

**HUMBOLDT COUNTY BUILDING & SAFETY DEPARTMENT
CITY OF WINNEMUCCA BUILDING DEPARTMENT**

**FOR PRIVATE THREE-SIDED POST FRAMED (NON-ENGINEERED)
OUTBUILDINGS LOCATED ON RESIDENTIAL LOTS ONLY**

Buildings must meet the following requirements to be designed without engineering.

Building Dimensions

Width 36 ft maximum
 Length 48 ft maximum
 Eave height 14 ft maximum
 Total height 20 ft maximum
 Note: Lean-to/roof cover/carport
 Supported off pole building are
 part of the width & length of the
 building.

Design Criteria

Wind speed
 90 mph fastest mile; 105 mph 3-second gust Exposure C
 Live roof load – 20 psf
 Ground snow load
 Less than 5,000 ft elev – 5 lb
 Over 5,000 ft elev – 10 lb
 Seismic Design Category – D1
 2012 International Building Code
 2011 National Electric Code

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

_____	Eave height
_____	Building width
_____	Building length
_____	Pole size
_____	Bay width
_____	Header size
_____	Rafter/Purlin size
_____	Rafter/Purlin spacing
_____	Roof sheathing
_____	Roofing material & gage
_____	Truss/Rafter attachment to post
_____	Girt size
_____	Girt spacing
_____	Type of siding & gage
_____	Corbel attachment to post
_____	Slope of roof (to determine maximum height)
_____	Burial depth of posts

Truss and corbel attachment

Eave Height Max. 14'	Corbel to post 8 - 20d nails	Truss to Post ½" thru-bolt
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Girt spacing, size and orientation

Bay Width-Max. 10' Width – 2x6 @ 24" o.c. attached to the outside of the posts. (see girt detail) Bay Width – Over 10' to 12" – 2x6 @ 24" o.c. installed horizontally (flat between posts) with 2x6 blocking between girts. (see girt detail)

Roof purlin spacing and size

Purlin Size and spacing: Minimum 2x6 @ 24"
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Header Sizes

Header sizes – see attached sheet

Burial depth of posts

Eave height to 10' – 3' depth Eave height over 10' – 14' – 4' depth or 3'6" depth with (1) ½" (#4) rebar – 36" long evenly spaced into a slab. Require on each post. Drill one hole thru post. Insert the rebar. Evenly space so there is approximately 15" of rebar on each side of post and bend

2. On a separate page provide a plan showing the size of the building, the location and spacing of all posts, rafters, doors, and windows. Indicate location of electrical subpanel. 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 line.

General Notes

- ❑ Buildings having over a 10' eave height shall be required to comply with the attached special provisions.
- ❑ Post and ground girts must be pressure treated
- ❑ Post must be a minimum of 6 x 6
- ❑ Post should not be surrounded by concrete unless approved by the manufacturer of the posts
- ❑ Roof trusses are required to be stamped by a Nevada engineer
- ❑ Truss engineering shall be submitted to this office prior to inspection.
- ❑ Review truss design for specific bracing requirements.
- ❑ All structural members shall have positive connections made at all points of load. These connectors shall be provided at post and beam (header) connections, rafter (purlins) and truss connections.
- ❑ Nailing shall comply with IBC requirements.
- ❑ Roofing materials shall comply with IBC requirements
- ❑ Metal siding is required on the building. Veneers of metal shall be fabricated from approved corrosion-resistant materials or shall be protected front & back with porcelain enamel, or otherwise be treated to render the metal resistant to corrosion. Such veneers shall not be less than 0.0149-inch nominal thickness sheet steel mounted on wood or metal furring strips or approved sheathing on the wood construction. If other types of siding are installed engineering may be required. IBC Section 1405.11
- ❑ Exterior metal veneer shall be securely attached to the supporting masonry or framing members with corrosion-resistant fastenings, metal ties or by other approved devices or methods. The spacing of fasteners or ties shall not exceed 24 inches either vertically or horizontally, but where units exceed 4 square feet in area there shall be not less than four attachments per units. The metal attachments shall have a cross-sectional area not less than provided by W 1.7 wire. Such attachments and their support shall be capable of resisting a horizontal force in accordance with the wind loads specified in Section 1609, but in no case less than 20 psf. IBC Section 1405.11.1
- ❑ Metal supports for exterior metal veneer shall be protected by painting, galvanizing or by other equivalent coating or treatment. Joints and edges exposed to the weather shall be caulked with approved durable waterproofing material or by other approved means to prevent penetration of moisture. IBC Section 1405.11.2
- ❑ Metal roof panels – The installation of metal roof panels shall comply with the following.
 - Deck requirements – Metal roof panel roof coverings shall be applied to a solid or closely fitted deck, except where the roof covering is specifically designed to be applied to spaced supports. IBC Section 1507.4.1
 - The minimum slope for standing seam roof systems shall be one-quarter unit vertical in 12 units horizontal (2% slope). IBC Section 1507.4.2
 - Material standards – Metal-sheet roof covering systems that incorporate supporting structural members shall be designed in accordance with Chapter 22. Metal-sheet roof coverings installed over structural decking shall comply with Table 1507.4.3. IBC Section 1507.4.3
 - Attachment – Metal roof fastened directly to steel framing shall be attached by approved manufacturer's fasteners. In the absence of manufacturer recommendations, all the following fasteners shall be used.
 - Galvanized fasteners shall be used for galvanized roofs.
 - 300 series stainless-steel fasteners shall be used for copper roofs.
 - Stainless steel fasteners are acceptable for all types of metal roofs.

- ❑ Metal siding shall be attached to pressure treated ground girt so a minimum of 4 to 6 inches is maintained from the bottom of the siding to the soil/finished grade.
- ❑ A minimum of 5% grade shall be provided away from the building.

Doors

- ❑ A man door shall be provided in addition to overhead doors. The exit doorway shall be of a size as to permit the installation of a door not less 3 feet in width and not less than 6'8" in height. The exit door shall be capable of opening so that the clear width of the exit doors shall be capable of opening so that the clear width of the exit doors is not less than 32". IBC Section 1008.1.1

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)(b)
- ❑ 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 250-32(B)(1).
- ❑ 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. Normally one service is permitted on a residential lot.
- ❑ Contact NV Energy for their requirements at 800-962-0399

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.

Mechanical/Heating

- ❑ Permits are required for wood stoves and gas/electric appliances and shall comply with UMC requirements.

RAFTER SPAN TABLES
2012 INTERNATIONAL RESIDENTIAL CODE

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.
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- 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.
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- 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)
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- 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.)

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"

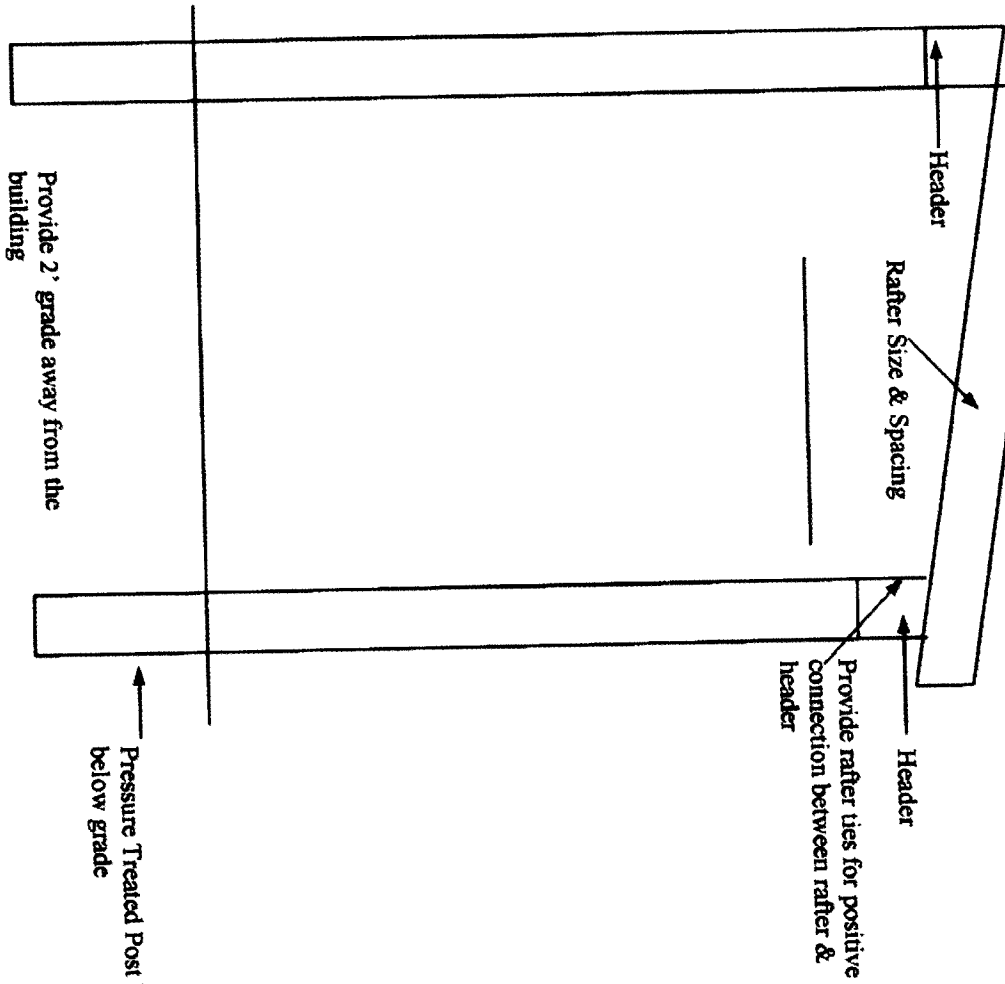
See IRC or header handout for construction details for single header

LEAN-TO DETAIL

Type of roofing _____

Size & type of roof sheathing _____

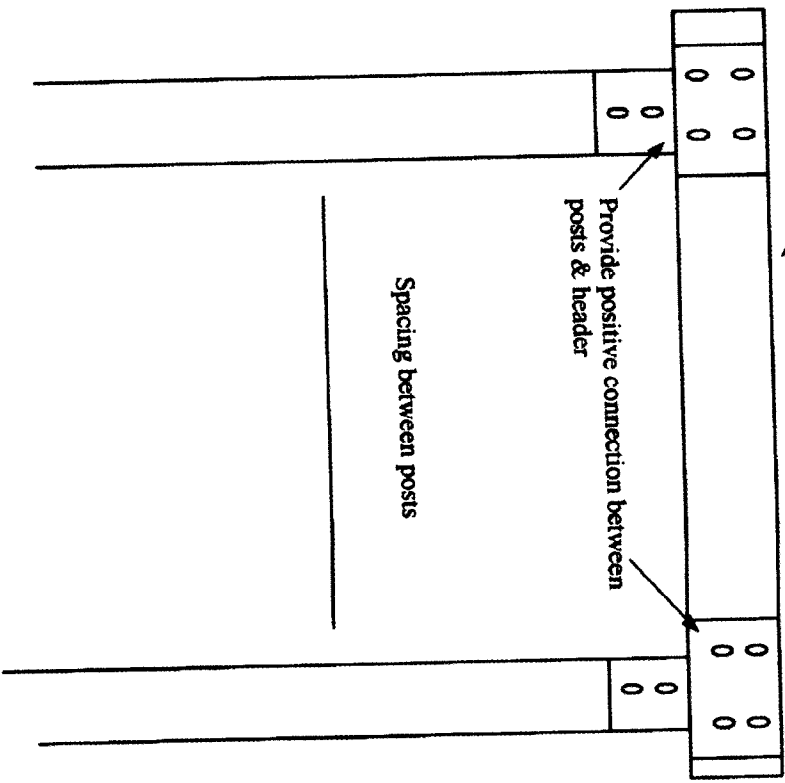
Width _____
 Length _____



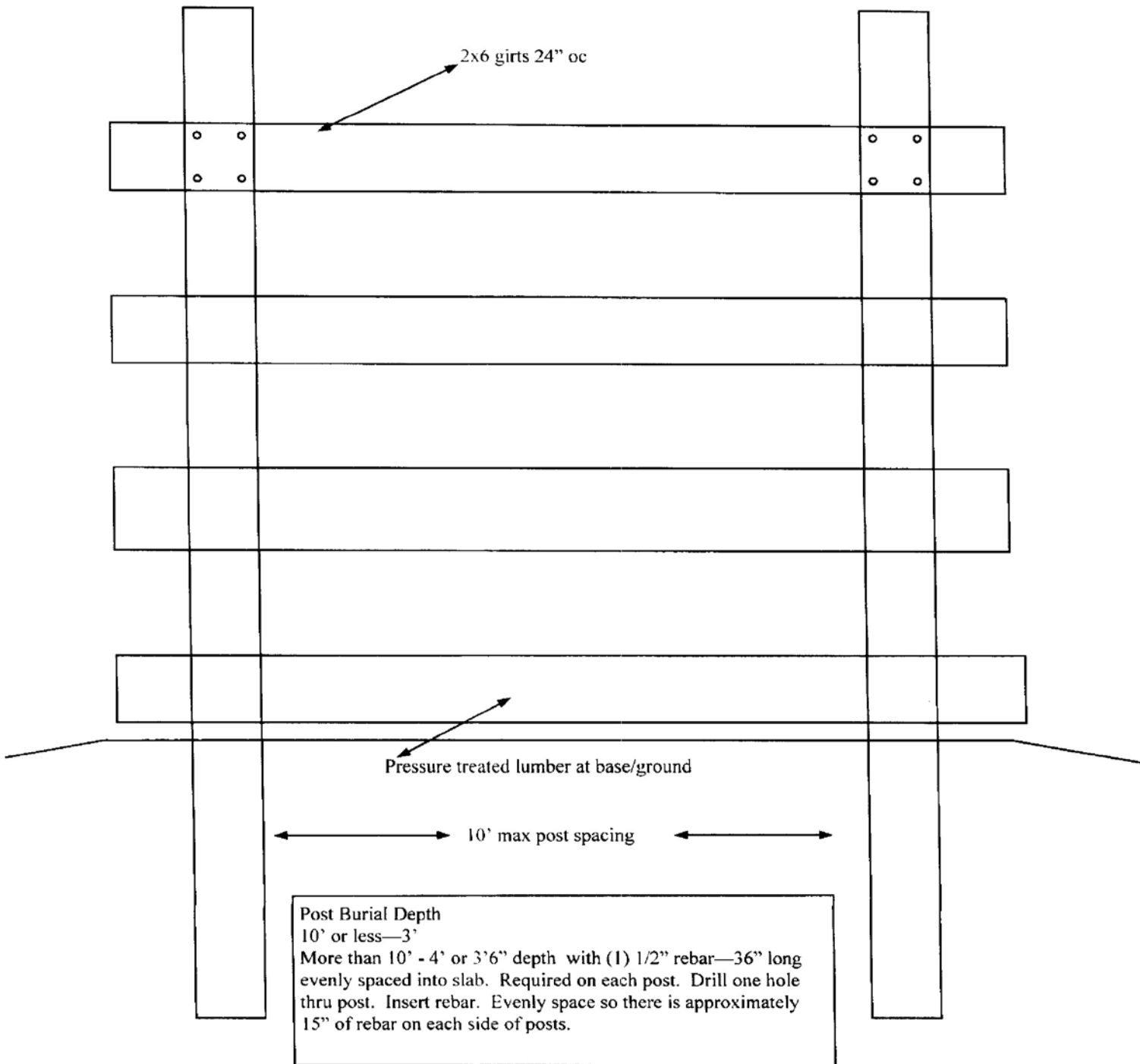
Provide 2' grade away from the building

Pressure Treated Post buried 3' below grade

Header Size _____



Wall Girt Detail for Buildings with 10' or Less Bay Width



Wall Girt Detail for Buildings Over 10' Bay Width (Max. 12' Bay Width)

