Development Services

From Concept to Construction

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More Contact Info (http://www.portlandoregon.gov//bds/article/519984)

APPEAL SUMMARY

Status: Decision Rendered - Held over from ID 20395 (5/15/19) for additional information

Appeal ID: 20433	**Project Address:** 1410 NW Johnson St
Hearing Date: 5/22/19	**Appellant Name:** Barry R Smith PC Architect
Case No.: B-015	**Appellant Phone:** 503-295-6261
Appeal Type: Building	**Plans Examiner/Inspector:** Jody Orrison, Amit Kumar, Corey Stanley.
Project Type: commercial	**Stories:** 4 **Occupancy:** F-2 **Construction Type:** III-B
Building/Business Name:	**Fire Sprinklers:** Yes - NFPA 13 (Improvements Req'd)
Appeal Involves: Alteration of an existing structure,Reconsideration of appeal	**LUR or Permit Application No.:**
Plan Submitted Option: pdf [File 1] [File 2] [File 3] [File 4] [File 5]	**Proposed use:** Factory Industry - Low Hazard

APPEAL INFORMATION SHEET

Appeal item 1

Code Section	Section 1022 Interior Exit Stairways and Ramps, 1022.3.1 Extension
Requires	Where interior exit stairways and ramps are extended to an exit discharge or a public way by an exit passageway, the interior exit stairway and ramp shall be separated from the exit passageway by a fire barrier constructed in accordance with Section 707 or a horizontal assembly constructed in accordance with Section 711, or both. The fire-resistance rating shall be at least equal to that required for the interior exit stairway and ramp. A fire door assembly complying with Section 716.5 shall be installed in the fire barrier to provide a means of egress from the interior exit stairway and ramp to the exit passageway. Openings in the fire barrier other than the fire door assembly are prohibited. Penetrations of the fire barrier are prohibited.
Proposed Design	This factory building was granted occupancy December 30, 1908 and little or no improvements have been made since the original construction. The current owner [Seller] has occupied the building since the 1950's using it as an office building and print shop. Circulation and egress are constricted in the current configuration. Occupants have to travel through adjoin occupied spaces or through an enclosed stair to access tenant spaces. Door swing in the wrong direction and are redundant. The new Owner [Purchaser] wishes to simplify the enclosed stair to act both as vertical circulation and means of egress as it now functions. The improvements are to secure the required two-hour fire resistive protection around the stairwell, correct the door swing and maneuvering distance condition and separate tenant access spaces by extending the stairwell footprint. (Fire Protection Engineer letters included for protection of existing heavy timber). Per Section 1022.2, the fire-resistive rating of the Interior Exit Stairway is required to be 2 hour as the stair is connecting four stories.

Building is equipped with an automatic sprinkler system and needs upgrading to current NFPA 13 standards.
There are no combustible concealed attic spaces.
Where non-rated interior glass relite and doors are used, a 2HR rated fire curtain is provided (Tyco Model WS – 2HR Fire Barrier).
Stairwell protection will be extended to the basement.
RESPONSE: A Building Code appeal is required for substituting 2HR fire curtains in lieu of two-hour fire resistive construction.

Reason for alternative The alternate gives the Owner flexibility to visually identify tenant access from egress components.

APPEAL DECISION

Extension of 2 hour fire rated stair enclosures: Granted provided Tyco Type WS sprinklers are installed per manufacturers specifications on the non-rated glazing, Non-glazed partitions are constructed as 2 hour fire barriers, doors are 2 hour fire rated assemblies and Type 13 sprinklers are installed throughout building.

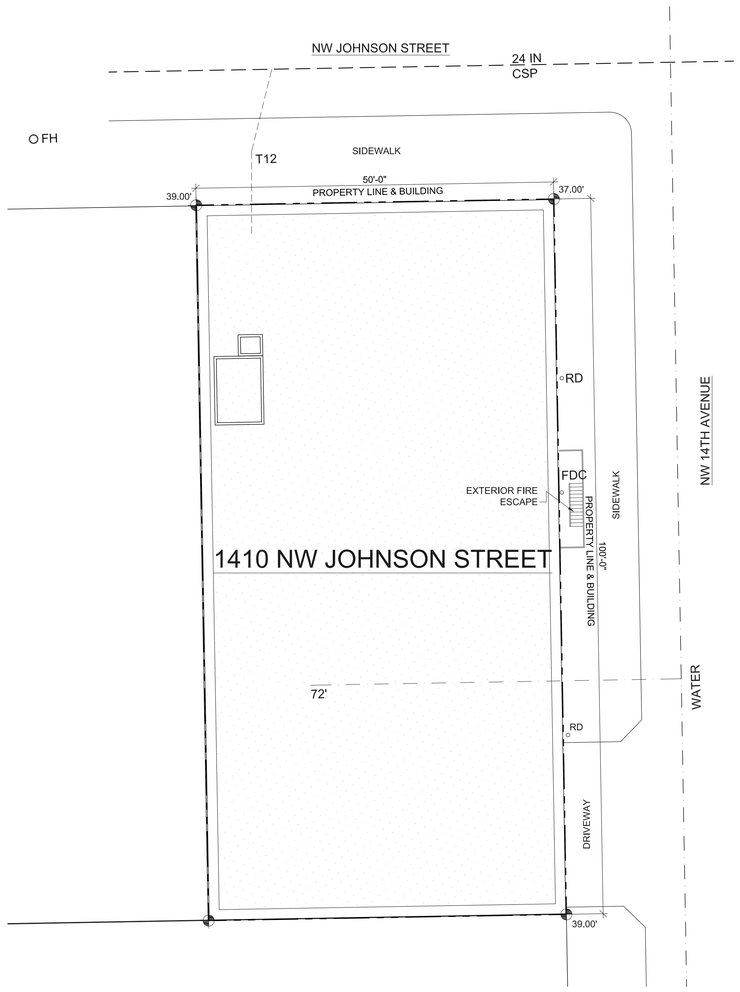
Note: Char calculations will be reviewed as part of building permit review process.

Appellant may contact John Butler (503 823-7339) with questions.

The Administrative Appeal Board finds with the conditions noted, that the information submitted by the appellant demonstrates that the approved modifications or alternate methods are consistent with the intent of the code; do not lessen health, safety, accessibility, life, fire safety or structural requirements; and that special conditions unique to this project make strict application of those code sections impractical.

Pursuant to City Code Chapter 24.10, you may appeal this decision to the Building Code Board of Appeal within 180 calendar days of the date this decision is published. For information on the appeals process and costs, including forms, appeal fee, payment methods and fee waivers, go to www.portlandoregon.gov/bds/appealsinfo, call (503) 823-7300 or come in to the Development Services Center.

1410 NW JOHNSON STREET



76 / A0.0 SITE PLAN
SCALE: 1:10

GENERAL NOTES:

1. CONSTRUCTION SHALL COMPLY WITH ALL CODES AS ADMINISTERED BY THE AUTHORITIES HAVING JURISDICTION. ALL WORK SHALL CONFORM TO ORDINANCES OR REGULATIONS RELATING TO ENVIRONMENTAL POLLUTION AND PRESERVATION OF NATURAL RESOURCES.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL BURIED SERVICES IN UNDAMAGED CONDITION DURING CONSTRUCTION. CONTRACTOR SHALL VERIFY UTILITY LOCATIONS AND CONNECTIONS.

3. CONTRACTOR SHALL INSURE ALL SCAFFOLDING, TEMPORARY FLOORS, ETC., FURNISHED BY HIMSELF OR SUBCONTRACTORS FOR INSTALLATION OF WORK TO BE BUILT AND MAINTAINED TO SAFELY SUPPORT REQUIRED LOADS. COMPLY WITH ALL APPLICABLE LOCAL SAFETY CODES AND SPECIFICALLY THE OCCUPATIONAL SAFETY AND HEALTH ACT FOR THE CONSTRUCTION INDUSTRY.

4. PERFORM ALL WORK IN A FIRE-SAFE MANNER AND SUPPLY AND MAINTAIN ADEQUATE FIRST-AID AND FIRE FIGHTING EQUIPMENT CAPABLE OF EXTINGUISHING INCIPIENT FIRES. COMPLY WITH LOCAL AND STATE FIRE PREVENTION REGULATIONS.

5. PROVIDE ADEQUATE SAFETY AND PROTECTIVE DEVICES FOR WORKMEN DURING EXCAVATION AND CLEARING. REVIEW LOCATION OF EXISTING SERVICES AND UTILITY LINES. PROVIDE PROTECTIONS NECESSARY TO PREVENT DAMAGE TO EXISTING IMPROVEMENTS AND SURVEY MARKERS. PROVIDE EROSION CONTROL PER BUILDING DEPARTMENT REQUIREMENTS.

6. PROVIDE SHORING, SHEETING AND BRACING WHEREVER NECESSARY TO PREVENT CAVING DURING EXCAVATION OR TO PROTECT ADJACENT IMPROVEMENTS, PROPERTY, WORKMEN AND THE PUBLIC.

7. SOILS ENGINEER SHALL INSPECT AND APPROVE CUT-OUT FOR FOUNDATION AND FOUNDATION PLAN.

8. CONCRETE TESTING SHALL BE REQUIRED SEE STRUCTURAL GENERAL NOTES FOR TESTING REQUIREMENTS.

9. FURNISH AND PLACE HOLDOWNS AND DEFORMED STEEL AS INDICATED BY THE STRUCTURAL ENGINEER. STRUCTURAL ENGINEER SHALL INSPECT ALL HOLDOWNS AND STEEL FOR CONFORMANCE. CONTRACTOR SHALL PROVIDE UL RATINGS FOR RATED STEEL PROTECTION, SEE DRAWINGS FOR RATED REQUIREMENTS.

10. RAPIDLY HANDLE CONCRETE FROM MIXER TO FORMS AND DEPOSIT AS NEAR AS POSSIBLE TO ITS FINAL POSITION TO AVOID SEGREGATION DUE TO HANDLING. SEE STRUCTURAL FOR ADDITIONAL REQUIREMENTS.

11. EXAMINE DRAWINGS FOR REQUIRED ROUGH CARPENTRY MATERIALS INCLUDING PLATES, STUDS, FIRE-STOPS, SOLID BLOCKING, BRIDGING, POSTS, BLOCKS, SUB-FLOORING AND SHEATHING. LUMBER SHALL BE DOUGLAS-FIR (STANDARD), TREATED LUMBER WITH A NET RETENTION OF 0.25 PCF. GYPSUM BOARD SHALL BE AS NOTED ON DRAWINGS. USE EXTERIOR GYPSUM BOARD FOR SOFFITS AND PORCH CEILINGS AND WATERPROOF IN BATHROOMS. PROVIDE ALL GLUE LAMINATED MEMBERS AS INDICATED BY STRUCTURAL. BUILDING PAPER SHALL BE NO. 15 LB. ASPHALT SATURATED ROOFING FELT. ALL HANGERS AND HOLDOWNS SHALL BE HOT DIPPED GALVANIZED. USE KRAFT FACE FIBERGLASS INSULATION; SEE ENERGY CODE COMPLIANCE. I-JOISTS BY TRUSS JOIST CORPORATION SHALL HAVE HOLES KNOCKED OUT AT FACTORY. INSTALL WITH HOLES UP. SIZE AND DETAILS OF JOISTS SHALL FIT DIMENSIONS AND LOADS AS INDICATED ON DRAWINGS.

12. ALL MANUFACTURED MATERIALS, COMPONENTS, FASTENERS, ASSEMBLIES, ECT., SHALL BE HANDLED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND PROVISIONS OF APPLICABLE ICBO RESEARCH RECOMMENDATIONS.

13. PROVIDE SHOP DRAWINGS FOR ALL PRE-ENGINEERED PRODUCTS (I-JOISTS, ROOF TRUSSES, ETC.) FOR STRUCTURAL REVIEW.

14. IMMEDIATELY NOTIFY ARCHITECT IN WRITING OF ANY DISREPINCIES BETWEEN CONSTRUCTION DOCUMENTS AND ACTUAL CONDITIONS. CORRECTIONS SHALL BE THE RESPONSIBILITY OF THE OWNER/CONTRACTOR.

15. MECHANICAL AND ELECTRICAL SYSTEMS SHALL BE BIDDER DESIGNED AND UNDER SEPARATE PERMIT. CONTRACTOR SHALL PROVIDE ALL REQUISITE SYSTEM DESIGN DOCUMENTS, LOAD CALCULATIONS AND SHOP DRAWINGS REQUIRED FOR REVIEW.

PROJECT DESCRIPTION

THE PROJECT IS TO HARDEN THE EXISTING EXIT STAIR SYSTEM WHILE EXPANDING THE FIRST FLOOR LOBBY AREA FOR TENANT ACCESS. HARDENING TO SOME EXTENT OCCURS ON ALL FLOORS. ADD ADA BATHROOMS TO UPPER THIRD FLOOR. BRING EXISTING AUTOMATIC SPRINKLER SYSTEM UP TO NFPA13 STANDARDS. PAINT AND REPAIR EXISTING EXTERIOR FIRE ESCAPE AND ASSOCIATED ELEMENTS.

PROPERTY:

SITE ADDRESS:	1410 NW JOHNSON STREET PORTLAND, OREGON 97209
PROPERTY ID:	R140740
STATE ID:	1N1E33AD 2000
NEW STATE ID:	1N1E33AD -02000
ALT ACOUNT #:	R180211050
MAP #:	2928 OLD

OWNER/DEVELOPER:

GANN BUILDING LLC
1410 NW JOHNSON STREET — PH: 503.244.3838
PORTLAND OREGON 97209 — FAX: N/A
contact: MARTIN KEHOE — EM: mkehoe03@gmail.com

ARCHITECT:

BARRY R. SMITH, PC, ARCHITECT
715 SW MORRISON STREET, SUITE 909 — PH: 503.295.6261
PORTLAND, OREGON 97205-3105 — FAX: N/A
contact: BARRY SMITH — EM: barry@barryrsmith.com

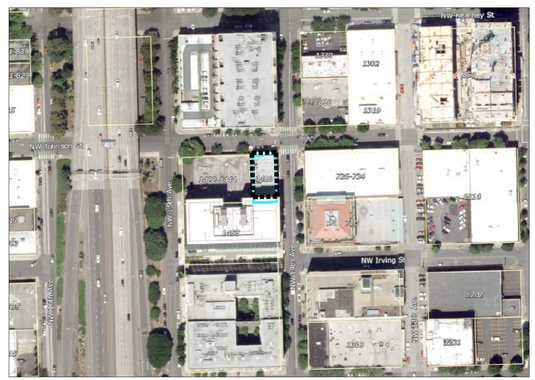
SEPARATE PERMITS REQUIRED

1. MECHANICAL PLANS
2. ELECTRICAL PLANS
3. PLUMBING PLANS

CODE APPEALS

PENDING - ID#18949

DRAWING INDEX:



26 / A0.0 VICINITY PHOTO
SCALE: N.T.S.

NORTH

REGISTERED ARCHITECT
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STATE OF OREGON

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1410 NW JOHNSON STREET
PORTLAND, OR
for GANN BUILDING LLC
TITLE SHEET & SITE PLAN

PERMIT SET

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A0.0

05.09.2019

BUILDING CODE ANALYSIS - SUMMARY

FLOOR	TYPE	OCCUPANCY	EXISTING AREA - SF	ALLOWABLE AREA - SF	SPRINKLER	ALARM	DETECTION
BASEMENT	IIIB	F-2	5,000	18,000	YES	NO	NO
1ST FLOOR	IIIB	F-2	5,000	18,000	YES	NO	NO
2ND FLOOR	IIIB	F-2	5,000	18,000	YES	NO	NO
3RD FLOOR	IIIB	F-2	5,000	18,000	YES	NO	NO
TOTAL FLOORS			20,000 SF	72,000 SF			

BUILDING CODE

THIS PROJECT HAS BEEN REVIEWED UNDER THE 2014 OREGON STRUCTURAL SPECIALTY CODE (BASED ON THE 2012 IBC), THE 2012 IBC/ICC A117.1 2009 FOR ACCESSIBILITY AND THE 2014 OREGON FIRE CODE. THIS ANALYSIS IDENTIFIES SOME SPECIFIC BUILDING CODE REQUIREMENTS BUT IS NOT INTENDED TO LIST ALL BUILDING CODE REQUIREMENTS. SEE ALL OTHER PLAN SHEETS FOR CONTRACT DOCUMENT INFORMATION.

CHAPTER 1 - SCOPE AND ADMINISTRATION:

102 - APPLICABILITY
102.6 - EXISTING STRUCTURES:
THE LEGAL OCCUPANCY OF ANY STRUCTURE EXISTING ON THE DATE OF ADOPTION OF THIS CODE SHALL BE PERMITTED TO CONTINUE WITHOUT CHANGE EXCEPT AS IS SPECIFICALLY COVERED IN THIS CODE OR THE FIRE CODE, OR AS IS DEEMED NECESSARY BY THE BUILDING OFFICIAL FOR THE GENERAL SAFETY AND WELFARE OF THE OCCUPANTS AND THE PUBLIC.

CHAPTER 3 - USE AND OCCUPANCY CLASSIFICATION:

USE AND CLASSIFICATION ARE LISTED IN THE ABOVE MATRIX FOR:
306 - FACTORY GROUP F
306.3 - LOW-HAZARD FACTORY INDUSTRIAL, GROUP F2.

CHAPTER 5 - GENERAL BUILDING HEIGHTS AND AREAS:

THE TABULAR VALUES IN TABLE 503 ARE:

OCC. GROUP	TYPE	ALLOWABLE HEIGHT	ALLOWABLE STORIES	ALLOWABLE AREA
F-2	IIIB	55 FT	3	18,000 SF

CHAPTER 6 - TYPES OF CONSTRUCTION:

TABLE 601 - FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS):
TYPE IIIB:

PRIMARY STRUCTURAL FRAME	= 0-HOUR
BEARING WALLS - EXTERIOR	= 2-HOUR
BEARING WALLS - INTERIOR	= 0-HOUR
NON-BEARING WALLS - EXTERIOR	= TABLE 602
NON-BEARING WALLS - INTERIOR	= 0-HOUR
FLOOR CONSTRUCTION & SECONDARY MEMBERS	= 0-HOUR
ROOF CONSTRUCTION & SECONDARY MEMBERS	= 0-HOUR

TABLE 602 - FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE:

X < 5FT -	TYPE IIIB - F-2	= 1-HOUR
5FT < X < 10FT -	TYPE IIIB - F-2	= 1-HOUR
10FT < X <30FT -	TYPE IIIB - F-2	= 1-HOUR
X > 30FT -	TYPE IIIB - F-2	= 0-HOUR

GENERAL RATINGS ARE INDICATED ON THE BUILDING CODE ANALYSIS FLOOR PLANS.

CHAPTER 7 - FIRE AND SMOKE PROTECTION FEATURES:

705 - EXTERIOR WALLS
705.5 - FIRE-RESISTANCE RATINGS:
EXTERIOR WALLS SHALL BE FIRE-RESISTANCE RATED IN ACCORDANCE WITH TABLES 601 AND 602 AND THIS SECTION.

706 - FIRE WALLS
TABLE 706.4 FIRE WALL FIRE-RESISTANCE RATINGS:
OCCUPANCY GROUP F-2 = 2-HOUR

707 - FIRE BARRIERS
707.3.2 - INTERIOR EXIT STAIRWAY & RAMP CONSTRUCTION:
FIRE BARRIERS FOR INTERIOR EXIT STAIRWAYS ARE 2-HOUR FIRE-RESISTANCE RATED.

707.3.3 - ENCLOSURES FOR EXIT ACCESS STAIRWAYS:
FIRE BARRIERS FOR INTERIOR EXIT STAIRWAYS ARE 2-HOUR FIRE-RESISTANCE RATED.

707.3.4 - EXIT PASSAGEWAY:
FIRE BARRIERS FOR EXIT PASSAGEWAYS ARE 2-HOUR FIRE-RESISTANCE RATED.

708 - FIRE PARTITIONS
708.3 - FIRE-RESISTANCE RATING:
FIRE PARTITIONS SHALL HAVE A FIRE-RESISTANCE RATING OF NOT LESS THAN 1-HOUR.

711 - HORIZONTAL ASSEMBLIES
711.1 - GENERAL:
NONFIRE-RESISTANCE-RATED FLOOR AND ROOF ASSEMBLIES SHALL COMPLY WITH SECTION 714.4.2.

713 - SHAFT ENCLOSURES
713.2 - CONSTRUCTION:
SHAFT ENCLOSURES SHALL BE CONSTRUCTED AS FIRE BARRIERS.

713.4 - FIRE-RESISTANCE RATING:
SHAFT ENCLOSURES ARE 2-HOUR FIRE-RESISTANCE RATED.

714 - PENETRATIONS
714.4.2 - NONFIRE-RESISTANCE-RATED ASSEMBLIES:
PENETRATIONS OF NONFIRE-RESISTANCE-RATED FLOOR OR FLOOR/CEILING ASSEMBLIES OR THE CEILING MEMBRANE OF A NONFIRE-RESISTANCE-RATED ROOF/CEILING ASSEMBLY SHALL MEET THE REQUIREMENTS OF SECTION 713 OR SECTIONS 714.4.2.1 OR 714.4.2.2.

714.4.2.1 - NONCOMBUSTIBLE PENETRATING ITEMS:
NONCOMBUSTIBLE PENETRATING ITEMS THAT CONNECT NOT MORE THAN FIVE STORIES ARE PERMITTED, PROVIDED THAT THE ANNULAR SPACE IS FILLED TO RESIST THE FREE PASSAGE OF FLAME AND THE PRODUCTS OF COMBUSTION WITH AN APPROVED NONCOMBUSTIBLE MATERIAL OR WITH A FILL, VOID OR CAVITY MATERIAL THAT IS TESTED AND CLASSIFIED FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS.

714.4.2.2 - PENETRATION ITEMS:
PENETRATING ITEMS THAT CONNECT NOT MORE THAN TWO STORIES ARE PERMITTED, PROVIDED THAT THE ANNULAR SPACE IS FILLED WITH AN APPROVED MATERIAL TO RESIST THE FREE PASSAGE OF FLAME AND THE PRODUCTS OF COMBUSTION.

716 - OPENING PROTECTIVES
TABLE 716.5 - OPENING FIRE PROTECTION ASSEMBLIES, RATINGS AND MARKINGS:
SEE PLAN SET FOR INDIVIDUAL OPENING FIRE PROTECTION ASSEMBLIES.

716.5.9 - DOOR CLOSING:
FIRE DOORS ARE PROPOSED TO BE SELF- OR AUTOMATIC-CLOSING.

CHAPTER 8 - INTERIOR FINISHES

TABLE 803.9 - PROPOSED INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY:
SPRINKLERED-

OCC. GROUP	EXIT	CORR.	ROOMS
F	C	C	C

CHAPTER 9 - FIRE PROTECTION SYSTEMS

903 - AUTOMATIC SPRINKLER SYSTEMS
[F] 903.1 - GENERAL:
AN NFPA 13 AUTOMATIC SPRINKLER SYSTEM IS INSTALLED IN THE BUILDING.

906 - PORTABLE FIRE EXTINGUISHERS
[F] 906.1 - WHERE REQUIRED:
PORTABLE FIRE EXTINGUISHERS SHALL BE PROVIDED IN OCCUPANCIES AND LOCATIONS AS REQUIRED BY THE FIRE CODE.

CHAPTER 10 - MEANS OF EGRESS

SECTION 1004 - OCCUPANT LOAD
TABLE 1004.1.2 - MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT:

FUNCTION OF SPACE	FLOOR FACTOR
INDUSTRIAL AREAS	100 GROSS

SECTION 1006 - MEANS OF EGRESS ILLUMINATION
1006.1 - ILLUMINATION REQUIRED:
THE MEANS OF EGRESS, INCLUDING THE EXIT DISCHARGE, SHALL BE ILLUMINATED AT ALL TIMES THE BUILDING SPACE SERVED BY THE MEANS OF EGRESS IS OCCUPIED..

SECTION 1009 - STAIRWAYS
1009.2 - INTERIOR EXIT STAIRWAYS:
STAIRWAY LEADS DIRECTLY TO THE EXTERIOR OF THE BUILDING.

1009.3 - EXIT ACCESS STAIRWAYS:
THE EXIT STAIRWAY IS ENCLOSED.

1009.3.1.2 - FIRE RESISTANCE RATING:
EXIT ACCESS STAIRWAY ENCLOSURE HAS A FIRE-RESISTANCE RATING OF 2-HOURS.

SECTION 1011 - EXIT SIGNS
1011.1 - WHERE REQUIRED:
EXITS AND EXIT ACCESS DOORS SHALL BE MARKED BY AN APPROVED EXIT SIGN READILY VISIBLE FROM ANY DIRECTION OF EGRESS TRAVEL. THE PATH OF EGRESS TRAVEL TO EXITS AND WITHIN EXITS SHALL BE MARKED BY READILY VISIBLE EXIT SIGNS TO CLEARLY INDICATED THE DIRECTION OF EGRESS TRAVEL IN CASES WHERE THE EXIT OR THE PATH OF EGRESS TRAVEL IS NOT IMMEDIATELY VISIBLE TO THE OCCUPANTS. INTERVENING MEANS OF EGRESS DOORS WITHIN EXITS SHALL BE MARKED BY EXIT SIGNS. EXIT SIGN PLACEMENT SHALL BE SUCH THAT NO POINT IN AN EXIT ACCESS CORRIDOR OR EXIT PASSAGEWAY IS MORE THAN 100 FT OR THE LISTED VIEWING DISTANCE FOR THE SIGN, WHICHEVER IS LESS, FROM THE NEAREST VISIBLE EXIT SIGN.

SECTION 1014 - EXIT ACCESS
1014.2. - EGRESS THROUGH INTERVENING SPACES:
1. EGRESS FROM A ROOM OR SPACE SHALL NOT PASS THROUGH ADJOINING OR INTERVENING ROOMS OR AREAS, EXCEPT WHERE SUCH ADJOINING ROOMS OR AREAS AND THE AREA SERVED ARE ACCESSORY TO ONE OR THE OTHER, ARE NOT A GROUP H OCCUPANCY AND PROVIDE A DISCERNIBLE PATH OF EGRESS TRAVEL TO AN EXIT.
EXCEPTION: MEANS OF EGRESS ARE NOT PROHIBITED THROUGH INTERVENING ROOMS OR SPACES IN A GROUP H, S, OR F OCCUPANCY WHEN THE ADJOINING ROOMS OR SPACES ARE THE SAME OR A LESSER HAZARD OCCUPANCY GROUP.

TABLE 1014.3 - COMMON PATH OF EGRESS TRAVEL:

OCCUPANCY	SPRINKLERED
F	100 FT

SECTION 1015 - EXIT AND EXIT ACCESS DOORWAYS
1015.2.1 - TWO EXITS OR EXIT ACCESS DOORWAYS:
EXCEPTION 2: WHERE A BUILDING IS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.3.1.1 OR 903.3.1.2, THE SEPARATION DISTANCE OF THE EXIT DOORS OR EXIT ACCESS DOORWAYS SHALL NOT BE LESS THAN ONE-THIRD OF THE LENGTH OF THE MAXIMUM OVERALL DIAGONAL DIMENSION OF THE AREA SERVED.

SECTION 1016 - EXIT ACCESS TRAVEL DISTANCE
TABLE 1016.2 - EXIT ACCESS TRAVEL DISTANCE:

OCCUPANCY	WITH SPRINKLER SYSTEM
F-2	300 FT

SECTION 1018 - CORRIDORS
TABLE 1018.1 - CORRIDOR FIRE-RESISTANCE RATING:
THE FIRE-RESISTANCE RATING OF THE CORRIDOR IS 0-HOUR, FOR F OCCUPANCY AND AN OCCUPANT LOAD GREATER THAN 30.

SECTION 1020 - EXITS
1020.2.2 - ARRANGEMENT:
THE EXTERIOR EXIT DOOR LEADS DIRECTLY TO THE PUBLIC WAY.

SECTION 1022 - INTERIOR EXIT STAIRWAYS AND RAMPS
1022.2 - CONSTRUCTION:
THE INTERIOR EXIT STAIRWAY WALLS ARE CONSTRUCTED AS 2-HOUR FIRE BARRIERS.

SECTION 1027 - EXIT DISCHARGE
EXIT IS DISCHARGED DIRECTLY TO THE EXTERIOR OF THE BUILDING. THE EXIT DISCHARGE PROVIDSE DIRECT ACCESS TO GRADE. THE EXIT DISCHARGE DOES NOT REENTER THE BUILDING.

CHAPTER 11 - ACCESSIBILITY

SECTION 1103 - SCOPING REQUIREMENTS:
1103.2.3 - EXISTING BUILDINGS:
EXISTING BUILDINGS SHALL COMPLY WITH SECTION 3411.

CHAPTER 34 - EXISTING BUILDINGS AND STRUCTURES

SECTION 3401 - GENERAL:
3401.1 - SCOPE:
THE PROVISIONS OF THIS CHAPTER SHALL CONTROL THE ALTERATION, REPAIR, ADDITION, AND CHANGE OF OCCUPANCY OF EXISTING BUILDINGS AND STRUCTURES.

SECTION 3404 - ALTERATIONS:
3404.1 - GENERAL:
EXCEPT AS PROVIDED BY SECTION 3401.4 OR THIS SECTION, ALTERATIONS TO ANY BUILDING SHALL COMPLY WITH THE REQUIREMENTS OF THE CODE FOR NEW CONSTRUCTION. ALTERATIONS SHALL BE SUCH THAT THE EXISTING BUILDING OR STRUCTURE IS NO LESS COMPLYING WITH THE PROVISIONS OF THIS CODE THAN THE EXISTING BUILDING OR STRUCTURE WAS PRIOR TO THE ALTERATION.
EXCEPTIONS:
1. AN EXISTING STAIRWAY SHALL NOT BE REQUIRED TO COMPLY WITH THE REQUIREMENTS OF SECTION 1009 WHERE THE EXISTING SPACE AND CONSTRUCTION DOES NOT ALLOW A REDUCTION IN PITCH OR SLOPE.
2. HANDRAILS OTHERWISE NOT REQUIRED TO COMPLY WITH SECTION 1009.15 SHALL NOT BE REQUIRED TO COMPLY WITH THE REQUIREMENTS OF SECTION 1012.6 REGARDING FULL EXTENSION OF THE HANDRAILS WHERE SUCH EXTENSIONS WOULD BE HAZARDOUS DUE TO PLAN CONFIGURATION.

3404.3 - EXISTING STRUCTURAL ELEMENTS CARRYING GRAVITY LOAD:
ANY EXISTING GRAVITY LOAD-CARRYING STRUCTURAL ELEMENT FOR WHICH AN ALTERATION CAUSES AN INCREASE IN DESIGN GRAVITY LOAD OF MORE THAN 5 PERCENT SHALL BE STRENGTHENED, SUPPLEMENTED, REPLACED OR OTHERWISE ALTERED AS NEEDED TO CARRY THE INCREASED GRAVITY LOAD REQUIRED BY THIS CODE FOR NEW STRUCTURES. ANY EXISTING GRAVITY LOAD-CARRYING STRUCTURAL ELEMENT WHOSE GRAVITY LOAD-CARRYING CAPACITY IS DECREASED AS PART OF THE ALTERATION SHALL BE SHOWN TO HAVE THE CAPACITY TO RESIST THE APPLICABLE DESIGN GRAVITY LOADS REQUIRED BY THIS CODE FOR NEW STRUCTURES.

SECTION 3406 - FIRE ESCAPES
3406.1 WHERE PERMITTED:
FIRE ESCAPES SHALL BE PERMITTED ONLY AS PROVIDED FOR IN SECTIONS 3406.1.1 THROUGH 3406.1.4.

3406.1.2 EXISTING FIRE ESCAPES:
EXISTING FIRE ESCAPES SHALL BE CONTINUED TO BE ACCEPTED AS A COMPONENT IN THE MEANS OF EGRESS IN EXISTING BUILDINGS.

3406.1.4 LIMITATIONS:
FIRE ESCAPES SHALL COMPLY WITH THIS SECTION AND SHALL NOT CONSTITUTE MORE THAN 50 PERCENT OF THE REQUIRED NUMBER OF EXITS NOR MORE THAN 50 PERCENT OF THE REQUIRED EXIT CAPACITY.

SECTION 3411 - ACCESSIBILITY FOR EXISTING STRUCTURES
3411.1 SCOPE:
THE PROVISIONS OF SECTION 3411.1 THROUGH 3411.9 APPLY TO MAINTENANCE, CHANGE OF OCCUPANCY, ADDITIONS AND ALTERATIONS TO EXISTING BUILDINGS, INCLUDING THOSE IDENTIFIED AS HISTORIC BUILDINGS.

3411.6 ALTERATIONS:
A FACILITY THAT IS ALTERED SHALL COMPLY WITH THE APPLICABLE PROVISIONS IN CHAPTER 11 OF THIS CODE, UNLESS TECHNICALLY INFEASIBLE. WHERE COMPLIANCE WITH THIS SECTION IS TECHNICALLY INFEASIBLE, THE ALTERATION SHALL PROVIDE ACCESS TO THE MAXIMUM EXTENT FEASIBLE.
EXCEPTIONS:
1. THE ALTERED ELEMENT OR SPACE IS NOT REQUIRED TO BE ON AN ACCESSIBLE ROUTE, UNLESS REQUIRED BY SECTION 3411.7.
2. ACCESSIBLE MEANS OF EGRESS REQUIRED BY CHAPTER 10 ARE NOT REQUIRED TO BE PROVIDED IN EXISTING FACILITIES.

SECTION 3412 - COMPLIANCE ALTERNATIVES
3412.1 COMPLIANCE:
THE PROVISIONS OF THIS SECTION ARE INTENDED TO MAINTAIN OR INCREASE THE CURRENT DEGREE OF PUBLIC SAFETY, HEALTH AND GENERAL WELFARE IN EXISTING BUILDINGS WHILE PERMITTING REPAIR, ALTERATION, ADDITION AND CHANGE OF OCCUPANCY WITHOUT REQUIRING FULL COMPLIANCE WITH CHAPTERS 2 THROUGH 33, OR SECTION 3401.3, AND 3403 THROUGH 3409M EXCEPT WHERE COMPLIANCE WITH OTHER PROVISIONS OF THIS CODE IS SPECIFICALLY REQUIRED IN THIS SECTION.

3412.2.4 ALTERATIONS OR REPAIRS
AN EXISTING BUILDING OR PORTION THEREOF, WHICH DOES NOT COMPLY WITH THE REQUIREMENTS OF THIS CODE FOR NEW CONSTRUCTION, SHALL NOT BE ALTERED OR REPAIRED IN SUCH A MANNER THAT RESULTS IN THE BUILDING BEING LESS SAFE OR SANITARY THAN SUCH BUILDING IS CURRENTLY. IF, IN THE ALTERATION OR REPAIR, THE CURRENT LEVEL OF SAFETY OR SANITATION IS TO BE REDUCED, THE PORTION ALTERED OR REPAIRED SHALL CONFORM TO THE REQUIREMENTS OF CHAPTERS 2 THROUGH 12 AND CHAPTERS 14 THROUGH 33.

SEE ALSO:
ORS 447.241 STANDARDS FOR RENOVATION, ALTERATION OR MODIFICATION OF CERTAIN BUILDINGS; BARRIER REMOVAL IMPROVEMENT PLAN.

ENERGY CODE

BUILDING ENVELOPE REQUIREMENTS - OPAQUE ASSEMBLIES

CLIMATE ZONE	5 AND MARINE 4	
	ALL OTHER	GROUP R
ROOFS		
ATTIC AND OTHER	R-38	
WALLS, ABOVE GRADE		
WOOD FRAMED AND OTHER	R-13 + R-3.8 OR R-21	
FLOORS		
JOIST / FRAMING (STEEL / WOOD)	R-30	
SLAB-ON-GRADE FLOORS		
UNHEATED SLABS	NR	
OPAQUE DOORS		
SWINGING	U-0.70	
ROLL-UP OR SLIDING	U-0.50	

BUILDING ENVELOPE REQUIREMENTS - FENESTRATION

CLIMATE ZONE	5 AND MARINE 4
VERTICAL FENESTRATION (30% MAXIMUM OF ABOVE-GRADE WALL)	
FENESTRATION TYPE	U-FACTOR
FRAMING MATERIALS OTHER THAN METAL WITH OR WITHOUT METAL REINFORCMENT OR CLADDING	
FIXED, OPERABLE, AND DOORS WITH GREATER THAN 50% GLAZING	0.35
SHGC-ALL FRAME TYPES	0.40

REGISTERED ARCHITECT
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1410 NW JOHNSON STREET
for GANN BUILDING LLC
PORTLAND, OR
BUILDING CODE ANALYSIS - SUMMARY

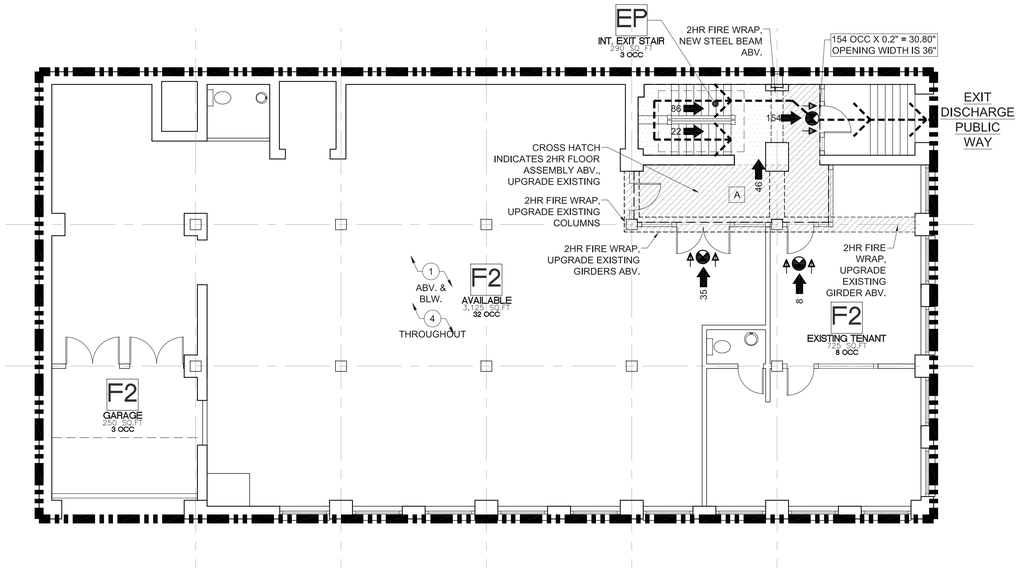
PERMIT SET

PLL1410NWJ - 00

A0.1

05.09.2019

OCCUPANCY SEPARATION
FIRST FLOOR - 5,000 GROSS SQ. FT. 46 TOTAL OCCUPANT LOAD ALLOWED
F2 — 4,100 SQ. FT. - 43 OCCUPANTS FACTORY OCCUPANIES INCLUDE THE USE OF A BUILDING OR STRUCTURE OR PORTION THEROF, FOR LOW-HAZARD FACTORY INDUSTRIAL 100 GROSS SF ALLOWANCE PER OCCUPANT.
EP — 290 SQ. FT. - 3 OCCUPANTS EXIT STAIR ENCLOSURE OR EXIT PASSAGEWAY: BOTH WITH OPENING, DUCT, PENETRATION, AND JOINT PROTECTION. SEE WALL TYPES AND JOINT DETAILS, DOOR AND WINDOW SCHEDULES, PENETRATION DETAILS, AND MECHANICAL DRAWINGS. (PART OF FACTORY OCCUPANCY DESIGNATION AND CALCULATED AS PART OF IT FOR BUILDING AREA CALCULATION PURPOSES.) 100 GROSS SF ALLOWANCE PER OCCUPANT.



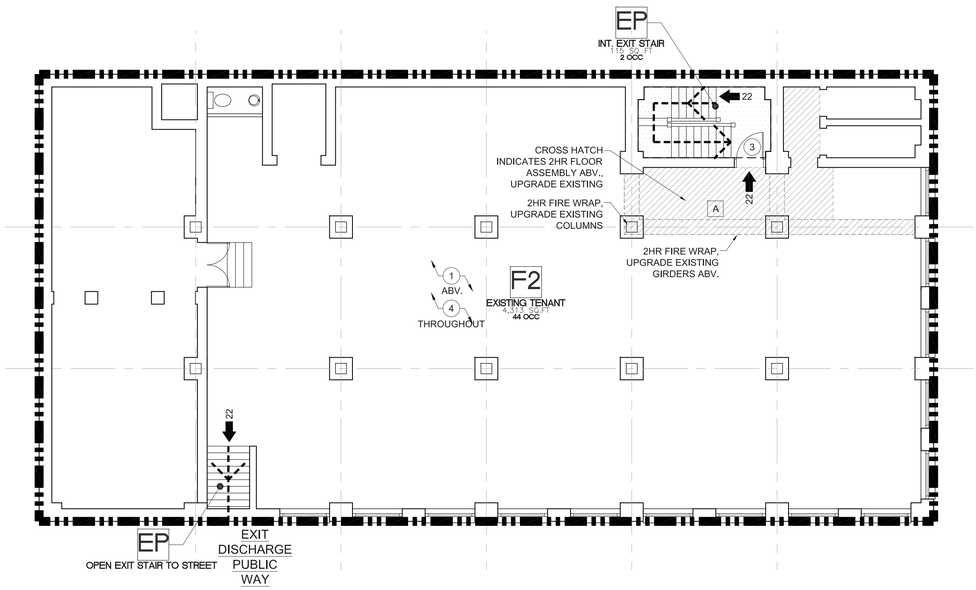
63 A0.2 BUILDING CODE ANALYSIS - FIRST FLOOR PLAN

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

SEE HARDENING PLANS ON A3.0 FOR FURTHER INFORMATION

NORTH

OCCUPANCY SEPARATION
BASEMENT FLOOR - 5,000 GROSS SQ. FT. 46 TOTAL OCCUPANT LOAD ALLOWED
F2 — 4,313 SQ. FT. - 44 OCCUPANTS FACTORY OCCUPANIES INCLUDE THE USE OF A BUILDING OR STRUCTURE OR PORTION THEROF, FOR LOW-HAZARD FACTORY INDUSTRIAL 100 GROSS SF ALLOWANCE PER OCCUPANT.
EP — 115 SQ. FT. - 2 OCCUPANTS EXIT STAIR ENCLOSURE OR EXIT PASSAGEWAY: BOTH WITH OPENING, DUCT, PENETRATION, AND JOINT PROTECTION. SEE WALL TYPES AND JOINT DETAILS, DOOR AND WINDOW SCHEDULES, PENETRATION DETAILS, AND MECHANICAL DRAWINGS. (PART OF FACTORY OCCUPANCY DESIGNATION AND CALCULATED AS PART OF IT FOR BUILDING AREA CALCULATION PURPOSES.) 100 GROSS SF ALLOWANCE PER OCCUPANT.



66 A0.2 BUILDING CODE ANALYSIS - BASEMENT FLOOR PLAN

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

SEE HARDENING PLANS ON A3.0 FOR FURTHER INFORMATION

NORTH

BUILDING CODE ANALYSIS

KEY NOTES

WALL ASSEMBLIES:

SEE LEGEND BELOW FOR FIRE-RATED WALLS.

FLOOR / ROOF ASSEMBLIES:

1. 0-HOUR HORIZONTAL FLOOR/CEILING ASSEMBLY (TABLE 601)
2. 0-HOUR ROOF ASSEMBLY (TABLE 601)

OPENING PROTECTION:

3. 90 MIN. DOOR @ 2-HR INTERIOR EXIT STAIRWAYS (TABLE 716.5)

FIRE PROTECTION:

4. BUILDING IS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13. (903.3.1.1)

GENERAL NOTES

- THIS CODE ANALYSIS PLAN IS FOR REFERENCE ONLY. SEE ALL OTHER PLAN SHEETS FOR CONTRACT DOCUMENT INFORMATION. THIS CODE ANALYSIS IDENTIFIES SOME SPECIFIC BUILDING CODE REQUIREMENTS BUT IS NOT INTENDED TO LIST ALL BUILDING CODE REQUIREMENTS.
- SEE OTHER PLANS AND DETAIL SHEETS FOR ACCESSIBILITY CONFORMANCE.

LEGEND

- INDICATES EMERGENCY EGRESS PATH @ A MINIMUM OF 1 FOOT-CANDLE. SEE SHEET LIGHTING PLANS FOR EXTERIOR LIGHTING REQUIREMENTS. LIGHTING LEVELS ARE PER ALL APPLICABLE FIRE/LIFE/SAFTEY CODES.
- 2-HOUR FIRE BARRIER & EXTERIOR WALL (705 & 707)
- NON-RATED WALL (TABLE 601)
- EXIT DISCHARGE
- XX — NUMBER AND DIRECTION OF OCCUPANTS FROM THE SPACE.

APPEALS

PENDING

REGISTERED ARCHITECT — BARRY R SMITH — PORTLAND, OREGON — STATE OF OREGON

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1410 NW JOHNSON STREET
for GANN BUILDING LLC
PORTLAND, OR
BUILDING CODE ANALYSIS - FLOOR PLANS

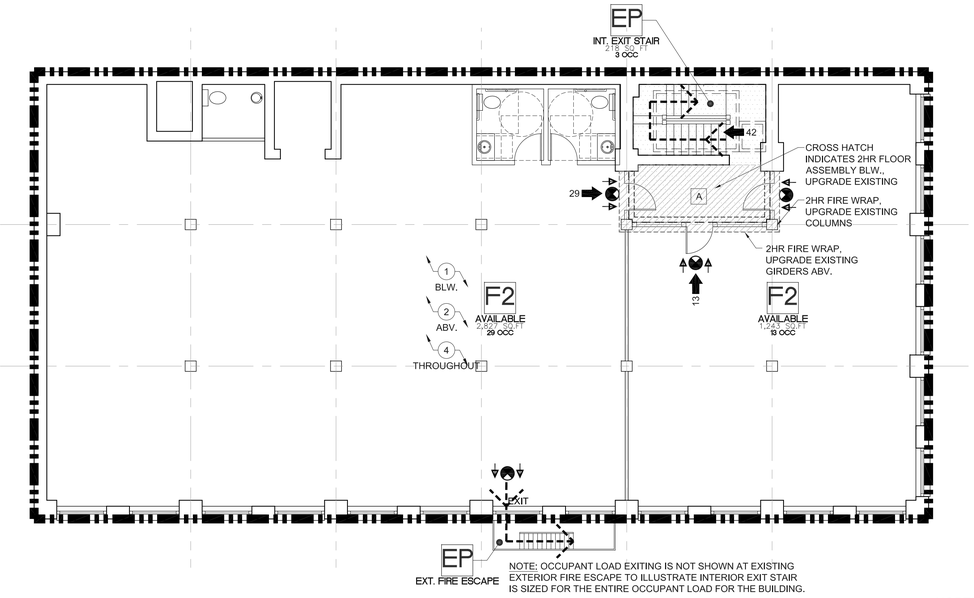
PERMIT SET

PLL1410NWJ - 00

A0.2

05.09.2019

OCCUPANCY SEPARATION
THIRD FLOOR - 5,000 GROSS SQ. FT. 45 TOTAL OCCUPANT LOAD ALLOWED
F2 4,103 SQ. FT. - 42 OCCUPANTS FACTORY OCCUPANIES INCLUDE THE USE OF A BUILDING OR STRUCTURE OR PORTION THEROF, FOR LOW-HAZARD FACTORY INDUSTRIAL 100 GROSS SF ALLOWANCE PER OCCUPANT.
EP 218 SQ. FT. - 3 OCCUPANTS EXIT STAIR ENCLOSURE OR EXIT PASSAGEWAY: BOTH WITH OPENING, DUCT, PENETRATION, AND JOINT PROTECTION. SEE WALL TYPES AND JOINT DETAILS, DOOR AND WINDOW SCHEDULES, PENETRATION DETAILS, AND MECHANICAL DRAWINGS. (PART OF FACTORY OCCUPANCY DESIGNATION AND CALCULATED AS PART OF IT FOR BUILDING AREA CALCULATION PURPOSES.) 100 GROSS SF ALLOWANCE PER OCCUPANT.



NOTE: OCCUPANT LOAD EXITING IS NOT SHOWN AT EXISTING EXTERIOR FIRE ESCAPE TO ILLUSTRATE INTERIOR EXIT STAIR IS SIZED FOR THE ENTIRE OCCUPANT LOAD FOR THE BUILDING.

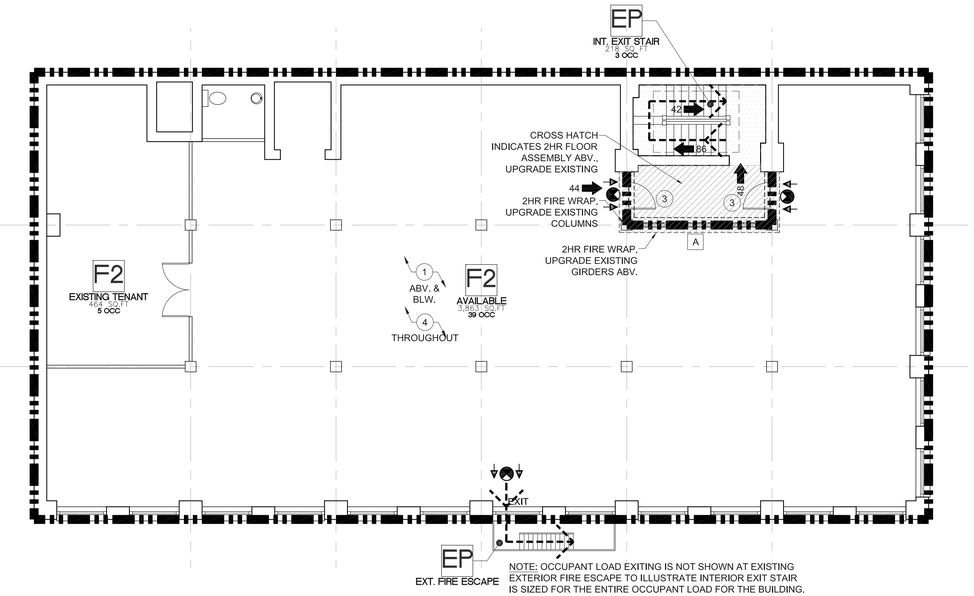
63 / A0.3 BUILDING CODE ANALYSIS - THIRD FLOOR PLAN

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

SEE HARDENING PLANS ON A3.0 FOR FURTHER INFORMATION

NORTH

OCCUPANCY SEPARATION
SECOND FLOOR - 5,000 GROSS SQ. FT. 48 TOTAL OCCUPANT LOAD ALLOWED
F2 4,358 SQ. FT. - 45 OCCUPANTS FACTORY OCCUPANIES INCLUDE THE USE OF A BUILDING OR STRUCTURE OR PORTION THEROF, FOR LOW-HAZARD FACTORY INDUSTRIAL 100 GROSS SF ALLOWANCE PER OCCUPANT.
EP 218 SQ. FT. - 3 OCCUPANTS EXIT STAIR ENCLOSURE OR EXIT PASSAGEWAY: BOTH WITH OPENING, DUCT, PENETRATION, AND JOINT PROTECTION. SEE WALL TYPES AND JOINT DETAILS, DOOR AND WINDOW SCHEDULES, PENETRATION DETAILS, AND MECHANICAL DRAWINGS. (PART OF FACTORY OCCUPANCY DESIGNATION AND CALCULATED AS PART OF IT FOR BUILDING AREA CALCULATION PURPOSES.) 100 GROSS SF ALLOWANCE PER OCCUPANT.



NOTE: OCCUPANT LOAD EXITING IS NOT SHOWN AT EXISTING EXTERIOR FIRE ESCAPE TO ILLUSTRATE INTERIOR EXIT STAIR IS SIZED FOR THE ENTIRE OCCUPANT LOAD FOR THE BUILDING.

66 / A0.3 BUILDING CODE ANALYSIS - SECOND FLOOR PLAN

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

SEE HARDENING PLANS ON A3.0 FOR FURTHER INFORMATION

NORTH

BUILDING CODE ANALYSIS

KEY NOTES

WALL ASSEMBLIES:

SEE LEGEND BELOW FOR FIRE-RATED WALLS.

FLOOR / ROOF ASSEMBLIES:

1. 0-HOUR HORIZONTAL FLOOR/CEILING ASSEMBLY (TABLE 601)
2. 0-HOUR ROOF ASSEMBLY (TABLE 601)

OPENING PROTECTION:

3. 90 MIN. DOOR @ 2-HR INTERIOR EXIT STAIRWAYS (TABLE 716.5)

FIRE PROTECTION:

4. BUILDING IS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13. (903.3.1.1)

GENERAL NOTES

- THIS CODE ANALYSIS PLAN IS FOR REFERENCE ONLY. SEE ALL OTHER PLAN SHEETS FOR CONTRACT DOCUMENT INFORMATION. THIS CODE ANALYSIS IDENTIFIES SOME SPECIFIC BUILDING CODE REQUIREMENTS BUT IS NOT INTENDED TO LIST ALL BUILDING CODE REQUIREMENTS.
- SEE OTHER PLANS AND DETAIL SHEETS FOR ACCESSIBILITY CONFORMANCE.

LEGEND

- INDICATES EMERGENCY EGRESS PATH @ A MINIMUM OF 1 FOOT-CANDLE. SEE SHEET LIGHTING PLANS FOR EXTERIOR LIGHTING REQUIREMENTS. LIGHTING LEVELS ARE PER ALL APPLICABLE FIRE/LIFE/SAFTEY CODES.
- 2-HOUR FIRE BARRIER & EXTERIOR WALL (705 & 707)
- NON-RATED WALL (TABLE 601)
- EXIT DISCHARGE
- XX — NUMBER AND DIRECTION OF OCCUPANTS FROM THE SPACE.

APPEALS

PENDING

REGISTERED ARCHITECT
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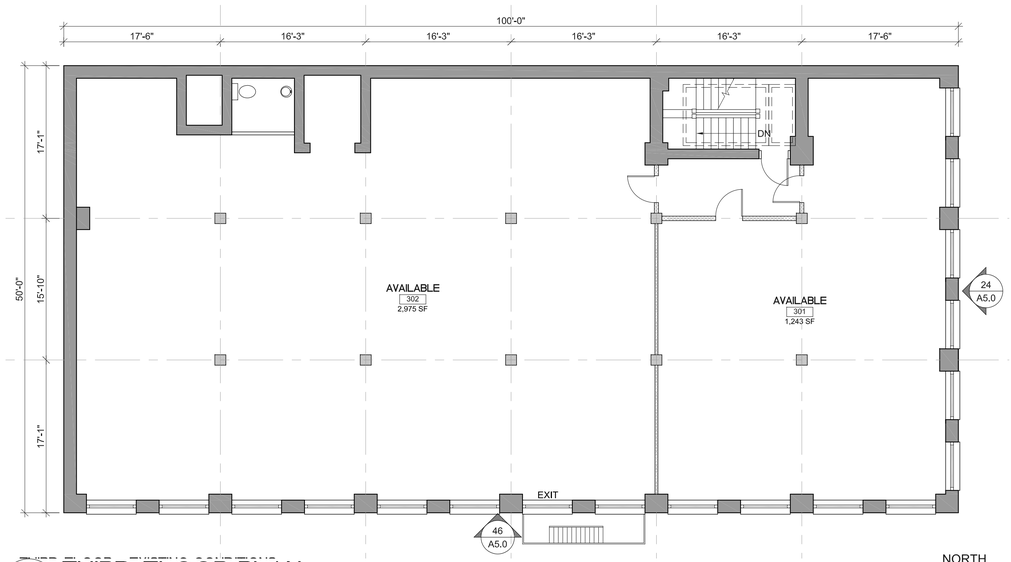
BUILDING CODE ANALYSIS - FLOOR PLANS

PERMIT SET

PLL1410NWJ - 00

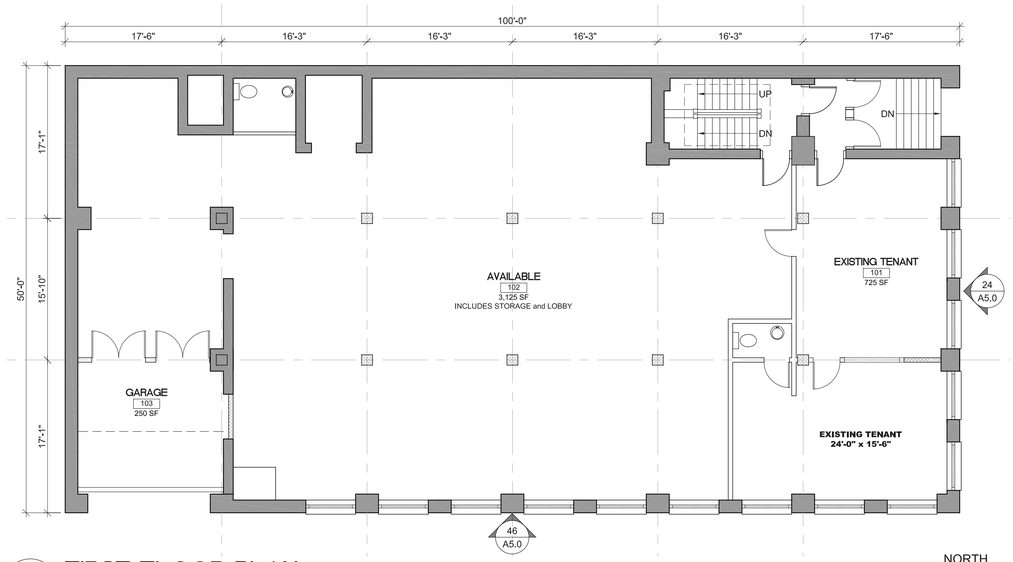
A0.3

05.09.2019



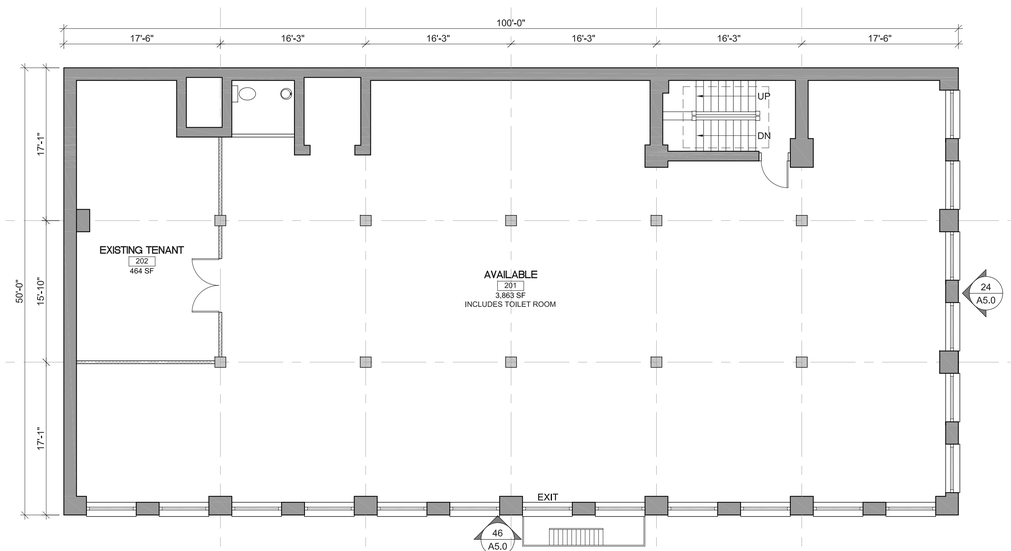
84 A1.0 THIRD FLOOR PLAN — 5,000 SF GROSS — NORTH

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



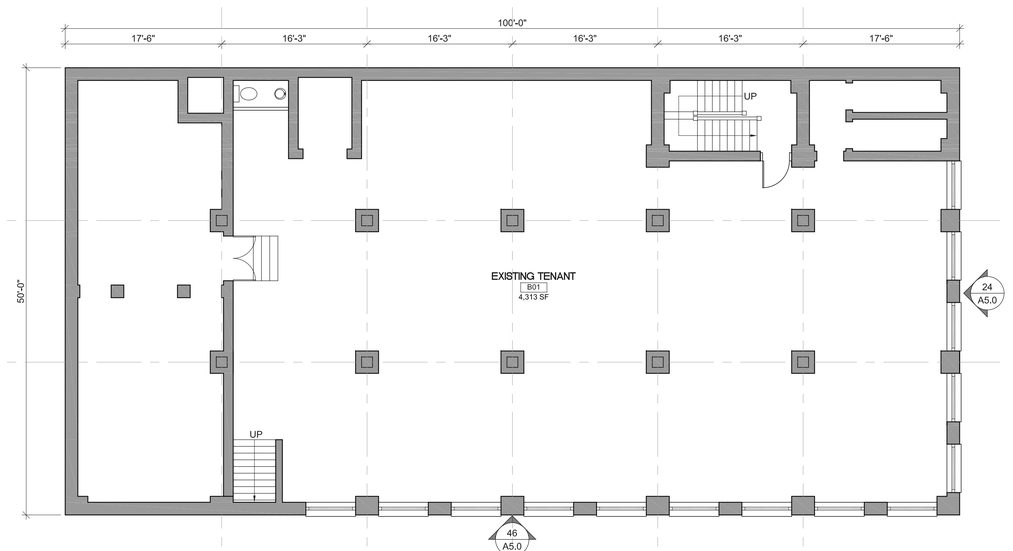
44 A1.0 FIRST FLOOR PLAN — 5,000 SF GROSS — NORTH

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



86 A1.0 SECOND FLOOR PLAN — 5,000 SF GROSS — NORTH

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



46 A1.0 BASEMENT FLOOR PLAN — 5,000 SF GROSS — NORTH

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

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1410 NW JOHNSON STREET
PORTLAND, OR
for GANN BUILDING LLC
EXISTING CONDITIONS PLANS

PERMIT SET

PLL1410NWJ - 01

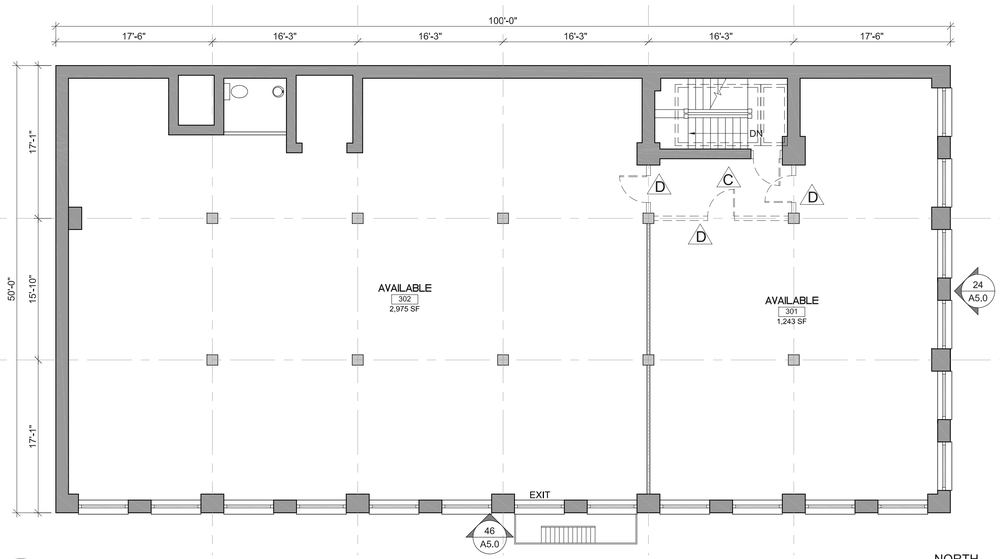
A1.0

05.09.2019

DEMOLITION SCHEDULE

A	REMOVE EXISTING DOORS AND BRICK STEM WALL. PROVIDE BRACING AS REQ'D BY STRUCTURAL.
B	REMOVE PORTION OF NON-LOAD BEARING WOOD PARTITION.
C	REMOVE EXISTING NON-RATED DOORS AND FRAMES.
D	REMOVE EXISTING NON-RATED WOOD PARTITION WALLS.

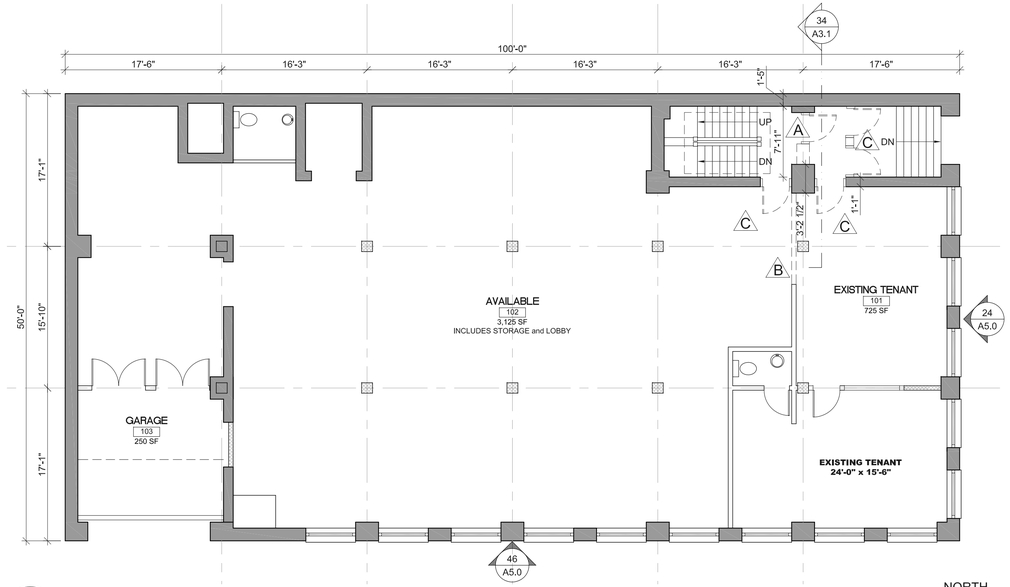
NOTES:
- DRAWINGS BASED ON ASBUILT PLANS.
- CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS.



84 A2.0 THIRD FLOOR DEMO PLAN

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

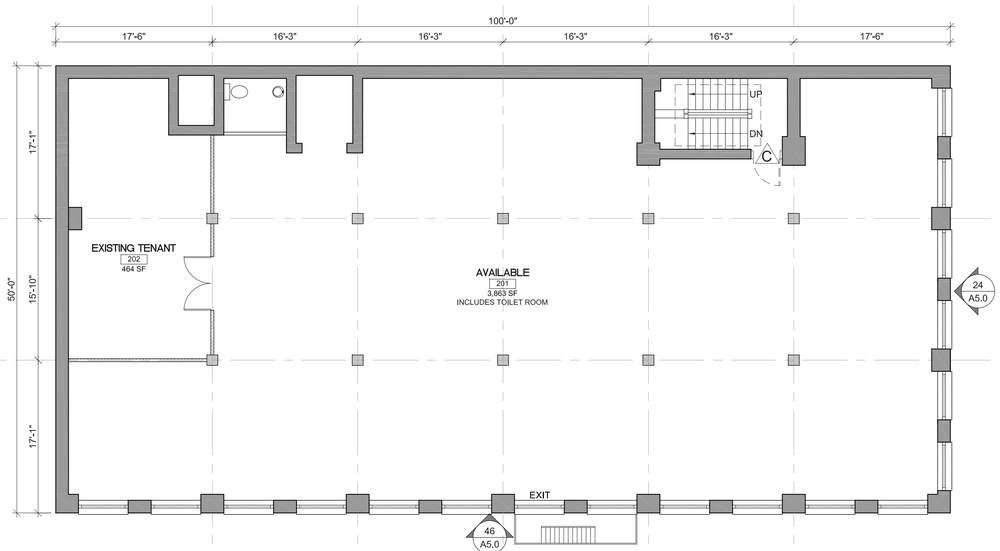
NORTH



44 A2.0 FIRST FLOOR DEMO PLAN

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

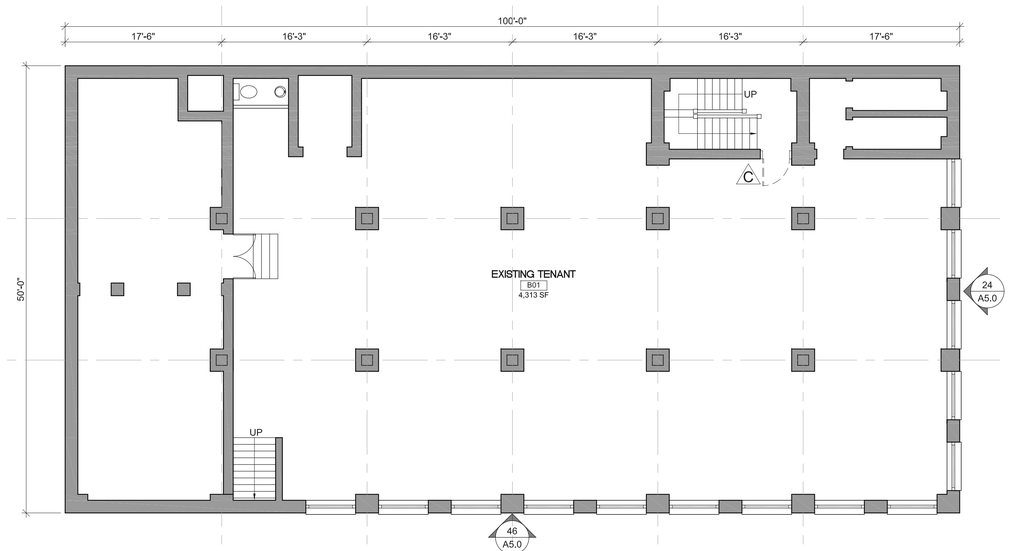
NORTH



86 A2.0 SECOND FLOOR DEMO PLAN

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

NORTH



46 A2.0 BASEMENT DEMO PLAN

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

NORTH

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1410 NW JOHNSON STREET
PORTLAND, OR
for GANN BUILDING LLC
DEMOLITION PLANS

PERMIT SET

PLL1410NWJ - 02

A2.0

05.09.2019

DOOR SCHEDULE

NO.	SIZE	FRAME	DOOR			ACCESS	HDW FUNCTION	REMARKS
	W. x HT. x THK.	MATERIAL/FINISH	MATERIAL/FINISH	LABEL	TEXTURE			
B01A	3'-0" x 7'-0" x 1 3/4"	HM., O.S. / PF.	HM., O.S. / PF.	90-MIN.	SMOOTH	PASSAGE	PB. & LATCH	FIRELIGHT - 100 SQ. IN. MAX. - EGRESS STAIRWAY
101A	3'-0" x 7'-0" x 1 3/4"	STOREFRONT	STOREFRONT	N/R	GLAZE	KEYED	LEVER & LATCH	FULL-LITE DOOR PART OF STOREFRONT SYSTEM
101B	3'-0" x 7'-0" x 1 3/4"	STOREFRONT, O.S.	STOREFRONT, O.S.	N/R	GLAZE	KEYED	LEVER & LATCH	EXT. ENTRANCE / EXIT - STOREFRONT SYSTEM
102A	3'-0" x 7'-0" x 1 3/4"	STOREFRONT, O.S.	STOREFRONT, O.S.	N/R	GLAZE	KEYED	LEVER & LATCH	FULL-LITE DOOR PART OF STOREFRONT SYSTEM
102B	6'-0" x 7'-0" x 1 3/4"	STOREFRONT	STOREFRONT	N/R	GLAZE	KEYED	LEVER & LATCH	DBL. FULL-LITE - PART OF STOREFRONT SYSTEM
201A	3'-0" x 7'-0" x 1 3/4"	HM., O.S. / PF.	HM., O.S. / PF.	90-MIN.	SMOOTH	PASSAGE	PB. & LATCH	FIRELIGHT - 100 SQ. IN. MAX. - EGRESS STAIRWAY
201B	3'-0" x 7'-0" x 1 3/4"	HM., O.S. / PF.	HM., O.S. / PF.	90-MIN.	SMOOTH	PASSAGE	PB. & LATCH	FIRELIGHT - 100 SQ. IN. MAX. - EGRESS STAIRWAY
301A	3'-0" x 7'-0" x 1 3/4"	STOREFRONT	STOREFRONT	N/R	GLAZE	KEYED	LEVER & LATCH	FULL-LITE DOOR PART OF STOREFRONT SYSTEM
301B	3'-0" x 7'-0" x 1 3/4"	STOREFRONT, O.S.	STOREFRONT, O.S.	N/R	GLAZE	KEYED	LEVER & LATCH	FULL-LITE DOOR PART OF STOREFRONT SYSTEM
302A	3'-0" x 7'-0" x 1 3/4"	STOREFRONT, O.S.	STOREFRONT, O.S.	N/R	GLAZE	KEYED	LEVER & LATCH	FULL-LITE DOOR PART OF STOREFRONT SYSTEM
303A	3'-0" x 7'-0" x 1 3/4"	HM. / PF.	HM. / PF.	N/R	SMOOTH	LOCKABLE	LEVER & LATCH	-
304A	3'-0" x 7'-0" x 1 3/4"	HM. / PF.	HM. / PF.	N/R	SMOOTH	LOCKABLE	LEVER & LATCH	-

NOTE: ALL DOORS TO BE SELF- OR AUTOMATIC CLOSING WITH LATCH. ALL RATED DOORS & DOORS PART OF THE EXIT SYSTEM TO HAVE SMOKE SEALS.

NOTES:
- ALL INTERIOR EXIT STAIR DOORS SHALL BE MARKED WITH AN "S" LABEL.
- ALL STOREFRONT DOORS PART OF THE EXIT STAIR SYSTEM SHALL BE UNLOCKED ON THE EGRESS SIDE TO ALLOW PASSAGE AT ALL TIMES.

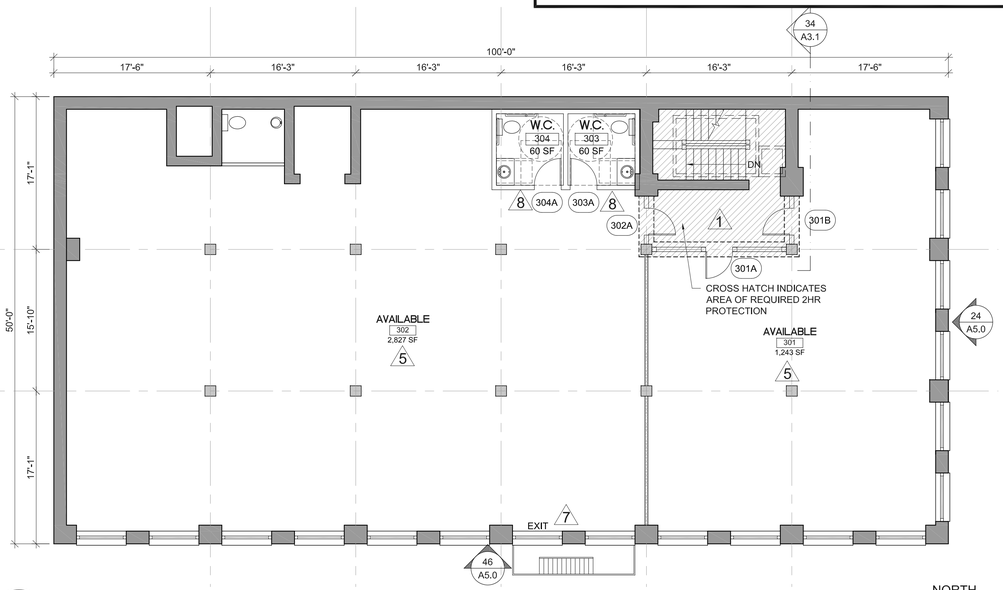
ABREVIATIONS:

DBL.	- DOUBLE
EXT.	- EXTERIOR
HM.	- HOLLOW METAL
N/R	- NON-RATED
O.S.	- OUTSWING
PB.	- PANIC BAR
PF.	- PREFINISHED

HARDENING SCHEDULE

1	EXPAND EXITING ENCLOSED STAIR AND EXIT LOBBY. PROVIDE 2HR FIRE CURTAIN AT NON-RATED ASSEMBLIES REQUIRING 2HR FIRE RESISTANCE WITH "TYCO MODEL WS - 2HR FIRE BARRIER" ASSEMBLY.
2	REPLACE NON RATED EXIT DOORS WITH PANIC EGRESS PASSAGE.
3	REPAIR EXISTING WOOD STAIR.
4	NEW BRACING PER STRUCTURAL. PROTECT STRUCTURAL ELEMENTS TO MEET 2HR FIRE REISISTIVE REQUIREMENTS.
5	ALL AREAS NOT A PART OF THE EXIT STAIR SYSTEM SHALL BE PROTECTED WITH A MINIMUM NFPA 13 FIRE SPRINKLER SYSTEM THROUGHOUT.
6	EXPAND 2HR RATED STAIR ENCLOSURE. USE 2HR RATED WALL AND 1.5 HR DOOR ASSEMBLIES. PROVIDE 2HR FIRE RESITIVE CONSTRUCTION FOR LOAD BEARING STRUCTURAL ELEMENTS. EXTEND PROTECTION TO NEXT VERTICAL SUPPORT[S] CONTINUOUS TO FOUNDATION.
7	REPAIR EXISTING WINDOW, FRAME AND WEIGHTS. PAINT AND REPAIR EXISTING FIRE ESCAPE.
8	ADD ACCESSIBLE TOILET ROOMS.

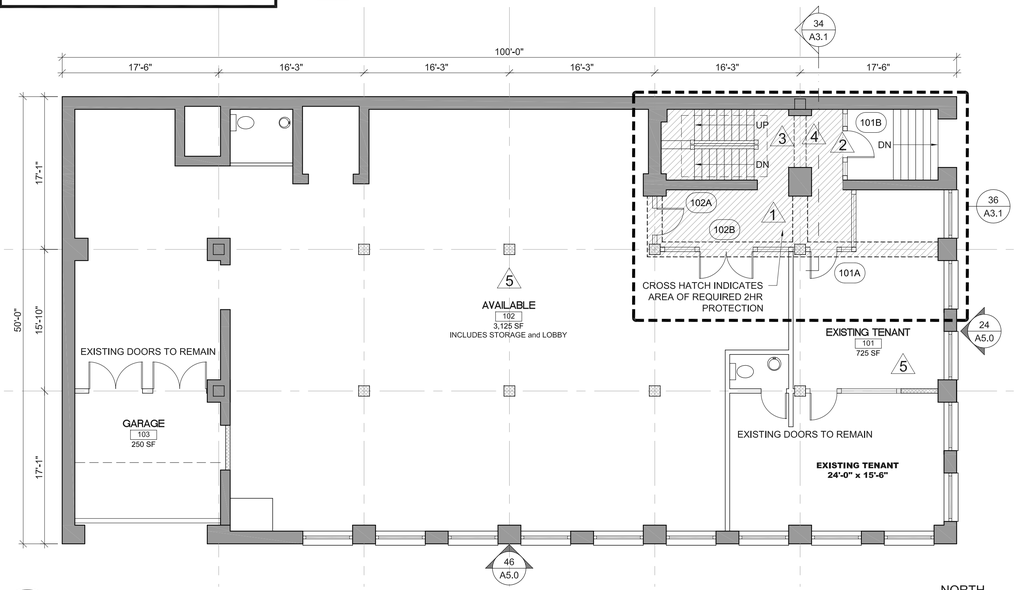
NOTES:
- DRAWINGS BASED ON ASBUILT PLANS.
- CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS.



84 / A3.0 THIRD FLOOR HARDENING PLAN

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

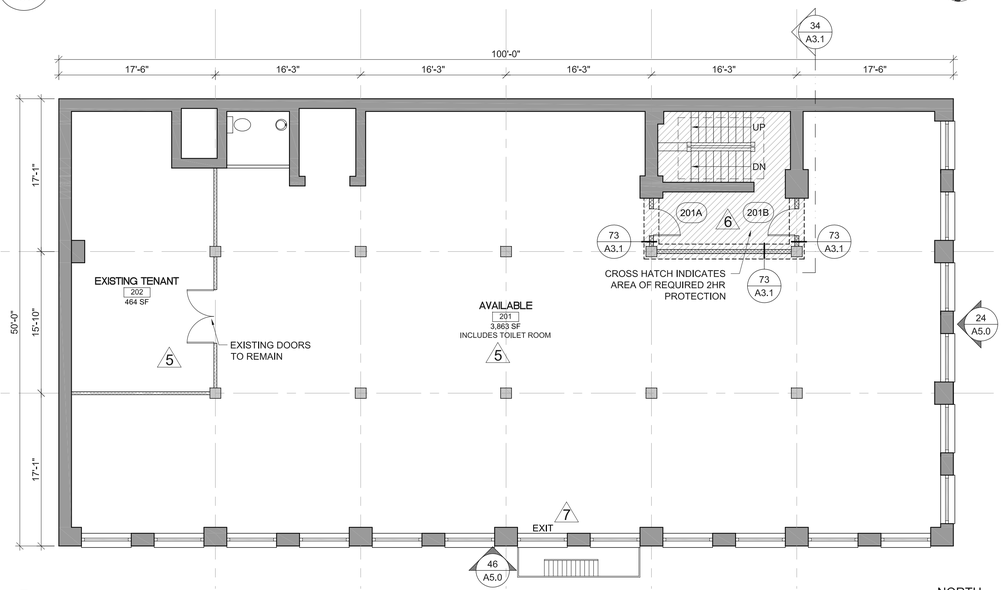
NORTH



44 / A3.0 FIRST FLOOR HARDENING PLAN

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

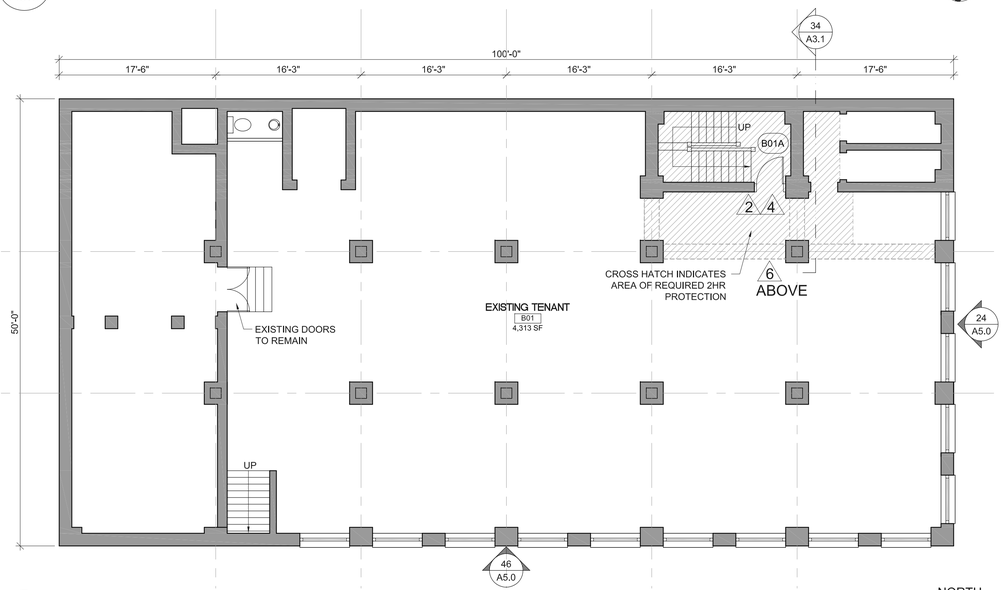
NORTH



86 / A3.0 SECOND FLOOR HARDENING PLAN

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

NORTH



46 / A3.0 BASEMENT HARDENING PLAN

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

NORTH

REGISTERED ARCHITECT
BARRY R. SMITH
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STATE OF OREGON

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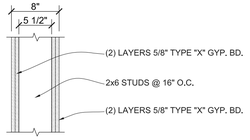
1410 NW JOHNSON STREET
PORTLAND, OR
for GANN BUILDING LLC
HARDENING PLANS

PERMIT SET

PLL1410NWJ - 03

A3.0

05.09.2019



OSSC 2014 SECTION 707 - FIRE BARRIERS
INTERIOR EXIT STAIRWAY

CONSTRUCTION
BASE LAYER 5/8" TYPE X GYPSUM WALLBOARD OR VEENER BASE APPLIED PARALLEL OR AT RIGHT ANGLES TO EACH SIDE OF 2X6 STUDS 16" O.C. WITH 1-1/4" TYPE W DRYWALL SCREWS 12" O.C., FACE LAYER 5/8" TYPE X GYPSUM WALLBOARD OR VENEER BASE APPLIED PARALLEL OR AT RIGHT ANGLES TO EACH SIDE WITH 1-7/8" TYPE W DRYWALL SCREWS 12" O.C. AND OFFSET 6" FROM SCREWS IN BASE LAYER.

JOINTS STAGGERED 16" EACH LAYER AND SIDE. (LOAD BEARING)

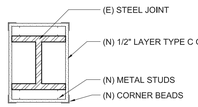
FIRE TEST: SWRI 01-5920-614, 12-5-94

SOUND TEST: SEE WP 4135 (NGC 2363, 4-1-70)

73 / A3.1 — 2 HR. INT. 5 1/2" WOOD

SCALE: 1" = 1' - 0"

GA FILE No.: WP 4136



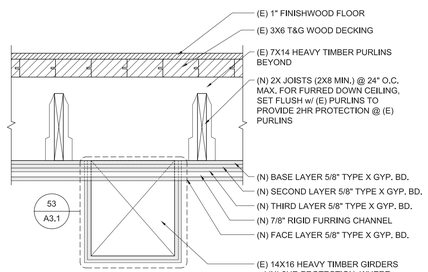
1/2" LAYER NOM, 3/32" THICK GYPSUM TYPE C GYPSUM BOARD ATTACHED WITH 1" LONG SELF-DRILLING, SELF-TAPPING STEEL SCREWS, SPACED VERTICALLY 12" O.C. TO STEEL STUDS 1-5/8" WIDE WITH LEG DIMENSIONS OF 1-5/16" AND 1-7/16" WITH A 1/4" FOLDED FLANGE IN LEGS FABRICATED FROM 25 MSG GALV STEEL, 3/4" BY 1-3/4" RECTANGULAR CUTOUTS PUNCHED 8" AND 16" FROM THE ENDS. STEEL STUD CUT 1/2" LESS IN LENGTH THAN ASSEMBLY HEIGHT. CORNER BEADS NO. 28 MSG GALV STEEL, 1-1/4" LEGS ATTACHED TO GYPSUM BOARD BY CRIMPING SPACED 6" O.C.

FIRE TEST: UL X520 AND CITY OF PORTLAND BUILDING CODE APPEAL APPROVAL.

74 / A3.1 — 2-HR FIRE-RATED STEEL JOINT DETAIL

SCALE: 1" = 1' - 0"

CITY OF PORTLAND BUILDING CODE APPEAL IDXXXX



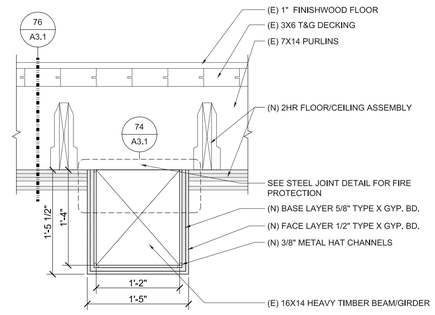
BASE LAYER - 5/8" TYPE X GYPSUM WALLBOARD APPLIED AT RIGHT ANGLES TO 2X8 WOOD JOISTS 24" O.C. WITH 1-1/4" TYPE W DRYWALL SCREWS 12" O.C. SECOND LAYER - 5/8" TYPE X GYPSUM WALLBOARD APPLIED AT RIGHT ANGLES TO JOISTS WITH 2" TYPE W DRYWALL SCREWS 12" O.C. SECOND LAYER JOINTS OFFSET 24" FROM BASE LAYER JOINTS. THIRD LAYER - 5/8" TYPE X GYPSUM WALLBOARD APPLIED AT RIGHT ANGLES TO JOISTS WITH 2-1/2" TYPE W DRYWALL SCREWS 12" O.C. THIRD LAYER JOINTS OFFSET 12" FROM SECOND LAYER JOINTS. HAT-SHAPED 7/8" RIGID FURRING CHANNELS 24" O.C. APPLIED AT RIGHT ANGLES TO JOISTS OVER THIRD LAYER WITH TWO 2-1/2" LONG TYPE W DRYWALL SCREWS AT EACH JOIST. FACE LAYER - 5/8" TYPE X GYPSUM WALLBOARD APPLIED AT RIGHT ANGLES TO FURRING CHANNELS WITH 1-1/8" TYPE S DRYWALL SCREWS 12" O.C. WOOD JOISTS SUPPORTING 3/4" T&G EDGE PLYWOOD FLOOR APPLIED AT RIGHT ANGLES TO JOISTS WITH 8d NAILS 6" O.C. AT JOINTS AND 12" AT INTERMEDIATE JOISTS. **CEILING PROVIDES TWO-HOUR FIRE-RESISTANCE PROTECTION FOR WOOD FRAMING.**

FIRE TEST: UL R4024, 00NK26545, 4-27-01; UL R4024, 03NK11206, 3-19-03; UL DESIGN L556; ULC DESIGN M514

76 / A3.1 — 2-HR FIRE-RATED FLOOR/CEILING DETAIL

SCALE: 1" = 1' - 0"

GA FILE NO.: FC 5725

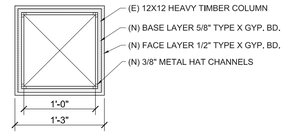


CONSTRUCTION:
BASE LAYER 5/8" TYPE X GYPSUM WALLBOARD ATTACHED TO 3/8" METAL HAT CHANNELS WHICH ARE ATTACHED TO 14X16 HEAVY TIMBER WOOD BEAM NOMINAL (MINIMUM 8X12 NOMINAL). FACE LAYER 1/2" TYPE X GYPSUM WALLBOARD.

53 / A3.1 — 2 HR. HEAVY TIMBER BEAM WRAP

SCALE: 1" = 1' - 0"

CITY OF PORTLAND BUILDING CODE APPEAL IDXXXX

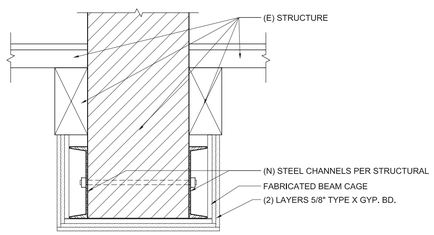


CONSTRUCTION:
BASE LAYER 5/8" TYPE X GYPSUM WALLBOARD ATTACHED TO 3/8" METAL HAT CHANNELS WHICH ARE ATTACHED TO 12X12 HEAVY TIMBER WOOD COLUMN (MINIMUM 12X12 NOMINAL). FACE LAYER 1/2" TYPE X GYPSUM WALLBOARD.

54 / A3.1 — 2 HR. HEAVY TIMBER COLUMN WRAP

SCALE: 1" = 1' - 0"

CITY OF PORTLAND BUILDING CODE APPEAL IDXXXX



BASE LAYER - 5/8" TYPE X GYPSUM WALLBOARD OR GYPSUM VENEER BASE APPLIED TO BEAM CAGE WITH 1-1/4" TYPE S DRYWALL SCREWS 16" O.C., FACE LAYER - 5/8" TYPE X GYPSUM WALLBOARD OR GYPSUM VENEER BASE APPLIED TO BEAM CAGE WITH 1-3/4" TYPE S DRYWALL SCREWS 8" O.C.

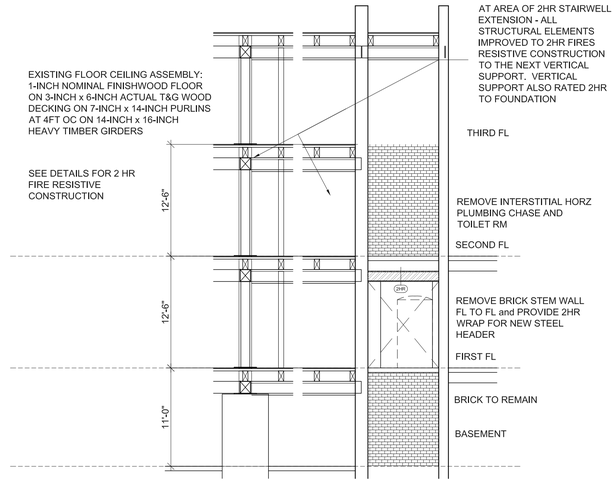
BEAM CAGE FABRICATED FROM HORIZONTAL INSTALLED STEEL ANGLES (25 GA STEEL HAVING 1" AND 2" LEGS) LOCATED NOT LESS THAN 1/2" FROM BEAM FLANGES. 1" LEGS OF THE UPPER ANGLES SECURED TO STEEL DECK UNITS WITH 1/2" TYPE S PAN HEAD SCREWS 12" O.C. "U" SHAPED BRACKETS FORMED OF 25 GA "U" SHAPED STEEL CHANNELS (1-11/16" WIDE WITH 1" LEGS) 24" O.C. SUSPENDED FROM UPPER ANGLES WITH 1/2" TYPE S PAN HEAD SCREWS AND SUPPORTED 1" X 2" ANGLES AT LOWER CORNERS ATTACHED TO BRACKETS WITH 1/2" TYPE S PAN HEAD SCREWS, OUTSIDE CORNERS OF GYPSUM BOARD PROTECTED BY 0.020" THICK STEEL CORNER BEADS CRIMPED OR NAILED. MINIMUM BEAM SIZE W8X24. (TWO HOUR RESTRAINED OR UNRESTRAINED BEAM.)

FIRE TEST: UL R4024-5, 9-14-66,
UL DESIGN N501;
ULC DESIGN O501

56 / A3.1 — 2-HR FIRE-RATED BEAM WRAP DETAIL

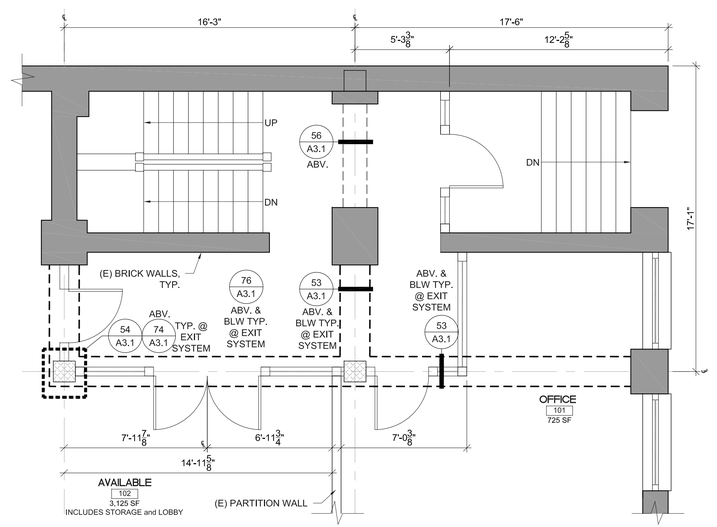
SCALE: 1" = 1' - 0"

GA FILE NO.: BM 2120



34 / A3.1 — ELEVATION + SECTION AT EXIT SYSTEM

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



36 / A3.1 — ENLARGED FIRST FLOOR EXIT LOBBY

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

REGISTERED ARCHITECT
BARRY R. SMITH
PORTLAND, OREGON
STATE OF OREGON

BARRY R SMITH, PC Architect
715 SW MORRISON STREET SUITE 909
PORTLAND OR 97205 503.295.6261 www.barryrsmith.com

1410 NW JOHNSON STREET
PORTLAND, OR
for GANN BUILDING LLC
HARDENING PLANS - ENLARGED

PERMIT SET

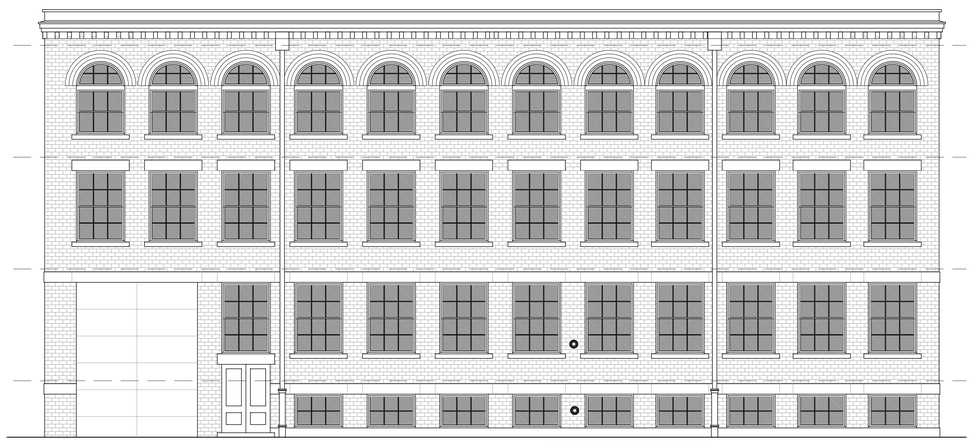
PLL1410NWJ - 03

A3.1

05.09.2019

24 / A5.0 JOHNSON STREET ELEVATION

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



NOTE LOCATION OF EXISTING FDC AND BELL

46 / A5.0 10TH AVENUE ELEVATION

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

REGISTERED ARCHITECT
BARRY R. SMITH
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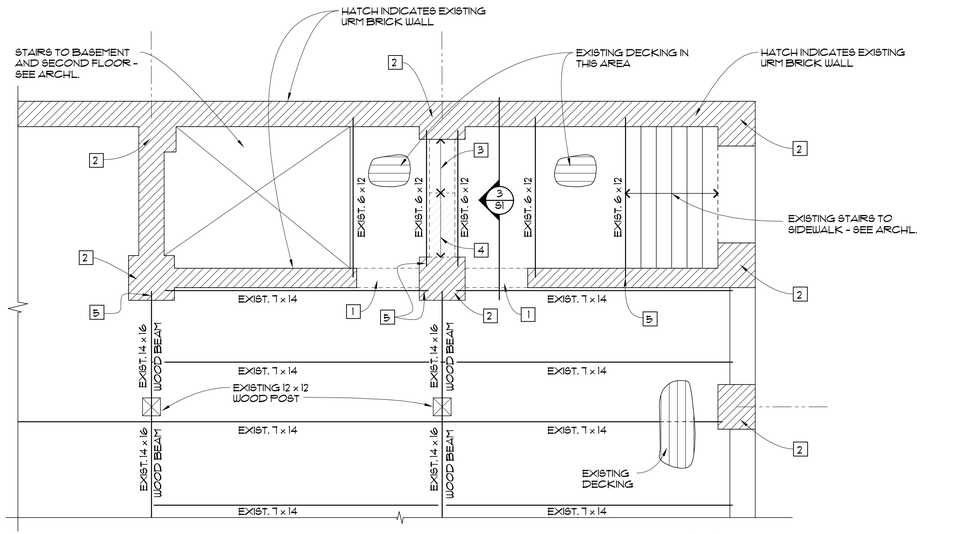
1410 NW JOHNSON STREET
PORTLAND, OR
for GANN BUILDING LLC
EXTERIOR ELEVATIONS

PERMIT SET

PLL1410NWJ - 05

A5.0

05.09.2019



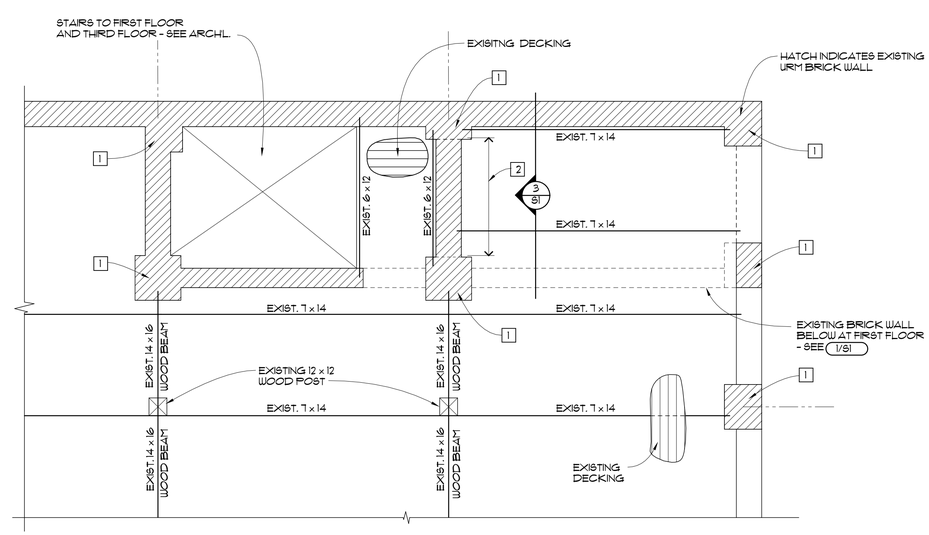
NOTES :

1. EXISTING BRICK LINTEL IN BASEMENT
2. EXISTING BRICK PILASTER CONTINUES INTO BASEMENT AND UP TO SECOND FLOOR
3. EXISTING DOOR OPENING. EXISTING DOOR TO BE REMOVED - SEE ARCHL.
4. REMOVE EXISTING BRICK WALL - SEE (3/S1)
5. EXISTING BEAM IS POCKETED INTO EXISTING BRICK WALL OR PILASTER

NORTH

FIRST FLOOR FRAMING

1/S1 — 1/4" = 1'-0"



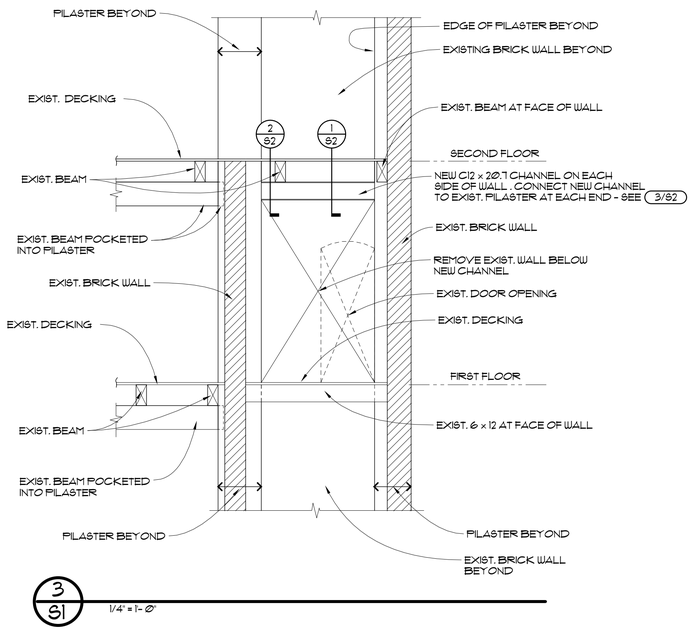
NOTES :

1. EXISTING BRICK PILASTER
2. NEW EXTENDED OPENING IN WALL BELOW - SEE (3/S1)

NORTH

SECOND FLOOR FRAMING

2/S1 — 1/4" = 1'-0"



3/S1 — 1/4" = 1'-0"

GENERAL NOTES

SPECIAL INSPECTION

1. Required special inspections shall be performed by an independent special inspector per Section 1701 of the International Building Code (IBC) for the following:
   a. Visual inspection of all structural welding except welding done in an approved fabricator's shop.
   b. Installation of post installed anchors.

   For more specific information regarding special inspections - see Tables 1
2. The special inspector shall provide a copy of their report to the owner, architect, structural engineer, contractor, and building official.

GENERAL

1. These notes set the minimum standards for construction. The drawings govern over the General Notes to the extent shown.
2. Contractor shall verify all dimensions and conditions on drawings and in the field. Coordinate locations of openings with architectural. Notify design agency of any discrepancies.
3. Contractor shall provide all necessary temporary support prior to completion of vertical and lateral load systems.
4. The contractor shall be responsible for all required safety precautions and methods, techniques, sequences, and procedures required to perform his work.
5. Where reference is made to ASTM, AISC, ACI or other standards, the latest issue shall apply.
6. All work shall be in strict compliance with the International Building Code as amended by the State of Oregon and all other state and local codes and building requirements that apply.
7. Design Criteria:

   a. Floors — 50 psf
   b Floor partition allowance — 15 psf

STRUCTURAL AND MISCELLANEOUS STEEL

1. Detailing, fabrication and erection shall conform to the Steel Construction Manual of AISC.
2. All steel to be A36 or better except as noted.
3. All welds to be made by Certified Welders to AWS Standards with E 70XX electrodes.
4. Bolts to be A307 unless noted otherwise.
5. Do not oversize drilled or punched holes with burning torch.

TABLE 1
REQUIRED STRUCTURAL SPECIAL INSPECTION

SYSTEM or MATERIAL	INSPECTION: IBC CODE REFERENCE	CODE or STANDARD REFERENCE	FREQUENCY: CONTINUOUS	FREQUENCY: PERIODIC	REMARKS
STEEL					
FABRICATION OF STRUCTURAL ELEMENTS	1704.2			X	REFER TO INSPECTION OF FABRICATOR REQUIREMENTS
MATERIAL VERIFICATION OF WELD FILLER METALS	1704.3	AISC 360 A3.5		X	MANUFACTURER'S CERTIFIED TEST REPORTS
VERIFYING USE OF PROPER WPS'S	1704.3.1	AWS D1.1 SECTION 6		X	COPY OF WELDING PROCEDURE SPECIFICATIONS
VERIFYING WELDER QUALIFICATIONS				X	COPY OF QUALIFICATION CARDS
SINGLE PASS FILLET WELDS LESS THAN OR EQUAL TO 5/16"				X	ALL WELDS VISUALLY INSPECTED PER AWS D1.1 6.9
POST INSTALLED CONCRETE ANCHORS					
INSTALLATION IN HARDENED CONCRETE AND COMPLETED MASONRY	1703.4.2 1704.13.3	ICC EVALUATION REPORT	X		SPECIAL INSPECTIONS APPLY TO ANCHOR PRODUCT NAME, TYPE, AND DIMENSIONS, HOLE DIMENSIONS, COMPLIANCE WITH DRILL BIT REQUIREMENTS, CLEANLINESS OF THE HOLE AND ANCHOR, ADHESIVE EXPIRATION DATE, ANCHOR / ADHESIVE INSTALLATION, ANCHOR EMBEDMENT, AND TIGHTENING TORQUE

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 30, 2016 — WILLIAM G. BERRY

EXPIRES: 12 / 31 / 2019

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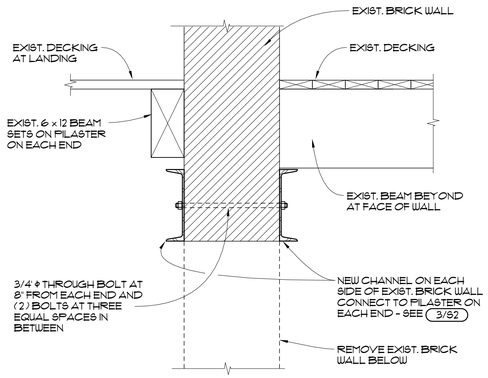
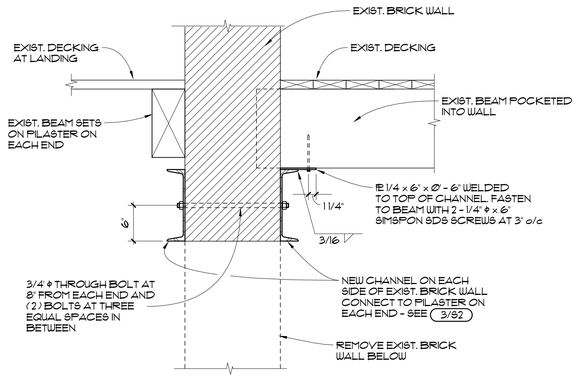
1410 NW JOHNSON STREET — PORTLAND, OR
for PORTLAND LEEDS LIVING
PLANS

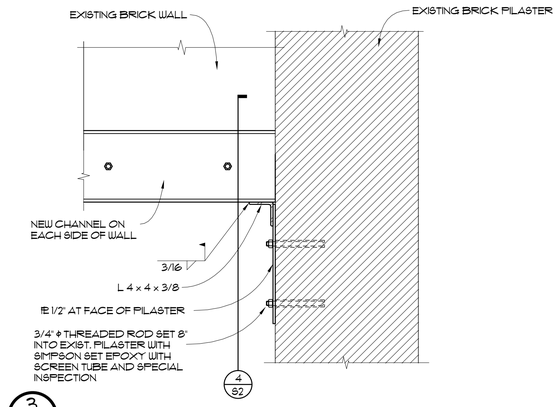
PLANS
S1
04.22.2019



1/S2 1" = 1'-0"



2/S2 1" = 1'-0"



3/S2 1" = 1'-0"

4/S2 1" = 1'-0"

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER OREGON JULY 30, 2016 WILLIAM G. BERRY

EXPIRES: 12 / 31 / 2019

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1410 NW JOHNSON STREET

PORTLAND, OR

for PORTLAND LEEDS LIVING

PLANS

PLANS

S2

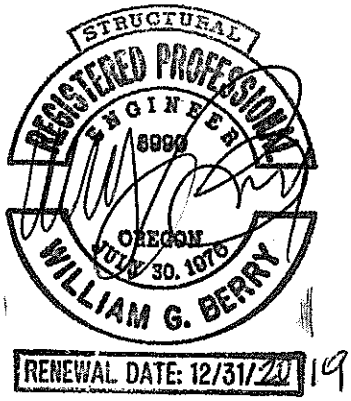
04.22.2019

STRUCTURAL CALCULATIONS

FOR

Net Section Analysis for Posts and Floor Beams

1410 NW Johnson St.
Portland, OR



ENGINEER WAS RETAINED IN A LIMITED CAPACITY FOR THIS PROJECT. DESIGN IS BASED UPON INFORMATION PROVIDED BY THE CLIENT WHO IS SOLELY RESPONSIBLE FOR ACCURACY OF THAT INFORMATION. NO RESPONSIBILITY AND/OR LIABILITY ARE ASSUMED BY, OR ARE TO BE ASSIGNED TO, THE ENGINEER FOR ITEMS BEYOND THAT SHOWN IN THESE CALCULATIONS.

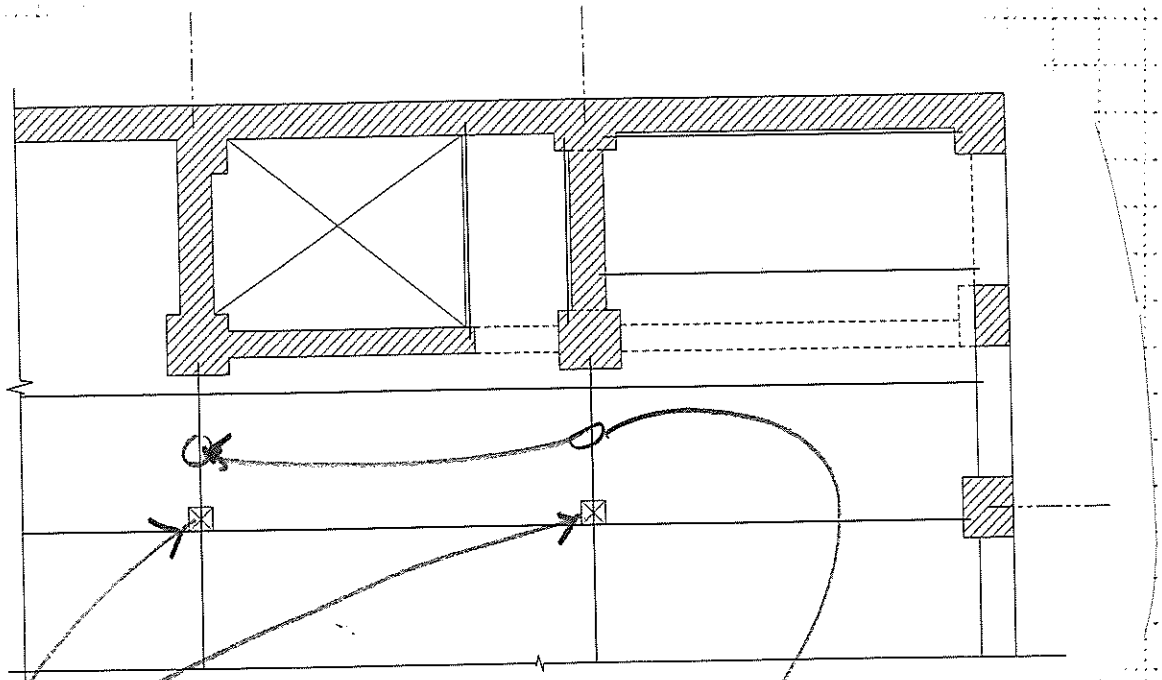
BKE INC. STRUCTURAL ENGINEERS

Project: Post and Beam Analysis @ NW Johnson St.
Client: Marty Kehoe Proj. No.: 19-045
Date: 05/2019 By: BB Sheet No.: COVER

2700 SE HARRISON ST. STE. B, MILWAUKIE OR, 97222, 503-607-0481, FAX 503-607-0486. matt@bkengineers.com

DESIGN SUMMARY

The intent of these calculations is to verify the load capacity for floor beams and posts in an area of two-hour protection adjacent to the stairs after a fire. A Fire Protection Engineer has determined the depth of char on the members. For the floor beam the depth of char is 2" on two sides and the bottom. For the post the depth of char is 2" on all four sides. The existing floor beam is a 14x16 wood member. The effective size will be reduced to 10x14. The existing post is a 12x12 wood member. The effective size after the fire is 8x8. The calculations show that the floor beam and post will be adequate as reduced sections.



CHECK THESE BEAMS AS REDUCED SECTIONS

CHECK THESE TWO POSTS AS REDUCED SECTIONS

SECOND FLR FRAMING PLAN

BK INC. STRUCTURAL ENGINEERS

Project: 14th & JOHNSON

Client: MARTY KEHOE Proj. No.:

Date: 5/2019 By: BB Sheet No.: 1

2700 SE HARRISON ST. STE. B, MILWAUKIE OR. 97222, 503-607-0481, FAX 503-607-0486. bill@bkengineers.com

CALCULATE LOADS ON FLOOR BEAM AND POST IN TWO HR RATED AREA ADJACENT TO STAIR WELL

LOADING:

ROOF:

SNOW 25 PSF
DEAD 15 PSF

FLOORS

OFFICE LOADING:

LIVE LOAD : 50 PSF
PARTITIONS : 15 PSF
DEAD : 15 PSF → [1]
⇒ 22 PSF → [2]

[1] DEAD LOAD DUE TO FLR FINISH, DECKING, FRAMING

[2] ADD 7 PSF DUE TO GYP CEILING

ADJACENT TO STAIR WELL

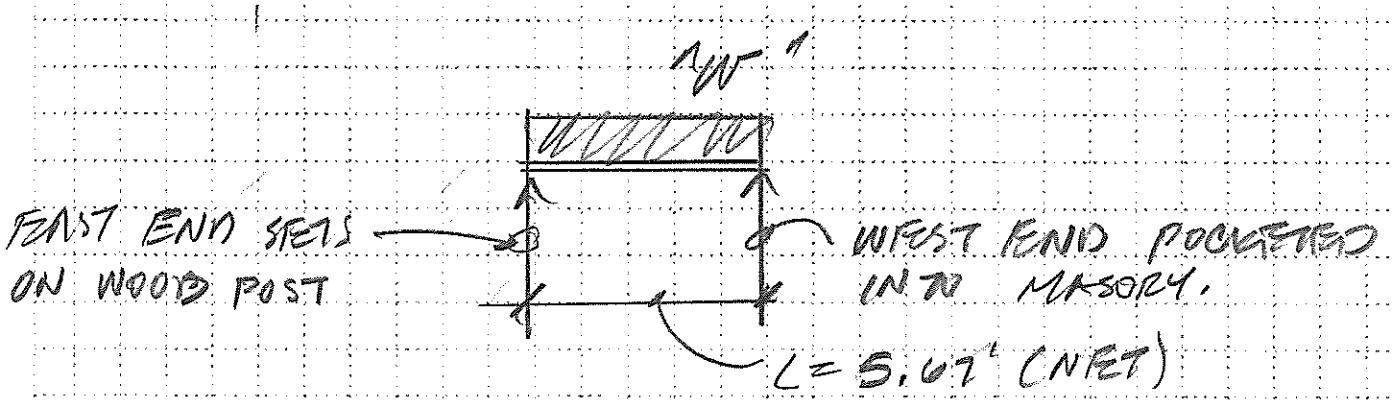
LIVE LOAD = 100 PSF
DEAD LOAD = 22 PSF
PARTITION LOAD: 0 PSF

BK INC. STRUCTURAL ENGINEERS

Project: 14th & JOHNSON
Client: MARTY KEHOE Proj. No.:
Date: 5/2019 By: BB Sheet No.: 2

2700 SE HARRISON ST. STE. B, MILWAUKIE OR. 97222, 503-607-0481, FAX 503-607-0486. bill@bkengineers.com

CHECK FLOOR BEAM



DETERMINE "W"

FLOOR LOAD:

LIVE LOAD = 100 PSF
DEAD LOAD = 22 PSF
PARTITIONS = 0 PSF

$W = (122\ psf)(16.5 + 16.25)/2$

$= 1998\ \#/'$

$M = 1998\ \#/' \times 5.67'/8$

$= 8030\ ft\text{-}\#$

ALLOWABLE BENDING STRESS FOR 6x MAT'L MEMBER DF/L #1.

$F_b = 1300\ psi$

ORIGINAL BEAM:
14x16
NET = 13½ x 15½

AFTER PIPE WITH 2" CHASE ON (3) SIDES
= 9.5" x 13.5"

$S = (9.5)(13.5)^2/6$
$= 288\ in^3$

BKE INC. STRUCTURAL ENGINEERS

2700 SE HARRISON ST. STE. B, MILWAUKIE OR. 97222. 503-607-0481. FAX 503-607-0486. bill@bkengineers.com

Project: 14th & JOHNSON
Client: MARTY ICEHOE Proj. No.:
Date: 5/2019 By: BB Sheet No.: 3

K1 M = 8030#-1

SNET AFTER FIRE
= 28$ IN 3

$f_b = \frac{8030(12)}{28}$

= 335 psi

F_b = 1300 psi > 335

BEAM IS OKAY

BKI INC. STRUCTURAL ENGINEERS

Project: 14th & JOHNSON

Client: MARTY ICEHOE Proj. No.:

Date: 5/2019 By: BB Sheet No.: 4

2700 SE HARRISON ST. STE. B, MILWAUKIE OR. 97222, 503-607-0481, FAX 503-607-0486. bill@bkengineers.com

DETERMINE TOTAL LOAD ON POST

TRIBUTARY AREA FOR LOAD ON POST

TRIBUTARY WIDTH
= (16.25 + 16.5) / 2
= 16.37'

TRIBUTARY LENGTH
= (6 + 15.83) / 2
= 10.92'

AT ROOF:

SNOW = 25 psf
DEAD LOAD: 15 psf & 22 psf

P = (25+15)(16.37) x 6/2
+ (25+22)(16.37)(15.83/2)
= 1965# + 6090#
= 8055#

AT 3RD FLR

P = (100+22)(16.37)(6/2)
+ (50+15+15)(16.37)(15.83/2)
= 5992# + 10,365#
= 16357#

AT 2ND FLR

LOAD ON POST IS THE SAME AS AT 3RD FLR

P = 16357#

AT 1ST FLR

LOAD ON POST IS THE SAME AS AT 3RD FLR

P = 16357#

BKE INC. STRUCTURAL ENGINEERS

Project: 14th & JOHNSON
Client: MARTY KEHOE Proj. No.:
Date: 5/2019 By: BB Sheet No.: 5

2700 SE HARRISON ST. STE. B, MILWAUKIE OR, 97222, 503-607-0481, FAX 503-607-0486. bill@bkengineers.com

CHECK LIVE LOAD REDUCTION

AREA = (16.37)(6/2) + (16.37)(15.83/2)

= 50 + 130

= 180 ft²

NO REDUCTION AT ROOF

INTERIOR POST

$K_{LL} = 4$

$K_{LL} A_T = 720$ ft²

$$L = L_o \left(0.25 + \frac{15}{(K_{LL} A_T)^{1/2}}\right)$$

$$L = L_o \left(0.25 + \frac{15}{(720)^{1/2}}\right)$$

$L = L_o (0.25 + 0.56)$

$L = L_o (0.81)$

REDUCE LIVE LOAD AT EACH LEVEL BY 19%

FOR (3) LEVELS TOTAL REDUCTION IS 19 × 3 = 57%

TOTAL ALLOWABLE REDUCTION ON POST IS 60% OK

REDUCED LOADS

AT ROOF DIVIDE LOAD BY 1.15 FOR LOAD DURATION FACTOR

= 700 #

AT THIRD FLOOR

AT STAIRS:

LIVE LOAD = 100 × .57 = 60 PSF

AT OFFICE

LIVE LOAD = 50 × 0.57 = 30 PSF

P = (60 + 22)(16.37)(6/2)

+ (30 + 15 + 15)(16.37)(15.83/2)

= 4030 # + 7775 #

= 11,805 #

LOAD SAME AT SECOND AND FIRST FLR

BK INC. STRUCTURAL ENGINEERS

2700 SE HARRISON ST. STE. B, MILWAUKIE OR. 97222, 503-607-0481, FAX 503-607-0486, bill@bkengineers.com

Project: 14th & JOHNSON

Client: MARTY KEHOE Proj. No.:

Date: 5/2019 By: BB Sheet No.: 6

CHECK LOAD CAPACITY FOR POST

NET HEIGHT OF POST.

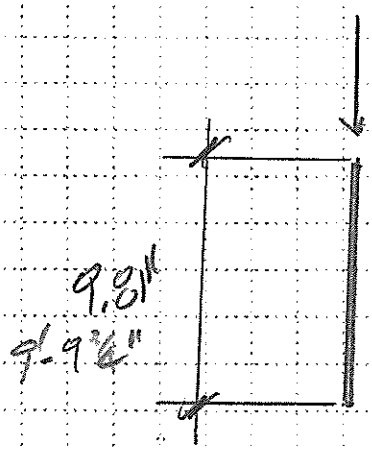
AT FIRST FLR TO SECOND FLR

FINISHED FLR TO FIN. FLR
L_t = 12'-6"

NET HEIGHT OF POST

FIN. FLR = 3/4"
DECKING = 2 1/2"
FLR PURLIN = 7x14" (13 1/2")
FLR BEAM = 14x16" (15 1/2")

NET = 12'-6" − (3/4 + 2 1/2 + 13 1/2 + 15 1/2)
= 12'-6" − (2.69')
= 9.81'



"P" = 7005# + 11,805#
+ 11,805#
= 30,615#

AT 7.5" x 7.5" POST

P_{CAP} = 141.5K

BK INC. STRUCTURAL ENGINEERS

Project: 14th & JOHNSON
Client: MARTY KEHOE Proj. No.:
Date: 5/2019 By: BB Sheet No.: 7

2700 SE HARRISON ST. STE. B, MILWAUKIE OR. 97222, 503-607-0481, FAX 503-607-0486. bill@bkengineers.com

BK Engineers
2700 SE Harrison St.
Milwaukie, OR 97222

Wood Column

DESCRIPTION: 9'-9.75" Column — POST AT FIRST TO SECOND FLR.

Code References

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : ASCE 7-16

General Information

Analysis Method :	Allowable Stress Design		
End Fixities	Top & Bottom Pinned		
Overall Column Height	9.813 ft		
(Used for non-slender calculations)			
Wood Species	Douglas Fir - Larch		
Wood Grade	No.1		
Fb +	1,350.0 psi	Fv	170.0 psi
Fb -	1,350.0 psi	Ft	675.0 psi
Fc - Prll	925.0 psi	Density	31.210 pcf
Fc - Perp	625.0 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1,600.0	1,600.0	1,600.0 ksi
Minimum	580.0	580.0	

Wood Section Name	8x8		
Wood Grading/Manuf.	Graded Lumber		
Wood Member Type	Sawn		
Exact Width	7.50 in	Allow Stress Modification Factors	
Exact Depth	7.50 in	Cf or Cv for Bending	1.0
Area	56.250 in^2	Cf or Cv for Compression	1.0
Ix	263.672 in^4	Cf or Cv for Tension	1.0
Iy	263.672 in^4	Cm : Wet Use Factor	1.0
		Ct : Temperature Factor	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 NDS 15.3.2
		Use Cr : Repetitive ?	No

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Unbraced Length for buckling ABOUT Y-Y Axis = 9.813 ft, K =
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 9.813 ft, K =

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 119.634 lbs * Dead Load Factor
AXIAL LOADS . . .
Load @ top of Column: Axial Load at 9.813 ft, D = 30.615 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS	Max. Axial+Bending Stress Ratio =	0.7378 : 1
	Load Combination	+D+H
	Governing NDS Forumla	Comp Only, fc/Fc'
	Location of max.above base	0.0 ft
	At maximum location values are . . .	
	Applied Axial	30.735 k
	Applied Mx	0.0 k-ft
	Applied My	0.0 k-ft
	Fc : Allowable	740.58 psi
PASS	Maximum Shear Stress Ratio =	0.0 : 1
	Load Combination	+D+S+H
	Location of max.above base	9.813 ft
	Applied Design Shear	0.0 psi
	Allowable Shear	195.50 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.0 k	Bottom along Y-Y	0.0 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.0 in at 0.0 ft above base
for load combination : n/a
Along X-X 0.0 in at 0.0 ft above base
for load combination : n/a

Other Factors used to calculate allowable stresses . . .

	Bending	Compression	Tension

Load Combination Results

Load Combination	C_D	C_P	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Maximum Shear Ratios: Stress Ratio	Status	Location
+D+H	0.900	0.890	0.7378	PASS	0.0 ft	0.0	PASS	9.813 ft
+D+L+H	1.000	0.874	0.6756	PASS	0.0 ft	0.0	PASS	9.813 ft
+D+Lr+H	1.250	0.834	0.5666	PASS	0.0 ft	0.0	PASS	9.813 ft
+D+S+H	1.150	0.850	0.6039	PASS	0.0 ft	0.0	PASS	9.813 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction k @ Base	@ Top	Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	My - End Moments k-ft @ Base	@ Top	Mx - End Moments @ Base	@ Top
+D+H					30.735				
+D+L+H					30.735				
+D+Lr+H					30.735				

SHT 8

BK Engineers
2700 SE Harrison St.
Milwaukie, OR 97222

Wood Column

DESCRIPTION: 9'-9.75" Column

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction k @ Base	@ Top	Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	My - End Moments k-ft @ Base	@ Top	Mx - End Moments @ Base	@ Top
+D+S+H					30.735				
+D+0.750Lr+0.750L+H					30.735				
+D+0.750L+0.750S+H					30.735				
+D+0.60W+H					30.735				
+D+0.750Lr+0.450W+H					30.735				
+D+0.750S+0.450W+H					30.735				
+0.60D+0.60W+0.60H					18.441				
+D+0.70E+0.60H					30.735				
+D+0.750L+0.750S+0.5250E+H					30.735				
+0.60D+0.70E+H					18.441				
D Only					30.735				
Lr Only									
L Only									
S Only									
W Only									
E Only									
H Only									

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
+D+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+L+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+Lr+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+S+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750Lr+0.750L+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.60W+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750Lr+0.450W+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750S+0.450W+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D+0.60W+0.60H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.70E+0.60H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+0.5250E+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D+0.70E+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
D Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
Lr Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
L Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
W Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
E Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
H Only	0.0000 in	0.000 ft	0.000 in	0.000 ft

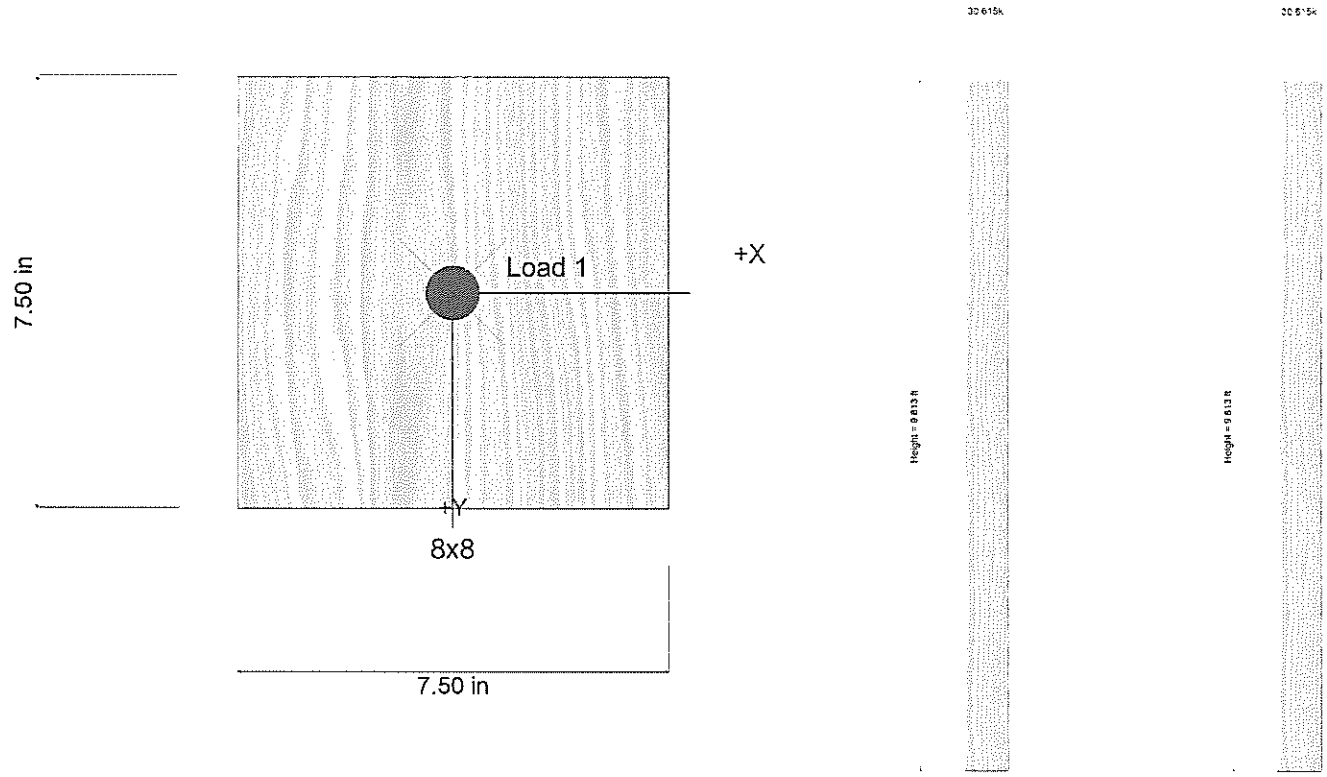
BK Engineers
2700 SE Harrison St.
Milwaukie, OR 97222

Wood Column

Lic. # : KW-06007984 BK ENGINEERS INC

DESCRIPTION: 9'-9.75" Column

Sketches



SHT 10

1410 NW Johnson Street

Engineering Judgement Report #1

Protection of 2-hour Rated Column

Client Name: Barry R. Smith, PC, Architect

Client Address: 715 SW Morrison Street, Suite 909, Portland, OR 97205

Date: 4/19/2019

Table of Contents

1. PROJECT OVERVIEW

Barry R. Smith, PC, Architect, is renovating the existing 1410 NW Johnson Street building. The existing building is 3 stories with a basement of Type III-B construction and includes Group F-2 occupancy. An NFPA 13 fire sprinkler system is provided throughout.

Code Unlimited has been asked to provide engineering analysis for the fire protection of a column member adjacent to the west stair to ensure 2-hour protection is provided as required by OSSC.

2. APPLICABLE CODES, STANDARDS, AND GUIDES

- 2014 Oregon Structural Specialty Code (OSSC)
- 2015 National Design Standard (NDS) Technical Report No. 10 – Fire Resistance of Exposed Wood Members – American Wood Council

3. DISCUSSION

3.1 Approach

- The proposed column assembly has been analyzed in accordance with 2014 OSSC Section 703.3 **Alternative Methods for Determining Fire Resistance**.
- NDS TR-10 is utilized to calculate wood char protection.
- The proposed design has been evaluated by an Oregon Licensed Fire Protection Engineer.

4. PROPOSED DESIGN

The 2-hour assembly design is composed of (1) 1/2" face layer and (1) 5/8” base layer of Type “X” gypsum wallboard wrapped around 3/8” metal hat channels which are attached to the greater than or equal to 12” x 12” in size timber column. The members are analyzed per NDS guidelines for structural requirements following a fire event. The column is not encased in an assembly and is not tested per ASTM E119 / UL 263. Therefore, the provided fire resistance will be calculated using the component added method per OSSC Section 703.2 and NDS TR-10 wood char analysis. Table 1 portrays the assembly design in detail:

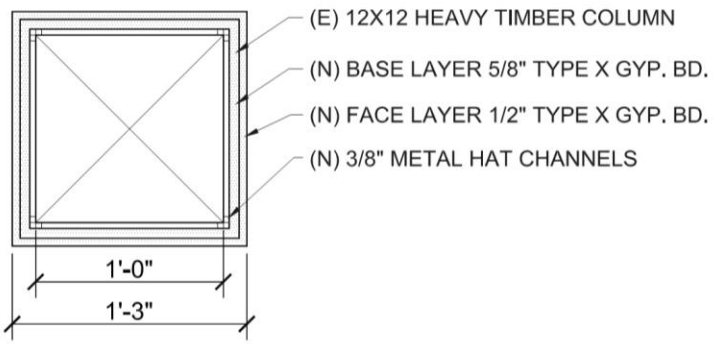


Figure 1. Proposed column assembly detail for structural column for 2-hour fire protection

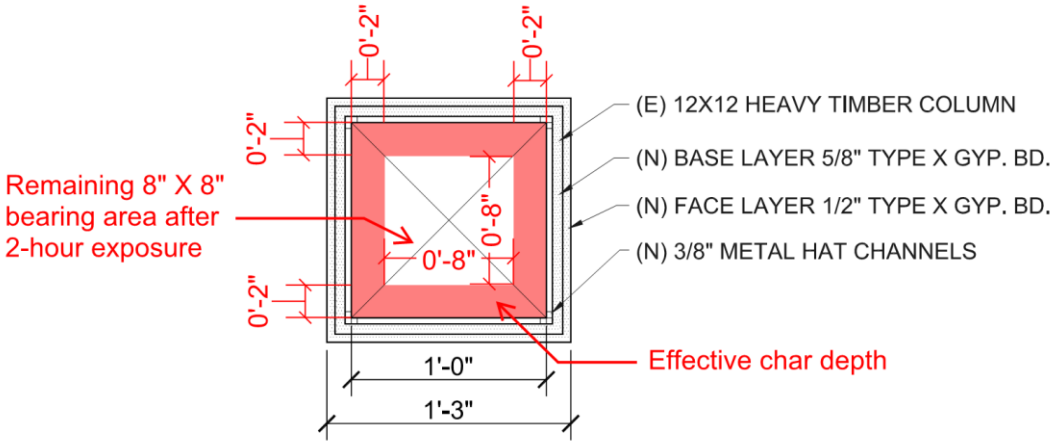


Figure 2. Bearing area of column after 2-hours (losing char on each side)

Table 1: Summary of Fire Resistance (Condition #1-Exposed Column)

Timber Column Size	Location on Column	Rating Provision	Code Section / Additional Provision	Equivalency
12 x 12 nominal	Any side of the column	(1) 5/8” Type X Gyp	OSSC Table 722.2.1.4(2)	*40 minutes*
		(1) 1/2” Type X Gyp	OSSC Table 722.2.1.4(2) / NDS TR-10	*+ 12.5 minutes*
		3/8” Hat Channels	----	Air Gap
		2” char depth	NDS TR-10	*+ 67.5 minutes (see Section 5.1)*
		TOTAL ASSEMBLY	**----**	***2-hour (calculated protection)***

5. ASSEMBLY ANALYSIS

There are three technical elements in the assembly design:

Item 1. Finish materials on fire-exposed side of wall that includes Type X gypsum wallboard
Item 2. Hat channel and clips to provide air separation between the wood member and finish materials for walls
Item 3. Design equations for unprotected fire-resistant exposed wood members.

The analysis will follow.

Item 1. 2014 OSSC Table 722.2.1.4(2) allows for equivalent fire protection time of 40 minutes for 5/8" Type X gypsum wallboard and 25 minutes for 1/2" Type X gypsum wallboard on fire-exposed side of walls. Per NDS TR-10, time assigned to the last layer (1/2” Type X gypsum wallboard) can only be multiplied by 0.50 which, in this case, is equivalent to 12.5 minutes.

Item 2. Since we are evaluating this application with respect to a 2-hour timber column rather than wall, 3/8” hat channels will be provided. The hat channels will prevent conductive heat transfer between the interior face of the gypsum board and timber member, reducing preheating and delaying ignition of wood column in a fire event.

Item 3. Fire resistance of unprotected/exposed wood column on all four sides will be provided by the 2” wood charring. This is based on the NDS, TR-10 wood char analysis (see calculations below).

5.1 Wood Column Char

The minimum wood thickness used as a protective material (effective char thickness) is required to meet the minimum protection (in addition to the protection provided by the Type X gypsum boards). The fire resistance of the wood is permitted to be calculated by ANSI/AF&PA *National Design Specifications for Wood Construction (NDS-TR10)*. The NDS specifies an effective char layer depth of 1.8” where 1-hour of fire resistance is required based on *equation 16.2-1* shown in *Figure 3*. *Table 16.2.1A* of the NDS is reproduced below in *Figure 4*.

$$\beta_{eff} = \frac{1.2\beta_n}{t^{0.187}} \qquad (16.2\text{-}1)$$

where:

β_{eff} = effective char rate (in./hr.), adjusted for exposure time, t

β_n = nominal char rate (in./hr.), linear char rate based on 1-hour exposure

t = exposure time (hr.)

Figure 3: Equation 16.2-1 in the NDS TR-10.

Table 16.2.1A	Effective Char Rates and Char Depths (for β_n = 1.5 in./hr.)	
Required Fire Endurance (hr.)	Effective Char Rate, β_{eff} (in./hr.)	Effective Char Depth, a_{char} (in.)
1-Hour	1.8	1.8
1½-Hour	1.67	2.5
2-Hour	1.58	3.2

Figure 4: Table 16.2.1A of the NDS TR-10.

5.1.1 NDS TR-10 Evaluation

As noted in the table above, 1.8" minimum actual wood thickness is necessary for load bearing for 1-hour of fire resistance. Non-Linear char rate provides the following for the evaluated period:

$$\beta_{eff} = {}^{1.2\ \beta_n}/_{t^{0.187}}$$

$$\beta_{eff} = {}^{1.2\ X\ 1.5}/_{1.125^{0.187}}$$

$$\beta_{eff} = 1.761\ in./hr$$

Effective char for 67.5 minutes (1.125 hour) is: 2"

Note: Char is classified by the discoloration of the wood, while the effective char is the wood material that is no longer structurally reliable for load bearing.

6. SUMMARY

The 2-hour fire protection of the column will be achieved by the protection provided from the Type X gypsum boards and limited char protection.

From the component additive method detailed in AWC-TR10, (2) layers (5/8" + 1/2") of Type "X" gypsum wallboard provides 52.5 minutes of protection while the char will provide additional fire protection for the column exposed sides. When we consider the convective and conductive heat transfer reduction by positioning 3/8" hat channels between the wood member and gypsum wrap assembly, the assembly will have a conservative total effective equivalent time of more than 2 hours. Therefore, the assembly will easily satisfy the design requirements for 2 hours of equivalent protection.

The project structural engineer verified that the remaining wood bearing area is acceptable for support of the assembly following the evaluated fire duration.

7. CONCLUSION

The proposed design of the primary structural column meets the code requirement to provide 2-hour fire resistance. The NDS calculation confirms that 2” of sacrificial wood will provide the effective char for 67.5 minutes of fire resistance, while the component additive method from AWC-TR10 provides 52.5-minute duration of fire resistance with multiple layers of Type X gypsum board. The column will maintain an adequate cross-sectional load bearing area following a fire event.

As evaluated in this EJ, the column will maintain a 2-hour fire resistance as required by the OSSC.

Franklin Callfas
Principal/Fire Protection Engineer
Code Unlimited

1410 NW Johnson Street

Engineering Judgement Report #2

Protection of 2-hour Rated Beam

Client Name: Barry R. Smith, PC, Architect

Client Address: 715 SW Morrison Street, Suite 909, Portland, OR 97205

Date: 4/19/2019

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1. PROJECT OVERVIEW

Barry R. Smith, PC, Architect, is renovating the existing 1410 NW Johnson Street building. The existing building is 3 stories with a basement of Type III-B construction and includes Group F-2 occupancy. An NFPA 13 fire sprinkler system is provided throughout.

Code Unlimited has been asked to provide engineering analysis for the fire protection of a beam member adjacent to the west stair to ensure 2-hour protection is provided as required by OSSC.

2. APPLICABLE CODES, STANDARDS, AND GUIDES

- 2014 Oregon Structural Specialty Code (OSSC)
- 2015 National Design Standard (NDS) Technical Report No. 10 – Fire Resistance of Exposed Wood Members – American Wood Council

3. DISCUSSION

3.1 Approach

- The proposed beam assembly has been analyzed in accordance with 2014 OSSC Section 703.3 **Alternative Methods for Determining Fire Resistance**.
- NDS TR-10 is utilized to calculate wood char protection.
- The proposed design has been evaluated by an Oregon Licensed Fire Protection Engineer.

4. PROPOSED DESIGN

The 2-hour assembly design is composed beam exposed on three sides and consists of (1) 1/2" face layer and (1) 5/8” base layer of Type “X” gypsum wallboard wrapped around 3/8” metal hat channels which are attached to the 14” x 16” timber beam.

The beam is analyzed per NDS guidelines for structural requirements following a fire event. The beam is not tested per ASTM E119 / UL 263. Therefore, the provided fire resistance will be calculated using the component added method per OSSC Section 703.2 and NDS TR-10 wood char analysis. Table 1 portrays the assembly design in detail:

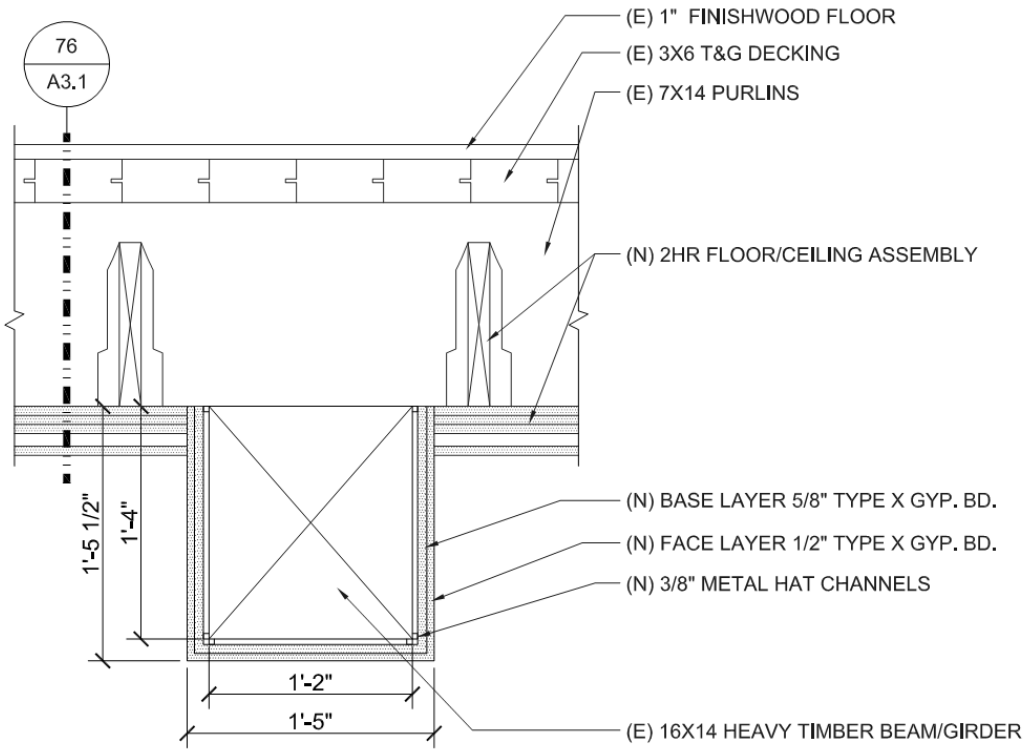


Figure 1. Proposed beam assembly detail

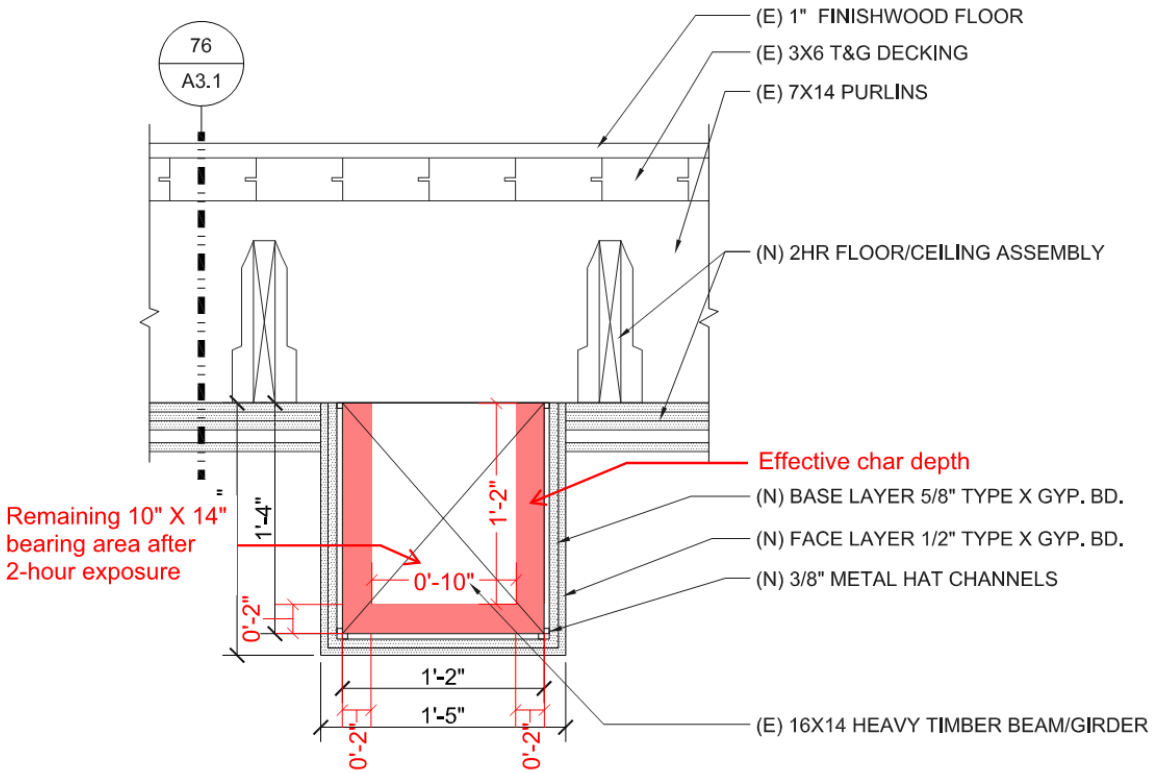


Figure 2. Bearing area of beam after 2-hours (losing char on each side)

Table 1. Timber beam size and summary of equivalency for EJ of 2-hour rated wood beam.

Timber Beam Size	Location on Beam	Rating Provision	Code Section / Additional Provision	Equivalency
8" x 12" nominal (14" x 16")	Bottom three side of the beam	(1) 5/8" Type X Gyp	OSSC Table 722.2.1.4(2)	*40 minutes*
		(1) 1/2" Type X Gyp	OSSC Table 722.2.1.4(2) / NDS TR-10	*+ 12.5 minutes*
		3/8" Hat Channels	----	Air Gap
		2" char depth	NDS TR-10	*+ 67.5 minutes (see Section 5.1)*
		TOTAL ASSEMBLY	**----**	***2-hour (calculated protection)***

5. ASSEMBLY ANALYSIS

There are three technical elements in the assembly design:

Item 1. Finish materials on fire-exposed side of wall that includes Type X gypsum wallboard
Item 2. Hat channel and clips to provide air separation between the wood member and finish materials for walls
Item 3. Design equations for unprotected fire-resistant exposed wood members.

The analysis will follow.

Item 1. 2014 OSSC Table 722.2.1.4(2) allows for equivalent fire protection time of 40 minutes for 5/8" Type X gypsum wallboard and 25 minutes for 1/2" Type X gypsum wallboard on fire-exposed side of walls. Per NDS TR-10, time assigned to the last layer (1/2" Type X gypsum wallboard) can only be multiplied by 0.50 which, in this case, is equivalent to 12.5 minutes.

Item 2. Since we are evaluating this application with respect to a 2-hour timber beam rather than wall, 3/8" hat channels will be provided. The hat channels will prevent conductive heat transfer between the interior face of the gypsum board and timber member, reducing preheating and delaying ignition of wood beam in a fire event.

Item 3. Fire resistance of unprotected/exposed wood beam on all three sides will be provided by the 2" wood charring. This is based on the NDS, TR-10 wood char analysis (see calculations below).

5.1 Wood Beam Char

The minimum wood thickness used as a protective material (effective char thickness) is required to meet the minimum protection (in addition to the protection provided by the Type X gypsum boards). The fire resistance of the wood is permitted to be calculated by ANSI/AF&PA *National Design Specifications for Wood Construction (NDS-TR10)*. The NDS specifies an effective char layer depth of 1.8" where 1-hour of fire resistance is required based on *equation 16.2-1* shown in *Figure 3*. *Table 16.2.1A* of the NDS is reproduced below in *Figure 4*.

$$\beta_{eff} = \frac{1.2\beta_n}{t^{0.187}} \qquad (16.2\text{-}1)$$

where:

β_{eff} = effective char rate (in./hr.), adjusted for exposure time, t

β_n = nominal char rate (in./hr.), linear char rate based on 1-hour exposure

t = exposure time (hr.)

Figure 3: Equation 16.2-1 in the NDS TR-10.

Table 16.2.1A Effective Char Rates and Char Depths (for β_n = 1.5 in./hr.)

Required Fire Endurance (hr.)	Effective Char Rate, β_{eff} (in./hr.)	Effective Char Depth, a_{char} (in.)
1-Hour	1.8	1.8
1½-Hour	1.67	2.5
2-Hour	1.58	3.2

Figure 4: Table 16.2.1A of the NDS TR-10.

5.1.1 NDS TR-10 Evaluation

As noted in the table above, 1.8” minimum actual wood thickness is necessary for load bearing for 1-hour of fire resistance. Non-Linear char rate provides the following for the evaluated period:

$\beta_{eff} = {}^{1.2\ \beta_n}/_{t^{0.187}}$

$\beta_{eff} = {}^{1.2\ X\ 1.5}/_{1.125^{0.187}}$

$\beta_{eff} = 1.761\ in./hr$

Effective char for 67.5 minutes (1.125 hour) is: 2”

Note: Char is classified by the discoloration of the wood, while the effective char is the wood material that is no longer structurally reliable for load bearing.

6. SUMMARY

The 2-hour fire protection of the beam will be achieved by the protection provided from the Type X gypsum boards and fire-resistance of the heavy timber beam.

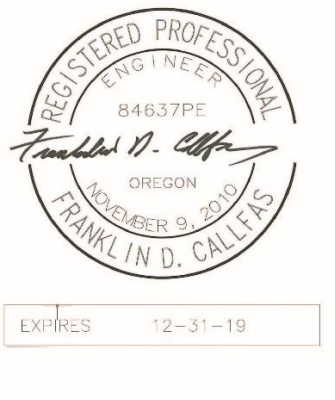
From the component additive method detailed in AWC-TR10, (2) layers (5/8" + 1/2") of Type "X" gypsum wallboard provides 52.5 minutes of protection while the char will provide additional fire protection for the beam exposed sides. When we consider the convective and conductive heat transfer reduction by positioning 3/8" hat channels between the wood member and gypsum wrap assembly, the assembly will have a conservative total effective equivalent time of more than 2 hours. Therefore, the assembly will easily satisfy the design requirements for 2 hours of equivalent protection.

The project structural engineer verified that remaining wood bearing area is acceptable for support of the assembly following the evaluated fire duration.

7. CONCLUSION

The proposed design of the primary structural beam meets the code requirement to provide 2-hour fire resistance. The NDS calculation confirms that 2" sacrificial wood will provide the effective char for 67.5 minutes of fire resistance, while the component additive method from AWC-TR10 provides 52.5-minute duration of fire resistance with multiple layers of Type X gypsum board. The beam will maintain an adequate cross-sectional load bearing area following a fire event.

As evaluated in this EJ, the beam will maintain a 2-hour fire resistance as required by the OSSC.



Franklin Callfas
Principal/Fire Protection Engineer
Code Unlimited

1410 NW Johnson Street

Engineering Judgement Report #3

Protection of support for 2-hour Rated Beam

Client Name: Barry R. Smith, PC, Architect

Client Address: 715 SW Morrison Street, Suite 909, Portland, OR 97205

Date: 5/1/2019

Table of Contents

1. PROJECT OVERVIEW

Barry R. Smith, PC, Architect, is renovating the existing 1410 NW Johnson Street building. The existing building is 3 stories with a basement of Type III-B construction and includes Group F-2 occupancy. An NFPA 13 fire sprinkler system is provided throughout.

Code Unlimited has been asked to provide engineering analysis for the fire protection of the support for the 2-hour beam assembly as required by OSSC.

Figure 1: Existing condition between the 2-hour column and 2-hour beam assemblies

2. APPLICABLE CODES, STANDARDS, AND GUIDES

- 2014 Oregon Structural Specialty Code (OSSC) including the recently adopted Appendix N.

3. DISCUSSION

3.1 Approach

- The proposed assembly has been analyzed in accordance with 2014 OSSC Section 703.3 **Alternative Methods for Determining Fire Resistance**.
- The fire protection has been compared against a 2-hour fire rated column, UL Design No. X520.
- Portions of the tested assembly are modified to suit the unique design condition. The modification is analyzed for equivalency using published fire test data and accepted fire science principles.

4. PROPOSED DESIGN

The proposed 2-hour assembly design utilizes (1) 1/2" thick layer of Type C gypsum wallboard wrapped around a steel support assembly which connects 2-hour rated column and beam. The steel member protection is compared to a 2-hour fire rated column per UL X520. The steel is a continuation of the wood column below and requires equivalent protection to a tested assembly tested per ASTM E119 / UL 263. The provided fire resistance will be based on the UL assembly comparison per OSSC Section 703.3. Table 1 portrays the assembly design in detail:

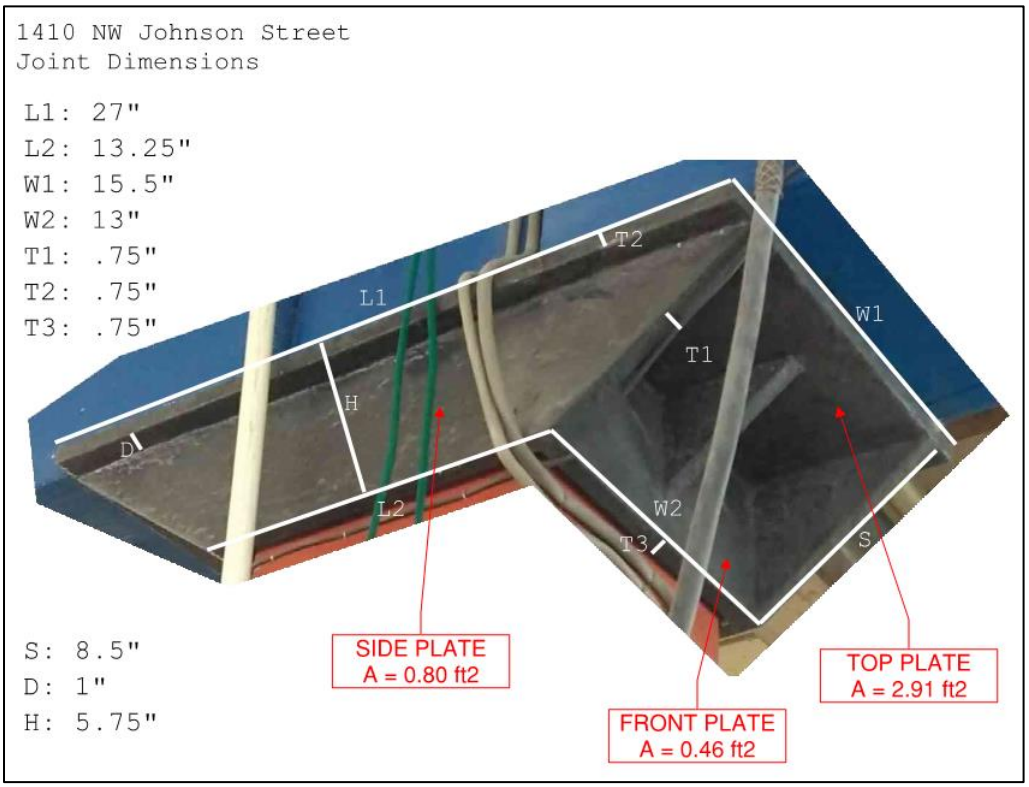


Figure 2: Dimensions of existing steel member.

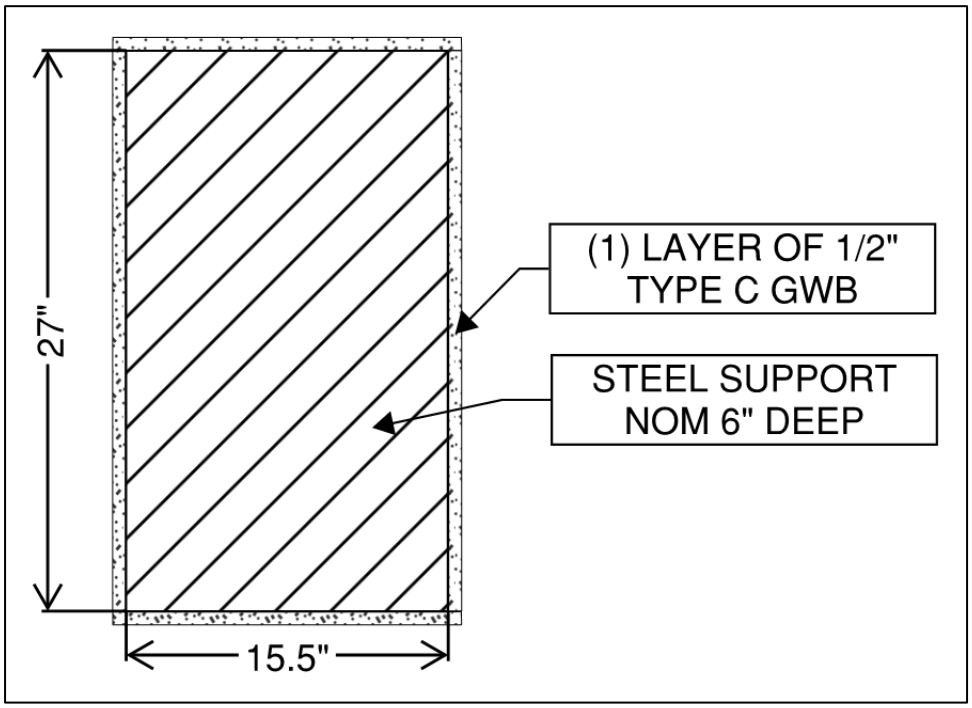


Figure 3: Proposed protection of steel joint, plan view.

5. ASSEMBLY ANALYSIS

5.1 W/D Ratio

The calculated W/D ratio of the steel member is determined for comparison of inherent fire-resistance against the tested column. The W/D value is a ratio between the linear weight of the steel (W), and the perimeter exposed to fire (D). The linear weight of the existing support member is determined with the known density of ¾" nominal thick steel plates (30.60 lbs/ft^2) (Engineering Toolbox *Steel Plates – Size and Weight*, 2009).

Joint Weight, using surface areas in Figure 2
Top plate: 30.60 lbs/ft^2 x 2.91 ft^2 = 89.05 lbs
Side plates: 30.60 lbs/ft^2 x (0.80 ft^2 x 2) = 48.96 lbs
Front and back plates: 30.60 lbs/ft^2 x (0.46 x 2) = 28.15 lbs
Approximate total weight = 166.16 lbs
Distributed across length of L1 = 27" = 2.25 ft:
166.16 lbs / 2.25 ft = **73.85 lbs/ft**

Heated Perimeter
Nominal depth x 4 sides = 6.75 in. x 2 = **13.5 in**.
Calculated W/D ratio = **5.47**

The minimum W/D ratio per the tested UL X520 (Figure 5) is:

W14x228 W/D = 2.44

Wide Flange Steel Specifications		
Steel Size	**W/D**	**HP/A**
W12X279	3.48	39
W14X311	3.26	41
W12X252	3.19	42
W14X283	3.00	45
W12X230	2.94	46
W14X257	2.75	49
W12X210	2.72	49
W14X233	2.52	53
W14X228	2.44	55

Figure 4: W/D ratio per UL X520.

5.2 UL Design No X520 Comparison

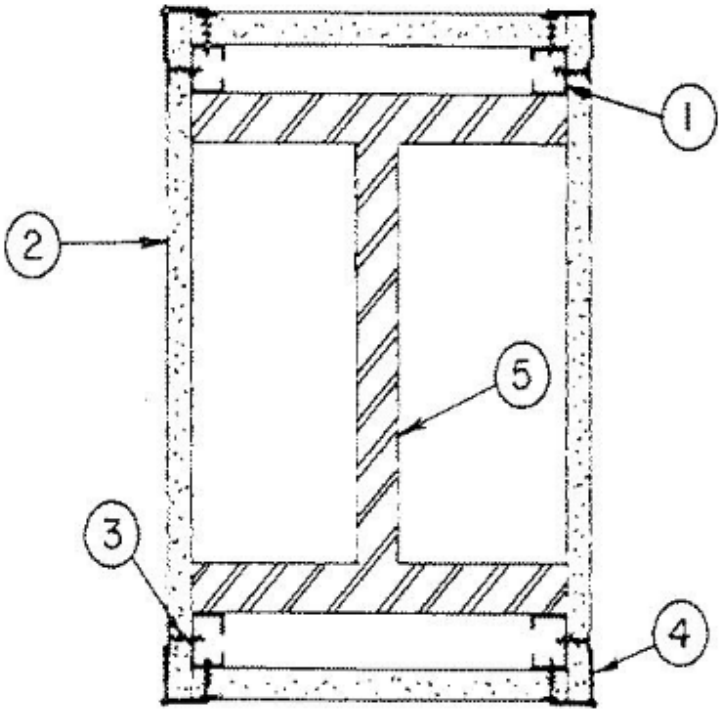
The proposed is a steel assembly, protected with (1) layer of 1/2” Type C gypsum board. It is compared to the 2-hour fire rated column per the tested assembly UL X520 as shown below.

Design No. X520

October 24, 2017

Rating — 2 Hr.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Steel Studs** — 1-5/8 in. wide with leg dimensions of 1-5/16 and 1-7/16 in. with a 1/4 in. folded flange in legs fabricated from 25 MSG galv steel, 3/4 by 1-3/4 in. rectangular cutouts punched 8 and 16 in. from the ends. Steel stud cut 1/2 in. less in length than assembly height. Alternate Construction, **Steel Framing Members*** — Clips attached to column flange 4 ft. OC and 1-1/4 in. from the top and bottom of column. 1-1/4 in. by 1-1/4 in. 28 MSG angle laid in place over clip. Angle cut 1 in. less in length than assembly height.
JOHN WAGNER ASSOCIATES INC, DBA GRABBER — Types CB, CB1 Clips.

2. **Gypsum Board*** — 1/2 in. thick, one layer. Nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard.
ACADIA DRYWALL SUPPLIES LTD — Type C.

AMERICAN GYPSUM CO — Type AG-C

CERTAINTEED GYPSUM INC — Type FRPC, SF3 or Type C.

CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C — Type LGFC-C/A.

GEORGIA-PACIFIC GYPSUM L L C — Types 5, C, DAP, DA, DAPC, TG-C.

NATIONAL GYPSUM CO — Types -eXP-C, FSW-G, FSW-1, FSK-G, FSW-C, FSK-C.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Types PG-3, PG-C.

THAI GYPSUM PRODUCTS PCL — Type C.

3. **Screws** — 1 in. long self-drilling, self-tapping steel screws, spaced vertically 12 in. O.C.

4. **Corner Beads** — No. 28 MSG galv steel, 1-1/4-in. legs attached to wallboard by crimping spaced 6 in. O.C.

5. **Steel Column** — Min size of column, a W14X228, with outside dimensions of 16 by 15-7/8 in. with a flange thickness of 1-11/16 in., a web thickness of 1-1/16 in., and a cross-sectional area of 67.06 sq in.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2017-10-24

Figure 5: UL X520.

Table 1: Comparison between the proposed design and the 2-hour fire rated UL X520 assembly

Element	UL Assembly Design No. X520	Proposed Design
1. Steel Member	Steel Column: W14x228 (W/D = 2.44 – Column) (Figures 4 and 5)	Steel Support (W/D = 5.47) (Figure 1 and Section 5.1) **Significantly Higher Inherent Fire-Resistance**
2. Gypsum Board	**1/2 in. thick, one layer**. Nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard.	One **(1) layer of 1/2" thick** Type C gypsum board wrapped around the joint to provide encasement protection. **Equivalent**
Fire-Resistance Rating	**2-Hour**	**2-Hour (minimum)**

6. SUMMARY

The 2-hour fire protection of the steel connection will be achieved by a GWB membrane provided through 1 layer of Type C gypsum board and the inherent fire-resistance of steel, as compared to UL X520 (Table 1).

While evaluating fire resistance requirement of members, different sized beam and columns are compared against each other through a factor referred to as the W/D Ratio. The weight per unit length of a member is divided by the length of exposed heated perimeter area to determine the inherent fire resistance of a member. Lower W/D ratios correspond with thinner steel members that will be subject to earlier failure when heated.

During this evaluation, an encased column assembly UL X520 was referenced, where the minimum required W/D ratio (2.44) is far less than the proposed design W/D ratio (5.47). The proposed support member is protected with ½" Type C gypsum, which is the equivalent protection used in UL X520. The greater W/D ratio and equivalent Type C gypsum board encasement ensures a minimum of 2-hour fire-resistance as compared to the 2-hour fire rated column assembly, UL X520.

Adjacent Beam and Column protection will utilize 2-hour assemblies as provided in EJ#1 an EJ#2 (See Appeal #20220).

7. CONCLUSION

The proposed assembly meets the code requirement to provide 2-hour fire-resistance and continuous fire protection of the adjacent 2-hour rated beam and column. The proposed design provides greater fire-resistance compared to the tested W-column in UL X520.

The significantly greater inherent fire-resistance of the steel member in addition to the equivalent Type C gypsum board encasement per UL X520 exceeds the protection of the tested column. Therefore, the proposed design for the steel support member encased with 1/2" Type C gypsum board will exceed the required minimum 2-hour fire-resistance required by code, as detailed in the report.

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Code Unlimited