Administration Service Interior Improvements - Student Services and Administration Building

LAS POSITAS COLLEGE
3000 CAMPUS HILL DR., LIVERMORE CA

DSA SUBMITTAL

08.11.2020

PROJECT DESCRIPTION

The project is limited to interior work in the Academic Services Suite 1690. Suite 1690 is located in the West Wing of the Second Floor of the Las Positas College Student Services and Administration Building (B-1600, DSA# 01-111019).

The improvements to the Academic Services Administration Suite 1690 include the expansion of the Vice President's office, the conversion of the existing storage space into a new office, and the creation of two new offices and a new storage space.

APPLICABLE CODES AND SUMMARIES

JURISDICTION: CALIFORNIA DIVISION OF STATE ARCHITECT (DSA)

NOTE: THE INTENT OF THE DRAWINGS AND SPECIFICATIONS IS TO CONSTRUCT REFERENCED PROJECT IN ACCORDANCE WITH CALIFORNIA CODE OF REGULATIONS TITLE 24. SHOULD ANY CONDITION DEVELOP NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH SAID CALIFORNIA CODE OF REGULATIONS TITLE 24, A CHANGE ORDER DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE AGENCY HAVING JURISDICTION BEFORE PROCEEDING WITH THE WORK.

CALIFORNIA CODE OF REGULATIONS (CCR)
2019 CALIFORNIA ADMINISTRATIVE CODE - PART 1, TITLE 24, CCR*
2019 CALIFORNIA BUILDING CODE - PART 2, TITLE 24, CCR
(2018 INTERNATIONAL BUILDING CODE, VOL. 1 & 2, AND 2019 CALIFORNIA AMENDMENTS)
2019 CALIFORNIA ELECTRICAL CODE - PART 3, TITLE 24, CCR
(2017 NATIONAL ELECTRICAL CODE AND 2019 CALIFORNIA AMENDMENTS)
2019 CALIFORNIA MECHANICAL CODE - PART 4, TITLE 24, CCR
(2018 IAPMO UNIFORM MECHANICAL CODE AND 2019 CALIFORNIA AMENDMENTS)
2019 CALIFORNIA PLUMBING CODE - PART 5, TITLE 24, CCR
(2018 IAPMO UNIFORM PLUMBING CODE AND 2019 CALIFORNIA AMENDMENTS)
2019 CALIFORNIA ENERGY CODE - PART 6, TITLE 24, CCR
2019 CALIFORNIA FIRE CODE - PART 9, TITLE 24, CCR
(2018 INTERNATIONAL FIRE CODE AND 2019 CALIFORNIA AMENDMENTS)
2019 CALIFORNIA EXISTING BUILDING CODE - PART 10, TITLE 24, CCR
(2018 INTERNATIONAL EXISTING BUILDING CODE AND 2019 CALIFORNIA AMENDMENTS)
2019 CALIFORNIA GREEN BUILDING STANDARDS CODE - PART 11, TITLE 24, CCR
2019 CALIFORNIA REFERENCE STANDARDS CODE - PART 12, TITLE 24, CCR
TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS
2016 ASME A17.1/CSA B44-13 SAFETY CODE FOR ELEVATORS AND ESCALATORS (PER 2019 CBC PART 2 CH 35)
NOTE: CAL/OSHA ELEVATOR UNIT ENFORCED CCR TITLE 8 AND USES THE 2004 ASME A17.1 BY ADOPTION

CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO NFPA STANDARDS

NFPA 10, STANDARD FOR PORTABLE FIRE EXTINGUISHERS, 2018 EDITION
NFPA 13, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS (CA AMENDED), 2016 EDITION
NFPA 14, STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEM (CA AMENDED), 2016 EDITION
NFPA 17, STANDARD FOR DRY CHEMICAL EXTINGUISHING SYSTEMS, 2017 EDITION
NFPA 17A, STANDARD FOR WET CHEMICAL EXTINGUISHING SYSTEMS, 2017 EDITION
NFPA 72, NATIONAL FIRE ALARM AND SIGNALING CODE (CA AMENDED), 2016 EDITION
NFPA 80, STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES, 2016 EDITION
NFPA 101, LIFE SAFETY CODE, 2018 EDITION
NFPA 2001, STANDARD ON CLEAN AGENT FIRE EXTINGUISHING SYSTEMS (CA AMENDED), 2015 EDITION
UL 300, STANDARD FOR FIRE TESTING OF FIRE EXTINGUISHING SYSTEMS FOR PROTECTION OF COMMERCIAL COOKING EQUIPMENT, 2005 (R2010)
UL 464, AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES, 2003 EDITION
UL 521, STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS, 1999 EDITION
UL 1971, STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED, 2002 (R2010)

FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2019 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE CHAPTER 80.

*ALL PARTS OF THE 2019 CALIFORNIA BUILDING CODE BECOME EFFECTIVE JANUARY 1, 2020 EXCEPT THE EFFECTIVE DATE FOR THE USE OF THE 2019 BUILDING ENERGY EFFICIENCY STANDARDS (TITLE 24, PART 1, CHAPTER 10) IS JANUARY 8, 2019 AND THE EFFECTIVE DATE FOR THE USE OF THE CALIFORNIA ADMINISTRATIVE CODE (TITLE 24, PART 1, CHAPTER 4) IS JANUARY 8, 2019.

DEFERRED APPROVALS AND SUBMITTALS

NONE

EXISTING BUILDING OVERVIEW

PROJECT LOCATION: LAS POSITAS COLLEGE, STUDENT SERVICES AND ADMINISTRATION BUILDING, DSA# 01-111019

EXISTING STRUCTURE: 2-STORY STUDENT SERVICES AND ADMINISTRATION BUILDING. EXISTING 68,016 SF

OCCUPANCY: LEVEL 1: GROUP A-2, A-3, B, AND F1-OCCUPANCY
LEVEL 2: GROUP B-OCCUPANCY (EXISTING TO REMAIN)

CONSTRUCTION TYPE: TYPE II-B (NON-COMBUSTIBLE, NON-FIRE-RATED)

ALLOWABLE BUILDING HEIGHT:

	ACTUAL		ALLOWABLE	
STORIES:	2	≤	2-4	OKAY
HEIGHT:	35'	<	55'	OKAY
BLDG AREA RATIO:	1.17	<	2	OKAY

SEE G03-05 FOR DETAIL CALCULATION AND CODE INFORMATION

SHEET INDEX

NOTE: FOR EXISTING PATH OF TRAVEL ACCESSIBLE ELEMENTS SEE REFERENCE SHEET A.02 IN "P.O.T. REFERENCE DRAWINGS" FOLDER

ADMINISTRATIVE REQUIREMENTS

CHAPTER 4 PART 1, TITLE 24, CCR., ADMINISTRATIVE REQUIREMENTS (PARTIAL LISTING ONLY)

1. A COPY OF PARTS 1 AND 2, TITLE 24, C.C.R. SHALL BE KEPT ON THE JOB SITE AT ALL TIMES.

2. ALL CHANGE ORDERS AND ADDENDA TO BE SIGNED BY THE ARCHITECT AND THE OWNER AND APPROVED BY DSA. CHANGE ORDERS ARE NOT VALID UNTIL APPROVED BY DSA PER SECTION 4-335, PART 1, TITLE 24.

3. ALL TESTS TO CONFORM TO THE REQUIREMENTS OF SECTION 4-335, PART 1, TITLE 24, AND APPROVED T & I SHEET.

4. TESTS OF MATERIALS AND TESTING LABORATORY SHALL BE IN ACCORDANCE WITH SECTION 4-335 OF PART 1, TITLE 24 AND THE DISTRICT SHALL EMPLOY AND PAY THE LABORATORY. COSTS OF RE-TEST MAY BE BACK CHARGED TO THE CONTRACTOR.

5. DSA SHALL BE NOTIFIED AT THE START OF CONSTRUCTION AND PRIOR TO THE PLACEMENT OF CONCRETE PER SECTION 4-331, PART 1, TITLE 24.

6. INSPECTOR SHALL BE APPROVED BY DSA. INSPECTION SHALL BE IN ACCORDANCE WITH SECTION 4-333 (B). THE DUTY OF THE INSPECTOR SHALL BE IN ACCORDANCE WITH SECTION 4-342, PART 1, TITLE 24.

7. SUPERVISION OF CONSTRUCTION BY DSA SHALL BE IN ACCORDANCE WITH THE SECTION 4-334, PART 1, TITLE 24.

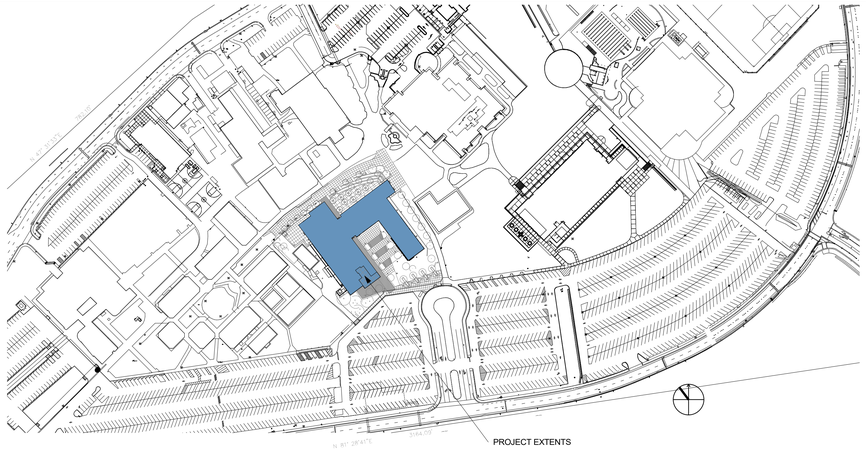
8. CONTRACTOR, INSPECTOR, ARCHITECT, AND ENGINEERS SHALL SUBMIT VERIFIED REPORTS (FORM SSS-6) IN ACCORDANCE WITH SECTION 4-336, AND 4-343, PART 1, TITLE 24.

9. THE CONTRACTOR SHALL PERFORM HIS DUTIES IN ACCORDANCE WITH SECTION 4-343, PART 1, TITLE 24.

ABBREVIATIONS

BLDG.	- BUILDING	OC.	- ON CENTER
CL.	- CENTER LINE	REQ.	- REQUIRED
CONC.	- CONCRETE	RCP.	- REFLECTED CEILING PLAN
CONT.	- CONTINUOUS	SCHD.	- SCHEDULE
DIA.	- DIAMETER	SED	- SEE ELECTRICAL DRAWINGS
E	- EXISTING	SIM.	- SIMILAR
FEC.	- FIRE EXTINGUISHER CABINET	SMD	- SEE MECHANICAL DRAWINGS
FF.	- FINISHED FLOOR	SSD.	- SEE STRUCTURAL DRAWINGS
HT.	- HEIGHT	STL.	- STEEL
MEP	- MECHANICAL / ELECTRICAL/PLUMBING	TYP.	- TYPICAL
MIN.	- MINIMUM	W/	- WITH
MTL.	- METAL		

LOCATION MAP



VICINITY MAP

THESE DRAWINGS AND/OR SPECIFICATIONS AND/OR CALCULATIONS FOR THE ITEMS LISTED BELOW HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. THESE DOCUMENTS HAVE BEEN EXAMINED BY ME FOR DESIGN INTENT AND APPEAR TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS AND THE PROJECT SPECIFICATIONS PREPARED BY ME.

THE ITEMS LISTED BELOW HAVE BEEN COORDINATED WITH MY PLANS AND SPECIFICATIONS ARE ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT FOR WHICH I AM THE INDIVIDUAL DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE.

* ALL SHEETS OF STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL, TELECOM, FIRE PROTECTION, AND FIRE ALARM AND CONTROL

KATIA MCCLAIN — 07/27/2020 DATE

No. 34593 LICENSE NUMBER — 02/28/2021 EXPIRATION DATE

PROJECT DIRECTORY

ARCHITECT OF RECORD

STEINBERG HART
125 S MARKET STREET, SUITE 110
SAN JOSE, CA 95113
408.295.5446

ACOUSTICAL

SALTER, INC.
60 S MARKET STREET, SUITE 480
SAN JOSE, CA, 95113
408.295.4944

MECH., ELEC., PLUM.

INTERFACE ENGINEERING, INC.
135 MAIN STREET, SUITE 400
SAN FRANCISCO, CA 94105
415.489.7240

STRUCTURAL

HOHBACH LEWIN, INC
260 SHERIDEAN AVENUE, SUITE 150
PALO ALTO, CA 94360
650.617.5930

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

CLIENT
Chabot Las-Positas Community College District
5020 Franklin Dr.
Pleasanton, CA 94588

ARCHITECT
Steinberg Hart
125 S. Market St., Suite 110
San Jose, CA 95113

REV DATE ISSUE

KEY PLAN

Administration Services Interior Improvements
Student Services and Administration Building, Las Positas College
3000 Campus Hill Drive, Livermore CA

PROJECT #:20057.100
DATE: August 11, 2020
DRAWN BY: S.CALDWELL
CHECKED BY: K. MCCLAIN
SCALE:

PROJECT INFORMATION & SHEET INDEX

G.01

BUILDING IDENTIFICATION

B-100	(E) CLASSROOMS	TO BE DEMOLISHED
B-400	(E) ENGLISH CENTER	DSA APPL. NO. 36810
B-500	(E) FINE ARTS / MATHEMATICS LAB	DSA APPL. NO. 37718, 01-100279, 01-111234
B-600	(E) CLASSROOMS, INTEGRATED LEARNING CENTER (ILC)	DSA APPL. NO. 39643, 01-111234
B-700	(E) COMPUTER LAB	DSA APPL. NO. 39643, 44340, 01-111234, 01-114753
B-800	(E) COMPUTER CENTER, THEATER / TECHNICAL - VOCATIONAL	DSA APPL. NO. 41405
B-900	(E) CLASSROOMS	DSA APPL. NO. 41995
B-1100	(E) CENTRAL UTILITY PLAN	DSA APPL. NO. 47291, 01-110313
B-1300	(E) BOOKSTORE	DSA APPL. NO. 61569
B-1600	(E) STUDENT SERVICES & ADMINISTRATION BUILDING	DSA APPL. NO. 01-111019
B-1700	(E) CAMPUS SAFETY, STUDENT HEALTH CENTER	DSA APPL. NO. 01-102915, 01-104183
B-1800	(E) SCIENCE/TECHNOLOGY CENTER 1	DSA APPL. NO. 60512, 01-111060
B-1850	(E) SCIENCE/TECHNOLOGY CENTER 2	DSA APPL. NO. 60512, 01-111060
B-1900	(E) INFORMATION TECHNOLOGY CENTER	DSA APPL. NO. 01-109294
B-2000	(E) LIBRARY (LEARNING RESOURCES CENTER)	DSA APPL. NO. 54873
B-2100	(E) FACULTY OFFICES	DSA APPL. NO. 54873
B-2200	(E) COMPUTER LAB, CLASSROOMS	DSA APPL. NO. 63859
B-2300	(E) CHILD DEVELOPMENT CENTER	DSA APPL. NO. 01-109257
B-2400	(E) MULTI-DISCIPLINARY EDUCATION BUILDING	DSA APPL. NO. 01-106513, 01-118325
B-2500	(E) PHYSICAL EDUCATION BUILDING	DSA APPL. NO. 02-105516
B-4000	(E) COLLEGE CENTER FOR THE ARTS	DSA APPL. NO. 01-108836
	(E) MULTI-USE PLAYING FIELD	DSA APPL. NO. 01-108704
	(E) AQUATICS CENTER	DSA APPL. NO. 01-108679
	CAMPUS WIDE FIRE ALARM SYSTEM	DSA APPL. NO. 01-110073

GENERAL NOTES

1. ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLAN IS A BARRIER-FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAX SLOPE, OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAX., AND AT LEAST 48" IN WIDTH. SURFACE IS STABLE, FIRM, AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5%, UNLESS OTHERWISE INDICATED. ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTION TO 80" MINIMUM, AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 24" AND LESS THAN 80".

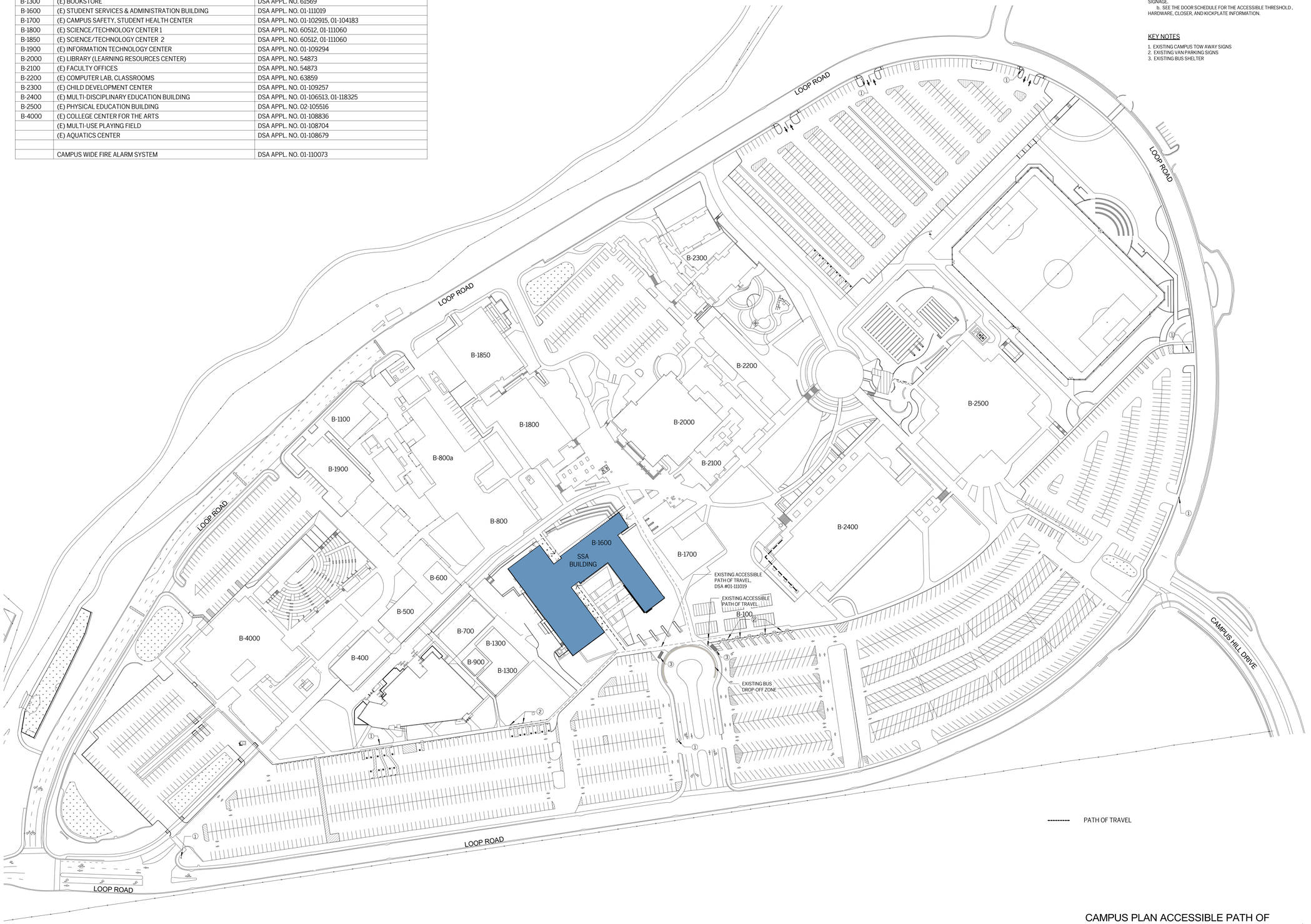
2. ALL EXTERIOR ENTRANCES AND EXITS IDENTIFIED WITH AN ARROW SYMBOL (➔) ON THIS PLAN ARE ACCESSIBLE AND COMPLY WITH CBC 1133B.1.1.

a. SEE THE SIGNAGE SCHEDULE FOR THE ISA AND TACTILE EXIT SIGNAGE.

b. SEE THE DOOR SCHEDULE FOR THE ACCESSIBLE THRESHOLD , HARDWARE, CLOSER, AND KICKPLATE INFORMATION.

KEY NOTES

1. EXISTING CAMPUS TOW AWAY SIGNS
2. EXISTING VAN PARKING SIGNS
3. EXISTING BUS SHELTER



--------- PATH OF TRAVEL

CAMPUS PLAN ACCESSIBLE PATH OF TRAVEL

SCALE: 1" = 80'-0"

1

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Steinberg Hart

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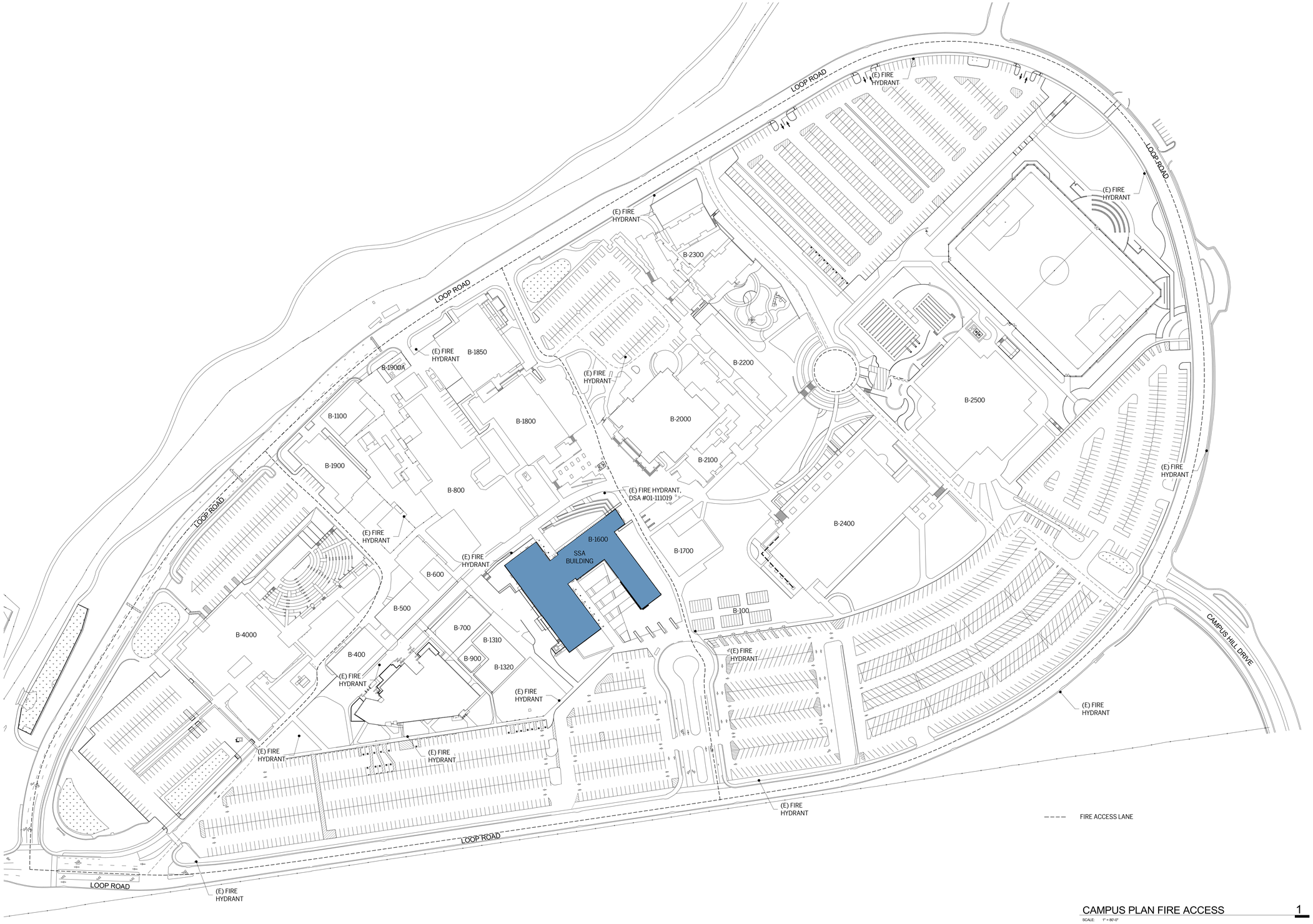
SCALE: As indicated

CAMPUS PLAN ACCESSIBLE PATH OF TRAVEL

G.02



CAMPUS PLAN FIRE ACCESS 1

SCALE: 1" = 80'-0"

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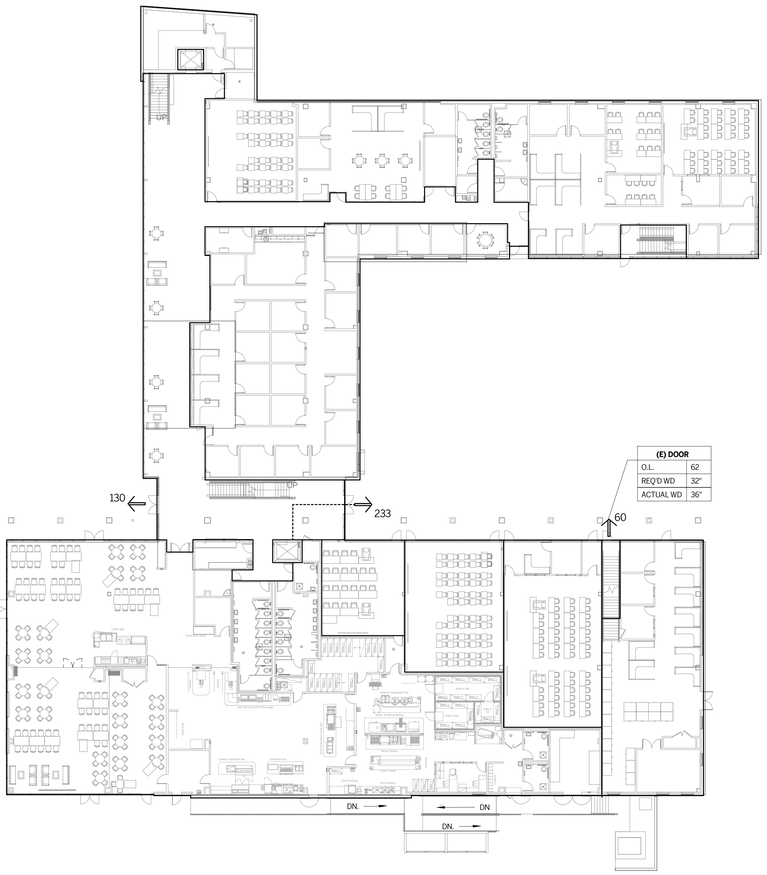
CAMPUS PLAN FIRE ACCESS DIAGRAM

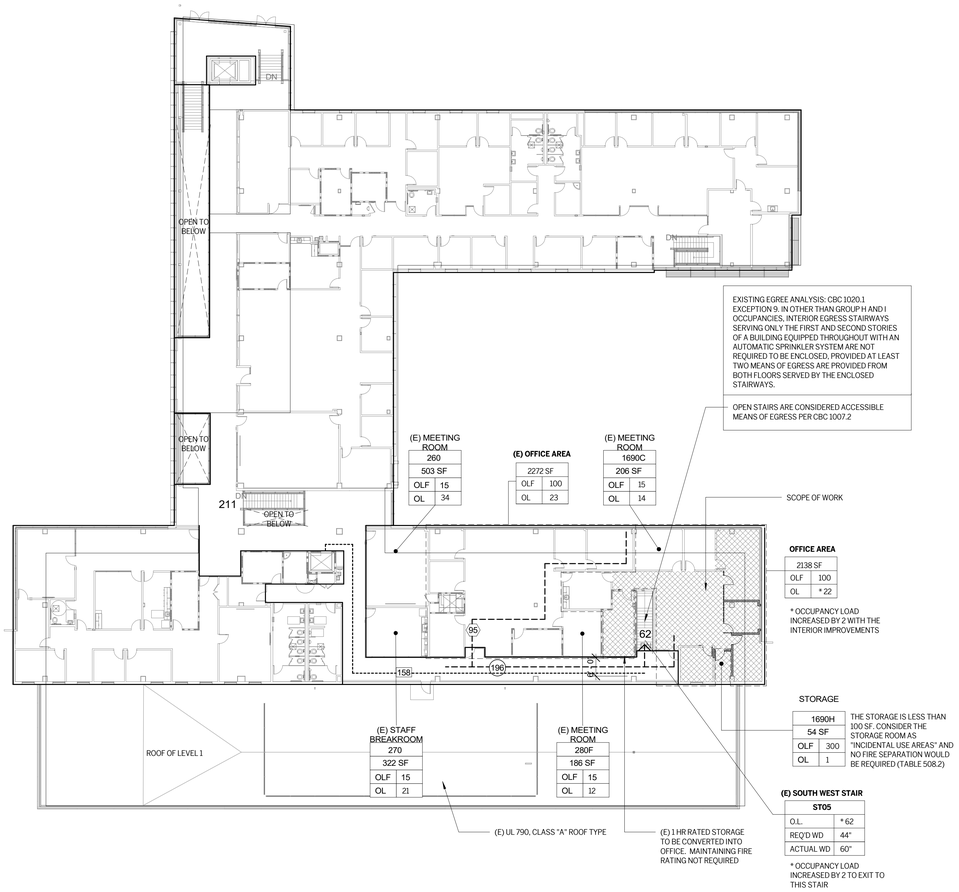
G.03



FOR EXITING REFERENCE ONLY
NO SCOPE OF WORK ON THIS FLOOR

Level 1 - Exiting Plan 1

SCALE: 1" = 20'-0"



Level 2 - Exiting Plan 2

SCALE: 1" = 20'-0"

CODE REVIEW SUMMARY

A. BUILDING AND OCCUPANCY CLASSIFICATION

USES AND OCCUPANCIES

USE	OCCUPANCY	SAMPLES
OFFICE AND ADMIN	GROUP B	OFFICE AREAS
CLASSROOM WITH < 50	GROUP B	OFFICE AREAS
CLASSROOM WITH > 50	GROUP A-3	ASSESSMENT
DINING	GROUP A-2	CAFETERIA
KITCHEN, MECH./ELECTRICAL	GROUP F-1	KITCHEN

B. TYPE OF CONSTRUCTION

THE EXISTING BUILDING IS TYPE II-B CONSTRUCTION (NON-COMBUSTIBLE, NON-FIRE-RATED).

C. EXISTING BUILDING OCCUPANCY

BUILDING MIXED OCCUPANCY DIAGRAM (NO CHANGE)

LEVEL 1	A-2/A-3 8,294 sf	F-1 8,294 sf	B 27,067 sf
LEVEL 2	B 29,016 sf		

D. (E) SEPARATION OF OCCUPANCIES REQUIREMENT

PER CBC TALBE 508.3.3 - BUILDING WITH SPRINKLER SYSTEM

A : B = 1-HR
A : F-1 = 1-HR
B : F-1 = 0

THIS PROJECT SHALL MAINTAIN ANY EXISTING FIRE SEPARATION

E. FIRE RESISTANCE RATING FOR BUILDING ELEMENTS

PER CBC TALBE 601.

BUILDING ELEMENTS	STRUCT. FRAME	BEARING WALLS	EXTERIOR WALLS	INTERIOR WALLS	FLOOR & ROOF
FIRE-RESIST RATING	0	0	SEE TABLE 602	0	0

F. (E) MEANS OF EGRESS

OCCUPANT LOAD FACTOR (OLF)

USE	OLP (SF/PERSON)
DINING AND CONFERENCE	15
COMMERCIAL KITCHEN	200
CLASSROOMS	20
OFFICE	100
STORAGE/MECHANICAL/SERVICE	300

OCCUPANT LOAD PER LEVEL

LEVEL	OCCUPANT LOAD	NUMBER OF EXITS REQ'D PER CBC 1019.1	NUMBER OF EXITS PROVIDED	NUMBER OF ACS EXITS REQ'D	NUMBER OF ACS EXITS PROVIDED
1	1003	4	15	3	15
2	410	2	4	2	4

CBC TABLE 1016.1 EXIT ACCESS TRAVEL DISTANCE

OCCUPANCY TYPE	TRAVEL DISTANCE WITH SPRINKLER SYSTEM (FEET)
B	300
A-2 / A-3	250

CBC SECTION 1014.3 COMMON PATH OF EGRESS TRAVEL
EXCEPTION 1. THE LENGTH OF A COMMON PATH OF EGRESS TRAVEL IN GROUP B, F AND S OCCUPANCIES SHALL NOT BE MORE THAN 100 FEET (30 480 MM), PROVIDED THAT THE BUILDING IS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORADANCE WITH SECTION 903.3.1.1.

CBC SECTION 404.8 . IN OTHER THAN THE LOWEST LEVEL OF THE ATRIUM, WHERE THE REQUIRED MENS OF EGRESS IS THROUGH THE ATRIUM SPACE, THE PORTION OF EXIT ACCESS TRAVEL DISTANCE WITHIN THE ATRIUM SPACE SHALL NOT EXCEED 200 FEET.

THE TOTAL (E) TRAVEL DISTRANCE THROUGH THE ATRIUM IN THIS PROJECT IS 165'-6"

G. (E) CORRIDORS

GROUP B: ALL (E) HALLWAYS ARE FULLY SPRINKLERED, NON-RATED

PER TABLE 17.1 CORRIDORS WALLS DO NOT REQUIRED FIRE-RESISTANT RATING WHEN BUILDING IS EQUIPED THROUGHOUT WITH FIRE SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.3.1.1

H. (E) GENERAL FIRE/LIFE SAFETY FEATURES

1. (E) AUTOMATIC SPRINKLERS
   - FULL PROTECTION
2. (E) FIRE EXTINGUISHERS
   - PROVIDED PER CFC 906
3. (E) FIRE ALARM SYSTEM
   - AUTOMATIC SPRINKLER SYSTEM WATERFLOW SUPERVISION OF ALL CONTROL VALVES
   - DUCT SMOKE DETECTORS AT SMOKE DAMPERS AND MAIN CIRCULATION AIR DUCT PER CMC 609
   - OCCUPANT NOTIFICATION PER NFPA 72

LEGEND

- 80 / 180 — COMMON PATH OF EGRESS TRAVEL DISTANCE, IN FEET; TOTAL FARTHEST TRAVEL DISTANCE, IN FEET MEASURED THROUGH OPEN STAIR TO THE EXTERIOR WHERE APPLICABLE
- 150 — DISTANCE BETWEEN STAIR AND ELEVATOR, IN FEET
- CONFERENCE ROOM — USE/OCCUPANT TYPE
- 17.6 — ROOM NUMBER
- 503 SF — SQUARE FOOTAGE
- OLF 15 / OL 34 — OCCUPANT LOAD FACTOR; OCCUPANT LOAD (SQ/OLF)
- 60 — NUMBER OF OCCUPANT EXTING.
- PROJECT EXTENTS

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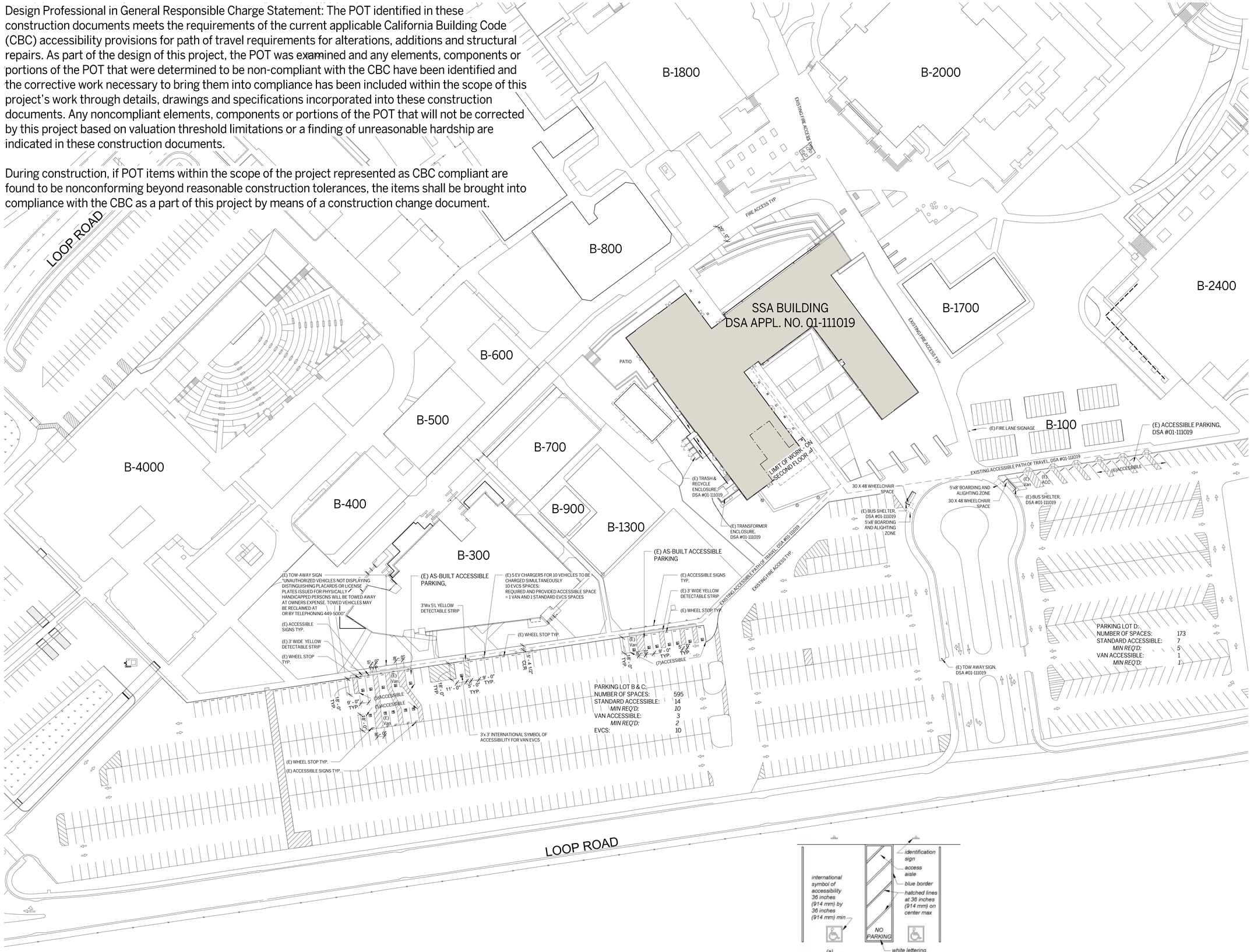
SCALE: As indicated

CODE/LIFE SAFETY

G.04

Design Professional in General Responsible Charge Statement: The POT identified in these construction documents meets the requirements of the current applicable California Building Code (CBC) 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 non-compliant with the CBC have been identified and the corrective work necessary to bring them into compliance has been included within the scope of this project's work through 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 indicated in these construction documents.

During construction, if POT items within the scope of the project represented as CBC compliant are found to be nonconforming beyond reasonable construction tolerances, the items shall be brought into compliance with the CBC as a part of this project by means of a construction change document.



TYPICAL ACCESSIBLE PARKING SPACE MARKINGS

ENLARGED SITE PLAN 1

SCALE: 1" = 40'-0"

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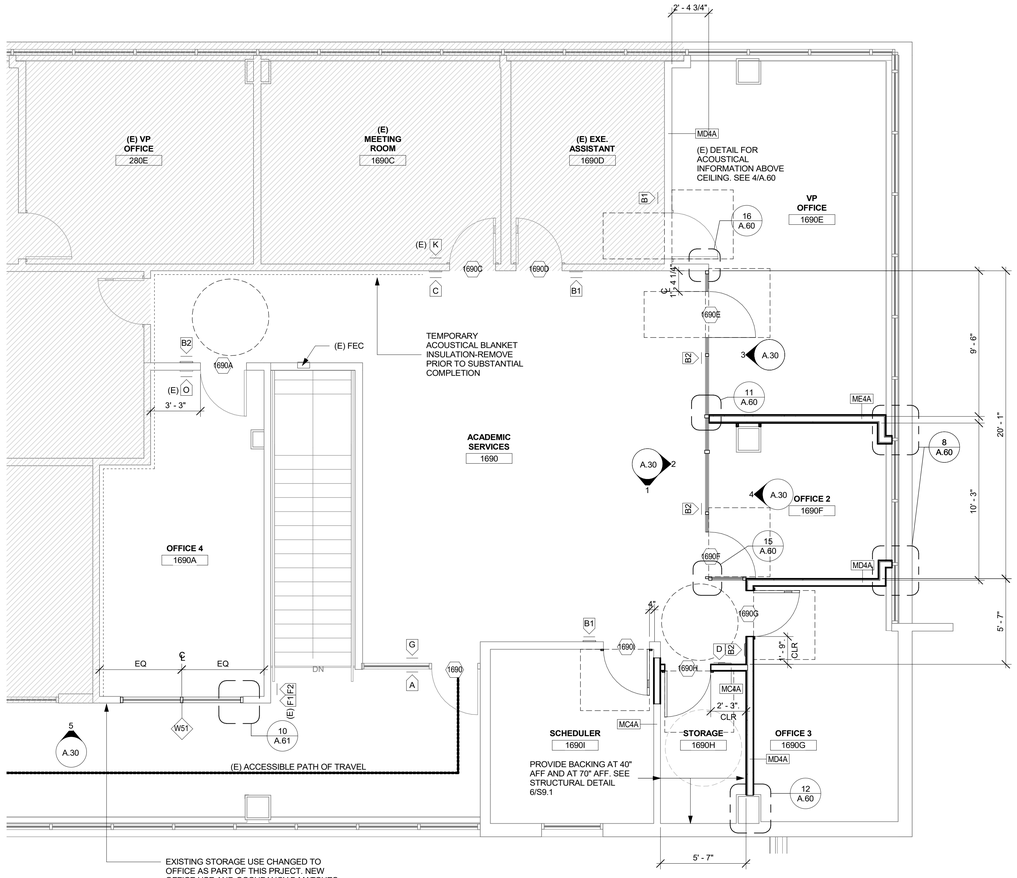
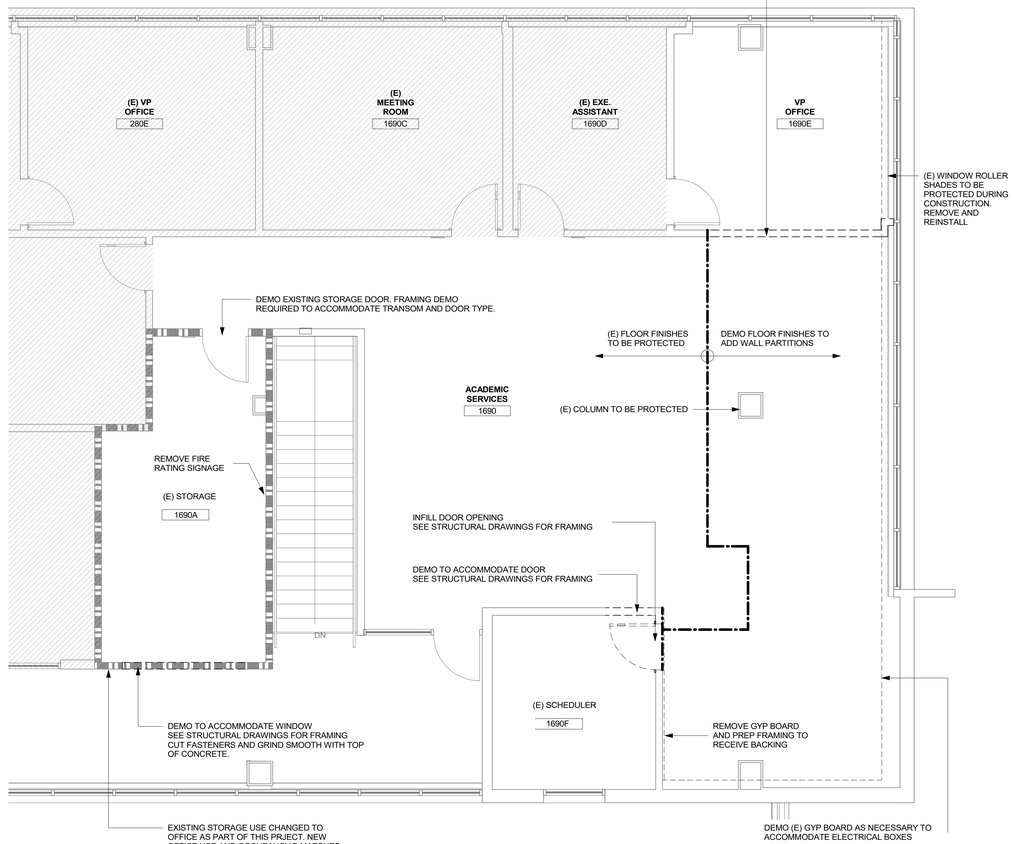
SITE PLAN

A.01



ENLARGED PLAN 2

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



ENLARGED DEMO PLAN 1

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

GENERAL NOTES:

1. SEE INTERIOR ELEVATIONS FOR EXTENT OF SPECIAL WALL FINISHES.
2. SEE INTERIOR ELEVATIONS FOR ACCESSORIES AND EQUIPMENT LOCATIONS.
3. ALL ITEMS NEW UNLESS OTHERWISE NOTED.
4. FURNITURE SHOWN FOR REFERENCE ONLY.
5. ALL DIMENSIONS ARE TO FACE OF STUDS, U.N.O.
6. LOCATE DOOR OPENING AS SHOWN IN DOOR DIAGRAM A.50
7. SEE A.50 FOR SIGNAGE SCHEDULE, TYPES, AND DETAILS.
8. EXISTING SIGNAGE TO REMAIN OR BE PRESERVED AND REINSTALLED
9. SEE A.50 FOR DOOR/WINDOW TYPES
10. NO DEMOLITION SHALL BEGIN UNTIL PLANS INCLUDING THE DEMOLITION WORK HAVE BEEN APPROVED BY DSA

LEGEND

- (E) OFFICE SPACE WITHOUT INTERIOR IMPROVEMENTS
- (E) EXTERIOR ALUMINUM PANEL SYSTEM ON 6" METAL STUD
- (E) EXTERIOR GFRC PANEL SYSTEM WITH INTERIOR METAL STUD FURRING
- (E) INTERIOR METAL STUD WALL
- (E) INTERIOR 1-HR FIRE RATED WALL, SEE 4/A.40
- INTERIOR METAL STUD ACOUSTICAL PARTITION, SEE A.40
- DEMOUNTABLE GLASS PARTITION, SEE A.40
- DIVISION LINE BETWEEN THE FLOOR TO PROTECT AND TO DEMO
- SIGNAGE, SEE A.50
- WALL SECTIONS AND TYPES, SEE A.40
- DOOR TYPES, SEE A.50
- WINDOW TYPES, SEE A.50

FOR EXISTING PATH OF TRAVEL ACCESSIBLE ELEMENTS SEE REFERENCE SHEET A.02 IN "P.O.T. REFERENCE DRAWINGS" FOLDER

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

CLIENT
Chabot Las-Positas Community College District
5020 Franklin Dr.
Pleasanton, CA 94588

ARCHITECT
Steinberg Hart
125 S. Market St., Suite 110
San Jose, CA 95113

REV DATE ISSUE

KEY PLAN

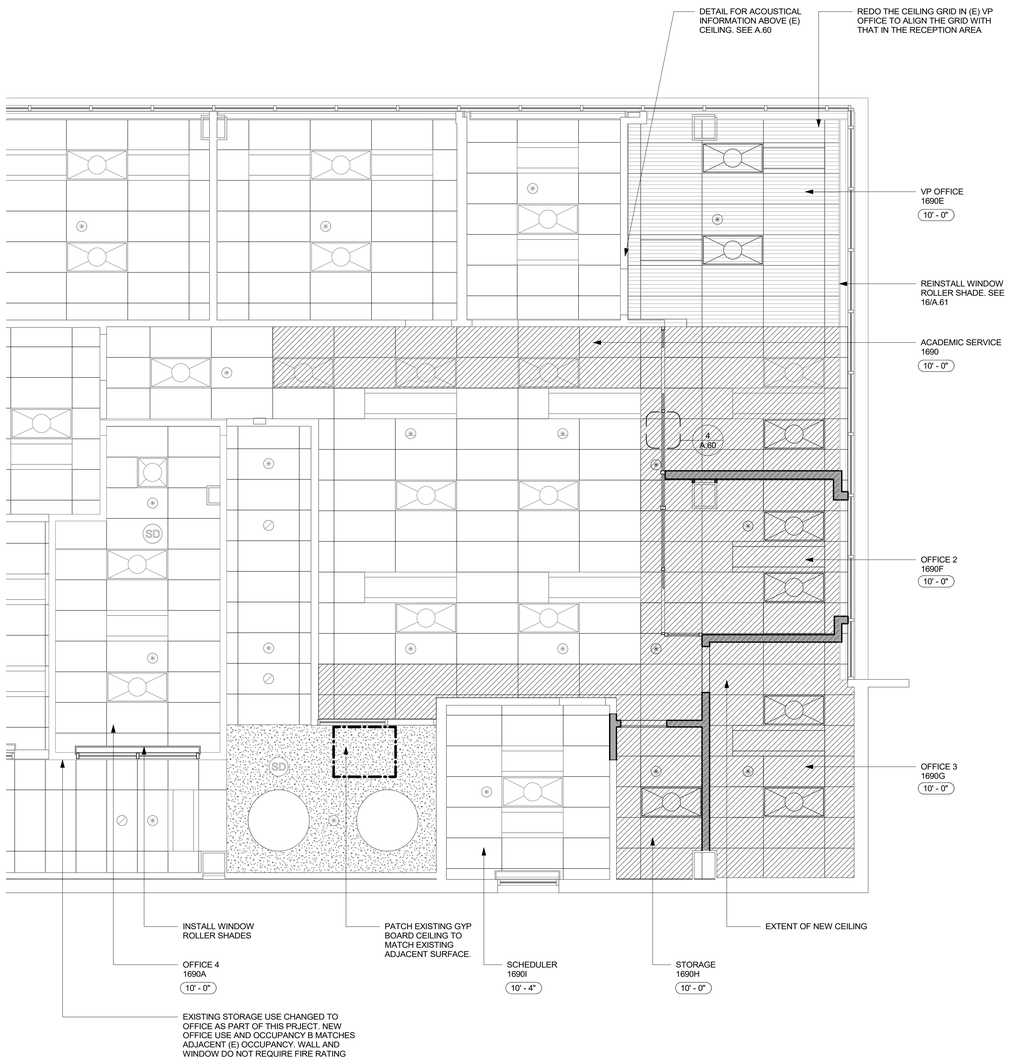
Administration Services Interior Improvements

Student Services and Administration Building, Las Positas College
3000 Campus Hill Drive, Livermore CA

PROJECT #: 20057.100
DATE: August 11, 2020
DRAWN BY: S.CALDWELL
CHECKED BY: K. MCCLAIN
SCALE: As indicated

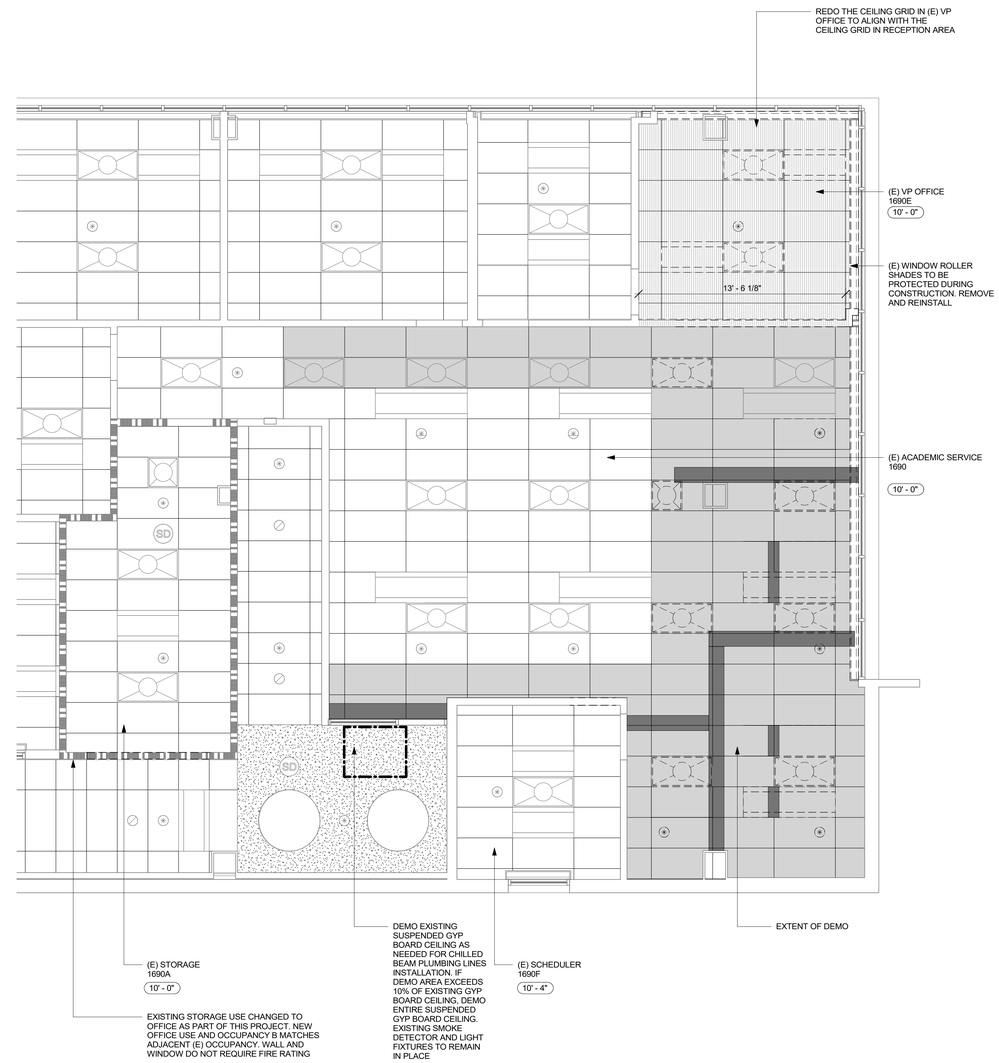
ENLARGED DEMO AND FLOOR PLAN

A.20



REFLECTED CEILING PLAN 2

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



REFLECTED CEILING DEMO PLAN 1

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

GENERAL NOTES:

1. PROTECT ALL EXISTING HVAC EQUIPMENTS, DUCTS, PIPES, AND DEVICES WHEN POSSIBLE

LEGEND:

- REMOVE CEILING TILE AS REQUIRED TO RELOCATED HVAC EQUIPMENT. MAINTAIN ALL CEILING GRID ELEMENTS AND COMPONENTS, INCLUDING SEISMIC ATTACHMENTS WHEN POSSIBLE. CEILING TILES AND LIGHTING FIXTURES WILL BE REINSTALLED AFTER HVAC EQUIPMENT INSTALLATION.
- DEMO EXISTING CEILING SYSTEM INCLUDING ALL SEISMIC ATTACHMENTS
- EXTENT OF AREA WHERE CEILING GRID ELEMENTS AND COMPONENTS ARE AFFECTED (55 SF < 10% of 1122 SF EXISTING RECEPTION AREA CEILING). IF AREA AFFECTED EXCEEDS 10% OF RECEPTION AREA CEILING, DEMO ENTIRE CEILING SYSTEM INCLUDING ALL SEISMIC ATTACHMENTS
- EXTENT OF NEW CEILING
- EXTENT OF EXISTING CEILING WITH <10% OF AREA MODIFIED
- (E) SKYDOME FIXTURE
- (E) SMOKE DETECTOR
- RECESSED FLOURESCENT LIGHT, SED, SEE DETAIL 1/E4.01
- CHILLED BEAM, SMD, SEE DETAIL 2/M.52
- (E) WINDOW ROLLER SHADE
- (E) SPRINKLER HEAD
- WINDOW ROLLER SHADE
- SPRINKLER HEAD

CEILING FINISHES:

- (E) GYPSUM BOARD
- (E) 2'X4' ACT TILE
- 2'X4' ACT TILE, SEE SHEET A.62

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REV	DATE	ISSUE
5	Date 5	Revision 5

KEY PLAN

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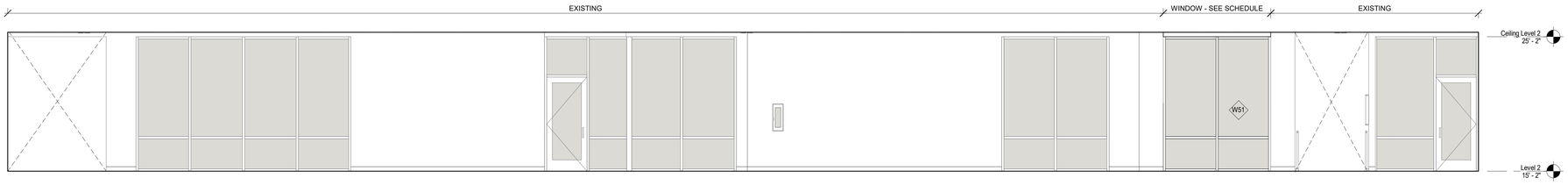
ENLARGED DEMO AND NEW REFLECTED CEILING PLAN

A.21

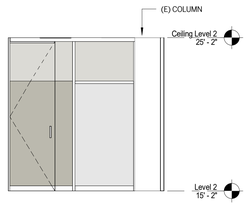
GENERAL NOTES:

1. REFER TO FINISH PLANS FOR ADDITIONAL NOTES AND INFORMATION
2. SEE SHEET A.50 FOR DOOR SCHEDULE
3. SEE SHEET A.50 FOR WINDOW AND ALUMINUM-FRAMED STOREFRONT SCHEDULE
4. SEE SHEET A.20 FOR REFLECTED CEILING PLANS
5. SEE SHEET A.50 FOR SIGNAGE DETAILS



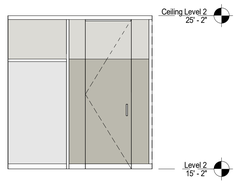
ADMINISTRATIVE CORRIDOR - WEST 5

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



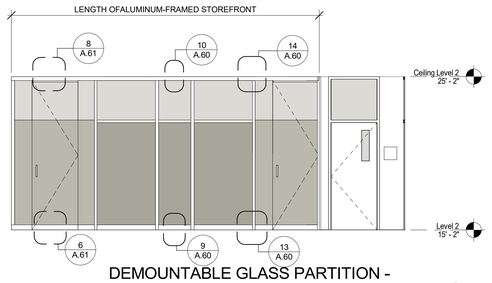
DEMOUNTABLE GLASS PARTITION - OFFICE 2 4

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



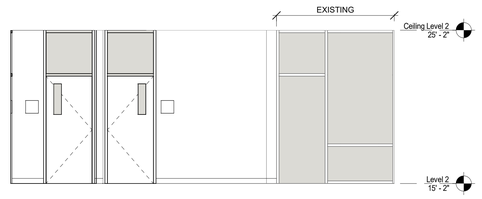
DEMOUNTABLE GLASS PARTITION - VP OFFICE 3

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



DEMOUNTABLE GLASS PARTITION - RECEPTION SIDE 2

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



ADMINISTRATIVE SUITE 1

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

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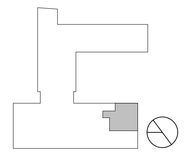

KEY PLAN

Administration Services Interior Improvements

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INTERIOR ELEVATIONS

A.30

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ARCHITECT
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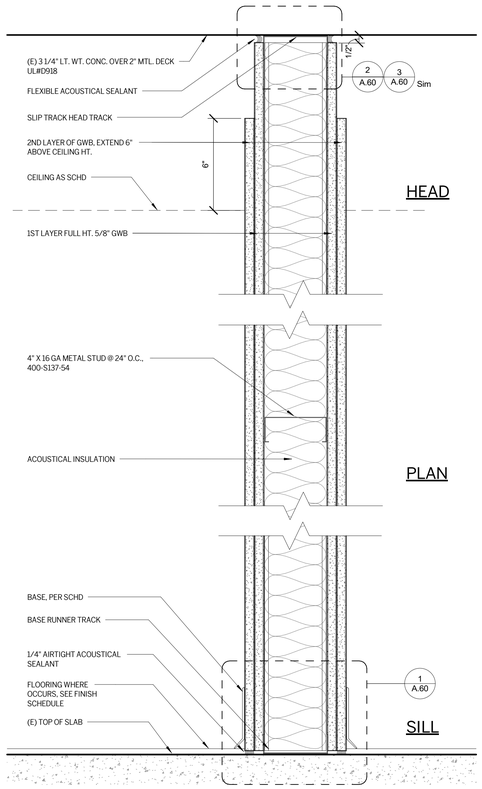
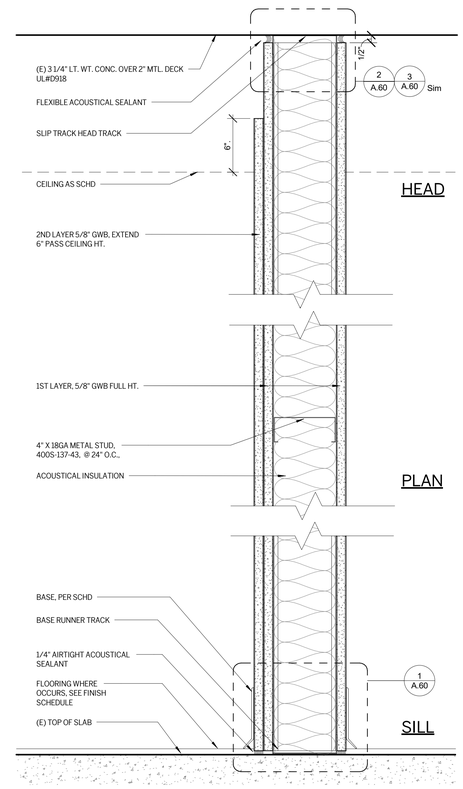
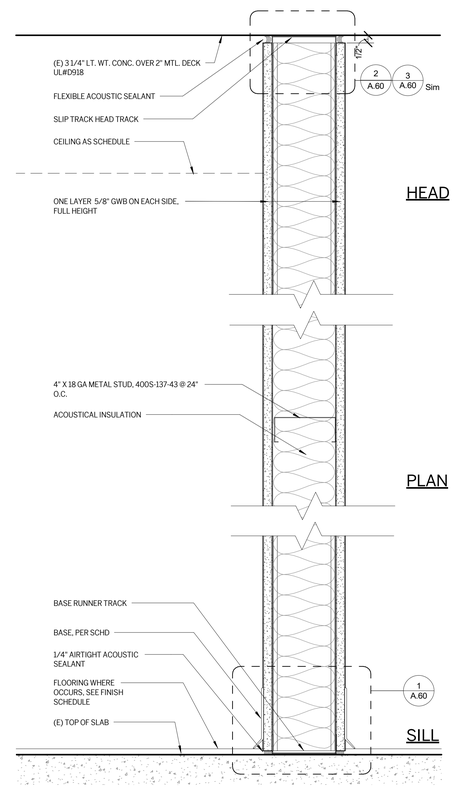


TYPE ME4A - DOUBLE LAYER GYP - 2 SIDED 3
SCALE: 3" = 1'-0"

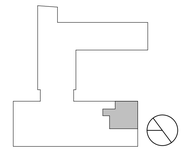


TYPE MD4A - 2/1 LAYER GYP BD. 2
SCALE: 3" = 1'-0"



TYPE MC4A - SINGLE LAYER GYP - 2 SIDED 1
SCALE: 3" = 1'-0"

REV DATE ISSUE



KEY PLAN

Administration Services Interior Improvements

Student Services and Administration Building, Las Positas College
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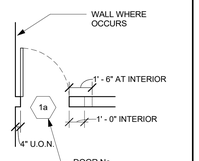
CHECKED BY: K. MCCLAIN
SCALE: 3" = 1'-0"

ACOUSTICAL PARTITION SECTIONS AND TYPES

A.40

Level	DOOR NO.	Room Name	DOOR					FRAME			DETAILS			HARDWARE GROUP	FIRE RATING	REMARKS
			TYPE	WIDTH	HEIGHT	THICKNESS	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	HEAD	JAMB	THRESHOLD			
Level 2	1690E	VP OFFICE	H	3' - 0"	9' - 9"	1/2"	GL		S/CS	ALUM	FF	8/A.61	8/A.61	6/A.61	03		
Level 2	1690F	OFFICE 2	H	3' - 0"	9' - 9"	1/2"	GL		S/CS	ALUM	FF	8/A.62	8/A.61	6/A.61	03		
Level 2	1690G	OFFICE 3	C	3' - 0"	7' - 0"	1 3/4"	WD	S	3	HM	P	4/A.62	3/A.61	2/A.61	02		1E
Level 2	1690H	STORAGE	A	3' - 0"	7' - 0"	1 3/4"	WD	S	3	HM	P	4/A.62	3/A.61	1/A.61	01		2
Level 2	1690I	SCHEDULER	C	3' - 0"	7' - 0"	1 3/4"	WD	S	3	HM	P	4/A.62	3/A.61	2/A.61	02		1E

DOOR DIAGRAM



DOOR GENERAL NOTES

1.THE PURPOSE OF THIS SHEET IS TO DESCRIBE AND ILLUSTRATE DOOR TYPES. NOT ALL DOOR TYPES SHOWN ARE NECESSARILY USED. SEE DOOR MARK SCHEDULE FOR DOOR TYPES USED.

2. SEE FLOOR PLANS FOR DOOR SYMBOL REFERENCES.

3. DOOR OPENING LOCATIONS:
A. IMMEDIATELY (4") ADJACENT TO A FLANKING WALL U.O.N.
B. AT THE CENTERLINE OF THE ROOM, U.O.N CENTERED ON A GRID LINE.
C. DOOR OPENINGS IN OTHER LOCATIONS ARE LOCATED BY DIMENSIONS.

4. SEE SPECIFICATIONS FOR HARDWARE SCHEDULE AND DETAIL FOR HARDWARE MOUNTING INFORMATION.

5. TYPICAL DOOR CONSTRUCTION U.O.N. ON SCHEDULE:
WOOD (WD)=SOLID CORE WOOD DOOR, HOLLOW METAL (HM), ALUMINUM (ALUM).

6. DOOR FRAME NOTES:
A. DOOR FRAMES TO BE KNOCK-DOWN EXCEPT HM EXTERIOR DOOR FRAMES AND FIRE RATED DOOR FRAMES WHICH ARE WELDED FRAMES

7. ALL INTERIOR DOORS WITH FIRE-RATINGS GREATER THAN 20 MINUTE SHALL HAVE A NONCOMBUSTIBLE SILL WITH AN UNDERCUT OF 3/8" ABOVE THE SILL.

8. ALL EXTERIOR DOORS SHALL HAVE METAL THRESHOLDS. SEE HARDWARE SCHEDULE AND DOOR DETAILS SHEETS.

9. WHERE DOOR HOLD-OPEN DEVICES OCCUR AT WALLS, PROVIDE BACKING PLATE

10. SEE THE SIGNAGE SCHEDULE FOR SIGNAGE REQUIREMENTS. FOR EXAMPLE, FOR EXIT DOORS PROVIDE A READILY VISIBLE DURABLE SIGN ON OR ADJACENT TO THE DOOR STATING "THIS DOOR MUST REMAIN UNLOCKED DURING BUSINESS HOURS". THE SIGN SHALL BE IN LETTERS NOT LESS THAN 1 INCH HIGH ON A CONTRASTING BACKGROUND.

11. DOORS MUST BE MINIMUM 36" WIDE

12. DOORS AND DOOR HARDWARE SHALL NOT REQUIRE FORCE GREATER THAN 5 LB. TO OPEN

13. DOOR HARDWARE MUST NOT REQUIRE TWO-HAND OPERATION

14. DOORS SHALL NOT REQUIRE MORE THAN ONE OPERATION TO UNLATCH

15. THRESHOLDS (IF PROVIDED) SHALL NOT EXCEED 1/2"

16. PROVIDE SMOOTH SURFACE WITHIN 10" OF FINISH FLOOR ON PUSH SIDE OF SWINGING DOORS. SMOOTH SURFACE SHALL EXTEND FULL WIDTH OF DOOR. EXEMPT: TEMPERED GLASS DOORS WITHOUT STILES, HAVING A BOTTOM RAIL OR SHOE WITH A TOP LEADING EDGE TAPERED AT 60 DEGREES MAXIMIM FROM THE HORIZONTAL.

17. IN-DOOR GALZING AND VISION LIGHTS SHALL HAVE A BOTTOM EDGE MAXIMUM 43" ABOVE THE FINISH FLOOR

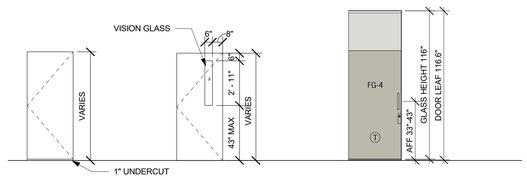
18. CROSS BARS FOR EXIT DEVICES SHALL EXTEND ACROSS NO LESS THAN HALF OF THE DOOR WIDTH

19. ENDS OF CROSS BARS SHALL BE CURVED, GUARDED, OR OTHERWISE PROTECTED TO PREVENT CATCHING ON CLOTHING

DOOR REMARKS

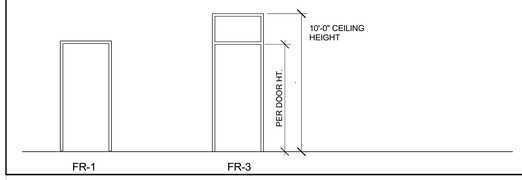
1. GLAZING
A. IGU-1: Tempered both panes
B. FRG-1: Fire-rated non-impact
C. FRG-2: Fire-rated safety
D. FG-1: Transparent tempered
E. FG-2: Transp. Acoustic Laminated
F. FG-3: Obscure Laminated
G. FG-4: Vinyl Film
2. UNDERCUT DOOR 1"

DOOR TYPE



TYPE A TYPE C TYPE H

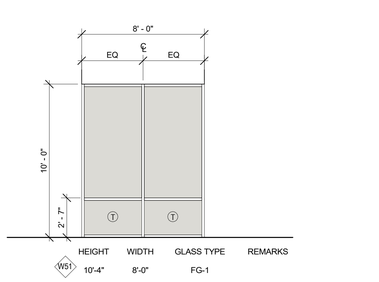
FRAME TYPES



FR-1 FR-3

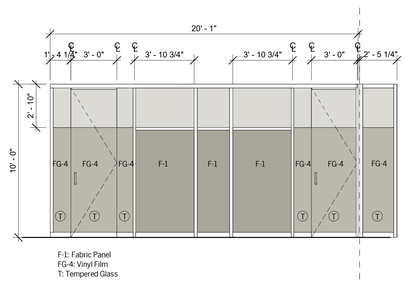
DOOR ABBREVIATIONS

ALUM	- ALUMINUM
HM	- HOLLOW METAL STEEL
RUD	- ROLL UP DOOR
FLD	- FOLDING DOOR
P	- PAINTED
SS	- STAINLESS STEEL
STR	- STOREFRONT SYSTEM
WD	- WOOD
S	- STAINED
FF	- FACTORY FINISH
STL	- STEEL
S/CS	- STOREFRONT/CURTAINWALL SYSTEM
MFR	- MANUFACTURER
GL	- GLASS



1690A OFFICE - W51 5

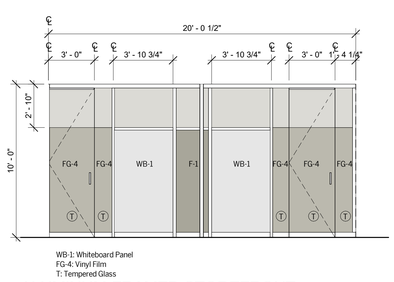
SCALE: 1/4" = 1'-0"



F-1: Fabric Panel
FG-4: Vinyl Film
T: Tempered Glass

ALUMINUM-FRAMED STOREFRONT - RECEPTION SIDE 4

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



WB-1: Whiteboard Panel
FG-4: Vinyl Film
T: Tempered Glass

ALUMINUM-FRAMED STOREFRONT - OFFICE SIDE 3

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

ADMIN SUITE - INTERIOR FINISH SCHEDULE										
ROOM NO.	ROOM NAME	FLOOR FINISH	BASE FINISH	WINDOW SHADE	WALL FINISH				CEILING FINISH	REMARK
					EAST	NORTH	SOUTH	WEST	ACT	
Level 2										
1690	ACADEMIC SERVICES	C-1	RB-1	WC-2	P-1	P-1	P-1	P-1	ACT-3	
1690A	OFFICE 4	C-3	RB-1	WC-2	P-1	P-1	P-1	P-1	ACT-3	
1690E	VP OFFICE	C-3	RB-1	WC-2	P-1	P-1	P-1	P-1	ACT-3	
1690F	OFFICE 2	C-3	RB-1	WC-2	P-1	GLAZ-1	P-1	P-1	ACT-3	
1690G	OFFICE 3	C-3	RB-1	WC-2	P-1	P-1	P-1	P-1	ACT-3	
1690H	STORAGE	C-1	RB-1		P-1	P-1	P-1	P-1	ACT-3	
1690I	SCHEDULER	C-3	RB-1	WC-2	P-1	P-1	P-1	P-1	ACT-3	

GENERAL NOTES:

1. ALL HM DOOR / DOOR FRAME TO BE PAINTED WITH P- #; SEMI-GLOSS FINISH ON DOOR FRAME

2. ALL PAINT FINISH TO BE EGGSHELL, U.N.O.

3. LOBBY AND HALLWAYS TO RECEIVE LEVEL 5 FINISH

4. SEE INTERIOR ELEVATIONS & RCP FOR ACTUAL MATERIAL LAYOUT

5. ALL ACOUSTICAL AND FABRIC FINISHES SHALL HAVE FLAME SPREAD CLASSIFICATION OF CLASS I PER CBC 802 AND TABLE 8A-8B

6. (E) GROUND AND FLOOR SURFACE ALONG ACCESSIBLE ROUTES AND IN ACCESSIBLE ROOMS AND SPACES, INCLUDING FLOORS, WALKS, RAMPS, CURB RAMPS AND STAIRS SHALL BE STABLE, FIRM AND SLIP-RESISTANT PER CBC 1124B.1

7. CARPET ON FLOOR SURFACES ALONG ACCESSIBLE ROUTES AND IN ACCESSIBLE ROOMS AND SPACES SHALL HAVE A FIRM CUSHION, A MAXIMUM PILE HEIGHT OF 1/2" AND BE SECURELY ATTACHED.

LEGEND:

FLOOR FINISH
C-1 CARPET TILE 1
C-3 CARPET TILE 2

BASE FINISH
RB-1 RUBBER BASE

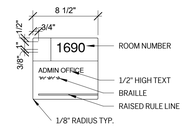
WINDOW SHADE
WC-2 MANUAL ROLLER SHADE

WALL FINISH
P-1 PAINT COLOR #1 ON GYP BOARD
KI LIGHTLINE BUTT GLAZED SYSTEM, SEE WINDOW SCHEDULE

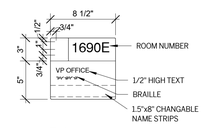
CEILING FINISH
ACT-3 2'x4' ACOUSTICAL PANEL

ADMIN SUITE - SIGNAGE SCHEDULE

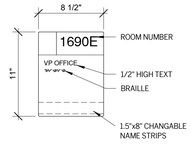
ROOM NO.	LOCATION	DOOR NO.	TYPE	TEXT
Level 2				
1690	ACADEMIC SERVICES	1690	A/G	
1690A	OFFICE 4	1690A	B1	
1690C	(E) MEETING ROOM	1690C	C	
1690D	(E) EXE. ASSISTANT	1690D	B1	
1690E	VP OFFICE	1690E	B2	
1690E	VP OFFICE	1690e	B1	
1690F	OFFICE 2	1690F	B2	
1690G	OFFICE 3	1690G	B2	
1690H	STORAGE	1690H	D	
1690I	SCHEDULER	1690I	B1	



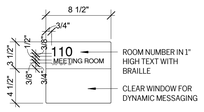
A. (DIVISION OFFICE)



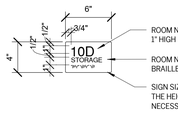
B1. (FACULTY OFFICE)



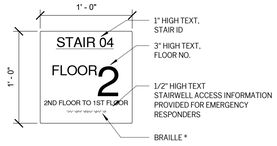
B2. (FACULTY DOOR CARD SIGN)



C. (MEETING ROOM)



D. (INFRASTRUCTURE SPACES)



F1. (STAIRWAY IDENTIFICATION)

EXISTING, FOR REFERENCE ONLY
NOT IN SCOPEOF WORK; DSA #01-111019

F2.

EXISTING, FOR REFERENCE ONLY
NOT IN SCOPEOF WORK; DSA #01-111019

G.

EXISTING, FOR REFERENCE ONLY
NOT IN SCOPEOF WORK; DSA #01-111019

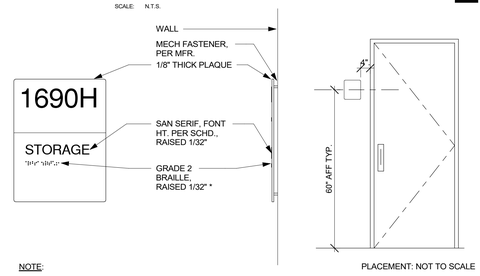
K.

EXISTING, FOR REFERENCE ONLY
NOT IN SCOPEOF WORK; DSA #01-111019

NOTE: *ALL BRAILLE IS CALIFORNIA CONTRACTED GRADE 2 BRAILLE

SIGNAGE TYPES 2

SCALE: N.T.S.



PLACEMENT: NOT TO SCALE

NOTE:

1. PROVIDE ROOM IDENTIFICATION SIGNAGE, PER SIGNAGE SCHEDULE AND AS SHOWN IN DETAIL

2. PROVIDE MATCHING BACKER AT ALL SIGNAGE ON GLASS IF NO SIGNAGE INDICATED.

3. FOR SINGLE DOOR, ROOM ID SIGN SHALL BE LOCATED ON LATCH-SIDE WALL

4. TACTILE SIGNS SHALL BE LOCATED SO THAT AN 18"X18" CLEAR FLOOR SPACE, CENTERED ON SIGN, IS PROVIDED BEYOND THE ARC OF ANY DOOR SWING

5. MOUNTING HEIGHT SHALL BE MAXIMUM 60" A.F.F. TO BASELINE OF HIGHEST LINE OF RAISED CHARACTERS AND MINIMUM 48" A.F.F. TO BASELINE OF LOWEST LINE OF BRAILLE

6. PICTOGRAM FIELDS SHALL BE NON-GLARE AND 6" MINIMUM HIGH. PICTOGRAMS SHALL CONTRAST WITH THE BACKGROUND FIELD AND ARE NOT REQUIRED TO BE RAISED. PICTOGRAMS SHALL HAVE TEXT DESCRIPTORS LOCATED OUTSIDE OF AND DIRECTLY BELOW THE PICTOGRAM FIELD, COMPLYING WITH 11B-703.2 AND 11B-703.3, AND SHALL BE MOUNTED PER 11B-703.4

TYPICAL ROOM SIGNAGE DETAIL 1

SCALE: 3" = 1'-0"

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Pleasanton, CA 94588

ARCHITECT
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125 S. Market St., Suite 110
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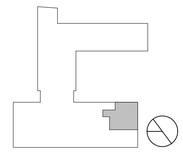


KEY PLAN

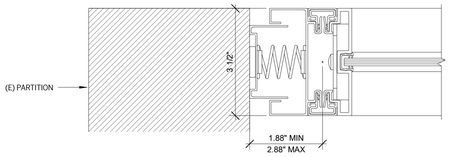
Administration Services Interior Improvements

Student Services and Administration Building, Las Positas College
3000 Campus Hill Drive, Livermore CA

PROJECT #:20057.100
DATE: August 11, 2020
DRAWN BY: S.CALDWELL
CHECKED BY: K. MCCLAIN
SCALE: As indicated

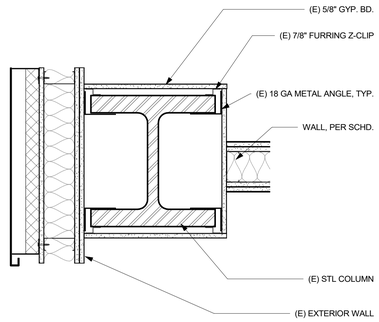
SCHEDULES

A.50



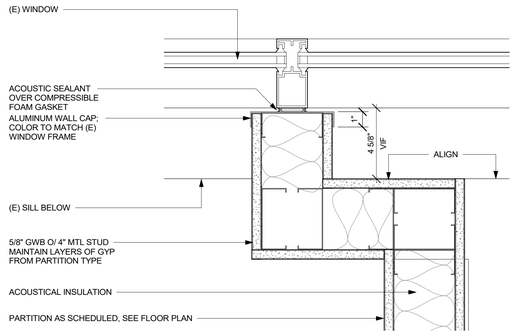
DEMOUNTABLE GLASS PARTITION - CONNECTION TO (E) PARTITION 16

SCALE: 6" = 1'-0"



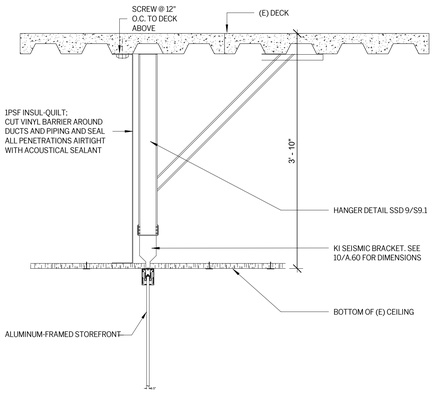
COLUMN FURRING 12

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



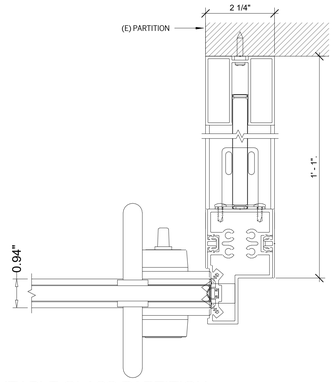
PARTITION DETAIL @ MULLION W/ SILL 8

SCALE: 3" = 1'-0"



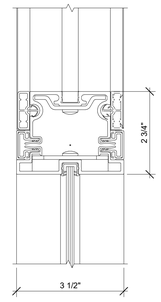
CEILING PLENUM ACOUSTIC BARRIER 4

SCALE: 1" = 1'-0"



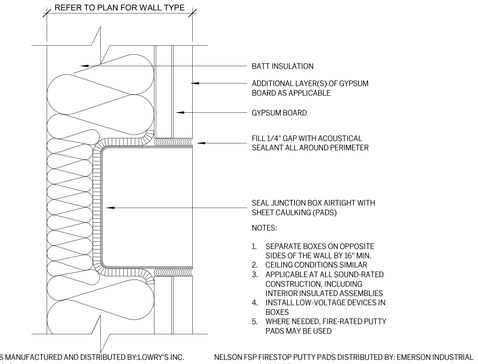
DEMOUNTABLE GLASS PARTITION - CORNER CONNECTION 15

SCALE: 6" = 1'-0"



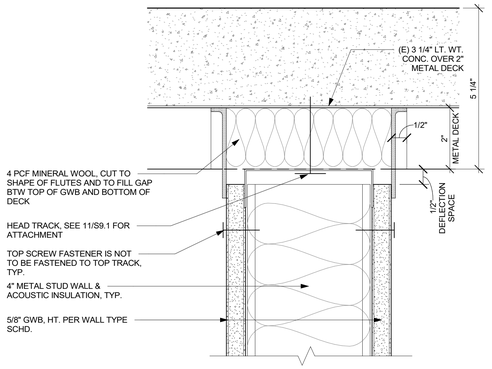
DEMOUNTABLE GLASS PARTITION - GLAZED TO SOLID PANEL CONNECTION 11

SCALE: 6" = 1'-0"



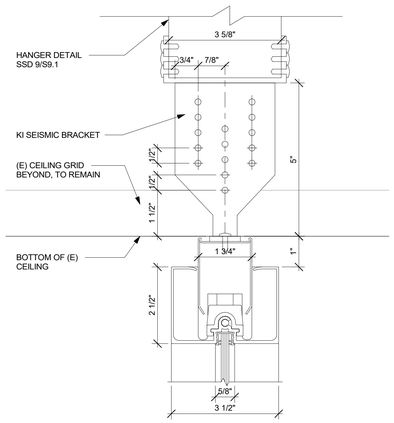
JUNCTION BOX IN SOUND-RATED CONSTRUCTION 7

SCALE: 6" = 1'-0"



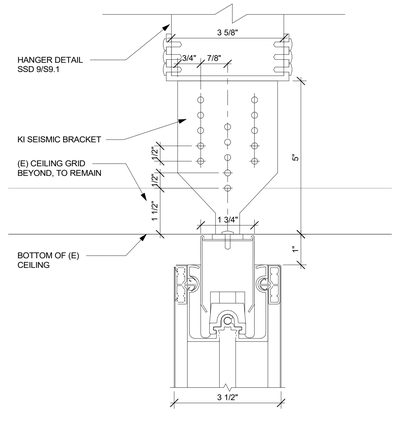
TYP. ACOUSTICAL PARTITION HEAD - PERP. TO DECK 3

SCALE: 6" = 1'-0"



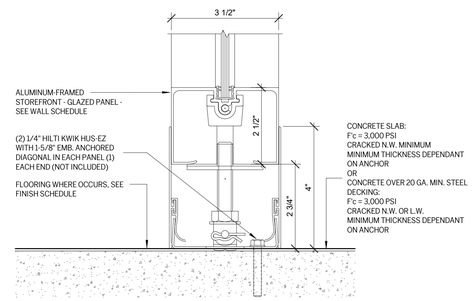
DEMOUNTABLE GLASS PARTITION - GLAZED PANEL DETAIL - HEADER 14

SCALE: 6" = 1'-0"



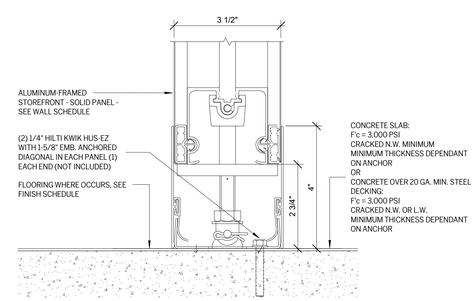
DEMOUNTABLE GLASS PARTITION - SOLID PANEL DETAIL - HEADER 10

SCALE: 6" = 1'-0"



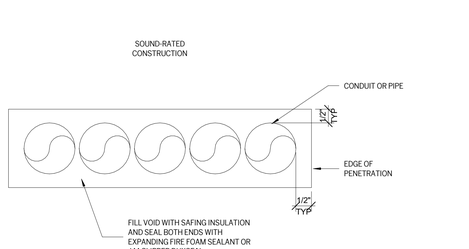
DEMOUNTABLE GLASS PARTITION - GLAZED PANEL DETAIL - FOOTER 13

SCALE: 6" = 1'-0"



DEMOUNTABLE GLASS PARTITION - SOLID PANEL DETAIL - FOOTER 9

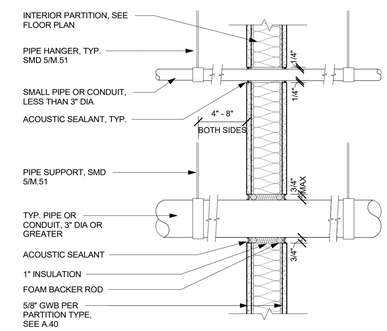
SCALE: 6" = 1'-0"



NOTE: APPLICABLE AT ALL SOUND-RATED CONSTRUCTION INCLUDING INTERIOR INSULATED ASSEMBLIES.

TYP MULTIPLE PIPE PENETRATION TRHOUGH SOUND-RATED CONSTRUCTION 6

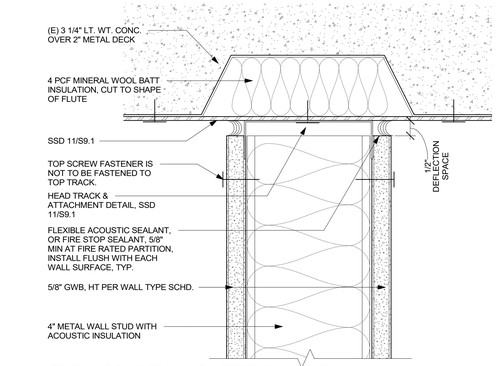
SCALE: 6" = 1'-0"



NOTE: APPLICABLE AT ALL SOUND-RATED CONSTRUCTION INCLUDING INTERIOR INSULATED ASSEMBLIES

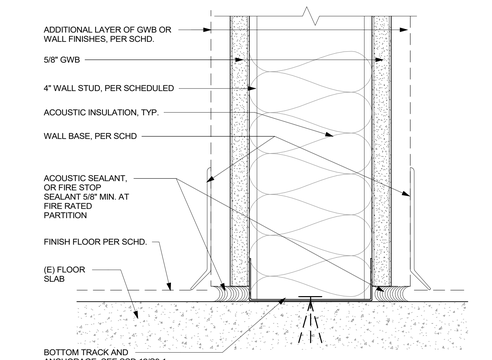
NON-RATED PIPE PENETRATION 5

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



TYP. ACOUSTICAL PARTITION HEAD - PARALLEL TO DECK 2

SCALE: 6" = 1'-0"



TYPICAL WALL BASE 1

SCALE: 6" = 1'-0"

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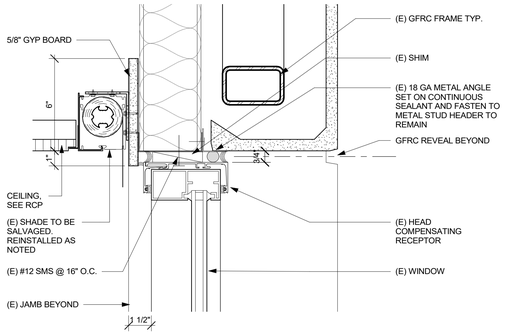
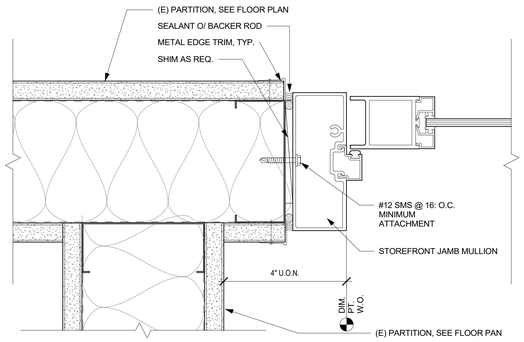
DETAILS - INTERIOR - WALLS

A.60



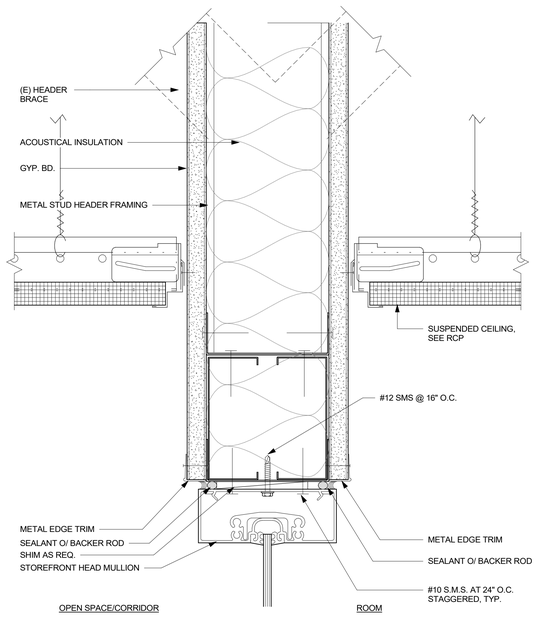
WINDOW HEAD AT GFRC, TYP. 16

SCALE: 3" = 1'-0"



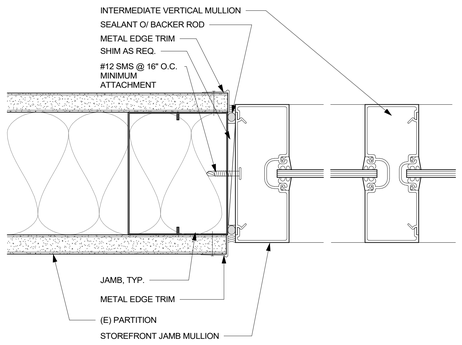
TYP. JAMB AT PERPENDICULAR PARTITION 15

SCALE: 6" = 1'-0"



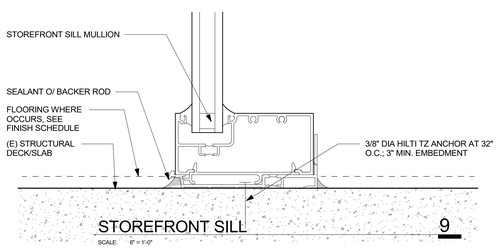
STOREFRONT HEAD 11

SCALE: 6" = 1'-0"



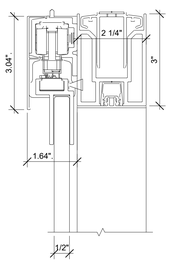
STOREFRONT JAMB/INTERMEDIATE MULLION 10

SCALE: 6" = 1'-0"



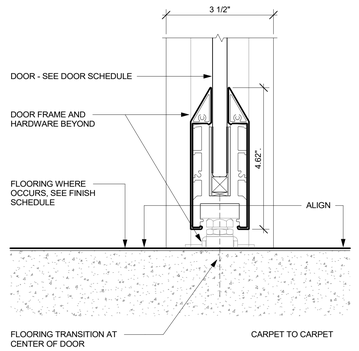
STOREFRONT SILL 9

SCALE: 6" = 1'-0"



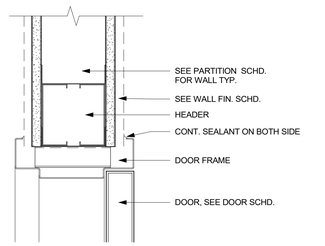
DEMOUNTABLE GLASS PARTITION DOOR DETAIL - HEADER 8

SCALE: 6" = 1'-0"



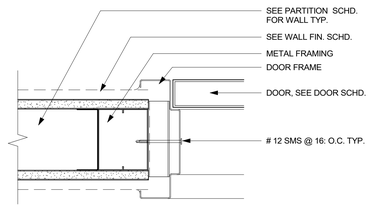
DEMOUNTABLE GLASS PARTITION DOOR DETAIL - FOOTER 6

SCALE: 6" = 1'-0"



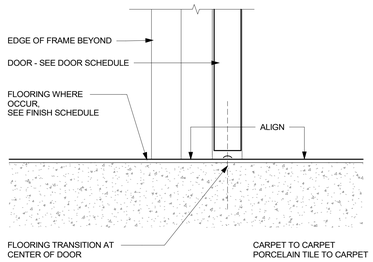
INT. DOOR HEAD 4

SCALE: 3" = 1'-0"



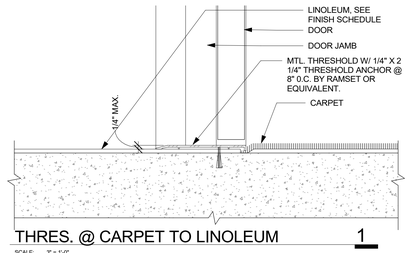
INT. DOOR JAMB 3

SCALE: 3" = 1'-0"



TYP. DOOR SILL W/O THRESHOLD 2

SCALE: 3" = 1'-0"



THRES. @ CARPET TO LINOLEUM 1

SCALE: 3" = 1'-0"

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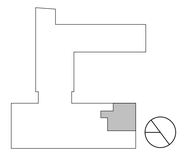

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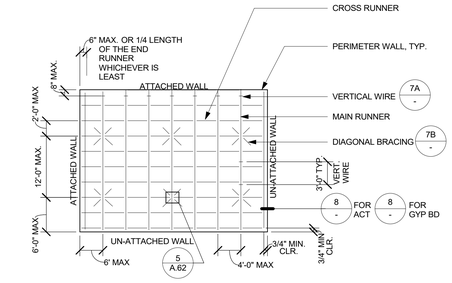
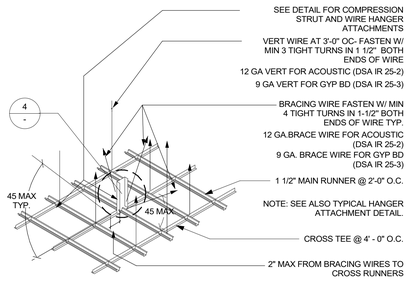
DETAILS - INTERIOR - DOORS AND WINDOWS

A.61



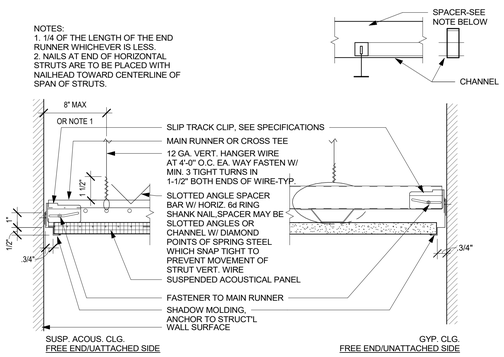
SUSP CLG DIAGRAMATIC BRACING 6

SCALE: 3" = 1'-0"



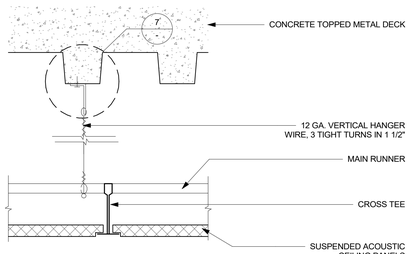
SUSP CLG DIAGONAL BRACING 5

SCALE: 3" = 1'-0"



TYP. SUSP. ACOUS. CLG. WALL ATTACHMENT 8

SCALE: 3" = 1'-0"



NOTES:
1. 1/4 OF THE LENGTH OF THE END RUNNER WHICHEVER IS LESS
2. NAILS AT ENDS OF HORIZONTAL STRUTS ARE TO BE PLACED WITH NAIL HEAD TOWARD CENTERINE OF SPAN OF STRUT.

SUSP CLG CONNECTION 4

SCALE: 3" = 1'-0"

DSA IR 25-5 METAL SUSPENSION SYSTEM FOR LAY-IN PANEL CEILINGS

1. CEILING NOTES: THE FOLLOWING NOTES WILL BE ACCEPTABLE IN PLANS AND SPECIFICATIONS FOR CEILING SYSTEMS WHOSE TOTAL WEIGHT, INCLUDING AIR CONDITIONING/HEATING GRILLS AND LIGHT FIXTURES, DOES NOT EXCEED TWO (2) PSF. HEAVIER SYSTEMS, AND THOSE SUPPORTING LATERAL LOADS FROM PARTITIONS, WILL REQUIRE SPECIAL DESIGN DETAILS. ALSO, SEE IR 25-3 FOR HEAVIER SYSTEMS.

1.1 #12 GAGE (MIN.) HANGER WIRES MAY BE USED FOR UP TO AND INCLUDING 4 FT. BY 4 FT. GRID SPACING AND SHALL BE ATTACHED TO MAIN RUNNERS.

1.2 PROVIDE #12 GAGE HANGER WIRES AT THE ENDS OF ALL MAIN AND CROSS RUNNERS WITHIN EIGHT (8) INCHES OF THE SUPPORT OR WITHIN ONE-FOURTH (1/4) OF THE LENGTH OF THE END TEE, WHICHEVER IS LEAST, FOR THE PERIMETER OF THE CEILING AREA. END CONNECTIONS FOR RUNNERS WHICH ARE DESIGNED AND DETAILED TO RESIST THE APPLIED VERTICAL AND HORIZONTAL FORCES MAY BE USED IN LIEU OF THE #12 GAGE HANGER WIRES, SUBJECT TO DIVISION OF THE STATE ARCHITECT (DSA) REVIEW AND APPROVAL.

1.3 PROVIDE TRAPEZE OR OTHER SUPPLEMENTARY SUPPORT MEMBERS AT OBSTRUCTIONS TO TYPICAL HANGER SPACING. PROVIDE ADDITIONAL HANGERS, STRUTS OR BRACES AS REQUIRED AT ALL CEILING BREAKS, SOFFITS OR DISCONTINUOUS AREAS. HANGER WIRES THAT ARE MORE THAN 1 IN 6 OUT OF PLUMB ARE TO HAVE COUNTER-SLOPING WIRES.

1.4 CEILING GRID MEMBERS MAY BE ATTACHED TO NOT MORE THAN TWO (2) ADJACENT WALLS. CEILING GRID MEMBERS SHALL BE AT LEAST 1/2 INCH CLEAR OF OTHER WALLS. IF WALLS RUN DIAGONALLY TO CEILING GRID SYSTEM RUNNERS, ONE END OF MAIN AND CROSS RUNNERS SHOULD BE FREE, AND A MINIMUM OF 1/2 INCH CLEAR OF WALL.

1.5 AT THE PERIMETER OF THE CEILING AREA WHERE MAIN OR CROSS RUNNERS ARE NOT CONNECTED TO THE ADJACENT WALL, PROVIDE INTERCONNECTION BETWEEN THE RUNNERS AT THE FREE END TO PREVENT LATERAL SPREADING. A METAL STRUT OR A #16 GAGE WIRE WITH A POSITIVE MECHANICAL CONNECTION TO THE RUNNER MAY BE USED. WHERE THE PERPENDICULAR DISTANCE FROM THE WALL TO THE FIRST PARALLEL RUNNER IS 12 INCHES OR LESS, THIS INTERLOCK IS NOT REQUIRED.

1.6 PROVIDE BRACING ASSEMBLIES CONSISTING OF A COMPRESSION STRUT AND FOUR (4) #12 GAGE SPLAYED BRACING WIRES ORIENTED 90 DEGREES FROM EACH OTHER (SEE FIGURE 1) AT THE FOLLOWING SPACING:

1. FOR SCHOOL BUILDINGS, PLACE BRACING ASSEMBLIES AT A SPACING NOT MORE THAN 12 FT. BY 12 FT. ON CENTER.

2. FOR ESSENTIAL SERVICES BUILDINGS, PLACE BRACING ASSEMBLIES NOT MORE THAN 8 FT. BY 12 FT. ON CENTER.

3. PROVIDE BRACING ASSEMBLIES AT LOCATIONS NOT MORE THAN ONE HALF (1/2) THE SPACINGS GIVEN ABOVE, FROM EACH PERIMETER WALL AND AT THE EDGE OF VERTICAL CEILING OFFSETS. THE SLOPE OF THESE WIRES SHALL NOT EXCEED 45 DEGREES FROM THE PLANE OF THE CEILING AND SHALL BE TAUT. SPLICES IN BRACING WIRES ARE NOT TO BE PERMITTED WITHOUT SPECIAL DSA APPROVAL.

4. SUSPENDED ACOUSTICAL CEILING SYSTEMS WITH A CEILING AREA OF 144 SQUARE FEET OR LESS, AND FIRE RATED SUSPENDED ACOUSTICAL CEILING SYSTEMS WITH A CEILING AREA OF 96 SQUARE FEET OR LESS, SURROUNDED BY WALLS WHICH CONNECT DIRECTLY TO THE STRUCTURE ABOVE, DO NOT REQUIRE BRACING ASSEMBLIES WHEN ATTACHED TO TWO ADJACENT WALLS.

1.7 FASTEN HANGER WIRES WITH NOT LESS THAN THREE (3) TIGHT TURNS. FASTEN BRACING WIRES WITH FOUR (4) TIGHT TURNS, MAKE ALL TIGHT TURNS WITHIN A DISTANCE OF 1-1/2 INCHES. HANGER OR BRACING WIRE ANCHORS TO THE STRUCTURE SHOULD BE INSTALLED IN SUCH A MANNER THAT THE DIRECTION OF THE ANCHOR ALIGNS AS CLOSELY AS POSSIBLE WITH THE DIRECTION OF THE WIRE.

NOTE: WIRE TURNS MADE BY MACHINE WHERE BOTH STRANDS HAVE BEEN DEFORMED OR BENT IN WRAPPING CAN WAIVE THE 1-1/2 INCH REQUIREMENT, BUT THE NUMBER OF TURNS SHOULD BE MAINTAINED, AND BE AS TIGHT AS POSSIBLE.

1.8 SEPARATE ALL CEILING HANGER AND BRACING WIRES AT LEAST SIX (6) INCHES FROM ALL UNBRACED DUCTS, PIPES, CONDUIT, ETC.

1.9 WHEN DRILLED-IN CONCRETE ANCHORS OR SHOT-IN ANCHORS ARE USED IN REINFORCED CONCRETE FOR HANGER WIRES, 1 OUT OF 10 MUST BE FIELD TESTED FOR 200 LBS. IN TENSION. WHEN DRILLED-IN CONCRETE ANCHORS ARE USED FOR BRACING WIRES, 1 OUT OF 2 MUST BE FIELD TESTED FOR 440 LBS. IN TENSION. SHOT-IN ANCHORS IN CONCRETE ARE NOT PERMITTED FOR BRACING WIRES. IF ANY SHOT-IN OR DRILLED-IN ANCHOR FAILS, SEE CBC, SECTION 1923A.3.5.
NOTE: DRILLED-IN OR SHOT-IN ANCHORS REQUIRE SPECIAL DSA APPROVAL PRIOR TO USE IN PRESTRESSED CONCRETE.

1.10 ATTACH ALL LIGHT FIXTURES AND CEILING MOUNTED AIR TERMINALS, TO THE CEILING GRID RUNNERS TO RESIST A HORIZONTAL FORCE EQUAL TO THE WEIGHT OF THE FIXTURES. SCREWS OR APPROVED FASTENERS ARE REQUIRED.

1.11 FLUSH OR RECESSED LIGHT FIXTURES AND AIR TERMINALS, WEIGHING LESS THAN 56 LBS., MAY BE SUPPORTED DIRECTLY ON THE RUNNERS OF A HEAVY DUTY GRID SYSTEM BUT, IN ADDITION, THEY MUST HAVE A MINIMUM OF TWO (2) #12 GAGE SLACK SAFETY WIRES ATTACHED TO THE FIXTURE AT DIAGONAL CORNERS AND ANCHORED TO THE STRUCTURE ABOVE. ALL 4 FT. X 4 FT. LIGHT FIXTURES MUST HAVE SLACK SAFETY WIRES AT EACH CORNER. ALL FLUSH OR RECESSED LIGHT FIXTURES AND AIR TERMINALS WEIGHING 56 LBS. OR MORE MUST BE INDEPENDENTLY SUPPORTED BY NOT LESS THAN FOUR (4) TAUT #12 GAGE WIRES, EACH ATTACHED TO THE FIXTURE AND TO THE STRUCTURE ABOVE REGARDLESS OF THE TYPE OF CEILING GRID SYSTEM USED.

THE FOUR (4) TAUT #12 GAGE WIRES, INCLUDING THEIR ATTACHMENT TO THE STRUCTURE ABOVE, MUST BE CAPABLE OF SUPPORTING FOUR (4) TIMES THE WEIGHT OF THE UNIT.

1.12 ALL FIXTURES AND AIR TERMINALS SUPPORTED ON INTERMEDIATE DUTY GRID SYSTEMS MUST BE INDEPENDENTLY SUPPORTED BY NOT LESS THAN FOUR (4) TAUT #12 GAGE WIRES EACH ATTACHED TO THE FIXTURE OR TERMINAL, AND TO THE STRUCTURE ABOVE.

1.13 SUPPORT SURFACE MOUNTED LIGHT FIXTURES BY AT LEAST TWO POSITIVE DEVICES WHICH SURROUND THE CEILING RUNNER AND WHICH ARE EACH SUPPORTED FROM THE STRUCTURE ABOVE BY A #12 GAGE WIRE. SPRING CLIPS OR CLAMPS THAT CONNECT ONLY TO THE RUNNER ARE NOT ACCEPTABLE. PROVIDE ADDITIONAL SUPPORTS WHEN LIGHT FIXTURES ARE 8 FT. OR LONGER.

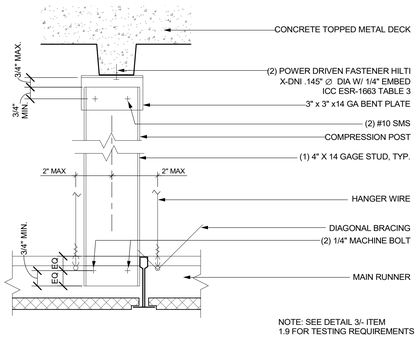
1.14 SUPPORT PENDANT MOUNTED LIGHT FIXTURES DIRECTLY FROM THE STRUCTURE ABOVE WITH HANGER WIRES OR CABLES PASSING THROUGH EACH PENDANT HANGER AND CAPABLE OF SUPPORTING FOUR (4) TIMES THE WEIGHT OF THE FIXTURE. A BRACING ASSEMBLY, PER DETAIL 1/--, IS REQUIRED WHERE THE PENDANT HANGER PENETRATES THE CEILING. SPECIAL DETAILS ARE REQUIRED TO ATTACH THE PENDANT HANGER TO THE BRACING ASSEMBLY TO TRANSMIT HORIZONTAL FORCES.

1.15 REQUIRED NOTES ON CONSTRUCTION DOCUMENTS:

CLASSIFICATION OF CEILING GRID IS HEAVY DUTY.
MANUFACTURER'S CATALOG NUMBER: USG DGLW-26.
MANUFACTURER'S CATALOG NUMBER: USG.DGLW-424
MANUFACTURER'S CATALOG NUMBER OF DETAIL FOR RUNNER SPLICE: USG DGSC-180

SUSPENDED ACOUSTICAL CEILING NOTES 2

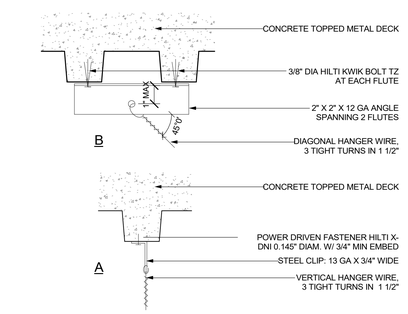
SCALE: 12" = 1'-0"



NOTE: SEE DETAIL 3/- ITEM 1.9 FOR TESTING REQUIREMENTS

COMPRESSION STRUT 3

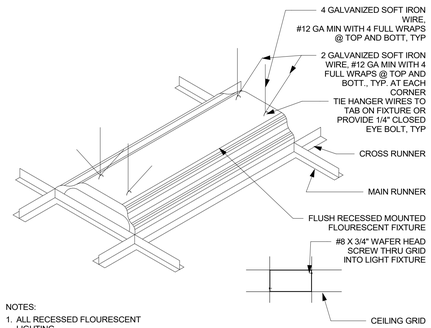
SCALE: 3" = 1'-0"



NOTE: SEE 3/- ITEM 1.9 FOR TESTING REQUIREMENTS

WIRE CONNECTION AT CONC. DECK 7

SCALE: 3" = 1'-0"



NOTES:
1. ALL RECESSED FLOURESCENT LIGHTING FIXTURES INSTALLED IN T-BAR CEILING SHALL BE ATTACHED TO T-BARS WITH 4-SELF-TAPPING SCREWS, 2 @ EACH END OF FIXTURE.

SUSP LIGHT FIXTURE 1

SCALE: 3/4" = 1'-0"

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

CLIENT
Chabot Las-Positas Community College District
5020 Franklin Dr.
Pleasanton, CA 94588

ARCHITECT
Steinberg Hart
125 S. Market St., Suite 110
San Jose, CA 95113

REV DATE ISSUE

Administration Services Interior Improvements

Student Services and Administration Building, Las Positas College
3000 Campus Hill Drive, Livermore CA

PROJECT #:20057.100
DATE: August 11, 2020
DRAWN BY: S.CALDWELL
CHECKED BY: K. MCCLAIN
SCALE: As indicated

DETAILS - INTERIOR - CEILINGS

A.62

STRUCTURAL GENERAL NOTES

- <u>GENERAL</u>

A. THESE DRAWINGS ARE COPY RIGHTED INSTRUMENTS OF SERVICE OF HOHBACH-LEWIN, INC. FOR USE ONLY ON THIS PROJECT.

B. CONTRACTOR RESPONSIBILITY - CONSTRUCTION DOCUMENTS REPRESENT THE FINISHED STRUCTURE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, SEQUENCES AND SAFETY PRECAUTIONS, INCLUDING BUT NOT LIMITED TO SHORING AND TEMPORARY BRACING.

C. DIMENSIONS - USE WRITTEN DIMENSIONS ONLY. VERIFY ALL DIMENSIONS AT JOB SITE BEFORE COMMENCING WORK AND REPORT ANY DISCREPANCIES. WHERE NO DIMENSIONS ARE PROVIDED, OBTAIN CLARIFICATION PRIOR TO PROCEEDING WITH WORK. DO NOT SCALE DRAWINGS.

D. COORDINATION - OPENINGS THROUGH WALLS AND FLOORS FOR MECHANICAL AND ELECTRICAL SYSTEMS SHALL BE COORDINATED BY CONTRACTOR AND CONSTRUCTED PER TYPICAL DETAILS SHOWN IN THESE DOCUMENTS. NO MECHANICAL OR ELECTRICAL SYSTEM COMPONENTS SHALL BE EMBEDDED IN SLABS OR WALLS UNLESS SPECIFICALLY DETAILED IN THESE DOCUMENTS.

E. OMISSIONS AND CONFLICTS - OMISSIONS OR CONFLICTS BETWEEN VARIOUS ELEMENTS OF THE CONSTRUCTION DOCUMENTS SHOULD BE BROUGHT TO THE ATTENTION OF THE DESIGN TEAM. IF CERTAIN FEATURES ARE NOT FULLY DELINEATED IN THE CONSTRUCTION DOCUMENTS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER AS FOR SIMILAR CONDITIONS THAT ARE DELINEATED.

F. STRUCTURAL DRAWINGS ARE INTENDED TO BE USED WITH ARCHITECTURAL AND MECHANICAL DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING SUCH REQUIREMENTS INTO THEIR SHOP DRAWINGS AND WORK.

G. THERE SHALL BE NO CHANGE IN SIZE OR DIMENSION OF A STRUCTURAL MEMBER, NOR SHALL ANY OPENINGS BE MADE IN ANY STRUCTURAL MEMBER, WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.

H. THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOAD IMPOSED UPON THE STRUCTURE. CONSTRUCTION LOADS SHALL NOT EXCEED THE DESIGN CAPACITY OF THE STRUCTURE AT THE TIME THE LOADS ARE IMPOSED.

I. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY DEVIATION FROM THE CONTRACT DOCUMENTS.

J. SEE DRAWINGS OTHER THAN STRUCTURAL FOR: TYPES OF FLOOR FINISH AND THEIR LOCATION, DEPRESSIONS IN FLOOR SLABS, OPENINGS IN WALLS AND FLOORS REQUIRED BY ARCHITECTURAL AND MECHANICAL FEATURES, AND ROADWAY PAVING, WALKS, RAMPS, STAIRS, CURBS, ETC.

K. TYPICAL DETAILS - DETAILS NOTED AS TYPICAL ARE APPLICABLE WHERE SPECIFIED ON THE STRUCTURAL DRAWINGS AND WHEREVER THE CONDITION OCCURS THROUGHOUT THE PROJECT, INCLUDING LOCATIONS WHERE THE DETAIL IS NOT EXPLICITLY SPECIFIED OR REFERENCED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY LOCATIONS WHERE TYPICAL DETAILS ARE APPLICABLE PRIOR TO CONSTRUCTION.

- <u>EXISTING CONSTRUCTION/ CONDITIONS:</u>

A. SHORING: THE CONTRACTOR SHALL PROVIDE SHORING WHEREVER NECESSARY TO ALLOW INSTALLATION OF THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE DESIGN, INSTALLATION AND MAINTENANCE OF ALL SHORING AND TEMPORARY WORK REQUIRED THROUGHOUT THE PROGRESS OF THE WORK.

B. EXISTING CONSTRUCTION: EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS WAS OBTAINED FROM LIMITED VISUAL OBSERVATIONS. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND SHALL NOTIFY THE STRUCTURAL ENGINEER OF RECORD OF ALL EXCEPTIONS AND RECEIVE DIRECTION PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.

C. DEMOLITION: THE REMOVAL, CUTTING, DRILLING. ETC. OF EXISTING WORK SHALL BE PERFORMED WITH GREAT CARE AND WITH APPROPRIATE TOOLS IN ORDER TO NOT JEOPARDIZE THE STRUCTURAL INTEGRITY OF THE BUILDING. SEE ARCHITECTURAL DRAWINGS FOR REQUIRED DEMOLITION.

- <u>DESIGN BASIS</u>

A. APPLICABLE CODE: CALIFORNIA BUILDING CODE (CBC), 2019 EDITION.

B. LATERAL LOADS:
    1. DESIGN WIND CRITERIA: PER ASCE 7-16
        BASIC DESIGN WIND SPEED: 99 mph
        ALLOWABLE STRESS DESIGN WIND SPEED: 60 mph
        WIND EXPOSURE: C
    2. DESIGN SEISMIC CRITERIA:
        SITE CLASS: D - DEFAULT
        S_{DS} = 1.385g
        S_{D1} = 0.680g
        IMPORTANCE FACTOR, I= 1.25
        SEISMIC DESIGN CATEGORY= D
        RISK CATEGORY = III
        COMPONENT RESPONSE MODIFICATION COEFF., R= 2.5
        COMPONENT AMPLIFICATION FACTOR, ap = 1.0
        DESIGN SEISMIC COEFF., F_p= 0.57W (STRENGTH)

- <u>LIGHT GAUGE STEEL</u>

A. COLD FORM STEEL USED FOR STUDS, TRACK, BLOCKING, GUSSETS, BRACE STRAPS, ETC. SHALL MEET THE REQUIREMENTS OF THE STEEL STUD MANUFACTURERS ASSOCIATION (SSMA) ES EVALUATION REPORT No. 3064P DATED FEBRUARY 2020. SEE DETAIL SHEETS FOR SIZES AND THICKNESS REQUIREMENTS.

B. COLD FORM STEEL STUD FRAMING SHALL CONFORM TO THE FOLLOWING:
    54 MIL AND HEAVIER-ASTM A653 SS (50 ksi MINIMUM YIELD)
    43 MIL AND LIGHTER-ASTM A653 SS (33 ksi MINIMUM YIELD)
    EXTERIOR MEMBERS : GALVANIZED G60 MIN.

C. ALL STEEL STUDS, JOIST & TRACK SHALL HAVE A LEGIBLE LABEL, STAMP OR EMBOSSMENT, AT A MAXIMUM OF 48" O.C., INDICATING THE MANUFACTURER'S NAME, LOGO OR INITIALS, EVALUATION SERVICE REPORT NUMBER, THE MATERIAL BASE METAL THICKNESS (UNCOATED) IN .001 In. AND THE YIELD STRENGTH IF DIFFERENT THAN 33 ksi.

D. MILL CERTIFICATES FROM THE COIL PRODUCER SHALL BE MADE AVAILABLE IF REQUESTED. MILL CERTIFICATE TO INCLUDE AS A MINIMUM THE CHEMICAL COMPOSITION, YIELD STRENGTH, TENSILE STRENGTH, ELONGATION, AND COATING THICKNESS.

E. ALL SECTIONS TO REMAIN UNPUNCHED EXCEPT WALL STUDS MAY BE PUNCHED IN ACCORDANCE WITH ICC HOLE SIZE AND SPACING LIMITATIONS.

F. LATERAL BRIDGING OF COLD FORM STEEL STUDS IS REQUIRED WHEN SHEATHING, INSTALLED DOES NOT CONTINUE FULL HEIGHT ON BOTH SIDES. FOR BRIDGING INSTALLATION SEE TYPICAL DETAIL SHEET.

G. COLD FORM STEEL STUDS SHALL HAVE FULL BEARING AGAINST INSIDE TRACK WEB PRIOR TO STUD AND TRACK ATTACHMENT. STUDS AND TRACKS SHALL BE ATTACHED BY WELDING OR (2) #8 SELF DRILLING SCREWS (ONE EA. FLANGE).

H. PRE-MANUFACTURED HANGERS, CLIPS, ETC. SHALL MEET THE REQUIREMENTS OF "SIMPSON" OR EQUIVALENT.

I. VERTICLIP SL/SLD BY THE STEEL NETWORK ICC ESR-2049.

J. SELF-DRILLING FASTENERS HAVE BEEN DESIGNED IN ACCORDANCE WITH AISI "SPECIFICATION PROVISIONS FOR SCREW CONNECTIONS". FASTENERS SHALL BE #8 SMS U.O.N. ALL SCREWS TO BE GALVANIZED OR CORROSION RESISTANT. SCREWS SHALL CONFORM TO S.A.E. J78.

K. WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS IN A FABRICATION SHOP. ALL WELDING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST AWS D1.3 CODE.
    43 MIL AND LIGHTER SHEET TO SHEET - E60XX
    54 MIL AND HEAVIER SHEET TO SHEET - E70XX

L. BUTT WELDS ON SPLICES SHALL BE USED AT ALL JOINTS IN TRACK. SPLICES IN STUDS OR BRACES SHALL NOT BE PERMITTED. WHERE STUDS ARE BURNED THROUGH BY WELDING PROVIDE SUITABLE STITCH PLATE OF SAME THICKNESS.

M. SEE ADDITIONAL NOTES ON DET. 1/S.91

- <u>EXPANSION ANCHORS</u> (HILTI)

A. EXPANSION BOLTS SHALL BE HILTI KWIK-BOLT TZ-CARBON STEEL ANCHOR (ESR-1917) OR EQUAL PRODUCT. ALTERNATE PRODUCTS MUST BE SUBMITTED TO E.O.R. FOR SUBSTITUTION PRIOR TO INSTALLATION PER SPECIFICATIONS.

    a. PROVIDE HILTI KWIK-BOLT 3 ANCHOR (ICC ESR-1385) AT MASONRY APPLICATION

B. INSTALLATION: INSTALL THE EXPANSION ANCHORS IN ACCORDANCE WITH THE REQUIREMENTS GIVEN IN MANUFACTURER'S RECOMMENDATIONS FOR THE SPECIFIC ANCHOR.

C. SPECIAL INSPECTION SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 1704 OF THE CBC. (1704A OF THE CBC FOR DSA PROJECTS)

D. WHEN EXPANSION ANCHORS ARE USED FOR SILL PLATE BOLTING AWAY FROM THE EDGE, 10% OF THE ANCHORS SHALL BE TENSION TESTED. FOR ALL OTHER STRUCTURAL APPLICATIONS, ALL SUCH EXPANSION ANCHOR SHALL BE TENSION TESTED. WHEN EXPANSION ANCHORS ARE USED FOR NON-STRUCTURAL APPLICATIONS, 50% OF ANCHORS SHALL BE TENSION TESTED. IF ANY ANCHOR FAILS TESTING, TEST ALL ANCHORS OF THE SAME TYPE NOT PREVIOUSLY TESTED UNTIL 20 CONSECUTIVE ANCHORS PASS. (PER IR-19.1 FOR DSA PROJECTS ONLY)

E. CONCRETE AT TIME OF INSTALLATION SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI AND SHALL HAVE A MINIMUM AGE OF 21 DAYS

VERIFY MINIMUM EXISTING CONCRETE STRENGTH IN FIELD. MIN. f'c = 2500 PSI (NORMAL WEIGHT CONCRETE) *					
DIA.	MIN. EMBED	MIN. HOLE DEPTH	MIN. EDGE DISTANCE	MIN. SPACING	TENSION TEST VALUE **
3/8"	2 1/4"	2 5/8"	4"	6"	1,509#
1/2"	3 5/8"	4"	6"	9 3/4"	3,267#
5/8"	4 1/2"	4 3/4"	6 3/4"	12"	4656#
3/4"	5 3/8"	5 3/4"	9"	13 1/4"	5,850#

* FOR SINGLE ANCHORS WITH NO EDGE DISTANCE OR SPACING REDUCTION.
FOR OTHER CASES, REDUCTION OF VALUES CALCULATED PER ACI 318 IS REQUIRED.

** TENSION TEST VALUES ONLY AND CORRESPOND WITH 1.5x CRACKED CONCRETE SEISMIC TENSION LOADS.

- <u>LVF-(Low Velocity Fasteners). HILTI, ICC ESR-2269</u>

A. IN NORMAL WEIGHT CONCRETE: 0.157"Φ X-U FASTENER, 1" MIN. EMBEDMENT 3" EDGE DISTANCE, MIN. 4" O.C. SPACING.

B. IN LIGHT WEIGHT CONCRETE: 0.157"Φ X-U FASTENER, 1 1/2" MIN. EMBEDMENT 3" EDGE DISTANCE, MIN. 4" O.C. SPACING.

C. IN STRUCTURAL STEEL: 0.157"Φ X-U FASTENER, 1/2" MIN. EDGE DISTANCE, 1" MIN. SPACING. THE ENTIRE POINTED PORTION OF L.V.F. MUST COMPLETELY PENETRATE THE STEEL.

D. IN CMU: 0.157"Φ X-U FASTENER, 1" MIN. EMBEDMENT.

- <u>CONTRACTOR SUBMITTALS</u>

THE FOLLOWING IS A LISTING OF REQUIRED ITEMS TO BE SUBMITTED TO STRUCTURAL ENGINEER OF RECORD (TO BE PROVIDED IF MARKED):

SUBMITTAL	CERTIFICATE	SHOP DRAWINGS (2)	CALCS W/ ENG. STAMP	DEFERRED SUBMITTAL (1)
COLD FORMED METAL FRAMING	X	X		

(1) DEFERRED SUBMITTALS SHALL FIRST BE SUBMITTED TO THE PROJECT ARCHITECT AND/OR ENGINEER FOR REVIEW AND COORDINATION, THEN SUBMITTED TO THE APPROPRIATE JURISDICTION FOR APPROVAL. THIS SUBMITTAL SHALL INCLUDE HOHBACH-LEWIN'S SHOP DRAWING STAMP INDICATING THE STRUCTURAL REVIEW HAS BEEN COMPLETED AND THAT THE PLANS AND CALCULATIONS FOR THE DEFERRED APPROVAL ITEMS ARE IN GENERAL COMPLIANCE WITH THE INFORMATION PROVIDED WITHIN THE CONTRACT DOCUMENTS.

(2) ELECTRONIC SHOP DRAWINGS ARE TO BE SUBMITTED TO HOHBACH-LEWIN FOR REVIEW. AT HOHBACH-LEWIN'S REQUEST, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING HARD COPIES OF SHOP DRAWINGS FOR REVIEW.

STRUCTURAL SHEET INDEX

ABBREVIATIONS

&	AND	MAX.	MAXIMUM
@	AT	MECH.	MECHANICAL
A.B.	ANCHOR BOLT	MANUF.	MANUFACTURER
ADD'L.	ADDITIONAL	M.B.	MACHINE BOLTS
ARCH.	ARCHITECTURAL	MIN.	MINIMUM
		MISC.	MISCELLANEOUS
BLDG.	BUILDING	MTL.	METAL
BLKG.	BLOCKING		
BM.	BEAM	N	NORTH
BOT.	BOTTOM	(N)	NEW
		NO.	NUMBER
℄	CENTER LINE	N.S.	NEAR SIDE
CBC	CALIFORNIA BUILDING CODE	N.T.S.	NOT TO SCALE
CLR.	CLEAR	O.C.	ON CENTER
COL.	COLUMN	OPG.	OPENING
CONC.	CONCRETE	OPP.	OPPOSITE
CONN.	CONNECTION	O.H.	OPPOSITE HAND
CONT.	CONTINUOUS		
CTR.	CENTER	⅊	PLATE
		PERP.	PERPENDICULAR
DBL	DOUBLE		
DET.	DETAIL	REINF.	REINFORCEMENT
DIA.	DIAMETER	REQD.	REQUIRED
DO	DITTO		
DWG.	DRAWINGS	SCHED.	SCHEDULE
		SDS	SELF-DRIVING SCREW
E	EAST	SIM.	SIMILAR
(E)	EXISTING	SMS	SHEET METAL SCREW
EA.	EACH	S.O.G.	SLAB-ON-GRADE
E.F.	EACH FACE	SPEC.	SPECIFICATION
EL.	ELEVATION	SQ.	SQUARE
E.W.	EACH WAY	S.S.	STAINLESS STEEL
EXP.	EXPANSION	STD.	STANDARD
EXT.	EXTERIOR	SYM.	SYMMETRICAL
		T&B	TOP AND BOTTOM
FDN.	FOUNDATION	T.O.C.	TOP OF CONCRETE
FIN.	FINISH	T.O.S.	TOP OF STEEL FRAMING
F.F.	FINISH FLOOR	T.O.P.	TOP OF PLATE/ TOP OF PARAPET
F.G.	FINISHED GRADE		
FLR.	FLOOR	TRANS.	TRANSVERSE
F.O.C.	FACE OF CONCRETE	TYP.	TYPICAL
F.O.S.	FACE OF STUD		
F.S.	FAR SIDE	U.O.N.	UNLESS OTHERWISE NOTED
FTG.	FOOTING		
		VERT.	VERTICAL
GA.	GAUGE	V.I.F.	VERIFY IN FIELD
G.C.	GENERAL CONTRACTOR		
		W/	WITH
HDR	HEADER	WF	WIDE FLANGE
HGR.	HANGER	W/O	WITHOUT
HORIZ.	HORIZONTAL	W.P.	WORK POINT
HT.	HEIGHT		
INT.	INTERIOR		
J.H.	JOIST HANGER		
LONG.	LONGITUDINAL		
L.V.F.	LOW-VELOCITY FASTENER		

SYMBOLS

X / SX.X — DETAIL NUMBER / SHEET NUMBER

WF, HSS — (E) STRUCTURAL STEEL COLUMN

(E) SEISMIC MOMENT CONNECTION

(E) DENOTE NON-SEISMIC MOMENT RESISTING CONNECTIONS.

DENOTE NON-SEISMIC MOMENT RESISTING CONNECTIONS.

(E) CONCRETE FILL OVER STEEL DECK

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

CLIENT
Chabot Las-Positas Community College District
5020 Franklin Dr.
Pleasanton, CA 94588

ARCHITECT
Steinberg Hart
125 S. Market St., Suite 110
San Jose, CA 95113

HOHBACH-LEWIN, INC.
STRUCTURAL & CIVIL ENGINEERS
260 Sheridan Avenue, Suite 150
Palo Alto, CA 94306
(650) 617-5930

RE: DATE: ISSUE:

Administration Services Interior Improvements

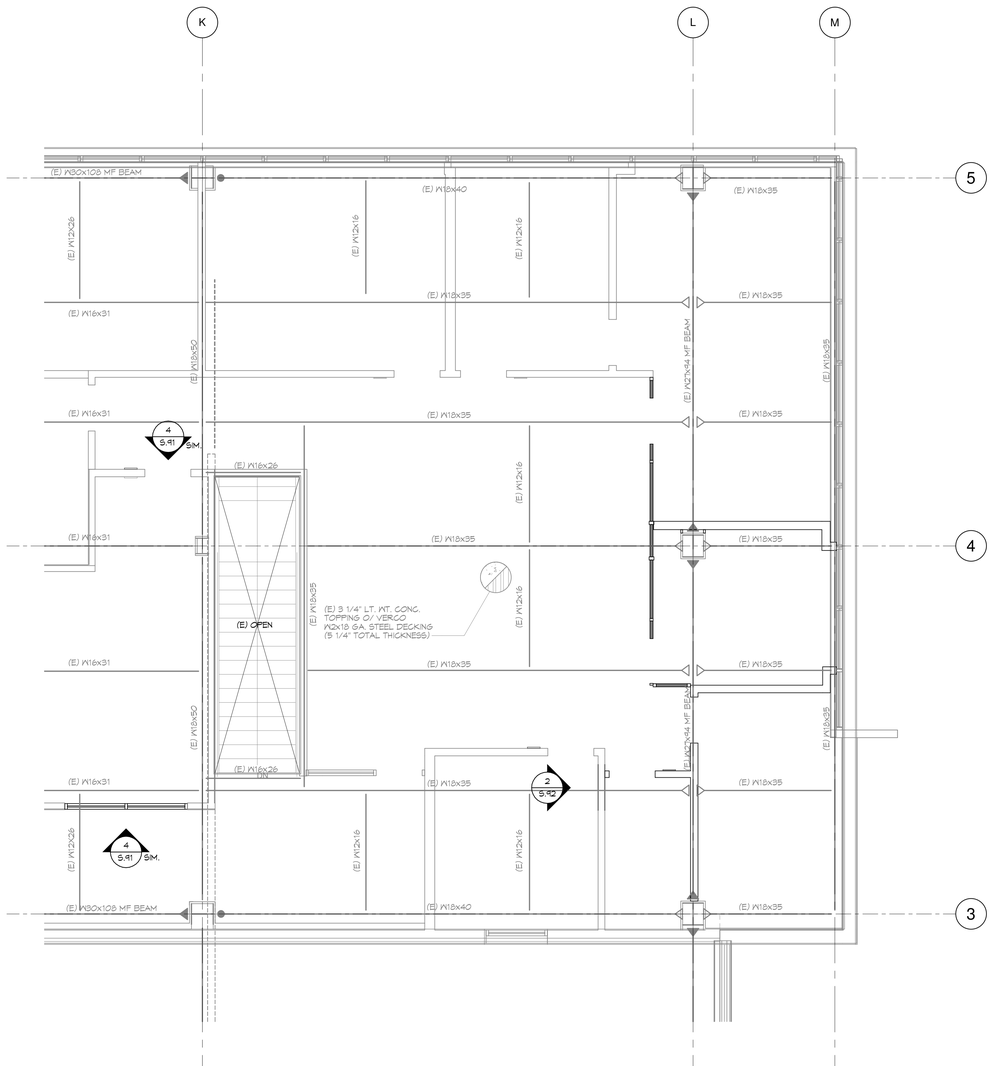
3000 Campus Hill Drive, Livermore CA

PROJECT #: 20057.100
DATE: August 10, 2020
DRAWN BY:
CHECKED BY:
SCALE: AS NOTED

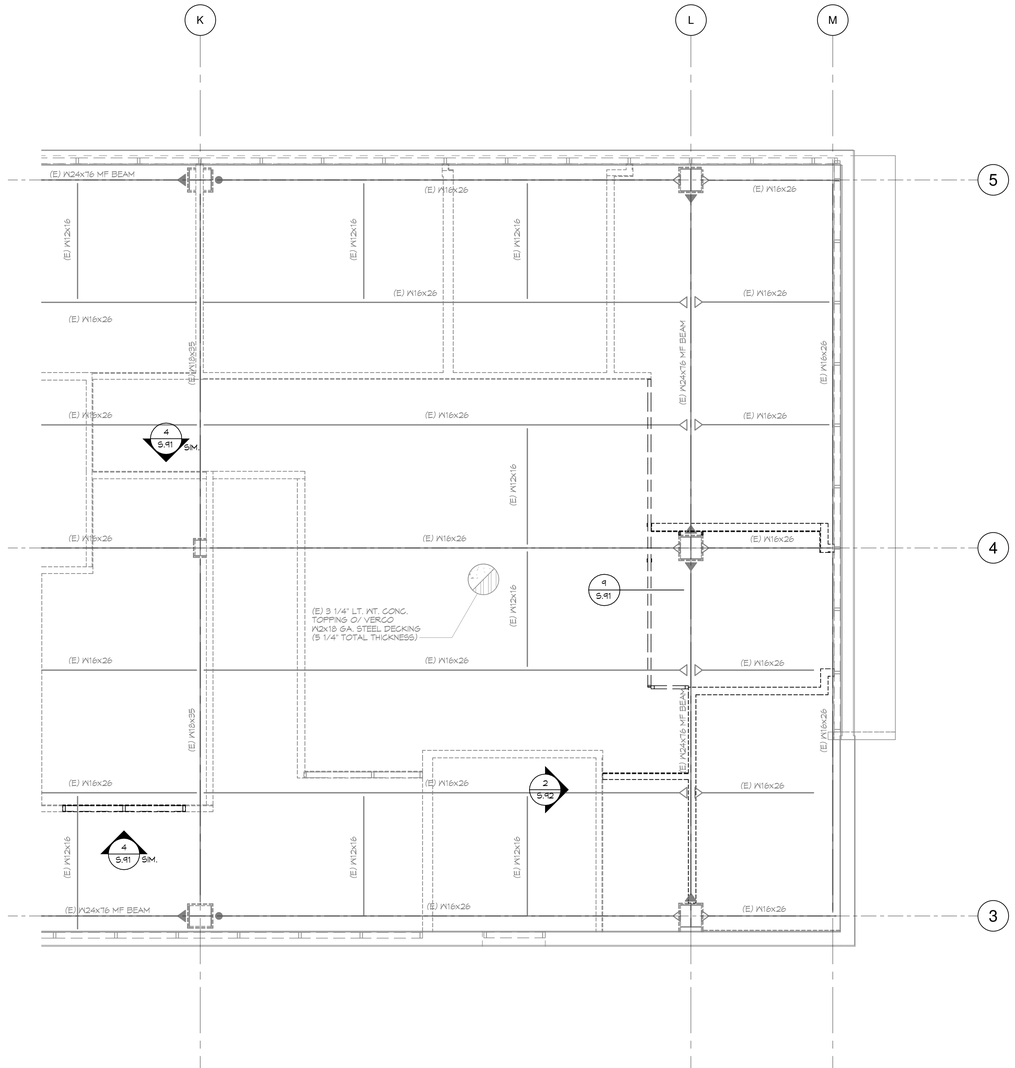
STRUCTURAL GENERAL NOTES

HOHBACH-LEWIN # 14715

S.10
Project Status



A (E) PARTIAL 2ND FLOOR FRAMING PLAN
1/4" = 1'-0"



B (E) PARTIAL ROOF FRAMING PLAN
1/4" = 1'-0"

FRAMING NOTES

1. FOR STRUCTURAL GENERAL NOTES, SEE S.10.
2. FOR BUILDING LAYOUT AND DIMENSIONS, FINISH FLOOR ELEVATIONS, SLAB SLOPES, DEPRESSIONS, DRAINS, FINISHES, ETC., SEE ARCHITECTURAL DRAWINGS, TYP. U.O.N.
3. FOR MECHANICAL, ELECTRICAL, AND PLUMBING OPENINGS, ETC. SEE DRAWINGS OTHER THAN STRUCTURAL.
4. FOR TYPICAL METAL STUD FRAMING DETAILS, SEE SHEET S.91.
5. S.A.D. FOR (N) FULL HEIGHT PARTITION WALL FRAMING AND DETAILS.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

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(650) 617-5930

RE DAT ISSU

REGISTERED PROFESSIONAL ENGINEER
MICHAEL W. RESNICK
S 5531
STRUCTURAL
STATE OF CALIFORNIA

KEY PLAN

Administration Services Interior Improvements

3000 Campus Hill Drive, Livermore CA

PROJECT #20057.100
DATE: August 10, 2020
DRAWN BY:
CHECKED BY:
SCALE:

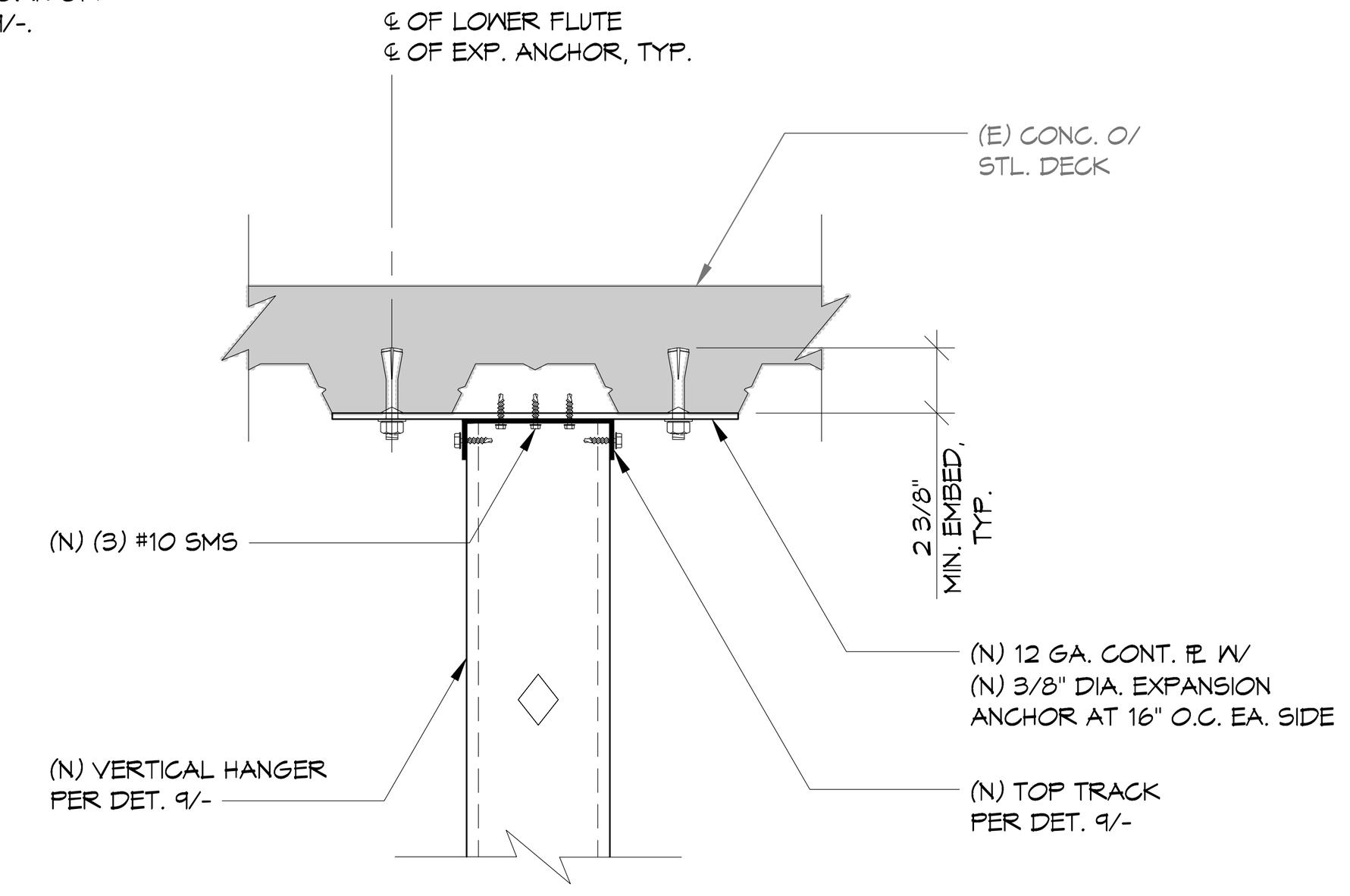
(E) PARTIAL 2ND FLOOR AND ROOF FRAMING PLANS

S.200
Project Status

HOHBACH-LEWIN # 14715

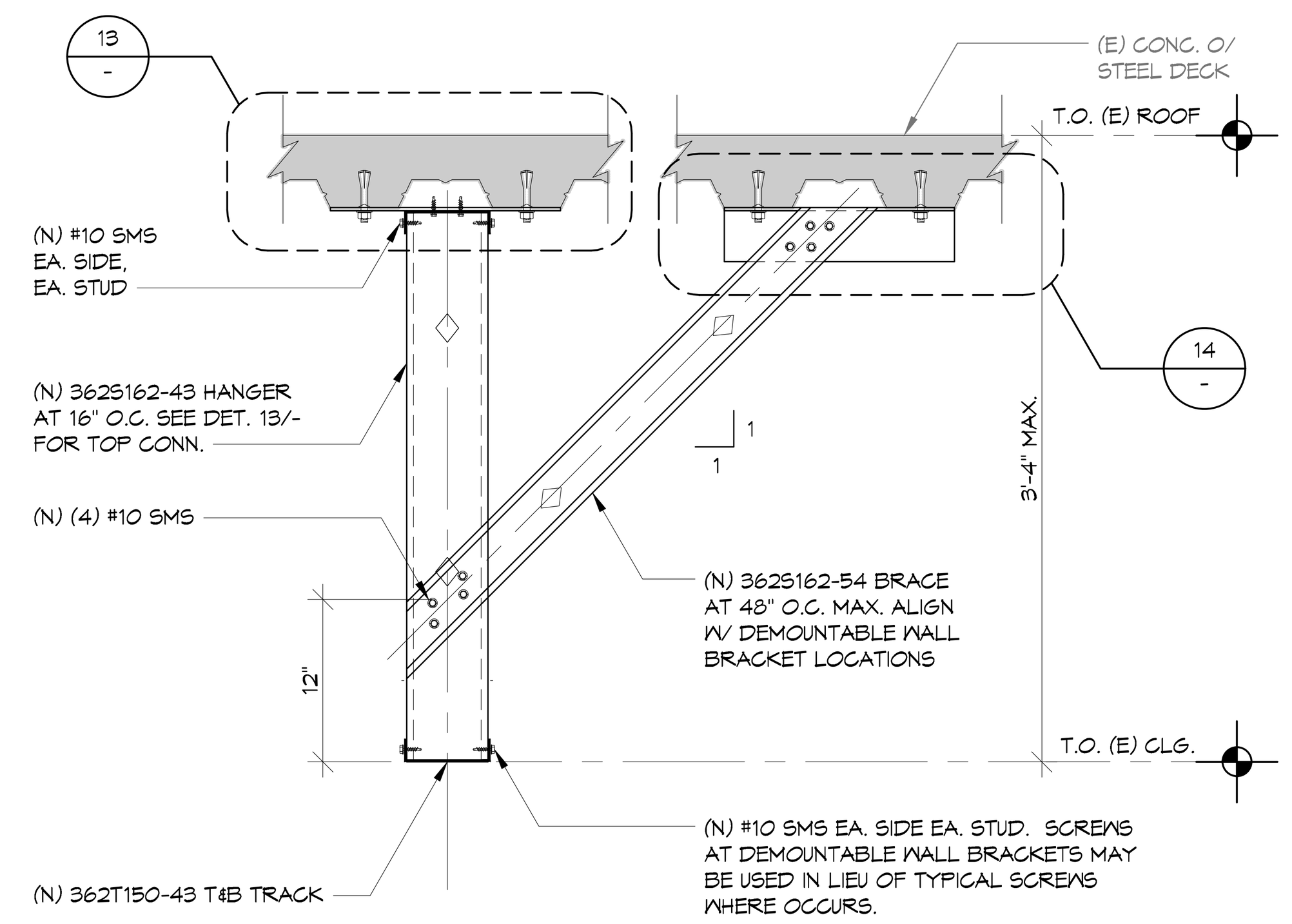
NOTE:

1. FOR INFO. NOT SHOWN OR NOTED, SEE DET. 9/-.



13 HANGER CONN.

1 1/2"=1'-0"

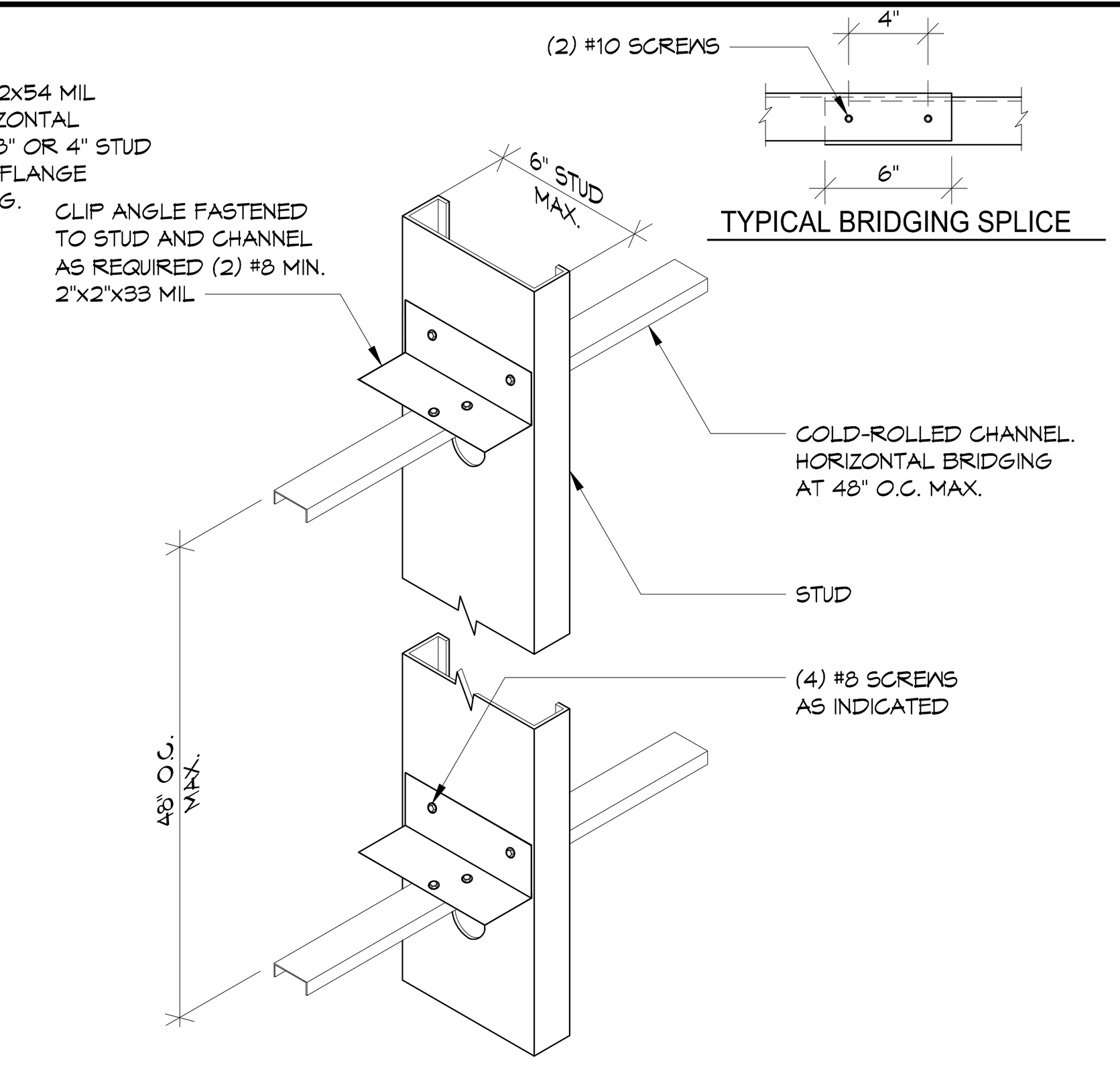


9 INTERIOR STOREFRONT WALL SYSTEM BRACING

1"=1'-0"

NOTE:

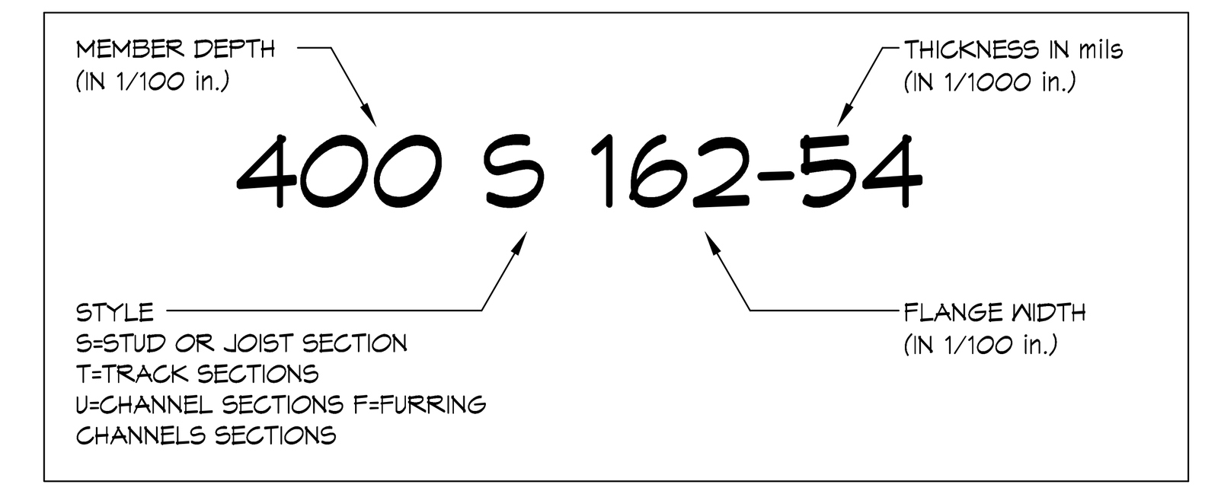
1. FOR 6" STUD USE 2 1/2x54 MIL W/ 1/2" FLANGE HORIZONTAL BRIDGING. FOR 3 5/8" OR 4" STUD USE 1 1/2"x54 W/ 1/2" FLANGE HORIZONTAL BRIDGING.



5 TYPICAL BRIDGING

LG-S9.1-05

N.T.S.



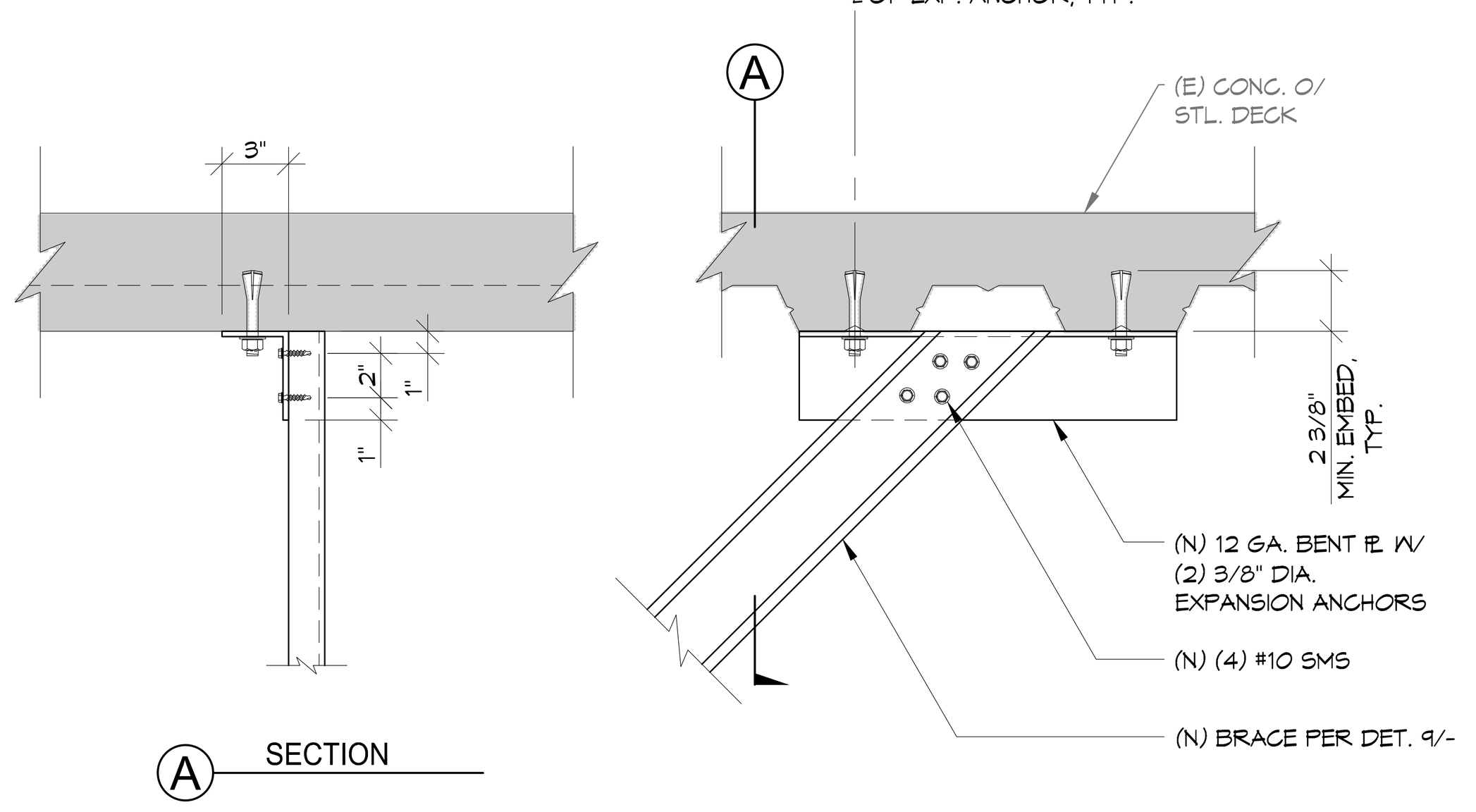
MINIMUM DELIVERABLE THICKNESS (MILS)	GAUGE	DESIGN THICKNESS (INCHES)
18	25	.0188
27	22	.0288
33	20	.0346
43	18	.0451
54	16	.0566
68	14	.0713
97	12	.1017

1 TYPICAL LIGHT GAUGE STUD DESIGNATIONS

LG-S9.1-01

NOTE:

1. FOR INFO. NOT SHOWN OR NOTED, SEE DET. 9/-.

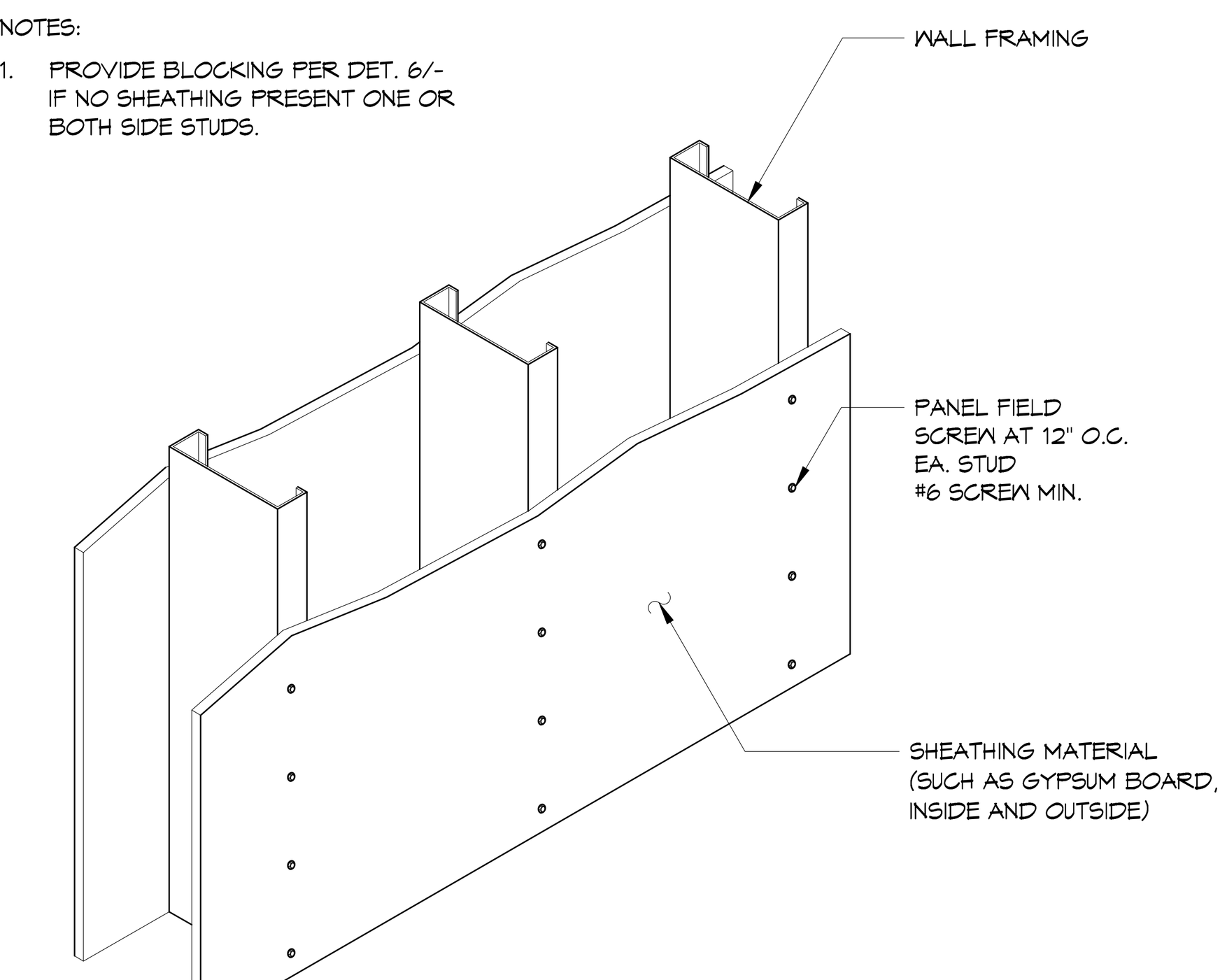


14 BRACE TOP CONN.

1 1/2"=1'-0"

NOTES:

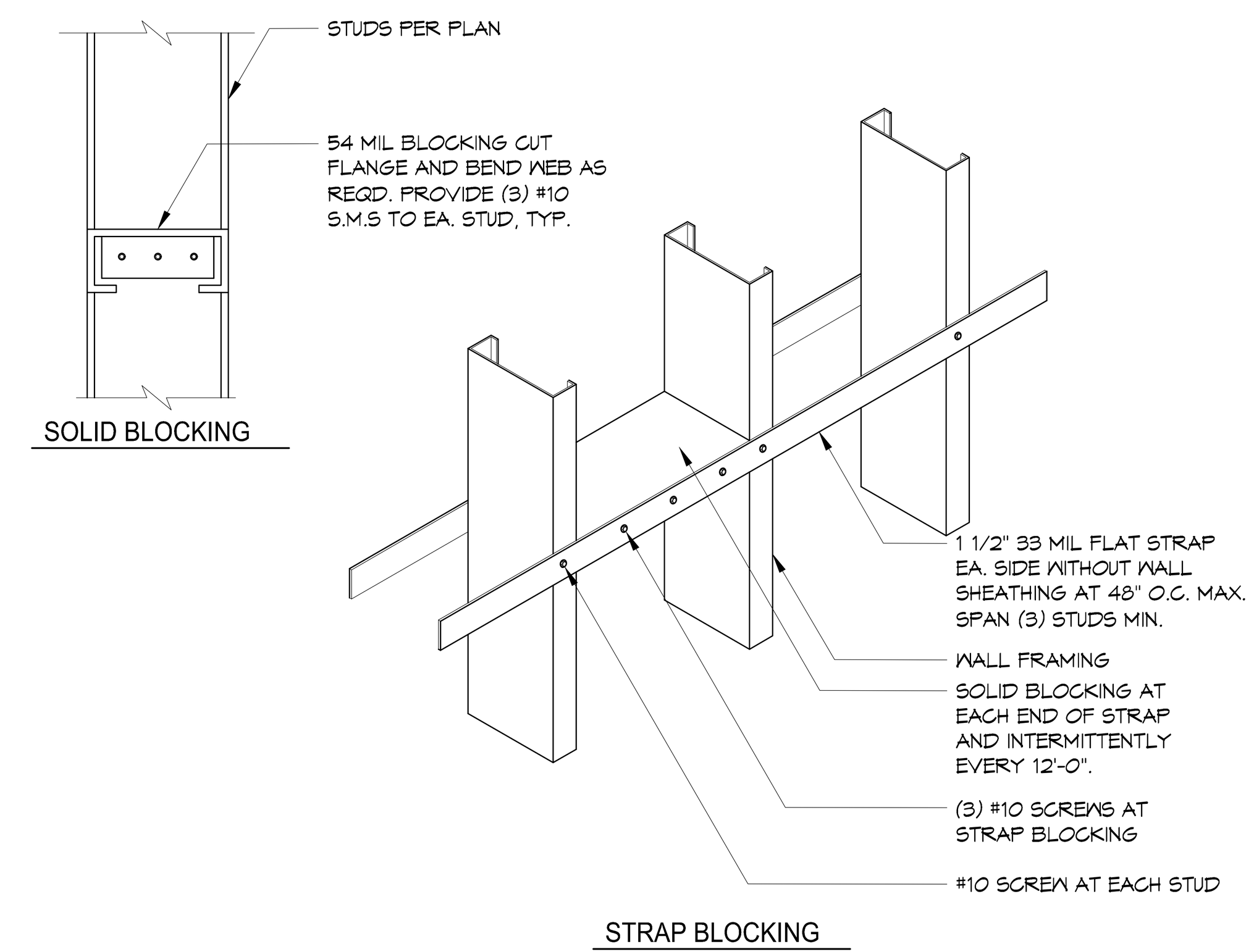
1. PROVIDE BLOCKING PER DET. 6/- IF NO SHEATHING PRESENT ONE OR BOTH SIDE STUDS.



10 TYPICAL STUD BRACING WITH SHEATHING

LG-S9.1-10

N.T.S.



6 TYPICAL STUD BLOCKING

1 1/2"=1'-0"

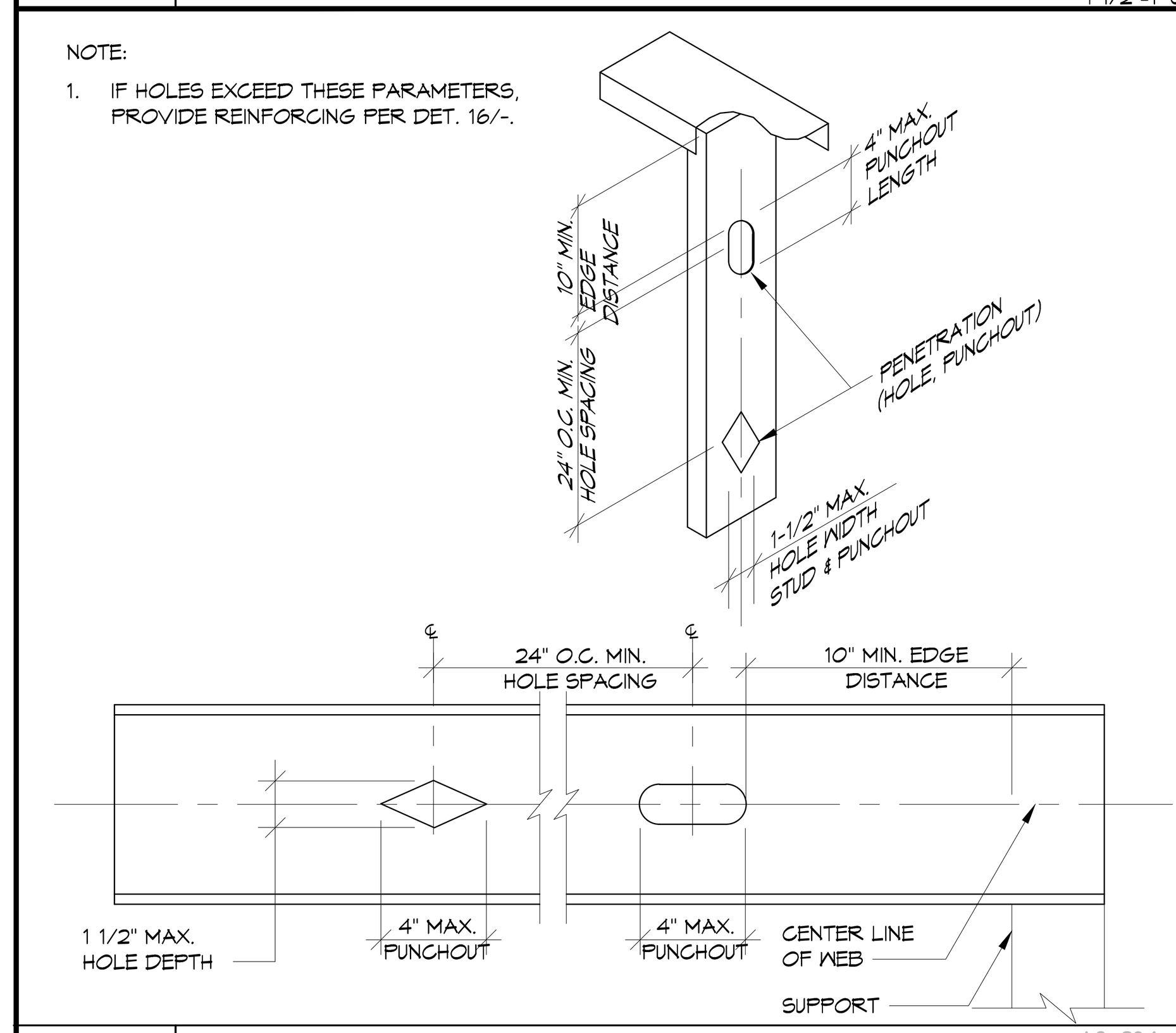
INTERIOR WALL STUD - NON BEARING PARTITION

WALL HEIGHT	STUD SECTION	SPACING
≤ 14'	400S137-43	16" O.C.

2 STUD SCHEDULE - NON BEARING

NOTE:

1. IF HOLES EXCEED THESE PARAMETERS, PROVIDE REINFORCING PER DET. 16/-.



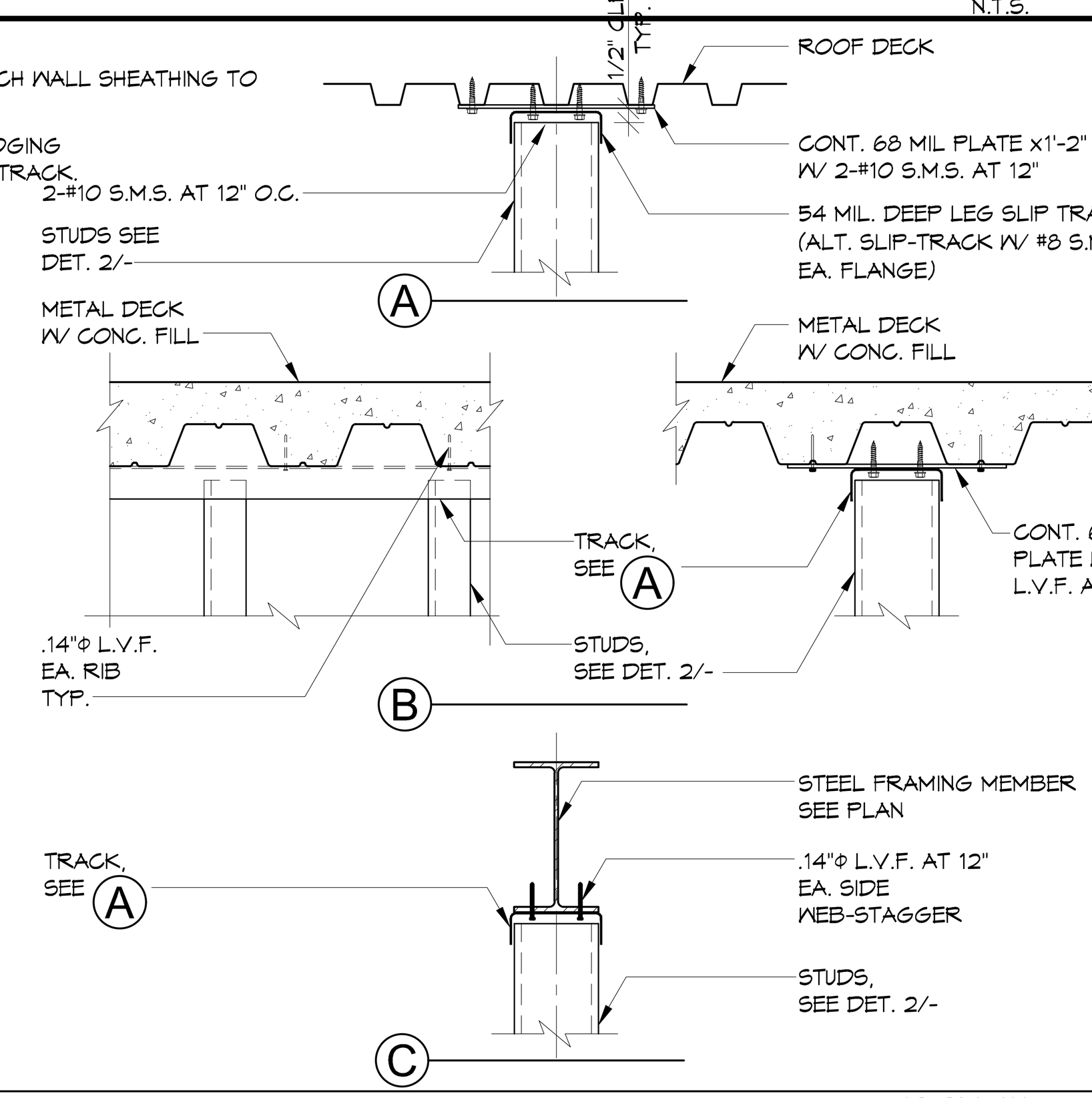
15 TYPICAL ALLOWABLE HOLES IN STUD WEB

LG-S9.1-15

N.T.S.

NOTES:

1. DO NOT ATTACH WALL SHEATHING TO SLIP TRACK.
2. PROVIDE BRIDGING WITHIN 12" OF TRACK.



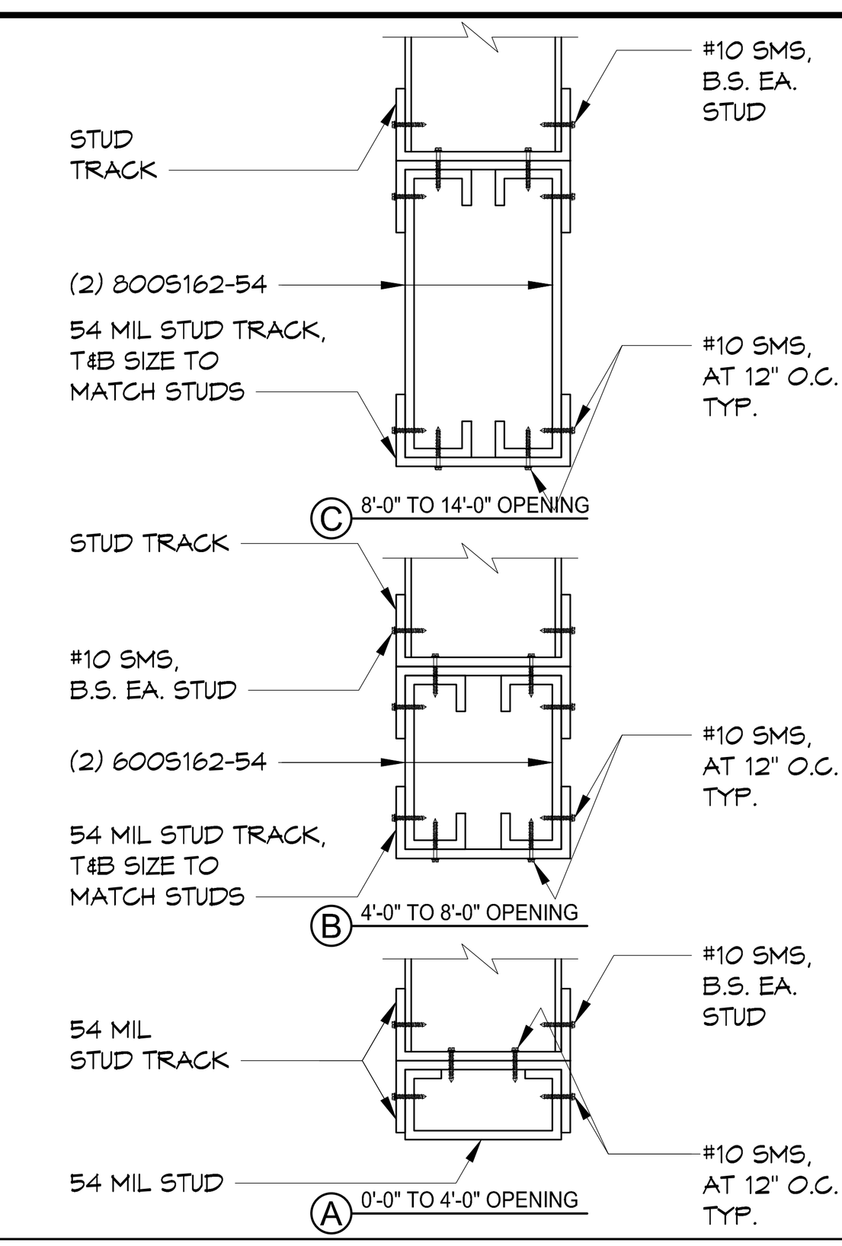
11 TYPICAL NON-BEARING WALL TOP CONNECTION

LG-S9.1-11A

N.T.S.

NOTE:

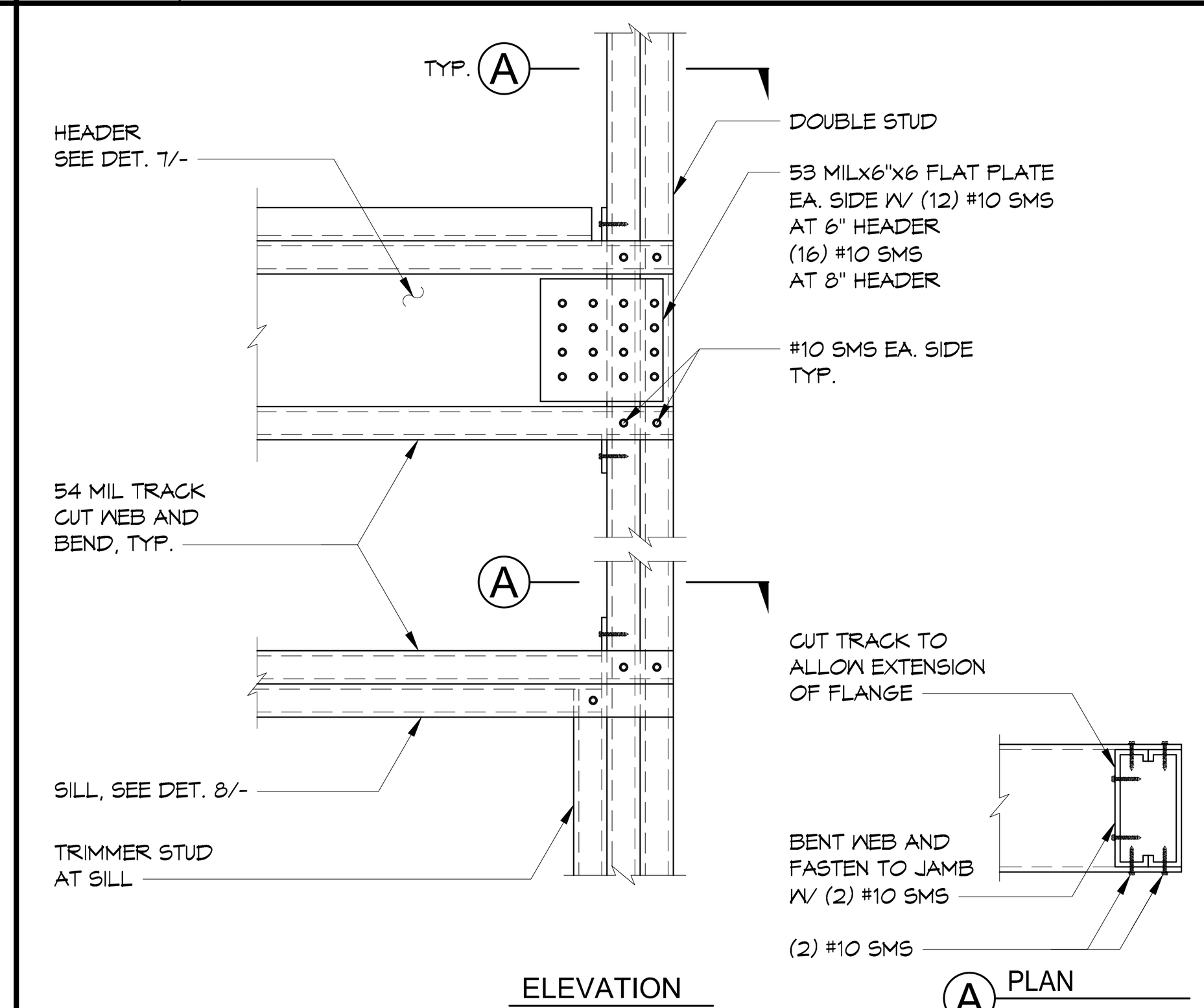
1. FOR CONNECTIONS TO JAMB, SEE DET. 3/-.



7 TYPICAL HEADER SCHEDULE

LG-S9.1-07

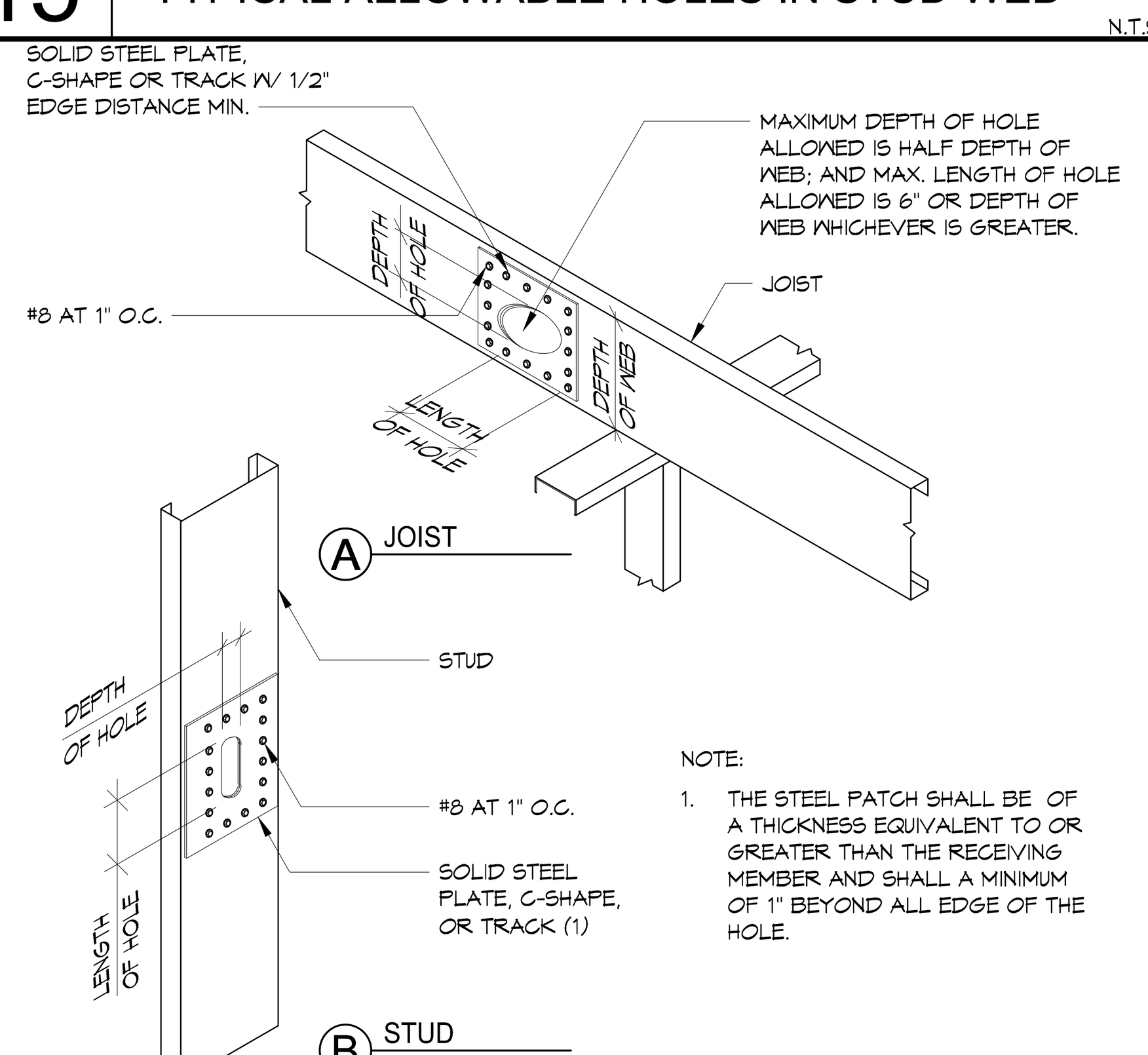
N.T.S.



3 TYPICAL HEAD AND SILL DETAILS AT JAMB NON BEARING WALL

LG-S9.1-03

1 1/2"=1'-0"



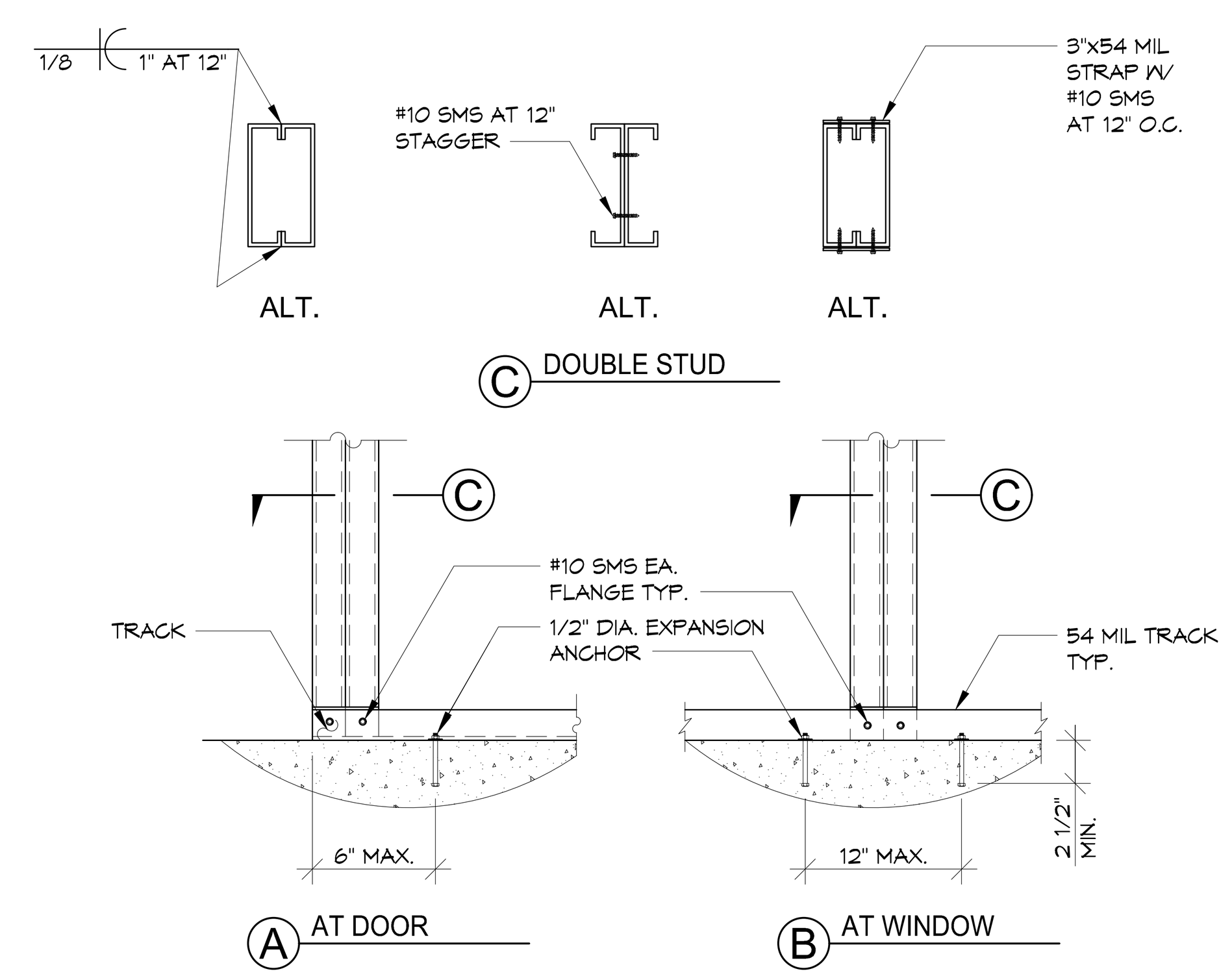
NOTE:

1. THE STEEL PATCH SHALL BE OF A THICKNESS EQUIVALENT TO OR GREATER THAN THE RECEIVING MEMBER AND SHALL A MINIMUM OF 1" BEYOND ALL EDGE OF THE HOLE.

16 TYPICAL JOIST AND STUD WEB HOLES REINFORCING

LG-S9.1-16

N.T.S.



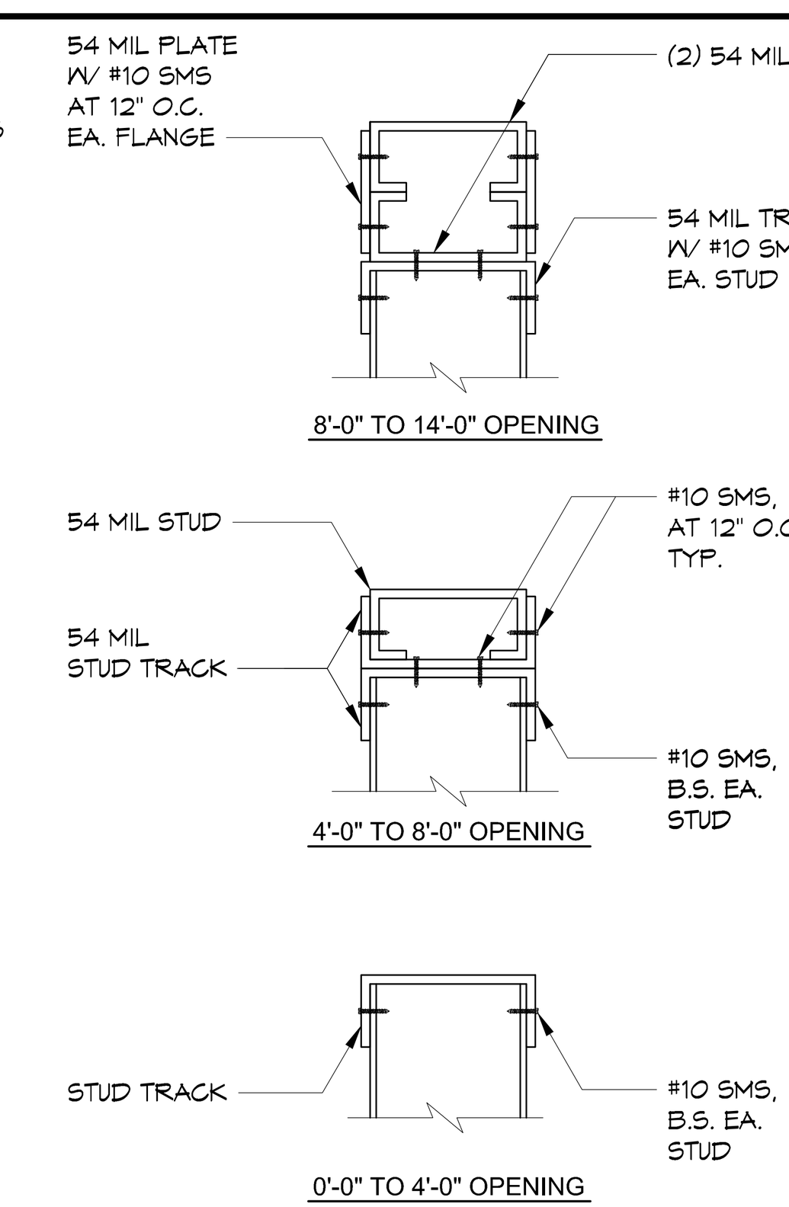
12 TYPICAL DOUBLE STUD JAMB BASE SIMILAR AT TOP

LG-S9.1-12

N.T.S.

NOTE:

1. FOR CONNECTIONS TO JAMB, SEE DET. 3/-.



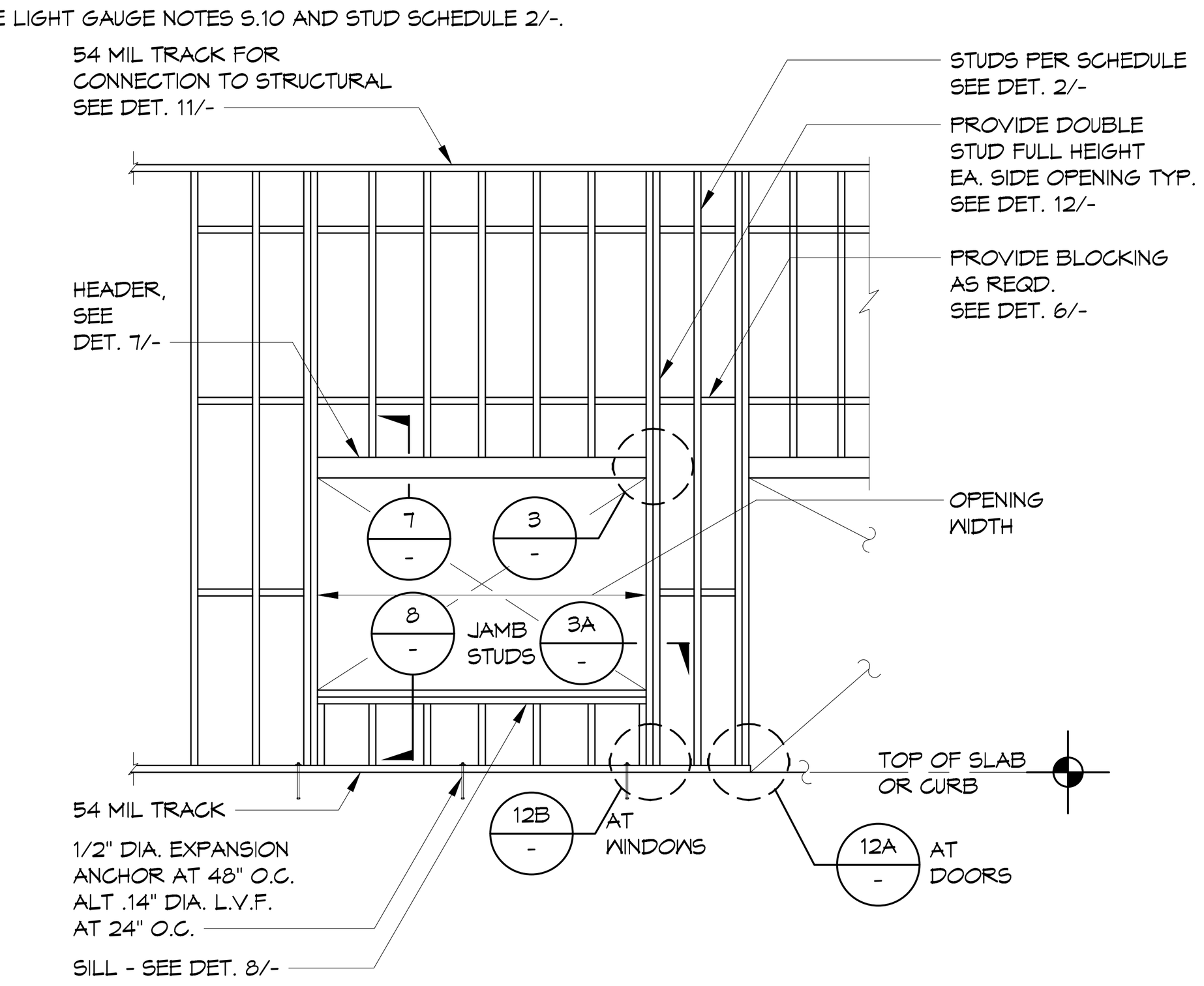
8 TYPICAL SILL SCHEDULE

LG-S9.1-08

N.T.S.

NOTE:

1. SEE LIGHT GAUGE NOTES S.10 AND STUD SCHEDULE 2/-.



4 TYPICAL LIGHT GAUGE STUD WALL FRAMING - NON BEARING

N.T.S.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

CLIENT
Chabot Las-Positas Community College District
5020 Franklin Dr.
Pleasanton, CA 94588

ARCHITECT
Steinberg Hart
125 S. Market St., Suite 110
San Jose, CA 95113

HOHBACH-LEWIN, INC.
STRUCTURAL & CIVIL ENGINEERS
260 Sheridan Avenue, Suite 150
Palo Alto, CA 94306
(650) 617-5930

RE: DATE: ISSUE:

Administration Services Interior Improvements

3000 Campus Hill Drive, Livermore CA

PROJECT #: 20057.100
DATE: August 10, 2020
DRAWN BY:
CHECKED BY:
SCALE: AS NOTED

LIGHT GAUGE DETAILS

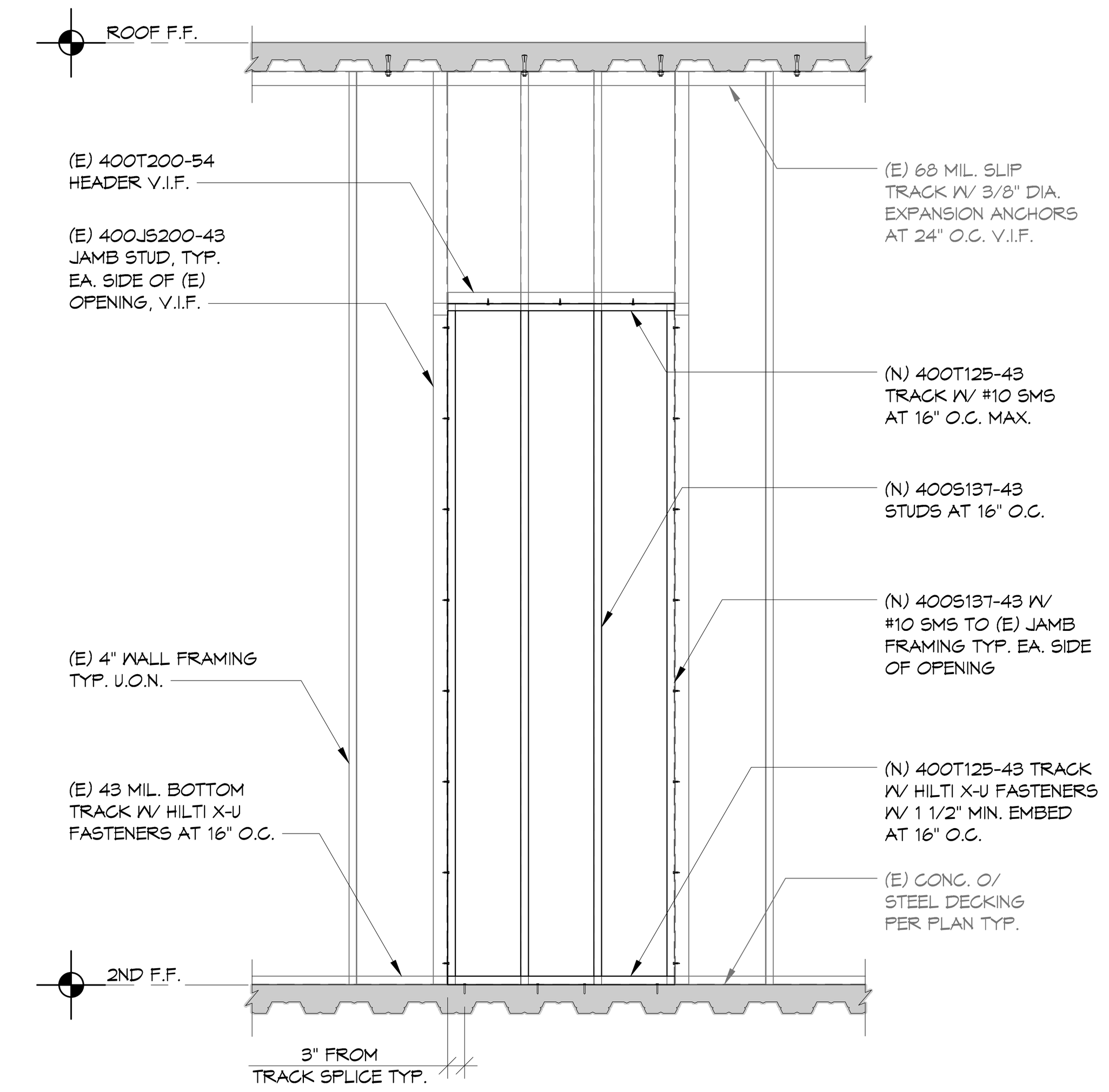
HOHBACH-LEWIN # 14715

S.91
Project Status

13

9

5



14

10

6

2 (E) DOOR INFILL AT NON-STRUCTURAL PARTITION 1/2"=1'-0"

15

11

7

3

16

12

8

4

7/20/2020 9:23 AM J:\14500-14999\14715\STRUC\14715S92.DWG

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

steinberg hart

CLIENT
Chabot Las-Positas Community College District
5020 Franklin Dr.
Pleasanton, CA 94588

ARCHITECT
Steinberg Hart
125 S. Market St., Suite 110
San Jose, CA 95113

HOHBACH-LEWIN, INC.
STRUCTURAL & CIVIL ENGINEERS
260 Sheridan Avenue, Suite 150
Palo Alto, CA 94306
(650) 617-5930

RE: DATE: ISSUE:

REGISTERED PROFESSIONAL ENGINEER
MICHAEL W. RESCH
S 5531
STRUCTURAL
STATE OF CALIFORNIA

Administration Services Interior Improvements

3000 Campus Hill Drive, Livermore CA

PROJECT #: 20057.100
DATE: August 10, 2020
DRAWN BY:
CHECKED BY:
SCALE: AS NOTED

LIGHT GAUGE DETAILS

HOHBACH-LEWIN # 14715

S.92
Project Status

MECHANICAL SYMBOL LIST

NOTE: This is a standard symbol list and not all items listed may be used.

Abbreviations

AFF	ABOVE FINISHED FLOOR
AD	ACCESS DOOR
A/C	AIR CONDITION(ED)
BDD	BACKDRAFT DAMPER
BFP	BACKFLOW PREVENTER
BFF	BELOW FINISHED FLOOR
BHP	BRAKE HORSEPOWER
CD	CEILING DIFFUSER
CV	CHECK VALVE
COP	COEFFICIENT OF PERFORMANCE
CH	COLD WATER
CD	CONDENSATE DRAIN
CU	CONDENSING UNIT
CONT.	CONTINUATION
DB	DECIBEL
DIA	DIAMETER
DX	DIRECT EXPANSION
D	DROP
DB	DRY BULB
EFF	EFFICIENT
ELECT	ELECTRICAL
EER	ENERGY EFFICIENCY RATING
EAT	ENTERING AIR TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EF	EXHAUST FAN
F	FAHRENHEIT
FT	FEET
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
GAL	GALLONS
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HD	HEAD
HTR	HEATER
HTG	HEATING
HP	HORSEPOWER
HWC	HOT WATER COIL
IN	INCHES
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
KW	KILOWATT
LH	LATENT HEAT
LAT	LEAVING AIR TEMPERATURE
MAX	MAXIMUM
MIN	MINIMUM
MA	MIXED AIR
MD	MOTORIZED DAMPER
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NO.	NUMBER
OC	ON CENTER
OBD	OPPOSED BLADE DAMPER
OA	OUTSIDE AIR
OD	OUTSIDE DIAMETER
PH	PHASE
LBS.	POUNDS
PSI	POUNDS PER SQUARE INCH
PD	PRESSURE DROP
PRV	PRESSURE REDUCING VALVE
QTY	QUANTITY
RET	RETURN
RA	RETURN AIR
RPM	REVOLUTIONS PER MINUTE
R	RISE
SEER	SEASONAL ENERGY EFFICIENCY RATING
SH	SENSIBLE HEAT
SOV	SHUT OFF VALVE
SF	SQUARE FEET
SP	STATIC PRESSURE
SA	SUPPLY AIR
T, TEMP	TEMPERATURE
TD	TEMPERATURE DIFFERENCE
MBH	THOUSAND BTU'S PER HOUR
TH	TOTAL HEAT
TP	TOTAL PRESSURE
V	VOLT
W/C	WATER COLUMN
W	WATT
WB	WET BULB
W/	WITH
CHWMS	CHWMS
CHWMR	CHWMR

Dampers

- FIRE DAMPER
- FIRE/SMOKE DAMPER
- MOTORIZED DAMPER
- SMOKE DAMPER
- VOLUME DAMPER

Diffusers and Grilles

- 12x12 CD-1 100 — DIFFUSER OR GRILLE IDENTIFICATION
- EXHAUST AIR
- RETURN AIR
- SUPPLY AIR

Ductwork Fittings

- ACOUSTICALLY LINED DUCT (SIZES SHOWN ARE NET INSIDE)
- BELLMOUTH
- CONCENTRIC SQUARE TO ROUND
- CONCENTRIC TRANSITION, RECTANGULAR OR ROUND
- ECCENTRIC TRANSITION, RECTANGULAR OR ROUND
- FLEXIBLE CONNECTION
- NON-SYMMETRICAL WYE
- RECTANGULAR DUCT DROP
- RECTANGULAR DUCT RISER
- RECTANGULAR MAIN WITH RECTANGULAR BRANCH
- RECTANGULAR MAIN WITH ROUND BRANCH
- RECTANGULAR OFFSET LESS THAN 15%%d
- RECTANGULAR OFFSET MORE THAN 15%%d
- ROUND DUCT DROP
- ROUND DUCT RISER
- ROUND DUCT WITH ROUND BRANCH
- ROUND WYE
- SYMMETRICAL WYE
- MITERED ELBOW WITH TURNING VANES
- RADIUSED ELBOW

General

- 30X16 — RECTANGULAR DUCT SIZING
- 30"Ø — ROUND DUCT SIZING

Piping Fittings, Appurtenances and Equipment

- AIR SEPARATOR
- AUTOMATIC AIR VENT
- BACKFLOW PREVENTER
- CAP
- CONTINUATION
- EXPANSION JOINT
- EXPANSION LOOP
- EXPANSION TANK
- FLOW SWITCH
- HEAT EXCHANGER
- HOSE BIBB
- MANUAL AIR VENT
- PIPE DROP
- PIPE RISE
- PIPE TO DRAIN
- PRESSURE GAUGE WITH COCK
- PRESSURE RELIEF VALVE
- PRESSURE SENSOR
- SHOCK ABSORBER
- STRAINER
- T&P RELIEF VALVE WITH PIPE TO DRAIN
- TEE DOWN ON PIPE
- TEE UP ON PIPE
- TEMPERATURE SENSOR
- TEST PORT (PETE'S PLUG OR EQUAL)
- THERMOMETER
- VENT TO ATMOSPHERE
- WATER METER

Piping Systems

- — —CHHWR— — CHILLED AND HOT WATER RETURN
- ——CHHWS—— CHILLED AND HOT WATER SUPPLY
- — —CHWR— — CHILLED WATER RETURN
- ——CHWS—— CHILLED WATER SUPPLY
- — —HWR— — HEATING WATER RETURN
- ——HWS—— HEATING WATER SUPPLY
- ——RL—— REFRIGERANT LIQUID
- ——RS—— REFRIGERANT SUCTION

Piping Valves

- BALANCING VALVE
- CHECK VALVE
- GLOBE VALVE
- QUARTER TURN VALVE
- VALVE, GENERAL

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 5/20) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: Administation Service Interior Improvements	Report Page:	Page 3 of 10
Project Address: 3000 Campus Hill Dr, Livermore	Date Prepared:	5/22/2020

Table Continued

[1] *FOOTNOTES: Equipment shall be the smallest size, within the available options of the desired equipment line, necessary to meet the design heating and cooling loads of the building per §140.4(a). Healthcare facilities are excepted.*
[2] *It is common practice to show rated output capacity on the equipment schedule. Sensible cooling output comes from specification sheet tables.*
[3] *If equipment is heating only, leave cooling output and load blank. If equipment is cooling only, leave heating output and load blank.*
[4] *Authority Having Jurisdiction may ask for load calculations used for compliance per §140.4(b).*

Dry System Equipment Efficiency (other than Package Terminal Air Conditioners (PTAC) and Package Terminal Heat Pumps (PTHP))

01	02	03	04	05	06	07	08	09
		Heating Mode				Cooling Mode		
Name or Item Tag	Size Category (Btu/h)	Rating Condition (°F)	Efficiency Unit	Min Efficiency Required per Tables 110.2/ Title 20	Design Efficiency	Efficiency Unit	Min Efficiency Required per Tables 110.2/ Title 20	Design Efficiency
	≥65,000 and <135,000							

G. PUMPS
This Section Does Not Apply

H. FAN SYSTEMS & AIR ECONOMIZERS
This Section Does Not Apply

I. SYSTEM CONTROLS
Table Instructions: Complete the following Table to demonstrate compliance with mandatory controls in §110.2 and §120.2 and prescriptive controls in §140.4(f) and (n) or requirements in §141.0(b)2E for altered space conditioning systems.
Table Continued

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards May 2020

DSA COMPONENT ANCHORAGE NOTES

A. ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC, SECTIONS 1616A.1.18 THROUGH 1616A.1.26, AND ASCE 7-16 CHAPTER 13, 26 AND 30.

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

B. THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT THE ATTACHMENT NEED TO BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENTS AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.

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

C. FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

A. PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-10 SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.6.8, 13.6.7, 13.6.5.6, AND 2016 CBC, SECTIONS 1616A.1.23, 1616A.1.24, 1616A.1.25 AND 1616A.1.26.

B. THE BRACING AND ATTACHMENTS TO THE STRUCTURE SHALL BE DETAILED ON THE APPROVED DRAWINGS OR THEY SHALL COMPLY WITH ONE OF THE OSHPD PRE-APPROVALS (OPM #).

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

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 5/20) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
This document is used to demonstrate compliance for mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.4, or §141.0(b)2 for alterations.		
Project Name: Administation Service Interior Improvements	Report Page:	Page 1 of 10
Project Address: 3000 Campus Hill Dr, Livermore	Date Prepared:	5/22/2020

A. GENERAL INFORMATION

01	Project Location (city)	Livermore	04	Total Conditioned Floor Area	775
02	Climate Zone	12	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1

- ☑ Office (B) ☐ Retail (M) ☐ Non-refrigerated Warehouse (S)
- ☐ Hotel/ Motel Guest Rooms (R-1) ☐ School (F) ☐ Healthcare Facility (H)
- ☐ High-Rise Residential (R-2/R-3) ☐ Relocatable Class Bldg (E) ☐ Other (Write In):

[1] *FOOTNOTES: Climate zone can be determined on the California Energy Commission's website at http://www.energy.ca.gov/maps/renewable/building_climate_zones.html*

B. PROJECT SCOPE
Table Instructions: Include any mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.4, or §141.0(b)2 for alterations.

My project consists of (check all that apply)

01	02	03
Air System(s)	Wet System Components	Dry System Components
☑ Heating Air System	☐ Water Economizer	☐ Air Economizer
☑ Cooling Air System	☐ Pumps	☐ Electric Resistance Heat
Mechanical Controls	☑ Hydronic System Piping	☐ Fan Systems
☑ Mechanical Controls	☐ Cooling Towers	☐ Ductwork
	☐ Chillers	☑ Ventilation
	☐ Boilers	☐ Zonal Systems/ Terminal Boxes

C. COMPLIANCE RESULTS
Table Instructions: If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

01		02		03		04		05		06		07		08	09
System Summary §110.1, §110.2, §140.4	AND	Pumps §140.4(k)	AND	Fans/ Economizers §140.4(c), §140.4(e)	AND	System Controls §110.2, §120.2, §140.4(f)	AND	Ventilation §120.1	AND	Terminal Box Controls §140.4(d)	AND	Distribution §120.3, §140.4(l)	AND	Cooling Towers §110.2(e)2	**Compliance Results**
(See Table F)		(See Table G)		(See Table H)		(See Table I)		(See Table J)		(See Table K)		(See Table L)		(See Table M)	
Yes	AND		AND		AND	Yes	AND	Yes	AND		AND	Yes	AND		**COMPLIES**
Mandatory Measures Compliance (See Table Q for Details)															**COMPLIES**

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards/ May 2020

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 5/20) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: Administation Service Interior Improvements	Report Page:	Page 2 of 10
Project Address: 3000 Campus Hill Dr, Livermore	Date Prepared:	5/22/2020

D. EXCEPTIONAL CONDITIONS
This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

Transfer air is being used in at least one zone to meet minimum ventilation requirements. See Table J for detail.
Selections made in Table O have been changed by the permit applicant. See Table E. Additional Remarks for permit applicant's explanation.

E. ADDITIONAL REMARKS
This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

TI renovation consisting of adding 3 new offices and enlarging an existing office. No new mechanical equipment

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)
Table Instructions: Complete the following equipment schedules to show compliance with mandatory requirements found in §110.1 and §110.2(a) and prescriptive requirements found in §140.4(a), §140.4(b) and §140.4(k) or §141.0(b)2 for alterations.

Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters)

01	02	03	04	05	06	07	08	09	10	11
				Equipment Sizing per Mechanical Schedule (Btu/h) §140.4 (a&b)						
				Heating Output[2,3]			Cooling Output[2,3]		Load Calculations[3,4]	
Name or Item Tag	Equipment Category per Tables 110.2	Equipment Type per Tables 110.2 & Title 20	Smallest Size Available[1] §140.4(a)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Supp. Heating Output (kBtu/h)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Total Heating Load (kBtu/h)	Total Sensible Cooling Load (kBtu/h)
(E) 290A	Unitary AC/ Condensers	AC, water cooled	Yes	0.9	0.9	0	1.9	1.9	12.3	5
(E)VP290E	Unitary AC/ Condensers	AC, water cooled	Yes	0.4	0.4	0	0.8	0.8	6.1	4.1
(E)290F	Unitary AC/ Condensers	AC, water cooled	Yes	0.27	0.27	0	0.13	0.13	5.4	2.9
(E) 290G	Unitary AC/ Condensers	AC, water cooled	Yes	0.27	0.27	0	0.13	0.13	5.4	2.9

Table Continued

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards May 2020

GENERAL MECHANICAL NOTES

A. PROVIDE MISCELLANEOUS METALS AND MATERIALS FOR A COMPLETE INSTALLATION (IE. SUPPORT, BRACING, ETC.)

B. PROVIDE EQUIPMENT SUBMITTAL, FOR REVIEW, IN ACCORDANCE WITH THE SPECIFICATIONS. DO NOT DELIVER TO THE JOB SITE ANY PRODUCTS WITHOUT PRIOR REVIEW BY THE ARCHITECT. SUBMIT ALL REQUIRED SUBMITTALS AT ONE TIME. AT CONTRACTOR'S OPTION, 3 SEPARATE SUBMITTALS MAY BE SUMBITTED, CONSISTING OF: UNDERGROUND WORK, BUILDING WORK, AND BUILDING AUTOMATION SYSTEM – DEVIATIONS WILL BE RETURNED WITHOUT REVIEW. INCOMPLETE SUBMITTALS WILL BE RETURNED WITHOUT REVIEW. ENGINEER WILL PROVIDE MAXIMUM OF TWO REVIEWS OF SUBMITTAL PACKAGE. ARRANGE FOR ADDITIONAL REVIEWS AND/OR EARLY REVIEW OF LONG-LEAD ITEMS AND BEAR COSTS OF THESE ADDITIONAL REVIEWS AT ENGINEER'S STANDARD HOURLY RATES. SUBSTITUTION REQUESTS WILL NOT BE REVIEWED AFTER AWARD OF CONTRACT.

C. PROVIDE SMOKE DETECTORS IN MAIN SUPPLY AIR DUCT OF ANY SUPPLY AIR SYSTEM WITH AIR QUANTITY OF MORE THAN 2000 CFM OR OF SUPPLY AIR SYSTEM(S) WHERE THE COMBINED SUPPLY AIR QUANTITY OF SUPPLY AIR SYSTEM(S) SUPPLYING AIR INTO ONE ZONE EXCEED 2000 CFM.

D. WHERE COMBINATION FIRE AND SMOKE DAMPER IS SHOWN IMMEDIATELY BEHIND A WALL MOUNTED GRILLE AND THERE IS INSUFFICIENT ACCESS AT DUCTWORK, ENLARGE THE WIDTH OF THE GRILLE AND FSD BY A MINIMUM OF 6 INCHES, OR AS OTHERWISE REQUIRED BY FSD MANUFACTURER, AND PROVIDE A "FRONT ACCESS" FSD FOR ACCESS TO FSD COMPONENTS FROM FACE OF GRILLE. INSTALL GRILLE FLUSH WITH WALL SURFACE AND LOCATE DAMPER ACTUATOR OUTSIDE OF THE AIRSTREAM. FSD'S SHALL BE RUSKIN FSD-60FA OR EQUAL

E. PRIOR TO SUBMISSION OF BID, REVIEW A COMPLETE SET OF CONSTRUCTION DOCUMENTS (INCLUDING ALL OTHER TRADES). INCLUDE ADDITIONAL PIPE OR DUCT OFF-SETS THAT MAY BE REQUIRED TO CLEAR STRUCTURE, FINISHES OR WORK OF OTHER TRADES. FIELD VERIFY EXACT LOCATION AND SIZES OF EXISTING UTILITIES, THE PROPOSED POINT OF CONNECTIONS TO EXISTING SYSTEMS, AND NEW ROUTINGS. EXTRA PAYMENT WILL NOT BE ALLOWED FOR WORK RESULTING FROM LACK OF APPRAISAL OF ENTIRE SCOPE OF WORK PRIOR TO BID. SYSTEM LAYOUTS AS INDICATED ON DRAWINGS ARE GENERALLY DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION WILL PERMIT.

F. PROVIDE DUCT ACCESS DOORS FOR EQUIPMENT AND DEVICES REQUIRING ACCESS OR RESETTING (IE. FIRE AND SMOKE DAMPERS, SMOKE DAMPERS, SENSORS, ETC.) INDICATE SIZE AND LOCATION ON COORDINATED SHOP DRAWINGS.

G. PROVIDE DUCTWORK AND TRANSITIONS EQUAL TO DUCT FREE AREA SHOWN ON DRAWINGS, TO PREVENT A SPATIAL CONFLICT. AT CONTRACTOR'S OPTION AND IF SPATIAL CONSTRAINTS ALLOW IT, ROUND SPIRAL DUCTWORK, OF EQUAL CROSS-SECTIONAL AREA OR LARGER, MAY BE USED IN LIEU OF RECTANGULAR DUCTWORK WHERE SHOWN ON PLANS.

H. USE FLEXIBLE DUCTS ONLY FOR THE LAST 5 FEET MAXIMUM AT AIR OUTLETS, EXCEPT FOR OSHPD PROJECTS WHERE A MAXIMUM OF 10 FEET MAY BE USED. PER 2016 CMC-603.4.1 EXCEPT FOR RESIDENTIAL OCCUPANCIES DO NOT USE FLEXIBLE DUCTWORK IN LIEU OF ELBOWS OR FITTINGS.

I. PROVIDE MANUAL VOLUME DAMPERS AT EACH GRILLE, REGISTER, AND DIFFUSER, AND LOCATE EQUIDISTANCE BETWEEN BRANCH TAKEOFF AND AIR INLET/OUTLET. DO NOT USE VOLUME DAMPERS INTEGRAL WITH GRILLES, DIFFUSERS AND REGISTERS FOR AIR BALANCING.

J. INSTALL EQUIPMENT WITH SUFFICIENT ACCESS TO PANELS, CONTROLS, FILTERS, MOTORS, ETC. COORDINATE ACCESS TO ALL DAMPERS, VALVES, AND OTHER SERVICEABLE EQUIPMENT. REVIEW CEILING HEIGHTS AND COORDINATE ACCESS PANEL LOCATIONS.

K. COORDINATE EQUIPMENT PLATFORMS, AND CUTTING AND PATCHING. OBTAIN WRITTEN PERMISSION FROM THE ARCHITECT PRIOR TO ANY STRUCTURAL MODIFICATIONS, CUTTING OR PATCHING WORK. KEEP SAW CUTTING TO A MINIMUM.

L. VERIFY DIFFUSERS, GRILLES, AND REGISTER MOUNTING FRAME TYPES WITH CONSTRUCTION TYPE AND CONFIGURATION.

M. PROTECT AND ISOLATE DUCTS STORED ON CONSTRUCTION SITE FROM DUST CONTAMINATION.

N. COORDINATE LOCATION OF SENSORS AND THERMOSTATS WITH ARCHITECT. COMPLY WITH ADA REQUIREMENTS.

O. "DEMOLISH" OR "REMOVE" MEAN: REMOVE AND RETURN TO OWNER FOR ACCEPTANCE, AND DISPOSE OF ANY ITEMS NOT ACCEPTED BY THE OWNER.

P. SEE EQUIPMENT SCHEDULES FOR BRANCH PIPE SIZES TO EQUIPMENT, WHERE PIPE SIZES ARE NOT SHOWN ON PLANS.

Q. PROVIDE REMOTE DAMPER OPERATORS AS MANUFACTURED BY YOUNG REGULATOR COMPANY, MODEL 315 AND 270-275, OR EQUAL, FOR DAMPERS ABOVE INACCESSIBLE CEILINGS (SUCH AS GYPBORAD).

R. COORDINATE WITH DIVISION 26 FOR LOCATION OF POWER AND LOCAL DISCONNECTS FOR MECHANICAL EQUIPMENT DEVICES. PROVIDE STARTERS FOR EQUIPMENT WITHOUT VFD'S, ECM MOTORS, OR EQUIPMENT WITHOUT INTEGRAL STARTERS.

S. MAINTAIN MINIMUM ELECTRICAL CODE AND UNIT MANUFACTURER'S CLEARANCES TO ADJACENT CONSTRUCTION OR EQUIPMENT, PER CEC OR THE FOLLOWING TABLE:

	0-150 VOLT	150-600
NO LIVE OR GROUNDED PARTS ON OPPOSITE SIDE	36 INCH	36 INCH
GROUNDED PARTS ON OPPOSITE SIDE	36 INCH	42 INCH
LIVE PARTS ON OPPOSITE SIDE	36 INCH	48 INCH

SHEET INDEX

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steinberg hart

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INTERFACE ENGINEERING
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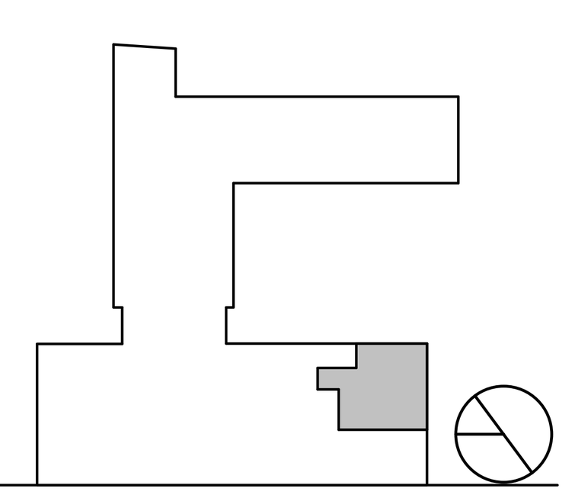
REV DATE ISSUE

REGISTERED PROFESSIONAL ENGINEER
JARED F. DOESCHER
No. 35930
MECHANICAL
STATE OF CALIFORNIA



Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA. 94551

DSA File #: 1-C2
DSA Application #: 01-118983

SYMBOL LIST AND GENERAL NOTES & TITLE 24 COMPLIANCE FORMS - MECHANICAL

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: 12" = 1'-0"

CHILLED BEAM SCHEDULE

ROOM/TAG	QTY	AREA SERVED	MFR	MODEL	LENGTH (FT)	WIDTH (IN)	AIR INLET Ø (IN)	ROOM CONDITIONS COOLING (F)	ROOM CONDITIONS COOLING RH	ROOM CONDITIONS HEATING (F)	ROOM CONDITIONS HEATING RH	FLOW (CFM)	FROM AHU-2 LAT EAT COOLING (F)	FROM AHU-2 LAT EAT HEATING (F)	TOTAL COOLING CAPACITY (BTUH)	TOTAL HEATING CAPACITY (BTUH)	HOT WATER FLOW (GPM)	CHILLED WATER FLOW (GPM)	HOT WATER EWT (°F)	CHILLED WATER EWT (°F)	MAX WT (LBS)	NOTES
(E) CB-1	1	VP OFFICE 290E	TROX	DID632-HC-4-G	4	24	5	75	50	70	50	75	65	65	3934	6104	0.25	2	160	58	65	1
(E) CB-2	1	VP OFFICE 290E	TROX	DID632-HC-4-G	4	24	5	75	50	70	50	75	65	65	3934	6104	0.25	2	160	58	65	1
(E) CB-3	1	VP OFFICE 290E	TROX	DID632-HC-4-Z	6	24	5	75	50	70	50	25	65	65	2885	5439	0.25	2.5	160	58	65	2
(E) CB-4	1	OFFICE 2 290F	TROX	DID632-HC-4-Z	6	24	5	75	50	70	50	25	65	65	2885	5439	0.25	2.5	160	58	65	2
(E) CB-5	1	OFFICE 3 290G	TROX	DID632-HC-4-Z	6	24	5	75	50	70	50	25	65	65	2885	5439	0.25	2.5	160	58	65	2
(E) CB-6	1	OFFICE 4 290A	TROX	DID632-HC-4-U	6	24	5	75	50	70	50	35	65	65	4992	12334	0.5	0.5	160	58	65	1,3

NOTES:
1. CHILLED BEAM WITH EXISTING PIPING TO REMAIN
2. CHILLED BEAM WITH NEW PIPING CONNECTIONS
3. REBALANCE CHILLED BEAM TO SCHEDULED CFM

DIFFUSER, REGISTER AND GRILLE SCHEDULE

SYMBOL	TYPE	FACE	FRAME	DAMPER	BASIS OF DESIGN	NOTES
CRG-1	CEILING RETURN DIFFUSER	PLAQUE	LAY-IN	NONE	TITUS OMNI	1

NOTES:
1. FINISH TO BE #26 WHITE

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 5/20) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	Administation Service Interior Improvements	Report Page:	Page 8 of 10
Project Address:	3000 Campus Hill Dr, Livermore	Date Prepared:	5/22/2020

P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION
Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be completed by a HERS Rater and provided to the building inspector during construction. The final documents must be created by a HERS Providers registry, but drafts can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCV/

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail
○	●	NRCV-MCH-04-H Duct Leakage Test *NOTE: Must be completed by a HERS Rater*	☐	☐
○	●	NRCV-MCH-24 Enclosure Air Leakage Worksheet *NOTE: Must be completed by a HERS Rater*	☐	☐
○	●	NRCV-MCH-27 High-rise Residential *NOTE: Must be completed by a HERS Rater*	☐	☐
○	●	NRCV-MCH-32 Local Mechanical Exhaust *NOTE: Must be completed by a HERS Rater*	☐	☐

STATE OF CALIFORNIA
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Project Name:	Administation Service Interior Improvements	Report Page:	Page 9 of 10
Project Address:	3000 Campus Hill Dr, Livermore	Date Prepared:	5/22/2020

Q. MANDATORY MEASURES DOCUMENTATION LOCATION
Table Instructions: Indicate where mandatory measures are documented in the plan set or construction documentation. For any mandatory measures that do not apply, mark the plan sheet or construction document location as "N/A", any active cells that are left blank will result in non-compliance in Table C.

01		02 Plan sheet or construction document location
Compliance with Mandatory Measures documented through MCH Mandatory Measures Note Block:	Yes	M.61

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 5/20) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	Administation Service Interior Improvements	Report Page:	Page 10 of 10
Project Address:	3000 Campus Hill Dr, Livermore	Date Prepared:	5/22/2020

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Jared Doescher	Documentation Author Signature:	
Company:	Interface Engineering	Signature Date:	4/14/2020
Address:	135 Main St, Suite 400	CEA/ HERS Certification Identification (if applicable):	
City/State/Zip:	San Francisco / CA/ 94105	Phone:	415 489 3225

RESPONSIBLE PERSON'S DECLARATION STATEMENT
I certify the following under penalty of perjury, under the laws of the State of California:
1. **The information provided on this Certificate of Compliance is true and correct.**
2. **I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)**
3. **The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.**
4. **The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.**
5. **I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.**

Responsible Designer Name:	Jared Doescher	Responsible Designer Signature:	
Company :	Interface Engineering	Date Signed:	4/14/2020
Address:	135 Main St, Suite 400	License:	35930
City/State/Zip:	San Francisco / CA/ 94105	Phone:	415 489 3225

STATE OF CALIFORNIA
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NRCC-MCH-E (Created 5/20) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	Administation Service Interior Improvements	Report Page:	Page 6 of 10
Project Address:	3000 Campus Hill Dr, Livermore	Date Prepared:	5/22/2020

L. DISTRIBUTION (DUCTWORK AND PIPING)
Table Instructions: Complete the following tables to show compliance with mandatory pipe insulation requirements found in §120.3 and prescriptive requirements found in §140.4(l) for duct leakage testing.

Mandatory Pipe Insulation

01	☑	Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather shall be installed with a cover suitable for outdoor service. Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space shall have a Class I or Class II vapor retarder. All penetrations and joints of which shall be sealed.

02	03	04	05	06	07	08	09	10
System Type	Nominal Pipe Diameter (in)	Fluid Temp. Range (°F)	Conductivity Range (Btu-in per hr per ft² per °F)	Insulation Mean Rating Temp. (°F)	Min. Insulation Thickness Required per Table 120.3-A (in)	Min. Insulation Thickness Required per §120.3(c)2 (in)	Insulation Thickness per Design (in)	Exception to §120.3 (if applicable)
Space cooling	1 to <1.5	40-60	0.21 - 0.27	75	0.5		1	Fluid design operating temp. 60-105°F
Space heating	< 1	141-200	0.25 - 0.29	125	1.5		2	No exception taken

M. COOLING TOWERS
This Section Does Not Apply

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION
Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail
●		NRCI-MCH-01-E - Must be submitted for all buildings.	☐	☐

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE
Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCA/

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail

STATE OF CALIFORNIA
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NRCC-MCH-E (Created 5/20) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	Administation Service Interior Improvements	Report Page:	Page 7 of 10
Project Address:	3000 Campus Hill Dr, Livermore	Date Prepared:	5/22/2020

YES	NO	Form/Title	Pass	Fail
●	○	NRCA-MCH-02-A Outdoor Air must be submitted for all newly installed HVAC units. *Note: MCH02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap.*	☐	☐
●	○	NRCA-MCH-03-A Constant Volume Single Zone HVAC NOTE: This form does not automatically move to "Yes". If Constant Volume Single Zone HVAC Systems are included in the scope, permit applicant should move this form to "Yes".	☐	☐
○	●	NRCA-MCH-04-A Air Distribution Duct Leakage	☐	☐
○	●	NRCA-MCH-05-A Air Economizer Controls	☐	☐
○	●	NRCA-MCH-06-A Demand Control Ventilation Systems Acceptance must be submitted for all systems required to employ demand controlled ventilation (refer to §120.1(c)3) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO2) concentration setpoints.	☐	☐
○	●	NRCA-MCH-07-A Supply Fan Variable Flow Controls	☐	☐
○	●	NRCA-MCH-08-A Valve Leakage Test	☐	☐
○	●	NRCA-MCH-09-A Supply Water Temperature Reset Controls	☐	☐
○	●	NRCA-MCH-10-A Hydronic System Variable Flow Controls	☐	☐
○	●	NRCA-MCH-11-A Automatic Demand Shed Controls	☐	☐
○	●	NRCA-MCH-12-A FDD for Packaged Direct Expansion Units	☐	☐
○	●	NRCA-MCH-13-A Automatic FDD for Air Handling Units and Zone Terminal Units Acceptance	☐	☐
○	●	NRCA-MCH-14-A Distributed Energy Storage DX AC Systems Acceptance *NOTE: This form does not automatically move to "Yes". If Distributed Energy Storage DX AC Systems are included in the scope, permit applicant should move this form to "Yes".*	☐	☐
○	●	NRCA-MCH-15-A Thermal Energy Storage (TES) System Acceptance *NOTE: This form does not automatically move to "Yes". If Chilled Water Storage, Ice-on-Coil Internal Melt, Ice-on-Coil External Melt, Ice Harvester, Brine, Ice-Slurry, Eutectic Salt, Clathrate Hydrate Slurry (CHS), Cryogenic or Encapulated (Ice Ball) Systems are included in the scope, permit applicant should move this form to "Yes".*	☐	☐
○	●	NRCA-MCH-16-A Supply Air Temperature Reset Controls	☐	☐
○	●	NRCA-MCH-17-A Condenser Water Temperature Reset Controls	☐	☐
●	○	NRCA-MCH-18 Energy Management Control Systems	☐	☐
○	●	NRCA-MCH-19 Occupancy Sensor Controls	☐	☐
○	●	NRCA-MCH-20 Multi-Family Ventilation	☐	☐
○	●	NRCA-MCH-21 Multi-Family Envelope Leakage	☐	☐

STATE OF CALIFORNIA
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NRCC-MCH-E (Created 5/20) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	Administation Service Interior Improvements	Report Page:	Page 4 of 10
Project Address:	3000 Campus Hill Dr, Livermore	Date Prepared:	5/22/2020

01	02	03	04	05	06	07	08	09
System Name	System Zoning	Conditioned Floor Area Being Served (ft²)	Thermostats §110.2(b) & (c)[1], §120.2(a) or §141.0(b)2E	Shut-Off Controls §120.2(e)	Isolation Zone Controls §120.2(g)	Demand Response §110.12 and §120.2(b)	Supply Air Temp. Reset §140.4(f)	Window Interlocks per §140.4(n)
(E) CB-X	single zone	≤ 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Alteration	NA: No operable windows

[1] FOOTNOTES: Gravity gas wall heaters, gravity floor heaters, gravity room heaters, non-central electric heaters, fireplaces or decorative gas appliances, wood stoves are not required to have setback thermostats.
** NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.*
EX: System 1: SA Temp Reset: Exempt because zones compliant with §140.4(d); EXCEPTION 1 to §140.4(f)

J. VENTILATION AND INDOOR AIR QUALITY
Table Instructions: Complete the following Table to demonstrate compliance with mandatory ventilation requirements in §120.1 and §120.2(e)3B for all nonresidential, high-rise residential and hotel/motel occupancies. For alterations, only ventilation systems being altered within the scope of the permit application need to be documented in this table. In lieu of this table, the required outdoor ventilation rates and airflows may be shown on the plans or the calculations can be presented in a spreadsheet.

01	☐	Check the box if the project is showing ventilation calculations on the plans, or attaching the calculations instead of completing this table.
02	☐	Check this box if the project includes new or altered high-rise residential dwelling units.
03	☐	Check the box if the project is using natural ventilation in any spaces to meet required ventilation rates per §120.1(c)2.

Table Continued

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 5/20) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name:	Administation Service Interior Improvements	Report Page:	Page 5 of 10
Project Address:	3000 Campus Hill Dr, Livermore	Date Prepared:	5/22/2020

Table Continued

Nonresidential and Hotel/ Motel Ventilation Systems

04	05	06	07
System Name: (E) Chilled beam ductwork	System Design OA CFM Air Flow[1]: 260	System Design Transfer Air CFM: 260	Air Filtration per §120.1(c) and §141.0(b)2[2] NA: Not system type specified in Table J footnote 2

08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per §120.1(c)3[3]: Occupancy Type[4]	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people[5]	Required Min OA CFM	Exh. Vent. per §120.1(c)4: Required Minimum CFM	Provided per Design CFM	DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3[6]	
CB-:1-6	Office space	916			137.4			DCV	NA: Area <150 ft2 or design occupancy < 10 people
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

17	Total System Required Min OA CFM	137.4	18	Ventilation for this System Complies?	Yes

[1] FOOTNOTES: System CFM should include both mechanical and natural ventilation for the zone/system.
[2] Air filtration requirements apply to the following three system types per §120.1(c)1A: space conditioning systems utilizing ducts to supply air to occupiable space; supply-only ventilation systems providing outside air to occupiable space; supply side of balanced ventilation systems including heat recovery and energy recovery ventilation systems providing outside air to occupiable space.
[3] Uniform Mechanical Code may have more stringent ventilation requirements; the most stringent code requirement takes precedence.
[4] See Standards Tables 120.1-A and 120.1-B.
[5] For lecture halls with fixed seating, the expected number of occupants shall be determined in accordance with the California Building Code.
[6] §120.2(e)3 requires systems serving rooms that are required by §130.1(c) to have lighting occupancy sensing controls to also have occupancy sensing zone controls for ventilation. Examples of spaces which require lighting occupancy sensors include offices 250ft² or smaller, multipurpose rooms less than 1,000ft², classrooms, conference rooms, restrooms, aisles and open areas in warehouses, library book stack aisles, corridors, stairwells, parking garages, and loading and unloading zones, unless excepted by §130.1(c).

K. TERMINAL BOX CONTROLS
This Section Does Not Apply

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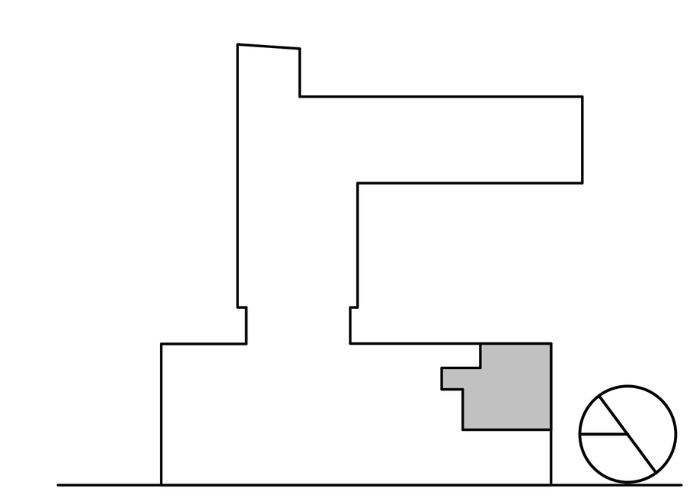
REV	DATE	ISSUE

REGISTERED PROFESSIONAL ENGINEER JARED F. DOESCHER No. 35930 MECHANICAL STATE OF CALIFORNIA



Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

SCHEDULES & TITLE 24 COMPLIANCE FORMS - MECHANICAL

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE:

M.02

GENERAL SHEET NOTES

A. ALL DUCT CONNECTIONS TO CHILLED BEAMS ARE 6" ROUND.

B. REALIGN NEW T-BAR WITH EXISTING CHILLED BEAMS. SEE ARCHITECTURAL DRAWINGS

⬡ SHEET KEYNOTES

1. DEMOLISH EXISTING DUCTWORK TO EXTENT NECESSARY TO INSTALL NEW POINT OF CONNECTION TO EQUIPMENT, WALLS, AND ASSOCIATED RCP CHANGES. COORDINATE EXTENT OF DEMOLITION PRIOR TO PROJECT START WITH OTHER TRADES
2. EXISTING CHILLED BEAM TO BE RELOCATED
3. PROVIDE DOOR SEAL. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION
4. RELOCATED EXISTING DUCTWORK MAIN

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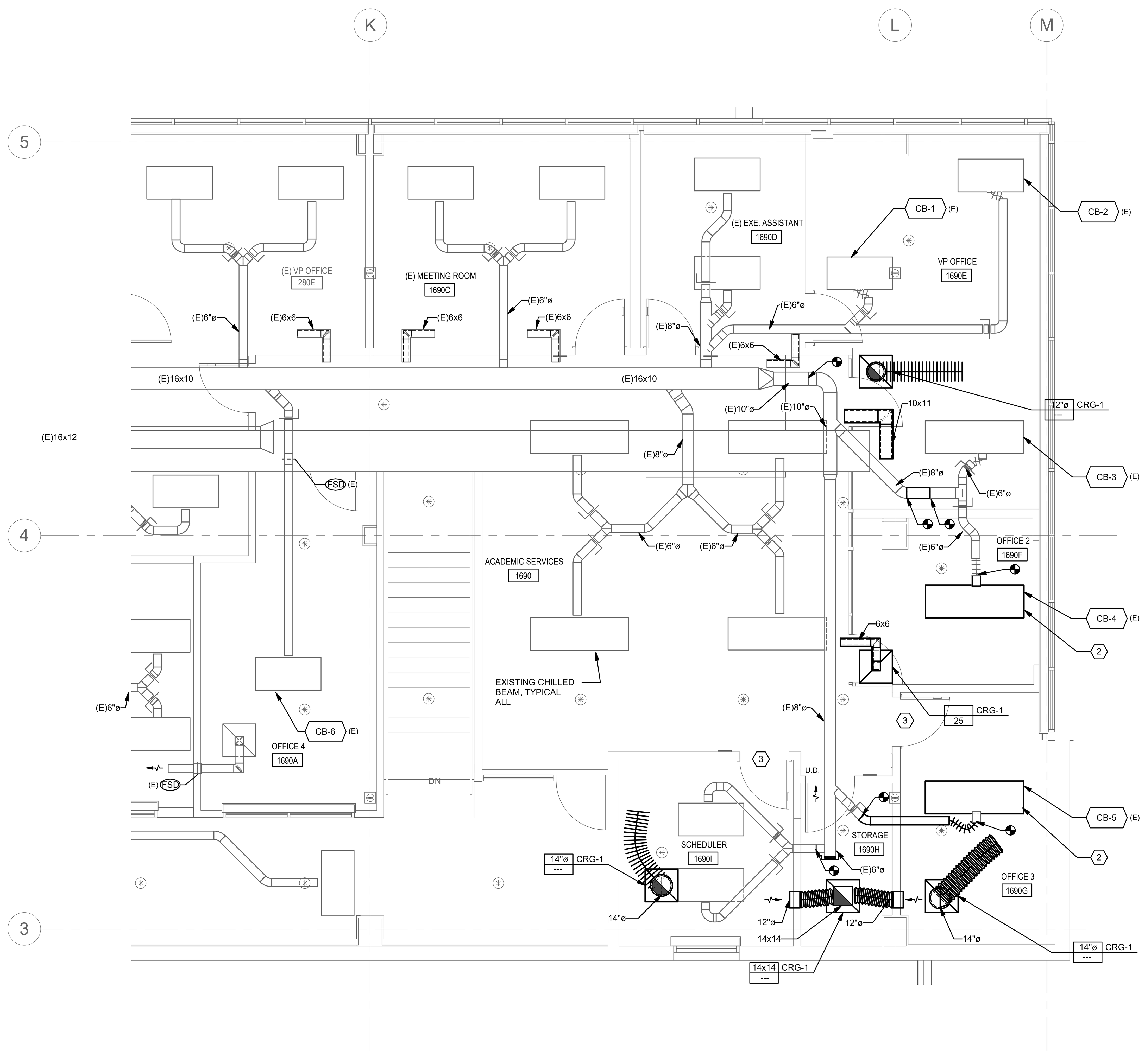
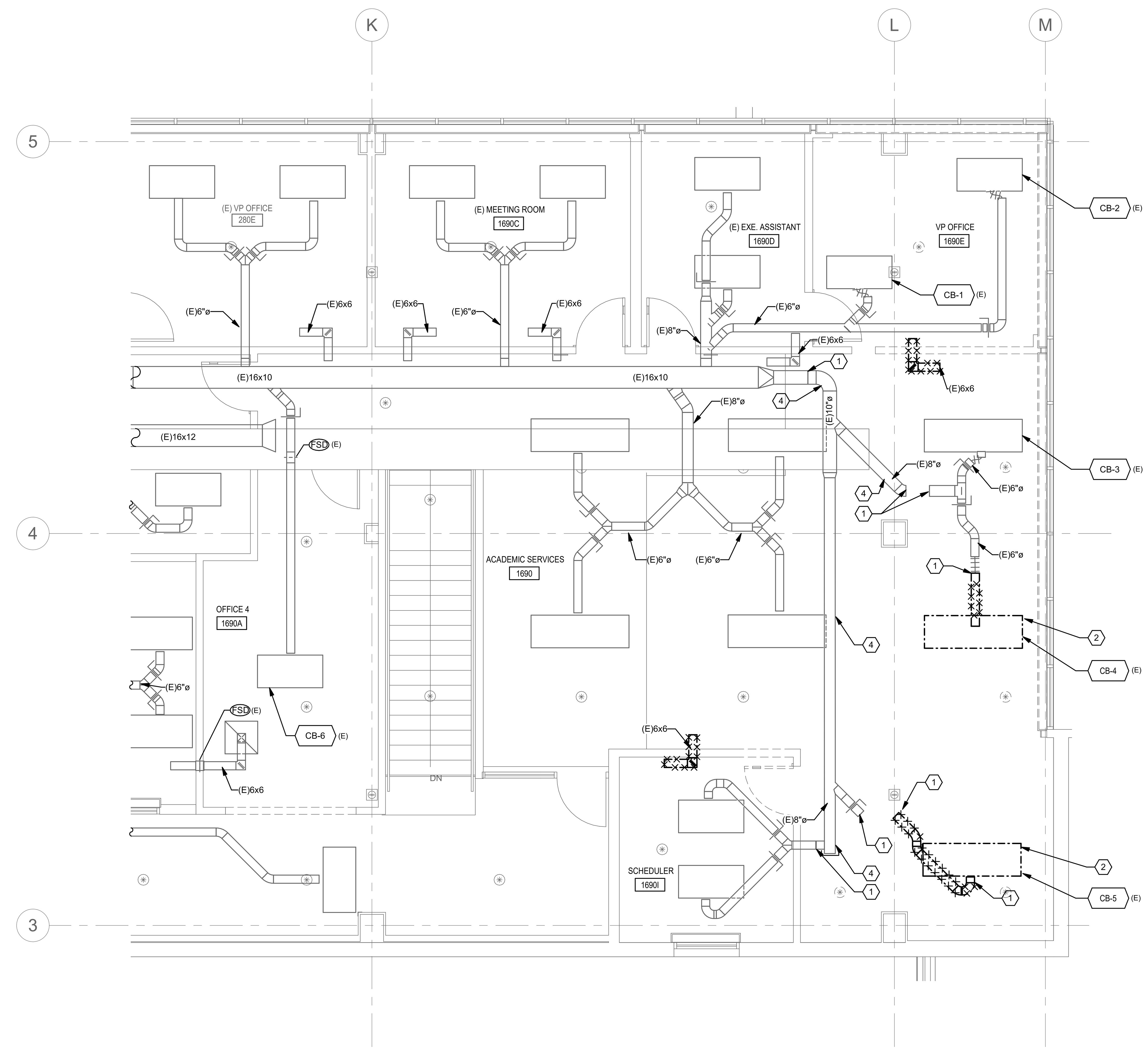


2 LEVEL 2 ADMIN SUITE TI MECHANICAL PLAN - ADMIN

1/4" = 1'-0"

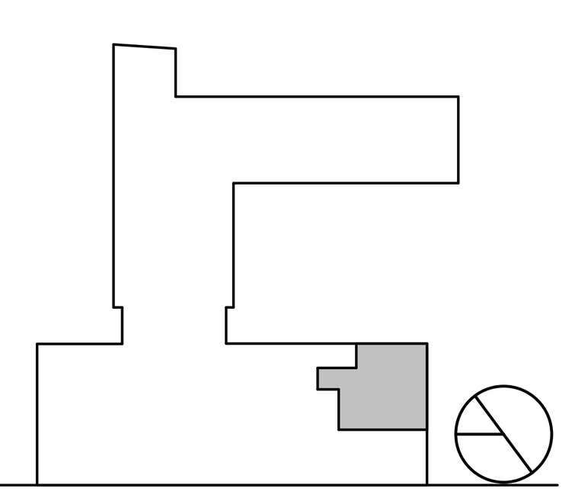


1 LEVEL 2 ADMIN SUITE TI - DEMO MECHANICAL PLAN - ADMIN

1/4" = 1'-0"

REV	DATE	ISSUE

REGISTERED PROFESSIONAL ENGINEER
JARED F. DOESCHER
No. 35930
MECHANICAL
STATE OF CALIFORNIA



Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
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DSA Application #: 01-118983

ENLARGED FLOOR PLAN - DEMO AND NEW WORK - MECHANICAL

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: 1/4" = 1'-0"

M.21

SHEET KEYNOTES

1. POINT OF DISCONNECTION. CAP PIPING AT POINT OF DISCONNECTION
2. NEW TEMPERATURE SENSOR AND RELATIVE HUMIDITY SENSORS SERVING BOTH OFFICE 290F AND 290G. CONNECT TO THERMOSTAT AT KEYNOTE 6
3. CONNECT NEW PIPE TO CHILLED WATER COIL. CAP HOT WATER COIL PIPING. NEW PIPING TO BE INSULATED
4. EXISTING TEMPERATURE SENSOR AND RELATIVE HUMIDITY SENSOR TO SERVE ALL THREE CHILLED BEAMS IN VP OFFLCE 290 E
5. EXISTING CHILLED BEAM TO BE RELOCATED
6. THERMOSTAT CONNECTED TO TEMPERATURE SENSOR AT KEYNOTE 2

GENERAL SHEET NOTES

A. ALL PIPE BRANCHES TO CHILLED BEAM ARE 3/4" UNLESS NOTED OTHERWISE

B. HOT TAP ALL NEW PIPE CONNECTIONS TO EXISTING PIPING

C. UPDATE BMS WITH GRAPHICS TO SHOW NEW ZONING WITH NEW ROOM NAMES

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

CLIENT
Chabot Las-Positas Community College District
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Pleasanton, CA 94588

ARCHITECT
Steinberg Architects
60 Pierce Avenue
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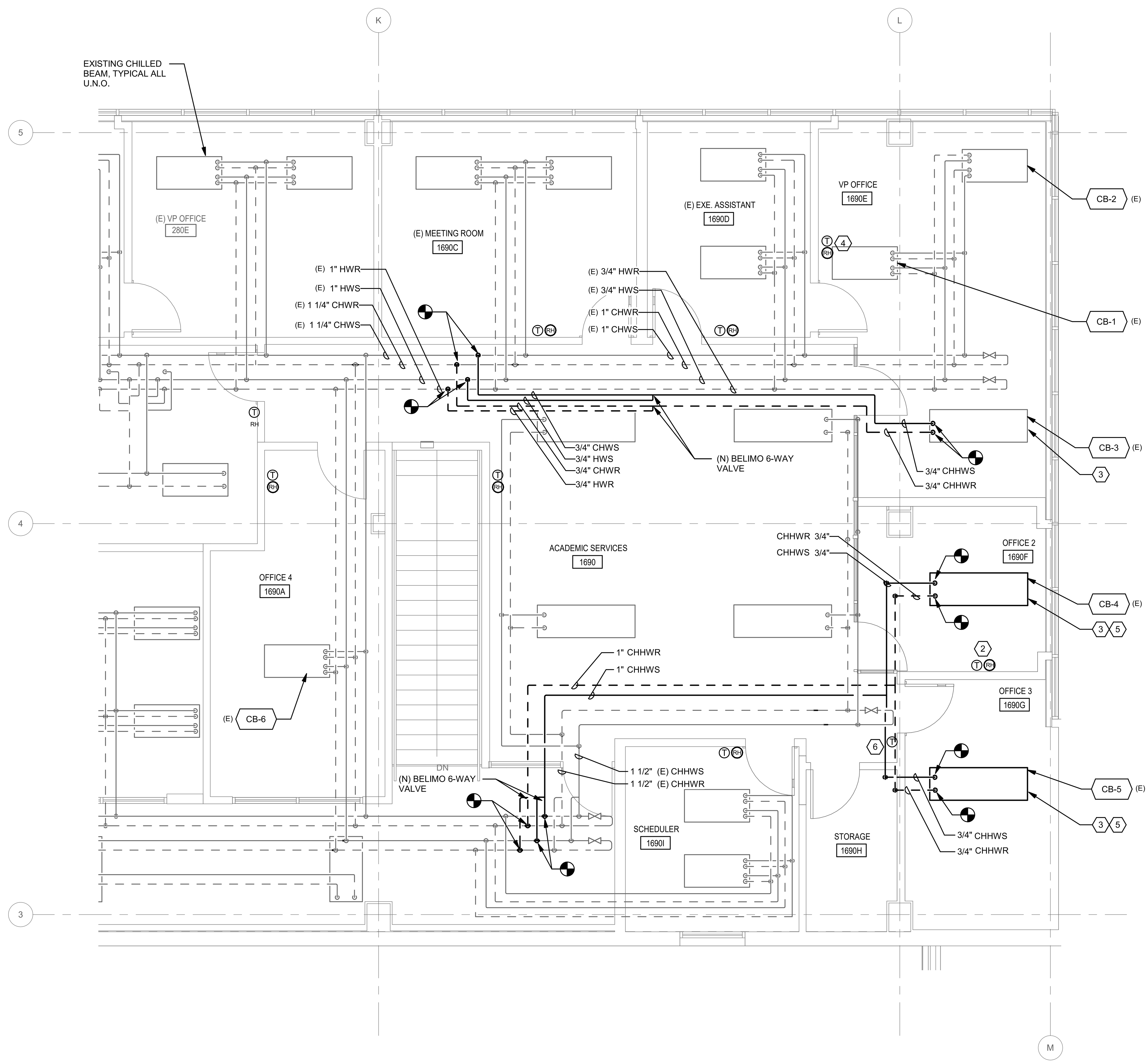
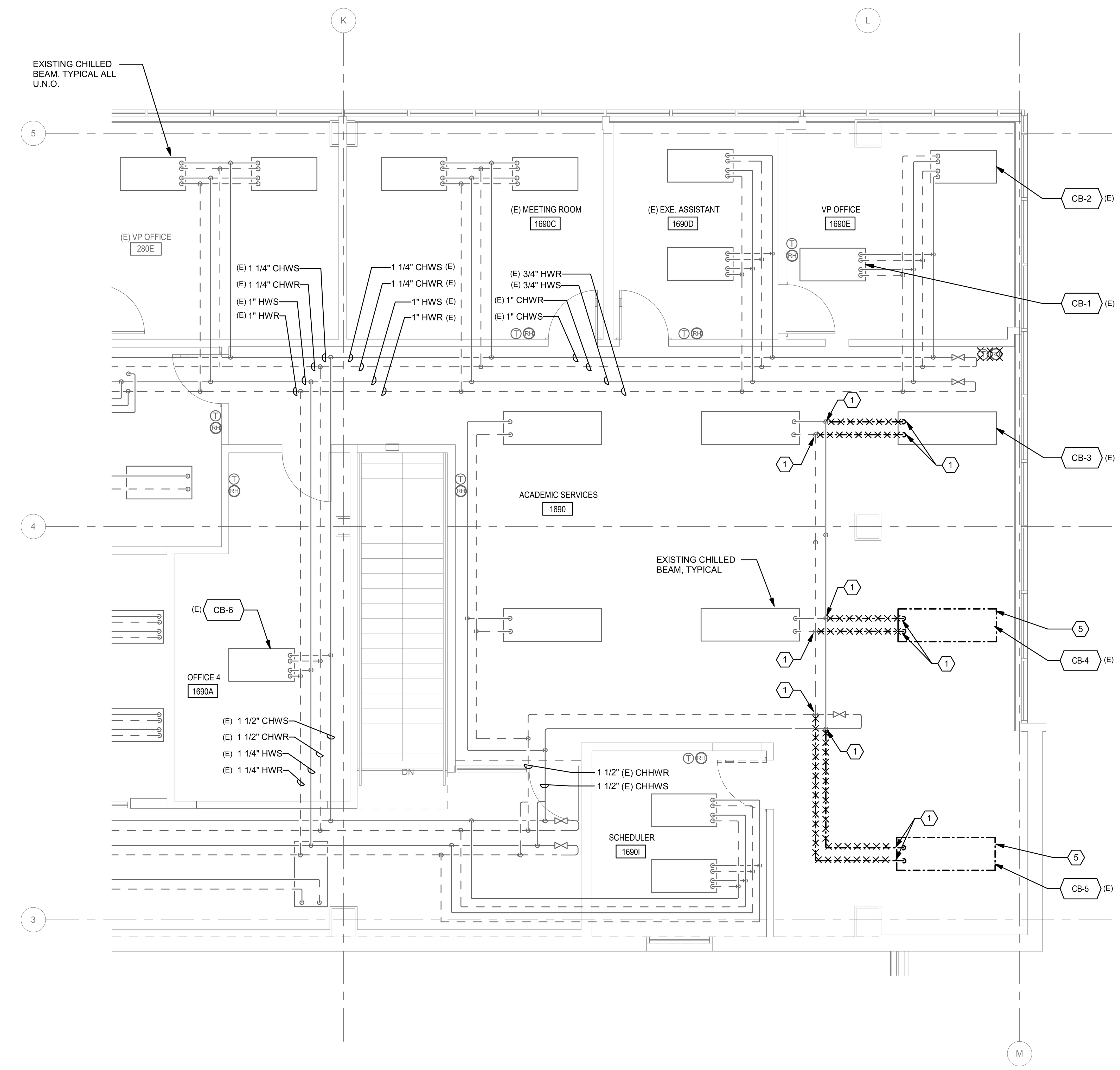


2 LEVEL 2 ADMIN SUITE TI MECHANICAL PIPING PLAN - ADMIN

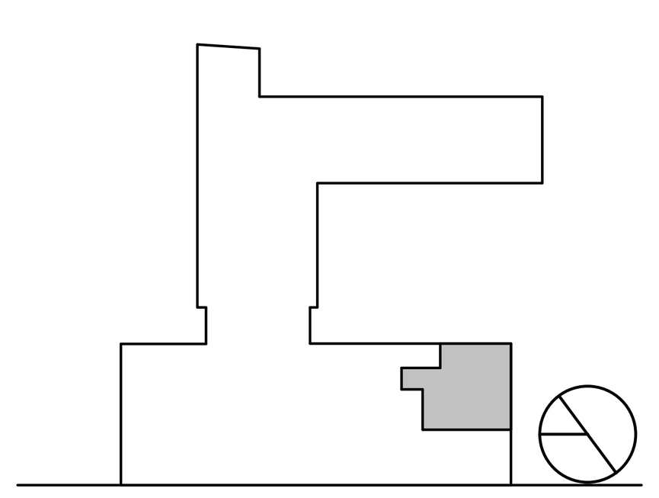
1/4" = 1'-0"



1 LEVEL 2 ADMIN SUITE TI - DEMO MECHANICAL PIPING PLAN - ADMIN

1/4" = 1'-0"

REV DATE ISSUE



Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

ENLARGED FLOOR PLAN - DEMO AND NEW WORK - MECHANICAL PIPING

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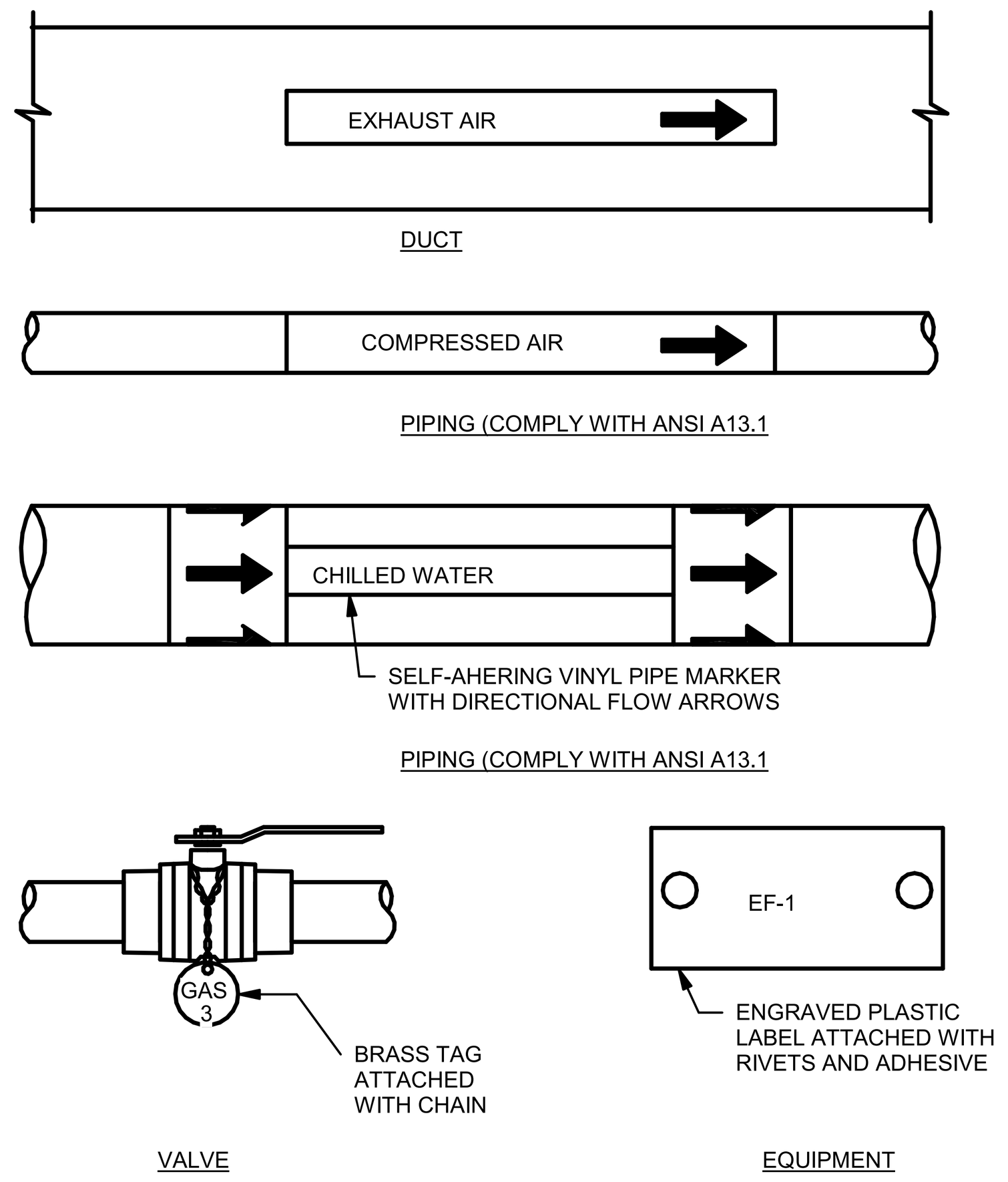
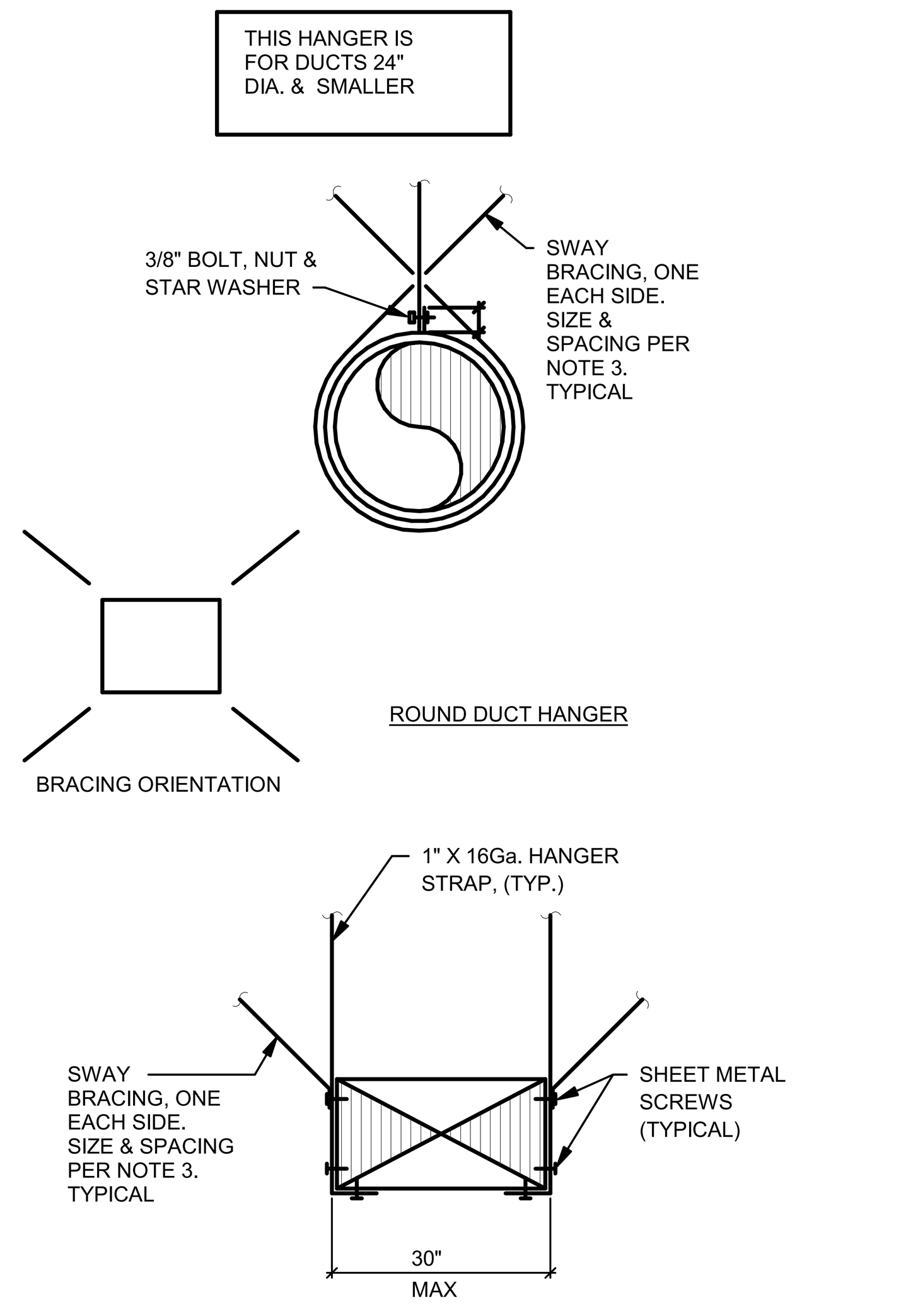


1. COORDINATE ALL TAGGING AND NAMING CONVENTIONS WITH FACILITY MAINTENANCE PERSONNEL.
2. FOR SMALLER EQUIPMENT CONTROL VALVES AND SHUT-OFF VALVES PROVIDE BRASS TAGS INDICATING THEIR FUNCTION AND THE NORMALLY OPEN AND CLOSED POSITIONS.
3. TAG BALANCING VALVES AND MAJOR DAMPERS WITH WALANCED GPM OR CFM.
4. PROVIDE VALVE TAG CHART PER KAISER DIVISION 23 STANDARDS.

3 IDENTIFICATIONS

NO SCALE

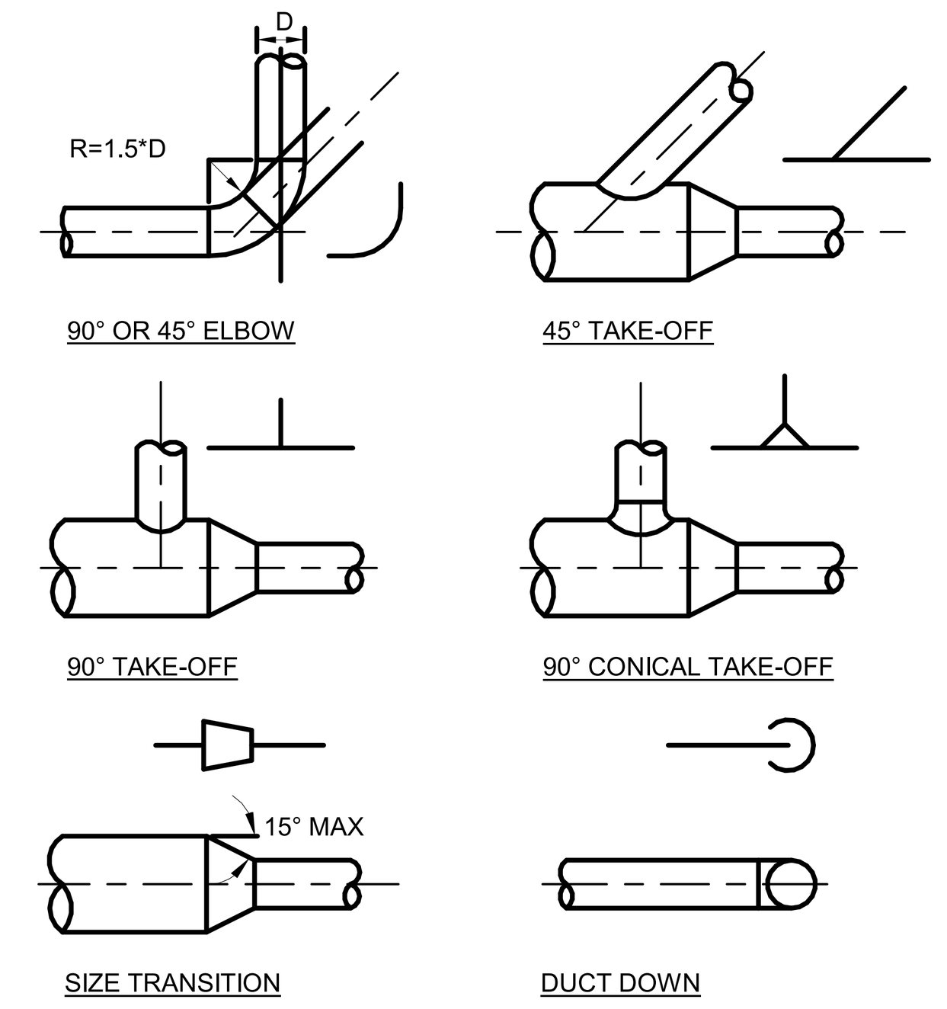


NOTES:

1. REFER TO SPECIFICATIONS FOR HANGER SPACINGS.
2. ATTACHMENTS TO OVERHEAD STRUCTURE SHALL BE MADE IN ACCORDANCE WITH STRUCTURAL ENGINEERS REQUIREMENTS AND WEIGHT LIMITATIONS. ALL ATTACHMENT METHODS TO STRUCTURE SHALL BE SUBMITTED TO ARCHITECT AND STRUCTURAL ENGINEER FOR REVIEW.
3. PROVIDE SWAY & SEISMIC BRACING PER THE LATEST EDITION OF CALIFORNIA BUILDING CODE. INDICATE LOCATIONS OF SEISMIC BRACING ON THE SHOP DRAWING SUBMITTALS.
4. HANGER MATERIAL SUPPORTING FLEXIBLE DUCT SHALL IN NO CASE BE LESS THAN 1 1/2 INCHES WIDE. FLEXIBLE DUCT SHALL BE SUPPORTED PER MANUFACTURER'S RECOMMENDED MATERIALS, BUT AT NO GREATER DISTANCE THAN 4 FEET MAX. PERMISSIBLE SAG IS MAX. 1/2 INCHES PER FOOT OF SPACING BETWEEN SUPPORTS.

2 DUCT SUPPORT DETAIL

NO SCALE

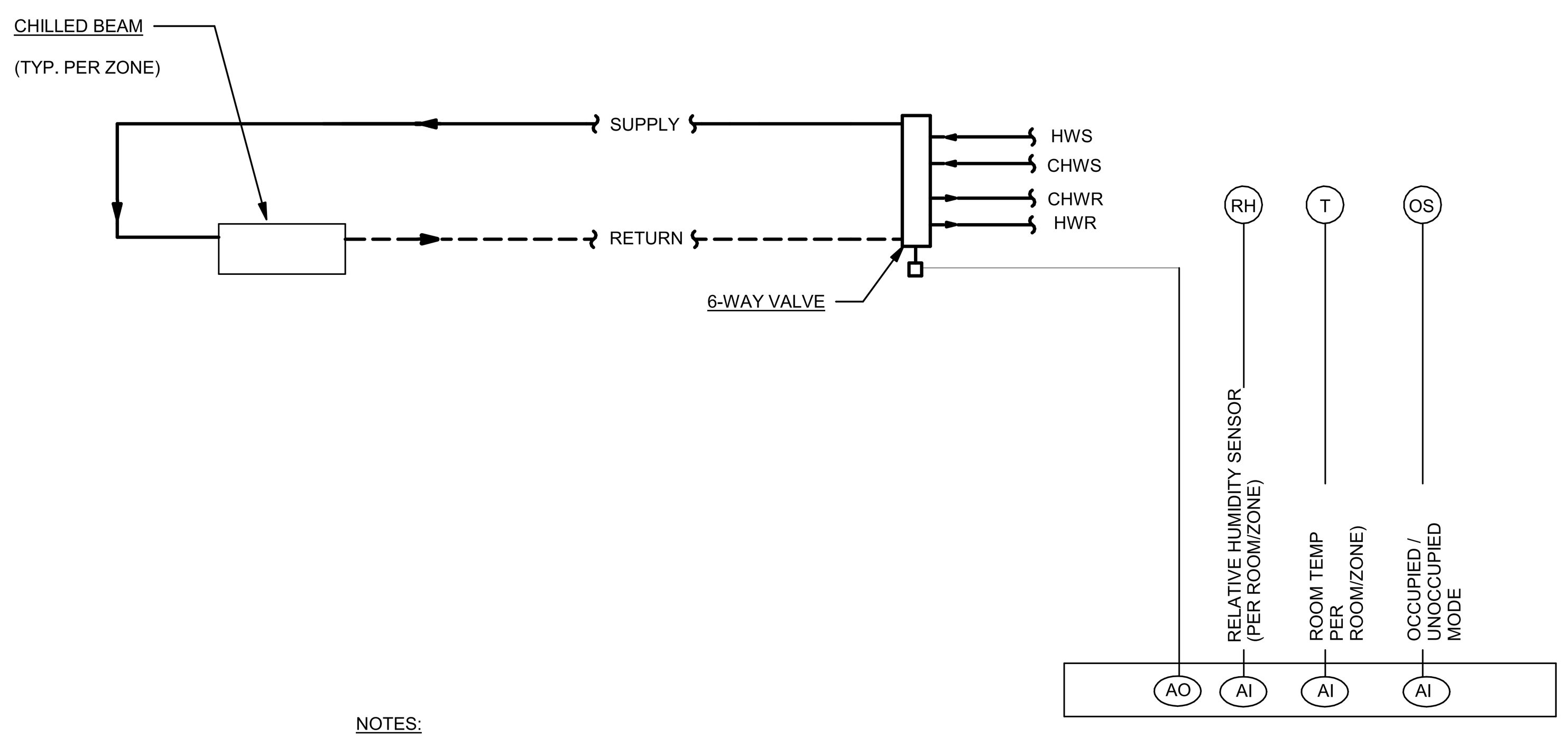


NOTES

1. SINGLE-LINE ILLUSTRATIONS ARE SYMBOLS USED ON DRAWINGS
2. PROVIDE ACCESS PANELS AT EVERY 50'-0" OF STRAIGHT DUCT AND UPSTREAM OF EACH ELBOW

1 ROUND DUCT DETAIL

NO SCALE



NOTES:

1. SEE FLOOR PLAN FOR QUANTITY OF THERMOSTATS AND SENSORS

SEQUENCE OF OPERATION:

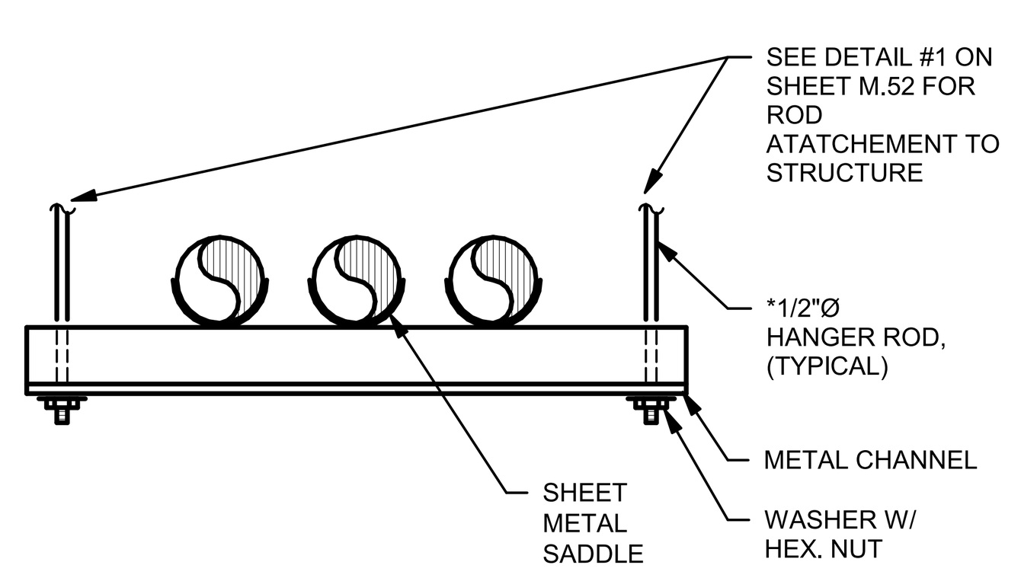
1. OCCUPIED MODE: MODULATE 6-WAY CONTROL VALVE BETWEEN HEATING AND COOLING AT CHILLED BEAMS TO MAINTAIN OCCUPIED SETPOINT (70 DEG. F HEATING; 74 DEG F COOLING; 50% RH, ADJ.). IF OCCUPANCY SENSOR HAS REGISTERED ALL SPACES WITHIN ZONE AS UNOCCUPIED DURING BUILDING OCCUPIED HOURS, ENABLE UNOCCUPIED MODE TEMPERATURE SET POINT AT THE ZONE +/- 2 DEG F, ADJ, MAINTAIN BUILDING AIR DISTRIBUTION. DISABLE SET BACK IF ANY ZONE OCCUPANCY SENSOR REGISTERS OCCUPIED.

 UNOCCUPIED MODE: SYSTEM TO FOLLOW EXISTING BUILDING UNOCCUPIED MODE SET POINTS AND AIR DISTRIBUTION. COORDINATE ON SITE PRIOR TO SENSOR INSTALLATION.

 ALARM: SEND AN ALARM IF ANY ZONE EXCEEDS DEWPOINT ALARM SETPOINT TO AVOID CONDENSATION AT THE CHILLED BEAMS

4 CHILLED BEAM CONTROL DIAGRAM

NO SCALE

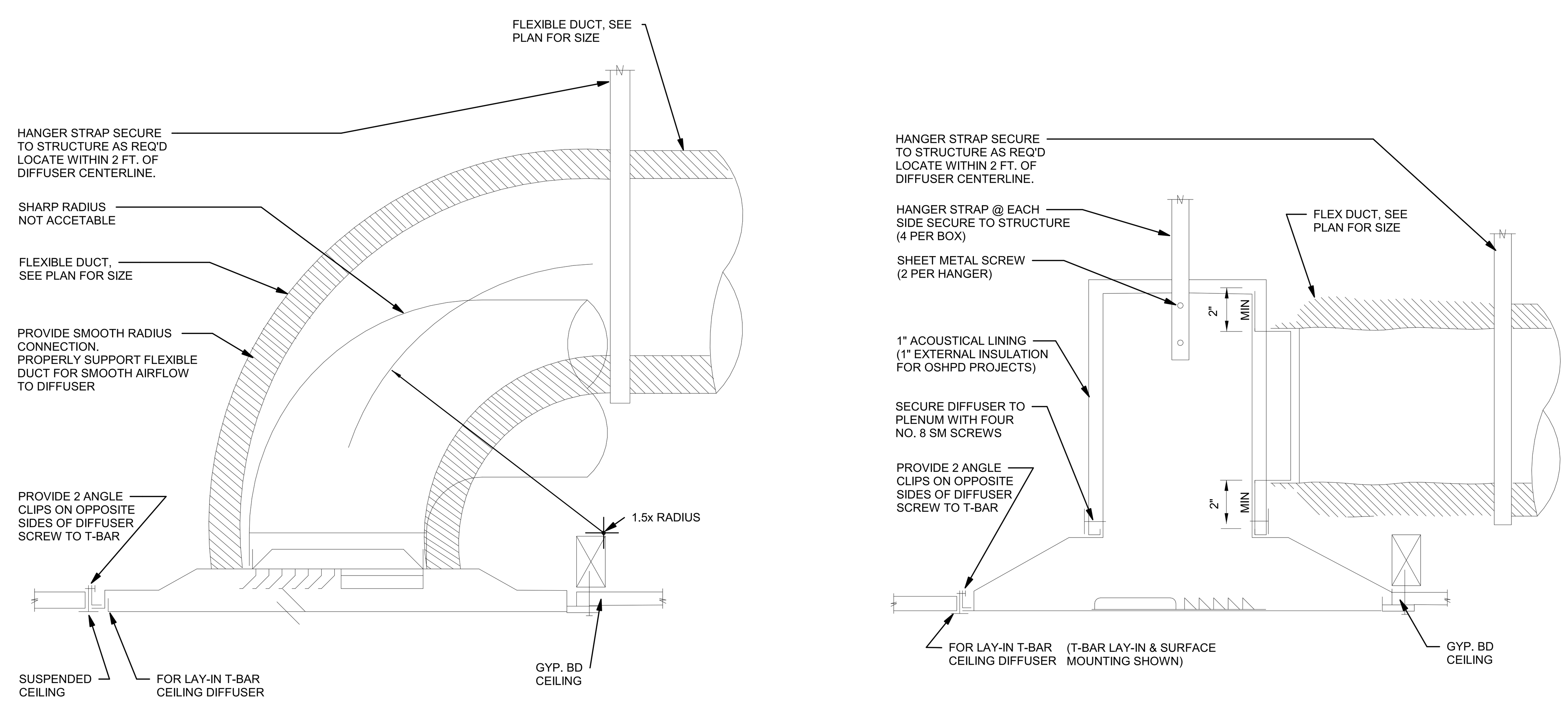


NOTES:

1 PROVIDE DIAGONAL BRACING 20'-0" MAX & EVERY CHANGE IN DIRECTION.
2 PROVIDE LONGITUDINAL BRACING AT 40'-0" O.C. MAX.

6 PIPE HANGER DETAIL

NO SCALE



NOTE:

1. USE DETAIL A FOR ALL DIFFUSERS AND GRILLES.
2. DETAIL B MAY BE USED WHEN THERE IS INADEQUATE SPACE FOR A FULL RADIUS ELBOW.
3. LINING OF AIR BOOT ABOVE DIFFUSER MAY BE OMITTED FOR RETURN OR EXHAUST APPLICATION.
4. PROVIDE BALANCING DAMPER UPSTREAM OF FLEXIBLE DUCT.

5 DIFF_CEILING SUPPLY, RETURN, & EXHAUST CONNECTION - 1

NO SCALE

steinberg hart

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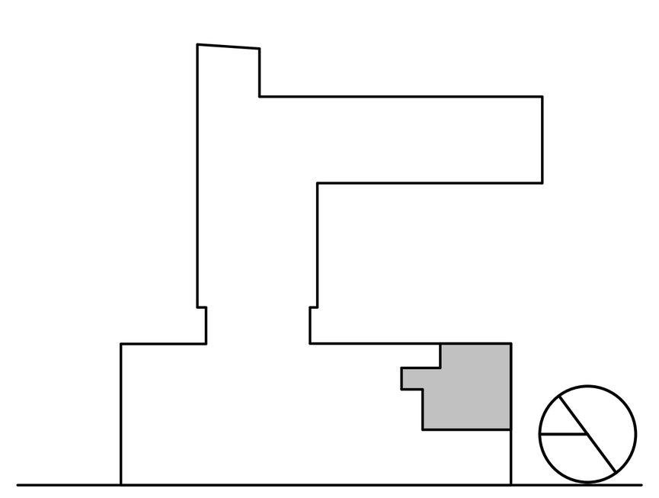
REGISTERED PROFESSIONAL ENGINEER JARED F. DOESCHER No. 35930 MECHANICAL STATE OF CALIFORNIA



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DETAILS & CONTROL DIAGRAMS - MECHANICAL

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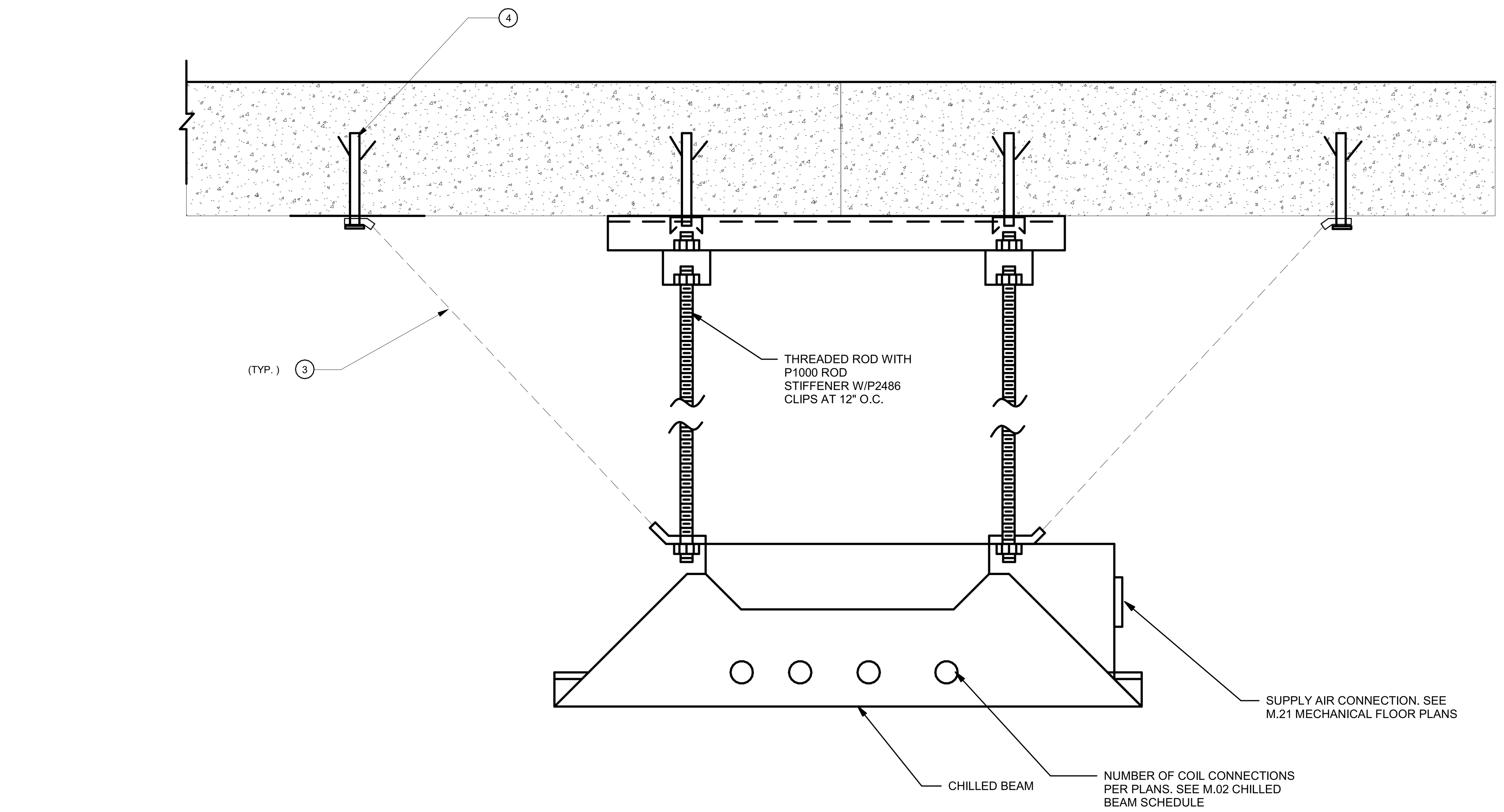
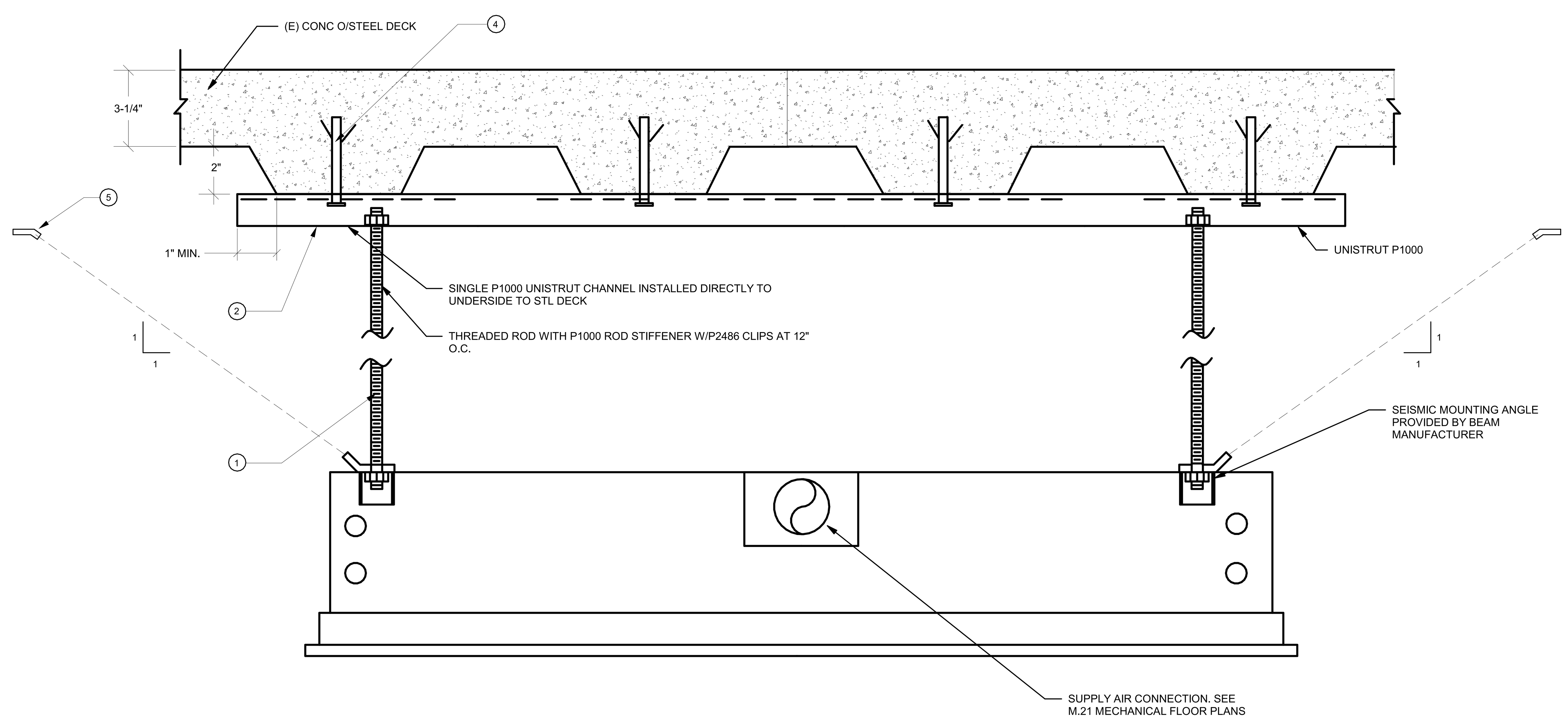


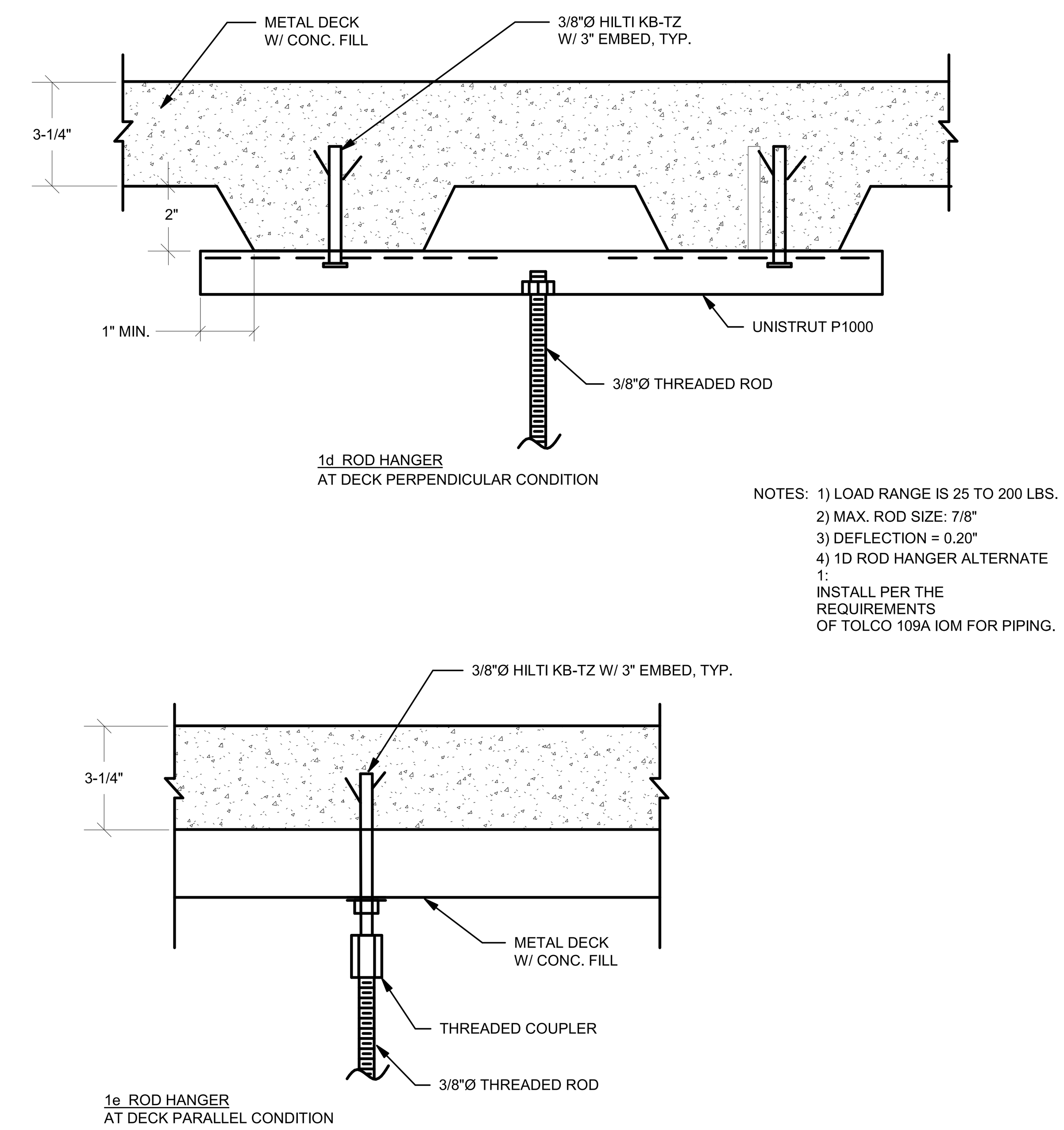


NOTES:

1. (N) (4) 1/2" DIA THREADED ROD W/ P1000 ROD STIFFENER W/ P2486 CLIPS AT 12" O.C.
2. (N) P1000 UNISTRUT CHANNEL
3. (N) 3/16" DIA 7X19 AIRCRAFT CABLE W/ (2) CABLE CLIPS
4. (N) 3/8" DIA HILTI KWIK BOLT TZ EXPANSION ANCHORS W/ 3" MIN EMBED, CENTER ON DECK FLUTE
5. (N) P1843 CLIP TOP AND BOTTOM

3 CHILLED BEAM MOUNTING DETAIL

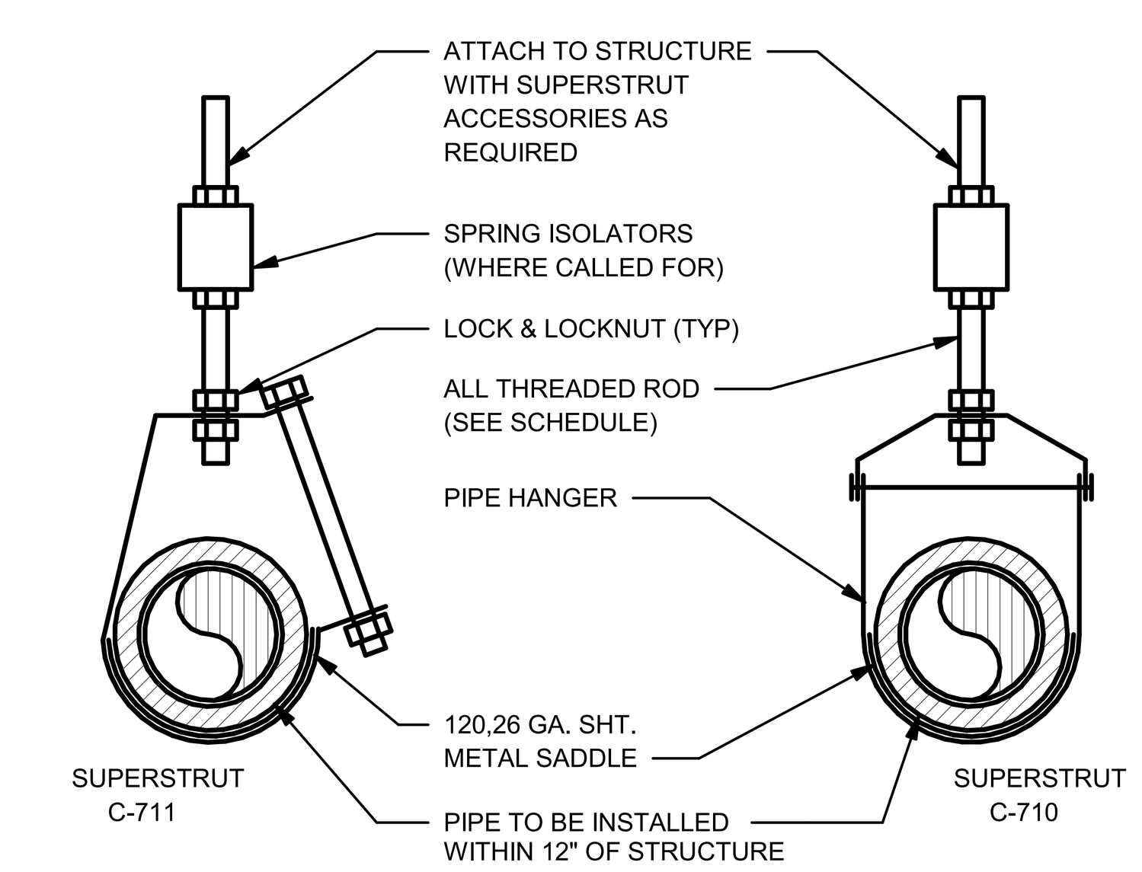
NO SCALE



NOTES:
1) LOAD RANGE IS 25 TO 200 LBS.
2) MAX. ROD SIZE: 7/8"
3) DEFLECTION = 0.20"
4) 1D ROD HANGER ALTERNATE 1:
INSTALL PER THE REQUIREMENTS OF TOLCO 109A IOM FOR PIPING.

1 ROD HANGER DETAIL

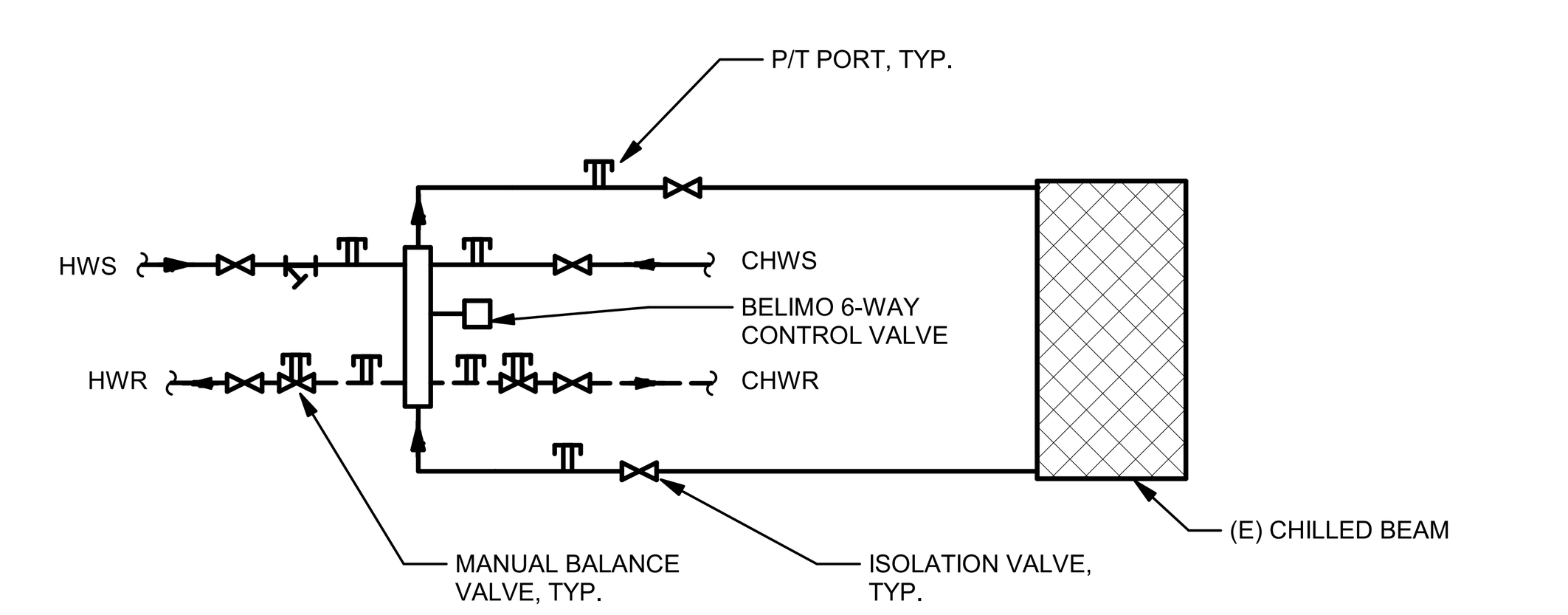
NO SCALE



PIPE SIZE (IN)	MAX SUPPORT SPAN (FT)	MIN. ROD SIZE (IN)
UP TO 1"	7	3/8"
1-1/2"	9	3/8"
2 TO 2-1/2"	10	3/8"
3"	12	1/2"
3-1/2"	13	1/2"
4	14	5/8"
5	16	5/8"
6	17	3/4"
8	19	7/8"
10	22	7/8"
12	23	7/8"

2 SINGLE PIPE SUPPORT DETAIL

NO SCALE



4 CHILLED BEAM 6-WAY VALVE PIPE TRIM DETAIL

NO SCALE

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MECHANICAL
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SECTION 230000 - BASIC MECHANICAL REQUIREMENTS
PART 1 - GENERAL
1.1 DEFINITIONS
A. FOLLOWING IS A LIST OF ABBREVIATIONS GENERALLY USED IN DIVISION 23:
1. ADA AMERICANS WITH DISABILITIES ACT.
2. AHJ AUTHORITY HAVING JURISDICTION.
3. ANSI AMERICAN NATIONAL STANDARDS INSTITUTE.
4. ARI AIR-CONDITIONING & REFRIGERATION INSTITUTE.
5. ASHRAE AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS.
6. ASME AMERICAN SOCIETY OF MECHANICAL ENGINEERS.
7. ASSE AMERICAN SOCIETY OF SANITARY ENGINEERING.
8. AWWA AMERICAN WATER WORKS ASSOCIATION.
9. CBC CALIFORNIA BUILDING CODE.
10. CEC CALIFORNIA ELECTRICAL CODE.
11. CMC CALIFORNIA MECHANICAL CODE.
12. CPC CALIFORNIA PLUMBING CODE.
13. CISPI CAST IRON SOIL PIPE INSTITUTE.
14. ETL ELECTRIC TESTING LABORATORIES.
15. HVAC HEATING, VENTILATING AND AIR CONDITIONING.
16. NEMA NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION.
17. NFPA NATIONAL FIRE PROTECTION ASSOCIATION.
18. NFGC NATIONAL FUEL GAS CODE.
19. NRCA NATIONAL ROOFING CONTRACTORS ASSOCIATION.
20. NSF NATIONAL SANITATION FOUNDATION.
21. OSHA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.
22. SMACNA SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC.
23. TIMA THERMAL INSULATION MANUFACTURERS ASSOCIATION.
24. UL UNDERWRITERS LABORATORIES INC.
B. PROVIDE: TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.
C. FURNISH: SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNPACKING, ASSEMBLY AND INSTALLATION.
D. INSTALL: INCLUDES UNLOADING, UNPACKING, ASSEMBLING, ERECTING, INSTALLATION, APPLYING, FINISHING, PROTECTING, CLEANING AND SIMILAR OPERATIONS AT THE PROJECT SITE AS REQUIRED TO COMPLETE ITEMS OF WORK FURNISHED BY OTHERS.

1.2 SUMMARY
A. WORK INCLUDED: PROVIDE COMPLETE MECHANICAL SCOPE AS OUTLINED IN THIS SPECIFICATION.

1.3 QUALITY ASSURANCE
A. WHERE DRAWINGS OR SPECIFICATIONS ARE AT VARIANCE WITH APPLICABLE CODES GOVERNING WORK, CODE REQUIREMENTS TAKE PRECEDENCE, AND INCLUDE COSTS NECESSARY TO MEET THESE IN BID PRICE.

B. MECHANICAL DRAWINGS:
1. THE MECHANICAL DRAWINGS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURER'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT DIMENSIONS, OR DETAILS OF EQUIPMENT OR PROPOSED SYSTEMS LAYOUT. VERIFY ACTUAL DIMENSIONS OF SYSTEMS (I.E. DUCTS AND PIPING) AND EQUIPMENT PROPOSED TO ASSURE THAT SYSTEMS AND EQUIPMENT WILL FIT IN AVAILABLE SPACE.

2. INSTALLATION OF ALL MECHANICAL SYSTEMS WITHIN LIMITATIONS IMPOSED BY ARCHITECTURAL, STRUCTURAL, AND ELECTRICAL REQUIREMENTS. PROVIDE ADEQUATE SPACE FOR MANUFACTURER'S RECOMMENDED MAINTENANCE AND CODE_REQUIRED CLEARANCES.

C. SUBSTITUTIONS:
1. WHERE MATERIALS OR EQUIPMENT ARE SPECIFIED BY NAME OF MANUFACTURER, SUCH SPECIFICATION TO BE DEEMED TO BE USED FOR PURPOSES OF ESTABLISHING A STANDARD OF QUALITY FOR THAT PARTICULAR ITEM. MATERIALS OR EQUIPMENT TO CONFORM TO SPECIFICATIONS AND DRAWINGS IN ALL RESPECTS. MODIFICATION TO EQUIPMENT TO CONFORM TO SPECIFICATIONS OR DRAWINGS IS REQUIRED IF LISTED MANUFACTURER CANNOT MEET REQUIREMENTS WITH A REGULARLY CATALOGED ITEM. INCLUSION OF A MANUFACTURER'S NAME AS ACCEPTABLE TO PROVIDE SPECIFIC EQUIPMENT DOES NOT INDICATE THAT MANUFACTURER'S STANDARD CATALOGUED COMPONENTS WILL PERFORM AS REQUIRED, OR THAT THEY WILL FIT IN ALLOCATED PHYSICAL SPACE FOR EQUIPMENT. VERIFY THAT EQUIPMENT WHICH IS PROPOSED TO BE PROVIDED WILL FIT IN ALLOCATED PHYSICAL SPACE, WITH ALL REQUIRED MANUFACTURERS AND CODE REQUIRED CLEARANCES.

2. EQUIPMENT SUBMITTED FOR SUBSTITUTION TO MEET ALL CONTRACT DOCUMENT REQUIREMENTS INCLUDING QUALITY ESTABLISHED BY BRAND SPECIFIED. INDICATE ALL DEVIATIONS OR NONCOMPLIANCES BY AN ATTACHED LETTER EXPLAINING A PROPOSED CHANGE. ACCEPTANCE OF SUBMITTED MATERIAL DOES NOT GRANT DEVIATION FROM CONTRACT REQUIREMENTS. ADDITIONAL EXPENSE RESULTING BY DECISION TO USE SUBSTITUTE MATERIALS MUST BE INCLUDED IN BID SUM AND SHALL INCLUDE ALL COSTS BY OTHER AFFECTED CRAFTS.

3. VARIATIONS IN EQUIPMENT: IF APPROVED MECHANICAL EQUIPMENT OF OTHER MANUFACTURER REQUIRES MODIFICATION OR ADDITIONS TO OTHER WORK SHOWN ON DRAWINGS, ARRANGE FOR AND PAY ALL COSTS OF SUCH CHANGES AT NO ADDITIONAL COST TO OWNER.

4. "OR APPROVED": WHERE EQUIPMENT MAKE IS LISTED, FOLLOWED BY PHRASE "OR APPROVED," THIS SHALL REQUIRE SUBMITTAL OF PROPOSED MAKE PRIOR TO BIDDING FOR REVIEW AND APPROVAL BY ARCHITECT.

D. REGULATORY REQUIREMENTS _ UL COMPLIANCE: PROVIDE UNITS WHICH ARE UL LISTED.
E. UNLESS OTHERWISE NOTED, WHERE SPECIFICATION REFERS TO SMACNA IN REFERENCE TO SHEET METAL OR FLEXIBLE DUCTWORK ACCESSORIES, THIS REFERS TO HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, LATEST EDITION, AS PUBLISHED BY SMACNA (SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC.).

1.4 PERMITS, CODES AND LAWS
A. AS A MINIMUM REQUIREMENT, UNLESS OTHERWISE SPECIFIED, ALL WORK SHALL BE IN ACCORDANCE WITH FOLLOWING RULES AND REGULATIONS AND ANY APPLICABLE LAWS:

1. NFPA.
2. OSHA.
3. RELATED SUPPLEMENTS AND STANDARDS.
4. CALIFORNIA STATE ENERGY CODE.
5. CALIFORNIA BUILDING CODE.
6. CALIFORNIA MECHANICAL CODE.
7. CALIFORNIA PLUMBING CODE.
8. STATE OF CALIFORNIA AND LOCAL JURISDICTIONAL REQUIREMENTS.

B. ALL WORK AND MATERIALS SHALL CONFORM TO PUBLIC UTILITY, LOCAL AND STATE CODES, AND ALL STATE AND OTHER APPLICABLE LAWS AND REGULATIONS. UPON COMPLETION OF MECHANICAL SYSTEMS INSTALLATION, SUBMIT CERTIFICATES OF INSPECTION BY ALL CODE AUTHORITIES HAVING JURISDICTION (AHJS).

C. MEET REQUIREMENTS AS A MINIMUM REQUIREMENT, AND INCLUDE ANY COST NECESSARY TO MEET THESE IN CONTRACT. ALL MACHINERY AND EQUIPMENT SHALL COMPLY WITH OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, AS CURRENTLY REVISED, AS INTERPRETED FOR EQUIPMENT MANUFACTURER REQUIREMENTS. INSTALL ALL EQUIPMENT PROVIDED PER MANUFACTURER RECOMMENDATIONS. SEE "LETTER OF CONFORMANCE" THIS SECTION.

D. WHENEVER THIS SPECIFICATION CALLS FOR MATERIAL, WORKMANSHIP, ARRANGEMENT OR CONSTRUCTION OF HIGHER QUALITY OR CAPACITY THAN THAT REQUIRED BY GOVERNING CODES, HIGHER QUALITY SHALL TAKE PRECEDENCE.

1.5 PERMITS AND INSPECTIONS
A. UNLESS OTHERWISE DISTINCTLY HEREINAFTER SPECIFIED, SUBMIT DRAWINGS AND DOCUMENTS FOR PERMIT REVIEW, APPLY AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS REQUIRED BY ANY PUBLIC AHJ.
B. REFER TO GENERAL AND SUPPLEMENTARY CONDITIONS FOR PAYMENT OF WATER AND SEWER SERVICE CONNECTION FEES.
C. OBTAIN CERTIFICATES OF INSPECTION FROM PUBLIC AHJ AND DELIVER TO OWNER BEFORE FINAL ACCEPTANCE.
D. EACH TRADE TO CONSULT LOCAL BUILDING DEPARTMENT, UTILITY COMPANIES AND OWNER PRIOR TO COMMENCEMENT OF WORK TO ASCERTAIN EXISTENCE AND LOCATION OF EXISTING UNDERGROUND UTILITIES. PROTECT EXISTING SERVICE AGAINST DAMAGE AND INTERRUPTION OF USE, AND REROUTE AS MAY BE NECESSARY TO ACCOMPLISH NEW WORK. INCLUDE COSTS FOR MATERIALS AND INSTALLATION FOR REROUTING AS SPECIFIED FOR NEW WORK IN BID PRICE.

1.6 COMPATIBILITY AND COORDINATION
A. THE MECHANICAL EQUIPMENT SHALL BE COMPATIBLE WITH, ACKNOWLEDGE AND ACCOMMODATE, REQUIREMENTS OF OTHER TRADES. RESOLVE WITHOUT ADDITIONAL COST TO OWNER THOSE DETAILS NECESSARY TO ASSURE THAT MECHANICAL SYSTEMS PROPERLY AND COMPLETELY FUNCTION TOGETHER WHEN ASSEMBLED AND ACHIEVE ALL REQUIRED PERFORMANCE AND CONFORM TO ALL REQUIREMENTS OF ALL GOVERNING CODES AND REGULATORY AGENCIES.

B. COORDINATE VARIOUS PORTIONS OF WORK AS TO SCHEDULING, INSTALLATION PROCEDURES, SHOP DRAWINGS AND FINAL INSTALLATION OF ALL RELATED MATERIALS. PROMPTLY NOTIFY OWNER OF ANY DEFECTS OR IMPERFECTIONS WHICH WILL AFFECT SATISFACTORY COMPLETION OF THIS WORK.
1.7 SUBMITTALS
A. SHOP DRAWINGS:
1. UNLESS OTHERWISE APPROVED, PROVIDE ALL MECHANICAL SHOP DRAWINGS AT ONE TIME IN ELECTRONIC FORMAT(PDF).
2. CLEARLY REFERENCE EACH ITEM BY PAGE AND PARAGRAPH TO APPLICABLE PORTION OF SPECIFICATIONS. WHERE EQUIPMENT IS DESIGNATED BY NUMBER OR SYMBOL ON DRAWINGS SUBMITTAL SHALL ALSO SHOW THIS NUMBER OR SYMBOL.

3. SPECIFICALLY NOTE ALL SPECIFIED FEATURES AND PERFORMANCE DATA ON SUBMITTAL.
4. CHECK SHOP DRAWINGS FOR SPACE REQUIREMENTS AND CONFORMANCE WITH SPECIFICATIONS AND MARK CORRECTIONS AND APPROVAL ON ALL SHOP DRAWINGS PRIOR TO SUBMITTAL TO ARCHITECT.
5. THE ENGINEER WILL REVIEW THE ORIGINAL SUBMITTAL AND ONE RESUBMITTAL FOR THE SAME PRODUCT. ADDITIONAL RESUBMITTALS WILL BE REVIEWED ON AN HOURLY RATE, PAYABLE BY THE CONTRACTOR.
6. PARTIAL SUBMITTALS OR SUBMITTALS NOT PROPERLY FORMATTED AS INDICATED ABOVE, ARE SUBJECT TO RETURN WITHOUT REVIEW FOR THE CONTRACTOR TO CORRECT

1.8 VISITING PREMISES
A. BEFORE SUBMITTING BID ON WORK, VISIT SITE AND BECOME FAMILIAR WITH ALL VISIBLE EXISTING CONDITIONS. NO ADDITIONAL ALLOWANCE WILL BE GRANTED DUE TO LACK OF INFORMATION OF VISIBLE EXISTING CONDITIONS.

B. THE SUBMISSION OF A BID WILL BE CONSIDERED AN ACKNOWLEDGMENT ON PART OF BIDDER OF HIS VISITATION TO SITE.

1.9 RECORD DRAWINGS
A. MAINTAIN A WEEKLY UPDATED SET OF AS-CONSTRUCTED DOCUMENTS. AT CONCLUSION OF BUILDING PROJECT, TRANSFER THESE WEEKLY UPDATED DOCUMENTS TO A SET OF REPRODUCIBLE SEPIAS OF ORIGINAL DESIGN.

1.10 WARRANTY
A. GENERAL: PROVIDE WRITTEN WARRANTY ON MECHANICAL WORK, AGREEING TO REPLACE/REPAIR INADEQUATE AND DEFECTIVE MATERIALS AND QUALITY OF WORK, INCLUDING LEAKAGE, BREAKAGE, IMPROPER ASSEMBLY AND FAILURE TO PERFORM AS REQUIRED FOR A PERIOD OF ONE YEAR FROM DATE OF OWNER'S ACCEPTANCE. INCLUDE SEPARATE PRODUCT WARRANTIES AS INDICATED (IF ANY) FOR SPECIFIC PARTS OR PRODUCTS IN WORK. PROVIDE WARRANTY SIGNED BY BOTH INSTALLER AND CONTRACTOR.

B. INCLUDE MANUFACTURER'S STANDARD PRODUCT WARRANTY, COVERING MECHANICAL EQUIPMENT OPERATION UNDER NORMAL CONDITIONS AND USE, WHERE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PROVIDE PRODUCT WARRANTY PERIOD TERMINATING 12 MONTHS AFTER SUBSTANTIAL COMPLETION.

PART 2 - PRODUCTS
2.1 MATERIAL
A. ALL MATERIALS AND PRODUCTS USED FOR CONSTRUCTION SHALL BE NEW, OF BEST GRADE AND OF LATEST PRODUCTS AS LISTED IN PRINTED MANUFACTURER'S CATALOG DATA. ALL ARTICLES OF A KIND ARE STANDARD PRODUCT OF A SINGLE MANUFACTURER. TRADE NAMES AND MANUFACTURER'S NAMES DENOTE CHARACTER AND QUALITY OF EQUIPMENT DESIRED AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. REFERENCES TO PRODUCT SPECIFICATIONS FOR MATERIALS ARE LISTED ACCORDING TO ACCEPTED BASE STANDARDS. ALL MATERIALS SHALL MEET LATEST APPROVED VERSIONS OF THESE STANDARDS.

B. ALL DISCRETE PRODUCTS IN THE FLOOR PLENUM ARE TO BE UL 2043 RATED

PART 3 - EXECUTION
3.1 INSPECTION

A. ALL WORK AND MATERIALS SUBJECT TO INSPECTION AT ANY AND ALL TIMES BY ARCHITECT AND/OR OWNER'S REPRESENTATIVE.
3.2 SUPERVISION
A. CONSTANTLY SUPERVISE WORK COVERED BY THESE SPECIFICATIONS. VERIFY ALL CONDITIONS ON JOB SITE AND LAY OUT WORK ACCORDINGLY.

3.3 EQUIPMENT IDENTIFICATION

A. EACH NEW PIECE OF EQUIPMENT SHALL BEAR A PERMANENTLY ATTACHED IDENTIFICATION PLATE, LISTING MANUFACTURER'S NAME, CAPACITIES, SIZES AND CHARACTERISTICS.

3.4 OPERATING AND MAINTENANCE INSTRUCTIONS

A. PRIOR TO ACCEPTANCE OF WORK AND DURING TIME DESIGNATED BY ARCHITECT, PROVIDE NECESSARY QUALIFIED PERSONNEL TO OPERATE SYSTEM FOR PERIOD OF 8 HOURS.

B. DURING OPERATING PERIOD, FULLY INSTRUCT OWNER'S REPRESENTATIVE IN COMPLETE OPERATIONS, ADJUSTMENT AND MAINTENANCE OF EACH RESPECTIVE INSTALLATION.

C. OPERATIONS AND MAINTENANCE DATA: AT TIME OF SYSTEM DEMONSTRATION, DELIVER TO OWNER TWO BOUND COPIES (3 _RING BINDER TYPE) OF OPERATION AND MAINTENANCE MANUALS CONTAINING FOLLOWING MATERIALS:

1. CATALOG DESCRIPTION OF EACH ITEM OF EQUIPMENT ACTUALLY INSTALLED ON JOB.
2. INSTRUCTIONS FOR OPERATION AND MAINTENANCE OF MECHANICAL SYSTEMS COMPOSED OF OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS AND MANUFACTURER'S LITERATURE AS FOLLOWS:

a. MAINTENANCE SCHEDULE CHART: PROVIDE AN 8_1/2_ BY 11_INCH TYPEWRITTEN LIST OF EACH ITEM OF INSTALLED EQUIPMENT REQUIRING INSPECTION, LUBRICATION OR SERVICE, DESCRIBING AND SCHEDULING PERFORMANCE OF SUCH MAINTENANCE.

b. MANUFACTURER'S LITERATURE: PROVIDE COPIES OF MANUFACTURER'S INSTRUCTIONS FOR OPERATION AND MAINTENANCE OF ALL MECHANICAL EQUIPMENT, INCLUDING REPLACEMENT PARTS LIST WITH NAME AND ADDRESS OF NEAREST DISTRIBUTOR. MARK EACH COPY WITH EQUIPMENT IDENTIFICATION LABEL AS LISTED IN EQUIPMENT SCHEDULE, I.E. AC_5, EF_10, ETC.

c. ELECTRONIC PDF COPY OF ITEMS A AND B ABOVE.

3.5 REVIEW BY ENGINEER
A. NOTIFY ARCHITECT AT FOLLOWING STAGES OF CONSTRUCTION SO THAT ARCHITECT MAY, AT HIS OPTION, VISIT SITE FOR REVIEW AND CONSTRUCTION OBSERVATION:
1. HVAC:

a. WHEN INSTALLATION STARTS FOR EACH DIFFERENT MAJOR TYPE OF EQUIPMENT.
b. WHEN TESTING IS STARTED.

B. SHOULD CONTRACTOR FAIL TO NOTIFY ARCHITECT AT TIMES PRESCRIBED ABOVE, IT SHALL BE CONTRACTOR'S RESPONSIBILITY AND COST TO MAKE DUCTWORK ACCESSIBLE, EXPOSE ANY CONCEALED PIPES, OR DEMONSTRATE ACCEPTABILITY OF ANY PART OF SYSTEM. ANY EXTRA COST CAUSED BY REMOVAL OF SUCH WORK SHALL BE BORNE BY CONTRACTOR.

3.6 OPERATING DURING CHANGEOVER
A. DURING REMODELING OF AN EXISTING STRUCTURE, OR ADDITION OF A STRUCTURE TO AN EXISTING STRUCTURE, WHILE AN EXISTING STRUCTURE IS OCCUPIED, PRESENT SERVICES SHALL REMAIN INTACT UNTIL NEW CONSTRUCTION, FACILITIES OR EQUIPMENT IS INSTALLED.

B. PRIOR TO CHANGING OVER TO NEW SERVICE, VERIFY THAT EVERY ITEM IS THOROUGHLY PREPARED. INSTALL ALL NEW PIPING, WIRING, ETC. TO POINT OF CONNECTION.

C. DO ACTUAL TRANSFER TO NEW SERVICE AT AN OFF_PEAK TIME, AS ARRANGED WITH OWNER. ONCE CHANGEOVER IS STARTED, VIGOROUSLY PURSUE IT TO ITS COMPLETION, TO KEEP INTERFERENCE TO A MINIMUM.

3.7 DEMOLITION
A. COORDINATE DEMOLITION OF EXISTING MECHANICAL SYSTEMS. COORDINATE EXTENT OF DEMOLITION OF MECHANICAL WORK WITH OTHER TRADES. NO EXTRA COSTS WILL BE APPROVED BY REPLACEMENT OF SYSTEMS DUE TO IMPROPER OR EXCESSIVE DEMOLITION.

3.8 ADJUSTING AND CLEANING
A. ADJUST CONTROLS FOR PROPER OPERATION. FLUSH PIPING THOROUGHLY AFTER TESTING AND PRIOR TO CONNECTING EQUIPMENT OR FIXTURES. CLEAN FIXTURES AND ADJUST FAUCETS AND VALVES.
3.9 DEMONSTRATION

A. UPON COMPLETION OF WORK AND ADJUSTMENT OF ALL EQUIPMENT, TEST SYSTEMS TO DEMONSTRATE TO OWNER'S REPRESENTATIVE AND ARCHITECT THAT ALL EQUIPMENT FURNISHED AND INSTALLED OR CONNECTED UNDER PROVISIONS OF THESE SPECIFICATIONS FUNCTIONS MECHANICALLY IN MANNER REQUIRED.

3.10 PIPING AND EQUIPMENT REMOVAL
A. PIPING AND EQUIPMENT REMOVED AND IDENTIFIED AS SALVAGE BY OWNER TO REMAIN PROPERTY OF OWNER.
B. COMPLY WITH SITE DEMOLITION PORTION OF SPECIFICATION.
C. CONTRACTOR TO REMOVE AND DISPOSE OF EXCESS PIPING (AND NOT IDENTIFIED BY OWNER AS SALVAGE).

3.11 CUTTING AND PATCHING
A. CUTTING AND PATCHING PERFORMED UNDER MECHANICAL WORK SHALL INCLUDE BUT NOT BE LIMITED TO:
1. SAW CUTTING AND TRENCHING NEW AND EXISTING CONCRETE FLOORS.
2. CUTTING AND TRIMMING OPENINGS IN CONCRETE WORK FOR INSTALLATION OR CONNECTION OF PLUMBING FIXTURES.
3. CUTTING AND PATCHING OF FINISHED CEILINGS.
B. PERFORM CUTTING AND PATCHING BY SKILLED CRAFTSMEN IN TRADE OF WORK TO BE PERFORMED. FILL HOLES WHICH ARE CUT OVERSIZED FOR COMPLETED WORK. REFINISHING SHALL MATCH EXISTING ADJACENT FINISH AND SHALL BE ACCEPTABLE TO ARCHITECT.

C. PERFORM ALL WORK TO MAINTAIN WARRANTY.
D. WHEN MASONRY OR CONCRETE CONSTRUCTION MUST BE PENETRATED, FURNISH AND INSTALL A STEEL PIPE SLEEVE IN OPENING AND GROUT IN PLACE IN A NEAT MANNER. LEAVE GROUT SURFACE TO MATCH EXISTING FINISH. PROVIDE ESCUTCHEONS. IF SLEEVES ARE NOT PROVIDED, CORE DRILL ALL PENETRATIONS.
E. LOCATE ALL CONCEALED UTILITIES TO ELIMINATE ANY POSSIBLE SERVICE INTERRUPTION OR DAMAGE.
F. NO EXTRA COST WILL BE ALLOWED FOR LACK OF PROPER COORDINATION.

3.12 FIRESTOPPING PENETRATIONS IN WALL/FLOOR ASSEMBLIES
A. PROVIDE PROPER SIZING WHEN PROVIDING SLEEVES OR CORE_DRILLED HOLES TO ACCOMMODATE PENETRATION. FIRESTOP ALL VOIDS BETWEEN SLEEVE OR CORE_DRILLED HOLE AND PIPE PASSING THROUGH TO MEET REQUIREMENTS OF ASTM E814.

3.13 LETTER OF CONFORMANCE
A. PROVIDE LETTER AND COPIES OF EXTENDED WARRANTIES WITH A STATEMENT IN LETTER THAT ALL MECHANICAL ITEMS WERE INSTALLED IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS. IF MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION HAVE NOT BEEN FOLLOWED, CONTRACTOR SHALL SO STATE, GIVE REASONS WHY AND HE SHALL WARN ARCHITECT OF ANY CONDITION WHICH MAY IMPAIR FUNCTIONING OF APPARATUS OR VOID MANUFACTURER'S WARRANTY. INCLUDE LETTER OF CONFORMANCE AND WARRANTIES IN OPERATING AND MAINTENANCE MANUALS.

SECTION 230100 - BASIC MATERIALS AND METHODS
PART 1 - GENERAL
1.1 SUBMITTALS
A. PROVIDE SHOP DRAWINGS FOR FOLLOWING EQUIPMENT:
1. PIPING MATERIALS.
2. VALVES.
3. UNIONS.
PART 2 - PRODUCTS
2.1 PRODUCT STANDARDS

A. REFERENCES TO PRODUCT SPECIFICATIONS FOR MATERIALS ARE LISTED ACCORDING TO ACCEPTED BASE STANDARDS. ALL MATERIALS SHALL MEET LATEST APPROVED VERSIONS OF THESE STANDARDS. COMMERCIAL GRADE PIPING MATERIALS ARE INDICATED FOR REFERENCE.
2.2 PIPING MATERIALS

A. COPPER TUBE: HARD DRAWN COPPER, TYPES "K," AND "L" CONFORMING TO ASTM B88. FITTINGS SHALL BE WROUGHT COPPER OR CAST BRONZE SOLDER JOINT FITTINGS CONFORMING TO ANSI B16.22.

2.3 VALVES
A. GENERAL: VALVES MANUFACTURED BY JENKINS, KENNEDY, WALWORTH, NIBCO, STOCKHAM, HAMMOND, MILWAUKEE, LUNKENHEIMER, OR APPROVED.

B. BALL VALVES SIZE 2_1/2 INCHES AND SMALLER: BRONZE BODY, 200 PSI WORKING PRESSURE, LEVER HANDLE WITH STOPS, THREADED OR SOLDERED ENDS TO MATCH PIPE AND BRONZE STEM AND BALL. SEATS AND SEAL SHALL BE BUNA_N FOR SERVICE OF MAXIMUM 150F. VALVE SEAT REPLACEABLE WITHOUT DISTURBING PIPING EITHER BY SWING AWAY OR TOP ENTRY METHOD. NIBCO MODEL 590W.
2.4 UNIONS
C. STEEL PIPE UNION: 150 LB. MALLEABLE IRON, BRASS TO IRON SEAT, GROUND JOINT, BLACK OR GALVANIZED TO MATCH PIPE.
D. COPPER PIPE UNION: 200 PSI WORKING PRESSURE. BRONZE BODY. SOLDER ENDS.
E. INSULATING UNIONS: 250 PSI WORKING PRESSURE. PIPE ENDS AND MATERIAL TO MATCH PIPING. ELECTRIC CURRENT BELOW 1 PERCENT OF GALVANIC CURRENT. GASKET MATERIAL AS RECOMMENDED BY MANUFACTURER. EPCO OR APPROVED.

2.5 WALL AND FLOOR SLEEVES

A. MINIMUM 20 GAUGE GALVANIZED STEEL IN CONCRETE. 1/2_INCH CLEARANCE AROUND PIPE OR INSULATION. PROVIDE UL APPROVED FIRE-RATED ASSEMBLIES/CAULKING AS REQUIRED. 3M OR APPROVED.

B. GENERAL:

1. PRE_ENGINEERED FIRE STOP PIPE PENETRATION SYSTEMS: UL LISTED ASSEMBLIES FOR MAINTAINING FIRE RATING OF PIPING PENETRATIONS THROUGH FIRE_RATED ASSEMBLIES. COMPLY WITH ASTM E814.

2. INSULATING CAULKING: EAGLE, PITCHER SUPER 66 HIGH TEMPERATURE CEMENT, OR APPROVED.
3. FABRICATED ACCESSORIES:
a. STEEL PIPE SLEEVES: FABRICATE FROM SCHEDULE 40 BLACK OR GALVANIZED STEEL PIPE. REMOVE END BURRS BY GRINDING.

b. SHEET METAL PIPE SLEEVES: FABRICATE FROM G_90 GALVANIZED SHEETS CLOSED WITH LOCK_SEAM JOINTS. PROVIDE THE FOLLOWING MINIMUM GAUGES FOR THE SIZES INDICATED:
1) SLEEVE SIZE 4 INCHES IN DIAMETER AND SMALLER: 18 GAUGE.
2) SLEEVE SIZES 5 TO 6 INCHES: 16 GAUGE.

c. FIRE_RATED SAFING MATERIAL:
1) ROCKWOOL INSULATION: COMPLYING WITH FS_HH_I_558, FORM A, CLASS IV, 6 LBS./CU.FT. DENSITY WITH MELTING POINT OF 1985F AND K VALUE OF 0.24 AT 75F.
2) CALCIUM SILICATE INSULATION: NONCOMBUSTIBLE, COMPLYING WITH FS_HH_I_523, TYPE II, SUITABLE FOR 100F TO 1200F SERVICE WITH K VALUE OF 0.40 AT 150F.]
2.6 ESCUTCHEONS
A. BRASS MATERIAL, CHROME PLATED FINISH. SIZE SUFFICIENT TO COVER ALL PIPE OPENINGS THROUGH WALL, FLOOR OR CEILING. SET SCREW OR SPRING TO SECURE TO PIPE.

2.7 PIPE HANGERS AND SUPPORTS
A. PIPE HANGER SIZE 3 INCHES AND SMALLER: ADJUSTABLE MALLEABLE IRON, SPLIT RING HANGER, BLACK, UL LISTED. MICHIGAN 111. FIGURE 100 OR 101 APPROVED.

2.8 STARTERS
A. STARTERS FOR EQUIPMENT FURNISHED BY MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR. THE STARTER SHALL BE SUITABLE FOR PERFORMING CONTROL FUNCTION REQUIRED. STARTERS SHALL HAVE THERMAL OVERLOAD PROTECTION DEVICES ON ALL "LINE" LEGS. SIZE ALL OVERLOAD HEATERS AS RECOMMENDED BY MOTOR OR EQUIPMENT MANUFACTURER FOR SERVICE AND LOCATION. PROVIDE CONTACTORS, RELAYS, AND INTERLOCKS AS REQUIRED TO PERFORM SEQUENCE OF OPERATION.

PART 3 - EXECUTION

3.1 PIPE AND PIPE FITTINGS
A. INSTALL UNIONS IN NON-FLANGED PIPE CONNECTIONS TO APPARATUS AND ADJACENT TO ALL SCREWED CONTROL VALVES, TRAPS AND APPURTENANCES REQUIRING REMOVAL FOR SERVICING, SO LOCATED THAT PIPING MAY BE DISCONNECTED WITHOUT DISTURBING GENERAL SYSTEMS. PROVIDE DIELECTRIC COUPLINGS, UNIONS OR FLANGES BETWEEN GALVANIZED STEEL AND COPPER PIPE AND TUBING.
1. RUN ALL PIPING PARALLEL TO BUILDING STRUCTURE AND SUPPORT IT SUFFICIENTLY TO PREVENT SAGGING.
2. INSTALL ALL PIPING WHERE POSSIBLE SO AS TO VENT AND DRAIN.
3. SUPPORT ALL PIPING INDEPENDENTLY SO THAT ITS WEIGHT IS NOT CARRIED BY EQUIPMENT.
4. ALL WATER PIPING TO BE INSTALLED IN CEILING SPACE UNLESS OTHERWISE NOTED.
5. INSTALL SHEEL METAL COLLAR AROUND PIPE WHERE PIPE PASSES THROUGH WALL OR FLOOR.

B. SCREWED JOINTS SHALL HAVE PIPE ENDS REAMED, DOPE OR TAPE APPLIED TO MALE THREADS ONLY, WITH EXCEPTION OF BRASS TO BRASS JOINTS WHICH SHALL BE MADE WITH TEFLON TAPE ONLY.

C. FOR BRAZE TYPE JOINTS, USE FOS-COPPER ROD ON WROUGHT COPPER FITTINGS, OR SILVER BRAZING ALLOY WITH FLUX RECOMMENDED FOR THAT PARTICULAR ALLOY ON ALL FITTINGS. CLEAN COPPER TUBING AND FITTINGS THOROUGHLY BEFORE APPLYING FLUX. REMOVE ALL COPPER TUBING BURRS, REAM TO FULL BORE AND TRUE AND ROUND ALL JOINTS. APPLY HEATING UNIFORMLY TO SECURE PENETRATION OF ROD AND LEAVE A FULL BEAD AROUND ENTIRE CIRCUMFERENCE OF JOINT TO SHOW PROPER PENETRATION AND SEALING. UNDER NO CIRCUMSTANCES WILL FOS-COPPER BE USED ON CAST FITTINGS. USE SILVER BEARING SOLDER ON REFRIGERANT COPPER PIPING.

3.2 VALVES

A. PROVIDE NEAT APPEARANCE AND EASY GROUPING WITH ALL PARTS EASILY ACCESSIBLE. INSTALL VALVE STEMS IN A HORIZONTAL OR UPRIGHT POSITION.

3.3 PIPE SLEEVES

A. LAY OUT WORK IN ADVANCE OF POURING CONCRETE. FURNISH AND SET SLEEVES NECESSARY TO COMPLETE WORK.

B. FLOOR SLEEVES: PROVIDE SLEEVE ON PIPES PASSING THROUGH CONCRETE FLOORS. EXTEND SLEEVE 1 INCH ABOVE FINISHED FLOOR. CAULK ALL PIPES PASSING THROUGH FLOOR WITH APPROVED FIRE RATED SEALANT.
3.4 UNIONS
A. INSULATING UNION: PLACE IN LINE IN PIPING SYSTEMS WHERE TWO DISSIMILAR METALS COME IN CONTRACT.

B. DI-ELECTRIC FITTINGS ARE NOT PERMITTED. USE 6" MINIMUM OF RED BRASS FOR DI-ELECTRIC ISOLATION BETWEEN COPPER NAD STEEL COMPONENTS OR OTHER COMPNENTS WITH A POTENTIAL FOR ELECTROLYSIS.

3.5 ESCUTCHEONS
A. INSTALL AT ALL EXPOSED PIPES PASSING THROUGH FLOORS OR WALLS.

3.6 PIPE HANGERS AND SUPPORTS
A. GENERAL: PROVIDE ADJUSTABLE HANGERS ON ALL PIPES, COMPLETE WITH ADJUSTERS, SWIVELS, RODS, ETC. SIZE HANGERS TO CLEAR INSULATION AND GUIDES.
B. ON HOT PIPE LINES WHERE EXPANSION AND CONTRACTION OCCURS, PROVIDE SWIVEL JOINT AT TOP OR BOTTOM OF HANGER ROD.
C. PROVIDE HANGER WITHIN 3 FEET OF ALL CHANGES IN DIRECTION.
D. BRANCHES 5 FEET OR LONGER SHALL HAVE SEPARATE HANGER.
E. PLUMBERS TAPE: NOT PERMITTED AS PIPE HANGERS.
F. HANGER SPACING:
1. COPPER TUBING 1_1/2 INCHES AND SMALLER: 6 FEET.
2. COPPER TUBING 1_3/4 INCHES AND LARGER: 10 FEET.

3.7 PIPE AND EQUIPMENT IDENTIFICATION
A. PIPE MARKERS:
1. ADHESIVE PIPE MARKERS OF WIDTH, LETTER SIZE AND BACKGROUND COLOR CONFORMING TO ANSI A13.1.
2. BRADY B350, SETON, ZESTON, OR APPROVED.
3. COORDINATE COLORS WITH ARCHITECT.

B. NAMEPLATES:

1. ENGRAVED NAMEPLATES, 1/16_INCH THICK, LAMINATED 3_PLY PLASTIC, CENTER PLY WHITE, OUTER PLY BLACK, LETTERS FORMED BY EXPOSING CENTER PLY. BRADY, SETON, ZESTON, OR APPROVED.
2. SIZE: 3_ BY 5_INCH NAMEPLATE WITH 1/4_INCH HIGH LETTERS.
3. SEE SECTION 230000, EQUIPMENT IDENTIFICATION.
PART 3 - EXECUTION
3.1 CUTTING, PATCHING, REPAIRING
A. PERFORM CUTTING, PATCHING AND REPAIRING REQUIRED FOR PROPER INSTALLATION AND COMPLETION OF WORK SPECIFIED IN EACH DIVISION, INCLUDING PLASTERING, MASONRY WORK, CONCRETE WORK, CARPENTRY WORK AND PAINTING BY SKILLED CRAFTSMEN IN THESE RESPECTIVE TRADES, ALL AT EXPENSE OF THIS CONTRACTOR. SEE SECTION 230100, BASIC MATERIALS AND METHODS.

3.2 PIPE INSTALLATION

A. GENERAL: INSTALL UNIONS IN ALL NON_FLANGED PIPE CONNECTIONS TO APPARATUS AND ADJACENT TO ALL SCREWED CONTROL VALVES, TRAPS AND APPURTENANCES REQUIRING REMOVAL FOR SERVICING, SO LOCATED THAT PIPING MAY BE DISCONNECTED WITHOUT DISTURBING GENERAL SYSTEM. PROVIDE DIELECTRIC COUPLINGS, UNIONS OR FLANGES BETWEEN GALVANIZED STEEL AND COPPER PIPE OR TUBING.

1. INSTALL ALL PIPING SO AS TO VENT AND DRAIN.
2. RUN ALL PIPING PARALLEL TO BUILDING STRUCTURE AND SUPPORT IT SUFFICIENTLY TO PREVENT SAGGING.
B. WATER PIPING: PROVIDE "LOW POINT" DRAIN VALVES WHERE PIPING IS "TRAPPED" OR CANNOT OTHERWISE BE DRAINED. USE ONLY NON_TOXIC APPROVED PIPE DOPE LUBRICANTS OR TEFLON TAPE ON THREADED JOINTS. PERMANENTLY BRACE OR ANCHOR SPECIAL PURPOSE OUTLET FITTINGS AGAINST DISPLACEMENT OR MISALIGNMENT.
3.3 PIPE TEST
A. NOTIFY ARCHITECT AND LOCAL PLUMBING INSPECTOR TWO DAYS BEFORE TEST.
B. DRAINAGE, WASTE AND VENT PIPING: TEST IN ACCORDANCE WITH LOCAL PLUMBING CODE PROVISIONS.
C. WATER PIPING: ELIMINATE AIR FROM SYSTEM. FILL AND TEST AT 150 PSIG FOR A PERIOD OF 6 HOURS WITH NO LOSS IN PRESSURE.

3.4 CHLORINATION
A. UPON SUCCESSFUL COMPLETION OF ALL TESTS AND NECESSARY REPLACEMENTS, FLUSH AND DISINFECT ALL DOMESTIC WATER PIPING AS HEREIN DESCRIBED.

B. THOROUGHLY FLUSH AND BACKFLUSH PIPING THROUGH ALL OPENINGS TO REMOVE DIRT, FLUX, DEBRIS AND RESIDUES UNTIL FLUSHING WATER RUNS CLEAR.

C. CONDUCT CHLORINATION TREATMENT WITH BOARD OF HEALTH AND PLUMBING CODE REQUIREMENTS. UPON COMPLETION, PRESENT A CERTIFICATE OF COMPLIANCE TO ARCHITECT.
3.5 EQUIPMENT PROTECTION
KEEP ALL PIPE OPENINGS CLOSED BY MEANS OF PLUGS OR CAPS TO PREVENT ENTRANCE OF FOREIGN MATTER. PROTECT ALL PIPING, DUCTWORK, FIXTURES, EQUIPMENT AND APPARATUS AGAINST DIRTY WATER, CHEMICAL OR MECHANICAL DAMAGE BOTH BEFORE AND AFTER INSTALLATION. RESTORE ANY SUCH FIXTURE, EQUIPMENT OR APPARATUS DAMAGED PRIOR TO FINAL
A. ACCEPTANCE OF WORK TO ITS ORIGINAL CONDITION OR REPLACE AT EXPENSE OF CONTRACTOR.
B. PROTECT ALL BRIGHT FINISHED SHAFTS, BEARING HOUSINGS AND SIMILAR ITEMS, UNTIL IN SERVICE; NO RUST WILL BE PERMITTED.
C. COVER OR PROTECT EQUIPMENT AND MATERIALS STORED ON JOBSITE AT DIRECTION OF AND TO SATISFACTION OF ARCHITECT. IF COVERINGS BECOME TORN, REPLACE THEM UNTIL EQUIPMENT IS CONNECTED AND OPERATING.

SECTION 230500 - HEATING, VENTILATING AND AIR CONDITIONING

PART 1 - GENERAL
1.1 SUBMITTALS
A. PROVIDE SHOP DRAWINGS FOR FOLLOWING EQUIPMENT:
1. TERMINAL UNITS
2. DIFFUSERS AND GRILLES.
1.2 SUMMARY
A. Work Includes but is not Limited to following major items:
1. All air distribution, heating, cooling, ventilation and exhaust systems.
2. Equipment used for distribution of air, including fans, motors, controls, control wiring, filters, ductwork, air supply outlets, air return and exhaust inlets.

3. Sleeves, hangers, flashings, counterflashing and weatherproofing for mechanical equipment.
4. Combustion air and flues for all gas_fired equipment including gas water heaters.
5. Fire dampers, sleeves, frames, smoke/fire dampers, and all control devices.
6. All other components specified and/or required for a complete operating system.

1.2 DUCT CONSTRUCTION
A. Ductwork: Construct from galvanized sheet metal to conform to CMC, latest edition, or latest edition of ASHRAE Guide Table.
B. Flexible Ducts: Galvanized spring steel wire helix covered with continuous liner and attached to liner with spray coating, 1_inch thickness of fiberglass insulation, plastic vapor barrier jacket sealed at both ends. 0.25 K factor at 75F mean temperature, rated for continuous service at 1.5_inch S.P. All joints made with 1/2_inch-wide positive locking steel straps. UL approved per UL 181. Maximum length of 5 feet. Manufacturer: Clevaflex, Flexmaster, Genflex, Thermaflex, or approved.

PART 2 - PRODUCTS
2.1 DIFFUSERS AND GRILLES
A. Manufacturers: Krueger, Nailor, E.H. Price Co., Titus.
B. See Drawings for types and model numbers.
C. Diffuser, Register and Grille Schedule lists Basis of Design, with specialty accessories, construction, finish or other criteria noted on schedule. Submitted air distribution must match criteria of Basis of Design, including accessories, finish, and: Matching construction materials and appearance; Equal installation method/frame; Pressure drop equal to or less than Basis of Design at CFM on Drawings; Isothermal jet throw plus or minus 5 percent of Basis of Design at CFM listed on Drawings; Noise Criteria: Plus or minus 1 NC of Basis of Design at CFM listed on Drawings. If Basis of Design NC is below registered level, submitted must match. NC rating with 10 dB room factor or less.

D. Coordinate mounting frames with ceiling construction type. Verify per reflected ceiling plans.

2.2 TERMINAL HEAT TRANSFER EQUIPMENT
A. Provide Active chilled beam as manufactured by Trox or Price.
B. Casings: Construct the active chilled beam from minimum 20 gauge galvanized steel with a primary air plenum, water coil frame, mixing chamber, grille assembly and mounting bracket support provisions. Sheet metal joints in the primary air plenum to be sealed airtight.
C. Primary Air connection: Provide a round or an oval primary air inlet connection at the end or side of the unit in the sizes as shown on the drawings.
D. Nozzles: Primary air to be discharged into the mixing chamber through induction nozzles. Provide the number and size of nozzles required to provide the primary and secondary airflows for each unit at the inlet static pressure and noise levels specififed. Nozzle plate painted with a flat black finish.
E. Cooling/Heating Water Coil:
1. Provide a single 2 or 4 pipe secondary water coil (as scheduled on drawings) with capacities as shown on the unit schedule constructed of galvanized steel frame with 1/2-inch copper tubes mechanically expanded into aluminum fins. Provide 1/2-inch stubbed coil connections suitable for brazed connections to the coil at the end of the unit as shown on the drawings.
2. Water coil rated for maximum operating pressure of not less than 300 PSIG, burst tested at 450 PSIG (air under water) and leak tested at 300 PSIG.
F. Ceiling: Border or grille assembly compatible for mounting in standard T-bar lay-in ceilings as shown on the Drawings and unit schedule.
G. Packaging and Labeling:
1. Units packaged in cartons palletized on wooden skids, wrapped in plastic for protection before and after installation prior to installation of the ceiling.
2. Each unit and carton labeled with identification tagging as required, and each unit's labeling to include its airflow commissioning information.
H. Provide the following:
1. 1/2" thick UL-181 approved thermal insulation applied tot he interior of the primary air plenum to prevent condensation from forming on the outside of the unit casing.
2. Units compatible for mounting in the ceiling design.

I. Accessories:
1. 1/2 - inch diameter 18 inch long flexible hose coil connectors constructed of Teflon hose with stainless steel braiding rated for a maximum operating pressure of not less than 300 PSI (with sweat of NPT threaded connections).
2. Trim kit for installation in dry wall or plaster ceilings.

2.3 BALANCING DAMPERS
A. Volume Dampers (VD): Provide in supply, exhaust and return ducts as required for balancing and construct of galvanized sheets not lighter than 18 gauge, reinforced to prevent vibration, equipped at both ends with brass bearing mounts and of sufficient length to provide a complete shut_off of duct. Basis-of-Design: Ruskin MD 35.
B. Rectangular Volume Dampers: Steel Frames: Hat-shaped, galvanized sheet steel channels, minimum 16 gauge thick, with mitered and welded corners; frames with flanges where indicated for attaching to walls and flangeless frames where indicated for installing in ducts. Roll-Formed Steel Blades: 16 gauge thick, galvanized sheet steel.
C. Round Volume Dampers: Single-blade suitable for horizontal or vertical applications. Steel Frames: Galvanized, roll formed, minimum of 20 gauge thick with beads at each end. Blades: Minimum 20 gauge thick, galvanized sheet steel, round, single-piece.
D. Provide each damper with an adjustment and locking quadrant device as manufactured by Young Regulator Company, 403 operator for accessible locations. Provide 12-inch plenum rated marker ribbon to end of all balancing damper handles.
E. Concealed Damper Hardware: For dampers above non-removable ceilings (gyp, plaster, decorative, etc.) where access panels have not been shown on Architectural drawings or in locations where dampers are more than 2-feet above the ceiling, provide Concealed Damper Regulator: Young Regulator Company Model 315 or approved equivalent. Cable System: Young Regulator Company or approved equivalent. Controller: Young Regulator Company 270-275 or approved equivalent. Control wrenches, wire stops, casing nuts, and stainless steel wire. Paint cover plate to match ceiling color or as directed by Architect.
2.3 DUCT CONSTRUCTION
A. DUCTWORK: CONSTRUCT FROM GALVANIZED SHEET METAL TO CONFORM TO SMACNA, LATEST EDITION.

B. FLEXIBLE DUCTS: GALVANIZED SPRING STEEL WIRE HELIX COVERED WITH CONTINUOUS LINER AND ATTACHED TO LINER WITH SPRAY COATING, 1_INCH THICKNESS OF FIBERGLASS INSULATION, PLASTIC VAPOR BARRIER JACKET SEALED AT BOTH ENDS. 0.25 K FACTOR AT 75F MEAN TEMPERATURE, RATED FOR CONTINUOUS SERVICE AT 1.5_INCH S.P. ALL JOINTS MADE WITH 1/2_INCH-WIDE POSITIVE LOCKING STEEL STRAPS. UL APPROVED PER UL 181. MAXIMUM LENGTH OF 5 FEET. MANUFACTURER: CLEVAFLEX, FLEXMASTER, GENFLEX, THERMAFLEX, OR APPROVED.

PART 3 - EXECUTION

3.1 INSPECTION
A. EXAMINE AREAS AND CONDITIONS UNDER WHICH SPLIT SYSTEM UNITS AND FURNACES ARE TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.

3.2 INSTALLATION
A. GENERAL: INSTALL UNITS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS, PLUMB AND LEVEL, AND FIRMLY ANCHORED IN LOCATIONS INDICATED. MAINTAIN MANUFACTURER'S RECOMMENDED AND CODE-REQUIRED ACCESS AND CLEARANCES.

B. SUPPORT: PROVIDE NEOPRENE VIBRATION ISOLATION PADS FOR FLOOR-MOUNTED EQUIPMENT AND SPRING VIBRATION ISOLATORS FOR SUSPENDED EQUIPMENT.

C. DUCTWORK: CONNECT SUPPLY AND RETURN TO UNIT WITH FLEXIBLE DUCT CONNECTIONS. PROVIDE TRANSITIONS TO EXACTLY MATCH UNIT DUCT CONNECTION SIZE. CONNECT OUTSIDE AIR TO UNIT WITH FLEXIBLE CONNECTIONS. INSTALL SHEET METAL COLLARS AROUND THE DUCT IF PENETRATING WALL.
D. DRAIN PIPING: RUN FULL SIZE TO CODE APPROVED DISCHARGE LOCATION. PROVIDE TRAP AT DRAIN PAN; CONSTRUCT 1 INCH DEEPER THAN FAN PRESSURE IN INCHES OF WATER.

E. START UP: START UP IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. TEST CONTROLS AND DEMONSTRATE COMPLIANCE WITH REQUIREMENTS. REPLACE DAMAGED OR MALFUNCTIONING CONTROLS AND EQUIPMENT.
3.3 DUCTWORK
A. ERECT ALL DUCTWORK IN A FIRST-CLASS MANNER, TRUE TO DIMENSIONS INDICATED, STRAIGHT AND SMOOTH ON INSIDE WITH NEATLY FINISHED JOINTS LAPPED IN DIRECTION OF AIR TRAVEL. PROPERLY BRACE AND REINFORCE ALL DUCTS WITH STEEL ANGLES OR OTHER MEMBERS.

B. SEAL ALL JOINTS IN DUCTS WITH 3M COMPANY OR JOHNS MANVILLE INDUSTRIAL GRADE PRESSURE SENSITIVE TAPE OR 6_INCH WIDTH OF SIX OUNCE CANVAS PASTED ON WITH ARABOL. RAY CHEM SHRINK TAPE APPROVED.

3.4 BALANCING
A. BALANCE AIR SYSTEM TO WITHIN PLUS OR MINUS 10 PERCENT OF DESIGN VALUES. PROVIDE A BALANCING REPORT AT END OF PROJECT. SEE SECTION 230593, TESTING, ADJUSTING AND BALANCING, FOR REQUIREMENTS.

3.5 ACTIVE CHILLED BEAM INSTALLATION
A. TO PROPERLY INSTALL THE ACTIVE CHILLED BEAMS, ENSURE THAT THE UNIT I SLEVEL AND PROPERLY SUPPORTED FROM ABOVE.
B. CONNECT TO THE MAIIN PRIMARY DUCT WITH STRAIGHT OR A GENTLE RADIUS FLEXIBLE DUCT.
C. MAKE JOINTS AIRTIGHT
D. CONNECT THE WATER INLET AND OUTLET PIPING TO THE WATER COIL, INCLUDING INSTALLATION OF ISOLATIONG, BALANCING AND CONTROL VALVES AS SPECIFIED.
E. REFER AND CONFORM TO THE RECOMMENDATIONS IN THE MANFACTURER INSTALLATION, OPERATION AND MAINTENANCE MANUAL.

SECTION 230700 - INSULATION
PART 1 - GENERAL
1.1 SUBMITTALS
A. PRODUCT DATA: BEFORE INSULATING MATERIALS ARE DELIVERED TO JOB SITE, SUBMIT COMPLETE DATA SHOWING INSULATION MATERIALS PROPOSED TO BE FURNISHED AND INSTALLED.
1.2 FIRE HAZARD CLASSIFICATION
A. MAXIMUM FIRE HAZARD CLASSIFICATION OF COMPOSITE INSULATION CONSTRUCTION AS INSTALLED SHALL BE NOT MORE THAN A FLAME SPREAD OF 25, FUEL CONTRIBUTED OF 50 AND SMOKE DEVELOPED OF 50.
B. TEST PIPE INSULATION IN ACCORDANCE WITH REQUIREMENTS OF UL "PIPE AND EQUIPMENT COVERINGS R5583 400 8.15".
C. TEST DUCT INSULATION IN ACCORDANCE WITH ASTM E84, UL 723, NFPA 255, NFPA 90A AND NFPA 90B.
1.3 LINING MATERIALS
A. MATERIALS TO BE MOLD-, HUMIDITY-, AND EROSION-RESISTANT SURFACE THAT MEETS THE REQUIREMENTS OF UL 181.
PART 2 - PRODUCTS
2.1 MANUFACTURERS
A. INSULATION: ARMACELL, LLC ARMAFLEX, CERTAINTEED, JOHNS MANVILLE, KNAUF, OWENS-CORNING, PPG.
B. FIRE PROTECTION DUCT WRAP: GREASE DUCTS NOT ENCLOSED IN RATED SHAFT: 3M FIRE BARRIER DUCT WRAP 615+, COMPLIANT WITH UL1978, AC101 AND ASTM 2336, FOIL ENCAPSULATED.
2.2 MATERIAL
A. FIBERGLASS SECTIONAL PIPE INSULATION: THERMAL CONDUCTIVITY OF 0.24 (BTU/IN)/HR/SQ.FT./DEG. F) AT 75F MEAN TEMPERATURE. MINIMUM DENSITY OF 1.5 LBS. PER CU.FT. JACKETED WITH WHITE VAPOR BARRIER LAMINATED OF ALUMINUM FOIL AND WHITE KRAFT PAPER REINFORCED WITH GLASS FIBER STRANDS. JACKET SHALL HAVE FACTORY APPLIED SELF-SEALING LAP.
B. DUCT LINING: ASTM C1071; FLEXIBLE BLANKET. 'K' VALUE: ASTM C518, 0.25 BTU*IN/(HR*SF*F) AT 75 DEGREES F, MAXIMUM SERVICE TEMPERATURE: 250 DEGREES F. NOISE REDUCTION COEFFICIENT: 0.65 OR HIGHER BASED ON ASTM C 423 "TYPE A MOUNTING." MAXIMUM VELOCITY ON MAT OR COATED AIR SIDE: 5,000 FPM. ADHESIVE: UL
LISTED WATERPROOF TYPE. FASTENERS: DUCT LINER GALVANIZED STEEL PINS, WELDED OR MECHANICALLY FASTENED. EROSION-RESISTANT SURFACES: UL 181. ASTM G21 AND ASTM G22 MICROBIAL GROWTH RESISTANCE.
FOR OSHPD-1 PROJECTS, COVER LINING WITH 2 MIL MYLAR SHEETING AND GALVANIZED INNER DUCT OVER THE MYLAR SHEETING.
C. DUCT WRAP: FIBERGLASS DUCT INSULATION WITH THERMAL CONDUCTIVITY OF 0.23 (BTU/IN)/HR/SQ.FT./DEG. F) AT 75F MEAN TEMPERATURE. MINIMUM DENSITY OF 1.5 LBS. PER CU.FT. FACTORY APPLIED FLAME RETARDANT FOIL REINFORCED KRAFT VAPOR BARRIER FACING.
D. ELASTOMERIC PIPE INSULATION: 1-INCH-THICK, FLEXIBLE ELASTOMERIC, CLOSED CELL PIPE INSULATION. THERMAL CONDUCTIVITY OF 0.27 BTU/IN)/(HR/SQ.FT./DEG. F) AT 75C; 2 INCHES THICK ON HOT WATER PIPE. ARMACELL, LLC ARMAFLEX "AP" OR APPROVED EQUIVALENT.
E. PIPE FITTING INSULATION COVERS: PVC PREFORMED MOLDED INSULATION COVERS. ZESTON OR APPROVED EQUIVALENT.
F. CALCIUM SILICATE: HYDROUS CALCIUM SILICATE TESTED IN ACCORDANCE WITH ASTM C533 TYPE I WITH A MINIMUM OF 200 PSI AT 5 PERCENT COMPRESSION.
G. FIBERGLASS BOARD: FIBERGLASS INSULATING BOARDS WITH THERMAL CONDUCTIVITY OF 0.23 (BTU/IN)/(HR/SQ.FT./DEG. F) AT 75F MEAN TEMPERATURE. MINIMUM DENSITY OF 3.0 LBS. PER SQ.FT.
H. JACKETING: CANVAS JACKET: UL LISTED FABRIC, 6 OUNCE/SQ. YD., PLAIN WEAVE COTTON TREATED WITH DILUTE FIRE RETARDANT LAGGING ADHESIVE. PVC PREFORMED MOLDED INSULATION COVERS. ZESTON OR APPROVED EQUIVALENT.
ALUMINUM JACKET: 0.016-INCH-THICK SHEET, (SMOOTH/EMBOSSED) FINISH, WITH LONGITUDINAL SLIP JOINTSAND 2-INCH LAPS,
DIE-SHAPED FITTING COVERS WITH FACTORY ATTACHED PROTECTIVE LINER. STAINLESS STEEL JACKET: TYPE 304 STAINLESS STEEL, 0.010-INCH, SMOOTH FINISH.
I. OUTDOOR DUCTING COVER: ALUMINUM JACKET: 0.016-INCH-THICK SHEET, SMOOTH/EMBOSSED FINISH, WITH LONGITUDINAL SLIP JOINTS AND 2-INCH LAPS. UV RESISTANT POLYVINYL CHLORIDE COVERING WITH JOINTS SECURED AND SEALED.
J. COVER INSULATION ON PIPES ABOVE GROUND, OUTSIDE OF BUILDING, WITH ALUMINUM JACKETING. POSITION SEAM ON BOTTOM OF PIPE.
K. INSULATED PIPE EXPOSED TO WEATHER: COVER INSULATION WITH ALUMINUM JACKET. SEAL WATERTIGHT JACKET PER MANUFACTURER'S RECOMMENDATIONS. INSTALL METAL JACKET WITH 2-INCH OVERLAP AT LONGITUDINAL AND BUTT JOINTS WITH EXPOSED LAP POINTING DOWN. SECURE JACKET WITH STAINLESS-STEEL DRAW BANDS 12-INCHES ON CENTER AND AT BUTT JOINTS.
L. INSULATION SHIELDS: PROVIDE HANGERS AND SHIELDS (18 GAUGE MINIMUM) OUTSIDE OF INSULATION FOR COLD PIPING (<60 DEGREES F).
HOT WATER PIPING HANGERS MAY PENETRATE INSULATION TO CONTACT PIPE DIRECTLY. PROVIDE 18-INCH LONG, NON-COMPRESSIBLE INSULATION SECTION AT INSULATION SHIELDS FOR LINES 2-INCHES AND LARGER FOR STEAM AND CHILLED WATER PIPING.

PART 3 - EXECUTION
3.1 INSULATION THICKNESS
A. GENERAL: PROVIDE INSULATION THICKNESS AS REQUIRED TO MEET STATE ENERGY CODE.
B. CONDENSATE DRAIN PIPE, COVER WITH 1/2-INCH FIBERGLASS SECTIONAL PIPE COVERING
C. DUCTWORK INSIDE BUILDING THERMAL ENVELOPE:
1. DUCT LINER: UNLESS SPECIFICALLY NOTED OTHERWISE, LINE SUPPLY AND RETURN AIR DUCTS WITHIN 20 FEET OF AIR HANDLING EQUIPMENT OR UNTIL 4 FEET PAST FIRST ELBOW, WHICHEVER IS LONGER, AND LINE ALL EXPOSED DUCTWORK
2. LINE DIFFUSER REGISTER AND GRILLE DUCT BOOTS WITH 1-INCH DUCT LINER.
3. OUTSIDE AIR INTAKE DUCTS:
a. EXPOSED DUCTS: INSTALL 3-INCH DUCT LINER.
b. CONCEALED DUCTS: INSTALL 3-INCH DUCT WRAP.
D. DUCTWORK OUTSIDE BUILDING INSULATION ENVELOPE:
1. DUCT LINER: LINE SUPPLY AND RETURN AIR DUCTS WITHIN 20 FEET OF AIR HANDLING EQUIPMENT OR UNTIL 4 FEET PAST FIRST ELBOW, WHICHEVER IS LONGER WITH 2-1/2-INCH DUCT LINER TO PROVIDE AN INSTALLED TOTAL THERMAL RESISTANCE OF AT LEAST R-7.
2. DUCT WRAP: COVER SUPPLY AND RETURN AIR DUCTS WITH 3-1/2-INCH DUCT WRAP EXCEPT WHERE SPECIFIED OR NOTED ON DRAWINGS FOR DUCTS TO BE LINED OR WHERE FIBERGLASS DUCTBOARD IS USED. TOTAL THERMAL RESISTANCE OF DUCT WRAP OR DUCTBOARD TO BE R-7 MINIMUM. DUCT WRAP NOT ALLOWED ON DUCT EXPOSED TO OUTSIDE CONDITIONS.
E. REFRIGERATION PIPE: INSULATE SUCTION PIPING WITH 1-INCH FLEXIBLE, ELASTOMERIC INSULATION.
1.2 INSTALLATION
A. INSTALLATION SHALL BE CONTINUOUS THROUGH WALLS, FLOORS, PARTITIONS EXCEPT WHERE NOTED OTHERWISE.
B. FIBERGLASS SECTIONAL PIPE INSULATION: APPLY INSULATION TO PIPE AND SEAL WITH SELF-SEALING LAP. USE SELF-SEALING BUTT STRIPS TO SEAL BUTT JOINTS. INSULATE ALL FITTINGS, VALVES AND UNIONS WITH SINGLE OR MULTIPLE LAYERS OF INSULATION AND COVER TO MATCH PIPE OR USE PREFORMED PVC MOLDED INSULATION COVERS.
C. DUCT LINERS: INSTALL MAT FINISH SURFACE ON AIR STREAM SIDE. SECURE INSULATION TO CLEANED SHEET METAL DUCT WITH A CONTINUOUS 100 PERCENT COAT OF ADHESIVE. FOR WIDTHS OVER 20 INCHES, ADDITIONALLY SECURE LINER WITH MECHANICAL FASTENERS 15 INCHES ON CENTER. ACCURATELY CUT LINER AND THOROUGHLY COAT ENDS WITH ADHESIVE. BUTT JOINTS TIGHTLY. TOP AND BOTTOM SECTIONS OF INSULATION SHALL OVERLAP SIDES. KEEP DUCT LINER CLEAN AND FREE FROM DUST. AT COMPLETION OF PROJECT, VACUUM DUCT LINER IF IT IS DIRTY OR DUSTY. CUT STUDS OFF NEAR WASHERS. DO NOT USE SMALL PIECES. IF INSULATION IS INSTALLED WITHOUT HORIZONTAL, LONGITUDINAL, AND END JOINTS BUTTED TOGETHER, INSTALLATION WILL BE REJECTED AND WORK REMOVED AND REPLACED WITH WORK THAT CONFORMS TO THIS SPECIFICATION.
D. DUCT WRAP: COVER SUPPLY AIR DUCTS EXCEPT DUCTS INTERNALLY LINED. WRAP TIGHTLY WITH ALL CIRCUMFERENTIAL JOINTS BUTTED AND LONGITUDINAL JOINTS OVERLAPPED MINIMUM OF 2 INCHES. ADHERE INSULATION WITH 4-INCH STRIPS OF INSULATING BENDING ADHESIVE AT 8 INCHES ON CENTER. ON DUCTS OVER 24 INCHES WIDE, ADDITIONALLY SECURE INSULATION WITH SUITABLE MECHANICAL FASTENERS AT 18 INCHES ON CENTER. CIRCUMFERENTIAL AND LONGITUDINAL JOINTS STAPLED WITH FLARE STAPLES ON 6-INCH CENTERS AND COVERED WITH 3-INCH-WIDE FOIL REINFORCED TAPE.
E. WHERE PIPING IS EXPOSED ON ROOF, COVER INSULATION WITH ALUMINUM JACKET. SEAL WATERTIGHT JACKET PER MANUFACTURER'S RECOMMENDATIONS.
F. FLEXIBLE ELASTOMERIC TUBING: SLIP INSULATION OVER PIPING OR IF PIPING IS ALREADY INSTALLED, IT SHOULD BE SLIT AND SNAPPED OVER PIPING. ALL JOINTS AND BUTT ENDS MUST BE ADHERED WITH 520 ADHESIVE.
G. CALCIUM SILICATE PIPE INSULATION: INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. SEAL CANVAS JACKET TIGHT TO INSULATION AT LAP JOINTS. INSULATION SHALL BE CONTINUOUS OVER PIPE, FITTINGS AND ALL SUPPORTS OR HANGERS. NO HOLIDAYS OR GAPS PERMITTED.
H. STORAGE TANKS: COVER WITH HYDROUS CALCIUM SILICATE, 2 INCHES THICK. FINISH WITH CANVAS JACKET AND ADHESIVE. OVERLAP JOINTS MINIMUM OF 4 INCHES. APPLY TWO COATS LATEX PAINT; COLOR SELECTED BY ARCHITECT.
I. FIBERGLASS FLEXIBLE BOARD: FIBERGLASS INSULATING FLEXIBLE BOARDS WITH THERMAL CONDUCTIVITY OF 0.230 BTU/IN)/(HR/SQ.FT./DEG. F) AT 75F MEAN TEMPERATURE. MINIMUM DENSITY OF 3.00 LBS. PER SQ.FT. FIELD APPLIED CANVAS JACKET.
J. INSULATION SHIELDS: PROVIDE FULL SIZE DIAMETER HANGERS AND SHIELDS (18 GAUGE MINIMUM) FOR ALL COLD PIPING. HOT PIPING HANGERS MAY PENETRATE INSULATION TO CONTACT PIPE DIRECTLY. PROVIDE 18-INCH LONG, NON-COMPRESSIBLE INSULATION SECTION AT INSULATION SHIELDS FOR LINES 2 INCH AND LARGER (STEAM AND COLD PIPING).

SECTION 230900 - CONTROLS
PART 1 - GENERAL
1.1 SYSTEM DESCRIPTION
A. PROVIDE A SYSTEM OF LOW VOLTAGE ELECTRIC CONTROLS.
B. WIRING: SHALL BE AS REQUIRED FOR A COMPLETE OPERATING CONTROL SYSTEM, PER STATE AND NATIONAL ELECTRICAL CODES. PROVIDE NECESSARY RELAYS, TRANSFORMERS, FUSING, SWITCHES AND PILOT LIGHTS. FEED INTERLOCKS AND CONTROL POWER FROM NEAREST PANEL.
C. Control system referenced throughout specifications and drawings as Building Automation System (BAS), Building Management System (BMS), or Energy Management System (EMS) interchangeably consists of high-speed, peer-to-peer network of DDC controllers and control system server.

PART 2 - PRODUCTS
2.1 CARBON DIOXIDE SENSORS
A. General: Wall-mounted carbon dioxide sensor. Infrared type.

B. Range and Accuracy: 0 to 2,000 ppm plus or minus 100 ppm. Maximum drift of plus or minus 100 ppm per year.

C. Output Signal: 4 to 20 milliamp linearized.

D. Calibration interval: One year.

E. Ambient Operating Conditions: 32 to 122F.

2.2 HUMIDITY SENSORS

A. Space Humidity Sensors: Operating range 10 - 95 percent relative humidity, accuracy plus or minus percent RH, surfaced mounted ventilated enclosure for wall mounting.

B. Humidity sensor's drift not exceed 1 percent of full scale per year.

PART 3 - EXECUTION

3.1 SEQUENCE OF OPERATION
A. SEE SHEET M.51 DETAIL 5 FOR CHILLED BEAM SOO

SECTION 230593 - TESTING, ADJUSTING AND BALANCING
PART 1 - GENERAL
1.1 SUMMARY
A. WORK INCLUDED: MATERIALS, EQUIPMENT AND LABOR REQUIRED FOR TESTING, ADJUSTING, AND BALANCING WORK REQUIRED BY THIS SECTION, INCLUDING AIR DISTRIBUTION SYSTEMS, AND ASSOCIATED EQUIPMENT AND APPARATUS. THE WORK CONSISTS OF SETTING SPEED AND VOLUME (FLOW) ADJUSTMENTS, RECORDING DATA, CONDUCTING TESTS, PREPARING AND SUBMITTING REPORTS, AND RECOMMENDING MODIFICATIONS TO WORK AS REQUIRED.

B. RELATED DOCUMENTS: DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION_1 SPECIFICATION SECTIONS, APPLY TO WORK SPECIFIED IN THIS SECTION.
1.2 QUALITY ASSURANCE
A. CODES AND STANDARDS:
1. NEBB COMPLIANCE: COMPLY WITH NEBB'S "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS" AS APPLICABLE TO MECHANICAL AIR AND HYDRONIC DISTRIBUTION SYSTEMS, AND ASSOCIATED EQUIPMENT AND APPARATUS; OR COMPLY WITH AABC'S MANUAL MN_1, "AABC NATIONAL STANDARDS," AS APPLICABLE TO EQUIPMENT AND APPARATUS.

2. INDUSTRY STANDARDS: COMPLY WITH ASHRAE RECOMMENDATIONS PERTAINING TO MEASUREMENTS, INSTRUMENTS, AND TESTING, ADJUSTING AND BALANCING, EXCEPT AS OTHERWISE INDICATED.

1.3 [QUALIFICATIONS
A. WORK OF THIS SECTION SHALL BE PERFORMED BY A FIRM CERTIFIED BY NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).
B.

WORK OF THIS SECTION SHALL BE DONE UNDER DIRECT SUPERVISION OF A PERSON WHO HAS PASSED WRITTEN AND PRACTICAL NEBB EXAMINATIONS FOR TESTING, ADJUSTING, AND BALANCING OF AIR SYSTEMS.]
PART 2 - PRODUCTS
2.1 TOOLS, EQUIPMENT, INSTRUMENTS
A. CALIBRATE ALL INSTRUMENTS USED FOR BALANCING WITHIN THE NEBB OR AABC REQUIREMENTS USED AND SUBMIT PROOF OF SUCH CALIBRATION TO MECHANICAL ENGINEER IF REQUESTED.
2.2 REPORTS AND RECORDS
A. SUBMIT FIVE COPIES OF COMPLETE BALANCING REPORT ON FORMS SIMILAR IN CONTENT TO STANDARD AABC OR NEBB TEST FORMS. PROVIDE WITH EACH REPORT A COMPLETE SET OF MARKED BALANCING DRAWINGS SHOWING AIR OPENING NUMBERS THAT CORRESPOND TO NUMBERING SYSTEM IN BALANCING LOGS.

PART 3 - EXECUTION
3.1 TESTING PROCEDURES _ AIR SYSTEMS
A. IDENTIFY AND LIST SIZE, TYPE AND MANUFACTURER OF ALL TERMINAL HEAT TRANSFER EQUIPMENT. USE MANUFACTURER'S PUBLISHED RATINGS ON ALL EQUIPMENT TO MAKE REQUIRED CALCULATIONS.

B. TEST, ADJUST AND RECORD FAN RPM TO DELIVER WITHIN PLUS OR MINUS 10 PERCENT OF AIR QUANTITY SPECIFIED. PLUG ALL TEST HOLES.

C. RECORD NAMEPLATE DATA AND ACTUAL RUNNING AMPERES FOR EACH FAN MOTOR.
D. TEST AND RECORD SYSTEM STATIC PRESSURE, SUCTION AND DISCHARGE.
E. TEST, ADJUST AND RECORD EACH REGISTER TO WITHIN 10 PERCENT OF DESIGN REQUIREMENTS. IDENTIFY EACH REGISTER AS MARKED ON BALANCING DRAWINGS.

END OF MECHANICAL SPECIFICATIONS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

CLIENT
Chabot Las-Positas Community College District
5020 Franklin Dr.
Pleasanton, CA 94588

ARCHITECT
Steinberg Architects
60 Pierce Avenue
San Jose, CA 95110

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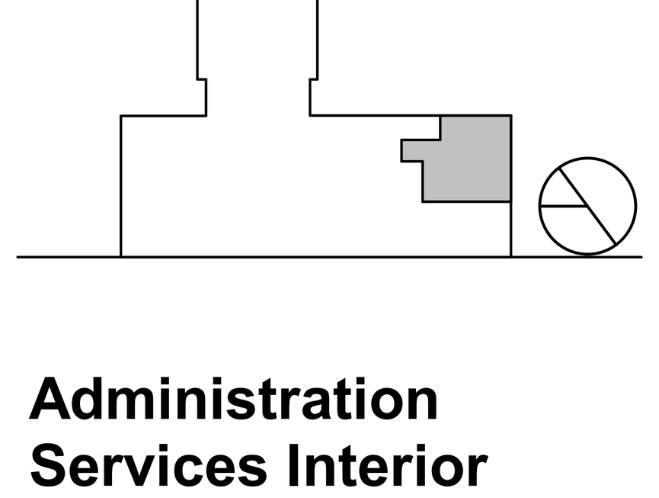
REV	DATE	ISSUE

REGISTERED PROFESSIONAL ENGINEER
JARED F. DOESCHER
No. 35930
MECHANICAL
STATE OF CALIFORNIA



Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

SPECIFICATIONS - MECHANICAL

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: No scale

M.61

ELECTRICAL SYMBOL LIST

NOTE: This is a standard symbol list and not all items listed may be used.

Abbreviations

AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AWG	AMERICAN WIRE GAUGE
A	AMPERES, AMBER
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AVAILABLE INTERRUPTING CAPACITY
BAS	BUILDING AUTOMATION SYSTEM
CA	CABLE
CAT	CATEGORY
CLG	CEILING
C	CONDUIT, CLOSE, CONTROL
COORD	COORDINATE
CU	COPPER
dB	DECIBEL
(X)	DEMOLISH
DTL	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DN	DOWN
DWG	DRAWING
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
EL	ELEVATION
E	EMERGENCY
EF	EXHAUST FAN
(E)	EXISTING
FA	FIRE ALARM
FMC	FLEXIBLE METAL CONDUIT
FT	FOOT, FEET
FBO	FURNISHED BY OTHERS
G, GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GFP	GROUND FAULT PROTECTION
HT	HEIGHT
ID	IDENTIFICATION
IN	INCH, INCHES
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IG	ISOLATED GROUND
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KW	KILOWATT
LED	LIGHT EMITTING DIODE
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LV	LOW VOLTAGE
MOCP	MAXIMUM OVERCURRENT PROTECTION
MIN	MINIMUM
MCA	MINIMUM CIRCUIT AMPS
MISC	MISCELLANEOUS
MCC	MOTOR CONTROL CENTER
MT, MTD	MOUNT, MOUNTED
NEC	NATIONAL ELECTRIC CODE
NESC	NATIONAL ELECTRIC SAFETY CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
N	NEUTRAL
N/A	NOT APPLICABLE
N.I.C.	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
PNL	PANEL
PH	PHASE
PVC	POLY-VINYL-CHLORIDE
PWR	POWER
QTY	QUANTITY
(R)	RELOCATE
RFI	REQUEST FOR INFORMATION
REQD	REQUIRED
RMC	RIGID METAL CONDUIT
RM	ROOM
SHT	SHEET
STD	STANDARD
SPD	SURGE PROTECTION DEVICE
SWBD	SWITCHBOARD
TBD	TO BE DETERMINED
XFMR	TRANSFORMER
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
UON	UNLESS OTHERWISE NOTED
V	VOLTS, VOLTAGE
WP	WEATHERPROOF
W/	WITH
W/O	WITHOUT

Connections / Equipment

CEILING MOUNTED JUNCTION BOX

FLOOR MOUNTED JUNCTION BOX

WALL-MOUNTED JUNCTION BOX

General

X / X — DETAIL NUMBER AND SHEET LOCATION

XX-X / LOCATION — EQUIPMENT IDENTIFICATION

1 — KEYED NOTE

DEMOLISH

EXISTING WORK

NEW WORK

Lighting

EXIT SIGN CEILING MOUNTED, ARROW(S) INDICATES DIRECTION IF SHOWN

EXIT SIGN WALL MOUNTED, ARROW(S) INDICATES DIRECTION IF SHOWN

RECESSED 2' X 2' LUMINAIRE

RECESSED 2' X 2' LUMINAIRE CONNECTED TO EMERGENCY/LIFE SAFETY CIRCUIT OR WITH INTEGRAL EMERGENCY BATTERY CONNECTED TO UNSWITCHED CIRCUIT

RECESSED 2' X 4' LUMINAIRE

RECESSED 2' X 4' LUMINAIRE CONNECTED TO EMERGENCY/LIFE SAFETY CIRCUIT OR WITH INTEGRAL EMERGENCY BATTERY CONNECTED TO UNSWITCHED CIRCUIT

Miscellaneous

#10 / B-27,29,31. — BRANCH CIRCUIT WIRING. ARROW INDICATES HOME RUN TO PANEL WITH CIRCUITS AS NOTED. WIRE SIZE IS #12 AWG MINIMUM UNLESS NOTED OTHERWISE. SHORT TICK MARKS INDICATE PHASE CONDUCTORS. LONG TICK MARKS INDICATE NEUTRAL CONDUCTORS. A SINGLE CURVED TICK MARK INDICATES INSULATED GREEN GROUND CONDUCTOR. SECOND CURVED TICK MARK INDICATES "ISOLATED GROUND" (GREEN INSULATION WITH YELLOW STRIPE) CONDUCTOR.

Raceways

CONDUIT CONCEALED IN WALL OR CEILING SPACE

CONDUIT ROUTED BELOW FLOOR / GRADE

CONDUIT ELLED DOWN

CONDUIT ELLED UP

CONDUIT/WIRING CONTINUATION

CONDUIT/WIRING STUBBED OUT WITH END CAP OR INSULATED PLASTIC BUSHING

FLEXIBLE CONDUIT

Switches and Receptacles

DUPLEX RECEPTACLE (MULTIPLE LETTERS INDICATE MULTIPLE OPTIONS)
A = ABOVE COUNTER
B = CLOCK HANGER
C = FLUSH CEILING MOUNTED
E = EMERGENCY
F = ARC FAULT PROTECTED BY BREAKER IN PANEL
G = GROUND FAULT CIRCUIT INTERRUPTER
H = HOSPITAL GRADE
K = CHILD RESISTANT COVER
L = ISOLATED GROUND
P = PENDANT MOUNTED WITH CORD GRIPS. VERIFY PENDANT LENGTH
R1 = HALF SWITCHED BY OCCUPANCY SENSOR RELAY
R2 = FULLY SWITCHED BY OCCUPANCY SENSOR RELAY
S = SPLIT WIRED
T = TAMPER RESISTANT SHUTTERED RECEPTACLE
U = USB PORT(S)
W = WEATHERPROOF CONTINUOUS USE COVER, GFCI PROTECTED, WITH WEATHER-RESISTANT RECEPTACLE

DOUBLE DUPLEX RECEPTACLE, FLUSH FLOOR

DOUBLE DUPLEX RECEPTACLE. SEE LETTER CODE LIST AT DUPLEX RECEPTACLE FOR OPTIONS

OS — CEILING MOUNTED OCCUPANCY SENSOR
P = PASSIVE INFRARED
D = DUAL TECHNOLOGY
U = ULTRASONIC, 360 DEG RANGE
H = ULTRASONIC, HALLWAY PATTERN
v (LOWERCASE) = VACANCY CONTROL DESIGNATION

OS — WALL MOUNTED OCCUPANCY SENSOR
P = PASSIVE INFRARED
D = DUAL TECHNOLOGY
v (LOWERCASE) = VACANCY CONTROL DESIGNATION

SS — WALL MOUNTED OCCUPANCY SENSOR/SWITCH
S = PASSIVE INFRARED WITH INTEGRAL "OFF" SWITCH
T = DUAL RELAY PASSIVE INFRARED WITH TWO INTEGRAL "OFF" SWITCHES
D = PASSIVE INFRARED WITH INTEGRAL DIMMER TO OFF.
v (LOWERCASE) = VACANCY CONTROL DESIGNATION

PHOTO ELECTRIC SWITCH
D = CONTINUOUS DIMMING PHOTOCELL
S = SWITCHED PHOTOCELL

$ — SINGLE POLE SWITCH
2 = DOUBLE POLE SWITCH
3 = THREE-WAY SWITCH
4 = FOUR-WAY SWITCH
a THRU z (LOWERCASE) = LUMINAIRE CONTROL DESIGNATION
D = DIMMER
F = FAN SPEED CONTROL
K = KEY OPERATED SWITCH
L = LIGHTED HANDLE
M = MANUAL MOTOR STARTER WITH THERMAL OVERLOAD
P = SWITCH WITH PILOT LIGHT
S = SENTRY SWITCH
T = INTERVAL TIMER
W = WEATHERPROOF SWITCH
V = LOW VOLTAGE SWITCH

Telecommunications

RACEWAY ONLY DATA/TELEPHONE OUTLET. PROVIDE DOUBLE GANG BACK BOX AND SINGLE GANG ADAPTER PLATE WITH 1" C. AND PULLSTRING TO ACCESSIBLE CEILING SPACE.
(MULTIPLE LETTERS INDICATE MULTIPLE OPTIONS)
A = ABOVE COUNTER
C = CEILING MOUNTED ABOVE ACCESSIBLE CEILING
F = FLUSH CEILING MOUNTED
R = SURFACE MOUNTED ON RACEWAY

RACEWAY ONLY TELEPHONE OUTLET. PROVIDE DOUBLE GANG BACK BOX AND SINGLE GANG ADAPTER PLATE WITH 3/4" C. AND PULLSTRING TO ACCESSIBLE CEILING SPACE. SEE LETTER CODE LIST AT DATA/TELEPHONE OUTLET FOR OPTIONS.

GENERAL ELECTRICAL NOTES

A. DO NOT COMMENCE INSTALLATION OF ELECTRICAL SYSTEMS AND EQUIPMENT WITHOUT RELATED SHOP DRAWING APPROVALS.

B. ELECTRICAL CIRCUITS SHALL BE INTERRUPTED ONLY WITH PRIOR WRITTEN CONSENT. SUCH INTERRUPTIONS SHALL BE PRECEDED BY ALL POSSIBLE PREPARATIONS BY THE CONTRACTOR WHICH ARE NECESSARY TO KEEP THE ELECTRICAL CIRCUITS OFF FOR A MINIMUM PERIOD IN AN EXPEDITIOUS MANNER PURSUANT WITH GOOD WORKMANSHIP. THIS INCLUDES CIRCUIT TRACING TO IDENTIFY THE ELECTRICAL LOAD BEING SERVED AND THE ORIGIN OF THE CIRCUIT.

C. PROVIDE TEMPORARY SUPPORT FOR ELECTRICAL SYSTEMS THAT REMAIN IN PLACE.

D. PROVIDE BLANK COVER PLATE FOR ABANDONED FLUSH OUTLETS.

E. EXISTING LIGHTING WHICH IS TO REMAIN OR BE RELOCATED IS TO BE RELAMPED, REBALLASTED, AND CLEANED. LEAVE ALL LUMINAIRES IN PROPER WORKING ORDER. REPLACE DAMAGED OR BROKEN LENS AND/OR COMPONENTS.

F. WHERE DRAWINGS INDICATE EXISTING ELECTRICAL EQUIPMENT OR DEVICES TO BE RELOCATED AND/OR REUSED, REFURBISH THEM. THOROUGHLY CLEAN SUCH ITEMS. NOTIFY ARCHITECT OF ANY DEFECTS IN SUCH INSTALLATIONS. REPAIR ANY DAMAGE CAUSED BY DEMOLITION OR CONSTRUCTION PERFORMED UNDER THIS CONTRACT.

G. OFFER REMOVED LUMINAIRES, WIRING DEVICES, PANELBOARDS AND EQUIPMENT TO THE OWNER. IF OWNER CHOOSES TO RETAIN THESE ITEMS, RETURN SUCH ITEMS TO OWNER. CAREFULLY REMOVE AND DISPOSE OF ITEMS REJECTED BY OWNER FROM PROJECT SITE AND IN A LEGAL MANNER.

H. RECONNECT EXISTING LUMINAIRES NOT SHOWN ON DRAWINGS AND AFFECTED DUE TO DEMOLITION TO NEAREST AVAILABLE EXISTING LIGHTING CIRCUIT ABLE TO TAKE THE ADDITIONAL LOAD.

I. PROVIDE SUITABLE ANCHORAGE AND SUPPORT FOR ELECTRICAL EQUIPMENT IN RATED WALLS, SLABS AND CEILINGS. MOUNT DEVICES AND RACEWAYS IN ACCORDANCE WITH ESTABLISHED CODES AND SPECIFICATIONS.

J. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

K. DRAWINGS AND SPECIFICATIONS COMPLEMENT EACH OTHER. REQUIREMENT BY EITHER INFERS REQUIREMENT BY BOTH.

L. CONNECT EQUIPMENT AND DEVICES FURNISHED UNDER OTHER DIVISIONS OF THIS CONTRACT, BY OWNER OR BY OTHER CONTRACTS.

M. UNLESS OTHERWISE NOTED, PROVIDE CONCEALED AND FLUSH MOUNTED INSTALLATION OF DEVICES AND EQUIPMENT IN AREAS.

N. PROVIDE SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN 120 VOLT, MULTI-WIRE CIRCUITS.

O. FOR 120 VOLT, 20 AMP CIRCUITS, WHERE CIRCUIT DISTANCE FROM PANELBOARD TO FARTHEST DEVICE/FIXTURE EXCEEDS 75 FEET, PROVIDE #10 SIZE CONDUCTOR.

P. RUN ELECTRICAL CONDUIT CONCEALED AND PARALLEL TO BUILDING LINES. VERIFY WITH ARCHITECT.

Q. RECEPTACLE OUTLETS SHALL COMPLY WITH CEC SECTIONS 210.7 AND 210.50.

R. LIGHTS, SWITCHES AND CONTROL MECHANISMS SHALL COMPLY WITH CEC SECTION 404.

S. BRACE ELECTRICAL EQUIPMENT TO RESIST A HORIZONTAL FORCE THAT ACT IN ANY DIRECTION. COMPLY WITH TITLE 24 REQUIREMENTS.

T. OCCUPANCY SENSOR NOTES:
   a. WALL SENSORS
      - SENSOR MUST HAVE CLEAR "VIEW" OF OCCUPANTS. WHERE SENSOR WILL BE BLOCKED, SUBSTITUTE WITH SMALL-ROOM CEILING SENSOR.
      - SEE MANUFACTURER'S SPECIFICATION REGARDING PLACING SENSORS AWAY FROM STRONG AIR-FLOW. INDICATE PRECISE LOCATION OF EACH CEILING SENSOR WHERE DRAWINGS INDICATE AIR SUPPLIES.
      - IN INDIVIDUAL ROOMS WITH CEILING SENSORS AND DUAL-LEVEL LIGHTING, ASSUME TWO TOGGLE SWITCH OVERRIDES PER ROOM.
      - PRIOR TO INSTALLATION, RECEIVE FACTORY-TRAINING AND LAYOUT-ASSISTANCE. IF LOCAL AGENT CHANGES LIGHTING DRAWINGS, CONTACT FACTORY REPRESENTATIVE.

DSA COMPONENT ANCHORAGE NOTES

A. ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26, AND ASCE 7-16 CHAPTER 13, 26, AND 30.
   a. ALL PERMANENT EQUIPMENT AND COMPONENTS.
   b. TEMPORARY OR MOVEABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
   c. MOVEABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

B. THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT THE ATTACHMENT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENTS AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.
   a. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
   b. COMPONENTS WEIGHTING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

C. FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENETS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	HOUSING	SHIELDING	MOUNTING	FINISH	DRIVER	LAMP(S)	INPUT WATTS	VOLTAGE	MFG/CATALOG #	NOTES
F1L	RECESSED 2'X4' LED LUMINAIRE	DIE-FORMED 20-GAUGE COLD-ROLLED STEEL	22 GAGUE STEEL PERFORATED SHIELD WITH ACRYLIC LENS INSERT.	RECESSED	WHITE	LED DRIVER, 0-10V, 1% MIN. DIMMING	3000 LUMENS, 3000K, 80 CRI - LED	30 W	277V	FOCAL POING "LUNA" SERIES #FLUL-24-PS-3000L-30K-1C-UNV-L11-G-WH OR APPROVED EQUIVALENT	

NOTES:
1 THIS LUMINAIRE SCHEDULE IS NOT COMPLETE WITHOUT A COPY OF THE PROJECT MANUAL CONTAINING THE ELECTRICAL SPECIFICATIONS.
2 DIMMING CONTROL PROTOCOL (0-10VDC, LINE VOLTAGE, DALI, ETC.) COMPATIBLE WITH LIGHTING CONTROL SYSTEM AS SPECIFIED AND SHOWN ON DRAWINGS.
3 COORDINATE ALL CEILING TYPES WITH LUMINAIRE LOCATIONS PRIOR TO ORDERING LUMINAIRES. COORDINATE INSTALLATION WITH REFLECTED CEILING PLAN.
4 SPECIFIED MANUFACTURERS ARE APPROVED TO SUBMIT BID. INCLUSION DOES NOT RELIEVE MANUFACTURER FROM SUPPLYING PRODUCT AS DESCRIBED.
5 PROVIDE SUBMITTALS THAT INCLUDE THE LUMINAIRE, LAMP AND DRIVER INFORMATION OF EACH LUMINAIRE, WITH APPLICABLE OPTIONS CLEARLY CHECKED OR HIGHLIGHTED. SUBMITTALS NOT INCLUDING THIS INFORMATION WILL BE RETURNED AS REJECTED BY THE ENGINEER OF RECORD.
6 PROVIDE +/- 12 INCH ADJUSTABILITY IN AIRCRAFT CABLE LENGTH WHERE USED.
7 REMOTE DRIVERS: UL LISTED FOR THEIR APPLICATION. DRIVERS MARKED AS UL RECOGNIZED COMPONENT BUT NOT UL LISTED ARE SUBJECT TO REMOVAL AND REPLACEMENT AT NO COST TO OWNER.
8 PROVIDE COMMISSIONING OF THE LIGHTING AND LIGHTING CONTROLS IN ACCORDANCE WITH CALIFORNIA TITLE 24 LIGHTING COMMISSIONING REQUIREMENTS.

SHEET INDEX

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

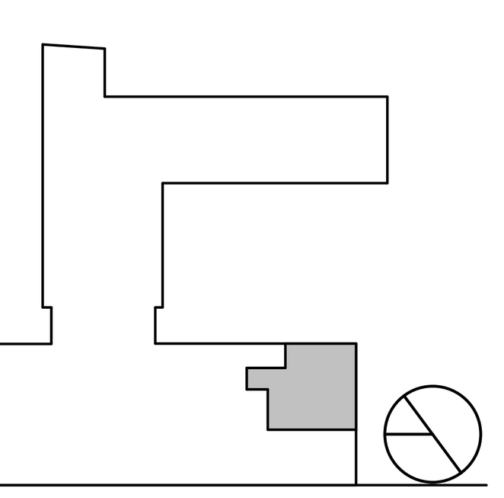
CLIENT
Chabot Las-Positas Community College District
5020 Franklin Dr.
Pleasanton, CA 94588

ARCHITECT
Steinberg Architects
60 Pierce Avenue
San Jose, CA 95110

INTERFACE ENGINEERING
PROJECT 2020-0137
CONTACT Robby Hubilla
135 Main Street, Suite 400
San Francisco, CA 94105
TEL 415.489.7240
www.interfaceengineering.com

REV DATE ISSUE

REGISTERED PROFESSIONAL ENGINEER
JASON LAU
No. E16806
ELECTRICAL
STATE OF CALIFORNIA



Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

SYMBOL LIST, GENERAL NOTES, AND LUMINAIRE SCHEDULE - ELECTRICAL

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: NO SCALE

E0.01

STATE OF CALIFORNIA
Indoor Lighting
NRCC-LTI-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name:	LPC Student Services and Administration Bldg	Report Page: (Page 1 of 7)
Project Address:	3000 Campus Hill Drive	Date Prepared: 4/3/2020

This document is used to demonstrate compliance with requirements in §110.9, §110.12(c), §130.0, §130.1, §140.6 and §141.0(b)2 for indoor lighting scopes using the prescriptive path.

A. GENERAL INFORMATION

01	Project Location (city)	Livermore	04	Total Conditioned Floor Area (ft²)	575
02	Climate Zone	12	05	Total Unconditioned Floor Area (ft²)	0
03	Occupancy Types Within Project (select all that apply):		06	# of Stories (Habitable Above Grade)	1

☒ Office ☐ Retail ☐ Warehouse ☐ Hotel/Motel ☐ School ☐ Support Areas
☐ Parking Garage ☐ High-Rise Residential ☐ Relocatable ☐ Healthcare ☐ Other (Write in) See Table I

B. PROJECT SCOPE

This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.6 or §141.0(b)2 for alterations.

Scope of Work	Conditioned Spaces		Unconditioned Spaces	
01	02	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	Area (ft²)
☐ New Lighting System				
☐ New Lighting System - Parking Garage				
☒ Altered Lighting System	Area Category Method	575	Area Category Method	0
Total Area of Work (ft²)	575		0	

Registration Number: — Registration Date/Time: — Registration Provider: Energysoft
CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance — Report Version: 2019.0.001 Schema Version: rev 20190401 — Report Generated: 2020-04-03 16:30:31

STATE OF CALIFORNIA
Indoor Lighting
NRCC-LTI-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name:	LPC Student Services and Administration Bldg	Report Page: (Page 2 of 7)
Project Address:	3000 Campus Hill Drive	Date Prepared: 4/3/2020

C. COMPLIANCE RESULTS

If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

Lighting in conditioned and unconditioned spaces must not be combined for compliance per §140.6(b)1	Allowed Lighting Power per §140.6(b) (Watts)						Adjusted Lighting Power per §140.6(a) (Watts)				Compliance Results
	01	02	03	04		05	06	07		08	09
	Complete Building §140.6(c)1 (See Table I)	Area Category §140.6(c)2 (See Table I)	Area Category Additional §140.6(c)2G (+) (See Table J)	Tailored §140.6(c)3 (+) (See Table K)	=	**Total Allowed** (Watts)	Total Designed (Watts) (See Table F)	Adjustments PAF Lighting Control Credits §140.6(a)2 (-) (See Table P)	=	**Total Adjusted** (Watts) *Includes Adjustments	**05 must be >= 08 §140.6**
Conditioned		388.4	0		=	388.4	≥ 270	0	=	270	COMPLIES
Unconditioned					=		≥		=		
Controls Compliance (See Table H for Details)											COMPLIES
Rated Power Reduction Compliance (See Table Q for Details)											

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. INDOOR LIGHTING FIXTURE SCHEDULE

This table includes all permanent designed lighting and all portable lighting in offices.

Designed Wattage: Conditioned Spaces

01	02	03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description	Modular (Track) Fixture	Small Aperture & Color Change[1]	Watts per luminaire[2]	How is Wattage determined	Total Number of Luminaires	Excluded per §140.6(a)3	Design Watts	Field Inspector	
									Pass	Fail
F1L	F1L	No	No	30	Mfr. Spec	9	No	270	☐	☐
Total Designed Watts: CONDITIONED SPACES								270		

Registration Number: — Registration Date/Time: — Registration Provider: Energysoft
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STATE OF CALIFORNIA
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NRCC-LTI-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name:	LPC Student Services and Administration Bldg	Report Page: (Page 3 of 7)
Project Address:	3000 Campus Hill Drive	Date Prepared: 4/3/2020

F. INDOOR LIGHTING FIXTURE SCHEDULE

[1]FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per §140.6(a)4B is adjusted to be 75% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column 05.

[2]Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per §130.0(c) Wattage used must be the maximum rated for the luminaire, not the lamp.

G. MODULAR LIGHTING SYSTEMS

This section does not apply to this project.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

*This table includes lighting controls for conditioned and unconditioned spaces. When a control having a * is shown, the notes section of this table provides more detail on how compliance is achieved. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank.*

Building Level Controls

01	02	03	
Mandatory Demand Response §110.12(c)	Shut-off controls §130.1(c)	Field Inspector	
		Pass	Fail
Not Required <= 10,000 SF	Whole Building Other	☐	☐

Area Level Controls

04	05	06	07	08	09	10	11	12	
Area Description	Complete Building or Area Category Primary Function Area	Area Controls §130.1(a)	Multi-Level Controls §130.1(b)	Shut-Off Controls §130.1(c)	Primary/Skylit Daylighting §130.1(d)	Secondary Daylighting §140.6(d)	Interlocked Systems §140.6(a)1	Field Inspector	
								Pass	Fail
Office Over 250 SF	All Other Space Types	Manual ON/OFF	Dimmer	Occupancy Sensor	N/A	N/A	No	☐	☐
Office Under 250 SF	All Other Space Types	Manual ON/OFF	Dimmer	Occupancy Sensor	N/A	N/A	No	☐	☐
Storage Room	All Other Space Types	Manual ON/OFF	Exempt*	Occupancy Sensor	N/A	N/A	No	☐	☐

Registration Number: — Registration Date/Time: — Registration Provider: Energysoft
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STATE OF CALIFORNIA
Indoor Lighting
NRCC-LTI-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name:	LPC Student Services and Administration Bldg	Report Page: (Page 4 of 7)
Project Address:	3000 Campus Hill Drive	Date Prepared: 4/3/2020

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

*NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.*
EX: Conference 1: Primary/Skylight Daylighting: Exempt because less than 120 watts of general lighting; EXCEPTION 1 to §130.1(d)2

		13
Storage Room	Less than 100 sqft	Plan Sheet Showing Daylit Zones:

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Each area complying using the Complete Building or Area Category Methods per §140.6(b) are included in this table. Column 06 indicates if additional lighting power allowances per §140.6(c) or adjustments per §140.6(a) are being used .

Conditioned Spaces

01	02	03	04	05	06	
Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft²)	Area (ft²)	Allowed Wattage (Watts)	Additional Allowance / Adjustment	
					Area Category	PAF
Office >= 250 sqft	Office greater than 250 square feet	0.65	282	183.3	No	No
Office <= 250 sqft	Office 250 square feet or less	0.7	239	167.3	No	No
Storage	Office 250 square feet or less	0.7	54	37.8	No	No
		TOTALS:	575	388.4	See Tables J, or P for detail	

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM

This section does not apply to this project.

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE

This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY

This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING

This section does not apply to this project.

Registration Number: — Registration Date/Time: — Registration Provider: Energysoft
CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance — Report Version: 2019.0.001 Schema Version: rev 20190401 — Report Generated: 2020-04-03 16:30:31

STATE OF CALIFORNIA
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NRCC-LTI-E — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name:	LPC Student Services and Administration Bldg	Report Page: (Page 5 of 7)
Project Address:	3000 Campus Hill Drive	Date Prepared: 4/3/2020

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED ORNAMENTAL/SPECIAL EFFECTS

This section does not apply to this project.

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE

This section does not apply to this project.

P.POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))

This section does not apply to this project.

Q. RATED POWER REDUCTION COMPLIANCE FOR ALTERATIONS

This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALLALTERATIONS - CONTROLS EXCEPTIONS

This section does not apply to this project.

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)

This section does not apply to this project.

Registration Number: — Registration Date/Time: — Registration Provider: Energysoft
CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance — Report Version: 2019.0.001 Schema Version: rev 20190401 — Report Generated: 2020-04-03 16:30:31

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name:	LPC Student Services and Administration Bldg	Report Page: (Page 6 of 7)
Project Address:	3000 Campus Hill Drive	Date Prepared: 4/3/2020

T. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

Yes	No	Form/Title	Field Inspector	
			Pass	Fail
●	○	NRCI-LTI-01-E - Must be submitted for all buildings	☐	☐
●	○	NRCI-LTI-02-E- Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance.	☐	☐
○	●	NRCI-LTI-04-E - Must be submitted for two interlocked systems serving an auditorium, a convention center, a conference room, a multipurpose room or a theater to be recognized for compliance.	☐	☐
○	●	NRCI-LTI-05-E- Must be submitted for a Power Adjustment Factor (PAF) to be recognized for compliance.	☐	☐
○	●	NRCI-LTI-06-E- Must be submitted for additional wattage installed in a video conferencing studio to be recognized for compliance.	☐	☐

U. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selection have been changed by the permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and any with "-A" in the form name must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Yes	No	Form/Title	Field Inspector	
			Pass	Fail
●	○	NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	☐	☐
○	●	NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	☐	☐
○	●	NRCA-LTI-04-A - Must be submitted for demand responsive lighting controls.	☐	☐
○	●	NRCA-LTI-05-A. - Must be submitted for institutional tuning power adjustment factor (PAF)	☐	☐

Registration Number: — Registration Date/Time: — Registration Provider: Energysoft
CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance — Report Version: 2019.0.001 Schema Version: rev 20190401 — Report Generated: 2020-04-03 16:30:31

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name:	LPC Student Services and Administration Bldg	Report Page: (Page 7 of 7)
Project Address:	3000 Campus Hill Drive	Date Prepared: 4/3/2020

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Jason Lau	Documentation Author Signature:
Company: Interface Engineering	Signature Date: 2020-04-03
Address: 135 Main Street Suite 400	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: San Francisco CA 94105	Phone: 415897240

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Jason Lau	Responsible Designer Signature:
Company: Interface Engineering	Date Signed: 2020-04-03
Address: 135 Main Street Suite 400	License: E16806
City/State/Zip: San Francisco CA 94105	Phone: 415897240

Registration Number: — Registration Date/Time: — Registration Provider: Energysoft
CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance — Report Version: 2019.0.001 Schema Version: rev 20190401 — Report Generated: 2020-04-03 16:30:31

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5020 Franklin Dr.
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ARCHITECT
Steinberg Architects
60 Pierce Avenue
San Jose, CA 95110

INTERFACE ENGINEERING
PROJECT 2020-0137
CONTACT Robby Hubilla
135 Main Street, Suite 400
San Francisco, CA 94105
TEL 415.489.7240
www.interfaceengineering.com

REV | DATE | ISSUE

REGISTERED PROFESSIONAL ENGINEER JASON LAU No. E16806 ELECTRICAL STATE OF CALIFORNIA

Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

TITLE 24 COMPLIANCE FORMS - ELECTRICAL

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE:

E0.02

GENERAL SHEET NOTES

A. DEMOLITION OF LUMINAIRES, LIGHTING CONTROLS, AND ELECTRICAL DEVICES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO COMMENCEMENT.

B. EXISTING LIGHTING BRANCH CIRCUITS TO BE DISCONNECTED AND REMOVED UP TO CEILING JUNCTION BOX FOR RE-USE. SEE NEW PLAN FOR NEW WORK.

C. EXISTING LUMINAIRES AND LIGHTING CONTROLS NOT SHOWN AND OUT OF PROJECT BOUNDARY ARE TO REMAIN OPERATIONAL UNLESS OTHERWISE NOTED.

D. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF LUMINARIES AND LIGHTING CONTROLS WITH ARCHITECT PRIOR TO INSTALLATION.

E. CIRCUIT NUMBERS SHOWN ARE BASED ON RECORD DRAWINGS. FIELD VERIFY IF CIRCUITS ARE AVAILABLE AND HAVE ADEQUATE CAPACITY FOR LOADS BEING ADDED PRIOR TO COMMENCEMENT OF WORK.

SHEET KEYNOTES

1. INTERCEPT AND EXTEND EXISTING CIRCUIT 'LPH-LIGHT B2-9.' FROM JUNCTION BOXES LEFT IN PLACE DURING DEMOLITION PHASE TO NEW LUMINAIRES AND ASSOCIATED LIGHTING CONTROLS.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

CLIENT
Chabot Las-Positas Community College District
5020 Franklin Dr.
Pleasanton, CA 94588

ARCHITECT
Steinberg Architects
60 Pierce Avenue
San Jose, CA 95110

INTERFACE ENGINEERING
PROJECT 2020-0137
CONTACT Robby Hubilla
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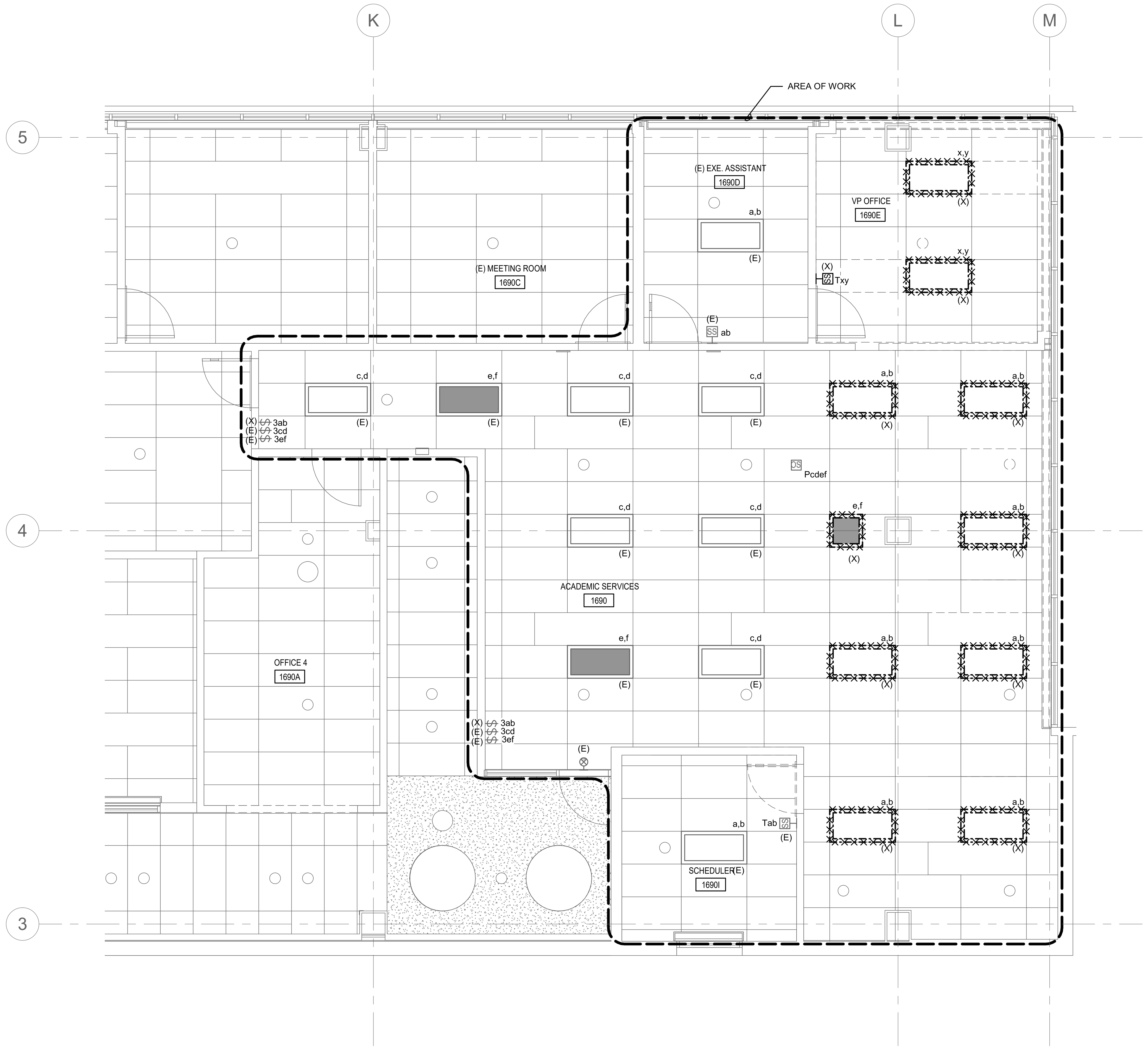
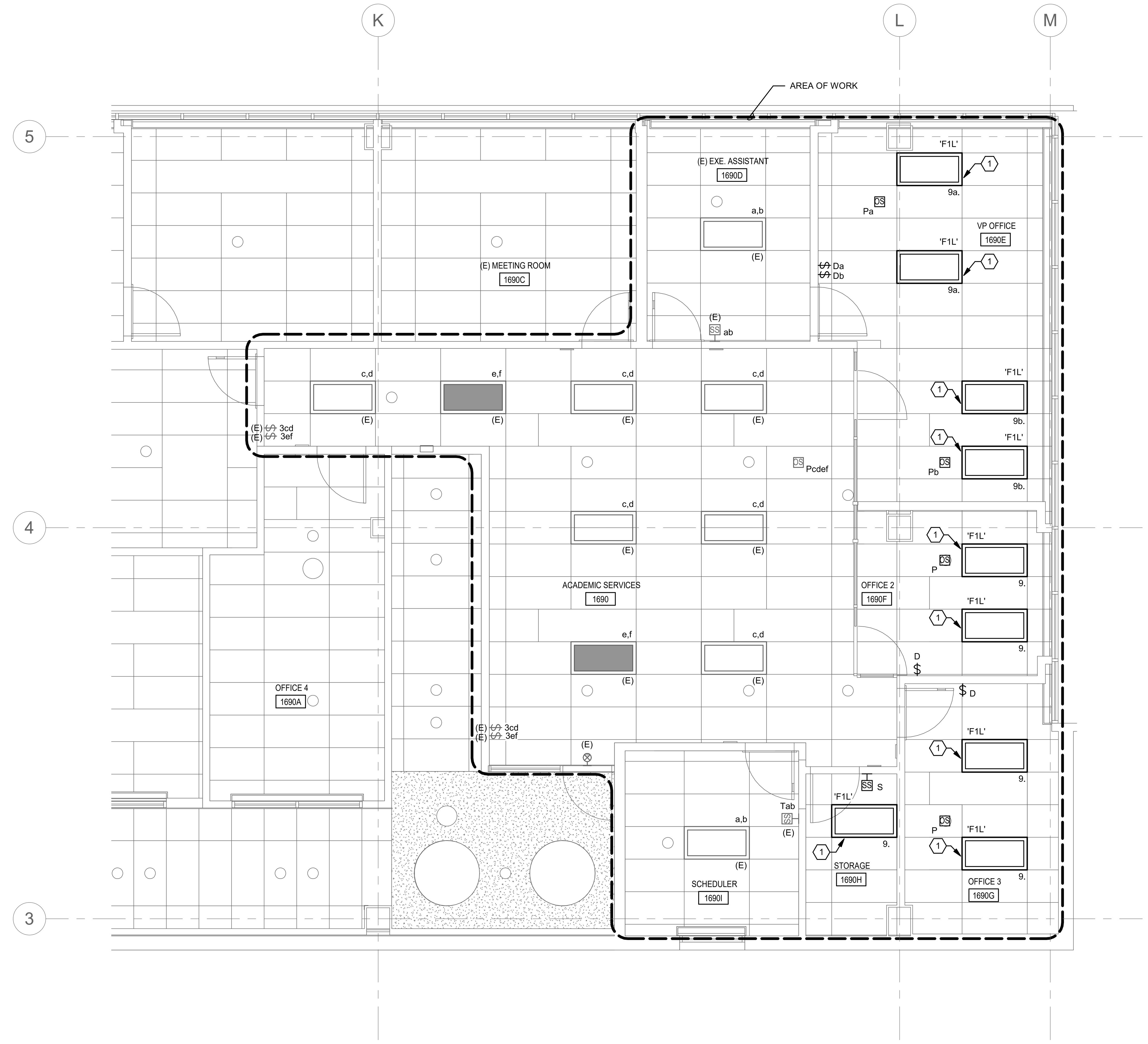


1 LEVEL 2 ADMIN SUITE TI DEMO PLAN - LIGHTING

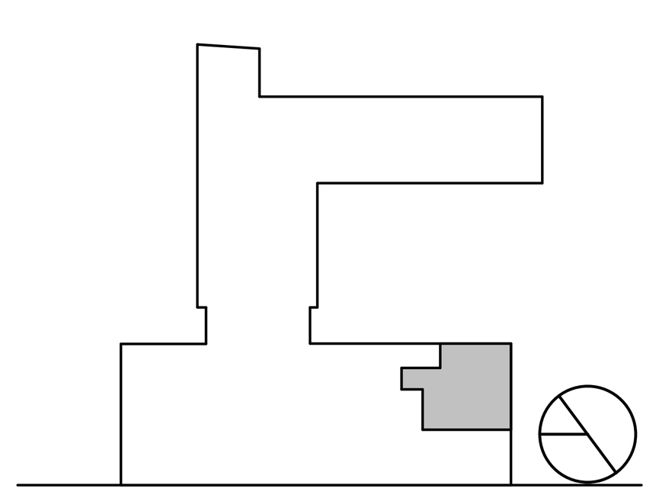
1/4" = 1'-0"



2 LEVEL 2 ADMIN SUITE TI PLAN - LIGHTING

1/4" = 1'-0"

REV DATE ISSUE



Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

ENLARGED FLOOR PLAN - LIGHTING

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: 1/4" = 1'-0"

E2.01

GENERAL SHEET NOTES

A. DEMOLITION OF RECEPTACLES, ELECTRICAL DEVICES, AND HVAC UNITS SHALL BE COORDINATED WITH ARCHITECT PRIOR TO COMMENCEMENT.

B. DEMOLISHED POWER BRANCH CIRCUITS TO BE DISCONNECTED AND REMOVED UP TO CEILING JUNCTION BOX FOR RE-USE. SEE NEW PLANS FOR NEW WORK.

C. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF RECEPTACLES AND ELECTRICAL DEVICES WITH ARCHITECT PRIOR TO INSTALLATION.

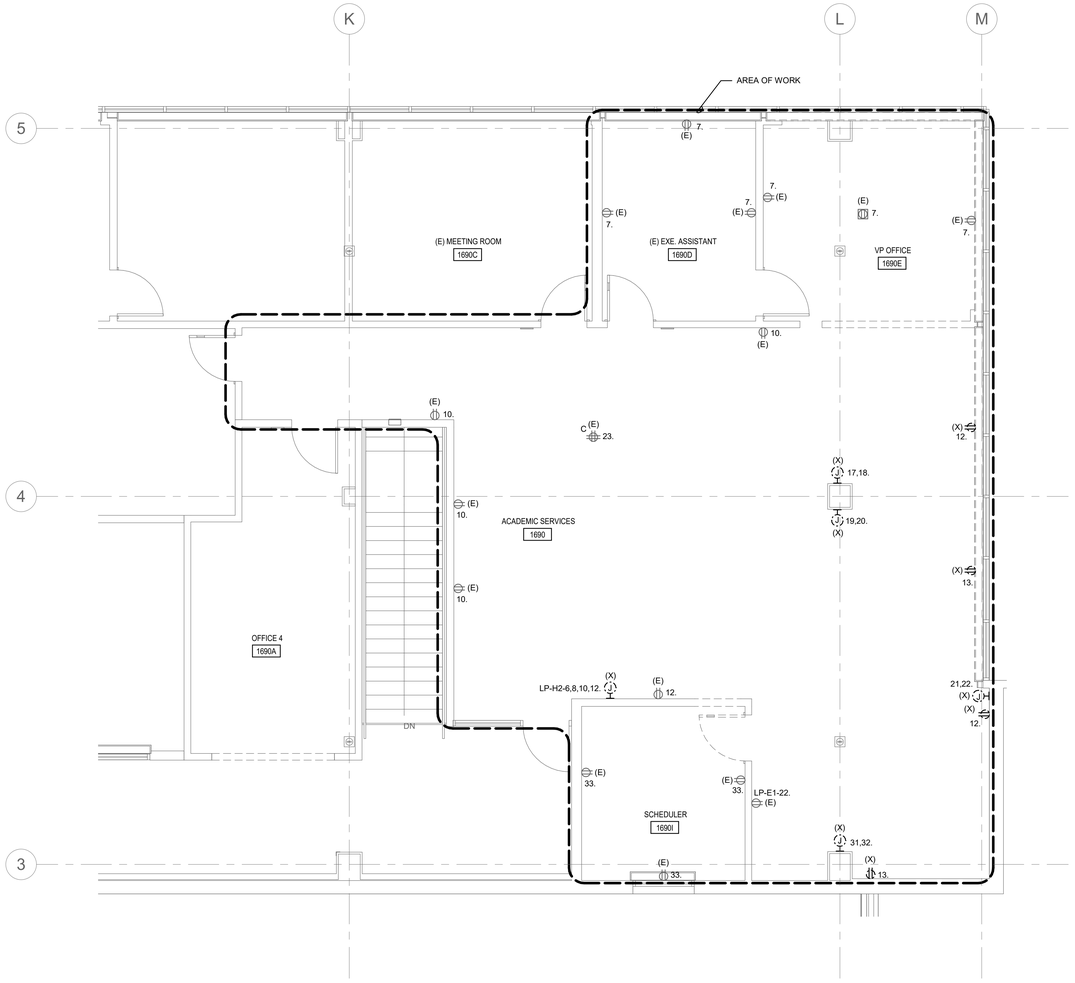
D. CIRCUIT NUMBERS SHOWN ARE BASED ON RECORD DRAWINGS. FIELD VERIFY IF CIRCUITS ARE AVAILABLE AND HAVE ADEQUATE CAPACITY FOR LOADS BEING ADDED PRIOR TO COMMENCEMENT OF WORK.

E. ALL CIRCUITS SHOWN ARE CONNECTED TO PANEL 'LP-F2' UNLESS OTHERWISE NOTED.

SHEET KEYNOTES

1. INTERCEPT AND EXTEND EXISTING CIRCUIT FROM JUNCTION BOXES LEFT IN PLACE DURING DEMOLITION PHASE TO NEW RECEPTACLES AS SHOWN.

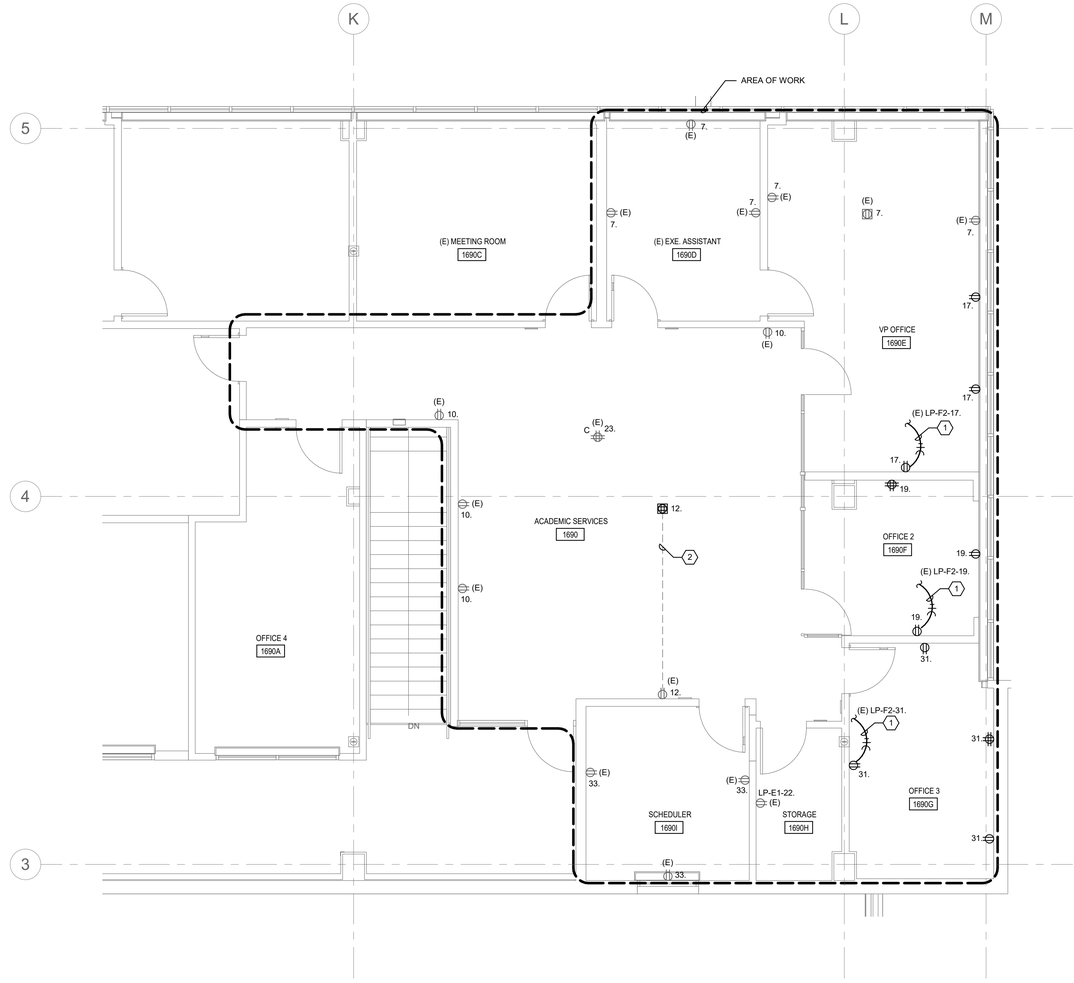
2. CONNECT NEW FLUSH FLOOR RECEPTACLE TO EXISTING RECEPTACLE CIRCUIT COMPLETE AS REQUIRED TO PLACE INTO SERVICE.



1 LEVEL 2 ADMIN SUITE TI DEMO PLAN - POWER

0' 2' 4' 8'

1/4" = 1'-0"



2 LEVEL 2 ADMIN SUITE TI PLAN - POWER

0' 2' 4' 8'

1/4" = 1'-0"

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REV DATE ISSUE

REGISTERED PROFESSIONAL ENGINEER
JASON LADD
No. E16906
ELECTRICAL
STATE OF CALIFORNIA

Administration Services Interior Improvements

Las Positas College

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ENLARGED FLOOR PLAN - POWER

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: 1/4" = 1'-0"

E3.01

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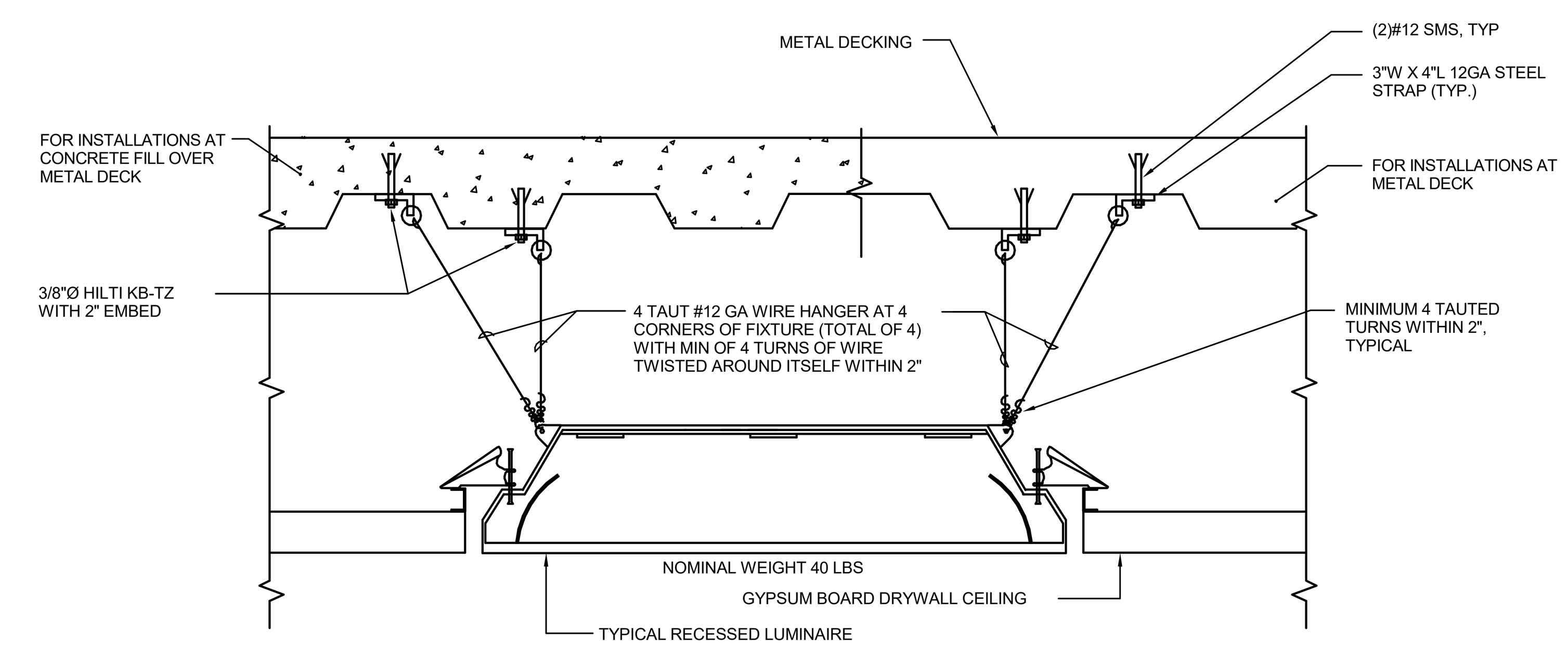
⬡ SHEET KEYNOTES

1. LOADS SHOWN ARE FOR NEW LOADS ONLY.



1 LUMINAIRE HANGING DETAIL

NO SCALE

(E) PANELBOARD: LP-F2

MAIN CIRCUIT BREAKER: 125 A
BUS AMPACITY: 125 A
EQUIPMENT RATING: 120/208 V, 3PH, 4 WIRE
AIC RATING:

MOUNTING: RECESSED
ENCLOSURE: TYPE 1
LOCATION:
SUPPLIED FROM:

Accessories:

					Load (VA)											
CKT	Description/Location	Type	C.B.	Pole	Note	A	B	C	A	B	C	Note	Pole	C.B.	Type	Description/Location	CKT
1	(E) LOAD	--	20 A	1		0			0				1	20 A	--	(E) LOAD	2
3	(E) LOAD	--	20 A	1			0			0			1	20 A	--	(E) LOAD	4
5	(E) LOAD	--	20 A	1				0			0		1	20 A	--	(E) LOAD	6
7	(E) LOAD	--	20 A	1		0			0				1	20 A	--	(E) LOAD	8
9	(E) LOAD	--	20 A	1			0			0			1	20 A	--	(E) LOAD	10
11	(E) LOAD	--	20 A	1				0			540		1	20 A	R	RECEPTACLES RM 290	12
13	(E) LOAD	--	20 A	1		0			0				1	20 A	--	(E) LOAD	14
15	(E) LOAD	--	20 A	1			0			0			1	20 A	--	(E) LOAD	16
17	RECEPTACLES RM 290E	R	20 A	1				540			0		1	20 A	--	(E) LOAD	18
19	RECEPTACLES RM 290F	R	20 A	1		540			0				1	20 A	--	(E) LOAD	20
21	(E) LOAD	--	20 A	1			0			0			1	20 A	--	(E) LOAD	22
23	(E) LOAD	--	20 A	1				0			0		1	20 A	--	(E) LOAD	24
25	(E) LOAD	--	20 A	1		0			0				1	20 A	--	(E) LOAD	26
27	(E) LOAD	--	20 A	1			0			0			1	20 A	--	(E) LOAD	28
29	(E) LOAD	--	20 A	1				0			0		1	20 A	--	(E) LOAD	30
31	RECEPTACLES RM 290G	R	20 A	1		720			0				1	20 A	--	(E) LOAD	32
33	(E) LOAD	--	20 A	1			0			0			1	20 A	--	(E) LOAD	34
35	(E) LOAD	--	20 A	1				0			0		1	20 A	--	(E) LOAD	36
37	(E) LOAD	--	20 A	1		0			0				1	20 A	--	(E) LOAD	38
39	(E) LOAD	--	20 A	1			0			0			1	20 A	--	(E) LOAD	40
41	(E) LOAD	--	20 A	1				0			0		1	20 A	--	(E) LOAD	42

Total Connected load Ph. A: 12 A
Total Connected load Ph. B: 0 A
Total Connected load Ph. C: 10 A

Panel Connected Load: 2.3 kVA — 6.5 A
Total Demand Load: 2.3 kVA — 6.5 A ⬡1

Notes:

Load Type Definitions:

Motor (125% largest Motor + 100% remaining...
R = Receptacles (to 10kVA100%, over 10 kVA 50%)
E = Existing Load 30-day metered (125%)
K = Kitchen (Demand as per NEC Table 220.56)
G = General Load (Non-continuous) (100%)
EL = Elevator (Demand as per NEC Table...
C = Continuous Load (125%)
L = Lighting (125%)
W = Water Heater (125%)
X = X-Rays (Demand per NEC 660.6)
H = Heating (100%)

Load Type	Connected Load	NEC Demand Factor	NEC Demand Load	Panel Totals	
R	2340.0	100.00%	2340.0	**Total Connected Load:**	2340.0 VA
				Total NEC Demand:	2340.0 VA
				Total Connected Current:	6.5 A
				Total NEC Demand Current:	6.5 A

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steinberg hart

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REGISTERED PROFESSIONAL ENGINEER
JASON LAU
No. E16806
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Administration Services Interior Improvements

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DSA File #: 1-C2
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DETAILS AND SCHEDULES - ELECTRICAL

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: NO SCALE

E4.01

SECTION 260000 - ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. ELECTRICAL SYSTEMS REQUIRED FOR THIS WORK INCLUDES LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY TO COMPLETE INSTALLATION OF ELECTRICAL WORK SHOWN ON DRAWINGS, SPECIFIED HEREIN OR REQUIRED FOR A COMPLETE OPERABLE FACILITY AND NOT SPECIFICALLY DESCRIBED IN OTHER SECTIONS OF THESE SPECIFICATIONS. AMONG THE ITEMS REQUIRED ARE:
1. BRANCH CIRCUIT WIRING FROM THE DISTRIBUTION PANELS FOR LIGHTING, RECEPTACLES, MOTORS, SIGNAL SYSTEMS AND OTHER DETAILED CIRCUIT WIRING.
2. LUMINAIRES, CONTROL SWITCHES, RECEPTACLES, RELAYS, SUPPORTS AND OTHER ACCESSORY ITEMS.

B. FEES:
1. PAY FEES LEVIED BY SERVING ELECTRIC UTILITY TO PROVIDE SERVICE TO THIS PROJECT.
2. OBTAIN FEES FROM SERVING ELECTRIC UTILITY PRIOR TO SUBMITTING A BID.
3. OBTAIN AND PAY FOR ELECTRICAL PERMITS, PLAN REVIEW, AND INSPECTIONS FROM LOCAL AUTHORITY HAVING JURISDICTION (AHJ).

1.2 DEFINITIONS

A. FOLLOWING IS A LIST OF ABBREVIATIONS GENERALLY USED IN THIS DIVISION:
1. ADA AMERICANS WITH DISABILITIES ACT.
2. AHJ AUTHORITY HAVING JURISDICTION.
3. CBC CALIFORNIA BUILDING CODE.
4. CEC CALIFORNIA ELECTRICAL CODE.
5. CFC CALIFORNIA FIRE CODE.
6. CEC T24 CALIFORNIA ENERGY CODE TITLE 24.
7. HVAC HEATING, VENTILATING AND AIR CONDITIONING.
8. IEEE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS.
9. IES ILLUMINATING ENGINEERING SOCIETY
10. NEMA NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION.
11. NFPA NATIONAL FIRE PROTECTION ASSOCIATION.
12. OSHA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.
13. UL UNDERWRITERS LABORATORIES INC.
14. USGBC UNITED STATES GREEN BUILDING COUNCIL

B. PROVIDE: TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.

C. FURNISH: SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNPACKING, ASSEMBLY AND INSTALLATION.

D. INSTALL: INCLUDES UNLOADING, UNPACKING, ASSEMBLING, ERECTING, INSTALLATION, APPLYING, FINISHING, PROTECTING, CLEANING AND SIMILAR OPERATIONS AT THE PROJECT SITE AS REQUIRED TO COMPLETE ITEMS OF WORK FURNISHED BY OTHERS.

1.3 SUBMITTALS

A. OPERATION AND MAINTENANCE DOCUMENTATION: PROVIDE COPIES OF CERTIFICATES OF CODE AUTHORITY ACCEPTANCE, TEST DATA, PRODUCT DATA, GUARANTEES, WARRANTIES, AND THE LIKE.

B. SUBMITTALS/SHOP DRAWINGS: PROVIDE PRODUCT SUBMITTALS AND SHOP DRAWINGS WHICH INCLUDE PHYSICAL CHARACTERISTICS, ELECTRICAL CHARACTERISTICS, DEVICE LAYOUT PLANS, WIRING DIAGRAMS, AND THE LIKE. PROVIDE PRODUCT SUBMITTALS AND SHOP DRAWINGS IN EITHER PAPER FORMAT OR ELECTRONIC FORMAT. ELECTRONIC FORMAT MUST BE SUBMITTED VIA EMAIL OR FTP SITE. FOR PAPER HARDCOPY, PROVIDE ONE COMPLETE BINDER WITH TABBED DIVIDERS CONTAINING A SEPARATE SUBMITTAL FOR EACH SPECIFICATIONS SECTION. FOR ELECTRONIC FORMAT, PROVIDE ONE ZIP FILE PER SPECIFICATION DIVISION CONTAINING A SEPARATE FILE FOR EACH SPECIFICATIONS SECTION. INDIVIDUAL SUBMITTALS SENT PIECEMEAL IN A PER SPECIFICATION SECTION METHOD WILL BE RETURNED WITHOUT REVIEW OR COMMENT. COPY ARCHITECT ON ALL SUBMISSIONS.
1. IDENTIFY EACH SUBMITTAL AND SHOP DRAWING IN DETAIL. NOTE WHAT DIFFERENCES, IF ANY, EXIST BETWEEN THE SUBMITTED ITEM AND THE SPECIFIED ITEM. FAILURE TO IDENTIFY THE DIFFERENCES WILL BE CONSIDERED CAUSE FOR DISAPPROVAL. IF DIFFERENCES ARE NOT IDENTIFIED AND/OR NOT DISCOVERED DURING THE SUBMITTAL REVIEW PROCESS, CONTRACTOR REMAINS RESPONSIBLE FOR PROVIDING EQUIPMENT AND MATERIALS THAT MEET THE SPECIFICATIONS AND DRAWINGS.
2. PROVIDE THE FOLLOWING INFORMATION FOR LIGHTING SUBMITTALS: INCLUDE ELECTRICAL RATINGS, DIMENSIONS, MOUNTING, MATERIAL, REQUIRED CLEARANCES, TERMINATIONS, WIRING AND CONNECTION DIAGRAMS, PHOTOMETRIC DATA, DIFFUSERS, LOUVERS, BALLAST TYPE AND QUANTITIES, LAMP TYPE AND QUANTITIES.
3. MAXIMUM OF TWO REVIEWS OF COMPLETE SUBMITTAL PACKAGE. ARRANGE FOR ADDITIONAL REVIEWS AND/OR EARLY REVIEW OF LONG-LEAD ITEMS; BEAR COSTS OF THESE ADDITIONAL REVIEWS AT ENGINEER'S HOURLY RATES. INCOMPLETE SUBMITTAL PACKAGES/SUBMITTALS WILL BE RETURNED TO CONTRACTOR WITHOUT REVIEW.

C. RECORD DRAWINGS: SHOW CHANGES AND DEVIATIONS FROM THE DRAWINGS. INCLUDE WRITTEN ADDENDUM AND CHANGE ORDER ITEMS. MAKE CHANGES TO DRAWINGS IN ELECTRONIC FORMAT. OBTAIN ELECTRONIC COPY FROM ARCHITECT, USE THE SAME VERSION OF AUTOCAD TO PREPARE RECORD DRAWINGS AS WAS USED BY THE ARCHITECT. PROVIDE ELECTRONIC COPY AND HARD COPY TO ARCHITECT FOR REVIEW.

1.4 QUALITY ASSURANCE

A. CONFORM TO THE LATEST ADOPTED VERSION OF THE CALIFORNIA ELECTRIC CODE (CEC), WITH LOCAL AMENDMENTS.

B. FURNISH PRODUCTS LISTED BY UNDERWRITERS LABORATORIES INC. (UL) OR OTHER TESTING FIRM ACCEPTABLE TO AHJ.

C. USE MANUFACTURER'S PUBLISHED TESTING AND ADJUSTING PROCEDURES TO ADJUST SENSORS' TIME DELAY, DAYLIGHT SENSITIVITY, AND PASSIVE INFRARED SENSITIVITY TO SATISFACTION OF THE OWNER.

D. REGULATORY REQUIREMENTS:
1. PROVIDE LUMINAIRES ACCEPTABLE TO CODE AUTHORITY FOR APPLICATION AND LOCATION AS INDICATED.
2. COMPLY WITH APPLICABLE ANSI STANDARDS.
3. COMPLY WITH APPLICABLE NEMA STANDARDS.
4. PROVIDE LUMINAIRES AND LAMPHOLDERS THAT COMPLY WITH UL STANDARDS AND HAVE BEEN LISTED AND LABELED FOR LOCATION AND USE INDICATED BY A TESTING AGENCY ACCEPTABLE BY THE AHJ (E.G. UL, ETL, AND THE LIKE).
5. COMPLY WITH CEC AS APPLICABLE TO INSTALLATION AND CONSTRUCTION OF LUMINAIRES.
6. COMPLY WITH FALLOUT AND RETENTION REQUIREMENTS OF CBC FOR DIFFUSERS, BAFFLES, AND LOUVERS.

1.5 SEQUENCING AND SCHEDULING

A. FOR THE PROPER EXECUTION OF THE WORK, COOPERATE WITH OTHER CRAFTS AND CONTRACTS AS NEEDED.

B. TO AVOID INSTALLATION CONFLICTS, THOROUGHLY EXAMINE THE COMPLETE SET OF CONTRACT DOCUMENTS. RESOLVE CONFLICTS PRIOR TO INSTALLATION.

C. PRIOR TO INSTALLATION OF FEEDERS TO EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS, EXAMINE THE MANUFACTURER'S SHOP DRAWINGS, WIRING DIAGRAMS, PRODUCT DATA, AND INSTALLATION INSTRUCTIONS. VERIFY THAT THE ELECTRICAL CHARACTERISTICS DETAILED IN THE CONTRACT DOCUMENTS ARE CONSISTENT WITH THE ELECTRICAL CHARACTERISTICS OF THE ACTUAL EQUIPMENT BEING INSTALLED.

1.6 WARRANTY

A. GUARANTEE ELECTRICAL WORK AGAINST FAULTY MATERIAL OR WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL COMPLETION BY THE OWNER.

B. LED WARRANTY: LED SYSTEMS AND COMPLETE LUMINAIRES MUST HAVE MANUFACTURER'S WARRANTY OF 3 YEARS FROM DATE OF SUBSTANTIAL COMPLETION, INCLUDING DRIVERS.

PART 2 - PRODUCTS

2.1 MATERIALS

A. BASE CONTRACT UPON FURNISHING MATERIALS AS SPECIFIED. MATERIALS, EQUIPMENT, AND FIXTURES USED FOR CONSTRUCTION ARE TO BE NEW, LATEST PRODUCTS AS LISTED IN MANUFACTURER'S PRINTED CATALOG DATA AND ARE TO BE UL APPROVED OR HAVE ADEQUATE APPROVAL OR BE ACCEPTABLE BY STATE, COUNTY, AND CITY AUTHORITIES. EQUIPMENT/FIXTURE SUPPLIER IS RESPONSIBLE FOR OBTAINING STATE, COUNTY, AND CITY ACCEPTANCE ON EQUIPMENT/FIXTURE NOT UL APPROVED OR NOT LISTED FOR INSTALLATION.

B. INCLUDE SPECIAL FEATURES, FINISHES, ACCESSORIES, AND OTHER REQUIREMENTS AS DESCRIBED IN THE CONTRACT DOCUMENTS REGARDLESS OF THE ITEM'S LISTED CATALOG NUMBER.

C. PROVIDE INCIDENTALS NOT SPECIFICALLY MENTIONED HEREIN OR NOTED ON DRAWINGS, BUT NEEDED TO COMPLETE THE SYSTEM OR SYSTEMS, IN A SAFE AND SATISFACTORY WORKING CONDITION.

D. FIRESTOPPING FOAM SEALANT: FOAM SEALANT FOR USE AROUND CONDUIT PENETRATIONS TO PREVENT PASSAGE OF SMOKE, FIRE, TOXIC GAS OR WATER. MAINTAIN SEAL BEFORE, DURING AND AFTER FIRE. IN AND AROUND CONDUIT FOR THERMAL BREAK AT PENETRATION OF BARRIER BETWEEN HEATED AND UNHEATED SPACES. HILTI, 3M, CHASE TECHNOLOGY CORPORATION CTC PR-855, FIRE FOAM, THOMAS & BETTS, OR APPROVED EQUIVALENT.

2.2 RACEWAYS

A. RIGID METAL CONDUIT (RMC): HOT-DIP GALVANIZED AFTER THREAD CUTTING. MANUFACTURED IN CONFORMANCE WITH UL 6, ANSI C80.1. UNIFORM FINISH COAT WITH CHROMATE FOR ADDED PROTECTION. MANUFACTURERS: ALLIED TUBE & CONDUIT, BECK MANUFACTURING WL, PICOMA, OR APPROVED EQUIVALENT.

B. ELECTRICAL METALLIC TUBING (EMT): STEEL GALVANIZED TUBING. MANUFACTURED IN CONFORMANCE WITH UL 797, ANSI C80.3. MANUFACTURERS: ALLIED TUBE & CONDUIT, BECK MANUFACTURING WL, PICOMA, OR APPROVED EQUIVALENT.

C. CONDUIT FITTINGS:
1. BUSHINGS: INSULATED TYPE FOR THREADED RIGID CONDUIT OR RACEWAY CONNECTORS WITHOUT FACTORY INSTALLED PLASTIC THROAT CONDUCTOR PROTECTION. MANUFACTURERS: THOMAS & BETTS 1222 SERIES, O-Z GEDNEY B SERIES, OR APPROVED EQUIVALENT.
2. GROUND BUSHINGS: INSULATED GROUNDING TYPE FOR THREADED RIGID CONDUIT OR RACEWAY CONNECTORS. MANUFACTURERS: O-Z GEDNEY BLG SERIES OR APPROVED EQUIVALENT.
3. RACEWAY CONNECTORS AND EMT COUPLINGS:
a. STEEL CONNECTORS, COUPLINGS, AND CONDUIT BODIES WITH ZINC ELECTROPLATE.
b. CONNECTOR LOCKNUTS ARE ZINC ELECTROPLATED STEEL, WITH THREADS MEETING ASTM TOLERANCES.
c. CONNECTOR THROATS HAVE FACTORY INSTALLED PLASTIC INSERTS PERMANENTLY INSTALLED. FOR NORMAL CABLE OR CONDUCTOR EXITING ANGLES FROM RACEWAY, THE CABLE JACKET OR CONDUCTOR INSULATION BEARS ONLY ON PLASTIC THROAT INSERT.

2.3 WIRES AND CABLES

A. COPPER, 600 VOLT RATED THROUGHOUT. CONDUCTORS 14AWG TO 10AWG, SOLID. CONDUCTORS 8AWG AND LARGER, STRANDED. PHASE COLOR TO BE CONSISTENT AT FEEDER TERMINATIONS; A-B-C, TOP TO BOTTOM, LEFT TO RIGHT, FRONT TO BACK. CONDUCTORS 3AWG AND LARGER, MINIMUM INSULATION RATING OF 75C. INSULATION TYPES THWN, THHN OR XHHW. MINIMUM INSULATION RATING OF 90C FOR BRANCH CIRCUITS. MANUFACTURERS: CAROL, GENERAL CABLE, OKONITE, SOUTHWIRE, OR APPROVED EQUIVALENT.

B. MC CABLE: HIGH STRENGTH GALVANIZED STEEL FLEXIBLE ARMOR. FULL LENGTH MINIMUM SIZE NO. 12 COPPER GROUND WIRE, THHN 90C CONDUCTORS, FULL LENGTH TAPE MARKER. OVERALL PVC OR NYLON CABLE TAPE. SHORT CIRCUIT THROAT INSULATORS. CONNECTOR THROATS HAVE FIELD INSTALLED PLASTIC INSERTS PERMANENTLY INSTALLED. FOR NORMAL CABLE OR CONDUCTOR EXITING ANGLES FROM THE RACEWAY (CEC BENDING RADIUS), THE CABLE JACKET OR CONDUCTOR INSULATION BEARS ONLY ON THE PLASTIC THROAT INSERT. MANUFACTURERS: ALFLEX, AFC, CAROL, OR APPROVED EQUIVALENT. AC/MC CABLE ALLOWED ONLY FOR 20 AMP BRANCH CIRCUITS CONCEALED IN WALLS OR CEILING.

2.4 CONNECTORS

A. COPPER PADS: DRILLED AND TAPPED FOR MULTIPLE CONDUCTOR TERMINALS.

B. LUGS: COMPRESSION TYPE FOR USE WITH STRANDED BRANCH CIRCUIT OR CONTROL CONDUCTORS; MECHANICAL LUGS NOT ACCEPTABLE. MANUFACTURERS: ANDERSON, ILSCO, PANDUIT, THOMAS & BETTS, 3M, OR APPROVED EQUIVALENT.

C. CONDUCTOR BRANCH CIRCUITS: WIRE NUTS WITH INTEGRAL SPRING CONNECTORS FOR CONDUCTORS 18 THROUGH 8AWG. PUSH-IN TYPE CONNECTORS WHERE CONDUCTORS ARE NOT REQUIRED TO BE TWISTED TOGETHER ARE NOT ACCEPTABLE. MANUFACTURERS: 3M, IDEAL, OR APPROVED EQUIVALENT.

2.5 BOXES

A. LUMINAIRE OUTLET: 4-INCH OCTAGONAL BOX, 1-1/2 INCHES DEEP WITH 3/8-INCH LUMINAIRE STUD IF REQUIRED. PROVIDE RAISED COVERS ON BRACKET OUTLETS AND ON CEILING OUTLETS. MANUFACTURER: HUBBELL, THOMAS & BETTS, OR APPROVED EQUIVALENT.

B. DEVICE OUTLET: INSTALLATION OF ONE OR TWO DEVICES AT COMMON LOCATION, MINIMUM 4-INCH SQUARE, MINIMUM 1-1/2 INCHES DEEP FOR NON-USB TYPE DEVICES. INSTALLATION OF ONE OR TWO DEVICES AT COMMON LOCATION, MINIMUM 4-INCH SQUARE, MINIMUM 2 INCHES DEEP FOR USB TYPE DEVICES. SINGLE- OR TWO-GANG FLUSH DEVICE RAISED COVERS. MANUFACTURER: HUBBELL, THOMAS & BETTS, OR APPROVED EQUIVALENT.

C. CONSTRUCTION: FOR INTERIOR LOCATIONS, PROVIDE GALVANIZED STEEL OUTLET WIRING BOXES, OF THE TYPE, SHAPE AND SIZE, INCLUDING DEPTH OF BOX, TO SUIT EACH RESPECTIVE LOCATION AND INSTALLATION; CONSTRUCTED WITH STAMPED KNOCKOUTS IN BACK AND SIDES, AND WITH THREADED HOLES WITH SCREWS FOR SECURING BOX COVERS OR WIRING DEVICES. PROVIDE OUTLET BOX ACCESSORIES FOR EACH INSTALLATION, INCLUDING MOUNTING BRACKETS, WALLBOARD HANGERS, EXTENSION RINGS, LUMINAIRE STUDS, CABLE CLAMPS AND METAL STRAPS FOR SUPPORTING OUTLET BOXES, COMPATIBLE WITH OUTLET BOXES BEING USED AND MEETING REQUIREMENTS OF INDIVIDUAL WIRING SITUATIONS.

D. JUNCTION AND PULL BOXES: ANSI 49 GRAY ENAMEL PAINTED SHEET STEEL JUNCTION AND PULL BOXES, WITH SCREW-ON COVERS; OF THE TYPE SHAPE AND SIZE, TO SUIT EACH RESPECTIVE LOCATION AND INSTALLATION; WITH WELDED SEAMS AND EQUIPPED WITH STEEL NUTS, BOLTS, SCREWS AND WASHERS. INSTALL JUNCTION BOXES ABOVE ACCESSIBLE CEILINGS FOR DROPS INTO WALLS FOR RECEPTACLE OUTLETS FROM OVERHEAD. INSTALL JUNCTION BOXES AND PULL BOXES TO FACILITATE THE INSTALLATION OF CONDUCTORS AND LIMITING THE ACCUMULATED ANGULAR SUM OF BENDS BETWEEN BOXES, CABINETS AND APPLIANCES TO 270 DEGREES. MANUFACTURER: B-LINE, HOFFMAN, OR APPROVED EQUIVALENT.

E. BOX EXTENSION ADAPTER: INSTALL OVER FLUSH WALL OUTLET BOXES TO PERMIT FLEXIBLE RACEWAY EXTENSION FROM FLUSH OUTLET TO FIXED OR MOVABLE EQUIPMENT. MANUFACTURER: BELL 940 SERIES, RED DOT IHE4 SERIES, OR APPROVED EQUIVALENT.

F. FLOOR BOXES AND POKE-THRUS
1. MULTI-GANG BOX, SLAB ABOVE GRADE: WIREMOLD RFB4 SERIES STEEL HOUSING WITH S40CCTC SERIES ALUMINUM FINISH, STEEL FLANGED ACTIVATION FOR USE WITH MATCHING CARPET OR TILE INSERT. RUBBER GASKET PROTECTS INTERIOR FROM WATER AND DEBRIS. PROVIDE WITH TWO DUPLEX RECEPTACLES AND BLANK INSERTS FOR TWO FUTURE DATA OUTLETS.
2. SINGLE GANG BOX, SLAB ABOVE GRADE: WIREMOLD 880S (STAMPED STEEL) SERIES WITH 817 SERIES ALUMINUM FINISH FLANGE SUITABLE FOR BOTH CARPET AND TILE FLOORS, AND 828GFI ALUMINUM FINISH COVER PLATE INSERT.
3. PROVIDE FLOOR BOXES SIZED MINIMUM 3-7 /16 INCHES DEEP WITH 1-INCH FACTORY KNOCKOUTS.

2.6 WIRING DEVICES

A. FINISH: MATCH BUILDING STANDARD

B. WALL SWITCHES: DECORATIVE AC ROCKER SWITCHES CHARACTERISTICS: QUIET ACTING, 20 AMP, 120/277 VOLT, UL LISTED FOR MOTOR LOADS UP TO 80 PERCENT OF RATED AMPERAGE. WHERE SWITCHES ARE GANGED TOGETHER, PROVIDE A SINGLE MULTI-GANG COVERPLATE. COOPER, HUBBELL, LEVITON, PASS & SEYMOUR, OR APPROVED EQUIVALENT.

C. DIMMER SWITCHES: LUTRON NT SERIES COMPATIBLE WITH TYPE OR LOAD CONTROLLED (I.E., ELECTRONIC BALLAST OR LOW VOLTAGE LUMINAIRE). FINISH TO MATCH WALL SWITCHES. SIZE DIMMERS TO ACCEPT CONNECTED LOAD. DO NOT CUT FINS. WHERE DIMMERS ARE GANGED TOGETHER, PROVIDE A SINGLE MULTI-GANG COVERPLATE.

D. RECEPTACLES: STRAIGHT PARALLEL BLADE, 125 VOLT, 2 POLE, 3 WIRE GROUNDING.
1. COMMERCIAL GRADE: RIVETED. BACK AND SIDE WIRED. BRASS GROUND CONTACT ON STEEL MOUNTING STRAP. NYLON FACE AND NYLON BASE. 20 AMP. COOPER 5362, HUBBELL 5362, BRYANT 5362, LEVITON 5362S, PASS & SEYMOUR 5362.

E. FINISH PLATES: MATCH BUILDING STANDARD.

2.7 OCCUPANCY SENSORS

A. PASSIVE INFRARED SENSORS (CEILING MOUNTED):
1. SENSOR FUNCTION: DETECTS HUMAN PRESENCE IN FLOOR AREA BEING CONTROLLED BY DETECTING CHANGES IN INFRARED ENERGY. SENSOR DETECTS SMALL MOVEMENTS, I.E., WHEN PEOPLE ARE WRITING WHILE SEATED AT A DESK. PROVIDES OCCUPIED/UNOCCUPIED STATUS SIGNAL TO HVAC CONTROLS SYSTEM PER CEC 120.2(e)3 VIA EXTRA DRY CONTACT OR VIA BMS SYSTEM.
2. PROVIDE TEMPERATURE COMPENSATED DUAL ELEMENT PYRO-ELECTRIC SENSOR AND WITH MULTI-ELEMENT FRESNEL LENS.
3. SENSOR UTILIZES DIP SWITCHES FOR ADJUSTMENT TO TIME DELAY AND OVERRIDE. FIELD ADJUSTABLE SETTINGS FOR SENSITIVITY.
4. PROVIDE DAYLIGHT FILTER TO ENSURE THAT SENSOR IS INSENSITIVE TO SHORT-WAVELENGTH INFRARED WAVES, I.E., THOSE EMITTED BY THE SUN.
5. SENSOR UTILIZES ADVANCED DIGITAL SIGNAL PROCESSING TECHNOLOGY TO REDUCE FALSE OFFS WITHOUT REDUCING SENSITIVITY.
6. 360 DEGREE SENSOR RANGE; COVERAGE: 1200 SQUARE FEET, UNLESS OTHERWISE NOTED ON DRAWINGS.
7. LOW VOLTAGE SENSOR: 24VDC POWER. SENSOR OPERATES REMOTE POWER SWITCH PACKS. MULTIPLE SENSORS CAN BE WIRED IN PARALLEL ALLOW COVERAGE OF LARGE AREAS.
8. WATTSTOPPER CI-300 SERIES OR APPROVED EQUIVALENT.

B. COMBINED OCCUPANCY SENSOR/WALL SWITCHES ("SENSOR/SWITCHES")
1. COMPLETELY SELF-CONTAINED SENSOR SYSTEM THAT FITS INTO A STANDARD SINGLE GANG BOX. INTERNAL TRANSFORMER POWER SUPPLY, LATCHING DRY CONTACT RELAY SWITCHING MECHANISM COMPATIBLE WITH ELECTRONIC BALLASTS, COMPACT FLUORESCENT, AND INDUCTIVE LOADS. TRIAC AND OTHER HARMONIC GENERATING DEVICES ARE NOT ALLOWED.
2. PASSIVE INFRARED SENSOR TECHNOLOGY INCLUDES ADVANCED SIGNAL PROCESSING TO REDUCE FALSE TRIGGERS WITHOUT INCREASING SENSITIVITY. LED INDICATOR BLINKS WHEN OCCUPANT SENSED.
3. RATED TO SWITCH LOADS: 800 WATTS INCANDESCENT OR 120-VOLT BALLAST; 1000 WATTS 277 VOLT BALLAST. ZERO-CROSSING TECHNOLOGY SWITCHES LIGHTING OFF WHEN AC VOLTAGE IS AT ZERO, MINIMIZES CONTACT WEAR.
4. PROVIDE ADJUSTABLE DAYLIGHT FEATURE THAT HOLDS LIGHTING "OFF" WHEN A DESIRED FOOTCANDLE LEVEL IS PRESENT.
5. PROVIDE INTEGRAL OFF OVERRIDE SWITCH WITH NO LEAKAGE CURRENT TO THE LOAD OR GROUND.
6. VANDAL-RESISTANT LENS.
7. INCLUDE NEUTRAL WIRE TO MEET CEC 2020.
8. FINISH: WHITE FINISH UNLESS SELECTED OTHERWISE BY ARCHITECT.
9. ALERTS FOR IMPENDING SHUT-OFF: LIGHT FLASH, AUDIBLE, BOTH OR NONE.
10. STANDARD SENSOR/SWITCH:
a. 180 DEGREE SENSOR RANGE; COVERAGE: 150 SQUARE FEET FOR DESKTOP ACTIVITY.
b. MANUFACTURERS: WATTSTOPPER PW-100 SERIES OR APPROVED EQUIVALENT.
11. SENSOR/SLIDE DIMMER:
a. LINE VOLTAGE SLIDER DIMMER ALLOWS FOR MANUAL ADJUSTMENT OF LIGHTING LEVELS FROM 100 PERCENT TO 10 PERCENT; COMPATIBLE WITH TWO-WIRE LINE VOLTAGE 100 PERCENT TO 10 PERCENT ELECTRONIC DIMMING BALLASTS. SEPARATE MANUAL BUTTON FOR OVERRIDE 'OFF' CONTROL.
b. 180 DEGREE SENSOR RANGE; COVERAGE: 150 SQUARE FEET FOR DESKTOP ACTIVITY.
c. FINISH: WHITE FINISH UNLESS SELECTED OTHERWISE BY ARCHITECT.
d. MANUFACTURERS: WATTSTOPPER WD SERIES OR APPROVED EQUIVALENT.

2.8 SUPPORTING DEVICES

A. HANGERS, SUPPORTS, THREADED ROD AND FASTENERS: CORROSION-RESISTANT MATERIALS OF SIZE AND TYPE ADEQUATE TO CARRY THE LOADS OF EQUIPMENT AND CONDUIT, INCLUDING WEIGHT OF WIRE IN CONDUIT. MANUFACTURERS: B-LINE, KINDORF, SUPERSTRUT, UNISTRUT, OR APPROVED EQUIVALENT.

B. ANCHORS: CORROSION-RESISTANT MATERIALS OF SIZE AND TYPE ADEQUATE TO CARRY THE LOADS OF EQUIPMENT AND CONDUIT, INCLUDING WEIGHT OF WIRE IN CONDUIT. MANUFACTURERS: ANCHOR IT, EPCON SYSTEM, HILTI-HIT SYSTEM, POWER FAST SYSTEM, OR APPROVED EQUIVALENT.

C. PIPE STRAPS: TWO-HOLE GALVANIZED OR MALLEABLE IRON.

D. LUMINAIRE CHAIN: CAMPBELL CHAIN 75031 OR APPROVED EQUIVALENT, 90 LB. TEST WITH STEEL HOOKS.

2.9 ELECTRICAL IDENTIFICATION

A. NAMEPLATES: ENGRAVING STOCK MELAMINE OR LAMICOID PLASTIC LAMINATE, FEDERAL SPECIFICATION L-P-387, IN THE SIZE AND THICKNESSES INDICATED, ENGRAVED WITH ENGRAVER'S STANDARD LETTER STYLE, MINIMUM 1/2-INCH HIGH LETTERS, BLACK WITH WHITE CORE (LETTER COLOR), PUNCHED FOR MECHANICAL FASTENING EXCEPT WHERE ADHESIVE MOUNTING IS NECESSARY BECAUSE OF SUBSTRATE. PROVIDE 1/8-INCH THICK MATERIAL. USE SELF TAPPING STAINLESS STEEL SCREWS. MANUFACTURER: B&I NAMEPLATES, INTELLICUM, JBR ASSOCIATES, OR APPROVED EQUIVALENT.

B. LABELS: ADHESIVE TAPE WITH 18 POINT BLACK LETTERS ON CLEAR BACKGROUND. USE ONLY FOR IDENTIFICATION OF INDIVIDUAL WALL SWITCHES AND RECEPTACLES, CONTROL STATIONS, AND TELECOMMUNICATION OUTLETS. INDICATE DEVICE NAME, SOURCE PANEL, AND SOURCE CIRCUITS. DO NOT PROVIDE DYMO TAPE STYLE LABELS. MANUFACTURER: KROY, BRADY, OR APPROVED EQUIVALENT.

C. CONDUCTOR NUMBERS: VINYL-CLOTH SELF-ADHESIVE TYPE WIRE MARKERS. EACH CONDUCTOR AT PULLBOXES, PANELBOARDS, OUTLET BOXES, JUNCTION BOXES, AND EACH LOAD CONNECTION. BRANCH CIRCUIT OR FEEDER NUMBERS AS INDICATED ON DRAWINGS AND SOURCE PANEL. MANUFACTURER: BRADY, PANDUIT, SUMITOMO, OR APPROVED EQUIVALENT.

D. BRANCH CIRCUIT SCHEDULES: PROVIDE BRANCH CIRCUIT IDENTIFICATION SCHEDULES, TYPEWRITTEN, CLEARLY FILLED OUT, TO IDENTIFY LOAD CONNECTED TO EACH CIRCUIT AND LOCATION OF LOAD. NUMBERS TO CORRESPOND TO NUMBERS ASSIGNED TO EACH CIRCUIT BREAKER POLE POSITION.

2.12 LUMINAIRES

A. LUMINAIRES: REFER TO DESCRIPTION AND MANUFACTURERS IN LUMINAIRE SCHEDULE.

B. WHERE RECESSED LUMINAIRES ARE INSTALLED IN CAVITIES INTENDED TO BE INSULATED, PROVIDE IC RATED LUMINAIRES OR OTHER CODE APPROVED INSTALLATION.

C. UL LABEL LUMINAIRES INSTALLED UNDER CANOPIES, ROOF OR OPEN PORCHES, AND SIMILAR DAMP OR WET LOCATIONS, AS SUITABLE FOR DAMP OR WET LOCATIONS.

D. RECESSED LUMINAIRES: FRAME COMPATIBLE WITH CEILING MATERIAL INSTALLED AT PARTICULAR LUMINAIRE LOCATION. PROVIDE PROPER FACTORY TRIM AND FRAME FOR LUMINAIRE TO FIT LOCATION AND CEILING MATERIAL. VERIFY WITH ARCHITECTURAL REFLECTED CEILING PLAN PRIOR TO SUBMITTALS.

E. FINISHES: MANUFACTURER'S STANDARD FINISH (UNLESS OTHERWISE INDICATED) OVER CORROSION RESISTANT PRIMER. WHITE OR SPECULAR FINISH WITH NOT LESS THAN 85 PERCENT REFLECTANCE FOR INTERIOR LUMINAIRES.

PART 3 - EXECUTION

3.1 EXAMINATION

A. DRAWINGS ARE DIAGRAMMATIC WITH SYMBOLS REPRESENTING ELECTRICAL EQUIPMENT, OUTLETS, LUMINAIRES, AND WIRING. EXAMINE THE ENTIRE SET OF DRAWINGS TO AVOID CONFLICTS WITH OTHER SYSTEMS. DETERMINE EXACT ROUTE AND INSTALLATION OF ELECTRICAL WIRING AND EQUIPMENT WITH CONDITIONS OF CONSTRUCTION.

B. CLARIFICATION:
1. THE DRAWINGS GOVERN IN MATTERS OF QUANTITY, THE SPECIFICATION IN MATTERS OF QUALITY. IN EVENT OF CONFLICT ON DRAWINGS OR IN THE SPECIFICATIONS, THE GREATER QUANTITY AND THE HIGHER QUALITY APPLY.
2. SHOULD THE ELECTRICAL DOCUMENTS INDICATE A CONDITION CONFLICTING WITH THE GOVERNING CODES AND REGULATIONS, REFRAIN FROM INSTALLING THAT PORTION OF THE WORK UNTIL CLARIFIED BY ARCHITECT.

3.2 DEMOLITION

A. COORDINATE WITH OWNER SO THAT WORK CAN BE SCHEDULED NOT TO INTERRUPT OPERATIONS, NORMAL ACTIVITIES, BUILDING ACCESS, ACCESS TO DIFFERENT AREAS. THE OWNER WILL COOPERATE TO THE BEST OF THEIR ABILITY TO ASSIST IN A COORDINATED SCHEDULE, BUT WILL REMAIN THE FINAL AUTHORITY AS TO TIME OF WORK PERMITTED.

B. COORDINATE THE EXACT LOCATION OF EXISTING UTILITIES AND EQUIPMENT PRIOR TO COMMENCEMENT OF WORK. COMPENSATE THE OWNER FOR DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE UTILITIES. REPLACE DAMAGED ITEMS WITH NEW MATERIAL TO MATCH EXISTING. VERIFY THAT ABANDONED WIRING AND EQUIPMENT SERVE ONLY ABANDONED FACILITIES.

C. EXECUTION:
1. REMOVE EXISTING LUMINAIRES, SWITCHES, RECEPTACLES, AND OTHER ELECTRICAL EQUIPMENT AND DEVICES AND ASSOCIATED WIRING FROM WALLS, CEILINGS, FLOORS, AND OTHER SURFACES SCHEDULED FOR REMODELING, RELOCATION, OR DEMOLITION UNLESS SHOWN AS RETAINED OR RELOCATED ON DRAWINGS.
2. PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN ELECTRICAL CONTINUITY OF EXISTING SYSTEMS DURING CONSTRUCTION. REMOVE OR RELOCATE ELECTRICAL BOXES, CONDUIT, WIRING, EQUIPMENT, LUMINAIRES, AS ENCOUNTERED IN REMOVED OR REMODELED AREAS IN THE EXISTING CONSTRUCTION AFFECTED BY THIS WORK.
3. REMOVE AND RESTORE WIRING WHICH SERVES USABLE EXISTING OUTLETS CLEAR OF THE CONSTRUCTION OR DEMOLITION
4. IF EXISTING JUNCTION BOXES WILL BE MADE INACCESSIBLE, OR IF ABANDONED OUTLETS SERVE AS FEED THROUGH BOXES FOR OTHER EXISTING ELECTRICAL EQUIPMENT WHICH IS BEING RETAINED, PROVIDE NEW CONDUIT AND WIRE TO BYPASS THE ABANDONED OUTLETS.
5. IF EXISTING CONDUITS PASS THROUGH PARTITIONS OR CEILING WHICH ARE BEING REMOVED OR REMODELED, PROVIDE NEW CONDUIT AND WIRE TO REROUTE CLEAR OF THE CONSTRUCTION OR DEMOLITION AND MAINTAIN SERVICE TO THE EXISTING LOAD.
6. CONCEALED CONDUIT LOCATED IN CONCRETE WALLS OR HARDBOARD CEILING SPACES MAY BE ABANDONED IN PLACE. REMOVE CONDUCTORS AND TAG ABANDONED CONDUITS WITH CORRESPONDING SYSTEM AND TERMINATION POINT. CUT AND CAP ABANDONED CONDUIT. DO NOT EXTEND STUBS ABOVE FINISHED FLOOR.
7. EXTEND CIRCUITING AND DEVICES IN EXISTING WALLS TO BE FURRED OUT.
8. PROVIDE TEMPORARY SUPPORT FOR ELECTRICAL SYSTEMS THAT REMAIN IN PLACE.
9. EXISTING ELECTRICAL OUTLETS AND LUMINAIRES ARE INDICATED ON ELECTRICAL DEMOLITION PLANS. VERIFY EXACT LOCATION AND NUMBER OF EXISTING ELECTRICAL OUTLETS AND LUMINAIRES IN THE FIELD. ONLY PARTIAL EXISTING ELECTRICAL SHOWN. LOCATIONS OF ITEMS SHOWN ON DRAWINGS AS EXISTING ARE PARTIALLY BASED ON RECORD AND OTHER DRAWINGS WHICH MAY CONTAIN ERRORS. VERIFY THE ACCURACY OF THE INFORMATION SHOWN PRIOR TO BIDDING AND PROVIDE SUCH LABOR AND MATERIAL AS IS NECESSARY TO ACCOMPLISH THE INTENT OF THE CONTRACT DOCUMENTS.
10. REMOVE ABANDONED WIRING TO SOURCE OF SUPPLY.
11. PROVIDE BLANK COVER PLATE FOR ABANDONED FLUSH OUTLETS.
12. EXISTING LIGHTING WHICH IS TO REMAIN OR BE RELOCATED IS TO BE RELAMPED, REBALLASTED AND CLEANED. LEAVE ALL LUMINAIRES IN PROPER WORKING ORDER. REPLACE DAMAGED OR BROKEN LENS AND/OR COMPONENTS.
13. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS PANEL AS APPROPRIATE.
14. WHERE DRAWINGS INDICATE EXISTING ELECTRICAL EQUIPMENT OR DEVICES TO BE RELOCATED AND/OR REUSED, REFURBISH THEM. THOROUGHLY CLEAN SUCH ITEMS. NOTIFY ARCHITECT OF ANY DEFECTS IN SUCH INSTALLATIONS. REPAIR ANY DAMAGE CAUSED BY DEMOLITION OR CONSTRUCTION PERFORMED UNDER THIS CONTRACT.
15. PROVIDE UPDATED PANEL SCHEDULES AND DIRECTORIES THAT IDENTIFY EXISTING CIRCUITS AND NUMBER OF SPARE CIRCUITS AVAILABLE UPON COMPLETION OF DEMOLITION WORK.
16. OFFER REMOVED LUMINAIRES, WIRING DEVICES, PANELBOARDS, AND EQUIPMENT TO THE OWNER. IF OWNER CHOOSES TO RETAIN THESE ITEMS, RETURN SUCH ITEMS TO OWNER. CAREFULLY REMOVE AND DISPOSE OF ITEMS REJECTED BY OWNER FROM PROJECT SITE AND IN A LEGAL MANNER.

3.3 CONTINUITY OF SERVICE

A. NO INTERRUPTION OF SERVICES TO ANY PART OF EXISTING FACILITIES WILL BE PERMITTED WITHOUT EXPRESS PERMISSION IN EACH INSTANCE FROM THE OWNER. REQUESTS FOR OUTAGES SHALL STATE THE SPECIFIC DATES AND HOURS AND THE MAXIMUM DURATIONS, WITH THE OUTAGES KEPT TO THESE SPECIFIC DATES AND HOURS AND THE MAXIMUM DURATIONS. OBTAIN WRITTEN PERMISSION FROM THE OWNER FOR ANY INTERRUPTION OF POWER, LIGHTING OR SIGNAL CIRCUITS AND SYSTEMS.

3.4 INSTALLATION

A. INSTALL ELECTRICAL EQUIPMENT COMPLETE AS DIRECTED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS. OBTAIN INSTALLATION INSTRUCTIONS FROM MANUFACTURER PRIOR TO ROUGH-IN OF THE ELECTRICAL EQUIPMENT, EXAMINE THE INSTRUCTIONS THOROUGHLY. WHEN REQUIREMENTS OF INSTALLATION INSTRUCTIONS CONFLICT WITH CONTRACT DOCUMENTS, REQUEST CLARIFICATION FROM ARCHITECT PRIOR TO PROCEEDING WITH INSTALLATION. THIS INCLUDES PROPER INSTALLATION METHODS, SEQUENCING, AND COORDINATION WITH OTHER TRADES AND DISCIPLINES.

B. DELIVERY, STORAGE AND HANDLING: INSPECT AND REPORT CONCEALED DAMAGE TO CARRIER WITHIN THEIR REQUIRED TIME PERIOD. STORE IN A CLEAN, DRY ENVIRONMENT. MAINTAIN FACTORY PACKAGING, AND IF REQUIRED, PROVIDE AN ADDITIONAL HEAVY CANVAS OR HEAVY PLASTIC COVER TO PROTECT ENCLOSURE(S) FROM DIRT, WATER, CONSTRUCTION DEBRIS, AND TRAFFIC.

C. INSTALL EQUIPMENT REQUIRING ACCESS (I.E. JUNCTION BOXES, LUMINAIRES, POWER SUPPLIES, ETC.) SO THAT THEY MAY BE SERVICED, RESET, REPLACED OR RECALIBRATED BY SERVICE PEOPLE WITH NORMAL SERVICE TOOLS AND EQUIPMENT. DO NOT INSTALL ELECTRICAL EQUIPMENT IN OBVIOUS PASSAGES, DOORWAYS, SCUTTLES OR CRAWL SPACES WHICH WOULD IMPEDE OR BLOCK THE INTENDED USAGE.

D. NOISE CONTROL:
1. DO NOT INSTALL OUTLET BOXES BACK TO BACK. DO NOT USE STRAIGHT THROUGH BOXES.
2. DO NOT PLACE CONTACTORS, TRANSFORMERS, STARTERS AND SIMILAR NOISE PRODUCING DEVICES ON WALLS WHICH ARE COMMON TO OCCUPIED SPACES UNLESS SPECIFICALLY CALLED FOR ON DRAWINGS. WHERE SUCH DEVICES MUST BE MOUNTED ON WALLS COMMON TO OCCUPIED SPACES, MOUNT OR ISOLATE IN SUCH A MANNER AS TO EFFECTIVELY PREVENT THE TRANSMISSION OF THEIR INHERENT NOISE TO THE OCCUPIED SPACE.

E. FIRESTOPPING: COORDINATE LOCATION AND PROTECTION LEVEL OF FIRE AND/OR SMOKE RATED WALLS, CEILINGS, AND FLOORS. WHEN THESE ASSEMBLIES ARE PENETRATED, SEAL AROUND CONDUIT AND EQUIPMENT WITH APPROVED FIRESTOPPING MATERIAL. INSTALL FIRESTOPPING MATERIAL COMPLETE AS DIRECTED THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. MEET REQUIREMENTS OF ASTM E814, STANDARD TEST METHOD FOR FIRE TESTS OF THROUGH-PENETRATION FIRE STOPS.

F. CONDUIT:
1. CONDUIT JOINTS: ASSEMBLE CONDUITS CONTINUOUS AND SECURE TO BOXES, PANELS, LUMINAIRES AND EQUIPMENT WITH FITTINGS TO MAINTAIN CONTINUITY.
2. CONCEAL CONDUITS. EXPOSED CONDUITS ARE PERMITTED ONLY IN THE FOLLOWING AREAS:
a. MECHANICAL ROOMS, ELECTRICAL ROOMS OR SPACES WHERE WALLS, CEILINGS AND FLOORS WILL NOT BE COVERED WITH FINISHED MATERIALS.
b. EXISTING WALLS THAT ARE CONCRETE OR BLOCK CONSTRUCTION AND WHERE SPECIFICALLY NOTED ON THE DRAWINGS.
3. DO NOT INSTALL CONDUITS ON SURFACE OF BUILDING EXTERIOR, ACROSS ROOF, ON TOP OF PARAPET WALLS, OR ACROSS FLOORS. WHERE EXPOSED CONDUITS ARE PERMITTED, INSTALL PARALLEL AND PERPENDICULAR TO WALLS, TIGHT TO FINISHED SURFACES AND NEATLY OFFSET INTO BOXES.
4. KEEP CONDUITS A MINIMUM OF 12-INCHES AWAY FROM STEAM OR HOT WATER RADIANT HEATING LINES (AT OR ABOVE 104 DEGREES F) OR 3-INCHES AWAY FROM WASTE OR WATER LINES.
5. MAXIMUM BENDS: INSTALL NO MORE THAN EQUIVALENT OF THREE 90 DEGREE BENDS BETWEEN ELECTRICAL BOXES. INSTALL NO MORE THAN EQUIVALENT OF TWO 90 DEGREE BENDS BETWEEN TELECOMMUNICATION BOXES. USE CONDUIT BODIES TO MAKE SHARP CHANGES IN DIRECTION, AS AROUND BEAMS.
6. CONDUIT SIZE: MINIMUM TRADE SIZE 3/4 INCH.
7. CONDUIT USE LOCATIONS:
a. DRY, PROTECTED: EMT.
b. SHARP BENDS AND ELBOWS: RMC, EMT USE FACTORY ELBOWS.
c. INSTALL TWO PULL STRINGS/TAPES IN EMPTY RACEWAYS. SECURE PULL STRINGS/TAPES AT EACH END.
d. FOR RECESSED LUMINAIRES AND EQUIPMENT CONNECTIONS SUBJECT TO MOVEMENT OR VIBRATION, USE FLEXIBLE METALLIC CONDUIT.
9. BRANCH CIRCUITS: DO NOT CHANGE THE INTENT OF THE BRANCH CIRCUITS OR CONTROLS WITHOUT APPROVAL. HOMERUNS FOR 20 AMP BRANCH CIRCUITS MAY BE COMBINED TO A MAXIMUM OF SIX CONDUCTORS IN A HOMERUN. APPLY DERATING FACTORS. INCREASE CONDUCTOR SIZE AS NEEDED.

G. CONDUIT FITTINGS:
1. USE SET SCREW TYPE FITTINGS ONLY IN DRY LOCATIONS. WHEN SET SCREW FITTINGS ARE UTILIZED, PROVIDE INSULATED CONTINUOUS EQUIPMENT GROUND CONDUCTOR IN CONDUIT, FROM OVER CURRENT PROTECTION DEVICE TO OUTLET.
2. USE COMPRESSION FITTINGS IN DRY LOCATIONS, DAMP AND RAIN-EXPOSED LOCATIONS. MAXIMUM SIZE PERMITTED IN DAMP LOCATIONS AND LOCATIONS EXPOSED TO RAIN IS 2 INCHES IN DIAMETER.
3. PROVIDE CORROSION-RESISTANT PUNCHED-STEEL BOX KNOCKOUT CLOSURES, CONDUIT LOCKNUTS AND PLASTIC CONDUIT BUSHINGS OF THE TYPE AND SIZE TO SUIT EACH RESPECTIVE USE AND INSTALLATION.

H. WIRES AND CABLES:
1. CONDUCTOR INSTALLATION: INSTALL CONDUCTORS WITH CARE TO AVOID DAMAGE TO INSULATION. DO NOT APPLY GREATER TENSION ON CONDUCTORS THAN RECOMMENDED BY MANUFACTURER DURING INSTALLATION.
2. CONDUCTOR SIZE AND QUANTITY: INSTALL NO CONDUCTORS SMALLER THAN 12AWG UNLESS OTHERWISE SHOWN. PROVIDE REQUIRED CONDUCTORS FOR A FULLY OPERABLE SYSTEM.
3. MC CABLE IS ALLOWED FOR THE FOLLOWING CONDITIONS. INSTALLATIONS NOT MEETING THESE CONDITIONS WILL BE REMOVED AND REPLACED AT INSTALLER'S OWN EXPENSE.
a. 20 AND 30 AMP BRANCH CIRCUITING WHERE FOLLOWING CONDITIONS APPLY:
1) WHERE THERE IS A SUSPENDED CEILING WITH ACCESSIBLE SPACE ABOVE (EXAMPLE: SUSPENDED ACOUSTIC CEILING TILE).
2) DO NOT USE FOR HOMERUNS FROM BRANCH CIRCUIT TO FIRST DEVICE OR LUMINAIRE IN CIRCUIT.
3) FOR DROPS TO CEILING-MOUNTED LUMINAIRES IN AREAS WITH ACCESSIBLE CEILING SPACE.
4) DO NOT USE IN WALLS IN AREAS WHERE MC CABLE CANNOT BE FISHED INTO THE WALLS AFTER CONSTRUCTION IS COMPLETED. FOR EXAMPLE: WALLS WITH GLAZING OR SOLID BEAMS OVERHEAD, PARTIAL HEIGHT WALLS, ETC.

I. BOXES:
1. ANCHORING: SECURE BOXES RIGIDLY TO THE SUBSTRATE UPON WHICH THEY ARE BEING MOUNTED.
2. NOISE CONTROL: PROVIDE ACOUSTIC PUTTY PAD TO BACK SIDE OF EACH OUTLET BOX INSTALLED IN ACOUSTIC RATED WALLS.
3. COORDINATE ELECTRICAL DEVICE LOCATIONS AND ELEVATIONS (SWITCHES AND RECEPTACLES) WITH ARCHITECTURAL DRAWINGS TO PREVENT MOUNTING DEVICES IN MIRRORS, BACK SPLASHES, AND BEHIND CABINETS.
4. KNOCKOUT CLOSURES: PROVIDE KNOCKOUT CLOSURES TO CAP UNUSED KNOCKOUT HOLES WHERE BLANKS HAVE BEEN REMOVED.
5. CODE COMPLIANCE: COMPLY WITH CEC AS APPLICABLE TO CONSTRUCTION AND INSTALLATION OF ELECTRICAL BOXES AND FITTINGS AND SIZE BOXES ACCORDING TO CEC, EXCEPT AS NOTED OTHERWISE.
6. MOUNT OUTLET BOXES, UNLESS OTHERWISE REQUIRED BY AMERICANS WITH DISABILITIES ACT (ADA), OR NOTED ON DRAWINGS, THE FOLLOWING DISTANCE ABOVE FINISHED FLOOR:
a. CONTROL SWITCHES:
1) 48 INCHES TO THE TOP OF OUTLET BOX.
2) 44 INCHES ABOVE FINISHED FLOOR TO THE TOP OF OUTLET BOX PER ADA REQUIREMENTS.
b. RECEPTACLES: 15 INCHES TO THE BOTTOM OF OUTLET BOX.
c. OTHER OUTLETS: AS INDICATED IN OTHER SECTIONS OF SPECIFICATIONS OR AS DETAILED ON DRAWINGS.

J. SUPPORTING DEVICES:
1. SAFETY FACTOR OF 4 REQUIRED FOR EVERY FASTENING DEVICE OR SUPPORT FOR ELECTRICAL EQUIPMENT INSTALLED. SUPPORT TO WITHSTAND FOUR TIMES WEIGHT OF EQUIPMENT IT SUPPORTS. PROVIDE SEISMIC BRACING PER CBC REQUIREMENTS FOR THIS BUILDING LOCATION.
2. PROVIDE VERTICAL SUPPORT MEMBERS FOR EQUIPMENT AND LUMINAIRES, STRAIGHT AND PARALLEL TO BUILDING WALLS. PROVIDE HORIZONTAL SUPPORT MEMBERS STRAIGHT AND PARALLEL TO CEILINGS OR FINISHED FLOOR, UNLESS OTHERWISE NOTED.
3. PROVIDE INDEPENDENT SUPPORTS TO STRUCTURAL MEMBER FOR LUMINAIRES, ELECTRICAL MATERIALS, OR EQUIPMENT INSTALLED IN OR ON CEILING, WALLS OR IN VOID SPACES OR OVER FURRED OR SUSPENDED CEILINGS.
4. DO NOT USE OTHER TRADE'S FASTENING DEVICES AS SUPPORTING MEANS FOR LUMINAIRES, ELECTRICAL MATERIALS, OR EQUIPMENT.
5. DO NOT FASTEN SUPPORTS TO PIPES, DUCTS, MECHANICAL EQUIPMENT OR CONDUIT.
6. DO NOT USE SUPPORTS OR FASTENING DEVICES TO SUPPORT OTHER THAN ONE PARTICULAR ITEM.
7. SUPPORT CONDUITS WITHIN 18 INCHES OF OUTLETS, BOXES, PANELS, CABINETS AND DEFLECTIONS. MAXIMUM DISTANCE BETWEEN SUPPORTS NOT TO EXCEED 8 FOOT SPACING.
8. SUPPORT FLEXIBLE CONDUITS AND MC CABLE WITHIN 12 INCHES OF OUTLETS, BOXES, PANELS, CABINETS AND DEFLECTIONS. MAXIMUM DISTANCE BETWEEN SUPPORTS NOT TO EXCEED 4 FOOT SPACING.
9. SECURELY SUSPEND JUNCTION BOXES, PULL BOXES OR OTHER CONDUIT TERMINATING HOUSINGS LOCATED ABOVE SUSPENDED CEILING FROM THE FLOOR ABOVE OR ROOF STRUCTURE TO PREVENT SAGGING AND SWAYING.
10. PROVIDE SEISMIC BRACING PER CBC REQUIREMENTS.

K. ELECTRICAL IDENTIFICATION:
1. CONDUCTOR IDENTIFICATION: APPLY MARKERS ON EACH CONDUCTOR FOR POWER, CONTROL, SIGNALING AND COMMUNICATIONS CIRCUITS.
2. PROVIDE AN ENGRAVED LABEL ON EACH MAJOR UNIT OF ELECTRICAL EQUIPMENT INDICATING BOTH EQUIPMENT NAME AND CIRCUIT SERVING EQUIPMENT, INCLUDING BUT NOT LIMITED TO THE FOLLOWING ITEMS: DISCONNECT SWITCHES, RELAYS, CONTACTORS, TIME SWITCHES, SERVICE DISCONNECTS, SWITCHBOARDS, BRANCH CIRCUIT PANELBOARDS, AND TRANSFORMERS.
3. ON THE FRONT OF RECEPTACLE FINISH PLATES, PROVIDE LABEL WITH THE CIRCUIT THAT EACH DEVICE IS CONNECTED TO.

L. GROUNDING:
1. RACEWAY GROUNDING:
a. GROUND METALLIC RACEWAY SYSTEMS. BOND TO GROUND TERMINAL WITH CODE SIZE JUMPER EXCEPT WHERE CODE SIZE OR LARGER GROUNDING CONDUCTOR IS INCLUDED WITH CIRCUIT, USE GROUNDING BUSHING WITH LAY-IN LUG.
b. CONNECT METAL RACEWAYS, WHICH TERMINATE WITHIN AN ENCLOSURE BUT WITHOUT MECHANICAL CONNECTION TO THE ENCLOSURE, BY GROUNDING BUSHINGS AND GROUND WIRE TO THE GROUNDING BUS.
c. WHERE EQUIPMENT SUPPLY CONDUCTORS ARE IN FLEXIBLE METALLIC CONDUIT, INSTALL STRANDED COPPER EQUIPMENT GROUNDING CONDUCTOR FROM OUTLET BOX TO EQUIPMENT FRAME.
d. INSTALL EQUIPMENT GROUNDING CONDUCTOR, CODE SIZE MINIMUM IN METALLIC RACEWAY SYSTEMS.
3. BOXES, CABINETS, ENCLOSURES AND PANELBOARDS:
a. BOND GROUNDING CONDUCTORS TO ENCLOSURE WITH SPECIFIED CONDUCTORS AND LUGS. INSTALL LUGS ONLY ON THOROUGHLY CLEANED CONTACT SURFACES.
4. RECEPTACLES: CONNECT GROUND TERMINAL OF RECEPTACLE TO EQUIPMENT GROUND SYSTEM BY NO. 14 CONDUCTOR BOLTED TO OUTLET BOX. SELF GROUNDING NATURE OF RECEPTACLE DEVICES DOES NOT ELIMINATE CONDUCTOR BOLTED TO OUTLET BOX.

N. OCCUPANCY SENSORS:
1. INSTALL OCCUPANCY SENSORS AS DIRECTED BY MANUFACTURER'S INSTRUCTIONS. PROVIDE CONNECTIONS TO CONTROL CIRCUITS, OCCUPANCY SENSORS, POWER SUPPLY PACK AND LOW VOLTAGE WIRING.
2. DRAWINGS WERE LAID OUT USING WATT STOPPER SENSORS AS THE BASIS OF DESIGN. IF ANOTHER MANUFACTURER IS APPROVED FOR INSTALLATION UNDER THIS CONTRACT, VERIFY WITH MANUFACTURER REPRESENTATIVE THAT SENSORS ARE LAID OUT TO PROVIDE COVERAGE ACROSS ROOM SPACE, ADDING ADDITIONAL SENSORS AS NEEDED.
3. PROVIDE POWER PACKS FOR SENSOR TO CONTROL NUMBER OF CIRCUITS AND/OR SWITCH LEGS WITHIN ITS AREA OF COVERAGE.
4. FIELD ADJUST EACH SENSOR TO MAXIMIZE ITS COVERAGE OF ROOM SPACE.
5. RELOCATE SENSORS WITH ULTRASONIC TECHNOLOGY TO AVOID BEING CLOSER TO HVAC DIFFUSERS AND POWER PACKS THAN RECOMMENDED BY MANUFACTURER.
6. FIELD SET TIME DELAY FOR EACH DEVICE AS NOTED BELOW:
a. CONFERENCE ROOMS: 20 MINUTES
b. STORAGE ROOMS, JANITOR'S CLOSETS: 5 MINUTES
c. OTHER SPACES: 20 MINUTES.

O. LIGHTING:
1. INSTALL LUMINAIRES SECURELY, IN NEAT AND WORKMANLIKE MANNER.
2. INSTALL LUMINAIRE OF TYPES INDICATED WHERE SHOWN AND AT INDICATED HEIGHTS; IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT LUMINAIRES COMPLY WITH REQUIREMENTS AND SERVE INTENDED PURPOSES.
3. ALIGN, MOUNT AND LEVEL LUMINAIRES UNIFORMLY. USE BALL HANGERS FOR SUSPENDED STEM MOUNTED LUMINAIRES.
4. AVOID INTERFERENCE WITH AND PROVIDE CLEARANCE FOR EQUIPMENT. WHERE THE INDICATED LOCATIONS FOR THE LUMINAIRES CONFLICT WITH LOCATIONS FOR EQUIPMENT, CHANGE LOCATIONS FOR THE LUMINAIRE AS DIRECTED BY ARCHITECT.
5. SUPPORT LUMINAIRES: ANCHOR SUPPORTS TO STRUCTURAL SLAB OR TO STRUCTURAL MEMBERS WITHIN A PARTITION, OR ABOVE A SUSPENDED CEILING. MAINTAIN LUMINAIRE POSITIONS AFTER CLEANING AND RELAMPING. SUPPORT LUMINAIRES WITHOUT CAUSING CEILING OR PARTITION TO DEFLECT.
6. PROVIDE RECESSED LUMINAIRES WITH TWO SUPPORT WIRES AS REQUIRED BY CBC.
7. WIRING:
a. RECESSED LUMINAIRES TO BE INSTALLED USING FLEXIBLE METALLIC CONDUIT WITH LUMINAIRE CONDUCTORS SPLICED TO BRANCH CIRCUIT CONDUCTORS IN NEARBY ACCESSIBLE JUNCTION BOX OVER CEILING. JUNCTION BOX FASTENED TO BUILDING STRUCTURAL MEMBER WITHIN 6 FEET OF LUMINAIRE.
b. INSTALL LUMINAIRES FOR LIFT OUT AND REMOVAL FROM CEILING PATTERN WITHOUT DISCONNECTING CONDUCTORS OR DEFACING CEILING MATERIALS.
c. FLEXIBLE CONNECTIONS WHERE PERMITTED TO EXPOSED LUMINAIRES; NEAT AND STRAIGHT, WITHOUT EXCESS SLACK, ATTACHED TO SUPPORT DEVICE.
d. INSTALL JUNCTION BOX, FLEXIBLE CONDUIT AND HIGH TEMPERATURE INSULATED CONDUCTORS FOR THROUGH WIRING OF RECESSED LUMINAIRES.
8. RELAMP LUMINAIRES WHICH HAVE FAILED LAMPS AT SUBSTANTIAL COMPLETION.
9. REPLACE DRIVERS DEEMED AS EXCESSIVELY NOISY BY ARCHITECT, ENGINEER, OR OWNER.
10. MAKE WIRING CONNECTIONS TO BRANCH CIRCUIT USING BUILDING WIRE WITH INSULATION SUITABLE FOR TEMPERATURE CONDITIONS WITHIN LUMINAIRE.
11. WHERE REMOTE DRIVERS ARE REQUIRED, INSURE ADEQUATE ACCESSIBILITY. UPSIZE CONDUCTORS BETWEEN LUMINAIRE AND DRIVER TO ACCOMMODATE VOLTAGE DROP.

3.5 FIELD QUALITY CONTROL

A. TESTS: CONDUCT TESTS OF EQUIPMENT AND SYSTEMS TO DEMONSTRATE COMPLIANCE WITH REQUIREMENTS SPECIFIED IN THIS DIVISION. REFER TO INDIVIDUAL SPECIFICATION SECTIONS FOR REQUIRED TESTS. DOCUMENT TESTS AND INCLUDE IN CLOSEOUT DOCUMENTS. DURING SITE EVALUATIONS BY ARCHITECT, PROVIDE AN ELECTRICIAN WITH TOOLS TO REMOVE AND REPLACE TRIMS, COVERS, DEVICES, AND THE LIKE, SO THAT A PROPER EVALUATION OF THE INSTALLATION CAN BE PERFORMED.

B. VERIFY ELECTRICAL CHARACTERISTICS OF EQUIPMENT PRIOR TO INSTALLATION OF CONDUITS AND WIRING FOR EQUIPMENT.

C. WIRING DEVICE TESTS: TEST WIRING DEVICES TO ENSURE ELECTRICAL CONTINUITY OF GROUNDING CONNECTIONS, AND AFTER ENERGIZING CIRCUITRY, TO DEMONSTRATE COMPLIANCE WITH REQUIREMENTS. TEST RECEPTACLES FOR LINE TO NEUTRAL, LINE TO GROUND AND NEUTRAL TO GROUND FAULTS. CORRECT DEFECTIVE WIRING.

D. USE MANUFACTURER'S PUBLISHED TESTING AND ADJUSTING PROCEDURES TO ADJUST SENSORS TIME DELAY, DAYLIGHT SENSITIVITY, AND PASSIVE INFRARED SENSITIVITY TO SATISFACTION OF THE OWNER.

E. VERIFICATION OF CONDITIONS: VERIFY CEILING CONSTRUCTION, RECESSING DEPTH AND OTHER CONSTRUCTION DETAILS PRIOR TO RELEASE OF LUMINAIRE FOR SHIPMENT.

3.6 CLEANING

A. REMOVE DIRT AND DEBRIS CAUSED BY THE EXECUTION OF THE ELECTRICAL WORK. LEAVE THE ENTIRE ELECTRICAL SYSTEM INSTALLED IN CLEAN, DUST-FREE AND PROPER WORKING ORDER.

B. THOROUGHLY CLEAN EXPOSED PORTIONS OF EQUIPMENT, REMOVING TEMPORARY LABELS AND TRACES OF FOREIGN SUBSTANCES. THROUGHOUT WORK, REMOVE CONSTRUCTION DEBRIS AND SURPLUS MATERIALS ACCUMULATED DURING WORK.

C. WHERE FINISH OF LUMINAIRES OR ENCLOSURES IS DAMAGED, TOUCH UP FINISH WITH MATCHING PAINT IN ACCORDANCE TO MANUFACTURER'S SPECIFICATIONS AND INSTALLATION INSTRUCTIONS.

D. CLEAN PAINT SPLATTERS, DIRT, DUST, FINGERPRINTS, AND DEBRIS FROM LUMINAIRES.

SECTION 269000 - BUILDING LIGHTING ACCEPTANCE TESTING AND DOCUMENTATION

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. THIS SECTION DESCRIBES THE ACCEPTANCE TESTING AND DOCUMENTATION OF THE LIGHTING SYSTEM(S) AND OUTLINES THE DUTIES AND RESPONSIBILITIES OF THE CONTRACTING TEAM FOR ACCEPTANCE TESTING.

B. SUPPLY THE ACCEPTANCE REQUIREMENTS TO PRODUCTS, EQUIPMENT AND SYSTEMS PROVIDED UNDER THIS DIVISION, WHERE INDICATED ON PLANS, AND WHERE REQUIRED BY CALIFORNIA TITLE 24 REQUIREMENTS.

C. ENGAGE THE SERVICES OF A FIRM SPECIALIZING IN COMMISSIONING OF LIGHTING SYSTEMS OR SHALL SUBMIT CONTRACTOR QUALIFICATIONS FOR REVIEW BY ARCHITECT WHERE TESTING AND DOCUMENTATION IS TO BE PERFORMED BY CONTRACTOR.

1.2 THE COMMISSIONING TEAM

A. FORM THE COMMISSIONING TEAM OF:
16. ELECTRICAL CONTRACTOR'S REPRESENTATIVE
17. LIGHTING CONTROLS MANUFACTURER'S REPRESENTATIVE
18. INSPECTOR OF RECORD
19. OWNER'S STAFF REPRESENTATIVE

PART 2 - PRODUCTS

2.1 DUTIES OF THE TEAM

A. THE DUTIES OF THE TEAM ARE AS OUTLINED IN THE TITLE 24 REQUIREMENTS AND SUMMARIZED BELOW:
1. PLAN, ORGANIZE AND IMPLEMENT THE ACCEPTANCE TESTING PROCESS AND WITHIN 1 MONTH OF THE AWARD OF THE CONTRACT, SUBMIT THE NAMES AND ADDRESSES OF THE TESTING TEAM MEMBER(S).
2. THE ACCEPTANCE TESTING TEAM SHALL SUBMIT A COMPLETE DESCRIPTION OF THE TESTING PROCEDURES AND SYSTEMS TO BE TESTED TO THE ARCHITECT FOR REVIEW.
3. THE ACCEPTANCE TESTING TEAM SHALL COORDINATE TESTS OF SYSTEMS AND EQUIPMENT AND ASSEMBLE DOCUMENTATION RELATED TO TESTS. SUBMIT DOCUMENTATION RELATIVE TO TESTS AND PROPOSED PROCEDURES TO DESIGN ENGINEER FOR REVIEW PRIOR TO SUBMITTING DOCUMENTATION TO AUTHORITY HAVING JURISDICTION (AHJ). TEAM RESPONSIBLE FOR PERFORMING DATA ANALYSIS, CALCULATION OF PERFORMANCE INDICES AND CROSSCHECKING OF RESULTS WITH THE REQUIREMENTS OF TITLE 24 AND THE CONTRACT DOCUMENTS. THE INSTALLING CONTRACTOR OR AGENT RESPONSIBLE FOR TESTING AND DOCUMENTATION SHALL RECORD THEIR STATE OF CALIFORNIA CONTRACTOR'S LICENSE NUMBER OR THEIR STATE OF CALIFORNIA PROFESSIONAL REGISTRATION LICENSE NUMBER ON EACH CERTIFICATE OF ACCEPTANCE FOR SUBMITTAL.
4. RESPONSIBLE FOR SUBMITTING CERTIFICATE OF ACCEPTANCE INCLUDING PAPER AND ELECTRONIC COPIES OF MEASUREMENTS AND MONITORING RESULTS AND SUPPORTING DOCUMENTATION TO THE AHJ. WHERE AHJ QUESTIONS RESULTS OR REQUIRES ADDITIONAL TESTING, COMPLETE ADDITIONAL TESTING AND PROVIDE REQUIRED DOCUMENTATION AT NO ADDITIONAL COST TO THE OWNER.

2.2 TIME SCHEDULE

A. DETERMINE THE TIME PERIOD OF THE COMMISSIONING OF THE SYSTEMS BY THE GENERAL CONTRACTOR AND ACCEPTANCE TESTING TEAM. IT IS IMPORTANT TO NOTE THAT AHJ WILL NOT RELEASE A FINAL CERTIFICATE OF OCCUPANCY UNTIL A CERTIFICATE OF ACCEPTANCE IS SUBMITTED THAT DEMONSTRATES THAT THE SPECIFIED SYSTEMS AND EQUIPMENT HAVE BEEN SHOWN TO BE PERFORMING IN ACCORDANCE WITH THE TITLE 24 STANDARDS.

2.3 ACCEPTANCE TESTING - PHASE I - DOCUMENTATION

A. TEAM SHALL ASSEMBLE DOCUMENTATION SHOWING LIGHTING FIXTURE LOCATIONS, LIGHTING CONTROL DEVICE LOCATIONS, CONTROL SEQUENCES AND NOTES.

B. PER TITLE 24 REQUIREMENTS, TEAM SHALL PROVIDE RECORD DRAWINGS TO BUILDING OWNER WITHIN 90 DAYS OF RECEIVING A FINAL OCCUPANCY PERMIT (REFER TO OTHER SPECIFICATION SECTIONS FOR REQUIREMENTS ON RECORD DRAWINGS.)

C. PER TITLE 24 REQUIREMENTS, TEAM SHALL PROVIDE OPERATING AND MAINTENANCE MANUALS TO THE BUILDING OWNER (REFER TO OTHER SPECIFICATION SECTIONS FOR REQUIREMENTS ON OPERATION AND MAINTENANCE MANUALS.)

2.4 ACCEPTANCE TESTING - PHASE II - INSPECTION AND TESTING

A. TEAM SHALL REVIEW THE INSTALLATION, PERFORM ACCEPTANCE TESTING AND DOCUMENT RESULTS FOR THE FOLLOWING SYSTEMS:
1. OCCUPANCY SENSORS

B. REVIEW OF INSTALLATION SHALL CONFIRM LIGHTING FIXTURES AND LIGHTING CONTROLS ARE PROPERLY LOCATED, IDENTIFIED, CALIBRATED, AND SET POINTS AND SCHEDULES PROGRAMMED PER CONTRACT DOCUMENT REQUIREMENTS.

2.5 ACCEPTANCE TESTING - PHASE III - CERTIFICATION

A. TEAM SHALL DOCUMENT OPERATING AND MAINTENANCE INFORMATION, COMPLETE INSTALLATION CERTIFICATE, AND INDICATE TEST RESULTS ON THE CERTIFICATE OF ACCEPTANCE, AND SUBMIT THE CERTIFICATE TO THE AHJ PRIOR TO RECEIVING FINAL OCCUPANCY PERMIT. TEAM SHALL SUBMIT FORMS NCRA-LTI-02-A THROUGH NCRA-LTI-05-A AND NRCA-LTO-02-A AS REQUIRED BY TITLE 24 REQUIREMENTS.

PART 3 - EXECUTION

3.1 ACCEPTANCE TESTS AND DOCUMENTATION

A. REFER TO CALIFORNIA TITLE 24, NON-RESIDENTIAL MANUAL FOR SPECIFIC TESTING PROCEDURES AND DOCUMENTATION REQUIREMENTS. THE DETAILED REQUIREMENTS CAN BE FOUND AT HTTP://WWW.ENERGY.CA.GOV/TITLE24/2019STANDARDS/INDEX.HTML . CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND COMPLYING WITH THESE STANDARDS

END OF ELECTRICAL SPECIFICATIONS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

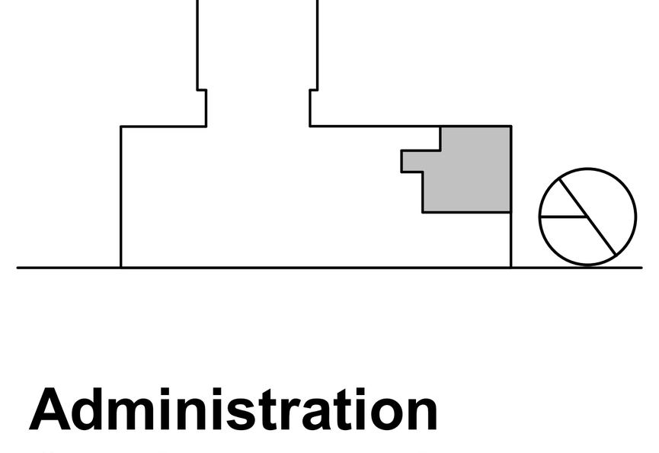
CLIENT
Chabot Las-Positas Community College District
5020 Franklin Dr.
Pleasanton, CA 94588

ARCHITECT
Steinberg Architects
60 Pierce Avenue
San Jose, CA 95110

INTERFACE ENGINEERING
PROJECT 2020-0137
CONTACT Robby Hubilla
135 Main Street, Suite 400
San Francisco, CA 94105
TEL 415.489.7240
www.interfaceengineering.com

REV	DATE	ISSUE

REGISTERED PROFESSIONAL ENGINEER
JASON LAU
No. E16806
ELECTRICAL
STATE OF CALIFORNIA



Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

SPECIFICATIONS - ELECTRICAL

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: 12" = 1'-0"

E5.01

FIRE PROTECTION SYMBOL LIST

NOTE: This is a standard symbol list and not all items listed may be used.

Abbreviations

(A)	ABANDON IN PLACE
AFF	ABOVE FINISHED FLOOR
AS	AUTOMATIC SPRINKLER
BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DECK
BOP	BOTTOM OF PIPE
BOR	BOTTOM OF RISER
BV	BUTTERFLY VALVE
C	CENTER LINE
CV	CHECK VALVE
(X)	DEMOLITION
DDCV	DOUBLE DETECTOR CHECK VALVE ASSEMBLY
DN	DROP NIPPLE
EL	ELEVATION
(E)	EXISTING
EC	EXTENDED COVERAGE
F	FAHRENHEIT
FT	FEET
FF	FINISHED FLOOR
FDC	FIRE DEPARTMENT CONNECTION
FHC	FIRE HOSE CABINET
FHS	FIRE HOSE STATION
FFL	FLOOR FLANGE
FS	FLOW SWITCH
(F)	FUTURE
GPM	GALLONS PER MINUTE
GV	GATE VALVE
G	GRADE
H	HANGER
HSW	HORIZONTAL SIDE WALL
HV	HOSE VALVE
IN	INCHES
ID	INSIDE DIAMETER
MAX	MAXIMUM
MIN	MINIMUM
(N)	NEW
N&C	NIPPLE AND CAP
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NO	NUMBER
OBJ	OPEN BAR JOIST
OD	OUTSIDE DIAMETER
OS & Y	OUTSIDE SCREW & YOKE
PIV	POST INDICATOR VALVE
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
(R)	RELOCATE/RELOCATED LOCATION
RN	RISER NIPPLE
RM	ROOF MANIFOLD
SOV	SHUT OFF VALVE
SF	SQUARE FEET
SSP	STANDARD SPRAY PENDENT
SSU	STANDARD SPRAY UPRIGHT
SP	STANDPIPE
SB	SWAY BRACE
TS	TAMPER SWITCH
TOB	TOP OF BEAM
TOP	TOP OF PIPE
TOR	TOP OF RISER
TOS	TOP OF STEEL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE

Control

- BELL/GONG
- CONTROL PANEL
- FLOW DETECTION SWITCH
- MONITOR SWITCH
- PRESSURE GAUGE
- TAMPER DETECTOR
- WATER MOTOR ALARM

General

- CONTINUATION
- DETAIL NUMBER AND SHEET LOCATION
- XX-X LOCATION — EQUIPMENT IDENTIFICATION
- XX — FOOD SERVICE EQUIPMENT / CALCULATION TAG
- X — KEYED NOTE
- PIPE OR CONDUIT BELOW GRADE
- POINT OF CONNECTION
- SECTION NUMBER AND SHEET LOCATION
- DEMOLISH
- DEMOLISH (DASH-DOT)
- EXISTING WORK
- NEW WORK

Miscellaneous

- 2-WAY SWAY BRACE
- 4-WAY SWAY BRACE
- AUXILIARY DRAIN
- H1 — BRANCHLINE RESTRAINT (TEXT INDICATES TYPE)
- COUPLING
- DRY HOSE STATION
- 14'-0" — ELEVATION ABOVE FINISHED FLOOR
- FLANGED COUPLING
- FLEX — FLEXIBLE COUPLING
- GROOVED CAP
- GROOVED COUPLING
- H1 — HANGER (TEXT INDICATES TYPE)
- HYDRAULIC CALCULATION NODE
- RISER
- SCREWED CAP
- SCREWED PLUG
- UNION
- WET HOSE STATION

HAZARD CLASSIFICATIONS

OCCUPANCY	DESCRIPTION	MAX SPRINKLER SPACING	DESIGN DENSITY	REMOTE AREA
LIGHT HAZARD	VESTIBULES, HALLS, RESTROOMS, OFFICES, COMPUTER LABS, TELECOMMUNICATION ROOMS, EVES AND OVERHANGS WITH COMBUSTIBLE CONSTRUCTION AND NO COMBUSTIBLE BENEATH, LIBRARIES WITH SMALL STACK AREAS.	225 SQ FT	0.10 GPM/SQ FT	1500 SQ FT
ORDINARY HAZARD GROUP 1	ELECTRICAL ROOMS, MECHANICAL ROOMS, JANITORS CLOSEST, STORAGE ROOMS	130 SQ FT	0.15 GPM/SQ FT	1500 SQ FT

MAXIMUM DISTANCE BETWEEN HANGERS (FT-IN)

STEEL PIPE	NOMINAL PIPE SIZE (IN)							
	1	1-1/4	1-1/2	2	2-1/2	3	4	6
	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0

FOR STEEL PIPE, THE MAXIMUM LENGTH FOR UNSUPPORTED ARMOVER SHALL BE 2'-0". WHEN PRESSURE EXCEEDS 100 PSI, UNSUPPORTED LENGTH SHALL BE 1'-0".

DISTANCE FROM SPRINKLER TO HANGER

36" FOR 1"
48" FOR 1-1/4"
60" FOR 1-1/2" OR LARGER
MAX
THEN EXTEND HERE
GREATER THAN 36" FOR 1"
GREATER THAN 48" FOR 1-1/4"
GREATER THAN 60" FOR 1-1/2" OR LARGER

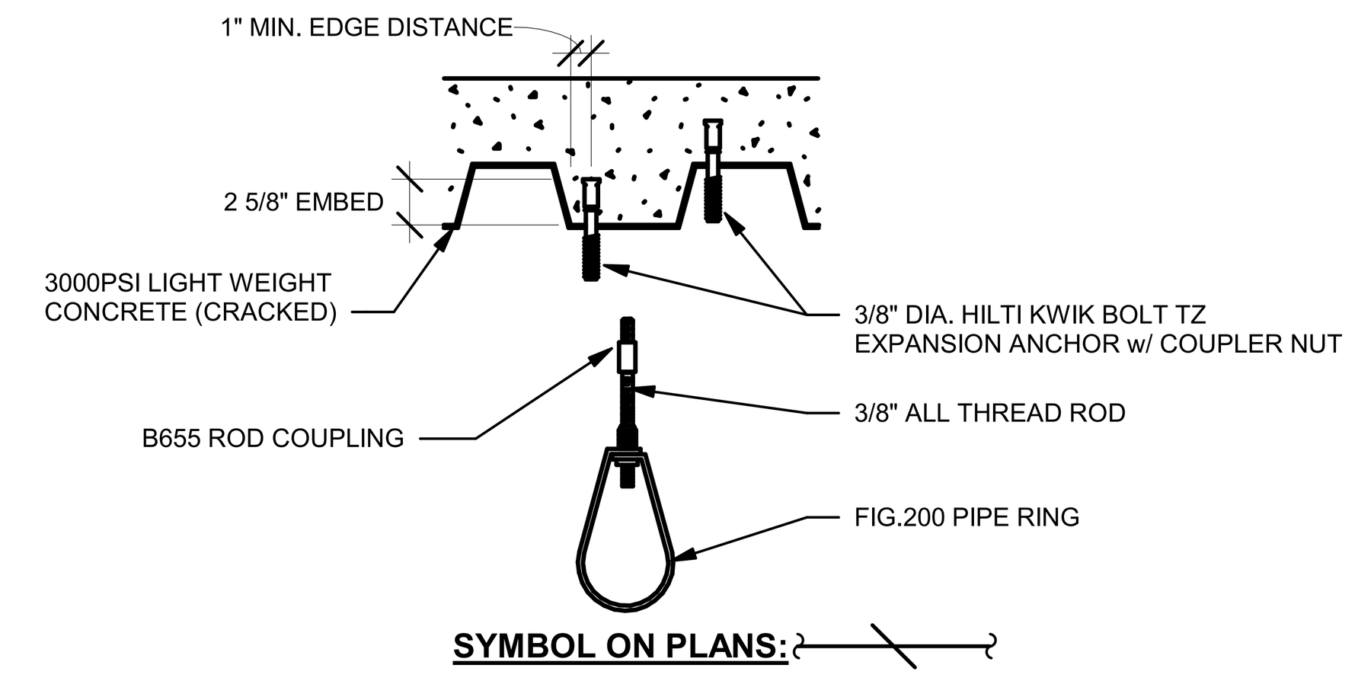
HANGER ROD SIZE	
PIPE SIZE	DIA. OF ROD
UP TO AND INCLUDING 4"	3/8"
6" AND 8"	1/2"

NOTE: TYPICAL TICK MARKS AS SHOWN ON PIPING PLAN MAY NOT REFLECT ACTUAL FIELD INSTALLATION. FINAL HANGER INSTALLATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 13 CHAPTER 9.

MAXIMUM SPACING (ft)(m) OF STEEL PIPE RESTRAINTS

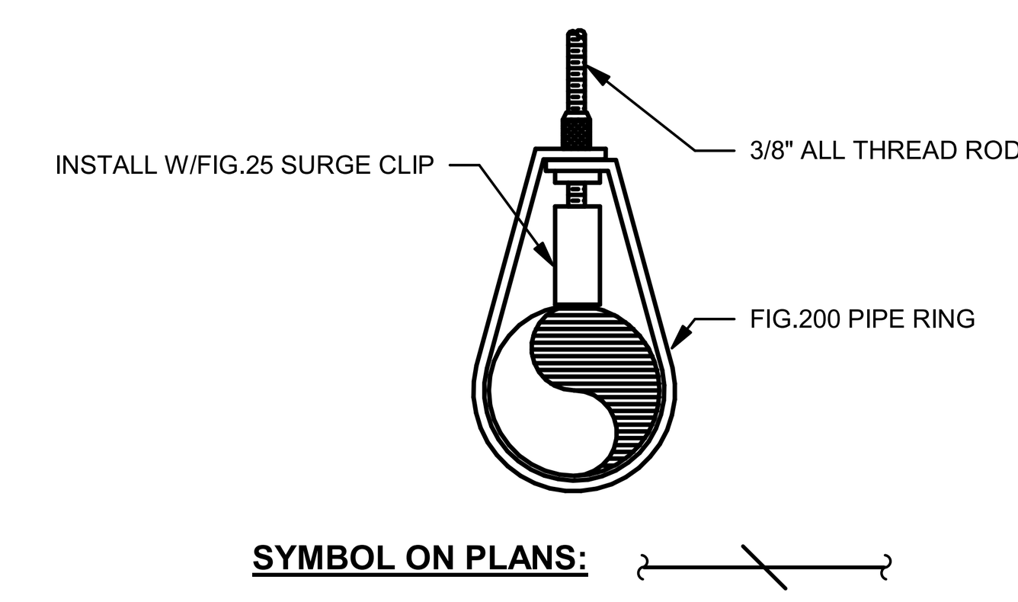
PIPE (in.) (mm)	SEISMIC COEFFICIENT, Cp: Cp ≤ .49	.5 < Cp ≤ .71	.71 < Cp ≤ 1.40	Cp ≥ 1.40
1 (25)	43 (13.1)	36 (11.0)	26 (7.9)	22 (6.7)
1-1/4 (32)	46 (14.0)	39 (11.9)	27 (8.2)	24 (7.3)
1-1/2 (40)	49 (14.9)	41 (12.5)	29 (8.8)	25 (7.6)
2 (50)	53 (16.1)	45 (13.7)	31 (9.4)	27 (8.2)

PROJECT SITE SPECIFIC COLUMN



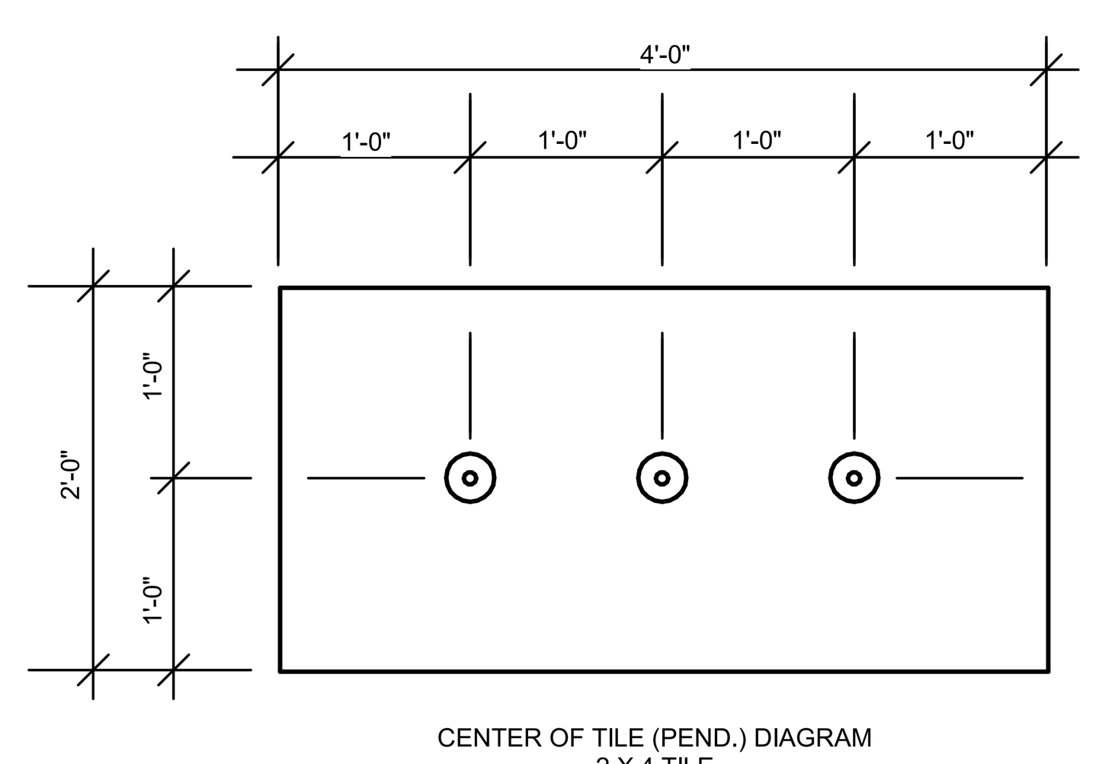
1 CONCRETE DECK INSERT HANGER

NO SCALE



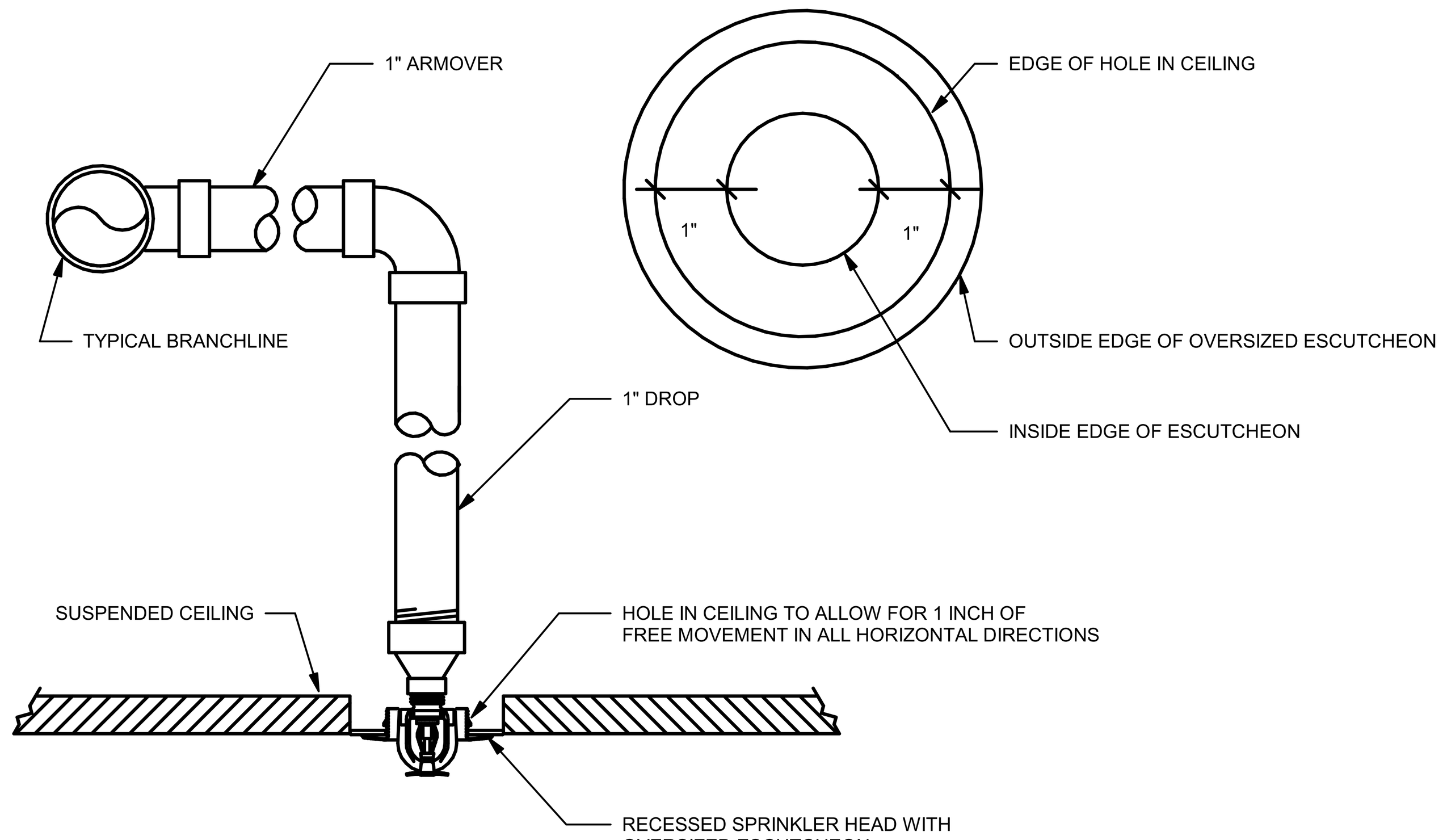
2 END OF BRANCHLINE HANGER

NO SCALE



3 TILE DETAIL

NO SCALE



4 PENDENT IN SUSPENDED CEILINGS WITH OVERSIZED ESCUTCHEON

NO SCALE

GENERAL FIRE PROTECTION NOTES

A. SCOPE OF WORK: MODIFY AND EXTEND EXISTING WET-PIPE SPRINKLER SYSTEM TO REMODELED PORTIONS OF BUILDING. REMOVE (2) 11.2k SPRINKLER HEADS IN DEMO AREA, ADD (5) 5.6k SPRINKLERS HEADS. TOTAL OF (3) ADDITIONAL 5.6k SPRINKLER HEADS ADDED.

B. NEW SPRINKLERS TO MATCH EXISTING THERMAL, RESPONSE AND FINISH CHARACTERISTICS OF EXISTING SPRINKLERS IN SAME AREA.

C. EXISTING WET-PIPE SPRINKLER SYSTEM DEISGNED PER NFPA 13(2010).

D. EXISTING BASIS OF DESIGN OH-1 (.15GPM/SQ FT) OVER 1600 SQFT. 250 HOSE ALLOWANCE. HYDRAULICALLY CALCULATED DEMAND WAS: 790.8GPM @ 80.1PSI (9-SPRINKLERS)

E. OCCUPANCY AND BUILDING CLASSIFICATION HAS NOT CHANGED. HAZARD CLASSIFICATION REDUCED FROM OH-1(.15) TO LIGHT HAZARD (.10). ESTABLISHED PIPE SCHEDULE HAS NOT CHANGED.

F. HYDRAULICALLY DESIGNED REMOTE AREA LAYOUT HAS BEEN MODIFIED, HOWEVER SPRINKLER DEMAND HAS BEEN REDUCED; LH (.10GPM/SQ FT.) OVER SAME REMOTE AREA SIZE. 100 GPM HOSE ALLOWANCE. HYDRAULICALLY CALCULATED DEMAND IS: 513GPM @ 48.2 PSI. (12-SPRINKLERS).

G. EXISTING SWAY BRACING TO REMAIN IN PLACE.

DSA NOTES

APPLICABLE STANDARD AND CODES:
2016 NFPA 13
2019 CALIFORNIA FIRE CODE
2019 CALIFORNIA BUILDING CODE
2019 CALIFORNIA MECHANICAL CODE
2019 CALIFORNIA ELECTRICAL CODE

A. DESIGN TO MEET REQUIREMENTS OF NFPA 13 (2016 EDITION), CBC (2016 EDITION), AND REQUIREMENTS OF THE STATE OF CALIFORNIA DSA (DIVISION OF THE STATE ARCHITECT).
B. 2016 NFPA SECTION 10.10.2.1.1, UNDERGROUND MAINS AND LEAD-IN CONNECTIONS TO SYSTEM RISERS SHALL BE COMPLETELY FLUSHED BEFORE CONNECTION IS MADE TO OVERHEAD SPRINKLER PIPING. RISER "STUB-UP" SHALL BE PROTECTED TO PREVENT INSECTS, ANIMALS, AND DEBRIS, ETC. FROM ENTERING THE PIPE.
C. PROVIDE FLOW TEST DATA AND INDICATE THE LOCATIONS AND HEIGHT ELEVATIONS OF THE TEST AND RESIDUAL FLOW HYDRANTS. DATA MUST BE NO MORE THAN 6 MONTHS OLD AND PROVIDE INFORMATION ABOUT AVAILABLE WATER AT THE SITE. INFORMATION MAY COME FROM THE LOCAL WATER PURVEYOR, UTILITIES COMPANY, OR LOCAL FIRE DEPARTMENT.
D. 2016 NFPA 13 SECTION 10.10.1: A COPY OF COMPLETED AND SIGNED "CONTRACTOR'S MATERIALS AND TEST CERTIFICATE FOR UNDERGROUND / ABOVE GROUND PIPING" SHALL BE INCLUDED IN OPERATION AND MAINTENANCE MANUAL.
E. 2016 NFPA 13 SECTION 10.10.2.2.1: ALL PIPING AND ATTACHED APPURTENANCES SUBJECTED TO SYSTEM WORKING PRESSURE SHALL BE HYDROSTATICALLY TESTED AT 200 PSI, OR 50 PSI ABOVE WORKING PRESSURE, WHICHEVER IS GREATER, AND SHALL MAINTAIN WITHOUT LOSS FOR 2 HOURS.
F. 2016 NFPA 13 SECTION 6.2.9: PROVIDE SPARE SPRINKLER HEAD CABINET, SPRINKLER WRENCH, AND NO FEWER THAN 6 SPARE SPRINKLER HEADS MATCHING THE TYPES AND TEMPERATURE RATING IN EACH PROTECTED AREA FOR SYSTEMS LESS THAN 300 SPRINKLERS (12 SPARE SPRINKLER HEADS FOR SYSTEMS 300 TO 1,000 SPRINKLERS).
G. 2016 NFPA 13 SECTION 9.3.6.3: THE END SPRINKLER ON EACH LINE SHALL BE RESTRAINED AGAINST EXCESSIVE VERTICAL AND LATERAL MOVEMENT. BRANCH LINES SHALL BE LATERALLY RESTRAINED AT INTERVALS NOT EXCEEDING THOSE SPECIFIED IN NFPA13, TABLE 9.3.6.4 (a) BASED ON BRANCH LINE DIAMETER AND VALUE OF Cp.
H. 2016 NFPA 13 SECTION 25.2.3.1: THE SPRINKLER FLOW SWITCH SHALL BE TESTED TO CONFIRM THAT WHEN THE INSPECTORS TEST VALVE IS ACTIVATED AND ALARM WILL SOUND NO MORE THAN 5 MINUTES AFTER INITIAL FLOW. TEST TO BE WITNESSED BY PROJECT INSPECTOR.
I. 2016 CBC 904.4.3: CONNECTIONS TO PROTECTED PREMISES AND SUPERVISING STATION FIRE ALARM SYSTEMS SHALL BE TESTED TO VERIFY PROPER IDENTIFICATION AND TRANSMISSION OF ALARMS FROM AUTOMATIC FIRE EXTINGUISHING SYSTEM.
J. 2016 NFPA 13 SECTION 8.17.2.4.7: SIGNAGE SHALL BE PROVIDED AS REQUIRED.
K. AUTOMATICALLY TRANSMITTED TO AN APPROVED CENTRAL STATION MONITORING COMPANY. 2016 CBC 903.4.1: THE MAIN FIRE ALARM PANEL VALVE MONITORING AND WATER-FLOW ALARM AND TROUBLE SIGNALS SHALL BE DISTINCTLY DIFFERENT AND SHALL BE AUTOMATICALLY TRANSMITTED TO AN APPROVED SUPERVISING STATION.
L. 2016 NFPA 13 SECTION 25.5: A PERMANENT HYDRAULIC CALCULATIONS DESIGN PLACARD SHALL BE ATTACHED TO EACH RISER.
M. 2016 NFPA 13 SECTION 6.9.1 AND 2010 CBC 903.4.2: FLOW SWITCH SHALL BE CONNECTED TO A 10 INCH OUTSIDE ALARM BELL AT EACH RISER. APPROVED IDENTIFICATION SIGNS SHALL BE PROVIDED TO OUTSIDE ALARM BELL "SPRINKLER FIRE ALARM - WHEN BELL RINGS CALL 911 / FIRE DEPARTMENT."
N. TITLE 19 ARTICLE 906(A): A LABEL OF THE SELF-ADHESIVE TYPE SHALL BE PLACED ON THE FIRE DEPARTMENT CONNECTION OR ON THE RISER FOR FIRE SPRINKLER SYSTEMS WITH THE DATE OF SERVICE AND / OR DATE OF INSTALLATION WAS PERFORMED AND LICENSE NUMBER OF PERSON PERFORMING SERVICE WORK.
O. 2016 NFPA 13 FIGURE 25.1: SPRINKLER CONTRACTOR SHALL COMPLETE AND SIGN CONTRACTORS MATERIAL AND TEST CERTIFICATE FOR THE ABOVEGROUND PIPING. THIS FORM SHALL BE GIVEN TO THE PROJECT INSPECTOR WHO WILL FORWARD TO DSA FOR FILING IN PROJECT RECORDS.
P. ALL PIPE LENGTHS SHOWN ON PLANS ARE CENTER TO CENTER LENGTHS ROUNDED TO THE NEAREST INCH.
Q. BRACING CALCULATIONS WERE PERFORMED USING THE INFORMATION IN NFPA (2016) 13, CHAPTER 9 AND (2016) CBC, 1613 A.6.3 AND CHAPTER 35.
R. ALL BRANCH LINE PIPING 1" AND SMALLER IS SCHEDULE 40 BLACK STEEL PIPING 1-1/4" AND LARGER IS SCHEDULE 10 BLACK STEEL.
S. ALL MAIN PIPING IS SCHEDULE 10 BLACK STEEL UNLESS NOTED ON PLANS.

SPRINKLER HEAD LEGEND (EXISTING)

EXISTING SPRINKLER INFORMATION SHOWN FOR SCOPE AREA ONLY. DOES NOT REPRESENT ENTIRE FLOOR AREA.

SYMBOL	DESCRIPTION	MODEL NO.	K-FACTOR	ORIFICE SIZE	RESPONSE	TEMP	COVERAGE	FINISH	ESCHUTCHEON	COUNT	COMMENTS
▣	CONCEALED PENDENT SPRINKLER	TY3531	5.6	1/2"	Quick	155	Standard	CHROME	FLAT PLATE CHROME	4	
◪	EXTENDED COVERAGE PENDENT SPRINKLER	TY5237	11.2	3/4"	Standard	155	Extended	CHROME	RECESSED CHROME	13	

TOTAL SPRINKLERS: 17

SPRINKLER HEAD LEGEND (NEW WORK)

SYMBOL	DESCRIPTION	MODEL NO.	K-FACTOR	ORIFICE SIZE	RESPONSE	TEMP	COVERAGE	FINISH	ESCHUTCHEON	COUNT	COMMENTS
⊙	PENDENT SPRINKLER	TY325	5.6	1/2"	Standard	155	Standard	CHROME	RECESSED CHROME	5	PROVIDE W/ OVERSIZED ESCHUTCHEON PER ASCE-7

TOTAL SPRINKLERS: 5

SHEET INDEX

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

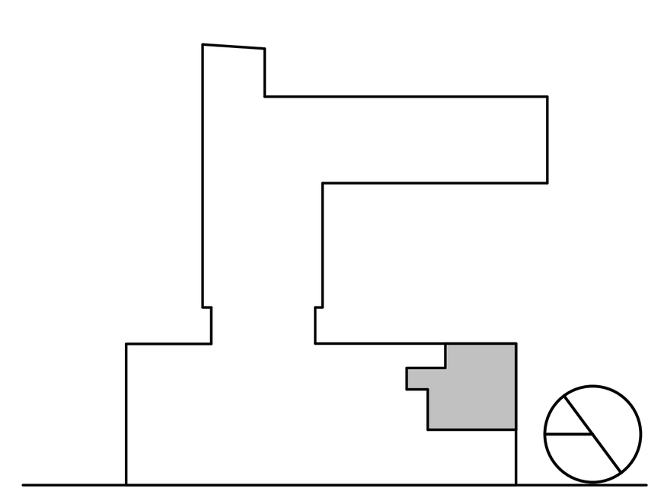
CLIENT
Chabot Las-Positas Community College District
5020 Franklin Dr.
Pleasanton, CA 94588

ARCHITECT
Steinberg Architects
60 Pierce Avenue
San Jose, CA 95110

INTERFACE ENGINEERING
PROJECT 2020-0137
CONTACT Calvin Karsch
135 Main Street, Suite 400
San Francisco, CA 94105
TEL 415.489.7240
www.interfaceengineering.com

REV DATE ISSUE

REGISTERED PROFESSIONAL ENGINEER
JARED F. DOESCHER
No. 35930
MECHANICAL
STATE OF CALIFORNIA



Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

SYMBOL LIST AND GENERAL NOTES - FIRE PROTECTION

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: As indicated

FP0.01

GENERAL SHEET NOTES

A. EXISTING BASIS OF DESIGN OH-1 (.15SGPM/SQ FT.) OVER 1605 SQ FT. 250 HOSE ALLOWANCE. HYDRAULICALLY CALCULATED DEMAND WAS: 790.8GPM @ 80.1PSI. NO NEW CALCULATIONS ARE BEING PROVIDED DUE TO EXISTING OH-1 SYSTEM DEMAND BEING HIGHER THAN NEW LIGHT HAZARD DEMAND.
   a. NEW SPRINKLER DEMAND IN EXISTING REMOTE AREA IS 513GPM @ 48.2PSI. FOR LIGHT HAZARD.

B. EXISTING SWAY BRACING TO REMAIN IN PLACE.

C. HANGERS AND BRANCHLINE RESTRAINTS TO REMAIN UNLESS NOTED OTHERWISE ON PLANS.

D. ALL NEW ARM-OVERS TO BE 1" SCH.40BLACK STEEL PIPE.

SHEET KEYNOTES

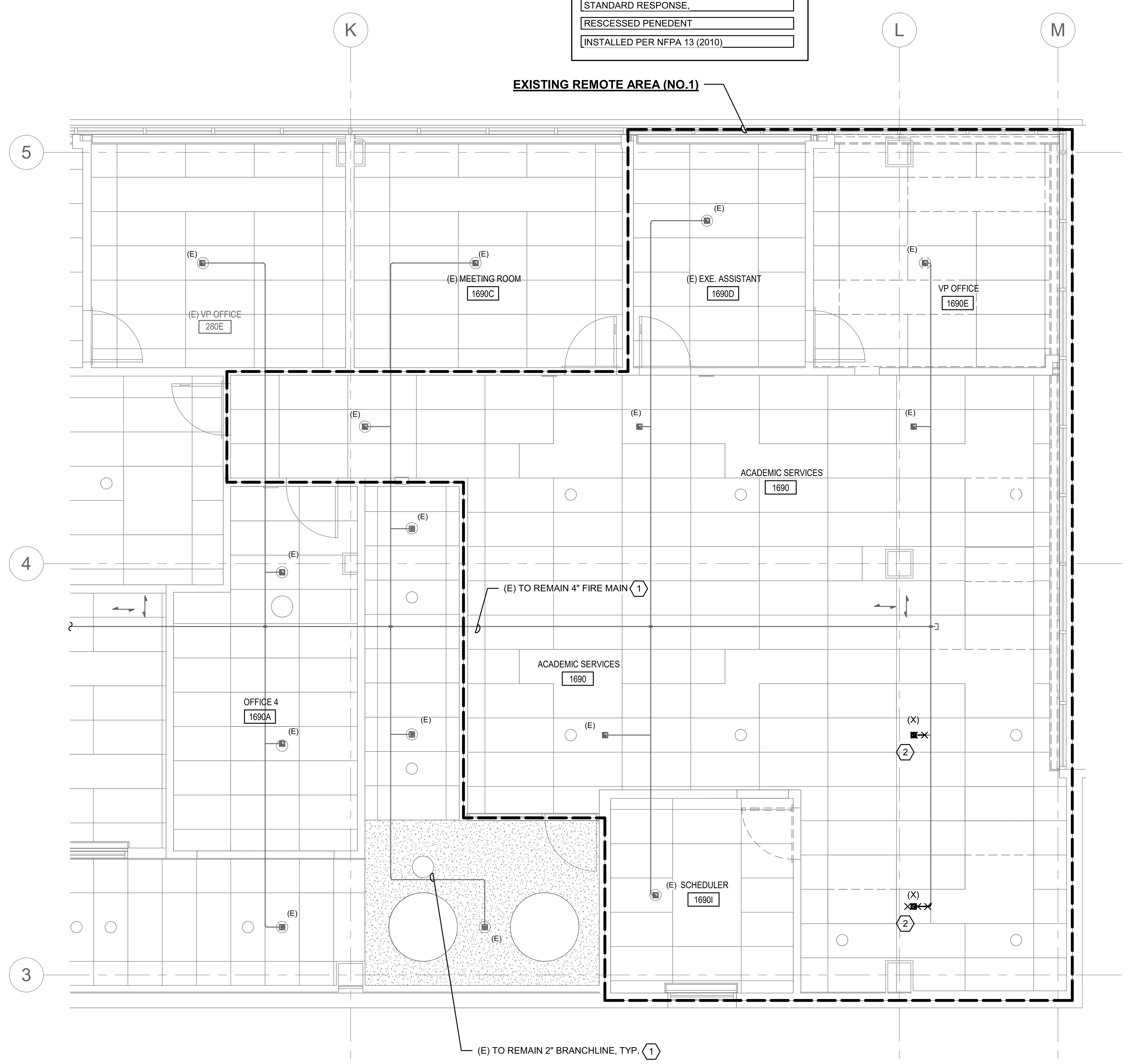
1. EXISTING 4" FIRE MAIN AND 2" BRANCHLINES TO REMAIN. INCLUDING SWAY BRACING, RESTRAINTS AND HANGERS.
2. DEMOLISH EXISTING SPRINKLER HEAD AND 1" ARM-OVER BACK TO BRANCHLINE. PROTECT FOR USE IN NEW CONSTRUCTION AREA.
3. PROVIDE NEW 1" MECHANICAL TEE CONNECTED TO NEW SPRINKLER HEAD IN EXISTING CEILING.
4. CONNECT NEW 1" ARM-OVER TO EXISTING TEE ON BRANCHLINE.
5. PROVIDE NEW 2"x1" TEE. CONNECT TO SPRINKLER HEADS TO NEW TEE ON EXISTING BRANCHLINE.
6. SMALL ROOM RULE - SPRINKLERS LOCATED IN SMALL ROOMS AS DEFINED BY NFPA 13(2016)3.3.22 SHALL BE LOCATED NO MORE THAN 9-FT FROM ANY WALL, NFPA 13(8.6.3.2.4.1).

HYDRAULIC REMOTE AREA

REMOTE AREA	NO.1 (EXISTING)
HAZARD	OH-1
AREA OF APPLICATION	1605 SQ. FT.
NO. OF SPRINKLERS	9
DENSITY	.15 GPM/SQ. FT.
SYSTEM DEMAND AT BASE OF RISER	790.8GPM @ 81PSI
HOSE — INSIDE	
HOSE — OUTSIDE	250 GPM
COVERAGE PER SPRINKLER	288 SQ. FT.

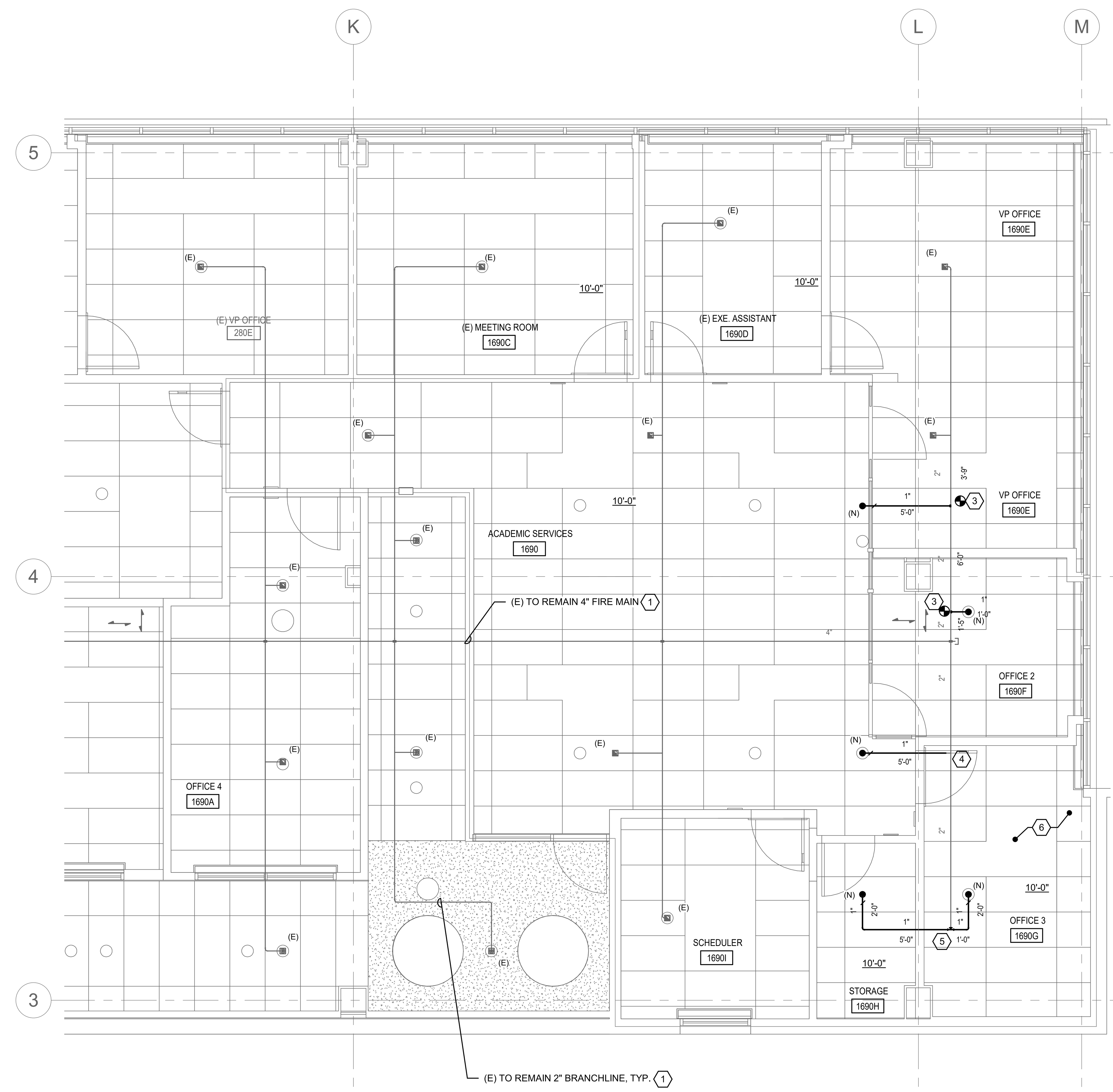
COMMENTS

(E) SPRINKLERS - TYCO MODEL TY5327 (11.2k)
STANDARD RESPONSE,
RESCESSED PENEDENT
INSTALLED PER NFPA 13 (2010)



1 LEVEL 2 ADMIN SUITE TI - DEMO FIRE PROTECTION PLAN - ADMIN

1/4" = 1'-0"



2 LEVEL 2 ADMIN SUITE TI FIRE PROTECTION PLAN - ADMIN

1/4" = 1'-0"

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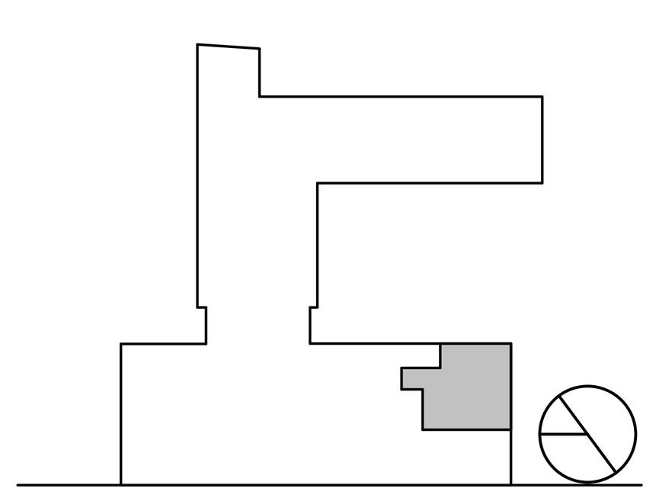

Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

ENLARGED RCP - DEMO AND NEW WORK - FIRE PROTECTION

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: 1/4" = 1'-0"

FP2.01

SECTION 21 0000 - FIRE SUPPRESSION BASIC REQUIREMENTS
PART 1 - GENERAL
1.01 SECTION INCLUDES
A. Work included in 21 00 00, Fire Suppression Basic Requirements applies to Division 21, Fire Suppression work to provide materials, labor, tools, permits, incidentals, and other services to provide and make ready for Owner's use of fire protection systems for proposed project.
B. Contract Documents include, but are not limited to, Specifications including Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Drawings, Addenda, Owner/Architect Agreement, and Owner/Contractor Agreement. Confirm requirements before commencement of work.
C. Definitions:
1. Provide: To furnish and install, complete and ready for intended use.
2. Furnish: Supply and deliver to project site, ready for unpacking, assembly and installation.
3. Install: Includes unloading, unpacking, assembling, erecting, installation, applying, finishing, protecting, cleaning and similar operations at project site as required to complete Item of work furnished.
4. Approved or Approved Equivalent: To possess the same performance qualities and characteristics and fulfill the utilitarian function without any decrease in quality, durability or longevity. For equipment/products defined by the Contractor as "equivalent," substitution requests must be submitted to Engineer for consideration, in accordance with Division 01, General Requirements, and approved by the Engineer prior to submitting bids for substituted Item.
5. Authority Having Jurisdiction (AHJ): Indicates reviewing authorities, including local fire marshal, Owner's insurance underwriter, Owner's Authorized Representative, and other reviewing entity whose approval is required to obtain systems acceptance.
1.02 RELATED SECTIONS
A. Content of Section applies to Division 21, Fire Suppression Contract Documents.
B. Related Work:
1. Additional conditions apply to this Division including, but not limited to:
a. Specifications including Division 00, Procurement and Contracting Requirements and Division 01, General Requirements.
b. Drawings
c. Addenda
d. Owner/Architect Agreement
e. Owner/Contractor Agreement
f. Codes, Standards, Public Ordinances and Permits
1.03 REFERENCES AND STANDARDS
A. References and Standards per Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, individual Division 21, Fire Suppression Sections and those listed in this Section.
B. Codes to include latest adopted editions, including current amendments, supplements and local jurisdiction requirements in effect as of the date of the Contract Documents, of/from:
1. State of California:
a. CBC - California Building Code
b. CEC - California Electrical Code
c. CEC T24 - California Energy Code Title 24
d. CFC - California Fire Code
e. CMC - California Mechanical Code
f. CPC - California Plumbing Code
g. CSFM - California State Fire Marshal
C. Reference standards and guidelines include but are not limited to the latest adopted editions from:
1. ASCE - American Society of Civil Engineers
2. ASCE-7 Minimum Design Loads for Buildings and Other Structures
3. ASTM - ASTM International
4. FM - FM Global
5. FM Global - FM Global Approval Guide
6. IEC - International Electrotechnical Commission
7. ICC-ESR - International Code Council Evaluation Service Reports
8. HI - Hydraulic Institute Standards
9. ISO - International Organization for Standardization
10. NEC - National Electric Code
11. NEMA - National Electrical Manufacturers Association
12. NFPA - National Fire Protection Association:
a. NFPA 13 - Standard for the Installation of Sprinkler Systems
b. NFPA 25 - Standard for Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems
c. NFPA 70 - National Electrical Code
d. NFPA 72 - National Fire Alarm and Signaling Code
13. UL - Underwriters Laboratories Inc.
D. See Division 21, Fire Suppression individual Sections for additional references.
1.04 SUBMITTALS
A. See Division 01, General Requirements for Submittal Procedures as well as specific individual Division 21, Fire Suppression sections.
B. Provide drawings in format and software release equal to the design documents. Drawings to be the same sheet size and scale as the Contract Documents.
C. "No Exception Taken" constitutes that review is for general conformance with the design concept expressed in the Contract Documents for the limited purpose of checking for conformance with information given. Any action is subject to the requirements of the Contract Documents. Contractor is responsible for the dimensions and quantity and will confirm and correlate at the job site, fabrication processes and techniques of construction, coordination of the work with that of all other trades, and the satisfactory performance of the work.
D. Provide product submittals and shop drawings in electronic format only. Electronic format must be submitted via zip file via e-mail. For electronic format, provide one file per division containing one bookmarked PDF file with each bookmark corresponding to each Specification Section. Arrange bookmarks in ascending order of Specification Section number. Individual submittals sent piecemeal in a per Specification Section method will be returned without review or comment. Copy Architect on all transmissions/submissions.
E. Submit shop drawings, calculations and product data sheets as one complete stand-alone package to AHJ, Owner's insurance underwriter and Engineer.
F. Product Data: Provide Manufacturer's descriptive literature for products specified in Division 21, Fire Suppression Sections.
G. Identify/mark each submittal in detail. Note what differences, if any, exist between the submitted item and the specified item. Failure to identify the differences will be considered cause for disapproval. If differences are not identified and/or not discovered during the submittal review process, Contractor remains responsible for providing equipment and materials that meet the Specifications and Drawings.
1. Label submittal to match numbering/references as shown in Contract Documents. Highlight and label applicable information to individual equipment or cross out/remove extraneous data not applicable to submitted model. Clearly note options and accessories to be provided, including field installed Item. Highlight connections by/to other trades.
2. Include technical data, installation instructions and dimensioned drawings for products, equipment and devices installed, furnished or provided. Reference Division 21, Fire Suppression specification Sections for specific Item required in product data submittal outside of these requirements.
3. Provide pump curves, operation characteristics, capacities, ambient noise criteria, etc. for equipment.
4. For vibration isolation of equipment, list make and model selected with operating load and deflection. Indicate frame type where required. Submit manufacturer's product data.
5. See Division 21, Fire Suppression Sections for additional submittal requirements outside of these requirements.
H.
I. Substitutions and Variation from Basis of Design:
1. The Basis of Design designated product establishes the qualities and characteristics for the evaluation of any comparable products by other listed acceptable manufacturers if included in this Specification or included in an approved Substitution Request as judged by the Design Professional.
2. If substitutions and/or equivalent equipment/products are being proposed, it is the responsibility of parties concerned, involved in, and furnishing the substitute and/or equivalent equipment to verify and compare the characteristics and requirements of that furnished to that specified and/or shown. If greater capacity and/or more materials and/or more labor is required for the rough-in, circuitry or connections than for the item specified and provided for, then provide compensation for additional charges required for the proper rough-in, circuitry and connections for the equipment being furnished. No additional charges above the Base Bid, including resulting charges for work performed under other Divisions, will be allowed for such revisions. Coordinate with the requirements of "Submittals". For any product marked "or approved equivalent", a substitution request must be submitted to Engineer for approval prior to purchase, delivery or installation.
J. Shop Drawings:
1. Provide coordinated Shop Drawings which include physical characteristics of all systems, equipment and piping layout, pipe layout, hanger layout, sway brace layout, seismic restraints, sway brace calculations, drains, location of drain discharge, risers, valves, details, water test information, physical device layout plans, and control wiring diagrams. Reference individual Division 21, Fire Suppression Sections for additional requirements for shop drawings outside of these requirements.
2. Shop Drawings and hydraulics calculations, sway brace calculations, trapeze hanger calculations, and the like, to be prepared under the direct supervision and control of a Professional Engineer competent to do such work and licensed in the state of California. Drawings and calculations to bear the seal and wet signature of the professional Engineer.
3. Provide Shop Drawings which indicate information required by NFPA 13.
K. Operation and Maintenance Manuals/Owner's Instructions:
1. Submit, at one time, electronic files (PDF format) of manufacturer's operation and maintenance instruction manuals and parts lists for equipment or Item requiring servicing. Include valve charts. Submit data when work is substantially complete and in same order format as submittals. Include name and location of source parts and service for each piece of equipment.
a. Include copies of certificates of code authority acceptance, code-required acceptance tests; test reports and certificates.
b. Include Warranty per Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Section 21 00 00, Fire Suppression Basic Requirements and individual Sections.
c. Catalog description of each Item of equipment actually installed on job.
d. Instructions for operation and maintenance of fire suppression systems composed of operating instructions, maintenance instructions and manufacturer's literature as follows:
1) Testing and Maintenance Schedule Chart: Provide an 8-1/2- by 11-inch typewritten list of each item of installed equipment requiring testing inspection , lubrication or service, describing and scheduling performance of maintenance.
2) Manufacturer's Literature: Provide copies of manufacturer's instructions for operation and maintenance of fire suppression equipment, including replacement parts list with name and address of nearest distributor. Mark each copy with equipment identification label as listed in equipment schedule, i.e. F-5 etc.
e. Include product certificates of warranties and guarantees.
f. Include Record Drawings,
g. Include Contractor's Material and Test Certificates for Aboveground Piping/Underground Piping.
h. Include a copy of NFPA 25.
i. Include a copy of valve charts and whether normally open or normally closed.
j. Include a copy of drain, auxiliary, and low point drains charts.
k. Include a copy of the list to be included in the spare sprinkler head box.
l. Include copy of approved submittal data along with submittal review letters received from Engineer. Data to clearly indicate installed equipment model numbers. Delete or cross out data pertaining to other equipment not specific to this project.
m. Include copy of manufacturer's standard Operations and Maintenance for equipment. At front of each tab, provide routine maintenance documentation for scheduled equipment. Include manufacturer's recommended maintenance schedule and highlight maintenance required to maintain warranty. Furnish list of routine maintenance parts, including part numbers, sizes, and quantities relevant to each piece of equipment: i.e. belts, motors, lubricants, and filters.
2. Thoroughly instruct Owner in proper operation of equipment and systems. Where noted in individual Sections, training will include classroom instruction with applicable training aids and systems demonstrations. Field instruction per Section 21 00 00, Fire Suppression Basic Requirements, Article titled "Demonstration".
3. Copies of certificates of code authority inspections, acceptance, code required acceptance tests, letter of conformance and other special guarantees, certificates of warranties, specified elsewhere or indicated on Drawings.
1.05 QUALITY ASSURANCE
A. Regulatory Requirements: Work and materials installed to conform with all local, State and Federal codes, and other applicable laws and regulations. Where code requirements are at variance with Contract Documents, meet code requirements as a minimum requirement and include costs necessary to meet these in Contract. Machinery and equipment are to comply with OSHA requirements, as currently revised and interpreted for equipment manufacturer requirements. Install equipment provided per manufacturer recommendations.
B. Whenever this Specification calls for material, workmanship, arrangement or construction of higher quality and/or capacity than that required by governing codes, higher quality and/or capacity take precedence.
C. Drawings are intended to be diagrammatic and reflect the Basis of Design manufacturer's equipment. They are not intended to show every Item in its exact dimensions, or details of equipment or proposed systems layout. Verify actual dimensions of systems (i.e., piping) and equipment proposed to assure that systems and equipment will fit in available space. Contractor is responsible for design and construction costs incurred for equipment other than Basis of Design, including, but not limited to, architectural, structural, electrical, HVAC, fire sprinkler, and plumbing systems.
D. Manufacturer's Instructions: Follow manufacturer's written instructions. If in conflict with Contract Documents, obtain clarification. Notify Engineer/Architect, in writing, before starting work.
E. Items shown on Drawings are not necessarily included in Specifications or vice versa. Confirm requirements in all Contract Documents.
F. Provide products that are UL listed.
G. Piping Insulation products to contain less than 0.1 percent by weight PBDE in all insulating materials.
1.06 WARRANTY
A. Provide written warranty covering the work for a period of one year from date of Substantial Completion in accordance with Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Section 21 00 00, Fire Suppression Basic Requirements and individual Division 21, Fire Suppression Sections.
B. Sections under this Division can require additional and/or extended warranties that apply beyond basic warranty under Division 01, General Requirements and the General Conditions. Confirm requirements in all Contract Documents.
PART 2 - PRODUCTS
2.01 MANUFACTURERS
A. Articles, fixtures, and equipment of a kind to be standard product of one manufacturer, including but not limited to sprinkler heads, pipe, fittings, hangers and bracing materials.
2.02 STANDARDS OF MATERIALS AND WORKMANSHIP
A. Base contract upon furnishing materials as specified. Materials, equipment, and fixtures used for construction are to be new, latest products as listed in manufacturer's printed catalog data and are to be UL, FM, and CSFM approved for their intended fire protection function or have adequate approval or be acceptable by State, County, and City authorities.
B. Names and manufacturer's names denote character and quality of equipment desired and are not to be construed as limiting competition.
PART 3 - EXECUTION
3.01 ACCESSIBILITY AND INSTALLATION
A. Confirm Accessibility and Installation requirements in Division 00, Procurement and Contracting Requirements, Division 01, General Requirements, Section 21 00 00, Fire Suppression Basic Requirements and individual Division 21, Fire Suppression Sections.
B. Install equipment requiring access (i.e. drains, control operators, valves, motors, engines, pumps, controllers, air compressors, gauges, fill cups, tanks, cleanouts and the like) so that they may be serviced, reset, replaced or recalibrated by service people with normal service tools and equipment. Do not install equipment in obvious passageways, doorways, scuttles or crawlspaces which would impede or block intended usage.
C. Install equipment and products complete as directed by manufacturer's installation instructions. Obtain installation instructions from manufacturer prior to rough-in of equipment and examine instructions thoroughly. When requirements of installation instructions conflict with Contract Documents, request clarification from Architect prior to proceeding with installation. This includes proper installation methods, sequencing, and coordination with other trades and disciplines.
D. Firestopping:
1. Confirm Firestopping requirements in Division 07, Thermal and Moisture Protection.
2. In absence of specific requirements, comply with individual Division 21, Fire Suppression Sections and coordinate location and protection level of fire and/or smoke rated walls, ceilings, and floors. When these assemblies are penetrated, seal around piping, ductwork and equipment with approved firestopping material. Install firestopping material complete as directed by manufacturer's installation instructions. Meet requirements of ASTM International E814, Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
E. Pipe Installation:
1. Provide installation of piping systems coordinated to account for expansion and contraction of piping materials and building as well as anticipated settlement or shrinkage of building. Install work to prevent damage to piping, equipment, and building and its contents. Provide piping offsets, loops, expansion joints, sleeves, anchors or other means to control pipe movement and minimize forces on piping. Verify anticipated settlement and/or shrinkage of building with Project Structural Engineer. Verify construction phasing, type of building construction products and rating coordinating installation of piping systems.
2. Include provisions for servicing and removal of equipment without dismantling piping.
F. Plenums: Provide plenum rated materials that meet the requirements to be installed in plenums. Immediately notify Architect/Engineer of discrepancy.

3.04 CUTTING AND PATCHING
A. Confirm Cutting and Patching requirements in Division 01, General Requirements. In absence of specific requirements, comply with individual Division 21, Fire Suppression Sections and the following:
1. Cutting and patching performed under Division 21, Fire Suppression includes, but is not limited to:
a. Cutting and patching of plaster or partitions.
b. Cutting and patching of finished ceilings.
2. Perform cutting and patching by skilled craftsmen in trade of work to be performed. Fill holes which are cut oversized for completed work. Match refinished areas with existing adjacent finish in a manner acceptable to Architect.
3. When masonry to concrete construction must be penetrated, provide a steel pipe sleeve in opening and grout in place in a neat manner. Leave grout surface to match existing finish. Provide escutcheons. If sleeves are not provided, core drill penetrations.
4. Locate concealed utilities to eliminate possible service interruption or damage.
5. Additional work required by lack of proper coordination will be provided at no additional cost to the Owner.
6. Proposed floor cutting/core drilling/sleeve locations to be approved by Project Structural Engineer. Submit proposed locations to Architect/Project Structural Engineer. Where slabs are of post tension construction, perform x-ray scan of proposed penetration locations and submit scan results including proposed penetration locations to Project Structural Engineer/Architect for approval. Where slabs are of waffle type construction, show column cap extent and cell locations relative to proposed penetration(s).
7. Cutting, patching and repairing for work specified in this Division including plastering, masonry work, concrete work, carpentry work, and painting included under this Section will be performed by skilled craftsmen of each respective trade in conformance with appropriate Division of Work.
8. Additional openings required in building construction to be made by drilling or cutting. Use of jack hammer is specifically prohibited. Patch openings in and through concrete and masonry with grout.
9. Restore new or existing work that is cut and/or damaged to original condition. Patch and repair specifically where existing items have been removed. This includes repairing and painting walls, ceilings, etc. where existing conduit and devices are removed as part of this project. Where alterations disturb lawns, landscaping, paving, and walks, surfaces to be repaired, refinished and left in condition matching existing prior to commencement of work.
10. Repair mutilation of building around pipes, equipment, hangers, and braces.
3.05 EQUIPMENT SELECTION AND SERVICEABILITY
A. Replace or reposition equipment which is too large or located incorrectly to permit servicing at no additional cost to Owner.
3.07 DEMONSTRATION
A. Confirm Demonstration requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Section 21 00 00, Fire Suppression Basic Requirements and individual Division 21, Fire Suppression Sections.
B. Upon completion of work and adjustment of equipment and test systems, demonstrate to Owner's Authorized Representative, Architect and Engineer that equipment furnished and installed or connected under provisions of these Specifications functions in manner required. Provide field instruction to Owner's Maintenance Staff as specified in Division 01, General Requirements, Section 21 00 00, Fire Suppression Basic Requirements and individual Division 21, Fire Suppression Sections.
C. Manufacturer's Field Services: Furnish services of a qualified person at time approved by Owner to instruct maintenance personnel, correct defects or deficiencies, and demonstrate to satisfaction of Owner that entire system is operating in satisfactory manner and complies with requirements of other trades that may be required to complete work. Complete instruction and demonstration prior to final job site observations.
D. Prior to acceptance of work and during time designated by Architect, provide necessary qualified personnel to operate system for a period of two hours.
E. Instruct the Owner in the operation of the sprinkler system, including main valve position (open or closed) recognition, system drainage, system testing, dry pipe valve reset and the relation to the fire alarm system.
F. Upon completion of work and adjustment of equipment, test systems to demonstrate to Owner's Authorized Representative and Architect that equipment is furnished and installed or connected under provisions of these Specifications.
3.09 INSTALLATION
A. Confirm Installation requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Section 21 00 00, Fire Suppression Basic Requirements and individual Division 21, Fire Suppression Sections.
B. Install equipment in accordance with manufacturer's installation instructions, plumb and level and firmly anchored to vibration isolators. Maintain manufacturer's recommended clearances.
C. Start-up equipment, in accordance with manufacturer's start-up instructions, in the presence of manufacturer's representative. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment. Provide pump impellers to obtain Basis of Design design capacities.
D. Provide miscellaneous supports/metals required for installation of equipment and piping.
3.11 DEMOLITION
A. Confirm Demolition requirements in Division 01, General Requirements and Division 02, Existing Conditions. In absence of specific requirements, comply with individual Sections in Division 21, Fire Suppression and the following:
1. Scope:
a. It is the intent of these documents to provide necessary information and adjustments to fire protection system required to meet code, and accommodate installation of new work.
b. Coordinate with Owner so that work can be scheduled not to interrupt operations, normal activities, building access or access to different areas.
c. Existing Conditions: Determine exact location of existing utilities and equipment before commencing work, compensate Owner for damages caused by failure to exactly locate and preserve underground utilities. Replace damaged Item with new material to match existing. Promptly notify Owner if utilities are found which are not shown on Drawings.
2. Equipment and Piping: Unless otherwise directed, equipment, piping, or fittings being removed as part of demolition process are Owner's property. Remove other Item not scheduled to be reused or relocated from job site as directed by Owner.
3. Unless specifically indicated on Drawings, remove exposed, unused piping to behind finished surfaces (floor, walls, ceilings, etc.). Cap piping and patch surfaces to match surrounding finish.
4. Unless specifically indicated on Drawings, remove unused equipment, fittings, rough-ins, and connectors. Removal is to be to a point behind finished surfaces (floors, walls, and ceilings).
5. Coordinate demolition of existing fire suppression systems with Contractor. Where applicable or possible, portions of fire suppression demolition work may be performed by Contractor. Verify with local AHJ as to limitations of demolition by others and not fire suppression trades. Coordinate extent of demolition of fire suppression work to be done by others and supervise this work. No extra costs will be approved by replacement of systems due to improper or excessive demolition.
3.12 ACCEPTANCE
A. Confirm requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements. In absence of specific requirements, comply with individual Sections in Division 21, Fire Suppression and the following:
1. System cannot be considered for acceptance until work is completed and demonstrated to Architect that installation is in strict compliance with Specifications, Drawings and manufacturer's installation instructions, particularly in reference to following:
a. Testing reports including Contractor's Material and Test Certificate for Underground Piping, Contractor's Material and Test Certificate for Aboveground Piping, Contractor's Material and Test Certificate for Private Fire Service Mains, Fire pump acceptance test data report, and the like.
b. Cleaning
c. Operation and Maintenance Manuals
d. Training of Operating Personnel
e. Record Drawings
f. Warranty and Guaranty Certificates
g. Start-up/Test Document and Commissioning Reports
h. Letter of Conformance
3.13 FIELD QUALITY CONTROL
A. Confirm Field Quality Control requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Section 21 00 00, Fire Suppression Basic Requirements and individual Division 21, Fire Suppression Sections.
B. Upon completion of installation of equipment, sprinklers, hose valves and piping and after units are water pressurized, test system to demonstrate capability and compliance with requirements. When possible, correct malfunctioning Item at site, then retest to demonstrate compliance; otherwise remove and replace with new Item and proceed with retesting.
C. Inspect each installed Item for damage to finish. If feasible, restore and match finish to original, except fire sprinklers, at site; otherwise, remove Item and replace with new Item. Feasibility and match to be judged by Architect. Remove cracked or dented Item and replace with new Item.
D. Fire sprinklers may not be reused, or cleaned, except for dusting. Replace damaged, field painted, oversprayed, overcoated or field coated sprinklers with new sprinklers of same manufacturer, model, finish, K-factor and performance characteristics. Where identical replacement sprinklers are not available, provide sprinklers of similar finish, style, K-factor and performance characteristics.
3.14 LETTER OF CONFORMANCE
A. Provide Letter of Conformance and copies of manufacturers' warranties and extended warranties with a statement that fire suppression items were installed in accordance with manufacturer's recommendations, UL listings and FM Global approvals. Include Letter of Conformance, copies of manufacturers' warranties and extended warranties in Operation and Maintenance Manuals.
3.15 ELECTRICAL INTERLOCKS
A. Where equipment motors are to be electrically interlocked with other equipment for simultaneous operation, utilize fire protection equipment wiring diagrams to coordinate with electrical systems so that proper wiring of equipment involved is affected.
3.16 CONNECTIONS TO EXISTING
A. Prior to connection of piping to existing piping or utilities, field verify existing conditions and exact sizes and locations of existing piping. Provide additional offsets, transitions, joints, cut-ins, and replace portions of existing as required to facilitate connections of new.
END OF SECTION

SECTION 21 1300 - FIRE SUPPRESSION SPRINKLER SYSTEMS
PART 1 - GENERAL
1.01 SUMMARY
A. Work Included:
1. Sprinklers
2. Oversized Sprinkler Escutcheons - For dry sprinklers in suspended ceilings which are supplied by a wet pipe or dry pipe system.
3. Spare Sprinkler Cabinet
B. This is a contractor designed system. Contact AHJ prior to bid to verify fire system requirements. Provide design compliant with codes as interpreted by AHJ.
C. Scope:
1. Revision and extension of existing system to new and remodeled areas.
2. Provide at least one coordination meeting with Architect prior to shop drawing submittal to coordinate sprinkler, piping, drain and test connection locations, details and the like.
D. Coordinate location and type of tamper, flow and pressure switches and fire alarm system.
E. Provide electrical connections and wiring as required for a complete and operable system. Includes but is not limited to bells, air compressors, sump pumps, fire pumps, jockey pumps and pump controllers.
1.02 RELATED SECTIONS
A. Contents of Division 21, Fire Suppression and Division 01, General Requirements apply to this Section.
B. In addition, reference the following:
1. Division 22, Plumbing
2. Division 23, Heating, Ventilating and Air-Conditioning
3. Division 26, Electrical
4. Division 28, Electronic Safety
5. Section 21 00 00, Fire Suppression Basic Requirements
6. Section 21 05 00, Common Work Results for Fire Suppression
1.03 REFERENCES AND STANDARDS
A. References and Standards as required by Section 21 00 00, Fire Suppression Basic Requirements and Division 01, General Requirements.
1.04 SUBMITTALS
A. Submittals as required by Section 21 00 00, Fire Suppression Basic Requirements and Division 01, General Requirements.
B. In addition, provide:
1. Details of oversized ceiling penetrations and oversized sprinkler escutcheons.
2. Trapeze hanger details and calculations, including size, length and material. Additionally, provide size, weight and number of pipes to be carried on the trapeze.
3. On submittal and As-Built drawings, provide text of sprinkler list to be installed in the spare sprinkler cabinet.
1.05 QUALITY ASSURANCE
A. Quality assurance as required by Section 21 00 00, Fire Suppression Basic Requirements and Division 01, General Requirements.
1.06 WARRANTY
A. Warranty of materials and workmanship as required by Section 21 00 00, Fire Suppression Basic Requirements and Division 01, General Requirements.
1.07 SYSTEM DESCRIPTION
A. Provide coverage for building areas as indicated. Field verify field conditions prior to submittal of bid. Adjust bid to provide protection features in accordance with applicable codes and interpretations by AHJ. Provide design and installation based on more stringent requirements if this specification and AHJ requirements differ from Code.
B. Design Parameters:
1. Building Areas: Corridors, Offices and the like.
a. Occupancy Classification: Light.
2. Building Area: Miscellaneous Storage.
a. Occupancy Classification: Ordinary Group 1.
3. Design parameters above are NFPA 13 minimums. Provide increased design densities, design areas and hose allowances to meet requirements of AHJ.
C. Extend hydraulic calculations from hydraulically most remote design area back to location of pressure hydrant of flow test or effective point of water supply where characteristics of water supply are known.
1.08 EXTRA STOCK
A. Provide extra sprinklers per code.
B. Provide suitable wrenches for each sprinkler type and metal storage cabinet in riser room.
PART 2 - PRODUCTS
2.01 MANUFACTURERS
A. Sprinklers; Finished Areas: Victaulic, Viking, Tyco, Reliable, Globe, Senju, or approved equivalent.
B. Oversized Sprinkler Escutcheons: Victaulic, Viking Corp., Tyco, Reliable, Globe Fire Sprinkler Corp., or approved equivalent.
C. Spare Sprinkler Cabinet: Victaulic, Fire Protection Products, Inc. (FPPI), Tyco, Allied Rubber and Gasket Co., Potter Roemer, or approved equivalent.
2.02 SPRINKLERS
A. Finished Areas:
1. Type: Glass-Bulb
2. Style: Recessed
3. Response:
a. Quick-Response
b. Match thermal characteristics of existing sprinklers in area.
4. Finish: White Polyester
5. Escutcheon: White Polyester
6. Coverplate for Concealed Sprinklers: Flat Plate, White.
B. Pendent sprinklers supplied by dry or preaction piping: Dry pendent type.
2.03 OVERSIZED SPRINKLER ESCUTCHEONS
A. Metal.
B. Provide oversized ceiling penetrations and oversized sprinkler escutcheons for pendent sprinklers to comply with Building Code and ASCE-7 seismic requirements.
C. Same manufacturer as sprinklers.
2.04 SPARE SPRINKLER CABINET
A. NFPA 13 Systems: Sized to accommodate a minimum of two spare sprinklers of each Sprinkler Identification Number (SIN), manufacturer, model, orifice, deflector type, temperature and thermal sensitivity, or a minimum of six sprinklers for facilities having under 300 sprinklers, or a minimum of 12 sprinklers for facilities having 300 to 1000 sprinklers, or a minimum of 24 sprinklers for facilities having over 1000 sprinklers, whichever is more.
B. Welded steel with hinged steel cover.
C. Red enamel or polyester coated finish inside and out.
PART 3 - EXECUTION
3.01 GENERAL INSTALLATION REQUIREMENTS
A. Install per manufacturer's requirements and recommendations.
3.02 SPRINKLERS
A. Center sprinklers in center or quarter points of suspended ceiling tile.
B. Align sprinklers with architectural column lines, lighting, diffusers and other ceiling features. In unfinished ceilings, route piping to minimize visual impact. Sprinklers and piping not so aligned are to be removed and replaced at no additional cost to Owner.
3.03 OVERSIZED SPRINKLER ESCUTCHEONS
A. Coordinate oversized sprinkler escutcheons with ceiling construction and sprinkler style.
B. Provide for dry sprinkler penetrations in suspended ceilings.
3.04 SPARE SPRINKLER CABINET
A. Attach to wall at the main sprinkler system riser.
B. Locate so cover is easy to open and readily accessible.
C. Locate in an area with a temperature between 40 and 100 degrees Fahrenheit (4 and 38 degrees Celsius).
D. Locate sprinkler wrenches inside cabinet.
E. Inside the cabinet, provide a list of sprinklers installed in the property, including sprinkler identification number, manufacturer, model, orifice, deflector type, thermal sensitivity and pressure rating, quantity of each type to be contained in the cabinet and issue or revision date of the list.
END OF SECTION

SECTION 21 0500 - COMMON WORK RESULTS FOR FIRE SUPPRESSION
PART 1 - GENERAL
1.01 SUMMARY
A. Work Included:
1. Aboveground Black Steel Pipe and Fittings
2. Wall and Floor Penetrations and Sleeves
3. Hangers and Supports
4. Anchors and Attachments
1.02 RELATED SECTIONS
A. Contents of Division 21, Fire Suppression and Division 01, General Requirements apply to this Section.
B. In addition, reference the following:
1. Division 22, Plumbing
2. Division 23, Heating, Ventilating and Air Conditioning
3. Division 26, Electrical
4. Division 28, Electronic Safety
5. Section 21 00 00, Fire Suppression Basic Requirements
6. Section 21 13 00, Fire Suppression Sprinkler Systems
1.03 REFERENCES AND STANDARDS
A. References and Standards as required by Section 21 00 00, Fire Suppression Basic Requirements and Division 01, General Requirements.
B. Meet requirements of ASCE 7, Minimum Design Loads for Buildings and Other Structures, by American Society of Civil Engineers, latest adopted edition.
1.04 SUBMITTALS
A. Submittals as required by Section 21 00 00, Fire Suppression Basic Requirements and Division 01, General Requirements.
1.05 QUALITY ASSURANCE
A. Quality assurance as required by Section 21 00 00, Fire Suppression Basic Requirements and Division 01, General Requirements.
B. In addition, meet the following:
1. Material and Equipment: Listed for its intended fire protection use in current UL Fire Protection Equipment Directory, or UL Online Certifications Directory for Fire Protection, International Code Council Evaluation Service Reports, or FM Global Approval Guide. All material and equipment to be new and from a current manufacturer.
2. Provide per AHJ requirements.
3. References to product Specifications for materials are listed according to accepted ANSI, ASTM, ASME, AWWA and other base standards. Materials to meet latest approved versions of these standards.
4. Fire Suppression Screw-Thread Connections: Comply with local fire department/fire marshal regulations for sizes, threading and arrangement of connections for fire department equipment to fire department connections.
5. Manufacturers: Unless an item is marked "No substitutions", submit substitution request for materials of other than named manufacturers.
6. Noise and Vibration:
a. Install vibration isolators and measures required to prevent noise and vibration from being transmitted to occupied areas. Select equipment to operate within noise coefficient (NC) design level for particular type of installation in relation to its location.
b. After installation, make proper adjustments to reduce noise and vibration to acceptable levels as defined by Architect.
c. In acoustically sensitive areas, design system in a manner that minimizes the number of wall penetrations.
1.06 WARRANTY
A. Warranty of materials and workmanship as required by Section 21 00 00, Fire Suppression Basic Requirements and Division 01, General Requirements.
1.07 SYSTEM IMPAIRMENT
A. When returning a water-based fire protection system to service after impairment or control valve closure, verify the system is in working order by performing a main drain test per NFPA 25.
PART 2 - PRODUCTS
2.01 MANUFACTURERS
A. Aboveground Black Steel Pipe and Fittings:
1. Pipe: Bull Moose Tube, Wheatland Tube, Youngstown Tube, Tex-Tube, State Pipe and Supply, Inc., ,or approved equivalent
2. Fittings, Mechanical and Grooved Couplings: Victaulic, Gruvlok, Shurjoint Piping Products Inc., Smith-Cooper International, Tyco Fire & Building Products, Viking, Allied Rubber and Gasket Company Incorporated, dba ARGCO, Anvil International, Dixon Valve & Coupling, or approved equivalent.
3. Fittings, Threaded: Ward Manufacturing, Anvil International, Smith-Cooper International, Aegis Technologies, or approved equivalent.
4. Fittings, Rubber Gasketed: Victaulic, Anvil International, AnvilStar, EBAA Iron, Inc., Shurjoint Piping Products, Inc., Smith-Cooper International, Tyco Fire & Building Products, Viking, Ward Manufacturing, Allied Rubber and Gasket Company Incorporated, dba ARGCO, Dixon Valve & Coupling, or approved equivalent.
5. Fittings, Welded: Anvil International, Shurjoint Piping Products Inc., Smith-Cooper International, State Pipe & Supply, or approved equivalent.
6. Fittings, Flanged: Victaulic, United Brand Fittings, U.S. Pipe, Anvil S.P.F., Iowa Fittings Company, Tyco Fire Products, or approved equivalent.
B. Wall and Floor Penetrations and Sleeves: Allied Rubber and Gasket Company, Incorporated, dba ARGCO, Fire Protection Products Incorporated (FPPI), or approved equivalent.
C. Hangers and Supports: Cooper B-Line Tolco, Anvil International, ITW Buildex Sammys, Erico International, PHD Manufacturing Inc., or approved equivalent.
D. Anchors and Attachments:
1. Concrete:
a. Cast-In Place Anchors for Hangers: Cooper B-Line Tolco, Erico International, or approved equivalent.
b. Attachments as specified or described by structural. If not specified or described by structural, then as follows: Hilti, Powers, Simpson, DeWalt, or approved equivalent.
2. Steel: Cooper B-Line Tolco, Anvil International, Elco Construction Products, Erico International, ITW Buildex Sammys, or approved equivalent.
2.02 ABOVEGROUND BLACK STEEL PIPE AND FITTINGS
A. Wet Pipe Systems:
1. Pipe Size 2-inch Diameter and Smaller: ASTM A53, ASTM A135, or ASTM A795; minimum of Schedule 40.
2. Pipe Size 2-1/2-inch Diameter and Larger: ASTM A53, ASTM A135, or ASTM A795; minimum of Schedule 10.
3. Exposed pipe 8-feet or less above finished floor: A minimum of Schedule 40.
B. Joints: Threaded, flanged or bevel welded. Piping installed in plenums or shafts to have welded joints.
C. Fittings:
1. Threaded:
a. Malleable Iron: Class 150 and Class 300, ANSI B16.3.
b. Cast Iron: Class 125 and 250, ANSI B16.3.
2. Flanged:
a. Cast iron; Class 125 and 250, ASME B16.1.
b. Raised ground face, bolt holes spot faced.
3. Welded:
a. Carbon Steel: Long radius, standard weight or extra strong.
b. Factory Wrought Steel Buttweld Fittings: ASME B16.9.
c. Buttwelding Ends for Pipe, Valves, Flanges and Fittings: ASME B16.25.
d. Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures: ASTM A234.
e. Steel Pipe Flanges and Flanged Fittings: ASME B16.5.
f. Forged Steel Fittings, Socket Welded and Threaded: ASME B16.11.
4. Mechanical Fittings and Grooved Couplings: UL 213, AWWA C606, ASTM A536 ductile iron or ASTM A47 malleable iron, with enamel finish and grooves or shoulders designed to accept grooved couplings. Synthetic-rubber gasket with central-cavity, pressure-responsive design and ASTM A183 carbon-steel bolts and nuts. FM Global approved.
2.03 WALL AND FLOOR PENETRATIONS AND SLEEVES
A. Below Grade and High Water Table Areas: Waterproof elastomeric compound.
2.04 HANGERS AND SUPPORTS
A. General: Select size of hangers and supports to exactly fit pipe size for bare piping.
B. Hangers: Ferrous.
C. Hanger Rods: Zinc electroplated carbon steel.
D. Finishes: Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.
E. Materials:
1. Use carbon steel pipe hangers and supports, metal trapeze pipe hangers and attachments for general service applications.
2. Use stainless steel hangers, rods and attachments for corrosive environment applications. Examples of corrosive environment applications include, but are not limited to: swimming pools and spas, pool and spa equipment rooms and adjacent areas, chemical rooms, kidney dialysis areas, marine and beach environments, commercial laundries and the like.
F. Anti-Scratch Padding: Use padded hangers for piping subject to scratching.
2.05 ANCHORS AND ATTACHMENTS
A. General: Anchor supports to masonry, concrete and block walls per anchoring system manufacturer's recommendations, or as modified by project Structural Engineer.
B. Materials:
1. Ferrous.
2. Stainless steel for corrosive environment applications. Examples of corrosive environment applications include, but are not limited to: swimming pools and spas, pool and spa equipment rooms and adjacent areas, chemical rooms, kidney dialysis areas, marine and beach environments, commercial laundries, and the like.
C. Cast in Place Anchors for Hangers: Verify listing is for hangers, braces, or both.
D. Attachments in Concrete:
1. Suitable for hanging and bracing fire protection systems in concrete which is subject to cracking in a seismic event.
2. Seismic Design Areas C, D, E and F:
a. Compatible with International Code Council Evaluation Service Acceptance Criteria AC-193 and AC308 for expansion, screw and adhesive anchors. Meet requirements of ACI 355.2, Qualification of Post-Installed Mechanical Anchors in Concrete and Commentary.
b. All models of Hilti HDI and ITW Red Head Multi-Set II anchors are not approved for attaching fire protection systems in Seismic Design Areas C, D, E and F. No Exceptions.
E. ITW Buildex Sammys with FM Approval only are not allowed in certain seismic zones. Verify with FM that FM Approval is effective in project's seismic zone.
PART 3 - EXECUTION
3.01 GENERAL INSTALLATION REQUIREMENTS
A. Install in conformance with UL Listing, FM Approval or ICC-ES requirements and restrictions.
3.02 ABOVEGROUND BLACK STEEL PIPE AND FITTINGS
A. Piping Routing:
1. Route piping, except as otherwise indicated, vertically and horizontally (sloped to drain). Avoid diagonal runs wherever possible. Orient horizontal routes parallel with walls and beam lines.
2. Install piping as shown or described by diagrams, details and notations on Drawings or, if not indicated, install piping to provide the shortest route which does not obstruct usable space or block access for servicing the building and its equipment.
3. Install piping in concealed spaces above finished ceilings. Prior to design and installation. obtain pre-approval by Architect for exposed piping.
4. In open-to-structure areas which are open to public view, route exposed piping to minimize visual impact. Obtain Architect's and Engineer's approval of exposed piping installation.
5. Coordinate installation with other trades. Route piping as required to avoid building structure, equipment, plumbing piping, HVAC piping, ductwork, lighting fixtures, electrical conduits and bus ducts and similar work. Final location of lighting will have priority over final sprinkler locations. Provide drains to trapped sections of system which result from such routing. Other trades take precedence for installation space.
6. Support piping adjacent to walls, overhead construction, columns and other structural and permanent enclosure elements of the building. Limit clearance to 2-inches wherever furring is indicated for concealment of piping. Allow for insulation thickness. Locate insulated piping to provide minimum 1-inch clearance outside insulation.
7. Wherever possible in finished and occupied spaces, conceal piping from view by locating within column or beam enclosures, hollow wall construction, or above suspended ceilings. Do not encase horizontal routes in solid partitions, except where approved.
8. General Electrical Equipment Clearances: Do not route piping through electrical rooms, transformer vaults, elevator equipment rooms and other electrical or electronic equipment spaces and enclosures. Do not route piping above electric power or lighting panel, switchgear, low voltage panel, or similar electric device.
9. Rooms Protected by Alternative Systems: Route water filled and dry system piping around rooms protected by pre-action systems, clean agent systems, gaseous suppression systems and other alternative fire suppression systems.
10. Install pipe runs to minimize obstruction to other work.
11. Pitch all dry and pre-action system piping 1/4-inch per 10-feet for mains and 1/2-inch per 10-feet for branch lines, including pipe passing through both warm and cold areas.
B. Couplings:
1. Install where indicated on Drawings and on each side of pieces of equipment to permit easy removal of equipment.
2. Deburr cut edges.
C. Pipe Penetrations: Wire pipe cutout coupon at point of pipe penetration.
D. Pipe and Pipe Fittings:
1. Expansion and Flexibility: Install work with due regard for expansion and contraction to prevent damage to the piping, equipment, building and its contents. Provide piping offsets, loops, approved type expansion joints, sway bracing, wire restraints, vertical restraints, flexible couplings or other means to control pipe movement and to minimize pipe forces.
2. Coordinate support of pipe 4-inches and larger with Structural Engineer.
3. Provide clearances around piping per NFPA 13.
4. Install dry and pre-action welded pipe with welds facing vertically up, or where this is not possible, as close as possible to vertical between 46 degrees and 234 degrees. Intent is to minimize corrosion caused by moisture in the bottom of pipes.
3.03 WALL AND FLOOR PENETRATIONS AND SLEEVES
A. Escutcheons: Install on exposed pipes passing through walls or floors.
1. Pipe Sleeves: Lay out work in advance of pouring concrete and furnish and set sleeves necessary to complete work.
2. Floor Sleeves: Provide sleeves on pipes passing through concrete or masonry construction. Extend sleeve 1-inch above finished floor. Caulk pipes passing through floor with nonshrinking fire and water resistant grout or approved equivalent caulking compound. Caulk/seal piping passing through fire rated building assembly with UL rated assemblies. Provide fire-rated assemblies per local AHJ requirements.
3. Wall Sleeves: Provide sleeves on pipes passing through concrete or masonry construction. Provide sleeve flush with finished face of wall. Caulk pipes passing through walls with non-shrinking caulking compound. Caulk/seal piping passing through fire-rated building assemblies with UL Listed or FM Approved fire-rated firestopping compound. Provide fire-rated assemblies per local AHJ requirements.
4. Beam Sleeves: Coordinate with trades for locations of pipe sleeves in reinforced concrete and steel beams. Penetrations must be indicated on structural shop drawings. See Drawings and Specifications for specific sleeve location limitations. Pipe sleeve locations must be indicated on reinforced concrete and steel beam shop drawings. Field cutting of beams not allowed without written approval of structural engineer. No extra costs allowed for failure to coordinate beam penetrations prior to reinforced concrete and steel beam shop drawing submittal.
5. Penetrations in Fire-Rated Wall/Floor Assemblies:
a. Reference Division 07, Thermal and Moisture Protection.
b. Coordinate with Drawings location of fire rated walls, ceilings and floors. When these assemblies are penetrated, seal around piping and equipment with approved firestopping material.
c. Provide proper sizing when providing sleeves or core-drilled holes to accommodate the penetration. Firestop voids between sleeve or core-drilled hole and pipe passing through to meet the requirements of ASTM E814 and NFPA.
d. Install firestopping material complete as directed by manufacturer's installation instructions. Meet requirements of ASTM E814.
3.04 HANGERS AND SUPPORTS
A. Installation of pipe hangers, inserts and supports to conform to NFPA 13. Provide adjustable hangers, inserts, brackets, clamps, supplementary steel and other accessory materials required for proper support of pipe lines and equipment. Provide supplementary materials for proper support and attachment of hangers.
3.05 ANCHORS AND ATTACHMENTS
A. In post-tension construction, determine location of post-tension cables and install anchors to avoid contact or interference with post-tension cables. Coordinate with Structural.
B. Do not use powder-driven attachments.
C. Building Attachments and Inserts: Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves and flanges, for sizes NPS 2-1/2 and larger. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
D. Hanger and Support Attachments:
1. Concrete:
a. Where supports in slabs are required after concrete has been poured, provide drilled-in threaded inserts (mechanical-expansion anchors), installed in accordance with manufacturer's recommendations.
b. Install mechanical-expansion anchors after concrete is completely cured and in accordance with manufacturer's installation instructions.
c. Where anchors are to be installed in post-tension construction, determine and avoid locations of post-tension cables prior to drilling.
2. Metal Floor Deck: Support hangers per UL Listing or FM Approval for selected concrete insert before pouring of concrete topping, or from beam clamps fastened to structural steel.
3. Steel Joists: Support hangers from beam clamps fastened to bar joists or to auxiliary steel between bar joists as required.
4. C-Clamp Hangers: Do not attach to one side of double-angle bottom members.
5. Locate and install hangers, supports and attachments connecting to I-joists, structural insulated panels (SIPs), cross laminated timber and similar engineered structural products according to the structural product manufacturer specifications.
E. Make available to the Architect information required to verify the anchorage, sway bracing and restraint of fire protection systems.
END OF SECTION

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

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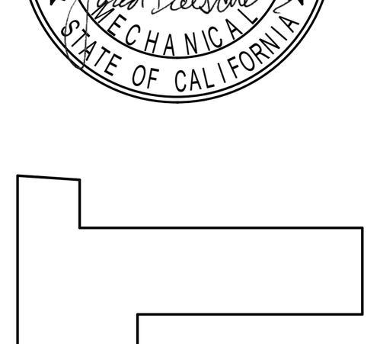
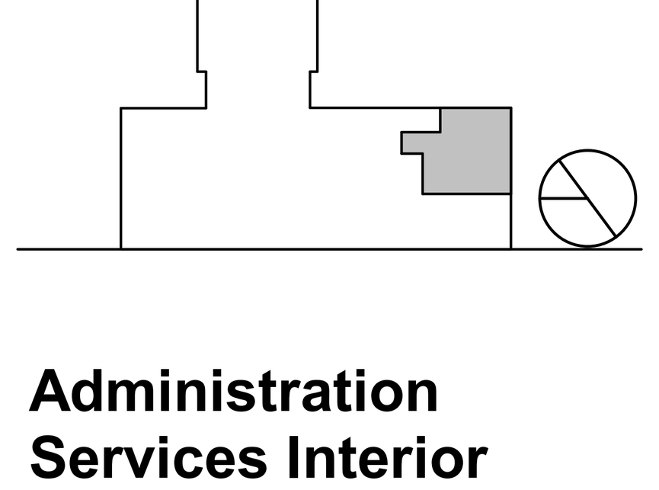
REV	DATE	ISSUE





Administration Services Interior Improvements

Las Positas College
3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

SPECIFICATIONS - FIRE PROTECTION

REFERENCE DRAWING:
PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: 12" = 1'-0"

FP5.01

FIRE ALARM SYMBOL LIST

Fire Alarm

Symbol	Description
Speaker/strobe symbol (#)	SPEAKER/STROBE COMBINATION (# INDICATES MINIMUM CANDELA RATING) WHEELOCK ET70-24MCW CSFM: 7125-0785:0152
Strobe symbol (#)	STROBE, WALL MOUNTED (# INDICATES MINIMUM CANDELA RATING) WHEELOCK RSS-24MCW CSFM: 7125-0785:0141
F	EXISTING PULL STATION
S	EXISTING SMOKE DETECTOR

General

Symbol	Description
X / X	DETAIL NUMBER AND SHEET LOCATION
X	KEYED NOTE
———	WIRING

	CONTROL UNIT ANNUNCIATION									NOTIFICATION							REQUIRED FIRE SAFETY CONTROL										SUPPLEMENTARY				
	ACTUATE COMMON ALARM SIGNAL INDICATOR	ACTUATE AUDIBLE ALARM SIGNAL	ACTUATE COMMON SUPERVISORY SIGNAL INDICATOR	ACTUATE AUDIBLE SUPERVISORY SIGNAL	ACTUATE COMMON TROUBLE SIGNAL INDICATOR	ACTUATE AUDIBLE COMMON TROUBLE SIGNAL	ACTUATE RESPECTIVE ALARM INDICATOR			TRANSMIT FIRE ALARM SIGNAL TO SUPERVISING STATION	TRANSMIT SUPERVISORY SIGNAL TO SUPERVISING STATION	TRANSMIT TROUBLE SIGNAL TO SUPERVISING STATION	ACTUATE RESPECTIVE FLOOR EVACUATION SIGNAL	DISPLAY/PRINT CHANGE OF STATUS			RELEASE MAGNETICALLY HELD SMOKE DOORS	CLOSE SMOKE/FIRE DAMPERS IN RATED WALLS	SHUTDOWN RESPECTIVE ZONE SUPPLYING AIR UNITS	ACTUATE SPRINKLER SYSTEM	RECALL ELEVATORS TO PRIMARY RECALL FLOOR	RECALL ELEVATORS TO ALTERNATE RECALL FLOOR	ACTUATE RESPECTIVE ZONE SMOKE EXHAUST	ACTIVATE ELEVATOR POWER SHUNT			ACTUATE SUPERVISORY ALARM SYSTEM ON NETWORK	ACTUATE EXTERIOR ALARM STROBE AND BELL AT F.D. RESPONSE POINT			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
MANUAL FIRE ALARM PULL BOXES	•	•					•			•			•	•			•										•	•			
SMOKE DETECTORS	•	•					•			•			•	•			•	•	•		•		•				•	•			
IN-DUCT SMOKE DETECTOR	•	•					•			•			•	•			•	•	•				•				•	•			
HEAT DETECTORS	•	•					•			•			•	•			•			•	•						•	•			
WATERFLOW - FLOW SWITCH	•	•					•			•			•	•			•	•	•	•	•			•			•	•			
ELEVATOR FIRST FLOOR LOBBY SMOKE DETECTOR	•	•					•			•			•	•			•	•	•			•									
SPRINKLER CONTROL VALVE - TAMPER SWITCH			•	•							•																				
FIRE ALARM AC POWER FAILURE			•	•							•																				
FIRE ALARM SYSTEM LOW BATTERY					•	•						•																			
OPEN CIRCUIT					•	•						•																			
GROUND FAULT					•	•						•																			
WIRE TO WIRE SHORT CIRCUIT					•	•						•																			
NOTIFICATION APPLIANCE CIRCUIT SHORT					•	•						•																			
ELEVATOR MACHINE ROOM SHAFT		•					•			•				•							•										
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE

NOTIFICATION CIRCUIT - V21
VOLTAGE DROP CALCULATIONS

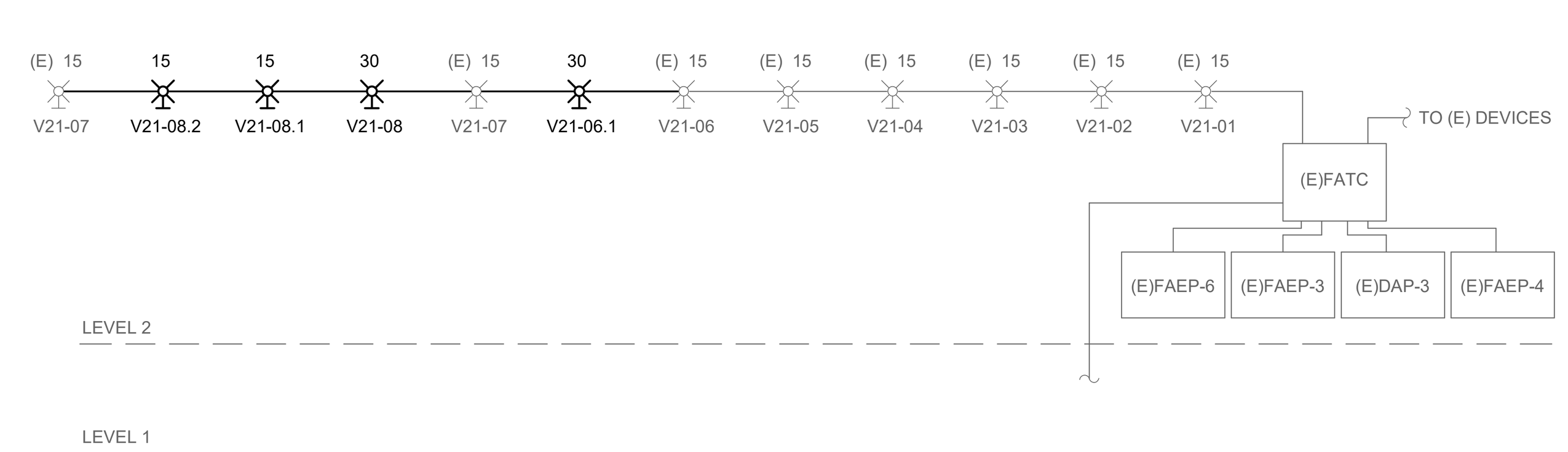
BASED ON POINT-TO-POINT OHM'S CALCULATIONS. ACCEPTABLE LIMIT: 10% x 20.4V = 2.04 (MAX)

OHMS = (#14 FEET* 3.07/1000 +#12 FEET* 1.93/1000 + #10 FEET* 1.21/1000) * 2

1) A/V 15cd	0.060	2) A/V 30cd	0.092	3) A/V 75cd	0.165
4) A/V 110cd	0.220	5) V/O 15cd	0.060	6) V/O 30cd	0.092

DEVICE TYPE #	DEVICE #	TO DEVICE #	LINEAR FEET BETWEEN DEVICES #14	#12	#10	RESISTANCE OF WIRES (OHMS)	LOAD ON RUN (AMPS)	VOLTAGE DROP (VOLTS)	ACCUM. VOLTAGE DROP (V)
5	9	8.2		30		0.116	0.060	0.007	0.007
5	**8.2**	8.1		20		0.077	0.120	0.009	0.016
5	**8.1**	8		10		0.039	0.180	0.007	0.023
6	**8**	7		30		0.116	0.272	0.031	0.055
5	7	6.1		55		0.212	0.332	0.070	0.125
6	**6.1**	6		15		0.058	0.424	0.025	0.150
5	6	5		20		0.077	0.484	0.037	0.187
5	5	4		15		0.058	0.544	0.031	0.219
5	4	3		70		0.270	0.604	0.163	0.382
5	3	2		30		0.116	0.664	0.077	0.459
5	2	1		20		0.077	0.724	0.056	0.515
5	1	NAC		300		1.158	0.784	0.908	1.422

Percent Loss 6.97%



1 ONE-LINE DIAGRAM - FIRE ALARM

NO SCALE

GENERAL FIRE ALARM NOTES

A. THE SCOPE OF THIS PROJECT IS TO MODIFY THE EXISTING FIRE ALARM SYSTEM TO ACCOMMODATE THE 2ND FLOOR REMODEL.

FIRE ALARM ADDRESS LEGEND

XX-### — DEVICE ADDRESS

WHERE: XX = LOOP NUMBER
- DEVICE ADDRESS

FIRE ALARM MONITORING NOTE

FIRE ALARM SYSTEMS SHALL TRANSMIT THE ALARM, SUPERVISORY, AND TROUBLE SIGNALS TO A PROPRIETARY SUPERVISING STATION AS REQUIRED BY NFPA 72. THE SUPERVISING STATION SHALL BE LISTED AS UUKA BY UNDERWRITERS LABORATORY (UL) OR SHALL MEET THE REQUIREMENTS OF FACTORY MUTUAL (FM) RESEARCH APPROVAL STANDARD 3011. SUPERVISION OF SYSTEM AND LEASED TELEPHONE LINES SHALL BE ARRANGED BY OWNER.

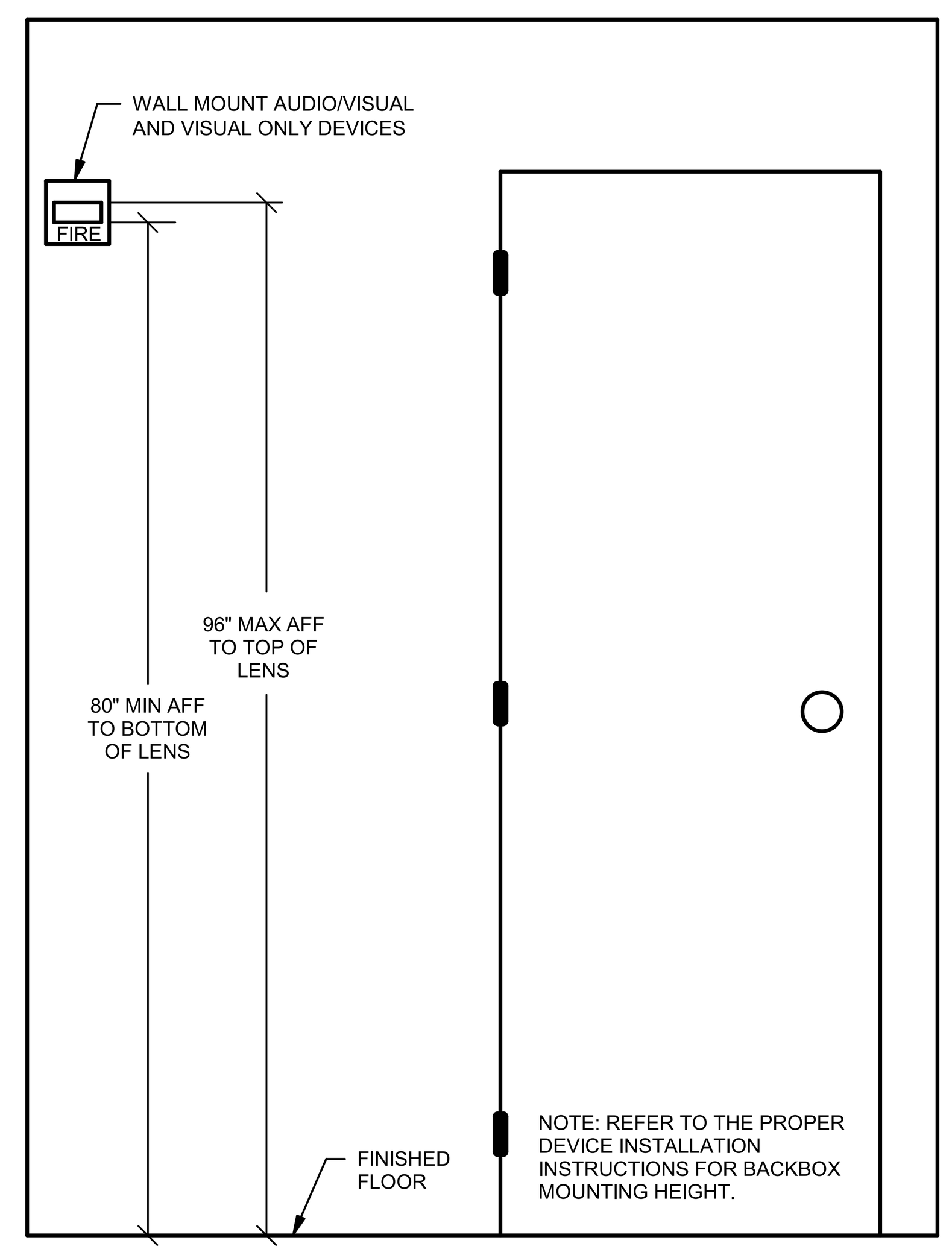
FIRE ALARM WIRE SCHEDULE

SYMBOL	DESCRIPTION
A	1 PAIR 16 AWG
B	1 PAIR 14 AWG

NOTE: LETTER DESIGNATION INDICATES CABLE TYPE. NUMBER OF HASH MARKS INDICATES QUANTITY OF CABLES. E.G., A, INDICATES TWO, #16 CABLES.

ABBREVIATIONS

(E)	EXISTING
(R)	RELOCATE/RELOCATED
(X)	DEMOLISH
C	CONDUIT
DACT	DIGITAL ALARM COMMUNICATING TRANSMITTER
EOL	END OF LINE COMPONENT
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FTC	FIRE TERMINAL CABINET
NAC	NOTIFICATION APPLIANCE CIRCUIT
SLC	SIGNALING LINE CIRCUIT
WG	WIREGUARD
WP	WEATHERPROOF



2 DEVICE MOUNTING HEIGHTS

NO SCALE

DSA NOTES

1. APPLICABLE STANDARDS AND CODES:
   2016 NFPA 72
   2019 CALIFORNIA FIRE CODE
   2019 CALIFORNIA BUILDING CODE
   2019 CALIFORNIA MECHANICAL CODE
   2019 CALIFORNIA ELECTRICAL CODE
2. INSTALLATION OF THE SYSTEM SHALL NOT BE STARTED UNTIL DETAILED DESIGN DOCUMENTS AND SPECIFICATIONS, INCLUDING STATE FIRE MARSHAL LISTING NUMBERS FOR EACH COMPONENT OF THE SYSTEM HAVE BEEN APPROVED BY DSA.
3. UPON COMPLETION OF THE INSTALLATION OF THE SYSTEM, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF A DSA PROJECT INSPECTOR.
4. A STAMPED SET OF APPROVED FIRE ALARM DESIGN DOCUMENTS SHALL BE MAINTAINED ON THE JOB SITE AND USED FOR INSTALLATION.
5. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE CODE OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF DSA AND THE ARCHITECT/ENGINEER OF THE PROJECT.
6. DSA, ARCHITECT/ENGINEER AND OWNER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE FINAL INSPECTION AND /OR TESTING.
7. ALL PENETRATIONS THROUGH RATED ASSEMBLIES REQUIRING OPENING PROTECTION SHALL BE PROVIDED WITH A PENETRATION FIRE STOP SYSTEM AS IDENTIFIED IN CBC CHAPTER 7, UL OR OTHER LAB TESTING CRITERIA. APPROVED TYPE OF MATERIALS SHALL BE IDENTIFIED WITHIN THE SPECIFICATION WITHIN THE FIRE ALARM SECTION.
8. WALL MOUNTED VISUAL NOTIFICATION APPLIANCES SHALL HAVE THEIR BOTTOMS MOUNTED AT 80" MINIMUM AND 96" MAXIMUM ABOVE FINISHED FLOOR.
9. WALL MOUNTED AUDIBLE NOTIFICATION APPLIANCES SHALL HAVE THEIR TOPS MOUNTED AT 90" MINIMUM AND 100" MAXIMUM ABOVE FINISHED FLOOR AND NO CLOSER THAN 6" TO A HORIZONTAL STRUCTURE.
10. AUDIBLE DEVICES SHALL PROVIDE A SOUND PRESSURE LEVEL OF 15 DECIBELS (dBA) ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 dBA ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION OF AT LEAST 60 SECONDS, WHICHEVER IS GREATER, IN EVERY OCCUPIABLE SPACE WITHIN THE BUILDING.
11. AUDIBLE APPLIANCES SHALL BE SYNCHRONIZED TEMPORAL CODE 3 PATTERN.
12. THE CONTRACTOR SHALL ADJUST/INSTALL ALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
13. VISUAL APPLIANCES SHOULD NOT EXCEED 2 FLASHES PER SECOND AND SHOULD NOT BE SLOWER THAN 1 FLASH EVERY SECOND. THE DEVICE SHALL HAVE A PULSING LIGHT SOURCE NOT LESS THAN 15 CANDELA. VISUAL APPLIANCES WITHIN 55' FROM EACH OTHER SHALL BE SYNCHRONIZED.
14. UNDERGROUND AND EXTERIOR CONDUITS TO HAVE WATERTIGHT FITTINGS AND WIRE TO BE APPROVED FOR WET LOCATIONS.
15. ALL FIRE ALARM WIRING SHALL BE FLP OR FPLP (FIRE POWER LIMITED OR FIRE POWER LIMITED PLENUM) AS REQUIRED FOR APPLICATION. WIRING IN CONDUIT ABOVE GROUND MAY BE THHN OR THWN.
16. PER CEC STANDARDS, ALL WIRING IS TO BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTED DIRECTLY TO EACH FIRE DEVICE. DO NOT SPLICE THE WIRE. THERE MUST BE AT LEAST 6" OF LEAD WIRE FROM THE BOX TO THE DEVICE. ALL BOXES TO BE SIZED PER CEC.
17. SMOKE DETECTORS SHALL NOT BE INSTALLED CLOSER THAN 1' FROM FIRE SPRINKLERS OR 3' FROM ANY SUPPLY DIFFUSER. IN AREA OF CONSTRUCTION OR POSSIBLE DAMAGE/CONTAMINATION, NEWLY INSTALLED FIRE ALARM DEVICES SHALL BE COVERED UNTIL THAT AREA IS READY TO BE TURNED OVER TO THE OWNER.
18. ALL FIRE ALARM CIRCUITS SHALL BE IN CONDUIT, SURFACE RACEWAY OR OPEN RUN ABOVE CEILINGS, UNDER FLOORS AND IN WALLS IN A NEAT AND PROTECTED MANNER AS INDICATED ON DESIGN DOCUMENTS. EXPOSED CIRCUITS ARE ONLY PERMITTED WHEN NOTED AS EXPOSED ON DESIGN DOCUMENTS.
19. FIRE ALARM PANEL, REMOTE PANELS, POWER SUPPLIES, AND COMPONENTS SHALL BE SECURED TO MOUNTING SURFACES PER MANUFACTURER'S SPECIFICATIONS. NO SINGLE DEVICE SHALL EXCEED THE WEIGHT OF 20 LBS. WITHOUT SPECIAL MOUNTING DETAILS.
20. A DEDICATED BRANCH CIRCUIT SHALL BE PROVIDED FOR FIRE ALARM EQUIPMENT. THIS CIRCUIT SHALL BE ENERGIZED FROM THE COMMON USE AREA PANEL AND SHALL HAVE NO OTHER OUTLETS. THE BREAKER SHALL HAVE A RED LOCKING DEVICE TO BLOCK THE HANDLE IN THE "ON" POSITION. THE CIRCUIT BREAKER SHALL BE LABELED "FIRE ALARM CIRCUIT CONTROL". CIRCUIT ID TO BE LABELED AT FIRE PANEL/EXTENDERS.
21. THE INSTALLING CONTRACTOR SHALL PROVIDE A RECORD OF COMPLETION PER NFPA 72, FIGURE 10.18.2.1.1.
22. CONTROL PANELS AND REMOTE ANNUNCIATORS SHALL BE INSTALLED WITH THEIR BOTTOMS MOUNTED AT 48" ABOVE FINISHED FLOOR.
23. THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC SECTION 901.6.2.
24. SUPERVISORY MONITORING SHALL BE TESTED AND VERIFIED AS SENDING CORRECT SIGNALS IN CONJUNCTION WITH FINAL ACCEPTANCE TEST.
25. OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT OR PROVISIONS.

System Current Draw - HPF24S8

Total Current	
C1	0.091 A
C2	2.254 A
C3	0.065 A

Device	C1 - Non-Alarm Current Qty		Draw	Non-Alarm	C2 - Alarm Current Qty		Draw	Alarm	C3 - Secondary Non-Alarm Qty		Draw	Non-Alarm
1. System Modules												
HPF24S6 Main Circuit Board	1	x	0.09100	0.09100	1	x	0.14500	0.14500	1	x	0.06500	0.06500
2. NAC #19												
RSS-2415MCW-FR	12	x	0.00000	0.00000	12	x	0.06000	0.72000	12	x	0.00000	0.00000
	0	x	0.00000		0	x	0.00000		0	x	0.00000	
NAC #1 Totals (Max 3 Amps):				0.00000				0.72000				0.00000
3. NAC #20												
RSS-2415MCC-FR	6	x	0.00000	0.00000	6	x	0.06500	0.39000	6	x	0.00000	0.00000
RSS-2475MCW-FR	1	x	0.00000	0.00000	1	x	0.16500	0.16500	1	x	0.00000	0.00000
	0	x	0.00000		0	x	0.00000		0	x	0.00000	
NAC #2 Totals (Max 3 Amps):				0.00000				0.55500				0.00000
4. NAC #21												
RSS-2415MCC-FR	10	x	0.00000	0.00000	10	x	0.06500	0.65000	10	x	0.00000	0.00000
RSS-2430MCW-FR	2	x	0.00000	0.00000	2	x	0.09200	0.18400	2	x	0.00000	0.00000
	0	x	0.00000		0	x	0.00000		0	x	0.00000	
NAC #3 Totals (Max 3 Amps):				0.00000				0.83400				0.00000
5. NAC #4												
	0	x	0.00000		0	x	0.00000		0	x	0.00000	
NAC #4 Totals (Max 3 Amps):				0.00000				0.00000				0.00000
Total Non-Alarm Load:				**0.091**	**Total Alarm Load:**			**2.254**	**Total Seondary Non-Alarm Load:**			**0.065**

HPF24S8 Power Supply

Primary Standby Load 0.09 Amps
Current load on the primary power supply during non-alarm conditions.

Primary Alarm Load 2.25 Amps
Current load on the primary power supply during alarm conditions.

Secondary Load Requirements 2.10 Amp Hours
Total Secondary Load from the calculation table below.

Current Draw		Time (hours)	Total (AH)
Seconday Standby Load 0.065 A	x	Required Standby Time 24 hours	1.56
Secondary Alarm Load 2.254 A	x	Required Alarm Time (hours) 0.084 hours	0.19
		Total Secondary Load	1.75
		Derating factor	x 1.2
		Secondary Load Requirements	**2.10** AH

Battery Selection 7 Amp Hours
Select batteries from the list below.

7.0 AH BAT-1270 Battery (12 volt)

TRUE

SHEET INDEX

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-118983 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 08/11/2020

steinberg hart

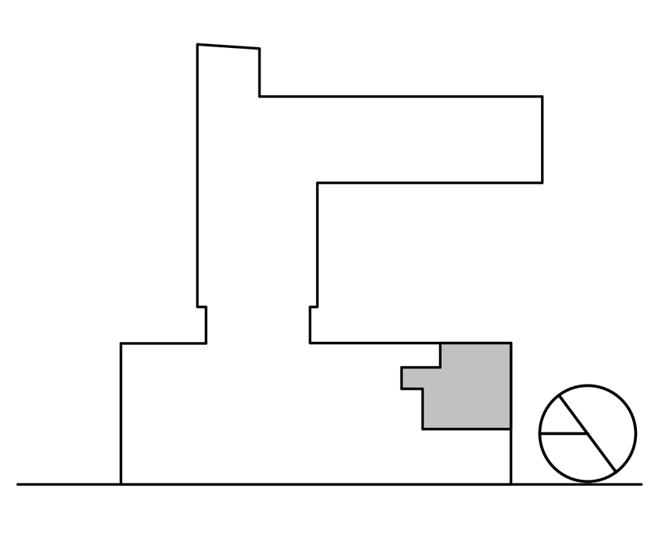
CLIENT
Chabot Las-Positas Community College District
5020 Franklin Dr.
Pleasanton, CA 94588

ARCHITECT
Steinberg Architects
60 Pierce Avenue
San Jose, CA 95110

INTERFACE ENGINEERING
PROJECT 2020-0137
CONTACT Joe Ripp
135 Main Street, Suite 400
San Francisco, CA 94105
TEL 415.489.7240
www.interfaceengineering.com

REV	DATE	ISSUE

REGISTERED PROFESSIONAL ENGINEER
JASON LAU
No. E16806
ELECTRICAL
STATE OF CALIFORNIA



Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

SYMBOL LIST AND GENERAL NOTES - FIRE ALARM

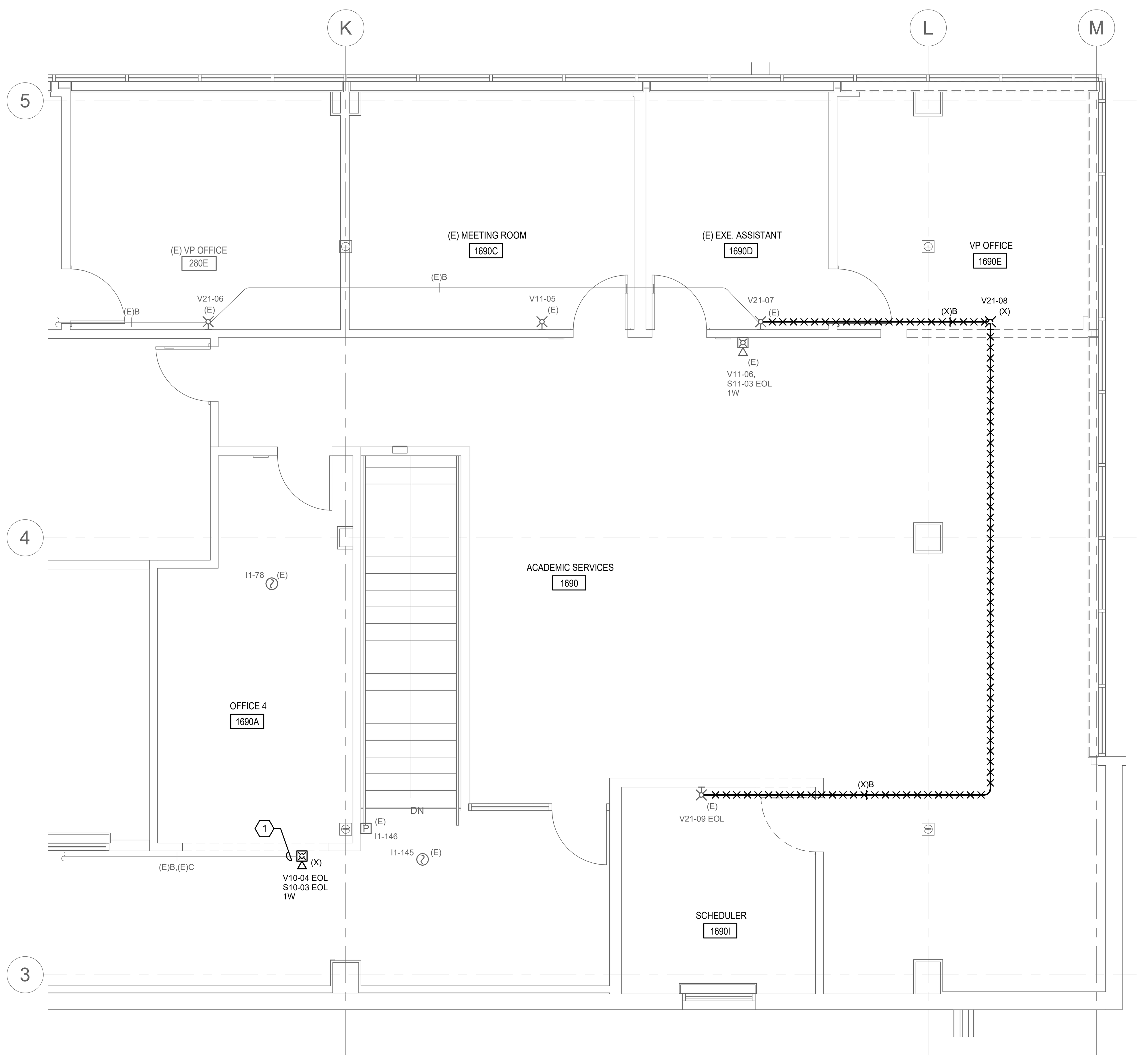
REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: NO SCALE

FA0.01

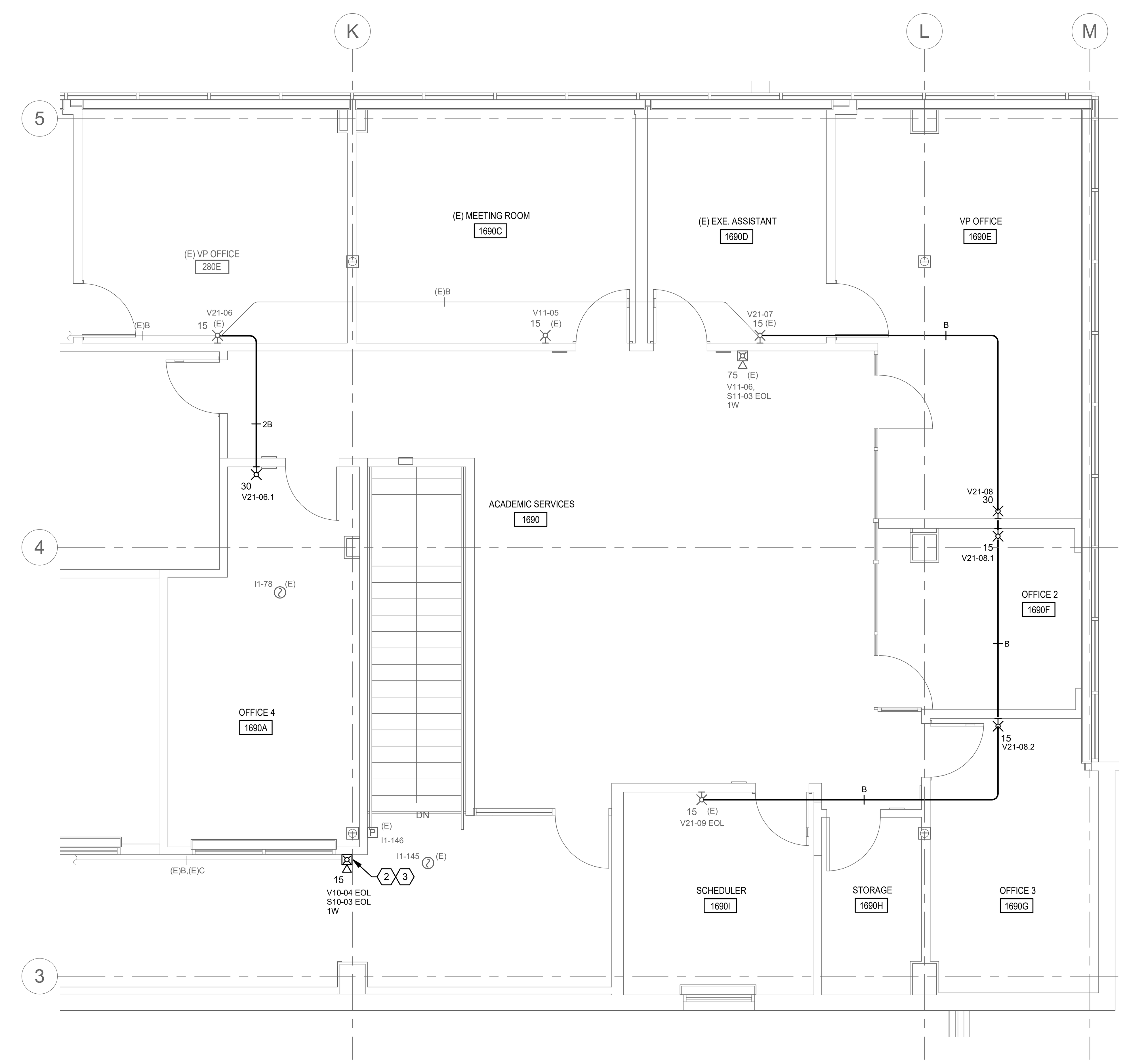
SHEET KEYNOTES

1. PULL BACK EXISTING CABLE TO ABOVE CEILING AND PROVIDE JUNCTION BOX FOR EXTENDING CIRCUIT TO NEW APPLIANCE.
2. CONNECT NEW APPLIANCE TO EXISTING CIRCUIT. EXTEND CABLING AS NEEDED TO REACH NEW APPLIANCE. PROVIDE TERMINAL STRIP WITHIN JUNCTION BOX AS NEEDED. SPLICING OF CABLE NOT ALLOWED.
3. MINIMAL DISTANCE OF APPLIANCE RELOCATION DOES NOT AFFECT VOLTAGE DROP OF EXISTING CIRCUIT.



1 LEVEL 2 ADMIN SUITE TI - DEMO FIRE ALARM PLAN - ADMIN

1/4" = 1'-0"



2 LEVEL 2 ADMIN SUITE TI FIRE ALARM PLAN - ADMIN

1/4" = 1'-0"

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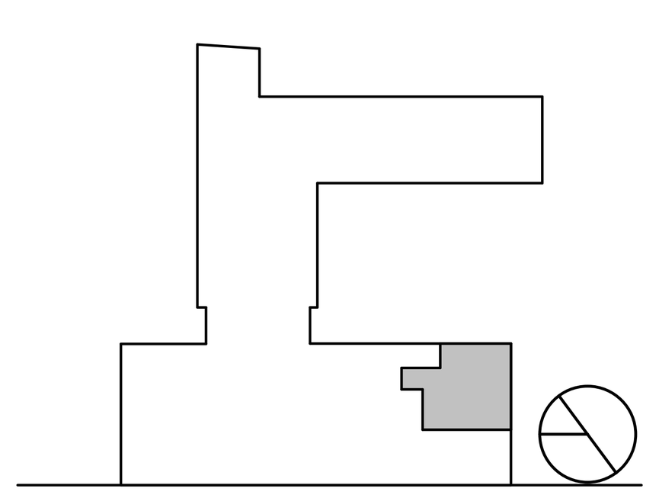

Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

ENLARGED FLOOR PLAN - DEMO AND NEW WORK - FIRE ALARM

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: 1/4" = 1'-0"

FA2.01

SECTION 28 0001 - ELECTRONIC SAFETY BASIC REQUIREMENTS
PART 1 - GENERAL
1.01 SECTION INCLUDES
A. Work included in 28 00 01, Electronic Safety Basic Requirements applies to Division 28, Electronic Safety work to provide materials, labor, tools, permits, incidentals, and other services to provide and make ready for Owner's use of electronic safety systems for proposed project.
B. Contract Documents include, but are not limited to, Specifications including Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Drawings, Addenda, Owner/Architect Agreement, and Owner/Contractor Agreement. Confirm requirements before commencement of work.
C. Definitions:
1. Provide: To furnish and install, complete and ready for intended use.
2. Furnish: Supply and deliver to project site, ready for unpacking, assembly and installation.
3. Install: Includes unloading, unpacking, assembling, erecting, installing, applying, finishing, protecting, cleaning and similar operations at project site as required to complete items of work furnished.
4. Approved or Approved Equivalent: To possess the same performance qualities and characteristics and fulfill the utilitarian function without any decrease in quality, durability or longevity. For equipment/products defined by the Contractor as "equivalent," substitution requests must be submitted to Engineer for consideration, in accordance with Division 01, General Requirements, and approved by the Engineer prior to submitting bids for substituted items.
5. Authority Having Jurisdiction (AHJ): Indicates reviewing authorities having jurisdiction, including local fire marshal, Owner's insurance underwriter, Owner's Authorized Representative, and other reviewing entity whose approval is required to obtain systems acceptance.

1.02 RELATED SECTIONS
A. Contents of Section apply to Division 28, Electronic Safety Contract Documents.
B. Related Work:
1. Additional conditions apply to this Division including, but not limited to:
a. Specifications including Division 00, Procurement and Contracting Requirements and Division 01, General Requirements.
b. Drawings
c. Addenda
d. Owner/Architect Agreement
e. Owner/Contractor Agreement
f. Codes, Standards, Public Ordinances and Permits
C. Contents of Division 26, Electrical apply to this Section.

1.03 REFERENCES AND STANDARDS
A. References and Standards per Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, individual Division 28, Electronic Safety Sections and those listed in this Section.
B. Codes to include latest adopted editions, including current amendments, supplements and local jurisdiction requirements in effect as of the date of the Contract Documents, of/from:
1. State of California:
a. CBC - California Building Code
b. CEC - California Electrical Code
c. CEC T24 - California Energy Code Title 24
d. CFC - California Fire Code
e. CMC - California Mechanical Code
f. CPC - California Plumbing Code
g. CSFM - California State Fire Marshal
h. DSA - Division of State Architect Regulations and Requirements
C. Reference standards and guidelines include but are not limited to the latest adopted editions from:
1. ABA - Architectural Barriers Act
2. ADA - Americans with Disabilities Act
3. ANSI - American National Standards Institute
4. ASCE - American Society of Civil Engineers
5. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers
6. ASHRAE Guideline 0, the Commissioning Process
7. ASME - American Society of Mechanical Engineers
8. ASTM - ASTM International
9. CFR - Code of Federal Regulations
10. EPA - Environmental Protection Agency
11. ETL - Electrical Testing Laboratories
12. FM - FM Global
13. ISO - International Organization for Standardization
14. NEC - National Electric Code
15. NEMA - National Electrical Manufacturers Association
16. NFPA - National Fire Protection Association
17. OSHA - Occupational Safety and Health Administration
18. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association
19. UL - Underwriters Laboratories Inc.
D. See Division 28, Electronic Safety individual Sections for additional references.

1.04 SUBMITTALS
A. See Division 01, General Requirements for Submittal Procedures.
B. Provide drawings in format and software release equal to the design documents. Drawings to be the same sheet size and scale as the Contract Documents.
C. "No Exception Taken" constitutes that review is for general conformance with the design concept expressed in the Contract Documents for the limited purpose of checking for conformance with information given. Any action is subject to the requirements of the Contract Documents. Contractor is responsible for the dimensions and quantity and will confirm and correlate at the job site, fabrication processes and techniques of construction, coordination of the work with that of all other trades, and the satisfactory performance of the work.
D. Provide product submittals and shop drawings in electronic format only. Electronic format must be submitted via zip file via e-mail. For electronic format, provide one file per division containing one bookmarked PDF file with each bookmark corresponding to each Specification Section. Arrange bookmarks in ascending order of Specification Section number. Individual submittals sent piecemeal in a per Specification Section method will be returned without review or comment. Copy Architect on all transmissions/submissions.
E. Product Data: Provide manufacturer's descriptive literature for products specified in Division 28, Electronic Safety Sections.
F. Identify/mark each submittal in detail. Note what difference, if any, exist between the submitted item and the specified item. Failure to identify the differences will be considered cause for disapproval. If differences are not identified and/or not discovered during the submittal review process, Contractor remains responsible for providing equipment and materials that meet the specifications and drawings.
1. Label submittal to match numbering/references as shown in Contract Documents. Highlight and label applicable information to individual equipment or cross out/remove extraneous data not applicable to submitted model. Clearly note options and accessories to be provided, including field installed items. Highlight connections by/to other trades.
2. Include technical data, installation instructions and dimensioned drawings for products, equipment and devices installed, furnished or provided. Reference individual Division 28, Electronic Safety specification Sections for specific items required in product data submittal outside of these requirements.
3. See Division 28, Electronic Safety individual Sections for additional submittal requirements outside of these requirements.
G. Maximum of two reviews of complete submittal package. Arrange for additional reviews and/or early review of long-lead items; Bear costs of additional reviews at Engineer's hourly rates. Incomplete submittal packages/submittals will be returned to contractor without review.
H. Resubmission Requirements: Make corrections or changes in submittals as required, and in consideration of Engineer's comments. Identify Engineer's comments and provide an individual response to each of the Engineer's comments. Cloud changes in the submittals and further identify changes which are in response to Engineer's comments.
I. Structural/Seismic: Provide weights, dimensions, mounting requirements and like information required for mounting, seismic bracing, and support. Indicate manufacturer's installation and support requirements to meet ASCE 7-10 requirements for non-structural components. Provide engineered seismic drawings and equipment seismic certification. Equipment Importance Factor as specified in Division 01 and in Structural documents.
J. Trade Coordination: Include physical characteristics, electrical characteristics, device layout plans, wiring diagrams, and connections as required per Division 28, Electronic Safety Coordination Documents. For equipment with electrical connections, furnish copy of approved submittal for inclusion in Division 26, Electrical and Division 28, Electronic Safety submittals.
K. Make provisions for openings in building for admittance of equipment prior to start of construction or ordering of equipment.
L. Substitutions and Variation from Basis of Design:
1. The Basis of Design designated product establishes the qualities and characteristics for the evaluation of any comparable products by other listed acceptable manufacturers if included in this Specification or included in an approved Substitution Request as judged by the Design Professional.
2. If substitutions and/or equivalent equipment/products are being proposed, it is the responsibility of parties concerned, involved in, and furnishing the substitute and/or equivalent equipment to verify and compare the characteristics and requirements of that furnished to that specified and/or shown. If greater capacity and/or more materials and/or more labor are required for the rough-in, circuitry or connections than for the item specified and provided for, then provide compensation for additional charges required for the proper rough-in, circuitry and connections for the equipment being furnished. No additional charges above the Base Bid, including resulting charges for work performed under other Divisions, will be allowed for such revisions. Coordinate with the requirements of "Submittals." For any product marked "or approved equivalent," a substitution request must be submitted to Engineer for approval prior to purchase, delivery or installation.
3. Where manufacturer equipment or model numbers are indicated with no exceptions, substitutions will be rejected.
M. Shop Drawings:
1. Provide coordinated shop drawings which include physical characteristics of all systems, device layout plans, and control wiring diagrams. Reference individual Division 28, Electronic Safety specification Sections for additional requirements for shop drawings outside of these requirements.
2. Provide Shop Drawings indicating access panel locations, size and elevation for approval prior to installation.
N. Samples: Provide samples when requested by individual Sections.
O. Resubmission Requirements:
1. Make any corrections or change in submittals when required by Architect/Engineer review comments. Provide submittals as specified. The engineer will not be required to edit and/or interpret the Contractor's submittals. Indicate changes for the resubmittal in a cover letter with reference to page(s) changed and reference response to comment. Cloud changes in the submittals.
2. Resubmit for review until review indicates no exception taken or "make corrections noted."
3. When submitting drawings for Engineers re-review, clearly indicate changes on drawings and "cloud" any revisions. Submit a list describing each change.
P. Operation and Maintenance Manuals, Owner's Instructions:
1. Reference individual Division 28, Electronic Safety Specification Sections for additional requirements for operations and maintenance manuals.
2. Submit, at one time, electronic files (PDF format) of manufacturer's operation and maintenance instruction manuals and parts lists for equipment or items requiring servicing. Submit data when work is substantially complete and in same order format as submittals. Include name and location of source parts and service for each piece of equipment.
a. Include copy of approved submittal data along with submittal review letters received from Engineer. Data to clearly indicate installed equipment model numbers. Delete or cross out data pertaining to other equipment not specific to this project.
b. Include copy of manufacturer's standard Operations and Maintenance for equipment. At front of each tab, provide routine maintenance documentation for scheduled equipment. Include manufacturer's recommended maintenance schedule and highlight maintenance required to maintain warranty. Furnish list of routine maintenance parts, including part numbers, sizes and quantities relevant to each piece of equipment.
c. Include copy of complete parts list for equipment. Include available exploded views of assemblies and sub-assemblies.
d. Include Warranty per Division 00, Procurement and Contracting Requirements, Division 01, General Requirements, Section 28 00 01, Electronic Safety Basic Requirements and individual Sections.
e. Include product certificates of warranties and guarantees.
f. Include copy of start-up and test reports specific to each piece of equipment.
g. Include commissioning reports.
h. Engineer will return incomplete documentation without review.
i. Engineer will provide one set of review comments in Submittal Review format. Arrange for additional reviews; Bear costs for additional reviews at Engineer's hourly rates.
3. Thoroughly instruct Owner in proper operation of equipment and systems. Where noted in individual Sections, training will include classroom instruction with applicable training aids and systems demonstrations. Field instruction per Section 28 00 01, Electronic Safety Basic Requirements Article titled "Demonstration."
4. Copies of certificates of code authority inspections, acceptance, code required acceptance tests, letter of conformance and other special guarantees, certificates of warranties, specified elsewhere or indicated on Drawings.
Q. Record Drawings:
1. Maintain at site at least one set of drawings for recording "as-constructed" conditions. Indicate on drawings changes to original documents by referencing revision document, and include buried elements and location of concealed items. Include items changed by addenda, field orders, supplemental instructions, and constructed conditions.
2. Record Drawings are to include equipment locations, calculations, and schedules that accurately reflect "as constructed or installed" for project.
3. At completion of project, input changes to original project on CAD Drawings and make one set of black-line drawings created from CAD Files in version/release equal to contract drawings. Submit CAD disk and drawings upon substantial completion.
4. See Division 28, Electronic Safety individual Sections for additional items to include in Record Drawings.

1.05 QUALITY ASSURANCE
A. Regulatory Requirements: Work and materials installed to conform with all local, State and Federal codes, and other applicable laws and regulations. Where code requirements are at variance with Contract Documents, meet code requirements as a minimum requirement and include costs necessary to meet these in Contract. Machinery and equipment are to comply with OSHA requirements, as currently revised and interpreted for equipment manufacturer requirements. Install equipment provided per manufacturer recommendations.
B. Whenever this Specification calls for material, workmanship, arrangement or construction of higher quality and/or capacity than that required by governing codes, higher quality and/or capacity take precedence.
C. Drawings are intended to be diagrammatic and reflect the Basis of Design manufacturer's equipment. They are not intended to show every item in its exact dimensions, or details of equipment or proposed systems layout. Verify actual dimensions of systems (e.g. cable tray, panels, etc.) and equipment proposed to assure that systems and equipment will fit in available space. Contractor is responsible for design and construction costs incurred for equipment other than Basis of Design, including, but not limited to, architectural, structural, electrical, HVAC, fire sprinkler, and plumbing systems.
D. Manufacturer's Instructions: Follow manufacturer's written instructions. If in conflict with Contract Documents, obtain clarification. Notify Engineer/Architect, in writing, before starting work.
E. Items shown on Drawings are not necessarily included in Specifications or vice versa. Confirm requirements in all Contract Documents.
F. Provide products that are UL listed.

1.06 WARRANTY
A. Provide written warranty covering the work for a period of one year from date of Substantial Completion in accordance with Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Section 28 00 01, Electronic Safety Basic Requirements and individual Division 28, Electronic Safety Sections.
B. Sections under this Division can require additional and/or extended warranties that apply beyond basic warranty under Division 01, General Requirements and the General Conditions. Confirm requirements in all Contract Documents.

PART 2 - PRODUCTS
2.01 MANUFACTURERS
A. Articles, fixtures, and equipment of a kind to be standard product of one manufacture, including but not limited to panels, devices and equipment unless otherwise specified in individual Division 28, Electronic Safety Sections.

2.02 STANDARDS OF MATERIALS AND WORKMANSHIP
A. Base contract upon furnishing materials as specified. Materials, equipment, and fixtures used for construction are to be new, latest products as listed in manufacturer's printed catalog data and are to be UL or FM approved or have adequate approval or be acceptable by state, county, and city authorities.
B. Names and manufacturer's names denote character and quality of equipment desired and are not to be construed as limiting competition.
C. Hazardous Materials:
1. Comply with local, State of California, and Federal regulations relating to hazardous materials.
2. Comply with Division 00, Procurement and Contracting Requirements and Division 01, General Requirements for this project relating to hazardous materials.
3. Do not use any materials containing a hazardous substance. If hazardous materials are encountered, do not disturb; immediately notify Owner and Architect. Hazardous materials will be removed by Owner under separate contract.

PART 3 - EXECUTION
3.01 ACCESSIBILITY AND INSTALLATION
A. Confirm Accessibility and Installation requirements in Division 00, Procurement and Contracting Requirements, Division 01, General Requirements, Section 28 00 01, Electronic Safety Basic Requirements and individual Division 28, Electronic Safety Sections.
B. Install equipment having components requiring access (i.e., devices, equipment, electrical boxes, panels, etc.) so that they may be serviced, reset, replaced or recalibrated by service people with normal service tools and equipment. Do not install equipment in obvious passageways, doorways, scuttles or crawlspaces which would impede or block intended usage.
C. Install equipment and products complete as directed by manufacturer's installation instructions. Obtain installation instructions from manufacturer prior to rough-in of equipment and examine instructions thoroughly. When requirements of installation instructions conflict with Contract Documents, request clarification from Architect prior to proceeding with installation. This includes proper installation methods, sequencing and coordination with other trades and disciplines.
D. Earthwork:
1. Confirm Earthwork requirements in Contract Documents. In absence of specific requirements, comply with individual Division 28, Electronic Safety Sections and the following:
a. Perform excavation, dewatering, shoring, bedding, and backfill required for installation of work in this Division in accordance with related earthwork divisions. Contact utilities and locate existing utilities prior to excavation. Repair any work damaged during excavation or backfilling.
b. Excavation: Do not excavate under footings, foundation bases, or retaining walls.
c. Provide protection of underground systems. Review the project Geotechnical Report for references to corrosive or deleterious soils which will reduce the performance or service life of underground systems materials.
E. Firestopping:
1. Confirm Firestopping requirements in Division 07, Thermal and Moisture Protection.
2. In absence of specific requirements, comply with individual Division 28, Electronic Safety Sections and coordinate location and protection level of fire and/or smoke rated walls, ceilings, and floors. When these assemblies are penetrated, seal around conduit, raceway and equipment with approved firestopping material. Install firestopping material complete as directed by manufacturer's installation instructions. Meet requirements of ASTM E814, Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
F. Plenums: In plenums, provide plenum rated materials that meet the requirements to be installed in plenums.

3.02 SEISMIC CONTROL
A. Confirm Seismic Control requirements in Division 01, General Requirements, Structural documents, and individual Division 28 Electronic Safety Sections.
B. Earthquake resistant designs for Electronic Safety (Division 28) systems and equipment to conform to regulations of jurisdiction having authority.
C. Restraints which are used to prevent disruption of function of piece of equipment because of application of horizontal force to be such that forces are carried to frame of structure in such a way that frame will not be deflected when apparatus is attached to a mounting base and equipment pad, or to structure in normal way, utilizing attachments provided. Secure equipment and distribution systems to withstand a force in direction equal to value defined by jurisdiction having authority.
D. Provide means to prohibit excessive motion of safety equipment during earthquake.

3.03 REVIEW AND OBSERVATION
A. Confirm Review and Observation requirements in Division 00, Procurement and Contracting Requirements, Division 01, General Requirements, Section 28 00 01, Electronic Safety Basic Requirements and individual Division 28, Electronic Safety Sections.
B. Notify Architect, in writing, at following stages of construction so that they may, at their option, visit site for review and construction observation:
1. Underground conduit and wire installation prior to backfilling.
2. Prior to covering walls when electronic safety systems installation is started.
3. Prior to ceiling cover/installation.
4. When main systems, or portions of, are being tested and ready for inspection by AHJ.
C. Final Punch: Costs incurred by additional trips required due to incomplete systems will be the responsibility of the Contractor.

3.04 CONTINUITY OF SERVICE
A. Confirm requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements. In absence of specific requirements in Division 01, General Requirements, comply with individual Division 28, Electronic Safety Sections and the following:
1. During remodeling or addition to existing structures, while existing structure is occupied, current services to remain intact until new construction, facilities or equipment is installed.
2. Prior to changing over to new system, verify that every item is thoroughly prepared. Install new wiring to point of connection.
3. Coordinate transfer time to new service with Owner. If required, perform transfer during off peak hours. Once changeover is started, pursue to its completion to keep interference to a minimum. If overtime is necessary, there will be no allowance made by Owner for extra expense for such overtime or shift work.
4. Organize work to minimize duration of power interruption.

3.05 CUTTING AND PATCHING
A. Confirm Cutting and Patching Requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements. In absence of specific requirements, comply with individual Division 28, Electronic Safety Sections and the following:
1. Proposed floor cutting/core drilling/sleeve locations to be approved by Project Structural Engineer. Submit proposed locations to Architect/Project Structural Engineer. Where slabs are of post tension construction, perform x-ray scan of proposed penetration locations and submit scan results including proposed penetration locations to Project Structural Engineer/Architect for approval. Where slabs are of waffle type construction, show column cap extent and cell locations relative to proposed penetration(s).
2. Cutting, patching and repairing for work specified in this Division including plastering, masonry work, concrete work, carpentry work, and painting included under this Section will be performed by skilled craftsmen of each respective trade in conformance with appropriate Division of Work.
3. Additional openings required in building construction to be made by drilling or cutting. Use of jack hammer is specifically prohibited. Patch openings in and through concrete and masonry with grout.
4. Restore new or existing work that is cut and/or damaged to original condition. Patch and repair specifically where existing items have been removed. This includes repairing and painting walls, ceilings, etc. where existing conduit and devices are removed as part of this project. Where alterations disturb lawns, paving, and walks, repair, refinish and leave in condition matching existing prior to commencement of work.
5. Additional work required by lack of proper coordination will be provided at no additional cost to the Owner.

3.06 EQUIPMENT SELECTION AND SERVICEABILITY
A. Replace or reposition equipment which is too large or located incorrectly to permit servicing, at no additional cost to Owner.

3.07 DELIVERY, STORAGE AND HANDLING
A. Confirm requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements. In absence of specific requirements, comply with the individual Division 28, Electronic Safety Sections and the following:
1. Handle materials delivered to project site with care to avoid damage. Store materials on site inside building or protected from weather, dirt and construction dust.
2. Protect equipment and pipe to avoid damage. Close conduit openings with caps or plugs. Keep motors and bearings in watertight and dustproof covers during entire course of installation.
3. Protect devices, panels and similar items until in service.
4. Products and/or materials that become damaged due to water, dirt and/or dust as a result of improper storage to be replaced before installation.

3.08 DEMONSTRATION
A. Confirm Demonstration requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements, Section 28 00 01, Electronic Safety Basic Requirements and individual Division 28, Electronic Safety Sections.
B. Upon completion of work and adjustment of equipment, test systems, demonstrate to Owner's Authorized Representative, Architect and Engineer that equipment furnished and installed or connected under provisions of these Specifications functions in manner required. Provide field instruction to Owner's Staff as specified in Division 01, General Requirements, Section 28 00 01, Electronic Safety Basic Requirements and individual Division 28, Electronic Safety Sections.
C. Manufacturer's Field Services: Furnish services of a qualified factory certified instructor at time approved by Owner, to instruct maintenance personnel, correct defects or deficiencies, and demonstrate to satisfaction of Owner that entire system is operating in satisfactory manner and complies with requirements of other trades that may be required to complete work. Complete instruction and demonstration prior to final job site observations.

3.09 CLEANING
A. Confirm cleaning requirements in Division 00, Procurement and Contracting Requirements, Division 01, General Requirements, Section 28 00 01, Electronic Safety Basic Requirements and individual Division 28 Sections.
B. Upon completion of installation, thoroughly clean exposed portions of equipment, removing temporary labels and traces of foreign substances. Throughout work, remove construction debris and surplus materials accumulated during work.

3.10 INSTALLATION
A. Confirm Installation requirements in Division 00, Procurement and Contracting Requirements, Division 01, General Requirements, Section 28 00 01, Electronic Safety Basic Requirements and individual Division 28, Electronic Safety Sections.
B. Install equipment in accordance with manufacturer's installation instructions, plumb and level and firmly anchored to building structure. Maintain manufacturer's recommended clearances.
C. Start up equipment, in accordance with manufacturer's start-up instructions, and in presence of manufacturer's representative. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.
D. Provide miscellaneous supports required for installation of equipment, conduit and wiring.

3.11 PAINTING
A. Confirm Painting requirements in Division 01, General Requirements and Division 09, Finishes. In absence of specific requirements, comply with individual Division 28, Electronic Safety Sections and the following:
1. Ferrous Metal: After completion of work, thoroughly clean and paint exposed supports constructed of ferrous metal surfaces, i.e. hangers, hanger rods, equipment stands, with one coat of black asphalt varnish for exterior or black enamel for interior, suitable for hot surfaces.
2. In electrical and mechanical room, on roof or other exposed areas, equipment not painted with enamel to receive two coats of primer and one coat of rustproof enamel, colors as selected by Architect.
3. See individual equipment Specifications for other painting.
4. Structural Steel: Repair damage to structural steel finishes or finishes of other materials damaged by cutting, welding or patching to match original.
5. Conduit: Clean, primer coat and paint interior conduit exposed in finished areas with two coats paint suitable for metallic surfaces. Color selected by Architect.

3.12 DEMOLITION
A. Confirm requirements in Division 01, General Requirements and Division 02, Existing Conditions. In the absence of specific requirements, comply with individual Division 28, Electronic Safety Sections and the following:
1. Scope:
a. It is the intent of these documents to provide necessary information and adjustments to electronic safety system required to meet code, and accommodate installation of new work.
b. Existing Conditions: Determine exact location of existing utilities and equipment before commencing work, compensate Owner for damages caused by failure to exactly locate and preserve underground utilities. Replace damaged items with new material to match existing. Promptly notify Owner if utilities are found which are not shown on Drawings.
c. Coordinate with Owner so that work can be scheduled not to interrupt operations, normal activities, building access, access to different areas. Owner will cooperate to best of their ability to assist in coordinated schedule, but will remain final authority as to time of work permitted.
2. Examination:
a. Determine exact location of existing utilities and equipment before commencing work, compensate Owner for damages caused by failure to locate and preserve utilities. Replace damaged items with new material to match existing.
b. Verify that abandoned wiring and equipment serve only abandoned facilities.
c. Demolition drawings are based on casual field observation and existing record documents.
1) Verify accuracy of information shown prior to bidding and provide such labor and material as is necessary to accomplish work.
2) Verify location and number of electronic safety system devices, panels, etc. in field.
d. Report discrepancies to Architect before disturbing existing installation.
3. Promptly notify Owner if systems are found which are not shown on Drawings.
4. Execution:
a. Remove existing electronic safety equipment, devices and associated wiring from walls, ceilings, floors, and other surfaces scheduled for remodeling, relocation, or demolition unless shown as retained or relocated on Drawings.
b. Provide temporary wiring and connections to maintain electrical continuity of existing systems during construction. Remove or relocate electrical boxes, conduit, wiring and equipment as encountered in removed or remodeled areas in existing construction affected by this work.
c. Remove and restore wiring which serves usable existing outlets clear of construction or demolition.
d. If existing junction boxes will be made inaccessible, or if abandoned outlets serve as feed through boxes for other existing electrical equipment which is being retained, provide new conduit and wire to bypass abandoned outlets.
e. If existing conduits pass through partitions or ceiling which are being removed or remodeled, provide new conduit and wire to reroute clear of construction or demolition and maintain service to existing load.
f. Extend circuiting and devices in existing walls to be furred out.
g. Remove abandoned wiring to source of supply.
h. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
i. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
j. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.
k. Existing electronic safety system components are indicated on demolition plans. Verify exact location and number of existing devices and components in field. Only partial existing systems shown. Locations of items shown on Drawings as existing are partially based on Record and other Drawings which may contain errors. Verify accuracy of information shown prior to bidding and provide such labor and material as is necessary to accomplish intent of Contract Documents.
l. Remove abandoned wiring to leave site clean.
m. If existing electrical equipment contains PCBs (Polychlorinated Biphenyl), replace with new non-PCB equipment. Dispose of material containing PCBs as required by federal and local regulations.
n. Repair adjacent construction and finishes damaged during demolition work.
o. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.
5. Existing Fire Alarm System: Maintain existing system in service during construction. Disable system only to make switchovers and connections.
a. Notify Owner before partially or completely disabling system.
b. Notify local fire service.
c. Make notifications at least five working days in advance.
d. Make temporary connections to maintain service in areas adjacent to work area.

3.13 ACCEPTANCE
A. Confirm requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements. In absence of specific requirements, comply with individual Division 28, Electronic Safety Sections and the following:
1. System cannot be considered for acceptance until work is completed and demonstrated to Architect that installation is in strict compliance with Specifications, Drawings and manufacturer's installation instructions, particularly in reference to following:
a. Cleaning
b. Operation and Maintenance Manuals
c. Training of Operating Personnel
d. Record Drawings
e. Warranty and Guaranty Certificates
f. Start-up/test Documents and Commissioning Reports

3.14 FIELD QUALITY CONTROL
A. Confirm requirements in Division 00, Procurement and Contracting Requirements and Division 01, General Requirements. In absence of specific requirements, comply with individual Division 28, Electronic Safety Sections and the following:
1. Tests:
a. Conduct tests of equipment and systems to demonstrate compliance with requirements specified. Reference individual Specification Sections for required tests. Document tests and include in Closeout Documents.
b. During site evaluations by Architect or Engineer, provide appropriate personnel with tools to remove and replace trims, covers, and devices so that proper evaluation of installation can be performed.

3.15 LETTER OF CONFORMANCE
A. Provide Letter of Conformance, copies of manufacturers' warranties and extended warranties with a statement in letter that electronic safety systems were installed in accordance with manufacturer's recommendations, UL listings and FM Global approvals. Include Letter of Conformance, copies of manufacturers' warranties and extended warranties in operating and maintenance manuals.

END OF SECTION

SECTION 28 3100 - FIRE DETECTION AND ALARM
PART 1 - GENERAL
1.01 SUMMARY
A. Work Included:
1. Combination Speaker/Strobes
2. Strobes
3. Miscellaneous Accessories
B. Scope: Provide modification and extension of the existing Gamewell-FCI fire alarm system to accommodate remodel.
C. In addition, provide design for the following as required in these Contract Documents: Fire Alarm System.
D. System Design:
1. Design Criteria: Design systems utilizing equipment appliance and device layouts depicted in the contract documents.
2. Design of Fire Alarm System:
a. Provide design of the fire alarm system as required by code.
b. Fire Alarm Sequence of Operation: Match Existing.
c. Supervisory Sequence of Operation: Match Existing.
d. Trouble Sequence of Operation: Match Existing.

1.02 RELATED SECTIONS
A. Contents of Division 28, Electronic Safety and Division 01, General Requirements apply to this Section.
B. Division 26, Electrical requirements apply to this section.

1.03 REFERENCES AND STANDARDS
A. References and Standards as required by Division 28, Electronic Safety and Division 01, General Requirements.
B. In addition, meet the following:
1. NFPA 72, National Fire Alarm and Signaling Code, adopted edition.
2. NFPA 70, National Electrical Code, adopted edition.

1.04 SUBMITTALS
A. Submittals as required by Division 28, Electronic Safety and Division 01, General Requirements.
B. In addition, provide:
1. Shop drawings to include the following:
a. Provide system designer NICET certification number or Engineer's signature and seal on shop drawings.
b. Identification of system designer and evidence of qualification or certification of designer as required by AHJ.
c. Floor plans indicating walls, doors, partitions, room descriptions, device/component locations.
d. Ceiling height and ceiling construction details.
e. A symbol legend with device catalog number, description, back box size and mounting requirements.
f. Detailed riser diagram.
g. Device address adjacent to each device symbol. Notification appliance circuit and number adjacent to each notification appliance symbol.
h. Point to point wiring indicating the quantity and gauge of the conductors and size of conduit/raceway used.
i. Wiring connection diagrams for control equipment, annunciators, power supplies, chargers, initiating devices, notification appliances, components being connected to the system and interfaces to associated equipment.
j. Battery calculations for each battery backed fire alarm control unit.
k. Voltage drop calculations for each notification appliance circuit, indicating individual appliance current draw, conductor run length and size.
l. Complete sequence of operation.
2. Prior to final acceptance, submit a letter confirming that inspections have been completed and system is installed and functioning in accordance with Specifications. Include manufacturer representative's certification of installation and letter of warranty.
3. Operation and Maintenance Manuals. Provide manuals containing the following:
a. Catalog Cut Sheets
b. System Components, Initiating Devices and Notification Appliances' Installation Sheets
c. Manufacturer's Installation, Operation and Maintenance Manual
d. Program Data File Printout
e. Program Data File on Electronic Storage Media
f. Record Drawings
g. Record Drawings on Electronic Storage Media
h. One year warranty agreement including parts and labor. Warranty period begins upon date of completion.
i. Record of Completion
j. Test Reports
k. Instruction Chart

1.05 QUALITY ASSURANCE
A. Quality assurance as required by Division 28, Electronic Safety and Division 01, General Requirements.
B. In addition, meet City of Livermore, California requirements, ordinances and amendments.

1.06 WARRANTY
A. Warranty of materials and workmanship as required by Division 28, Electronic Safety and Division 01, General Requirements.

PART 2 - PRODUCTS
2.01 MANUFACTURERS
A. Combination Speaker/Strobes:
1. Must be compatible with fire alarm control equipment and notification appliance circuit panels.
2. Wheelock; no substitutions permitted.
B. Strobes:
1. Must be compatible with fire alarm control equipment and notification appliance circuit panels.
2. Same manufacturer as fire alarm control equipment.
3. Wheelock; no substitutions permitted.
C. Miscellaneous Accessories:
1. Weatherproof/Surface Backboxes: Same manufacturer as fire alarm detection devices or notification appliances, or approved equivalent.
2. Protective Guard:
a. Wire Guard:
1) Same manufacturer as fire alarm control equipment.
2) American Wire Guards, Chase Security Systems, Safety Technology International, Shaw-Perkins, or approved equivalent.
b. Protective Cover: Safety Technology International, or approved equivalent.
3. Circuit Conductors: Allied Wire and Cable, Belden, CCI, West Penn Wire, or approved equivalent.
D. Substitutions: For substitution of products by manufacturers not listed, submit product data showing features and certification by Contractor that the design will comply with contract documents.
E. Equipment to be supplied by a certified manufacturer representative.

2.02 COMBINATION SPEAKER/STROBES
A. Multi-candela, flush wall mount. Insect-proof, 4-inch multitap to 1/4, 1/2, 1 and 2 watts with backbox and trim grill. Provide speaker capable of transmitting tone or voice.
B. Provide with integral ANSI 117.1 and UL 1971 approved strobe light. Provide strobes that meet the latest requirements of NFPA 72, ANSI 117.1 and UL 1971. Candela rating 75 cd minimum unless otherwise indicated on Drawings.

2.03 STROBES
A. Multi-candela, flush wall mount, insect-proof.
B. Provide strobes that meet the latest requirements of NFPA 72, ANSI 117.1 and UL 1971. Candela rating 75 cd minimum unless otherwise indicated on Drawings.

2.04 MISCELLANEOUS ACCESSORIES
A. Protective Guard:
1. Wire Guard: Steel wire guard.
2. Protective Cover: Polycarbonate construction.
B. Circuit Conductors: Copper or optical fiber; color code and label. Type FPL, FPLR and FPLP as required by NEC. Minimum signaling line circuit and initiating device circuit wire size: AWG18. Minimum notification appliance circuit wire size: AWG14, or as approved by Engineer. Fiber optic cable as required by manufacturer.

PART 3 - EXECUTION
3.01 GENERAL INSTALLATION REQUIREMENTS
A. Obtain Architect's approval of locations of devices, appliances and annunciators before installation.
B. Notification Appliance Circuits (NAC): Class B.
C. Obtain approval of system design from AHJ prior to installation. Do not begin installation without approval from AHJ and submittal review comments from Engineer.
D. Install in accordance with applicable codes, NFPA 72, NFPA 70 and the Contract Documents.
E. In accordance with manufacturer's instructions, provide wiring, conduit and outlet boxes required for the erection of a complete system as described in these specifications, as shown on Drawings and as required by AHJ.
F. Conceal wiring, conduit, boxes and supports where installed in finished areas.
G. Provide raceway system for cabling concealed in walls and hard ceilings and in locations where cabling is exposed. Where exposed, provide surface raceway in finished areas and surface mounted EMT in non-finished areas.
H. Provide cabling and conduits system suitable for wet locations for below grade systems.
I. At junction boxes and termination points, provide identification tags on wires and cables.
J. Route wiring to avoid blocking access to equipment requiring service, access, or adjustment.
K. Existing Components:
1. Existing Fire Alarm System: Maintain fully operational during construction in all areas except areas of remodel.
a. Maintain fully operational during construction in all areas except areas of remodel.
2. Disable system only to make switchovers and connections.
a. Notify Owner before partially or completely disabling system.
b. Notify local fire service.
c. Make notifications at least five working days in advance.
d. Make temporary connections to maintain service in areas adjacent to work area.
3. Provide fire watch in areas where the system is not functioning if required by the AHJ.
4. Equipment Removal:
a. Remove existing system after acceptance of new fire alarm system. Restore damaged surfaces.
b. Package operational fire alarm and detection equipment that has been removed and deliver to Owner.
c. Remove from site and legally dispose of remainder of existing material.
5. On-Premises Supervising Station: Include, as part of this work, modifications necessary to existing supervising station to accommodate new fire alarm work.
L. Inspection and Testing for Completion:
1. System testing and commissioning to be performed by a certified manufacturer representative.
2. Perform inspection and testing in accordance with NFPA 72 and requirements of local authorities; document each inspection and test.
3. Document audibility measurements and verify intelligibility for each space on record drawings.
4. Provide the services of the installer's supervisor or person with equivalent qualifications to supervise inspection and testing, correction and adjustments.
5. Provide tools, software and supplies required to accomplish inspection and testing.
6. Prepare for testing by ensuring that work is complete and correct; perform preliminary tests as required to test system.
7. Correct defective work, adjust for proper operation and retest until entire system complies with Contract Documents.
8. Notify Owner seven days prior to beginning completion inspections and tests.
9. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.
10. Diagnostic Period: After successful completion of inspections and tests, operate system in normal mode for at least 14 days without any system or equipment malfunctions.
a. Record all system operations and malfunctions.
b. If a malfunction occurs, start diagnostic period over after correction of malfunction.
c. Owner will provide attendant operator personnel during diagnostic period; schedule training to allow Owner personnel to perform normal duties.
d. At end of successful diagnostic period, complete and submit NFPA 72 "Inspection and Testing Form."
M. Closeout:
1. Closeout Demonstration:
a. Demonstrate proper operation of functions to Owner.
b. Be prepared to conduct any of the required tests.
c. Have at least one copy of operation and maintenance data, copy of project record drawings, input/output matrix and operator instruction chart(s) available during demonstration.
d. Have authorized technical representative of control unit manufacturer present during demonstration.
e. Demonstration may be combined with inspection and testing required by AHJ. Notify AHJ in time to schedule demonstration.
f. Repeat demonstration until successful.
2. Substantial Completion of the project cannot be achieved until inspection and testing is successful and:
a. Specified diagnostic period without malfunction has been completed.
b. Approved operating and maintenance data has been delivered.
c. Spare parts, extra materials and tools have been delivered.
d. All aspects of operation have been demonstrated to Architect.
e. Final acceptance of the fire alarm system has been given by authorities having jurisdiction.
f. Occupancy permit has been granted.
g. Specified pre-closeout instruction is complete.

3.02 COMBINATION SPEAKER/STROBES
A. Reference 3.01, General Installation Requirements.
B. Install per manufacturer's instructions and recommendations.
C. Provide machine printed labels on notification appliances with appliance circuit number and sequence. Labels to be visible from the floor without magnification.
D. Provide protective guard where device is subject to abuse and where required by AHJ.

3.03 STROBES
A. Reference 3.01, General Installation Requirements.
B. Install per manufacturer's instructions and recommendations.
C. Provide machine printed labels on notification appliances with appliance circuit number and sequence. Labels to be visible from the floor without magnification.
D. Provide wire guards or protective covers where device is subject to abuse and where required by AHJ.

3.04 MISCELLANEOUS ACCESSORIES
A. Reference 3.01, General Installation Requirements.
B. Install per manufacturer's instructions and recommendations.
C. Weatherproof/Surface Backboxes: Provide manufacturer's weatherproof backbox listed for use in areas where the device or appliance is subject to humidity in excess of listed rating. Provide manufacturer surface backboxes where devices cannot be installed recessed.
D. Protective Guard:
1. Wire Guard.
2. Protective Cover.
E. Circuit Conductors: Provide wiring to meet the requirements of national, state and local electrical codes. Provide color coded wiring as recommended and specified by the fire alarm and detection system manufacturer. Provide Type FPLR cable when in a riser application or FPLP cable when installed in plenums.

END OF SECTION

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INTERFACE ENGINEERING
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REV	DATE	ISSUE

REGISTERED PROFESSIONAL ENGINEER
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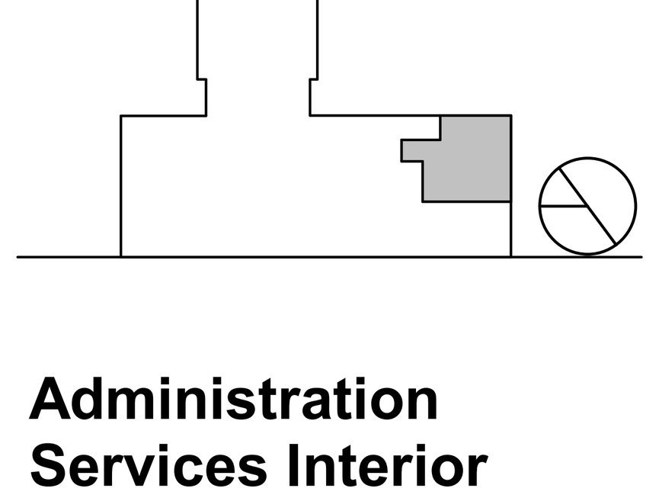

Administration Services Interior Improvements

Las Positas College

3000 Campus Hill Dr.,
Livermore, CA 94551

DSA File #: 1-C2
DSA Application #: 01-118983

SPECIFICATIONS - FIRE ALARM

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: NO SCALE

FA4.01

TECHNOLOGY SYMBOL LIST

NOTE: This is a standard symbol list and not all items listed may be used.

Abbreviations

AFF	ABOVE FINISHED FLOOR
AV	AUDIO VISUAL
ATS	AUTOMATIC TRANSFER SWITCH
BC	BARE COPPER
CATV	CABLE TELEVISION
CAT	CATEGORY
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
COAX	COAXIAL
COM	COMMUNICATION
C	CONDUIT
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFOI	CONTRACTOR FURNISHED OWNER INSTALLED
CNTL	CONTROL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CT	CURRENT TRANSFORMER
(X)	DEMOLISH
EA	EACH
E	EMERGENCY
(E)	EXISTING
LC	FIBER OPTIC CONNECTOR
SC	FIBER OPTIC CONNECTOR
FDU	FIBER OPTIC DISTRIBUTION UNIT
FF	FINISH FLOOR
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FT	FOOT, FEET
GRC	GALVANIZED RIGID STEEL CONDUIT
ANMW	GEL-FILLED UNDERGROUND CABLE
G, GND	GROUND
HH	HANDHOLE
IN	INCH, INCHES
IT	INFORMATION TECHNOLOGY
IDF	INTERMEDIATE DISTRIBUTION FRAME
IMC	INTERMEDIATE METAL CONDUIT
LAN	LOCAL AREA NETWORK
LV	LOW VOLTAGE
MDF	MAIN DISTRIBUTION FRAME
MSB	MAIN SWITCHBOARD
MTS	MANUAL TRANSFER SWITCH
MATV	MASTER ANTENNA TELEVISION
MISC	MISCELLANEOUS
M	MOTOR
(N)	NEW
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NA	NOT APPLICABLE
NTS	NOT TO SCALE
OSP	OUTSIDE PLANT
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
PTZ	PAN, TILT, ZOOM
PNL	PANEL
PVC	POLY-VINYL-CHLORIDE
POE	POWER OVER ETHERNET
PBX	PRIVATE BRANCH EXCHANGE
QTY	QUANTITY
RFI	REQUEST FOR INFORMATION
RM	ROOM
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TGB	TELECOMMUNICATIONS GROUNDING BUS BAR
TELE	TELEPHONE
TTB	TELEPHONE TERMINAL BOARD
TYP	TYPICAL
UPS	UNINTERRUPTABLE POWER SUPPLY
UON	UNLESS OTHERWISE NOTED
WP	WEATHERPROOF
WAN	WIDE AREA NETWORK
WAP	WIRELESS ACCESS POINT
WI-FI	WIRELESS FIDELITY
W/	WITH
W/O	WITHOUT

Equipment

- 2-POST EQUIPMENT RACK
- DOUBLE-SIDED VERTICAL WIRE MANAGEMENT
- MAJOR EQUIPMENT, CABINETS OR PANELS

General

- DEMOLISH

Raceways

- CABLE RUNWAY, WIDTH AS INDICATED
- CONDUIT AND CONDUCTORS ABOVE GRADE
- CONDUIT AND CONDUCTORS BELOW GRADE OR SLAB
- CONDUIT DOWN
- CONDUIT SLEEVE
- CONDUIT UP
- CONDUIT/WIRING CONTINUATION
- FLEXIBLE CONDUIT
- HH — HANDHOLE
- PB — PULL BOX
- VT — TELECOMMUNICATIONS VAULT
- TELEPHONE BACKBOARD

Reference Symbols

- 1 / XXX — DETAIL NUMBER AND SHEET LOCATION
- 1 — KEYED NOTES
- A / XXX — SECTION NUMBER AND SHEET LOCATION

Telecommunications

(X) STANDARD TELECOMMUNICATIONS OUTLET WITH 5" SQUARE RANDL BACKBOX, SINGLE GANG FACEPLATE AND COMMSCPOE SYSTIMAX CAT6A CABLING IN A 1-1/4"C. TO ACCESSIBLE CEILING SPACE (X):
A = (1) VOICE/(1) DATA IN FOUR PORT FACEPLATE, UNUSED PORTS BLANKED.
B = (2) DATA IN FOUR PORT FACEPLATE, UNUSED PORTS BLANKED.
C = (2) VOICE/(2) DATA IN FOUR PORT FACEPLATE.
D = (4) DATA IN FOUR PORT FACEPLATE.
E = (1) VOICE IN ONE PORT FACEPLATE WITH KNOBS FOR HANGING WALL PHONES.

LEGRAND WIREMOLD EVOLUTION SERIES 6" POKE-THRU COMBINATION TELE/DATA/AV OUTLET AND COMMSCOPE SYSTIMAX CAT6A CABLING:
A = (1) VOICE/(1) DATA IN FOUR PORT FACEPLATE, UNUSED PORTS BLANKED.
B = (2) DATA IN FOUR PORT FACEPLATE, UNUSED PORTS BLANKED.
C = (2) VOICE/(2) DATA IN FOUR PORT FACEPLATE.
D = (4) DATA IN FOUR PORT FACEPLATE.

LEGRAND WIREMOLD EVOLUTION SERIES 8-GANG FLUSH FLOOR COMBINATION COMMUNICATIONS OUTLET AND COMMSCOPE SYSTIMAX CAT6A CABLING AND 1-1/4" IN SLAB CONDUIT TO NEAREST WALL, THEN TO CABLE TRAY ROUTING IN ACCESSIBLE CEILING SPACE.
A = (1) VOICE/(1) DATA IN FOUR PORT FACEPLATE, UNUSED PORTS BLANKED.
B = (2) DATA IN FOUR PORT FACEPLATE, UNUSED PORTS BLANKED.
C = (2) VOICE/(2) DATA IN FOUR PORT FACEPLATE.
D = (4) DATA IN FOUR PORT FACEPLATE.

GENERAL TECHNOLOGY NOTES

A. COMMUNICATIONS RACEWAYS, TRAYS, AND OUTLETS ARE SHOWN DIAGRAMMATICALLY. LOCATIONS ARE APPROXIMATE UNLESS SPECIFICALLY DIMENSIONED. FIELD COORDINATE ALL WORK WITH OTHER TRADES.

B. CONSTRUCTION DETAILS SHOW TYPICAL INSTALLATION, UON, AND APPLY TO ALL COMMUNICATIONS WORK INCLUDED IN THE SUMMARY OF WORK FOR THIS PACKAGE EVEN THOUGH NOT SPECIFICALLY REFERENCED ON THE PLAN DRAWINGS.

C. THE TECHNOLOGY DRAWINGS ARE PART OF A LARGER SET OF DRAWINGS WHICH, WHEN COMPLETE, CONSISTS OF DRAWINGS LISTED BY THE "INDEX OF DRAWINGS." PARTIAL SETS OF DRAWINGS NOT INCLUSIVE OF ALL DISCIPLINES ARE INCOMPLETE AND SHOULD NOT BE DISTRIBUTED OR UTILIZED.

D. INSTALL PULL STRINGS IN ALL CONDUITS AT THE TIME OF CONDUIT AND CABLE INSTALLATION.

E. COORDINATE ALL DOOR ACCESS CONTROL FUNCTIONS WITH ADA DOOR ACTUATOR FUNCTION SUCH THAT DOOR MOTOR WILL NOT OPERATE WITHOUT PRIOR VALID CARD READ DURING SECURE MODE OPERATION.

SHEET INDEX

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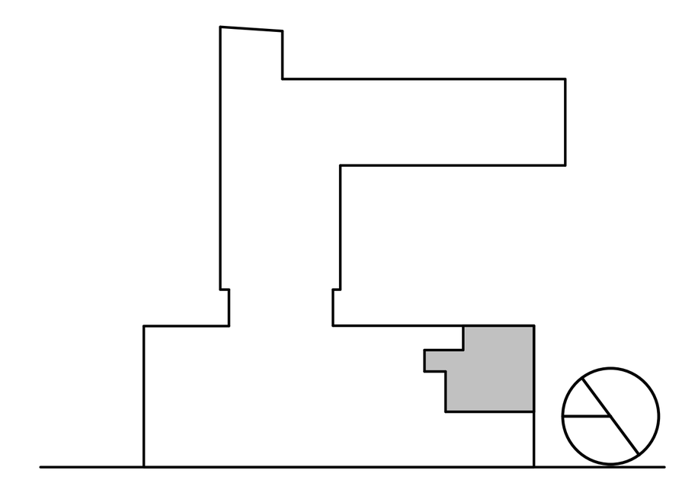

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SYMBOL LIST AND GENERAL NOTES - TECHNOLOGY

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: 12" = 1'-0"

T0.01

SHEET KEYNOTES

1. WIREMOLD 6AT POKETHRU WITH TYPE C DATA OUTLET. CONTRACTOR SHALL TERMINATE CAT6A CABLING IN IDF 1654 AND LABEL NEW OUTLET AS 1690-12. PROVIDE 2" UNDERSLAB CONDUIT AND STUB INTO ACCESSIBLE CEILING SPACE.
2. FURNITURE FEED DATA OUTLET 1690-04 SHALL BE PULLED BACK INSTALLED FLUSH ON THE PILLAR.
3. LOW VOLTAGE CABLING SHALL BE DISCONNECTED AND COILED UP IN CEILING FOR FUTURE USE.
4. LOW VOLTAGE CABLING TO BE REINSTALLED, TERMINATED AND TESTED AFTER NEW WORK IS COMPLETE.

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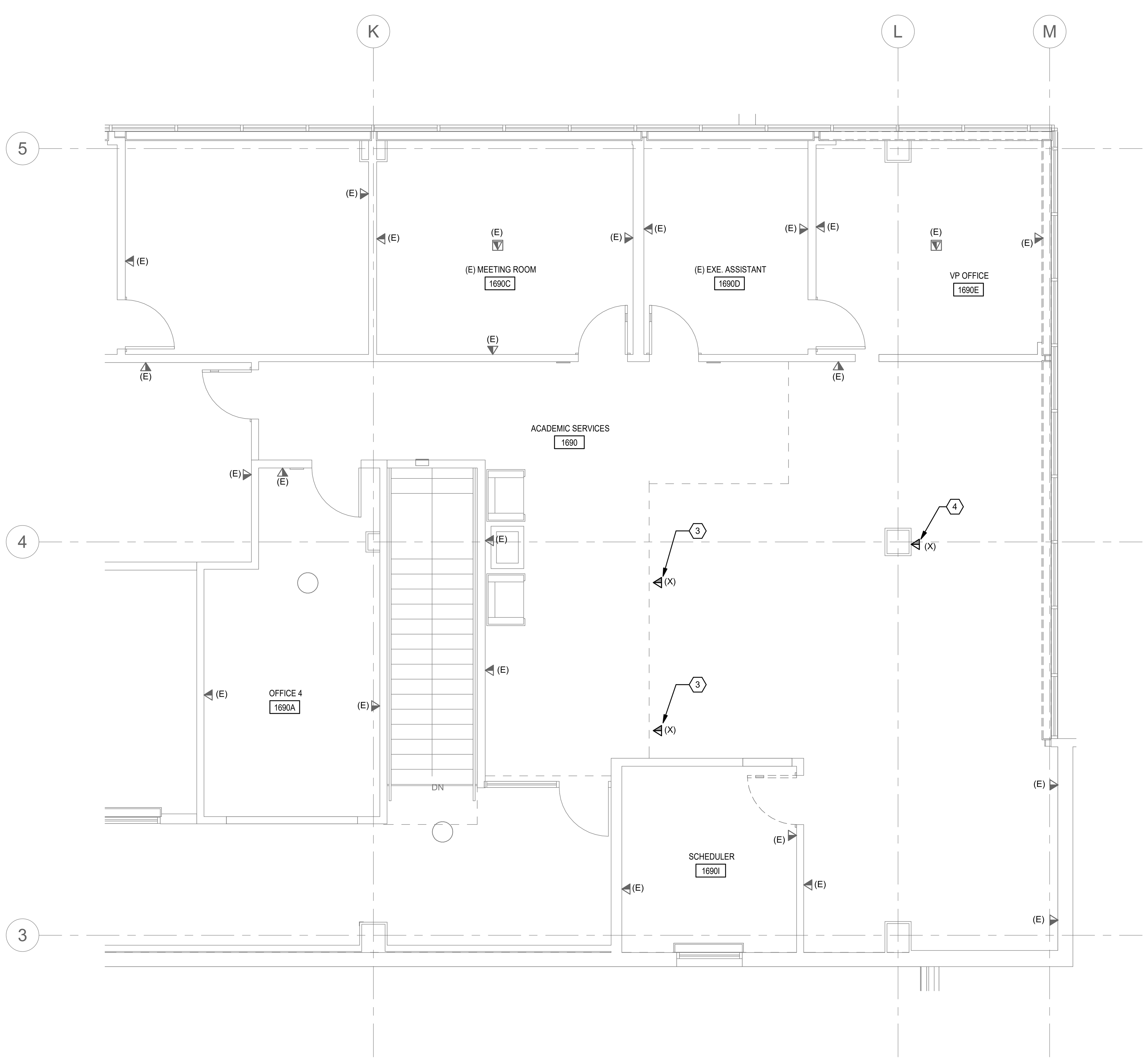
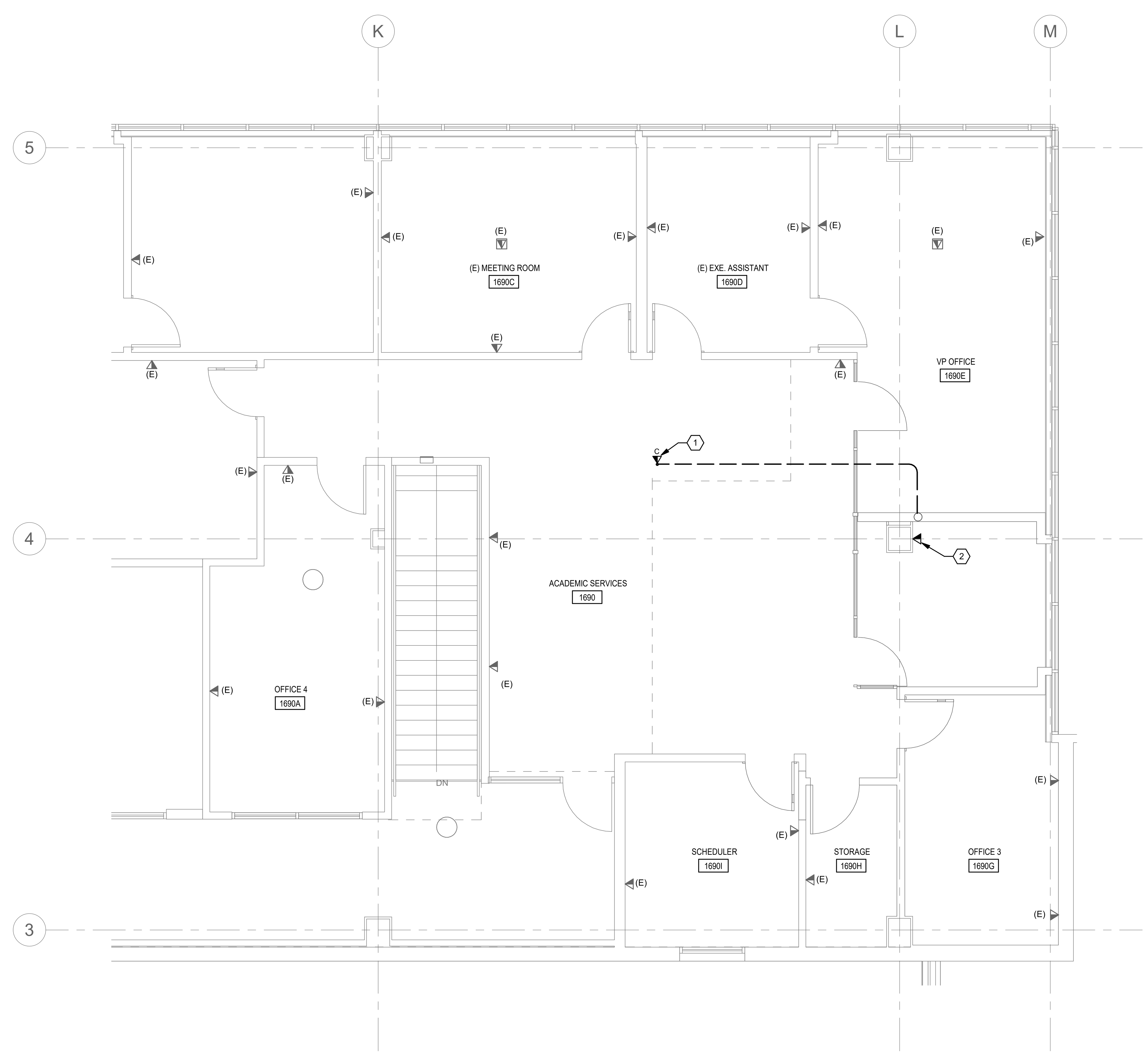


1 LEVEL 2 ADMIN SUITE TI - DEMO TECHNOLOGY PLAN - ADMIN

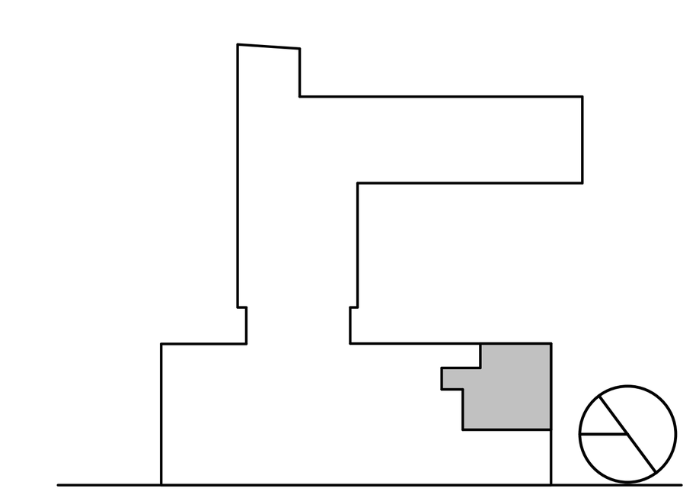
1/4" = 1'-0"



2 LEVEL 2 ADMIN SUITE TI TECHNOLOGY PLAN - ADMIN

1/4" = 1'-0"

REV DATE ISSUE



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ENLARGED FLOOR PLAN - TECHNOLOGY

REFERENCE DRAWING:

PROJECT #: 20057.100
DATE: August 10, 2020
SCALE: 1/4" = 1'-0"

T2.01