General Notes

1. ALL GENERAL NOTES HEREIN APPLY TO ALL TRADES FOR THE PROJECT AMENDED ELSEWHERE TO INCLUDE ISOLATED CONDITIONS.
2. THE DRAWINGS ARE INTENDED TO SHOW THE GENERAL ARRANGEMENT, DESIGN, AND EXTENT OF THE WORK AND ARE PARTLY DIAGRAMMATIC - THEY ARE NOT INTENDED TO BE SCALED.
3. ALL DETAILS AND SECTIONS SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL BE CONSTRUED TO APPLY TO ANY SIMILAR SITUATION ELSEWHERE ON THE PROJECT, EXCEPT WHERE A DIFFERENT DETAIL IS SHOWN.
4. THE CONTRACTOR AND ALL SUBCONTRACTORS SHALL VERIFY ALL GRADE LINES, LEVELS, CONDITIONS, AND DIMENSIONS AT THE JOB SITE AND AS SHOWN ON THE DRAWINGS. THEY SHALL REPORT ANY ERRORS OR INCONSISTENCIES TO THE OWNER /ARCHITECT BEFORE COMMENCING WORK.
5. CONTRACTOR AND SUBCONTRACTORS SHALL LAY OUT THEIR WORK FROM ESTABLISHED REFERENCE POINTS AND BE RESPONSIBLE FOR ALL LINES, ELEVATIONS, AND MEASUREMENTS IN CONNECTION WITH THEIR OWN.
6. PROTECTION:
   A. THE CONTRACTOR IS RESPONSIBLE AND SHALL COMPLY WITH THE REQUIREMENTS OF THE BUILDING CODE HAVING JURISDICTION AND ALL LOCAL, STATE, AND FEDERAL LAWS.
   B. PROVIDE ALL SHORING AND BRACING AS REQUIRED FOR THE PROPER EXECUTION OF THE WORK.- REMOVE WHEN WORK IS COMPLETED
   C. PROVIDE AND MAINTAIN SAFETY LIGHTING AND BARRICADES AT ALL AREAS OF WORK ADJACENT TO PUBLIC WAYS OR PUBLIC SPACES.
   D. AT ALL TIMES PROVIDE PROTECTION AGAINST WEATHER (RAIN, WIND, STORMS, OR HEAT) SO AS TO MAINTAIN ALL WORK, MATERIALS, APPARATUS, AND FIXTURES FREE FROM DAMAGE.
   E. THE CONTRACTOR SHALL PAY FOR ALL DAMAGES TO ADJACENT STRUCTURES, SIDEWALKS, AND STREETS OR OTHER PUBLIC PROPERTY OR TO ANY PUBLIC UTILITIES.
7. IF ANY ERRORS OR OMISSIONS APPEAR IN THE DRAWINGS, SPECIFICATIONS, OR OTHER DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE OWNER / ARCHITECT IN WRITING OF SUCH OMISSIONS OR ERRORS PRIOR TO PROCEEDING WITH ANY WORK IN WHICH APPEARS IN QUESTION. IN THE EVENT OF THE CONTRACTOR'S FAILING TO GIVE SUCH NOTICE, THEY SHALL BE HELD RESPONSIBLE FOR THE RESULTS OF ANY SUCH ERRORS OR OMISSIONS AND THE COST OF RECTIFYING THE SAME. THE CONTRACTOR SHALL HAVE ALL ITEMS OR DETAILS CLARIFIED WITH THE OWNER / ARCHITECT PRIOR TO SUBMITTING A BID; OTHERWISE THE ARCHITECT'S INTERPRETATION SHALL BE FINAL.
8. THE CONTRACTOR SHALL USE ANY STRUCTURAL DRAWINGS TOGETHER WITH THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS TO LOCATE DEPRESSED SLABS, SLOPES, DRAINS, OUTLETS, RECESSES, OPENINGS, REGLETS, BOLT SETTING, SLEEVES, DIMENSIONS, ETC. POTENTIAL CONFLICTS SHALL BE TRANSMITTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
9. ALL WOOD WALL DIMENSIONS GIVEN ARE TO EXTERIOR FACE OF FRAMING. LIGHT GA STEEL WALLS ARE DIMENSIONED TO FACE OF FRAMING. CONCRETE OR MASONRY DIMENSIONS GIVEN ARE TO FACE OF STRUCTURAL ASSEMBLY.
10. SOME CONNECTIONS INDICATED ON THE DRAWINGS ARE SCHEMATIC. SECURE ALL COMPONENTS RIGIDLY TO STRUCTURE AND EACH OTHER. USE FASTENERS DESIGNED FOR EACH IN-SERVICE CONNECTION.
11. OBTAIN CLARIFICATION AND INTERPRETATION OF DRAWINGS AND SPECIFICATIONS, INCLUDING ADDITIONAL DETAIL, DIRECTLY FROM ARCHITECT WITH COPY TO OWNER'S PROJECT MANAGER.
12. WASTE MATERIAL AND RUBBISH FROM DEMOLITION AND ALTERATIONS SHALL BE REMOVED FROM SITE AS RAPIDLY AS POSSIBLE AND SHALL NOT BE ALLOWED TO ACCUMULATE ON PREMISES. DISPOSAL OF MATERIALS WILL BE AT THE DISCRETION OF THE CONTRACTOR. OPEN FIRES WILL NOT BE PERMITTED FOR DISPOSAL OF WASTE. CONTRACTOR SHALL PROVIDE AN EXTERIOR AREA TO COLLECT ALL DEMOLISHED MATERIAL NOT TO BE REUSED. THE AREA SHALL BE SAFE AND UNOBSTRUCTING THE BUILDING FUNCTION AND THE OWNER'S DAILY BUSINESS OPERATIONS.
13. EXISTING UTILITY LINES INDICATED OR NOTED ON THE DRAWINGS ARE SHOWN AS OBTAINED FROM EXISTING INFORMATION AND ARE LIKELY INCOMPLETE AND ONLY APPROXIMATE IN LOCATION. THE CONTRACTOR SHALL TAKE EXTREME CAUTION TO AVOID DAMAGE TO ALL EXISTING UTILITY LINES AND/OR HARM TO PERSONNEL ENGAGED IN WORKING IN THE AREA. COORDINATE WITH POB STAFF PRIOR TO DIGGING.

Drawing Index

Project Information

PROJECT DATA

SITE ADDRESS:	5694 2nd AVENUE, FERNDALE, WA 982248
PARCEL NUMBER:	3902291325220000
PROJECT DESCRIPTION:	LIMITED ARCHITECTURAL, MECHANICAL, AND ELECTRICAL RENOVATIONS AT THE EXISTING MUNICIPAL COURT FACILITY. THE PROJECT ALSO INCLUDES A SMALL ENTRANCE ADDITION TO SUPPORT PUBLIC SECURITY PROCEDURES FOR THE FACILITY.
ZONING:	PI - PUBLIC / INSTITUTIONAL

BUILDING CODE REQUIREMENTS

CODES:	2015 INTERNATIONAL EXISTING BUILDING CODE (IEBC) 2015 INTERNATIONAL BUILDING CODE (IBC) AND AMENDMENTS - CHAPTER 51-50 WAC 2015 INTERNATIONAL MECHANICAL CODE (IMC) AND AMENDMENTS - CHAPTER 51-52 WAC 2015 INTERNATIONAL FUEL GAS CODE (IFGC) AND AMENDMENTS - CHAPTER 51-52 WAC 2015 INTERNATIONAL RESIDENTIAL CODE (IRC) AND AMENDMENTS - CHAPTER 51-50 WAC 2015 INTERNATIONAL PROPERTY MAINTENANCE CODE (IPMC) 2015 INTERNATIONAL ENERGY CONSERVATION CODE (IECC) AND AMENDMENTS - CHAPTER 51-11C & 51-11R WAC 2015 NATIONAL FUEL GAS CODE (NFPA 54) - CHAPTER 51-52 WAC 2011 LIQUEFIED PETROLEUM GAS CODE (NFPA 58) - CHAPTER 51-52 WAC 2015 INTERNATIONAL FIRE CODE (IFC) AND AMENDMENTS CHAPTER 51-54 WAC 2015 UNIFORM PLUMBING CODE (UPC) AND AMENDMENTS - CHAPTERS 51-56, 51-57 WAC ELECTRICAL - CHAPTER 296 -46B WAC WASHINGTON CITIES ELECTRICAL CODE WASHINGTON STATE ENERGY CODE (WSEC), 2015 EDITION *NOTE: ALL CODES ARE SUBSEQUENTLY MODIFIED BY WASHINGTON ADMINISTRATIVE CODE (WAC) AMENDMENTS
CODE PATH:	IEBC (2015) ALTERATION LEVEL 2
OCCUPANCY CLASSIFICATION:	A3 @ SOUTHERN STRUCTURE (COURTHOUSE), B @ NORTHERN STRUCTURE (COMMUNITY RESOURCE CENTER)
OCCUPANCY SEPARATION: (TABLE 508.4)	A TO B = 2 HOUR TYPICALLY (NS)
CONSTRUCTION TYPE:	VB, NON SPRINKLERED
NON SEPARATED OCCUPANCES: (IBC 508.3)	- A3 DEFINES THE MOST RESTRICTIVE CONDITION - OK - - THUS OCCUPANCY AND CONSTRUCTION TYPE ALLOWS 6,000 S.F. PLUS FRONTAGE INCREASE, ALLOWING 10,500 S.F. - OK - - CHAPTER 9 DOES NOT REQUIRE FIRE PROTECTION FOR FIRE AREA, A3 OCCUPANCIES UNDER 12,000 S.F., OR LESS THAN 300 OCCUPANTS OR HAVING UPPER STORIES.
ALLOWABLE AREA: (TABLE 506.2)	A3 : 6,000 S.F. + YARD INCREASE = 10,500 S.F. - OK - B : 9,000 S.F. + YARD INCREASE = 15,750 S.F. - N/A -
PROPOSED AREA:	EXISTING "A3" : 1,918 S.F. EXISTING "B" : 2,027 S.F. PROPOSED ADDITION "B" : 590 S.F. SUB TOTAL : 4,535 S.F. - OK -
ALLOWABLE HEIGHT / STORIES:	40 FT., 1 STORY (MOST RESTRICTIVE)
PROPOSED HEIGHT / STORIES:	17 FT., 1 STORY
FIRE PROTECTION:	EXISTING FIRE ALARM SYSTEM
PLUMBING FIXTURES:	NO CHANGE

Alternates

1. REPLACE SUSPENDED ACOUSTICAL CEILING TILES @ COURTROOM 101.
2. INSTALL NEW CARPET TILE @ COURTROOM 101.
3. REMOVE EXISTING ROOFING AND INSULATION LAYERS ABOVE EXISTING STRUCTURAL DECKING AT ROOF OF NORTH BUILDING AND INSTALL NEW INSULATION AND ROOFING
4. REMOVE EXISTING ROOFING AND INSULATION LAYERS ABOVE EXISTING STRUCTURAL DECKING AT ROOF OF SOUTH BUILDING AND INSTALL NEW INSULATION AND ROOFING

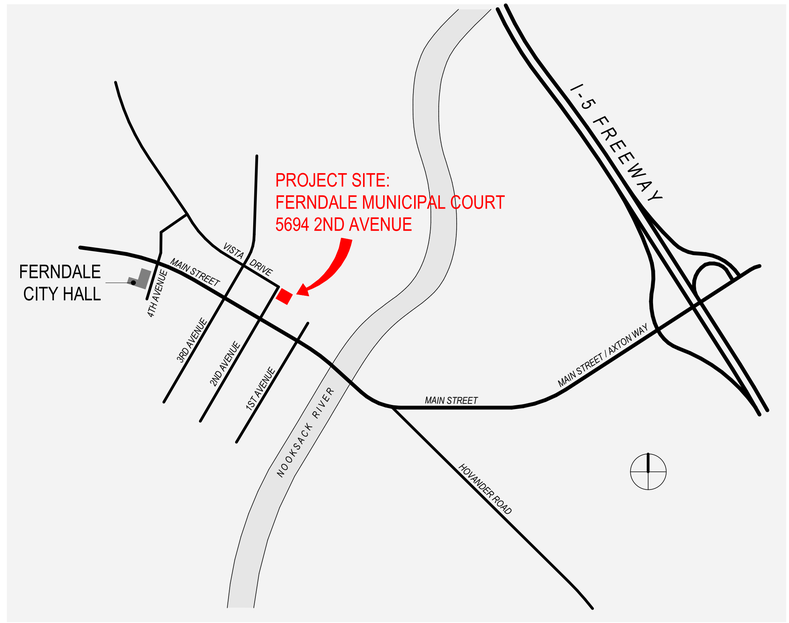
WSEC Energy Code Approach

- USE PRESCRIPTIVE COMPONENT PERFORMANCE PATH FOR RENOVATIONS ONLY AT THE ADDITION.
- WSEC SECTION C406: ADDITIONAL EFFICIENCY PACKAGE OPTIONS
  1. C406.2 MORE EFFICIENT HVAC EQUIPMENT AND FAN SYSTEMS
  2. C406.6 DEDICATED OUTDOOR AIR SYSTEMS (DOAS).
- AIR BARRIER TESTING IS REQUIRED FOR NEW CONSTRUCTION PROJECTS PER WSEC C402.5.1.2 AND SHALL BE PROVIDED BY THE GENERAL CONTRACTOR TO MEET 0.40 CFM/FT^2 UNDER TEST PRESSURE OF 0.3 INCH W.G. AREA OF TEST IS THE ADDITION ONLY - CONTRACTOR SHALL: (1) SUBMIT AIR BARRIER TEST REPORT TO JURISDICTION ONCE TEST IS COMPLETED; (2) IF TEST RESULTS EXCEED 0.40 CFM/FT^2 (1.5 L/S/M^2) AT 0.3 IN. W.G. (75 PA), THEN VISUALLY INSPECT AIR BARRIER AND SEAL NOTED SOURCES OF LEAKAGE; (3) SUBMIT A FOLLOW-UP REPORT TO JURISDICTION NOTING CORRECTIVE MEASURES TAKEN; (4) INCLUDE AIR BARRIER TEST REPORT IN COMPLIANCE DOCUMENTATION PROVIDED TO BUILDING OWNER.
- WSEC ENVELOPE PERFORMANCE IS PER THE PRESCRIPTIVE METHOD PER WSEC FORMS.
- WSEC C303.1.1: INSTALL INSULATION SO THAT IDENTIFICATION MARK IS READILY OBSERVABLE DURING INSPECTION(S)
- WSEC C402.4.3: FENESTRATION PRODUCTS SHALL BE LABLED WITH RATED U-FACTOR = 0.30, SHG. C = 0.40, VT AND LEAKAGE RATING FOR INSPECTION.
- NEW ADDITION FENESTRATION OPENING TO WALL AREA RATIO = 5.9%
- WSEC PROJECT CLOSEOUT DOCUMENTATION IS REQUIRED INCLUDING APPLICABLE WSEC ENVELOPE COMPLIANCE FORMS AND CALCULATIONS, AND FENESTRATION NFRC RATING CERTIFICATES; PROVIDE TO OWNER AS PART OF CLOSEOUT.

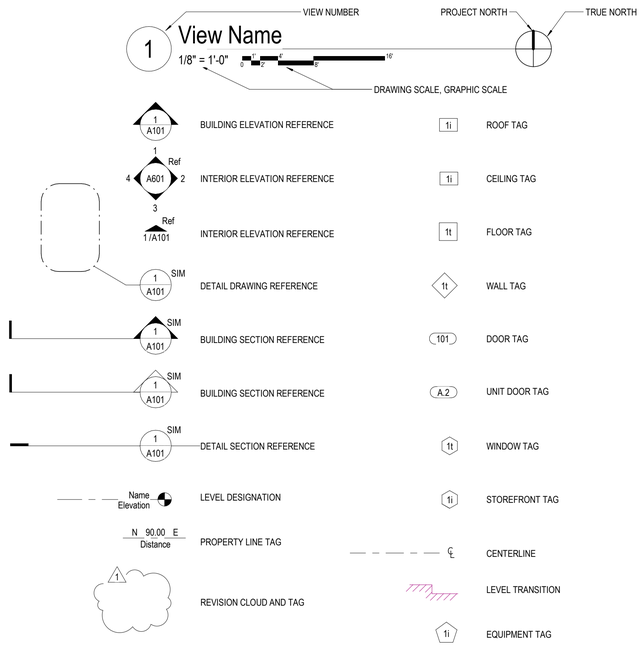
Project Team

CLIENT:	**CITY OF FERNDALE** 2095 MAIN STREET FERNDALE, WASHINGTON 98248 T 360 384 4302 ATTENTION: KEVIN RENZ KevinRenz@cityofferndale.org	STRUCTURAL ENGINEER:	**KINGWORKS STRUCTURAL ENGINEERS** 600 DUPONT STREET, SUITE B BELLINGHAM, WA 98255 T 360 714 8260 x1 CONTACT: DAN LINKHART, P.E. dan@king-works.com
ARCHITECT:	**RMC ARCHITECTS, PLLC** 1223 RAILROAD AVENUE BELLINGHAM, WA 98225 T 360 676 7733 F 360 738 0448 ATTENTION: BRAD CORNWELL brad.c@rmcarchitects.com	MECHANICAL & ELECTRICAL ENGINEER:	**COFFMAN ENGINEERS INC.** 1997 PARK LANE BURLINGTON, WA 98233 T 360 707 5656 CONTACT: TAMAS BENCSIK, P.E. tamas.bencsik@coffman.com

Vicinity Map



Architectural Symbols



Abbreviations

SEE ALSO PLAN LEGEND AND KEYS THROUGHOUT DRAWINGS

A B

ACT	ACOUSTICAL CEILING TILE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AFS	ABOVE FINISH SLAB
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
AP	ACCESS PANEL
BLDG	BUILDING
BO	BOTTOM OF
BUR	BUILT-UP ROOFING

C

C	ACOUSTICAL CEILING PANEL
CB	CATCH BASIN
CB	CORNER BEAD
CFCI	CONTRACTOR FURNISHED & INSTALLED
CG	CORNERGUARD
CJ	CONSTRUCTION JOINT
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CPT	CARPET

D E

DEMO	DEMOLITION
DN	DOWN
DS	DOWNSPOUT
DWV	DRAIN WASTE AND VENT
(E)	EXISTING
ELEV	ELEVATOR
EM	ENTRANCE MAT
EP	ELECTRIC PANEL
EQUIP	EQUIPMENT
EXT	EXTERIOR

F G

FBO	FURNISHED BY OTHERS
FEC	FIRE EXTINGUISHER CABINET
FURR	FURRING
GA	GAUGE
GALV	GALVANIZED
GLB	GLUE LAMINATED BEAM
GWB	GYPSUM WALLBOARD

H

HM	HOLLOW METAL
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING

I J K

L

LAM	LAMINATE
LB, #	POUNDS
LF	LINEAR FOOT
LP	LIGHT POLE
LWC	LIGHTWEIGHT CONCRETE

M

MECH	MECHANICAL
MFGR, MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
ML	METAL LATH
MTD	MOUNTED
MTL	METAL

N

(N)	NEW
NA, N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO, #	NUMBER
NTS	NOT TO SCALE

O

OC	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED & OWNER INSTALLED
OVHD	OVERHEAD

P

PLAM, P-LAM	PLASTIC LAMINATE
POLY	POLYETHYLENE
PREP	PREPARATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE-TREATED
PT	PAINT
PTD	PAINTED
PVC	POLYVINYL CHLORIDE

Q R

QTY	QUALITY
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFERENCE
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RSF	RESILIENT FLOORING

S

SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SQ FT, S.F.	SQUARE FOOT
SQ IN, S.I.	SQUARE INCH
ST	STREET
STL	STEEL
STRUCT	STRUCTURAL

T

T & B	TOP AND BOTTOM
T & G	TONGUE AND GROOVE
TEMP	TEMPORARY
T.O.	TOP OF
TPO	THERMOPLASTIC POLYOLEFIN
TYP	TYPICAL

U V

UNO	UNLESS NOTED OTHERWISE
VCT	VINYL COMPOSITION TILE
VENT	VENTILATOR
VT	VINYL TILE
VWC	VINYL WALL COVERING

W

W/O	WITHOUT
WC	WATER CLOSET
WD	WIDTH
WD	WOOD

X Y Z

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BRADLEY P. CORNWELL
STATE OF WASHINGTON

City of Ferndale
Municipal Court Remodel
5694 2nd Avenue
Ferndale, WA 98248

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Checked By: BPCornwell
Issued for:
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COVER SHEET

G001

VISTA DRIVE

2ND AVENUE

EXTENT OF RAILROAD RIGHT-OF-WAY

CENTERLINE OF RAILROAD RIGHT-OF-WAY

EXTENT OF RAILROAD RIGHT-OF-WAY

16 PARKING STALLS
(1 ACCESSIBLE)

EXISTING CONCRETE SIDEWALKS

AREA OF WORK

APPROXIMATE EDGE OF PAVING

APPROXIMATE PROPERTY LINE EXTENTS

EXISTING CONCRETE SIDEWALKS

ROOF PERIMETERS SHOWN BOLD

REFER TO FLOOR PLAN FOR EXTENTS OF ROOF AND SLAB DEMOLITION AT EXISTING BUILDING (SHOWN HERE DASHED & POCHE'D)

EXISTING PARKING
- NO CHANGE -

19 PARKING STALLS
(1 ACCESSIBLE)
- NO CHANGE -

TRUE NORTH

PROJECT NORTH

1 Existing Site Plan

1" = 10'-0"

0 5 10' 20'

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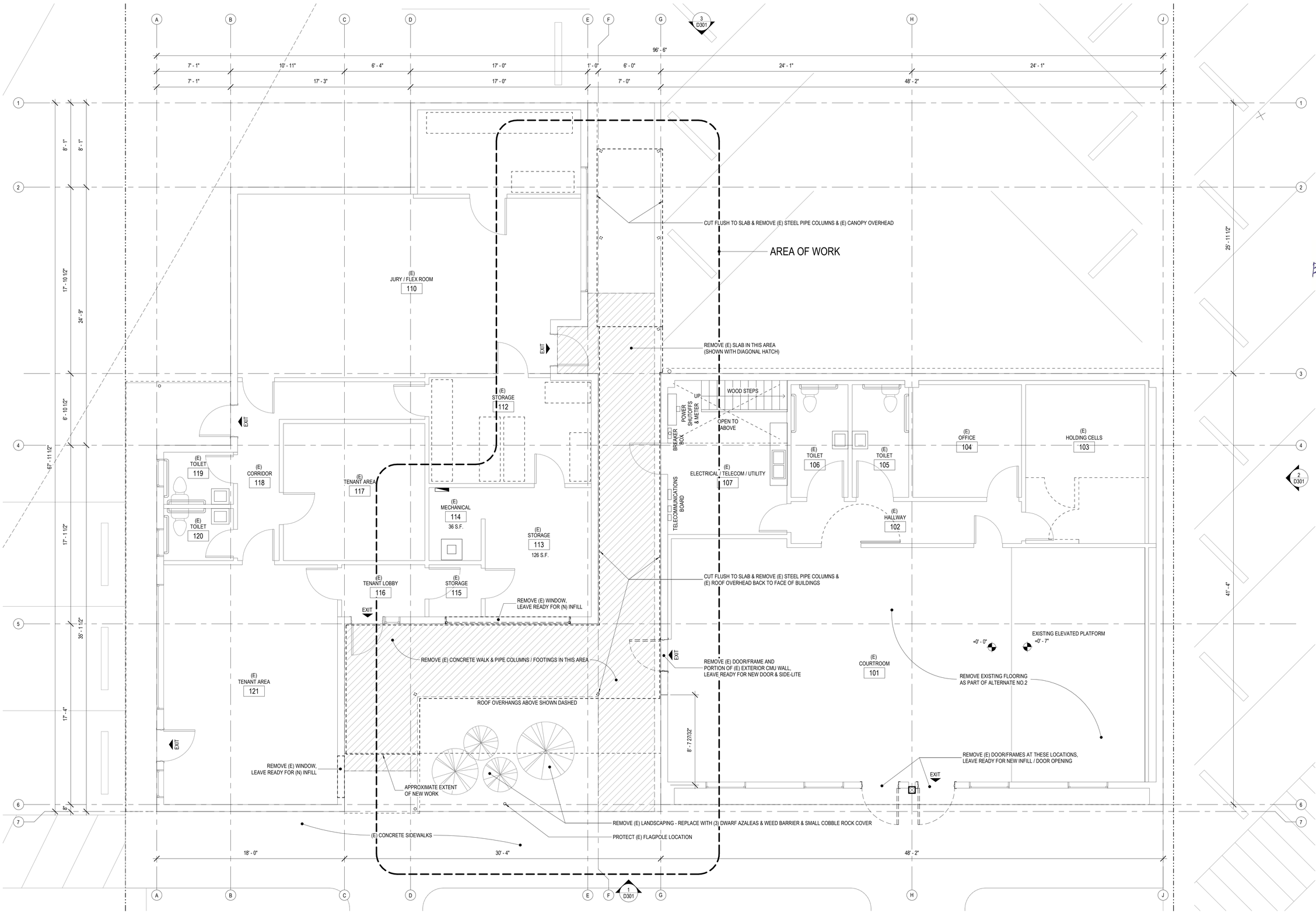
EXISTING SITE PLAN

D100



1 Ground Floor Demolition Plan

1/4" = 1'-0"

TRUE NORTH

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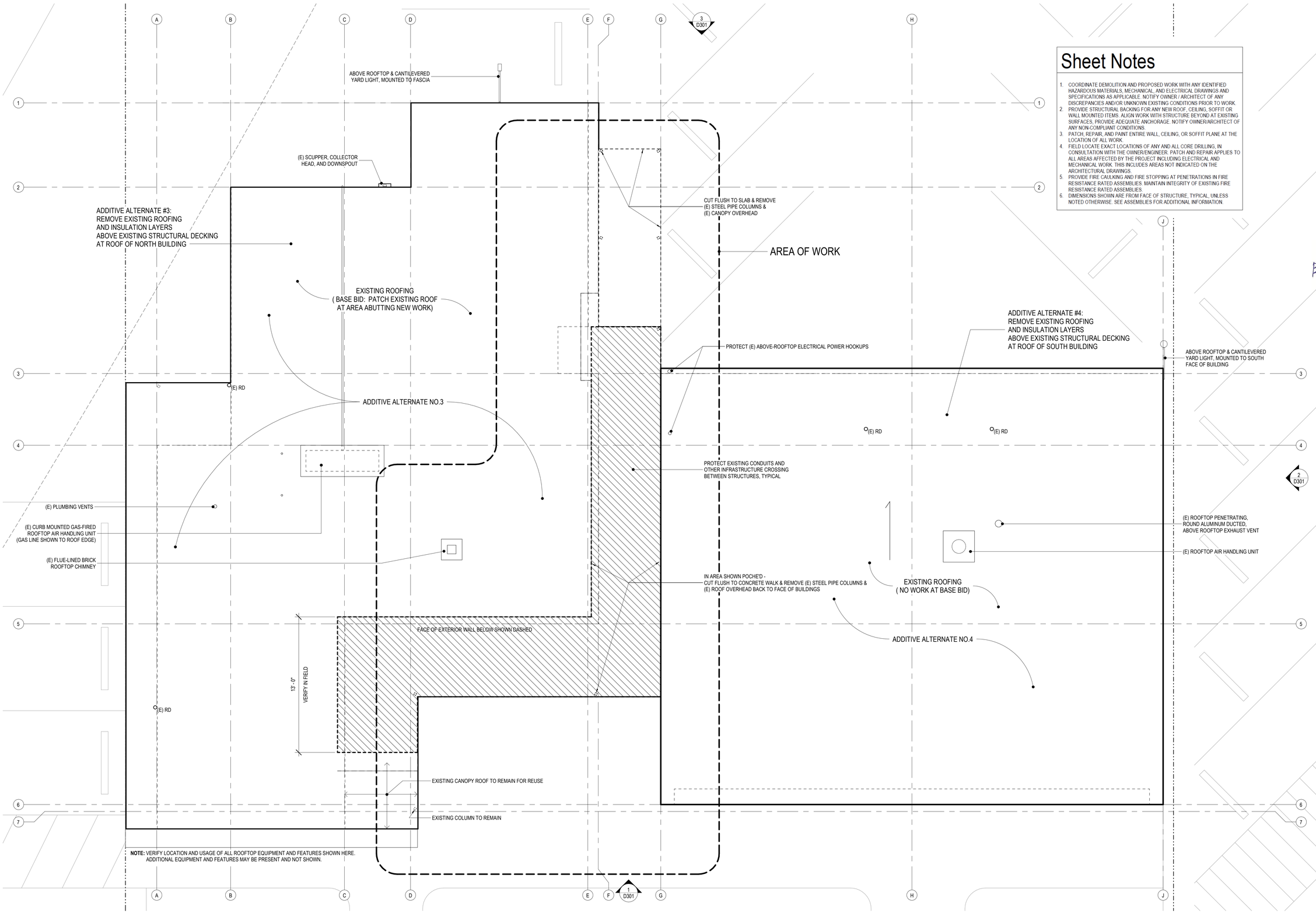
GROUND FLOOR DEMOLITION PLAN

D201



Sheet Notes

1. COORDINATE DEMOLITION AND PROPOSED WORK WITH ANY IDENTIFIED HAZARDOUS MATERIALS, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS AS APPLICABLE. NOTIFY OWNER / ARCHITECT OF ANY DISCREPANCIES AND/OR UNKNOWN EXISTING CONDITIONS PRIOR TO WORK.
2. PROVIDE STRUCTURAL BACKING FOR ANY NEW ROOF, CEILING, SOFFIT OR WALL MOUNTED ITEMS. ALIGN WORK WITH STRUCTURE BEYOND AT EXISTING SURFACES, PROVIDE ADEQUATE ANCHORAGE. NOTIFY OWNER/ARCHITECT OF ANY NON-COMPLIANT CONDITIONS.
3. PATCH, REPAIR, AND PAINT ENTIRE WALL, CEILING, OR SOFFIT PLANE AT THE LOCATION OF ALL WORK.
4. FIELD LOCATE EXACT LOCATIONS OF ANY AND ALL CORE DRILLING, IN CONSULTATION WITH THE OWNER/ENGINEER. PATCH AND REPAIR APPLIES TO ALL AREAS AFFECTED BY THE PROJECT INCLUDING ELECTRICAL AND MECHANICAL WORK. THIS INCLUDES AREAS NOT INDICATED ON THE ARCHITECTURAL DRAWINGS.
5. PROVIDE FIRE CAULKING AND FIRE STOPPING AT PENETRATIONS IN FIRE RESISTANCE RATED ASSEMBLIES. MAINTAIN INTEGRITY OF EXISTING FIRE RESISTANCE RATED ASSEMBLIES.
6. DIMENSIONS SHOWN ARE FROM FACE OF STRUCTURE, TYPICAL, UNLESS NOTED OTHERWISE. SEE ASSEMBLIES FOR ADDITIONAL INFORMATION.

NOTE: VERIFY LOCATION AND USAGE OF ALL ROOFTOP EQUIPMENT AND FEATURES SHOWN HERE. ADDITIONAL EQUIPMENT AND FEATURES MAY BE PRESENT AND NOT SHOWN.

1 Roof Demolition Plan
1/4" = 1'-0"

TRUE NORTH

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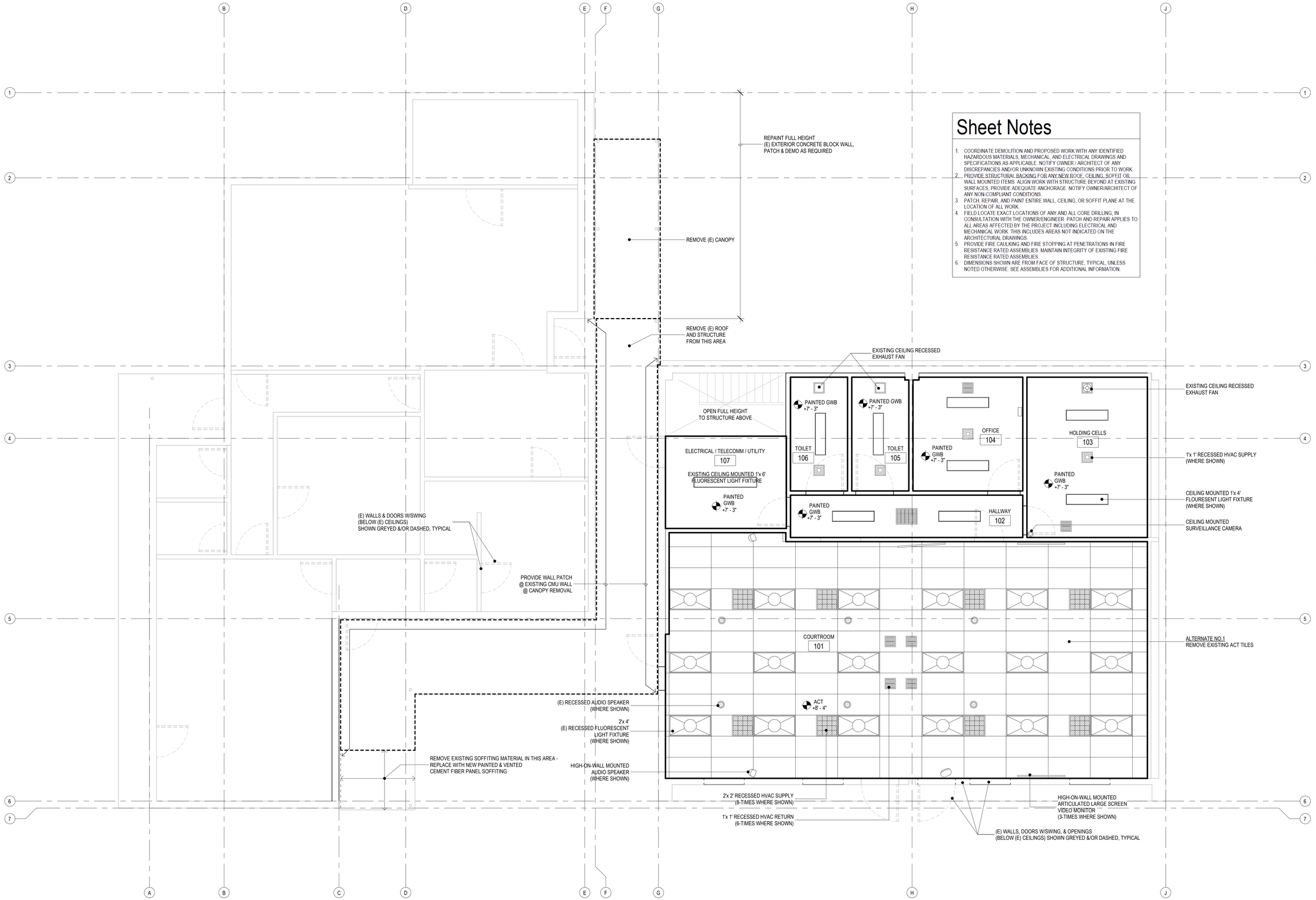
ROOF DEMOLITION PLAN

D202



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1 Ground Floor Demolition Reflected Ceiling Plan

1/4" = 1'-0"

TRUE NORTH

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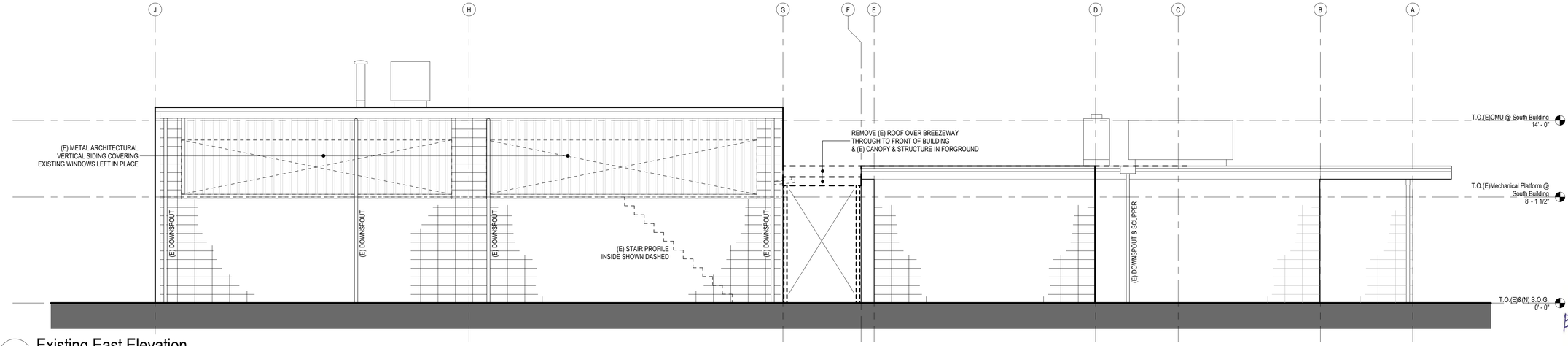
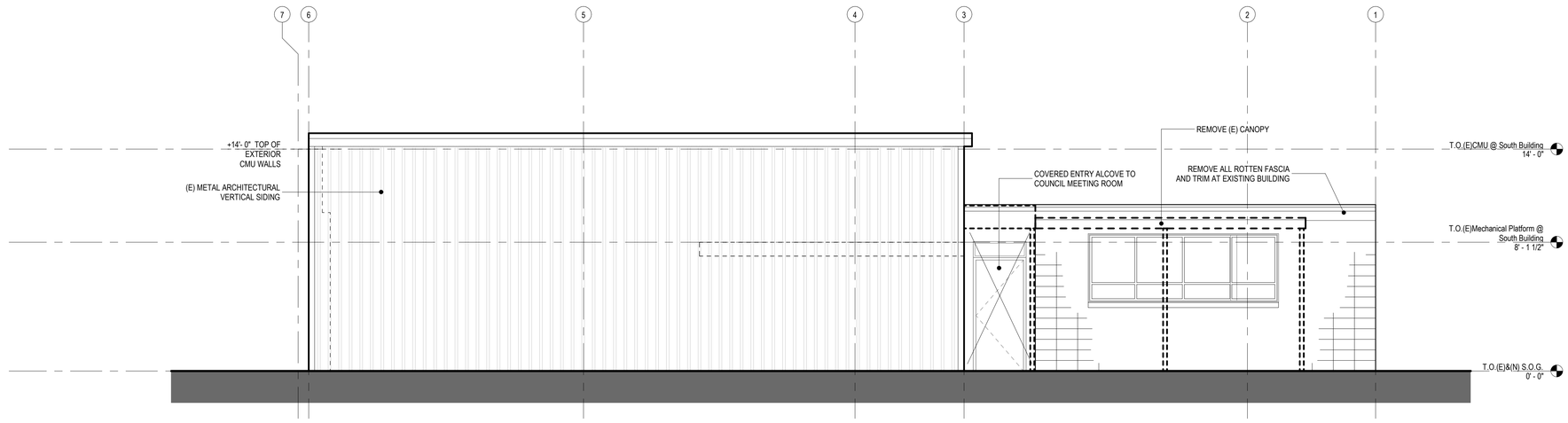
GROUND FLOOR DEMOLITION REFLECTED CEILING PLAN

D210



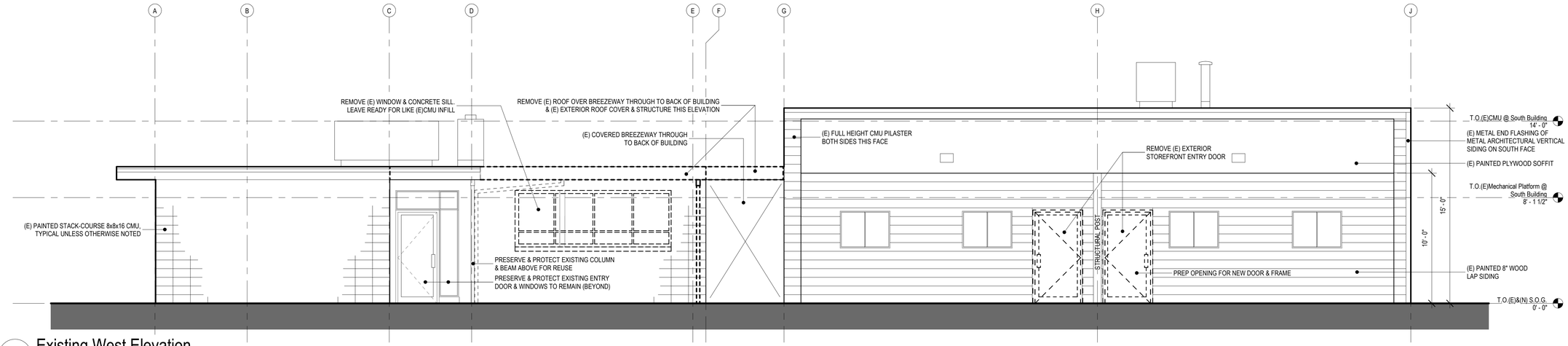
3 Existing East Elevation

1/4" = 1'-0"



2 Existing South Elevation

1/4" = 1'-0"



1 Existing West Elevation

1/4" = 1'-0"

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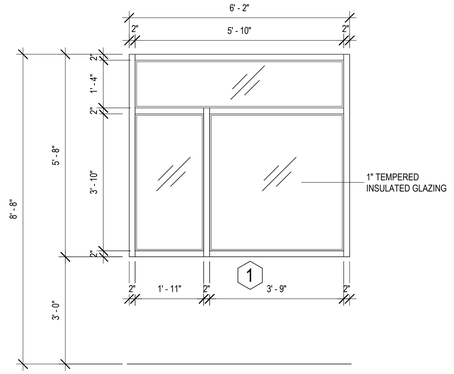
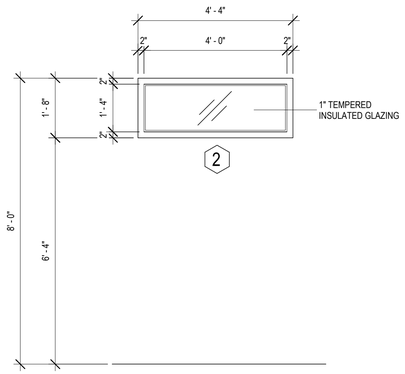
EXISTING ELEVATIONS

D301



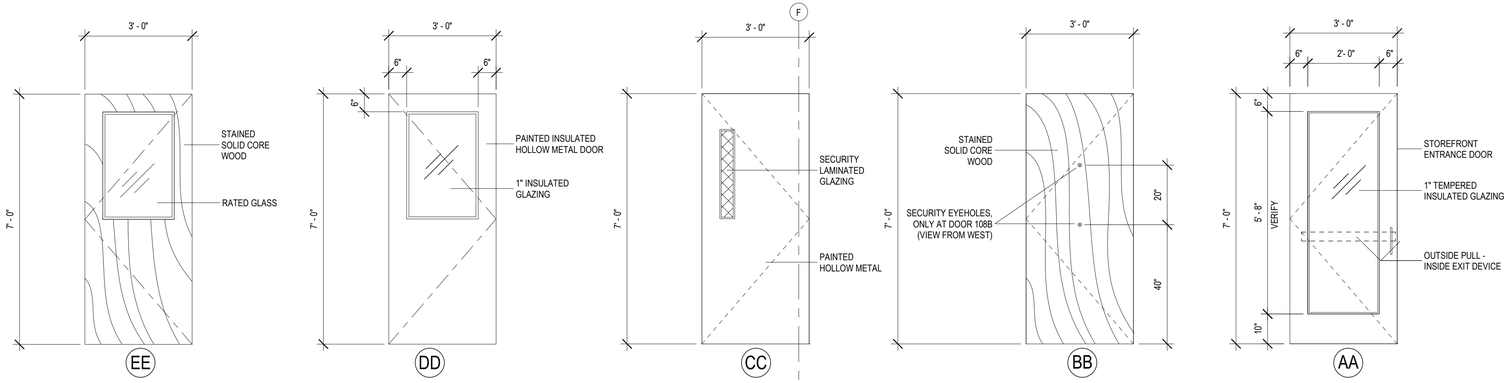


New Windows

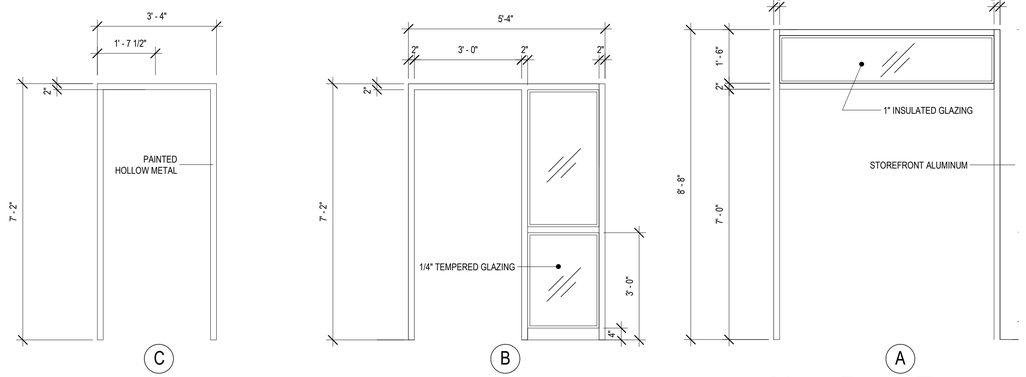
Schedule of New Doors

Door Schedule

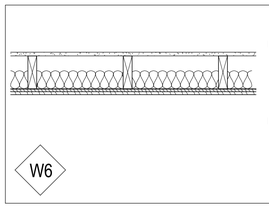
Door Number	Door Size Width	Size Height	Size Thickness	Door Type	Door Finish	Door Descritpion	Frame Type	Frame Finish	Fire Rating	Glazing	Hardware Group	Comments
101	3' - 0"	7' - 0"	0' - 1 3/4"	DD	PAINTED	HOLLOW METAL	C 7-1/2"	PAINTED	---	1" INSUL.		NO PULL @ EXTERIOR SIDE, EXIT DEVICE
108A	3' - 0"	7' - 0"	0' - 1 3/4"	CC	PAINTED	HOLLOW METAL	C	PAINTED	---	1" INSUL.		EXIT DEVICE, ACCESS CONTROL
108B	3' - 0"	7' - 0"	0' - 1 3/4"	BB	STAIN	SOLID CORE WOOD	C	PAINTED	20 MIN.	---		EXIT DEVICE, ACCESS - CONTROL, HOLD OPEN
109A	6' - 0"	7' - 0"	0' - 2"	PAIR AA	MFR.	ALUMINUM	A	MFR.	---	1" INSUL.		EXIT DEVICE, ACCESS CONTROL
109B	3' - 0"	7' - 0"	0' - 1 3/4"	EE	STAIN	SOLID CORE WOOD	B	PAINTED	20 MIN.	1/4" RATED		EXIT DEVICE

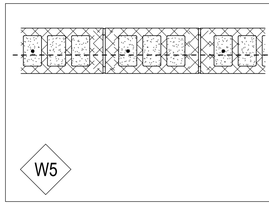


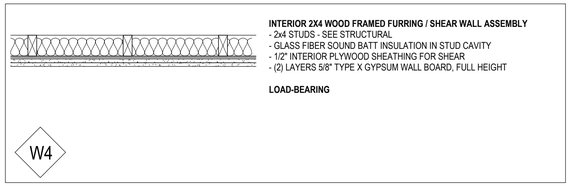
New Doors

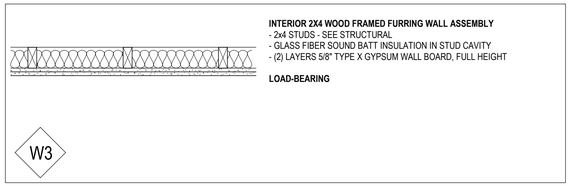


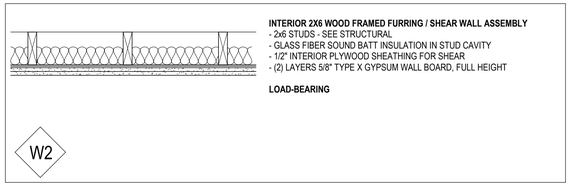
New Door Frames

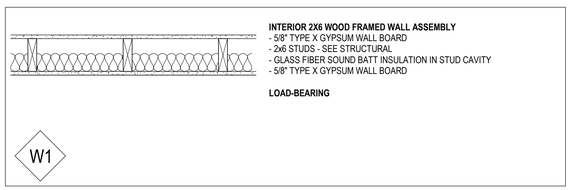


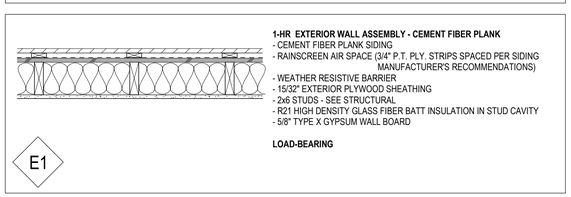


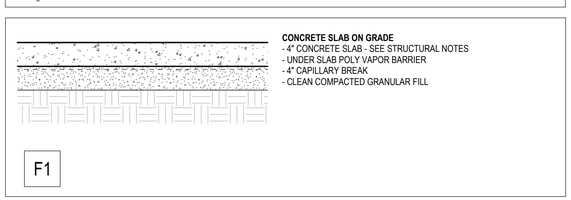












New Construction Assemblies

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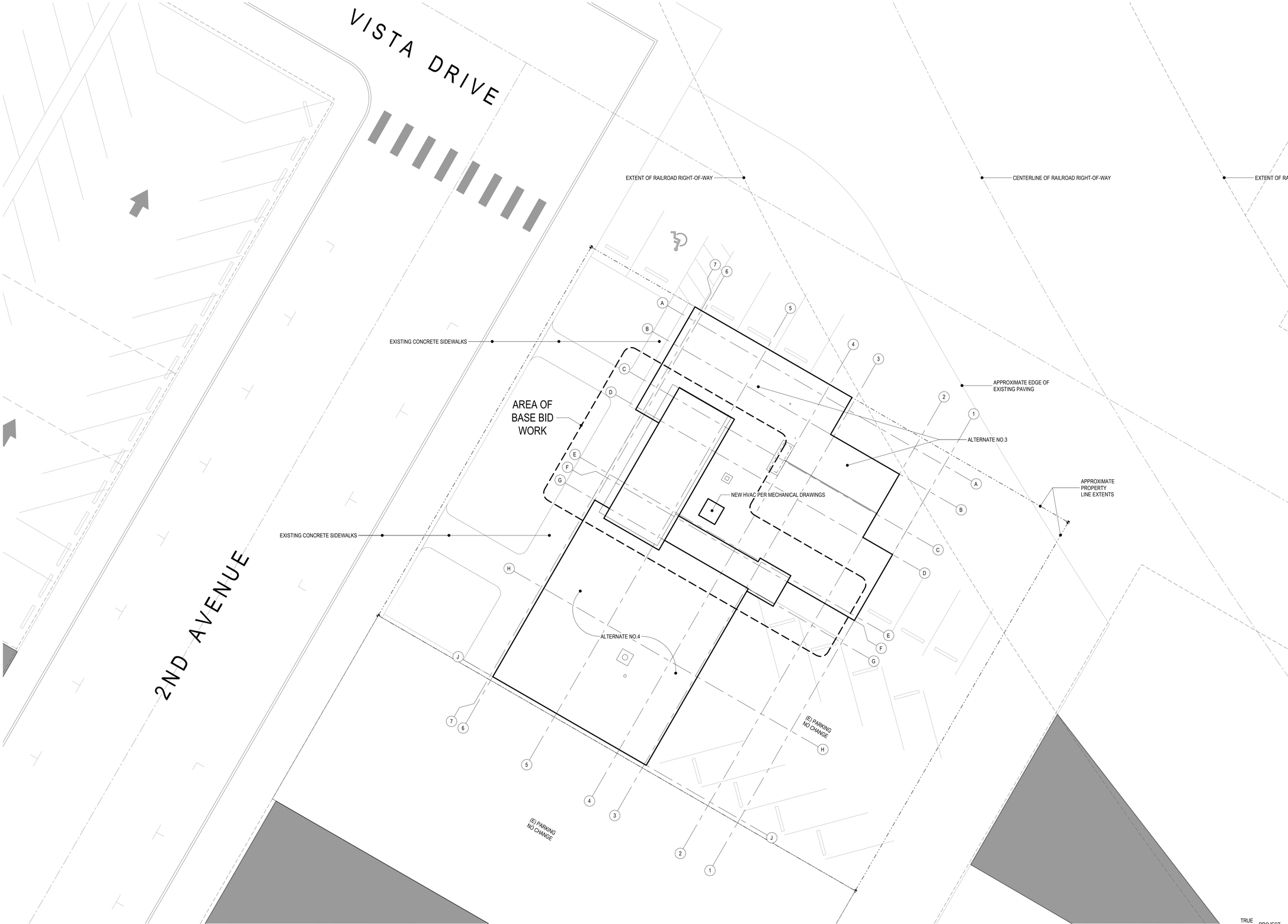
BRADLEY P. CORNWELL
STATE OF WASHINGTON

City of Ferndale
Municipal Court Remodel
5694 2nd Avenue
Ferndale, WA 98248

Job No: 2015 Date: 2020-07-31
File No: 2015 Ferndale Court.rvt
Drawn By: CKJones
Checked By: JWilliard, BPCornwell
Issued for:
BID/PERMIT SET SEP. 3, 2020

ASSEMBLIES / DOOR FRAMES / DOORS & SCHEDULE / WINDOWS

A001



1 Proposed Site Plan

1" = 10'-0"

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PROPOSED SITE PLAN

A101

Sheet Notes

1. COORDINATE DEMOLITION AND PROPOSED WORK WITH ANY IDENTIFIED HAZARDOUS MATERIALS, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS AS APPLICABLE. NOTIFY OWNER / ARCHITECT OF ANY DISCREPANCIES AND/OR UNKNOWN EXISTING CONDITIONS PRIOR TO WORK.
2. PROVIDE STRUCTURAL BACKING FOR ANY NEW ROOF, CEILING, SOFFIT OR WALL MOUNTED ITEMS. ALIGN WORK WITH STRUCTURE BEYOND AT EXISTING SURFACES. PROVIDE ADEQUATE ANCHORAGE. NOTIFY OWNER/ARCHITECT OF ANY NON-COMPLIANT CONDITIONS.
3. PATCH, REPAIR, AND PAINT ENTIRE WALL, CEILING, OR SOFFIT PLANE AT THE LOCATION OF ALL WORK.
4. FIELD LOCATE EXACT LOCATIONS OF ANY AND ALL CORE DRILLING, IN CONSULTATION WITH THE OWNER/ENGINEER. PATCH AND REPAIR APPLIES TO ALL AREAS AFFECTED BY THE PROJECT INCLUDING ELECTRICAL AND MECHANICAL WORK. THIS INCLUDES AREAS NOT INDICATED ON THE ARCHITECTURAL DRAWINGS.
5. PROVIDE FIRE CAULKING AND FIRE STOPPING AT PENETRATIONS IN FIRE RESISTANCE RATED ASSEMBLIES. MAINTAIN INTEGRITY OF EXISTING FIRE RESISTANCE RATED ASSEMBLIES.
6. DIMENSIONS SHOWN ARE FROM FACE OF STRUCTURE, TYPICAL, UNLESS NOTED OTHERWISE. SEE ASSEMBLIES FOR ADDITIONAL INFORMATION.

1 Proposed Ground Floor Plan
1/4" = 1'-0"

TRUE NORTH

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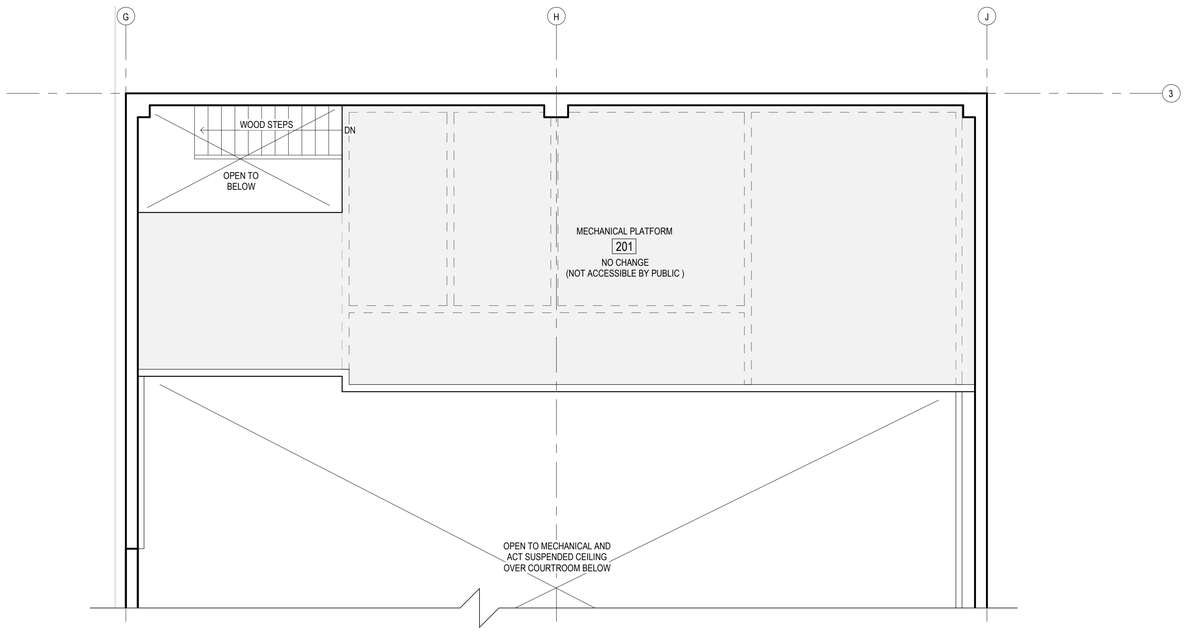
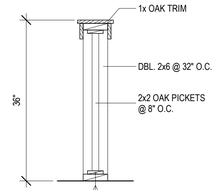
PROPOSED GROUND FLOOR PLAN

A201



1 Mechanical Platform Existing Plan

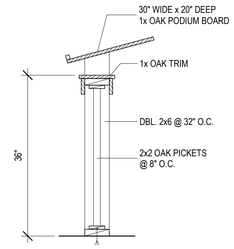
1/4" = 1'-0"



3 Courtroom Rail

3/4" = 1'-0"

NOTE: ALL NEW WOODWORK TO BE STAINED



2 Courtroom Podium Stand

3/4" = 1'-0"

NOTE: ALL NEW WOODWORK TO BE STAINED

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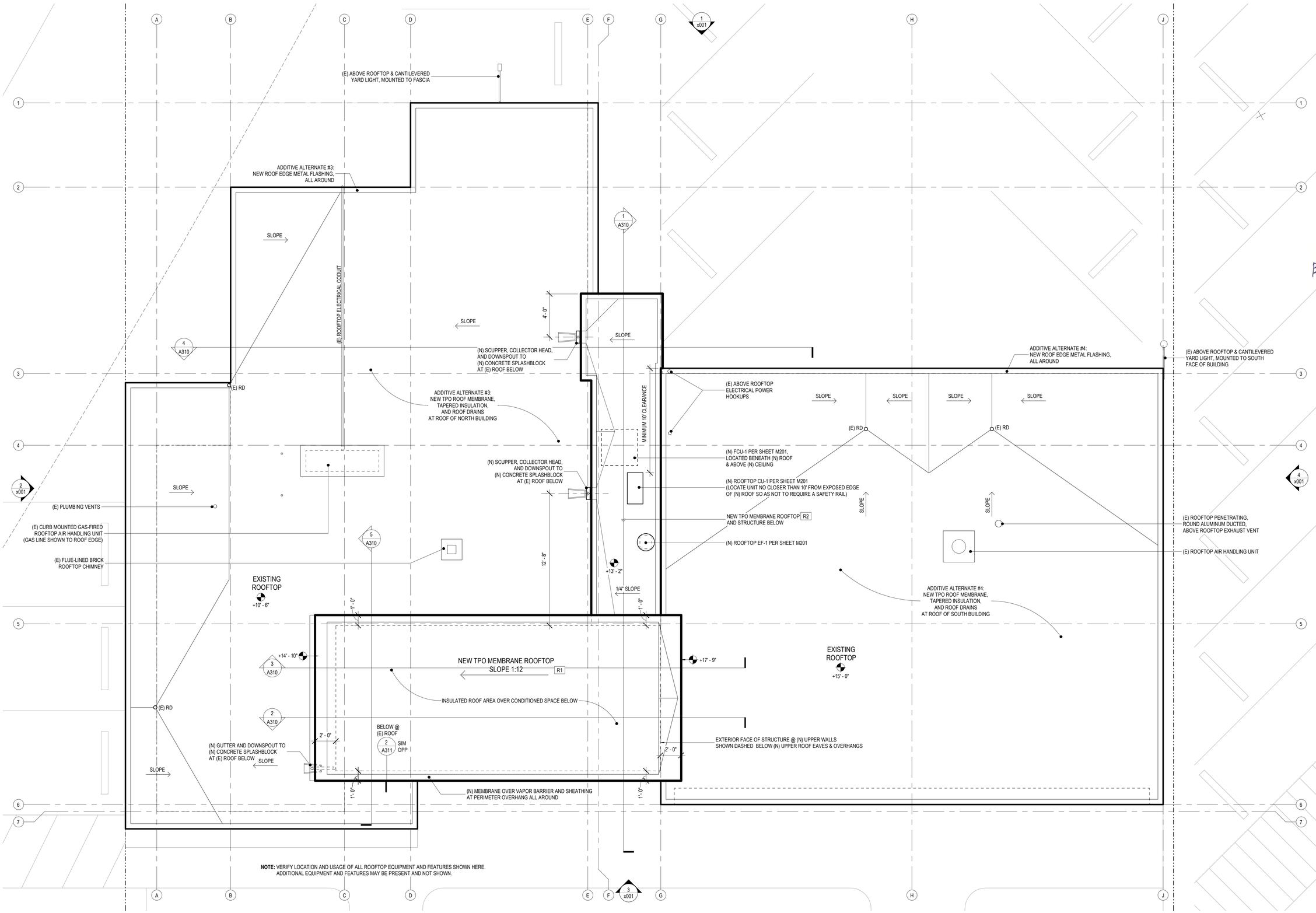
MECHANICAL PLATFORM PLANS AND INTERIOR DETAILS

A202



NOTE: VERIFY LOCATION AND USAGE OF ALL ROOFTOP EQUIPMENT AND FEATURES SHOWN HERE. ADDITIONAL EQUIPMENT AND FEATURES MAY BE PRESENT AND NOT SHOWN.

1 Roof Proposed Plan
1/4" = 1'-0"

TRUE NORTH

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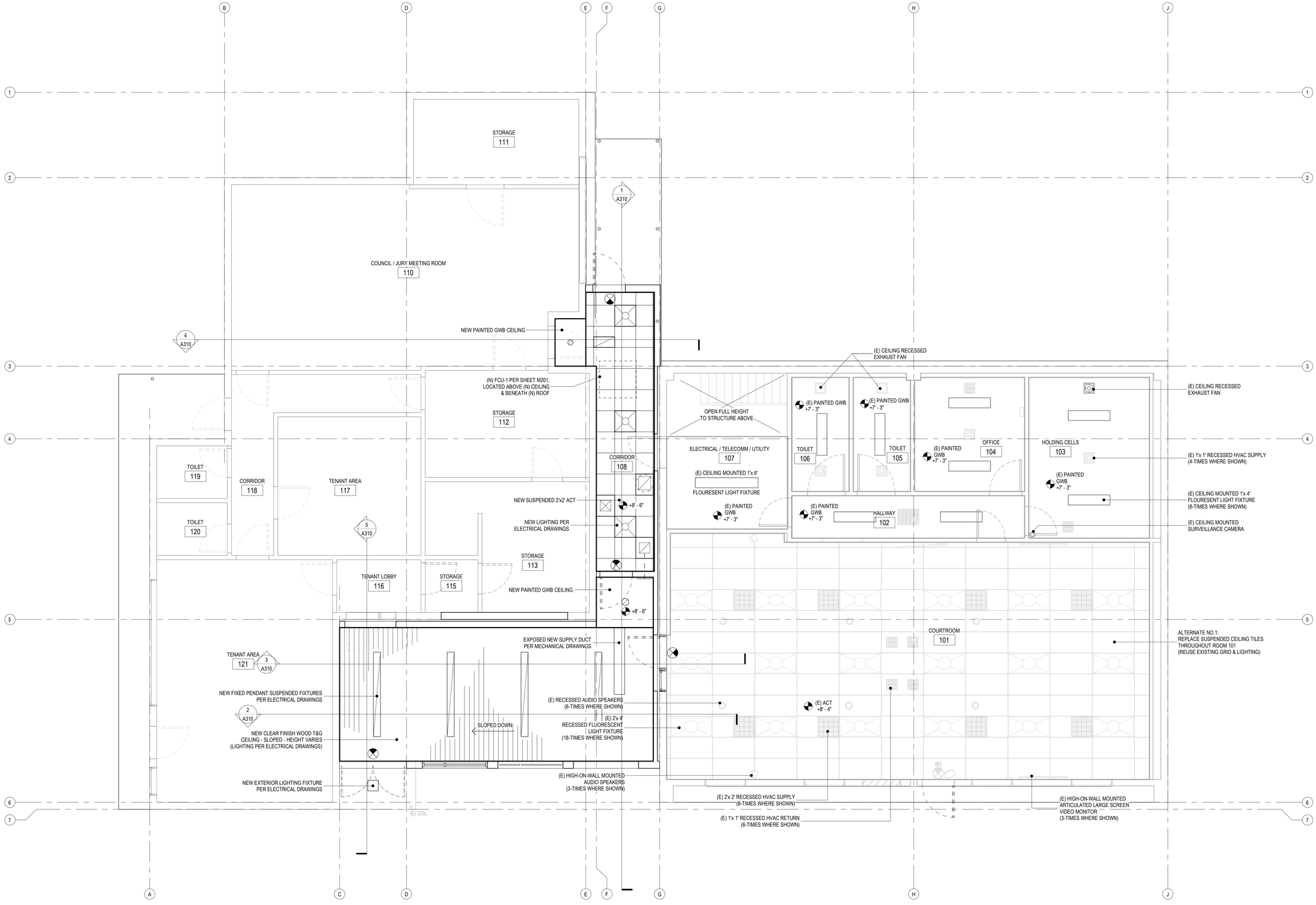
PROPOSED ROOF PLAN

A203



1 Ground Floor Proposed Reflected Ceiling Plan

1/4" = 1'-0"

NOTE: EXISTING WALLS AND CEILINGS WITH FEATURES AND FIXTURES SHOWN GREYED

TRUE NORTH

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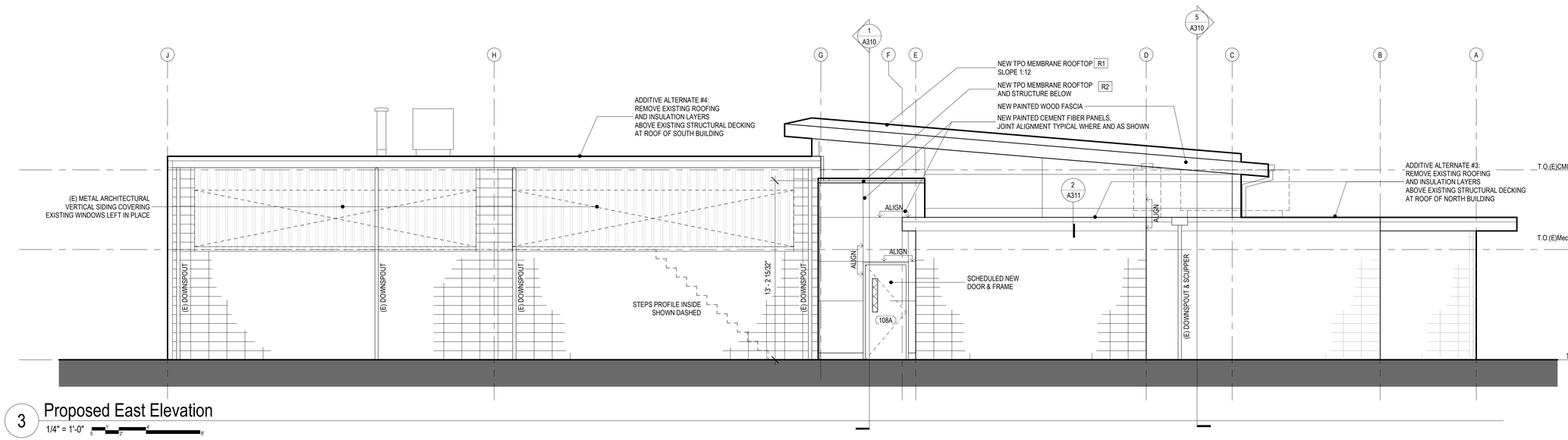
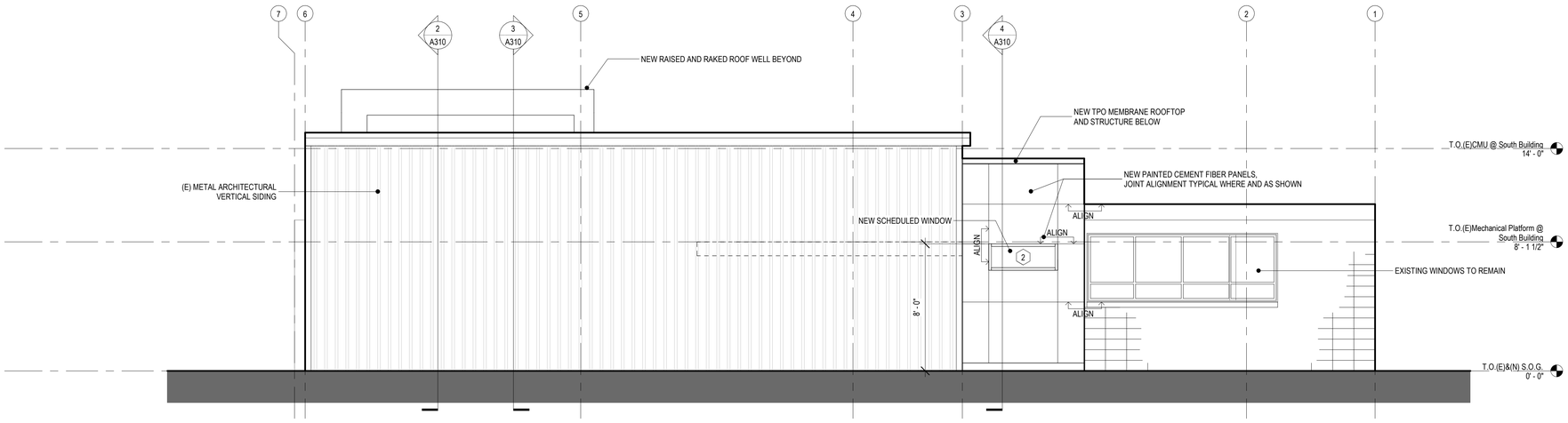
GROUND FLOOR
REFLECTED
CEILING PLAN

A210



3 Proposed East Elevation

1/4" = 1'-0"



2 Proposed South Elevation

1/4" = 1'-0"

1 Proposed West Elevation

1/4" = 1'-0"

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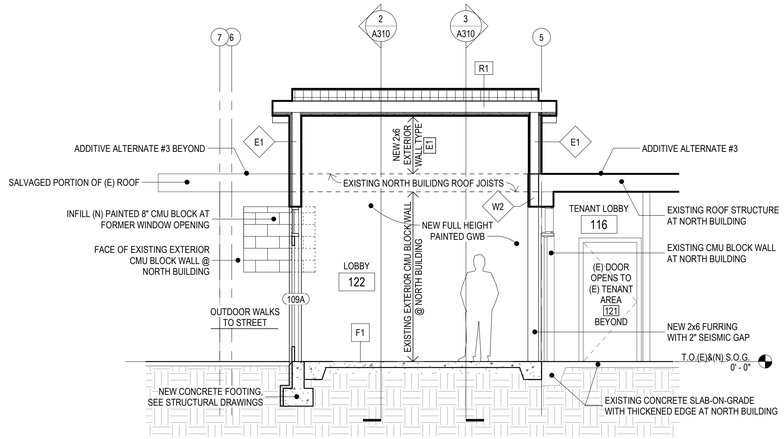
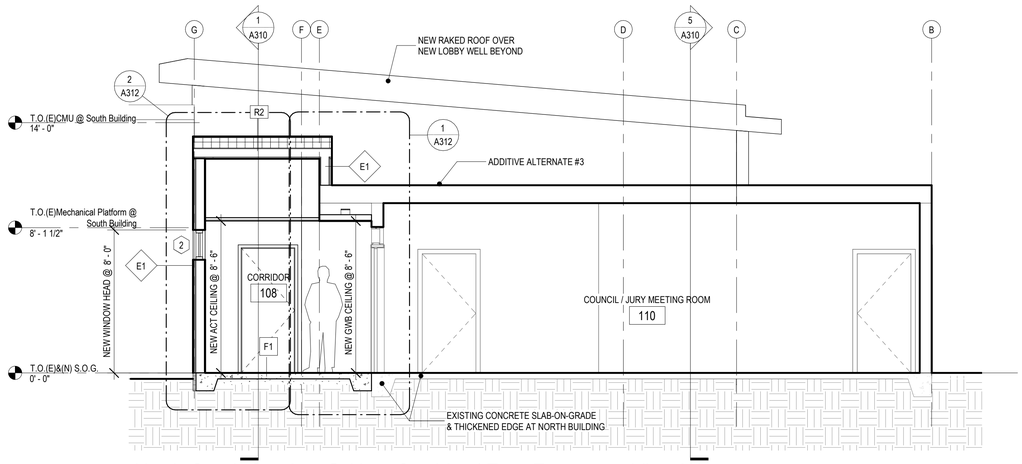
PROPOSED EXTERIOR ELEVATIONS

A301



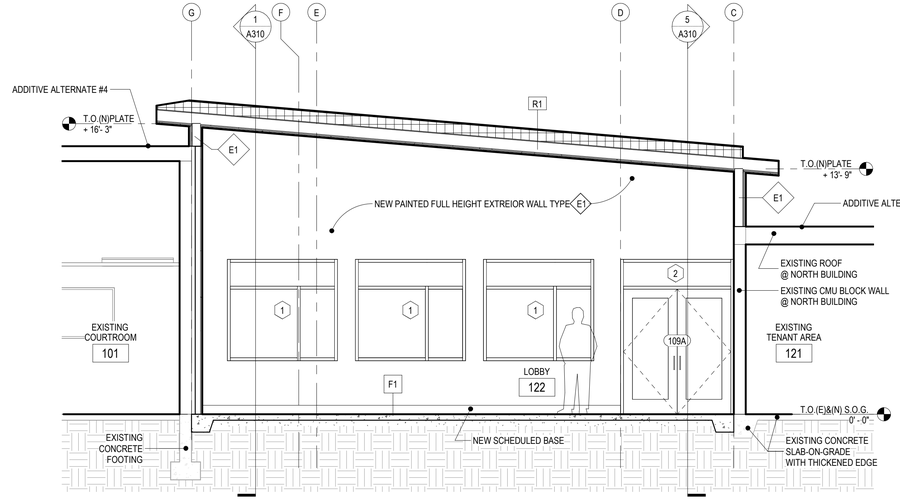
5 East-West Section @ New Lobby 122 - View North

1/4" = 1'-0"



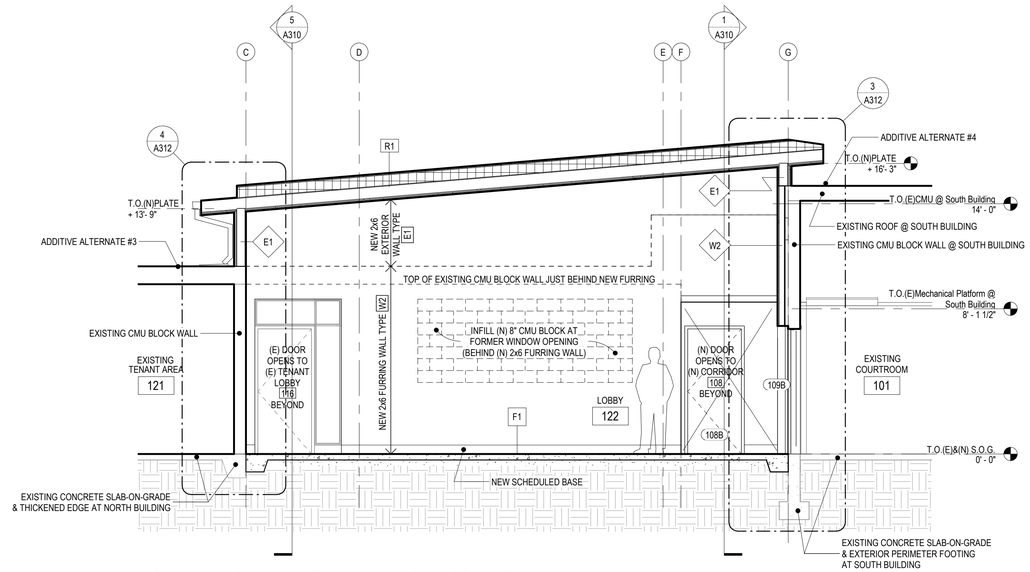
4 North-South Section @ New Corridor / East Entrance - View West

1/4" = 1'-0"



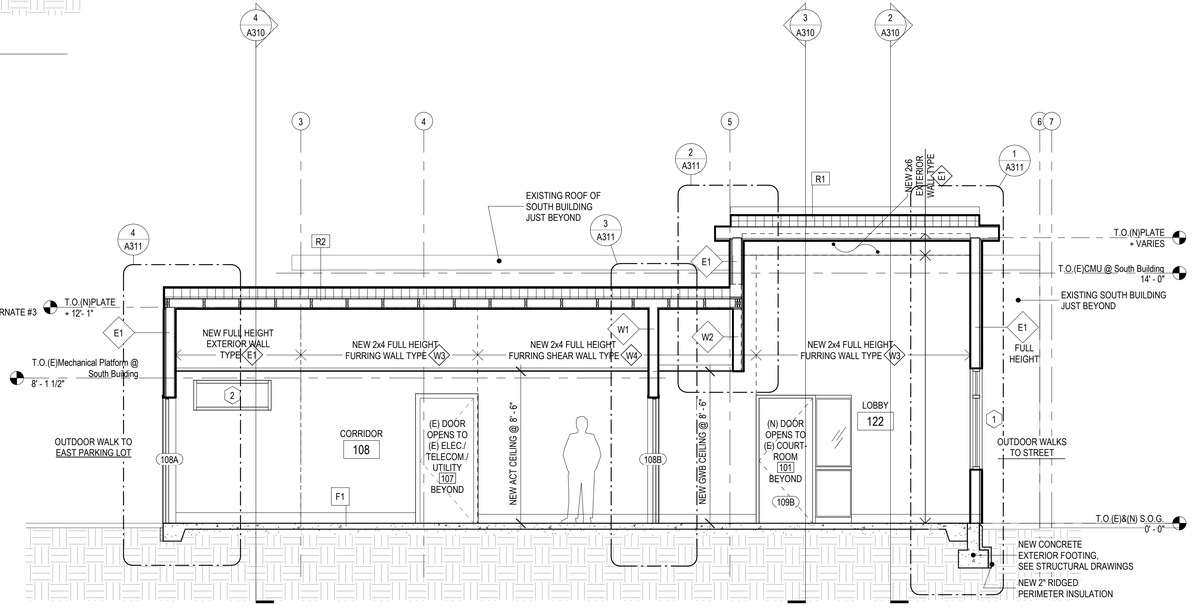
2 North-South Section @ New Lobby 122 - View West

1/4" = 1'-0"



3 North-South Section @ New Lobby - View East

1/4" = 1'-0"



1 East-West Section @ New Lobby 122 & Corridor 108 - View South

1/4" = 1'-0"

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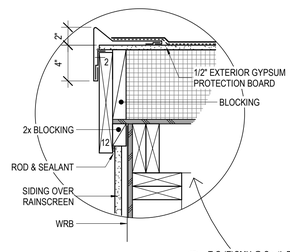
BUILDING SECTIONS

A310



2 Wall Section
1" = 1'-0"

4 Wall Section
1" = 1'-0"

3 Wall Section
1" = 1'-0"

1 Wall Section
1" = 1'-0"

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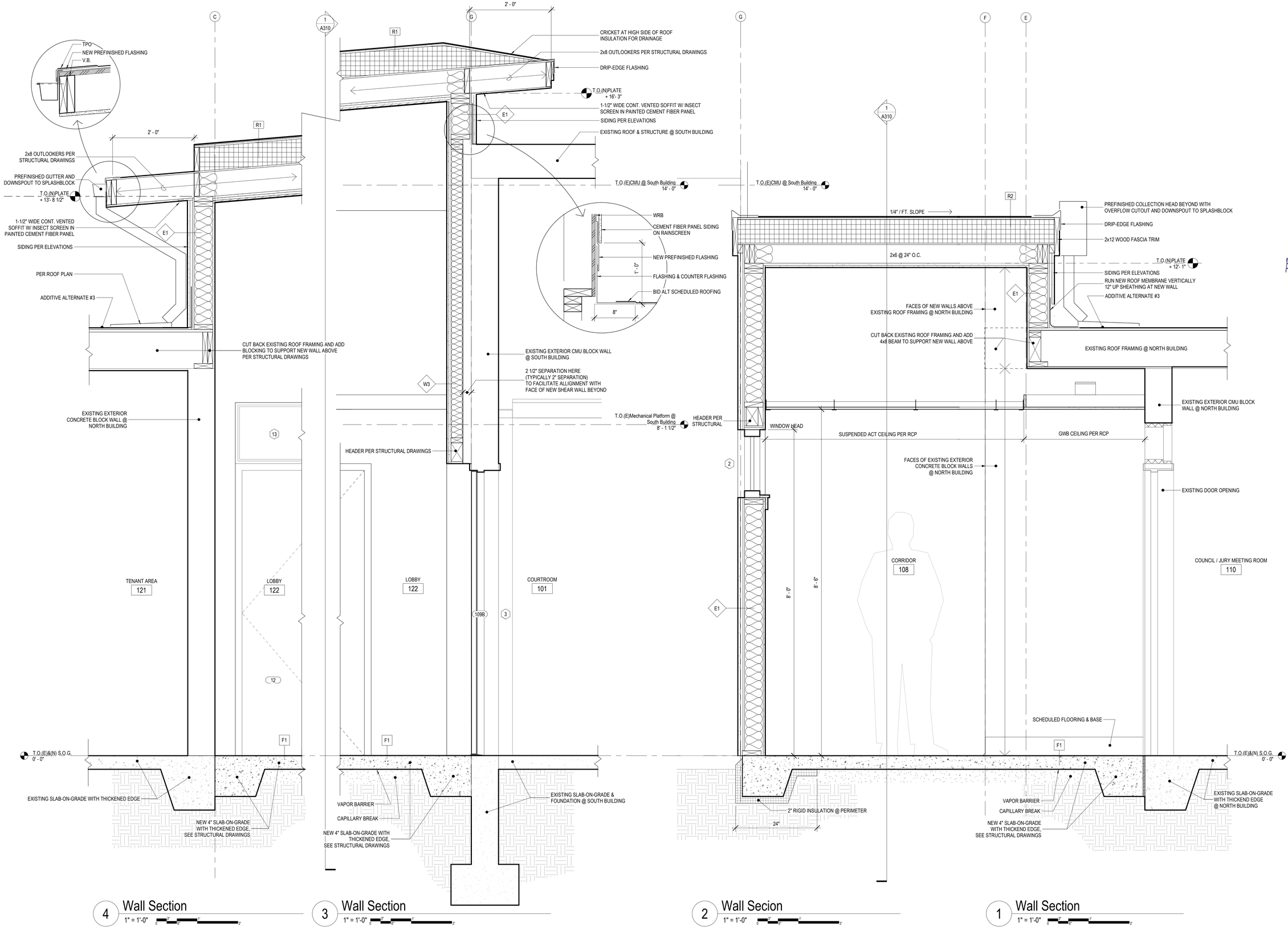
WALL SECTIONS

A311



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WALL SECTIONS

A312

-- GENERAL NOTES --

1 DESIGN BASIS: Designed in accordance with the 2015 International Building Code (IBC).

2 RISK CATEGORY: III (per IBC Table 1604.5)

3 DESIGN DEAD / LIVE LOADS
- Roof Dead Load: 15 PSF Typical (Incl. Framing)
- Roof Live Load: 20 PSF Typical

4 DESIGN SNOW LOADS (ASCE 7-10)
- Ground Snow Load: Pg = 25 PSF
- Flat Roof Snow Load: Pf = 20 PSF
- Minimum Uniform Roof Snow Load = 25 PSF (unreducible)
- Themal Factor: Ct = 1.0 / Exposure Factor: Ce = 1.0 / Snow Load Importance Factor: Is = 1.1

5 DESIGN WIND LOADS (ASCE 7-10)
- V(ult) (3-sec gust) = 115 MPH / V(asd) = 90 MPH
- Exposure: B / Internal Pressure Coefficient: +/- 0.18
- Components & Cladding: Components and cladding-wind pressures to be used for the design of exterior components and cladding (by others) shall be determined in accordance with ASCE 7 and the IBC.

6 DESIGN SEISMIC LOADS (ASCE 7-10)
- Site Class = D
- Seismic Design Category = D / Importance Ie = 1.25
- Ss = 0.951g / S1 = 0.374g
- Sds = 0.710g / Sd1 = 0.412g
- Building System: Bearing Wall System
- SFRS: Wood Sheathed ILight-Framed Shearwall
- Response Modification Factor Used: R = 6.5
- Seismic Response Coefficient: Cs = 0.137
- Analysis Procedure: Equivalent Lateral Force Procedure

7 QUALITY: Contractor shall ensure high standards of worksmanship throughout, with strict adherence to the contract documents and all governing codes and standards.

8 DESIGN RESPONSIBILITY: Kingworks is responsible only for the design of the primary structural system as shown in the contract documents. Design of all secondary structure or non-structural elements are by others.

9 DISCREPANCIES: Notify the Architect immediately of any discrepancies between these notes, the contract drawings, the specification, or the governing code. The Architect shall reply in writing. Any related work performed by the Contractor prior to receiving a reply from the Architect is at the Contractor's sole risk. For purposes of bidding, the most stringent of the conflicting documents shall apply.

10 VERIFICATIONS: Verify all existing conditions; verify all dimensions in the field; verify architectural, mechanical and electrical openings for size, location and number; notify the Architect of any discrepancies, substandard existing conditions, or conditions not included in or contrary to the Contract Documents prior to shop drawing submittal or construction.

11 DRAWING COORDINATION: Coordinate the structural drawings with drawings from all other disciplines (including but not limited to Architectural, Civil, Mechanical, and Electrical).

12 COMPLETED FORM: The structure shown in these drawings is designed to be stable and to resist the loads above only in a fully completed form. Contractor shall ensure that the structure is adequately braced and shored during construction for all temporary loads until all elements are in place, and shall ensure that temporary loadings do not exceed the allowable capacity of any structural elements both before and after these elements are in place.

13 MEANS AND METHODS: Contractor is solely responsible for site safety, coordination, procedures, construction methodology, shoring, bracing, sequencing, and all other "means and methods" of construction except where specifically shown in the Contract Documents.

14 PROTECTION AND BRACING: Contractor is solely responsible for the protection of existing buildings, utilities, streets, equipment, etc. during construction. Provide temporary bracing and protection as required.

15 SCALING: Do not scale drawings. See architectural drawings for dimensions, and notify the Architect of any discrepancies.

16 ALTERATIONS: Any holes or other alterations to the structure which are not specifically detailed on the Contract Drawings shall be submitted to the engineer for approval.

17 LOAD COORDINATION: The design of all pre-engineered components shall include provisions for precise locations and weights of all mechanical units and other concentrated loads. Concentrated loads are not necessarily indicated on the Structural Drawings, and must be coordinated by the General Contractor, who shall also inform the Architect of any significant loads not shown in the contract documents. The Contractor shall assume full responsibility for coordination of weights, locations, hanger spacings, methods of attachment and seismic bracing of all mechanical units, sprinklers, pipes, ductwork, and other miscellaneous MEP assemblies.

18 MEP CONNECTIONS TO STRUCTURE: Unless specifically shown otherwise in the Contract Documents, all anchorage, support, and seismic bracing of mechanical and electrical equipment, piping, ceilings, fixtures and other non-structural components shall be designed by a Washington State Licensed Professional Engineer and installed by the Contractor. The engineer shall be retained by the Contractor, and the Contractor is responsible for all associated engineering, component, and installation costs. Design shall be per ASCE 7 Chapter 13.

19 DELIVERY, STORAGE AND HANDLING: All products shall be delivered, stored, and handled according to the Manufacturer's recommendations and installation instructions. Protect all items from damage, moisture, corrosion, or other deterioration before, during and after installation.

20 COPYRIGHT: These drawings, and all designs shown within these drawings, are copyrighted by Kingworks Structural Engineers. Duplication is not permitted without written permission. The designs shown herein are intended for this project only and may not be used on any other project or for any other purpose.

-- SUBMITTALS --

1 GENERAL: Provide PDF of all submittals to the Architect. Allow two weeks for review. Submittals will be reviewed for general conformance to the contract documents. Responsibility for adherence to the contract documents lies solely with the Contractor, including but not limited to dimensions, sizes, connections, and quantities.

2 CONTRACTOR REVIEW: Contractor shall review, mark, and stamp all submittals before submittal to the Architect. Unreviewed or unstamped submittals will be returned to the Contractor without review.

3 RESUBMITTALS: Resubmittals shall have all revisions clearly identified with "drawing clouds" and revision dates. KW shall not be responsible for review of any unmarked revisions.

4 SHOP DRAWINGS: To include typical and unique conditions and all connections, shall be submitted to the Structural Engineer of Record for the following products prior to fabrication. Shop drawings shall clearly demonstrate the Contractor's understanding of the contract documents. The following shall be considered minimum structural submittals for this project:
- Concrete / Masonry Reinforcing Steel
- Concrete / Grout Mix Designs (confirm f'c & f'm prior to construction)
- Slab-on-Grade Jointing Plan

5 SUBMITTAL REVIEW COMMENTS: Engineer marks and comments on shop drawings and other submittals are a normal and expected part of the submittal process, and are not to be used as a basis for change orders except in cases where these marks result in or derive from substantial changes to the Contract Drawings. Time required to revise and resubmit any submittal shall be considered inherent to the submittal review process and shall not be deemed a change order. If discrepancies are discovered between the submittals and the Contract Documents (either before, during, or after submittal review), the Contract Documents shall govern and be implemented unless specifically directed otherwise.

-- FOUNDATIONS & SUBGRADE --

1 SOIL ALLOWABLE BEARING PRESSURE: 1500 PSF presumed per IBC T1806.2. Granular subgrade beneath all foundations and slabs shall be compacted to a firm and unyielding condition. Remove all unsuitable native soils or fills, replace with compacted structural fill. Subgrade and soil bearing capacity shall be verified in the field by the project Special Inspection Agency prior to any concrete pour.

2 VERIFICATIONS: Verify sizes, slopes and locations of tunnels, electrical cells, pits, pipes, floor drains, trenches and floor recesses with architectural, mechanical and electrical contractors.

3 UTILITIES: Utilities are not to pass through or beneath footings, stemwalls, and other concrete work on grade except as shown in specific details.

4 ALIGNMENT: All footings shall be centered below columns and walls, unless dimensioned otherwise.

5 BACKFILL: Do not backfill against below-grade walls until strength has been achieved and floor framing is in place.

6 FROST PROTECTION: Maintain minimum 1'-6" soil cover, measured from finished grade to the bottom of the footing, for perimeter wall foundations and isolated exterior foundations.

7 EXCAVATION SLOPE: Excavation slope shall not exceed that permitted by local regulation, except as specifically approved by the geotechnical engineer.

-- REINFORCED CONCRETE --

1 MATERIALS
- Required concrete strength "f'c" shall be evaluated at 28 days (56 days OK for fly ash or slag concrete).
- Conform to following concrete material schedule requirements.

-- CONCRETE MATERIAL SCHEDULE --

	f'c (PSI)	W/CM (MAX)	COARSE AGG (MAX)	AIR CONTENT	MIN FLY ASH AND/OR SLAG
SLAB ON GRADE (INTERIOR)	3500	0.55	3/4"	-	30%
FOOTINGS/WALLS	4500	0.45	3/4"	6%	30%

-- REINFORCED CONCRETE --

- Cementitious Materials: Provide Type I or II Cement per ASTM C150(Type III OK for Precast) or Type IL Blended Hydraulic Cement per ASTM C595. Cementitious materials for use in concrete exposed to soil or weather must meet or exceed the S1 exposure class per ACI 318 Table 19.3.2.1.
- Fly Ash: Class F per ASTM C618.
- Slag: GGBF Slag per ASTM C989, Grade 100 minimum.
- Air Entrainment: Provide air entrainment per concrete mix table +/- 1.5%, all other locations exposed to weather shall have air entrainment of 6% (+/- 1.5%).
- Typical Reinforcing Steel: ASTM A615, Grade 60

2 STANDARD COMPLIANCE: All concrete work shall conform to ACI 301 and ACI 318-14 unless noted otherwise.

3 SPLICES: All reinforcing steel lap splices are to be per typical schedule unless noted otherwise. All welded wire reinforcement lap slices shall be the greater of one space plus 2 inches or 6 inches, unless otherwise noted.

4 CONTINUITY: Horizontal reinforcing steel in walls and wall footings shall be continuous around corners, same size and spacing. At intersections of walls or footings, extend all bars as far as possible into continuous element and terminate with standard hook.

5 CLEAR COVER: Provide clear cover from outermost reinforcing to surface of concrete in accordance with the following:
- Elements cast against and permanently exposed to earth: 3" clr
- Elements formed and exposed to earth or weather: 2" clr (#6-#18), 1 1/2" clr (#3-#5)
- Slabs, Walls, Joists NOT exposed to weather or in contact w/ ground: 3/4" clr (#3-#11)

6 ACCESSORIES: Provide all accessories, chairs, spacer bars and supports necessary to secure steel In accordance with ACI Code of Standard Practice.

7 CHAMFER: Chamfer all exposed corners and edges above grade per the Architect.

8 FORM STRIPPING: Do not strip forms until concrete has reached adequate strength.

-- REINFORCED CONCRETE --

9 SLEEVES / OPENINGS: Furnish and place all sleeves and openings as shown on the drawings or as specified.

10 REINFORCING FABRICATION: All reinforcing shall be shop fabricated. Exception: #3 or #4 bars may be field bent one time in any location, do not rebend or restraighten.

11 HOOKS: All hooked bars shall be a standard shop fabricated hook with bend radii and length per ACI 318, UON.

12 TESTING: Test cylinders shall be taken by qualified personnel according to ACI 318-14 Section 26.12

13 MEMBRANE: Provide vapor barrier (per arch/spec, 10-mil min where not otherwise specified) directly below slab-on-grade (above compacted fill), reinforce all seams and repair tears as necessary.

14 WEATHER PROVISIONS: Observe all ACI recommendations for hot or cold weather concreting cure slabs using an approved curing compound or wet cure system per ACI recommendations, with special consideration for slag and fly ash concrete as appropriate.

15 CONSTRUCTION JOINTS: All construction joint locations shall be submitted to the Architect for approval. Roughen joints to 1/4-inch minimum amplitude, remove all laitance. Soak joint continuously for 2 hours minimum, then remove all standing water, immediately prior to second pour. Unless noted otherwise, all reinforcing shall be spliced/continuous across the construction joints.

-- SPECIAL INSPECTIONS, TESTING, AND STRUCTURAL OBSERVATION --

1 GENERAL: A special inspection agency shall be retained by the owner to perform inspections according to IBC Chapter 17. The following scheduled structural special inspection and testing regimen shall be cross-referenced with the IBC and its referenced standards for more specific requirements and exceptions. Special inspection and test reports shall be submitted to the Building Official, Architect and Structural Engineer in accordance with IBC 1704.2.4.

2 NONSTRUCTURALCOMPONENTS: Nonstructural components are also subject to special inspection for conformance to the Seismic Design Requirements of ASCE 7-10 Chapter 13. The support and seismic bracing of nonstructural components shall be designed by a Washington State Licensed Engineer, who shall be retained by the Contractor. Nonstructural components subject to seismic design and periodic special inspection requirements of ASCE 7-10 and IBC Chapter 17 include (but are not limited to) the following:
- Suspended Ceilings (ASCE 7-10 Sec 13.5.6.2.2)
- Mechanical and Electrical Components (IBC 1705.12.6)

3 STRUCTURAL OBSERVATION: Kingworks will perform Structural Observations in accordance with IBC Section 1704.6 if/as required. These observations provide intermittent checks of general conformance to the design intent and are in addition to (not replacing) the third-party special inspection regimen. It shall be the Contractor's responsibility to keep the Structural Engineer apprised of the general schedule of construction, such that observations may be made at appropriate stages before significant structural components (such as reinforcing bars, framing members, or wall holdowns) are obscured.

-- STRUCTURAL SPECIAL INSPECTION SCHEDULE --

	STRUCTURAL ITEM	FREQUENCY (C=continuous, P=periodic)	REFERENCE (2015 IBC Section, uon)
1	CONCRETE		1705.3, Chap 26
	- Reinf Placement	P (and prior to all pours)	Table 1705.3
	- Anchor Placement	P (and prior to all pours)	Table 1705.3
	- Concrete Placement	C	Table 1705.3
	- Concrete Testing	Per ACI 318-14	Table 1705.3
	- Formwork & Curing	P	Table 1705.3
2	MASONRY	"Level B" QA (not req'd for veneer)	1705.4, 2105, ACI 530-13, ACI 530.1-13
	- Mortar Proportions & Joints	P	ACI 530.13 Table 3.1.2
	- Reinf Placement	P (and prior to grouting)	ACI 530.13 Table 3.1.2
	- Type/Size/Location (Elements)	P	ACI 530.13 Table 3.1.2
	- Type/Size/Location (Anchors)	P (and prior to grouting)	ACI 530.13 Table 3.1.2
	- Reinf Welding	C	ACI 530.13 Table 3.1.2
	- Cold Weather Measures	P	ACI 530.13 Table 3.1.2
	- Grout Placement	C	ACI 530.13 Table 3.1.2
	- Prism Testing	P (not req'd for Unit Strength Method)	2105, ACI 530.13 Table 3.1.2
3	POST-INSTALLED ANCHORS		Table 1705.3
	- Epoxy or Adhesive Anchors Used in Horizontal or Overhead Position	C	See ICC-ES report
	- All Other Anchors Installed in Hardened Concrete or Masonry	P (except where C req'd by ICC-ES report)	See ICC-ES report
4	WOOD		1705.5
	- Shearwalls (nailing, thickness, grade, blocking, top and bottom fastening, sill bolts, holdowns)	P (not req'd when fasteners are in single row and spaced greater than 4" o/c)	1705.11.1, 1705.12.2
	- Floor/Roof Diaphragms (nailing, thickness, grade, blocking)	P (not req'd when fasteners are in single row and spaced greater than 4" o/c)	1705.5.1, 1705.11.1, 1705.12.2
5	SOILS & FOUNDATIONS		1705.6, Table 1705.6, Geotech Report
	- Subgrade Adequacy	P (beneath fill and/or foundations)	Table 1705.6
	- Excavation Depth	P	Table 1705.6
	- Fill Materials	P	Table 1705.6
	- Fill Placement & Compaction	C	Table 1705.6

-- STRUCTURAL MASONRY --

1 SPECIFICATION: Masonry construction and materials shall conform to all requirements of "Specification for Masonry Structures" (ACI 530.1-13), unless noted otherwise.

2 UNIT STRENGTH: The concrete masonry design is based on a specified compressive strength of masonry (f'm) of 1500 psi at 28 days. The compressive strength of masonry shall be determined by the unit strength method in accordance with ACI 530.1.

3 MATERIALS
- Hollow concrete masonry units: ASTM C90, Grade N, Type I, normal weight units, net area compressive strength of masonry units = 2150 psi
- Mortar: ASTM C270, Type S portland cement/lime mortar
- Grout: maximum aggregate size of 3/8", compressive strength equal or greater than the strength of masonry units at 28 days (AND not less than 2000 psi in any case)
- Reinforcing Steel: ASTM A615, Grade 60 typical (A706 for weldable bars)
- Portland Cement: Cement in mortar and grout shall contain 0.6% or less alkali by weight

4 DEVELOPMENT: All masonry reinforcing shall be developed and lapped in solid grout per typical schedule.

5 CLEANOUTS: Cleanouts are required in the bottom course of masonry for each grout pour when the "pour height" exceeds 5'-4". Cleanouts shall meet the criteria of ACI 530.1-13 Section 3.2F.

6 REINFORCEMENT ALIGNMENT: Vertical reinforcement shall be centered within cells unless noted otherwise. Use approved spacers to ensure alignment within cells. See details for other bar alignment criteria.

7 HORIZONTAL REINFORCEMENT: Horizontal reinforcement shall be tied to vertical reinforcement, continuous, and terminate with standard 180-degree hook around vertical bar at wall ends or jambs, or 90-degree bends extending one lap length at wall corners. Where CMU wall intersects with concrete wall, dowel all horizontal bars similar to typical corner or tee details.

8 STOPPAGE KEYS: When the grouting is stopped for one hour or longer, horizontal construction joints shall be formed by stopping the grout pour 1-1/2" below the top of the uppermost unit.

9 CLEAR COVER: Minimum clear cover from face of masonry to face of reinforcing shall be 1-1/2" minimum for #5 bars or smaller, and 2" minimum for #6 bars or larger. See details for typical reinforcement alignment.

10 CONTROL JOINTS: Refer to architectural and structural drawings for locations and details of vertical control joints. Verify all joint locations with Architect.

11 HOOKS: All hooked bars shall be a standard shop fabricated hook with bend radii and length per ACI 318, UON.

-- ANCHORAGE TO CONCRETE OR MASONRY --

1 MATERIALS (unless noted otherwise in the drawings)
- Concrete or grout must cure for a minimum of 21 days prior to drilling any holes or placing post-installed anchors.
- Anchor type shall be according to the drawings. All post-installed anchors installed in concrete shall have ICC-ES reports demonstrating IBC compliance for use in cracked concrete and for seismic loading. Substitutions not permitted without written permission by KW.
- Pre-approved Epoxy for post-installed threaded rod or reinforcing in concrete base material: HILTI HIT-RE 500 V3 or Simpson SET-XP or SET-3G or DEWALT/Powers Pure110+.
- Pre-approved Epoxy for post-installed threaded rod or reinforcing in solid grouted CMU base material: HILTI-HY 70.
- Pre-approved "Expansion Anchors" in concrete base material: HILTI Kwik-Bolt TZ or Simpson Strong-Bolt 2, or DEWALT/Powers Power-Stud+ SD2.
- Pre-approved "Expansion Anchors" in solid grouted CMU base material: HILTI Kwik-Bolt TZ or Simpson Strong-Bolt 2, or DEWALT/Powers Power-Stud+ SD1.
- Pre-approved "Screw Anchors" in concrete base material: HILTI HUS-EZ or Simpson Titen HD or DEWALT/Powers Screw-Bolt+.
- Pre-approved "Screw Anchors" in solid grouted CMU base material: HILTI HUS-EZ or Simpson Titen HD or DEWALT/Powers Wedge-Bolt+.
- Pre-approved "Powder Actuated Fasteners" in concrete or CMU base material: HILTI or approved equal, with diameter/type per the Structural Drawings (0.145"Ø UON).
- Post-installed or Cast-in-Place Threaded Rod (Anchor): ASTM A36
- Post-installed Reinforcing: ASTM A615 Grade 60

2 EMBEDMENT: Anchor embedment in base material shall be per the drawings, which shall govern over the typical values shown below. Where not otherwise indicated, provide embedment as follows:
- Epoxy to Concrete: Min Embed = 12 x (Rod/Bar Ø) for 5/8"Ø (#5) or smaller, 14 x (Rod/Bar Ø) for 3/4"Ø (#6) or larger
- Epoxy to Solid-Grouted CMU: Min Embed = 9 x (Rod/Bar Ø)
- Expansion Anchor to Concrete: Min Embed = 8 x (Anchor Ø)
- Expansion Anchor to Solid-Grouted CMU: Min Embed = 7.5 x (Anchor Ø)
- Screw Anchor to Concrete: Min Embed = 9 x (Anchor Ø)
- Screw Anchor to Solid-Grouted CMU: Min Embed = 7.5 x (Anchor Ø)
- PAF to Concrete or CMU: Min Embed = 1 1/4", Min Edge Distance = 3"
- PAF to Structural Steel: Point of PAF shall penetrate through base steel where base steel thickness is 1/2-inch or less. Where base steel thickness is greater than 1/2-inch, point penetration shall be 1/2-inch minimum.
- Cast-In-Place Anchor: Min Embed = 7" to top of embedded washer or hook

3 INSTALLATION: Post-installed anchor hole diameter, drilling depth, cleaning and installation procedure shall be in accordance with the current Manufacturer's Printed Installation Instructions (MPII) provided in the ICC/ES report. Holes shall be drilled with rotohammer equipment. Core-drilled holes are not permitted unless specifically noted otherwise.

4 COLD-WEATHER INSTALLATION: Do not use epoxy or adhesive anchors outside of their rated temperature range. Contact the Structural Engineer for alternate if the base material temperature may be less than 40 degrees during installation or curing.

5 CAST-IN-PLACE ANCHORS: Cast-in-place anchors shall have nut and washer at embedded end, UON. Anchors shall be affixed to the form to prevent movement during pouring, vibration, or set-up and shall not be "stabbed" into wet concrete or grout. Verify adequate length of exposed thread to fully engage all attached work.

6 FINISHES: All anchors used at exterior, or where subject to moisture, or where in contact with pressure treated wood, shall be hot-dip galvanized per ASTM A153 or stainless steel, including matching washers and nuts.

-- ANCHORAGE TO CONCRETE OR MASONRY --

7 ANCHOR PLACEMENT IN CMU BASE MATERIAL: Where anchors are installed in face-of-wall condition, no holes shall be permitted within vertical (head) joints nor within 1 1/2" horizontal each way of head joints (exception: HILTI HIT-HY 70 may be used in or near fully-mortared head joints). Where anchors installed in top-of-wall condition, holes shall be drilled into grouted cores only (do not drill into head joints or block shell). Notify KW of any potential conflicts with head joints prior to shop drawing submittal. Anchors in hollow (ungrouted) CMU cells are not permitted UON.

8 REINFORCEMENT LOCATIONS: All post-installed anchors shall be located to avoid drilling into reinforcement, unless specifically approved by the Engineer. Reinforcement shall be placed with consideration for locations of post-installed anchors. Do not damage reinforcing during drilling operations.

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Verify Scale:
Enclosing box measures 12 inch tall x 2 1/2 inch wide when drawings are printed at full scale.

DANIEL DAVIS LINKART — STATE OF WASHINGTON — 41390 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER — 7/29/20
DIGITAL SEAL ON PDF FILE

City of Ferndale
Municipal Court Remodel
5694 2nd Avenue
Ferndale, WA 98248

Job No: 20025 Date: 7/31/2020
File No:
Drawn By: GK
Checked By: DL
Issued for: BID / PERMIT SET

STRUCTURAL NOTES

S101

-- WOOD FRAMING --

1 MATERIALS (unless otherwise noted in the drawings)
- Posts / Beams: Doug Fir #1
- Solid Sawn Studs: Doug Fir #2
- Sills / Plates: HF#2 or DF#2
- Joists / Rafters: Doug Fir #2
- Blocking / Bridging: Doug Fir 'Stud'

2 MOISTURE CONTENT: All sawn lumber, including heavy timber, shall be kiln-dried to a maximum moisture content of 19%. For pressure-treated framing, kiln-drying shall occur after treatment.

3 NAILS: Nail sizes shown are 'common' (not 'box') uon. 8d = 0.131"x2.5", 10d = 0.148"x3", 12d = 0.148"x3.25", 16d = 0.162"x3.5". Typical nailing not otherwise shown in the drawings shall be per IBC Table 2304.10.1. Where nailing occurs in two or more rows, the on-center spacing indicated in the drawings shall be for each row. Where on-center nail spacing for a single row is less than 6" (for 12d and larger) or less than 4" (for 10d and smaller), stagger each row of nails into two rows offset by 1/2" min. All nails shall maintain 3/8" min to framing or sheathing edges.

4 HOLES: Bolt holes in wood for through-bolt connections shall equal bolt diameter plus 1/8" maximum. Bolt holes in steel fixtures shall be per the steel section of these notes. Wood screws and lag screws (lag bolts) shall be hex head and shall have predrilled pilot holes equal to approximately 60% of the fastener diameter (70% for 7/8" and larger lag screws) and shall be installed by turning; do not hammer into hole. Soap lubrication on threads is acceptable. Provide cut washer beneath all hex heads and nuts uon.

5 SPLITTING: Though very tight nail and screw spacings are used in many locations on this project, splitting of wood members by driving nails or screws is not acceptable. If splitting occurs, or if splitting may occur as wood dries in place, predrill all holes as required to approximately 60% of the nail or screw diameter. Omission of predrilling for fasteners is at the Contractor's sole risk, and as such, all split members shall be replaced at the Contractor's sole expense.

6 ALTERATIONS: Do not notch any structural wood members. See typical detail for allowable hole locations and sizes (for mechanical or electrical utility passage).

7 STUD WALLS: All stud walls shown on the structural plans are structural walls and shall be constructed per the structural notes and details of these drawings. Typical structural walls are 2x6@16" on center, unless noted otherwise. Wall callouts (such as "WL-D2") shall apply to the entire wall line at which the callout occurs, uon. Typical structural walls are constructed with single sill and double top plate. Continue multiple stud and solid sawn posts and jambs in walls from level indicated down to the foundation, including same size or equiv holdown at each level below. Note that posts and multiple studs and jambs indicated on an upper level are not always indicated on the level below, but shall be provided (as desribed above) regardless.

8 STUD WALL BRACING: All bearing walls rely on GWB and/or sheathing to brace the studs against buckling. Where GWB or sheathing is not provided on at least one face of studs, provide full depth blocking at 4'-0" max on-center in each stud bay, in addition to diagonal bracing for full length of wall (Simpson WB in "X"-configuration at approximately 45-deg, install per catalog, typ uon).

9 SISTERING (BUILT-UP MULTIPLE STUDS AND BLOCKING): Where multiple 2x studs or blocking occur, each added ply after the first shall be sistered to the previous plies by face nailing. At shearwalls, sistering nails for studs or blocking shall be 0.148"x3" at spacing equal to 'EN' per schedule. At non-shearwall multiple studs, sistering nails shall be 0.148"x3" at 12" on-center, uon. Sistering nails shall be staggered in all instances.

10 RAFTERS/JOISTS: Provide full-depth blocking or bridging lines at no less than 8'-0" on center between supports. At bearing supports bear rafters and joists 2" minimum on plates or beams, uon. At other supports provide hangers per the typical details. Where no detail applies use as a minimum Simpson LU series face mount hangers. Provide a doubled joist (minimum) beneath each parallel wall, including partition walls.

11 BEAMS: Bear beams full length and width on supporting wall plates and/or posts, unless shown otherwise per typical details. Provide glulam beam camber equal to 3500-foot radius for all simple span beams, except where special camber is indicated on the plans; install with upward curvature (highest at midspan). Do not camber cantilever beams unless specifically noted. Beams exposed to view shall be Architectural Appearance grade in accordance with AITC 110, with finish per the Architect.

12 POSTS: Unless noted otherwise, provide Simpson BC or AC caps at all post to beam and post to beam (below) connections. At post to concrete provide Simpson ABU or CB post bases, uon. Posts in walls may bear on the sill with connection hardware per typical details. At wood or steel posts/columns continuous through floor framing, block tight all-around at floor to prevent lateral movement or buckling.

13 CONNECTORS: Connectors and/or fasteners called out by letters & numbers in the drawings shall be manufactured by Simpson Strong-Tie, or approved equal. All connecting hardware shall be installed per the Manufacturer's recommendations and requirements, as per current catalog and related publications. Fill all fastener holes with the fastener type (diameter and length) indicated by the Manufacturer, uon. Where light-gage connector occurs at steel column, weld 1/8" all-around, uon.

14 PRESSURE TREATMENT: Except where specifically noted otherwise, the following member types shall be pressure treated in accordance with the following guidelines, in addition to any such members noted in the plans or details. Minimum treatment retention shall be as recommended by AWPA for the "Use Category" appropriate to each application. Treatment shall be non-ammonia formulation in all cases.
- Lumber exposed to exterior, humidity, or within 8" of soil): AWPA C2
- Lumber directly against concrete or masonry: AWPA C31
- Borate-treated lumber is acceptable in locations where protected from rainfall or other potential repeated moisture, such as sill plates in an enclosed wall cavity and interior ledgers.

15 FIELD TREATMENT: Field treat all cuts, ends, and holes in pressure treated lumber with copper naphthenate applied per manufacturer's recommendations.

16 EXTERIOR WOOD PROTECTION: Provide flashings, sealants and finishes per the Architect in order to protect all exterior wood surfaces and post/beam ends from moisture.

17 GALVANIZING: All steel components, hardware, or fasteners for wood framing members exposed to moisture, high humidity, or in contact with pressure treated lumber shall be hot-dip galvanized per ASTM A153. Light gage connectors shall be galvanized per ASTM A653, G185 minimum (Simpson "Z-max" or approved equal). The above described galvanizing requirements specifically include, but are not limited to: nails, screws, bolts, washers, nuts, anchor bolts, threaded rods, cast-in-place and post-installed anchors, Simpson hardware, and weldments. (Exception: not required for SBX/DOT borate-treated wood protected from weather.)

-- WOOD FRAMING --

18 MEMBRANE PROTECTION: Where specified steel hardware in contact with pressure treated wood is unavailable in HDG or G185 finish, Grace Vycor (or approved eq) membrane shall be placed per manufacturer's recommendations to isolate the hardware from the treated wood. HDG fasteners shall be used in such instances.

19 SHEATHING: Place roof and floor sheathing with face grain oriented in the direction of span. Offset adjacent rows of sheathing panels by 24" minimum, with all panel ends bearing on joists, beams, trusses or walls. Place cants or crickets over continuous basic roof sheathing with drilled vent holes per the Architect. Install wall sheathing in either the horizontal or up-right orientation. Adjust all sheathing layouts so that no panel is less than 24" in length or width. Where edges are not required to be blocked per schedule, provide Simpson PSCA clips at spacing per catalog recommendation. All sheathing shall be APA rated, with type/blocking/fastening per the following schedule. Provide 1/8" gaps between abutting sheet edges, typical.

20 SHEATHING FASTENING: Minimum nailing per the following schedule shall apply at all locations, except where larger nails and/or smaller spacing are required by plans or details. Shearwall nailing is shown by schedule on the plans. Where "boundary nailing" (BN) and/or "edge nailing" (EN) are referenced in these drawings, panel edge values per the schedule shall apply. Blocking for edges shall be 2x4 flat, minimum, unless a greater size is required to avoid splitting. See plans for zones of special nailing requirements.

-- WOOD SHEATHING SCHEDULE --

USE	TYPE	BLOCK EDGES	MIN EDGE NAILING	MIN FIELD NAILING
Shearwalls	15/32" PLY or OSB (Struct 1)	Yes	Per SW Sched (EN)	10d @ 12"
Other Sheathed Walls	15/32" PLY or OSB	No	10d @ 6"	10d @ 12"
Roof	15/32" PLY	Yes	10d @ 6" (BN)	10d @ 12"

- STRUCTURAL ABBREVIATIONS -

AA	ALL AROUND
AB	ANCHOR BOLT
ADDL	ADDITIONAL
ALT	ALTERNATE
ANCH	ANCHOR (ANCHORAGE)
ARCH	ARCHITECT, ARCHITECTURAL
ATR	ALL-THREAD ROD
BB	BOND BEAM
BF	BOUNDARY FASTENING (PER DTL/SCHED)
BFE	BOTTOM OF FOOTING ELEVATION
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BN	FLOOR/ROOF BOUNDARY NAILING
BOD	BOTTOM OF DECK
BOT	BOTTOM
BRG	BEARING
BSMT	BASEMENT
BTWN	BETWEEN
C-C or C/C	CENTER-TO-CENTER
CANT	CANTILEVER
CBORE	COUNTERBORE
CFS	COLD FORMED STEEL
CIP	CAST IN PLACE
CJ or CJT	CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMOSITE
CONC	CONCRETE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONSTR JT	CONSTRUCTION JOINT
CONT	CONTINUOUS, CONTINUED
CONTR	CONTRACTOR
CSINK	COUNTERSINK
CTR	CENTER
D	DEPTH
DAHB	DOWEL ALL HORIZONTAL BARS
DAVB	DOWEL ALL VERTICAL BARS
DBL	DOUBLE
DEG	DEGREES
DET or DTL	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIAPH	DIAPHRAGM
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DO	DITTO (SAME AS ABOVE or ADJACENT)
DS	DRAG STRUT
DWG	DRAWING
DWLS	DOWELS
E	EAST
(E) or EXIST	EXISTING
EA	EACH
EA END	EACH END

- STRUCTURAL ABBREVIATIONS -

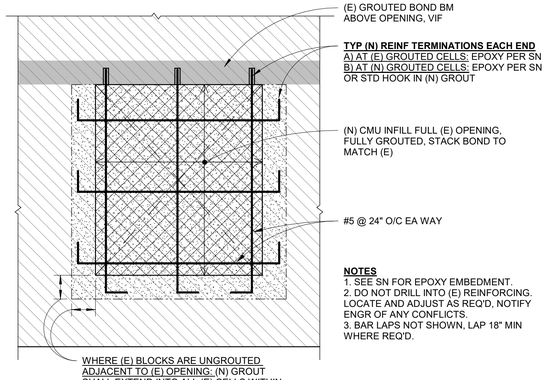
EF	EDGE FASTENING (PER SCHED)
EL or ELEV	ELEVATION (or ELEVATOR)
ELEC	ELECTRICAL
EN	WALL EDGE NAILING
EPS	EXPANDED POLYSTYRENE
EQ	EQUAL
EQ SP	EQUALLY SPACED
EQUIP	EQUIPMENT
ERECT	ERECTION
EW	EACH WAY
EXP	EXPANSION
EXP ANCH	EXPANSION ANCHOR
EXP BOLT	EXPANSION BOLT
EXP JT or EJ	EXPANSION JOINT
EXT	EXTERIOR
FB	FLAT BAR
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FIELD FASTENING (PER SCHED)
-	or FINISHED FLOOR
FIN	FINISH
FLR	FLOOR
FMG or FRMG	FRAMING
FS	FAR SIDE
FT	FOOT (FEET)
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GC	GENERAL CONTRACTOR
GEO	GEOTECHNICAL ENGINEER
GL	GLULAM
GLB	GLULAM BEAM
GS	GRIND SMOOTH
GWB	GYPSUM WALL BOARD
HDG	HOT-DIP GALVANIZED
HDR	HEADER
HK	HOOK
HNGR	HANGER
HORIZ or (H)	HORIZONTAL
HSS	HOLLOW STRUCTURAL SECTIONS
HT or H	HEIGHT
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH (INCHES)
INT	INTERIOR
JBE	JOIST BEARING ELEVATION
JH	JOIST HEADER
JST	JOIST
JT or JNT	JOINT
K	KIP (1000 POUNDS)
KO	KNOCK OUT
KW	KING-WORKS
L	ANGLE
LB	POUND
LG	LENGTH, LONG
LGS	LIGHT GAGE STEEL

- STRUCTURAL ABBREVIATIONS -

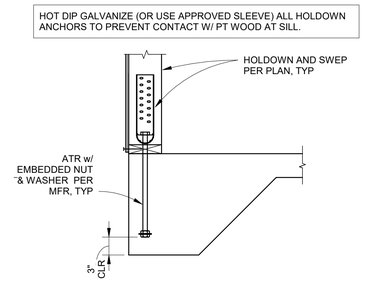
LL	LIVE LOAD
LLBB	LONG LEG BACK-TO-BACK
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LONG	LONGITUDINAL
LSL	LONG SLOTTED (HOLE)
-	or LAMINATED STRAND LUMBER
LT WT	LIGHT WEIGHT
LVL	LAMINATED VENEER LUMBER
LW	LONG WAY
MAS	MASONRY
MAX	MAXIMUM
MCJ	MASONRY CONTROL JOINT
MECH	MECHANICAL
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MONO	MONOLITHIC
MPCWT	METAL PLATE CONNECTED WOOD TRUSS
MTL	METAL
(N)	NEW
N	NORTH
NIC	NOT IN CONTRACT
NO	NUMBER
NS	NEAR SIDE
NS/HS	NON-SHRINK HIGH STRENGTH
NTS	NOT TO SCALE
OC or O/C	ON CENTER
OCBF	ORDINARY CONCENTRIC BRACED FRAME
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OH	OVERHEAD
OMF	ORDINARY MOMENT FRAME
OOP	OUT-OF-PLANE
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
OVS	OVERSIZE
OWJ	OPEN WEB WOOD CHORD JOIST
PAF	POWDER ACTUATED FASTENER
PAR	PARALLEL
PC	PRECAST or PIECE
PERP	PERPENDICULAR
PL	PLATE
PN	WALL PLATE NAILING
PROJ	PROJECT
PS-B	PANEL SCREWS - TYP BEARING
PS-D	PANEL SCREWS - DIAPH EDGE
PSF	POUNDS PER SQUARE FOOT
PSI	POUND PER SQUARE INCH
PSL	PARALLEL STRAND LUMBER
PT	PRESSURE TREATED or POINT
PVC	POLYVINYL CHLORIDE
R	RADIUS, REACTION
R/W	REINFORCED WITH
RD	ROOF DRAIN
REF	REFERENCE

- STRUCTURAL ABBREVIATIONS -

REINF	REINFORCEMENT
REQD	REQUIRED
REV	REVERSE, REVISION
RF	ROOF
RO	ROUGH OPENING
RTU	ROOF TOP UNIT
S	SOUTH
SC	SLIP CONTROL
SCHED	SCHEDULE
SECT	SECTION
SF	SQUARE FOOT/FEET
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SIP	STRUCTURAL INSULATED PANEL
SL	SNOW LOAD or SLOPING
SLBB	SHORT LEG BACK-TO-BACK
SN	STRUCTURAL NOTES
SOG	SLAB ON GRADE
SP @	SPACED AT
SPA	SPACES
SPEC	SPECIFICATIONS
SPECD	SPECIFIED
SQ	SQUARE
SSL	SHORT SLOTTED (HOLE)
STD	STANDARD
STIFF	STIFFENER
STIR	STIRRUPS
STL	STEEL
STL JST	STEEL JOIST
STRUCT	STRUCTURAL
SW	SHEARWALL
SWEP	SHEARWALL ENDPOST
SYM	SYMMETRICAL
T&B	TOP & BOTTOM
TBE	TOP OF BEAM ELEVATION
TEMP STL	TEMPERATURE STEEL
TF	TRACK FASTENING (PER TYP DTL)
TFE	TOP OF FOOTING ELEVATION
TL	TOTAL LOAD
TO or T/	TOP OF
TOB	TOP OF BEAM
TOS	TOP OF SLAB
TOW	TO OF WALL
TRANS	TRANSVERSE
TSE	THICKENED SLAB EDGE
TYP	TYPICAL
UNO or UON	UNLESS NOTED OTHERWISE
VERT or (V)	VERTICAL
VNR	VENEER
W	WIDTH OR WEST
W/	WITH
W/O	WITHOUT
WF	WIDE FLANGE
WHS	WELDED HEADED STUDS
WL	WIND LOAD
WP	WORK POINT
WPA	WATER PROOFING ADMIXTURE
WT	WEIGHT
WWF	WELDED WIRE FABRIC
<	LESS THAN
≤	EQUAL TO OR LESS THAN
>	GREATER THAN
=	EQUAL TO

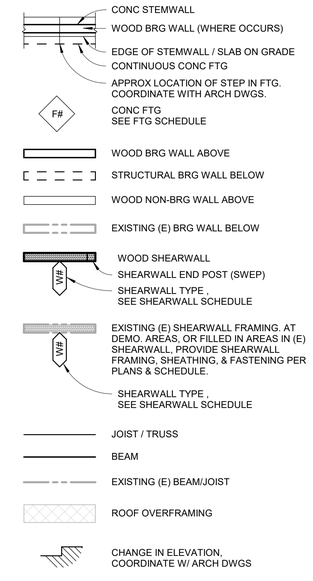


3 TYP CMU INFILL OF (E) OPENINGS
1/2" = 1'-0"



2 TYP SHEARWALL ENDPOSTS AND HOLDOWNS
1" = 1'-0"

LEGEND



1 LEGEND (REMODEL)
1/4" = 1'-0"

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City of Ferndale
Municipal Court Remodel
5694 2nd Avenue
Ferndale, WA 98248

Job No: 20025 Date: 7/31/2020
File No:
Drawn By: GK
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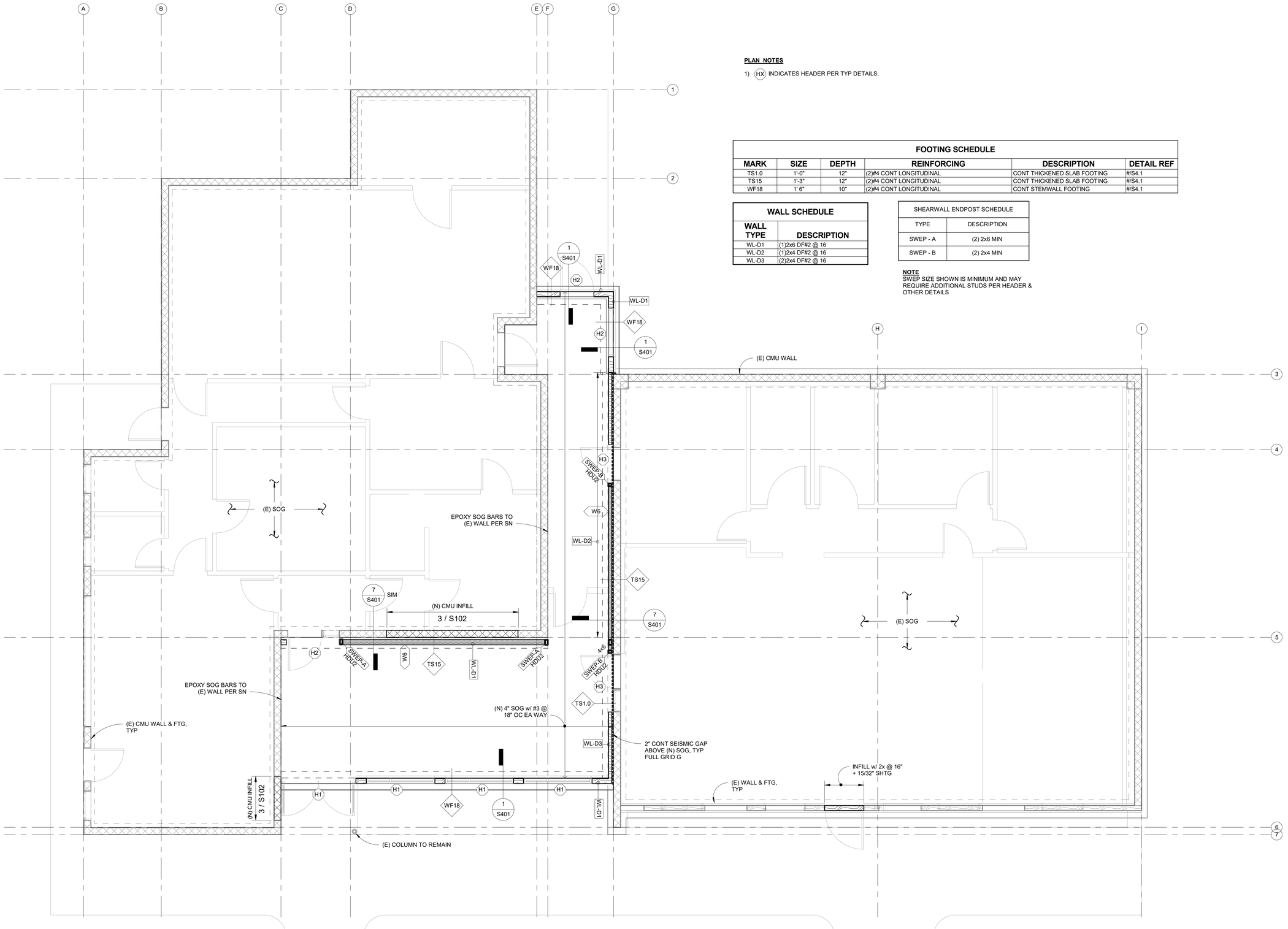
Issued for: BID / PERMIT SET

STRUCTURAL NOTES & MISC DETAILS

S102



1 GROUND FLOOR FOUNDATION AND FLOOR FRAMING PLAN
1/4" = 1'-0"

PLAN NOTES

1) (HX) INDICATES HEADER PER TYP DETAILS.

FOOTING SCHEDULE					
MARK	SIZE	DEPTH	REINFORCING	DESCRIPTION	DETAIL REF
TS1.0	1'-0"	12"	(2)#4 CONT LONGITUDINAL	CONT THICKENED SLAB FOOTING	#/S4.1
TS15	1'-3"	12"	(2)#4 CONT LONGITUDINAL	CONT THICKENED SLAB FOOTING	#/S4.1
WF18	1' 6"	10"	(2)#4 CONT LONGITUDINAL	CONT STEMWALL FOOTING	#/S4.1

WALL SCHEDULE	
WALL TYPE	DESCRIPTION
WL-D1	(1)2x6 DF#2 @ 16
WL-D2	(1)2x4 DF#2 @ 16
WL-D3	(2)2x4 DF#2 @ 16

SHEARWALL ENDPOST SCHEDULE	
TYPE	DESCRIPTION
SWEP - A	(2) 2x6 MIN
SWEP - B	(2) 2x4 MIN

NOTE
SWEP SIZE SHOWN IS MINIMUM AND MAY REQUIRE ADDITIONAL STUDS PER HEADER & OTHER DETAILS

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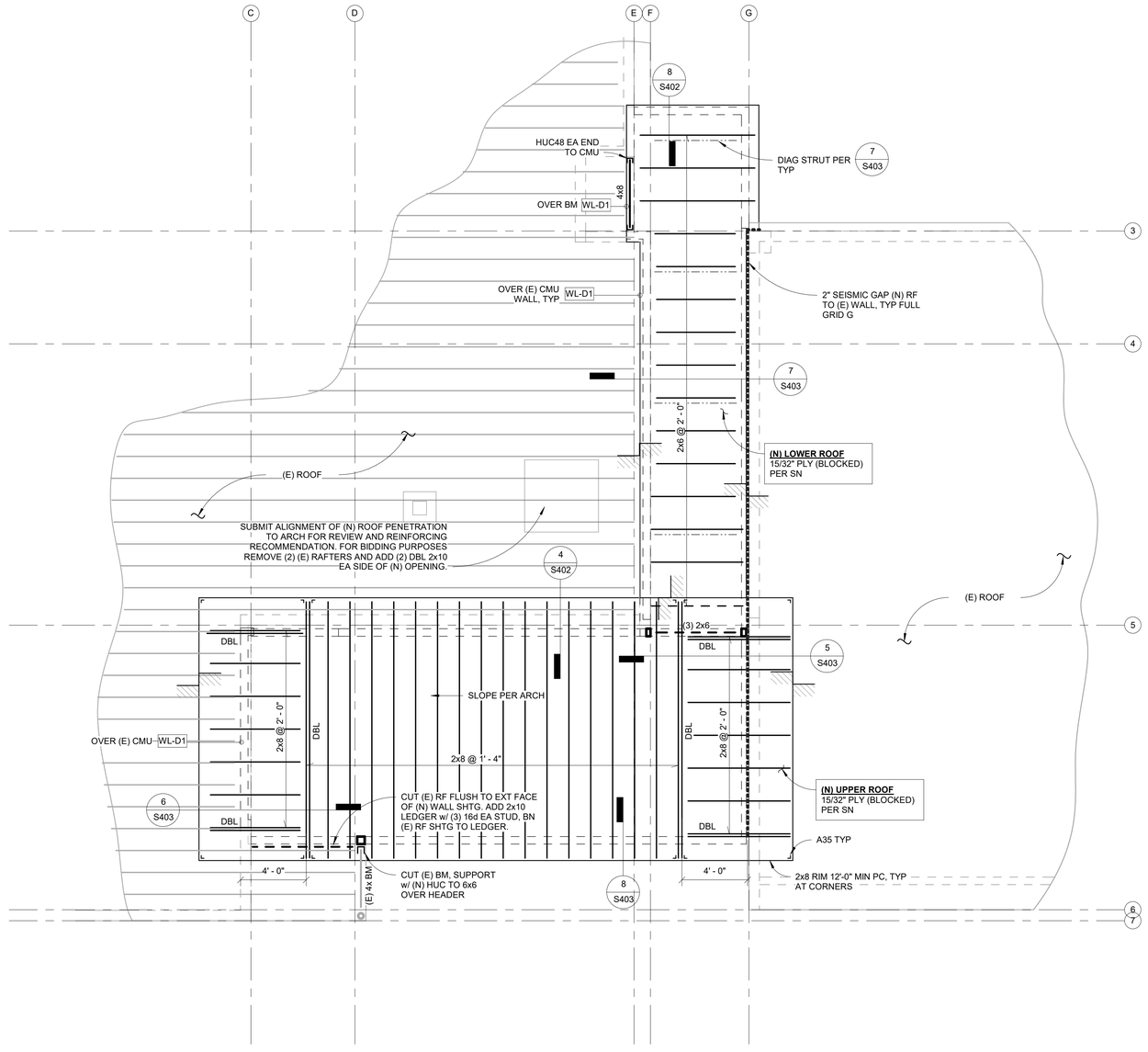
FOUNDATION & MAIN FLOOR FRAMING PLAN

S201



1 PARTIAL ROOF FRAMING PLAN
1/4" = 1'-0"

TRUE
NORTH

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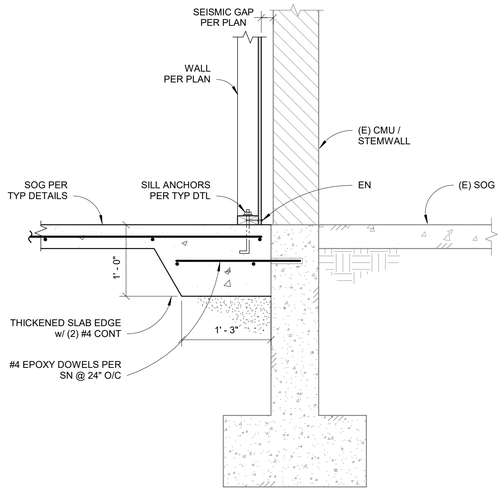
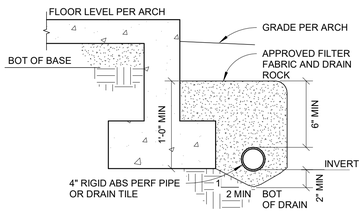
ROOF FRAMING
PLAN

S202



TYP THICKENED SLAB EDGE AT (E) WALL
1" = 1'-0"



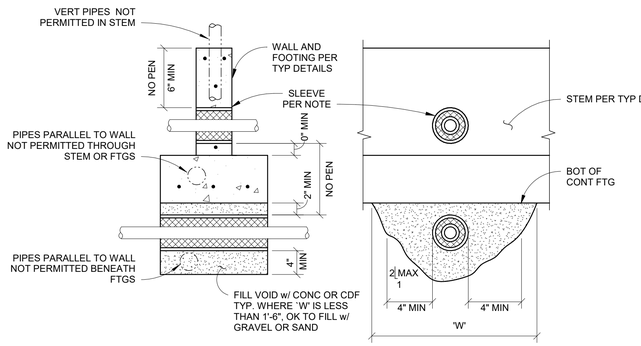
PERIMETER FOUNDATION DRAIN NOTES
- INVERT MUST BE BELOW FLOOR LEVEL.
- BOTTOM OF DRAIN MUST BE BELOW BOT OF BASE.

NOTES
1. DRAIN PIPES MUST DISCHARGE BY GRAVITY OR MECHANICAL MEANS TO AN APPROVED DRAINAGE SYSTEM THAT COMPLIES WITH THE INTERNATIONAL PLUMBING CODE.
2. MINIMUM SLOPE FOR DRAIN PIPE RUNS IS 0.5%.
3. DO NOT CONNECT FOUNDATION DRAIN SYSTEMS TO RAIN LEADERS OR DOWN SPOUTS.
4. PROVIDE APPROVED CLEANOUTS FOR ALL DRAIN PIPE AT ENDS, CORNERS, AND NO MORE THAN 120'-0" ON CENTER.
5. SEE CIVIL DRAWINGS FOR GRADES, DISCHARGE POINTS, AND OTHER REQMTS. ALSO SEE GEOTECH REPORT FOR ADDITIONAL REQMTS.
6. SUBMIT A FOUNDATION DRAINAGE PLAN TO THE ARCHITECT FOR REVIEW.
7. DRAIN ROCK/BASE MATERIAL SHALL CONSIST OF GRAVEL OR STONE WITH LESS THAN 10% OF MATERIAL PASSING THROUGH A NUMBER 4 SIEVE.
8. REQUIREMENTS OF THIS DETAIL SHALL BE CONSIDERED "MINIMUM REQUIREMENTS" AND SHALL BE SUPERSEDED BY ANY MORE STRINGENT REQUIREMENTS REQUIRED BY THE CIVIL DRAWINGS, SPECIFICATIONS, AND/OR GEOTECHNICAL REPORT.

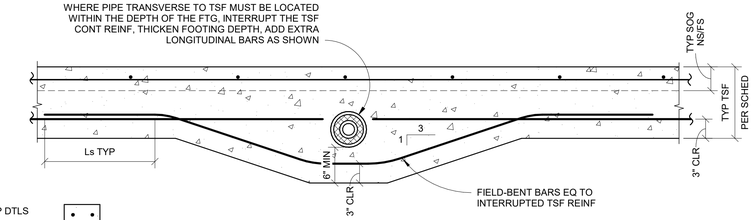
TYP FOUNDATION DRAINS
1" = 1'-0"

TYP PIPE ALLOWANCES AT FOUNDATIONS
1" = 1'-0"

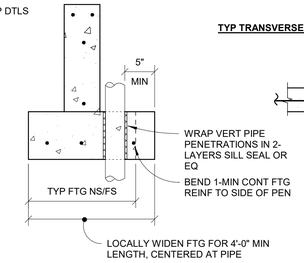
NOTES
1. PROVIDE SLEEVES NOT LESS THAN TWO PIPE SIZES LARGER THAN THE ACTIVE PIPE. CENTER PIPE IN SLEEVE AND FILL VOID w/ LOW DENSITY FOAM OR OTHER COMPRESSIBLE MATERIAL.
2. ADJACENT PENETRATIONS THROUGH STEMWALL SHALL BE SPACED TO PERMIT 6" MIN REMAINING CONCRETE BETWEEN THEM. IF CLOSER PENETRATION SPACING IS REQUIRED, OR IF ANY TYP REINF REQUIRES INTERRUPTION, SUCH LOCATIONS SHALL BE CLEARLY INDICATED ON THE SUBMITTED REINFORCING SHOP DRAWINGS; THE ENGINEER SHALL REVIEW THE SHOP DRAWING FOR ADEQUACY AND ADD REINFORCING AS REQUIRED. FOR BIDDING PURPOSES ONLY, INCLUDE (2) ADD'L #4 x 6'-0" ON EACH SIDE OF EACH MULTIPLE-PIPE PENETRATION.
3. FIGURE BELOW SHOWS ACCEPTABLE PENETRATION LOCATIONS THROUGH STEM OR BELOW FTG:



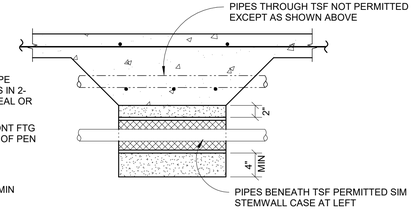
TYP TRANSVERSE PIPE THROUGH OR BENEATH STEMWALL



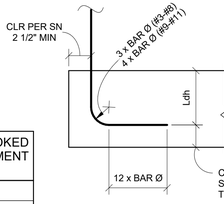
TYP TRANSVERSE PIPE PENETRATION THROUGH TSF



TYP VERT PIPE THROUGH STEMWALL FTG



TYP TRANSVERSE PIPE BENEATH TSF



BAR SIZE	MIN STD HOOKED BAR EMBEDMENT (Ldh)
#3	8 in
#4	11 in
#5	13 in
#6	16 in
#7	18 in
#8	21 in
#9	23 in
#10	26 in
#11-#14	29 in

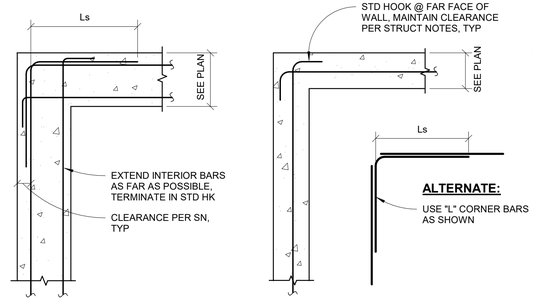
NOTE
TABULATED VALUES ARE BASED ON GRADE 60 UNCOATED REINF BARS AND 3500 PSI MIN STRENGTH NORMAL WEIGHT CONCRETE. MULTIPLE LENGTHS TIMES 1.10 IN 3000 PSI CONCRETE AND TIMES 0.9 IN 4500 PSI CONCRETE.

SHELTERS - CONC REINF STANDARD HOOKS
3/4" = 1'-0"

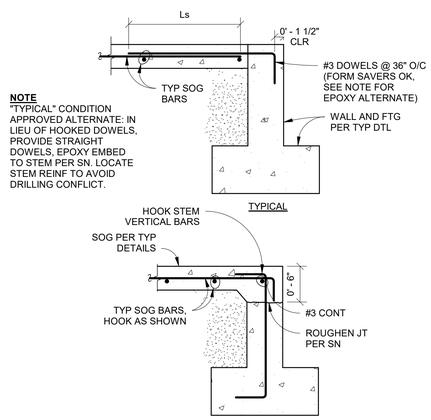
BAR SIZE	DEVELOPMENT LENGTHS (Ld) TOP	DEVELOPMENT LENGTHS (Ld) OTHER	LAP SPLICE LENGTHS (Ls) TOP	LAP SPLICE LENGTHS (Ls) OTHER
#3	12 in	12 in	16 in	12 in
#4	20 in	16 in	26 in	20 in
#5	29 in	23 in	38 in	29 in
#6	40 in	31 in	52 in	40 in
#7	64 in	49 in	83 in	64 in
#8	79 in	61 in	103 in	79 in
#9	96 in	74 in	125 in	96 in
#10	115 in	89 in	150 in	115 in
#11-#14	MECH ONLY		MECH ONLY	

NOTES
1. TABULATED VALUES ARE BASED ON GRADE 60 UNCOATED REINF BARS AND 3500 PSI STRENGTH NORMAL WEIGHT CONCRETE. MULTIPLY THE TABULATED LENGTHS BY 1.10 IN 3000 PSI CONCRETE AND BY 0.9 IN 4,500 PSI CONCRETE. LENGTHS ARE NEVER TO BE REDUCED BELOW 12".
2. BAR C/C SPACING MUST BE GREATER THAN TWICE THE BAR DIAMETER AND COVER GREATER THAN ONE BAR DIAMETER.
3. "TOP" BARS ARE DEFINED AS HORIZONTAL BARS WITH MORE THAN 12 INCHES OF FRESH CONCRETE CAST BELOW THE BARS (WALL HORIZONTAL REINFORCEMENT IS EXEMPT).
4. FOR #11 AND LARGER BARS, MECHANICAL ANCHORAGE AND SPLICES SHALL BE REQUIRED, AND SHALL DEVELOP 1.25 Fy, MIN.
5. AT LOCATIONS WHERE Ld IS CALLED OUT BUT CANNOT BE ACHIEVED, PROVIDE STANDARD HOOK AT PER TYP DETAIL AT 3" CLR TO OPPOSITE FACE OF CONCRETE.

SHELTERS - CONC REINF DEVELOPMENT/SPLICE LENGTHS
3/4" = 1'-0"

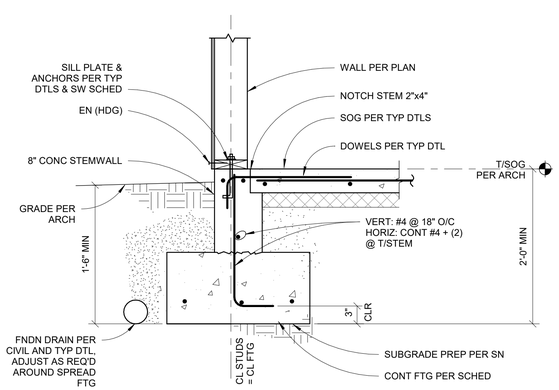


TYP CONC WALL AND FTG REINF @ CORNERS
3/4" = 1'-0"



NOTE
"TYPICAL" CONDITION APPROVED ALTERNATE: IN LIEU OF HOOKED DOWELS, PROVIDE STRAIGHT DOWELS, EPOXY EMBED TO STEM PER SN. LOCATE STEM REINF TO AVOID DRILLING CONFLICT.

TYP DOWELS AT STEMWALL
1" = 1'-0"



TYP PERIMETER STEMWALL FTG
1" = 1'-0"

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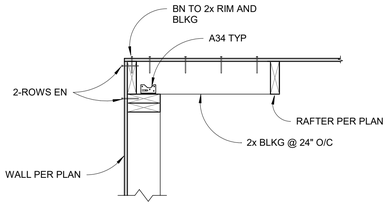
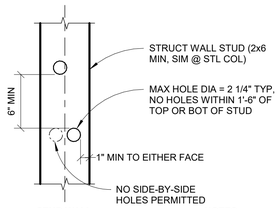
STRUCTURAL DETAILS

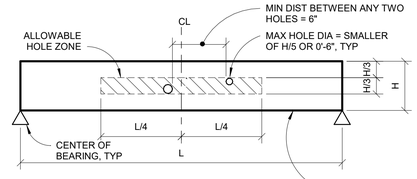
S401



8 LOW ROOF SECTION AT EAST WALL
1" = 1'-0"



STUD WALL

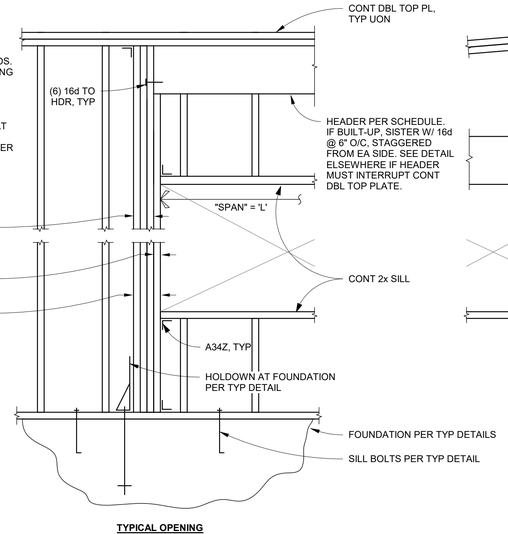


SOLID JOIST OR BEAM

NOTES
1. NO "NOTCHING" PERMITTED OF ANY WOOD MEMBER.
2. ALLOWABLE HOLES THROUGH PRE-ENGINEERED PRODUCTS (SUCH AS I-JOISTS) SHALL BE AS PERMITTED BY MFR.
3. WHERE PROPOSED PENETRATION WOULD NOT CONFORM TO THIS DETAIL, SUBMIT TO ENGINEER FOR REVIEW (3) DAYS MIN PRIOR TO DRILLING. ANY ADDITIONAL REINFORCING REQUIRED TO ACCOMMODATE THE NON-CONFORMING PENETRATION SHALL BE PROVIDED AT NO ADDITIONAL EXPENSE TO THE OWNER.

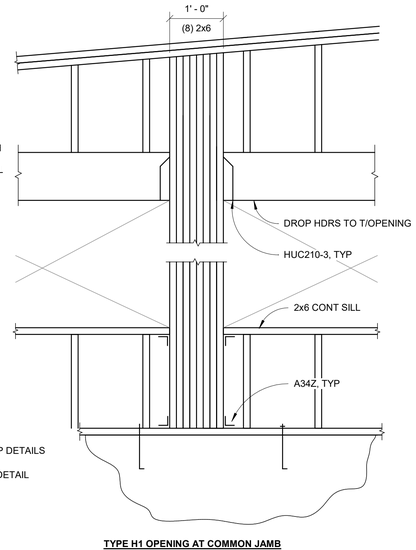
7 TYP ALLOWABLE HOLES THROUGH WOOD MEMBERS
1 1/2" = 1'-0"

NOTES
1. "H" = HEADER, "J" = JACK STUDS, "K" = KING STUDS.
2. PROVIDE TYPE "H2" FRAMING AT ALL NON-BEARING WALL OPENINGS NOT OTHERWISE NOTATED ON PLAN.
3. SUBMIT PROPOSED LOCATIONS & SIZES OF ANY OPENINGS REQUIRED IN BEARING WALLS (SUPPORTING ROOF AND/OR FLOOR FRAMING) THAT ARE NOT SPECIFICALLY NOTATED ON PLAN. ENGINEER SHALL REPLY WITH APPROPRIATE HEADER TYPE FRAMING. FOR BIDDING PURPOSES, TYPE H2 SHALL BE ASSUMED FOR ALL SUCH OPENINGS.



TYPE	FRAMING
H1	H: (3)2x10 DF#2 J: NONE K: (4)2x6 DF#2
H2	H: (2)2x6 DF#2 J: (1)2x6 DF#2 K: (1)2x6 DF#2
H3	H: (2)2x6 DF#2 J: (4)2x4 DF#2

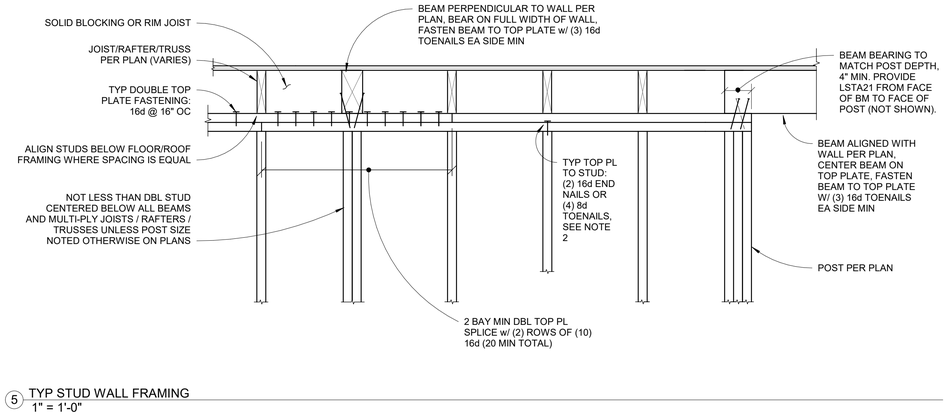
TYPICAL OPENING



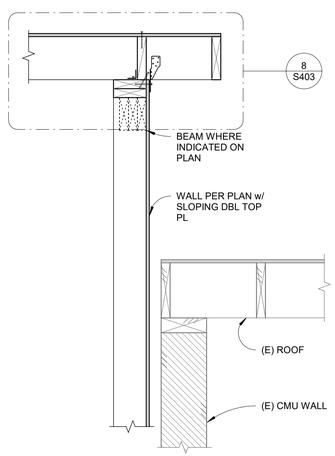
TYPE H1 OPENING AT COMMON JAMB

6 TYP HEADER FRAMING
3/4" = 1'-0"

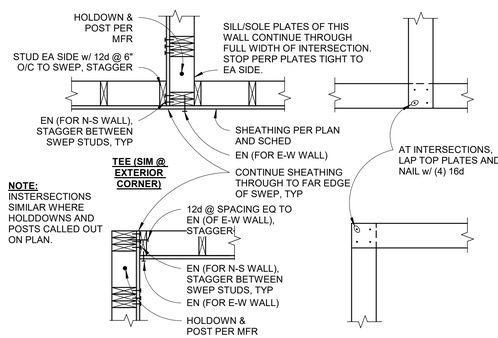
TYP STUD WALL FRAMING NOTES
1. SEE IBC TABLE 2304.10.1 FOR OTHER MIN FASTENING REQUIREMENTS IN ADDITION TO THOSE SHOWN IN THESE DRAWINGS AND STRUCT NOTES.
2. AT MULTIPLE STUD PACKS, TYP T&B END FASTENING SHALL APPLY TO EACH STUD IN PACK



5 TYP STUD WALL FRAMING
1" = 1'-0"

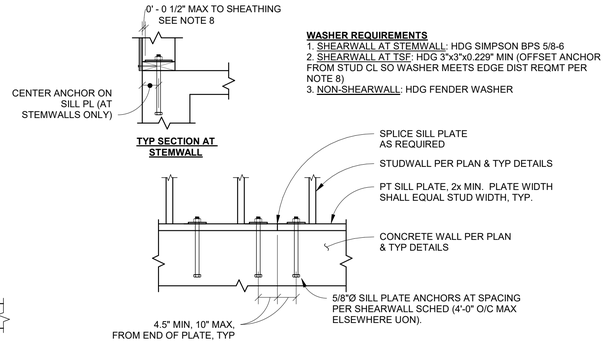


4 GRID 5 UPPER ROOF RAKE EDGE
1" = 1'-0"



INTERIOR CORNER

3 TYP WOOD WALL INTERSECTIONS
3/4" = 1'-0"



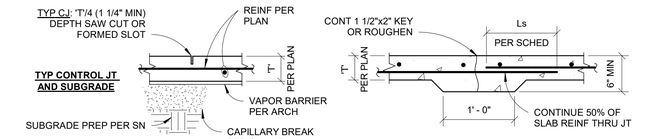
TYP SECTION AT STEMWALL

WASHER REQUIREMENTS
1. SHEARWALL AT STEMWALL: HDG SIMPSON BPS 5/8-6
2. SHEARWALL AT TSF: HDG 3"x3"x0.229" MIN (OFFSET ANCHOR FROM STUD CL SO WASHER MEETS EDGE DIST REQMT PER NOTE 8)
3. NON-SHEARWALL: HDG FENDER WASHER

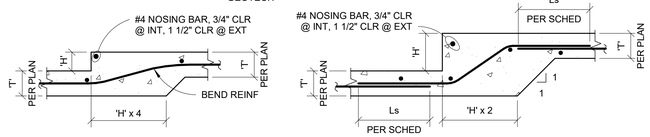
SILL ANCHOR OPTIONS
OPTION 1: CAST-IN-PLACE ANCHOR RODS; 7" MIN EMBEDMENT WITH 2" HOOK OR HEADED BOLT.
OPTION 2: MECH GALV SIMPSON TITEN HD ANCHORS, 3 1/2" MIN EMBEDMENT
OPTION 3: EPOXY ANCHORS PER SN, 5" MIN EMBEDMENT

NOTES
1. SET SILL PLATE FOR EVEN BEARING. PLACE MORTAR UNDER PLATE WHEN GAP EXCEEDS 1/8".
2. SEE SHEAR WALL SCHEDULE FOR ANCHOR SPACING AT SHEAR WALLS.
3. USE ONLY HOT DIP GALVANIZED SILL ANCHORS, WASHERS, CONNECTORS AND FASTENERS IN PRESSURE TREATED WOOD EXCEPT WHERE BORATE TREATED SILLS ARE USED. SEE STRUCTURAL NOTES FOR ADD'L INFORMATION.
4. THIS DETAIL DOES NOT APPLY TO HOLDOWN ANCHORS, SEE DETAIL ELSEWHERE.
5. POST-INSTALLED ANCHORS SHALL BE INSTALLED PER MFR's RECOMMENDATIONS AND REQUIRE SPECIAL INSPECTION. SEE STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.
6. HOLE Ø IN SILL PLATE SHALL BE 1/16" MAX LARGER THAN THE ANCHOR Ø.
7. HOLE IN PL WASHER MAY BE 1 1/16" MAX LARGER THAN THE ANCHOR Ø OR DIAGONALLY SLOTTED WITH MAX SLOT LENGTH OF 1 3/4", PROVIDED A STANDARD CUT WASHER IS PLACED BETWEEN PLATE WASHER AND NUT.
8. ALL PLATE WASHERS AT SHEARWALLS SHALL EXTEND TO WITHIN 1/2" OF THE EDGE OF THE BOTTOM PLATE ON THE SHEATHED SIDE(S).

2 TYP WALL SILL ANCHORS
1" = 1'-0"



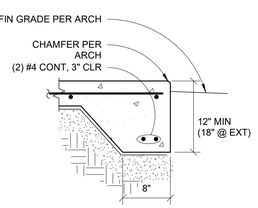
TYP CONSTRUCTION JT



TYP SLAB STEP (H<T)

TYP SLAB STEP (H<2T)

NOTE
1. PLACE CONTROL JOINTS AND CONST JOINTS AT NO MORE THAN 12'-0" O/C, EW. ALIGN JOINTS WITH COLS AND SLAB CORNERS WHERE POSSIBLE.
2. CUT CJ's AFTER CONC HAS SUFFICIENTLY HARDENED TO PREVENT SPALLING OR TEARING BUT NO MORE THAN 12 HOURS AFTER POUR.
3. SUBMIT A SLAB PLAN SHOWING CONTROL & CONSTRUCTION JOINT LAYOUT AND POUR SEQUENCE FOR APPROVAL.
4. THE SUBGRADE SHOWN ABOVE SHALL BE THE MINIMUM REQUIRED AT ANY LOCATION, AND SHALL BE INCREASED OR MODIFIED AS RECOMMENDED IN THE GEOTECH. REPORT.
5. SEE SPEC AND ARCH/MECH/CIVIL DRAWINGS FOR SLAB EXTENTS, SLOPES, STEPS, DRAINS, ELEVATIONS, CHAMFERS, FINISHES AND OTHER RELATED INFORMATION. MAINTAIN MIN THICKNESS PER PLAN THROUGHOUT.
6. WHERE SINGLE PENETRATION (OR COMBINED GROUPING OF MULTIPLE PENETRATIONS, SUCH AS AT GROUPS OF PIPES OR CONDUIT) LARGER THAN 0'-10" ANY DIRECTION, PROVIDE ADD'L #3 EA SIDE EXTENDING 18" MIN BEYOND THE PENETRATION EXTENTS.
7. AT INT CORNERS, PROVIDE (2) ADD'L #3x36" @ 2" O/C, PLACED AT 45-DEG AND 2" CLR TO THE INT CORNER OF SOG.
8. SIM AT EXT SOG's/SIDEWALKS AROUND BLDG, EXCEPT OMIT VAPOR BARRIER, REDUCE CJ SPACING TO 10'-0" O/C MAX, PROVIDE AIR ENTRAINMENT PER SN.



TYP THICKENED SLAB EDGE

1 TYP SLAB-ON-GRADE DETAILS
1" = 1'-0"

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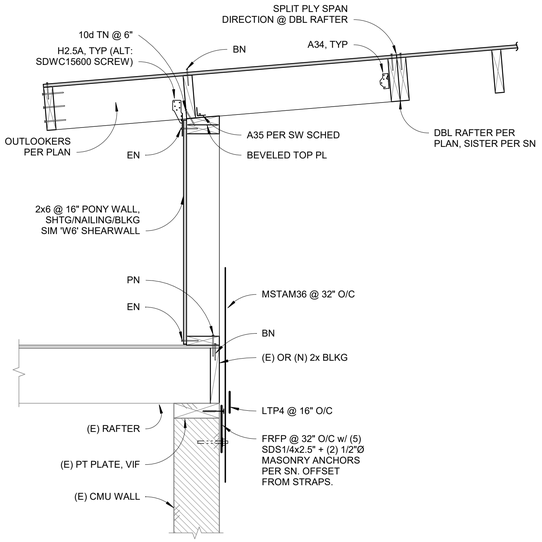
City of Ferndale
Municipal Court Remodel
5694 2nd Avenue
Ferndale, WA 98248

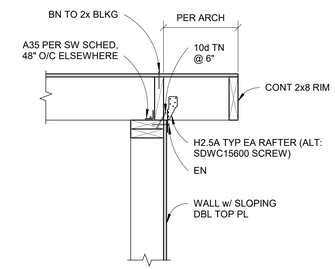
Job No: 20025 Date: 7/31/2020
File No:
Drawn By: GK
Checked By: DL
Issued for: BID / PERMIT SET

STRUCTURAL DETAILS

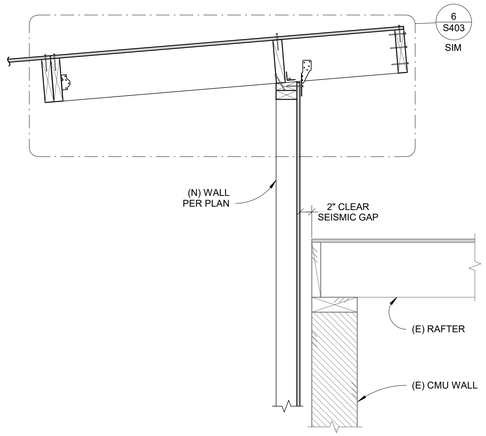
S402



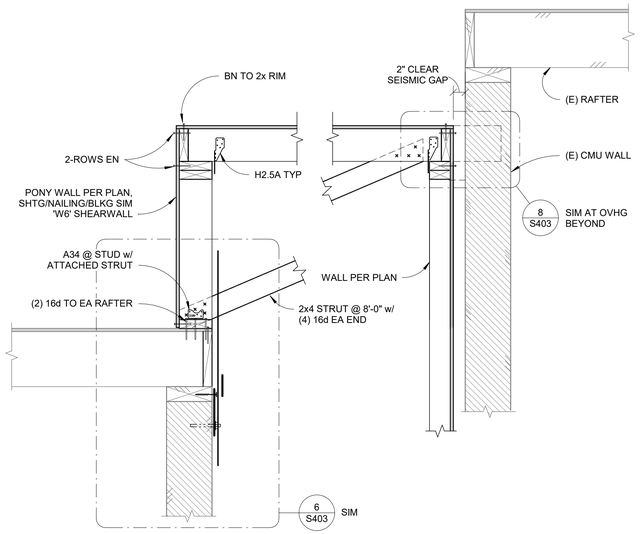
6 UPPER ROOF SECTION AT LOW EAVE
1" = 1'-0"



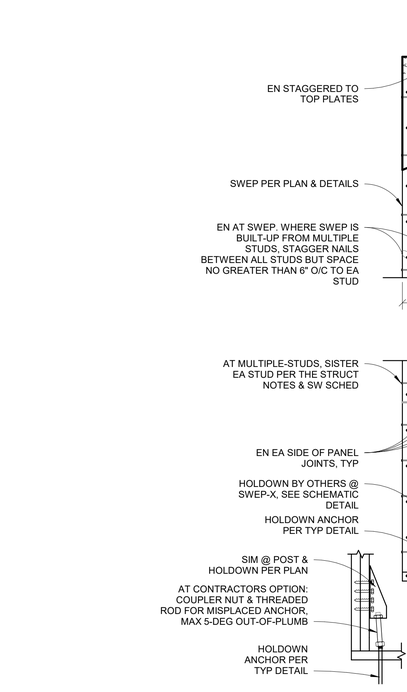
8 TYP UPPER ROOF RAKE EDGE
1" = 1'-0"



5 UPPER ROOF SECTION AT HIGH EAVE
1" = 1'-0"

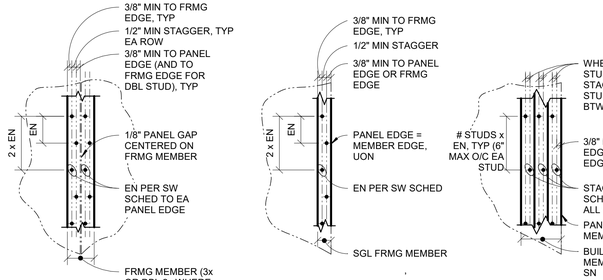


7 TYP LOW ROOF SECTION
1" = 1'-0"



NOTES
1. SEE SW SCHED FOR EDGE NAILING (EN) AND PLATE NAILING (PN) SIZE & SPACING.
2. PROVIDE 1/8" GAP BETWEEN ADJACENT PANELS, TYP.
3. WHEREVER EDGE NAIL (EN) SPACING IS LESS THAN 4" O/C, EACH ROW OF NAILS SHALL BE STAGGERED INTO TWO ROWS. THE CENTERLINES OF THESE TWO ROWS SHALL BE OFFSET BY 1/2" MIN. ALSO MAINTAIN 3/8" MIN EDGE DISTANCE FROM CL OF NAIL TO EDGE OF PANEL AND EDGE OF FRAMING MEMBER. SEE TYP STAGGER DTL ELSEWHERE.
4. SHTG PANELS MAY BE INSTALLED VERTICALLY OR HORIZONTALLY.
5. WHERE DBL SILL OR SOLE PLATE USED, SISTER UPPER PL TO LOWER PL w/ PN PER SW SCHED; STAGGER EN EVENLY BETWEEN PLATES.

3 TYP SHEARWALL CONSTRUCTION
1" = 1'-0"



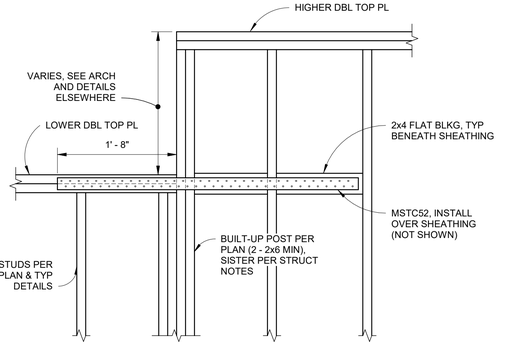
TYP NAIL STAGGER AT ABUTTING PANEL EDGES (FOR EN < 4" O/C)

TYP NAIL STAGGER AT NON-ABUTTING PANEL EDGE ON SINGLE MEMBER (FOR EN < 4" O/C)

TYP NAIL STAGGER AT NON-ABUTTING PANEL EDGE ON BUILT-UP MEMBER (FOR ALL EN)

NOTE
VERTICAL (STUD) CONFIGURATIONS SHOWN; STAGGER AT HORIZONTAL (PLATE OR BLKG) CONFIGURATIONS SHALL BE SIMILAR

4 TYP SHEARWALL NAIL STAGGER
1 1/2" = 1'-0"



TYP DOUBLE TOP PLATE ELEVATION TRANSITION
2 1" = 1'-0"

TABLE 2304.9.1
FASTENING SCHEDULE

CONNECTION	FASTENING[a, m]	LOCATION
1. Joist to sill or girder	3 - 8d common (2½" × 0.131") 3 - 3" × 0.131" nails 3 - 3" 14 gage staples	toenail
2. Bridging to joist	2 - 8d common (2½" × 0.131") 2 - 3" × 0.131" nails 2 - 3" 14 gage staples	toenail each end
3. 1" × 6" subfloor or less to each joist	2 - 8d common (2½" × 0.131")	face nail
4. Wider than 1" × 6" subfloor to each joist	3 - 8d common (2½" × 0.131")	face nail
5. 2" subfloor to joist or girder	2 - 16d common (3½" × 0.162")	blind and face nail
6. Sole plate to joist or blocking	16d (3½" × 0.135") at 16" o.c. 3" × 0.131" nails at 8" o.c. 3" 14 gage staples at 12" o.c.	typical face nail
Sole plate to joist or blocking at braced wall panel	3 - 16d (3½" × 0.135") at 16" o.c. 4 - 3" × 0.131" nails at 16" o.c. 4 - 3" 14 gage staples at 16" o.c.	braced wall panels
7. Top plate to stud	2 - 16d common (3½" × 0.162") 3 - 3" × 0.131" nails 3 - 3" 14 gage staples	end nail
8. Stud to sole plate	4 - 8d common (2½" × 0.131") 4 - 3" × 0.131" nails 3 - 3" 14 gage staples	toenail
	2 - 16d common (3½" × 0.162") 3 - 3" × 0.131" nails 3 - 3" 14 gage staples	end nail
9. Double studs	16d (3½" × 0.135") at 24" o.c. 3" × 0.131" nail at 8" o.c. 3" 14 gage staple at 8" o.c.	face nail
10. Double top plates	16d (3½" × 0.135") at 16" o.c. 3" × 0.131" nail at 12" o.c. 3" 14 gage staple at 12" o.c.	typical face nail
Double top plates	8 - 16d common (3½" × 0.162") 12 - 3" × 0.131" nails 12 - 3" 14 gage staples	lap splice
11. Blocking between joists or rafters to top plate	3 - 8d common (2½" × 0.131") 3 - 3" × 0.131" nails 3 - 3" 14 gage staples	toenail
12. Rim joist to top plate	8d (2½" × 0.131") at 6" o.c. 3" × 0.131" nail at 6" o.c. 3" 14 gage staple at 6" o.c.	toenail
13. Top plates, laps and intersections	2 - 16d common (3½" × 0.162") 3 - 3" × 0.131" nails 3 - 3" 14 gage staples	face nail
14. Continuous header, two pieces	16d common (3½" × 0.162")	16" o.c. along edge
15. Ceiling joists to plate	3 - 8d common (2½" × 0.131") 5 - 3" × 0.131" nails 5 - 3" 14 gage staples	toenail
16. Continuous header to stud	4 - 8d common (2½" × 0.131")	toenail

CONNECTION	FASTENING[a, m]	LOCATION
17. Ceiling joists, laps over partitions (see Section 2308.10.4.1, Table 2308.10.4.1)	3 - 16d common (3½" × 0.162") minimum, Table 2308.10.4.1 4 - 3" × 0.131" nails 4 - 3" 14 gage staples	face nail
18. Ceiling joists to parallel rafters (see Section 2308.10.4.1, Table 2308.10.4.1)	3 - 16d common (3½" × 0.162") minimum, Table 2308.10.4.1 4 - 3" × 0.131" nails 4 - 3" 14 gage staples	face nail
19. Rafter to plate (see Section 2308.10.1, Table 2308.10.1)	3 - 8d common (2½" × 0.131") 3 - 3" × 0.131" nails 3 - 3" 14 gage staples	toenail
20. 1" diagonal brace to each stud and plate	2 - 8d common (2½" × 0.131") 2 - 3" × 0.131" nails 2 - 3" 14 gage staples	face nail
21. 1" × 8" sheathing to each bearing	3 - 8d common (2½" × 0.131")	face nail
22. Wider than 1" × 8" sheathing to each bearing	3 - 8d common (2½" × 0.131")	face nail
23. Built-up corner studs	16d common (3½" × 0.162") 3" × 0.131" nails 3" 14 gage staples	24" o.c. 16" o.c. 16" o.c.
24. Built-up girder and beams	20d common (4" × 0.192") 32" o.c. 3" × 0.131" nail at 24" o.c. 3" 14 gage staple at 24" o.c.	face nail at top and bottom staggered on opposite sides
	2 - 20d common (4" × 0.192") 3 - 3" × 0.131" nails 3 - 3" 14 gage staples	face nail at ends and at each splice
25. 2" planks	16d common (3½" × 0.162")	at each bearing
26. Collar tie to rafter	3 - 10d common (3" × 0.148") 4 - 3" × 0.131" nails 4 - 3" 14 gage staples	face nail
27. Jack rafter to hip	3 - 10d common (3" × 0.148") 4 - 3" × 0.131" nails 4 - 3" 14 gage staples	toenail
	2 - 16d common (3½" × 0.162") 3 - 3" × 0.131" nails 3 - 3" 14 gage staples	face nail
28. Roof rafter to 2-by ridge beam	2 - 16d common (3½" × 0.162") 3 - 3" × 0.131" nails 3 - 3" 14 gage staples	toenail
	2 -16d common (3½" × 0.162") 3 - 3" × 0.131" nails 3 - 3" 14 gage staples	face nail
29. Joist to band joist	3 - 16d common (3½" × 0.162") 4 - 3" × 0.131" nails 4 - 3" 14 gage staples	face nail

CONNECTION	FASTENING[a, m]	LOCATION
30. Ledger strip	3 - 16d common (3½" × 0.162") 4 - 3" × 0.131" nails 4 - 3" 14 gage staples	face nail at each joist
31. Wood structural panels and particleboard[b] Subfloor, roof and wall sheathing (to framing)	½" and less	6d[c, i] 2 ⅜" × 0.113" nail[d] 1⅝" 16 gage[e] 8d[f] or 8d[g]
	⁹/₁₆" to ¾"	2½" × 0.113" nail[d] 2" 16 gage[e] 8d[f]
	⅞" to 1" 1¼" to 1½"	10d[f] or 8d[g]
Single floor (combination subfloor-underlayment to framing)	½" and less	6d[g]
	⅝" to 1"	8d[g]
	⅞" to 1½"	10d[f] or 8d[g]
32. Panel siding (to framing)	½" or less	6d[f]
	⅝"	8d[f]
33. Fiberboard sheathing[n]	½"	No. 11 gage roofing nail[h] 6d common nail (2" × 0.113") No. 16 gage staple[j]
	²⁵/₃₂"	No. 11 gage roofing nail[h] 8d common nail (2½" × 0.131") No. 16 gage staple[j]
34. Interior paneling	¼"	4d[f]
	⅜"	6d[k]

For SI: 1 inch = 25.4 mm.
a. Common or box nails are permitted to be used except where otherwise stated.
b. Nails spaced at 6 inches on center at edges, 12 inches at intermediate supports except 6 inches at supports where spans are 48 inches or more. For nailing of wood structural panel and particleboard diaphragms and shear walls, refer to Section 2305. Nails for wall sheathing are permitted to be common, box or casing.
c. Common or deformed shank (6d - 2" × 0.113"; 8d - 2½" × 0.131"; 10d - 3" × 0.148").
d. Common (6d - 2" × 0.113"; 8d - 2½" × 0.131"; 10d - 3" × 0.148").
e. Deformed shank (6d - 2" × 0.113"; 8d - 2½" × 0.131"; 10d - 3" × 0.148").
f. Corrosion-resistant siding (6d - 1⅞" × 0.106"; 8d - 2½" × 0.128") or casing (6d - 2" × 0.099"; 8d - 2½" × 0.113") nail.
g. Fasteners spaced 3 inches on center at exterior edges and 6 inches on center at intermediate supports, when used as structural sheathing. Spacing shall be 6 inches on center on the edges and 12 inches on center at intermediate supports for nonstructural applications.
h. Corrosion-resistant roofing nails with ⅞"-inch-diameter head and 1½-inch length for ½-inch sheathing and 1¾-inch length for ²⁵/₃₂-inch sheathing.
i. Corrosion-resistant staples with nominal ⅞-inch crown or 1-inch crown and 1½-inch length for ½-inch sheathing and 1½-inch length for ²⁵/₃₂-inch sheathing. Panel supports at 16 inches (20 inches if strength axis is in the long direction of the panel, unless otherwise marked).
j. Casing (1½" × 0.080") or finish (1½" × 0.072") nails spaced 6 inches on panel edges, 12 inches at intermediate supports.
k. Panel supports at 24 inches. Casing or finish nails spaced 6 inches on panel edges, 12 inches at intermediate supports.
l. For roof sheathing applications, 8d nails (2½" × 0.113") are the minimum required for wood structural panels.
m. Staples shall have a minimum crown width of ⅞-inch.
n. For roof sheathing applications, fasteners spaced 4 inches on center at edges, 8 inches at intermediate supports.
o. Fasteners spaced 4 inches on center at edges, 8 inches at intermediate supports for subfloor and wall sheathing and 3 inches on center at edges, 6 inches at intermediate supports for roof sheathing.
p. Fasteners spaced 4 inches on center at edges, 8 inches at intermediate supports.

NOTE
THE ABOVE TYPICAL MINIMUM NAILING SCHEDULE SHALL APPLY THROUGHOUT EXCEPT WHERE GREATER QUANTITY OR SIZE IS SPECIFICALLY INDICATED IN THE STRUCTURAL DETAILS.

TYP MIN NAILING SCHEDULE - IBC Table 2304.9.1
1 6" = 1'-0"

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STATE OF WASHINGTON
41390
7/29/20
STRUCTURAL ENGINEER
DIGITAL SEAL
ON PDF FILE

City of Ferndale
Municipal Court Remodel
5694 2nd Avenue
Ferndale, WA 98248

Job No: 20025 Date: 7/31/2020
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STRUCTURAL DETAILS

S403

GENERAL LEGEND

SYMBOL	DESCRIPTION
A / B	DETAIL SYMBOL: A = IDENTIFYING NUMBER B = SHEET WHERE DETAIL IS SHOWN
A / B	SECTION SYMBOL: A = IDENTIFYING LETTER B = SHEET WHERE SECTION IS SHOWN
	SECTION CUT LINE INDICATOR
1	KEYED REFERENCE NOTE OR SHEET NOTE
	POINT OF CONNECTION (POC) SYMBOL
P1-1	PLUMBING FIXTURE REFERENCE (REFER TO SCHEDULE)
AHU-1	EQUIPMENT IDENTIFICATION (REFER TO SCHEDULES)
A	MEDICAL GAS OUTLET IDENTIFICATION (REFER TO SCHEDULE)
	MEDICAL GAS ZONE VALVE STATION MOUNTED IN WALL
	MEDICAL GAS ALARM PANEL MOUNTED IN WALL
	MEDICAL GAS OUTLET
1	REVISION CLOUD AND REVISION NUMBER
XX	BINARY (YES/NO) SENSING SWITCH (PIPE OR DUCT MOUNTED)
XX	BINARY (YES/NO) SENSING SWITCH (SURFACE MOUNTED)
XX	ANALOG SENSING DEVICE (PIPE OR DUCT MOUNTED)
XX	ANALOG SENSING DEVICE (SURFACE MOUNTED)
X	ANALOG SENSING DEVICE (SURFACE MOUNTED) (APPROPRIATE FOR MEASURED FLUID) SUBSCRIPT LETTER (X) INDICATES: A - ALARM PRESSURE SENSOR D - DIFFERENTIAL PRESSURE F - FLOW RATE H - HUMIDITY L - LOW LIMIT P - PRESSURE (STATIC) T - TEMPERATURE V - VELOCITY & VOLUME FLOW RATE

ABBREVIATIONS

ABBR	DESCRIPTION	ABBR	DESCRIPTION
ABV	ABOVE	L	LENGTH
AD	ACCESS DOOR	LAT	LEAVING AIR TEMPERATURE
AHU	AIR HANDLING UNIT	LBS	POUNDS
AL	ACOUSTIC LINED	LF	LINEAR FOOT/FEET
AP	ACCESS PANEL	LVG	LEAVING
APD	AIR PRESSURE DROP	LWG	LOW WALL GRILLE
ARCH	ARCHITECT/ARCHITECTURAL	LWR	LOW WALL REGISTER
ARV	AUTOMATIC RELIEF VALVE or ACID RESTISTANT VENT	LWT	LEAVING WATER TEMPERATURE
ARW	ACID RESTISTANT WASTE	MAX	MAXIMUM
		MBH	1000 BRITISH THERMAL UNITS PER HOUR
BDD	BACKDRAFT DAMPER		
BFP	BACKFLOW PREVENTER	MCC	MOTOR CONTROL CENTER
BHP	BRAKE HORSEPOWER	MECH	MECHANICAL
BG	BELOW GROUND	MFR	MANUFACTURER
BJ	BETWEEN JOISTS	MIN	MINIMUM
BTU	BRITISH THERMAL UNIT	MISC	MISCELLANEOUS
BTUH	BRITISH THERMAL UNITS PER HOUR	MTD	MOUNTED
		MTG	MOUNTING
C	CENTIGRADE		
CC	COOLING COIL	N/A	NOT APPLICABLE
CD	CEILING DIFFUSER	N/C	NORMALLY CLOSED
CFM	CUBIC FEET PER MINUTE	N/O	NORMALLY OPEN
CG	CEILING GRILLE	NC	NOISE CRITERIA
CI	CAST IRON	NIC	NOT IN CONTRACT
CLG	CEILING	NTS	NOT TO SCALE
CO	CLEANOUT		
CONC	CONCRETE	OA	OUTSIDE AIR
CONN	CONNECT or CONNECTION	OBD	OPPOSED BLADE DAMPER
CONST	CONSTRUCTION	O/C	ON CENTER
CONT	CONTINUATION	OD	OUTSIDE DIAMETER
CR	CONDENSATE RETURN	OPNG	OPENING
DB	DECIBLE or DRY BULB	PCV	PRESSURE CONTROL VALVE
DDC	DIRECT DIGITAL CONTROL	PD	PRESSURE DROP
DIA	DIAMETER	PH or Ø	PHASE
DIM	DIMENSION	PLCS	PLACES
DN	DOWN	POC	POINT OF CONNECTION
DPR	DAMPER	POUA	POINT OF USE ALARM
DWG	DRAWING	PRV	PRESSURE REDUCING VALVE
		PSI	POUNDS PER SQUARE INCH
E-100	EXHAUST AIR NUMBER INDICATES CFM QUANTITY	PSIG	POUNDS PER SQUARE INCH GAGE
EA	EACH	R-100	RETURN AIR NUMBER INDICATES CFM QUANTITY
EAT	ENTERING AIR TEMPERATURE		
EF	EXHAUST FAN	RA	RETURN AIR
EG	EXHAUST GRILLE	RAG	RETURN AIR GRILLE
ELEC	ELECTRIC or ELECTRICAL	REQD	REQUIRED
ELEV	ELEVATION	RPBP	REDUCED PRESSURE BACKFLOW PREVENTOR
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM		
ESP	EXTERNAL STATIC PRESSURE	RPM	REVOLUTIONS PER MINUTE
EWT	ENTERING WATER TEMPERATURE		
EXH	EXHAUST	S-100	SUPPLY AIR NUMBER INDICATES CFM QUANTITY
EXST or (E)	EXISTING		
F	FAHRENHEIT	SA	SUPPLY AIR
FA	FACE AREA	SF	SUPPLY FAN
FCO	FLOOR CLEANOUT	SHT	SHEET
FCU	FAN COIL UNIT	SIM	SIMILAR
FD	FLOOR DRAIN	SP	STATIC PRESSURE
FDPR	FIRE DAMPER	SQ	SQUARE
FFD	FUNNEL FLOOR DRAIN	SQ FT	SQUARE FOOT/FEET
FF	FINAL FILTER	SS	STAINLESS STEEL
FLR	FLOOR	STD	STANDARD
FPM	FEET PER MINUTE	THK	THICK
FPS	FEET PER SECOND	TP	TRAP PRIMER or TEST PLUG
FT	FOOT/FEET	TYP	TYPICAL
FV	FACE VELOCITY	TU	TERMINAL UNIT
GA	GAGE or GAUGE	UBC	UNIFORM BUILDING CODE
GAL	GALLON	UFC	UNIFORM FIRE CODE
GALV	GALVANIZED	UMC	UNIFORM MECHANICAL CODE
GPH	GALLONS PER HOUR	UPC	UNIFORM PLUMBING CODE
GPM	GALLONS PER MINUTE	UG	UNDERGROUND
H	HEIGHT	UH	UNIT HEATER
HD	HEAD		
HP	HORSEPOWER	VA	VALVE
HTG	HEATING	VAC	VACUUM
HVAC	HEATING, VENTILATION AND AIR CONDITIONING	VAV	VARIABLE AIR VOLUME
		VD	VOLUME DAMPER
HWG	HIGH WALL GRILLE	VEL	VELOCITY
HWR	HIGH WALL REGISTER	VFD	VARIABLE FREQUENCY DRIVE
HZ	HERTZ	VTR	VENT THRU ROOF
ID	INSIDE DIAMETER	W	WIDE
IE	INVERT ELEVATION	W/	WITH
IN	INCH or INCHES	W/O	WITHOUT
INSUL	INSULATION	WB	WET BULB
INV	INVERT	WCO	WALL CLEANOUT
		WG	WATER GAGE
KW	KILOWATT	WGE	WASTE GAS EVACUATION
KWH	KILOWATT HOUR	WPD	WATER PRESSURE DROP
		WT	WEIGHT

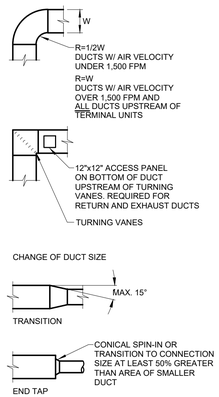
AIR DISTRIBUTION LEGEND

SYMBOL	ABBR	DESCRIPTION
		LIGHT LINEWORK INDICATES EXISTING DUCT OR EQUIPMENT
		INDICATES DUCT OR EQUIPMENT TO BE REMOVED
18x12 / 18x12		DUCT SIZE IN INCHES FIRST SIZE LISTED IS SIDE SHOWN
		ACOUSTIC LINED DUCT
R / R	R	DUCT OFFSET (UP) IN DIRECTION OF ARROW (NOT TYPICALLY SHOWN)
D / D	D	DUCT OFFSET (DN) IN DIRECTION OF ARROW (NOT TYPICALLY SHOWN)
18"Ø / 18"Ø		ROUND DUCT IN INCHES
18x12"Ø / 18x12"Ø		OVAL DUCT IN INCHES
18x10 / 18x12		CHANGE OF DUCT SIZE
18x10 / 18x12		CHANGE OF DUCT SIZE (TRIANGLE NOT ALWAYS SHOWN)
		RECTANGULAR SUPPLY DUCT ELBOW TURNED UP
		RECTANGULAR SUPPLY DUCT ELBOW TURNED DOWN OR AWAY
		RECTANGULAR RETURN/EXHAUST DUCT ELBOW TURNED UP
		RECTANGULAR RETURN/EXHAUST DUCT ELBOW TURNED DOWN OR AWAY
		SMALL RECTANGULAR DUCT ELBOW TURNED DOWN OR AWAY
		ROUND DUCT ELBOW TURNED UP
		ROUND DUCT ELBOW TURNED DOWN OR AWAY
		END OF DUCT WITH CAP (UNLESS INDICATED OTHERWISE)
	FLEX	FLEXIBLE DUCT
	AD	DUCT ACCESS DOOR
		RECTANGULAR ELBOW WITH TURNING VANES (SINGLE LINE)
		RADIUS ELBOW (SINGLE LINE)
		BRANCH DUCT TAKE-OFF (SINGLE LINE)
	VD	VOLUME DAMPER
		TWO-POSITION PARALLEL-BLADE DAMPER W/ ACTUATOR
	FDPR	FIRE DAMPER
	SDPR	SMOKE DAMPER
	FSD	FIRE/SMOKE DAMPER W/ ACTUATOR
	MD	MODULATING OPPOSED BLADE DAMPER W/ ACTUATOR
	BDD	BACKDRAFT DAMPER
SD	DSD	DUCT SMOKE DETECTOR
7.5 KW-460-3Ø		EQUIPMENT-MOUNTED ELECTRIC HEATING COIL. IF NOT INDICATED ON SCHEDULES, FIRST NUMBER INDICATES COIL HEATING CAPACITY (KILO-WATTS), SECOND NUMBER INDICATES SUPPLY VOLTAGE (IN VOLTS), THIRD NUMBER INDICATES PHASE(S).
4.5 KW-460-3Ø		TERMINAL OR DUCT MOUNTED ELECTRIC HEATING COIL. IF NOT INDICATED ON SCHEDULES, FIRST NUMBER INDICATES COIL HEATING CAPACITY (KILO-WATTS), SECOND NUMBER INDICATES SUPPLY VOLTAGE (IN VOLTS), THIRD NUMBER INDICATES PHASE(S).
		HYDRONIC HEATING OR COOLING COIL. REFER TO DRAWING NOTES AND/OR SCHEDULE FOR CAPACITY.
		AIR FILTER
		SOUND ATTENUATOR
		INDICATES SUPPLY AIR FLOW DIRECTION
		INDICATES RETURN or EXHAUST AIR FLOW DIRECTION
		CEILING SUPPLY DIFFUSER. REFER TO DIFFUSER AND GRILLE SCHEDULE FOR ADDITIONAL INFORMATION.
		LINEAR SLOT DIFFUSER. REFER TO DIFFUSER AND GRILLE SCHEDULE FOR ADDITIONAL INFORMATION.
		CEILING GRILLE (RETURN, EXHAUST OR TRANSFER) REFER TO DIFFUSER AND GRILLE SCHEDULE FOR ADDITIONAL INFORMATION.
		GRILLE, REGISTER OR OPEN DUCT (SUPPLY SHOWN)

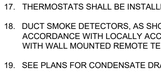
DUCT FITTING REQUIREMENTS

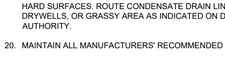
THE FOLLOWING DUCT FITTINGS ARE CONSIDERED ACCEPTABLE. THE CONTRACTOR SHALL OBTAIN ENGINEER'S APPROVAL FOR OTHER FITTINGS PRIOR TO FABRICATION. ONLY FITTINGS WITH EQUAL OR LOWER PRESSURE DROP WILL BE CONSIDERED.

DUCT ELBOWS



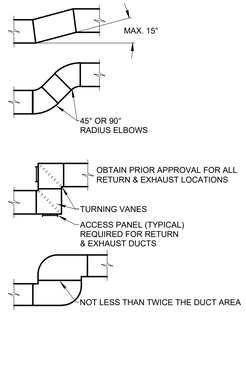
CHANGE OF DUCT SIZE



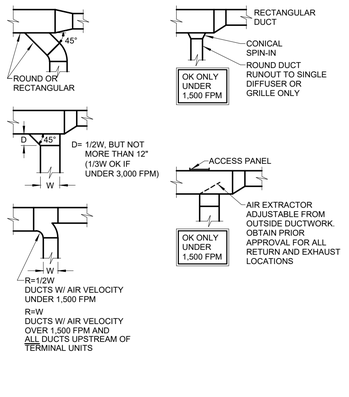


OFFSETS

NOTE: OFFSETS (TO AVOID OBSTRUCTIONS) ARE REQUIRED BUT ARE NOT NECESSARILY SHOWN ON THE PLANS.



BRANCH DUCT TAKEOFFS
W/ MINIMUM PRESSURE DROP



GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL MATERIALS AND LABOR NECESSARY TO CONSTRUCT COMPLETE AND OPERATIONAL SYSTEMS.
2. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH AND INCORPORATING ALL SPECIFICATIONS SUBMITTED WITH PACKAGE.
3. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND CORRECT ANY DISCREPANCIES BETWEEN EXISTING WORK SHOWN ON DRAWINGS AND ACTUAL CONDITIONS ON SITE, AS REQUIRED TO MEET ALL CODES AND REGULATIONS.
4. COORDINATION WITH ALL TRADES IS REQUIRED TO AVOID CONFLICTS AND DELAYS. NO ALLOWANCES WILL BE MADE FOR REWORK DUE TO POOR COORDINATION BETWEEN INVOLVED TRADES.
5. CONTRACTOR SHALL MAKE THE REQUIRED ARRANGEMENTS FOR TRANSPORTING ALL MECHANICAL EQUIPMENT INTO THE BUILDING AND TO ITS FINAL INSTALLATION LOCATION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND VERIFYING DIMENSIONS PRIOR TO ORDERING MATERIALS AND INSTALLING EQUIPMENT. THE DRAWINGS REPRESENT THE GENERAL ARRANGEMENT OF MECHANICAL AND ELECTRICAL SYSTEMS AND OTHER WORK. CONTRACTOR SHALL MAKE REASONABLE MODIFICATIONS TO LAYOUT AND COMPONENTS TO AVOID CONFLICTS WITH OTHER TRADES. SIGNIFICANT MODIFICATIONS TO LAYOUTS AND COMPONENTS SHALL BE REVIEWED AND APPROVED BY THE ARCHITECT/ENGINEER PRIOR TO CONSTRUCTION. SUCH MODIFICATIONS SHALL NOT BE GROUNDS FOR ADDITIONAL COMPENSATION TO CONTRACTOR.
7. CONTRACTOR IS EXPECTED TO ORDER ALL MATERIALS WITH SUFFICIENT LEAD TIME TO PREVENT DELAYING THE COMPLETION OF THE PROJECT. DELAYS IN DELIVERIES WILL NOT BE CONSIDERED JUSTIFIABLE CAUSE FOR SUBMISSION OF SUBSTITUTE MATERIALS.
8. CONTRACTOR SHALL GIVE 24 HOUR NOTICE, IN WRITING, TO THE BUILDING ADMINISTRATOR (OR APPOINTED REPRESENTATIVE) AND RECEIVE WRITTEN APPROVAL FROM THE BUILDING ADMINISTRATOR PRIOR TO SHUT DOWN OR DISRUPTION OF SERVICE TO ANY AREA. CONTRACTOR SHALL ALSO COORDINATE EXACT LOCATION AND TIMING OF SYSTEM(S) SHUT DOWN POINTS WITH THE OWNER REPRESENTATIVE. CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE THE DOWNTIME OR DISRUPTION OF ANY SYSTEMS.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FIRE AND/OR SMOKE RATING OF ALL PENETRATIONS. FIRE STOP ALL PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, AND CEILINGS. ALL FIRE RATED PENETRATIONS SHALL BE TEMPORARILY FIRE STOPPED AT THE END OF EACH WORK DAY AND PERMANENTLY FIRE STOPPED AT THE COMPLETION OF THE PROJECT.
10. COORDINATE ALL DIFFUSER/GRILLE INSTALLATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN.
11. ALL NEW VOLUME DAMPERS INSTALLED SHALL BE FLAGGED WITH FLUORESCENT ORANGE SURVEYOR'S TAPE FOR IDENTIFICATION.
12. SIZES OF DUCT RUNOUTS, FLEXIBLE DUCT CONNECTIONS, AND SPIN-IN TAPS SHALL BE EQUAL TO DIFFUSER NECK SIZE. SEE PLANS.
13. ALL DUCTWORK SHALL BE SUPPORTED IN STRICT COMPLIANCE WITH SMACNA OR LOCALLY ACCEPTED CODE, WHICHEVER IS STRICTER.
14. ALL DUCTWORK SHALL BE FLANGED SHEET METAL UNLESS NOTED OTHERWISE. ALL DUCT SHALL BE CONSTRUCTED PER LATEST VERSION OF SMACNA DUCT CONSTRUCTION STANDARDS INCLUDING DUCT MIN THICKNESS.
15. INSULATION USED IN THIS PROJECT SHALL MEET CRITERIA PRESCRIBED BY LOCALLY ACCEPTED CODES.
16. ALL DUCT/PIPE DIMENSIONS INDICATE INSIDE NET FREE AREA. ALL MITERED RECTANGULAR ELBOWS SHALL HAVE TURNING VANES.
17. THERMOSTATS SHALL BE INSTALLED AT 60" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
18. DUCT SMOKE DETECTORS, AS SHOWN IN PLANS, TO PROVIDE AUTOMATIC SHUTDOWN IN ACCORDANCE WITH LOCALLY ACCEPTED CODES. DUCT SMOKE DETECTORS SHALL BE PROVIDED WITH WALL MOUNTED REMOTE TEST/ANNUNCIATOR STATION.
19. SEE PLANS FOR CONDENSATE DRAIN ROUTING. CONDENSATE DRAIN SHALL NOT BE ROUTED TO HARD SURFACES. ROUTE CONDENSATE DRAIN LINES TO SANITARY SEWERS, STORM DRAINS, DRYWELLS, OR GRASSY AREA AS INDICATED ON DRAWINGS, OR AS ALLOWED BY LOCAL AUTHORITY.
20. MAINTAIN ALL MANUFACTURERS' RECOMMENDED SERVICE CLEARANCES FOR ALL EQUIPMENT.
21. REFER TO ARCHITECTURAL SITE PLANS FOR LOCATION OF BUILDING.
22. ALL CONTROLS CONDUIT AND WIRING INSTALLED BY CONTROLS CONTRACTOR. ALL CONTROLS DEVICES TO BE SELECTED, INSTALLED, CONFIGURED AND TESTED BY THE CONTROLS CONTRACTOR TO ACHIEVE THE OPERATIONAL INTENT COMMUNICATED THROUGH THESE DRAWINGS. CEI HIGHLY RECOMMENDS THE MECHANICAL CONTRACTOR HIRE A CONTROLS CONTRACTOR TO DETAIL, INSTALL, AND COMMISSION THE CONTROLS UNLESS THEY HAVE THEIR OWN IN HOUSE CONTROLS TECHNICIANS.
23. THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR STARTUP AND COMMISSIONING OF ALL EQUIPMENT INCLUDING PREPARING STARTUP FORMS FOR ALL EQUIPMENT, BALANCING AND REPORT BY NEBB CERTIFIED BALANCER, FULL FUNCTIONAL TESTING OF EQUIPMENT TO CONFIRM ALL COMPONENTS WORK AND THE SYSTEMS OPERATE AS INTENDED.
24. ALL EQUIPMENT SHALL BE INSTALLED, PIPED, AND WIRED PER MANUFACTURERS INSTRUCTIONS.
25. PROVIDE MECHANICAL SYSTEMS COMMISSIONING FOR ALL AUTOMATICALLY CONTROLLED SYSTEMS PER WASHINGTON STATE ENERGY CODE. ALL CONTROLLED DEVICES SHALL BE CALIBRATED, TESTED, AND REPAIRED TO FUNCTION PER THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE DOCUMENTATION INDICATING TESTING METHODS AND RESULTS. PROVIDE PRELIMINARY WRITTEN DOCUMENTATION AS REQUIRED PRIOR TO APPLICATION FOR CERTIFICATE OF OCCUPANCY. COMPLETED COMMISSIONING REPORT SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER.
26. PROVIDE ENERGY METERING AND ENERGY CONSUMPTION MANAGEMENT PER SECTION C409, INCLUDING THE FOLLOWING:
    1) C409.2 - ENERGY SOURCE METERING: COORDINATE HVAC EQUIPMENT ELECTRICAL ENERGY METERING WITH ELECTRICAL CONTRACTOR. PROVIDE NATURAL GAS METERING PER C409.2.
    2) C409.4 - MEASUREMENT DEVICES, DATA ACQUISITION SYSTEM AND ENERGY DISPLAY TO COMPLY WITH THE REQUIREMENTS OF THIS SECTION.

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7/1/20

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DRAWING INDEX

City of Ferndale Municipal Court Remodel

5694 2nd Avenue
Ferndale, WA 98248

Job No: 200919 Date: 07.03.2020
File No:
Drawn By: CEI
Checked By: TB
Issued for: PERMIT SET

COVER SHEET AND GENERAL INFO

M001

SPECIFICATIONS

GENERAL REQUIREMENTS

SUMMARY

THE WORK COVERED BY THIS AND ALL OTHER MECHANICAL SECTIONS CONSISTS OF FURNISHING ALL LABOR, EQUIPMENT, APPLIANCES AND MATERIALS AND PERFORMING ALL OPERATIONS REQUIRED FOR A COMPLETE INSTALLATION OF ALL HEATING AND VENTILATION SYSTEMS AS HEREINAFTER SPECIFIED, IN STRICT ACCORDANCE WITH THIS AND ALL SECTIONS OF THESE SPECIFICATIONS, DRAWINGS, TERMS AND CONDITIONS OF THE CONTRACT, ALL APPLICABLE CODES, ORDINANCES AND LAWS GOVERNING EACH SYSTEM. UPON COMPLETION, THE SYSTEMS SHALL BE FULLY FUNCTIONAL, ADJUSTED, AND READY FOR USE.
ALL WORK AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
2015 INTERNATIONAL BUILDING CODE WITH STATEWIDE AMENDMENTS
ICC/ANSI A117.1-09, ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES, WITH STATEWIDE AMENDMENTS
2015 INTERNATIONAL MECHANICAL CODE WITH STATEWIDE AMENDMENTS
2015 INTERNATIONAL FIRE CODE WITH STATEWIDE AMENDMENTS
2015 UNIFORM PLUMBING CODE WITH STATEWIDE AMENDMENTS
2015 WASHINGTON STATE ENERGY CODE
2015 INTERNATIONAL EXISTING BUILDING CODE WITH STATEWIDE AMENDMENTS FOUND IN THE IBC
NATIONAL ELECTRICAL CODE (NFPA 70) WITH STATEWIDE AMENDMENTS
OTHER RELEVANT NATIONAL FIRE PROTECTION (NFPA) ASSOCIATION AND AMERICAN PETROLEUM INSTITUTE (API) INDUSTRY CODES.
UNDERWRITERS' LABORATORIES.
LOCAL UTILITY CODES.
ALL APPLICABLE INDUSTRIAL SAFETY AND HEALTH LAWS AND REGULATIONS.
ALL APPLICABLE ENERGY CODES.
LOCAL PLUMBING CODES.
LOCAL BUILDING, MECHANICAL AND FIRE CODES.
ALL GOVERNING RULES AND REGULATIONS BY LOCAL AND STATE AUTHORITIES.
ALL CONTRACT DOCUMENTS PERTAINING TO THIS PROJECT ARE HEREBY MADE A PART OF THIS SPECIFICATION.
THE CONTRACTOR IS RESPONSIBLE TO MAKE SURE OF A CLEAR UNDERSTANDING OF BOTH PLANS AND SPECIFICATIONS, PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR AND ENGINEER PRIOR TO COMMENCEMENT OF WORK. THE ENGINEER SHALL NOT BE HELD ACCOUNTABLE FOR LACK OF NOTIFICATION BY THE MECHANICAL AND/OR PLUMBING CONTRACTORS.

EXISTING CONDITION INFORMATION

BEFORE SUBMITTING BID, THE CONTRACTOR SHALL EXAMINE SITE CONDITIONS TO DETERMINE ANY EFFECT ON EXECUTION OF WORK AND INCLUDE COSTS IN BID. BY SUBMITTING A BID THE CONTRACTOR IS ACKNOWLEDGING THAT THEY HAVE SUFFICIENTLY UNDERSTOOD THE SCOPE OF CONSTRUCTION WORK REQUIRED AND HAVE INCLUDED IN BID, WHETHER SPECIFIED OR NOT, THE SUPPLY AND INSTALLATION OF ALL ITEMS REQUIRED BY GOOD PRACTICE TO PROVIDE COMPLETE AND OPERATIONAL SYSTEMS.

PERMIT APPLICATION

OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED BEFORE AND DURING CONSTRUCTION.

SUBSTITUTION PROCEDURES

THE EQUIPMENT SPECIFIED ON THE DRAWINGS HAVE BEEN SELECTED AS THE BASIS OF DESIGN. THE CONTRACTOR MAY PROPOSE A SUBSTITUTION OF OTHER MATERIAL OR EQUIPMENT, WHICH IN HIS OPINION WILL ACCOMPLISH THE DESIGN FUNCTION AND IS EQUAL TO THAT SPECIFIED. ALL COSTS INCURRED BECAUSE OF THIS SUBSTITUTION SHALL BE BY THE CONTRACTOR. THE ENGINEER SHALL BE THE JUDGE OF THE QUALITY AND SUITABILITY OF THE PROPOSED SUBSTITUTION AND MAY REQUIRE THE CONTRACTOR TO FURNISH ANY MATERIAL OR PIECE OF EQUIPMENT AS SPECIFIED.

PROJECT MANAGEMENT AND COORDINATION

- GENERAL: THE CONTRACTOR SHALL SCHEDULE HIS WORK IN SUCH A MANNER AS TO AVOID DELAYS IN OVERALL CONSTRUCTION AND PERMIT PROPER INSTALLATION OF ALL WORK BY THEMSELF AND OTHER CRAFTS.
- DESIGN DRAWINGS: THESE DRAWINGS ARE DIAGRAMMATIC AND DO NOT NECESSARILY SHOW THE FINAL ROUTING OF PIPING OR FINAL LOCATION OF EQUIPMENT. IF CONFLICTS ARISE WHICH CAUSE A CHANGE IN THE SPECIFIED PLANS OR DESIGN, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER PRIOR TO MAKING THE CHANGES. ANY CHANGES NOT APPROVED BY THE ENGINEER SHALL BE THE RESPONSIBILITY OF OTHERS.
- INTERFERENCE'S: THE CONTRACTOR SHALL COORDINATE WITH ALL OTHER CRAFTS TO MAKE CERTAIN LOCATIONS AND ARRANGEMENTS REQUIRED FOR INSTALLATION OF SYSTEMS ARE MADE AVAILABLE, AND BE RESPONSIBLE FOR ARRANGING PIPING, EQUIPMENT, ETC., SO AS NOT TO INTERFERE WITH STRUCTURAL MEMBERS, LIGHTS, AND OTHER ITEMS HAVING FIXED LOCATIONS NOT RELATED TO THE SYSTEMS. WHERE ALTERNATE ROUTING, OFFSETS, AND TRANSITIONS ARE REQUIRED FOR FIELD COORDINATION OF ALL TRADES, THE CONTRACTOR SHALL MAKE CHANGES WITHOUT ADDITIONAL COSTS.
- VERIFICATION: PRIOR TO ORDERING ANY EQUIPMENT OR FIXTURES, VERIFY DIMENSIONS OF ALL SUCH EQUIPMENT, FIXTURES, ETC., TO MAKE CERTAIN IT FITS INTO THE STRUCTURAL AND ARCHITECTURAL FEATURES OF THE BUILDING, AVOIDS CONFLICT WITH EQUIPMENT OR FIXTURES OF OTHER CRAFTS AND FITS INTO THE SPACE PROVIDED FOR THE INSTALLATION.
- SLEEVES AND INSERTS: THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SLEEVES AND INSERTS REQUIRED FOR HIS WORK. THE CONTRACTOR SHALL SCHEDULE HIS WORK SO HE INSTALLS SLEEVES AND INSERTS AS CONSTRUCTION PROCEEDS AND IN A MANNER TO AVOID DELAYS. IF THE CONTRACTOR FAILS TO INSTALL SLEEVES AND INSERTS AS CONSTRUCTION PROCEEDS, HE SHALL PAY ALL COSTS FOR CUTTING AND PATCHING TO MAKE THE PROPER INSTALLATION.
- CONTRACTOR SHALL NOT SHUT-OFF/PUT OUT OF SERVICE ANY SYSTEMS/SERVICES WITHOUT FIRST COORDINATING ALL DOWNTIME WITH OWNER'S PERSONNEL. CONTRACTOR SHALL PROVIDE A DETAILED M.O.P. AS REQUIRED. DO NOT BEGIN WORK WITHOUT WRITTEN APPROVAL.
- SUBMITTALS: SUBMIT PRODUCT DATA AND SHOP DRAWINGS FOR ALL SIGNIFICANT MATERIALS, EQUIPMENT, AND FIXTURES TO THE A/E FOR REVIEW.ALLOW REASONABLE TIME FOR REVIEW AND RETURN PRIOR TO ORDERING. PDF (ELECTRONIC) SUBMITTALS AREA ACCEPTABLE, IF PAPER COPIES ARE SUBMITTED ASSUME OWNER AND A/E WILL RETAIN A TOTAL OF THREE COPIES OF SUBMITTALS.
- SAFETY MEASURES: PROVIDE A SAFE ENVIRONMENT TO PROTECT EMPLOYEES AND ALL OTHERS FROM INJURY. COMPLY WITH LOCAL, STATE AND FEDERAL SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION.

EXISTING BUILDINGS

CONTINUITY OF SERVICE: ANY SYSTEMS OR SERVICES SHALL BE MAINTAINED WITH MINIMUM INTERRUPTION. COORDINATE ANY NEEDED INTERRUPTIONS WITH THE OWNER. ANY OVERTIME WORK REQUIRED BY THIS PROJECT TO MAINTAIN EXISTING BUILDINGS IN CONTINUOUS SERVICE, WITHOUT REDUCING THEIR EFFICIENCY, SHALL BE INCLUDED AS PART OF THIS CONTRACT.

DEMOLITION: PROVIDE MECHANICAL SYSTEM DEMOLITION IN AREAS OF EXISTING BUILDINGS TO ACCOMMODATE INSTALLATION OF NEW WORK. EXISTING PIPING, VALVES, AND DUCTWORK WHERE INDICATED ON THE DRAWING, MAY BE REUSED IN THEIR ORIGINAL LOCATION. DO NOT REUSE EXISTING PIPING, VALVES, OR DUCTWORK ONCE THEY ARE REMOVED, UNLESS WRITTEN PERMISSION IS OBTAINED FROM OWNER. REMOVE ALL UNUSED PIPING AND DUCTWORK LOCATED IN REMODEL AREAS OF EXISTING BUILDINGS.

CUTTING AND PATCHING: PROVIDE ALL CUTTING OF BUILDING CONSTRUCTION, AS REQUIRED FOR THIS WORK. KEEP CUTTING TO A MINIMUM, AND USE SAW CUTTING TO MAINTAIN NEAT, EVEN OPENINGS.UNLESS PATCHING IS INCLUDED UNDER OTHER DIVISIONS OF THIS SPECIFICATION, PROVIDE PATCHING AT ALL CUTTING LOCATIONS. ALL PATCHING SHALL CONFORM TO SPECIFICATIONS FOR THE NEW GENERAL CONSTRUCTION WORK. FINISH TO MATCH EXISTING.

PRODUCT REQUIREMENTS

- THE MATERIAL AND EQUIPMENT SHALL BE NEW, BEST QUALITY AND AS SPECIFIED.
- EQUIPMENT SHALL BE FURNISHED COMPLETE WITH ALL PARTS NECESSARY FOR PROPER OPERATION. MATERIAL AND EQUIPMENT SHALL BE CLEANED AND FREE FROM DENTS, SCRATCHES, AND CORROSION. EQUIPMENT SHALL PROVIDE QUIET OPERATION.

EXECUTION

- THE WORK SHALL BE PERFORMED BY PERSONS SKILLED IN THE PARTICULAR TRADE, AND INCLUDES ALL WORK NECESSARY TO PROPERLY COMPLETE THE INSTALLATION IN A MANNER THAT PRESENTS A NEAT AND FINISHED APPEARANCE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS RECOMMENDED BY THE EQUIPMENT MANUFACTURER, REQUIRED BY CODES AND NECESSARY FOR THE PROTECTION OF PERSONNEL, SUCH AS SCREENS, GUARDS, RELIEF VALVES, VENTS, OVERFLOW, ETC., WHICH SHALL BE PROVIDED AND INSTALLED IN AN APPROVED MANNER.
- CONTRACTOR SHALL INSTALL ALL EQUIPMENT FOLLOWING ALL MANUFACTURER'S REQUIREMENTS. CONTACT ENGINEER IF CONFLICTS ARISE.
- INSTALLATION, GENERAL: FOLLOW MANUFACTURER'S INSTRUCTIONS AND UTILIZE GOOD INDUSTRY PRACTICE WHEN INSTALLING ALL WORK. USE ONLYSKILLED TRADESPEOPLE WITH QUALIFIED SUPERVISION. ALL WORK SHALL BE LEFT NEAT AND CLEAN.
- CONCEALMENT: PIPING AND DUCTWORK SHALL BE CONCEALED WITHIN BUILDING CONSTRUCTION, UNLESS SPECIFICALLY INDICATED OTHERWISE. WHERE PIPING IS INDICATED TO BE EXPOSED TO VIEW IN FINISHED SPACES OR CABINETS, PROVIDE CHROME ESCUTCHEONS WHERE THE PIPING PENETRATES THE WALL, FLOOR OR CEILING CONSTRUCTION.
- WATER SEALING AT FLOORS: PROVIDE WATER TIGHT SEALING AT EACH FLOOR PENETRATION INCLUDING PIPING WITHIN WALL CAVITIES. PROVIDE WATER SLEEVES SEALED TO THE FLOOR CONSTRUCTION AND PROJECTING NOT LESS THAN 1.5" ABOVE FLOOR WHERE INSULATED PIPING PENETRATES THE FLOOR. THE INTENT IS TO MINIMIZE PASSAGE OF WATER DURING A SIGNIFICANT WATER LEAKAGE EVENT. SEALING IS REQUIRED FOR CONCRETE FLOORS, BUT NOT REQUIRED FOR OTHER FLOOR SYSTEMS WHERE THE CONSTRUCTION ITSELF, AT THE PIPE PENETRATION, ALLOWS SIGNIFICANT WATER SEEPAGE (PLANKED WOOD FLOOR FOR EXAMPLE.)
- COORDINATION WITH OTHER TRADES: COMPLETE DRAWINGS AND SPECIFICATIONS OF ALL TRADES WILL BE FURNISHED OR WILL BE AVAILABLE FOR INSPECTION IN THE CONSTRUCTION OFFICE AT THE JOBSITE. CAREFULLY CHECK THESE DRAWINGS AND SPECIFICATIONS BEFORE INSTALLING ANY WORK. IN ALL CASES, CONSIDER THE WORK OF ALL OTHER TRADES AND COORDINATE WORK WITH THAT OF THE SHEET METAL, PIPING,PLUMBING,FIRE PROTECTION, ELECTRICAL, AND SITE-WORK SUBCONTRACTORS, SO THAT THE BEST ARRANGEMENT OF ALL EQUIPMENT, PIPING, CONDUIT, DUCTS, AND OTHER RELATED ITEMS CAN BE OBTAINED.
- ELECTRICAL CLEARANCES: COORDINATE WITH ALL TRADES TO MAINTAIN ELECTRICAL SERVICE CLEARANCE (PER NATIONAL ELECTRICAL CODE) FOR MECHANICAL EQUIPMENT.

QUALITY REQUIREMENTS

- ON COMPLETION OF THE WORK, FURNISH SATISFACTORY EVIDENCE THAT ALL WORK HAS BEEN INSTALLED AND INSPECTED IN ACCORDANCE WITH THE APPLICABLE CODES.
- THE OWNER AND/OR GENERAL CONTRACTOR SHALL DECIDE WHETHER OR NOT THE FINISHED WORK IS SATISFACTORY AND IF ANY MATERIAL OR EQUIPMENT HAS NOT BEEN PROPERLY INSTALLED OR FINISHED. THE MECHANICAL AND/OR PLUMBING CONTRACTOR IS OBLIGATED TO REPAIR OR REPLACE THE MATERIAL OR EQUIPMENT IN A MANNER SATISFACTORY TO THE OWNER WITHOUT COST TO THE OWNER.
- GUARANTEE: GUARANTEE MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR AFTER THE DATE OF SUBSTANTIAL COMPLETE. REFER TO ADDITIONAL REQUIREMENTS OUTLINED BY ARCHITECT AND OWNER.
-

PROJECT CLOSE OUT DOCUMENTATION (C103.6):

1. THE FOLLOWING DOCUMENTS SHALL BE BE PROVIDED TO THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT WITH 180 DAYS OF THE DATE OF RECEIPT OF THE CERTIFICATE OF OCCUPANCY:
   - RECORD DOCUMENTS (C103.6.1)
   - MANUALS (C103.6.2)
   - COMPLIANCE DOCUMENTATION (C103.6.3)
2. TRAINING OF THE MAINTENANCE STAFF FOR EQUIPMENT INCLUDED IN THE MANUALS REQUIRED BY SECTION C103.6.2 SHALL INCLUDE AT A MINIMUM (C103.6.4):
   - REVIEW OF MANUALS AND PERMANENT CERTIFICATE.
   - HANDS-ON DEMONSTRATION OF ALL NORMAL MAINTENANCE PROCEDURES, NORMAL OPERATING MODES, AND ALL EMERGENCY SHUTDOWN AND START-UP PROCEDURES.
   - TRAINING COMPLETION REPORT.

COMMISSIONING:

IT HAS BEEN DETERMINED THAT **COMMISSIONING IS NOT REQUIRED** FOR THE MECHANICAL SYSTEMS ON THIS PROJECT.

BALANCING

BALANCING: PROVIDE THE SERVICES OF A QUALIFIED BALANCING FIRM TO OBTAIN AIR FLOWS WITHIN 10% OF THE AMOUNTS INDICATED ON THE DRAWINGS. BALANCING FIRM SHALL BE A MEMBER OF NEBB OR AABC. OBTAIN A/E APPROVAL OF THE BALANCING FIRM AT BEGINNING OF PROJECT. PROVIDE DRIVE ADJUSTMENTS AS REQUIRED TO OBTAIN THE FLOWS, AND PROVIDE TOTAL FLOW, PRESSURE, RPM AND AMPERAGE MEASUREMENTS AT ALL EQUIPMENT. AT THE COMPLETION OF THE PROJECT, COMPLETE AND SIGNED BALANCING REPORTS SHALL BE SUBMITTED TO THE A/E AND OWNER INDICATING ALL MEASURED VALUES ALONG WITH CORRESPONDING DESIGN VALUES AND NOTES/DISCUSSION WHERE RESULTS WERE NOT WITHIN 10% OF DESIGN VALUES.

BASIC MATERIALS AND METHODS (APPLIES TO ALL WORK)

GENERAL

WORK INCLUDED: THIS SECTION APPLIES TO ALL MECHANICAL WORK NORMALLY SPECIFIED UNDER DIVISIONS 21, 22 AND 23, AND REPRESENTS REQUIREMENTS IN ADDITION TO THE REQUIREMENTS STATED IN OTHER SECTIONS. THESE SPECIFICATIONS DO NOT COVER ALL ITEMS THAT WILL BE REQUIRED FOR COMPLETE AND WORKING SYSTEMS. WHERE MATERIALS OR EQUIPMENT NEEDED FOR THIS PROJECT ARE NOT COVERED IN THESE SPECIFICATIONS, PROVIDE THE MATERIALS AND EQUIPMENT OF A QUALITY EQUAL TO OR BETTER THAN THAT GENERALLY UTILIZED BY THE INDUSTRY FOR SIMILAR PROJECTS IN THE SAME GEOGRAPHIC AREA.

A. SUPPORT AND HANGERS

SUPPORT OF MECHANICAL SYSTEMS: EACH PIECE OF EQUIPMENT SHALL BE SUPPORTED (FROM ABOVE OR BELOW) IN NOT LESS THAN FOUR CORNERS FROM THE BUILDING STRUCTURE. PIPING AND DUCTWORK SHALL BE SUPPORTED AT INTERVALS SPECIFIED, WITH EACH SYSTEM SUPPORTED INDEPENDENTLY FROM THE BUILDING STRUCTURE.

SEISMIC BRACING: PROVIDE COMPLETE SEISMIC BRACING FOR ALL NEW PIPING, DUCTWORK, TERMINAL UNITS AND EQUIPMENT AS REQUIRED BY THE 2015 IBC WITH ALL LOCAL AMENDMENTS AND ASCE/SCI 7-10 (THE CURRENT CODE). BRACING MAY BE PER GUIDELINES ESTABLISHED BY RESTRAINT MANUFACTURERS SUCH AS; MASON INDUSTRIES AND I.S.A.T PROVIDED THEY MEET THE CURRENT CODE. ALL BRACING SHALL BE DESIGNED AND MANUFACTURED BY MASON, I.S.A.T, OR PRIOR-APPROVED ALTERNATE. MANUFACTURER SHALL FURNISH PROJECT-SPECIFIC DRAWINGS SHOWING THE CORRECT BRACE FOR EACH PROJECT-SPECIFIC LOCATION.

CONNECTIONS TO THE BUILDING STRUCTURE: PROVIDE ALL NECESSARY CONNECTIONS TO THE BUILDING STRUCTURE FOR SEISMIC RESTRAINTS AND SUPPORTS. WHERE CONCRETE STRUCTURE IS PRESENT, REVIEW THE USE OF CONCRETE ANCHORS WITH THE ARCHITECT, OWNER, AND GENERAL CONTRACTOR, AND VERIFY THAT THERE ARE NO POST-TENSIONED SLABS OR OTHER CONDITIONS THAT NEED TO BE TAKEN INTO ACCOUNT IN SETTING OF ANCHORS. UTILIZE MCCULLOUGH "KWIK-BOLT", PHILLIPS SELF-DRILLING ANCHORS, GREGORY "BULLDOG," OMARK "DRILL ANCHORS", OR OTHER APPROVED ANCHOR TO ATTACH TO CONCRETE STRUCTURES. WHERE BUILDING STRUCTURE IS WOOD OR STEEL, OBTAIN ARCHITECT APPROVAL OF HARDWARE AND METHODS TO BE UTILIZED FOR ATTACHMENT TO THE STRUCTURE.

ADDITIONAL FRAMING: PROVIDE STEEL FRAMING MEMBERS TO TRANSFER LOAD FROM SUPPORT POINTS AT HANGERS TO LOCATIONS WHERE CONNECTIONS CAN BE MADE TO THE BUILDING STRUCTURE. FRAMING MEMBERS SHALL BE 12-GAUGE MINIMUM, 1-3/8" X 1-5/8" MINIMUM CROSS-SECTION SIZE; UNISTRUT, POWERSTRUT, OR OTHER APPROVED. SELECT MEMBER SIZE AND TYPE, AS APPROPRIATE FOR LOAD PER MANUFACTURER GUIDELINES.

PIPE HANGERS: CLEVIS OR RING HANGERS WITH STEEL RODS. HANGERS FOR INSULATED PIPING SHALL BE SIZED FOR OUTSIDE INSULATION AND 6" SHIELDS SHALL BE PROVIDED AT ALL HANGERS TO PROTECT INSULATION. PIPE SUPPORT SPACING PER IMC. PROVIDE PLASTIC SEPARATION BETWEEN CLAMPS AND COPPER PIPE.

HANGER RODS: HOT ROLLED STEEL ROD, ASTM A 36; SIZE TO "CODE FOR PRESSURE PIPING", ANSI B 31.1, WITH SAFETY FACTOR OF 5. MINIMUM ROD SIZE; 1" PIPE AND SMALLER (240 POUNDS) = 1/4" ROD, 1-1/4" TO 2" PIPE (TO 610 POUNDS) = 3/8" ROD, 2-1/2" TO 4" PIPE (TO 1,130 POUNDS) = 1/2" ROD, 5" TO 8" PIPE (TO 1,810 POUNDS) = 5/8" ROD.

INSTALL HIGH DENSITY PRE-MOLDED PIPE INSULATION 180 DEGREES (HALF-SHELLS) ON BOTTOM HALF OF PIPE AT SUPPORTS FOR PIPING GREATER THAN 1" IN DIAMETER, 6" LONG FOR PIPING 6" IN SIZE OR SMALLER. FOR COLD PIPE SUPPORTS USE 3.0 PCF DENSITY POLYISOCYANURATE INSULATION. HOT PIPE SUPPORTS SHALL BE HIGH DENSITY POLYISOCYANURATE FOR FLUIDS UP TO 300 F, OR CALCIUM SILICATE. INSULATION AT SUPPORTS SHALL HAVE SAME THICKNESS AS ADJACENT INSULATION.

EQUIPMENT AND PIPING IDENTIFICATION

1. NAMEPLATES: PROVIDE NAMEPLATE FOR EACH PIECE OF EQUIPMENT, INCLUDING EQUIPMENT NUMBER AND ANY SPECIAL INSTRUCTION FOR ITS USE; LAMINATED BLACK AND WHITE PLASTIC WITH LETTERING CUT THROUGH TO WHITE BACKGROUND. MINIMUM SIZE 3" X 1".
2. PIPE IDENTIFICATION: ALL PIPING IN SERVICEABLE LOCATIONS (INCLUDING ABOVE LAY-IN CEILINGS) SHALL BE IDENTIFIED WITH SEMI-RIGID PLASTIC OR ADHESIVE IDENTIFICATION MARKERS. MARKERS SHALL CONFORM TO ANSI A13.1, "SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS". LOCATE MARKERS ADJACENT TO EACH VALVE, AT MINIMUM 30' CENTERS WITH AT LEAST ONE MARKER BETWEEN ANY TWO PARTITIONS. PROVIDE DIRECTION OF FLOW ARROWS AT MARKERS.

MISCELLANEOUS MATERIALS AND ACCESSORIES

1. DIELECTRIC UNIONS: PROVIDE AT EACH PIPE CONNECTION BETWEEN DISSIMILAR METALS. 2 INCHES AND SMALLER, 250 PSIG AT 180 DEG. F., ANSI B16.39. OVER 2" USE FLANGE FITTINGS, ANSI B16.42 (IRON) OR ANSI B16.24 (BRONZE), WATTS 3000 SERIES, EPCO OR EQUIVALENT.
2. FIRE SEALING AT RATED WALLS AND FLOORS: PROVIDE UL LISTED FIRE RATED PUTTY AT ALL PIPE PENETRATIONS OF RATED WALLS AND FLOORS. PUTTY SHALL BE INSTALLED STRICTLY PER MANUFACTURER INSTRUCTIONS WITH SLEEVES WHERE REQUIRED. OVERALL INSTALLATION SHALL MEET CODE REQUIREMENTS. PIPE INSULATION SHALL NOT BE CONTINUOUS THROUGH FIRE RATED WALLS OR FLOORS.
3. FIRE STOP SYSTEMS SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS; TRAINING RECORDS/CERTIFICATIONS OF INSTALLERS MAY BE REQUIRED AT TIME OF INSPECTIONS. PENETRATIONS THROUGH RATED FIRE WALLS AND CEILINGS SHALL BE SEALED UPON COMPLETION OF WORK AND ALL PENETRATIONS SHALL BE LABELED. IFC 703.2 (2015 EDITION) AND NFPA 80.
4. MOTORS: UNLESS OTHERWISE SPECIFIED, ALL ELECTRIC MOTORS FURNISHED SHALL CONFORM WITH THE REQUIREMENTS OF NEMA MG1 "MOTORS AND GENERATORS". PROVIDE MINIMUM MOTOR EFFICIENCIES AS REQUIRED BY THE ENERGY CODE.
5. INTERCONNECTING WIRING: PROVIDE ANY NECESSARY INTERCONNECTING WIRING BETWEEN INDIVIDUAL COMPONENTS AND ACCESSORIES FURNISHED WITH MECHANICAL EQUIPMENT PACKAGES (UNLESS THAT WIRING IS SPECIFICALLY CALLED FOR ON THE ELECTRICAL DRAWINGS). WIRING AND WIRING ACCESSORIES SHALL BE IN ACCORDANCE WITH DIVISION 26 SPECIFICATIONS (AND/OR THE SPECIFICATIONS ON THE ELECTRICAL DRAWINGS) AND LOCAL ELECTRICAL CODE. WIRING SHALL BE IN CONDUIT OR RACEWAY. WIRING SHALL BE PROVIDED AT THE EXPENSES OF THE SUBCONTRACTOR FURNISHING THE EQUIPMENT PACKAGE.
6. CONDENSATE DRAIN PIPING AND FITTINGS: SEAMLESS TYPE L COPPER WITH 95-5 SOLDER. INSULATE CONDENSATE DRAIN PIPING WITH 1/2" INCH THICK ARMSTRONG "ARMAFLEX" OR EQUAL.
7. ACOUSTIC LINING FOR RETURN AND EXHAUST DUCTS: FIBERGLASS, 1.5-INCH THICKNESS UNLESS OTHERWISE NOTED, WITH A BLACK PIGMENTED NEOPRENE COATED MAT SURFACE ON THE AIR-STREAM SIDE, 1-1/2 POUNDS PER CUBIC FOOT DENSITY, FIRE HAZARD CLASSIFICATION FHS 25/50 PER UL 723. ALL CUT EDGES SHALL BE COATED WITH CODE-APPROVED ADHESIVE TO PREVENT EROSION.
8. FLEXIBLE DUCTS: ACCEPTABLE ONLY WHERE INDICATED ON THE DRAWINGS. EXTERIOR REINFORCED LAMINATED VAPOR BARRIER, 2.0-INCH THICK FIBER GLASS INSULATION (K = .25 AT 75 DEGREES F.), ENCAPSULATED SPRING STEEL WIRE HELIX AND IMPERVIOUS, SMOOTH, NON-PERFORATED INTERIOR VINYL LINER. UL 181 LISTED WITH FLAME-SPREAD RATING NOT OVER 25, SMOKE-DEVELOPED RATING NOT OVER 50. MINIMUM LENGTH 6', MAXIMUM LENGTH 8', MINIMUM OF 1 ELBOW, NOT GREATER THAN 2 ELBOWS. USE FLEXMASTER USA TYPE 8M, R-6.0.
9. FLEXIBLE CONNECTORS: PROVIDE FLEXIBLE CONNECTORS AT FANS AND EQUIPMENT THAT DO NOT HAVE INTERNAL VIBRATION ISOLATION. INDOOR: UL LISTED HYPOLON COATED GLASS FABRIC OR NEOPRENE COATED NYLON FABRIC. FLAME RESISTANT TO 250 F. 24 OZ / SQ. YD. DURODYNE "NEOPRENE" OR ELGEN "HYPOLON".
10. DUCT ACCESS DOORS: PROVIDE IN SUFFICIENT QUANTITY, LOCATIONS, AND SIZES TO PROVIDE PROPER ACCESS TO DAMPERS AND EQUIPMENT THAT MAY REQUIRE SERVICE. VENTLOCK WITH PIANO HINGE AND/OR CAM LATCHES. SUPPLY DUCT ACCESS DOORS SHALL BE DOUBLE WALL, WITH 1" INSULATION.
11. VOLUME DAMPERS: BALANCING DAMPERS SHALL BE PER SMACNA STANDARDS. HEAVY DUTY QUADRANTS WITH SETTING SCALE AND SECURE LOCKING THUMB NUTS.

DIVISION 23 - HEATING VENTILATION AND AIR CONDITIONING

HANGERS AND SUPPORTS FOR HVAC, PIPING AND EQUIPMENT

- HANGERS, BRACKETS, ANCHORS AND MISCELLANEOUS SUPPORTS SHALL BE PROVIDED FOR THE INSTALLATION OF ALL PIPING AND HVAC EQUIPMENT.
- SUPPORTING DEVICES SHALL BE ATTACHED TO CEILING, WALLS AND FLOORS BY BOLTS AND FASTENERS.
- PIPE HANGERS AND VERTICAL SUPPORT SPACING SHALL BE IN COMPLIANCE WITH THE 2015 INTERNATIONAL MECHANICAL CODE.
- MOUNTS, ANCHORS AND BRACING SHALL MEET 2015 I.B.C AND I.M.C. SEISMIC CODES AND MANUFACTURER'S SPECIFICATIONS.

VIBRATION AND SEISMIC CONTROLS FOR HVAC

THE SEISMIC BRACING AND ANCHORAGE OF DUCTWORK AND EQUIPMENT SHALL BE CONSTRUCTED WITH "GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS", PUBLISHED BY SMACNA (MOST RECENT EDITION).

CONTROLS FOR HVAC

A. RESPONSIBILITY
THE CONTROLS ARE TO BE PROVIDED AS PART OF A COMPLETE HVAC SYSTEM.

B. SPECIFICATIONS
- ALL CONTROLS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES INCLUDING THE 2015 VERSIONS OF THE INTERNATIONAL CODES AND WASHINGTON STATE ENERGY CODE.
- ALL CRITERIA NOT SPECIFIED HEREIN, BUT NECESSARY FOR COMPLETE SYSTEMS SHALL BE PROVIDED.
- THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING THE CONTROLS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

C. HVAC + CONTROLS
- THE PLANS ARE SCHEMATIC BY NATURE AND DO NOT SHOW EVERY ASPECT OF THE COMPONENTS AND CONTROLS OF THE SYSTEMS. THE CONTRACTOR SHALL SUBMIT TO THE OWNER THEIR COMPONENTS AND ENOUGH SPECIFIC INFORMATION TO DEMONSTRATE HOW THE HVAC SYSTEM WILL BE CONTROLLED.

D. EXECUTION
- THE MECHANICAL CONTRACTOR SHALL COORDINATE AND PROVIDE INTERFACING BETWEEN THE CONTROLS FURNISHED WITH INDIVIDUAL PIECES OF EQUIPMENT.

DUCTING SYSTEMS:

1. RIGID DUCTWORK SHALL BE CONSTRUCTED, ERECTED, AND SEALED IN ACCORDANCE WITH THE 2015 INTERNATIONAL MECHANICAL CODE. (603)
2. ALL RIGID HVAC DUCTWORK IS 2.0 INCH W.C. PRESSURE CLASSIFICATION (603.3)
3. RIGID DUCTWORK SHALL BE GALVANIZED MEETING SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.
4. FLEXIBLE AIR DUCTWORK SHALL MEET SECTION 603.6 REQUIREMENTS.

REFRIGERANT PIPING SYSTEMS

1. REFRIGERANT PIPING, VALVES AND ACCESSORIES SHALL BE PROVIDED IN COMPLIANCE WITH MANUFACTURER'S SYSTEM REQUIREMENTS.

MECHANICAL INSULATION

A. GENERAL

MANUFACTURERS: MANVILLE, OWENS-CORNING, CERTAINTEED, OR KNAUF. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

INSULATION THICKNESS: PER WSEC.

B. INSULATION MATERIALS

INDOOR PIPE INSULATION: FIBERGLASS PIPE INSULATION WITH ALL-SERVICE (VAPOR BARRIER) JACKET SHALL BE PROVIDED FOR ALL PIPING SYSTEMS, EXCEPT REFRIGERANT PIPING. FITTINGS SHALL BE MITERED SECTIONS OF INSULATION WITH THE SAME THICKNESS AS ADJACENT PIPE INSULATION WITH FACTORY-PREMOLDED, ONE-PIECE, UL LISTED (25/50) PVC FITTING COVERS. INSTALLATION MUST REFLECT CAREFUL WORKMANSHIP, AND BE NEAT IN APPEARANCE. VAPOR BARRIER SHALL BE SEALED AT ALL JOINTS ON COLD PIPING.

OUTDOOR PIPE INSULATION: INSULATION AND FITTINGS SAME AS SPECIFIED FOR INDOOR PIPE INSULATION. PROVIDE METAL JACKETS OF 0.016" ALUMINUM WITH INTEGRAL VAPOR RETARDER, SELF-SEALING, WATERTIGHT METAL BANDS FOR BUTT JOINTS. SEAL JOINTS WITH ALUMINUM PIGMENTED VAPOR RETARDER MASTIC, FOSTER 60-65, OR APPROVED EQUIVALENT.

ROOF DRAIN BODY INSULATION: FLEXIBLE FIBERGLASS BLANKET CONFORMING TO ASTM C 553, TYPE I, AND NOMINAL DENSITY NOT LESS THAN 1 LB. PER CUBIC FOOT, COVERED WITH 8-OUNCE CANVAS AND VAPOR RETARDER CEMENT.

REFRIGERANT PIPING INSULATION: 3/4" THICK IMCOA "IMCOLOCK" OR "IMCOSHIELD" INSULATION ON ALL REFRIGERATION GAS PIPING, AND ALL OUTDOOR REFRIGERANT LIQUID PIPING. NOT FOR USE ON OTHER PIPING SYSTEMS. PROVIDE METAL JACKETS OF 0.016" ALUMINUM ON OUTDOOR INSULATION.

DUCT AND PLENUM INSULATION: FIBERGLASS, 0.75-POUND DENSITY, FLEXIBLE DUCT INSULATION WITH KRAFT VAPOR BARRIER. VAPOR BARRIER SHALL BE SEALED AT ALL JOINTS AND ACCESS DOORS, ETC. IN GENERAL, INSTALLATION MUST REFLECT CAREFUL WORKMANSHIP, NEAT IN APPEARANCE.

2015 WASHINGTON STATE ENERGY CODE (WSEC) NOTES:

HVAC NOTES BELOW APPLY TO THE HVAC SYSTEMS SERVING THE AREAS WORK IS SHOWN, OTHER BUILDING SPACE ARE NOT INCLUDED IN THIS PROJECT SCOPE OF WORK

EQUIPMENT SIZING, PERFORMANCE, & TYPE:

1. LOAD CALCULATIONS WERE PERFORMED USING LIGHTING AND EQUIPMENT.
2. OUTPUT CAPACITY OF HEATING AND COOLING EQUIPMENT AND SYSTEMS ARE NO GREATER THAN THE SMALLEST AVAILABLE SIZE THAT EXCEEDS THE CALCULATED LOADS (C403.2.2)
3. ALL ELECTRIC MOTORS SHALL BE COMPLIANT WITH SECTION C405.8 AS APPLICABLE.

HVAC SYSTEM CONTROLS

1. EACH HEATING AND COOLING SYSTEM SHALL BE PROVIDED WITH THERMOSTATIC CONTROLS (C403.2.4.1) THAT COMPLY WITH THE FOLLOWING REQUIREMENTS:

A. C403.2.4.1.2 SETPOINT OVERLAP RESTRICTION. WHERE USED TO CONTROL BOTH HEATING AND COOLING, THERMOSTATIC CONTROLS SHALL PROVIDE A TEMPERATURE RANGE OR DEADBAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS CAPABLE OF BEING SHUT OFF OR REDUCED TO A MINIMUM.

B. C403.2.4.2 OFF-HOUR CONTROLS. FOR ALL OCCUPANCIES OTHER THAN GROUP R, THE SPACE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.

C. C403.2.4.2.1 THERMOSTATIC SETBACK CAPABILITIES. THERMOSTATIC SETBACK CONTROLS SHALL HAVE THE CAPABILITY TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN SPACE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

D. C403.2.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN CAPABILITIES. AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR AT LEAST 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CAPABLE OF BEING ADJUSTED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR

E. C403.2.4.2.3 AUTOMATIC START CAPABILITIES. AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROLS SHALL BE CAPABLE OF AUTOMATICALLY ADJUSTING THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.

PROJECT SUMMARY

THIS PROJECT HAS MULTIPLE ENGINEERS WORKING TOGETHER TO COMPLETE THE PROJECT. COFFMAN ENGINEERS SCOPE IS LIMITED TO THE FOLLOWING:

HVAC:

1. COMFORT AND/OR CODE COMPLIANT HVAC AS SHOWN ON PLANS.

PLUMBING:

1. CONDENSATE DRAINAGE PIPING.

ELECTRICAL

1. ELECTRICAL ENGINEERING TO SUPPORT MECHANICAL EQUIPMENT, ACCESS CONTROL AND LIGHTING.

PROJECT EXCLUSIONS BY COFFMAN ENGINEERS:

1. STRUCTURAL SYSTEM.
2. FIRE PROTECTION SYSTEMS.
3. COMFORT AND/OR CODE COMPLIANT HVAC EXCEPT AS MENTIONED
4. PLUMBING SYSTEMS.

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SPECIFICATIONS

M002

VARIABLE REFRIGERANT VOLUME - AIR-COOLED CONDENSING UNIT SCHEDULE

TAG	BASIS OF DESIGN (DAIKIN)	NOMINAL TONNAGE	DESCRIPTION	LOCATION	COOLING CAPACITY		HEATING CAPACITY		REFRIGERANT CHARGE	CONNECTION RATIO (%)	ELECTRICAL				DIMENSIONS		EFFICIENCY			NOTES	OPTIONS AND ACCESSORIES
					BTU/h	AMBIENT DESIGN (°F DB)	BTU/h	AMBIENT DESIGN (°F DB / WB)	FACTORY CHARGE (LBS)		VOLTAGE–PHASE	MIN CIRCUIT AMPS (MCA)	MAX OVERCURRENT PROTECTION (MOP)	RUNNING CURRENT(RLA)	(WxHxD) (INCH)	WEIGHT (LBS)	EER	SEER	HSPF		
CU–1	RXL24UMVJUA	2	OUTDOOR UNIT	ROOF	24,000	84.2	27,600	32/30.7	3.2	–	208–230V 1ph	19.8	–	–	29 x 35 x 13	130	12.5	18.6	10	1–16	

NOTES:
1. MANUFACTURER MUST BE CERTIFIED, LISTED, AND LABELED PER AHRI 1230.
2. SYSTEM RATING DATA BASED ON DESIGN AMBIENT CONDITIONS FOR COOLING AND FOR HEATING.
3. SUBMITTED PERFORMANCE DATA MUST BE FULLY DE–RATED FOR ALL COMPONENTS AND ACCESSORIES, INCLUDING BUT NOT LIMITED TO, LINE LENGTH, VERTICAL SEPARATION, CONNECTION RATIO, DESIGN CONDITIONS, CONDENSER COIL COATING.
4. CONDENSING UNITS MUST HAVE FULLY MODULATING INVERTER COMPRESSORS.
5. CONDENSING UNITS MUST HAVE HAVE AUTO CHANGEOVER FUNCTIONS
6. DEMAND LIMITING RELAY CONTACT MUST BE PROVIDED.
7. EEV ACTUATORS MUST BE REMOVABLE FROM VALVE BODY WITHOUT DISTURBING THE REFRIGERANT SYSTEM.
8. FCU THERMOSTATS MUST PROVIDE +/– 1 DEGREE DEAD–BAND SET–POINT AND CONTROL CAPABILITY.
9. SYSTEM SHALL BE PROVIDED WITH I–TOUCH MANAGER CONTROLLER WITH WEB BASED SOFTWARE FOR DISPLAYING UP TO 8 DIII–NET SYSTEMS WITH 128 INDOOR UNITS PER SYSTEM.PC BY OTHERS.
10. MANUFACTURERS SUBMITTAL MUST INCLUDE REFRIGERANT PIPING DIAGRAM WITH PIPE DIAMETERS, LENGTHS, AND REFRIGERANT VOLUME.
11. SUBSTITUTE MANUFACTURER SHALL BE RESPONSIBLE FOR ADDITIONAL PIPING AND REFRIGERANT.
12. CONTRACTOR TO VERIFY PIPING DIMENSIONS.
13. INSTALLING CONTRACTOR MUST HAVE SUCCESSFULLY COMPLETED MANUFACTURERS CERTIFIED INSTALLATION CLASS WITHIN PAST 36 MONTHS.
14. CONTRACTOR TO FURNISH AND INSTALL INSULATION ON REFRIGERANT PIPING.
15. MANUFACTURER MUST PROVIDE 10 YEARS PARTS WARRANTY ON ALL FCUS, CONDENSING UNITS, MODE CHANGEOVER DEVICES AND ZONE CONTROLS. WARRANTY CONDITIONS MUST BE CLARIFIED DURING SUBMITTAL PHASE.

VARIABLE REFRIGERANT VOLUME - INDOOR UNIT SCHEDULE

TAG	LOCATION	BASIS OF DESIGN (DAIKIN)	NOMINAL TONNAGE	DESCRIPTION	CONNECTED TO:		SUPPLY FAN	COOLING CAPACITY				HEATING CAPACITY		ELECTRICAL			DIMENSIONS	WEIGHT (LBS)	FILTER	NOTES	OPTIONS AND ACCESSORIES
					CONDENSING UNIT	ZONE CHANGEOVER DEVICE	AIR FLOW RATE CFM	TOTAL BTU/h	SENSIBLE BTU/h	ENTERING AIR °F DB	ENTERING AIR °F WB	TOTAL BTU/h	ENTERING AIR °Fdb	POWER SUPPLY VOLTAGE – PHASE	MIN CIRCUIT AMPS	MAX OVERCURRENT PROTECTION	WxHxD INCH				
FCU–1	CORRIDOR	FXFQ24TVJU	2	ROUND FLOW SENSING CASSETTE	CU–1	NO	678	24,000	16,730	78.8	65.5	27,600	68	POWERED THRU OUTDOOR UNIT			39 x 10 x 32	82	MERV 13	1–6	

NOTES:
1. BUILT–IN CONDENSATE PUMP
2. COOLING/HEATING CAPACITY LISTED IN SCHEDULE IS FAN COIL RATED CAPACITY.
3. VRF FAN COIL UNITS DO NOT REQUIRE ECONOMIZERS. SYSTEM FALLS UNDER C403.4.1, EXCEPTION 6.
4. MC AND VENDOR TO VERIFY SYSTEM REFRIGERANT CHARGE CAPACITY BASED ON FINAL EQUIPMENT LAYOUT.
5. PROVIDE REMOTE WIRED PROGRAMMABLE THERMOSTAT AT EACH ZONE.
6. STANDARD LIMITED WARRANTY: 10–YEAR WARRANTY ON COMPRESSOR AND ALL PARTS

EXHAUST FAN SCHEDULE

UNIT NO.	LOCATION	AREA SERVED	CFM	ESP (IN. WG)	FAN RPM	MOTOR HP	MOTOR VOLTS	MOTOR PH	FAN TYPE	DRIVE TYPE	SOUND SONES	ACCESSORIES	BASIS OF DESIGN	OPER WT. (LBS.)	REMARKS
EF–1	ROOF	CORRIDOR/RECEPTION	50–110	0.50	1385	1/8	115	1	DOWN BLAST	ECM	4.5	–	TWIN CITY DCRD080B	60	1–7

NOTES:
1. FAN SHALL RUN AT LOW SPEED CONTINOUSLY AND AT HIGH SPEED ON TRIGGER FROM CO2 SENSOR.
2. ALUMINUM CONSTRUCTION OPTION.
3. DISCONNECT BY ELEC CONTRACTOR.
4. PROVIDE ROOF CURB.
5. PROVIDE CO2 SENSOR AND INTERFACE WITH FAN OPERATION.
6. PROVIDE BACKDRAFT DAMPER AT FAN.
7. PROVIDE SPEED DIAL TO BALANCE FAN.

DIFFUSER AND GRILLE SCHEDULE

TAG	TYPE	BASIS OF DESIGN	REMARKS
S–1	SUPPLY GRILLE	PRICE SCDA	DUCT MOUNT
S–2	SUPPLY DIFFUSER	PRICE 610	CEILING MOUNT
R–1	RETURN GRILLE	PRICE 630	CEILING MOUNT
R–2	RETURN GRILLE	PRICE 630	WALL MOUNT
E–1	EXHAUST GRILLE	PRICE 630	CEILING MOUNT

BRANCH DUCT SIZING:

CONNECTION SIZE:	BRANCH DUCT SIZE:	CFM RANGE:
4x4	4"	0–30
6x6	6"	30–80
8x8	8"	80–190
10x10	10"	190–360
12x12	12"	360–580
14x14	14"	580–850

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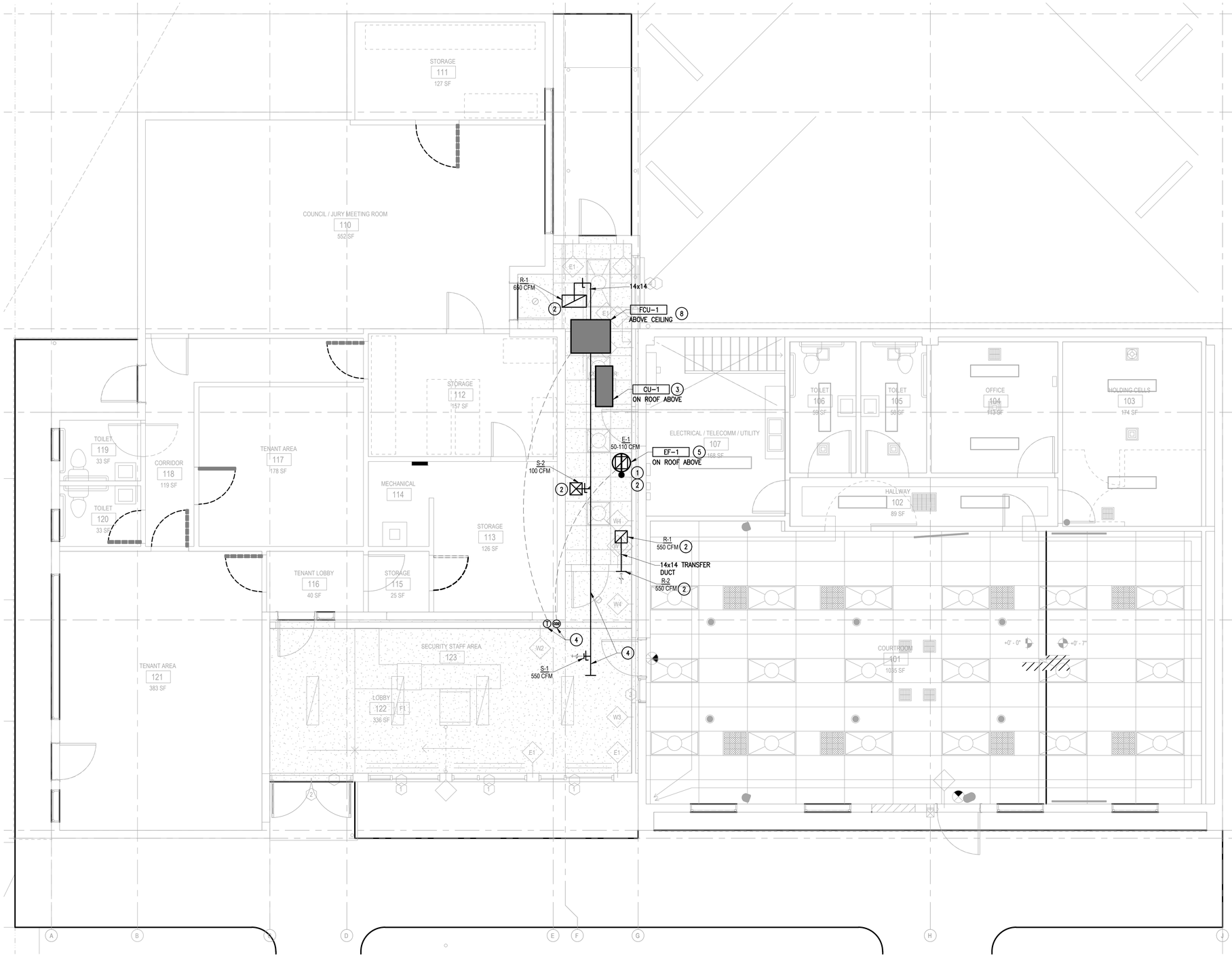
SCHEDULES

M003



1 GROUND FLOOR HVAC PLAN

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

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JAMES BENCSIK — STATE OF WASHINGTON — 48284 — REGISTERED PROFESSIONAL ENGINEER

7/1/20

RMC ARCHITECTS
RMC Architects, PLLC • 1223 Railroad Avenue • Bellingham, WA 98225
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GENERAL NOTES

1. OUTSIDE AIR INTAKE OPENINGS SHALL BE LOCATED A MIN. 10' FROM EXHAUST AIR OUTLETS, LOT LINES, VENTS, STREETS, ALLEYS, PARKING LOTS, AND LOADING DOCKS.
2. EXHAUST AIR OUTLETS SHALL BE LOCATED A MIN. OF 3' FROM OPERABLE OPENING AND 10' FROM OUTSIDE AIR INTAKES.
3. ROUTE CONDENSATE TO P-TRAP OF LAV IN RESTROOM, FIELD VERIFY ROUTING.
4. FOR ALL MANUAL VOLUME DAMPERS LOCATED ABOVE HARD LID CEILING, PROVIDE REMOTE CABLE OPERATION.
5. REFER TO ELECTRIC HEATER SCHEDULE ON SHEET M003 FOR HEATER THERMOSTAT AND LOCATION.
6. PROVIDE VOLUME DAMPER AT EACH GRD DUCT CONNECTION.
7. COORDINATE LOCATION OF CONDENSING UNITS WITH OWNER/ARCHITECT.
8. REFER TO DETAIL ON M401 FOR ADDITIONAL INSTALLATION INFORMATION.
9. COORDINATE ACCESS DOOR/PANEL LOCATIONS FOR MAINTENANCE OF EQUIPMENT AND ACCESSORIES.

REFRIGERANT PIPING NOTES

1. DESIGN INTENT IS ALL REFRIGERANT PIPING IS CONCEALED AND ROUTED IN WALLS, FLOOR/CEILING, AND ROOF/CEILING ASSEMBLES WITHOUT THE USE OF DROPPED SOFFITS EXCEPT FOR PARKING GARAGES.
2. CONTRACTOR IS RESPONSIBLE FOR FINAL ROUTING OF PIPING PER SELECTED SPLIT SYSTEM MANUFACTURER INSTALLATION REQUIREMENTS. THIS INCLUDES VERIFYING THE MAXIMUM PERMISSIBLE LENGTH OF REFRIGERANT PIPING PER MANUFACTURER'S INSTALLATION REQUIREMENTS.
3. REFRIGERANT PIPING ROUTING TO COMPLY WITH WASHINGTON STATE MECHANICAL CODE REQUIREMENTS.
4. ALL PENETRATIONS OF RATED WALLS, FLOOR.CEILING, AND ROOF/CEILING ASSEMBLIES TO BE PROTECTED PER WASHING STATE BUILDING CODE REQUIREMENTS.
5. ALL HOLES AND NOTCHES IN STRUCTURAL WOOD MEMBERS TO COMPLY WITH STRUCTURAL REQUIREMENTS AND WASHINGTON STATE BUILDING CODE REQUIREMENTS FOR OPENING SIZE AND LOCATION BASED ON SIZE OF MEMBER PENETRATED. NOTE THERE ARE DIFFERENT OPENING REQUIREMENTS FOR BEARING WALLS, NON-BEARING WALLS, STRUCTURAL JOISTS, AND BEAMS. SEE STRUCTURAL DRAWING FOR DETAILS.
6. HOLE, NOTCH, OR OPENING SIZES ARE REQUIRED TO BE OF SUFFICIENT SIZE TO ACCOMMODATE PIPING AND INSULATION.

SHEET NOTES

1. ROUTE DUCTWORK ABOVE CEILING, TYP.
2. COORDINATE GRD LOCATIONS WITH ARCHITECTURAL AND ELECTRICAL DRAWINGS.
3. MOUNT CONDENSING UNITS ON ROOF.
4. PROVIDE LOCKABLE COVER.
5. PROVIDE ROOF MOUNTED EXHAUST FAN. PROVIDE DUCT THRU ROOF TO EXHAUST GRILLE IN CEILING. PROVIDE VOLUME DAMPER AT EXHAUST GRILLE. PROVIDE BACKDRAFT DAMPER IN FAN CURB.
6. ROUTE CONDENSATE TO P-TRAP OF LAV IN RESTROOM, FIELD VERIFY ROUTING.
7. DUCT SHALL BE ROUND EXPOSED IN THIS AREA. DUCT SHALL BE NEATLY FINISHED SHEET METAL.
8. PROVIDE BOTTOM FILTER ACCESS.

City of Ferndale

Municipal Court Remodel

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Ferndale, WA 98248

Job No: 200919 Date: 07.03.2020
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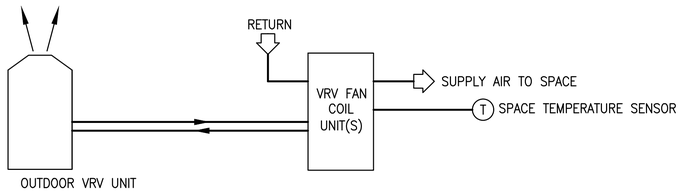
GROUND FLOOR HVAC PLAN

M201

DESCRIPTION OF OPERATIONS



HALLWAY UNIT SYSTEM DESCRIPTION:

VARIABLE REFRIGERANT FLOW SYSTEM SHALL BE PROVIDED WITH COMPLETE MANUFACTURERS CONTROLS PACKAGE. THE SYSTEM SHALL OPERATE UNDER ITS OWN CONTROLS. PROVIDE USER INTERFACE CONTROLLER IN SPACE. PROVIDE ALL LABOR, MATERIALS AND PROGRAMMING FOR A FULLY OPERATIONAL SYSTEM. COORDINATE WITH A/E FOR SPACE TEMPERATURE SET POINTS DURING SYSTEM SETUP. PROVIDE CONTROLS DRAWINGS, PROGRAMMING, PRODUCT SUBMITTAL TO A/E FOR REVIEW PRIOR TO INSTALLATION.

SYSTEM DIAGRAM LEGEND

SYMBOL	DESCRIPTION
T4	BINARY INPUT DEVICE (SEE BELOW FOR NOMENCLATURE)
T4	ANALOG SENSOR (SEE BELOW FOR NOMENCLATURE)
T4	AMBIENT ANALOG SENSOR (WALL MOUNTED) (SEE BELOW FOR NOMENCLATURE)

NOMENCLATURE

T

LETTER CODE:

C = CURRENT (AMPERAGE)
D = DIFFERENTIAL PRESSURE
E = END SWITCH
F = FLOW
H = HUMIDITY
L = LOW TEMPERATURE
P = PRESSURE
S = SWITCH (MANUAL)
T = TEMPERATURE
V = VELOCITY

ECM	ELECTRONICALLY COMMUTATED MOTOR
CR	CONTROL RELAY
CP	CONTROL PANEL
MS	MOTOR STARTER (SEE DIV. 16)

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CONTROLS

M301

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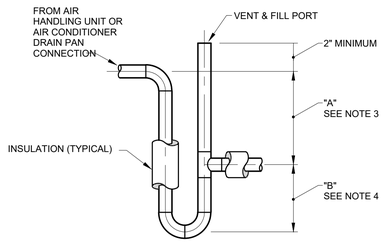
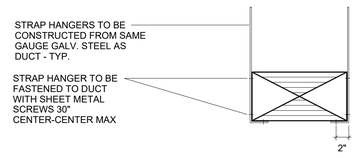


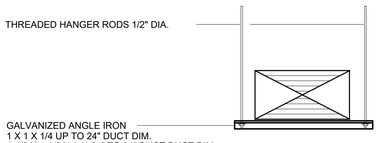
NOTES:

1. DRAIN LINE SHALL BE INSULATED.
2. DRAIN LINE SIZE SHALL BE EQUIPMENT MANUFACTURER'S MINIMUM DRAIN PAN CONNECTION SIZE BUT NOT LESS THAN 1" DIAMETER.
3. TRAP DEPTH DIMENSION "A" SHALL BE THE MAXIMUM POSSIBLE NEGATIVE PRESSURE IN THE UNIT AT THE DRAIN OUTLET (IN INCHES W.G.) PLUS ONE INCH. IF THE PRESSURE IS POSITIVE, "A" SHALL BE ONE INCH.
4. TRAP DEPTH DIMENSION "B" SHALL BE HALF OF "A" PLUS ONE INCH IF OUTLET IS UNDER NEGATIVE PRESSURE. IF THE PRESSURE IS POSITIVE, "B" SHALL BE THE MAXIMUM POSSIBLE PRESSURE (IN INCHES W.G.) PLUS TWO INCHES.

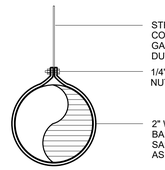
1 M401 CONDENSATE DRAIN ON FAN COIL TRAP DETAIL
SCALE: NTS



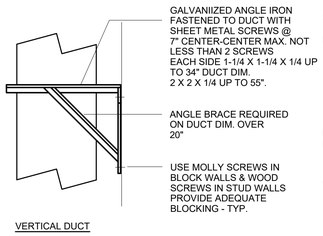
RECTANGULAR DUCT UP TO 20"



RECTANGULAR DUCT UP TO 55"

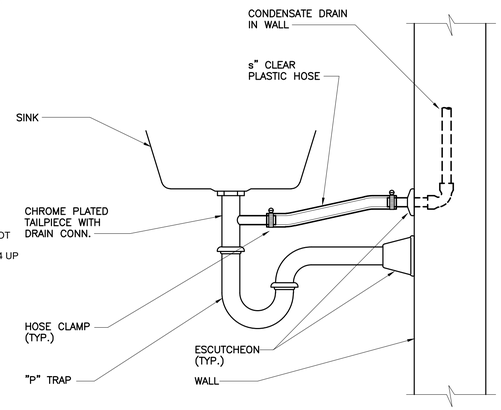


ROUND DUCT UP TO 40"

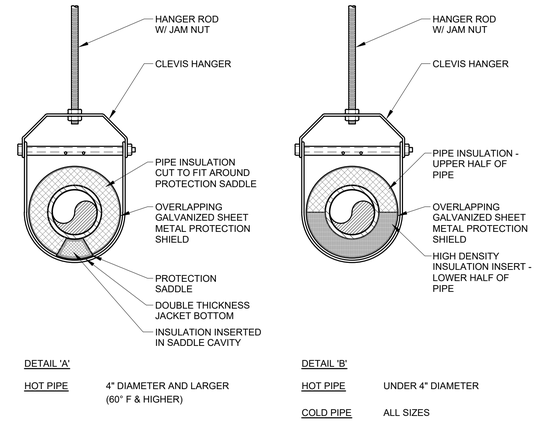


VERTICAL DUCT

2 M401 DUCT SUPPORT DETAILS
SCALE: NTS



3 M401 CONDENSATE DRAIN TO TRAP DETAIL
SCALE: NTS



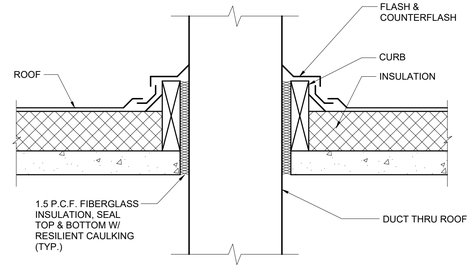
DETAIL 'A'

HOT PIPE	4" DIAMETER AND LARGER (60° F & HIGHER)

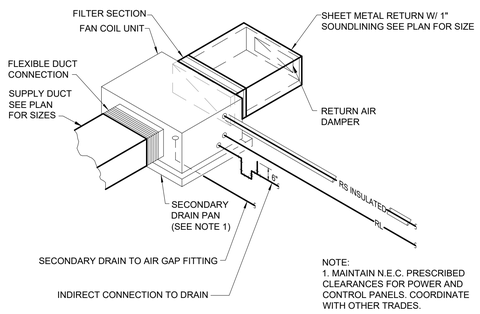
DETAIL 'B'

HOT PIPE	UNDER 4" DIAMETER
COLD PIPE	ALL SIZES

4 M401 TYPICAL PIPE HANGERS - INSULATED PIPE
SCALE: NTS



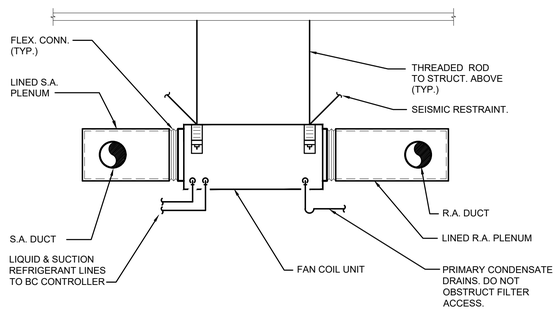
5 M401 DUCT THRU ROOF DETAIL
SCALE: NTS



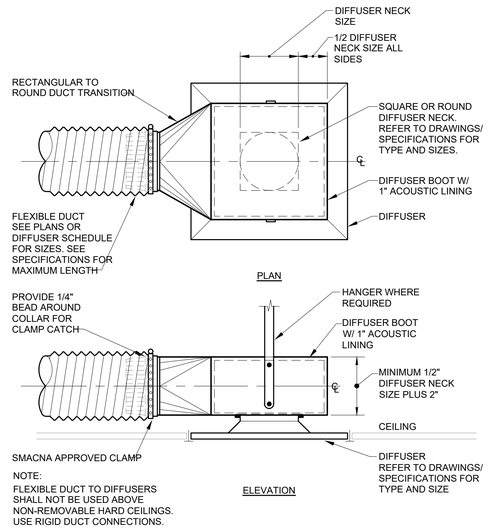
NOTE:
1. MAINTAIN N.E.C. PRESCRIBED CLEARANCES FOR POWER AND CONTROL PANELS. COORDINATE WITH OTHER TRADES.

NOTE:
1. PROVIDE SECONDARY DRAIN, DRAIN PAN W/DRAIN PIPE OR INTEGRATED SHUTOFF VALVE, PER IMC

6 M401 SPLIT INDOOR FAN COIL DETAIL
SCALE: NTS



7 M401 SPLIT INDOOR FAN COIL DETAIL
SCALE: NTS



NOTE:
FLEXIBLE DUCT TO DIFFUSERS SHALL NOT BE USED ABOVE NON-REMOVABLE HARD CEILINGS. USE RIGID DUCT CONNECTIONS.

ELEVATION

8 M401 RESTRICTED CEILING HEIGHT DIFFUSER CONNECTION DETAIL
SCALE: NTS

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DETAILS

M401

GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY TO ALL DRAWINGS

1. ITEMS NOTED AS "TYPICAL" ON ANY DRAWING REFERS TO ALL DRAWINGS.
2. PROVIDE NYLON PULL STRING IN ALL EMPTY RACEWAYS.
3. NO STRUCTURAL MEMBERS SHALL BE CUT OR ALTERED WITHOUT PRIOR APPROVAL OF THE ARCHITECT AND STRUCTURAL ENGINEER.
4. ALL RACEWAYS WITHIN THE BUILDING SHALL BE RUN OVERHEAD U.O.N. RACEWAYS SHALL NOT BE RUN UNDER THE FLOOR SLAB UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS.
5. NO RACEWAYS SHALL BE RUN IN FLOOR SLABS.
6. FIRST FLOOR HOMERUNS (TO THE FIRST DEVICE) MAY BE RUN UNDER THE SLAB IN 1" PVC.
7. LOCATIONS OF ALL WALL MOUNTED DEVICES ARE SHOWN SCHEMATICALLY. COORDINATE WITH THE ARCHITECTURAL DRAWINGS, ELEVATIONS AND CASEWORK SUPPLIERS SHOP DRAWINGS FOR EXACT LOCATION OF DEVICES PRIOR TO ROUGH-IN.
8. ALL RACEWAYS IN FINISHED SPACES SHALL BE CONCEALED.
9. PROVIDE 2" EMT SLEEVES FOR LOW VOLTAGE WIRING RUNNING THROUGH NON-RATED WALLS, FLOORS AND CEILINGS.
10. PROVIDE STI "EZ-PATH" ASSEMBLIES AT EACH LOCATION WHERE LOW VOLTAGE WIRING PENETRATES A RATED WALL OR CEILING. ASSUME 50 ARE TO BE PROVIDED.
11. SEAL ALL PENETRATIONS IN RATED FLOORS AND CEILINGS WITH A UL APPROVED FIRE STOP SYSTEM.
12. PROVIDE A COMPLETE DESIGN-BUILD PATHWAY SYSTEM FOR ALL SPECIAL SYSTEMS WIRING, SEE SPECIFICATIONS. QUANTITY AND SIZE OF RACEWAYS SHOWN ON SPECIAL SYSTEMS PLANS ARE THE MINIMUM TO BE PROVIDED. CONTRACTOR SHALL PROVIDE ALL RACEWAYS AS REQUIRED.
13. ALL LOW VOLTAGE WIRING NOT RUN IN A METALLIC RACEWAY SHALL BE PLENUM RATED.
14. ALL EQUIPMENT, LUMINAIRES, RACEWAYS, DEVICES, ETC. SHALL BE UL LISTED.
15. MOUNT ALL DEVICES ABOVE COUNTERS 6" ABOVE BACKSPLASH UNLESS NOTED OTHERWISE.
16. WHERE A CONFLICT EXISTS THE MOST EXPENSIVE OPTION SHALL GOVERN.
17. PROVIDE ALL RACEWAYS AND WIRING REQUIRED TO INSTALL ELECTRONIC DOOR HARDWARE. REFER TO DOOR HARDWARE SPECIFICATIONS, SCHEDULES AND DIAGRAMS.

DEMOLITION PLANS

THE FOLLOWING GENERAL NOTES APPLY TO ALL DEMOLITION PLAN DRAWINGS

1. THE CONTRACT DOCUMENTS DO NOT SHOW ALL REQUIRED DEMOLITION WORK. THE CONTRACTOR SHALL SURVEY THE EXISTING CONDITIONS AND ESTABLISH THE EXTENT OF DEMOLITION PRIOR TO BID.
2. WHERE "ALL ELECTRICAL SYSTEMS" ARE NOTED TO BE REMOVED FROM AN AREA REMOVE ALL FIXTURES, DEVICES, EQUIPMENT, RACEWAYS, AND WIRING UNLESS OTHERWISE NOTED.
3. REMOVE ALL ELECTRICAL DISTRIBUTION EQUIPMENT, RACEWAYS, AND CONDUCTORS AS SHOWN ON THE EXISTING ONE-LINE DIAGRAM.
4. REMOVE ALL TEMPORARY WORK INSTALLED DURING THE COURSE OF CONSTRUCTION.
5. REMOVE CONNECTIONS TO MECHANICAL EQUIPMENT AS SHOWN ON THE MECHANICAL DEMOLITION PLANS.
6. EXISTING DEVICES TO BE DEMOLISHED SHOWN BOLD. REMOVE DEVICE, RACEWAY AND WIRING BACK TO SOURCE, UON.
7. WHERE EXISTING RECEPTACLES ARE REMOVED, MAINTAIN CONTINUITY TO RECEPTACLES ON THE SAME CIRCUIT TO REMAIN.
8. WHERE EXISTING LUMINAIRES ARE REMOVED, MAINTAIN CONTINUITY TO FIXTURES ON THE SAME CIRCUIT TO REMAIN.
9. WHERE EXISTING LOW VOLTAGE DEVICES ARE REMOVED, MAINTAIN CONTINUITY TO OTHER DEVICES.

WASHINGTON STATE NONRESIDENTIAL ENERGY CODE COMPLIANCE

1. LIGHTING: THE CONTRACTOR SHALL PROVIDE A WRITTEN CERTIFICATION VERIFYING THAT ALL LAMPS AND BALLASTS HAVE BEEN PROVIDED PER THE SPECIFICATIONS. PROVIDE A LIST WHICH INDICATES THE EXACT PART NUMBER OF THE LAMP AND BALLAST PROVIDED FOR EACH FIXTURE TYPE. INCLUDE THE CERTIFICATION AND THE LAMP/BALLAST LIST IN THE O&M MANUAL.
2. COMMISSIONING REQUIREMENTS: ALL LIGHTING CONTROLS INCLUDING DAYLIGHT OR OCCUPANT SENSING AUTOMATIC CONTROLS, AUTOMATIC SHUT OFF CONTROLS, OCCUPANCY SENSORS OR AUTOMATIC TIME SWITCHES, THE LIGHTING CONTROLS SHALL BE TESTED TO ENSURE THAT CONTROL DEVICES, COMPONENTS, EQUIPMENT AND SYSTEMS ARE CALIBRATED, ADJUSTED AND OPERATE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS. SEQUENCE OF OPERATIONS SHALL BE FUNCTIONALLY TESTED TO ENSURE THEY OPERATE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL PROVIDE A WRITTEN STATEMENT CERTIFYING ALL LIGHTING CONTROLS HAVE BEEN COMMISSIONED. INCLUDE CERTIFICATION IN O&M MANUAL.
3. TRANSFORMERS: THE MINIMUM EFFICIENCY OF ALL LOW VOLTAGE DRY-TYPE DISTRIBUTION TRANSFORMERS SHALL BE THE CLASS 1 EFFICIENCY LEVELS FOR DISTRIBUTION TRANSFORMERS SPECIFIED IN TABLE 4-2 OF THE "GUIDE FOR DETERMINING ENERGY EFFICIENCY FOR DISTRIBUTION TRANSFORMERS" PUBLISHED BY THE NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA TP-1, LATEST EDITION).

LIGHTING PLANS

THE FOLLOWING GENERAL NOTES APPLY TO ALL LIGHTING PLAN DRAWINGS

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF LUMINAIRES.
2. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT LOCATIONS OF EXTERIOR LUMINAIRES.
3. COORDINATE THE FINAL LOCATION OF LUMINAIRES IN MECHANICAL ROOMS AND ATTIC SPACES TO AVOID CONFLICTS WITH DUCT WORK, PIPING, AND MECHANICAL EQUIPMENT.
4. ROUTE ALL EXTERIOR LIGHTING CIRCUITS VIA LIGHTING CONTROL PANEL.
5. INSTALL AND WIRE REMOTE BALLASTS AND DRIVERS. REFER TO LUMINAIRE SCHEDULE. MOUNT IN ACCESSIBLE LOCATIONS. SHOW LOCATIONS ON THE AS-BUILT DRAWINGS.

EQUIPMENT CONNECTIONS

1. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER SHOP DRAWINGS PRIOR TO ROUGH-IN.
2. INSTALL AND WIRE EQUIPMENT PER MANUFACTURER SHOP DRAWINGS.
3. PROVIDE ALL RACEWAYS, WIRING AND ANCILLARY EQUIPMENT AS SHOWN ON MANUFACTURER SHOP DRAWINGS.
4. PROVIDE HARDWIRED CONNECTION, RECEPTACLE OR FUSED DISCONNECT SWITCH AS SHOWN ON MANUFACTURER SHOP DRAWINGS.

SYSTEMS PLANS

THE FOLLOWING GENERAL NOTES APPLY TO ALL SPECIAL SYSTEMS PLAN DRAWINGS

1. MINIMUM RACEWAY SIZE SHALL BE 1" FOR TELECOMMUNICATIONS CABLING AND ¾" FOR ALL OTHER SYSTEMS.
2. ALL SPECIAL SYSTEMS WIRING EXCEPT FIRE ALARM SHALL BE RUN UTILIZING OPEN WIRING METHOD ABOVE ACCESSIBLE CEILINGS. PROVIDE METALLIC RACEWAYS FOR WIRING INSTALLED IN WALLS, ABOVE INACCESSIBLE CEILING, WHERE EXPOSED OR WHERE SUBJECT TO PHYSICAL DAMAGE. RACEWAY FILL SHALL NOT EXCEED 40%.
3. FIRE ALARM SYSTEM WIRING SHALL BE RUN IN CONTINUOUS METALLIC RACEWAYS.
4. PROVIDE ADDRESSABLE DUCT DETECTOR AT EACH FIRE/SMOKE DAMPER (FSD) AND SMOKE DAMPER (SD) LOCATION. REFER TO MECHANICAL DRAWINGS FOR LOCATIONS.
5. PROVIDE FA CONNECTION TO FIRE SPRINKLER TAMPER, FLOW, AND PRESSURE SWITCHES. REFER TO MECHANICAL DRAWINGS FOR LOCATIONS.
6. PROVIDE ¾" A-C FIRE RETARDANT PLYWOOD ON ALL FOUR WALLS OF THE MDF AND EACH IDF. MOUNT 8' DIMENSION VERTICAL. PAINT FLAT WHITE.
7. PROVIDE 1" C. FROM EACH FLOOR BOX TO ACCESSIBLE CEILING LOCATION. THIS IS IN ADDITION TO THE RACEWAYS SHOWN ON THE DRAWINGS.
8. ALL EXTERIOR FIRE ALARM AND INTERCOM DEVICES SHALL BE WEATHERPROOF.
9. PROVIDE EXTERIOR FIRE ALARM BELL AND STROBE AT LOCATION DIRECTED BY FIRE MARSHAL.
10. PROVIDE CONNECTION TO FIRE SPRINKLER DOUBLE CHECK VALVE ASSEMBLIES AND PIV'S. REFER TO CIVIL/MECHANICAL DRAWINGS FOR LOCATIONS.
11. STAPLES SHALL NOT BE USED TO SECURE LOW VOLTAGE CABLING.
12. ALL CABLING NOT RUN IN A METALLIC RACEWAY SHALL BE PLENUM RATED.
13. EXTERIOR INTERCOM SPEAKERS SHALL BE WEATHERPROOF AND VANDAL RESISTANT.

ELECTRICAL SYMBOLS

LIGHTING

XX ▭ YY	LUMINAIRE: XX - LUMINAIRE TYPE YY - CIRCUIT NUMBER
⊗	EXIT SIGN, CEILING MOUNT REFER TO ARCHITECTURAL LIFE SAFETY PLAN FOR DIRECTION OF TRAVEL
▭	RECESSED LINEAR LUMINAIRE

EQUIPMENT

☮	EQUIPMENT CONNECTION
EF-1	MECHANICAL EQUIPMENT CALLOUT. REFER TO MECHANICAL EQUIPMENT SCHEDULE.

SPECIAL SYSTEMS

SECURITY SYSTEM

◁▷	DOOR CONTACTS
Ⓔ	ELECTRIC STRIKE
C	CARD READER
●	PUSHBUTTON
M	MAGNETIC DOOR LOCK

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

CONDENSING UNIT SCHEDULE

EQUIP. NO.	DESCRIPTION	LOCATION	HP	KW	FLA	MCA	MOCP	VOLTAGE	PHASE	DISCONNECT	STARTER	FEEDER	CIRCUITING	NOTES
CU-1	CONDENSING UNIT	ROOF				19.8		208	1	30AS	CONT PNL	3/4" - 2#10 & 1#10G	P-1,3	

FAN COIL UNIT SCHEDULE

EQUIP. NO.	DESCRIPTION	LOCATION	HP	W	FLA	MCA	MOCP	VOLTAGE	PHASE	DISCONNECT	STARTER	FEEDER	CIRCUITING	NOTES
FCU-1	FAN COIL UNIT	CORRIDOR						208	1	30AS	CONT PNL	3/4" - 2#10 & 1#10G	P-1,3	1

EXHAUST FAN UNIT SCHEDULE

EQUIP. NO.	DESCRIPTION	LOCATION	HP	W	FLA	MCA	MOCP	VOLTAGE	PHASE	DISCONNECT	STARTER	FEEDER	CIRCUITING	NOTES
EF-1	EXHAUST FAN	ROOF	1/6					120	1	HRS	-	1/2" - 2#12 & 1#12G	P-5	

SCHEDULE NOTES:
1. INDOOR UNIT FED FROM OUTDOOR UNIT.

GENERAL NOTES:
A. INFORMATION PRESENTED IN THIS SCHEDULE IS BASED ON EQUIPMENT SELECTED BY THE MECHANICAL ENGINEER DURING THE DESIGN PROCESS (PRE-BID). THE ACTUAL EQUIPMENT SELECTED BY MECHANICAL CONTRACTOR UNDER THIS CONTRACT MAY BE DIFFERENT. COORDINATE WITH MECHANICAL EQUIPMENT SUBMITTALS FOR ACTUAL LOADS AND PROVIDE OVERCURRENT PROTECTIVE DEVICES AND CIRCUIT SIZES AS REQUIRED BY THE EQUIPMENT MANUFACTURER PRIOR TO ORDERING MATERIALS OR ROUGH-IN.

B. ALL DISCONNECTS ARE FUSED U.O.N. CONFIRM FUSE SIZE WITH EQUIPMENT MANUFACTURER.

C. LOCATE ALL DISCONNECTING MEANS PER 2014 NEC 430.102(B) AND AHJ REQUIREMENTS.

D. ABBREVIATIONS:
AS: AMPERE SWITCH
HRS: HORSEPOWER RATED MOTOR DISCONNECT WITH OVERLOAD PROTECTION.

Luminaire Schedule

Type	Description	Lamp Type	Ballast/ Driver	Dimming Type	WATTS/VA	Manufacturer Information	Schedule Notes
EA1	UNIVERSAL LED EXIT SIGN UNIVERSAL CEILING, WALL, END MOUNTING. FILED SLECTABLE KNOCKOUT CHEVRON INDICATORS. BRUSHED ALUMINUM FACEPLATE.	3W LED GREEN	NA	NA	4/4	HE WILLAMS "EXIT/CA" SERIES EQUAL BY: COOPER, ACUITY	1
DA1	RECESSED 4" LED DOWNLIGHT LUMINAIRE DIFFUSE ACRYLIC LENS	9W LED 3500K 1000 LUMENS	0-10V DIMMING DRIVER	0-10V	9/9	DMF "DRD5" SERIES EQUAL BY: COOPER, HE WILLIAMS	
HA2	SUSPENDED LINEAR DIRECT/INDIRECT LUMINAIRE - 8' LENGTH SATIN ACRYLIC LENS, 40% UP / 60% DOWN	83.4W LED 3500K 9680 LUMENS	INTEGRAL ELECTRONIC DRIVER	0-10V	84/84	LUX LUMINAIRE "ERA-P" SERIES EQUAL BY: COOPER, ACUITY	
RA1	RECESSED 2X2 LED FLAT PANEL LUMINAIRE	38W LED 3500K 4330 LUMENS	INTEGRAL DIMMING DRIVER	0-10V	38/38	COOPER METALUX "22 FP" SERIES EQUAL BY: HE WILLIAMS, LITHONIA	

SCHEDULE GENERAL NOTES:
A. REFERENCE NOTES ON SHEET E002.
B. MANUFACTURER INFORMATION BASED ON LUMINAIRE DESIGN SERIES; PART NUMBERS SHOULD BE BASED ON WRITTEN DESCRIPTION.
C. FOR ALL LED LUMINAIRES, THE LUMEN VALUES LISTED IN THE LAMP TYPE COLUMN REPRESENT THE MINIMUM INITIAL OUTPUT REQUIRED.
F. CONTRACTOR TO VERIFY CEILING COMPATIBILITY OF ALL LUMINAIRE TYPES PRIOR TO ORDERING.

SCHEDULE NOTES:
1. PROVIDE SINGLE FACE, DOUBLE FACE AND ARROWS AS NEEDED. REFER TO ARCHITECTURAL LIFE SAFETY PLAN FOR DIRECTION OF TRAVEL.

ELECTRICAL ABBREVIATIONS

AD	AUTO DOOR
DLC	DOOR LOCK CONTROLLER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
WP	WEATHERPROOF

DRAWING INDEX

LIGHTING TYPE NOMENCLATURE

EXAMPLE DESIGNATION: RA1

FUNCTION
E = EMERGENCY
(EXIT SIGNS, BUGEYES)
C = COVE
D = DOWNLIGHT
H = HANGING/PENDANT
R = RECESSED
S = SURFACE
U = UNDERCABINET
T = TRACK
W = WALL

P = POLE
B = BOLLARD/POST
G = IN-GROUND (INGRADE)

X = EXEMPT
Z = CUSTOM

TYPE
(A-Z)

VARIANT
(1-9)

LUMINAIRE SCHEDULE NOTES

1. REFER TO ADDITIONAL NOTES ON DRAWING E0.2.
2. THE UNDERLINED LUMINAIRE IN THE SCHEDULE REPRESENTS THE "BASIS OF DESIGN". ALL OTHER MANUFACTURERS LISTED MUST MEET OR EXCEED ALL REQUIREMENTS OF THE BASIS OF DESIGN.
3. VERIFY THE VOLTAGE OF ALL LUMINAIRES. REFER TO PLANS FOR SPECIFIC VOLTAGE REQUIREMENTS.
4. ALL LUMINAIRES TO BE PROVIDED WITH ALL ROUGH-IN AND TRIM ASSEMBLIES FOR A COMPLETE INSTALLATION.
5. ALL LUMINAIRES TO BE PROVIDED WITH A CUSTOM COLOR/FINISH AS SELECTED BY THE ARCHITECT, UNLESS OTHERWISE NOTED.
6. ALL LUMINAIRES TO BE UL LISTED AND LABELED. EXTERIOR LUMINAIRES TO BE UL "WET" LABELED.
7. LUMINIARES SHALL BE PROVIDED WITH AN INTERNAL DISCONNECTING MEANS WHICH COMPLIES WITH NEC ARTICLE 410.
8. ALL FLUORESCENT AND HID BALLASTS TO BE PROVIDED WITH AN IN-LINE FUSE.
9. ALL LUMINAIRES TO HAVE AN INTEGRAL BALLAST UNLESS A REMOTE BALLAST IS SPECIFIED.
10. TANDEM OR THROUGH-WIRED BALLASTS ARE NOT ALLOWED. PROVIDE A SEPARATE BALLAST FOR EVERY 4' LUMINAIRE 'SECTION'.
11. PROVIDE WIRE GUARDS AND PLASTIC LAMP SLEEVES FOR ALL FLUORESCENT LINEAR STRIP LUMINAIRES.
12. FOR HID LUMINAIRES FED FROM THE GENERATOR PROVIDE QUARTZ RESTRIKE WITH STANDBY TIME DELAY PER UL 1598. QUARTZ LAMP IS KEPT ON UNTIL THE HID LAMP REACHES 80% OF FULL LIGHT OUTPUT.
13. ALL METAL HALIDE LAMPS/BALLASTS SHALL BE PULSE START.
14. PROVIDE GLARE SHIELDS FOR ALL POLE MOUNTED LUMINAIRE.
15. THE CONTRACTOR SHALL REVIEW THE ARCHITECTURAL INTERIOR ELEVATIONS AND THE CASEWORK MANUFACTURER SHOP DRAWINGS TO DETERMINE THE LENGTH OF UNDER CABINET LUMINAIRE.
16. REFER TO ARCHITECTURAL ELEVATIONS TO DETERMINE PENDANT LENGTH.
17. REFER TO THE SPECIFICATIONS AND DRAWINGS FOR ADDITIONAL REQUIREMENTS.
18. AIM ADJUSTABLE LUMINAIRES AS DIRECTED BY THE ENGINEER.

SPECIAL REQUIREMENTS FOR ALL LED LUMINAIRES

1. LUMINAIRES SHALL BE CERTIFIED BY ENERGY STAR, DESIGN LIGHTS CONSORTIUM, OR THE LIGHTING DESIGN LAB LED CERTIFICATION PROGRAM.
2. MINIMUM CRI SHALL BE 80.
3. MANUFACTURER SHALL PROVIDE A 5-YEAR WARRANTY.
4. LUMINAIRES SHALL COMPLY WITH ROHS (RESTRICTION OF THE USE OF HAZARDOUS SUBSTANCES IN ELECTRICAL AND ELECTRONIC EQUIPMENT) REGULATIONS. APPLICABLE FOR LEED PROJECTS ONLY.
5. MINIMUM LUMENS PER WATT EFFICACY SHALL BE 65%.

SUBSTITUTIONS

1. NO POST BID SUBSTITUTIONS WILL BE CONSIDERED.
2. WHERE ONLY ONE MANUFACTURER IS LISTED, PRE-BID SUBSTITUTIONS WILL ONLY BE CONSIDERED IF A SAMPLE OF THE FIXTURE IS PROVIDED.

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City of Ferndale
Municipal Court Remodel
5694 2nd Avenue
Ferndale, WA 98248

Job No: 200919 Date: 07.03.2020
File No:
Drawn By: CEI
Checked By: CJB
Issued for: PERMIT SET

COVER SHEET AND GENERAL INFORMATION

E001

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Lighting Summary — LGT-SUM

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1 — Revised July 2016

Project Info

Compliance forms do not require a password to use. Instructional and calculating cells are write-protected.

Project Title:	City of Ferndale Municipal Court Remodel
Applicant Information. Provide contact information for individual who can respond to inquiries about compliance form information provided.	
Company Name:	Coffman Engineers
Company Address:	1101 2nd Ave Suite 400
Applicant Name:	Coffman Engineers
Applicant Phone:	206.623.0717
Applicant Email:	

Date: 6/29/2020 — For Building Department Use

Project Description

☑ New Building ☐ Addition ☐ Alteration ☐ Plans Included

Include PROJ-SUM form (included in envelope forms workbook) with lighting compliance forms.

Building Additions

Refer to Section C502.2.6 for additional requirements.

Compliance Method	Interior lighting	Exterior lighting
Lighting systems in addition area comply with all applicable provisions as a stand alone new construction project	☐	☐
Lighting systems in addition are combined with existing building lighting systems to demonstrate compliance	☐	☐

Addition is combined with existing:
*For **interior** lighting projects, include new + existing interior lighting fixture wattage in Proposed Lighting Wattage table in LTG-INT-BLD or LTG-INT-SPACE form.*
*For **exterior** lighting projects, include new + existing exterior lighting fixture wattage in Proposed Tradable and Proposed Non-Tradable Lighting Wattage tables in LTG-EXT form.*

Interior and Exterior Lighting Alterations

Select all Lighting Power and Lighting Control elements that apply to the scope of the retrofit project. If project includes a combination of spaces where less than 50% of the existing fixtures are replaced in some spaces, and 50% or more of the fixtures are replaced in others, then provide separate lighting power compliance forms for the two retrofit conditions. Spaces undergoing the same type of retrofit may be combined into one lighting power compliance form.

Refer to Section C503.6 for additional requirements.

All alteration lighting controls shall be commissioned per C408.3.

Lighting Power	Interior lighting	Parking garage	Exterior lighting
50% or more of existing are replaced	☐	☐	☐
Less than 50% of existing are replaced	☐	☐	☐
Lamp and/or ballast replacement only – existing total wattage not increased	☐	☐	☐

50% or more replaced *- Total lighting power of new + existing-to-remain fixtures shall comply with total LPA per Sections C405.4.2 and C405.5.2. Include new + existing-to-remain fixtures in Proposed Lighting Wattage table in LTG-INT-BLD, LTG-INT-SPACE or LTG-EXT form.*

Less than 50% replaced *- Total lighting power of new + existing-to-remain fixtures shall not exceed the total lighting power prior to alteration. Include new + existing-to-remain fixtures in the Proposed Lighting Wattage table in LTG-INT-BLD, LTG-INT-SPACE or LTG-EXT form.*

50% threshold *applies to number of luminaires for interior spaces and parking garages, and total installed wattage for exterior luminaires.*

Lighting Controls	Interior lighting	Parking garage	Exterior lighting
New wiring installed to serve added fixtures and/or fixtures relocated to new circuit(s)	☐	☐	☐
New or moved lighting panel	☐	☐	☐
Interior space is reconfigured - luminaires unchanged or relocated	☐		

New wiring or circuit *- For interior lighting, provide required manual controls per C405.2.3, occupancy sensor controls per C405.2.1, daylight responsive controls per C405.2.4 and application specific lighting controls per C405.2.5. For exterior lighting, provide required controls per C405.2.7.*

New or moved panel *- Provide all applicable lighting controls as noted for New Wiring and automatic time switch controls per C405.2.2.*

Reconfigured interior space *- Provide all required lighting controls that apply to a new interior space. Application specific lighting control provisions per C405.2.5 do not apply to reconfigured*

☐ ***No changes are being made to the interior or exterior lighting systems and existing space uses and configuration are not changed.***

Change of Space Use

☐ Existing interior lighting systems in areas under-going a change in space use are upgraded to comply with LPAs for the new space types per Tables C405.4.2(1) or C405.4.2(2).

Identify interior spaces requiring LPD upgrade to the current Code in Proposed Lighting Wattage table in LTG-INT-BLD or LTG-INT-SPACE form.

Interior Lighting - Building Area Method — LTG-INT-BLD

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1 — Revised July 2016

Project Title:	City of Ferndale Municipal Court Remodel

Date: 6/29/2020 — For Building Department Use

Calculation Area [NOTE 8]: ◉ Addition - stand alone ○ Addition + existing ○ Spaces where < 50% of luminaires are replaced ○ Spaces where ≥ 50% of luminaires are replaced ○

LPA Calculation Type: ◉ Standard ○ Additional Efficiency Package Option C406.3 Reduced Interior Lighting Power ○

To comply with C406.3, the Proposed LPD shall be 25% lower than the Target LPA. Refer to C406.3 for additional requirements.

Maximum Allowed Lighting Wattage [NOTE 1]

Building Area	Location (plan #, room #, or ALL)	Area Description	Gross Interior Area in ft²	Allowed Watts per ft²	Watts Allowed (watts/ft² x area)
Court house		Security lobby and corridor	570	0.81	462
			Total		570

Proposed Lighting Wattage

Building Area	Location (plan #, room #)	Fixture Description [NOTE 2, 3, 4, 5]	Number of Fixtures	Watts per Fixture [NOTE 6]	Watts Proposed
Court house		RA1	3	38	114
Court house		HA2	4	84	336

Compliance by Building Area [NOTE 7]

Building Area	Warnings	Total Allowed Watts	Total Proposed Watts	Interior Lighting Power Allowance
Court house		462	450	COMPLIES
	Totals	462	450	

Note 1 - List all unique building areas per Table C405.4.2(1) that occur in the project scope. Select building area category from drop down menu.
Note 2 - Proposed fixtures must be listed in the building area in which they occur. List all proposed lighting fixtures including exempt lighting equipment and existing-to-remain fixtures.
Note 3 - For proposed Fixture Description, indicate fixture type, lamp type (e.g. T-8), number of lamps in the fixture, and ballast type (if included). For track lighting, list the length of the track (in feet) in addition to the fixture, lamp, and ballast information.
Note 4 - For lighting equipment eligible for exemption per C405.4.1, note exception number and leave Watts/Fixture blank.
Note 5 - Existing-to-remain fixtures shall be included in the Proposed Lighting Wattage table in the same manner as new fixtures. Identify as existing in fixture description.
Note 6 - For proposed Watts/Fixture enter the luminaire wattage for installed lamp and ballast using manufacturer or other approved source. For luminaires with screw-in lamps, enter the manufacturer's listed maximum input wattage of the fixture (not the lamp wattage). For low voltage lighting, enter the wattage of the transformer. For line voltage track/busway systems, enter the larger of the attached luminaire wattage or 50 watts/lineal foot, or enter the wattage limit of permanent current limiting device.
Note 7 - Proposed Wattage for each Building Area type shall not exceed the Allowed Wattage for that Building Area type. Trading wattage between Building Area types is not allowed under the Building Area Method compliance path.

Lighting, Motor, and Electrical Permit Checklist, Pg. 1 — LTG-CHK

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1 — Revised July 2016

Project Title:	City of Ferndale Municipal Court Remodel

Date: 6/29/2020

The following information is necessary to check a permit application for compliance with the lighting, motor, and electrical requirements in the Washington State Energy Code, Commercial Provisions.

Applicability (yes,no,na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
LIGHTING CONTROLS					
Yes	C405.2	Lighting controls, general	For all lighting fixtures, indicate lighting control method on plans for spaces and lighting zone(s) served, or exception taken	E201	
NA	C405.2	Luminaire level lighting controls (LLLC)	Indicate on plans all fixtures provided with LLLC in lieu of C405.2 lighting controls; provide description of control capabilities and performance parameters		
NA	C405.1	Lighting in dwelling units	For permanently installed lighting fixtures in dwelling units, indicate lighting control method on plans for spaces and lighting zone(s) served, or demonstrate compliance with high efficacy exception		
Yes	C405.2.3 C405.2.1.1 C405.2.2.2 C405.2.4 C405.2.5	Manual controls	Indicate on plans the method of manual lighting control (whether combined with occupancy sensor, automatic light reduction, daylight responsive or specific application controls), location of manual control device and area or specifice application it serves	E201	
Yes	C405.2.2.1 C405.2.2.2 C405.2.3	Manual interior lighting controls	Indicate on plans which method of manual 50% lighting load reduction is provided, or whether lighting load is reduced via occupancy sensors or daylight responsive controls	E201	
Yes	C405.2.2	Method of automatic shut-off control	Indicate on plans the method of automatic shut-off control during unoccupied periods (occupancy sensor or time switch) for all lighting zones;	E201	
			Indicate locations where automatic shutoff is provided by other methods (occupancy sensor or digital timer switch) or which time switch control exception applies	E201	
Yes	C405.2.1 C405.2.1.1	Occupancy sensor controls	Indicate on plans the spaces served by occupancy sensors;	E201	
			Indicate whether occupancy sensor controls are configured to be manual-on, automatic 50%-on, or serve a space eligible for automatic 100%-on per exception	E201	
NA	C405.2.1.2	Occupancy sensor controls - warehouses	Indicate aisleways and open areas in warehouse spaces provided with occupancy sensor controls that reduce lighting power by 50%		
NA	C405.2.6	Digital timer switch	Indicate required digital timer switch control function when control is used		
Yes	C405.2.2.1	Automatic time switch controls	Indicate locations of override switches on plans and the lighting zone(s) served, include area sq. ft.	E201	
Yes	C405.2.4.2 C405.2.4.3	Daylight zones - Sidelight and toplight	Indicate primary and secondary sidelight daylight zone areas on plans, include sq. ft.;	E201	
			Indicate toplight daylight zone areas on plans, include sq. ft.;	E201	
			For small vertical fenestration assemblies (rough opening less than 10 percent of primary daylight zone) where daylight responsive controls are not required, provide fenestration area to daylight zone calculation(s)	E201	
Yes	C405.2.4	Daylight responsive controls	Indicate on plans lighting zone(s) served by daylight responsive controls;	E201	
			Identify sidelight and toplight daylight zones that are not provided with daylight sensing controls and the exception(s) that apply;	E201	
			Indicate on plans the lighting load reduction method - continuous dimming, or stepped dimming that provides at least two even steps between 0%-100% of rated power;	E201	
			Indicate that daylight sensing controls are configured to completely shut off all controlled lights in the lighting zone	E201	
NA	C405.2.5	Additional controls - Specific application lighting controls	Identify spaces and lighting fixtures on plans that require specific application lighting controls per this section		
NA	C405.2.5 - Items 1&2	Display and accent lighting	Indicate on plans that display and accent lighting, and display case lighting are controlled independently from both general area lighting and other lighting applications within the same space;		
			Indicate manual and automatic lighting control method		

Lighting, Motor, and Electrical Permit Checklist, Pg. 2 — LTG-CHK

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1 — Revised July 2016

Project Title:	City of Ferndale Municipal Court Remodel

Date: 6/29/2020

The following information is necessary to check a permit application for compliance with the lighting, motor, and electrical requirements in the Washington State Energy Code, Commercial Provisions.

Applicability (yes,no,na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
NA	C405.2.5 - Item 3	Hotel/motel guest rooms	Indicate method of automatic control - vacancy or captive key control of all installed luminaires and switched receptacles in guest room		
NA	C405.2.5 - Item 4	Supplemental task lighting	Indicate method and location of automatic shut-off vacancy control for supplemental task lighting, including under-shelf or under-cabinet lighting		
NA	C405.2.5 - Item 5	Lighting for non-visual applications	Indicate on plans eligible non-visual lighting applications, include sq. ft. area of each lighting control zone;		
			Indicate on plans that non-visual lighting are controlled independently from both general area lighting and other lighting applications within the same space;		
			Indicate method of manual lighting control and applicable automatic lighting control		
NA	C405.2.5 - Item 6	Lighting equipment for sale or demonstration	Indicate on plans that lighting equipment for sale or demonstration are controlled independently from both general area lighting and other lighting applications within the same space;		
			Indicate method of manual lighting control and applicable automatic lighting control		
Yes	C405.2.5 - Item 7	Means of egress lighting	Identify on plans egress fixtures that function as both normal and emergency means of egress illumination;	E201	
			Provide calculation of lighting power density of total egress lighting;	E201	
			If total egress lighting power density is greater than 0.02 W/sq. ft., indicate on plans egress fixtures requiring automatic shut-off during unoccupied periods;	E201	
			Indicate method of automatic shut-off control	E201	
NA	C405.2.7	Exterior lighting controls	Indicate on exterior lighting plans and fixture schedules the automatic lighting control method, control sequence, and locations served;		
			For building façade and landscape lighting, indicate automatic controls shut off lighting as a function of dawn/dusk and fixed opening/closing time;		
			For all other exterior lighting, indicate automatic controls shut off lighting as a function of available daylight; include control sequence that also reduces lighting power by at least 30% between 12am-6am, or from 1 hour after closing to 1 hour before opening, or based upon motion sensor		
NA	C405.5.1	Exterior building grounds lighting controls	For building grounds fixtures greater than 100 watts, indicate on plans whether fixtures have efficacy greater than 80 lumens or; are controlled by motion sensor, or are exempt lighting per C405.5.2		
NA	C405.2.5	Area controls - Master control switches and circuit power limit	Indicate location(s) of master control switch(es) intended to control multiple independent switches; circuit breaker may not be used as a master control switch;		
			Verify that no 20 amp circuit controlled by a single switch or automatic control is loaded beyond 80%		
NA	C406.4	Enhanced digital lighting controls	To comply with additional efficiency package option, indicate on plans all interior lighting fixtures that are individually addressed and provided with continuous dimming, or exception taken;		
			Include calculation of percent total installed interior lighting power that is configured with required enhanced lighting control functions (min 90% to comply with additional efficiency package option)		
NA	C405.13 C408.3	Lighting system functional testing	If claiming lighting system commissioning exemption provide supporting calculation;		
			Identify applicable commissioning documentation requirements per Section C408 or eligibility for exception;		
			Provide written procedures for functional testing of all automatic controls and describe the expected system response		

Lighting, Motor, and Electrical Permit Checklist, Pg. 3 — LTG-CHK

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1 — Revised July 2016

Project Title:	City of Ferndale Municipal Court Remodel

Date: 6/29/2020

The following information is necessary to check a permit application for compliance with the lighting, motor, and electrical requirements in the Washington State Energy Code, Commercial Provisions.

Applicability (yes,no,na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
INTERIOR LIGHTING POWER & EFFICACY					
Yes	C405.4.1 C405.4.1 C405.4.2	Total connected interior lighting power	Include all luminaires in lighting fixture schedule; indicate fixture types, lamps, ballasts, and manufacturer's rated watts per fixture;	E001	
			Identify spaces eligible for lighting power exemption on plans and in compliance forms; indicate the exception applied;	E201	
			Identify lighting equipment eligible for lighting power exemption in fixture schedule and in compliance forms; indicate the exception applied;	E201	
			Indicate that exempt lighting equipment is in addition to general area lighting and is controlled independently	E201	
Yes	C405.3	Exit signs	Indicate location of exit signs on plans and rated watts per fixture in lighting fixture schedule (maximum 5 watts per fixture)	E201	
NA	C405.1	Lighting in dwelling units - lamp efficacy	If high efficacy exception is applied to permanently installed lighting fixtures in dwelling units, indicate in lighting fixture schedule if lamps in fixtures are high efficacy per R404.1; Calculate percentage of fixtures with high efficacy lamps in project (min 75% to comply with exception).		
NA	C406.3	Reduced lighting power density - dwelling unit lamp efficacy	For project with dwelling units, to comply with additional efficiency package option indicate in lighting fixture schedule if lamps in fixtures have efficacy rating of 60 lumens per watt or more. Calculate percentage of fixtures with lamps that have this efficacy rating (min 95% to comply with option).		
	Lighting Power Calculation - Indicate compliance path taken				
Yes	C405.4.2.1	Building Area Method	Complete required compliance forms – proposed wattage per building area does not exceed maximum allowed wattage per building area. Identify locations of building areas on plans	E201	
NA	C405.4.2.2	Space-By-Space Method	Complete required compliance forms – total proposed wattage does not exceed maximum allowed wattage. Identify locations of space types on plans, including retail display areas, lobby art & exhibit display areas, and ceiling heights as applicable		
NA	C406.3	Reduced lighting power density	To comply with additional efficiency package option, demonstrate in compliance forms that total connected interior lighting wattage is 75% less than the total maximum allowed lighting wattage via Building Area Method or Space-By-Space Method		
EXTERIOR LIGHTING POWER & EFFICACY					
NA	C405.5.2	Total connected exterior lighting power	Include all luminaires in lighting fixture schedule; indicate fixture types, lamps, ballasts, and manufacturer's rated watts per fixture;		
			Identify exterior applications eligible for lighting power exemption on plans and in compliance forms; indicate exception applied;		
			Indicate that exempt exterior lighting is controlled independently from non-exempt exterior lighting; include exception claimed for each fixture or group of fixtures under exception category		
NA	Table C405.5.2(1)	Exterior lighting zone	Indicate building exterior lighting zone as defined by the AHJ		
NA	C405.5.1	Exterior building grounds lighting	For building grounds fixtures rated at greater than 100 watts that are complying based on efficacy, indicate rated lamp efficacy (in lumens per watt) in fixture schedule		
NA	C405.5.2	Exterior lighting power calculations	Complete required compliance form – proposed wattage for exterior lighting plus base site allowed does not exceed maximum allowed		

Lighting, Motor, and Electrical Permit Checklist, Pg. 4 — LTG-CHK

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1 — Revised July 2016

Project Title:	City of Ferndale Municipal Court Remodel

Date: 6/29/2020

The following information is necessary to check a permit application for compliance with the lighting, motor, and electrical requirements in the Washington State Energy Code, Commercial Provisions.

Applicability (yes,no,na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
MOTORS & TRANSFORMERS					
NA	C405.6	Electrical tranformers	Include electrical transformer schedule on electrical plans; indicate transformer size, efficiency, or exception taken		
NA	C405.7	Dwelling unit electrical energy consumption	Indicate on electrical plans that each dwelling unit in Group R-2 has a separate electrical energy meter		
NA	C405.8	Electric motor efficiency	Include all motors, including fractional hp motors, in electric motor schedule on electrical plans; indicate hp, rpm, rated efficiency, or exception applied		
NA	C405.9.1	Elevator cabs	For luminaires in each elevator cab, provide calculated average efficacy of combined fixtures that indicates efficacy is not less than 35 lumens per watt;		
			Indicate rated watts per cfm for elevator cab ventilation fans do not exceed 0.33 watts per cfm;		
			Indicate automatic controls that de-energize lighting and ventilation fans when elevator is stopped and unoccupied for a period of 15 minutes or more		
NA	C405.9.2	Escalators and moving walks	Indicate escalators comply with ASME A17.1/CSA B44; automatic controls are configured to reduce operational speed to the minimum permitted when not in use		
NA	C405.9.3	Regenerative drive	Indicate all one-way down or reversible escalators are provided with a variable frequency regenerative drive		
Yes	C405.10	Controlled receptacles	Identify all controlled and uncontrolled receptables on electrical plans in each space in which they are required; include receptacle configuration such as spacing between controlled and uncontrolled, duplex devices, etc;	E201	
			Indicate on plans whether the method of automatic control for each controlled receptable zone is by occupant sensor or programmable time-of-day control	E201	

If "no" is selected for any question, provide explanation:

End of Lighting, Motor & Transformer Permit Documents Checklist

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7/1/2020

City of Ferndale
Municipal Court Remodel
5694 2nd Avenue
Ferndale, WA 98248

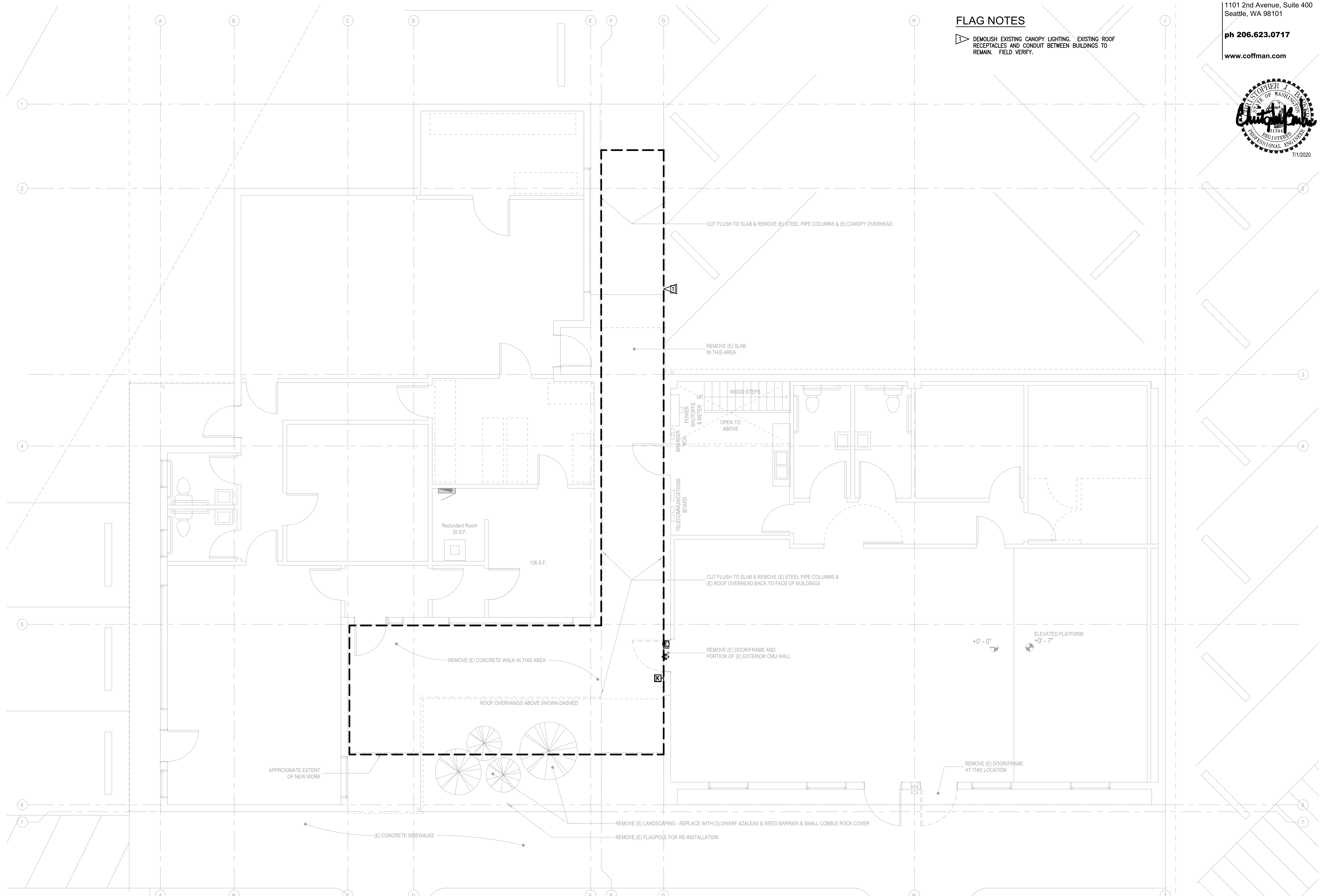
Job No: 200919 Date: 07.03.2020
File No:
Drawn By: CEI
Checked By: CJB
Issued for: PERMIT SET

NREC

E002

FLAG NOTES

1. DEMOLISH EXISTING CANOPY LIGHTING. EXISTING ROOF RECEPTACLES AND CONDUIT BETWEEN BUILDINGS TO REMAIN. FIELD VERIFY.



GROUND FLOOR ELECTRICAL DEMOLITION PLAN

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

1/4"=1'-0" 0 1 2 3 4 6 8 12

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City of Ferndale
Municipal Court Remodel
5694 2nd Avenue
Ferndale, WA 98248

Job No: 200919	Date: 07.03.2020
File No:	
Drawn By: CEI	
Checked By: CJB	
Issued for: PERMIT SET	

GROUND FLOOR ELECTRICAL DEMOLITION PLAN

ED301

GENERAL NOTES

1. CORRIDOR LIGHTING CONTROLLED FROM LCP.

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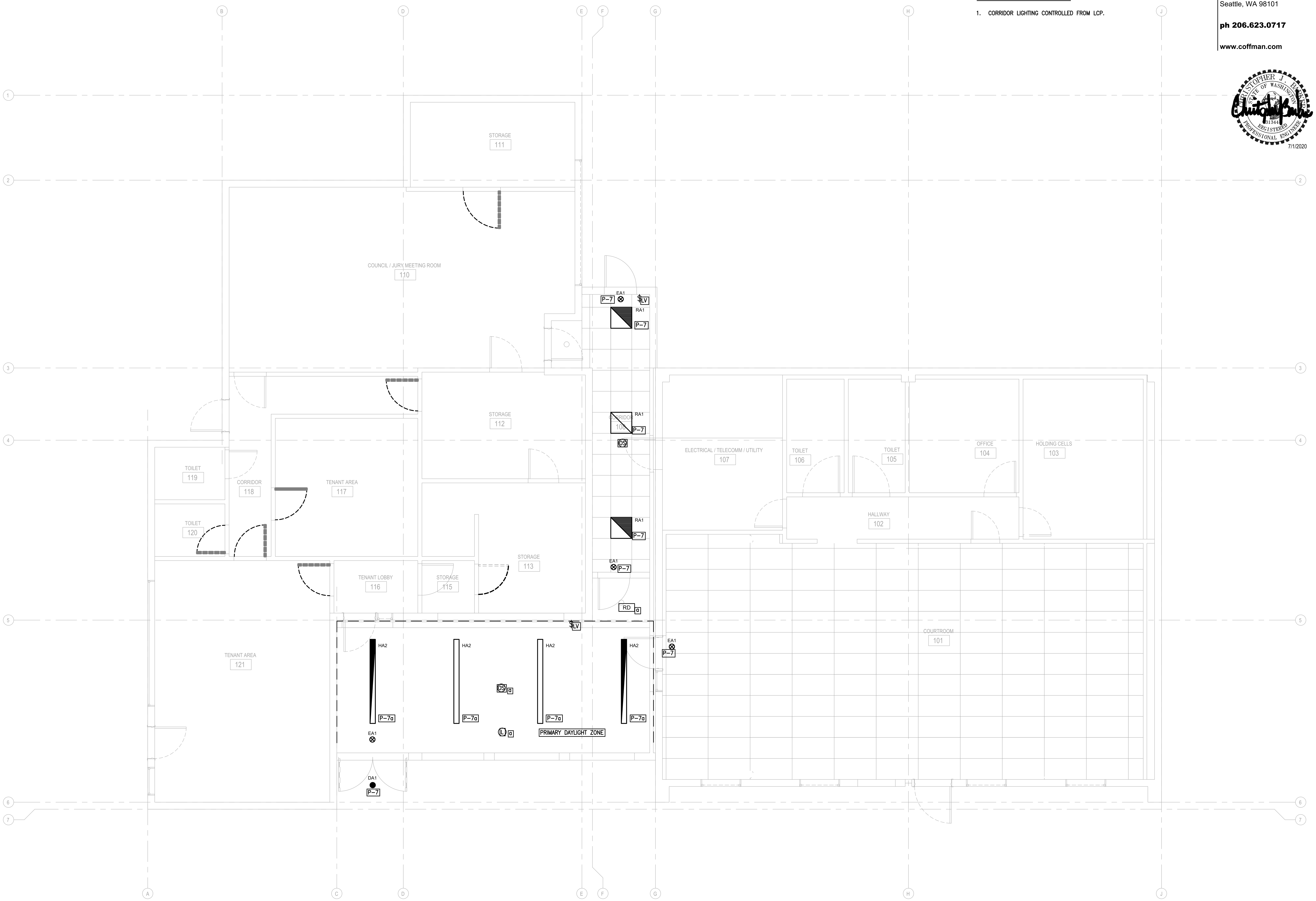

GROUND FLOOR LIGHTING PLAN

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

1/4"=1'-0" 0 1 2 3 4 6 8 12

City of Ferndale

Municipal Court Remodel

5694 2nd Avenue
Ferndale, WA 98248

Job No: 200919 Date: 07.03.2020
File No:
Drawn By: CEI
Checked By: CJB
Issued for: PERMIT SET

GROUND FLOOR
LIGHTING PLAN

E201

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REGISTERED
PROFESSIONAL ENGINEER
7/1/2020

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FLAG NOTES

1. PROVIDE 3/4"C-3#10 & 1#10G.

STORAGE 111 127 SF
COUNCIL / JURY MEETING ROOM 110 552 SF
STORAGE 112 157 SF
CORRIDOR 108 166 SF
TOILET 119 33 SF
CORRIDOR 118 119 SF
TOILET 120 33 SF
TENANT AREA 117 178 SF
MECHANICAL 114
STORAGE 113 126 SF
TENANT LOBBY 116 40 SF
STORAGE 115 25 SF
TENANT AREA 121 383 SF
SECURITY STAFF AREA 123
LOBBY 122 336 SF
ELECTRICAL / TELECOMM / UTILITY 107 168 SF
TOILET 106 59 SF
TOILET 105 58 SF
OFFICE 104 113 SF
HOLDING CELLS 103 174 SF
HALLWAY 102 89 SF
COURTROOM 101 1035 SF

(E) PANEL MDF
(E) PANEL A
(N) PANEL P
FCU-1
CU-1 (ON ROOF)
GFCI WP (ON ROOF) P-2
EF-1 (ON ROOF)
DLC P-12
P-4
P-8,10 CONNECTION (FOIC) X-RAY MACHINE
P-6 MAGNETOMETER CONNECTION (FOIC)
+0' - 0"
+0' - 7"

GROUND FLOOR POWER & SYSTEMS PLAN

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

1/4"=1'-0" 0 1 2 3 4 6 8 12

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Municipal Court Remodel
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GROUND FLOOR POWER & SYSTEMS PLAN

E301

Ferndale Municipal Court PANEL SCHEDULE NEW PANEL: P 200919

Location: Feed Through: Source:

Ckt	Load Description	Phase	Amp	Poles	Notes	Rec.	Ltg.	Kit.	Mtr.	Htg.	Clg.	Cont.	Non.	Total	Specifications	
1	CU–1 / FCU–1	A	30	2							2.06			2.06		
3	–	B	–	–							2.06			2.06	Rating (Amps):	100
5	EF–1 – ROOF	C	20	1					0.53					0.53	Voltage (L–L):	208
7	LTG – CORRIDOR	A	20	1			0.82							0.82	Phase:	3
9	SPARE C.B.	B	20	1											Wire:	4
11	SPARE C.B.	C	20	1											Bus Material:	Cu
13	SPARE C.B.	A	20	1											Int. Rating:	10,000A
15	SPARE C.B.	B	20	1												
17	SPARE C.B.	C	20	1											Main Lugs Only:	X
19	SPARE C.B.	A	20	1											Main Ckt Brkr:	–
21	SPARE C.B.	B	20	1												
23	SPARE C.B.	C	20	1											Surface Mtd:	X
25		A													Flush Mtd:	–
27		B														
29		C													Bonded Gnd:	–
31		A													Isolated Gnd:	–
33		B													200% Neutral:	–
35		C													Feed Thru:	–
37		A													Double Lug:	–
39		B													Top Feed:	–
41		C													Bottom Feed	–
2	RECEPT – ROOF	A	20	1		0.18								0.18		
4	RECEPT – RM 123	B	20	1		0.36								0.36		
6	MAGNETOMETER – RM 123	C	20	1									0.50	0.50		
8	XRAY MACHINE – RM 123	A	30	2									1.50	1.50	Feed Thru Load:	NONE
10	–	B	–	–									1.50	1.50	Phase A:	
12	DOOR LOCK CONTROLLER	C	20	1									0.10	0.10	Phase B:	
14	SPARE C.B.	A	20	1											Phase C:	
16	SPARE C.B.	B	20	1											Total Conn.:	
18	SPARE C.B.	C	20	1											Load From This Panel:	
20	SPARE C.B.	A	20	1											Phase A:	4.56
22	SPARE C.B.	B	20	1											Phase B:	3.92
24	SPARE C.B.	C	20	1											Phase C:	1.13
26		A													Total Conn.:	9.61
28		B													Total Connected Load:	
30		C													Phase A:	4.56
32		A													Phase B:	3.92
34		B													Phase C:	1.13
36		C													Total Conn.:	9.61
38		A													Total Feeder Demand Load:	
40		B													Total:	9.94 KVA
42		C													Avg. Amps/Phase:	28 A.

CATEGORY	TOTAL CONN. LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
Receptacles	0.54	50%>10KVA	0.54
Lighting	0.82	125%	1.03
Kitchen Equipment		NEC 220.56	
Motors (Largest)	0.53	125%	0.66
Motors		100%	
Heating		NEC 220.60	
Cooling	4.12	NEC 220.60	4.12
Continuous Load		125%	
Non–Continuous Load	3.60	100%	3.60
		100%	
		100%	
TOTAL	9.61		9.94

General Notes:

Keyed Notes:

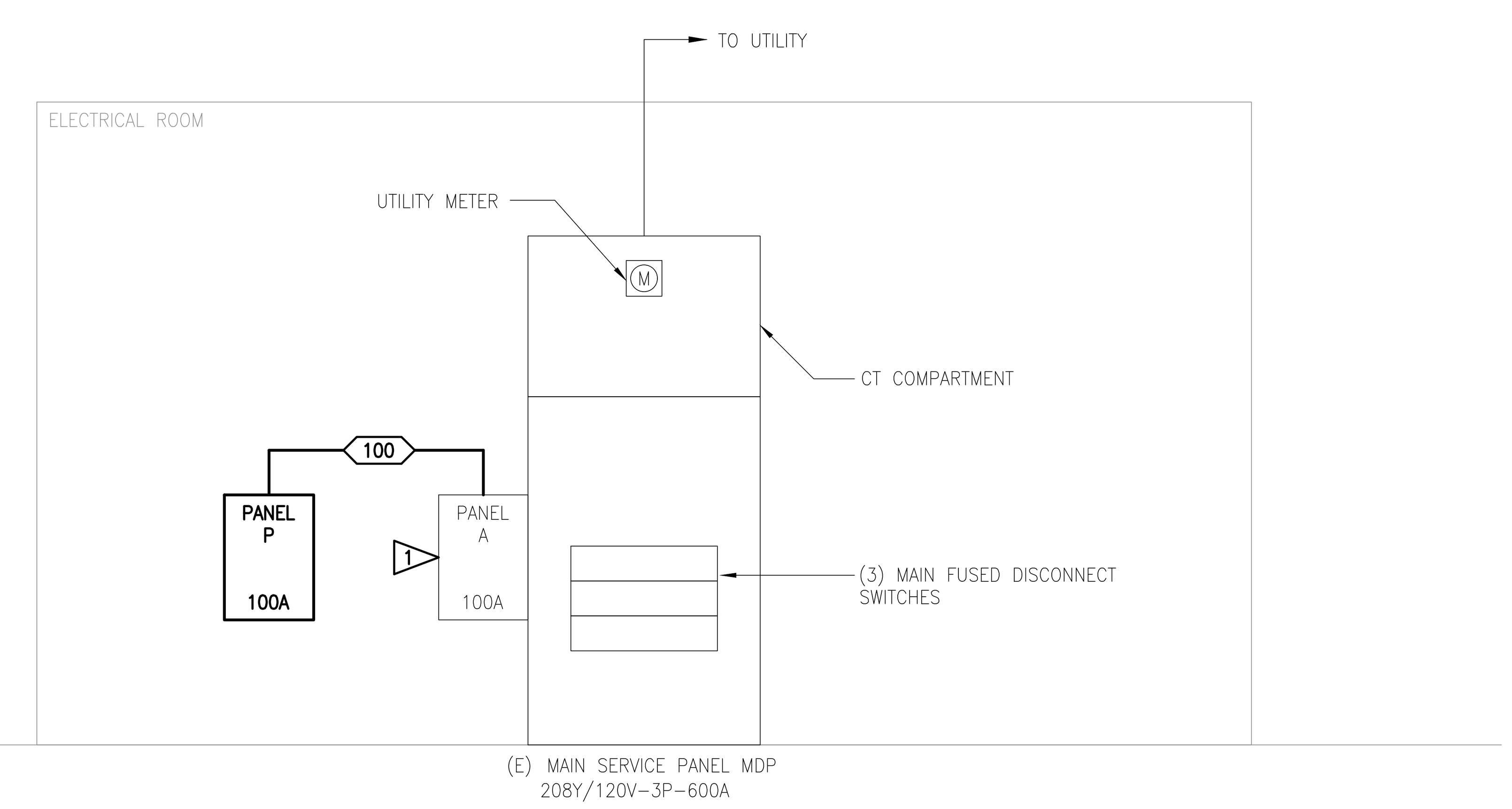
ALUMINUM FEEDER SCHEDULE

AMPACITY (AMPS)	SYMBOL ID.	FEEDER 3 PHASE, 4 WIRE	RACEWAY	SYMBOL ID.	FEEDER 3 PHASE, 3 WIRE	RACEWAY
70	70	4#2, 1#6 G	1.5"	70N	3#2, 1#6 G	1.5"
80	80	4#1, 1#6 G	1.5"	80N	3#1, 1#6 G	1.5"
100	100	4#1/0, 1#6 G	1.5"	100N	3#1/0, 1#6 G	1.5"
125	125	4#2/0, 1#4 G	2"	125N	3#2/0, 1#4 G	2"
150	150	4#3/0, 1#4 G	2"	150N	3#3/0, 1#4 G	2"
175	175	4#4/0, 1#4 G	2"	175N	3#4/0, 1#4 G	2"
200	200	4#250 kcmil, 1#4 G	2.5"	200N	3#250 kcmil, 1#4 G	2.5"
225	225	4#300 kcmil, 1#2 G	2.5"	225N	3#300 kcmil, 1#2 G	2.5"
250	250	4#350 kcmil, 1#2 G	3"	250N	3#350 kcmil, 1#2 G	3"
300	300	4#500 kcmil, 1#1 G	3"	300N	3#500 kcmil, 1#1 G	3"
400	400	2 SETS 4#250 kcmil, 1#1 G	(2) 2.5"	400N	2 SETS 3#250 kcmil, 1#1 G	(2) 2.5"
500	500	2 SETS 4#350 kcmil, 1#1/0 G	(2) 3"	500N	2 SETS 3#350 kcmil, 1#1/0 G	(2) 3"
600	600	2 SETS 4#500 kcmil, 1#2/0 G	(2) 3"	600N	2 SETS 3#500 kcmil, 1#2/0 G	(2) 3"
800	800	3 SETS 4#400 kcmil. 1#3/0 G	(3) 3"	800N	3 SETS 3#400 kcmil. 1#3/0 G	(3) 3"
1000	1000	3 SETS 4#600 kcmil, 1#4/0 G	(3) 3.5"	1000N	3 SETS 3#600 kcmil, 1#4/0 G	(3) 3.5"
1200	1200	4 SETS 4#500 kcmil, 1#250 kcmil G	(4) 3"	1200N	4 SETS 3#500 kcmil, 1#250 kcmil G	(4) 3"
1600	1600	5 SETS 4#600 kcmil, 1#350 kcmil G	(5) 3.5"	1600N	5 SETS 3#600 kcmil, 1#350 kcmil G	(5) 3.5"
2000	2000	6 SETS 4#600 kcmil, 1#400 kcmil G	(6) 3.5"	2000N	6 SETS 3#600 kcmil, 1#400 kcmil G	(6) 3.5"
2500	2500	7 SETS 4#700 kcmil, 1#600 kcmil G	(7) 3.5"	2500N	7 SETS 3#700 kcmil, 1#600 kcmil G	(7) 3.5"

NOTES:
1. ALL FEEDERS ARE ALUMINUM WITH THHN/THWN INSULATION, PVC SCHEDULE 40 CONDUIT AND CHAPTER 9
2. FOR FEEDERS WITH AN "SL" SUFFIX, DELETE THE GROUND CONDUCTOR.

FLAG NOTES

1 PROVIDE FEED THRU LUGS IN EXISTING PANEL A TO SERVE NEW PANEL P.



ONE-LINE DIAGRAM

SCALE: NONE

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ONE-LINE DIAGRAM AND PANEL SCHEDULE

E401