Engineering Division
Phone: (707) 257-9530

Community Development Department
1600 First St., P.O. Box 660
Napa, CA 94559-0660

Planning Division
Phone: (707) 257-9530

Building Division
Phone: (707) 257-9540
Inspections: (707) 257-1063

Facsimile: (707) 257-9522

Napa Fire Department
Fire Prevention Division
Phone: (707) 257-9590

CITY of NAPA

ROOF FRAMING FROM FLAT TO PITCH ROOF

Scope of work: Address _____ Date_____

1. Typical twist strap connection between new rafters being installed and existing top plates of dwelling must have positive connection at each new rafter and to top plate. LTP4 needs to be installed at each ceiling bay at a max of 24' O/C.

2. Must remove all existing built up roofing materials on existing roof to lighten roof load.

3. Need to provide attic access 22" x 30". Not to be installed in closet.

4. May need to extend electrical mast. See service change information that is provided.

5. Plumbing vents and other piping may need to be lift up through new roof..

6. Provide elevations plans for the Planning Division.

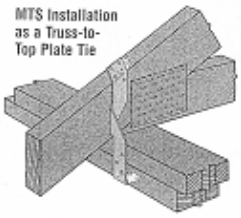
7. Attic floor may not be used for storage.

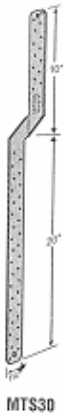
8. Provide truss calculations with layout or provide conventional roof framing detail with grade, species , size and spacing of lumber.

9. If home has fireplace chimney show on plan and how it will be raised through new roof.

10. THIS FRAMING IS NOT APPROVED FOR TILE ROOF INSTALLATION. TILE ROOFS REQUIRE A CALIFORNIA LICENSE ENGINEER.

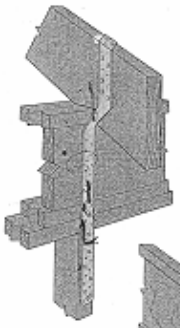
Twist straps provide a tension connection between two wood members. They resist uplift at the heel of a truss economically. The 3" bend section eliminates interference at the transition points between wood members.
MATERIAL: LTS–18 gauge; MTS–16 gauge; HTS–14 gauge
FINISH: Galvanized. Some products available in stainless steel and Z-MAX; see Corrosion-Resistance, page 7.
INSTALLATION: Use all specified fasteners. See General Notes.
CODES: See page 8 for Code Listing Key Chart.

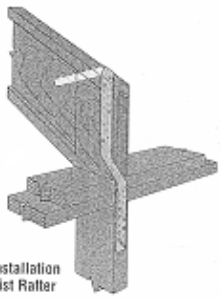




Model No.	L	Fasteners[2] 10d	Fasteners[2] 10dx1½"	Avg Ult	Doug-Fir-Larch/So Pine Allowable Uplift Loads[5] 10d (133/160)	Doug-Fir-Larch/So Pine 10dx1½" (133)	Doug-Fir-Larch/So Pine 10dx1½" (160)	Spruce-Pine-Fir Allowable Uplift Loads 10d (133/160)	Spruce-Pine-Fir 10dx1½" (133)	Spruce-Pine-Fir 10dx1½" (160)	Code Ref.
LTS12	12	12-10d	12-10dx1½	2383	775	720	720	665	620	620	3, 41
LTS16	16	12-10d	12-10dx1½	2383	775	720	720	665	620	620	
LTS18	18	12-10d	12-10dx1½	2383	775	720	720	665	620	620	
LTS20	20	12-10d	12-10dx1½	2383	775	720	720	665	620	620	
MTS12	12	14-10d	14-10dx1½	3116	1000	840	1000	860	730	860	3, 41, 128
MTS16	16	14-10d	14-10dx1½	3116	1000	840	1000	860	730	860	
MTS18	18	14-10d	14-10dx1½	3116	1000	840	1000	860	730	860	
MTS20	20	14-10d	14-10dx1½	3116	1000	840	1000	860	730	860	
MTS30	30	14-10d	—	3092	995	—	—	720	—	—	
MTS24C	24	14-10d	14-10dx1½	3116	1000	840	1000	860	730	860	170
MTS28C	28	14-10d	14-10dx1½	3116	1000	840	1000	860	730	860	
MTS30C	30	14-10d	14-10dx1½	3116	1000	840	1000	860	730	860	
HTS16	16	16-10d	16-10dx1½	4430	1260	1005	1150	1085	865	990	62
HTS20	20	20-10d	24-10dx1½	4430	1450	1450	1450	1245	1245	1245	
HTS24	24	20-10d	24-10dx1½	4430	1450	1450	1450	1245	1245	1245	
HTS28	28	20-10d	24-10dx1½	4430	1450	1450	1450	1245	1245	1245	
HTS30	30	20-10d	24-10dx1½	4430	1450	1450	1450	1245	1245	1245	
HTS30C	30	20-10d	24-10dx1½	4430	1450	1450	1450	1245	1245	1245	

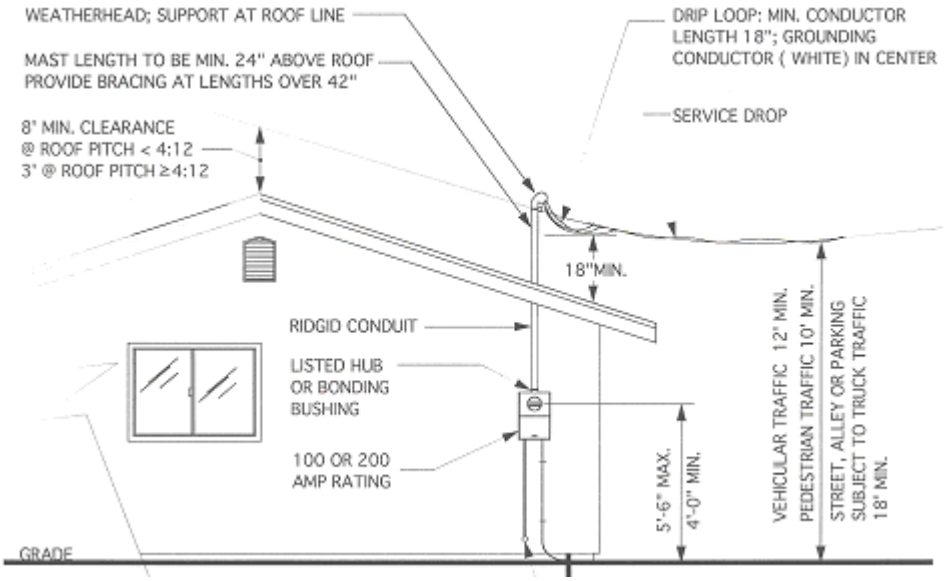
1. LTS12 thru LTS20, MTS16 through MTS30, HTS24 through HTS30C (except HTS30) have additional nail holes.
2. Install half of the fasteners on each end of strap to achieve full loads.
3. Loads have been increased 33% and 60% for earthquake or wind loading; no further increase allowed; reduce where other loads govern.
4. All straps except the MTS30 and HTS30 have the twist in the center of the strap.
5. Twist straps do not have to be wrapped over the truss to achieve the load.
6. Optional nail holes are provided on some straps.





All forms and handouts are available on www.cityofnapa.org

Typical risers through roof.

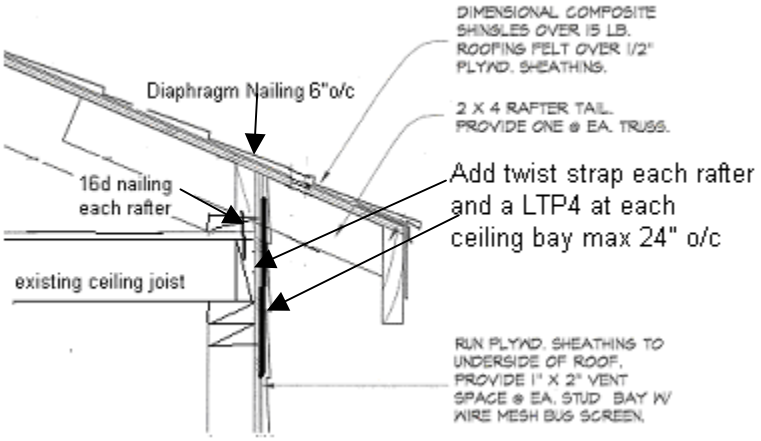


Typical Roof Spans
DF. #2 or better.

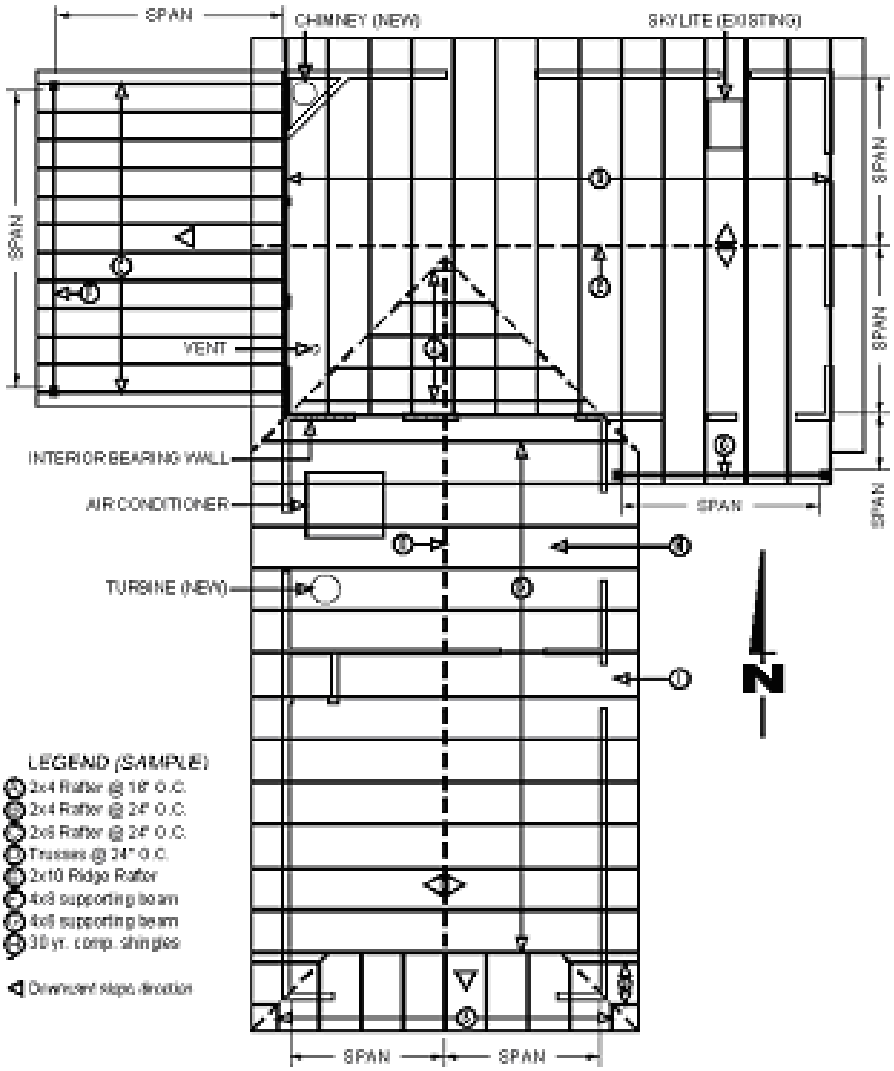
RAFTERS L/240 20LL+10DL

SIZE	SPACING	ALLOWABLE SPAN
2x4	12"oc	9'-7"
	16"oc	8'-6"
	24"oc	7'-0"
2x6	12"oc	15'-4"
	16"oc	13'-9"
	24"oc	11'-7"
2x8	12"oc	20'-3"
	16"oc	18'-1"
	24"oc	14'-10"
2x10	12"oc	24'-10"
	16"oc	21'-6"
	24"oc	17'-7"
2x12	12"oc	25'-2"
	16"oc	25'-2"
	24"oc	20'-6"

TYPICAL ROOF OVERHANG.



Typical conventional roof framing plan.



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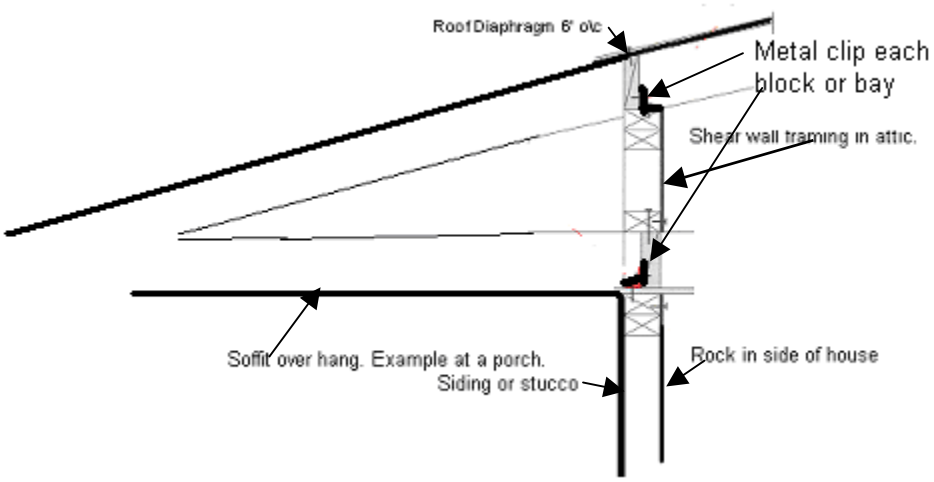
ATTIC SHEAR-WALL EXTENSION IN CONVENTONAL ROOF FRAMING

Roof sheathing

Notes:

1. Roof diaphragm sheathing edge or boundary fastening to blocking
2. Blocking fastening to top plates
3. Shear-wall sheathing fastening to top plates