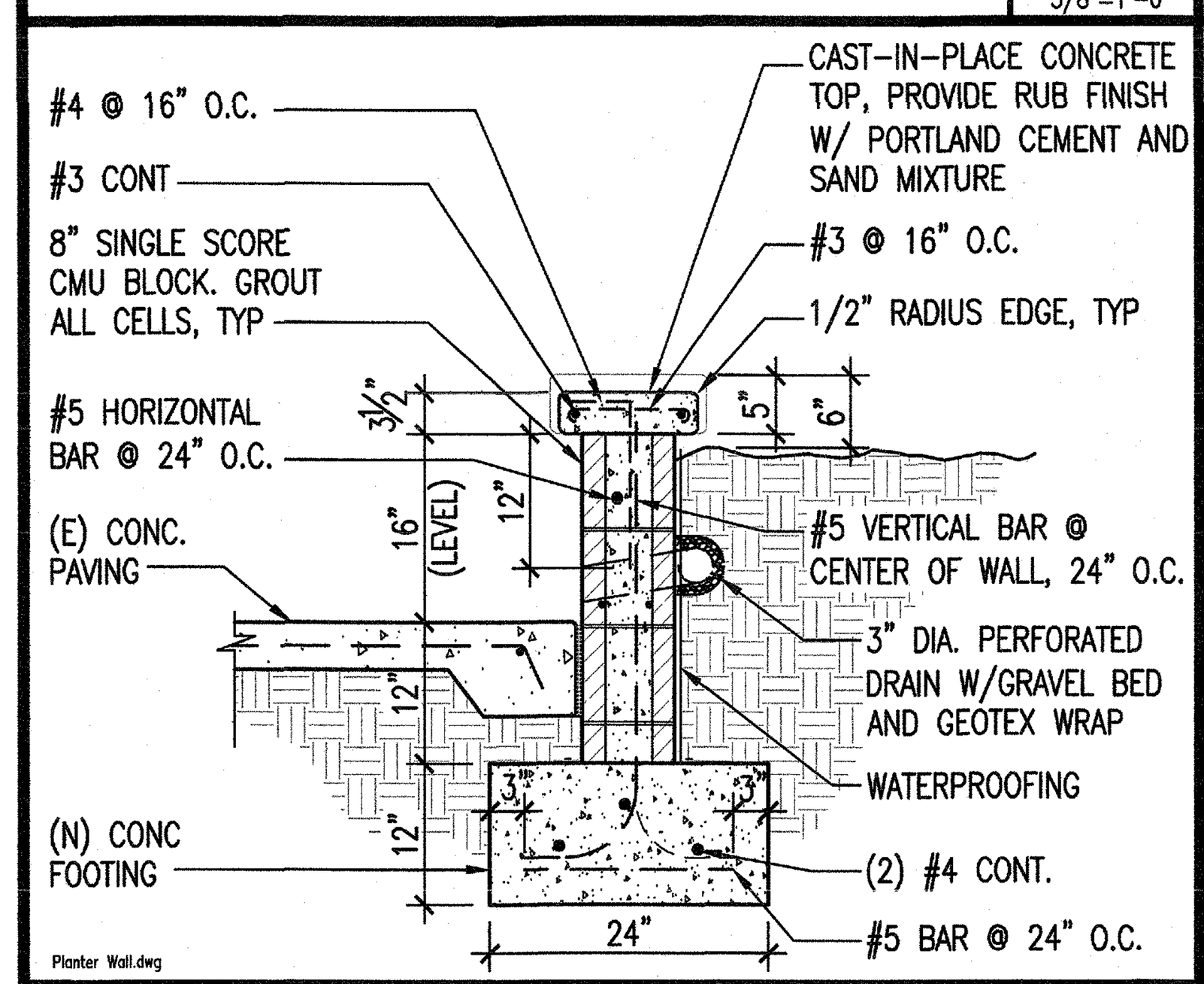
1. PROVIDE SIGN AT ALL WOMENS/GIRLS RESTROOM DOORS, U.N.O. LOCATE PER DETAIL 2/-.
2. SIGN COLOR SHALL DISTINCTLY CONTRAST WITH DOOR COLOR. SEE 4/-

4 SIGN COLORS & FINISH NOTES — N.T.S.

FINISH:
CHARACTERS, SYMBOLS, PICTOGRAMS AND THEIR BACKGROUNDS SHALL HAVE A NON-GLARE FINISH, SUCH AS MATTE, SATIN OR EGGSHELL.

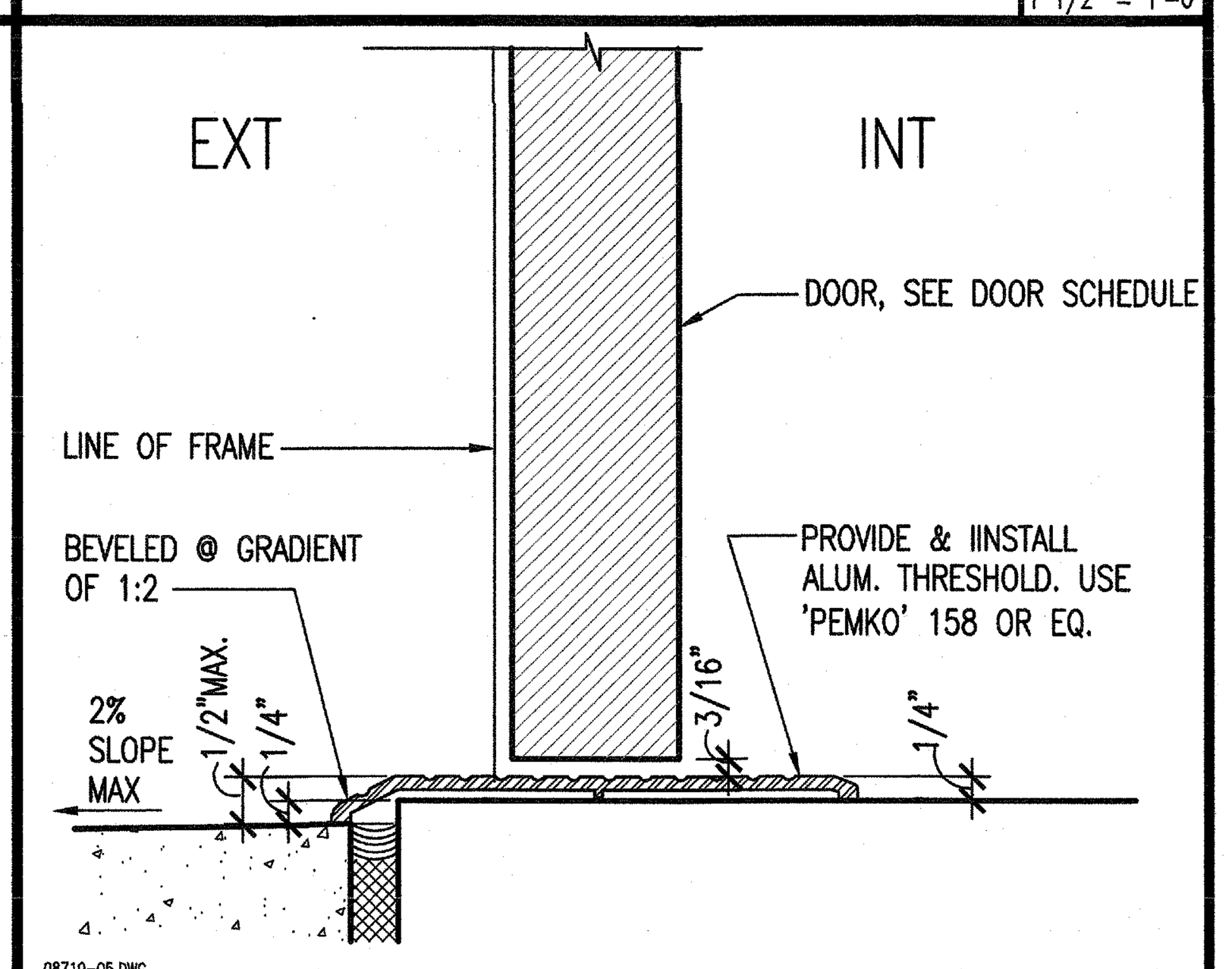
CONTRAST:
CHARACTERS, SYMBOLS AND PICTOGRAMS SHALL CONTRAST WITH THEIR BACKGROUND, EITHER LIGHT CHARACTERS, SYMBOLS AND PICTOGRAMS ON A DARK BACKGROUND OR DARK CHARACTERS, SYMBOLS AND PICTOGRAMS ON A LIGHT BACKGROUND. A CONTRAST BETWEEN THE COLOR OF THE BACKGROUND AND THE COLOR OF THE CHARACTERS, SYMBOLS AND PICTOGRAMS OF AT LEAST 70% BASED ON THE LIGHT REFLECTANCE VALUE IS REQUIRED. A CONTRAST BETWEEN THE BACKGROUND COLOR OF THE DOOR MOUNTED TOILET ROOM SIGN AND THE COLOR OF THE DOOR OF AT LEAST 70% BASED ON THE LIGHT REFLECTANCE VALUE IS REQUIRED.

30 PLANTER WALL — 3/4"=1'-0"

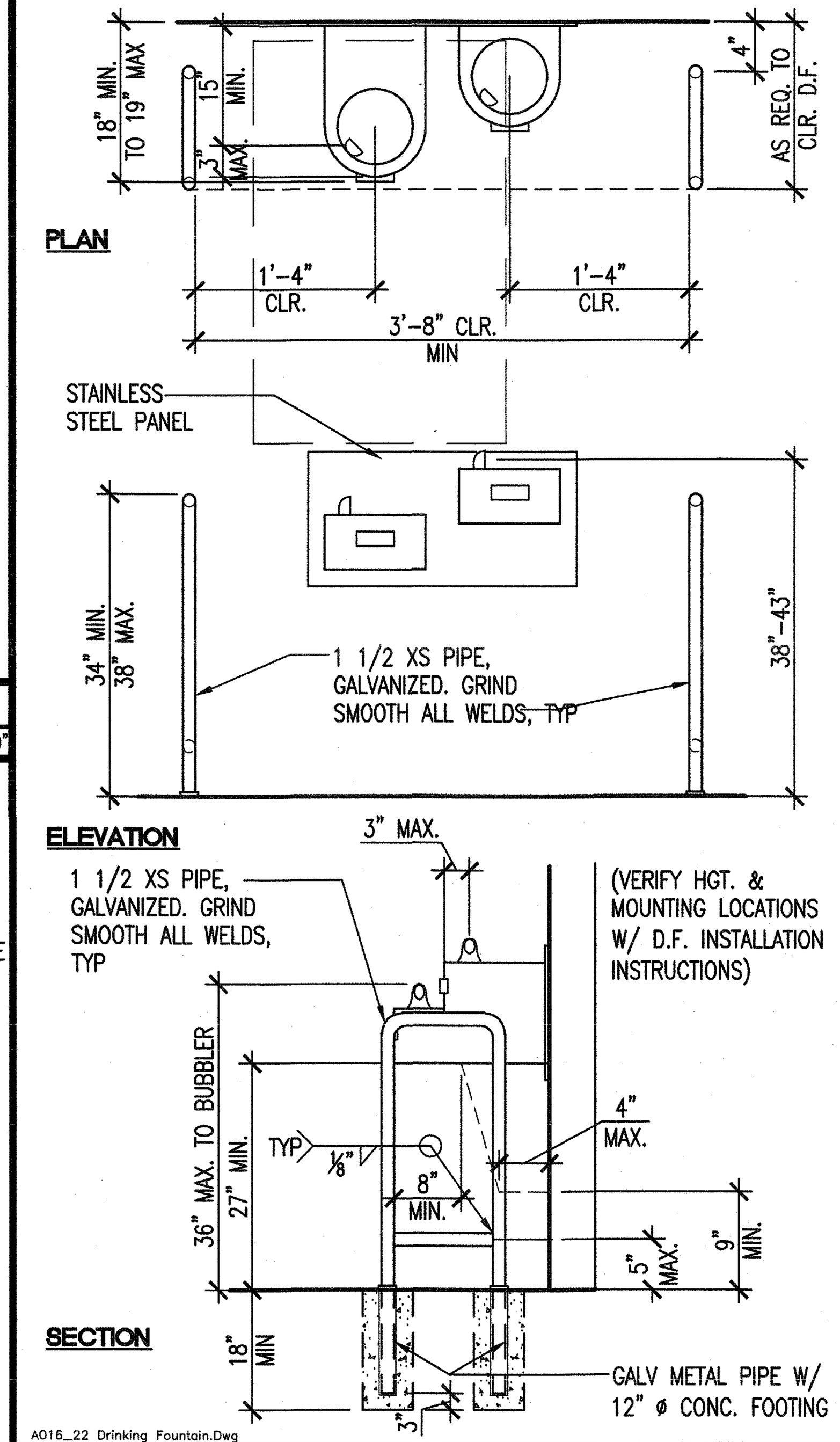


25

20 ALUMINUM THRESHOLD - EXTERIOR LANDING — 6"=1'-0"



15 DRINKING FOUNTAIN — 1" = 1'-0"



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26

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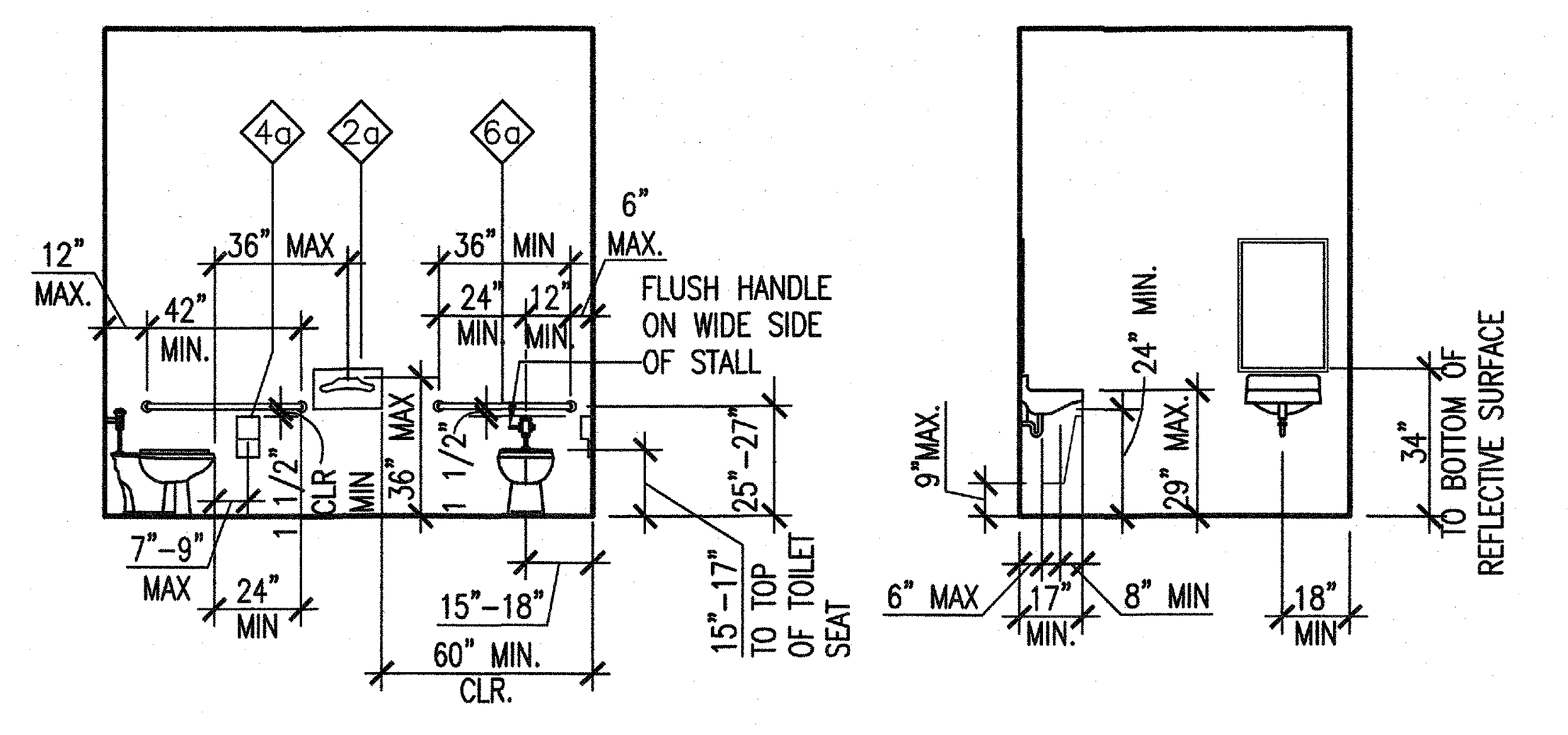
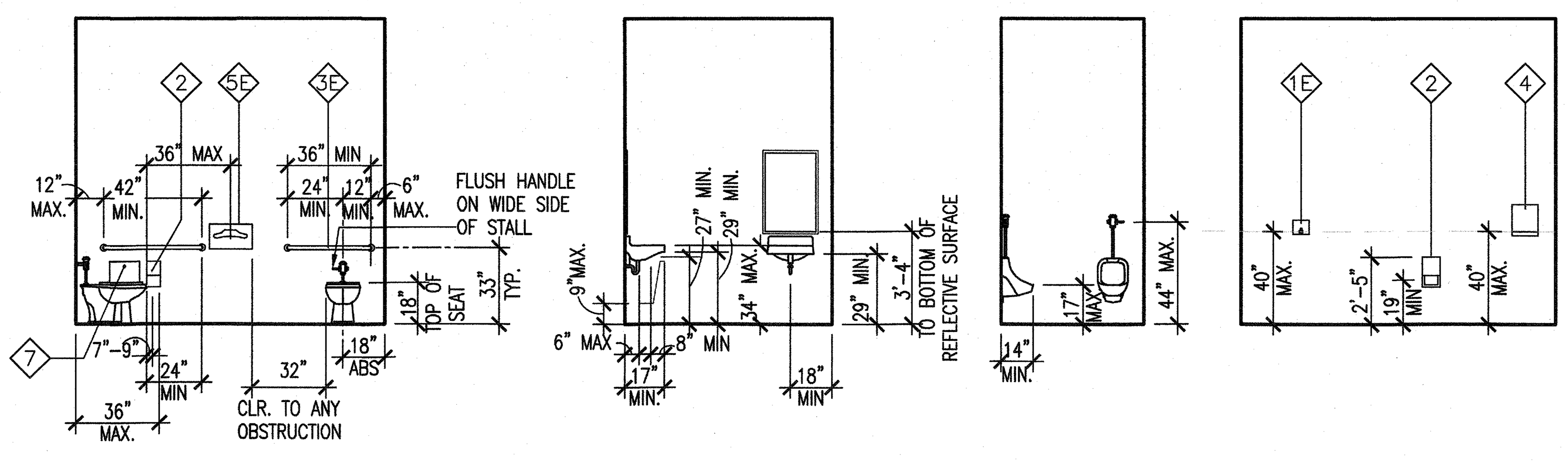
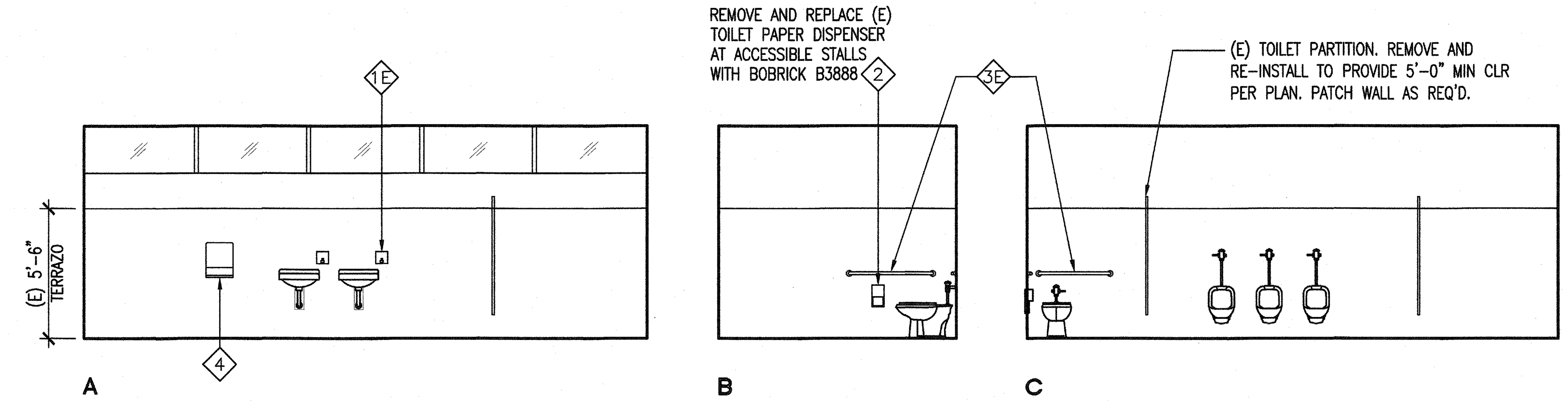


TYPICAL ACCESSIBLE MOUNTING HEIGHTS 11
AGE: 9-12 (ELEMENTARY) DIMENSIONS 1/4"=1'-0"

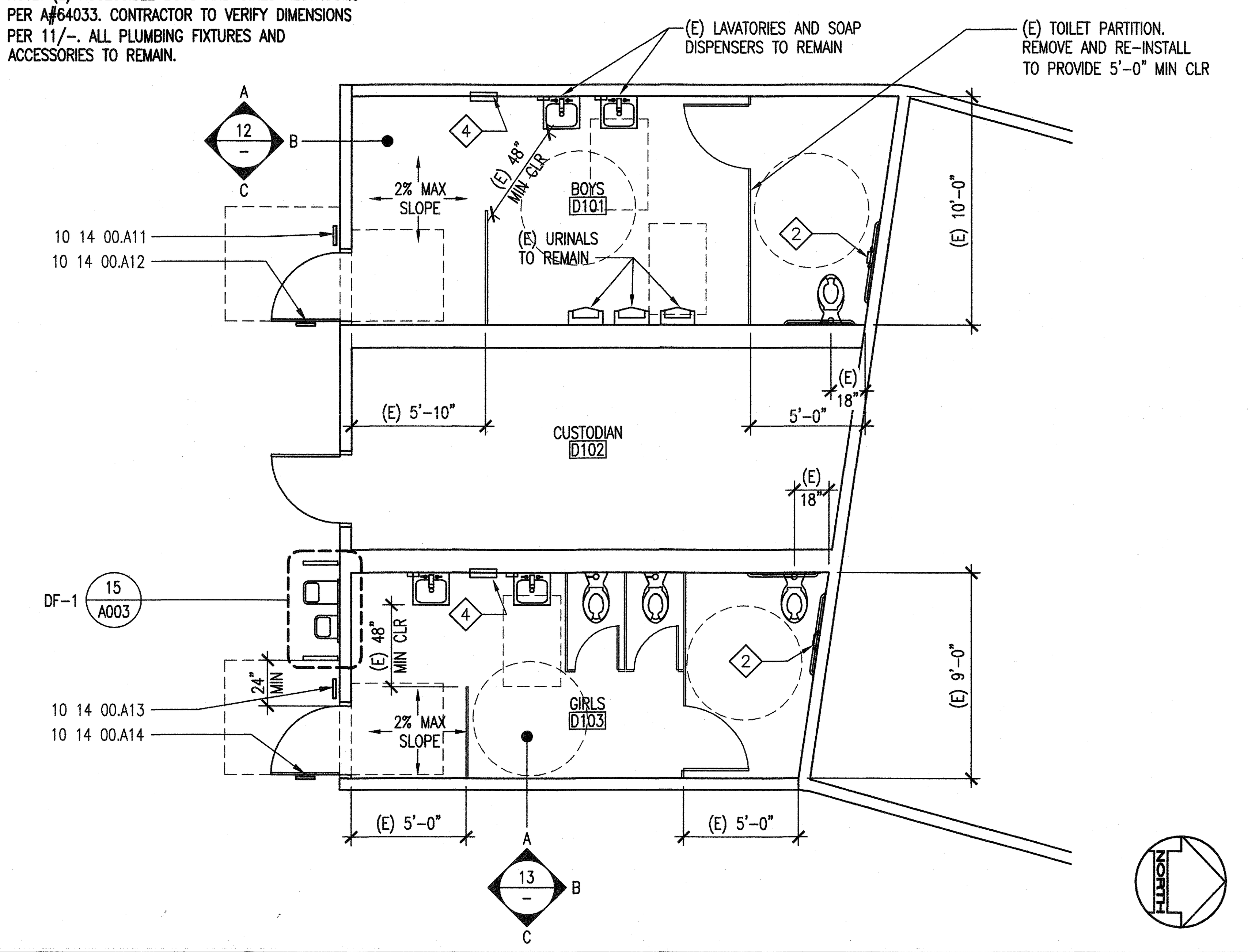


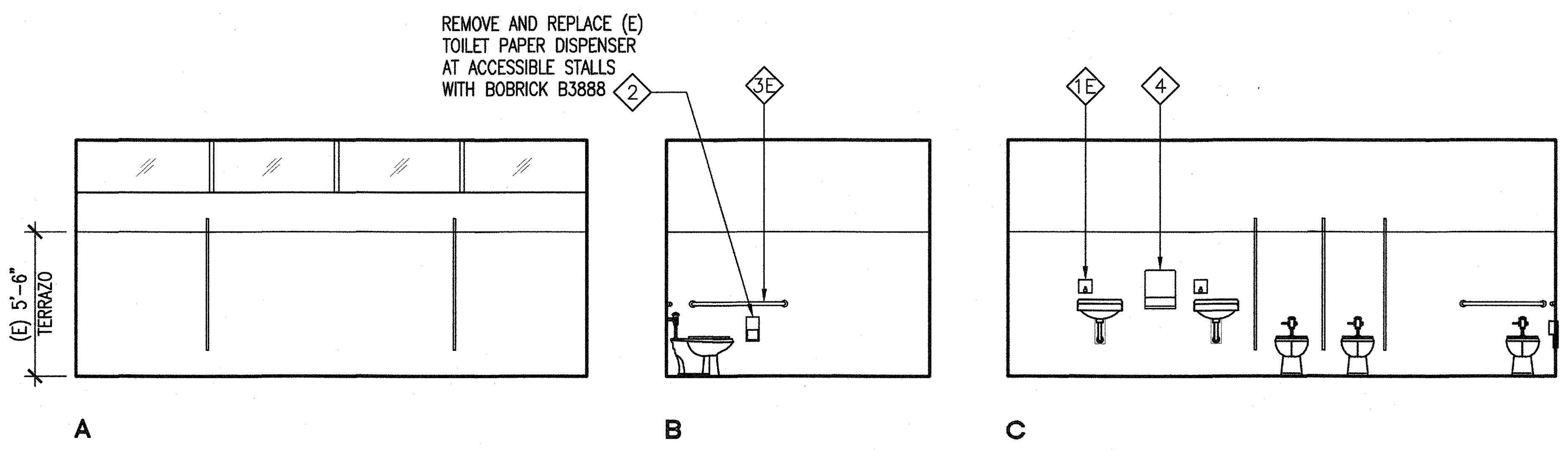
TYPICAL ACCESSIBLE MOUNTING HEIGHTS 1
ADULT DIMENSIONS 1/4"=1'-0"



BOYS D101 - INTERIOR ELEVATIONS 12
1/4"=1'-0"

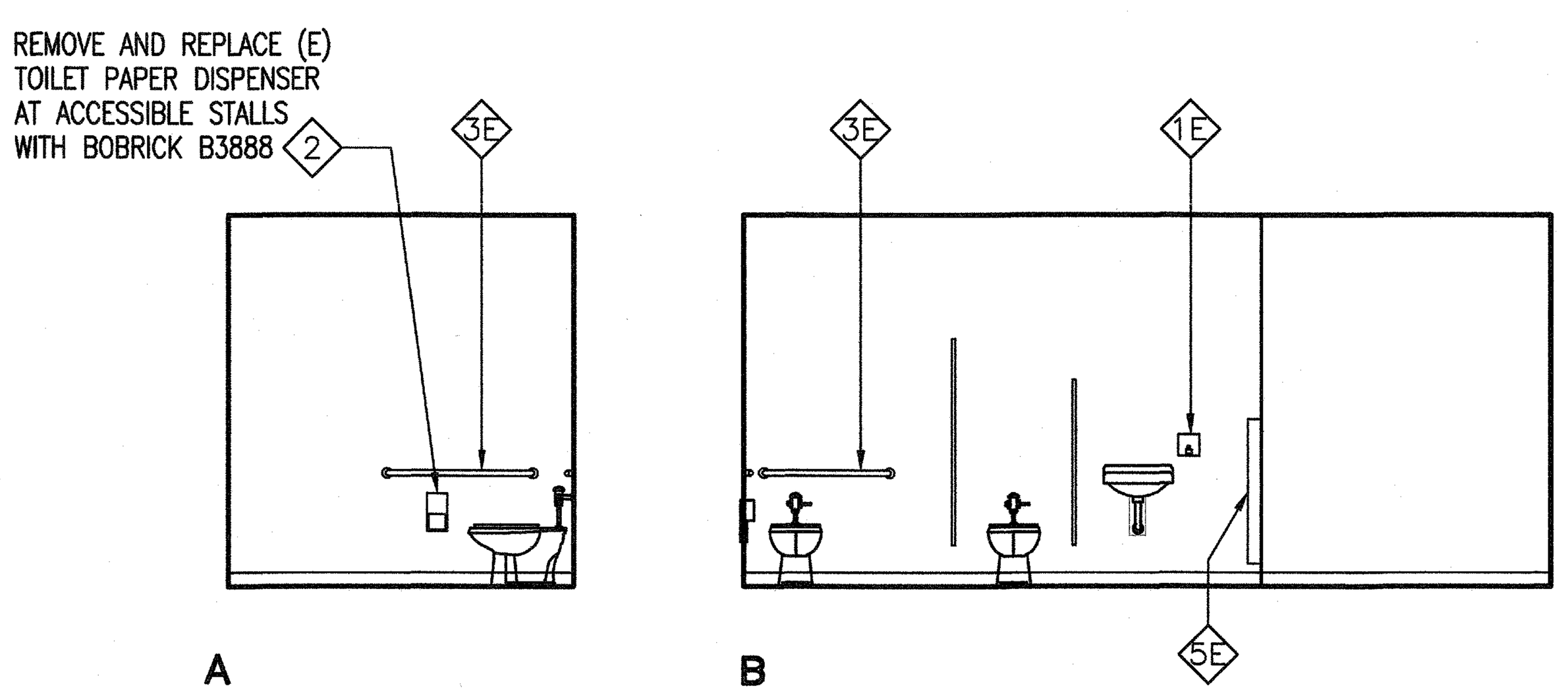
NOTE: (E) ACCESSIBLE BOYS AND GIRLS RESTROOMS PER A#64033. CONTRACTOR TO VERIFY DIMENSIONS PER 11/-. ALL PLUMBING FIXTURES AND ACCESSORIES TO REMAIN.





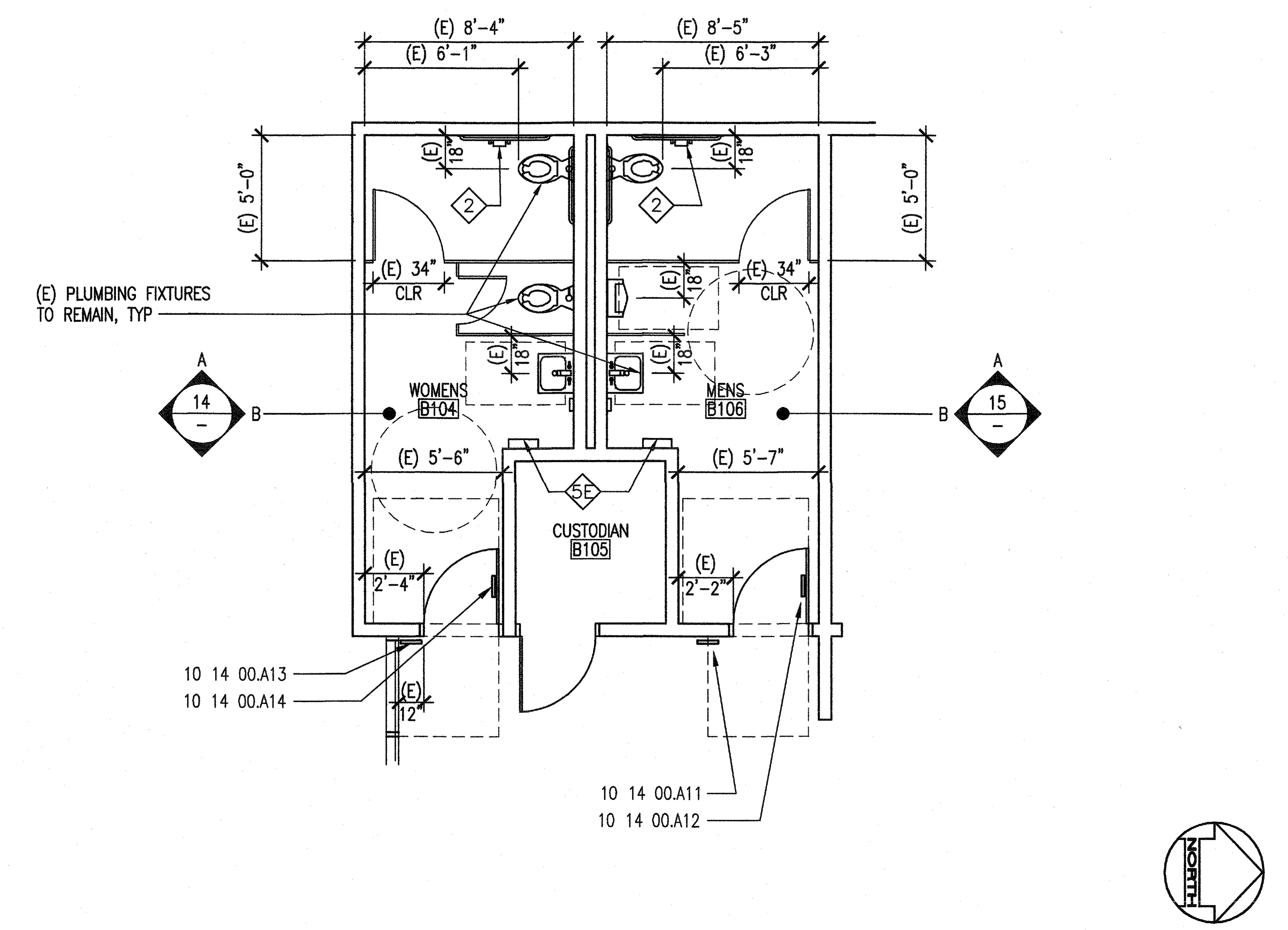
GIRLS D103 - INTERIOR ELEVATIONS 13
1/4"=1'-0"

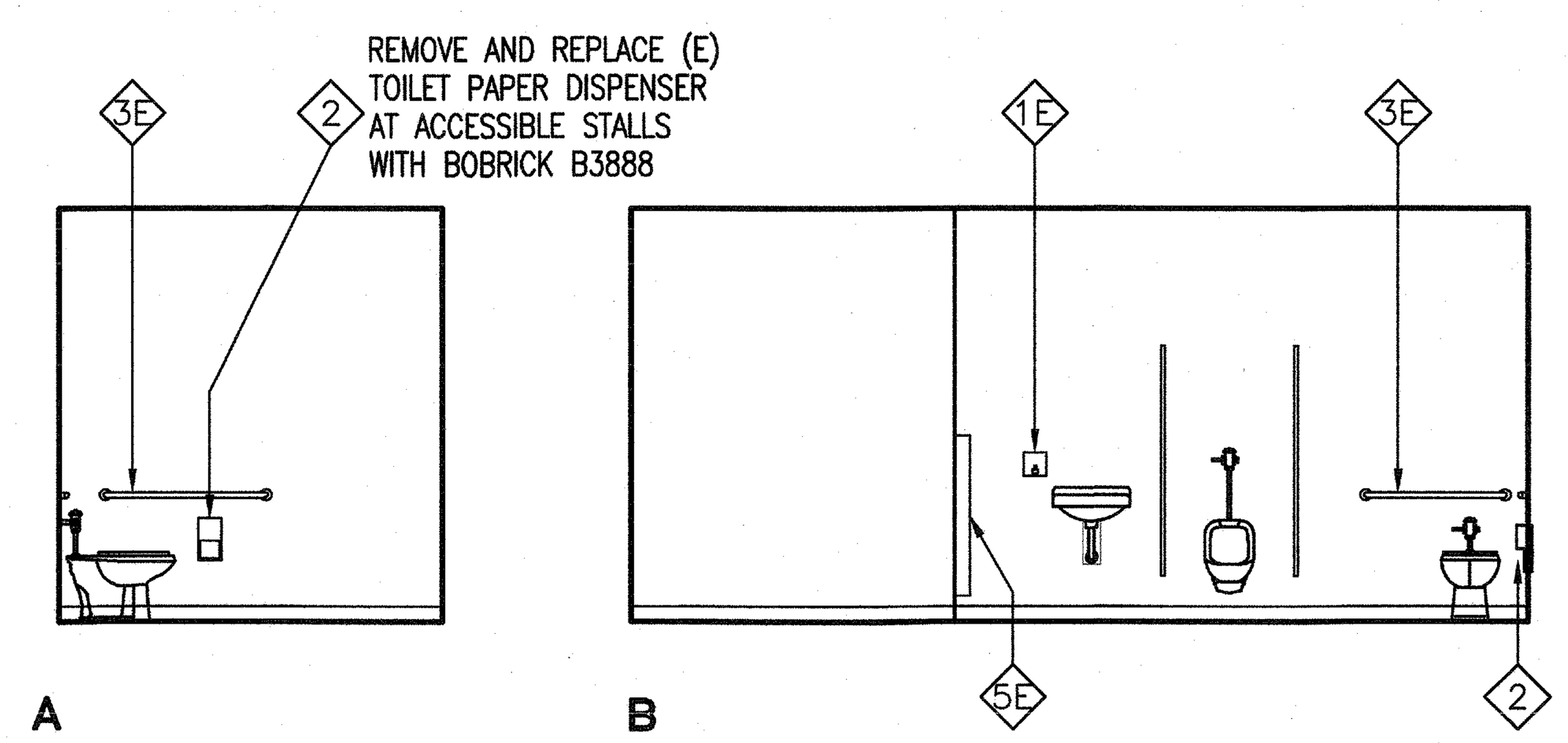
BUILDING D - ENLARGED RESTROOM PLAN 3
BOYS D101 AND GIRLS D103 1/4"=1'-0"



WOMENS B104 - INTERIOR ELEVATIONS 14
1/4"=1'-0"

NOTE: (E) ACCESSIBLE MENS AND WOMENS RESTROOMS PER A#64033. CONTRACTOR TO VERIFY DIMENSIONS PER 1/-. ALL PLUMBING FIXTURES AND ACCESSORIES TO REMAIN.





MENS B106 - INTERIOR ELEVATIONS 15
1/4"=1'-0"

BUILDING B - ENLARGED RESTROOM PLAN 5
WOMENS B104 AND MENS B106 1/4"=1'-0"

KEYNOTES GENERALLY CORRESPOND TO SPECIFICATION SECTIONS BY MEANS OF THE FIVE-DIGIT NUMBER IDENTIFYING THE SPEFICIATION SECTION AS A MATTER OF REFERENCE AND CONVENIENCE. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL WORK INDICATED HEREIN PERSUANT TO THE GENERAL CONDITIONS AND TECHNICAL SPECIFICATIONS OF THE CONTRACT, REGARDLESS OF WHETHER OR NOT THE KEYNOTE(S) SPECIFICALLY CORRESPOND TO ANY SPECIFICATION DIVISION PROVIDED IN THE TECHNICAL SPECIFICATIONS.

KEYNOTES

DIVISION 10 - SPECIALTIES

		DETAIL #
10 14 00.A11	– TACTILE MENS/BOYS RESTROOM SIGN	11/A003
10 14 00.A12	– MENS/BOYS DOOR SIGN	12/A003
10 14 00.A13	– TACTILE WOMENS/GIRLS RESTROOM SIGN	8/A003
10 14 00.A14	– WOMENS/GIRLS DOOR SIGN	9/A003

RESTROOM NOTES

1. FOR TYPICAL SYMBOLS AND ABBREVIATIONS, SEE SHEET G001.
2. REFER TO DETAIL 1/A301 FOR ELEMENTARY (AGE: 9-12) AND 2/A301 FOR KINDERGARTEN (AGE: 5-8) MOUNTING HEIGHTS/DIMENSIONS.
3. THERE SHALL BE NO SHARP OR ABRASIVE OBJECTS OR SURFACES UNDER LAVATORIES.
4. ALL WALL FINISHES TO REMAIN IN (E) RESTROOMS, U.N.O. PATCH AS REQUIRED TO MATCH (E) FINISH WHEN REMOVING OR REPLACING ACCESSORIES OR FIXTURES OR WHEN ADDING NEW.
5. CONTRACTOR TO VERIFY 5 LBS OPERATING PRESSURE AT ALL EXISTING RESTROOM DOORS AND DOORS LEADING TO RESTROOMS, SEE SITE PLAN A001. TYP.
6. REMOVE (E) DOOR AND WALL SIGNAGE AT RESTROOMS AND REPLACE W/ NEW PER SIGNAGE DETAILS ON SHEET A003.

(E) TOILET ACCESSORIES

1E (E) SOAP DISPENSER TO REMAIN, U.N.O.

2 TOILET PAPER DISPENSER (MAX. 3" PROTRUSION FROM WALL, NON-CONTROLLED DELIVERY, SEMI-RECESSED) - BOBRICK B-3888

3E (E) GRAB BAR TO REMAIN, U.N.O.

4 RECESSED PAPER TOWEL DISPENSER. MAX 3" PROJECTION - BOBRICK B-359

5E (E) COMBO PAPER TOWEL DISPENSER/WASTE RECEPTACLE

NOTES:
1. ALL DIMENSIONS ARE TO FACE OF FINISH U.N.O
2. FLOOR DRAIN W/ 1/2" MAX GRATE OPENING IN ALL DIRECTIONS, TYP.
3. 2% MAXIMUM SLOPE IN ALL DIRECTIONS IN RESTROOMS WITH FLOOR DRAINS, TYP.

ACCESSIBLE TURNAROUND SPACE MIN. 60"DIAM X 27"H CLEAR

30"X48" CLEAR SPACE

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LICENSED ARCHITECT DAVID M. BANNON NO. C-25904 EXP. JULY 31, 2017 STATE OF CALIFORNIA
Architect Seal

Consultant Seal

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
AP 03 117500
AC W FLS SS BY
Date SEP 21 2016

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

SITE DETAILS

REVISIONS:
1
2
3
4
5
6
7
8

Date: 09/21/16
Job: 1633
Scale:
Drawn:

A301

SHEET OF XXX
XREF:

ABBREVIATIONS

4S/DP	4" SQUARE BY 2-1/8" DEEP BOX	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	NO	NORMALLY OPENED
ADA	AMERICAN WITH DISABILITIES ACT	GFP	GROUND FAULT PROTECTION	NF	NON-FUSED
A.F.F.	ABOVE FINISH FLOOR	GE or GEC	GROUNDING ELECTRODE CONDUCTOR	NIC	NOT IN CONTRACT
A.F.G.	ABOVE FINISH GRADE	HACR	HEATING AIR CONDITIONING REFRIGERATION	N.T.S.	NOT TO SCALE
AWG	AMERICAN WIRE GAUGE	HOA	HAND-OFF-AUTO	NL	NIGHT LIGHT
AMP, A	AMPERE	HVAC	HEATING, VENTILATING AND AIR CONDITIONING	NO. or #	NUMBER
A.I.C.	AMPERES INTERRUPTING CAPACITY (SYMMETRICAL)	H.,W.,D.,L.	HEIGHT, WIDTH, DEPTH, LENGTH	OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
AF/AT	AMP FRAME, AMP TRIP	HID	HIGH INTENSITY DISCHARGE	%Z	PERCENT IMPEDANCE
AHJ	AUTHORITY HAVING JURISDICTION	HP	HORSEPOWER	PH. or ø	PHASE
AS/AF	AMP SWITCH, AMP FUSE	HPS	HIGH PRESSURE SODIUM	PC	PHOTOCELL
ATS	AUTOMATIC TRANSFER SWITCH	IN. or "	INCHES	P.C.	PLUMBING CONTRACTOR
AVG	AVERAGE	I/G	ISOLATED GROUND	P	POLE
BJ	BONDING JUMPER	IBC	INTERNATIONAL BUILDING CODE	PVC	POLY VINYL CHLORIDE
BDF	BUILDING DISTRIBUTION FRAME	IDF	INTERMEDIATE DISTRIBUTION FRAME	PDU	POWER DISTRIBUTION UNIT
BR	BRANCH	JBOX	JUNCTION BOX	PRIMARY	OVER 600 VOLTS
BLDG	BUILDING	K	DEGREE KELVIN	PROVIDE	FURNISH, INSTALL AND CONNECT
CBC	CALIFORNIA BUILDING CODE	KCMIL	THOUSAND CIRCULAR MILS	PT	POTENTIAL TRANSFORMER
CEC	CALIFORNIA ELECTRICAL CODE	KVA	KILOVOLT AMPERES	PA	PUBLIC ADDRESS
CIRC., CKT.	CIRCUIT	KW	KILOWATT	(R)	DENOTES RELOCATED DEVICE LOCATION.
CB	CIRCUIT BREAKER	KWH	KILOWATT HOUR	REC, RECEPT	RECEPTACLE
CSFD	COMBINATION SMOKE FIRE DAMPER	LCL	LONG CONTINUOUS LOAD	REF	REFRIGERATOR
C	CONDUIT	LF, L.F.	LINEAR FEET	RGS	RIGID GALVANIZED STEEL
C.O.	CONDUIT ONLY, COMPLETE WITH PULLSTRING	LTG, LTS	LIGHTING	RMS	ROOT MEAN SQUARE
CONN	CONNECTED	LPS	LOW PRESSURE SODIUM	SCC	SHORT CIRCUIT CURRENT
CPT	CONTROL POWER TRANSFORMER	MAX.	MAXIMUM	SCS	STRUCTURED CABLING SYSTEM
CLCB	CURRENT LIMITING CIRCUIT BREAKER	MBJ	MAIN BONDING JUMPER	SFD	SMOKE FIRE DAMPER
CLF	CURRENT LIMITING FUSE	MDF	MAIN DISTRIBUTION FRAME	SECONDARY	600 VOLTS AND LESS
CT	CURRENT TRANSFORMER	MOCP	MAXIMUM OVERCURRENT PROTECTION	SMACNA	SHEET METAL & AIR COND. CONTRACTORS' NAT'L ASSOC.
(D)	EXISTING DEVICE TO BE DEMOLISHED	MCB	MAIN CIRCUIT BREAKER	SQ.	SQUARE
DIA	DIAMETER	MLO	MAIN LUGS ONLY	SSBJ	SUPPLY SIDE BONDING JUMPER
DISC	DISCONNECT	M.C.	MECHANICAL CONTRACTOR	SBJ	SYSTEM BONDING JUMPER
DIST	DISTRIBUTION	M	METER	TC	TIMECLOCK
E.C.	ELECTRICAL CONTRACTOR	M/M	METER MAIN	TEL/DATA	TELEPHONE AND DATA
EMS	ENERGY MANAGEMENT CONTROL SYSTEM	MV	MERCURY VAPOR	TV	TELEVISION
EMT	ELECTRICAL METALLIC TUBING	MH	METAL HALIDE	T.V.S.S.	TRANSIENT VOLTAGE SURGE SUPPRESSION
ENT	ELECTRICAL NON-METALLIC TUBING	MIN.	MINIMUM	TYP	TYPICAL
EWC	ELECTRIC WATER COOLER	MCA	MINIMUM CIRCUIT AMPS	U.G.P.S.	UNDERGROUND PULL SECTION
E.P.O.	EMERGENCY POWER OFF	MCC	MOTOR CONTROL CENTER	U.O.N.	UNLESS OTHERWISE NOTED
E-O-L	END-OF-LINE CIRCUIT TERMINATOR	MCM	THOUSAND CIRCULAR MILS	U.P.S.	UNINTERRUPTABLE POWER SYSTEM
EF	EXHAUST FAN	MCP	MOTOR CIRCUIT PROTECTOR	VAV	VARIABLE AIR VOLUME
EGC or EG or E/G	EQUIPMENT GROUND (GREEN)	MFR.	MANUFACTURER	V	VOLTS
(E)	EXISTING DEVICE TO REMAIN	MTD	MOUNTED	VA	VOLT AMPERES
EP	EXPLOSION PROOF	MW	MICROWAVE	VD	VOLTAGE DROP
(ER)	EXISTING DEVICE TO BE RELOCATED	NATS	NON AUTOMATIC DISCONNECT	WP	WEATHERPROOF
FT or '	FEET	NEC	NATIONAL ELECTRICAL CODE	W	WIRE
FA	FIRE ALARM	NEMA	NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION	XFMR	TRANSFORMER
FLA	FULL LOAD AMPS	NC	NORMALLY CLOSED		
GRD	GROUND				

FIRE ALARM SYSTEM SYMBOLS

SEE FIRE ALARM OR CENTRAL MONITORING SYSTEM DRAWINGS FOR FIRE ALARM SYMBOLS.

SIGNAL SYSTEM SYMBOLS

- B — WALL MOUNTED CLOCK, FIELD VERIFY MOUNTING HEIGHT PRIOR TO INSTALLATION. "B" INDICATES BATTERY OPERATED CLOCK. "D" INDICATES DIGITAL CLOCK, "NO LETTER" INDICATES ANALOG CLOCK. REFER TO SPECIFICATIONS.
- —C— CONCEALED CLOCK CONDUIT RUN 1/2" CONDUIT, OR AS NOTED, WITH CONDUCTORS PER SPECIFICATIONS.
- TV OUTLET, WALL MOUNTED. STUB A 3/4"C.O. UP 6" ABOVE THE ACCESSIBLE CEILING AND PROVIDE BUSHING.
- TV OUTLET FLUSH CEILING MOUNTED.
- —TV— CONCEALED TELEVISION CONDUIT RUN, 3/4" CONDUIT, OR AS NOTED, WITH CONDUCTORS – REFER TO SPECIFICATIONS.
- MICROPHONE OUTLET, WALL MOUNTED. PROVIDE 3/4" C.O. (WITH PULL ROPE) UP TO 6" ABOVE ACCESSIBLE CEILING SPACE. PROVIDE BUSHING AT EACH END.
- MICROPHONE OUTLET, FLUSH CEILING MOUNTED.
- —M— CONCEALED MICROPHONE CONDUIT RUN, 3/4" CONDUIT, OR AS NOTED, WITH CONDUCTORS – REFER TO SPECIFICATIONS.
- V — SURFACE WALL MOUNTED SPEAKER, "V" INDICATES VOLUME CONTROL.
- V — SURFACE MOUNTED SPEAKER , "V" INDICATES VOLUME CONTROL.
- V — FLUSH WALL MOUNTED SPEAKER , "V" INDICATES VOLUME CONTROL.
- V — CEILING FLUSH MOUNTED SPEAKER , "V" INDICATES VOLUME CONTROL.
- VOLUME CONTROL, WALL MOUNTED.
- —S— CONCEALED SPEAKER CONDUIT RUN 3/4" CONDUIT, OR AS NOTED, WITH CONDUCTORS – REFER TO SPECIFICATIONS.

SECURITY ALARM SYSTEM SYMBOLS

- SACP — SECURITY ALARM CONTROL PANEL – SEE SPECIFICATIONS.
- SPS — SECURITY SYSTEM POWER SUPPLY – SEE SPECIFICATIONS.
- ID — SECURITY ALARM PASSIVE INFRARED MOTION SENSOR – SEE SPECIFICATIONS.
- DT — SECURITY ALARM DUAL TECHNOLOGY MOTION SENSOR – SEE SPECIFICATIONS.
- UD — SECURITY ALARM ULTRASONIC MOTION SENSOR – SEE SPECIFICATIONS.
- DC — SECURITY ALARM DOOR CONTACT – SEE SPECIFICATIONS.
- PB — SECURITY ALARM PANIC BUTTON – SEE SPECIFICATIONS.
- KP — SECURITY ALARM KEY PAD – SEE SPECIFICATIONS.
- GB — SECURITY ALARM GLASS BREAK INDICATOR – SEE SPECIFICATIONS.
- —SA— SECURITY ALARM SYSTEM BRANCH CIRCUIT PER SECURITY ALARM RISER DIAGRAM AND/OR SPECIFICATIONS.

ACCESS CONTROL SYSTEM SYMBOLS

- ACCP — ACCESS CONTROL PANEL – SEE SPECIFICATIONS.
- APS — ACCESS CONTROL SYSTEM POWER SUPPLY – SEE SPECIFICATIONS.
- LPS — ACCESS CONTROL SYSTEM LOCK POWER SUPPLY – SEE SPECIFICATIONS.
- KS — ACCESS CONTROL KEY SWITCH – SEE SPECIFICATIONS.
- LA — ACCESS CONTROL LOCAL ALARM SOUNDER – SEE SPECIFICATIONS.
- PR — ACCESS CONTROL PROXIMITY READER – SEE SPECIFICATIONS.
- CR — ACCESS CONTROL CARD READER – SEE SPECIFICATIONS.
- KP — ACCESS CONTROL KEY PAD – SEE SPECIFICATIONS.
- ES — ACCESS CONTROL REQUEST TO EXIT SENSOR – SEE SPECIFICATIONS.
- —AC— ACCESS CONTROL SYSTEM BRANCH CIRCUIT PER ACCESS CONTROL RISER DIAGRAM AND/OR SPECIFICATIONS.

PROJECT SPECIFIC SYMBOLS

REQUIRED SPECIFICATION DEVIATIONS

THE FOLLOWING ITEM(S) ARE REQUIRED DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS AND SHOULD BE INCLUDED AS PART OF THE BASE BID. THESE DEVIATIONS ARE AT THE DIRECTION OF THE OWNER:

NONE

ALLOWED SPECIFICATION DEVIATIONS

THE FOLLOWING ITEM(S) ARE ALLOWED DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS. THESE DEVIATIONS ARE AT THE DIRECTION OF THE OWNER:

NONE

DEDUCTIVE/ADDITIVE ALTERNATE PRICING

IN ADDITION TO ANY DEDUCTIVE OR ADDITIVE LINE ITEM PRICING CALLED FOR ON THE DRAWING OR IN THE SPECIFICATIONS, CONTRACTOR SHALL PROVIDE SEPARATE LINE ITEM DEDUCTIVE/ ADDITIVE ALTERNATE PRICING FOR EACH OF THE FOLLOWING ITEM(S):

NONE

ANNOTATIONS

- A — PANEL CALLOUT, "A" INDICATES PANELBOARD OR EQUIPMENT DESIGNATION.
- AC / 2 — MECHANICAL EQUIPMENT CALLOUT, "AC" INDICATES UNIT TYPE AND "2" INDICATES UNIT NUMBER. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION AND ELECTRICAL REQUIREMENTS.
- 3 / E-1 — DETAIL CALLOUT, "3" INDICATES DETAIL NUMBER "E-1" INDICATES SHEET NUMBER.
- 2 — PLAN NOTE REFERENCE, REFER TO NOTES ON SHEET, OR AS DIRECTED.
- REVISION REFERENCE.
- WYE CONFIGURATION — DELTA CONFIGURATION — GROUND

CCTV SYSTEM SYMBOLS

- CCTV — CLOSED CIRCUIT TELEVISION CONTROL PANEL – SEE SPECIFICATIONS.
- CPS — CLOSED CIRCUIT TELEVISION POWER SUPPLY – SEE SPECIFICATIONS.
- CCTV FIXED POSITION CAMERA – SEE SPECIFICATIONS.
- CCTV PAN/TILT CAMERA – SEE SPECIFICATIONS.
- VA — CCTV VIDEO AMPLIFIER – SEE SPECIFICATIONS.
- VM — CCTV VIDEO MONITOR – SEE SPECIFICATIONS.
- —CC— CCTV SYSTEM BRANCH CIRCUIT PER CCTV SYSTEM RISER DIAGRAM AND/OR SPECIFICATIONS.

TELEPHONE/DATA SYMBOLS

- TELEPHONE OUTLET BOX, WALL MOUNTED. STUB A 1" C.O. UP 6" ABOVE THE ACCESSIBLE CEILING AND PROVIDE A BUSHING. 4S/DP MINIMUM WITH SINGLE GANG RING.
  "W" = WALL MOUNTED PHONE
  "P" = PUBLIC (PAY) PHONE. VERIFY ALL REQUIREMENTS WITH THE TELEPHONE UTILITY COMPANY. PROVIDE 1"C.O. (MIN) TO THE MAIN TELEPHONE BACKBOARD. MOUNTING HEIGHT AS REQUIRED.
- DATA OUTLET BOX, WALL MOUNTED. STUB A 1" C.O. UP 6" ABOVE THE ACCESSIBLE CEILING AND PROVIDE A BUSHING. 4S/DP MINIMUM WITH SINGLE GANG RING.
- COMBINATION TELEPHONE AND DATA OUTLET BOX, WALL MOUNTED. STUB A 1" C.O. UP 6" ABOVE THE ACCESSIBLE CEILING AND PROVIDE A BUSHING. 4S/DP MINIMUM WITH SINGLE GANG RING.
- TELEPHONE OUTLET BOX, FLUSH MOUNTED IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.
- DATA OUTLET BOX FLUSH MOUNTED IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.
- COMBINATION TELEPHONE AND DATA OUTLET BOX FLUSH MOUNTED IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.
- TELEPHONE OUTLET BOX, WALL MOUNTED 6" ABOVE COUNTER OR SPLASH. STUB A 1" C.O. UP 6" ABOVE THE ACCESSIBLE CEILING AND PROVIDE A BUSHING. 4S/DP MINIMUM WITH SINGLE GANG RING.
- DATA OUTLET BOX, WALL MOUNTED 6" ABOVE COUNTER OR SPLASH. STUB A 1"C.O. UP 6" ABOVE THE ACCESSIBLE CEILING AND PROVIDE A BUSHING. 4S/DP MINIMUM WITH SINGLE GANG RING.
- COMBINATION TELEPHONE AND DATA OUTLET BOX, WALL MOUNTED 6" ABOVE COUNTER OR SPLASH. STUB A 1" C.O. UP 6" ABOVE THE ACCESSIBLE CEILING AND PROVIDE A BUSHING. 4S/DP MINIMUM WITH SINGLE GANG RING.
- COMBINATION TELEPHONE AND DATA OUTLET BOX MOUNTED IN ACCESSIBLE CEILING SPACE OR IN FLOOR BOX PER PLAN FOR FLEXIBLE CONNECTION TO FURNITURE SYSTEM. VERIFY CONNECTION REQUIREMENTS WITH MANUFACTURER PRIOR TO ROUGH-IN – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.
- COMBINATION TELEPHONE AND DATA OUTLET, WALL MOUNTED AT +18" A.F.F. FOR FLEXIBLE CONNECTION TO FURNITURE SYSTEM. PROVIDE THE FOLLOWING:
  - IN A NON-RATED INSULATED WALL, OR NON-RATED UNINSULATED WALL, PROVIDE A 2-GANG MUD RING OR CADDY #RBS SERIES BOX MOUNTING BRACKET (EQUAL BY B-LINE OR RAYCO) WITH (2) 1-1/2"C.O. WITH PULL STRING TO ACCESSIBLE CEILING. PROVIDE 1-1/2" BUSHINGS AT CONDUIT ENDS. REFER TO ARCHITECTURAL PLANS FOR WALL CONSTRUCTION/TYPE AND CEILING CONDITIONS.
  - IN A RATED WALL, PROVIDE (1) 4S/DP BOX WITH (2) 1-1/4"C.O. AND (1) 4S/DP BOX WITH (1) 1-1/4"C.O. WITH PULL STRINGS IN EACH CONDUIT TO ACCESSIBLE CEILING. PROVIDE 1-1/4" BUSHINGS AT CONDUIT ENDS. UTILIZE CADDY #RBS SERIES BOX MOUNTING BRACKET TO MAINTAIN BOX ALIGNMENT (EQUAL BY B-LINE OR RAYCO). UTILIZE FIRESTOPPING SYSTEM PADS RATED FOR USE ON THE INSIDE OR OUTSIDE OF THE BOX (STI OR EQUAL) AS REQUIRED TO MAINTAIN RATING OF WALL OR MEMBRANE. REFER TO ARCHITECTURAL PLANS FOR WALL CONSTRUCTION/TYPE AND CEILING CONDITIONS.
- —T1— CONCEALED TELEPHONE/DATA CONDUIT RUN, 1" CONDUIT ONLY (MIN). SEE TABLE FOR CONDUIT SIZE VARIATIONS.
  T2 = 1-1/4" C.O. T3 = 1-1/2" C.O. T4 = 2" C.O.
- FLUSH MOUNTED, LOCKABLE TERMINAL CABINET WITH TERMINAL STRIPS AS REQUIRED.
- SURFACE MOUNTED, LOCKABLE TERMINAL CABINET WITH TERMINAL STRIPS AS REQUIRED.
- TELEPHONE TERMINAL BACKBOARD SIZED AS NOTED, REFER TO SYSTEM GROUND DETAIL.

LIGHTING SYMBOLS

SITE LIGHTING FIXTURE SYMBOLS DEPICTED WITH CAPITAL LETTER(S) ADJACENT TO RESPECTIVE SYMBOL(S) INDICATE(S) LIGHT FIXTURE MOUNTING BASE DETAIL(S). SEE LIGHTING FIXTURE SCHEDULE FOR FIXTURE SYMBOL INFORMATION.

- 1a — LIGHTING FIXTURE CALL OUT, NUMBER(S) AND/OR UPPER CASE LETTER(S) (i.e. "1") INDICATES FIXTURE TYPE (REFER TO LIGHTING FIXTURE SCHEDULE). LOWER CASE LETTER (i.e. "a") ADJACENT TO FIXTURE TYPE INDICATES BALLAST OPTION (SEE GENERAL LIGHTING FIXTURE SCHEDULE NOTES).
- INDICATES FINAL CONNECTION TO A LIGHTING FIXTURE, NUMBER OF CONDUCTORS AS REQUIRED.

LIGHTING CONTROL SYMBOLS

SEE THE DISTRIBUTED LIGHTING CONTROL SPECIFICATIONS FOR MORE INFORMATION.

- LOW-VOLTAGE WIRING BETWEEN OCCUPANCY SENSORS, VACANCY SENSORS, DAY-LIGHTING CONTROLS, LOW-VOLTAGE SWITCHES, AND SWITCHPACKS. CONDUCTOR TYPE AND QUANTITY PER MANUFACTURER'S RECOMMENDATIONS AND WIRING DIAGRAMS.
- WALL MOUNTED DIMMER. SEE SINGE POLE SWITCH SYMBOL FOR RELATED SUBSCRIPTS. QUANTITY OF ADJACENT LOWER CASE LETTERS INDICATES QUANTITY OF DIMMERS REQUIRED. PROVIDE DIMMER TYPE TO MATCH INDICATED BALLAST TYPE AND CONTROL REQUIREMENTS.
- y, (y), (y,z) — WALL MOUNTED STAND ALONE OCCUPANCY SENSOR. QUANTITY OF ADJACENT LOWER CASE LETTERS INDICATES QUANTITY OF RELAYS CIRCUITS REQUIRED – SEE CONTROL CONFIGURATIONS BELOW FOR MORE INFORMATION. EXACT CONTROL FUNCTION IS DETERMINED BY THE BALLAST/FIXTURE TYPE.
- H y,(y) — WALL MOUNTED NON-NETWORKED / INTERCONNECTED/ NETWORKED, SYSTEM-BASED OCCUPANCY SENSOR. QUANTITY OF ADJACENT LOWER CASE LETTERS INDICATES QUANTITY OF RELAYS/DIMMING CIRCUITS REQUIRED – SEE CONTROL CONFIGURATIONS BELOW FOR MORE INFORMATION. EXACT CONTROL FUNCTION IS DETERMINED BY THE BALLAST/FIXTURE TYPE. ADJACENT UPPER CASE LETTER ("H") INDICATES CONNECTION TO HVAC SYSTEM CONTROLS.
- H,DM,AV,P y,(y) — 1-WAY / 2-WAY DIRECTIONAL CEILING MOUNTED, NON-NETWORKED / INTERCONNECTED/ NETWORKED, SYSTEM-BASED OCCUPANCY SENSOR. QUANTITY OF ADJACENT LOWER CASE LETTERS INDICATES QUANTITY OF RELAYS / DIMMING CIRCUITS REQUIRED – SEE CONTROL CONFIGURATIONS BELOW FOR MORE INFORMATION. EXACT CONTROL FUNCTION IS DETERMINED BY THE BALLAST/FIXTURE TYPE. ADJACENT UPPER CASE LETTER ("H") INDICATES CONNECTION TO HVAC SYSTEM CONTROLS VIA CONTROLLED DRY-CONTACT CLOSURE. ADJACENT UPPER CASE LETTERS ("DM") INDICATES DUAL MODE CONTROL AT CORRIDORS, STAIRWELLS AND WAREHOUSE AISLEWAYS. ADJACENT UPPER CASE LETTERS ("AV") INDICATES CONNECTION TO AV CONTROL SYSTEM. ADJACENT UPPER CASE LETTER ("P") INDICATES CONNECTION TO MOVEABLE PARTITION INTERFACE, SENSOR & STATUS INDICATOR.
- Ky, Vy, y, DM — LOW VOLTAGE MOMENTARY SWITCHES, WALL MOUNTED, FOR MANUAL "ON/OFF SWITCHING" AND "DIMMING" (STEPPED / CONTINUOUS) CONTROL OF LIGHTING WHICH IS CONTROLLED BY CEILING MOUNTED OCCUPANCY SENSORS. ADJACENT LOWER CASE LETTERS INDICATES QUANTITY OF SWITCHLEGS TO BE CONTROLLED. EXACT CONTROL FUNCTION IS DETERMINED BY THE BALLAST/FIXTURE TYPE. UPPER CASE SUBSCRIPT "K" INDICATES LOCKING SWITCH FOR THE SUBSEQUENT LOWER CASE LETTER. UPPER CASE SUBSCRIPT "V" INDICATES VANDAL RESISTANT SWITCH. UPPER CASE SUBSCRIPT "DM" INDICATES DUAL MODE CONTROL SWITCH.
- (50) y+ — AUTOMATIC SWITCHING / STEP-DIMMING DAYLIGHTING CONTROLLER USED TO SWITCH OFF LIGHTS WHEN SUFFICIENT NATURAL LIGHT IS PRESENT. NUMBER IN PARENTHESIS INDICATES THE AVERAGE WORKPLANE "TARGET ILLUMINATION" SYMBOL VALUE. ADJACENT LOWER CASE LETTER(S) INDICATES SWITCH LEG(S) CONTROLLED. ADJACENT "+" INDICATES PORTION OF SWITCHLEG CONTROLLED BY SENSOR.
- (50) y+ — AUTOMATIC CONTINUOUS DIMMING DAYLIGHTING CONTROLLER USED TO DIM LIGHTS WHEN SUFFICIENT NATURAL LIGHT IS PRESENT. NUMBER IN PARENTHESIS INDICATES THE AVERAGE WORKPLANE "TARGET ILLUMINATION" SYMBOL VALUE. ADJACENT LOWER CASE LETTER(S) INDICATES SWITCH LEG(S) CONTROLLED. ADJACENT "+, ++ AND *" INDICATES PORTION OF SWITCHLEG CONTROLLED BY SENSOR WHERE "+" INDICATES PRIMARY SIDELIT DAYLIT ZONE, "++" INDICATES SECONDARY SIDELIT DAYLIT ZONE, AND "*" INDICATES SKYLIT DAYLIT ZONE

CONTROL CONFIGURATIONS:

- y — "y" INDICATES THAT SWITCH LEG "y" TO BE CONFIGURED IN A "AUTO ON 100% / AUTO OFF" AND BE CONTROLLED (CONTINUOUSLY DIMMED) BY THE ASSOCIATED CEILING SENSOR REMOTE SWITCH ON THE WALL.
- y,(y) — "y,(y)" INDICATES THAT SWITCH LEG "y" TO BE CONFIGURED IN A "AUTO ON 50% / MANUAL ON 100% / AUTO OFF" AND BE CONTROLLED (CONTINUOUSLY DIMMED) BY THE ASSOCIATED DISTRIBUTED LIGHTING CONTROLS.
- (y) — "(y)" INDICATES THAT SWITCH LEG "y" IS TO BE CONFIGURED IN A "MANUAL ON / AUTO OFF" (VACANCY SENSOR) AND BE CONTROLLED BY THE ASSOCIATED DISTRIBUTED LIGHTING CONTROLS.

MISCELLANEOUS SYSTEM SYMBOLS

- ICP — INVERTER CONTROL PANEL – SEE INVERTER SPECIFICATIONS.
- IAP — INVERTER ANNUNCIATOR PANEL – SEE INVERTER SPECIFICATIONS.
- GAP — GENERATOR ANNUNCIATOR PANEL – SEE GENERATOR SYSTEM SPECIFICATIONS FOR MORE INFORMATION.
- IDCS — INTEGRATED DIMMING CONTROL STATION (IDCS) PANEL – WALL MOUNTED. SEE IDCS SYSTEM SPECIFICATIONS FOR MORE INFORMATION.
- DPCS — DIMMING PANEL CONTROL STATION (DPCS) PANEL – WALL MOUNTED. SEE DPCS SYSTEM SPECIFICATIONS FOR MORE INFORMATION.
- L — LIGHTING CONTROL SYSTEM LOCAL SWITCH – WALL MOUNTED. SEE LIGHTING CONTROL SYSTEM SPECIFICATIONS FOR MORE INFORMATION.
- O — LIGHTING CONTROL SYSTEM OVERRIDE SWITCH – WALL MOUNTED. SEE LIGHTING CONTROL SYSTEM SPECIFICATIONS FOR MORE INFORMATION.
- M — LIGHTING CONTROL SYSTEM MASTER SWITCH – WALL MOUNTED. SEE LIGHTING CONTROL SYSTEM SPECIFICATIONS FOR MORE INFORMATION.
- R — IDCS/DPCS SYSTEM REMOTE STATION SWITCH – WALL MOUNTED. SEE IDCS SYSTEM AND/OR DPCS SYSTEM SPECIFICATIONS FOR MORE INFORMATION.
- P — IDCS/DPCS SYSTEM PARTITION STATION SWITCH – WALL MOUNTED. SEE IDCS SYSTEM AND/OR DPCS SYSTEM SPECIFICATIONS FOR MORE INFORMATION.

BRANCH CIRCUIT SYMBOLS

- A-1,3,5 — HOME RUN TO PANEL. LETTER DESIGNATES PANEL, NUMBERS INDICATE CIRCUITS. HASH MARKS INDICATE NUMBER OF CONDUCTORS IN CONDUIT RUN, #12 AWG MINIMUM UNLESS OTHERWISE NOTED.
- A-1&3&5 — HOME RUN TO PANEL. LETTER DESIGNATES PANEL, NUMBERS INDICATE CIRCUITS WITH SEPARATE NEUTRALS. "&" INDICATES SEPARATE NEUTRALS.
- A-1+3+5 — HOME RUN TO PANEL. LETTER DESIGNATES PANEL, NUMBERS INDICATE CIRCUITS. "+" INDICATES SEPARATE #10 NEUTRAL THROUGHOUT BRANCH CIRCUIT. HASH MARK " ⌡ " INDICATES AN ISOLATED GROUND CONDUCTOR.
- CONCEALED CONDUIT OR BRANCH CIRCUIT UNLESS OTHERWISE NOTED. 1/2" CONDUIT MINIMUM, (2) #12 AWG CONDUCTORS MINIMUM.
- CONDUIT OR BRANCH CIRCUIT CONCEALED BELOW GRADE, 3/4" CONDUIT MINIMUM WITH (2) 12 AWG CONDUCTORS MINIMUM AND A CODE SIZED EQUIPMENT GROUND.
- SURFACE-MOUNTED CONDUIT OR BRANCH CIRCUIT UNLESS OTHERWISE NOTED. 1/2" CONDUIT MINIMUM, (2) #12 AWG CONDUCTORS MINIMUM.
- TANDEM WIRING CONNECTION.
- CONDUIT STUB OUT, CAP, MARK AND RECORD ON AS-BUILT DRAWINGS
- CONDUIT CONTINUATION.
- FLEXIBLE CONNECTION AS REQUIRED. NUMBER OF CONDUCTORS AS REQUIRED. VERIFY CONNECTION REQUIREMENTS WITH MANUFACTURER PRIOR TO ROUGH-IN.
- CONDUIT/ BRANCH CIRCUIT/FEEDER CONTINUATION DOWN WALL TO FLOOR BELOW
- CONDUIT/ BRANCH CIRCUIT/FEEDER CONTINUATION UP WALL TO FLOOR ABOVE

FLOOR BOX / SPECIALTY WALL BOX / PEDESTAL BOX SYMBOLS

- SINGLE SERVICE IN FLOOR BOX. PROVIDE DEVICES PER PLAN. SEE FLOOR BOX DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.
- TWO SERVICE IN FLOOR BOX. PROVIDE DEVICES PER PLAN. SEE FLOOR BOX DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.
- THREE SERVICE IN FLOOR BOX. PROVIDE DEVICES PER PLAN. SEE FLOOR BOX DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.
- FOUR SERVICE IN FLOOR BOX. PROVIDE DEVICES PER PLAN. SEE FLOOR BOX DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.
- SIX SERVICE IN FLOOR BOX. PROVIDE DEVICES PER PLAN. SEE FLOOR BOX DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.
- AV — 7-GANG AV FLOOR BOX. PROVIDE DEVICES PER PLAN. SEE FLOOR BOX DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.
- AV — RECESSED, ADJUSTABLE DEPTH, FLAT PANEL TV/DISPLAY WALL BOX WITH FLUSH GROMMETED COVER PANEL (CHIEF #PAC525F) AND MINIMUM OF (1) 1-1/4"C.O. FROM TOP-MOUNTED L.V. CONDUIT ENTRY BOX TO ACCESSIBLE CEILING. SEE PLANS FOR ANY ADDITIONAL CONDUIT REQUIREMENTS. PROVIDE ADDITIONAL L.V. AND LINE VOLTAGE CONDUIT ENTRY BOXES AS REQUIRED TO ACCOMPLISH WALL BOX CONFIGURATION DEPICTED ON PLANS. FLUSH GROMMETED COVER SHALL BE WHITE, BLACK OR CUSTOM COLOR PER ARCHITECT. WHEN FIELD CONDITIONS PROHIBIT INSTALLATION OF THIS DEVICE (SUCH AS WALL STUD/CAVITY DEPTH OF LESS THAN 2.5" ETC), CONFIRM VIA WRITTEN RFI THE INSTALLATION OF A TRADITIONAL POWER AND DATA RECEPTACLE INSTALLATION ALONG SIDE CCTV/AV JUNCTION BOX CONSISTING OF 2-GANG DEEP JUNCTION BOX/2-GANG RING WITH 1-1/4"C.O. TO ACCESSIBLE CEILING IN ADDITION TO ANY OTHER CONDUIT REQUIREMENTS DEPICTED ON PLANS. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR MOUNTING HEIGHT.
- SINGLE OR DUAL SERVICE RECESSED EXTERIOR WALL BOX – TYPE "WP-A". PROVIDE DEVICES PER PLAN. EACH LV OR UNUSED COMPARTMENT SHALL BE EQUIPPED WITH A 1"CO TO THE NEAREST ACCESSIBLE CEILING SPACE U.O.N. SEE EXTERIOR DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.
- SINGLE OR DUAL SERVICE EXTERIOR PEDESTAL – TYPE "WP-C". PROVIDE DEVICES PER PLAN. SEE EXTERIOR DETAILS AND SPECIFICATIONS FOR MORE INFORMATION. ARROW DENOTES DEVICE DOOR LOCATION.

POWER SYMBOLS

ALL RECEPTACLE OUTLETS SHOWN WITH A DIAGONAL SLASH SHALL BE CONTROLLED BY OCCUPANCY SENSOR OR LIGHTING CONTROL PANEL. SEE DISTRIBUTED LIGHTING CONTROLS FOR ADDITIONAL REQUIREMENTS. WHERE DOUBLE DUPLEX RECEPTACLE OUTLETS ARE INDICATED AS CONTROLLED, ONLY A SINGLE DUPLEX RECEPTACLE OUTLET (NON-IG, NON-GCFI TYPE) SHALL BE CONTROLLED. WITHIN ANY CONTROLLED DUPLEX RECEPTACLE OUTLET, ONLY ONE RECEPTACLE SHALL BE CONTROLLED. NOTE THAT FOR FLOOR BOXES OR POKE-THRU DEVICES, THE ASSOCIATED CONTROL RELAY MAY NEED TO BE LOCATED WITHIN THE ELECTRICAL ROOM WHERE THE CONTROLLED CIRCUIT ORIGINATES.

- a — OCCUPANCY SENSOR/LIGHTING CONTROL SYSTEM CONTROLLED RECEPTACLE RELAY. WHERE LETTER DESIGNATION "a" REPRESENTS OCCUPANCY SENSOR/LIGHTING CONTROL SYSTEM CONTROL ZONE. SEE THE DISTRIBUTED LIGHTING CONTROL SPECIFICATION FOR MORE INFORMATION.
- DUPLEX RECEPTACLE, WALL MOUNTED.
- DOUBLE DUPLEX RECEPTACLE, WALL MOUNTED.
- DUPLEX, GFCI RECEPTACLE, WALL MOUNTED. WP INDICATES WEATHERPROOF, A, B OR C INDICATES THE TYPE OF COVER, REFER TO THE GENERAL PRODUCT SPECIFICATIONS.
- DOUBLE DUPLEX, WALL MOUNTED, WITH (1) GFCI RECEPTACLE AND (1) DUPLEX RECEPTACLE CONNECTED ON LOAD SIDE OF GFCI. WP INDICATES WEATHERPROOF, A, B OR C INDICATES THE TYPE OF COVER, REFER TO THE GENERAL PRODUCT SPECIFICATIONS.
- DUPLEX RECEPTACLE, ONE HALF SWITCHED, WALL MOUNTED.
- DUPLEX, ISOLATED GROUND RECEPTACLE, WALL MOUNTED.
- 1,3 / 1,3a — COMBINATION DOUBLE DUPLEX: ONE ISOLATED GROUND DUPLEX RECEPTACLE AND ONE DUPLEX RECEPTACLE, WALL MOUNTED.
- COMBINATION DOUBLE DUPLEX: TWO ISOLATED GROUND RECEPTACLES, WALL MOUNTED.
- SIMPLEX RECEPTACLE, WALL MOUNTED.
- SPECIAL RECEPTACLE, WALL MOUNTED. REFER TO PLAN NOTES.
- DUPLEX RECEPTACLE FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.
- DOUBLE DUPLEX RECEPTACLE FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.
- DUPLEX RECEPTACLE, ONE HALF SWITCHED, FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.
- DUPLEX, ISOLATED GROUND RECEPTACLE, FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.
- 1,3 / 1,3a — COMBINATION DOUBLE DUPLEX: ONE ISOLATED GROUND DUPLEX RECEPTACLE AND ONE DUPLEX RECEPTACLE, MOUNTED FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN FLOOR BOX SYMBOL.
- COMBINATION DOUBLE DUPLEX FLUSH IN CEILING: TWO ISOLATED GROUND RECEPTACLES – MOUNT FLUSH IN FLOOR WHEN INDICATED IN FLOOR BOX SYMBOL.
- SIMPLEX RECEPTACLE FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.
- SPECIAL RECEPTACLE FLUSH IN CEILING – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL.
- DUPLEX RECEPTACLE, WALL MOUNTED AT 6" ABOVE COUNTER OR SPLASH.
- DOUBLE DUPLEX RECEPTACLE, WALL MOUNTED AT 6" ABOVE COUNTER OR SPLASH.
- DUPLEX, GFCI RECEPTACLE, WALL MOUNTED AT 6" ABOVE COUNTER OR SPLASH. WP INDICATES WEATHERPROOF, A, B OR C INDICATES THE TYPE OF COVER, REFER TO THE GENERAL PRODUCT SPECIFICATIONS.
- DOUBLE DUPLEX, WALL MOUNTED, WITH (1) GFCI RECEPTACLE AND (1) DUPLEX RECEPTACLE CONNECTED ON LOAD SIDE OF GFCI. WP INDICATES WEATHERPROOF, A, B OR C INDICATES THE TYPE OF COVER, REFER TO THE GENERAL PRODUCT SPECIFICATIONS.
- DUPLEX RECEPTACLE, BOTTOM HALF SWITCHED, WALL MOUNTED AT 6" ABOVE COUNTER OR SPLASH.
- DUPLEX, ISOLATED GROUND RECEPTACLE, WALL MOUNTED AT 6" ABOVE COUNTER OR SPLASH.
- 1,3 / 1,3a — COMBINATION DOUBLE DUPLEX: ONE ISOLATED GROUND DUPLEX RECEPTACLE AND ONE DUPLEX RECEPTACLE, WALL MOUNTED AT 6" ABOVE COUNTER OR SPLASH.
- COMBINATION DOUBLE DUPLEX: TWO ISOLATED GROUND DUPLEX RECEPTACLES, WALL MOUNTED AT 6" ABOVE COUNTER OR SPLASH.
- SIMPLEX RECEPTACLE, WALL MOUNTED AT 6" ABOVE COUNTER OR SPLASH.
- SPECIAL RECEPTACLE, WALL MOUNTED AT 6" ABOVE COUNTER OR SPLASH. REFER TO PLAN NOTES.
- WP-D — DAMP LOCATION-LISTED (NOT-RAINTITE-IN-USE) RECEPTACLE- SEE ELECTRICAL SPECIFICATION FOR ADDITIONAL INFORMATION.
- DUPLEX RECEPTACLES WITH TWO 5V, 3.1A USB CHARGING PORTS. PROVIDE COLOR AS REQUIRED IN 15A OR 20A CONFIGURATION AND/OR TAMPER RESISTANT AND/OR HOSPITAL GRADE AS REQUIRED BY PLANS AND THE WIRING DEVICES SECTION OF THE GENERAL ELECTRICAL SPECIFICATIONS. (PASS & SEYMOUR OR EQUAL BY HUBBELL OR LEVITON.)
- QUAD RECEPTACLES WITH TWO 5V, 3.1A USB CHARGING PORTS. PROVIDE COLOR AS REQUIRED IN 15A OR 20A CONFIGURATION AND/OR TAMPER RESISTANT AND/OR HOSPITAL GRADE AS REQUIRED BY PLANS AND THE WIRING DEVICES SECTION OF THE GENERAL ELECTRICAL SPECIFICATIONS. (PASS & SEYMOUR OR EQUAL BY HUBBELL OR LEVITON.)
- JUNCTION BOX, WALL MOUNTED AT +18" A.F.F. OR AS NOTED. 4S/DP MINIMUM OR AS REQUIRED BY N.E.C..
- JUNCTION BOX, MOUNTED IN ACCESSIBLE CEILING FOR APPLICATION DENOTED ON PLAN. 4S/DP MINIMUM OR AS REQUIRED BY N.E.C..
- JUNCTION BOX, WALL MOUNTED AT 6" ABOVE COUNTER OR SPLASH. 4S/DP MINIMUM OR AS REQUIRED BY N.E.C..
- JUNCTION BOX MOUNTED IN ACCESSIBLE CEILING SPACE PER PLAN FOR FLEXIBLE CONNECTION TO PREWIRED FURNITURE SYSTEM. VERIFY CONNECTION REQUIREMENTS WITH MANUFACTURER PRIOR TO ROUGH-IN – MOUNT FLUSH IN FLOOR WHEN INDICATED IN A FLOOR BOX SYMBOL. WHEN SHOWN WITH A DIAGONAL SLASH, THE LAST GENERAL RECEPTACLE CIRCUIT ON THE HOME-RUN CALLOUT SHALL BE CONTROLLED BY THE OCCUPANCY SENSOR. SEE DISTRIBUTED LIGHTING CONTROLS FOR ADDITIONAL REQUIREMENTS.
- JUNCTION BOX, WALL MOUNTED AT +18" A.F.F. FOR FLEXIBLE CONNECTION TO PREWIRED FURNITURE SYSTEM. VERIFY CONNECTION REQUIREMENTS WITH MANUFACTURER PRIOR TO ROUGH-IN. WHEN SHOWN WITH A DIAGONAL SLASH, THE LAST GENERAL RECEPTACLE CIRCUIT ON THE HOME-RUN CALLOUT SHALL BE CONTROLLED BY THE OCCUPANCY SENSOR. SEE DISTRIBUTED LIGHTING CONTROLS FOR ADDITIONAL REQUIREMENTS.
- SURFACE MOUNTED MULTI-OUTLET ASSEMBLY. REFER TO GENERAL PRODUCT SPECIFICATIONS. PROVIDE ALL COMPONENTS NECESSARY FOR A COMPLETE INSTALLATION.
- THERMOSTAT OUTLET BOX, PROVIDE 1/2"C.O. TO RESPECTIVE MECHANICAL UNIT.
- EXHAUST FAN, OR MOTOR LOAD. REFER TO MECHANICAL, PLUMBING OR KITCHEN DRAWINGS FOR SPECIFIC LOAD REQUIREMENTS OR AS NOTED.
- FLUSH MOUNTED ELECTRICAL PANELBOARD OR LOAD CENTER. REFER TO PANEL SCHEDULE.
- SURFACE MOUNTED ELECTRICAL PANELBOARD OR LOAD CENTER. REFER TO PANEL SCHEDULE.
- DISTRIBUTION SWITCHBOARD. REFER TO SINGLE LINE DIAGRAM.
- T — TRANSFORMER, REFER TO SINGLE LINE DIAGRAM.
- F — FUSED DISCONNECT SWITCH, HP RATED, OR COMBINATION MOTOR STARTER/DISCONNECT SWITCH WITH FUSES PER EQUIPMENT MANUFACTURER AND WEATHERPROOF AS REQUIRED. PROVIDE FINAL CONNECTION TO UNIT EQUIPMENT. SEE MOTORIZED EQUIPMENT SCHEDULE FOR DISCONNECT AND STARTER SIZES.
- NON-FUSED DISCONNECT SWITCH, HP RATED AND WEATHERPROOF AS REQUIRED. PROVIDE FINAL CONNECTION TO UNIT EQUIPMENT. SEE MOTORIZED EQUIPMENT SCHEDULE FOR DISCONNECT SIZES.
- M — UTILITY COMPANY METER. PROVIDE "CT's" AND "PT's" AS REQUIRED, REFER TO SINGLE LINE DIAGRAM.
- A B C — CIRCUIT BREAKER: "A" REPRESENTS CIRCUIT BREAKER AMPERE RATING, "B" REPRESENTS NUMBER OF POLES AND "C" REPRESENTS MISCELLANEOUS BREAKER FEATURES.
  - SHUNT= PROVIDE SHUNT TRIP MECHANISM
  - HACR= PROVIDE HACR-RATED BREAKER
  - GFP= GROUND FAULT PROTECTION
  - CLCB= CURRENT LIMITING CIRCUIT BREAKER
  - SS= PROVIDE SOLID STATE CIRCUIT BREAKER
  - LO= PROVIDE PERMANENT LOCK-OPEN (OFF) HARDWARE
  - LC= PROVIDE PERMANENT LOCK-CLOSED (ON) HARDWARE
- A B C D — FUSIBLE SWITCH: "A" REPRESENTS SWITCH / FRAME AMPERE RATING, "B" REPRESENTS THE FUSE AMPERE RATING, "C" INDICATES NUMBER OF POLES AND "D" REPRESENTS MISCELLANEOUS FUSE / SWITCH FEATURES.
  - SHUNT= PROVIDE SHUNT TRIP MECHANISM
  - GFP= GROUND FAULT PROTECTION
  - CLF= CURRENT LIMITING FUSE
- GROUND CONNECTION, SIZE AS INDICATED OR AS REQUIRED.
- $a,b — SINGLE POLE SWITCHES, WALL MOUNTED. SUBSCRIPTS AT SYMBOL INDICATE THE FOLLOWING:

2 – DOUBLE POLE	LV – LOW VOLTAGE	RL – ROTARY LOCK KEY TYPE
3 – THREE WAY	P – PILOT LIGHT	PB – PUSHBUTTON
4 – FOUR WAY	R – REMOTE CONTROL	S – PROJECTION SCREEN
K – KEY OPERATED	M – MOTOR STARTING	

a, b, c, ETC. – DESIGNATES QUANTITY OF SWITCHES AT EACH LOCATION.

NOTE: ALL WALL SWITCHES CONTROLLING EMERGENCY CIRCUITS SHALL BE ENGRAVED WITH "EMERGENCY".

- H — EMERGENCY POWER OFF STATION, WALL MOUNTED PER EPO SYSTEM DETAIL.
- PB, OR P — PULLBOX, SIZED PER N.E.C. OR AS NOTED.

WALL MOUNTED DEVICE MOUNTING HEIGHT NOTE:

ALL WALL-MOUNTED EQUIPMENT MOUNTING HEIGHTS SHALL BE VERIFIED PRIOR TO ROUGH-IN PER REQUIREMENTS OF THE DEVICE ALIGNMENT AND MOUNTING HEIGHT DETAILS AND SPECIFICATIONS.

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DIV. OF THE STATE ARCHITECT
APP 03 117500
AC W FLS SS
Date SEP 21 2016

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS

409 S. BARRANCA STREET, WEST COVINA, CA 91791

COVINA-VALLEY UNIFIED SCHOOL DISTRICT

ELECTRICAL SYMBOLS LIST

REVISIONS:
1
2
3
4
5
6
7
8

Date:	06/14/16
Job:	1633
Scale:	NONE
Drawn:	

E000

SHEET - OF XXX
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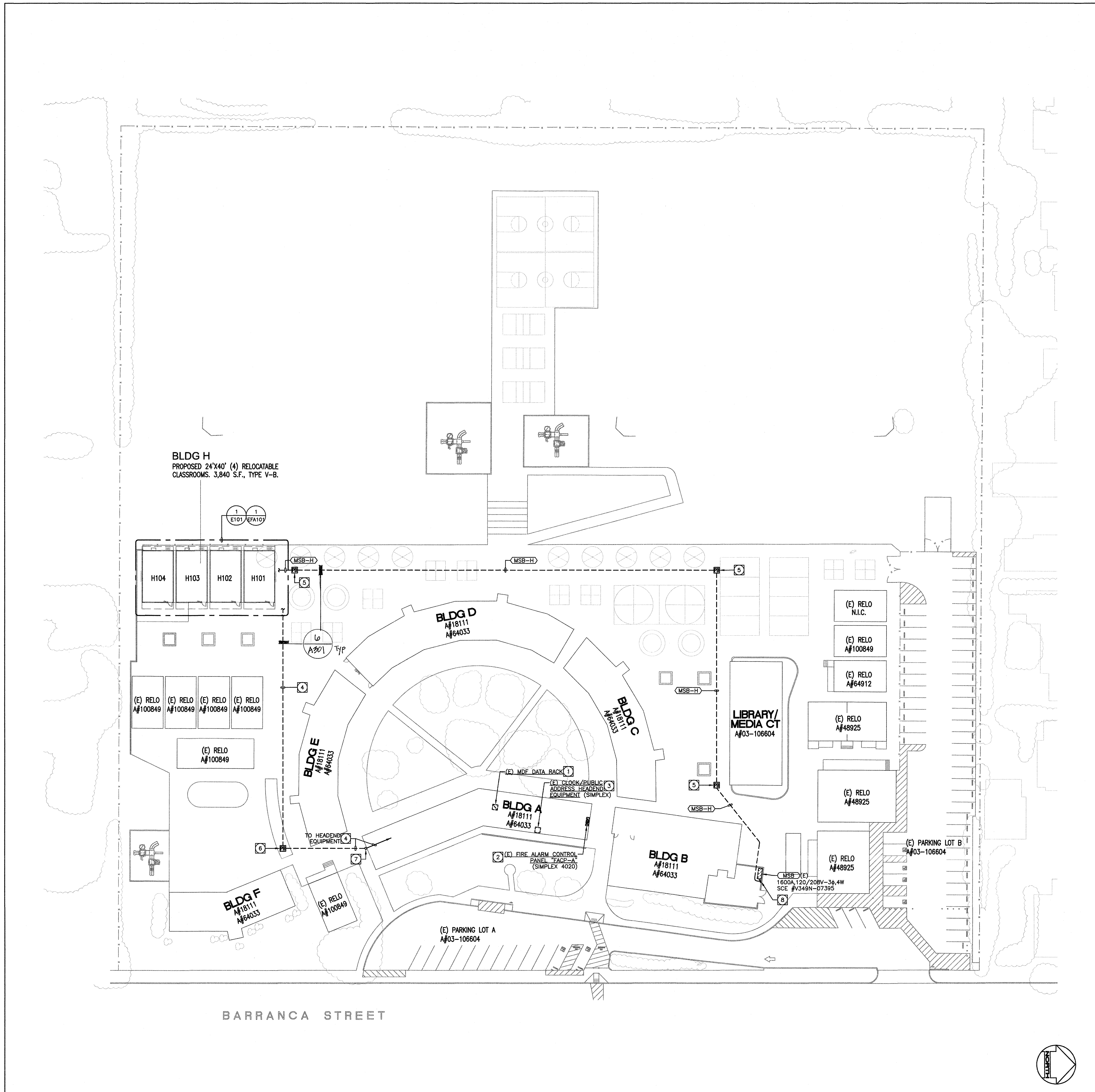

OVERALL SITE ELECTRICAL PLAN 1

1"=30'-0"

SITE UTILITY PLAN CONSTRUCTION NOTES:

THESE NOTES ESTABLISH MINIMUM QUALITY LEVELS AND COORDINATION REQUIREMENTS. RESPECTIVE UTILITY COMPANY PLANS AND REQUIREMENTS TAKE PRECEDENCE OVER THESE NOTES WITH REGARD TO RESPECTIVE UTILITY COMPANY CONDUIT AND UNDERGROUND STRUCTURE SYSTEMS.

1. CALL UNDERGROUND SERVICE ALERT (USA) AT 1 (800) 422-4133 OR APPLICABLE STATE AND LOCAL DIG SAFE OR UNDERGROUND ALERT HOTLINES PRIOR TO CONSTRUCTION START.
2. COORDINATE ALL UNDERGROUND STRUCTURES AND CONDUIT ROUTING WITH LANDSCAPE ARCHITECT PRIOR TO ROUGH-IN TO ENSURE THAT SUCH ITEMS ARE NOT PLACED IN CRITICAL LANDSCAPE PLANTING/HARDSCAPE AREAS.
3. VAULTS, MAINTENANCE HOLES (MH's), FORMERLY KNOWN AS MANHOLES, AND CONDUITS SHALL MAINTAIN A MINIMUM COVER OF 24" BELOW FINAL SURFACE AT ALL CONDITIONS. INCLUDE ALL COSTS IN BASE BID TO MEET UTILITY COMPANY REQUIREMENTS WHICH MAY REQUIRE GREATER MINIMUM CONDUIT DEPTHS.
4. VAULTS, MH's AND PULLBOXES (PB's) SHALL BE EQUIPPED WITH KNOCKOUT PANELS OR PRE-CAST INDIVIDUAL CONDUIT OPENINGS. CONDUITS SHALL ONLY ENTER AND EXIT ON END/SHORT WALLS. CONDUITS MAY NOT ENTER AND EXIT ON SIDE/LONG WALLS, CEILINGS OR FLOORS UNLESS OTHERWISE NOTED.
5. CUT DUCTS FLUSH WITH INTERIOR VAULT/MH/PB WALL.
6. GROUT AROUND DUCT ENTRANCES ON VAULT/MH/PB WALLS.
7. SLURRY BACKFILL AROUND DUCTS WITHIN 5 FEET OF VAULT/MH/PB TO PREVENT SHEARING.
8. CONDUITS PASSING UNDER THE BUILDING PERIMETER SHALL BE ENCASED IN LIGHTWEIGHT CONCRETE OR WATER-IMPERVIOUS CLAY TO PREVENT WATER INFILTRATION. SEE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.
9. CONDUIT BEND RADIUS FOR BUILDING ENTRANCES AND AT POLES SHALL BE A MINIMUM OF 24" FOR CONDUITS WITH LESS THAN 2" INTERNAL DIAMETER AND A MINIMUM OF 48" FOR CONDUITS WITH MORE THAN 2" INTERNAL DIAMETER.
10. PREFERRED CONDUIT SWEEP RADIUS BETWEEN VAULTS IS 25 FEET. UNDER NO CIRCUMSTANCES SHALL THE CONDUIT SWEEP RADIUS BE LESS THAN 12.5 FEET. MAXIMUM OF 90 DEGREES PER SWEEP AND LIMITED TO NO MORE THAN (2) 90 DEGREE SWEEPS BETWEEN VAULTS.
11. VAULTS/MH's/PB's ARE TO BE EQUIPPED WITH RACKING, GROUNDING LUGS, AND BOLT-DOWN LIDS UNLESS OTHERWISE NOTED.
12. VAULTS AND MH's TO BE EQUIPPED WITH ROUND COVERS, EXTENSION RINGS AS REQUIRED, LADDERS AND (3) SEGMENTS OF 6 FOOT HIGH CABLE RACKING PER EACH LONG WALL.
13. LABEL ALL NON-UTILITY COMMUNICATION VAULT/MH/PB COVERS WITH "COMMUNICATIONS" UNLESS OTHERWISE NOTED ON PLANS.
14. COORDINATE FINAL VAULT/MH/PB OPENING HEIGHT WITH G.C. PRIOR TO ROUGH-IN TO ENSURE FINAL GRADE DOES NOT SLOPE INTO VAULT/MH/PB OPENING.
15. CONTRACTOR TO PROVIDE A MINIMUM OF 8" DEEP COMPACTED 1/2" DIAMETER GRAVEL, UNDER ALL VAULTS, MH's OR PB's TO ENSURE UNIFORM DISTRIBUTION OF SOIL PRESSURE ON THE FLOOR AND BE ABLE TO DISSIPATE WATER OUT OF THE VAULT, MH OR PB.
16. ALL VAULTS/MH's/PB's WITHOUT GROUNDING LUGS SHALL HAVE AN 8' x 3/4" COPPER GROUND ROD DRIVEN THRU THE FLOOR TO ALLOW GROUNDING OF ITEMS WITHIN.
17. ALL VAULTS/MH's/PB's SHALL BE PROVIDED WITH TRAFFIC RATED COVERS WHEN LOCATED IN PAVED AREAS UTILIZED FOR VEHICLE TRAFFIC.
18. IF THE WATER OR MOISTURE BARRIER ON OR NEAR THE FOUNDATION OF A BUILDING IS DISTURBED IN ANY MANNER BY EXCAVATION OR OTHER CONSTRUCTION WORK, THE MOISTURE BARRIER MUST BE REPAIRED FOLLOWING THE RECOMMENDATIONS OF THE MANUFACTURER OF THE ORIGINAL BARRIER PRODUCT.
19. THE CONTRACTOR SHALL INCLUDE IN BASE BID ALL COSTS TO COMPLY WITH ALL REQUIREMENTS FOR CONFINED SPACE ENTRY PER THE OSHA REQUIREMENTS 29 CFR-1910.146, 29 CFR-1910.268, ETC. DURING ANY CONFINED SPACE ENTRY.
20. ANY DUCTS LEAVING A VAULT, MH OR PB ROUTED INTO A FACILITY SHALL BE PLUGGED AT EACH END USING REMOVEABLE MECHANICAL PLUGS DESIGNED TO PREVENT WATER AND GAS FROM ENTERING THE FACILITY.
21. SEE ELECTRICAL SPECIFICATIONS AND PLAN DETAILS FOR ADDITIONAL REQUIREMENTS REGARDING UNDERGROUND CONDUITS AND IN-GRADE VAULT/MH/PB/JUNCTION BOXES.

SITE PLAN GENERAL NOTES:

1. CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE TO AVOID EXISTING DUCTS, PIPING OR CONDUITS, ETC., AND TO PREVENT HAZARDS TO PERSONNEL AND/OR DAMAGE TO EXISTING UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN AND INSTALLED BY ANY OTHER CONTRACTS. THE ENGINEER IS NOT RESPONSIBLE FOR THE LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES WHETHER OR NOT SHOWN OR DETAILED AND INSTALLED BY ANY OTHER CONTRACTS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER SHOULD SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED. THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE THE NECESSARY ELEMENTS FOR CONSTRUCTION SAFETY.
2. CALL UNDERGROUND SERVICE ALERT (USA) AT 1 (800) 422-4133 OR APPLICABLE STATE AND LOCAL DIG SAFE OR UNDERGROUND ALERT HOTLINES PRIOR TO CONSTRUCTION START.
3. MINIMUM CONDUIT SIZE SHALL BE 3/4" - U.O.N.
4. MINIMUM CONDUCTOR SIZE SHALL BE #10 AWG. - U.O.N.
5. ALL SITE BRANCH CIRCUITS SHALL INCLUDE AN EQUIPMENT GROUND CONDUCTOR THAT, AT MINIMUM, MATCHES THE SIZE OF THE ASSOCIATED BRANCH CIRCUIT CONDUCTOR. WHERE MULTIPLE BRANCH CIRCUITS ARE ROUTED/GROUPED TOGETHER, THE EQUIPMENT GROUNDING CONDUCTOR SHALL MATCH THE SIZE OF THE LARGEST BRANCH CIRCUIT CONDUCTOR IN THE GROUP.
6. ALL ELECTRICAL EQUIPMENT MOUNTED OUTDOORS SHALL BE WEATHERPROOF (NEMA #3R).
7. ALL CONDUIT ONLY SHALL BE PROVIDED WITH A NYLON PULL STRING.
8. SEE ARCHITECTURAL/LANDSCAPE ARCHITECTURAL PLANS FOR EXACT LOCATIONS OF FIXTURES, PULLBOXES, MANHOLES, OTHER ELECTRICAL DEVICES, ETC. COORDINATE ALL UNDERGROUND STRUCTURES AND CONDUIT ROUTING WITH LANDSCAPE ARCHITECT PRIOR TO ROUGH-IN TO ENSURE THAT SUCH ITEMS ARE NOT PLACED IN CRITICAL LANDSCAPE PLANTING/HARDSCAPE AREAS.
9. UNLESS SPECIFICALLY SHOWN AS (E), (R), (ER), (D), EXISTING OR NON-BOLD, ALL ELECTRICAL DEVICES SHOWN ARE NEW.

KEYNOTES GENERALLY CORRESPOND TO SPECIFICATION SECTIONS BY MEANS OF THE FIVE-DIGIT NUMBER IDENTIFYING THE SPEFICIATION SECTION AS A MATTER OF REFERENCE AND CONVENIENCE. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL WORK INDICATED HEREIN PERSUANT TO THE GENERAL CONDITIONS AND TECHNICAL SPECIFICATIONS OF THE CONTRACT, REGARDLESS OF WHETHER OR NOT THE KEYNOTE(S) SPECIFICALLY CORRESPOND TO ANY SPECIFICATION DIVISION PROVIDED IN THE TECHNICAL SPECIFICATIONS.

PLAN NOTES:

1. MODIFY EXISTING DATA MDF RACK AS REQUIRED TO SERVE THE NEW CONSTRUCTION. PROVIDE ADDITIONAL FIBER ENCLOSURES, PATCH PANELS, CONNECTION, ETC. AS NEEDED FOR A COMPLETE AND OPERABLE SYSTEM.
2. EXISTING FIRE ALARM CONTROL PANEL TO REMAIN PROTECTED IN PLACE. MODIFY EXISTING FIRE ALARM PANEL AS REQUIRED TO INTERCONNECT WITH NEW FIRE ALARM CONTROL PANEL. PROVIDE ADDITIONAL HARDWARE, PROGRAMMING, CONNECTIONS, ETC. AS NEEDED FOR A COMPLETE AND OPERABLE SYSTEM.
3. MODIFY EXISTING HEADEND EQUIPMENT AS REQUIRED TO SERVE THE NEW CONSTRUCTION. PROVIDE ADDITIONAL HARDWARE, CONNECTIONS, ETC. AS NEEDED FOR A COMPLETE AND OPERABLE SYSTEM. VERIFY EXACT LOCATION IN MAIN SIGNAL ROOM IN FIELD.
4. PROVIDE THE FOLLOWING SIGNAL SYSTEM CONDUITS WITH CONDUCTORS AS SPECIFIED:
   3"C. DATA/TELEPHONE
   2"C. CLOCK/PUBLIC ADDRESS
   2"C. FIRE ALARM
   1"C.O. EMS
   1"C.O. SPARE
5. PROVIDE 2'x3' CONCRETE PULLBOX WITH BOLT-DOWN TRAFFIC RATED COVER ENGRAVED "POWER". DEPTH AS REQUIRED.
6. PROVIDE ONE (1) 2'x3' AND ONE (1) 11"x17" CONCRETE PULLBOXES WITH BOLT-DOWN TRAFFIC RATED COVERS, ENGRAVED "SIGNAL" AND "FIRE ALARM", RESPECTIVELY. DEPTHS AS REQUIRED.
7. ROUTE CONDUIT FROM BELOW GRADE EXPOSED ON BUILDING EXTERIOR TO AN ELEVATION ABOVE THE ACCESSIBLE CEILING SPACE. PROVIDE A WEATHERPROOF "LB" FITTING AND SEALED PENETRATION THROUGH THE BUILDING EXTERIOR AS REQUIRED TO PERFORM WORK INDICATED. PAINT CONDUIT TO MATCH THE SURROUNDING SURFACE.
8. PROVIDE NEMA-3R ENCLOSURE MOUNTED ON WALL ADJACENT TO "MSB". PROVIDE ONE (1) 400A CIRCUIT BREAKER WITHIN ENCLOSURE TO SERVE NEW CONSTRUCTION. 10'-0" MAX TAP DISTANCE. REFER TO SINGLE LINE DIAGRAM ON SHEET E201 FOR FURTHER INFORMATION.

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SITE ELECTRICAL PLAN

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tk1sc Job #: 2016-0263

Date:	06/14/16
Job:	1633
Scale:	AS NOTED
Drawn:	

E001

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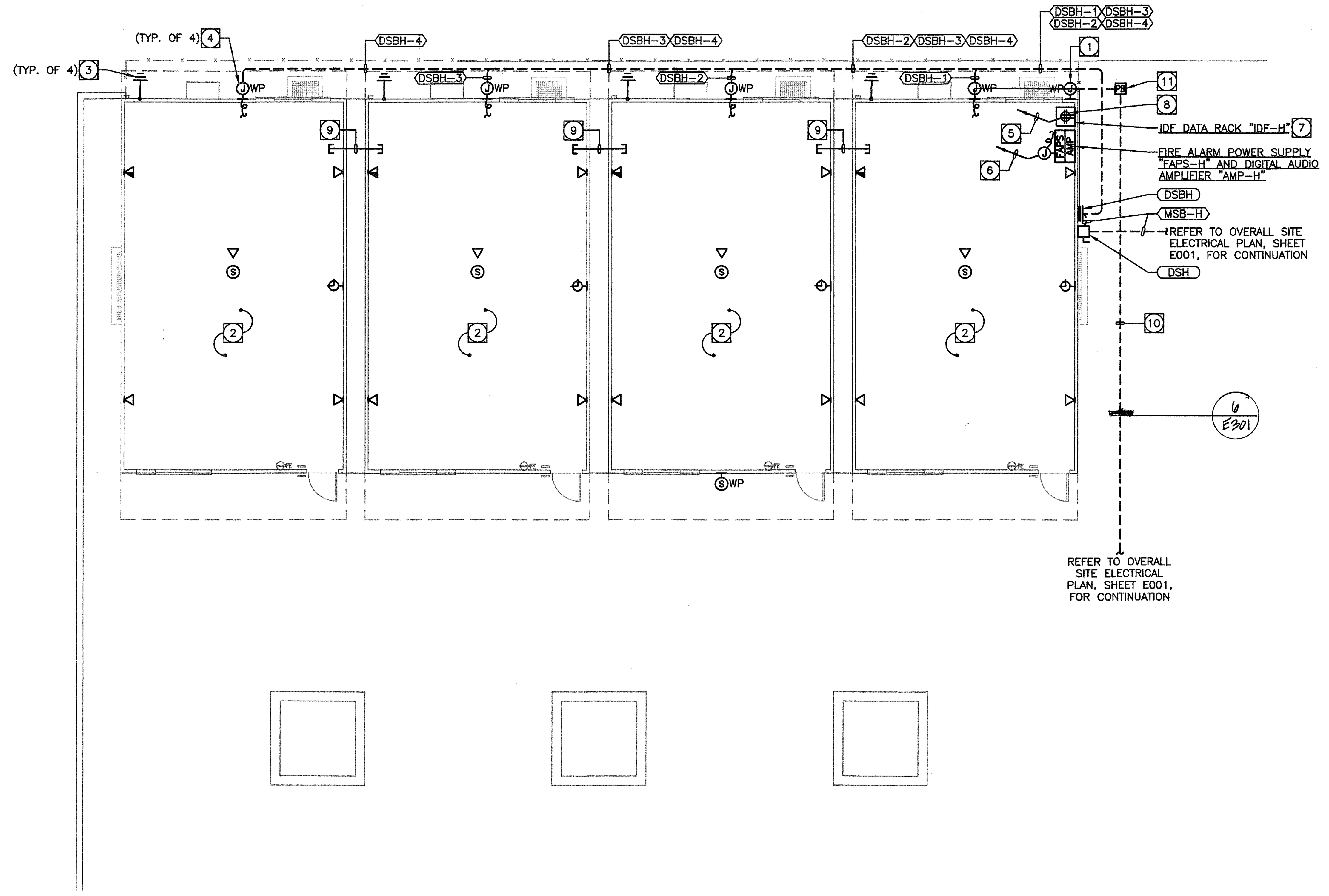
XREF:



RELOCATABLE BUILDINGS ELECTRICAL PLAN 1
1/8"=1'-0"

POWER PLAN GENERAL NOTES:

1. ALL RECEPTACLES ON COMMON WALLS SHALL BE SEPARATE BOXES AND OFFSET 24" MINIMUM.
2. ALL PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE PROTECTED FROM THE SPREAD OF FIRE WITH AN APPROVED FIRESTOP SYSTEM EQUAL OR GREATER THAN THE FIRE RATING OF THE WALL.
3. ALL WALL-MOUNTED DEVICE HEIGHTS SHALL BE VERIFIED WITH THE ARCHITECT PRIOR TO ROUGH-IN.
4. ALL FURNITURE FEED LOCATIONS TO BE VERIFIED WITH ARCHITECT AND FURNITURE VENDOR PRIOR TO ROUGH-IN.
5. ALL FURNITURE WHIPS SHALL BE TRIMMED TO REDUCE EXCESS WHIP LENGTH.
6. WHEN EXPOSED CEILINGS OR OPEN GRID CONDITIONS OCCUR, THE CONTRACTOR WILL NEED TO PROVIDE THE FOLLOWING ITEMS:

   - ALL BRANCH CIRCUITS SHALL BE IN EMT.
   - ALL BRANCH CIRCUITS SHALL BE ROUTED NEATLY AND IN PARALLEL TO STRUCTURES OR DUCT WORK.

   VISUALLY OBJECTIONABLE BRANCH CIRCUITS SHALL BE REROUTED AT THE REQUEST OF THE ARCHITECT AT NO ADDITIONAL COST.
7. EXPOSED CABLE/CONDUCTORS INSTALLED IN A PLENUM SPACE SHALL CONFORM TO NEC, OR CEC WHERE ADOPTED, **ARTICLE 300.22(C)**.
8. PROVIDE G.F.C.I. TYPE RECEPTACLE(S) OR RECEPTACLE(S) PROTECTED BY A GFCI CIRCUIT BREAKER(S) WHEN LOCATED WITHIN 6 FEET OF ANY SINK OR THERAPEUTIC TUB, SERVING ANY DRINKING FOUNTAIN OR VENDING MACHINE, WITHIN ANY KITCHEN SPACE AND/OR LOCATED OUTDOORS. WHERE RECEPTACLES ARE NOT READILY ACCESSIBLE, PROVIDE GFCI CIRCUIT BREAKER(S) TO PROTECT THE RESPECTIVE BRANCH CIRCUIT AND PROVIDE ADDITIONAL NEUTRAL CONDUCTORS IN THE BRANCH CIRCUITING AS REQUIRED TO ENSURE PROPER GFCI FUNCTION.
9. PROVIDE OCCUPANCY SENSOR/LIGHTING CONTROL SYSTEM CONTROLLED RECEPTACLE RELAY(S) AS REQUIRED TO SWITCH CONTROLLED RECEPTACLES. CONNECT BRANCH CIRCUITRY AND CONTROL WIRING AS REQUIRED TO ALLOW OCCUPANCY SENSOR/LIGHTING CONTROL SYSTEM RELAY TO SWITCH STANDALONE AND/OR SYSTEMS FURNITURE CONTROLLED RECEPTACLES AS INDICATED ON PLANS. PROVIDE ADDITIONAL CONDUIT, WIRING AND PATHWAYS NECESSARY TO CONNECT BRANCH CIRCUITRY AND CONTROL WIRING TO REMOTE RELAYS TO INCLUDE RELAY(S) LOCATED ON ALTERNATE FLOORS, IN ELECTRICAL ROOMS, ETC.
10. PROVIDE ADDITIONAL J-BOX NEAR PANEL FOR MULTIPLE HOMERUN CIRCUITRY.
11. UNLESS SPECIFICALLY SHOWN AS (E), (R), (ER), (D), EXISTING OR NON-BOLD, ALL ELECTRICAL DEVICES SHOWN ARE NEW.
12. PROVIDE REDUNDANT GROUND PATH IN ALL BRANCH CIRCUITS SERVING PATIENT CARE AREAS CONSISTING OF A SEPARATE, INSULATED EQUIPMENT GROUNDING CONDUCTOR PER NEC, OR CEC WHERE ADOPTED, ART 517.13.

COMMUNICATIONS PATHWAYS GENERAL NOTES:

1. CONDUITS SHALL, (a) CONTAIN NO CONTINUOUS SECTIONS LONGER THAN 30M (98 FT.), AND, (b) CONTAIN NO MORE THAN (2) 90° BENDS OR (1) REVERSE BEND WITHOUT INSTALLING A PULLBOX. SPLIT CONDUITS IN PLACE OF PULLBOXES ARE UNACCEPTABLE.
2. CONDUITS SHALL CONTAIN PLASTIC OR NYLON PULL TAPE RATED AT 200 LBS. WITH A MINIMUM OF 5 FEET OF EXTRA PULL TAPE COILED AT EACH END.
3. CONDUIT BEND RADIUS SHALL BE (a) A MINIMUM OF 6 TIMES THE INTERNAL CONDUIT DIAMETER FOR CONDUITS 2" IN DIAMETER OR LESS, AND, (b) 10 TIMES THE INTERNAL CONDUIT DIAMETER FOR CONDUITS MORE THAN 2" IN DIAMETER.
4. TERMINATE CONDUIT STUBS AND SLEEVES THAT PROTRUDE THROUGH STRUCTURAL FLOORS 2"-3" ABOVE THE FLOOR SURFACE.
5. INSTALL BUSHINGS OR BELL ENDS AS REQUIRED ON ALL CONDUITS.
6. FLEX CONDUIT IS UNACCEPTABLE FOR USE AS A COMMUNICATIONS CONDUIT EXCEPT AT SEISMIC JOINTS AND/OR IF APPROVED IN WRITING BY THE ENGINEER.
7. ALL UNDER SLAB OR IN-SLAB CONDUITS SHALL BE INSTALLED IN A MANNER THAT PREVENTS WATER INFILTRATION OF THE CONDUIT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE GROUND WATER, RAIN WATER OR CONSTRUCTION WATER IS PREVENTED FROM ENTERING AND/OR REMOVED FROM THE CONDUITS PRIOR TO PLACEMENT OF COMMUNICATIONS CABLES. SEE ELECTRICAL SPECIFICATIONS, DETAILS AND PLANS FOR ADDITIONAL CONDUIT SEALING REQUIREMENTS.
8. ALL PULLBOXES SHALL BE SIZED AND INSTALLED PER ANSI-TIA-569-C. PULLBOXES FOR IN/UNDER SLAB CONDUIT RUNS ARE NOT PERMITTED UNLESS OTHERWISE NOTED. PULLBOXES FOR OVERHEAD CONDUIT RUNS SHALL BE LOCATED ABOVE ACCESSIBLE CEILINGS WITHIN THE ACCESSIBLE CEILING SPACE AND SUPPORTED INDEPENDENTLY FROM THE STRUCTURE AND CONDUIT SUPPORTS. PULLBOXES FOR ROOF MOUNTED OR EXTERIOR ABOVE GRADE APPLICATIONS SHALL BE NEMA 3R RATED. PULLBOXES SHALL BE SIZED ACCORDING TO THE FOLLOWING:

CONDUIT SIZE	WIDTH	LENGTH	DEPTH	WIDTH INCREASE PER ADDITIONAL CONDUIT
1"	4"	16"	3"	2"
2"	8"	36"	4"	5"
3"	12"	48"	5"	6"
4"	15"	60"	8"	8"

   FOR OTHER CONDUIT SIZES REFER TO ANSI/TIA-569-C TABLE 12. - LATEST PUBLISHED EDITION.
9. CONDUIT(S) SHALL EXIT A PULLBOX ON THE WALL OPPOSITE THE WALL ENTERED.
10. PROVIDE LABELING OF EACH CONDUIT PER GENERAL ELECTRICAL SPECIFICATIONS.
11. PROVIDE INTERNAL/EXTERNAL GAS AND WATER TIGHT MECHANICAL SEALING/PLUGGING OF EACH BUILDING ENTRY CONDUIT AS SPECIFIED ELSEWHERE IN THE DRAWINGS AND SPECIFICATIONS.

KEYNOTES GENERALLY CORRESPOND TO SPECIFICATION SECTIONS BY MEANS OF THE FIVE-DIGIT NUMBER IDENTIFYING THE SPEFICIATION SECTION AS A MATTER OF REFERENCE AND CONVENIENCE. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL WORK INDICATED HEREIN PERSUANT TO THE GENERAL CONDITIONS AND TECHNICAL SPECIFICATIONS OF THE CONTRACT, REGARDLESS OF WHETHER OR NOT THE KEYNOTE(S) SPECIFICALLY CORRESPOND TO ANY SPECIFICATION DIVISION PROVIDED IN THE TECHNICAL SPECIFICATIONS.

PLAN NOTES:

1. PROVIDE ONE (1) 24"x24"x6"D. (DATA/TELEPHONE) AND THREE (3) 12"x12"x6"D. (CLOCK/PUBLIC ADDRESS, FIRE ALARM, EMS/SPARE) NEMA '3R' TERMINAL CABINETS WITH SCREW COVER FOR LOW VOLTAGE SYSTEMS. PROVIDE 3"C. (DATA) & (3) 2"C. TO RELOCATABLE BUILDING ACCESSIBLE CEILING SPACE.
2. VERIFY LOCATION OF SIGNAL DEVICES WITHIN CLASSROOM WITH DISTRICT AND RELOCATABLE BUILDING MANUFACTURER PRIOR TO ROUGH-IN.
3. PROVIDE GROUNDING PER DETAIL 3, SHEET E301.
4. CONNECT TO RELOCATABLE BUILDING PANELBOARD PER MANUFACTURERS REQUIREMENTS.
5. PROVIDE 3/4"C. WITH 2#12, 1#12 GRD. TO 120V DEDICATED CIRCUIT WITHIN BUILDING PANEL FOR POWER. PROVIDE ONE (1) 20AMP, 1-POLE CIRCUIT BREAKER IN SPACE OF BUILDING PANEL AND CONNECT AS REQUIRED. PROVIDE ALL REQUIRED MOUNTING HARDWARE. MATCH A.I.C. RATING OF DEVICES USED.
6. PROVIDE 3/4"C. WITH 3#12, 1#12 GRD. TO (2) 120V DEDICATED CIRCUITS WITHIN BUILDING PANEL FOR POWER. PROVIDE 20AMP, 1-POLE CIRCUIT BREAKERS IN SPACE OF BUILDING PANEL WITH APPROVED LOCK-ON DEVICESS, RED INDICATOR AND IDENTIFIED AS "FIRE ALARM CONTROL CIRCUIT" (NFPA 72, 10.6). CONNECT AS REQUIRED. PROVIDE ALL REQUIRED MOUNTING HARDWARE. MATCH A.I.C. RATING OF DEVICES USED.
7. MOUNT IDF DATA RACK ON WALL AS HIGH AS POSSIBLE.
8. PROVIDE RECEPTACLE MOUNTED WITHIN DATA RACK.
9. PROVIDE THE FOLLOWING CONDUIT SLEEVES WITH CONDUCTORS AS SPECIFIED. SEE DETAIL 4, SHEET E301.
   2"C. DATA/TELEPHONE
   2"C. CLOCK/PUBLIC ADDRESS
   1"C. FIRE ALARM
   1"C.O. SPARE
10. PROVIDE THE FOLLOWING SIGNAL SYSTEM CONDUITS WITH CONDUCTORS AS SPECIFIED:
   3"C. DATA/TELEPHONE
   2"C. CLOCK/PUBLIC ADDRESS
   2"C. FIRE ALARM
   1"C.O. EMS
   1"C.O. SPARE
11. PROVIDE ONE (1) 2'x3' AND ONE (1) 11"x17" CONCRETE PULLBOXES WITH BOLT-DOWN TRAFFIC RATED COVERS, ENGRAVED "SIGNAL" AND "FIRE ALARM", RESPECTIVELY. DEPTHS AS REQUIRED.

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COVINA-VALLEY UNIFIED SCHOOL DISTRICT

RELOCATABLE BUILDINGS ELECTRICAL PLAN

REVISIONS:

Date:	06/14/16
Job:	1633
Scale:	AS NOTED
Drawn:	

E101

SHEET - OF XXX
XREF:

FEEDER SCHEDULE

FEEDER	CONDUIT AND CONDUCTORS	LOAD	DISTANCE	V.D. (%)	A.I.C.	NOTES
MSB–H	(2) 4"C.–4#500MCM, 1#2/0 GRD.	224A	600'	1.50%	9,190A	– –
–	–	–	–	–	–	– –
DSBH–1	2"C.–4#1, 1#8 GRD.	56A	30'	0.18%	7,502A	– –
DSBH–2	2"C.–4#1, 1#8 GRD.	56A	60'	0.35%	6,002A	– –
DSBH–3	2"C.–4#1, 1#8 GRD.	56A	90'	0.53%	5,002A	– –
DSBH–4	2"C.–4#1, 1#8 GRD.	56A	120'	0.71%	4,288A	– –
–	–	–	–	–	–	– –
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GENERAL FEEDER SCHEDULE NOTES:

1. ALL FEEDERS SHOWN, UNLESS SPECIFICALLY NOTED OTHERWISE, ARE PRESUMED TO BE ROUTED IN METAL RACEWAYS. IF P.V.C. CONDUITS ARE UTILIZED, THE CONTRACTOR SHALL PROVIDE AN EQUIPMENT GROUND PER NEC, OR CEC WHERE ADOPTED, **TABLE 250.122** OR, WHERE REQUIRED, PROVIDE A MAIN BONDING JUMPER PER **TABLE 250.66** AND INCREASE THE CONDUIT SIZE ACCORDINGLY.
2. LOADS INDICATED WITH " ( ) " REPRESENT WORST CASE LOAD IN AMPS.
3. DISTANCE SHOWN IS FOR DESIGN PURPOSES ONLY. IT IS NOT A MATERIAL TAKEOFF.
4. VOLTAGE DROP VALUE INDICATED IS AT THE END OF THE FEEDER.
5. AVAILABLE FAULT CURRENT VALUE AT THE END OF THE FEEDER INDICATED. CALCULATIONS ARE BASED UPON INITIAL VALUES RECEIVED FROM THE SERVING UTILITY AND THE LENGTH AND IMPEDANCE OF THE FEEDER.

GENERAL SINGLE LINE DIAGRAM NOTES:

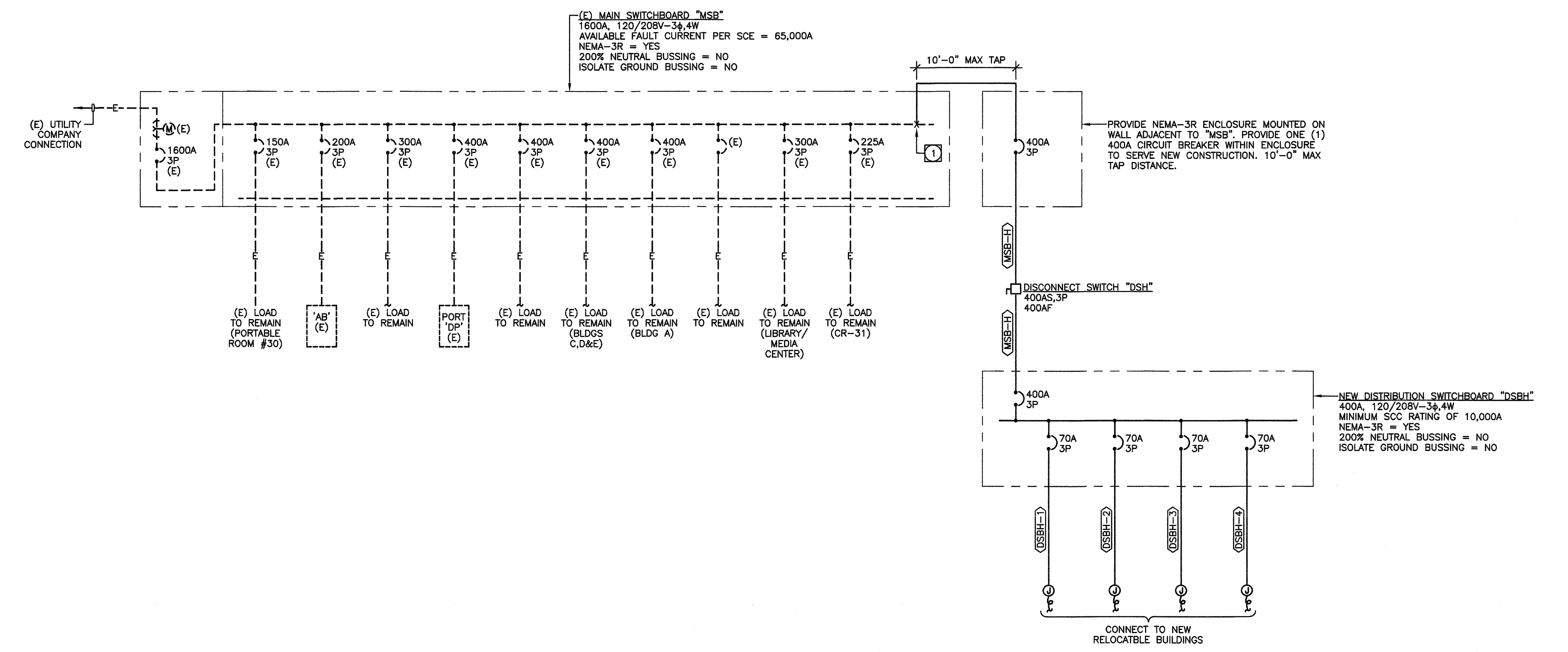
1. ALL SWITCHGEAR SHALL BE SQUARE D OR EQUAL BY CUTLER–HAMMER, RSE–SIERRA, G.E., SIEMENS, OR Z–POWER & DISTRIBUTION.
2. ALL ITEMS DEPICTED ON THE SINGLE LINE DRAWINGS SHALL BE ASSUMED AS NEW U.O.N.
3. ALL OVERCURRENT DEVICES IN AN INDIVIDUAL PIECE OF EQUIPMENT SHALL HAVE AN AIC RATING EQUAL TO THE OVERALL RATING OF THE EQUIPMENT–SERIES RATING OF DEVICES WITHIN A PIECE OF EQUIPMENT IS NOT ALLOWED. SEE SPECIFICATIONS FOR MORE INFORMATION.
4. SERIES RATED DEVICES SHALL HAVE BEEN INVESTIGATED BY UL IN COMBINATION WITH THE END USE EQUIPMENT AND IN THE EQUIPMENT IN WHICH THESE DEVICES ARE USED SHALL BE MARKED WITH A SERIES RATING. ALL EQUIPMENT SHALL BE MARKED IN ACCORDANCE WITH NEC (OR CEC–WHERE ADOPTED) REQUIREMENTS. SEE SPECIFICATIONS FOR MORE INFORMATION. WHERE SERIES RATINGS ARE ALLOWED, THE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD TO INDICATE A SERIES COMBINATION RATING. WHICH SHALL BE READILY VISIBLE AND STATE THE FOLLOWING:

   CAUTION – SERIES COMBINATION SYSTEM RATED AT ??,??? AMPERES. USE ONLY IDENTIFIED REPLACEMENT COMPONENTS IN THIS SYSTEM.

   WHERE ??,??? REPRESENTS AVAILABLE FAULT CURRENT. SEE SPECIFICATIONS FOR PLACARD REQUIREMENTS.
5. ALL TERMINATIONS AND ENCLOSURES SHALL BE RATED FOR USE WITH 75 DEGREE CELSIUS CONDUCTORS.
6. ALL SERVICE ENTRANCE EQUIPMENT RATED AT 400A OR GREATER SHALL BE PROVIDED WITH A BACKFEED–RATED, SOLID STATE MAIN OVERCURRENT DEVICE AND BUSSING RATED AT 100% OPERATION (1000A/sq.in. FOR CU, 750A/sq.in. FOR AL). NO HEAT RISE RATED BUSSING ALLOWED. NON–SERVICE ENTRANCE SWITCHBOARDS AND DISTRIBUTION BOARDS LARGER THAN 600A SHALL BE PROVIDED WITH BUSSING RATED FOR 100% OPERATION – SEE SPECIFICATION FOR CIRCUIT BREAKER REQUIRMENTS. ALL NON–SERVICE ENTRANCE SWITCHBOARDS AND DISTRIBUTION BOARD MAIN OVERCURRENT DEVICES SHALL BE BACKFEED–RATED. BACKFEED RATINGS SHALL COMPLY WITH NEC, OR CEC WHERE ADOPTED, **690.10 (E) & 705.12(D)(5).** SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS REGARDING CIRCUIT BREAKERS.
7. ALL SWITCHBOARDS AND DISTRIBUTION BOARDS SHALL HAVE:
   a. **TIN–PLATED ALUMINUM** BUSSING WITH RECTANGULAR CROSS SECTION. HORIZONTAL AND VERTICAL BUSSING SHALL BE FULL LENGTH AND SHALL HAVE PROVISIONS FOR FUTURE EXTENSIONS. ALL BUSSING SHALL HAVE MINIMUM WITHSTAND RATING EQUAL TO THE AVAILABLE FAULT CURRENT INDICATED. ALL VERTICAL AND HORIZONTAL BUSSING SHALL BE RATED AT FULL CAPACITY IN ALL SWITCHBOARD AND DISTRIBUTION BOARD SECTIONS. PROVIDE 100% NEUTRAL BUSSING MINIMUM UNLESS OTHERWISE NOTED. PROVIDE FULL LENGTH GROUND BUS AND, WHERE INDICATED ON PLANS, ISOLATED GROUND BUSSING. PROVIDE REAR WIRE WAY IN ALL SWITCHBOARD SECTIONS.
   b. LUGS SUITABLE FOR USE WITH COPPER OR ALUMINUM CONDUCTORS LISTED FOR USE WITH 75 DEGREE CELSIUS AMPACITY CONDUCTORS.
   c. PERMANENT PLACARD(S) MARKED PER THE SPECIFICATIONS AND PER NEC (OR CEC–WHERE ADOPTED) SECTIONS **225.37, 230.2(E), 690.56(A) & (B), 692.56, 700.7, 701.7, 702.7,** AND **705.10** DENOTING THE PRESENCE OF ADDITIONAL SERVICES, PHOTOVOLTAIC SYSTEMS, FUEL CELLS, EMERGENCY OR STAND–BY POWER SOURCES AS APPLICABLE.
8. CONTRACTOR SHALL SUBMIT SWITCHBOARD SHOP DRAWINGS TO THE SERVING UTILITY FOR APPROVAL PRIOR TO FABRICATION. CONTRACTOR SHALL SECURE CONFIRMATION THAT THE PROPOSED SWITCHBOARD COMPLIES WITH ELECTRIC UTILITY COMPANY REGULATIONS.
9. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PER THE SPECIFICATIONS FOR SWITCHBOARDS, DISTRIBUTION BOARDS TRANSFORMERS, PANEL BOARDS AND ALL OTHER DEVICES SHOWN ON THE SINGLE LINE PRIOR TO FABRICATION.
10. ALLOWABLE DIMENSIONS IN MAIN ELECTRICAL ROOM ARE A CRITICAL COORDINATION ITEM. CONTRACTOR SHALL PROVIDE 1/4"= 1'–0" SCALE DRAWINGS WITH SWITCHGEAR SUBMITTALS SHOWING THAT ALL PROPOSED EQUIPMENT WILL FIT IN THE SPACE PROVIDED. SUBMITTALS WITHOUT THIS DRAWING SHALL BE REJECTED AS INCOMPLETE.
11. UNLESS SPECIFICALLY SHOWN AS (E), (R), (ER), (D), EXISTING OR NON–BOLD, ALL ELECTRICAL DEVICES SHOWN ARE NEW.
12. WHERE REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION OR WHERE A NEW GROUND FAULT PROTECTIVE DEVICE IS BEING INSTALLED, A GROUND FAULT SYSTEM TEST SHALL BE CONDUCTED BY AN INDEPENDENT TESTING AGENCY PER NEC (OR CEC–WHERE ADOPTED) **230.95(C)**. THE GROUND FAULT SYSTEM TEST SHALL BE PERFORMED IN THE PRESENCE OF THE LOCAL AUTHORITY HAVING JURISDICTION. VERIFICATION OF DEVICE SETTINGS PER THE POWER SYSTEMS STUDY SPECIFICATION SHALL BE PERFORMED BY THE SAME INDEPENDENT TESTING AGENCY. THE GROUND FAULT TEST RESULTS SHALL BE DELIVERED TO THE ENGINEER OF RECORD.
13. SEE POWER SYSTEMS STUDY SPECIFICATION FOR ADDITIONAL REQUIREMENTS. ALL REQUIRED POWER SYSTEMS STUDIES MUST BE COMPLETED AND SUBMITTED WITH SWITCHGEAR SUBMITTAL. FAILURE TO DO SO WILL PREVENT THE ENGINEER FROM EFFECTIVELY EVALUATING THE SUBMITTAL AND SHALL RESULT IN REJECTION OF THE SWITCHGEAR SUBMITTAL AS INCOMPLETE.

SPECIFIC SINGLE LINE NOTES:

(1) INTERCEPT EXISTING SWITCHBOARD BUS AND EXTEND TO NEW ENCLOSURE AS INDICATED.



NOTE:
EXISTING SOURCE OF POWER HAS BEEN INVESTIGATED AND IS ADEQUATE FOR THE NEW ADDITIONAL LOAD AS INDICATED ON DRAWINGS.

SINGLE LINE DIAGRAM (1)

SCALE: N.T.S.

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MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS

409 S. BARRANCA STREET, WEST COVINA, CA 91791

COVINA-VALLEY UNIFIED SCHOOL DISTRICT

SINGLE LINE DIAGRAM

REVISIONS:
1
2
3
4
5
6
7
8

Date: 06/14/16
Job: 1633
Scale: AS NOTED
Drawn:

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Bill Voller - Electrical
tk1sc Job #: 2016-0263

E201

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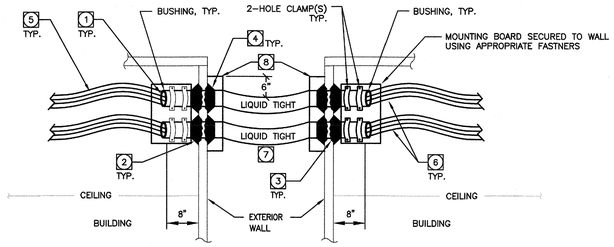
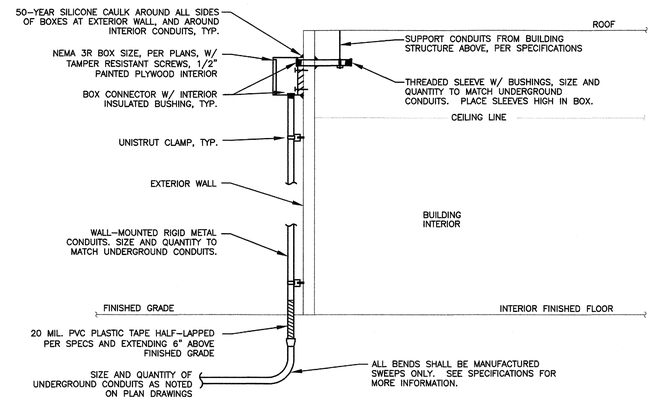


1. FIRESTOP SLEEVES WITH STI'S SPEC SEAL PUTTY (#SSP100) OR EQUAL, IN AND AROUND CABLES AT BOTH ENDS PER MANUFACTURER'S DIRECTIONS.
2. 1/2" BEAD 30-YEAR SILICONE CAULK (CLEAR) INTERIOR WALL TYPICAL.
3. SILICONE CAULK PUSHED INTO BOTH WALL VOIDS FOR A WEATHERTIGHT SEAL.
4. 1/2" BEAD 50-YEAR SILICONE CAULK (CLEAR) EXTERIOR WALL TYPICAL.
5. CABLES TO BE SUPPORTED WITHIN 24" OF BUSHING WITH APPROVED CAT-6 SUPPORT EACH SIDE.
6. MAINTAIN MINIMUM 2" BEND RADIUS FOR CABLES,
7. CONTRACTOR SHALL INSTALL LIQUID TIGHT SIDE BY SIDE W/ MINIMUM 2" SEPARATION. ENVIRONMENT WILL DICTATE BEST APPROACH. CONFIRM WITH AHJ PRIOR TO INSTALLATION.
8. WEATHERPROOF JUNCTION BOX, SIZED AS REQUIRED.

TYPICAL LIQUID TIGHT SLEEVE DETAIL 4

SCALE: N.T.S.

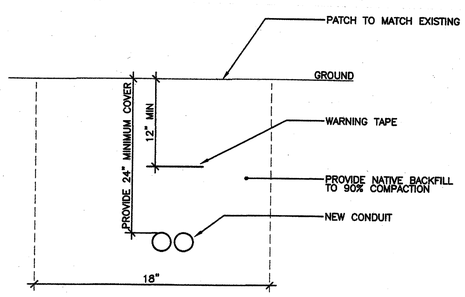


NOTES:

1. ALL BOXES/PLYWOOD TO BE SECURED TO BUILDING STRUCTURE USING MIN. ⅜" X 2" WALL ANCHORS/LAG BOLTS.
2. 50-YEAR SILICONE CAULK AROUND ALL PENETRATIONS, BOXES AND ALL THREADS AS REQUIRED.
3. SEAL ALL UNDERGROUND CONDUITS PER COMMUNICATION PATHWAY NOTES, GENERAL PROJECT NOTES, AND PROJECT SPECIFICATIONS.
4. SEE SPECIFICATIONS FOR MORE INFORMATION.

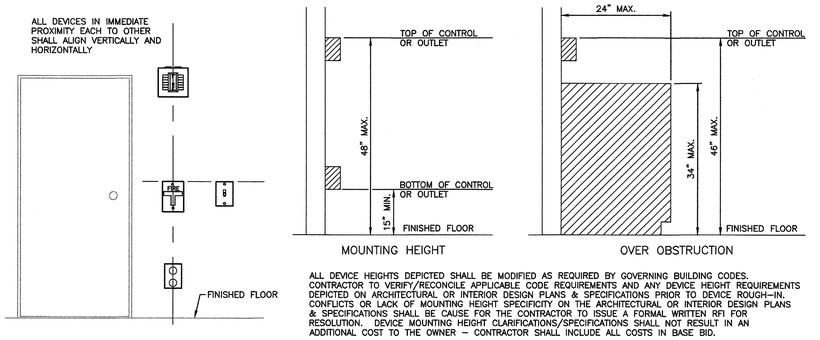
TYPICAL EXTERIOR JUNCTION BOX DETAIL 5

SCALE: N.T.S.



TRENCH DETAIL 6

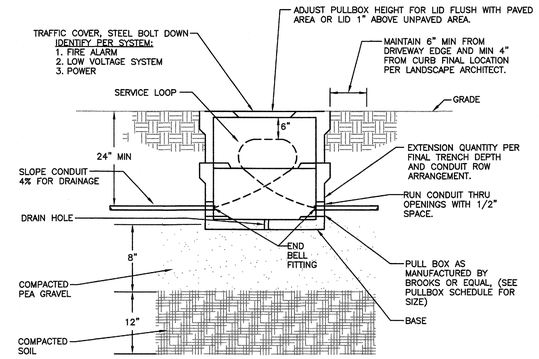
SCALE: N.T.S.



ALL DEVICE HEIGHTS DEPICTED SHALL BE MODIFIED AS REQUIRED BY GOVERNING BUILDING CODES. CONTRACTOR TO VERIFY/RECONCILE APPLICABLE CODE REQUIREMENTS AND ANY DEVICE HEIGHT REQUIREMENTS DEPICTED ON ARCHITECTURAL OR INTERIOR DESIGN PLANS & SPECIFICATIONS PRIOR TO DEVICE ROUGH-IN. CONFLICTS OR LACK OF MOUNTING HEIGHT SPECIFICITY ON THE ARCHITECTURAL OR INTERIOR DESIGN PLANS & SPECIFICATIONS SHALL BE CAUSE FOR THE CONTRACTOR TO ISSUE A FORMAL WRITTEN RFI FOR RESOLUTION. DEVICE MOUNTING HEIGHT CLARIFICATIONS/SPECIFICATIONS SHALL NOT RESULT IN AN ADDITIONAL COST TO THE OWNER – CONTRACTOR SHALL INCLUDE ALL COSTS IN BASE BID.

DEVICE ALIGNMENT & MOUNTING HEIGHT DETAILS 1

SCALE: N.T.S.

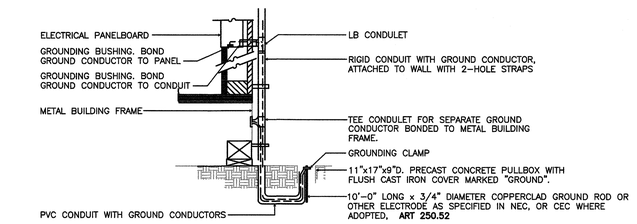


PULL BOX NOTES

1. ALL BOXES SHALL BE SET ON A MINIMUM 8" GRAVEL BASE WITH 1/2" DIAMETER GRAVEL.
2. ALL INCIDENTAL CONCRETE SHALL BE REMOVED FROM BOXES.
3. PROVIDE WATERTIGHT SPLICES AND CAPS FOR POWER CONDUCTORS.
4. PROVIDE SEALING GEL IN ALL CONDUITS (BOTH W/ CONDUCTORS AND IN EMPTY SPARE CONDUITS.) THE GEL SHALL BE INSERTED IN THE CONDUIT TO A DEPTH OF 5" AND FLUSH W/ THE END OF THE CONDUIT. THE GEL SHALL BE MANUFACTURED BY 3M #4442 RE-ENTERABLE ENCAPSULANT.
5. PROVIDE IDENTIFYING TAGS ON ALL POWER AND COMMUNICATION CONDUCTORS IN PULLBOXES.
6. PULLBOX SHALL BE SIZED PER N.E.C. REQUIREMENTS.

TYPICAL PULLBOX DETAIL 2

SCALE: N.T.S.



NOTES:

1. METAL MODULAR BUILDINGS: WHEN METAL BUILDINGS ARE MADE OF COMPONENTS, EACH BUILDING COMPONENT, INCLUDING STEEL RAMPS, MUST BE ELECTRICALLY BONDED TOGETHER IN A MANNER ACCEPTABLE TO DSA/SSS. PAINT ON THE SURFACE WILL INHIBIT PASSAGE OF ELECTRICAL CURRENT; THEREFORE, BOLTED CONNECTIONS OF COMPONENT PARTS ARE NOT AN ACCEPTABLE ELECTRICAL BOND.
2. WOOD MODULAR BUILDINGS: IN WOOD FRAME MODULAR BUILDINGS, THE ELECTRICAL SYSTEM MUST BE GROUNDED AS REQUIRED IN TITLE 24, C.E.C.
3. GROUNDING: THE ELECTRICAL CIRCUITS ARE USUALLY PROPERLY GROUNDED, HOWEVER, IT IS ALSO NECESSARY TO INDEPENDENTLY GROUND THE STEEL FRAMES. THIS IS PARTICULARLY IMPORTANT WHEN THE BUILDING IS SUPPORTED ON A FOUNDATION MADE OF WOOD.
4. INSPECTOR OF RECORD (I.O.R.) SHALL WITNESS GROUND TEST AND SUBMIT A COPY OF THE REPORT TO THE ARCHITECT. ALL BUILDING COMPONENTS MUST BE ELECTRICALLY BONDED TOGETHER AND MUST BE INDEPENDENTLY GROUNDED. ALL GROUNDING SYSTEMS ARE TO BE TESTED WITH A MEGGER UNIT OR IN AN OTHERWISE ACCEPTABLE MANNER. REFER TO C.E.C. SECTIONS 250-81 AND 250-83 FOR SPECIFIC GROUNDING REQUIREMENTS.
5. SIZE OF CONDUCTORS SHALL COMPLY WITH NEC. TABLE 250-95.
6. BOND SEPARATE CONDUCTORS FROM GROUND ROD TO ELECTRICAL PANEL AND TO METAL BUILDING FRAME (NEC. 250-81). IN ADDITION TO THE DETAIL SHOWN ABOVE, BOND THE ELECTRICAL CONDUCTOR GROUND TO METAL WATER PIPE EMBEDDED AT LEAST 10 FEET INTO THE SOIL IF AVAILABLE (N.E.C. 250-81 AND NEC. 250-83).
7. ALL MODULES OF METAL FRAME BUILDINGS AND RAMPS SHALL BE ELECTRICALLY BONDED TOGETHER (BOLTING ONLY IS NOT ACCEPTABLE BONDING).
8. CHECK RESISTANCE TO GROUND. 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. (NEC. 250-84).
9. SEE SPECIFICATIONS FOR TESTING OF GROUNDING REQUIRED.
10. ALL ELECTRICAL WORK TO MEET THE REQUIREMENTS OF THE STATE ELECTRICAL CODES. PART 3 OF TITLE 24, CAC, WHICH REQUIRES PROPER GROUNDING OF ALL ELECTRICAL CIRCUITS, EQUIPMENT, ETC. FOR PUBLIC SCHOOL BUILDING(S), REGARDLESS OF THE TYPE OF CONSTRUCTION.

RELOCATABLE BUILDING GROUNDING DETAIL 3

SCALE: N.T.S.

GHATTAS BANNON ARCHITECTS
Architecture • Planning • Interior Design
735 W. 18th STREET, UNIT B
COSTA MESA, CA 92627
ph: 714.650.8550
fax: 714.650.8559

LICENSED ARCHITECT — No. C-25604 — STATE OF CALIFORNIA — Architect Seal

REGISTERED PROFESSIONAL ENGINEER — No. E15610 — STATE OF CALIFORNIA — Consultant Seal

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP# 03 117500
ACV FLS SS BY
Date SEP 21 2016

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

DETAILS

REVISIONS:
1
2
3
4
5
6
7
8

Date: 06/14/16
Job: 1633
Scale: AS NOTED
Drawn:

E301

SHEET – OF XXX
XREF:

tk1sc COLLABORATIVE
11870 Pierce Street, Suite 160
Riverside, California 92505
951.299.4160 www.tk1sc.com
Bill Voller - Electrical
tk1sc Job #: 2016-0283

SECTION 16010

GENERAL ELECTRICAL SPECIFICATIONS

1.1 WORK INCLUDED:

A. This specification shall apply to all phases of work hereinafter specified, shown on drawings, or as required to provide a complete installation of electrical systems for this project. Work required under this specification is not limited to just the Electrical drawings. Refer to Architectural, Structural, Landscape, and Mechanical/Plumbing drawings as well as all other drawings applicable to this project, which designate the scope of work to be accomplished. The intent of the Drawings and Specifications is to provide a complete and operable electrical system that includes all documents that are a part of the Contract.

1. Work Included: Furnish labor, material, services and skilled supervision necessary for the construction, erection, installation, connections, testing, and adjustment of all circuits and electrical equipment specified herein, or shown or noted on Drawings, and its delivery to the Owner complete in all respects ready for use.

2. The electrical Work includes installation or connection of certain materials and equipment furnished by others. Verify installation details, installation and rough-in locations from the actual equipment or from the equipment shop drawings.

B. Electrical Drawings: Electrical Drawings are diagrammatic, and are intended to convey the scope of work, indicating intended general arrangement of equipment, conduit and outlets. Follow Drawings in laying out Work and verify spaces for installation of materials and equipment based on actual dimensions of equipment furnished.

1.2 QUALITY ASSURANCE

A. Design, manufacture, testing and method of installation of all apparatus and materials furnished under requirements of these specifications shall conform to latest publications or standard rules of the following:

1. Institute of Electrical and Electronic Engineers – IEEE
2. National Electrical Manufacturers' Association – NEMA
3. Underwriters' Laboratories, Inc. – UL
4. National Fire Protection Association – NFPA
5. Federal Specifications – Fed. Spec.
6. American Society for Testing and Materials – ASTM
7. American National Standards Institute – ANSI
8. National Electrical Code – NEC
9. National Electrical Safety Code – NESC
10. Insulated Cable Engineers Association – ICEA
11. American Institute of Steel Construction – AISC
12. State and Municipal Codes In Force In The Specific Project Area
13. Occupational Safety and Health Administration (OSHA)
14. Electronics Industries Association/Telecommunications Industry Association (EIA/TIA)
15. California Electrical Code (where adopted)
16. Local Authority Having Jurisdiction (AHJ) Published Electrical Standards and Codes (as applicable).

B. Perform Work in accordance with the National Electrical Code, applicable building ordinances, and other applicable codes, hereinafter referred to as the "Code." The Contractor shall comply with the Code including local amendments and interpretations without added cost to the Owner. Where Contract Documents exceed minimum requirements, the Contract Documents take precedence. Where code conflicts occur, the most stringent shall apply unless variance is approved.

1. Comply with all requirements for permits, licenses, fees and codes. The Contractor, at Contractor's expense, shall obtain all permits, licenses, fees, special service costs, inspections and arrangements required for Work under this contract, unless otherwise specified.

2. Comply with requirements of the applicable utility companies serving this Project. Make all arrangements with utility companies for proper coordination of Work.

1.3 GENERAL REQUIREMENTS

A. Guarantee: Furnish a written guarantee for a period of one-year from date of acceptance.

B. Wherever a discrepancy in quantity or size of conduit, wire, equipment, devices, circuit breakers, etc., (all materials), arises on the Drawings and/or in the Specifications, the Contractor shall be responsible for providing and installing all material and services required by the strictest condition noted on Drawings and/or in Specifications to ensure complete and operable systems as required by the Owner and Engineer.

C. All Core Cutting, Drilling, and Patching:

1. For the installation of work under this Section, the aforementioned shall be performed under this Section of the Specifications and the Concrete section of the Specifications.

2. No holes will be allowed in any structural members without the written approval of the Project's Structural Engineer.

3. For penetrations of concrete slabs or concrete footings, the work shall be as directed in the Concrete Section of Specifications.

4. The Contractor shall be responsible for patching and repairing surfaces where he is required to penetrate for work under this contract.

5. Penetrations shall be sealed to meet the rated integrity of the surface required to be patched and repaired. The patched surface shall be painted or finished to match the existing surface.

D. Verifying Drawings and Job Conditions:

1. The Contractor shall examine all Drawings and Specifications in a manner to be fully cognizant of all work required under this Section.

2. The Contractor shall visit the site and verify existing conditions. Where existing conditions differ from Drawings, adjustment(s) shall be made and allowances included for all necessary equipment to complete all parts of the Drawings and Specifications.

1.4 WORK IN COOPERATION WITH OTHER TRADES

A. Examine the Drawings and Specifications and determine the work to be performed by the electrical, mechanical and other trades. Provide the type and amount of electrical materials and equipment necessary to place this work in proper operation, completely wired, tested and ready for use. This shall include all conduit, wire, disconnects, relays, and other devices for the required operation sequence of all electrical, mechanical and other systems or equipment.

B. Provide a conduit-only system for low voltage wiring required for control of mechanical and plumbing equipment described in this or other parts of the Contract Documents. Install all control housings, conduits, and backboxes required for installing conduit to the controls.

C. Install separate conduits between each heating, ventilating and air conditioning sensing device and its control panel and/or control motor. Before installing any conduit for heating, ventilating and air conditioning control wiring, verify the exact requirements from the control diagrams provided with the equipment manufacturer's shop drawings.

1.5 TESTING AND ADJUSTMENT

A. Upon completion of all electrical work, the Contractor shall test all circuits, switches, light fixtures, lighting control and dimming systems including distributed systems, UPSs, generators, SPDs, lighting inverters, transfer switches, motors, circuit breakers, motor starter(s) and their auxiliary circuits and any other electrical items to ensure perfect operation of all electrical equipment.

B. Equipment and parts in need of correction, and discovered during such testing, shall be immediately repaired or replaced with all new equipment and that part of the system shall then be retested. All such replacement or repair shall be done at no additional cost to the Owner.

C. All circuit(s) shall be tested for continuity and circuit integrity. Adjustments shall be made for circuits not complying with testing criteria.

D. All test reports, including copies of any required Energy Code Acceptance Forms (e.g. CA Title 24 Acceptance For Code Compliance Forms) should be submitted to the Engineer at completion of project.

1.6 IDENTIFICATION

A. Nameplates shall be provided for unit substations, switchgear, switchboards, distribution boards, distribution panels, panel boards, motor control centers, transformers, transfer switches, contactors, starters, disconnect switches, enclosed circuit breakers/switches, Inverters, UPSs, PDUs, RDCs, SPDs, lighting control panels, dimming panels, door releasing system panels, fire alarm/central monitoring terminal cabinets/power supplies/control panels, and all low voltage system terminal and control cabinets.

1. Nameplate inscriptions shall be identical to the equipment designations indicated in plans and specifications. Nameplates shall be engraved with the device designation/identification on the top line, source identification for the device on the 2nd line per NEC, or CEC where adopted, Art **408.4** and load designation for the device on the bottom line. Where load designation consists of a branch circuit, omit bottom line. Where device designation is not indicated on plans/specifications, Contractor shall submit a written clarification request to the Engineer.

Example: Transformer 1TA
Source Disconnecting Location: Switchboard MSA located in Rm 110
Load: Panels 1LA & 1LB

2. All circuit breakers/fuses in switchgear, switchboards, distribution boards, distribution panels, UPS output circuit breakers, PDU sub-feed circuit breakers and motor control centers shall have individual nameplates located immediately adjacent to the respective device. Nameplate inscription shall identify the downstream equipment or device served by the circuit breaker or fuse.

B. Identification nameplates, unless otherwise noted (UON), shall be laminated/extruded modified acrylic that is 3/32" thick, UV-stabilized, matte finish, suitable for use in 180 deg F ambient, with beveled edges and engraved white letters 3/8" high, minimum, on 1-1/2" high black background (utility/normal and optional standby power systems) for single line of text. Where two lines of text are required, provide min. 2" high nameplate. Where three lines of text are required, provide min. 2.5" high nameplate. Provide white letters on red background for all NEC, or CEC where adopted, Article 517 essential power systems, Article 700 Emergency Systems, Article 701 Legally required standby systems and Article 708 COPS.

C. Identification nameplates for new switchgear, switchboards, distribution boards, distribution panels, panel boards & motor control centers shall be attached with switchgear manufacturer-provided screws via switchgear manufacturer factory pre-drilled holes. A factory option to rivet identification nameplates to the equipment is only acceptable if screw-fastened nameplates are not an available option from the switchgear manufacturer. Field drilling or other mechanical attachment methods that change/void the NEMA or NTRL rating of the enclosure are strictly forbidden.

D. Identification nameplates for transformers, transfer switches, disconnect switches, enclosed circuit breakers/switches, inverters, UPSs, PDUs, RDCs, SPDs, lighting control panels, dimming panels, door-releasing system panels, terminal cabinets and all circuit breakers/fuses in switchgear, switchboards, distribution boards, distribution panels, UPS output circuit breakers, PDUs, PDU sub-feed circuit breakers, and motor control centers shall be attached to the equipment by self-adhesive backing integral to the nameplates. When equipment is located outdoors, provide nameplates without self-adhesive backing and attach to equipment using weather-rated, UV-resistant epoxy. In all cases, clean surfaces before applying identification nameplates parallel to equipment lines.

E. Warning Placards, as required by General Single Line Diagram Notes for multiple power sources, or instruction placards, as required for all kirk-key interlock schemes, all UPS bypass procedures or as required elsewhere in the plans/specifications shall be engraved 1/2" high with white lettering on a red background using the same material specified for identification nameplates with a self-adhesive backing. Warning/instruction placards shall be attached to the face of the equipment directly related to the placards. Provide a formal placard submittal for review by the Engineer prior to ordering any warning/instruction placards. In all cases, clean surfaces before applying warning/instruction placards parallel to equipment lines.

F. Receptacles that are part of a UL-listed under floor computer room whip assembly, ceiling and/or cable/ladder tray-mounted receptacles used in lab, manufacturing, commercial kitchen environments or that are serving telcom/data/AV racks and cabinets shall have identification nameplates located on the wiring device plate cover. Nameplates shall be self-adhesive, 3/32" thick Micarta with beveled edges, engraved 1/4" high white lettering on black background with serving power source, circuit identification and NEMA/IEC receptacle type. Use of two (2) separate nameplates per device plate cover is acceptable. Affix nameplates to be visible when plugs are occupying receptacles.

G. See wiring device section of this specification for additional wiring device plate cover labeling requirements.

H. See drawings for panel board schedule directory installation requirements.

I. See conduit installation section of this specification for conduit labeling requirements.

1.7 FINAL INSPECTION AND ACCEPTANCE

A. After all requirements of the Specifications and/or the Drawings have been fully completed, representatives of the Owner will inspect the work. Contractor shall provide competent personnel to demonstrate the operation of any item or system to the full satisfaction of each representative.

B. Final acceptance of the work will be made by the Owner after receipt of approval and recommendation of acceptance from each representative.

1.8 RECORD DRAWINGS

A. Drawings of Record: The Contractor shall provide and keep up-to-date, a complete record set of drawings. These shall be corrected daily and show every change from the original Drawings. This set of prints shall be kept on the job site and shall be used only as a record set. This shall not be construed as authorization for the Contractor to make changes in the layout without definite instruction in each case. Upon completion of the work, a set of reproducible Contract Drawings shall be obtained from the General Contractor and all changes as noted on the record set of prints shall be incorporated thereon with black ink in a neat, legible, understandable and professional manner. Refer to the Supplementary General Conditions for complete requirements.

1.9 APPROVALS, EQUALS, SUBSTITUTIONS, ALTERNATIVES, NO KNOWN EQUAL

A. Approvals: Where the words (or similar terms) "approved", "approval", "acceptable", and "acceptance" are used, it shall be understood that acceptance by the Owner, Architect and Engineer are required.

B. Equal: Where the words (or similar terms) "equal", "approved equal", "equal to", "or equal by", "or equal" and "equivalent" are used, it shall be understood that these words are followed by the expression "in the opinion of the Owner, Architect, and Engineer". For the purposes of specifying products, the above words shall indicate the same size, made of the same construction materials, manufactured with equivalent life expectancy, having the same aesthetic appearance/style (includes craftsmanship, physical attributes, color and finish), and the same performance".

C. Substitution: For the purposes of specifying products, "substitution" shall refer to the submittal of a product not explicitly approved by the construction documents/specifications.

1. Substitutions of specified equipment shall be submitted and received by the Engineer ten (10) days prior to the bid date for review and written approval. Regulatory Agency approval for all substitutions will be the sole responsibility of the contractor. To receive consideration, requests for substitutions must be accompanied by documentary proof of its equality with the specified material. Documentary proof shall be in letter form and identify the specified values/materials alongside proposed equal values/materials. In addition, catalog brochures and samples, if requested, must be included in the submittal. ONLY PRE-BID APPROVED PRODUCTS, ISSUED VIA A FORMAL BID ADDENDUM TO ALL BIDDERS, WILL BE ALLOWED ON THE PROJECT. REGARDLESS OF THE APPROVAL ON ANY SUBSTITUTION, ALL BIDS SHALL BE BASED ON THE PRODUCTS EXACTLY AS SPECIFIED. PRICING FOR EACH APPROVED SUBSTITUTION SHALL BE INCLUDED IN THE BID SUBMITTAL AS A SEPARATE LINE ITEM.

2. In the event that written authorization is given for a substitution after award of contract, the Contractor shall submit to the Engineer quotations from suppliers/distributors of both the specified and proposed equal material for price comparison, as well as a verification of delivery dates that conform to the project schedule.

3. In the event of cost reduction, the Owner will be credited with 100 percent of the reduction, arranged by change order.

4. The Contractor warrants that substitutions proposed for specified items will fully perform the functions required.

D. Alternates/Alternatives: For the purposes of specifying products, "alternatives/alternates" may be established to enable the Owner/Architect/Engineer to compare costs where alternative materials or methods might be used. An alternate price shall be submitted in addition to the base bid for consideration. If the alternate is deemed acceptable, written authorization will be issued.

E. No Known Equal: For the purposes of specifying products, "No Known Equal" shall mean that the Owner/Architect/Engineer is not aware of an equivalent product. The Contractor will need to submit a "Substitution" item, per the requirements listed above, if a different product is proposed to be utilized.

1.10 SHOP DRAWINGS/SUBMITTALS

A. Shop Drawings/Submittals, unless required otherwise by general project specifications or instructions to bidders, shall be submitted in electronic format (PDF) to include a Letter of Transmittal (PDF), which shall give a list of the drawings submitted with dates and/or sytem(s) components contained within the submittal. Drawings and material cut sheets shall be complete in every respect and edited/marked to indicate specific items being provided. Printed/Hard copies are not acceptable.

B. The shop drawings/submittals shall be marked with the name of the project, numbered consecutively, and bear the approval of the Contractor as evidence that the Contractor has checked the drawings. Any drawings submitted without this approval will be returned to the Contractor for resubmittal.

C. If the shop drawings show variations from the requirements of the Contract because of standard shop practice or other reasons, the Contractor shall make specific mention of such variations in the Contractor's letter of transmittal. If the substitution is accepted, the Contractor shall be responsible for proper adjustment that may be caused by the substitution. Samples shall be submitted when requested.

D. Only products listed as "Equal" within the contract documents, along with formally approved "Substitutions" will be reviewed. Products not conforming to these items will not be reviewed and will be returned to the Contractor for re-submittal.

E. Review comments used in response to shop drawings/submittals are:

1. "No Exception Taken"	Product approved as submitted.
2. "Furnish as Corrected"	Re-submittal not required, although the Contractor shall provide the submitted product with corrections as noted.
3. "Revise and Resubmit"	Re-submittal required with corrections as noted.
4. "Rejected"	Re-submittal required based upon the originally specified product.

F. Shop drawings shall be submitted on the following, but not limited to:

1. Lighting fixtures, lamps and ballasts.
2. Switchgear, switchboards, distribution boards, motor control centers, panelboards, and bus ducts; complete with overcurrent device information.
3. Transformers.
4. Fire Alarm System/Central Monitoring System.
5. Wiring Devices.
6. Lighting control products/dimming system products.
7. Pull boxes and underground vaults.
8. Terminal cabinets.
9. Lighting inverters, UPSs, RDCs, PDUs, generators, transfer switches, SPD systems.
10. Cable tray, flexible cable tray and cable runway.
11. Power poles and floor boxes.
12. Arc flash, short-circuit, and coordination studies.
13. All other products called out on drawings that call for shop drawing submittal.

1.11 MAINTENANCE, SERVICING, INSTRUCTION MANUALS AND WIRING DIAGRAMS

A. Prior to final acceptance of the job, the Electrical Contractor shall furnish to the Owner at least four (4) copies of operating and maintenance and servicing instructions, as well as four (4) complete wiring diagrams for the following items or equipment:

1. Lighting control systems/dimming systems.
2. Fire Alarm System.
3. Transformers.
4. Switchgear, switchboards, distribution boards, motor control centers, panel boards, and bus ducts; complete with overcurrent device information.
5. Lighting inverters, UPS's, PDU's, generators, transfer switches, SPD systems.

B. All wiring diagrams shall specifically cover the system supplied. Typical drawings will not be accepted. Four (4) copies shall be presented to the Owner.

1.12 INTERRUPTION OF SERVICES/SERVICE SHUTDOWN

A. Any interruption of electrical services, electrical circuits, electrical feeders, signal systems, communication systems, fire alarm systems, etc., required to perform work shall meet the specific prior-approval requirements of the Owner. Such work shall be scheduled with the Owner to be performed at the Owner's convenience.

B. Interruptions/outages of any of the Owner's systems and services mentioned above shall be scheduled to occur during other than the Owner's normal business hours. Any overtime costs shall be borne by the Contractor.

C. See drawings for any additional requirements regarding outages, interruption and any temporary services required.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Materials and Equipment: All electrical materials and equipment, including custom-made equipment, shall be new and shall be listed by Underwriter's Laboratories (UL) and bear their label or be listed and certified by a Nationally Recognized Testing Lab (NRTL) that is also recognized by the local Authority-Having-Jurisdiction (AHJ).

B. Switchgear/Switchboards/Distribution Boards/Motor Control Centers:

1. See general single line diagram notes on drawings for more information.

C. Panelboards – Branch Circuit:

1. See drawings for panel board schedules and specifications.

D. Transformers:

1. See drawings for transformer schedules and specifications.

E. Lighting Fixtures:

1. See drawings for lighting fixture and lamp schedules and additional specifications. Furnish, install, and connect a lighting fixture at each outlet where a lighting fixture type symbol (designated on plans) is shown as being installed. Each fixture shall be complete with all required accessories including sockets, glassware, boxes, spacers, mounting devices, fire rating enclosure and lamps.

2. Ballasts: See lighting fixture schedule notes. All noisy ballasts shall be replaced at no cost to the Owner.

3. Lamps: See lamp/fixture schedule and lamp/lighting fixture schedule notes.

F. Wiring Devices:

1. Provide wiring devices indicated per plan. Devices shall be specification grade. Acceptable manufacturers are Leviton, Pass & Seymour and Hubbell. Provide all similar devices of same manufacturer, unless indicated otherwise. All device colors shall be selected from the full range of manufacturer standard color options as selected by the Architect. This direction will be provided in the shop drawing review process.

a. Wiring Devices (Decora)

1) Convenience Receptacle	#16252-???
2) Dedicated Receptacle	#16352-???
3) Convenience I.G. Receptacle	#16262-IG-???
4) Dedicated IG Receptacle	#16362-IG-???
5) Convenience G.F.C.I. Receptacle	#N7599-??? or GFNT1-???
6) Dedicated G.F.C.I. Receptacle	#N7899-??? or GFNT2-???
7) Convenience Hospital Grade Receptacle	#16252-HG?-???
8) Dedicated Hospital Grade Receptacle	#16352-HG?-???
9) Convenience G.F.C.I. Hospital Grade Receptacle	#N7599-HGX or GFNT1-HG?
10) Dedicated G.F.C.I. Hospital Grade Receptacle	#N7899-HGX or GFNT2-HG?
11) Tamper Resistant Convenience Receptacle	#TDR15-???
12) Tamper Resistant Dedicated Receptacle	#TDR20-???
13) Tamper Resistant GFCI Receptacle	#7899-??? or GFTR2-???
14) Tamper Res. Conv. G.F.C.I. Hospital Grade Recept.	#X7599-HGX or GFTR1-HG?
15) Tamper Res. Ded. G.F.C.I. Hospital Grade Recept.	#X7899-HGX or GFTR2-HG?
16) Weather/Tamper Resistant GFCI Receptacle	#WT899-??? or GFWT2-???
17) Convenience Simplex Receptacle	#16251-???
18) Dedicated Simplex Receptacle	#16351-???
19) Recessed Clock Receptacle	#5361-CH-??? (Non-Decora)
20) Single Pole Switch	#5621-2-???
21) Double Pole Switch	#5622-2-???
22) Three Way Switch	#5623-2-???
23) Four Way Switch	#5624-2-???
24) Pilot Light Switch "On"	#5628-2-???
25) Pilot Light Switch "Off"	#5631-2-???
26) Projection Screen Switch	#5657-2-???
27) Low Voltage Momentary Switch	#5657-2-???
28) Keyed Switch	#1221-2L-??? (Non-Decora)
29) Door Jam Switch	#1865-???

b. Use of dedicated receptacles is required where plans depict a branch circuit supplying only a single simplex or duplex receptacle. Use of controlled receptacles is required where depicted on plans – See controlled receptacle specifications for additional information.

2. I.G. (isolated ground) receptacle bodies shall be of a basic color specified above with an orange triangle to symbolize isolated ground.

3. H.G. (hospital grade) receptacle bodies shall be of a basic color specified above with a green circle to symbolize hospital grade.

4. When shown circuited with an I.G. conductor, all receptacles shall be of the I.G. type. As an example, a NEMA L6-30R denoted on the plans and shown circuited with an I.G. conductor shall be an I.G. version of the receptacle.

5. Wiring devices located in wood finished areas shall generally be black unless otherwise indicated by the Architect.

6. Wiring devices located in mirrors shall generally be white with stainless steel cover plates unless otherwise indicated by the architect.

7. In addition to other device requirements listed elsewhere in this specification, 125V (volt), 15A (amp) and 20A Tamper-Resistant wiring devices shall be provided as follows:

a. In dwelling units per NEC, or CEC where adopted, **Article 210.52.**

b. In pediatric care areas per NEC, or CEC where adopted, **Article 517.18 (C).**

c. In child care or day care facilities.

d. In wet and/or exterior locations.

8. Wiring devices shall be listed "hospital grade", and so identified, in the following locations:

a. Patient bed locations within general care areas per NEC, or CEC where adopted, **Article 517.18(B).**

b. Patient bed locations within critical care areas per NEC, or CEC where adopted, **Article 517.19(B).**

c. In "other-than-hazardous" anesthetizing locations per NEC, or CEC where adopted, **Article 517.61(C)(2).**

9. Wiring device cover plates located on recessed boxes shall be commercial grade nylon. Plate color shall match wiring device color UON on plans. Cover plates utilized on surface mounted boxes shall be metal. Plastic cover plates are unacceptable.

10. Except as otherwise noted, all wiring device plates on the project shall be labeled with panel and circuit number(s) utilizing a Brother P-Touch labeling system with 1/2" tape (yellow on black) or equal by Herman-Tellerman or Panduit. Locate label on the concealed side of the wiring device plate. Handwritten labels are unacceptable.

11. The Contractor shall provide duplex receptacle outlets in the appropriate configurations necessary to comply with applicable energy code requirements for controlled receptacles and as shown on plans. All wiring devices indicated to be controlled receptacles shall be NEMA-approved, electrical code-compliant with factory markings on the face of the receptacle(s) with the word "Controlled" or utilize further markings and symbols to indicate which receptacles on each outlet is/are controlled. Stickers, field-applied markings or other non-permanent markings are not acceptable. Where a GFCI receptacle outlet is required to be controlled, provide an adjacent controlled duplex receptacle outlet connected on the load side of the GFCI outlet. Generally, one receptacle in a duplex receptacle outlet is required to be controlled. It may be the lower receptacle or upper receptacle based on manufacturer offering. However, the controlled receptacle location within a controlled receptacle outlet shall remain consistent throughout the project. Where an existing duplex receptacle outlet is required to be controlled, provide a new wiring device with the appropriate control configuration necessary to comply with plans. All controlled receptacles shall be connected to a branch circuit controlled by an occupancy sensor-based or relay panel lighting control system. Acceptable manufacturers are Leviton, Pass and Seymour and Hubbell.

12. The following wiring device plates shall have custom engraving:

a. Key operated switches, switches with pilot lights, and switches for the control of motors, heaters and ventilators. Engraving shall be black and occur on the exposed side of the plate indicating the motor, heater, or ventilator controlled.

b. Receptacles on optional standby generator and/or UPS power shall have custom engraved plates with the words "Generator" or "UPS" in black letters. In addition, where located in telecommunications closets, IDFs, server rooms, data centers, labs (wet, dry or electronic) indicating panel board and circuit number.

c. For Health Care Facilities, provide custom engraved device cover plates, for all devices, indicating panel board and circuit number. Devices served by normal/utility power circuits shall have black lettering; devices served by essential electrical system power circuits shall have red lettering.

d. All stainless steel and nylon device plates shall be engraved using a rotary engraving process except for black lettering on stainless steel device plates which may be accomplished via laser etching process. All lettering shall be 3/16" high. Provide a dimensioned submittal drawing detailing a typical device faceplate with engraving.

G. Weatherproof Outlet Covers/Assemblies: All Receptacles identified as weatherproof on the drawings shall be weather-resistant, tamper-resistant, GFCI type and equipped as follows:

1. Type WP-A: Recessed wall box with a hinged, lockable, cast aluminum, self-closing, gasket-equipped door that is wet location-listed raintight while "in use". Unit shall comply with NEC, or CEC where adopted, **Article 406.8(A) and (B).** UON on drawings, provide a minimum of 2 separate compartments suitable for installation of power receptacles, AV or communications outlets. Additionally, unless otherwise noted on drawings, provide the following:

a. A 20A Weather-resistant, tamper-resistant, GFCI duplex receptacle in the first compartment. Provide branch circuiting per plans.

b. A blank metal plate suitable for field installation of power, AV or communications devices in the second compartment.

c. Where indicated on plans as requiring data, AV, or other low voltage service outlet, provide min. 3/4"C.O. with pull string routed from the second compartment to nearest low voltage pull box. Where shown mounted in a building wall, any blank/unused compartment shall be equipped minimum 3/4" C.O. with pull string routed to the nearest accessible ceiling space.

d. See wiring device section of this specification for additional wiring device plate cover labeling requirements.

e. 1 key minimum per device (minimum of 2 per project) to the Owner's project manager upon completion of project.

f. Custom color powder coat finish as selected by Architect – Include all costs in base bid for same.

g. In locations with sufficient wall depth, provide 6" wide x 6" tall x 5-1/2" deep recessed wall box (C.W. Cole #TL310-WCS-K1-CUSTOM COLOR).

h. In locations utilizing shallow stud walls construction or other walls of insufficient depth, provide 10-3/4" wide x 7-3/8" tall x 3-7/8" deep recessed wall box (C.W. Cole #TL310-WCS-SH-K1-CUSTOM COLOR).

i. See drawings for additional details.

2. Type/Subscript WP-B: Wet location-listed raintight while "in use" cast copper-free aluminum lockable cover with baked aluminum lacquer finish and one-gang, weather-resistant, tamper-resistant GFCI receptacle. Hubbell WP26E series. Polycarbonate covers are unacceptable. Unit shall comply with NEC, or CEC where adopted, **Article 406.8(A) and (B).** Contractor shall powder coat cover assembly to a custom color where receptacle locations are deemed by the Architect to be in aesthetically sensitive or public spaces. Custom color as selected by Architect.

3. Type WP-C: (C.W. Cole #TL310-WCS-PED-ADA-K1-CUSTOM COLOR or #TL310-WCS-PED-K1-CUSTOM COLOR) pedestal device box with a hinged, lockable, cast aluminum, self-closing, gasket-equipped door that is wet location – listed raintight while "in use". Unit shall comply with NEC, or CEC where adopted, **Article 406.8(A) and (B).** UON on drawings, provide a minimum of 2 separate compartments suitable for installation power receptacles, AV or communications outlets. Additionally, unless otherwise noted on drawings, provide the following:

a. A 20A weather-resistant, tamper-resistant, GFCI duplex receptacle in the first compartment. Provide branch circuiting per plans.

b. A blank metal plate suitable for field installation of power, AV or communications devices in the second compartment.

c. Where indicated on plans as requiring data, AV or other LV outlet, provide min. 3/4"C.O. with pull string routed from the second compartment to nearest low voltage pull box.

d. See wiring device section of this specification for additional wiring device plate cover labeling requirements.

e. 1 key minimum per device (minimum of 2 per project) to the Owner's project manager upon completion of project.

f. Include all costs in base bid for ADA version (22.5" tall) of pedestal box. Prior to ordering material, contractor shall coordinate with architect and/or AHJ to determine which pedestal box locations do not require ADA compliance and may be changed to the standard (11.5" tall) version of the pedestal box.

g. Custom color powder coat finish as selected by Architect. Include all costs in base bid for same.

h. See drawings for additional details.

4. Type/Subscript WP-D: Damp location-listed (not-raintite-in-use) cast copper-free, pad lockable, die-cast aluminum cover with baked aluminum lacquer finish and one gang GFCI receptacle. Hubbell/rayco 502?/503? Series. Polycarbonate covers are unacceptable. Unit shall comply with NEC, or CEC where adopted, **article 406.8(a) and (b).** Custom color powder coat finish as selected by Architect. Include all costs in base bid for same.

H. Motor Controllers/Starters: See drawings for motorized equipment schedules and specifications.

I. Circuit Breakers.

1. Service entrance circuit breakers smaller than 400A frame shall be thermal-magnetic trip with inverse time current characteristics unless otherwise indicated below. Service entrance main circuit breakers and meter main circuit breakers, 400A frame and larger shall be 100% rated, solid-state type as outlined in this specification. All other service entrance circuit breakers, 400A frame and larger, shall be 100% rated, solid-state type as outlined in this specification.

2. All non-service entrance circuit breakers 225A and larger shall be thermal magnetic type and have continuously adjustable instantaneous pick-ups of approximately 5 to 10 times trip rating. Breakers shall have either tamper-resistant rating dials or easily changed trip rating plugs with trip ratings as indicated on the Drawings. Rating plugs shall be interlocked so they are not interchangeable between frames. Additionally, all non-service entrance circuit breakers, 600A frame and larger, located in 480V 3 phase, 3-wire or 277/480V, 3 phase 4-wire switchgear, distribution boards, panel boards or busway plugs, shall be solid state, 100% rated. Breaker shall have built-in test points for testing long delay, short delay and instantaneous, and ground fault (where shown) functions of the breaker by means of a 120V operated test kit. Contractor shall utilize a test kit capable of testing all breakers 400A and above – at the Engineer's request.

3. All non-service entrance circuit breakers less than 225A shall be molded plastic case, air circuit breakers conforming to UL 489. Provide breakers with thermal magnetic trip units, and a common trip bar for two- or three-pole breakers, connected internally to each pole so tripping of one pole will automatically trip all poles of each breaker. Provide breakers of trip-free and trip-indicating bolt-on type, with quick-make, quick-break contacts. Provide single two- or three-pole breaker interchangeability. Provide padlocking device for circuit breakers as shown on the Drawings.

4. Where a Current Limiting Circuit Breaker (CLCB) is indicated on drawings or as required elsewhere in this specification, provide a U.L. listed current limiting thermal magnetic circuit breaker(s) UON An independently operating limiter section within a molded case is not allowed. Coordinate CLCB ratings as required to protect electrical system components on the load side of the CLCB to include, but not limited to, protecting automatic transfer switches, panel boards and lighting control panels.

5. Where a solid state circuit breaker is indicated on drawings or as required elsewhere in this specification, provide a solid state circuit breaker with minimum five function complete with built-in current transformers. The five functions shall be independently adjustable and consist of Overload/Long Time Amp Rating, Long Time Delay, Short Time Delay, Short Circuit/Instantaneous Pick-up, but may also include Shunt Trip and/or Ground Fault if so indicated on the Drawings. Rating plugs shall be interlocked so they are not interchangeable between frames. Breaker shall have built-in test points for testing long delay and instantaneous, and ground fault (where shown) functions of the breaker by means of a 120V operated test kit. Contractor shall utilize a test kit capable of testing all breakers 400A and above, at the Engineer's request

6. Ground Fault Interrupting Breakers: Provide with molded plastic case, air circuit breakers, similar to above with ground fault circuit interrupt capability, conforming to UL Class A, Group 1.

7. Arc Fault Interrupting Breakers: Provide with molded plastic case, air circuit breakers, similar to above with arc fault circuit interrupt capability, conforming to UL 1699 and UL Class A, Group 1. Provide on all dwelling-unit circuits supplying bedrooms, sleeping quarters, etc., as required to comply with NEC, or CEC where adopted, **Article 210.12(B)**

8. Tandem or half-sized circuit breakers are not permitted.

9. Series-Rated Breakers: UL listed series-rated combinations of breakers can be used to obtain panelboard-interrupting ratings shown on Drawings. If series-rated breakers are used, switchboards, distribution boards and panelboards shall be appropriately labeled to indicate the use of series rated breakers. Shop drawing submittal shall include chart of UL listed devices which coordinate to provide series rating.

10. Circuit breakers shall be standard interrupting construction. Panelboard shall accept standard circuit breakers up to 225A.

11. Circuit breaker handle accessories shall provide provisions for locking handle in the on or off position.

12. Shunt trip equipped circuit breakers shall be provided on all elevator feeders.

13. Temperature compensating circuit breaker(s) shall be provided when located in outdoor enclosure(s) or when located in an enclosure subject to high ambient heat due to nearby industrial processes, etc.

14. Provide 75 degree Celsius-rated conductor lugs/lug kits as required on all circuit breakers to accept conductor quantities and sizes shown on drawings.

15. All circuit breaker terminations shall be suitable for use with 75 degree Celsius ampacity conductors.

16. Circuit breakers serving Fire Alarm or Central Monitoring panels and power supplies shall be red in color and lockable in the "ON" position.

J. Disconnect Switches:

1. Non-fusible or fusible, heavy-duty, externally operated horsepower-rated, 600V A.C: Provide NEMA 3R, lockable enclosures for all switches located on roof tops, in wet or damp areas and in any area exposed to the elements.

2. Fusible switches shall be Class "R" when 600A or less, and Class "L" when greater than 600A.

3. Amperage, horsepower, voltage, and number of poles per drawings: All shall be clearly marked on the switch nameplate.

4. Provide the Owner's project manager with one (1) spare set of fuses and two (2) sets of fuse clips/fuses for every set of fuses on the project.

K. Fuses:

1. Provide fuses at all locations shown on the Drawings and as required for supplemental protection:

a. Fuses shall be manufactured by Bussman, Shawmut or equal.

b. All fuses shall be the product of a single manufacturer.

2. Main and Feeder Protection:

a. Protective devices rated greater than 600A: Provide Bussman Hi-Cap fuses, Class L, current-limiting, having an interrupting rating of 200,000A RMS.

b. Protective devices rated 600A or less: Provide Bussman Class R fuses, Class RK series current-limiting fuses, having an interrupting rating of 200,000A RMS.

3. Motor Protection:

a. Where rating of protective device is greater than 600A: Provide Bussman Hi-Cap fuses, Class L, current-limiting, having an interrupting rating of 200,000A RMS.

b. Where rating of protective device is 600A or less: Provide Bussman Class RK series current-limiting fuses, having an interrupting rating of 200,000A RMS.

c. Where fuses feeding motors are indicated, but not sized: It shall be the responsibility of the Contractor to coordinate the fuse size with the motor to provide proper motor running protection.

d. When rejection type fuses are specified (Class RK series) the fuse holder of all switches (specified in other Sections) shall be suitable for the fuses provided.

L. Cable Tray, Flexible Cable Tray and/or Cable Runway:

1. See drawings for Cable Tray, Flexible Cable Tray and/or Cable Runway specifications.

M. Uninterruptible Power Systems (UPS):

1. See drawings for UPS schedules and specifications.

N. Power Distribution Units (PDU):

1. See drawings for PDU schedules and specifications.

O. Generator Systems:

1. See drawings for Generator schedules and specifications.

P. Transfer Switches:

1. See drawings for Transfer Switch schedules and specifications.

Q. Lighting Control/Dimming Systems:

1. See drawings for Lighting Control and/or Dimming Systems schedules and specifications.

2. Wall box dimmers shall be rocker-type as manufactured by Lutron (no known equal except as noted below). Dimmers and dimmer faceplates shall match the color of adjacent switches and faceplates. Dimmers and dimmer faceplates in wood finished areas shall generally be black unless otherwise indicated by the Architect. The Contractor shall obtain written approval of the Architect regarding final dimmer and dimmer faceplate color selection prior to ordering material. Multiple dimmers/switches shall be ganged together with a common cover plate. Provide dimmers as follows:

a. Incandescent:	Lutron DIVA DV-10P or DV-103P (3-way) (1000 Watt max.)
b. Electronic Low Voltage:	Lutron DIVA DVELV-300P or DVELV-303P-(3-way) (300 Watt)
c. Magnetic Low Voltage:	Lutron DIVA DVLV-10P or DVLV-103p (3-way) (800 Watt max.)
d. Fluorescent (3-Wire):	Lutron DIVA DVF-103P (single/3way, 8A @ 120V) or DVF-103P-277 (single/3way, 6A @ 277V)
e. Fluorescent (0-10V):	Lutron DIVA DVTV with PP-???H Power Pack
f. Fluorescent (Lutron Tu-Wire):	Lutron DIVA DVFTU-5A3P with Lutron H.P. module where required.
g. LED (0-10V):	Lutron DIVA DVTV with PP-???H Power Pack
h. Screw Base CFL/LED:	Lutron DIVA DVCL-153P
i. Fan Control:	Lutron DIVA DVFSQ-F (1.5A @ 120V max, 3 speed, single pole, 3-way)

3. Contractor shall verify if dimmer(s) requires derating when ganged. Contractor shall provide, and provide connections to, additional Lutron Power Modules, Lutron Power Packs, and / or Lutron Interface Modules where required to accommodate loads higher than dimmers standard or derated load-carrying capacity. Note – contractor may to provide a Lutron recommended dimmer type (typically a #DVF-103P unit) to control the necessary power modules or interface devices.

R. Fire Alarm System/Central Monitoring System:

1. See drawings for Fire Alarm System or Central Monitoring System specifications.

S. Surge Protective Device (SPD):

1. See drawings for SPD specifications.

T. Conduit:

1. Galvanized Rigid Conduit (GRC) shall be full weight threaded type steel. Steel conduit shall be protected by overall zinc coating to inside and outside surfaces, applied by the hot dip, metallizing, or sherardizing process.

2. Intermediate Metal Conduit (IMC) shall be hot-dipped galvanized in accordance with UL 1242, and meet Federal Specification WWC-581 (latest revision).

3. Electrical Metallic Tubing (EMT) shall be zinc-coated steel with baked enamel or plastic finish on inside surfaces except as noted below. EMT shall be dipped in a chromic acid bath to chemically form a corrosion-resistant protective coating of zinc chromate over galvanized surface.

4. Flexible metal conduit shall be constructed of aluminum or hot-dipped galvanized steel strips wound spirally with interlocking edges to provide greatest flexibility with maximum strength. Interior surfaces shall be smooth and offer minimum drag to pulling in conductors. Used only as directed in writing by the Engineer with the exception of 400 Hz feeders and 400 Hz branch circuits which shall be run in flexible aluminum conduit

5. Liquid-tight conduit (Seal-Tite) shall be galvanized steel flexible conduit as above except with moisture and oil-proof jacket, pre-cut lengths and factory-installed fittings. For outdoor installations and motor connections only unless otherwise noted on drawings.

6. Factory assembled, or off-site assembled wiring systems (such as Metal Clad (MC) Cable, Type AC Cable, Type NM Cable, Type BX Cable, etc) shall not be used unless otherwise indicated in the Allowed Specification Deviations Section or Deductive/Additive Alternate Pricing Section generally located on the symbols list drawing.

7. When approved for use in the Allowed Specification Deviations Section, generally located on the symbols list drawing, MC cables shall be allowed for lighting branch circuits (homeruns shall be EMT), receptacle branch circuits (homeruns shall be EMT) and poke-thru fed systems furniture homeruns. MC shall not be used where exposed, except for a maximum 6' length for final connections to light fixtures, or terminate in electrical panelboards or distribution boards. Equipment ground conductor shall be green. Isolated ground conductor shall be green with yellow stripe. Provide 600V rated aluminum or lightweight steel interlocking armor Metal Clad (MC) cable with copper conductors, THHN (90 degree C) insulation, and integral equipment grounding conductor and isolated grounding conductor as required. Type AC cable listed for use in patient care areas for non-essential electrical system branch circuits per NEC, or CEC where adopted, **Article 517.13** shall be required in such areas in lieu of MC cable. Type AC and MC cable shall not be used for essential electrical system branch circuits. MC cable shall be manufactured to Underwriters Laboratories Standard 1569. See Part 3 – Execution in this specification for additional installation requirements.

8. Nonmetallic Flexible Tubing (ENT) shall not be used unless otherwise indicated in the Allowed Specification Deviations Section or Deductive/Additive Alternate Pricing Section generally located on the symbols list drawing. Use of ENT, if allowed, is strictly limited to use in CMU walls and parking structures decks or as directed in writing by the Engineer. See Execution section of this specification for additional installation requirements.

9. Non-Metallic Conduit:

a. Polyvinyl chloride (PVC) rigid conduit, Schedule 40, Type II for underground installation only with solvent welded joints, conforming to UL requirements, listed for exposed and direct burial application.

b. Conduit and fittings shall be produced by the same manufacturer.

10. Fire-rated MC Cable:

a. 2-hour fire-rated, polymer insulated 600V MC cable listed and conforming to UL 2196 and UL 1569 requirements for installation as an Electrical Circuit Protective System for use in complying with NEC, or CEC where adopted, **Articles 695 and 700.** Where adopted, cable sheath shall be suitable for use as a NEC or CEC equipment grounding conductor, and shall be listed for use in wet locations to 90 degrees C (Raychem or equal).

b. Cable connectors shall be brass MC connectors.

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Architect Seal

Consultant Seal

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP 03 117500
AC FLS SS
Date SEP 21 2016

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

ELECTRICAL SPECIFICATIONS

REVISIONS:
1
2
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Date:	06/14/16
Job:	1633
Scale:	NONE
Drawn:	

E401

SHEET – OF XXX
XREF:

U. Fittings:

1. Condulet type fittings shall be smooth inside and out, taper threaded with integral insulating bushing and of the shapes, sizes and types required to facilitate installation or removal of wires and cables from the conduit and tubing system. These fittings shall be of metal, smooth inside and out, thoroughly galvanized, and sherardized cadmium plated.
2. Metallic condulet covers shall have the same finish as the fitting and shall be provided for the opening of each fitting where conductors do not pass through the cover.
3. Connector, coupling, locknut, bushings and caps used with rigid conduit shall be steel, threaded and thoroughly galvanized. Bushings shall be insulated.
4. UON all interior EMT fittings, connectors and couplings installed in concealed locations, areas not considered to be wet or damp locations by the AHJ, or areas not subject to physical damage, shall be steel, zinc or cadmium plated, threadless, compression, steel locking ring type with insulated throat. Where suitable for use, steel set screw fittings are allowed for trade sizes of 2" and smaller. Insulated throat is not required for fittings, connectors and couplings 1" and smaller.
5. All interior and exterior EMT fittings, connectors and couplings, 2" and smaller, installed in exposed or concealed locations that are considered by the AHJ to be wet or damp locations, shall be raintite-listed, steel, zinc or cadmium plated, threadless, compression, steel locking ring type with insulated throat. If raintite-listed, EMT fittings, connectors and couplings are unavailable for a given trade size or if conduit is installed in an area subject to damage – provide rigid metallic or intermediate metallic conduits, fittings, connectors and couplings as required.
6. Flexible steel conduit connectors shall be a malleable iron clamp or squeeze type or steel twist-in type with insulated throat. The finish shall be zinc or cadmium plating.
7. Conduit unions shall be "Erickson" couplings, or approved equal. The use of running threads will not be permitted.

V. 600V Conductors – Wire and Cable:

1. All conductors shall be copper. Provide stranded conductor for #10 AWG and larger or when making flexible connections to vibrating machinery. Use compression "fork" type connectors or transition to solid conductors when connecting to switches, receptacles, etc.
2. Type THHN/THWN-2 thermoplastic, 600V, UL approved, dry and wet locations rated at 90 degrees Celsius, for conductors of all sizes from #12 AWG up to and including 1000 kcmil. RHH/RHW insulation is allowed only to provide an Electrical Circuit Protective System to comply with NEC, or CEC where adopted, **Articles 695 and 700.**
3. Wire and cable shall be new, manufactured not more than six (6) months prior to installation, shall have size, type of insulation, voltage rating and manufacturer's name permanently marked on outer covering at regular intervals.
4. Wire and cable shall be factory color-coded by integral pigmentation with a separate color for each phase and neutral. Each system shall be color-coded and it shall be maintained throughout.
5. Systems Conductor Color Coding:
   a. Power 208/120V, 3PH, 4W:
      1) Phase A = Black
      2) Phase B = Red
      3) Phase C = Blue
      4) Neutral = White or White with Phase Color Tracer
      5) Switchlegs = Purple (Switchlegs shall also be identified separately by numerical tags).
      6) Travelers = Purple with Black stripe or Pink.
   b. Power 480/277V, 3PH, 4W:
      1) Phase A = Brown
      2) Phase B = Orange
      3) Phase C = Yellow
      4) Neutral = Grey or Grey with Phase Color Tracer
      5) Switchlegs = Purple (Switchlegs shall also be identified separately by numerical tags).
      6) Travelers = Purple with Black stripe or Pink.
   c. Ground Conductors: Green
   d. Isolated Ground Conductors: Green with continuous yellow stripe.
   e. Fire Alarm System: As recommended by the manufacturer.
6. All color-coding for #12 through #6 AWG conductor shall be as identified above. Conductors #4 AWG and larger shall be identified with utilizing phase tape at each termination.
7. No conductors carrying 120V or more shall be smaller than #12 AWG.
8. Aluminum conductors shall not be used.
9. Wire-pulling compounds used as lubricants in installing conductors in raceways shall only be "Polywater J". No oil, grease, graphite, or similar substances may be used. Pulling of #1/0 or larger conductors shall be done with an approved cable pull machine. Other methods; e.g. using vehicles, and block and tackle to install conductors are not acceptable.

W. Medium Voltage Conductors (greater than 600V):

1. See drawings for Medium Voltage Cable Schedule and Specifications.

X. Junction and Pullboxes:

1. For interior dry locations, boxes shall be NEMA 1 galvanized one-piece drawn steel, knockout type, with removable, machine screw secured covers.
2. For outside, damp or surface locations, boxes shall be NEMA 3R heavy cast aluminum or cast iron with removable, gasketed, non-ferrous machine screw secured covers.
3. For in-grade applications, junction and pull boxes shall be pre-cast concrete or molded fiberglass manufactured by Christy, Brooks-Jensen, or Utility Vault Co. Fiberglass boxes shall:
   a. Be used only in landscape planter areas that are not subject to damage from lawnmowers, tractors and other machinery.
   b. Not be used in lawn or turf areas.
   c. Not exceed 11" W x 17" L in size unless required to be larger to meet code requirements.
4. All boxes shall be sized for the number and sizes of conductors and conduits entering the box and equipped with plaster rings where required.
5. All boxes located in traffic areas shall be traffic rated.

Y. Outlet Boxes:

1. For fixtures, boxes shall be galvanized, one-piece drawn steel, knockout type equipped with 3/8" fixture studs and plaster rings where required.
2. For convenience outlets, wall switches, or other devices, outlet boxes shall be galvanized one-piece drawn steel, knockout type 4" x 4" x 2-1/8" minimum size with plaster rings as required.
3. For locations where standard boxes are not suitable due to number and size of conduit to be terminated, special boxes shall be designed to fit space or meet other requirements and submitted for approval.
4. For exposure to weather, damp locations, or surface mounting, outlet boxes shall be heavy cast aluminum or cast iron with threaded hubs; covers shall be watertight with gaskets and non-ferrous screws.
5. Outlet boxes used for support of ceiling fans shall be galvanized, one-piece drawn steel, knockout type equipped with bracing bars & plaster rings where required and listed for ceiling fan support use. Such boxes shall be labeled and capable of supporting ceiling fan weights up to 70 pounds.
6. See drawings for floor box installation notes and specifications.

Z. Plywood Backboards: Where indicated for telephone or communications system terminals or other equipment assemblies, provide backboards of size indicated. Use 3/4" thick x 8' tall (length per plans), Douglas Fir, void-free, kiln-dried, fire-rated plywood finished on one side and prime coat painted on all surfaces with finish coat of enamel paint, color by architect. Leave one (1) fire-rating stamp/sheet exposed for inspection.

AA. Terminal Cabinets:

1. Terminal cabinets shall be fabricated of hot dipped galvanized code gauge sheet metal for flush or surface mounting, complete with barriered sections, a door for each vertically barriered section, and sizes as indicated on plan. Doors shall be hinged and lockable. Locks shall be keyed to match the branch circuit panelboards. Terminal cabinet trims shall match the branch circuit panels.
2. Provide each terminal cabinet with a full size mounting backplate.
3. Terminal cabinets shall be installed complete with full-length skirts of the same construction and finish as the terminal cabinet.
4. Where mounted outdoors, terminal cabinets shall be NEMA 3R, weatherproof complete with gaskets and required sealant to prevent moisture from entering the terminal cabinet.
5. All terminal cabinets and terminal cabinet barriered sections shall be labeled by the cabinet or cabinet section use (i.e. CATV, Security, etc.). Labels shall be Micarta type as specified elsewhere in these specifications. Unless otherwise noted, all termination blocks and cables shall be labeled per ANSI/EIA 606 standard.

BB. Painting: Terminal cabinets, panels, junction boxes, pull boxes, etc., and conduit installed in public view shall be painted with colors selected by the Architect to match the subject surface. Refer to painting section of the specifications for additional requirements.

CC. Seismic Design, Certification, and Anchoring of Electrical Equipment:

1. Contractor shall include all costs in the base bid for labor, materials, all special inspections and structural engineering design necessary to meet the Seismic Design Requirements for Non-structural Components (Chapter 13, ACE SEI 7-05 Minimum Design loads for Buildings and Other Structures) as required by IBC, or CBC where adopted, Section 1708 and as related to the installation all electrical equipment furnished under this contract. See Specific Project Site Seismic Criteria on architectural and/or structural plans which include Building Occupancy Category, Seismic Design Category, Design Spectral Response Acceleration (S_{DS}), Height factor ratio (z/h) and Site Class. Non-structural Component Importance Factor (I_p) for a particular component shall be determined based on the following criteria:
   a. I_p=1.0: Non-life safety, Non-structural Components in an Occupancy Category IV Facility not required for continued operations of the facility or in any other Occupancy Category Facility where component failure will not impair continued operation of the facility.
   b. I_p=1.5: Designated Seismic Systems are those non-structural components in any Occupancy Category IV facility (except as noted above) or that are a part of any code-defined Critical, Life Safety, Emergency and Legally Required Standby Electrical System. Additionally, those non-structural components containing hazardous materials shall be classified as Designated Seismic Systems. While Designated Seismic Systems are generally identified on the plans, they may include items such as Generators, Automatic Transfer Switches, UPS units and all associated electrical distribution equipment and components necessary for the designated seismic system to form a complete and operable system. The Contractor shall ultimately be responsible for identifying Designated Seismic Systems. For any electrical component either identified on the plans or determined by the contractor to be a Designated Seismic System, all line and load side electrical distribution systems supporting that Designated Seismic System (including, but not limited to, feeders, panel boards switchboards, transformers, all related component supports and attachments, etc.) shall be considered a part of the designated seismic system for the purposes of code-compliance and seismic certification.
   c. z/h – Height factor ratio: See plans for respective equipment locations.
2. Provide a delegated-design submittal for each of the following seismic-restraint systems to be used as required:
   a. Restraint Channel Bracings consisting of MFMA-4, shop-or field-fabricated bracing assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end, with other matching components, and with corrosion-resistant coating; rated in tension, compression, and torsion forces.
   b. Restraint Cables consisting of ASTM A 603 galvanized-steel cables. End connections made of steel assemblies with thimbles, brackets, swivel, and bolts designed for restraining cable service; with a minimum of two clamping bolts for cable engagement.
   c. Seismic-Restraint Accessories consisting of hanger rod/hanger rod stiffener assemblies, multifunctional steel connectors for attaching hangers to rigid channel bracings and/or restraint cables, bushings for floor and wall-mounted equipment, anchor bolts, and resilient isolation washers and bushings.
   d. Mechanical Anchor Bolts consisting of drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.
   e. Adhesive Anchor Bolts consisting of drilled-in and capsule anchor system containing resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide specific LEED-compatible, environmentally-friendly resins and adhesives on all LEED projects. Provide anchor bolts and hardware with zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.
3. Submittal shall include design calculations and details for selecting seismic restraints complying with performance requirements, design criteria, and analysis data signed and sealed by the contractor's structural engineer responsible for their preparation. Calculations shall include, but not be limited to, static and dynamic loading caused by equipment weight, operation, and seismic and, if applicable, wind forces required to select seismic and, if applicable, wind restraints and for designing vibration isolation bases. Provide seismic and wind-restraint detailing to support system selection, arrangement of restraints, attachment locations, methods, and spacings with all components identified to include their strengths, directions and values of forces transmitted to the structure during seismic events and association with vibration isolation devices. Sizes of components shall be selected so strength will be adequate to carry present static and seismic loads to accommodate 25% spare future capacity within specified loading limits.
4. Any pre-approval and evaluation documentation shall have a California Office of Statewide Health Planning and Development (OSHPD) Special Seismic Certification Preapproval (OSP) demonstrating horizontal and vertical load testing and analysis showing maximum seismic-restraint ratings, by ICC-ES or another agency acceptable to authorities having jurisdiction. Ratings based on independent testing are preferred to ratings based on calculations. If preapproved ratings are not available, submittals based on independent testing are preferred. Calculations (including combining shear and tensile loads) that support seismic-restraint designs must be signed and sealed by a qualified professional engineer.
5. Coordinate the location of embedded connection hardware with supported equipment attachment and mounting points and with requirements for concrete reinforcement and formwork specified elsewhere in the project specifications.
6. Install flexible connections in runs of raceways, cables, wireways, cable trays, and busways where they cross seismic joints, where adjacent sections or branches are supported by different structural elements, and where connection is terminated to equipment that is anchored to a different structural element from the one supporting them as they approach equipment. Flexible connection limitations of the NEC, or CEC where adopted, shall apply.
7. Install seismic-restraint devices using methods approved by OSHPD or an agency acceptable to authorities having jurisdiction providing required submittals for component.
8. Multiple Raceways or Cables: Secure raceways and cables to trapeze member with clamps approved for application by OSHPD or an agency acceptable to authorities having jurisdiction.
9. The contractor shall engage a qualified testing agency to perform tests and inspections as listed in other Project Specifications, but as a minimum shall include at least four of each type and size of installed anchors and fasteners selected by Architect. Schedule tests with Owner, through Architect, before connecting anchorage device to restrained component (unless post connection testing has been approved), and with at least seven days' advance notice. Obtain Architect's approval before transmitting test loads to structure. Provide temporary load-spreading members as required. Test to 90 percent of rated proof load of device. Prepare and submit test and inspections reports.

DD. Trenching and Backfilling: Contractor shall be responsible for trenching and backfilling. Refer to applicable trenching and backfilling specifications for complete requirements.

PART 3 – EXECUTION

3.1 PREPARATION AND INSTALLATION

A. Installation of Conduit and Outlet Boxes:

1. All conduit installed in the dry walls or ceilings of a building shall be steel tube (EMT), aluminum tube (EMT), or intermediate Metal Conduit (IMC). Flexible conduit shall not be used in lieu of EMT, IMC or rigid conduit except as noted herein.
2. Galvanized rigid conduit (GRC) or intermediate metal conduit (IMC) shall be used as follows:
   a. When noted on the drawings.
   b. When considered exposed to damage by the local AHJ.
   c. When installed in wet or damp locations and of a trade size where listed-Raintite fittings, connectors, couplings, etc. are unavailable.
   d. When required by NEC or CEC **Article 517.13**
   e. When installed in concrete and masonry. The use of ENT in CMU walls and parking structures may be allowed only as directed in writing by the Engineer. Request for ENT substitution must be made prior to bid and in accordance with pre-bid substitution request requirements of these specifications.
3. Intermediate metal conduit (IMC), is approved for use in all locations as approved for GRC or EMT and in accordance with NEC, or CEC where adopted, **Article 342**.
4. Flexible steel conduit shall only be permitted to be used at light fixture outlets and connections to vibrating electrical equipment. All flexible steel conduit runs shall be less than 6'-0". Except when concealed in walls or other structural elements, all outdoor installation shall be made using liquid-tight flex with approved fittings. Include a separate insulated green ground conductor sized per NEC in each conduit. Other uses of flexible conduit shall be allowed only as approved in writing by the Engineer.
5. Flexible liquidtight conduit shall be installed in lieu of the flexible steel; where required by NEC, or CEC where adopted, in damp and wet location, where exposed to weather, in refrigerated area (65 Deg. F or less), and/or between seismic joints. All rotating electrical equipment shall be supplied with flexible, liquid-tight conduit with appropriate slack and shall not exceed thirty-six (36) inches. Include a separate insulated green ground conductor sized per NEC in each conduit. Other uses of liquidtight flexible conduit shall be allowed as approved in writing by the Engineer on a case by case basis.
6. Rigid metallic conduit installed underground or embedded in concrete shall be 1" trade size minimum and shall be wrapped with 20 mil polyvinyl chloride plastic tape. PVC conduit installed underground or imbedded in concrete shall be 3/4" minimum trade size.
7. Where required for providing an Electrical Circuit Protective System to comply with NEC, or CEC where adopted, **Articles 695 and 700**, utilize UL Listed 2-hour fire-rated, MC cable or UL Listed 2-hour fire-rated RHH/RHW conductors in conduit.
8. Conduit shall be run so as not to interfere with other piping, fixtures or equipment.
9. The ends of all conduits shall be cut square, carefully reamed out to full size and shall be shouldered in fitting.
10. No running threads will be permitted in locations exposed to the weather, in concrete or underground. Special union fittings shall be used in these locations.
11. Where conduit is underground, under slabs or grade, exposed to the weather, or in wet locations, make joints liquid tight and gas tight.
12. All metal conduit in masonry and concrete and where concealed under floor slabs shall have joints painted with thread compound prior to makeup.
13. PVC conduit shall not be run in walls except where approved by the Engineer prior to bid in limited instances that may include concrete or CMU walls used in site retaining, parking structures, or exterior equipment yard or enclosure walls, etc.
14. Where conductors enter a raceway or a raceway in a cabinet, pull box, junction box, or auxiliary gutter, the conductors shall be protected by a plastic bushing type fitting providing a smoothly rounded insulating surface.
15. Where conduit extends through roof to equipment on roof area, the Contractor shall provide flashing material compatible with the roofing system as required by the roofing specifications or as required by the Owner's roof warranty. This flashing shall be delivered to the roofing Contractor for installation. The actual location of all such roof penetrations and outlets shall be verified by the Architect/Owner. Contractor to verify type of flashing prior to bid and include all costs.
16. All conduit shall be supported at intervals not less than 6'-0" and within 12" from any outlet and at each side of bends and elbows. Conduit supports shall be galvanized, heavy stamped, two-hole conduit clamp properly secured.
17. Where conduit racks are used the rack shall consist of two piece conduit clamps attached to galvanized steel slotted channels, properly secured via threaded rods attached directly to the building structure.
18. Nail-in conduit supports, one-piece set screw type conduit clamps or perforated iron for supporting conduit shall not be used.
19. Seismic Conduit Support:
   a. All conduit shall be supported in such a manner that it is securely attached to the structure of the building. Attachment is to be capable of supporting the tributary weight of conduit and contents in any direction. Maximum spacing of support and braces are to be as follows:

CONDUIT SIZE	MAXIMUM SPACING
1/2" to 3"	6'-0"
3-1/2" to 4"	8'-0"

20. All conduit runs shall be installed parallel or perpendicular to walls, structural members, or intersection of vertical planes and ceilings. Field made bends and offset shall be avoided where possible. Crushed or deformed raceway shall not be installed.
21. Open knockouts in outlet boxes only where required for inserting conduit.
22. Locate wall outlet of the same type at same level in all rooms, except where otherwise noted.
23. Outlet boxes on metal studs shall be attached to metal hangers, tack welded or screwed to studs; On wood studs attachment shall be with wood screws, nails are not acceptable.
24. Recessed boxes shall not be mounted back-to-back in any wall; minimum offset shall be 24 inches.
25. Junction Boxes that do not contain any device(s) shall be located in storage rooms, electrical closets, or above accessible ceilings, not in hard lid ceilings or other forms of inaccessible ceilings. Place boxes which must be exposed to public view in a location approved by the Owner's Project Manager. Provide covers or plates to match adjacent surfaces as approved by the Owner's Project manager.
26. Surface mounted pull boxes, terminal cabinets, junction boxes, panel boards etc., shall be attached to walls using appropriate screws, fasteners, backing plates, stud blocking, etc., as detailed on architectural and/or structural drawings. If architectural and/or structural drawings are not provided on the project, Contractor shall provide all necessary mounting hardware and backing support to comply with local building code requirements and any additional requirements imposed by the local Authority-Having-Jurisdiction.
27. Except where below grade, sleeves shall be installed where conduit passes through masonry or concrete walls and shall be 24 gauge galvanized steel no more than 1/2" greater in diameter than the outside diameter of the conduit. When located in non-rated structures, caulk conduit sleeve with stone wool. When located in fire rated structures, provide UL listed fire stopping system. See fire stopping section of this specification for additional requirements.
28. All boxes shall be covered with outlet box protector, Appleton SB-CK, or similar device/method to keep dirt/debris from entering box, conduit or panels. If dirt/debris does get in, it shall be removed prior to pulling wires.
29. All boxes installed outdoors shall be suitable for outdoor installations, gasketed, screw cover, and painted as directed by the Architect with weatherproof paint to match building.
30. All conduit entries to outdoor mounted panels, cabinets, boxes, etc., shall be made using Myers "SCRU-TITE" hubs Series ST.
31. Provide nylon or a 1/8-inch O.D. polyethylene rope, rated at 250 pounds tensile strength, in all conduits more than 5 feet in length left empty for future use. Not less than 5 feet of rope shall be left at each end of the conduit. Tag all lines with a plastic tag at each end indicating the termination/stub location of the opposite end of the conduit.
32. All multiple conduit runs within suspended ceilings shall be suspended from building structure by means of unistrut hangers/racks. Conduit shall not be allowed to lay on ceiling or be supported from ceiling suspension wires or other suspension system. Support conduit to structure above suspended ceilings 8" minimum above ceiling to allow removal of ceiling tile. Maintain two inch clearance above recessed light fixtures
33. All exposed conduits and support hardware shall be painted to match the finish of the wall or ceiling to which it is supported.
34. Where conduits or wireways cross seismic joints, provide approved flexible conduit connection or approved expansion/deflection fitting to allow for displacement of conduit in all three axes. Connection shall allow for movement in accordance with design of seismic joint. Non-flexible raceways crossing expansion joints or other areas of possible structural movement shall make provision for 3-way movement at such points by means of expansion/deflection fittings. Fittings shall be installed in the center of their axes of movement and shall not be deflected to make part of a conduit bend, or compressed or extended to compensate for incorrect conduit length. Install flexible conduit connection(s) or approved expansion/deflection fitting(s) complete with ground jumpers. Where necessary, provide approved expansion joints to allow for thermal expansion and contraction of conduit(s). Install expansion joints complete with ground jumpers.
35. Seal all conduits where termination is subject to moisture or where conduit penetrates exterior wall, floor or roof, in refrigerated areas, classified (hazardous areas) and as indicated on the drawings.
36. Except as otherwise indicated on the drawings or elsewhere in these specifications, bends in feeder and branch circuit conduit 2 inches or larger shall have a radius or curvature of the inner edge, equal to not less than ten (10) times the internal diameter of the conduit. Except where sweeping vertically into a building where sweep radius equals ten (10) times conduit diameter, underground communications and building interconnect conduits 3 inches or larger shall have a minimum 12'-6" radius or curvature of the inner edge. For the serving utilities, radius bends shall be made per their respective specifications.
37. Tag all empty conduits at each accessible end with a permanent tag identifying the purpose of the conduit, footage end-to-end, and the location of the other end. In wet, corrosive outdoor or underground locations, use brass, bronze, or copper 16 gauge tags secured to conduit ends with #16 or larger galvanized wire. Inscribe on the tags, with steel punch dies, clear and complete identifying information.
38. The following additional requirements shall apply to underground conduits:
   a. Underground conduit shall be Schedule 40 PVC (polyvinyl chloride) unless otherwise indicated elsewhere in these specifications or as required per NEC, or CEC where adopted, **Article 517.13.**
   b. For all communications conduits 2" and larger and feeders 100A or greater, provide with a minimum 3", (2,000 LB) concrete envelope, 2" minimum separation between conduits, installed at depth of not less than 24" below grade. (Provide concrete encasement and/or greater minimum conduit depth as required by the Utility Companies.) Conduit separation within a duct bank shall be maintained using plastic spacers located at 5'-0" intervals. Where power and communication conduits are run in a common trench, a 12" minimum separation shall be maintained between power and communication conduits or as required by Utility Companies. Where concrete encasement is not required by serving utilities for a utility-only duct bank, provide free draining sand bedding suitable to acheive 95% relative compaction based on ASTM D1557 using 6" lifts or directed by Utility Company Standards.
   c. In all cases, where any conduit(s) pass under a building slab or footing, the electrical contractor will provide a Bentonite clay or concrete barrier that conforms to the height and width of the trench excavation extending a minimum of 24" on either side of the foundation. In all cases, where conduit(s) pass through a sleeve in a footing or other foundation element, the electrical contractor will provide a Bentonite clay or concrete barrier between the sleeve and the conduit(s) surrounding the conduit(s) for the entire depth of the sleeve. The barrier is required to prevent passage of moisture under or through the slab or footing via the trench or sleeve.
   d. Where underground conduit passes under a building slab, concrete encasement may not be required, except as required above, contact the Engineer for written direction prior to omitting any encasement.
   e. Underground conduits, which terminate inside building(s) below grade, such as in a basement level, or which slope so that water might flow into interior building spaces, shall be sealed at the point of penetration with a modular conduit seal (Link-Seal or equal by Rox Systems). Conduit/conduit sealing system penetrations of waterproofing membranes/systems on existing structures shall be completely restored as required to maintain membrane/system manufacturer and installer warrantee for the installation. All conduits shall be provided with a 4% slope away from buildings. All conduits shall be installed such that the water cannot accumulate in the conduit and such that water drains into the nearest manhole, pull box or vault and not into the facility. In instances where grade changes or elevation differences prevent sloping of conduit away from a building into the nearest manhole, pull box or vault or where accumulation of water in a manhole, pull box or vault may result in water traveling into the facility, conduits shall be sealed internally at each end of each conduit using conduit sealing bushing, sized as required for the conductors contained within the conduit (O-Z Gedney #CSBG 100psig withstand or equal). In all cases, install plugs or caps in spare (empty) conduits at both ends of each conduit (Jackmoon or equal) preventing both water and gas from entering the facility via the conduits.
   f. Include a separate insulated green ground conductor sized per NEC, or CEC where adopted, in each underground electrical feeder/branch circuit.
   g. All underground conduits with circuits rated at 40A or greater and all underground communications conduits shall be provided with a metallic marker tape located 12" below the finished grade.
   h. Where underground conduits sweep into/through slabs, utilize PVC 90 degree sweeps that transition, via female PVC adapter to GRC coupling mounted flush in slab. GRC couplings shall be 1/2 lap taped with 20 mil tape. If the distance of the conduit run between a sweep and the next connecting sweep, pullbox, vault or manhole exceeds 150 ft then the sweep shall be concrete encased. Exceptions:
      1) Communications conduits shown terminating at a finished floor shall have an additional 4" high GRC nipple equipped with a bushing, removable conduit plug, labeling tag and pull rope. Tie off pull rope to conduit plug.
      2) Utility conduit sweeps shall be installed per the requirements of the respective utility company.
   i. All PVC conduit shall be glued for a water and gas tight installation. The Contractor shall use appropriate solvent on all joints prior to gluing conduit and fittings together.
   j. All underground conduit work shall conform to the Federal, State and Local Safety Orders or Rules regarding excavations, trenches and related earthwork. For projects in California, refer to the California Code of Regulations, Title 8, Construction Code Sections 1540 and 1541 for additional requirements.
39. Installation of Metal Clad (MC) Cable (when use is permitted in the Allowed Specification Deviations Section or Deductive/Additive Alternate Pricing Section generally located on the symbols list drawing).
   a. Provide J-box above accessible ceiling prior to running MC cable within partitions or walls. J-box shall be permanently labeled with panel identification and circuit numbers contained within.
   b. Overhead MC cable runs shall generally follow building lines to provide a neat and workmanlike installation.
   c. Provide code-sized J-boxes to accommodate MC cable splicing in general. For systems furniture poke-through feeds utilizing MC cable, transition from MC cables to conduit and wire near the panelboard in the TI accessible ceiling space on the floor below the panel board via code-sized gutter(s). Utilize UL listed, insulated barrier strips with recessed screw heads (Ideal #89-6?? series or equal) fastened within the gutter(s), terminate MC conductors on one side of the strip(s) and individual conductors in conduit from the panel board(s) on the other side of the strip(s). Label each terminal strip(s) with panel designation. Label each phase conductor with circuit number using wire markers (ideal or equal). Wire nuts are not an acceptable alternative to the terminal strips in these underfloor transition locations. Provide (1) spare 3/4" conduit from each gutter to its respective panelboard.
   d. MC cable shall not run directly into panelboards, distribution boards or electrical rooms.
   e. MC cabling shall be provided with its own code-approved ceiling support wires, cable hangers, individual spring steel support clips, steel trapeze hangers, threaded rods or dedicated #10 AWG drop wire. Cable supports shall be fastened to concrete slabs, beams, joists or other structural members of the building. In no case shall MC cable rest on ceilings, suspended ceilings or structures. Do not support MC cable using ceiling support wires. The use of nylon cable ties to support MC cable is not allowed.
   f. Use lock or spring nut MC cable fittings.
   g. Cable runs shall be continuous from wiring device to wiring device – no intermediate splicing j-boxes allowed.
   h. When terminating or splicing at a junction, outlet, or switch box, cut the cable with an armored cable rotary cutter such that 6" of free conductors remain for connections or splices. Use screw-in or spring lock connector and ensure a proper bonding by firmly tightening the connector to both the box and cable. Insert an anti-short bushing at cable ends to protect conductors from abrasion and use insulated connectors.
   i. MC Cable bend radius shall not be less than seven (7) times the external diameter of the cable.
   j. MC cables passing through fire-rated walls or floors shall be firestopped as required with a UL listed system. See firestopping requirements outlined elsewhere in this specification for additional requirements.
   k. Installation shall not exceed code requirements for total current carrying conductors in multiple MC cable runs bundled together into a single MC cable hanger or strap, unless support device is specifically listed for such purpose. Neutrals shall be counted as current carrying conductors.
   l. Maintain MC cable clearance of at least 6" from hot water and any other high temperature pipes. Maintain at least 12" clearance between MC cable(s) and telecommunication conduits and cables. MC cable shall cross telecommunication cables and conduits at right angles.
   m. MC cabling shall not be run through exposed ceilings, where open grid conditions exist, exposed on walls, or exposed to view. See Power Plan and Lighting Plan General Notes for additional requirements.
   n. Use of MC-AP, "MC All Purpose" or MC cabling where the interlocked armor sheath forms all or a portion of the equipment grounding conductor is expressly prohibited.
40. Installation of Electrical Nonmetallic Tubing (ENT) Cable (when use is permitted in the Allowed Specification Deviations Section or Deductive/Additive Alternate Pricing Section generally located on the symbols list drawing).
   a. When approved for use in the Allowed Specification Deviations Section or Deductive/Additive Alternate Pricing Section, generally located on the symbols list drawing, 1/2" and 3/4" trade size ENT shall be allowed for concealed lighting branch circuits, receptacle branch circuits and miscellaneous signal system circuits within concrete floors, walls and columns within parking structures.
   b. ENT conduit shall meet the requirements of Underwriters Laboratories **Standards 1479 and 1653, NEMA TC-13,** and be UL-listed.
   c. All ENT conduit, ENT fittings, ENT boxes and ENT accessories shall be UL listed and manufactured by the same manufacturer so as to form a complete ENT system. ENT systems shall only be used if they are listed for use in fire resistance rated concrete floors and ceilings with resistance ratings as indicated elsewhere in the project plans. ENT System shall comply with NEC, or CEC where adopted, **Article 362**.
   d. All ENT fittings and ENT boxes shall be concrete-tight listed without the use of tape. Additionally, ENT fittings shall be constructed of high-impact PVC and able to resist ENT conduit pull out forces of a minimum of 175 lbs. ENT fittings with fewer than 6 locking tabs for ENT connection shall utilize manufacturer-approved glue as additional protection from fitting/conduit separation. ENT conduit to rigid conduit transition fittings shall be equipped with set screw fittings on the rigid conduit side of the fitting. ENT to metal box fittings shall be equipped with a threaded end and lock washer.
   e. Where tubing enters a box, fitting, or other enclosure provide a bushing or adapter to protect conductors from abrasion unless the box, fitting, or enclosure design provides equivalent protection.
   f. ENT junction boxes shall have brass screw inserts and shall be rated to support lighting fixtures weighing less than 50 lbs.
   g. Concrete tight metal boxes shall be used to support pendant hung fixtures or fixtures over 50 lbs.
   h. ENT shall be provided in continuous lengths between junction boxes without use of in-line splices or connectors and shall be clearly marked/labeled at least every 10-feet.
   i. All ENT conduit containing electrical branch circuits shall contain a code-sized equipment ground conductor.
   j. ENT shall transition to EMT, IMC, RMC, or rigid PVC, as appropriate or as called out elsewhere in this specification, for all exposed conduits within/on/under a parking structure.
   k. ENT shall transition to appropriately sized PVC expansion joint(s) at all structure expansion or seismic joints.
   l. ENT shall be securely fastened and supported every 2 – 3 ft. and within 1 ft. of every junction box and fitting to prevent movement and sag.
   m. ENT shall be routed straight without sags, or excessive bending. Where bends are required, comply with **Table 344.24** of the NEC for minimum radius of bends. Number of bends shall not exceed quantity allowed by code where used for power and lighting branch circuit and/or feeder conductors. Where utilized for communications system conductors (phones, data cabling, etc.) number of bends shall not exceed the equivalent of (2) 90 degree bends with conduit length no more than 100 feet without installation of a TIA 569-compliant pull box.
   n. Separation of ENT from fitting(s), excessive sags, or deflections in ENT runs that prevent pulling of wire and other ENT system product or system installation failures/errors shall be corrected by saw cutting and patching as necessary at no additional cost to the Owner. Use of surface mounted conduits and junction boxes as a repair method is unacceptable.
   o. Empty ENT runs shall be provided with a nylon pull string.
   p. Coordinate installation of raceway with structural steel and other structural members. Do not cut, notch or otherwise alter structural members without obtaining approval in writing from the Structural Engineer of record.
   q. No more than (2) 3/4" ENT conduits may cross each other within a horizontal concrete slab without obtaining approval in writing from the Structural Engineer of record.

B. Installation of 600V Conductors:

1. All electrical wire, including signal circuits, shall be installed in conduit.
2. All circuits and feeder wires for all systems shall be continuous from overcurrent protective device or switch to terminal or farthest outlet. No joints shall be made except in pull, junction or outlet boxes, or in panel or switchboard gutters.
   a. Utilize preinsulated "winged" spring type connectors, 3M Company "Performance Plus" #O/B or #R/Y or equal and as required for splices and taps in conductors #6 AWG and smaller. When a spring connector is used in an underground environment or when subject to moisture, utilize a 3M Company Scotchcast 3507G epoxy resin connector sealing pack to seal the spring connector. THE USE OF PUSH-WIRE CONNECTORS (e.g. "WAGO" OR EQUIVALENT) IS STRICTLY PROHIBITED.
   b. Wires #4 AWG and larger AWG shall be joined together as follows:
      1) When located in an underground environment or when subject to moisture, the splice shall be made with compression connector and sealed by a 3M, or equal, PST cold shrink connector insulator.
      2) When located in an interior environment, the splice shall be made with an Ilsco or equal dual rated, insulated splicer-reducer connector or multi-tap connector-listed for use with 75/90 degree Celsius rated conductors.
   c. Connections to busbar shall be made with dual-rated copper/aluminum one-piece compression lugs. Paralleled conductor connections shall be by mechanical lugs.
3. Thoroughly clean all conduit and wire-ways and see that all parts are perfectly dry before pulling any wires.
4. Install UL approved fixture wire from all lighting fixture lamp sockets into fixture outlet or junction box.
5. For 20A branch circuit wiring, increase #12 conductors to #10 for 120V circuits longer than 100 feet and for 277V circuits longer than 150 feet.
6. Conductor Support: Provide conductor supports as required by codes and recommended by cable manufacturer. Where required, provide cable supports in vertical conduits and provide lower end of conduit with a ventilator.

C. Grounding/Bonding:

1. Provide grounding and bonding for entire electric installation as shown on plans, as listed herein, and as required by applicable codes. Included, but not limited to, are items that require grounding/bonding:
   a. Conduit, raceways and cable trays.
   b. Neutral or identified conductors of interior wiring system.
   c. Panel boards, Distribution boards, Switchgear and Switchboards.
   d. Non-current carrying metal parts of fixed equipment.
   e. Telephone distribution equipment.
   f. Transformers, Inverters, UPS, PDU, RDC, Transfer Switch and Generator Systems.
   g. Raised Flooring.
   h. Exposed metal in maintenance holes, hand holes.
   i. Lightning Protection Systems and antennas.
   j. Metal piping installed in or attached to a building/structure.
   k. Metallically isolated structural steel.
   l. Metallically isolated underground metal water piping.
   m. Elevator hydraulic piston/lift case.
2. In multi-occupancy buildings, Contractor shall bond metal water piping systems installed in, under or attached to a building and/or structure serving individual occupancies where the piping system(s) are metallically isolated from each other. Per NEC, or CEC where adopted, **ART. 250.104(A)(2) and (4)**, the bonding conductor shall be sized per **Table 250.122** and connected to the switchboard/panelboard serving that suite/occupancy.
3. Use of Ground Rods: Furnish and install required number of 3/4" x 10' copper clad ground rods to meet specified resistance, all required grounding wires, conduit and clamps. The size of the grounding conductors shall be not less than that set forth in the latest edition of the California Code of Regulations, Title 24, State of California and NEC (or CEC where adopted), unless otherwise indicated. Rods shall be installed such that at least 10 feet of length is in contact with the soil. Where rock bottom is encountered, the electrode shall be driven at an oblique angle not to exceed 45 degrees from vertical or shall be buried in a trench that is at least 30 inches deep. The upper end of the electrode shall be flush with or below ground level unless the above ground end and the grounding electrode conductor attachments are protected against physical damage. Unless otherwise noted, connection to the grounding electrode conductor may be by compression type or exothermic process connector. Mechanical connectors shall not be used.
4. Grounding System Connection:
   a. Compression connectors shall be unplated copper, manufactured by Burndy, or approved equal, designed specifically for the intended connection.
   b. Exothermic weld-type connectors shall be 'Cadweld' manufactured by Erico Products, or approved equal, designed specifically for the intended connection.
   c. Mechanical connectors shall not be used.
5. Isolated Ground Receptacles shall have an insulated ground wire connected between the receptacle and the panelboard isolated ground bus. Unless otherwise noted, this ground wire shall not be grounded at any other point, and shall be distinguished from other ground wires by a continuous yellow stripe.
6. Provide separate green equipment ground conductor in all electrical raceways to effectively ground all fixtures, panels, controls, motors, disconnect switches, exterior lighting standards, and non current-carrying metallic enclosures. Use bonding jumpers, grounding bushings, lugs, busses, etc., for this purpose. Connect the equipment ground to the building system ground. Use the same size equipment ground conductors as phase conductors, up through #10 AWG. Use NEC (or CEC where adopted) **Table 250.122** for conductor size with phase conductors #8 and larger, if not shown on the Drawings.
7. Clean the contact surfaces of all ground connections prior to making connections.
8. Ductwork: Provide a flexible ground strap, No. 6 AWG equivalent, at each flexible duct connection at each air handler, exhaust fan, and supply fan, and install to preclude vibration.
9. Motors: Connect the ground conductor to the conduit with an approved grounding bushing, and to the metal frame with a bolted solderless lug. Bolts, screws and washers shall be bronze or cadmium plated steel.
10. Building grounding system resistance to ground shall not exceed 25 ohms unless otherwise noted and should be confirmed by testing.

D. Line Voltage and Low Voltage Power Supplies to all Mechanical Equipment Including Plumbing, Heating and Air Conditioning Units:

1. An electric power supply, including conduit, any necessary junction and/or outlet boxes and conductors and connection shall be furnished and installed by the Contractor for each item or mechanical equipment.
2. Power supplies to individual items of equipment shall be terminated in a suitable outlet or junction box adjacent to the respective item of equipment, or a junction box provided by the manufacturer or the equipment and directed by the Mechanical Contractor. Allow sufficient lengths of conductor at each location to permit connection to the individual equipment without breaking the wire run.
3. The location of all conduit terminations to the equipment is approximate. The exact location of these conduit terminations shall be located and installed as directed by the Mechanical or Plumbing Contractor.
4. Provide power supplies to all plumbing and mechanical equipment, including but not limited to, equipment furnished and installed by Owner or Contractor such as heating and air conditioning equipment, pumps, boilers, auto valves and water coolers, etc. The installation shall produce a complete and operable system.
5. Unless otherwise noted, the Contractor shall furnish and install all conduit, boxes, wires, etc., for line voltage wiring and low voltage wiring.
6. It is the Contractor's responsibility to verify with the drawings of other trades regarding the extent of his responsibility for mechanical equipment. The bid must include a sum sufficient to cover the cost of the installation.
7. The location of all power supply connection and/or terminations to the mechanical equipment is approximate. The exact locations of these terminations shall be verified with other trades during construction.

E. Prefabricated Equipment: Installation of all prefabricated items and equipment shall conform to the requirements of the manufacturer's specifications and installation instruction pamphlets. Where code requirements affect installation of materials and equipment, the more stringent requirements, code or manufacturer's instructions and/or specifications, shall govern the work.

F. Firestopping:

1. The Contractor shall be responsible for furnishing all material, labor, equipment, and services in conjunction with the selection and installation of a complete, fully functioning, code compliant, UL-listed, fire stop assembly/system(s) as required by project conditions.
2. Each fire stop assembly/system shall have an "F" and/or "T" rating as required by each condition requiring fire stopping. Each fire stop assembly/system shall have a current UL listing, as indicated in the latest edition of the UL Fire Resistance Directory. Contractor shall verify acceptability of all fire stopping methods and system selections with the authority having jurisdiction prior to installation. The Contractor shall install each firestop assembly/system in accordance with the manufacturer's printed instructions
3. Each fire stop assembly/system shall be labeled with fire stop manufacturer-furnished label on each side of the fire stopping systems depicting UL number, etc.

G. House Keeping Pads

1. Provide a minimum 3" high housekeeping pad above finished floor/finished grade for all floor-mounted switchgear, switchboards, distribution boards, transformers, motor control centers, etc., flush with the face of the equipment. Located in mechanical central plant(s), other mechanical spaces, and located outdoors, pads shall be flush with the face of the equipment. Confirm pad dimensions with local inspector prior to forming pad to ensure any local code interpretations/conditions are met regarding housekeeping pads.
2. Unless otherwise noted above, provide a minimum 1-1/2" high housekeeping pad above finished floor/finished grade for all interior floor-mounted switchgear, distribution boards, transformers, motor control centers, transfer switches, etc., flush with the face of the equipment. All housekeeping pad heights are as measured from finished floor or grade. Confirm pad dimensions with local inspector prior to forming pad to ensure any local code interpretations/conditions are met regarding housekeeping pads.
3. Provide a 1-1/2" high housekeeping pad above finished floor/finished for service equipment. Prior to pad rough-in, Contractor shall verify serving utility company's maximum meter height requirements and, if necessary, adjust height of housekeeping pad to comply with those requirements. In indoor applications, the pad shall be flush with the face of the switchgear. In outdoor applications, the housekeeping pad shall extend a minimum of 4 feet from the front of switchgear's weatherproof enclosure. Confirm pad dimensions with local inspector prior to forming pad to ensure any local code interpretations/conditions are met regarding housekeeping pads.
4. All housekeeping pads located in, on, or attached to a building shall be seismically braced/connected to the building structure.

END OF SECTION

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Consultant Seal: REGISTERED PROFESSIONAL ENGINEER — RAYMOND W. SWARTZ — NO. E15610 — ELECTRICAL — STATE OF CALIFORNIA

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP03 117500
AC FLS SS
Date SEP 21 2016

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

ELECTRICAL SPECIFICATIONS

REVISIONS:
1
2
3
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Date:	06/14/16
Job:	1633
Scale:	NONE
Drawn:	

E402

SHEET – OF XXX
XREF:

FIRE ALARM SYSTEM SPECIFICATIONS

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. The work under this section includes all final design, all labor, material, equipment, supplies, labor, testing, and accessories required to furnish and install a complete Fire Alarm System as indicated on the drawings and as specified herein.

B. All miscellaneous system components including, but not limited to, cables, termination equipment, punch blocks, patch panels, backboards, and any other related items shall be furnished and installed complete under this section, such that the system shall perform all functions listed herein in compliance with all of the specified requirements.

C. The Fire Alarm System shall include, but not limited to, the following subsystems / products:

1. See Products Section.

1.02 RELATED WORK

A. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and sections of Divisions 1 and 16 of these specifications.

B. All applicable portions of Section 16010 shall apply to this section as though written herein completely.

1.03 GENERAL REQUIREMENTS

A. The contractor shall hold a valid State of California C–10 Low–Voltage license, shall have completed at least 20 projects of equal scope, shall have been in business of furnishing and installing systems of this scope and magnitude for at least five years, and capable of being bonded to assure the owner of performance and satisfactory service during the guarantee period.

B. The contractor shall hold all other licenses required by the legally constituted authorities having jurisdiction over the work.

C. All work shall be performed under the supervision of a company accredited by the basic equipment manufacturer and such accreditation must be presented.

D. The installing contractor shall be a factory authorized distributor and warrantee station for the brand of equipment offered and shall maintain a fully equipped service organization capable of furnishing adequate repair service to the equipment. The installing contractor shall maintain a spare set of all major parts for the system at all times. All circuit boards, amplifiers and control sub systems shall be 100% backed up with stock at contractors shop.

E. All of the equipment in this specification shall be furnished and installed by the Authorized Factory Distributor of the equipment. The Contractor shall furnish a letter from the manufacturer of all major equipment, which certifies that the installing contractor is the Authorized Distributor and that the equipment has been installed according to factory intended practices. The Contractor shall also furnish a written guarantee from the manufacturer that they will have a service representative assigned to this area for the life of the equipment.

F. The fire alarm contractor shall be UL listed company under the UL classification of (UUJS). The installation company shall UL certify this installation.

G. The fire alarm contractor shall have a NICET Certified and Technicians on staff in their facility directly involved with this project to ensure technical expertise to this project and adherence with these specifications.

H. The fire alarm contractor shall maintain sufficient stock on hand and have a fully equipped service organization capable of guaranteeing response time within 8 hours of service calls, 24 hours a day, 7 days a week to service completed systems.

I. Equipment, wire and materials shall only be installed by the fire alarm contractor / manufacture's distributor. A Contractor other than the manufacturer's distributor used to install the system is not acceptable.

J. The fire alarm contractor/distributor shall provide, install and test all equipment related to this section.

K. The contractor shall pay all charges (including travel, lodging, meals, etc...) required to provide factory certification, equal to that of a Factory Authorized Distributor of the substituted item, for two (2) selected Owners representatives. This training shall occur at the primary factory of the substituted item in question and shall allow the selected Owners representatives to provide any and all Factory / Manufacturer Approved repairs, services, software upgrades, etc... without affecting any available or applicable Manufacturer Warranties.

1.04 QUALITY ASSURANCE

A. The equipment shall be as manufactured by Notifier to match existing equipment on campus. No other manufacturers will be allowed by the District.

B. In order to maintain a high degree of quality assurance, the Contractor shall, without exception, use the parts and supplies as specified on the drawings and in this specification.

C. For any proposed product substitution or when the Contractor intends to include an "or equal" product in the bid pricing, provide a substitution request submittal to the Owner's Project Manager for review no later than fifteen (15) calendar days prior to Bid submittal. This report shall include:
1. Description of how the proposed product(s) will impact meeting the project completion date, indicate item(s) with lead times and expected delivery date(s).
2. Itemized cost comparisons between the proposed product(s) and the listed product(s).
3. Detailed technical analysis of the electrical and mechanical specification differences between the proposed product(s) and the listed product(s).
4. ETL "Verified" or UL "Verified" test lab documentation for the proposed product(s), component(s) and assemblies.
5. Proposed product identification, manufacturer literature (specifications and cut sheets).
6. Name, address and contact information of several similar projects where the proposed product(s) have been used.
7. Name, address and contact information of the proposed product(s) manufacturer's local representative.
8. Sample proposed product(s) manufacturer's warranty.

D. The Owner's Design Team/Project Manager must approve any proposed product(s) substitution item in writing. The Owner's Design Team/Project Manager reserves the right to require a complete sample of any proposed product(s) and may request a sample tested by an independent testing consultant to prove equality. This reimbursement shall include all costs required to obtain re–approval from DSA, as the currently specified fire alarm system has been approved in it's entirety by DSA. (This project does not have a "deferred approval" status in regards to the fire alarm system.) The decision of the Owner's Design Team/Project Manager regarding equality of proposed product(s) items will be final.

E. If a proposed product(s) is given final acceptance by the Owner's Project Manager, the Contractor shall reimburse the Owner's Design Team/Project Manager for the costs to review the proposed product(s) substitution(s), and for any additional engineering charges, and shall pay all charges of other trades resulting from this product(s) use, at no cost to the Owner.

F. It is a mandatory requirement that a single Contractor perform the work described in this specification.

G. All of the equipment in this specification shall be furnished and installed by the Authorized Factory Distributor of the equipment with the most current software package available at the time of installation. At the time of Owner Acceptance of the installation, all equipment shall include any and all updated software revisions. In addition, when the software is available in disk format, a backup copy of the most up to date revision, in disk format, shall be handed to the Owner at the completion of the project.

H. Conform to all of the applicable provisions of the latest version of the following standards:

NFPA 72 – National Fire Alarm Code with California Amendments
Reference UL Standard 1971 for "visual devices"
CBC – California Building Code
CEC – California Electrical Code
CFC – California Fire Code
CPC – California Plumbing Code
CMC – California Mechanical Code
NFPA 13 – Automatic Sprinkler Systems
NFPA 14 – Standpipe Systems
NFPA 17 – Dry Chemical Extinguishing Systems
NFPA 17a – Wet Chemical Systems
NFPA 20 – Sanitary Pumps
NFPA 24 – Private Fire Mains (Included in 1999 NFPA 13)
NFPA 253 – Critical Radiant Flux of Floor Covering Systems
NFPA 2001 – Clean Agent Fire Extinguishing Systems
Reference code section for NFPA Standards – 2001 CBC (SFM) 3504.1

1.05 SUBMITTAL AND MANUAL

A. Comply with all requirements of the General Conditions, Supplementary Conditions and applicable sections of Divisions 1 and 16 of these specifications.

B. Additional requirements of this section are:

1. Within thirty–five (35) calendar days after the date of award of the Contract, the Contractor shall submit eight copies of the complete submission to the Architect for review.

2. The submission shall consist of five major sections with each section separated with index tabs. Each page in the submission shall be numbered chronologically and shall be summarized in the index.

3. The first section shall be the "index" which shall include the project title and address, name of the firm submitting the proposal and name of the Architect.

4. The second section shall include the following items:

a. CONTRACTOR'S LICENSE: A copy of the electronics contractor's valid State of California License.

b. PROOF OF EXPERIENCE: Proof that the fire alarm contractor has been regularly engaged in the business of fire alarm contracting consisting of, but not limited to, engineering, fabrication, installation, and servicing of fire alarm systems of the type specified herein for at least the past ten (10) consecutive years. Provide a statement summarizing any pending litigation involving any officer or principal of/or the company, the nature of the litigation and what effect the litigation may carry as it relates to this work in the worst case scenario. Non–disclosure of this item, if later discovered, may result, at the owner's discretion, in the contractor bearing all costs and any cost related to associated delays in the progress of the work.

c. INSURANCE CERTIFICATES: Copy of fire alarm contractor's current liability insurance and state industrial insurance certificates in conformance with the contract documents.

d. PROJECT LIST: A List containing at least ten (10) California installations completed within the last five (5) years by the fire alarm contractor that are comparable in scope and nature to that specified in the contract document.

e. SERVICE CAPABILITY: Documentation indicating in detail that the fire alarm contractor has competent engineering, installation, service personnel and facilities with reasonable stock of service parts within 100 air miles of the job site.

f. AUTHORIZATION LETTERS: Letters from the fire alarm equipment manufacturer stating that the fire alarm contractor is the Factory Authorized Distributor, and is trained and certified for the equipment he proposes to use on this project, and is licensed to purchase and install that software required to provide the specified functions.

g. CERTIFICATION:

1) Proof that the fire alarm contractor is Underwriters Laboratories, Inc. (UL) listed under the classification of "PROTECTIVE SIGNALING SERVICES–LOCAL, AUXILIARY, REMOTE STATION AND PROPRIETARY (UUJS).

2) Copy of the following (NICET) Certificates. Proof that the certificate holders are a part of the fire alarm contractor's local facility servicing this project and will be actively involved in this project.

a) Technician Level 2 minimum of (5).

b) Technician Level 4 minimum of (1)

h. PROOF OF TRAINED PERSONNEL:

1) Documentation that the fire alarm contractor has on staff personnel factory–trained and certified for the equipment proposed for this project. Also, a statement that personnel meeting these qualifications are in the local facility, and will be maintained at that facility throughout the project and the warranty period.

5. The third section shall contain the comparative specification listing, including a complete listing of the characteristics of the equipment to be furnished next to all of the specified equipment's features and functions as stated in the specifications and data sheets. Include CSFM listing sheet for each component.

6. The fourth section shall contain an original factory data sheet for every component in the specifications.

7. The fifth section shall contain complete 1/8" = 1'–0" scale drawing showing system wiring plans.

a. Riser Diagram.

b. Typical Device Wiring Diagram.

c. Wire Legend.

d. Battery Calculation for each control panel, power supply, field power supply and network annunciator.

e. Worst Case Voltage drop for each circuit type per building.

f. Floor Plans showing all conduits, sizes, quantity of conductors.

g. Mounting Height of each devices and back box requirement.

h. Zoning and address description legend.

C. Failure to comply with all of the requirements listed above will result in the rejection of the entire submittal package.

D. The Contractor shall provide two copies of an "Operating and Servicing Manual" for the system. The manuals shall be bound in flexible binders. All data shall be printed material or typewritten. Each manual shall include the following: Instructions necessary for the proper operation and servicing of the system; complete as–built installation drawings of the system; a wiring destination schedule for each circuit leaving for each piece of equipment; a schematic diagram of major components with all transistor and IC complements and replacement number.

1.06 GENERAL SYSTEM PRODUCT, INSTALLATION AND OVERALL SYSTEM WARRANTY

A. Prior to Owner acceptance, the contractor shall provide to Owner, a manufacturers product and performance warranty. This will require a submittal of the required pre–job certification registration forms as well as the required project closing information. The Owner will only acknowledge acceptance upon submittal of a valid manufacturers warranty.

B. The warranty shall commence from the date of final written acceptance by the Owner.

C. All conditions for obtaining the manufacturers warranty shall be the sole responsibility of the contractor.

D. The contractor shall maintain a competent service organization and shall, if requested, submit a service maintenance agreement to the owner after the end of the guarantee period.

E. A typewritten notice shall be posted at the equipment rack that shall indicate the firm, address and telephone number to call when service is necessary. The notice shall be mounted in a neatly finished metal frame with a clear plastic window and securely attached to the inside of the door.

1.07 SPECIFIC SYSTEM PRODUCT, INSTALLATION AND OVERALL SYSTEM WARRANTY

A. The entire system shall be warranted free of mechanical or electrical defects for a period of one (1) year after final acceptance of the installation. Any material showing mechanical or electrical defects shall be replaced promptly at no expense to the Owner.

SECTION 2 – SYSTEM EQUIPMENT SPECIFICATION

2.01 ACCEPTABLE MANUFACTURERS

A. All equipment listed herein will be by Notifier to match existing system on campus.

B. Its the responsibility of the bidder to insure that the proposed product meets or exceeds every standard set forth in these specifications and the equipment's technical data sheets.

C. The functions and features specified are vital to the operation of this facility. Therefore, inclusion of a component's manufacturer in the list of acceptable manufacturers does not release the contractor from strict compliance with the requirements of this specification.

D. All basic electronic equipment (not including cable) specified herein shall be produced by a single manufacturer of established reputation and experience who shall have produced similar apparatus for at least three or more years and who shall be able to refer to similar installations rendering satisfactory service.

2.02 SYSTEM FUNCTIONS AND CAPABILITIES:

A. Provide a new intelligent reporting, microprocessor controlled fire detection system. It shall be installed in accordance with the specifications and drawings.

B. Provide all hardware, software, programming tools and documentation necessary to modify the fire alarm system on site. Modification includes addition and deletion of devices, circuits, zones and changes to system operation and custom label changes for devices or zones. The system structure and software shall place no limit on the type or extent of software modifications on–site.

C. All required special programming equipment shall be furnished by the fire alarm contractor, turned over to the District and shall remain on site and shall be covered during the warranty period.

D. Basic Performance:

1. Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded onto a (Class B) signaling line circuit.

2. Initiation device circuits shall be wired (Class B).

3. Indication appliance circuits shall be wired (Class B).

4. Digitized electronic signals shall employ check digits or multiple polling.

5. A Single ground of open on any system signaling line circuit, initiating device circuit, or indicating appliance circuit shall indicate a trouble condition at the control panel.

6. Alarm signals arriving at the main FACP shall not be lost following a power failure (or outage) until the alarm signal is processed and recorded.

E. Basic System Functional Operation: When a fire alarm condition is detected and reported by one of the system initiating devices or appliances, the following functions shall immediately occur:

1. The system Alarm LED shall flash.

2. A local piezo electric signal in the control panel shall sound.

3. The 80 character LCD display shall indicate all information associated with the Fire Alarm condition, including the type of alarm point and its location within the protected premises.

4. Printing and history storage equipment shall log the information associated each new Fire alarm Control Panel condition, along with time and date of occurrence.

5. All system output programs assigned via control by event equations to be activated by the particular point in alarm shall be executed, and the associated System Outputs (alarm indicating appliances an/or relays) shall be activated.

F. Circuiting Guidelines:

1. All system smoke detectors shall be of the Addressable Analog type. Although each individual device point number and message shall be displayed on the LCD, the initiating devices shall be zoned as follows to provide the appropriate indication on the LED Annunciator.

2. Provide one alarm initiating zone per device as shown on the plans and annunciator(s).

a. Manual stations per building.

b. Area smoke/heat detectors per building.

c. Duct mounted smoke detectors / HVAC shut down relays per building.

G. The system shall be capable, via a modem to a remote computer, of off_site programming and diagnostic functions by the Owner, distributor or manufacturer personnel. It shall be also be possible to facilitate remote software changes. Contractor to provide, install, and program a copy of the required software to accomplish this task.

2.03 PRODUCTS:

A. Fire Alarm Control Panel (VECP)

1. Provide a new fire alarm voice evacuation control panel.

2. Control panel shall contain the following features:

a. Addressable signaling line circuit loops Network communications, capable of monitoring, initiation, supervision, annunciation and control devices. One spare addressable signaling line circuit loop.

1 (selectable Local Energy, Shunt Master box, Reverse Polarity Remote Station Connection
(1 min) Form C Alarm Contacts (1 Amp each)
(1 min) Form C Trouble Contact (1 Amp each)
(1 min) Form C Supervisory Contact (1 Amp each)
(1 min) Form C Default Alarm Contacts (1 Amp each)
Default Alarm Mode (Provide fire alarm in event of a CPU failure or provide redundant CPU).
Automatic Battery Charger
1 set Standby Batteries
1 lot Resident non–volatile programmable operating system memory for all operating requirements.
1 Supervised Manual Evacuation Switch with Alphanumeric Display

B. REMOTE ANNUNCIATOR

1. Where indicated on Drawings, provide and install a remote annunciator.

C. POWER SUPPLIES

1. Unit shall be complete with main Printed Circuit Board (PCB), transformers, lockable cabinet and batteries.

D. PERIPHERAL DEVICES

1. Manual Stations

a. Station shall be addressable semi–flush, nonbreakable–glass type. Station housing shall be constructed of durable die–cast aluminum with reset lock and key.

2. Smoke Detectors

a. Furnish and install where indicated on Drawings, photoelectric smoke detectors. Provide addressable base.

3. Control Module

a. Use this to connect a conventional indicating appliance to one of SLC loops. Control module shall mount in a standard 4" square, 2–1/8" deep electrical box. Control module may also be wired as a dry contact (form C) relay. Power for relay coil shall be provided by SLC loop to reduce wiring connection requirements. Audio/Visual power shall be provided by a separate loop from main control panel or from supervised remote power supplies.

b. Control module shall provide address–setting means using rotary decimal switches and shall also store an internal identifying code which control panel shall use to identify type of device. An LED shall be provided which shall flash under normal conditions, indicating that control module is operational and in regular communication with control panel.

4. Speakers: Alarm speakers shall be polarized and operated by 24 UDC. Each horn assembly shall include separate wire lead for in/out wiring for each leg of associated signal circuit. T tapping of signal device conductors to signal circuit conductors will not be accepted. Suitable gaskets shall be provided for weatherproof installation. Speakers shall produce a minimum sound pressure level of 97 db at 10'–0", and provide 15 db above ambient noise levels in all areas.

5. Speaker/strobe shall operate on 24 VDC polarized circuit and shall be provided with a semi–flush mounting plate. Entire unit shall be red finish. Strobe light shall be white lexan with word "FIRE" in red on 2 sides. Speaker shall have a minimum sound output of 95 db at 10'–0", and provide 15 db above ambient noise levels in all areas. The strobe shall have a minimum light intensity as indicated on drawings and meet or exceed requirements of the American with Disabilities Act (ADA) and UL 1971.

6. Strobes indicating appliances shall be wall mounted. "Lexan" lens shall be clear with word "FIRE" imprinted in red and shall be rectangular in shape to allow better visibility. The strobes shall meet ADA and UL 1971 requirements.

a. Maximum pulse duration to be 0.20 of a second with a ADAAG 4.28.3(3). Visual alarms maximum duty cycle of 40%. The pulse duration defined as the time interval between initial and final points of 10% max. signal.
b. Capable of providing 75 candela min. intensity (effective strength measured at the source).
c. The flash rate to be a minimum of 1 Hz and a maximum of 3 Hz.
d. Mounting height to be 80 inches (2,032mm) AFF or 6 inches (152 mm) below ceiling, whichever is lowest.

7. Door Holder/Release: Electromagnetic door holder/releases shall be 24 VDC and installed on each door as indicated on Drawings and as specified herein. Holder/releases shall consist of a wall–mounted electromagnet and a door mounted armature with an adjustable contact plate. Electromagnets shall have a force of attraction of 35 pounds when energized and less than 3 pounds residual with power disconnected. Armature contact plates shall have a horizontal adjustment of 25 degrees. The holding force of holder/releases shall be totally electromagnetic and without the use of mechanical linkage or other moving parts. All holder/releases shall normally be energized, and a release shall be accomplished by interrupting the circuit.

8. Water Flow Switches:

a. Vane–type water flow switches shall be installed on system piping as designated on the Drawings and/or as specified herein. Detectors shall mount on any clear pipe span of appropriate nominal size, either a vertical or horizontal run, at least 6" from any fittings or valves which may change water direction, flow rate, or pipe diameter, or no closer than 24" to a valve or drain. Detector shall respond to water flow in specified direction after a preset time delay, which is field adjustable. Actuation mechanism shall include a polyethylene vane inserted through a hole in the pipe and connected by a mechanical linkage to delay mechanism. Outputs shall consist of 10 A (Dual SPDT Switches/Form–C Contacts). A conduit entrance for standard fittings of commonly used electrical conduit shall be provided on detectors. All detectors shall be listed by Underwriters Laboratories, Inc. for indoor or outdoor use.

b. Supervisory switch shall be installed on each valve as designated on Drawings and/or as specified herein. Switches shall be mounted so as not to interfere with normal valve operation and shall be adjusted to operate within two revolutions of valve control or when stem has moved no more than one–fifth of distance from its normal position. Mechanism shall be contained in a weatherproof die cast metal housing, which shall provide a ¾" tapped conduit entrance and incorporate necessary facilities for attachment to valve. Switch mechanism shall have a minimum rated capacity of 10 Amp @ 125 VAC and 2.5 Amp @ 24 VAC. Entire installed assembly shall be tamper–resistant. Tamper switches shall be Underwriters Laboratories Inc. listed.

9. Fire Control Communicators shall be digital type, UL and Fire Marshal listed, for fire reporting to a central station. It shall provide power and necessary components for 8 supervised detection circuits, (2–class A and 6–class B). It shall have a charger and battery (12V, 6.5 AH), which will provide 24–hour standby power.

a. Control/communicator shall have capability to supervise 2 telephone lines, seize phone line and send alarm signal on one or both lines without addition of any more equipment. It shall sound a local trouble signal if telephone service is interrupted for longer than 45 seconds and shall transmit a signal indicating loss of phone line. A signal shall also be transmitted indicating restoration of phone service. Control/communicator shall be able to report loss of either phone without regard to which phone line failed first. If both lines fail, a local signal shall sound.

b. Control/communicator shall have ability to send a test signal to central station every 24 hours. Test signal shall be able to transmitted at a specific time of day or night, by setting a program within panel.

c. Alarm signals transmitted to central station shall indicate which of 8 zones is in alarm and which zones are in trouble. Restoration from alarm or trouble shall also be transmitted by zone. Control/communicator shall be capable of communicating to Silent Knight, Radionics or Ademco central station receivers.

E. CONDUIT AND SURFACE RACEWAY

1. All conduit, surface raceways, outlet boxes, junction boxes, pull boxes, terminal cabinets, and similar devices required in this section of the work shall be provided under Division 16000 and as shown on drawings.

2. Conduit and surface raceways shall comply with the requirements of Section 16010 BASIC ELECTRICAL MATERIAL.

3. Conduit shall not enter the Fire Alarm Control Panel, or any other remotely mounted Control Panel equipment or backbox, except where conduit entry is specified by the FACP manufacturer.

4. All fire alarm related conduits shall be clearly marked as "Fire Alarm System" and painted red in color to indicate such system.

F. WIRE

1. All low voltage wire required in this section shall be furnished and installed by the fire alarm contractor.

2. All wire shall be installed in conduit. Wiring installed in underground conduits shall be approved for wet applications in accordance with the National Electric Code.

3. All fire alarm system wiring shall be new.

4. Wiring shall be in accordance with local stated and national codes (e.g., CEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 16 AWG for Initiating Device Circuits and Signaling Line Circuits, and 14 AWG for Indicating Appliance Circuits.

5. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.

6. Wiring used for the multiplex communication loop shall be 18AWG twisted and shielded and installed in conduit unless specifically expected by the fire alarm equipment manufactured.

7. All field wiring shall be completely supervised. In the event of a primary power failure, disconnected standby battery, removal of any internal modules, or any open circuits in the field wiring; a trouble signal will
be activated until the system and its associated field wiring are restored to normal condition.

G. TERMINAL CABINETS AND JUNCTION BOXES:

1. All boxes and cabinets shall be UL listed for their use and purpose.

2. Terminal cabinets shall comply with the requirements of Section 16010 Terminal Cabinets.

3. Provide terminal blocks for all conductors entering and/or exiting each terminal cabinet.

PART 3 – EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

A. The wiring of the system shall be executed in accordance with the drawings and the equipment manufacturer's wiring diagrams. Should any variations in these requirements occur, the contractor shall notify the architect before making any changes. It shall be the responsibility of the factory–authorized distributor of the approved equipment to install the equipment and guarantee the system to operate as per plans and specifications.

B. Furnish all conduit, junction boxes, conductors, equipment plugs, terminal strips, etc., and labor to install a complete and operable system.

C. The cables within the rack or cabinets shall be carefully cabled and laced with no. 12 Cord waxed linen lacing twine or ty_raps. All cables shall be numbered for identification.

D. Splices of conductors in underground pull boxes is not permitted.

E. The labor employed by the contractor shall be regularly employed in the installation and repair of communication systems and shall be acceptable to the owner and architect to engage in the installation and service of this system.

F. The contractor shall thoroughly clean all equipment and materials. All exposed parts of the equipment, cabinets, and other equipment shall be left in a clean condition, unblemished and free of all dirt, dust, smudges, spots, fingerprints, etc., The contractor shall remove all debris and rubbish occasioned by the electronic systems work from the site. The contractor shall thoroughly clean all buildings of any dirt, debris, rubbish, marks, etc., Caused by the performance of this work.

G. The system must meet all local and other prevailing codes.

H. All cabling installations shall be performed by qualified technicians.

I. All cabling shall be splice free.

J. In order to ensure the least amount of cable untwisting, it is required that all cables shall be stripped using a special tool.

K. The use of lubricants (i.e. Yellow 77) to facilitate the installation of cables in conduits is highly discouraged. If such a lubricant must be used, the contractor shall verify the acceptability of the lubricant to be used with the cable manufacturer, prior to using such a lubricant.

L. Under no circumstance are "channel locks" or other pliers to be used.

M. All firewalls penetrated by structured cabling shall be sealed by use a non–permanent fire blanket or other method in compliance with the 2002 edition of National Fire Protection Association (NFPA) and the California Electric Code (CEC) or other prevailing code. The contractor must not use concrete or other non–removable substance for fire stopping on cable trays, wireways or conduits. Contractors who use this method will be required to replace all cables affected and provide the original specified access to each effected area.

3.02 SPECIFIC SYSTEM INSTALLATION REQUIREMENTS

A. The entire system shall be installed in a workmanlike manner in accordance with approved manufacturers manuals and wiring diagrams. The contractor shall furnish all wiring, conduit, outlet boxes, junction boxes, terminal cabinets and similar devices necessary for the completed installation..

B. Installation off conduit, outlet boxes, junction boxes, terminal cabinets, special back boxes and similar devices shall comply with the requirements of Section 16010 Basic Electrical Materials.

C. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas an may be exposed in unfinished areas. Smoke detector heads shall not be installed prior to the system programming and test period. If construction is on going during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.

D. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas. Verify with the Project Architect prior to any surface mounted installations.

E. All penetrations of floor slabs and fire walls, shall be fire stopped in accordance with the electrical specifications.

F. Duct mounted Smoke Detectors shall be furnished and wired by this Contractor and installed by the Mechanical Contractor. All shutdown and interface wiring shall be performed by the Electrical Contractor. All air pressure differential testing shall be performed by the Mechanical/Air Balance Contractor.

G. The sprinkler flow and tamper switches shall be furnished, installed and adjusted by the Sprinkler Contractor, wired and tested by this Contractor.

3.03 GENERAL TESTING REQUIREMENTS

A. Provide all instruments for testing and demonstrating in the presence of the owner's inspector that the frequency response is as stated in the factory data sheets. Check all circuits and wiring to verify they are free of shorts and grounds.

3.04 SPECIFIC SYSTEM TESTING REQUIREMENTS

A. Contractor shall provide all DSA required testing and certification at no cost to the Owner.

PART 4 – FINAL ACCEPTANCE

A. The Owner or Owner's representative may visit the site during the installation of the system to ensure that correct installation practices are being followed.

B. The Owner or Owner's representative will conduct a final job review once the contractor has finished the job. This review will take place within one week after the contractor notifies the owner.

C. Two copies of all certification data and drawings for all identifications shall be provided to the Owner before the owner's review.

D. The Owner or Owner's representative will review the installation and certification data prior to the system acceptance.

E. The Owner or Owner's representative may test some of the systems features to ensure that the certification data is correct. If a substantial discrepancy is found, the Owner reserves the right to have an independent consultant perform a certification of the entire system. If such a procedure is undertaken, the cost of the testing will be billed back to the contractor.

F. In the event that repairs or adjustments are necessary, the contractor shall make these repairs at his own expense. All repairs shall be completed within 10 days from the time they are discovered.

G. The contractor shall provide not less than eight (8) hours for site instruction of personnel in the operation and maintenance of the installed systems. This instruction time shall be divided as directed by the Owner.

H. The contractor shall hand to the owner a copy of any applicable installation specific software configurations in disk format.

I. Provide the NFPA certificate to the Owner, local fire official, Architect and D.S.A.

END OF SECTION

GHATAODE BANNON ARCHITECTS
Architecture · Planning · Interior Design

Architect Seal

Consultant Seal

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP 03 117500
AC FLS SS
Date SEP 21 2016

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

FIRE ALARM SPECIFICATIONS

REVISIONS:

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11870 Pierce Street, Suite 160
Riverside, California 92505
951.299.4160 www.tk1sc.com
Bill Voller - Electrical
tk1sc Job #: 2016-0263

Date: 06/14/16
Job: 1633
Scale: NONE
Drawn:

E403

SHEET - OF XXX
XREF:

FIRE ALARM GENERAL NOTES

1. ALL WALL-MOUNTED AUDIBLE SIGNALING APPLIANCES SHALL HAVE THEIR HEIGHTS ABOVE THE FINISHED FLOOR AT NOT LESS THAN 90" TO FINISHED FLOOR AND AT NOT LESS THAN 6" TO FINISHED CEILING, AS CEILING HEIGHT PERMITS (NFPA 72, 2013, CH. 18.4.8.1). ALL WALL MOUNTED VISUAL APPLIANCES AND COMBINATION AUDIBLE/VISUAL APPLIANCES SHALL BE MOUNTED SUCH THAT THE ENTIRE LENS IS NOT LESS THAN 80" AND NOT GREATER THAN 96" ABOVE FINISHED FLOOR (NFPA 72, 2013, CH. 18.5.5.1).
2. ALL EQUIPMENT SHALL BE U.L. AND CSFM LISTED.
3. ALL WIRING SHALL BE IN ACCORDANCE WITH THE NEC AND AUTHORITIES HAVING JURISDICTION.
4. ALL JUNCTION BOXES SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. AND SHALL HAVE THEIR COVERS PAINTED RED WHERE APPLICABLE.
5. ELECTRICAL CONTRACTOR SHALL FURNISH ACCESS PANELS TO AREAS THAT REQUIRE SERVICING, TROUBLE SHOOTING, ETC.
6. DO NOT DEVIATE FROM CONDUIT RUNS AS SHOWN ON FLOOR PLANS WITHOUT PRIOR APPROVAL FROM ELECTRICAL ENGINEER. FACTORS SUCH AS EXCESSIVE VOLTAGE DROP, ADDITIONAL PARTS, ENGINEERING, ETC., THAT ARE A RESULT OF CONDUIT RUN DEVIATIONS SHALL BE THE SOLE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
7. DETECTORS SHALL NOT BE LOCATED IN A DIRECT AIR-FLOW, NOR CLOSER THAN THREE (3) FEET (914mm) FROM AN AIR SUPPLY DIFFUSER.
8. ALL FAN SHUTDOWN FUNCTIONS, DAMPER CLOSURES AND ASSOCIATED MECHANICAL SYSTEM FIRE ALARM INTERFACE SHALL BE BY MECHANICAL CONTRACTOR, AND SHALL BE COORDINATED WITH FIRE ALARM SYSTEM.
9. ALL DUCT SMOKE DETECTORS SHALL BE MOUNTED BY THE MECHANICAL CONTRACTOR. DUCT SMOKE DETECTORS EXPOSED TO THE WEATHER SHALL BE C.S.F.M. LISTED FOR OUTDOOR INSTALLATION, AND WEATHER PROTECTED BY THE MECHANICAL CONTRACTOR. ALL AIR VELOCITY TESTING SHALL BE PERFORMED BY THE MECHANICAL CONTRACTOR.
10. ALL 120VAC POWER REQUIREMENTS FOR THE FIRE ALARM SYSTEM SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR AND SHALL MEET ALL REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION.
11. ALL FIRE ALARM DEVICE BACKBOXES, FIRE ALARM TERMINAL CABINETS, GUTTERS, JUNCTION BOXES AND ASSOCIATED CONDUITS SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED. REFER TO FIRE ALARM SYMBOL LIST AND/OR MOUNTING DETAILS FOR ADDITIONAL INFORMATION. SYSTEM SUPPLIER PROVIDED BACKBOXES SHALL BE INSTALLED BY ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED.
12. SMOKE DETECTOR TESTING SHALL BE PERFORMED TO ENSURE THAT EACH DETECTOR IS WITHIN ITS LISTED AND MARKED SENSITIVITY RANGE USING THE METHODS PER CFC 907.8.4 AND NFPA 72, 2013 14.4.4.3.4.
13. ALL WIRING, INITIATING DEVICES AND ANNUNCIATOR PANEL SHALL BE SUPERVISED TO THE PRINCIPAL POINT OF ANNUNCIATION. THE FIRE ALARM CONTROL PANEL TO SUPERVISE THE ANNUNCIATOR PANEL, ALL INITIATING AND INDICATING DEVICE CIRCUITS.
    A. INITIATING DEVICE CIRCUITS (IDC): CLASS B
    B. SIGNALING LINE CIRCUITS (SLC): CLASS B
    C. NOTIFICATION APPLIANCE CIRCUITS (NAC): CLASS B
14. ALL WIRING SHALL BE CUT FOR IN AND OUT. WIRING SHALL NOT BE LOOPED THROUGH DEVICES.
15. POINT AND COMMON ANNUNCIATION AND T-TAPPING ARE PROHIBITED. (T-TAPPING IS ALLOWABLE ON STYLE 4 SLC LOOPS).
16. PROVIDE 3/4" CONDUIT FROM FIRE ALARM CONTROL PANEL TO TELEPHONE BACKBOARD FOR OWNER PROVIDED CENTRAL STATION MONITORING.
17. CONTRACTOR TO FIELD VERIFY AND PROVIDE DECIBEL METER FOR TESTING OF AMBIENT NOISE LEVELS (THE AUDIBLE ALARM NOTIFICATION APPLIANCES SHALL PROVIDE A SOUND PRESSURE LEVEL OF 15 dBA ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 dBA ABOVE THE MAXIMUM SOUND LEVEL HAVING DURATION OF AT LEAST 60 SECONDS, WHICH IS GREATER, IN EVERY OCCUPIED SPACE WITHIN THE BUILDING. THE MINIMUM SOUND PRESSURE LEVEL SHALL BE 60 dBA PER CFC 907.5.2.1.1). INSTALL ADDITIONAL AUDIBLE DEVICES AS NEEDED TO ATTAIN REQUIRED NOISE LEVELS IN ALL REQUIRED AREAS. PROVIDE UPDATED PLANS AND CALCULATIONS THROUGH THE "CHANGE ORDER" PROCESS WHEN INSTALLING ADDITIONAL DEVICES. INSPECTOR OF RECORD (IOR) TO WITNESS FINAL TEST OF SYSTEM. CONTRACTOR(S) TO PROVIDE FINAL TEST RESULTS AND "RECORD OF COMPLETION" TO ARCHITECT OF RECORD, OWNER, DIVISION OF THE STATE ARCHITECT, IOR AND LOCAL FIRE AUTHORITY.
18. ALL CONDUITS SHALL BE 3/4" MINIMUM.
19. ALL FLOW SWITCHES SHALL BE 2 WIRE WITH NON-ELECTRONIC RETARD TYPE SIMILAR TO THE SYSTEM SENSOR MODEL "WFD SERIES" ONLY.
20. ALL DEVICES IN THE ALARM SYSTEM SHALL BE COMPATIBLE AND INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
21. SYSTEM SHALL BE FURNISHED AND INSTALLED BY AN AUTHORIZED DISTRIBUTOR.
22. FIRE ALARM SYSTEM INSTALLATION COMPANY SHALL BE UL LISTED (UUJS).
23. "DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER THE CONSTRUCTION CLEAN-UP OF ALL TRADES IS COMPLETE AND FINAL. DETECTORS THAT HAVE BEEN INSTALLED PRIOR TO FINAL CLEAN-UP BY ALL TRADES SHALL BE CLEANED OR REPLACED IN ACCORDANCE WITH CHAPTER 18." CLEANING OR REPLACEMENT OF DEVICES THAT WERE MOUNTED AT THE REQUEST OF THE CONTRACTOR WILL NOT BE PERFORMED WITHOUT WRITTEN AUTHORIZATION THAT ASSUMES FINANCIAL RESPONSIBILITY FOR COSTS INCURRED. TESTING OF DETECTORS SHALL BE PERFORMED PER NFPA 72 14.4.5.3.4 AND CFC 907.8.4.
24. PER CBC 1117B.6(4) ACTIVATION OF INITIATING DEVICE SHALL NOT REQUIRE MORE THAN 5 LBS. (22.2N) OF FORCE OR REQUIRE TIGHT GRASPING PINCHING, OR TWISTING OF WRIST.
25. FIRE ALARM SYSTEM CONTROL PANEL SHALL HAVE PROGRAMMING TO ALLOW FOR THE MANUAL SILENCING OF THE AUDIBLE PORTION OF AN ALARM WHILE MAINTAINING THE ALARM STATUS OF ALL VISUAL DEVICES WITHIN THE SYSTEM.
26. THE SYSTEM SHALL CONFORM TO CALIFORNIA CODE OF REGULATIONS (CCR) TITLES 19 AND 24 AS APPLICABLE TO THIS PROJECT.
27. THE FIRE ALARM EVACUATION SIGNAL SHALL BE THE STANDARD THREE-PULSE TEMPORAL PATTERN PER THE "EXCEPTION" OF THE 2013 CALIFORNIA BUILDING CODE 907.5.2.1.3 ANSI S3.41.
28. PROVIDE A LABEL WITHIN THE FACP AND EACH POWER SUPPPLY WITH THE PANEL NUMBER AND CIRCUIT NUMBER OF THE 120 VOLT POWER SOURCE.
29. WHERE HORNS/STROBE OCCUR AT WHITEBOARDS, LOCATE DEVICE(S) +4" ABOVE TOP OF WHITEBOARD.
30. WHERE A DETECTOR IS INSTALLED ABOVE THE CEILING, THE DETECTOR SHALL BE EASILY ACCESSIBLE AND THE LOCATION OF THE DETECTOR SHALL BE CLEARLY MARKED. FOR DUCT SMOKE DETECTORS A REMOTE TEST STATION SHALL BE PROVIDED.
31. THE "END OF LINE RESISTANCE" OF EACH CIRCUIT SHALL BE TESTED IN THE PRESENCE OF THE I.O.R. AND SHALL NOT EXCEED A MAXIMUM OF 10% VOLTAGE DROP, OR LISTED MANUFACTURER'S MINIMUM OPERATING VOLTAGE.
32. ALL WIRING USED IN UNDERGROUND CONDUIT SHALL BE LISTED FOR WET AREA APPLICATION, IN ACCORDANCE WITH CEC 2013, SEC. 110.11, 300.6 & 310.10, 760.3(D).
33. FIRE ALARM SYSTEM IS A FULLY AUTOMATIC SYSTEM. CONTRACTOR TO UTILIZE AREA COVERAGE SMOKE DETECTORS AND ADDRESSABLE CONTROL RELAYS FOR THE SHUTDOWN AND/OR CLOSURE OF HVAC UNITS AND COMBINATION SMOKE/FIRE DAMPERS.
34. THE EXISTING CAMPUS FIRE ALARM SYSTEM SHALL BE MAINTAINED AND OPERATIONAL AT ALL TIMES DURING ALTERATIONS AND CONSTRUCTION. WHEN PORTIONS OF THE SYSTEM REQUIRE ALTERATIONS, THE REMAINDER OF THE SYSTEM SHALL BE KEPT IN SERVICE. IF NECESSARY TO SHUT DOWN ENTIRE FIRE ALARM SYSTEM, CONTRACTOR SHALL PROVIDE FIREWATCH FOR ALL OCCUPIED AREAS OF WORK UNTIL THE FIRE ALARM SYSTEM IS RETURNED TO OPERATIONAL SERVICE. FIREWATCH AND SYSTEM/EQUIPMENT IDENTIFICATION SHALL BE PER THE 2013 CFC, CHAPTER 33. LOCAL FIRE AUTHORITY AND OWNER SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF ANY SHUT DOWN.

FIRE ALARM SYSTEM TESTING NOTES:

1. CONTRACTOR SHALL PROVIDE A CERTIFIED IMPARTIAL FIRE ALARM INSPECTOR.
2. 100% OF THE SYSTEM IN CONTRACT WILL BE TESTED AND INSPECTED WITH THE CONTRACTOR OR CONTRACTOR'S SUB AND DISTRICT'S ETS STAFF MEMBER PRESENT. INSPECTION WILL INCLUDE, BUT NOT BE LIMITED TO, REMOVING STROBES/HORNS TO CHECK FOR "T-TAPS", REMOVING J-BOX COVERS TO CHECK WIRE GAGE AND SPLICES.
3. FOLLOW ALL REQUIREMENTS AND INSTRUCTIONS PROVIDED BY MANUFACTURER UPON INSTALLATION OF MANUFACTURER'S PRODUCTS AND DEVICES.
4. PRIOR TO REQUESTING FINAL APPROVAL OF THE INSTALLATION, THE INSTALLING CONTRACTOR SHALL FURNISH A WRITTEN STATEMENT TO THE FIRE CODE OFFICIAL THAT THE SUBJECT FIRE PROTECTION SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH APPROVED PLANS AND HAS BEEN TESTED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND THE APPROPRIATE INSTALLATION STANDARD. ANY DEVIATIONS FROM THE DESIGN STANDARDS SHALL BE NOTED AND COPIES OF THE APPROVALS FOR SUCH DEVIATIONS SHALL BE ATTACHED TO THE WRITTEN STATEMENT. (CFC 901.2.1)
5. UPON COMPLETION OF SYSTEM INSTALLATION, THE SYSTEM SHALL BE TESTED IN THE PRESENCE OF AND IN A MANNER ACCEPTABLE TO DSA/I.O.R. CONTRACTOR SHALL SUPPLY NECESSARY TESTING EQUIPMENT, INCLUDING A "SOUND LEVEL METER" TO CHECK ACCEPTABLE NOISE LEVELS OF AUDIBLE DEVICES. PROVIDE TEST RESULTS PER NFPA 72 TO ARCHITECT, D.S.A., I.O.R. AND TO LOCAL FIRE AUTHORITY.

SEQUENCE OF OPERATIONS

ACTION / DEVICE	120 VOLT POWER FAILURE	SYSTEM TROUBLE/ WIRING FAULT or OPEN	AREA SMOKE DETECTOR	AREA or ATTIC HEAT DETECTOR
SOUND CONTROL PANEL TROUBLE BUZZER	YES	YES	NO	NO
SOUND CONTROL PANEL SUPERVISORY BUZZER	NO	NO	NO	NO
SOUND CONTROL PANEL ALARM BUZZER	NO	NO	YES	YES
ACTIVATE RELAY FOR CENTRAL STATION MONITORING	YES	YES	YES	YES
ANNUNCIATE AT FIRE ALARM CONTROL PANEL (ALARM or TROUBLE)	YES	YES	YES	YES
ANNUNCIATE AT REMOTE ANNUNCIATOR PANEL (ALARM or TROUBLE)	YES	YES	YES	YES
ACTIVATE NOTIFICATION (AUDIBLE/VISUAL) ALARM SIGNAL THROUGHOUT BLDG	NO	NO	YES	YES
SHUT DOWN ASSOCIATED AIR HANDLING (HVAC) THROUGHOUT BUILDING	NO	NO	YES	NO
NOTIFY FIRE DEPARTMENT VIA MONITORING STATION –	NO	NO	YES	YES

FIRE ALARM WIRE LEGEND

WIRE DESIGNATION	WIRE IN CONDUIT	WIRE IN CONDUIT UNDERGROUND/WET LOC.	UNDERGROUND/WET WIRE DESIGNATION
INIT. LOOP Z	TWO PAIR 2 CONDUCTOR #16 UNSHIELDED WEST PENN #D990	TWO PAIR 2 CONDUCTOR #16 FPL UNSHIELDED WEST PENN #AQ-225	INIT. LOOP ZU
POWER CKT. (24VDC) P	2 CONDUCTOR #12 THHN STRANDED	2 CONDUCTOR #12 STRANDED TYPE THWN	POWER CKT. (24VDC) PU
NETWORK CONTROL C	2 CONDUCTOR #12 THHN STRANDED	2 CONDUCTOR #12 STRANDED TYPE THWN	NETWORK CONTROL CU
ANN./TELE. D,T	2 CONDUCTOR #18 FPL TWISTED/ SHIELDED WEST PENN #D975	2 CONDUCTOR #18 FPL TWISTED/ SHIELDED WEST PENN #AQ-293	ANN./TELE. DU,TU
LOW LEV. AUD. X,Y	2 CONDUCTOR #18 FPL TWISTED/ SHIELDED WEST PENN #D975	2 CONDUCTOR #18 FPL TWISTED/ SHIELDED WEST PENN #AQ-293	LOW LEV. AUD. XU,YU
AUDIBLE A	2 CONDUCTOR #16 FPL TWISTED/ SHIELDED	2 CONDUCTOR #16 FPL TWISTED/ SHIELDED	AUDIBLE AU
VISUAL V	2 CONDUCTOR #12 THHN STRANDED	2 CONDUCTOR #12 STRANDED TYPE THWN	VISUAL VU

NOTE:
1. ALL WIRE MODEL NUMBERS ARE WEST PENN. EQUIVALENT BY OTHER MANUFACTURER IS ACCEPTABLE.
2. COLOR CODE ALL FIRE ALARM CONDUCTORS PER DISTRICT STANDARDS. VERIFY COLOR SCHEMES PRIOR TO ORDERING FIRE ALARM CONDUCTORS.

FIRE ALARM SYMBOLS LIST

SYMBOL	DESCRIPTION	MODEL	MANUFACTURER	BACKBOX	MOUNTING HEIGHT	C.S.F.M. NUMBER
VECP	VOICE EVACUATION CONTROL PANEL WITH COMMUNICATOR	4100ES Voice	SIMPLEX	PROVIDED	5'-6" A.F.F. TO TOP	7165-0026:0251
AMP	VOICE EVACUATION AUDIO AMPLIFIER	FLEX-35	SIMPLEX	PROVIDED	5'-6" A.F.F. TO TOP	7165-0026:0251
FATC	FIRE ALARM TERMINAL CABINET	N/A	BY ELECTRICIAN	18"SQ. x 6"D U.N.O. (RED)	VERIFY IN FIELD	N/A
SD	AREA SMOKE DETECTOR (ADDRESSABLE/PHOTO.)	4098-9714 4098-9792 (BASE)	SIMPLEX	4S DEEP BOX W/ 3-0 RING	CEILING	7272-0026:0218
HD	AREA HEAT DETECTOR (ADDRESS./FIXED 200°F) WITH MONITOR MODULE	4098-9614 4098-9788 (BASE) 4090-9101	SIMPLEX	4S DEEP BOX W/ 3-0 RING 4S DEEP BOX	ABOVE ACCESSIBLE CEILING, U.O.N.	7270-0026:0221 7300-0026:0222 7300-0026:0223
R	FIRE ALARM RELAY MODULE	MR-101/C	AIR PRODUCTS	4S DEEP BOX	VERIFY IN FIELD	7300-1004:101
S WP	WEATHERPROOF FIRE ALARM SPEAKER	4902-9716	SIMPLEX	PROVIDE WP BACKBOX	90" A.F.F. TO TOP	7320-0026:0242
SF cd	FIRE ALARM SPEAKER/STROBE (CEILING)	4906-9154	SIMPLEX	4S DEEP BOX W/ 4S EXTENSION	CEILING	7320-0026:0247
SYNC	FIRE ALARM SYNC MODULE	4905-9815	SIMPLEX	4S DEEP BOX	VERIFY IN FIELD	7300-0026:0315
J	FIRE ALARM JUNCTION BOX	N/A	BY ELECTRICIAN	4S BOX, U.N.O.	VERIFY IN FIELD	N/A

A.F.F.	ABOVE FINISHED FLOOR	N/A	NOT APPLICABLE
E.O.L.	END OF LINE RESISTOR	U.N.O.	UNLESS NOTED OTHERWISE
(E)	EXISTING DEVICE	VL	VERIFY LOCATION IN FIELD
F.B.O.	FURNISHED BY OTHERS	WP	WEATHERPROOF DEVICE
TSP	TWISTED SHIELDED PAIR	cd	INDICATED CANDELA RATING OF STROBE DEVICE

PLAN REVIEW REQUIREMENTS AND APPLICABLE CODES AND STANDARDS

1.0 FIRE ALARM PLAN REVIEW

A. FIRE ALARM PLAN REVIEW
1. AS PART OF THE FIRE ALARM PLAN REVIEW, PLANS AND SPECIFICATIONS FOR THE FIRE ALARM SYSTEM HAVE BEEN INCLUDED FOR REVIEW AND COMMENT BY THE DIVISION OF THE STATE ARCHITECT, FIRE & LIFE SAFETY.
2. THE FLOOR PLANS AND SPECIFICATIONS INCLUDE THE FOLLOWING: LOCATIONS OF ALL ALARM-INITIATING AND SIGNALING DEVICES, CONTROL AND TROUBLE SIGNALING EQUIPMENT (FIRE ALARM CONTROL PANEL, BUILDING ANNUNCIATION (FIRE ALARM ANNUNCIATOR).

B. FIRE ALARM COMPONENTS
1. PROVIDE CALIFORNIA STATE FIRE MARSHAL LISTING SHEETS AND U.L. LISTING NUMBERS FOR EACH COMPONENT.
2. EQUIPMENT POWER CONNECTIONS.
3. RISER DIAGRAM SHOWING EACH COMPONENT.
4. VOLTAGE DROP CALCULATIONS.
5. POWER CONNECTIONS TO APPLICABLE COMPONENTS.
6. WIRE AND/OR CABLING TYPES AND SIZES.
7. PROVIDE CATALOG DATA SHEETS FOR ALL FIRE ALARM SYSTEM COMPONENTS.
8. A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE PROJECT INSPECTOR AND LOCAL FIRE AUTHORITY.
9. UPON THE CERTIFICATE OF COMPLIANCE, THE INSTALLER SHALL SUPPLY THE OWNER WITH A WRITTEN OPERATING, TESTING AND MAINTENANCE INSTRUCTIONS, POINT-TO-POINT AS BUILT DRAWINGS AND EQUIPMENT SPECIFICATIONS.

C. SCOPE OF WORK
1. INSTALL A FULLY AUTOMATIC, ADDRESSABLE, FIRE ALARM SYSTEM WITHIN ALL BUILDINGS IN SCOPE OF PROJECT AS DEFINED PER CFC 907.2.3 AND NFPA 72.
2. FIRE ALARM SYSTEM SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION IN ACCORDANCE WITH NFPA 72. THE SUPERVISING STATION SHALL BE U.L. LISTED AS UUFX (CENTRAL STATION) PER CFC 907.2.3.5.

2.0 LIST OF CURRENT CALIFORNIA CODE OF REGULATIONS

APPLICABLE CODES AS OF JUNE 1, 2014

2013 Building Standards Administrative Code, Part 1, Title 24 C.C.R.

2013 California Building Code (CBC), Volumes 1 & 2, Part 2, Title 24 C.C.R.
(2012 International Building Code and 2013 California Amendments)

2013 California Electrical Code (CEC), Part 3, Title 24 C.C.R.
(2011 National Electrical Code and 2013 California Amendments)

2013 California Mechanical Code (CMC), Part 4, Title 24 C.C.R.
(2012 Uniform Mechanical Code and 2013 California Amendments)

2013 California Plumbing Code (CPC), Part 5, Title 24 C.C.R.
(2012 Uniform Plumbing Code and 2013 California Amendments)

2013 California Energy Code, Part 6, Title 24, C.C.R.

2013 California Elevator Safety Construction Code, Part 8, Title 24, C.C.R.
(2012 International Building Code and 2013 California Amendments)

2013 California Fire Code (CFC), Part 9, Title 24, C.C.R.
(2012 International Fire Code and 2013 California Amendments)

2013 California Green Building Standards Code (CALGreen), Part 11, Title 24, C.C.R.

2013 California Referenced Standards, Part 12, Title 24, C.C.R.

Title 19 C.C.R., Public Safety, State Fire Marshal Regulations.

PARTIAL LIST OF APPLICABLE NFPA STANDARDS:

NFPA 13-Automatic Sprinkler Systems	2013 Edition
NFPA 14-Standpipes Systems (CA Amended)	2013 Edition
NFPA 17-Dry Chemical Extinguishing Systems	2013 Edition
NFPA 17a-Wet Chemical Systems	2013 Edition
NFPA 20-Stationary Pumps	2013 Edition
NFPA 24-Private Fire Mains (CA Amended)	2013 Edition
NFPA 72-National Fire Alarm Code (CA Amended) (Note-See UL Standard 1971 for "Visual Devices")	2013 Edition
NFPA 80-Fire Door and Other Opening Protectives	2013 Edition
NFPA 253-Critical Radiant Flux of Floor Covering Systems	2011 Edition
NFPA 2001-Clean Agent Fire Extinguishing Systems	2012 Edition

Ref. code section for NFPA Standards-2013 CBC (SFM) Chapter 35
Ref. code section for NFPA Standards-2013 CFC Chapter 45

COMPLETE FIRE ALARM SUBMITTAL

AUTOMATIC ADDRESSABLE FIRE ALARM SYSTEM WITH EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM

tk1sc COLLABORATIVE
11870 Pierce Street, Suite 160
Riverside, California 92505
951.299.4160 www.tk1sc.com
Bill Voller - Electrical
tk1sc Job #: 2016-0263

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DIV. OF THE STATE ARCHITECT
APP 03 117500
AC FLS SS
Date SEP 21 2016

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

FIRE ALARM SYMBOLS LIST AND GENERAL NOTES

REVISIONS:
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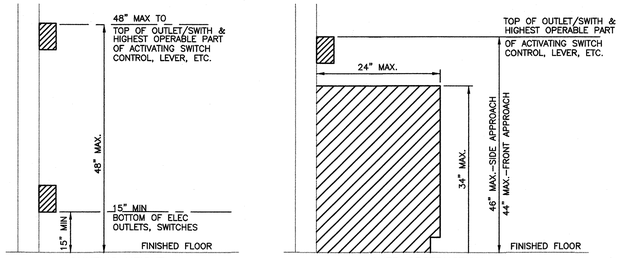
Date: 06/14/16
Job: 1633
Scale: NONE
Drawn:

EFA001

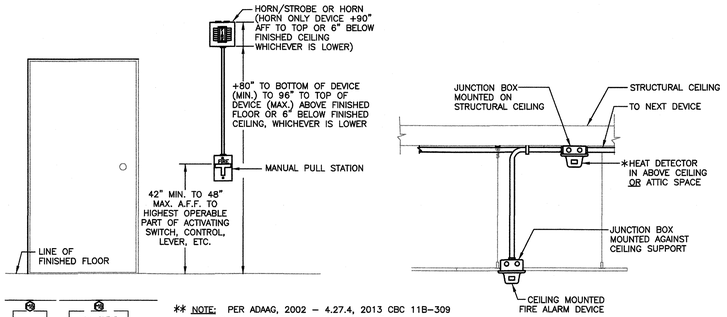
SHEET – OF XXX
XREF:



ALL DEVICE HEIGHTS DEPICTED SHALL BE MODIFIED AS REQUIRED BY GOVERNING BUILDING CODES. CONTRACTOR TO VERIFY/RECONCILE APPLICABLE CODE REQUIREMENTS AND ANY DEVICE HEIGHT REQUIREMENTS DEPICTED ON ARCHITECTURAL OR INTERIOR DESIGN PLANS & SPECIFICATIONS PRIOR TO DEVICE ROUGH-IN. CONFLICTS OR LACK OF MOUNTING HEIGHT SPECIFICITY ON THE ARCHITECTURAL OR INTERIOR DESIGN PLANS & SPECIFICATIONS SHALL BE CAUSE FOR THE CONTRACTOR TO ISSUE A FORMAL WRITTEN RFI FOR RESOLUTION. DEVICE MOUNTING HEIGHT CLARIFICATIONS/SPECIFICATIONS SHALL NOT RESULT IN AN ADDITIONAL COST TO THE OWNER – CONTRACTOR SHALL INCLUDE ALL COSTS IN BASE BID.

MOUNTING HEIGHT OVER OBSTRUCTION DETAIL (5)

SCALE: NTS

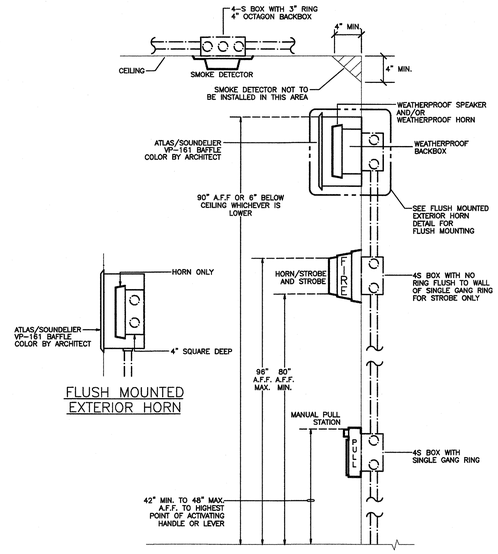


** NOTE: PER ADAAG, 2002 – 4.27.4, 2013 CBC 11B-309 CONTROLS AND OPERATING MECHANISMS AT INITIATING DEVICE "SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE CONTROLS SHALL BE NO GREATER THAN 5lbf (22.2N)."

* – TEMPERATURE SETTING OF HEAT DETECTOR DEVICE TO BE SET AT MINIMUM OF 20°F. ABOVE THE MAXIMUM EXPECTED TEMPERATURE OF THE SPACE INSTALLED PER NFPA 72, 2013 17.6.2.3.

DEVICE MOUNTING DETAILS (4)

SCALE: N.T.S.



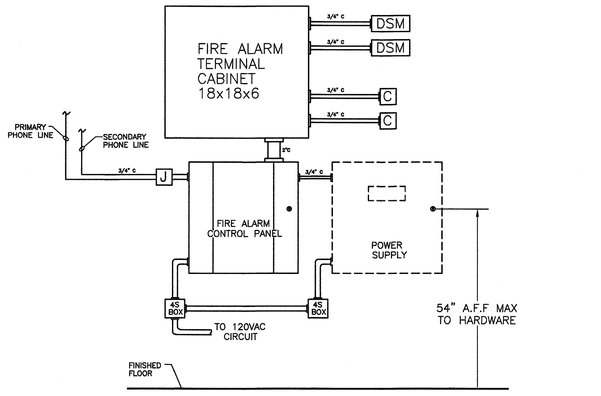
FLUSH MOUNTED EXTERIOR HORN

GENERAL NOTES:

1. THE ENTIRE LENS OF STROBE LIGHTS MUST BE BETWEEN 80" AND 96" ABOVE FLOOR FINISH. (2013 NFPA 72 18.5.4)
2. MANUAL FIRE ALARM BOXES SHALL BE INSTALLED IN ACCORDANCE WITH 2013 CFC SECTIONS 907.4 THROUGH 907.5.
3. WHEN APPLICABLE, MANUAL FIRE ALARM BOXES SHALL BE LOCATED NOT MORE THAN 5 FEET FROM THE ENTRANCE TO EACH EXIT. ADDITIONAL MANUAL FIRE ALARM BOXES SHALL BE LOCATED SO THAT TRAVEL DISTANCE TO THE NEAREST BOX DOES NOT EXCEED 200 FEET. (2013 CFC 907.4.2.1)

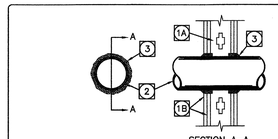
MOUNTING HEIGHT DETAIL (1)

SCALE: N.T.S.



FIRE ALARM PANEL/POWER SUPPLY MOUNTING ELEVATION (2)

SCALE: N.T.S.



SECTION A–A

PENETRATION THRU GYPSUM BOARD WALL

NO SCALE

System No.W-L-1001
June 13, 2005
F Ratings – 1, 2, 3 and 4 Hr (See Items 2 and 3)
T Ratings – 0, 1, 2, 3, and 4 Hr (See Item 4)
L Rating At Ambient – less than 1 CFM/sq ft
L Rating At 400 F – less than 1 CFM/sq ft

1. 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 described in the individual U300 or U400 Series Wall or 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 (max 2 hr fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be nom 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* – Nom 1/2 or 5/8 in. (13 or 16 mm) thick, 4 ft. (122 cm) wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm).
2. Through Penetrant – 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 is 0 in. (point contact). Min annular space is nom 0 in. (0 mm). 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 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe – Nom 24 in. (610 mm) diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. (305 mm) diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.
   C. Conduit – Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing
   D. Copper Tubing – Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing
   E. Copper Pipe – Nom 8 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
   F. Through Penetrating Product* – Flexible Metal Piping – The following types of steel flexible metal gas piping may be used.
1. Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

   OMEGA FLEX INC
2. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

   TITEFLEX CORP
   A BUNDY CO
3. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

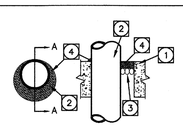
   WARD MFG INC
4. Fill, Void or Cavity Materials* – Caulk or Sealant – Min 5/8 in.-1-1/4-7/8 and 2-1/2 in. (16, 32, 48 and 64 mm) thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annular space, at both surfaces of wall, flush with wall surface. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point of contact location on both sides of wall.
   The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table.
   The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

MAX. PIPE OR CONDUIT DIAM, IN	ANNULAR SPACE IN.	F RATING HR	T RATING HR
1	0 TO 3/16	1 OR 2	0+, 1 OR 2
1	1/4 TO 1/2	1 OR 2	1 OR 4
6	0 TO 1/4	1 OR 2	0
6	1/4 TO 1/2	1 OR 2	0
12	3/16 TO 3/8	1 OR 2	0

+When copper pipe is used, T Rating is 0 hr.

MINNESOTA MINING & MFG. CO. – TYPES CP–25 S/L, CP–25 W/B, CP–25 WS, CP–25 WS+ (NOTE: L RATINGS APPLY WHEN TYPE CP–25 WS+ CAULK IS USED.)

*Bearing the UL Classification Marking



SECTION A–A

PENETRATION THRU CONCRETE WALL OR FLOOR

NO SCALE

System No. C-AJ-1044
June 15, 2005
F Ratings – 2, 3, and 4 Hr (See Items 2A and 4)
T Rating – 0 Hr
L Rating At Ambient – 2 CFM/sq ft
L Rating At 400 F – less than 1 CFM/sq ft
W Rating – Class 1 (See Item 4)

1. Floor or Wall Assembly – Lightweight or normal weight (100–150 pcf or 1600–2400 kg/m3) concrete. Except as noted in table under Item 4, min thickness of solid concrete floor or wall assembly is 4–1/2 in. (114 mm). Floor may also be constructed of any min 6 in. (152 mm) thick UL Classified hollow core Precast Concrete Units*. When floor is constructed of hollow core precast concrete units, packing material (Item 3) and caulk fill material (Item 4) to be installed symmetrically on both sides of floor, flush with floor surface. Wall assembly may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is in solid lightweight or normal weight concrete. Floor is 32 in. (813 mm). Max diam of opening in floor constructed of hollow–core precast concrete units is 7 in. (178 mm).

   See Concrete Blocks (CAZT) and Precast Concrete Units (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

1A. Steel Sleeve (Optional, not shown) – Max 15 in. (381 mm) ID (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. Sleeve may extend a max of 2 in. (51 mm) above top of floor or beyond either surface of wall. Max 16 in. (406 mm) ID (or smaller) min 0.028 (0.71 mm) wall thickness (or heavier) galvanized steel sleeve cast or grouted into floor or wall assembly. Sleeve may extend a max of 1/2 in. (13 mm) beyond surface of floor or wall.

2. Through Penetrants – One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Max annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in Item 4. Min annular space between pipe or conduit and edge of through opening is 0 in. (0 mm) (point contact). Pipe conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

   A. Steel Pipe – Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe – Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit – Nom 6 in. (152 mm) diam (or smaller) steel conduit.
   D. Conduit – Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing.
   E. Copper – Tubing Nom 8 in. (152 mm) diam (or smaller) Type L (or heavier) copper tube.
   F. Copper Pipe – Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. Packing Material – Polyethylene backer rod or nom 1 in. (25 mm) thickness of tightly–packed mineral wool batt or glass fiber insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of caulk fill material (Item 4).

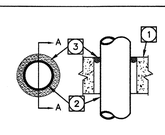
4. Fill/Void or Cavity Material* – Caulk or Sealant – Applied to fill the annular space flush with top surface of floor and at both surfaces of wall. Min thickness of caulk to be installed symmetrically on both sides of wall, flush with wall surface. At point contact location between penetrant and sleeve or between penetrant and concrete, a min 1/4 in. (6 mm) diam bead of caulk shall be applied at top surface of floor and at both surfaces of wall. The hourly F Ratings and the min required caulk thicknesses are dependent upon a number of parameters, as shown in the following table:

MAX. FLOOR OR WALL OPEN. DIAM, IN.	NOM. PIPE TUBE OR CONDUIT DIAM, INCH	MAX. ANNULAR SPACE IN.	MIN. CAULK THKNS. IN.	F RATING HR
2–1/2(064)	1/2–12(13–305)	1–3/4(38)	1/2(13)	2
2–1/2(064)	1/2–12(13–305)	1–3/4(38)	1(25)	3
4–1/2(114)	1/2–6(13–152)	1–3/4(38)	1/4(6)(a)	2
4–1/2(114)	1/2–12(13–305)	1–3/4(38)	1/2(13)	3
4–1/2(114)	1/2–20(13–508)	2(51)	1(25)	3
4–1/2(114)	1/2–20(13–508)	2(51)	1(25)	3
4–1/2(114)	1/2–12(13–305)	3–1/4(83)	1(25)	3
4–1/2(114)	22–30(558–762)	2(51)	1(25)	3
5–1/2(140)	1/2–8(13–152)	1–3/8(35)	1(25)(b)	4

(a) Min 2 in. (51 mm) thickness of mineral wool batt insulation required in annular space.
(b) Min 1 in. (25 mm) thickness of mineral wool batt insulation required in annular space on both sides of floor or wall assembly. Min 1 in. (25 mm) thickness of caulk to be installed flush with each surface of floor or wall assembly.

3M COMPANY – CP 25WB+ caulk or FB–3000 WT sealant.
(Note: W Rating applies only when FB–3000 WT sealant is used.)

*Bearing the UL Classification Marking



SECTION A–A

PENETRATION THRU CONCRETE FLOOR

NO SCALE

SYSTEM NO. C-AJ-1027
F RATING–3 HR
T RATING–0 HR

1. Floor or Wall Assembly – Min 4–1/2 in. thick lightweight or normal weight (100–150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of through opening is 12–1/4 in.

   See Concrete Blocks (CAZT) category in Fire Resistance Directory for names of manufacturers.

2. Through Penetrants – One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Min annular space between pipe, conduit or tubing and edge of opening is 0 in. (point contact). Max annular space is dependent on pipe, conduit or tubing type and size as well as the F Rating of the system, as shown in the table below. 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 10 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Conduit – Nom 6 in. diam (or smaller) rigid steel conduit.
   C. Conduit – Nom 4 in. diam (or smaller) steel electrical metallic tubing or steel conduit.
   D. Copper – Tubing Nom 3 in. diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper – Pipe Nom 3 in. diam (or smaller) Regular (or heavier) copper pipe.
   F. Iron Pipe – Nom 10 in. diam (or smaller) cast or ductile iron pipe.

PIPE, CONDUIT OR TUBING TYPE	MAX. NOM. PIPE OR CONDUIT DIAM, IN.	F RATING HR	MAX. ANNULAR SPACE IN.
1–1/2	1/2–12	3	3/4
2–1/2	1/2–12	3	3/4
4–1/2	1/2–6	3	1–1/2
4–1/2	1/2–12	3	3/4
4–1/2	1/2–30	2	7/8

3. Fill/Void or Cavity Materials* – Putty – Moldable putty material kneaded by hand and applied to fill annular space to a min depth of 1 in., flush with top surface of floor. In wall assemblies, required putty thickness to be installed symmetrically on both sides of wall.

3M COMPANY – FD–150

*Bearing the UL Classification Marking

THROUGH RATED WALL OR FLOOR PENETRATIONS (U.L. LISTINGS) (3)

SCALE: N.T.S.

COMPLETE FIRE ALARM SUBMITTAL

AUTOMATIC ADDRESSABLE FIRE ALARM SYSTEM WITH EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM

tklsc COLLABORATIVE
11870 Pierce Street, Suite 160
Riverside, California 92505
951.299.4180 www.tklsc.com
Bill Voller - Electrical
tklsc Job #: 2016-0263

GHATAODE BANNON ARCHITECTS
Architecture • Planning • Interior Design
735 W. 19th STREET, UNIT B
COSTA MESA, CA 92627
ph: 714.650.8550
fax: 714.650.8559

Architect Seal

Consultant Seal

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP 03 117500
ACC FLS SS 84
Date SEP 21 2016

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

FIRE ALARM DETAILS

REVISIONS:
1
2
3
4
5
6
7
8
9

Date: 06/14/16
Job: 1633
Scale: AS NOTED
Drawn:

EFA002

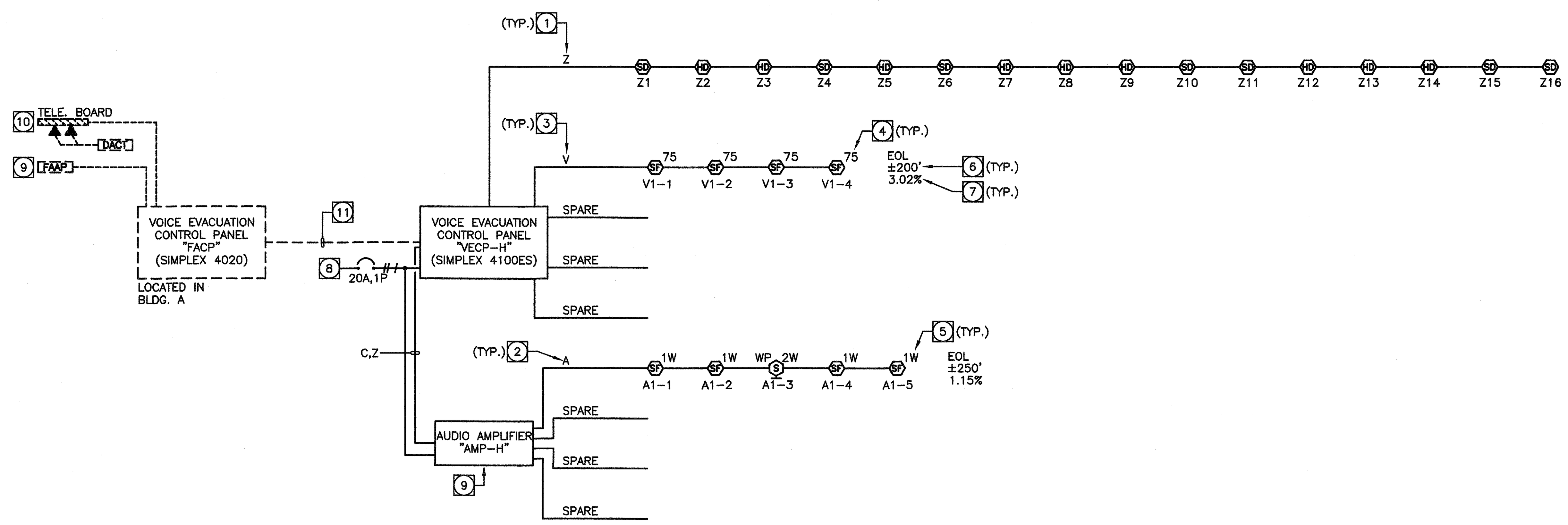
SHEET – OF XXX
XREF:

RISER DIAGRAM PLAN NOTES:

1. Z – ZONABLE/ADDRESSABLE CIRCUIT, PROVIDE 2#16 TWISTED PAIR PER CIRCUIT, TYPICAL.
2. A – AUDIBLE NOTIFICATION CIRCUIT, PROVIDE 2#16 PER CIRCUIT, TYPICAL.
3. V – VISUAL NOTIFICATION CIRCUIT, PROVIDE 2#12 PER CIRCUIT, TYPICAL.
4. CANDELA RATING OF STROBE DEVICE, TYPICAL.
5. SPEAKER WATTAGE, TYPICAL.
6. DISTANCE TO END OF LINE (EOL) DEVICE, TYPICAL.
7. WORST–CASE VOLTAGE DROP PERCENTAGE, TYPICAL.
8. PROVIDE 3/4"C. WITH 2#12, 1#12 GRD. TO 120V DEDICATED CIRCUIT IN RELOCATABLE BUILDING PANEL FOR POWER. PROVIDE 20AMP, 1–POLE CIRCUIT BREAKER WITH APPROVED LOCK–ON DEVICE, RED INDICATOR AND IDENTIFIED AS "FIRE ALARM CONTROL CIRCUIT" (NFPA 72, 10.5.5.2). CONNECT AS REQUIRED. PROVIDE ALL REQUIRED MOUNTING HARDWARE. MATCH A.I.C. RATING OF DEVICES USED.
9. EXISTING FIRE ALARM ANNUNCIATOR PANEL (FAAP). VERIFY EXACT LOCATION.
10. EXISTING (2) DEDICATED PHONE LINES (LAND LINES) FOR FIRE ALARM SYSTEM MONITORING. VERIFY EXACT LOCATION.
11. INTERCONNECT NEW FIRE ALARM CONTROL PANEL AND EXISTING FIRE ALARM CONTROL PANEL ON CAMPUS FOR SYSTEM INTERFACE. PROVIDE ALL NECESSARY RELAYS, MODULES, CABINETS, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. REFER TO FIRE ALARM INTERCONNECTION DETAIL 2 ON SHEET EFA003.

FIRE ALARM GENERAL NOTES:

1. ALL WALL–MOUNTED AUDIBLE SIGNALING APPLIANCES SHALL HAVE THEIR HEIGHTS ABOVE THE FINISHED FLOOR AT NOT LESS THAN 90" TO FINISHED FLOOR AND AT NOT LESS THEN 6" TO FINISHED CEILING, AS CEILING HEIGHT PERMITS (NFPA 72, 2013, CH. 18.4.8.1). ALL WALL MOUNTED VISUAL APPLIANCES AND COMBINATION AUDIBLE/VISUAL APPLIANCES SHALL BE MOUNTED SUCH THAN THE ENTIRE LENS IS NOT LESS THAN 80" AND NOT GREATER THAN 96" ABOVE FINISHED FLOOR (NFPA 72, 2013, CH. 18.5.5.1).
2. DO NOT DEVIATE FROM CONDUIT RUNS AS SHOWN ON FLOOR PLANS WITHOUT PRIOR APPROVAL FROM SYSTEM SUPPLIER / ENGINEER. FACTORS SUCH AS EXCESSIVE VOLTAGE DROP, ADDITIONAL PARTS, ENGINEERING, ETC. THAT ARE A RESULT OF CONDUIT RUN DEVIATIONS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
3. DETECTORS SHALL NOT BE LOCATED IN A DIRECT AIR–FLOW, NOR CLOSER THAN 3 FEET (915 mm) FROM ANY AIR SUPPLY DIFFUSER.
4. THE AUDIBLE ALARM NOTIFICATION APPLIANCES SHALL PROVIDE A SOUND PRESSURE LEVEL OF 15 dBA ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 dBA ABOVE THE MAXIMUM SOUND LEVEL HAVING DURATION OF AT LEAST 60 SECONDS, WHICH IS GREATER, IN EVERY OCCUPIED SPACE WITHIN THE BUILDING. THE MINIMUM SOUND PRESSURE LEVEL SHALL BE 60 dBA PER CFC 907.5.2.1.1.
5. THE FIRE ALARM EVACUATION SIGNAL SHALL BE THE STANDARD THREE–PULSE TEMPORAL PATTERN PER THE "EXCEPTION" OF THE 2013 CALIFORNIA BUILDING CODE 907.5.2.1.3 ANSI S3.41.
6. FIRE ALARM SYSTEM UTILIZES A COMPLETE COVERAGE, FULLY AUTOMATIC SYSTEM. PROVIDE RELAY MODULE(S) AT FATC/FACP LOCATIONS FOR CONTROL OF HVAC SHUT DOWN, SMOKE/FIRE DAMPER CLOSURE AND DOOR HOLD RELEASES.
7. THE EXISTING CAMPUS FIRE ALARM SYSTEM SHALL BE MAINTAINED AND OPERATIONAL AT ALL TIMES DURING ALTERATIONS AND CONSTRUCTION. WHEN PORTIONS OF THE SYSTEM REQUIRE ALTERATIONS, THE REMAINDER OF THE SYSTEM SHALL BE KEPT IN SERVICE. IF NECESSARY TO SHUT DOWN ENTIRE FIRE ALARM SYSTEM, CONTRACTOR SHALL PROVIDE FIREWATCH FOR ALL OCCUPIED AREAS OF WORK UNTIL THE FIRE ALARM SYSTEM IS RETURNED TO OPERATIONAL SERVICE. FIREWATCH AND SYSTEM/EQUIPMENT IDENTIFICATION SHALL BE PER THE 2013 CFC, CHAPTER 33. LOCAL FIRE AUTHORITY AND OWNER SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF ANY SHUT DOWN.



FIRE ALARM RISER DIAGRAM (1)

SCALE: N.T.S.

VOLTAGE DROP CALCULATIONS																	
MESA ES - MODULAR CLASSROOMS																	
DEVICE	CURRENT (AMPS) (UL MAX.)	NO	VISUAL CIRCUIT V1	NO	VISUAL CIRCUIT SPARE	NO	VISUAL CIRCUIT SPARE	NO	VISUAL CIRCUIT SPARE	NO	AUDIBLE CIRCUIT A1	NO	AUDIBLE CIRCUIT SPARE	NO	AUDIBLE CIRCUIT SPARE	NO	AUDIBLE CIRCUIT SPARE
SPEAKER (1W; INTERIOR)	0.014		0.000		0.000		0.000		0.000	4	0.056		0.000		0.000		0.000
SPEAKER (2W; EXTERIOR)	0.028		0.000		0.000		0.000		0.000	2	0.056		0.000		0.000		0.000
STROBE (CEILING) 15 CD	0.075		0.000		0.000		0.000		0.000		0.000		0.000		0.000		0.000
STROBE (CEILING) 30 CD	0.125		0.000		0.000		0.000		0.000		0.000		0.000		0.000		0.000
STROBE (CEILING) 75 CD	0.233	4	0.932		0.000		0.000		0.000		0.000		0.000		0.000		0.000
STROBE (CEILING) 95 CD	0.316		0.000		0.000		0.000		0.000		0.000		0.000		0.000		0.000
			0.000		0.000		0.000		0.000		0.000		0.000		0.000		0.000
			0.000		0.000		0.000		0.000		0.000		0.000		0.000		0.000
TOTAL CURRENT ON CIRCUIT			0.932 AMPS		0.000 AMPS		0.000 AMPS		0.000 AMPS		0.112 AMPS		0.000 AMPS		0.000 AMPS		0.000 AMPS
TOTAL WIRE LENGTH IN FEET			200								250						
% VOLTAGE DROP			**3.02**		**0.00**		**0.00**		**0.00**		**1.15**		**0.00**		**0.00**		**0.00**
WIRE SIZE			#12		#12		#12		#12		#16		#16		#16		#16
CIRCUIT LOCATION			VECP-H		VECP-H		VECP-H		VECP-H		AMP-H		AMP-H		AMP-H		AMP-H
VOLTS DROPPED			**0.62**		**0.00**		**0.00**		**0.00**		**0.23**		**0.00**		**0.00**		**0.00**

VOLTAGE DROP CALCULATIONS GENERAL NOTES:

1. THE LISTED MANUFACTURERS OPERATING VOLTAGE RANGE FOR EQUIPMENT AND DEVICES ARE AS FOLLOWS:

   DEVICES = 16 – 33 VDC
   EQUIPMENT = +24VDC FILTERED, REGULATED
   BATTERY = 20.4 VDC END OF USEFUL LIFE PER NFPA 72 HANDBOOK AND UL 864.

2. VOLTAGE DROP PERCENT FORMULA:

$$\frac{\text{WIRE LENGTH} \times \text{TOTAL CURRENT AMPS} \times 21.6}{\text{CIRCULAR MILS}} \times \frac{100}{20.4}$$

21.6 = CONSTANT (RESISTANCE OF CONDUCTOR)

AMERICAN WIRE GAUGE TO CIRCULAR MILS:
#12 = 6,530
#14 = 4,110
#16 = 2,580
#18 = 1,620

BATTERY SIZING CALCULATION

PROJECT NAME: MESA ES - MODULAR CLASSROOMS
PANEL LOCATION: RELOCATABLE BUILDINGS
DATE PERFORMED: June 13, 2016

VECP-H

QTY.	DEVICE NAME	STD-BY (AMPS)		ALARM (AMPS)	
1	AUDIO AMPLIFIER	0.0850	0.0850	1.6400	1.6400
4	SPEAKER (INTERIOR/1W)	0.0000	0.0000	0.0141	0.0564
1	SPEAKER (EXTERIOR/2W)	0.0000	0.0000	0.0283	0.0283
1	SYNC MODULE	0.0001	0.0001	0.4500	0.4500
		0.0000	0.0000	0.0000	0.0000
		0.0000	0.0000	0.0000	0.0000
		0.0000	0.0000	0.0000	0.0000
	TOTALS =		0.0851		2.1747

STAND-BY LOAD = 0.0851 ALARM LOAD = 2.1747 AMPS
STAND-BY TIME = 24 ALARM TIME = 15 / 60 HRS

STAND-BY = 2.0424 ALARM = 0.5437 AMP HRS

TOTAL = STAND-BY + ALARM
= 2.04 + 0.54
= 2.59 Ah (AMP HRS)
MULTIPLY BY DERATING FACTOR OF 1.25 = 3.23 Ah (AMP HRS)

MINIMUM BATTERY SIZE = 3.23 AMPERE HOURS
PROVIDE MIN. (2) 6.2 Ah 12VDC BATTERIES AS REQUIRED FOR 24VDC OPERATION

BATTERY SIZING CALCULATION

PROJECT NAME: MESA ES - MODULAR CLASSROOMS
PANEL LOCATION: RELOCATABLE BUILDINGS
DATE PERFORMED: June 13, 2016

VECP-H

QTY.	DEVICE NAME	STD-BY (AMPS)		ALARM (AMPS)	
1	CONTROL PANEL	0.2250	0.2250	0.3850	0.3850
1	MICROPHONE	0.0024	0.0024	0.0300	0.0300
8	SMOKE DETECTOR	0.0010	0.0080	0.0010	0.0080
8	HEAT DET/MONITOR MOD	0.0160	0.1280	0.0720	0.5760
0	15cd STROBE (CEILING)	0.0000	0.0000	0.0750	0.0000
0	30cd STROBE (CEILING)	0.0000	0.0000	0.1250	0.0000
4	75cd STROBE (CEILING)	0.0000	0.0000	0.2330	0.9320
0	95cd STROBE (CEILING)	0.0000	0.0000	0.3160	0.0000
1	SYNC MODULE	0.0001	0.0001	0.4500	0.4500
1	RELAY MODULE	0.0000	0.0000	0.0480	0.0480
		0.0000	0.0000	0.0000	0.0000
		0.0000	0.0000	0.0000	0.0000
		0.0000	0.0000	0.0000	0.0000
	TOTALS =		0.3635		2.4290

STAND-BY LOAD = 0.3635 ALARM LOAD = 2.4290 AMPS
STAND-BY TIME = 24 ALARM TIME = 15 / 60 HRS

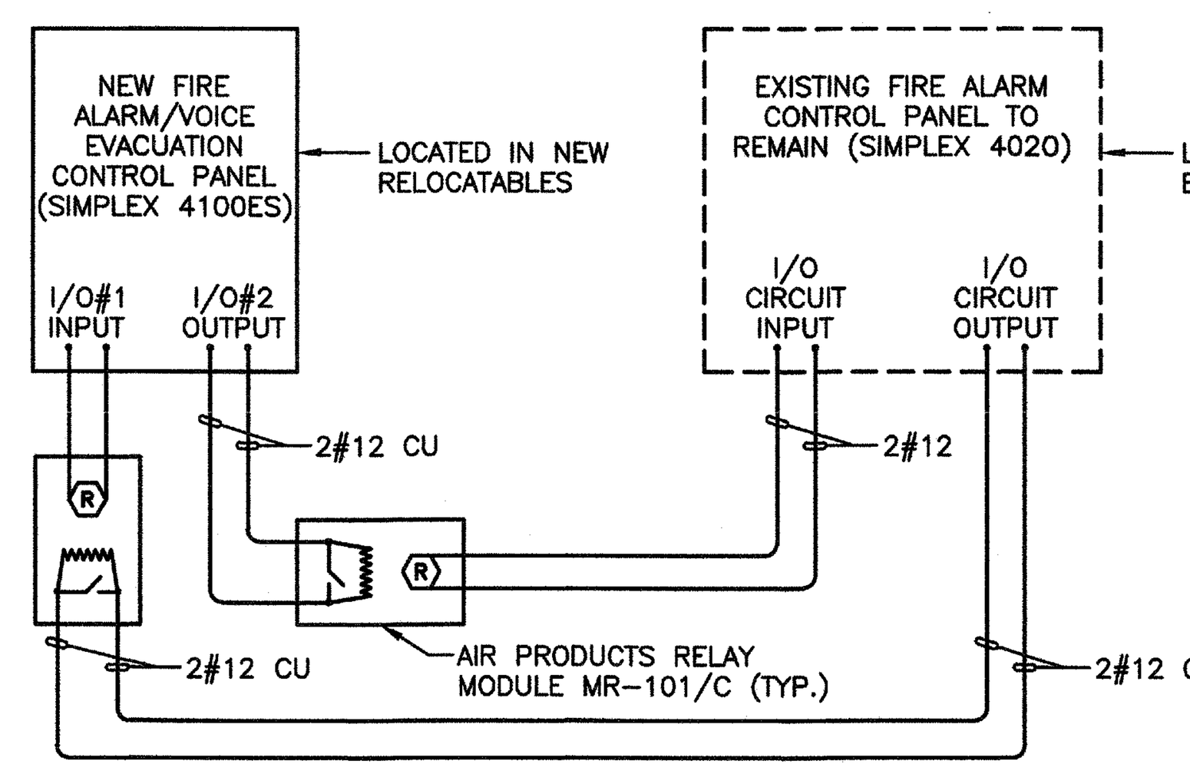
STAND-BY = 8.7240 ALARM = 0.6073 AMP HRS

TOTAL = STAND-BY + ALARM
= 8.72 + 0.61
= 9.33 Ah (AMP HRS)
MULTIPLY BY DERATING FACTOR OF 1.25 = 11.66 Ah (AMP HRS)

MINIMUM BATTERY SIZE = 11.66 AMPERE HOURS
PROVIDE MIN. (2) 12.7 Ah 12VDC BATTERIES AS REQUIRED FOR 24VDC OPERATION

FIRE ALARM SYSTEM CALCULATIONS (3)

SCALE: N.T.S.



PROVIDE PERMANENT FOLLOWING INSTRUCTION AT BOTH FIRE ALARM CONTROL PANELS
DIRECTION OF RESETTING FACP 1. RESET DEVICE(S). 2. SILENCE NEW SIMPLEX 4100ES CONTROL PANEL. 3. RESET (E) SIMPLEX 4020 CONTROL PANEL. 4. RESET NEW SIMPLEX 4100ES CONTROL PANEL.

FIRE ALARM INTERCONNECTION DETAIL (2)

SCALE: N.T.S.

COMPLETE FIRE ALARM SUBMITTAL
AUTOMATIC ADDRESSABLE FIRE ALARM SYSTEM WITH EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM

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COVINA-VALLEY UNIFIED SCHOOL DISTRICT

FIRE ALARM RISER DIAGRAM AND SYSTEM CALCULATIONS

REVISIONS:
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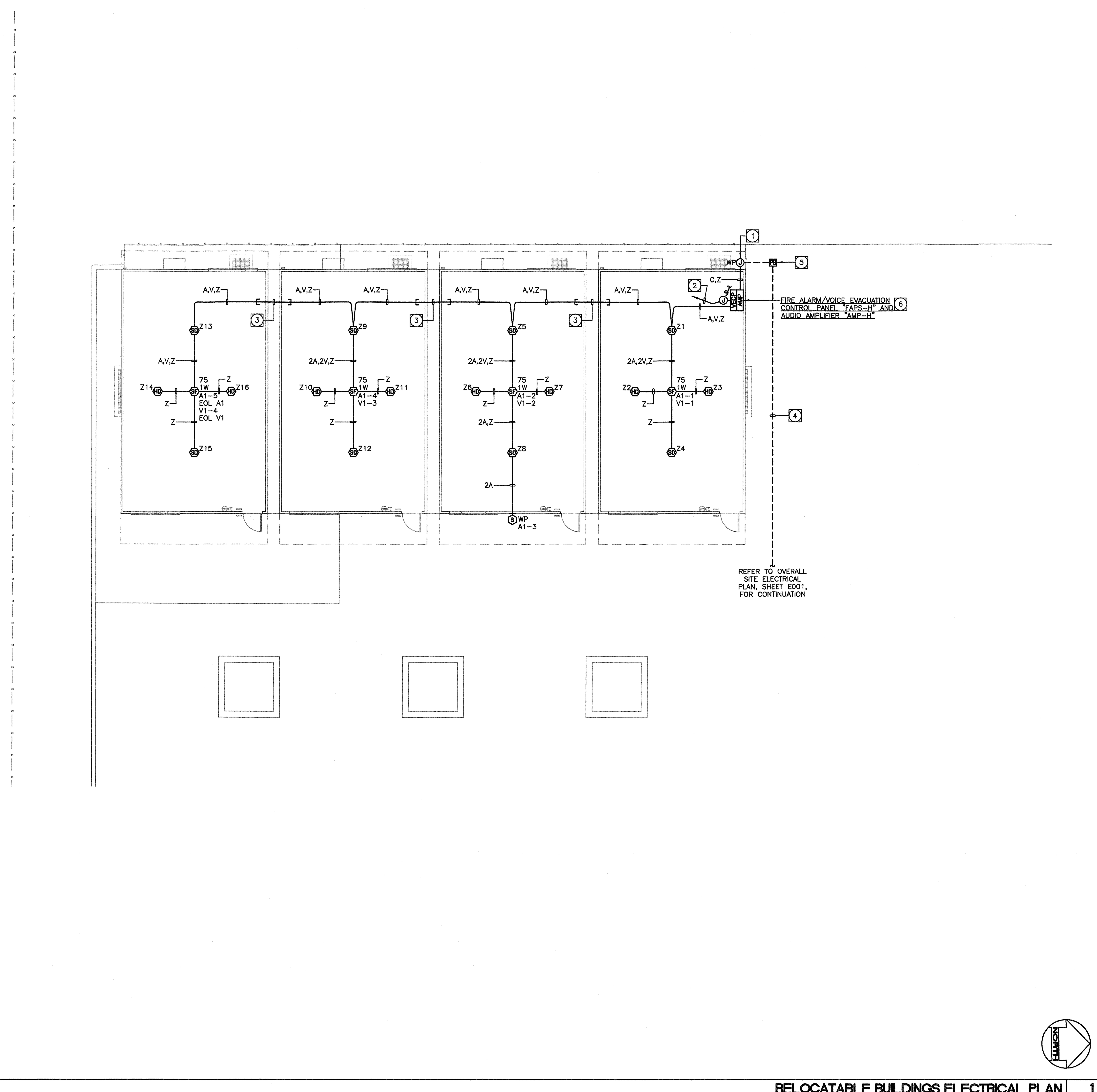
Date: 06/14/16
Job: 1633
Scale: AS NOTED
Drawn:

EFA003

SHEET – OF XXX
XREF:



RELOCATABLE BUILDINGS ELECTRICAL PLAN 1
1/8"=1'-0"

FIRE ALARM GENERAL NOTES:

1. ALL WALL-MOUNTED AUDIBLE SIGNALING APPLIANCES SHALL HAVE THEIR HEIGHTS ABOVE THE FINISHED FLOOR AT NOT LESS THAN 90" TO FINISHED FLOOR AND AT NOT LESS THEN 6" TO FINISHED CEILING, AS CEILING HEIGHT PERMITS (NFPA 72, 2013, CH. 18.4.8.1). ALL WALL MOUNTED VISUAL APPLIANCES AND COMBINATION AUDIBLE/VISUAL APPLIANCES SHALL BE MOUNTED SUCH THAN THE ENTIRE LENS IS NOT LESS THAN 80" AND NOT GREATER THAN 96" ABOVE FINISHED FLOOR (NFPA 72, 2013, CH. 18.5.5.1).
2. DO NOT DEVIATE FROM CONDUIT RUNS AS SHOWN ON FLOOR PLANS WITHOUT PRIOR APPROVAL FROM SYSTEM SUPPLIER / ENGINEER. FACTORS SUCH AS EXCESSIVE VOLTAGE DROP, ADDITIONAL PARTS, ENGINEERING, ETC. THAT ARE A RESULT OF CONDUIT RUN DEVIATIONS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
3. DETECTORS SHALL NOT BE LOCATED IN A DIRECT AIR-FLOW, NOR CLOSER THAN 3 FEET (915 mm) FROM ANY AIR SUPPLY DIFFUSER.
4. THE AUDIBLE ALARM NOTIFICATION APPLIANCES SHALL PROVIDE A SOUND PRESSURE LEVEL OF 15 dBA ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 dBA ABOVE THE MAXIMUM SOUND LEVEL HAVING DURATION OF AT LEAST 60 SECONDS, WHICH IS GREATER, IN EVERY OCCUPIED SPACE WITHIN THE BUILDING. THE MINIMUM SOUND PRESSURE LEVEL SHALL BE 60 dBA PER CFC 907.5.2.1.1.
5. THE FIRE ALARM EVACUATION SIGNAL SHALL BE THE STANDARD THREE-PULSE TEMPORAL PATTERN PER THE "EXCEPTION" OF THE 2013 CALIFORNIA BUILDING CODE 907.5.2.1.3 AND ANSI S3.41.
6. REFER TO ARCHITECTURAL EXTERIOR ELEVATIONS FOR PRECISE OUTLET LOCATIONS.
7. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL CEILING MOUNTED DEVICES.
8. IF SHIELDED WIRE IS USED, THE FOLLOWING MUST BE OBSERVED.
   A. METALLIC CONTINUITY OF THE SHIELD MUST BE MAINTAINED AND INSULATED THROUGHOUT THE ENTIRE LENGTH OF THE CABLE.
   B. THE ENTIRE LENGTH OF THE CABLE MUST HAVE A RESISTANCE GREATER THAN 1 MEGOHM TO EARTH.
9. ALL PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE PROTECTED FROM THE SPREAD OF FIRE WITH AN APPROVED FIRE STOP SYSTEM EQUAL TO OR GREATER THAN THE FIRE RATING OF THE STRUCTURE / SURFACE BEING PENETRATED.
10. A SYSTEM GROUND MUST BE PROVIDED FOR EARTH DETECTION AND LIGHTNING PROTECTION DEVICES. THIS CONNECTION SHALL BE MADE TO AN APPROVED DEDICATED EARTH CONNECTION PER CEC, ARTICLE 250.
11. WIRING IN DUCTS, PLENUMS AND OTHER AIR HANDLING SPACES MUST BE INSTALLED IN ACCORDANCE WITH CEC 2013.
12. UNDERGROUND WIRING MUST BE FREE OF ALL WATER.
13. ALL FIRE ALARM SYSTEM CONDUCTORS SHALL BE RUN IN A DEDICATED FIRE ALARM CONDUIT SYSTEM.
14. WHERE A DETECTOR IS INDICATED TO BE INSTALLED ABOVE THE CEILING AND NO ACCESS TO THE CEILING SPACE EXISTS, THE ELECTRICAL CONTRACTOR SHALL FURNISH ACCESS PANELS. THE DETECTOR SHALL BE EASILY ACCESSIBLE AND THE LOCATION OF THE DETECTOR SHALL BE CLEARLY MARKED.
15. COORDINATE ALL FIRE ALARM DEVICES, ESPECIALLY REMOTE LED'S FOR DUCT SMOKE DETECTORS, WITH ARCHITECT PRIOR TO ROUGH-IN.
16. WIRING OTHER THAN THAT CONNECTED TO ELEVATOR CABS MUST NOT BE RUN IN ELEVATOR SHAFTS (REF. CEC, ARTICLE 620).
17. FIRE ALARM SYSTEM UTILIZES A COMPLETE COVERAGE, FULLY AUTOMATIC SYSTEM. PROVIDE RELAY MODULE(S) AT FATC/FACP LOCATIONS FOR CONTROL OF HVAC SHUT DOWN, SMOKE/FIRE DAMPER CLOSURE AND DOOR HOLD RELEASES.
18. WHERE NEW DEVICES (AND ASSOCIATED CONDUIT) CANNOT PHYSICALLY BE MOUNTED CONCEALED IN WALLS, RUN IN PANDUIT SURFACE RACEWAY/WIREWAY (AND DEVICES SHALL BE MOUNTED ON SURFACE OUTLET BOXES). REFER TO SPECIFICATIONS. PROVIDE SIZE OF RACEWAY TO ACCOMMODATE THE REQUIRED CONDUCTORS. WHERE CONDUIT IS INDICATED, PROVIDE SURFACE RACEWAY WITH AN EQUAL CROSS SECTION TO THE DIAMETER OF THE CONDUIT INDICATED.
19. DETECTOR SENSITIVITY SHALL BE TESTED USING MANUFACTURER'S CALIBRATED SENSITIVITY INSTRUMENT OR OTHER CALIBRATED TESTING METHOD. (CFC 907.8.4.1)
20. THE EXISTING CAMPUS FIRE ALARM SYSTEM SHALL BE MAINTAINED AND OPERATIONAL AT ALL TIMES DURING ALTERATIONS AND CONSTRUCTION. WHEN PORTIONS OF THE SYSTEM REQUIRE ALTERATIONS, THE REMAINDER OF THE SYSTEM SHALL BE KEPT IN SERVICE. IF NECESSARY TO SHUT DOWN ENTIRE FIRE ALARM SYSTEM, CONTRACTOR SHALL PROVIDE FIREWATCH FOR ALL OCCUPIED AREAS OF WORK UNTIL THE FIRE ALARM SYSTEM IS RETURNED TO OPERATIONAL SERVICE. FIREWATCH AND SYSTEM/EQUIPMENT IDENTIFICATION SHALL BE PER THE 2010 CFC, CHAPTER 14. LOCAL FIRE AUTHORITY AND OWNER SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF ANY SHUT DOWN.

KEYNOTES GENERALLY CORRESPOND TO SPECIFICATION SECTIONS BY MEANS OF THE FIVE-DIGIT NUMBER IDENTIFYING THE SPEFICIATION SECTION AS A MATTER OF REFERENCE AND CONVENIENCE. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL WORK INDICATED HEREIN PERSUANT TO THE GENERAL CONDITIONS AND TECHNICAL SPECIFICATIONS OF THE CONTRACT, REGARDLESS OF WHETHER OR NOT THE KEYNOTE(S) SPECIFICALLY CORRESPOND TO ANY SPECIFICATION DIVISION PROVIDED IN THE TECHNICAL SPECIFICATIONS.

PLAN NOTES:

1. PROVIDE ONE 24" X 24" X 6"D. (DATA) AND THREE 12" X 12" X 6"D. WP TERMINAL BOXES WITH SCREW COVER TYPE "3R" FOR SIGNAL SYSTEMS (FIRE ALARM, INTRUSION DETECTION, ENERGY MANAGEMENT SYSTEM (EMS)/SPARE). PROVIDE 2"C. (DATA) & (3) 2"C. TO RELOCATABLE BUILDING ACCESSIBLE CEILING SPACE.
2. PROVIDE 3/4"C. WITH 3#12, 1#12 GRD. TO (2) 120V DEDICATED CIRCUITS WITHIN BUILDING PANEL FOR POWER. PROVIDE TWO (2) 20AMP, 1-POLE CIRCUIT BREAKERS IN SPACE OF BUILDING PANEL WITH APPROVED LOCK-ON DEVICES, RED INDICATORS AND IDENTIFIED AS "FIRE ALARM CONTROL CIRCUIT" (NFPA 72, 10.6). CONNECT AS REQUIRED. PROVIDE ALL REQUIRED MOUNTING HARDWARE. MATCH A.I.C. RATING OF DEVICES USED.
3. PROVIDE THE FOLLOWING CONDUIT SLEEVES WITH CONDUCTORS AS SPECIFIED. SEE DETAIL 4, SHEET E301.
   2"C. DATA/TELEPHONE
   2"C. CLOCK/PUBLIC ADDRESS
   1"C. FIRE ALARM
   1"C.O. SPARE
4. PROVIDE THE FOLLOWING SIGNAL SYSTEM CONDUITS WITH CONDUCTORS AS SPECIFIED:
   3"C. DATA/TELEPHONE
   2"C. CLOCK/PUBLIC ADDRESS
   2"C. FIRE ALARM
   1"C.O. EMS
   1"C.O. SPARE
5. PROVIDE ONE (1) 2'x3' AND ONE (1) 11"x17" CONCRETE PULLBOXES WITH BOLT-DOWN TRAFFIC RATED COVERS, ENGRAVED "SIGNAL" AND "FIRE ALARM", RESPECTIVELY. DEPTHS AS REQUIRED.
6. INTERCONNECT NEW FIRE ALARM CONTROL PANEL AND EXISTING FIRE ALARM CONTROL PANEL ON CAMPUS FOR SYSTEM INTERFACE. PROVIDE ALL NECESSARY RELAYS, MODULES, CABINETS, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. REFER TO FIRE ALARM INTERCONNECTION DETAIL 2 ON SHEET EFA003.

COMPLETE FIRE ALARM SUBMITTAL
AUTOMATIC ADDRESSABLE FIRE ALARM SYSTEM WITH EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM

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409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

RELOTABLE BUILDINGS
FIRE ALARM PLAN

REVISIONS:
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Date:	06/14/16
Job:	1633
Scale:	AS NOTED
Drawn:	

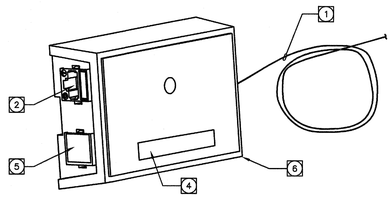
EFA101

SHEET - OF XXX
XREF:

WHERE THE FOLLOWING SYMBOLS ARE INDICATED ON THE ELECTRICAL DRAWINGS ARCHITECTURAL DRAWINGS AND/OR STRUCTURED CABLING SYSTEM DRAWINGS:

▽

THE FOLLOWING SHALL BE PROVIDED, AS DEPICTED IN THE FOLLOWING DIAGRAMMATIC CONNECTIVITY DETAIL.



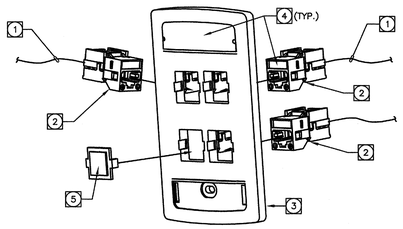
ABOVE-CEILING SINGLE DATA DEVICE (3)

SCALE: N.T.S.

WHERE THE FOLLOWING SYMBOLS ARE INDICATED ON THE ELECTRICAL DRAWINGS ARCHITECTURAL DRAWINGS AND/OR STRUCTURED CABLING SYSTEM DRAWINGS:

▽

THE FOLLOWING SHALL BE PROVIDED, AS DEPICTED IN THE FOLLOWING DIAGRAMMATIC CONNECTIVITY DETAIL.



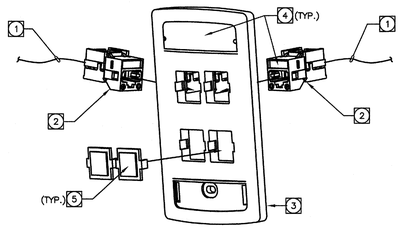
DATA/VOICE DEVICE (2)

SCALE: N.T.S.

WHERE THE FOLLOWING SYMBOLS ARE INDICATED ON THE ELECTRICAL DRAWINGS ARCHITECTURAL DRAWINGS AND/OR STRUCTURED CABLING SYSTEM DRAWINGS:

(2)
▽

THE FOLLOWING SHALL BE PROVIDED, AS DEPICTED IN THE FOLLOWING DIAGRAMMATIC CONNECTIVITY DETAIL.



DUAL DATA DEVICE (1)

SCALE: N.T.S.

IDF WALL MOUNTED CABINET NOTES:

A. E.C. TO MOUNT 20 AMP DEDICATED CIRCUIT QUAD OUTLET ON THE INSIDE BACK WALL OF CABINET. COORDINATE LOCATION WITH SCS CONTRACTOR.

B. SCS CONTRACTOR TO INSTALL BUILDING ENTRANCE PROTECTOR AND FUSED PROTECTOR MODULES PER SPECIFICATION FOR TERMINATION OF CATEGORY 3 TELECOMMUNICATIONS OSP CABLE. MOUNT INSIDE CABINET AND BOND TO RACK MOUNTED BUS BAR WITH #6AWG GREEN CONDUCTOR AND 2-HOLE COMPRESSION LUG.

C. E.C. PROVIDED 1/2"C. WITH #6-AWG GREEN GROUND CONDUCTOR EXOTHERMICALLY CONNECTED TO NEAREST BUILDING STEEL. CONNECT TO RACK MOUNTED BUS BAR WITH 2-HOLE COMPRESSION LUG.

D. SCS CONTRACTOR TO INSTALL 19" RACK MOUNTED COPPER BUSBAR (GREAT LAKES #CBB-19 OR EQUAL). MOUNT TO REAR RAILS AT TOP.

E. SCS CONTRACTOR TO INSTALL BLACK 36" WALL MOUNTED CABINET (CHATSWORTH #11901-736 OR EQUAL). SCS CONTRACTOR TO MOUNT CABINET TO E.C. INSTALLED PLYWOOD. PROVIDE EXTERIOR MOUNTED FAN KIT AND FILTER KIT (CHATSWORTH #12804-701 AND 12805-201).

F. SCS CONTRACTOR TO PATCH IN AND CROSS-CONNECT ALL EQUIPMENT PER OWNERS INSTRUCTIONS.

G. FIBER OPTIC ENCLOSURE PER SPECIFICATION. SCS CONTRACTOR TO TERMINATE OSP BACKBONE FIBER AS SPECIFIED. SEE SCS ONE-LINE DIAGRAMS FOR MORE INFORMATION.

H. PATCH PANEL AS REQUIRED PER SPECIFICATION. SCS CONTRACTOR SHALL PROVIDE QUANTITY OF PATCH PANELS AND JACKS NECESSARY TO TERMINATE ALL DATA CABLES. PROVIDE ONE (1) ADDITIONAL SPARE PATCH PANEL.

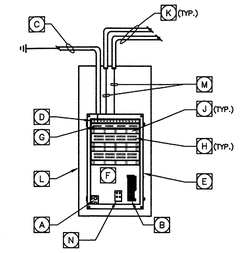
J. 1U HORIZONTAL WIRE MANAGEMENT. SCS CONTRACTOR TO INSTALL ONE (1) WIRE MANAGER ABOVE AND BELOW EACH PATCH PANEL AND ONE (1) BELOW EACH OWNER SUPPLIED DATA SWITCH.

K. CONDUITS FOR HORIZONTAL, RISER AND BACKBONE CABLES. QUANTITY AS REQUIRED. TERMINATE CONDUITS ON BACKBOARD.

L. PAINTED A/C GRADE BACKBOARD BY E.C. SEE ELECTRICAL PLANS FOR MORE INFORMATION.

M. SECURE AND NEATLY DRESS ALL HORIZONTAL, RISER AND BACKBONE CABLES TO BACKBOARD UTILIZING VELCOR AND D-RINGS. TYE-WRAPS ARE PROHIBITED. CABLES SHALL ENTER CABINET VIA TOP KNOCKOUTS WITH RUBBER GROMMETS.

N. MOUNT CATV DISTRIBUTION TAPS AND SPLITTERS INSIDE CABINET.



FLOOR

36" IDF WALL MOUNTED CABINET (4)

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

FACEPLATE NOTES:

1. PROVIDE (1) CAT-6, 4-PAIR UTP CABLE(S) TO RESPECTIVE MDF/IDF CABINET/RACK. TERMINATE STATION END(S) IN STATION CONNECTOR(S) PER SPECIFICATIONS. TERMINATE CABINET END(S) ON CAT-6 PATCH PANEL(S) PER SPECIFICATIONS. COLOR OF CABLE(S) PER DISTRICT STANDARDS.
2. PROVIDE CAT-6 4-PAIR STATION CONNECTOR PER SPECIFICATIONS. COLOR PER DISTRICT STANDARDS.
3. PROVIDE FACEPLATE PER SPECIFICATIONS. FACEPLATE MATERIAL AND FINISH SHALL MATCH ADJACENT/NEARBY POWER FACEPLATES, U.O.N. IN SPECIFICATIONS. PROVIDE FLOOR BOX, POWER POLE AND MODULAR FURNITURE DEVICE BRACKETS/CUSTOM ADAPTERS AS REQUIRED FOR A COMPLETE INSTALLATION. INCLUDE ALL COSTS IN BASE BID.
4. PROVIDE FACEPLATE LABELING PER SPECIFICATIONS. SEE SPECIFICATIONS FOR ALL OTHER LABELING REQUIREMENTS.
5. BLANK INSERT. ALL UNUSED OPENINGS SHALL BE COVERED WITH A BLANK INSERT MATCHING THE COLOR OF THE FACEPLATE.
6. DUAL PORT, SURFACE MOUNTED BOX (ANP #1116698-1 OR EQUAL). PROVIDE PLENUM-RATED BOX IN PLENUM-RATED SPACES.

GENERAL NOTES:

1. INSTALLATION OF EQUIPMENT AND WIRING MUST MEET ALL APPLICABLE CODES AND STANDARDS INCLUDING BUT NOT LIMITED TO CEC, NEC, NFPA, ANSI/EIA/TIA AND ISO 9001.
2. EQUIPMENT AND MATERIALS MUST COMPLY WITH UL LISTING AND EACH ITEM STAMPED OR LABELED AS SUCH.
3. COMPLIANCE WITH ANSI/TIA/EIA 569-B. COMMERCIAL BUILDING STANDARDS FOR TELECOMMUNICATIONS PATHWAYS AND SPACES.
4. COMPLIANCE WITH ANSI/TIA/EIA 568-B. COMMERCIAL BUILDING TELECOMMUNICATIONS CABLING STANDARDS.
5. DRAWINGS AND LAYOUTS ARE PRIMARILY DIAGRAMMATIC. CONTRACTOR IS RESPONSIBLE FOR FINAL FOOTAGES AND EXACT LOCATIONS.
6. CONTRACTOR SHALL NOTE IN WRITING, ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATIONS. AS SUCH DISCREPANCIES ARISE, THE MORE STRINGENT SHALL TAKE PRECEDENCE.
7. COMMUNICATIONS CABLES (ANY TYPE) ROUTED THRU FURNITURE SYSTEMS SHALLBE ROUTED VIA DEDICATED COMMUNICATIONS PATHWAY, WHEN AVAILABLE. WHEN DEDICATED COMMUNICATIONS PATHWAY IS UNAVAILABLE, THE ABOVE-MENTIONED CABLES SHALL BE ROUTED IN A BARRIERED SYSTEMS FURNITURE RACEWAY SEPARATE FROM POWER CONDUCTORS PER EIA/TIA STANDARDS AND NEC REQUIREMENTS.
8. CONTRACTOR SHALL VERIFY SYSTEMS FURNITURE TYPE AND CABLE ROUTING/FACEPLATE LOCATION WITHIN SYSTEMS FURNITURE PRIOR TO BID. INCLUDE ALL COSTS IN BASE BID.
9. REFERENCE ALL ELECTRICAL DRAWINGS.
10. REFERENCE ALL STRUCTURED CABLING SYSTEM DRAWINGS.
11. REFERENCE ALL ARCHITECTURAL DRAWINGS.
12. REFERENCE ALL ELECTRICAL AND STRUCTURED CABLING SYSTEM SPECIFICATIONS.
13. CONTRACTOR SHALL UTILIZE CONDUIT(S)/SLEEVE(S) SEQUENTIALLY, MAXIMIZING THE CABLE FILL IN EACH BEFORE UTILIZING THE NEXT CONDUIT(S)/SLEEVE(S). MAXIMUM ALLOWABLE CONDUIT FILL SHALL BE BASED ON NEC TABLES FOR CONDUIT FILL.
14. IT IS THE INTENT OF THESE DRAWINGS WHICH ARE PRESENTED IN A DESIGN-BUILD FORMAT, FOR THE CONTRACTOR TO DESIGN, PROVIDE AND INSTALL A COMPLETE, FULLY OPERATIONAL AND TESTED SYSTEMS.
15. CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO BID. FAILURE TO DO SO WILL NOT RESULT IN ADDITIONAL PAYMENTS TO CONTRACTOR. CONTRACTOR IS RESPONSIBLE FOR FINAL FOOTAGES AND EXACT LOCATIONS.
16. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL PATHWAY ROUTES, DISTANCES AND CONDITIONS PRIOR TO ORDERING AND INSTALLING MATERIALS. CONTRACTOR IS REQUIRED TO MANDREL, SWAB AND MULE TAPE MEASURE EACH CONDUIT PATHWAY PRIOR TO USE.
17. INSTALLATION, RELOCATION AND TESTING OF ALL EQUIPMENT SHALL BE INCLUDED IN BID. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL NECESSARY LABOR AND MATERIALS FOR COMPLETE AND FULLY OPERATIONAL SYSTEMS AT NO ADDITIONAL COST TO THE DISTRICT.

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FACEPLATE AND IDF DATA RACK DETAILS

REVISIONS:

Date: 06/14/16
Job: 1633
Scale: AS NOTED
Drawn:

SCS001

SHEET – OF XXX
XREF:

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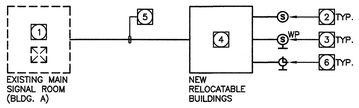
Bill Voller - Electrical
tklsc Job #: 2016-0283

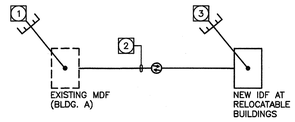


BLOCK DIAGRAM SPECIFIC NOTES:

1. EXISTING MAIN CLOCK/PUBLIC ADDRESS RACK (SIEMENS BUILDING COMMUNICATIONS).
2. INTERIOR PUBLIC ADDRESS SYSTEM SPEAKER. QUANTITY AND LOCATIONS PER PLAN DRAWINGS. PROVIDE 3/4"C. TO ACCESSIBLE CEILING SPACE WITH CONDUCTORS. MATCH EXISTING DEVICES AND CABLING ON CAMPUS.
3. WEATHER PROOF FLUSH MOUNTED BACKBOX FOR PUBLIC ADDRESS LONG THROW SPEAKER. PROVIDE 3/4"C. TO ACCESSIBLE CEILING SPACE WITH CONDUCTORS. MATCH EXISTING DEVICES AND CABLING ON CAMPUS.
4. RELOCATABLE BUILDING TERMINAL CABINET.
5. REFER TO SITE ELECTRICAL PLAN FOR CONDUIT SIZES BETWEEN HEADEND EQUIPMENT.
5. WALL MOUNTED CLOCK. QUANTITY AND LOCATIONS PER PLAN DRAWINGS. PROVIDE 3/4"C. TO ACCESSIBLE CEILING SPACE WITH CONDUCTORS. MATCH EXISTING DEVICES AND CABLING ON CAMPUS.

PUBLIC ADDRESS/CLOCK SYSTEMS BLOCK DIAGRAM (3)

SCALE: N.T.S.



BLOCK DIAGRAM DETAIL NOTES:

1. RACK-MOUNTED FIBER ENCLOSURE IN MDF CABINET. TERMINATE ALL FIBER OPTIC BACKBONE CABLES IN RACK-MOUNTED FIBER ENCLOSURE(S). PROVIDE ALL FIBER ENCLOSURES, FAN OUT KITS, SPLICE TRAYS, PANELS, ADAPTERS, CONNECTORS, FIBER PATCH CORDS, LABELING, ETC. AS REQUIRED TO TERMINATE ALL STRANDS FOR A COMPLETE SYSTEM. SEE DISTRICT SPECIFICATIONS FOR MDF CABINET AND FIBER PATCH CORD REQUIREMENTS. COORDINATE FIBER ENCLOSURE LOCATIONS WITH DISTRICT PRIOR TO CABLE ROUGH-IN.
2. 6-STRAND SINGLE MODE, 6-STRAND MULTIMODE INDOOR/OUTDOOR RATED FIBER OPTIC CABLE, UNLESS OTHERWISE NOTED IN DISTRICT SPECIFICATIONS. PROVIDE PLENUM RATED CABLING IN PLENUM RATED SPACES.
3. RACK-MOUNTED FIBER CONNECTOR HOUSING IN IDF CABINET. PROVIDE ALL FIBER ENCLOSURES, FAN OUT KITS, SPLICE TRAYS, PANELS, ADAPTERS, CONNECTORS, FIBER PATCH CORDS, LABELING, ETC. AS REQUIRED TO TERMINATE ALL STRANDS FOR A COMPLETE SYSTEM. SEE DISTRICT SPECIFICATIONS FOR IDF CABINET AND FIBER PATCH CORD REQUIREMENTS.

FIBER OPTIC BACKBONE BLOCK DIAGRAM (1)

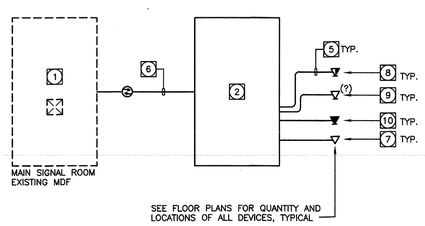
SCALE: NTS

FIBER OPTIC NOTES:

1. CONTRACTOR TO PROVIDE AND INSTALL ALL COMPONENTS, MATERIAL, LABOR, EQUIPMENT, SUPPLIES, TESTING AND ACCESSORIES REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
2. PROVIDE ALL NEW FIBER OPTIC CABLING BETWEEN MDF AND IDF(S).
3. CONTRACTOR TO PROVIDE ALL FIBER PATCH PANELS, BREAKOUT KITS, PIGTAILS, PANELS, CONNECTORS, COUPLERS, ADAPTERS, SPLICE TRAYS, FIBER PATCH CORDS, GROUNDING CONNECTIONS, LABELING, AND ALL OTHER COMPONENTS NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.
4. ALL FIBER SHALL BE LASER-OPTIMIZED, 50-MICRON MULTIMODE INDOOR OUTDOOR RATED TIGHT BUFFERED CABLE, IN STRAND COUNTS AS INDICATED.
5. ALL FIBER SHALL BE INSTALLED INSIDE 1" MINIMUM DIAMETER INNERDUCT WHEN NOT INSTALLED IN METALLIC OR PVC CONDUIT. ONLY USE PLENUM RATED INNERDUCT IN PLENUM RATED SPACES.
6. ALL ACTIVE ELECTRONICS (DATA SWITCHES, GBIC MODULES, HUBS, ROUTERS, ETC) SHALL BE PROVIDED AND INSTALLED BY OTHERS.
7. CONNECTOR TYPE(S) PER DISTRICT STANDARDS. VERIFY ALL CONNECTOR TYPES WITH DISTRICT PRIOR TO ORDERING.
8. PROVIDE ALL FIBER OPTIC PATCH CORDS IN QUANTITIES AND LENGTHS PER DISTRICT SPECIFICATIONS. CONTRACTOR RESPONSIBLE TO NEATLY INSTALL ALL FIBER PATCH CORDS TO THE OWNER'S SATISFACTION.
9. FIBER OPTIC CABLES SHALL NOT BE INSTALLED IN ELECTRICAL CONDUIT BODIES OR CONDULETS NOT SPECIFICALLY MANUFACTURED FOR FIBER OPTIC CABLES AND PRE-APPROVED BY ARCHITECT.
10. TEST AND CERTIFY ALL FIBER LINKS ACCORDING TO DISTRICT SPECIFICATIONS. PROVIDE SOFT AND HARD COPIES OF ALL TEST RESULTS FOR DISTRICT REVIEW. PROVIDE MANUFACTURERS EXTENDED WARRANTY TO OWNER.
11. PROVIDE TWENTY (20) FEET OF NEATLY COILED FIBER BACKBONE SLACK LOOPS AND SECURED AT EACH MDF AND IDF LOCATION. CONFIRM MOUNTING LOCATIONS WITH DISTRICT'S ENGINEER PRIOR TO INSTALLATION.
12. CONTRACTOR SHALL EXERCISE EXTREME CAUTION TO NOT DISRUPT EXISTING SYSTEMS DURING INSTALLATION.
13. CONTRACTOR SHALL COORDINATE SYSTEM CUT OVER AND TESTING WITH DISTRICT'S PROJECT MANAGER AND WITH DISTRICT'S SCHEDULE.
14. ATTACH METALLIC CABLE SHIELD(S) TO FIBER ENCLOSURE GROUND LUG ACCORDING TO MANUFACTURERS INSTRUCTIONS. INSTALL #6 AWG GREEN GROUND CONDUCTOR FROM ENCLOSURE GROUND LUG TO NEAREST TELECOM GROUND BUSBAR, EFFECTIVELY GROUNDED BUILDING STEEL, OR NEAREST ELECTRICAL PANEL GROUND POINT. INSIDE THE FIBER ENCLOSURE, INSTALL GROUND TAG ATTACHED TO GROUND CONDUCTOR INDICATING LOCATION OF THE GROUND POINT.
15. PROVIDE WEATHERPROOF PLASTIC FIBER OPTIC WARNING LABELS ON EACH CABLE IDENTIFYING LOCATION OF BOTH ENDS, STRAND COUNT AND FIBER TYPE, (E.G.; BLDG-B IDF-1 TO BLDG-A MDF, 12MM), AT EVERY VAULT, PULLBOX, HANDHOLE, AND AT TEN (10) FOOT INTERVALS WHERE CABLE IS VISIBLE AND ACCESSIBLE. HAND WRITTEN LABELS ARE PROHIBITED.
16. ALL FIBER OPTIC CABLES SHALL BE CONTINUOUS. SPLICING OF FIBER OPTIC CABLE IS PROHIBITED, UNLESS OTHERWISE NOTED IN DISTRICT STANDARDS AND SPECIFICATIONS.
17. DRAWINGS AND LAYOUTS ARE PRIMARILY DIAGRAMMATIC, CONTRACTOR IS RESPONSIBLE FOR FINAL FOOTAGES AND EXACT LOCATIONS.
18. REFERENCE DISTRICT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

GENERAL NOTES:

1. IT IS THE INTENT OF THESE DRAWINGS WHICH ARE PRESENTED IN A DESIGN-BUILD FORMAT, FOR THE CONTRACTOR TO DESIGN, PROVIDE AND INSTALL A COMPLETE, FULLY OPERATIONAL AND TESTED SYSTEMS.
2. INSTALLATION OF EQUIPMENT AND WIRING MUST MEET ALL APPLICABLE CODES AND STANDARDS INCLUDING BUT NOT LIMITED TO CEC, NEC, NFPA, ANSI/EIA/TIA AND ISO 9001.
3. EQUIPMENT AND MATERIALS MUST COMPLY WITH UL LISTING AND EACH ITEM STAMPED OR LABELED AS SUCH.
4. COMPLIANCE WITH ANSI/TIA/EIA 569-B. COMMERCIAL BUILDING STANDARDS FOR TELECOMMUNICATIONS PATHWAYS AND SPACES.
5. COMPLIANCE WITH ANSI/TIA/EIA 568-B. COMMERCIAL BUILDING TELECOMMUNICATIONS CABLING STANDARDS.
6. DRAWINGS AND LAYOUTS ARE PRIMARILY DIAGRAMMATIC, CONTRACTOR IS RESPONSIBLE FOR FINAL FOOTAGES AND EXACT LOCATIONS.
7. CONTRACTOR SHALL NOTE IN WRITING, ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATIONS. AS SUCH DISCREPANCIES ARISE, THE MORE STRINGENT SHALL TAKE PRECEDENCE.
8. COMMUNICATIONS CABLES (ANY TYPE) ROUTED THRU FURNITURE SYSTEMS SHALLBE ROUTED VIA DEDICATED COMMUNICATIONS PATHWAY, WHEN AVAILABLE. WHEN DEDICATED COMMUNICATIONS PATHWAY IS UNAVAILABLE, THE ABOVE-MENTIONED CABLES SHALL BE ROUTED IN A BARRIERED SYSTEMS FURNITURE RACEWAY SEPARATE FROM POWER CONDUCTORS PER EIA/TIA STANDARDS AND NEC REQUIREMENTS.
9. CONTRACTOR SHALL VERIFY SYSTEMS FURNITURE TYPE AND CABLE ROUTING/FACEPLATE LOCATION WITHIN SYSTEMS FURNITURE PRIOR TO BID. INCLUDE ALL COSTS IN BASE BID.
10. REFERENCE ALL ELECTRICAL DRAWINGS.
11. REFERENCE ALL STRUCTURED CABLING SYSTEM DRAWINGS.
12. REFERENCE ALL ARCHITECTURAL DRAWINGS.
13. REFERENCE ALL ELECTRICAL AND STRUCTURED CABLING SYSTEM SPECIFICATIONS.
14. CONTRACTOR SHALL UTILIZE CONDUIT(S)/SLEEVE(S) SEQUENTIALLY, MAXIMIZING THE CABLE FILL IN EACH BEFORE UTILIZING THE NEXT CONDUIT(S)/SLEEVE(S). MAXIMUM ALLOWABLE CONDUIT FILL SHALL BE BASED ON NEC TABLES FOR CONDUIT FILL.
15. CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO BID. FAILURE TO DO SO WILL NOT RESULT IN ADDITIONAL PAYMENTS TO CONTRACTOR. CONTRACTOR IS RESPONSIBLE FOR FINAL FOOTAGES AND EXACT LOCATIONS.
16. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL PATHWAY ROUTES, DISTANCES AND CONDITIONS PRIOR TO ORDERING AND INSTALLING MATERIALS. CONTRACTOR IS REQUIRED TO MANDREL, SWAB AND MULE TAPE MEASURE EACH CONDUIT PATHWAY PRIOR TO USE.
17. INSTALLATION, RELOCATION AND TESTING OF ALL EQUIPMENT SHALL BE INCLUDED IN BID. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL NECESSARY LABOR AND MATERIALS FOR COMPLETE AND FULLY OPERATIONAL SYSTEMS AT NO ADDITIONAL COST TO THE DISTRICT.
18. DO NOT ROUTE CABLES ON CANOPY SECTIONS.



CATEGORY-6 CABLING BLOCK DIAGRAM (2)

SCALE: NTS

BLOCK DIAGRAM DETAIL NOTES:

1. EXISTING MAIN DATA FRAME, MDF. MODIFY EXISTING EQUIPMENT AS REQUIRED TO SERVE NEW CONSTRUCTION.
2. IDF CABINET COMPLETE WITH ALL PATCH PANELS, HORIZONTAL WIRE MANAGERS, VERTICAL WIRE MANAGERS, FAN AND FILTER KITS, CAT-6 PATCH CORDS, GROUNDING, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. SEE E-SHEETS FOR EXACT LOCATIONS. SEE DISTRICT SPECIFICATIONS FOR MORE INFORMATION. TERMINATE ALL CAT-6 CABLES IN CABINET-MOUNTED CAT-6 PATCH PANELS. NETWORK ELECTRONICS ARE PROVIDED / INSTALLED BY OTHERS.
3. ROUTE AND TERMINATE ALL CAT-6 DATA AND TELEPHONE CABLES IN IDF CABINET. LABEL ALL CABLES AND PATCH PANEL.
4. ROUTE AND TERMINATE ALL CAT-6 DATA AND TELEPHONE CABLES IN BUILDING-A MDF CABINET. PROVIDE DEDICATED PATCH PANEL(S) LABELED FOR ALL BUILDING-D CABLES. LABEL ALL CABLES AND PATCH PANEL.
5. CATEGORY-6 UTP 4-PAIR DATA CABLE(S) PER SPECIFICATIONS. CABLE QUANTITIES AT EACH DEVICE PER PLAN DRAWINGS AND FACEPLATE DETAILS. TERMINATE IN FACEPLATE(S) AT DEVICE LOCATION AND ON CATEGORY-6 RACK-MOUNTED PATCH PANEL(S) IN IDF/MDF CABINETS UNLES OTHERWISE NOTED. SEE PLAN DRAWINGS FOR LOCATIONS AND QUANTITIES.
6. BACKBONE CABLE FROM MDF TO IDF, TYPICAL. SEE FIBER OPTIC CABLE BACKBONE BLOCK DIAGRAM DETAIL 1 THIS SHEET FOR MORE INFORMATION.
7. SINGLE CAT-6 DATA OUTLET TERMINATED IN SURFACE MOUNT BOX FOR WIRELESS ACCESS POINT. LOCATE ABOVE ACCESSIBLE CEILING SPACE WITH 15 FEET OF SLACK NEATLY COILED AND SECURED ABOVE CEILING. QUANTITY AND LOCATIONS PER PLAN DRAWINGS.
8. DUAL CAT-6 DATA OUTLET WALL MOUNTED. QUANTITY AND LOCATIONS PER PLAN DRAWINGS.
9. CAT-6 DATA OUTLET WALL MOUNTED. NUMBER IN PARENTHESES (?) INDICATES REQUIRED QUANTITY OF CABLES AND OUTLETS. SEE FACEPLATE DETAILS FOR MORE INFORMATION. QUANTITY AND LOCATIONS PER PLAN DRAWINGS.
10. SINGLE CAT-6 TELEPHONE OUTLET WALL MOUNTED. QUANTITY AND LOCATIONS PER PLAN DRAWINGS.

HORIZONTAL CATEGORY-6 CABLING SYSTEM NOTES:

1. IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS, WHICH ARE PRESENTED IN A "DESIGN-BUILD" FORMAT, FOR THE CONTRACTOR TO DESIGN, PROVIDE AND INSTALL A COMPLETE, FULLY OPERATIONAL AND TESTED STRUCTURED CABLING SYSTEM, INCLUDING ALL FINAL DESIGN, MATERIAL, EQUIPMENT, LABOR, SUPPLIES, TESTING AND ACCESSORIES REQUIRED TO FURNISH AND INSTALL A COMPLETE 'CONNECTION TO ALL LOCATIONS AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS.
2. CONTRACTOR TO PROVIDE ALL CABLES, JACKS, FACE PLATES, PATCH PANELS, WIRE MANAGERS, CABLE SUPPORTS, PATCH CORDS, RACKS, CABINETS, LADDER TRAY, GROUNDING, AND ANY ADDITIONAL HARDWARE AND COMPONENTS FOR A COMPLETE AND OPERABLE SYSTEM.
3. CONTRACTOR TO INSTALL CAT-6 UTP 4-PAIR CABLE FROM DEVICE TO PATCH PANEL IN IDF/MDF ROOMS IN THE QUANTITIES AND LOCATIONS SHOWN ON THE PLAN DRAWINGS AND SPECIFICATIONS.
4. TERMINATE ALL CAT-6 CABLES ON CATEGORY-6 PATCH PANELS(S) IN IDF RACK/CABINET(S). PROVIDE SUFFICIENT PATCH PANELS TO TERMINATE ALL CABLES.
5. CONTRACTOR TO PROVIDE AND INSTALL ALL CONDUIT SLEEVES AND FIRESTOP SYSTEMS AS NEEDED AND AS REQUIRED BY CODE AND DISTRICT STANDARDS.
6. PROVIDE ALL NECESSARY CABLE SUPPORTS, HANGER WIRE/ROD, SLEEVES, RACKS, LADDER TRAY, D-RINGS, WIRE MANAGERS, RACK AND LADDER GROUNDING, LABELS, AND ANY ADDITIONAL EQUIPMENT AND HARDWARE FOR A COMPLETE AND OPERABLE SYSTEM.
7. CONTRACTOR TO ROUTE AND SUPPORT CABLE RUNS VIA J-HOOKS LOCATED ABOVE ACCESSIBLE CEILING SPACES. J-HOOKS SHALL NOT BE SPACED FURTHER THAN 48" FROM EACH OTHER. INSTALL CABLES IN CONDUIT WHEN TRAVELING ACROSS INACCESSIBLE CEILINGS, HARD LID CEILINGS, AND OPEN CEILINGS. PAINT CONDUIT TO MATCH SURROUNDING SURFACES WHEN INSTALLED IN OPEN CEILINGS AND EXPOSED AREAS.
8. VERIFY ALL QUANTITIES AND LOCATIONS WITH PLAN DRAWINGS AND DISTRICT SPECIFICATIONS PRIOR TO ROUGH-IN.
9. PROVIDE ALL NECESSARY CAT-6 PATCH CORDS, LABELS AND ANY ADDITIONAL HARDWARE AND EQUIPMENT FOR A COMPLETE AND OPERABLE SYSTEM.
10. TEST CABLES WITH THE APPROPRIATE PERMANENT LINK TEST UTILIZING A LEVEL III CABLE ANALYZER (FLUKE DTX OR EQUAL) PRIOR TO SYSTEM ACTIVATION, OR AS DIRECTED IN DISTRICT SPECIFICATIONS.
11. PROVIDE ALL PATCH CORDS IN THE COLORS, LENGTHS AND QUANTITIES AS INDICATED IN DISTRICT SPECIFICATIONS.
12. WIRELESS ACCESS POINT ELECTRONICS PROVIDED AND INSTALLED BY OTHERS.
13. CONTRACTOR SHALL LABEL ALL PATCH PANELS, TERMINAL BLOCKS, FACEPLATES AND BOTH ENDS OF EVERY CABLE WITH MACHINE GENERATED PLASTIC LABELS. HAND WRITTEN LABELS ARE PROHIBITED. REFER TO DISTRICT SPECIFICATIONS FOR PROPER LABELING SCHEME. PROVIDE LABEL SAMPLES FOR DISTRICT REVIEW AND APPROVAL PRIOR TO INSTALLATION.
14. CONTRACTOR SHALL COORDINATE SYSTEM CUT OVER AND TESTING WITH DISTRICT'S PROJECT MANAGER.
15. PROVIDE MANUFACTURER'S EXTENDED CABLE WARRANTY ACCORDING TO DISTRICT SPECIFICATIONS.
16. CONTRACTOR SHALL EXERCISE EXTREME CAUTION TO NOT DISRUPT OTHER SYSTEMS DURING INSTALLATION.
17. THIS PROJECT WILL BE PERFORMED IN A PHASED CONSTRUCTION FORMAT, INCLUDING DEMOLITION PORTIONS. EACH PHASE OF CONSTRUCTION WILL BE COMPLETELY INSTALLED, LABELED AND TESTED, TO THE GREATEST EXTENT PHYSICALLY POSSIBLE, BEFORE MOVING TO THE NEXT PHASE. SEE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER FOR SCHEDULES.
18. REFERENCE DISTRICT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
19. DRAWINGS AND LAYOUTS ARE PRIMARILY DIAGRAMMATIC, CONTRACTOR IS RESPONSIBLE FOR FINAL FOOTAGES AND EXACT LOCATIONS.

tk1sc COLLABORATIVE
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Bill Voller - Electrical
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CHATTOORE BANNON ARCHITECTS
Architecture • Planning • Interior Design
200 W. 4th STREET, UNIT B
CLAREMONT, CA 91711
ph: 714.665.8500
fax: 714.665.8505

LICENSED ARCHITECT — No. C-25504 — EXP. JULY 31, 2017 — STATE OF CALIFORNIA

Architect Seal

REGISTERED PROFESSIONAL ENGINEER — RAYMOND W. HART — No. E15610 — ELECTRICAL — STATE OF CALIFORNIA

Consultant Seal

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP 03 117500
AC IV FLS SS 17
Date SEP 21 2016

MESA ELEMENTARY SCHOOL - MODULAR CLASSROOMS
409 S. BARRANCA STREET, WEST COVINA, CA 91791
COVINA-VALLEY UNIFIED SCHOOL DISTRICT

LOW VOLTAGE SYSTEMS BLOCK DIAGRAMS AND NOTES

REVISIONS:
1
2
3
4
5
6
7
8

Date: 06/14/16
Job: 1633
Scale: AS NOTED
Drawn:

SCS101

SHEET – OF XXX
XREF:

STOCKPILE #13

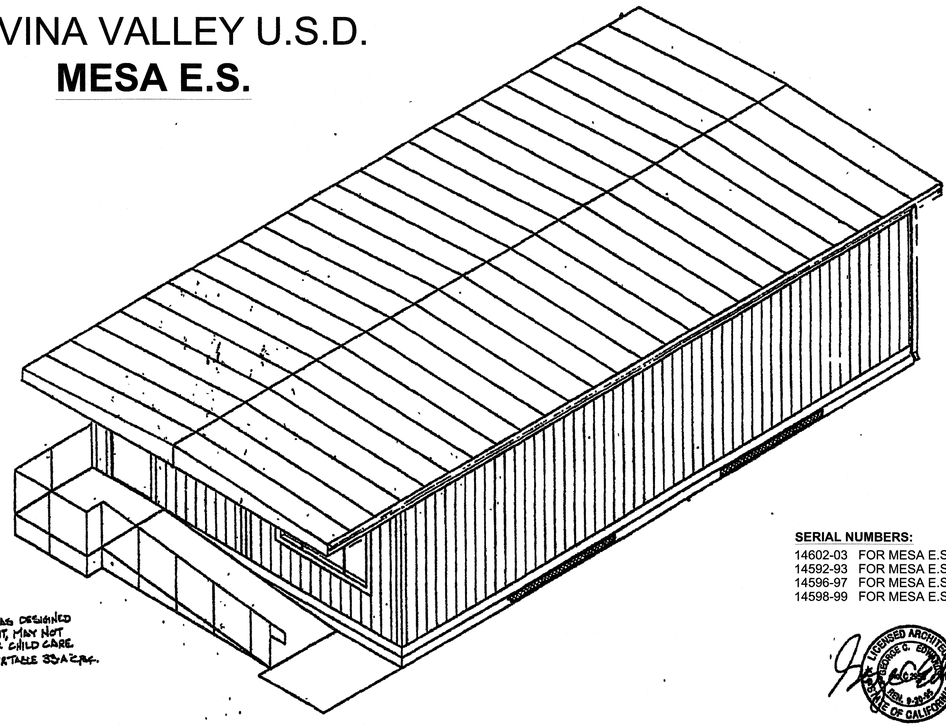
CLASS LEASING INC. 2830 BARRETT AVE., PERRIS, CA 92571

24' X 40' RELOCATABLE BUILDING

COVINA VALLEY U.S.D.

MESA E.S.

SYMBOLS		
TYPE	SYMBOL	DESCRIPTION
DETAIL	1 / -	DETAIL ON SAME SHEET AS SYMBOL
DETAIL	1 / 2	DETAIL NUMBER (1) ON SHEET NUMBER (2)
DETAIL	DET 5:3	DETAIL NUMBER (5) ON SHEET NUMBER (2)
NOTE	1	NOTE NO 1. ON SAME SHEET AS SYMBOL.
NOTE	4 / 5	NOTE NO. 4 ON SHEET NUMBER (5)
NOTE	NOTE 4:5	NOTE NO. (4) ON SHEET NO. (5)
PANEL	A / 1	PANEL TYPE "A" ON SHEET (1).
SECTION	A / 3	SECTION "A" ON SHEET (3)
REV.	1	REVISION: CHANGE IN DWG. NO. (1). FIRST REVISION
REV.	CLOUD	HIGHLIGHTS CHANGED AREA



*NOTE: THIS BUILDING AS DESIGNED WITH ONE EXIT, MAY NOT BE USED FOR CHILD CARE PURPOSES PER TABLE 33A-2 RG.

FROM STOCKPILE TO SITE SPECIFIC RELOCATION PACKAGE

SITE SET-UP

SHEET INDEX

ARCHITECTURAL	A 0 - COVER SHEET A1.0 - FLOOR PLAN/ROOF PLAN A2.0 - EXT./INT. ELEVATION ~~A3.0 - ARCHITECTURAL DETAILS~~ ~~A4.0 - REFLECTED CEILING PLAN~~ ~~A5.0 - WALL FRAMING~~ A6.0 - WALL FRAMING DETAILS ~~A7.0 - GENERAL NOTES AND SPECS.~~ ~~A8.0 - GENERAL NOTES AND SPECS.~~
STRUCTURAL	S1.0 - FOUNDATION PLAN/DETAILS S2.0 - ROOF / FLOOR FRAMING PLAN S3.0 - FRAMING ELEVATIONS/ DETAILS S4.0 - TYPICAL DETAILS C1.0 - C.L. STK FOUNDATION (PC 04-113776) C2.1 - C.L. STK FOUNDATION (PC 04-113776)
MECHANICAL	M1.0 - MECHANICAL PLAN
ELECTRICAL	E1.0 - POWER/SIGNAL/LIGHTING PLAN
RAMP	~~R1.01 - RAMP PLAN FROM STKP A# 04 105274~~ ~~R1.02 - RAMP DETAILS FROM STKP A# 04 105274~~

SERIAL NUMBERS:

14602-03 FOR MESA E.S.
14592-93 FOR MESA E.S.
14596-97 FOR MESA E.S.
14598-99 FOR MESA E.S.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP03 117500
AC FLS SSS BY
Date SEP 21 2018

BUILDING DATA	
24'X40'BLD'G.	
OCCUPANCY	E-2
TYPE OF CONSTRUCTION	V-N
WIND LOAD	75 MPH, EXP. "C"
FLOOR LIVE LOAD	50 P.S.F.
ROOF LIVE LOAD	20 P.S.F.
BUILDING AREA	960 SQ.FT.
STRUCTURAL DESIGN	SHEARWALL

4012-8-244
STKP-13 CLLS.003

WITH THE SIGNING OF THE DRAWINGS, WE ACKNOWLEDGE THAT WE HAVE REVIEWED THESE PLANS AND SPECIFICATIONS AND HAVE FOUND THEM TO BE IN GENERAL COMPLIANCE WITH THE BID DRAWINGS, SPECIFICATIONS AND ASSOCIATED ADDENDA. WHEN THESE PLANS AND SPECIFICATIONS HAVE BEEN APPROVED BY THE OFFICE OF THE STATE ARCHITECT, THEY SHALL PREVAIL OVER CONFLICTING AREAS IN THE BID DRAWING AND SPECIFICATIONS, AND ANY ADDENDUMS THERETO.

APPLICABLE CODES - NEW CONSTRUCTION

TITLE 24, C.C.R., PART 2, 1991 C.B.C. (1991 UBC W/ CALIF. AMENDMENTS)
TITLE 24, C.C.R., PART 3, 1991 C.E.C. (1990 NEC W/ CALIF. AMENDMENTS)
TITLE 24, C.C.R., PART 4, 1991 C.M.C. (1991 UMC W/ CALIF. AMENDMENTS)
TITLE 24, C.C.R., PART 5, 1991 C.P.C. (1991 UPC W/ CALIF. AMENDMENTS)
TITLE 19, C.C.R., PUBLIC SAFETY, DIV. 1, STATE FIRE MARSHALL REGULATIONS

UNIT "A" AS SHOWN
UNIT "B" OPPOSITE HAND (x4) AT MESA E.S.
NOTE: ALL THESE UNITS SHALL BE UNIT "B"

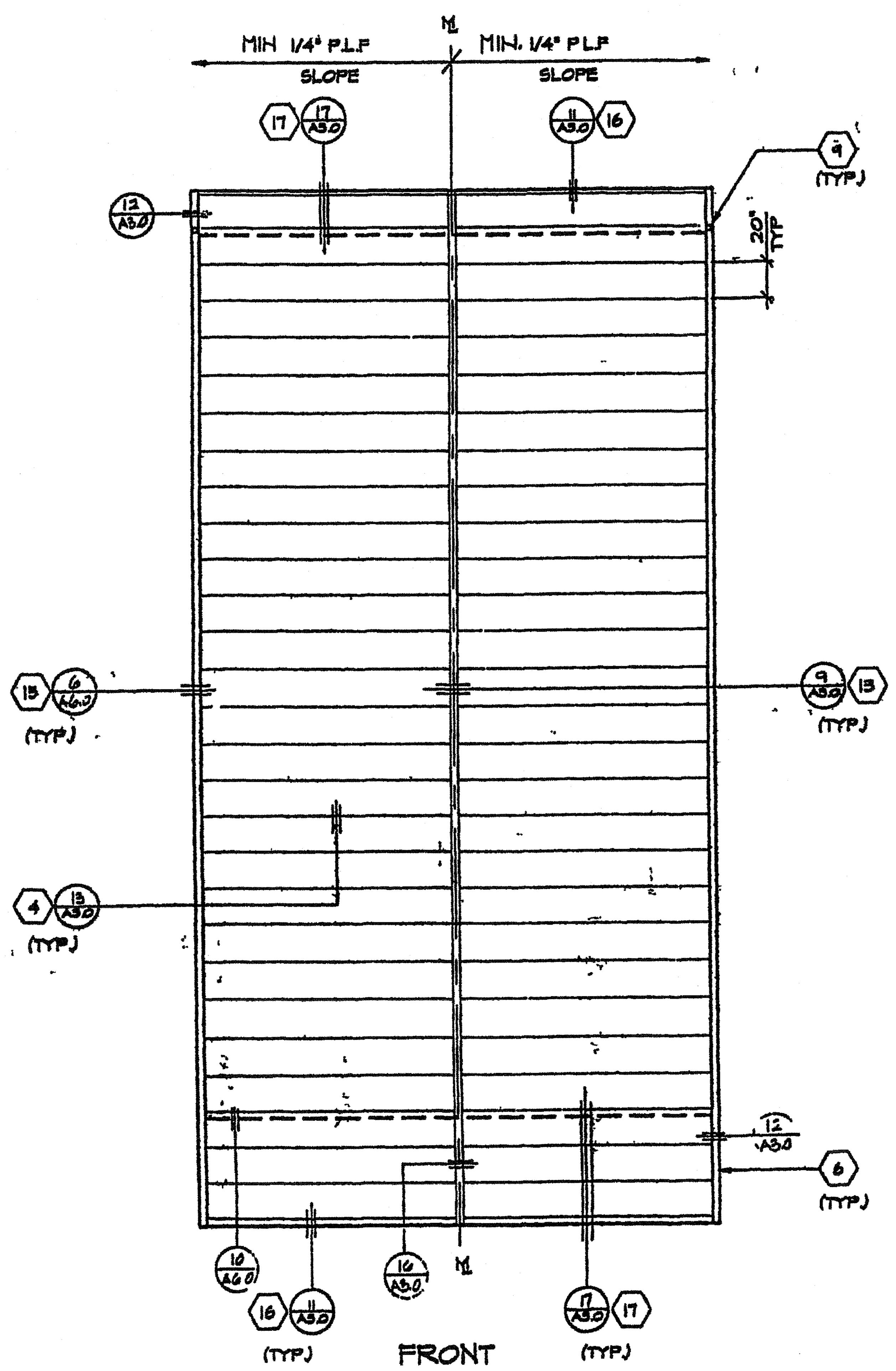
"AS ALTERNATE FOR ALL SHOT PIN ATTACHMENTS, USE #10 S.T.S.M.S. AT THE SAME SPACING."

ARCHITECT	ELECTRICAL	STRUCTURAL	MECHANICAL	FIRE MARSHAL	ACCESS COMPLIANCE	STRUCTURAL SAFETY

MODTECH, INC.
2830 BARRETT AVE. P.O. BOX 1240
PERRIS

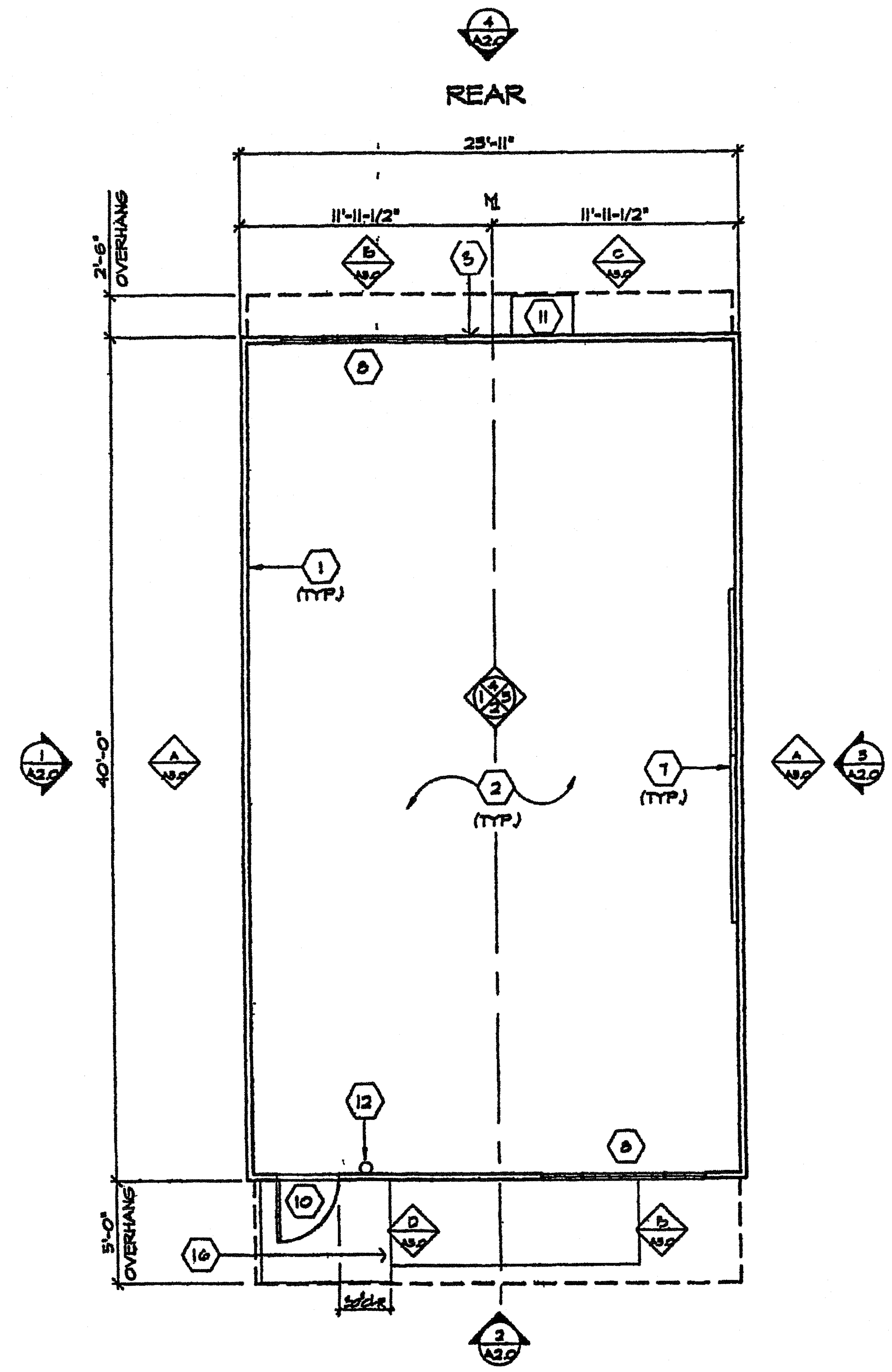
DRAWN BY A.B.
DATE
CHECKED BY
DATE 20 JUN 94

A 0



ROOF PLAN

SCALE 1/4" = 1'-0"



UNIT "A" AS SHOWN (x1) AT BARRANCA E.S.
UNIT "B" OPPOSITE HAND (x1) AT BARRANCA E.S. & (x3) AT COVINA H.S.
ALL BUILDINGS SHALL BE UNIT "B"

FLOOR PLAN

SCALE 1/4" = 1'-0"

NOTES

1. TYPICAL INTERIOR FINISH: VINYL COVERED TACKBOARD OVER 1/2" GYP BD OR 3/8" PLYWOOD VINYL TO BE CLASS 2
2. FINISH FLOORING: CARPET PER STATE OF CALIFORNIA COMPLYING WITH GROUP 1, TYPE A OR DENSITY 4600, DIRECT GLUE DOWN WITH 4" TOPSET BASE.
3. METAL TAG ON ALL MODULES MECHANICALLY ATTACHED TO REAR EXTERIOR OF BUILDING SHOW O.S.A. APPLICATION NUMBER, MANUFACTURER'S NAME AND SERIAL NUMBER.
4. 26 GA INTERLOCKING ROOF PANELS OVER 3/4" CDX PLYWOOD, OVER 30 lb SATURATED FELT UNDERLAYMENT
5. PAINT COLORS: DARK BROWN-FASCIA AND ALL TRIM, MODTECH BEIGE-SIDING, SKIRTING & SOFFIT INTERIOR TRIM-GEARY OAK PRE-FINISH BRONZE - DOOR AND FRAME
6. CONT GUTTER (ATTACHED AND SET ON TOP OF BEAM @ SIDEWALL)
7. 8040 CHALKBOARDS (2) OR 8040 MARKERBOARDS (SEE SPECS.)
8. 8040 WINDOWS SHOWN, MAY VARY SEE SPECS
9. DOWNSPOUTS (TYP 2 @ REAR, 1 EA SIDE)
10. 3068 HOLLOW METAL DOOR SEE SPECS
11. HVAC UNIT - SEE SHT M-1
12. FIRE EXTINGUISHER 5 LBS WITH OVER SPRAY AND 2A-10BC U.L. RATING, DRY CHEMICAL WALL MTD. - BRACKET @ 40" AFF
13. ROOF CAP @ MODLINE
14. RAMP AND LANDING SEE SHT R-1
15. BEAM @ SIDEWALL
16. FASCIA
17. OVERHANG (2'-6" @ REAR AND 5'-0" @ FRONT)

KEY NOTES

1. EXTERIOR DOOR SHALL BE OPERABLE FROM THE INTERIOR WITHOUT A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT
2. CLOSURES SHALL HAVE A MAXIMUM 8.5 LBS PRESSURE
3. PROVIDE TAG INSIDE ELECTRICAL PANEL W/ O.L.A BLDG NO. & OSA APPLICATION NO.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP03 117500
AC [signature] FLS [signature] SS BY
Date SEP 21 2010

INTERIOR REFERENCE SYMBOL SEE SHEET A2.0 FOR INT ELEV.(S)

ARCHITECT	ELECTRICAL	STRUCTURAL	MECHANICAL	FIRE MARSHAL	ACCESS COMPLIANCE	STRUCTURAL SAFETY
[stamp]		[stamp]		[stamp]	[stamp]	[stamp]

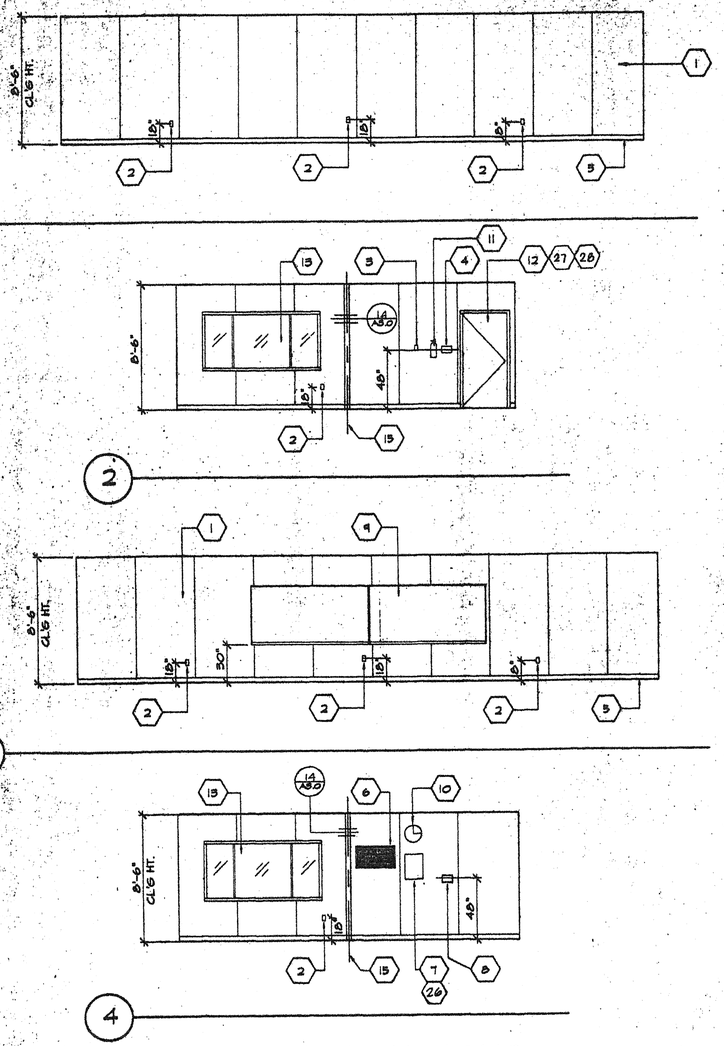
MODTECH INC.

JOB #
24'X40' BLDG

4012-8-244
STKP-13 CLLS 003

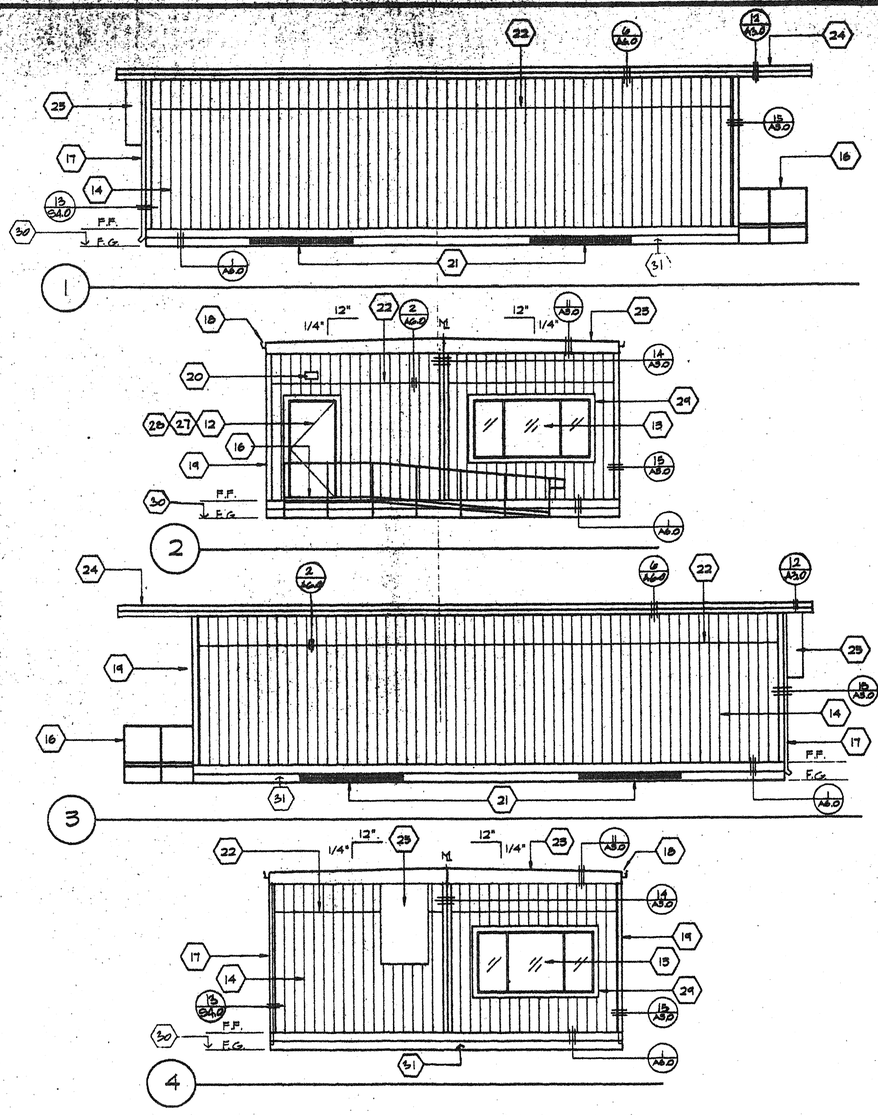
DRAWN BY A.B.
DATE
CHECKED BY
DATE 20 JUN 94

FLOOR / ROOF PLAN
A1.0



INTERIOR ELEVATIONS

SCALE 1/4"=1'-0"

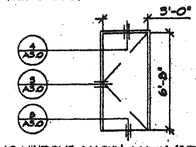


EXTERIOR ELEVATIONS

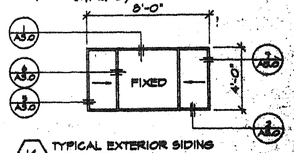
SCALE 1/4"=1'-0"

NOTES

1. TYPICAL INTERIOR FINISH (SEE SPECS SHT.)
2. DUPLEX WALL RECEPTACLE @18" A.F.F. TO ℄ (SEE SPEC'S)
3. FIRE ALARM PULL STATION (@48")
4. LIGHT SWITCH
5. 4" TOP SET BASE (TYPICAL) (SEE SPECS SHT.)
6. RETURN AIR GRILL (RAG.)
7. ELECTRICAL PANEL (SEE ELECTRICAL DRAWG'S)
8. THERMOSTAT (SEE MECH. DRAWG'S)
9. 8040 MARKERBOARD (SEE SPECS.)
10. 12" DIA. ELECTRIC CLOCK
11. FIRE EXTINGUISHER: 5LBS. DRY CHEMICAL WITH 2AG-10BC U.L. RATING ON WALL MTD. BRACKET AT 48"
12. 3068 HOLLOW METAL DOOR AND FRAME (SEE SPECS.)



13. 8040 WINDOWS EMOWN, MAY VARY SEE SPECS (TYPICAL)



14. TYPICAL EXTERIOR SIDING (SEE SPECS SHT.)
15. MODLINE (M TYPICAL)
16. RAMP AND LANDING SEE SHT. R-1
17. DOWNSPOUT (TYP. OF 2 @ REAR EA. SIDE)
18. CONT. GUTTER (ATTACHED AND SET OR TOP OF BEAM @ SIDEWALL)
19. COLUMN (SEE STRUCTURAL)
20. EXTERIOR FLOURESCENT BRACKET LIGHT FIXTURE (SEE SPECIFICATIONS)
21. 4-1/2"X84" FOUNDATION VENT (TYP.) SEE SHT. S1.0
22. PLYWOOD SPLICE @ +8'-0" (WHEN REQ'D)
23. FASCIA
24. OVERHANG (2'-0" @ REAR AND 5'-0" @ FRONT)
25. HVAC UNIT - SEE M-1
26.
27.
28.
29. 1X4 TRIM
30. FOR ELEVATION @ FINISH GRADE SEE DISTRICT ARCHITECT'S SITE PLAN
31. INSTALL SKIRTING AS REQUIRED TO MATCH SIDING

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DIV. OF THE STATE ARCHITECT
APP 03 117500
AC W FLS CASS BY
Date SEP 21 2018

UNIT "A" AS SHOWN
UNIT "B" OPPOSITE HAND
* ALL BUILDINGS SHALL BE UNIT "B" TYPE

ARCHITECT	ELECTRICAL	STRUCTURAL	MECHANICAL	FIRE MARSHAL	ACCESS COMPLIANCE	STRUCTURAL SAFETY
LICENSED ARCHITECT C-7284						

MODTECH INC.

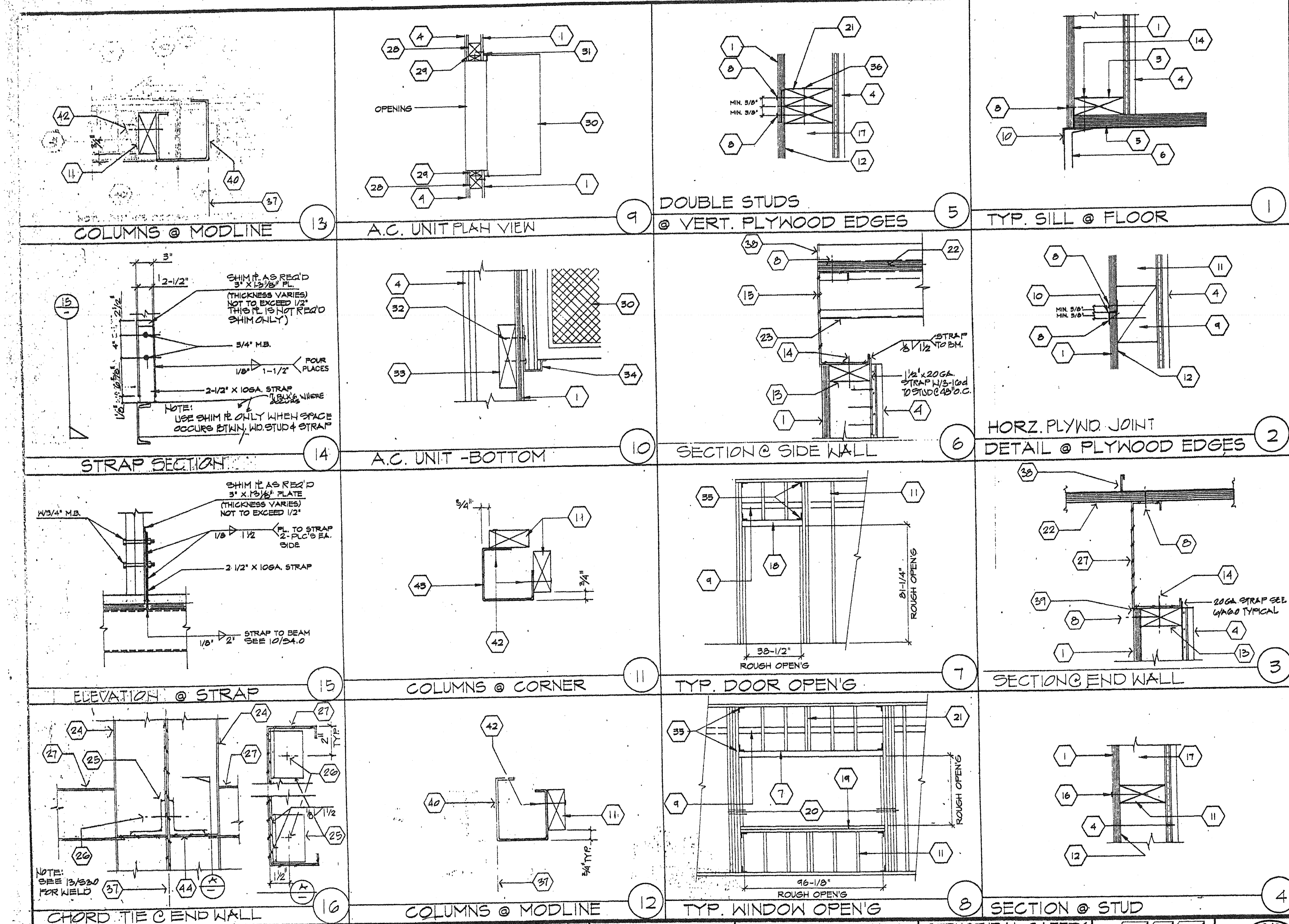
LICENSED ARCHITECT GEORGE C. EDWARDS

JOB # 4012-8-244
24'X40' BLD'G STKP-13 CLLS.003

DRAWN BY A.B.
DATE
CHECKED BY
DATE 20 JUN 94

INT. / EXT. ELEVATIONS

A2.0



NOTES

1. EXTERIOR PLYWOOD SIDING
2. 16d BOX NAILS @ 8" O.C.
3. 2X4 BOTTOM PLATE
4. TYP. INTERIOR FINISH - SEE SPECS
5. PLYWOOD FLOOR
6. FLOOR BEAM
7. 4X6 HDR.
8. EN
9. 4 X BLK'G @ PLYW'D EDGE JOINT ONLY WHEN OCCURS
10. "Z" FLASHING ONLY WHEN PLYWD. JOINT OCCURS
11. 2X4 @ 16" O.C.
12. WATERPROOF MEMBRANE
13. 2X4 TOP PL.
14. #10 S.M.S., FOR SPACING SEE SHT. A5.0 ALT. USE 0.145⌀ SHOT PIN.
15. ROOF BEAM @ SIDE WALL SEE STRUCT
16. 8d GALV. BOX NAIL @ MAX. 12" O.C. FH
17. 2X4 SILL PLATE
18. 4x4 HEADER ALT. USE 2-2X4
19. 2-2X4 SILL PLATE
20. 4-2X4 FULL HEIGHT STUDS W/ 1-2X4 TRIMMER TYP.
21. 2-2X4 STUDS @ VERT. PLYWOOD EDGES
22. PLYWOOD ROOF SHEATHING
23. ROOF PURLIN SEE STRUCTURAL
24. MOD LINE ROOF BM. SEE STRUCTURAL
25. 3"x3" x 3/8" ∠ X 4" (2 CLIPS AT CHORD TIE)
26. 5/8" ⌀ M.B.
27. TAPERED RF. HDR. BM. SEE STRUCT.
28. 4"X4" POST (SEE ALT. 2/A5.0)
29. 2X4 TRIMMER
30. AC UNIT
31. L 1-1/2"X1-1/2"X1/8"X18" LONG ATTACHED TO A/C W/ 4-#10 SELF TAPPING STAINLESS STEEL OR GALV. S.M.S. FASTEN TO POST W/ 4-#12X2-1/2" GALV. RD.HD. WOOD SCREWS TYPICAL
32. 6-3/8X2" GALV. LAG SCREWS
33. 2X6 LEDGER LET- INTO STUDS W/3-16d TO EA. STUD
34. 11GA. X24" STEEL SUPPORT BRACKET
35. A-34 CLIPS (TYP)
36. 16d @ SAME SPACING AS PLYWD. EN
37. MODULE JOINT
38. 26GA. MT'L ROOF DECKING SEE SPECIFICATIONS
39. SEALANT SEE SPECIFICATIONS
40. COLUMN @ MODLINE SEE STRUCT.
41.
42. AEROSMITH AKN-144.0175 DRIVE PIN ALT. #10 STSMS. SEE NOTES ON SHT. A5.0 FOR SPACING
43. CORNER COLUMN SEE DTL. 1/S3.0
44. 5/16" STIFFENER PLATE
45.
46.
47.

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APP03 117500
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Date SEP 21 2016

ARCHITECT	ELECTRICAL	STRUCTURAL	MECHANICAL	FIRE MARSHAL	ACCESS COMPLIANCE	STRUCTURAL SAFETY
LICENSED ARCHITECT C-7283 STATE OF CALIFORNIA		No. 2602 STRUCTURAL STATE OF CALIFORNIA LICENSE EXPIRES 6-30-1996		IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES APPL 6 17 57	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES APPL 5 ... DATE 11-16-94	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES APPL ...247 DATE 10-28-93

MODTECH INC.

LICENSED ARCHITECT GEORGE C. EDWARDS STATE OF CALIFORNIA REN. 9-30-95

JOB #

4012-S-244

STKP-13 CLLS.003

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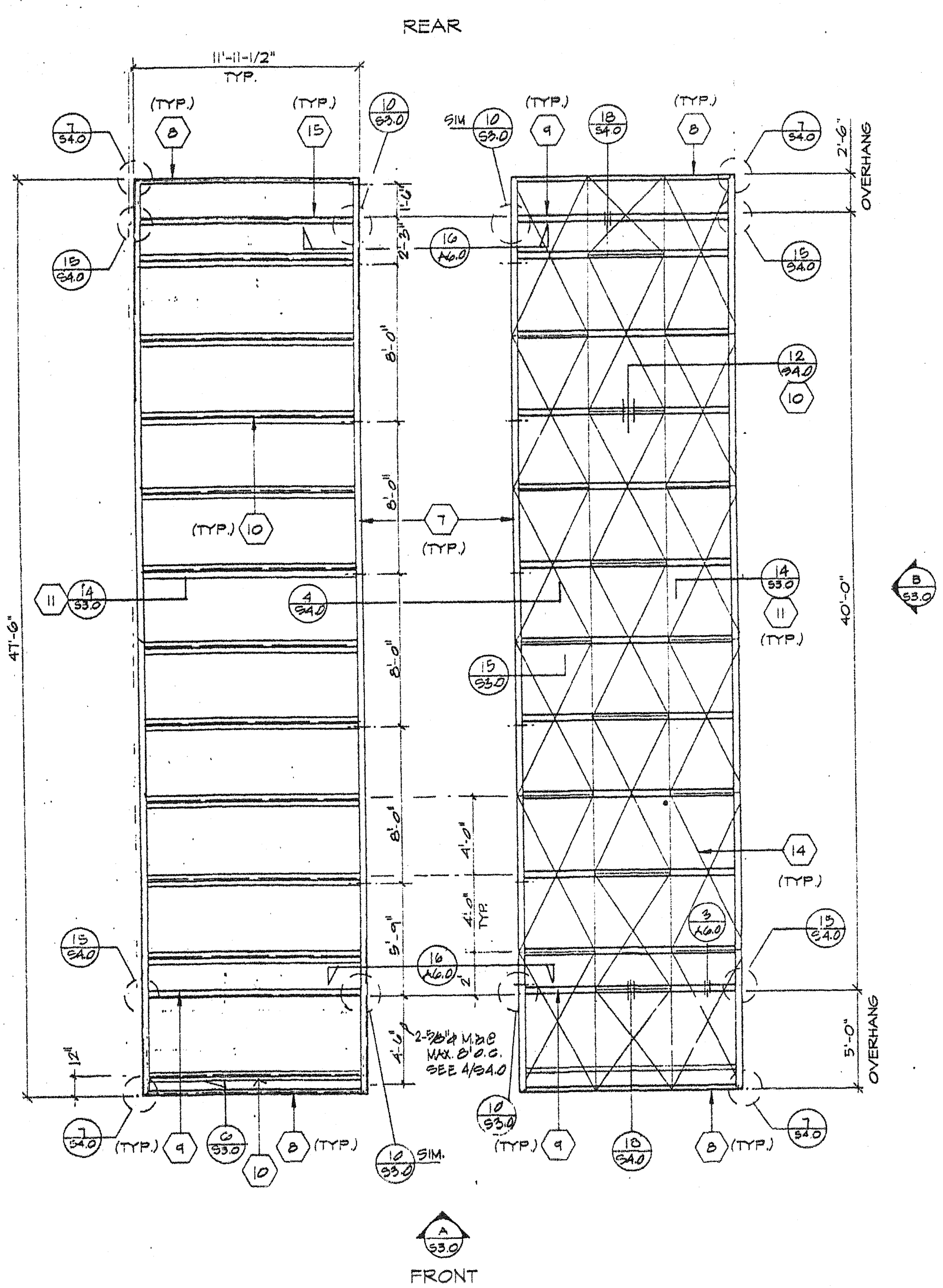
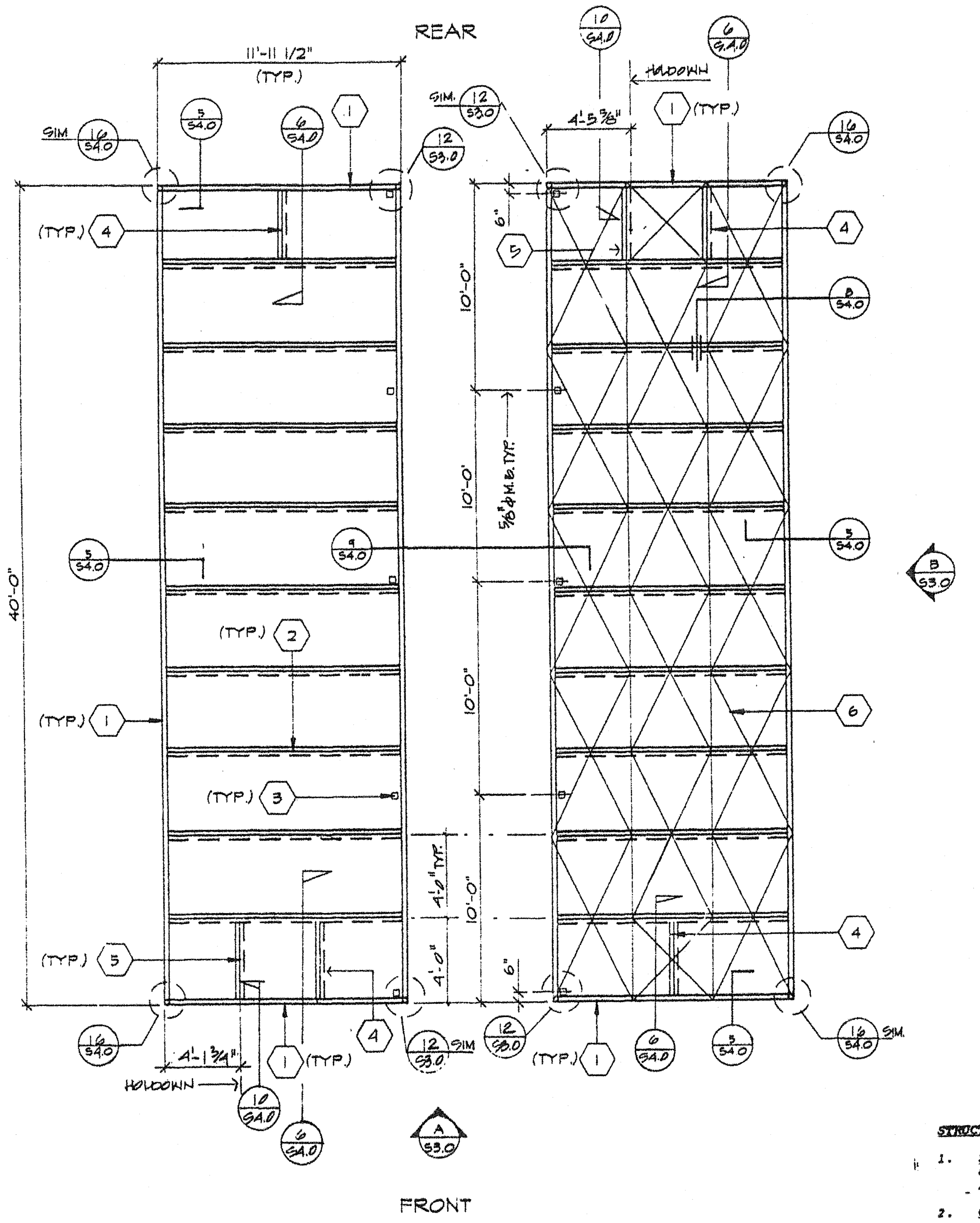
WALL FRAMING DETAILS

A6.0



ROOF FRAMING PLAN

SCALE 1/4"=1'-0"



FLOOR FRAMING PLAN

SCALE 1/4"=1'-0"

NOTES

FLOOR

1. [7X9.8 PERIMETER FLOOR FRAME
2. ⌉ 6-3/8"X2-1/2"X12 GA. FLR. JOIST
3. HAND HOLE FOR 5/8" BEAM BOLT
4. 6-3/8"X2-1/2"X12 GA. BLOCKING
5. BLOCKING @ HOLD DOWN (4'-0" O.C.)
6. PLYWOOD FLOOR SHEATHING APA PS 1-83 STURD-I-FLOOR 1-1/8" THK. T&G EXPOSURE I OR STURD-I-WOOD ATTACH PLYWOOD TO [7X9.8 W/#10-1-3/4" STFHS @ 6"O.C. EN & 6"O.C. FN ATTACH PLYWOOD TO FLOOR JOIST W/AEROSMITH AKN 144.0175 DRIVE PINS @ 6"O.C. EN 6" O.C. FN

ROOF

7. BEAM @ MODLINE (SEE DTL: 5/S3.0)
8. FASCIA (SEE DTL: 6/S3.0)
9. HEADER (SEE DTL: 7/S3.0 TYPE 'A')
10. ROOF PURLIN (SEE DTL: 3/S3.0)
11. BEAM @ SIDE WALL (SEE DTL: 4/S3.0)
12. NOT USED
13. NOT USED.
14. PLYWOOD ROOF SHEATHING 3/4" CD EXP. I P.I.I. 48/24 PS 1-83 PLYCLIPS @16" O.C. LONG EDGES. #10- 1-1/4"STFHS @ 6"O.C. TO PERIMETER FRAME, AERO-SMITH AKN. 144.0175 DRIVE PINS @ 6"O.C. @ SUPPORTED EDGES @ 6"O.C. FIELD TO TO PURLIN. PLYWOOD PATTERN SHOWN IS TYPICAL THRU-OUT.
15. HEADER (SEE DTL: 7/S3.0 TYPE 'B')

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STRUCTURAL STEEL:

1. *Structural Steel Shapes.* ASTM A-36, open hearth or electric furnace only, all regular shapes as described in AISC construction Manual, Unless noted otherwise.
2. *Cold-Formed Light Gauge Steel.* ASTM A-570, Grade 33, minimum yield 33,000 PSI.
3. *Structural Pipe and Tubing.* ASTM A-500 Grade B.
4. *Bolt Materials.* Bolts and nuts, American Standard Regular, as detailed in AISC Construction Manual, fabricated from structural quality steel, ASTM A-307.
5. *Arc-Welding Electrodes.* Class E-70 Series for welding A-36 steel to A-36 and E-60 series for welding A-570 steel to A-36 conforming requirements of structural welding code of American Welding Society latest edition.

ARCHITECT	ELECTRICAL	STRUCTURAL	MECHANICAL	FIRE MARSHAL	ACCESS COMPLIANCE	STRUCTURAL SAFETY
LICENSED ARCHITECT GORDON H. CHONG C-7283 STATE OF CALIFORNIA				IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES

MODTECH INC.

JOB # [redacted]

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4012·8·244

24'X40' BLD'G. STKP-13 CLLS.003

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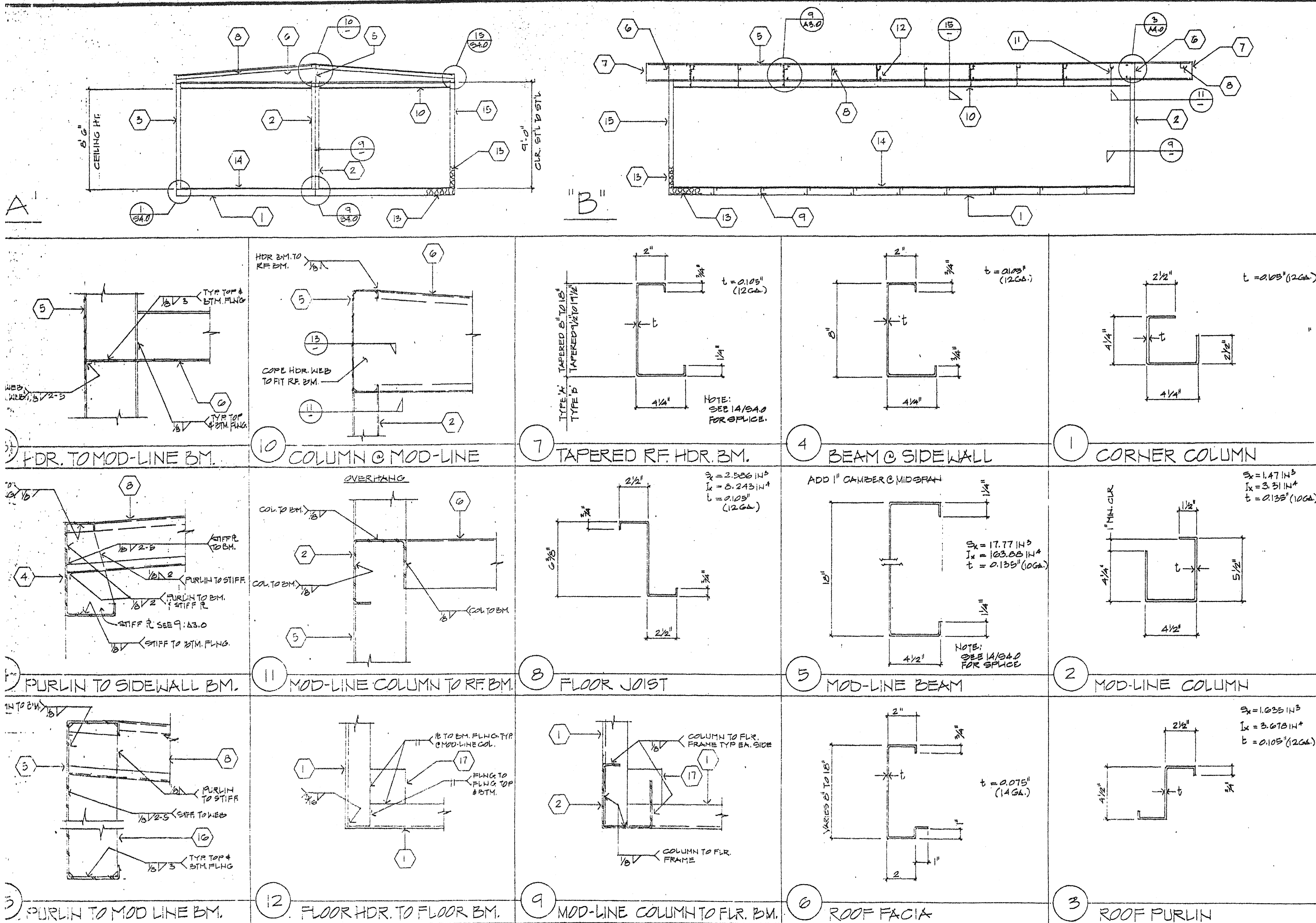
ROOF / FLOOR FRAMING PLAN

S2.0



NOTES

1. C7x9.8 PERIMETER FLOOR BEAM
2. COLUMN @ MOD-LINE (2/–)
3. COLUMN @ SIDEWALL (1/–)
4. BEAM @ SIDEWALL (4/–)
5. BEAM @ MOD-LINE (5/–) 1" CAMBER @ MIDSPAN
6. ROOF HDR. BEAM (7/–)
7. ROOF FACIA (6/–)
8. ROOF PURLIN (3/–)
9. FLOOR JOIST (8/–)
10. SUSPENDED CEILING GRID SEE A4.0
11. CEILING HANGER WIRE SEE A4.0
12. 5/8" ⌀ M.B. @ 6" FROM RF. HDR. BM. & MAX. 8' O.C. @ STIFF. PL.
13. R-11 INSULATION
14. 1 1/8" PLYWOOD FLOORING
15. EXTERIOR WALL SEE A5.0
16. 5/16" STIFFENER PL.
17. 3"x3"x1/4" PL. @ MOD-LINE CORNER ONLY

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AC FLS SS
Date SEP 21 2010

NOTE:
THICKNESS TOLERANCE OF LIGHT GAGE STEEL SHALL NOT BE LESS THAN 95% OF 't' PER AISI A3.4

ARCHITECT	ELECTRICAL	STRUCTURAL	MECHANICAL	FIRE MARSHAL	ACCESS COMPLIANCE	STRUCTURAL SAFETY
LICENSED ARCHITECT GORDON H. CHONG C-7283 STATE OF CALIFORNIA		STATE OF CALIFORNIA		IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES APPL 61937	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES APPL 57920	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES APPL 00267

MODTECH INC,

LICENSED ARCHITECT GEORGE C. EDWARDS REN. 9-30-95 STATE OF CALIFORNIA

4012-8-244
STKP-13 CLLS.003

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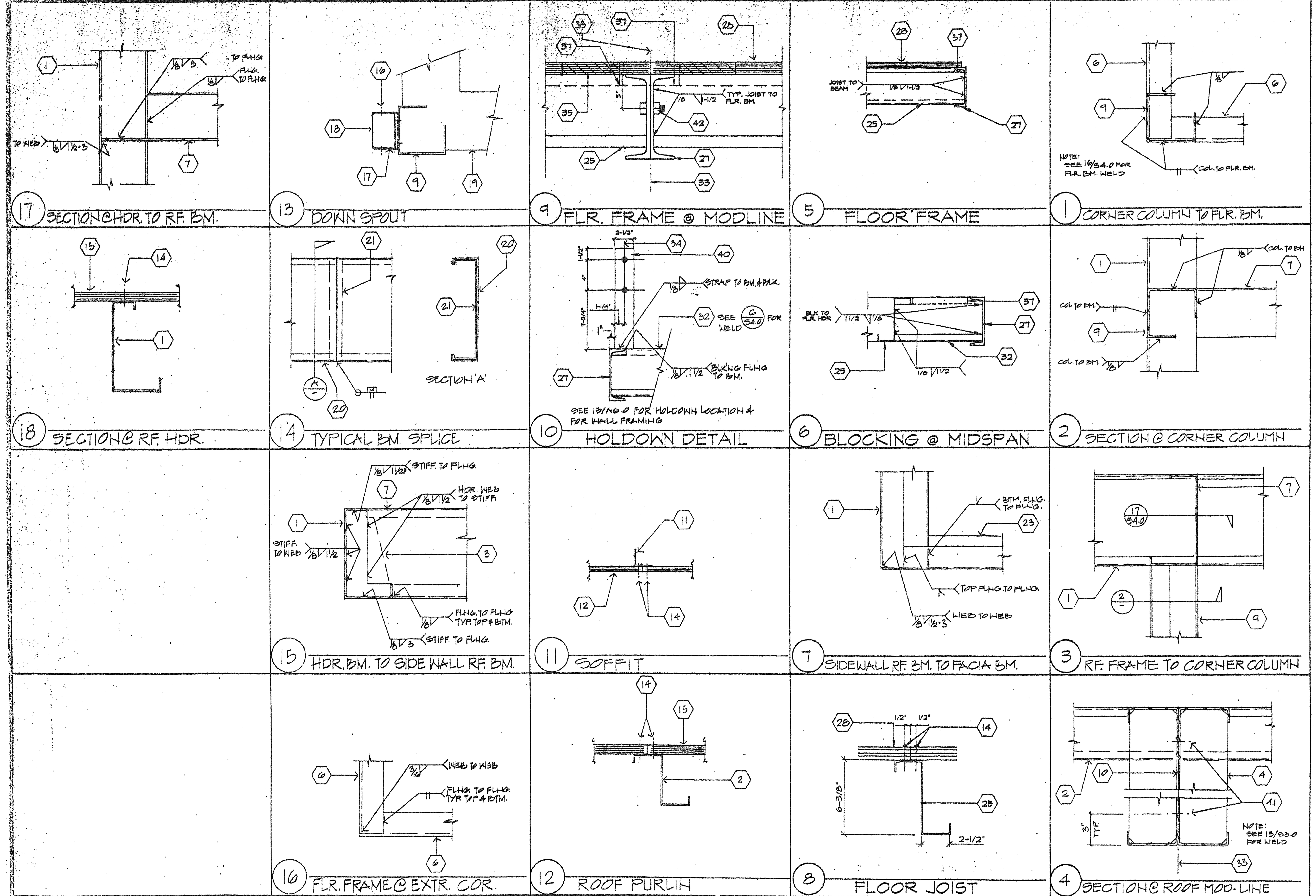
DETAILS

S3.0



NOTES

1. ROOF BEAM @ SIDEWALL (4/S3.0)
2. ROOF PURLIN (3/S3.0)
3. 4"x 7 3/4 x 5/16" PL
4. 4"x 17 3/4 x 5/16 PLATE @ 8'-0" O.C.
5. 5/8" M.B. BEAM TO BEAM
6. C7x9.8 PERIMETER FLOOR BM.
7. ROOF HDR. BM. (2/S3.0)
8.
9. COLUMN @ SIDEWALL (1/S3.0)
10. RF. BEAM @ MOD-LINE (5/S3.0) W/ 1" CAMBER @ MIDSPAN
11. 1 1/2" x 1 1/2" x 10 GA. L FRAME @ SOFFIT SPACING @ MAX. 24" O.C. WELD TO ROOF FRAME @ OVERHANG
12. PLYWOOD SOFFIT SEE SPEC'S
13.
14. EN
15. 3/4" PLYWD. RF. DECK SEE S2.0
16. 1/8" ϕ POP RIVET
17. 20 GA. STRAP W/2-#10 STSMS TO COLUMN 2-PLC'S TYP. TOP & BTM.
18. 3"x 2"x 24 GA. DOWN SPOUT
19. EXTERIOR WALL
20. MOD-LINE BEAM 5/S3.0 SIDE WALL BEAM 4/S3.0 TYP. SPLICE WELD
21. 10 GA. x 2" BACK-UP. TACK WELD IN PLACE
22.
23. FASCIA BEAM (6/S3.0)
24.
25. FLOOR JOIST (6-3/8"X2-1/2"X12 GA) SEE 8/S3.0
26.
27. PERIMETER FLOOR FRAMING CHANNEL [7X9.8
28. PLYWOOD FLOOR SHEATHING SEE S2.0 NOTE #6
29.
30. COPE FLANGES OF 6-3/8X2-1/2X12 GA. BLOCKING
31.
32. 6-3/8X2-1/2X12 GA. BLOCKING
33. MODLINE
34. 11/16"ϕ HOLE FOR 5/8"M.B.
35. 5"SQ. ACCESS HOLE @ BOLT LOC.
36.
37. COPE FLANGES AS REQ'D
38. COLUMN
39.
40. 2-1/2" X 10GA. STEEL STRAP W/5/8"ϕM.B. (2)
41. 5/8"ϕ M.B. @ MAX. 8' O.C.
42. 5/8" M.B. @ MAX. 10' O.C. SEE S2.0
43.

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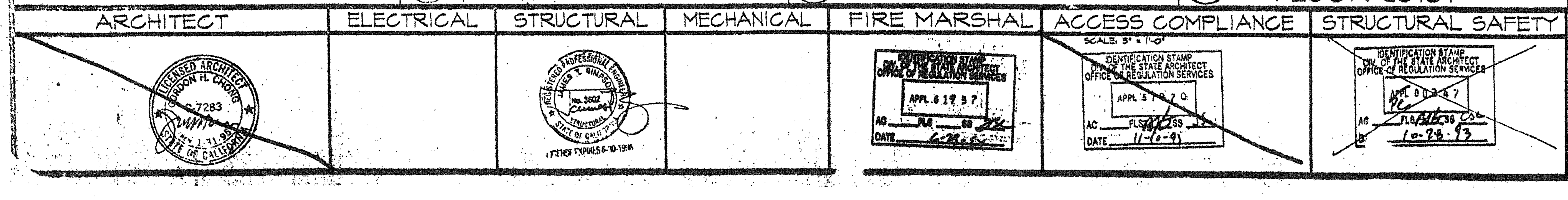

MODTECH INC,

JOB #

[redacted] 4012-8-244

24'X40' BLD.'G STKP-13 CLLS.003

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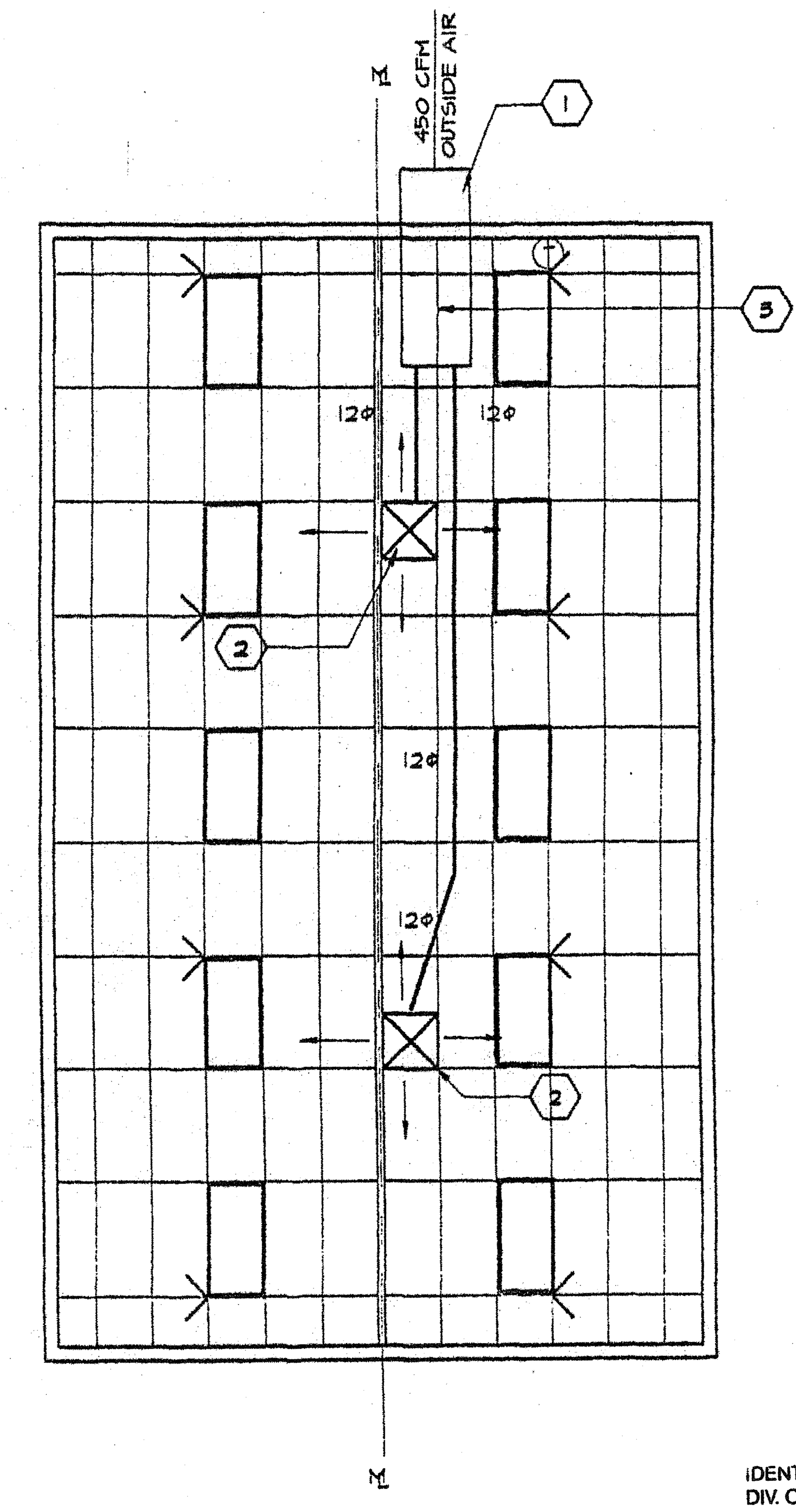
TYPICAL DETAILS

S4.0



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APP03 117500

UNIT "A" AS SHOWN (x1) AT BARRANCA E.S.
UNIT "B" OPPOSITE HAND (x1) AT BARRANCA E.S. & (x3) AT COVINA H.S.
ALL BUILDINGS SHALL BE UNIT "B"

AIR CONDITIONING PLAN

SCALE 1/4"=1'-0"

NOTES

(1) AC - WALL MOUNTED HEAT PUMP (N.I.C.)
INTERTHERM PWY - 042KAVX08 OR EQUAL
208/230V - 1 PHASE
- NOMINAL 8KW ELECTRIC STRIP HEATER
F.L.A. ON COOLING = 27.9 AMPS
F.L.A. ON HEATING A = 27.9 AMPS
F.L.A. ON HAETING B = 36.4 AMPS
WT. = 500 lbs. NOMINAL
- CIRCUITRY PROHIBITS SIMULTANEOUS OPERATION OF COMPRESSOR AND ELECTRIC HEATER.

(2) 15X15 - 4W, 700 CFM.

(5) GALV. PLENUM (5'-0" MIN.)

SYMBOLS

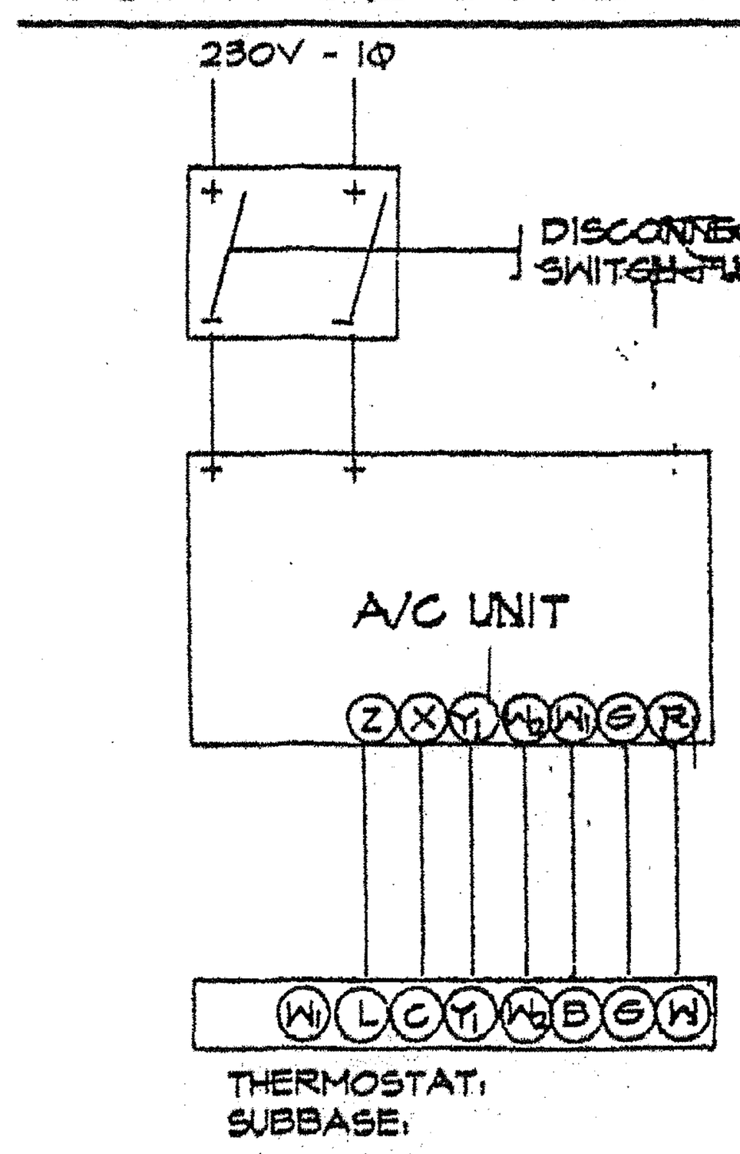
SEISMIC SPLAY

2X4 LIGHT FIXTURE (SEE SPEC'S)

SUPPY AIR GRILL (SEE SPEC'S)

(T) THERMOSTAT: HONEYWELL T7300 OR WHITE RODGERS IF92 W/LOCKING CLEAR COVER W/ACCESS HOLE FOR PROGRAM OVER RIDE

CONTROL SCHEMATIC



SCHOOL EQUIPMENT ANCHORAGE

THE FOLLOWING IS FOR THE MECHANICAL ENGINEER'S INFORMATION ONLY.

THE SEISMIC ANCHORAGE OF MECHANICAL EQUIPMENT SHALL CONFORM TO C.C.R. TITLE 24, SECTION 2312 (g) AND TABLE 23-P. ANCHORAGE DETAILS FOR ROOF/FLOOR MOUNTED EQUIPMENT WEIGHING LESS THAN 400 LBS. AND HUNG EQUIPMENT WEIGHING LESS THAN 20 LBS. MAY BE OMITTED FROM THE PLANS.

FOR MECHANICAL DRAWINGS:

ALL MECHANICAL EQUIPMENT SHALL BE BRACED OR ANCHORED TO RESIST A HORZONTAL FORCE ACTING IN ANY DIRECTION USING THE FOLLOWING CRITERIA.

EQUIPMENT ON GRADE	20% OF OPERATING WEIGHT
EQUIPMENT ON STRUCTURE	50% OF OPERATING WEIGHT

FOR FLEXIBLY MOUNTED EQUIPMENT USE 4 X THE ABOVE VALUES, AND FOR SIMULTANEOUS VERTICAL FORCE USE 1/3 X THE HORIZONTAL FORCE.

THE ABOVE VALUES ARE FOR AN IMPORTANCE FACTOR, I = 1.0 AND SEISMIC ZONE, Z = 0.4.

WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE MECHANICAL ENGR. AND THE FIELD ENGINEER OF THE OFFICE OF THE STATE ARCHITECT.

ARCHITECT	ELECTRICAL	STRUCTURAL	MECHANICAL	FIRE MARSHAL	ACCESS COMPLIANCE	STRUCTURAL SAFETY
LICENSED ARCHITECT GORDON H. CHONG C-7283 STATE OF CALIFORNIA				IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES APPL 8 19 57	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES APPL 57970	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES 10-28-93

MODTECH INC.

JOB # [redacted]

4012·8·244

24'X40' BLD'G. STKP-13 CLLS.003

DRAWN BY A.B.
DATE
CHECKED BY
DATE 20 JUN 94

MECHANICAL PLAN

M-1

SCHOOL EQUIPMENT ANCHORAGE

THE FOLLOWING IS FOR THE ARCHITECTS INFORMATION ONLY.

THE SEISMIC ANCHORAGE OF ELECTRICAL EQUIPMENT SHALL CONFORM TO C.C.R. TITLE 24, SECTION 2312 (g) AND TABLE 23-P. ANCHORAGE DETAILS FOR ROOM/FLOOR MOUNTED EQUIPMENT WEIGHING LESS THAN 400 LBS. AND HUNG EQUIPMENT WEIGHING LESS THAN 20 LBS. MAY BE OMITTED FROM THE PLANS.

FOR ELECTRICAL DRAWINGS:

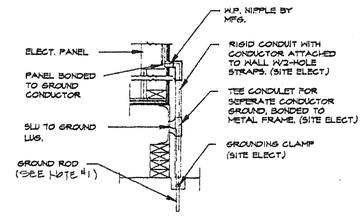
ALL ELECTRICAL EQUIPMENT SHALL BE BRACED OR ANCHORED TO RESIST A HORIZONTAL FORCE ACTING IN ANY DIRECTION USING THE FOLLOWING CRITERIA.

EQUIPMENT ON GRADE	20% OF OPERATING WEIGHT
EQUIPMENT ON STRUCTURE	30% OF OPERATING WEIGHT

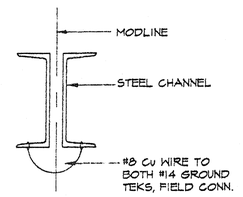
FOR FLEXIBLY MOUNTED EQUIPMENT USE 4 X THE ABOVE VALUES, AND FOR SIMULTANEOUS VERTICAL FORCE USE 1/3 X THE HORIZONTAL FORCE.

THE ABOVE VALUES ARE FOR AN IMPORTANCE FACTOR, I = 1.0 AND SEISMIC ZONE, Z = 0.4.

WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT AND THE FIELD ENGINEER OF THE OFFICE OF THE STATE ARCHITECT.

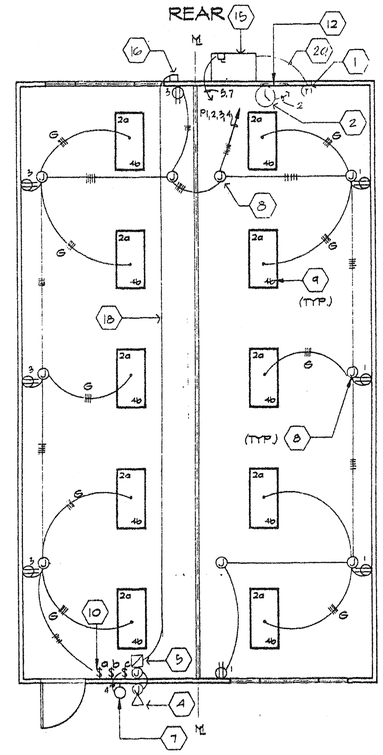


1 GROUND DETAIL



2 JUMPER @ MODLINE

PANEL FLUSH, NEMA1, NQO				MAIN CB 100A					
VOLTAGE 120/240 – 1Φ, 60H, 3W				BUS SIZE 100A					
CIRC. NO.	OUTLETS			WATTAGE			CIRC. BACK		REMARKS
	LTS	REC	OTHERS	Φ A	Φ B	Φ C	AMP	POLE	
1		4		720			20	1	RECEPT.
2	10		+ CLOCK	900					LIGHTS
3		4			720				RECEPT.
4	11				820				LIGHTS
5			HVAC	4356			50	2	HEAT PUMP 3-1/2"
6					4356				SPACE
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
TOTALS				5989	5905		11890	=	49.58 A
L.C.L.= 10270				L.C.L.X125%			12838		
				OTHER			1440		
				TOTAL			14278		59.54 A



IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP03 117500
AC W FLS 07 SS DY
Date SEP 21 2018

LIGHTING/POWER/SIGNAL PLAN

SCALE 1/4" = 1'-0"

SYMBOLS / NOTES

1. THERMOSTAT. (WHITE ROGERS) (+48")
2. CLOCK (7'-0")
3. FUSED DISCONNECT SWITCH RAINTIGHT
4. FIRE ALARM HORN (+8'-0") J-BOX & CONDUIT (ONLY)
5. FIRE ALARM PULL STATION (+48") J-BOX & CONDUIT (ONLY)
6. DUPLEX WALL RECEPTACLE, 15-A 125-V 3-WIRE GROUNDING TYPE (+18")
7. INCANDESCENT BRACKET LIGHT FIXTURE (+96")
8. JUNCTION BOX TYP. TO POWER AND LIGHTING PLAN
9. 4- TUBE FLUORESCENT LIGHT FIXTURE RECESSED MOUNTED (a b b a ← TYP SWITCHING)
10. SWITCH SINGLE POLE @ 48" ("a" DENOTES CONTROLLING SWITCH)
11. CONDUIT RUN CONCEALED IN WALL OR CEILING
    - 1/2" C,2 #12
    - 1/2" C,3 #12
    - 1/2" C,5 #12
12. ELECTRICAL PANEL "A"
13. #6 CU TO BOTH GROUND LUGS FEILD CONNECTION (RAMP TO BUILDING) PER IR 8-1
14. HOME RUN ELECTRICAL PANEL "A"
15. HVAC UNIT (SELF CONTAINED) (LIL DISCONNECT SWITCH)
16. WEATHER PROOF BOX & COVER FIRE ALARM CONNECTION
17. RAMP AND LANDING SEE SHT. R1
18. 3/4" CONDUIT WITH PULL STRING
19.
20. 1/2" C 4-#14
21. G - GROUND

NOTES

1. EACH BUILDING SHALL BE SEPARATELY GROUNDED WITH A 5/4" RD.X8' COPPERCLAD STEEL GROUND ROD. WHERE ROCK BOTTOM IS ENCOUNTERED, ROD SHALL BE DRIVEN AT AN ANGLE NOT TO EXCEED 45 DEGREES FROM THE VERTICAL OR SHALL BE BURIED IN A TRENCH THAT IS AT LEAST 30" DEEP. (BY SITE ELECTRICAL)
2. TESTING: TEST FOR RESISTANCE TO GROUND. IF RESISTANCE EXCEEDS 25 OHMS, INSTALL ADDITIONAL GROUND RODS SEPARATED AT LEAST 6'-0" UNTIL RESISTANCE IS REDUCED TO 25 OHMS OR LESS. (BY SITE ELECTRICAL)
3. PROVIDE EQUIPMENT ANCHORAGE PER TITLE 24, TABLE 2-23.J, PART B.
4. APPROVAL OF THIS PLAN DOES NOT CONSTITUTE APPROVAL OF THIS FIRE ALARM FOR ALL SITES. THE FIRE ALARM SYSTEM AND/OR COMPONENTS MAY BE REQUIRED TO BE CHANGED DUE TO SITE LOCATION, EXISTING CONDITIONS OR INCOMPATABLE COMPONENTS.
5. GROUNDING TEST SHALL BE DONE IN THE PRESENCE OF THE PROJECT INSPECTOR
6. ELECTRICIAN SHALL PROVIDE 2-12 GA. BLACK WIRES TO HOUSING OF ALL LIGHT FIXTURES @ DIAGONAL CORNERS WIRES SHALL BE ATTACHED TO STRUCTURE, SEE SHT. A4.0
7. ALL WIRING SHALL BE 75° CENTIGRADE OR CALCULATE DERATION FOR AMBIENT TEMPERATURE

ARCHITECT	ELECTRICAL	STRUCTURAL	MECHANICAL	FIRE MARSHAL	ACCESS COMPLIANCE	STRUCTURAL SAFETY
GORDON H. CHONG C-7283 REN. 1-31-95 STATE OF CALIFORNIA		REGISTERED PROFESSIONAL ENGINEER JAMES C. BURROUGHS No. 36012 CIVIL STATE OF CALIFORNIA EXPIRES 6-30-1998		IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT APR 8 19 98	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES	IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES

MODTECH INC,

LICENSED ARCHITECT GEORGE S. MODTECH REN. 8-30-98 STATE OF CALIFORNIA

JOB # 4012-8-244

24'X40' BLD'G STKP-13 CLLS.003

DRAWN BY A.B.
DATE
CHECKED BY
DATE 20 JUN 94

ELECTRICAL PLAN

E1.0

CLASS LEASING, LLC.

1221 Harley Knox Blvd. Perris, CA 92571-7408
(951) 943-1908 Fax (951) 943-5768

SPECIFICATIONS
RELOCATABLE CLASSROOMS

7.01 CONCRETE AND REINFORCING STEEL

1. SOIL TYPE AND FOUNDATION DESIGNED FOR 1000 PSF SOIL BEARING PRESSURE ALL FOOTINGS SHALL EXTEND 12 INCHES MINIMUM INTO NATIVE SOIL OR APPROVED ENGINEERED FILL.
2. ALL CONCRETE SHALL HAVE MINIMUM STRENGTH AT 28 DAYS FOOTINGS: f'c = 3000 PSI (DESIGN BASED ON f'c = 2000 PSI).
3. CONCRETE SHALL CONFORM TO CBC 2013 AND ACI 18-11
CONCRETE MIX DESIGN SHALL BE PROVIDED (ACI 3 POINT CURVE) FOR REVIEW.
f'c = 3000 PSI AT 28 DAYS.
AGGREGATE SHALL BE 3/4" TO 1" MAX SIZE BUT NOT THAN 3/4" MIN CLEAR BAR SPACING.
WATER CONTENT SHALL NOT EXCEED 6 GALLONS PER SACK.
MAX SLUMP SHALL NOT EXCEED 4" (+/-) 1".
4. CONTINUOUS BATCH PLANT INSPECTION SHALL BE PROVIDED FOR ALL CONCRETE.
5. ALL CEMENT SHALL BE TYPE I OR TYPE II PER ASTM C-150, UNLESS NOTED OTHERWISE ON THE APPROVED PLANS, SPECIFICATIONS OR GEOTECHNICAL REPORT.
6. PORTLAND CEMENT CONFORMING TO ASTM C-150, TYPE II LOW ALKALI.
7. NATURAL SAND AND ROCK AGGREGATES SHALL CONFORM TO ASTM C-33. EXPANDED CLAY SHALL CONFORM TO ASTM C-330.
8. FOR SLAB-0N-GRADE: MINIMUM CEMENT CONTENT SHALL BE 5.3 SACKS PER CU.YARD.
9. CONCRETE MAX SLUMP SHALL NOT EXCEED 4" (+/-) 1".
10. FLY ASH (CLASS N OR F ONLY) IS NOT ALLOWED UNLESS APPROVED BY THE ARCHITECT OR ENGINEER AND SHALL NOT EXCEED 12% VOLUME OF THE TOTAL CEMENT CONTENT.
11. REINFORCING STEEL GRADE 40 OR 60 ALL REINFORCING STEEL SHALL BE BILLET STEEL PER ASTM A-615, GRADE 60, EXCEPT TIES AND STIRRUPS NO.3 AND No.4 MAY BE GRADE 40.
12. WELDED REINFORCING STEEL SHALL CONFORM TO ASTM A-706 OR SHALL BE ASTM A-615 PREHEATED AND WELDED PER AWS D1.4-2011.
13. ALL REINFORCING STEEL SHALL HAVE A 57 BAR DIAMETER MINIMUM LAP SPLICE (2'-0" MINIMUM) UNLESS NOTED OTHERWISE.
14. SPLICES OF HORIZONTAL REINFORCING IN WALL SHALL BE STAGGERED.
15. ANCHOR PLATES SHALL CONFORM TO ASTM A-36
16. ANCHOR BOLTS SHALL CONFORM TO ASTM A-307
17. ANCHOR BOLTS, DOWELS, REINFORCING STEEL AND EMBEDDED ITEMS ARE TO BE SECURELY TIED IN PLACE BEFORE CONCRETE IS POURED.
18. REINFORCING FABRIC SHALL CONFORM TO ASTM A-185
19. NO PIPES OR DUCTS SHALL BE PLACED IN CONCRETE SLABS OR WALL UNLESS SPECIFICALLY DETAILED.
20. FOR FOOTINGS USING TRENCH FOR FORMING: WIDTH SHALL BE INCREASED 2" EACH SIDE.

DSA DEPARTMENT OF GENERAL SERVICES — DSA-103 rev 12/2013
Statement of Structural Tests & Special Inspections - 2013 CBC

Increment # — DSA File No.: — Application No.: — Date Submitted: — Revised: — Revised:

School Name: SAMPLE: CONCRETE FOUNDATION — District:

IMPORTANT: This form is only a summary list of structural tests and special inspections required for the project. The actual tests and inspections must be performed as detailed on the DSA approved documents. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, high-load wood diaphragms, cold-...

INSTRUCTIONS: Click a plus sign (+) before any category or subcategory to reveal additional tests and special inspections. An "X" before a listed test or inspection indicates it is a mandatory requirement. A shaded box indicates a test or special inspection that may be required, depending on the scope of the construction and other issues. A shaded box can be clicked indicating your selection of that test. Note: A minus (-) on a category or subcategory heading ...

- SOILS
  - 1. GENERAL
  - 2. COMPACTED FILLS
- CONCRETE
  - 1. CAST IN PLACE CONCRETE
- MASONRY
- STEEL
  - 17. STRUCTURAL STEEL AND COLD-FORMED STEEL USED FOR STRUCTURAL PURPOSES
- WOOD
- OTHER

KEY to Columns

1.01 GENERAL REQUIREMENTS:

1. The requirements of the general conditions of the agreement and these General Requirements apply to the several trade sections with the same force as though fully repeated in each section.
2. Name brands are indicated to establish a standard of quality. Items of equal or better quality may be substituted for the listed brand named products.

1.02 SCOPE OF WORK:

1. The work consists of installing on-site, modular relocatable buildings as defined herein, shown and detailed on the drawings.
2. All requirements of CCR (California Code of Regulation)Title 19 and 24 relating to inspections and verified reports shall be complied with and shall include:
   a) General responsible charge of Field Administration by the Architect of Record.
   b) Inspection during the course of construction by an Inspector approved by DSA (Division of the State Architect) and the District Architect. The Inspector shall be responsible for and approved to inspect the general construction, welding, mechanical and electrical work. Cost of these inspections shall be borne by the School District.
   c) On site inspection of the building installation, electrical and utility of the building installation or connection by an Inspector approved by the DSA and retained by the School District.
   d) Other special tests or inspections as may be required by DSA. Cost of these inspections/tests shall be borne by the School District.

1.03 WORK NOT INCLUDED:

1. All on-site or off-site utilities and the connection of them to the building unless indicated on the drawings.
2. All leveling, grading or other site preparation (except concrete or wood leveling strips, where Required) unless otherwise indicated on the drawings.
3. Fire alarm system, program bell, clock, public address system, intercom system, TV system, computer data or any other low voltage system, unless otherwise indicated on the drawings or the lease agreement.

1.04 ACCESSIBILITY OF SITE:

The School District shall provide access to the site for the installation of the building. Removal of trees, shrubs, fencing, sprinklers, etc. necessary for move-in and removal of the buildings shall be the responsibility of the School District.

2.01 SITE ASSEMBLY:

1. Scope of Work: **Contractor** shall provide all labor, materials and services to prepare the building elements, transport them from the plant to the site and to complete the assembly at the site.
   The condition of the site, such as drainage and soil bearing capacity, shall be the responsibility of the School District and the District Architect.
2. Assembly of Elements:
   a) In a location on the site as determined by the District Architect. The contractor shall place the foundation as detailed on the drawings.
   b) The elements shall be brought to the site on wheel assembly and transferred to the prepared site. Great care shall be taken to avoid damage to the elements by racking or bumping.
   c) Connection of the elements together shall be done according to instructions on the drawings. Flashing, trim and other loose items shall be installed per plans and details of the original building manufacturer's drawings.

5.01 SITE INSTALLATION REQUIREMENTS FOR DSA CLASSROOM BUILDINGS:

In the case of equipment located in the State of California, the **LESSEE** (School District) is responsible for the site being cleared (free of grass, trees, shrubs, etc) and graded to within 4 1/2" of level grade for each building. If the site exceeds the 4 1/2" level grade requirement additional costs may be charged to lessee.

Under no circumstances should the site be greater that 9" from level grade or have less than a **1000 PSF MINIMUM SOIL BEARING PRESSURE.**

Prior to delivery, the lessee shall mark the four corners of the building on the site, including door location. Should special handling be required to either place, install or relocate the classroom on the lessee's site due to site obstruction such as fencing, landscaping, other classrooms, etc., additional costs will be charge to the lessee.

6.01 TEST AND INSTALLATION:

1. Provide Electrical Grounding Test per DSA IR E-1.
2. Soils Testing and Inspection: Geotechnical Verified Report – **Form DSA 293**
3. All Structural Testing: Laboratory Verified Report – **Form DSA 291**
4. Concrete Batch Plant Inspection: Special Inspection Verified Report – **Form DSA 292**
5. Field Welding Inspection: Special Inspection Verified Report - **Form DSA-292.**
6. No other tests and inspections are required.

Soil test and inspections are only applicable if there is Geotechnical Report

The example form DSA 103's shown on this sheet are for illustration purposes only. A form DSA 103 is to be completed for each application that this PC is being incorporated into and all example form DSA-103's are to be crossed out on this drawing.

CONTRACTOR IS RESPONSIBLE FOR THE OVERALL CONCRETE FOUNDATION DIMENSIONS AND ACCURATE PLACEMENT OF WELD PLATES.

SCANNED

APPLICABLE BUILDING CODES

ALL NEW WORK SHALL COMPLY AND CONFORM TO THE REQUIREMENTS OF THE 2013 CBC

2013 CALIFORNIA CODE OF REGULATIONS (CCR) As of January 01, 2014*
- -2013 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE PART 1, TITLE 2 (2012 INTERNATIONAL BUILDING CODE VOLUMES 1-2 WITH 2013 CALIFORNIA AMENDMENTS)
- -2013 CALIFORNIA ELECTRICAL CODE (CEC) PART 3, TITLE 24, CCR (2011 NATIONAL ELECTRICAL CODE WITH 2013 CALIFORNIA AMENDMENTS)
- -2013 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24, CCR (2012 UNIFORM MECHANICAL CODE WITH 2013 CALIFORNIA AMENDMENTS)
- -2013 CALIFORNIA PLUMBING CODE (CPC) PART 5, TITLE 24, CCR (2012 UNIFORM PLUMBING CODE WITH 2013 CALIFORNIA AMENDMENTS)
- -2013 CALIFORNIA ENERGY CODE (CEC) PART 6, TITLE 24, CCR*
- -2013 CALIFORNIA FIRE CODE PART 9, TITLE 24, CCR (2012 INTERNATIONAL FIRE CODE WITH 2013 CALIFORNIA AMENDMENTS)
- -2013 CALIFORNIA REFERENCED STANDARDS CODE PART 12, TITLE 24, CCR

TITLE 19 CCR PUBLIC SAFETY, STATE FIRE MARSHALL REGULATIONS.

DESIGN DATA:

FLOOR LIVE LOAD = 50 PSF, 50 + 20 PSF PARTITIONS, 100 PSF
ROOF LIVE LOAD = 20 PSF REDUCIBLE FOR TRIBUTARY AREA
WIND SPEED =120 MPH (V) (3 SECOND GUST), K_{ZT} = 1.0
SNOW LOAD: PROJECT IS NOT LOCATED IN A SNOW REGION.
BUILDING CODES = 2012 IBC AND CBC 2013

SEISMIC DESIGN DATA: — MOMENT FRAME PC'S
Basic Seismic-Force-Resisting System = STEEL MOMENT FRAME
ANALYSIS PROCEDURE USED = EQUIVALENT LATERAL FORCE
Seismic Design Category = E (per CBC Section 1613A.5.6)
Design Base Shear: 24x40 BUILDING = 9460 # (Roof, Floor, Walls & Partitions)
36x40 BUILDING = 14190 # (Roof, Floor, Walls & Partitions)
48x40 BUILDING = 18920 # (Roof, Floor, Walls & Partitions)

I: = 1.0 C_{s2} = 0.411 R: = 3.5 SITE CLASS = D
S_s = 2.7 mapped value / 0.8 S_s = 2.16 (For Design)
S_{DS} = 1.44 (Site Specific Documentation Justifying SDS Shall Be Submitted To DSA Prior To Approval)
S_1 = 1.3 per CBC Figure 1613A.5(2) S_{D1} = 1.3
RISK CATEGORY = II

SEISMIC DESIGN DATA: — SHEAR WALL PC'S
Basic Seismic-Force-Resisting System = WOOD PANEL SHEAR WALLS
ANALYSIS PROCEDURE USED = EQUIVALENT LATERAL FORCE
Seismic Design Category = E (per CBC Section 1613A.5.6)
Design Base Shear: 24x40 BUILDING = 9460 # (Roof, Floor, Walls & Partitions)
36x40 BUILDING = 14190 # (Roof, Floor, Walls & Partitions)
48x40 BUILDING = 18920 # (Roof, Floor, Walls & Partitions)

I: = 1.0 C_{s2} = 0.222 R: = 6.5 SITE CLASS = D p = 1.3
S_s = 2.7 mapped value / 0.8 S_s = 2.16 (For Design)
S_{DS} = 1.44 (Site Specific Documentation Justifying SDS Shall Be Submitted To DSA Prior To Approval)
S_1 = 1.3 per CBC Figure 1613A.5(2) S_{D1} = 1 3
RISK CATEGORY = II

FLOOD DESIGN DATA: Project is not located in a flood zone.

GENERAL NOTES

THE BUILDING SHALL BE SET ON 3000 PSI CONCRETE PADS, DESIGNED FOR A MAXIMUM OF 1500 PSF LOAD ON THE SOIL WITH A MINIMUM 12 INCH PENETRATION INTO EARTH PER THE DSA APPROVED PC DRAWINGS. THE FOUNDATION AND THE METHOD OF FASTENING THE UNITS SHALLBE PER THE APPROVED PC DRAWINGS.

BELOW GRADE FOUNDATION REQUIRES 18" CLEARANCE UNDER BUILDING FROM THE BOTTOM OF THE PURLINS TO THE TOP OF FINISH PAD OR TOP OF RODENT BARRIER. THE FOOTING DESIGN SHALL PROVIDE SHIMS AND BLOCKS NECESSARY TO PERMIT INSTALLATION ON SITES NOT LEVEL, BUT WITHIN THE TOLERANCE ALLOWED BY CODE AND/OR DSA.

THIS FOUNDATION PLAN HAS 1/4" ADDED AT EACH MODLINE AND 1/8" AT EACH SIDE WALL AND DOES NOT MATCH THE FLOOR PLAN DIMENSIONS, THIS IS REQUIRED FOR GROWTH THAT IS EXPERIENCED WHEN SETTING MULTIPLE MODULE BUILDINGS.

THE DISTRICT SHALL PROVIDE CLEAR AND UNOBSTRUCTED ACCESS TO THE SITE. ALL RIGGING AND CRANING ARE NOT INCLUDED IN THIS SECTION. THE DISTRICT SHALL PROVIDE STAKED CORNERS AND A BENCHMARK PER THE ARCHITECT'S PLANS. THE DISTRICT SHALL BE RESPONSIBLE FOR ANY OVER EXCAVATION AND COMPACTION OF THE BUILDING PAD. THE DISTRICT SHALL PROVIDE THE CONTRACTOR AND/OR CLASS LEASING AN EXCAVATED CLEAR 22'x50' PAD LEVEL WITHIN +/- .1' OVER THE DIAGONAL MEASUREMENT OF THE PAD. THE DISTRICT IS RESPONSIBLE FOR ALL SOILS/SPOILS REMOVAL, HAUL OFF, BACKFILL AND RE-COMPACTION.

FOUNDATION PLAN CAN BE EXPANDED TO ACCOMODATE VARIOUS BLDGS AS A COMMON FOUNDATION FOLLOWING: FOUNDATION AT BUILDING SEPARATION DETAIL & DETAIL (3B) ON SHEETS C2.0 - C2.1 - C3.0 - C3.1 - C3.2 - C4.0 - C4.1 - C4.2 - VENTING REQUIREMENTS FOR BLDGS ON COMMON FOUNDATION MUST BE PROVIDED & SHOWN IN (AOR) ARCHITECTURAL/CIVIL PLANS. ⚠1

SCOPE OF WORK: DSA FOUNDATION PLANS FOR EXISTING STOCKPILE BUILDINGS FOR CLASS LEASING, LLC.

SHEET INDEX: STOCKPILE BUILDING FOUNDATION- 2013 CODE UPDATE

BELOW GRADE CONCRETE FOUNDATION DESIGNED FOR MODTECH BUILDINGS ONLY

C1.0 COVER SHEET, BUILDING DATA, STOCKPILE APPROVAL INDEX
C2.0 24 x 40 - 50 PSF CONCRETE FOUNDATION PLAN & DETAILS, ADJACENT BUILDING PAD
C2.1 24 x 40 - 50+20 PSF CONCRETE FOUNDATION PLAN & DETAILS, ADJACENT BUILDING PAD
C3.0 36 x 40 - 50 PSF CONCRETE FOUNDATION PLAN & DETAILS, ADJACENT BUILDING PAD
C3.1 36 x 40 - 50+20 PSF CONCRETE FOUNDATION PLAN & DETAILS, ADJACENT BUILDING PAD
C3.2 36 x 40 - 100 PSF CONCRETE FOUNDATION PLAN & DETAILS, ADJACENT BUILDING PAD
C4.0 48 x 40 - 50 PSF CONCRETE FOUNDATION PLAN & DETAILS, ADJACENT BUILDING PAD
C4.1 48 x 40 - 50+20 PSF CONCRETE FOUNDATION PLAN & DETAILS, ADJACENT BUILDING PAD
C4.2 48 x 40 - 100 PSF CONCRETE FOUNDATION PLAN & DETAILS, ADJACENT BUILDING PAD

ADJACENT BUILDINGS: ONLY THOSE BUILDINGS MANUFACTURED BY THE SAME COMPANY MAY BE PLACED ADJACENT TO EACH OTHER

CLASS LEASING-APPROVED STOCKPILE A NUMBERS FOR THIS FOUNDATION PC

BUILDING DATA - 24 x 40 SHEAR WALL

STKP #	DSA #	PC-BASE	DATE	SIZE	FLOOR LOAD	BLDG MFG
STKP 1029	50643	SHR	10-21-1988	24 x 40	50+20#	MODTECH
STKP 02	52512	48138-SHR	11-06-1989	24 x 40	50#	MODTECH
STKP 01	52513	46750-SHR	11-06-1989	24 x 40	50#	MODTECH
STKP 03	52514	SHR	11-06-1989	24 x 40	50#	MODTECH
STKP 04	52516	SIM PC 29 SHR	12-07-1989	24 x 40	50#	MODTECH
STKP 22	55113	PC 80	10-05-1990	24 x 40	50#	MODTECH
STKP 24	55580	PC 95	06-14-1994	24 x 40	50#	MODTECH
STKP 13	61957	PC 247	06-29-1994	24 x 40	50#	MODTECH
STKP 77	57970	PC 247	11-10-1997	24 x 40	50#	MODTECH

BUILDING DATA - 24 x 40 RIGID FRAME

STKP #	DSA #	PC-BASE	DATE	SIZE	FLOOR LOAD	BLDG MFG
STKP 11	52482	MRF	08-13-1991	24 x 40	50+20#	MODTECH
STKP 20	55031	PC 79	09-18-1990	24 x 40	50#	MODTECH
STKP 21	55032	PC 79	09-19-1990	24 x 40	50#	MODTECH
STKP 23	55347	PC 79	11-26-1990	24 x 40	50#	MODTECH
STKP SW	57194	PC 79	11-08-1991	24 x 40	50+20#	MODTECH
STKP 14	57679	PC 96	03-19-1992	24 x 40	50#	MODTECH
STKP 18	63288	PC 243	05-04-1995	24 x 40	50#	MODTECH
STKP 19	63321	PC 242	05-11-1995	24 x 40	50#	MODTECH
STKP 27	65493	PC 266	07-31-1996	24 x 40	50#	MODTECH
STKP 31	66318	PC 266	11-12-1996	24 x 40	50+20#	MODTECH
STKP 33	67333	RC 266	03-11-1997	24 x 40	50#	MODTECH
STKP 35	04-100117	PC 266	01-15-1998	24 x 40	50+20#	MODTECH
STKP 39	04-100595	PC 275	08-10-1998	24 x 40	50+20#	MODTECH
STKP 37	04-100596	PC 266	08-10-1998	24 x 40	50+20#	MODTECH
STKP 40	04-100690	PC 282	09-03-1998	24 x 40	50+20#	MODTECH
STKP 42	04-100929	PC 266	01-07-1999	24 x 40	50+20#	MODTECH
STKP 43	04-101555	PC 275	09-09-1999	24 x 40	50#	MODTECH
STKP 44	04-101602	PC 266	09-30-1999	24 x 40	50+20#	MODTECH
STKP 48	04-101768	PC 101268	12-16-1999	24 x 40	50#	MODTECH
STKP 51	04-102015	PC 101268	03-16-2000	24 x 40	50# /**50+20#	MODTECH
STKP 53	04-102365	PC 101268	07-06-2000	24 x 40	50+20#	MODTECH
STKP 56	04-102824	PC 101268	12-21-2000	24 x 40	50#	MODTECH
STKP 62	04-104169	PC 101268	04-18-2002	24 x 40	50+20#	MODTECH
STKP 67	04-104812	PC 101268	12-05-2002	24 x 40	50+20#	MODTECH
STKP 70	04-105299	PC 104801	05-22-2003	24 x 40	50+20#	MODTECH
STKP 75	04-110431	PC 04-105337	06-05-2003	24 x 40	50#	MODTECH
STKP 76	04-105455	PC 04-104796	07-17-2003	24 x 40	50#	MODTECH
STKP 78	04-109208	PC 108884	12-03-2007	24 x 40	50#	CURRENT/SMI
STKP 107	65985	PC 266	05-24-1996	24 x 40	50#	MODTECH
STKP 109	66341	PC 275	05-20-1989	24 x 40	50#	MODTECH
STKP 110	04-100118	PC 04-100073	01-15-1998	24 x 40	50#	MSI
STKP 111	04-101984	PC 04-101419	03-09-2000	24 x 40	50#	MODTECH
STKP 112	04-104082	PC 04-101419	03-21-2002	24 x 40	50#	MODTECH
STKP 113	04-104310	PC 04-101419	06-02-2002	24 x 40	50#	MODTECH
STKP 114	04-105455	PC 04-104796	07-17-2003	24 x 40	50#	MODTECH
STKP 130	04-101527	PC 270	09-12-1999	24 x 40	50# /50+20#	MODTECH
STKP 131	04-104946	PC 04-101419	01-23-2003	24 x 40	50# /50+20#	MODTECH

BUILDING DATA - 36 x 40 RIGID FRAME

STKP #	DSA #	PC-BASE	DATE	SIZE	FLOOR LOAD	BLDG MFG
STKP SW	57194	PC 79	11-08-1991	36 x 40	70#	MODTECH
STKP 32	66319	PC 266	11-12-1996	36 x 40	50+20#	MODTECH
STKP 34	67332	PC 266	03-11-1997	36 x 40	50+20#	MODTECH
STKP 45	04-101616	PC 101268	10-07-1999	36 x 40	50+20#	MODTECH
STKP 81	04-113121	PC 04-102015	09-12-2013	36 x 40	50+20#	MODTECH
STKP 57	04-103001	PC 101268	03-01-2001	36 x 40	50#	MODTECH
STKP 65	04-104441	PC 101268	07-11-2002	36 x 40	50+20#	MODTECH
STKP 71	04-106-419	PC 104801	07-29-2004	36 x 40	50+20#	MODTECH
STKP 73	04-108585	PC 101268	03-01-2007	36 x 40	100#	MODTECH
STKP 85	04-111101	PC 79	06-03-2010	36 x 40	50+20#	MODTECH
STKP 104	04-113588	A-88118	05-01-2014	36 x 40	50+20#	MODTECH

BUILDING DATA - 48 x 40 RIGID FRAME

STKP #	DSA #	PC-BASE	DATE	SIZE	FLOOR LOAD	BLDG MFG
STKP SW	57194	PC 79	11-08-1991	48 x 40	100#	MODTECH
STKP SW	57194	PC 79	11-08-1991	48 x 40	70#	MODTECH
STKP 17	63289	PC 243	05-04-1995	48 x 40	50+20#	MODTECH
STKP 41	04-100797	PC 266	10-22-1998	48 x 40	50+20#	MODTECH
STKP 46	04-101617	PC 101268	10-07-1999	48 x 40	50+20#	MODTECH
STKP 63	04-104170	PC 101268	04-18-2002	48 x 40	50+20#	MODTECH
STKP 96	04-113418	PC 79/57194	01-30-2014	48 x 40	50+20#	MODTECH
STKP 105	04-113544	PC 04-101268	04-10-2014	48 x 40	50+20#	MODTECH

REGISTERED PROFESSIONAL ENGINEER — JAMES T. SIMPSON — No. 3602 — STRUCTURAL — STATE OF CALIFORNIA
LICENSE EXPIRES 6-30-2016

DATE SIGNED SEP 30 201[illegible]

REGISTERED PROFESSIONAL ENGINEER — JAMES T. SIMPSON — No. 3602 — STRUCTURAL — STATE OF CALIFORNIA
LICENSE EXPIRES 6-30-2016

DATE SIGNED JAN 28 2015

REVISED 1/29/15

PRE-CHECK (PC) DOCUMENT
CODE: 2013 CBC
A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP03 117500
AC __ FLS __ SS __
Date SEP 21 2016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
04 113776
AC __ FLS __ SS __
DATE JAN 29 2015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
PC 04-113776
AC __ FLS __ SS __
DATE OCT 08 2014

STOCKPILE CLASSROOM RELOCATION - BASIC BELOW GRADE FOUNDATION PLANS

MULTIPLE BUILDINGS MAY BE PLACED TOGETHER FOR DISTRICT SITE REQUIRMENTS.

ADDITIONAL VENTILATION -ACCESS MUST BE PROVIDED FOR THE OVERALL BUILDING PLAN:

STOCKPILE CLASSROOM RELOCATION FOUNDATION PLAN & DETAILS

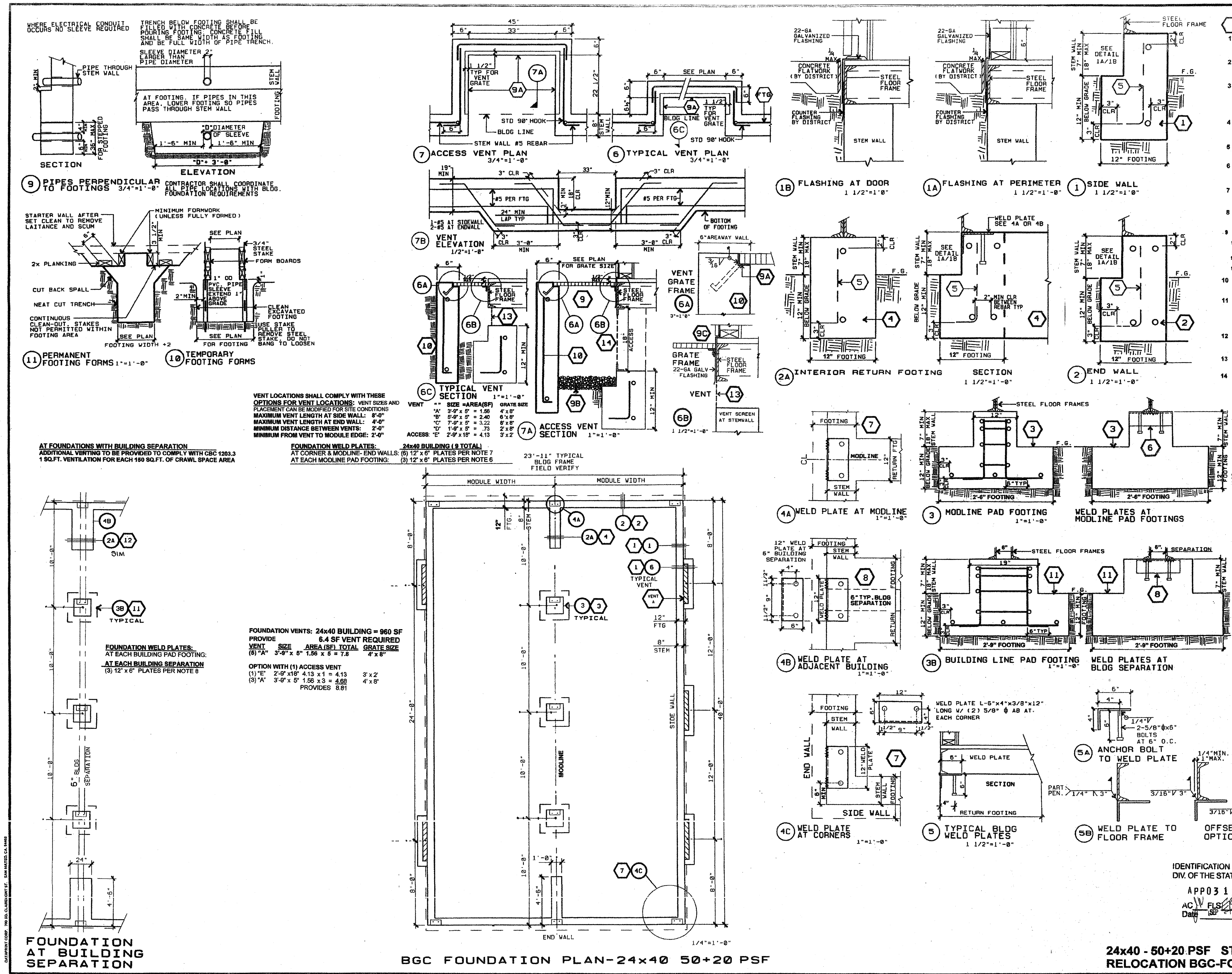
REVISIONS	BY
⚠1 JAN 2015 ADD STKP 130/131 & FOUNDATION EXPAND NOTE	CLLS

CLASS LEASING LLC

Class Leasing, LLC
1221 Harley Knox Blvd. Perris, CA 92571-7408
VOICE (951)943-1908 FAX (951)943-5768

CLASS LEASING, LLC.
PC - FOUNDATION PLANS & DETAILS FOR RELOCATION OF STOCKPILE CLASSROOMS
BELOW GRADE CONCRETE FOUNDATIONS

DATE	09-29-2014
SCALE	
DRAWN	LAM-CLLS
JOB	
SHEET	C1.0



VENT LOCATIONS SHALL COMPLY WITH THESE **OPTIONS FOR VENT LOCATIONS:** VENT SIZES AND PLACEMENT CAN BE MODIFIED FOR SITE CONDITIONS
MAXIMUM VENT LENGTH AT SIDE WALL: 8'-0"
MAXIMUM VENT LENGTH AT END WALL: 4'-0"
MINIMUM DISTANCE BETWEEN VENTS: 2'-0"
MINIMUM FROM VENT TO MODULE EDGE: 2'-0"

VENT	" "	SIZE =AREA(SF)	GRATE SIZE
	"A"	3'-9" x 5" = 1.56	4' x 8"
	"B"	5'-9" x 5" = 2.40	6' x 8"
	"C"	7'-9" x 5" = 3.22	8' x 8"
	"D"	1'-9" x 5" = .73	2' x 8"
ACCESS:	"E"	2'-9" x 18" = 4.13	3' x 2'

AT FOUNDATIONS WITH BUILDING SEPARATION
ADDITIONAL VENTING TO BE PROVIDED TO COMPLY WITH CBC 1203.3
1 SQ.FT. VENTILATION FOR EACH 150 SQ.FT. OF CRAWL SPACE AREA

FOUNDATION WELD PLATES: **24x40 BUILDING (9 TOTAL)**
AT CORNER & MODLINE- END WALLS: (6) 12" x 6" PLATES PER NOTE 7
AT EACH MODLINE PAD FOOTING: (3) 12" x 6" PLATES PER NOTE 6

FOUNDATION WELD PLATES:
AT EACH BUILDING PAD FOOTING:
AT EACH BUILDING SEPARATION
(3) 12" x 6" PLATES PER NOTE 8

FOUNDATION VENTS: 24x40 BUILDING = 960 SF
PROVIDE 6.4 SF VENT REQUIRED

VENT	SIZE	AREA (SF) TOTAL	GRATE SIZE
(5) "A"	3'-9" x 5"	1.56 x 5 = 7.8	4' x 8"

OPTION WITH (1) ACCESS VENT

(1) "E"	2'-9" x18"	4.13 x 1 = 4.13	3' x 2'
(3) "A"	3'-9" x 5"	1.56 x 3 = 4.68	4' x 8"
		PROVIDES 8.81	

NOTES 50+20 PSF FLOOR LOAD-

1 **FOUNDATION AT SIDE WALL:**
12" WIDE FOOTING: (1) #5 REBAR CONTINUOUS
8" STEM WALL AT TOP AND BOTTOM

2 **FOUNDATION AT END WALL:**
12" WIDE FOOTING: (2) #5 REBAR CONTINUOUS
8" STEM WALL AT TOP AND BOTTOM

3 **MODLINE PAD FOOTING:**
2'-6" SQ. FOOTING: (3) #5 REBAR AT BOTTOM; EACH WAY
12" PEDESTAL: (2) #4 SQUARE TIES AT TOP AND #4 SQUARE TIES AT 8" O.C. (4) #5 -L REBAR VERTICALS

4 **MODLINE RETURN FOOTING:**
12" WIDE FOOTING: (1) #5 REBAR CONTINUOUS AT TOP AND BOTTOM

5 **VERTICAL REBAR:** #3 VERTICALS AT 24" O.C.
REQUIRED ONLY ON 60'x40' BLDG OR GREATER

6 **WELD PLATES:** AT INTERIOR PADS — L- 6"x 4"x3/8"x12" LONG WELD PLATES W/ (2) 5/8" ϕ AB's. SEE DETAIL 3 AND DETAIL 5 FOR WELDING PLATE TO FRAME.

7 **WELD PLATES:** AT END WALLS CORNERS & MODLINES — L- 6"x 4"x3/8"x12" LONG WELD PLATES W/ (2) 5/8" ϕ AB's. SEE DETAIL 4A/4C AND DETAIL 5 FOR WELDING PLATE TO FRAME.

8 **WELD PLATES:** AT BLDG SEPARATION — L- 6"x 4"x3/8"x12" LONG WELD PLATES W/ (2) 5/8" ϕ AB's. SEE DETAIL 4B AND DETAIL 5 FOR WELDING PLATE TO FRAME.

9 **HORIZONTAL VENT:** GRATE OPENING TO BE A MAXIMUM 1" (EXCEPT 1/2" MAX. IN PATH OF TRAVEL)
9A ANGLE FRAME: AT CONC WALL: L -1 1/4" x 1 1/4" FOR HORIZONTAL VENT 3/8" DIA. x 6" LONG ANCHOR BOLTS AT 24"O.C. WELD ANGLE VENT FRAME TO BOLTS
9B DRYWELL: 3" DEEP WITH 3/8" PEA GRAVEL ONLY AT ACCESS VENT
9C ANGLE FRAME: AT FLOOR FRAME: L -1 1/4" x 1 1/4" FOR HORIZONTAL VENT #10 STS AT 12" O.C. FRAME TO FLR FRAME

10 **VENT AREAWAY WALL:** 6" WIDE — (1) #4 REBAR CONTINUOUS AT TOP AND BOTTOM

11 **PAD FOOTING: AT BUILDING SEPARATION**
2'-9" SQ. FOOTING: (3) #5 REBAR AT BOTTOM; EACH WAY
19" PEDESTAL: (2) #4 SQUARE TIES AT TOP AND #4 SQUARE TIES AT 8" O.C. (4) #5 -L REBAR VERTICALS

12 **RETURN FOOTING: AT BUILDING SEPARATION**
24" WIDE FOOTING: (1) #5 REBAR CONTINUOUS AT TOP AND BOTTOM

13 VENT SCREEN — 12 GA GALVANIZED EXPANDED DIAMOND MESH. EMBED 1 1/2" INTO WET CONCRETE AT 2 SIDES AND BOTTOM.

14 OPTION FRAME: — 3/16" x 1 1/2" GALVANIZED ANGLE FRAME WITH 12-GA GALVANIZED EXPANDED DIAMOND MESH WELDED TO END OF INTERIOR ANGLE LEG. ANCHOR WITH 3 FASTENERS AT BOTTOM INTO CONCRETE AND 3 FASTENERS AT TOP INTO FLOOR CHANNEL.

GENERAL NOTES

THE BUILDING SHALL BE SET ON 3000 PSI CONCRETE PADS, DESIGNED FOR A MAXIMUM OF 1500 PSF LOAD ON THE SOIL WITH A MINIMUM 12 INCH PENETRATION INTO EARTH PER THE DSA APPROVED PC DRAWINGS. THE FOUNDATION AND THE METHOD OF FASTENING THE UNITS SHALL BE PER THE APPROVED PC DRAWINGS.

BELOW GRADE FOUNDATION REQUIRES 18" CLEARANCE UNDER BUILDING FROM THE BOTTOM OF THE PURLINS TO THE TOP OF FINISH PAD OR TOP OF RODENT BARRIER. THE FOOTING DESIGN SHALL PROVIDE SHIMS AND BLOCKS NECESSARY TO PERMIT INSTALLATION ON SITES NOT LEVEL, BUT WITHIN THE TOLERANCE ALLOWED BY CODE AND/OR DSA.

FOUNDATION DIMENSION REQUIRMENT FOR GROWTH THAT IS EXPERIENCED WHEN SETTING MULTIPLE MODULE BUILDINGS. ADD: 1/4" AT EACH MODULE AND 1/8" AT EACH SIDE WALL --FIELD VERIFY FLOOR FRAME DIMENSIONS.

CONTRACTOR IS RESPONSIBLE FOR THE OVERALL CONCRETE FOUNDATION DIMENSIONS AND ACCURATE PLACEMENT OF WELD PLATES.

THE DISTRICT SHALL PROVIDE CLEAR AND UNOBSTRUCTED ACCESS TO THE SITE. ALL RIGGING AND CRANING ARE NOT INCLUDED IN THIS SECTION. THE DISTRICT SHALL PROVIDE STAKED CORNERS AND A BENCHMARK PER THE ARCHITECT'S PLANS. THE DISTRICT SHALL BE RESPONSIBLE FOR ANY OVER EXCAVATION AND COMPACTION OF THE BUILDING PAD. THE DISTRICT SHALL PROVIDE THE CONTRACTOR AND/OR CLASS LEASING AN EXCAVATED CLEAR 22'x60' PAD LEVEL WITHIN +/- .1' OVER THE DIAGONAL MEASUREMENT OF THE PAD. THE DISTRICT IS RESPONSIBLE FOR ALL SOILS/SPOILS REMOVAL, HAUL OFF, BACKFILL AND RE-COMPACTION.

DATE SIGNED SEP 30 2014
REGISTERED PROFESSIONAL ENGINEER JAMES T. SIMPSON No. 3602 STRUCTURAL STATE OF CALIFORNIA
LICENSE EXPIRES 6-30-2016

PRE-CHECK (PC) DOCUMENT
CODE: 2013 CBC
A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP03 117500
AC FLS SS
Date SEP 21 2016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
PC 04-113776
AC FLS SS
DATE: OCT 08 2014

24x40 - 50+20 PSF STOCKPILE CLASSROOM RELOCATION BGC-FOUNDATION PLAN & DETAILS

REVISIONS | BY

CLASS LEASING LLC

Class Leasing, LLC
1221 Harley Knox Blvd. Perris, CA 92571-7408
VOICE (951)943-1908 FAX (951)943-5768

CLASS LEASING, INC.
STOCKPILE CLASSROOM
24x40 - 50+20 PSF RELOCATION
BGC- FOUNDATION PLAN & DETAILS

DATE	09-29-2014
SCALE	
DRAWN	LAM-CLLS
JOB	24x40 50+20 PSF
SHEET	C2.1