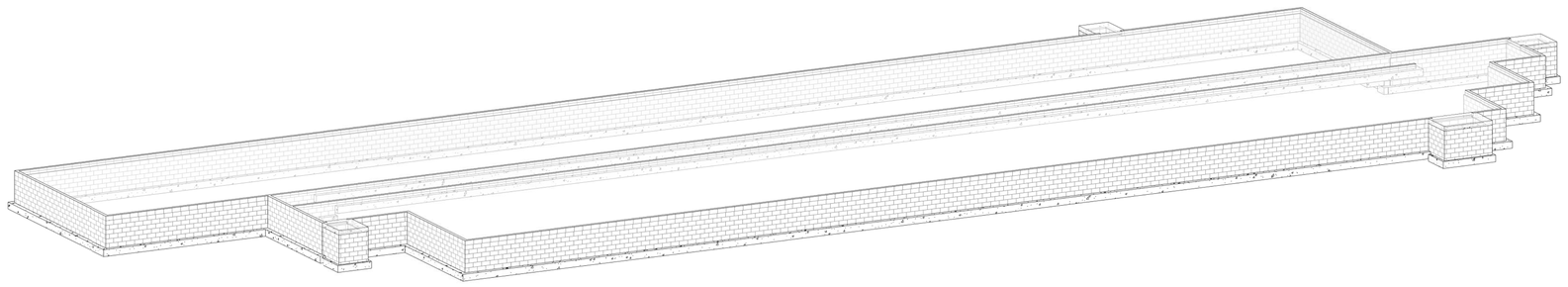
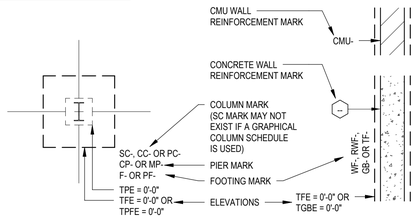


STRUCTURAL SHEET INDEX

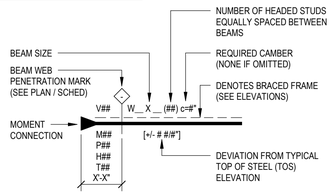
- ● INDICATES DRAWINGS ARE BEING ISSUED
- ●S INDICATES DRAWINGS ARE BEING ISSUED AND SIGNED FOR THE FIRST TIME
- ▲ INDICATES DRAWINGS ARE BEING ISSUED ON SMALL SHEETS OR WRITE UP
- R INDICATES DRAWINGS ARE BEING ISSUED FOR REFERENCE ONLY (NOT FOR CONSTRUCTION)

SHEET #	ISSUE: 10.26.2018 - 100% MHFA REVIEW	2.5.2019 - ISSUED FOR CITY REVIEW	2.21.2019 - ADDENDUM #2	6.7.2019 - ISSUED FOR CONSTRUCTION				SHEET TITLE
S000	●	●S	●	●				STRUCTURAL COVER SHEET
S001	●	●S	●	●				GENERAL STRUCTURAL NOTES
S002	●	●S	●	●				GENERAL STRUCTURAL NOTES (CONT)
S003	●	●S	●	●				TYPICAL DETAILS - FOUNDATION
S004	●	●S	●	●				TYPICAL DETAILS - CMU
S005	●	●S	●	●				TYPICAL DETAILS - WOOD SCHEDULES
S006	●	●S	●	●				TYPICAL DETAILS - WOOD SCHEDULES
S007	●	●S	●	●				TYPICAL DETAILS - WOOD STAIR FRAMING
S111	●	●S	●	●				FIRST FLOOR FOUNDATION PLAN
S112	●	●S	●	●				SECOND FLOOR FRAMING PLAN
S121	●	●S	●	●				ROOF FRAMING PLAN
S501	●	●S	●	●				FOUNDATION DETAILS
S601	●	●S	●	●				WOOD FRAMING DETAILS
S602	●	●S	●	●				WOOD FRAMING DETAILS

FOUNDATION PLAN LEGEND



STEEL BEAM FRAMING PLAN LEGEND



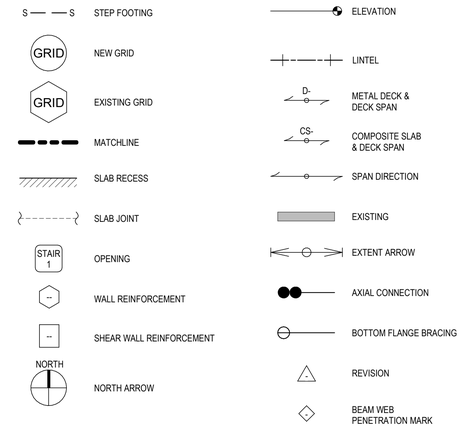
V - INDICATES FACTORED VERTICAL SHEAR FORCE IN KIPS (SEE SCHEDULE IF OMITTED)
M - INDICATES FACTORED END MOMENT FORCE IN KIP-FEET (SEE SCHEDULE IF OMITTED)
P - INDICATES FACTORED END AXIAL FORCE IN KIPS (FORCES ARE FULLY REVERSIBLE UNO)
H - INDICATES FACTORED HORIZONTAL SHEAR FORCE IN KIPS, PERPENDICULAR TO BEAM AXIS
T - INDICATES TORSIONAL MOMENT FORCE IN KIP-FEET

OVERALL PROJECT NOTES

1. 3D VIEWS SHOWN ON THE CONTRACT DOCUMENTS ARE FOR REFERENCE ONLY.

TYPICAL SYMBOLS

- FOR ADDL SYMBOLS SEE PLAN LEGENDS.



STRUCTURAL ABBREVIATIONS

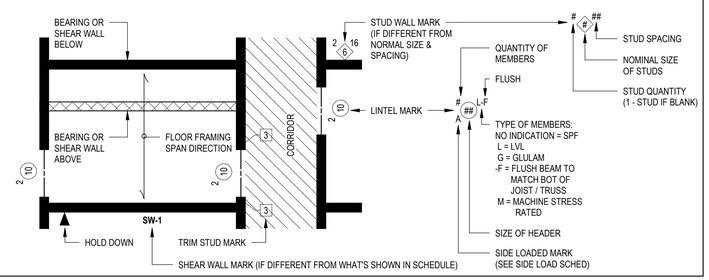
ADD	ADDENDUM
ADDL	ADDITIONAL
ALT	ALTERNATE
ANCH	ANCHOR (ANCHORAGE)
ARCH	ARCHITECT, ARCHITECTURAL
@	AT
BSMT	BASEMENT
BM	BEAM
BRG	BEARING
BTWN	BETWEEN
BLK	BLOCK
BB	BOND BEAM
BOT,BO,B/	BOTTOM
BFE	BOTTOM FOOTING ELEVATION
BLKG	BLOCKING
BLDG	BUILDING
CANT	CANTILEVER
CIP	CAST IN PLACE
CLG	CEILING
CTR	CENTER
CL	CENTERLINE
CLR	CLEAR
COL	COLUMN
COMP	COMPOSITE
CONC	CONCRETE
CMU	CONCRETE MASONRY UNIT
CONN	CONNECTION(S)
CONST	CONSTRUCTION
CONST JT	CONSTRUCTION JOINT
CONT	CONTINUOUS
db	REINFORCING BAR DIAMETER
DBL	DOUBLE
DEFL	DEFLECTION
DEG	DEGREES
DL	DEAD LOAD
D, d	DEPTH
DET	DETAIL
DIAG	DIAGONAL
DIA	DIAMETER
DIM	DIMENSION
DWL(S)	DOWEL(S)
DN	DOWN
DWG	DRAWING
EA	EACH
EF	EACH FACE
ELEC	ELECTRICAL
ENGR	ENGINEER
EL	ELEVATION
ELEV	ELEVATOR
EOD	EDGE OF DECK
EOR	ENGINEER OF RECORD
EOS	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
ERECT	ERECTION
EW	EACH WAY
EXIST, (E)	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FD	FLOOR DRAIN
FDN/FND	FOUNDATION
FL/FLR	FLOOR
FRMG	FRAMING
FS	FAR SIDE
FT	FOOT (FEET)
FTG	FOOTING
GALV	GALVANIZED
GA	GAGE
GC	GENERAL CONTRACTOR
GB	GRADE BEAM
HD	HEADED
HDR	HEADER
HK	HOOK
HT	HEIGHT
HS	HIGH STRENGTH
HSS	HOLLOW STRUCTURAL TUBE
HORIZ	HORIZONTAL
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH(S)
INFO	INFORMATION
INT	INTERIOR
JT OR JNT	JOINT
JST	JOIST
JBE	JOIST BEARING ELEVATION
JSD	JOIST SEAT DEPTH
K	KIP (1,000 POUNDS)
K/FT	KIPS PER FOOT
KLF	KIPS PER LINEAL FOOT
K/SF	KIPS PER SQUARE FOOT
L	ANGLE
LB	POUND
LG	LENGTH, LONG
LL	LIVE LOAD
LOC	LOCATION
LONG	LONGITUDINAL
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LWT	LIGHT WEIGHT
MAX	MAXIMUM
MCJ	MASONRY CONTROL JOINT
MEP / MECH	MECHANICAL, ELECTRICAL PLUMBING
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTL	METAL
(N)	NEW
NEC	NECESSARY
NO	NUMBER
NOM	NOMINAL
NS	NEAR SIDE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NWT	NORMAL WEIGHT
OC	ON CENTER
OPNG	OPENING
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
/	PER
PC	PRECAST
PERP	PERPENDICULAR
PL	PLATE
PROJ	PROJECTION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POST-TENSIONED
PVC	POLYVINYL CHLORIDE
R	RADIUS
REF	REFERENCE
REINF	REINFORCEMENT
REQD	REQUIRED
REV	REVERSE/REVISION
RD	ROOF DRAIN
RO	ROUGH OPENING
SCHED	SCHEDULE
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SIP	SIP STRUCTURAL INSULATED PANEL
SJI	SJI STEEL JOIST INSTITUTE
SOG	SLAB ON GRADE
SPA	SPACES
SPEC	SPECIFICATIONS
SQ	SQUARE
STD	STANDARD
STL	STEEL
STIFF	STIFFENER
STIR	STIRRUPS
STRUCT	STRUCTURAL
TBE	TOP OF BEAM ELEVATION
TDE	TOP OF DECK ELEVATION
TEMP	TEMPORARY
TEMP STL	TEMPERATURE STEEL
TFE	TOP OF FOOTING ELEVATION
THK	THICK
T & B	TOP AND BOTTOM
TO, T/	TOP OF
TOS	TOP OF STEEL
TOSL	TOP OF SLAB
TRANSV	TRANSVERSE
TWE	TOP OF WALL ELEVATION
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VIF	VERIFY IN FIELD
W, w	WIDTH
W	WITH
W/O	WITH OUT
WP	WORK POINT
WT	WEIGHT
WWF	WELDED WIRE FABRIC

TYPICAL MARKS

BP-	=	BASE PLATE
BRP-	=	BEARING PLATE
B0 OR B0-000 =		CONCRETE BEAM
CC-	=	CONCRETE COLUMN
CCB-	=	CONCRETE COUPLING BEAM
J0 OR J0-000 =		CONCRETE JOIST
CP-	=	CONCRETE PIER
DP-	=	DRILLED PIER
DPC-	=	DRILLED PIER CAP
EP-	=	EMBED PLATE
GB-	=	GRADE BEAM
F-	=	ISOLATED FOOTING
L-	=	LINTEL
MP-	=	MASONRY PIER
PF-	=	PILE FOUNDATIONS
PB-	=	POST-TENSION BEAM
PC-	=	PRECAST COLUMN
RWF-	=	RETAINING WALL FOOTING
SC-	=	STEEL COLUMN
SH-	=	STEEL HANGER
SP-	=	STEEL POST
WF-	=	WALL FOOTING

WOOD FRAMING PLAN LEGEND

- DENOTES 2X FLOOR OR ROOF FRAMING
- DENOTES BEARING OR SHEAR WALLS FROM LEVEL BELOW.
- DENOTES BEARING OR SHEAR WALLS FROM LEVEL ABOVE.



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SIGNATURES

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of

MINNESOTA — 6.7.2019

WILLIAM T. BULLER — 20995 reg. no.

06.30.2020 reg. exp. date

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PROJECT INFO

Commission No.
B/A: 616-18
Drawn By:
MDS/TMR
Issue Date
6.7.2019

SUBMITTALS / REVISIONS

- 10.26.2018 100% MHFA REVIEW
- 2.5.2019 ISSUED FOR CITY REVIEW
- 2.21.2019 ADDENDUM #2
- 6.7.2019 ISSUED FOR CONSTRUCTION

SCALE
As Indicated

West Birch Apartments

W Branch Street
Princeton, MN

STRUCTURAL COVER SHEET

S000

6/4/2019 2:35:33 PM

GENERAL STRUCTURAL NOTES

These notes supplement the Specifications. Refer to the Specifications for additional requirements.

1. DESIGN CRITERIA:

1.1. BUILDING CODES USED FOR DESIGN:

1.1.1. IBC 2012 with Minnesota amendments.

1.2. STRUCTURAL TESTS AND SPECIAL INSPECTIONS:

1.2.1. Special inspections shall be performed by an independent testing agency according to IBC Chapter 17.

Section 1704.2.5 - Fabricators
Section 1705.2 and Table 1705.2.2 - Steel Construction
Table 1705.3 - Concrete Construction
Section 1705.4 - Masonry Construction
Table 1705.6 - Soils
Table 1705.3 - Post-installed Anchors

1.2.2. Qualifications of special inspectors and frequency of tests and inspections shall be as defined in "Guideline Program for Structural Testing and Special Inspections," 5th Edition, Council of American Structural Engineers of Minnesota (available at http://www.mn-sea.org/).

1.2.3. The Engineer will provide periodic observation to assure conformance with design intent of the construction documents. These observations are not meant to fulfill the requirements of special inspections.

1.2.4. Special inspections of the following items are not within the scope of the structural drawings. Contact the Architect or design professionals with these responsibilities for information about these items.

Sprayed Fire-resistant Materials
Mastic and Intumescent Fire-resistant Coatings
EIFS
Smoke Control

1.2.5. In addition to the special inspections required elsewhere in these drawings, the project specifications, and contract documents, camber shall be verified in a minimum of 10% of all members requiring camber. If, in the opinion of the EOR and Testing Agency, this testing discloses a large ratio (10% or more) of unacceptable cambers, the required percentage of tested cambers may be increased by the EOR to 100% at no expense to the owner. For steel beams and trusses, the fabrication tolerances for camber shall be as defined in AISC 303 "Code of Standard Practice for Steel Buildings and Bridges" (latest edition).

1.3. FUTURE CONSTRUCTION:

1.3.1. VERTICAL: None.

1.3.2. HORIZONTAL: None.

1.4. DESIGN LOADS:

1.4.1. Risk Category:

From IBC Table 1604.5

Risk Category II

1.4.2. DESIGN LIVE LOADS:

Public Areas . . . . . 100 PSF
Residential Areas . . . . . 40 PSF

1.4.3. WIND LOAD:

Ultimate Design Wind Speed: . . . 115 MPH
Exposure Classification: . . . . . B
Internal Pressure Coeff: . . . . . +0.18
. . . . . -0.18
Wind pressures used for the design of exterior components and cladding shall be calculated by a professional engineer registered in the state where the project is located. Calculations shall be submitted for review.

1.4.4. SNOW LOAD:

Ground Snow Load: . . . . . 60 PSF
Flat Roof Snow Load: . . . . . 46 PSF
Snow Exposure Factor: 1.0
Snow Load Importance Factor: . . . 1.0
Roof Thermal Factor: 1.1
Roof Slope Factor: 1.0

1.5. DEFLECTION AND DRIFT

1.5.1. Horizontal framing members are designed for deflections as tabulated. Deflections of horizontal to horizontal framing members are additive. Subcontractors shall make allowance for installation and operation of their systems to accommodate these deflections.

TYPICAL FRAMING MEMBERS
Roof Live Load span/360
Floor Live + Superimposed Dead Load span/480
Construction Load span/180

FRAMING MEMBER SUPPORTING EXTERIOR WALL
Ext wall + live + superimposed dead load . . span/600
(3/8" max)

PREFABRICATED WOOD TRUSSES AND I-JOISTS
Roof Live Load span/360
Roof Total Load span/240
Floor Live Load span/480
Floor Total Load span/360

1.5.2. Story drifting criteria:

Wind: H/400
Seismic: . . . . . 0.020 hx

2. DESIGN STRENGTHS:

2.1. CONCRETE:

2.1.1. All concrete shall be stone aggregate unless noted. See Specifications for additional durability requirements.

2.1.2. Minimum concrete 28-day compressive strength shall be as follows:

Class	f'c (PSI)	Type	Add'l Remarks	Location
A	4000	NWT		Interior Slabs and Walls
B	4500	NWT, Air	Note 1	Exterior Slabs and Walls
C	3000	NWT		Footings

Note 1: Limit Water to Cement Ratio to 0.45

2.2. CONCRETE REINFORCEMENT:

Deformed Bars:	FY = 60 KSI	ASTM A615
Weldable Deformed Bars:	FY = 60 KSI	ASTM A706
Welded Wire Fabric:	FY = 70 KSI	ASTM A185
Micro/Macro Synthetic Fibers:	ASTMC1116	

2.3. COLD-FORMED STEEL: See ASTM A1003.

54 mil (16 Gage) and Heavier: FY = 50 KSI
43 mil (18 Gage) and Lighter: FY = 33 KSI

2.4. MASONRY:

Assembly Compressive Strength:	f'm = 2,000 PSI	
Masonry Grout:	f'g = 3,000 PSI	
Deformed Bars:	FY = 60 KSI	ASTM A615

2.5. DIMENSIONAL LUMBER:

2.5.1. Structural Framing (beams, joists, studs, plates): Spruce-Pine-Fir #1/#2

Fb = 875 PSI
Fv = 135 PSI
Fc parallel = 1,150 PSI
E = 1,400 KSI

2.5.2. Wood Posts (5x5 and larger): Spruce-Pine-Fir #1 or better

Fb = 850 PSI
Fv = 125 PSI
Fc parallel = 700 PSI
E = 1,300 KSI

2.6. LAMINATED VENEER LUMBER (LVL): Grade 2.0 E

Fb = 2,950 PSI
Fv = 290 PSI
E = 2,000 KSI

2.7. PARALLEL STRAND LUMBER (PSL):

2.7.1. Posts: Grade 1.8 E

Fb = 2,400 PSI
Fv = 190 PSI
Fc parallel = 2,500 PSI
E = 1,800 KSI

2.7.2. Beams 18" deep or less: Grade 2.0 E

Fb = 2,900 PSI
Fv = 290 PSI
Fc perp = 625 PSI
E = 2,000 KSI

2.7.3. Beams deeper than 18": Grade 2.2 E

Fb = 2,900 PSI
Fv = 290 PSI
Fc perp = 625 PSI
E = 2,200 KSI

2.8. LAMINATED STRAND LUMBER (LSL): Grade 1.3 E

Fb = 1,700 PSI
Fv = 425 PSI
Fc perp = 710 PSI
E = 1,300 KSI

2.9. GLUED LAMINATED LUMBER:

Fb = 2,400 PSI
Fv = 265 PSI
E = 1,800 KSI

2.10. PARKING AREAS / STRUCTURE EXPOSED TO WEATHER:

2.10.1. All structural steel and embed plates exposed to weather or located in parking areas shall be hot-dip galvanized unless noted otherwise.

2.10.2. Field welds shall be touched up with 2 coats of zinc rich paint.

3. FOUNDATIONS AND EARTHWORK:

3.1. SOILS AND FOUNDATION ENGINEERING REPORT:

3.1.1. Reference the project's geotechnical report prepared by Braun Intertec, number B1800529, dated February 13, 2018, for additional information and requirements.

3.1.2. This report is for informational purposes only and shall not be considered part of the contract documents. Furthermore, no warranty is made by the owner with regard to the completeness and accuracy of the subsurface investigation data, soil test data, statements and interpretations given in the report.

3.2. GROUND WATER:

3.2.1. Water levels indicated on the boring logs are subject to seasonal and/or annual variations. If necessary, a dewatering system of sufficient capacity shall be installed and operated to maintain the construction area free of water at all times.

3.3. EXCAVATIONS:

3.3.1. Should any questionable conditions be encountered during excavation, notify Owner's Representative immediately.

3.3.2. No engineered fill shall be placed until excavation bottoms have been inspected and approved by the Geotechnical Engineer.

3.3.3. Water shall not be permitted to accumulate in footing excavations.

3.3.4. Provide a minimum of 6 inches of granular fill below all interior slabs-on-grade.

3.3.5. The slab-on-grade design is based on a modulus of subgrade reaction of 150 PCI.

3.4. FOOTINGS:

3.4.1. The foundation design is based on a total load net soil pressure of:
Spread Footings 3000 PSF
Wall Footings 3000 PSF

3.4.2. Foundations are assumed to be supported on native material or properly compacted structural fill. All footing excavations shall be inspected, prior to concrete placement, by the Geotechnical Engineer to verify suitable bearing material of capacity as specified.

3.4.3. Notify the Owner's representative when additional excavation is required to reach suitable bearing material.

3.4.4. Footing steps shall be located generally where indicated on the plan, and shall be installed as detailed.

3.4.5. Bottom of exterior building footings surrounding heated areas are to be at least 60 inches below final outside grade unless dimensioned otherwise. Bottom of exterior building footings at stoops or other unheated areas are to be at least 60 inches below final outside grade unless dimensioned otherwise.

3.4.6. Contractor shall provide frost protection for all footings when footings may be exposed to freezing conditions. Frost protection may include insulating blankets or at least 60 inches of soil above the bottom of footing.

3.4.7. All continuous footings shall be centered under walls unless dimensioned otherwise.

3.5. NON-FROST SUSCEPTIBLE FILL

3.5.1. Where non-frost susceptible fill is required, fill should consist of clean, open graded crushed stone. See the geotechnical report for additional requirements.

3.5.2. Non-frost susceptible fill shall extend below the freeze zone.

3.6. BACKFILLING:

3.6.1. No backfilling and compacting of earth shall be permitted against retaining walls until walls and footings have reached 100% of their design strength, or unless adequate bracing is provided. Bracing must be reviewed by the Engineer.

3.6.2. No backfilling and compacting of earth shall be permitted against basement or other foundation walls until all slabs that support the wall against lateral earth pressure have been poured and have reached 75% of their design strength, or unless adequate bracing is provided. Bracing must be reviewed by the Engineer.

3.6.3. Material used for backfill shall be free draining engineered backfill unless noted otherwise. See the Geotechnical Report for additional information.

3.6.4. Both sides of foundation walls shall be backfilled simultaneously so as to prevent overturning or lateral movement of walls. All grade beams shall be adequately braced to prevent lateral movement during backfilling and compaction.

3.6.5. No fill or backfill shall be settled by the use of water.

3.7. SHEET PILING AND EARTH RETENTION SYSTEMS:

3.7.1. Sheet piling and earth retention systems shall be designed by the Contractor. Design calculations and drawings shall be submitted for review for conformance to the drawings and construction sequences before installation. See Specifications.

4. CONCRETE:

4.1. REFERENCES:

ACI 315	ACI Detailing Manual
ACI 318	Building Code Requirements for Reinforced Concrete
CRSI MSP	Manual of Standard Practice
AWS D1.4	Structural Welding Code - Reinforcing Steel
CRSI	Recommended Practice for Placing Reinforcing Bars
PCI Design Handbook:	Precast and Prestressed Concrete

4.2. REINFORCING STEEL:

4.2.1. The reinforcing steel Contractor shall fabricate all reinforcement and furnish all accessories, chairs, spacer bars and supports necessary to secure the reinforcement unless shown otherwise on the plans and/or details.

4.2.2. Concrete reinforcement shall be placed according to ACI and CRSI "Recommended Practice for Placing Reinforcing Bars".

4.2.3. Reinforcement Placing Tolerances

Clear Distance From Bars To:
A. Soffit on Earth +/- 1/2"
B. Formed Soffit +/- 1/4"
C. Formed Side or Vertical Surface +/- 3/8"
D. Top Surface
Depth 8" or Less +/- 1/4"
Depth More than 8", Not More Than 24" +/- 1/2"
Depth More Than 24" +/- 1"

Spacing of Bars:
A. Longitudinal Bars in
Columns, Girders, and Beams +/- 1/4"
B. Ties and Stirrups +/- 1"
C. In Slab Walls +/- 2"

Longitudinal Location of Bends and Bar Ends:
A. At Discontinuous End of Member +/- 1/2"
B. All Other Locations +/- 2"

4.2.4. Minimum Clear Cover For Concrete Reinforcement:

Footings . . . . . 2" Sides, 3" Bottom, 2" Top
Foundation Walls
Exterior Face . . . . . 2"
Interior Face . . . . . 2" Against Soil
Slabs on Grade . . . . . Center of Slab

4.2.5. See typical detail for required bar development lengths and lap splice lengths.

4.2.6. All welded wire fabric shall have one full space plus 2" at splices and wire together.

4.2.7. Continuous top and bottom bars in walls, beams, and grade beams shall be spliced as follows:

1. Top bars - at mid-span
2. Bottom bars - over supports.

4.2.8. Slabs, beams and joists shall not have joints in a horizontal plane. Any stop in concrete work must be made at center of span or at center of support with vertical bulkheads and horizontal keys, unless otherwise shown. All construction joints shall be as detailed unless reviewed by Architect and Structural Engineer.

4.2.9. No welding of reinforcement shall be permitted unless specifically called for or reviewed by the Structural Engineer. Where welding is permitted, all welding of reinforcing bars shall conform to: "Structural Welding Code - Reinforcing Steel". A chemical analysis of the reinforcing bars to be welded shall be submitted for review.

4.3. ANCHORING TO CONCRETE

4.3.1. Headed studs shall be Nelson H4L or S3L with Fu = 65 ksi, or approved equal, unless noted otherwise.

4.3.2. Deformed bar anchors shall be Nelson D2L with FY = 70 ksi or approved equal, unless noted otherwise.

4.3.3. Post-installed anchors shall be installed by qualified personnel in accordance with the Manufacturer's Printed Installation Instructions.

4.3.4. Expansion anchors shall not be loaded until concrete has achieved a minimum age of 7 days. Adhesive anchors shall not be loaded until concrete achieved a minimum age of 21 days.

4.3.5. Expansion anchors shall be Hilti Kwik Bolt TZ or approved equal, unless noted otherwise. Embedment shall be as follows unless noted otherwise:

Diameter	Embedment	Diameter	Embedment
3/8"	2"	5/8"	4"
1/2"	3 1/4"	3/4"	4 3/4"

4.3.6. Adhesive anchors shall be Hilti HIT-RE 500 V3 or HIT-HY 200 with HAS Standard rods or approved equal, unless noted otherwise. Embedment shall be as follows unless noted otherwise:

Diameter	Embedment	Diameter	Embedment
3/8"	3 3/8"	5/8"	5 5/8"
1/2"	4 1/2"	3/4"	6 3/4"

4.3.7. Epoxy for dowels drilled into concrete shall be Hilti HIT-RE 500 V3, HIT-HY 200, or approved equal, unless noted otherwise. Embedment shall be as follows unless noted otherwise:

Bar	Embedment	Bar	Embedment
# 3	3 1/4"	# 5	5 3/4"
# 4	4 3/8"	# 6	6"

4.3.8. Anchor capacity is dependent upon spacing between adjacent anchors and proximity of anchors to edge of concrete. Install anchors in accordance with spacing and edge clearances indicated on the drawings.

4.3.9. Contractor shall verify the location of reinforcing bars and/or prestressing tendons via GPR, X-Ray, or other means before drilling anchor holes. Reinforcing steel shall not be damaged.

5. MASONRY:

5.1. REFERENCES:

IBC 2012	
ACI 530	Building Code Requirements for Concrete Masonry Structures
ACI 530.1	Specification for Concrete Masonry Construction

5.2. CONCRETE MASONRY UNITS:

5.2.1. Concrete masonry units shall conform to ASTM C 90, normal weight.

5.2.2. Structural walls shall be comprised of Plain Double Corner units, Open End ('A' shaped) units, or Double Open End ('H' shaped) units. Stretcher units shall not be used in structural walls.

5.2.3. Store concrete masonry units off the ground, under cover, and in a dry location.

5.2.4. Autoclave Aerated Concrete (AAC) masonry shall not be used.

5.3. MORTAR:

5.3.1. Mortar shall conform to the requirements of ASTM C 270.

5.3.2. Mortar for structural walls below grade shall be Type M. Mortar for other structural walls shall be Type M or S.

5.3.3. Face shells and webs of bed joints shall be fully mortared for all starter courses, columns, pilasters, and cells to be grouted.

5.3.4. Head joints shall be mortared a minimum distance from each face equal to the face shell thickness of the unit.

5.3.5. Do not wet concrete masonry before laying up or grouting.

5.4. GROUT:

5.4.1. Vertical cells to be grouted shall be aligned, and unobstructed openings for grout provided.

5.4.2. Grout shall conform to the requirements of ASTM C 476 and have a slump between 8 and 11 inches.

5.4.3. Masonry walls shall be grouted with lift heights not exceeding 5 feet. Pour heights shall not exceed 5 feet unless cleanouts are provided, and 24 feet when cleanouts are provided per ACI 530. Consolidate lifts exceeding 1 foot in height by mechanical vibration and reconsolidate after initial water loss and settlement have occurred.

5.5. REINFORCEMENT:

5.5.1. Masonry walls shall have ladder type horizontal bed joint reinforcement consisting of W1.7 (9 gage) hot-dipped galvanized wire conforming to ASTM A 951. Bed joint reinforcement shall be spaced at 16" OC vertically.

5.5.2. Provide 5/8" cover to bed joint reinforcement for exterior walls or walls below grade. Provide 1/2" cover to bed joint reinforcement for other walls.

5.5.3. Secure vertical reinforcement with bar positioners at bar splices, top and bottom of walls, and at intervals not exceeding 192 bar diameters.

5.5.4. Lap splices shall be in accordance with the table shown in the drawings unless noted otherwise.

5.5.5. Provide a minimum of 1 1/2" cover to deformed bar reinforcement.

5.5.6. When using fine grout, provide a minimum of 1/4" clear distance between reinforcing bars and the face of any masonry unit. When using course grout, provide 1/2" clear distance.

5.5.7. Contractor shall provide Shop Drawings showing lengths, sizes, bending details, and locations of reinforcing steel, wall elevations, and setting diagrams for embedded items.

5.6. LINTELS:

5.6.1. Provide 24" deep minimum solid masonry below all lintel bearing locations.

5.6.2. Masonry lintels shall be comprised of Lintel Block. Reinforcing bars shall be chaired and tied.

5.6.3. Steel lintels and loose lintels shall be galvanized.

5.7. ANCHORING TO MASONRY:

5.7.1. Headed studs shall be Nelson H4L or S3L with FY = 50 ksi, or approved equal, unless noted otherwise.

5.7.2. Deformed bar anchors shall be Nelson D2L with FY = 70 ksi or approved equal, unless noted otherwise.

Anchors installed into grouted cells or bond beams shall be Hilti Kwik Bolt 3 Masonry Anchors or approved equal, unless noted otherwise. Anchors shall not be installed in head joints unless approved by the Engineer. No more than one anchor shall be installed per cell unless approved by the Engineer. Embedment shall be as follows unless noted otherwise:

Diameter	Embedment	Diameter	Embedment
1/4"	2"	5/8"	4"
3/8"	2 1/2"	3/4"	4 3/4"
1/2"	3 1/2"		

5.7.3. Anchors installed into hollow cells shall be Hilti HIT-HY 270 with threaded HAS rods with 2" embedment in HIT-SC screen tubes or approved equal, unless noted otherwise. No more than two anchors shall be installed per cell, and anchors shall not be installed in CMU mortar joints, flange, or cell web.

6. STRUCTURAL WOOD:

6.1. REFERENCES:

IBC 2012	
NFPA	National Design Specification for Wood Construction
NFPA	Design Values for Wood Construction

6.2. DIMENSION LUMBER:

6.2.1. All member sizes given on plan are nominal dimensions.

6.2.2. Spacing of bridging for floor and roof joists shall not exceed 8' or 6 times the nominal joist depth (whichever is greater).

6.2.3. Wood lintels shall bear the full length on all trim studs, columns, posts or other supporting members indicated on plan.

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SIGNATURES

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of MINNESOTA 6.7.2019

WILLIAM T. BULLER 20995
reg. no.

06.30.2020
reg. exp. date

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ERA Commission #2018-273

PROJECT INFO

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Drawn By:
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SUBMITTALS / REVISIONS

10.26.2018 100% MHFA REVIEW
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SCALE
As Indicated

West Birch Apartments

W Branch Street
Princeton, MN

GENERAL STRUCTURAL NOTES

S001

6.2.4. All beams and joists not bearing on supporting members shall be framed with "Simpson" joist hangers or equal. Use Type LUSXX for single 2x's and Type LUSXX-2 for double 2x's.

6.2.5. All nailing shall be in accordance with IBC Table No. 2304.10.1 unless noted otherwise.

6.2.6. Bolt nailers and blocking to steel members with 1/2" diameter bolts spaced at 32 inches on center unless noted otherwise.

6.2.7. Roof and ceiling joists are shown as a general layout only. Consider joist spacing shown as the maximum spacing with incidental framing, bracing and blocking added as needed for standard wood frame construction.

6.3. PREFABRICATED ROOF AND FLOOR TRUSSES:

6.3.1. Trusses shall be designed to meet all loading and spans as indicated on the plans. Design trusses for concentrated loads and cantilevers as indicated on architectural and structural plans.

6.3.2. Typical Floor Truss Design Loads:

Top Chord Live Load . . . . See DESIGN LIVE LOADS above
Top Chord Dead Load . . . . 17 psf
Bottom Chord Dead Load . . 8 psf

6.3.3. Typical Roof Truss Design Loads:

Top Chord Live Load . . . . See DESIGN LIVE LOADS and SNOW LOADS above
Top Chord Dead Load . . . . 12 psf
Bottom Chord Dead Load . . 8 psf

6.3.4. Trusses shall be designed and fabricated in accordance with the latest edition of ANSI/TPI 1.

6.3.5. The prefabricated wood truss fabricator is responsible for the design of the trusses, truss connections, etc. Trusses shall be designed and certified by a professional engineer registered in the State where the project is located.

6.3.6. Truss supplier shall furnish all necessary blocking, bracing and connection material to provide a completed installation. This information shall be clearly shown on erection plan.

6.3.7. Contractor shall be responsible for bracing and/or bridging required during construction.

6.3.8. Permanent bracing required by the truss supplier for web members shall be designed and provided by the truss supplier.

6.3.9. Permanent lateral restraint and diagonal bracing shall be installed in accordance with the Structural Building Components Association (SBCA)BCSI B3: "Permanent Restraint / Bracing of Chords and Web Members".

6.3.10. All lumber used in the fabrication of trusses shall be stress graded. Connector plates shall be made of Grade "A" galvanized steel, minimum 20 gage, per TIP Specification.

6.4. LAMINATED VENEER LUMBER:

6.4.1. Laminated Veneer Lumber (indicated LVL on plans) to be supplied and manufactured according to the specification of the Truss Joist Corporation. See Section 1 of these notes for material strength information.

6.5. PARALLEL STRAND LUMBER:

6.5.1. Parallel Strand Lumber (indicated PSL on plans) to be supplied and manufactured according to the specification of the Truss Joist Corporation. See Section 1 of these notes for material strength information.

6.6. LAMINATED STRAND LUMBER:

6.6.1. Laminated Strand Lumber (indicated LSL on plans) to be supplied and manufactured according to the specification of the Truss Joist Corporation. See Section 1 of these notes for material strength information.

6.7. GLUED LAMINATED LUMBER:

6.7.1. Glued laminated members (indicated GL on plans) to be supplied and manufactured according to the specification of the American Institute of Timber Construction. See Section 1 of these notes for material strength information.

7. MISCELLANEOUS:

7.1. DEFERRED STRUCTURAL SUBMITTALS

7.1.1. The design and documentation of some components defined using performance-based specifications may be deferred until after a building permit is obtained.

7.1.2. Deferred submittals include, but are not limited to, the items listed below.

7.1.3. For the following deferred submittals, the Contractor shall submit shop drawings and calculations signed and stamped by a professional engineer registered in the state where components are installed. These shall be submitted for review prior to fabrication.

Stairs
Exterior Cold-Formed Framing
Guardrails and Handrails
Structural Precast
Architectural Precast
Wood Truss Systems

7.1.4. For the following deferred submittals, the Contractor shall submit shop drawings for review prior to fabrication.

Elevators
Window Washing Davits/Supports
Fall Protection Systems
Specialty Retaining Walls
Awnings

7.2. ANCHOR RODS:

7.2.1. All anchor rods for mechanical and electrical equipment shall be furnished and located by the respective Subcontractors and set by the General Contractor except where the other Subcontractors furnish their own concrete pads.

7.3. NON LOAD BEARING PARTITION WALLS:

7.3.1. Non load bearing partition walls are generally not shown on the structural drawings. Care shall be taken by the Contractor to maintain a deflection space between the top of partition walls and floor or roof structure above.

7.3.2. See Typical Details and deflection requirements of horizontal framing members in Section 1 of these Notes for minimum deflection space between top of non load bearing partition walls and overhead structure.

7.4. VERIFICATIONS:

7.4.1. The General Contractor shall verify all openings sizes, pad sizes, and locations with the respective Subcontractors.

7.4.2. Structural steel supplier and erector are responsible for providing deck reinforcement or framing as shown on typical structural details for mechanical roof openings. See mechanical drawings for quantities, sizes and locations. The cost of structural redesign fees shall be borne by the Mechanical Contractor for equipment and/or opening changes made after structural documents have been issued.

7.5. GENERAL:

7.5.1. These drawings do not include necessary components for construction safety.

7.5.2. The structural design is based only on the building in its completed state. Contractors and their subs shall take whatever precautions are necessary to withstand all horizontal and vertical loadings that may be encountered during the construction prior to completion of the building.

7.5.3. During construction, the Contractor may encounter existing conditions which are not now known or are at variance with project documentation (Discovery). Such conditions may interfere with new construction or required protection and/or support of existing Work during construction, or may consist of damage or deterioration to structural materials or components which could jeopardize the structural integrity of the building(s).

7.5.4. The Contractor shall notify the Engineer of all Discoveries that the Contractor believes may interfere with proper execution of the Work or jeopardize the structural integrity of the building(s) prior to proceeding with Work related to such Discoveries.

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SIGNATURES

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SCALE
As Indicated

West Birch Apartments

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Princeton, MN

GENERAL STRUCTURAL NOTES (CONT)

S002

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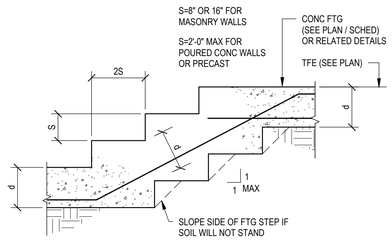
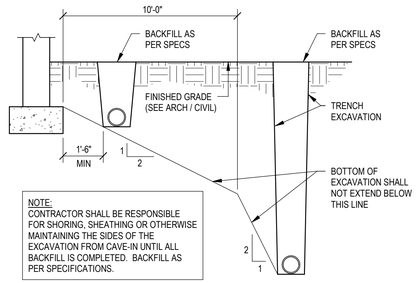
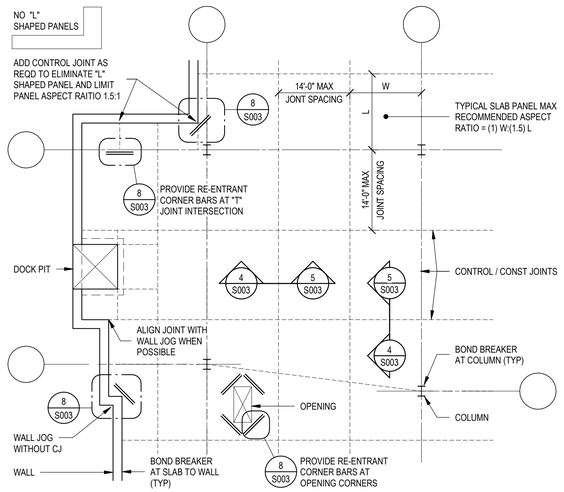


1 S003 STEPPED FOOTING DETAIL #00701 NO SCALE



NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR SHORING, SHEATHING OR OTHERWISE MAINTAINING THE SIDES OF THE EXCAVATION FROM CAVE-IN UNTIL ALL BACKFILL IS COMPLETED. BACKFILL AS PER SPECIFICATIONS.

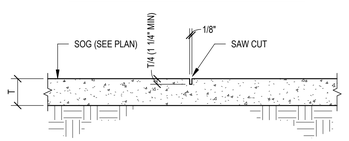
2 S003 UTILITIES PARALLEL TO FOOTINGS DETAIL #00702 NO SCALE



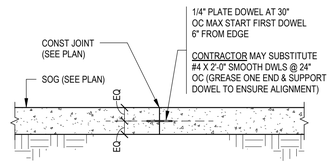
SLAB ON GRADE JOINTING AND ADDITIONAL REINFORCEMENT NOTES
1. MAX CONTROL JOINT SPACING TO BE 14'-0" OC EACH WAY.
2. CONTRACTOR TO SUBMIT SLAB ON GRADE JOINT PLAN THREE WEEKS PRIOR TO SLAB POUR.
3. LIMIT SLAB PANEL ASPECT RATIO TO 1.5:1.
4. MINIMIZE "L" SHAPED PANELS WHEN AT ALL POSSIBLE OR PROVIDE ADDITIONAL JOINTING OR RE-ENTRANT CORNER BARS.
5. WHENEVER POSSIBLE LOCATE JOINTS UNDER WALL AND FIXTURES.
6. SAW CUTTING SHALL BE DONE AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY TO PERMIT CUTTING WITHOUT CHIPPING, SPALLING OR TEARING BUT NOT MORE THAN 12 HOURS AFTER POURING.

3 S003 SOG - JOINTING AND ADDITIONAL REINFORCEMENT REQUIREMENTS #01901 NO SCALE

NOTE:
SAW CUTTING SHALL BE DONE AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY TO PERMIT CUTTING WITHOUT CHIPPING, SPALLING OR TEARING BUT NOT MORE THAN 12 HOURS AFTER POURING



4 S003 SOG - CONTROL JOINT #01902 NO SCALE



5 S003 SOG - CONSTRUCTION JOINT #01903 NO SCALE

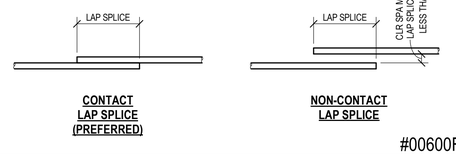
CONCRETE REINFORCEMENT DEVELOPMENT LENGTHS & LAP SPLICE LENGTHS																	
BAR SIZE	f'c ≥ 3,000 PSI		f'c ≥ 4,000 PSI		f'c ≥ 5,000 PSI		f'c ≥ 6,000 PSI		f'c ≥ 7,000 PSI		f'c ≥ 8,000 PSI		f'c ≥ 9,000 PSI		f'c ≥ 10,000 PSI		f'c = ALL
	Ld	Ls	Ld	Ls	Ld	Ls	Ld	Ls	Ld	Ls	Ld	Ls	Ld	Ls	Ld	Ls	Lc
#3	17"	22"	15"	20"	13"	17"	12"	16"	12"	16"	12"	16"	12"	16"	12"	16"	12"
#4	22"	29"	19"	25"	17"	22"	16"	21"	15"	20"	14"	18"	13"	17"	12"	16"	15"
#5	28"	36"	24"	31"	22"	29"	20"	26"	18"	23"	17"	22"	16"	21"	15"	20"	19"
#6	33"	43"	29"	38"	26"	34"	24"	31"	22"	29"	21"	27"	19"	25"	18"	23"	23"
#7	48"	62"	42"	55"	38"	49"	34"	44"	32"	42"	30"	39"	28"	36"	27"	35"	27"
#8	55"	72"	48"	62"	43"	56"	39"	51"	36"	47"	34"	44"	32"	42"	30"	39"	30"
#9	62"	81"	54"	70"	48"	62"	44"	57"	41"	53"	38"	49"	36"	47"	34"	44"	34"
#10	70"	91"	61"	79"	54"	70"	50"	65"	46"	60"	43"	56"	41"	53"	39"	51"	39"
#11	78"	101"	61"	87"	60"	78"	55"	72"	51"	66"	48"	62"	54"	59"	43"	56"	43"

NOTES

Ld = CLASS 'A' LAP SPLICE / DEVELOPMENT LENGTH
Ls = CLASS 'B' LAP SPLICE
Lc = COMPRESSION LAP SPLICE
db = BAR DIAMETER

1. WHERE SPLICES ARE NOT CALLED OUT ON THE DRAWINGS, PROVIDE CLASS B LAP SPLICE (Ls)
2. FOR LIGHT WEIGHT CONCRETE, MULTIPLY LENGTHS BY 1.3.
3. FOR EPOXY BARS, MULTIPLY LENGTHS BY 1.5.
4. FOR HORIZONTAL BARS WITH 12" OF FRESHLY PLACED CONCRETE BELOW, MULTIPLY LENGTHS BY 1.3.
5. WHERE NOTE 3 AND NOTE 4 BOTH APPLY, MULTIPLY LENGTHS BY 1.7.
6. MECHANICAL SPLICES WITH 125% OF BAR YIELD STRENGTH MAY BE USED IN LIEU OF LAPS.

DETAILS



CONTACT LAP SPLICE (PREFERRED)

NON-CONTACT LAP SPLICE

#00600F

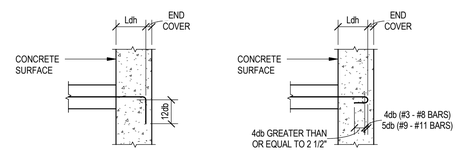
CONCRETE REINFORCEMENT EMBEDMENT LENGTHS FOR STANDARD HOOKS								
BAR SIZE	f'c ≥ 3,000 PSI	f'c ≥ 4,000 PSI	f'c ≥ 5,000 PSI	f'c ≥ 6,000 PSI	f'c ≥ 7,000 PSI	f'c ≥ 8,000 PSI	f'c ≥ 9,000 PSI	f'c ≥ 10,000 PSI
#3	6"	6"	6"	6"	6"	6"	6"	6"
#4	8"	7"	6"	6"	6"	6"	6"	6"
#5	10"	9"	8"	7"	7"	6"	6"	6"
#6	12"	10"	9"	9"	8"	8"	7"	7"
#7	14"	12"	11"	10"	9"	9"	8"	8"
#8	16"	14"	12"	11"	11"	10"	9"	9"
#9	18"	15"	14"	13"	12"	11"	10"	10"
#10	20"	17"	16"	14"	13"	12"	12"	11"
#11	22"	19"	17"	16"	15"	14"	13"	12"

NOTES

Ldh = DEVELOPMENT LENGTH OF HOOK
db = BAR DIAMETER

1. MULTIPLY LENGTHS BY 1.5 WHERE ANY OF THE FOLLOWING OCCUR:
   - SIDE COVER ≤ 2 1/2".
   - END COVER ≤ 2".
2. FOR LIGHT WEIGHT CONCRETE, MULTIPLY LENGTHS BY 1.3.
3. FOR EPOXY BARS, MULTIPLY LENGTHS BY 1.2.

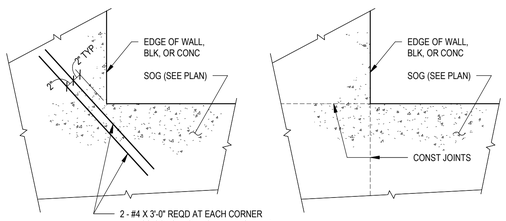
DETAILS



90 DEGREE HOOK

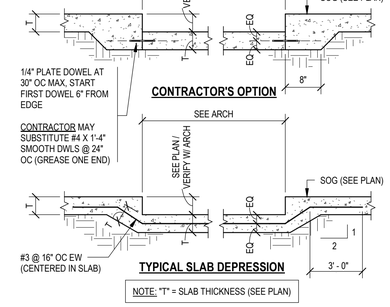
180 DEGREE HOOK

#00600G



NOTE:
1. FOR PIPES 3'-0" OR LESS BELOW FTG, PROVIDE SLEEVE AND CONCRETE AS SHOWN.
2. FOR PIPES MORE THAT 3'-0" BELOW FTG, USE STEPPED FTG DETAIL TO GET WITHIN 3'-0" MAX.
CONTRACTOR'S OPTION:
OMIT STEPPED FOOTING AND CONCRETE BELOW AND PROVIDE PROPERLY COMPACTED SOIL BETWEEN BOTTOM OF FOOTING TO 6" MIN BELOW PIPE SLEEVE.

6 S003 PIPES PERPENDICULAR TO FOOTINGS DETAIL #00703 NO SCALE



CONTRACTOR'S OPTION

TYPICAL SLAB DEPRESSION

NOTE: "T" = SLAB THICKNESS (SEE PLAN)

7 S003 SOG - RECESS / DEPRESSION #01905 NO SCALE

RE-ENTRANT CORNERS W/O CONST JOINTS

RE-ENTRANT CORNERS W/ CONST JOINTS

8 S003 SOG - RE-ENTRANT CORNERS #01904 NO SCALE

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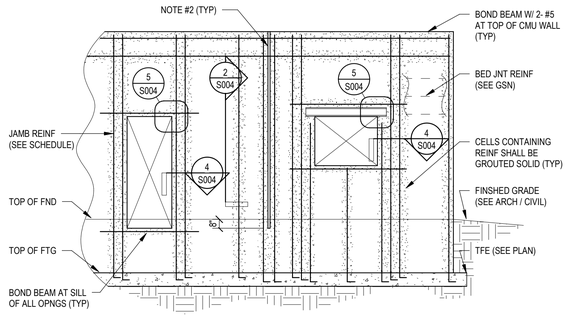
TYPICAL DETAILS - FOUNDATION

S003



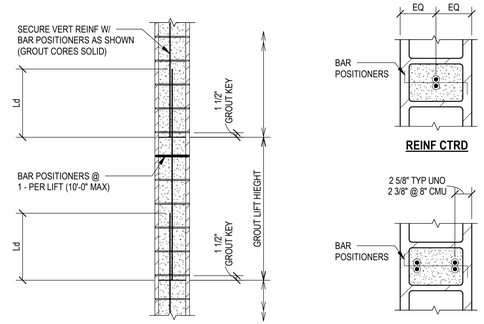
CMU SHAPE REQUIREMENTS			
USE FOR REINFORCED WALLS			USE FOR UNREINFORCED WALLS ONLY
PLAIN DOUBLE CORNER	SINGLE OPEN END ('A' SHAPED)	DOUBLE OPEN END ('H' SHAPED)	STRETCHER

CMU BEARING WALL REINFORCEMENT SCHEDULE				
MARK	REINFORCEMENT		PLACEMENT IN WALL	COMMENTS
	DOWELS	VERTICAL		
CMU-1	#5 @ 48" OC	#5 @ 48" OC	CENTERED	ALL WALLS (UNO)

NOTES:
1. PROVIDE VERTICAL WALL REINFORCING IN FIRST CELL NEXT TO CONTROL JOINTS TYP.
2. MASONRY CONTROL JOINTS SHALL OCCUR A MIN OF 24" AWAY FROM ANY OPENING, AND TERMINATE 8" BELOW TOP OF FOUNDATION WALL. REFER TO JAMB SCHEDULE FOR SPECIFIC REQUIREMENTS BASED ON OPNG SIZE..
3. REINFORCE ALL NON-LOAD BEARING WALLS WITH #5 @ 48" OC VERTICAL. NON-LOAD BEARING CMU WALLS MAY NOT BE SHOWN ON STRUCTURAL DRAWINGS, SEE ARCH FOR SIZE AND LOCATION.

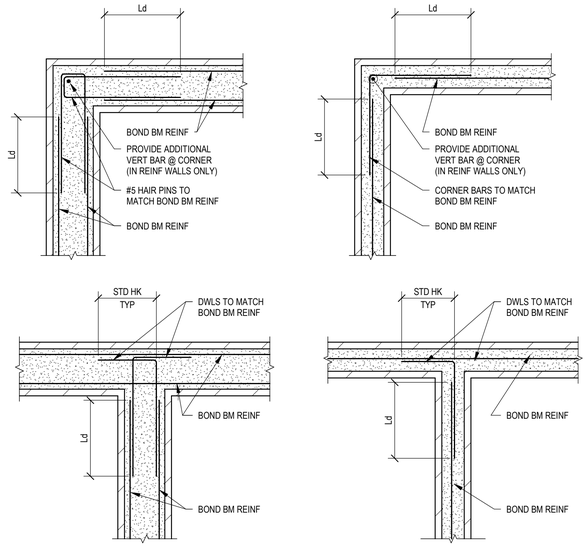
1 S004 CMU - REINFORCING SCHEDULE AND DIAGRAM #00201 NO SCALE

f'm = 2,000 PSI	MASONRY (CMU) REINFORCEMENT DEVELOPMENT LENGTHS & LAP SPLICE LENGTHS (Ld)						
BAR SIZE	CENTERED						EACH FACE
	6" BLOCK	8" BLOCK	10" BLOCK	12" BLOCK	14" BLOCK	16" BLOCK	ALL
#3	12"	12"	12"	12"	12"	12"	12"
#4	17"	12"	12"	12"	12"	12"	22"
#5	27"	19"	19"	19"	19"	19"	34"
#6	52"	37"	29"	23"	20"	19"	54"
#7	-	51"	40"	32"	27"	24"	63"
#8	-	72"	61"	49"	41"	36"	72"
#9	-	-	78"	63"	53"	46"	81"



NOTES:
1. LOCATE BAR POSITIONERS AT SPLICES, TOP AND BOTTOM OF WALLS, AND AT INTERVALS NOT EXCEEDING 8'-0".

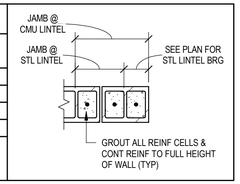
2 S004 CMU - LAP SPLICE SCHEDULE #00200D NO SCALE



3 S004 CMU - REINFORCEMENT AT WALL INTERSECTIONS #00205 NO SCALE

CMU JAMB REINFORCEMENT SCHEDULE		
CLEAR OPNG WIDTH	# OF GROUTED CORES @ JAMB	REINFORCEMENT AT EA CORE
≤ 2'-8"	1 CORE	1- #5 CENTERED
≤ 6'-8"	2 CORE	1- #5 CENTERED
≤ 10'-4"	3 CORE	1- #5 CENTERED
≤ 12'-8"	4 CORE	1- #5 CENTERED

NOTE:
WHERE OPNG SIZE IS NOT A MASONRY (CMU) DIMENSION SUCH THAT UNITS MUST BE CUT, DO NOT COUNT PARTIAL UNITS AS PART OF JAMB.



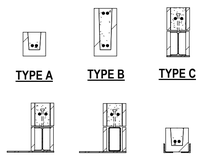
4 S004 CMU - JAMB REINFORCEMENT SCHEDULE #00202 NO SCALE

LINTEL SCHEDULE					
MARK	TYPE	LINTEL SIZE	BEARING PLATE SIZE	BEARING	COMMENTS
L1	A	8" X 8"d BOND BEAM W/ 2 - #5 CONT (BOT)			
L2	B	8" X 16"d BOND BEAM W/ 2 - #6 CONT (T & B)	-	8"	-

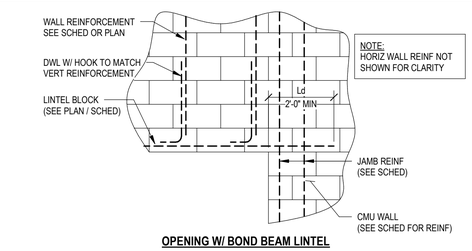
NOTES

1. VERIFY ALL OPENING SIZES AND LOCATIONS W/ ARCH.
2. PROVIDE 8" MIN BEARING EACH END OF STEEL LINTELS.
3. WIDTH OF BOTTOM PLATE TO BE 1/2" LESS THAN TOTAL WALL THICKNESS.
4. BOTTOM PLATES MAY BE OFFSET FROM BEAM CENTER LINE. (VERIFY WITH WALL CONSTRUCTION).
5. PROVIDE LINTELS IN NON-STRUCTURAL BLOCK PARTITION WALLS AS FOLLOWS:
   a) OPENINGS LESS THAN 5'-0" WIDE, USE 8"d BOND BEAM W/ 2 - #5 CONT BOT.
   b) OPENINGS 5'-0" WIDE TO 12'-0" WIDE, USE 16"d BOND BEAM W/ 2 - #5 CONT BOT.
   c) OPENINGS 12'-0" TO 14'-0" WIDE, USE 24"d BOND BEAM W/ 2 - #5 CONT BOT.
6. NO MASONRY VERTICAL CONTROL JOINTS ARE TO BE LOCATED WITHIN 24" OF AN OPENING.
7. MASONRY LINTELS SHALL BE SHORED UNTIL GROUT HAS REACHED 75% OF DESIGN STRENGTH AND WALL HAS BEEN INSTALLED TO DECK ABOVE.
8. PROVIDE LOOSE BRICK SUPPORT LINTELS AS FOLLOWS:
   - L4 X 4 X 5/16 (LLV) FOR OPENINGS UP TO 4'-0" WIDE.
   - L6 X 4 X 3/8 (LLV) FOR OPENINGS GREATER THAN 4'-0" TO 6'-4" WIDE.
   - L8 X 4 X 1/2 (LLV) FOR OPENINGS GREATER THAN 6'-4" TO 8'-8" WIDE.
   a) LOOSE LINTELS TO BE PLACED WITH VERTICAL LEG OF ANGLE TIGHT AGAINST BACK OF BRICK.
   b) PROVIDE 4" MIN BEARING EACH END OF LOOSE LINTEL.

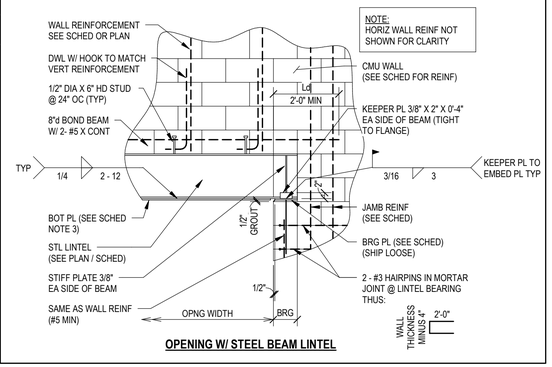
TYPES



DETAILS

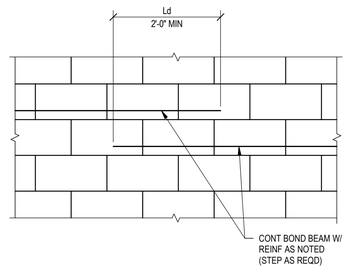


OPENING W/ BOND BEAM LINTEL

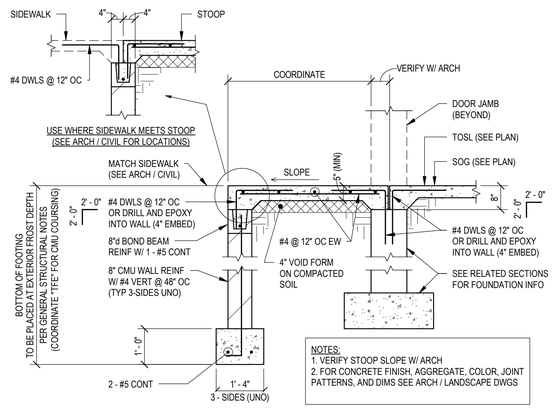


OPENING W/ STEEL BEAM LINTEL

5 S004 CMU - LINTEL SCHEDULE #00200B NO SCALE



6 S004 CMU - BOND BEAM STEP #00206 NO SCALE



NOTES:
1. VERIFY STOOP SLOPE W/ ARCH
2. FOR CONCRETE FINISH, AGGREGATE, COLOR, JOINT PATTERNS, AND DIMS SEE ARCH / LANDSCAPE DWGS

7 S004 CMU - STOOP NO SCALE

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SIGNATURES

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of MINNESOTA 6.7.2019

WILLIAM T. BULLER 20995 reg. no.

06.30.2020 reg. exp. date

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PROJECT INFO

Commission No.
B/A: 616-18
Drawn By:
MDS/TMR
Issue Date
6.7.2019

SUBMITTALS / REVISIONS

10.26.2018 100% MHFA REVIEW
2.5.2019 ISSUED FOR CITY REVIEW
2.21.2019 ADDENDUM #2
6.7.2019 ISSUED FOR CONSTRUCTION

SCALE
As Indicated

West Birch Apartments

W Branch Street
Princeton, MN

TYPICAL DETAILS - CMU

S004

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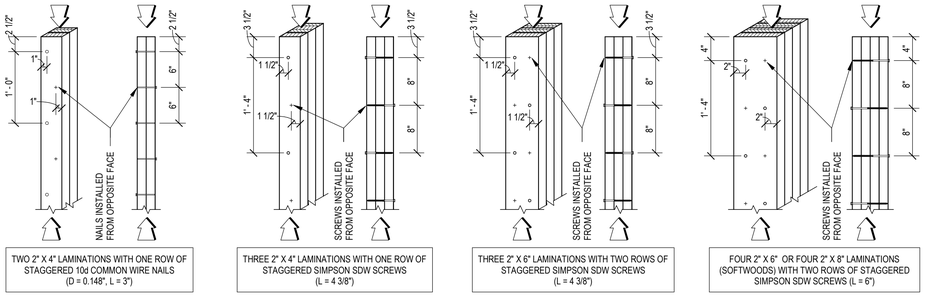
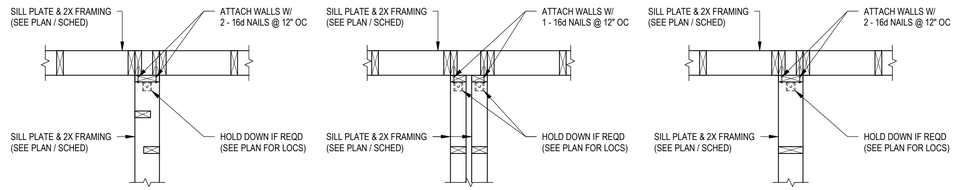


1 S005 WOOD - STUD PACK CONNECTION REQUIREMENTS
#10001 NO SCALE



2 S005 WOOD - CONNECTION AT WALL INTERSECTION
#10434 NO SCALE

WOOD SHEAR WALL LOCATION SCHEDULE					
FLOOR	PARTY WALLS		CORRIDOR WALLS	EXTERIOR WALLS	STAIR / ELEVATOR SHAFT WALLS
ROOF - LEVEL 2	SW-6		SW-4	SW-6	SW-9
LEVEL 2 - LEVEL 1	SW-7		SW-4	SW-6	SW-9

WOOD SHEAR WALL TYPE SCHEDULE							
MARK	WALL DESCRIPTION	FASTENING PATTERN			BLOCKED	ANCHOR BOLT SPACING	SILL PLATE CONNECTION THROUGH FLOOR SHEATHING
		FASTENER SIZE	SPACING EDGE	SPACING FIELD	FASTENER LENGTH PENETRATION DEPTH		
SW-1	1 - LAYER 5/8" GYP BD ONE SIDE	NO. 6 SCREW	8" OC	12" OC	1 1/4" LONG	NO	48" OC	(3) 16d NAILS PER STUD SPACE
SW-2	1 - LAYER 5/8" GYP BD ONE SIDE	6d	7" OC	7" OC	1 7/8" LONG	NO	48" OC	(3) 16d NAILS PER STUD SPACE
SW-3	1 - LAYER 5/8" GYP BD ONE SIDE	6d	4" OC	4" OC	1 7/8" LONG	NO	48" OC	(3) 16d NAILS PER STUD SPACE
SW-4	1 - LAYER 5/8" GYP BD ONE SIDE	6d	4" OC	4" OC	1 7/8" LONG	YES	48" OC	(3) 16d NAILS PER STUD SPACE
SW-5	1 - LAYER 5/8" GYP BD TWO SIDES	6d	7" OC	7" OC	1 7/8" LONG	NO	48" OC	(3) 16d NAILS PER STUD SPACE
SW-6	1 - LAYER 5/8" GYP BD TWO SIDES	6d	4" OC	4" OC	1 7/8" LONG	NO	48" OC	(6) 16d NAILS PER STUD SPACE
SW-7	1 - LAYER 5/8" GYP BD TWO SIDES	6d	4" OC	4" OC	1 7/8" LONG	YES	40" OC	(6) 16d NAILS PER STUD SPACE
SW-8	2 - LAYERS 5/8" GYP BD ONE SIDE	6d (BASE LAYER)	9" OC	9" OC	1 7/8" LONG	YES	48" OC	(3) 16d NAILS PER STUD SPACE
		8d (FACE LAYER)	7" OC	7" OC	2 3/8" LONG			
SW-9	2 - LAYERS 5/8" GYP BD TWO SIDES	6d (BASE LAYER)	9" OC	9" OC	1 7/8" LONG	YES	24" OC	(6) 16d NAILS PER STUD SPACE
		8d (FACE LAYER)	7" OC	7" OC	2 3/8" LONG			
SW-10	1 - LAYER 1/2" OSB PLYWOOD ONE SIDE	10d	6" OC	12" OC	1 1/2" PENETRATION INTO STUD (MIN)	YES	40" OC	(6) 16d NAILS PER STUD SPACE
SW-11	1 - LAYER 1/2" OSB PLYWOOD ONE SIDE	10d	4" OC	12" OC	1 1/2" PENETRATION INTO STUD (MIN)	YES	24" OC	(9) 16d NAILS PER STUD SPACE
SW-12	1 - LAYER 1/2" OSB PLYWOOD ONE SIDE	10d	3" OC	12" OC	1 1/2" PENETRATION INTO STUD (MIN)	YES	16" OC	(9) 16d NAILS PER STUD SPACE
SW-13	1 - LAYER 1/2" OSB PLYWOOD ONE SIDE	10d	2" OC	12" OC	1 1/2" PENETRATION INTO STUD (MIN)	YES	16" OC	(12) 16d NAILS PER STUD SPACE

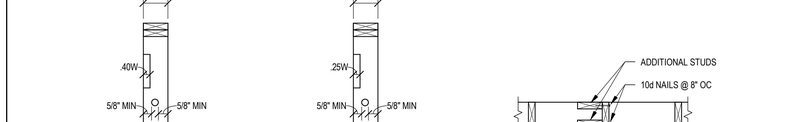
NOTES - GENERAL:
1. SHEATHING SHOWN IS FOR SHEAR STRENGTH OF WALLS ONLY. ADDITIONAL LAYERS OF MATERIAL MAY BE REQUIRED FOR SOUND, FIRE RATING, WEATHER RESISTANCE OR OTHER ARCHITECTURAL REASONS. SEE ARCHITECTURAL WALL TYPES FOR ADDITIONAL INFORMATION.
2. ANY SHEATHING LAYERS APPLIED OUTSIDE OF RESILIENT CHANNEL DO NOT COUNT TOWARD MEETING THE REQUIREMENTS OF THIS SCHEDULE.
3. AT DOUBLE WALL LOCATIONS, THE DESIGNATION APPLIES TO EACH WALL WITHIN THE UNIT SEPARATION WALL ASSEMBLY.
4. ALL WALLS ABOVE ARE TYPICAL UNO ON PLAN.
5. ALL ANCHORS TO BE 5/8" DIA X 3" MIN EMBED SIMPSON TITEN HD SCREW ANCHOR OR APPROVED EQUAL.

NOTES - GYP PANEL SHEAR WALLS:
1. WHERE BLOCKED WALLS ARE NOTED, BLOCKING SHALL BE 2" NOMINAL OR GREATER. ALL JOINTS IN SHEATHING SHALL OCCUR OVER AND BE FASTENED TO COMMON FRAMING MEMBERS OR COMMON BLOCKING.
2. 6D COOLER NAILS SHALL HAVE A DIAMETER OF 0.092", BE 1 7/8" LONG AND HAVE A 1/4" HEAD. ALTERNATE FASTENERS: WALLBOARD NAIL - 0.0915" DIAMETER X 1 7/8" LONG WITH 19/64" HEAD; 0.120 NAIL X 1 3/4" LONG WITH 3/8" HEAD.
3. 8D COOLER NAILS SHALL HAVE A DIAMETER OF 0.113", BE 2 3/8" LONG AND HAVE A 0.281" HEAD. ALTERNATE FASTENERS: WALLBOARD NAIL - 0.113" DIAMETER X 2 3/8" LONG WITH 3/8" HEAD; 0.120 NAIL X 2 3/8" LONG WITH 3/8" HEAD.
4. #6 SCREWS, WHERE NOTED ABOVE IN THE FASTENER SIZE COLUMN, SHALL BE TYPE S OR W DRYWALL SCREWS AND SHALL CONFORM TO ASTM C 1002.

NOTES - WOOD PANEL SHEAR WALLS:
1. PANELS SHALL NOT BE LESS THAN 4'X 8' EXCEPT AT BOUNDARIES AND CHANGES IN FRAMING.
2. NAILS SHALL BE LOCATED AT LEAST 3/8" FROM THE PANEL EDGES. MAX NAIL SPACING AT PANEL EDGES SHALL BE 6" O.C.
3. ALL WOOD PANEL SHEAR WALLS ARE TO BE BLOCKED. ALL EDGES AND/OR JOINTS OF ALL PANELS SHALL BE SUPPORTED BY AND FASTENED TO COMMON FRAMING MEMBERS OR 2X NOMINAL (MIN) BLOCKING EXCEPT AS NOTED BELOW.
4. PROVIDE 3X NOMINAL WIDTH OF FRAMING MEMBERS OR BLOCKING AT LOCATIONS OF ADJOINING PANEL EDGES FOR SHEAR WALLS WITH NAILING AT 2" O.C.
5. WHERE WOOD PANELS ARE APPLIED ON BOTH FACES OF A SINGLE WALL AND NAIL SPACING IS LESS THAN 6" ON CENTER ON EITHER SIDE, EITHER PANEL JOINTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS OR THE WIDTH OF THE NAILED FACE OF THE FRAMING MEMBERS SHALL BE 3" NOMINAL MINIMUM AND NAILING AT ADJOINING PANEL EDGES SHALL BE STAGGERED.
6. WOOD STRUCTURAL PANELS SHALL CONFORM TO THE REQUIREMENTS FOR ITS TYPE IN DOC PS1 OR PS2.

#10002

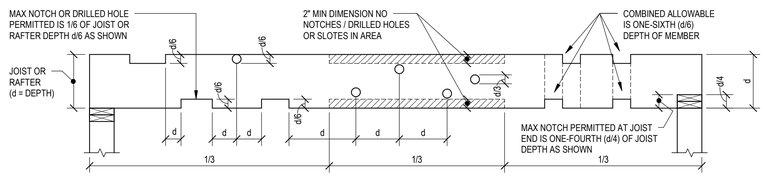
WOOD WALL FRAMING SCHEDULE					
FLOOR	PARTY WALLS		CORRIDOR WALLS	EXT WALLS	STAIR / ELEV SHAFT WALLS
ROOF - LEVEL 2	2 X 6 @ 16" OC		2 X 6 @ 16" OC	2 X 6 @ 16" OC	SEE PLAN
LEVEL 2 - LEVEL 1	2 X 6 @ 16" OC		2 X 6 @ 16" OC	2 X 6 @ 16" OC	SEE PLAN



NOTES:
1. STRUCTURAL DRAWINGS INDICATE THE STRUCTURE IN ITS COMPLETED STATE. LOAD BEARING STUDS ARE DESIGNED ASSUMING WALL SHEATHING (GYPSUM, PLYWOOD, OSB) BRACES STUDS FROM IN-PLANE BUCKLING (LOSS OR REDUCTION OF LOAD CARRYING CAPACITY). TEMPORARY CONDITIONS MAY ARISE DUE TO THE SEQUENCING OF CONSTRUCTION IN WHICH THE LOWER LEVEL STUD WALLS ARE NOT SHEATHED AND ARE AT RISK OF BUCKLING UNTIL SHEATHING IS INSTALLED. THE CONTRACTOR AND THEIR SUBS SHALL TAKE PRECAUTIONS TO PREVENT THE WALL STUDS FROM BUCKLING PRIOR TO THE INSTALLATION OF SHEATHING. THIS IS TYPICALLY ACCOMPLISHED BY BLOCKING AT-RISK WALLS.
2. WHEN MULTIPLE STUDS AT A SPACING ARE REQUIRED BY THE SCHEDULE, THE STUDS MUST BE FASTENED TOGETHER USING THE STUD PACK NAILING REQUIREMENTS.
3. PARTY WALLS DESIGNATIONS REFER TO EACH WALL WITHIN THE UNIT SEPARATION WALL ASSEMBLY.

#10003

WOOD ALLOWABLE NOTCH & BORED HOLE DIMENSIONS								
JOIST & RAFTERS					BEARING STUDS		NON-BEARING STUDS	
NOMINAL	ACTUAL	d/6	d/4	d/3	.25W	.40W	.40W	.60W
4"	3 1/2"	5/8"	7/8"	1 1/8"	7/8"	1 3/8"	1 3/8"	2 1/8"
6"	5 1/2"	7/8"	1 3/8"	1 7/8"	1 3/8"	2 1/4"	2 1/4"	3 1/4"
8"	7 1/4"	1 1/4"	1 7/8"	2 3/8"	1 7/8"	2 7/8"	2 7/8"	4 3/8"
10"	9 1/4"	1 1/2"	2 3/8"	3 1/8"	N/A	N/A	N/A	N/A
12"	11 1/4"	1 7/8"	2 7/8"	3 3/4"	N/A	N/A	N/A	N/A
14"	13 1/4"	2 1/4"	3 3/8"	4 3/8"	N/A	N/A	N/A	N/A



JOIST OR RAFTER DIAGRAM (ELEVATION VIEW)

NOTES:
1. HOLES / NOTCHES / SLOTS ARE NOT TO BE LOCATED ADJACENT TO UNSOUND OR LOOSE KNOTS.
2. NOT TO BE USED AT MICRO LAM, PSL, GLULAM BEAMS OR ANY OTHER MANUFACTURED PRODUCTS.
3. PREFERRED LOCATION OF NOTCH IS AT TOP OF MEMBER.
4. INSTALL PLATE PROTECTION OVER ALL ELECTRICAL & PLASTIC PIPE NOTCHES OR BORING.

NOTES:
1. HOLES UP TO 60% ARE ALLOWED IN BEARING WALLS AT DOUBLE STUD CONDITIONS PROVIDED NOT MORE THAN TWO SUCCESSIVE DOUBLE STUDS ARE SO BORED.
2. AT BEARING AND NON-BEARING WALL LOCATIONS WHERE THE HOLE SIZE THROUGH THE STUDS EXCEEDS THE ABOVE ALLOWABLE LIMITS (40% AND 60% RESPECTIVELY) PROVIDE TWO ADDITIONAL STUDS PERPENDICULAR TO CUT STUD, SEE STUD DIAGRAM (PLAN VIEW) ABOVE.

#10004

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SIGNATURES

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of MINNESOTA 6.7.2019

WILLIAM T. BULLER 20995 reg. no.

06.30.2020 reg. exp. date

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Structural Engineers
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SCALE
As Indicated

West Birch Apartments

W Branch Street
Princeton, MN

TYPICAL DETAILS - WOOD SCHEDULES

S005

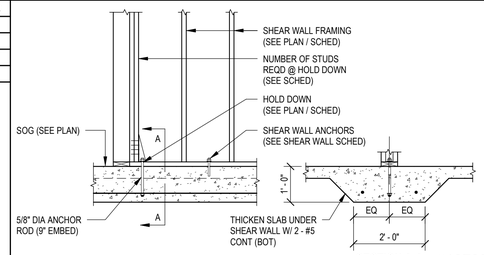
6/4/2019 2:35:47 PM

SHEAR WALL HOLD DOWN SCHEDULE & DETAILS

SCHEDULE

MARK	MODEL NO.	ANCHOR BOLT	SDS SCREWS	NO. OF STUDS
A	HDU2-SDS2.5	5/8"	6 - 1/4" X 2 1/2"	2
B	HDU4-SDS2.5	5/8"	10 - 1/4" X 2 1/2"	2
C	HDU5-SDS2.5	5/8"	14 - 1/4" X 2 1/2"	2
D	HDU8-SDS2.5	7/8"	20 - 1/4" X 2 1/2"	3

DETAILS



SECTION A-A

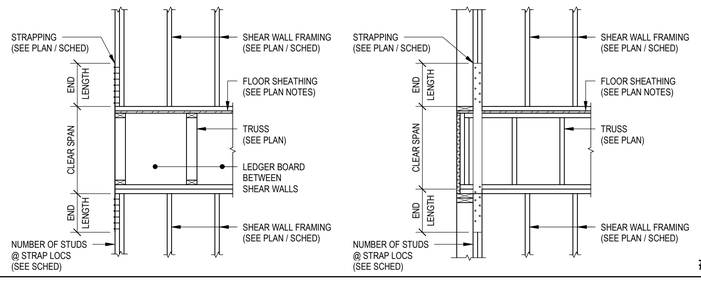
#10702

SHEAR WALL STRAPPING SCHEDULE & DETAILS

SCHEDULE

MARK	MODEL NO.	FASTENERS	END LENGTH	NO. OF STUDS	COMMENTS
1	CS16	22 - 10d NAILS	13"	2	-
2	CS14	30 - 10d NAILS	16"	2	-
3	CMST14	76 - 10d NAILS	34"	2	-
4	CMST12	98 - 10d NAILS	44"	2	-

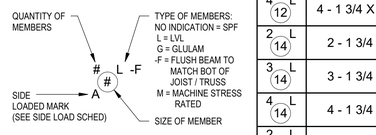
DETAILS



#10704

WOOD BEAM / HEADER SCHEDULE

MARK	SIZE	COMMENTS	MARK	SIZE	COMMENTS
2 (6)	2 - 2 X 6	-	2 (8) L	2 - 1 3/4 X 7 1/4 LVL	-
2 (8)	2 - 2 X 8	-	3 (8) L	3 - 1 3/4 X 7 1/4 LVL	-
3 (8)	3 - 2 X 8	-	2 (10) L	2 - 1 3/4 X 9 1/4 LVL	-
2 (10)	2 - 2 X 10	-	3 (10) L	3 - 1 3/4 X 9 1/4 LVL	-
3 (10)	3 - 2 X 10	-	4 (10) L	4 - 1 3/4 X 9 1/4 LVL	-
2 (12)	2 - 2 X 12	-	2 (12) L	2 - 1 3/4 X 11 1/4 LVL	-
3 (12)	3 - 2 X 12	-	3 (12) L	3 - 1 3/4 X 11 1/4 LVL	-
			4 (12) L	4 - 1 3/4 X 11 1/4 LVL	-
			2 (14) L	2 - 1 3/4 X 14 LVL	-
			3 (14) L	3 - 1 3/4 X 14 LVL	-
			4 (14) L	4 - 1 3/4 X 14 LVL	-
			2 (16) L	2 - 1 3/4 X 16 LVL	-
			3 (16) L	3 - 1 3/4 X 16 LVL	-
			4 (16) L	4 - 1 3/4 X 16 LVL	-
			2 (18) L	2 - 1 3/4 X 18 LVL	-
			3 (18) L	3 - 1 3/4 X 18 LVL	-
			4 (18) L	4 - 1 3/4 X 18 LVL	-
			4 (20) L	4 - 1 3/4 X 20 LVL	-
			3 (10) M	3 - 1 3/4 X 9 1/4 MSR	



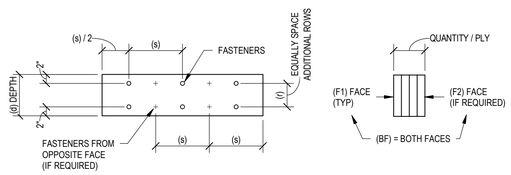
WOOD BEAM / HEADER KEY

TRIM STUD / POST TAG NOT COVERED BY NOTE 1

NOTES:

1. AT ALL LOCATIONS NOT INDICATED ON PLAN OR PER NOTE 2, PROVIDE 2 - 2X TRIM STUDS AND 1 - 2X KING STUD.
2. AT EXTERIOR WALL OPENINGS PROVIDE THE FOLLOWING KING STUDS:
   OPNGS 4'-0" OR LESS = 1 - 2X KING STUD
   OPNGS GREATER THAN 4'-0" TO 8'-0" = 2 - 2X KING STUDS
   OPNGS GREATER THAN 8'-0" TO 12'-0" = 3 - 2X KING STUDS
   OPNGS GREATER THAN 12'-0" =NOTIFY ENGINEER OF RECORD

MULTIPLE-PLY 2X / LVL FASTENING REQUIREMENTS



FASTENER REQUIREMENTS AT A TOP LOAD

	2X / LVL DEPTH (d)	QUANTITY = 2 ROWS (r)	QUANTITY = 2 SPACING (s)	QUANTITY = 3 ROWS (r)	QUANTITY = 3 SPACING (s)	QUANTITY = 4 ROWS (r)	QUANTITY = 4 SPACING (s)
10d NAILS (0.128"x3")	EQUAL TO 7 1/4" OR LESS THAN 14"	3	12"	3 (F1)	12" (F1)		
				3 (F2)	12" (F2)		
	EQUAL TO OR GREATER THAN 14"	4	12"	4 (F1)	12" (F1)		
				4 (F2)	12" (F2)		
5" SCREWS	EQUAL TO OR GREATER THAN 7 1/4"			2	24"		
6" SCREWS	EQUAL TO OR GREATER THAN 7 1/4"					2 (F1)	24" (F1)
						2 (F2)	24" (F2)

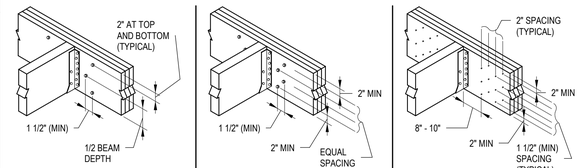
FASTENER REQUIREMENTS AT A SIDE LOAD

MARK	FASTENER TYPE	ROWS (r)	SPACING (s)	NOTES
A	SDS25312 (1 1/4" X 3 1/2")	2	16"	3 PLY : (F1) & (F2) REQUIRED
B	SDS25600 (1 1/4" X 6")	2 (F1)	16" (F1)	
		2 (F2)	16" (F2)	
C	SDW22338 (3 3/8")	2	16"	3 PLY : (F1) & (F2) REQUIRED
D	SDW22500 (5")	2	16"	
E	SDW22634 (6 3/4")	2	16"	

NOTES:

1. "(F1)" AND "(F2)" SHOWN IN SCHEDULE INDICATES THE MULTIPLE-PLY FACES THAT ARE REQUIRED PER THE SCHEDULE.
2. ALL FASTENERS MUST HAVE FULL EMBEDMENT OF THE SHANK, BUT MUST NOT BE OVER-DRIVEN, OVER-TIGHTENED, OR COUNTERSUNK.
3. SPACING CLOSER THAN THOSE INDICATED MAY BE ACCEPTABLE, BUT REQUIRE EVALUATION, PLEASE CONTACT ENGINEER OF RECORD.
4. SDS AND SDWS STRUCTURAL SCREWS ARE SIMPSON PRODUCTS. CONTACT ENGINEER OF RECORD FOR APPROVAL OF OTHER FASTENERS.

ADDITIONAL FASTENER REQUIREMENTS AT A CONCENTRATED SIDE LOAD



4 OR 6 SCREW CONNECTION | **8 SCREW CONNECTION** | **NAIL CONNECTION**

MARK	TYPE	NUMBER OF FASTNERS EACH SIDE OF LOAD
CSL-1	10d NAIL	6
CSL-2	SDS25312 (1 /4" X 3 1/2")	4
CSL-3	SDW25600 (1/4" X 6")	4

#10005

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SIGNATURES

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PROJECT INFO

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SUBMITTALS / REVISIONS

10.26.2018 100% MHFA REVIEW
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SCALE
As Indicated

West Birch Apartments

W Branch Street
Princeton, MN

TYPICAL DETAILS - WOOD SCHEDULES

S006

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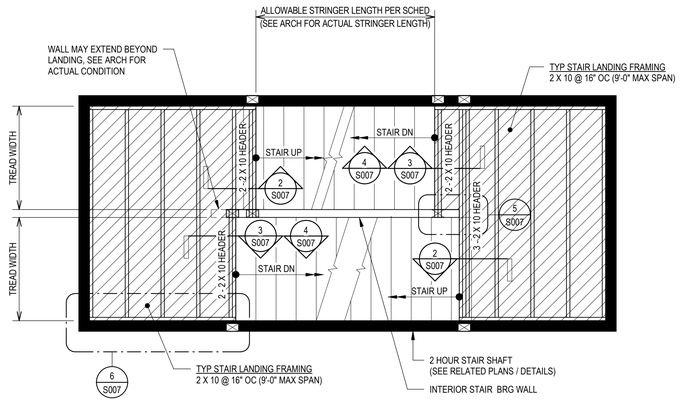
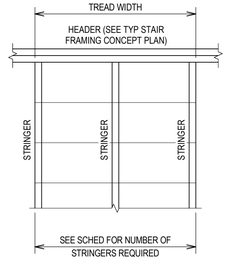


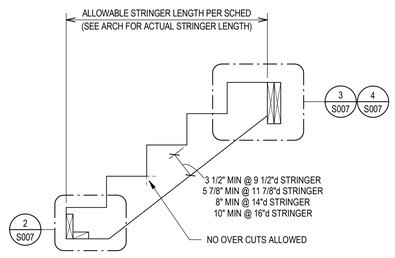
TYPICAL STAIR FRAMING CONCEPT PLAN - SEE ARCH FOR ACTUAL STAIR CONFIGURATION

ALLOWABLE WOOD STAIR STRINGER LENGTH TABLE			
42" TREAD WIDTH AND LESS	ALLOWABLE STRINGER LENGTH	LSL SIZE TO BE USED TO CUT STRINGER	NUMBER OF STRINGERS REQUIRED
	5'-10"	1 3/4" X 9 1/2"	3
	9'-2"	1 3/4" X 11 7/8"	3
	12'-6"	1 3/4" X 14"	3
	14'-0"	1 3/4" X 16"	3

ALLOWABLE WOOD STAIR STRINGER LENGTH TABLE			
48" TREAD WIDTH AND LESS	ALLOWABLE STRINGER LENGTH	LSL SIZE TO BE USED TO CUT STRINGER	NUMBER OF STRINGERS REQUIRED
	6'-8"	1 3/4" X 9 1/2"	4
	11'-8"	1 3/4" X 11 7/8"	4
	14'-10"	1 3/4" X 14"	4
	16'-8"	1 3/4" X 16"	4



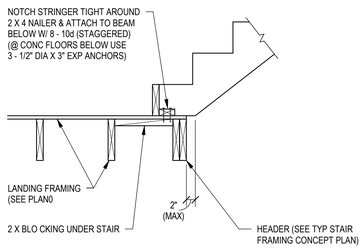
STAIR STRINGER PLAN VIEW REFERENCE



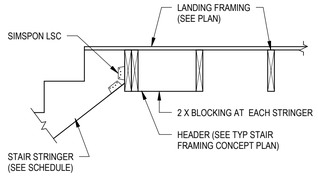
STAIR STRINGER SECTION VIEW REFERENCE

NOTES:
1. ALL STRINGERS TO BE CUT FROM TRUS-JOIST 1 3/4" TIMBERSTRAND 1.55E LSL.
2. FOR LONGER RUNS CONTACT ENGINEER OF RECORD.
3. DO NOT OVER CUT STAIR STRINGERS.
4. PLACE ONE STRINGER AT EACH END OF TREAD AND PLACE THE THIRD STRINGER AT CENTER OF TREAD.

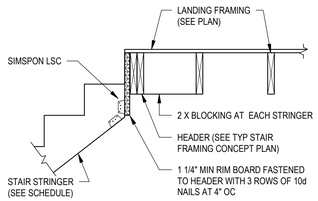
1 S007 TYPICAL STAIR FRAMING PLAN AND DETAILS #10101 NO SCALE



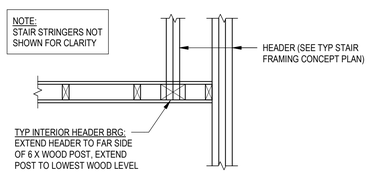
2 S007 STAIR STRINGER AT BOTTOM OF LANDING #10102 NO SCALE



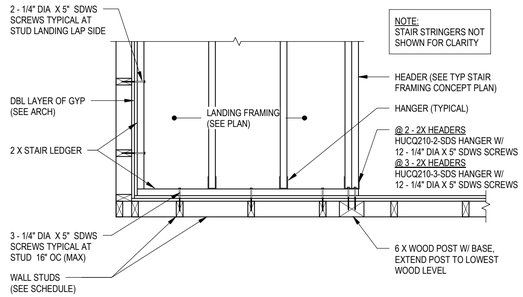
3 S007 STAIR STRINGER FLUSH WITH TOP OF LANDING #10103 NO SCALE



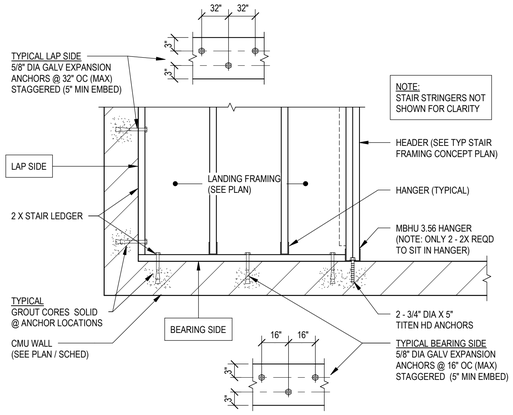
4 S007 STAIR STRINGER DROPPED AT TOP OF LANDING #10104 NO SCALE



5 S007 STAIR LANDING FRAMING #10108 NO SCALE



6 S007 STAIR LANDING FRAMING AT WOOD SHAFT WALLS #10105 NO SCALE



7 S007 STAIR LANDING FRAMING AT CMU SHAFT WALLS #10106 NO SCALE

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WILLIAM T. BULLER 20995 reg. no.

06.30.2020 reg. exp. date

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PROJECT INFO

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SCALE
As Indicated

West Birch Apartments

W Branch Street
Princeton, MN

TYPICAL DETAILS - WOOD STAIR FRAMING

S007

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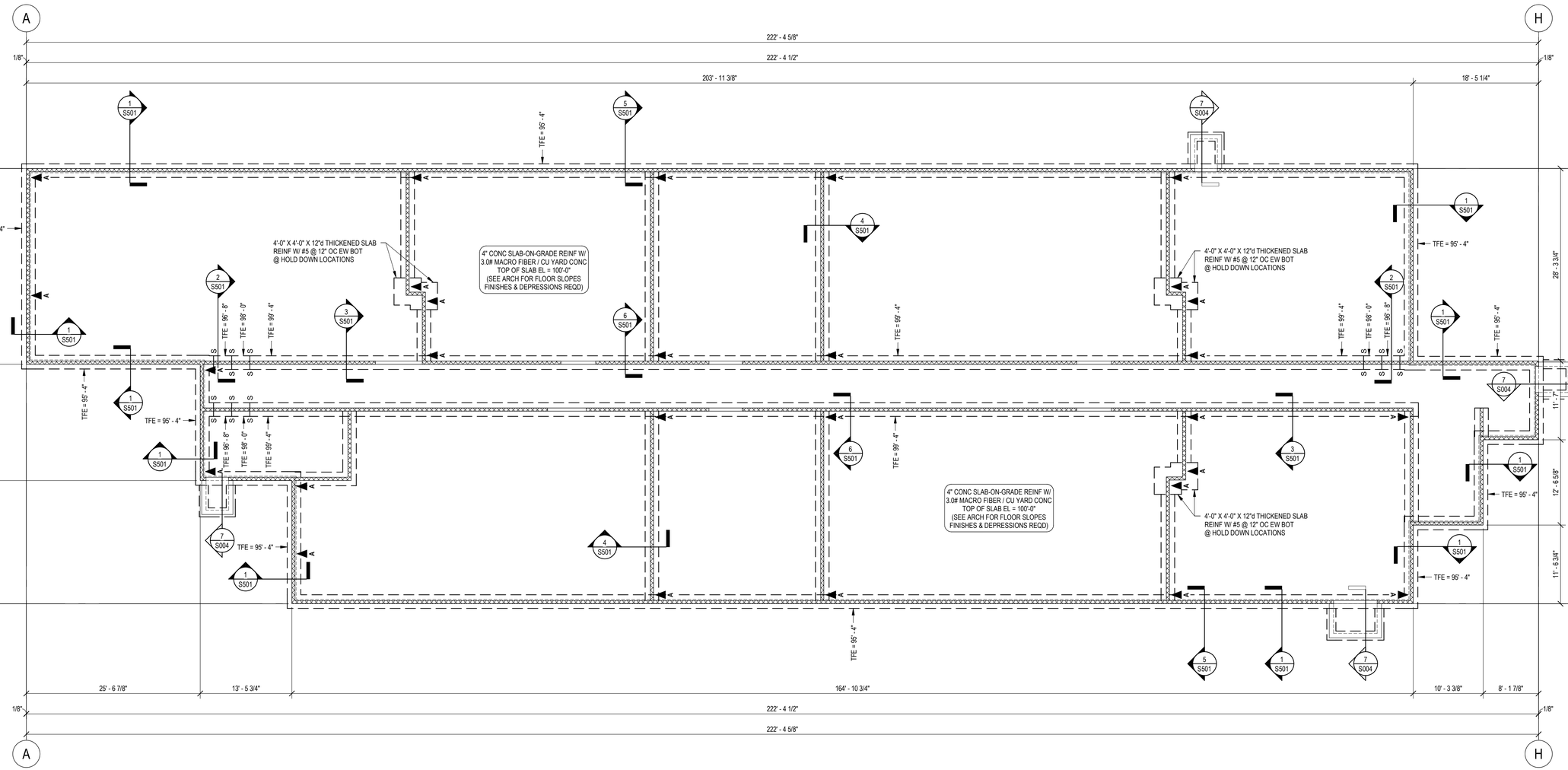

1 S111 FIRST FLOOR FOUNDATION PLAN

1/8" = 1'-0"

NORTH

FOUNDATION PLAN SHEET NOTES

A. General

1. See Cover Sheet for structural sheet index defining sheet name, sheet number and issue status.
2. See Cover Sheet for Structural Abbreviations, Typical Marks & Symbols and Plan Legends.
3. Review General Structural Notes and typical details in conjunction with applicable plans. See sheet index on Cover Sheet.
4. Elevation 100'-0" on these drawings matches elevation 981.7' on Civil drawings.
5. Coordinate stoop sizes and locations with Architectural and Civil. See typical details for stoop construction.
6. If present, coordinate the sizes and locations of tunnels, electrical cells, pits, pipes, floor drains, trenches and floor recesses with Architectural, Structural, Mechanical, Civil, and Electrical drawings.
7. Frost protection is required for all foundations if winter conditions are present.
8. Dimensions shown with +/- indicate dimensions that have been rounded to the nearest 1/16 of an inch.

B. Footings

1. "F-" denotes footing mark. See schedule for size and reinforcing.

   "WF-" denotes wall footing mark See schedule for size and reinforcing.
2. Top of footing elevation (TFE) is shown on plan. See typical detail sheets for stepped footing detail.
3. Locations of footing steps on plan are approximate. Contractor shall verify all step locations with Civil grade elevations to maintain minimum frost depths and all Mechanical, Electrical and Plumbing pipe elevations prior to pouring footings. Coordinate footing step locations with precaster if applicable. See typical detail sheets for pipes perpendicular and parallel to footing.
4. All footings shall be centered below walls, columns and piers unless dimensioned otherwise.
5. Provide dowels to walls, columns and piers above. Hooked dowels shall be tied to footing reinforcing prior to pouring concrete.

D. Slab On Grade

1. Top of slab elevation (TOSL =) is shown on plan.
2. See Architectural drawings for depressions, slab slopes, finishes and drains.
3. Concrete slab thickness shall be as noted on plan. See Architectural drawings for vapor barrier requirements and geotech report for slab sub-base thickness and material specification.
4. Unless noted otherwise, reinforce slab with 3.0 pounds of macro fiber per cubic yard of concrete. Coordinate finishing requirements with owner. Contractor may substitute 6 x 6 - W1.4 x W1.4 WWF chaired in place 1" below top of slab in lieu of macro fiber.
5. Provide control joints(CJ) and construction joints (CONST JT) in slab. See typical foundation details.
6. Concrete Contractor shall submit location of slab control joints (CJ) and construction joints (CONST JT) for review three weeks minimum prior to slab pour.

F. CMU Walls

1. "CMU-" denotes CMU wall reinforcing mark. See schedule and typical detail sheets for additional reinforcing requirements.
2. See Architectural for masonry control joint spacing. Locate control joints a minimum of 24" from the edges of all openings.
3. See Architectural drawings for non-load bearing CMU wall thickness and locations. See typical detail sheets for non-load bearing CMU details.
4. Coordinate all exterior wall finish ledge elevations for brick, stone, etc. with architectural drawings.

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ERA Commission #2018-273

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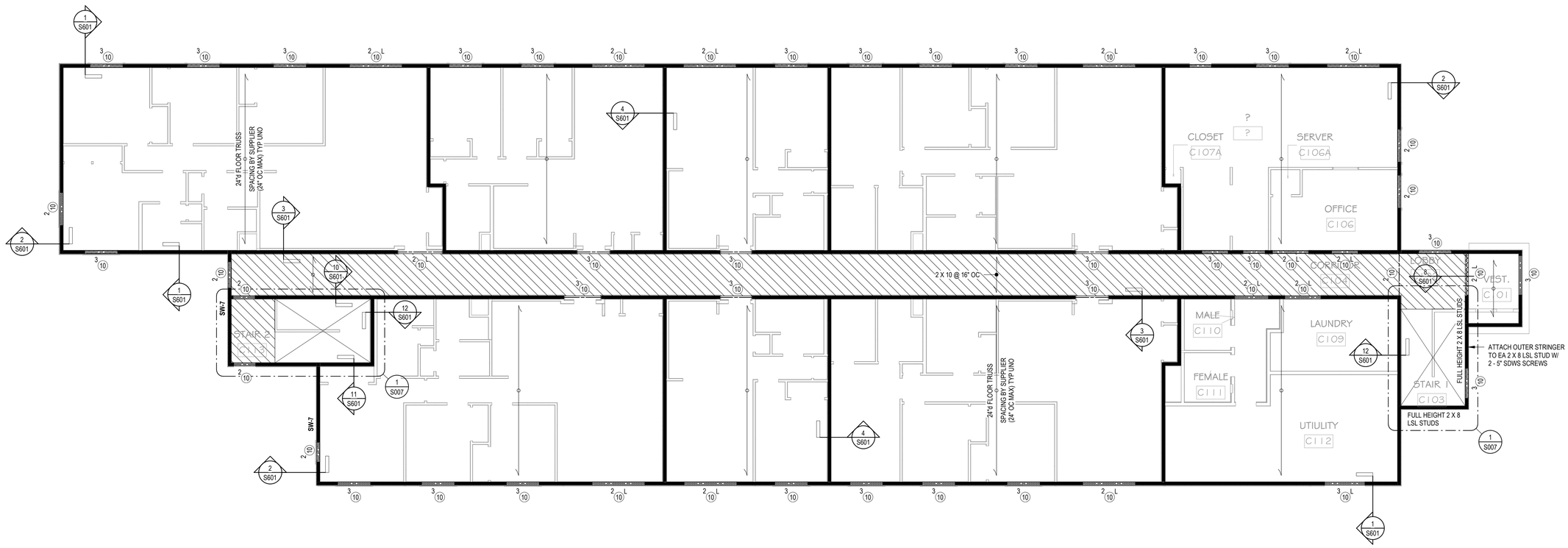
SCALE
As Indicated

West Birch Apartments

W Branch Street
Princeton, MN

FIRST FLOOR FOUNDATION PLAN

S111



1 S112 SECOND FLOOR FRAMING PLAN

1/8" = 1'-0"

NORTH

FRAMING PLAN SHEET NOTES

A. General

1. See Cover Sheet for structural sheet index defining sheet name, sheet number and issue status.
2. See Cover Sheet for Structural Abbreviations, Typical Marks & Symbols and Plan Legends.
3. Review General Structural Notes and typical details in conjunction with applicable plans. See sheet index on Cover Sheet.
4. Elevation 100'-0" on these drawings matches elevation 981.7' on Civil drawings.
5. If present, coordinate the sizes and locations of tunnels, electrical cells, pits, pipes, floor drains, trenches and floor recesses with Architectural, Structural, Mechanical, Civil, and Electrical drawings.
6. Dimensions shown with +/- indicate dimensions that have been rounded to the nearest 1/16 of an inch.

B. Prefabricated Wood Trusses

1. See Architectural for truss bearing elevations.
2. Prefabricated wood trusses shall be designed to resist all loads indicated on plans, notes and details. Supplier shall submit calculations signed and stamped by a registered engineer in the state of the project for review and approval prior to fabrication. See General Structural Notes and specifications for other requirements.
3. Truss spacing by truss supplier. Spacing not to exceed 24" oc max.

C. Floor & Roof Sheathing Diaphragms

1. See Architectural for top of sheathing elevations.
2. Floor sheathing shall be 3/4" APA rated plywood / OSB. Attach sheathing to floor framing members with 10d nails (0.128" diameter x 3" long) at 6" OC at panel edges and 12" OC at intermediate supports.
3. Roof sheathing shall be 5/8" APA rated plywood / OSB. Attach sheathing to roof framing members with 10d nails (0.128" diameter x 3" long) at 6" OC at panel edges and 12" OC at intermediate supports.
4. All diaphragm nailing shall be done with common nails and shall be driven flush but not fracture the surface of the sheathing. Box or sinker nails must be approved prior to use.
5. As an alternate to hand nailing the contractor shall submit for approval the size and type of nail used for automatic nailing with the approved technical data for its use in nailing horizontal diaphragms.

D. Wood framed Construction

1. See General Structural Notes for additional wood construction information.
2. See schedules for load bearing walls, shear walls, beam / header information, etc.
3. All bottom plates or other wood in contact with precast, concrete or masonry shall be treated.
4. Anchors, hangers and other metal connectors in contact with pressure treated lumber shall be hot dipped galvanized, G185 treated or approved for use with pressure treated lumber by EOR.
5. Provide a minimum of 2 studs (3" length of bearing) at all beam, header and girder truss bearing unless noted otherwise on plan. Full width of beam, header and girder truss must be supported by an equal width of 2X or PSL post. Where posts / stud packs consisting of 3 or more studs occur on a level, identical posts / stud packs shall be constructed on all floors below to final supporting level unless noted otherwise on plan. Solid blocking shall be placed in floor framing space between upper and lower post / stud packs.
6. All wood beams connected to 4 x 4 posts or larger to use Simpson PC/EPC caps or equivalent unless noted otherwise. All wood beams connected to PSL or glulam posts to use CC/ECC caps or equivalent unless noted otherwise.
7. Mechanical and electrical contractors to design their systems to accommodate 3/8" vertical shrinkage of the structure per floor, from lowest floor to roof.

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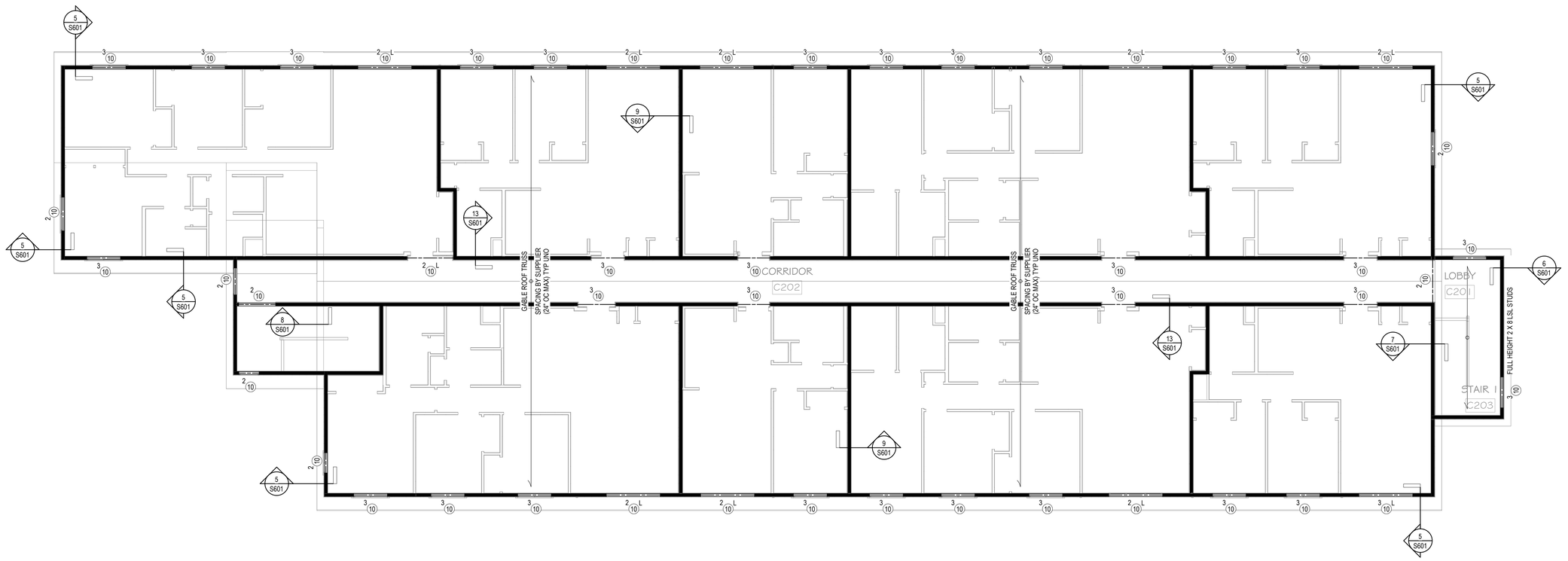
SCALE
As Indicated

West Birch Apartments

W Branch Street
Princeton, MN

SECOND FLOOR FRAMING PLAN

S112



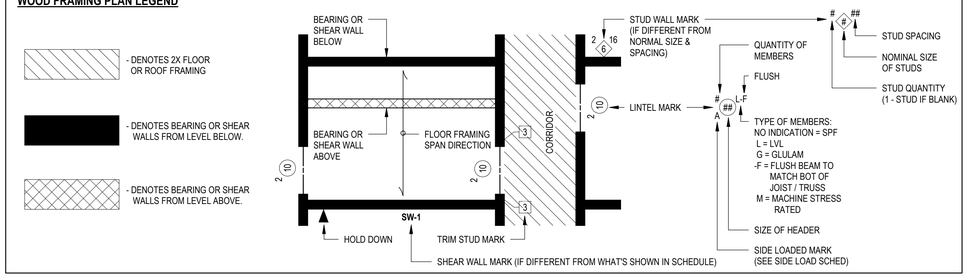
1 S121 ROOF FRAMING PLAN

1/8" = 1'-0"

NORTH

SEE SHEET S112 FOR FRAMING PLAN NOTES

WOOD FRAMING PLAN LEGEND



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West Birch Apartments

W Branch Street
Princeton, MN

ROOF FRAMING PLAN

S121

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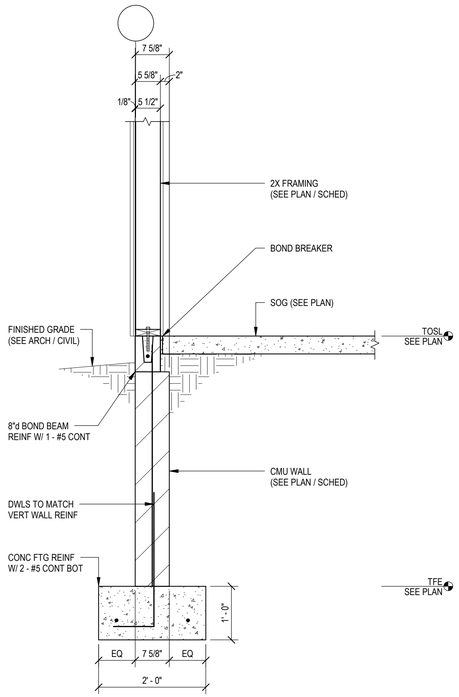
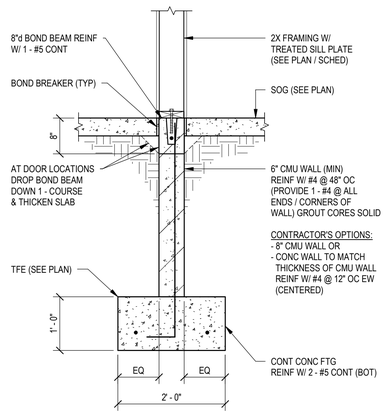
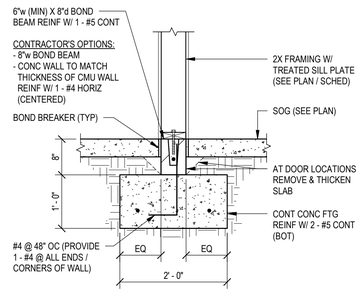


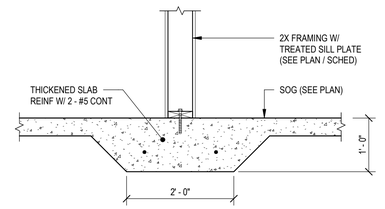
1 S501 FOUNDATION DETAIL
3/4" = 1'-0"



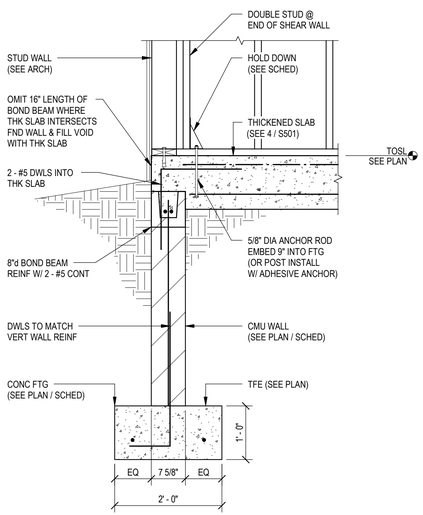
2 S501 FOUNDATION DETAIL
3/4" = 1'-0"



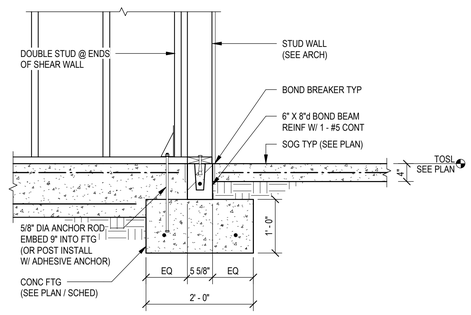
3 S501 FOUNDATION DETAIL
3/4" = 1'-0"



4 S501 FOUNDATION DETAIL
3/4" = 1'-0"



5 S501 FOUNDATION DETAIL
3/4" = 1'-0"



6 S501 FOUNDATION DETAIL
3/4" = 1'-0"

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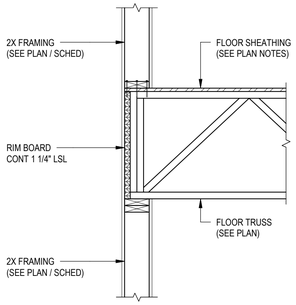
FOUNDATION DETAILS

S501

6/4/2019 2:36:02 PM



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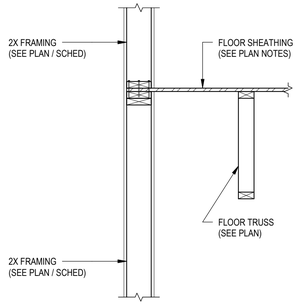

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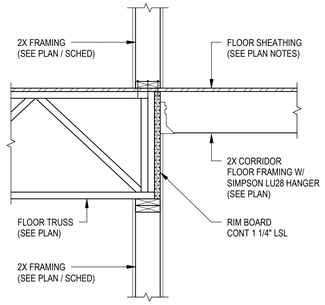

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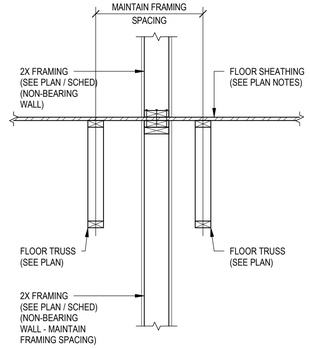
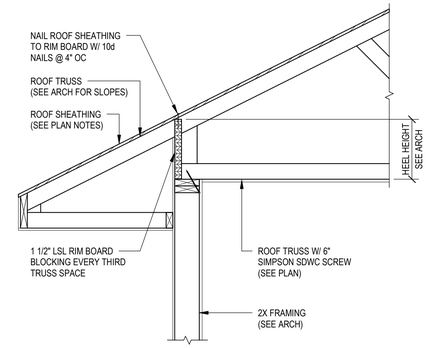
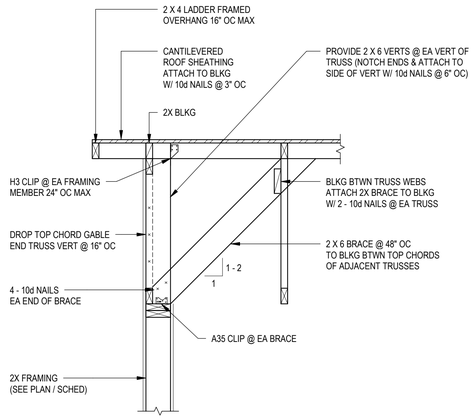


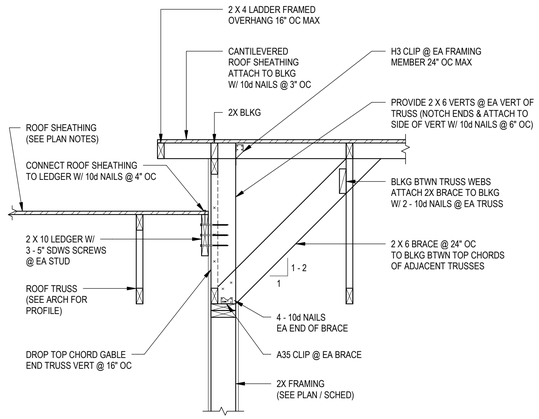
4 S601 FRAMING DETAIL #10426 NO SCALE



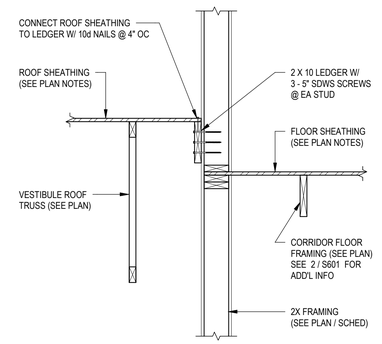
5 S601 FRAMING DETAIL 3/4" = 1'-0"



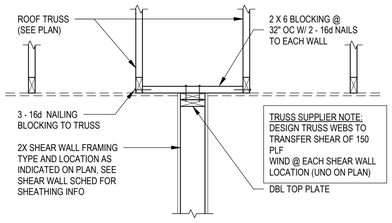
6 S601 FRAMING DETAIL 3/4" = 1'-0"



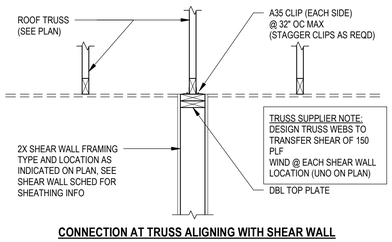
7 S601 FRAMING DETAIL 3/4" = 1'-0"



8 S601 FRAMING DETAIL 3/4" = 1'-0"

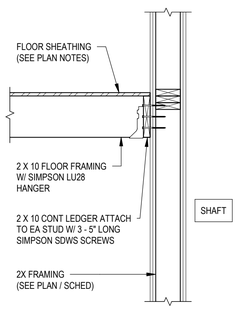


CONNECTION AT TRUSS NOT ALIGNING WITH SHEAR WALL



CONNECTION AT TRUSS ALIGNING WITH SHEAR WALL

9 S601 FRAMING DETAIL #10702 NO SCALE



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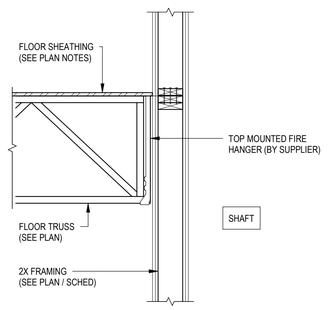

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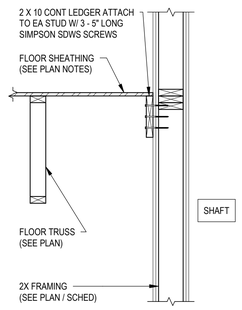

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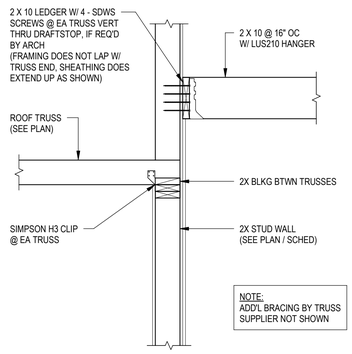

13 S601 FRAMING DETAIL 3/4" = 1'-0"

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Blumentals Architecture
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Minneapolis, MN 55413
612/331-2222
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info@blumentals.com

SIGNATURES

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of

MINNESOTA 6.7.2019

WILLIAM T. BULLER 20995
reg. no.

06.30.2020
reg. exp. date

ERA ERICKSEN ROED & ASSOCIATES
Structural Engineers
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Saint Paul, MN 55114-1904
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ERA Commission #2018-273

PROJECT INFO

Commission No.
B/A: 616-18
Drawn By:
MDS/TMR
Issue Date
6.7.2019

SUBMITTALS / REVISIONS

10.26.2018 100% MHFA REVIEW
2.5.2019 ISSUED FOR CITY REVIEW
2.21.2019 ADDENDUM #2
6.7.2019 ISSUED FOR CONSTRUCTION

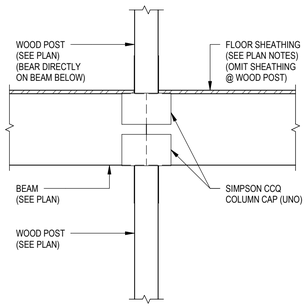
SCALE
As Indicated

West Birch Apartments

W Branch Street
Princeton, MN

WOOD FRAMING DETAILS

S601



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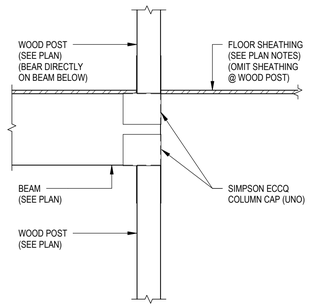
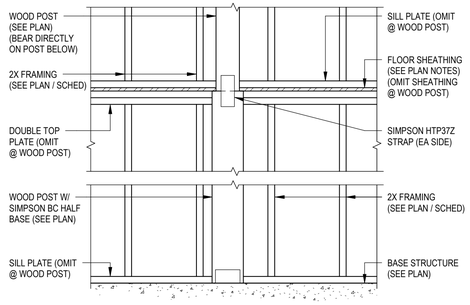


2 S602 FRAMING DETAIL #10447 NO SCALE



3 S602 FRAMING ELEVATION #10448 NO SCALE

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SIGNATURES

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of MINNESOTA 6.7.2019

WILLIAM T. BULLER 20995 reg. no.

06.30.2020 reg. exp. date

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SCALE
As Indicated

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W Branch Street
Princeton, MN

WOOD FRAMING DETAILS

S602

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