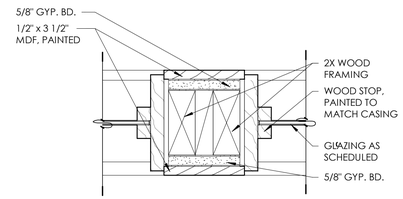
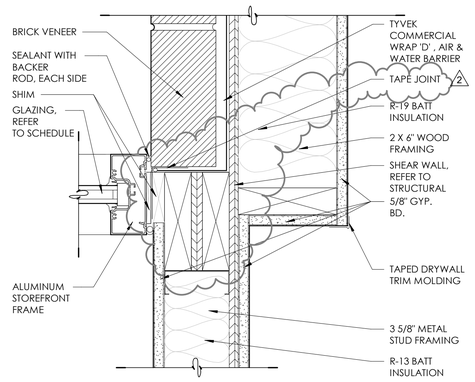


D1 JAMB DETAIL
3" = 1'-0"



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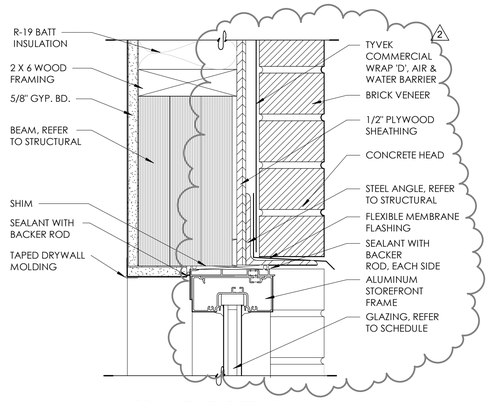

D4 HEAD DETAIL
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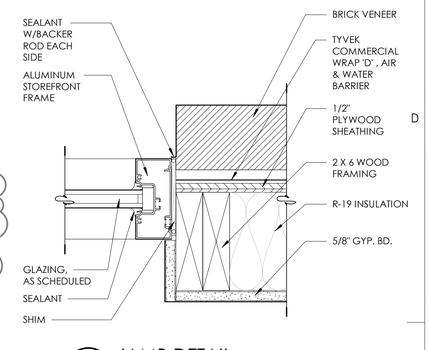

D5 JAMB DETAIL
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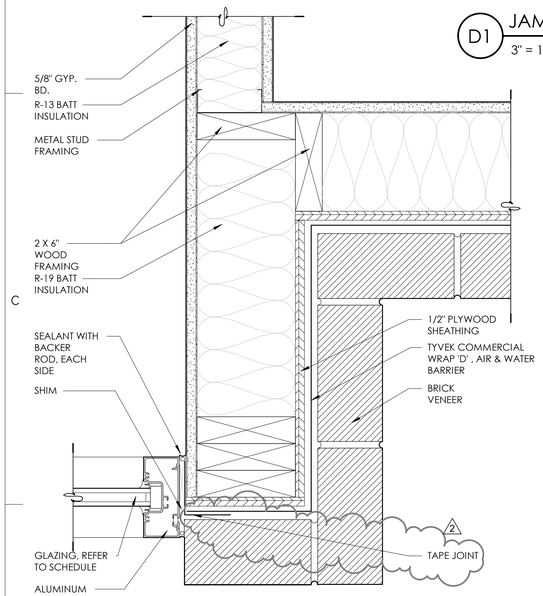

C1 JAMB DETAIL
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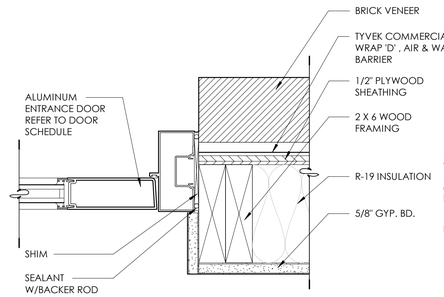

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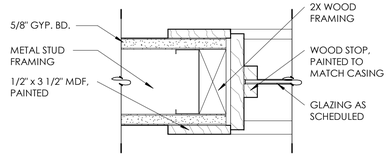

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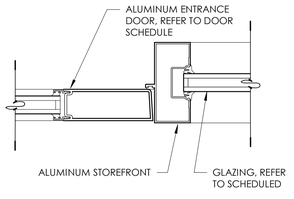

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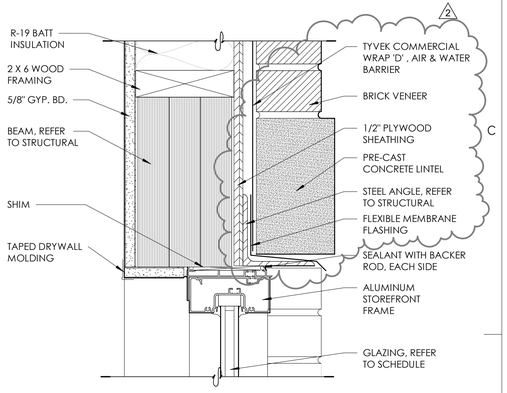

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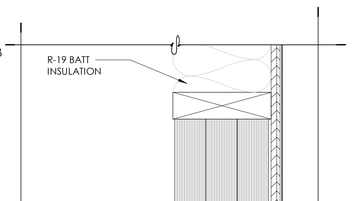

A HEAD DETAIL W/BEAM
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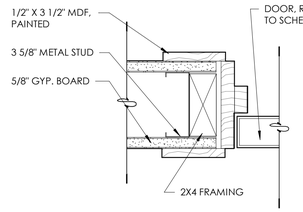

B1 JAMB DETAIL
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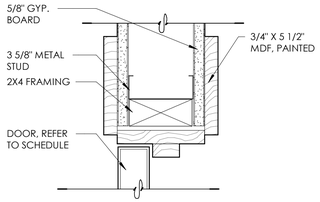

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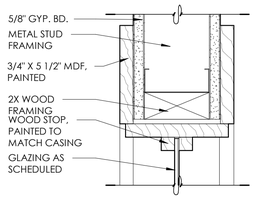

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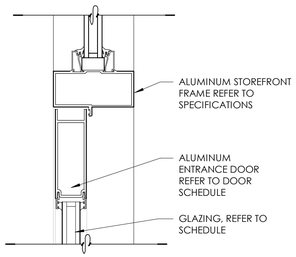

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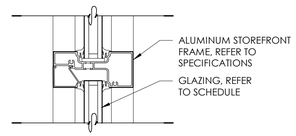

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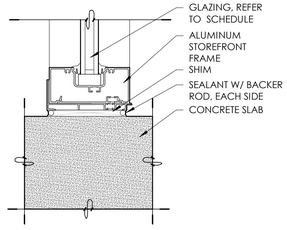
3" = 1'-0"



A1 SILL DETAIL
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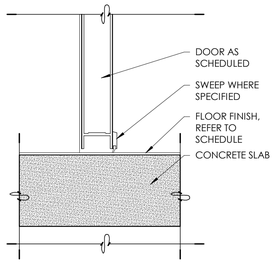

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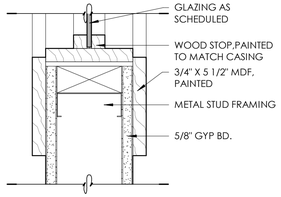

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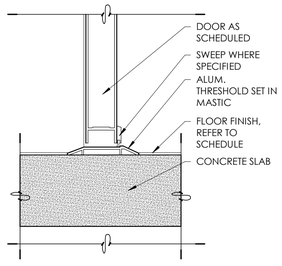

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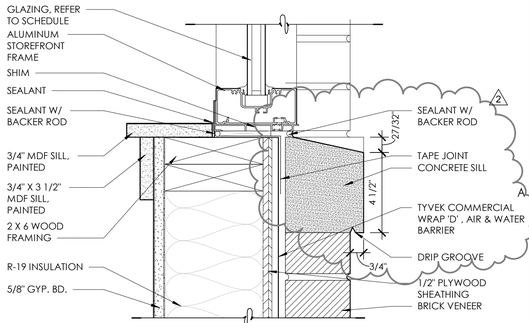

A5 SILL DETAIL
3" = 1'-0"

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www.sandersarch.com

Seal

STATE OF UTAH
M. SHANE SANDERS
No. 5926553
LICENSED ARCHITECT
9.11.25

Consultant

Project Name
JONES & ASSOCIATES
CONSULTING ENGINEERS
6080 S FASHION POINT DRIVE
SOUTH OGDEN, UT 84405

Issued

No.	Date	Description
1	09.21.23	PLAN REVIEW
2	02.29.24	PLAN REVIEW

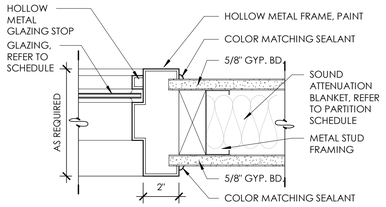
Revision

No.	Date	Description
2	02.01.24	PLAN REVIEW/REDESIGN

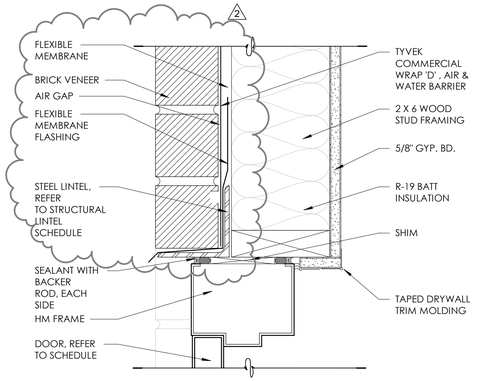
SAA Project No. 2022-11

Drawing Title
OPENING DETAILS

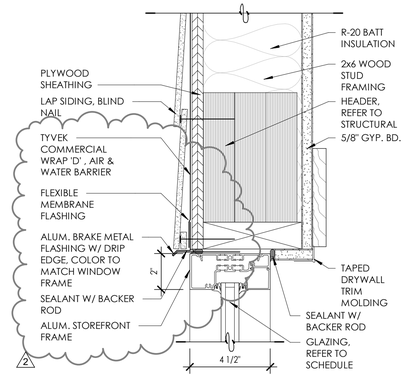
Sheet Number
AE581



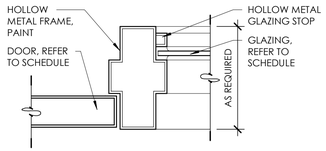
D2 HM HEAD/JAMB DETAIL
3" = 1'-0"



C3 HM HEAD
3" = 1'-0"



C5 HEAD DETAIL
3" = 1'-0"



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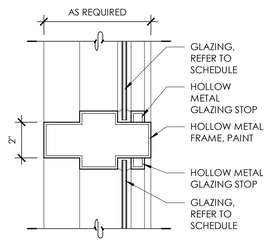

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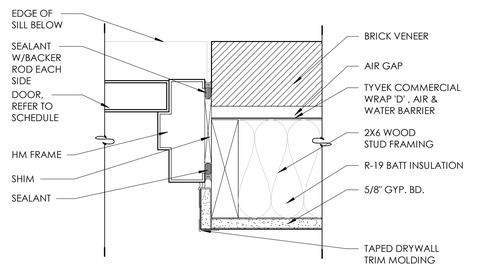

B3 HM JAMB
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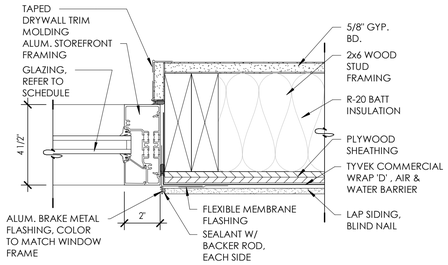

B5 JAMB DETAIL
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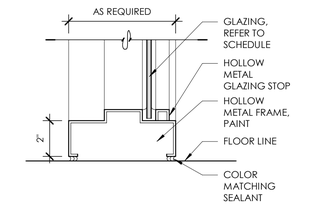

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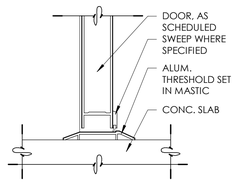

A3 HM SILL
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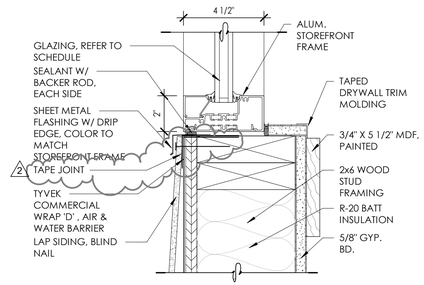

A5 SILL DETAIL
3" = 1'-0"

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6080 S FASHION POINT DRIVE
SOUTH OGDEN, UT 84405

Issued

No.	Date	Description
1	09.21.23	PLAN REVIEW
2	02.29.24	PLAN REVIEW

Revision A

No.	Date	Description
2	02.01.24	PLAN REVIEW/REDESIGN

SAA Project No. 2022-11

Drawing Title

OPENING DETAILS

Sheet Number

AE582

DOOR SCHEDULE

DOOR #	ROOM NAME	DOOR	SIZE			MTRL	FINISH	GLAZE	FRAME	MTRL	FINISH	HEAD DETAIL	JAMB DETAIL	SILL DETAIL	HRDWR. GROUP	FIRE RATING	COMMENTS	DOOR #
		DOOR TYPE	WIDTH	HEIGHT	THICK				FRAME TYPE									
101A	ENTRY	A	3' - 0"	7' - 0"	1 3/4"	ALUM	CLEAR	GL-3	W1	ALUM	CLEAR	-	-	-	5	-		101A
101B	OMITTED		0"	0"	0"				OMITTED									101B
102A	MEN	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	3	-		102A
103A	WOMEN	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	3	-		103A
104A	OMITTED		0"	0"	0"				OMITTED									104A
106A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		106A
107A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		107A
108A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		108A
109A	STORAGE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	4	-		109A
110A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		110A
111A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		111A
112A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		112A
113A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		113A
114A	OMITTED		0"	0"	0"				OMITTED									114A
114B	STAIR B	C	3' - 0"	7' - 0"	1 3/4"	HM	PNT		B	HM	PNT	C3/AE582	B3/AE582	A3/AE582	6	1HR		114B
202A	GPS STORAGE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	4	-		202A
203A	MEN	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	3	-		203A
204A	WOMEN	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	3	-		204A
206A	MECH	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		206A
207A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		207A
208A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		208A
209A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		209A
211A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		211A
212A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		212A
213A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		213A
214A	OFFICE	B	3' - 0"	7' - 0"	1 3/8"	WD	PNT	-	A	WD	PNT	B2/AE581	B1/AE581	-	1	-		214A

PANEL SCHEDULE

MARK	GLASS TYPE	COMMENTS
GL-1	1/4" - CLEAR	
GL-2	1/4" - CLEAR TEMPERED	
GL-3	1" INSUL - LOW E - TEMPERED	SOLARBAN 60 (2) CLEAR +CLEAR U: 0.29, SHGC: 0.39
GL-4	1" INSUL-LOW E	SOLARBAN 60 (2) CLEAR +CLEAR U: 0.29, SHGC: 0.39

GENERAL NOTES

2

ALL EXTERIOR STOREFRONTS, WINDOWS AND DOORS MUST HAVE A NFRC OR EQUAL CERTIFICATE

ALL DOORS LOCATED ON AN ACCESSIBLE ROUTE OR CIRCULATION PATH MUST BE TESTED FOR A MAX OPENING FORCE OF 5 LBS.

HARDWARE SCHEDULE

Hardware Grade: Meet ANSI / BHMA A156.3, Series 4000, Grade 2
Hardware Finish: US26D (Satin Chrome)
Lever: Provide lever meeting accessibilty requirements
Harewware Accessibilty Requirements: Meet 2009 ANSI / ICC A117.1 & 2010 ADA standards for accessible design
Hardware Requirments: Meet 2009 ANSI / ICC A117.1

GROUP 1
Function : Passage
Hinges
Door Stop- wall mount, where applicable
Silencers

GROUP 2
Function : Passage
Closure
Hinges
Door Stop- wall mount, where applicable
Silencers

GROUP 3
Function: Privacy lock
Closure
Kickplate
Hinges
Door Stop- Wall mount
Silencers

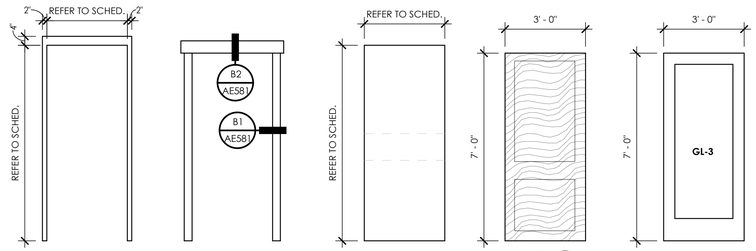
GROUP 4
Function: Office lock
Hinges
Door Stop- wall mount
Silencers

GROUP 5
Provided by Storefront Manufacturer
(Key as required by Owner)

GROUP 6
Function: Entry
Exit Panic Device w/ Level
Exterior cylinder night latch (part of panic device)
Closure
Hinges
Threshold
Weatherstripping

2

GROUP 7
OMITTED



FRAME TYPE B
HOLLOW METAL

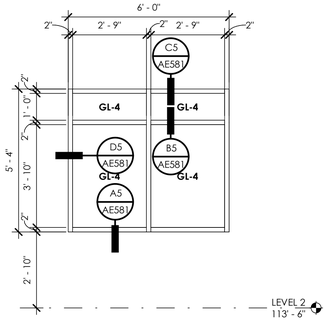
FRAME TYPE A
WOOD

DOOR TYPE C
HOLLOW METAL

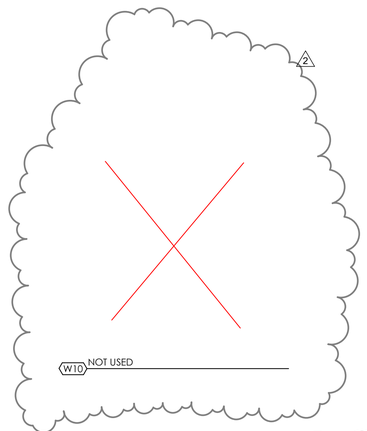
DOOR TYPE B
HOLLOW CORE WOOD

2

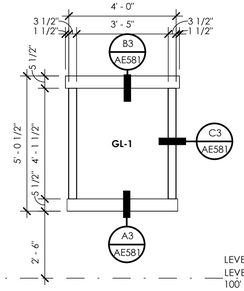
DOOR TYPE A
STOREFRONT



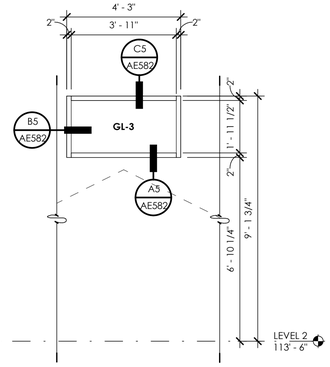
W5 STOREFRONT
BONE WHITE PERMACOAT, POWDER COATING



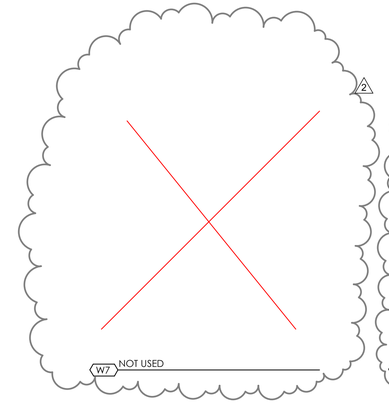
W10 NOT USED



W9 WOOD WINDOW
PAINTED



W8 STOREFRONT
BONE WHITE PERMACOAT, POWDER COATING



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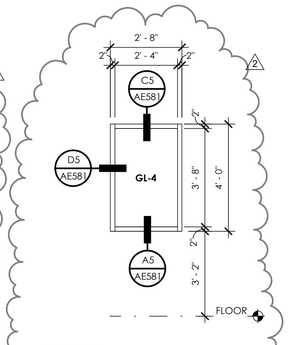
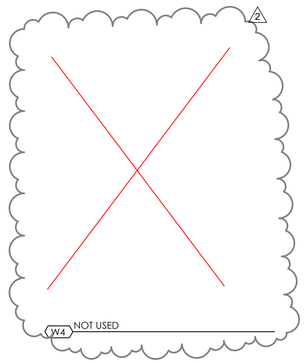
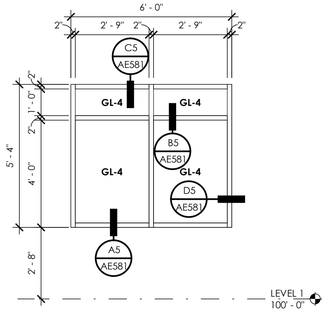


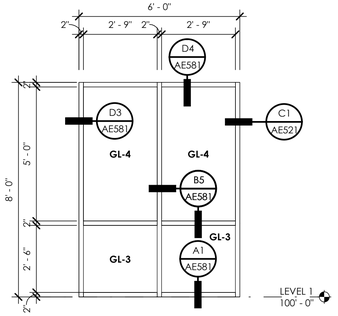
W6 STOREFRONT
BONE WHITE PERMACOAT, POWDER COATING



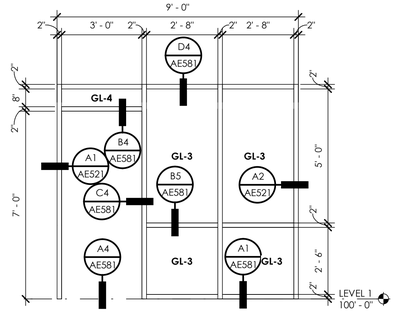
W4 NOT USED



W3 STOREFRONT
BONE WHITE PERMACOAT, POWDER COATING



W2 STOREFRONT
BONE WHITE PERMACOAT, POWDER COATING



W1 STOREFRONT
BONE WHITE PERMACOAT, POWDER COATING

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Seal

STATE OF UTAH
M. SHANE SANDERS
No. 5926553
LICENSED ARCHITECT
9.11.23

Consultant

JONES & ASSOCIATES
CONSULTING ENGINEERS
6080 S FASHION POINT DRIVE
SOUTH OGDEN, UT 84405

Project Name

Issued

No.	Date	Description
1	09.21.23	PLAN REVIEW
2	02.29.24	PLAN REVIEW

Revision

No.	Date	Description
1	10.30.23	ADDENDUM #1
2	02.01.24	PLAN REVIEW/REDESIGN

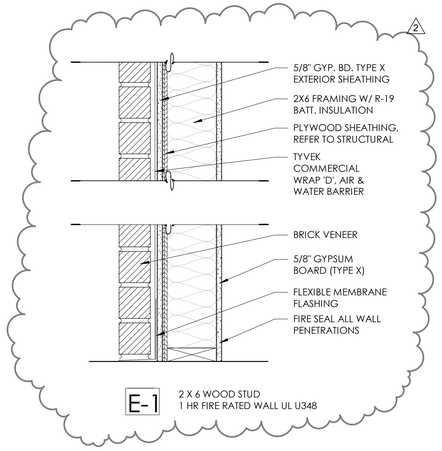
SAA Project No. 2022-11

Drawing Title

DOOR SCHEDULE, FRAME TYPES & OPENING DETAILS

Sheet Number

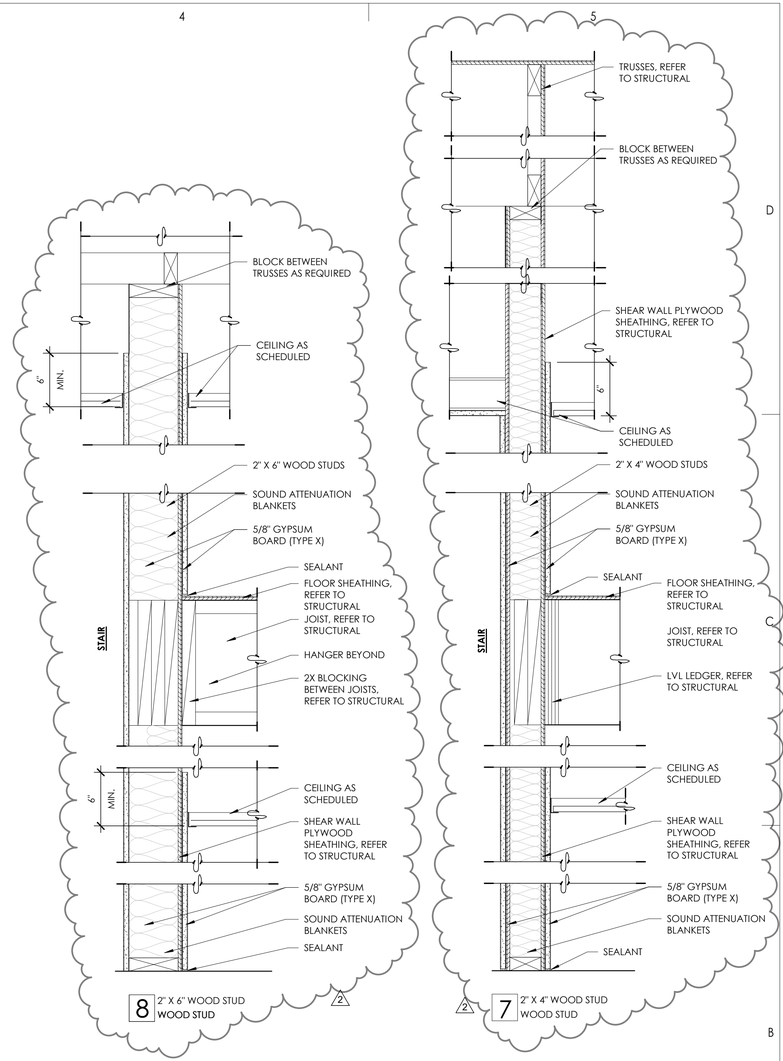
AE601



E-1 2 X 6 WOOD STUD
1 HR FIRE RATED WALL UL U348

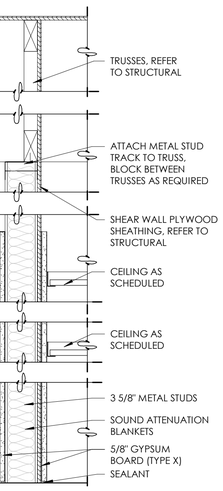
NOT USED

13 3 5/8" STEEL STUD

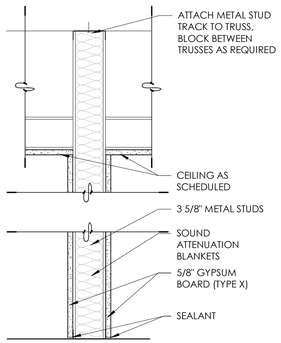


7 2" X 4" WOOD STUD
WOOD STUD

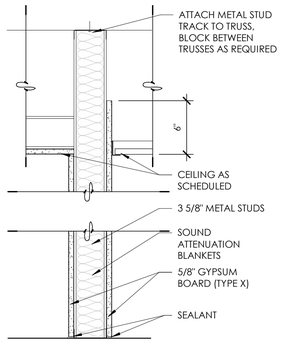
8 2" X 6" WOOD STUD
WOOD STUD



12 3 5/8" STEEL STUD SHEER- SOUND



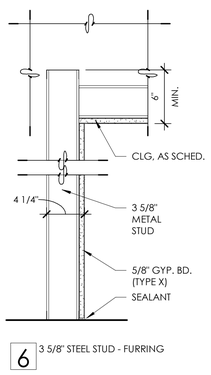
11 3 5/8" STEEL STUD - SOUND



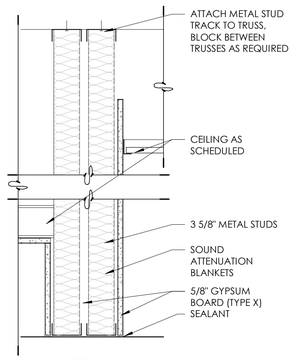
10 3 5/8" STEEL STUD - SOUND

NOT USED

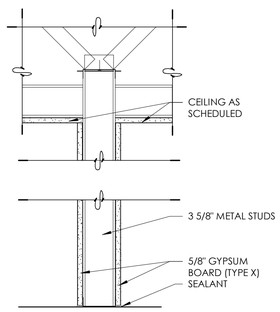
9 3 5/8" STEEL STUD



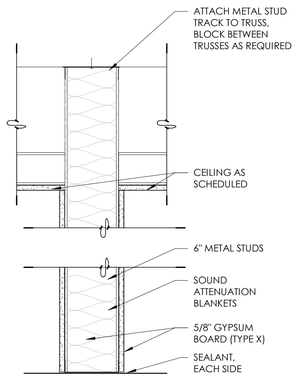
6 3 5/8" STEEL STUD - FURRING



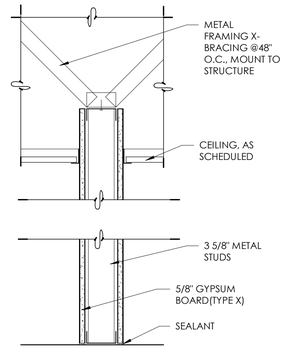
5 3 5/8" STEEL STUD - DOUBLE



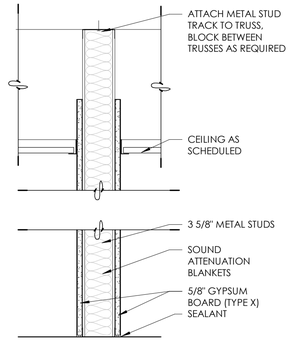
4 3 5/8" STEEL STUD



3 6" STEEL STUD - SOUND



2 3 5/8" STEEL STUD



1 3 5/8" STEEL STUD - SOUND

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SAA Project No. 2022-11

Drawing Title

PARTITION TYPES

Sheet Number

AE661

GENERAL NOTES:

1. VISITS TO THE JOB SITE BY REPRESENTATIVES OF THE ENGINEER DO NOT SUBSTITUTE APPROVAL OF THE WORK PERFORMED BY THE CONTRACTOR OR HIS SUBCONTRACTORS AND ARE MERELY FOR THE PURPOSE OF OBSERVING THE WORK PERFORMED.
2. CONTRACTOR SHALL NOTIFY ENGINEER/ARCHITECT OF ANY DISCREPANCIES, OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND/OR SPECIFICATIONS BEFORE PROCEEDING WITH ANY WORK INVOLVED. IN ALL CASES, UNLESS OTHERWISE DIRECTED, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN AND BE PERFORMED.
3. CONTRACTOR SHALL VERIFY ALL CONDITIONS, DIMENSIONS AND ELEVATIONS, ETC., AT THE SITE AND SHALL COORDINATE WORK PERFORMED BY ALL TRADES. DO NOT SCALE DRAWINGS.
4. SHOP DRAWINGS SHALL BE REVIEWED BY THE ENGINEER/ARCHITECT PRIOR TO FABRICATION OR ERECTION OF ANY PREFABRICATED OR MANUFACTURER- DESIGNED COMPONENTS AND SHALL BE STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THIS STRUCTURE RESIDES.
5. SIZES, LOCATIONS, LOADS, AND ANCHORAGES OF EQUIPMENT SHALL BE VERIFIED IN THE FIELD WITH EQUIPMENT MANUFACTURERS (SUPPLIERS) PRIOR TO FABRICATION OR INSTALLATION OF SUPPORTING STRUCTURES.
6. TEMPORARY BRACING SHALL BE PROVIDED WHEREVER NECESSARY TO WITHSTAND OF ALL LOADS TO WHICH THE STRUCTURE MAY BE SUBJECTED, INCLUDING WIND. SUCH BRACING SHALL BE LEFT IN PLACE AS LONG AS MAY BE REQUIRED FOR SAFETY, OR UNTIL ALL THE STRUCTURAL ELEMENTS ARE INSTALLED.
7. DURING AND AFTER CONSTRUCTION THE CONTRACTOR AND/OR OWNER SHALL KEEP LOADS ON THE STRUCTURE WITHIN THE LIMITS OF THE DESIGN LOADS.
8. CONTRACTOR AND ALL SUBCONTRACTORS SHALL PERFORM THEIR TRADES AND DUTIES IN A MANNER CONFORMING TO THE PROCEDURES AND REQUIREMENTS AS STATED IN THE CURRENTLY ADOPTED INTERNATIONAL BUILDING CODE, (OR LATEST ACCEPTED CODE ADOPTED BY THE LOCAL BUILDING OFFICIALS).
9. ANY SPECIAL INSPECTIONS REQUIRED BY THE BUILDING OFFICIAL OR THE BUILDING CODE ARE THE RESPONSIBILITY OF THE OWNER OR CONTRACTOR.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY AND PROTECTION WITHIN AND ADJACENT TO THE JOB SITE.

FOUNDATION AND EARTHWORK NOTES

1. SOILS INFORMATION / REPORT
   - 1.1. NO SOILS INVESTIGATION REPORT PROVIDED.
   - 1.2. ASSUMED SOIL BEARING CAPACITY — 1,500 PSF
   - 1.3. FROST PROTECTION (TO BOTTOM OF FOOTING) — 30 INCHES MINIMUM
     CONTRACTOR SHALL ENSURE THAT THE FOOTING ELEVATIONS WILL PROVIDE MINIMUM FROST PROTECTION BELOW THE FINAL GRADES.
2. ANY SOIL CONDITION ENCOUNTERED DURING EXCAVATION THAT IS CONTRARY TO THOSE USED FOR DESIGN OF FOOTINGS AS OUTLINED IN THE WORKING DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING.
3. ALL FOOTINGS SHALL BEAR ON UNDISTURBED NATIVE SOIL OR ENGINEERED GRANULAR FILL COMPACTED TO 95% OF MAX DENSITY, BASED ON ASTM D 1557 METHOD OF COMPACTION. FILL SHALL BE PLACED IN LAYERS NOT TO EXCEED SIX INCHES IN DEPTH AFTER COMPACTION AND SHALL EXTEND DOWN TO IN-SITU SOILS. FILL SHALL BE COMPACTED UNDER ALL CONCRETE WORK ON THE SITE.
4. NO FOOTINGS SHALL BE PLACED IN WATER, SNOW, FROZEN GROUND, OR UNSTABLE SOILS.
5. ALL EXCAVATIONS ADJACENT TO AND BELOW FOOTING ELEVATION FOR OTHER TRADES SHALL BE ACCOMPLISHED PRIOR TO POURING ANY FOOTINGS.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR LATERALLY SUPPORTING ALL RETAINING TYPE FOUNDATION WALLS WHILE COMPACTING BEHIND WALLS AND UNTIL ALL SUPPORTING MEMBERS HAVE BEEN PLACED (SUCH AS FLOOR SLABS). ALL OPEN EXCAVATIONS AND TRENCHES SHALL BE SUPPORTED AND BARRICADED BY CONTRACTOR TO CONFORM WITH OSHA SAFETY STANDARDS.
7. ALL REINFORCEMENTS SHALL BE SECURELY TIED IN PLACE PRIOR TO POURING CONCRETE.
8. PROVIDE DOWELS IN FOOTING AND FOUNDATIONS TO MATCH ALL VERTICAL BARS IN WALLS AND COLUMNS ABOVE, UNLESS NOTED OTHERWISE.
9. CONSULT THE PROJECT SPECIFICATIONS AND SOILS REPORT FOR FURTHER EARTHWORK REQUIREMENTS.

CONCRETE NOTES

1. CONCRETE MATERIALS:
   - 1.1. CEMENT TYPE - ASTM C-150 — TYPE I/II
     CEMENT SOURCE SHALL REMAIN THE SAME FOR THE ENTIRE JOB.
   - 1.2. FLY ASH - ASTM C618 — CLASS F, 25% MAX CEMENT. CONTENT
   - 1.3. ADMIXTURES:
     - 1.3.1. AIR-ENTRAINING - ASTM C260
     - 1.3.2. WATER-REDUCING ADMIXTURE - ASTM C494, TYPE A
     - 1.3.3. RETARDING ADMIXTURE - ASTM C494, TYPE B
     - 1.3.4. WATER-REDUCING AND RETARDING ADMIXTURE - ASTM C494, TYPE F
     - 1.3.5. HIGH-RANGE, WATER-REDUCING AND RETARDING ADMIXTURE - ASTM 494, TYPE G
     - 1.3.6. ADMIXTURE MANUFACTURER SHALL HAVE ISO 9001 QUALITY CERTIFICATION.
     - 1.3.7. ALL ADMIXTURES SHALL BE FROM THE SAME MANUFACTURER TO ENSURE COMPATIBILITY
     - 1.3.8. CALCIUM CHLORIDE SHALL NOT BE ADDED TO THE CONCRETE MIX
   - 1.4. NORMAL WEIGHT AGGREGATES — ASTM C33
     - 1.4.2. COMBINED AGGREGATE GRADATION FOR SLABS ON GRADE AND OTHER DESIGNATED CONCRETE SHALL BE 8% TO 18% FOR LARGE TOP SIZE AGGREGATES (1 1/2") OR 8% TO 22% FOR SMALLER TOP SIZE AGGREGATES (1" OR 3/4") RETAINED ON EACH SIEVE BELOW THE TOP SIZE AND ABOVE THE NO. 100. THE RANGE FOR THE NO. 30 AND NO. 50 SIEVES SHALL BE 8% TO 15% RETAINED IN EACH. TO AVOID GAP GRADING THE FOLLOWING SHALL OCCUR.
       - 1.4.2.1. THE PERCENT RETAINED ON TWO ADJACENT SIEVES SHALL NOT FALL BELOW 5%
       - 1.4.2.2. THE PERCENT RETAINED ON THREE ADJACENT SIEVES THAT NOT FALL BELOW 8%
       - 1.4.2.3. WHEN THE PERCENT RETAINED ON TWO ADJACENT SIEVES IS LESS THAN 8%, THE TOTAL RETAINED ON EITHER OF THESE SIEVES AND THE ADJACENT OUTSIDE SIEVE SHALL BE AT LEAST 13%. SEE ACI 302 SECTION 5.4.3.3
     - 1.4.3. MAXIMUM AGGREGATE SIZE SHALL BE NOT LARGER THAN:
       - 1.4.3.1. 1/5 THE NARROWEST DIMENSION OF THE FORMS
       - 1.4.3.2. 1/3 THE DEPTH OF THE SLAB
       - 1.4.3.3. 3/4 THE MINIMUM SPACING BETWEEN BARS
   - 1.5. REINFORCING STEEL - ASTM A615, GRADE GO (Fy = 60 ksi)
     USE GRADE 40 (Fy = 40 ksi) FOR FIELD BENT DOWELS WITH SPACINGS REDUCED BY 1/3 FROM THAT INDICATED IN THE DRAWINGS.
   - 1.6. ANCHOR RODS (TYPICAL) — ASTM F1554, GRADE 36
     - 1.6.1. HEAVY HEX NUTS AND HARDENED WASHERS — ASTM A563
   - 1.7. WATER CEMENT RATIO SHALL MEET THE REQUIREMENTS OF ACI 318
   - 1.8. PROVIDE AIR ENTRAINMENT AS RECOMMENDED BY ACI 318.
     HORIZONTAL USE CONCRETE THAT EXTENDS ABOVE GRADE AND IS EXPOSED TO FREEZING AND THAWING WHILE MOIST SHALL BE AIR ENTRAINED (UNLESS OTHERWISE INDICATED)
   - 1.9. ITEMS NOT PERMITTED TO BE DIRECTLY EMBEDED IN CONCRETE ARE ALUMINUM CONDUIT, PRODUCTS CONTAINING ALUMINUM, OR OTHER SUCH NON-COMPATIBLE MATERIALS.
2. CONCRETE COMPRESSIVE STRENGTHS OF CONCRETE AT 28 DAYS AND ACI 318 CLASSIFICATIONS SHALL BE AS FOLLOWS (OR AS OTHERWISE INDICATED)
   - 2.1. INTERIOR FOOTINGS & INTERIOR FOUNDATION WALLS
     STRENGTH — 3,000 PSI
     CLASSIFICATION — F0, S0, W0, C0
   - 2.2. EXTERIOR FOOTINGS & EXTERIOR FOUNDATION WALLS
     STRENGTH — 3,000 PSI
     CLASSIFICATION — F0, S0, W0, C0
   - 2.3. INTERIOR SLABS ON GRADE
     STRENGTH — 3,000 PSI
     CLASSIFICATION — F0, S0, W0, C0
   - 2.4. ALL SITE CONCRETE WITH REINFORCEMENT
     STRENGTH — 5,000 PSI
     CLASSIFICATION — F3, S0, W1, C2
   - 2.5. ALL SITE CONCRETE WITHOUT REINFORCEMENT
     STRENGTH — 4,500 PSI
     CLASSIFICATION — F3, S0, W1, C2
3. REINFORCEMENT COVER
   - 3.1. CAST-IN-PLACE CONCRETE — CLEAR COVER
     - 3.1.1. PERMANENTLY CAST AGAINST EARTH — 3"
     - 3.1.2. FORMED CONCRETE EXPOSED TO WEATHER
       #5 BARS AND SMALLER — 1 1/2"
       #6 THROUGH #18 BARS — 2"
     - 3.1.3. CONCRETE NOT EXPOSED TO WEATHER OR AGAINST EARTH
       SLABS, WALLS AND THEIR PIERS — 3/4"
       BEAMS, COLUMNS: — 1 1/2"
     - 3.1.4. SUSPENDED SLABS
       #11 BARS AND SMALLER (TOP) — 2"
       #11 BARS AND SMALLER (BOTTOM) — 3/4"
     - 3.1.5. BEAMS:
       TIES, STIRRUPS, SPIRALS (TOP) — 2"
       TIES, STIRRUPS, SPIRALS (BOTTOM) — 1 1/2"
4. ONLY ONE GRADE OR TYPE OF CONCRETE SHALL BE POURED ON THE SITE AT ANY GIVEN TIME.
   - 4.1. ALL CONCRETE WORK SHALL BE PLACED, CURED, STRIPPED, AND PROTECTED AS DIRECTED BY THE ACI STANDARDS AND PRACTICES
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SHORING AND FORMWORK.
   - 5.1. SUPPORTING FORMS AND SHORING SHALL NOT BE REMOVED UNTIL STRUCTURAL MEMBERS HAVE ACQUIRED SUFFICIENT STRENGTH TO SAFELY SUPPORT THEIR OWN WEIGHT AND ANY CONSTRUCTION LOAD TO WHICH THE MAY BE SUBJECTED.
6. CONSTRUCTION JOINTS, CONTROL JOINTS
   - 6.1. UNLESS OTHERWISE NOTED, ALL CONSTRUCTION JOINTS SHALL BE KEYED WITH A KEY 1-1/2" DEEP, A LENGTH 2" LESS THAN THE MEMBER, AND A WIDTH 1/2 OF THE MEMBER. REINFORCING SHALL BE CONTINUOUS THRU JOINT.
   - 6.2. UNLESS NOTED OTHERWISE, CONTROL JOINTS (CONTRACTION JOINTS) SHALL BE SPACED NO FURTHER THAN 30 TIMES THE SLAB THICKNESS. THE CONTROL JOINTS SHALL BE INSTALLED SO THAT THE LENGTH TO WIDTH RATIO IS NO MORE THAN 1.20:1.
     - 6.2.1. CONTROL JOINTS SHALL BE COMPLETED AS SOON AS FINAL SET IS ACHIEVED. THE JOINT DEPTH F0R SAWCUT AND TOOLED JOINTS SHALL BE 1/4" THE SLAB THICKNESS. THE SAWCUT DEPTH SHALL INCREASE TO 1/3 THE SLAB THICKNESS FOR MACRO FIBER REINFORCED SLABS.
7. CONSTRUCTION AND DETAILING
   - 7.1. ALL SPLICES IN CONTINUOUS CONCRETE REINFORCING BARS SHALL LAP 40 BAR DIAMETERS. ALL SUCH SPLICES SHALL BE MADE IN A REGION OF COMPRESSION UNLESS OTHERWISE SHOWN.
   - 7.2. ALL OPENINGS IN CONCRETE WALLS SHALL BE REINFORCED WITH 2 #5 BARS EXTENDING 2'0" MIN BEYOND THE EDGE OF THE OPENING AT EACH FACE OF OPENING (UNLESS NOTED OTHERWISE).
   - 7.3. BEFORE CONCRETE IS POURED CHECK WITH ALL TRADES TO INSURE PROPER PLACEMENT. OF ALL OPENINGS, SLEEVES, CURBS, CONDUITS, BOLTS, INSERTS, ETC. RELATIVE TO WORK.
   - 7.4. REFER TO ARCHITECTURAL DRAWINGS FOR MOLDS, GROOVES, ORNAMENT, CLIPS OR GROUNDS, REQUIRED TO BE ENCASED IN CONCRETE AND FLOOR LOCATION OF FLOOR FINISHES AND SLAB DEPRESSIONS.
   - 7.5. NO PIPES, DUCTS, SLEEVES, ETC SHALL BE PLACED IN STRUCTURAL CONCRETE UNLESS SPECIFICALLY DETAILED OR APPROVED BY THE STRUCTURAL ENGINEER. PENETRATIONS THROUGH WALLS WHEN APPROVED SHALL BE BUILT INTO THE WALL PRIOR TO CONCRETE PLACEMENT. PENETRATIONS THROUGH WALLS WHEN APPROVED SHALL BE BUILT INTO THE WALL PRIOR TO CONCRETE PLACEMENT.
   - 7.6. ALL REINFORCEMENT SHALL BE DETAILED AND PLACED IN ACCORDANCE WITH THE CURRENT VERSION OF ACI-318.
   - 7.7. USE CHAIRS OR OTHER SUPPORT DEVICES RECOMMENDED BY THE CRSI TO SUPPORT AND TIE REINFORCEMENT BARS PRIOR TO PLACING CONCRETE. REINFORCING STEEL FOR SLABS ON GRADE AND SLABS OVER METAL DECK SHALL BE ADEQUATELY SUPPORTED. SUPPORT REINFORCING STEEL OF SLABS ON GRADE WITH PRECAST CONCRETE UNITS. LIFTING THE REINFORCING OFF THE GRADE DURING PLACEMENT IS NOT PERMITTED.
   - 7.8. FOR STEPS IN FOUNDATION GREATER THAN 2 FEET, WRAP CORNER W/2- #4 BARS EXTENDING 18" EACH DIRECTION.
   - 7.9. REINFORCING BARS SHALL NOT BE WELDED UNLESS SPECIFICALLY NOTED ON DRAWINGS.

POST INSTALLED ANCHOR NOTES

1. ADHESIVE ANCHORS (EPOXY ANCHORS)
   - 1.1. FOR CONCRETE, THE ADHESIVE SHALL BE HIT RE 500-SD BY HILTI INC., HIT-HY 200 WITH SAFE SET TECHNOLOGY BY HILTI, PURE 110 + BY POWERS FASTENERS, SET-XP BY SIMPSON STRONG-TIE OR AT-XP BY SIMPSON STRING-TIE, SIKA ANCHORFIX-3001 BY SIKA CORPORATION.
2. MECHANICAL ANCHORS
   - 2.1. FOR CONCRETE, THE MECHANICAL ANCHOR SHALL BE KWIK BOLT TZ BY HILTI, STRONG-BOLT 2 BY SIMPSON STRONG-TIE, OR POWER-STUD + SD2 BY POWERS FASTENERS.
   - 2.2. FOR GROUTED MASONRY, THE MECHANICAL ANCHOR SHALL BE KWIK BOLT 3 BY HILTI, WEDGE ALL BY SIMPSON STRONG-TIE OR STRONG-BOLT 2 BY SIMPSON STRONG-TIE, OR POWER-STUD + SD1 BY POWERS FASTENERS
3. SCREW ANCHORS
   - 3.1. FOR CONCRETE AND GROUTED MASONRY, THE SCREW ANCHOR SHALL BE TITEN HD FOR CONCRETE ONLY BY SIMPSON STRONG-TIE, SCREW BOLT + BY DeWALT, WEDGE-BOLT + BY POWERS FASTENERS OR KWIK HUS-EZ FOR CONCRETE ONLY BY HILTI.
4. POWDER ACTUATED FASTENERS (PAF)
   - 4.1. FOR FASTENERS DRIVEN INTO STEEL, THE FASTENER SHALL BE X-U P8 TH UNIVERSAL KNURLED SHANK FASTENER BY HILIT., PDPA BY SIMPSON STRONG-TIE, OR 8mm HEAD SPIRAL CSI DRIVE PIN BY POWERS FASTENERS
   - 4.2. FOR FASTENERS DRIVEN INTO CONCRETE, THE FASTENER SHALL BE X-U UNIVERSAL KNURLED SHANK FASTENER BY HILTI, PDP OR PDPA BY SIMPSON STRONG-TIE OR 8mm HEAD SPIRAL CSI DRIVE PIN BY POWERS FASTENERS.
5. INSTALL ALL ANCHORS PER MANUFACTURER'S REQUIREMENTS. THESE REQUIREMENTS INCLUDE, BUT ARE NOT LIMITED TO, HOLE PREPARATION, EPOXY PROPORTIONS AND QUANTITIES, INSTALLATION TEMPERATURE, AND CURE TIMES.
6. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS AND CERTIFICATION TESTING REPORTS FOR INSTALLATION.
7. ALTERNATIVE ANCHORS MAY BE USED IF AN ICC-ES ESR OR IAPMO-UES ER APPROVAL FOR USE IN CRACKED CONCRETE IS SUBMITTED TO THE STRUCTURAL ENGINEER PRIOR TO USE.
8. WHERE A SPECIFIC ANCHOR IS CALLED OUT ON THE PLAN, THAT ANCHOR SHALL BE USED UNLESS IT CAN BE DEMONSTRATED THAT AN ALTERNATIVE ANCHOR WILL MEET OR EXCEED THE CAPACITY OF THE SPECIFIED ANCHOR FOR THE SPECIFIC APPLICATION FOR WHICH IT IS BEING SPECIFIED.

MASONRY VENEER NOTES

1. MASONRY VENEER SHALL BE ATTACHED TO STEEL STUD AND WOOD STUD WALLS WITH DUR-O-WALL D/A 213 SEISMIC VENEER ANCHORS OR HOHMANN * BARNARD DW-10 OR DW-10HS SEISMIC VENEER ANCHORS (OR EQUAL) SPACED AT 16" O.C. VENEER ANCHORS SHALL BE ATTACHED TO STUDS WITH #10 CORROSION RESISTANCE SELF-DRILLING SCREWS. ATTACH THE VENEER TO THE ANCHORS WITH DUR-O-WAL SEISMIC STEEL PINTLES OR HOHMANN & BARNARD 3/16" DIA. BYNA-TIE WITH SEISMICLIPS (OR EQUAL) SPACED AT A MAXIMUM OF 16" O.C. IN BOTH DIRECTIONS. ANCHOR TIES SHALL ENGAGE TO A GALVANIZED NO. 9 GAUGE HORIZONTAL JOINT REINFORCEMENT WIRE IN THE VENEER, WHICH SHALL BE CONTINUOUS AND SHALL BE PLACED AT 16" O.C. MAXIMUM AT THE CENTER OF THE VENEER. AT WALLS WITH RIGID INSULATION USE HOHMANN& BARNARD X-SEAL S.I.S. VENEER ANCHORS.
2. OTHER METHODS OF ATTACHMENT MAY BE USED AFTER WRITTEN ACCEPTANCE BY THE ARCHITECT AND STRUCTURAL ENGINEER IS PROVIDED.
3. STEEL LINTELS: PROVIDE STEEL ANGLE LINTELS AT ALL OPENINGS THROUGH THE MASONRY VENEER. PROVIDE ONE INCH OF BEARING FOR EACH FOOT OF WIDTH OF OPENING, WITH A MINIMUM BEARING OF 6 INCHED.
4. STEEL LINTEL ANGLES SHALL BE GALVANIZED AT ALL EXTERIOR CONDITIONS WHERE EXPOSED TO WEATHER.

COLD-FORMED STEEL

1. ALL COLD-FORMED STEEL SHALL MEET THE REQUIREMENTS OF "SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS" BY AMERICAN IRON AND STEEL INSTITUTE (AISI)
2. ALL COLD-FORMED STEEL CONNECTORS SHALL BE PROVIDED BY THE STEEL NETWORK, CEMCO OR AN APPROVED EQUAL. IF THE STEEL NETWORK ISN'T USED, THE CONTRACTOR SHALL PROVIDE A COMPARISON LIST.
3. LIGHT GAUGE STEEL FRAMING:
   - 3.1. GALVANIZED STEEL SHALL MEET THE MINIMUM REQUIREMENTS OF ASTM A653 (FY = 50 KSI) FOR 97 MIL (12 GAUGE), 68 MIL (14 GAUGE) AND 54 MIL (16 GAUGE). 43 MIL (18 GAUGE) AND LIGHTER GALVANIZED STEEL SHALL MEET ASTM A653 (FY = 33KSI). GALVANIZED COATINGS MUST MEET ASTM A924.
   - 3.2. FOLLOW THE MANUFACTURERS' RECOMMENDATIONS FOR THE USE OF THESE PRODUCTS.
   - 3.3. UNLESS NOTED OTHERWISE, ALL WELDED CONNECTIONS SHALL BE DONE ACCORDING TO AWS STANDARDS.
   - 3.4. ALL INTERIOR NON-BEARING STEEL-STUD WALLS THAT EXTEND ABOVE THE CEILING BUT DO NOT ATTACH TO THE STRUCTURE ABOVE SHALL BE BRACED WITH DIAGONAL METAL-STUD BRACES (45 DEGREES). THE kl/r RATIO OF THE BRACE SHALL NOT EXCEED 200 AND SHALL NOT BE SPACED FURTHER APART THAN 10'-0" O.C. CONNECT DIAGONAL BRACES TO THE TOP OF THE STEEL STUD WALLS AND TO THE TOP FLANGE OF THE STEEL BEAMS WITH TWO #10 TEK SCREWS MINIMUM. WHERE A CONCRETE DECK OCCURS ABOVE, USE TWO POWER-DRIVEN FASTENERS PER DIAGONAL BRACE. OTHER APPROVED METHODS MAY BE USED.

LUMBER NOTES

1. WOOD MATERIALS
   - 1.1. FRAMING LUMBER
     - 1.1.1. STUDS BEARING WALLS — DOUG-FIR LARCH #2 BTR
     - 1.1.2. STUDS NON BEARING WALLS — DOUG-FIR LARCH STUD GRADE BTR
     - 1.1.3. JOISTS — DOUG-FIR LARCH #2 BTR
     - 1.1.4. HEADERS — DOUG-FIR LARCH #2 BTR
     - 1.1.5. POSTS — DOUG-FIR LARCH #1 BTR
     - 1.1.6. SILL PLATES IN CONTACT WITH CONCRETE — DOUG-FIR LARCH #2 (PRESS. TREAT.)
   - 1.2. ENGINEERED LUMBER
     - 1.2.1. GLU-LAM BEAMS — 24F-V4 DOUG-FIR
     - 1.2.2. CANTILEVERED GLU-LAM BEAMS — 24F-V8 DOUG-FIR
     - 1.2.3. LAMINATED VENEER LUMBER (LVL) — 1.9E
   - 1.3. FASTENERS
     - 1.3.1. NAILS FOR ALL FRAMING ANCHORS, COLUMN BASES, HOLDDOWNS, POST CAPS, HANGERS STRUCTURAL HARDWARE, ETC. (UNLESS NOTED OTHERWISE)

*SPECIFIED NAIL SIZE	**TYPICAL NAIL LENGTH
8d COMMON (0.131" DIA.)	1.1/2"
10d COMMON (0.148" DIA.)	3" (OR 1.1/2" FOR SINGLE 2X APPLICATION)
16d COMMON (0.162" DIA.)	3.1/2"

**MANUFACTURER RECOMMENDATIONS FOR NAIL DIAMETER AND LENGTH SHALL BE FOLLOWED WHEN VARIED FROM THE TYPICAL LENGTHS LISTED. SOME APPLICATIONS OF CERTAIN HARDWARE PRODUCTS MAY HAVE NAIL DIAMETERS AND LENGTHS THAT VARY FROM THOSE SHOWN ABOVE.

     - 1.3.2. STRUCTURAL PANEL FLOOR/ROOF DIAPHRAGM FASTENERS (UNLESS NOTED OTHERWISE)

*SPECIFIED NAIL SIZE	MINIMUM PENETRATION INTO FRAMING MEMBER
6d COMMON (0.113" DIA.)	1.1/4"
8d COMMON (0.131" DIA.)	1.3/8"
10d COMMON (0.148" DIA.)	1.1/2"

     - 1.3.3. STRUCTURAL PANEL SHEARWALL FASTENERS (UNLESS NOTED OTHERWISE)

*SPECIFIED NAIL SIZE	MINIMUM PENETRATION INTO FRAMING MEMBER
8d COMMON OR GALVANIZED BOX	1.3/8"
10d COMMON OR GALVANIZED BOX	1.1/2"

     - 1.3.4. *COMMON NAILS SHALL BE USED IN LIEU OF BOX NAILS WHEN NOT SPECIFIED. THE FOLLOWING ARE THE REQUIRED NAIL PROPERTIES FOR COMMON AND BOX NAILS FOR REFERENCE.
       COMMON NAIL SHANK DIAMETERS
       6d = 0.113"; 8d = 0.131"; 10d = 0.148"; 16d = 0.162"
       BOX NAIL SHANK DIAMETERS (NOT PERMITTED UNLESS NOTED OTHERWISE)
       6d = 0.099"; 8d = 0.113"; 10d = 0.128"; 16d = 0.135"
   - 1.4. WOOD SHEATHING SHALL BE UNSANDED PLYWOOD OR ORIENTED STRAND BOARD (OSB) AND SHALL BE INTERIOR GRADE WITH EXTERIOR GLUE AND HAVE THE MINIMUM FOLLOWING SPAN RATING AND THICKNESS, UNLESS NOTED OTHERWISE.
     24/0 — WALLS (7/16 INCH THICK)
     48/24 — FLOORS (23/32 INCH THICK)
     32/16 — ROOF (15/32 INCH THICK)
2. WHERE NOT NOTED OTHERWISE, CONNECT ALL WOOD TO CONCRETE, WOOD TO STEEL AND WOOD TO WOOD (EXCEPT STUD TO PLATE) WITH SIMPSON CONNECTORS OR APPROVED EQUAL.
3. ALL WOOD IN DIRECT CONTACT WITH CONCRETE, MASONRY OR SOIL SHALL BE PRESSURE TREATED OR BE REDWOOD
4. ALL MULTIPLE PLATES AND LEDGERS SHALL BE NAILED TOGETHER WITH 16d NAILS AT 8" ON CENTER.
5. STUD WALLS SHALL RUN CONTINUOUS BETWEEN POINTS OF HORIZONTAL SUPPORT. PROVIDE BRACING WHERE OTHERWISE.
6. BLOCK ALL HORIZONTAL EDGES OF PLYWOOD WALL SHEATHING WITH 2" NOMINAL BLOCKING. BLOCK EDGES OF PLYWOOD ON FLOORS AND ROOF AS DIRECTED ON DRAWINGS.
7. SOLID 2" NOMINAL BLOCKING (SHAPED AND FULL DEPTH) SHALL BE PROVIDED AT ENDS OR POINTS OF SUPPORT OF ALL WOOD JOISTS. ATTACH BLOCKING TO THE WOOD TOP PLATE WITH ONE SIMPSON 'A35' CONNECTOR PER EACH PIECE OF BLOCKING WITH (12) 8d x 1-1/2" NAILS.
8. ALL WALLS SHALL HAVE A MINIMUM OF TWO TOP PLATES. SPLICES IN TOP PLATES SHALL BE STAGGERED A MINIMUM OF FOUR FEET FROM THE NEAREST ADJOINING SPLICE IN THE TOP PLATE.
9. ALL LEDGER BOLTS SHALL HAVE PLATE WASHERS WITH A MINIMUM DIA. EQUAL TO 3 TIMES THE BOLT DIA. UNLESS SHOWN OTHERWISE IN DETAILS.
10. MINIMUM NAILING FOR GENERAL FRAMING AND CARPENTRY SHALL BE PER THE IRC/IBC OR PER THE "MINIMUM NAILING SCHEDULE" IN THESE DRAWINGS.
11. FASTENERS SUCH AS STAPLES, CAN ONLY BE SUBSTITUTED FOR NAILS AT A RATE EQUAL TO LOAD VALUES PROVIDED BY I.C.B.O. APPROVAL. SEE EQUIVALENT STAPLE SCHEDULE IN THESE DRAWINGS.
12. JOISTS SHALL HAVE BRIDGING, BLOCKING AND NOTCHED BEARING PLATES AS RECOMMENDED BY THE MANUFACTURER WITH A MINIMUM OF ONE ROW OF BRACING AT MID SPAN. MANUFACTURER SHALL SUPPLY AND CONTRACTOR SHALL INSTALL. PROVIDE AT 8'-0" O.C. MAXIMUM BETWEEN JOIST END SUPPORTS.
13. ALL FASTENERS (I.E. NAILS, SCREWS, ANCHOR BOLTS, ETC.) WHICH ARE TO BE INSTALLED IN PRESERVATIVE TREATED WOOD (I.E. SILL PLATES) SHALL MEET THE REQUIREMENTS OF IBC 2304.10.5.1
14. PROVIDE A DOUBLE JOIST UNDER PARALLEL PARTITIONS

16. SILL PLATES SHALL BE ANCHORED WITH 1/2" DIA. BOLT EMBEDDED 7" MINIMUM. A MINIMUM OF (2) BOLTS PER PLATE, BOLTS SHALL NOT BE SPACED MORE THAN 6" O.C.

PRE-FABRICATED WOOD TRUSS NOTES

1. THE TRUSSES SHALL BE DESIGNED TO SUPPORT THE CONCENTRATED AND OTHER DISTRIBUTED LOADS AS SHOWN ON THE FRAMING PLANE IN ADDITION TO THE FOLLOWING UNIFORM LOADS:
   - 1.1. DEAD LOAD (TOP CHORD) = 10 PSF
   - 1.2. DEAD LOAD (BOTTOM CHORD) = 10 PSF
   - 1.3. SNOW LOAD (TOP CHORD) = 30 PSF
     TOTAL LOAD = 50 PSF
2. THE TRUSS DESIGNER SHALL CONSIDER UNBALANCED SNOW LOADING FOR ALL SLOPED ROOFS EXCEEDING (1/2:12) OR LESS THAN 70 DEGREES. COORDINATE THE DESIGN WITH ALL MECHANICAL EQUIPMENT, FIRE SPRINKLING SYSTEMS AND HANGING WALLS SUPPORTED BY THE TRUSSES. PROVIDE EXTRA TRUSS WEBS WHERE REQUIRED.
3. ALL ROOF TRUSSES (AND ATTACHMENTS) SHALL BE DESIGNED FOR WIND UPLIFT. ASSUME 8 PSF DEAD LOAD (ALLOWABLE).
4. ANY PARAPETS WHICH ARE DESIGNED INTO THE TRUSSES SHALL BE DESIGNED FOR 40 PSF.
5. DESIGN TRUSSES TO LIMIT DEFLECTION TO SPAN (IN.) DIVIDED BY 240.
6. CHECK DIMENSIONS WITH ARCH. DRAWINGS. TRUSS MANUFACTURER IS RESPONSIBLE TO PROVIDE WEB AND CHORD MEMBERS TO SATISFY LOAD REQUIREMENTS.
7. TRUSS MANUFACTURER SHALL SUBMIT CALCULATIONS AND SHOP DRAWINGS FOR APPROVAL BY ENGINEER.
8. COMPLETE CALCULATIONS AND SHOP DRAWINGS INDICATING ALL MEMBER FORCES, STRESSES, DURATION FACTORS, LUMBER GRADES, DIMENSIONS, LOADING, TRUSS TO TRUSS CONNECTIONS, STEEL TRUSS PLATE SIZE AND LOCATIONS SHALL BE SUBMITTED AND REVIEWED BY THE ENGINEER PRIOR TO COMMENCING FABRICATION.
9. CONNECT ALL TRUSSES PER TRUSS MANUFACTURERS SPECIFICATIONS. ALL TRUSS TO TRUSS CONNECTIONS SHALL BE BY THE TRUSS MANUFACTURER.
10. THE TRUSSES SHALL BE STORED IN A MANNER TO PREVENT MOISTURE FROM BEING ABSORBED BY THE WOOD.
11. PROVIDE BUILT UP COLUMN TO SUPPORT ALL GIRDER TRUSS LOADS MATCHING THE WIDTH OF THE GIRDER [(3) STUDS MINIMUM], MATCH WALL STUD SIZE UNO.

LEGENDS OF MARKS AND ABBREVIATIONS

AB	ANCHOR BOLT(S)	J.B.D.	JOIST BEARING ELEVATION
ABV	ABOVE	JST	JOIST
ALT	ALTERNATE		
APPROX	APPROXIMATE	k	KIPS (1000 POUNDS)
ARCH	ARCHITECT(URAL)	KLF	KIPS PER LINEAR FOOT
		KSF	KIPS PER SQUARE FOOT
BLDG	BUILDING		
BLW	BELOW	LBS	POUNDS
BOT	BOTTOM	LLH	LONG LEG HORIZONTAL
BRG	BEARING	LLV	LONG LEG VERTICAL
BTWN	BETWEEN	LSH	LONG SIDE HORIZONTAL
		LSV	LONG SIDE VERTICAL
CMU	CONCRETE MASONRY UNIT	LVL	LAMINATED VENEER LUMBER
COL	COLUMN		
CONC	CONCRETE	MAX	MAXIMUM
CONST	CONSTRUCT(ION)	MCJ	MASONRY CONTROL JOINT
CJ	CONTROL JOINT	MECH	MECHANICAL
CP-X	CONCRETE PIER	MIN	MINIMUM
CW-X	CONCRETE WALL	MISC	MISCELLANEOUS
D	DEPTH	(N)	NEW
db	BAR DIAMETER	NTS	NOT TO SCALE
DBE	DECK BEARING ELEVATION		
DBL	DOUBLE	O.C.	ON CENTER
DET	DETAIL	O.F.	OUTSIDE FACE
DIA	DIAMETER	OPP	OPPOSITE
DIM	DIMENSION		
DIST	DISTANCE	PAF	POWDER-ACTUATED FASTENER
		PAR	PARALLEL
(E)	EXISTING	PCF	POUNDS PER CUBIC FOOT
EA	EACH	PERP	PERPENDICULAR
E.A.	EACH FACE	PL	PLATE
E.J.	EXPANSION JOINT	PLF	POUNDS PER LINEAR FOOT
ELEC	ELECTRICAL	PNL	PANEL
ELEV	ELEVATION	PSF	POUNDS PER SQUARE FOOT
EQUIP	EQUIPMENT	PSI	POUNDS PER SQUARE INCH
EQ	EQUAL	POUNDS (LBS)	
E.W.	EACH WAY		
EX	EXISTING	REINF	REINFORCEMENT
EXT	EXTERIOR	REQD	REQUIRED
		R.D.	ROOF DRAIN
FC-X	CONTINUOUS FOOTING	RTU	ROOF TOP UNIT
F.D.	FLOOR DRAIN		
FDN	FOUNDATION		
FFE	FINISHED FLOOR ELEVATION	SIM	SIMILAR
FS-X	SPOT FOOTING	STR	STRUCTURAL
FT	FOOT	STRUCT	STRUCTURAL
FTG	FOOTING	STS	SELF TAPPING SCREWS
FTS-X	THICKENED SLAB FOOTING		
		T&B	TOP AND BOTTOM
GA	GAUGE	TOC	TOP OF CONCRETE
GALV	GALVANIZED	TOF	TOP OF FOOTING
GLB	GLU-LAM BEAM	TOS	TOP OF SLAB
GSN	GENERAL STRUCTURAL NOTES	TOW	TOP OF WALL
		TYP	TYPICAL
HORIZ	HORIZONTAL		
HT	HEIGHT	UNO	UNLESS NOTES OTHERWISE
ICC	INTERNATIONAL CODE COUNCIL	VERT	VERTICAL
IBC	INTERNATIONAL BUILDING CODE		
I.F.	INSIDE FACE	W/	WITH
IN	INCH	WT	WALL THICKNESS
INT	INTERIOR	WWF	WELDED WIRE FABRIC
IRC	INTERNATIONAL RESIDENTIAL CODE		

DESIGN CRITERIA

1. GOVERNING BUILDING CODE(S)	2018 INTERNATIONAL BUILDING CODE
RISK CATEGORY	II
2. SEISMIC LOADS	
SEISMIC IMPORTANCE FACTOR, I_e	1.0
SEISMIC DESIGN CATEGORY	D
2.1. SOIL SITE CLASS	D (DEFAULT)
2.2. MAPPED SPECTRAL ACCELERATION	$S_S = 1.33$ $S_1 = 0.480$
2.3. SOIL SITE COEFFICIENTS	$F_a = 1.20$ $F_v = 1.82$
2.4. 5% DAMPED ACCELERATION	$S_{DS} = 2/3 * F_a * S_S = 1.065$ $S_{D1} = 2/3 * F_v * S_1 = 0.582$
2.5. BASIC SFRS	LIGHT FRAMED WOOD SHEAR WALLS
RESPONSE MOD. COEFFICIENT	R = 6.5
SYSTEM OVER-STRENGTH FACTOR	$\Omega = 3.0$
DEFLECTION AMPLIFICATION FACTOR	$C_d = 4.0$
2.6. SEISMIC RESPONSE COEFFICIENT	$C_s = S_{DS} * I_e / R$
2.7. W	DEAD LOADS OF STRUCTURE
2.8. BASE SHEAR	$V = C_s * W = 0.16 * W$ (STRENGTH)
2.9. ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE
3. WIND LOADS	
3.1. WIND VELOCITY (3 SECOND GUST)	103 MPH (STRENGTH) 80 MPH (ALLOWABLE ($I_w = 1.0$))
3.2. EXPOSURE TYPE	C
3.3. INTERNAL PRESSURE COEFF. GC_{pi}	+/- 0.18
3.4. TOPOGRAPHIC FACTOR, K_{ZT}	1.0
4. SNOW LOADS	
4.1. GROUND SNOW LOAD	$P_g = 47$ psf
4.2. SNOW IMPORTANCE FACTOR	$I_s = 1.0$
4.3. SNOW EXPOSURE COEFFICIENT	$C_e = 1.0$
4.4. THERMAL EXPOSURE COEFFICIENT	$C_t = 1.0$
4.5. ROOF SNOW LOAD	$Pf = 0.7*C_e*C_t*I_s*P_g = 33$ PSF PLUS SNOW DRIFT
5. FLOOR LIVE LOADS	
5.1. OFFICE	50 PSF + 20 PSF PARTITION
5.2. EXIT FACILITIES AND CORRIDORS	100 PSF

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Seal

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03/05/2024
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1	09.21.23	PERMIT SET
2	02.29.23	PLAN REVIEW

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Drawing Title
GENERAL NOTES

Sheet Number
S001

SOILS CONSTRUCTION (1705.6)

TYPE	SPECIAL INSPECTION FREQUENCY		REMARKS
	CONT.	PERIODIC	
VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	--	X	VERIFY STRUCTURAL FILL IS PLACED (INCLUDING DEPTH AND LIFTS) IN CONFORMANCE WITH THE CONTRACT DRAWINGS (IF REQUIRED) OR THAT THE NATIVE GROUND MEETS THE ASSUMPTIONS OF THE GEOTECHNICAL REPORT AND CONTRACT DRAWINGS.
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	--	X	VERIFY FROST DEPTH IS A ACHIEVED AND FOOTING AND SLAB DEPTHS MEET THE REQUIREMENTS OF THE CONTRACT DRAWINGS WHERE INDICATED, INCLUDING FOOTING STEPS.
PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	--	X	VERIFY FILL MATERIAL IS IN CONFORMANCE WITH THE SPECIFIED FILL MATERIAL TYPE
VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	--	VERIFY FILL MATERIAL PLACED AND COMPACTED IN ACCORDANCE WITH THE SPECIFIED REQUIREMENTS; THE MAXIMUM LIFT THICKNESS AND THE IN-PLACE DRY DENSITY CONFORMS WITH THE DRAWINGS AND SPECIFICATIONS. WHEN A GEOTECHNICAL REPORT IS NOT PRESENT, IN-PLACE DRY DENSITY OF COMPACTED FILL SHALL BE NOT LESS THAN 90 PERCENT OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT DETERMINED IN ACCORDANCE WITH ASTM D1557
PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	--	X	VERIFY SITE PREPARATION MEETS SPECIFIED REQUIREMENTS, INCLUDING PROPER EXCAVATION DEPTH, REMOVAL OF ALL DELETERIOUS MATERIALS, AND ANY OTHER SPECIFIC REQUIREMENTS DEEMED NECESSARY BY THE SOILS ENGINEER.

CONCRETE CONSTRUCTION (1705.3)

TYPE	SEPCIAL INSPECTION FREQUENCY		REMARKS	REF. STANDARD
	CONT.	PERIODIC		
INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	--	X	VERIFY REINFORCING IS OF SPECIFIED TYPE, GRADE, AND SIZE; REQUIRED EMBEDMENT LENGTHS, LAP LENGTHS, AND SPLICES ARE ACHIEVED AND STAGGERED, OFFSET OR SPACED AS INDICATED; REINFORCEMENT IS FREE OF ICE, MUD, OIL, EXCESSIVE RUST OR OTHER DELETERIOUS MATERIAL; REINFORCING SPLICES ARE IN CONFORMANCE WITH THE CONTRACT DOCUMENTS OR THE MANUFACTURES RECOMMENDATIONS (FOR MECHANICAL SPLICES); TIES, HOOKS, BENDS, AND SUPPLEMENTAL REINFORCING IS PROPERLY PLACED AND COVER TOLERANCES ARE ACHIEVED.	1BC1908.4 ACI 318 CH. 20, 25.2, 25.3, 26.6.1-26.6.3
REINFORCING BAR WELDING:				
VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706	--	X	VERIFY MILL TEST REPORT OF MATERIAL PROPERTIES FOR A706 BAR THAT DEMONSTRATE CONFORMANCE TO THE REQUIREMENTS OF AWS D1.4	AWS D1.4 ACI 318: 26.6.4
INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM $\frac{5}{16}$"		X		
INSPECT ALL OTHER WELDS	X			
INSPECT ANCHORS CAST IN CONCRETE	--	X	VERIFY PLACEMENT PRIOR TO AND DURING CONCRETE PLACEMENT. INSPECTION SHALL OCCUR FOR CONDITIONS THAT INCLUDE, BUT ARE NOT LIMITED TO, BRACED FRAMES, MOMENT FRAMES, TENSION HOLDDOWNS, CANTILEVERED COLUMNS.	ACI 318: 17.8.2
INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS				
ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	X		INSPECTOR SHALL BE QUALIFIED AND SHALL VERIFY EMBEDMENT DEPTHS AND INSTALLATION PROCEDURES CONFORM TO MANUFACTURERS RECOMMENDATIONS	ACI 318: 17.8.2.4
MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED ABOVE		X	VERIFY EMBEDMENT DEPTHS AND INSTALLATION PROCEDURES CONFORM TO MANUFACTURERS RECOMMENDATIONS	ACI 318: 17.8.2
VERIFY USE OF REQUIRED DESIGN MIX	--	X	VERIFY MIX DESIGN MEETS SPECIFIED STRENGTH AND EXPOSURE CLASS REQUIREMENTS	IBC 1904.1, 1904.2, 1908.2, 1908.3 ACI 318: CH. 19, 26.4.3, 26.4.4
PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	--	FABRICATE SPECIMENS IN ACCORDANCE WITH REFERENCED STANDARDS	IBC 1908.10 ASTM C172, ASTM C31, ACI 318: 26.5, 26.12
INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	--	VERIFY DEBRIS AND ICE IS REMOVED FROM SPACES TO BE OCCUPIED BY CONCRETE; PLACEMENT IS AT A RATE TO PROVIDE SUFFICIENT WORK TIMES AND TO AVOID SEGREGATION OR LOSS OF MATERIAL. VERIFY SUITABLE MEANS TO ACHIEVE PROPER CONSOLIDATION ARE USED.	IBC 1908.6, 1908.7, 1908.8 ACI 318: 26.5
VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	--	X	VERIFY CONCRETE MAINTAIN A TEMPERATURE OF AT LEAST 50°F FOR THE FIRST 7 DAYS UNLESS HIGH-EARLY-STRENGTH OR ACCELERATED CURING IS USED; FORMS, FILLERS, AND GROUND IS FREE FROM FROST AND ICE AND CONCRETE MATERIALS ARE PROTECTED FROM FREEZING AT TIME OF PLACEMENT AND CURING; ADEQUATE PROCEDURES ARE TAKEN TO LIMIT TEMPERATURES AND EVAPORATION DURING HOT WEATHER CONCRETE PLACEMENT.	IBC 1908.9 ACI 318: 26.5.3-26.5.5
VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	--	X	FORMWORK SHALL NOT BE REMOVED FROM BEAMS OR SLABS UNTIL AN ESTIMATE OF IN-PLACE CONCRETE STRENGTH HAS BEEN VERIFIED BY TESTING OR OTHER PROCEDURES	ACI 318: 26.11.2
INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	-	X	VERIFY FORMWORK IS BRACED OR TIED TOGETHER TO MAINTAIN POSITION AND SHAPE AND IS SUFFICIENTLY TIGHT TO INHIBIT LEAKAGE OF PASTE OR MORTAR	ACI 318: 26.11.1.2(b)

WOOD CONSTRUCTION (1705.5, 1705.11.1, 1705.12.2)

TYPE	SPECIAL INSPECTION FREQUENCY		REMARKS	IBC REFERENCE
	CONT.	PERIODIC		
PREFABRICATED WOOD STRUCTURAL ELEMENTS				
SHOP FABRICATED TRUSSES	--	X	VERIFY THAT DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES EXIST THAT PROVIDE A BASIS FOR INSPECTION CONTROL AND WORKMANSHIP WITH PERIODIC EVALUATION BY AN APPROVED AGENCY OR THE BUILDING OFFICIAL. THE FABRICATOR SHALL PROVIDE A CERTIFICATE OF COMPLIANCE UPON REQUEST	1704.2.5, 1705.5
WOOD DIAPHRAGMS AND WOOD SHEARWALLS INCLUDING NAILING, BOLTING, ANCHORING, AND OTHER FASTENING ELEMENTS WHICH ARE PART OF THE LATERAL FORCE RESISTING SYSTEM	--	X	VERIFY THE NOMINAL SIZE OF FRAMING MEMBERS AT ADJOINING PANEL EDGES; THE WOOD PANEL SHEATHING GRADE AND THICKNESS; NAIL OR STAPLE DIAMETER AND LENGTH; THE NUMBER OF FASTENER LINES AND THE SPACING BETWEEN FASTENERS IN EACH LINE; HOLD-DOWNS AND ANCHORS; ANCHOR BOLT SIZE AND SPACING, OTHER STRAP, DRAG STRUT, BRACE AND CLIP ELEMENTS AND OTHER COMPONENTS OF THE LATERAL FORCE LOAD PATH. NOTE: NOT REQUIRED WHEN EDGE FASTENER SPACING OF THE DIAPHRAGM OR SHEARWALL SHEATHING IS MORE THAN 4 INCHES ON CENTER	1705.5.1, 1705.11.1, 1705.12.2

STRUCTURAL OBSERVATIONS (1704.6) (NOT REQUIRED)

STRUCTURAL OBSERVATIONS, WHEN REQUIRED, SHALL BE MADE BY THE ENGINEER OF RECORD OR BY A REGISTERED DESIGN PROFESSIONAL AS APPROVED BY THE ENGINEER OF RECORD. STRUCTURAL OBSERVATIONS DO NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR SPECIAL INSPECTIONS AS NOTED IN THESE DRAWINGS. THE FOLLOWING SECTIONS INDICATE STAGES OF CONSTRUCTION THAT THE STRUCTURAL OBSERVER SHALL BE NOTIFIED. AT THE CONCLUSION OF THE PROJECT, THE STRUCTURAL OBSERVER SHALL SUBMIT A WRITTEN STATEMENT TO THE BUILDING OFFICIAL INDICATING THAT SITE VISITS HAVE BEEN MADE AND IDENTIFY ANY REPORTED DEFICIENCIES THAT, TO THE BEST OF THE STRUCTURAL OBSERVER'S KNOWLEDGE, HAVE NOT BEEN RESOLVED.

CONTRACTOR TO NOTIFY ENGINEER OF RECORD AT THE FOLLOWING STAGES:	
CONCRETE	
FOOTINGS AND CONCRETE FOUNDATION WALLS	PRIOR TO POURING CONCRETE
WOOD	
WOOD SHEAR WALLS	PRIOR TO COVERING UP WALLS
WOOD ROOF SHEATHING	PRIOR TO COVERING UP WITH ROOFING

DEFERRED SUBMITTALS

DEFERRED SUBMITTALS LISTED BELOW SHALL BE SUBMITTED TO THE ENGINEER OF RECORD, ARCHITECT, AND BUILDING OFFICIAL FOR THEIR REVIEW AND APPROVAL TO ENSURE CONFORMANCE TO THE DESIGN AND SPECIFICATIONS OF THE BUILDING.

DEFERRED STRUCTURAL SUBMITTALS FOR THIS PROJECT ARE:
PREFABRICATED METAL PLATE WOOD TRUSSES

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SP PROJECT#: 23-165

Project Name

JONES & ASSOCIATES
CONSULTING ENGINEERS
6080 S FASHION POINT DRIVE
SOUTH OGDEN, UT 84405

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Drawing Title

SPECIAL INSPECTIONS

Sheet Number

S002

CONCRETE FOOTING SCHEDULE

MARK	WIDTH	LENGTH	THICK	REINFORCING CROSSWISE				REINFORCING LENGTHWISE				REMARKS
				NO.	SIZE #	LENGTH	SPACING	NO.	SIZE #	LENGTH	SPACING	
FC2.0	2' - 0"	CONT.	12"	NONE	--	--	--	2	#5	CONT.	EVEN	
FC4.0	4' - 0"	CONT.	24"	REQD	#5	3'-6"	12"	4	#5	CONT.	EVEN	TOP AND BOTTOM
FS3.0	3' - 0"	3'-0"	12"	3	#5	2'-6"	EVEN	3	#5	2'-6"	EVEN	
FS4.0	4' - 0"	4'-0"	12"	4	#5	3'-6"	EVEN	4	#5	3'-6"	EVEN	
FS5.0	5' - 0"	5'-0	14"	5	#5	4'-6"	EVEN	5	#5	4'-6"	EVEN	

NOTES:
1. PLACE ALL FOOTINGS REINFORCING 3" FROM BOTTOM OF FOOTING WITH 3" CLEAR ON SIDES UNLESS NOTED OTHERWISE.
2. FOOTINGS MUST BEAR ON COMPACTED STRUCTURAL FILL AS INDICATED IN TEH GEOTECHNICAL REPORT.

CONCRETE PIER SCHEDULE

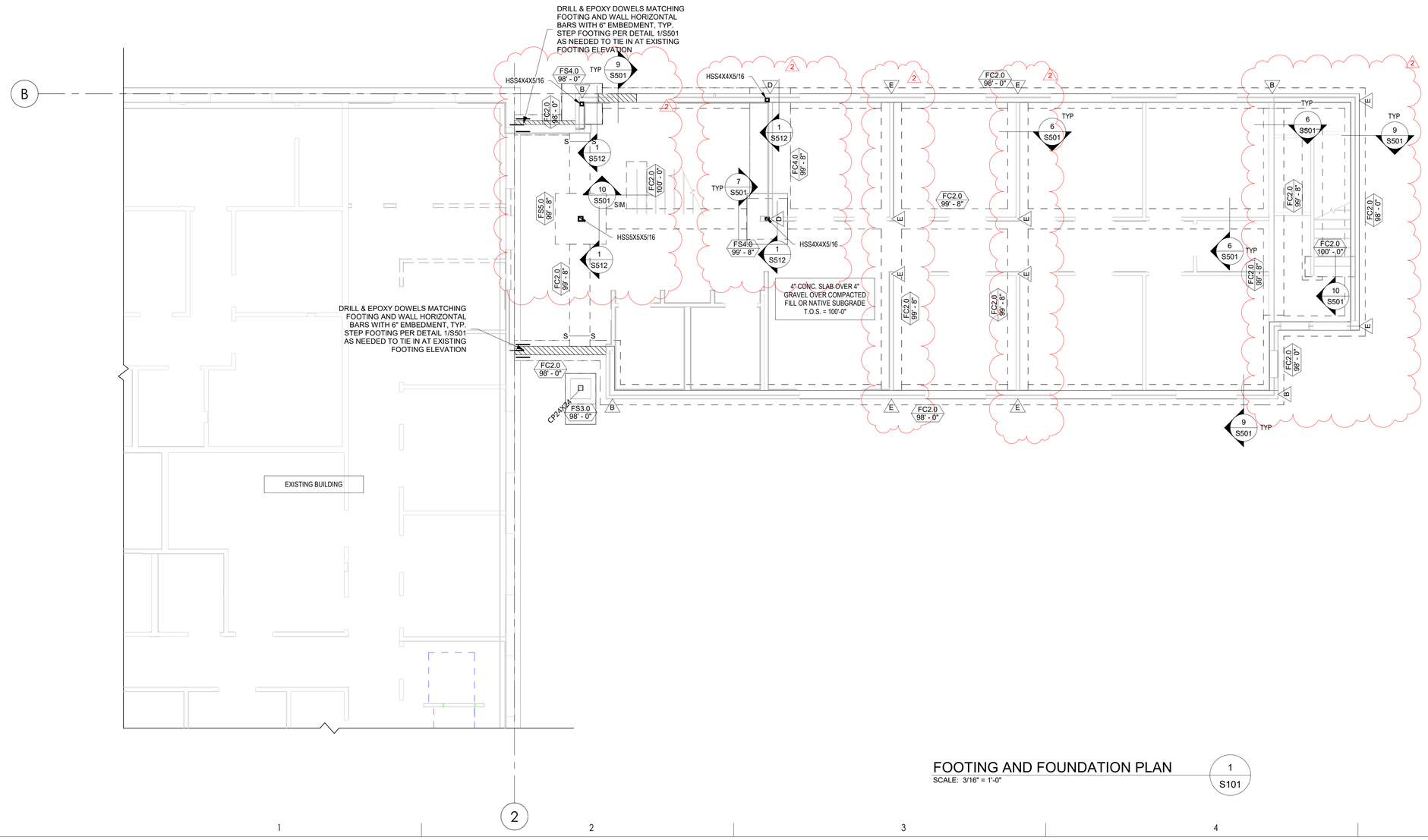
MARK	PIER SIZE	VERTICAL REINFORCEMENT	STRUCTURAL TIES	STYLE	COMMENTS
CP24X24	24"X24"	(12) #5	#3 AT 8" O.C. WITH (3) TIES IN THE TOP 5 INCHES		

NOTES AND SYMBOLS LEGEND

- XX / SXXX — INDICATES DETAIL REFERENCE NUMBER / INDICATES SHEET REFERENCE NUMBER
- FXX.X / XX'-X" — INDICATES FOOTING SIZE AND TOP OF FOOTING ELEVATION, SEE SCHEDULE THIS S601
- CP-X — INDICATES CONCRETE PIER, SEE CONCRETE PIER SCHEDULE ON THIS SHEET.
- CW-XX — INDICATES CONCRET WALL, SEE CONCRETE WALL SCHEDULE ON SHEETS S601
- FCX.X — INDICATES CONTINUOUS FOOTING CALLOUT, SEE FOOTING SCHEDULE ON THIS SHEET
- FSX.X — INDICATES SPOT FOOTING CALLOUT, SEE FOOTING SCHEDULE ON THIS SHEET
- INDICATES DEPRESSED FOUNDATION AT OPENINGS
- S——S — INDICATES STEP IN FOOTING, SEE TYPICAL FOOTING STEP DETAIL 1/S501
- INDICATES STEP IN FLOOR ELEVATION AS INDICATED ON PLAN
- X — INDICATES HOLDDOWN ANCHOR OR STRAP, SEE SCHEDULE ON SHEET S601

FOOTING AND FOUNDATION NOTES

1. COORDINATE LOCATION OF SLOPED SLABS, DEPRESSED, SLABS, FLOOR DRAINS, ETC. WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
2. SEE ARCHITECTURAL DRAWINGS FOR DIMESNIONS TO ALL STEEL COLUMN.
3. SEE ARCHITECTURAL AND CIVIL DRAWINGS FOR EXTERIOR CONCRETE WORK AT DOORS SIDEWALKS, ETC.
4. SEE ARCHITECTURAL DRAWINGS FOR CONTROL JOINT LOCATIONS. REFER TO DETAIL 8/S501 FOR CONTROL JOINT REQUIREMENTS AND SHEET S001.
5. SEE FOUNDATION AND EARTHWORK NOTES ON SHEET S001 FOR MINIMUM FILL REQUIRED BENEATH FOOTINGS.
6. SEE DETAIL 2/S501 AND 3/S501 FOR CONDITION WHERE BURIED PIPES RUN PARALLEL AND PERPENDICULAR TO FOOTINGS.
7. SEE DETAIL 4/S501 FOR TYPICAL CONCRETE WALL CORNER REINFORCING
8. ANCHOR BOLT SIZE AND SPACING FOR BEARING WALLS (NON-SHEAR WALLS) SHALL BE 5/8" DIA. AT 32" O.C.
9. SEE DETAIL 5/S501 FOR SLAB REINFORCING WHERE CONTROL JOINTS ARE DISCONTINUOUS.
10. CARRY ALL COLUMN LOADS DOWN TO FOOTING OR FOUNDATION WALL.
11. SEE SHEET S601 FOR TYPICAL CONCRETE WALL SCHEDULE
12. ALL EXTERIOR WOOD WALLS TO BE SHEATHED PER SW-1 IN THE SHEARWALL SCHEDULE SHOWN ON SHEET S601 UNLESS NOTED OTHERWISE.
13. ALL FOUNDATION WALLS SHALL BE CW-10A, SEE SCHEDULE ON SHEET S601



FOOTING AND FOUNDATION PLAN (1 / S101)
SCALE: 3/16" = 1'-0"

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FOOTING FOUNDATION PLAN

Sheet Number

S101

NOTES AND SYMBOLS LEGEND

XX / SXXX — INDICATES DETAIL REFERENCE NUMBER / INDICATES SHEET REFERENCE NUMBER

FB-X — INDICATES FLOOR BEAM , SEE FLOOR BEAM SCHEDULE THIS SHEET

HDR — INDICATES WOOD HEADER, SEE HEADER SCHEDULE ON SHEET S602

(X) B — INDICATES MINIMUM NUMBER OF BEARING STUDS REQUIRED FOR BUILT UP POST. MATCH STUD DEPTH WITH WALL STUD DEPTH, ALL POSTS, AND BUILT UP POSTS SHALL EXTEND TO THE FOUNDATION (UNO) SEE DETAIL 4/S521 IF GREATER NUMBER OF BEARING STUDS IS REQUIRED BY HOLDDOWN POST, THAT NUMBER OF STUDS SHALL BE USED, THEY NEED NOT BE ADDITIVE.

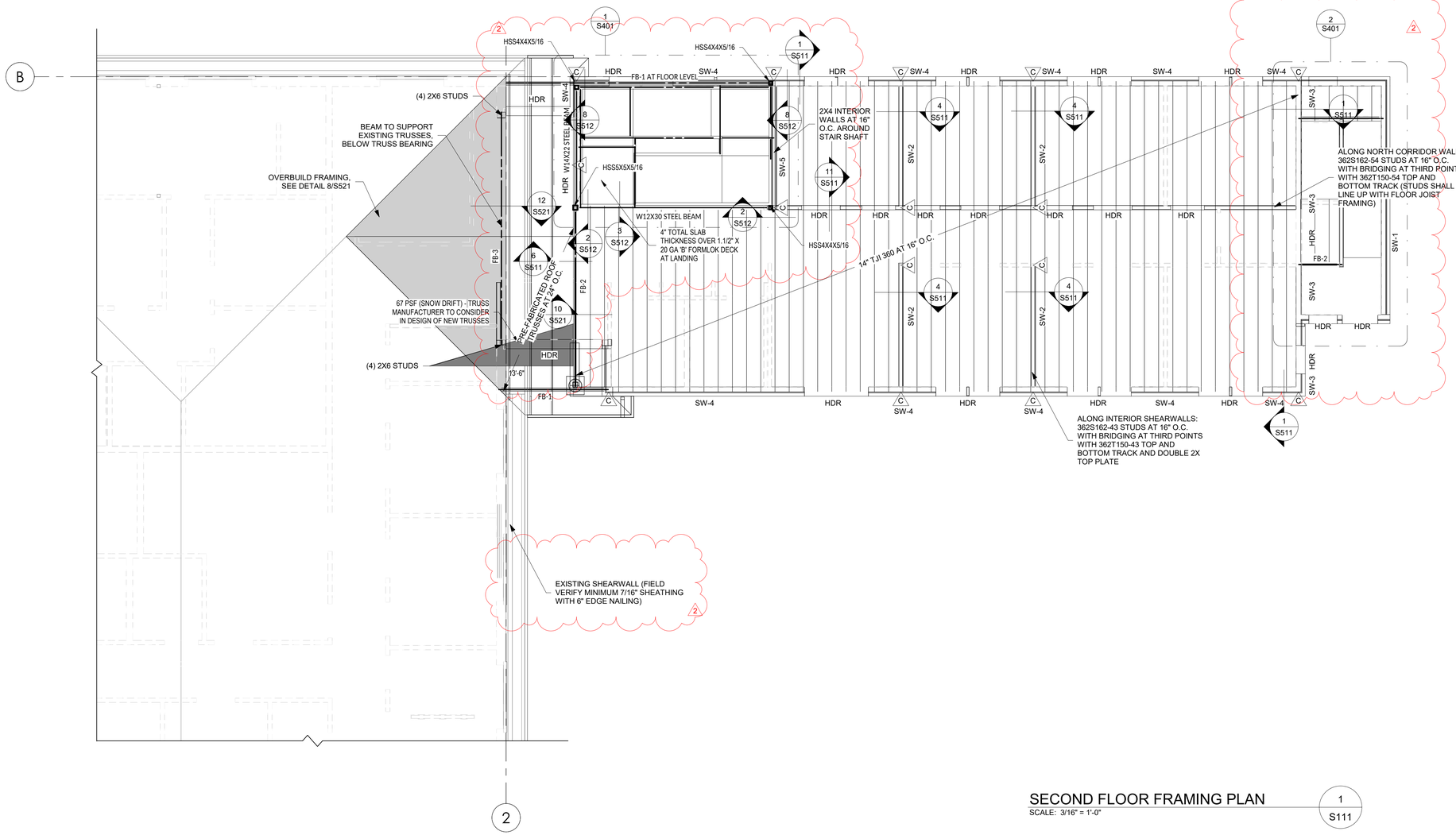
X — INDICATES HOLDDOWN. SEE SCHEDULE ON SHEET S601

FLOOR FRAMING NOTES

1. VERIFY ALL FLOOR OPENINGS FOR MECHANICAL SHAFTS, STAIRS, ETC. WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
2. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS TO ALL STEEL COLUMNS.
3. FLOOR SHEATHING SHALL BE T&G GLUED AND NAILED WITH 10d NAILS AT 6" O.C. AT ALL PANEL ENDS, SUPPORTED EDGES AND ALL BLOCKING; 10d NAILS AT 12" O.C. ALONG INTERMEDIATE FRAMING MEMBERS. GLUE WITH GLUE CONFORMING TO AFG-01 ACCORDING TO APA SPECIFICATIONS. SEE SCHEDULE ON SHEET S602.
4. BLOCK JOISTS SOLID AT ALL BEARING POINTS.
5. ALL INTERIOR BEARING WALLS AND SHEARWALL 3.5/8" METAL STUDS 362S162-33 AT 16" O.C. WITH 362T150-33 TOP AND BOTTOM TRACKS WITH BRIDGING AT MID HEIGHT (UNO).
6. ALL EXTERIOR BEARING WALLS AND SHEARWALL ARE 2X6 AT 16" O.C. (UNO)
7. PROVIDE SQUASH BLOCKING AT ALL POINT LOADS THROUGH FLOOR
8. ALL LVL BEAMS SHALL BE 2.0E AND 1-3/4" WIDE UNO
9. CONNECT 4-PLY AND GREATER BEAMS WITH (2) ROWS 1/2" THRU BOLTS @ 12" O.C. (SEE MANUFACTURERS SPECIFICATIONS).
10. CARRY ALL COLUMN LOADS DOWN TO FOOTING OR FOUNDATION WALL.
11. PROVIDE SOLID BLOCKING OR SQUASH BLOCKS IN JOIST SPACE AT ALL COLUMN LOCATIONS.
12. SEE "MINIMUM NAILING" SCHEDULE ON SHEET S602 FOR TYPICAL NAILING FOR VARIOUS FRMAING CONDITIONS.
13. SEE DETAIL 4/S521 FOR TYPICAL MULTI-PLY HEADERS, JAMBS, POSTS, AND BEAMS (UNO).
14. SEE DETAIL 1/S521 FOR TYPICAL TOP PLATE SPLICE AT PIPE.
15. SEE DETAIL 2/S521 FOR TYPICAL TOP PLATE LAP SPLICE DETAIL
16. SEE DETAIL 3/S521 FOR TYPICAL OPENINGS IN ROOF/FLOOR TRUSSES/JOISTS.
17. SEE DETAIL 5/S521 FOR HEADERS GREATER THAN 6'-0".
18. SEE VENEER LINTEL SCHEDULE ON SHEET S601 FOR STEEL LINTELS AT OPENINGS IN MASONRY VENEER.
19. SEE WOOD HEADER BEARING SCHEDULE ON SHEET S601 FOR TYPICAL HEADER SIZES AND BEARING AND KING STUD REQUIREMENTS.
20. SEE DETAILS 6 AND 7 OF SHEET S521 FOR TYPICAL BEAM CONNECTIONS

FLOOR BEAM SCHEDULE

MARK	TYPE
FB-1	(3)1.3/4" x 14" LVL
FB-2	(2)1.3/4" x 14" LVL
FB-3	(3)1.3/4" x 16" LVL
FB-4	(2) 1 3/4x11 7/8 LVL



SECOND FLOOR FRAMING PLAN (1 / S111)
SCALE: 3/16" = 1'-0"

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FLOOR FRAMING PLAN

Sheet Number

S111

NOTES AND SYMBOLS LEGEND

XX / 5XXX — INDICATES DETAIL REFERENCE NUMBER / INDICATES SHEET REFERENCE NUMBER

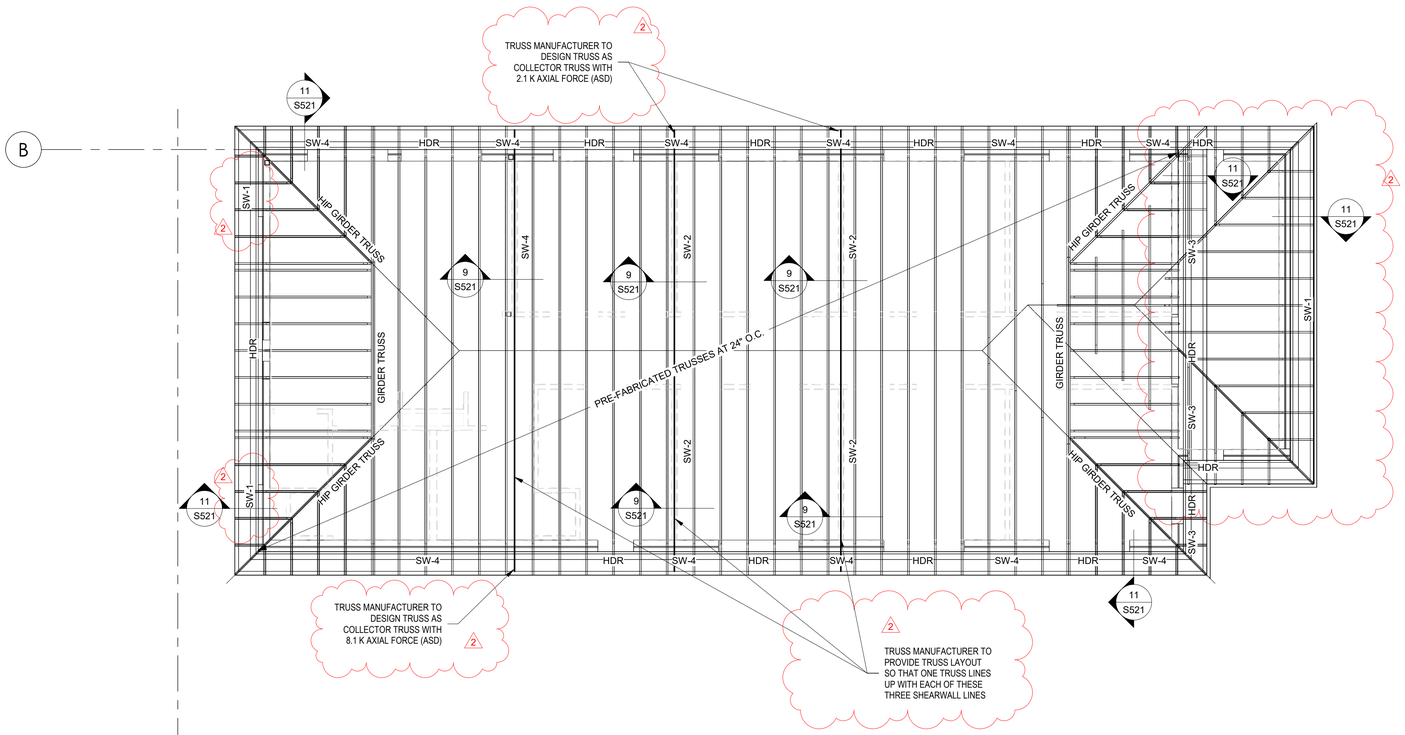
SW-X — INDICATES SHEARWALL CALLOUT, SEE SHEARWALL SCHEDULE ON SHEET S601

HDR — INDICATES WOOD HEADER, SEE HEADER SCHEDULE ON SHEET S601

INDICATES NON-BEARING WALLS

ROOF FRAMING NOTES

1. VERIFY ALL ROOF OPENINGS FOR MECHANICAL SHAFTS, STAIRS, ETC. WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
2. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS TO ALL STEEL COLUMNS.
3. ROOF SHEATHING SHALL BE NAILED WITH 8d NAILS AT 6" O.C. AT ALL PANEL ENDS, SUPPORTED EDGES AND ALL BLOCKING, 8d NAILS AT 12" O.C. ALONG INTERMEDIATE FRAMING MEMBERS, PROVIDE 1/8" GAP BETEEN ALL PANELS.
4. SHEATH ROOF PRIOR TO CONSTRUCTING OVERBUILDS. ROOF SHEATHING SHALL EXTEND BENEATH ALL OVERBUILDS.
5. BLOCK JOISTS SOLID AT ALL BEARING POINTS.
6. ALL INTERIOR BEARING WALLS AND SHEARWALL 3.5/8" METAL STUDS 362S162-33 AT 16" O.C. WITH 362T150-33 TOP AND BOTTOM TRACKS WITH BRIDGING AT MID HEIGHT (UNO).
7. ALL EXTERIOR BEARING WALLS ARE 2X6 AT 16" O.C. UNO
8. ALL EXTERIOR WALLS SHALL BE SHEATHED AS SW-1, UNO. SEE SHEARWALL SCHEDULE ON SHEET S6.02.
9. PROVIDE SQUASH BLOCKING AT ALL POINT LOADS THROUGH FLOOR.
10. ALL LVL BEAMS SHALL BE 2.0 E AND 1-3/4" WIDE UNO
11. CONNECT 4-PLY AND GREATER LVL BEAMS WITH (2) ROWS 1/2" THRU BOLTS @ 12" O.C. (SEE MANUFACTURERS SPECIFICATIONS).
12. CARRY ALL COLUMN LOADS DOWN TO FOOTING OR FOUNDATION WALL.
13. PROVIDE SOLID BLOCKING OR SQUASH BLOCKS IN JOIST SPACE AT ALL COLUMN LOCATIONS.
14. SEE 'MINIMUM NAILING' SCHEDULE ON SHEET S6.02 FOR TYPICAL NAILING FOR VARIOUS FRAMING CONDITIONS
15. SEE DETAIL 1/S521 FOR TYPICAL TOP PLATE SPLICE AT PIPE
16. SEE DETAIL 2/S521 FOR TYPICAL TOP PLATE LAP SPLICE DETAIL
17. SEE DETAIL 3/S521 FOR TYPICAL OPENINGS IN ROOF/FLOOR TRUSSES/JOISTS.
18. SEE DETAIL 4/S521 FOR TYPICAL MULTI-PLY HEADERS, JAMBS, POSTS, AND BEAMS (UNO)
19. SEE DETAILS 6 AND 7 ON SHEET S521 FOR TYPICAL BEAM CONNECTIONS
20. SEE DETAIL 8/S521 FOR HEADERS GREATER THAN 6'-0"
21. SEE VENEER LINTEL SCHEDULE ON SHEET S601 FOR STEEL LINTELS AT OPENINGS IN MASONRY VENEER
22. SEE HEADER BEARING SCHEDULE ON SHEET S601 FOR TYPICAL BEARING AND KING STUD REQUIREMENTS.
23. ALL BEAMS SHALL BE SUPPORTED BY A MINIMUM OF (2) 2X6 BEARING STUDS.



ROOF FRAMING PLAN
SCALE: 3/16" = 1'-0"

2 — 1 S121

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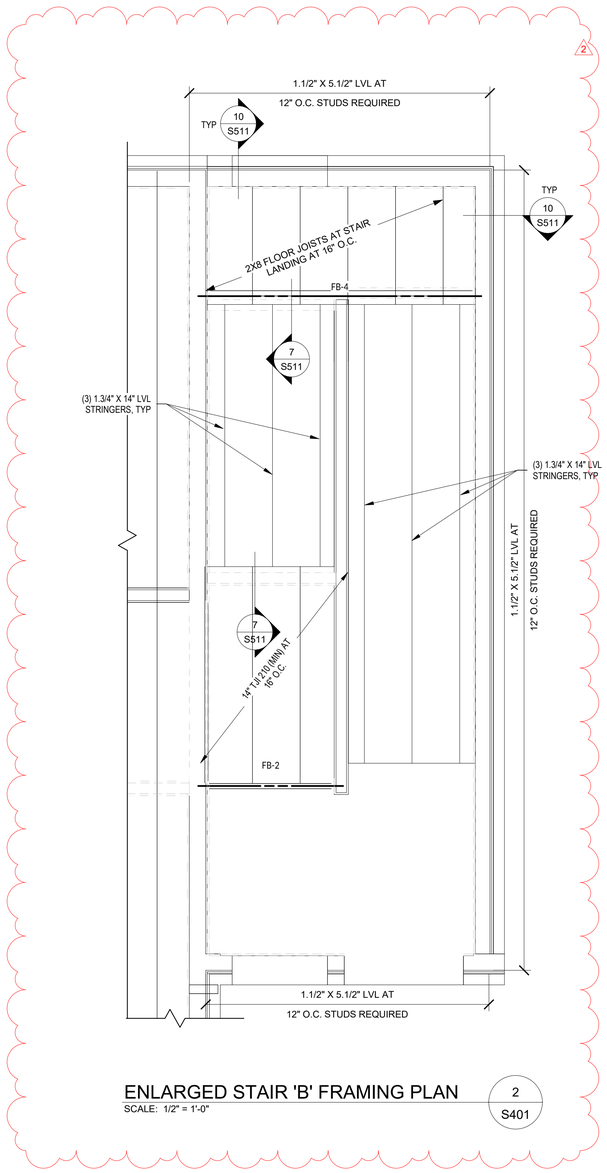
ROOF FRAMING PLAN

Sheet Number

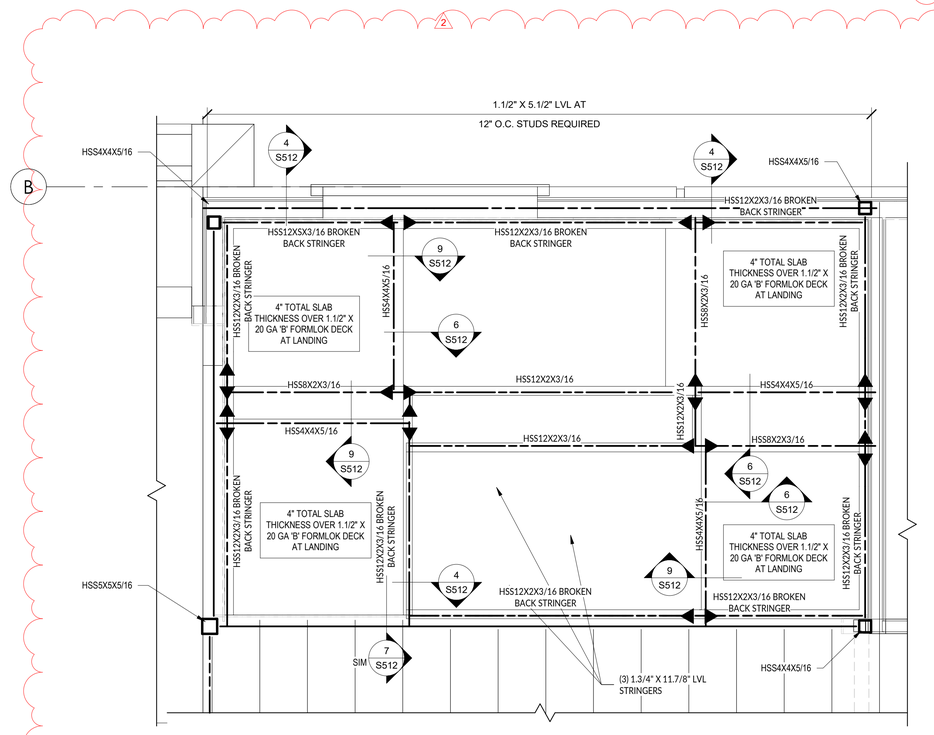
S121



ENLARGED STAIR 'B' FRAMING PLAN

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

2 / S401



ENLARGED STAIR 'A' FRAMING PLAN

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

1 / S401

FLOOR BEAM SCHEDULE

MARK	TYPE
FB-1	(3)1.3/4" x 14" LVL
FB-2	(2)1.3/4" x 14" LVL
FB-3	(3)1.3/4" x 16" LVL
FB-4	(2) 1 3/4x11 7/8 LVL

2

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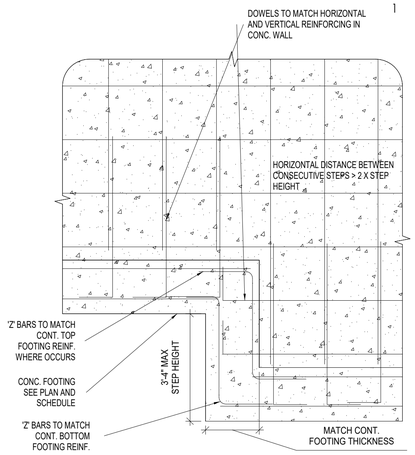
ENLARGED STAIR PLAN

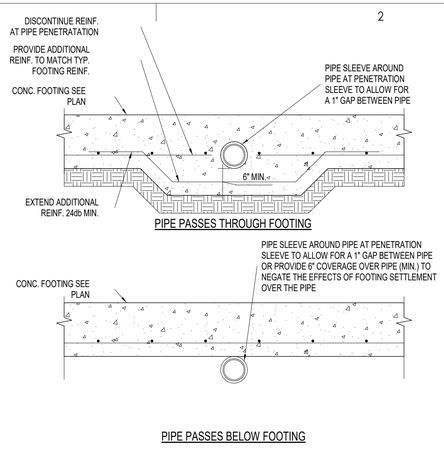
Sheet Number

S401



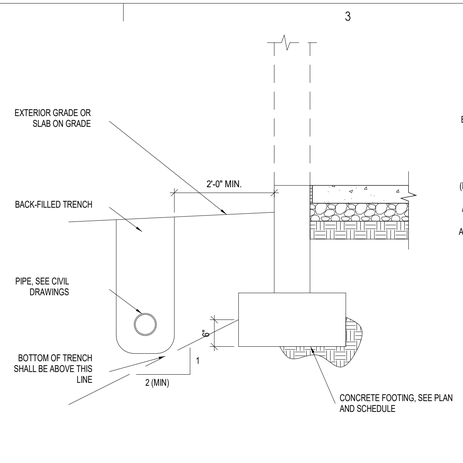
TYPICAL FOOTING STEP DETAIL

NOT TO SCALE — 1 / S501



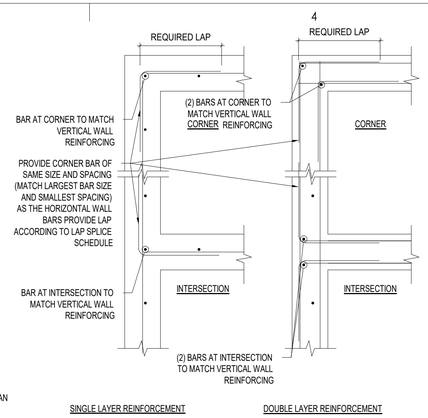
TYPICAL FOOTING PENETRATION

NOT TO SCALE — 2 / S501



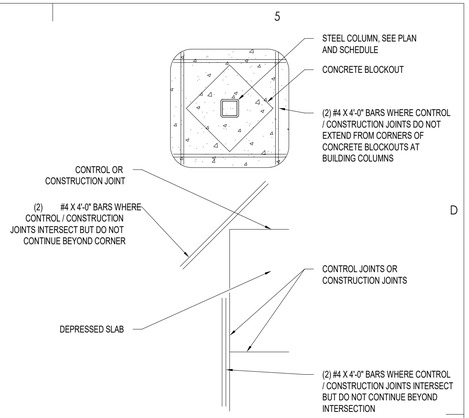
PIPE PARALLEL TO FOOTING DETAIL

NOT TO SCALE — 3 / S501



TYPICAL CORNER REINFORCEMENT

NOT TO SCALE — 4 / S501



ADDITIONAL SLAB REINFOREMENT DETAIL

NOT TO SCALE — 5 / S501

INTERIOR FOOTING DETAIL

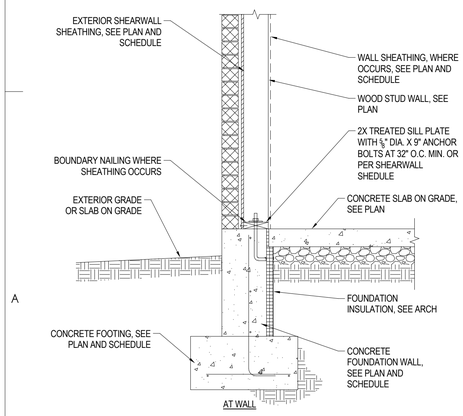
NOT TO SCALE — 6 / S501

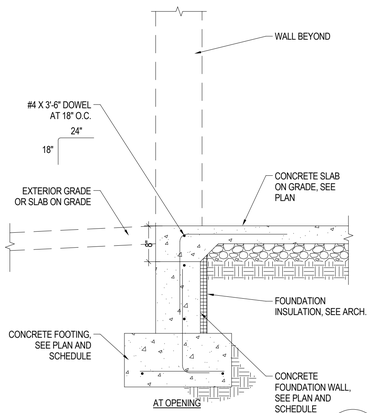
HOLDDOWN AT INTERIOR FOOTING

NOT TO SCALE — 7 / S501

CONTROL AND ISOLATION JOINTS

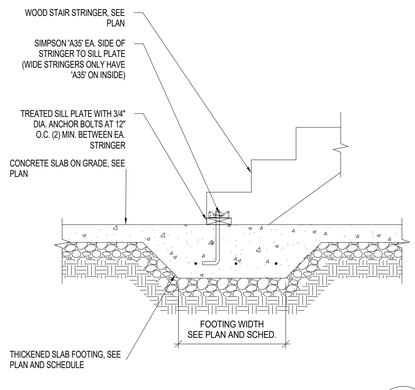
NOT TO SCALE — 8 / S501





EXTERIOR WALL FOOTING DETAIL AT 10 IN. WALL

NOT TO SCALE — 9 / S501



STAIR TO FOOTING DETAIL

NOT TO SCALE — 10 / S501

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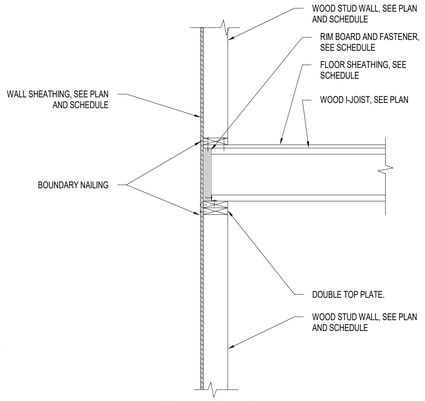
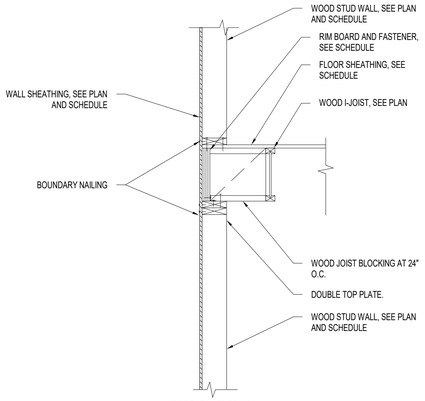
FOOTING AND FOUNDATION DETAILS

Sheet Number

S501



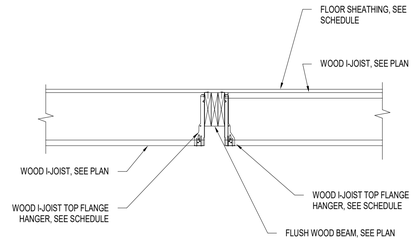
JOIST PERPENDICULAR TO WALL



JOIST PARALLEL TO WALL

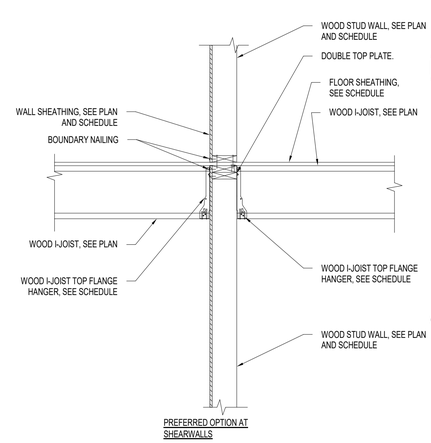
FLOOR I-JOIST TO WALL DETAIL

NOT TO SCALE — 1 / S511

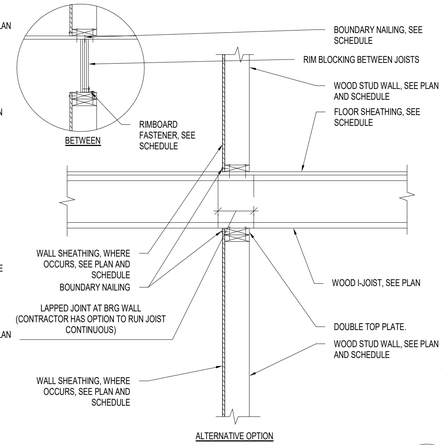


JOISTS AT FLUSH BEAM

NOT TO SCALE — 2 / S511



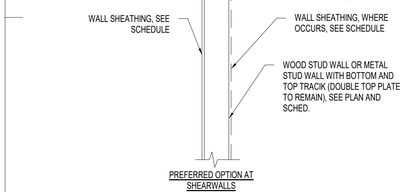
PREFERRED OPTION AT SHEARWALLS



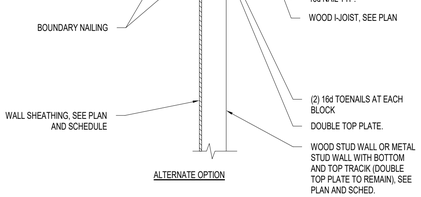
ALTERNATIVE OPTION

JOISTS AT BEARING WALL (AT WOOD WALLS)

NOT TO SCALE — 3 / S511



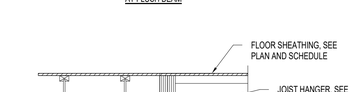
PREFERRED OPTION AT SHEARWALLS



ALTERNATE OPTION

JOISTS AT SHEARWALL

NOT TO SCALE — 4 / S511

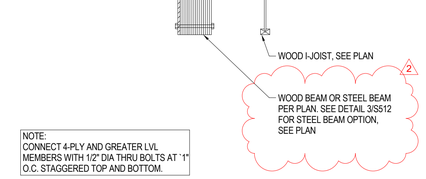


AT FLUSH BEAM

AT FLUSH JOISTS

FLUSH FRAMING TO BEAM DETAIL

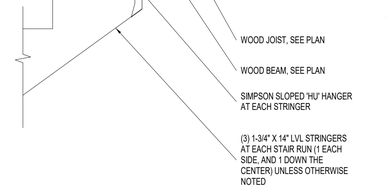
NOT TO SCALE — 5 / S511



NOTE:
CONNECT 4-PLY AND GREATER LVL MEMBERS WITH 1/2" DIA THRU BOLTS AT 1'-1" O.C. STAGGERED TOP AND BOTTOM.

WOOD BEAM AT DISCONTINUOUS SHEARWALL

NOT TO SCALE — 6 / S511



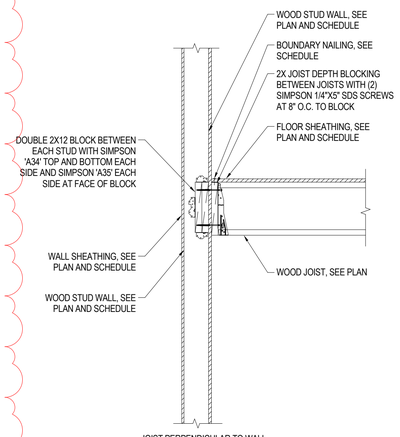
STAIR STRINGER FRAMING

NOT TO SCALE — 7 / S511

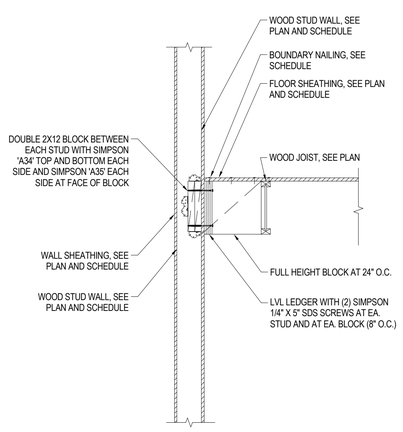
NOT USED

NOT USED — 9 / S511

NOT USED — 8 / S511



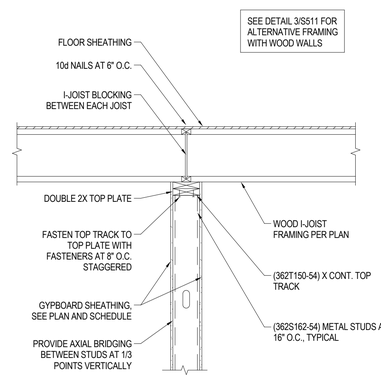
JOIST PERPENDICULAR TO WALL



JOIST PARALLEL TO WALL

STAIR LANDING JOIST TO WALL DETAIL

NOT TO SCALE — 10 / S511



METAL STUD JOISTS TO WALL DETAIL

NOT TO SCALE — 11 / S511

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Project Name

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Issued

No.	Date	Description
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2	02.29.23	PLAN REVIEW

Revision 2

No.	Date	Description
1	10.30.23	ADDENDUM #1
2	02.29.23	PLAN REVIEW/REDESIGN

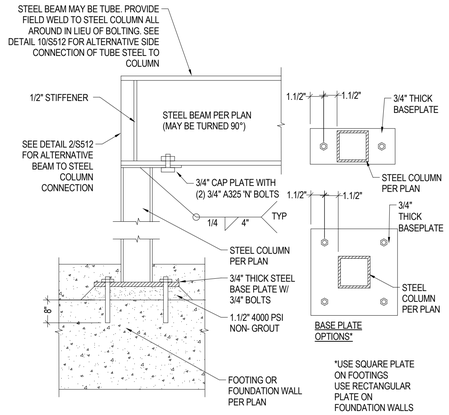
SAA Project No. 2022-11

Drawing Title

FLOOR FRAMING DETAILS

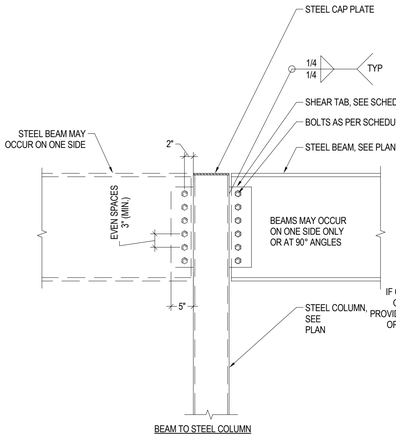
Sheet Number

S511



STEEL COLUMN DETAIL

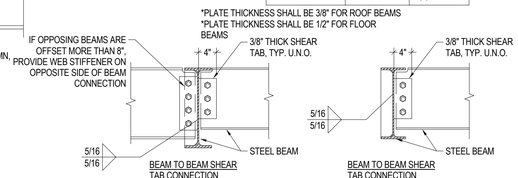
NOT TO SCALE — 1 / S512



USE A325 'N' BOLTS

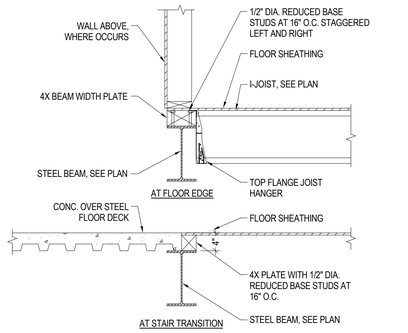
BEAM SIZE	*PLATE SIZE	BOLTS
W8	0'-5.1/2"	(2) 3/4" DIA
W10	0'-6"	(2) 3/4" DIA
W12, C12	0'-9"	(3) 3/4" DIA
W16	1'-1"	(4) 3/4" DIA
W18	1'-3"	(5) 3/4" DIA
W21	1'-6"	(6) 3/4" DIA
W24	1'-8"	(6) 3/4" DIA
W27	1'-11"	(7) 3/4" DIA
W30	2'-2"	(8) 3/4" DIA
W33	2'-5"	(9) 3/4" DIA

*PLATE THICKNESS SHALL BE 3/8" FOR ROOF BEAMS
*PLATE THICKNESS SHALL BE 1/2" FOR FLOOR BEAMS



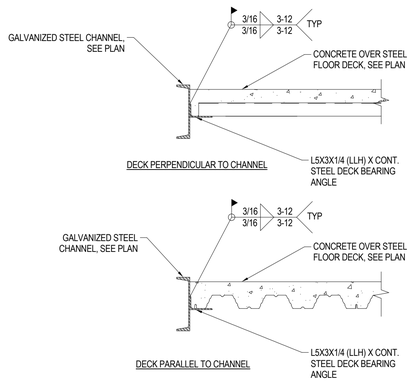
STEEL BEAM BOLT DETAILS

NOT TO SCALE — 2 / S512



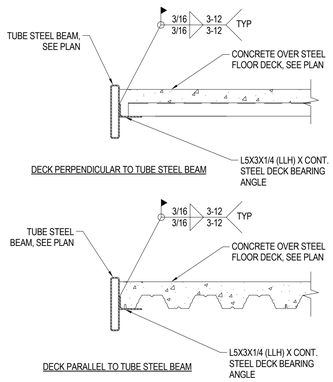
STEEL BEAM AT FLOOR DETAIL

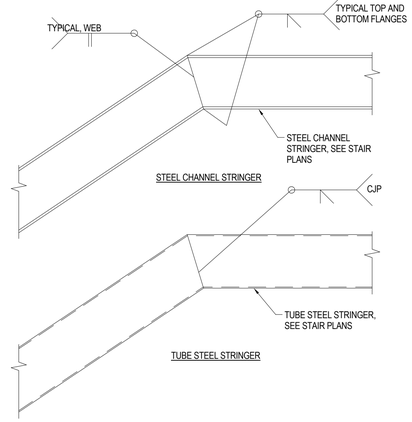
NOT TO SCALE — 3 / S512



TYPICAL CONCRETE SLAB TO STEEL CHANNEL AND TUBE STEEL BEAM

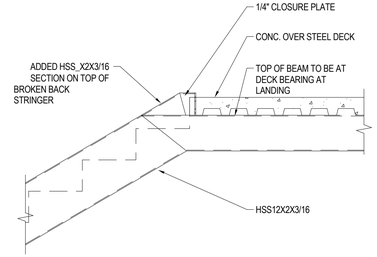
NOT TO SCALE — 4 / S512





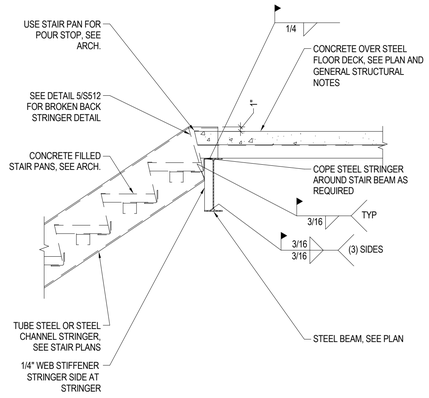
TYPICAL BROKEN BACK STRINGER CONNECTION DETAIL

NOT TO SCALE — 5 / S512



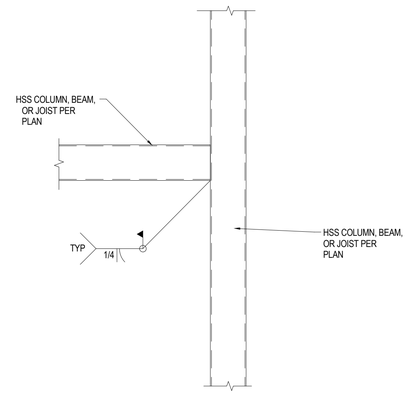
BROKEN BACK BEAM CONT. BELOW LANDING

NOT TO SCALE — 6 / S512



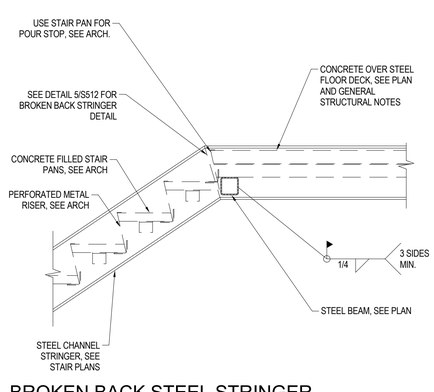
TYPICAL STEEL STRINGER FRAMING

NOT TO SCALE — 7 / S512



HSS TO HSS CONNECTION

NOT TO SCALE — 8 / S512



BROKEN BACK STEEL STRINGER FRAMING

NOT TO SCALE — 9 / S512

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Issued

No.	Date	Description
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2	02.29.23	PLAN REVIEW

Revision 2

No.	Date	Description
2	02.29.23	PLAN REVIEW/REDESIGN

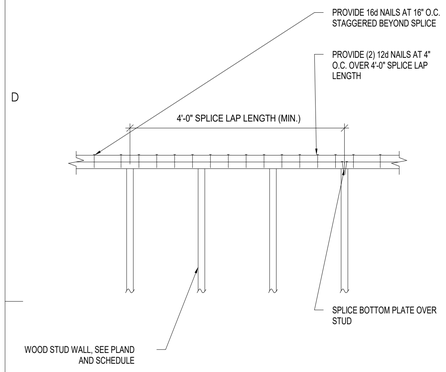
SAA Project No. 2022-11

Drawing Title

FLOOR FRAMING DETAILS

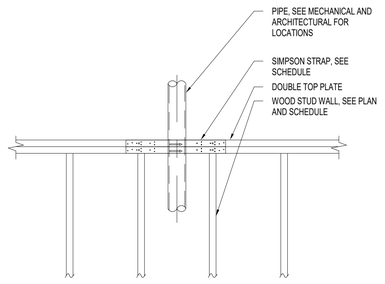
Sheet Number

S512



TYPICAL TOP PLATE SPLICE DETAIL

NOT TO SCALE — 1 / S521

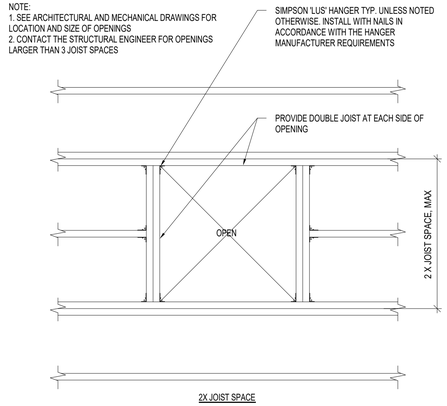


HOLE SIZE	SIMPSON STRAP
LESS THAN OR EQUAL TO 1/3 STUD WIDTH	NO STRAP REQUIRED
GREATER THAN 1/3 AND LESS THAN OR EQUAL TO 1/2 STUD WIDTH	(1) 'RPS22' AT NOTCH SIDE WITH (16) 16d NAILS
GREATER THAN 1/2 STUD WIDTH	(2) 'RPS22' EACH SIDE WITH (16) 16d NAILS

TYPICAL TOP PLATE SPLICE AT PIPE

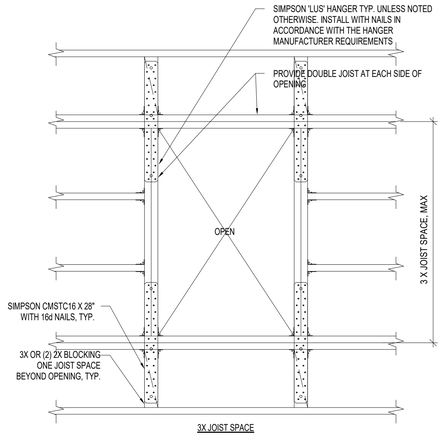
NOT TO SCALE — 2 / S521

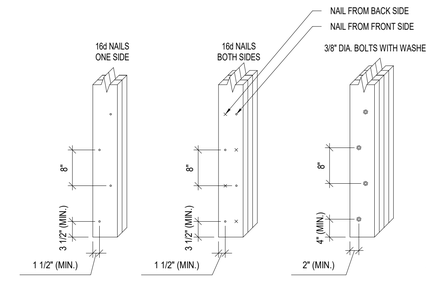
NOTE:
1. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATION AND SIZE OF OPENINGS
2. CONTACT THE STRUCTURAL ENGINEER FOR OPENINGS LARGER THAN 3 JOIST SPACES



TYPICAL OPENING AT TRUSSES AND JOISTS

NOT TO SCALE — 3 / S521

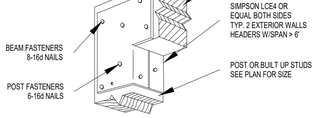




NOTE: DETAIL APPLIES TO ALL BUILT-UP POSTS, JAMBS, HEADERS, AND BEAMS. SEE SHEET NOTES FOR (4) PLY LVL BEAM REQUIREMENTS IF APPLICABLE.

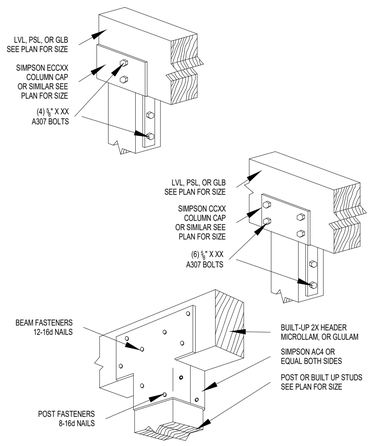
MULTI-PLY (BUILT-UP) MEMBER

NOT TO SCALE — 4 / S521



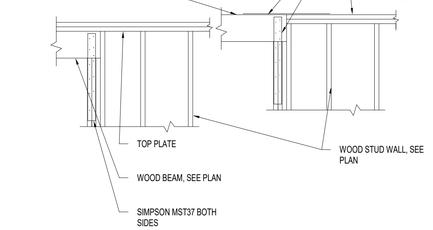
HEADER GREATER THAN 6 FT DETAIL

NOT TO SCALE — 5 / S521



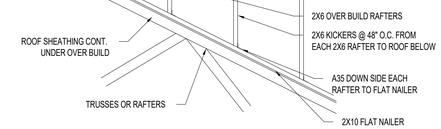
TYPICAL BEAM CONNECTION DETAILS

NOT TO SCALE — 6 / S521



BEAM CONNECTIONS

NOT TO SCALE — 7 / S521

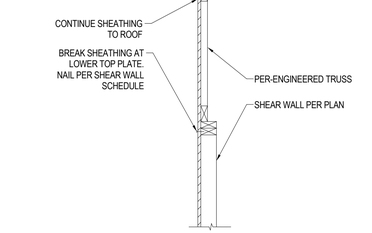


OVERBUILD NOTE:

OVERBUILDS SHALL BE CONSTRUCTED BY SHEATHING THE LOWER ROOF THEN NAILING A 2x10 FLAT WITH (2)16d NAILS @ 24" O.C. IN THE VALLEY OF THE OVERBUILD. THE OVERBUILD SHALL THEN BE FRAMED ON THE 2x10 USING 2x6 ROOF JOISTS @ 24" O.C. AND WITH 2x6 KICKERS AT 4'-0" O.C. FROM EACH 2x6 ROOF JOIST DOWN TO THE TRUSSES OR ROOF JOISTS BELOW.

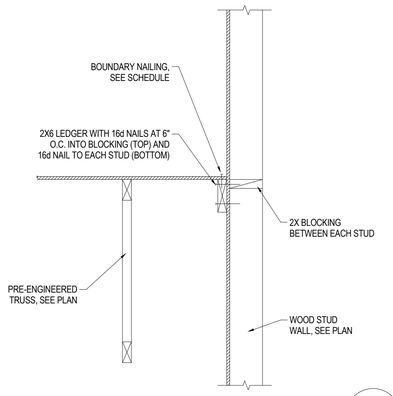
OVERBUILD DETAIL

NOT TO SCALE — 8 / S521



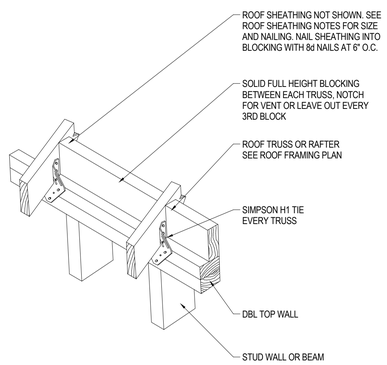
INTERIOR SHEARWALL CONNECTION

NOT TO SCALE — 9 / S521



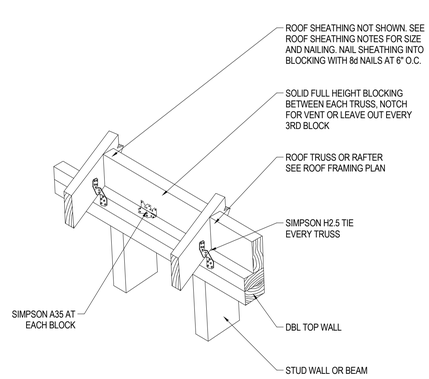
SHEAR TRANSFER DETAIL

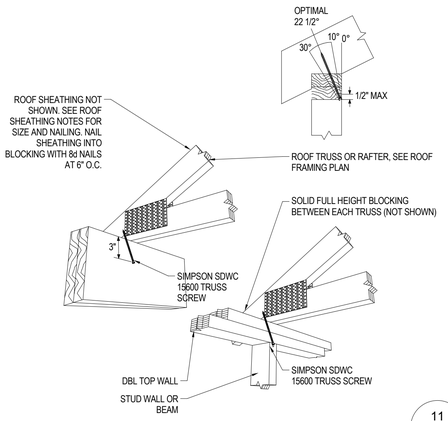
NOT TO SCALE — 10 / S521



ROOF FRAMING CONNECTION DETAIL OPTIONS

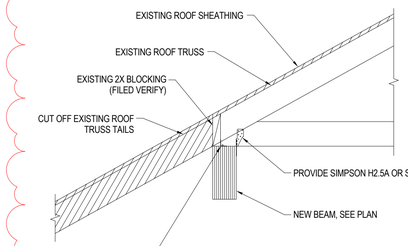
NOT TO SCALE — 11 / S521





EXISTING TRUSSES TO NEW BEAM

NOT TO SCALE — 12 / S521



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SAA Project No. 2022-11

Drawing Title

ROOF FRAMING DETAILS

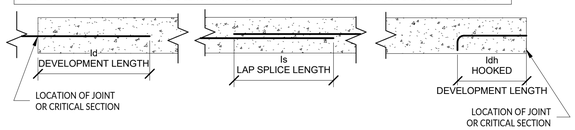
Sheet Number

S521

CONCRETE REINFORCING BAR LAP SPLICE SCHEDULE (ACI 318-14)

BAR SIZE	F'C = 3,000 PSI ld & ls CLASS A	F'C = 3,000 PSI ld & ls CLASS B	F'C = 3,000 PSI ldh	F'C = 4,000 PSI & F'C = 4,500 PSI ld & ls CLASS A	F'C = 4,000 PSI & F'C = 4,500 PSI ld & ls CLASS B	F'C = 4,000 PSI & F'C = 4,500 PSI ldh	F'C = 5,000 PSI ld & ls CLASS A	F'C = 5,000 PSI ld & ls CLASS B	F'C = 5,000 PSI ldh	F'C = 6,000 PSI ld & ls CLASS A	F'C = 6,000 PSI ld & ls CLASS B	F'C = 6,000 PSI ldh
#3	16"	21"	8"	14"	18"	7"	13"	17"	6"	12"	16"	6"
#4	22"	29"	11"	19"	25"	9"	17"	22"	8"	15"	20"	8"
#5	27"	35"	14"	24"	31"	12"	21"	27"	11"	19"	25"	10"
#6	33"	43"	16"	28"	36"	14"	25"	33"	13"	23"	30"	12"
#7	48"	62"	19"	42"	55"	17"	37"	48"	15"	34"	44"	14"
#8	55"	72"	22"	47"	61"	19"	42"	55"	17"	39"	51"	15"
#9	62"	81"	25"	53"	69"	21"	48"	62"	19"	44"	57"	17"
#10	68"	88"	27"	59"	77"	24"	53"	69"	21"	48"	62"	19"
#11	75"	75"	30"	65"	85"	26"	58"	75"	23"	53"	69"	21"

1. THIS SCHEDULE SHALL BE USED FOR ALL BAR SPLICES IN CONCRETE WALLS UNLESS OTHERWISE NOTED.
2. FOR ALL LIGHTWEIGHT CONCRETE, ALL LENGTHS IN THE TABLE ABOVE SHALL BE MULTIPLIED BY 1.33
3. FOR ALL EPOXY COATED BARS, MULTIPLY ld, ldh, AND ls BY 1.2. THE EPOXY BARS SHALL HAVE A CLEAR SPACING EQUAL TO OR GREATER THAN 6"db AND CLEAR COVER GREATER THAN 3"db, OTHERWISE LENGTHS SHALL BE MULTIPLIED BY 1.5
4. BARS IN BEAMS OR SLABS THAT HAVE MORE THAN 12 INCHES OF FRESH CONCRETE BELOW ARE CONSIDERED TOP BARS, MULTIPLY ld AND ls BY 1.2
5. CLASS A SPLICES MAY BE USED ONLY IN CASES WHERE 50% OR LESS OF THE BARS ARE SPLICED AT THE SAME LOCATION
6. CLASS B SPLICES SHALL BE USED FOR ALL SPLICES UNLESS THE REQUIREMENTS OF CLASS A ARE MET.
7. SPLICES FOR BUNDLED BARS.
   a. FOR BUNDLED BARS OF THREE OR LESS, MULTIPLY ls BY 1.2
   b. FOR BUNDLED BARS OF FOUR, MULTIPLY ls BY 1.33
   c. BUNDLED BARS GREATER THAN (4) BARS IS NOT PERMITTED
   d. ENTIRE BUNDLES SHALL NOT BE LAP SPLICED
   e. INDIVIDUAL BAR SPLICES WITHIN THE BUNDLE SHALL NOT OVERLAP
8. TIES AND STIRRUPS SHALL NOT BE SPLICED
9. HOOKED BARS (ldh):
   a. FOR HOOKED BARS THAT ARE ENCLOSED IN TIES OR STIRRUPS THAT ARE SPACED NO MORE THAN 3 TIMES THE HOOKED BAR DIAMETER (db) OVER THE LENGTH OF THE HOOK OR OVER THE HOOKED DEVELOPMENT LENGTH, HOOKED DEVELOPMENT LENGTH MAY BE REDUCED BY 80%
   b. FOR HOOKED BARS THAT WILL HAVE SIDE CONCRETE COVER (NORMAL TO PLANE OF HOOK) >= 2.1/2 INCHES AND 90-DEGREE HOOKS WITH COVER ON THE BAR EXTENSION BEYOND THE HOOK >= 2 INCHES, HOOKED DEVELOPMENT LENGTH MAY BE REDUCED BY 70%
   c. HOOKED BARS LOCATED AT THE END OF A MEMBER SHALL HAVE SIDE AND TOP/BOTTOM) COVER GREATER THAN 2.1/2 INCHES OR SHALL HAVE TIES OR STIRRUPS AS DESCRIBED IN NOTE 9.a WITH NO REDUCTION.
10. HEADED BAR DEVELOPMENT LENGTH SHALL CONFORM TO SECTION 25.4.4 OF THE ACI 318-14
11. db = BAR DIAMETER; ld = DEVELOPMENT LENGTH; ldh = HOOKED BAR DEVELOPMENT LENGTH; ls = BAR LAP SPLICE LENGTH



CONCRETE FOOTING SCHEDULE

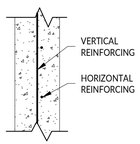
MARK	WIDTH	LENGTH	THICK	REINFORCING CROSSWISE NO.	SIZE #	LENGTH	SPACING	REINFORCING LENGTHWISE NO.	SIZE #	LENGTH	SPACING	REMARKS
FC2.0	2' - 0"	CONT.	12"	NONE	--	--	--	2	#5	CONT.	EVEN	
FC4.0	4' - 0"	CONT.	24"	REQ'D	#5	3'-6"	12"	4	#5	CONT.	EVEN	TOP AND BOTTOM
FS3.0	3' - 0"	3'-0"	12"	3	#5	2'-6"	EVEN	3	#5	2'-6"	EVEN	
FS4.0	4' - 0"	4'-0"	12"	4	#5	3'-6"	EVEN	4	#5	3'-6"	EVEN	
FS5.0	5' - 0"	5'-0	14"	5	#5	4'-6"	EVEN	5	#5	4'-6"	EVEN	

NOTES:
1. PLACE ALL FOOTINGS REINFORCING 3" FROM BOTTOM OF FOOTING WITH 3" CLEAR ON SIDES UNLESS NOTED OTHERWISE.
2. FOOTINGS MUST BEAR ON COMPACTED STRUCTURAL FILL AS INDICATED IN TEH GEOTECHNICAL REPORT.

CONCRETE WALL SCHEDULE

MARK	THICKNESS	REINFORCING VERTICAL	REINFORCING HORIZONTAL	REINFORCING TOP AND BOTTOM	TYPE	COMMENTS
CW-10A	10"	#4 AT 16" O.C.	#5 AT 15" O.C.	(1) #4	A	

NOTE:
1. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS



MINIMUM NAILING SCHEDULE

"CONNECTION"	"NAILING"
1. JOIST TO SILL GIRDER, TOENAIL	3-8D
2. BRIDGING TO JOIST, TOENAIL EA. END	2-8D
3. SOLE PLATE TO JOIST OR BLOCKING, FACE NAIL	6D AT 16" O.C.
4. TOP PLATE TO STUD, END NAIL	2-16D
5. STUD TO SOLE PLATE	4-8D TOENAIL 2-6D END WALL
6. DOUBLE STUDS, FACE NAIL	16D AT 24" O.C.
7. DOUBLE TOP PLATES, FACE NAIL	16D AT 16" O.C.
8. TOP PLATES, LAPS AND INTERSECTIONS, FACE NAIL	2-16D
9. CONTINUOUS HEADERS TWO PIECES, ALONG EA. EDGE	16D AT 16" O.C.
10. CEILING JOISTS TO PLATE, TOENAIL	3-8D
11. CONTINUOUS HEADERS TO STUD, TOENAIL	4-8D
12. CEILING JOISTS, LAPS OVER PARTITIONS, FACE NAIL	3-16D
13. CEILING JOISTS TO PARALLEL RAFTERS, FACE NAIL	3-16D
14. RAFTER TO PLATE, TOENAIL	3-8D
15. BUILT-UP CORNER STUDS	16 AT 24" O.C.
16. BUILT-UP GIRDER AND BEAMS	20D AT 32" O.C. T/B STAGGERED 2-20D AT ENDS AND SPLICES

SHEARWALL SCHEDULE

MARK	SHEATHING	EDGE	FIELD	DIA.	SPACING	SIZE	FASTENERS	RIM BOARD/BLOCKING FASTENER	RIM BOARD/BLOCKING SPACING	NOTES
SW-1	7/16" OSB ON SIDE	8d AT 6" O.C.	8d AT 12" O.C.	5/8"	32" O.C.	2X	16d AT 6" O.C.	SIMPSON 'A35' WITH (12) 8dX1.1/2" NAILS RIMBOARD TO TOP PLATE	32" O.C.	1, 2, 3, 4, 5
SW-2	7/16" OSB ON SIDE	8d AT 4" O.C.			32" O.C.	2X	16d AT 6" O.C.		16" O.C.	1, 2, 3, 4, 5
SW-3	7/16" OSB ON SIDE	8d AT 3" O.C.			32" O.C.	3X	16d AT 4" O.C.		16" O.C.	1, 2, 3, 4, 5, 6
SW-4	7/16" OSB ON SIDE	8d AT 2" O.C.			16" O.C.	3X	16d AT 4" O.C.		12" O.C.	1, 2, 3, 4, 5, 6
SW-5	7/16" OSB BOTH SIDE	8d AT 3" O.C.			16" O.C.	3X	1/4" X 3.1/2" SDS WOOD SCREWS AT 6" O.C.		8" O.C.	1, 2, 3, 4, 5, 6, 7

NOTES:
1. APPLY 7/16" APA OSB OVER DOUGLAS FIR OR SOUTHERN PINE FRAMING SPACED AT 16" O.C.
2. NAIL OR STAPLE SHEATHING ALONG INTERMEDIATE STUDS AT 12" O.C.
3. BLOCK ALL PANEL EDGES
4. PROVIDE 3"X3"X1/4" PLATE WASHERS ON ANCHOR BOLTS (TYPICAL)
5. ALL SHEATHING SHALL EXTEND CONTINUOUS FROM SILL PLATE TO ROOF OR FLOOR SHEATHING
6. FRAMING AT ADJOINING PANELS SHALL BE 3" NOMINAL OR (2) 2X NAILED TOGETHER WITH (2) TOWS OF 16d COMMON NAILS AT 12" O.C.
7. OFFSET PANEL JOINTS TO AVOID SPLITTING THE STUDS
8. INSTALL SIMPSON LCE4 CONNECTORS ON EACH CORNER OF WINDOWS NOTED AS LCE4.
9. WHERE PANELS ARE APPLIED TO BOTH FACES OF A SHEARWALL AND EDGE NAILING IS LESS THAN 6" O.C. OR LESS THAN 2" O.C. FOR A PANEL ON ONE SIDE, PANEL JOINTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING. ALTERNATIVELY, THE WIDTH OF THE NAILED FACE OF FRAMING MEMBERS SHALL BE E3" NOMINAL OR GREATER AT ADJOINING PANEL EDGES AND NAILING SHALL BE STAGGERED.
10. NAILS SHALL BE PLACED NOT LESS THAN 1/2" FROM EDGE OF PANEL AND DRIVEN SO THAT THEIR HEAD OR CROWN IS FLUSH WITH THE SURFACE OF THE SHEATHING
11. USE COMMON NAILS AT SILL PLATE USE HOT-DIPPED OR TUMBLED GALVANIZED NAILS IN ACCORDANCE WITH IBC 2304.10.
12. IF SHEATHING OCCURS AT METAL STUDS, USE THE SAME SPACING OF FASTENERS BUT SUBSTITUTE WITH #8 SCREWS. MINIMUM STUD GAGE SHALL BE 43 MILS (18 GAGE)

FLOOR AND ROOF SHEATHING SCHEDULE

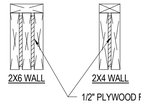
LOCATION	THICKNESS	NAIL SIZE	EDGE NAIL	FIELD NAIL	BOUNDARY NAIL	EDGE BLOCK	COMMENTS
ROOF	15/32"	10d	6"	12"	6"	NO	
FLOOR	23/32"	10d	6"	12"	6"	NO	

NOTES:
1. MINIMUM NAIL PENETRATION INTO FRAMING: 10d-1.5/8"
2. USE COMMON NAILS (10d DIAMETER = 0.148")
3. ALL WOOD FLOOR SHEATHING SHALL BE GLUED AND NAILED
4. PROVIDE (2) ROWS OF BOUNDARY NAILING STAGGERED OVER INTERIOR SHEAR WALL AT FLOOR ROOF
5. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS: 2

HEADER BEARING SCHEDULE

LEVEL	*HEADER SPAN*	*HEADER*	*JAMB BEARING STUDS*	*JAMB KING STUDS*	*CONDITION*	*REMARKS*
ROOF	0'-0" TO 6'-0"	(2) 1.3/4" X 9.1/2" LVL	(2) 2X6	(2) 2X6	EXTERIOR	USE LCE4 AT EACH SIDE OF HEADER SEE DETAIL 5/S521
2ND	0'-0" TO 6'-0"	(2) 1.3/4" X 9.1/2" LVL	(2) STUDS	(1) 2X6	EXTERIOR	USE LCE4 AT EACH SIDE OF HEADER SEE DETAIL 5/S521
	0'-0" TO 4'-0"	(2) 2X10	(2) STUDS	(1) STUD	INTERIOR	FOR WOOD STUD WALL OPTIONS
	0'-0" TO 4'-0"	(2) 600S162-54 STUDS (MIN.) WITH TOP AND BOTTOM TRACK MATCHING TYPICAL WALL TRACKS		(1) STUD		FOR METAL STUD WALL OPTIONS

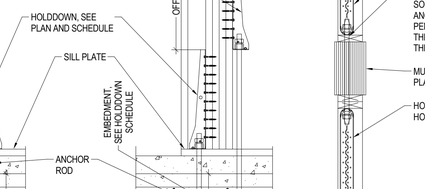
TYPICAL HEADER ASSEMBLY



AT WOOD STUD WALLS

AT METAL STUD WALLS

(2) STUD SECTION



STEEL VENEER LINTEL SCHEDULE

CLEAR OPENING	ANGLE SIZE
UP TO 5'-0"	4" X 4" X 1/4"
5'-1" TO 7'-0"	4" X 4" X 1/4"
7'-1" TO 9'-0"	6" X 4" X 1/4"
9'-1" TO 10'-0"	6" X 4" X 5/16"
10'-1" TO 11'-0"	6" X 4" X 3/8"
11'-1" TO 12'-0"	6" X 4" X 3/8"
12'-0" AND OVER	SPECIAL ANALYSIS REQUIRED

NOTES:
1. ALL LINTELS SHALL BE LONG LEG UP
2. LINTELS CARRY VENEER ONLY. WHERE FLOORS, ROOFS, OR CONCENTRATED LOADS OCCUR, FURTHER ANALYSIS IS NECESSARY

HOLDDOWN SCHEDULE

MARK	SIMPSON HOLDDOWN TYPE	ANCHOR ROD DIAMETER	ANCHOR ROD EMBEDMENT INTO FOOTING	ANCHOR ROD EMBEDMENT INTO WALL / PIER	POST SIZE (BOUNDARY MEMBER)	BOUNDARY MEMBER FASTENERS	STRAP AND HOLDDOWN ALTERNATIVE AT FLOORS TYPE	LENGTH	FASTENERS	REMARKS
A	HSU8-SDS2.5	7/8"	9"	SB7/8X24 WITH 18" EMBED	(3) 2X6 OR 4X6	(20) 1/4" X 2.1/2" SDS	CMST12	90"	(76) 0.148" X 2.1/2" NAILS	
B	HDU11-SDS2.5	1"	12"	16" INTO CONC. PIER	6X6 OR 4X8	(30) 1/4" X 2.1/2" SDS	--	--	--	
C	--	--	--	--	(2) 2X6 OR (2) 2X4	--	MSTC66	66"	(68) 0.148 X 3.1/4" NAILS	
D	HDU14-SDS2.5	1"	20"	MUST EMBED INTO FOOTING	6X6 OF 4X8	(36) 1/4" X 2.1/2" SDS	--	--	--	
E	HDU4-SDS2.5	5/8"	9"	SB5/8X24 WITH 18" EMBED	(2) 2X6	--	--	--	--	

SRS HOLDDOWN SCHEDULE NOTES:
1. ALL HOLDOWNS SPECIFIED ARE 'SIMPSON-STRONG TIE'
2. LAG SCREWS SHALL NOT BE USED.
3. ANCHOR RODS SHALL BE ASTM F1544 GR. 36 OR A36 THREADED ROD AND SHALL HAVE A 1/4"X3"X3" PLATE WASHER WITH DOUBLE HEAVY HEX NUT AT THE END OF HTE EMBEDMENT IN CONCRETE. FOR SIMPSON 'SB' TYPE ANCHOR BOLTS, USE ANCHORAGE ASSEMBLY SPECIFIED BY MANUFACTURER
4. INCREASE FOOTING DEPTH WHERE EMBEDMENT LENGTH + 3" IS GREATER THAN SPECIFIED FOOTING DEPTH
5. SEE DETAIL 10/SS01 FOR TYPICAL HOLDDOWN AT INTERIOR FOOTING
6. ALL HOLDDOWN ANCHOR RODS SHALL BE CAST IN PLACE. DRILLING AND EPOXYING THE HOLDDOWN ANCHOR RODS IS NOT PERMITTED.
7. ALL FLOORS, CONTRACTOR HAS OPTION TO USE ALTERNATIVE STRAP HOLDDOWN IN LIEU OF HDU STYLE HOLDDOWN
8. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS

AT FLOOR TO FLOOR STRAP

AT FLOOR

AT SINGLE HOLDDOWN

AT DOUBLE HOLDDOWN

HOLDDOWN THROUGH BEAM

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Project Name

Issued

No.	Date	Description
1	09.21.23	PERMIT SET
2	02.29.23	PLAN REVIEW

Revision

No.	Date	Description
1	10.30.23	ADDENDUM #1
2	02.29.23	PLAN REVIEW/REDESIGN

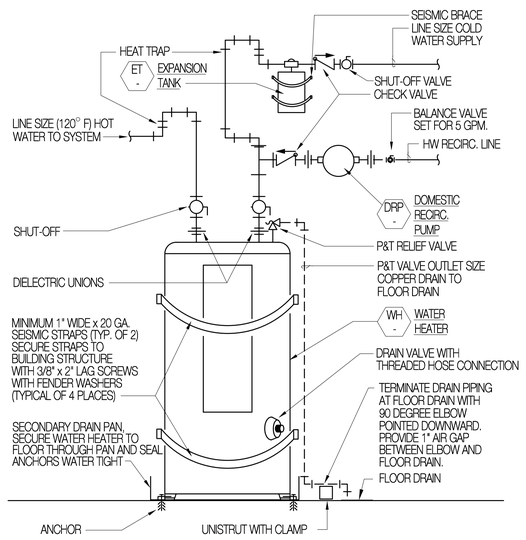
SAA Project No. 2022-11

Drawing Title

STRUCTURAL SCHEDULES

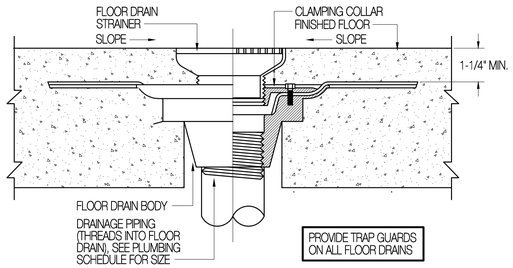
Sheet Number

S601



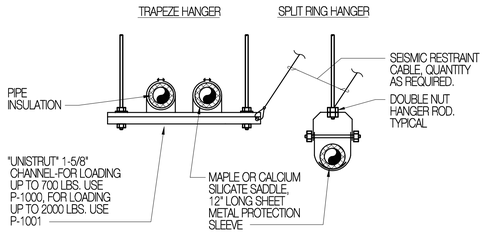
5 P000 WATER HEATER DETAIL

SCALE: NONE



1 P000 FLOOR DRAIN DETAIL

SCALE: NONE



PIPE SIZE	MAX. SPACING	PIPE LOAD WEIGHT/FT. TOTAL	ROD SIZE
1" AND SMALLER	8	2.5/20	3/8"
1-1/4" - 2"	10	6/60	3/8"

HANGERS SIZES AND SPACING ARE FOR SINGLE PIPES. HANGER ROD LOADING FOR TRAPEZE HANGERS SHALL NOT EXCEED THE TOTAL LOADING INDICATED. IF SMALLER ROD SIZE IS USED, DECREASE MAXIMUM SPACING SO THAT TOTAL LOADING IS NOT EXCEEDED.

2 P000 PIPE HANGER DETAIL

SCALE: NONE

PLUMBING SYMBOL LEGEND \ ABBREVIATIONS

FD	FLOOR DRAIN		TEE IN PIPE
WCO	WALL CLEAN OUT		BALL VALVE
DOMESTIC COLD WATER (DCW)			PIPE CAP
DOMESTIC HOT WATER (DHW)			VALVE IN DROP
DOMESTIC HOT WATER RECIRC. (DHWR)			UNION
WASTE (W)		VTR	VENT THROUGH ROOF
VENT (V)		A.F.F.	ABOVE FINISHED FLOOR
DROP IN PIPE			ELBOW IN PIPE
RISE IN PIPE			

PLUMBING FIXTURE SCHEDULE

SYMBOL	DESCRIPTION	COLD	HOT	TRAP	WASTE	VENT	REMARKS
P-1	WATER CLOSET, FLOOR MOUNTED, FLUSH TANK, ADA HEIGHT	1/2"	-	INT.	3"	2"	-
P-2	LAVATORY, PORCELAIN, WALL MOUNTED, ADA COMPLIANT	1/2"	1/2"	1-1/4"	2"	1-1/2"	-
P-3	BREAKROOM SINK, SINGLE BOWL SS, UNDERMOUNT, GOOSENECK FAUCET	1/2"	1/2"	1-1/2"	2"	1-1/2"	W / GARBAGE DISPOSAL
P-4	WATER COOLER, BI-LEVEL WITH BOTTLE FILLER	1/2"	-	1-1/2"	2"	1-1/2"	-
FD	FLOOR DRAIN, 6" DIAMETER GRATE	-	-	2"	2"	2"	-
SD	SHOWER DRAIN, 4" DIAMETER GRATE	-	-	2"	2"	2"	-
WCO	WALL CLEAN OUT	-	-	-	-	-	-

GENERAL FIXTURE NOTES:

1. THE PLUMBING CONTRACTOR SHALL VERIFY THE REQUIREMENTS OF ALL PLUMBING EQUIPMENT AND THE RELATED ROUGH IN LOCATIONS WITH THE MECHANICAL AND ARCHITECTURAL PLANS AND SPECIFICATIONS. PROVIDE ALL ACCESSORIES AND OPTIONS REQUIRED TO PROVIDE THE OWNER A COMPLETELY FUNCTIONAL PLUMBING SYSTEM.
2. ALL WALL HUNG PLUMBING FIXTURES SHALL BE SUPPORTED BY FLOOR MOUNTED CARRIERS (SMITH, JOSAM, MIFAB, OR WATTS) CARRIERS SHALL BE CONSTRUCTED UTILIZING ALL METAL COMPONENTS WITH SUPPORT FEET SECURELY ANCHORED TO FLOOR STRUCTURE. FIXTURE ARMS SHALL SUPPORT FIXTURE INDEPENDENT FROM WALL STRUCTURE.
3. EACH INDIVIDUAL FIXTURE SUPPLY SHALL BE PROVIDED WITH A CHROME-PLATED QUARTER TURN STOP VALVE BRASSCRAFT MODEL KTCR_ OR ENGINEER APPROVED EQUAL.
4. FIXTURES AND ACCESSORIES SHALL BE AS SCHEDULED. EACH ITEM SHALL BE COMPLETE WITH CHROME-PLATED BRASS TRIM.
5. ADA COMPLIANT FIXTURES SHALL BE INSTALLED WITH PRE-FORMED INSULATION AND PROTECTIVE COVERS ON P-TRAPS AND STOPS. COVERS TO BE MANUFACTURED BY BUCKAROOS OR TRUEBRO.
6. CAULK ALL FIXTURES TO THE WALL OR FLOOR WITH APPLICABLE SILICONE COMPOUND. UTILIZE MULTIPLE BEADS TO FILL GAPS AND FINISH TO SMOOTH, FILLETED EDGE. USE APPROPRIATE TOOLS TO PROVIDE PROFESSIONAL APPEARANCE.
7. ALL PLUMBING SHALL BE INSTALLED TO CONFORM TO THE LATEST ADOPTED EDITION OF THE IDAHO PLUMBING CODE INCLUDING LOCAL AMENDMENTS. CONSULT AUTHORITIES HAVING JURISDICTION.
8. ALL SINKS AND LAVATORIES WHERE HAND WASHING IS ANTICIPATED (FIXTURE P-2) SHALL BE PROTECTED WITH ASSE 1070 APPROVED TEMPERING VALVES PER DETAIL 4/P-000.

WATER HEATER (WH)

SYMBOL	NOMINAL INPUT (WATTS)	TANK VOLUME GALLONS	WATER CHARACTERISTICS			ELEC. CHARACTERISTICS			A.O. SMITH MODEL	REMARKS
			EWT °F	LWT °F	RECOVERY (GPH)	VOLTS	HZ.	PHASE		
WH-1	4,500	40	40	122	21	240	60	1	HNT-40	-

EXPANSION TANK (ET)

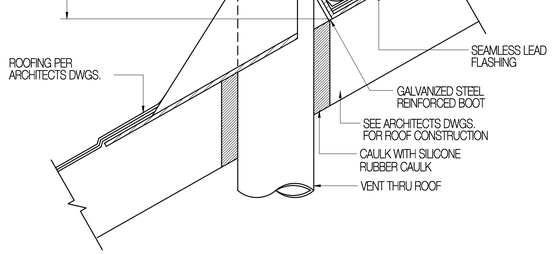
SYMBOL	TANK VOLUME GAL.	ACCEPT VOLUME GAL.	DUTY	AMTROL MODEL	ARRANGEMENT	REMARKS
ET-1	0.9	2.1	DOMESTIC WATER	ST-5	VERTICAL	-

DOMESTIC HOT WATER RECIRCULATION PUMP (DRP)

SYMBOL	GPM	FEET HEAD	ELEC. REQUIREMENTS			DUTY	TYPE	B&G SERIES	SIZE	REMARKS
			VOLTS	PH.	HZ.					
DRP-1	5	15	120	1	60	DOMESTIC HOT WATER RECIRC. WH-1	ALL BRONZE WET ROTOR	NBF	25	MEDIUM SPEED

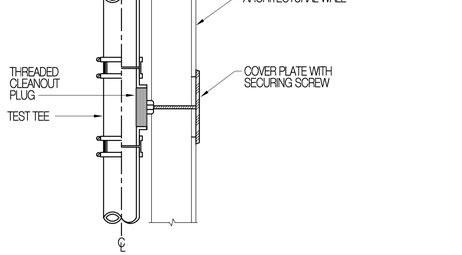
PIPING SCHEDULE

SERVICE	MATERIAL	REMARKS
DCW / DHW / DHWR	TYPE L COPPER WITH WROUGHT COPPER FITTINGS	-
WASTE / VENT	SOLID CORE SCHEDULE 40 PVC WITH PVC DWV FITTINGS	-
NAT. GAS	SCHEDULE 40 BLACK STEEL WITH BLACK STEEL FITTINGS	-



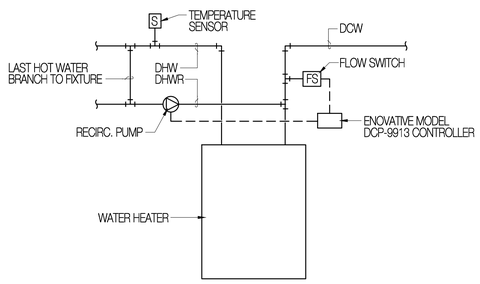
6 P000 VENT THROUGH ROOF DETAIL

SCALE: NONE

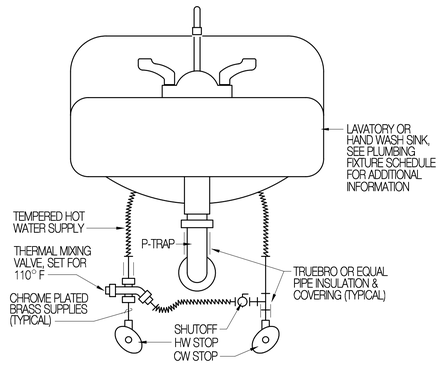


3 P000 WALL CLEANOUT DETAIL

SCALE: NONE



DOMESTIC WATER RECIRC. CONTROL DIAGRAM



4 P000 TEMPERING VALVE DETAIL

SCALE: NONE

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Project Name

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2	02.01.24	PLAN REVIEW/REDESIGN

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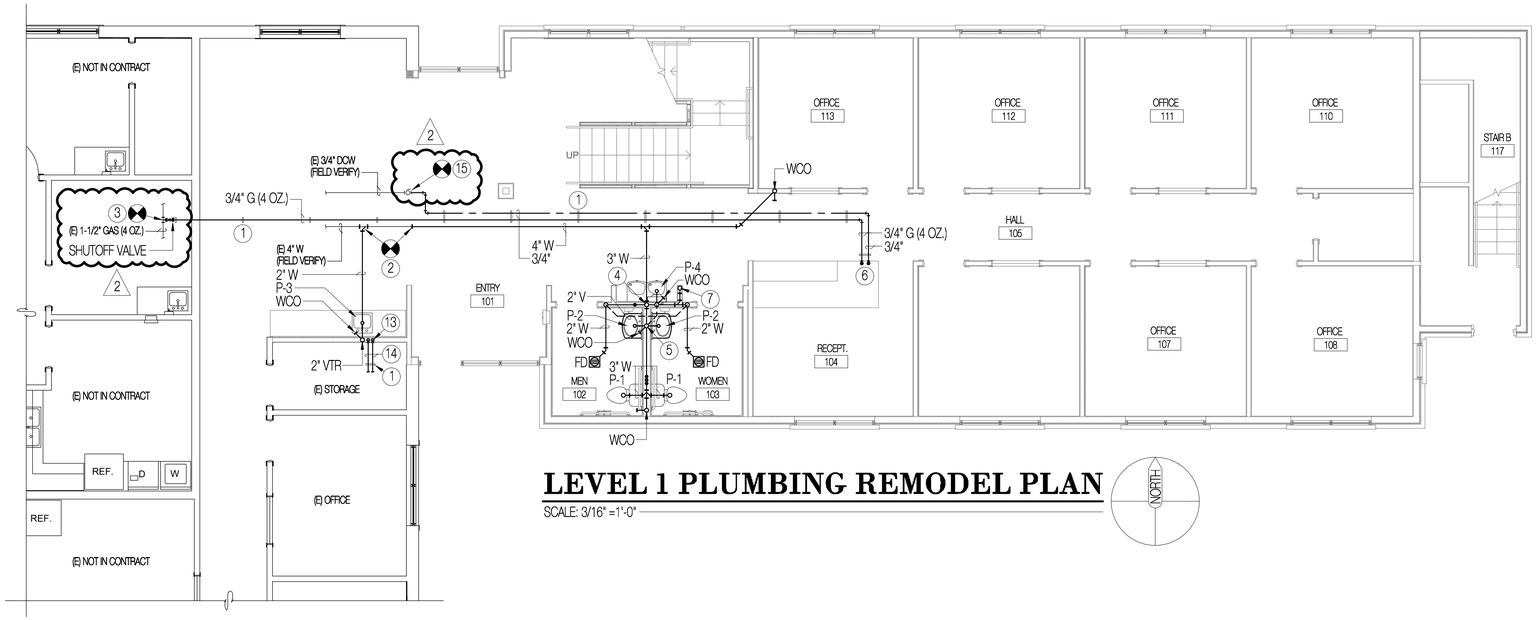
PLUMBING SYMBOL LEGEND, SCHED'S. AND DETAILS

Sheet Number

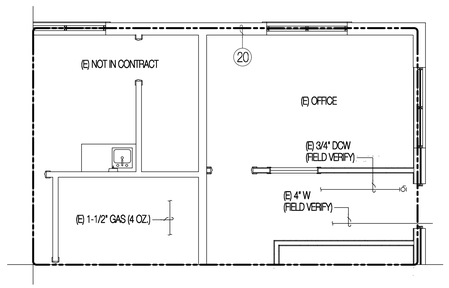
P-000



LEVEL 1 PLUMBING REMODEL PLAN

SCALE: 3/16" =1'-0"

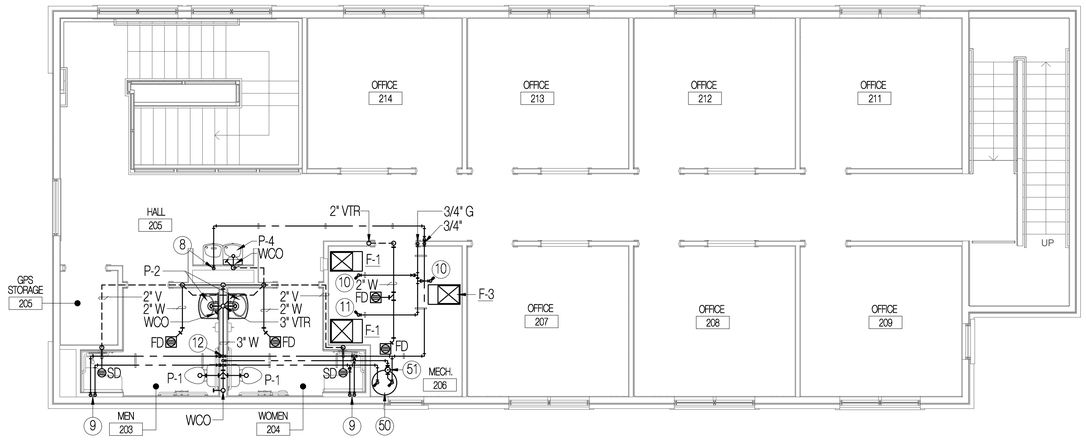
NORTH



20 FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING H-VAC AND PLUMBING UTILITIES AND MODIFY THE EXISTING UTILITIES AS REQUIRED TO SERVE THE REMODELED SPACE. DEMO PORTIONS OF THE EXISTING UTILITIES NOT REQUIRED TO REMAIN IN SERVICE.

GENERAL DEMO. PLAN

SCALE: 3/16" =1'-0"



LEVEL 2 PLUMBING PLAN

SCALE: 3/16" =1'-0"

NORTH

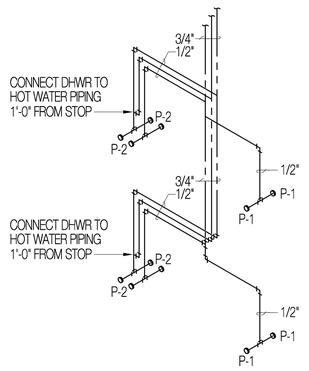
DRAWING NOTES

1. PIPE SUPPORT, SEE DETAIL 2/P-000.
2. FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING WASTE PIPING AND CONNECT NEW TO EXISTING UTILIZING LIKE MATERIALS.
3. FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING GAS PIPING AND CONNECT NEW TO EXISTING UTILIZING LIKE MATERIALS.
4. 3" WASTE PIPING RISE TO FIXTURES ON SECOND FLOOR, SEE SECOND FLOOR PLUMBING PLAN THIS SHEET FOR CONTINUATION.
5. 2" VENT PIPING RISE TO FIXTURES ON SECOND FLOOR, SEE SECOND FLOOR PLUMBING PLAN THIS SHEET FOR CONTINUATION.
6. 3/4" DOMESTIC COLD, AND 3/4" GAS PIPING RISES TO SECOND FLOOR, SEE SECOND FLOOR PLUMBING PLAN THIS SHEET FOR CONTINUATION.
7. 2" WASTE PIPING RISE TO FIXTURES ON SECOND FLOOR, SEE SECOND FLOOR PLUMBING PLAN THIS SHEET FOR CONTINUATION.
8. 1/2" DOMESTIC COLD WATER PIPING DROP TO FIXTURES ON BOTH FLOORS. TERMINATE PIPING AT REQUIRED FIXTURE ROUGH-IN HEIGHT WITH QUARTER TURN STOP AND ESCUTCHEON AS REQUIRED BY SPECIFICATION.
9. 1/2" DOMESTIC COLD WATER AND 1/2" DOMESTIC HOT WATER PIPING DROPS TO THERMOSTATIC MIXING VALVE. TERMINATE PIPING AT SHOWER VALVE ROUGH IN HEIGHT AND INSTALL VALVE WITH UNION CONNECTION AS REQUIRED BY SPECIFICATION.
10. 1/2" (4 OZ.) GAS PIPING DROP TO FURNACE, TERMINATE GAS PIPING WITH DIRT LEG, SHUTOFF VALVE AND FLEXIBLE CONNECTION.
11. 3/4" (4 OZ.) GAS PIPING DROP TO FURNACE, TERMINATE GAS PIPING WITH DIRT LEG, SHUTOFF VALVE AND FLEXIBLE CONNECTION.
12. 3/4" DOMESTIC COLD, HOT, AND HOT WATER RECIRC. PIPING DROPS IN WALL TO FIXTURES, SEE WATER PIPING ISOMETRIC THIS SHEET FOR ADDITIONAL INFORMATION.
13. 1/2" DOMESTIC HOT WATER AND 1/2" DOMESTIC COLD WATER PIPING DROPS TO FIXTURE. TERMINATE PIPING AT REQUIRED FIXTURE ROUGH-IN HEIGHT WITH QUARTER TURN STOP AND ESCUTCHEON AS REQUIRED BY SPECIFICATION.
14. EXTEND 1/2" DOMESTIC HOT WATER AND 1/2" DOMESTIC COLD WATER PIPING TO NEAREST UTILITY LOCATION AND CONNECT NEW TO EXISTING.
15. FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING WATER PIPING AND CONNECT NEW TO EXISTING UTILIZING LIKE MATERIALS.

EQUIPMENT NOTES

50 WH 1 — CEILING EXHAUST FAN

51 DRP 1 — DOMESTIC RECIRC. PUMP



WATER PIPING ISOMETRIC

SCALE: NONE

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Seal

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Project Name

Issued

No.	Date	Description

Revision

No.	Date	Description
2	02.01.24	PLAN REVIEW/REDESIGN

SAA Project No. 2022-03

Drawing Title

PLUMBING REMODEL PLANS AND DIAGRAMS

Sheet Number

P-100

OUTSIDE AIR SCHEDULE

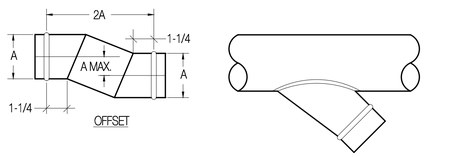
ROOM	AREA	CFM / SQ. FT.	PEOPLE / 1,000 SQ. FT.	# PEOPLE	CFM / PEOPLE	CFM	SERVED BY
RECEPT. 104	200	0.06	10	3	5	27	F-1
OFFICE 106	135	0.06	5	1	5	14	-
OFFICE 107	135	0.06	5	1	5	14	-
OFFICE 108	135	0.06	5	1	5	14	-
OFFICE 110	135	0.06	5	1	5	14	-
OFFICE 111	135	0.06	5	1	5	14	-
OFFICE 112	135	0.06	5	1	5	14	-
OFFICE 113	135	0.06	5	1	5	14	-
						125	TOTAL

ROOM	AREA	CFM / SQ. FT.	PEOPLE / 1,000 SQ. FT.	# PEOPLE	CFM / PEOPLE	CFM	SERVED BY
HALL 205	345	0.12	-	-	-	42	F-2
OFFICE 211	135	0.06	5	1	5	14	
OFFICE 212	135	0.06	5	1	5	14	
OFFICE 213	135	0.06	5	1	5	14	
OFFICE 214	135	0.06	5	1	5	14	
						100	TOTAL
MEN 203	65	-	-	-	-	25	F-3
WOMEN 204	65	-	-	-	-	25	
OFFICE 207	135	0.06	5	1	5	14	
OFFICE 208	135	0.06	5	1	5	14	
OFFICE 209	135	0.06	5	1	5	14	
						100	TOTAL

CALCULATIONS BASED ON TABLE 6-1 ASHRAE STANDARD 62.1-2010 AND 2021 INTERNATIONAL MECHANICAL CODE

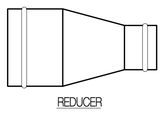
GENERAL NOTES

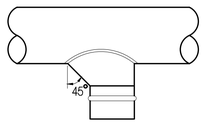
1. ALL DRAWINGS SHALL BE CONSIDERED PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL ASPECTS OF THE CONTRACT DOCUMENTS PRIOR TO SUBMITTING PRICING. ANY AND ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO TO ANY INSTALLATION SUCH THAT CLARIFICATIONS CAN BE ISSUED.
2. ANY WORK PERFORMED OR MATERIAL USED WHICH IS SHOWN TO BE IN CONFLICT WITH THE CONTRACT DRAWINGS, SPECIFICATIONS OR ANY APPLICABLE CODE OR GOVERNING REGULATION SHALL BE REMOVED AND REPLACED OR CORRECTED AT THE CONTRACTOR'S EXPENSE.
3. ALL SYMBOLS AND ABBREVIATIONS USED ON THE CONTRACT DRAWINGS ARE CONSIDERED CONSTRUCTION STANDARDS. IF CLARIFICATION IS REQUIRED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH ANY WORK.
4. DO NOT SCALE THE DRAWINGS; ALL EXISTING CONDITIONS AND DIMENSIONS SHALL BE VERIFIED BY THE CONTRACTOR AT THE JOB SITE PRIOR TO FABRICATION OF MATERIALS OR ERECTION OF ASSEMBLIES. IF DISCREPANCIES ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED FOR CLARIFICATION.
5. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR AND EQUIPMENT, TRANSPORTATION AND SERVICES REQUIRED FOR COMPLETION OF THE WORK. ALL WORK PERFORMED AND MATERIALS INSTALLED SHALL BE DONE IN STRICT COMPLIANCE WITH ALL LOCAL CODES AND GOVERNING REGULATIONS.
6. ALL PERMITS AND FEES WHICH ARE REQUIRED FOR THIS WORK SHALL BE SECURED AND PAID FOR BY THE MECHANICAL CONTRACTOR.
7. ALL PLUMBING AND MECHANICAL INSTALLATIONS SHALL ADHERE TO THE 2018 IECC INCLUDING: MINIMUM R-6 INSULATION ON ALL NON-ACOUSTICALLY LINED DUCTWORK; ACOUSTICAL LINER SHALL PROVIDE A MINIMUM OF R-6 INSULATING VALUE. ALL DOMESTIC WATER PIPING SHALL BE INSULATED WITH A MINIMUM 1" FIBERGLASS INSULATION.
8. MECHANICAL SYSTEMS HAVE BEEN DESIGNED IN ACCORDANCE WITH ASHRAE 183. DUCTWORK DESIGNED UTILIZING EQUAL FRICTION METHOD WITH A MAXIMUM PRESSURE DROP OF 0.08"/100 FT.
9. FIRE CAULK ALL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES PER DETAIL 1/MS-100.



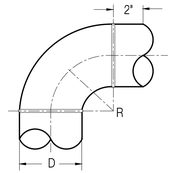
OFFSET

45° LO-LOSS CONICAL TAP

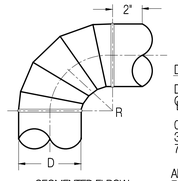

REDUCER



LO-LOSS TAP



STAMPED ELBOW



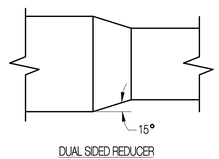
SEGMENTED ELBOW

DIMENSIONS
D = DUCT SIZE
℄ R = 1.5D

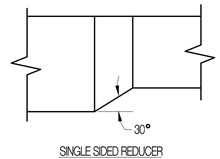
0-35°---- 2 PIECE
36-71°----3 PIECE
72-90°----5 PIECE

ADD ONE PIECE FOR EACH ADDITIONAL 18

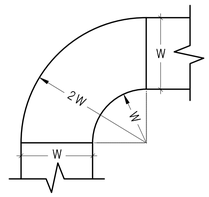
3/M000 ROUND DUCT FITTINGS
SCALE: NONE



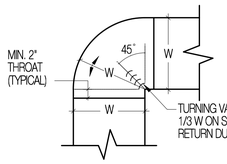
DUAL SIDED REDUCER



SINGLE SIDED REDUCER



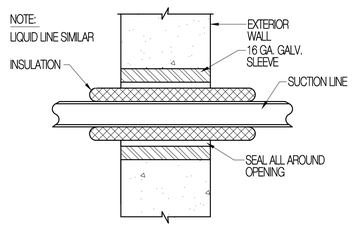
RADIUS ELBOW



COMPOSITE ELBOW

NOTES:
MITERED RECTANGULAR ELBOWS WITH FULL TURNING VANES NOT ALLOWED.

1/M000 RECTANGULAR DUCT FITTINGS
SCALE: NONE



2/M000 REFRIG. PIPING SLEEVE AT WALL
SCALE: NONE

SYMBOL LEGEND

	SUPPLY AIR DIFFUSER	T	THERMOSTAT	S.A.	SUPPLY AIR
	RETURN OR EXHAUST GRILLE	S	SENSOR	R.A.	RETURN AIR
24" x 12"	ACOUSTICALLY LINED DUCTWORK (INSIDE CLEAR DIMENSION)		SUPPLY AIR DIRECTION	NK.	NECK
SLOPE	SLOPE IN DUCT, SEE SECTIONS FOR SLOPE DIRECTION		RETURN AIR DIRECTION		ELBOW IN PIPE
	RECTANGULAR SUPPLY AIR DUCT CROSS SECTION	A.F.F.	ABOVE FINISHED FLOOR		TEE IN PIPE
9	ROUND SUPPLY AIR DUCT CROSS SECTION	HET	HIGH EFFICIENCY TAKEOFF		DROP IN PIPE
H.D.	HAND DAMPER, SEE DETAIL 2/M-100	A.L.	ACOUSTICAL LINING		RISE IN PIPE
	RISE OR DROP IN DUCT	O.A.	OUTSIDE AIR	R.D.	HAND DAMPER WITH REMOTE ACTUATOR, SEE DETAIL 5/M-400

FURNACES (F)

SYMBOL	INPUT HIGH / LOW (BTUH)	OUTPUT HIGH / LOW (BTUH) (1)	MINIMUM DAT° F	MIN. CFM (1)	MIN. E.S.P. IN. WG.	FAN SPEED	ELECTRICAL REQUIREMENTS						YORK MODEL (OR EQUAL)	REMARKS
							VOLTS	PH.	HZ.	HP.	MCA	MOCP		
F-1	100,000 / 65,000	96,000 / 62,000	95°F	1,750	0.65"	HIGH	120	1	60	1	14.1	20	TM9V100C20MP12C	5.0 TON COOLING CAPACITY
F-2	40,000 / 26,000	38,000 / 25,000	95°F	760	0.45"	HIGH	120	1	60	1/2	9.6	15	TM9V040A10MP12C	2.5 TON COOLING CAPACITY
F-3	40,000 / 26,000	38,000 / 25,000	95°F	730	0.45"	HIGH	120	1	60	1/2	9.6	15	TM9V040A10MP12C	2.5 TON COOLING CAPACITY

(1) CAPACITIES AT JOB SITE ELEVATION OF 4,500 FEET ABOVE SEA LEVEL.

DX COOLING COILS (CC)

SYMBOL	TOTAL CAPACITY (BTUH) (1)	SENSIBLE CAPACITY (BTUH) (1)	LATENT CAPACITY (BTUH) (1)	MINIMUM CFM	COIL E.A.T. DB°F / WB°F	MINIMUM AREA (SQ. FT.)	MAXIMUM △P IN. WG. (2)	UNIT SERVED	REFRIG. TYPE	YORK MODEL (OR EQUAL)	REMARKS
CC-1	52,100	51,000	2,200	1,750	80°F / 62°F	7.6	0.28	F-1	R-410	XAFC60	NOMINAL 5.0 TON COIL
CC-2	21,200	20,200	1,000	760	80°F / 62°F	3.7	0.17	F-2	R-410	XAFB24	NOMINAL 2.0 TON COIL
CC-3	21,200	20,200	1,000	730	80°F / 62°F	3.7	0.17	F-3	R-410	XAFB24	NOMINAL 2.0 TON COIL

(1) CAPACITIES AT JOB SITE ELEVATION.
(2) WET COIL

AIR COOLED CONDENSING UNITS (CU)

SYMBOL	TOTAL CAPACITY (BTUH)	SENSIBLE CAPACITY (BTUH)	COND. COIL AREA	COND. COIL CFM	AMBIENT AIR TEMP. (F°)	ELECTRICAL REQUIREMENTS					UNIT SERVED	MIN. EFF. (SEER2)	REFRIG. TYPE	YORK MODEL (OR EQUAL)	REMARKS
						VOLTS	PH.	HZ.	MCA	MOCP					
CU-1	52,100	51,000	25.28	4,275	95°F	230	1	60	34.0	50	CC-1	15.2	R-410	YC2F60	NOMINAL 5.0 TON CONDENSING UNIT
CU-2	21,200	21,200	12.21	2,575	95°F	230	1	60	16.5	20	CC-2	15.2	R-410	YC2F24	NOM. 2.0 TON CONDENSING UNIT
CU-3	21,200	21,200	12.21	2,575	95°F	230	1	60	16.5	20	CC-3	15.2	R-410	YC2F24	NOM. 2.0 TON CONDENSING UNIT

(1) CAPACITIES AT JOB SITE ELEVATION.

CEILING EXHAUST FANS (CEF)

SYMBOL	MINIMUM CFM	TOTAL STATIC PRESSURE IN. WG.	ELECTRICAL REQUIREMENTS				SERVICE	BROAN MODEL	REMARKS
			VOLTS	PH.	HZ.	WATTS			
CEF-1	80	0.375"	120	1	60	87	MEN 102	L100MG	-
CEF-2	80	0.375"	120	1	60	87	WOMEN 103	L100MG	-
CEF-3	80	0.375"	120	1	60	87	MEN 203	L100MG	-
CEF-4	80	0.375"	120	1	60	87	WOMEN 204	L100MG	-

(1) CAPACITIES AT JOB SITE ELEVATION.

BASEBOARD RADIATION (BR)

SYMBOL	TYPE	LENGTH	ELECTRICAL REQUIREMENTS				INDEECO MODEL	SERVICE	REMARKS
			VOLTS	PH.	HZ.	WATTS			
BR-1	ELEC.	39"	120	1	60	600	904U00600B	ENTRY 101	(1)

(1) PROVIDE WITH TAMPER PROOF THERMOSTAT AND BUILT IN DISCONNECT SWITCH.

GRILLES AND DIFFUSERS

SYMBOL	CFM	NECK SIZE	FACE SIZE	KRUEGER MODEL	REMARKS
S-1	AS NOTED	AS NOTED	AS NOTED	1400	-
S-2	AS NOTED	AS NOTED	AS NOTED	SH	BEVELED DROP FACE / SURFACE MOUNT
S-3	AS NOTED	AS NOTED	AS NOTED	1900	-
R-1	AS NOTED	AS NOTED	AS NOTED	6490	-
R-2	AS NOTED	AS NOTED	AS NOTED	S85H	-

LOUVERS (L)

SYMBOL	NOMINAL SIZE (W" x H")	MIN. FREE FACE AREA (SQ. FT.)	SERVICE	RUSKIN MODEL (OR EQUAL)	REMARKS
L-1	14" x 14"	0.78	OUTSIDE AIR	ELF-6375DX	PROVIDE WITH MATTE BLACK FINISH TO MATCH BUILDING FINISHES.

CONTROL DAMPERS (CD)

SYMBOL	APPROX. SIZE	TYPE	RUSKIN MODEL	SERVICE	REMARKS
CD-1 THUR 3	8"Ø	QUARTER TURN	CDR-25	FURNACE F-1 THRU 3 OUTSIDE AIR	WITH 24 VOLT ACTUATOR

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Project Name

Issued

No.	Date	Description

Revision 2

No.	Date	Description
2	02.01.24	PLAN REVIEW/REDESIGN

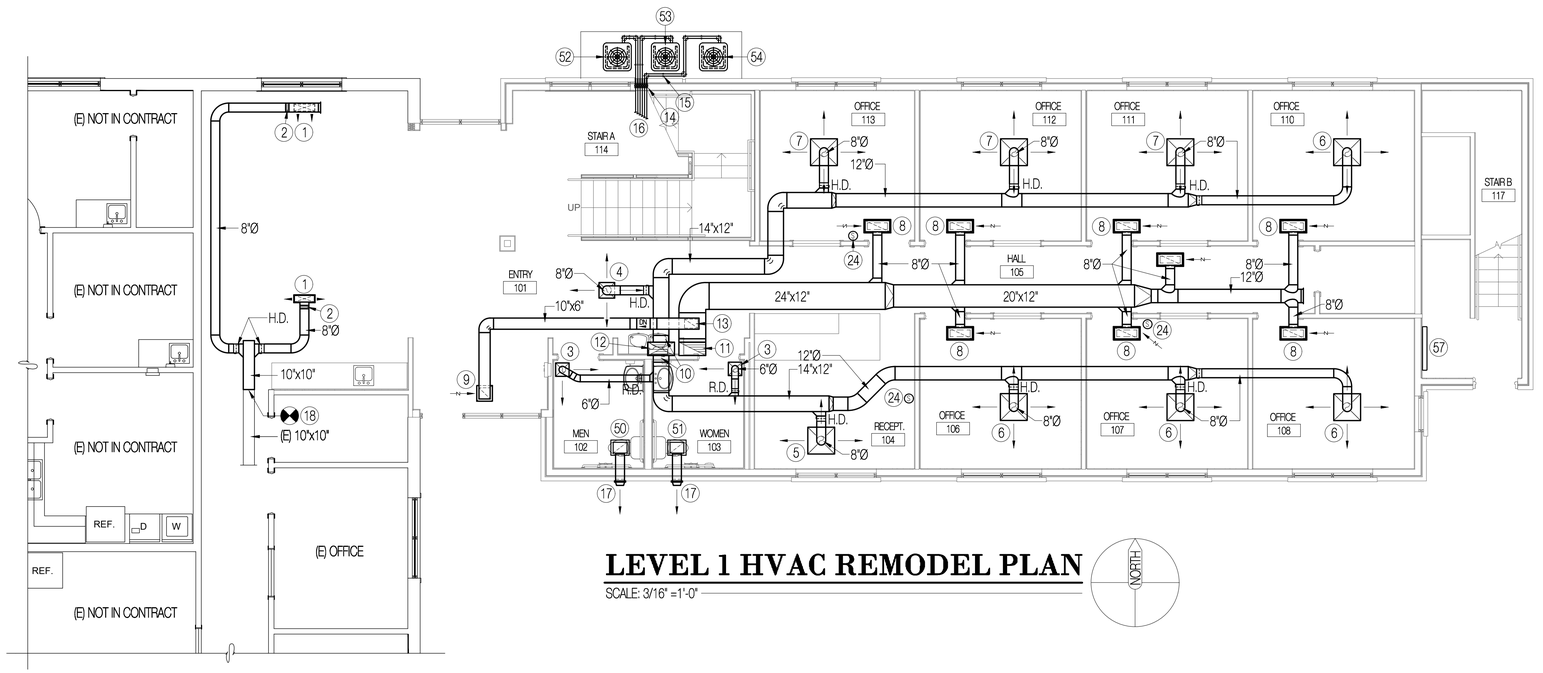
SAA Project No. 2022-03

Drawing Title

MECHANICAL SYM. LEGEND, SCHEDULES, AND DETAILS

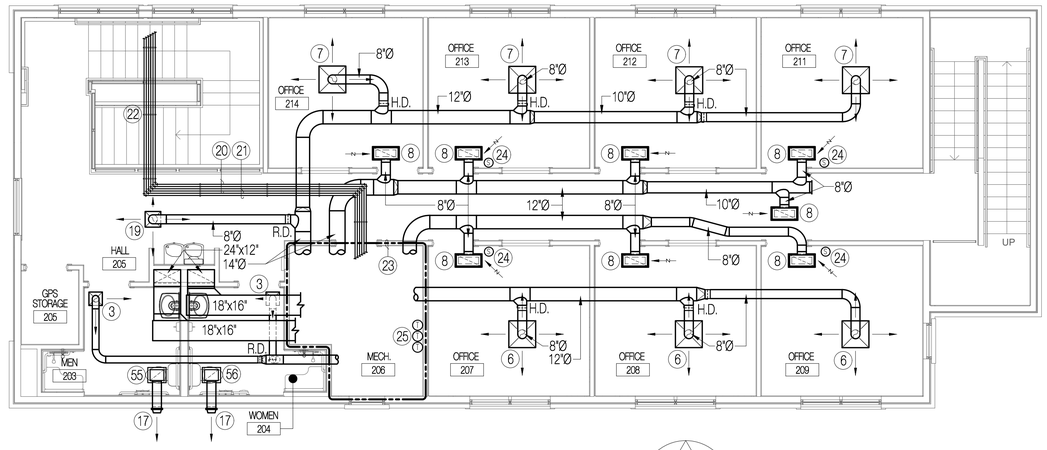
Sheet Number

M-000



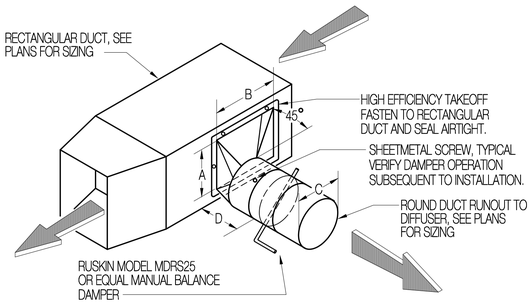
LEVEL 1 HVAC REMODEL PLAN

SCALE: 3/16" =1'-0"



LEVEL 2 HVAC PLAN

SCALE: 3/16" =1'-0"



HET DIMENSIONS

BRANCH SIZE (C)	THROAT DIM. A	THROAT DIM. B	MIN. AREA AxB
6"	8-1/4"	12"	3.5 X AREA OF C
8"	10-1/4"	14"	2.8 X AREA OF C
10"	12"	15"	2.3 X AREA OF C
12"	15"	18"	2.3 X AREA OF C
LENGTH D SHALL BE A MINIMUM OF 11"			

2 M100 ROUND DUCT RUNOUT DETAIL

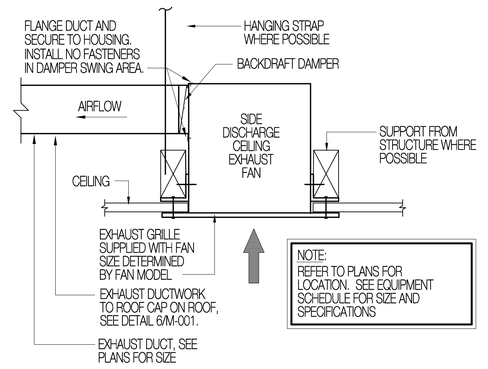
SCALE: NONE

DRAWING NOTES

1. S-3 135 CFM, 2 @ 1/2" WIDE SLOT x 1'-6" LONG LINEAR DIFFUSER. PROVIDE DIFFUSER WITH 18"x6"ACOUSTICALLY LINED PLENUM WITH END TRANSITION TO FIT DIFFUSER NECK SIZE.
2. FLEXIBLE CONNECTION, TYPICAL.
3. S-2 90 CFM, 6"Ø NK. S.A. DIFFUSER.
4. S-2 135 CFM, 8"Ø NK. S.A. DIFFUSER.
5. S-3 200 CFM, 8"Ø NK. S.A. DIFFUSER.
6. S-1 200 CFM, 8"Ø NK. S.A. DIFFUSER.
7. S-1 145 CFM, 8"Ø NK. S.A. DIFFUSER.
8. R-1 10"x22" NK. R.A. GRILLE WITH ACOUSTICALLY LINED PLENUM
9. R-2 10"x10" NK. R.A. GRILLE.
10. HIGH EFFICIENCY TAKEOFF, TYPICAL.
11. 24"x12" RETURN AIR DUCT RISE TO SECOND FLOOR, SEE SECOND LEVEL HVAC PLAN THIS SHEET FOR CONTINUATION.
12. 24"x12" SUPPLY AIR DUCT RISE TO SECOND FLOOR, SEE SECOND LEVEL HVAC PLAN THIS SHEET FOR CONTINUATION.
13. EXTEND 10"x6" RETURN DUCT OVER 24"x12" MAIN AND CUT 8"x12" HOLE IN BOTTOM OF TOP DUCT AND TOP OF BOTTOM DUCT. SECURE DUCTS TOGETHER AND SEAL AIR TIGHT.
14. PIPE SLEEVE AT REFRIGERATION PENETRATION AT WALL, SEE DETAIL 2/M-000.
15. EXTERIOR REFRIGERATION PIPE SUPPORT, SEE DETAIL 6/M-700.
16. REFRIGERATION PIPING FROM EXTERIOR CONDENSING UNITS TO INTERIOR COOLING COILS ON SECOND FLOOR. SEE SECOND FLOOR HVAC PLAN THIS SHEET FOR CONTINUATION.
17. PROVIDE AND INSTALL NEW BROAN MODEL 643 WALL CAP. PAINT WALL CAP WITH TWO COATS PRIMER AND TWO COATS PAINT, COLOR TO MATCH BUILDING EXTERIOR.
18. FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING SUPPLY AIR DUCTWORK AND CONNECT NEW TO EXISTING, SEAL ALL CONNECTIONS AIR TIGHT.
19. S-2 150 CFM, 8"Ø NK. S.A. DIFFUSER.
20. 3/8" LIQUID AND 3/4" SUCTION PIPING FROM EXTERIOR CONDENSING UNIT TO INTERIOR COOLING COIL.
21. 3/8" LIQUID AND 1-1/8" SUCTION PIPING FROM EXTERIOR CONDENSING UNIT TO INTERIOR COOLING COIL.
22. REFRIGERATION PIPE SUPPORT, SEE DETAIL 2/M-700.
23. SEE LARGE SCALE MECHANICAL ROOM 206 PLAN SHEET M-400 FOR ADDITIONAL WORK IN THIS AREA.
24. PROVIDE AND INSTALL NEW WIRELESS TEMPERATURE SENSOR AT 48" A.F.F. SEE CONTROL DRAWINGS SHEET M-700 FOR ADDITIONAL INFORMATION.
25. PROVIDE AND INSTALL NEW THERMOSTAT, MOUNT THERMOSTAT AT 48" A.F.F. SEE CONTROL DRAWINGS FOR ADDITIONAL INFORMATION.

EQUIPMENT NOTES

50. CEF 1 CEILING EXHAUST FAN
51. CEF 2 CEILING EXHAUST FAN
52. CU 1 CONDENSING UNIT
53. CU 2 CONDENSING UNIT
54. CU 3 CONDENSING UNIT
55. CEF 3 CEILING EXHAUST FAN
56. CEF 4 CEILING EXHAUST FAN
57. BR 1 BASEBOARD RADIATION



1 M100 CEILING EXHAUST FAN DETAIL

SCALE: NONE

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Seal

LICENSED PROFESSIONAL ENGINEER No. 4947211 NORMAN CUNNING 09/05/23 STATE OF UTAH

Consultant

Project Name

JONES & ASSOCIATES
CONSULTING ENGINEERS
6080 S FASHION POINT DRIVE
SOUTH OGDEN, UT 84405

Issued

No.	Date	Description

Revision

No.	Date	Description
2	02.01.24	PLAN REVIEW/REDESIGN

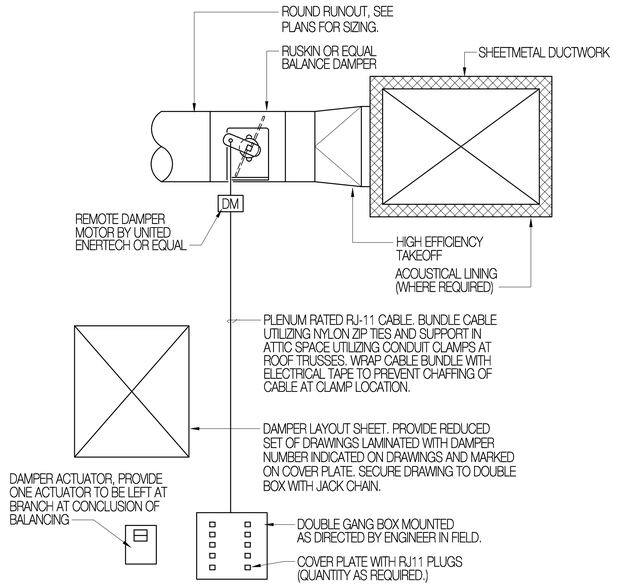
SAA Project No. 2022-03

Drawing Title

MAIN FLOOR HVAC PLAN

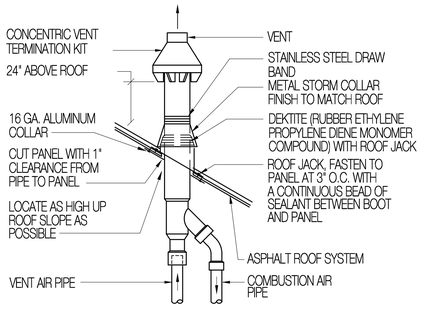
Sheet Number

M-100



5 M400 REMOTE DAMPER CONTROLLER DETAIL

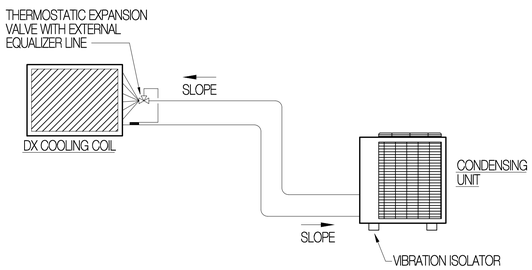
SCALE: NONE



ALL VENT ASSEMBLIES TO BE EXTENDED OUT THE ROOF ON THE NORTH SIDE OF THE RIDGE. PAINT ALL VENT PIPING TO MATCH ROOF COLOR

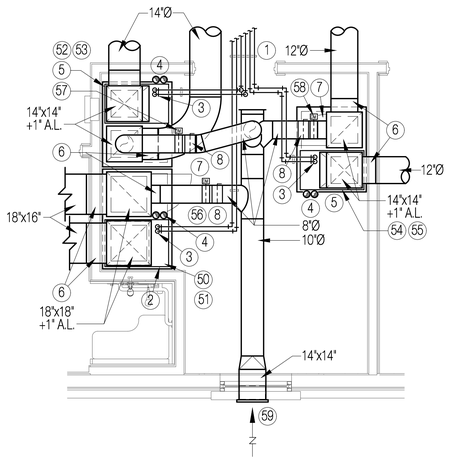
6 M400 VENT ASSEMBLY KIT DETAIL

SCALE: NONE



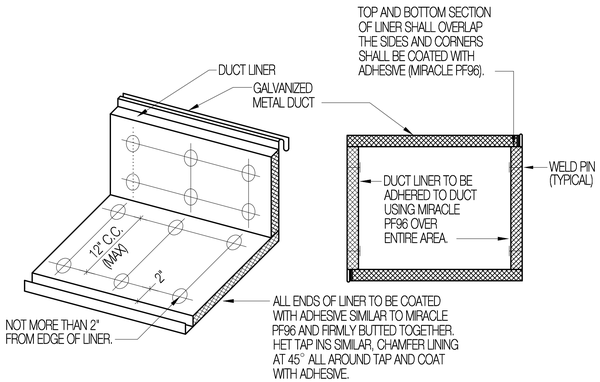
7 M400 REFRIG. PIPING SCHEMATIC

SCALE: NONE



LARGE SCALE MECH. RM. 206 PLAN

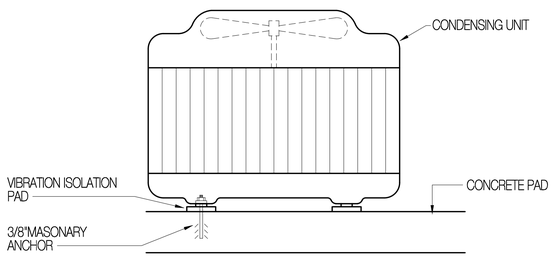
SCALE: 3/8" =1'-0"



LINING FASTENERS:
DURA DYNE MODEL CP WELD TYPE FASTENERS OR EQUIVALENT. ADHESIVE TYPE STICK CLIPS OR GRIP NAILS NOT ALLOWED.

3 M400 ACOUSTICAL LINER DETAIL

SCALE: NONE



4 M400 CONDENSING UNIT MTG. DETAIL

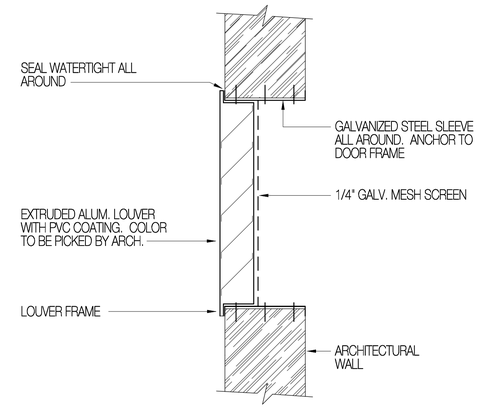
SCALE: NONE

DRAWING NOTES

1. REFRIGERATION PIPE SUPPORT, SEE DETAIL 6/M-102.
2. 42"Wx30"Dx11"H +1" A.L. (FIELD VERIFY) RETURN AIR PLENUM BELOW FURNACE. PLENUM TO BE CONSTRUCTED WITH 1"x1"x1/8" BLACK ANGLE IRON FRAME COVERED WITH 22 GAUGE GALVANIZED SHEET METAL ALL AROUND. SHEET METAL TO BE SEALED AND FASTENED TO FRAME WITH POP RIVETS, TYPICAL ONE RIVET EVERY 6", SECURE FRAME TO FLOOR WITH 1/4" MASONRY ANCHORS AT 12" ON CENTER, SEAL PLENUM TO FLOOR AIRTIGHT.
3. REFRIGERATION PIPING CONNECTION AT DX COOLING COIL, CONNECT PER DETAIL 5/M-700.
4. 3'Ø VENT AND COMBUSTION AIR PIPING RISES TO CONCENTRIC VENT KIT ON ROOF, SEE DETAIL 6/M-400.
5. 36"Wx30"Dx11"H +1" A.L. (FIELD VERIFY) RETURN AIR PLENUM BELOW FURNACE. PLENUM TO BE CONSTRUCTED WITH 1"x1"x1/8" BLACK ANGLE IRON FRAME COVERED WITH 22 GAUGE GALVANIZED SHEET METAL ALL AROUND. SHEET METAL TO BE SEALED AND FASTENED TO FRAME WITH POP RIVETS, TYPICAL ONE RIVET EVERY 6", SECURE FRAME TO FLOOR WITH 1/4" MASONRY ANCHORS AT 12" ON CENTER, SEAL PLENUM TO FLOOR AIRTIGHT.
6. HIGH EFFICIENCY TAKEOFF, TYPICAL.
7. FILTER HOLDING FRAME WITH ACCESS DOOR, SEE DETAIL 2/M-400 FOR ADDITIONAL INFORMATION.
8. 8'Ø MANUAL OUTSIDE AIR DAMPER, BALANCE DAMPER TO 100 CFM.
9. 8'Ø MANUAL OUTSIDE AIR DAMPER, BALANCE DAMPER TO 125 CFM.

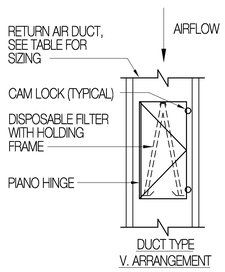
EQUIPMENT NOTES

50	F 1	FURNACE	55	CC 3	COOLING COIL
51	CC 1	COOLING COIL	56	CD 1	CONTROL DAMPER
52	F 2	FURNACE	57	CD 2	CONTROL DAMPER
53	CC 2	COOLING COIL	58	CD 3	CONTROL DAMPER
54	F 3	FURNACE	59	L 1	LOUVER



1 M400 LOUVER DETAIL

SCALE: NONE



PROVIDE DOOR CLOSURE PIECES BETWEEN FILTER PLENUM AND FILTERS. FILTERS TO BE CENTERED ON FURNACE OPENINGS. FILTER VELOCITY SHALL NOT EXCEED 300 FPM.

FURNACE	CFM	DUCT SIZE	FILTER SIZE	ARRANGEMENT
F-1	1,750	18"x18"+1" A.L.	2-18"x24"	VEE
F-2	760	14"x14"+1" A.L.	2-14"x24"	VEE
F-3	730	14"x14"+1" A.L.	2-14"x24"	VEE

2 M400 RETURN AIR FILTER DETAIL

SCALE: NONE

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Issued

No.	Date	Description

Revision 2

No.	Date	Description
2	02.01.24	PLAN REVIEW/REDESIGN

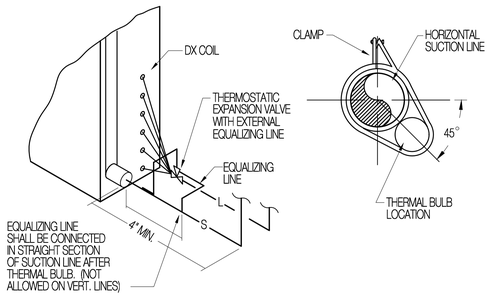
SAA Project No. 2022-03

Drawing Title

LARGE SCALE MECH. PLANS AND DETAILS

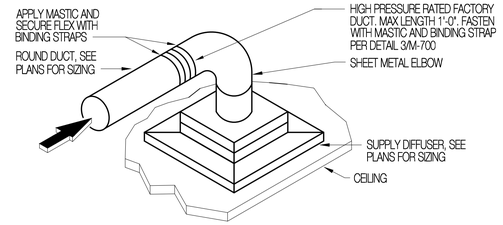
Sheet Number

M-400



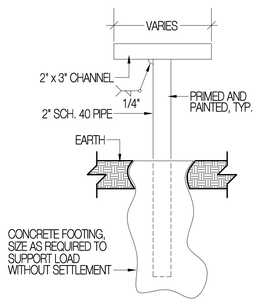
5 M700 DX COIL INSTALLATION DETAIL

SCALE: NONE



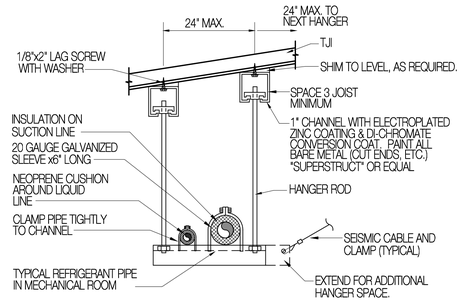
1 M700 DIFFUSER CONNECTION DETAIL

SCALE: NONE



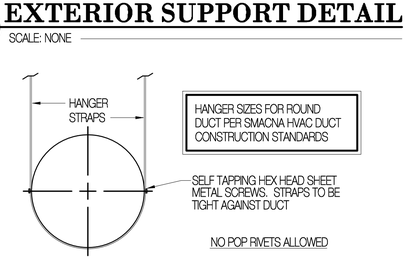
6 M700 EXTERIOR SUPPORT DETAIL

SCALE: NONE



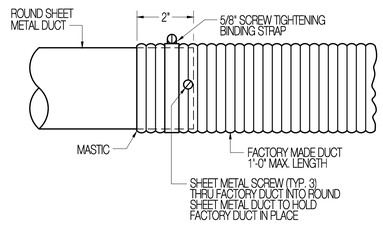
REFRIGERANT PIPING SUPPORT FROM JOIST DETAIL

2 M700 SCALE: NONE



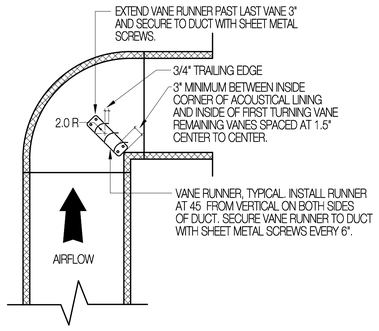
7 M700 RND. DUCT HANGER DETAIL

SCALE: NONE



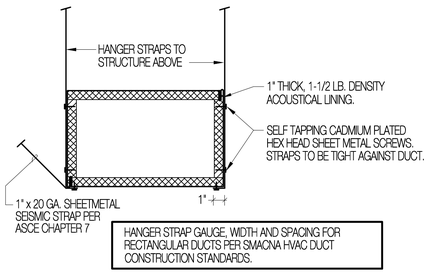
3 M700 FACTORY DUCT DETAIL

SCALE: NONE



8 M700 TURNING VANE DETAIL

SCALE: NONE



4 M700 RECT. DUCT HANGER DETAIL

SCALE: NONE

GENERAL NOTES FOR MECHANICAL CONTROLS

1. ALL ELECTRICAL INSTALLATIONS, INCLUDING POWER DISTRIBUTION AND SPECIAL SYSTEMS, IS INCLUDED IN THE SCOPE OF THE GENERAL CONTRACT. RESPONSIBILITY FOR THE CONTROL WORK IS DIVIDED BETWEEN THE PROJECT ELECTRICIAN (DIV. 16000) AND A SPECIALTY CONTROLS CONTRACTOR (DIV 23000).
2. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH DIVISION 26000 AND TO THE FULLEST EXTENT POSSIBLE, PRODUCTS AND PRACTICES SHALL BE SIMILAR FOR ALL INSTALLATIONS.
3. THE ELECTRICIAN SHALL PROVIDE ALL POWER TO AND THROUGHOUT THE BUILDING, TO INCLUDE MOTOR CONTROL CENTERS, BREAKER PANELS AND ALL OTHER SYSTEMS DESIGNATED TO THE ELECTRICIANS.
4. THE ELECTRICIAN SHALL RUN AND CONNECT ALL WIRING AND DEVICES 120 VOLTS AND ABOVE WHICH POWER MOTORS AND OTHER MECHANICAL DEVICES. WHERE CONTROL DEVICES ARE LOCATED IN POWER CIRCUIT, THE CONTROLS CONTRACTOR SHALL INTERRUPT THE CIRCUIT IN THE MECHANICAL EQUIPMENT JUNCTION BOX, WIRE THROUGH THE CONTROL DEVICE AND BACK TO THE JUNCTION BOX.
5. THE CONTROLS CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR CONTROL SYSTEM CIRCUITS.
6. BREAKERS AND DISCONNECTS, AUXILIARY CONTACTS, STANDARD PILOT LIGHTS AND MAGNETIC STARTERS ARE THE RESPONSIBILITY OF DIVISION 26000.
7. AUXILIARY RELAYS, LOW VOLTAGE TRANSFORMERS, CONTROL PANEL SWITCHES & DEVICES, THERMOSTATS, PRESSURE SWITCHES, ELECTRIC OPERATED VALVES, ETC., ARE THE RESPONSIBILITY OF DIVISION 23000.
8. ANY QUESTION OF RESPONSIBILITY SHALL BE CLARIFIED BY THE GENERAL CONTRACTOR
9. ALL WIRING SHALL TERMINATE AT LABELED TERMINAL STRIPS.
10. ALL THERMOSTATS SHALL BE ENERGY STAR RATED WITH IAQ CAPABILITY.

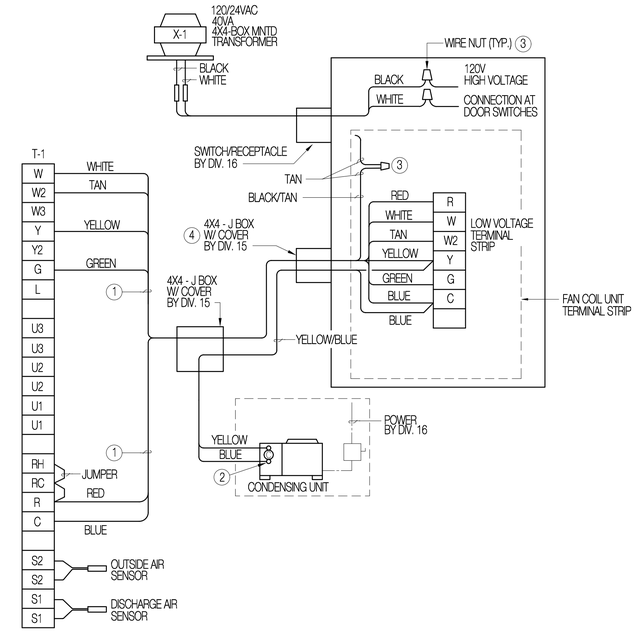


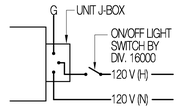
DIAGRAM NOTES

1. THERMOSTAT CABLE- 8 CONDUCTOR- 18 AWG SOLID COPPER WIRE INSULATED WITH HIGH DENSITY POLYETHYLENE. CONDUCTORS SHALL BE ENCLOSED IN BROWN JACKETING. (NO 22 AWG CABLE ALLOWED).
2. IF CONDENSING UNITS HAVE THEIR OWN POWER SUPPLY IT MAY BE NECESSARY TO ADD ADDITIONAL RELAYS IN CONDENSING UNIT TO PROPERLY INTERFACE CONTROLS.
3. USE WIRE NUT CONNECTORS FOR SPLICING CONDUCTORS AND TYTON TYPE CRIMP CONNECTORS FOR TERMINAL CONNECTIONS. NO TERMINAL CONNECTORS REQUIRED AT THERMOSTAT.
4. ALL WIRING TO BE PLENUM RATED.

CONTROL EQUIPMENT

SYMBOL	DESCRIPTION	HONEYWELL MODEL NO.
T-1	THERMOSTAT	TH8320R1003
WS-1	WIRELESS INDOOR TEMP. SENSOR	C7189R1004
OS-1	WIRELESS O.A. TEMP. SENSOR	C7089R1013
DS-1	DISCHARGE AIR TEMP. SENSOR	C7089R1013

FURNACE CONTROL DIAGRAM



CEILING EXHAUST FAN CONTROL DIAGRAM

TYPICAL OF ALL CEILING EXHAUST FANS

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2	02.01.24	PLAN REVIEW/REDESIGN

SAA Project No. 2022-03

Drawing Title

MECHANICAL CONTROLS & DETAILS

Sheet Number

M-700

MECHANICAL SPECIFICATIONS

GENERAL CONDITIONS

DESCRIPTION OF PROJECT: The mechanical work described in these mechanical specifications is for a project located in Ogden, Utah. Design weather conditions are: 95° db, 63° wb, and winter 1°F. Altitude readings, unless otherwise noted, are for an elevation of 4,500 feet above sea level. Make adjustment to manufacturer's performance data as needed.

CODES AND PERMITS, AUTHORITIES HAVING JURISDICTION:
2021 International Mechanical Code - (with Utah amendments)
2021 International Building Code – (with Utah amendments)
2021 International Plumbing Code – (with Utah amendments)
2021 International Energy Code – (with Utah amendments)
SMACNA Duct Design Standards
Locally enforced NFPA Codes
Local Fuel Utility Regulations
Local Power Utility Regulations
American Gas Association
ASTM B31.1 Piping

DEFINITION OF PLANS AND SPECIFICATIONS: The mechanical drawings at reduced scale show the general arrangement of piping, ductwork, equipment, etc., and shall be followed as closely as the actual building construction and the work of other trades will permit. The architectural and structural drawings shall be considered as part of the work insofar as these drawings furnish the Contractor with information relating to design and construction of the building. Architectural drawings shall take precedence over mechanical drawings. Request clarification and participate in resolution in the event of conflict.

A. Because of the small scale of the mechanical drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. Investigate the structural and finish conditions affecting the work and arrange the work accordingly, providing such extensions, fittings, valves and accessories to meet the conditions as may be required. Some small scale work is not shown such as control conduit and piping, incidental piping, specialties. Provide as directed by note or specification.
B. Examine the actual construction site prior to bidding and obtain an understanding of the conditions under which the work will be performed. No allowances will be made for failure to make such examination.
C. During construction, verify the dimensions governing the mechanical work at the building. No extra compensation shall be claimed or allowed because of differences between actual dimensions and those indicated on the drawings. Examine adjoining work on which mechanical work is dependent for perfect efficiency, and report any work of other trades which must be corrected. No waiver of responsibility for defective work shall be claimed nor allowed due to failure to report unfavorable conditions affecting the mechanical work.

ALTERNATIVE CONSTRUCTION/SUBSTITUTION: The contract documents outline a way in which the Owner may be delivered a functional and reliable facility. Drawings and specifications describe reasonable engineering practice for the Contractor to follow.
A. Coordination between trades may result in periodic needs to adjust the installation from that indicated, but in no case shall the intended function be compromised.
B. The Contractor may perceive some work methods which differ from those specified which could save time and effort. These may be presented to the Architect with a breakdown of possible cost savings for review. Implement only with authorization.
C. Materials substitutions will generally be covered in a review process prior to bidding. After bidding, substitutions shall be proposed only on the basis of definitive cost accounting and implemented only with authorization.

QUALITY OF MATERIALS AND EQUIPMENT:
A. All equipment and materials shall be new, and shall be the standard products of manufacturers regularly engaged in the production of plumbing, heating, ventilating and air conditioning equipment, and shall be the manufacturer's latest design. Specific equipment shown in schedules on drawings and specified herein is to be the basis for the Contractor's bid. Provisions for substitute equipment are outlined in the General Conditions. All materials shall be produced by manufacturing plants located in the United States of America.
B. Furnish and install all major items of equipment specified in the equipment schedules on the drawings complete with all accessories normally supplied with catalog items listed, and all other accessories necessary for a complete and satisfactory installation.

MANUFACTURER'S DIRECTIONS: Install all equipment in strict accordance with directions and recommendations furnished by the manufacturer. Where such directions are in conflict with the plans and specifications, report such conflicts to the Architect who shall direct adjustments as deemed necessary and desirable.

VALVES:

DOMESTIC COLD WATER, DOMESTIC HOT WATER, DOMESTIC HOT WATER RETURN:
A. Ball Valves: Copper piping, 2-1/2" and Smaller: 475 psig WOG @ 250°F, bronze construction, soldered ends for 3/4" and smaller, threaded ends for 1" and larger, glass Reinforced PolyTetraFlouroEthylene (RPTFE) seat providing bubble tight leakage performance at 100 psig air pressure under water, full port stainless steel ball. Operate with flow in either direction. Suitable for throttling and tight shut-off. Lever or tee handle as required.
1. Manufacturers & Models: Provide ball valves from one of the manufacturers and model numbers listed below.
(1) Apollo 77-140
(2) Watts FBV-SS (up to 2")
(3) Nibco T-580-70-66 (up to 1")
(4) Crane/Stockham 285-BR-R-66

INSULATION:

WATER PIPING (domestic cold & hot water, 1" thickness required.)
A. Preformed Fiberglass Piping Insulation: ASTM C 547. (Class 1 for use to 450°F (230°C); Class 2 for use to 650°F (345°C); Class 3 for use to 1200°F (650°C).
REFRIGERATION PIPING (1-1/2" thickness required on all refrigeration suction piping)
A. Flexible, Unicellular Pipe Insulation: Closed-cell elastomeric, preformed, with heat fusion or contact cement joining system. Insulation may be compressed but not stretched. By Armaflex II or Rubatex.
1. All insulation exposed to sunlight or installed outdoors shall be protected with two coats of Armstrong Wb Armaflex Finish.
DUCTWORK (1-1/2" thickness for all non-acoustically lined ductwork in concealed spaces) :
A. Flexible Fiberglass Ductwork Insulation: ASTM C 553, Type 1 - resilient, flexible; Class B-1 - 0.65 lbs/ft^3; Class B-2 - 0.75 lbs/ft^3; Class B-3 - 1.0 lbs/ft^3; Class B-4 - 1.5 lbs/ft^3; Class B-5 - 2.0 lbs/ft3; Class B-6 - 3.0 lbs/ft^3; Type II - flexible; Class F-1 - 4.5 lbs/ft^3; Type III - semirigid; Class F-2 - 4.5 lbs/ft^3.

DOMESTIC WATER:
A. Domestic Water:
1. Pipe Sizes 4" and Smaller: Copper tubing. Conform to ASTM B88, Type L, hard temper, copper tube; ASME B16.22 streamlined pattern wrought-copper fittings, with soldered joints using 95-5 tin antimony solder or non-lead bearing solders such as "Silvabrite."
2. Cross-linked polyethylene conforming to ASTM F877.

WASTE, DRAIN AND VENT PIPING:
A. Sanitary Soil Drain, Waste and Vent Piping:
1. Piping and Fittings: Schedule 40 PVC pipe and fittings conforming to the requirements of ASTM D 2665. Pipe and fittings shall be produced domestically as supplied by Spears, or Charlotte Pipe and Fittings.

NATURAL GAS PIPING:
A. Building Distribution Piping:
1. Pipe Size 2" and Smaller: Black steel pipe; Schedule 40; malleable-iron threaded fittings (exposed), welded fittings and joints (concealed).
B. Gas Cocks:
1. Gas Cocks 2" and Smaller: 150 psi non-shock WOG, bronze straightway cock, flat or square head, threaded ends.
2. Manufacturer: Subject to compliance with requirements, provide gas cocks of one of the following:
a. DeZurik Corp.
b. Jenkins Bros.
c. Lukenheimer Co.
d. NIBCO, Inc.
e. Powell (The Wm.) Co.
f. Rockwell International; Flow Control Div.
g. Stockham Valves and Fittings.
h. Walworth Co.

COMBUSTION AIR & VENT PIPING:
A. Air Piping - Schedule 40 pipe and fittings meeting requirements of ASTM D 1785, and ASTM D 2466.
B. Primer and Cement - Meet requirements of ASTM D 2564 and ASTM F 656.

EQUIPMENT SELECTION
The contractors shall select equipment based on the drawing schedules and requirements of these specifications. Any and all substitutions shall be presented during submittals for approval.

FIXTURES AND TRIM: The model numbers listed below have been carefully selected to help bidders in the submittal process of selecting fixtures and trim. The completeness and accuracy of these numbers must be verified during the bidding process. Any discrepancies between the model numbers and the fixture, or trim descriptions noted by a manufacturer during the bidding process will be reported to the Architect / Engineer for clarification. Clarifications will be made a part of the contract through an addendum only. The contractor is responsible for reporting any clarifications before the bid date as required in this specification.

1. (P-1) ADA Compliant Fixture: (1.6 gal./flush)
a. Floor mounted, flush tank type, vitreous china, elongated bowl. Mounted so top of seat is 18" above finished floor.
b. Approved Manufacturers:
(1) Kohler - "Persuade" No. 3753
(2) American Standard – "Cadet" No. 2514.101
(3) Gerber – "North Point ErgoHeight" No. 20-832.
2. (P-1) Seat:
a. (White) high impact plastic, open front, check hinge.
b. Approved Manufacturers: (Typical on standard use and ADA fixtures)
(1) Church No. 295C
(2) Beneke No. 527CH
(3) Bemis No. 1655-C
(4) Olsonite No. 95
B. Lavatory:
1. (P-2) ADA Fixture
a. Wall mounted, 18" x 20", vitreous china, front overflow, faucet holes on 4" centers, concealed arm carrier, mounted so bottom of lavatory is 29" above finished floor, furnish and install pre-formed insulation around P-trap and water supplies meet 25/50 flame/smoke rating.
b. Approved Manufacturers:
(1) Kohler "Kingston" No. K-2005
(2) American Standard "Lucerne" No. 0355.012
(3) Eljer "Delwyn" No. 051-1644.
(4) Crane "Harwich" No. 1-412-V.
2. (P-2) Faucet:
a. Two handle, 4" center set, renewable seats, indexed 4" wrist blade handles, aerator with 1.5 GPM flow control device, chrome plated, perforated strainer assembly, vandal proof.
b. Approved Manufacturers:
(1) Kohler "Triton" No. 7404
(2) American Standard "Heritage" No. 5402.172V
(3) Chicago Faucet No. 802A
3. (P-2) Pre-formed Insulation and Protective Cover:
a. Pre-formed foam or fiberglass insulation with two piece white PVC snap on cover with velcro closure, to fit P-trap and hot and cold water stops and supplies, meet 25/50 flame/smoke rating.
b. Approved Manufacturer:
(1) Buckaroos, Inc.
(2) Truebro
(3) or an engineer approved equivalent.
4. (P-2) Supplies with Stops:
a. Chrome plated quarter turn cast brass angle stop, brass stem, gasketed seat, flexible, chrome plated copper riser, chrome plated escutcheon, compression type connections.
b. Approved Manufacturers:
(1) Brass Craft
(2) Eastman
(3) McGuire
5. (P-2) P-Trap:
a. 17 gauge, tubular brass, chrome plated and chrome escutcheons.
b. Approved Manufacturers:
(1) Dearborn
(2) McGuire
(3) Jameco
(4) Sanitary Dash
6. (P-2) Strainer:
a. Drain with grid pattern strainer, cast brass, chrome plated. Provide offset type drain as required to maintain ADA clearances.
b. Approved Manufacturers:
(1) Kohler K-7715 (Offset type No. K-13885)
(2) Jameco
(3) Sanitary Dash
(4) McGuire
C. Sinks
1. (P-3) Breakroom Sink:
a. Single compartment, counter mounted, 14" x 14" x 7-1/2" deep, 18 gauge type 304 stainless steel, 3 faucet holes on 4" centers, self rimming, sound deadened.
b. Approved Manufacturers:
(1) Just No. SL-2017-A-GR
(2) Elkay No. LR-1720
2. (P-3) Faucet:
a. Underdeck mounted, 8" high rigid gooseneck spout, 2.5 gpm vandal proof aerator, 4" wing handles, supplies on 8" centers.
b. Approved Manufacturers:
(1) Chicago Faucet No. 786-HZFCCP.
(2) T & S Brass
3. (P-3) Supplies and Stops:
a. Chrome plated quarter turn cast brass angle stop, brass stem, gasketed seat, flexible chrome plated copper riser, chrome plated escutcheon, compression type connections.
b. Approved Manufacturers:
(1) Brass Craft
(2) Eastman
(3) McGuire
4. (P-3) Outlet Fitting and Tailpiece:
a. Chrome plated 17 gauge cast brass.
b. Approved Manufacturers:
(1) Elkay No. LK-53
(2) Just
5. Strainer:
a. Basket strainer, stainless steel, stainless steel basket, neoprene stopper, locking shell, tailpiece. Provide offset type where required to maintain ADA clearances.
b. Approved Manufacturers:
(1) Jameco
(2) Sanitary Dash No. SS3000W
(3) McGuire
(4) Elkay
(5) Just
6. P-Trap:
a. 17 gauge, tubular brass, cleanout plug, chrome plated and chrome escutcheons.
b. Approved Manufacturers:
(1) Dearborn
(2) McGuire
(3) Jameco
(4) Sanitary Dash

E. Drinking Fountain:
1. (P-4) ADA Compliant Fixture (Dual Level, Refrigerated)
a. Self-contained, wall-hung, mounted at height noted on architectural drawings, self-contained, front and side pressure operator with cast brass bubbler, air cooled, 7.8 gal. per hour capacity (minimum), with 90° ambient air water entering at 80° and leaving at 50°, stainless steel top, cabinet of stainless steel. Five year warranty, 120 volt, 60 cycle, 1 phase power.
(1) Approved Manufacturers:
(a) Elkay No. EZSTL8C
(b) Oasis
(c) Sunroc
2. (P-4) Supplies with Stops
a. Chrome plated quarter turn cast brass angle stop, brass stem, gasketed seat, flexible chrome plated copper riser, chrome plated escutcheon, compression type connections.
b. Approved Manufacturers:
(1) Brass Craft
(2) Eastman
(3) McGuire
3. (P-4) P-Trap
a. PVC P-trap as recommended by electric water cooler manufacturer.
b. Approved Manufacturers:
(1) McGuire
(2) Frost
(3) Jameco
(4) Sanitary Dash

F. Floor Drain:
1. (FD) Fixture:
a. 6" diameter nickel bronze strainer, cast iron body with 2" outlet and deep seal P-trap, clamping collar. Provide Proset Protection "Trap Gaurds" or similar on all floor drains.
b. Approved Manufacturers:
(1) Zurn No. ZN-415.
(2) Josam No. 30000 -A
(3) J.R. Smith No. 2010
(4) Wade No. 1100 Series

G. Cleanouts
1. Finished Walls:
a. Approved Manufacturers:
(1) Zurn No. Z-1445-1
(2) J.R. Smith No. 4530
(3) Wade No. W-8460-R
(4) Josam No. 58790

PIPING MATERIALS: Piping materials shall be as follows unless otherwise indicated on the applicable contract drawing:
A. Pipe: "ACR" Type L, hard drawing, degreased, sealed at mill copper tubing, ASTM B88-62, cleaned and sealed at the mill. Pre-charged refrigerant lines shall not be used.
B. Fittings: Long radius, wrought copper type equal to Mueller Streamline, ASME B16.22.1963.

VALVES, SPECIALTIES, ETC:
A. Filter-Dryer: On lines smaller than 3/4" O.D. filter-dryer shall be a sealed type using male flare fittings. Size shall be full line size. Filter-dryer shall be Sporlan, Mueller or Alco.
B. Sight Glass: Shall be a combination moisture and liquid indicator with protection cap. Sight glass shall be Alco, Mueller, Sporlan or Henry. Size shall be full line size.
C. Flexible Connection: Corrugated bronze hose with single layer of stainless steel exterior braiding, minimum 9 inches long with copper tube ends; for system working pressure.

REFRIGERANT AND LUBRICATING OIL: The Contractor furnish and install all of the refrigerant required to develop the system to its full rating, and in addition to the initial charge, he shall be required to provide, without cost to the Owner, all required refrigerant for the proper operation of the refrigeration apparatus during the first year's operation. The contractor shall be required to provide the initial charge of lubricating oil for all refrigeration apparatus and related equipment. Loss of refrigerant and oil during the first year of operation shall be made good at the contractor's expense.

DUCTWORK - GENERAL:
A. Standards: All duct fabrications shall comply with standards and techniques detailed by SMACNA "Duct Construction Manuals" for the appropriate pressure class, with the ASHRAE Handbook, 1988 edition, Chapter 1, Duct Construction, and with the contract drawing details.
B. Sheet Metal: Except as otherwise indicated, fabricate ductwork from galvanized sheet steel complying with ASTM A 527, lockforming quality, with G 90 zinc coating in accordance with ASTM A 525; mill phosphatized for exposed locations.

FITTINGS AND FABRICATION:
A. Fittings: Fabricate duct fittings to match adjoining ducts, and to comply with duct requirements as applicable to fittings. Fabricate elbows utilizing inside and outside radiuses with a center-line radius equal to associated duct width; or where fully radiused elbows are not possible, fabricate elbows with an inside square and outside radius and include turning vanes in the first 1/3 of elbow. Maintain duct width throughout turn on inside square and outside radiused elbows. Limit angular tapers to 30° for contracting tapers and 20° for expanding tapers.
B. Fabricate ductwork with accessories installed during fabrication to the greatest extent possible.
C. Fabricate ductwork with duct liner in each section of duct where indicated. Laminate liner to internal surfaces of duct in accordance with instructions by manufacturers of lining and adhesive, and fasten with weld type fasteners.
D. Offset, transition, adapt ductwork to structural obstacles and work of other trades in a coordinated effort. Layout work to avoid conflict with piping, etc. With review of conditions, teardrop around conflicting piping, lights, etc., all at no added cost to the owner.

LOW PRESSURE ROUND DUCTWORK:
A. Round type ductwork for use on low velocity supply systems (1200 fpm maximum), low pressure (0.75" maximum duct pressure), shall be fabricated on 26 gauge galvanized steel sheets with snap-lock longitudinal seams and crimped and beaded joints.
B. ll end joints shall have at least three screw fasteners and joints shall be sealed airtight with Hardcast TA tape or water based duct sealer. Snap lock longitudinal seams shall be seal with water based duct sealer NO EXCEPTIONS. Elbows and fittings shall provide smooth air flow patterns and have a neat appearance.

MEDIUM PRESSURE DUCTWORK: (3" SMACNA Pressure Class)
A. General: At Installer's option, provide factory-fabricated duct and fittings, in lieu of shop-fabricated duct and fittings.
B. Round Ductwork: Construct of galvanized sheet steel complying with ASTM A 527 by the following methods and in minimum gauges listed.

Diameter	Minimum Gauge	Method of Manufacture
3" to 14"	26	Spiral Lockseam
15" to 26"	24	Spiral Lockseam

Provide locked seams for spiral duct; fusion-welded butt seam for longitudinal seam duct.

C. Round Duct Fittings and Couplings: Construct of minimum gauges listed. Provide continuous welds along seams. Mitered elbows shall be of at least 5 piece construction with R/D ratio of 1.5.

Diameter	Minimum Gauge
3" to 36"	20

LOW PRESSURE RECTANGULAR DUCTWORK:
A. Rectangular ductwork for use on supply systems up to 2" maximum duct static pressure and 2000 fpm maximum duct velocity shall be constructed of galvanized steel using construction for nominal 3" SMACNA rated systems. Seal all transverse and longitudinal joints with water based duct sealer NO EXCEPTIONS.
B. Use radiused elbows, or square inside radiused outside elbows with single thickness turning vanes in the first 1/3 where space restrictions prohibit fully radiused elbows. Use 45° high efficiency tapping takeoffs with separate downstream balance dampers.
C. Duct dimensions are inside clear. Increase for acoustical lining.

MISCELLANEOUS DUCTWORK MATERIALS:
A. General: Provide miscellaneous materials and products of types and sizes indicated and, where not otherwise indicated, provide type and size required to comply with ductwork system requirements including proper connection of ductwork and equipment.
B. Runout Fittings: Runout fittings shall be used to make round to rectangular duct connections. Use 45° time and a half square to round fittings. Provide with locking quadrant dampers where balance is involved. Provide with insulation guard where insulated duct is involved.
C. Duct Sealing Compound: Duct sealing compound shall be 3M brand number EC-750 or Duro-Dyne S-2. This material shall be used in making up duct joints or in water proofing, caulking plenums, etc.
D. Acoustical Lining: Acoustical lining in ducts shall be 1" thick, 1-1/2 pound density, coated, flexible glass fiber type, set in adhesive and impaled on weld studs spaced not more than 12" on centers and secured with lock washers. Airstream surface faced with black coated matte. Acoustical lining shall completely line the ducts. Lining shall have a fire and smoke hazard rating not exceeding 20-50-50. Owens-Corning, Johns-Manville, Certainteed.
1. All joints, edges and/or surface breaks in the coating of the acoustical lining shall be pointed up to a smooth surface with adhesive.
E. Duct Liner Adhesive: Comply with ASTM C 916 "Specifications for Adhesives and Duct Thermal Insulation".
F. Duct Liner Fasteners: Comply with SMACNA HVAC Duct Construction Standards, Article S2.11.
G. Ductwork Support Materials: Except as otherwise indicated, provide hot-dipped galvanized steel fasteners, anchors, rods, straps, trim and angles for support of ductwork.

GRILLES AND DIFFUSERS:
A. Ceiling Supply Diffuser (S-1): Krueger series 1400, square face, four way blow,round neck, anti-smudge border, all steel, white baked on enamel, size as indicated on drawings.
B. Ceiling Supply Diffuser (S-2): Krueger series SH, square face, one, two three or four way blow as required. Square neck, beveled drop face, anti-smudge border, all steel, white baked on enamel, size as indicated on drawings.
C. Slot Diffuser (S-3): Krueger series 1900, 1/2" slot x 2 slot, adjustable vanes for varying volume and direction of throw. All aluminum extruded construction. White finish with black pattern controller.
D. Perforated Return Register / square neck (R-1): Krueger series 6490. Concealed hinge frame, sponge rubber gasket, white baked-on enamel, filter holding frame, color as selected by architect, size as indicated on drawing.
E. Return Grille (R-2): Krueger series S85H. Heavy duty steel construction, horizontal blades at 35° deflection with 1/2" spacing, mounting frame with concealed fasteners, sponge rubber gasket, white baked enamel finish, size as indicated on drawings.

MECHANICAL CONTROLS:

CONTROL DAMPERS:
A. In supplying dampers, instruct the sheet metal workers in the proper installation of the dampers. Ductwork shall be reinforced and the damper properly supported without strain.
B. Protect all dampers mounted in a duct system which requires special treatment.
C. Provide damper operators with motors of proper size, so that the motors will operate against the static pressure of the systems. Provide each damper motor with a bracket for attaching to ductwork, building structure or equivalent. Damper motors in plenums shall be mounted on damper frames. Do not install motors in ducts. Modulating motors where indicated shall be provided with integral steps for both minimum and maximum stop.
D. Control dampers for outside air, relief air, exhaust air, ventilating air and other dampers exposed to weather temperatures in built-up systems. Low leakage type with spring loaded side seals, inflatable butyl or neoprene fabric edge seals, bronze or teflon bearings, reinforced galvanized steel blades. Parallel action. Air leakage not to exceed 10 CFM per square foot at 4" upstream static pressure.
1. Johnson "Proportion-Aire" D-1200/D-1300.
2. Ruskin CD50
3. Greenheck VCD-43

CONDUCTORS:
A. Color coded and No. 16 and No. 12 AWG Type TWN, TFN, or THHN, stranded.
B. Thermostat Cable - 12 conductor or 8 conductor, 18AWG solid copper wire, insulated with high density polyethylene. Conductors parallel enclosed in brown PVC jacket (No 22 AWG cable allowed).

THERMOSTAT: (Furnace System)
A. Programmable low voltage type provided with automatic change over feature for both heating and cooling stages, seven day program with two starts and stops per day, and provisions for damper operators. Thermostat and subbase compatible with heat pump operation.
B. Battery - Mallory MN1604 9 volt alkaline type or equal as approved by Engineer.
C. Approved Manufacturer & Model -
1. Honeywell TH8320

SENSORS:
A. Wall – Honeywell 71891004 (wireless)
B. Outside and Discharge Air – Honeywell 7089R1013 (wireless)

TRANSFORMER:
A. 120/24 volt, 38VA Honeywell AT72D1188, cover mount

SAA
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Seal

LICENSED PROFESSIONAL ENGINEER
No. 4947211
NORMAN GUNNING
09/06/23
STATE OF UTAH

Consultant

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CONSULTING ENGINEERS
6080 S FASHION POINT DRIVE
SOUTH OGDEN, UT 84405

Project Name

Issued

No.	Date	Description

Revision

No.	Date	Description
2	02.01.24	PLAN REVIEW/REDESIGN

SAA Project No. 2022-03

Drawing Title

MECHANICAL SPECIFICATIONS

Sheet Number

MS-100

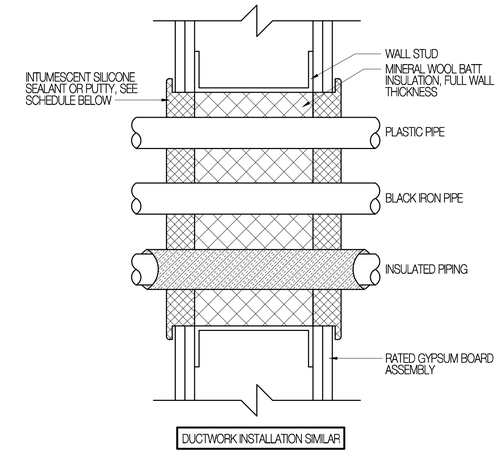
B. 120/24 volt, 50VA Honeywell AT87A1106, foot mount

DAMPER ACTUATORS:

A. Electric type equipped for Class I wiring.
B. Shall not consume power during UNOCCUPIED cycle or use chemicals or expandable media.
C. Have built in spring return.
D. Approved Manufacturer & Model -
   1. Honeywell MS7505A2030

AIR SYSTEMS BALANCE:

A. Before any adjustments are made, check the systems for such items as dirty filters, duct leakage, filter leakage, damper leakage, equipment vibrations, correct damper operations, etc. Adjust all fan systems, major duct sections, registers, diffusers, etc., to deliver design air quantities within +5%. Individual air outlets, when one of three or more serve a space may have a tolerance of 10 percent from the average. Design static pressure is based on filters approximately 50% loaded with dirt. Pressure drop across filters during balancing shall be simulated to that condition. After balancing is completed check motor amperage with the filters clean.
B. Adjust supply, and recirculation air systems towards air quantities shown on drawings. Establish a proper relationship between supply and exhaust. Follow proportional balance procedures outlined by AABC and/or SMACNA for such work.
C. Distribution system shall be further adjusted to obtain uniform space temperatures free from objectionable drafts and noise within the capabilities of the system.



DUCTWORK INSTALLATION SIMILAR

WALL RATING	DEPTH OF SEALANT	SEALANT CROWN
1 HOUR	1"	1/4"

1 MS100 **TYPICAL WALL FIRE STOP DETAIL**

SCALE: NONE

2

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MS-101

GENERAL PROJECT NOTES

1. ALL ELECTRICAL INSTALLATIONS TO CONFORM TO THE LATEST NEC AND LOCAL CODES.
2. THE ELECTRICAL CONTRACTOR SHALL HAVE A COORDINATION MEETING WITH THE MECHANICAL CONTRACTOR, CONSTRUCTION SUPERINTENDANT AND ANY OTHER TRADES AS REQUIRED WITHIN SEVEN DAYS OF THE START OF THE JOB TO REVIEW CODE CLEARANCE REQUIREMENTS FOR PANELS, SWITCHES, AND OTHER ELECTRICAL GEAR SPECIFICALLY FOR THIS JOB. RECORD THE MEETING IN THE SUPERINDENT'S LOG. REPORT UNRESOLVED CONFLICTS TO THE ARCHITECT IMMEDIATELY.
3. ELECTRICAL CONTRACTOR'S PROJECT MANAGER AND ON-SITE PROJECT FOREMAN SHALL REVIEW VENDOR SUBMITTALS FOR ACCURACY PRIOR TO SUBMITTING TO ENGINEER. INACCURACIES SHALL BE CORRECTED PRIOR TO ENGINEER SUBMITTAL.
4. SUBMITTALS FOR EACH SYSTEM WILL BE REVIEWED BY ENGINEER UP TO TWO TIMES--ONE FULL SUBMITTAL FOR OVERALL COMPLIANCE AND ONE RESUBMITTAL. ADDITIONAL REVIEWS WILL BE CHARGED TO CONTRACTOR AT ENGINEER'S STANDARD BILLING RATE.
5. SUBMITTALS TO ENGINEER SHALL INCLUDE ALL SPECIFIED SYSTEMS IN FIRST SUBMITTAL. PARTIAL SUBMITTALS WILL BE RETURNED TO CONTRACTOR AS INCOMPLETE AND WILL BE CONSIDERED ONE OF TWO INCLUDED SUBMITTAL REVIEWS.
6. THE CLARITY OF RECORD DRAWING CHANGES MADE BY THE CONTRACTOR SHALL BE EQUAL TO THE ORIGINAL DRAWINGS AS JUDGED BY THE ARCHITECT OR THE RECORD SET WILL BE RETURNED TO THE CONTRACTOR FOR CLARIFICATION.
7. WHEN THE GENERAL CONTRACT CALLS FOR "RECORD" OR "AS-BUILT" DRAWINGS TO BE FURNISHED BY THE CONTRACTOR AT JOB COMPLETION, THE ELECTRICAL CONTRACTOR SHALL BE REQUIRED TO FURNISH A COMPLETE SET OF "BLUE-PRINT READY" AUTOCAD ELECTRICAL DRAWINGS FOR ALL CONTRACTOR GENERATED CHANGES FROM THE DRAWINGS OF A CLARITY EQUAL TO THE ORIGINAL DRAWINGS AS JUDGED BY THE ENGINEER. CONTACT ARCHITECT FOR DISKS OR REPRODUCIBLE ORIGINAL MEDIA. PROVIDE DRAWINGS ON CD IN AUTOCAD FORMAT.
8. DO NOT SCALE ELECTRICAL FLOOR PLANS. SEE ARCHITECTURAL DRAWINGS FOR ACCURATE DIMENSIONS AND FLOOR PLANS.
9. ELECTRICAL DEVICES CANNOT BE SHOWN TO SCALE AND SOMETIMES OVERLAP BUILDING ELEMENTS. REFER TO ARCHITECTURAL ELEVATIONS FOR ACCURATE MOUNTING LOCATIONS
10. ELECTRICAL CONTRACTOR SHALL CONTACT POWER COMPANY, TELEPHONE COMPANY, AND TV COMPANY WITHIN THE FIRST WEEK OF THE START OF CONSTRUCTION AND NOTIFY THEM OF THE PROBABLE DATE WHEN THE NEW ELECTRICAL, TELEPHONE, AND/OR TV SERVICE CONNECTION WILL BE NEEDED.
11. THE MAIN TELEPHONE AND TV SERVICES AS SHOWN ON THE DRAWINGS HAVE NOT BEEN COORDINATED WITH THE RESPECTIVE UTILITY COMPANIES DURING DESIGN. THE CONTRACTOR SHALL VERIFY THE TELEPHONE AND TV SERVICE AS SHOWN OR ANY CHANGES REQUIRED BY THE TELEPHONE COMPANY BEFORE INSTALLATION BEGINS. NOTIFY THE ARCHITECT IF CHANGES FROM THE DRAWING ARE REQUIRED.
12. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY ALL PANEL CLEARANCES PER NEC 110.26 AND NOTIFY ALL OTHER TRADES ON THE JOB OF THESE CODE REQUIREMENTS.
13. THE ELECTRICAL CONTRACTOR SHALL FIELD VERIFY WITH THE GENERAL CONTRACTOR ADEQUATE WALL DEPTH FOR MOUNTING FLUSH CIRCUIT BREAKER PANELS.
14. PANEL INDEXES SHALL INCLUDE ALL PERTINENT INFORMATION ON THE PANEL SCHEDULES INCLUDING INFORMATION ON LIGHTS AND OUTLETS. DO NOT SIMPLY COPY THE CIRCUIT DESCRIPTION COLUMN. INDEXES TO BE TYPEWRITTEN.
15. CONDUITS ENTERING MAIN PANEL FROM THE BOTTOM SHALL BE ARRANGED IN STRAIGHT ROWS FASTENED TO UNISTRUT. HOLES SHALL BE PUNCHED IN PANEL BOTTOM AND CONDUITS FASTENED BY TWO LOCKNUTS AND A CONDUIT BUSHING. CUTTING OUT THE BOTTOM OF THE PANEL IS NOT PERMITTED.
16. DO NOT INSTALL PANELS IN FIRE WALLS.
17. COORDINATE MOUNTING HEIGHT AND LOCATION OF ALL OUTLETS, SWITCHES, AUXILIARY EQUIPMENT, AND OTHER DEVICES WITH THE ARCHITECTURAL DRAWINGS. PRIOR TO INSTALLATION, REVIEW WITH THE GENERAL CONTRACTOR THE LOCATION OF MILLWORK AS A FINAL CHECK TO PREVENT COVERING OF ELECTRICAL ITEMS.
18. MOUNTING HEIGHT OF GENERAL PURPOSE OUTLETS AND SWITCHES SHALL BE 16" TO BOTTOM AND 48" TO TOP RESPECTIVELY UNLESS OTHERWISE NOTED.
19. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED SO AS NOT TO INTERFERE WITH WOOD TRIM AND MOLDINGS. THE ELECTRICAL CONTRACTOR SHALL REVIEW FINISH SCHEDULES AND ARCHITECTURAL DETAILS BEFORE ROUGH-IN OF OUTLET OR SWITCH BOXES TO PREVENT BOXES AND PLATES FROM BEING PLACED BEHIND OR IN TRIMS AND MOLDINGS. REFER SPECIAL CONDITIONS TO ARCHITECT PRIOR TO ROUGH-IN.
20. DO NOT INSTALL DISPOSAL SWITCHES OR GFCI PROTECTION BEHIND SINKS.
21. EMT IS NOT ALLOWED OUT OF DOORS.
22. DO NOT INSTALL FEEDERS OR CIRCUITING EXPOSED ON ROOFTOPS OR RUNNING HORIZONTALLY WITHIN 36" OF ROOFTOPS.
23. CIRCUIT WIRE SIZES MUST, AT MINIMUM, MATCH NEC REQUIRED CONDUCTOR SIZES FOR CORRESPONDING OVERCURRENT PROCTECTIVE DEVICES. VERIFY WITH PANEL SCHEDULES BEFORE PULLING WIRE.
24. HOME RUNS MUST BE RUN EXACTLY AS SHOWN ON PLANS UNLESS OTHERWISE NOTED. DO NOT COMBINE HOME RUNS INTO ONE CONDUIT THAT ARE NOT SHOWN COMBINED ON THE DRAWINGS.
25. THE ELECTRICAL CONTRACTOR SHALL RUN BRANCH CIRCUIT CONDUITS IN ATTIC SPACES IN A NEAT AND WORKMANLIKE MANNER SO AS TO CONSERVE OPEN SPACES AS MUCH AS POSSIBLE. HVAC DUCTWORK AND PLUMBING SHALL HAVE LOCATION PRIORITY OVER BRANCH CIRCUIT CONDUIT RUNS.
26. CIRCUIT WIRING SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS. ANY DEVIATIONS SHALL BE INITIATED BY A CHANGE ORDER FROM THE ARCHITECT. OTHERWISE THE RECORD SET SHALL MATCH THE CONSTRUCTION SET.
27. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR, PULLED INTO THE CONDUIT WITH THE PHASE CONDUCTOR, IN ALL SERVICE, FEEDER, AND BRANCH CIRCUITS.
28. PROVIDE A NEUTRAL CONDUCTOR FOR EACH BREAKER TRIP HANDLE. NEUTRALS SHALL NOT BE SHARED BETWEEN BRANCH CIRCUITS.
29. ALL CIRCUITS TO BE MINIMUM #12 CU IN MINIMUM 3/4" CONDUIT UNLESS OTHERWISE NOTED.
30. WHERE ALLOWED BY CODE, MC CABLE IS AN APPROVED ALTERNATE TO CONDUCTORS IN CONDUIT FOR CONCEALED BRANCH CIRCUIT WIRING BETWEEN DEVICES, BUT NOT FOR HOME-RUNS. HOME RUNS TO BE RAN IN CONDUIT COMPLETE FROM PANEL TO FIRST DEVICE OR FIXTURE ON CIRCUIT.
31. DO NOT INSTALL MORE THAN THREE PHASE CONDUCTORS IN ANY HOME-RUN CONDUITS UNLESS SPECIFICALLY INDICATED ON DRAWINGS.
32. IDENTIFY ALL OUTLET COVER PLATES WITH THE PANEL AND CIRCUIT NUMBER.
33. A GFI OUTLET SHALL BE INSTALLED AT EACH LOCATION DESIGNATED BY "GFI" ON THE DRAWINGS. DOWNSTREAM PROTECTION BY A GFI OUTLET UPSTREAM IS NOT ALLOWED.
34. OUTLETS, SWITCHES, AND COVER PLATES TO BE COLOR CODED (BROWN, WHITE, IVORY, OR GRAY) TO THE WALL THEY ARE MOUNTED ON AS DIRECTED BY THE ARCHITECT.
35. ALL CONVENIENCE OUTLETS MUST BE MOUNTED FLUSH WITH THE COVER PLATE AND SECURED FIRMLY TO THE OUTLET BOX.
36. REMOVE ALL OLD AND/OR UNUSED EXISTING CONDUIT AND ELECTRICAL APPARATUS FROM EXTERIOR OR INTERIOR EXPOSED SURFACES.
37. WHERE EXISTING ELECTRICAL EQUIPMENT IS TO REMAIN BUT THE SURFACE THAT IT IS MOUNTED ON IS TO BE REWORKED UNDER OTHER CONTRACTS, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND INSTALL OR MODIFY THE EXISTING EQUIPMENT AS REQUIRED TO MEET THE DESIGN INTENT. SEE ARCHITECTURAL DRAWINGS FOR ROOF, CEILINGS, WALLS, SOFFITS, FLOORS, ETC.
38. REMOVE ALL UNUSED CONDUITS AND CIRCUITS IN THE DEMOLTIONED AREA AS THEY ARE IDENTIFIED AS UNUSED OR ABANDONED.
39. REMOVE ALL EXISITING ELECTRICAL DEVICES, EQUIPMENT, AND APPARATUS AS THEY ARE IDENTIFIED AS UNUSED OR ABANDONED.
40. RELOCATE EXISTING CONDUITS AND CIRCUITS AS REQUIRED THAT ARE PRESENTLY SERVING EQUIPMENT THAT IS INTENDED TO REMAIN IN SERVICE BUT SAID CONDUITS ARE CURRENTLY RUNNING THROUGH AREAS TO BE DEMOLITIONED.
41. WHERE EXISTING CONDUIT RUNS ARE RE-USED BY SPECIAL PERMISSION FROM THE ARCHITECT, A SEPARATE GREEN, INSULATED GROUND WIRE SHALL BE PULLED IN THE CONDUIT AND BONDED AT EACH END AS REQUIRED.
42. RE-ROUTE EXISTING CIRCUIT CONDUITS AS REQUIRED AT ALL AREAS WHERE EXISTING WALLS ARE TO BE DEMOLITIONED OR HAVE DOORWAYS CUT IN THEM. PLAN ON AN AVERAGE OF ONE, 3/4" CONDUIT RELOCATION FOR EACH PENETRATION OR WALL REMOVAL.
43. FIELD VERIFY CONDITIONS FOR NEW WIRING. SURFACE RACEWAYS MUST RECEIVE PRIOR APPROVAL FROM THE ARCHITECT AND OWNER AND WILL BE EVALUATED ON A CASE BY CASE BASIS DURING CONSTRUCTION. APPROVED RACEWAYS MUST BE PAINTED TO MATCH THE SURFACE ON WHICH THEY ARE MOUNTED.
44. ALL PATCH, REPAIR, REPAINT AND COVER UP REQUIRED AS A RESULT OF ELECTRICAL REMODEL IS TO BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR, BUT ACTUAL WORK IS TO BE PERFORMED BY QUALIFIED PERSONNEL.
45. ALL RECESSED LIGHT FIXTURES MUST CONFORM TO NEC 410
46. ALL RECESSED LIGHT FIXTURES THAT PENETRATE THE BUILDING THERMAL ENVELOPE SHALL BE SEALED WITH A GASKET OR CAULK BETWEEN THE HOUSING AND INTERIOR WALL OR CEILING COVERING
47. COORDINATE LOCATION OF CEILING LIGHT FIXTURES WITH THE REFLECTED CEILING PLAN.
48. FIXTURE COUNTS SHOWN ON DRAWINGS ARE FOR REFERENCE ONLY. CONTRACTOR IS RESPONSIBLE TO VERIFY FIXTURE COUNTS AS PART OF BIDDING PROCESS.
49. ELECTRICAL CONTRACTOR SHALL VERIFY CEILING THICKNESSES AND USE CEILING TRIM EXTENDERS ON DOWNLIGHTS AS REQUIRED.
50. ELECTRICAL CONTRACTOR SHALL REVIEW THE EXACT LOCATION OF ALL SKYLIGHTS WITH THE GENERAL CONTRACTOR PRIOR TO ROUGH-IN OF CEILING OUTLET BOXES.
51. SUPPORT RECESSED T-BAR MOUNT FIXTURES WITH FOUR EXTRA GALVANIZED WIRE SUPPORTS ON OPPOSITE CORNERS PER IBC. CONNECT WIRES TO BUILDING STRUCTURE.
52. CONNECT EMERGENCY CIRCUIT OF EMERGENCY LIGHT BATTERY PACK TO UNSWITCHED LIGHTING CIRCUIT SERVING FIXTURES IN AREA. INSTALL EXTRA CONDUCTORS AS REQUIRED. WIRE SO LAMPS IN NORMAL MODE ARE CONTROLLED AS NOTED ON LIGHTING PLANS. PROVIDE ADDITIONAL BALLASTS AS REQUIRED.
53. WHERE LIGHT FIXTURES AS SPECIFIED AS COLOR PER ARCHITECT, THIS SHALL BE INTERPRETED AS A NON-STANDARD COLOR
54. THE CONTRACTOR SHALL PROVIDE A WIRE MESH COVER OVER ALL RECESSED LIGHTS TO KEEP BLOWN IN INSULATION AT LEAST THREE INCHES AWAY FROM THE FIXTURE HOUSING.
55. EMERGENCY LIGHT BATTERY PACKS SHALL BE CONNECTED SO AS TO BE ABLE TO OPERATE IN THE TEST MODE WHEN THE NORMAL SWITCH LEG IS TURNED ON, AND SHALL ILLUMINATE ONE FIXTURE LAMP UNLESS OTHERWISE NOTED.
56. OVER-MIRROR WALL LIGHTS ARE TO BE MOUNTED SO THE LENS FACES DOWNARD.
57. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW ALL SWITCH LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO ROUGH-IN TO PREVENT ANY SWITCHES FROM BEING LOCATED ON THE WRONG SIDE OF THE DOOR.
58. COORDINATE LOCATION OF EXIT LIGHTS WITH ARCHITECT.
59. COORDINATE LOCATION OF LIGHT FIXTURES IN MECHANICAL ROOMS WITH MECHANICAL EQUIPMENT. DETERMINE FINAL FIXTURE LOCATIONS AFTER DUCTWORK INSTALLATION HAS BEEN COMPLETED. CHAIN SUSPEND FIXTURES UNDER DUCTWORK AND CONDUIT RACKS AS REQUIRED.
60. PENDANT FIXTURES SHALL HAVE SEISMIC RATED PENDANT CONNECTIONS AND SWIVEL JOINTS.
61. VERIFY FIXTURE COUNT WITH REFLECTED CEILING PLAN.
62. EXHAUST FANS FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR.
63. REFER TO MECHANICAL PLANS FOR EXACT LOCATION OF MECHANICAL EQUIPMENT.
64. ELECTRICAL CONTRACTOR SHALL FURNISH ALL MOTOR DISCONNECTS, STARTERS, AND CONTROL STATIONS FOR MECHANICAL EQUIPMENT UNLESS THE SAME IS FURNISHED AS AN INTEGRAL PART OF THE EQUIPMENT. VERIFY WITH MECHANICAL CONTRACTOR PRIOR TO BID.
65. THERMOSTAT AND CONTROL WIRING FOR MECHANICAL EQUIPMENT BY MECHANICAL CONTRACTOR.
66. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE NUMBER AND LOCATION OF FIRE/SMOKE DAMPERS WITH MECHANICAL DRAWINGS. CONNECT TO 120V POWER THROUGH RELAY CONTROLLED BY FIRE ALARM.
67. LOCATE OUTLETS FOR ELECTRIC WATER COOLERS SO THAT THE OUTLET AND CORDS ARE CONCEALED FROM VIEW. SEE DETAIL FOR ADDITIONAL INSTALLATION REQUIREMENTS.
68. DISCONNECT SWITCHES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. CONTRACTOR SHALL FIELD VERIFY LOCATION OF ALL ELECTRICAL SWITCHES AND MOTOR CONTROL FOR PROPER CODE CLEARANCES. NOTIFY ARCHITECT IMMEDIATELY OF ANY CONFLICTS WITH OTHER TRADES REGARDING PROPER EQUIPMENT CLEARANCES.
69. ALL DISCONNECT SWITCHES FOR MOTORS SHALL BE RATED A MINIMUM OF 22000 AIC UNLESS OTHERWISE SHOWN.
70. COORDINATE LOCATION OF THERMOSTATS, SENSORS, AND ATC JUNCTION BOXES WITH MECHANICAL CONTRACTOR BEFORE INSTALLATION.
71. BEFORE RUNNING CONDUITS, PLACING OUTLETS OR ORDERING EQUIPMENT, THE CONTRACTOR SHALL REVIEW THE SPECIFICATIONS AND DESIGN AND SHOP DRAWINGS OF THE OTHER TRADES SERVED BY THE CONDUIT, OUTLETS, AND/OR EQUIPMENT.
72. PROVIDE NEUTRAL CONNECTION TO 208/240/480V, SINGLE-PHASE EQUIPMENT. RUN SEPARATE GROUND WIRE TO ALL OUTDOOR UNITS AND BOND TO THE EQUIPMENT GROUND LUG.
73. ELECTRICAL CONTRACTOR SHALL INSTALL A PULL STRING IN ALL COMMUNICATIONS, SECURITY, AND OTHER LOW VOLTAGE CONDUITS FOR USE BY LOW VOLTAGE SYSTEM CONTRACTOR.
74. ELECTRICAL CONTRACTOR SHALL INSTALL A PULL STRING IN ALL UNUSED POWER AND LIGHTING CONDUITS.
75. WHERE THERE ARE CONFLICTS IN THE DRAWINGS AND/OR SPECIFICATIONS THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER PRIOR TO BID. WHERE NO NOTIFICATION IS GIVEN THE MORE STRINGENT INTERPRETATION (GENERALLY INTERPRETED TO BE THE MORE COSTLY) WILL BE ENFORCED.

ELECTRICAL LEGEND

ANNOTATIONS

Symbol	Description
X / XXX	DETAIL CALL-OUT; TOP "X" REFERS TO DETAIL NUMBER & BOTTOM "XXX" REFERS TO SHEET NUMBER
#	KEYED NOTE CALLOUT
#-#	EQUIPMENT CALLOUT
#-#	PRODUCTION EQUIPMENT CALLOUT
---- xCDy ----	COMMUNICATIONS RACEWAY: "x" CONDUITS OF "y" DIAMETER

LIGHTING FIXTURES

FIXTURE LUMEN INDICATOR, FIXTURE SIZE INDICATOR, FIXTURE TYPE — XXX - X XX (X) — FIXTURE ACCESSORY APPEND

Symbol	Description
	EMERGENCY LIGHT
	BATTERY PACK
	EXIT LIGHT: CEILING - FACE(S) AS SHOWN
	EXIT LIGHT: WALL - FACE(S) AS SHOWN
	EXIT LIGHT: FACE SIDE
	EXIT LIGHT: DIRECTIONAL ARROWS, DOUBLE FACE
	RECESSED FIXTURE
	STRIP LIGHT
	LINEAR FIXTURE
	EMERGENCY FIXTURE
	WALL MOUNT FIXTURE
	POLE LIGHT; ONE HEAD
	POLE LIGHT; TWO HEAD
	SUSPENDED FIXTURE

LIGHTING CONTROL

GENERAL CONTROLS

Symbol	Description
S DT	OCCUPANCY SENSOR: DUAL TECHNOLOGY
S VS	OCCUPANCY SENSOR: VACANCY SENSOR FUNCTION
S OS	OCCUPANCY SENSOR: OCCUPANCY SENSOR FUNCTION
S #	OCCUPANCY SENSOR: # INDICATES WATTSTOPPER CAT# FOR COVERAGE PATTERN OR EQUIVALENT AS SPECIFIED
P	PHOTOCELL
	TIME CLOCK
	PUSH BUTTON

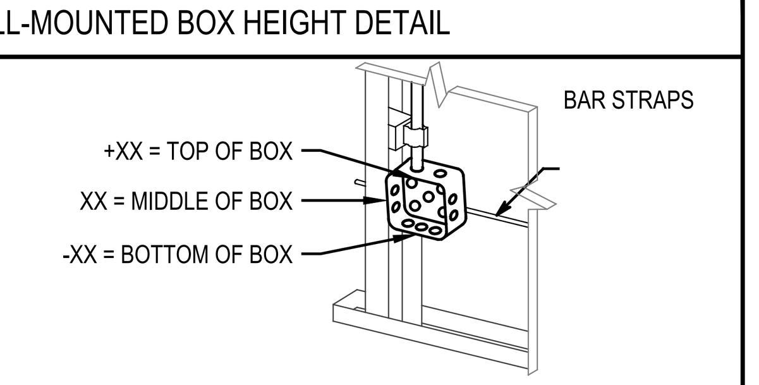
LOCAL CONTROLS

Symbol	Description
$ X	SINGLE POLE SWITCH; "x" INDICATES SWITCH GROUP
$ 3	THREE WAY SWITCH
$ P	PILOT LIGHT SWITCH
L	DIMMER SWITCH: LED; 600 W MINIMUM
VS	WALL MOUNT OCCUPANCY SENSOR: VACANCY SENSOR FUNCTION
OS	WALL MOUNT OCCUPANCY SENSOR: OCCUPANCY SENSOR FUNCTION

CENTRAL SYSTEM CONTROLS
(SEE LIGHTING CONTROL SCHEDULES FOR COMPLETE INFORMATION)

Symbol	Description
$ LSX/SY	DIGITAL LIGHTING CONTROL TOGGLE; SX = SWITCH CONTROL TYPE #1; SY = SWITCH CONTROL TYPE #2; ETC.
$ DL	SWITCH: DAYLIGHT ZONE AS DETAILED
S LO#	OCCUPANCY SENSOR: LIGHTING CONTROL SYSTEM; O# = LIGHTING CONTROL TYPE
P DR	PHOTOCELL: DAYLIGHT RESPONSIVE FOR CONTINUOUS DIMMING APPLICATIONS.
P LP#	PHOTOCELL: INTEGRATED TO LIGHTING CONTROL SYSTEM; P# = LIGHTING CONTROL TYPE
LDX/DY	DIGITAL LIGHTING CONTROL DIMMING SWITCH; DX = SWITCH CONTROL TYPE #1; DY = SWITCH CONTROL TYPE #2; ETC.

GENERAL WALL-MOUNTED BOX HEIGHT DETAIL



REFER TO POWER, LIGHTING AND COMMUNICATIONS PLANS FOR SPECIFIC DIMENSIONS. SEE GENERAL NOTES AND SPECIFICATIONS WHERE NO HEIGHTS ARE INDICATED.

BRANCH CIRCUITING

Symbol	Description
	SIMPLEX OUTLET
	SIMPLEX OUTLET: GROUND FAULT INTERRUPTER
	DUPLEX OUTLET
	FACELESS GFCI PROTECTION DEVICE
	DUPLEX OUTLET: GROUND FAULT INTERRUPTER
EWC	ELECTRIC WATER COOLER OUTLET: GFCI UNLESS NOTED
WP	DUPLEX OUTLET: WEATHERPROOF
WPIU	DUPLEX OUTLET: WEATHERPROOF-IN-USE COVER
	DOUBLE DUPLEX OUTLET
	DOUBLE DUPLEX OUTLET: GROUND FAULT INTERRUPTER
	SPECIAL OUTLET: SEE PANEL SCHEDULE
J	JUNCTION BOX
	DISCONNECT; NO OVER-CURRENT PROTECTION
	DISCONNECT WITH OVER-CURRENT PROTECTION (CIRCUIT BREAKER STYLE OR AS SPECIFIED)
$ m	MOTOR PROTECTIVE THERMAL SWITCH
	QUANTITY OF CONDUCTORS: SHORT LINES = PHASE /SWITCH, LONG LINES = NEUTRAL
	HOME-RUN
	CIRCUITING: LINE VOLTAGE

POWER AND DISTRIBUTION

Symbol	Description
	DISTRIBUTION PANEL
	PANELBOARD
	METER / METER SOCKET

ONE-LINE

Symbol	Description
XA YP	BREAKER : "x" = BREAKER AMPERAGE "y" = QUANTITY OF POLES
	BRANCH PANEL
	BRANCH PANEL WITH MAIN BREAKER
	BRANCH PANEL WITH SUB FEED BREAKER
X	FEEDER SIZE (REFER TO CONDUIT AND CONDUCTOR SCHEDULE UNLESS OTHERWISE NOTED)
	GROUND
M	CT AND METER
	TRANSFORMER
SPD	SURGE PROTECTIVE DEVICE
x-y	FUSE : "x" = FUSE TYPE, "y" = FUSE AMPERAGE
hp	MOTOR : hp = MOTOR HORSEPOWER

COMMUNICATIONS

Symbol	Description
----CMJ ----	COMMUNICATIONS RACEWAY; OPEN D-RINGS OR J-HOOKS. SEE DETAILS AND SPECIFICATIONS
	COMMUNICATIONS RACK
	PHONE BACKBOARD
	COMMUNICATIONS ENCLOSURE
	TELEVISION OUTLET (4-11/16"sq x 2-3/4"D J-BOX; 5/8",1-GANG MUD RING; 1" CONDUIT, (1)RG-6 COAX)
	COMMUNICATIONS OUTLET, 1-PORT DEVICE, COMMUNICATIONS BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (1)CAT 6A CABLE/JACK
	COMMUNICATIONS OUTLET, 2-PORT DEVICE, COMMUNICATIONS BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (2)CAT 6A CABLES/JACKS
	COMMUNICATIONS OUTLET, 3-PORT DEVICE, COMMUNICATIONS BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (3)CAT 6A CABLES/JACKS
x	COMMUNICATIONS OUTLET, 6-PORT DEVICE, COMMUNICATIONS BOX (SEE COMMUNICATIONS RACEWAY SCHEDULE); 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (X)CAT 6A CABLES/JACKS

SITE ELECTRICAL

Symbol	Description
----1ØUP----	1-PHASE UNDERGROUND PRIMARY POWER
----1ØUS----	1-PHASE UNDERGROUND SECONDARY POWER
-- (E)3ØUP --	3-PHASE UNDERGROUND PRIMARY POWER : EXISTING
-- (E)3ØUS --	3-PHASE UNDERGROUND SECONDARY POWER : EXISTING
----3ØUP----	3-PHASE UNDERGROUND PRIMARY POWER
----3ØUS----	3-PHASE UNDERGROUND SECONDARY POWER
----(E)UT----	UNDERGROUND TELEPHONE : EXISTING
----(E)UTV----	UNDERGROUND TV : EXISTING
----UT----	UNDERGROUND TELEPHONE
----UTV----	UNDERGROUND TV
	POINT OF DISCONNECTION
	POINT OF CONNECTION
	UTILITY POLE

SHEET INDEX

#	Sheet Title
EE001	ABBREVIATIONS G.P.N. LEGEND & SHEET INDEX
EE002	ELECTRICAL SPECIFICATIONS
EE003	ELECTRICAL SPECIFICATIONS
ES101	ELECTRICAL SITE PLANS
ED101	ELECTRICAL DEMOLITION PLAN
EL201	LIGHTING PLANS
EL501	LIGHTING DETAILS
EP301	POWER PLANS
ET401	ELECTRONIC SYSTEMS PLANS
EP501	ELECTRICAL DETAILS
EP601	ELECTRICAL ONE-LINE DIAGRAM

ELECTRICAL ABBREVIATIONS

A	AMPERE	LTG	LIGHTING
AF	AMP FUSE	MAX	MAXIMUM
AFF	ABOVE FINISHED FLOOR	MCB	MAIN CIRCUIT BREAKER
AFG	ABOVE FINISHED GRADE	MECH	MECHANICAL
AFI	ARC-FAULT CIRCUIT-INTERRUPTER	MFR	MANUFACTURER
AIC	AMPERE INTERRUPTING CAPACITY	MIN	MINIMUM
AL	ALUMINUM	MLO	MAIN LUGS ONLY
ARCH	ARCHITECT(URAL)	MTD	MOUNTED
AS	AMP SWITCH	NEC	NATIONAL ELECTRICAL CODE
AWG	AMERICAN WIRE GAUGE	NECA	NATIONAL ELECTRICAL CONTRACTOR'S ASSOCIATION
BLDG	BUILDING	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
BKBD	BACKBOARD	NEUT	NEUTRAL
C	CONDUIT	NFC	NATIONAL FIRE CODE
CAB	CABINET	NC	NORMALLY CLOSED
CAT	CATALOG/CATEGORY	NIC	NOT IN CONTRACT
C/B	CIRCUIT BREAKER	NL	NIGHT LITE
CKT	CIRCUIT	NO	NORMALLY OPEN
CLG	CEILING	NTS	NOT TO SCALE
CO	CONDUIT ONLY	OCP	OVERCURRENT PROTECTION
COMM	COMMUNICATION	P	POLE
CONN	CONNECTION	PH	PHASE
CU	COPPER	PNL	PANEL
DEMO	DEMOLITION/DEMOLISH	PWR	POWER
DISC	DISCONNECT	QTY	QUANTITY
DN	DOWN	RECEP	RECEPTACLE
DWG	DRAWING	REQ'D	REQUIRED
EA	EACH	RGSC	RIGID GALVANIZED STEEL CONDUIT
ELEC	ELECTRICAL	RM	ROOM
ELEV	ELEVATOR	SCHED	SCHEDULE
EMER, EM	EMERGENCY	SECT	SECTION
EMT	ELECTRICAL METALLIC TUBING	SP	SINGLE POLE
EOLR	END OF LINE RESISTOR	SN	SOLID NEUTRAL
EQUIP	EQUIPMENT	SPEC	SPECIFICATION
EX, EXIST	EXISTING	SW	SWITCH
FBO	FURNISHED BY OTHERS	SWBD	SWITCHBOARD
FCU	FAN COIL UNIT	SWGR	SWITCH GEAR
FF	FINISHED FLOOR	SYS	SYSTEM
FIXT	FIXTURE	TEMP	TEMPORARY
FLEX	FLEXIBLE METALLIC CONDUIT (STEEL)	TELE	TELEPHONE
FLUOR	FLUORESCENT	XFMR	TRANSFORMER
FT	FEET OR FOOT	T-STAT	THERMOSTAT
GFI	GROUND FAULT INTERRUPTER	TWP	TWISTED PAIR
GND	GROUND	TWSP	TWISTED SHEILDED PAIR
HP	HORSEPOWER	TYP	TYPICAL
HVAC	HEATING, VENTILATING & AIR CONDITIONING	UBC	UNIFORM BUILDING CODE
IG	ISOLATED GROUND	UL	UNDERWRITERS LABORATORY
IMC	INTERMEDIATE METAL CONDUIT	UMC	UNIFORM MECHANICAL CODE
IN	INCH(ES)	UNO	UNLESS NOTED OTHERWISE
ISC	SHORT CIRCUIT AMPERES, KA	V	VOLT OR VOLTAGE
JB, J-BOX	JUNCTION BOX	VA	VOLT AMPERE
KCMIL	THOUSAND CIRCULAR MILS	W	WATT
KVA	KILOVOLT AMPERE	W/	WITH
KW	KILOWATT	WG	WIRE GUARD
		WP	UL LISTED WEATHERPROOF, NEMA 3R or 4

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Project Name
JONES AND ASSOCIATES
BUILDING ADDITION

Issued

No.	Date	Description
1	09.21.23	PLAN REVIEW
2	02.29.24	PLAN REVIEW

Revision

No.	Date	Description

SAA Project No. 2022-03

Drawing Title
ABBREVIATIONS
G.P.N. LEGEND &
SHEET INDEX

Sheet Number
EE001

ELECTRICAL SPECIFICATIONS

SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL

1.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Electrical equipment shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.
   1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

1.2 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.3 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
B. Sleeves for Rectangular Openings: Galvanized sheet steel.

1.4 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
   1. Sealing Elements: EPDM or NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
   2. Pressure Plates: Stainless steel. Include two for each sealing element.
   3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

1.5 ELECTRICAL ENCLOSURES

A. Flush- and surface-mounted cabinets.
   1. Rated for environmental conditions at installed location.
      a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
      b. Outdoor Locations: NEMA 250, Type 3R.
      c. Kitchen Areas: NEMA 250, Type 4X, stainless steel.
      d. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.

1.6 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Comply with NECA 1.
B. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
C. Right of Way: Give to piping systems installed at a required slope.

1.7 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
B. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
C. Seal space outside of sleeves with grout for penetrations of concrete and masonry
D. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials.
E. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

1.8 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly.

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

1.1 CONDUCTORS AND CABLES

A. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-2-THWN-2 or Type XHHW-2.
B. Multiconductor Cable: Comply with NEMA WC 70/ICEA S-95-658 for metal-clad cable, Type MC and Type SOW with ground wire.

1.2 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

1.3 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper for feeders smaller than No. 4 AWG; copper or aluminum for feeders No. 4 AWG and larger.
B. Branch Circuits: Copper.

1.4 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Feeders: Type THHN-2-THWN-2 or Type XHHW-2, single conductors in raceway.
B. Exposed Branch Circuits, Including in Crawlspaces: Type THHN-2-THWN-2, single conductors in raceway.
C. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-2-THWN-2, single conductors in raceway or Metal-clad cable, Type MC (for connections between devices on the same circuit, but not for home-runs).
D. Cord Drops and Portable Appliance Connections: Type SOW, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.

1.5 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
C. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
D. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

1.6 CONNECTIONS

A. Make splices, terminations, and taps that are compatible with conductor material.
   1. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.
B. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.

1.7 IDENTIFICATION

A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

1.1 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
B. Bare Copper Conductors:
   1. Solid Conductors: ASTM B 3.
   2. Stranded Conductors: ASTM B 8.
   3. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.

1.2 CONNECTORS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

1.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad Zinc-coated steel; 3/4 inch by 10 feet in diameter.

1.4 APPLICATIONS

A. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.
B. Conductor Terminations and Connections:
   1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
   2. Connections to Ground Rods: Bolted connectors.
   3. Connections to Structural Steel: Welded connectors.

1.5 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all service, feeder, and branch circuits, in addition to those required by NFPA 70:

1.6 INSTALLATION

A. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade unless otherwise indicated.
B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
   1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
   2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

1.1 PERFORMANCE REQUIREMENTS

A. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
B. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems with galvanized metallic coatings and channel dimensions selected for applicable load criteria.
B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
D. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
   1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
   2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
   3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
   4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
   5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
   6. Toggle Bolts: All-steel springhead type.
   7. Hanger Rods: Threaded steel.

1.3 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

1.4 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

1.5 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
B. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
   1. To Wood: Fasten with lag screws or through bolts.
   2. To New Concrete: Bolt to concrete inserts.
   3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
   4. To Existing Concrete: Expansion anchor fasteners.
   5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
   6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts or Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
   7. To Light Steel: Sheet metal screws.
   8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

1.1 METAL CONDUITS, TUBING, AND FITTINGS

A. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
B. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
   1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886 and NFPA 70.
   2. Fittings for EMT:
      a. Material: Steel or die cast.
      b. Type: Setscrew or compression.

1.2 NONMETALLIC CONDUITS, TUBING, AND FITTINGS

A. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.3 METAL WIREWAYS AND AUXILIARY GUTTERS

A. Description: Sheet metal, complying with UL 870 and NEMA 250, unless otherwise indicated, and sized according to NFPA 70.
B. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

1.4 BOXES, ENCLOSURES, AND CABINETS

A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
B. Sheet Metal Outlet, Device, Pull, and Junction Boxes: Comply with NEMA OS 1 and UL 514A.
C. Cast-Metal Outlet, Device, Pull, and Junction Boxes: Comply with NEMA FB 1, ferrous alloy or aluminum, Type FD, with gasketed cover.
D. Metal Floor Boxes:
   1. Material: sheet metal.
   2. Type: Fully adjustable.
   3. Shape: Rectangular.
   4. Listing and Labeling: Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
E. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, with continuous-hinge cover with flush latch unless otherwise indicated.

1.5 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

A. General Requirements for Handholes and Boxes:
   1. Boxes and handholes for use in underground systems shall be designed and identified as defined in NFPA 70, for intended location and application.
   2. Boxes installed in wet areas shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel, fiberglass, or a combination of the two.
   1. Cover Legend: Molded lettering, "ELECTRIC.".

1.6 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
   1. Above-grade: GRC.
   2. Underground Conduit: RNC, Type EPC-40-PVC or Type EPC-80-PVC where required by utility.
   3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
   4. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
B. Indoors: Apply raceway products as specified below unless otherwise indicated.
   1. Exposed, Not Subject to Physical Damage: EMT.
   2. Exposed and Subject to Physical Damage: GRC.
   3. Concealed in Ceilings and Interior Walls and Partitions: EMT.
   4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
   5. Damp or Wet Locations: GRC.
   6. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.
C. Minimum Raceway Size: 3/4-inch trade size.
D. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.

1.7 INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
B. Raceways Embedded in Slabs: Change from RNC to wrapped, GRC before rising above floor.
C. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways where required by NFPA 70:
D. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to top of box unless otherwise indicated.
E. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
F. Locate boxes so that cover or plate will not span different building finishes.
G. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
H. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.
I. Set metal floor boxes level and flush with finished floor surface.

1.8 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:
   1. Excavate trench bottom to provide firm and uniform support for conduit.
   2. Install backfill
   3. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor.
      a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete for a minimum of 12 inches on each side of the coupling.
      b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.
   4. Underground Warning Tape: Comply with requirements in Section 260553 "Identification for Electrical Systems."

1.9 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.
B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch above finished grade.

SECTION 260548 - VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS

1.1 PERFORMANCE REQUIREMENTS

A. Seismic-Restraint Loading:
   1. Site Class as Defined in the IBC: D.
   2. Assigned Seismic Use Group or Building Category as Defined in the IBC: III.
      a. Component Importance Factor:
         1) General: 1.0.
         2) Life Safety (EM): 1.5
      b. Component Response Modification Factor:
         1) Fixtures: 1.0
         2) Equipment: 2.5
         3) Conduit and Cables: 5.0.
      c. Component Amplification Factor: 2.5.
   3. Design Spectral Response Acceleration at Short Periods (0.2 Second): 173%.
   4. Design Spectral Response Acceleration at 1.0-Second Period: 76%.

1.2 SEISMIC-RESTRAINT DEVICES

A. General Requirements for Restraint Components: Rated strengths, features, and application requirements shall be as defined in reports by an agency acceptable to authorities having jurisdiction.
   1. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.
B. Restraint Cables: ASTM A 603 galvanized-steel cables with end connections made of steel assemblies with thimbles, brackets, swivels, and bolts designed for restraining cable service; and with a minimum of two clamping bolts for cable engagement.
C. Mechanical Anchor: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchors with strength required for anchor and as tested according to ASTM E 488. Minimum length of eight times diameter.
D. Adhesive Anchor: Drilled-in and capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide anchor bolts and hardware with zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

1.3 APPLICATIONS

A. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static and seismic loads within specified loading limits.

1.4 SEISMIC-RESTRAINT DEVICE INSTALLATION

A. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.
B. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.
C. Drilled-in Anchors:
   1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
   2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
   3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
   4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
   5. Set anchors to manufacturer's recommended torque, using a torque wrench.
   6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.

1.5 ADJUSTING

A. Adjust isolators after isolated equipment is at operating weight.
B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.
C. Adjust active height of spring isolators.
D. Adjust restraints to permit free movement of equipment within normal mode of operation.

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

1.1 INSTALLATION

A. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
B. Apply identification devices to surfaces that require finish after completing finish work.
C. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
D. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
E. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trenchexceeds 16 inches (400 mm) overall.

1.2 IDENTIFICATION SCHEDULE

A. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
   1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder, and branch-circuit conductors.
      a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
      b. Colors for 120/240-V Circuits:
         1) Phase A: Black.
         2) Phase B: Red.
         3) Neutral: White with colored stripe to match associated phase
         4) Ground: Green
B. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.
C. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
   1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
   2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
   3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.
D. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.
E. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.
F. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive warning labels.
   1. Comply with 29 CFR 1910.145.
   2. Identify system voltage with black letters on an orange background.
   3. Apply to exterior of door, cover, or other access.
G. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
   1. Labeling Instructions:
      a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.
      b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
      c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
      d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

SECTION 260923 - LIGHTING CONTROL DEVICES

1.1 SUBMITTALS

A. Product Data: For each type of product.
B. Operation and maintenance data

1.2 OUTDOOR PHOTOELECTRIC SWITCHES

A. Description: Solid state, with SPST dry contacts rated for 1800 VA, to operate connected load, complying with UL 773.
   1. Light-Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range.
   2. Time Delay: Thirty-second minimum, to prevent false operation.
   3. Lightning Arrester: Air-gap type.
   4. Mounting: Twist lock complying with NEMA C136.10, with base.

1.3 INDOOR OCCUPANCY SENSORS

A. General Requirements for Sensors: Wall- or ceiling-mounted, solid-state indoor occupancy sensors with a separate power pack.
   1. Operation: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn them off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
   2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor is powered from the power pack.
   3. Power Pack: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Sensor has 24-V dc, 150-mA, Class 2 power source, as defined by NFPA 70.
   4. Indicator: Digital display, to show when motion is detected during testing and normal operation of sensor.
   5. Bypass Switch: Override the "on" function in case of sensor failure.
   6. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc; turn lights off when selected lighting level is present.
B. PIR Type: Ceiling mounted; detect occupants in coverage area by their heat and movement.
   1. Detector Sensitivity: Detect occurrences of 6-inch- minimum movement of any portion of a human body that presents a target of not less than 36 sq. in..
   2. Detection Coverage (Room): Detect occupancy anywhere in a circular area of 1000 sq. ft. when mounted on a 96-inch- high ceiling.
   3. Detection Coverage (Corridor): Detect occupancy within 90 feet when mounted on a 10-foot- high ceiling.
C. Dual-Technology Type: Ceiling mounted; detect occupants in coverage area using PIR and ultrasonic detection methods. The particular technology or combination of technologies that control on-off functions is selectable in the field by operating controls on unit.
   1. Sensitivity Adjustment: Separate for each sensing technology.
   2. Detector Sensitivity: Detect occurrences of 6-inch- minimum movement of any portion of a human body that presents a target of not less than 36 sq. in., and detect a person of average size and weight moving not less than 12 inches in either a horizontal or a vertical manner at an approximate speed of 12 inches/s.
   3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. when mounted on a 96-inch- high ceiling.

1.4 SWITCHBOX-MOUNTED OCCUPANCY SENSORS

A. General Requirements for Sensors: Automatic-wall-switch occupancy sensor, suitable for mounting in a single gang switchbox.
   1. Operating Ambient Conditions: Dry interior conditions, 32 to 120 deg F.
   2. Switch Rating: Not less than 800-VA fluorescent at 120 V, 1200-VA fluorescent at 277 V, and 800-W incandescent.

1.5 INSTALLATION

A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.
B. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.
   1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.
C. Identify components and power and control wiring according to Section 260553 "Identification for Electrical Systems."

1.6 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:
   1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
   2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

SECTION 260943 - RELAY-BASED LIGHTING CONTROLS

1.1 ACTION SUBMITTALS

A. Product Data: For each type of product.
B. Shop Drawings: For each relay panel and related equipment.

1.2 SYSTEM DESCRIPTION

A. Input signal from field-mounted manual switches, or digital signal sources, shall open or close one or more lighting control relays in the lighting control panels. Any combination of inputs shall be programmable to any number of control relays.
B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
C. Comply with UL 916.

1.3 LIGHTING CONTROL RELAY PANELS

A. Description: Standalone lighting control panel using mechanically latched relays to control lighting and appliances.
B. Lighting Control Panel:
   1. Leviton EZ-Max or equivalent
   2. A single enclosure with incoming lighting branch circuits, control circuits, switching relays, and on-board timing and control unit.
   3. A vertical barrier separating branch circuits from control wiring.
C. Control Unit: Contain the power supply and electronic control for operating and monitoring individual relays.
   1. Timing Unit:
      a. 365-day calendar, astronomical clock, and automatic adjustments for daylight savings and leap year.
   2. Sequencing Control with Override:
   3. Nonvolatile memory shall retain all setup configurations. After a power failure, the controller shall automatically reboot and return to normal system operation, including accurate time of day and date.
D. Relays: Electrically operated, mechanically held single-pole and double-pole switch, rated at 20 A at 277 V. Short-circuit current rating shall be not less than 5 kA. Control shall be three-wire, 24-V ac.
E. Operator Interface:
   1. Integral alphanumeric touchscreen with intuitive drop-down menus to assist in programming.

1.4 MANUAL SWITCHES AND PLATES

A. Push-Button Switches: Modular, digitally addressible, for operating one or more relays and to override automatic controls.
   1. Match color and style specified in Section 262726 "Wiring Devices."
   2. Integral green LED pilot light to indicate when circuit is on.
   3. Internal white LED locator light to illuminate when circuit is off.
B. Wall Plates: Single and multigang plates as specified in Section 262726 "Wiring Devices."
C. Legend: Engraved or permanently silk-screened on wall plate where indicated. Use designations indicated on Drawings.

1.5 EXAMINATION

A. Examine panels before installation. Reject panels that are damaged or rusted or have been subjected to water saturation.

1.6 PANEL INSTALLATION

A. Mount panel cabinet plumb and rigid without distortion of box.
B. Install filler plates in unused spaces.

1.7 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

1.8 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain the control unit and operator interface.

SECTION 262416 - PANELBOARDS

1.1 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.
B. Shop Drawings: For each panelboard and related equipment.

1.2 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.3 GENERAL REQUIREMENTS FOR PANELBOARDS

A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Section 260548 "Vibration and Seismic Controls for Electrical Systems."
B. Enclosures: Flush- and surface-mounted cabinets.
   1. Rated for environmental conditions at installed location.
   2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
   3. Directory Card: Inside panelboard door, mounted in transparent card holder.
C. Phase, Neutral, and Ground Buses: Tin-plated aluminum or Hard-drawn copper, 98 percent conductivity.
D. Conductor Connectors: Suitable for use with conductor material and sizes.
   1. Material: Tin-plated aluminum or Hard-drawn copper, 98 percent conductivity.
   2. Mechanical type.
   3. Subfeed (Double) Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
E. Service Equipment Label: NRTL labeled for use as service equipment for panelboards with one or more main service disconnecting and overcurrent protective devices.
F. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
G. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

1.4 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
B. Branch Overcurrent Protective Devices: Plug-in or Bolt-on circuit breakers, replaceable without disturbing adjacent units.
C. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

1.5 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
   1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
   2. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
   3. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
      a. Standard frame sizes, trip ratings, and number of poles.
      b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
      c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
      d. Shunt Trip: 120 or 24-V (per system requirements) trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.
      e. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.

1.6 INSTALLATION

A. Comply with mounting and anchoring requirements specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."
B. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
C. Install overcurrent protective devices and controllers not already factory installed.
   1. Set field-adjustable, circuit-breaker trip ranges.
D. Install filler plates in unused spaces.
E. Arrange conductors in gutters into groups and bundle and wrap with wire ties.
F. Comply with NECA 1.

1.7 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Section 260553 "Identification for Electrical Systems."
B. Create a directory to indicate installed circuit loads and incorporating Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

SECTION 262713 - ELECTRICITY METERING

1.1 SUMMARY

A. Section includes equipment for electricity metering by utility company.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.
B. Shop Drawings: Dimensioned plans and sections or elevation layouts and wiring diagrams.
C. Field quality-control reports.
D. Operation and Maintenance Data.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.4 EQUIPMENT FOR ELECTRICITY METERING BY UTILITY COMPANY

A. Meters will be furnished by utility company.
B. Current-Transformer Cabinets: Comply with requirements of electrical-power utility company.
C. Meter Sockets: Comply with requirements of electrical-power utility company.

1.5 INSTALLATION

A. Comply with equipment installation requirements in NECA 1.
B. Install meters furnished by utility company. Install raceways and equipment according to utility company's written requirements. Provide empty conduits for metering leads and extend grounding connections as required by utility company.
C. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
   1. Series Combination Warning Label: Self-adhesive type, with text as required by NFPA 70.

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Project Name
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BUILDING ADDITION

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ELECTRICAL SPECIFICATIONS

Sheet Number
EE002

ELECTRICAL SPECIFICATIONS

262726 - 1SECTION 262726 - WIRING DEVICES

1.1 ADMINISTRATIVE REQUIREMENTS
- A. Coordination:
  - 1. Receptacles for Owner-Furnished Equipment: Match plug configurations.

1.2 GENERAL WIRING-DEVICE REQUIREMENTS
- A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.3 STRAIGHT-BLADE RECEPTACLES
- A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.
- B. Isolated-Ground, Duplex Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.
  - 1. Description: Straight blade; equipment grounding contacts shall be connected only to the green grounding screw terminal of the device and with inherent electrical isolation from mounting strap. Isolation shall be integral to receptacle construction and not dependent on removable parts.

1.4 GFCI RECEPTACLES
- A. General Description:
  - 1. Straight blade, feed-through type.
  - 2. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596.
  - 3. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection.
- B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

1.5 LOW VOLTAGE SWITCHES
- A. Push-Button Switches: Modular, analog interface, for operating one or more relays and to work in conjunction with automatic controls.
  - 1. Match color and style specified in Section 262726 "Wiring Devices."
  - 2. Integral green LED pilot light to indicate when circuit is on.
  - 3. Internal white LED locator light to illuminate when circuit is off.
- B. Legend: Engraved or permanently silk-screened on wall plate. Use designations indicating load controlled.
- C. 24-volt; Powered from associated power pack serving controlled switching group

1.6 LOW VOLTAGE WALL-BOX DIMMERS
- A. Push-Button Switches: Modular, analog interface, for operating one or more relays and to work in conjunction with automatic controls.
  - 1. Match color and style specified in Section 262726 "Wiring Devices."
  - 2. Integral green LED pilot light to indicate when circuit is on.
  - 3. Internal white LED locator light to illuminate when circuit is off.
- B. Legend: Engraved or permanently silk-screened on wall plate. Use designations indicating load controlled.
- C. 24-volt; Powered from associated power pack serving controlled switching group
- D. Control: Continuously adjustable; with single- or multi-location connections.
- E. LED Lamp Dimmer Switches: Modular, compatible with dimmer drivers; trim potentiometer to adjust low-end dimming; dimmer-driver combination capable of consistent dimming with low end not greater than 1 percent of full brightness.

1.7 WALL PLATES
- A. Single and combination types shall match corresponding wiring devices.
  - 1. Plate-Securing Screws: Metal with head color to match plate finish.
  - 2. Material for Finished Spaces: 0.035-inch- thick, satin-finished, Type 302 stainless steel.
  - 3. Material for Unfinished Spaces: Galvanized steel.
  - 4. Material for Damp Locations: Thermoplastic or Cast aluminum with spring-loaded lift cover, and listed and labeled for use in wet and damp locations.
- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant, die-cast aluminum or thermoplastic with lockable cover.

1.8 FINISHES
- A. Device Color:
  - 1. Wiring Devices Connected to Normal Power System: As selected by owner unless otherwise indicated or required by NFPA 70 or device listing.
  - 2. Isolated Ground Devices: Orange.
- B. Wall Plate Color: For plastic covers, match device color.

1.9 INSTALLATION
- A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.
- B. Conductors:
  - 1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
  - 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
  - 3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
  - 4. Existing Conductors:
    - a. Cut back and pigtail, or replace all damaged conductors.
    - b. Straighten conductors that remain and remove corrosion and foreign matter.
    - c. Pigtailing existing conductors is permitted, provided the outlet box is large enough.
- C. Device Installation:
  - 1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
  - 2. Connect devices to branch circuits using pigtails that are not less than 12 inches in length.
  - 3. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
- D. Dimmers:
  - 1. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device listing conditions in the written instructions.

SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

1.1 QUALITY ASSURANCE
- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.

1.2 NONFUSIBLE SWITCHES
- A. Type GD, General Duty, Single Throw, 600 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.
- B. Accessories:
  - 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
  - 2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
  - 3. Lugs: Suitable for number, size, and conductor material.

1.3 MOLDED-CASE CIRCUIT BREAKERS
- A. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.
- B. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
- C. Features and Accessories:
  - 1. Standard frame sizes, trip ratings, and number of poles.
  - 2. Lugs: Suitable for number, size, trip ratings, and conductor material.
  - 3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.

1.4 INSTALLATION
- A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- B. Comply with NECA 1.

1.5 IDENTIFICATION
- A. Comply with requirements in Section 260553 "Identification for Electrical Systems."

SECTION 262913 - ENCLOSED CONTROLLERS

1.1 SUBMITTALS
- A. Operation and maintenance data.

1.2 FULL-VOLTAGE CONTROLLERS
- A. General Requirements for Full-Voltage Controllers: Comply with NEMA ICS 2, general purpose, Class A.
- B. Motor-Starting Switches: "Quick-make, quick-break" toggle or push-button action; marked to show whether unit is off or on.
  - 1. Configuration: Nonreversing.
  - 2. Surface mounting.
  - 3. Pilot light.
- C. Fractional Horsepower Manual Controllers: "Quick-make, quick-break" toggle or push-button action; marked to show whether unit is off, on, or tripped.
  - 1. Configuration: Nonreversing.
  - 2. Overload Relays: Inverse-time-current characteristics; NEMA ICS 2, Class 10 tripping characteristics; heaters matched to nameplate full-load current of actual protected motor; external reset push button; bimetallic type or melting alloy type.
  - 3. Surface mounting.
  - 4. Pilot light.

1.3 INSTALLATION
- A. Wall-Mounted Controllers: Install enclosed controllers on walls with tops at uniform height, and with disconnect operating handles not higher than 79 inches (2006 mm) above finished floor, unless otherwise indicated, and by bolting units to wall or mounting on lightweight structural-steel channels bolted to wall. For controllers not at walls, provide freestanding racks complying with Section 260529 "Hangers and Supports for Electrical Systems."
- B. Seismic Bracing: Comply with requirements specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."
- C. Install heaters in thermal overload relays. Select heaters based on actual nameplate full-load amperes after motors have been installed.
- D. Identify enclosed controllers, components, and control wiring. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
  - 1. Label each enclosure with engraved nameplate.

1.4 ADJUSTING
- A. Set field-adjustable switches and overload-relay pickup and trip ranges.

SECTION 265100 - INTERIOR LIGHTING

1.1 ACTION SUBMITTALS
- A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, and finishes.

1.2 QUALITY ASSURANCE
- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.

1.3 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS
- A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.
- B. Metal Parts: Free of burrs and sharp corners and edges.
- C. Diffusers and Globes:
  - 1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
    - a. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
    - b. UV stabilized.

1.4 LED LUMINAIRES
- A. Solid State Drivers and LED: Comply with DOE LM 79
  - 1. Total Harmonic Distortion Rating: Less than 10 percent
  - 2. Transient Voltage protection
  - 3. Power factor: 0.90 or higher
  - 4. Temperatures: Minus 40 deg F (minus 40 deg C) and higher
  - 5. Heat sink to remove heat from circuits
  - 6. L70 compliant to 70,000 hours minimum
  - 7. Color Rendering Index: 80 CRI minimum
  - 8. Dimmable
    - a. Dimming Range: 100 to 1 percent of rated lamp lumens
    - b. Input watts: Can be reduced to 20 percent of normal

1.5 EMERGENCY POWER UNIT
- A. Internal Type: Self-contained, modular, battery-inverter unit, factory mounted within lighting fixture body and compatible with ballast or driver. Comply with UL 924.
  - 1. Emergency Connection: Operate one lamp(s) continuously at an output of 1100 lumens each. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast or driver.
  - 2. Nightlight Connection: Operate one lamp continuously.
  - 3. Test Push Button and Indicator Light:
  - 4. Battery: Sealed, maintenance-free, nickel-cadmium type.
  - 5. Charger:
  - 6. Integral Self-Test:

1.6 EXIT SIGNS
- A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.
- B. Internally Lighted Signs:
  - 1. Lamps for AC Operation: LEDs, 50,000 hours minimum rated lamp life.
  - 2. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.

1.7 LIGHTING FIXTURE SUPPORT COMPONENTS
- A. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage.
- B. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage.

1.8 INSTALLATION
- A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.
- B. Comply with NFPA 70 for minimum fixture supports.

1.9 FIELD QUALITY CONTROL
- A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

SECTION 270528 - PATHWAYS FOR COMMUNICATIONS SYSTEMS

1.1 ACTION SUBMITTALS
- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of cable tray.
- C. Delegated-Design Submittal: For seismic restraints.

1.2 METAL CONDUITS AND FITTINGS
- A. See section 260533 “Raceways and boxes for Electrical Systems”.

1.3 BOXES, ENCLOSURES, AND CABINETS
- A. See section 260533 “Raceways and boxes for Electrical Systems” unless otherwise indicated below.
- B. Device Box Dimensions: 4 inches square by 2-1/2 inches deep.

1.4 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND CABLING
- A. See section 260533 “Raceways and boxes for Electrical Systems”.

1.5 WIRE-BASKET CABLE TRAYS
- A. Description:
  - 1. Configuration: Wires are formed into a standard 2-by-4-inch wire mesh pattern with intersecting wires welded together. Mesh sections must have at least one bottom longitudinal wire along entire length of section.
  - 2. Materials: High-strength-steel longitudinal wires with no bends.
  - 3. Safety Provisions: Wire ends along wire-basket sides (flanges) rounded during manufacturing to maintain integrity of cables and installer safety.
  - 4. Sizes:
    - a. Straight sections shall be furnished in standard 118-inch lengths.
    - b. Wire-Basket Depth: 4-inch usable loading depth by 12 inches wide.
  - 5. Connector Assemblies: Bolt welded to plate shaped to fit around adjoining tray wires and mating plate. Mechanically joins adjacent tray wires to splice sections together or to create horizontal fittings.
  - 6. Connector Assembly Capacity: Splices located within support span shall not diminish rated loading capacity of cable tray.
  - 7. Hardware and Fasteners: ASTM F 593 and ASTM F 594 stainless steel, Type 316.

1.6 PATHWAY APPLICATION
- A. See section 260533 “Raceways and boxes for Electrical Systems” unless otherwise indicated below.
- B. Indoors: Apply pathway products as specified below unless otherwise indicated:
- C. Minimum Pathway Size: 1 inch.

1.7 INSTALLATION
- A. See section 260533 “Raceways and boxes for Electrical Systems” unless otherwise indicated below.
- B. Install no more than the equivalent of two 90-degree bends in any pathway run. Support within 12 inches of changes in direction. Utilize long radius ells for all optical-fiber cables.
- C. Stub-ups to Above Recessed Ceilings:
  - 1. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
- D. Coat field-cut threads on PVC-coated pathway with a corrosion-preventing conductive compound prior to assembly.
- E. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install insulated bushings on conduits terminated with locknuts.
- F. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.
- G. Spare Pathways: Install pull wires in empty pathways. Cap underground pathways designated as spare above grade alongside pathways in use.
- H. Pathways for Communications Cable: Install pathways as follows:
  - 1. 1-Inch Trade Size and Larger: Install pathways in maximum lengths of 75 feet.
  - 2. Install with a maximum of two 90-degree bends or equivalent for each length of pathway unless Drawings show stricter requirements.

1.8 INSTALLATION OF UNDERGROUND CONDUIT
- A. See section 260533 “Raceways and boxes for Electrical Systems” unless otherwise indicated below.

1.9 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES
- A. See section 260533 “Raceways and boxes for Electrical Systems” unless otherwise indicated below.

SECTION 271116 - COMMUNICATIONS RACKS, FRAMES, AND ENCLOSURES

1.1 DEFINITIONS
- A. Access Provider: An operator that provides a circuit path or facility between the service provider and user. An access provider can also be a service provider.
- B. Service Provider: The operator of a telecommunications transmission service delivered through access provider facilities.

1.2 SUBMITTALS
- A. Product Data: For each type of product.
- B. Shop Drawings: For communications racks, frames, and enclosures. Include plans, elevations, sections, details, and attachments to other work.

1.3 PERFORMANCE REQUIREMENTS
- A. Seismic Performance: Equipment shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
  - 1. The term "withstand" means "the unit will remain in place without separation of any parts when subjected to the seismic forces specified."
- B. UL listed.
- C. RoHS compliant.

1.4 19-INCH EQUIPMENT RACKS
- A. Description: Two- and four- post racks with threaded rails designed for mounting telecommunications equipment. Width is compatible with EIA/ECIA 310-E, 19-inch (482.6-mm) equipment mounting with an opening of 17.72-inches (450-mm) between rails.
- B. General Requirements:
  - 1. Frames: Modular units designed for telecommunications terminal support and coordinated with dimensions of units to be supported.
  - 2. Material: Extruded aluminum.
  - 3. Finish: Manufacturer's standard, baked-polyester powder coat.
  - 4. Color: Black.
- C. Wall-Mounted Racks:
  - 1. Height: As indicated on Drawings.
  - 2. Depth: 23 inches (584.2 mm).
  - 3. Load Rating: 150 lb (65 kg).
  - 4. Wall Attachment: Four mounting holes.
  - 5. Equipment Access: Integral swing.
- D. Cable Management:
  - 1. Metal, with integral wire retaining fingers.
  - 2. Baked-polyester powder coat finish.
  - 3. Vertical cable management panels shall have front and rear channels, with covers.
  - 4. Provide horizontal crossover cable manager at the top of each relay rack, with a minimum height of two rack units each.

1.5 POWER STRIPS
- A. Power Strips: Comply with UL 1363.
  - 1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
  - 2. Rack mounting
  - 3. Height: 1 RU.
  - 4. Housing: Metal.
  - 5. Six, 20-A, 120-V ac, NEMA WD 6, Configuration 5-20R receptacles.
  - 6. LED indicator lights for power and protection status.
  - 7. LED indicator lights for reverse polarity and open outlet ground.
  - 8. Circuit Breaker and Thermal Fusing: When protection is lost, circuit opens and cannot be reset.
  - 9. Cord connected with 15-foot (4.5-m) line cord.
  - 10. Rocker-type on-off switch, illuminated when in on position.
  - 11. Surge Protection: UL 1449, Type 3.
    - a. Maximum Surge Current, Line to Neutral: 72 kA.
    - b. Protection modes shall be line to neutral, line to ground, and neutral to ground.
    - c. UL 1449 Voltage Protection Rating for line to neutral and line to ground shall be 600 V and for neutral to ground.

1.6 GROUNDING
- A. Rack and Cabinet TGBs: Rectangular bars of hard-drawn solid copper, accepting conductors ranging from No. 14 to No. 2/0 AWG, NRTL listed as complying with UL 467, and complying with TIA-606-B. Predrilling shall be with holes for use with lugs specified in this Section.

1.7 LABELING
- A. Comply with TIA-606-B and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

1.8 INSTALLATION
- A. Comply with NECA 1.
- B. Comply with BICSI TDMM for layout of communications equipment spaces.
- C. Comply with BICSI ITSIMM for installation of communications equipment spaces.
- D. Bundle, lace, and train conductors and cables to terminal points without exceeding manufacturer's limitations on bending radii. Install lacing bars and distribution spools.
- E. Coordinate layout and installation of communications equipment in racks and room. Coordinate service entrance configuration with service provider.
- F. Coordinate location of power raceways and receptacles with locations of communications equipment requiring electrical power to operate.

1.9 GROUNDING
- A. Comply with NECA/BICSI 607.
- B. Install grounding according to BICSI ITSIMM, "Bonding, Grounding (Earthing) and Electrical Protection" Ch.
- C. Locate TGB to minimize length of bonding conductors. Fasten to wall, allowing at least 2 inches (50 mm) of clearance behind TGB. Connect TGB with a minimum No. 4 AWG grounding electrode conductor from TGB to suitable electrical building ground. Connect rack TGB to near TGB or the TMGB.
  - 1. Bond the shield of shielded cable to patch panel, and bond patch panel to TGB or TMGB.

1.10 IDENTIFICATION
- A. Coordinate system components, wiring, and cabling complying with TIA-606-B. Comply with requirements in Section 270553 "Identification for Electrical Systems."
- B. Comply with requirements in Section 099123 "Interior Painting" for painting backboards. For fire-resistant plywood, do not paint over manufacturer's label.
- C. Labels shall be machine printed. Type shall be [**1/8 inch (3 mm)**] [**3/16 inch (5 mm)**] [**1/4 inch (6 mm)**] in height.

SECTION 271323 - COMMUNICATIONS OPTICAL FIBER BACKBONE CABLING

1.1 COORDINATION
- A. Coordinate layout and installation of telecommunications pathways and cabling with Owner's telecommunications and LAN equipment and service suppliers.

1.2 SUBMITTALS
- A. Product Data:
  - 1. For each type of product.
- B. Maintenance Data: For optical fiber cable, splices, and connectors.

1.3 TYPE OFNR OPTICAL FIBER CABLE
- A. Description: This category covers jacketed optical fiber cable for use as risers in vertical runs in shaft or between floors within buildings in accordance with Article 770 of NFPA 70 containing no electrically conductive materials.
- B. Performance Criteria:
  - 1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
  - 2. Listing Criteria: UL CCN QAYK; including UL 1651.
  - 3. General Characteristics:
    - a. Performance: TIA-568.3.
    - b. Inside Plant Mechanical Properties: ICEA S-83-596.
    - c. Inside-Outside Plant Mechanical Properties: ICEA S-104-696.
    - d. Jacket:
      - 1) Cable cordage jacket, fiber, unit, and group color in accordance with TIA-598.
      - 2) Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inch (1 m).
- C. Type OFNR, Designation OS1, Inside-Outside Plant, Single-Mode Optical Fiber Cable:
  - 1. Additional Characteristics:
    - a. Construction: TIA-492CAAA; 9 µm core diameter, 125 µm cladding diameter.
    - b. Minimum Overfilled Modal Bandwidth-Length Product: 500 MHz-km at 850 nm wavelength; 500 MHz-km at 1300 nm wavelength.
  - 2. Options:
    - a. Configuration:
      - 1) 2-fiber, single loose tube, optical fiber cable.
    - b. Maximum Attenuation: 0.5 dB/km at 1310 nm wavelength; 0.5 dB/km at 1550 nm wavelength.
    - c. Jacket Color: Yellow.

1.4 OPTICAL FIBER CABLE HARDWARE
- A. Performance Criteria:
  - 1. Fiber Optic Connector Intermateability Standard (FOCIS) specifications of TIA-604 series.
  - 2. TIA-568.3.
- B. Cross-Connects and Patch Panels: Modular panels housing multiple-numbered, duplex cable connectors.
  - 1. Number of Connectors per Field: One for each fiber of cable or cables assigned to field, plus spares and blank positions adequate to suit specified expansion criteria.
- C. Patch Cords: Factory-made, dual-fiber cables in 36 inch (900 mm) lengths.
- D. Connector Type: Type LC complying with TIA-604-10, connectors.
- E. Plugs and Plug Assemblies:
  - 1. Male; color-coded modular telecommunications connector designed for termination of single optical fiber cable.
  - 2. Insertion loss not more than 0.25 dB.
  - 3. Marked to indicate transmission performance.
- F. Jacks and Jack Assemblies:
  - 1. Female; quick-connect, simplex and duplex; fixed telecommunications connector designed for termination of single optical fiber cable.
  - 2. Insertion loss not more than 0.75 dB.
  - 3. Marked to indicate transmission performance.
  - 4. Designed to snap-in to patch panel or faceplate.

1.5 SOURCE QUALITY CONTROL
- A. Factory Tests and Inspections:
  - 1. Test and inspect multimode optical fiber cables, by, or under supervision of, qualified electrical testing laboratory recognized by authorities having jurisdiction, in accordance with TIA-526-14 and TIA-568.3 before delivering to site. Affix label with name and date of manufacturer's certification of system compliance.
  - 2. Test and inspect pre-terminated optical fiber cable assemblies, by, or under supervision of, qualified electrical testing laboratory recognized by authorities having jurisdiction, in accordance with TIA-526-14 and TIA-568.3 before delivering to site. Affix label with name and date of manufacturer's certification of system compliance.
- B. Nonconforming Work:
  - 1. Cables that do not pass tests and inspections will be considered defective.

1.6 PREPARATION
- A. Coordinate backbone cabling with protectors and demarcation point provided by communications service provider.

1.7 SELECTION OF OPTICAL FIBER TYPE
- A. Installed in Vertical Shaft or Floor-to-Floor Riser:
  - 1. Nonconductive:
    - a. Type OFNR.

1.8 INSTALLATION OF OPTICAL FIBER BACKBONE CABLES
- A. Optical fiber backbone cabling system must provide interconnections between communications equipment rooms, main terminal space, and entrance facilities in telecommunications cabling system structure. Cabling system consists of backbone cables, intermediate and main cross-connects, mechanical terminations, and patch cords or jumpers used for backbone-to-backbone cross-connection.
- B. Backbone cabling cross-connects may be located in communications equipment rooms or at entrance facilities. Bridged taps and splitters may not be used as part of backbone cabling.
- C. Comply with BICSI N1, NECA NEIS 1, and NECA NEIS 301.
- D. Backbone cabling system must comply with transmission standards in TIA-568.1.
- E. Telecommunications Pathways and Spaces: Comply with TIA-569.
- F. Wiring Methods:
  - 1. In Raceway: Install cables in raceways and cable trays except within consoles, cabinets, desks, and counters. Conceal raceway and cables except in unfinished spaces.
    - a. Install plenum cable in environmental airspaces, including plenum ceilings.
    - b. Comply with requirements for pathways specified in Section 270528 "Pathways for Communications Systems."
  - 2. In Enclosures: Bundle, lace, and train cables within enclosures. Connect to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.
- G. Optical Fiber Cabling Installation:
  - 1. Comply with TIA-568.1 and TIA-568.3.
  - 2. Comply with BICSI ITSIMM, Ch. 6, "Cable Termination Practices."
  - 3. Terminate all cables; no cable may contain unterminated elements. Make terminations only at indicated outlets, terminals, cross-connects, and patch panels.
  - 4. Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inch (760 mm) and not more than 6 inch (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
  - 5. Install lacing bars to restrain cables, to prevent straining connections, and to prevent bending cables to smaller radii than minimums recommended by manufacturer.
  - 6. Bundle, lace, and train cable to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIMM, "Cabling Termination Practices" Chapter. Use lacing bars and distribution spools.
  - 7. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
  - 8. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps may not be used for heating.
  - 9. In communications equipment room, provide 10 ft (3 m) long service loop on each end of cable.
  - 10. Pulling Cable: Comply with BICSI ITSIMM, Ch. 4, "Pulling Cable." Monitor cable pull tensions.
  - 11. Cable may be terminated on connecting hardware that is rack or cabinet mounted.
- H. Group connecting hardware for cables into separate logical fields.

1.9 IDENTIFICATION
- A. Identify system components, wiring, and cabling complying with TIA-606. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- B. Cable and Wire Identification:
  - 1. Label each cable within 4 inch (100 mm) of each termination and tap, where it is accessible in cabinet or junction or outlet box, and elsewhere as indicated.
  - 2. Each wire connected to building-mounted devices is not required to be numbered at device if color of wire is consistent with associated wire connected and numbered within panel or cabinet.
  - 3. Exposed Cables and Cables in Cable Trays and Wire Troughs: Label each cable at intervals not exceeding 15 ft (4.5 m).
  - 4. Label each unit and field within distribution racks and frames.
  - 5. Identification within Connector Fields in Equipment Rooms and Wiring Closets: Label each connector and each discrete unit of cable-terminating and connecting hardware. Where similar jacks and plugs are used for both voice and data communication cabling, use different color for jacks and plugs of each service.
- C. Labels must be preprinted or computer-printed type with printing area and font color that contrasts with cable jacket color but still complies with requirements in TIA 606, for the following:
  - 1. Flexible vinyl or polyester that flexes as cables are bent.

1.10 FIELD QUALITY CONTROL
- A. Tests and Inspections:
  - 1. Visually inspect optical fiber jacket materials for qualified electrical testing laboratory certification markings. Inspect cabling terminations in communications equipment rooms for compliance with color-coding for pin assignments, and inspect cabling connections for compliance with TIA-568.1.
  - 2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
  - 3. Optical Fiber Cable Tests:
    - a. Link End-to-End Attenuation Tests:
      - 1) Horizontal and multimode backbone link measurements: Test at 850 or 1300 nm in one direction in accordance with TIA-526-14, Method B, One Reference Jumper.
      - 2) Attenuation test results for backbone links must be less than 2.0 dB. Attenuation test results must be less than those calculated in accordance with equation in TIA-568.1.
- B. Nonconforming Work:
  - 1. Cables will be considered defective if they do not pass tests and inspections.
  - 2. Remove and replace defective cables and retest.

SECTION 271500 - COMMUNICATIONS CABLING

1.1 PERFORMANCE REQUIREMENTS
- A. General Performance: Horizontal cabling system shall comply with transmission standards in TIA/EIA-568-B.1, when tested according to test procedures of this standard.

1.2 QUALITY ASSURANCE
- A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Flame-Spread Index: 25 or less.
  - 2. Smoke-Developed Index: 50 or less.
- B. Telecommunications Pathways and Spaces: Comply with TIA/EIA-569-A.
- C. Grounding: Comply with ANSI-J-STD-607-A.

1.3 DELIVERY, STORAGE, AND HANDLING
- A. Test cables upon receipt at Project site. Test each pair of UTP cable for open and short circuits.

1.4 PATHWAYS
- A. Cable Support: NRTL labeled for support of Category 6A cabling, designed to prevent degradation of cable performance and pinch points that could damage cable.
  - 1. Support brackets with cable tie slots for fastening cable ties to brackets.
  - 2. Lacing bars, spools, J-hooks, and D-rings.
  - 3. Straps and other devices.
- B. Conduit and Boxes: Comply with requirements in Division 26 Section "Raceway and Boxes for Electrical Systems." Flexible metal conduit shall not be used.
  - 1. Outlet boxes shall be no smaller than 2 inches wide, 3 inches high, and 2-1/2 inches deep.

1.5 LABELING
- A. Comply with TIA/EIA-606-A and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

1.6 GROUNDING
- A. Comply with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems" for grounding conductors and connectors.

1.7 BACKBOARDS
- A. Backboards: Plywood, fire-retardant treated, 3/4 by 48 by 96 inches.

1.8 UTP CABLE
- A. Description: 100-ohm, 4-pair UTP, covered with a blue thermoplastic jacket.
  - 1. Comply with ICEA S-90-661 for mechanical properties.
  - 2. Comply with TIA/EIA-568-B.1 for performance specifications.
  - 3. Comply with TIA/EIA-568-B.2, Category 6A.
  - 4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444 and NFPA 70 for the following types:
    - a. Communications, General Purpose: Type CM or CMG; or MPP, CMP, MPR, CMR, MP, or MPG.
    - b. Communications, Plenum Rated: Type CMP or MPP, complying with NFPA 262.

1.9 UTP CABLE HARDWARE
- A. General Requirements for Cable Connecting Hardware: Comply with TIA/EIA-568-B.2, IDC type, with modules designed for punch-down caps or tools. Cables shall be terminated with connecting hardware of same category or higher.
- B. Connecting Blocks: 110-style IDC for Category 6A.
- C. Cross-Connect: Modular array of connecting blocks arranged to terminate building cables and permit interconnection between cables.
  - 1. Number of Terminals per Field: One for each conductor in assigned cables.
- D. Patch Panel: Modular panels housing multiple-numbered jack units with IDC-type connectors at each jack for permanent termination of pair groups of installed cables.
  - 1. Number of Jacks per Field: One for each four-pair UTP cable indicated.
- E. Jacks and Jack Assemblies: Modular, color-coded, eight-position modular receptacle units with integral IDC-type terminals.
- F. Patch Cords: Factory-made, four-pair cables in varying lengths; terminated with eight-position modular plug at each end.
  - 1. Patch cords shall have bend-relief-compliant boots and color-coded icons to ensure Category 6A performance. Patch cords shall have latch guards to protect against snagging.

1.10 COAXIAL CABLE
- A. General Coaxial Cable Requirements: Broadband type, recommended by cable manufacturer specifically for broadband data transmission applications. Coaxial cable and accessories shall have 75-ohm nominal impedance with a return loss of 20 dB maximum from 7 to 806 MHz.
- B. RG-6/U (Plenum Rated): NFPA 70, Type CMP.
- C. Coaxial-Cable Connectors: Type BNC, 75 ohms.

1.11 TELECOMMUNICATIONS OUTLET/CONNECTORS
- A. Jacks: 100-ohm, balanced, twisted-pair connector; four-pair, eight-position modular. Comply with TIA/EIA-568-B.1.
- B. Workstation Outlets: Four and six-port-connector assemblies mounted in single faceplate.
  - 1. For use with snap-in jacks accommodating any combination of UTP work area cords.
  - 2. Legend: Snap-in, clear-label covers and machine-printed paper inserts.

1.12 IDENTIFICATION PRODUCTS
- A. Comply with TIA/EIA-606-A and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.
- B. Comply with requirements in Division 26 Section "Identification for Electrical Systems."

1.13 WIRING METHODS
- A. Wiring Method: Install cables in raceways and cable trays except within consoles, cabinets, desks, and counters and except in accessible ceiling spaces, in attics, and in gypsum board partitions where unenclosed wiring method may be used. Conceal raceway and cables except in unfinished spaces.
  - 1. Install plenum cable in environmental air spaces, including plenum ceilings.
  - 2. Comply with requirements for raceways and boxes specified in Division 26 Section "Raceway and Boxes for Electrical Systems."
- B. Wiring within Enclosures: Bundle, lace, and train cables to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

1.14 INSTALLATION OF PATHWAYS
- A. Comply with TIA/EIA-569-A for pull-box sizing and length of conduit and number of bends between pull points.
- B. Comply with requirements in Division 26 Section "Raceway and Boxes for Electrical Systems" for installation of conduits and wireways.
- C. Install manufactured conduit sweeps and long-radius elbows.
- D. Pathway Installation in Communications Equipment Rooms:
  - 1. Position conduit ends adjacent to a corner on backboard where a single piece of plywood is installed, or in the corner of room where multiple sheets of plywood are installed around perimeter walls of room.
  - 2. Secure conduits to backboard when entering room from overhead.
  - 3. Install metal conduits with grounding bushings and connect with grounding conductor to grounding system.

1.15 INSTALLATION OF CABLES
- A. Comply with NECA 1.
- B. General Requirements for Cabling:
  - 1. Comply with TIA/EIA-568-B.1.
  - 2. Comply with BICSI ITSIM, Ch. 6, "Cable Termination Practices."
  - 3. Install 110-style IDC termination hardware unless otherwise indicated.
  - 4. Terminate conductors; no cable shall contain unterminated elements.
  - 5. Pulling Cable: Comply with BICSI ITSIM, Ch. 4, "Pulling Cable." Monitor cable pull tensions.
- C. UTP Cable Installation:
  - 1. Comply with TIA/EIA-568-B.2.
- D. Separation from EMI Sources:
  - 1. Comply with BICSI TDMM and TIA/EIA-569-A for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.

1.16 IDENTIFICATION
- A. Identify system components, wiring, and cabling complying with TIA/EIA-606-A. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
  - 1. Color-code cross-connect fields. Apply colors to voice and data service backboards, connections, covers, and labels.
- B. Labels shall be preprinted or computer-printed type with printing area and font color that contrasts with cable jacket color but still complies with requirements in TIA/EIA-606-A.

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Project Name
JONES AND ASSOCIATES
BUILDING ADDITION

Issued

No.	Date	Description
1	09.21.23	PLAN REVIEW
2	02.29.24	PLAN REVIEW

Revision

No.	Date	Description

SAA Project No. 2022-03

Drawing Title
ELECTRICAL SPECIFICATIONS

Sheet Number
EE003

TIME: 15 OCT 2013 - 12:25PM DAKOT - T:\JOBS\2023068 JONES ASSOCIATES EXPANSION\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECT\SHEETS\EE003 ELECTRICAL SPECIFICATIONS.DWG
LAST SAVED: 01 Sep 23

SHEET KEYED NOTES

1. UPGRADE MODULAR METERING AND ASSOCIATED STAND PER ELECTRICAL ONE-LINE DIAGRAM.
2. PROVIDE NEW FEEDER AS SHOWN ON EP601 - ELECTRICAL ONE-LINE DIAGRAM.
3. CUT, PATCH AND REPAIR OR BORE UNDER EXISTING HARDSCAPE FOR NEW FEEDER INSTALLATION.
4. PROVIDE NEW DISCONNECTS. SEE EP601 - ELECTRICAL ONE-LINE DIAGRAM. VERIFY LOCATION ON BUILDING WITH OWNER AND FIELD CONDITIONS.

GENERAL SHEET NOTES

1. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
2. CIRCUIT ROUTING IS SCHEMATIC UNLESS OTHERWISE NOTED.
3. COORDINATE ALL UTILITY INSTALLATIONS WITH LOCAL UTILITY REPS.
4. COMPLY WITH ALL UTILITY REQUIREMENTS FOR NEW UTILITY INSTALLATIONS.

1 ELECTRICAL SITE PLAN
Scale: 1"=20'-0"

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Drawing Title

ELECTRICAL SITE PLAN

Sheet Number

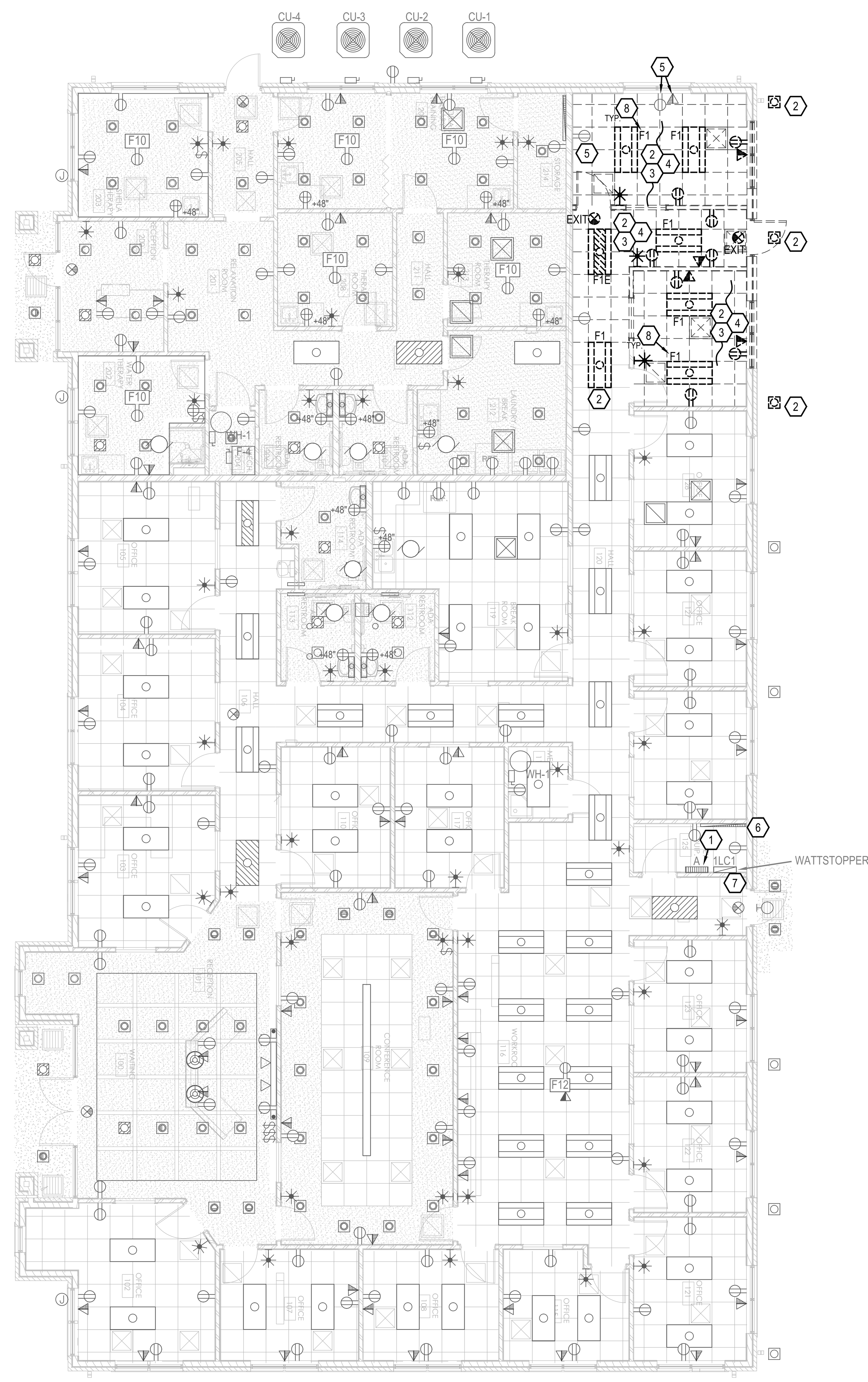
ES101

GENERAL SHEET NOTES

1. DEMOLITION PLAN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES DOWNSTREAM OF ITEMS TO BE REMOVED.
4. WHERE DEVICES ARE SHOWN TO BE REMOVED, COMPLETELY REMOVE ALL RACEWAYS, BOXES AND CONDUCTORS TO PANEL OR TO FIRST J-BOX TO REMAIN ACTIVE IN CIRCUIT PATH.

SHEET KEYED NOTES

1. EXISTING DISTRIBUTION TO REMAIN.
2. REMOVE EXISTING FIXTURES AND/OR LIGHTING CONTROL AS INDICATED.
3. REMOVE EXISTING OUTLETS AS INDICATED.
4. REMOVE EXISTING COMMUNICATIONS DEVICES AS INDICATED.
5. REPLACE EXISTING DEVICES/COVERS INDICATED WITH NEW COMPLYING WITH THIS PROJECT'S SPECIFICATIONS.
6. EXISTING COMMUNICATIONS RACK TO REMAIN. EXPAND AS REQUIRED.
7. EXISTING WATTSTOPPER LP8 LIGHTING RELAY PANEL TO REMAIN. INTEGRATE NEW DEVICES INTO EXISTING SYSTEM AS REQUIRED.PROVIDE ALL UPGRADES NEEDED.
8. EXISTING FIXTURE IDENTIFICATION. FOR USE IN RE-USING FIXTURES WHERE NOTED ON EL201 - LIGHTING PLANS.



1 ELECTRICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

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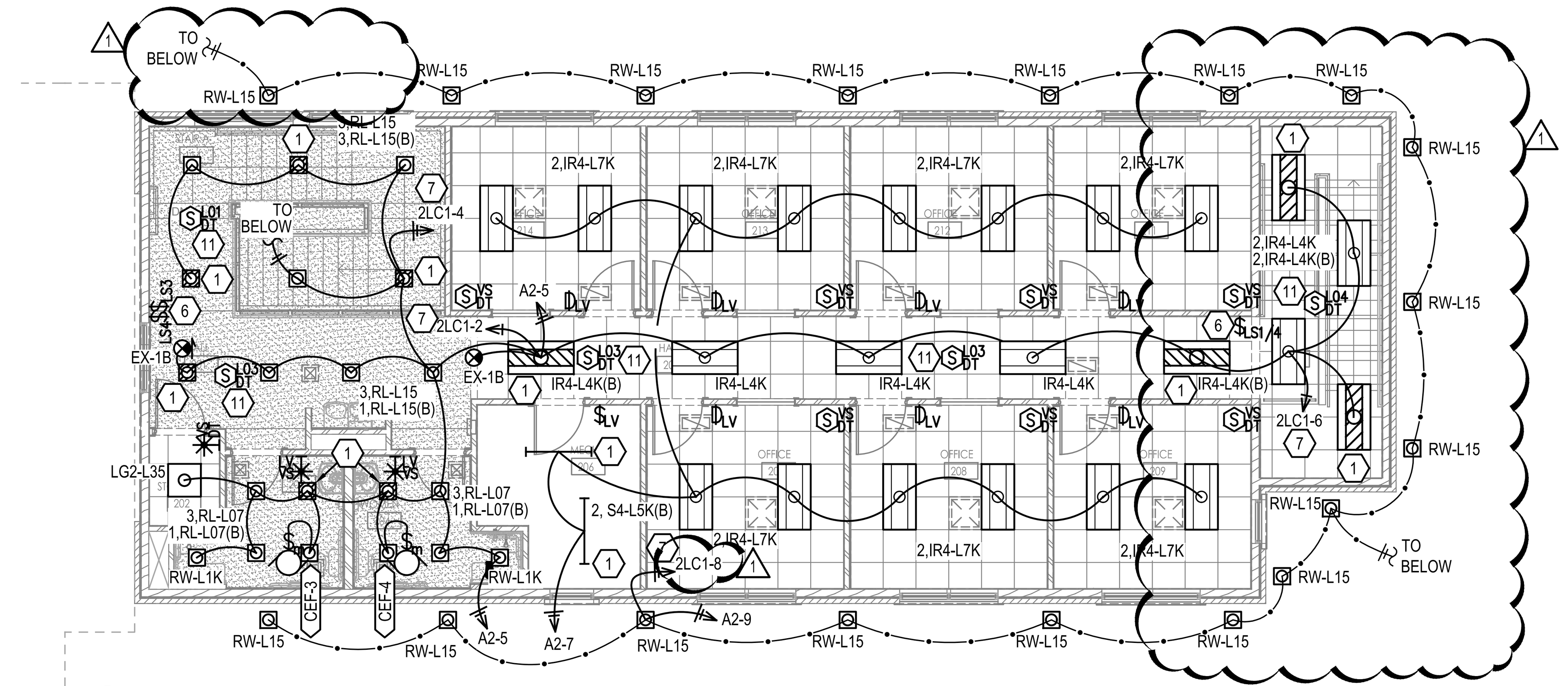
ELECTRICAL DEMOLITION PLAN

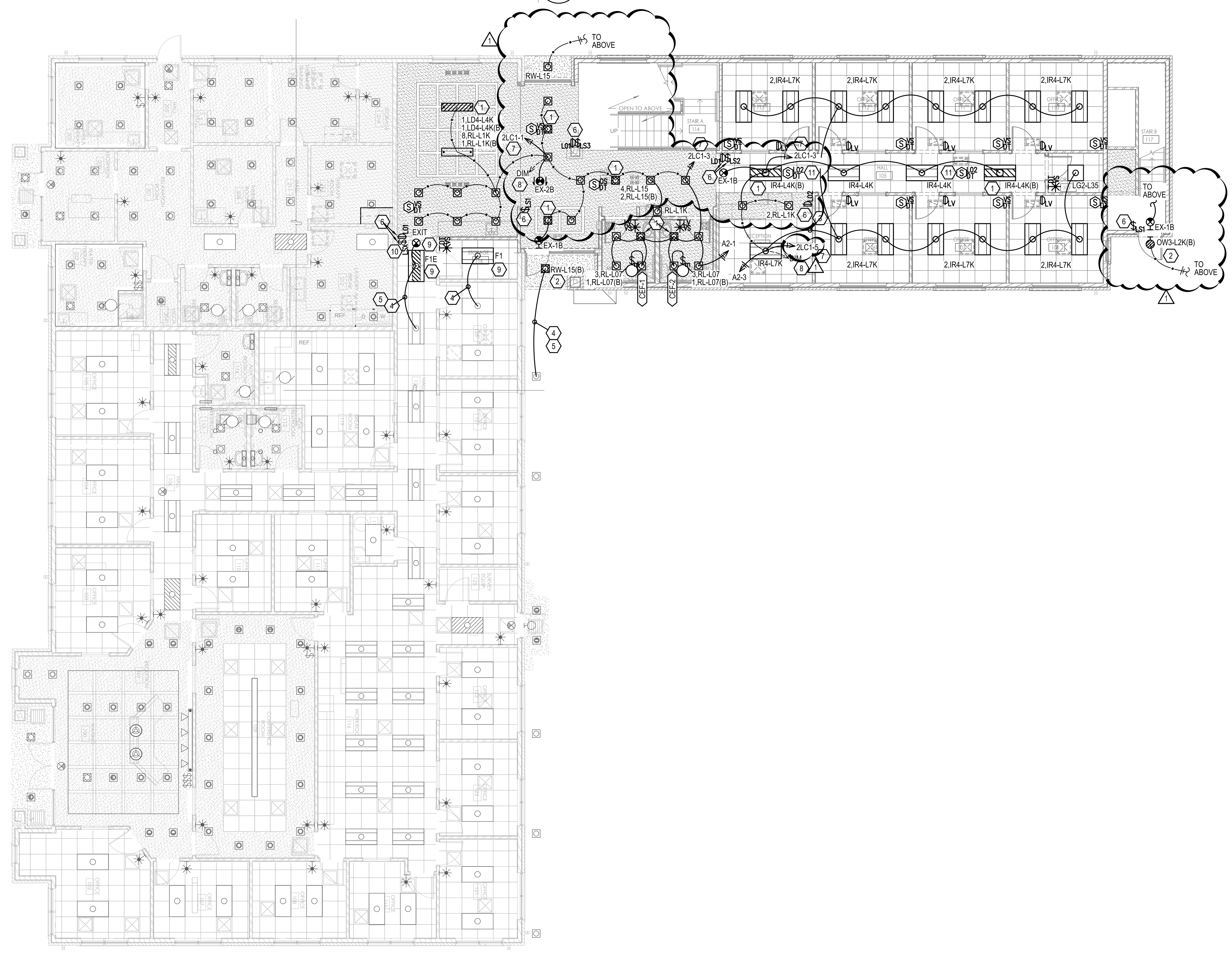
Sheet Number

ED101



2 LIGHTING PLANS:UPPER FLOOR

SCALE: 1/8" = 1'-0"



1 LIGHTING PLANS:MAIN

SCALE: 1/8" = 1'-0"

SHEET KEYED NOTES

1. PROVIDE EM BATTERY BALLAST IN FIXTURES NOTED. CONNECT BATTERY TO UNSWITCHED CIRCUIT CONDUCTOR OF CIRCUIT SERVING FIXTURE. CONNECT LAMPS TO OPERATE WITH SWITCH(S) IN NORMAL MODE.
2. PROVIDE COLD-WEATHER OR REMOTE EM BATTERY BACKUP FOR FIXTURES NOTED. CONNECT BATTERY TO UNSWITCHED CIRCUIT CONDUCTOR OF CIRCUIT SERVING FIXTURE. CONNECT LAMPS TO OPERATE WITH SWITCH(S) IN NORMAL MODE.
3. CONNECT TO UNSWITCHED SOURCE CONDUCTOR.
4. CONNECT TO EXISTING CIRCUIT INDICATED.
5. CONNECT TO EXISTING LIGHTING CONTROL INDICATED.
6. PROVIDE LIGHTING CONTROL OVERRIDE SWITCHES AT LOCATIONS INDICATED. PROVIDE CONTROL WIRING PER MANUFACTURER'S REQUIREMENTS. SEE DETAILS AND SCHEDULES FOR ADDITIONAL INFORMATION. ENGRAVE COVER PLATE WITH ZONES CONTROLLED. PROVIDE SEPARATE BUTTON/LABELING FOR EACH ZONE INDICATED. MULTIPLE BUTTONS SHALL BE MOUNTED IN A SINGLE-GANG COVER.
7. LIGHTING CONTROL PANEL SWITCH LEGS. REFER TO LIGHTING CONTROL PANEL SCHEDULES AND DETAILS FOR ADDITIONAL INFORMATION. SWITCH LEGS MAY BE ROUTED TO PANEL IN SAME CONDUITS AS CONSTANT POWER FEEDS. CONTRACTOR TO DERATE/UPSIZE CONDUCTORS & CONDUIT WHERE REQUIRED.
8. PROVIDE DIMMING CONTROL TO RELAY PANEL. EXTEND TO ADDITIONAL FIXTURES IN SWITCH-GROUP PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
9. REINSTALL FIXTURE REMOVED DURING DEMOLITION. FIXTURE CALL OUT CORRESPONDS TO FIXTURE ID SHOWN ON DEMO PLAN AND IS NOT LISTED IN FIXTURE SCHEDULE.
10. INTEGRATE NEW SWITCH INTO SWITCHING CONTROL.
11. INTEGRATE SENSOR INDICATED INTO LIGHTING CONTROL SYSTEM.

GENERAL SHEET NOTES

1. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
2. CONTRACTOR TO FURNISH OCCUPANCY SENSORS WITH COVERAGE PATTERNS APPROPRIATE FOR THEIR INSTALLED LOCATIONS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO BID.
3. CONNECT OCCUPANCY SENSORS TO ENABLE ALL SWITCHES IN CONTROLLED SPACE.
4. CONNECT OCCUPANCY SENSORS, BATTERY BALLASTS, EXIT SIGNS, ETC. TO UNSWITCHED SOURCE CONDUCTOR.
5. SEE POWER PLAN FOR ELECTRICAL DISTRIBUTION, EQUIPMENT AND LIGHTING RELAY PANEL LOCATIONS.
6. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
7. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
8. ALL NEW LIGHTING CONTROLS (SWITCH, OCCUPANCY SENSORS, DIMMERS, ETC.) SHALL BE WATTSTOPPER TO MATCH, AND INTEGRATE INTO EXISTING SYSTEM AND SHALL ALLOW SWITCHES AND SENSORS TO COMMUNICATE TO MEET MANUAL ON, AUTO OFF REQUIREMENTS OF ENERGY CODE.
9. ALL EMERGENCY LIGHTING BATTERIES SHALL PROVIDE A MINIMUM OF 90 MINUTES ILLUMINATION PER NEC 700.12(A) AND IBC1006. SEE SPEC SECTION 265100 FOR ADDITIONAL REQUIREMENTS.

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Drawing Title

LIGHTING PLANS

Sheet Number

EL201

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
EX- 1B	DUAL LITE LX-U-G-W-E-I SURE-LITES CCX7-0-70-G-WH-SD LIGHTOLIER LT-N-U-G-W-SD LITHONIA LQM S W 3 G 120/277 EL N SD OR EQUIVALENT	EXIT SIGN; SINGLE FACE; UNIVERSAL MOUNTING; WHITE, THERMOPLASTIC HOUSING; SELF DIAGNOSTICS; WIRE GUARD WHERE NOTED ON DRAWINGS	WALL OR CEILING 1-FACE	1.5W	LED
EX- 2B	DUAL LITE LX-U-G-W-E-I SURE-LITES CCX7-0-70-G-WH-SD LIGHTOLIER LT-N-U-G-W-SD LITHONIA LQM S W 3 G 120/277 EL N SD OR EQUIVALENT	EXIT SIGN; DOUBLE FACE; UNIVERSAL MOUNTING; WHITE, THERMOPLASTIC HOUSING; SELF DIAGNOSTICS; WIRE GUARD WHERE NOTED ON DRAWINGS	WALL OR CEILING 1-FACE	1.5W	LED
IR4- L7K IR4- L4K(B)	LITHONIA SPX-2X4-7200LM-80CRI-35K-BFR-EDCB-MIN10-ZT-MVOLT(-E10WLCP)-MW OR EQUIVALENT	RECESSED, CENTER BASKET FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMING, DRIVER; EM BATTTERY PACK WHERE NOTED ON DRAWINGS;	RECESSED	53 W	7000 LUMEN NOMINAL LED 3500K
IR4- L7K	LITHONIA SPX-2X4-7200LM-80CRI-35K-BFR-EDCB-MIN10-ZT-MVOLT(-E10WLCP)-MW OR EQUIVALENT	RECESSED, CENTER BASKET FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMING, DRIVER; EM BATTTERY PACK WHERE NOTED ON DRAWINGS;	RECESSED	53 W	7000 LUMEN NOMINAL LED 3500K
LD4- L4K LD4- L4K(B)	ARCH LTG WORKS FBD-S4-HI-80-3500K-0/10V/1%-EXT/R-SCBA-UNV(-EMB)-* OR EQUIVALENT WITH PRIOR ARCHITECTURAL APPROVAL	SUSPENDED LINEAR; 1.75" MAX WIDTH; 3" MAX HEIGHT; MULTI-VOLT, ELECTRONIC, DIMMABLE (1%), DRIVER; INTEGRAL DRIVER; SUSPENSION LENGTH AS INDICATED ON ARCHITECTURAL DRAWINGS; CUSTOM COLOR AS SELECTED BY ARCHITECT; EM PROVISIONS WHERE (B) OPTION INDICATED ON DRAWINGS	CABLE SUSPENDED WOOD CEILING	37 W	4000 LUMEN NOMINAL LED 3500K
LG2- L35 LG2- L35(B)	LITHONIA SPX-2X2-3400LM-80CRI-35K-BFR-MPL-MIN10-ZT-MVOLT(-E10WLCP)-MW OR EQUIVALENT	RECESSED, FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMING, DRIVER; EM BATTTERY PACK WHERE NOTED ON DRAWINGS;	RECESSED	23 W	3500 LUMEN NOMINAL LED 3500K
OW3- L2K OW3- L2K(B)	LITHONIA WDGE2-LED-P2-40K-80CRI-FW-MVOLT-*-*(-E20WC)-SCBA OR EQUIVALENT	EXTERIOR WALL FIXTURE; LED LAMPING; TYPE 3 OPTICAL DISTRIBUTION; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; INTEGRAL BATTERY WHERE (B) OPTION INDICATED ON LTG PLAN;	WALL	15 W	2000 LUMEN NOMINAL LED 4000K

TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
RL- L07 RL- L07(B)	LITHONIA LDN6-35-07-LO6-AR-LD-MVOLT-GZ1(-ELSD) OR EQUIVALENT	RECESSED CAN; LED LAMPING; CLEAR, OPEN, SEMI-SPECULAR CONE; 6" NOMINAL OPENING; SELF-FLANGED CONE; DIMMABLE; EM BATTERY WHERE NOTED ON DRAWINGS; TRIM EXTENDER WHERE REQUIRED	RECESS	8.9 W	1000 LUMEN NOMINAL LED 3500K
RL- L1K	LITHONIA LDN6-35-10-LO6-AR-LD-MVOLT-GZ1(-ELSD) OR EQUIVALENT	RECESSED CAN; LED LAMPING; CLEAR, OPEN, SEMI-SPECULAR CONE; 6" NOMINAL OPENING; SELF-FLANGED CONE; DIMMABLE; EM BATTERY WHERE NOTED ON DRAWINGS; TRIM EXTENDER WHERE REQUIRED	RECESS	12 W	1000 LUMEN NOMINAL LED 3500K
RL- L15 RL- L15(B)	LITHONIA LDN6-35-15-LO6-AR-LD-MVOLT-GZ1(-ELSD) OR EQUIVALENT	RECESSED CAN; LED LAMPING; CLEAR, OPEN, SEMI-SPECULAR CONE; 6" NOMINAL OPENING; SELF-FLANGED CONE; DIMMABLE; EM BATTERY WHERE NOTED ON DRAWINGS; TRIM EXTENDER WHERE REQUIRED	RECESS	17.5 W	1500 LUMEN NOMINAL LED 3500K
RW- L1K	LITHONIA LDN6-40-10-LO6-AR-LD-MVOLT-GZ1(-ELSD) OR EQUIVALENT	RECESSED CAN; LED LAMPING; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; 6" NOMINAL OPENING; CLEAR, SEMI-SPECULAR CONE; WET LOCATION RATED; EM BATTERY WHERE (B) OPTION SHOWN ON DRAWINGS	RECESS	10.4 W	1000 LUMEN NOMINAL LED 4000K
RW- L15 RW- L15(B)	LITHONIA LDN6-40-15-LO6-AR-LD-MVOLT-GZ1(-ELSD) OR EQUIVALENT	RECESSED CAN; LED LAMPING; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; 8" NOMINAL OPENING; CLEAR, SEMI-SPECULAR CONE; WET LOCATION RATED; EM BATTERY WHERE (B) OPTION SHOWN ON DRAWINGS	RECESS	17.5 W	1500 LUMEN NOMINAL LED 4000K
S4- L5K S4- L5K(B)	LITHONIA CLX-L48-5000LM-SEF-FDL-MVOLT-GZ10-35K-80CRI-(PS1050)-SCBA HE WILLIAMS 75-4-L50-840-DIM-UNV OR EQUIVALENT	LED STRIP FIXTURE; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; DIFFUSE LENS; EM BATTERY WHERE NOTED ON DRAWINGS	SURFACE OR CABLE SUSPENDED WHERE NOTED	35 W	5000 LUMEN NOMINAL LED 3500K

NOTES

1- CONTRACTOR SHALL VERIFY COLOR TEMPERATURE FOR INTERIOR AND EXTERIOR FIXTURES WITH EXISTING LIGHTING COLOR TEMPERTAURE PRIOR TO FIXTURE RELEASE

LIGHT FIXTURE ACCESSORY APPEND

B	AS SPECIFIED	APPENDED TO FIXTURE TYPE; 1100 LUMEN EM BATTERY SUPPLY	AS SPECIFIED	N/A	PER FIXTURE TYPE

NOTES -FIXTURE APPENDS ARE ADDED TO STANDARD FIXTURE TYPES. APPENDS ARE INTENDED TO MODIFY FIXTURE CATALOG NUMBERS GIVEN ABOVE AS NOTED IN APPEND DESCRIPTION

RELAY PANEL SCHEDULE

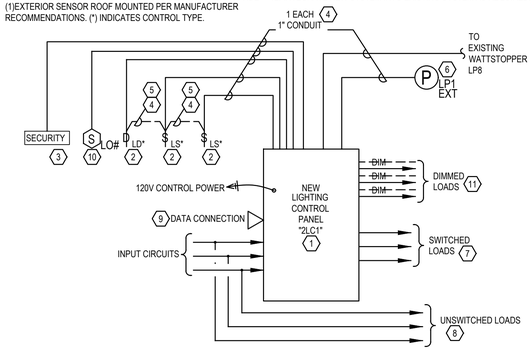
RELAY PANEL: 2LC1 — [X] NEW [ ] EXISTING
FEEDS: [X] INDIVIDUAL [ ] MAIN LUGS [ ] MAIN BKR; MAX VOLTAGE 240; MAX PHASE 1
REMARKS: -PANEL TO BE WATTSTOPPER TO MATCH EXISTING; -*PROVIDE DIMMING CONTROL WIRING PER LOAD TYPE THROUGHOUT CIRCUIT
LOCATION: L2 HALL
MOUNTING: [X] FLUSH [ ] SURFACE

No.	RELAY A	RELAY P	CONTROLLED CKT	CONTROL ZONE	CONTROL TYPE (SEE SCHEDULE)	DIMMING* (SEE SCHED)	No.	No.	CONTROL TYPE (SEE SCHEDULE)	DIMMING* (SEE SCHED)	CONTROL ZONE	CONTROLLED CKT	RELAY A	RELAY P	No.
1	20	1	A2- 1	LOBBY	T1,B1,SS	D1	1	2	T1,B1,SS,O3,S4	N/A	L2 HALL	A2- 5	20	1	2
3	20	1	A2- 3	L1 HALL	T1,B1,SS,O2,S2	N/A	3	4	T1,B1,SS,O1,S3	N/A	N STAIR	A2- 5	20	1	4
5	20	1	A2- 3	RECEPTION	T1,B1,SS	D2	5	6	T1,B1,SS,O1,S1	N/A	E STAIR	A2- 5	20	1	6
7	20	1	SPA: RE				7	8	T2,B1,SS,P1	FUTURE	ADTN EXT	A2- 9	20	1	8
9	20	1	SPA: RE				9	10				SPA: RE	20	1	10
11	20	1	SPA: RE				11	12				SPA: RE	20	1	12

CLK = TIMECLOCK; SW = SWITCH (1, 3, OR 4); OVER = 2-HOUR TIMED OVERRIDE ON; PHOTO = PHOTOCELL

DETAIL KEYED NOTES

1. PROVIDE LIGHTING CONTROL PANEL WITH ALL OPTIONS NECESSARY TO PROVIDE CONTROLS AS SHOWN AND SPECIFIED.
2. SEE LIGHTING PLANS ON ELXXX SERIES SHEETS FOR DIGITAL, ADDRESSABLE SWITCH LOCATIONS. PROGRAM FOR CONTROL AS SCHEDULED. PROVIDE ENGRAVED COVER PLATES AS DESCRIBED ON ELXXX SHEETS. (*) INDICATES CONTROL TYPE.
3. COORDINATE CONNECTIONS WITH OWNER'S SECURITY SYSTEM PROVIDER.
4. PROVIDE CONTROL WIRING PER EQUIPMENT REQUIREMENTS.
5. PROVIDE HOME-RUN OR DAISY CHAIN WIRING PER EQUIPMENT REQUIREMENTS.
6. PROVIDE INTERIOR AND/OR EXTERIOR PHOTOCELLS. REFER TO LIGHTING PLAN FOR INTERIOR COUNTS AND LOCATIONS. PROVIDE (1)EXTERIOR SENSOR ROOF MOUNTED PER MANUFACTURER RECOMMENDATIONS. (*) INDICATES CONTROL TYPE.
7. REFER TO LIGHTING PLANS FOR SWITCHING GROUPS/HOME RUNS.
8. PROVIDE CONSTANT POWER TO EXIT SIGNS, EM BALLASTS, NIGHT-LIGHTS, OCCUPANCY SENSORS, ETC.
9. PROVIDE LAN CONNECTION TO CONTROL PANEL FOR REMOTE OWNER CONTROL. PROVIDE ALL HARDWARE/PROGRAMMING REQUIRED FOR SYSTEM INTERFACES AS SPECIFIED.
10. PROVIDE OCCUPANCY SENSORS/RELAYS COMPATIBLE WITH LIGHTING CONTROL SYSTEM. SENSORS MY BE USED FOR LOCAL AND SYSTEM CONTROL. (*)INDICATES CONTROL TYPE.
11. REFER TO LIGHTING PLANS FOR DIMMING GROUPS/HOME-RUNS. INCLUDE DIMMING CONTROL WIRE PER SYSTEM/FIXTURE REQUIREMENTS.
12. INTEGRATE NEW SYSTEM INTO EXISTING SYSTEM AS REQUIRED.

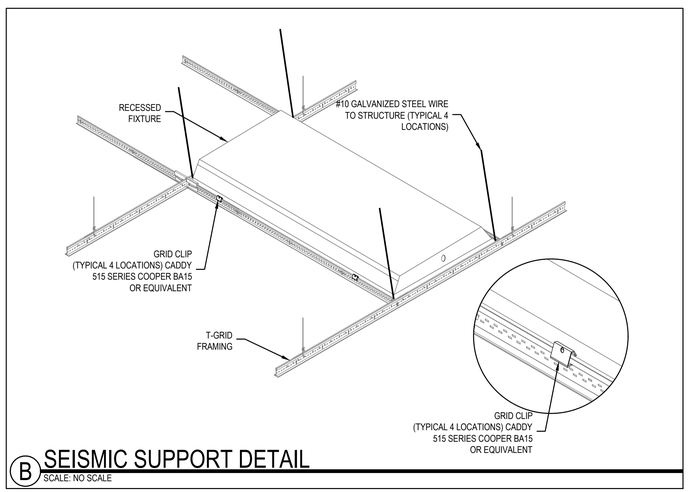


1 LIGHTING CONTROL RISER DIAGRAM
SCALE: NO SCALE

LIGHTING CONTROL INPUT SCHEDULE

TYPE	DESCRIPTION	CONTROLLED RELAYS
T1	INTERIOR TIMECLOCK ON/OFF (SCHEDULE PER OWNER)	2LC1:1-6,8
T2	EXTERIOR TIMECLOCK ON/OFF (ON AT DUSK, OFF PER OWNER)	2LC1:8
SS	SECURITY SYSTEM INTERFACE	2LC1:1-6,8
B1	BLINK WARNING	
D1	TOGGLE W/ TIME OUT + DIMMING: LOBBY	2LC1:1
D2	TOGGLE W/ TIME OUT + DIMMING: RECEPTION	2LC1:5
D3	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D4	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D5	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D6	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D7	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
D8	TOGGLE W/ TIME OUT + DIMMING: SPARE INPUT	
O1	OCC SENSOR: N STAIR	2LC1:4
O2	OCC SENSOR: L1 HALL	2LC1:3
O3	OCC SENSOR: L2 HALL	2LC1:2
O4	OCC SENSOR: E STAIR	2LC1:6
O5	OCC SENSOR: SPARE INPUT	
O6	OCC SENSOR: SPARE INPUT	
O7	OCC SENSOR: SPARE INPUT	
O8	OCC SENSOR: SPARE INPUT	
P1	PHOTOCELL: EXTERIOR	2LC1:8
P2	PHOTOCELL: SPARE INPUT	
P3	PHOTOCELL: SPARE INPUT	
S1	TOGGLE W/ TIME OUT: E STAIR	2LC1:6
S2	TOGGLE W/ TIME OUT: L2 HALL	2LC1:3
S3	TOGGLE W/ TIME OUT: N STAIR	2LC1:4
S4	TOGGLE W/ TIME OUT: L2 HALL	2LC1:2
S5	TOGGLE W/ TIME OUT: SPARE INPUT	
S6	TOGGLE W/ TIME OUT: SPARE INPUT	
S7	TOGGLE W/ TIME OUT: SPARE INPUT	
S8	TOGGLE W/ TIME OUT: SPARE INPUT	

NOTES



B SEISMIC SUPPORT DETAIL
SCALE: NO SCALE

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Project Name
JONES AND ASSOCIATES
BUILDING ADDITION

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No.	Date	Description
1	09.21.23	PLAN REVIEW
2	02.29.24	PLAN REVIEW

Revision 2

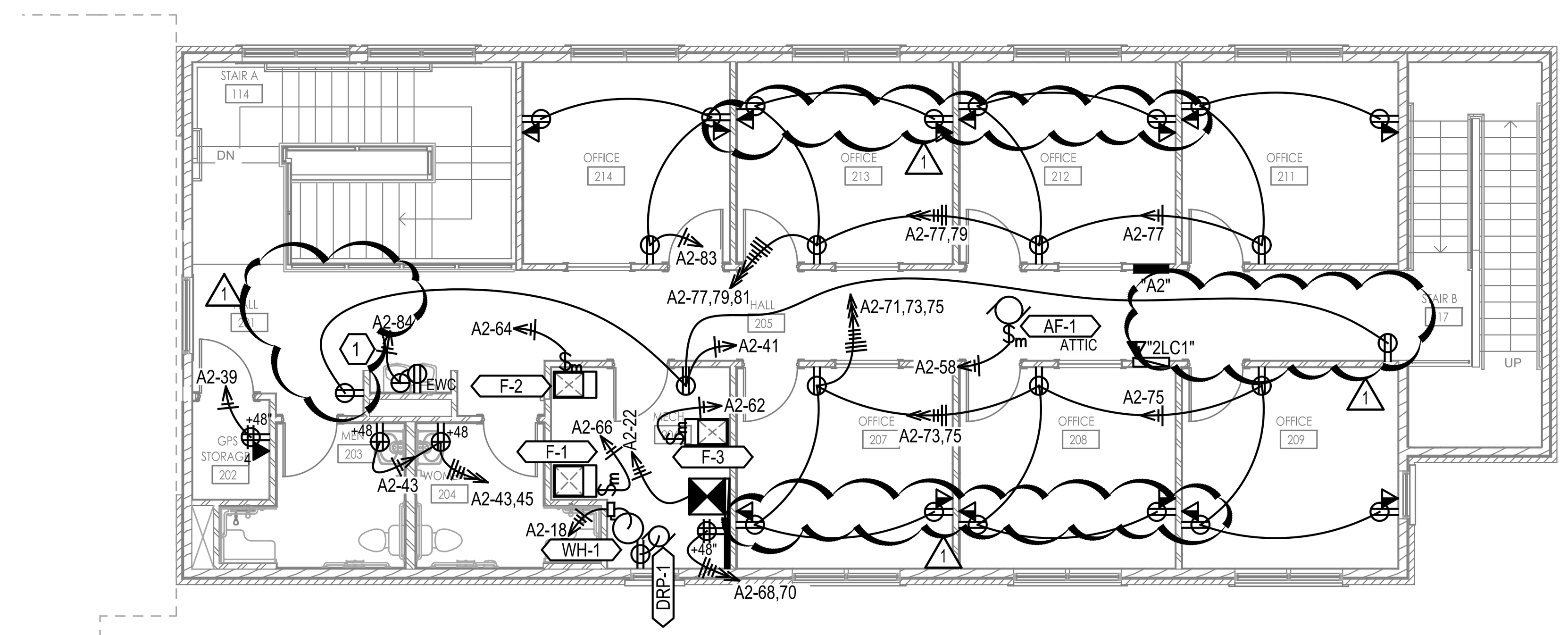
No.	Date	Description
1	02.29.24	CITY REVIEW

SAA Project No. 2022-03

Drawing Title
LIGHTING DETAILS

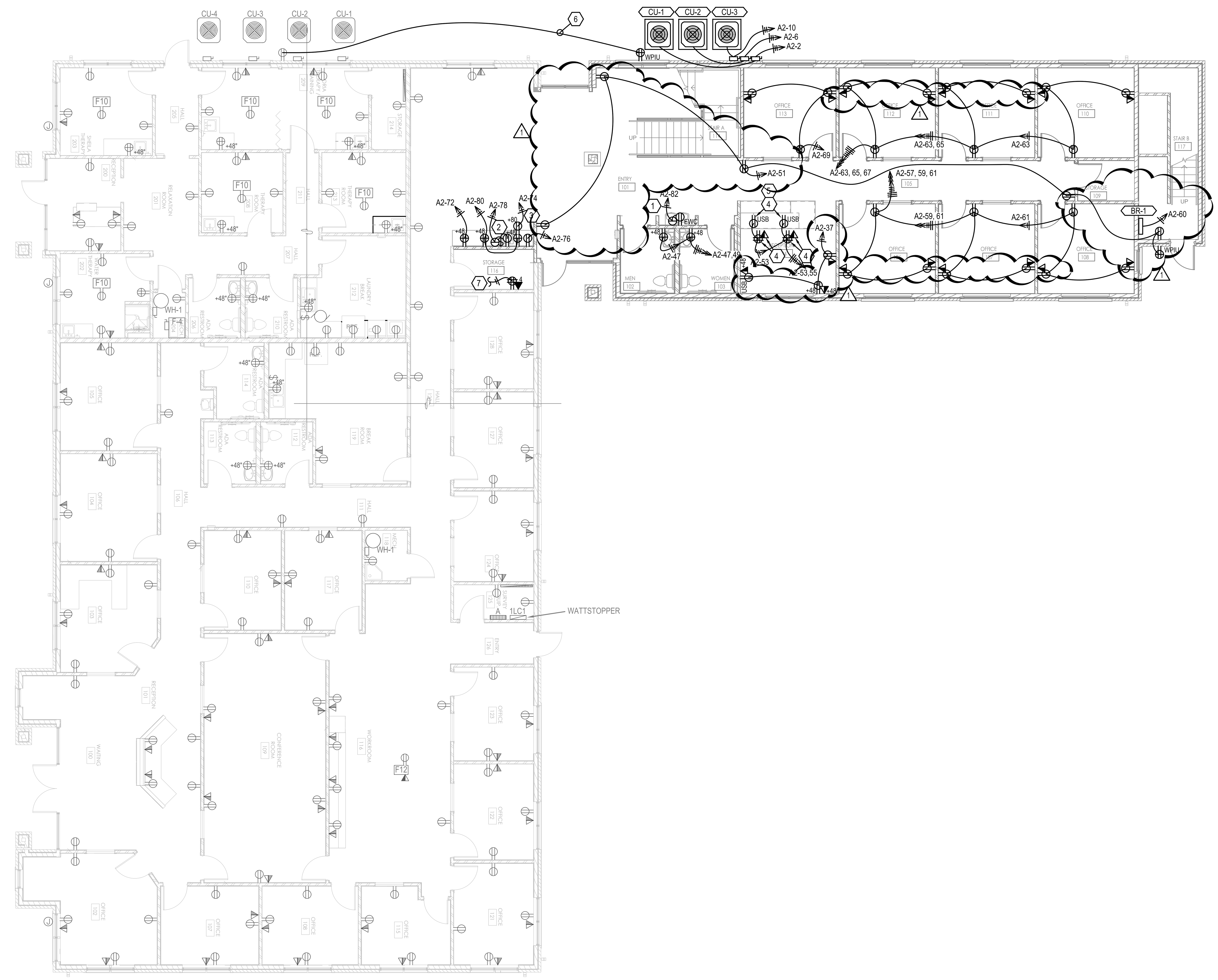
Sheet Number
EL501

TIME: 15 OCT 2013 - 12:29PM DONALD J. PATTON - T:\JOBS\2022\008 JONES ASSOCIATES EXPANSION\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECT\SHEETS\EL501 LIGHTING DETAILS.DWG
LAST SAVED: 29 Feb 24



2 POWER PLANS:UPPER FLOOR

SCALE: 1/8" = 1'-0"



1 POWER PLANS:MAIN FLOOR

SCALE: 1/8" = 1'-0"

SHEET KEYED NOTES

1. MOUNT EWC OUTLET BEHIND COOLER COVER. ROUTE CIRCUIT THROUGH FACELESS GFCI (LEVITON 7590 OR EQUIVALENT) MOUNTED BELOW COOLER COVER PER DETAIL D/EP501.
2. PROVIDE SWITCHED RECEPTACLE UNDER BASIN FOR DISPOSAL. DISPOSAL BY OTHERS. COORDINATE DISPOSAL CORD WITH PLUMBING CONTRACTOR AND PROVIDE AND/OR INSTALL CORD AS REQUIRED. ROUTE CIRCUIT THROUGH FACELESS GFCI (LEVITON 7590 OR EQUIVALENT) MOUNTED ABOVE COUNTER LEVEL WITH COUNTER-TOP OUTLETS. LABEL GFCI FOR APPLIANCE SERVED.
3. PROVIDE POWER TO MICROWAVE. MOUNT OUTLET IN LOWER CORNER OF UPPER CABINET PER DETAIL B/EP501.
4. OUTLETS MOUNTED IN MILLWORK. COORDINATE WITH CABINET SUPPLIER.
5. MOUNT OUTLET HORIZONTAL IN RISER BETWEEN UPPER AND LOWER COUNTERS. SEE ARCHITECTURAL DETAILS FOR ADDITIONAL INFORMATION.
6. CONNECT TO EXISTING CIRCUIT INDICATED.
7. CONNECT TO EXISTING CIRCUIT PREVIOUSLY SERVING SPACE.

GENERAL SHEET NOTES

1. COORDINATE ALL SWITCH, OUTLET, LIGHT AND OTHER DEVICE LOCATIONS WITH ARCHITECTURAL ELEMENTS (CABINETS, WINDOWS ETC.) PRIOR TO ROUGH IN. REVIEW ARCHITECTURAL INTERIOR ELEVATIONS PRIOR TO ROUGH-IN OF EACH AREA FOR ADDITIONAL INFORMATION.
2. SEE SYMBOL SCHEDULE AND COMMUNICATIONS RACEWAY SCHEDULE FOR COMMUNICATIONS ROUGH-IN REQUIREMENTS.
3. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
4. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
5. SURFACE MOUNTED CONDUITS RAN ON ROOF-TOP OR WITHIN 36" OF ROOF-TOP NOT ALLOWED.

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SAA Project No. 2022-03

Drawing Title

POWER PLANS

Sheet Number

EP301

TIME: 15 OCT 2013 - 12:25PM DONALD J. PATTON - T:\JOBS\2023\068 JONES ASSOCIATES EXPANSION\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECT\SHEETS\EP301 POWER PLANS.DWG
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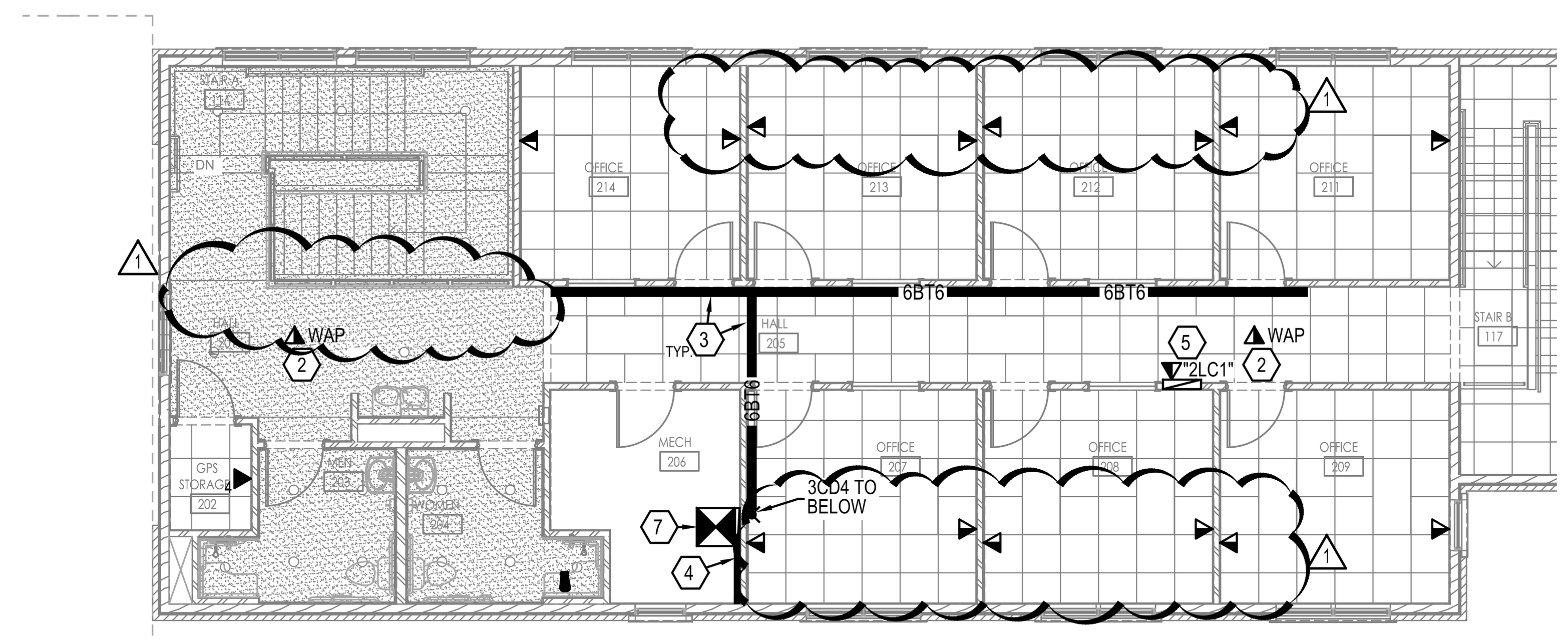
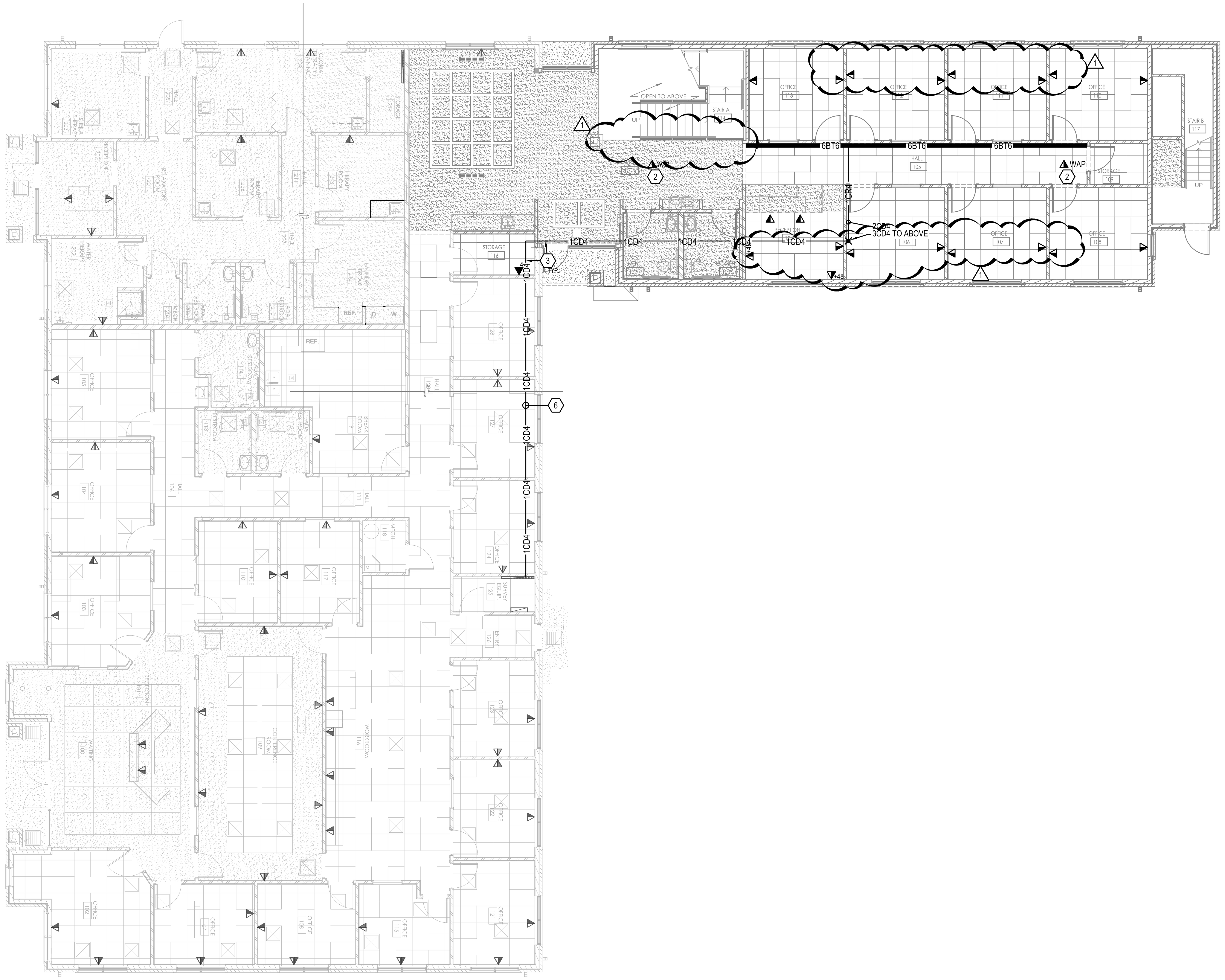


2 ELECTRONIC SYSTEMS PLAN: UPPER FLOOR

SCALE: 1/8" = 1'-0"



1 ELECTRONIC SYSTEMS PLAN: MAIN FLOOR

SCALE: 1/8" = 1'-0"

SHEET KEYED NOTES

1. PROVIDE ROUGH-IN FOR FUTURE CONNECTIONS OUTLET.
2. PROVIDE CEILING OUTLET FOR WIRELESS ACCESS POINT. COORDINATE WITH OWNERS I.T. PERSONNEL PRIOR TO ROUGH-IN.
3. PROPOSED ROUTING OF COMMUNICATIONS RACEWAYS.
4. PROVIDE 4'x8' PLYWOOD BACKBOARD MOUNTED VERTICALLY ALONG WALL INDICATED.
5. PROVIDE DATA CONNECTION TO LIGHTING CONTROL PANEL AS REQUIRED.
6. PROVIE 4" CONDUIT WITH 1" INNERDUCT TO EXISTING RACK. PROVIDE FIBER TERMINAL CONDUITS IN NEW AND EXISTING RACKS WITH 2 PAIR, SINGLE MODE FIBER BETWEEN RACKS.
7. PROVIDE 60" WALL MOUNT DATA RACK. PROVIDE 48-PORT PATCH PANELS (AS NEEDED UFFER CABLES + 50% SPARE CAPACITY). PROVIDE 2KVA, RACK MOUNT UPS.

GENERAL SHEET NOTES

1. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
2. PROVIDE COMMUNICATIONS OUTLET BOX AS SCHEDULED WITH 1.25" CONDUIT TO COMMUNICATIONS RACEWAY FOR EACH COMMUNICATIONS OUTLET SHOWN.
3. SEE SYMBOL SCHEDULE AND COMMUNICATIONS RACEWAY SCHEDULE FOR COMMUNICATIONS BOXES, RACEWAYS, AND CABLING REQUIREMENTS.
4. PROVIDE INDUSTRY STANDARD CADDIE CLIPS 4' ON CENTER FROM OUTLET CONDUIT STUBS TO CABLE TRAYS. COMPLY WITH TIA/EIA CATEGORY 6A STANDARDS FOR COMMUNICATIONS RACEWAY INSTALLATIONS.
5. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.

COMMUNICATIONS RACEWAY SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
xCDy	CONDUIT; QUANTITY "X", DIAMETER "Y" AS INDICATED ON SYMBOL SCHEDULE	AS SPECIFIED		INSULATED THROAT CONNECTORS ON ALL ENDS; PULL STRING
CMJ	CABLE HOOKS; 4"; RETAINING CLIP QUANTITY AS REQUIRED FOR CURRENT CABLING PLUS 50% SPARE CAPACITY	COOPER B-LINE	BCH64 SERIES (OR EQUIVALENT)	RETAINER (BCHR64) OTHER ACCESSORIES AS REQUIRED
xBTy	X"W X Y"D STEEL, WIRE MESH TRAY MAXIMUM 6' SUPPORT SPACING (MIN 83 LBS/FT LOAD CAPACITY)	COOPER	FT(X)X(Y)-EG SERIES (OR EQUIVALENT)	ACCESSORIES AS REQUIRED
COMM OUTLET BOX	5" SQUARE X 2 7/8" DEEP 3/4" MUD RING (1 OR 2-GANG AS NOTED)	STEEL CITY STEEL CITY	82181T-1 SERIES 82C-*G-3/4 (OR EQUIVALENT)	

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Drawing Title

ELECTRONIC SYSTEMS PLANS

Sheet Number

ET401

TIME: 15 OCT 2013 - 12:25PM DONALD J. PATTON - T:\JOBS\2023068 JONES ASSOCIATES EXPANSION\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECT\SHEETS\ET401 ELECTRONIC SYSTEMS PLANS.DWG
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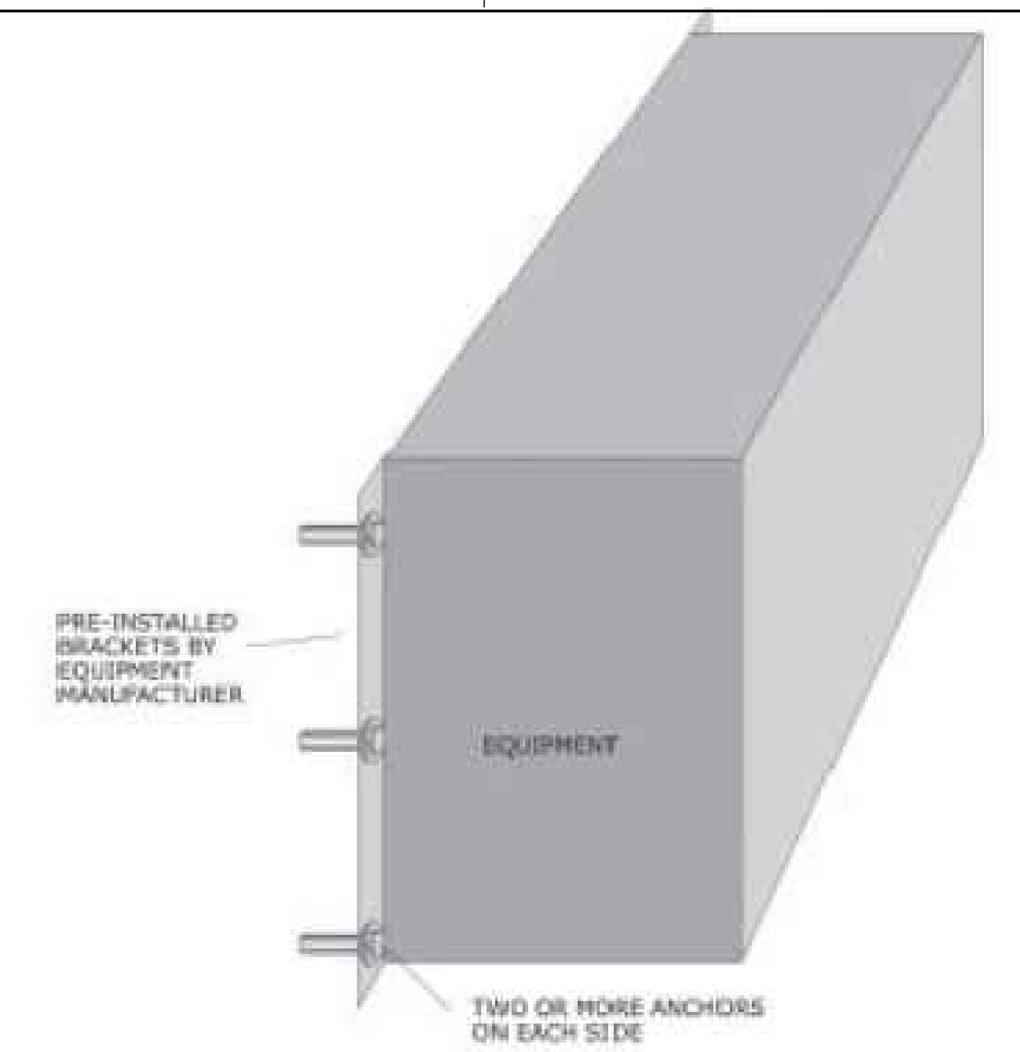
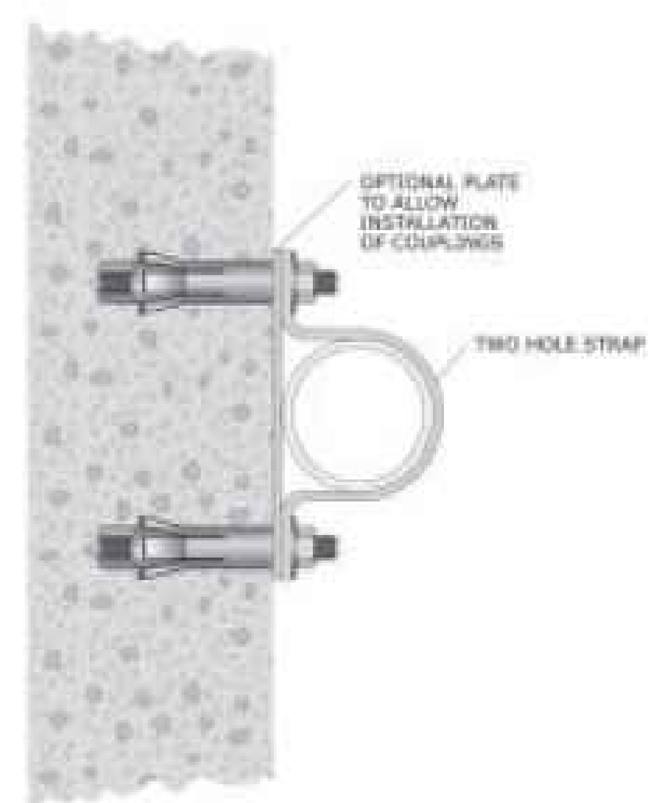


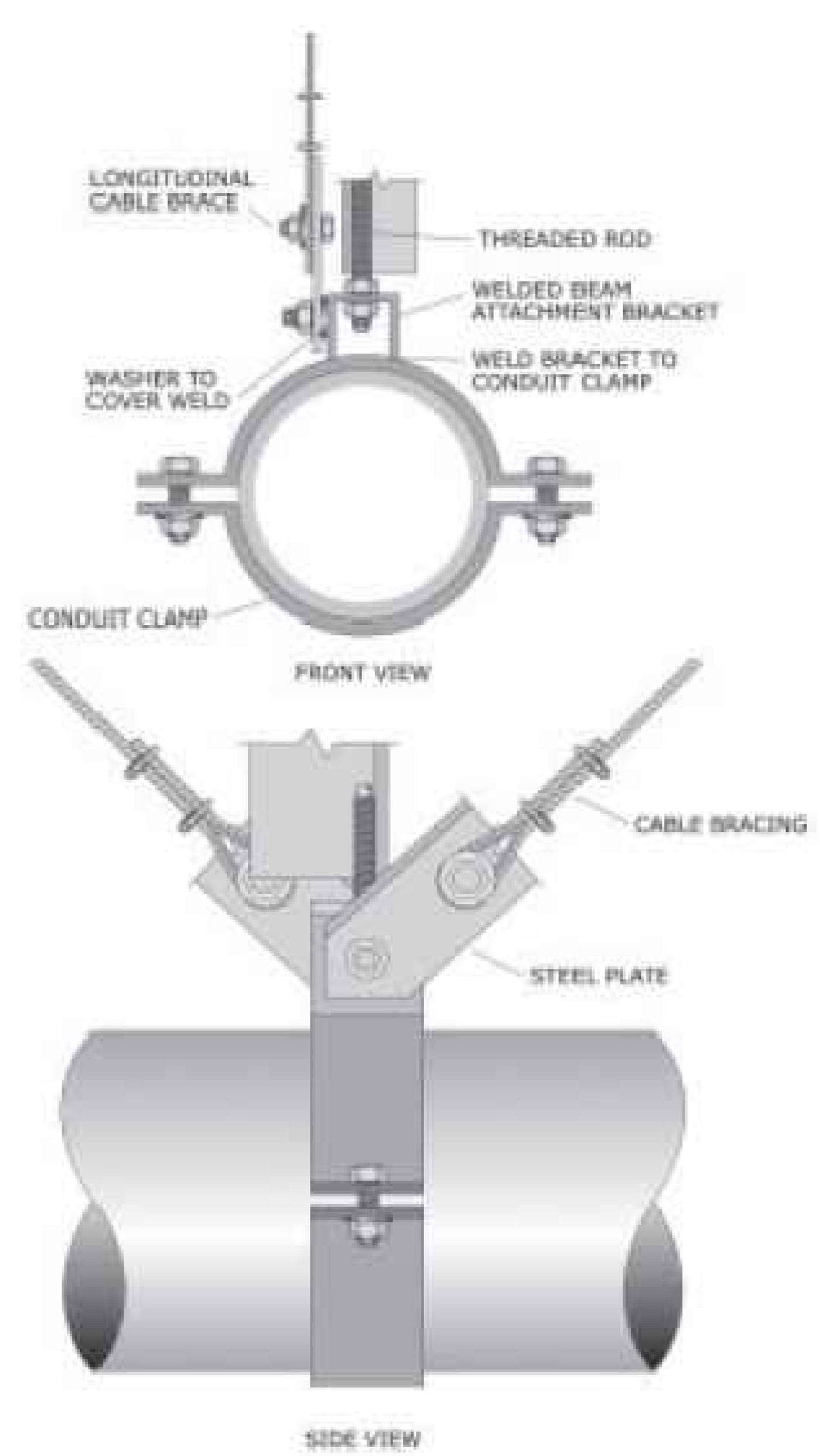
Direct attachment to a wall.

H SEISMIC SUPPORT: EQUIPMENT TO WALL
SCALE: NO SCALE



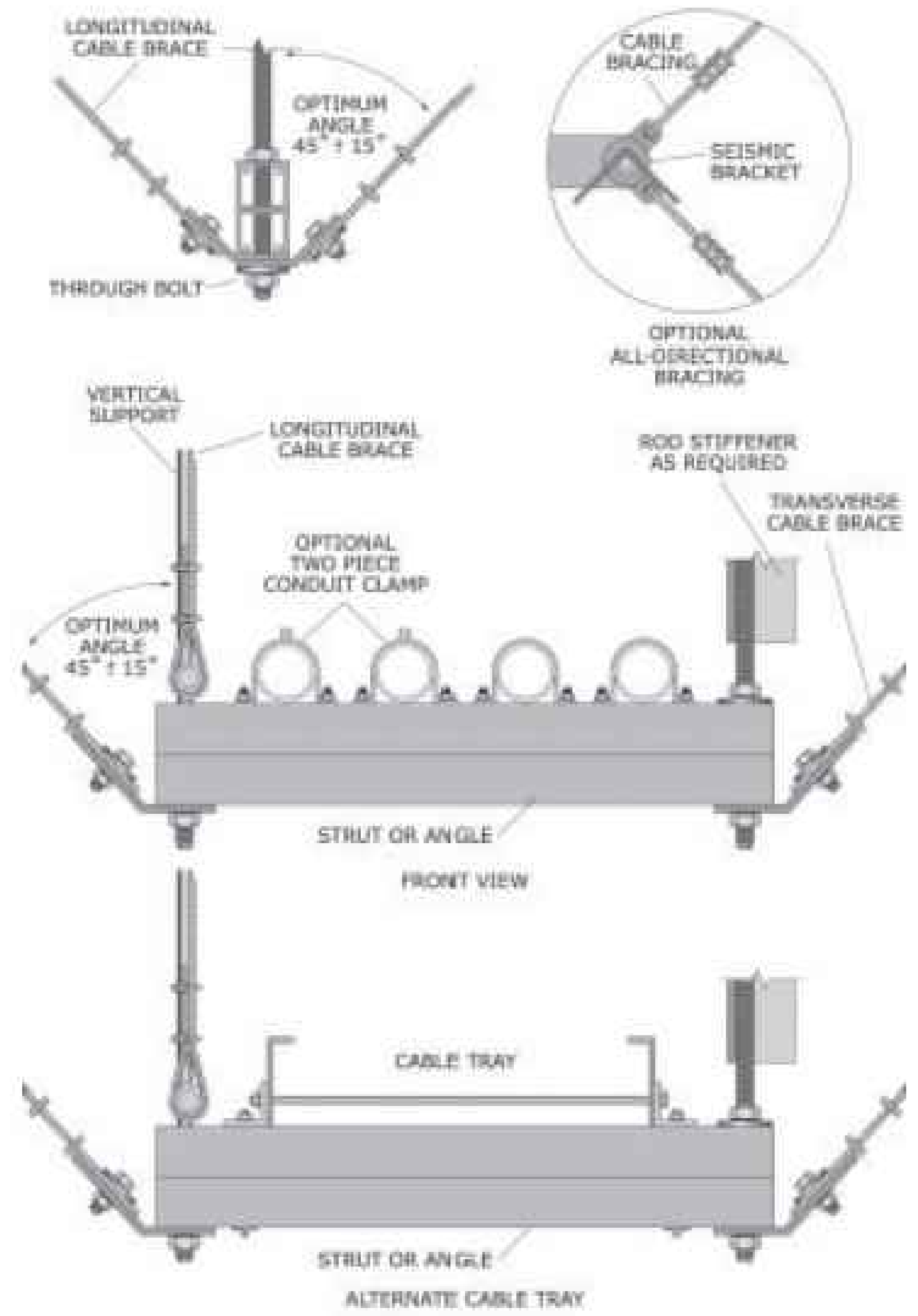
Direct attachment

G SEISMIC SUPPORT: RACEWAY TO WALL
SCALE: NO SCALE



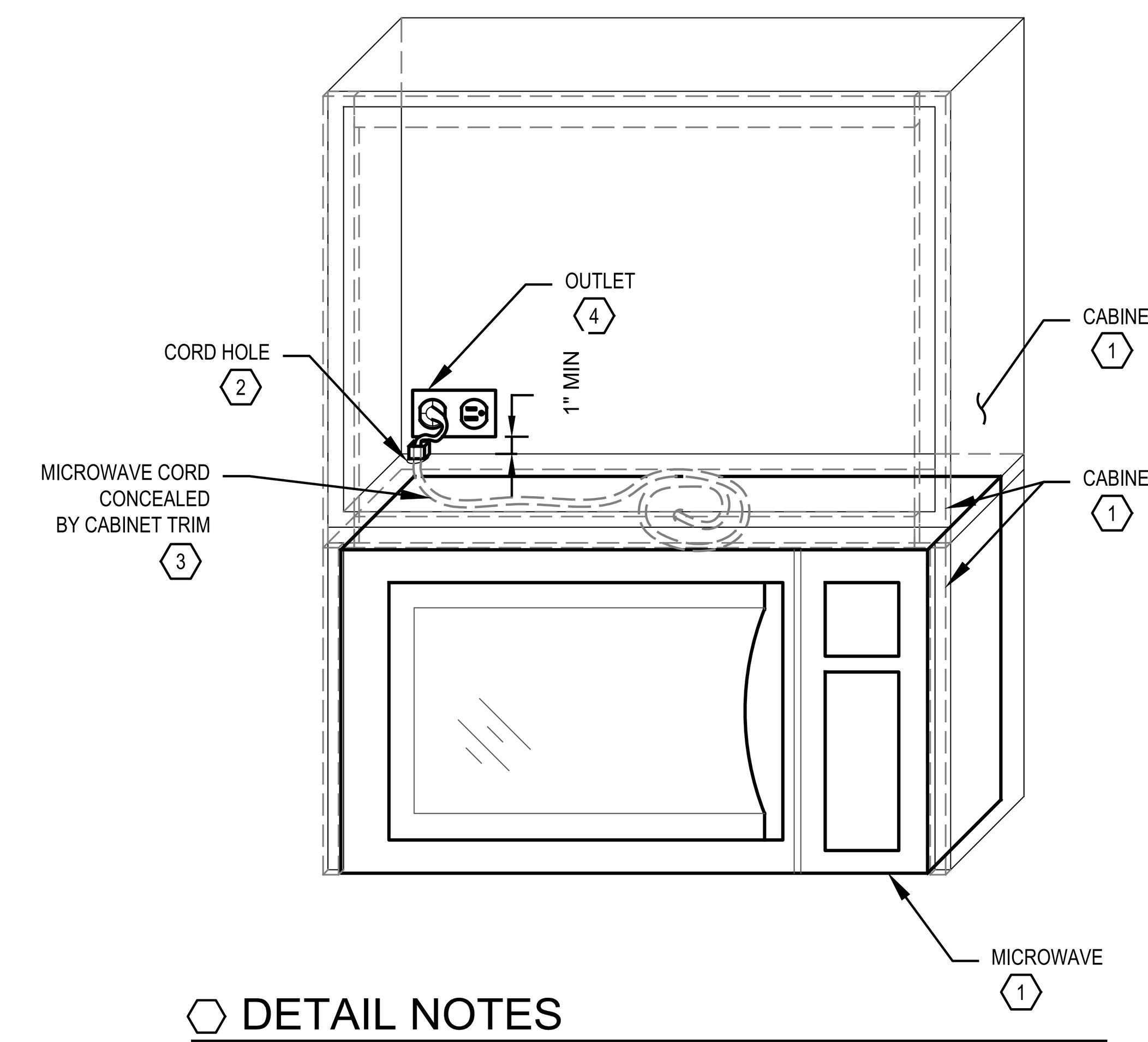
Conduit clamp supports with longitudinal cable lateral support and hanger rod.

F SEISMIC SUPPORT: SUSPENDED RACEWAY
SCALE: NO SCALE



Trapeze support with cable lateral supports.

E SEISMIC SUPPORT: RACEWAY TRAPEZE
SCALE: NO SCALE



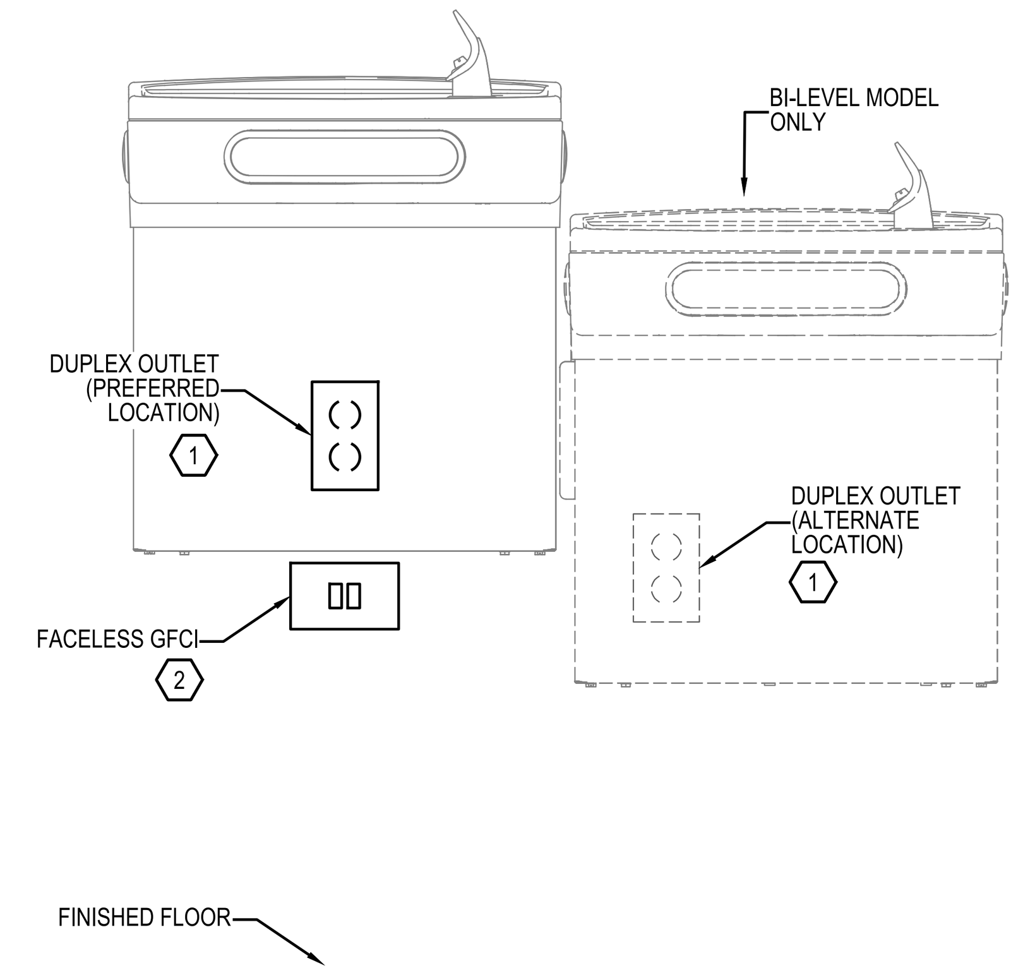
DETAIL NOTES

1. BY OTHERS
2. DRILL CORD HOLE SIZED PER MICROWAVE PLUG END IN BACK COVER OF CABINET. LEFT OR RIGHT SIDE PER FIELD CONDITIONS.
3. COIL CORD ON TOP OF MICROWAVE BETWEEN APPLIANCE AND CABINET.
4. LOCATE OUTLET FLUSH IN BACK OF CABINET. LOCATE CABINET TO ALLOW FLEXIBLE CORD BEND RADIUS BEFORE ENTRY HOLE PER NEC REQUIREMENTS.

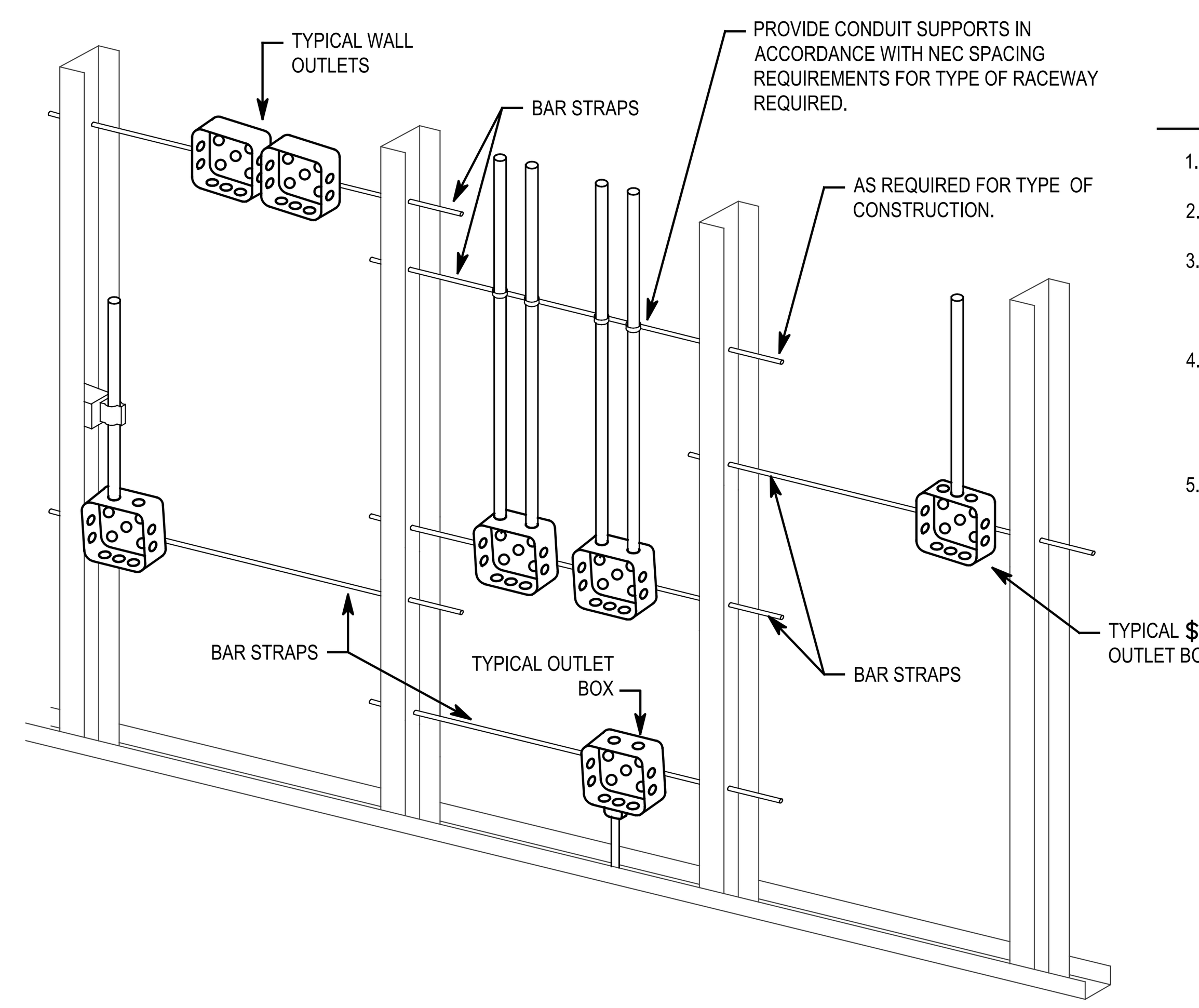
B MICROWAVE INSTALLATION DETAIL
SCALE: NO SCALE

DETAIL KEYED NOTES

1. VERIFY OUTLET LOCATION WITH MANUFACTURER'S REQUIREMENTS AND FIELD CONDITIONS TO BE CONCEALED WITH COVER INSTALLED.
2. FACELESS GFCI - HORIZONTAL, FLUSH-MOUNT IMMEDIATELY BELOW COOLER COVER TO BE ACCESSIBLE WITH COVER IN PLACE. CONNECT OUTLETS TO LOAD-SIDE OF GFCI.



D DRINKING FOUNTAIN ELECTRICAL DETAIL
SCALE: NO SCALE



GENERAL NOTES

1. TYPICAL FOR WOOD AND METAL STUD ROUGH-IN.
2. PLASTER RINGS NOT SHOWN.
3. LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND WITH ALL APPLICABLE SHOP DRAWINGS.
4. OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE IN A RATED FIRE SEPARATION WALL MUST BE SEPARATED BY A MINIMUM OF 24" HORIZONTAL DISTANCE.
5. IN NON-RATED WALLS, OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS MUST BE SEPARATED BY 16" FOR SOUND ATTENUATION.

A TYPICAL ROUGH-IN REQUIREMENTS DETAIL
SCALE: NO SCALE

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Project Name
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2	02.29.24	PLAN REVIEW

Revision #

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SAA Project No. 2022-03

Drawing Title
ELECTRICAL DETAILS

Sheet Number
EP501

PANEL A	TYPE GE POWERMARK PLUS	3 Ø	4 WIRE	120/208 VOLTS	LOCATION: L2 HALL	MOUNTING
X NEW	REMARKS					X FLUSH
EXISTING	-ALL CIRCUITS CONSIDERED EXISTING UNLESS OTHERWISE INDICATED IN THESE DRAWINGS					SURFACE
1 NEMA RATING	-UPGRADE PANEL IN SAME LOCATION WITH HIGHER CIRCUIT CAPACITY PANEL					225 AMP MAIN
BOLT ON BREAKERS						X LUGS
ISOLATED GROUND BUS						BREAKER
SURGE PROTECT (SPD)						

No.	BRKR		CIRCUIT DESCRIPTION	L	O	M	WIRE/CND				CIRC. LOAD				CIRC. LOAD	WIRE/CND				L	O	M	CIRCUIT DESCRIPTION	BRKR		No.
	A	P					PH	N	G	C		A	B	C		PH	N	G	C					A	P	
1	20	1	LTG: CONF				EX	EX	EX	EX		0				EX	EX	EX	EX				REFER & COUNTER	20	1	2
3	20	1	LTG: WAIT				EX	EX	EX	EX			0			EX	EX	EX	EX				MICROWAVE	20	1	4
5	20	1	LTG: WORK				EX	EX	EX	EX				0		EX	EX	EX	EX				FURN #1	20	1	6
7	20	1	LTG: HALL				EX	EX	EX	EX		0				EX	EX	EX	EX				FURN #2	20	1	8
9	20	1	LTG: EXTERIOR				EX	EX	EX	EX			0			EX	EX	EX	EX				FURN #3	20	1	10
11	20	1	PHONE BOARD & HALL PLUGS				EX	EX	EX	EX				0		EX	EX	EX	EX				PLUGS: BREAK	20	1	12
13	20	1	PLUGS: OFF 127,128				EX	EX	EX	EX		0				EX	EX	EX	EX				PLUGS: RR GFCI	20	1	14
15	20	1	PLUGS: OFF 108,115				EX	EX	EX	EX			0			EX	EX	EX	EX				PLUGS: WORKRM CNTR	20	1	16
17	20	1	PLUGS: OFF 129, WK				EX	EX	EX	EX				0		EX	EX	EX	EX				DRINK FTN	20	1	18
19	20	1	PLUGS: OFF 104, 105				EX	EX	EX	EX		0				EX	EX	EX	EX				DISPOSAL	20	1	20
21	20	1	PLUGS: OFF 121, 122				EX	EX	EX	EX			0			EX	EX	EX	EX				LTG: OFF	20	1	22
23	20	1	PLUGS: WAIT, REC				EX	EX	EX	EX				0		EX	EX	EX	EX				LTG: OFF	20	1	24
25	20	1	PLUGS: OFF 131,124				EX	EX	EX	EX		0				EX	EX	EX	EX				LTG: OFF, RR	20	1	26
27	20	1	PLUGS: CONF				EX	EX	EX	EX			0			EX	EX	EX	EX				HEAT TAPE: NORTH	20	1	28
29	20	1	PLUGS: CONF				EX	EX	EX	EX				0		EX	EX	EX	EX				HEAT TAPE: WEST	20	1	30
31	20	1	PLUGS: OFF 103				EX	EX	EX	EX		0				EX	EX	EX	EX				HEAT TAPE: SOUTH	20	1	32
33	20	1	PLUGS: WORKRM				EX	EX	EX	EX			0			EX	EX	EX	EX				PLUG: WORK ISLAND	20	1	34
35	50	2	A/C #1				EX	EX	EX	EX				0		EX	EX	EX	EX				PLUGS	20	1	36
37	-	-	-				EX					0				EX	EX	EX	EX				A/C #3	50	2	38
39	50	2	A/C #2				EX	EX	EX	EX			0			EX							-	-	-	40
41	-	-	-				EX							0		EX	EX	EX	EX				PLUGS: OFF 102, 107	20	1	42
											TOTALS	0	0	0												
			FEEDER: EXISTING								AMPS/PHASE	0	0	0												

AIC: EXISTING
SCCR: EXISTING
PARALLEL RUNS: SEE ONE-LINE

BREAKER CODES
A=ARC-FAULT; G=GROUND FAULT; H=HACR; L=LOCKING HANDLE; S=SHUNT TRIP; R=RED PAINTED HANDLE
WIRE CODES
I=ADD'L ISO GROUND TO MATCH SAFETY GROUND; S=UNLESS OTHERWISE SPECIFIED
GENERAL CODES
1LIN=SEE ONE-LINE DIAGRAM; SP=AS SPECIFIED

PANEL A2	TYPE GE POWERMARK PLUS	3 Ø	4 WIRE	120/208 VOLTS	LOCATION: L2 HALL	MOUNTING
X NEW	REMARKS					X FLUSH
EXISTING	-*=VERIFY WITH EQUIPMENT NAMEPLATE AND/OR SUBMITTAL PRIOR TO FINAL GEAR RELEASE					SURFACE
AS NEMA RATING						225 AMP MAIN
AS BOLT ON BREAKERS						X LUGS
ISOLATED GROUND BUS						BREAKER
X SURGE PROTECT (SPD)						

No.	BRKR		CIRCUIT DESCRIPTION	L	O	M	WIRE/CND				CIRC. LOAD				CIRC. LOAD	WIRE/CND				L	O	M	CIRCUIT DESCRIPTION	BRKR		No.
	A	P					PH	N	G	C		A	B	C		PH	N	G	C					A	P	
1	20	1	LTG: MAIN LOBBY	25		2	12S	12S	12S	3/4S	626	4706			4080	6	6	10	1.25			1	CONDENSING UNIT: CU-1	50H*	2	2
3	20	1	LTG: MAIN HALL, OFFICES	22			12S	12S	12S	3/4S	1003		5083		4080	6						1	-	-	-	4
5	20	1	LTG: STAIR, L2 HALL	18		2	12S	12S	12S	3/4S	628			2608	1980	12S	12S	12S	3/4S			1	CONDENSING UNIT: CU-2	20H*	2	6
7	20	1	LTG: L2 OFFICES	16			12S	12S	12S	3/4S	812	2792			1980	12S						1	-	-	-	8
9	20	1	LTG: ADDITION EXTERIOR	17			12S	12S	12S	3/4S	307		2287		1980	12S	12S	12S	3/4S			1	CONDENSING UNIT: CU-3	20H*	2	10
11	20	1	SPARE											1980	1980	12S						1	-	-	-	12
13	20	1	SPARE									0											SPARE	20	1	14
15	20	1	SPARE										0										SPARE	20	1	16
17	20	1	SPARE											2250	2250	10	10	10	3/4			1	WATER HEATER	30L*	2	18
19	20	1	SPARE									2250			2250	10						1	-	-	-	20
21	20	1	SPARE										2500		2500	10	10	10	3/4			1	COMMUNICATIONS RACK	30	2	22
23	20	1	SPARE											2500	2500	10						1	-	-	-	24
25	20	1	SPARE									0											SPARE	20	1	26
27	20	1	SPARE										0										SPARE	20	1	28
29	20	1	SPARE											0									SPARE	20	1	30
31	20	1	SPARE									0											SPARE	20	1	32
33	20	1	SPARE										0										SPARE	20	1	34
35	20	1	SPARE											0									SPARE	20	1	36
37	20	1	PLUGS: REC COUNTER		3		12S	12S	12S	3/4S	540	540											SPARE	20	1	38
39	20	1	PLUGS: OPS STORAGE		2		12S	12S	12S	3/4S	360		360										SPARE	20	1	40
41	20	1	PLUGS: L2 HALL		3		12S	12S	12S	3/4S	540			540									SPARE	20	1	42
43	20	1	PLUGS: MEN 203		1		12S	12S	12S	3/4S	180	180											SPARE	20	1	44
45	20	1	PLUGS: WMN 204		1		12S	12S	12S	3/4S	180		180										SPARE	20	1	46
47	20	1	PLUGS: MEN 102		1		12S	12S	12S	3/4S	180			180									SPARE	20	1	48
49	20	1	PLUGS: WMN 103		1		12S	12S	12S	3/4S	180	180											SPARE	20	1	50
51	20	1	PLUGS: L1 HALL		6		12S	12S	12S	3/4S	1080		1080										SPARE	20	1	52
53	20	1	PLUGS: REC 104 CKT 1		3		12S	12S	12S	3/4S	540			540									SPARE	20	1	54
55	20	1	PLUGS: REC 104 CKT 2		3		12S	12S	12S	3/4S	540	540											SPARE	20	1	56
57	20	1	PLUGS: OFF 106		3		12S	12S	12S	3/4S	540		900		360							1		20	1	58
59	20	1	PLUGS: OFF 107		3		12S	12S	12S	3/4S	540			1290	750	12S	12S	12S	3/4S			1	HEATER (STAIR)	20	1	60
61	20	1	PLUGS: OFF 108		3		12S	12S	12S	3/4S	540	1692			1152	12S	12S	12S	3/4S			1	FURNACE (F-3)	20	1	62
63	20	1	PLUGS: OFF 110		3		12S	12S	12S	3/4S	540		1692		1152	12S	12S	12S	3/4S			1	FURNACE (F-2)	20	1	64
65	20	1	PLUGS: OFF 111		3		12S	12S	12S	3/4S	540			1812	1272	12S	12S	12S	3/4S			1	FURNACE (F-1)	20	1	66
67	20	1	PLUGS: OFF 112		3		12S	12S	12S	3/4S	540	1540			1000	12S	12S	12S	3/4S			1	PHONE BOARD CKT 1	20	1	68
69	20	1	PLUGS: OFF 113		3		12S	12S	12S	3/4S	540		1540		1000	12S	12S	12S	3/4S			1	PHONE BOARD CKT 2	20	1	70
71	20	1	PLUGS: OFF 207		3		12S	12S	12S	3/4S	540			2040	1500	12S	12S	12S	3/4S			1	BREAK MICRO: COUNTER	20	1	72
73	20	1	PLUGS: OFF 208		3		12S	12S	12S	3/4S	540	2040			1500	12S	12S	12S	3/4S			1	BREAK MICRO: BUILT-IN	20	1	74
75	20	1	PLUGS: OFF 209		3		12S	12S	12S	3/4S	540		1740		1200	12S	12S	12S	3/4S			1	BREAK UC REFER	20	1	76
77	20	1	PLUGS: OFF 211		3		12S	12S	12S	3/4S	540			1740	1200	12S	12S	12S	3/4S			1	BREAK DISPOSAL	20	1	78
79	20	1	PLUGS: OFF 212		3		12S	12S	12S	3/4S	540	2040			1500	12S	12S	12S	3/4S		2		BREAK COUNTER	20	1	80
81	20	1	PLUGS: OFF 213		3		12S	12S	12S	3/4S	540		1740		1200	12S	12S	12S	3/4S			1	DRINK FTN: L1	20	1	82
83	20	1	PLUGS: OFF 214		3		12S	12S	12S	3/4S	540			1740	1200	12S	12S	12S	3/4S			1	DRINK FTN: L2	20	1	84
											TOTALS	18500	19102	19220												
			FEEDER: SEE ONE-LINE								AMPS/PHASE	154	159	160												

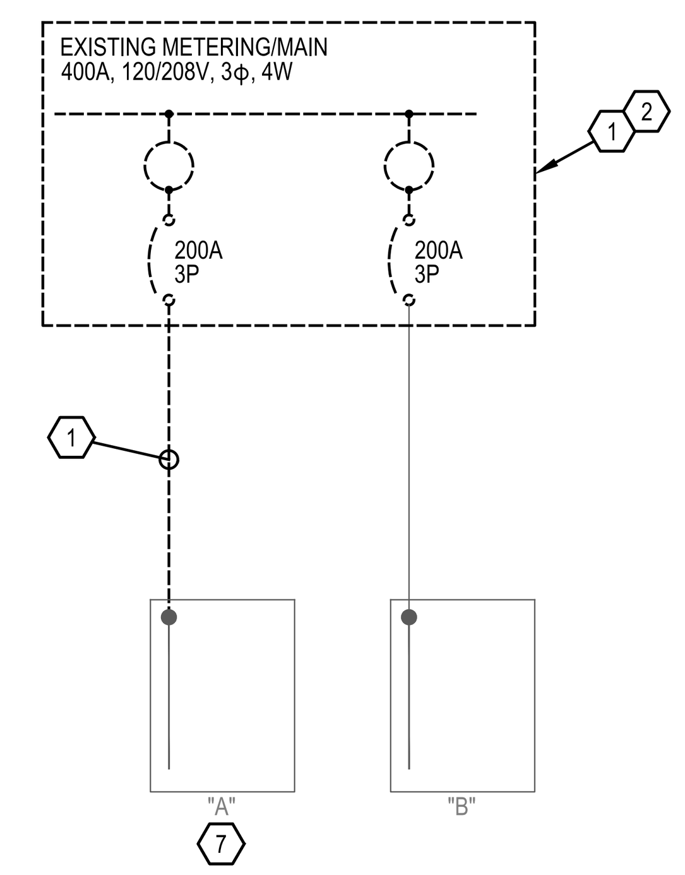
AIC: 10000
SCCR: 10000
PARALLEL RUNS: SEE ONE-LINE

BREAKER CODES
A=ARC-FAULT; G=GROUND FAULT; H=HACR; L=LOCKING HANDLE; S=SHUNT TRIP; R=RED PAINTED HANDLE
WIRE CODES
I=ADD'L ISO GROUND TO MATCH SAFETY GROUND; S=UNLESS OTHERWISE SPECIFIED
GENERAL CODES
1LIN=SEE ONE-LINE DIAGRAM; SP=AS SPECIFIED

MECHANICAL EQUIPMENT SCHEDULE

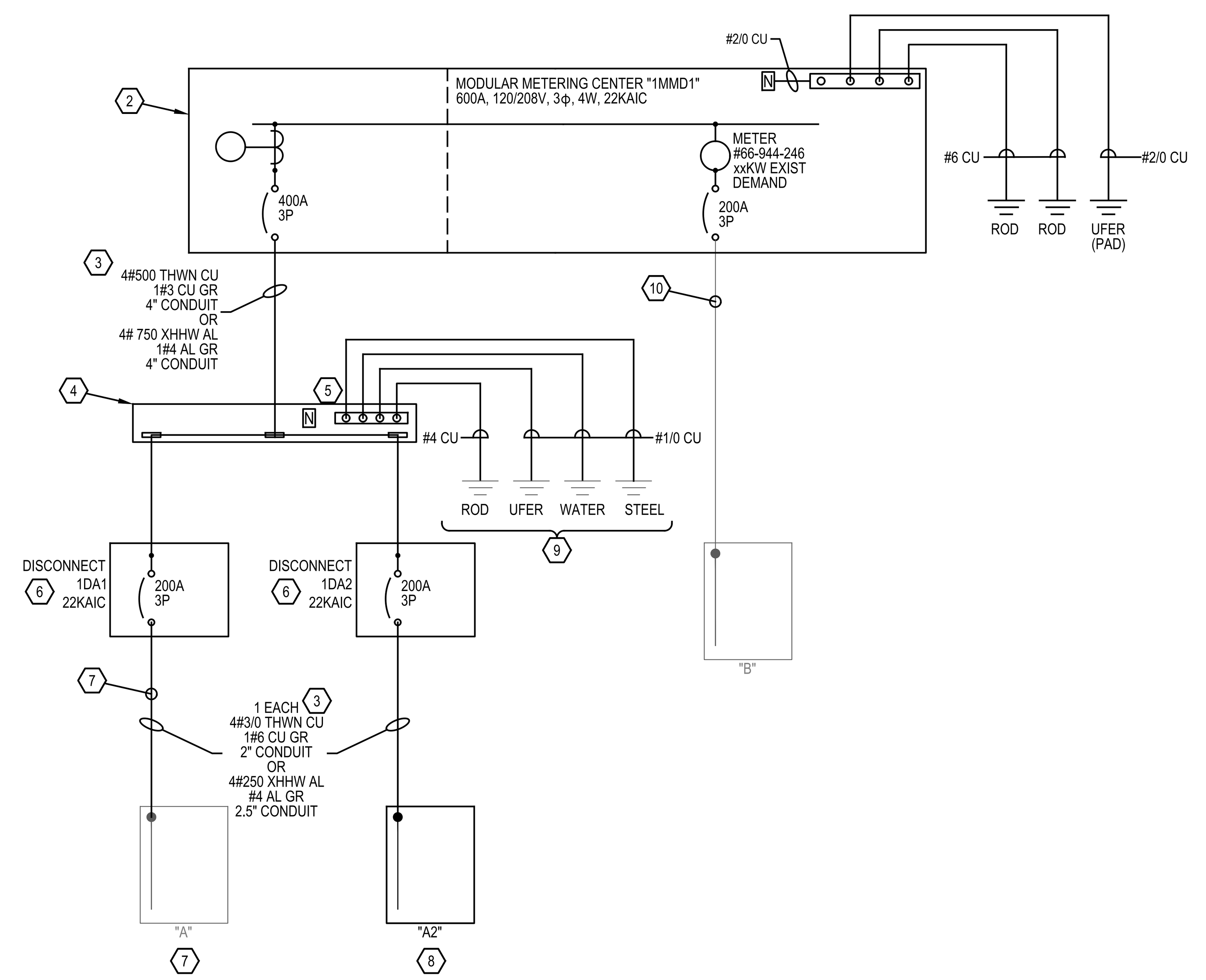
SYM	DESCRIPTION	LOAD	VOLTS	PHASE	FIRE ALARM SHUTDOWN	CONTROL CIRCUITS BY	* STARTER BY	SAFETY DISCONNECT BY	REMARKS
AF- 1	ATTIC FAN	3 FLA	120	1	NO	ELEC	ELEC	ELEC	
BR- 1	BASEBOARD HEATER	750 W	120	1	NO	MECH	MECH	MECH	
CEF- 1	CEILING EXHAUST FAN	87 W	120	1	NO	ELEC	MECH	ELEC	INTERLOCK TO BE CONTROLLED WITH LIGHTING IN SPACE SERVED BY FAN
CEF- 2	CEILING EXHAUST FAN	87 W	120	1	NO	ELEC	MECH	ELEC	INTERLOCK TO BE CONTROLLED WITH LIGHTING IN SPACE SERVED BY FAN
CEF- 3	CEILING EXHAUST FAN	87 W	120	1	NO	ELEC	MECH	ELEC	INTERLOCK TO BE CONTROLLED WITH LIGHTING IN SPACE SERVED BY FAN
CEF- 4	CEILING EXHAUST FAN	87 W	120	1	NO	ELEC	MECH	ELEC	INTERLOCK TO BE CONTROLLED WITH LIGHTING IN SPACE SERVED BY FAN
CU- 1	CONDENSING UNIT	34 MCA 50 MOCP	208	1	NO	MECH	MECH	ELEC	
CU- 2	CONDENSING UNIT	16.5 MCA 20 MOCP	208	1	NO	MECH	MECH	ELEC	
CU- 3	CONDENSING UNIT	16.5 MCA 20 MOCP	208	1	NO	MECH	MECH	ELEC	
DRP- 1	DOMESTIC HOT WATER RECIRC PUMP	1/15 HP	120	1	NO	MECH	EQUIP	ELEC	PROVIDE CORD AND PLUG TO MATCH EQUIPMENT NAMEPLATE
F- 1	FURNACE	14.1 MCA	120	1	NO	MECH	MECH	ELEC	
F- 2	FURNACE	9.6 MCA	120	1	NO	MECH	MECH	ELEC	
F- 3	FURNACE	9.6 MCA	120	1	NO	MECH	MECH	ELEC	
WH- 1	WATER HEATER	4.5 KW	208	1	NO	MECH	N/A	ELEC	PROVIDE CORD AND PLUG TO MATCH EQUIPMENT NAMEPLATE

* ELECTRICAL CONTRACTOR VERIFY SINGLE SPEED OR TWO SPEED STARTERS WITH MECHANICAL DRAWINGS.



2 ELECTRICAL ONE-LINE DIAGRAM: DEMO

SCALE: 1/8" = 1'-0"



1 ELECTRICAL ONE-LINE DIAGRAM: NEW

SCALE: 1/8" = 1'-0"

SHEET KEYED NOTES

1. REMOVE EXISTING DISTRIBUTION AS INDICATED.
2. UPGRADE EXISTING MODULAR METERING CENTER AND ASSOCIATED SUPPORT RACK WITH NEW.
3. PROVIDE NEW FEEDER.
4. PROVIDE GUTTER WITH FEEDER TAPS TO DISCONNECTS AS SHOWN.
5. PROVIDE GROUNDING AND BONDING PER NEC 250.32(B) FOR SEPARATE STRUCTURES. DO NOT BOND NEUTRAL TO GROUND AT THIS LOCATION.
6. LOCATE DISCONNECT ON BUILDING AS REQUIRED BY CODE. VERIFY LOCATIONS WITH FIELD CONDITIONS.
7. RE-FEED EXISTING PANEL. CONTRACTOR, AT HIS OWN RISK, MAY OPT TO LOCATE AND UTILIZE PARTS OF EXISTING FEEDER PROVIDED THAT THE FEEDER IS IN GOOD CONDITION AND MEETS THE PROJECTS REQUIREMENTS.
8. PROVIDE NEW G.E. PANEL AS SPECIFIED TO MATCH EXISTING.
9. PROVIDE BONDING CONNECTION TO EXISTING BUILDING'S GROUNDING ELECTRODE SYSTEM.
10. RECONNECT EXISTING FEEDER AS TO EXISTING PANEL TO REMAIN.

GENERAL SHEET NOTES

1. COMPLY WITH POWER UTILITY'S REQUIREMENTS FOR ALL UTILITY RELATED INSTALLATIONS. REVIEW CURRENT UTILITY STANDARDS MANUAL PRIOR TO BID. NOTIFY ENGINEER OF CONFLICTS PRIOR TO BID.
2. AIC RATINGS SHOWN INDICATE MINIMUM REQUIRED VALUES. SCCR RATINGS ARE TO MATCH OR EXCEED AIC RATINGS.
3. ALL CONDUCTORS ARE CONSIDERED TO BE COPPER UNLESS SPECIFICALLY NOTED OTHERWISE.
4. A FULL SIZE EQUIPMENT GROUNDING CONDUCTOR SIZED FOR THE OVERCURRENT PROTECTIVE DEVICE PROTECTING THE CIRCUIT IS REQUIRED IN EACH RACEWAY OR CABLE FOR PARALLELED CIRCUITS.
5. CONTRACTOR SHALL DOCUMENT FEEDER CONDUCTOR LENGTH ON FIELD REDLINE SET. FEEDER LENGTHS ARE REQUIRED FOR ARC FAULT STUDIES AS SPECIFIED.
6. FIELD MARK SERVICE EQUIPMENT WITH AVAILABLE FAULT CURRENT AND CALCULATION DATE PER NEC 110.24(A).
7. RUN PORTIONS OF GROUNDING ELECTRODE CONDUCTORS NOT CONCEALED IN BUILDING FINISHES IN CONDUIT.
8. REFER TO SPECIFICATIONS FOR SERIES VS. FULLY RATED REQUIREMENTS.
9. FIELD MARK ALL SERVICE EQUIPMENT WITH REQUIRED BREAKER CLEARING TIME. CONTRACTOR VERIFY WITH MANUFACTURER'S PUBLISHED DATA FOR MAIN BREAKER.

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Project Name
JONES AND ASSOCIATES
BUILDING ADDITION

Issued

No.	Date	Description
1	09.21.23	PLAN REVIEW
2	02.29.24	PLAN REVIEW

Revision

No.	Date	Description
1	02.29.2024	CITY REVIEW

SAA Project No. 2022-03

Drawing Title
ELECTRICAL ONE-LINE DIAGRAM

Sheet Number
EP601