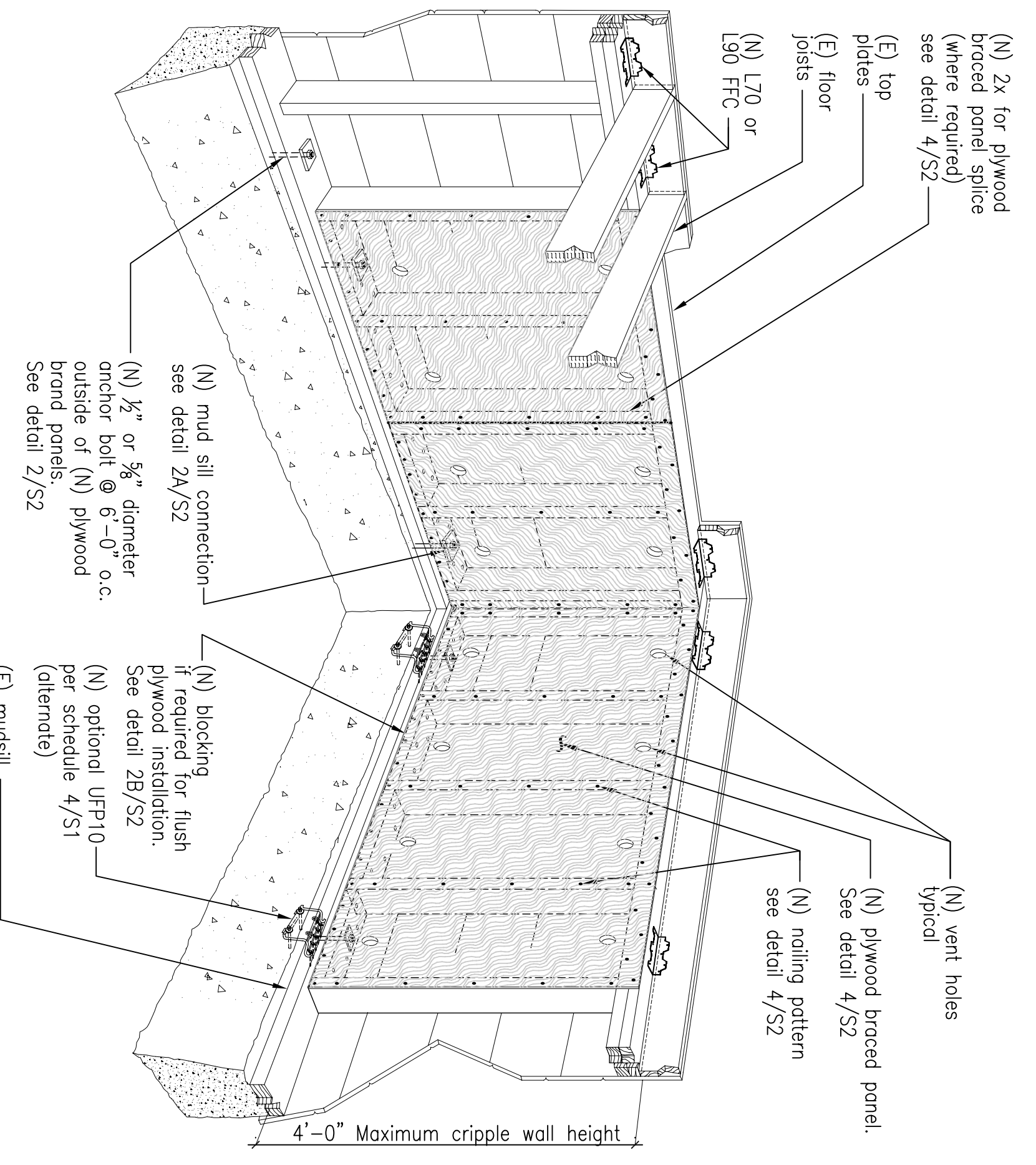
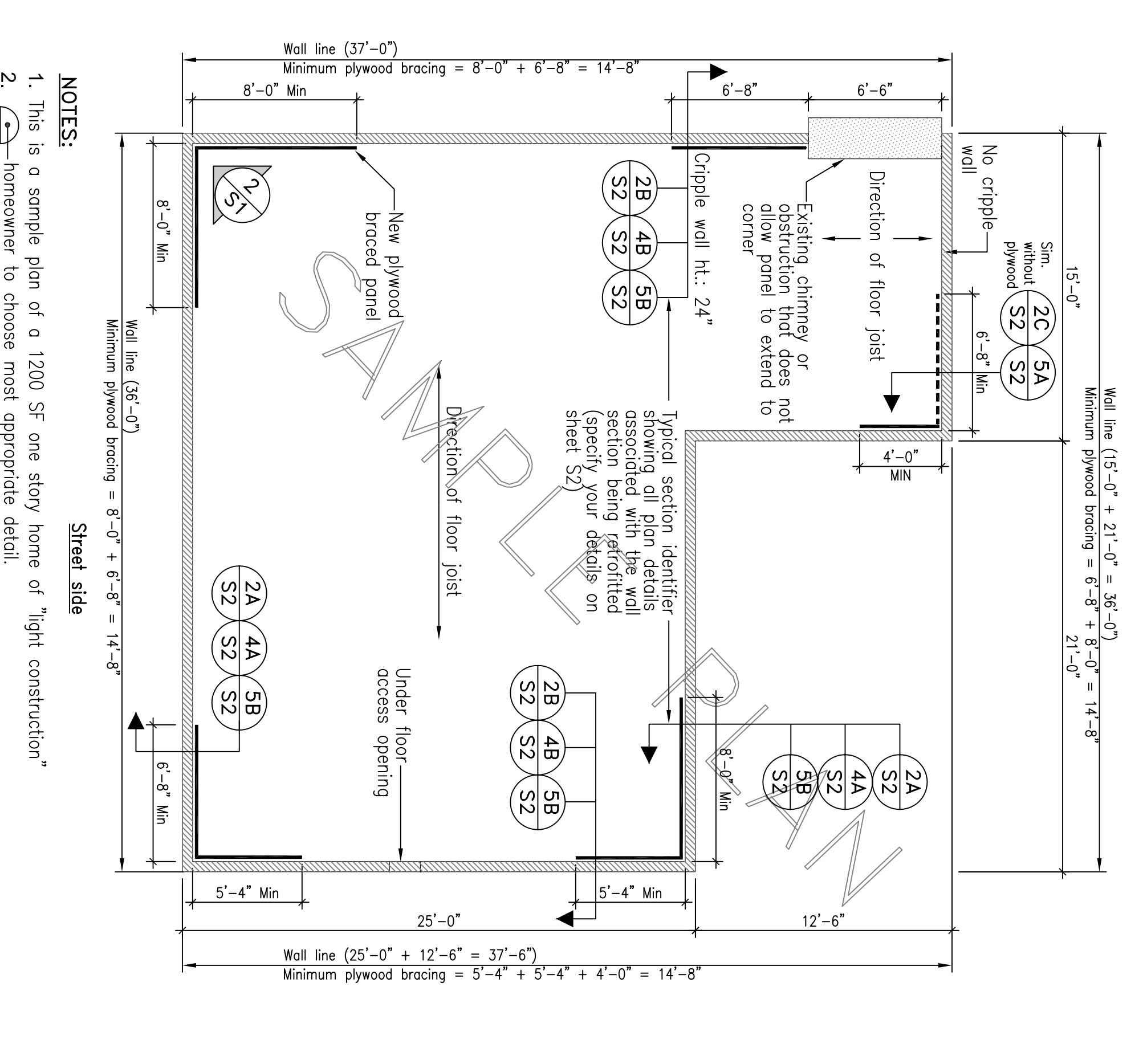


## 2 TYPICAL CRIPPLE WALL BRACING DETAIL



- NOTES:**
- This detail shows a sample cripple wall which has undergone a typical seismic retrofit.
  - This detail is not intended to supersede requirements contained in the specific installation details on sheet S2.
  - This isometric is viewed from the interior of the crawl space.

## 1 SAMPLE FOUNDATION AND PLYWOOD LAYOUT PLAN



- NOTES:**
- This is a sample plan of a 1200 SF one story home of "light construction"
  - homeowner to choose most appropriate detail.

## 5 CONSTRUCTION DATA

**A. Square footage calculation**

- No. of stores above cripple wall/mud sill: \_\_\_\_\_ sf
- Approximate 1st floor area over crawl space: (Do not include areas above garage slab) \_\_\_\_\_ sf
- Approximate 2nd floor area over crawl space: (Do not include areas above garage slab) \_\_\_\_\_ sf

Total floor area: \_\_\_\_\_ sf

## 4 REINFORCEMENT SCHEDULE

GENERAL INFORMATION	PLYWOOD BRACING	MUDSILL ANCHORAGE	FLOOR TO CRIPPLE WALL / MUDSILL CONNECTION
CHECK THE BOX WHICH APPLIES TO YOUR HOME	TOTAL FLOOR AREA (SQ FT)	MINIMUM TOTAL BRACING ENERGY EACH WALL LINE	MINIMUM SILL ANCHORS ALONG EACH WALL LINE
<b>1-5 STORY REQUIREMENTS</b>			
800 Light	16'-0"	5	8
1000 Heavy	17'-4"	4	6
1200 Light	17'-4"	4	6
1400 Heavy	17'-4"	4	6
1600 Light	17'-4"	4	6
1800 Heavy	17'-4"	4	6
2000 Light	17'-4"	4	6
2200 Heavy	17'-4"	4	6
2400 Light	17'-4"	4	6
2600 Heavy	17'-4"	4	6
2800 Light	17'-4"	4	6
3000 Heavy	17'-4"	4	6
3200 Light	17'-4"	4	6
3400 Heavy	17'-4"	4	6
3600 Light	17'-4"	4	6
3800 Heavy	17'-4"	4	6
4000 Light	17'-4"	4	6
4200 Heavy	17'-4"	4	6
4400 Light	17'-4"	4	6
4600 Heavy	17'-4"	4	6
4800 Light	17'-4"	4	6
5000 Heavy	17'-4"	4	6
5200 Light	17'-4"	4	6
5400 Heavy	17'-4"	4	6
5600 Light	17'-4"	4	6
5800 Heavy	17'-4"	4	6
6000 Light	17'-4"	4	6
6200 Heavy	17'-4"	4	6
6400 Light	17'-4"	4	6
6600 Heavy	17'-4"	4	6
6800 Light	17'-4"	4	6
7000 Heavy	17'-4"	4	6
7200 Light	17'-4"	4	6
7400 Heavy	17'-4"	4	6
7600 Light	17'-4"	4	6
7800 Heavy	17'-4"	4	6
8000 Light	17'-4"	4	6
8200 Heavy	17'-4"	4	6
8400 Light	17'-4"	4	6
8600 Heavy	17'-4"	4	6
8800 Light	17'-4"	4	6
9000 Heavy	17'-4"	4	6
9200 Light	17'-4"	4	6
9400 Heavy	17'-4"	4	6
9600 Light	17'-4"	4	6
9800 Heavy	17'-4"	4	6
10000 Light	17'-4"	4	6

**FOOTNOTES FROM TABLE:**

- See total floor area retrofit Construction Data.
- When UFP anchors and bolts are used in a single wall line, UFP anchors may be substituted for the number of bolts.
- Not more than one angle per joist bay unless joists are spaced 24 inches on center.
- Where proctored install angles between joists above plywood braced panel locations.
- Install L70 & L90 W/ 104 x 1 1/2" nails (148 x 1 1/2")
- H10 uses (8) 8d (131" dia.) x 1 1/2" into top plates.
- 8d (131" dia.) x 1 1/2" into top plates.

**HEAVY CONSTRUCTION** is your home constructed using any of the following:

- Stucco exterior wall finish
- Heavy roofing consisting of concrete or clay tiles (weighing up to 11 pounds per square foot)

**NOTE:**

Clay tile weighing more than 11 pounds per square foot may be considered on an individual basis. Check w/ your local Building Department.

**ROOFING MATERIALS:**

- Wood shingles or asphalt shingles
- Composition or asphalt shingles
- Metal roofing (weighing 5 pounds per square foot or less)

**EXTERIOR WALL FINISHES:**

- Wood panel sheathing
- Wood board siding
- Similar light board siding

**INTERIOR WALL FINISHES:**

- Gypsum board
- Wood board siding
- Similar light board siding

CONNECTOR CAPACITY (Pounds) and Connection Description
450 lbs. L70 is 1/8" x 7" long
450 lbs. (8) - 100 x 1-1/2" nails (148 x 1 1/2")
600 lbs. uses (10) - 104 x 1-1/2" nails (148 x 1 1/2")
600 lbs. H10 anchor
500 lbs. uses (8) - 8d x 1-1/2" nails (131 x 1 1/2")
620 lbs. 1/2" dia. bolt
1170 lbs. 5/8" dia. bolt
1540 lbs. UFP10 - Universal plate anchor

## 3 TECHNICAL NOTES

- A. GENERAL:**
- All existing concrete and wood material which will be part of the strengthening work shall be in sound condition and free from defects which would substantially reduce the capacity of the material. Any substitution material shall be reported or replaced to meet minimum building code requirements. New foundations shall meet current Building Code requirements.
  - All metal connectors and hardware shall meet an approved standard for its intended use and be installed per manufacturer's instructions, and in accordance with the requirements of these standards. Alternate details may be approved by the building official provided detailed information and calculations are submitted and approved.
  - All existing under floor ventilation shall be maintained.
  - Due to the corrosive nature of new pressure treated wood fasteners in new pressure treated wood shall be hot dipped galvanized fasteners (meeting ASTM A153) and connectors (ASTM A 653 class G185 steel), or better.
  - LEGEND:**
- (E) = Existing construction; (N) = New construction  
 4/S1 = Refer to detail 4 on sheet S1  
 N/S = Not to scale; Min = Minimum  
 FFC = Floor Framing Clip
- B. MUDSILL CONNECTIONS:**
- New bolts or UFP10 anchors required by reinforcement schedule 4/S1 shall be installed within plywood braced panels. See detail 2/S2.
  - Where an existing continuous rim joist, end joist, or solid blocking between joists, does not exist above the perimeter cripple wall or mud sill, new blocking and/or supplemental connections shall be provided and subject to approval by the building official.
  - All new mud sill bolts shall have a 3" x 3" x 1/2" plate washer installed between the mud sill (or blocking) and the nut.
  - New bolts shall be 1/2" inches minimum from the edges of the mud sill and 6" from the ends.
  - Existing anchor bolts are generally not reliable and should not be considered as meeting the requirements of this plan set.
- C. FLOOR TO CRIPPLE WALL / MUDSILL CONNECTION:**
- See "Reinforcement Schedule" 4/S1 and detail 5/S2 for required connection.
  - Increase length of nails 1/2" when attaching floor framing clips through plywood.
  - If splices in double top plates do not have a minimum 48" lap, provide a new minimum 4" strip. See detail 6A/S2.
  - Existing single top plates shall be reinforced with a 16ga x 48" metal strip. See detail 6B/S2.
  - Where plate strips occur within a braced panel, the strip shall be placed over the plywood and the plywood nails omitted where the strip is installed.
- D. PLYWOOD BRACED PANEL INSTALLATION:**
- See 4/S1 "Reinforcement Schedule" for the required length of new plywood panel bracing along each wall line. See "Sample Foundation Plan" for the definition of a "wall line" and an example of plywood panel layout.
  - Install plywood braced panels at each end of each wall line and space additional panels, as needed, along each wall line.
  - Plywood braced panels closest to the ends of wall lines shall be located as near to the ends of a wall line when existing obstructions or limited clearances necessitate such relocation.
  - Plywood braced panels should be neatly equal in length and width where possible.

## GENERAL INSTRUCTIONS

- READ FIRST:**
- To determine if your home qualifies please answer the following questions. If you answer yes to all of the following questions your home qualifies to use this standard. IF YOU ANSWER YES TO EACH OF THESE QUESTIONS PROCEED TO APPLICANT INSTRUCTIONS.
- DOES THIS PLAN SET APPLY TO YOUR HOME?**
- |   |                          |                          |
|---|--------------------------|--------------------------|
| 1. Is your home a one or two family residential structure?  | YES                      | NO                       |
| 2. Is your home two stories or less?  | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Is your home wood-framed construction?   | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Does the building have a continuous perimeter concrete foundation (ignoring the immediate area surrounding the fireplace)?   | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Does your house have a crawl space?  | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Are all the cripple walls less than 4 feet in height? (See detail 2/S1 in lower left corner of plan set for an example of a cripple wall)  | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. If your home has brick or stone veneer along the exterior walls (excluding any chimneys), is the maximum height of the veneer 4 feet above the foundation? (If your home does not have any brick or stone veneer, you should answer this question as a YES.) | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. If the roofing of your home is clay tile, are the tiles installed without the use of mortar along the tile edges? (If your home's roofing is a material other than clay tile, you should answer this question as a YES.)                                     | <input type="checkbox"/> | <input type="checkbox"/> |
- IF YOU ANSWER NO TO ANY OF THESE QUESTIONS CONTACT YOUR LOCAL BUILDING DEPARTMENT FOR ASSISTANCE.**
- PURPOSE:**
1. These plans set standards for strengthening may be approved by the building official without requiring additional plans or calculations. They provide an economical method to help improve your home's chances of surviving an earthquake.
2. The intent of these standards is to promote public safety and welfare by reducing the risk of earthquake damage to existing wood-framed residential buildings.
3. The requirements contained herein are prescriptive minimum standards intended to improve the seismic performance of residential buildings. They will not necessarily prevent earthquake damage, nor make your home earthquake proof. These recommendations are based on assumptions that apply to houses of average construction. You are encouraged to have a competent, licensed engineer or architect review the plans & modify them as appropriate for your home.
4. The prescriptive details and provisions are not intended to be the only acceptable strengthening methods permitted (alternate details and methods may be used when approved by the building official).
5. When the building official determines that conditions exist that are beyond the scope of these prescriptive standards, analysis and documentation shall be prepared by a California licensed architect or engineer.
6. This prescriptive plan addresses only seismic strengthening work. Alternative designs will be considered on a case-by-case basis. Work done under permit pursuant to this prescriptive plan does not negate any previous work done without a permit.
- APPLICATION INSTRUCTION:**
- Draw a scaled foundation plan of the house in the graph space provided on sheet S2 (refer to the "sample foundation and plywood layout plan," Detail 1/S1 for guidance).
  - Provide appropriate construction information in the "Construction Data," detail 5/S1. Determine the spacing requirements for the mudsill bolts or anchor plates to be used and identify the type of FFC clip to be used.
  - Bossed upon the homes square footage, number of stories and type of construction "heavy" or "light", determine the requirements for "plywood bracing, mudsill anchorage" and floor to cripple wall/mudsill connections". Based on the "Reinforcement Schedule," See detail 4/S1.
  - Identify on the "Foundation plan" the direction of run of all your floor joists.
  - Identify on the "Foundation plan" (along the perimeter walls) the location of all fireplaces.
  - For each wall segment on the foundation plan indicate the plan details which represent:
    - step1: the mud sill anchoring method. See detail 2/S2
    - step2: the floor-to-cripple wall/mudsill attachment. See detail 5/S2
    - step3: the cripple wall bracing method to be used. See detail 4/S2
  - For each wall segment on the foundation plan indicate the maximum cripple wall height and the length and location of all plywood braced panels to be installed (identify all wall section that do not have cripple walls).

# STANDARD PLAN A (REVISION 1)

## RESIDENTIAL SEISMIC STRENGTHENING PLAN

### PRESCRIPTIVE SEISMIC STRENGTHENING PLAN FOR CRIPPLE WALL BRACING AND FOUNDATION SILL PLATE ANCHORAGE OF LIGHT WOOD FRAMED RESIDENTIAL STRUCTURES.

**APPLICANT INFORMATION**

APPLICANT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TELEPHONE: \_\_\_\_\_

PROPERTY ADDRESS: \_\_\_\_\_

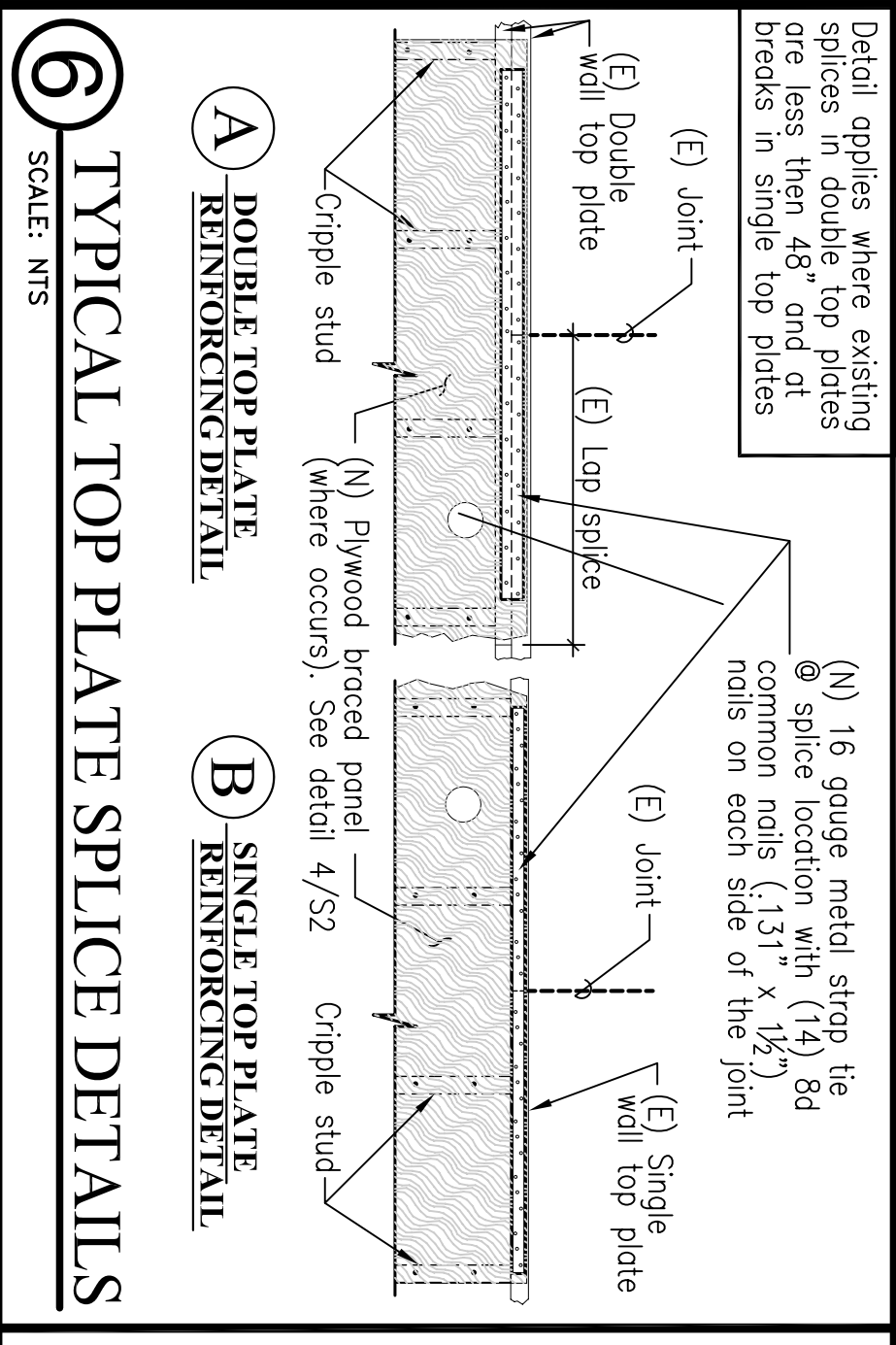
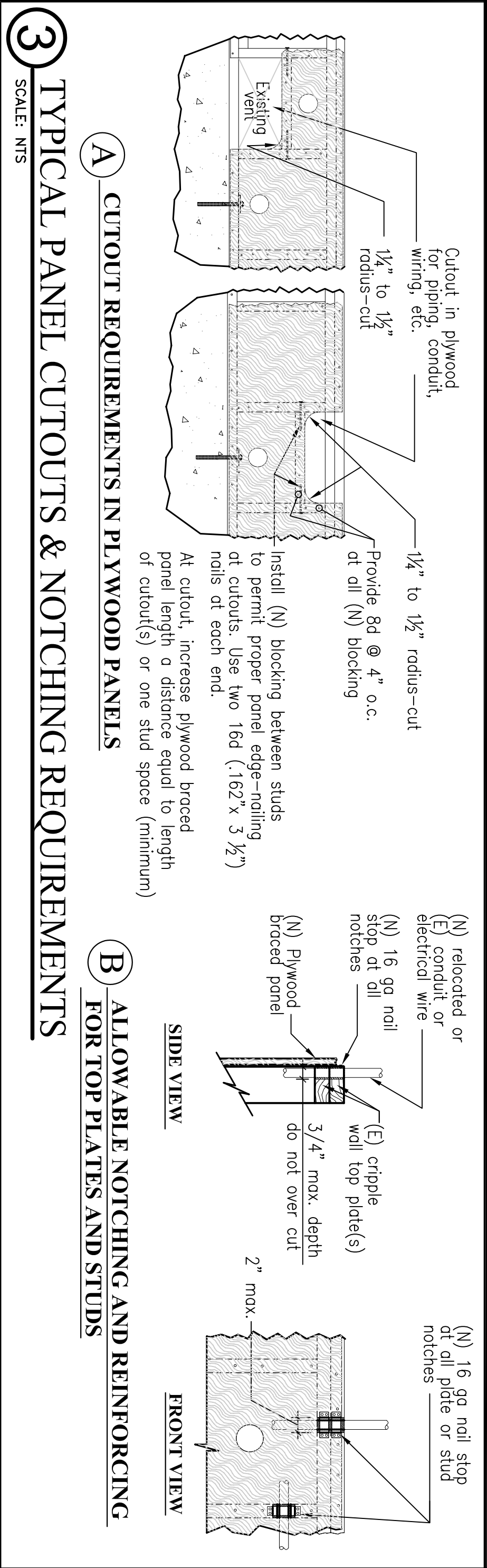
OWNER: \_\_\_\_\_

APPLICANT'S SIGNATURE: \_\_\_\_\_

REVISION 1 08/01/2008

# S1

1 OF 2



**ACKNOWLEDGMENTS**  
This prescriptive plan set and the provisions for voluntary seismic retrofit of wood-frame homes were developed by a committee representing the East Bay and Peninsula chapters of the International Code Council (ICC). In addition, the plan development committee consisted of representatives from the following organizations who provided contributions and peer review:

- A. Structural engineers association of Northern California (SEANOC), Existing building committee, Seismology & Structural standards, Light-frame subcommittee.
- B. Association of bay area governments (ABAG) earthquake program.
- C. Building contractors specializing in home retrofitting.
- D. California building officials (CALBO) emergency preparedness committee.
- E. California building officials (CALBO) seismic safety committee.
- F. Earthquake engineering research institute, Northern California chapter (EERI-NC)
- G. ICC, TRI-chapter (East Bay, Peninsula, Monterey Bay) plan check standards committee.

**NOTE** - The professional organizations, government agencies and others involved in this process, including ICC and its chapters, SEANOC, CALBO, EERI-NC, their committees, and their individual members do not make any warranty or assume any legal liability or responsibility for the use of or reference to opinions, findings, conclusions or recommendations included in these drawings, plan sets, or booklets.  
**NOTE** - Technical changes may not be made without the express permission of the committee.

# STANDARD PLAN A (REVISION 1)

## RESIDENTIAL SEISMIC STRENGTHENING PLAN

PRESCRIPTIVE SEISMIC STRENGTHENING PLAN FOR CRIPPLE WALL BRACING AND FOUNDATION SILL PLATE ANCHORAGE OF LIGHT WOOD FRAMED RESIDENTIAL STRUCTURES.

**APPLICANT INFORMATION**

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TELEPHONE: \_\_\_\_\_

PROPERTY ADDRESS: \_\_\_\_\_

OWNER: \_\_\_\_\_

APPLICANT'S SIGNATURE \_\_\_\_\_