Building Materials List for Behm Design Plan #832-1SP

www.behmdesign.net 1-800-210-6776
~ Local building code approved substitutions may be made to this list ~
Variations in construction methods and materials can require modification of this list. Every attempt is made for greatest accuracy, but typographical or human error is possible. Quantities verification by the materials supplier is recommended before materials package is finalized and/or shipped.

Rough Framing
2 x 6 x 144" HF/DF interior wall "stud" framing ---------- 12 pcs.
2 x 6 x 139 1/2" HF/DF exterior wall "stud" framing ---------- 64 pcs.
2 x 6 x 92-1/2" HF/DF exterior wall "stud" framing ---------- 53 pcs.
2 x 6 HF/DF No. 2 wall top plate material ---------- 284 lf
2 x 4 HF/DF No. 2 pressure-treated bottom plate ---------- 142 lf
3-1/2 x 9-1/4 LVL Header 2950Fb 2.0E (porch beams)----- 8' length --- 2 pcs.
5-1/2 x 11-1/4 LVL Header 2950Fb 2.0E (interior wall header) ------16'-6" length ---- 1 pc.
5-1/2 x 9-1/4 LVL Header 2950Fb 2.0E (garage door header) ---------10'-9" length --- 1 pc.
5-1/2 x 9-1/4 LVL Header 2950Fb 2.0E (garage door header) ---------9'-9" length ---- 1 pc.
4 x 4 HF/DF No. 2 porch posts ---------- 8' length --- 2 pcs.
2 x 6 DF No. 1 Header ---------- 8' length --- 1 pc.
2 x 6 DF No. 1 Header ---------- 10' length --- 2 pcs.
2 x 6 HF/DF No. 2 wall blocking material ---------- 56 lf
Roof Truss Package: refer to planset sht. 3 Roof Framing Plan & Cross-section
2 x 4 HF/DF No. 2 rafters ---------- 8' length --- 10 pcs.
2 x 6 HF/DF No. 2 ridge board ---------- 6' length --- 1 pc.
2 x 6 HF/DF No. 2 hip rafters ----------10' length--- 2 pcs.
2 x 6 HF/DF No. 2 valley nailers----------8' length --- 2 pcs.
2 x 3 HF/DF No. 2 soffit framing material ---------- 264 lf

Sheathing Materials
7/16" o.s.b. wall sheathing ----------4 x 8 sheet --- 46 sheets
15/32" Roof C-D APA Plywood, ext. glue P.I. 24/0 ----------4 x 8 sheet---- 37 sheets

Vapor Barrier
Roof 15# bituminous felt paper in 36" wide roll---------- 454 lf
Wall 7# bituminous felt paper in 40" wide roll ---------- 480 lf
Floor .006" black polyethylene membrane---------- 832 sf

Siding Materials
8" textured o.s.b.siding boards with 1" lap ---------- 994 sf siding area
Trim: 5/4 x 3 (<for alt. siding, use 1x thk. trims) ----------12' length --- 2 pcs.
Trim: 5/4 x 3 ---------- 8' length --- 3 pcs.
Trim: 5/4 x 4 ---------- 8' length --- 12 pcs.
Trim: 5/4 x 4 ----------10' length --- 2 pcs.
Trim: 5/4 x 4 ----------12' length --- 2 pcs.
Trim: 5/4 x 12 ----------11' length --- 1 pc.
Trim: 5/4 x 12 ----------10' length --- 1 pc.
Fascia: 1 x 6 ---------- 160 lf

Roofing Materials
Composition Roofing Shingles---------- 1130 sf roof area
Ridgevent material---------- 8 lf

Window and Door Assemblies
4030 sliding window(s)---------- 2 ea.
9'-0" x 7'-0" sectional garage door---------- 1 ea.
10'-0" x 10'-0" sectional garage door---------- 1 ea.
3068 exterior door---------- 1 ea.

Metal Parts & Misc.
Anchor bolts: 1/2" dia. x 10" ASTM A-307 w/ hex nuts---------- 27 pcs.
Flat washer for 1/2" dia: 3" square x 1/4" thick stl. pl.---------- 27 pcs.
Simpson H10 connectors ---------- 76 pcs.
Simpson A35 connectors ---------- 4 pcs.
Simpson HUC410 beam hangers ---------- 4 pcs.
Simpson STHD14 hold-down straps ---------- 6 pcs.
Simpson EPC44 post top connectors ---------- 2 pcs.
Simpson EPB44 post base connectors ---------- 2 pcs.
8d common nails @ 145 nails / lb. ---------- 50 lbs.
2" soffit vent strip material ---------- 160 lf
~ To advise corrections, call 1-800-210-6776 Thank you.~.
(note: electrical components and finishing materials not included in this list)

GARAGE PLAN #480-1FTSP

20' x 24 ' 2-CAR GARAGE WITH 6 FT. SIDEPORCH

Building Code Compliance

This planset was prepared to comply with the prescriptive requirements of the 2015 International Residential Code (IRC)

Parameters For Design

Wind Speed: 115 mph ultimate

Wind Exposure: C

Seismic Category: A, B, C

Snow Load: 30# / sq.ft.

Building Categories and Data

Occupancy Classification: "U"

Construction Type: "V"

Grade-To-Maximum Height: 9'-11 1/2""

Garage Area: 480 sf

Sideport Area: 144 sf

Gross Area: 624 sf

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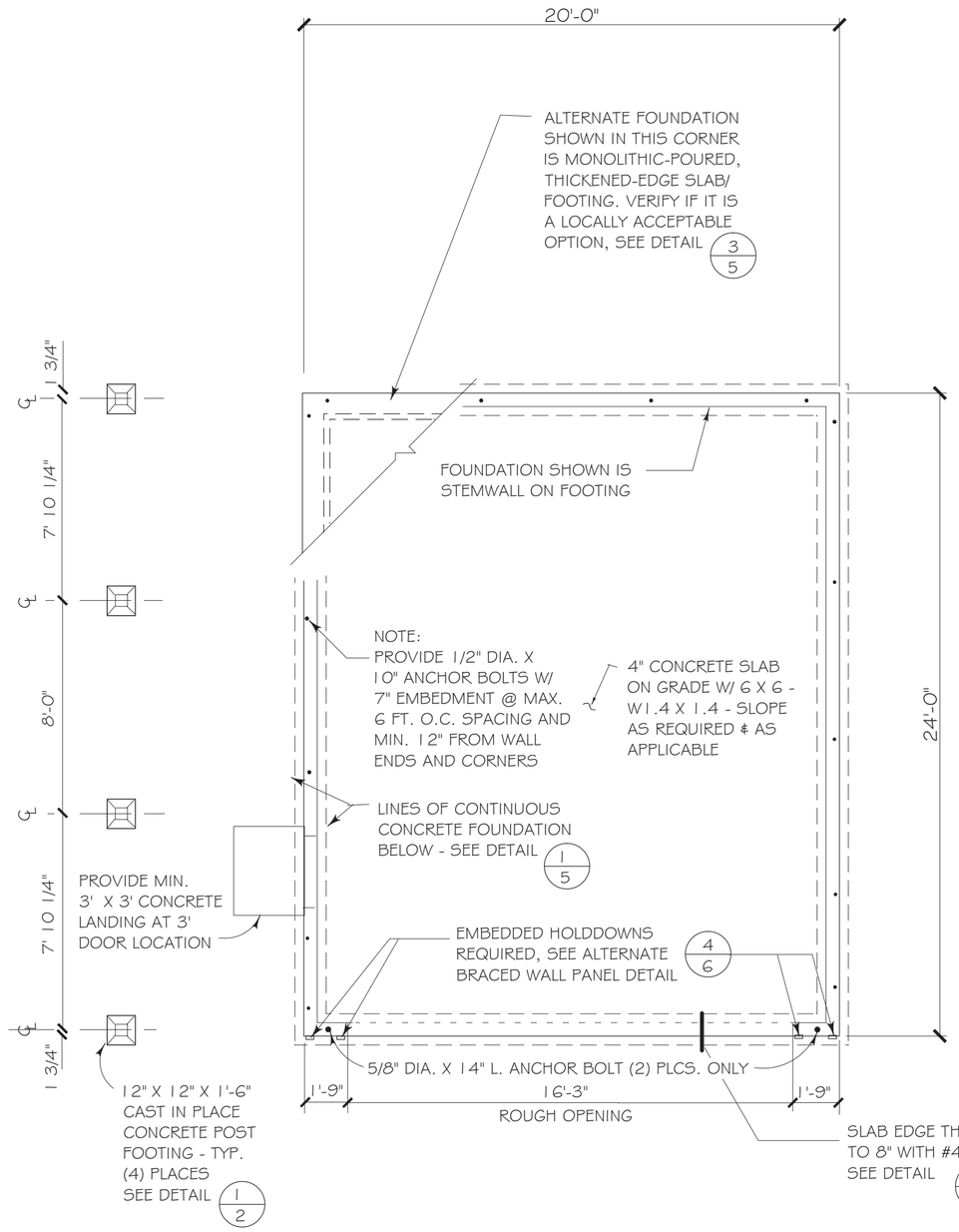
PLAN NO. 480-1FTSP

DESIGN BY: JJB

DATE: updated 04/19

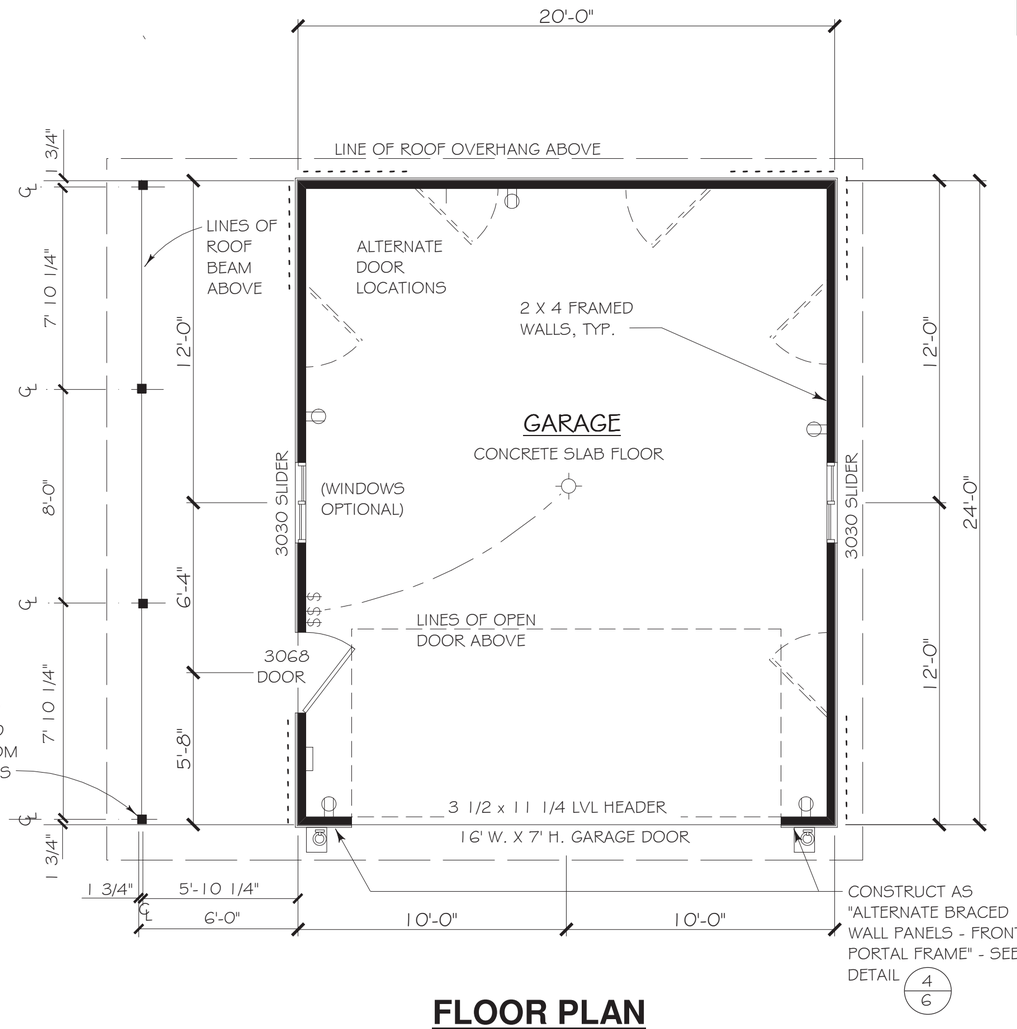
SHEET CONTENTS: Pictorial View Of Design, Project Data, Building Materials List

SHEET 1 OF 8



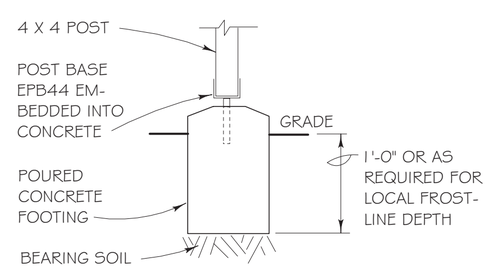
FOUNDATION PLAN

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



FLOOR PLAN

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



1 **POST FOOTING DETAIL**

BRACED WALLS AS PER IRC R602.10, AS APPLICABLE FOR LOCAL CODES

(SHOWN: - - - - - - - - - - - - -)
METHOD: CS-WSP
EXTERIOR BRACED WALLS (MIN. 48") NAIL SIDING PANELS OR SHEATHING W/ 8d @ 6" o.c., EDGES AND @ 12" O.C.,
FIELD AND BLOCK AT HORIZ. PANEL JOINTS.
PROVIDE ALTERNATE BRACED WALL PANELS AS INDICATED.

NOTE:
FLOOR PLAN DIMENSIONS ARE TO FACE OF FRAMING OR CENTERLINE OF BEARING, TYP. AS SHOWN

NOTE:
DOOR AND WINDOW HEADERS SHALL BE 2- 2 X 6 UNLESS OTHERWISE NOTED

NOTE:
FOUNDATION PLAN DIMENSIONS ARE TO FACE OF CONCRETE OR CENTERLINE OF BEARING, AS SHOWN

LEGEND

- $ SWITCH LOCATION
- CEILING MOUNTED LIGHT FIXTURE
- 110 VOLT DUPLEX OUTLET
- EXTERIOR WALL-MTD. LIGHT FIXTURE
- ELECTRIC PANEL OR SUB-PANEL LOCATION, INSTALL PER LOCAL CODES

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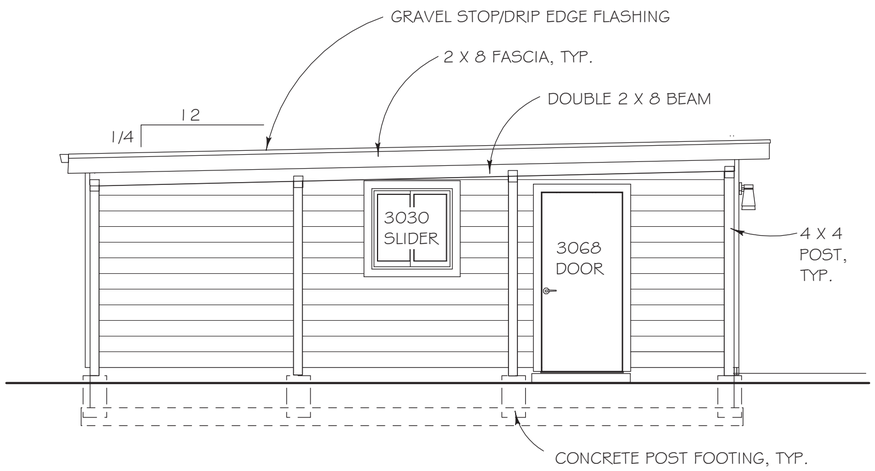
PLAN NO. 480-1FTSP

DESIGN BY: JJB DATE:

SHEET CONTENTS: FLOOR PLAN FOUNDATION PLAN

SHEET 2 OF 8



LEFT SIDE WALL ELEVATION

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

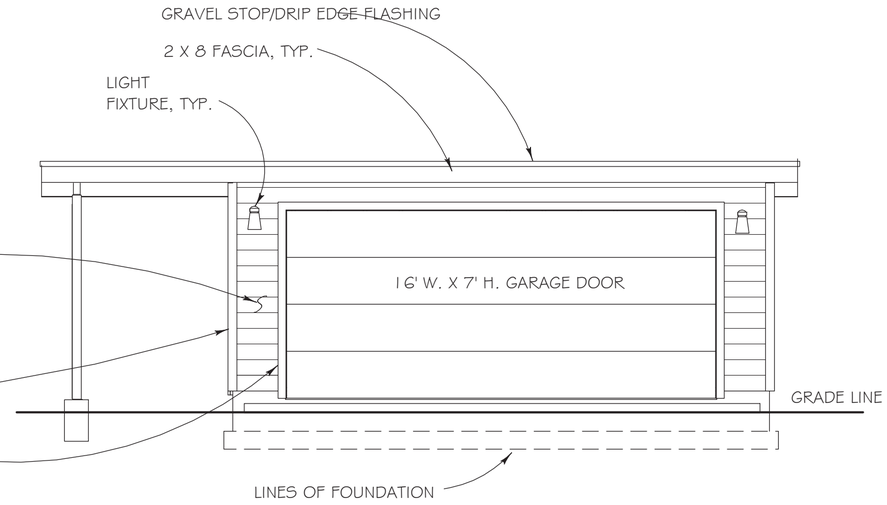
ALTERNATE SIDING:
7/16" TEXTURED O.S.B SIDING (OR T1-11 PLYWOOD) PANELS OVER 7# FELT VAPOR BARRIER

SIDING:
8" X 7/16" TEXTURED O.S.B. SIDING BOARDS, OVER 7# FELT VAPOR BARRIER, OVER SHEATHING (APPROVED ALTERNATE SIDING MATERIALS MAY BE SUBSTITUTED)

5/4 X 4 / 5/4 X 3 CORNER BOARDS- BUTT SIDING

5/4 X 4 WRAP TRIM - BUTT SIDE MEMBERS TO TOP AND BOTTOM

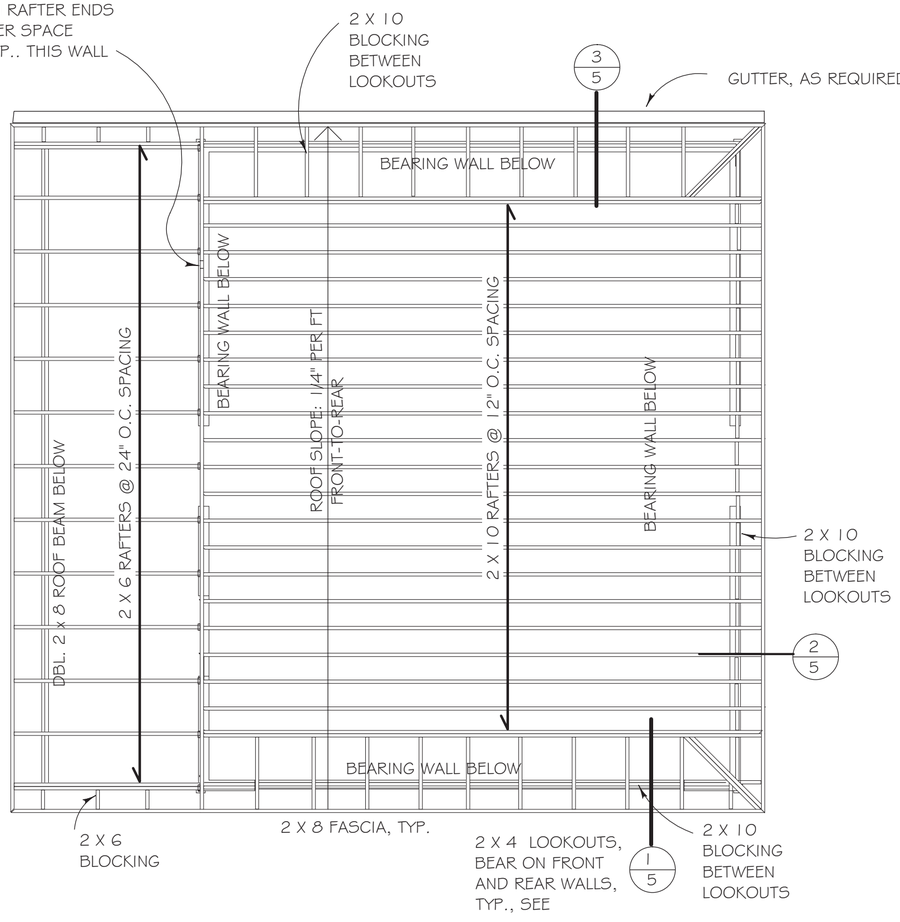
NOTE:
FOR ALTERNATIVE SIDING BOARDS USE 1X TRIM BOARDS AND NAIL OVER SIDING PANELS



FRONT ELEVATION

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

NOTE:
CUT 3" DIA HOLE THROUGH 2 X 10 @ CENTER POINT OF SPACE BETWEEN RAFTER ENDS FOR EACH RAFTER SPACE VENTILATION, TYP.. THIS WALL



ROOF FRAMING PLAN

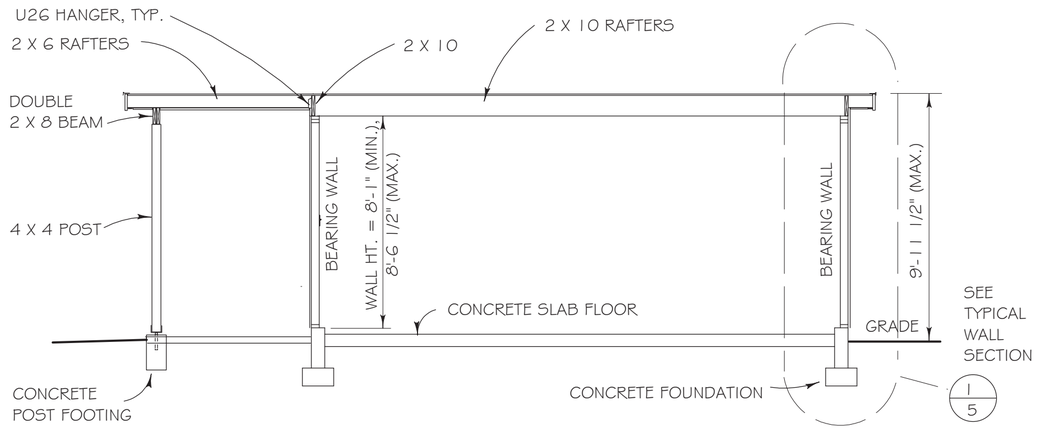
SCALE: 1/4" = 1'-0"

NOTE:
ARROW LINE INDICATES EXTENT OF SPANNING MEMBERS, NOT THE DIRECTION OF SPAN

NOTE:
NOMINAL WINDOW SIZES ARE SHOWN: FEET/INCHES WIDE X FEET/INCHES HIGH, TYP. - VERIFY FRAMED OPENING REQUIRED BY PRODUCT MFR.

NOTE:
FLASH OPENINGS AND PROVIDE WEATHERSTRIPPING AS REQUIRED BY LOCAL CODES

NOTE:
NOTES AND MATERIALS INDICATED IN THIS ELEVATION ARE TYPICAL FOR ENTIRE BUILDING AS APPLIC.



CROSS-SECTION

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

NOTE:
FOOTING/STEMWALL FOUNDATION SHOWN. FOR ALTERNATIVE THICKENED-EDGE FOUNDATION SEE DETAIL 3/5

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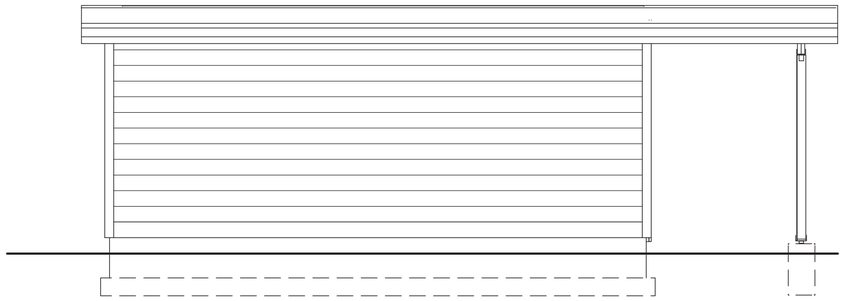
PLAN NO. 480-1FTSP

DESIGN BY: JJB

DATE:

SHEET CONTENTS:
FLOOR PLAN
FOUNDATION PLAN
ROOF FRAMING PLAN
CROSS-SECTION

SHEET 3 OF 8

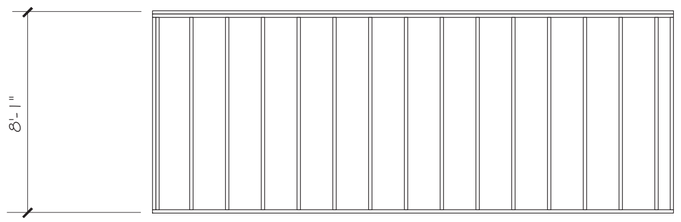


REAR ELEVATION

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

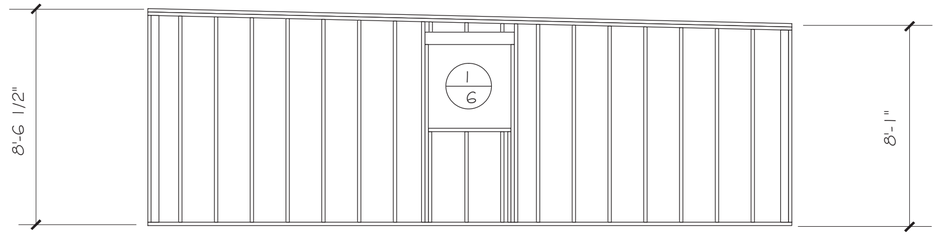
RIGHT SIDE ELEVATION

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



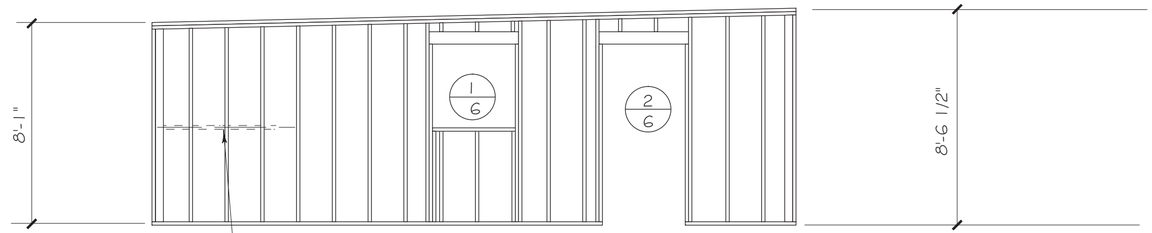
REAR WALL FRAMING ELEVATION

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



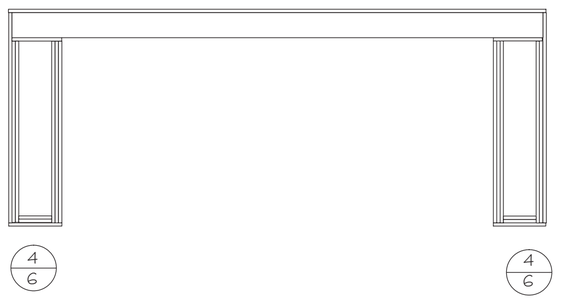
RIGHT SIDE WALL FRAMING ELEVATION

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



NOTE:
FOR HORIZONTALLY APPLIED WALL SHEATHING PROVIDE 2 X 4 HORIZONTAL BLOCKING BETWEEN STUDS FOR PANEL EDGE NAILING AT BRACED WALLS

LEFT SIDE WALL FRAMING ELEVATION



FRONT WALL FRAMING ELEVATION

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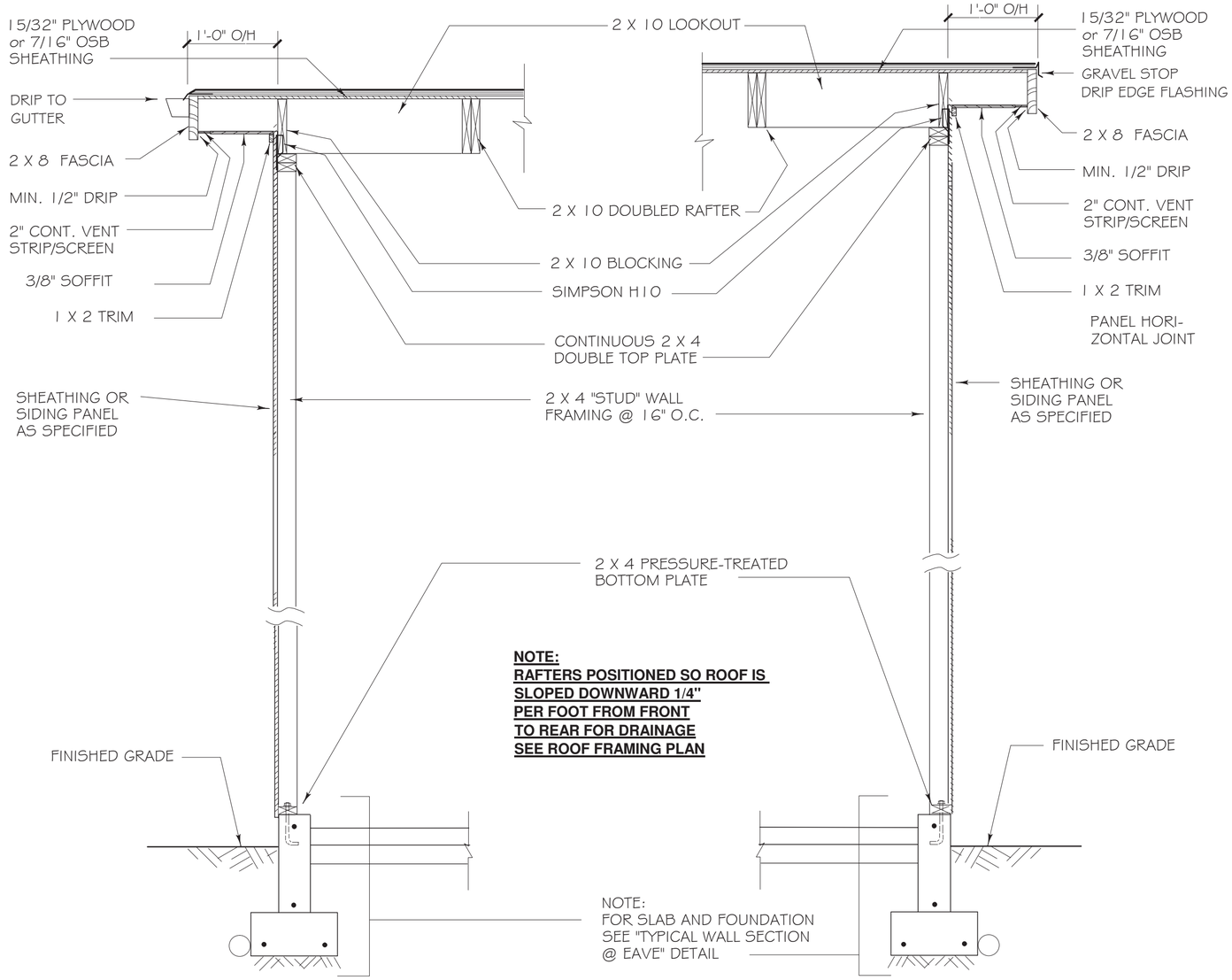
PLAN NO. 480-1FTSP

DESIGN BY: JJB

DATE:

SHEET CONTENTS:
RIGHT SIDE ELEVATION
LEFT SIDE ELEVATION
WALL FRAMING ELEVATIONS

SHEET 4 OF 8

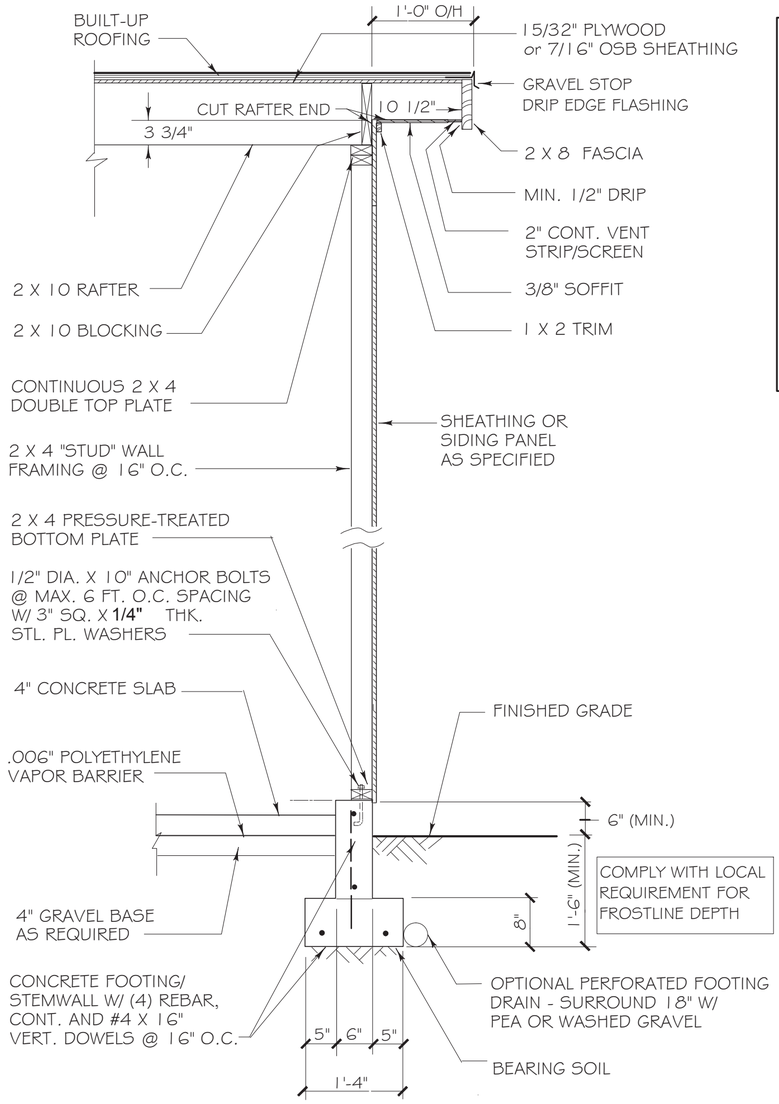


3 TYPICAL WALL SECTION @ REAR WALL OVERHANG

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

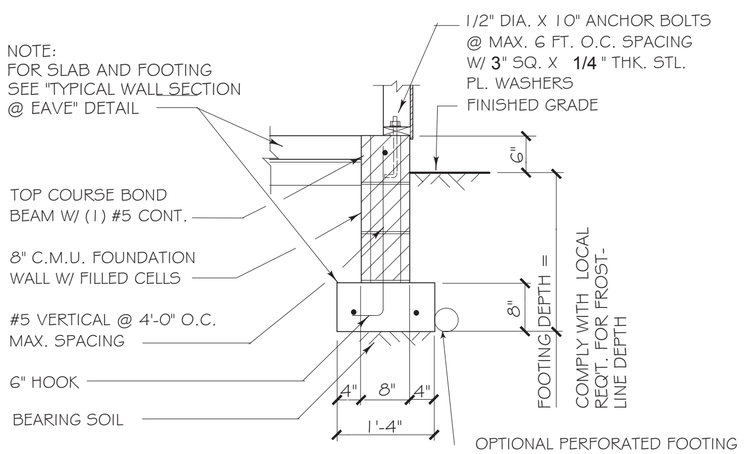
2 TYPICAL WALL SECTION @ FRONT WALL OVERHANG

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



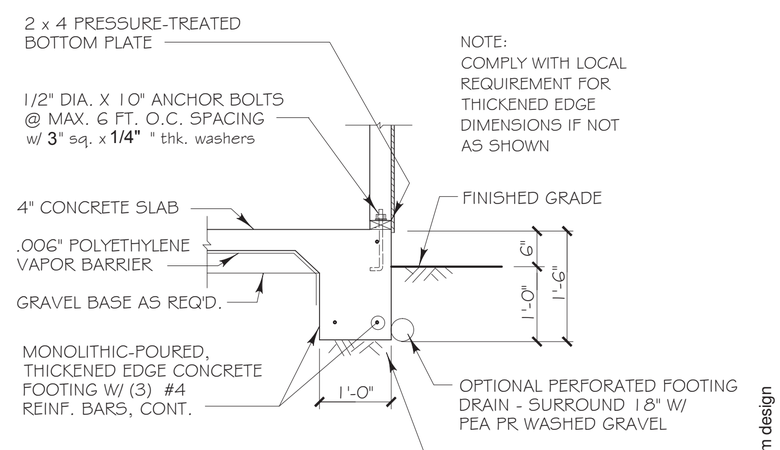
1 WALL SECTION @ RIGHT SIDE WALL OVERHANG

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



4 BLOCK FOUNDATION WALL DETAIL

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



3 MONOLITHIC FOOTING DETAIL

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

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480-1FTSP

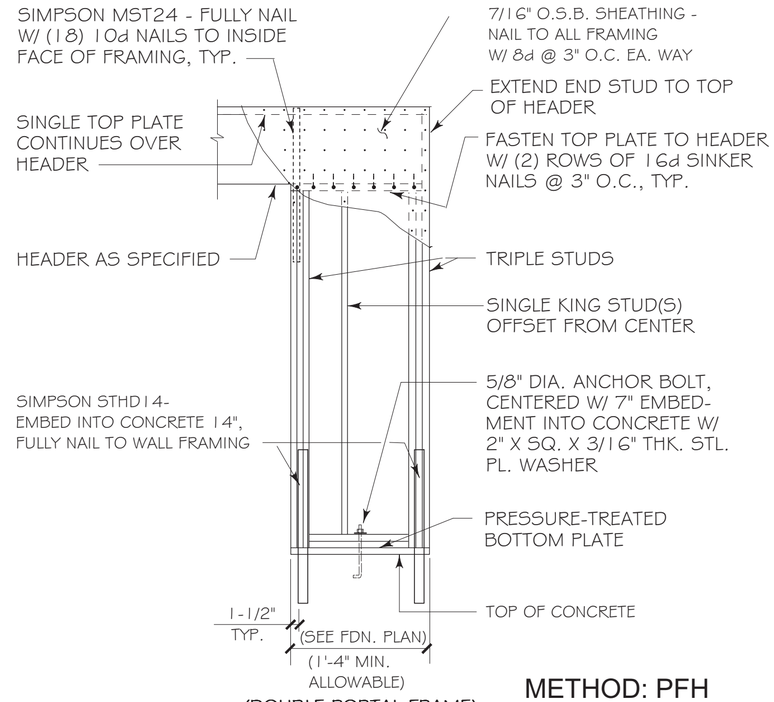
PLAN NO.

DESIGN BY: JJB

DATE:

SHEET CONTENTS:
TYPICAL WALL SECTIONS
FOUNDATION DETAILS
ROOF DETAILS

SHEET 5 OF 8

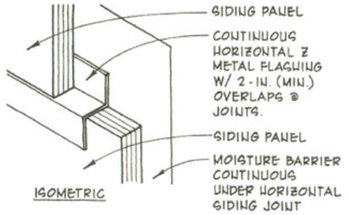


(DOUBLE PORTAL FRAME)
(mirror detail for other side)

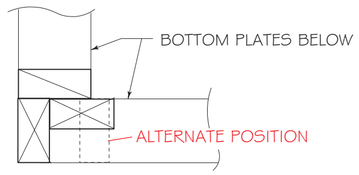
METHOD: PFH

4 ALTERNATE BRACED WALL PANEL DETAIL

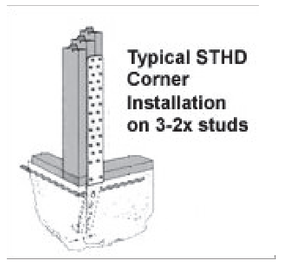
SCALE: 3/4" = 1'-0"



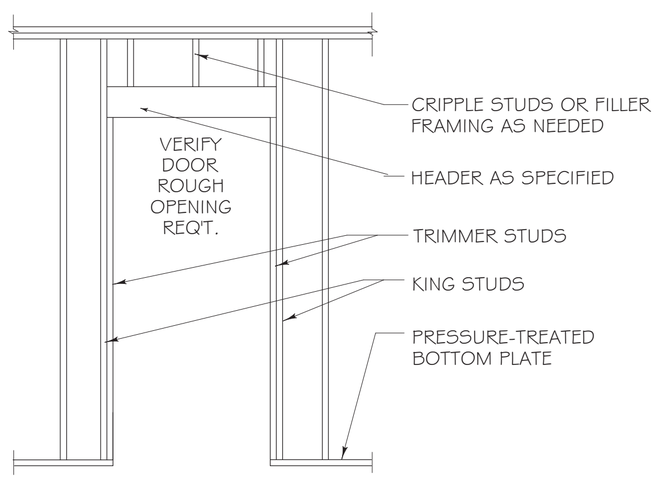
5 FLASHING DETAIL (PANEL SIDING)



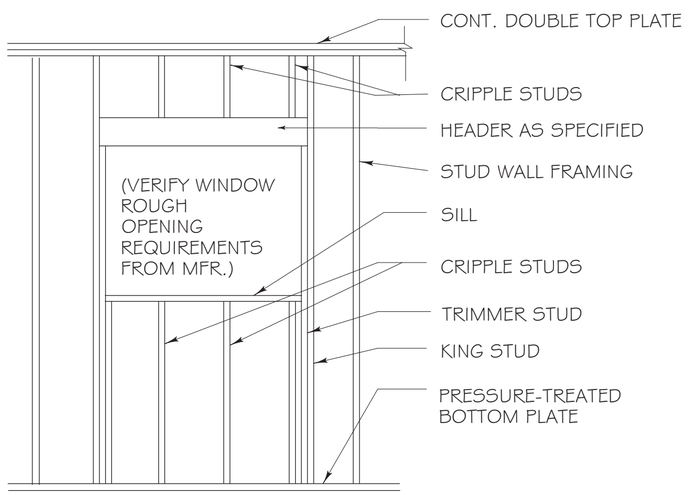
STUDS @ CORNER (PLAN VIEW)



STHD HOLDDOWNS



2 DOOR OPENING DETAIL



1 WINDOW OPENING DETAIL

PLAN NO. 480-1FTSP

DESIGN BY: JJB

DATE:

SHEET CONTENTS: WALL FRAMING DETAILS
ALTERNATE BRACED WALL PANEL DETAIL (for double portal frame)
FLASHING DETAIL (PANEL SIDING)

SHEET 6 OF 8

STRUCTURAL/GENERAL NOTES & SPECIFICATIONS

A. General
The following notes shall clarify and supplement the working drawings.

B. Codes & Standards
International Residential Code (IRC) – 2015
/ ACI-318; ACI SP-15 / M.B.M.A Manual
(and comply with all local applicable codes as required by Building Official)

C. Live Loads
Roof……30 lbs/sf
Floors……..40 lbs/sf
Stairs & Exist ……. 100 lbs/sf
Wind…… 115 mph ultimate
Seismic zone……A, B, C
Earth Pressure ……30lbs/cf equiv. Fluid pressure

D. Soil & Foundation Data
1. Soil bearing data not available. Assumed soil bearing capacity = 1500 lbs/sf .
2. Extend all footings down to undisturbed soil of the specified strength with a minimum depth of 1'-6" below adjacent grade, or as required by local building official, based on local frost line depth.
3. Center all footings on columns and walls unless specifically dimensioned otherwise.
4. Compacted fill to be well graded and granular with not more than 5% passing a 200 sieve. Place in 8-inch loose lifts and compact to 95% modified AASHO density at optimum moisture.

E. Cast-In-Place Concrete and Reinforcing Steel

1. Concrete of the following 28-day strength: 5 sack cement/cy (min. 2500 psi); max. 6 gal water/sack for all structural concrete, including foundations and slabs on grade. Maximum sized aggregate ¾". Maximum slump 4". Add Master Builders Pozzolith per manufacturer's recommendations to all concrete except footings. Concrete for exterior walks to be air entrained (5% air).
2. Reinforcing steel ASTM A-615 grade 40/60. Use grade 40 for temperature steel, stirrups and dowels. Detail, fabricate and place in accordance with the latest edition of A.C.I. "Manual Of Standard Practice".
3. Concrete cover on reinforcing steel (clear dimensions):
Suspended slabs……¾"
Beams & columns (to ties)……1 ½"
Non-exposed vertical faces……1"
Vertical faces exposed to earth or weather..2"
Bottom of footings……3
Slabs-on-grade (from top)……1 ½"
4. Lap all field splices 24 diameters with minimum of 12". Bend outer wall footing bars 12 inches or use corner bars at all corners and wall intersections.
5. Provide min. one continuous #4 bar at top and bottom of foundation walls w/ #4 at 12" o.c. where wall height exceed two feet. Provide min. two continuous #4 bars in footings. Dowel foundation walls to footings w/ #4 x 1'-6" long @ 16" o.c. Embedded 6" into footing. (No shear keys required)
6. Reinforce around wall and slab openings, with sides of 12" or greater, with two #5 bars extending 24" beyond corners on all four sides. Provide one extra #5 diagonal bar, 4'-0" long, at each corner.
7. Slabs-on-grade: Roll sub grade and moisten before pour. Saw cut crack control joints within 24 hours of pour or install Zip-Strip, with maximum of 12'-0" for 4" non-reinforced slabs and 40'-0" for reinforced slabs. (min. reinforcing: w6 x 6 - w1.4 x 1.4, supported)
8. Vibrate all concrete. Segregation of materials to be prevented. Test cylinders not required.
9. Place no fill against foundation or basement walls until floors are in place or walls have been adequately shored to resist lateral earth pressures.

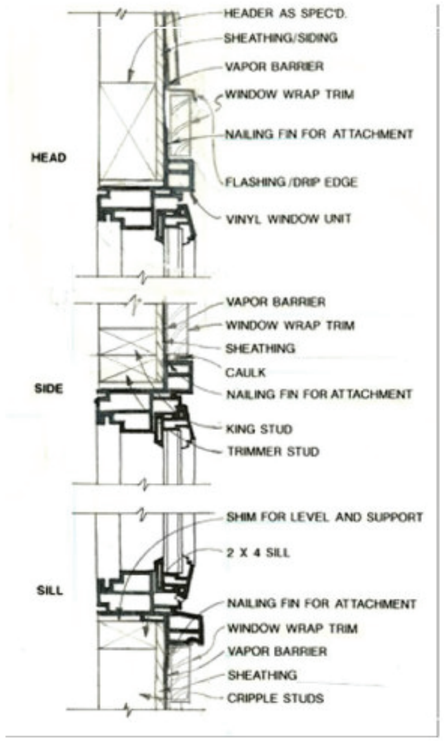
F. Masonry (as applicable)
1. Hollow masonry units: F'M=1350 (half & half c.m.u.)
Mortar type S: 1 pc, ½ lime putty, 4 sand
Grout: 2000 psi pea gravel concrete (7 sack)
2. Reinforcing steel: ASTM A-615, grade 40.
3. Place grout in lifts no greater than 4'-0" height.
4. Wall reinforcing:
.....6" walls: #4 vertical @ 48" o.c. w/ #9 wire horiz. Joint reinf. @ 8" o.c.
.....8" walls: #5 vertical @ 48" o.c. w/ 3/16" dia. wire horiz. Joint reinf. @ 8" o.c.
Install two bars in corners, wall intersections, wall endings and around openings. Lap all bars 20 inches and joint reinforcing, 12 inches. Use corner bars for outer bars in bond beams and at intersecting walls.
5. Anchor brick veneer to wood framed wall as detailed with 22 ga. X 7/8" x 7" galvanized corrugated wall ties @ 16" o.c. ea. Way with one Simpson n20a nail.

G. Timber and Wood Framing
1. Substitution of wood species identified herein may be as approved by local Building Official and material strength and capacities shall equal or exceed that of the species identified herein.
2. All lumber to be graded per book 16 of the West Coast Lumber Inspection Bureau:
HF/DF no. 2 for joists, rafters, light framing, plates and bracing
DF no. 1 for posts and beams
HF/DF "stud" for stud wall framing
4. Joists and rafters (lumber) shall have 2" nominal thick solid blocking at supports.
3. Comply with the latest edition of the NFPA "National Design Specification" as modified by the applicable code for all structural timber requirements.
5. Spike laminated members together w/ 10d nails @ 12" o.c., staggered. Splice laminations at supports only.
6. Provide cut washers for all bolts bearing on wood.
7. All nails shall be common wire nails.
8. Glue-laminated timbers, Douglas Fir, A.I.T.C. grading: combination 24F-V3 for simple spans: 24F-V8 for cantilevered spans. Dry conditions of use. Architectural appearance grade where exposed to view. Fabrication plant A.I.T.C. inspected./ Wrap individual members.
9. Plywood: Roof sheathing to be 15/32"" C-D int-apa plywood with exterior glue, P.I. 24/0 (use 5-ply for panelized roofs) Nailing 8d @ 6" o.c. at panel edges and 8d @ 12" o.c. at intermediate supports. Sub-flooring to be ¾" C-D-apa plywood with exterior glue, P.I. 32/16. Use T&G if no underlayment. Glue and nail with 10d @ 6" o.c. at panel edges and @ 10" at intermediate supports.
10. Pre-fabricated trussed members to be designed by applicable state licensed engineer in accordance with requirements shown in the drawings. Contractor shall verify as-framed dimensions and conditions prior to truss fabrication and coordinate as required. All engineering data shall be made available for submittal to the Building Official as required.

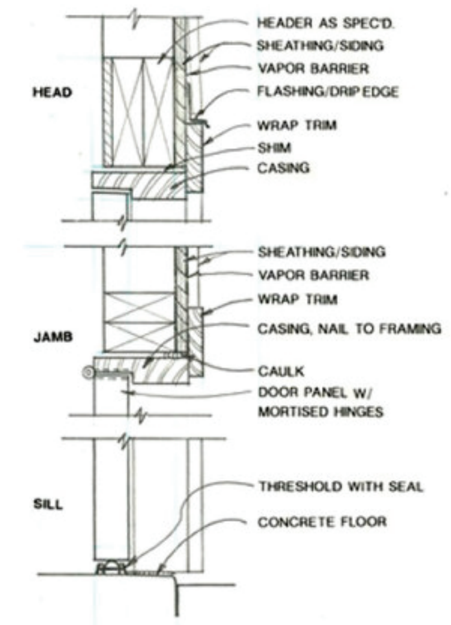
H. Structural Steel
1. All steel, except tubing: ASTM A-36. Pipe: ASTM A-53, Type E or S, grade B. Tubular section: ASTM A500, grade B. All bolts: ASTM A-307.
2. All fabrication, erection and detailing shall be in accordance with the latest edition of the "Manual Of Steel Construction" of the American Institute Of Steel Construction.
3. All welding by WABO certified welders in accordance with the "Welding Handbook" by the American Welding Society.
4. All welds 3/16" min. continuous fillet welds using ASWA5, E70XX electrodes.
5. Provide washers on all bolted connections.
6. All steel not embedded in concrete or masonry shall receive one shop coat of an approved primer paint. Apply two coats of heavy asphaltic paint to all steel exposed to earth.
7. Furnish complete shop drawings prior to fabrication.

I. Miscellaneous
1. Contractor shall verify all site conditions and dimensions in field.
2. Provide temporary bracing as required until all permanent connections and stiffening have been installed.
3. Verify size and locations of all openings in floor, roof and walls and coordinate with electrical and mechanical work.
4. Pre-fabricated items shall be handled and installed in accordance with manufacturers' recommendations. Pre-fabricated

assemblies shall be coordinated with any as-built conditions by the contractor regarding dimensions, clearance and applicable building code requirements.
5. All HVAV equipment shall be determined by owner and/or contractor specific to this project and comply with all applicable codes. Performance data and distribution layout shall be provided by mechanical subcontractor. Submittals shall be coordinated by the contractor as required by the Building Official.
6. It is the intent of these drawings and specifications to comply with the requirements of the applicable Building Code and all other relevant codes and ordinances. Any discrepancies, omissions or errors shall be brought to the attention of the designer for clarification or correction before beginning the work. It is the responsibility of the general contractor to seek clarification or correction if needed.



1 **WINDOW DETAILS**
(NOT TO SCALE)



2 **DOOR DETAILS**
(NOT TO SCALE)

- FASTENING REQUIREMENTS -

TABLE R602.3(3)
REQUIREMENTS FOR WOOD STRUCTURAL PANEL WALL SHEATHING USED TO RESIST WIND PRESSURES[a,b,c]

MINIMUM NAIL		MINIMUM WOOD STRUCTURAL PANEL SPAN RATING	MINIMUM NOMINAL PANEL THICKNESS (inches)	MAXIMUM WALL STUD SPACING (inches)	PANEL NAIL SPACING		MAXIMUM WIND SPEED (mph)		
							Wind exposure category		
Size	Penetration (inches)				Edges (inches o.c.)	Field (inches o.c.)	B	C	D
6d Common (2.0″ × 0.113″)	1.5	24/0	3/8	16	6	12	110	90	85
8d Common (2.5″ × 0.131″)	1.75	24/16	7/16	16	6	12	130	110	105
				24	6	12	110	90	85

For SI: 1 inch = 25.4 mm, 1 mile per hour = 0.447 m/s.
a. Panel strength axis parallel or perpendicular to supports. Three-ply plywood sheathing with studs spaced more than 16 inches on center shall be applied with panel strength axis perpendicular to supports.
b. Table is based on wind pressures acting toward and away from building surfaces per Section R301.2. Lateral bracing requirements shall be in accordance with Section R602.10.
c. Wood Structural Panels with span ratings of Wall-16 or Wall-24 shall be permitted as an alternate to panels with a 24/0 span rating. Plywood siding rated 16 oc or 24 oc shall be permitted as an alternate to panels with a 24/16 span rating. Wall-16 and Plywood siding 16 oc shall be used with studs spaced a maximum of 16 inches on center.

TABLE R602.3(4)
ALLOWABLE SPANS FOR PARTICLEBOARD WALL SHEATHING[a]

THICKNESS (inch)	GRADE	STUD SPACING (inches)	
		When siding is nailed to studs	When siding is nailed to sheathing
3/8	M—1 Exterior glue	16	—
1/2	M—2 Exterior glue	16	16

For SI: 1 inch = 25.4 mm.
a. Wall sheathing not exposed to the weather. If the panels are applied horizontally, the end joints of the panel shall be offset so that four panels corners will not meet. All panel edges must be supported. Leave a 1/16-inch gap between panels and nail no closer than 3/8 inch from panel edges.

TABLE R602.3(1)
FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING OF FASTENERS
	Roof		
1	Blocking between joists or rafters to top plate, toe nail	3-8d (2 1/2″ × 0.113″)	—
2	Ceiling joists to plate, toe nail	3-8d (2 1/2″ × 0.113″)	—
3	Ceiling joists not attached to parallel rafter, laps over partitions, face nail	3-10d	—
4	Collar tie rafter, face nail or 1 1/4″ × 20 gage ridge strap	3-10d (3″ × 0.128″)	—
5	Rafter to plate, toe nail	2-16d (3 1/2″ × 0.135″)	—
6	Roof rafters to ridge, valley or hip rafters: toe nail face nail	 4-16d (3 1/2″ × 0.135″) 3-16d (3 1/2″ × 0.135″)	 — —
	Wall		
7	Built-up corner studs	10d (3″ × 0.128″)	24″ o.c.
8	Built-up header, two pieces with 1/2″ spacer	16d (3 1/2″ × 0.135″)	16″ o.c. along each edge
9	Continued header, two pieces	16d (3 1/2″ × 0.135″)	16″ o.c. along each edge
10	Continuous header to stud, toe nail	4-8d (2 1/2″ × 0.113″)	—
11	Double studs, face nail	10d (3″ × 0.128″)	24″ o.c.
12	Double top plates, face nail	10d (3″ × 0.128″)	24″ o.c.
13	Double top plates, minimum 48-inch offset of end joints, face nail in lapped area	8-16d (3 1/2″ × 0.135″)	—
14	Sole plate to joist or blocking, face nail	16d (3 1/2″ × 0.135″)	16″ o.c.
15	Sole plate to joist or blocking at braced wall panels	3-16d (3 1/2″ × 0.135″)	16″ o.c.
16	Stud to sole plate, toe nail	3-8d (2 1/2″ × 0.113″) or 2-16d 3 1/2″ × 0.135″)	— —
17	Top or sole plate to stud, end nail	2-16d (3 1/2″ × 0.135″)	—
18	Top plates, laps at corners and intersections, face nail	2-10d (3″ × 0.128″)	—
19	1″ brace to each stud and plate, face nail	2-8d (2 1/2″ × 0.113″) 2 staples 1 3/4″	— —
20	1″ × 6″ sheathing to each bearing, face nail	2-8d (2 1/2″ × 0.113″) 2 staples 1 3/4″	— —
21	1″ × 8″ sheathing to each bearing, face nail	2-8d (2 1/2″ × 0.113″) 3 staples 1 3/4″	— —
22	Wider than 1″ × 8″ sheathing to each bearing, face nail	3-8d (2 1/2″ × 0.113″) 4 staples 1 3/4″	— —
	Floor		
23	Joist to sill or girder, toe nail	3-8d (2 1/2″ × 0.113″)	—
24	1″ × 6″ subfloor or less to each joist, face nail	2-8d (2 1/2″ × 0.113″) 2 staples 1 3/4″	— —
25	2″ subfloor to joist or girder, blind and face nail	2-16d (3 1/2″ × 0.135″)	—
26	Rim joist to top plate, toe nail (roof applications also)	8d (2 1/2″ × 0.113″)	6″ o.c.
27	2″ planks (plank & beam – floor & roof)	2-16d (3 1/2″ × 0.135″)	at each bearing
28	Built-up girders and beams, 2-inch lumber layers	10d (3″ × 0.128″)	Nail each layer as follows: 32″ o.c. at top and bottom and staggered. Two nails at ends and at each splice.
29	Ledger strip supporting joists or rafters	3-16d (3 1/2″ × 0.135″)	At each joist or rafter

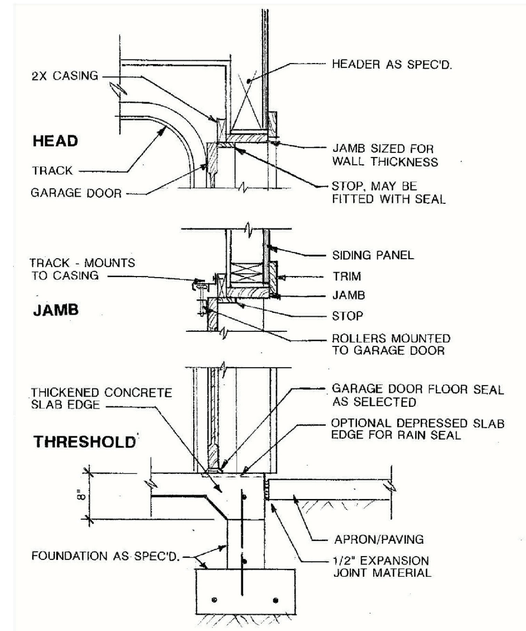
TABLE R602.3(2)
ALTERNATE ATTACHMENTS

NOMINAL MATERIAL THICKNESS (inches)	DESCRIPTION[a, b] OF FASTENER AND LENGTH (inches)	SPACING[c] OF FASTENERS	
		Edges (inches)	Intermediate supports (inches)
Wood structural panels subfloor, roof and wall sheathing to framing and particleboard wall sheathing to framing[f]			
up to 1/2	Staple 15 ga. 1 3/4	4	8
	0.097 - 0.099 Nail 2 1/4	3	6
	Staple 16 ga. 1 3/4	3	6
19/32 and 5/8	0.113 Nail 2	3	6
	Staple 15 and 16 ga. 2	4	8
	0.097 - 0.099 Nail 2 1/4	4	8
23/32 and 3/4	Staple 14 ga. 2	4	8
	Staple 15 ga. 1 3/4	3	6
	0.097 - 0.099 Nail 2 1/4	4	8
	Staple 16 ga. 2	4	8
1	Staple 14 ga. 2 1/4	4	8
	0.113 Nail 2 1/4	3	6
	Staple 15 ga. 2 1/4	4	8
	0.097 - 0.099 Nail 2 1/2	4	8
NOMINAL MATERIAL THICKNESS (inches)	DESCRIPTION[a, b] OF FASTENER AND LENGTH (inches)	SPACING[c] OF FASTENERS	
		Edges (inches)	Body of panel[d] (inches)
Floor underlayment; plywood-hardboard-particleboard[f]			
Plywood			
1/4 and 5/16	1 1/4 ring or screw shank nail—minimum 12 1/2 ga. (0.099″) shank diameter	3	6
	Staple 18 ga., 7/8, 3/16 crown width	2	5
11/32, 3/8, 15/32, and 1/2	1 1/4 ring or screw shank nail—minimum 12 1/2 ga. (0.099″) shank diameter	6	8[e]
19/32, 5/8, 23/32 and 3/4	1 1/2 ring or screw shank nail—minimum 12 1/2 ga. (0.099″) shank diameter	6	8
	Staple 16 ga. 1 1/2	6	8
Hardboard[f]			
0.200	1 1/2 long ring-grooved underlayment nail	6	6
	4d cement-coated sinker nail	6	6
	Staple 18 ga., 7/8 long (plastic coated)	3	6
Particleboard			
1/4	4d ring-grooved underlayment nail	3	6
	Staple 18 ga., 7/8 long, 3/16 crown	3	6
3/8	6d ring-grooved underlayment nail	6	10
	Staple 16 ga., 1 1/8 long, 3/8 crown	3	6
1/2, 5/8	6d ring-grooved underlayment nail	6	10
	Staple 16 ga., 1 7/8 long, 7/8 crown	3	6

For SI: 1 inch = 25.4 mm.
a. Nail is a general description and may be T-head, modified round head or round head.
b. Staples shall have a minimum crown width of 7/16-inch on diameter except as noted.
c. Nails or staples shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater. Nails or staples shall be spaced at not more than 12 inches on center at intermediate supports for floors.
d. Fasteners shall be placed in a grid pattern throughout the body of the panel.
e. For 5-ply panels, intermediate nails shall be spaced not more than 12 inches on center each way.
f. Hardboard underlayment shall conform to ANSI/AHA A135.4.

ITEM	DESCRIPTION OF BUILDING MATERIALS	DESCRIPTION OF FASTENER[b, c, e]	SPACING OF FASTENERS: Edges (inches)[i]	SPACING OF FASTENERS: Intermediate supports[c, e] (inches)
Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing				
30	3/8″ - 1/2″	6d common (2″ × 0.113″) nail (subfloor wall)[i] 8d common (2 1/2″ × 0.131″) nail (roof)	6	12[g]
31	5/16″ - 1/2″	6d common (2″ × 0.113″) nail (subfloor, wall) 8d common (2 1/2″ × 0.131″) nail (roof)[f]	6	12[g]
32	19/32″ - 1″	8d common nail (2 1/2″ × 0.131″)	6	12[g]
33	1 1/8″ - 1 1/4″	10d common (3″ × 0.148″) nail or 8d (2 1/2″ × 0.131″) deformed nail	6	12
Other wall sheathing[h]				
34	1/2″ structural cellulosic fiberboard sheathing	1/2″ galvanized roofing nail, 7/16″ crown or 1″ crown staple 16 ga., 1 1/4″ long	3	6
35	25/32″ structural cellulosic fiberboard sheathing	1 3/4″ galvanized roofing nail, 7/16″ crown or 1″ crown staple 16 ga., 1 1/2″ long	3	6
36	1/2″ gypsum sheathing[d]	1 1/2″ galvanized roofing nail; staple galvanized, 1 1/2″ long; 1 1/4 screws, Type W or S	7	7
37	5/8″ gypsum sheathing[d]	1 3/4″ galvanized roofing nail; staple galvanized, 1 5/8″ long; 1 5/8″ screws, Type W or S	7	7
Wood structural panels, combination subfloor underlayment to framing				
38	3/4″ and less	6d deformed (2″ × 0.120″) nail or 8d common (2 1/2″ × 0.131″) nail	6	12
39	7/8″ - 1″	8d common (2 1/2″ × 0.131″) nail or 8d deformed (2 1/2″ × 0.120″) nail	6	12
40	1 1/8″ - 1 1/4″	10d common (3″ × 0.148″) nail or 8d deformed (2 1/2″ × 0.120″) nail	6	12

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s; 1ksi = 6.895 MPa.
a. All nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less.
b. Staples are 16 gage wire and have a minimum 7/16-inch on diameter crown width.
c. Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.
d. Four-foot-by-8-foot or 4-foot-by-9-foot panels shall be applied vertically.
e. Spacing of fasteners not included in this table shall be based on Table R602.3(2).
f. For regions having basic wind speed of 110 mph or greater, 8d deformed (2 1/2″ × 0.120) nails shall be used for attaching plywood and wood structural panel roof sheathing to framing within minimum 48-inch distance from gable end walls, if mean roof height is more than 25 feet, up to 35 feet maximum.
g. For regions having basic wind speed of 100 mph or less, nails for attaching wood structural panel roof sheathing to gable end wall framing shall be spaced 6 inches on center. When basic wind speed is greater than 100 mph, nails for attaching panel roof sheathing to intermediate supports shall be spaced 6 inches on center for minimum 48-inch distance from ridges, eaves and gable end walls; and 4 inches on center to gable end wall framing.
h. Gypsum sheathing shall conform to ASTM C 1396 and shall be installed in accordance with GA 253. Fiberboard sheathing shall conform to ASTM C 208.
i. Spacing of fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at all floor perimeters only. Spacing of fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.



1 GARAGE DOOR DETAILS

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PLAN NO. 480-1FTSP

DESIGN BY: JJB

DATE: updated 04/11

SHEET CONTENTS: IBC CODE REQUIREMENTS FOR FASTENINGS AND SHEATHING — GARAGE DOOR DETAILS

SHEET 8 OF 8