LATERAL AND UPLIFT DESIGN/INSPECTION CONSIDERATIONS

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LATERAL AND UPLIFT DESIGN/INSPECTION CONSIDERATIONS

- Overview of continuous load path
- Overview of different systems
- Different design considerations
- Pre-construction activities
- Construction concerns
- Post-construction
CONTINUOUS LOAD PATH
DIFFERENT LATERAL RESISTANCE SYSTEMS

- Site-Built Shear Wall
- Pre-Fabricated narrow Shear Panels
- Multi-Story Rod Systems
  - Wind and Seismic
- Moment Frames
TYPICAL SITE BUILT SHEAR WALL

▪ Cast-in-place anchor bolts or cast-in-place strap hold downs
▪ Reinforcement by EOR/Designer
▪ Attached hold downs with proper fasteners
▪ Attached sheathing and nailing per shear wall schedule
TEMPLATED PRE-FABRICATED HOLD DOWN AND ANCHOR BOLTS
POST TENSION CABLES AND HOLD DOWN STRAPS READY FOR POUR
FINISHED PADS
COMPLETED SITE-BUILT SHEAR WALLS
# Shear Wall Nailing Schedule

## Shear Wall Schedule

<table>
<thead>
<tr>
<th>Shear Wall No.</th>
<th>Thickness</th>
<th>Plywood Type</th>
<th>No. of Sides</th>
<th>Nailing Sides</th>
<th>BLK/G</th>
<th>Spacing</th>
<th>Allowable Shear Wall Value</th>
<th>Sill Plate</th>
<th>Top Plate Connection W/Simpson &quot;AAS&quot; (See Note 3 &amp; 6 Below)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<td>10d Common</td>
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<td>6&quot;</td>
<td>12&quot;</td>
<td>340 PLF</td>
<td>5&quot; x 8&quot; Anchor Bolts at 48&quot; OC</td>
<td>'A35' at 16&quot; OC</td>
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<td>12&quot;</td>
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<td>2&quot;-A35 at 8&quot; OC</td>
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</table>

**NOTES**

1. FOR ADDITIONAL INFORMATION SEE GENERAL NOTES.
2. FOR SHEAR WALL NOTES SEE DETAIL B ON SHEET 512.
3. "AAS" INSTALLED BY SIMPSON SPECIFICATIONS AND AS ALTERNATE USE DETAIL 20 ON SHEET 580.
4. SCREWS "SOW" INSTALLED BY SIMPSON SPECIFICATIONS.
5. FORGERED IN CONTACT WITH PRESSURE TREATED SILL PLATE SHALL BE NOT DIPPED ZINC COATED GALVANIZED OR STAINLESS STEEL OR SILICON BRONZE OR COPPER.
6. WHEN REQUIRED 3 CUP ANCHORS PROVIDE ONE AT ONE SIDE & OTHER AT OTHER SIDE STAGGERED AS ALTERNATE ONE "A35" AND OTHER SIDE ONE "LTH" STAGGERED.
7. RATED WALLS HEWN TIMBER RATED WALLS OR PLANKS.
8. EDGE NAILING ARE BOUNDARIES, PANEL EDGES, TOP AND BOTTOM PLATE ATTACHMENT.

## Shear Walls Schedule

**SCALE:** 1/8"=1'-0"
ALLOWABLE OFFSET TOLERANCE
FLOOR TO FLOOR TRANSFER AND LATERAL RESISTANCE OF SECOND FLOOR
PRE-FABRICATED SHEAR WALLS
DRAG STRUT
PRE-FABRICATED PLATED TRUSS
TRANSFER TOP PLATE TO TRUSS
INTERIOR UPLIFT
NEW APPROACH TO UPLIFT...
SDWC & QUIK STICK
COLD FORMED STEEL CONSTRUCTION
COLD FORMED STEEL CONSTRUCTION
TYPICAL MID-RISE WOOD FRAMED BUILDING
MULTI-STORY OVERTURNING AND UPLIFT

- **Overturning (Lateral)**
  - When a building weight cannot stabilize a structure under a lateral force, it causes the structure to rotate off its foundation.

- **Uplift (Vertical)**
  - As wind flows over the roof the wind creates a strong lifting effect, much like that of air flowing over an airplane wing.

- *Different Forces = Different Systems*
TWO DIFFERENT TYPES OF SYSTEMS

Key Differences:
- Rod location
- Load direction
- Framing Requirements
- Load path
- Shrinkage/compression location
OVERTURNING (HOLD DOWNS & ROD SYSTEMS)
ROD SYSTEMS
FAST BUILD AND MOVE...
HOW DID IT DO?
TYPICAL MID-RISE IN CONSTRUCTION
DESIGN PHASE

- Arch/Engineer communication
  - Manufacture spec vs. generic load call-out
- Manufacturer responsibility
- RFIs
- Mis-step of ordering too early in design process
SUBMITTALS

- Deferred submittals vs. hard spec
- Final construction docs review by manufacturer
- Document prep
  - Calculations
  - Installation details
  - Overlays and laminated cards
ANCHOR TIEDOWN SYSTEM
REQUEST FOR INFORMATION (RFI)

PROJECT: Homewood Suites - Aliso Viejo, CA
DATE ISSUED: 6/8/2013

APPLICATION: [ ] HIGH [ ] MEDIUM [ ] LOW [ ] FAQ [ ] E-mail

PROJECT INFORMATION

[Diagram]

[Table]

[Text]

Questions

We have added a new location in the contract down [in re] to adjust with the floor plan. As we work on this clarification, we will send a final copy of the revised detail sheet to you. We appreciate your assistance.

[Answer]

[Signature]

[Text]
Anchor Tiedown System

Component capacities for
Homewood Suites
110 Vanta Drive
Aliso Viejo, CA

Prepared for
DCI Engineers

Structural Code of Practice
Aug 25, 2014

Architectural Code of Practice
Jul 28, 2014

Date of Report
Nov 12, 2014

Prepared by
H. CA
SEE ALTERNATE BRIDGE BLOCK DETAIL
ON ATS-1 FOR ADDITIONAL INFORMATION

T1.2
8 RUN(S)
PRE-CONSTRUCTION CONSIDERATIONS

▪ Anchorage issues
  - Inconsistent callouts
  - Responsibility

▪ Sub coordination
  - HVAC
  - Utilities
  - Plumber
  - Concrete
  - Framer
  - System termination (bridge block/top plate)
SHIPMENT

- Coordination with GC and sub
- Ship by floors
  - Stage shipments
  - Minimize potential missing parts
- Check in shipments with subs
  - Ongoing throughout the job
- Missing parts
- Inspection
  - Ensure understandings of jurisdiction inspector, EOR job walk and GC
- Post assessment of system with EOR, GC and subs
SHIPPING PALLETS
ANCHORAGE
OVERTURNING COMPONENTS
TERMINATION (OVERTURNING)

Top Plate

Bridge Block
UPLIFT RESTRAINT SYSTEMS
UPLIFT RESTRAINT SYSTEMS COMPONENTS
UPLIFT RESTRAINT SYSTEMS COMPONENTS

Strong-Drive® SDWC TRUSS Screw

Fasteners Simplify Wind-Uplift Restraint

Strong-Drive® SDWF FLOOR-TO-FLOOR Screw Assembly
MULTI FAMILY AND PRE-FAB WALLS AND MOMENT FRAMES
MOMENT FRAME DOCUMENTS
THANK YOU

Questions?