

# **NAVAJO COUNTY**

## **ADDENDA & ADDITIONS TO THE INTERNATIONAL BUILDING CODES**



### **Public Works/Planning & Zoning Building & Safety**

AMENDED (05-02-05)

NAVAJO COUNTY GOVERNMENTAL COMPLEX  
P.O. BOX 668  
HOLBROOK, ARIZONA 86025

RESOLUTION NO. 34 -05A RESOLUTION OF THE NAVAJO COUNTY BOARD OF  
SUPERVISORS, AMENDING THE NAVAJO COUNTY ADDENDA AND  
ADDITIONS TO THE INTERNATIONAL BUILDING CODE

WHEREAS, the Navajo County Technical Code Advisory and Appeals Board held a duly noticed public hearings pursuant to ARS § 11-251 on January 25, March 3, and April 7, 2005 for the purpose of considering certain proposed amendments to the Navajo County Addenda and Additions to the International Building Codes to bring them more in line with current construction practices; and

WHEREAS, the Navajo County Technical Code Advisory and Appeals Board adopted Resolution No. 05-1A, on April 7, 2005, recommending the adoption, of said amendments to the Navajo County Addenda and Additions to the International Building Code, by the Navajo County Board of Supervisors; and

WHEREAS, after giving notice pursuant to ARS §§ 11-251, the Board of Supervisors held a public hearing on May 2, 2005 and determined that the recommended amendments to the Navajo County Addenda and Additions to the International Building Codes would be appropriate and in the interests of the public health, safety and general welfare.

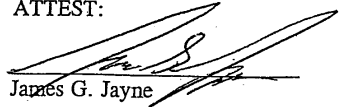
NOW, THEREFORE, BE IT RESOLVED by the Board of Supervisors that the amendments to the Navajo County Addenda and Additions to the International Building Code are APPROVED and the attached document shall be used in conjunction with construction in the unincorporated portions of Navajo County. See attached document.

PASSED AND ADOPTED by the Board of Supervisors of Navajo County on May 2, 2005.

NAVAJO COUNTY BOARD OF SUPERVISORS

By   
Jerry Brownlow, Chairman of the Board

ATTEST:

  
James G. Jayne  
Clerk of the BoardATTACHMENT: Approved Navajo County Addenda and Additions to the  
International Building Code

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# ***Public Works/Planning & Zoning Area Offices***

[www.navajocountyaz.gov](http://www.navajocountyaz.gov)

## **Holbrook Area**

**Holbrook  
Woodruff  
Joseph City  
Sun Valley  
Adamana  
Winslow**

**Navajo County  
Planning & Zoning  
P.O. Box 668  
100 East Code Talkers Dr.  
Holbrook, AZ 86025  
928 524-4100  
928 524-4122 (FAX)**

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## **Show Low Area**

**Show Low  
Pinetop  
Lakeside  
Linden  
Pinedale  
Concho  
Taylor  
Snowflake**

**Navajo County  
Building & Safety  
550 N. 9<sup>th</sup> Place  
Show Low, AZ 85901  
928-532-6040  
928-532-6044 (FAX)**

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## **Heber/Overgaard Area**

**Clay Springs  
Aripine  
Chevelon Retreat  
928-535-7110  
928-535-7114 (FAX)**

**Navajo County  
Building & Safety  
P.O. Box 1212  
2188 W. Country Club Dr.  
Overgaard, AZ 85933**

# ***GENERAL NOTES***

## **Adopted Codes**

- All 2003 International Building, Electric, Plumbing, and Mechanical Codes (*Except Chapter 11 & appendix E of the Residential Code*)
- 1996 National Electric Code and 1994 Uniform Plumbing Code are used as supplementary references.

## **Conflicts**

If there is a conflict between code(s) as adopted by either Navajo County or the State of Arizona and this Addenda and Additions, the more restrictive shall prevail. The Navajo County Technical Advisory Board shall act as the Board of Appeals in such matters.

## **Certificate of Occupancy**

No building or structure shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made until the Building Official has issued a Certificate of Occupancy.

*Exception: Navajo County does not prohibit the occupancy of a single-family non-commercial dwelling by the owners of said property during the finishing phases of construction, but only with an **approved and completed** septic / sewer system.*

## **Issuance of Permit**

No building, manufactured home, or meter loop (electrical hook-up) permit will be issued unless hook-up to an **approved** sanitary system is available. Documentation of the system will be required.

# *Design Criteria*

## **Engineering**

Any Structure built for commercial use as well as any steel, log or post and beam type construction, shall be approved and stamped by an architect or engineer registered in the State of Arizona. This policy is at the discretion of the Technical Advisory Board and the Board of Supervisors.

## **DESIGN LOADS**

Area	Wind/Exposure	Seismic	Roof Pitch	Snow Load PSF
Heber/Overgaard	80 mph / B	B	0:12 up to 4:12	45 PSF
Pinetop/Lakeside	80 mph / B		4:12 or greater	40 PSF
Show Low	80 mph / B			
Clay Springs	80 mph / C	B	0:12 up to 4:12	35 PSF
Pinedale	80 mph / B		4:12 or greater	30 PSF
Snowflake/Taylor	80 mph / C			
Shumway	80 mph / B			
Holbrook	80 mph / C	B	0:12 up to 4:12	25 PSF
Joseph City	80 mph / C		4:12 or greater	20 PSF
Winslow	80 mph / C			
Woodruff	80 mph / C			
Note: All Signs to be designed for a load of 100 mph. All Greenhouses designed for 100 PSF live load.				

## **Permits Required IBC 105.1**

Any owner or authorized agent who intends to construct, alter, move, enlarge or change the occupancy of a building or structure shall first make application and obtain the required permit.

## **Work Exempt From Permit IBC 105.2**

1. One story detached(a) accessory structures, provided the floor area does not exceed 144 square feet.
2. Fences not over 6 feet high.
3. Retaining walls not over 4 feet in height measured from the bottom of the footing to the top of the wall.
4. Flat work, sidewalks and driveways if not more than 30 inches above adjacent grade and not above any basement or story below.
5. Replacement of roof coverings or exterior siding.
6. Interior remodeling not exceeding \$1000.00 in materials & labor  
(a) Detached generally means a required 15 ft separation between structure, see the specific zoning requirements for you project.

## **Required Inspections**

1. Septic systems.
  2. Footing steel
  3. Stem steel
  4. Under-slab copper, sewer, electrical.
  5. Under-floor framing...BEFORE FLOOR SHEETING.
  6. Roof sheathing & Shear panel nail-off.
  7. Rough-in Framing, Electrical, Plumbing, Venting and Heating.  
(House must be weather-sealed prior to rough-in inspections)
  8. Drywall nailing.
  9. Final Inspection.
  10. Additional inspections may be required for specialized projects.
- All inspections must be performed and work approved before issuance of a Certificate of Occupancy.*

## **Foundations, Piers and Stem Walls**

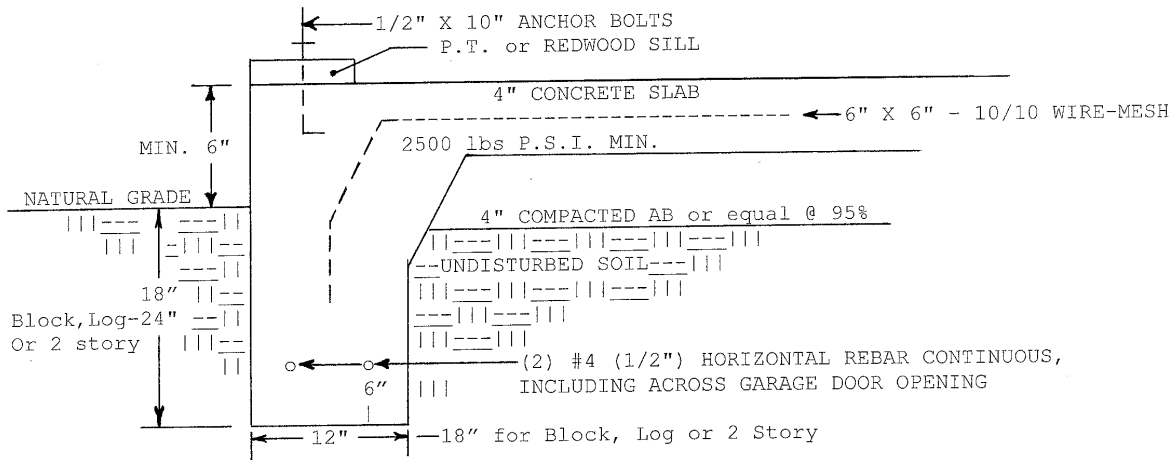
1. Footing rebar is required to be placed 6 inches below the surface of the poured concrete, and 3 inches minimum from all soil.
2. Due to most ground conditions in Navajo County, it is recommended that a UFER wire be installed in the footing before pouring. (Minimum 20' into footing)
3. All CMU stem walls shall have bond beams in the top course and at 48 inch intervals maximum.
4. Any CMU stem wall under 60 inches in height shall be a minimum of 8 inches in width with ½ inch diameter reinforcing steel at 48 inches on center and 1 ft. min. from each corner. The vertical steel shall be embedded at a minimum of 6 inches into the concrete footing. Garages may use 6 inch width stem but limited to 3 courses (2 feet high).
5. Any basement or stem wall 60 inches or more in height shall be a minimum of 8 inches in width and have 5/8 inch diameter rebar at 24 inches on center in both the horizontal and vertical direction.
6. Dur-o-wall may be used in lieu of rebar for the non-bond beam horizontal reinforcement, if desired.
7. All CMU cells containing reinforcing steel shall be grouted solid.
8. All steel laps shall be a minimum of 40 diameters and tied.
9. In walls over 8 feet in height, the steel bond beam and footing requirements may be changed at the discretion of the building official if site conditions so dictate.
10. Fibermesh concrete (3000 psi) may be substituted for 6"x 6"-10/10 wire in slabs.
11. All pier footings shall be 24"x24"x24" with 12" thick concrete.
12. For porches or decks, concrete piers up to 24 inches in height shall be a minimum of 8"x8"x16" CMU grouted solid or 12" diameter tubular concrete.
13. Concrete piers over 24 inches in height shall be a minimum of 16"x16" CMU grouted solid or 18 inch diameter tubular concrete.
14. Single story stem wall footings shall be 18" wide & 18" deep with 10" of concrete. Footings for block, log, and/or two stories shall be 24" X 24" with 12" of concrete.
15. Single story piers shall have two (2) ½" vertical rebars. Piers for block, log, and/or two stories shall have four (4) ½" vertical rebars.
16. Compaction testing is required for fill in excess of 12" deep.



## FOUNDATIONS Continued

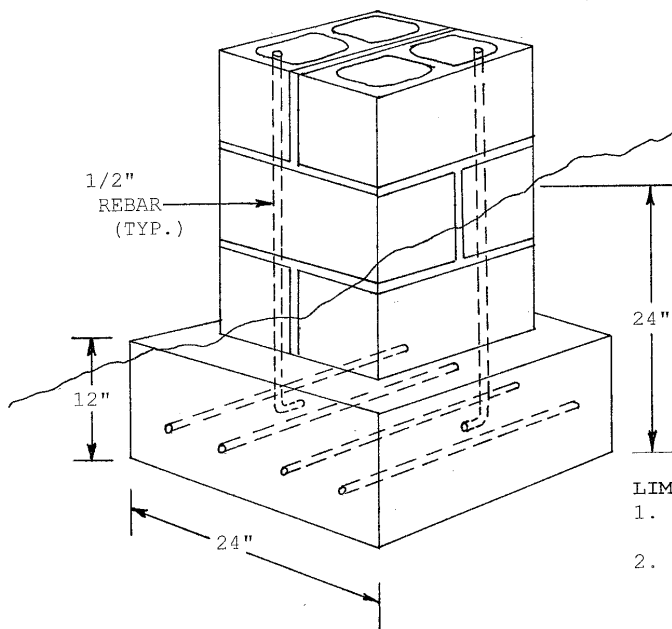
All foundation requirements are included as addenda & additions to Current I.B.C.

### MONOLITHIC POURED SLABS

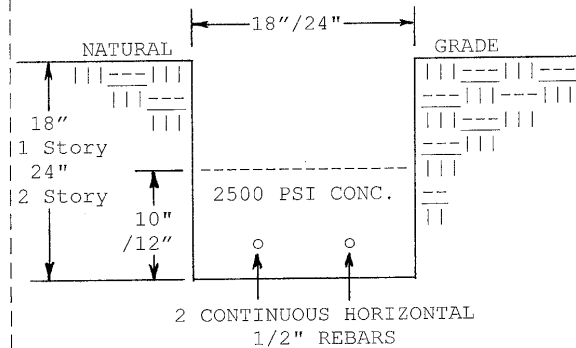


NOTE: FIBERMESH CONCRETE @ 3000 PSI MAY BE SUBSTITUTED FOR 6" X 6" - 10/10 WIRE-MESH

### PIERS & PIER FOOTINGS



### STEM WALL FOOTING DITCH



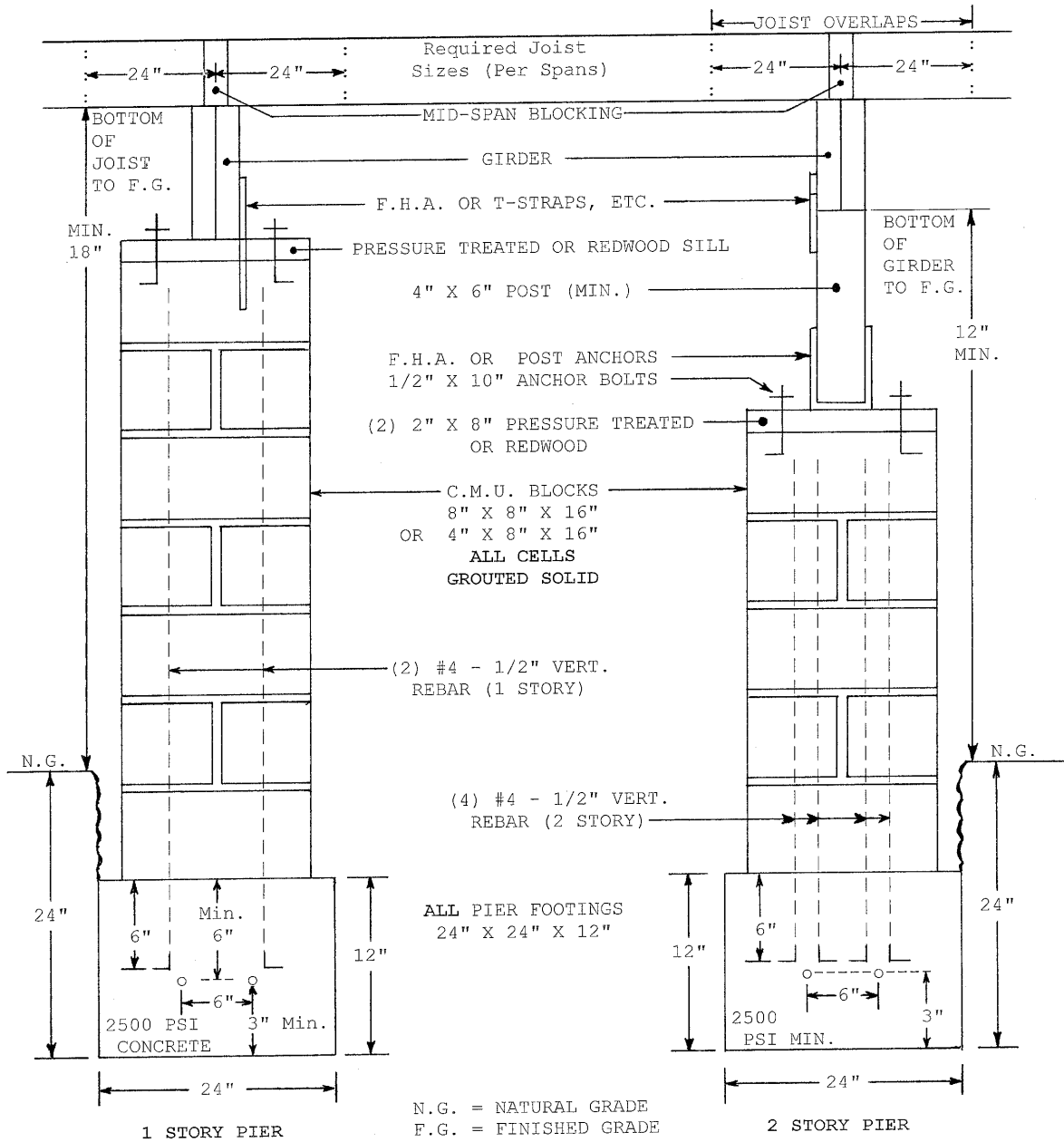
#### LIMITATIONS OF PIERS POURED INTO TUBE FORMS:

1. 12" & 16" TUBES: UP TO 24" IN HEIGHT (Porches & Sheds ONLY)
2. ANY PIER MORE THAN 24" ABOVE GRADE REQUIRES A MINIMUM TUBE DIAMETER OF 18".

# FOUNDATIONS Continued

All foundation requirements are included as addenda & additions to Current I.B.C.

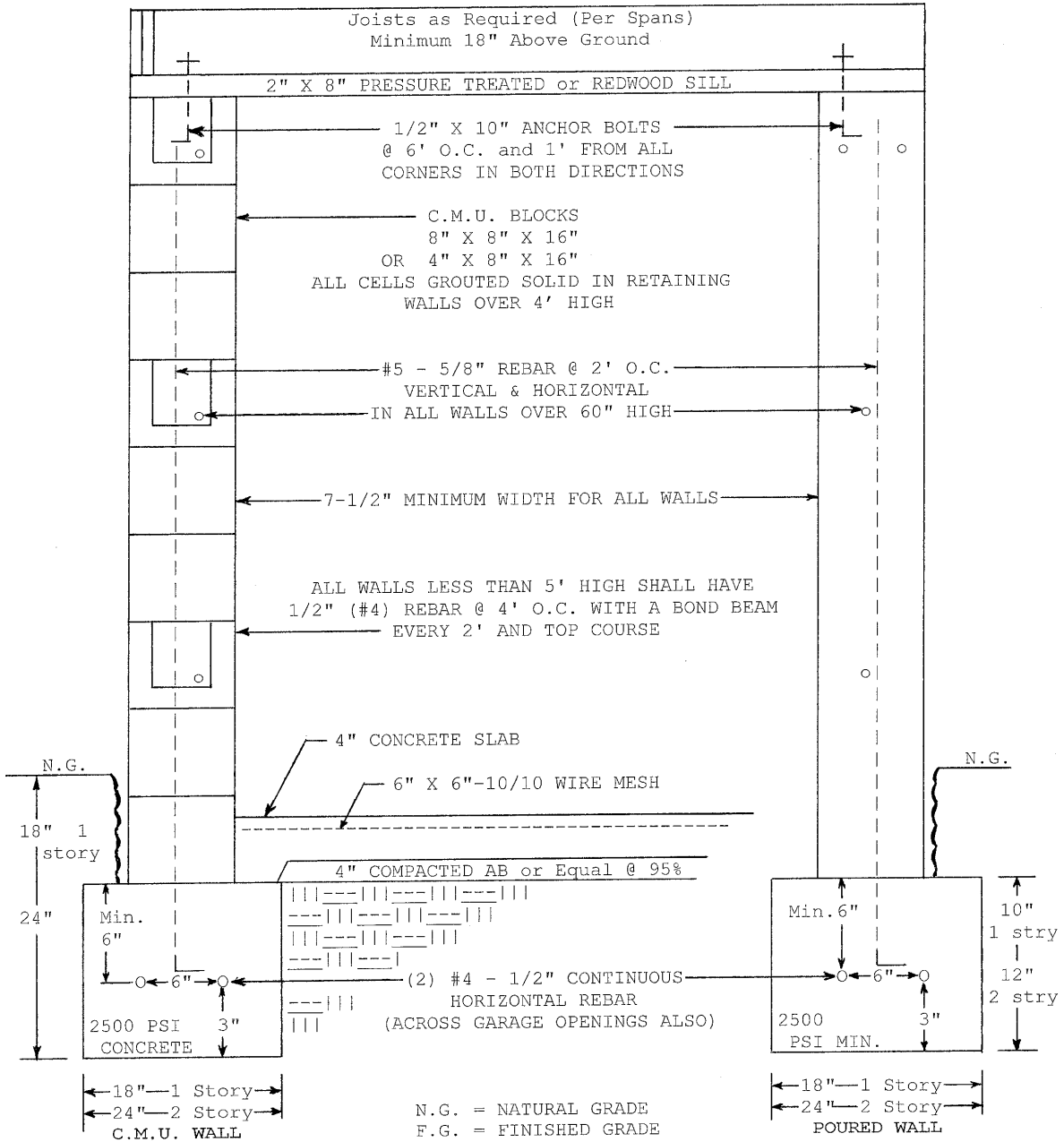
## PIERS - 16" X 16" SQUARE



# FOUNDATIONS Continued

All foundation requirements are included as addenda & additions to Current I.B.C.

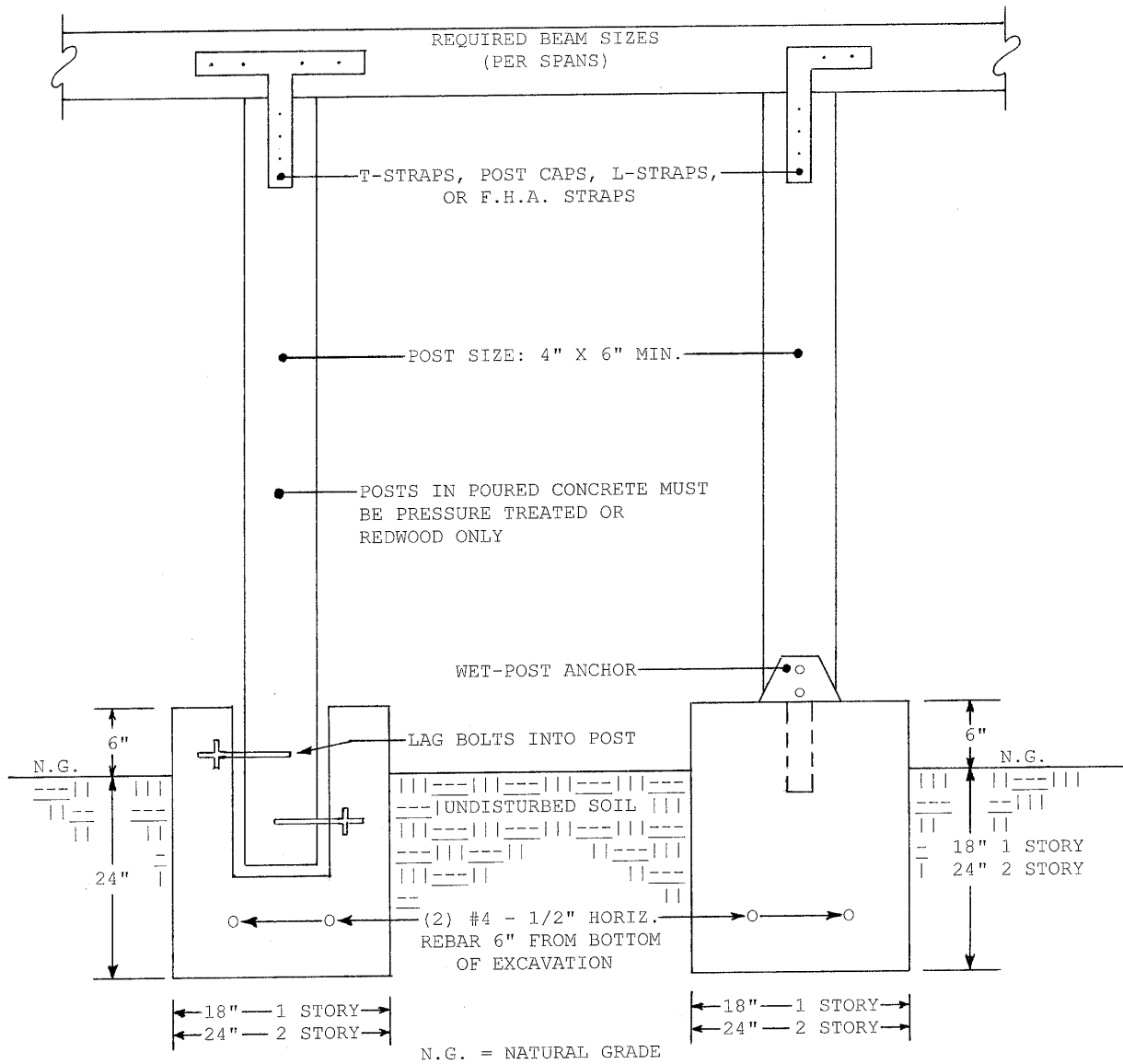
## STEM WALLS - TYPICAL



FOUNDATIONS Continued

All foundation requirements are included as addenda & additions to Current I.B.C.

POST & BEAM CONSTRUCTION WITH FOOTINGS



## **Floors**

1. All under-slab plumbing, electrical and mechanical shall be inspected and approved before placement of concrete.
2. Wood floor framing shall be inspected and approved before placement of sheathing. (Minimum  $\frac{3}{4}$ " T. & G.)
3. All bearing points of girders must be strapped by approved means.

## **Roofs**

1. Roof sheathing nail spacing (6" on edges & 12 " in fields) shall be inspected and approved before placement of roofing material.
2. Trusses shall be engineered and manufactured for all imposed loads including any mechanical equipment or concrete roofing etc..
3. Roof sheathing face grain shall be at right angles to rafters with the following ratios:  
5/8" sheathing : rafters at 24" O.C. 3/4" sheathing : rafters at 32" O.C. 1/2" sheathing may be used only on unattached accessory buildings with rafters at 16" O.C.

## **Framing**

1. All headers to be box or double 2x material on edge. Flat or "California" type headers are **not** allowed.
2. All walls shall have double top plates (48" Minimum Overlap).
3. Metal hurricane straps (e.g. H2.5s) must be secured at each end of each rafter to the double top plates of walls.
4. All 2x4 framed walls, 16 inch on center maximum.
5. End wall ladder backing is not allowed.
6. Ceiling height in livable areas shall be a minimum of 7 ft 6 inches with the exception of bathrooms, kitchens and hallways which may be reduced to 7 feet.
7. All walls shall be braced for shear.
8. Engineering calculations and design data may be required for any unusual design, at the discretion of the building official, prior to issuance of a building permit.
9. Attic access openings must be 30 " x 22 " minimum.

## **Electrical**

1. Inspections based on 2003 I.E.C. and referenced with 1996 National Electric Code.
2. All receptacle wiring shall be 12 AWG minimum on 20 Amp circuit.
3. Separate lighting circuits may use 14 AWG with 15 Amp breakers.
4. Bathrooms must be on their own separate circuit.
5. Ground Fault Circuit Interrupters are required for:
  - a. All receptacles in bathrooms
  - b. All receptacles within 6 feet of water
  - c. All countertop receptacles
  - d. All exterior receptacles (Must have weather-proof cover)
  - e. All receptacles in garages and unfinished basements
  - f. All temporary receptacles.
  - g. All circuits providing power to spas or hot tubs and any convenience outlet within 10 feet of unit.

## **Plumbing**

1. Inspections based on 2003 I.P.C. and referenced with 1994 Uniform Plumbing Code.
2. All venting through the roof shall be a minimum of 2" in diameter.
3. LPG service, facilities, supply, or storage shall **not** be installed in a basement, pit, or crawlspace.
4. All fireplaces supplied with gas log lighters shall have a key type gas valve installed outside the hearth and within three feet of the device.
5. No atmospheric valve type venting (e.g. Studor brand vents) will be allowed without prior approval from the Building Official. (Attic placement prohibited)

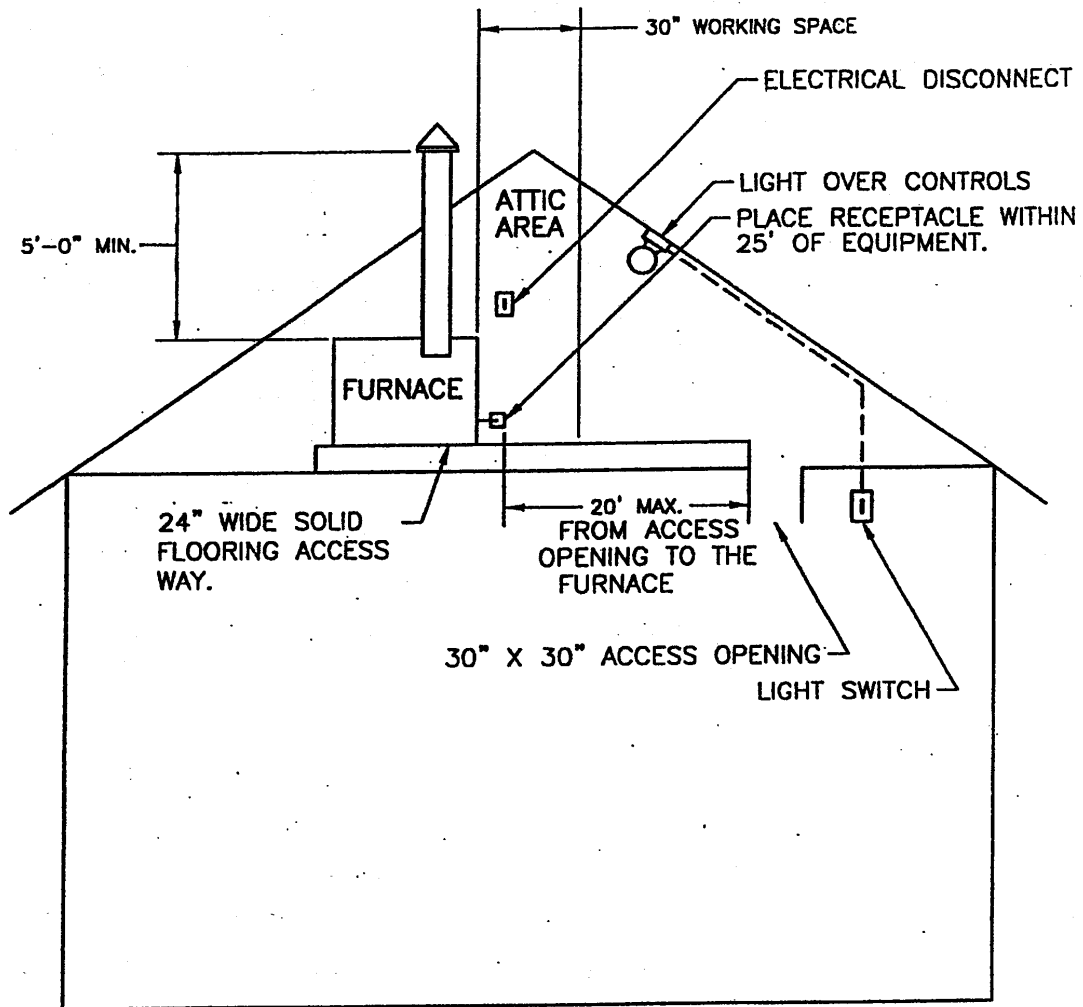
## **Drywall**

1. Green board shall not be installed on ceilings.
2. Sheetrock shall not be installed on the exterior of any structure.
3. ATTACHED GARAGES: All ceilings and walls common with a dwelling, shall be 5/8" type X sheetrock minimum. (Solid core doors with self closing hinges are required at the dwelling access.)
4. Fastener spacing:   Ceilings = 6" on edges   8" in fields  
                                  Walls     = 7" on edges  12" in fields

## **FINAL INSPECTION CHECKLIST**

1. Septic and plumbing in total working order.
2. Concrete approach pads, guard and hand rails at correct heights & spacings.
3. Electric panels labeled, and outlets closed up and properly working.
4. GFCIs and inter-connected smoke detectors installed where required.
5. Furnace and water heater rooms vented with self closing doors as required for gas. T&P valves plumbed to outside.
6. Solid core, self closing door from garage to dwelling.
7. No obstructions in stem wall or attic access openings.
8. Yard landscaped for proper water drainage.
9. Spark arrester installed and chimney capped.
10. Garage door operable
11. No under-floor L.P.G. units
12. Proper fall on sewer lines & no debris in crawlspace
13. Culvert installed (if required).
14. Additional inspections may be required as site conditions dictate.
15. A Temporary Certificate of Occupancy may be issued for a single family dwelling (with a completed and approved sanitary system) contingent upon corrections and/or completion within 60 days from the date of this inspection.

## ATTIC FURNACE INSTALLATION

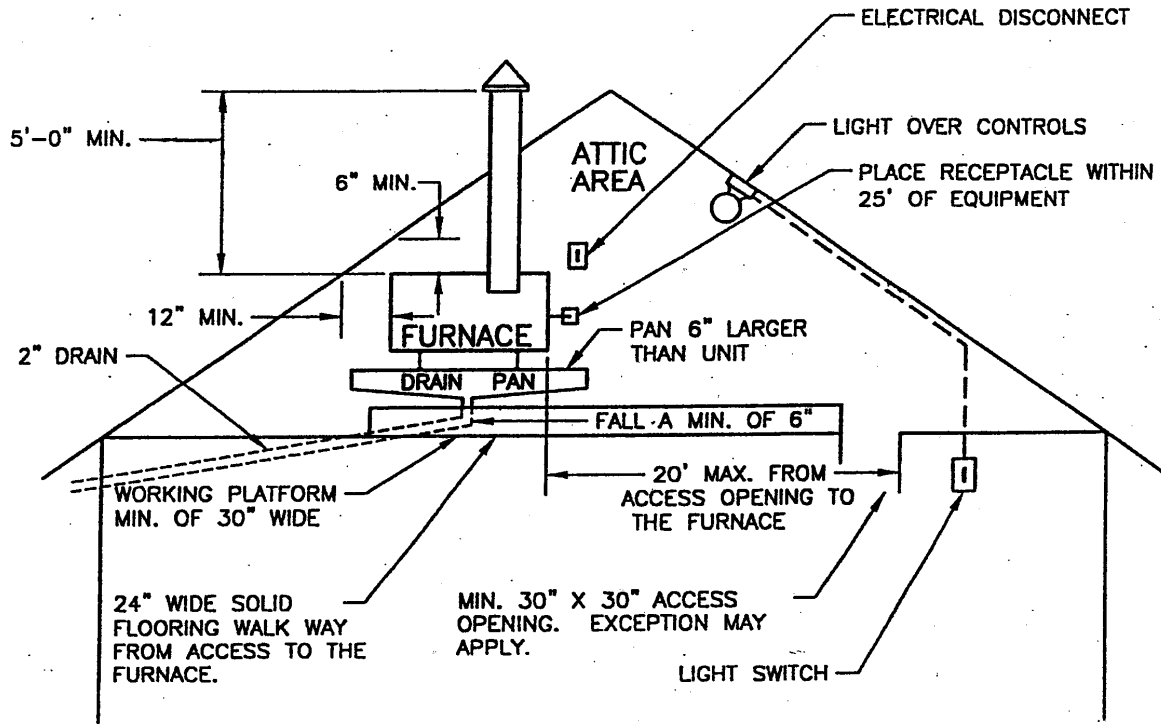


**\* NOTES:**

1. THIS DIAGRAM IS NOT FOR INSTALLATION OF LIQUID PETROLEUM GAS.
2. A MINIMUM OF 30" ATTIC HEADROOM IS REQUIRED FOR FURNACE INSTALLATION.



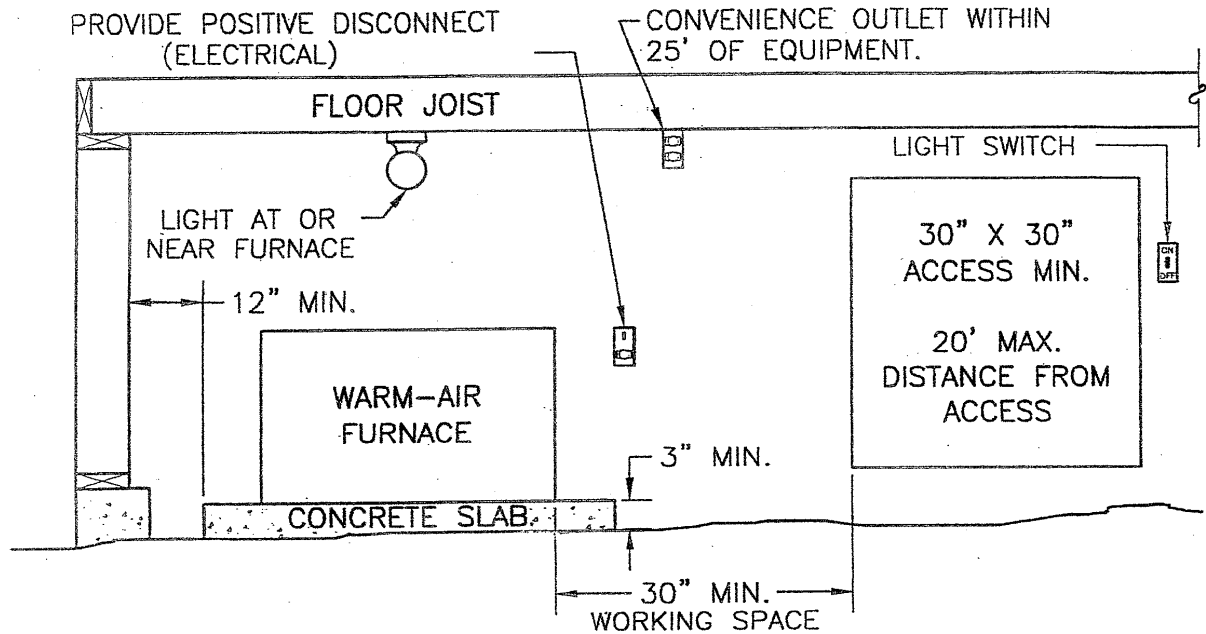
ATTIC FURNACE INSTALLATION HUNG FROM RAFTERS WITH PAN FOR L.P.G.



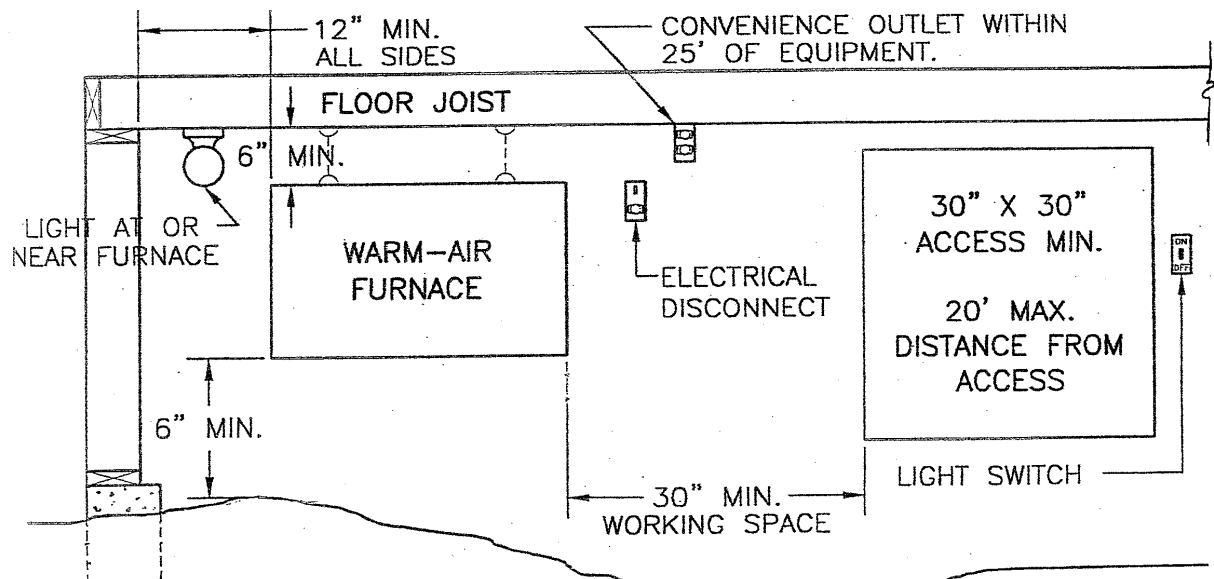
**NOTES:**

1. ALL SUPPORTING TRUSSES MUST BE ENGINEERED TO HANG UNIT.
2. ALL RAFTERS ON WHICH UNIT IS HUNG SHALL BE DOUBLED.
3. A MINIMUM OF 30" ATTIC HEADROOM IS REQUIRED FOR FURNACE INSTALLATION.
4. ATTIC VOLUME SHALL BE NO LESS THAN 50 CUBIC FT. PER 1000 BTU APPLIANCE RATING.
5. L.P.G. UNITS REQUIRE A DRAIN PAN AND VENTS IN THE LOWEST PART OF THE ATTIC.

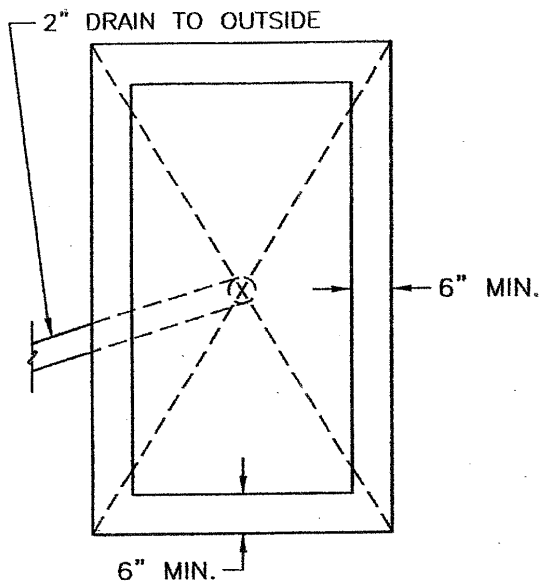
# FURNACE SUPPORTED FROM GROUND



# SUSPENDED FURNACE

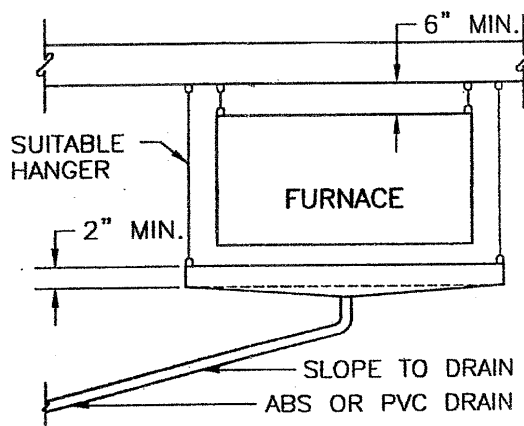


NOTE:  
L.P.G. SERVICE, FACILITIES, SUPPLY, OR STORAGE SHALL **NOT** BE INSTALLED IN A BASEMENT, PIT, OR CRAWLSPACE.

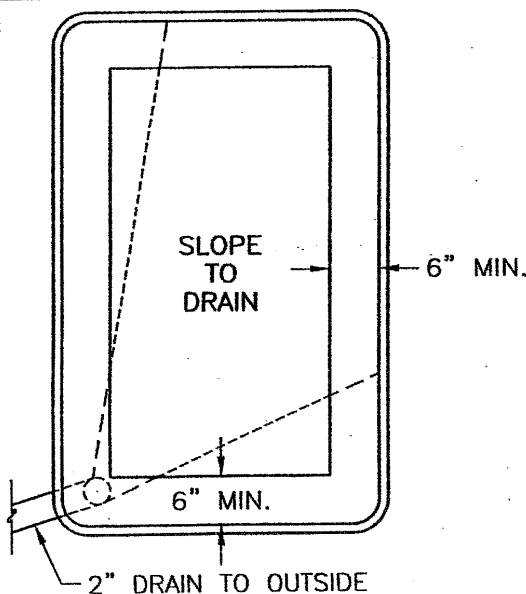


SHEET METAL DRAIN PAN SUSPENDED  
TOP

SEE ILLUSTRATIONS FOR UNDERFLOOR  
FURNACE INSTALLATIONS.



FRONT



TOP

DRAIN PAN ILLUSTRATIONS ON THIS PAGE ARE ONLY  
FOR **ATTIC** INSTALLATIONS OF L.P.G. UNITS.

VENTS ARE ALSO REQUIRED AT THE LOWEST PART  
OF THE ATTIC.

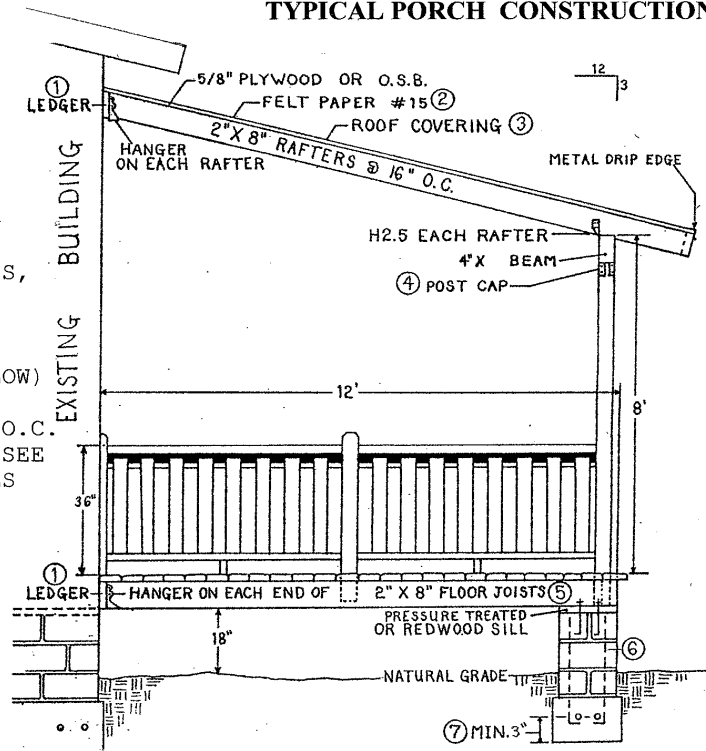
L.P.G. UNITS SHALL NOT BE INSTALLED UNDER THE  
HOUSE.

GAS UNITS INSTALLED IN BEDROOMS OR BATHROOMS  
HAVE STRICT LIMITATIONS REGARDING TYPES AND  
BTU RATINGS - CHECK WITH YOUR LOCAL BUILDING  
OFFICIAL BEFORE INSTALLING ANY GAS UNIT  
ANYWHERE EXCEPT IN A GARAGE OR ATTIC.

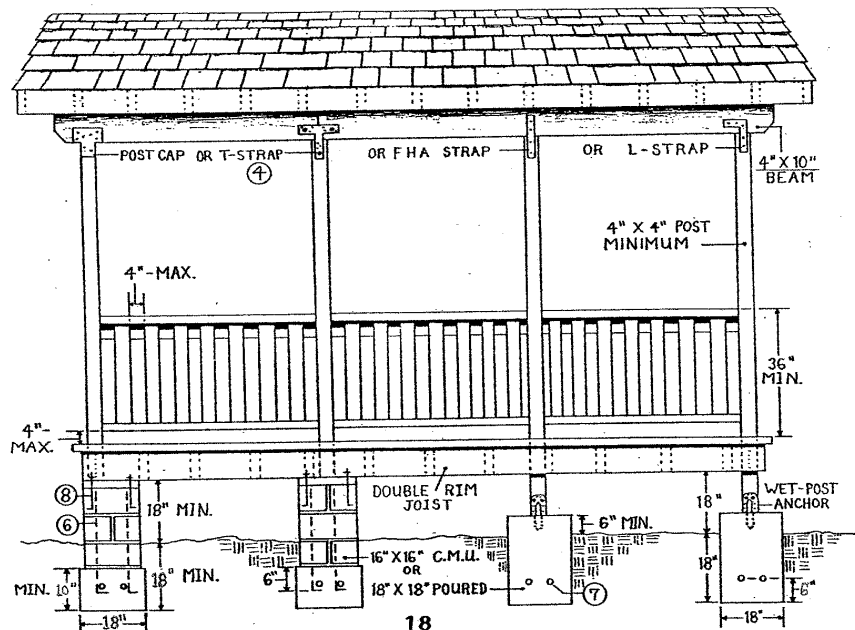
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## TYPICAL PORCH CONSTRUCTION

- ① LEDGER: LAG BOLTS INTO EXISTING STUDS OR RIM JOIST @ 32" O.C.
- ② ROOF PITCH LESS THAN 3-12 REQUIRES #90 ROLLED ROOFING
- ③ OPTIONS: ASPHALT, FIBERGLASS, CONCRETE, OR WOOD SHAKES; TILE, METAL, ETC.
- ④ SEE FRONT VIEW OPTIONS (BELOW)
- ⑤ 2" X 8" FLOOR JOISTS @ 16" O.C. NEEDED FOR THIS SIZE ROOM. SEE SPAN TABLES FOR LUMBER SIZES REQUIRED FOR YOUR PROJECT.
- ⑥ (2) 1/2" VERTICAL REBARS EMBEDDED 6" INTO CONCRETE (4 REBARS FOR 2 STORY)
- ⑦ (2) 1/2" HORIZONTAL REBARS (LOWEST 1/3 OF CONCRETE)
- ⑧ 1/2" X 10" ANCHOR BOLTS

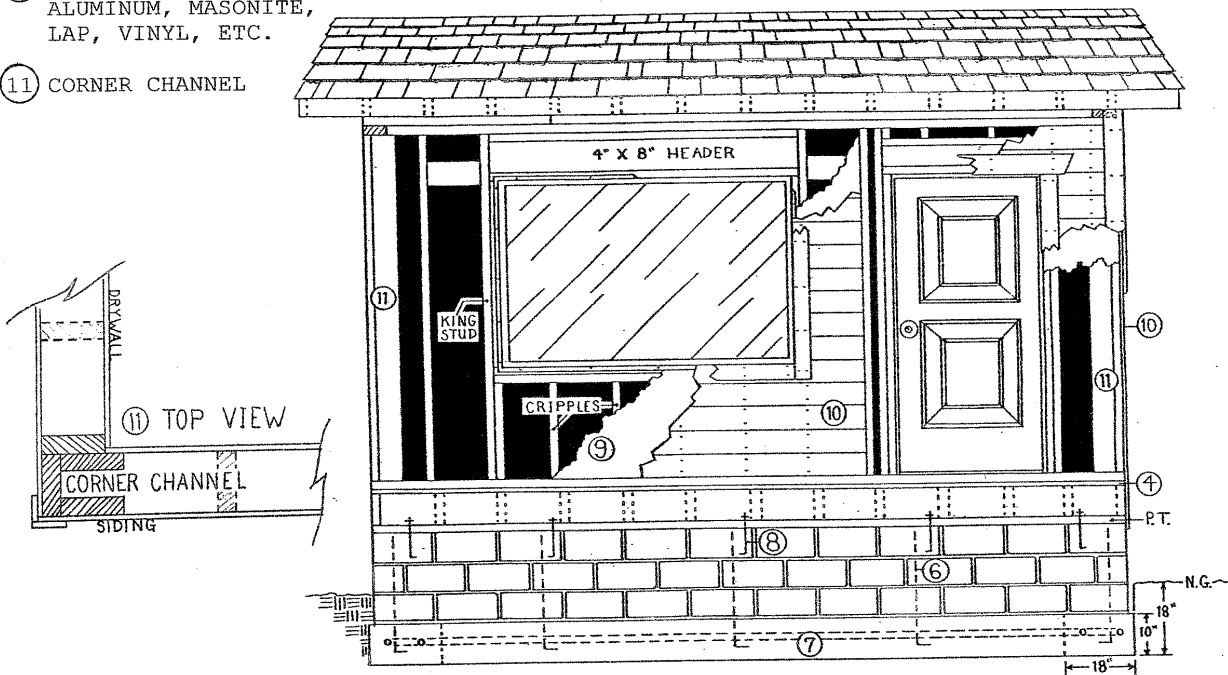
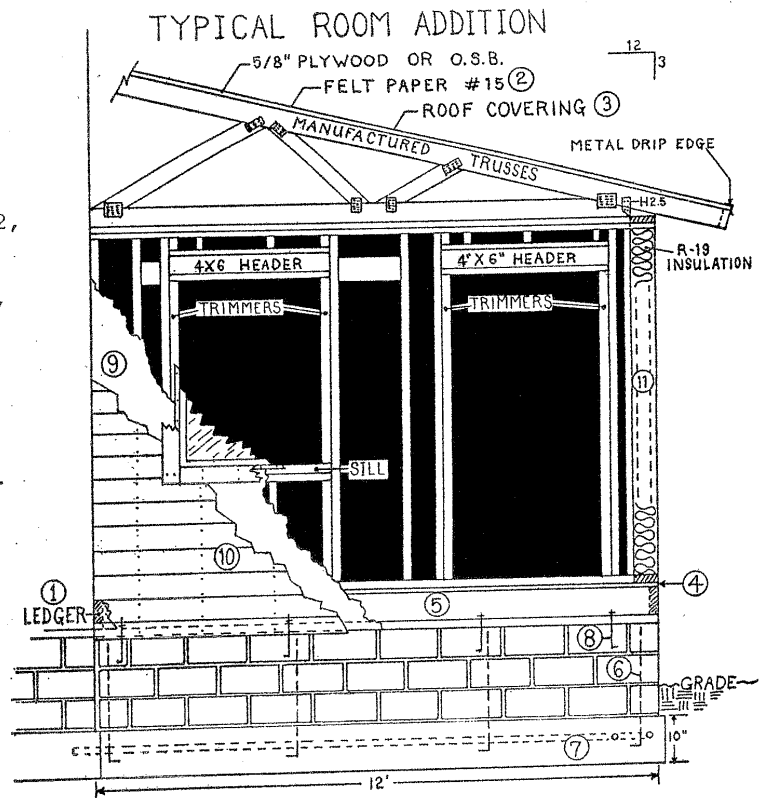


NOTE: WHEN ENCLOSING AN EXISTING PORCH INTO LIVING AREA, A NEW BUILDING PERMIT IS REQUIRED.



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- ① LEDGER: LAG BOLTS INTO EXISTING STUDS OR RIM JOIST @ 32" O.C.
- ② IF ROOF PITCH IS LESS THAN 3-12, #90 ROLLED ROOFING IS REQUIRED
- ③ OPTIONS: ASPHALT (COMPOSITION), FIBERGLASS, CONCRETE, OR WOOD SHAKE SHINGLES; TILE, METAL, OR ROLLED ROOFING, ETC.
- ④ 3/4" T & G PLYWOOD FLOOR
- ⑤ 2" X 8" FLOOR JOISTS @ 16" O.C. NEEDED FOR THIS SIZE ROOM. SEE SPAN TABLES FOR LUMBER SIZES REQUIRED FOR YOUR PROJECT.
- ⑥ (2) 1/2" VERTICAL REBARS EMBEDDED 6" INTO CONCRETE
- ⑦ (2) 1/2" HORIZONTAL REBARS 6" BELOW CONCRETE SURFACE
- ⑧ 1/2" X 10" ANCHOR BOLTS
- ⑨ AIR FILTRATION BARRIER
- ⑩ SIDING OPTIONS: LOG, T1-11, ALUMINUM, MASONITE, LAP, VINYL, ETC.
- ⑪ CORNER CHANNEL



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	52
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## Girder and Header Spans for Exterior Bearing Walls

Girders / Headers Supporting	SIZE	Building Width (a)					
		20 feet		28 feet		36 feet	
		Span	Jacks	Span	Jacks	Span	Jacks
SINGLE STORY	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
	3-2x8	8'4"	1	7'5"	1	6'8"	1
	3-2x10	10'6"	1	9'1"	2	8'2"	2
	3-2x12	12'2"	2	10'7"	2	9'5"	2
	4-2x8	7'0"	1	6'1"	2	5'5"	2
	4-2x10	11'8"	1	10'6"	1	9'5"	2
	4-2x12	14'1"	1	12'2"	2	10'11"	2
TWO STORY	2-2x4	2'8"	1	2'4"	1	2'1"	1
	2-2x6	3'11"	1	3'5"	2	3'0"	2
	2-2x8	5'0"	2	4'4"	2	3'10"	2
	2-2x10	6'1"	2	5'3"	2	4'8"	2
	2-2x12	7'1"	2	6'1"	3	5'6"	3
	3-2x8	6'3"	2	5'5"	2	4'10"	2
	3-2x10	7'7"	2	6'7"	2	5'11"	2
	3-2x12	8'10"	2	7'8"	2	6'10"	2
	4-2x8	5'1"	2	4'5"	2	3'11"	2
	4-2x10	8'9"	2	7'7"	2	6'10"	2
	4-2x12	10'2"	2	8'10"	2	7'11"	2

(a): Building width is measured perpendicular to the ridge  
 Jacks: Number of jack studs (trimmers) required to support each end

## HEADER SPANS FOR INTERIOR NON-BEARING WALLS

SIZE	MAXIMUM SPAN
4x4 or 2-2x4	3'
4x6 or 2-2x6	6'
4x8 or 2-2x8	8'
4x10 or 2-2x10	10'
4x12 or 2-2x12	12'
<b>Note: All lumber to be placed on edge</b>	

## ALLOWABLE SPANS FOR JOISTS AND RAFTERS

	LL=40 DL=10	LL=40 DL=15		LL=45 DL=15	
Lumber Sizes	Floor Joists No Drywall Below 1*	Floor Joists Drywall Below	Ceiling Joists With Drywall	Rafters 0:12 up to 4:12 Pitch 2*	Rafters 4:12 Pitch or More 2*
2x4 @ 12" O.C.			9'8"		
2x4 @ 16" O.C.			8'3"		
2x4 @ 24" O.C.			7'8"		
2x6 @ 12" O.C.	10'8"	9'9"	15'2"	11'2"	12'0"
2x6 @ 16" O.C.	9'6"	8'10"	13'9"	9'9"	10'8"
2x6 @ 24" O.C.	8'4"	7'8"	12'0"	7'11"	8'8"
2x8 @ 12" O.C.	13'10"	12'10"	19'11"	14'10"	16'0"
2x8 @ 16" O.C.	12'8"	11'8"	18'1"	12'10"	14'8"
2x8 @ 24" O.C.	10'3"	10'2"	15'10"	10'6"	11'6"
2x10 @ 12" O.C.	17'8"	16'5"	25'5"	18'11"	20'0"
2x10 @ 16" O.C.	16'0"	14'11"	21'9"	16'4"	17'7"
2x10 @ 24" O.C.	12'9"	12'3"	20'2"	13'4"	14'8"
2x12 @ 12" O.C.	21'6"	19'11"		23'0"	24'6"
2x12 @ 16" O.C.	18'6"	17'9"		19'11"	21'8"
2x12 @ 24" O.C.	15'0"	14'4"		16'3"	17'9"

Notes: Joists calculated @ LL deflection = 360, DL deflection = 240 with 3/4" Min. Sheathing

All spans based on Douglas Fir Lumber: 1\* = #1 or Better 2\* = Select Structural

Reduce spans by 10% if Pine Lumber is used.