

2017



Modular Installation Instructions-Clayton Albuquerque

993Home Building Facility
4/20/2017

Modular Installation Instructions

Index

General Installation Information SU-1.0

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Fixed Roof Installation Information SU-993-2.0.0

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<ul style="list-style-type: none">Ceiling Connection at Mate Line(s)	<ul style="list-style-type: none">Peak Connection at Mate Line(s)	<ul style="list-style-type: none">Typical Roof Penetrations

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Items Covered by this detail			
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Triple Hinged Roof Non-Attic Storage Installation Information SU-993-2.1.0-K148

Items Covered by this detail			
<ul style="list-style-type: none">Ceiling Connection at Mate Line(s)Typical Roof Penetrations	<ul style="list-style-type: none">Ridge Box Connection(s)	<ul style="list-style-type: none">Gable End Framing	<ul style="list-style-type: none">Kneewall Connection(s)

Hinged Roof Attic Storage Installation Information SU-993-2.2.0

Items Covered by this detail			
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Mechanical Installation Information (Standard Crossovers) SU-3.0

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<ul style="list-style-type: none">Comfort Cooling SystemsFurnace De-RationDryer Duct Installation	<ul style="list-style-type: none">Air ConditionersFireplaceStandard Floor Crossover Connection	<ul style="list-style-type: none">HVAC Crossover Duct InstallationCombustion Air Duct InletsStandard Ceiling Crossover Connection	<ul style="list-style-type: none">Heat PumpsGas Dryer InstallationStandard Duct Connection

Electrical Installation Information SU-4.0

Items Covered by this detail	
<ul style="list-style-type: none">Module Interconnection	<ul style="list-style-type: none">Service Installation

Plumbing Installation Information SU-5.0

Items Covered by this detail		
<ul style="list-style-type: none">Waste Lines	<ul style="list-style-type: none">Supply Lines	<ul style="list-style-type: none">Water Heater

Display Set Information SU-6.0, 6.1 & 6.2

GENERAL INSTALLATION INFORMATION

- THIS HOME WAS DESIGNED, ENGINEERED AND BUILT WITH GREAT PRIDE AND CARE AND IS A TOTALLY INTEGRATED STRUCTURE. THEREFORE, IT IS IMPORTANT THAT THESE INSTRUCTIONS BE CLOSELY ADHERED FOLLOWED. HOME SETUP AND INSTALLATION SHALL BE PERFORMED BY AN EXPERIENCED AND QUALIFIED CONTRACTOR.
- YOUR HOME STATE MAY HAVE MODULAR HOME INSTALLATION LAWS AND REGULATIONS AND YOUR CONTRACTOR WILL BE REQUIRED TO FOLLOW THESE INSTRUCTIONS. IT MAY ALSO BE REQUIRED THAT YOUR CONTRACTOR, AS WELL AS UTILITY CONTRACTORS, BE LICENSED. YOUR LOCAL AUTHORITIES CAN PROVIDE YOU WITH THE REQUIREMENTS IN YOUR AREA. IF YOUR HOME STATE DOES NOT HAVE SPECIFIC REGULATIONS, THESE INSTRUCTIONS MUST BE FOLLOWED OR THE WARRANTY MAY BECOME VOID.
- A PROPERLY PREPARED SITE IS NECESSARY PRIOR TO BEGINNING THE INSTALLATION OF THE HOME'S SUPPORT SYSTEM. IT IS IMPORTANT THAT THE FOLLOWING ITEMS BE CONSIDERED IN PREPARING THE SITE FOR YOUR HOME. CMH MANUFACTURING WILL CONSIDER THE CONDITION OF THE HOME SITE BEFORE IT WILL BE ABLE TO HONOR ANY APPARENT FOUNDATION RELATED CLAIM.
- THESE DETAILS HAVE INSTRUCTIONS FOR THE PROPER SETUP AND INSTALLATION OF THE HOME AS WELL AS FOR CROSSOVER CONNECTIONS OF UTILITIES (IF IT IS A MULTI-SECTIONAL HOME). CONNECTION TO PUBLIC UTILITIES SHALL BE PERFORMED BY UTILITY COMPANY PERSONNEL OR THEIR AUTHORIZED AGENT.
- PRIOR TO THE DELIVERY OF THIS HOME THE HOMEOWNER OR SETUP CONTRACTOR SHALL CONTACT THE APPROPRIATE LOCAL AUTHORITIES TO DETERMINE THE REQUIREMENTS FOR ZONING, EASEMENTS, ENCROACHMENTS, AND ANY RESTRICTIONS THAT MAY APPLY IN YOUR AREA, AS WELL AS THE NEED FOR PERMITS AND INSPECTIONS.
- DEVIATION FROM THESE INSTRUCTIONS MAY VOID YOUR WARRANTY. ANY ALTERATIONS OR CHANGES TO THIS HOME SHALL BE APPROVED BY A REGISTERED ENGINEER AND MAY STILL BE SUBJECT TO WARRANTY VIOLATIONS.

DRAINAGE AND GRADE

- AN IMPORTANT FACTOR IN ENSURING THE LONG TERM STRUCTURAL INTEGRITY OF THE HOME IS ASSURING THAT THE HOME'S SITE IS PROPERLY DRAINED. MOISTURE UNDER THE HOME MAY LEAD TO STRUCTURAL DAMAGE TO THE FLOOR SYSTEM AND OTHER PARTS OF THE HOME. ADDITIONALLY, FAILURE TO PROVIDE ADEQUATE SLOPE MAY RESULT IN OTHER MOISTURE RELATED PROBLEMS. THE AREA BENEATH AND AROUND THE HOME SHALL BE GRADED AND SLOPED TO PREVENT SURFACE WATER FROM ACCUMULATING UNDER THE HOME. THE HOME SHOULD ALSO BE LOCATED AWAY FROM STREAMS, RIVERS AND OTHER NATURAL DRAINAGE AREAS. IF GUTTERS AND DOWNSPOUTS ARE INSTALLED, ENSURE THE RUNOFF IS DIRECTED AWAY FROM THE HOME.

INSTALLATION TYPES

- THERE ARE SEVERAL DIFFERENT TYPES OF HOME INSTALLATIONS. DEPENDING ON WHICH METHOD THEY WILL USE, MAY EFFECT THE SITE PREPARATION.

INSTALLER

- THIS HOME WEIGHS SEVERAL TONS AND QUALIFIED, TRAINED AND APPROPRIATELY LICENSED PERSONNEL SHALL PERFORM ITS SETUP. PRIOR TO THE COMMENCEMENT OF ANY WORK, THE SETUP CONTRACTOR SHALL ENSURE THAT PROPER SAFETY PRECAUTIONS ARE OBSERVED AND FOLLOWED.

ACCESS TO SITE

- A PROPER ROUTE TO THE SITE SHALL BE SELECTED.

MINIMUM CLEARANCES

- 18" FOR WOOD JOISTS OR THE BOTTOM OF A WOOD STRUCTURAL FLOORS EXPOSED TO THE GROUND IN CRAWL SPACES OR UNEXCAVATED AREA LOCATED WITHIN THE PERIPHERY OF THE BUILDING FOUNDATION.
- 12" FOR WOOD OR STEEL GIRDERS EXPOSED TO THE GROUND IN CRAWL SPACES OR UNEXCAVATED AREA LOCATED WITHIN THE PERIPHERY OF THE BUILDING FOUNDATION.
- 6" FROM THE GROUND FOR WOOD SIDING, SHEATHING AND WALL FRAMING ON THE EXTERIOR OF A BUILDING.

MATELINE GAPS

- THE HOME BUILDING FACILITY HAS INSTALLED A FOAM GASKET AT THE MATE LINE TO SEAL ANY GAPS THAT MAY OCCUR DURING INSTALLATION OF THE MODULES. MODULES SHOULD BE PLACE CLOSE ENOUGH TO COMPRESS THE GASKET. GAPS UP TO 1", ARE ACCEPTABLE IF INSTALL ONE OF THE FOLLOWING TO FILL IN GAPS:
 - FIBERGLASS INSULATION
 - LUMBER
 - EXPANDABLE FOAM
- WOOD SHIMS SHALL BE INSTALLED AT THE FASTENER LOCATION AND FASTENERS SHALL BE INCREASED IN LENGTH BY THE GAP SIZE.
 - EXAMPLE: 1" GAP AND 3" LONG FASTENER CALL OUT
- FASTENER SHALL INCREASE TO 4" LONG FASTENER AND WOOD SHIM SHALL BE INSTALLED IN THE GAP AT THE FASTENER LOCATION.

INSTALLATION OF MODULES WITH CHASSIS

- THE FOLLOWING STEPS SHALL BE FOLLOWED WITH EACH MODULE OF YOUR HOME.
- CAUTION: NO ONE SHALL BE UNDERNEATH THE MODULE WHILE IT IS BEING JACKED UP OR CRANED. SHOULD THE MODULE FALL A SEVERE INJURY COULD OCCUR.
- NOTE: FOR THE PURPOSE OF THESE INSTRUCTIONS, THE FRONT OF THE HOME REFERS TO THE HITCH END.
 - POSITION MODULE IN ITS DESIRED FINAL LOCATION.
 - ROUGH LEVEL THE MODULE USING THE HITCH JACK AT THE FRONT OF THE MODULE.
 - STARTING WITH ONE SIDE, PLACE THE FIRST JACK JUST FORWARD OF THE FRONT SPRING SHACKLE UNDER THE MAIN I-BEAM AND THE SECOND JACK BEHIND THE AXLES.
 - INSTALL SUPPORT PIERS PER FOUNDATION PLAN.
 - LIFT THE OPPOSITE SIDE OF THE MAIN BEAM AND ROUGH LEVEL BY PLACING PIERS DIRECTLY OPPOSITE THOSE PLACED ON THE FIRST SIDE.
 - COMPLETE THE ROUGH LEVELING BY ADJUSTING SUPPORTS AS REQUIRED.
 - ADDITIONAL PIERS MAY BE PLACED UNDER THE FLOOR JOISTS LOCATED UNDER HEAVY FURNITURE OR EQUIPMENT.
 - ADJUST THE FINAL HEIGHT OF THE MODULE FOUNDATION SUPPORT USING A LEVEL. LEVEL FROM FRONT TO REAR AND SIDE TO SIDE TO OBTAIN A FINAL LEVEL THROUGHOUT THE MODULE.

- CONNECT ALL TIE DOWN STRAPS TO GROUND ANCHORS. CAUTION: FOR GAS, ELECTRICAL, WATER, ETC. HOOKUPS REFERENCE OTHER DETAILS.
- A RE-CHECK OF LEVEL AND PIERS SHOULD BE MADE AFTER APPROXIMATELY THIRTY DAYS IN CASE SOME SETTLLING HAS OCCURRED. CAUTION: AUTHORIZED SERVICE PERSONNEL WHO ARE FAMILIAR WITH LOCAL REQUIREMENTS SHALL MAKE ALL UTILITY CONNECTIONS.
- NOTE: IF DRYER IS INSTALLED REFERENCE OTHER DETAILS FOR DRYER DUCT INSTALLATION REQUIREMENTS.
- THERE ARE TIMES WHEN THE BOTTOM BOARD OF YOUR NEW MODULE MAY BECOME TORN OR CUT FOR VARIOUS REASONS. IN SUCH CASES, SUCH PLACES SHALL BE PATCHED ACCORDING TO THE MANUFACTURERS' INSTALLATION INSTRUCTIONS FOUND IN THE SHIP LOOSE MATERIAL. IF NO INSTRUCTIONS CAN BE FOUND, A PIECE OF 3/8" PLYWOOD SHOULD BE INSTALLED ABOVE THE BOTTOM BOARD. PLACE PATCH OVER THE HOLE AND FASTEN WITH SCREWS INTO THE PLYWOOD.

INSTALLATION OF MODULES WITHOUT CHASSIS

- PLEASE BE ADVISED WITH THIS TYPE OF INSTALLATION, INSULATION IN THE FLOOR CAVITY MAY HAVE SHIFTED DURING TRANSPORTATION. THIS MAY REQUIRE THE INSTALLATION PERSONAL TO REINSTALL AND ADD SUPPORTS.
- THE FOLLOWING STEPS SHALL BE FOLLOWED WITH EACH MODULE OF YOUR HOME.
- CAUTION: NO ONE SHALL BE UNDERNEATH THE MODULE WHILE IT IS BEING JACKED UP OR CRANED. SHOULD THE MODULE FALL A SEVERE INJURY COULD OCCUR.

DRIVE THROUGH METHOD

- PERSONNEL REQUIREMENTS: THIS METHOD WILL REQUIRE A FORMAN FAMILIAR WITH THIS TYPE OF OPERATION ALONG WITH A MINIMUM OF THREE-WORK PERSONS. MANPOWER REQUIREMENTS WILL VARY WITH THE SCOPE OF THE PROJECT.
- POSITIONING OF MODULES: UPON ARRIVAL OF THE MODULES, POSITION CARRIER CENTERLINE WITH CENTERLINE OF SPACE IN FOUNDATION. DEPENDING UPON SITE CONDITIONS, TRANSPORTER MAY EITHER BACK MODULE INTO SLOT OR PULL DIRECTLY THROUGH.
- WITH THE MODULES ALIGNED AS CLOSE AS POSSIBLE TO THEIR FINAL POSITION, REMOVE THE LAG BOLTS SECURING THE MODULE TO THE CARRIER FROM BOTH SIDES.
- JACK UP MODULE TO SUFFICIENT HEIGHT AS NOT TO DAMAGE MODULE AND REMOVE CARRIER.
- LOWER MODULE INTO PLACE AND ALIGN.
- INSTALL FOAM SEALING STRIP AROUND ALL OPENINGS BEFORE MODULES ARE PUSHED TOGETHER.

ROLL ON ERECTION METHOD

- PERSONNEL REQUIREMENTS: THE ROLL-ON ERECTION METHOD WILL REQUIRE A FORMAN FAMILIAR WITH THIS TYPE OF OPERATION ALONG WITH A MINIMUM OF THREE WORK PERSONS. MANPOWER REQUIREMENTS WILL VARY WITH THE SCOPE OF THE PROJECT.
- POSITIONING OF MODULE: UPON ARRIVAL OF MODULES, POSITION CARRIERS SO THAT EACH ARE NOT MORE THAN 3' FROM LONGEST DIMENSION WALL AND PARALLEL TO IT, ON THE SIDE WHERE ACCESS IS EASIEST. THE FIRST MODULE TO BE SET IS THE ONE THAT ENDS UP THE FURTHEST AWAY FROM STARTING LOCATION. ALIGN THE ENDS OF THE MODULE WITH THE FOUNDATION. LAY OUT AND MARK ON THE MODULES THE POINTS WHERE THE ROLLING STOCK IS TO BE SET UP. THE SAME LOCATIONS MUST BE MARKED ON THE FOUNDATION.
- SET-UP OF ROLLING STOCK AND PREPARING MODULE: REMOVE THE LAG BOLTS SECURING THE MODULE TO THE TRANSPORTER. RAISE MODULE FROM CARRIAGE WITH JACKS AND BLOCK. SET ROLLER BEAMS UNDER THE MODULE. BLOCK SO THAT THE ROLLER BEAM IS ON THE SAME PLANE AS THE BEAMS IN THE FOUNDATION. INSTALL ADDITIONAL BLOCKING UNDER THE BEAMS SO THAT NO SPAN IS GREATER THAN 12 FEET. POSITION ROLLERS UNDER MODULE. SET JACKS AND POSTS IN THE EXCAVATION FOR RAISING MODULE OFF ROLLERS. MAKE CERTAIN ROLLER BEAMS ARE BRACED AGAINST ANY HORIZONTAL MOVEMENT.
- MODULE TRANSFER: ROLL MODULE ONTO FOUNDATION AND ALIGN FOR PROPER PLACEMENT. MOVEMENT MAY BE MADE BY THE USE OF A SMALL WINCH ASSEMBLY. THE MODULE CAN BE MOVED BY THREE PERSONS, ONE AT EACH WINCH, ONE CHECKING AND ONE GUIDING THE MODULE.
- SETTING OF MODULE ON FOUNDATION: ATTACH HYDRAULIC JACKS AND RAISE MODULE OFF ROLLERS, REMOVE ROLLERS AND LOWER ONTO FOUNDATION.
- REPEAT PROCEDURES FOR THE NEXT MODULE.
- INSTALL FOAM SEALING STRIP AROUND ALL OPENINGS BEFORE MODULES ARE PUSHED TOGETHER.

CRANE ERECTION METHOD (SPREADER BARS MUST BE USED WITH THIS METHOD)

- PERSONNEL REQUIREMENTS: THIS METHOD WILL REQUIRE A FORMAN FAMILIAR WITH THIS TYPE OF OPERATION ALONG WITH A MINIMUM OF THREE WORK PERSONS. MANPOWER REQUIREMENTS WILL VARY WITH THE SCOPE OF THE PROJECT
- POSITIONING OF MODULE: UPON ARRIVAL OF MODULES, POSITION CARRIERS WITHIN A REASONABLE DISTANCE FROM THE CRANE TO PERMIT ATTACHING HARNESS TO BE APPLIED.
- MARK CENTERLINE OF THE FOUNDATION WHERE MODULES SHOULD LINE UP AND REMOVE THE LAG BOLTS SECURING THE MODULAR TO THE CARRIER FROM BOTH SIDES.
- DETERMINE THE LIFT POINTS FOR THE HOME. IF POSSIBLE LIFT POINTS LOCATED AT SIDEWALLS SHOULD AVOID GLAZED OPENINGS. LIFT POINTS LOCATED BENEATH THE MARRIAGE LINE SHALL BE LOCATED BENEATH A FULL HEIGHT WALL OR, IF LOCATED IN A MARRIAGE WALL OPENING, A TIGHT-FITTING TEMPORARY SHIPPING WALL SHALL BE INSTALLED DIRECTLY ABOVE THE LIFTING POINT.
- TYPICALLY THE LIFTING POINTS SHALL BE 1/4 TO 1/3 OF THE LENGTH OF THE MODULE FROM EACH END, OR A MINIMUM OF 10 FT FROM EACH END. VARIABLES THAT MAY AFFECT THE LIFTING LOCATIONS INCLUDE OFFSET FLOORS, HVAC PLACEMENT, PLUMBING LINES, PORCHES, EXISTING RIM RAIL SPLICES, RECESSED ENTRIES, GLAZED OPENINGS, ETC. THE LIFTING FOREMAN SHALL ADJUST THE PICK POINTS AS NECESSARY TO ENSURE THE MODULE IS BEING LIFTED ABOVE ITS CENTER OF GRAVITY.
- IF THE MODULE EXCEEDS 50 FT IN LENGTH IT IS RECOMMENDED THAT A

- MINIMUM OF 3 SPREADER BARS BE UTILIZED. THE LIFTING FOREMAN SHALL ADD LIFTING POINTS AS NECESSARY TO ENSURE A BALANCED LIFT AND AS TO NOT EXCEED THE CAPACITY OF THE LIFTING STRAPS, CABLES, HARNESSES AND OTHER LIFTING EQUIPMENT.
- MAXIMUM 2 1/4" HOLES MAY BE DRILLED IN THE RIM JOISTS FOR CABLE/STRAP ACCESS. THE HOLES SHOULD NOT BE LOCATED WITHIN 2 INCHES OF THE TOP OR BOTTOM EDGE OF THE RIM JOISTS. IF THE HOLES ARE LOCATED WITHIN 2 INCHES OF THE RIM JOIST OR IF NOTCHES ARE UTILIZED RATHER THAN HOLES, THE NOTCH OR HOLE SHOULD BE SUPPORTED BY A CONTINUOUS LOAD-BEARING FOUNDATION WALL OR CONCRETE MASONRY PIER. NOTCHES OR HOLES WITHIN 2 INCHES OF THE BOTTOM EDGE OF THE RIM JOISTS AND NOT SUPPORTED BY A PIER OR FOUNDATION WALL SHALL BE REPAIRED PER DETAIL 3.
 - LIFT POINTS SHALL BE LOCATED A MINIMUM OF 24" FROM EXISTING RIM RAIL SPLICES.
 - AFTER HARNESSES ARE ATTACHED AND ADJUSTED FOR WEIGHT DISTRIBUTION, THE CRANE WILL SET MODULE ON FOUNDATION. TAG LINE ROPES SHALL BE ATTACHED TO ENDS OF MODULAR TO HELP CONTROL THE AMOUNT OF MOVEMENT WHILE THE LOAD IS SUSPENDED.
 - USE (6) JACKS TO RELIEVE WEIGHT OF MODULE FROM FOUNDATION AND SLIDE MODULE ADJACENT TO PREVIOUSLY PLACED MODULE AND FASTEN AS PER PLANS.

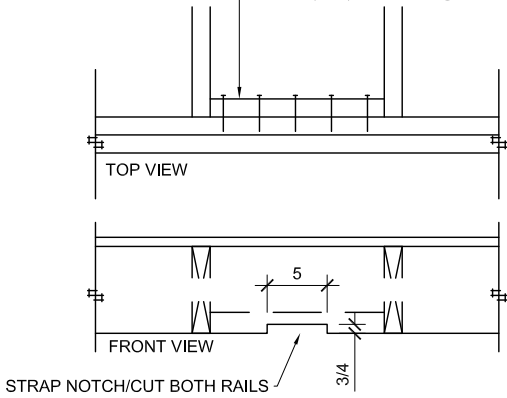
SITE-BUILT ADDITIONS AND PORCHES

A SITE-BUILT ADDITION OR PORCH MAY BE CONSTRUCTED ADJACENT TO A MODULAR HOME BUILT BY CMH MANUFACTURING PROVIDED THE ADDITION MEETS THE FOLLOWING MINIMUM CONDITIONS:

- THE ADDITION MUST BE ENTIRELY SELF-SUPPORTED AND CANNOT RELY ON THE HOME FOR SUPPORT (SUPERFICIAL CONNECTIONS ARE ACCEPTABLE). THE HOME'S STRUCTURAL SYSTEM IS NOT DESIGNED TO SUPPORT THE SUPERIMPOSED LOADS OF THE ADDITION OR PORCH.
- THE HOME'S STRUCTURAL SYSTEM SHALL NOT BE CUT OR ALTERED IN ANY WAY.
- ALL JOINTS BETWEEN THE HOME AND THE ADDITION MUST BE PROPERLY SEALED SO THEY ARE WATERTIGHT.
- THE HOME'S MECHANICAL SYSTEM HAS BEEN SIZED FOR THE HOME ITSELF AND DOES NOT CONSIDER THE HEATING OR COOLING FOR ANY TYPE OF ADDITION.
- THE ADDITION OR PORCH MUST MEET ALL LOCAL CODES AND STRUCTURAL REQUIREMENTS. THE MANUFACTURER DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE DESIGN OF THE ADDITION OR PORCH.
- THE ADDITION OR PORCH MUST BE APPROVED BY THE JURISDICTION HAVING AUTHORITY.
- THE MANUFACTURER WILL NOT HONOR THE WARRANTY FOR ANY PROBLEM THAT RELATES TO THE CONSTRUCTION OF THE ADDITION OR PORCH (LEAK PROBLEMS, ETC).
- A DORMER ROOF MAY BE INSTALLED ON THE HOME TO MATCH THE ROOF PITCH OF THE ADDITION OR PORCH. THE SHINGLES BELOW THE DORMER MUST BE REMOVED AND THE DORMER MUST BE VENTED PROPERLY. THE DORMER WEIGHT SHALL BE NO MORE THAN 5 PSF AND DISTRIBUTED UNIFORMLY OVER THE ROOF TRUSSES OF THE HOME. CONNECTIONS MAY BE MADE TO ATTACH THE DORMER TO THE HOME, BUT NOT BE USED TO SUPPORT THE ROOF LOADS OF THE ADDITION OR PORCH. THE DORMER SHALL BE SHINGLED AND SEALED PROPERLY TO PREVENT LEAKS (FOLLOW SHINGLE MANUFACTURER'S INSTRUCTIONS AND ARMA GUIDELINES FOR SHINGLE VALLEY APPLICATIONS).

LOCAL PERMITS, INSPECTIONS, WARRANTIES, AND INSTALLATION REQUIREMENTS FOR SITE-INSTALLED ADDITIONS ARE NOT THE RESPONSIBILITY OF CMH MANUFACTURING, INC. OR ITS AFFILIATES. CMH MANUFACTURING, INC. IS PROVIDING THE ABOVE INFORMATION AS AN ACCOMMODATION ONLY AND WITHOUT CONSIDERATION. ACCORDINGLY, CMH MANUFACTURING, INC. EXTENDS NO WARRANTIES OR REPRESENTATION EITHER EXPRESSED OR IMPLIED WITH REGARD TO THE RECOMMENDATIONS HEREIN.

14-1/2" 2X6 BLOCK FOR SUPPORT 80% PVA OR EQUIVALENT GLUE COVERAGE, (2) ROWS .131x3" (10D) PD NAILS @ 3" O.C.

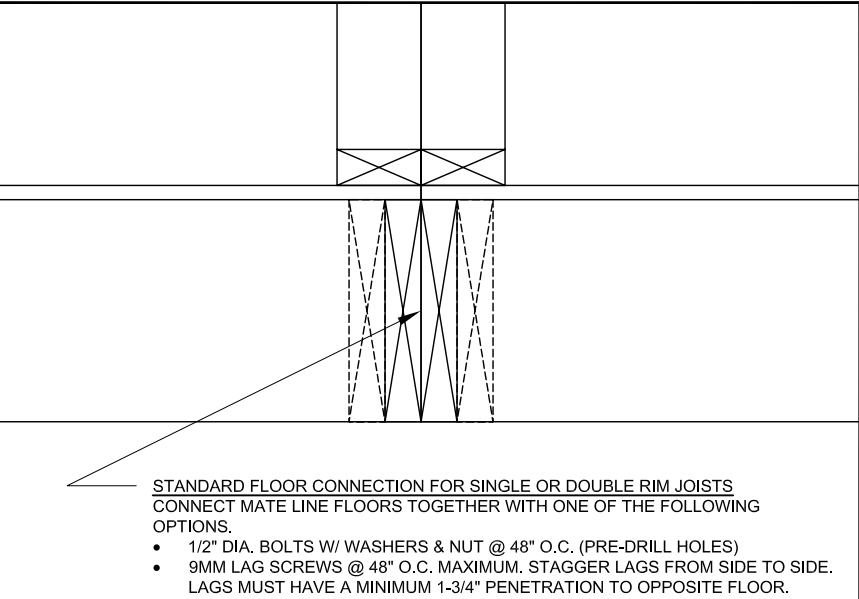


(REF. FL-020.0 DETAIL 7)

3

RIM JOIST STRAP NOTCH REPAIR

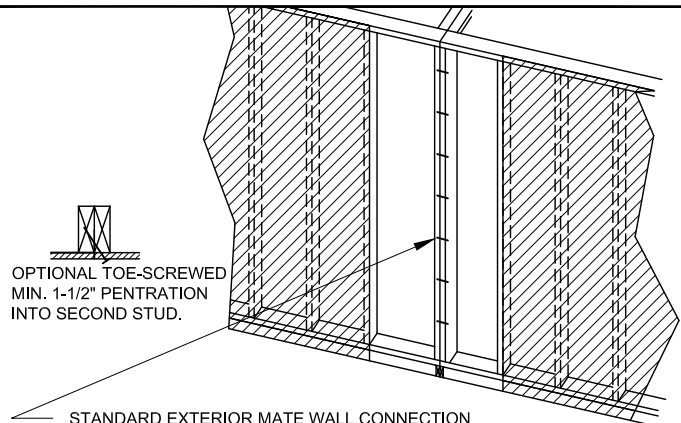
SCALE: N.T.S. WIND: ALL ROOF PITCH: ALL



1

Floor Connection @ Mate Line

SCALE: 1-1/2"=1'-0" WIND: ALL ROOF PITCH: ALL



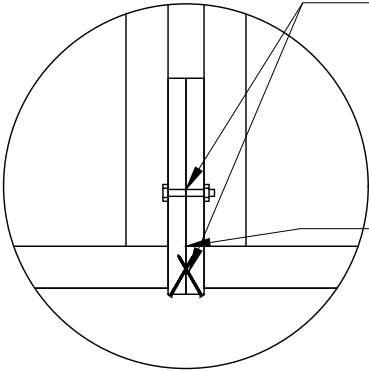
2

Exterior Wall Connection @ Mate Line

SCALE: N.T.S. WIND: ALL ROOF PITCH: ALL

		THIRD PARTY SEAL	
P.E. SEAL			
TITLE: GENERAL INSTALLATION INFORMATION		CMH MANUFACTURING, INC. Home Office 5000 Clayton Road, Maryville, TN 37804 PH: 865.380.3000 FAX: 865.380.3781	
DRAWN BY: B.R.	DATE: 6/17/2014	SHEET: SU-1.0	
REVIEWED BY: --	LAST REVISED: 8/29/2016		
CHECKED BY: --	CALC REF: --		

Apr 12, 2017 - 1:38pm C:\Users\russellb\local settings\temp\AcPublish_4892\Modular Installation Instructions-Roof-993.dwg



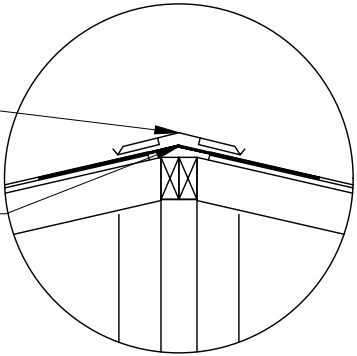
STANDARD ROOF CONNECTION
CONNECT MATE LINE ROOFS TOGETHER WITH ONE OF THE FOLLOWING OPTIONS.

- 3/8" LAG BOLT WITH 1" MIN. PENETRATION LAG SCREW SPACED 16" O.C. STAGGERED FROM SIDE TO SIDE.
- 1/2" DIA. BOLT WITH 1 3/8" WASHER SPACED 24" O.C. MAX. INSTALLED IN PRE-DRILLED HOLES.
- TOE-SCREW W/ #10 x 4 1/2" WOODSCREWS ALTERNATING EVERY 12" o.c.

NOTE
IF GAP EXISTS AT CONNECTION POINTS THEN A SHIM SHALL BE INSTALL TO MAINTAIN WOOD TO WOOD CONTACT.

1 Ceiling Connection

SCALE: 3/4"=1'-0" WIND: ALL ROOF PITCH: ALL



STANDARD ROOF CONNECTION
CONNECT MATE LINE ROOFS TOGETHER WITH (1) 1 1/2" X 26 GA. STEEL STRAP @ 4'-0" O.C. WITH

- (6) 16d NAILS EACH END
- (12) 15 GA. x 1" PENETRATING STAPLES EACH END

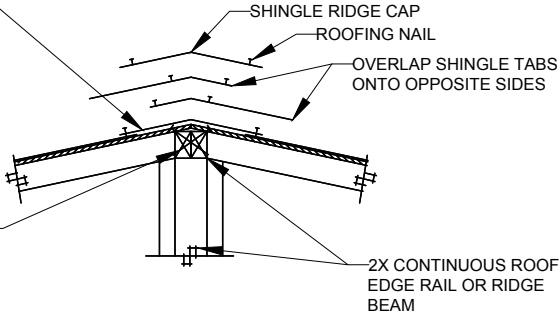
2 Peak Connection

SCALE: 3/4"=1'-0" WIND: ALL ROOF PITCH: 2:12 to 4:12

STRAP EACH TRUSS OVER SHEARWALLS (ENDWALLS STD.) ACROSS MATING LINE(S) WITH A SIMPSON CS16X40" STRAP. FASTEN EACH END OF STRAP TO TRUSS WITH (13) .131 X 2-1/2" NAILS

ALTERNATE: STRAPS MAY BE FASTENED ACROSS TOP PLATE IN PLACE OF FASTENING OVER TRUSS.

#10 X 4 1/2" WOOD SCREWS (TOE-SCREWED) INTO ROOF EDGE RAILS OR RIDGE BEAMS AT 12" O.C. ALONG RIDGE. FASTENERS MAYBE LOCATED TOP OR BOTTOM OF RAILS.



3 DIAPHRAGM TENSION TRANSFER DETAIL

SCALE: 1/16"=1'

ROOF INSTALLATION INFORMATION

THE TRUSS SHOWN ABOVE IS A REPRESENTATION OF THE TYPE OF ROOF SYSTEM FOR THE HOME. SEE ACTUAL TRUSS DRAWING FOR SPECIFIC TRUSS DIAGRAM. YOU WILL NEED TO SELECT WHICH CONNECTIONS APPLY TO THE ROOF SYSTEM YOU HAVE RECEIVED AND WHICH CONNECTIONS YOU WANT TO USE. NOT ALL CONNECTIONS APPLY TO THE ROOF SYSTEM. WE HAVE PROVIDED OPTIONS TO ENSURE PROPER INSTALLATION.

CUTS, NOTCHES AND HOLES BORED IN STRUCTURAL COMPOSITE LUMBER, STRUCTURAL GLUE-LAMINATED MEMBERS OR I-JOISTS ARE PROHIBITED EXCEPT WHERE PERMITTED BY THE MANUFACTURER'S RECOMMENDATIONS OR WHERE THE EFFECTS OF SUCH ALTERATIONS ARE SPECIFICALLY CONSIDERED IN THE DESIGN OF THE MEMBER BY A REGISTERED DESIGN PROFESSIONAL.

TRUSS MEMBERS SHALL NOT BE CUT, NOTCHED, DRILLED, SPLICED OR OTHERWISE ALTERED IN ANY WAY WITHOUT THE APPROVAL OF A REGISTERED DESIGN PROFESSIONAL. ALTERATIONS RESULTING IN THE ADDITION OF LOAD (E.G. HVAC EQUIPMENT, WATER HEATER) THAT EXCEEDS THAT DESIGN LOAD FOR THE TRUSS SHALL NOT BE PERMITTED WITHOUT VERIFICATION THAT THE TRUSS IS CAPABLE OF SUPPORTING SUCH ADDITIONAL LOADING.

ROOF DECKING SHALL BE COVERED WITH APPROVED ROOF COVERINGS SECURED TO THE BUILDING OR STRUCTURE. ROOF ASSEMBLIES SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE IRC AND THE APPROVED MANUFACTURER'S INSTALLATION INSTRUCTIONS SUCH THAT THE ROOF ASSEMBLY SHALL SERVE TO PROTECT THE BUILDING OR STRUCTURE.

FLASHING SHALL BE INSTALLED IN A MANNER THAT PREVENTS MOISTURE FROM ENTERING THE WALL AND ROOF THROUGH JOINTS IN COPINGS, THROUGH MOISTURE PERMEABLE MATERIALS AND AT INTERSECTIONS WITH PARAPET WALL AND OTHER PENETRATIONS THROUGH THE ROOF PLANE.

ASPHALT SHINGLES SHALL BE USED ONLY ON ROOF SLOPES OF TWO UNITS VERTICAL IN 12 UNITS HORIZONTAL (2:12) OR GREATER. FOR ROOF SLOPES FROM TWO UNITS VERTICAL IN 12 UNITS HORIZONTAL (2:12) UP TO FOUR UNITS VERTICAL IN 12 UNITS HORIZONTAL (4:12), DOUBLE UNDERLAYMENT APPLICATION IS REQUIRED.

UNLESS OTHERWISE NOTED, REQUIRED UNDERLAYMENT SHALL CONFORM TO ASTM D226 TYPE I, OR ASTM D 4869 TYPE I, OR ASTM D 6757. SELF-ADHERING POLYMER MODIFIED BITUMEN SHEET SHALL COMPLY WITH ASTM D 1970.

ASPHALT SHINGLES SHALL COMPLY WITH ASTM D 225 OR D 3462. ASPHALT SHINGLES SHALL BE TESTED IN ACCORDANCE WITH ASTM D7158H OR D 3161F. ASPHALT SHINGLE PACKAGING SHALL BEAR A LABEL TO INDICATE COMPLIANCE WITH ASTM D7158H OR D 3161F AND THE REQUIRED CLASSIFICATION.

FASTENERS FOR ASPHALT SHINGLES SHALL BE GALVANIZED STEEL, STAINLESS STEEL, ALUMINUM OR COPPER ROOFING NAILS, MINIMUM 12 GAUGE SHANK WITH A MINIMUM 3/8 INCH DIAMETER HEAD, ASTM F 1667, OF A LENGTH TO PENETRATE THROUGH THE ROOFING MATERIALS AND A MINIMUM OF 3/4 INCH INTO THE ROOF SHEATHING. WHERE THE ROOF SHEATHING IS LESS THAN 3/4 INCH THICK, THE FASTENERS SHALL PENETRATE THROUGH THE SHEATHING. FASTENERS SHALL COMPLY WITH ASTM F 1667.

ASPHALT SHINGLES SHALL HAVE THE MINIMUM NUMBER OF FASTENERS REQUIRED BY THE MANUFACTURER, BUT NOT LESS THAN FOUR FASTENERS PER STRIP SHINGLE OR TWO FASTENERS PER INDIVIDUAL SHINGLE.

FOR ROOFS LOCATED WHERE THE BASIC WIND SPEED IS 110 MPH OR HIGHER, SPECIAL METHODS OF FASTENING ARE REQUIRED. SPECIAL FASTENING METHODS SHALL BE TESTED IN ACCORDANCE WITH ASTM D 3161, CLASS F. ASPHALT SHINGLE WRAPPERS SHALL BEAR A LABEL INDICATING COMPLIANCE WITH ASTM D 3161, CLASS F FOR WIND SPEED EQUAL OR GREATER THAN REQUIRED FOR HOME LOCATION.

UNDERLAYMENT APPLIED IN AREAS SUBJECT TO HIGH WINDS, GREATER THAN 110 MPH, SHALL BE APPLIED WITH CORROSION-RESISTANT FASTENERS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. FASTENERS ARE TO BE APPLIED ALONG THE OVERLAP NOT FARTHER APART THAN 36 INCHES ON CENTER.

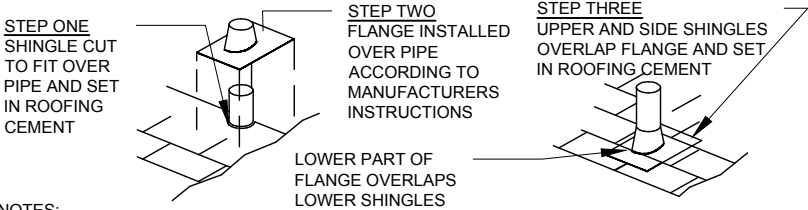
VALLEY LININGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS BEFORE APPLYING SHINGLES. VALLEY LININGS OF THE FOLLOWING TYPES SHALL BE PERMITTED:

FOR OPEN VALLEY (VALLEY LINING EXPOSED) LINED WITH METAL, THE VALLEY LINING SHALL BE AT LEAST 24 INCHES WIDE AND OF A CORROSION-RESISTANT METAL.

FOR OPEN VALLEYS, VALLEY LINING OF TWO PLIES OF MINERAL SURFACE ROLL ROOFING, COMPLYING WITH ASTM D-3909 OR ASTM D 6380 CLASS M, SHALL BE PERMITTED. THE BOTTOM LAYER SHALL BE 18 INCHES AND THE TOP LAYER A MINIMUM OF 36 INCHES WIDE.

FOR CLOSED VALLEYS (VALLEY COVERED WITH SHINGLES), VALLEY LINING OF ONE PLY OF SMOOTH ROLL ROOFING COMPLYING WITH ASTM D 6380 AND AT LEAST 36 INCHES WIDE OR VALLEY LINING FOR OPEN VALLEY CONDITIONS SHALL BE PERMITTED. SELF-ADHERING POLYMER MODIFIED BITUMEN UNDERLAY COMPLYING WITH ASTM D1970 SHALL BE PERMITTED IN LIEU OF THE LINING MATERIAL.

FLASHING AGAINST A VERTICAL SIDEWALL SHALL BE BY THE STEP-FLASHING METHOD. THE FLASHING SHALL BE A MINIMUM OF 4 INCHES HIGH AND 4 INCHES WIDE.

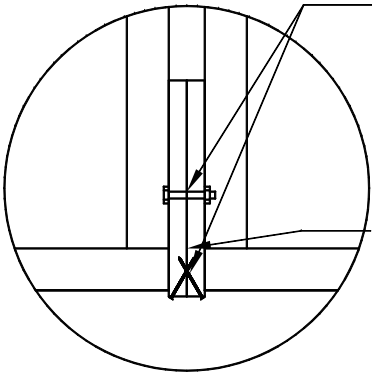


NOTES:

1. WHEN ROOF DECKING IS PENETRATED, THE AREA PENETRATED MAY BE 1/2" +/- 1/4" LARGER THEN ITEM PROTRUDING THRU OR PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS.
2. ALL SHINGLES PENETRATIONS TO BE SEALED IN ACCORDANCE WITH THE FLASHING MANUFACTURER INSTALLATION INSTRUCTIONS WHEN APPLICABLE. OTHERWISE USE DETAIL ABOVE.
3. DO NOT USE PETROLEUM BASED SEALANTS ON BASE OF FLASHING WHEN USING A NO CAULK FLASHING.
4. PLUMBING VENT PENETRATION SHALL EXTEND A MINIMUM OF 6" OR AS AMENDED BY STATE OR LOCAL CODES ABOVE ROOF FINISH .
5. DETAILS APPLICABLE TO PLUMBING VENTS, FLUES AND CHIMNEYS, AND ELECTRICAL MASTS.

P.E. SEAL		THIRD PARTY SEAL	
TITLE: Fixed Roof Installation Information			
DRAWN BY: B.R.		DATE: 4/12/2017	
REVIEWED BY: --		LAST REVISED: 4/12/2017	
CHECKED BY: --		CALC REF: --	
		CMH MANUFACTURING, INC. Home Office 5000 Clayton Road, Maryville, TN 37804 PH: 865.380.3000 FAX: 865.380.3781	
		SHEET: SU993-2.0.0	

May 30, 2017 - 9:38am C:\Users\jweldy\Desktop\Mod in process\Modular Installation Instructions-Roof-993.dwg



STANDARD ROOF CONNECTION
CONNECT MATE LINE ROOFS TOGETHER WITH ONE OF THE FOLLOWING OPTIONS.

- 3/8" LAG BOLT WITH 1" MIN. PENETRATION LAG SCREW SPACED 16" O.C. STAGGERED FROM SIDE TO SIDE.
- 1/2" DIA. BOLT WITH 1 3/8" WASHER SPACED 24" O.C. MAX. INSTALLED IN PRE-DRILLED HOLES.
- TOE-SCREW W/ #10 x 4 1/2" WOODSCREWS ALTERNATING EVERY 12" o.c.

NOTE
IF GAP EXISTS AT CONNECTION POINTS THEN A SHIM SHALL BE INSTALL TO MAINTAIN WOOD TO WOOD CONTACT.

1 Ceiling Connection
SCALE: 3/4"=1'-0" WIND: ALL ROOF PITCH: ALL

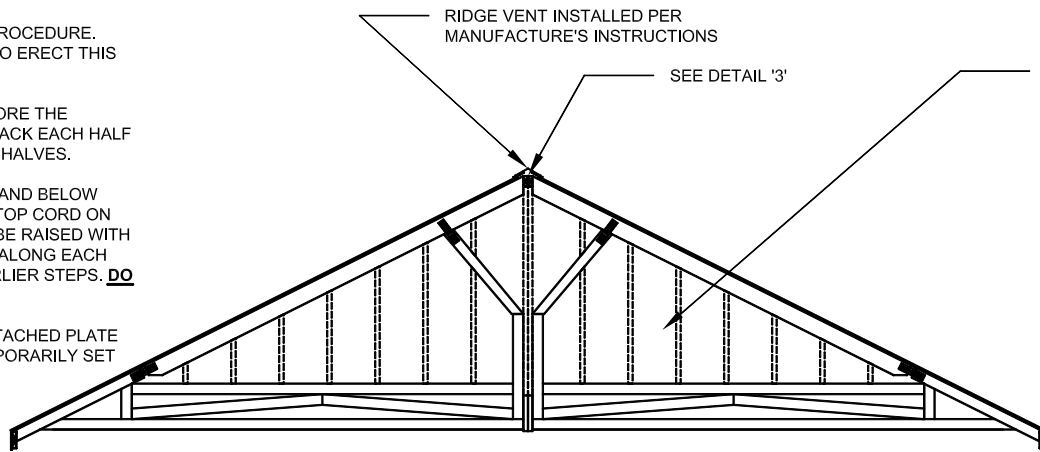
LIFTING OF ROOF
ONLY QUALIFIED SERVICE PERSONNEL SHOULD CARRY OUT THIS PROCEDURE. HOMEOWNERS OR UNAUTHORIZED PERSONNEL SHOULD NOT ATTEMPT TO ERECT THIS ROOF, AND DOING SO WILL VOID THE HOMEOWNERS WARRANTY.

NOTE: IT IS RECOMMENDED THAT THE HINGE ROOF BE RAISED BEFORE THE HALVES OF THE HOME ARE MATED TOGETHER. IT IS RECOMMENDED TO JACK EACH HALF OF THE ROOF WHEN THERE IS APPROXIMATELY 12" TO 20" BETWEEN THE HALVES.

TEMPORARILY SECURE A 48" - 2X6 BLOCK TO THE TRUSSES ABOVE AND BELOW EACH JACK FOR ADDITIONAL SUPPORT. ATTACH 2X TO BOTTOM SIDE OF TOP CORD ON TRUSS AND TOPSIDE OF BOTTOM CORD ON TRUSS. ALL ROOFS SHOULD BE RAISED WITH THE USE OF A CRANE OR BOOM TRUCK, WITH MULTIPLE PICK-UP POINTS ALONG EACH HALF. ATTACH STRAPS TO TRUSS TOP CORDS AT 2X6'S INSTALLED IN EARLIER STEPS. **DO NOT ATTACH STRAPS TO 2X'S AT ENDS OF TRUSSES.**

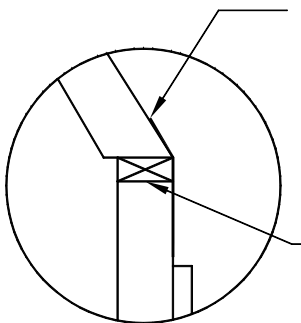
RAISE THE HINGED SECTION UP EVENLY UNTIL KINGPOSTS AND ATTACHED PLATE CAN BE SWUNG INTO PLACE ON TOP OF THE FIXED KINGPOSTS AND TEMPORARILY SET TO ALIGN ROOF.

-- Gable End Wall Framing
SCALE: N.T.S WIND: ALL ROOF PITCH: ALL



GABLE END WALL & TRUSS OVER SHEARWALL FRAMING
INSTALL GABLE END WALL FRAMING PER ONE OF THE FOLLOWING.

- INSTALL 2x4 STUDS (56" MAX. HEIGHT) AT 16" O.C. FASTENED w/ (2) 8d TOE-NAILS EACH END FOR SIDING SECUREMENT. EACH GABLE END TRUSS SHALL BE SHEATHED w/ 7/16" OSB FASTENED w/ 7/16" x 1-1/2" x 16 GA. STAPLES OR 6d NAILS 6" O.C.
- DO NOT REMOVE INTERIOR TRUSS COMPONENTS EXCEPT WHERE ALLOWED BY TRUSS PRINT. INSTALL 2x4-16" O.C. GABLE END WALL. ATTACH WALL TOP & BOTTOM PLATES TO TRUSS CHORDS w/ #8x3" SCREWS 8" O.C. GABLE END WALL AND TRUSS BOTTOM CHORD SHALL BE SHEATHED w/ 7/16" OSB FASTENED TO TRUSS CHORD AND 2x4s w/ 7/16" x 1-1/2" x 16 GA. STAPLES OR 6d NAILS 3" O.C.



CONNECT SWING ARM TO KING POST WITH ONE OF THE FOLLOWING OPTIONS. SEE TRUSS PRINT FOR CONNECTION VALUES.

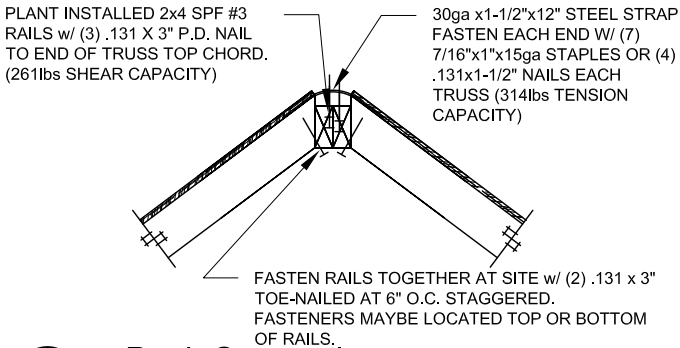
- MAXIMUM TRUSS REACTION AT CONNECTION: 478# TENSION, 650# COMPRESSION, 282# SHEAR. (1) 26 GA. x 1-1/2" x LENGTH STRAP SECURED W/ (5) .131"x1-1/2" NAILS EACH END.
- MAXIMUM TRUSS REACTION AT CONNECTION: 1705# TENSION, 650# COMPRESSION, 282# SHEAR. (1) CS16 STRAP SECURED W/ (13) 8d x 1 1/2" NAILS EACH END.

26 GA STRAPS SHALL BE MADE FROM SS37 STEEL CONFORMING TO ASTM A653

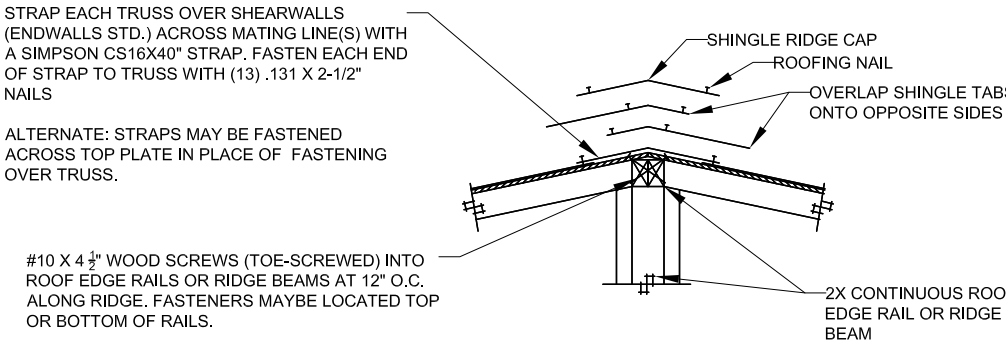
FACTORY INSTALLED 2x RAIL FASTENED TO EACH SWING ARM WITH (5) .131"x3" NAILS

ON SITE INSTALL (4) .131"x3" TOE NAILED FROM 2X RAIL TO EACH FIXED KING POST

2 Alt. Swing Arm Connection
SCALE: N.T.S. WIND: ALL ROOF PITCH: 5:12 to 9:12



3 Peak Connection
SCALE: N.T.S. WIND: ALL ROOF PITCH: ALL



4 DIAPHRAGM TENSION TRANSFER DETAIL
SCALE: 1/16"=1'

ROOF INSTALLATION INFORMATION

THE TRUSS SHOWN ABOVE IS A REPRESENTATION OF THE TYPE OF ROOF SYSTEM FOR THE HOME. SEE ACTUAL TRUSS DRAWING FOR SPECIFIC TRUSS DIAGRAM. YOU WILL NEED TO SELECT WHICH CONNECTIONS APPLY TO THE ROOF SYSTEM YOU HAVE RECEIVED AND WHICH CONNECTIONS YOU WANT TO USE. NOT ALL CONNECTIONS APPLY TO THE ROOF SYSTEM. WE HAVE PROVIDED OPTIONS TO ENSURE PROPER INSTALLATION.

CUTS, NOTCHES AND HOLES BORED IN STRUCTURAL COMPOSITE LUMBER, STRUCTURAL GLUE-LAMINATED MEMBERS OR I-JOISTS ARE PROHIBITED EXCEPT WHERE PERMITTED BY THE MANUFACTURER'S RECOMMENDATIONS OR WHERE THE EFFECTS OF SUCH ALTERATIONS ARE SPECIFICALLY CONSIDERED IN THE DESIGN OF THE MEMBER BY A REGISTERED DESIGN PROFESSIONAL.

TRUSS MEMBERS SHALL NOT BE CUT, NOTCHED, DRILLED, SPLICED OR OTHERWISE ALTERED IN ANY WAY WITHOUT THE APPROVAL OF A REGISTERED DESIGN PROFESSIONAL. ALTERATIONS RESULTING IN THE ADDITION OF LOAD (E.G. HVAC EQUIPMENT, WATER HEATER) THAT EXCEEDS THAT DESIGN LOAD FOR THE TRUSS SHALL NOT BE PERMITTED WITHOUT VERIFICATION THAT THE TRUSS IS CAPABLE OF SUPPORTING SUCH ADDITIONAL LOADING.

ROOF DECKING SHALL BE COVERED WITH APPROVED ROOF COVERINGS SECURED TO THE BUILDING OR STRUCTURE. ROOF ASSEMBLIES SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE IRC AND THE APPROVED MANUFACTURER'S INSTALLATION INSTRUCTIONS SUCH THAT THE ROOF ASSEMBLY SHALL SERVE TO PROTECT THE BUILDING OR STRUCTURE.

FLASHING SHALL BE INSTALLED IN A MANNER THAT PREVENTS MOISTURE FROM ENTERING THE WALL AND ROOF THROUGH JOINTS IN COPINGS, THROUGH MOISTURE PERMEABLE MATERIALS AND AT INTERSECTIONS WITH PARAPET WALL AND OTHER PENETRATIONS THROUGH THE ROOF PLANE.

ASPHALT SHINGLES SHALL BE USED ONLY ON ROOF SLOPES OF TWO UNITS VERTICAL IN 12 UNITS HORIZONTAL (2:12) OR GREATER. FOR ROOF SLOPES FROM TWO UNITS VERTICAL IN 12 UNITS HORIZONTAL (2:12) UP TO FOUR UNITS VERTICAL IN 12 UNITS HORIZONTAL (4:12), DOUBLE UNDERLAYMENT APPLICATION IS REQUIRED.

UNLESS OTHERWISE NOTED, REQUIRED UNDERLAYMENT SHALL CONFORM TO ASTM D226 TYPE I, OR ASTM D 4869 TYPE I, OR ASTM D 6757. SELF-ADHERING POLYMER MODIFIED BITUMEN SHEET SHALL COMPLY WITH ASTM D 1970.

ASPHALT SHINGLES SHALL COMPLY WITH ASTM D 225 OR D 3462. ASPHALT SHINGLES SHALL BE TESTED IN ACCORDANCE WITH ASTM D7158H OR D 3161F. ASPHALT SHINGLE PACKAGING SHALL BEAR A LABEL TO INDICATE COMPLIANCE WITH ASTM D7158H OR D 3161F AND THE REQUIRED CLASSIFICATION.

FASTENERS FOR ASPHALT SHINGLES SHALL BE GALVANIZED STEEL, STAINLESS STEEL, ALUMINUM OR COPPER ROOFING NAILS, MINIMUM 12 GAUGE SHANK WITH A MINIMUM 3/8 INCH DIAMETER HEAD, ASTM F 1667, OF A LENGTH TO PENETRATE THROUGH THE ROOFING MATERIALS AND A MINIMUM OF 3/4 INCH INTO THE ROOF SHEATHING. WHERE THE ROOF SHEATHING IS LESS THAN 3/4 INCH THICK, THE FASTENERS SHALL PENETRATE THROUGH THE SHEATHING. FASTENERS SHALL COMPLY WITH ASTM F 1667.

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FOR ROOFS LOCATED WHERE THE BASIC WIND SPEED IS 110 MPH OR HIGHER, SPECIAL METHODS OF FASTENING ARE REQUIRED. SPECIAL FASTENING METHODS SHALL BE TESTED IN ACCORDANCE WITH ASTM D 3161, CLASS F. ASPHALT SHINGLE WRAPPERS SHALL BEAR A LABEL INDICATING COMPLIANCE WITH ASTM D 3161, CLASS F FOR WIND SPEED EQUAL OR GREATER THAN REQUIRED FOR HOME LOCATION.

UNDERLAYMENT APPLIED IN AREAS SUBJECT TO HIGH WINDS, GREATER THAN 110 MPH, SHALL BE APPLIED WITH CORROSION-RESISTANT FASTENERS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. FASTENERS ARE TO BE APPLIED ALONG THE OVERLAP NOT FARTHER APART THAN 36 INCHES ON CENTER.

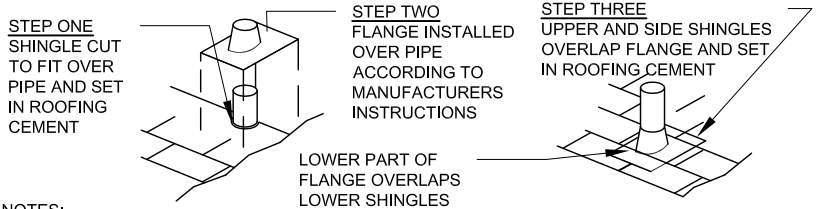
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FOR OPEN VALLEY (VALLEY LINING EXPOSED) LINED WITH METAL, THE VALLEY LINING SHALL BE AT LEAST 24 INCHES WIDE AND OF A CORROSION-RESISTANT METAL.

FOR OPEN VALLEYS, VALLEY LINING OF TWO PLIES OF MINERAL SURFACE ROLL ROOFING, COMPLYING WITH ASTM D-3909 OR ASTM D 6380 CLASS M, SHALL BE PERMITTED. THE BOTTOM LAYER SHALL BE 18 INCHES AND THE TOP LAYER A MINIMUM OF 36 INCHES WIDE.

FOR CLOSED VALLEYS (VALLEY COVERED WITH SHINGLES), VALLEY LINING OF ONE PLY OF SMOOTH ROLL ROOFING COMPLYING WITH ASTM D 6380 AND AT LEAST 36 INCHES WIDE OR VALLEY LINING FOR OPEN VALLEY CONDITIONS SHALL BE PERMITTED. SELF-ADHERING POLYMER MODIFIED BITUMEN UNDERLAY COMPLYING WITH ASTM D1970 SHALL BE PERMITTED IN LIEU OF THE LINING MATERIAL.

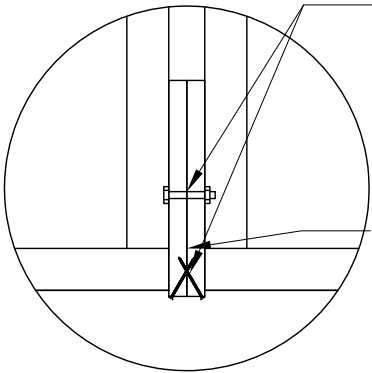
FLASHING AGAINST A VERTICAL SIDEWALL SHALL BE BY THE STEP-FLASHING METHOD. THE FLASHING SHALL BE A MINIMUM OF 4 INCHES HIGH AND 4 INCHES WIDE.



- NOTES:
1. WHEN ROOF DECKING IS PENETRATED, THE AREA PENETRATED MAY BE 1/2" +/- 1/4" LARGER THEN ITEM PROTRUDING THRU OR PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS.
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 3. DO NOT USE PETROLEUM BASED SEALANTS ON BASE OF FLASHING WHEN USING A NO CAULK FLASHING.
 4. PLUMBING VENT PENETRATION SHALL EXTEND A MINIMUM OF 6" OR AS AMENDED BY STATE OR LOCAL CODES ABOVE ROOF FINISH .
 5. DETAILS APPLICABLE TO PLUMBING VENTS, FLUES AND CHIMNEYS, AND ELECTRICAL MASTS.

		THIRD PARTY SEAL	
P.E. SEAL		THIRD PARTY SEAL	
TITLE: Hinged Roof Non-Attic Storage Installation Information		CMH MANUFACTURING, INC. Home Office 5000 Clayton Road, Maryville, TN 37804 PH: 865.380.3000 FAX: 865.380.3781	
DRAWN BY: B.R.	DATE: 10/6/14	SHEET: SU993-2.1.0	
REVIEWED BY: --	LAST REVISED: 5/30/17		
CHECKED BY: --	CALC REF: --		

May 30, 2017 - 9:42am C:\Users\jweldy\Desktop\Mod in process\Modular Installation Instructions-Roof-993.dwg



STANDARD ROOF CONNECTION
CONNECT MATE LINE ROOFS TOGETHER WITH ONE OF THE FOLLOWING OPTIONS.

- 3/8" LAG BOLT WITH 1" MIN. PENETRATION LAG SCREW SPACED 16" O.C. STAGGERED FROM SIDE TO SIDE.
- 1/2" DIA. BOLT WITH 1 3/8" WASHER SPACED 24" O.C. MAX. INSTALLED IN PRE-DRILLED HOLES.
- TOE-SCREW W/ #10 x 4 1/2" WOODSCREWS ALTERNATING EVERY 12" o.c.

NOTE
IF GAP EXISTS AT CONNECTION POINTS THEN A SHIM SHALL BE INSTALL TO MAINTAIN WOOD TO WOOD CONTACT.

1 Ceiling Connection
SCALE: 3/4"=1'-0" WIND: ALL ROOF PITCH: ALL

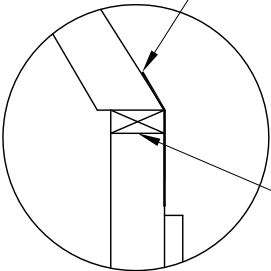
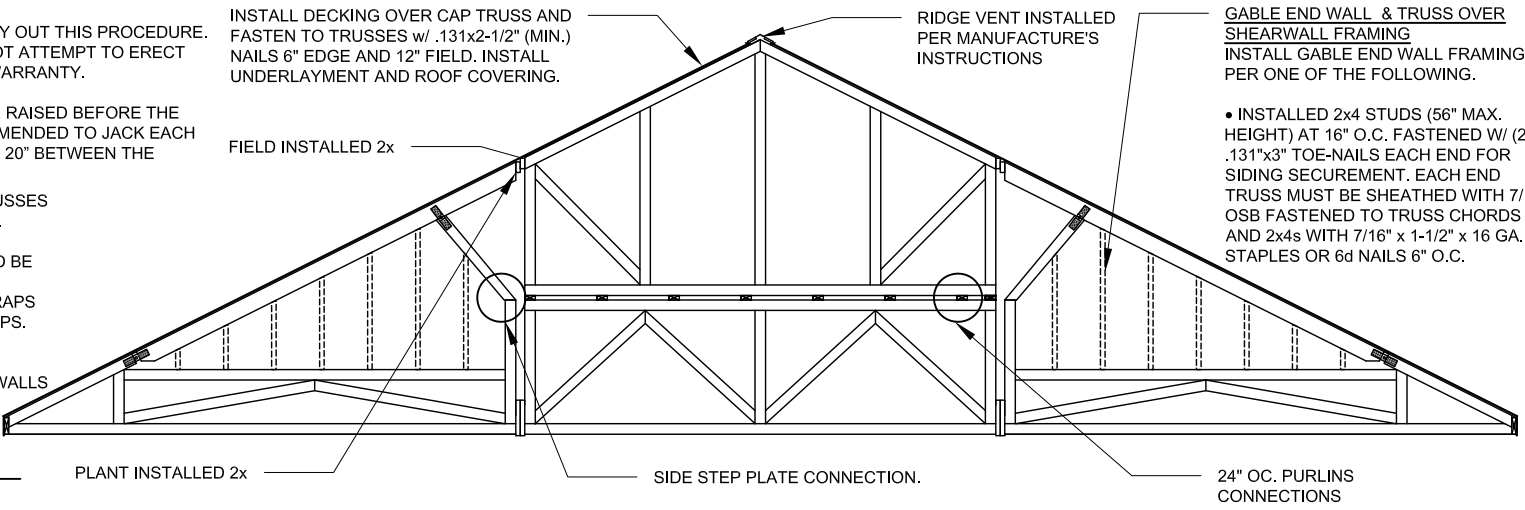
LIFTING OF ROOF
ONLY QUALIFIED SERVICE PERSONNEL SHOULD CARRY OUT THIS PROCEDURE. HOMEOWNERS OR UNAUTHORIZED PERSONNEL SHOULD NOT ATTEMPT TO ERECT THIS ROOF, AND DOING SO WILL VOID THE HOMEOWNERS WARRANTY.

NOTE: IT IS RECOMMENDED THAT THE HINGE ROOF BE RAISED BEFORE THE HALVES OF THE HOME ARE MATED TOGETHER. IT IS RECOMMENDED TO JACK EACH HALF OF THE ROOF WHEN THERE IS APPROXIMATELY 12" TO 20" BETWEEN THE HALVES.

TEMPORARILY SECURE A 48" - 2X6 BLOCK TO THE TRUSSES ABOVE AND BELOW EACH JACK FOR ADDITIONAL SUPPORT. ATTACH 2X TO BOTTOM SIDE OF TOP CORD ON TRUSS AND TOPSIDE OF BOTTOM CORD ON TRUSS. ALL ROOFS SHOULD BE RAISED WITH THE USE OF A CRANE OR BOOM TRUCK, WITH MULTIPLE PICK-UP POINTS ALONG EACH HALF. ATTACH STRAPS TO TRUSS TOP CORDS AT 2X6'S INSTALLED IN EARLIER STEPS. **DO NOT ATTACH STRAPS TO 2X'S AT ENDS OF TRUSSES.**

RAISE THE HINGED SECTION UP EVENLY UNTIL KNEEWALLS AND ATTACHED PLATE CAN BE SWUNG INTO PLACE ON TO BOTTOM CHORD AND TEMPORARILY SET TO ALIGN ROOF.

-- Gable End Wall Framing
SCALE: N.T.S WIND: ALL ROOF PITCH: ALL



CONNECT SWING ARM TO KING POST WITH ONE OF THE FOLLOWING OPTIONS. SEE TRUSS PRINT FOR CONNECTION VALUES.

- MAXIMUM TRUSS REACTION AT CONNECTION: 478# TENSION, 650# COMPRESSION, 282# SHEAR. (1) 26 GA. x 1-1/2" x LENGTH STRAP SECURED W/ (5) .131"x1-1/2" NAILS EACH END.
- MAXIMUM TRUSS REACTION AT CONNECTION: 1705# TENSION, 650# COMPRESSION, 282# SHEAR. (1) CS16 STRAP SECURED W/ (13) 8d x 1½" NAILS EACH END.

26 GA STRAPS SHALL BE MADE FROM SS37 STEEL CONFORMING TO ASTM A653

FACTORY INSTALLED 2x RAIL FASTENED TO EACH SWING ARM WITH (5) .131"x3" NAILS

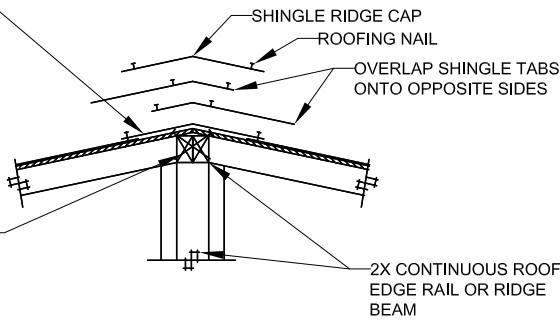
ON SITE INSTALL (4) .131"x3" TOE NAILED FROM 2X RAIL TO EACH FIXED KING POST

2 Alt. Swing Arm Connection
SCALE: N.T.S. WIND: ALL ROOF PITCH: 5:12 to 9:12

STRAP EACH TRUSS OVER SHEARWALLS (ENDWALLS STD.) ACROSS MATING LINE(S) WITH A SIMPSON CS16X40" STRAP. FASTEN EACH END OF STRAP TO TRUSS WITH (13) .131 X 2-1/2" NAILS

ALTERNATE: STRAPS MAY BE FASTENED ACROSS TOP PLATE IN PLACE OF FASTENING OVER TRUSS.

#10 X 4 ½" WOOD SCREWS (TOE-SCREWED) INTO ROOF EDGE RAILS OR RIDGE BEAMS AT 12" O.C. ALONG RIDGE. FASTENERS MAYBE LOCATED TOP OR BOTTOM OF RAILS.



3 DIAPHRAGM TENSION TRANSFER DETAIL
SCALE: 1/16"=1'

ROOF INSTALLATION INFORMATION
THE TRUSS SHOWN ABOVE IS TRUSS K-148.

CUTS, NOTCHES AND HOLES BORED IN STRUCTURAL COMPOSITE LUMBER, STRUCTURAL GLUE-LAMINATED MEMBERS OR I-JOISTS ARE PROHIBITED EXCEPT WHERE PERMITTED BY THE MANUFACTURER'S RECOMMENDATIONS OR WHERE THE EFFECTS OF SUCH ALTERATIONS ARE SPECIFICALLY CONSIDERED IN THE DESIGN OF THE MEMBER BY A REGISTERED DESIGN PROFESSIONAL.

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UNLESS OTHERWISE NOTED, REQUIRED UNDERLAYMENT SHALL CONFORM TO ASTM D226 TYPE I, OR ASTM D 4869 TYPE I, OR ASTM D 6757. SELF-ADHERING POLYMER MODIFIED BITUMEN SHEET SHALL COMPLY WITH ASTM D 1970.

ASPHALT SHINGLES SHALL COMPLY WITH ASTM D 225 OR D 3462. ASPHALT SHINGLES SHALL BE TESTED IN ACCORDANCE WITH ASTM D7158H OR D 3161F. ASPHALT SHINGLE PACKAGING SHALL BEAR A LABEL TO INDICATE COMPLIANCE WITH ASTM D7158H OR D 3161F AND THE REQUIRED CLASSIFICATION.

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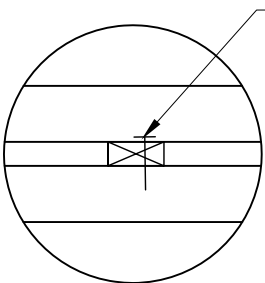
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FOR OPEN VALLEYS, VALLEY LINING OF TWO PLIES OF MINERAL SURFACE ROLL ROOFING, COMPLYING WITH ASTM D-3909 OR ASTM D 6380 CLASS M, SHALL BE PERMITTED. THE BOTTOM LAYER SHALL BE 18 INCHES AND THE TOP LAYER A MINIMUM OF 36 INCHES WIDE.

FOR CLOSED VALLEYS (VALLEY COVERED WITH SHINGLES), VALLEY LINING OF ONE PLY OF SMOOTH ROLL ROOFING COMPLYING WITH ASTM D 6380 AND AT LEAST 36 INCHES WIDE OR VALLEY LINING FOR OPEN VALLEY CONDITIONS SHALL BE PERMITTED. SELF-ADHERING POLYMER MODIFIED BITUMEN UNDERLAY COMPLYING WITH ASTM D1970 SHALL BE PERMITTED IN LIEU OF THE LINING MATERIAL.

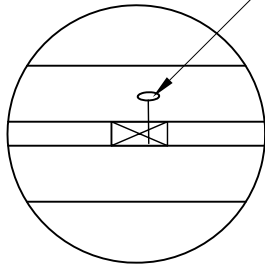
FLASHING AGAINST A VERTICAL SIDEWALL SHALL BE BY THE STEP-FLASHING METHOD. THE FLASHING SHALL BE A MINIMUM OF 4 INCHES HIGH AND 4 INCHES WIDE.



CONNECT 24" OC. 2X4 spf #3 PURLINS TO LOWER TRUSS WITH EITHER:

- (2) .131X3" NAILS OR
- (2) 15 GA.X2-1/2" STAPLES

4 Purlins to Lower Truss
SCALE: 1"=1'-0" WIND: ALL ROOF PITCH: ALL



CONNECT CAP TRUSS TO 24" OC. 2X4 spf #3 PURLINS WITH EITHER:

- (2) .131X3" TOE NAILS OR
- (2) #8X3" WOODSCREWS

5 Cap Truss to Purlins
SCALE: 1"=1'-0" WIND: ALL ROOF PITCH: ALL

STEP ONE
SHINGLE CUT TO FIT OVER PIPE AND SET IN ROOFING CEMENT

STEP TWO
FLANGE INSTALLED OVER PIPE ACCORDING TO MANUFACTURERS INSTRUCTIONS

STEP THREE
UPPER AND SIDE SHINGLES OVERLAP FLANGE AND SET IN ROOFING CEMENT

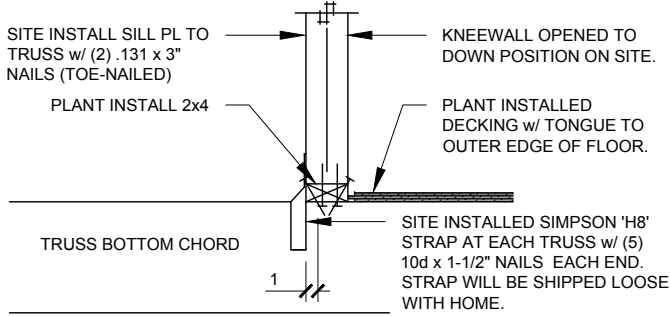
LOWER PART OF FLANGE OVERLAPS LOWER SHINGLES

NOTES:

1. WHEN ROOF DECKING IS PENETRATED, THE AREA PENETRATED MAY BE 1/2" +/- 1/4" LARGER THEN ITEM PROTRUDING THRU OR PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS.
2. ALL SHINGLES PENETRATIONS TO BE SEALED IN ACCORDANCE WITH THE FLASHING MANUFACTURER INSTALLATION INSTRUCTIONS WHEN APPLICABLE. OTHERWISE USE DETAIL ABOVE.
3. DO NOT USE PETROLEUM BASED SEALANTS ON BASE OF FLASHING WHEN USING A NO CAULK FLASHING.
4. PLUMBING VENT PENETRATION SHALL EXTEND A MINIMUM OF 6" OR AS AMENDED BY STATE OR LOCAL CODES ABOVE ROOF FINISH .
5. DETAILS APPLICABLE TO PLUMBING VENTS, FLUES AND CHIMNEYS, AND ELECTRICAL MASTS.



P.E. SEAL		THIRD PARTY SEAL	
TITLE:		Triple Wide Hinged Roof Installation Information	
DRAWN BY:		B.R.	DATE: 10/6/14
REVIEWED BY:		--	LAST REVISED: 5/30/2017
CHECKED BY:		--	CALC REF: --
		SHEET: SU993-2.1.0-K148	
		CMH MANUFACTURING, INC. Home Office 5000 Clayton Road, Maryville, TN 37804 PH: 865.380.3000 FAX: 865.380.3781	



1 Kneewall Connection to Bottom Chord
SCALE: 3/4"=1'-0" WIND: ALL ROOF PITCH: ALL

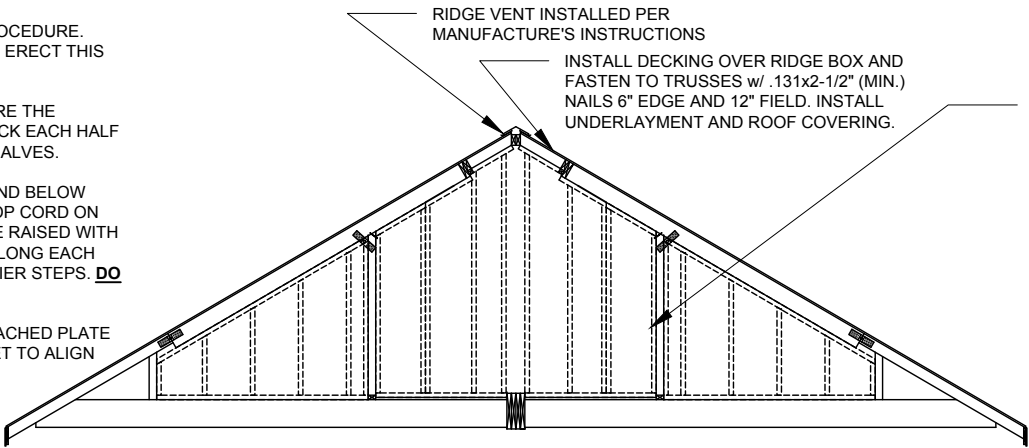
LIFTING OF ROOF
ONLY QUALIFIED SERVICE PERSONNEL SHOULD CARRY OUT THIS PROCEDURE. HOMEOWNERS OR UNAUTHORIZED PERSONNEL SHOULD NOT ATTEMPT TO ERECT THIS ROOF, AND DOING SO WILL VOID THE HOMEOWNERS WARRANTY.

NOTE: IT IS RECOMMENDED THAT THE HINGE ROOF BE RAISED BEFORE THE HALVES OF THE HOME ARE MATED TOGETHER. IT IS RECOMMENDED TO JACK EACH HALF OF THE ROOF WHEN THERE IS APPROXIMATELY 12" TO 20" BETWEEN THE HALVES.

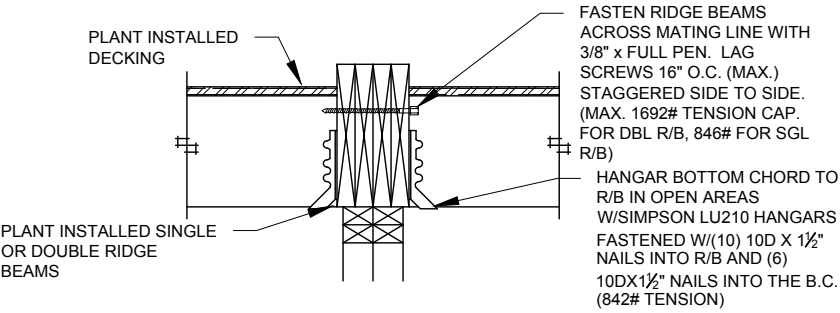
TEMPORARILY SECURE A 48" - 2X6 BLOCK TO THE TRUSSES ABOVE AND BELOW EACH JACK FOR ADDITIONAL SUPPORT. ATTACH 2X TO BOTTOM SIDE OF TOP CORD ON TRUSS AND TOPSIDE OF BOTTOM CORD ON TRUSS. ALL ROOFS SHOULD BE RAISED WITH THE USE OF A CRANE OR BOOM TRUCK, WITH MULTIPLE PICK-UP POINTS ALONG EACH HALF. ATTACH STRAPS TO TRUSS TOP CORDS AT 2X6'S INSTALLED IN EARLIER STEPS. **DO NOT ATTACH STRAPS TO 2X'S AT ENDS OF TRUSSES.**

RAISE THE HINGED SECTION UP EVENLY UNTIL KNEEWALLS AND ATTACHED PLATE CAN BE SWUNG INTO PLACE ON TO BOTTOM CHORD AND TEMPORARILY SET TO ALIGN ROOF.

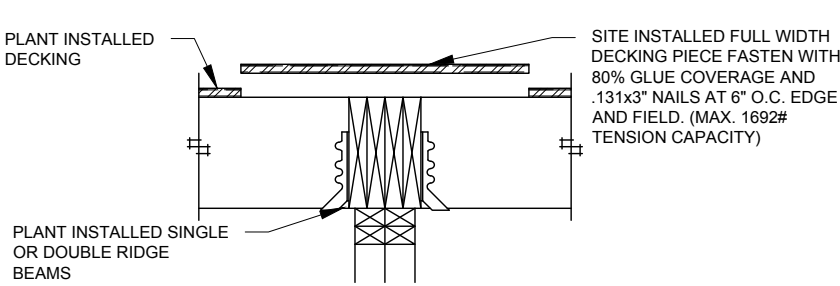
-- Gable End Wall Framing
SCALE: N.T.S WIND: ALL ROOF PITCH: ALL



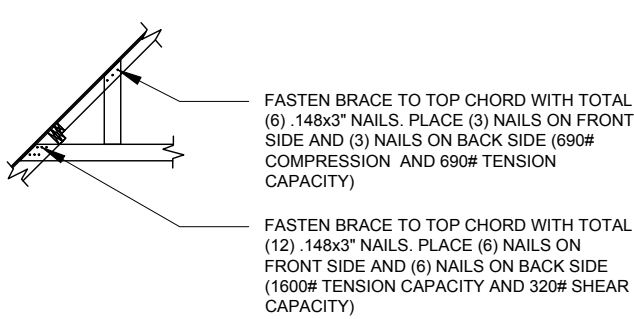
GABLE END WALL FRAMING (MAX 140 MPH EXP C & 60 PSF MAX GROUND SNOW LOAD)
GABLE ENDWALL FRAMING TO BE SPF #2 2X4'S AT 16" O.C. (MAX STUD HT IS 108" IN NON-CORNER ZONES AND 96" MAX IN 3 FT CORNER ZONES). FASTEN STUDS TO PLATES WITH MIN. OF (2) .131 X 3" NAILS. FASTEN PLATES TO TOP AND BOTTOM CHORDS WITH .131 X 3" NAILS OR #8X3" WOOD SCREWS AT 8" O.C. 2X NAILING LEDGER MAY BE SECURED TO INTERIOR SIDE OF TOP CHORD WITH #8 X 3" WOOD SCREWS AT 12" O.C. FASTEN GABLE SHEATHING TO GABLE FRAMING WITH .131 X 3" NAILS AT 3" O.C. EDGE/12 " O.C. FIELD. (COLLAR TIE MAY BE REMOVED ON END TRUSS WHEN GABLE FRAMING IS ADDED AS DESCRIBED ABOVE).



2a Ceiling Connection
SCALE: 3/4"=1'-0" WIND: ALL ROOF PITCH: ALL



2b Ceiling Connection
SCALE: 3/4"=1'-0" WIND: ALL ROOF PITCH: ALL



5 Collar Tie Connection
SCALE: N.T.S. WIND: ALL ROOF PITCH: ALL

ROOF INSTALLATION INFORMATION

THE TRUSS SHOWN ABOVE IS A REPRESENTATION OF THE TYPE OF ROOF SYSTEM FOR THE HOME. SEE ACTUAL TRUSS DRAWING FOR SPECIFIC TRUSS DIAGRAM. YOU WILL NEED TO SELECT WHICH CONNECTIONS APPLY TO THE ROOF SYSTEM YOU HAVE RECEIVED AND WHICH CONNECTIONS YOU WANT TO USE. NOT ALL CONNECTIONS APPLY TO THE ROOF SYSTEM. WE HAVE PROVIDED OPTIONS TO ENSURE PROPER INSTALLATION.

CUTS, NOTCHES AND HOLES BORED IN STRUCTURAL COMPOSITE LUMBER, STRUCTURAL GLUE-LAMINATED MEMBERS OR I-JOISTS ARE PROHIBITED EXCEPT WHERE PERMITTED BY THE MANUFACTURER'S RECOMMENDATIONS OR WHERE THE EFFECTS OF SUCH ALTERATIONS ARE SPECIFICALLY CONSIDERED IN THE DESIGN OF THE MEMBER BY A REGISTERED DESIGN PROFESSIONAL.

TRUSS MEMBERS SHALL NOT BE CUT, NOTCHED, DRILLED, SPLICED OR OTHERWISE ALTERED IN ANY WAY WITHOUT THE APPROVAL OF A REGISTERED DESIGN PROFESSIONAL. ALTERATIONS RESULTING IN THE ADDITION OF LOAD (E.G. HVAC EQUIPMENT, WATER HEATER) THAT EXCEEDS THAT DESIGN LOAD FOR THE TRUSS SHALL NOT BE PERMITTED WITHOUT VERIFICATION THAT THE TRUSS IS CAPABLE OF SUPPORTING SUCH ADDITIONAL LOADING.

ROOF DECKING SHALL BE COVERED WITH APPROVED ROOF COVERINGS SECURED TO THE BUILDING OR STRUCTURE. ROOF ASSEMBLIES SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE IRC AND THE APPROVED MANUFACTURER'S INSTALLATION INSTRUCTIONS SUCH THAT THE ROOF ASSEMBLY SHALL SERVE TO PROTECT THE BUILDING OR STRUCTURE.

FLASHING SHALL BE INSTALLED IN A MANNER THAT PREVENTS MOISTURE FROM ENTERING THE WALL AND ROOF THROUGH JOINTS IN COPINGS, THROUGH MOISTURE PERMEABLE MATERIALS AND AT INTERSECTIONS WITH PARAPET WALL AND OTHER PENETRATIONS THROUGH THE ROOF PLANE.

ASPHALT SHINGLES SHALL BE USED ONLY ON ROOF SLOPES OF TWO UNITS VERTICAL IN 12 UNITS HORIZONTAL (2:12) OR GREATER. FOR ROOF SLOPES FROM TWO UNITS VERTICAL IN 12 UNITS HORIZONTAL (2:12) UP TO FOUR UNITS VERTICAL IN 12 UNITS HORIZONTAL (4:12), DOUBLE UNDERLAYMENT APPLICATION IS REQUIRED.

UNLESS OTHERWISE NOTED, REQUIRED UNDERLAYMENT SHALL CONFORM TO ASTM D226 TYPE I, OR ASTM D 4869 TYPE I, OR ASTM D 6757. SELF-ADHERING POLYMER MODIFIED BITUMEN SHEET SHALL COMPLY WITH ASTM D 1970.

ASPHALT SHINGLES SHALL COMPLY WITH ASTM D 225 OR D 3462. ASPHALT SHINGLES SHALL BE TESTED IN ACCORDANCE WITH ASTM D7158H OR D 3161F. ASPHALT SHINGLE PACKAGING SHALL BEAR A LABEL TO INDICATE COMPLIANCE WITH ASTM D7158H OR D 3161F AND THE REQUIRED CLASSIFICATION.

FASTENERS FOR ASPHALT SHINGLES SHALL BE GALVANIZED STEEL, STAINLESS STEEL, ALUMINUM OR COPPER ROOFING NAILS, MINIMUM 12 GAUGE SHANK WITH A MINIMUM 3/8 INCH DIAMETER HEAD, ASTM F 1667, OF A LENGTH TO PENETRATE THROUGH THE ROOFING MATERIALS AND A MINIMUM OF 3/4 INCH INTO THE ROOF SHEATHING. WHERE THE ROOF SHEATHING IS LESS THAN 3/4 INCH THICK, THE FASTENERS SHALL PENETRATE THROUGH THE SHEATHING. FASTENERS SHALL COMPLY WITH ASTM F 1667.

ASPHALT SHINGLES SHALL HAVE THE MINIMUM NUMBER OF FASTENERS REQUIRED BY THE MANUFACTURER, BUT NOT LESS THAN FOUR FASTENERS PER STRIP SHINGLE OR TWO FASTENERS PER INDIVIDUAL SHINGLE.

FOR ROOFS LOCATED WHERE THE BASIC WIND SPEED IS 110 MPH OR HIGHER, SPECIAL METHODS OF FASTENING ARE REQUIRED. SPECIAL FASTENING METHODS SHALL BE TESTED IN ACCORDANCE WITH ASTM D 3161, CLASS F. ASPHALT SHINGLE WRAPPERS SHALL BEAR A LABEL INDICATING COMPLIANCE WITH ASTM D 3161, CLASS F FOR WIND SPEED EQUAL OR GREATER THAN REQUIRED FOR HOME LOCATION.

UNDERLAYMENT APPLIED IN AREAS SUBJECT TO HIGH WINDS, GREATER THAN 110 MPH, SHALL BE APPLIED WITH CORROSION-RESISTANT FASTENERS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. FASTENERS ARE TO BE APPLIED ALONG THE OVERLAP NOT FARTHER APART THAN 36 INCHES ON CENTER.

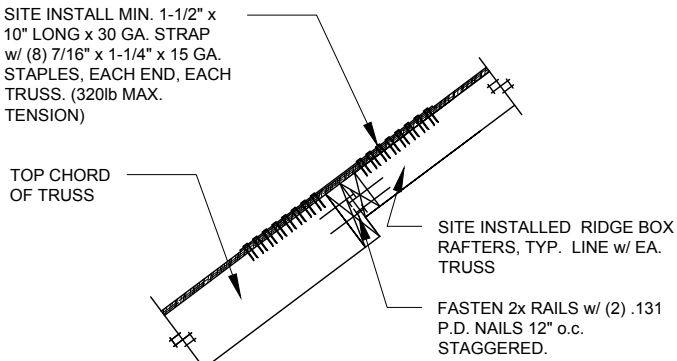
VALLEY LININGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS BEFORE APPLYING SHINGLES. VALLEY LININGS OF THE FOLLOWING TYPES SHALL BE PERMITTED:

FOR OPEN VALLEY (VALLEY LINING EXPOSED) LINED WITH METAL, THE VALLEY LINING SHALL BE AT LEAST 24 INCHES WIDE AND OF A CORROSION-RESISTANT METAL.

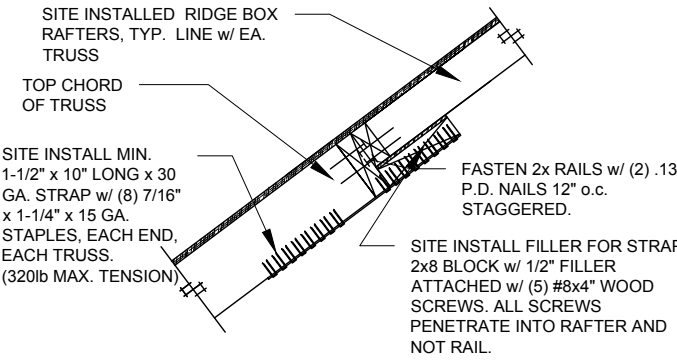
FOR OPEN VALLEYS, VALLEY LINING OF TWO PLIES OF MINERAL SURFACE ROLL ROOFING, COMPLYING WITH ASTM D-3909 OR ASTM D 6380 CLASS M, SHALL BE PERMITTED. THE BOTTOM LAYER SHALL BE 18 INCHES AND THE TOP LAYER A MINIMUM OF 36 INCHES WIDE.

FOR CLOSED VALLEYS (VALLEY COVERED WITH SHINGLES), VALLEY LINING OF ONE PLY OF SMOOTH ROLL ROOFING COMPLYING WITH ASTM D 6380 AND AT LEAST 36 INCHES WIDE OR VALLEY LINING FOR OPEN VALLEY CONDITIONS SHALL BE PERMITTED. SELF-ADHERING POLYMER MODIFIED BITUMEN UNDERLAY COMPLYING WITH ASTM D1970 SHALL BE PERMITTED IN LIEU OF THE LINING MATERIAL.

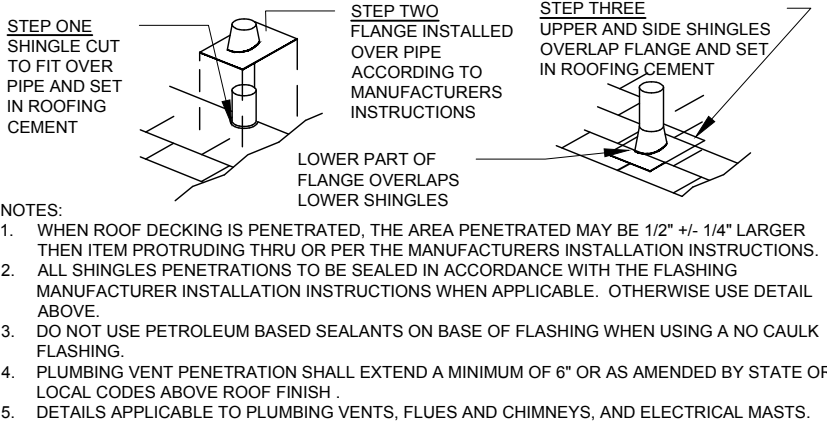
FLASHING AGAINST A VERTICAL SIDEWALL SHALL BE BY THE STEP-FLASHING METHOD. THE FLASHING SHALL BE A MINIMUM OF 4 INCHES HIGH AND 4 INCHES WIDE.



3 Opt. Ridge Box to Top Chord Conn.
SCALE: N.T.S. WIND: ALL ROOF PITCH: ALL



3a Opt. Ridge Box to Top Chord Conn.
SCALE: N.T.S. WIND: ALL ROOF PITCH: ALL



- NOTES:
- WHEN ROOF DECKING IS PENETRATED, THE AREA PENETRATED MAY BE 1/2" +/- 1/4" LARGER THEN ITEM PROTRUDING THRU OR PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS.
 - ALL SHINGLES PENETRATIONS TO BE SEALED IN ACCORDANCE WITH THE FLASHING MANUFACTURER INSTALLATION INSTRUCTIONS WHEN APPLICABLE. OTHERWISE USE DETAIL ABOVE.
 - DO NOT USE PETROLEUM BASED SEALANTS ON BASE OF FLASHING WHEN USING A NO CAULK FLASHING.
 - PLUMBING VENT PENETRATION SHALL EXTEND A MINIMUM OF 6" OR AS AMENDED BY STATE OR LOCAL CODES ABOVE ROOF FINISH .
 - DETAILS APPLICABLE TO PLUMBING VENTS, FLUES AND CHIMNEYS, AND ELECTRICAL MASTS.



P.E. SEAL

THIRD PARTY SEAL

Hinged Roof Attic Storage Installation Information			
TITLE:	B.R.	DATE:	10/6/2014
DRAWN BY:	--	LAST REVISED:	8/25/2016
REVIEWED BY:	--	CALC REF:	--
CHECKED BY:	--		

CMH MANUFACTURING, INC.	
Home Office	
5000 Clayton Road, Maryville, TN 37804	
PH: 865.380.3000 FAX: 865.380.3781	
SHEET:	SU993-2.2.0

Sep 24, 2014 - 2:07pm W:\ENG\Modular Packages\1One Modular Package\Setup Manuals\Modular Installation Instructions-Mechanical.dwg

MECHANICAL INSTALLATION INFORMATION

DO NOT ALLOW ANY EXHAUST SYSTEM TERMINATE UNDER THE HOME WHERE EXCESS MOISTURE OR FLAMMABLE MATERIAL CAN ACCUMULATE.

COMFORT COOLING SYSTEMS

ONLY QUALIFIED PERSONNEL SHALL INSTALL ANY COMFORT COOLING SYSTEM NOT PROVIDED WITH THE HOME. FOLLOW THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND CONFORM TO ALL LOCAL CODES.

AIR CONDITIONERS

THE AIR DISTRIBUTION SYSTEM OF THIS HOME HAS BEEN DESIGNED FOR A CENTRAL AIR CONDITIONING SYSTEM. SITE-INSTALLED EQUIPMENT MUST NOT EXCEED THE RATING SHOWN ON THE HOME'S COMPLIANCE CERTIFICATE.

THE HOME'S ELECTRICAL DISTRIBUTION PANEL MAY CONTAIN OPTIONAL FACTORY INSTALLED CIRCUITS FOR AIR CONDITIONING. THE MAXIMUM FULL LOAD AMPERE DRAW FOR THE DESIRED AIR CONDITIONING UNIT MUST NOT EXCEED THE CIRCUIT RATING SHOWN. IN ADDITION, ELECTRICAL CIRCUITS WITHIN THE HOME MAY NOT HAVE BEEN SIZED FOR THE ADDITIONAL LOAD OF NON-FACTORY INSTALLED AIR CONDITIONING, AND A SEPARATE, OUTSIDE ELECTRICAL SUPPLY MAY HAVE TO BE PROVIDED.

ANY FIELD-INSTALLED WIRING BEYOND THE JUNCTION BOX MUST INCLUDE A DISCONNECT FUSE LOCATED WITHIN SIGHT OF THE CONDENSING UNIT. THE MAXIMUM FUSE SIZE IS MARKED ON THE CONDENSER DATA PLATE. LOCAL CODES WILL DETERMINE THE ACCEPTABILITY OF THE AIR CONDITIONING EQUIPMENT, RATING, LOCATION, DISCONNECT MEANS, FUSE TYPE BRANCH CIRCUIT PROTECTION, AND CONNECTIONS TO THE EQUIPMENT. 'A' COIL AIR CONDITIONING UNITS MUST BE COMPATIBLE AND LISTED FOR USE WITH THE FURNACE IN THE HOME. FOLLOW THE AIR CONDITIONER MANUFACTURER'S INSTRUCTIONS.

IF A REMOTE (SELF-CONTAINED, PACKAGE) AIR CONDITIONER (COOLING COIL AND BLOWER LOCATED OUTSIDE THE HOME) IS TO BE CONNECTED TO THE HEATING SUPPLY DUCT, INSTALL AN AUTOMATIC DAMPER BETWEEN THE FURNACE AND THE HOME'S AIR DUCT SYSTEM AND ANOTHER BETWEEN THE REMOTE UNIT AND THE HOME'S AIR DUCT SYSTEM. SECURE THE DUCT SYSTEM LEADING FROM THE REMOTE UNIT TO THE HOME AND DO NOT ALLOW IT TO TOUCH THE GROUND. INSULATE DUCTS WITH MATERIAL HAVING AN 'R' VALUE OF NOT LESS THAN 8, AND A PERM RATING OF NOT LESS THAN 1. CONNECT THE DUCT CARRYING AIR TO THE HOME TO THE MAIN DUCT AT A POINT WHERE THERE ARE APPROXIMATELY AS MANY REGISTERS FORWARD OF THE CONNECTION AS THERE ARE TO THE REAR. LOCATE THE RETURN AIR DUCT IN THE CENTER OF THE HOME.

DO NOT CUT OR DAMAGE FLOOR JOISTS. REPLACE INSULATION REMOVED DURING THE INSTALLATION, AND SEAL THE BOTTOM BOARD AROUND THE DUCT CONNECTIONS.

ALL CONDENSATION PIPING FOR THE HVAC SYSTEM MUST BE INSTALLED ON SITE BY OTHERS. THIS CONDENSATE PIPE CAN EITHER BE DIRECTED TO THE EXTERIOR OF THE HOME OR CONNECTED TO THE HOMES DWV PLUMBING SYSTEM. IF CONNECTING TO THE DWV PLUMBING SYSTEM, NO EXTERNAL TRAP SHOULD BE USED AS THE FURNACE CONTAINS AN INTERNAL TRAP.

HVAC CROSSOVER DUCT INSTALLATION

CROSSOVER DUCTS TO BE INSULATED WITH A MATERIAL HAVING A MINIMUM R-8 VALUE.

DUCT MUST BE SUPPORTED SO IT DOES NOT TOUCH THE GROUND.

HEAT PUMPS

INSTALL HEAT PUMPS ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

FURNACE DE-RATION

IF YOUR HOME IS LOCATED AT 4500 FEET OR MORE ABOVE SEA LEVEL OR AS INDICATED IN THE MANUFACTURER'S INSTRUCTIONS, YOUR GAS FURNACE MUST BE DE-RATED FOR THE ALTITUDE. THIS MUST BE DONE BY A QUALIFIED SERVICE PERSON. A LICENSED TECHNICIAN MAY BE REQUIRED. CHECK WITH YOUR LOCAL AUTHORITIES.

CAUTION!

FAILURE TO DE-RATE THE FURNACE CAN CAUSE THE FURNACE TO OVERHEAT, OPERATE POORLY AND CAUSE EXCESSIVE SOOT. DANGEROUS LEVELS OF CARBON MONOXIDE COULD ACCUMULATE IN THE HOME.

FIREPLACE

FIREPLACE MANUFACTURER'S INSTRUCTIONS WILL BE SHIPPED WITH THE HOME.

FIREPLACE AND WOOD STOVES REQUIRE ON SITE INSTALLATION OF ADDITIONAL SECTIONS OF APPROVED LISTED CHIMNEY PIPE, SPARK ARRESTOR AND RAIN CAP ASSEMBLY.

CHIMNEY MUST BE INSTALLED TO A MINIMUM EXTENSION ABOVE ROOF TO ASSURE SUFFICIENT DRAFT FOR PROPER OPERATION. EXTEND THE FINISHED CHIMNEY AT LEAST 3' ABOVE THE HIGHEST POINT WHERE IT PENETRATES THE ROOF AND AT LEAST 2' HIGHER THAN ANY SURFACE WITHIN 10' OF THE CHIMNEY. THE INSTALLER MAY HAVE TO PROVIDE AN ADDITIONAL SECTION OF CHIMNEY PIPE IF REQUIRED BY LOCAL CODES.

THE REQUIRED COMPONENTS OF A CORRECTLY INSTALLED CHIMNEY ARE AS SHOWN ON MANUFACTURER'S INSTALLATION INSTRUCTIONS.

ASSEMBLE AND SEAL YOUR FIREPLACE OR WOOD STOVE CHIMNEY PER FIREPLACE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

COMBUSTION AIR DUCT INLETS (FIREPLACE OR WATER HEATER)

COMBUSTION AIR INTAKE DUCTS END JUST BELOW THE BOTTOM COVERING OF THE FLOOR. YOU MUST EXTEND THEM TO THE OUTSIDE WHEN YOUR HOME HAS A BASEMENT OR CRAWL SPACE. THESE ADDED DUCTS ARE SUPPLIED OR MAY BE PURCHASED AT YOUR LOCAL HARDWARE STORE OR HOME CENTER. THE FIREPLACE MANUFACTURER'S INSTRUCTIONS FOR INSTALLING COMBUSTION AIR DUCTS ARE IN THE FIREPLACE/STOVE OR WITH THE CHIMNEY PARTS. DO NOT ALLOW THE COMBUSTION AIR INLET TO DROP MATERIAL FROM THE HEARTH BENEATH THE HOME. LOCATE ITS INLET DAMPER ABOVE EXPECTED SNOW LEVEL.

GAS DRYER INSTALLATION

IF THE HOME DID NOT COME EQUIPPED WITH A GAS DRYER, REMEMBER THAT INSTALLING ONE REQUIRES SUBSTANTIAL ALTERATION TO THE HOME. YOU MUST PROVIDE GAS SUPPLY PIPING AND ADEQUATE VENTING AS SPECIFIED BY THE GAS DRYER MANUFACTURER. ONLY A TRAINED AND EXPERIENCED PERSON SHOULD INSTALL A GAS DRYER. CUTTING MAJOR STRUCTURAL ELEMENTS (SUCH AS RAFTERS AND JOISTS) TO ALLOW FOR GAS DRYER INSTALLATION IS NOT PERMISSIBLE. CMH MANUFACTURING IS NOT RESPONSIBLE FOR ANY WEAKENING OF THE HOME'S STRUCTURAL SOUNDNESS RESULTING FROM DRYER INSTALLATION.

DRYER DUCT INSTALLATION

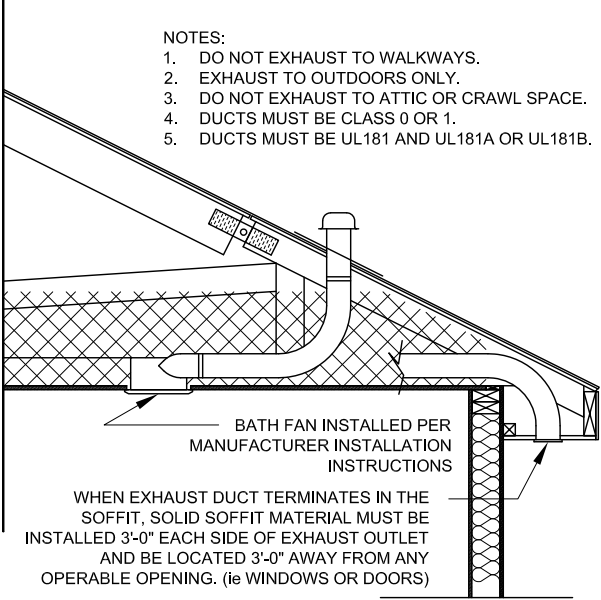
THE DRYER EXHAUST DUCT IS TO BE INSTALLED SO THAT NO PART OF THE DUCT IS IN CONTACT WITH THE GROUND. THE DRYER EXHAUST DUCT IS TO RUN TO THE OUTSIDE OF THE HOME AND SHALL NOT TERMINATE UNDERNEATH THE UNIT AND BE LOCATED NOT LESS THAN 12 INCHES ABOVE FINISHED GRADE. AN APPROVED BACK DRAFT DAMPER SHALL BE INSTALLED ON THE END OF THE DUCT. DRYER EXHAUST DUCTS NOT DESIGNED FOR A SPECIFIC DRYER SHALL BE CONSTRUCTED OF MINIMUM 0.0157 INCH GALVANIZED STEEL OR OTHER NONCOMBUSTIBLE MATERIAL OF EQUIVALENT STRENGTH AND CORROSION RESISTANCE. DUCTS SHALL HAVE A SMOOTH INTERIOR FINISH WITH JOINTS RUNNING IN THE DIRECTION OF AIRFLOW. ANY AIR GAPS FROM PENETRATIONS THROUGH THE BUILDING ENVELOPE SHALL BE CAULKED, GASKETED, WEATHER-STRIPPED, WRAPPED, OR OTHERWISE SEALED TO LIMIT UNCONTROLLED AIR MOVEMENT. MINIMUM SIZE OF EXHAUST DUCTS SHALL BE 4 INCHES INTERIOR DIAMETER. MAXIMUM LENGTH OF RIGID METAL DUCTS SHALL NOT EXCEED 35 FEET FROM DRYER LOCATION TO WALL OR ROOF CAP WITH DEDUCTIONS IN DUCT LENGTHS FOR 45 AND 90 DEGREE BENDS. TRANSITION DUCTS SHALL BE METAL, LIMITED TO 8 FEET LENGTH, AND LISTED AND LABELED FOR THE APPLICATION. TRANSITION DUCTS MUST REMAIN ENTIRELY WITHIN THE ROOM THE APPLIANCE IS INSTALLED. THIS DETAIL DOES NOT APPLY TO COMMERCIAL CLOTHES DRYER INSTALLATION.

VENTING (GAS/OIL FURNACES AND/OR WATER HEATERS)

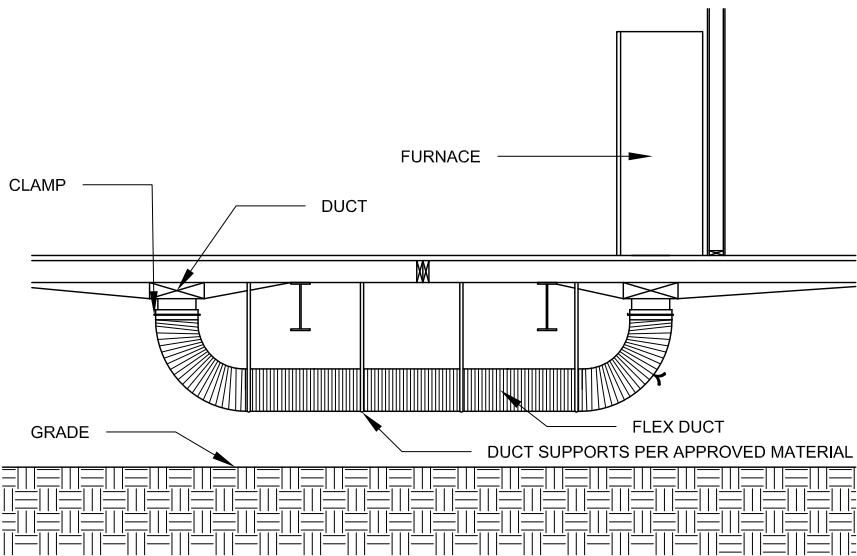
MANUFACTURER'S INSTRUCTIONS WILL BE SHIPPED WITH THE HOME.

SOME VENTING MAY REQUIRE ON SITE INSTALLATION OF ADDITIONAL SECTIONS. THE MANUFACTURER'S INSTRUCTION MUST BE FOLLOWED WHEN INSTALLING THIS PIPING.

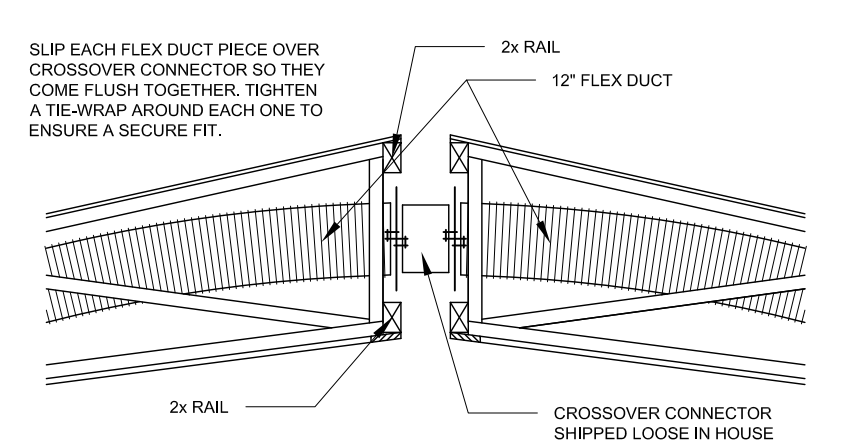
THE INSTALLER MAY HAVE TO PROVIDE AN ADDITIONAL SECTION OF PIPE IF REQUIRED BY LOCAL CODES.



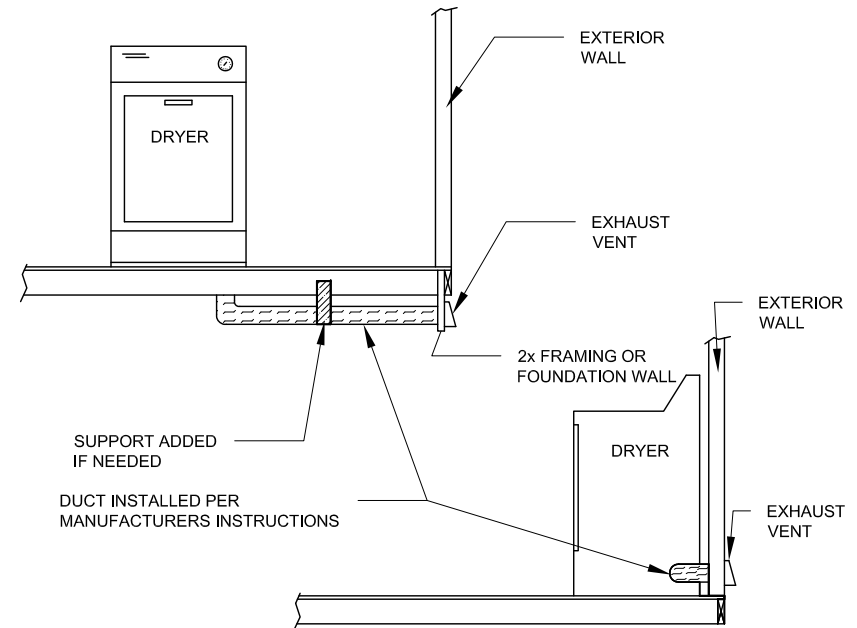
4 BATH FAN EXHAUST
SCALE: N.T.S. DETAIL IS APPLICABLE FOR SITE INSTALLATION



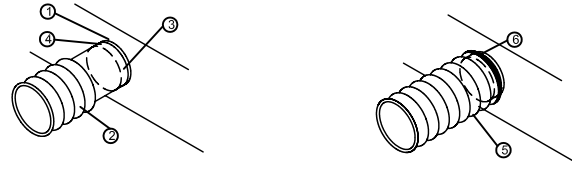
1 STD. FLOOR CROSSOVER CONNECTION
SCALE: N.T.S.



2 STD. CEILING CROSSOVER CONNECTION
SCALE: N.T.S.

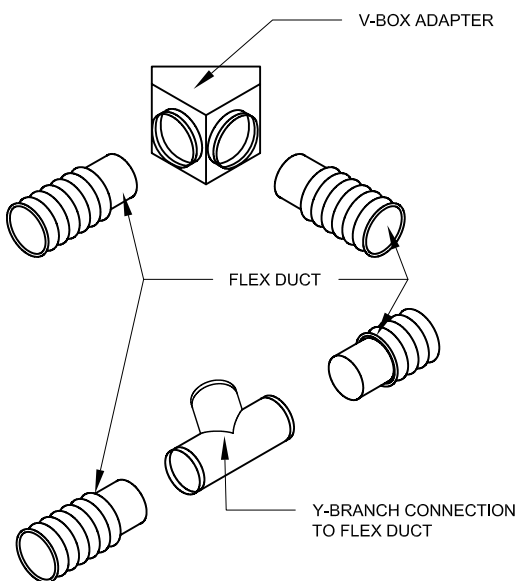


3 DRYER DUCT INSTALLATION
SCALE: N.T.S.



- PROCEDURE:
1. LOCATE DUCT COLLARS THAT EXTEND BELOW THE BOTTOM BOARD MATERIAL ON EACH SECTION. REMOVE SHIPPING CLOSE-UP MATERIAL FROM COLLARS.
 2. PULL VINYL COVERING BACK FROM DUCT AND SLIDE EXPOSED END OVER DUCT COLLAR AND UP AGAINST BOTTOM BOARD MATERIAL.
 3. FASTEN DUCT TO COLLAR WITH 3 SHEET METAL SCREWS APPROXIMATELY EQUALLY SPACED AROUND THE COLLAR.
 4. ADD METAL OR PLASTIC TIE STRAP AROUND DUCT AND SECURE TIGHTLY. IF METAL STRAP IS USED, SECURE WITH SHEET METAL SCREW.
 5. AFTER DUCT IS FASTENED TO COLLAR PULL VINYL COVERING OVER CONNECTIONS AND FLUSH TO THE BOTTOM BOARD MATERIAL.
 6. WRAP THE TOP OF THE VINYL COVER AROUND THE COLLAR AT LEAST TWO TIMES WITH DUCT TAPE.
 7. REPEAT STEPS 1 THRU 6 AT COLLAR ON OTHER SECTION OR SECTIONS OF THE HOME. SOME HOMES MAY REQUIRE THE CONNECTION OF A METAL V-BOX ADAPTER OR VINYL FLEX Y-BRANCH AT THE COLLAR UNDER THE FURNACE.

4 STANDARD DUCT CONNECTION
SCALE: N.T.S.



5 OTHER CROSSOVER CONNECTIONS
SCALE: N.T.S.

P.E. SEAL

THIRD PARTY SEAL

TITLE: MECHANICAL INSTALLATION INFORMATION			CMH MANUFACTURING, INC. Home Office 5000 Clayton Road, Maryville, TN 37804 PH: 865.380.3000 FAX: 865.380.3781	
DRAWN BY:	B.R.	DATE:		10/8/2010
REVIEWED BY:	--	LAST REVISED:		9/24/2014
CHECKED BY:	--	CALC REF:		--
SHEET:			SU-3.0	

ELECTRICAL INSTALLATION INFORMATION

GENERAL

BECAUSE OF THE IMPORTANCE OF PROPER ELECTRICAL CONNECTIONS IT IS ADVISABLE TO HAVE ONLY A QUALIFIED ELECTRICIAN WORK ON THE ELECTRICAL SYSTEM OF YOUR UNIT.

ALUMINUM CONDUCTORS SHALL NOT BE USED.

ELECTRICAL CABLES SHALL BE SECURED IN PLACE AT INTERVALS NOT EXCEEDING 4-1/2 FEET AND WITHIN 12 INCHES FROM EVERY CABINET, BOX OR FITTING.

METALLIC FACE PLATES SHALL BE EFFECTIVELY GROUNDED.

APPLIANCES CONNECTED BY METAL-CLAD CABLE OR FLEXIBLE CONDUIT SHALL HAVE AT LEAST 3 FEET OF FREE CABLE OR CONDUIT TO PERMIT MOVING THE APPLIANCE.

SWITCHES SHALL BE ADEQUATELY RATED FOR LOAD CONTROL.

AT LEAST 6 INCHES OF FREE CONDUCTOR, MEASURED FROM THE POINT IN THE BOX WHERE IT EMERGES FROM ITS RACEWAY OR CABLE SHEATH, SHALL BE LEFT AT EACH OUTLET, JUNCTION, AND SWITCH POINT FOR SPLICES OR THE CONNECTION OF LUMINARIES OR DEVICES. WHERE THE OPENING TO AN OUTLET, JUNCTION, OR SWITCH POINT IS LESS THAN 8 INCHES IN ANY DIMENSION, EACH CONDUCTOR SHALL BE LONG ENOUGH TO EXTEND AT LEAST 3 INCHES OUTSIDE THE OPENING.

EXPPOSED WIRING OUTSIDE THE HOME SHALL BE IN CONDUIT.

NO WIRING TO BE INSTALLED IN THE RETURN AIR PLENUMS.

SERVICE EQUIPMENT SHALL BE SUITABLE FOR THE SHORT CIRCUIT (FAULT) CURRENT AVAILABLE AT ITS SUPPLY TERMINALS. NEC SECTION 230-65.

ALL RECEPTACLES TO BE GROUNDING TYPE.

ALL WIRING TO BE PER NEC WITH TYPE NM ROMEX (CU) WITH GROUND.

DISCONNECTING MEANS TO BE LOCATED WITHIN SIGHT OR ABLE TO BE LOCKED OUT OF ALL MOTORS.

WEATHER-PROOF PROTECTION REQUIRED FOR ALL OUTDOOR LIGHTS, RECEPTACLES AND DISCONNECTS.

PROPER WORKING CLEARANCES TO BE PROVIDED AND MAINTAINED AROUND ALL ELECTRICAL EQUIPMENT.

ALL EQUIPMENT TO BE LISTED AND INSTALLED IN ACCORDANCE WITH ITS LISTING.

MODULE INTERCONNECTION

MULTI-SECTION UNITS WILL HAVE THE ELECTRICAL CROSSOVERS LOCATED EITHER IN THE FLOOR NEAR THE MARRIAGE LINE OR IN THE ENDWALLS NEAR THE CENTER OF THE UNIT. LOCATE THE JUNCTION BOXES AND CONNECT THE CONDUCTORS TOGETHER. THE CONDUCTORS SHOULD BE COLOR CODED OR MARKED FOR EASY IDENTIFICATION.

DO NOT INTERCONNECT CIRCUITS OR CROSS CONDUCTORS. ALL WIRE CONNECTIONS SHOULD BE DONE INSIDE THE JUNCTION BOXES OR WITH SELF-CONTAINED DEVICES.

COPPER LEADER CONDUCTOR SIZES NO. 3 MAY BE REPLACED BY NO. 2, NO. 1 MAY BE REPLACED BY NO. 1/0 AND NO. 1/0 MAY BE REPLACED BY NO. 2/0.

ROUTE WIRES AS INDICATED ON THE DETAIL.

CONNECT MALE WIRE CONNECTOR INTO FEMALE WIRE CONNECTOR IN THE FLOOR CAVITY.

USE BOTH SCREWS FROM THE MALE CONNECTOR TO JOIN BOTH CONNECTORS.

COVER AREA WITH INSULATED ACCESS PANELS. FLOOR CROSSOVER ONLY.

OTHER TYPES OF SPLICE CONNECTORS MAY BE USED, REFER TO INSTALLATION INSTRUCTIONS.

CONNECTORS FROM EACH HALF TO BE IDENTIFIED FOR PROPER CONNECTION AT SETUP.

FLOOR JOIST NOTCHES AND HOLES ARE TO BE MADE IN ACCORDANCE WITH IRC SECTIONS R502.8 THRU R502.8.2.

OTHER APPROVED BOTTOM BOARD ACCESS METHODS MAY BE USED AND MUST MAINTAIN PROPER INSULATION COVERAGE. FLOOR CROSSOVER ONLY.

SERVICE INSTALLATION

ALL ELECTRICAL MATERIALS AND CONSTRUCTION MUST BE IN ACCORDANCE WITH THE NEC NFPA 70.

ALL ELECTRICAL EQUIPMENT TO BE UL LISTED OR TESTED BY

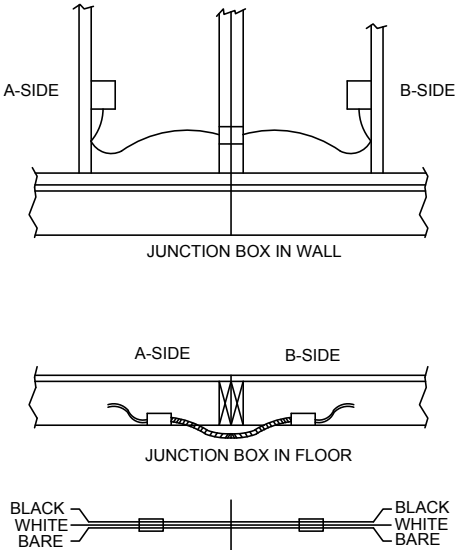
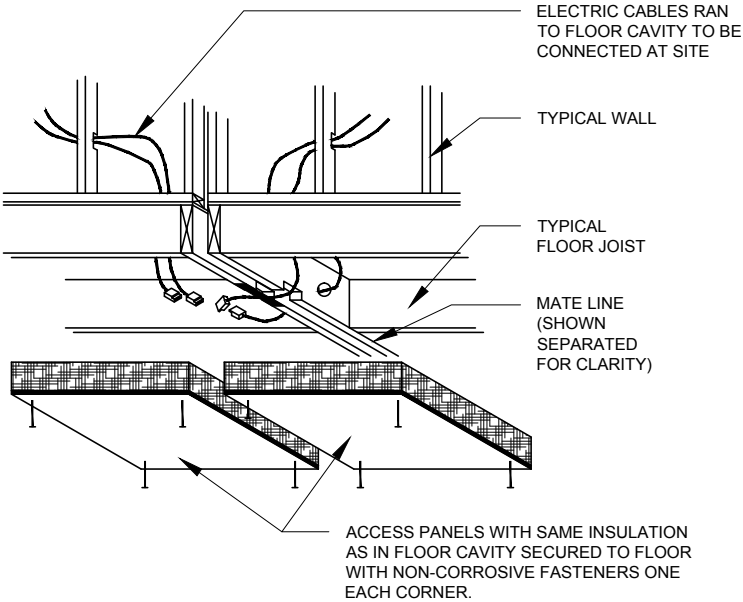
INDEPENDENT LABORATORIES IN COMPLIANCE WITH UL STANDARDS.

SERVICE DROP CLEARANCES ABOVE ROOF AND GROUND MUST COMPLY WITH SECTION 230-24 OF THE NEC.

ELECTRICAL WIRES INSTALLED WITHIN 6'-0" OF ATTIC ACCESS MUST BE INSTALLED PER SECTION 320-23 AND 330-23 OF THE NEC.

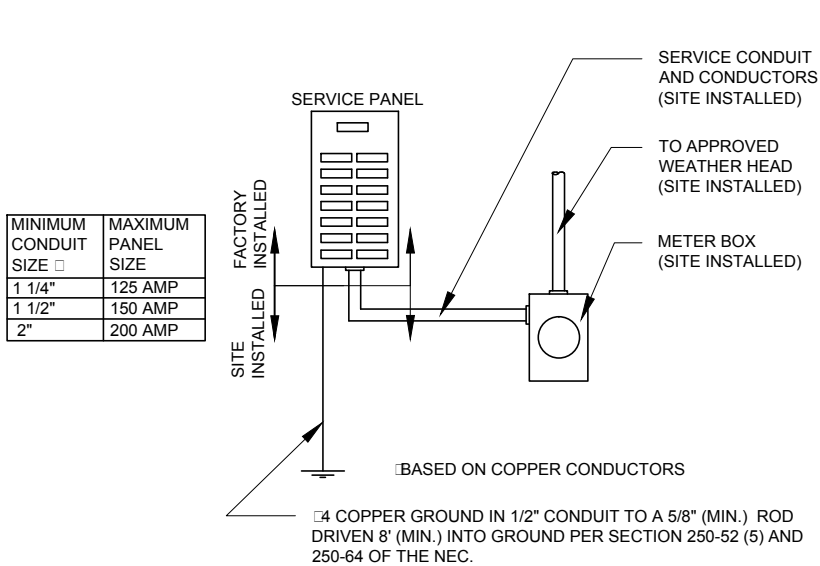
WIRES TO BE FASTENED 4' O.C., 12" FROM METAL BOX AND 8" FROM NON-METAL BOXES.

ALL SITE INSTALLED ITEMS ARE DESIGNED BY OTHERS AND SUBJECT TO THE APPROVAL OF THE LOCAL JURISDICTION.



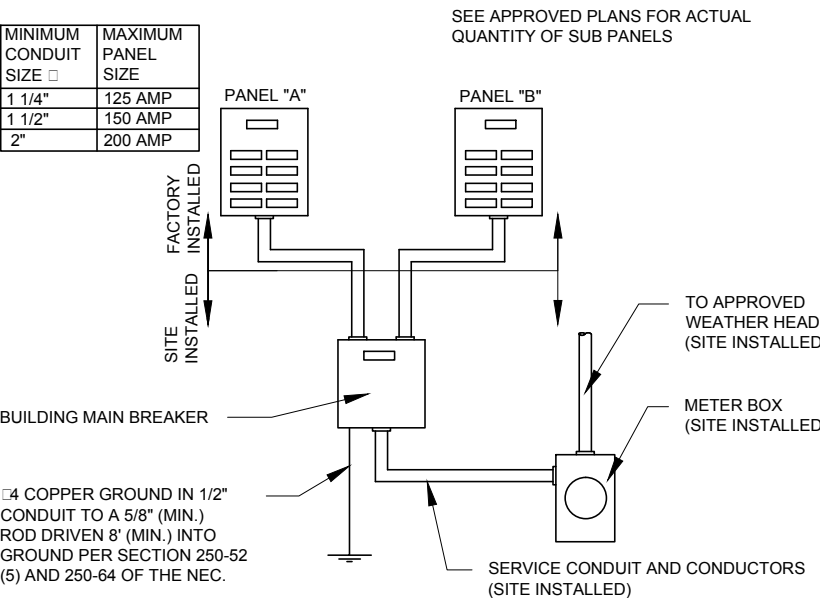
3 TYPICAL ELECTRICAL CROSSOVERS

SCALE: N.T.S.



1 TYPICAL ELECTRICAL SERVICE

SCALE: N.T.S.



2 TYPICAL MULTI-PANEL ELECTRICAL SERVICE

SCALE: N.T.S.

FEEDER SIZE (SEE MAIN BREAKER AND LABEL ON DIS- TRIBUTION PANEL) (AMPS)	MINIMUM SIZES			FEEDER CONDUCTOR SIZES						MAX. CALCULATED NEUTRAL FEEDER LOAD (AMPS)
	JUNCTION BOX (IN.)	FLEX CONDUIT (IN.)		COPPER CONDUCTORS			ALUMINUM CONDUCTORS			
		COPPER CONDUCTORS	ALUMINUM CONDUCTORS	RED & BLACK (POWER)	WHITE (NEUTRAL)	GREEN (GROUNDING)	RED & BLACK (POWER)	WHITE (NEUTRAL)	GREEN (GROUNDING)	
50	10-10-4	1	1	NO. 6 THW	NO. 5 THW	NO. 8 THW	NO. 8 THW	NO. 8 THW	NO. 8 THW	50
100	10-10-4	1 1/2	1 1/2	NO. 3 THW	NO. 3 THW	NO. 8 THW	NO. 1 THW	NO. 1 THW	NO. 6 THW	100
125	12-12-6	1 1/2	2	NO. 1 THW	NO. 3 THW	NO. 8 THW	NO. 2/0 THW	NO. 1/0 THW	NO. 4 THW	115
150	12-12-6	1 1/2	2	NO. 1/0 THW	NO. 2 THW	NO. 8 THW	NO. 3/0 THW	NO. 1/0 THW	NO. 4 THW	115
200	12-12-6	2	2	NO 3/0 THW	NO. 2 THW	NO. 8 THW	250 MCM	NO. 1/0 THW	NO. 4 THW	115

4 ELECTRICAL FEEDERS AND EQUIPMENT SIZES

SCALE: N.T.S.



P.E. SEAL

THIRD PARTY SEAL

TITLE: ELECTRICAL INSTALLATION INFORMATION

DRAWN BY: B.R. DATE: 10/18/2010

REVIEWED BY: LAST REVISED: 6/17/2014

CHECKED BY: CALC REF:

CMH MANUFACTURING, INC. Home Office

5000 Clayton Road, Maryville, TN 37804

PH: 865.380.3000 FAX: 865.380.3781

SHEET: SU-4.0

PLUMBING INSTALLATION INFORMATION

GENERAL

THE FOLLOWING INSTRUCTIONS ARE PROVIDED FOR USE IN COMPLETING THE INSTALLATION OF THE PLUMBING SYSTEMS IN THE CORRECT MANNER. PLEASE REVIEW THE INFORMATION PROVIDED BEFORE STARTING WORK TO FAMILIARIZE YOURSELF WITH PROPER SEQUENCE OF INSTALLATION.

BECAUSE OF THE IMPORTANCE OF PROPER PLUMBING CONNECTIONS IT IS ADVISABLE TO HAVE ONLY A QUALIFIED PLUMBER WORK ON THE PLUMBING SYSTEM OF YOUR UNIT.

ALL PLUMBING MATERIAL, DEVICES, FIXTURES, FITTINGS, EQUIPMENT, APPLIANCES AND ACCESSORIES INSTALLED SHALL BE LISTED OR CERTIFIED BY AN APPROVED LISTING AGENCY (NSF, LAPMO, GPT, ETC.) OR SHALL BE SPECIFICALLY APPROVED.

ALL VALVES, PIPES AND FITTINGS SHALL BE INSTALLED IN CORRECT RELATIONSHIP TO THE DIRECTION OF FLOW.

ALL PIPING, PIPE THREADS, HANGERS AND SUPPORTS WHICH ARE EXPOSED TO THE WEATHER, WATER, MUD AND/OR ROAD DAMAGE SHALL BE ADEQUATELY PROTECTED FROM DETERIORATION AND OR DAMAGE DURING TRANSIT.

PIPING SHALL BE INSTALLED WITHOUT UNDUE STRAIN AND STRESS WITH PROVISION FOR EXPANSION, CONTRACTION AND STRUCTURAL SETTLEMENT.

WASTE LINES

BEFORE YOU BEGIN

LOCATE THE DRAIN WASTE PLUMBING SCHEMATIC. REVIEW THE LAYOUT.

CHECK ALL LOOSE PLUMBING PARTS SUPPLIED BY LAYING THEM OUT ON THE GROUND UNDER THE HOME IN THEIR CORRECT RELATIONSHIP ACCORDING TO THE DRAIN WASTE SCHEMATIC. ALL PIPING AND FITTINGS SHOULD BE USED WHERE INDICATED TO ENSURE THE CORRECT FLOW OF WASTE IN THE ASSEMBLED DRAIN SYSTEM.

DWV MATERIAL TO BE ABS OR PVC.

PLASTIC PIPING SHALL BE SUPPORTED AT 4 FOOT INTERVALS UNLESS OTHERWISE STATED IN THE APPLICABLE MATERIAL STANDARDS OR BY THE PIPING MANUFACTURER.

CLEAN-OUTS SHALL BE ACCESSIBLE THROUGH AN UNOBSTRUCTED MINIMUM CLEARANCE OF 12 INCHES DIRECTLY IN FRONT OF THE OPENING. THE MINIMUM SPACE SHALL BE NOT LESS THAN 12 INCHES FOR PIPES LESS THAN 3 INCHES AND 18 INCHES FOR PIPES 3 INCHES AND LARGER.

A FULL SIZE CLEAN-OUT SHALL BE INSTALLED AT THE UPPER END OF ANY SECTION OF DRAIN PIPING WHICH DOES NOT HAVE THE REQUIRED MINIMUM SLOPE OF 1/4 INCH PER FOOT GRADE, BUT HAS AT LEAST 1/8 INCH PER FOOT GRADE.

VENT PIPES SHALL EXTEND THROUGH THEIR FLASHING AND TERMINATE VERTICALLY NOT LESS THAN 6 INCHES ABOVE THE ROOF OR AS AMENDED BY STATE OR LOCAL CODES.

PORTIONS OF THE DRAIN WASTE SYSTEM WHICH ARE BELOW THE FLOOR MAY NOT HAVE BEEN INSTALLED AT THE MANUFACTURING FACILITY DUE TO THE POSSIBILITY OF DAMAGE TO THE SYSTEM DURING TRANSIT. ALL MATERIALS REQUIRED TO COMPLETE THE SYSTEM HAVE BEEN FURNISHED BY THE MANUFACTURING FACILITY AND ARE SHIPPED AS LOOSE ITEMS IN THE HOME.

SUPPLY LINES

WATER SUPPLY AND DISTRIBUTION PIPING SHALL BE LISTED AND APPROVED FOR POTABLE WATER SYSTEMS.

WATER HAMMER IN THE WATER SUPPLY SYSTEMS RESULTING FROM QUICK-CLOSING VALVES WILL BE PREVENTED BY INSTALLING EITHER AIR CHAMBERS OR HYDRAULIC SHOCK ARRESTORS, COMPLYING WITH ASSE STANDARD 1010.

ALL WATER PIPING LOCATED IN CRAWL SPACES OR OTHER LOCATIONS SUBJECT TO FREEZING SHALL BE PROTECTED.

CHECK WATER AND DRAIN LINES FOR ANY CONNECTIONS THAT MAY HAVE COME LOOSE DURING SHIPMENT.

SHOULD YOUR UNIT NOT BE EQUIPPED WITH A MASTER SHUT-OFF VALVE, ONE MUST BE INSTALLED BETWEEN THE UNIT AND THE WATER SUPPLY.

THE WATER SUPPLY SYSTEM IS DESIGNED FOR A MAXIMUM INLET WATER PRESSURE OF 80 PSI, IF THE LOCAL WATER SUPPLY PRESSURE TO WHICH THE UNIT IS BEING CONNECTED EXCEEDS 80 PSI, A PRESSURE REDUCING VALVE MUST BE INSTALLED TO LIMIT THE PRESSURE.

CHECK WITH LOCAL WATER DISTRICT, A PRESSURE REDUCING VALUE AND BACKFLOW PREVENTER MAY NEED TO BE INSTALLED ON THE SUPPLY INLET.

WATER HEATER

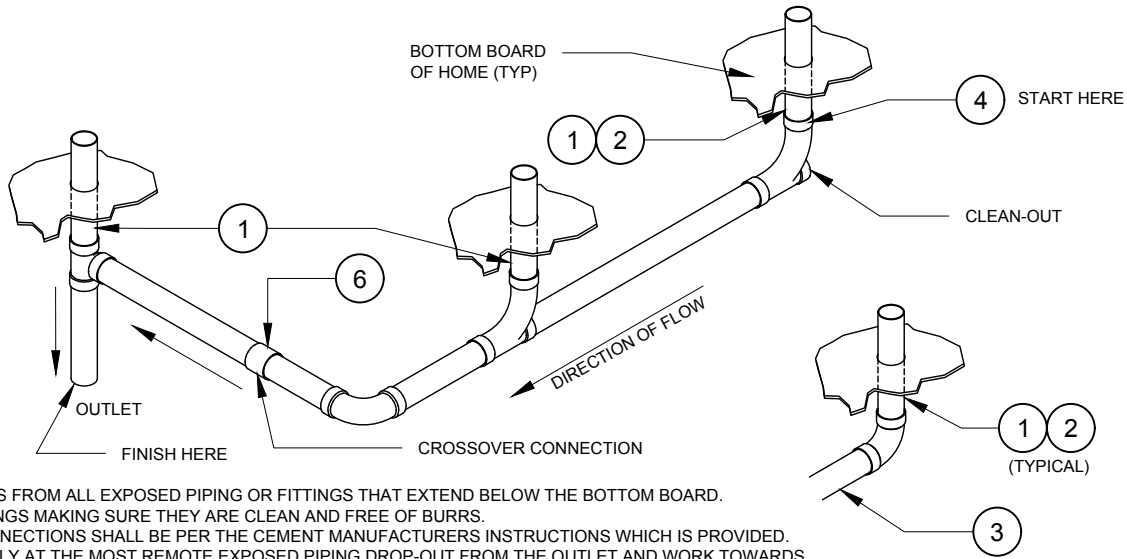
CAUTION: DO NOT TURN THE POWER ON TO THE WATER HEATER UNTIL THE TANK IS FULL OF WATER.

WATER HEATERS SHALL BE PROVIDED WITH A COLD WATER "DIP" TUBE WITH

A HOLE AT THE TOP OR A VACUUM RELIEF VALVE INSTALLED IN THE COLD WATER SUPPLY LINE ABOVE THE TOP OF THE WATER HEATER TANK. BOTTOM FED WATER HEATERS SHALL HAVE A VACUUM RELIEF VALVE INSTALLED.

WATER HEATERS SHALL BE PROVIDED WITH A TEMPERATURE AND PRESSURE RELIEF VALVE INSTALLED IN THE SHELL OF THE WATER HEATER TANK OR MAY BE INSTALLED IN THE HOT WATER OUTLET PROVIDED THE THERM-BULB EXTENDS INTO THE SHELL OF THE TANK.

WATER HEATER MUST BE TESTED, CERTIFIED AND LABELED AS HAVING A PERFORMANCE EFFICIENCY EQUAL TO OR EXCEEDING ANSI/ASHRAE/IES 90A. EXCEPTION: WATER HEATERS LESS THAN 20 GALLON CAPACITY.



PROCEDURE:

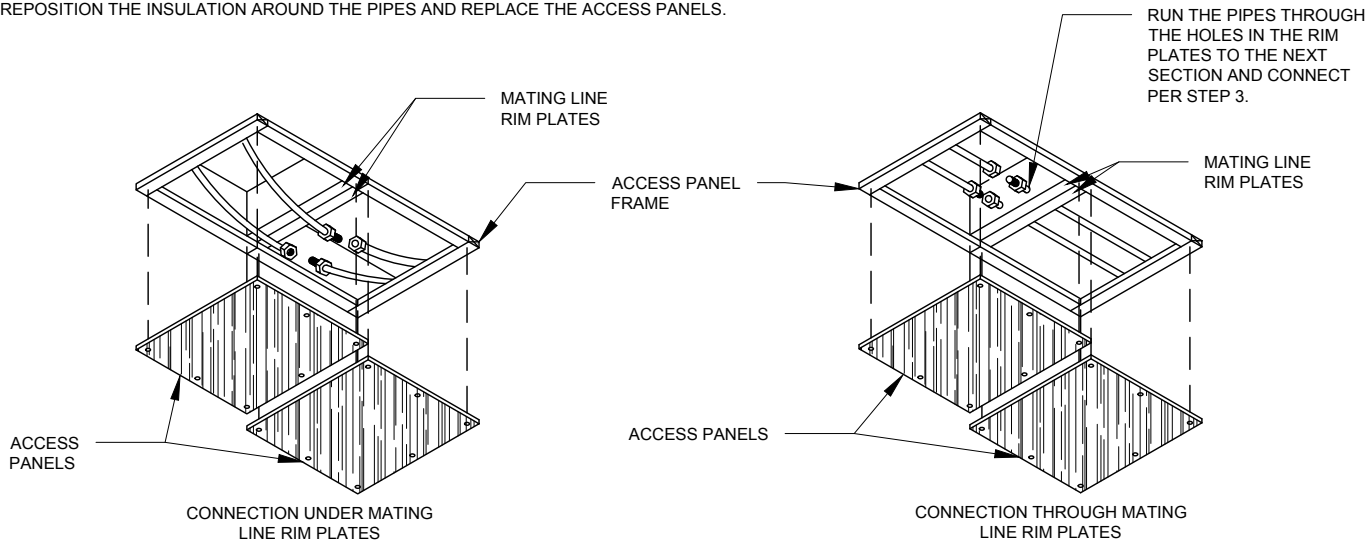
1. REMOVE SHIPPING COVERS FROM ALL EXPOSED PIPING OR FITTINGS THAT EXTEND BELOW THE BOTTOM BOARD.
2. INSPECT PIPING AND FITTINGS MAKING SURE THEY ARE CLEAN AND FREE OF BURRS.
3. ALL PIPE AND FITTING CONNECTIONS SHALL BE PER THE CEMENT MANUFACTURERS INSTRUCTIONS WHICH IS PROVIDED.
4. START THE DRAIN ASSEMBLY AT THE MOST REMOTE EXPOSED PIPING DROP-OUT FROM THE OUTLET AND WORK TOWARDS THE OUTLET LOCATION.
5. IT IS RECOMMENDED THAT TEMPORARY BLOCKING OR SUPPORT BE USED FOR THE ASSEMBLED DRAIN PIPING AS YOU PROCEED TO ACHIEVE A SLOPE TOWARDS THE OUTLET OF AT LEAST 1/4" PER FOOT.
6. IF A CROSSOVER CONNECTION IS REQUIRED USE ONE OF THE METHODS EXPLAINED PREVIOUSLY IN THIS CHAPTER.
7. WHEN ALL CONNECTIONS HAVE BEEN COMPLETED RELOCATE THE TEMPORARY SLOPE BLOCKING TO NO MORE THAN 4 FEET APART FOR PERMANENT DRAIN PIPING SUPPORT.

1 TYPICAL WASTE LINE

SCALE: N.T.S.

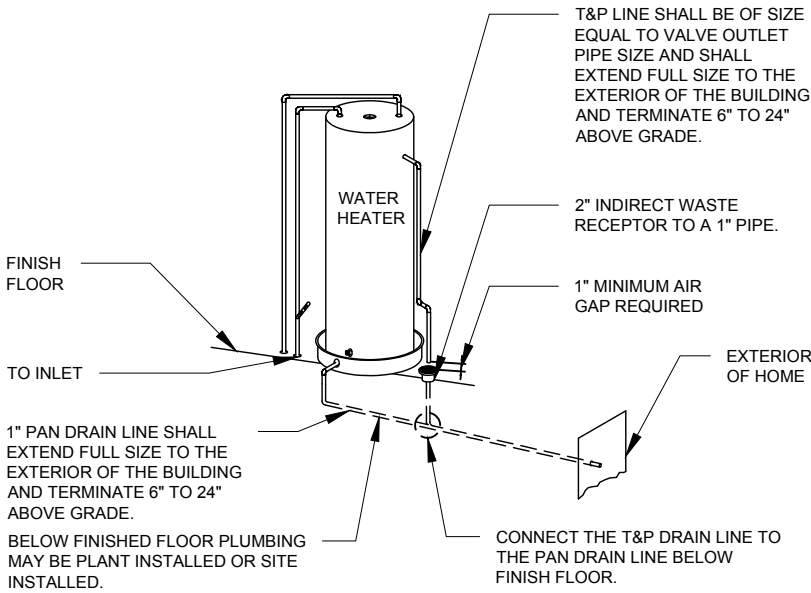
PROCEDURE:

1. REMOVE ACCESS PANEL FROM EACH SECTION
2. CONNECT THE HOT AND COLD WATER PIPES USING THE CONNECTORS INSTALLED ON THE ENDS OF THE PIPE. THE CONNECTOR FITTINGS ARE DESIGNED TO BE USED WITH -OUT ANY LUBRICANTS OR SEALANTS.
3. REPOSITION THE INSULATION AROUND THE PIPES AND REPLACE THE ACCESS PANELS.



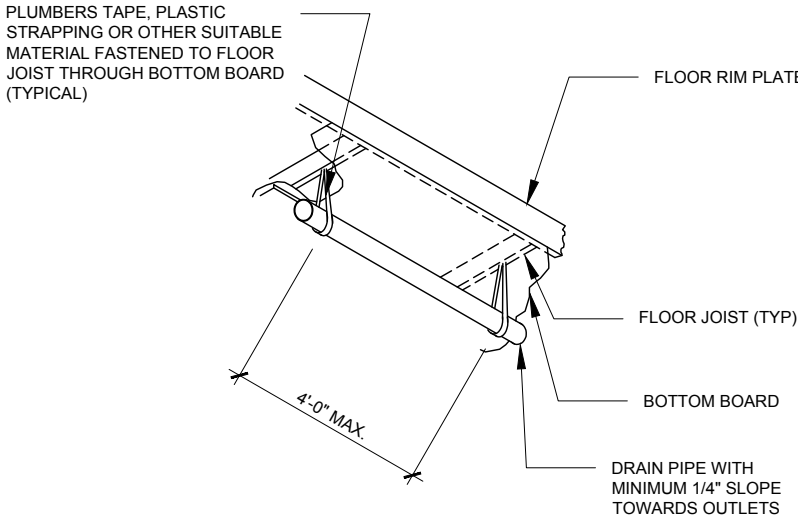
2 TYPICAL SUPPLY CROSSOVER CONNECTION

SCALE: N.T.S.



3 TYPICAL WATER HEATER DRAIN

SCALE: N.T.S.



4 TYPICAL WASTE LINE SUPPORT

SCALE: N.T.S.



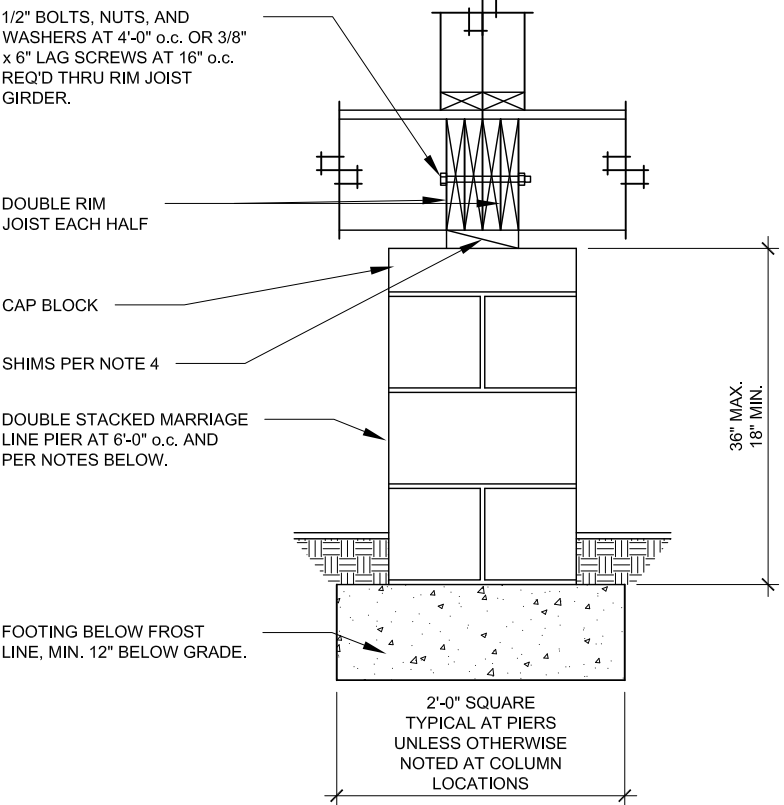
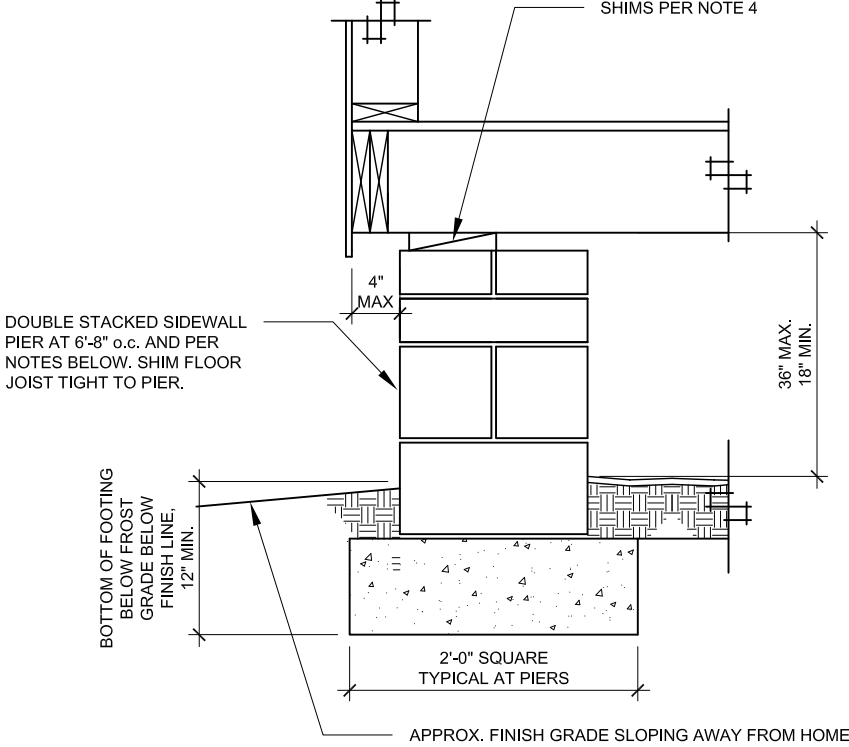
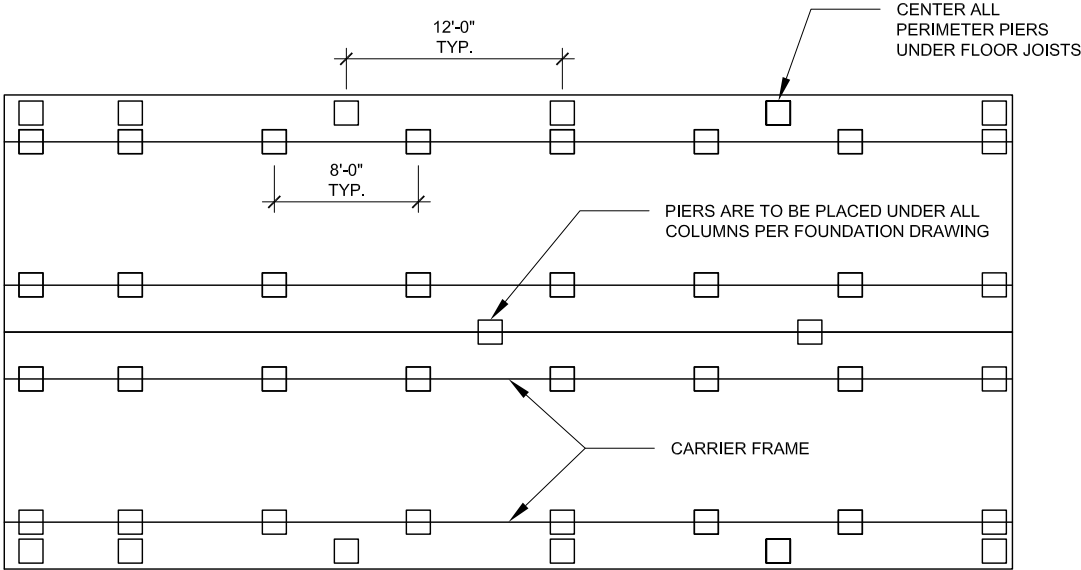
P.E. SEAL

THIRD PARTY SEAL

TITLE: PLUMBING INSTALLATION INFORMATION			
DRAWN BY:	B.R.	DATE:	10/18/2010
REVIEWED BY:		LAST REVISED:	7/16/2014
CHECKED BY:		CALC REF:	

CMH MANUFACTURING, INC.	
Home Office	
5000 Clayton Road, Maryville, TN 37804	
PH: 865.380.3000 FAX: 865.380.3781	
SHEET:	SU-5.0

Apr 20, 2017 - 4:20pm W:\ENG\Modular Packages\1 One Modular Package\Setup Manuals\Modular Installation Instructions-Display Set.dwg



1 Display Set - On Carrier

SCALE: N.T.S.

2 Display Set - Sidewall

SCALE: N.T.S.

3 Display Set - Mateline

SCALE: N.T.S.

TEMPORARY DISPLAY INSTALLATION INFORMATION

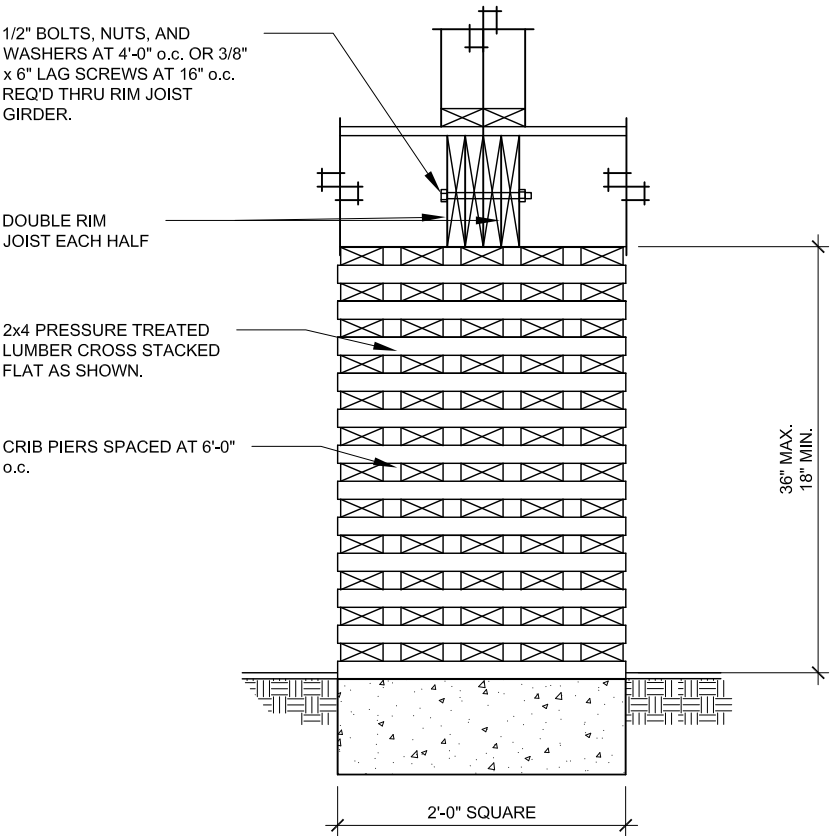
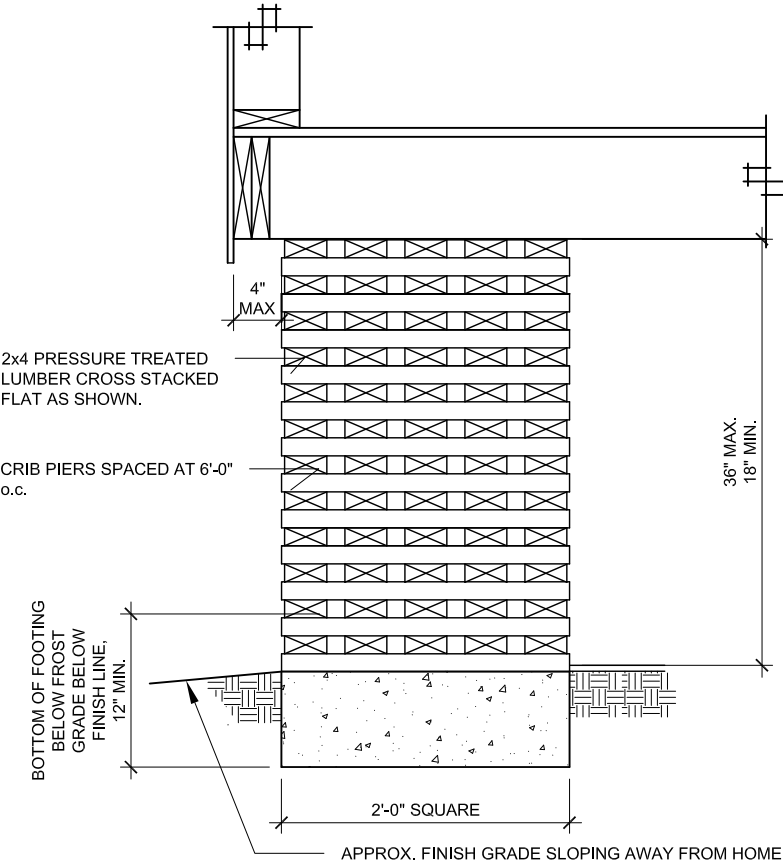
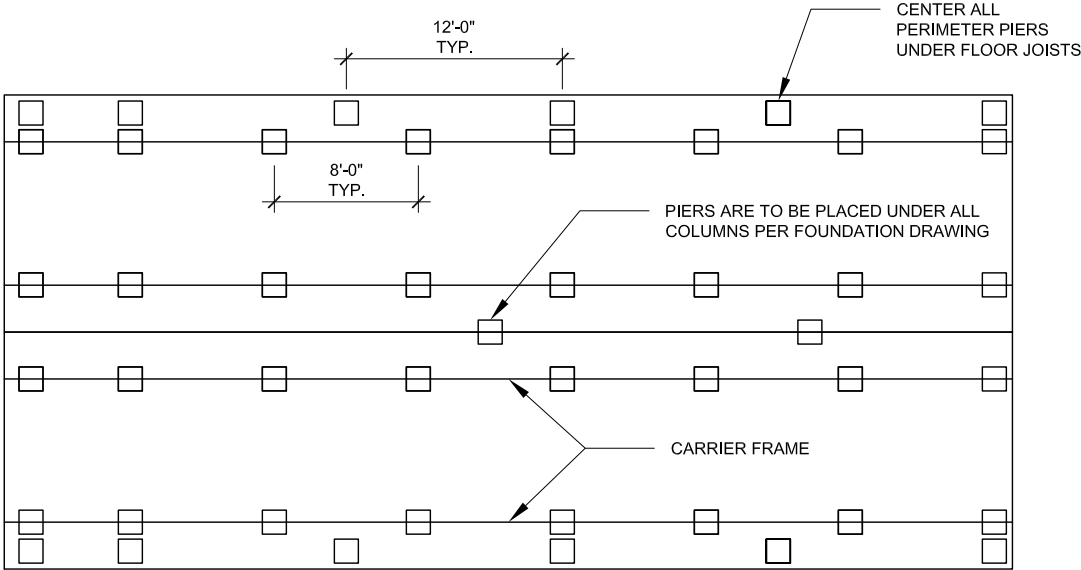
- PLEASE REFER TO MODEL SPECIFIC OFF FRAME FOUNDATION PLAN FOR MATING LINE PIER LOCATIONS.
- FOOTINGS MUST BE LEVEL IN ALL DIRECTIONS. PIERS ARE TO BE PLACED CENTERED ON THE FOOTING SO THAT THE FOOTING PROJECTION FROM THE PIER IS EQUAL FROM SIDE-TO-SIDE AND FRONT-TO-BACK. PIERS MUST BE LEVEL VERTICALLY ON ALL SIDES AND SQUARE WITH THE FOOTING.
- CONCRETE BLOCKS FOR PIERS ARE 8"x16"x8" NOMINAL SIZE, HOLLOW CELL LOAD BEARING CMU's MANUFACTURED IN CONFORMANCE WITH ASTM C90, GRADE "N". OPEN CELLS ARE ALIGNED VERTICALLY. THE DOUBLE OR SINGLE STACKED PIERS CAN BE DRY STACKED. THE TOP COURSE OR THE CAP BLOCKS SHALL BE PERPENDICULAR TO THE FLOOR JOIST.
- CAP BLOCKS MAY BE TWO INCH NOMINAL HARDWOOD, STEEL, OR 4" SOLID CONCRETE OR MASONRY BLOCKS. SHIMS SHALL BE AT LEAST 3 1/2" WIDE (7 1/4" WIDE FOR SIDEWALL SHIMS) AND 6" LONG AND ARE NOT TO EXCEED 1" IN THICKNESS. SHIMS SHALL BE PERPENDICULAR TO JOIST, FITTED AND DRIVEN TIGHT BETWEEN CAP BLOCKS AND JOIST.
- MARRIAGE LINE PIERS SHALL SUPPORT THE MARRIAGE WALL COLUMNS PER MODEL SPECIFIC FOUNDATION PLAN.
- SIDEWALL PIERS SHALL BE SPACED AT 12'-0" O.C. UNLESS OTHERWISE NOTED.
- SIDEWALL PIERS SHALL BE CENTERED ON A FLOOR JOIST.
- FOOTING SIZES ARE BASED ON PRESUMPTIVE ALLOWABLE SOIL BEARING PRESSURE OF 2,000 PSF.
- SEE GENERAL NOTES FOR DRAINAGE AND OTHER FOUNDATION REQUIREMENTS.
- AS AN ALTERNATE TO USING CONCRETE FOOTINGS, PER R403.2 OF THE IRC, USE 24" X 24" X 6" GRAVEL OR CRUSHED STONE. GRAVEL SHALL BE WASHED AND WELL GRADED. THE MAXIMUM STONE SIZE SHALL NOT EXCEED 3/4". GRAVEL SHALL BE FREE FROM ORGANIC, CLAYEY OR SILTY SOILS. SAND SHALL BE COARSE, NOT SMALLER THAN 1/16" GRAINS AND SHALL BE FREE FROM ORGANIC, CLAYEY OR SILTY SOILS. CRUSHED STONE SHALL HAVE A MAXIMUM SIZE OF 1/2".

- This detail is for temporary display (unoccupied) purposes and is designed to prevent serviceability issues that may result between factory construction and permanent set.
- Design is limited to gravity supports and does not address horizontal loads due to wind and seismic. Design is subject to local authority having jurisdiction.

THIRD PARTY SEAL

TITLE: DISPLAY SET INFORMATION			CMH MANUFACTURING, INC. Home Office 5000 Clayton Road, Maryville, TN 37804 PH: 865.380.3000 FAX: 865.380.3781
DRAWN BY: B.R.	DATE: 10/26/2010	SHEET: SU-6.0	
REVIEWED BY:	LAST REVISED: 7/16/2014		
CHECKED BY:	CALC REF:		

Apr 20, 2017 - 4:20pm W:\ENG\Modular Packages\1 One Modular Package\Setup Manuals\Modular Installation Instructions-Display Set.dwg



1 **Display Set**
SCALE: N.T.S.

2 **Display Set - Sidewall**
SCALE: N.T.S.

3 **Display Set - Mateline**
SCALE: N.T.S.

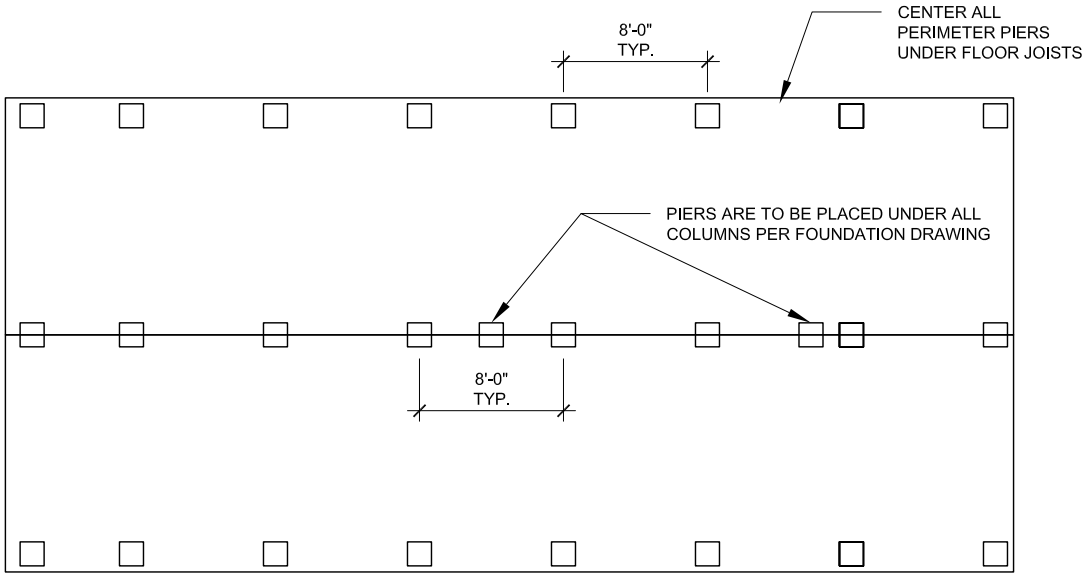
TEMPORARY DISPLAY INSTALLATION INFORMATION

- PLEASE REFER TO MODEL SPECIFIC OFF FRAME FOUNDATION PLAN FOR MATING LINE PIER LOCATIONS.
- FOOTINGS MUST BE LEVEL IN ALL DIRECTIONS. PIERS ARE TO BE PLACED CENTERED ON THE FOOTING SO THAT THE FOOTING PROJECTION FROM THE PIER IS EQUAL FROM SIDE-TO-SIDE AND FRONT-TO-BACK. PIERS MUST BE LEVEL VERTICALLY ON ALL SIDES AND SQUARE WITH THE FOOTING.
- CONCRETE BLOCKS FOR PIERS ARE 8"x16"x8" NOMINAL SIZE, HOLLOW CELL LOAD BEARING CMU's MANUFACTURED IN CONFORMANCE WITH ASTM C90, GRADE "N". OPEN CELLS ARE ALIGNED VERTICALLY. THE DOUBLE OR SINGLE STACKED PIERS CAN BE DRY STACKED. THE TOP COURSE OR THE CAP BLOCKS SHALL BE PERPENDICULAR TO THE FLOOR JOIST.
- CAP BLOCKS MAY BE TWO INCH NOMINAL HARDWOOD, STEEL, OR 4" SOLID CONCRETE OR MASONRY BLOCKS. SHIMS SHALL BE AT LEAST 3 1/2" WIDE (7 1/4" WIDE FOR SIDEWALL SHIMS) AND 6" LONG AND ARE NOT TO EXCEED 1" IN THICKNESS. SHIMS SHALL BE PERPENDICULAR TO JOIST, FITTED AND DRIVEN TIGHT BETWEEN CAP BLOCKS AND JOIST.
- MARRIAGE LINE PIERS SHALL SUPPORT THE MARRIAGE WALL COLUMNS PER MODEL SPECIFIC FOUNDATION PLAN.
- SIDEWALL PIERS SHALL BE SPACED AT 12'-0" O.C. UNLESS OTHERWISE NOTED.
- SIDEWALL PIERS SHALL BE CENTERED ON A FLOOR JOIST.
- FOOTING SIZES ARE BASED ON PRESUMPTIVE ALLOWABLE SOIL BEARING PRESSURE OF 2,000 PSF.
- SEE GENERAL NOTES FOR DRAINAGE AND OTHER FOUNDATION REQUIREMENTS.
- AS AN ALTERNATE TO USING CONCRETE FOOTINGS, PER R403.2 OF THE IRC, USE 24" X 24" X 6" GRAVEL OR CRUSHED STONE. GRAVEL SHALL BE WASHED AND WELL GRADED. THE MAXIMUM STONE SIZE SHALL NOT EXCEED 3/4". GRAVEL SHALL BE FREE FROM ORGANIC, CLAYEY OR SILTY SOILS. SAND SHALL BE COARSE, NOT SMALLER THAN 1/16" GRAINS AND SHALL BE FREE FROM ORGANIC, CLAYEY OR SILTY SOILS. CRUSHED STONE SHALL HAVE A MAXIMUM SIZE OF 1/2".

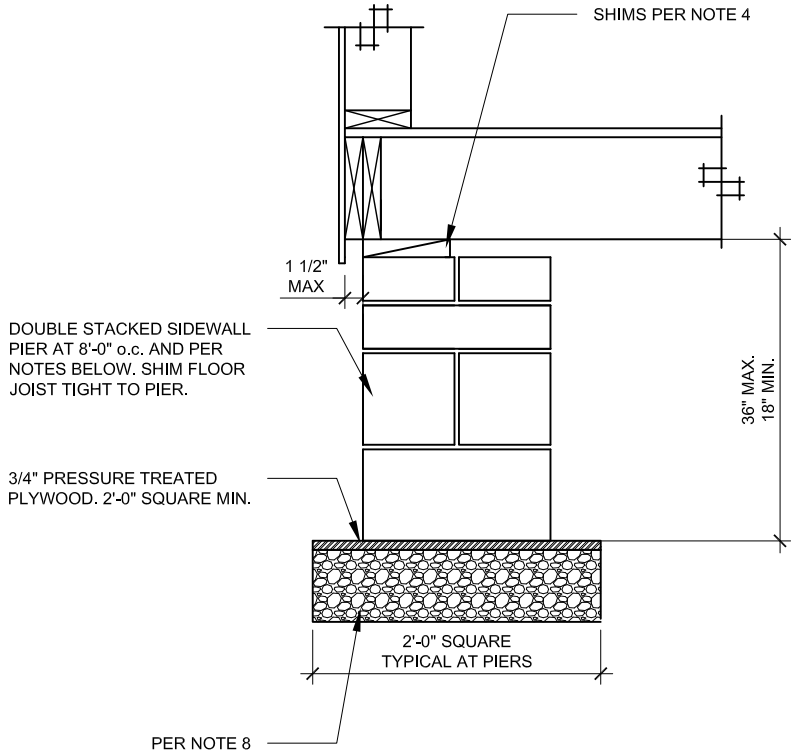
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- Design is limited to gravity supports and does not address horizontal loads due to wind and seismic. Design is subject to local authority having jurisdiction.



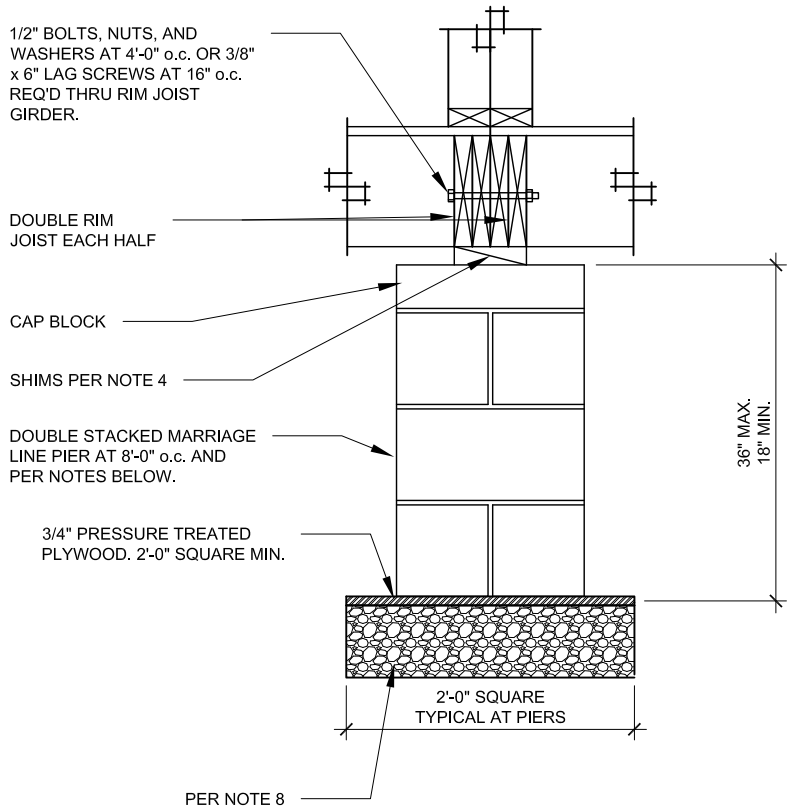
P.E. SEAL		THIRD PARTY SEAL	
TITLE:		DISPLAY SET INFORMATION	
DRAWN BY:		B.R.	DATE: 10/26/2010
REVIEWED BY:			LAST REVISED: 7/16/2014
CHECKED BY:			CALC REF:
		CMH MANUFACTURING, INC. Home Office 5000 Clayton Road, Maryville, TN 37804 PH: 865.380.3000 FAX: 865.380.3781	
		SHEET: SU-6.1	



1 Display Set - Off Carrier
SCALE: N.T.S.



2 Display Set - Sidewall
SCALE: N.T.S.



3 Display Set - Mateline
SCALE: N.T.S.

TEMPORARY DISPLAY INSTALLATION INFORMATION

1. FOOTINGS MUST BE LEVEL IN ALL DIRECTIONS. PIERS ARE TO BE PLACED CENTERED ON THE FOOTING SO THAT THE FOOTING PROJECTION FROM THE PIER IS EQUAL FROM SIDE-TO-SIDE AND FRONT-TO-BACK. PIERS MUST BE LEVEL VERTICALLY ON ALL SIDES AND SQUARE WITH THE FOOTING.
2. CONCRETE BLOCKS FOR PIERS ARE 8"x16"x8" NOMINAL SIZE, HOLLOW CELL LOAD BEARING CMU's MANUFACTURED IN CONFORMANCE WITH ASTM C90, GRADE "N". OPEN CELLS ARE ALIGNED VERTICALLY. THE DOUBLE OR SINGLE STACKED PIERS CAN BE DRY STACKED. THE TOP COURSE OR THE CAP BLOCKS SHALL BE PERPENDICULAR TO THE FLOOR JOIST.
3. CAP BLOCKS MAY BE TWO INCH NOMINAL HARDWOOD, STEEL, OR 4" SOLID CONCRETE OR MASONRY BLOCKS. SHIMS SHALL BE AT LEAST 3 1/2" WIDE (7 1/4" WIDE FOR SIDEWALL SHIMS) AND 6" LONG AND ARE NOT TO EXCEED 1" IN THICKNESS. SHIMS SHALL BE PERPENDICULAR TO JOIST, FITTED AND DRIVEN TIGHT BETWEEN CAP BLOCKS AND JOIST.
4. MARRIAGE LINE PIERS SHALL SUPPORT THE MARRIAGE WALL COLUMNS PER MODEL SPECIFIC FOUNDATION PLAN.
5. SIDEWALL PIERS SHALL BE SPACED AT 8'-0" O.C. UNLESS OTHERWISE NOTED.
6. FOOTING SIZES ARE BASED ON PRESUMPTIVE ALLOWABLE SOIL BEARING PRESSURE OF 2,000 PSF.
7. SEE GENERAL NOTES FOR DRAINAGE AND OTHER FOUNDATION REQUIREMENTS.
8. PER R403.2 OF THE IRC, USE 24" X 24" X 6" GRAVEL OR CRUSHED STONE. GRAVEL SHALL BE WASHED AND WELL GRADED. THE MAXIMUM STONE SIZE SHALL NOT EXCEED 3/4". GRAVEL SHALL BE FREE FROM ORGANIC, CLAYEY OR SILTY SOILS. SAND SHALL BE COARSE, NOT SMALLER THAN 1/16" GRAINS AND SHALL BE FREE FROM ORGANIC, CLAYEY OR SILTY SOILS. CRUSHED STONE SHALL HAVE A MAXIMUM SIZE OF 1/2".

- **WARNING:** This home weighs several tons. Adequate support blocking must be used to safeguard personnel and the structure during all installation procedures. Personal should not be permitted to work under the home where injury might result should the home accidentally slip during installation process.
- Only experienced personal should perform this type of display set.
- This detail is for temporary display (unoccupied) purposes and is designed to prevent serviceability issues that may result between factory construction and permanent set.
- Design is limited to gravity supports and does not address horizontal loads due to wind and seismic. Design is subject to local authority having jurisdiction.

		THIRD PARTY SEAL	
P.E. SEAL			
TITLE: DISPLAY SET INFORMATION			
DRAWN BY: B.R.		DATE: 10/26/2010	
REVIEWED BY:		LAST REVISED: 7/16/2014	
CHECKED BY:		CALC REF:	
		CMH MANUFACTURING, INC. Home Office 5000 Clayton Road, Maryville, TN 37804 PH: 865.380.3000 FAX: 865.380.3781	
		SHEET: SU-6.2	