## HUMBOLDT COUNTY BUILDING AND SAFETY DEPARTMENT
## CITY OF WINNEMUCCA BUILDING DEPARTMENT

# STORAGE BUILDING
# RESIDENTIAL – ONE STORY ONLY
# 2012 INTERNATIONAL RESIDENTIAL CODE

**1. Using the charts below fill in the blanks on the worksheet:**

_____Eave Height

_____Building Width

_____Building Length

Foundations

_____Footing and stemwall

_____Slab foundation (Storage buildings 600 square feet or less can be constructed without frost proteted footings. Edges of slab shall be deepened to 12" in order to install anchor bolts.

_____Roof Design (Flat, Hip, Gable, etc)

_____Trusses/submit Nevada stamped engineers drawing

_____Rafters – Request handout if desired

_____Size

_____Spacing

Wall Studs – Bearing wall stud height shall be a max. of 10'

_____Size

_____Spacing

_____Wall Bracing Material

_____Tie down devices required – wall less than 4' from corner to opening.

Header Sizes – See attached header schedule

If using engineered headers (versalams, LVL, etc) the headers are required to be protected from the weather. This requires total encasement of the header with weatherproof materials.

_____Over Man Doors

_____Over Windows

Roof

_____Roof Sheathing Material

_____Roofing Material

Siding

_____Siding material

Sheetrock

_____Is storage building going to be sheetrocked? If so, provide attic ventilation

_____Number of lights

_____Number of switches

_____Number of outlets

_____New electric service required or what size is existing service and what is the amperage

**2. On the floor plan provided show the size of the building, the location and spacing of all trusses, doors and windows. Indicate the location of the electrical subpanel. If you are going to construct the roof with rafters you will be required to submit a roof framing detail. Also, provide a site plan indicating the distances from property lines and other buildings. Check with the Planning Department (623-6393) for their required setbacks from the property lines.**

3. General Notes

- Foundations – Storage buildings less than 600 square feet may be constructed with walls supporting slab or wood foundation.
    - Slab foundations – The anchor bolts shall be placed 6' o.c. and 12" from each end. A plate washer that is .0229" x 3" x3" shall be installed on the anchor bolt. The sill plate shall be pressure treated. The anchor bolts shall not be countersunk in the sill plate.
    - Tie down devices may be required where there is less than 4' from a corner to an opening. Each panel end stud shall have a tie-down device fastened to the foundation capable of providing an uplift capacity of not less than 1,800 lbs.
- All framing shall comply with minimum County standards as designated by the International Residential Code. See Humboldt County handout for minimum wall framing. Provide fire blocking per IRC Section 602.8.
- Install positive connections on each truss or rafter at the double plate.
- **Wall Bracing –** IRC Section R602.10.1**. See Framing & Wall Bracing Handout**
- Beams **– Versalam beams shall be enclosed with weather resistant materials and shall be sized by the manufacturer/Lumber Company**
- **Doors** – a man door shall be provided in addition to the garage doors. This exit doorway shall be of a size as to permit the installation of a door not less than 3 feet in width and not less than 6'8" in height. Exit doors shall be capable of opening so that the clear width of the exit door is not less than 32". IRC Section R311.4.3
- **Fire Protection**
    - Exterior walls shall be protected by a (1) hour fire resistive rating (approved assembly) when less than (3) feet from property line or (6) feet to another building. IRC R302.1
    - Openings shall not be permitted in exterior walls with a fire separation distant of less than 3 feet. IRC Section R302.2. Openings in exterior walls shall be ¾ hour rated. IBC Table 715.3
    - All drywall joints shall be taped.

**Electrical**

- Owner shall verify service size is adequate for an additional electric load. Only one service permitted on a residential lot.
- Submit number of fixtures including switches, lights, and outlets.
- This office recommends an owner not familiar with electrical installation of the NEC obtain a simple wiring booklet, which is written to comply with the 2011 National Electric Code. This type of book will contain more specific information regarding wiring methods, wiring sizes, supports, sub panels, overcurrent protection, connections, fixtures, working space, safety precautions, grounding, branch circuits, etc. There are various requirements that cannot be covered in a handout.
- All garage outlets shall be GFI (ground fault circuit interrupter) protected. See NEC Code for specific exceptions.
- Exterior outlets shall have weather tight covers, which will remain weather tight when a plug is inserted. (Bubble covers are required). NEC 406.9(2)(6)
- All exposed wiring shall be securely stapled or protected.
- If installing romex wiring (nonmetallic sheathed cable) wiring shall be protected from damage
- Provide individual ground rod and ground wire when more than (1) circuit is provided in garage. If a four-wire system is run from the service a ground rod is not required. (NEC 250.24)

- A disconnecting means and overcurrent protection shall be provided per NEC. Overcurrent protection requires the breaker to be rated for the amperage of the wire. #12 wire/20 amp breaker, #10 wire/30 amp breaker. See NEC for further information.
- Ground wire and neutral wires shall be separated/isolated as per NEC, 250.61(b).
- Feeder wires for the garage shall not be serviced from the manufactured/mobile home unless approved by Manufactured Housing Division.
- Schedule 80 (PVC) rigid nonmetallic electric conduit is required to protect above ground conductors. NEC 230.50
- All wiring used underground shall be listed for wet location or underground use when installed in conduit. NEC 300.5(D)(5)
- Inform the Building Department if an upgraded service will be necessary.
- Contact NV Energy at (775) 623-3667or Harney Electric at (775) 272-3336 for their requirements.

**Plumbing**

- Locate your septic system before planning the garage construction. A minimum of 8 feet is required to the nearest portion of the septic tank.
- Permits are required for all plumbing fixture installations.

**Heating/Mechanical (Including woodstoves)**

- Permits are required for all mechanical installations.
- All gas appliances shall be installed to manufacturer's installation instructions and to Uniform Mechanical Code requirements.
- Heating & cooling equipment located in a garage and which generates a glow, spark or flame capable of igniting flammable vapors shall be installed with the pilots and burners or heating elements and switches are at least 18 inches above floor level. IRC Section M1307.3
- Appliances located in a garage or carport shall be protected from impact by automobiles. IRC Section M1307.3.1
- Exhaust fans in bathroom are required or a window shall be installed. IRC Section R303.

# HEADER SCHEDULE

**LOAD BEARING EXTERIOR HEADERS-ROOF & CEILING ONLY (IRC TABLE R502.5(1))**

| BUILDING WIDTH | | | | | | |
|---|---|---|---|---|---|---|
| | **20’** | | **28’** | | **36’** | |
| Size | Span | # of Jack Studs | Span | # of Jack Studs | Span | # of Jack Studs |
| 2-2x4 | 3’6” | 1 | 3’2” | 1 | 2’10” | 1 |
| 2-2x6 | 5’5” | 1 | 4’8” | 1 | 4’2” | 1 |
| 2-2x8 | 6’10” | 1 | 5’11” | 2 | 5’4” | 2 |
| 2-2x10 | 8’5” | 2 | 7’3” | 2 | 6’6” | 2 |
| 2-2x12 | 9’9” | 2 | 8’5” | 2 | 7’6” | 2 |
| 2-2x8 | 8’4” | 1 | 7’5” | 2 | 6’8” | 2 |
| 3-2x10 | 10’6” | 1 | 9’1” | 2 | 8’2” | 2 |
| 3-2x12 | 12’2” | 2 | 10’7” | 2 | 9’5” | 2 |
| 4-2x8 | 9’2” | 1 | 8’4” | 1 | 7’8” | 1 |
| 4-2x10 | 11’8” | 1 | 10’6” | 1 | 9’5” | 2 |
| 4-2x12 | 14’1’ | 1 | 12’2” | 2 | 10’11” | 2 |

**LOAD BEARING INTERIOR HEADERS-ROOF & CEILING ONLY (IRC TABLE R502.2(2))**

| BUILDING WIDTH | | | | | | |
|---|---|---|---|---|---|---|
| | **20’** | | **28’** | | **36’** | |
| Size | Span | # of Jack Studs | Span | # of Jack Studs | Span | # of Jack Studs |
| 2-2x4 | 3’1” | 1 | 2’8” | 1 | 2’5” | 1 |
| 2-2x6 | 4’6” | 1 | 3’11” | 1 | 3’6” | 1 |
| 2-2x8 | 5’9” | 1 | 5’0” | 2 | 4’5” | 2 |
| 2-2x10 | 7’0” | 2 | 6’1” | 2 | 5’5” | 2 |
| 2-2x12 | 8’1” | 2 | 7’0” | 2 | 6’3” | 2 |
| 3-2x8 | 7’2” | 1 | 7’7” | 2 | 6’9” | 2 |
| 3-2x10 | 8’9” | 1 | 7’7” | 2 | 6’9” | 2 |
| 3-2x12 | 10’2” | 2 | 8’10” | 2 | 7’10” | 2 |
| 4-2x8 | 9’0” | 1 | 7’8” | 1 | 6’9” | 1 |
| 4-2x10 | 10’1” | 1 | 8’9” | 1 | 7’10” | 2 |
| 4-2x12 | 11’9” | 1 | 10’2” | 2 | 9’1” | 2 |

**SPANS FOR MIN. #2 GRADE SINGLE HEADER SUPPORTING ROOF & CEILING ONLY (IRC TABLE R602.7.1)**

| BUILDING WIDTH | | | |
|---|---|---|---|
| | **20’** | **28’** | **36’** |
| 2x8 | 5’3” | 4’6” | 4’0” |
| 2x10 | 6’8” | 5’8” | 5’1” |
| 2x12 | 8’1” | 6’11” | 7’2” |

See Header handout or IRC for construction details for single header

Rafter Spans for Douglas Fir-Larch #2 – Ceiling not attached to rafters (R802.5.1(1))

| Rafter Spacing | 2x6 | 2x8 | 2x10 | 2x12 |
|---|---|---|---|---|
| 12” o.c. | 16’7” | 21’ | 25’8” | * |
| 16’ o.c. | 14’4” | 18’2” | 22’3” | 25’9” |
| 19.2 o.c. | 13’1” | 16’7” | 20’3” | 23’6” |
| 24” o.c. | 11’9” | 14’10” | 18’2” | 21’0” |

*Span exceeds 26 feet in length
2x4’s can be used in limited situations with reduced span; higher slope; light roof covering.
Table cannot be used to determine rafter sizes for tile or other heavy roof coverings.

Rafter Spans for Douglas Fir-Larch #2 – Ceiling attached to rafters (R802.5.1(2))

| Rafter Spacing | 2x6 | 2x8 | 2x10 | 2x12 |
|---|---|---|---|---|
| 12” o.c. | 15’6” | 20’5” | 25’8” | * |
| 16’ o.c. | 14’1” | 18’2” | 22’3” | 25’9” |
| 19.2 o.c. | 13’1” | 16’7” | 20’3” | 23’6” |
| 24” o.c. | 11’9” | 14’10” | 18’2” | 21’ |

*Span exceeds 26 feet in length
2x4’s can be used in limited situations with reduced span; higher slope; light roof covering.
Table cannot be used to determine rafter sizes for tile or other heavy roof coverings.

Rafter Ties:
Where ceiling joists are not parallel to rafters, the rafters shall be tied to 2”x4” minimum size rafter ties and installed in accordance with the connection requirements in Table R802.5.1(9) or connections of equivalent capacities will be provided. (R802.3.1)

Collar Ties:
Collar ties or ridge straps to resist wind uplift shall be connected in the upper third of the attic space in accordance with Table R602.3(1). Collar ties shall be a minimum of 1”x4”, spaced not more than 4 feet on center. (R802.3.1.)