INLINE ENGINEERING, INC.
990 Industrial Road, Suite 202 TEL 650.591.2700 · FAX 650.591.2777
San Carlos, California 94070

Summary of Contents

990 Industrial Road, Suite 202
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Inspection Sequence

Superintendent Copy

Before Inspections

- Weekly schedules are issued by Greenbriar.
  - Schedules need to include inspections and re-inspections.
  - Schedules need to be faxed to InLine's office by the Friday on the week prior to inspections.
- Any changes to the issued schedules are to be faxed to InLine's office.

Check-In Process

- InLine inspector will check in with Greenbriar at the site;
  - Can check in at trailer or by phone.
  - Recap what inspections are to be done.
  - Sometimes Greenbriar will cancel or add minor inspections, or request a specific order of inspection.

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Inspection Process

- First inspection (assume it is not a Recheck):
  - InLine writes a CORRECTION LIST of all items for the first inspection.
  - InLine will verbally identify corrections to Greenbriar and/or the contractor's foreman. See *Inspection Procedures* for additional information.
  - InLine will mark-up all items on the framing (will not mark on surfaces that will be exposed). See *Inspection Procedures* for additional information.
- Second Inspection (assume it is a Recheck):
  - On the original CORRECTION LIST, InLine will add the current date in the "Recheck Box".
  - InLine will circle all items that have been completely corrected.
  - The revised CORRECTION LIST will be reissued at the end of the day (regardless if all items are acceptable or if a recheck is needed).

Reports Issued to Greenbriar

- Paper Work: After Last Inspection of the Day
  - InLine will issue a SITE REPORT with all CORRECTION LISTS attached.
    - The SITE REPORT lists all inspections for the day and indicates where re-inspections are needed.
    - The CORRECTION LIST identifies every specific correction item for a given inspection.
  - One copy is issued to the site Superintendent.
    - This is usually given to Assistant Superintendent (depends on project).
  - One copy is faxed to Inline Engineering (from job site trailer).

Leaving Project

- InLine will check out with Greenbriar by issuing the SITE REPORT.

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Foundation Inspection

Procedures

Required to Start

- People needed at inspection:
  - Greenbriar representative (usually assistant superintendent).
  - Contractor's foreman (to direct workers and sub-contractors).
  - Adequate number of laborers to complete work during the inspection.
- Materials needed:
  - Sufficient quantities of construction materials need to be on site to complete corrections.
  - Tools and equipment are needed to complete corrections: Includes tools for cutting and bending rebar, for tying rebar, for cleaning trenches, for leveling sand, etc.
  - String lines at top of slab: One string is required at each square in each direction.
- Site preparation:
  - Provide enough room to safely walk around the foundation so dirt or garbage does not fall into the trenches.
  - Tie and support reinforcing steel with dobbies.

Inspection Procedure

- InLine will walk around the foundation and verbally identify items to be corrected:
  - Check exterior trenches, interior trenches, slabs and pads.
  - Check for interference of non-structural items such as electrical conduit, plumbing pipes, utilities, etc.
  - Check for placement of wood sleepers at doors.
  - See *Foundation Checklist* for specific items to be checked.
- The corrections should be done during the inspection to avoid the need for re-checks.
  - Minor corrections are usually made during the walk around.
  - Significant corrections are either checked immediately after completion of the walk around or are rescheduled for another day.
- When slab corrections are not completed during the scheduled inspection, a short general list is issued.

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Foundation Checklist

Specific Items to Check

MATERIALS

- Rebar grade.
- Moisture barrier, thickness per plans.
- Hardware grade and manufacturer.
- Grade of bolts for Hardy Panels.
- Sleepers to be pressure treated with coated nails per plans.
- Steel products to be coated per drawings.

CONCRETE

- Strength (2500psi) and slump (4" max.) per plans.
- Follow specifications and plans for concrete mix (InLine approved mix).
- Submit testing engineer's report for each lot.
- Make sure that one pour system is within 2-3 hours total pour time (complete slab in the house and garage with footing).
- Remove over spilled concrete, especially at driveways and walkways.

TRENCHES

- Install forms.
- Trench at all footings (depth and width per plans).
- Exterior and garage footings.
- Interior footings.
- Pop outs, fireplaces.
- At column in garage (where shown).
- Tie beams.
- Clean all footings.

PADS

- Install rock (per plans and soils report).
- Install moisture barrier (thickness per plans, length per details).
- Do not cover reinforcing in footings.
- No air pockets (cut at corners, plumbing or conduit).
- Cover all areas shown on the plans.
- No holes in moisture barrier (repair per soils engineer).
- Install sand per plans.

REINFORCING STEEL

- Steel grade; size, type per plans.
- Footing reinforcing with bottom bars supported by dobbies in trench.
- Top and bottom bars per plans (3" apart).
- Vertical placement of rebar:
    - Slab steel to be centered in slab.
    - Top bars of footings to be in same plane as slab steel.
- Tie steel where shown.
- Overlaps 24" minimum: See Sheet S0.1.
- Pop outs, fireplaces, at column in garage.
- Tie beams: Top and bottom bars, ties at 24" minimum.
- Clearance from dirt or sand is minimum 3" (use 3" dobbies).
- Clearance from the top and forms is minimum 1-1/2".
- Clearance at the perimeter (top bars at the end 1-1/2").

HOLDOWNS & HARDY FRAME BOLTS

- Place all holdowns at correct locations, set in place.
    - Secure bolts in place with tie-wire.
- Do not raise (or wet set) holdown bolts.
- Place all hardy panel bolts at correct locations.
    - Install washer and nuts per plan details.
    - Deeper trench depth at bolts (see plans).
- Do not raise (or wet set) hardy panel bolts.
- 2-nuts and 1-washer is required at bottom of all thread-rods.
- Clearance from the forms and soil (secure bolts with wire).
- Length of holdown bolt (embedment).
- Length of hardy panel bolts (embedment per details).
- Special attention to placement of bolts 1” or larger (can not be epoxied later).
- Special attention to placement of Hardy Panel bolts (these can not be epoxied later).

SLAB

- Thickness per plans.
- Location over footing – 12” of footing width required directly below slab.
- Rebar size, length, and grade per plans.
- Rebar spacing - per plans.
- Rebar location - clearance at top and bottom.
- Enough dobbies to keep steel mat in place (48" o.c. maximum spacing).
- Ties at intersection of rebars: minimum every 3rd intersection.
- Wet before placing concrete - do not allow steel to get muddy.
- Trim bar in stem at garage (stem height limited, see plans).

ANCHOR BOLTS

- Size: diameter, length and embedment.
- Minimum number needed at shear walls.
- Maximum spacing at 6' o.c. (unless otherwise noted) at all shear, exterior and garage walls.
- Minimum 4" and maximum 9" anchor bolt distance from the end of sill plate.
- Minimum 2 per piece of sill plate (unless otherwise noted).
- Sill anchors at pop-outs and short sills (MAS mudsill anchors).
- Secure in place with tie-wire when required by City Building Department.

RETAINING WALL

- Footing depth and width per plans (with or without key).
- Reinforcing steel location, size and grade per plans.
- Vertical rebar in wall at correct face of wall (see details).
    - Usually at back face when top of wall is not braced.
    - Location relative to wall face will vary when wall is braced at top.
- Wall thickness size per plans.
- Wall reinforcing per plans.
- Beam pocket size and location per plans.
- Holdowns, anchor bolts (see above).

SPREAD FOOTINGS

- Footing depth and width per plan.
- Reinforcing steel location, size and grade per plans.
- Stem thickness per plans.
- Stem reinforcing per plans.
- Stem pocket for floor framing (size and location).
- Holdown bolts and anchor bolts, secure to rebar with tie-wire.

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Foundation Inspection for Two-Pour System

Procedures

First Inspection, Before 1st Pour (Footings)

Required to Start

- People needed at inspection:
  - Greenbriar representative (usually assistant superintendent).
  - Contractor's foreman (to direct workers and sub-contractors).
  - Adequate number of laborers to complete work during the inspection.
- Materials needed:
  - Sufficient quantities of construction materials need to be on site to complete corrections.
  - Tools and equipment are needed to complete corrections: Includes tools for cutting and bending rebar, for tying rebar, for cleaning trenches, etc.
  - Point of reference at top of slab so that total depth of footings can be verified, this can be a string line or a form board.
- Site preparation:
  - Provide enough room to safely walk around the foundation so dirt or garbage does not fall into the trenches.
  - Tie and support reinforcing steel with dobbies.

Inspection Procedure

- InLine will walk around the foundation and verbally identify items to be corrected:
  - Check exterior trenches, interior trenches.
  - Check for interference of non-structural items such as electrical conduit, plumbing pipes, utilities, etc.
  - See *Foundation Checklist, 1st Pour* for specific items to be checked.
- The corrections should be done during the inspection to avoid the need for re-checks.
  - Minor corrections are usually made during the walk around.
  - Significant corrections are either checked immediately after completion of the walk around or are rescheduled for another day.
- When footing corrections are not completed during the scheduled inspection, a short general list is issued.

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Foundation Checklist, 1st Pour

Specific Items to Check

First Inspection, Before 1st Pour (Footings)

MATERIALS

- Rebar grade.
- Hardware grade and manufacturer.
- Grade of bolts for Hardy Panels.
- Steel products to be coated per drawings.

CONCRETE

- Strength (2500psi) and slump (4" max.) per plans.
- Follow specifications and plans for concrete mix (InLine approved mix).
- Submit testing engineer's report for each lot.
- Make sure that first pour is complete within 2 hours total pour time (complete all footings).
- Remove over spilled concrete, or concrete placed too high (see details).

TRENCHES

- Trench at all footings (depth and width per plans).
- Exterior and garage footings.
- Interior footings.
- Pop outs, fireplaces.
- At column in garage (where shown).
- Tie beams.
- Clean all footings.

REINFORCING STEEL

- Steel grade; size, type per plans.
- Footing reinforcing bottom bars per plans (3" apart) with dobbies in trench.
- Dowels per plan. If wet set, dowels must be inspected by SPECIAL INSPECTOR during concrete placement.
- Tie steel where shown.
- Overlaps 24" minimum: See Sheet S0.1.
- Pop outs, fireplaces, at column in garage.
- Tie beams: Top and bottom bars, ties at 24" minimum.

HOLDOWNS & HARDY FRAME BOLTS

- Place all holdowns at correct locations, set in place.
- Secure bolts in place with tie-wire.

- Do not raise (or wet set) holdown bolts.
- Place all hardy panel bolts at correct locations.
    - Install washer and nuts per plan details.
    - Deeper trench depth at bolts (see plans).
- Do not raise (or wet set) hardy panel bolts.
- 2-nuts and 1-washer required at bottom of all thread-rods.
- Clearance from the forms and soil (secure bolts with wire).
- Length of holdown bolt (embedment).
- Length of hardy panel bolts (embedment per details).
- Special attention to placement of bolts 1" or larger (can not be epoxied later).
- Special attention to placement of Hardy Panel bolts (these can not be epoxied later).

ANCHOR BOLTS

- Size: diameter, length and embedment.
- Minimum number needed at shear walls.
- Maximum spacing at 6' o.c. (unless otherwise noted) at all shear, exterior and garage walls.
- Minimum 4" and maximum 9" anchor bolt distance from the end of sill plate.
- Minimum 2 per piece of sill plate (unless otherwise noted).
- Sill anchors at pop-outs and short sills (MAS mudsill anchors). At very short sills, anchors can be installed before 2nd Pour.
- Secure in place with tie-wire when required by City Building Department.

RETAINING WALL

- Footing depth and width per plans (with or without key).
- Vertical rebar location in wall at correct face of wall(see details).
    - Usually at back face when top of wall is not braced.
    - Location relative to wall face will vary when wall is braced at top.
- Reinforcing steel location, size and grade per plans.
- Reinforcing steel in footing and extended into wall cavity.

SPREAD FOOTINGS

- Footing depth and width per plan.
- Reinforcing steel location, size and grade per plans.

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Foundation Inspection for Two-Pour System

Procedures

Second Inspection, Before 2nd Pour (Slabs)

Required to Start

- People needed at inspection:
  - Greenbriar representative (usually assistant superintendent).
  - Contractor's foreman (to direct workers and sub-contractors).
  - Adequate number of laborers to complete work during the inspection.
- Materials needed:
  - Sufficient quantities of construction materials need to be on site to complete corrections.
  - Tools and equipment are needed to complete corrections: Includes tools for cutting and bending rebar, for tying rebar, for cleaning footings, for leveling sand, etc.
  - String lines at top of slab: One string is required at each square in each direction.
- Site preparation:
  - Tie and support reinforcing steel with dobbies.

Inspection Procedure

- InLine will walk around the foundation and verbally identify items to be corrected:
  - Check exterior footings, interior footings, slabs and pads.
  - Check for presence of water stop and moisture barrier at locations shown on the details. The water stop and moisture barrier material, manufacturer, and installation are checked by others.
  - Re-check the anchor bolts and holdown bolts that were placed before 1st Pour. Replacement locations for damaged bolts will be marked with paint so they can be added. Holdown bolts need to be installed prior to placing the slab concrete.
  - Check for interference of non-structural items such as electrical conduit, plumbing pipes, utilities, etc.
  - See *Foundation Checklist, 2nd Pour* for specific items to be checked.
- The corrections should be done during the inspection to avoid the need for re-checks.
  - Minor corrections are usually made during the walk around.
  - Significant corrections are either checked immediately after completion of the walk around or are rescheduled for another day.
- When footing corrections are not completed during the scheduled inspection, a short general list is issued.

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Foundation Checklist, 2nd Pour

Specific Items to Check

Second Inspection, Before 2nd Pour (Slabs)

MATERIALS

- Rebar grade.
- Moisture barrier, thickness per plans.
- Water stop (by others).
- Hardware grade and manufacturer.
- Grade of bolts for Hardy Panels.
- Sleepers to be pressure treated with coated nails per plans.
- Steel products to be coated per drawings.

CONCRETE

- Strength (2500psi) and slump (4" max.) per plans.
- Follow specifications and plans for concrete mix (InLine approved mix).
- Submit testing engineer's report for each lot.
- Make sure that second pour is complete within 2 hours total time (complete slab in the house and garage).

FOOTINGS

- Install forms for slab at exterior footings.
    - The slab to be over the entire footing width as specified on plans.
    - The portion of the footing that extends past the edge of slab (over-pour) does not increase the footing width.
- Depth of slab over all footings per plans (remove overspill).
- Clean 1st pour concrete at all footings.
    - No loose dirt on top of footings.
    - Brush surface and air blast if dirt is dry and loose.
    - Water blast surface to remove mud or ground-in dirt.
    - Clean per manufacturer of binding agent when needed for waterstop.
- Dowels per plan (length, overlap).
- Presence of water stops (inspection of type and installation by others).

PADS

- Install rock (per plans and soils report).
- Install moisture barrier (thickness per plans, length per details).
- Do not cover reinforcing steel.
- Do not cover concrete in the footings.
- No air pockets (cut at corners, plumbing or conduit).
- Cover all areas shown on the plans.

- No holes in moisture barrier.
- Install sand per plans.

REINFORCING STEEL

- Steel grade; size, type per plans.
- Footing reinforcing: Top bars per plans (3" apart).
- Vertical placement of rebar:
  - Slab steel to be centered in slab.
  - Top bars of footings to be in same plane as slab steel.
- Tie steel where shown.
- Overlaps 24" minimum: See Sheet S0.1.
- Pop outs, fireplaces, at column in garage.
- Tie beams: Top bars, ties at 24" minimum (as occurs).
- Clearance from dirt or sand is minimum 3" (use 3" dobbies).
- Clearance from the top and forms is minimum 1-1/2".
- Clearance at the perimeter (top bars at the end 1-1/2").
- Clearance from water stop.

HOLDOWNS

- Clearance from the forms and soil (secure bolts with wire).
- Check for bent or damaged bolts: mark damaged bolts with paint for replacement.
- Re-check placement of all holdown bolts placed in 1st Pour: replacement bolts will need to be drilled into the footings to provide embedment depth as shown on details.

SLAB

- Thickness per plans.
- Rebar size, length, and grade per plans.
- Rebar spacing - per plans.
- Rebar location - clearance at top and bottom.
- Enough dobbies to keep steel mat in place (48" o.c. maximum spacing).
- Ties at intersection of rebars: minimum every 3rd intersection.
- Wet before placing concrete - do not allow steel to get muddy.
- Trim bar in stem at garage (stem height limited, see plans).

ANCHOR BOLTS

- Clearance from forms and soil (or use bent bolts).
- Re-check placement of all anchor bolts placed in 1st Pour: replacement bolts will need to be drilled into the footings to provide 7" minimum embedment.
- Sill anchors at pop-outs and short sills (MAS mudsill anchors).

RETAINING WALL

- Stem reinforcing steel location, size and grade per plans.

- Wall thickness size per plans.
- Vertical rebar in wall at correct face of wall (see details).
    - Usually at back face when top of wall is not braced.
    - Location relative to wall face will vary when wall is braced at top.
- Stem placement in relation to footing: correct distance from heel.
- Beam pocket size and location per plans.
- Corner steel per details.
- Bolts for attachment of non-structural items.
- Expansion joint material.
- Holdowns, anchor bolts (see above).

SPREAD FOOTINGS

- Stem reinforcing steel location, size and grade per plans.
- Stem thickness per plans.
- Stem pocket for floor framing (size and location).
- Holdowns, anchor bolts (see above).

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Additional Inspections for Two-Pour System

By Others

At Various Stages

During 1st Pour (Footings)

- Soil Inspection:
  - Soils Engineer to verify that soil in trenches is acceptable.
  - Soils Engineer is to verify that the footing depth recommended in report is acceptable (footings can not be reduced in depth without approval from the Structural Design Engineer).
- Dowels between footing and slab: Check size, placement and installation.
- Anchor bolts: Check size, placement and installation for all wet set anchor bolts.
- Holdown bolts: Check size, placement and installation for all wet set holdown bolts.
- Concrete: Check concrete for compliance with project standards.
  - Check that slump is 4 inches or less (measured at end of truck).
  - Verify water/cement ratio is correct (normally ranges from 0.45-0.55).
  - Check delivery ticket.
- Verify cleaning of materials:
  - The tops of all footings are to be clean of all dirt, sand, rock, curing compound, etc. prior to placing the slab concrete.
  - Reinforcing steel is to be clean of dirt and excess concrete spill.
- Water stop installation:
  - Concrete is to be smooth below water stop.
  - Check that binding agent was applied to concrete below water stop.
  - Check that handling, storage, and installation of water stop meets with manufacturer's requirements.
- Concrete placement: Verify that concrete is placed per standards.
- Additional checks as required by drawings, specifications, building department, building code, etc.

After 1st Pour (Footings)

- Installation of chemical (epoxy) adhered holdown bolts.

During 2nd Pour (Slabs)

- Sand and rock: Check type, thickness and moisture of material.
- Vapor barrier: Check thickness and placement.
  - Ends of vapor barrier are to extend to side of footing as shown on drawing.
  - Verify that membrane is not punctured.
  - Repairing tears in membrane per soils report.
  - Sealing membrane around pipes per soils report.

After 2nd Pour (Slabs)

- Installation of chemical (epoxy) adhered anchor bolts.
- Zip strips or scoring of slab per specifications.
- Installation of curing compound per manufacturer's specifications.

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Anchor Bolt Inspection

Procedures

Required to Start

- People needed at inspection:
  - InLine can inspect without framer or contractor.
- Materials needed:
  - None.
- Site preparation:
- When to schedule:
  - For slab-on-grade, inspection can be done any time after roof and shear inspection.
  - For spread footings with framed-up floors, anchor bolt inspection must be done before the floor joist inspection.

Inspection Procedure (Slab-on-Grade)

- InLine will develop a list of correction items.
  - This list is for use by the foundation contractor so that missing bolts can be epoxied in place prior to the Interior Frame Inspection.
- The corrections can be done after the inspection.
- Re-inspections by InLine would be made after corrections are complete.
  - Chemical adhered (epoxy) anchor bolts need SPECIAL INSPECTION.

Inspection Procedure (Framed-up Floor)

- InLine will develop a list of correction items.
  - This list is for use by the foundation contractor so that missing bolts can be epoxied in place. Inspection approval needs to be complete prior to installing the floor sheathing.
  - This list is for use by the framing contractor to identify locations to add washers and tighten nuts. Inspection approval needs to be complete prior to installing the floor sheathing.
- Corrections from both the Anchor Bolts and Floor Framing Inspection need to be approved prior to installing floor plywood.
- Re-inspections by InLine would be made after corrections are complete.
  - Chemical adhered (epoxy) anchor bolts need SPECIAL INSPECTION.

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Anchor Bolt Checklist

Specific Items to Check

MATERIALS

- Anchor bolt diameter, length and grade.
- 2”x2”x3/16” square washers.
- Non-shrink grout material and manufacturer, 7,500 psi strength.
- Dry-pack material and manufacturer.
- Epoxy type and manufacturer.

HOLDOWNS

- Verify general placement of all holdowns bolts (not measured).
- Verify general placement of all Hardy Panel bolts (not measured).
- Distance from the edge of concrete and sill plate.

ANCHOR BOLTS

- Verify diameter of anchor bolts.
- Verify extension of anchor bolts.
- Minimum number needed at shear walls.
- Maximum spacing at 6' o.c. (unless otherwise noted) at all shear, exterior and garage walls.
- Minimum 4" and maximum 9" anchor bolt distance from the end of sill plate.
- Minimum 2 per piece of sill plate (unless otherwise noted).
- Sill anchors at pop-outs and short sills (MAS mudsill anchors).

ANCHOR BOLTS (Framed-up Floor)

- Square washers installed.
- Nuts tightened.

DRYPACK and GROUT

- Structural non-shrink grout below Hardy Panels (7,500 psi).
- Dry-pack voids under sill plate.

REPAIRS

- Chemical adhered (epoxy) anchor bolts need to be embedded 7” minimum: SPECIAL INSPECTION is required.
- Chemical adhered (epoxy) holdown bolts need to be embedded per plans: SPECIAL INSPECTION is required.
- Fill over-drilled sill plate holes with epoxy per detail on plans.
- Dry-pack below voids under sill plate.

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Floor Joist Inspection

Procedures

Required to Start

- People needed at inspection.
  - Assistant superintendent from developer.
  - Framing foreman is needed at some time during inspection to review corrections.
  - Pick-up person to make corrections if same day approval is needed.
- Materials needed:
  - Stairs to be installed for access to floor.
  - OPTION: When stairs are not yet installed, developer is to provide an extension ladder that is secured in place.
- Floor preparation:
  - Provide a relatively clean area to safely walk around the building. Excessive lumber debris, nails, etc. need to be cleaned out prior to inspection.
  - No work overhead during inspection from below the floor.
- When to schedule:
  - After installing the floor framing.

Inspection Procedure

- InLine will develop a list of correction items.
  - Walk under the floor to check beams, joists, connections and other items on the *Floor Framing Checklist*.
  - Climb the ladder at all bearing and shear walls to check for connections: Nailing at TJI's or clips at sawn lumber.
  - The correction items would be marked on the framing and a correction list would be developed.
- Minor corrections can be done after the inspection.
  - It is common to make corrections immediately following the floor check so the re-check can be made the same day.
  - Re-inspection would be done immediately following the inspection if corrections are complete.
- The Floor Framing corrections need to be complete and approved prior to installing the sub-floor plywood.

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Floor Joist Checklist

Specific Items to Check

MATERIALS

- Verify lumber grade.
- Verify hardware manufacturer.
- Verify joist manufacturer.

TJI

- Joist size and spacing per plans:
  - Joist size varies at collectors; see detail over each shear wall.
  - Joist size varies at shear walls; see detail over each shear wall.
- Perimeter rim joists grade and size:
  - 1-1/2" minimum thickness.
  - Maximum thickness depends on manufacturer for bearing lengths.
- Connect double TJI joists per details.
- Connect spliced TJI joists per details.

SAWN JOISTS

- Joist size, lumber grade, connections and spacing per plans.
- Connect double and triple joists per details.

BEAMS

- Beam sizes, lumber grade and connections per plans.
- All beam sizes and connections:
  - Column caps.
  - Straps from beam to post.
  - Straps from beams to top plates.

CONNECTIONS

- Joist hangers installed and completely nailed.
- Beam hangers installed and completely nailed.
- Verify number and size of nails at TJI connection to top plate:
  - At shear wall locations per schedule.
  - At bearing wall locations per details.
- Verify number and size of clips at sawn lumber connection to top plate:
  - At shear wall locations per schedule.
  - At bearing wall locations per details.
- Beam nailing connection to top plate at bearing wall locations.
- Beam hardware at posts: Column caps nailed or bolted at concealed locations.
- Hardware installed per manufacturer unless a specific repair or detail is provided.

FLOOR BLOCKS

- Verify blocks, size, nail size, and connections for details:
  - At all bearing walls.
  - At all shear walls.
  - Size of TJI blocks vary at shear walls, see details.
- Solid lumber blocks
  - At double #8 and #9 shear walls.
  - At #10 shear walls.
  - At Hardy Panel walls.
- Blocks at 4' o.c. along perimeter wall where joists are parallel to wall.

COLLECTORS

- Horizontal straps at collectors:
  - Joists to top plates.
  - Joist to Joist at collector splice.
  - Beam to top plate.
- 2x4 flat blocks at collectors perpendicular to floor joists.

POSTS

- Mark any missing posts that support beams.

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Sub-Floor Plywood Inspection

Procedures

Required to Start

- People needed at inspection.
  - Assistant superintendent from developer.
  - Framing foreman is needed at some time during inspection to review corrections.
  - Pick-up person to make corrections if same day approval is needed.
- Materials needed:
  - Stairs to be installed for access to floor.
  - OPTION: When stairs are not yet installed, developer is to provide an extension ladder that is secured in place.
- Floor preparation:
  - Provide a relatively clean area to safely walk around the building. Excessive lumber debris, nails, etc need to be cleaned out prior to inspection.
  - No work over head while inspection from below the floor.
- When to schedule:
  - After installing sub-floor plywood and collector straps.

Inspection Procedure

- All correction items from the Floor Framing Inspection need to be complete prior to starting the Sub-Floor Inspection.
- InLine will develop a list of correction items.
  - Walk under joists and check for shiners. All shiners need to be removed before checking the top of the floor.
  - Walk on top of the plywood and check for nailing and straps.
  - The correction items would be marked on the framing and a correction list would be developed.
- Minor corrections can be done during the inspection.
  - It is common to make corrections during the sub-floor check.
  - Re-inspection would be done immediately following the inspection if corrections are complete.
- The Sub-Floor corrections need to be complete and approved prior to installing the upper level walls.

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Sub-Floor Plywood Checklist

Specific Items to Check

MATERIALS

- Verify plywood grade.
- Verify hardware manufacturer.
- Verify joist manufacturer.
- Nails: 10d screw shank nails.

SUBFLOOR

- Plywood: Nails: 10d screw shank.
- Plywood: 3/4" T&G (cdx) – glued.
- Plywood supported by floor joists at 16" o.c. maximum.
- Nail spacing per plans:
    - Edge nailing at 6” o.c.
    - Field nailing at 10” o.c.
    - Collector nailing at 3” o.c.
- Check for shiners; remove and re-nail.
- See plans where joists are 12” o.c. or doubled.
- Do not place plywood joint at collectors.
- Coil straps installed over plywood where shown as collectors on the plans:
    - Where straps are perpendicular to joists.
    - At 4x blocks
    - Extend 4’ over shear walls or as shown on the plans.
- Alternate nailing for coil straps
    - CS16 nailed at 2-1/16” o.c. average.
    - CMST14 nailed at every round hole (no nailing at triangle holes).
    - Other straps per manufacturer.
- Plywood nailed at all beams and bearing walls:
    - Minimum 6” o.c.
    - 3” o.c. at collectors.
- Minimum width of sheathing is 24” (per code), otherwise block and edge nail all edges.
- Adjust nail gun: do not over-drive or under-drive nails.
- Drive all under driven nails flush with plywood.
- Edge nail into perpendicular blocks.

COLLECTORS

- Coil straps over plywood:
    - Verify size and length per plans.
    - Verify collector blocks.
    - Extend strap 4’ over shear wall.

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- Collector nailing at 3” on center:
    - At all collector beams or blocks.

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Exterior Shear Inspection

Procedures

Required to Start

- People needed at inspection.
  - Assistant superintendent from developer at the start of the inspection.
  - Framing foreman is needed at some time during inspection to review corrections.
  - Pick-up person to make corrections if same day approval is needed.
- Materials needed:
  - Developer to provide a light weight, 6-foot tall, self standing ladder.
- Site preparation:
  - Provide a relatively clean area to safely walk around the exterior of the building. Excessive lumber and debris needs to be cleaned prior to inspection.
  - No work over head during inspection.
- When to schedule:
  - Exterior Shear review to be scheduled after all exterior framing is complete.
- Combined Inspections
  - The Exterior Shear Inspection can be combined with the Roof Sheathing Inspection.

Inspection Procedure

- InLine will develop a list of correction items.
  - Walk around the building and identify connection items for areas that will be covered by the waterproofing material.
  - The correction items would be numbered and marked on the framing.
  - A correction list would be issued to the site superintendent.
- Corrections can be done after the inspection.
  - It is common to make corrections during the Exterior Shear Inspection.
  - Re-inspection would be done as scheduled by the developer.
  - Corrections need to be complete and accepted prior to installing the waterproofing.
  - When the corrections are made during the inspection, re-inspections could be done the same day. This allows for the exterior shear to be wrapped with waterproofing and eliminate the need for scheduling a re-inspection.

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Exterior Shear Checklist

Specific Items to Check

MATERIALS

- Verify lumber grade.
- Verify hardware manufacturer.
- Verify joist manufacturer.
- Verify beam manufacturer.

SHEAR WALLS

- Plywood nailing:
  - 8d common at #6, 7, 8, and 9 shear walls.
  - 10d common at #10 shear walls.
- Do not overdrive nails.
- Follow designated edge nailing: 2", 3", 4" or 6" o.c.
- Field nailing @ 12" o.c.
- Place plywood joint vertically on one stud or one post.
  - When on two studs, sill nail studs together using sill nailing per shear wall schedule (repair).
  - When 3" o.c. Edge nail, use 3x or 4x member at vertical joint.
- Use 3x sills as shown on foundation plans and/or shear wall schedule:
  - At number #9 and #10 shear.
  - At some #8 shear walls.
- Horizontal joint at rim; if not at rim, contact engineer for repair.
- Edge nailing at all holdown posts / studs.
- Edge nail at ends of panels (at doors, windows, window frames, and door frames).
- Edge nail plywood at posts with vertical straps.
- Block all horizontal joints at balloon framed walls.
- Block at plywood seams above and below windows at window frame locations.
- Clips at gable end trusses (job specific when clips are installed on exterior):
  - Number of clips at shear wall per schedule.
  - Number of clips at non-shear walls per detail 1/LD1.

HARDWARE

- Exterior Straps - fully nailed with nails specified in manufacturer's catalog:
  - Holdown straps connecting upper level post to lower level post.
  - Holdown straps connecting upper level post to beam.
  - Straps at headers (see plans).
  - Coil straps at window and door frames.
- Vertical straps install per LD2 details 6, 7, and 8 (see plan).
- Exterior clips and straps for quantity and installation:
  - Flat clips at gable end truss to top plates.

  - Flat clips at top plate of wall to rim joist.
  - Clips at blocks at 1st floor shear walls.
  - Clips at gable end trusses to top plates.
- Horizontal straps where shown on plans (details F21, F24, T18, T20):
  - At steps in foundation.
  - At steps in top plates from lower roof to wall.
  - At end of top plates to wall framing across balloon framing.
- Holdowns from lower level posts to foundation are positioned at correct post locations. Complete installation and bolting of holdowns does not need to be complete at this time.
- Verify exterior (or concealed) ST and MST straps at beam collectors, double joists, rafters and trusses.

GENERAL FRAMING

- Balloon frame walls with windows per details E14, E15.
- Check for "shiners"; remove and re-nail.
- Block and edge nail around openings in plywood (vents, electrical, plumbing, and mechanical) larger than 6"x6".
- Clips at freeze blocks.

HARDY PANELS

- Number, diameter and length of SDS screws at top of panel to framing (if turned towards the exterior).
- Check size of holdown bolts.
- Check size of anchor bolts.
- Check that for tightness of nuts (if turned towards the exterior).
- Dry-pack required below frame.
- Number of clips connecting framing at top of panel (if needed at the exterior).

POSTS

- Identify any missing posts that support beams.
- Verify edge nailing to holdown posts at exterior walls.

COVERED ITEMS

- Verify items that will be covered by the building paper:
  - Columns and pop-outs at all exterior walls.
  - Anchor bolts at boxed column framing and pop-outs.
  - Dry-pack below Hardy Frames, base plates, etc.

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Roof Plywood Inspection

Procedures

Required to Start

- People needed at inspection.
  - Assistant superintendent from developer.
  - For safety reasons, a representative from the framer or developer must accompany InLine's inspector during the entire roof inspection.
  - Pick-up person to make corrections if same day approval is needed.
- Materials needed:
  - Framer is to provide an access hole through the roof plywood.
  - Developer to provide a ladder for access to the roof from the upper floor.
- Building preparation:
  - For safety reasons, this inspection can only be done in dry weather with completely dry roof plywood.
  - Provide a relatively clean area to safely walk through the building to the roof access location. Excessive lumber debris, nails, etc need to be cleaned out prior to inspection.
  - Roof plywood to be clean of saw dust, protruding nails, loose nails, and debris.
- When to schedule:
  - Roof Plywood Inspection can be done at any time after installation of roof sheathing and hardware.
- Combined Inspections
  - The Roof Plywood Inspection is usually combined with the Exterior Sheathing Inspection.

Inspection Procedure

- InLine will develop a list of correction items.
  - Walk under roof trusses and check for shiners. All shiners need to be removed before roof inspection can continue.
  - Walk under the roof to verify blocks at collectors and California framing.
  - Walk under the roof to verify that collector trusses are aligned with shear walls and girder trusses are in correct locations.
  - Climb onto the roof and check for plywood nailing and hardware installation.
  - The correction items would be marked on the framing. If corrections are not completed during the inspection, a correction list would be developed.
- Minor corrections can be done during or after the inspection.
  - It is common to make corrections during the roof plywood check so the re-check can be made the same day (or as scheduled by the developer).
  - Corrections need to be complete and accepted prior to installing the roof waterproofing.

- The Roof Plywood Inspection is normally combined with the Exterior Plywood Inspection.

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Roof Plywood Checklist

Specific Items to Check

MATERIALS

- Verify lumber grade.
- Verify hardware manufacturer.

NAILING

- Check for shiners from below roof plywood; remove and re-nail.
- Plywood: 1/2" T&G (cdx) – glued.
- Nailing
  - 8d common.
  - Field nailing at 12" o.c.
  - Edge nailing @ 6" o.c. (plywood edges, hips and ridges).
  - Collector nailing at 3" o.c.
  - Check at freeze blocks.
  - Adjust nail gun: Do not overdrive nails.
- Coil strap over plywood (where required per plans).
- Supported by roof trusses / rafters at 24" o.c. maximum.
- California framing plywood over main framing per detail M88 (sleepers and blocking).
- Pay special attention to edge nailing under California framing.
- Minimum 24" of plywood (per code), otherwise block and edge nail all edges.

ROOF BLOCKS

- Verify blocks, size, nail size, and connections:
  - At all collectors that are perpendicular to the roof trusses.
  - At shear walls.
  - At California framing (see details).

COLLECTORS

- Horizontal straps at collectors when shown on the drawings.
- 2x4 flat blocks at collectors perpendicular to roof trusses.

CHIMNEYS

- Straps and clips per details (2 different conditions, i.e. chimney / flue).
- Crickets as required.
- Framing at 16" o.c.,
- Edge and field nailing on plywood.
- Balloon framing per detail M59, M60, or M61 (2-2x studs).
- Balloon framing to include 3-2x's at corners.

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Truss Break Inspection

Procedures

Required to Start

- People needed at start of inspection.
  - Assistant superintendent from developer.
- Materials needed:
  - Developer to provide a light weight, 6-foot tall, self standing ladder.
  - Truss book reviewed and approved by InLine.
- Floor preparation:
  - Provide a relatively clean area to safely walk around the building. Excessive lumber debris, nails, etc. need to be cleaned out prior to inspection.
- When to schedule:
  - Inspection can be done any time after the Roof Sheathing Inspection is completed.
  - Scheduling the Truss Break Inspection prior to the Interior Frame Inspection allows time for the manufacturer to develop and process repair details.
  - Note: Since truss breaks can result during installation of mechanical and electrical equipment, additional truss break items may be added during the Interior Frame Inspection.

Inspection Procedure

- InLine will develop a list of broken or damaged roof trusses.
  - Walk under the roof trusses and identify trusses that have breaks or significant damage.
  - The correction items would be marked on the wall framing below the break location. A correction list is developed.
- The truss manufacturer will need to provide repair details.
  - Documentation by the truss manufacturer for the recommended repairs needs to be provided for all trusses identified in InLine's correction list (whether or not repairs are required).
  - The documentation for each identified truss must be signed and stamped by the truss manufacturer's engineer.
- Re-inspection will be done after InLine receives the truss repairs from the manufacturer.
  - InLine will verify that the repair has been installed.
  - InLine will accept the repair only after the original wet signed and stamped repair detail is received.

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Truss Break Checklist

Specific Items to Check

MATERIALS

- Lumber grade.

TRUSS

- Check each truss for damage:
  - Breaks in lumber due to drying.
  - Breaks and damage from fork lift.
  - Holes in lumber from mechanical or electrical.
  - Excessive splitting from nailing at straps and clips.
  - Cuts in top chord at outrigger.
- Measure and report depth of lumber where shaved to provide a flat ceiling.
- Identify missing or damaged gang plates.

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Interior Frame Inspection

Procedures

Required to Start

- People needed at inspection.
  - Assistant superintendent from developer at the start of the inspection.
- Materials needed:
  - Developer to provide a light weight, 6-foot tall, self standing ladder.
  - Truss book reviewed and approved by InLine.
- Building preparation:
  - Building is to be clean at start of inspection. Excessive lumber and debris needs to be cleaned prior to inspection. Sill plates need to be cleaned.
  - No noise from radios, skill saws, drills, etc.
  - No framing, plumbing or electrical work in building during inspection.
- When to schedule:
  - Frame review to be scheduled after all framing is complete. Holes in structural members from plumbing and mechanical operations need to be complete.
- Combined Inspections
  - The Interior Shear Wall Inspection is normally included with the Interior Frame Inspection (correction items are on same list).
  - The Roof Truss Bracing Inspection is normally combined with the Interior Frame Inspection (correction items are on same list).
  - The Roof Truss Break Inspection may be combined with the Interior Frame Inspection.
  - The Anchor Bolt Inspection may be combined with the Interior Frame Inspection.
  - All outstanding corrections from previous lists are to be completed prior to starting the Interior Frame Inspection.

Inspection Procedure

- InLine will develop a list of correction items.
  - Walk around the building and identify correction items.
  - The correction items would be numbered and marked on the framing.
  - A correction list would be issued to the site superintendent.
- Corrections can be done after the inspection.
  - It is common for the framer to make corrections the day after the Frame Inspection.
  - Re-inspections would be done as scheduled by the developer. It is common to schedule the re-check one or two days after the initial inspection.
- The Interior Frame corrections need to be complete and approved prior to installing any plywood soffit shear (when required).
- The walls with double sided plywood are checked after insulation is installed.

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Interior Frame Checklist

Specific Items to Check

MATERIALS

- Verify lumber grade.
- Verify hardware manufacturer.
- Verify joist manufacturer.
- Verify beam manufacturer.

SHEAR WALLS

- Plywood nailing:
  - 8d common at #6, 7, 8, and 9 shear walls.
  - 10d common at #10 shear walls.
  - Do not overdrive nails.
- Follow designated edge nailing: 2", 3", 4" or 6" o.c.
- Field nailing @ 12" o.c.
- Place plywood joint vertically on one stud or one post.
  - When on two studs, nail studs together using sill nailing per shear wall schedule (repair).
  - When edge nailing is 3" o.c., use 3x or 4x member at vertical joint.
- Use 3x sills as shown on foundation plans:
  - At number #9 and #10 shear.
  - At some #8 shear walls.
- Horizontal joint at rim; if not at rim, contact engineer for repair.
- Edge nailing at all holdown posts.
- Edge nail at ends of panels (at doors, windows, and door frames).
- Edge nail plywood at posts with vertical straps.
- Block all horizontal joints at balloon framed walls.
- Clips at collector trusses to shear wall.
- Clips at gable end trusses to top plate (if clips are installed at interior).
- Check for "shiners"; remove and re-nail.
- Check garage shear walls prior to installing gypsum or soffit.

NOTCHES AND HOLES

- Only one notch up to 2-1/2” deep is allowed in the top plates at air-conditioner conduit locations.
- Straps at interrupted top plates (detail T8/S0.2).
- Straps at plumbing/electrical holes in top plates (detail T10/S0.2).
- InLine office evaluation required for the following:
  - Notches/holes in all structural beams.
  - Notches in all studs for shear walls.
  - Holes in studs for shear walls that exceed limits of T11/S0.2.

  - Notches in all joists where limits of T11/S0.2 are exceeded.
  - Notches in all bearing studs where limits of T11/S0.2 are exceeded.
- Manufacturer to provide evaluation and repair for the following:
  - Prefabricated roof trusses that have been notched, drilled or damaged.
  - TJI products that have cut flanges, have been over notched, or are damaged.
- Holes in webs of TJI are to be sized according to manufacturer.

HARDWARE

- Verify all anchor bolts:
  - Total number at shear walls
  - Diameter of bolt per plans.
  - Square washers installed.
  - Nuts are tightened at time of frame inspection.
- Anchor bolt repairs:
  - Fill void in over-drilled sill plates with epoxy.
  - Remove excess epoxy at drilled-in anchor bolts.
- Verify all holdowns are installed:
  - Tightened nuts.
  - Positioned according to manufacturer and plans (against sill plate, against post).
  - Check size of holdown and post.
- Holdown repairs as needed:
  - Shim between bottom of holdown and sill plate.
  - Shim between post and holdown.
  - Full height stud between holdown and post with full height stitch nailing.
  - At nailed holdowns, increase nail length at shimmed posts.
- Hangers
  - Verify correct hanger sizes at beams per drawings.
  - Verify correct hanger size at trusses per manufacturer's shop drawings.
  - Hangers are fully nailed per manufacturer's catalog.
  - Bearing against bottom of hanger.
  - Sides of hangers are tight against lumber.

GENERAL FRAMING

- Balloon frame walls with windows per details E14, E15.
- Block and edge nail around openings in plywood (vents, electrical, plumbing, and mechanical) larger than 6"x6".
- Straps fully nailed with nails specified in manufacturer's catalog.
- Horizontal straps where shown on plans (details F21, F24, T18, T20 at stepped top plates).
- Vertical straps install per LD2 details 6, 7, and 8 (see plan).
- Straps at headers (see plans).
- Install all blocks and coil straps where shown on the plans at collectors.

- Install all ST and MST straps at beam collectors, double joists, rafters and trusses.

BRACING
- Brace top of non-bearing walls at 4' o.c.
- 45 degree braces at 4' o.c. at gable end walls.

TRUSS
- Truss bracing per manufacturer, use approved truss package.
- Number, diameter and length of SDS screws from truss panel to framing (at interior shear walls).

CALIFORNIA FRAMING
- Lower plywood nailed to framing.
- Vertical supports: 2x4 struts at 4' on center in each direction.
- Skewed blocks: 2x blocks at 4' o.c. to follow valley line.
- Collar ties: 2x6 at 48" with (6) 16d nails at each end.

HARDY PANELS
- Number, diameter and length of SDS screws at top of panel to framing (when frame is turned towards the exterior).
- Check size of holdown bolts.
- Dry-pack required below frame.
- Number of clips connecting framing at top of panel (if needed at exterior).
- Tighten bolts.

POSTS
- Mark any missing posts that support beams.
- At exterior walls with edge nailing.
- At interior walls with edge nailing.
- Posts aligned between floors.
- Full bearing is needed for beams and girder trusses.
- No holes or notches.
- Full bearing at sill plate.