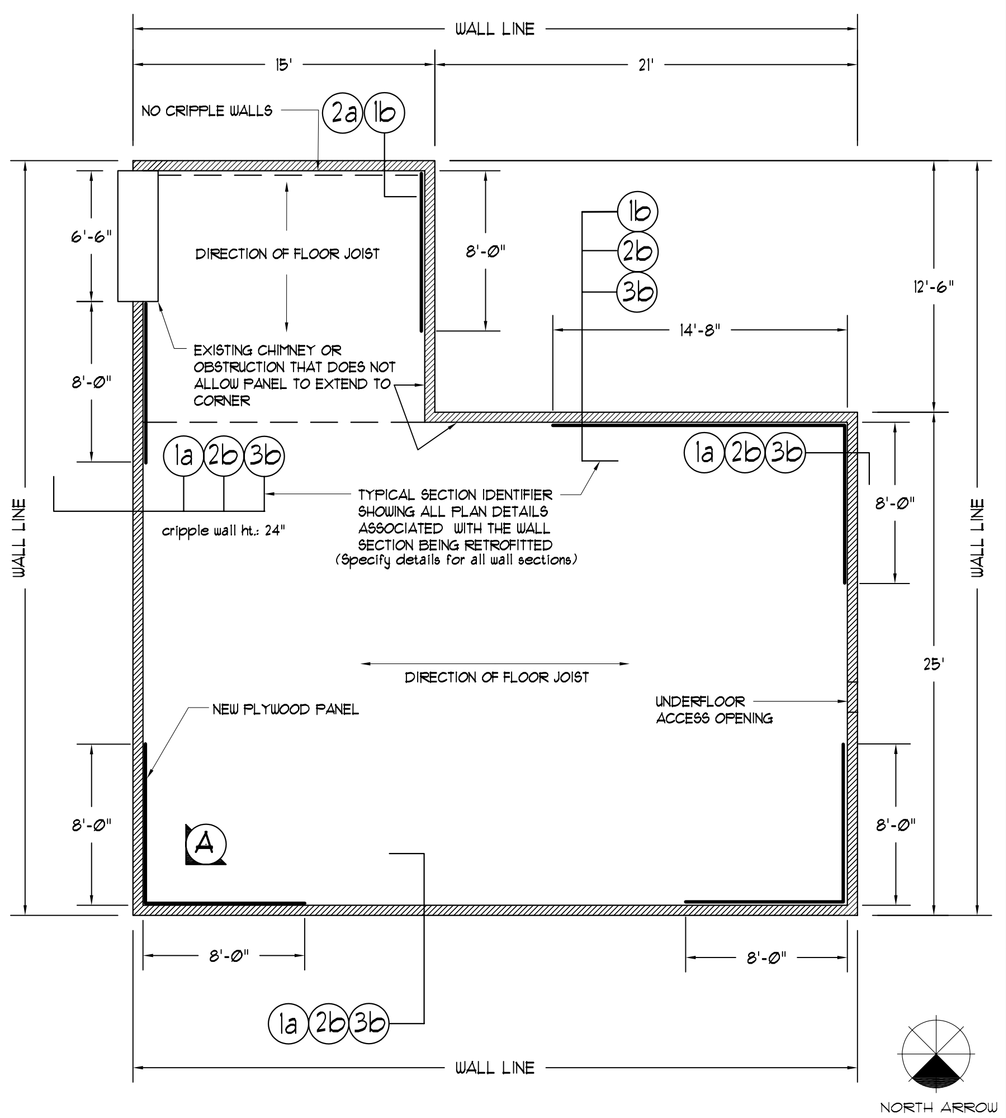
SAMPLE PLAN



SAMPLE FOUNDATION PLAN & PLYWOOD PANEL LAYOUT

FOR A 1200 SF 1-STORY HOUSE OF LIGHT CONSTRUCTION

READ THIS 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?	YES	NO
- Is your home a one or two family residential structure?	☐	☐
- Is your home two stories or less?	☐	☐
- Is your home wood-framed construction?	☐	☐
- Does the building have a continuous perimeter concrete foundation (Ignoring the immediate area surrounding the fireplace?)	☐	☐
- Does your house have a crawl space?	☐	☐
- Are all the cripple walls less than 4 feet in height? (See detail in lower left corner of plan set for an example of a cripple wall)	☐	☐
- 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.)	☐	☐
- 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.)	☐	☐

IF YOU ANSWER NO TO ANY OF THESE QUESTIONS CONTACT YOUR LOCAL BUILDING DEPARTMENT FOR ASSISTANCE.

PURPOSE

THESE PLANS SET STANDARDS FOR STRENGTHENING MAY BE APPROVED BY THE BUILDING OFFICIAL WITHOUT REQUIRING ADDITIONAL PLANS OR CALCULATIONS. THEY PROVIDE A LOW-COST METHOD TO HELP IMPROVE YOUR HOME'S CHANCES OF SURVIVING AN EARTHQUAKE USING A METHOD THAT IS QUICK, EASY AND INEXPENSIVE.

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. THE REQUIREMENTS CONTAINED HEREIN ARE PRESCRIPTIVE MINIMUM STANDARDS INTENDED TO IMPROVE THE SEISMIC PERFORMANCE OF RESIDENTIAL BUILDINGS, BUT THEY WILL NOT NECESSARILY PREVENT EARTHQUAKE DAMAGE.

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).

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 REGISTERED ENGINEER.

TECHNICAL NOTES

1. 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 LEGALIZE ANY PREVIOUS WORK DONE WITHOUT A PERMIT.
2. 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 SUBSTANDARD MATERIAL SHALL BE REPAIRED OR REPLACED TO MEET MINIMUM BUILDING CODE REQUIREMENTS.
3. NEW FOUNDATIONS SHALL MEET CURRENT CALIFORNIA BUILDING CODE REQUIREMENTS.
4. NEW MUD SILL PLATES SHALL BE PRESSURE-TREATED DOUGLAS-FIR OR FOUNDATION-GRADE REDWOOD.
5. AN EXISTING SINGLE TOP PLATE MAY BE USED WHEN A 16 GA. METAL STRAP IS PROVIDED WITH 14 8d COMMON NAILS ON EACH SIDE OF THE JOINT.
6. IF SPLICES IN DOUBLE TOP PLATES DO NOT HAVE A MINIMUM 48" LAP, PROVIDE MINIMUM 4' STRAP AS ABOVE.
7. WHERE PLATE STRAPS OCCUR WITHIN A BRACED PANEL, THE STRAP SHALL BE PLACED OVER THE PLYWOOD AND THE PLYWOOD NAILS OMITTED WHERE THE STRAP IS INSTALLED.
8. NEW STEEL BOLTS SHALL CONFORM TO ASTM A307. EPOXY BOLTS AND EXPANSION BOLTS SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND IN ACCORDANCE WITH THE PROVISIONS OF AN APPROVED NATIONALLY RECOGNIZED TESTING AGENCY. NO THIRD PARTY SPECIAL INSPECTIONS ARE REQUIRED. EXPANSION BOLTS SHALL NOT BE USED WHEN THE INSTALLATION CAUSES CRACKING OF THE FOUNDATION WALL AT THE LOCATION OF THE BOLT.
9. 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.
10. 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.
11. UNDERFLOOR VENTILATION SHALL BE MAINTAINED.
12. DUE TO THE CORROSIVE NATURE OF NEW PRESSURE TREATED WOOD USED AFTER 1-1-04 AND TO PREVENT PREMATURE FAILURE OF THE METAL HARDWARE, FASTENERS IN NEW PRESSURE TREATED WOOD SHALL BE HOT DIPPED GALVANIZED FASTENERS (MEETING ASTM A 153) AND CONNECTORS (ASTM A 653 CLASS G185 SHEET), OR BETTER.

APPLICANT INSTRUCTIONS

1. DRAW A SCALED FOUNDATION PLAN OF THE HOUSE IN THE GRAPH SPACE ON SHEET 2 (REFER TO THE "SAMPLE FOUNDATION PLAN AND PLYWOOD PANEL LAYOUT" ON THIS PLAN FOR GUIDANCE).
2. PROVIDE APPROPRIATE CONSTRUCTION INFORMATION IN THE "RETROFIT CONSTRUCTION DATA" AREA BELOW. DETERMINE THE SPACING REQUIREMENTS FOR THE MUD SILL BOLTS AND ANCHOR PLATES TO BE USED AND IDENTIFY THE TYPE OF FRAMING CLIP TO BE USED.
3. IDENTIFY ON THE FOUNDATION PLAN THE DIRECTION OF RUN OF ALL FLOOR JOISTS.
4. IDENTIFY ON THE FOUNDATION PLAN (ALONG THE PERIMETER WALLS) THE LOCATION OF ALL FIREPLACES.
5. FOR EACH WALL SEGMENT ON THE FOUNDATION PLAN ANNOTATE THE PLAN DETAILS WHICH REPRESENT:
   - STEP 1: THE MUD SILL ANCHORING METHOD,
   - STEP 2: THE FLOOR-TO-CRIPPLE WALL/MUD SILL ATTACHMENT, AND
   - STEP 3: THE CRIPPLE WALL BRACING METHOD TO BE USED.
6. FOR EACH WALL SEGMENT ON THE FOUNDATION PLAN ANNOTATE THE MAXIMUM CRIPPLE WALL HEIGHT AND THE LENGTH AND LOCATION OF ALL PLYWOOD PANELS TO BE INSTALLED (IDENTIFY ALL WALL SECTIONS THAT DO NOT HAVE CRIPPLE WALLS).

PERMIT & INSPECTION REQUIREMENTS

1. SUBMIT A PERMIT APPLICATION AND 2 COMPLETED PLAN SETS TO THE BUILDING DEPT. FOR REVIEW (PHOTOGRAPHS OF THE MUD SILL, CRIPPLE WALL, AND FLOOR FRAMING CONDITIONS MAY ASSIST THE REVIEW PROCESS).
2. PRIOR TO COMMENCEMENT OF WORK THE PERMIT HOLDER MAY BE REQUIRED TO SCHEDULE A PRE-CONSTRUCTION INSPECTION WITH THE BUILDING DEPARTMENT TO VERIFY THAT FIELD CONDITIONS ARE CONSISTENT WITH THE INFORMATION PROVIDED ON THE APPROVED PLAN.
3. INSPECTIONS BY THE BUILDING DEPARTMENT ARE REQUIRED FOR:
   - FOUNDATION BOLT/ANCHOR PLATE INSTALLATION,
   - INSTALLATION OF BLOCKING,
   - PLYWOOD PANEL INSTALLATION ON CRIPPLE WALL,
   - METAL HARDWARE INSTALLATION, AND
   - FINAL INSPECTION.

   NO WORK REQUIRING INSPECTION SHALL BE COVERED UNTIL IT HAS BEEN INSPECTED AND APPROVED BY THE BUILDING DEPARTMENT.
4. PRIOR TO FINAL INSPECTION, SMOKE DETECTORS SHALL BE INSTALLED IN THE ATTACHED DWELLING(S) IN ACCORDANCE WITH BUILDING CODE REQUIREMENTS.

APPLICANT INFORMATION

Applicant:

Address:

Telephone:

Property Address:

Owner:

Applicant's Signature:

SEE PLAN SET BOOKLET FOR ADDITIONAL DETAILS AND INFORMATION

FILE NO.

ACKNOWLEDGEMENTS

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:

- ASSOCIATION OF BAY AREA GOVERNMENTS (ABAG) EARTHQUAKE PROGRAM
- BUILDING CONTRACTORS SPECIALIZING IN HOME RETROFITTING
- CALIFORNIA BUILDING OFFICIALS (CALBO) EMERGENCY PREPAREDNESS COMMITTEE
- CALIFORNIA BUILDING OFFICIALS (CALBO) SEISMIC SAFETY COMMITTEE
- EARTHQUAKE ENGINEERING RESEARCH INSTITUTE, NORTHERN CALIFORNIA CHAPTER (EERI-NC)
- ICC, TRI-CHAPTER (EAST BAY, PENINSULA, MONTEREY BAY) PLAN CHECK STANDARDS COMMITTEE
- STRUCTURAL ENGINEERS ASSOCIATION OF NORTHERN CALIFORNIA (SEAONC). EXISTING BUILDINGS COMMITTEE
- STRUCTURAL ENGINEERS ASSOCIATION OF NORTHERN CALIFORNIA (SEAONC). SEISMOLOGY & STRUCTURAL STANDARDS COMMITTEE - LIGHT-FRAME SUBCOMMITTEE

NOTE- THE PROFESSIONAL ORGANIZATIONS, GOVERNMENTAL AGENCIES AND OTHERS INVOLVED IN THIS PROCESS, INCLUDING ICC AND ITS CHAPTERS, SEAONC, 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.

DATE: 10-20-2004

STANDARD PLAN A

RESIDENTIAL SEISMIC STRENGTHENING PLAN

PRESCRIPTIVE SEISMIC STRENGTHENING PLAN FOR CRIPPLE WALL BRACING AND FOUNDATION SILL PLATE ANCHORAGE OF LIGHT WOOD-FRAMED RESIDENTIAL STRUCTURES NOT MORE THAN TWO STORIES IN HEIGHT AND CONTAINING NOT MORE THAN TWO DWELLING UNITS

RETROFIT CONSTRUCTION DATA

(fill in all applicable areas)

No. of stories above cripple wall/mud sill: _____

Approximate 1st floor area over crawl space: _____ sf
(Do not include areas above garage slab)

Approximate 2nd floor area over crawl space: _____ sf
(Do not include areas above garage slab)

Total floor area: _____ sf

Clay tile or concrete tile roof? ☐ YES ☐ NO

Stucco (cement plaster) finish on exterior walls? ☐ YES ☐ NO

Exterior brick or stone veneer (ignoring the brick chimney)? ☐ YES ☐ NO

Height of veneer above foundation: _____

Continuous rim joist/blocking (ignoring the immediate area around the chimney)? ☐ YES ☐ NO

Maximum height of cripple wall: _____ ft. _____ in.

MUD SILL ANCHORAGE

Existing

☐ BOLTS: Diameter _____ Spacing _____

New

☐ BOLTS: Diameter _____ Spacing _____

Type: ☐ Chemical ☐ Expansion/Mechanical

☐ ANCHOR PLATE: Manufacturer _____

Part No. _____

Bolt Type: ☐ Chemical ☐ Expansion/Mechanical

Floor Framing Connection to Mudsill or Top Plate

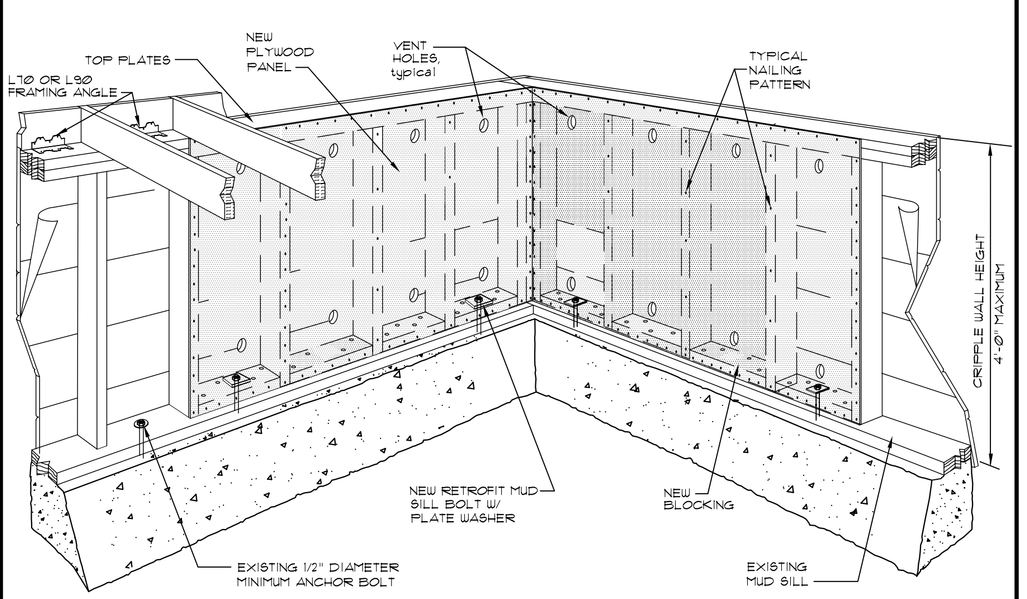
☐ FRAMING CLIP: _____

Manufacturer _____

Part No. _____

Load value parallel to cripple wall and/or mud sill _____

Connector Capacity (Pounds)	Description
458 lbs.	L70 is 16 ga X 7" long uses 8 - 10d X 1-1/2" minimum
600 lbs.	L90 is 16 ga X 9" long uses 10 - 10d X 1-1/2" minimum
820 lbs.	1/2" dia. bolt
1170 lbs.	5/8" dia. bolt
1340 lbs.	UFP10- Universal plate anchor



(A) TYPICAL CRIPPLE WALL BRACING DETAIL

NOTES:

1. THIS DETAIL SHOWS A SAMPLE CRIPPLE WALL WHICH HAS UNDERGONE A TYPICAL SEISMIC STRENGTHENING.
2. THIS DETAIL IS NOT INTENDED TO SUPERSEDE REQUIREMENTS CONTAINED IN THE SPECIFIC INSTALLATION DETAILS ON SHEET 2 OR THE PLAN SET BOOKLET.

STANDARD PLAN A SCHEDULE

MINIMUM NUMBER OF BOLTS & ANCHORS

-SILL BOLT OR FOUNDATION ANCHOR SPACING AT BRACED PANELS SHALL BE:
- ONE BOLT OR FOUNDATION ANCHOR AT EACH END BAY (MINIMUM).
- ADDITIONAL BOLTS AT 32" ON CENTER OR LESS.
- ADDITIONAL FOUNDATION BOLTS OR ANCHORS AS REQUIRED BY THE CHART (ON RIGHT).

-SILL BOLT SPACING OUTSIDE BRACED PANELS SHALL BE:
- 1/2" DIA. (MINIMUM) AT 6'-0" ON CENTER OR LESS.
- OTHER ANCHORS EQUIVALENT TO 1/2" DIA. MAY BE USED.

BRACING BOLTING & SHEAR TRANSFER REQUIREMENTS FOR **1-STORY** HOUSE

Using 15/32" rated plywood sheathing with 8d @ 4" o.c.

TOTAL FLOOR AREA (SF) (1)	HEAVY OR LIGHT CONSTRUCTION	TOTAL BRACING LENGTH ALONG EACH WALL LINE 8d @ 4" NAILING	MINIMUM SILL ANCHORS ALONG EACH WALL LINE (2) UFP10	1/2" DIA. BOLTS	5/8" DIA. BOLTS	MINIMUM NO. OF ANGLES ALONG EACH WALL LINE (3) (4) NO. OF L70	NO. OF L90
1200	HEAVY	26'	6	9	7	17	13
1200	LIGHT	14'-8"	5	7	5	13	10
1500	HEAVY	22'-8"	7	11	8	19	15
1500	LIGHT	17'-4"	5	8	6	15	11
2000	HEAVY	28'	8	13	9	24	18
2000	LIGHT	21'-4"	6	10	7	18	14

BRACING BOLTING & SHEAR TRANSFER REQUIREMENTS FOR **2-STORY** HOUSE

Using 15/32" rated plywood sheathing with 8d @ 4" o.c.

1800	HEAVY	24'-0"	7	12	8	21	16
1800	LIGHT	18'-8"	6	9	7	16	12
2400	HEAVY	29'-4"	9	14	10	25	19
2400	LIGHT	22'-8"	7	11	8	20	15
3000	HEAVY	N/A		N/A	N/A	N/A	N/A
3000	LIGHT	26'-8"	8	13	9	23	17

PLYWOOD PANEL INSTALLATION REQUIREMENTS

- INSTALL PLYWOOD SHEAR PANELS AT EACH END OF EACH WALL LINE AND SPACE ADDITIONAL PANELS, AS NEEDED, ALONG EACH WALL LINE.
- BRACED PANELS CLOSEST TO THE ENDS OF WALL LINES SHALL BE LOCATED AS NEAR TO THE ENDS AS POSSIBLE. PANELS MAY BE LOCATED AWAY FROM THE ENDS OF A WALL LINE WHEN EXISTING OBSTRUCTIONS OR LIMITED CLEARANCE NECESSITATES SUCH RELOCATION.
- BRACED PANELS SHOULD BE NEARLY EQUAL IN LENGTH AND SHOULD BE NEARLY EQUAL IN SPACING ALONG THE LENGTH OF THE WALL WHERE POSSIBLE.
- THE LENGTH OF EACH INDIVIDUAL PANEL MUST BE TWICE THE HEIGHT OF THE CRIPPLE WALL BEING BRACED, BUT NEVER LESS THAN 48 INCHES.
- NAILS SHALL BE 8d COMMON WITH A MINIMUM SHANK DIAMETER OF .131 INCHES
- PLYWOOD SHEAR PANEL SHALL BE **3-PLY** 15/32" (1/2") CDX (3-PLY 15/32" IS NOT ACCEPTABLE) AND SHALL BE INSTALLED IN ACCORDANCE WITH THE SIZE, SPACING AND HARDWARE SPECS IN DETAILS.
- WALL LINE- SEE SAMPLE PLAN.
- MIN. EDGE DISTANCE OF NAILS IS 3/8".
- **DO NOT OVERDRIVE NAILS.**
- **DO NOT SPACE NAILS CLOSER THAN 3-1/2" IN PLYWOOD.**

DEFINITIONS- LIGHT AND HEAVY CONSTRUCTION

HEAVY CONSTRUCTION IS ANY BUILDING 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

LIGHT CONSTRUCTION IS ANY BUILDING CONSTRUCTED USING ONLY THE FOLLOWING

ROOFING MATERIALS:
- WOOD SHAKES OR 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 WEIGHT BOARD SIDING

INTERIOR WALL FINISHES:
- GYPSUM BOARD
- GYPSUM OR PLASTER LATH

NOTE: NEW BOLTS OR ANCHORS SHALL BE INSTALLED WHERE PLYWOOD PANELS OCCUR.

ALL NEW MUD SILL BOLTS SHALL HAVE A 3" X 3" X 1/4" PLATE WASHER INSTALLED BETWEEN THE MUD SILL (OR BLOCKING) AND THE NUT.

NEW BOLTS SHALL BE 1-1/2" INCHES MINIMUM FROM THE EDGES OF THE MUD SILL AND 4-3/8" FROM THE ENDS.

EXISTING BOLTS MAY BE USED ALONG PORTIONS OF MUD SILLS LOCATED OUTSIDE OF A BRACED WALL PANEL AND ALONG WALL LINES WITHOUT A CRIPPLE WALL, WHEN THEY MEET THE FOLLOWING REQUIREMENTS:
- BOLTS SHALL BE 1 INCH MINIMUM FROM THE EDGES OF THE MUD SILL (MEASURED FROM THE CENTER OF THE BOLT TO THE EDGE OF THE MUD SILL).
- BOLTS MUST NOT BE SEVERELY RUSTED, DAMAGED, OR DETERIORATED SUCH THAT THEIR ORIGINAL CAPACITY IS SIGNIFICANTLY REDUCED.
- MUD SILL BOLT HOLES MUST NOT BE OVERSIZED SUCH THAT THE EFFECTIVENESS OF THE WASHER AND NUT IS SIGNIFICANTLY REDUCED.

FOOTNOTES FROM TABLE:

(1) SEE TOTAL FLOOR AREA FROM RETROFIT CONSTRUCTION DATA.

(2) WHEN UFP ANCHORS AND BOLTS ARE USED IN A SINGLE WALL LINE, UFP ANCHORS MAYBE SUBSTITUTED FOR THE NUMBER OF BOLTS.

(3) NOT MORE THAN ONE ANGLE PER JOIST BAY UNLESS JOISTS ARE SPACED 24 INCHES ON CENTER. WHERE PRACTICABLE INSTALL ANGLES BETWEEN JOISTS ABOVE PLYWOOD PANEL LOCATIONS.

(4) INSTALL L70 & L90 W/ 10d X 1-1/2" NAILS.

REVISIONS

1/2