

**8' Foundation  
SIPs  
Detail Manual  
(On Granular Footings)**



**Pinnacle**  
ENGINEERING



**EXTREME PANEL  
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I hereby certify that this plan,  
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prepared by me or under my  
direct supervision and that I am  
a duly Licensed Professional  
Engineer under the laws of the  
State of Minnesota.

Name: Thomas A. Moore

Signature: *Thomas A. Moore*

Date: 01-24-2025 License: #57458

Thomas A. Moore  Digitally signed by Thomas A Moore  
DN: cn=Thomas A Moore, o=US,  
email=tmoore@pinneng.com  
Date: 2025.01.24 16:10:10 -05'00'

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4. For granular footings which are typically minimum of 10" deep by 24" wide, a .60 CCA treated 2x12 is used for the base plate. This base plate must be placed on uniform well compacted granular footings and staked into position every 4'-0". In Group I and II soils, place a minimum of 4" of granular fill and for Group III soils use a minimum of 6" of granular fill under the slab, for proper drainage to a Sump pit located in the interior or exterior of the foundation. With Group I soils, granular material can be used for drainage on the outside of the foundation as long as it is covered by a 6 mil poly sheeting or water permeable filter fabric to prevent soil from washing into the footing. In Group II and III soils it is recommended that a 4" perforated tile be placed at same grade level as the footing and covered with a filter cloth to keep the perforations open. This tile along with the granular bed under the slab needs to be sloped toward the sump to drain properly. An automatic electric sump pump will be needed if the sump cannot be drained by gravity to daylight or to a storm sewer system.

5. Attach the .60 CCA treated 2x8 to the 2x12 base plate using 10d stainless steel (type 304 or 316) nails 8" o.c. staggered, or a 3" stainless steel construction lag screw 12" o.c. staggered. SIP adhesive/sealant is to be used between the two plates. Make sure that ends of sill plate are at a minimum distance of 2'-0" from the ends of the base plate. Remember to set the plates in 5/8" from outer dimensions of the structure to allow for exterior skin of SIP to fit on the outside of the plate.

6. Install Extreme's Foundation SIPs according to the SIP shop drawings provided. Use SIP Adhesive/Sealant for all wood to wood connections and for all wood to foam or foam to foam connections. Refer to Extreme Panel's Construction Detail Manual for placement of these products. Nail all SIP connections using 2" stainless steel (type 304 or 316) ring shank nails 8" o.c.. These materials are supplied by Extreme Panels. Any other alternative products need to be approved by Extreme Panels. Note: If a pneumatic nailer is used, do not drive the heads of the nails in any deeper than 1/8". Top plates (typically not treated) are to be installed with the ends of the top plates staggered to not fall on the seam of a SIP vertical connection.

7. Seal exterior joints in the plywood using 4" SIP Flashing which is supplied by Extreme Panels. SIP Adhesive/Sealant can also be used.

8. Floor systems: If you are using Extreme's Insulated Rimboard, refer to Extreme Panel's Construction Detail Manual for installation guidelines. If an alternative rimboard is used, follow that products installation manual. Set the floor system that has been designed for the structure according to their layout. Fasten the floor joists to the top plate of the SIP using (3) #9x3" screws or (3) 16d nails. When a backfill of 5'-0" or higher is required, use an angle clip (Simpson Strong-Tie A35 Framing Angle with Bend Slot) to secure joist to top plate with (12) 8d x 1 1/2" nails.

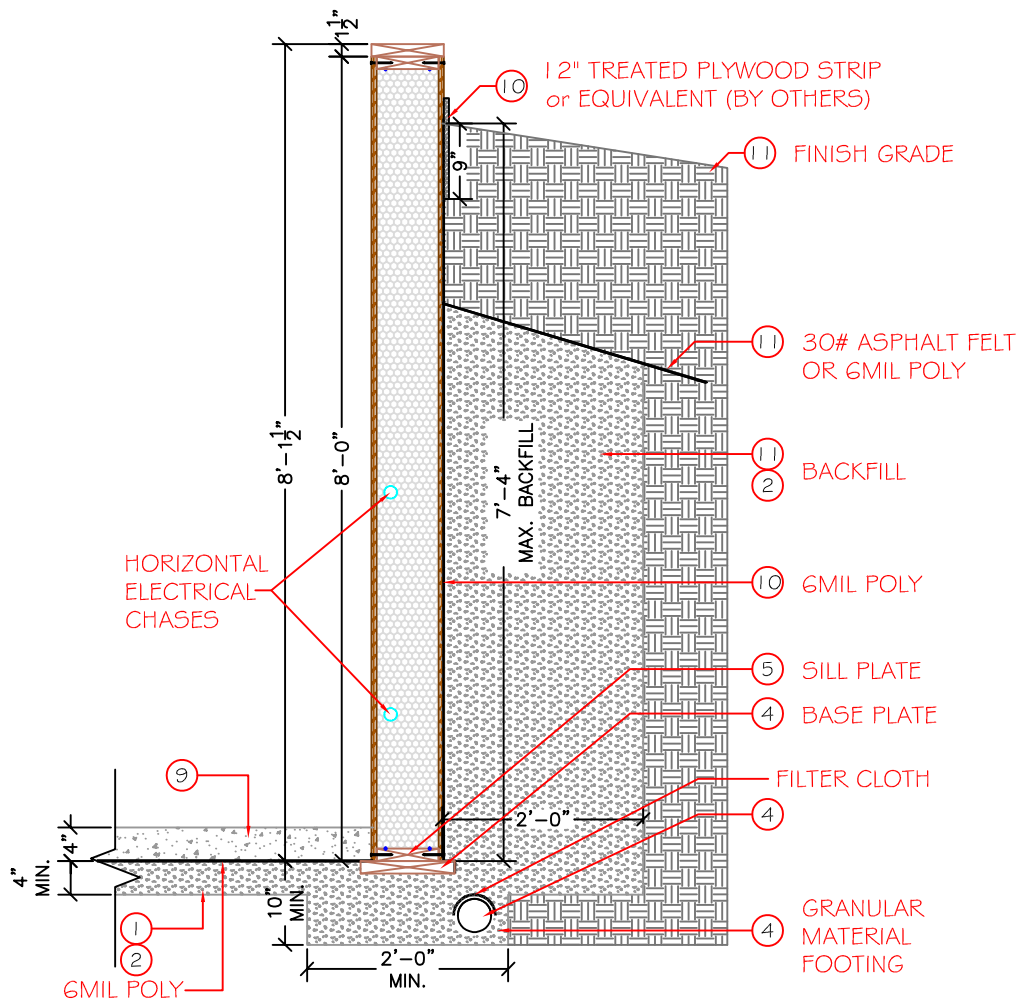
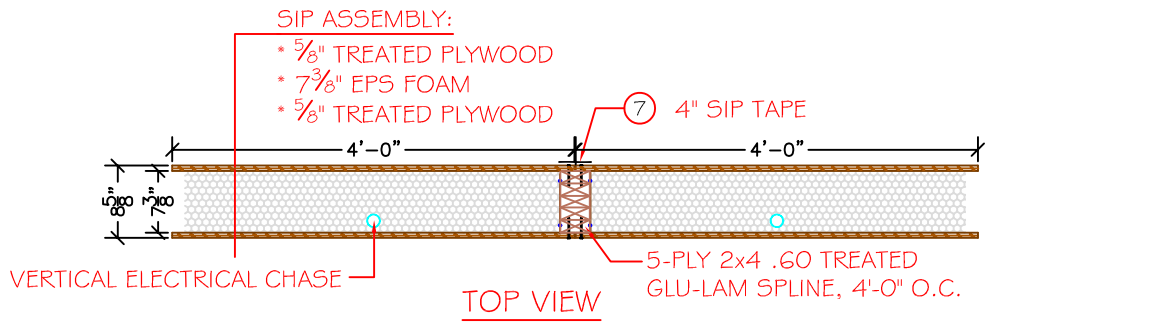
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7. Seal exterior joints in the plywood using 4" SIP Flashing which is supplied by Extreme Panels. SIP Adhesive/Sealant can also be used.

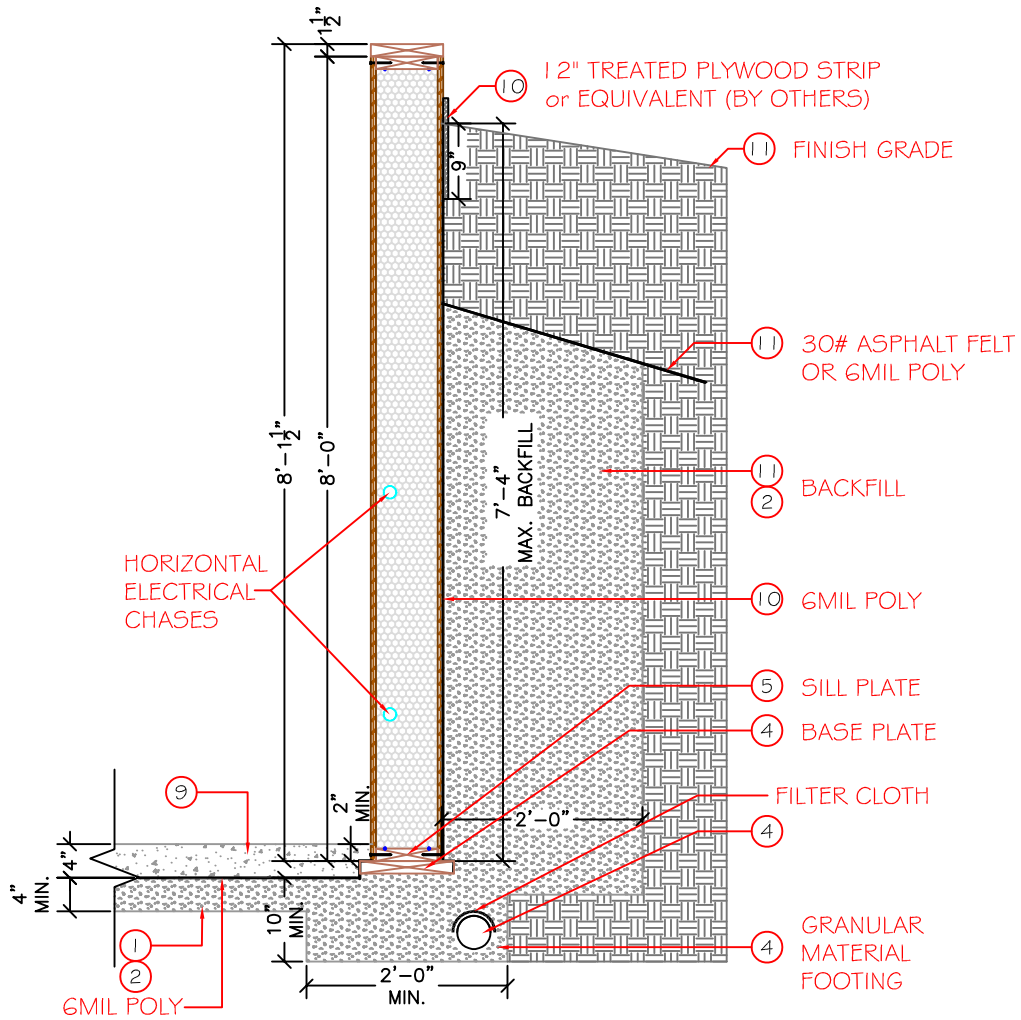
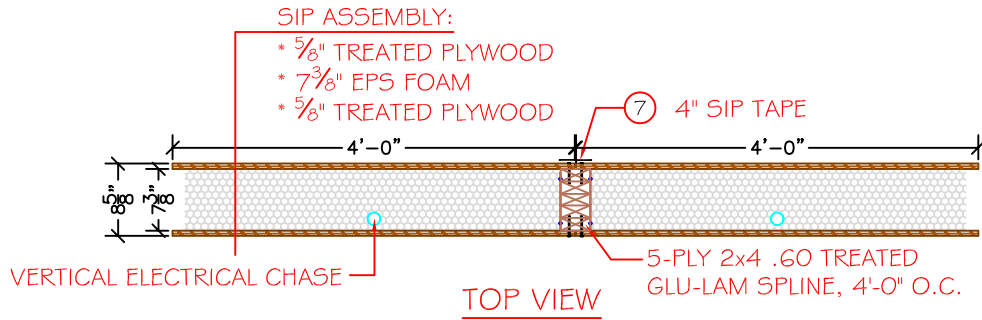
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SECTION  
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DETAIL TITLE : BELOW GRADE 8' FOUNDATION SIP  
 DETAIL NO. : FD-101  
 PAGE NO. : 4  
 UPDATED : 3/2024





## FOUNDATION DETAIL

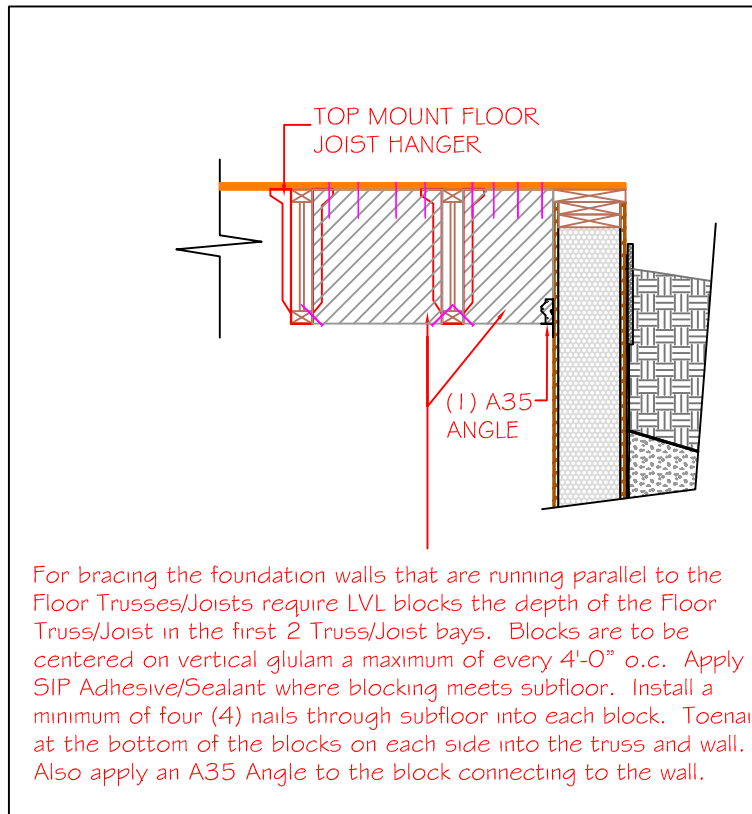
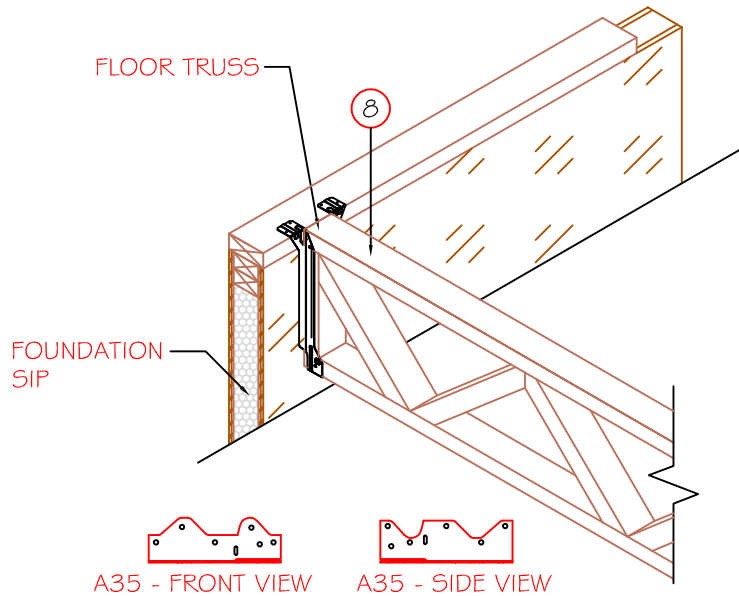
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OPTIONAL CONCRETE FLOOR POURED AGAINST SIP FOUNDATION WALL

SECTION  
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DETAIL TITLE : BELOW GRADE 8' FOUNDATION SIP  
 DETAIL NO. : FD-101-1  
 PAGE NO. : 5  
 UPDATED : 3/2024





SECTION  
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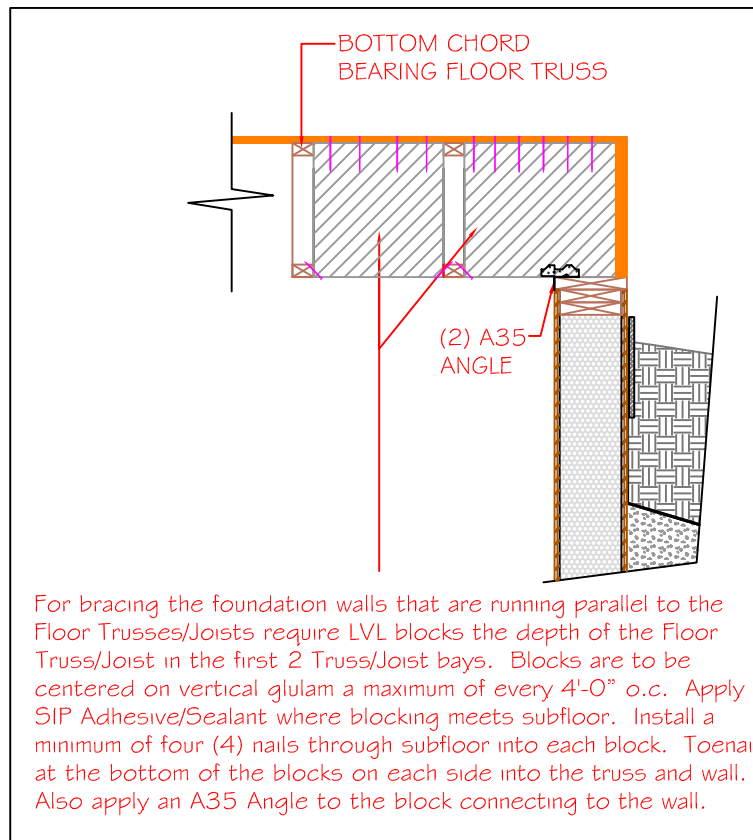
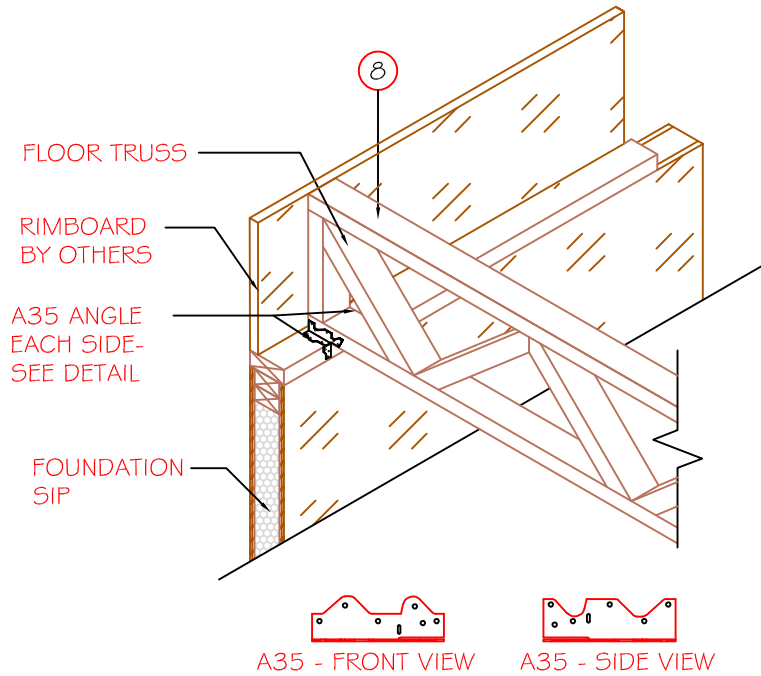
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UPDATED : 3/2024



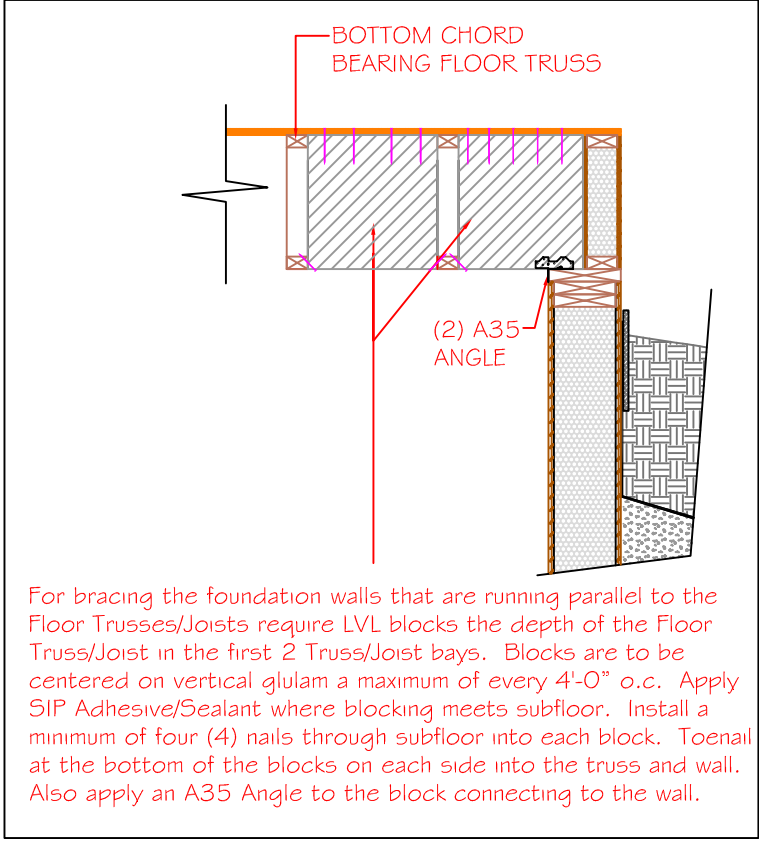
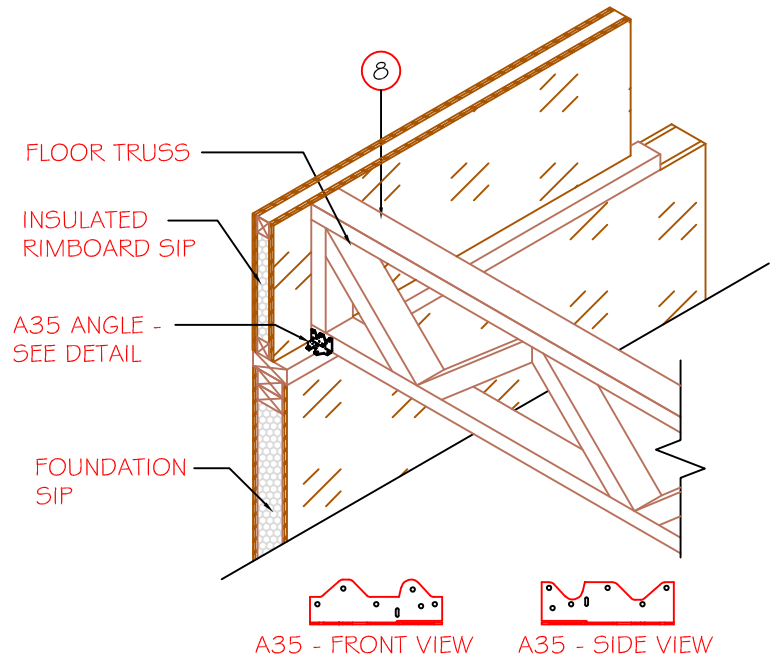




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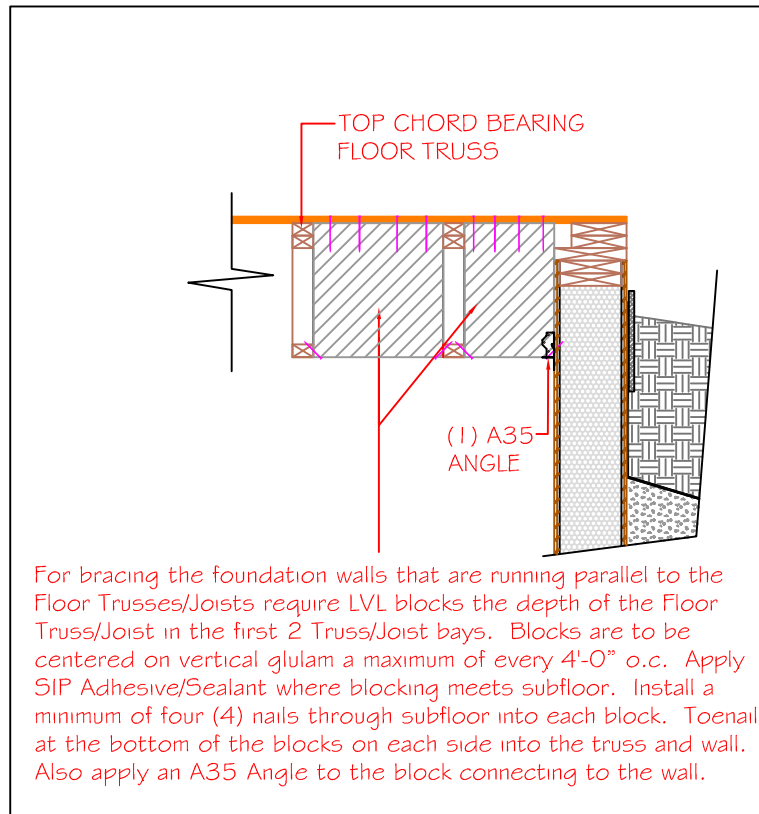
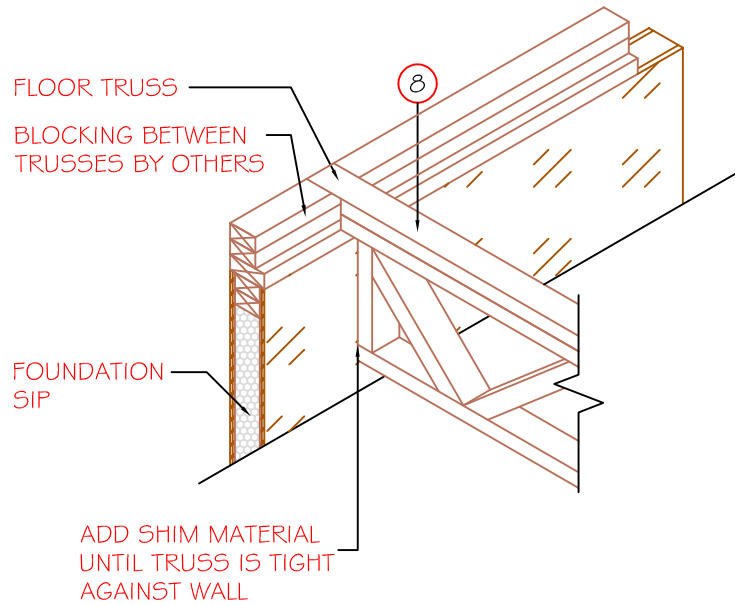




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 PAGE NO. : 8  
 UPDATED : 3/2024

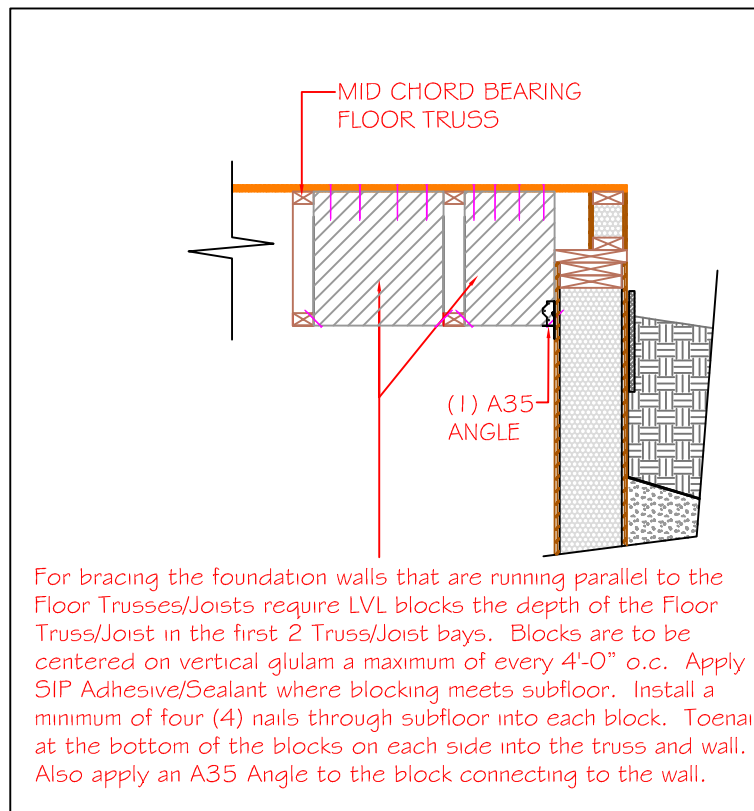
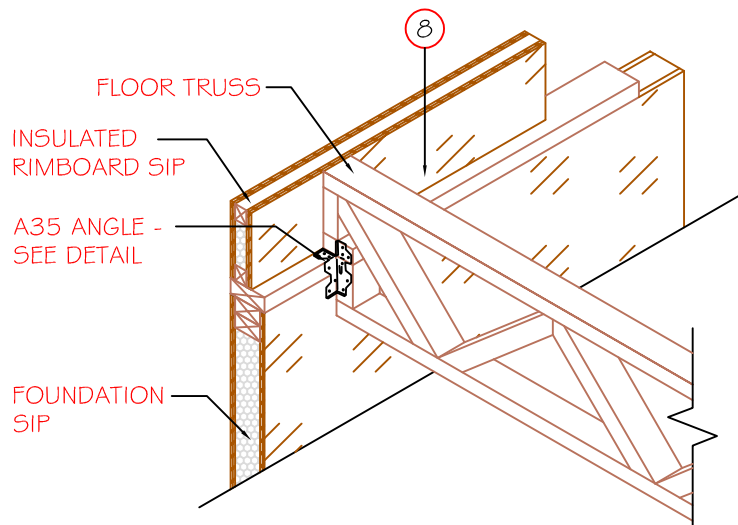




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 PAGE NO. : 9  
 UPDATED : 3/2024





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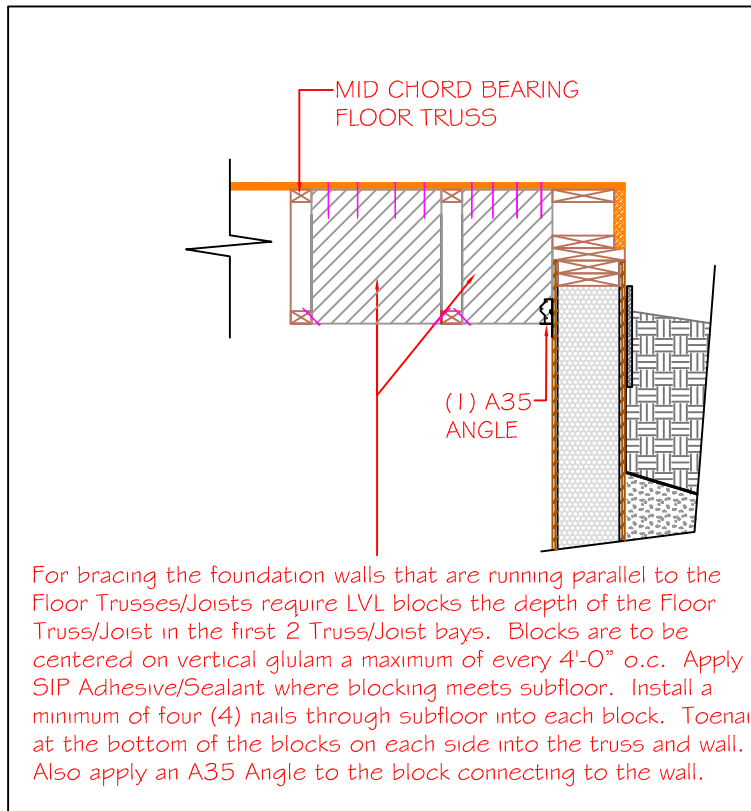
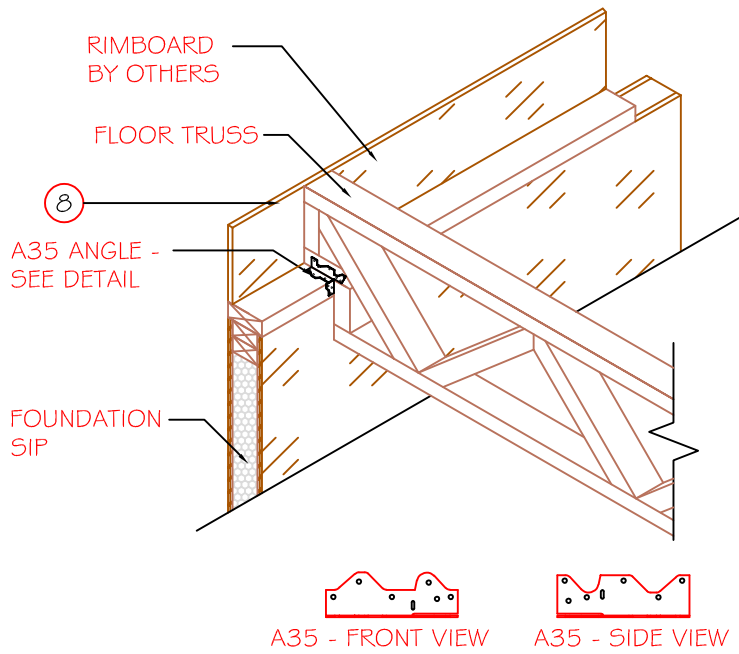
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DETAIL NO. : BD-105

PAGE NO. : 10

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DETAIL NO. : BD-106

PAGE NO. : 11

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## SITE CONSIDERATIONS

### SOIL CONDITIONS

The type of soil and general grading conditions at the building site are factors in determining foundation construction details such as footing design, backfill and drainage provisions.

Soils are classified by their composition and how they drain. Table 1 lists common soil types and their properties. Soil classifications for most areas are list-

ed in the standard series of soil surveys published by the U.S. Department of Agriculture's Soil Conservation Service.

PWFs may be built in Group I, II, or III soils. In poorly drained Group III soils, granular fill under the slab for basement-type foundations must be at least 6" deep, as opposed to the 4" minimum for Group I

**TABLE 1 – TYPES OF SOILS AND RELATED DESIGN PROPERTIES**

Soil Group	Unified Soil Classification Symbol	Soil Description	Allowable Bearing in Pounds Per Square Foot with Medium Compaction or Stiffness <sup>1</sup>	Drainage Characteristics <sup>2</sup>	Frost Heave Potential	Volume Change Potential Expansion <sup>3</sup>
Group I Excellent	GS	Well-graded gravels, gravel-sand mixtures, little or no fines.	8000	Good	Low	Low
	GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.	8000	Good	Low	Low
	SW	Well-graded sands, gravelly sands, little or no fines.	6000	Good	Low	Low
	SP	Poorly graded sands or gravelly sands, little or no fines.	5000	Good	Low	Low
	GM	Silty gravels, gravel-sand-silt mixtures.	4000	Medium	Medium	Low
	SM	Silty sand, sand-silt mixtures.	4000	Medium	Medium	Low
Group II Fair to Good	GC	Clayey gravels, gravel-sand-clay mixtures.	4000	Medium	Medium	Low
	SC	Clayey sands, sand-clay mixture.	4000	Medium	Medium	Low
	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.	2000	Medium	High	Low
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.	2000	Medium	Medium	Medium <sup>4</sup>
Group III Poor	CH	Inorganic clays of high plasticity, fat clays.	2000	Poor	Medium	High <sup>4</sup>
	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.	2000	Poor	High	High
Group IV Unsatisfactory	OL	Organic silts and organic silty clays of low plasticity.	400	Poor	Medium	Medium
	OH	Organic clays of medium to high plasticity, organic silts.	-0-	Unsatisfactory	Medium	High
	Pt	Peat and other highly organic soils.	-0-	Unsatisfactory	Medium	High

<sup>1</sup> Allowable bearing value may be increased 25 percent for very compact, coarse grained gravelly or sandy soils or very stiff fine-grained clayey or silty soils. Allowable bearing value shall be decreased 25 percent for loose, coarse-grained gravelly or sandy soils, or soft, fine-grained clayey or silty soils.

<sup>2</sup> The percolation rate for good drainage is over 4 inches per hour, medium drainage is 2 to 4 inches per hour, and poor is less than 2 inches per hour.

<sup>3</sup> For expansive soils, contact local soils engineer for verification of design assumptions.

<sup>4</sup> Dangerous expansion might occur if these soil types are dry but subject to future wetting.