BUILDING CONSTRUCTION MANUAL

OFFD 406

No. 2

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U.S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

REGION FOUR

REVISED 1933

R. H. RUTLEDGE, REGIONAL FORESTER

U. S. GOVERNMENT PRINTING OFFICE: 1934

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REGION 4

BUILDING PLAN INDEX

Plan Number	Lands Plate No:	Type	Size	Date Completed
		Dwellings		
1		4 Room with Basement		Complete
1A		4 Room without Basement		Complete
1B		Rangers' Residence		
1C		Rangers' Residence		
1D		Chief Clerks'-Executive Ass'ts & Staff Officers' Residences		
1E		Chief Clerks'-Executive Ass'ts & Staff Officers' Residences		
2		Summer Headquarters 3 or 4 Room		Complete
3 & 3A		Regional Forester's Residence		
3B		Ass't Regional Forester's and Supervisor's Residences		
3C		Ass't Regional Forester's and Supervisor's Residences		
3D				
3E				
4		1 Room & Porch	16' x 24'	Complete
5		1 Room, Storeroom & Porch	18' x 24'	Complete
6		1 Room (No Porch)		Complete
7		2 Room & Porch		Complete
7 alt.		3 Room & Porch (with plbg.)		Complete
7A		Dwelling - 3 Room (Recreation Patrol Bldg.)		
7B		Dwelling		
8		Dwelling		Complete
9		Bunk House		Complete
10				
		Barns		
11		4 Horse Type		Complete
12		6 Horse Type		Complete
13A		2 Horse Type		Complete
13B		2 Horse Type		Complete
14		Fly Shed		Complete
15				
16				
17				
18				
19				
		Garages		
20		2 Car Type		Complete
21		2 Car & Storeroom		Complete

Plan Number	Lands Plate No:	Type	Size	Date Completed
22		2 Car & Storeroom & Shop		
23		Single Car, Storeroom and Woodshed		Complete
24		Single Car Type		Complete
25		3 Car Type		
26				
27				
28				
29				
		Warehouse & Equipment Bldgs.		
30		Large Type		
31		Small Type	24' x 32'	
32		Storeroom & Office		
33		Storeroom & Shop Combination		Complete
33A		Storeroom & 3 Car Garage		Complete
33B		Storeroom & 3 Car Garage		Complete
33C		Storeroom & 3 Car Garage		Complete
34		Storeroom, Garage & 2-Horse Barn		Complete
35		Garage & Equipment Building		Complete
36				
37				
38				
39				
40		Blacksmith Shop		Complete
41				
42				
43				
44				
45				
46				
47				
48				
49				
		Offices		
50		Office		
51		Office & Bedroom (or Store-Room)		Complete
51B		Alternate Plan Office & Bedroom		Complete
52		Office & Storeroom or (Mess & Bunk)		
53		Office, Storeroom (or Dwelling)		Complete
54		Supervisors' Office Bldg.		Complete
54A		Supervisors' Office Bldg.		
54B		Supervisors' Office Bldg.		
54C		Supervisors' Office Bldg.		
55		Office - 3 Room		
56				
57				

Plan Number	Lands Plate No	Type	Size	Date Completed
58				
59				
		Miscellaneous Buildings		
60		Spring House		
60A-1				
60A-2				
61		Powder House		Complete
62		Large Hillside Cellar		Complete
62A		Small Hillside Cellar		Complete
63		Cellar, Cold Storage Type		Complete
64A		Bulletin Boards		Complete
64B		Checking Station		Complete
64B-1				
64B-2				
64B-3				
64B-4				
64B-5				
64C		Entrance Signs		Complete
64C-1		Entrance Signs		Complete
64C-2		Entrance Signs		Complete
64C-3		Entrance Signs		Complete
64C-4		Entrance Signs		Complete
64D				
64D-1		Markers		Complete
64D-2		Markers		Complete
64D-3				
64E		Archways		
64E-1				
64E-2				
64E-3				
64F		Entrances		
64F-1				
64F-2				
65		Fences & Gates		Complete
65A		Buck Pole Fence		Complete
65B		Panel for Log Fence		Complete
66		Woodshed		Complete
67		Cattle Guard, 15 Ton		Complete
67A		Cattle Guard, 3 Ton		Complete
68		Ice House		
69		Trellises, Garden Seats, etc.		
69A-1		Rustic Seats		Complete
69A-2				
69A-3				
69A-4				
69A-5				
69A-6				
69B-1		Screens		
69B-2		Portals		
69B-3		Barriers		Complete
		Toilets		
70		Single Unit Pit Toilet		Complete
70A-1		Single Unit Pit Toilet (shake type)		Complete

Plan Number	Lands Plate No:	Type	Size	Date Completed
70A-2		Single Unit Chemical Toilet		
70B-1		2 Unit Pit Toilet (cobble rock)		Complete
70B-2		2 Unit Std. Plumbing (shakes)		Complete
70B-3		2 Unit Pit (shakes)		
70B-4		2 Unit Pit (shakes)		
71		4 Unit Chemical Latrine		Complete
71A-1		4 Unit Chemical Latrine (shakes)		
71A-2		4 Unit Standard Plumbing		
72		4 Unit Pit Type		Complete
72A-1		4 Unit Pit Type (shakes)		
72A-2		4 Unit Standard Plumbing		
72A-3		4 Unit Std. Plbg.(cobble rock)		
72A-4		4 Unit Std. Plbg.(frame bldg.) with shakes		
72B-1		5 Unit Standard Plumbing		Complete
72B-2				
73		6 Unit Standard Plumbing		Complete
73A-1				
73A-2				
74		8 Unit Standard Plumbing		Complete
74A-1		8 Unit Std. Plbg.(cobble rock and shakes)		
74A-2		8 Unit Std. Plbg. (shakes)		
75				
76		(Septic Tanks, (Large)		Complete
		(Drainage Fields		
		(Filter Trenches		
76A		Septic Tank (Small)		Complete
76A-1		Septic Tank (Medium)		
76A-2				
77				
78				
79		Portable Toilet		Complete
		Lookout Buildings		
80		Lookout House		Complete
81		Patrol Station & Tower Cupola		
82		Lookout Tower with Living Quarters		Complete
83		Lookout Tower with Cupola		
84		Lookout Tower with Platform		
85				
86				
87				
88				
89				
		Other Buildings or Equipment		
90		Mess Wagon		
91		Trailer Plan		
92		Fire Tool Cache		
92A		Fire Tool Boxes		
93		Water Troughs		
94		Cistern		

Plan Number	Lands Plate No	Type	Size	Date Completed
95		Gasoline & Oil House		Complete
96		Camp Ground Stove		Complete
96A-1		Stoves with clay or brick walls		Complete
96A-2		Stoves with coils (combination of 4 stoves)		Complete
96A-3		Group Camp Ground Stove		Complete
96A-4		Group Camp Ground Stove		Complete
97A,B&C		Camp Ground Table		Complete
97D		Camp Ground Tables		Complete
97D-1		Camp Ground Tables (cobble legs)		
97D-2				
97D-3				
97D-4				
98 Rev.		Camp Ground Drinking Fountains		Complete
98A-1		Drinking Fountain		Complete
98A-2				
98B-1		Water Fountains (Ornamental)		
99				
99A-1				
99A-2				
99B-1				
99B-2				
99C-1		Hunter & Summer Cabin		
99C-2		Hunter & Summer Cabin		
100		Instrument Shelter		Complete
101		Electric Specifications		Complete
101A-1		Lighting Layouts		
101A-2				
101A-3				
101A-4				
101B-1		Lighting Plant Buildings		
101B-2		Lighting Plant Buildings		
101B-3		Lighting Plant Buildings		
102		Foundation Forms & Layouts		Complete
103B-1		Incinerators		
103		Garbage Pit covers		Complete
103A-1		Garbage Pit Covers		
103A-2		Garbage Pit Covers		
104		Camp Ground Shelter		Complete
104A-1		Rock Shelter		Complete
104A-2		Rock Shelter		Complete
104A-3		Rock Shelter		Complete
104A-4		Open Shelter		Complete
104B-1		3 Wall Shelter (Leanto)		Complete
104B-2		3 Wall Shelter (Leanto)		Complete
104B-3		Closed Shelter		
104B-4		Overlook Shelter		Complete
104B-5		Scenic Point Development		Complete
105		Warming Fireplace		Complete
105A		Heating Stove		
106		Bon Fire Place		Complete
106A-1				
106A-2				

Plan Number	Lands Plate No:	Type	Size	Date Completed
106B-1		Fireplace		
106B-2		Fireplace		
107		Amphitheater		Complete
107A-1				
107A-2				
107A-3				
108		Playground Equipment		Complete
108A-1		Swings		
108A-2		Horizontal Bars		
108A-3				
108A-4				
108A-5				
108B-1		See-Saws		
108B-2				
108B-3				
108B-4				
108B-5				
108C-1		Chutes		
108C-2				
108C-3				
108D-1		Sand Pile (Sand Boxes)		Complete
108D-2				
108D-3				
109		Rustic Furniture		
109A-1		Seats		
109A-2				
109A-3				
109A-4				
109A-5				
109A-6				
109B-1				
109B-2				
109B-3				
109B-4				
109C-1				
109C-2				
109D-1				
109D-2				
110		Use of Steel Square		Complete
111		Wading Pool (Large)		Complete
111A-1		Wading Pool (Small)		
112		Bath House (2 showers,2 tubs)		Complete
112A-1		Shower Bath (4 showers, 2 toilets - camp grounds)		Complete
112A-2		Shower Bath (4 showers, 2 toilets - laundry room)		Complete
112A-3				
112B-1		Wash House (2 sets, 2 tubs)		
112B-2		Wash House		
113		Swimming Pool	25' x 60'	
113A-1		Swimming Pool	25' x 75'	
113A-2				
114		Water Storage Tank 10,000 Gal.		Complete
114A-1		Water Storage Tank 6,000 Gal.		
114A-2		Water Storage Tank 15,000 Gal.		
114A-3		Water Storage Tank 25,000 Gal.		

Plan Number	Lands Plate No:	Type	Size	Date Completed
115		Water Supply		
115A-1		Hydrants & Drains		
115A-2		Hydrants & Drains		
115B-1		Pump Building		
115B-2		Pump Building		
116		Food Cabinets		
116A-1		Food Cabinets		Complete
116A-2		Food Cabinets		
117		Water Cooler		
117A-1		Water Cooler		
118		Flag Pole		
118A-1		Flag Pole		
118A-2		Flag Pole		
119		Barbecue Pit		
119A-1		Barbecue Pit		
120		Tent Floor (Gravel)		
120A-1		Tent Floor (Slab Rocks)		
120A-2				
121		Bridge		
121A-1		Foot Bridge		Complete
121A-2		Foot Bridge		
121A-3		Foot Bridge		
121A-4		Foot Bridge		
121A-5		Foot Bridge		
121B-1		Foot Bridge		
121B-2		Foot Bridge		
121B-3		Foot Bridge		
121B-4		Foot Bridge		
122		Playground Layouts		Complete
122A-1		Golf Course		
122A-2		Golf Course		
122A-3		Golf Course		
122B-1				
122B-2				
122C-1				
122C-2				
122C-3				
122C-4				
122D-1				
122D-2				
122E-1		Ski Runs & Take Off		
122E-2		Ski Runs & Take Off		
122E-3		Ski Runs & Take Off		
122F-1		Tobogan Slides		
122F-2		Tobogan Slides		
122F-3		Tobogan Slides		
122G-1		Skating Rink Building Shelter		
122G-2				
122G-3				
122H-1				
122H-2				
122I-1				
122I-2				
122J-1				
122J-2				

Plan Number	Lands Plate No	Type	Size	Date Completed
123		Boat Docks, Piers & Landings		
123A-1				
123A-2				
123A-3				
123A-4				
123B				
123B-1		Pontoon Boat Landing		Complete
123B-2				
123B-3				
123B-4				
123C		Boat Piers		
123C-1				
123C-2				
123C-3				
123D		Boat Houses		
123D-1				
123D-2				
123D-3				
124		Dressing Room Buildings for Lakes		
124A-1		Dressing Room Buildings for Lakes		Complete
124A-2				
124A-3				
125		Garbage Can Anchorage		Complete
		Forest Service Camp Bldgs.		
126		Equipment & Truck Shelter		Complete
126A		Tool Shed		Complete
126B		Blacksmith & Machine Shop		Complete
126C		Office Building for Supts. and Engineers		Complete
126D		Garage (10 stalls)		Complete
126E		Gasoline & Oil House		Complete
126F		Powder House		Complete
126G		Barracks		Complete
130		Community Building with Recreation Rooms		
130A-1		Yearlong Community Building		
130A-2				
130B-1		Summer Community Building		
130B-2				
130C-1		Winter Community Building		
130C-2				
131		Museums		
131A-1		Museums		
131B-1		Exhibit Houses		
131B-2		Exhibit Houses		
132		Service Buildings		
132A-1				
132A-2				
132A-3				
132B-1				
132B-2				
132B-3				
132B-4				

Plan Number	Lands Plate No.	Type	Size	Date Completed
132C-1		Stores & Canteens		
132C-2		Stores & Canteens		
132C-3		Stores & Canteens		
133		Summer Homes & Cabins		
133A-1		1 Room		Complete
133A-2		1 Room		
133B-1		2 Room		
133B-2		With Dining Rm. Sitting Rm., Toilet, Shower (2 Room)		
133C-1		3 Rm. Add Fireplace, Bed Rm. Porch		
133D-1		5 Rm. add Bed Room, Etc.		
134		Lodges		
134A-1		Lodges		
134A-2		Lodges		
135		Service Stations		
135A-1		Service Stations		
135A-2		Service Stations		
136		Garages		
136A-1		Garages		
136A-2		Garages		
136A-3		Garages		
137		Laundry Buildings for Lodges		
137A-1		Laundry Buildings for Lodges		
137A-2		Laundry Buildings for Lodges		
138		Public Lookouts & Observatories		
138A-1		Lookout		
138A-2		Lookout		
138A-3		Lookout		
138A-4		Lookout		
139		Dude Ranch		
140				
141		Renovate CCC Camp		
142		Interiors for Public Service Buildings		
150		Cleanout of Debris		
151		Cribbing or Rock Walls at Stream banks		

BUILDING PLANS

CONSTRUCTION AND MAINTENANCE

GENERAL USES FOR WHICH BUILDINGS ARE TO BE CONSTRUCTED

In this Region buildings constructed for administrative, protective and recreation use are usually designed and constructed for one of four general uses:

1. Permanent administrative force and equipment.
   - A. Housing
   - B. Office quarters
   - C. Warehouses
   - D. Equipment buildings, shops, barns, garages and other

2. Temporary administrative force and equipment.
   - A. Housing
   - B. Office quarters
   - C. Warehouses
   - D. Equipment buildings, shops, barns, garages and other

3. Fire protection
   - A. Housing
   - B. Lookouts
   - C. Storehouses, caches, etc.

4. Recreational buildings. (For buildings and equipment constructed for recreational use, see Lands Handbook.)

Buildings for the first use are as a rule the most pretentious designed and constructed by the Forest Service. They are usually assembled in groups of three or more according to the needs at headquarters for Forest Supervisors and District Rangers. Buildings designed for the second use are less pretentious in appearance and are usually constructed at sites where only one or, at most, three buildings are needed. Buildings for the third use are designed purely for a special purpose, such as lookout houses or towers, and their location is determined entirely by the needs of the fire control organization.

BUILDING PLANS

As an index to the kind of plans available for use on the Forest, a letter-size reproduction of the first page of each set of plans will be supplied Supervisors as a part of this manual and as a supplement hereto. When it is desired to construct a building, the necessary prints will be requisitioned from the Regional Office. In this way it will not be necessary for each Supervisor's office to maintain a voluminous file of plans. Each

set of prints furnished will include a complete list of materials and instructions for erection. Lists of materials are prepared and can be furnished so they may be used in bid specifications; and they will comply with all fiscal requirements in the preparation of bids and vouchers. By this method, these lists may be requisitioned of the Regional Office in quantities sufficient for attaching to bids, thus eliminating the time and labor in preparing material lists. Building plans will be prepared on atlas-size tracings so that the prints may be filed in file cabinets, atlas-binders, or folded for filing in standard letter files.

POLICY IN REGARD TO USE OF STANDARD BUILDING PLANS

Only standard or special plans sent you from the Regional Office shall be used. Approved plans and specifications must be followed in detail without variation. Changes in floor plans, design, finish, etc., shall not be made in the field except upon specific approval by the Regional Forester or his duly authorized representative. Recommendations for such changes must be supported by conclusive evidence as to why the change is necessary.

If errors in plans or lists of materials are found in the course of construction, they should be reported promptly to the Regional Office so that corrections may be made.

PROPOSED BUILDINGS

Buildings will be constructed where there is an evident need and where prior approval is granted by the Regional Office. Before construction on any building, it will be necessary for the Forest concerned to show a reason why such a building is needed. In making your showing regarding the need for a particular building, make a definite study of your needs and show in your report to the Regional Office whether these buildings are intended for quartering or housing temporary or permanent administrative people or equipment, or whether they are for fire protection. We want to build, as close as possible, to take care of actual needs.

Care and consideration should be given, in planning your needs, that you look reasonably into the future, but caution should be used to make certain that we are not building too far ahead. It is certain that we do not wish to have on our hands in a few years a number of empty or unused buildings. The first cost of the building is not alone the important consideration, and we must not lose sight of the fact, in this building program, that we will have a perpetual job of maintenance for every improvement we construct. Certainly we should not build anything that we do not intend to maintain, and every additional building is going to take a material amount of maintenance. Therefore, keep improvements to a minimum consistent with real needs. While it is appreciated that we should do what building we can while we have available funds, nevertheless, availability of funds is no good reason for over-doing the construction of buildings. If you are in doubt as to the extent of your needs, the Regional Office will review a report from you and will be willing to propose a building for your needs after this review.

The Following will be the Policy Relative to the Type of Building to be Constructed for Various Periods of Occupancy:

Dwellings

Plans #1, 1A and 2 will be built at yearlong ranger stations only.
Plans #3 and #3a are intended to serve as Regional Foresters' residences.
Plans 3B and 3C are intended to serve as Assistant Regional Foresters' and Supervisors' residences.
Plans 1B and 1C are intended for Rangers' residences but will only be approved in exceptional cases.
Plans 1D and 1E are to serve as Chief Clerks' residences or as residences for executive assistants and staff officers.
Plans 3, 3A, 3B, 3C, 1B, 1C, 1F and 1G will be built only according to a policy which will be outlined in a letter of special instruction by the Regional Office which will supplement this manual.

For ranger and guard stations, the present use of which will be in excess of five months but less than yearlong, use plans Revised #7, 7A, 7B, 8 and 53. For dwellings for use not in excess of 5 months but greater than 3 months, use Plan 7, 7A and 51. For occupancy of not more than 3 months but more than 45 days, use Plans 4, 5 and 6. If use is for not more than 45 days, do not build.

Offices

Offices will be built only at yearlong headquarters. Rangers' offices, where built at yearlong stations will be Plans 5 or 51. Plan 54, 54A, or 54C will be built only at yearlong Supervisors' headquarters. These plans will be used only after a study has been made as to the exact needs of the Supervisors' office, and the building nearest to the need will be built. In no case will these offices be built for Rangers' office quarters.

Barns

For yearlong stations Plans R-4 #11, 4-horse, and R-4 #12, 6-horse, will be built.

After careful study, it is decided that a barn for six horses with stalls all side by side is not as economical to build as a center-aisle barn; in fact, a saving of up to $150 is possible in the center-aisle type, because this type needs only 640 sq. ft. of floor space as against 880 feet for the other. Ample space through the center will be provided to prevent horses tied at different ends of the barn injuring each other. Considering all things, the six-horse barn is a very economical building to build. Where you need as much as a four-horse barn, you should consider the merits of this six-horse barn -- possibly it should be built for your needs.

At temporary stations, Plans R-4 #13 (2 horses) Types A and B will be used where special authority is granted by the Regional Office. The R-4 #14 Fly Shed will be used as outlined in the section designated "General" which follows. No alternate of long studs will be allowed in the future to gain additional hay storage in the mow without Regional Office approval. To use long studs makes the barn too high for its other dimensions and its appearance is not good.

Garages

There are several choices in garage plans and, unless otherwise specified and required in other sections of this manual, the individual requirements at each station will of course govern the choice of plan. Gasoline will seldom be stored in garages or other buildings with equipment. Where the volume of gasoline is sufficient to justify it, an under-ground tank will be installed. Otherwise, gasoline will be stored, if at all practicable, in a separate building removed from other structures.

Warehouse and Equipment Buildings

There are a number of buildings in the standard plans to choose from. A choice should be made so that the proper structure is built for the desired needs. Where a combination building is possible, it should get first consideration as we wish to keep our buildings to the smallest number possible in any group. Besides the standard plans provided, there are plans for equipment storage buildings in the Washington Truck-Trail Manual. By referring to the plan illustrations, a part of this manual, you should be able to tell which plan fits your needs.

Shops

In some situations it may be advisable to construct a separate building for a shop or a blacksmith shop because of fire hazard. Plan R-4 #40 provides a plan for a suitable blacksmith shop. Where a machine or an equipment shop is needed apart from a combination building, it is possible that some one of our warehouse or equipment plans might fit the need either fully or in part. Should your need demand a special plan, it should be referred to the Regional Office for consideration.

Miscellaneous Buildings

In the plans provided and available you will find many plans for miscellaneous needs such as powder houses, cellars, woodsheds, cattle-guards, bulletin boards, checking stations, fences, etc. You will also find plans for toilets for use at stations, lookout houses and buildings intended for recreational use. Plans also include entrance signs and some service equipment.

Reference may be made to the index of plans at the fore part of this manual and one will clearly see what is available and what is to become a part of the plan scheme.

General

At regular guard stations, including lookouts (not emergency locations), in addition to the dwelling, the standard will be a flyshed if horses are used (not a barn, but the flyshed standard), toilet and, if on a road and if a car is clearly needed, a one-car garage-storeroom. In a number of cases the storeroom will not be needed. You can hang up your extra equipment in the garage. In a lot of cases you will not need the garage. Where a garage is needed, a one-car garage should be built. Except where horse flies are bad a flyshed will not be needed.

No buildings whatever are authorized for emergency guard stations, including emergency lookouts. There will be a few places where something may

be advisable. You should get the consent of the Regional Office, however, before constructing any buildings whatever at emergency smoke-chaser or lookout stations. It would be of considerable importance if we could have our tools and equipment at these emergency stations all the time, so that we could send a man into the particular stations at the time of the emergency without the necessity of getting the equipment together and sending it with him. However, it is impracticable to keep any equipment at emergency stations so as to have it ready for use. Even where buildings might be constructed, there are entirely too many chances that the equipment would be stolen and removed and we could not count that it would be there when needed.

With reference to telephone lines to emergency stations, we will not build any considerable mileage at the present time unless the distances are very short. There is too much chance that radio will be cheaper. If we need telephone lines where the distances are short, we may want to use emergency wire and put the line up and take it down later each period the station is occupied.

As indicated above, the standards, numbers of buildings stated, etc., are the maximum. In some cases you may desire to build a lower standard but a lower standard will of course have to be a standard plan, and, if the case is justifiable, the Regional Office will authorize construction.

Plans that have plumbing fixtures shall not be built except in localities where water is available at the building or can be made available at a reasonable cost.

Number of Buildings

It is necessary to determine the number of buildings which your organization will require in a particular place. It is important to consider carefully what number of buildings will eventually be needed.

CHOICE OF SITE FOR LOCATION OF BUILDINGS - GEOGRAPHICAL

The discussion under this caption refers to the general location of an administrative site; not to a specific location, as a particular quarter section or section.

On what part of an administrative or protective unit should a site be chosen and a station built? There are several important considerations, and in giving attention to each of these, consider the future as well as the present and look ahead at least ten years. These remarks also apply when considering whether more or better buildings should be constructed on present sites now at least partly improved. Consider:

1. Volume of business and work on different parts of the unit; frequency of trips and length of stay necessary at these units.

2. Trail and road system and a central point in this system, and ease with which different parts of the unit may be reached from a given point.

3. Of the practical places where a station might be established, which would be most accessible to and best meet the needs of the public; which best satisfy the private interests of the Forest officer and his family.

The tendency in choosing the location for a Ranger's headquarters is more and more toward settlements and towns or locations on highways. If

rangers are to accomplish the maximum, they must be easily accessible to the public.

Other Requisites Affecting Location

Following upon the determination of the general geographical location of the station, it is necessary to select from the sites available the one most satisfactory from the standpoint of appearance, natural setting, exposure, drainage, accessibility, fuel, shade, shelter, water and pasture. Locations likely to be hazardous from rolling or falling rocks or sliding snow will be avoided. As a rule, of course, our choice is somewhat limited to sites which have already been selected and at least partly improved. But there are some cases where we may to advantage abandon present sites for rangers' headquarters and scrap or move present buildings onto new sites.

Where there is any choice, it is usually best to select a south exposure for the ranger station site, since such a site gives the maximum amount of sunshine, which is a very desirable factor, particularly for yearlong stations and for summer stations at high altitudes. The site should be as level as possible in order to facilitate the most efficient arrangement and construction of the buildings, and yet should be selected to afford proper drainage for sanitation. Usually there is at least sufficient slope. There must be water for domestic purposes as handy as possible. Generally water for sprinkling and for irrigation is desirable. It will be well if the location is such as will allow use of modern plumbing by a gravity system. With relation to roads, especially heavily traveled highways, the site should be on the windward side, to minimize dust and noise.

Needs of future administration must be given the most careful consideration, particularly to the end that we may not soon find ourselves with unused and surplus buildings and abandoned sites due to shifting work, to the enlarging of administrative and protective units, etc.

In selecting sites for protective guard stations, a site will be chosen which will allow the guard to function to the best advantage in fire control. With very few exceptions, the guard will be of most value as a lookout-smokechaser. This will necessitate the choice of a site where the guard can be of value as a lookout, a site from which he can see considerable of the country within a 10 to 15-mile radius. The selection of proper sites for protective guards is of high importance. Engineering will help you decide the proper location for each guard as visibility surveys are made.

Sites in Cities or Towns

Where administrative needs are such as to demand a location in cities or towns, the same consideration as to location outlined above will be followed as far as is practicable. Sites should be secured at reasonable figures.

SITE PURCHASES

S & E Purchases

The Forest Service manual, Lands section, outlines the procedure to be followed in the procurement of sites under all conditions (57L, 58L,

59L, 60L, and 61L. But $2,500 is appropriated annually for the entire Forest Service of S & E for the purchase of land.

ERA Purchases

No purchase of sites is authorized from F.Y. 1937 ERA funds.

ECW Purchases (From ECW Handbook - W.O. pages 411 & 412 - 2/17/36)

"ECW funds may be used in the acquisition of real property for National Forest Administrative sites, but only when small amounts are involved, and only where it can be unquestionably shown that the land is urgently needed for administrative purposes. It must be evident that such purchase is incidental to and in aid of the primary purpose of giving proper and useful employment to the CCC enrollees.

"No acquisition can be undertaken without advance approval from the Washington Office (through Regional Office), and all requests must be accompanied by a clear-cut plan for the use and development of the land, including the following information:

1. Purpose for which the site is desired and need for it.
2. Acreage which it is proposed to purchase.
3. Estimated cost of the land.
4. Major buildings, other structures and development work which it is proposed will be undertaken on the site as part of the ECW program, with the following information for each:
    (a) Estimated cost of materials.
    (b) Estimated cost of skilled labor, hired in addition to that available under (c).
    (c) Estimated value of time of supervisory and facilitating personnel.
    (d) Estimated man months of enrollee labor that will be used.
5. Enrollment period during which it is proposed work will be performed and camp designation, if known.

"After the administrative approval has been given by the Washington Office, the Region may proceed to acquire the land by the usual methods of negotiation and option."

IMPROVEMENT PLAN OR GROUPING PLAN NECESSARY PRIOR TO BUILDING

Records Required of Forests:

1. Rough field map.

2. Descriptive sheet.

1. The Supervisor will make a rough field map on atlas-size sheets, of that part of every administrative site on which there are any administrative or protective buildings, or on which he proposes to construct any such buildings. This map will be made from an actual survey on the ground with compass and chain or tape, and it will be drawn strictly to scale (1" will equal either 25' or 50', and the legend will show the scale). The exact location of each building, fence, road, etc., will be shown by bearing and distance from the "central point" (see caption "Central Point"). Likewise, the suggested location of each proposed building and other improvements will be shown. Existing improvements will be shown with solid lines; proposed, with broken lines. Contour intervals of 5' should be used. All existing culture, such as trees, shrubs, buildings, fences, roads, telephone lines, will be shown. This rough map will be sent to the Regional Office. When approved by the Regional Office a tracing and prints will be made. The tracing will be kept in the Regional Office. Two prints will be sent the Supervisor for his own and the District Ranger's records. As proposed buildings are completed, the broken lines on the prints will be made solid. If buildings are removed, erasures will be made to show this. Maps (prints) will be kept up to date. Please refer to sample improvement maps or plans, a part of this manual, which suggest the legend and general make-up desired.

2. Accompanying each map will be a descriptive sheet typed on atlas-size paper, which will contain a brief description of the site, its location, the history of its withdrawal for administrative use, the lawn, trees and other vegetation thereon, followed by a list of the existing buildings on the site, the dimensions of each, number of rooms in dwellings, year constructed and general condition. Following these a list of other proposed improvements and the type and Region 4 plan number of structure proposed for each. This write-up will include a plan for any needed improvement of the grounds: lawn, flowers, shrubbery, trees.

A photograph of a site and the improvements thereon may well be made a part of this descriptive sheet. When this sheet is approved by the Regional Office, it will be returned to the Forest to be filed with the map.

Please endeavor to complete surveys, write-ups and records by March 31, 1936, for all sites with buildings, present and prospective.

Grouping of Buildings and Their Arrangement Within the Group

When building space permits, the sides of any building will be parallel to the sides, or ends, of any other building in the group, but not on the same building line; that is, the side or end line prolonged of any building will not coincide with that of any other building.

Ease of approach, utility and general convenience are important in determining the location of each building in the group, as well as in

deciding on the location and layout of the station driveway. For efficiency, the buildings must be so grouped that the "travel time" doing chores around the station is not excessive. The area of station driveway and walks to be maintained must also be kept within practical limits. Try to avoid a strung out appearance in the grouping of buildings. Other things being equal, centralize the grouping of the buildings which have the greater amount of use and push into the background those which have only occasional use. Quarters for temporary men should be so located as to obviate interference with the privacy of the ranger's family. For sanitary reasons, the barn should be at a considerable distance from the house, usually the farthest of all buildings.

It naturally follows that the woodshed will be located handy to the back door of the dwelling and not too far away, say not more than 25 or 30 feet, and it should be located so that it is screened as much as possible from the view of the visitor coming toward the house on the main approach, and at the same time so as to be easily reached for filling from trucks or wagons. Likewise, a cellar should be handy to the kitchen and a frost-proof and cold-storage room above ground should be built in a convenient location, in the absence of a basement. A garage for the Forest officer's car should be fairly close by. The office should be handy for the Forest officer, but also convenient to the public, and so located, if practical, as to draw the public to it and away from the dwelling.

Secondary to the dwelling, but of greater importance in the plan than most other buildings, is the Ranger's office building. Usually the office will occupy but a part of the building, and there will be one or more other rooms, to be used as storeroom, bunkroom, etc. Driveway, flag-pole, hitching rack and parking space for cars will be so arranged that visitors having business with the ranger will naturally go to the office rather than to the dwelling.

Other buildings should be located secondary to the dwelling and office, and they should be grouped from a standpoint of appearance, natural setting, drainage and accessibility for use. The sample improvement plan maps indicate desirable grouping under certain conditions. These will help you to analyze your problems.

Orientation of Buildings

Buildings should be made to "square" either with the topography or the line of a nearby highway, rather than with the cardinal directions of the compass. On sites where the topography has a well-defined direction (a river nearby or the precipitous face of a nearby mountain, e.g.), buildings will square with the topography; but where there is no well-defined direction in which the topography trends, buildings will square with the adjacent highway. Also orientation with the highway rather than the topography will be the rule if no clear directional trend of topography is evident except at a considerable distance. If a directional trend of the topography is not evident and there is no nearby highway or important road, then the buildings should square with the cardinal points of the compass.

Alternation of Roof Lines

Roof lines of different buildings should not all run in the same direction, but the buildings should present an alternation of roof lines

and gables. There is a chance this instruction may in some cases cause conflict with utility of use, in which case let utility be the guiding factor in the limitation.

TIE ALL STRUCTURES TO A "CENTRAL POINT"

A central point, which may be a suitable rock or a piece of iron pipe set or driven into the ground, will be established at some central position on the site and the bearing and distance of the nearest corner of each structure existing or proposed determined from this central point, and recorded on the map of the site.

Constructing a Group of Buildings in One Season

Where it can be arranged, it will sometimes be good business to construct more than one, or all the buildings on a site, in one season. This may reduce cost of supervision as well as other costs of construction. On the other hand, when contributed time of guards is available each season, it may be advisable to go slower in completing a group of buildings in order to use more contributed time, on the whole, and to do some building on each of several sites rather than a lot on one or two sites. This practice of scattering the work may allow the maximum use of contributed guard time. Availability of CCC'S will sometimes be the governing factor.

Suggestions for Improving Existing Groups

Where plans are being prepared for stations already considerably developed, consideration of replacement of existing structures should be given and be built into the plan. Many old buildings are not worthy of further expenditures for maintenance and their removal should be planned. Some are so unsatisfactory that an attempt should not be made to better or reconstruct them. Plan to tear down and build others. On those sites where a mistake in placement of a building has been made, consider fully the possibility of moving the structure, if it is worth preserving, to the proper location, in order that the group may be properly developed along the lines expressed in this policy statement. Consider very carefully before spending money to better a building as much as 15 years old; or any building, in fact, cheaply constructed.

BUILDING LIMITATION (The following is quoted from the Agricultural Appropriation Act, and relates to the building limitations effective for Fiscal Year 1938.)

Regular Funds

"Provided, That the cost of any building purchased, erected, or as improved, exclusive of the cost of constructing a water-supply or sanitary system and of connecting the same with any such building, and exclusive of the cost of any tower upon which a lookout house may be erected, shall not exceed $7,500, with the exception that any building erected, purchased, or acquired, the cost of which was $7,500 or more, may be improved out of the appropriations made under this Act for the Forest Service by an amount not to exceed two per centum of the cost of such building as certified by the Secretary of Agriculture."

Forest Roads and Trails Funds

"Provided, That this appropriation shall be available for the rental, purchase, or construction of buildings necessary for the storage of equipment and supplies used for road and trail construction and maintenance, but the total cost of any such building purchased or constructed under this authorization shall not exceed $7,500."

CCC enrollees' labor must be included @$1.50 per day as a charge against the $7,500 statutory limitation when regular funds are used in combination with ECW Funds.

ECW Funds (From ECW Hdbk. - Sec. 4 (66) Sup. 70, 9/16/36)

The following maximum limitations are fixed for buildings on which ECW funds are used, and must be strictly observed:

Type of Buildings	Max. Amount Which May Be Spent from ECW Funds for Equip. and Materials	(70) Max. Am't. Which May Be Spent from ECW and/or Other Funds in Combination for Equip., Mater., & Sk. Labor
1. Dwellings, community bldgs., & comparable structures	2,500.00	$5,000.00
2. Overnight Cabins and similar structures	500.00	1,000.00
3. All other buildings, a figure below, which is in proportion to the degree to which the structure is comparable in design & materials to either No. 1 or No. 2 above	2,500.00	5,000.00

ECW funds or enrollee labor will not be used on building projects where the above limitations cannot be observed.

ERA Funds

There are no legal or administrative building limits controlling our ERA allotments, but lack of funds for purchase of material naturally prevents much building from this appropriation. Future emergency funds may or may not be subject to building limitations.

ERA Circular #101 of 7/17/36 defines extent to which ERA may be used for buildings under the several projects for which ERA is allotted the Forest Service.

ERA Circular #104 of August 14, 1936, places an interpretation on building projects:

"Buildings not exceeding the standard of a ranger station dwelling or relatively inexpensive and simple building such as warehouses, were considered falling within the permitted class, but supervisors' offices and buildings of similar standards fall in the 'Major Building' classification which is not authorized under our projects."

ERA Circular #109 of October 9, 1936 places a further interpretation of Project Descriptions as follows:

"Reference is made to ERA Circular #104.

"The term major buildings is interpreted by the Budget and WPA to

include public buildings with general administrative purposes such as regional offices and warehouses and supervisors' offices and other large and expensive buildings where the Forest Service ordinarily conducts its business with the public. Any buildings of direct benefit to an Official Project such as Fire Protection, Recreation or Range can be constructed under this program. It is the purpose for which the building is constructed more than actual cost of the structure which determines whether it comes under our authorization or not.

"Before undertaking any considerable building program, you should investigate carefully as to the supply of suitable labor to complete the structure within the time allotted, and keep up on your relief roller quota for the coming three months' period. We do not wish to have a number of unfinished buildings on our hands in case we cannot get additional funds at the end of this period.

"Projects Started Must Be Completed

"As previously, individual jobs should not be started unless under the ERA allotments being made they will be in such shape that they can be discontinued without loss and are usable or can be completed with current appropriated funds, without requiring the appropriation of additional funds for completion."

Other Conditions Affecting Building Limitations

1. All the plumbing equipment, including water supply and waste disposal items inside the building is chargeable against the $5,000 building limitation.

2. All the cost of the water supply and sewage disposal system outside the building is chargeable against the $500 water supply system. There is no ECF limit.

The Regional Office reserves the right to approve all work. In the old days, satisfactory dwellings for rangers' headquarters could not be built because of the low building limitations. That accounts for some of our inadequate buildings, cheaply constructed, old and not worth spending more money on.

Many replacements are in order as fast as finances permit. It is our

responsibility to build better in the future than in the past.

FACTORS CONTROLLING THE LOCATION OF BUILDINGS RELATIVE TO EACH OTHER AND TO ROADS

There are several factors which must be considered in determining the location of each building with reference to other improvements. The dwelling being the most important structure at each station, it is necessary that its location be chosen with extreme care. It should have the most advantageous location both from a practical, as well as an aesthetic point of view. It should occupy the most prominent position of all buildings on the site and should be the first building to catch the eye as one comes toward the site by the main approach.

The remainder of the structures in the building group will be made to serve as a frame or background for the dwelling. The dwelling should, as a rule, be located upon the highest part of the site so that all drainages will be away from it. In relation to the normal wind direction at the site, it should be located to windward of the barns, corrals and highway.

Where the site will permit, the dwelling will be located not less than 100 feet from the edge of right-of-way of the highway and usually not more than 200 feet. On main traveled roads particularly, it is well to get back from the dust and noise, and a dwelling will probably not look its best if much closer than 100 feet of a highway. Of course, in those cases where the station is located on or at the end of an approach road which is not traveled much by the public, this distance is not so important and may be waived if the site is restricted in area.

Normally a distance of at least 50 feet will be preserved between any building and the one next to it, with such exceptions as may be noted later on. This is a fire protection measure and also insures that buildings will not be unnecessarily crowded together, shutting out light and detracting from the best possible appearance of the whole group. In the case of small buildings or where there is little hazard, or where a fire could be easily localized or confined in one building, the buildings may then be closer together than 50 feet (but not less than 25 feet). If the area of usable ground or the appearance requires, or when closer spacing will promote utility, as in case of cellars and woodsheds with reference to dwellings, the smaller buildings may be closer one to the other, but the above minimum 25 feet must be regarded. Furthermore, the dwelling should, when at all possible, be so faced that the living room side of the building will have a southerly exposure, and at the same time give a view of the principal approach to the station from the living room windows. A spacing that is proper for small buildings will make larger buildings look crowded.

POLICY IN REGARD TO COMBINATION BUILDINGS

Both for the sake of appearance and for economy in building construction and maintenance, it is desirable to build combination buildings. A garage and workshop can well be placed under the same roof. Likewise, an office and storeroom and bunkroom. A woodshed may well be built under the same roof as a garage. There are several feasible combinations listed in our building plans. Avoid a number of small buildings when it is practical to combine them. Combination buildings also are economical as to the amount of ground they occupy, and this is sometimes an important consideration where the amount of fairly level ground is limited.

DEVELOPMENT OF GROUNDS SURROUNDING THE DWELLING

Ranger Station Yard.

The dwelling should be surrounded by an appropriate lawn or yard enclosed by a yard fence. This lawn will be restricted to an area extending not more than 50 feet from the sides of the dwelling in any direction. A landscaping plan for the station providing for the planting of trees and shrubbery should be made and followed out if water and moisture conditions will allow successful planting. (See #2, under the caption, "Records Required of Forests."). Wherever possible, trees growing naturally on the grounds will be preserved. See circular "O-Improvement-Shade Tree Planting" of October 5, 1934. Where there is a scarcity of trees at a station, trees should be planted. Trees up to 10-20 feet high can be successfully transplanted and should be. When new construction is undertaken at a station, all trees and shrubs which are to be retained as a part of the landscaping plan should be carefully protected from all damage. The front yard of a Forest officer's dwelling and office should be kept presentable at all times. It is the show place that the public sees as it passes or enters the station grounds, and this fact alone demands that it be kept in order. We expect the public to clean up their camps, and we should set a good example at our stations.

The area around the ranger's dwelling which is set aside for a lawn should be plowed, fertilized and leveled off before seeding with lawn grass. In most situations the commercial grades of lawn grass seed put out by the seed companies will prove satisfactory. Kentucky blue grass with white clover is good. When a lawn is laid out and seeded, adequate provision to flood or sprinkle it in some manner must be provided. Otherwise, we will have to be satisfied with native grasses, etc. In the latter case, it will usually be advisable to leave the yard unplowed. The lawn should, in most cases, be surrounded by a neat fence to protect it from trampling by loose stock or against other damage and for the sake of appearance. The fence should enclose some other buildings with the house. A satisfactory fence may be constructed of either woven wire, poles or boards, specifications for which are provided in Plan R-4-65. Other fences are suggested in Plan R-4-65a.

It has been said that the front of the dwelling should be not closer than 100 feet to the edge of the right-of-way for the highway. This policy will leave a considerable strip between the yard and highway. The yard fence generally should be set back right against the lawn and the strip between the yard fence and the highway may be left open for car parking, etc., that is, if it is not more than say 100 to 150 feet wide.

Ranger Station Driveways.

They should generally not be more than 12 to 14 feet in width and should be gravelled. When laid out on the station site, the edge of the driveway may be marked with a rock border neatly arranged. Suitable drainage for the driveway should be provided also. In some situations where the soil is of a gravelly character, it may not be necessary to do more than prepare a standard turnpike section with a grader.

Ranger Station Walks

It will usually be desirable to construct walks between the dwelling, driveway, office and some other buildings. These may be concrete, 24 to 30

inches in width, or better, where flat rocks are available, a very neat and attractive walk may be constructed by laying the rocks with their upper surface just level with the ground. The rock type sometimes will be more economical than concrete, and if a neat, workmanlike job is done will serve the purpose just as well and look better. Where expense is an improtant factor, particularly relative to the longer walks, they may be built of gravel.

EMPLOYMENT OF MEN ON GENERAL IMPROVEMENT WORK

CCC Labor

Much of our improvement work will be handled with CCC labor under proper guidance of technical overhead. You are urged to take full advantage of this opportunity in constructing buildings and improvements. In some cases, this labor can be used to advantage in towns or near populated areas successfully. We must, however, make pretty sure that there will be no labor or other difficulties involved by its use. We wish to avoid such difficulties and suggest that you assure yourself before entering upon construction by contacting the local labor authorities or labor themselves.

ERA Labor (From ERA Washington Circular #104 - 8/14/36, also ERA Circular #101 of 7/17/36)

Buildings require numbers and types of skilled workers or tradesmen which, in some cases, cannot be secured from relief rolls. In view of this and the fact that exemption will not be granted by the W.P.A. (except by the method outlined under the 90 - 10% rule, paragraph below) you may wish to reexamine your building construction program. The ERA Circular #101 of 7/17/36 defines the extent to which ERA may be used for buildings under the several projects for which ERA is allotted the Forest Service.

"90-10% Rule (Exemptions)

"A recent request for an exemption under the 1937 F. Y. Program, submitted to the W.P.A. was definitely refused. We were told that the Forest Service would be held strictly to the 90 - 10 rule for all six projects collectively. In other words, the Forest Service will have to show at the end of the program that we have employed not more than the number of ten percenters shown on the Regional Summary Sheet (ERA #101)." However, it is possible to make adjustments within our Region by shifting 10 percenters between states and Forests where the shift is justified and in conformity with the procedure outlined in Circular #104.

Maintenance, Policy of Handling

In at least one Region, contracting the maintenance of both telephone lines and trails has been tried with considerable success. Costs have been greatly reduced and satisfactory work done.

This Region is not prepared at this time to advocate a general policy of contracting maintenance of improvements, although Forests may well try it out in a small way any time. It is believed, however, that it may

eventually be advisable to adopt such a policy for a lot of this work. Particularly in the case of telephone and trail maintenance, it is difficult to give good supervision by the regular Forest Officers. The work is scattered over much territory and the Forest Officers have many other duties to perform besides supervision of this work. The chances of a lot of time being lost by temporary employees in travel, at camps and in other ways is great. Also savings may be possible by contracting construction of improvements.

Question of Employment by the Day on Improvement Work Raised

It is suggested that men might be employed more generally by the day rather than by the month on improvement work. If, for example, a man who will be hired as a guard for fire control work on July 1, is hired to begin work June 10 in maintaining telephone lines, he might be hired by the day as a temporary laborer for the period prior to July 1, or until he is placed at his station for fire control duties. After this, he will be hired by the month, although he may be able to contribute some time to improvement work. Again, if at the end of the fire season he is put at improvement work, he might again be paid by the day as a temporary laborer.

We all want to make the dollar go as far as possible in the handling of improvement as well as other work. Some Supervisors believe it better business to hire men by the day rather than the month on at least some classes of improvements and are hiring them by the day. We are suggesting that the practice of hiring by the day on improvement work be made more general, but we are not making this mandatory at this time.

In the construction of the principal buildings, such as the better dwellings, large barns and equipment buildings, capable carpenters and building tradesmen should be engaged, at least to the extent of supervising the construction. This will still permit of Forest Officers contributing their time on the buildings as far as other duties allow. It will be the carpenter's duty to assist you in securing the most economical use of all materials furnished, and in getting a workmanlike job done which will carry out all intents and purposes of the plans and specifications.

BUYING MATERIALS

Considerable savings have been made by buying lumber and other building materials in carload lots. If money can be allotted for several buildings on the Forest for the same year, it may be good business, since it will allow maximum purchases to be made at one time, and this should assure the minimum prices for materials. Where materials must come from a distance, special effort should be made to ship in carload lots thus lowering the freight rates.

Buying materials by the carload will not prove very satisfactory unless we see what we are buying before it is shipped us, or unless we buy on bids specifically mentioning acceptable grading rules, such as

those laid down by the Western Pine Manufacturers' Association or the West Coast Lumbermen's Association. The bidder can be held to furnishing what we want if we follow this suggestion.

Sometimes it may be practical for two or more Forests to combine so as to order in carload lots and save freight charges, unloading at the most convenient point and trucking from that point. But a carload of lumber is not a big amount and it should be practical generally for one Forest to buy in such lots.

All plans and lists specify grades, sizes, etc., required. Where equals of other manufacture are substituted, you must make sure you are getting an equal.

Reference is made to our circular, "O-Supervision, Purchasing and Warehousing" of 2/20/32, and particularly to the last paragraph, concerning the policy relative to when to buy locally. Quote "11. It is desirable to buy locally just as far as this can be done, consistent with getting relatively good prices."

It is intended that wherever practical, wood shall be used for construction purposes. It should be favored even though it may cost slightly more or be of slightly less than equal in advantage.

Reference is made to Washington Office Circular E-1592 of February 24, 1936 and E-1750 of 12/10/36 - policy set forth quoted below:

"A function of the Forest Service is to foster not only the production but also the use of wood. From a utilization standpoint our aims go beyond the reduction of waste and the increase in usefulness and value of wood products. We aim to insure the permanent place of wood in our modern economy, and thus give incentive and reality to a nation-wide program of forestry by which lands otherwise idle can be made a source of wealth and employment.

"The Forest Service in its own construction work should use wood to the fullest possible degree. The use of other materials in lieu of wood should be considered and authorized only when their suitability and durability clearly exceed that of wood, or where the use of such substitute materials is made necessary by the general type or design of the structure, or where the first cost plus maintenance cost of wood would so greatly exceed the first cost plus maintenance or other materials that it cannot be justified on any demonstrational or economical basis"..... "or where the use of lumber is at variance with City, County and State Building codes."

Lumber Grades Recommended for Use in Building Construction in Region 4

	Grades Recommended under Standard Grading Rules of	
	West Coast Lumbermen's Ass'n.	Western Pine Manufacturers' Ass'n.
	Grades Spec. in Plans	Grades Allowed (Alternates)
All 2" or thicker dimension for all classes of buildings	#1 Com. D.F.or West Coast Hemlock S4S	#1 Dim. F/L, S4S
Wall sheathing and false floors in dwellings	#2 Com. boards D.F. or W.C. Hemlock S4S	#3 Com. Pine S4S
1 x 8 shiplap or plain sheathing where used as a siding or a lining or any width of (Drop Siding, Bevel Siding, Channel Siding, Novelty Siding) 6" or 8"	"C" F.G. or V.G. Drop siding D.F.	(#2 Select Com. (Pine or C-Siding
6" bevel siding	"B" bevel siding D.F.	"C" select siding pine
Log siding, 2" x 8"	#1 Com. or #2 Com. for less important buildings (Douglas Fir)	#1 Com. or #2 Com. for less important buildings. (Pine)
4" flooring dwellings	"B" V.G. flooring D.F. S4S	-
4" flooring warehouses, and such	"C" " " D.F.S4S	-
Lath	#1 Fir or Cedar	#1 Pine lath
For all kinds of finish and trim in dwellings and offices, pattern stock or plain	"C" Select F.G. or V.G. Finish D.F.	"C" select pine S4S
Same for warehouses, guard dwellings, etc.	Selected Com.boards	#2 Com. Pine S4S
Trim for exterior of all buildings		"D" select pine S4S
Shingles, cedar #1-16"(Perfects 5X) At 4½" to weather, 4 bundles will cover 92 sq. ft.		
Floors (Plank type) for barns and warehouses	3" bridge planks DF or 2" car decking B or better-Douglas Fir (T&G - CM)	

In General:

All lumber must be to grade specified.

All lumber must be properly seasoned and dry. (Up to and including 2" thick)

Have all lumber carefully checked by a qualified man to see that the quality is as good as specified. Have this done before the account is vouchered.

POLICIES CONCERNING MATERIALS, TYPES OF CONSTRUCTION, SPECIFICATIONS, ETC.

Character of Buildings - Log or Frame

There are several points to consider in deciding whether the buildings shall be of log or frame construction. Economy in cost of construction and maintenance is important and must be considered, and when other things are nearly equal it should govern.

New Buildings on New Sites

If the timber on the site or near is preponderantly conifer, a log or log siding building is the type; if broadleaf, a frame building is the proper one. If there is neither conifer nor broadleaf near nor plainly in view from the site, a frame building usually will be the type. In towns or communities where private buildings are close by, consider whether the type of building we should construct should be in harmony with the materials of surrounding private buildings.

Additional Buildings on Existing Sites

The new building should conform to the principal buildings already on the site or close by.

Other Conditions - Log or Frame

In some parts of the Region it may be difficult to employ a man or men who can build a good log house, but in such a case the cost of building with logs is probably prohibitive. In any event, if logs are used, they should be properly selected and cured. This requires time.

If logs are the proper type for a building, but not practical for erection at a point, Shevlin (sometimes known as log or plank siding) Siding. (Shevlin is a siding made to suggest logs.)

Relative to one group of buildings, avoid the use of different designs in siding; make for uniformity. Where a start has been made with a drop siding and the buildings are satisfactory and in agreement with the rules above, continue to use drop siding. If the buildings are of novelty rustic, continue to use novelty rustic for all new buildings, and so on. However, Shevlin Siding may prove economical for gable ends when the body is of log construction.

Foundations

For buildings constructed for year-round use, foundations will be solid and of concrete or of rock masonry. Where the buildings are in a Recreation area, concrete foundations should be faced with field rock (not cobble stone.) Ventilation will be provided with standard cast iron ventilators where foundations are solid. In buildings with basements the windows provided in the plans will, of course, afford proper ventilation except for any space under the house entirely shut off from the basement. For summer stations and for buildings where warmth is not an important consideration, concrete or rock piers are satisfactory, but solid concrete or rock masonry may be used if the cost is reasonable. In no case will lumber or logs of buildings be allowed to come in contact with the ground.

Flues

Where transportation facilities make it feasible, flues will be of brick lined with fire-clay flue lining; otherwise, a double metal flue will be used similar to the Jackson flue.

Modern Plumbing

This will be the standard for all offices and dwellings built in towns and at Ranger district headquarters. If a gravity water system is imprractical, a gas or electric pump will be considered. In some warehouses and workshops it will be desirable to provide for hot water and a basin for lavatory purposes. Also toilet facilities should be provided. Cost of plumbing within a building will not be charged against the $5,000 building limitation.

Diagrams and lists of materials are or will be available.

Plaster

For yearlong dwellings, a standard manufactured hardwall plaster or a lime plaster shall be used where this is at all practical. Otherwise, a good quality of composition board may be used to line dwellings (see "Acceptable Wall Boards").

Acceptable Wall Boards

The following wall boards are wood or by-products thereof, and are considered acceptable as lining for buildings:

1/2" DU-X
1/2" Nu-Wood
1/2" Firtex (use only where covered with Plastic Paint)
1/2" Masonite
3-ply wood wall boards of the various trade names -
"Ply-wood," "Fir-board," etc.

In order to show and to use more wood in our buildings, details of and ideas for interior walls in ply-wood, knotty-pine, etc., will become a part of our plans.

Basements.

Where dry basements are practical, yearlong buildings will have concrete basements if building limitations do not preclude, and if such limitations allow, the basements will be full size. (See "Frost-proof rooms.") Where the building limitations will permit, a basement at least sufficient for a furnace will be provided and a furnace may be installed at yearlong stations. At any station, even summer stations, where much cold storage or frost-proof space is needed, consideration should be given to the practicability of a cold storage or a frost-proof room in basement.

In the event that properly mixed and properly proportioned concrete will not keep out water, then no further money will be expended to make a basement waterproof, unless approval is granted by the Regional Office. Should such approval be granted, detailed instructions for waterproofing will be given you by the Regional Office. Ordinarily, if the ground is wet, frost-proof and cold storage will be provided above-ground and a basement made no larger than needed for a furnace and a little fuel, and no basement provided if no furnace is desirable.

Drainage of Site

In some cases drainage of the site, even in a moderate way will be advisable. In nearly all cases the drainage will be a problem that will demand planning on the ground. It is, therefore, essential the proper plans be worked out on the ground. The Regional Office will be glad to offer assistance on these problems where practicable.

Insulation

Where dwellings are used in the winter, the interior heat melts the snow from the eaves up. Water runs down and in cold weather freezes as it reaches the eaves. An accumulation of ice backs the water above the eaves, often sufficiently to result in the formation of ice under the shingles. Finally, water gets through the roof and often causes a lot of trouble. This condition can be remedied by putting a strip or strips of tar sheathing paper under the shingles, running it parallel with the eaves, its lower edge at the upper edge of the eaves, flush with the outside wall of the house.

This use of a strip of tar paper at least 42" wide for yearlong dwellings, where there is a foot or more of snowfall, will be standard practice. The sheathing under this tar paper will be laid solid and will be of 1" matched lumber or 1" shiplap, since ordinary sheathing varies in thickness and would make a poor base for the paper.

Sawdust may be used for insulation over ceilings. The plan recommended is to take clean, dry sawdust and fill between the ceiling joists to a depth of 3 inches, leveling the material carefully. If the house is wired, all wires will be protected with a wrapping of sheet asbestos. After the sawdust is placed as specified above, one pound of baking soda (bicarbonate of soda) should be sifted over every 10 sq. ft. of exposed sawdust. This will, to some extent, fireproof the sawdust.

Electric Wiring for Lights Where Practical

Where commercial electric power or light service is available or can be made available at very little cost, our dwellings should be wired for lights, wiring to conform to the National Electrical Code and the regulations of the National Board of Fire Underwriters insofar as possible. Where buildings are constructed in towns, consideration should also be given to local building codes regarding electric wiring, building materials, etc.

Detailed Lists of Materials are Available

Roofs

Generally the roof of any building 30 feet wide or over will be built with a one-half pitch, which is a 45-degree slope. This standard will apply also to the roof of any building however narrow where snowfall is likely to pile up on the ground as deep as four feet in the extreme.

Roofs of buildings narrower than 30 feet and not coming under the exception noted above as to snowfall will be one-third pitch.

These standards are adopted because we wish our roofs to give adequate service at a minimum expense, and also because we feel that a wide building looks squatty unless the pitch of the roof is fairly steep. This is not so with a narrow building. There the one-third pitch seems to harmonize or balance better than any steeper pitch. We do not deem it essential or necessary that all buildings in a group have roofs with the same pitch. Our standard plans allow roofs with but two different degrees of slope; that is, a one-third and a one-half pitch.

Roofs will be covered with wooden shingles of 16" lengths, perfects 5X, 4½" to the weather; unless transportation is very expensive and good shakes can be obtained nearby and at a considerable saving in cost, in which case hand-made shakes will be used.

The shingles of roofs will be painted at 3 to 5-year intervals and maintained properly.

Frost-proof Rooms

Where practical, considering ground water and the building limitations, basements under buildings will be provided where frost-proof storage is needed. Otherwise, frost-proof rooms will be built, generally above ground. A double wall, with 18 to 24 inches of sawdust between and piled over the ceiling should suffice. With at least one log wall, there should be 18" in the clear for sawdust. In wholly frame construction, 24" of space should be provided between the walls for sawdust. In all cases, put 24" of sawdust over the ceiling. Such construction has been used in Region 1 and is satisfactory. Sawdust is more efficient loose. Therefore, it should not be tamped or packed in. Sawdust will be added as needed to make up for any settling. Region 4 is still very short of space in frost-proof rooms. This situation should be remedied as soon as possible. The cost of building frost-proof rooms above ground is not prohibitive.

Rodent-proof Rooms

Storerooms, saddle and grain rooms and receptacles, and in general any rooms and receptacles will be made rodent-proof in which grain, provisions, materials and equipment subject to damage by rodents will be stored. This will be done with galvanized wire netting, such as is used for screen windows and doors. When building a room, the wire netting should be placed on the studding or joists. Walls and ceilings of rooms already built can easily be rodent-proofed by placing the wire over the walls and ceiling. Prompt steps should be taken to make this policy effective in all cases where rodents are still doing a material amount of damage to our provisions, equipment, grain, etc.

Particularly where pack rats are numerous, consideration should be given to keeping them out of attics, mows, etc.

STANDARD COLOR SCHEME (Region Four)

STRUCTURES AND BUILDINGS
(Administrative, Protective and Recreational Improvements)

The color scheme which will prevail for exteriors for Region 4 structures will be controlled by the predominant cover type in the immediate vicinity or, as will sometimes be the case, by exposed rock or earth, or by surrounding buildings or other conditions.

COVER TYPES OR OTHER CONDITIONS

COLOR SCHEME NUMBER

1. Conifers. Log buildings in all cover types except when color scheme #5 applies.

2. Aspen, Maple, Cottonwood.

3. Sage, Open Prairie or Grass, Willow, Oak, Large Brush and Birch.

4. In towns generally. (Except buildings located in a setting or close to a background preponderantly conifers.)

5. Rock Outcrops or cliffs, or earth banks - doubtful cases.

The color scheme selected will be used on the exterior of all improvements at the site, including posts, flag pole, fences, and recreational equipment, provided they are to be stained or painted at all. Only one body color, one trim color, and one roof color will be used for all improvements on one site. Dark brown stain will not be allowed - buildings previously stained will be coated on maintenance painting with oil and dryer only. All paint, stains, oils, varnish, etc., will be furnished through the Regional Office. Paints are not to be mixed on the job. Stains may be mixed on job according to specifications furnished by Regional Office or as specified herein by Formula.

COLOR SCHEME #1 - Conifer (Log buildings, other settings except where color scheme applies)

Color allowed for New Log, Log Siding or Shake Covered Structures.

BODY (BUILDING OR STRUCTURE)

Light Brown Stain (Stain to be made to formula "A"

Color Scheme #1 (Cont'd.)

Medium Brown Stain (Stain to be made to formula "B"

TRIM (SASH, FRAMES, DOORS, SHUTTERS, MISC. TRIM)

Medium Brown Stain (Stain to be made to formula "B"

or

Red Stone Paint

Instructions for Stained Work

The use of stains for new work is based on the following. The color illustrated is the finish color desired. By the fact that stains are of a certain intensity when applied, you shall use a stain of a desired intensity as the first coat only. Additional or following coats shall consist not of stain but of boiled linseed oil and dryer-varnish may be added in amounts of one quart for each gallon of oil. For maintenance work usually the oil, dryer and varnish preparation shall be sufficient - when required because of fading or bleaching a weak stain may be used and may be job-mixed as a first maintenance coat. The following or subsequent coats shall be oil, dryer and varnish only; that is, after the proper intensity of stain color has been applied.

Caution must be used not to two or three coat the work with stain as the color intensity adds up with each coat, usually giving work entirely too dark or not of proper color shade.

ROOF

Roof Green (F.S. R-4 Std. Green Oil Stain

or

Medium Brown Stain (Use only where Lt. Br. Stain is used on body, otherwise use Roof Green

Color allowed for Frame or Painted Structures.

All such cases will be brought to the attention of the Regional Office. Each case will be studied and a color scheme carefully worked out to secure proper color treatment. The color shall be worked out to secure proper harmony with the natural surroundings and setting, as well as the peculiar architectural requirements of the building or improvement group. The color scheme worked out by the Regional Office shall then apply.

(Color Allowed for Frame or Painted Structures (Cont'd.)

a. Formula Stain "A"

1 Gallon Boiled Oil
1/16 " Turpentine
1/8 " Spar Varnish

Color with Burnt Umber to shade of color chip of Light brown.

Stain (Equal or similar in color to Fullers #1950 Light Oak)

b. Formula Stain "B"

1 Gallon Boiled Oil
1/16 " Turpentine
1/8 " Spar Varnish

Color with Burnt Umber to Shade of color chip of Medium brown.

Stain (Equal or similar in color to Fuller's #1951 Dark Oak)

ROOF

Roof Green (F.S. R-4 Std. Green Oil Stain

or

Medium Brown Stain (Use only where (Lt. Br. Stain is (used on body, (otherwise use Roof (Green.

COLOR SCHEME #2 - Aspen, Maple, Cottonwood

Color allowed for Shake Covered Structures. (In cases where mixed building materials are used - use Color Scheme #5)

BODY (BUILDING OR STRUCTURE)

Grey Stain (Equal or Similar (to Fullers #S8752

TRIM

White Exterior Paint

ROOF

Driftwood Stain

or

Roof Green Stain (F.S. R-4 Std. (Only use where roofs in a particular group were originally painted green.)

Color allowed for Frame and Painted Structures.

BODY (BUILDING OR STRUCTURE)

Light Grey Paint

TRIM

White Exterior Paint

ROOF

Roof Green Stain(F.S. R-4 Std. (Use only where roofs in a particular group were originally painted green.)

COLOR SCHEME #3 - Sage, Open Prairie or Grass, Willow, Oak, Large Brush and Birch

Colors allowed for Shake Covered Structures. (In cases where mixed building materials are used - use Color Scheme #5)

BODY (BUILDING OR STRUCTURE)

Silver Grey Stain

TRIM

White Exterior Paint

ROOF

Driftwood Stain

Colors allowed for Frame Structures.

BODY (BUILDING OR STRUCTURE)

Sage

TRIM

White Exterior Paint

ROOF

Roof Green(Std. R-4 Roof Green)

COLOR SCHEME #4 - In Towns Generally.

Colors allowed for Frame Structures:

BODY (BUILDING OR STRUCTURE)

White Exterior Paint

TRIM (Window Sash. Limited amount on doors and shutters.)

Nile Green

ROOF

Roof Green Stain (Std. R-4 Roof Green)

COLOR SCHEME #5 - Buildings where mixed materials are used, Buildings Near Rock Outcrops or Cliffs or Earth Banks or Doubtful Cases

All such cases will be brought to the attention of the Regional Office. They will assist you in making a decision on colors to be used.

Building Interiors

Dwellings and Offices

Interior walls, light green, light tan or buff, cream or Colonial ivory, of eggshell finish. Two-tone or blended color work of combined colors will be allowed, but no harsh contrasts will be countenanced. Three coats usually will be required. (See also section designated Interior Decorating Guide.)

Colors allowed for Interior Walls:

Light Green

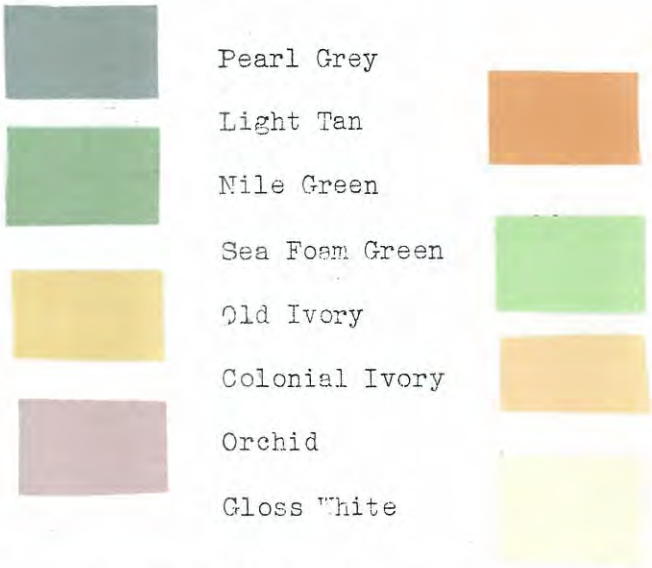
Light Tan or Buff

Cream

Colonial Ivory

Woodwork that is well selected may be natural, covered with clear spar varnish or it may be stained appropriately and varnished. Where woodwork has been colored or is not well selected, the future color will be pearl grey, light tan, nile or sea foam green, old ivory, Colonial ivory, orchid, or gloss white, using enamel paint. (Three coats over two coats of undercoat.) (See also Section designated Interior Decorating Guide.)

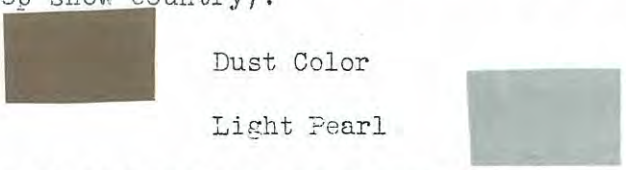
Colors allowed for Woodwork.



Porch ceilings are to be painted to match adjacent work, or if new, covered with clear spar varnish: floors, dust color or light pearl floor paint.

Colors allowed for Porch Floors.

Natural finish will be allowed for new floors (Recommended for deep snow country).



Floors, varnished or waxed or, to the extent allowed in the "O" Handbook, covered with linoleum.

Recreational Structures

Toilets

INTERIOR DECORATING GUIDE

Warm and Cool Colors

Generally colors are divided into two groups. Blue, green and violet are cool colors. Red, orange and yellow are warm colors., In Interior decorating this information can be used to advantage in a number of ways. For example, blue is a good color for a formal reception hall but because of its coolness would be out of place in a breakfast room.

Primary Colors

It is generally understood that there are three primary colors, yellow, red and blue. These colors can not be produced from any other color but from them, with the help of black and white, all other colors can be created.

Secondary Colors

Midway between the primary colors are secondary colors. These are produced by combining equal parts of two primary colors: yellow and blue produce green; blue and red produce violet; red and yellow produce orange. If the combination is more blue than yellow a blue-green results. In the same way, orange may be made more red than yellow. Violet may be made more blue than red.

The fact that colors may be combined in infinite proportions enables one to create hues and values of various descriptions. For this reason it is well to be able to know how to describe or use a particular hue, value or intensity.

Hues, Values and Intensities of Color

The name of the color itself is the hue. For example, the hue that you may wish in your bedroom may be designated as blue, blue-green or pink. The value quality of a color refers to its darkness or lightness. Pink is a light value. Maroon is a dark value. If a color such as pink is toned with another color or white, it may be made more intense or lighter in hue. A general rule usually followed in decorating or painting a room is that the room should be decorated with the darkest values at the bottom and the lightest values at the top. This rule is easy to remember by merely thinking of the dark earth and the lighter sky. Intensity or the third color quality is usually descriptive of brilliance or softness of a particular shade. As an example of intense color you might not even notice a dull blue chair placed in a corner of a living room but a vivid blue would certainly attract your attention. It is, therefore, easy to realize that the intensity of a color must be given serious consideration and it is as important as the hue and value. In Forest Service decorating it

is intended that the background of a room should be much less intense than the furnishing in front of it.

General Information on Color Quality and its Use

Beside being warm or cool, colors have other inherent characteristics.

Yellow is the color of artificial light and it has the same powers as light to bring cheer into rooms. Yellow may be used in any room where it is the desire to bring brightness or good cheer. It need not be intense yellow but any of the hues such as cream ivory or lemon are effective.

Blue is the color of the sea and sky and because of its association with vastness, tends to make a room appear larger. In selecting blue it is well to remember that it is a cold color and except where formality is desired it should be combined in its use with some warm shade such as orange or red-brown.

Red, the color of fire always commands attention. Red as a color is dangerous to use in large quantities but it is very effective when sparingly used. Its warmth gives the impression of hospitality. Beware of using red on walls or large surfaces as it has a tendency to make a room look much smaller and it is very tiring in large quantities.

Green is made up of yellow and blue and it has the most charming qualities of both. It is both cheerful and cool. Because green suggest foliage and is a universal part of nature it is an admirable color to use, especially in light tones. Light tones of greens under favorable circumstances are good in any room of the house.

Violet is a color of splendor. Its less intense tones, lavender and orchid, take on a daintiness that is charming in bedrooms and bathrooms. To accent its regal qualities use gold with purple and for cheerfulness it may be combined with green.

Neutral Colors

There are three neutral tones, black, white and gray. These may be used effectively in small quantities for contrast but for large masses they are not pleasing for Interior decoration. You will find that light gray tints with a dominant hue are more attractive than full gray.

In a blue room it is better to have blue-gray woodwork than neutral gray woodwork. For Forest Service color schemes neutral tones should be used only for contrast and in small masses. They may, however, be combined for two-tone effects in light hues with a dominant color used in some color schemes.

Complementary Colors

A color is said to be the complement of another when it has the element the other lacks. Green and red are complementary colors. Green is made up of the other primary colors blue and yellow. Violet is produced by a combination of blue and red; therefore, yellow, the missing color is complementary. In the same way orange has blue as its complementary color. In any decorating scheme it is well to use a small quantity of the dominant hues complementary color for accent but caution must be taken not to use too much as this would result in a neutralization of the effect of both colors. Usually in Forest Service decorating of interiors the complementary color may be more predominantly used in the furnishing than in the decorating scheme.

Creating a Color Scheme

On new work and in Forest Service buildings which are unoccupied it may be well in planning color schemes to hold to the old standbys of tans, buffs, ivory and white. These are conservative colors and will nearly always appeal. With these neutral background colors do not be afraid of contrasting color interest in the furnishings. Chintz, cretonne, printed linen and similar materials on colored backgrounds are most flattering to neutral walls.

Where beamed ceilings or open-log joists, stained woodwork and rough plastered walls create a rugged interior, contrasts and colors can be stronger. Decorators favor white textured walls with dark stained woodwork. White washable wall finish or white or pale ivory semi-gloss paint are just right for such walls. Avoid a glossy finish on woodwork. A much more pleasing effect is produced by semi-gloss or dull finishes.

Other plans that may be followed in planning a color scheme

1. From current magazines you may be able to select many colored illustrations of well worked out plans for color decoration. The Forest Service allowed colors will fit into many of these as found. By careful analysis the application of these illustrations may be made to your problem.

2. A second path to follow would be one of perfect harmony. To have a color scheme of this class choose only those colors which are definitely rel ted to one another, green, blue-green, yellow-green; or the related blue, blue-purple, purple and pale purple, and so on.

3. By complementary or contrasting color schemes a third plan may be used. An example color scheme under this plan would be green, blue and orange. Green is related to blue and orange, is a complementary color thrown in for contrast. In using this method be careful

not to get too intense colors. Very light tones or shades are always better.

4. Select some outstanding things such as a rug, tapestry, picture or vase. From these articles you will find color combinations which will aid you in building a color scheme.

The walls and general background must be decided upon first. In choosing the wall coloring it should be secondary and less intense than the furnishings.

The ceiling would next be selected and it should be either a toning down of the wall surface by using white or it should be a related or lighter harmony color.

The woodwork may be of the complementary color or a lighter or darker hue than the wall covering. However, in choosing the woodwork color it should be chosen so that it would be in perfect harmony with other colors to be used.

5. Other Good Color Schemes

Green for dominant color. Blue-Green and orange to be used for accents. This is particularly pleasing for living rooms. Lavander for the dominant shade, green and yellow-green as a supplementary color tone is exceptionally distinctive for dining rooms.

For breakfast and dining nooks that are extremely sunny, green is very cheerful and successful. Rose or orange may be used with it successfully. Yellow is a perfect shade for a kitchen which is apt to be dark. Use cream and blue for the ceiling and woodwork respectively.

For Bedrooms, sometimes pink is a favorite. The delicate tones of this color may be accented by pale blue. For other bedrooms you may choose green and pink or yellow and blue and in each case ivory is successful for the woodwork.

Brown or tones of tan may be recommended for libraries. To add sparkle, a limited amount of red may be used.

In bathrooms green, blue-green, pale blue, orchid and ivory may be used. As an example, an emerald green floor, blue-green walls and a pale blue ceiling.

6. There are other methods of creating color schemes but for general use they are impractical.

Keying Colors in a Room

Every object that is to be used in a room has its own color

roll to play. As stated above, the background should be rather neutral or less intense than the furnishings.

The rug should be of a darker value and definitely keyed to the color of the walls. The furniture may be keyed to the woodwork or the walls. The room will look much larger if the furniture is keyed to the walls and not to the woodwork. Small articles of furniture may be more intense in color values. Larger pieces of furniture in intense colors always look inappropriate and out of place. As an example, a bright orange lamp is attractive whereas a bright orange davenport would look too garish. Draperies generally should be lighter in color values than the furniture for they are near the top of the room. They should not be so intense in color hue that the other furnishings are overlooked.

General

The Forest Service colors for building interiors have been selected with the idea that two tone or blended work of combined colors will be allowed. However, no harsh contrast will be countenanced. The colors may be blended or two toned by the various methods in present-day use. It will be noted that the instructions on color schemes above will occasionally involve a color which has not been allowed in the Forest Service standard colors for interiors. Where these colors are needed for accent in small quantities, approval may be requested from the Regional Office for their use. It is desired that all our work conform as nearly as possible to the approved colors.

The following tables have been prepared as color guides:

INTERIOR COLOR SCHEME GUIDE

General Note: All painted walls should be of eggshell or semi-gloss paint except in some cases bathrooms and kitchens may be done in gloss.

All woodwork may be enamel or semi-gloss, or may be stained or finished natural where wood is well selected and without blemishes.

Special Color Schemes may be proposed for Regional Office consideration. Color schemes will also be prepared for jobs in Knotty Pine, Plywood, Wallboard, or natural colored wallboards.

Two-toned or blended effects are approved for walls but not for woodwork.

Any of the color schemes may be painted over plastic paint. Use manufacturers' instructions in the application of plastic paint.

Room	For Walls	For Ceilings	For Woodwork	Floors
Office Living & Dining Room Color Scheme #1	Ivory	Ivory toned with white	Lt. Tan or Sheel Tan	Natural oil finish or Green Enamel
Color Scheme #2	Ivory toned with white	Ivory toned with white	White	Dark Oak stain varnish
Color Scheme #3	Colonial Ivory	Ivory toned with white	Choice of 1 Seafoam Green, Lt. Tan, Ivory-Old, White	Medium Oak stain varnish & wax
Color Scheme #4	Lt. Tan blended with Ivory	Same as walls	Colonial Ivory or White	"
Color Scheme #5	Lt. Green two toned with white or Ivory	Same as wall, shade lighter	Choise of 1 Seafoam green White Colonial Ivory Tan or cream Lt. Gray	Medium Oak Stain Varnish & Wax

Room	For Walls	For Ceilings	For Woodwork	Floors
Color Scheme #6	Cream	Same as Walls, shade lighter	Choice of 1 Seafoam Green Old Ivory Lt. Tan White	Medium Oak Stain Varnish & Wax
Color Scheme #7	Cream blended with Lt. Green, Tan & White	Same as walls, shade lighter or white	Choice of 1 Seafoam Gr. Old Ivory White Light Tan	"

° Where Dining Rooms are directly connected to Living Rooms use same Color Scheme.

Kitchens Color Scheme #8	Lt. Green	Buff or Ivory	Choice of 1 White Seafoam Green Old Ivory Colonial Ivory	Linoleum Green Brown Cream
Color Scheme #9	Ivory	Use Ivory toned down with white or use next lighter shade	Choice of 1 Seafoam Green White Nile Green	Linoleum to harmonize
Color Scheme #10	Cream	Cream	Choice of 1 Seafoam Green White Lt. Tan Nile Green	Linoleum to harmonize
Color Scheme #11	Buff	Buff	Choice of 1 Ivory Nile Green White	Linoleum to harmonize
Color Scheme #12	Lt. Green toned with white or Seafoam Gr.	Same as walls	Nile Green	Linoleum to harmonize
Color Scheme #13	Orchid	Orchid	White	Linoleum to harmonize

Room	For Walls	For Ceilings	For Wood work	Floors
Bedrooms Color Scheme #14	Colonial Ivory blended with white	Same as walls but toned lighter with white	Old Invory or White	Med. Oak stain-varnish & waxed
Color Scheme #15	Lt. Green toned or blended with white to get a very pale green	Cream	Choice of Colonial Iv. White Seafoam Gr. Nile Green	"
Color Scheme #16	Cream tone with orchid and white	Same as walls	Choice of Colonial Ivory White Orchid	"
Color Scheme #17	Lt.Tan toned with white & cream or blended	Same as Walls	Choice of Lt. Tan Cream White Ivory	"

Room	For Walls		For Ceilings	For Woodwork	Floors
	Lower	Upper			
Bathrooms Color Scheme #18	Ivory or White	Lt.Green toned down with white or Ivory	Same as upper wall	Ivory Col. Seafoam Gr. Nile Green Gloss White	Old Linoleum to harmonize
Color Scheme #19	Cream or Lt. Green	Ivory toned with Orchid	Same as upper wall	Orchid Ivory Seafoam Green	"
Color Scheme #20	Cream	Cream	Cream	Lt.Tan Nile Green Pearl Gray Old Ivory	"
Color Scheme #21	Ivory	Ivory toned with white	Same as upper wall	Orchid Ivory Seafoam Green Nile Green White	"
Color Scheme #22	Tan	Orchid	Cream	Ivory or Apricot	"
Color Scheme #23	White	Pale Ivory	Same as upper wall	Dark Green Nile Green or Black & White	"

INTERIOR COLOR SCHEME GUIDE
(Cont'd)

Recommended Color Schemes	Halls, Stairways, etc.
Color Schemes #1, 2, 4, 5 & 6	Living Rooms
#8, 11, 12	Kitchens
#14, 15, 17	Bedrooms

Recommended Interior Color Schemes	Storerooms, Garages, Warehouses, etc.
Woodwork - pearl gray or gray toned down with white	

INTERIOR DECORATING GUIDE

Gives color combination in addition to those shown on table.

*Ceiling colors to harmonize with Walls, can be made by adding a small amount of White to Wall color.

Key Color of Furnishings	Master Rooms	Walls	Woodwork	Ceilings
Green	Cool Scheme	Cream	Seafoam Gr.	Colonial Iv.
	Warm "	Colonial Ivory	Old Ivory	" "
Red	Cool Scheme	Colonial Ivory toned Gray	Ivory toned with Gray & White	Colonial Iv. toned with White
	Warm Scheme	Colonial Ivory toned with White	Colonial Iv. toned with Gray	Colonial Iv. toned with White
Blue Green	Cool Scheme	Lt.Green toned with White	Colonial Iv. toned with Gray	Lt. Green toned with White
	Warm Scheme	Colonial Ivory	Lt. Green toned with Blue	Colonial Iv. toned with White
Brown	Cool Scheme	Lt.Green toned with Ivory	Nile Green	Colonial Iv. toned with White
	Warm Scheme	Lt. Tan toned with Ivory	Lt. Tan	Tan toned with Ivory
Tan	Cool Scheme	Lt.Green toned with white	Lt.Green toned with Blue	Lt. Green toned with White
	Warm Scheme	Lt.Tan toned with Ivory	Light Tan	Colonial Iv.
Blue	Cool Scheme	Cream	Cream	Colonial Iv.
	Warm "	Colonial Ivory toned with White	Colonial Iv.	" "

INTERIOR DECORATING GUIDE
(Cont'd)

Key Color of Furnishings	Bed Rooms	Walls	Woodwork	Ceilings
Orchid	Cool Scheme	Lt.Green toned with White	Lt.Green toned with White	Colonial Iv. toned with White
Yellow	Cool Scheme	Colonial Ivory toned with White	Old Ivory	Cream toned with white & Yellow
	Warm Scheme	Colonial Ivory	Yellow or Ivory toned with Yellow	Colonial Ivory
Blue Green	Cool Scheme	Orchid toned with White	Orchid	Colonial Iv. toned with White
	Warm Scheme	Colonial Ivory	Colonial Ivory	"
Salmon	Cool Scheme	Green slightly toned with Lt. Green	Nile Green	Colonial Iv. toned with White
	Warm Scheme	Ivory toned with Orchid	Light Tan	"
Blue	Cool Scheme	Lt.Green toned with White	White or Ivory toned lightly with Green	Colonial Iv. Toned with White
	Warm Scheme	Colonial Ivory toned with White	Lt. Tan Orange or Pale Orange	"

Paint for Interior of Lookout Buildings

Since considerable complaint has been made that the silver grey oil stain reflects too much light for use on the interior of lookouts, scientific advice was sought on the subject from the Department of Ophthalmology of the University of California Medical School. Their investigations show as follows:

Silver grey paint absorbs only 43% of the light and reflects 57%.

Forest Green absorbs 75% of the light and reflects 25%.

Olive green absorbs 90% of the light and reflects only 10%.

As a general rule enamel reflects more light than paint, while paint reflects more light than stain.

From these facts it is evident that olive green is the best color to use, although it has a depressing effect on some people. In order to give our lookouts all the breaks possible it is believed desirable to use olive green on the interior of the lookouts hereafter. Upon ordering new buildings we shall call for olive green oil stain. In repainting the interiors of old lookouts you should use a flat olive green paint hereafter.

Quality, Analysis and Purchase of Paints

Specifications will call for a higher quality of paint than has been used in the past. The paint and oil will be purchased by the Regional Office, in order to get better prices by quantity purchases and so as to make it practical to have the ingredients analyzed by the Bureau of Standards to help assure that we get what we want, order and pay for.

Some Exceptions to Standard Color Schemes

Suppose we have one or more old buildings on a site painted under the old color scheme and the paint is still in pretty good shape. We put up a new building on the same site. Shall we use the new or the old color scheme on the new building? Use the new, unless you prefer to let the walls of the new building go unpainted until the other buildings are ready to repaint, and then paint all by the new color scheme. In such a case the new building can be given a coat, too, of linseed oil to preserve the wood in the meantime, if you consider that desirable.

The principal buildings on a site may be log, but there may be some minor frame buildings, or vice versa. If the principal buildings are log, use a color scheme for frame buildings which will match the bodies of the log buildings. If the principal buildings are frame, use an approved color scheme for the bodies of the frame buildings and match the log buildings with a stain, if possible, as of new work. If

in doubt, ask Regional Office help.

In the case of a big old or dilapidated building, such as a barn, no paint at all is sometimes the answer. White paint or light colored will not look well generally on such buildings. Such colors will seldom be satisfactory on unsurfaced lumber or on lumber that has weathered for several years before being painted. If it is desirable to paint a barn of much-weathered or unsurfaced lumber, with light or white paint, the outside should first be covered with surfaced siding of some kind.

In the case of log buildings where logs have been painted, any repainting of the logs of such buildings should be with an approved color. The stain formula for logs cannot be used to advantage over the old paint.

You should plan on what buildings are necessary on each of your administrative sites. You can determine the type of construction (log siding or milled siding) for new buildings, and plan on your color scheme accordingly, considering the cover types in the immediate vicinity, and endeavoring to keep as much harmony among colors on different buildings as is practical until your building plan for the site has been completed and the color scheme has been brought fully up to the correct standard. Once a color scheme has been adopted, it is desired to have all buildings in the group conform to the scheme as soon as repainting is required. This end should be worked toward.

With reference to the inside of houses and relative to the roofs and outside trimmings of all buildings and relative to porch floors and ceilings and to doors, the new color scheme should be used 100 per cent as soon as any painting of the surfaces mentioned is done, regardless of the intermingling of log and frame buildings or of old and new buildings.

Quality, Analysis and Purchase of Paints

Specifications will call for a higher quality of paint than has been used in the past. The paint and oil will be purchased by the Regional Office, in order to get better prices by quantity purchases and so as to make it practical to have the ingredients analyzed by the Bureau of Standards to help assure that we get what we want, order and pay for.

Some Exceptions to Standard Color Scheme

Suppose we have one or more old buildings on a site painted under the old color scheme and the paint is still in pretty good shape. We put up a new building on the same site. Shall we use the new or the old color scheme on the new building? Use the new, unless you prefer to let the walls of the new building go unpainted until the other buildings are ready to repaint, and then paint all by the new color scheme. In such a case the new building can be given a coat of linseed oil to preserve the wood in the meantime, if you consider that desirable.

The principal buildings on a site may be log, but there may be some minor frame buildings, or vice versa. In either case, use the new color scheme for the log buildings except as noted below. If the principal buildings are log, use the old color scheme for the bodies of the frame buildings. If the principal buildings are frame, use the new color scheme for the bodies of the frame buildings.

In the case of a big old or dilapidated building, such as a barn, no paint at all is sometimes the answer. White paint will not look well generally on such buildings. It will seldom be satisfactory on unsurfaced lumber or on lumber that has weathered for several years before being painted. If it is desirable to paint a barn of much-weathered or unsurfaced lumber, with white paint, the outside should first be covered with surfaced siding of some kind.

In case of log buildings where logs have been painted, any repainting of the logs of such buildings should be with the old color - brown. The new formula for logs can not be used to advantage over the old paint.

You should soon plan on what buildings are necessary on each of your administrative sites. You can determine the type of construction (wood or frame) for new buildings, and plan on your color scheme accordingly, endeavoring to keep as much harmony among colors on different buildings as is practical until your building plan for the site has been completed and the color scheme has been brought fully up to the new standard.

With reference to the inside of houses and relative to the roofs and outside trimmings of all buildings and relative to porch floors and ceilings and to doors, the new color scheme should be used 100 per cent as soon as any painting of the surfaces mentioned is done, regardless of the intermingling of log and frame buildings or of old and new buildings.

In many cases buildings will be of designs which will have special architectural treatment or provide for use of local or rustic materials. These cases may demand special handling to gain proper color harmony. Plans and specifications will provide or special instructions will be issued when these cases occur.

No Standards or Other Forest Service Plans to be Sold or Loaned

We will not give, lend or sell Forest Service plans to the public. This will not be done because to do so would bring considerable protest from architects and builders to the effect that we were encroaching upon private industry.

Warning on Explosives, Inflammable Gases and Liquids

It is obviously desirable to keep highly inflammable and explosive substances apart from our buildings and equipment so that in case of trouble a minimum amount of damage will be done. It is certainly inadvisable to move these inflammable substances into warehouses for any purpose even temporarily. Do your upmost to prevent loss due to carelessness of any employees. Fill your lanterns, etc., with gas in the building in which you store your gas, not in your equipment or other buildings.

Care of Building Materials on Jobs

All materials shall be properly stocked or housed to protect them from the weather during building work. Conditions allowing abuse before use only lowers quality and often causes expensive replacements or a resulting inferior standard of construction. No lumber or cement will be placed on ground - these shall be carefully stacked or piled on platforms or cross sills. Make sure that waste and loss is avoided. Keep your materials properly piled and stored even during the time a building is being constructed. Do not allow tools, nails, etc., to be widely scattered over the premises during the period of a construction job. Tools should be gathered, checked and locked up at close of each day's work. Failure to follow such a practice has resulted in the loss of many tools. Make the man in charge of a building job responsible for any loss of tools due to failure to follow these instructions.

INSTRUCTIONS FOR MAINTENANCE AND CARE OF FOREST BUILDINGS

1. Generally no one except Forest Service employees will be given permission or allowed to occupy any building owned by the Forest Service.

2. Dwellings will be kept clean and neat at all times. Floors, windows and woodwork must be kept washed or cleaned.

3. Hob nailed or Calked boots will not be allowed in the house.

4. No nails will be allowed to be driven inside or outside of dwellings or offices.

5. Basements of our buildings will be kept clean of worthless junk.

6. Dogs will not be allowed to dirty up any building.

7. Water systems at temporary stations will be thoroughly drained at the time the station is abandoned in the fall. Rangers will check to see that all water and plumbing systems are drained at each station in his ranger district at the time they are abandoned in the fall.

8. No property or equipment, other than Forest Service employees' property, will be stored in Forest Service buildings.

9. Surplus tin cans, boxes, sacks, garbage or other worthless junk will not be allowed to accumulate in or around Forest buildings.

10. Grounds around all buildings will be kept raked and cleaned up of all material.

11. Lawns will be seeded at all stations where there is water, and if practical mowed at least once each week during the growing season.

12. Rangers will report when buildings need painting.

13. Rangers will report needs for maintenance other than that which usually can be done by the ranger himself such as minor repairs. It is intended that minor repairs be kept up and replacement of broken windows made promptly.

14. No camping will be allowed in or around station buildings.

15. Rangers or guards are not to allow parking of cars and trucks at their stations for several days at a time by the public. We will not assume responsibility for cars left at stations.

16. Where woodsheds or storage places for wood have been made available, a supply of dry wood should be planned for and this should be stored in a neat and careful manner. A supply should be left at the close of the season if no danger of theft during winter.

17. Tool houses and equipment sheds will be kept neat and clean at all times. Have a particular place for every kind of tool. When you are through with tools that have been used, place them in the position provided for such tools. Tools and equipment are to be kept locked up when not in use.

18. Barns will be kept clean at all times. Manure will not be piled within 50 feet of barn, and shall be hauled out and scattered on the pasture at least every fall or spring. The barn yard must be kept clean.

19. Horses shall be kept away from all dwellings, garages, warehouses or any other kind of building except the barn and fences should be provided to this end.

FUNDAMENTALS OF GOOD CONCRETE

The basic material of concrete is portland cement - a staple product obtainable from practically all dealers in building materials. Cement is generally obtainable in cloth sacks or paper bags. For convenience in handling or measuring, each sack contains one cu. ft. (94 lbs.) of cement.

Portland cement is a thoroughly dependable product. All of the standard brands produced by members of the Portland Cement Association are tested repeatedly and will produce good concrete when properly combined with the other materials necessary for a concrete mixture.

HOW CEMENT IS USED TO MAKE CONCRETE

Portland cement mixed with water forms a paste. When sand and pebbles are so mixed with this paste that every particle is coated, plastic concrete is obtained. This workable mass of cement, water, sand and pebbles, when placed into forms and allowed to stand, becomes hard like stone due to a process known as the hydration of the cement. When properly cured, concrete continues to harden for a long time after it has acquired sufficient strength for the work it has to do. This continued increase in strength is a characteristic of concrete up to a certain limit.

Strength, watertightness and durability of concrete are partly controlled by the amount of water used per sack of cement. The inclusion of too much mixing water thins or dilutes the cement paste and weakens its cementing qualities. It is therefore important that the correct amount of mixing water be used to obtain concrete of the required strength and density according to the class of work for which it is intended.

Well constructed forms, properly plumbed and leveled are essential to good concrete construction. Proper placing and tamping of concrete is very important. All concrete is to be placed without disturbing forms and must be tamped with tamping tools after being deposited in layers of from 6 to 10 inches. This compacts the concrete, releases air pockets and works large particles away from face of forms. No concrete will give a satisfactory bond if the previous pour has been in place longer than 45 minutes.

DETERMINING PROPORTIONS OF CEMENT AND WATER

All the plan specifications provide the proportions of the concrete mix that is to be used for the specific purpose involved. It is intended that these proportions be used where standard cement and aggregates can be secured, or where the sand and gravels are properly proportioned and cleaned. In some cases a variance will be necessary due to the conditions in obtaining the materials. The following data for determining proportions of cement aggregates and water is therefore to pertain under those conditions.

Table 1 gives recommended quantities of water to use per sack of cement for the different classes of construction. In mixing half-sack batches, use just half the amount of water indicated. The table also suggests proportions of cement, sand and pebbles for the first trial batch and gives maximum size of pebbles allowable. Note that with dry sand and pebbles, more water is added than when the materials are in a moist or wet condition. This is true since the moisture present in damp aggregates is free to act on the cement.

The use of this table can best be explained by an example. Suppose it is desired to determine proper proportions for building a watertight floor. The recommended mix for this class of work is one containing a total of 5-1/2 gallons of water per sack of cement. One cubic foot of moist aggregate contains approximately a quart of water. Consequently when the aggregates (sand and pebbles) are in a moist condition, only 4-1/4 gallons need be added as the water which they contain is free to act upon the cement. When aggregates are dripping wet they contain even greater quantities of water and only 3-3/4 gallons are then added to a one-sack batch.

Steps in the work of mixing concrete by hand. Thorough mixing is essential for satisfactory results.

A concrete mixture in which there is insufficient cement-sand mortar to fill the spaces between pebbles. Such a mixture will be hard to work and will result in rough, honeycombed surfaces.

A concrete mixture which contains the correct amount of cement-sand mortar; with light troweling all spaces between pebbles are filled with mortar. Note appearance on edges of pile. This is a good workable mixture and will give maximum yield of concrete with a given amount of cement.

A concrete mixture in which there is an excess of cement-sand mortar. While such a mixture is plastic and workable and will produce smooth surfaces, the yield of concrete will be low. Such concrete is also likely to be porous.

TABLE I

RECOMMENDED MIXTURES FOR SEVERAL CLASSES OF CONSTRUCTION

Intended primarily for use on small jobs

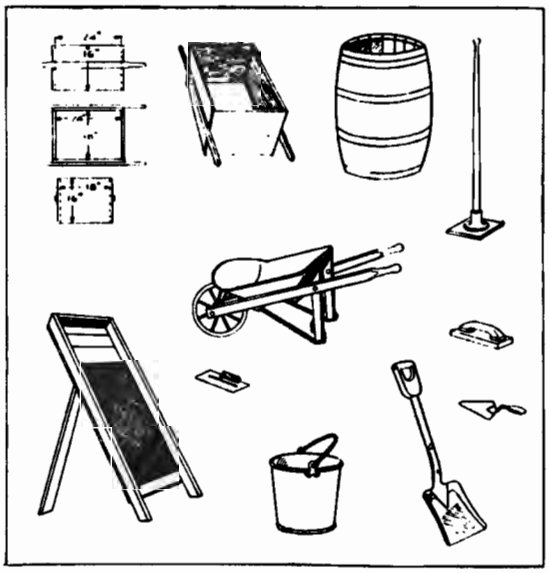
Kind of Work	Gallons of Water to Add to Each One-Sack Batch			Trial Mixture For First Batch			Maximum Aggregate Size
	Dry Sand and Pebbles	Moist Sand and Pebbles	Wet Sand and Pebbles	Cement	Sand	Pebbles	
							Ins.
Fence posts, flower boxes, garden furniture and other work of very thin sections. (Strength 4400 pounds per square inch at 28 days.)	4½	3¾	3½	1	2	2	¼
Water storage tanks, cisterns, septic tanks, watertight floors, sidewalks, feeding floors, barnyard pavements, driveways, barn approaches, porch floors, basement floors, steps, corner posts, gate posts, piers, columns, sills, lintels, chimney caps, etc. (Strength 3300 pounds per square inch at 28 days.)	5½	4¼	3¾	1	2	3	1
Watertight basement walls and pits, walls above ground, grain bins, silos, manure pits, scale pits, dipping vats, dams, lawn rollers, hotbeds, storage cellar walls, etc. (Strength 2700 pounds per square inch at 28 days.)	6½	5	4¼	1	2½	3½	1½
Foundation walls which need not be watertight, mass concrete for footings, retaining walls, engine bases, etc. (Strength 2000 pounds per square inch at 28 days.)	7½	6	5	1	3	5	2

TABLE II

For coarse aggregates ranging from ¼-inch up to ½-inch, use approximately equal parts of sand and pebbles.

For coarse aggregates ranging from ¼-inch up to ¾-inch, use about ¾ as much sand as pebbles.

For coarse aggregates ranging from ¼-inch up to 1½ inches, use about half as much sand as pebbles.



Tools commonly used in farm concrete work.

Stiff, medium and wet mixes of concrete. The stiff mix is suitable for foundations, floors and work of that character. The medium mix is suitable for tank walls, fence posts and similar work. The wet mix is used only for very thin sections like vases and garden furniture.

A mechanical mixer helps in securing a high quality concrete. Just as in hand mixing, correct proportions of cement, aggregate, and especially water must be controlled. Materials should be mixed at least one and preferably two minutes to obtain good workability.

How to Figure Quantities

QUANTITIES OF CEMENT, FINE AGGREGATE AND COARSE AGGREGATE REQUIRED FOR ONE CUBIC YARD OF COMPACT MORTAR OR CONCRETE

(See Table I, for quantities of mixing water)

MIXTURES			QUANTITIES OF MATERIALS				
Cement	F. A. (Sand)	C. A. (Gravel or Stone)	Cement in Sacks	Fine Aggregate		Coarse Aggregate	
				Cu. Ft.	Cu. Yd.	Cu. Ft.	Cu. Yd.
1	1½	...	15.5	23.2	0.86	....	....
1	2	...	12.8	25.6	0.95	....	....
1	2½	...	11.0	27.5	1.02	....	....
1	3	...	9.6	28.8	1.07	....	....
1	1½	3	7.6	11.4	0.42	22.8	0.85
1	2	2	8.3	16.6	0.61	16.6	0.61
1	2	3	7.0	14.0	0.52	21.0	0.78
1	2	4	6.0	12.0	0.44	24.0	0.89
1	2½	3½	5.9	14.7	0.54	20.6	0.76
1	2½	4	5.6	14.0	0.52	22.4	0.83
1	2½	5	5.0	12.5	0.46	25.0	0.92
1	3	5	4.6	13.8	0.51	23.0	0.85

1 sack cement = 1 cu. ft.; 4 sacks = 1 bbl. Based on tables in "Concrete, Plain and Reinforced," by Taylor and Thompson.

MATERIALS REQUIRED FOR 100 SQ. FT. OF SURFACE FOR VARYING THICKNESSES OF CONCRETE OR MORTAR

(See Table I, for quantities of mixing water)

C. = Cement in sacks.
F.A. = Fine aggregate (sand) in cu. ft.
C.A. = Coarse aggregate (pebbles or broken stone) in cu. ft.
Quantities may vary 10 per cent either way depending upon character of aggregate used. No allowance made in table for waste.

Proportion	1 - 1½			1 - 2			1 - 2½			1 - 3		
Thickness in Inches	C.	F.A.	C.A.	C.	F.A.	C.A.	C.	F.A.	C.A.	C.	F.A.	C.A.
⅜	1.8	2.7	.....	1.5	3.0	.....	1.3	3.2	.....	1.1	3.4	.....
½	2.4	3.6	.....	2.0	4.0	.....	1.7	4.3	.....	1.5	4.4	.....
¾	3.6	5.4	.....	3.0	6.0	.....	2.5	6.3	.....	2.2	6.6	.....
1	4.8	7.2	.....	4.0	7.9	.....	3.4	8.4	.....	3.0	8.9	.....
1¼	6.0	9.0	.....	4.9	9.9	.....	4.2	10.5	.....	3.7	11.1	.....
1½	7.2	10.8	.....	5.9	11.9	.....	5.1	12.7	.....	4.4	13.3	.....
1¾	8.4	12.6	.....	6.9	13.9	.....	5.9	14.7	.....	5.2	15.7	.....
2	9.6	14.4	.....	7.9	15.8	.....	6.8	16.9	.....	5.9	17.7	.....
	1 - 2 - 2			1 - 2 - 3			1 - 2½ - 3½			1 - 3 - 5		
3	7.7	15.4	15.4	6.5	13.0	19.3	5.5	13.6	19.1	4.3	12.8	21.3
4	10.2	20.4	20.4	8.6	17.2	25.8	7.3	18.1	25.4	5.7	17.0	28.4
5	12.8	25.6	25.6	10.8	21.6	32.2	9.1	22.6	31.8	7.1	21.3	35.5
6	15.4	30.7	30.7	12.9	25.8	38.6	10.9	27.2	38.2	8.5	25.6	42.6
8	20.6	41.0	41.0	17.2	34.4	51.6	14.6	36.4	51.0	11.4	34.1	57.0
10	25.6	51.2	51.2	21.5	43.2	64.4	18.2	45.3	63.5	14.2	42.5	71.0
12	30.7	61.4	61.4	25.8	51.6	77.2	21.8	54.5	76.3	17.0	51.1	85.1

MORTAR MATERIALS REQUIRED FOR CONCRETE MASONRY (8" WALL)

(Note) Amount of mortar required is subject to wide variation, depending upon wastage and how joints are made. The following figures represent general practice on the basis of 25 per cent wastage and ⅜-inch mortar joints, the mortar joints being non-continuous through the wall.

For Ordinary Work

One sack cement, 1 cu. ft. lime and 6 cu. ft. sand will make mortar sufficient to lay up the following:

120 8 by 8 by 16-inch block, or

175 5 by 8 by 12-inch concrete building tile.

For Special Work

One sack cement, 10 pounds lime and 3 cu. ft. sand will make mortar sufficient to lay up the following:

55 8 by 8 by 16-inch concrete block, or

75 5 by 8 by 12-inch concrete building tile.

As a trial mixture for determining correct proportions of sand and pebbles for watertight concrete, 1 sack of cement to 2 cubic feet of sand to 3 cubic feet of pebbles (1-2-3 mix) is recommended. It may be necessary to change the proportions of sand and pebbles slightly in order to obtain a smooth, plastic, workable mixture which will place and finish well. For example, suppose the addition of the recommended quantity of water for the trial proportions suggested gives a mixture that is too wet, add more sand and pebbles in the proportions of about two parts sand to three parts pebbles until the right degree of workability is obtained. On the other hand, if the mixture is too stiff with suggested proportions, use less sand and pebbles in the following batches. In this way the exact proportions for the job can be obtained.

The following recommendations (Table II) will prove helpful in arriving at best proportions of sand to pebbles. All measurements are based on moist sand. If sand is absolutely dry, a condition seldom encountered, use 25 per cent less than quantities given in the table.

WHAT IS A WORKABLE MIXTURE?

A workable mixture is one of such plasticity and degree of wetness that it can be placed in forms readily, and that with light spading or tamping will result in a dense concrete. It should be neither too dry nor too wet. In a workable mixture there is sufficient sand-cement mortar to give good smooth surfaces free from rough spots, called honeycombing, and to bind the pieces of coarse aggregates into the mass so they will not separate out in handling.

In other words, there should be just enough cement-sand mortar to fill completely the spaces between the pebbles and to insure a smooth plastic mix. Mixtures with a deficiency of mortar will be harsh, hard to work and difficult to finish. On the other hand, over-sanding or the use of too much sand should be guarded against as it increases porosity, and reduces the amount of concrete that can be obtained with a sack of cement.

A good rule to follow is to so proportion the amounts of sand to pebbles as to obtain the greatest amount of concrete of a plasticity suitable to the character of the work. The center illustration shows how a workable mix will look when a trowel is drawn across it. Under no circumstances vary the ratio of water to cement from the quantities given in Table I.

AGGREGATES

Aggregates for concrete should be clean, hard and free from dirt, loam, clay or vegetable matter. These foreign materials are objectionable because they prevent adhesion between the cement and sound, hard particles of aggregates. Concrete made with dirty aggregate hardens very slowly at best and may never harden enough to produce a good quality of concrete.

Sand should be well graded, that is, the particles should not all be fine nor all coarse, but should vary from fine up to those particles that will just pass a sieve having meshes 1/4-inch square. If sand is well graded, the fine particles help to occupy the spaces (voids) between the coarser particles, thus resulting in a dense concrete. Under these conditions, a

given amount of cement paste will bind together a greater mass of aggregates, thus increasing the amount of concrete obtainable with a sack of cement.

Pebbles, crushed stone, or other coarse aggregates should be tough, fairly hard and free from impurities that are objectionable in sand. Stone containing a considerable quantity of soft, flaky or elongated particles is not suitable for making concrete. Coarse aggregates should be well graded with sizes ranging from 1/4 inch up to 1-1/2 or 2 inches, the maximum size being governed by the nature of the work. In thin slabs or walls, the largest pieces of aggregates should never exceed one-third the thickness of the sections of concrete being placed.

BANK-RUN MATERIALS

Bank-run gravel, the natural mixture of sand and pebbles as taken from the pit, is seldom suitable for concrete unless first screened to separate sand from pebbles. When thus separated materials may be recombined in correct ratio to give a workable mix as previously described. Most gravel banks contain either more sand or more pebbles than desirable; usually, there is too much sand. Money can generally be saved by screening out the sand and then recombining sand and pebbles in correct proportions.

WATER

Water used to mix concrete should be clean, free from oil, alkali and acid. In general, water that is fit to drink is suitable for concrete.

ACCURATE MEASUREMENT ESSENTIAL

All materials, including water, should be accurately measured for every batch. A bottomless frame made exactly 1 cubic foot, 2 cubic feet or any other convenient volume, serves as a measuring box for sand and pebbles. A pail marked off on the inside to indicate gallons and half-gallons is commonly used for measuring water.

MIX THOROUGHLY

Concrete may be mixed by machine or by hand. In either case, mixing must proceed until stones or pebbles are completely coated with a mortar of sand and cement.

Practically all standard batch-type machine mixers on the market will render satisfactory service and pay for their cost in construction work by saving labor and insuring more thoroughly and uniformly mixed concrete.

HAND MIXING

For hand mixing a tight floor or mixing platform is required. A platform may be constructed especially for the purpose.

The method generally used for hand mixing is as follows: Spread the measured amount of sand out on the platform, distribute the required quantity of cement evenly on top of the sand and turn with square-pointed shovels until the mixture is uniform in color. At least three turnings are necessary. On the cement-sand mixture spread the measured amount of pebbles and mix

thoroughly as before until the mass has the same even color throughout. A hollow is then formed in the center of the pile and the exact quantity of water poured into this depression, materials in the pile being gradually turned into the water with shovels and mixed until the cement, sand and pebbles have been thoroughly and uniformly combined and the mixture has the same color and plasticity throughout.

PLACING

Concrete should be placed in the forms inside of 45 minutes. It should be deposited in 6 to 10-inch layers and thoroughly spaded. This compacts the concrete, releases air pockets, and works large particles away from the face of the forms.

CURING

Moisture is necessary for the proper hardening of concrete. If this fact is kept in mind no difficulties will be encountered in the proper curing of concrete. Floors and walks are commonly given a covering of 2 to 3 inches of earth, straw or sand which is kept moist by sprinkling for 10 days. Wall sections are protected with moist canvas or burlap.

HOW TO USE TABLES FOR CALCULATING QUANTITIES (From Portland Cement Association Publications)

PROBLEM I:

What quantities of materials are required for a monolithic concrete foundation wall 34 feet square, outside measurements, 12 inches thick, 7 feet high, with a footing 12 inches thick and 18 inches wide, using a 1-2 1/2-3 1/2 mixture in both the wall and footing?

SOLUTION

The wall contains 924 square feet of surface, 12 inches thick, deducting the duplication at corners.

Referring to table under 1-2 1/2-3 1/2 mixture for 12-inch walls 21.8 sacks of cement are required for each 100 square feet of surface. Dividing 924 by 100 gives the number of times 100 square feet are contained in the total wall surface and multiplying by 21.8 gives the total number of sacks of cement required. Similar calculations are made for the fine aggregate and the coarse aggregate in both the wall and the footing, noting that the width of the footing, 18 inches, is 1-1/2 times the 12 inches thick.

$\frac{924 \times 21.8}{100}$ = 201.5 sacks cement $\frac{924 \times 54.5}{100}$ = 503.6 cu. ft. fine aggregate

$\frac{924 \times 76.3}{100}$ = 705 cu. ft. coarse aggregate.

The footing contains 132 square feet of surface, 18 inches thick (1-1/2 x 12 inches), deducting for duplication at corners.

$\frac{132 \times 21.8 \times 1\text{-}1/2}{100}$ = 43.2 sacks cement $\frac{132 \times 54.5 \times 1\text{-}1/2}{100}$ = 107.9 cu. ft. fine aggregate

$\frac{132 \times 76.3 \times 1\text{-}1/2}{100}$ = 151.0 cu. ft. coarse aggregate.

Total materials required for footing and wall: 244.7 sacks cement, 611.5 cu. ft. fine aggregate, 856 cu. ft. coarse aggregate.

PROBLEM 2:

What quantities of materials are required for a 1:2 cement plaster coat, one inch thick on the lower four feet of the above foundation?

SOLUTION

Perimeter of foundation: 4 x 34 feet = 136 feet. This multiplied by height of plaster coat, four feet, equals 544 square feet.

$\frac{544 \times 4.0}{100}$ = 21.8 sacks of cement $\frac{544 \times 7.9}{100}$ = 42.5 cu. ft. sand.

NOTE:

All standard plans and lists give a list of materials needed for concrete work. No further computations should be necessary unless the peculiarities of the site is such that high foundations and extremely heavy footings are necessary.

A METHOD OF LAYING OUT FOUNDATIONS

The proper method of laying out a foundation is given in Plan R-4-102. The easiest, quickest and most accurate way to determine the boundary line of a new building is by means of surveying instruments. When such instruments are not available, one of the simplest methods for laying out corners is known as the right triangle method. A triangle with sides six, eight and ten feet long is a right triangle and the 90° angle or right angle is opposite the longest side.

First, a base line is established, marking out one end of side of the new building. See line AB on the accompanying drawing. Stakes are set at A and B on this line, locating two corners. In the top of Stake A a nail is partly driven in the center. This nail accurately locates the corner. On the line AB another stake is driven at F, 6 feet from Stake A. A nail is driven in the top of this stake exactly 6 feet from the nail in Stake A. Stake E should be driven so that its center will be exactly eight feet from Stake A and exactly 10 feet from Stake F.

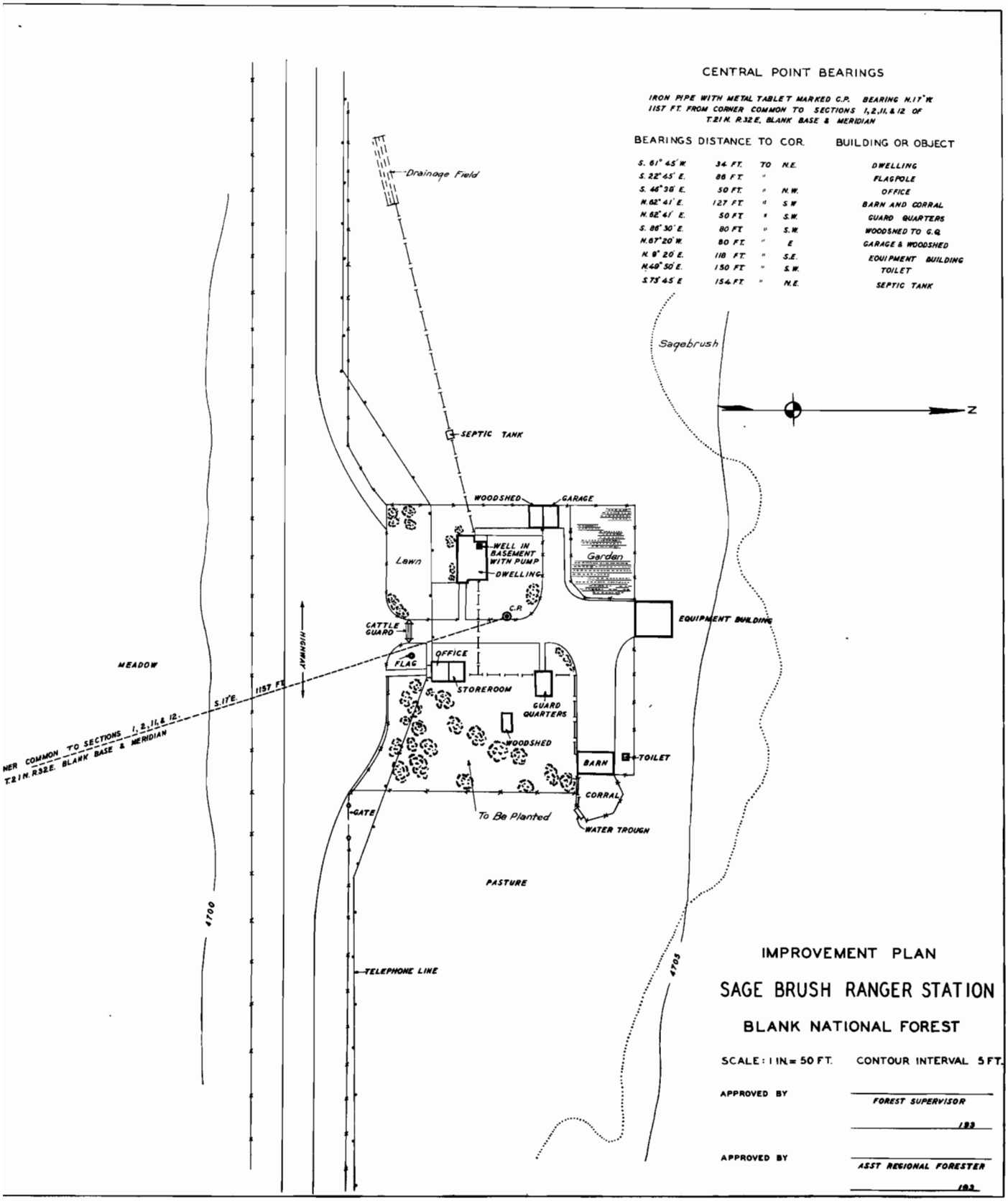
The corner represented by the angle EAF is a right angle; the line AE extending to D will form the second boundary line of the building and D will represent the third corner. Other corners are located in the same manner. After this has been done, strings are stretched over the corner stakes, A, B, C, D, and carried to outside supports called "batter boards" as indicated by G, H, K, L, M, N, P, R. The top of the horizontal batters should be set at first floor level or some other convenient "datum." The building lines may be projected from the strings to the ground by means of a plumb bob suspended as shown in the drawing. When the stakes G, H, K, L, M, N, P, R have been set and the strings indicating the layout of the building transferred to them, the corner stakes A, B, C, D, and stakes E and F are removed so that the trench may be excavated. Nails should be driven in the cross pieces between standards where the strings are fastened so that in case the strings are

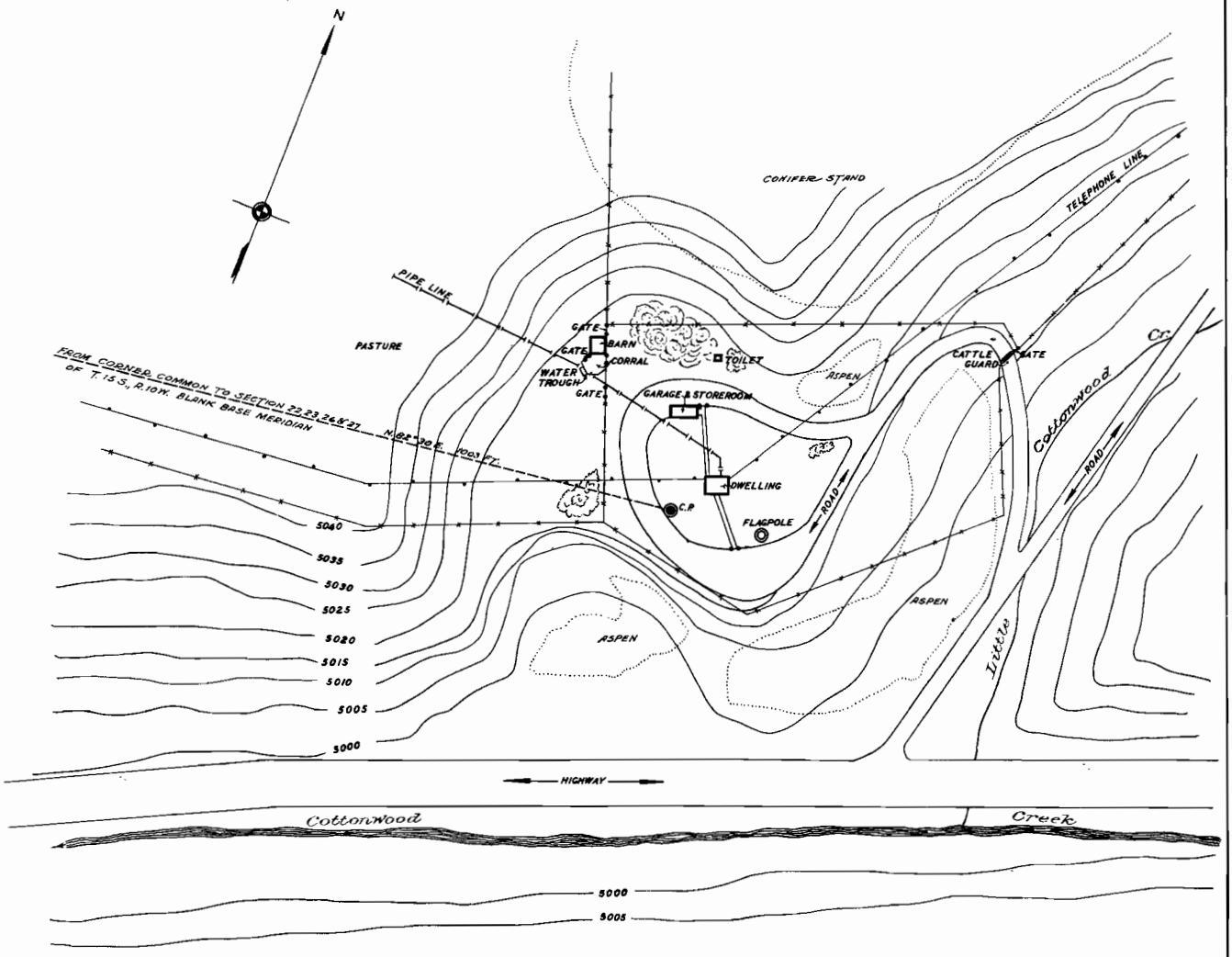
broken or removed they can be accurately replaced. Having found the building line, it is easy to locate piers, posts, columns or other intermediate supports.

COOPERATION DESIRED

In accordance with the wishes of the Forester, you are instructed not to use wood substitutes where wood can be used to equal, or slightly less than equal, advantage. The desirability of the use of wood in the construction of improvements by an organization whose business is largely concerned with growing wood is, of course, evident. (See policy on use of wood, page 23 of this manual.)

With your cooperation, the results that will be obtained from this effort toward better Forest buildings will give us more utility of use, better grouping and building appearances, greatly decreased costs of design and, on the whole, longer-life buildings.


CENTRAL POINT BEARINGS
IRON PIPE WITH METAL TABLET MARKED C.P. BEARING N.17°W 1157 FT. FROM CORNER COMMON TO SECTIONS 1, 2, 11, & 12 OF T.21 N. R.32 E., BLANK BASE & MERIDIAN
BEARINGS DISTANCE TO COR. BUILDING OR OBJECT
S. 61° 45' W. 34 FT. TO N.E. DWELLING
S. 22° 45' E. 88 FT. " FLAGPOLE
S. 46° 38' E. 50 FT. " N.W. OFFICE
N. 62° 41' E. 127 FT. " S.W. BARN AND CORRAL
N. 62° 41' E. 50 FT. " S.W. GUARD QUARTERS
S. 86° 30' E. 80 FT. " S.W. WOODSHED TO G.Q.
N. 87° 20' W. 80 FT. " E GARAGE & WOODSHED
N. 9° 20' E. 118 FT. " S.E. EQUIPMENT BUILDING
N. 49° 50' E. 150 FT. " S.W. TOILET
S. 73° 45' E 154 FT. " N.E. SEPTIC TANK
Drainage Field
Sagebrush
N
SEPTIC TANK
WOODSHED
GARAGE
WELL IN BASEMENT WITH PUMP
DWELLING
Lawn
Garden
C.R.
CATTLE GUARD
EQUIPMENT BUILDING
HIGHWAY
MEADOW
FLAG
OFFICE
STOREROOM
GUARD QUARTERS
WOODSHED
BARN
TOILET
CORRAL
WATER TROUGH
GATE
To Be Planted
PASTURE
S.17°E.
1157 FT.
NER COMMON TO SECTIONS 1, 2, 11, & 12; T.21 N. R.32 E. BLANK BASE & MERIDIAN
4700
4705
TELEPHONE LINE
IMPROVEMENT PLAN
SAGE BRUSH RANGER STATION
BLANK NATIONAL FOREST
SCALE: 1 IN. = 50 FT. CONTOUR INTERVAL 5 FT.
APPROVED BY
FOREST SUPERVISOR
19
APPROVED BY
ASST REGIONAL FORESTER
19



CENTRAL POINT BEARINGS

IRON PIPE WITH METAL TABLET MARKED C.P.+ BEARING N.82° 30'E. 1003 FT. FROM CORNER COMMON TO SECTIONS 22, 23, 26, 27 OF T.15S., R.10W. BLANK BASE & MERIDIAN

BEARING	DISTANCE TO COR.			BUILDING OR OBJECT
N.44°25'E.	23 FT.	"	S.W.	DWELLING
N.85°30'E.	61 FT.	"		FLAGPOLE
N.44°20'W.	112 FT.	"	S.E.	BARN & CORRAL
N.22°05'W.	61 FT.	"	S.W.	GARAGE & STOREROOM
N. 5°05'W.	101 FT.	"	S.W.	TOILET

IMPROVEMENT PLAN

COTTONWOOD GUARD STATION

BLANK NATIONAL FOREST

SCALE 1 IN. = 50 FT. CONTOUR INTERVAL 5 FT.

APPROVED BY _____ FOREST SUPERVISOR

_____ 193__

APPROVED BY _____ ASST. REGIONAL FORESTER

_____ 193__

IMPROVEMENT PLAN

WILLOW CREEK RANGER STATION

BLANK NATIONAL FOREST

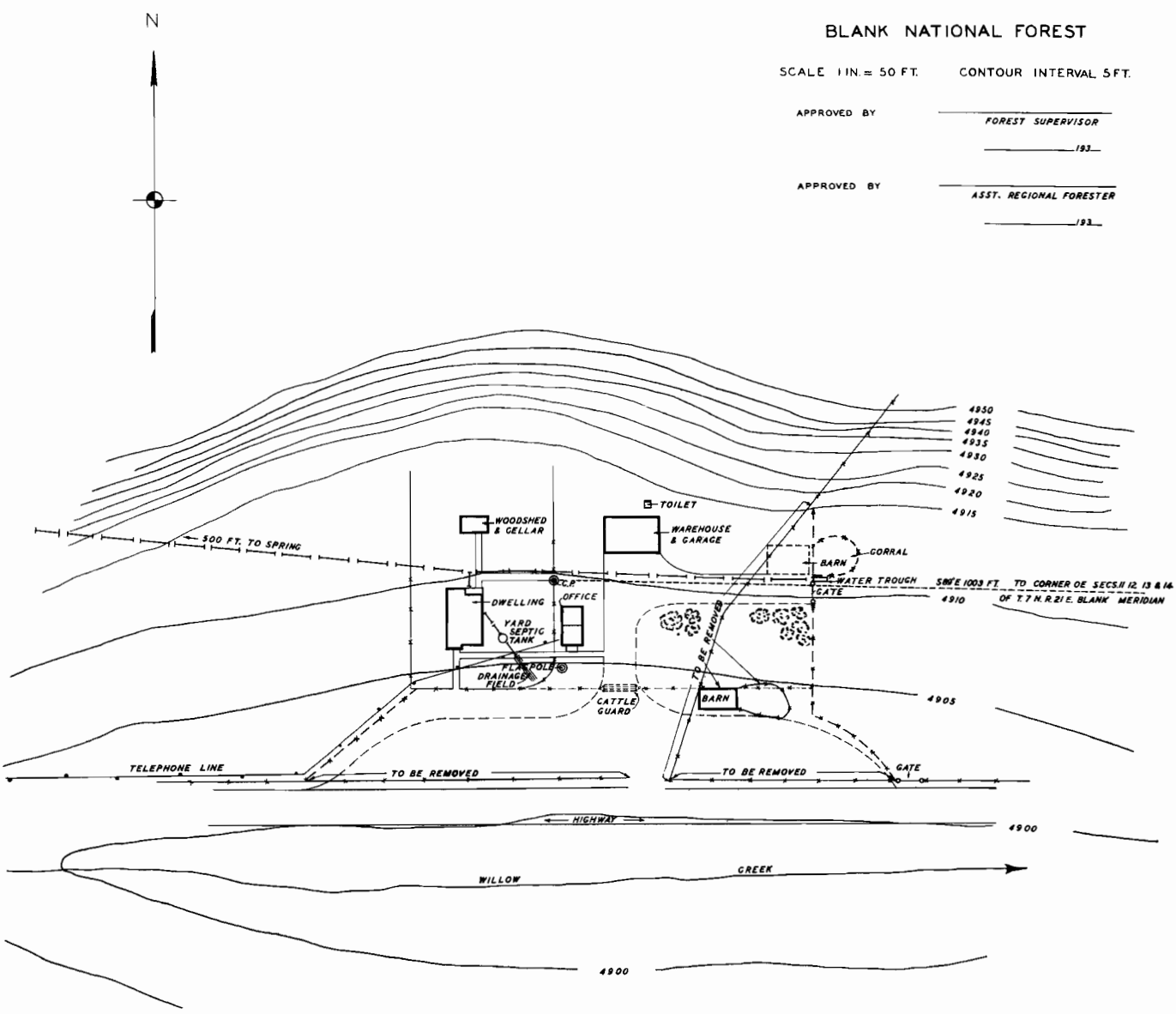
SCALE 1 IN. = 50 FT. CONTOUR INTERVAL 5 FT.

APPROVED BY _____ FOREST SUPERVISOR

_____ 193_

APPROVED BY _____ ASST. REGIONAL FORESTER

_____ 193_



CENTRAL POINT BEARINGS

CENTRAL POINT IS AN IRON PIPE WITH FOREST SERVICE METAL TABLET IN TOP SET FLUSH WITH GRADE AND MARKED C.P. + ELEVATION 4809 FT.

BEARING & DISTANCE TO			COR.	BUILDING OR OBJECT
S. 84° 30' W.	50 FT.	"	N.E.	DWELLING
S. 4° 25' E.	62 FT.	"		FLAGPOLE
S. 15° 25' E.	18 FT.	"	N.W.	OFFICE
S. 53° 10' E.	126 FT.	"	N.W.	OLD BARN-TO BE REMOVED
N. 81° 8' E.	151 FT.	"	N.W.	PROPOSED BARN AND CORRAL
N. 62° 30' E.	40 FT.	"	S.W.	WAREHOUSE AND GARAGE
N. 52° 00' E	80 FT.	"	S.W.	TOILET
N. 53° 54' W.	53 FT.	"	S.E.	WOODSHED AND CELLAR

DOOR SCHEDULE

	UNIVERSAL DESIGN NO.	MATERIAL	SIZE	GLASS	REMARKS
①	U-274	FIR OR PINE	2'8" x 6'8" x 1 3/8"	O.S.	
②	U-431	FIR OR PINE	2'6" x 6'6" x 1 3/8"	—	
③	U-431	FIR OR PINE	2'0" x 6'6" x 1 3/8"	—	
④	U-431	FIR OR PINE	2'4" x 6'6" x 1 3/8"	—	
⑤	U-431	FIR OR PINE	2'6" x 6'6" x 1 3/8"	—	DOUBLE ACTING
⑥	U-500	FIR OR PINE	2'6" x 6'6" x 1 3/8"	O.S.	
⑦	U-130 (SIMILAR TO PLANS) U-183	FIR OR PINE FIR OR PINE	3'0" x 7'0" x 1 3/8" 3'0" x 7'0" x 1 1/8"	O.S. O.S.	FURNISH ONE AS SPECIFIED

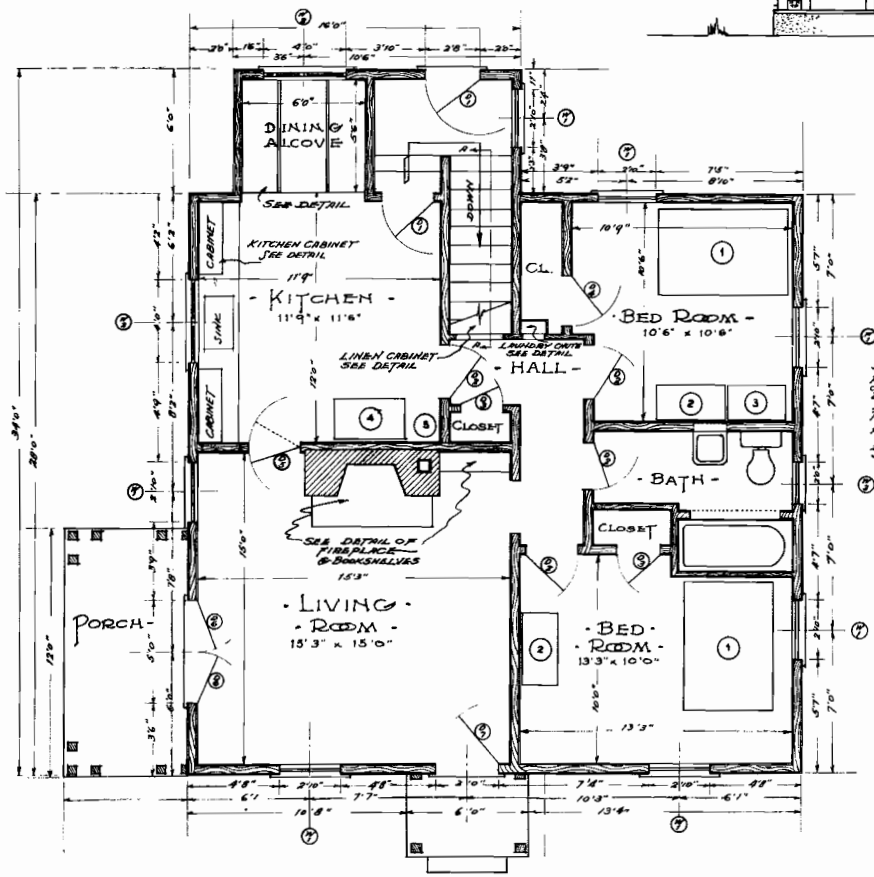
WINDOW SCHEDULE

	UNIVERSAL DESIGN NO.	SIZE OF EACH LIGHT	SIZE OF OPENING	TYPE OF WINDOW	REMARKS
⑦	U-1013	10 x 12	2-10 1/2 x 4'-6"	D.H. 12 LT. CK. RAIL	1 3/8" THICK.
⑧	U-1116	10 x 12	3'-11 5/8" x 3'-5 5/8"	CASEMENT SASH, 6 LT.	1 3/8" THICK, RABBET 5/8" ON MEETING RAILS
⑨	U-1008	10 x 12	2'-0 7/8" x 4'-6"	D.H. 8 LT. PLAIN RAIL	1 1/8" THICK.

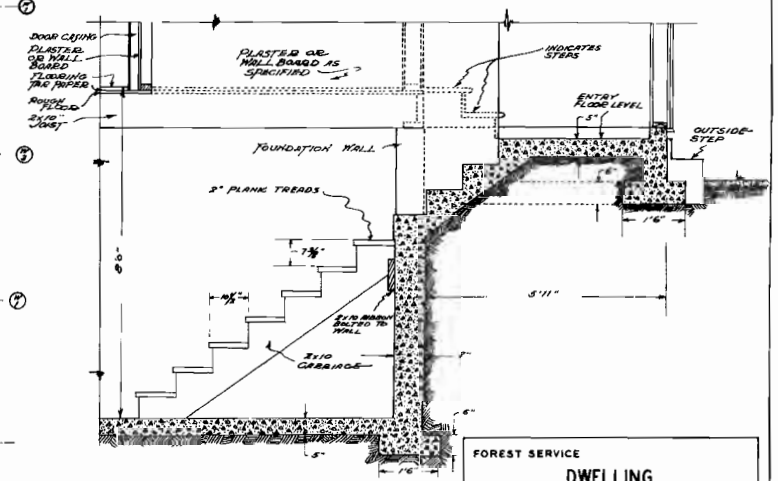
- FRONT ELEVATION -

KEY TO FURNITURE & EQUIPMENT SHOWN

①	BED - STANDARD SIZE - BOTH BED ROOMS
②	DRESSING TABLE OR BUREAU -
③	CHIFFONIER -
④	KITCHEN RANGE -
⑤	RANGE BOILER -



- FLOOR PLAN -



- DETAIL OF BASEMENT STAIRWAY AT A-A -

- SCALE 1/2" = 1 FOOT -

FOREST SERVICE

DWELLING
RANGER STATION

PLAN R-4 # 1

SHEET 1 OF

	DATE	SCALE
CHECKED O.L.N	3-13-33	1/4" = 1 FOOT EXCEPT AS SHOWN
APPROVED C.N.W	3-15-33	

DOOR SCHEDULE

	UNIVERSAL DESIGN NO.	MATERIAL	SIZE	GLASS	REMARKS
⑦	U-278	FIR OR PINE	3'0" x 7'0" x 1⅜"	O.S.	
③	U-431	FIR OR PINE	2'6" x 6'6" x 1⅜"	—	
①	U-431	FIR OR PINE	3'0" x 6'6" x 1⅜"	—	
②	U-431	FIR OR PINE	2'4" x 6'6" x 1⅜"	—	
⑫	U-431	FIR OR PINE	2'6" x 6'6" x 1⅜"	—	DOUBLE ACTING
⑪	U-500	FIR OR PINE	2'6" x 6'6" x 1⅜"	O.S.	
⑨	U-130 (SHOWN IN PLAN)	FIR OR PINE	3'0" x 7'0" x 1⅜"	O.S.	FURNISH ONE AS SPECIFIED
	U-185	FIR OR PINE	3'0" x 7'0" x 1⅜"	O.S.	

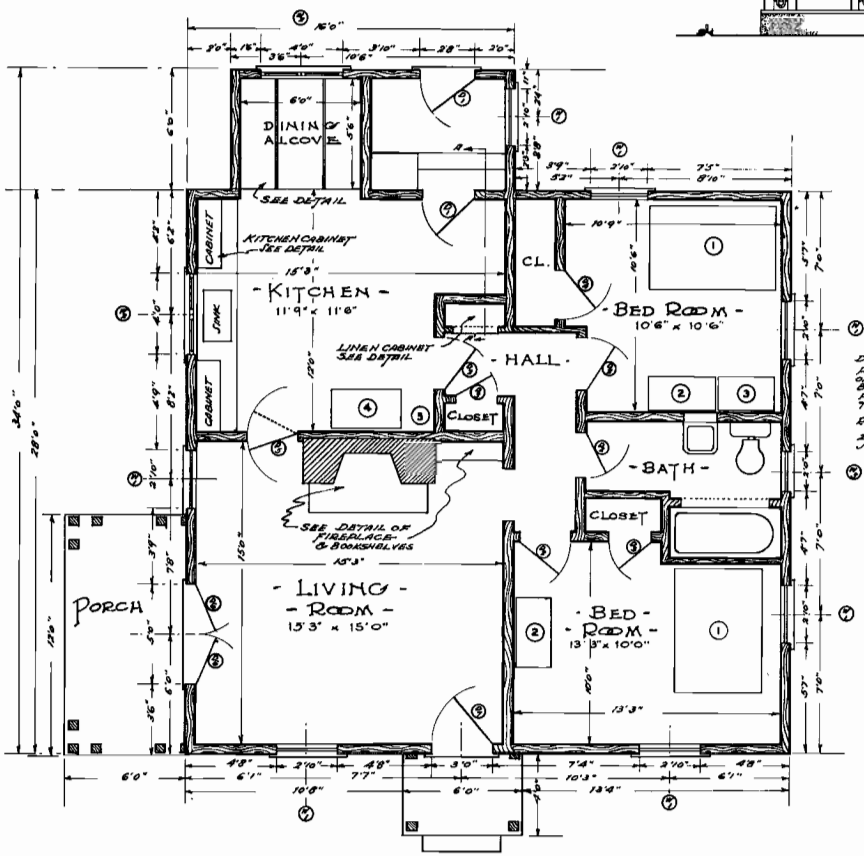
WINDOW SCHEDULE

	UNIVERSAL DESIGN NO.	SIZE OF EACH LIGHT	SIZE OF OPENING	TYPE OF WINDOW	REMARKS
⑰	U-1012	10 x 12	2-10⅛ x 4'-6"	D.H. 12 LT. CK. RAIL	1⅜" THICK
⑮	U-1116	10 x 12	3-11⅝ x 3'-5⅝"	CASEMENT SASH, 6 LT.	1⅜" THICK. RABBET SASH ON MEETING RAILS
⑭	U-1008	10 x 12	2'-0⅛" x 4'-6"	D.H. 8 LT. PLAIN RAIL	1⅜" THICK.
○					
○					
○					
○					

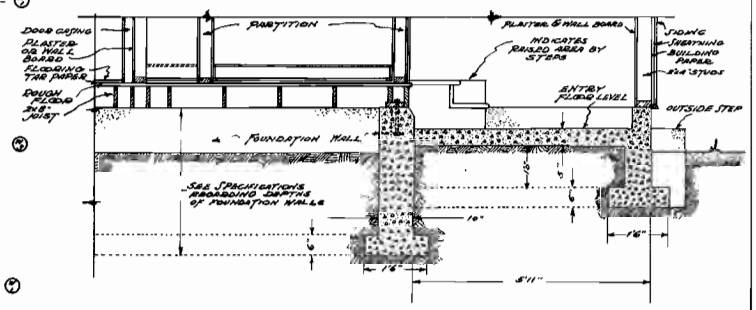
- FRONT ELEVATION -

KEY TO FURNITURE & EQUIPMENT SHOWN

①	BED - STANDARD SIZE - BOTH BED ROOMS
②	DRESSING TABLE OR BUREAU —
③	CHIFFONIER —
④	KITCHEN RANGE —
⑤	RANGE BOILER —



- FLOOR PLAN -



- DETAIL - OF CONSTRUCTION AT A-A'
- SCALE ½" = 1 FOOT -

FOREST SERVICE

DWELLING

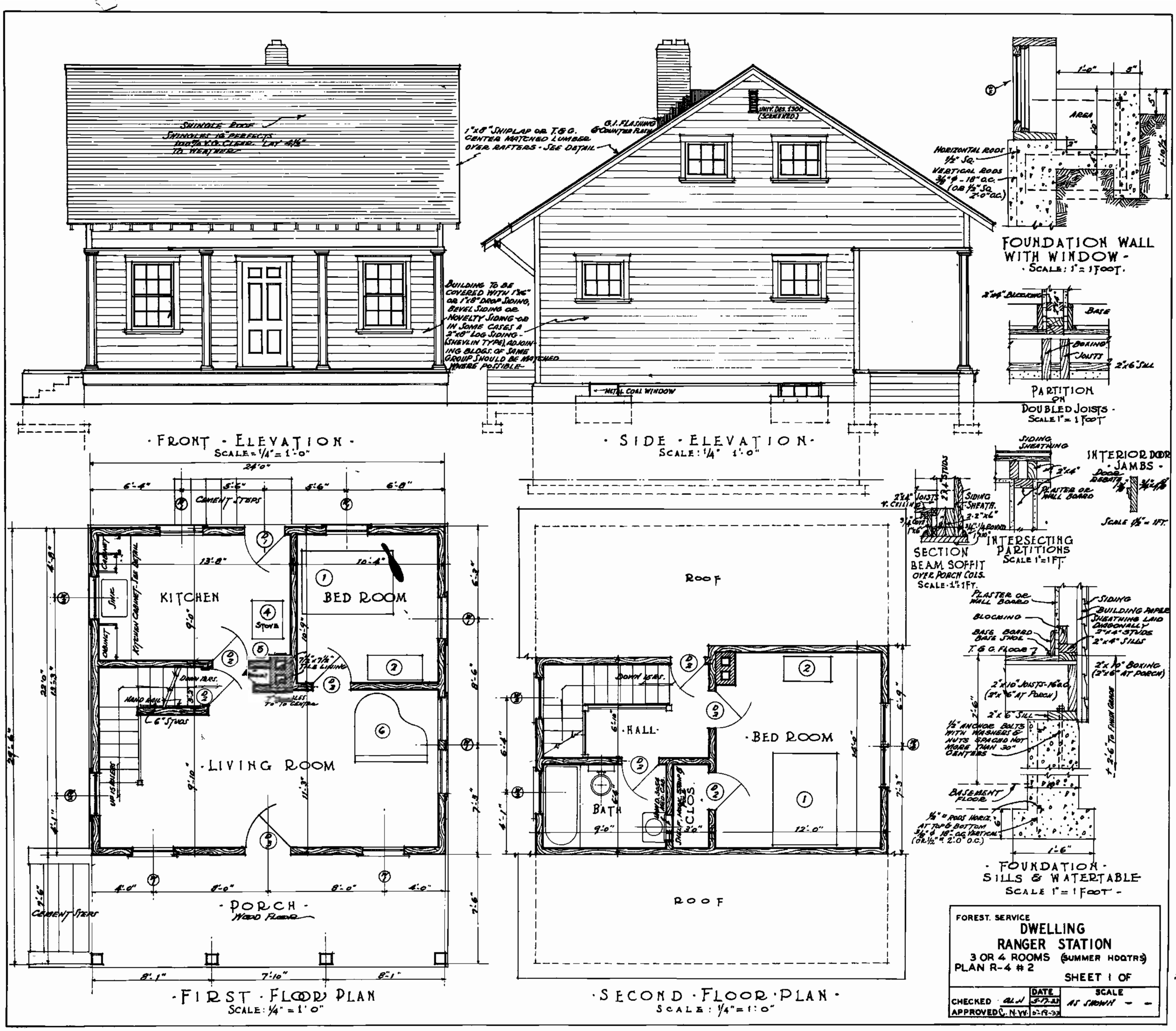
RANGER STATION

4 ROOM (NO BASEMENT)

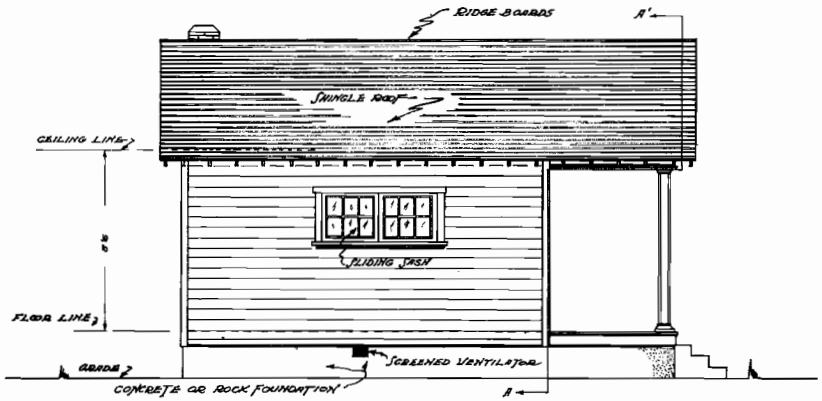
PLAN R-4 #1A

SHEET 1 OF

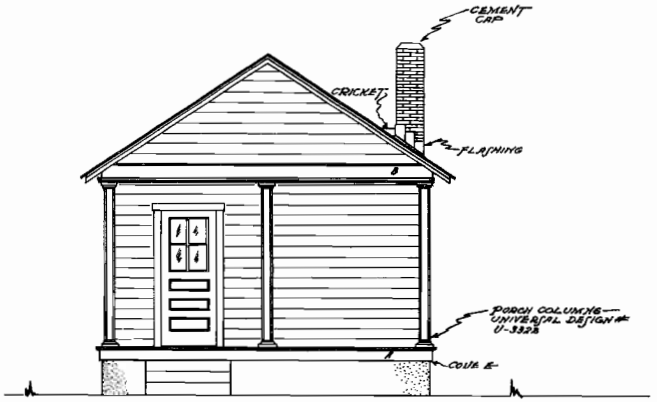
CHECKED	DATE	SCALE
G.L.N.	4-19-33	½" = 1 FOOT
APPROVED C.N.W.	4-21-33	EXCEPT AS SHOWN



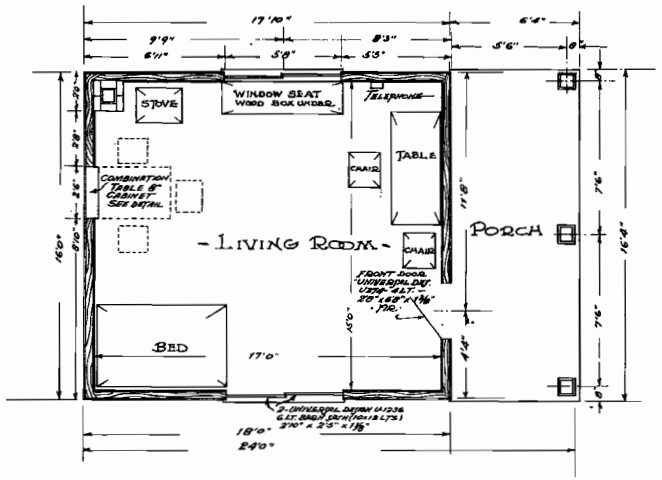
· FRONT · ELEVATION ·
SCALE: 1/4" = 1'-0"
· SIDE · ELEVATION ·
SCALE: 1/4" 1'-0"
FOUNDATION WALL WITH WINDOW
· SCALE: 1" = 1 FOOT ·
PARTITION ON DOUBLED JOISTS ·
SCALE 1" = 1 FOOT
INTERIOR DOOR · JAMBS ·
INTERSECTING PARTITIONS
SCALE 1" = 1 FT.
SECTION BEAM SOFFIT OVER PORCH COLS.
SCALE 1" = 1 FT.
· FOUNDATION · SILLS & WATERTABLE
SCALE 1" = 1 FOOT ·
KITCHEN
BED ROOM
LIVING ROOM
· PORCH ·
CEMENT STEPS
· FIRST · FLOOR · PLAN
SCALE: 1/4" = 1'-0"
ROOF
HALL
BATH
CLOS.
BED ROOM
ROOF
· SECOND · FLOOR · PLAN ·
SCALE: 1/4" = 1'-0"
FOREST. SERVICE
DWELLING
RANGER STATION
3 OR 4 ROOMS (SUMMER HDQTRS)
PLAN R-4 # 2
SHEET 1 OF
CHECKED
APPROVED
DATE
SCALE
AS SHOWN



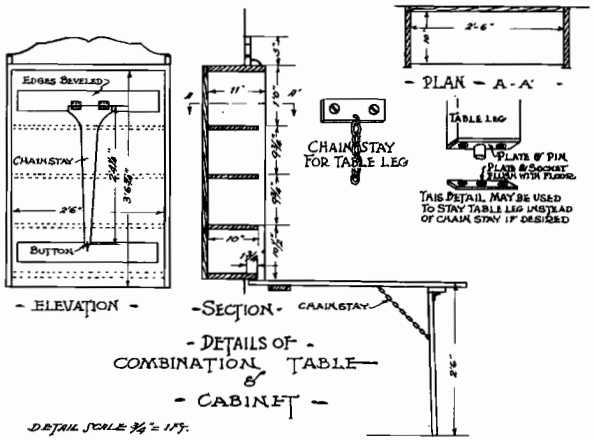
- SIDE ELEVATION -



- FRONT ELEVATION -



- FLOOR PLAN -



FOREST SERVICE

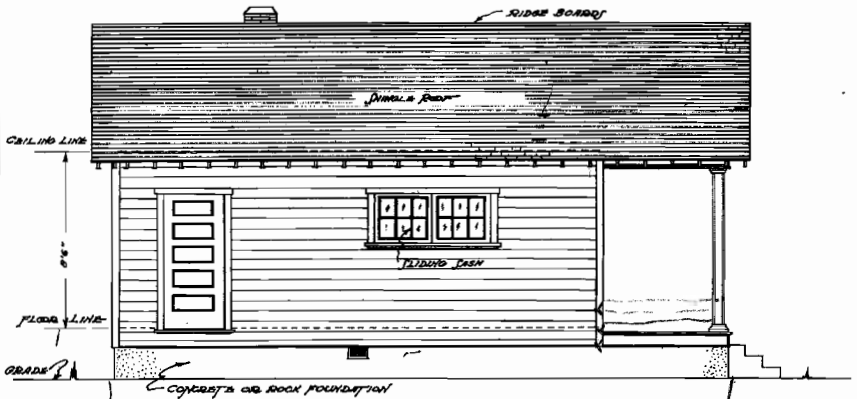
DWELLING - GUARD STATION

ONE ROOM

PLAN R-4 # 4

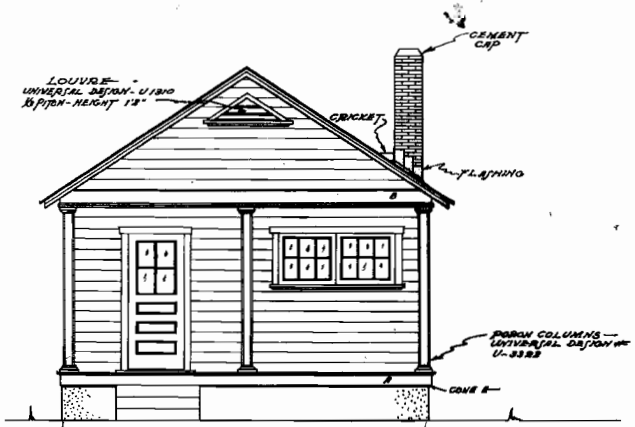
SHEET 1 OF

	DATE	SCALE
CHECKED G.L.N	2-25-32	ELEVATIONS & PLAN 1/4" = 1 FOOT
APPROVED L.N.W.	3-10-32	DETAILS AS SHOWN



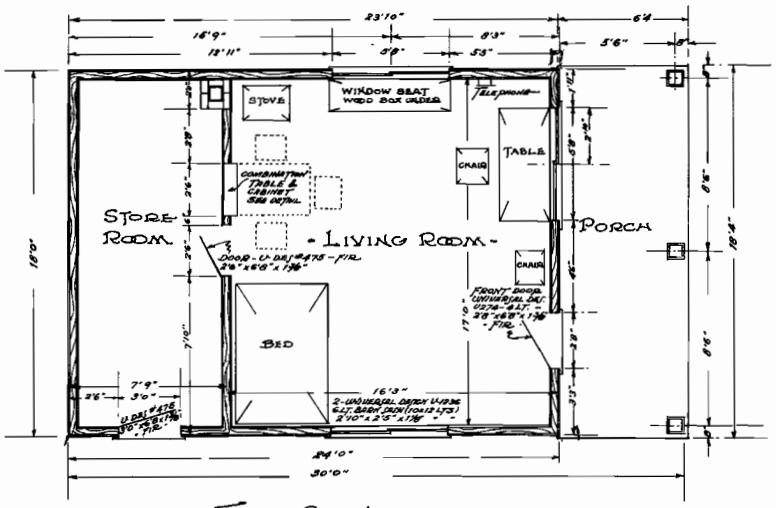
- SIDE ELEVATION -

32'

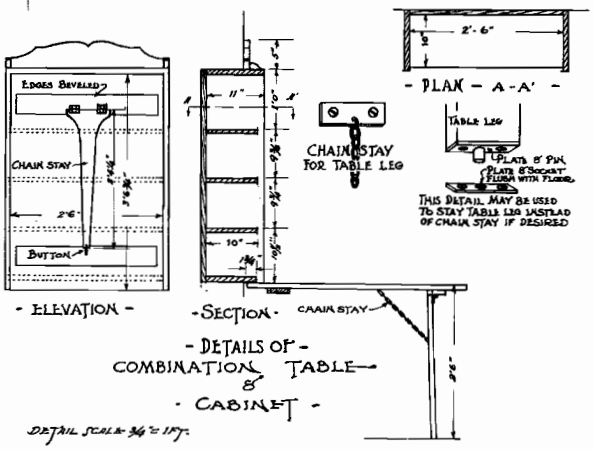


- FRONT ELEVATION -

18'8"



- FLOOR PLAN -



FOREST SERVICE

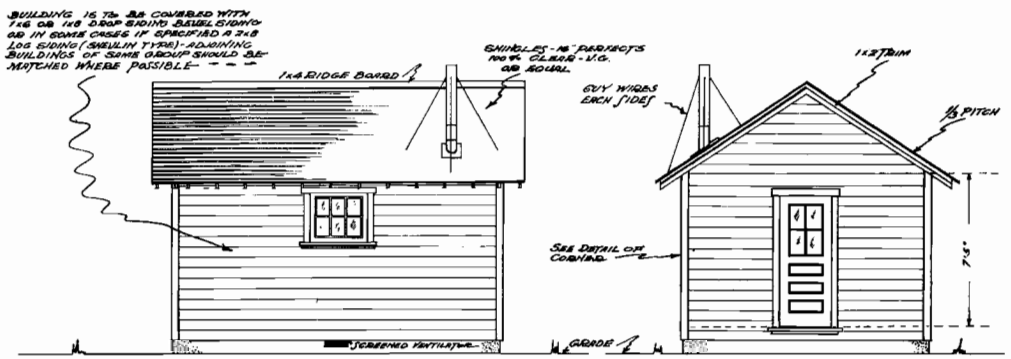
DWELLING - GUARD STATION

ONE ROOM & STOREROOM

PLAN R-4 # 5

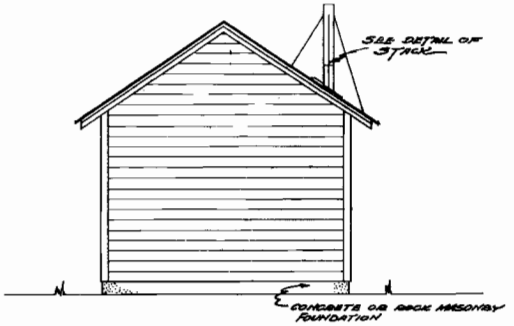
SHEET 1 OF

CHECKED C.A.N.	DATE 1-8-33	SCALE ELEVATION & PLAN 1/2" = 1 FOOT
APPROVED C.N.W.	2-10-33	DETAILS AS SHOWN

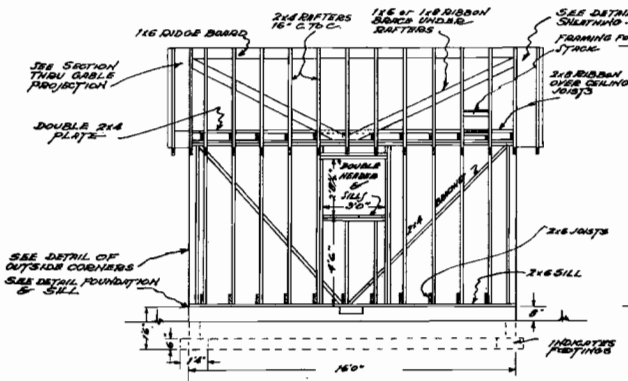


- SIDE ELEVATION -
- BOTH SIDES ALIKE -

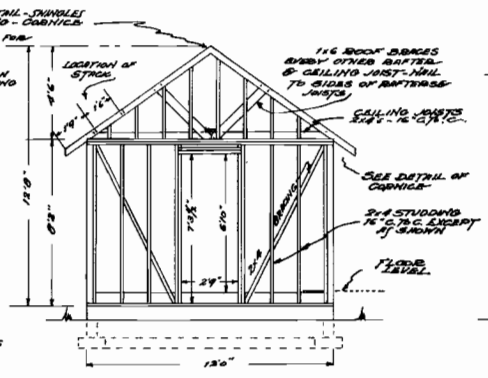
- END ELEVATION -



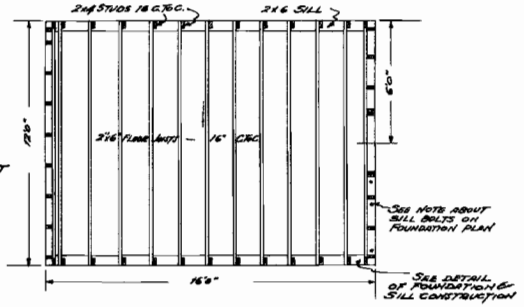
- END ELEVATION -



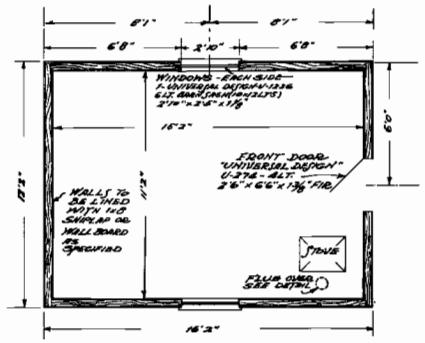
- FRAMING SIDE ELEVATION -



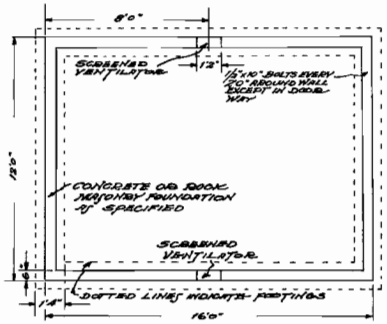
- FRAMING - END ELEVATION -



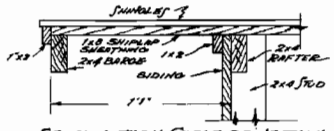
- FLOOR FRAMING -



- FLOOR PLAN -



- FOUNDATION PLAN -



- SECTION THRU GABLE PROJECTION -
- SCALE - 2" = 1FT. -

FOREST SERVICE

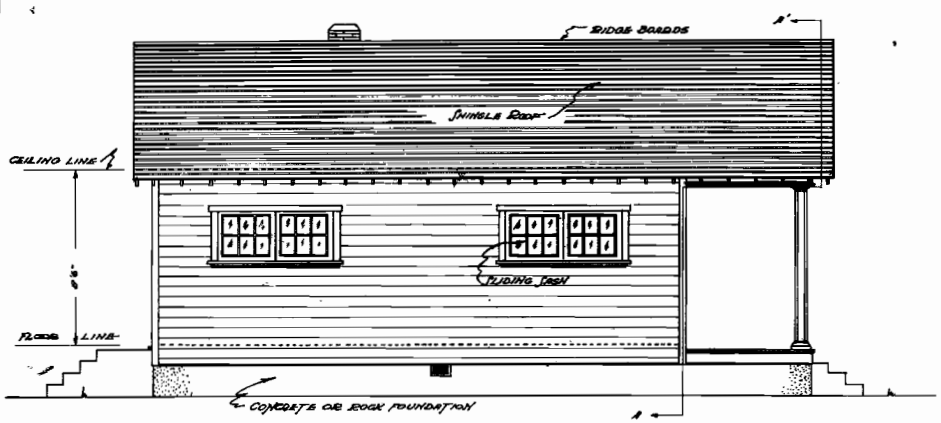
DWELLING - GUARD STATION

ONE ROOM - NO PORCH

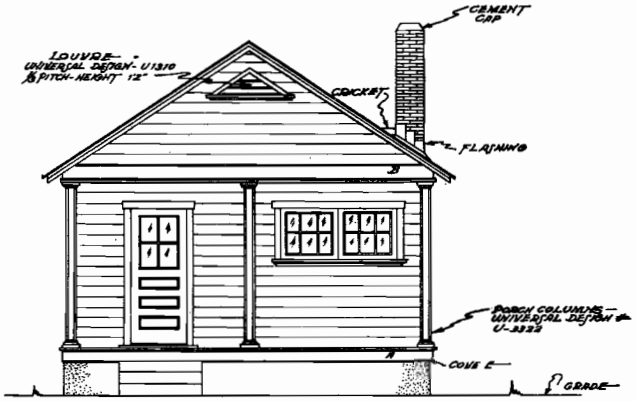
PLAN R-4 # 6

SHEET 1 OF

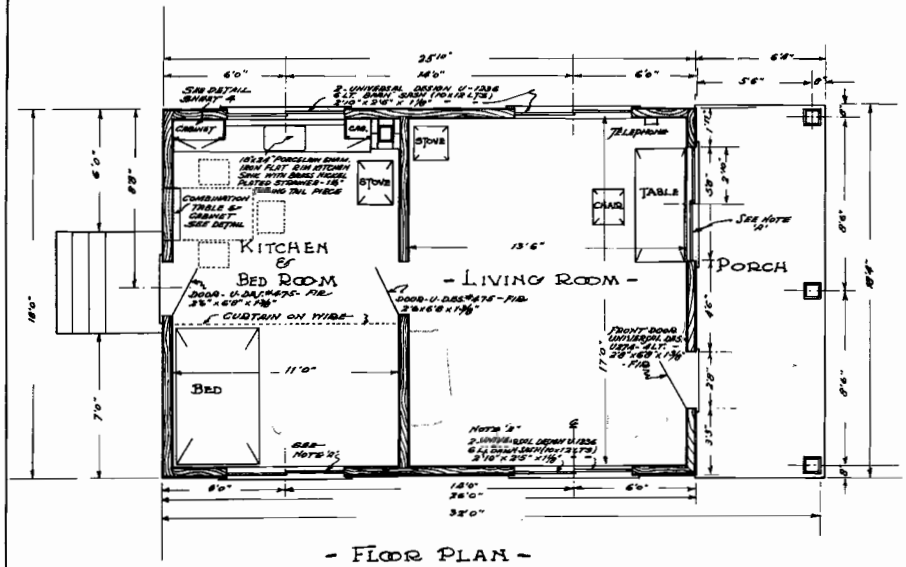
CHECKED G.L.W.	DATE 3-1-33	SCALE ELEVATIONS & PLANS 1/4" = 1 FOOT DETAILS AS SHOWN
APPROVED R.W.W.	3-10-33	



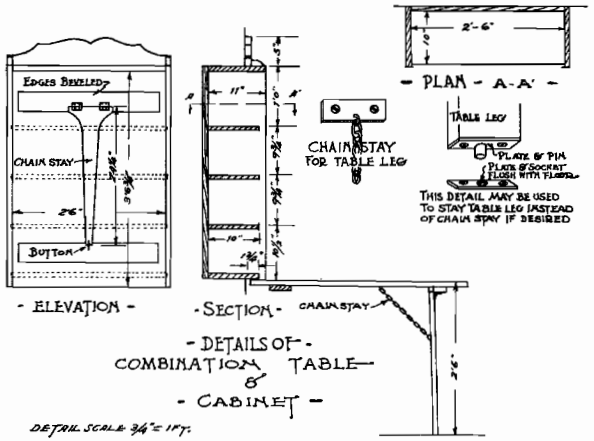
- SIDE ELEVATION -



- FRONT ELEVATION -



- FLOOR PLAN -



FOREST SERVICE

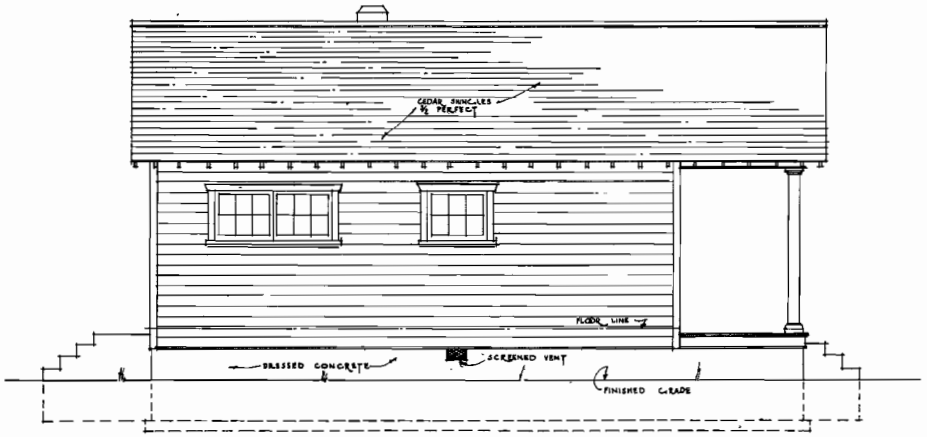
DWELLING - GUARD STATION

TWO ROOMS

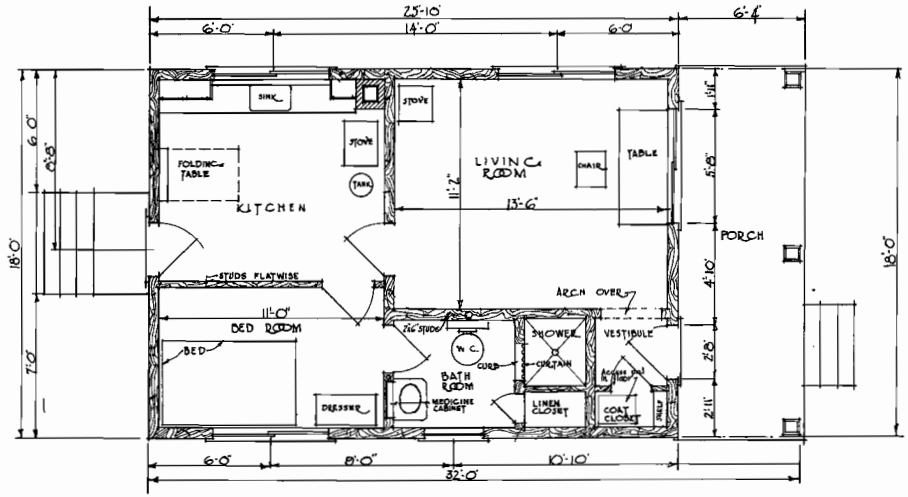
PLAN R-4 # 7

SHEET 1 OF

	DATE	SCALE
CHECKED G.I.N.	2-25-39	ELEVATIONS & PLAN 1/8" = 1 FOOT
APPROVED C.N.W.	3.10.39	DETAIL AS SHOWN



SIDE ELEVATION
SCALE ¼"=1'-0"



PLAN
SCALE ¼"=1'-0"

FOREST SERVICE

DWELLING GUARD STATION
WITH SHOWER AND TOILET ROOM

PLAN R-4 #7 ALTERNATE
SHEET 1 OF 3

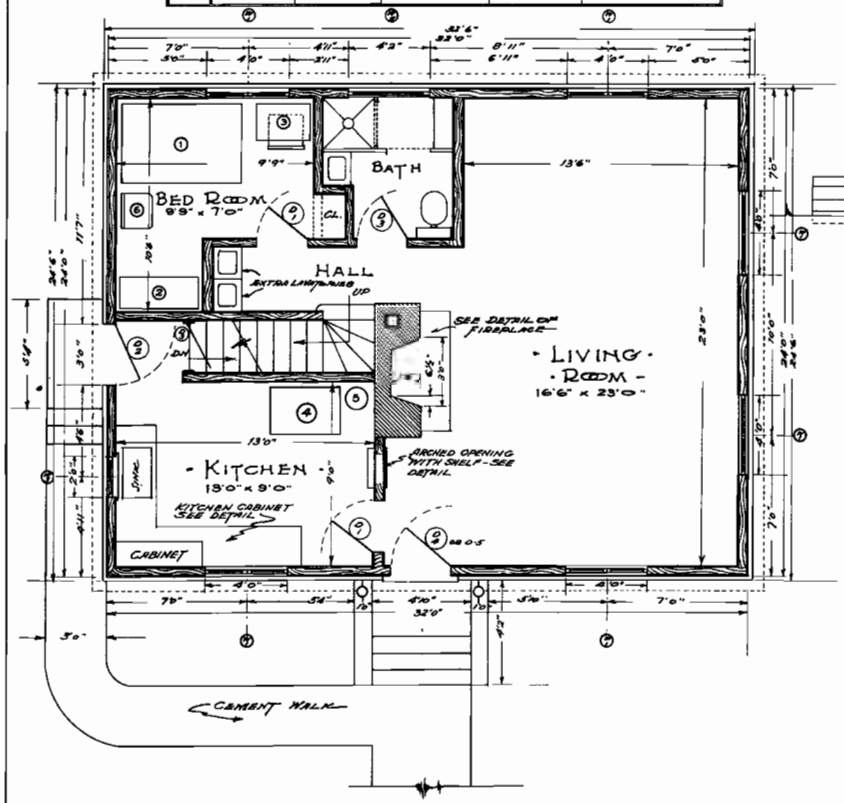
CHECKED GEN	DATE 5-7-36	SCALE ¼"=1'-0"
APPROVED CM&W	" " "	

DOOR SCHEDULE

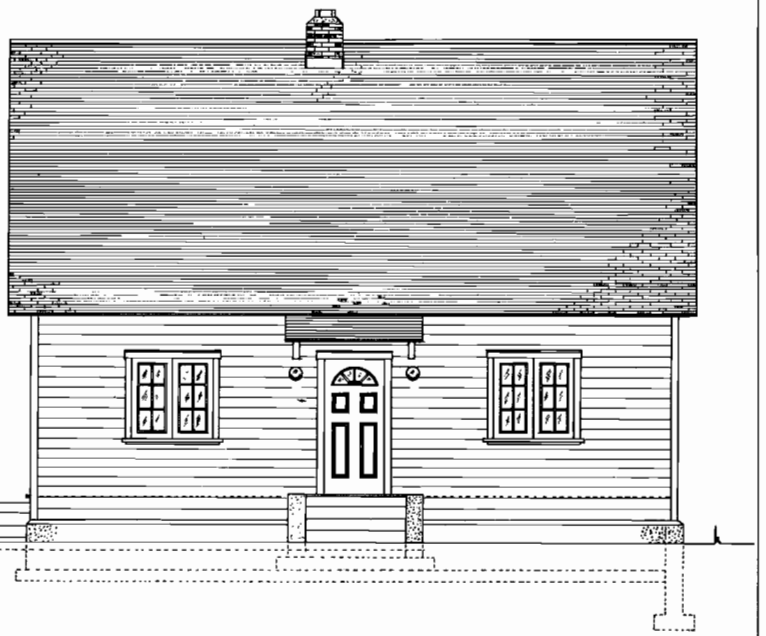
	UNIVERSAL DATUM NO.	MATERIAL	SIZE	GLASS	REMARKS
⑦	U-431	FIR OR PINE	2'6" x 6'6" x 1⅜"	——	
④	U-274	FIR OR PINE	3'0" x 7'0" x 1⅜	D.S.	
③	U-431	FIR OR PINE	2'4" x 6'6" x 1⅜"	——	
②	U-130	FIR OR PINE	3'0" x 7'0" x 1⅜"	D.S.	TYPE OF DOOR SHOWN
①	U-183	FIR OR PINE	3'0" x 7'0" x 1⅜"	D.S.	ALTERNATE FOR D-4
⑥					
⑤					

WINDOW SCHEDULE

	UNIVERSAL DATUM NO.	SIZE OF EACH LIGHT	SIZE OF OPENING	TYPE OF WINDOW	REMARKS
⑦	U-1116	10 x 12	4'0" x 3'11½"	CASEMENT SLT.	1⅜" THICK
⑤	U-1224	10 x 12	2'0" x 3'5"	4 LT. SINGLE SASH	1⅜" THICK
④	U-1332	10 x 18	4'2" x 1'5"	2-2 LT. CELLAR SASH	1⅜" THICK
③	U-1233	10 x 12	2'10" x 1'5"	3 LT. CELLAR SASH	1⅜" THICK
○					
○					
○					



PLAN



FRONT ELEVATION

KEY TO FURNITURE & EQUIPMENT SHOWN

①	BED - STANDARD SIZE
②	DRESSING TABLE OR BUREAU
③	TABLE & CHAIR
④	KITCHEN RANGE
⑤	RANGE BOILER
⑥	CHAIR

FOREST SERVICE

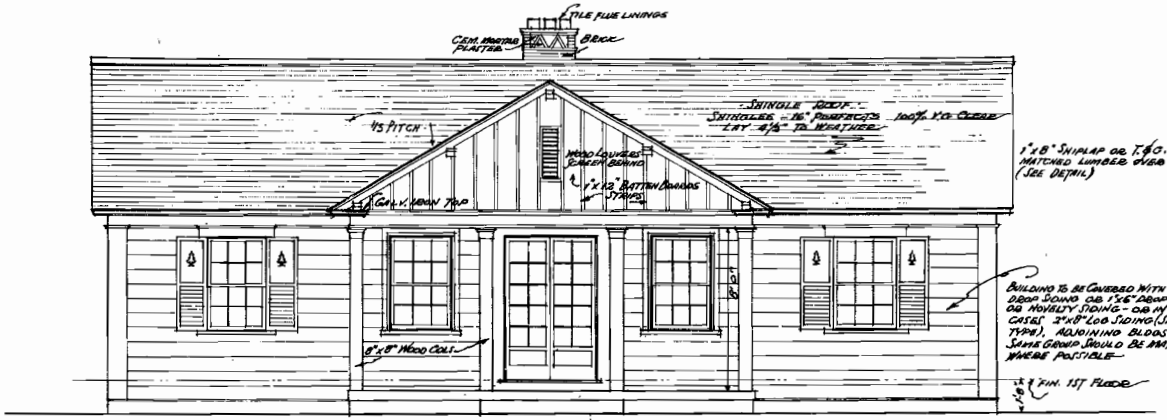
DWELLING
RANGER STATION

3 OR 4 ROOM OR DORMITORY

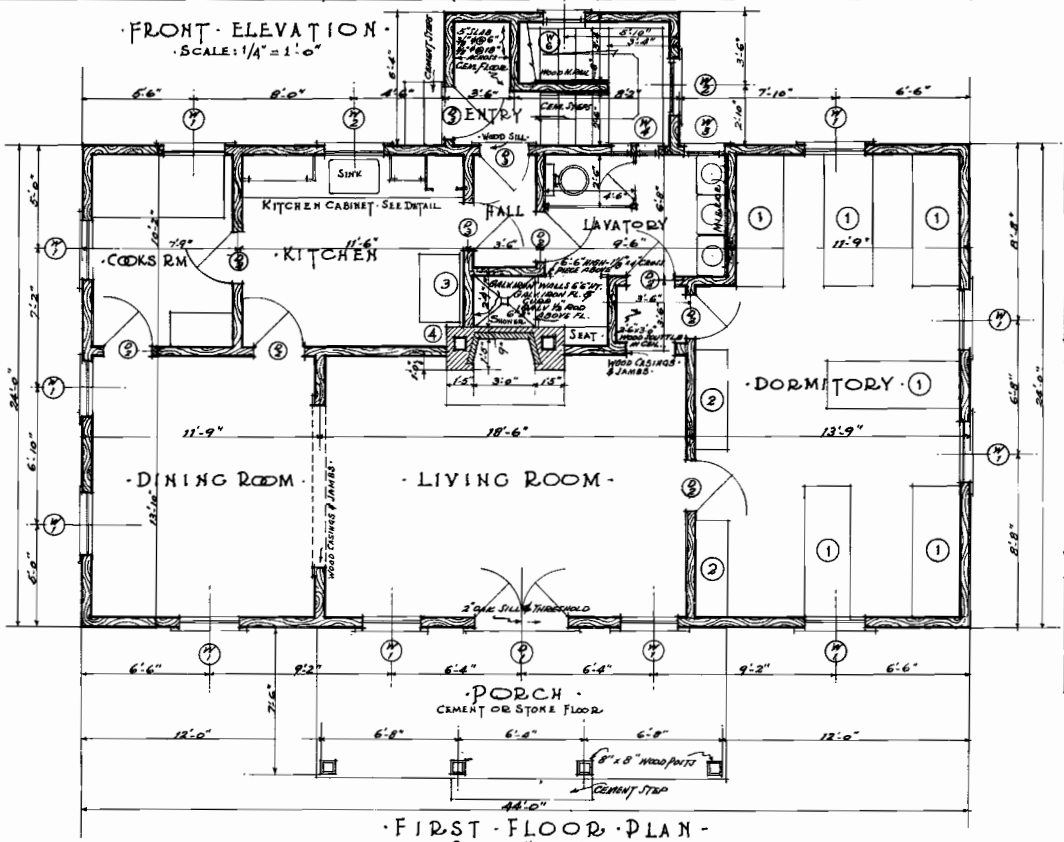
PLAN R-4 #8

SHEET 1 OF

CHECKED C.L.N	DATE 4-11-33	SCALE ELEVATION & PLAN 1/8" = 1 FOOT
APPROVED C.N.W	4-19-33	



·FRONT · ELEVATION·
·SCALE: 1/4" = 1'-0"



·FIRST · FLOOR · PLAN·
·SCALE: 1/4" = 1'-0"

·DOOR SCHEDULE·

	UNIT DR. NO.	MATERIAL	SIZE	GLASS	REMARKS
(1)		FIR or PINE	2'-2'3"x7'-0"x1⅜"	O.S.	FRENCH DOORS (DEEP STILES & RAILS-3½")
(2)	U-431	" " "	2'-6"x6'-6"x1⅜"	—	
(3)	U-374	" " "	2'-8"x7'-0"x1⅜"	O.S.	
(4)					
(2)					
(8)					

·WINDOW SCHEDULE·

	UNIT DR. NO.	SIZE OF OPEN. LIMIT	SIZE OF OPENING	TYPE OF WINDOW	REMARKS
(W1)	U-1012	10"x12"	2'-10½"x4'-6"	D.H. 12 LT. SASH	1⅜" THICK
(W2)	U-1236	10"x12"	2'-10½"x2'-5⅛"	CASEMENT SASH 6 LT.	1⅜" THICK
(W3)	U-1226	10"x12"	2'-0¼"x3'-5⅛"	CASEMENT SASH 6 LT.	" "
(W4)		10"x12"	2'-1⅜"x3'-5⅛"	CASEMENT SASH 3 LT.	1⅛" DOUBLE WITH MULLION
(W5)	U-1238	10"x12"	2'-10⅜"x1'-8"	CASEMENT SASH 4 LT.	1⅜" THICK
(W6)	U-1224	10"x12"	2'-0¼"x2'-5⅛"	CASEMENT SASH 4 LT.	1⅜" THICK

·KEY TO FURNITURE & EQUIPMENT SHOWN·

①	BED - ARMY COTS
②	HANGING SPACE WARDROBE WITH CURTAIN
③	KITCHEN RANGE
④	RANGE BOILER
○	

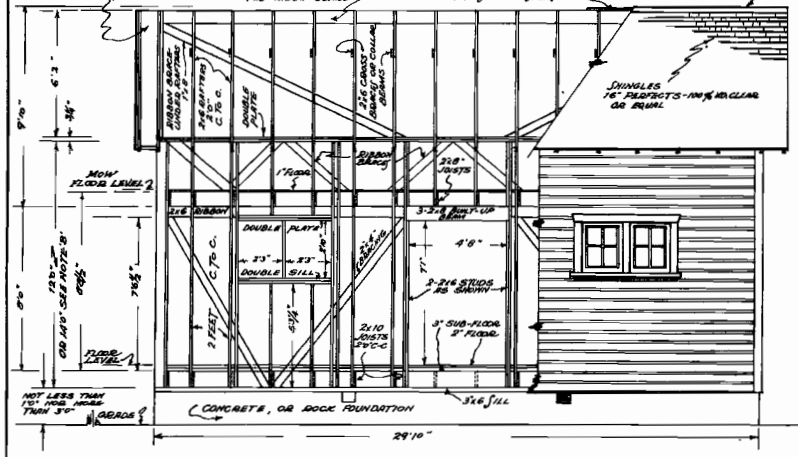
FOREST SERVICE

BUNK HOUSE

PLAN R-4 #9

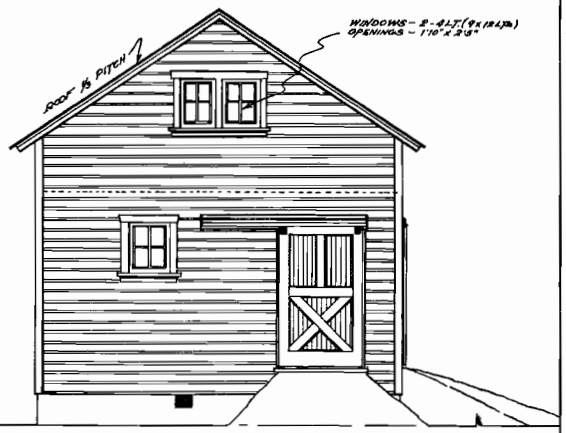
SHEET 1 OF 11

	DATE	SCALE
CHECKED G.L.N	5-27-43	¼" = 1'-0" UNLESS OTHERWISE AS SHOWN
APPROVED C.N.W.Y.	" "	



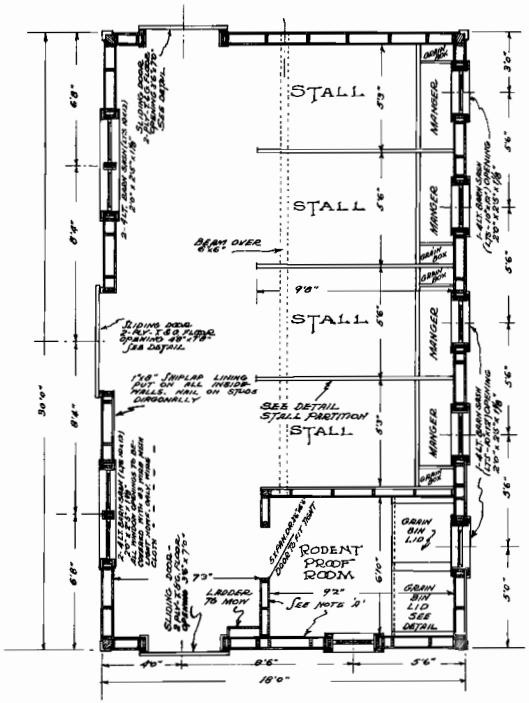
- FRONT ELEVATION - SHOWING FRAMING -

NOTE 'B' WHERE MORE HAY STORAGE IS NEEDED - USE 18'0" STUDS INSTEAD OF 12'0". THIS WILL INCREASE STORAGE BY APPROXIMATELY TWO TONS. BUILDING DESIGN AS SHOWN PROVIDES AMPLY FOR 4 TONS.

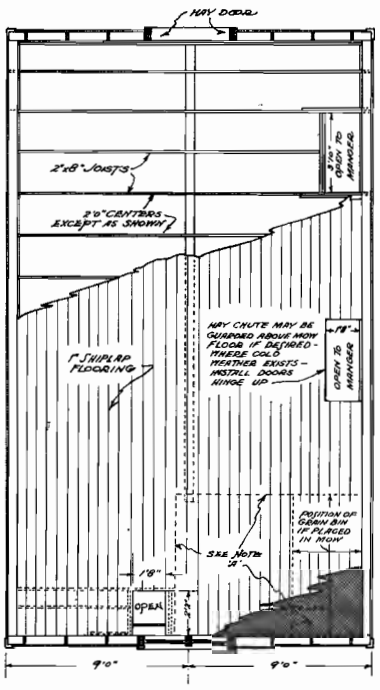


- END ELEVATION -

END ELEV. SHOWN ABOVE INDICATES A REVERSED PLAN - THIS MAY BE DESIRABLE IN SOME CASES TO GAIN UTMOST ADVANTAGE OF SUNLIGHT - - - -

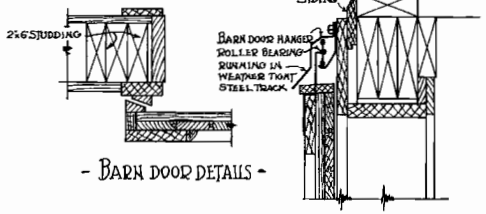


- FLOOR PLAN -

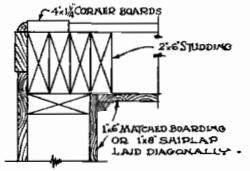


- MOW PLAN -

NOTE 'A'
THIS ROOM IS TO BE PROTECTED UNDER ALL INSIDE WALL COVERING - ALSO OVER FLOOR JOISTS AND UNDER FLOOR - ALSO OVER CEILING JOISTS AND UNDER MOW FLOOR WITH BELLY DOUBLE SELV 12 MESH SCREEN WIRE CLOTH -



- BARN DOOR DETAILS -



CORNER POST DETAILS

- SCALE - 1½" = 1FT -

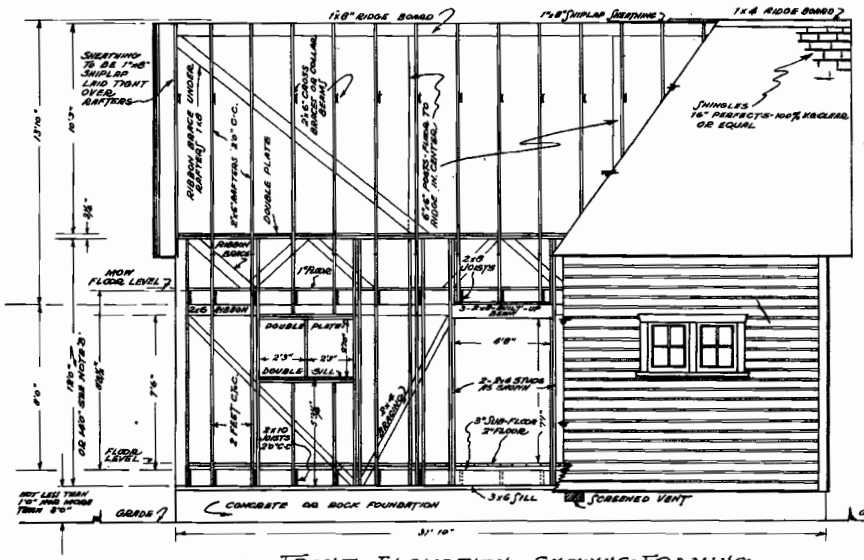
FOREST SERVICE

FOUR HORSE BARN

PLAN R-4 #11

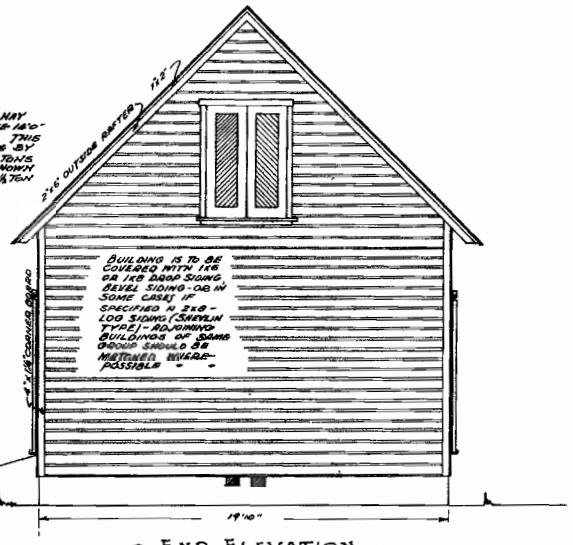
SHEET 1 OF

CHECKED G.L.H.	DATE 2-9-53	SCALE 1/4" = 1 FOOT EXCEPT AS SHOWN
APPROVED C.W.W.	3-10-53	

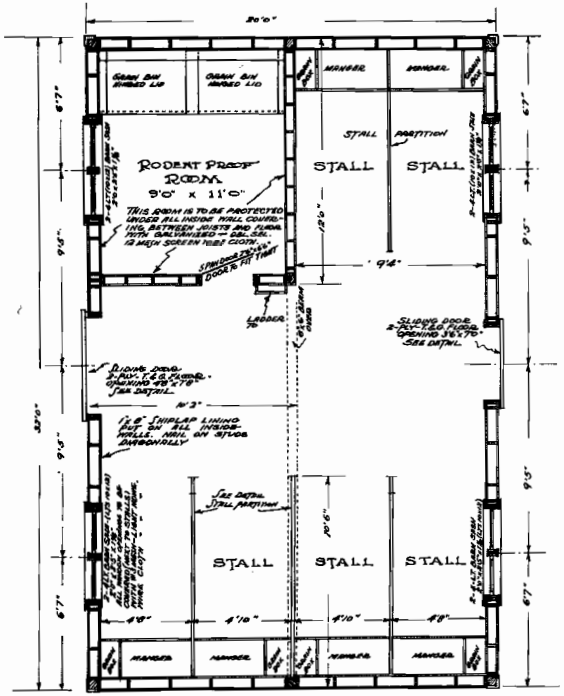


- FRONT ELEVATION - SHOWING FRAMING -

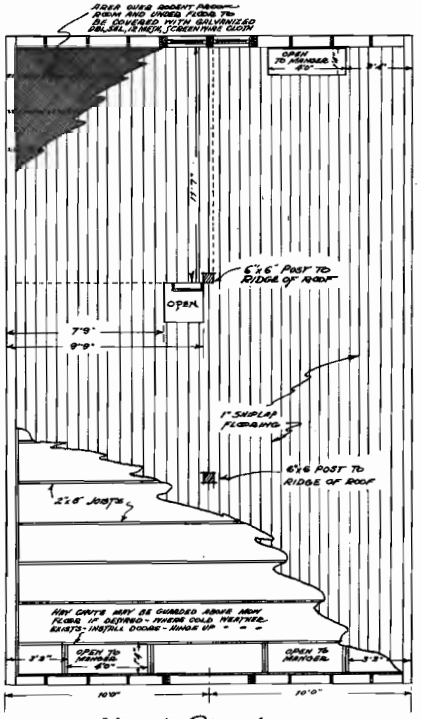
NOTE "B" WHERE MORE HAY STORAGE IS NEEDED - USE 16'0" STUDS INSTEAD OF 12'0". THIS WILL INCREASE STORAGE BY APPROXIMATELY 7 TON. THIS BUILDING DESIGN AS SHOWN PROVIDES AMPLY FOR 5½ TON



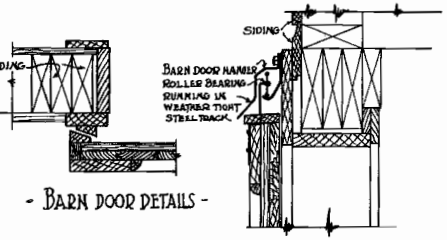
- END ELEVATION -



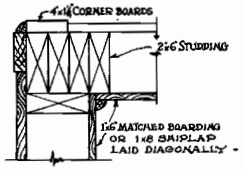
- FLOOR PLAN -



- MOW PLAN -



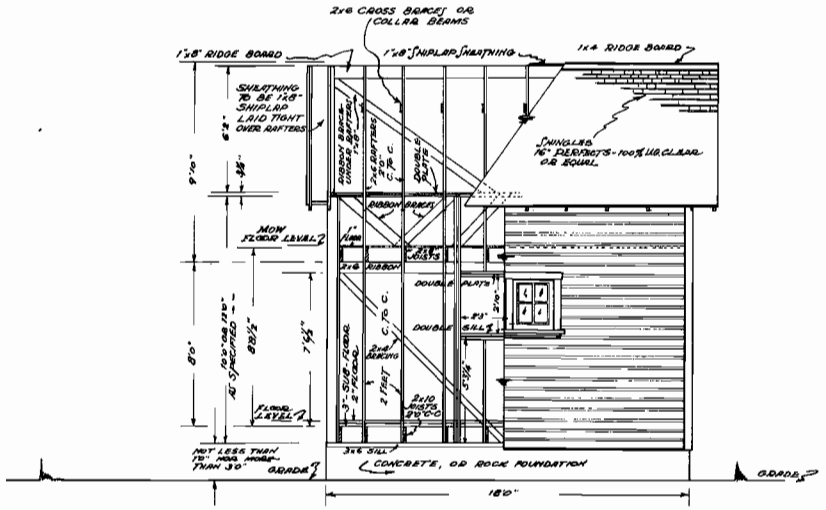
- BARN DOOR DETAILS -



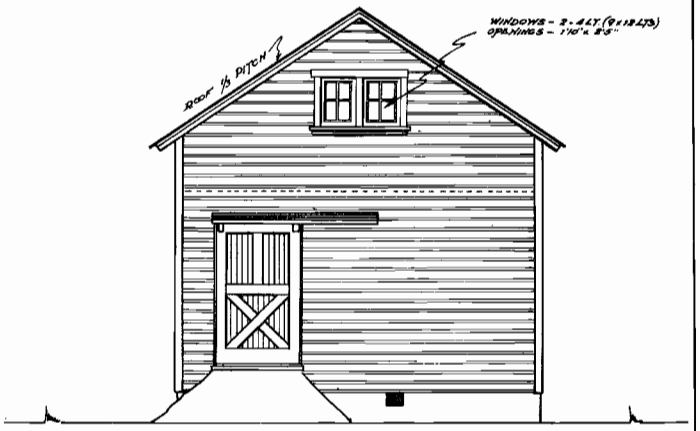
CORNER POST DETAILS

- SCALE 1½" = 1 FT -

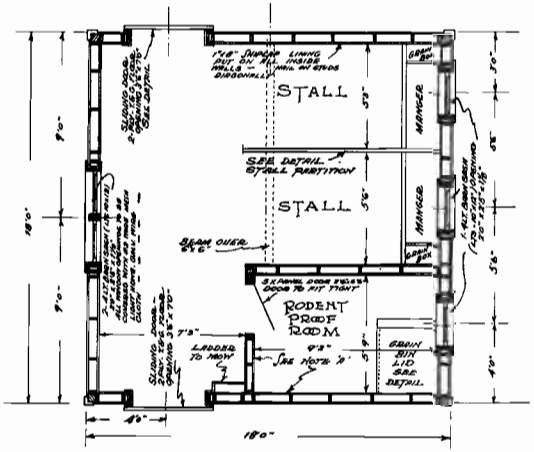
FOREST SERVICE	
SIX HORSE BARN	
PLAN R-4 # 12	SHEET 1 OF
CHECKED O.L.N.	DATE 2-9-33
APPROVED C.M.W.	3-10-33
SCALE 1/8" = 1 FOOT EXCEPT AS SHOWN	



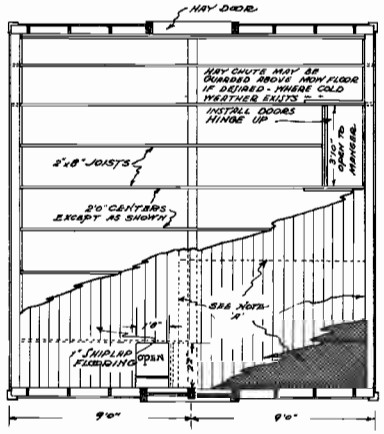
— FRONT ELEVATION - SHOWING FRAMING —



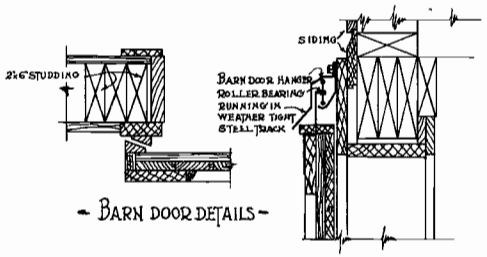
— END ELEVATION —



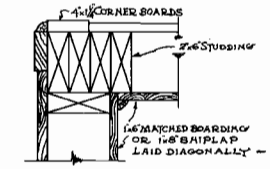
— FLOOR PLAN —



— MOW PLAN —



— BARN DOOR DETAILS —

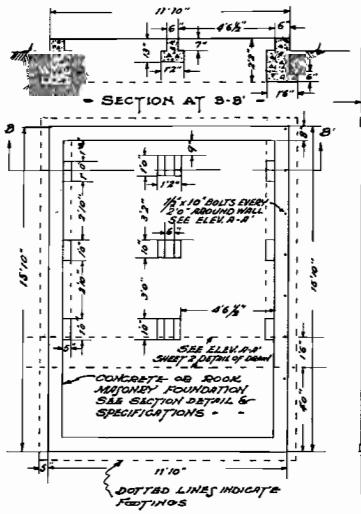


— CORNER POST DETAILS —

— SCALE 1½" = 1FT —

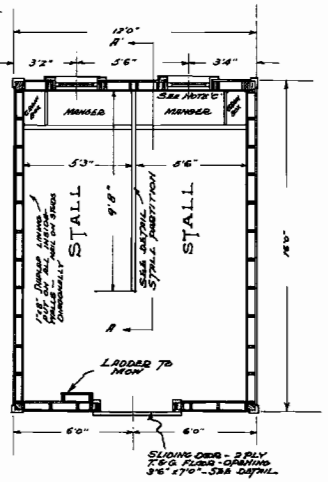
NOTE 'X'
THIS ROOM IS TO BE PROTECTED UNDER ALL INSIDE WALL COVERING - ALSO OVER FLOOR JOISTS AND UNDER FLOOR - ALSO OVER CEILING JOISTS AND UNDER MOW FLOOR WITH GALV. DOUBLE GALV. 12 MESH SCREEN WIRE CLOTH -

FOREST SERVICE	
TWO HORSE BARN	
PLAN R-4 # 13 TYPE A	SHEET 1 OF
CHECKED C.L.N.	DATE 2-13-33
APPROVED C.N.W.	3-10-33
SCALE SCALE 1½" = 1FT. EXCEPT AS SHOWN	

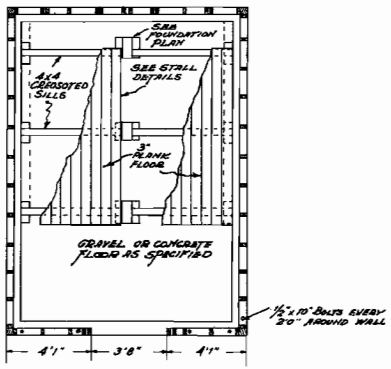


- FOUNDATION PLAN -

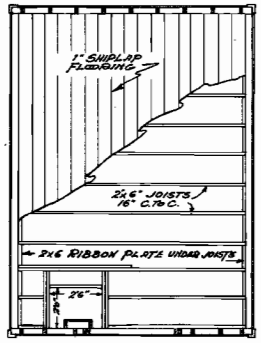
NOTE C: WINDOWS - EACH 1 - 4 LT. BARN SASH (4'8"-10"x18") OPENING - 2'0" x 2'5" x 1'8"



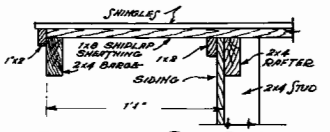
- FLOOR PLAN -



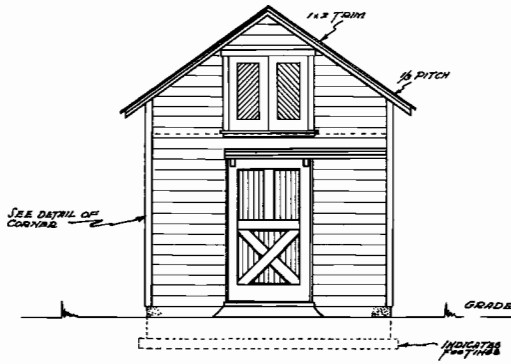
- FLOOR FRAMING -



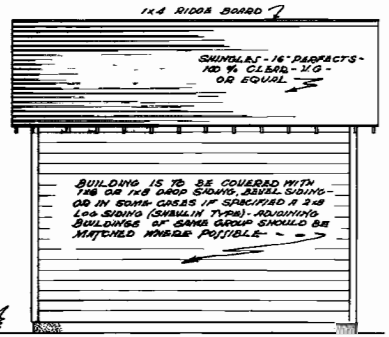
- MOW PLAN -



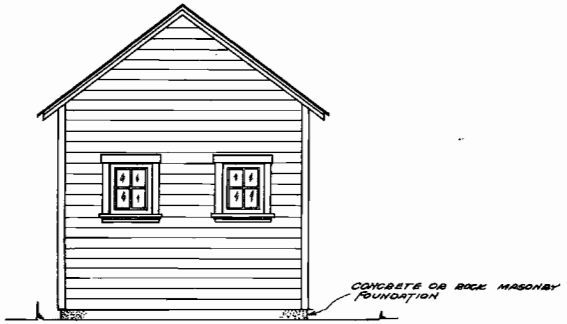
- SECTION THRU GABLE PROJECTION -



END ELEVATION -



- SIDE ELEVATION -
- BOTH SIDES ALIKE -



- END ELEVATION -

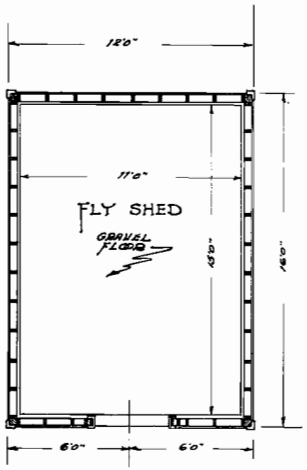
FOREST SERVICE

TWO HORSE BARN

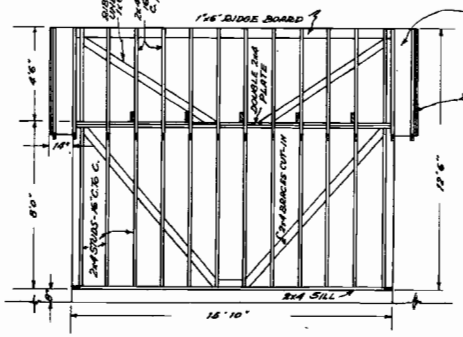
PLAN R-4 # 13 TYPE B

SHEET 1 OF 3

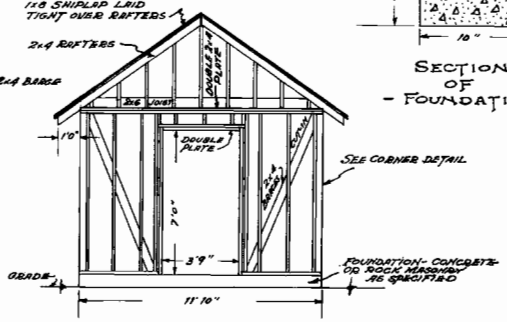
CHECKED C.L.N.	DATE 2-17-33	SCALE ELEVATIONS & PLAN - ½" = 1 FOOT -
APPROVED C.N.W.	3-10-33	



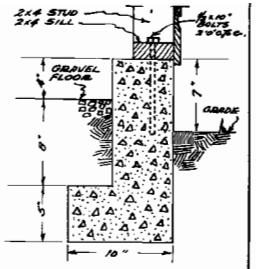
- FLOOR PLAN -



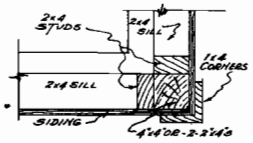
- FRAMING SIDE ELEVATION -



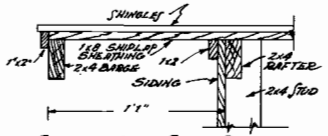
- END FRAMING -



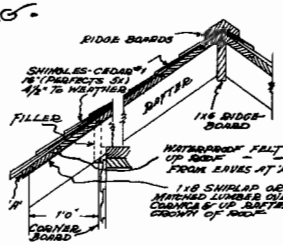
SECTION OF FOUNDATION



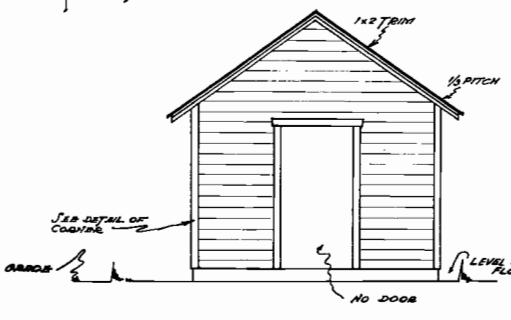
- DETAIL OF CORNER -



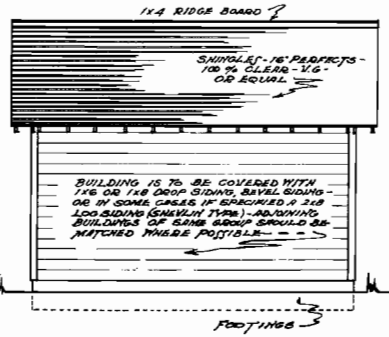
- SECTION THRU GABLE PROJECTION -



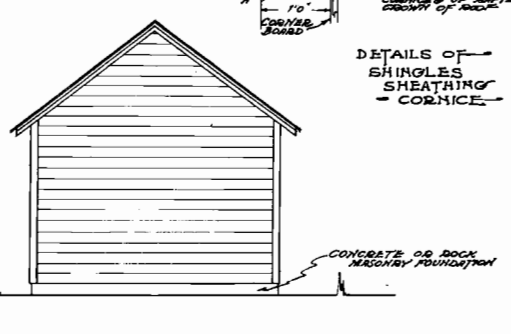
DETAILS OF SHINGLES SHEATHING - CORNICE -



- END ELEVATION -



- SIDE ELEVATION -
- BOTH SIDES ALIKE -



- END ELEVATION -

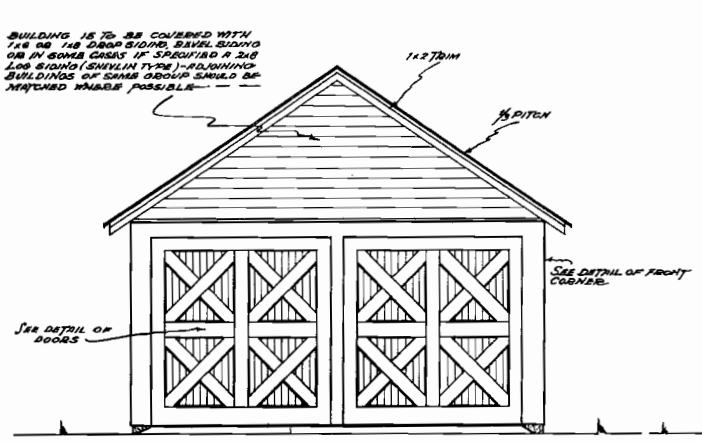
FOREST SERVICE

FLY SHED

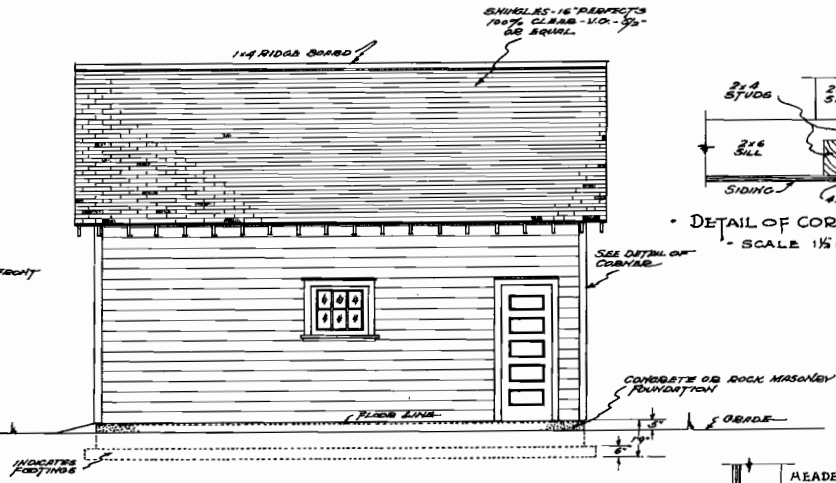
PLAN R-4 # 14

SHEET 1 OF 2

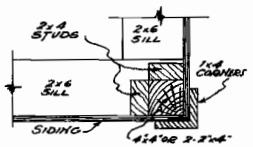
CHECKED G.L.N.	DATE 2-1-33	SCALE PLANS & ELEV. ¼"=1FT. DETAILS AS SHOWN
APPROVED: N.W.	3-10-33	



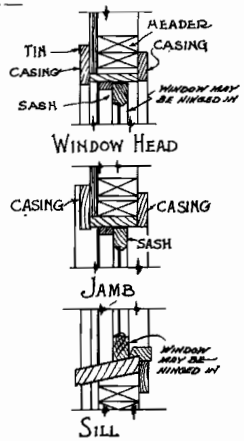
- FRONT ELEVATION -



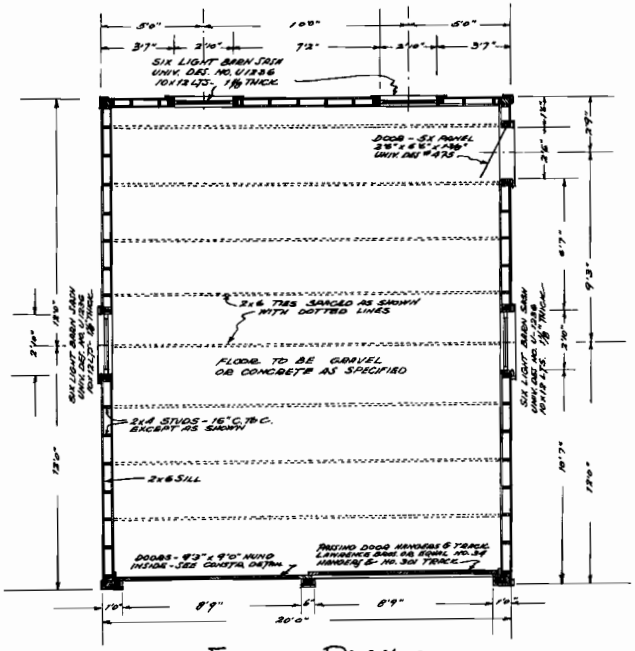
- SIDE ELEVATION -



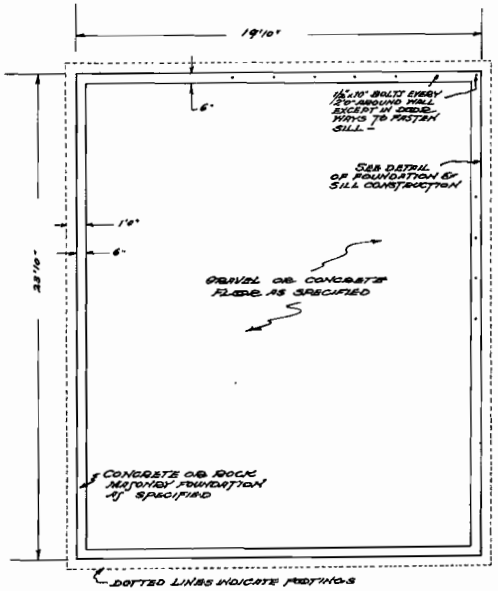
- DETAIL OF CORNER -
- SCALE 1½" = 1FT. -



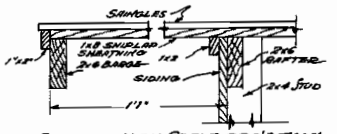
- WINDOW DETAIL -
- SCALE 1½" = 1FT -



- FLOOR PLAN -



- FOUNDATION PLAN -



- SECTION THRU GABLE PROJECTION -
- SCALE - 1½" = 1FT. -

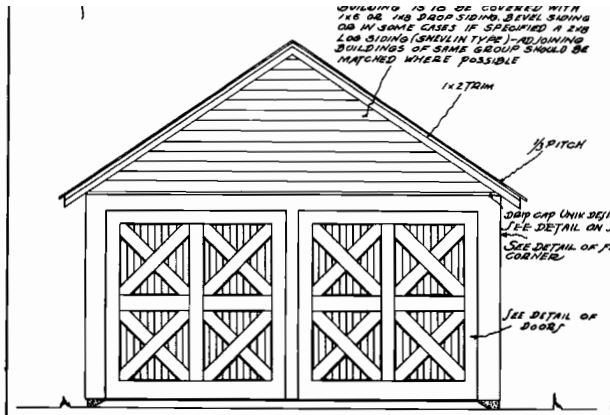
FOREST SERVICE

GARAGE
TWO CAR

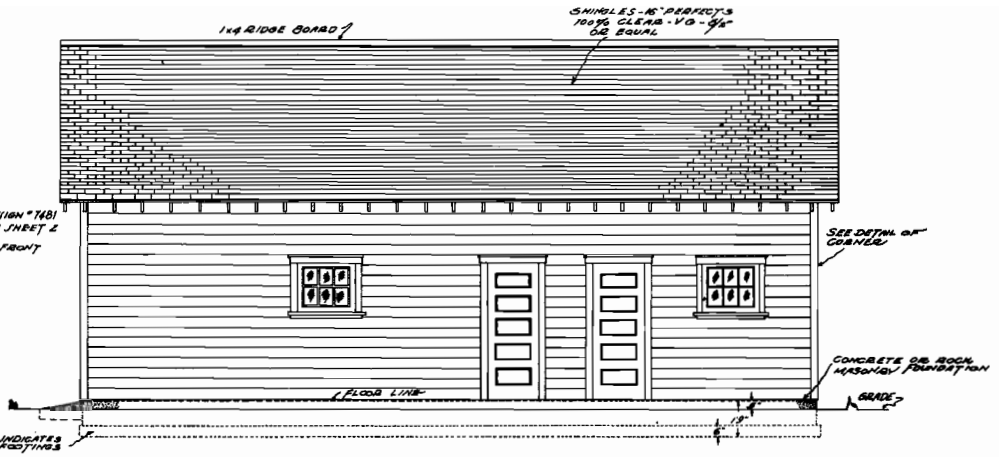
PLAN R-4 # 20

SHEET 1 OF

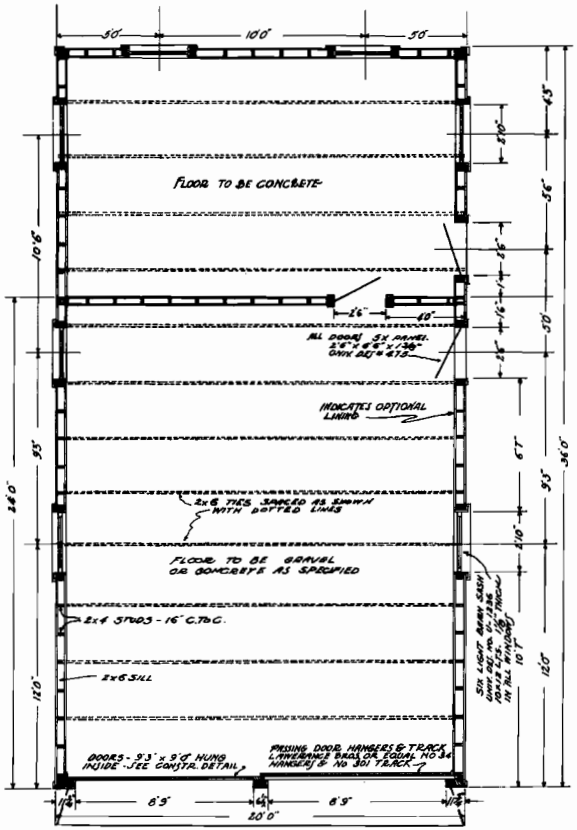
CHECKED G.L.N.	DATE 3-16-53	SCALE ELEVATIONS & PLANS ¼" = 1 FOOT DETAILS AS SHOWN
APPROVED C.N.W.	3-27-53	



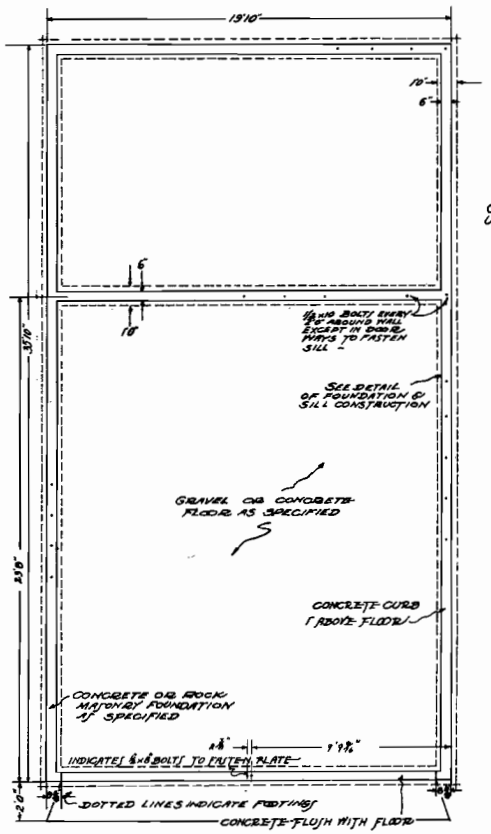
- FRONT ELEVATION -



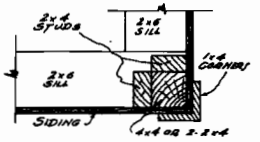
- SIDE ELEVATION -



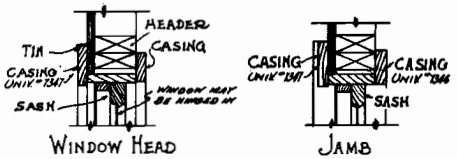
- FLOOR PLAN -

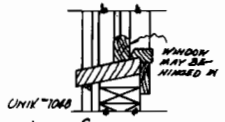


- FOUNDATION PLAN -

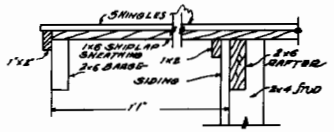


- DETAIL OF CORNER -
- SCALE 1½ = 1FT. -





- WINDOW DETAIL -
- SCALE 1½" = 1FT -



- SECTION THRU GABLE PROJECTION -
- SCALE 1½ = 1FT. -

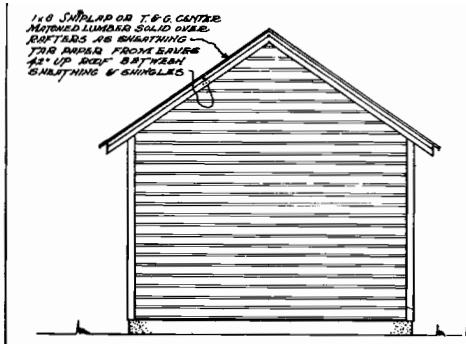
FOREST SERVICE

TWO CAR GARAGE & STOREROOM

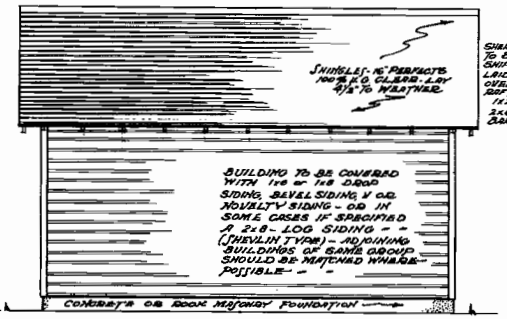
PLAN R-4 #21

SHEET 1 OF

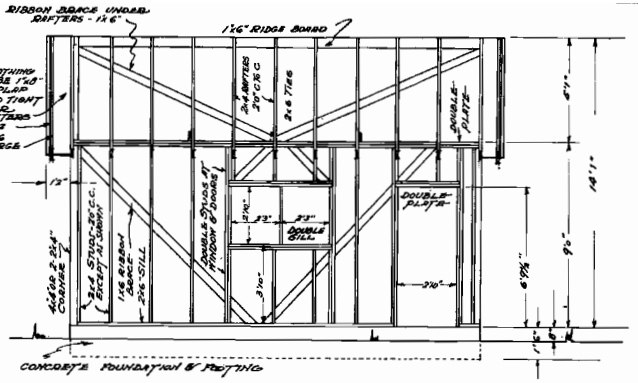
	DATE	SCALE
CHECKED G.L.K.	6-7-32	ELEVATIONS & PLAN - ¼" = 1'0"
APPROVED C. [illegible]	11/1/32	DETAILS AS SHOWN



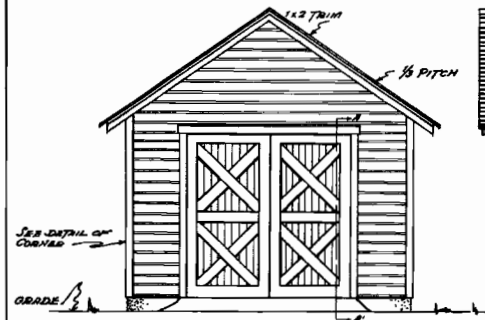
- BACK ELEVATION -



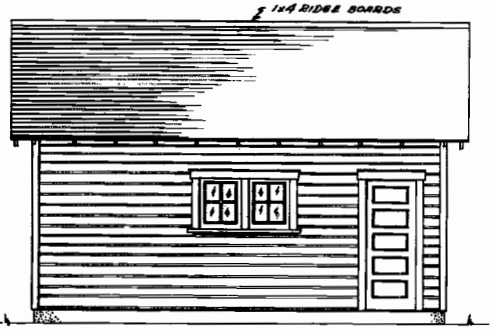
- SIDE ELEVATION -



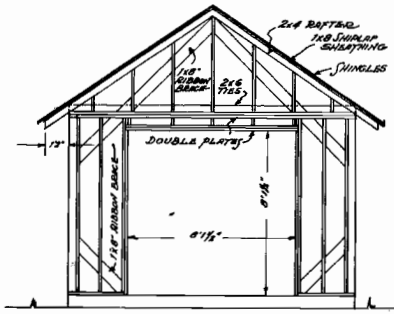
- FRAMING SIDE ELEVATION -



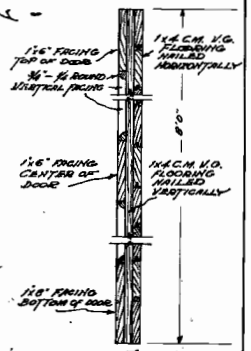
- FRONT ELEVATION -



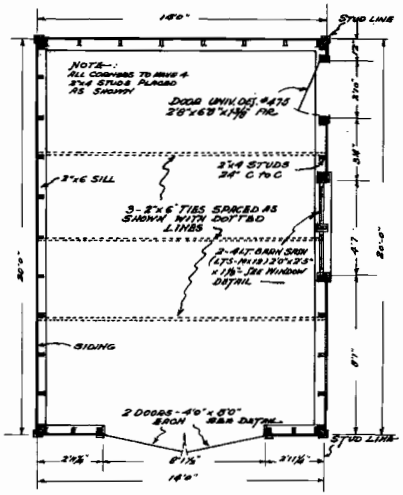
- SIDE ELEVATION -



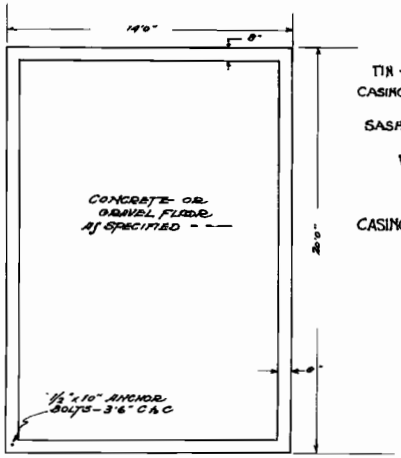
- FRAMING FRONT ELEVATION -



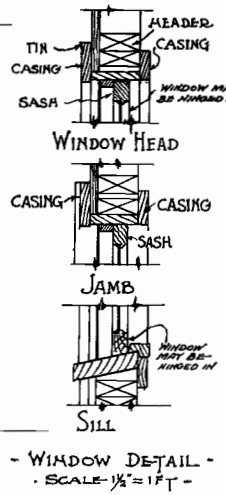
SECTION THRU DOOR AT A-A



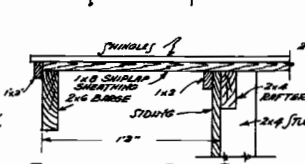
- FLOOR PLAN -



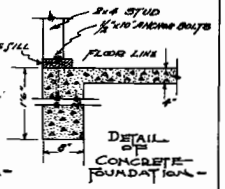
- FOUNDATION PLAN -



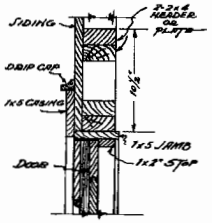
- WINDOW DETAIL -
- SCALE - 1½" = 1 FT -



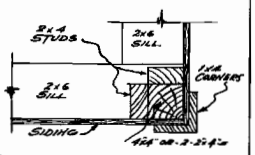
- SECTION THRU GABLE PROJECTION -



DETAIL OF CONCRETE FOUNDATION



SECTION THRU - DOOR HEAD -



- DETAIL OF CORNER -

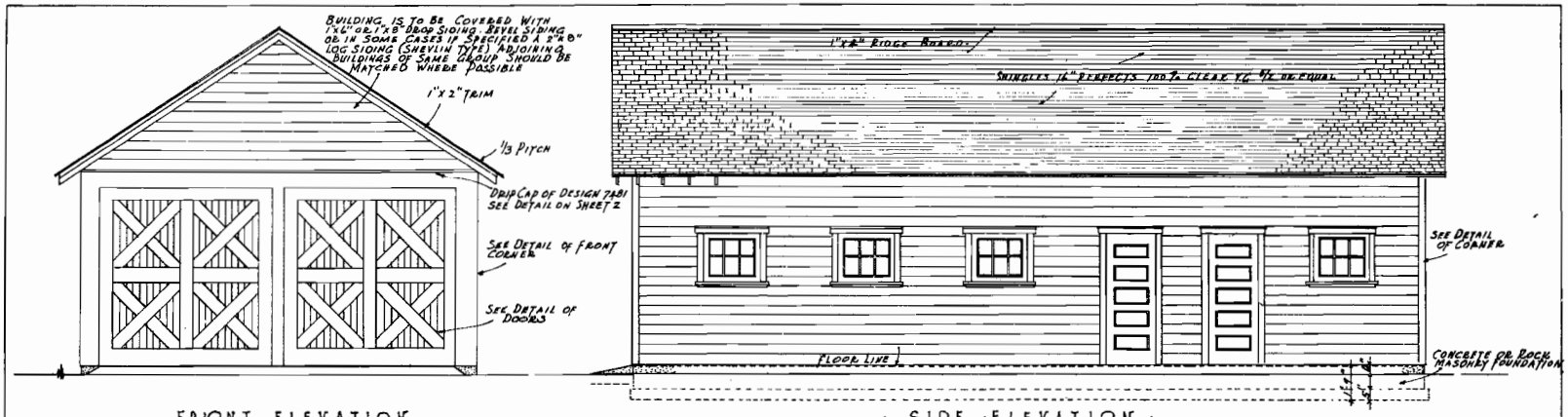
FOREST SERVICE

SINGLE CAR GARAGE

PLAN R-4 * 24

SHEET 1 OF 2

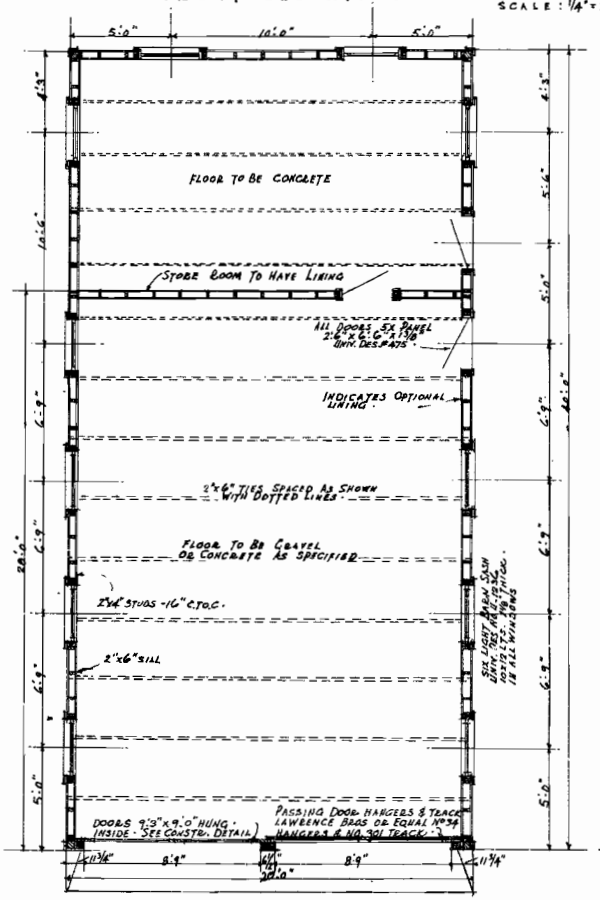
	DATE	SCALE
CHECKED ALN	2-7-33	PLANS & ELEV. ½" = 1 FT.
APPROVED C.N.W.	3-16-33	DETAILS AS SHOWN



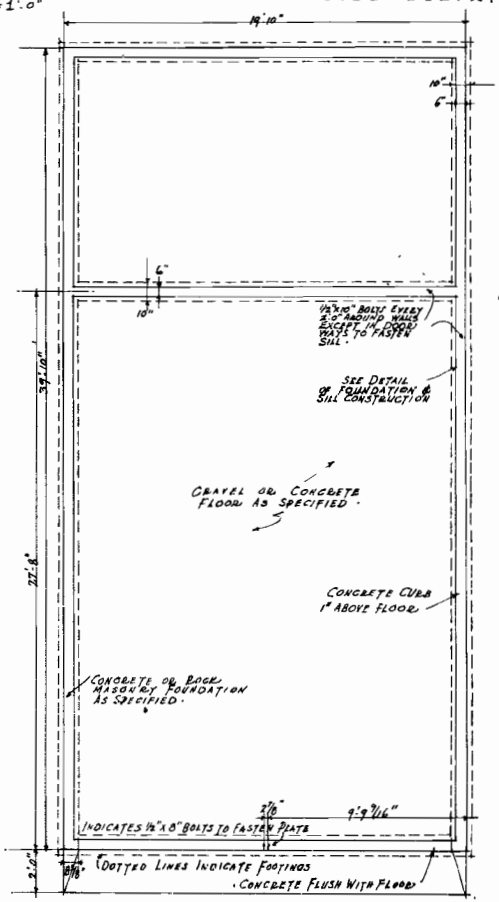
FRONT ELEVATION

SIDE ELEVATION

SCALE : 1/4" = 1'-0"

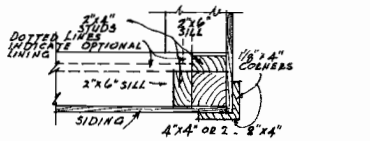


FLOOR PLAN

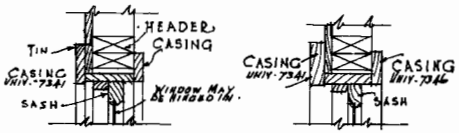


FOUNDATION PLAN

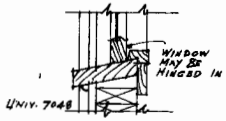
SCALE : 1/4" = 1'-0"



DETAIL OF CORNER
SCALE : 1 1/2" = 1 FT

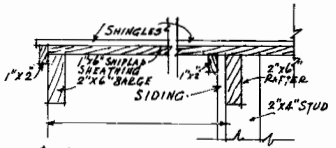


WINDOW HEAD JAMB



SILL

WINDOW DETAILS
SCALE 1 1/2" = 1 FT.



SECTION THRU GABLE PROJECTION
SCALE : 1 1/2" = 1 FT.

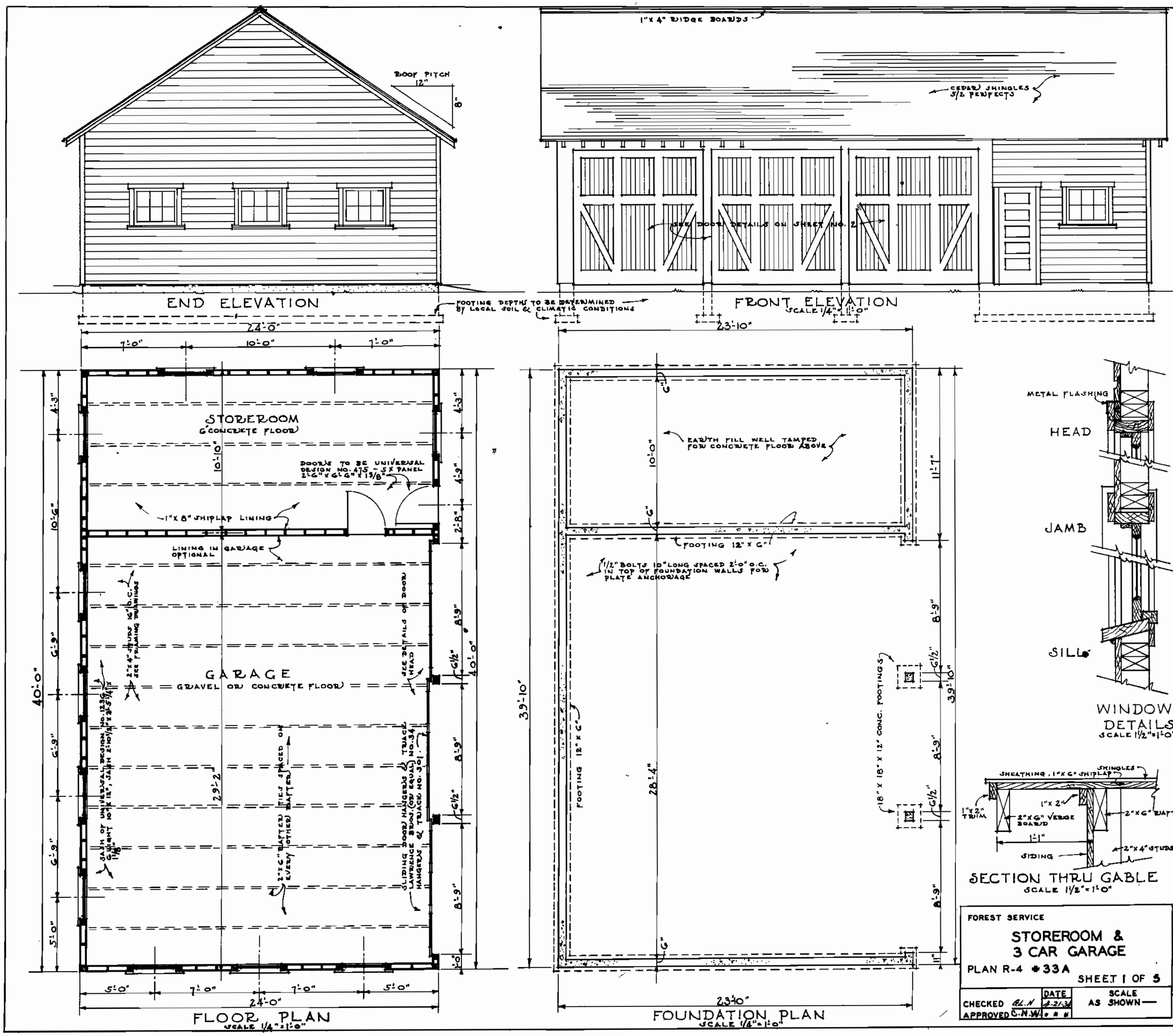
FOREST SERVICE

SHOP & STOREROOM

PLAN R-4 #33

SHEET 1 OF 5

		DATE	SCALE
CHECKED	W.W.B.	6-26-33	1/4 IN. = 1 FOOT
APPROVED	T.W.P.	6-26-33	DETAILS AS SHOWN


END ELEVATION
ROOF PITCH
12"
8"
1"x4" RIDGE BOARDS
CEDAR SHINGLES 5/2 PERFECTS
SEE DOOR DETAILS ON SHEET NO. 2
FRONT ELEVATION
SCALE 1/4"=1'-0"
FOOTING DEPTHS TO BE DETERMINED BY LOCAL SOIL & CLIMATIC CONDITIONS
STOREROOM
6" CONCRETE FLOOR
DOORS TO BE UNIVERSAL DESIGN NO. 475 - 5X PANEL 2'-6" x 6'-6" x 1 3/8"
1"x8" SHIPLAP LINING
LINING IN GARAGE OPTIONAL
GARAGE
GRAVEL OR CONCRETE FLOOR
2"x4" STUDS 16" O.C. SEE FRAMING DRAWINGS
SASH OF UNIVERSAL DESIGN NO. 1236 6 LIGHT 10"x12", SASH 2'-10 1/2" x 2'-5 1/4" x 1 1/8"
2"x6" RAFTER TIES SPACED ON EVERY OTHER RAFTER
SLIDING DOORS HANGERS & TRACK LAWRENCE BROS. (OR EQUAL) NO. 34 HANGERS & TRACK NO. 301
SEE DETAILS OF DOOR HEAD
FLOOR PLAN
SCALE 1/4"=1'-0"
EARTH FILL WELL TAMPED FOR CONCRETE FLOOR ABOVE
FOOTING 12" x 6"
1/2" BOLTS 10" LONG SPACED 2'-0" O.C. IN TOP OF FOUNDATION WALLS FOR PLATE ANCHORAGE
18" x 18" x 12" CONC. FOOTINGS
FOUNDATION PLAN
SCALE 1/4"=1'-0"
METAL FLASHING
HEAD
JAMB
SILL
WINDOW DETAILS
SCALE 1 1/2"=1'-0"
SHEATHING, 1"x6" SHIPLAP
SHINGLES
1"x2" TRIM
1"x2"
2"x6" VERGE BOARD
2"x6" RAFTER
2"x4" STUDS
SIDING
SECTION THRU GABLE
SCALE 1 1/2"=1'-0"

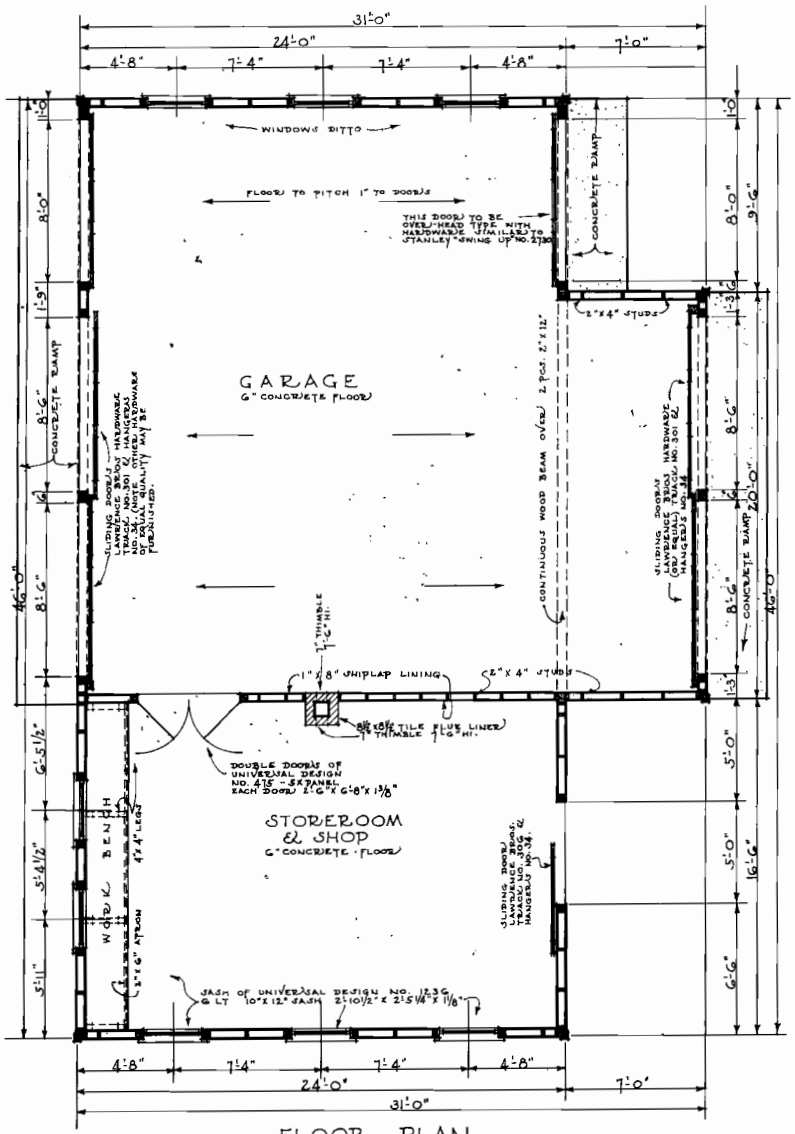
FOREST SERVICE

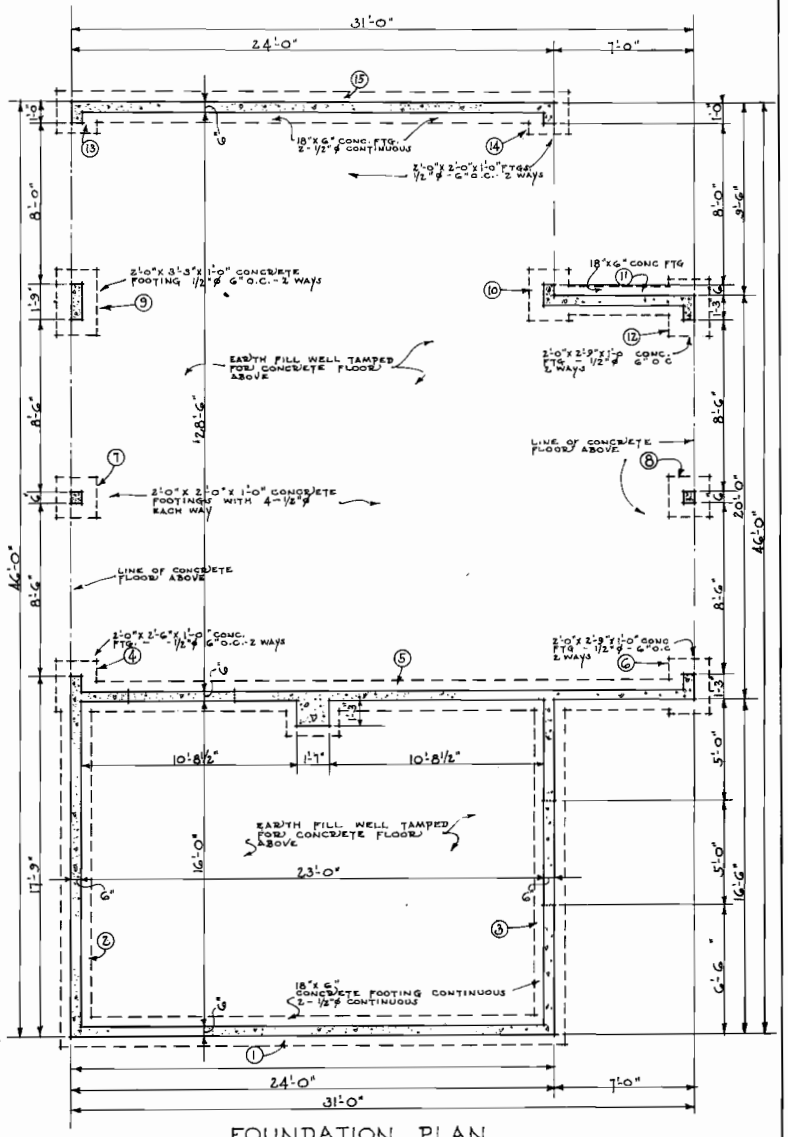
STOREROOM & 3 CAR GARAGE

PLAN R-4 #33A

SHEET 1 OF 5

CHECKED	R.L.H.	DATE 4-21-36	SCALE AS SHOWN
APPROVED	C.N.W.	" " "	





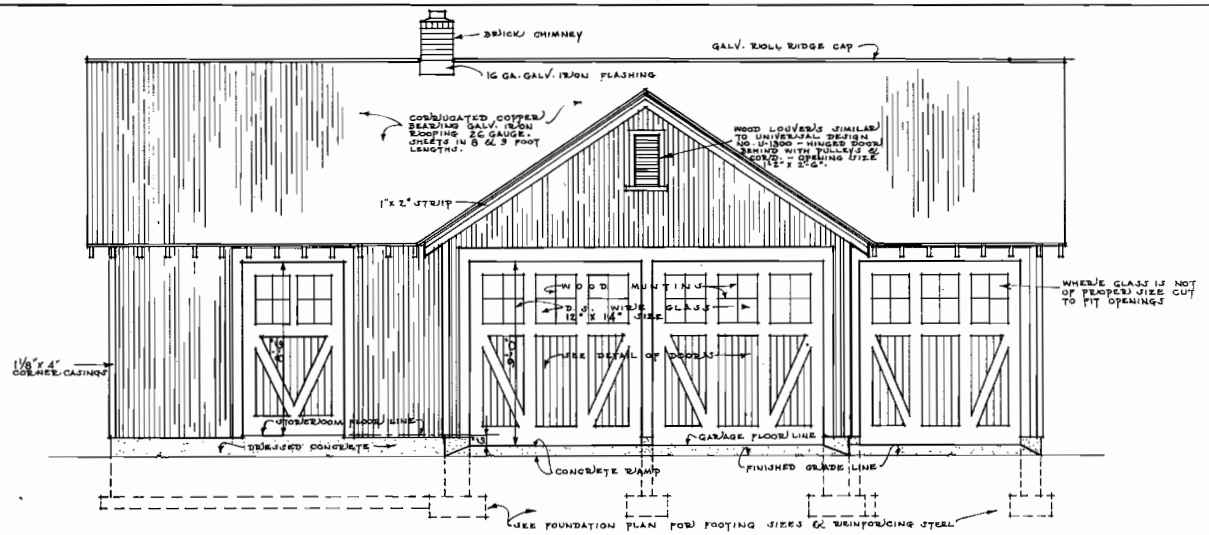
FOREST SERVICE

3 CAR GARAGE & STOREROOM

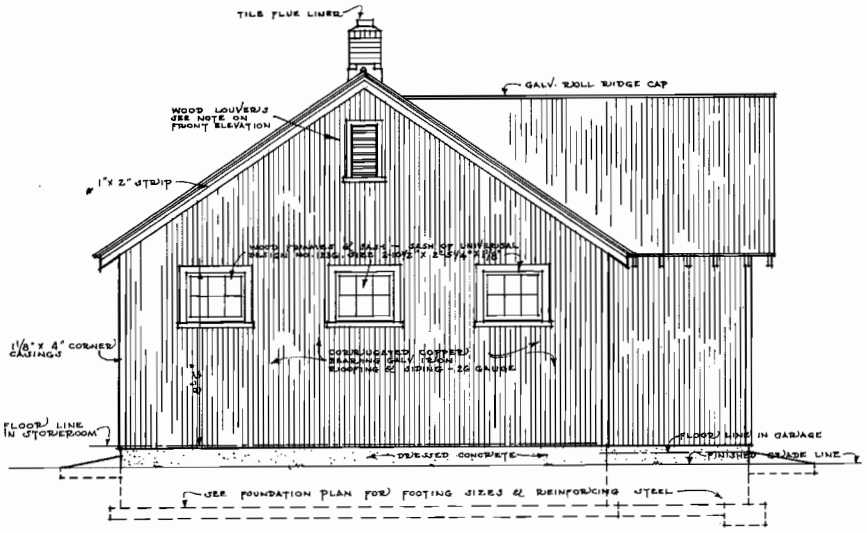
PLAN R-4 ✠ 33B

SHEET 1 OF 7

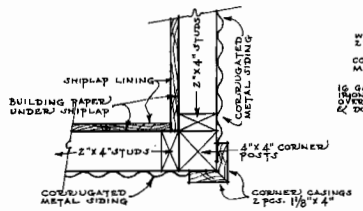
CHECKED	DATE	SCALE
APPROVED C.N.W.	5-8-36	AS SHOWN



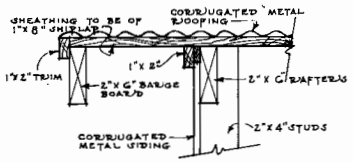
FRONT ELEVATION
SCALE 1/4" = 1'-0"



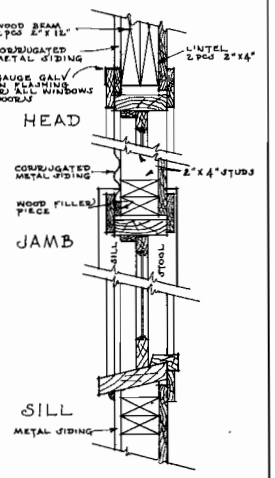
END ELEVATION
(OPPOSITE END SIMILAR)
SCALE 1/4" = 1'-0"



DETAIL OF BUILDING CORNER
SCALE 1 1/2" = 1'-0"



SECTION THRU GABLE END
SCALE 1 1/2" = 1'-0"



WINDOW DETAILS
SCALE 1 1/2" = 1'-0"

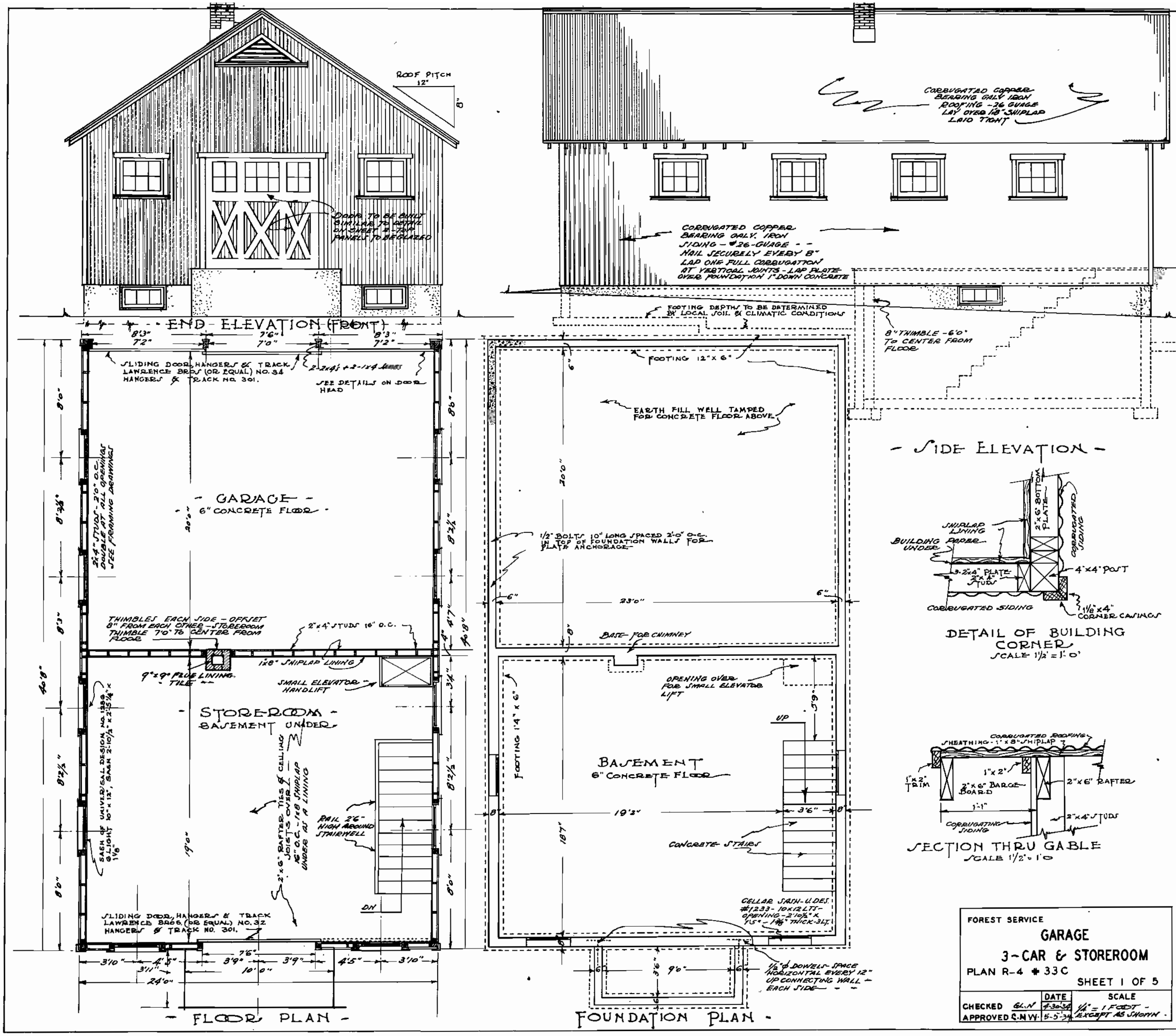
FOREST SERVICE

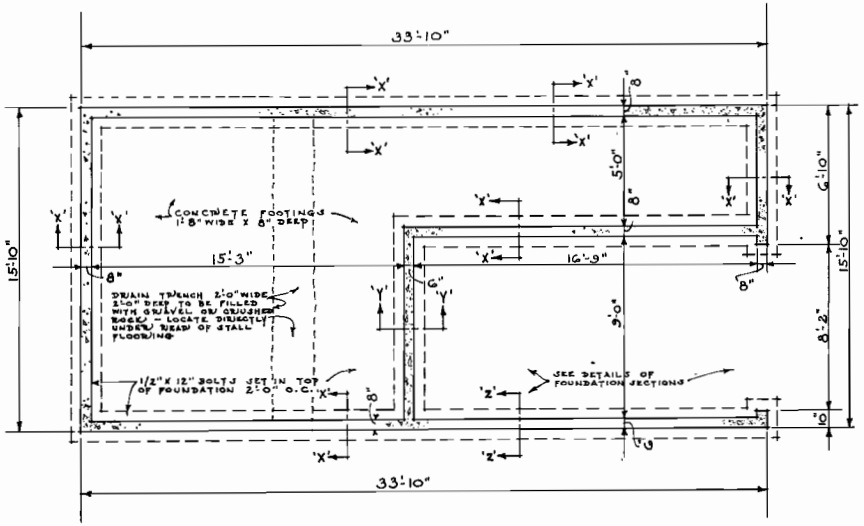
3 CAR GARAGE & STOREROOM

PLAN R-4 # 338

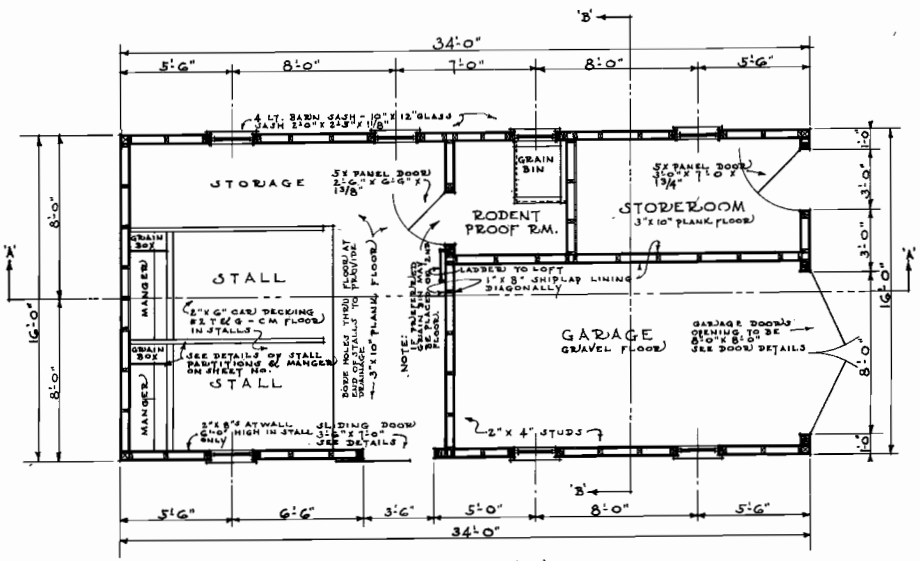
SHEET 2 OF 7

CHECKED C.N.W.	DATE 5-8-34	SCALE AS SHOWN
APPROVED C.N.W.		

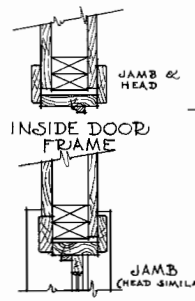

END ELEVATION (FRONT)
ROOF PITCH
12"
8"
DOORS TO BE BUILT SIMILAR TO DETAIL ON SHEET #-TOP PANELS TO BE GLAZED
CORRUGATED COPPER BEARING GALV. IRON ROOFING - 26 GUAGE LAY OVER 1x8" SHIPLAP LAID TIGHT
CORRUGATED COPPER BEARING GALV. IRON SIDING - #26-GUAGE - - NAIL SECURELY EVERY 8" LAP ONE FULL CORRUGATION AT VERTICAL JOINTS - LAP PLATE OVER FOUNDATION 1" DOWN CONCRETE
FOOTING DEPTHS TO BE DETERMINED BY LOCAL SOIL & CLIMATIC CONDITIONS
8" THIMBLE - 6'0" TO CENTER FROM FLOOR
- SIDE ELEVATION -
SLIDING DOOR, HANGERS & TRACK LAWRENCE BROS (OR EQUAL) NO. 34 HANGERS & TRACK NO. 301.
SEE DETAILS ON DOOR HEAD
- GARAGE -
6" CONCRETE FLOOR
2"x4" STUDS - 2'0" O.C. DOUBLE AT ALL OPENINGS SEE FRAMING DRAWINGS
THIMBLES EACH SIDE - OFFSET 8" FROM EACH OTHER - STOREROOM THIMBLE 7'0" TO CENTER FROM FLOOR
2"x4" STUDS 16" O.C.
1x8" SHIPLAP LINING
9"x9" FLUE LINING TILE
SMALL ELEVATOR HANDLIFT
- STOREROOM -
BASEMENT UNDER
SASH OF UNIVERSAL DESIGN NO. 1280 8 LIGHT 10"x12", SASH 2'-10 1/2" x 2'-5 1/4" x 1 3/8"
RAIL 2'6" HIGH AROUND STAIRWELL
DN
SLIDING DOOR, HANGERS & TRACK LAWRENCE BROS (OR EQUAL) NO. 32 HANGERS & TRACK NO. 301.
24'0"
10'0"
- FLOOR PLAN -
FOOTING 12" x 6"
EARTH FILL WELL TAMPED FOR CONCRETE FLOOR ABOVE
1/2" BOLTS 10" LONG SPACED 2'-0" O.C. IN TOP OF FOUNDATION WALLS FOR PLATE ANCHORAGE
23'0"
BASE FOR CHIMNEY
OPENING OVER FOR SMALL ELEVATOR LIFT
UP
FOOTING 1'4" x 6"
BASEMENT
6" CONCRETE FLOOR
19'2"
CONCRETE STAIRS
CELLAR SASH - U. DES. #1233 - 10x12 LTS - OPENING - 2'10 1/2" x 1'5" - 1 3/8" THICK - 3 LT.
1/2" Ø DOWELS - SPACE HORIZONTAL EVERY 12" UP CONNECTING WALL - EACH SIDE
FOUNDATION PLAN -
SHIPLAP LINING
BUILDING PAPER UNDER
2"x6" BOTTOM PLATE
CORRUGATED SIDING
4"x4" POST
1 1/8"x4" CORNER CASINGS
DETAIL OF BUILDING CORNER
SCALE 1 1/2" = 1'-0"
CORRUGATED ROOFING
SHEATHING - 1"x8" SHIPLAP
1"x2" TRIM
1"x2"
2"x6" BARGE BOARD
2"x6" RAFTER
2"x4" STUDS
CORRUGATED SIDING
SECTION THRU GABLE
SCALE 1 1/2" = 1'0"
FOREST SERVICE
GARAGE
3-CAR & STOREROOM
PLAN R-4 # 33C
SHEET 1 OF 5
DATE
SCALE
CHECKED G.L.N. 4-30-34
APPROVED C.N.W. 5-5-34
1/4" = 1 FOOT - EXCEPT AS SHOWN



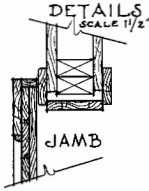
FOUNDATION PLAN
SCALE 1/4" = 1'-0"

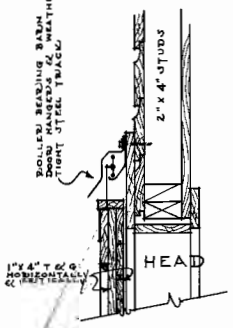


FLOOR PLAN
SCALE 1/4" = 1'-0"

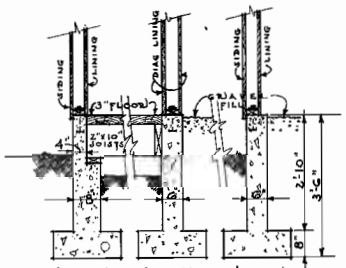


WINDOW FRAME DETAILS
SCALE 1 1/2" = 1'-0"

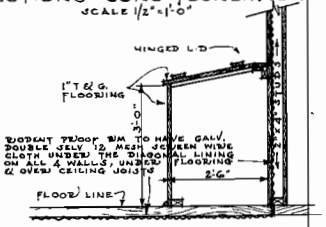




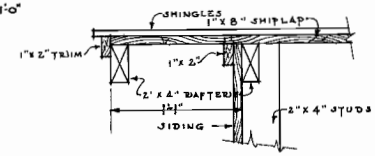
DETAILS of SLIDING BARN DOOR
SCALE 1 1/2" = 1'-0"



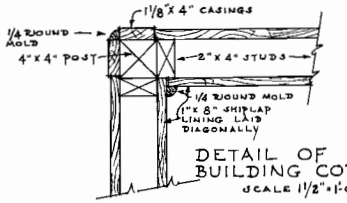
SECTIONS CONC FOUNDATION
SCALE 1/2" = 1'-0"



SECTION THRU GRAIN BIN
SCALE 1/2" = 1'-0"



SECTION THRU GABLE
SCALE 1 1/2" = 1'-0"



DETAIL OF BUILDING CORNERS
SCALE 1 1/2" = 1'-0"

FOREST SERVICE

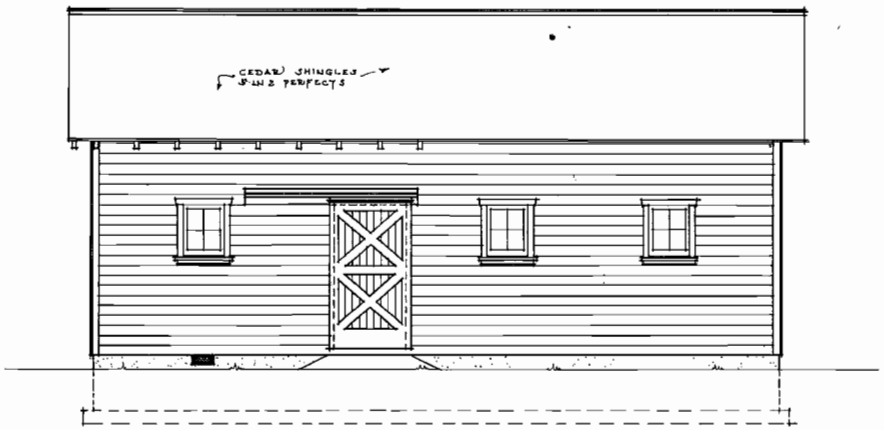
STORE ROOM-GARAGE & 2 HORSE BARN

PLAN R-4 #34

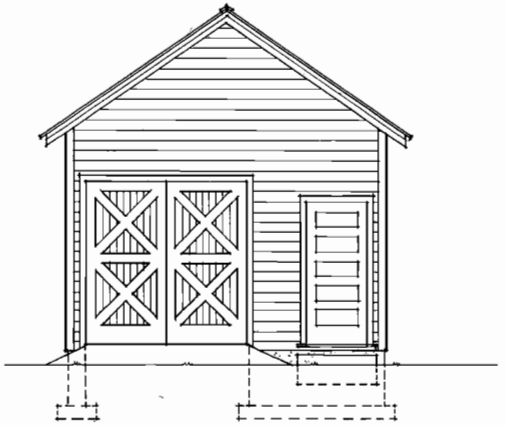
SHEET 1 OF 6

CHECKED GLW	DATE 1/22/34	SCALE AS NOTED
APPROVED C.N.W	1/23/34	

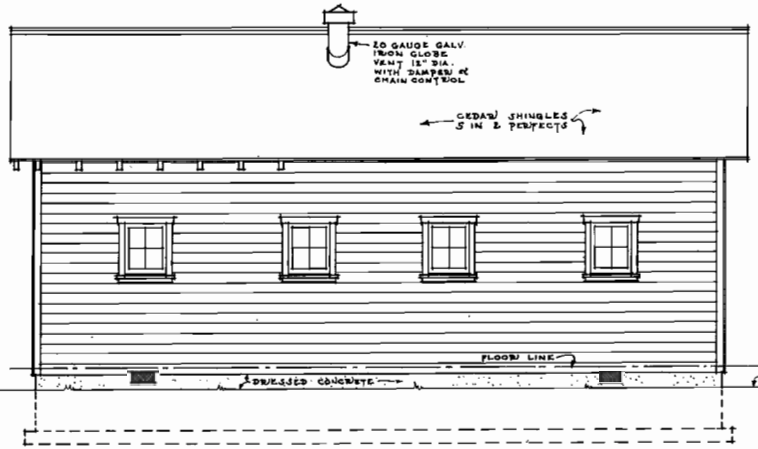
REVISED MAY 1, 1934



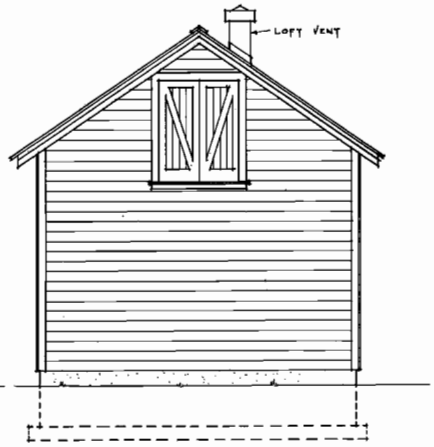
FRONT ELEVATION



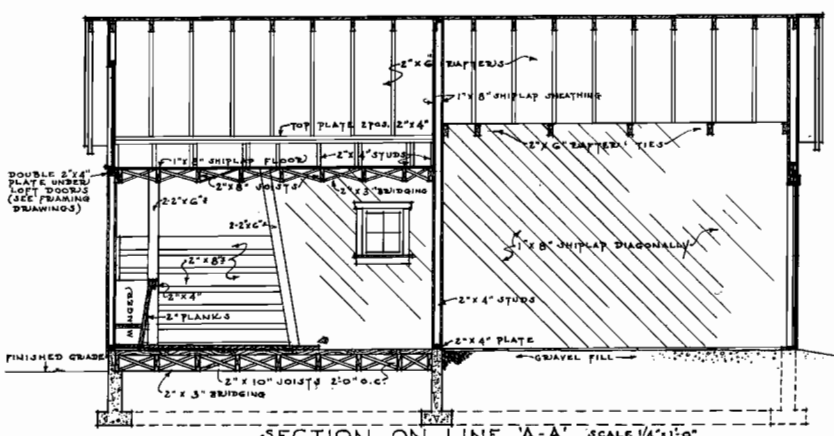
END ELEVATION



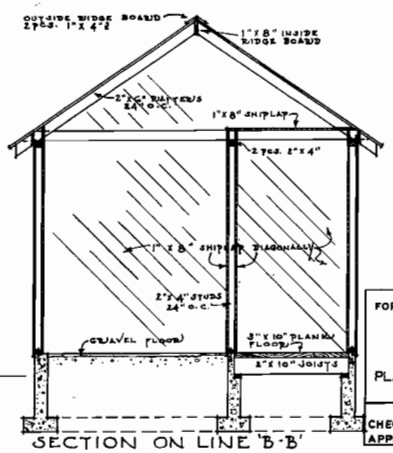
REAR ELEVATION



END ELEVATION



SECTION ON LINE 'A-A' SCALE 1/4"=1'-0"



SECTION ON LINE 'B-B'

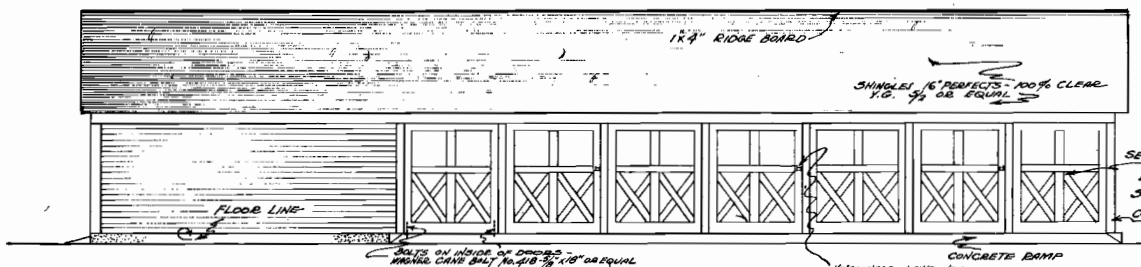
FOREST SERVICE

STOREROOM-GARAGE & 2 HORSE BARN

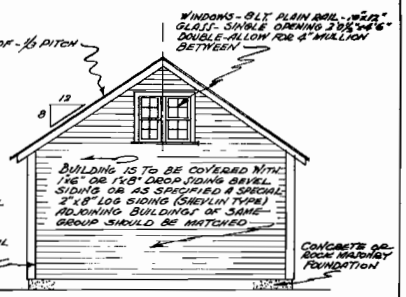
PLAN R-4 #34

SHEET 2 OF 6

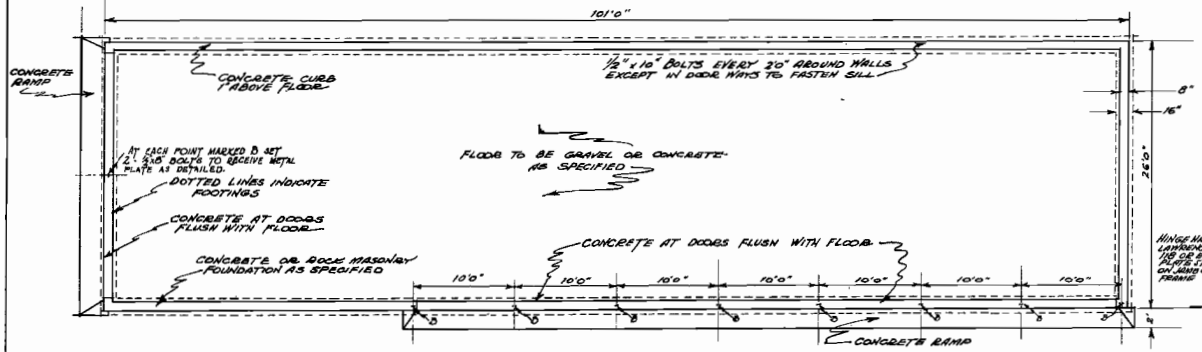
CHECKED G.L.N.	DATE 1/31/56	SCALE AS NOTED
APPROVED C.N.W.	1/31/56	



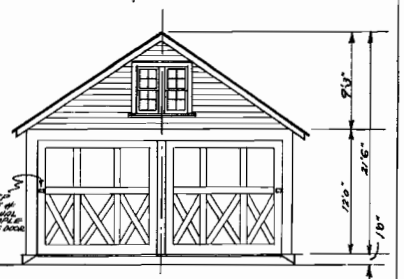
- FRONT ELEVATION -



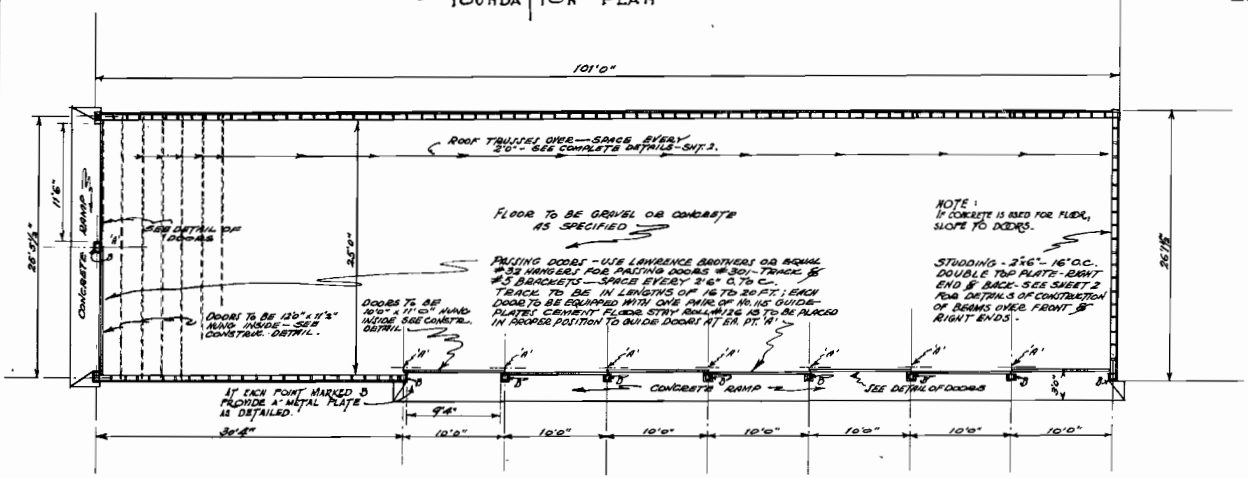
- RIGHT END ELEVATION -



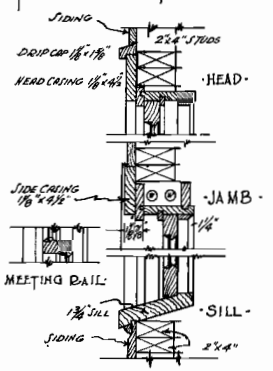
- FOUNDATION PLAN -



- LEFT END ELEVATION -



- FLOOR PLAN -



- DETAIL OF DOUBLE HUNG WINDOW -
SCALE: 1½" = 1.0"

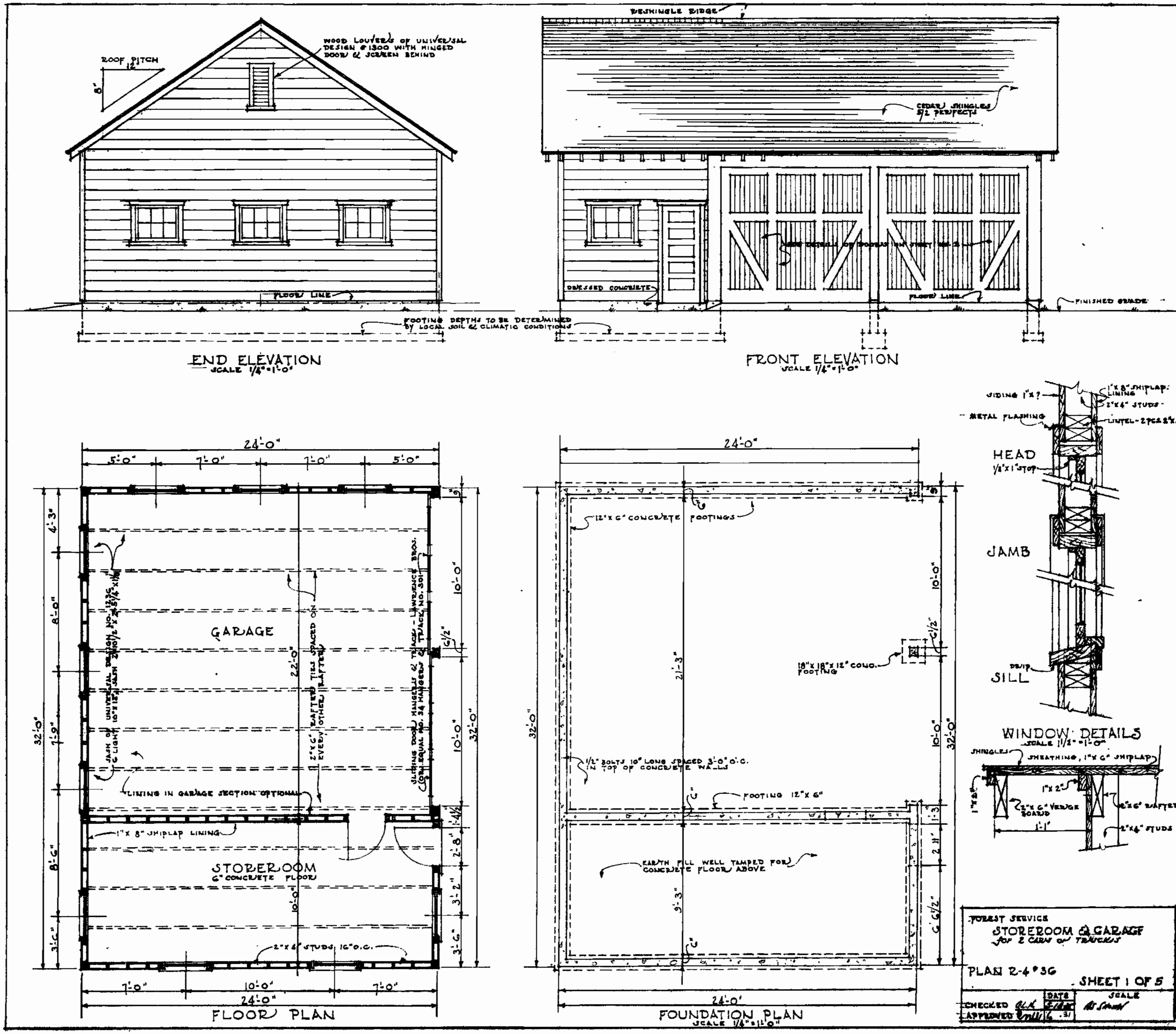
FOREST SERVICE

GARAGE AND EQUIPMENT BUILDING

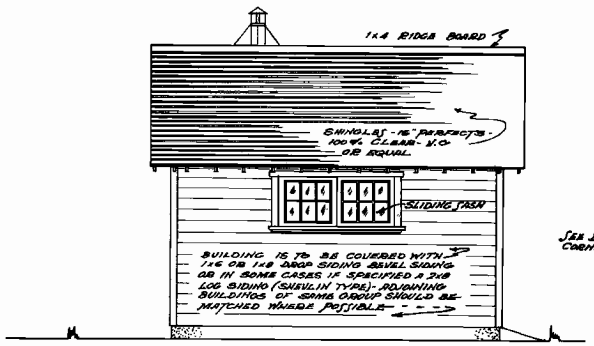
PLAN R-4 # 35

SHEET 1 OF 6

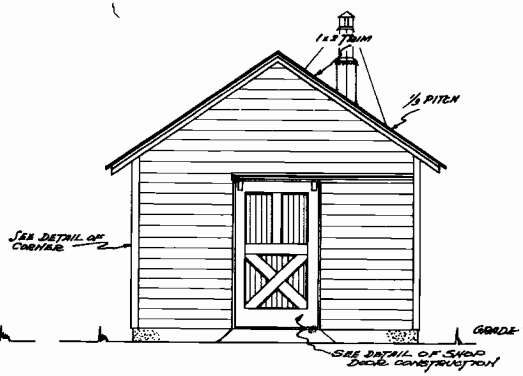
CHECKED	G.A.N.	DATE 3-10-38	SCALE Scale ⅛" to 1 Foot
APPROVED	C.N.W.	3/16/38	



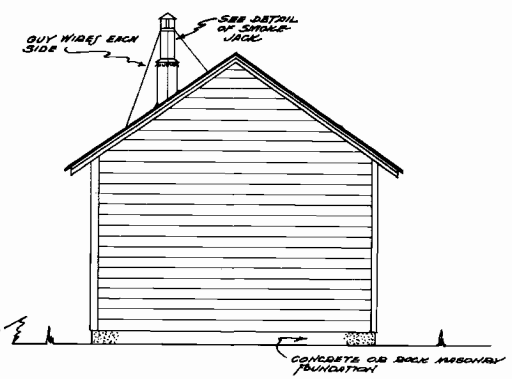
WOOD LOUVERS OF UNIVERSAL DESIGN #1300 WITH HINGED DOOR & SCREEN BEHIND
ROOF PITCH
12"
8"
FLOOR LINE
FOOTING DEPTHS TO BE DETERMINED BY LOCAL SOIL & CLIMATIC CONDITIONS
END ELEVATION
SCALE 1/4"=1'-0"
RESHINGLE RIDGE
CEDAR SHINGLES
DRESSED CONCRETE
FLOOR LINE
FINISHED GRADE
FRONT ELEVATION
SCALE 1/4"=1'-0"
SIDING 1"X?
METAL FLASHING
1"X 8" SHIPLAP LINING
2"X4" STUDS
HEAD
1/2"X1" STOP
JAMB
DRIP
SILL
WINDOW DETAILS
SCALE 1 1/2"=1'-0"
SHINGLES
SHEATHING, 1"X 6" SHIPLAP
1"X 2"
2"X 6" RAFTERS
2"X4" STUDS
1'-1"
24'-0"
5'-0"
7'-0"
7'-0"
5'-0"
GARAGE
22'-0"
LINING IN GARAGE SECTION OPTIONAL
1"X 8" SHIPLAP LINING
STORBROOM
6" CONCRETE FLOOR
10'-0"
2"X 4" STUDS, 16" O.C.
32'-0"
4'-3"
8'-0"
7'-9"
8'-6"
3'-6"
10'-0"
6 1/2"
10'-0"
1'-4 1/2"
2'-8"
3'-2"
3'-6"
32'-0"
7'-0"
10'-0"
7'-0"
24'-0"
FLOOR PLAN
24'-0"
12"X 6" CONCRETE FOOTINGS
21'-3"
18"X 18"X 12" CONC. FOOTING
1/2" BOLTS 10" LONG SPACED 3'-0" O.C. IN TOP OF CONCRETE WALLS
FOOTING 12"X 6"
EARTH FILL WELL TAMPED FOR CONCRETE FLOOR ABOVE
9'-3"
32'-0"
10'-0"
6 1/2"
10'-0"
1'-3"
2'-11"
6'-6 1/2"
32'-0"
24'-0"
FOUNDATION PLAN
SCALE 1/4"=1'-0"
FOREST SERVICE
STOREROOM & GARAGE
FOR 2 CARS OR TRUCKS
PLAN 2-4 #36
SHEET 1 OF 5
CHECKED
APPROVED
DATE
SCALE



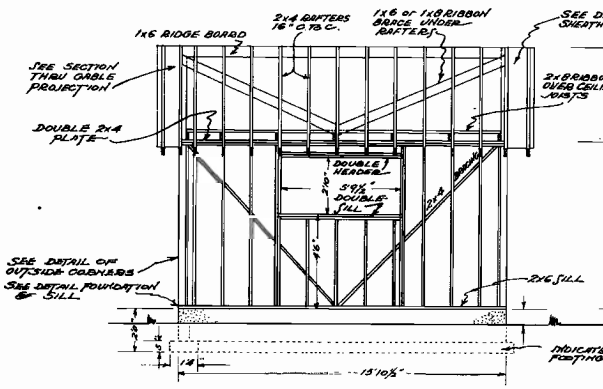
- SIDE ELEVATION -
- BOTH SIDES ALIKE -



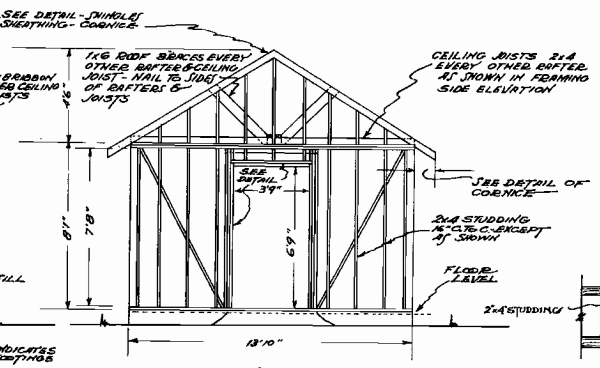
- END ELEVATION -



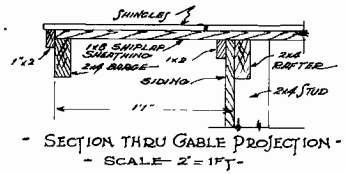
- END ELEVATION -



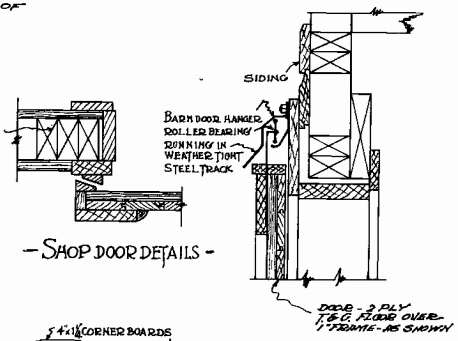
- FRAMING SIDE ELEVATION -



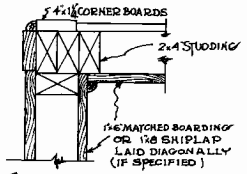
- FRAMING - END ELEVATION -



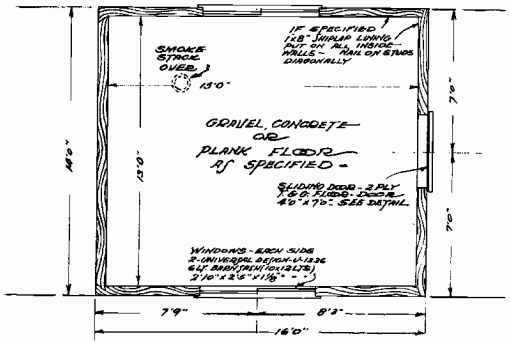
- SECTION THRU GABLE PROJECTION -
- SCALE 2" = 1FT -



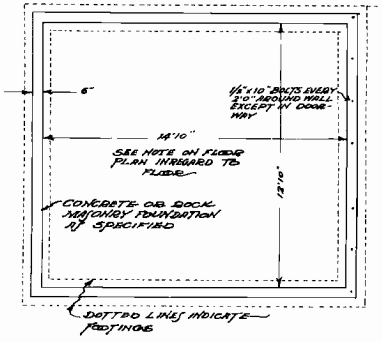
- SHOP DOOR DETAILS -



- CORNER POST DETAILS -
- SCALE 1½" = 1FT -



- FLOOR PLAN -



- FOUNDATION PLAN -

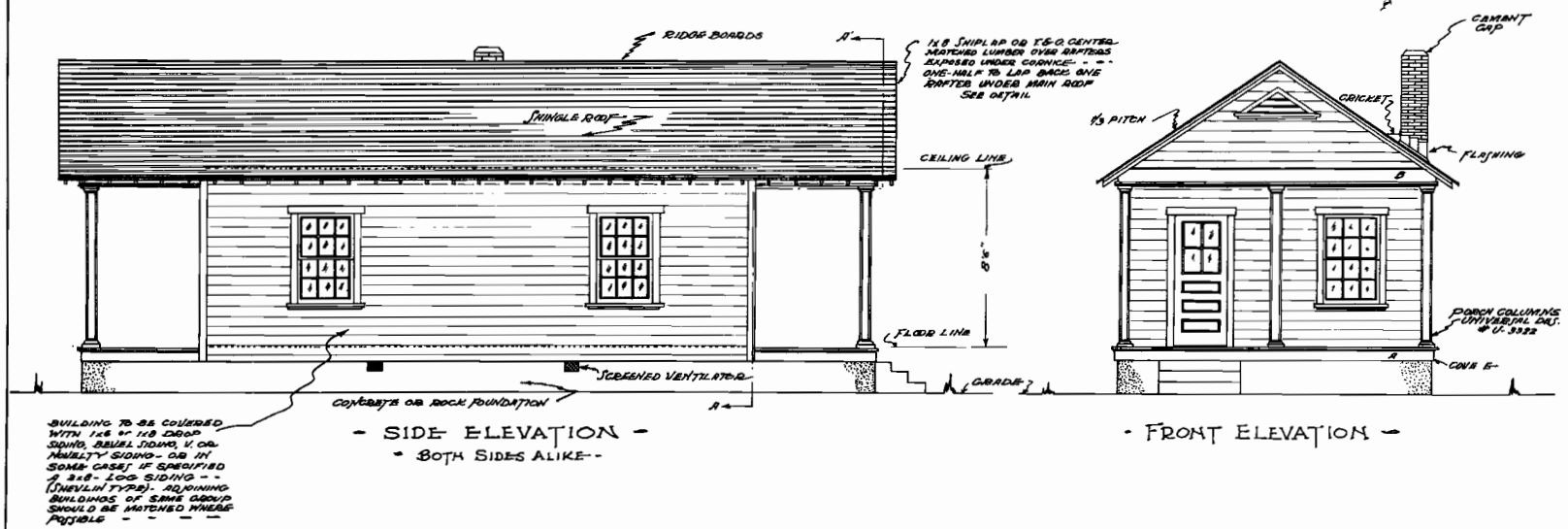
FOREST SERVICE

- BLACKSMITH SHOP -

PLAN R-4 * 40

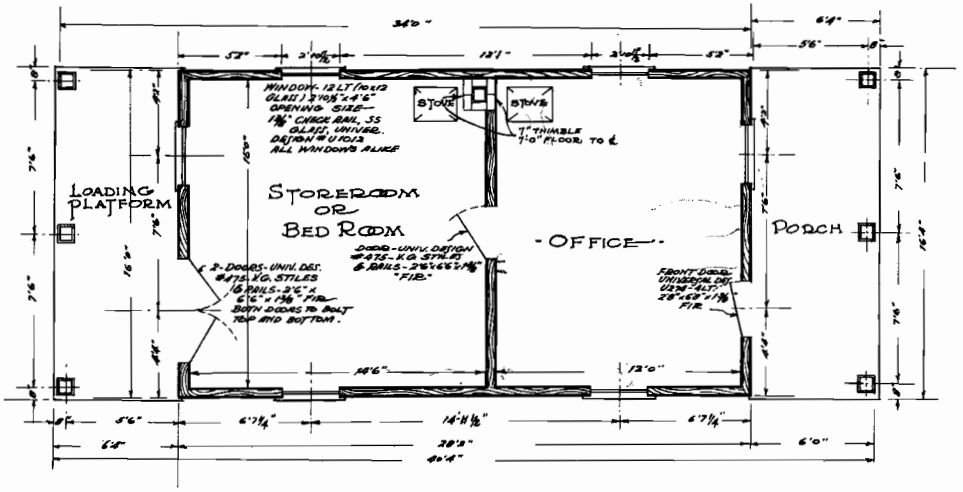
SHEET 1 OF

CHECKED G.L.N	DATE 3-2-33	SCALE ELEVATIONS & PLANS ½" = 1 FOOT DETAILS AS SHOWN
APPROVED C.N.W	3-15-33	

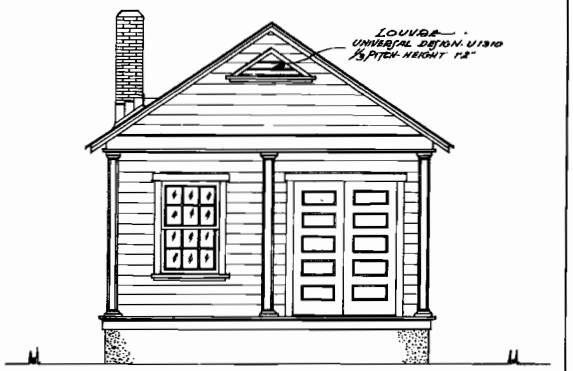


- SIDE ELEVATION -
- BOTH SIDES ALIKE -

- FRONT ELEVATION -



- FLOOR PLAN -



- REAR ELEVATION -

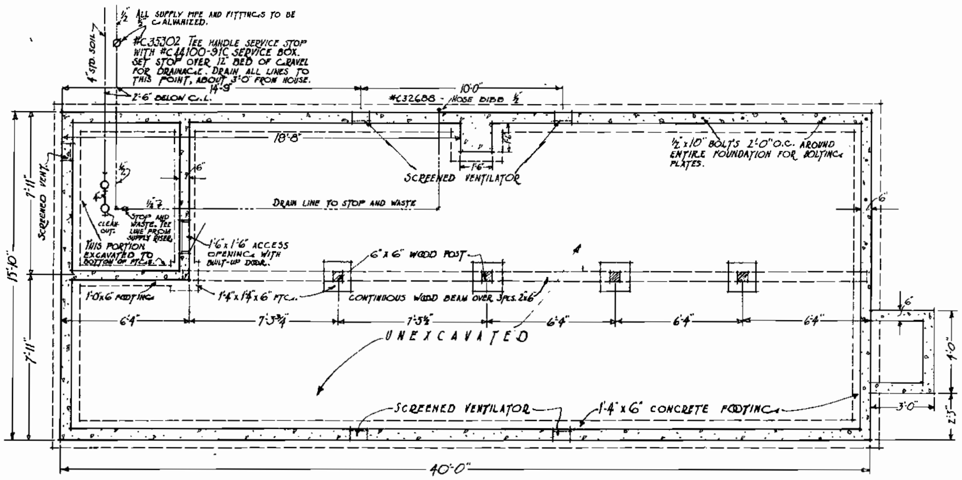
FOREST SERVICE

OFFICE & STOREROOM
OR
OFFICE & BEDROOM

PLAN R-4 # 51

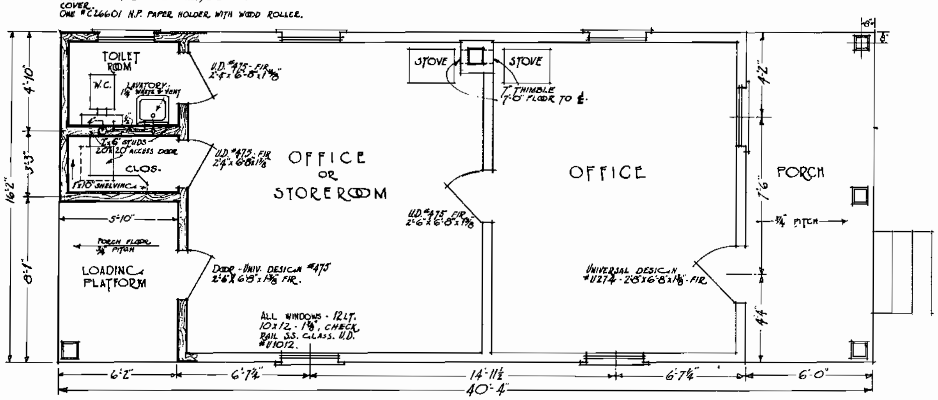
SHEET 1 OF

CHECKED	G.L.N.	DATE 5-26-38	SCALE ELEVATIONS & PLAN - 1/8" = 1 Foot -
APPROVED	C.W.W.	5-30-38	

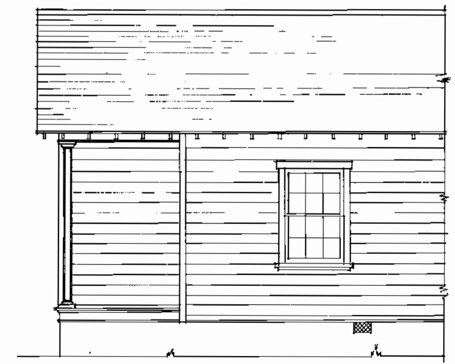


FOUNDATION AND FOOTING PLAN SCALE 1/4" = 1'-0"

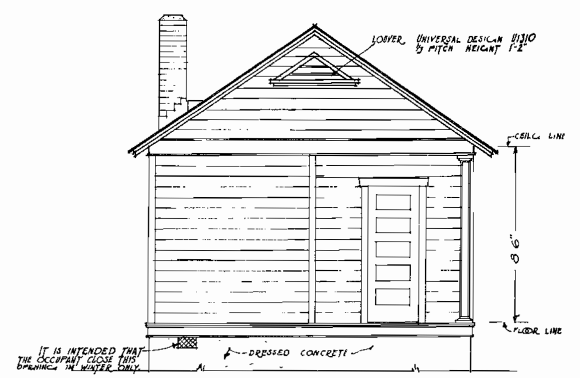
PLUMBING FIXTURES
WATER CLOSET - WASHDOWN "ILLINI" #C11181A, 6 GAL. TANK, VITREOUS CHINA, GOLDEN OAK SEAT, WITH COVER, SCREWS AND WASHERS; ALL EXPOSED PARTS NICKLE PLATED.
NORFOLK E.I. LAVATORY 15"x17" SIMILAR TO #C1250-PS SUPPLY TO WALL, 1 1/4" N.P. "P" TRAP #31830, LOW PATTERN N.P. COLD WATER SUPPLY ONLY, ONE #C33130 N.P. HOLE COVER.
ONE #C26601 N.P. PAPER HOLDER WITH WOOD ROLLER.



FLOOR PLAN SCALE 1/4" = 1'-0"



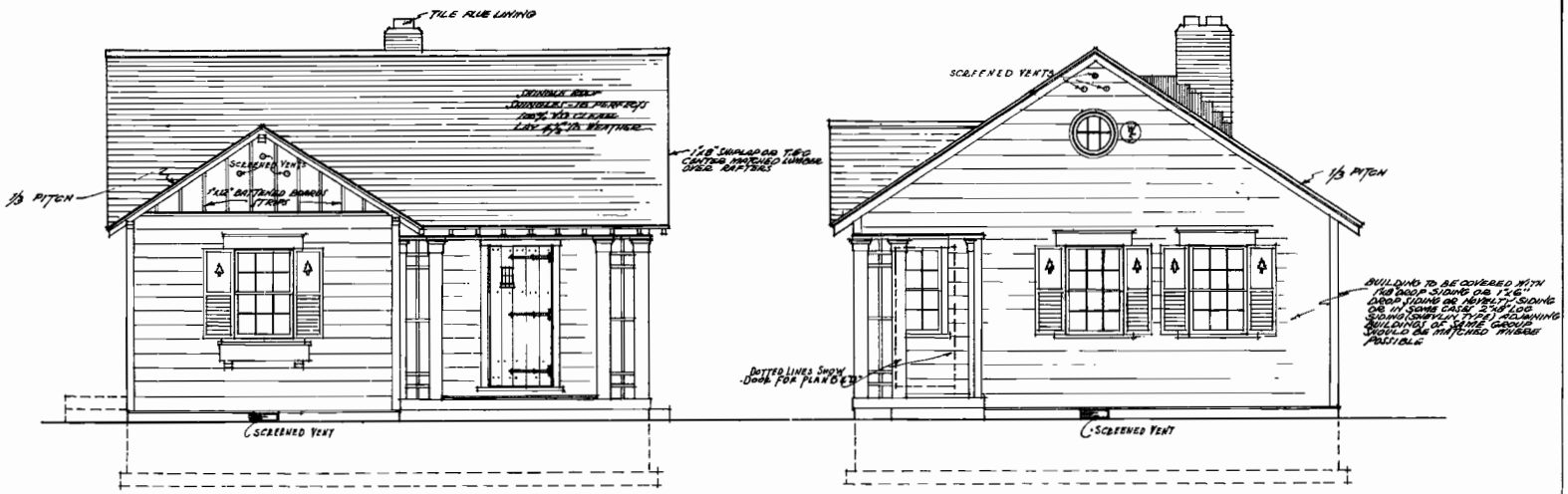
PART SIDE ELEVATION SCALE 1/4" 1'-0"



REAR ELEVATION SCALE 1/4" = 1'-0"

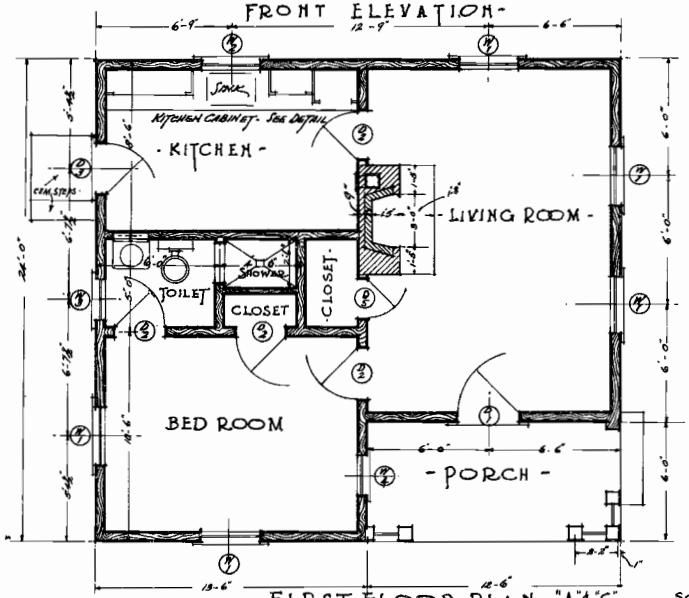
FOREST SERVICE
ALTERNATE PLAN
OFFICE AND STOREROOM
ADDITION TO PLAN #5'
PLAN R-4 # 51B
SHEET 1 OF 2

		DATE	SCALE
CHECKED	G.L.H.	3-13-35	1/4" = 1'-0"
APPROVED	C.N.W.	3-14-35	



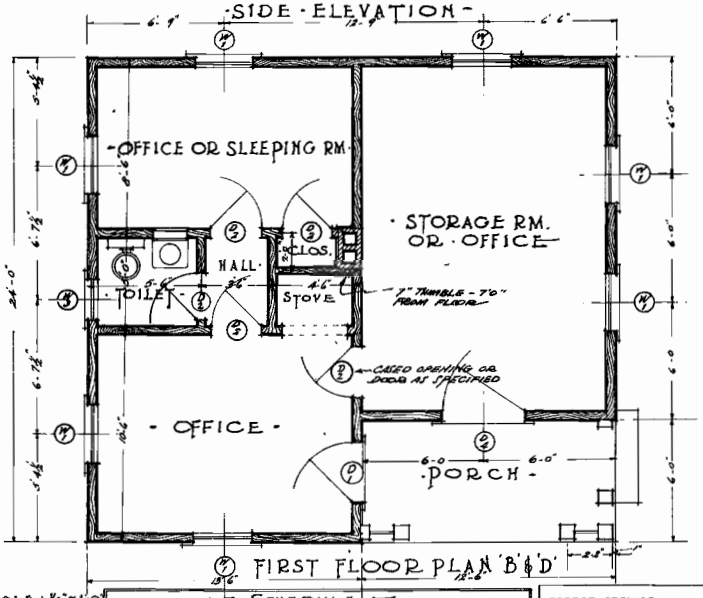
FRONT ELEVATION

SIDE ELEVATION



FIRST FLOOR PLAN "A" & "C"

SCALE : 1/4" = 1'-0"



FIRST FLOOR PLAN "B" & "D"

DOOR SCHEDULE

	UNIT DOOR NO.	MATERIAL	SIZE	GLASS	REMARKS
1	U 108	FOR OUTSIDE DOOR	3'0" x 7'0" x 1 3/4"	0.S	1/2 PANEL GLASS PANEL
2	D 330	" "	2'6" x 6'8" x 1 3/8"	—	
3	D 324	" "	3'0" x 7'0" x 1 3/4"	—	
4	—	" "	6'0" x 7'0" x 2 1/2"	0.S	SLIDING GLASS PANEL
5	U 431	" "	2'0" x 6'6" x 1 3/8"		

WINDOW SCHEDULE

	UNIT SASH NO.	SIZE OF SASH OPENING	SIZE OF OPENING	TYPE OF WINDOW	REMARKS
7	U 1012	10" x 12"	2'-1 1/2" x 4'-6"	D.H. 12 LT. SASH	1 3/8" THICK
8	U 1236	16" x 18"	2'-1 1/2" x 4'-3 1/2"	CASEMENT SASH 6 LT.	1 3/8" THICK
9	U 1236	16" x 18"	2'-0 1/2" x 3'-5 1/2"	CASEMENT SASH 6 LT.	1 3/8" THICK
10	U 1008	10" x 12"	2'-1" x 4'-6"	D.H. 8 LT.	1 3/8" THICK
			2'-0" ROUND	6 LT.	1 3/8" THICK

SCHEDULE
ALTERNATE TYPES OF CONSTRUCTION

TYPE A	THREE ROOM DWELLING	1/3 PITCH ROOF
" B	OFFICE, STOREROOM & L. RM.	1/3 PITCH ROOF
" C	THREE ROOM DWELLING	1/2 PITCH ROOF
" D	OFFICE, STOREROOM & L. RM	1/2 PITCH ROOF

NOTE: THE AL. "" ALTERNATES OFFER FOUR CHOICES IN CONSTRUCTION - CHOOSE THE MATERIAL LAST THAT SUITS YOUR CONDITION" - LISTS ARE DESIGNATED AND CORRESPOND TO THE ABOVE SCHEDULE -

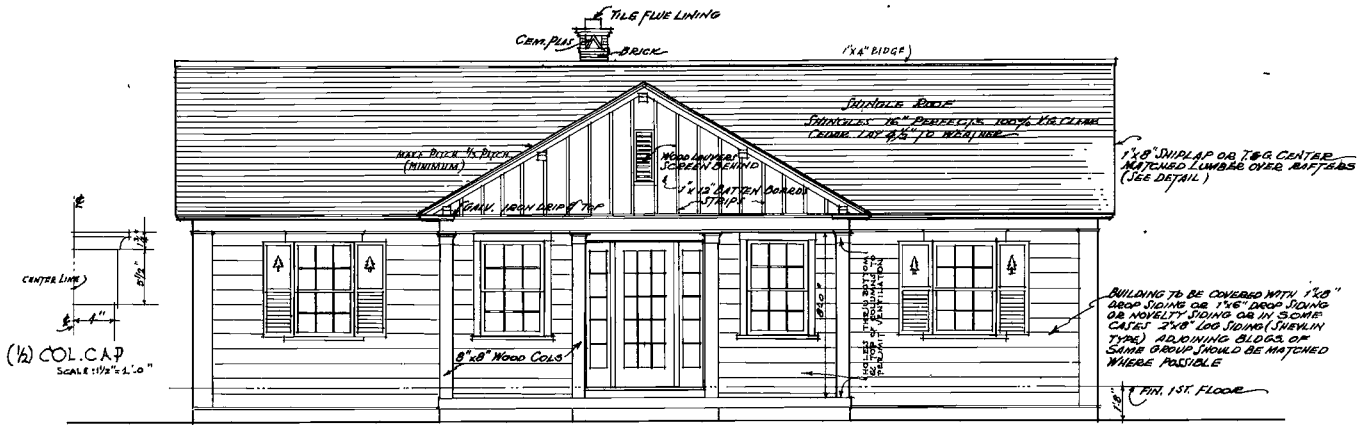
FOREST SERVICE

OFFICE STOREROOM & LIVING RM. OR DWELLING GUARD STATION 3 RM.

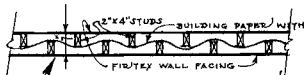
PLAN R-4 # 53

SHEET 1 OF

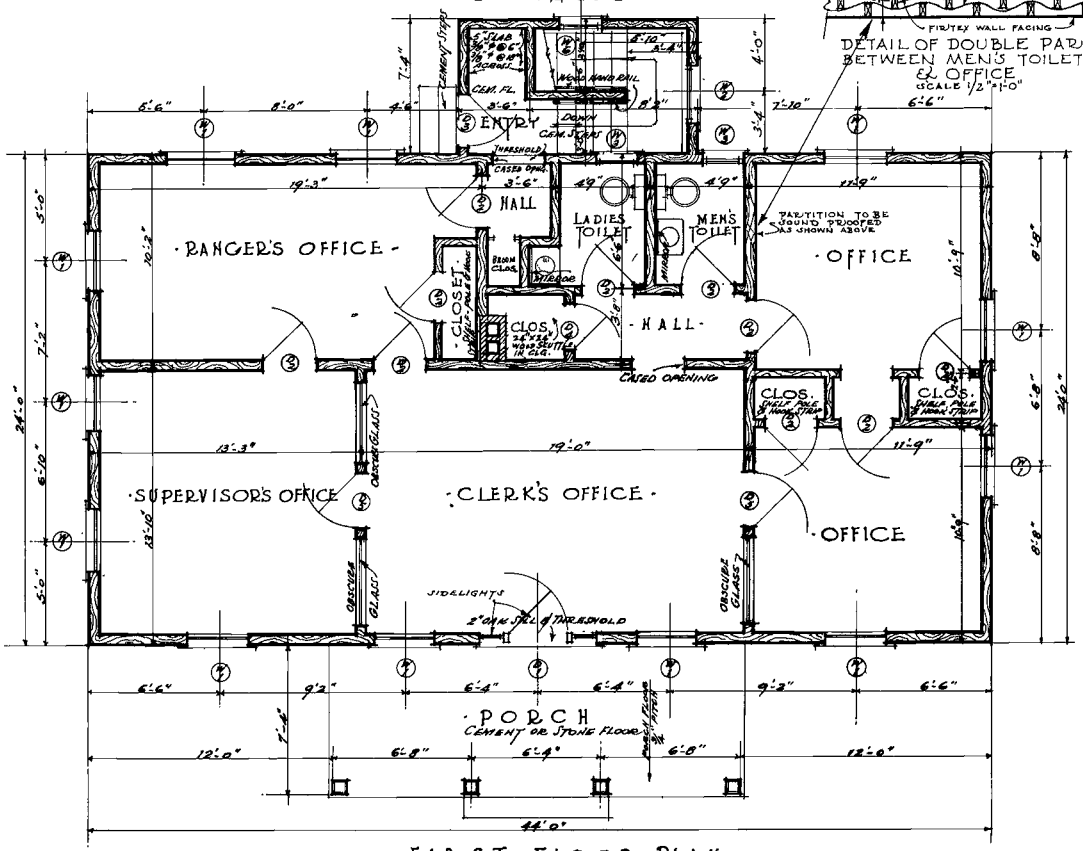
CHECKED	DATE	SCALE
A.L.N	6-9-33	1/4" = 1 FOOT
APPROVED C.N.W.	" "	



- FRONT ELEVATION -
SCALE: ¼" = 1'-0"



DETAIL OF DOUBLE PARTN. BETWEEN MEN'S TOILET & OFFICE
SCALE 1½"=1'-0"



- FIRST-FLOOR PLAN -
SCALE: ¼" = 1'-0"

DOOR SCHEDULE

	UNIT DWG. NO.	MATERIAL	SIZE	GLASS	REMARKS
(1)		FIR OR PINE	2'-10"x7'0"x1¾"	D.S	FRONT DOOR W/ SIDELIGHTS (SEE DETAIL)
(2)	U-931	" " "	2'-6"x6'-6"x1¾"	—	
(3)	U-278	" " "	2'-8"x7'-0"x1¾"	D.S	
(4)	U-931	" " "	2'-4"x6'-6"x1¾"	—	
(5)		" " "	2'-6"x6'-6"x1¾"	D.S	OBSCURE GLASS (NO PAN (5'-6" FROM FL.)

WINDOW SCHEDULE

	UNIT DWG.	SIZE OF EACH LIGHT OPENING	SIZE OF WINDOW	TYPE OF WINDOW	REMARKS
(W-1)	U-1013	10"x12"	2'-10½"x 4'-6"	DBL. SLT. RAIL	1¾" THICK
(W-2)	U-1336	10"x12"	2'-10½"x 2'-5⅛"	CASEMENT TWIN-6 LTS	1¾" THICK
(W-3)	U-1326	10"x12"	2'-0⅛"x 2'-5⅛"	CASEMENT-SASH 6 LT.	
(W-4)	—	—	—	—	—
(W-5)	U-1233	10"x12"	2'-10½"x 1'-5"	CASEMENT SASH 3 LT.	1¾" THICK
(W-6)	U-1224	10"x12"	2'-0⅛"x 2'-5⅛"	CASEMENT-SASH 4 LT.	1¾" THICK

REVISED 7/1/34

FOREST SERVICE

OFFICE BUILDING

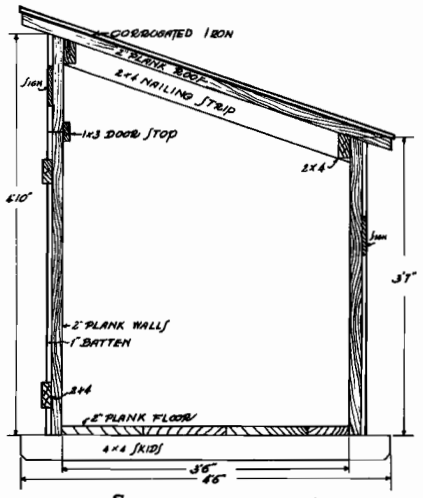
PLAN R-4 #54

SHEET 1 OF 10

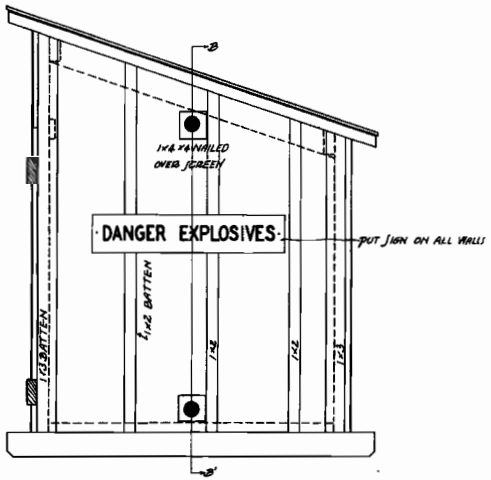
CHECKED G.L.H. DATE 6-9-33

APPROVED H.W. " " "

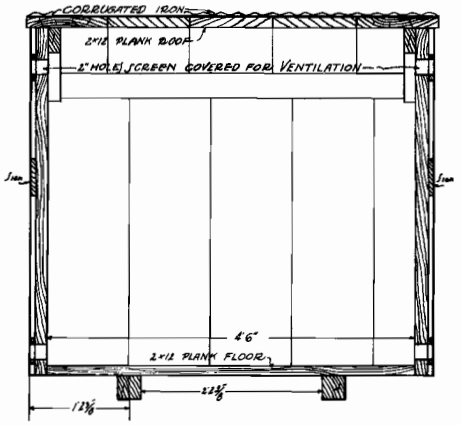
SCALE ¼" = 1 FOOT



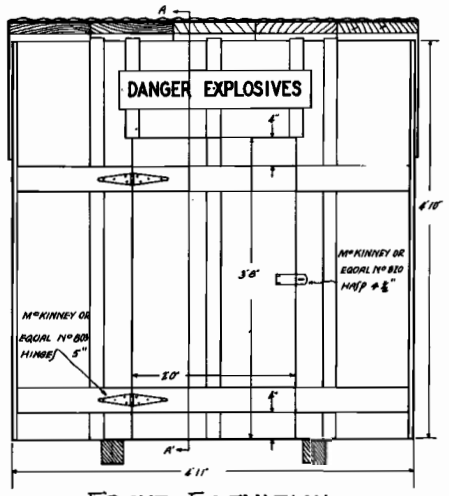
— SECTION AT A-A —



— SIDE ELEVATION —



— SECTION AT B-B' —



— FRONT ELEVATION —

SPECIFICATIONS

General

The powder house shall be constructed to the dimensions shown on the drawings.

Lumber

All lumber shall be cut to sizes and shapes shown. Care shall be taken to fit all parts very closely, making neat joints and laps.
The best surface shall be exposed to the exterior and care shall be taken to drive nails home and leave surfaces free from hammer marks.

Foundation

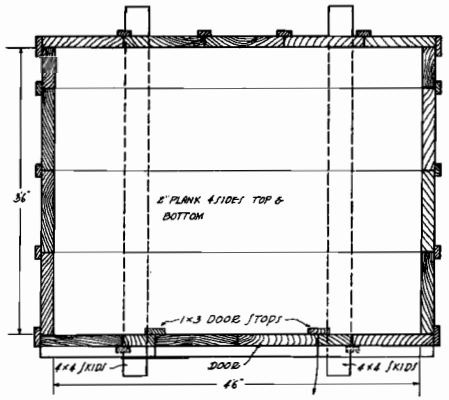
Where considered essential, building shall be constructed on rock foundation, care being taken to have all walls plumb, straight and true.

Roof Covering

Corrugated iron roof covering shall be applied with 4D common galvanized nails, as listed. Lap joints shall be made, care being taken to nail all pieces securely at joints and edges.
Workmen shall cut all iron where necessary, making clean, straight, workman-like edges.

Painting

Red paint as listed shall be applied to roof covering. One coat shall be applied to metal on all surfaces before setting in place. After metal roof covering is applied, all exposed surfaces shall be cleaned and two additional coats applied. Sufficient time shall be allowed between coats to insure proper drying.
All exposed exterior surfaces of lumber shall be painted three coats of white exterior paint, care being taken to allow time between coats for proper drying and application.
All hardware shall be applied after final coat of paint is dry, thus insuring all hardware being free of paint.



— PLAN —

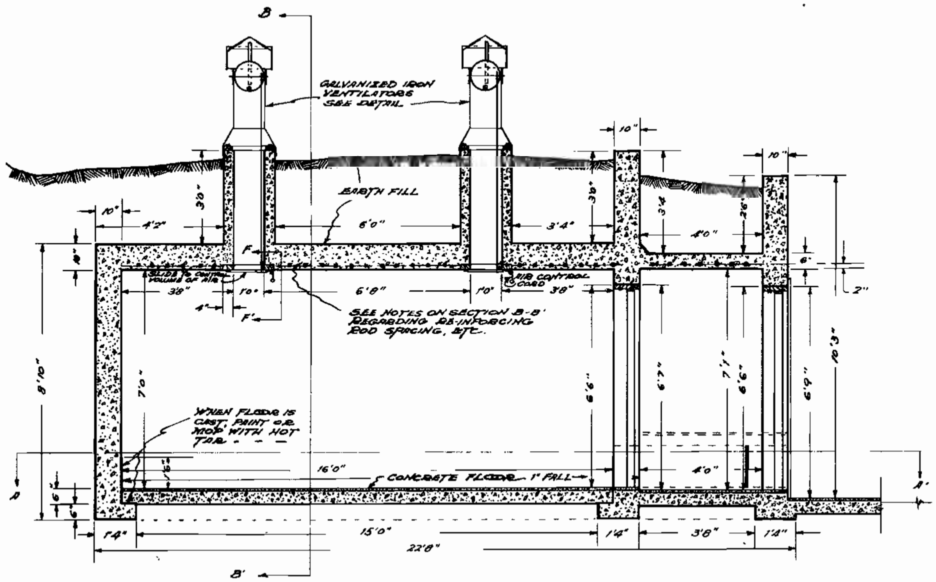
FOREST SERVICE

POWDER HOUSE

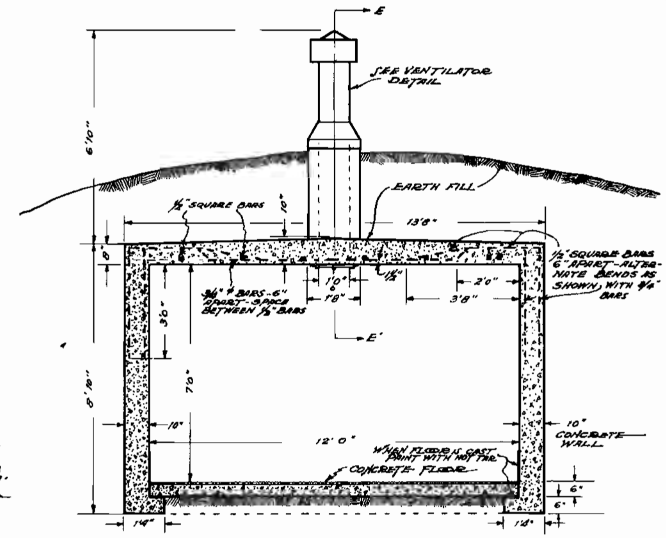
PLAN R-4 #81

SHEET 1 OF 2

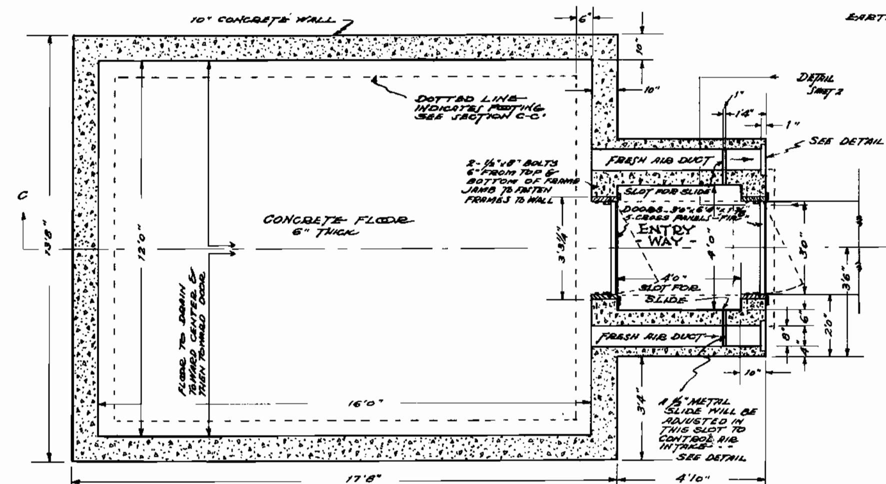
CHECKED G.L.N.	DATE 9-7-33	SCALE 1" = 1 FOOT
APPROVED C.N.W.	9-7-33	



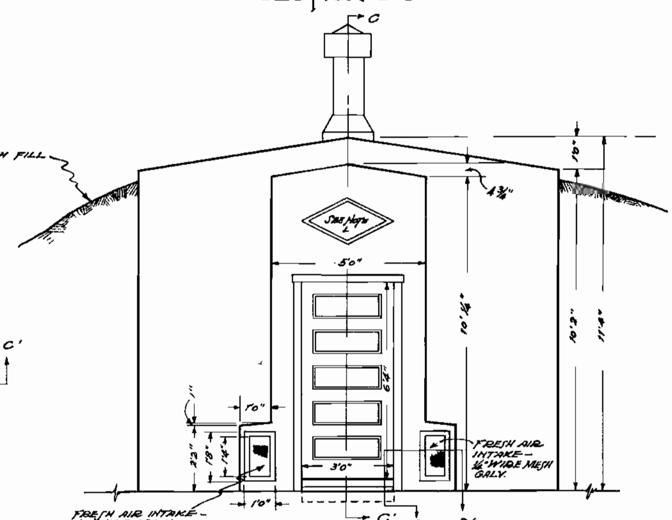
- SECTION C-C' -



- SECTION B-B' -



- SECTION A-A' & PLAN -

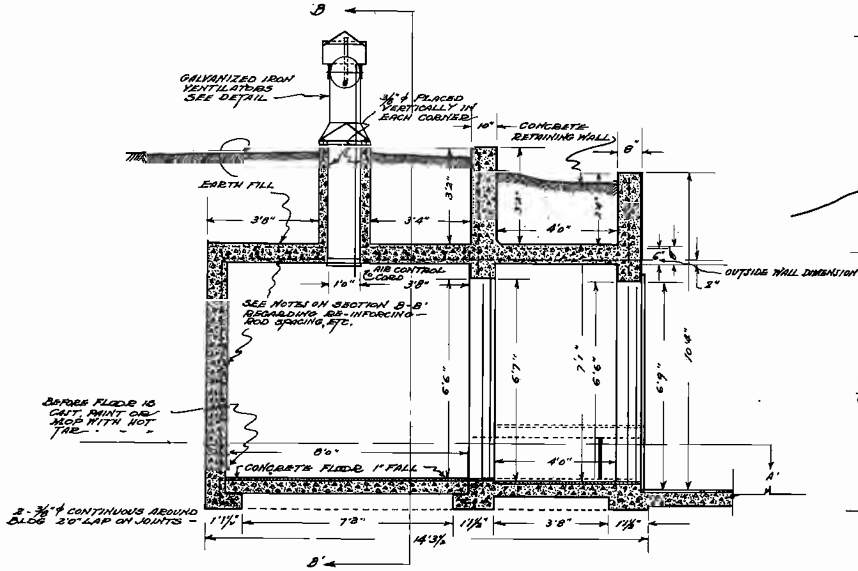


- FRONT ELEVATION -

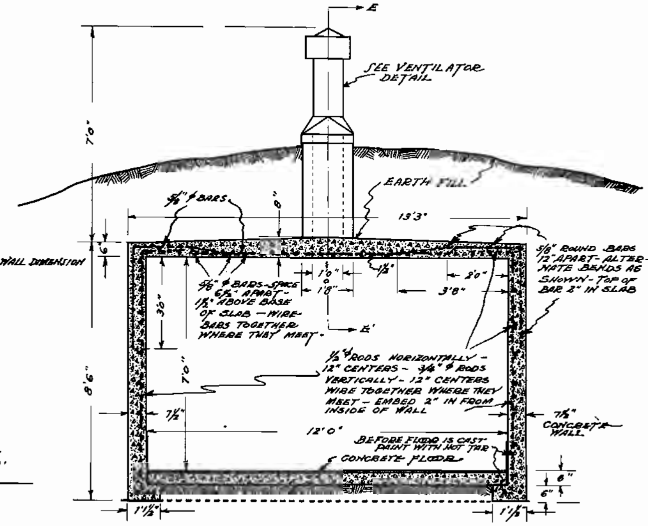
NOTE-L: RECESS PANEL ½" - OR MAKE PLAIN AS SPECIFIED - -

FOREST SERVICE
CELLAR
HILLSIDE
PLAN R-4 # 62
SHEET 1 OF

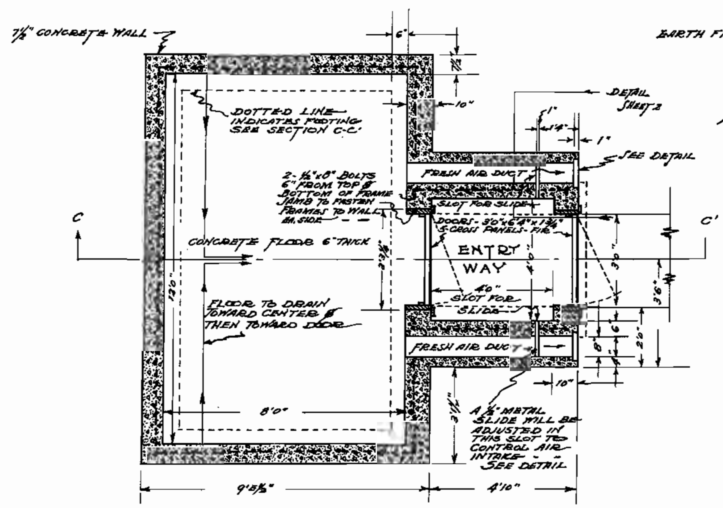
	DATE	SCALE
CHECKED G.L.N.	3-7-33	⅜" = 1 FOOT
APPROVED C.N.W.	3-15-33	



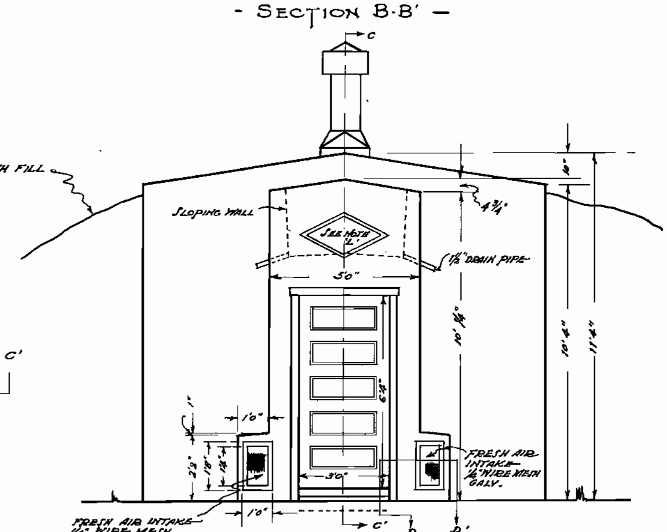
- SECTION C-C' -



- SECTION B-B' -



- SECTION A-A' -
&
PLAN -



- FRONT ELEVATION -

NOTE 'L': RECESS PANEL 1/2" - OR MAKE PLAIN AS SPECIFIED -

FOREST SERVICE

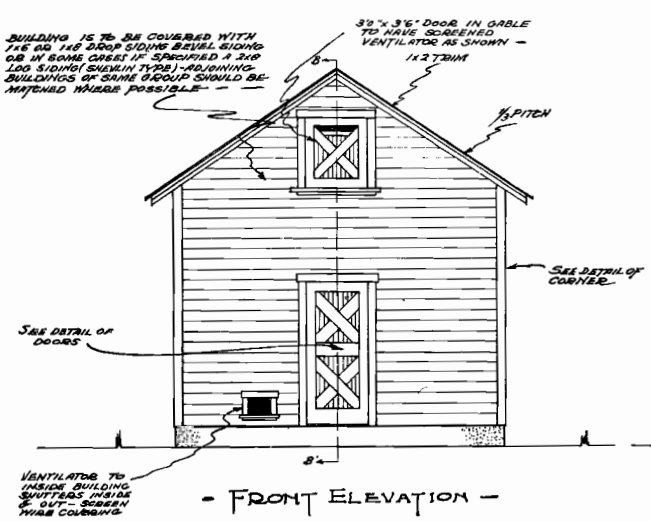
CELLAR

SMALL HILLSIDE TYPE

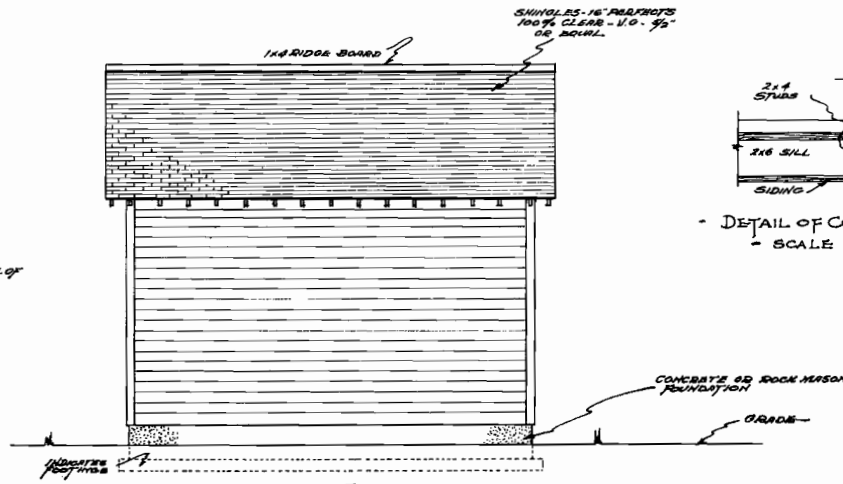
PLAN R-4 #62A

SHEET 1 OF 4

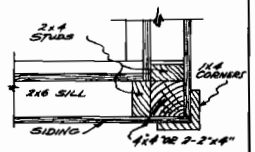
		DATE	SCALE
CHECKED	G.L.N.	4-19-34	3/8" = 1 FOOT -
APPROVED	C.N.W.	" " "	



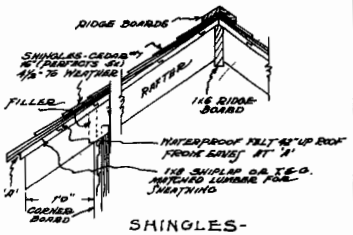
- FRONT ELEVATION -



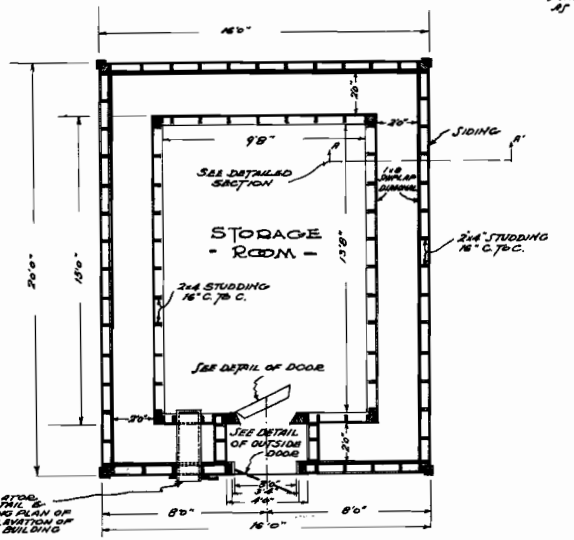
- SIDE ELEVATION -



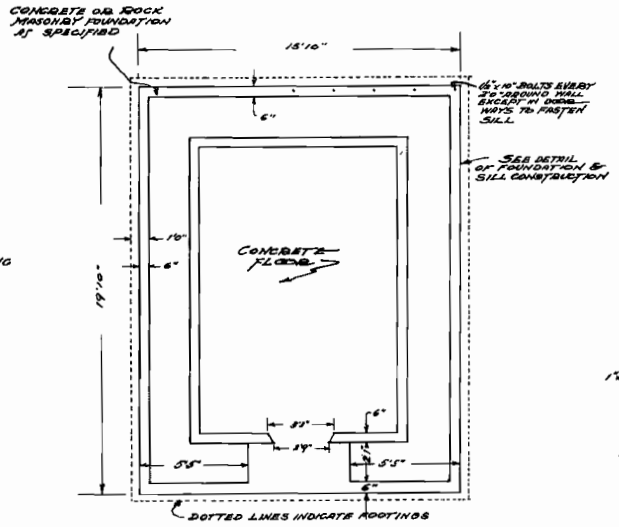
- DETAIL OF CORNER -
- SCALE 1½" = 1FT. -



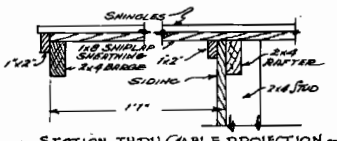
SHINGLES - SHEATHING - CORNICE -



- FLOOR PLAN -



- FOUNDATION PLAN -

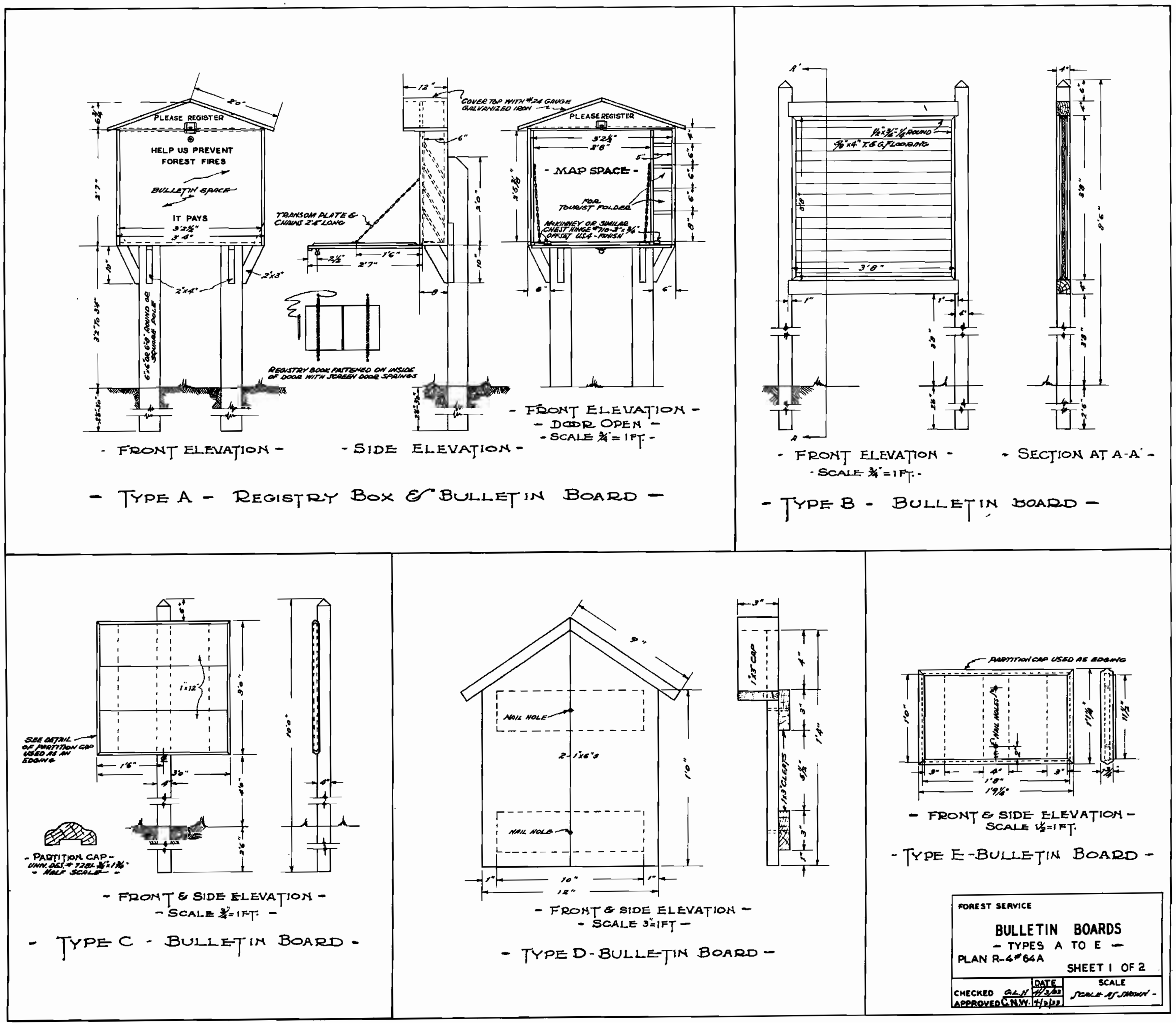


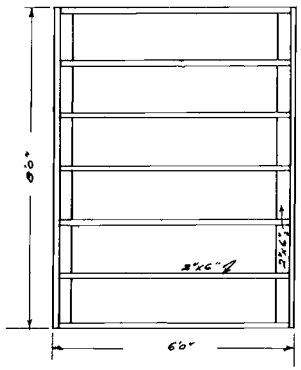
- SECTION THRU GABLE PROJECTION -
- SCALE 2" = 1FT. -

FOREST SERVICE

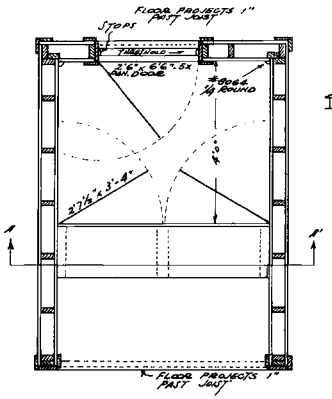
CELLAR
ABOVE GROUND
COLD STORAGE TYPE
PLAN R-4 # 63
SHEET 1 OF

CHECKED G.L.N.	DATE 3-18-33	SCALE ELEVATIONS & PLANS 1/2" = 1 FOOT - DETAILS AS SHOWN
APPROVED C.N.W.	3-25-33	

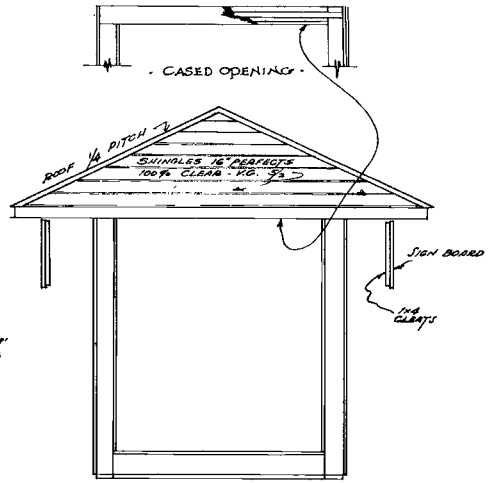

PLEASE REGISTER
HELP US PREVENT
FOREST FIRES
BULLETIN SPACE
IT PAYS
TRANSOM PLATE & CHAINS 2'8" LONG
COVER TOP WITH #24 GAUGE GALVANIZED IRON
REGISTRY BOOK FASTENED ON INSIDE OF DOOR WITH SCREEN DOOR SPRINGS
MAP SPACE
FOR TOURIST FOLDER
McKINNEY OR SIMILAR CHEST HINGE #716-3" x 3/4" OFFSET USA-FINISH
- FRONT ELEVATION -
- SIDE ELEVATION -
- FRONT ELEVATION -
- DOOR OPEN -
- SCALE 3/4" = 1 FT. -
- TYPE A - REGISTRY BOX & BULLETIN BOARD -
5/8" x 4" T & G FLOORING
- FRONT ELEVATION -
- SCALE 3/4" = 1 FT. -
- SECTION AT A-A' -
- TYPE B - BULLETIN BOARD -
SEE DETAIL OF PARTITION CAP USED AS AN EDGING
- PARTITION CAP -
- HALF SCALE -
- FRONT & SIDE ELEVATION -
- SCALE 3/4" = 1 FT. -
- TYPE C - BULLETIN BOARD -
NAIL HOLE
2 - 1" x 6"'s
1" x 3" CAP
- FRONT & SIDE ELEVATION -
- SCALE 3" = 1 FT -
- TYPE D - BULLETIN BOARD -
PARTITION CAP USED AS EDGING
NAIL HOLES
- FRONT & SIDE ELEVATION -
SCALE 1/2" = 1 FT.
- TYPE E - BULLETIN BOARD -
FOREST SERVICE
BULLETIN BOARDS
- TYPES A TO E -
PLAN R-4 #64A
SHEET 1 OF 2
CHECKED
APPROVED
DATE
SCALE
SCALE AS SHOWN



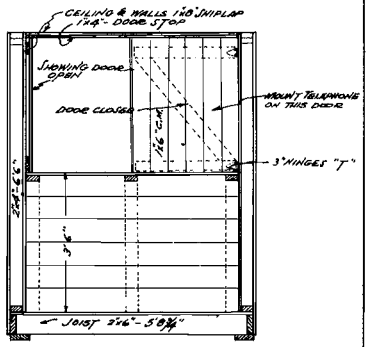
- FLOOR FRAMING PLAN -



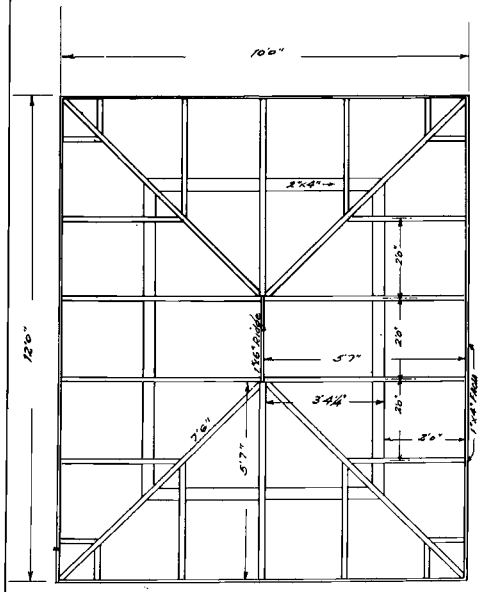
- FLOOR PLAN -



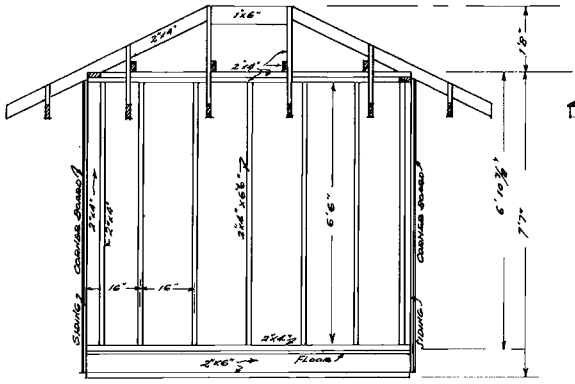
- FRONT ELEV -



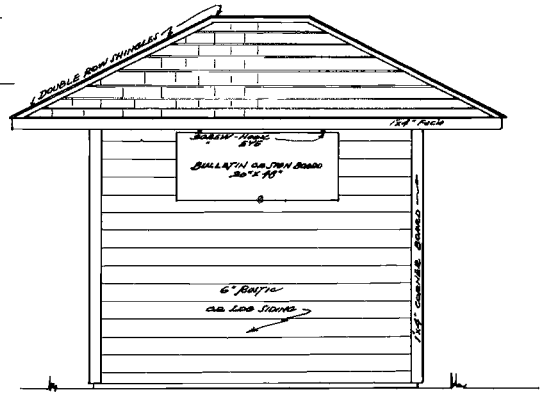
- CROSS SEC. A-A' -



- ROOF FRAMING PLAN -



- FRAMING PLAN · SIDE ELEVATION -



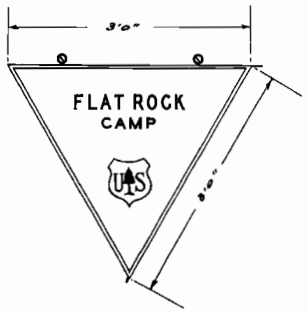
- SIDE ELEVATION -

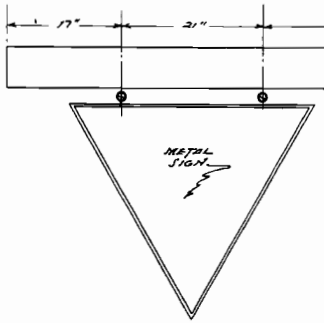
FOREST SERVICE

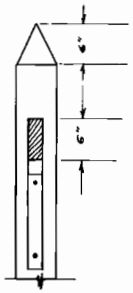
CHECKING STATION & TELEPHONE BOOTH

PLAN R-4 * 64 B
FROM R-1 - PLAN M-7 SHEET 1 OF

CHECKED G.L.N	DATE 6-8-33	SCALE ¼" = 1 FOOT
APPROVED C.N.W.	" "	

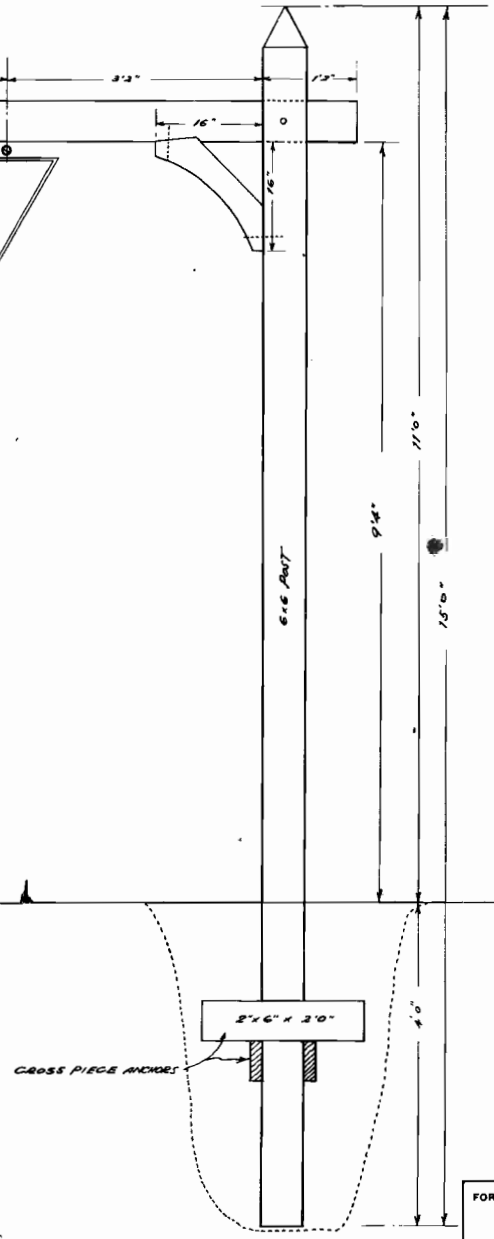






- ELEVATION -

SHOWING MORTISE THRU POST & BRACKET IN PLACE



- SIDE - ELEVATION -

BILL OF MATERIALS

Item No.	No. of Pcs.	Material	Purpose
1	1	Pc. 6" x 6" x 16'0"	Post
2	1	" 2" x 6" x 10'0"	Cross arm & bracket
3	1	" 2" x 6" x 2'0"	Cross piece anchors
4	2	4-1/2" round head wood screws	Bolting bracket to post & cross arm.
5	1	1/2" bolt 7" long, complete with nuts & washers	Bolting cross arm to post
6	2	No. 1 screw eyes 2-13/16" over all	Sign Hanger
7	1/2	Gallon creosote	Parts under ground
8	1/4	" White paint	
9	1	Pound 20D nails, common	Nail anchors in place

Note: Paint to be furnished by regional office.

FOREST SERVICE

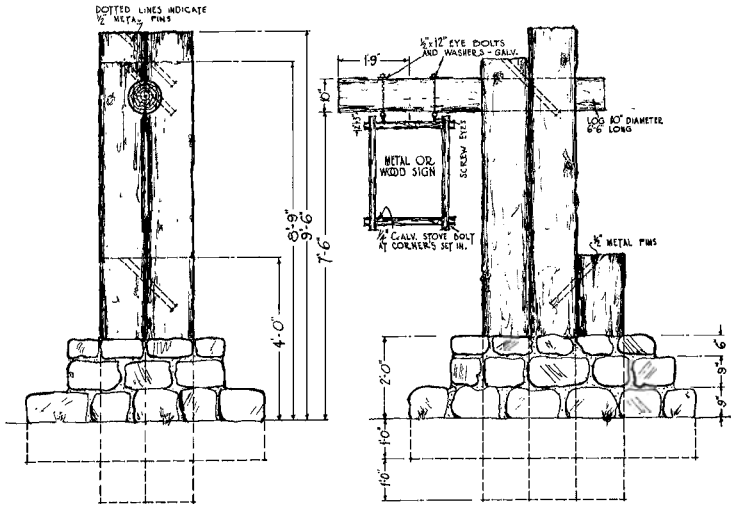
CAMP GROUND ENTRANCE SIGN

PLAN R-4 # 64C

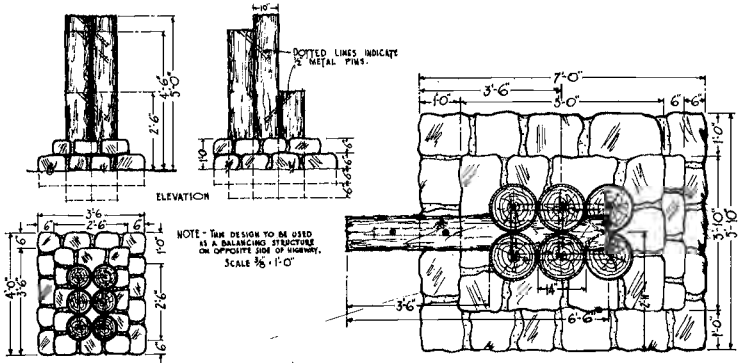
From R-1-Type

SHEET 1 OF .

CHECKED GLH	DATE 5-17-33	SCALE 1" = 1 FOOT
APPROVED C.D.	"	

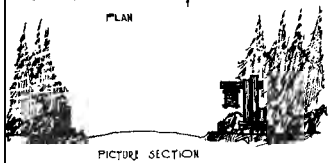


ELEVATIONS
SCALE ½"-1'-0"

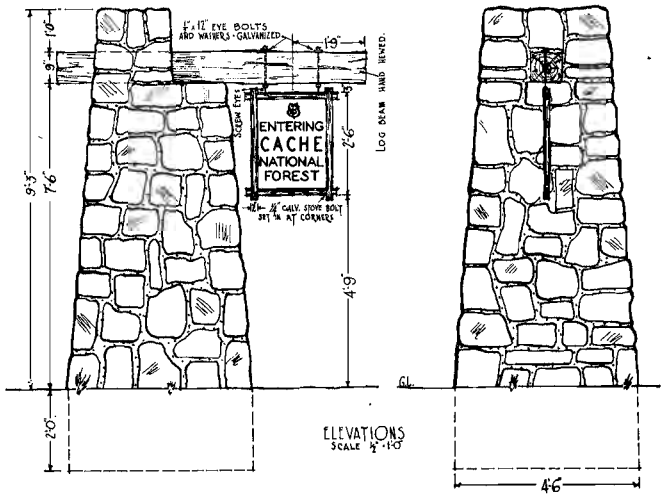


TYPE "A"

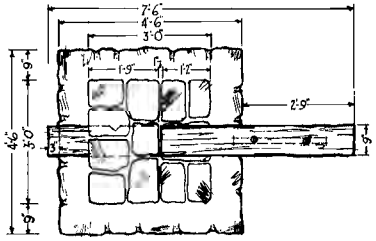
ALL EXPOSED LUMBER TO HAVE TWO COATS OF LOG SIDING STAIN.
LUMBER IN CONTACT WITH THE EARTH TO HAVE TWO COATS OF CREOSOTE TO 6" ABOVE THE GROUND LINE.



PICTURE SECTION



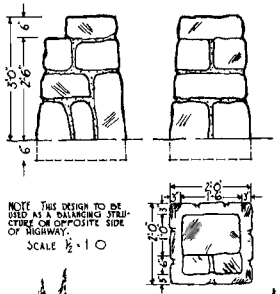
ELEVATIONS
SCALE ½"-1'-0"

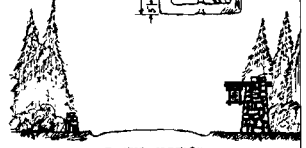


PLAN
SCALE ½"-1'-0"

TYPE "D"

LUMBER TO HAVE TWO COATS OF LOG SIDING STAIN.





PICTURE SECTION

NOTE: SIGNS ON THIS SHEET TAKEN FROM REGION 6 LANDS HANDBOOK.

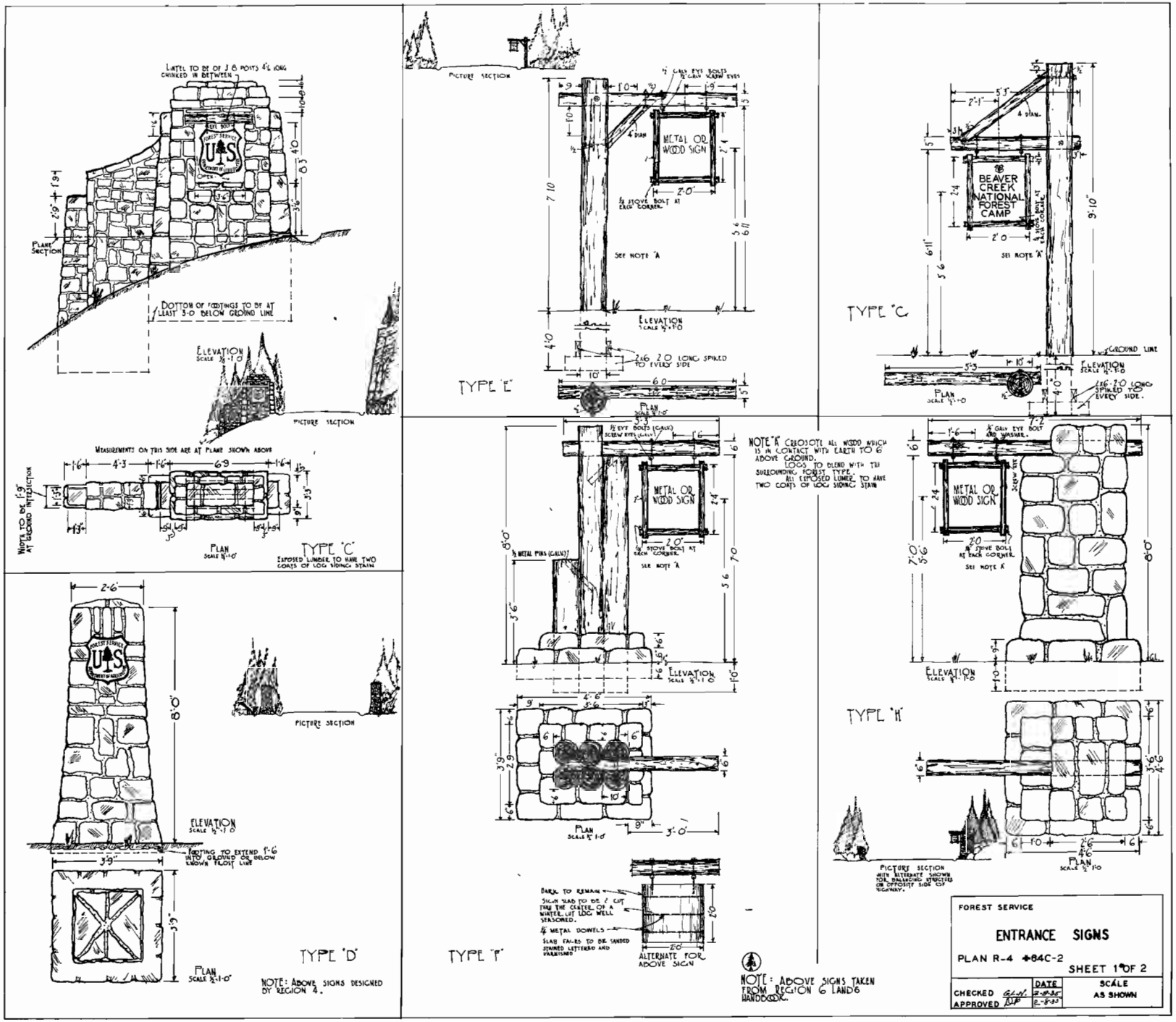
FOREST SERVICE

ENTRANCE SIGNS

PLAN R-4 #64C-1

SHEET 1 OF 2

	DATE	SCALE
CHECKED GLN	2-8-95	AS SHOWN
APPROVED DJP	2-9-95	



FOREST SERVICE

ENTRANCE SIGNS

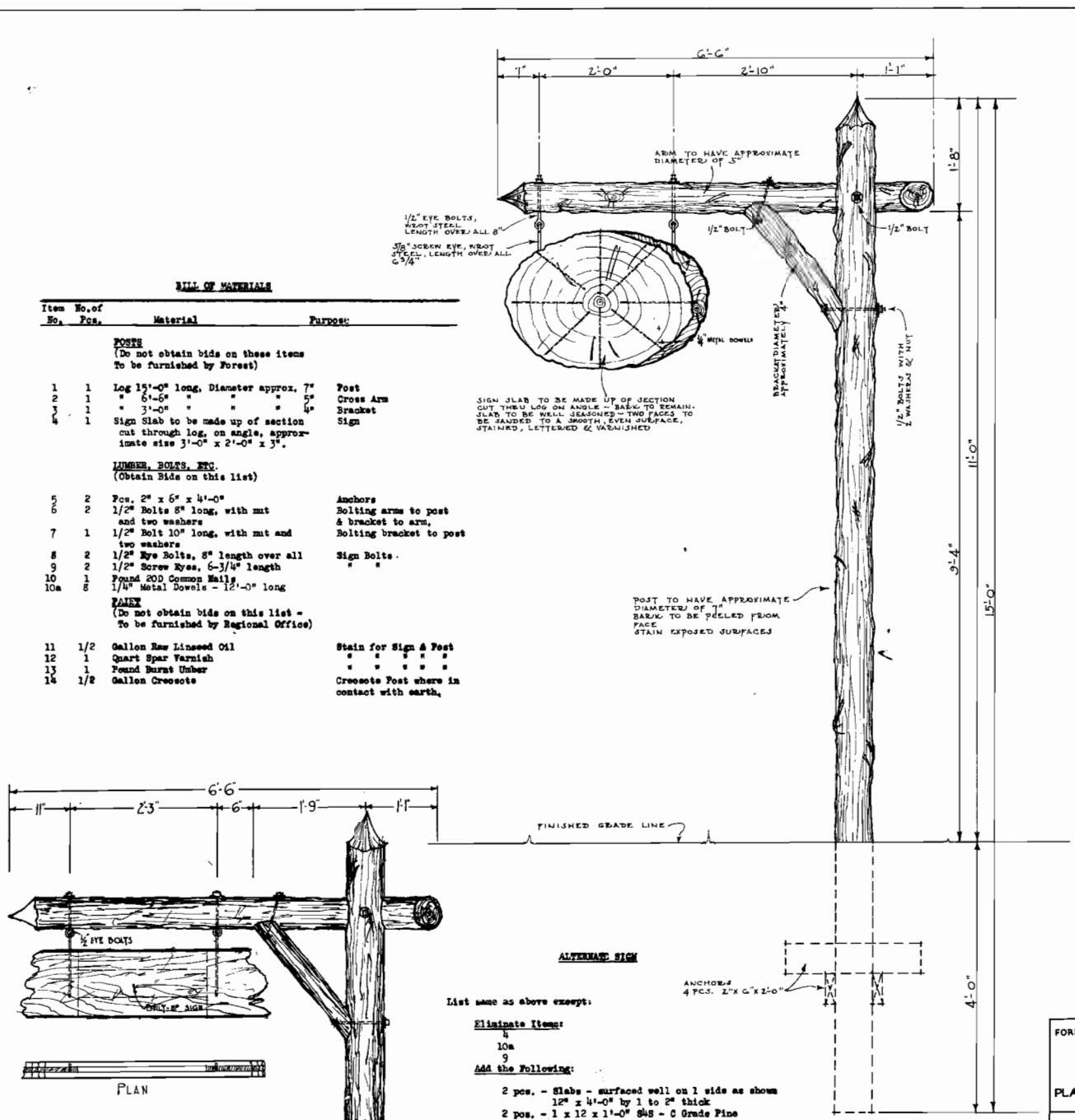
PLAN R-4 #64C-2

SHEET 1 OF 2

CHECKED	DATE	SCALE
APPROVED	2-8-83	AS SHOWN

BILL OF MATERIALS

Item No.	No. of Pcs.	Material	Purpose
		POSTS (Do not obtain bids on these items To be furnished by Forest)	
1	1	Log 15'-0" long, Diameter approx. 7"	Post
2	1	" 6'-6" " " " 5"	Cross Arm
3	1	" 3'-0" " " " 4"	Bracket
4	1	Sign Slab to be made up of section cut through log, on angle, approximate size 3'-0" x 2'-0" x 3".	Sign
		LUMBER, BOLTS, ETC. (Obtain Bids on this list)	
5	2	Pcs. 2" x 6" x 4'-0"	Anchors
6	2	1/2" Bolts 8" long, with nut and two washers	Bolting arms to post & bracket to arm,
7	1	1/2" Bolt 10" long, with nut and two washers	Bolting bracket to post
8	2	1/2" Eye Bolts, 8" length over all	Sign Bolts.
9	2	1/2" Screw Eyes, 6-3/4" length	" "
10	1	Pound 20D Common Nails.	
10a	8	1/4" Metal Dowels - 12'-0" long	
		PAINT (Do not obtain bids on this list - To be furnished by Regional Office)	
11	1/2	Gallon Raw Linseed Oil	Stain for Sign & Post
12	1	Quart Spar Varnish	" " " " "
13	1	Pound Burnt Umber	" " " " "
14	1/2	Gallon Creosote	Creosote Post where in contact with earth.



PLAN

ELEVATION

ALTERNATE FOR ABOVE

ALTERNATE SIGN

List same as above except:

Eliminate Items:
4
10a
9

Add the Following:

2 pcs. - Slabs - surfaced well on 1 sides as shown 12" x 4'-0" by 1 to 2" thick
2 pcs. - 1 x 12 x 1'-0" S4S - C Grade Pine
1 pc. - 1 x 4 x 4'-0" S4S - C Grade Pine
2 pcs. - 1/4" round rods - 15" long.

FOREST SERVICE

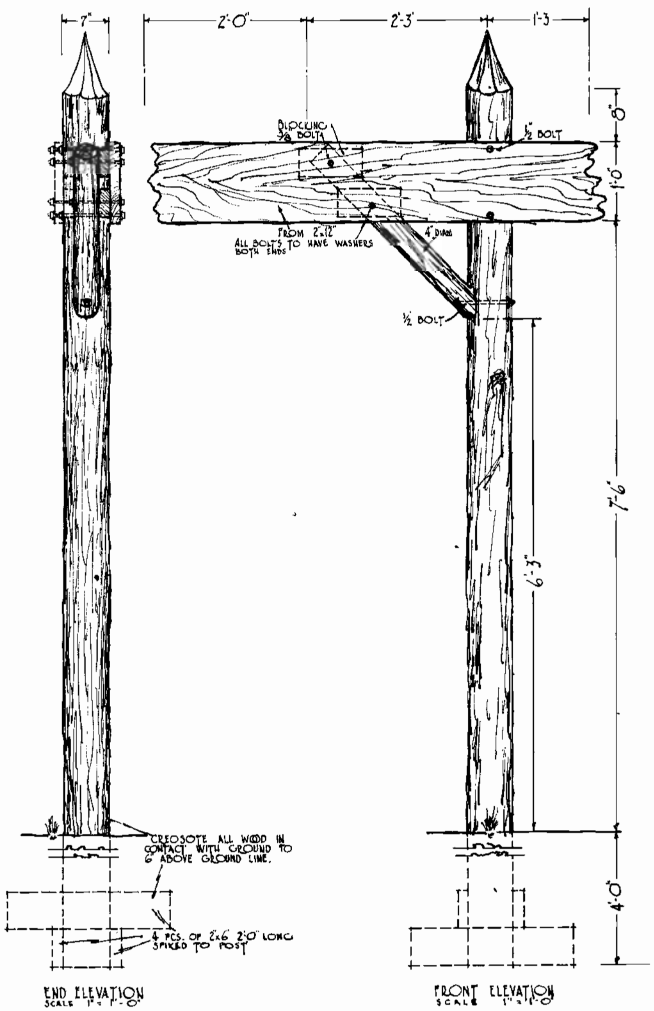
ENTRANCE SIGNS

PLAN R-4 #64C-3 SHEET 1 OF 1

		DATE	SCALE
CHECKED	A.L.M.	2-7-38	1" - 1'-0"
APPROVED	D.P.	6-7-38	

BILL OF MATERIALS

Item No.	No. of Pcs.	Material or Labor	Purpose
		Lumber	
1	1	2" x 4" - 4'-0"	Blocking at rear of sign
2	1	2" x 6" - 8'-0"	Post Anchorage
3	1	2" x 12" - 6'-0"	Sign
4	1	7" Dia. post, 14'-0"	Sign Post
5	1	4" post 3'-0"	Arm
		Bolts	
6	1	½" x 9" each with nut and 3 washers	Bolting arm to post
7	2	½" x 10" " " " " " "	Bolting sign to post
8	2	½" x 8" " " " " " "	Bolting sign to arm
9	1 lb.	20D Common Nails	
		Painting and Preservative	
		(Do not take bids on paint or creosote - To be furnished by Regional Office.)	
10	½ gal.	Log siding stain	On all exposed wood surfaces
11	½ gal.	Creosote	On all wood members where in contact with ground.
		Alternates for Double Sign	
		(Eliminate items #3, 7, & 8. Add the Following)	
14	4	½" x 11" bolts each with nut and 3 washers	Bolting signs to post & arm
15	1	2" x 12" - 12'-0"	Signs



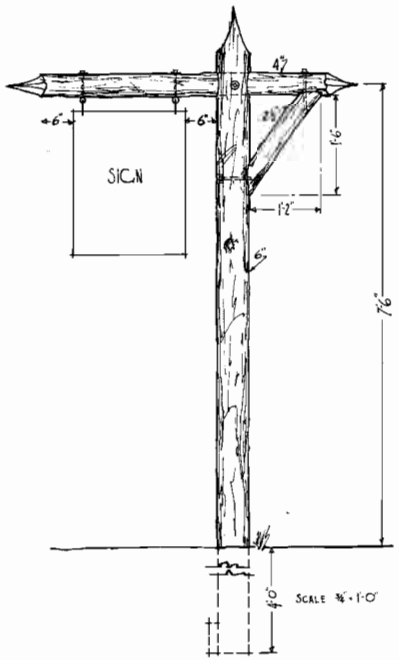
FOREST SERVICE

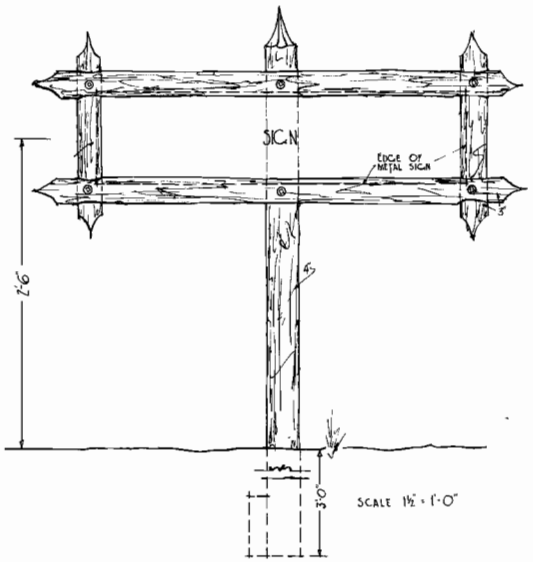
ENTRANCE SIGNS

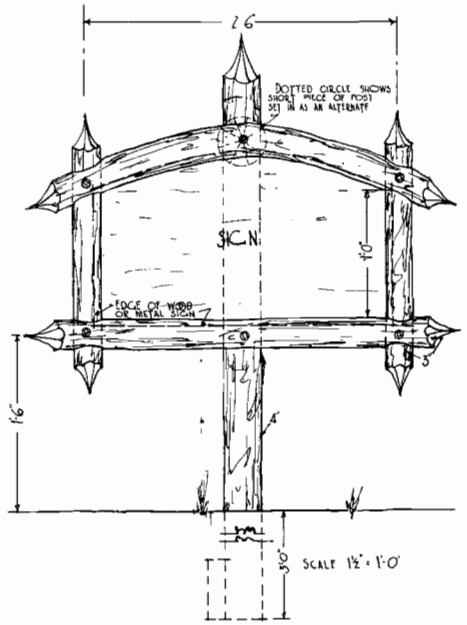
PLAN R-4 #64C-4

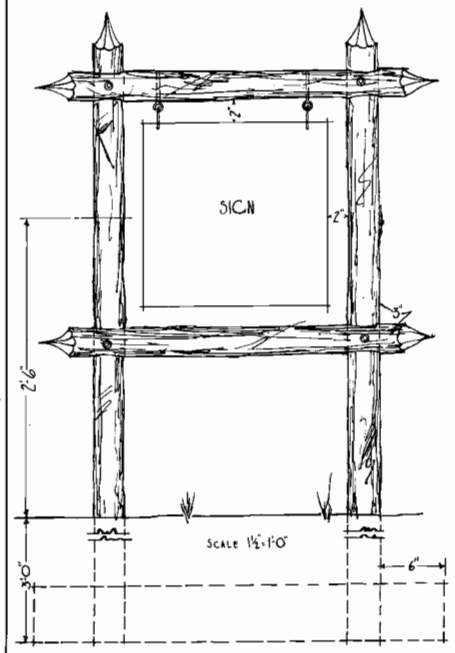
SHEET 1 OF 1

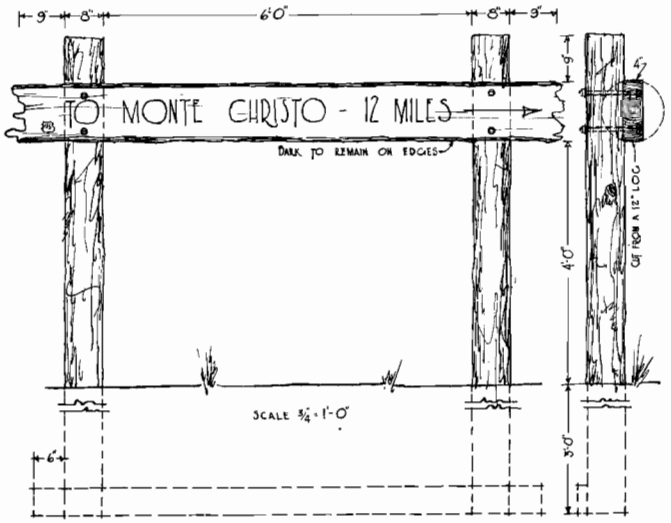
	DATE	SCALE
CHECKED . G.L.N	2-7-35	AS SHOWN
APPROVED D.P.	2-7-35	





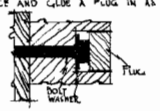






GENERAL NOTES

DIMENSION LUMBER SHOWN SPIKED TO THE BOTTOM OF POSTS IS TO BE OF 2x6 STUFF. UNLESS OTHERWISE SHOWN IT IS TO BE 2'-0" LONG.
ALL WOOD IN CONTACT WITH EARTH TO BE CREOSOTED TO 6" ABOVE THE GROUND.
FACE OF SIGN TO BE SANDED SMOOTH, STAINED, LETTERED AND VARNISHED WHERE WOOD IS USED.
BOLTS TO BE 3/8" GALVANIZED. WASHERS BOTH ENDS.
WHERE BOLTS ARE TO BE SET IN FACE OF SIGN, SET THE HEADS IN FROM THE FACE AND GLUE A PLUG IN AS PER DETAIL BELOW:



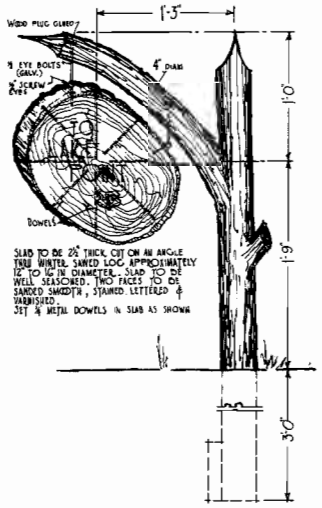
FOREST SERVICE

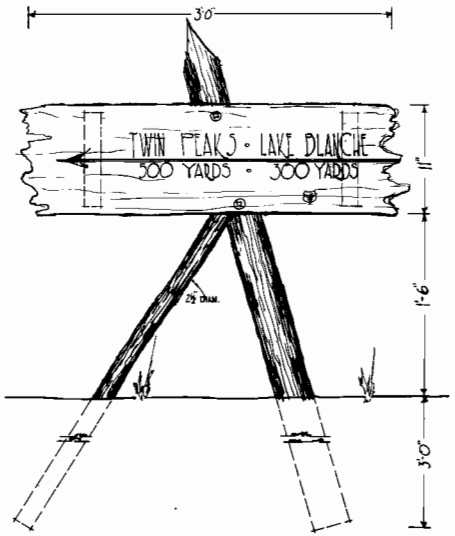
MARKERS

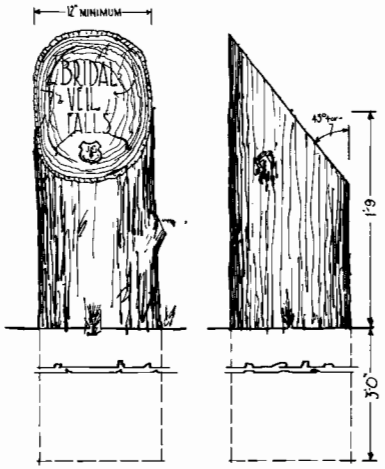
PLAN R-4 #64D-1

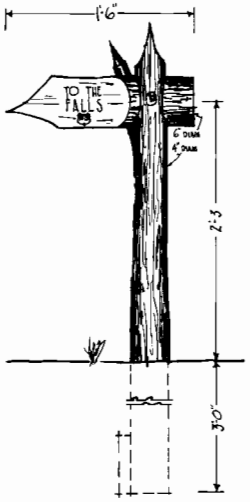
SHEET 1 OF 1

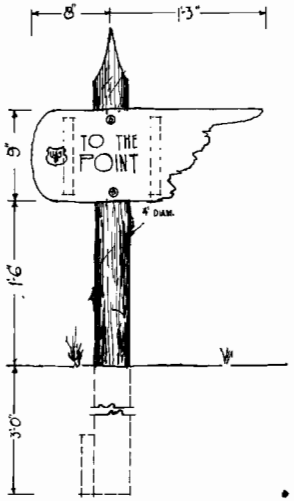
CHECKED GLN	DATE 2-7-55	SCALE AS SHOWN
APPROVED DJP	2-8-55	

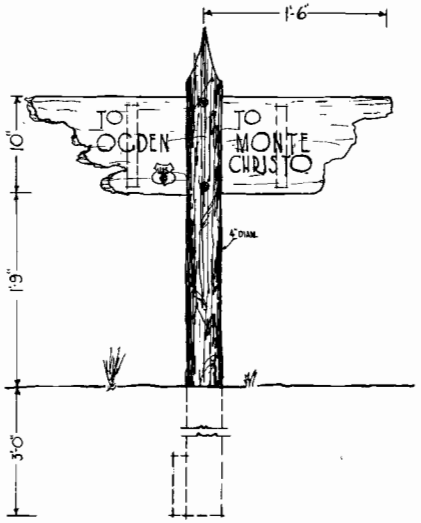


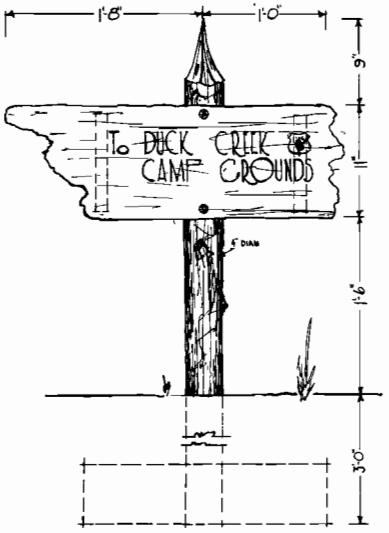












GENERAL NOTES

WHERE DIMENSION LUMBER IS SHOWN SPIKED TO BOTTOM OF SIGN POSTS IT IS TO BE A 2x8" - 2'-0" LONG. MEASUREMENTS SHOWN ARE ONLY SUGGESTIVE AND MAY BE VARIED TO SUIT THE CERTAIN OBTAINABLE MEMBERS. CLEATS SHOWN ARE TO BE SECURED TO BACK OF SIGNS BY COUNTERSUNK SCREWS, STAGGERED 3'OC TO BE PITTED OFF TO FACE OF CLEAT. SCREWS SHALL COME TO WITHIN ⅛" OF FINISHED FACE OF SIGN BUT SHALL NOT BREAK THRU. ALL WOOD IN CONTACT WITH GROUND TO BE CREOSOTED TO 6" ABOVE GROUND LINE.
EACH SIGN TO BE OF A SLAB, CROSS-CUT THRU CENTER OF LOG AND WELL SEASONED, BARK TO REMAIN ON EDGES. ONE SIDE OF SLAB, EXCEPT WHERE NOTED, TO BE SANDED SMOOTH, STAINED, LETTERED AND VARNISHED. TREAT FACE OF CUT LOG IN SAME MANNER.
BOLTS TO BE ⅜" GALVANIZED WASHERS BOTH ENDS.

TYPICAL PLAN OF POST SIGN AND CLEATS NO SCALE

FOREST SERVICE

MARKERS

PLAN R-4 #64D-2

SHEET 1 OF 1

CHECKED	DATE	SCALE
APPROVED	2-7-35	1½" = 1'-0"

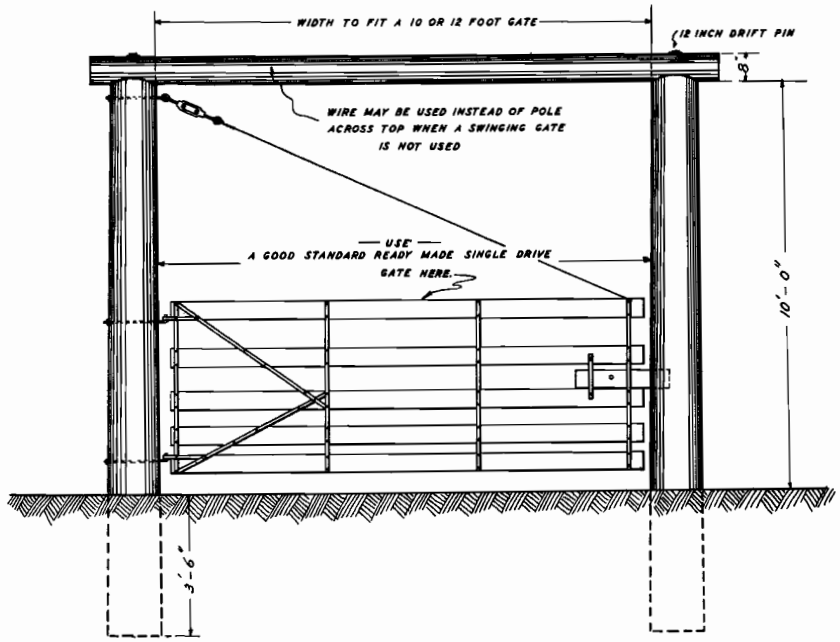
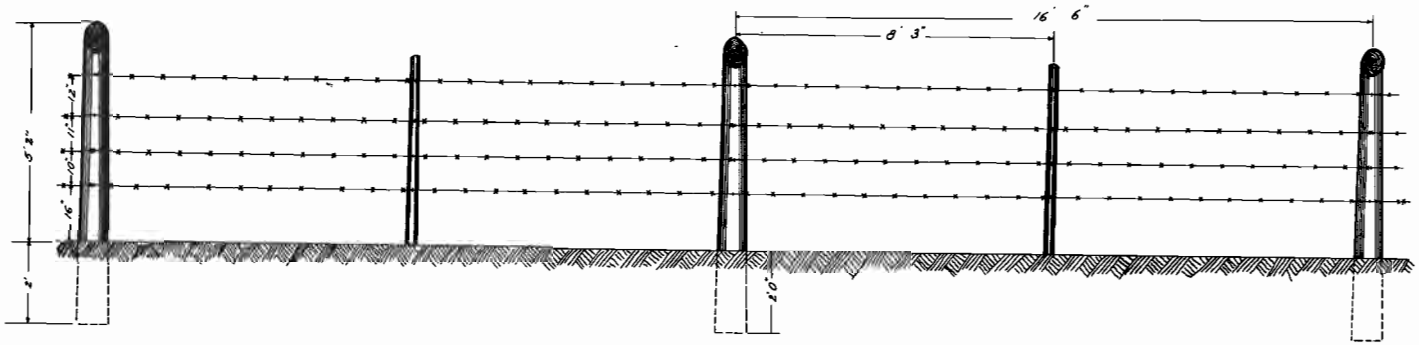


FIG. 4

FRAME AND BRACING FOR GATE OPENING ON FREQUENTLY USED ROADS WHERE LONG POSTS ARE AVAILABLE

FOREST SERVICE		
FENCES & GATES		
PLAN R-4 # 65		SHEET 3 OF
CHECKED A.L.M. APPROVED C.N.W.	DATE 7-7-33 7-7-33	SCALE 1/2" = 1 Foot



SECTION OF LINE FENCE

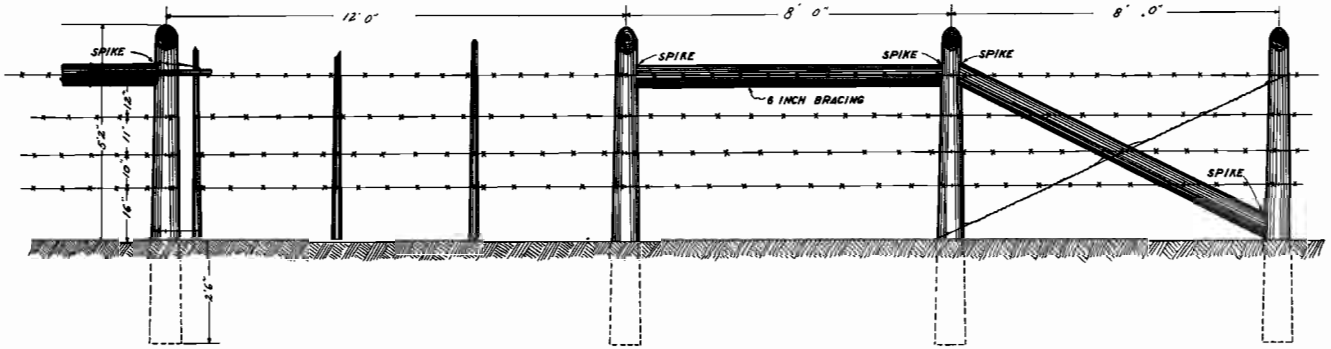


FIG 3

GATE AND BRACING ON ROADS USED INFREQUENTLY AND WHERE LONG POSTS ARE NOT AVAILABLE

FOREST SERVICE		
FENCES & GATES		
PLAN R-4 #65		SHEET 2 OF
CHECKED G.L.N. APPROVED C.N.W.	DATE 4-5-33 4-28-33	SCALE 1/2" = 1 Foot

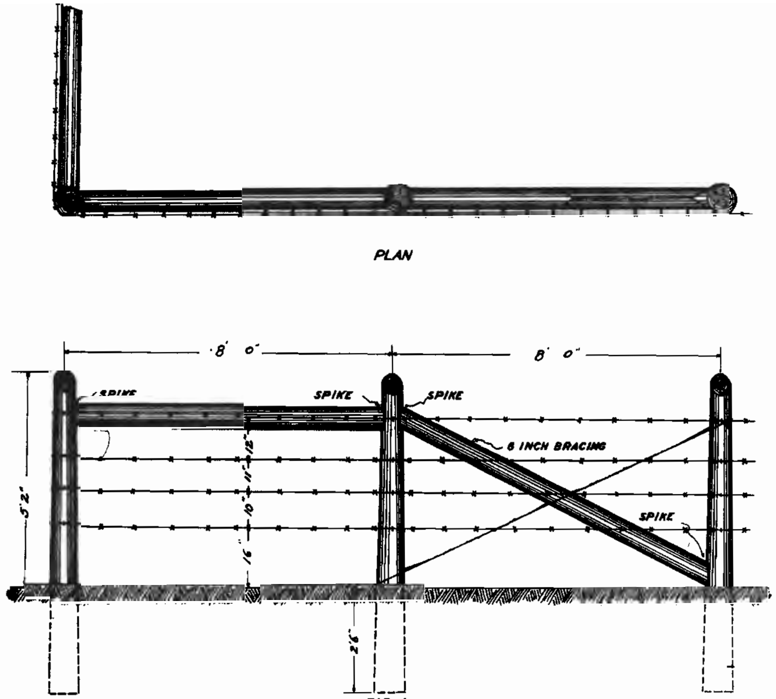


FIG. 1

STANDARD BRACING FOR FENCE CORNERS

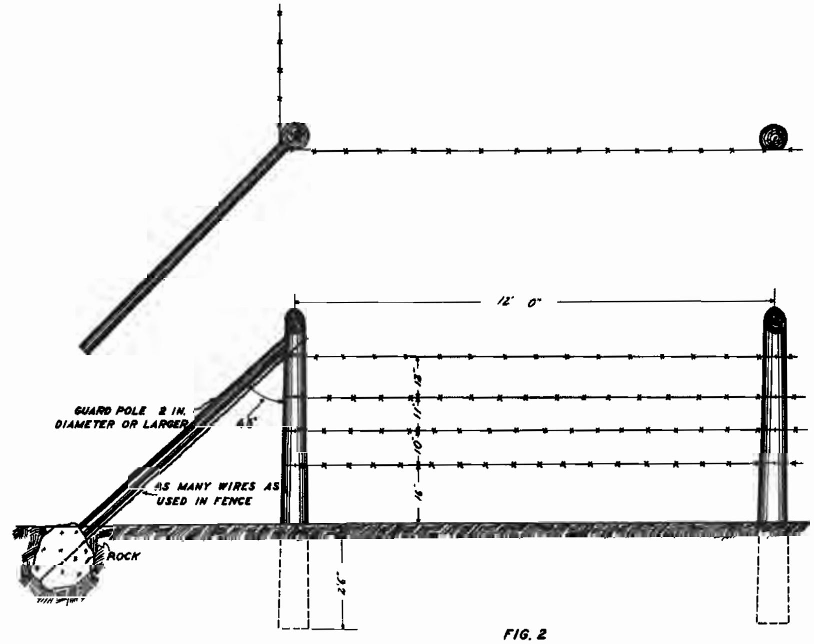


FIG. 2

ALTERNATE TYPE OF CORNER WITH DEADMAN BRACE

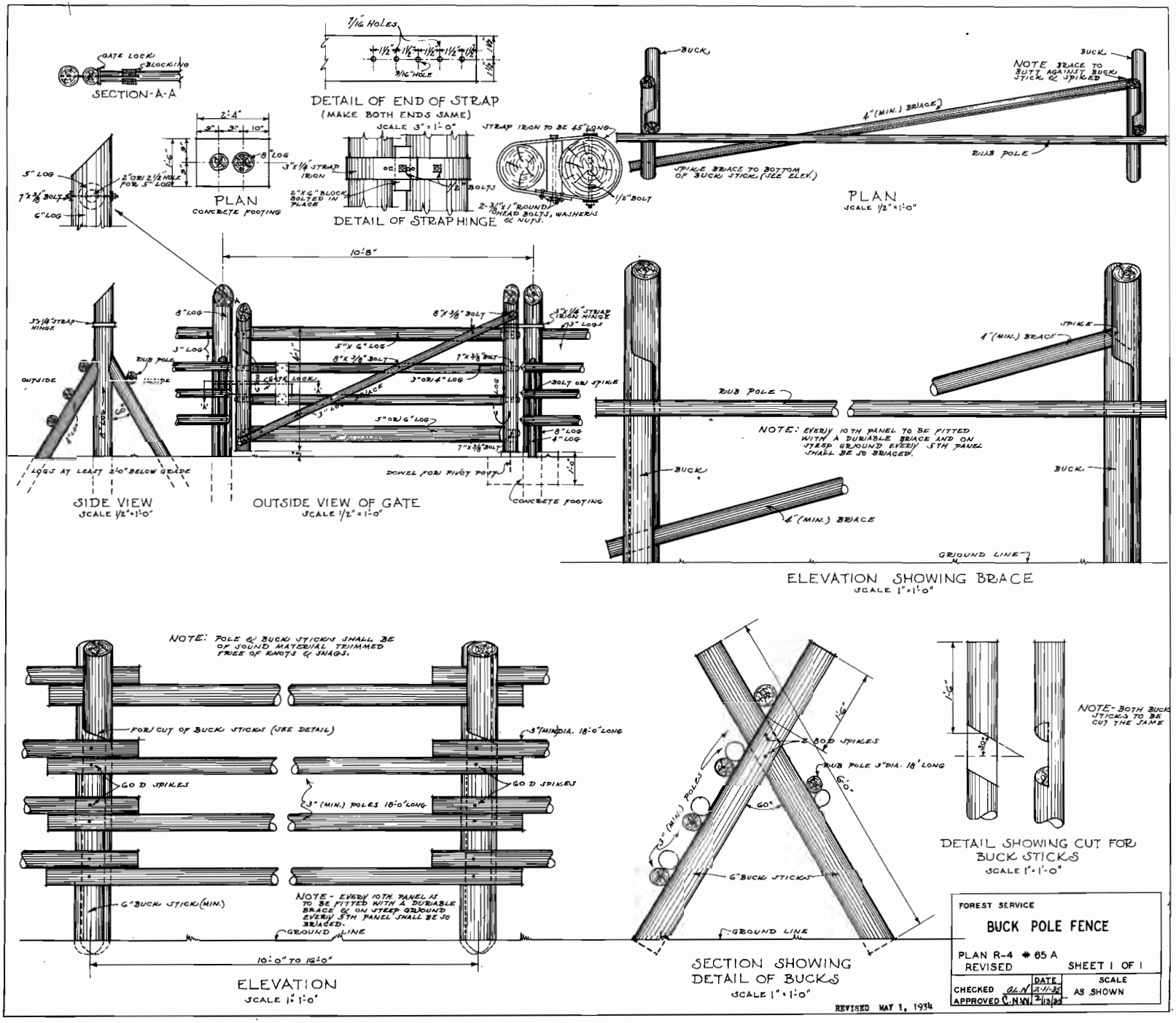
FOREST SERVICE

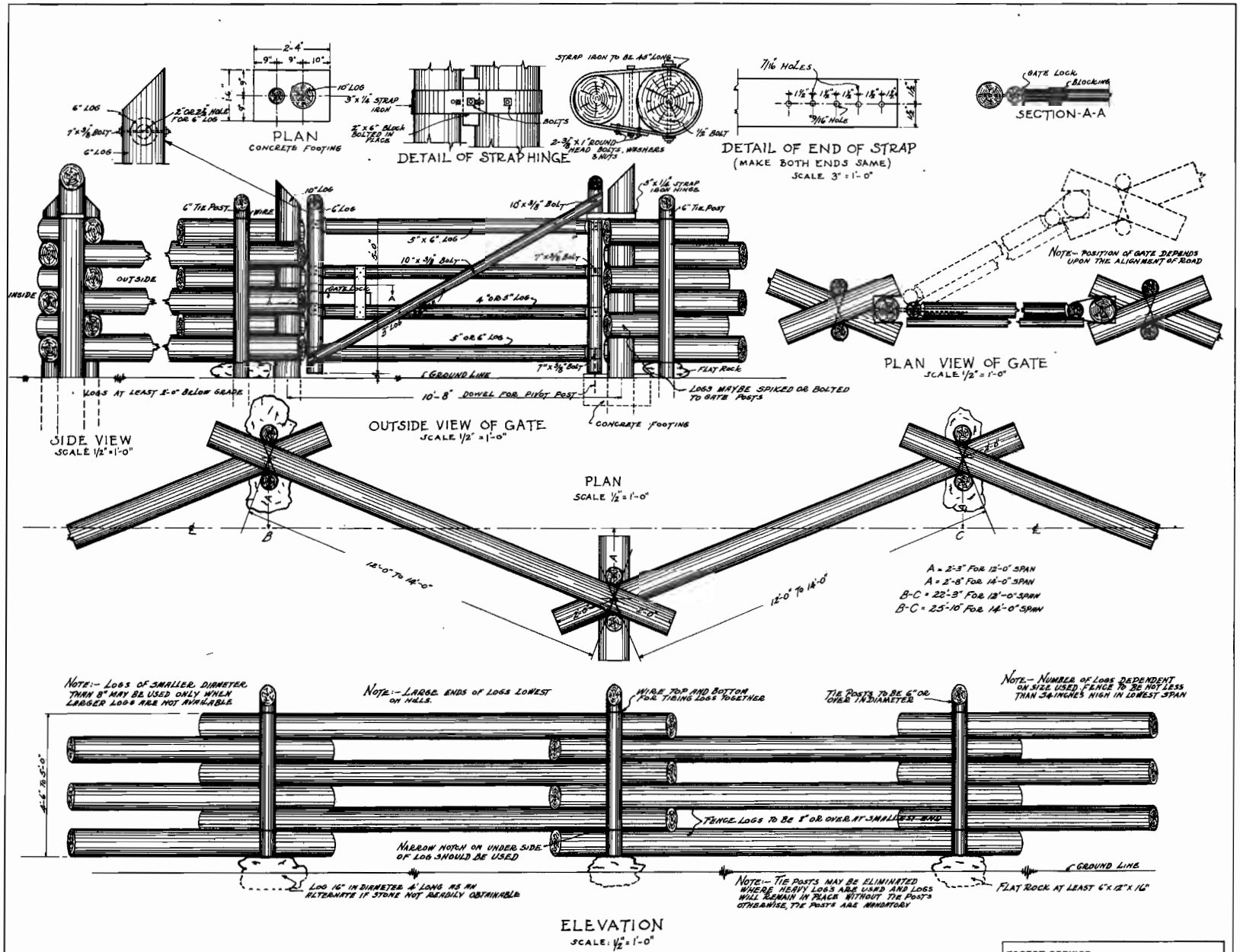
FENCES & GATES

PLAN R-4 #65

SHEET 1 OF

		DATE	SCALE
CHECKED		4-5-33	1/2" = 1 FOOT.
APPROVED	C.N.W.	7-5-33	


GATE LOCK
BLOCKING
SECTION-A-A
7/16 HOLES
1½"
1½"
1½"
1½"
1½"
9/16" HOLE
1½"
DETAIL OF END OF STRAP
(MAKE BOTH ENDS SAME)
2'-4"
3"
3"
10"
8" LOG
3"x1/4" STRAP IRON
2"x6" BLOCK BOLTED IN PLACE
PLAN
CONCRETE FOOTING
SCALE 3"=1'-0"
STRAP IRON TO BE 45" LONG
1/2" BOLTS
2-3½"x1" ROUND HEAD BOLTS, WASHERS & NUTS.
DETAIL OF STRAP HINGE
5" LOG
2"OR 2½" HOLE FOR 5" LOG
7"x3/8" BOLT
6" LOG
BUCK
NOTE BRACE TO BUTT AGAINST BUCK STICK & SPIKED
4"(MIN.) BRACE
RUB POLE
SPIKE BRACE TO BOTTOM OF BUCK STICKS (SEE ELEV.)
PLAN
SCALE 1/2"=1'-0"
10'-8"
3"x1/4" STRAP HINGE
8"x3/8" BOLT
8" LOG
3" LOG
5"x6" LOG
8"x3/8" BOLT
7"x3/8" BOLT
3"x1/4" STRAP IRON HINGE
3" LOGS
3"OR 4" LOG
BOLT OR SPIKE
GATE LOCK
BRACE
3" LOG
5"OR 6" LOG
8" LOG
4" LOG
7"x3/8" BOLT
OUTSIDE
INSIDE
RUB POLE
LOGS AT LEAST 2'-0" BELOW GRADE
DOWEL FOR PIVOT POST
CONCRETE FOOTING
SIDE VIEW
SCALE 1/2"=1'-0"
OUTSIDE VIEW OF GATE
SCALE 1/2"=1'-0"
SPIKE
4"(MIN.) BRACE
RUB POLE
NOTE: EVERY 10TH PANEL TO BE FITTED WITH A DURABLE BRACE AND ON STEEP GROUND EVERY 5TH PANEL SHALL BE SO BRACED.
BUCK
BUCK
4"(MIN.) BRACE
GROUND LINE
ELEVATION SHOWING BRACE
SCALE 1"=1'-0"
NOTE: POLE & BUCK STICKS SHALL BE OF SOUND MATERIAL TRIMMED FREE OF KNOTS & SNAGS.
FORK CUT OF BUCK STICKS (SEE DETAIL)
3"/MIN DIA. 18'-0" LONG
60 D SPIKES
60 D SPIKES
3" (MIN.) POLES 18'-0" LONG
6" BUCK STICK (MIN.)
NOTE - EVERY 10TH PANEL AS TO BE FITTED WITH A DURABLE BRACE & ON STEEP GROUND EVERY 5TH PANEL SHALL BE SO BRACED.
GROUND LINE
10'-0" TO 16'-0"
ELEVATION
SCALE 1"=1'-0"
1'-6"
8 60D SPIKES
RUB POLE 3" DIA. 18' LONG
6'-0"
60°
3" (MIN.) POLES
6" BUCK STICKS
GROUND LINE
SECTION SHOWING DETAIL OF BUCKS
SCALE 1"=1'-0"
1'-6"
3"
NOTE- BOTH BUCK STICKS TO BE CUT THE SAME
DETAIL SHOWING CUT FOR BUCK STICKS
SCALE 1"=1'-0"
FOREST SERVICE
BUCK POLE FENCE
PLAN R-4 # 65 A
REVISED
SHEET 1 OF 1
CHECKED G.L.N
APPROVED C.N.W.
DATE 2-11-35
2/13/35
SCALE AS SHOWN
REVISED MAY 1, 1934



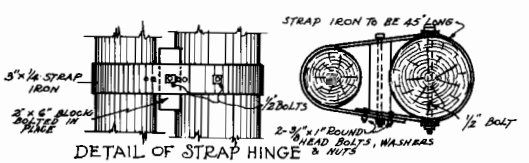
FOREST SERVICE

WORM FENCE

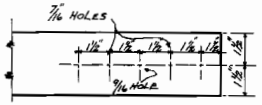
PLAN R-4 # 65C

SHEET 1 OF 2

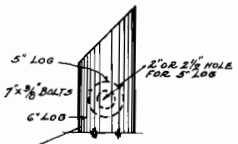
	DATE	SCALE
CHECKED		AS SHOWN
APPROVED		

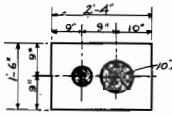


DETAIL OF STRAP HINGE



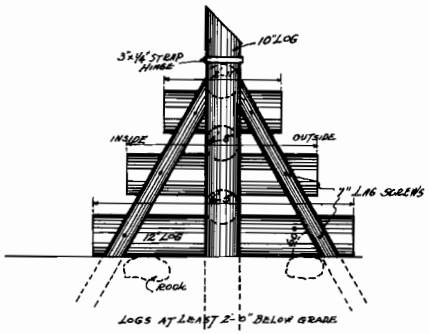
DETAIL OF END OF STRAP
(MAKE BOTH ENDS SAME)
SCALE 3" = 1'-0"



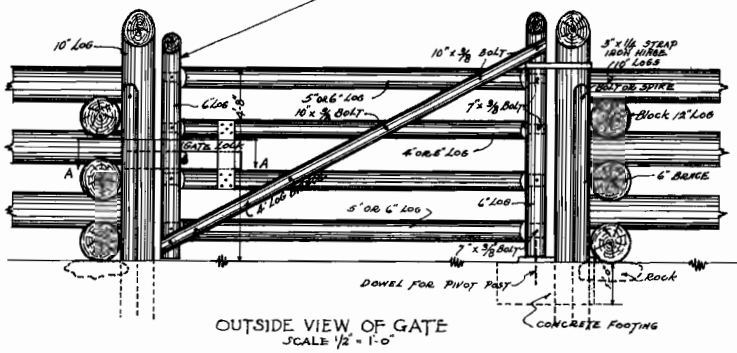


PLAN
CONCRETE FOOTING

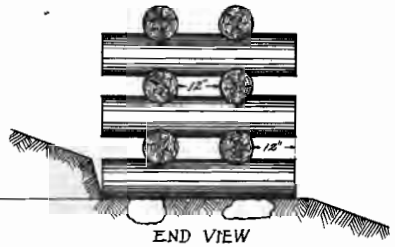
SECTION A-A



SIDE VIEW
SCALE ½"=1'-0"

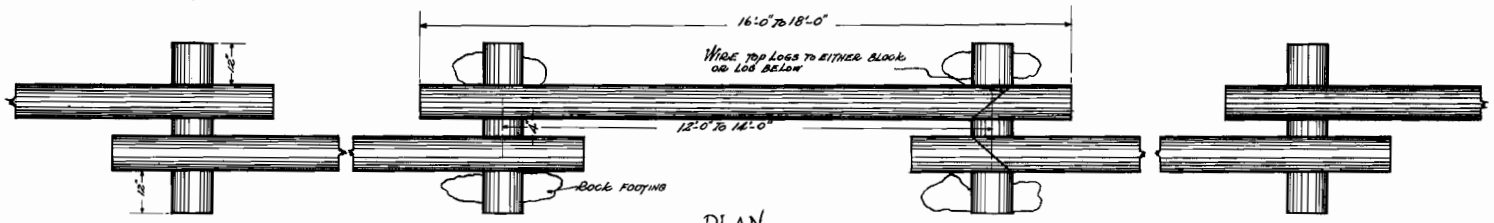


OUTSIDE VIEW OF GATE
SCALE ½" = 1'-0"

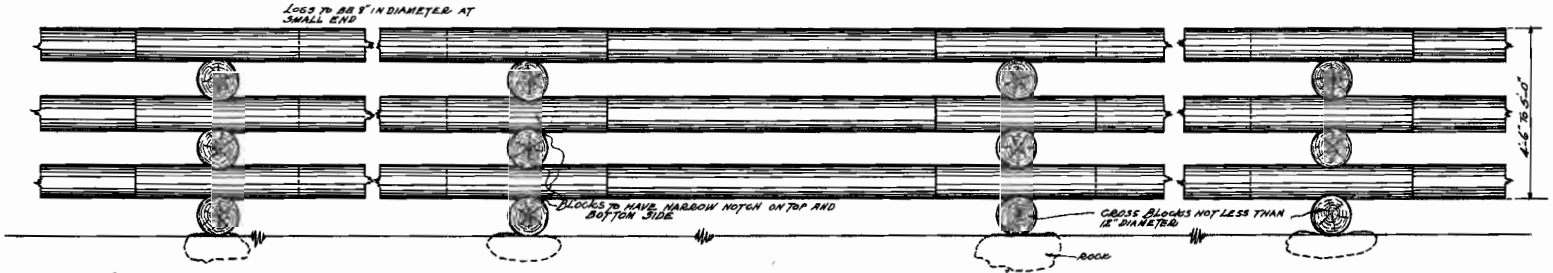


END VIEW

IN DIFFICULT SITUATIONS WHERE CENTERS OF GRAVITY MUST BE MAINTAINED TO KEEP FENCE FROM FALLING DOWN HILL - BUILD FENCE AS SHOWN ON THIS DETAIL



PLAN



NOTE:- NUMBER OF LOGS DEPENDENT ON SIZE USED. FENCE TO BE NOT LESS THAN 54 INCH HIGH

ELEVATION
SCALE: ½"=1'-0"

NOTE:- SMALLER LOGS AND BLOCKS TO BE USED ONLY WHEN LOGS OF SPECIFIED DIAMETER NOT AVAILABLE

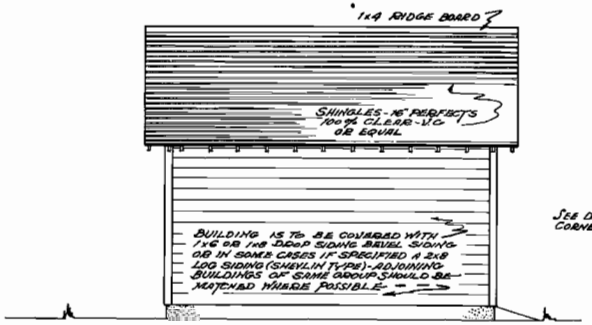
FOREST SERVICE

LOG & BLOCK FENCE

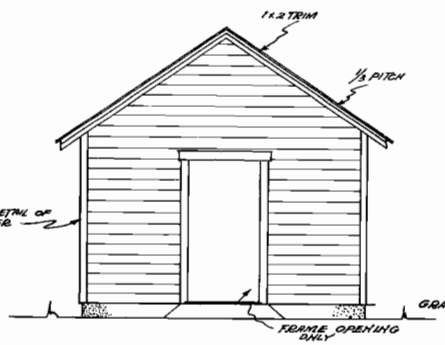
PLAN R-4 # 65D

SHEET 1 OF 2

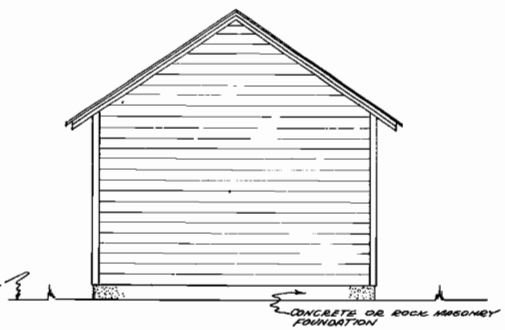
	DATE	SCALE
CHECKED		AS SHOWN
APPROVED	6/10/41	



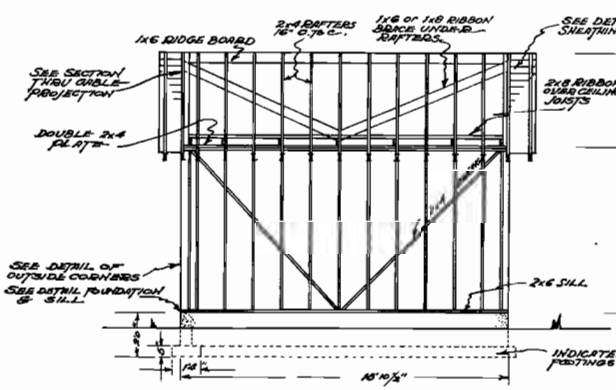
- SIDE ELEVATION -
- BOTH SIDES ALIKE -



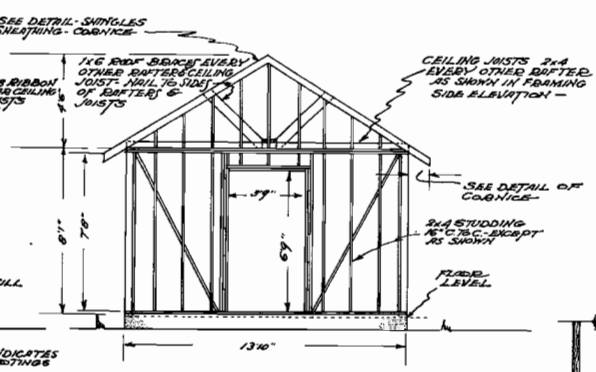
- END ELEVATION -



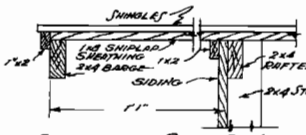
- END ELEVATION -



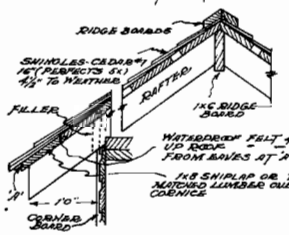
- FRAMING SIDE ELEVATION -



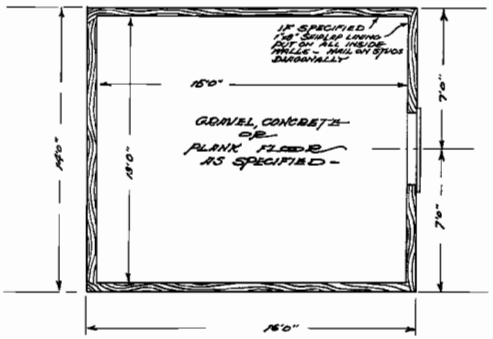
- FRAMING - END ELEVATION -



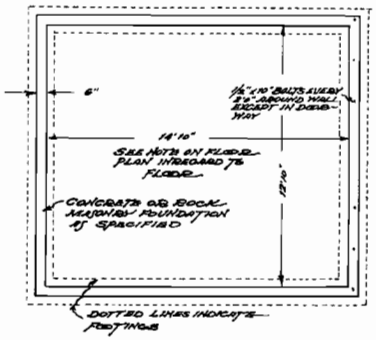
- SECTION THRU GABLE PROJECTION -
- SCALE 1½ = 1FT -



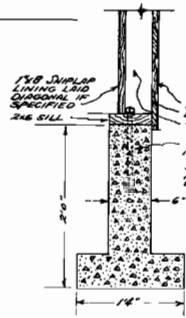
DETAILS OF SHINGLES SHEATHING - CORNICE -
SCALE 1" = 1 FT.



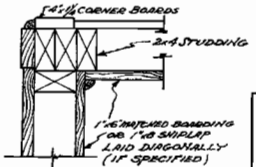
- FLOOR PLAN -



- FOUNDATION PLAN -



FOUNDATION & SILLS
- SCALE 1" = 1 FOOT -



- CORNER POST DETAILS -
- SCALE 1½" = 1 FOOT -

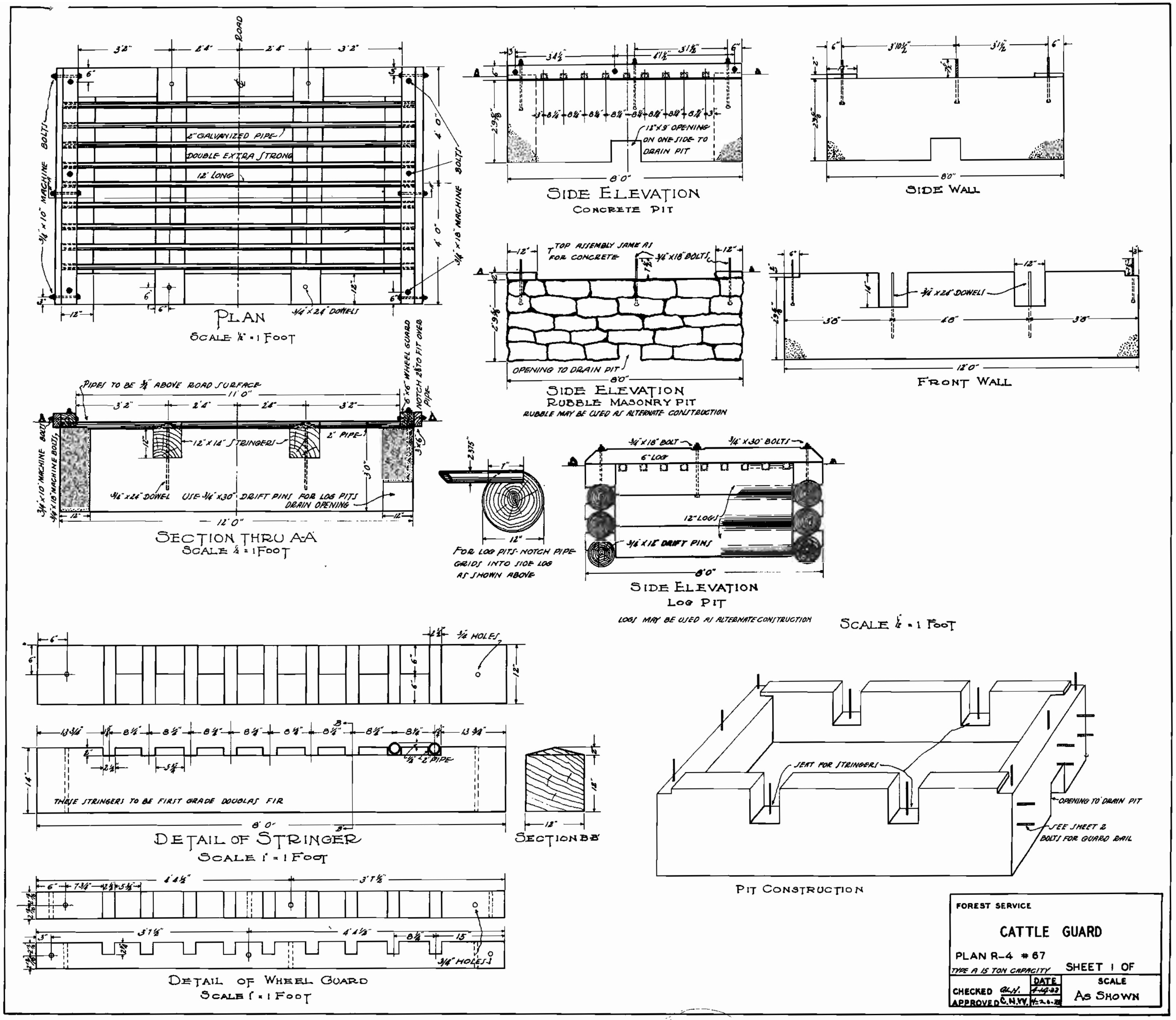
FOREST SERVICE

WOODSHED

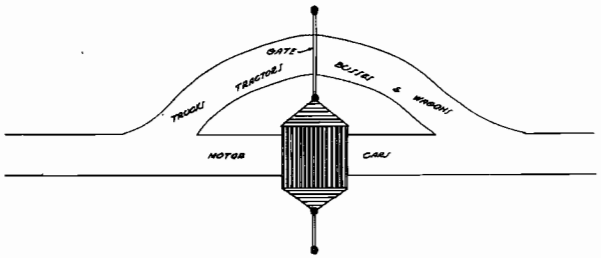
PLAN R-4 #66

SHEET 1 OF

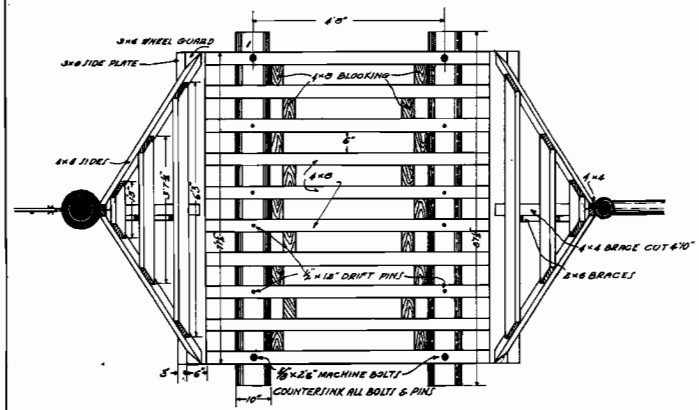
CHECKED	G.L.N	DATE	SCALE
APPROVED	C.N.V.V	1-8-53	ELEVATIONS & PLANS 1/4" = 1 FOOT DETAILS AS SHOWN



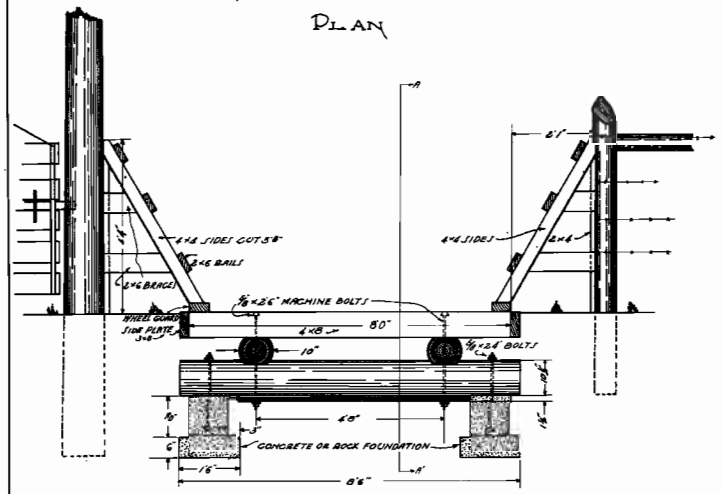
PLAN
SCALE ¼" = 1 FOOT
2" GALVANIZED PIPES DOUBLE EXTRA STRONG 12' LONG
¾" x 10" MACHINE BOLTS
¾" x 18" MACHINE BOLTS
¾" x 24" DOWELS
ROAD
SIDE ELEVATION
CONCRETE PIT
12"x 9" OPENING ON ONE SIDE TO DRAIN PIT
SIDE WALL
SIDE ELEVATION
RUBBLE MASONRY PIT
RUBBLE MAY BE USED AS ALTERNATE CONSTRUCTION
TOP ASSEMBLY SAME AS FOR CONCRETE
OPENING TO DRAIN PIT
FRONT WALL
¾" x 24" DOWELS
SECTION THRU A-A
SCALE ¼" = 1 FOOT
PIPES TO BE ½" ABOVE ROAD SURFACE
6" x 6" WHEEL GUARD NOTCH 2⅜" TO FIT OVER PIPE
12" x 14" STRINGERS
2" PIPE
USE ¾" x 30" DRIFT PINS FOR LOG PITS
DRAIN OPENING
FOR LOG PITS - NOTCH PIPE GRIDS INTO SIDE LOG AS SHOWN ABOVE
SIDE ELEVATION
LOG PIT
LOGS MAY BE USED AS ALTERNATE CONSTRUCTION
¾" x 18" BOLT
¾" x 30" BOLTS
6" LOG
12" LOGS
¾" x 18" DRIFT PINS
SCALE ¼" = 1 FOOT
DETAIL OF STRINGER
SCALE 1" = 1 FOOT
THESE STRINGERS TO BE FIRST GRADE DOUGLAS FIR
½" HOLES
SECTION B-B
DETAIL OF WHEEL GUARD
SCALE 1" = 1 FOOT
¾" HOLES
PIT CONSTRUCTION
SEAT FOR STRINGERS
OPENING TO DRAIN PIT
SEE SHEET 2 BOLTS FOR GUARD RAIL
FOREST SERVICE
CATTLE GUARD
PLAN R-4 #67
TYPE A 15 TON CAPACITY
SHEET 1 OF
CHECKED
APPROVED
DATE
SCALE
AS SHOWN



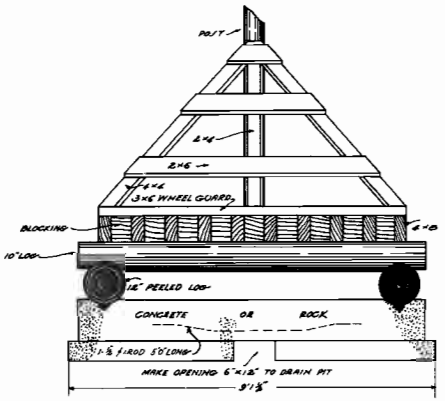
GENERAL PLAN



PLAN



FRONT ELEVATION



SECTION ON A-A

BILL OF MATERIALS

Item No.	No. of Pcs.	Material	Purpose	FBM
		Cement, Sand & Gravel		
1		(Cement listed under lumber)	Foundations & footings	
2	1/2	Cu. Yds. Sand	" " "	
3	1	Cu. Yds. Gravel	" " "	
		Lumber & Yard List - Cement, etc.		
4	6	Sacks of Portland Cement		
5	10	Pcs. 4"x8" - 8'-0" #1 Common D.F. S4S	Platform	214
6	2	" 3"x8" - 8'-0" Ditto	Sideplate	32
7	2	" 3"x6" - 8'-0" Ditto	Wheelguard	24
8	1	" 4"x8" -10'-0" Ditto	Blocking	27
9	4	" 4"x4" - 8'-0" Ditto	Sides	43
10	1	" 4"x4" -10'-0" Ditto	Center braces for sides	14
11	1	" 2"x6" - 8'-0" Ditto	Braces for sides	6
12	2	" 2"x6" -12'-0" Ditto	Horizontals for sloping sides	24
13	1	" 2"x4" -10'-0" Ditto	Vertical anchor members for sides	7
14	2	" 10" diam. logs-8'-7 1/2" long (peeled)	Platform support	
15	2	" 14" " " 5'-6" long (peeled)	Platform lateral support	
16	4	5/8"x2'-6" machine bolts complete with nuts and washers	For bolting ends of platform	
17	6	1/2"x12" drift pins	For platform	
18	2	1/2" Iron rods 5'-0" long	Reinforcing footings	
19	3	#10D Nails		
20	4	#20D Nails		
21	4	5/8"x24" Bolts complete with nuts and washers	Bolting logs to concrete	
22	1/2	#30D Nails	Spikes for anchoring to support	
		Paint		
21	1	Gallon White Paint	Platform and sides	
22	1	Gallon Creosote	For treating logs & ground members	

(Paint to be furnished by the Regional Office.)

SPECIFICATIONS

Concrete:- Bottom of footings to be levelled and tamped. The concrete is to be mixed thoroughly in proportion of 1-2-1/2-5 and the water is to be carefully measured, using seven (7) gallons clear, clean water to each one sack batch where the sand and gravel is dry, or six (6) gallons where sand and gravel are moist. Thoroughly mix.

Lumber:- All lumber to be #1 Common Douglas Fir S4S for finish lumber and Douglas Fir logs.

Logs and ground members to be creosoted.

FOREST SERVICE

CATTLE GUARD

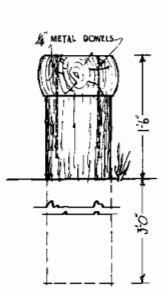
DESIGNED FOR LOADS UNDER THREE TONS

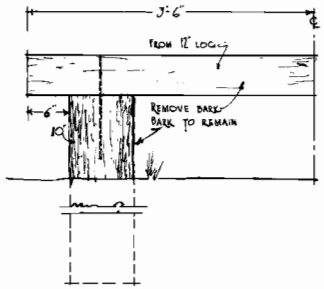
PLAN R-4 #67A

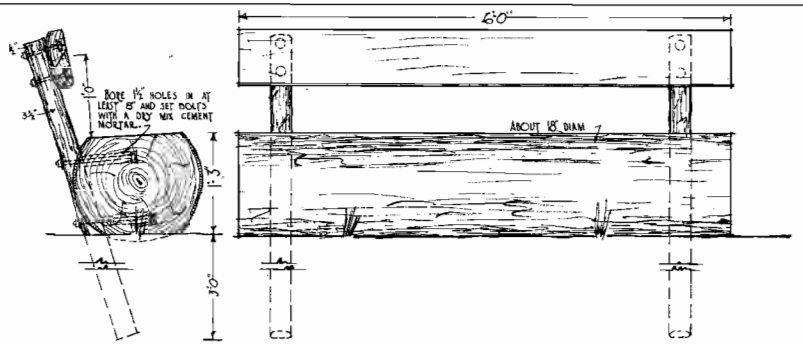
LOG TYPE

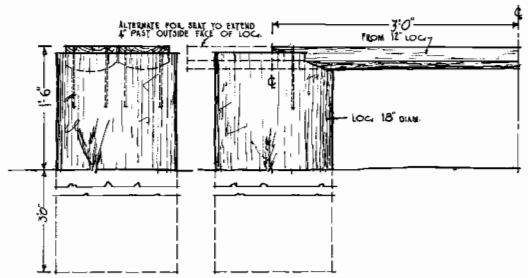
SHEET 1 OF 1

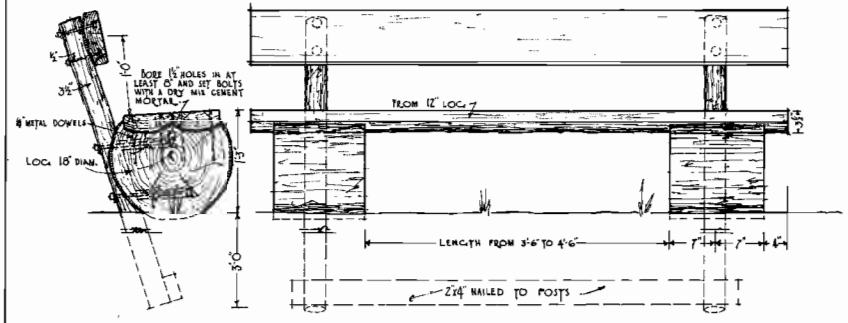
		DATE	SCALE
CHECKED	G.L.N.	4-22-33	1" = 1 Foot
APPROVED	C.N.W.	4-27-33	

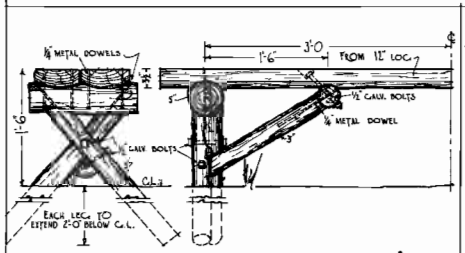


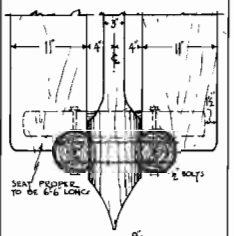


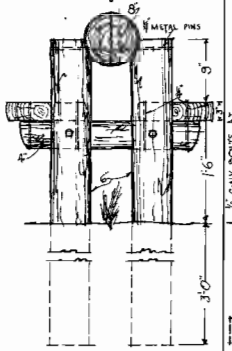


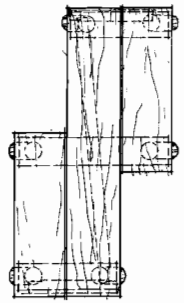


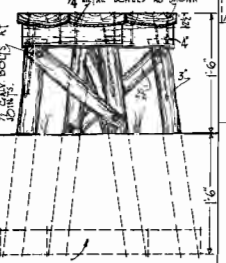


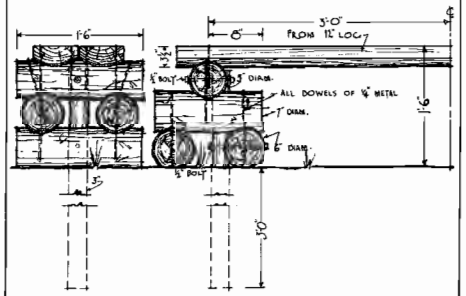


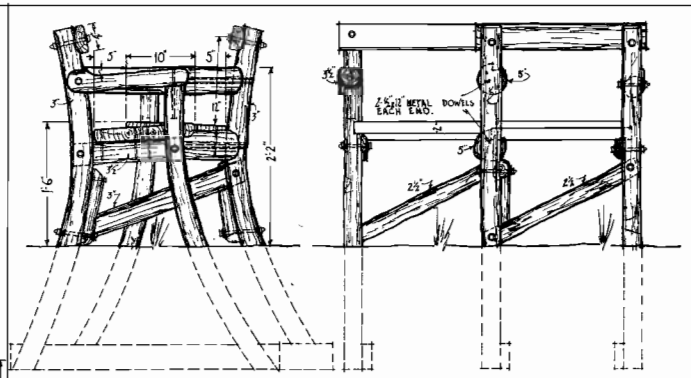


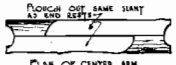












NOTE - BOLTS TO BE ⅜" ϕ WASHERS. DOWELS TO BE ⅛" METAL UNLESS SPECIFIED OTHERWISE.

GENERAL NOTES

CREOSOTE ALL WOOD IN CONTACT WITH EARTH TO 6" ABOVE THE GROUND EXCEPT ON LOG SEATS WHICH ARE TO HAVE A PRESERVATIVE TO SAME DISTANCE ABOVE THE GROUND IN THE FOLLOWING PROPORTIONS: ONE OF TURPENTINE, TWO OF SPAR VARNISH, SIXTEEN OF LINSEED OIL. WHERE POSSIBLE TO SECURE, LOGS ARE TO BE WINTER CUT. REMOVE BARK FROM LOGS WHERE IN CONTACT WITH BODY. STAIN EXPOSED SURFACES WITH 2 COATS LOG SIDING STAIN. SET BOLTS IN FROM SURFACE AND GLUE A WOOD PLUG TO COVER HEADS WHERE SHOWN.

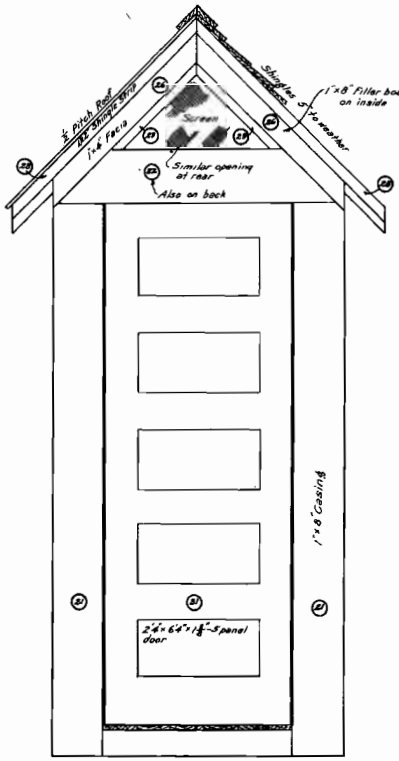
FOREST SERVICE

RUSTIC SEATS

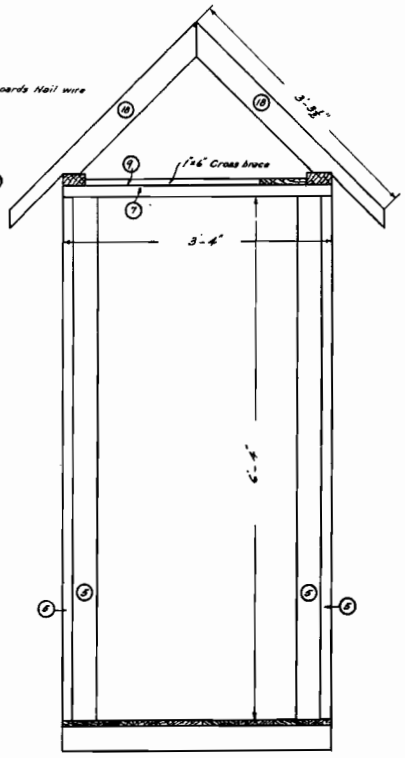
PLAN R-4 #69 A-1

SHEET 1 OF 2

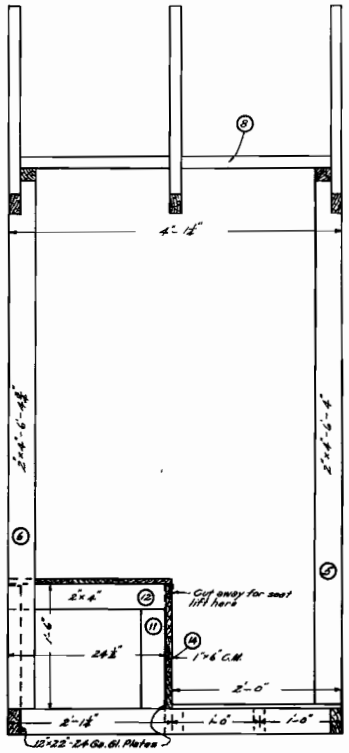
	DATE	SCALE
CHECKED A.E.N.	2-11-38	1" = 1'-0"
APPROVED [illegible]	"	



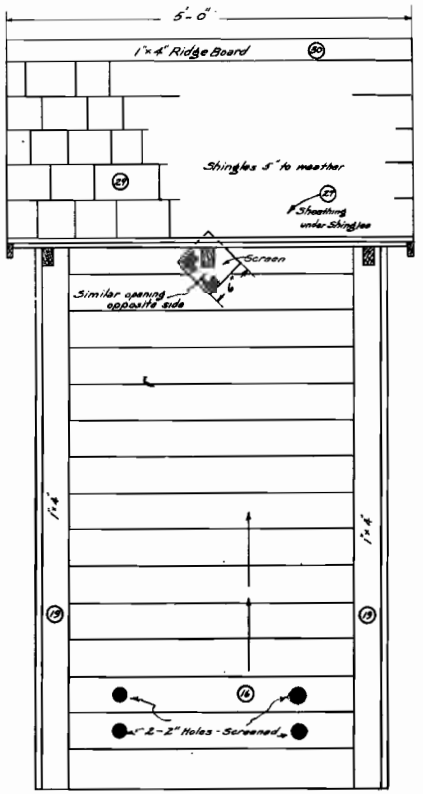
FRONT



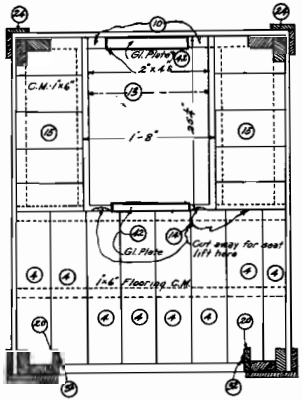
FRONT FRAMING



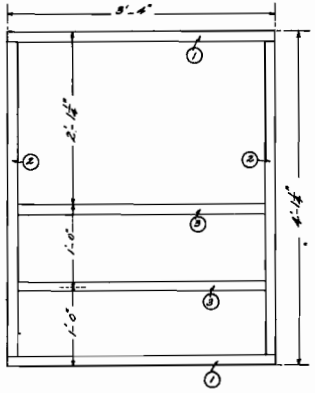
SIDE FRAMING



SIDE ELEVATION



FLOOR PLAN



FLOOR FRAMING

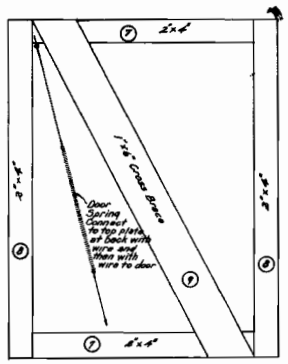


PLATE FRAMING

FOREST SERVICE

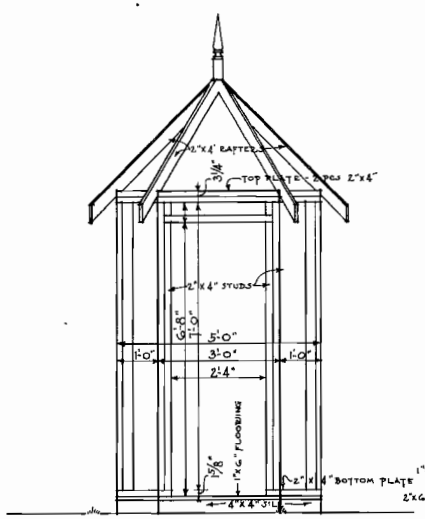
SINGLE UNIT LATRINE

PLAN R-4 # 70

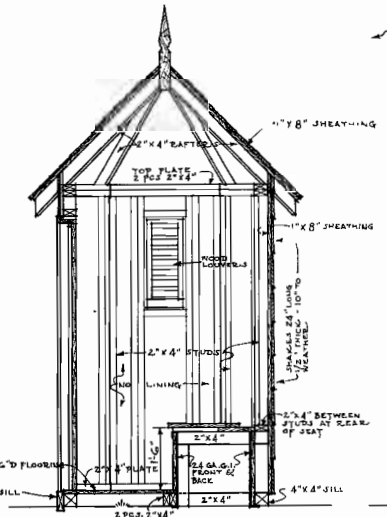
Revised by R-4 From Plan R-1

SHEET 1 OF 3

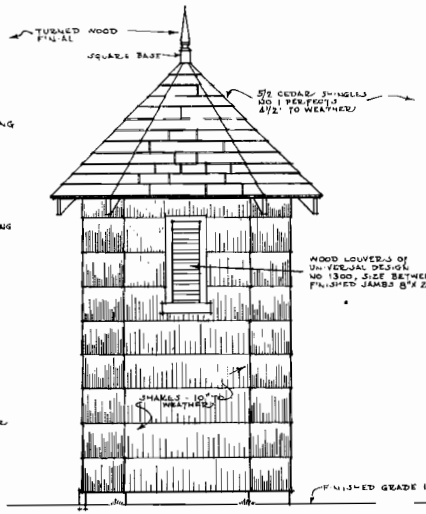
CHECKED G.L.N.	DATE 1-5-38	SCALE: 1 IN. = 1 FOOT
APPROVED G.N.W.	3-10-38	



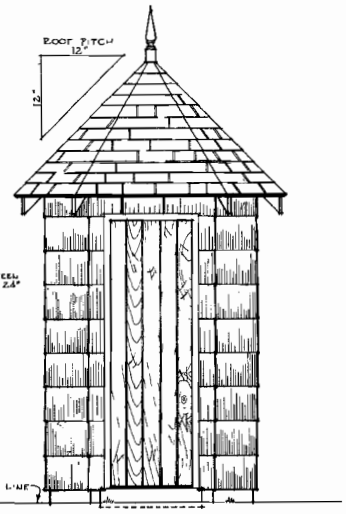
FRONT ELEV. of FRAMING
SCALE 1/2" = 1'-0"



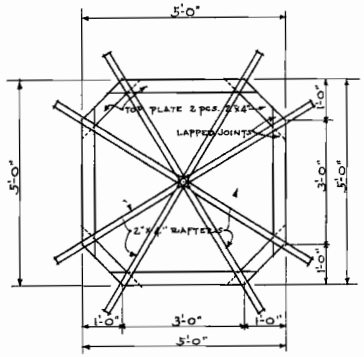
SECTION ON LINE 'A-A'
SCALE 1/2" = 1'-0"



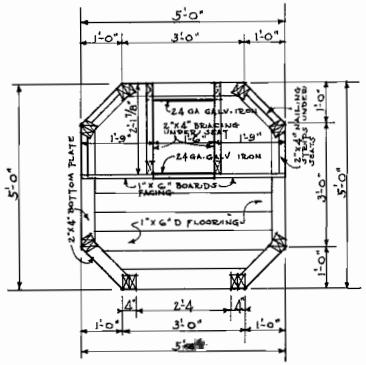
SIDE ELEVATION
(OPPOSITE SIDE SIMILAR)
SCALE 1/2" = 1'-0"



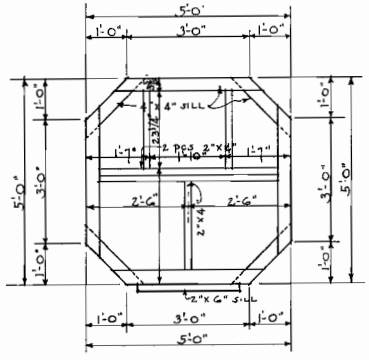
FRONT ELEVATION
SCALE 1/2" = 1'-0"



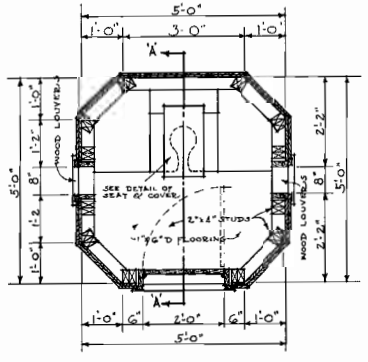
ROOF FRAMING
SCALE 1/2" = 1'-0"



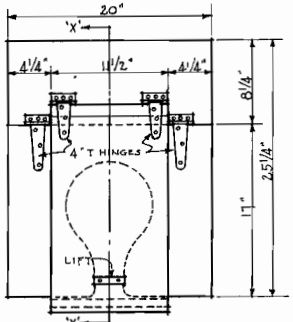
PLAN SHOWING SEAT FRAMING
SCALE 1/2" = 1'-0"



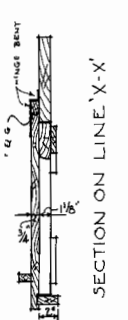
FLOOR FRAMING
SCALE 1/2" = 1'-0"



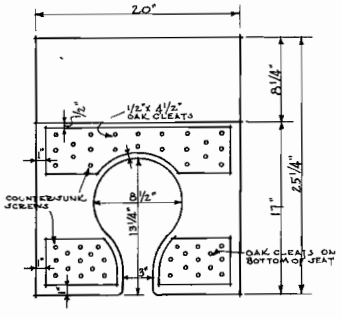
PLAN
SCALE 1/2" = 1'-0"



PLAN OF TOP

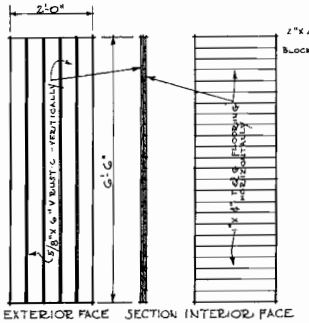


SECTION ON LINE 'X-X'

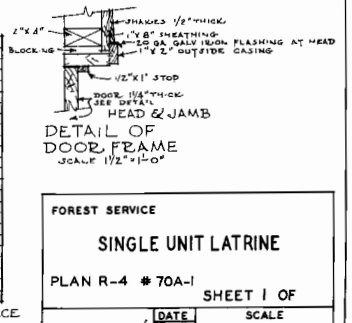


REFLECTED PLAN (SHOWING CLEATS ON BOTTOM OF SEAT)
SCALE 1 1/2" = 1'-0"

DETAILS OF TOILET SEAT



DETAILS OF DOOR
SCALE 1/2" = 1'-0"



DETAIL OF DOOR FRAME
SCALE 1 1/2" = 1'-0"

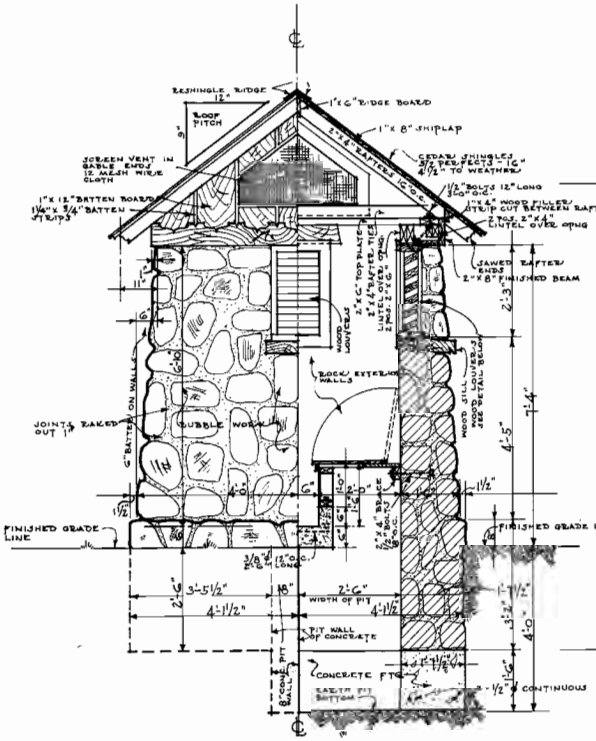
FOREST SERVICE

SINGLE UNIT LATRINE

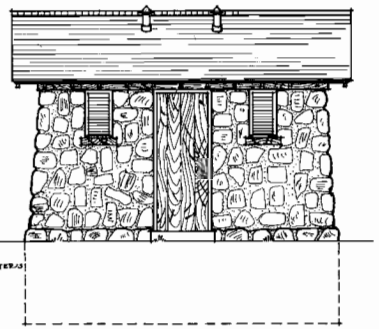
PLAN R-4 # 70A-1

SHEET 1 OF

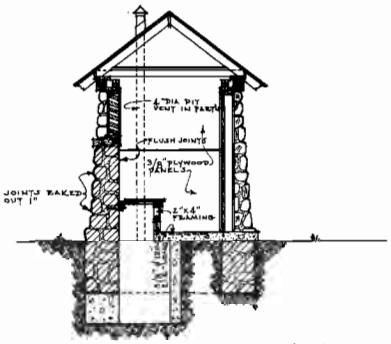
CHECKED	DATE	SCALE
APPROVED	3-4-52	AS SHOWN



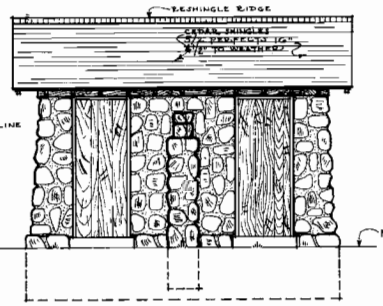
HALF END ELEV. HALF CROSS SECTION
SCALE 1/2"=1'-0"



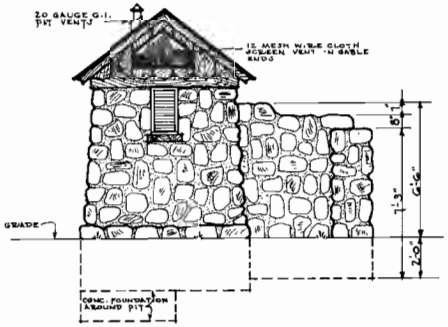
REAR ELEVATION
SCALE 1/4"=1'-0"



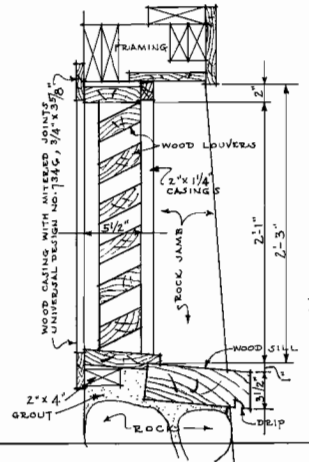
SECTION ON LINE 'A-A'
SCALE 1/4"=1'-0"



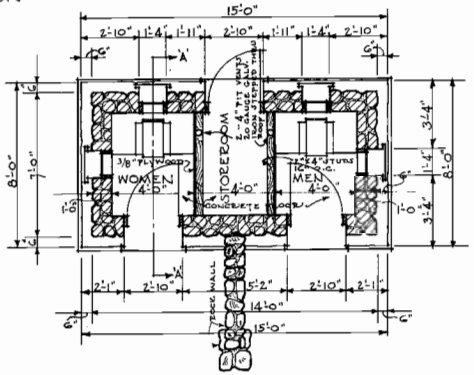
FRONT ELEVATION SCALE 1/4"=1'-0"



END ELEVATION
SCALE 1/4"=1'-0"
(OPPOSITE END SIMILAR)



DETAIL OF VENTILATORS
SCALE 1½"=1'-0"

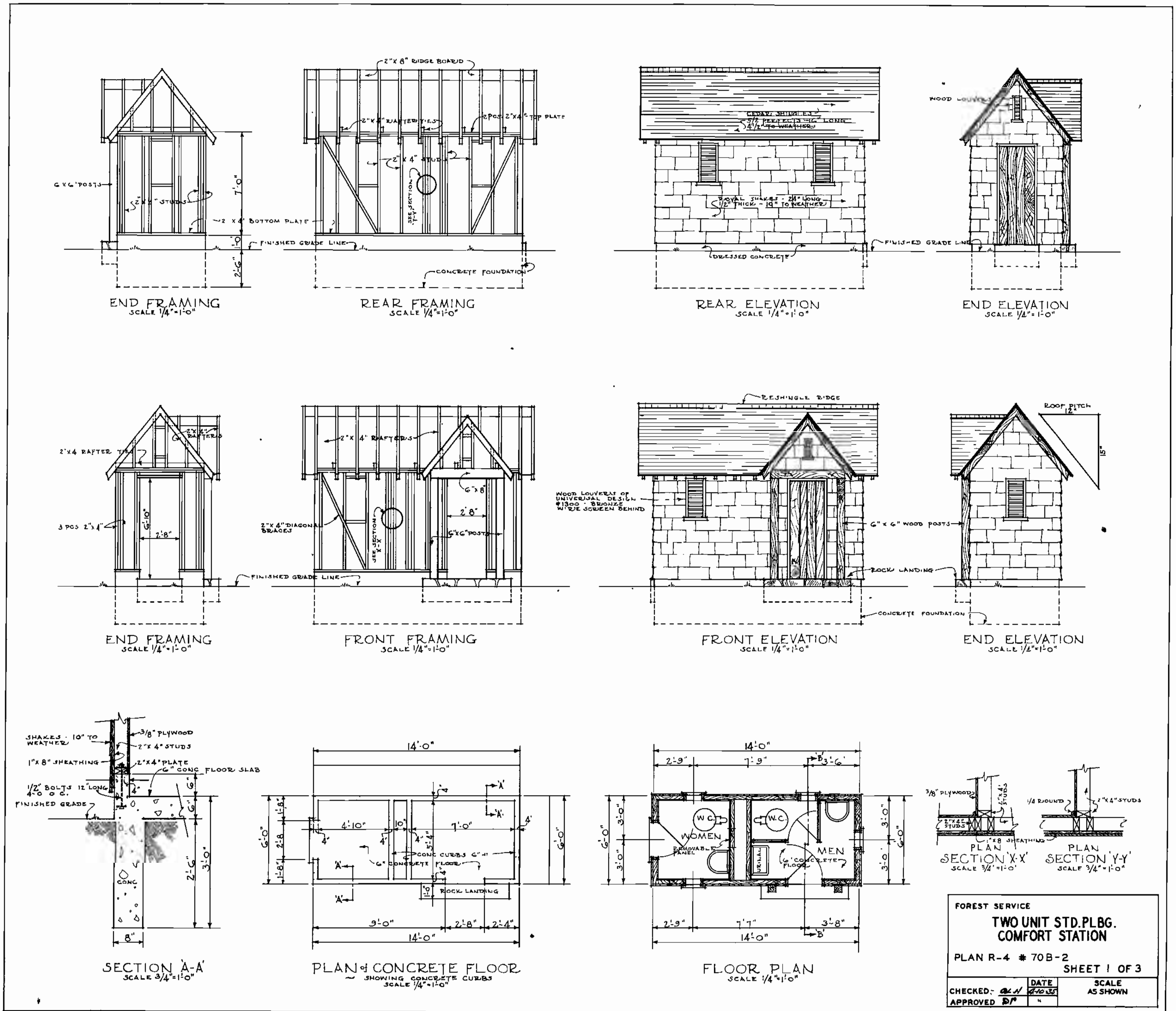


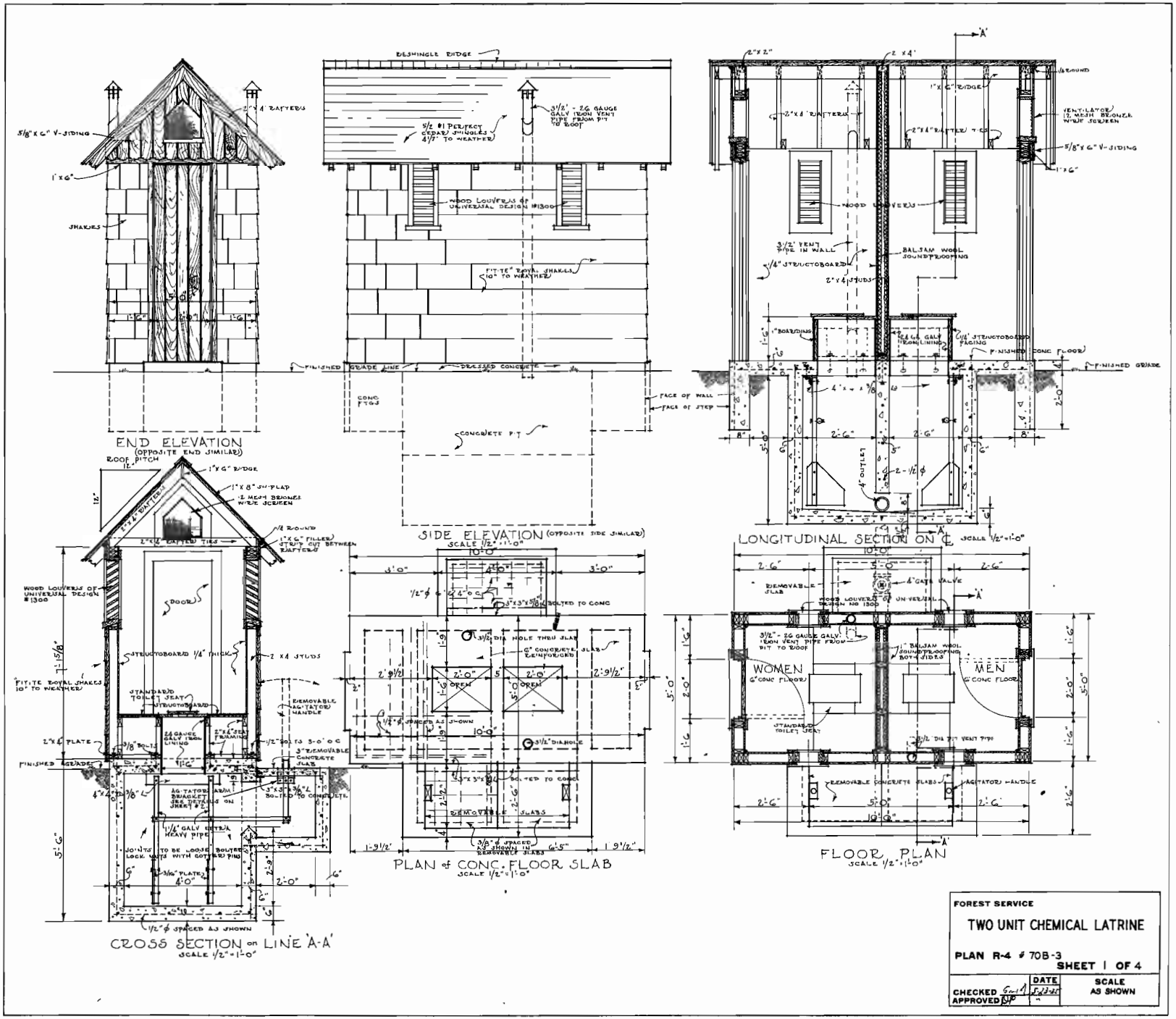
PLAN
SCALE 1/4"=1'-0"

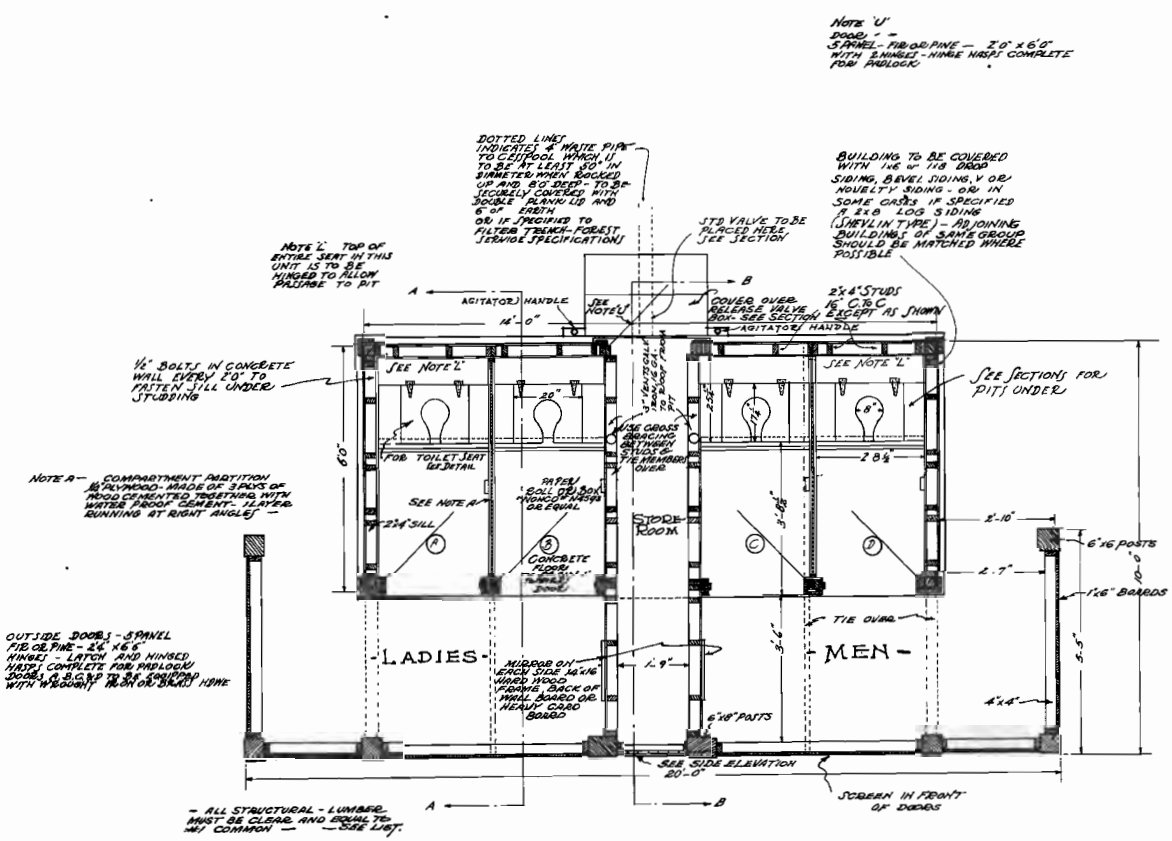
DOORS:
ALL DOORS TO BE SIMILAR TO UNIVERSAL DESIGN NO. 108 EXCEPT WITHOUT GLASS PANEL. SIZE TO BE 2'-6"x6'-8"x1¾". V-JOINTS TO BE PLACED ON OUTSIDE ONLY.

FOREST SERVICE
TWO UNIT PIT TYPE COMFORT STATION
PLAN R-4 #70B-1
SHEET 1 OF 3

CHECKED	DATE	SCALE
APPROVED	4-11-35	AS SHOWN


END FRAMING
SCALE 1/4"=1'-0"
REAR FRAMING
SCALE 1/4"=1'-0"
REAR ELEVATION
SCALE 1/4"=1'-0"
END ELEVATION
SCALE 1/4"=1'-0"
END FRAMING
SCALE 1/4"=1'-0"
FRONT FRAMING
SCALE 1/4"=1'-0"
FRONT ELEVATION
SCALE 1/4"=1'-0"
END ELEVATION
SCALE 1/4"=1'-0"
SECTION 'A-A'
SCALE 3/4"=1'-0"
PLAN of CONCRETE FLOOR
SHOWING CONCRETE CURBS
SCALE 1/4"=1'-0"
FLOOR PLAN
SCALE 1/4"=1'-0"
PLAN SECTION 'X-X'
SCALE 3/4"=1'-0"
PLAN SECTION 'Y-Y'
SCALE 3/4"=1'-0"
2"x 8" RIDGE BOARD
2"x 4" RAFTER TIES
2 PCS 2"x 4" TOP PLATE
2"x 4" STUDS
6"x 6" POSTS
2 x 4" BOTTOM PLATE
FINISHED GRADE LINE
CONCRETE FOUNDATION
CEDAR SHINGLES
DRESSED CONCRETE
WOOD LOUVERS
RESHINGLE RIDGE
ROOF PITCH
2"x 4" RAFTERS
2"x 4" DIAGONAL BRACES
3 PCS 2"x 4"
6"x 8"
6"x 6" POSTS
6"x 6" WOOD POSTS
ROCK LANDING
WOOD LOUVERS OF UNIVERSAL DESIGN #1300 · BRONZE WIRE SCREEN BEHIND
SHAKES · 10" TO WEATHER
3/8" PLYWOOD
2"x 4" STUDS
1"x 8" SHEATHING
2"x 4" PLATE
6" CONC FLOOR SLAB
1/2" BOLTS 12" LONG 4'-0" O.C.
FINISHED GRADE
CONC
6" CONC CURBS
6" CONCRETE FLOOR
ROCK LANDING
14'-0"
W.C.
WOMEN
MEN
URINAL
REMOVABLE PANEL
6" CONCRETE FLOOR
1/4 ROUND
FOREST SERVICE
TWO UNIT STD. PLBG. COMFORT STATION
PLAN R-4 # 70B-2
SHEET 1 OF 3
CHECKED:
APPROVED
DATE
SCALE AS SHOWN


END ELEVATION
(OPPOSITE END SIMILAR)
SIDE ELEVATION (OPPOSITE SIDE SIMILAR)
SCALE 1/2" = 1'-0"
LONGITUDINAL SECTION ON ℄
SCALE 1/2" = 1'-0"
CROSS SECTION on LINE 'A-A'
SCALE 1/2" = 1'-0"
PLAN of CONC. FLOOR SLAB
SCALE 1/2" = 1'-0"
FLOOR PLAN
SCALE 1/2" = 1'-0"
WOMEN
MEN
FOREST SERVICE
TWO UNIT CHEMICAL LATRINE
PLAN R-4 # 70B-3
SHEET 1 OF 4
CHECKED
APPROVED
DATE
SCALE
AS SHOWN



NOTE:
IF FOREST OFFICERS IN CHARGE DESIRES DEODORANT UNITS IN THIS STATION HE MAY HAVE SAME INSTALLED ON WALL OF EACH COMPARTMENT. THESE UNITS ARE NOT INCLUDED IN MATERIAL LIST AND MUST BE PURCHASED AS AN EXTRA.

- FLOOR PLAN -

REVISED AS OF JUNE 17, 1935

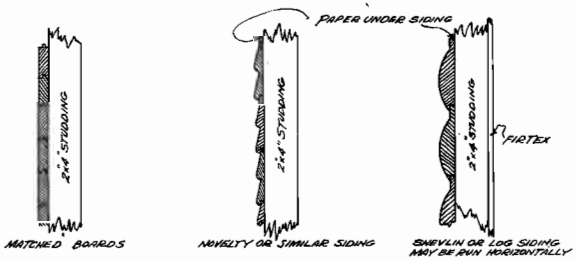
FOREST SERVICE

FOUR UNIT CHEMICAL COMFORT STATION

PLAN R-4 # 71

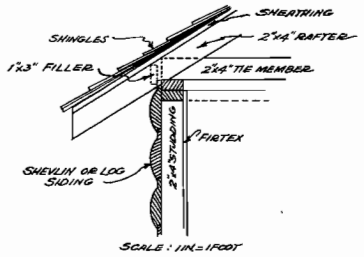
SHEET 1 OF 10

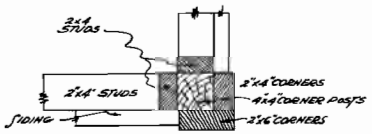
	DATE	SCALE
CHECKED G.A.N.	2-7-35	- 1/8" = 1 FOOT -
APPROVED [illegible]	6-10-35	



- DETAIL SHOWING ALTERNATE SIDING -

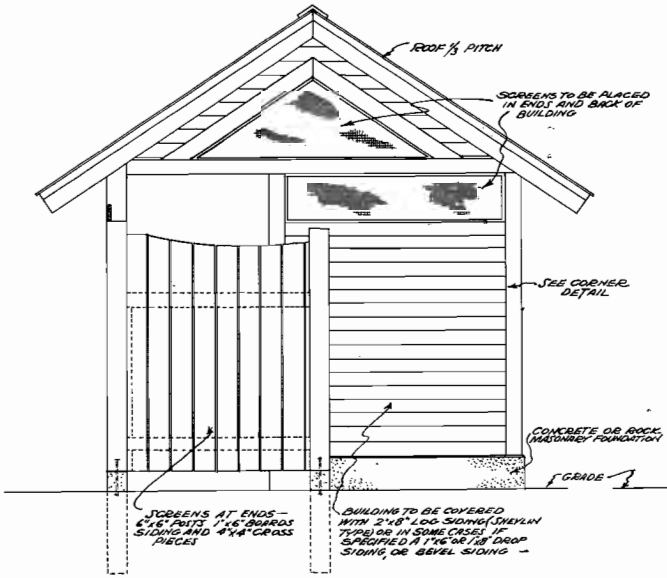
SCALE: 1½ IN. = 1 FT.



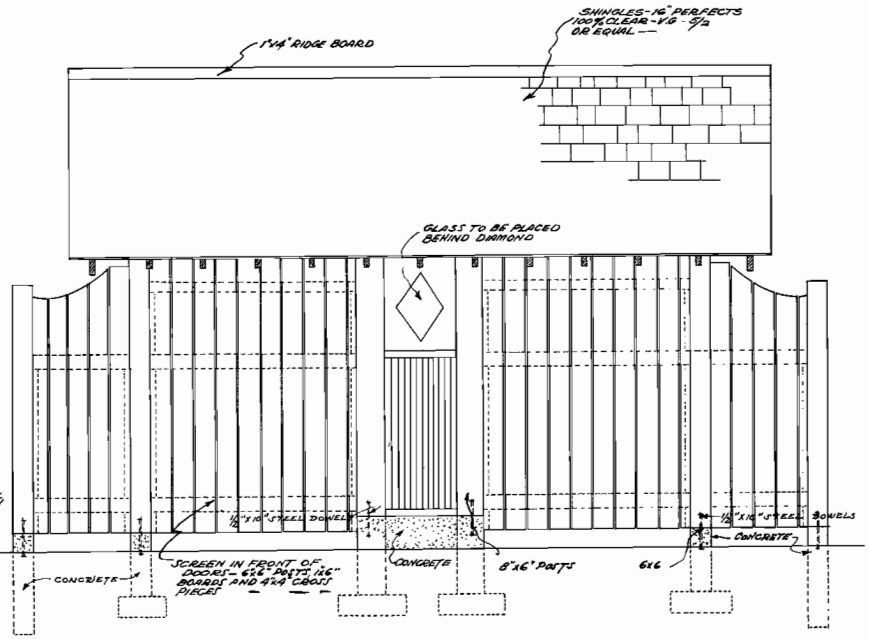


- DETAIL OF CORNER -

- SCALE 1½ IN = 1 FT -



- END ELEVATION -



- FRONT ELEVATION -

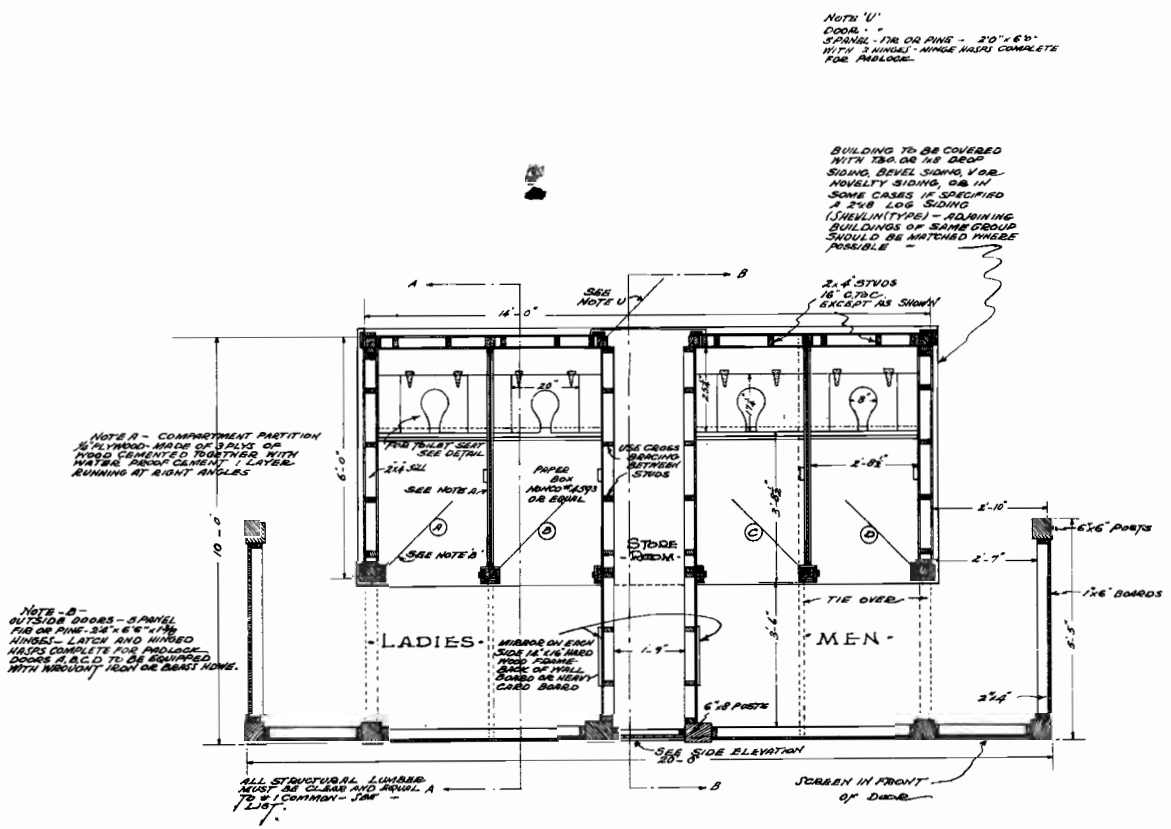
FOREST SERVICE

FOUR UNIT CHEMICAL COMFORT STATION

PLAN R-4 # 71
FRAME TYPE

SHEET 2 OF 10

CHECKED G.L.N.	DATE 4-18-33	SCALE - 1/2 & 1 FOOT DETAILS AS SHOWN
APPROVED D.F.P.	4-25-33	



- FLOOR PLAN -

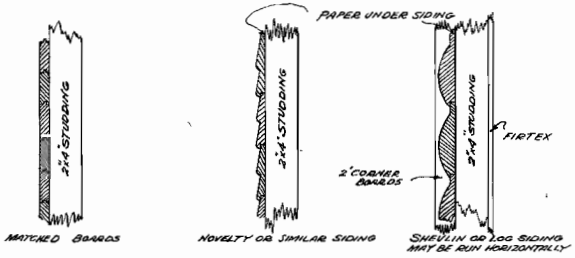
FOREST SERVICE

FOUR UNIT PIT TYPE COMFORT STATION

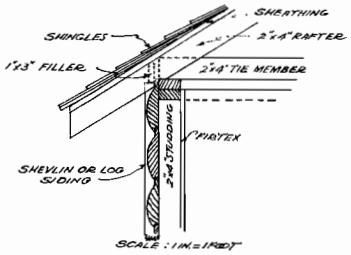
PLAN R-4 #72
FRAME TYPE

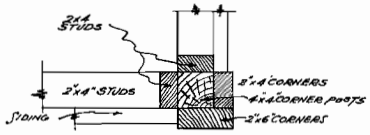
SHEET 1 OF

		DATE	SCALE
CHECKED	O.L.N.	4-8-33	- ½" = 1 FOOT
APPROVED	D.P.	4-18-33	

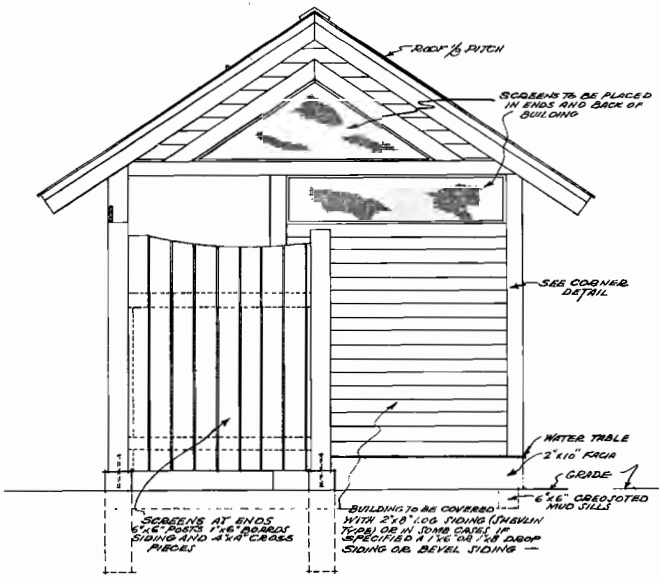


- DETAIL SHOWING ALTERNATE SIDING -
SCALE 1½IN.=1FT.

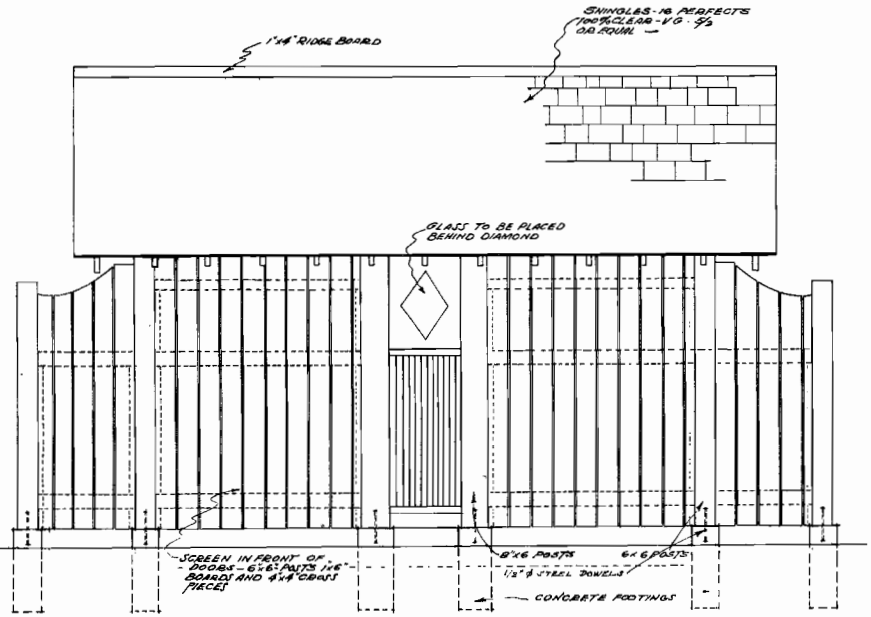




- DETAIL OF CORNER -
- SCALE 1½IN=1FT.



- END ELEVATION -



- FRONT ELEVATION -

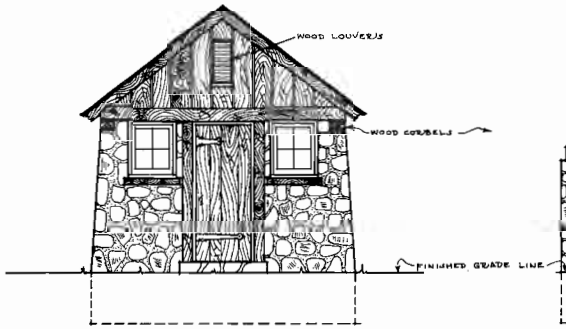
FOREST SERVICE

FOUR UNIT PIT TYPE COMFORT STATION

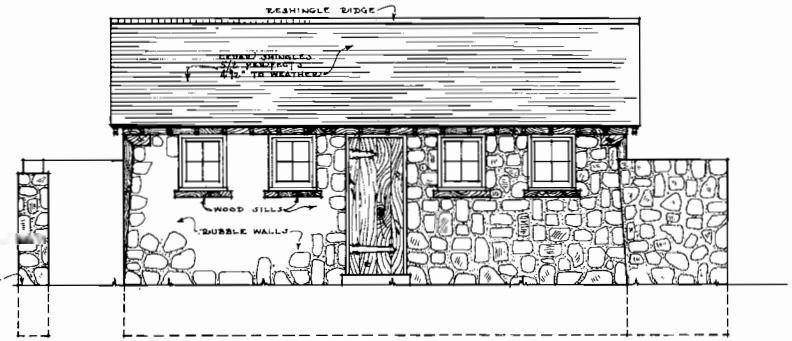
PLAN R-4 #72
FRAME TYPE

SHEET 2 OF 10

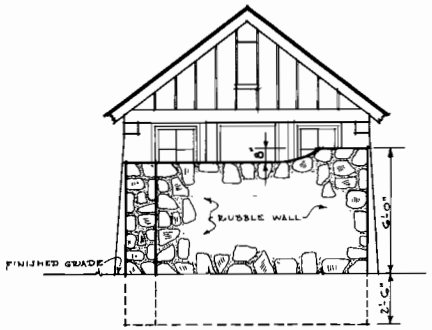
CHECKED G.L.N	DATE 9-26-33	SCALE -½"=1 FOOT DETAILS AS SHOWN
APPROVED [illegible]	9-29-33	



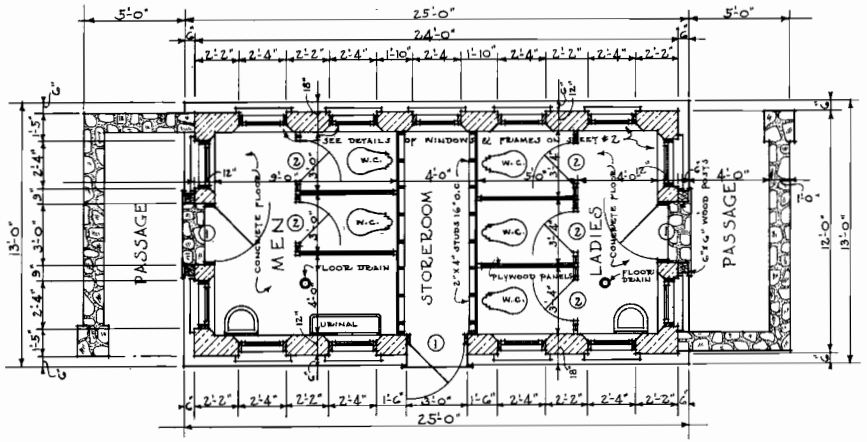
END ELEVATION
SCALE 1/4"=1'0"
(OPPOSITE END SIMILAR)



SIDE ELEVATION
SCALE 1/4"=1'0"
(OPPOSITE SIDE SIMILAR) EXCEPT WINDOW ON ℄ IN PLACE OF DOOR)



END ELEVATION SHOWING ROCK WALL
(OPPOSITE END SIMILAR)
SCALE 1/4"=1'0"



PLAN
SCALE 1/4"=1'0"

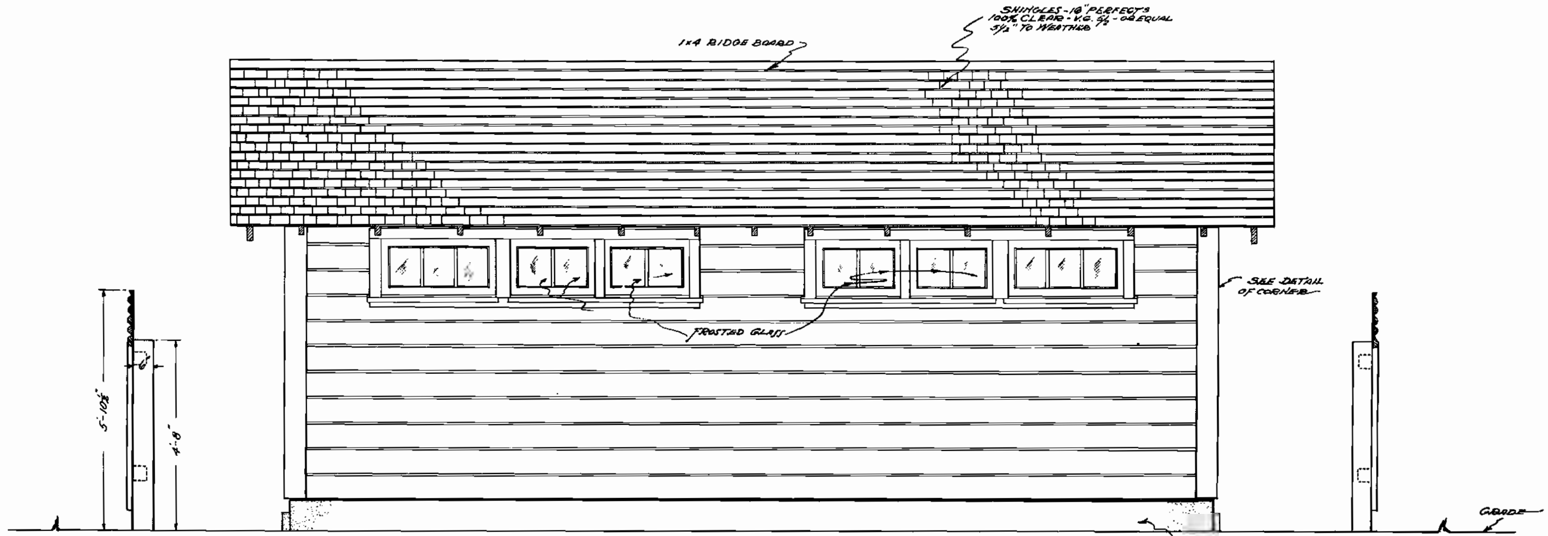
WINDOWS
SASH TO BE OF UNIVERSAL DESIGN # 1224 4 LIGHT SASH, 10"x12" D.S. GLASS.
FRAMES DETAILED ON SHEET #2.

DOOR SCHEDULE

DOOR NO.	UNIVERSAL DESIGN NO.	WOOD	SIZE	REMARKS
①	417	PINE OR FIR	2'8"x6'8"x1¾"	V-JOINTS TO BE RANDOM WIDTHS
②	610	PINE OR FIR	2'0"x6'0"x1⅛"	

FOREST SERVICE
FIVE UNIT
COMFORT STATION
STANDARD PLUMBING
PLAN R-4 #72B-1
SHEET 1 OF 4

CHECKED	DATE	SCALE
APPROVED	2-11-35	AS SHOWN

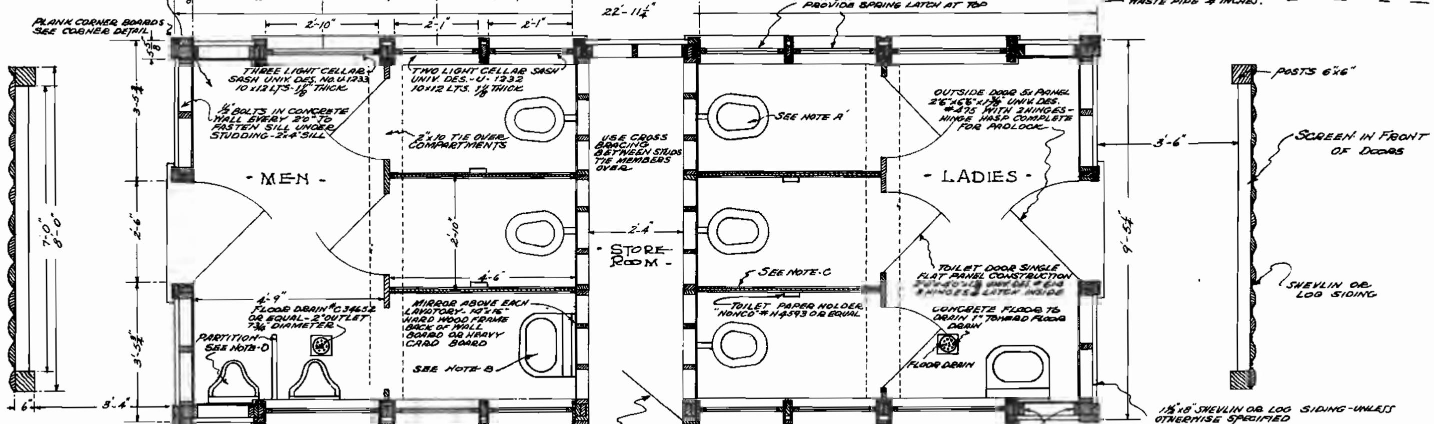


CONCRETE OR ROCK MASONRY FOUNDATION

- SIDE ELEVATION -

NOTE-A- SYPHON JET ELONGATED CLOSETS WITH SELF-DRAINING JET AND DRAW PLUG, AND WITH SPUD FOR FLUSH VALVE NO. F 3123 MADERA OF STANDARD PLUMBING FIXTURES OR EQUAL, WITH BACK SPUD. DIRECT FLUSH VALVE PROVIDED WITH VACUUM BREAKER, NO. S5543 SLOAN VALVE OR EQUAL WITH HARD RUBBER SPLIT SEAT EBONY FINISH. VALVES TO BE CONCEALED IN STOREROOM. THERE SHOULD BE A SEPARATE TRENCH FOR MAIN SUPPLY AND WASTE PIPE — WASTE PIPE 4 INCHES.

NOTE- CEMENT FLOOR IS NOT TO BE CAST UNTIL ALL ROUGHING IN OF PLUMBING IS COMPLETE & TESTED



- NOTE-D- VITREOUS CHINA FLAT BACK URINAL WITH TOP SUPPLY, BOTTOM OUTLET, WASH DOWN TYPE WITH COMPRESSION FAUCET COMPLETE WITH ALL FITTINGS FOR FLOOR AND WALL CONNECTIONS. UNIT 15"x13"

NOTE-B- LAVATORY CRANE #C 2240 OR EQUAL 19"x17" WITH ONE OPENING PLUGGED-TELSA-JR. COMPRESSION FAUCETT, WITH POP-UP WASTE #C32380 INSTEAD OF DRAIN PLUG-BRASS PLUG ON WASTE SECURED SO IT CANNOT BE REMOVED, WITH HOSE BIB #803 ON ¾ PIPE UNDER WASH BASIN FOR ¾" HOSE CONNECTION-COMPLETE WITH FITTINGS-PIPE CONNECTIONS, WASTE PIPE, AND TRAP TO CONNECT FIXTURE TO WATER SERVICE AND CESSPOOL OR DRAINAGE FIELD

STOREROOM DOOR-5x PANEL 2'4"x6'8"x1⅜ UNIV. DES. #475 FIR WITH 2 HINGES-HINGE COMPLETE FOR PADLOCK

NOTE-C- ¼" PLYWOOD MADE OF 3 PLYS OF WOOD CEMENTED TOGETHER WITH WATER PROOF CEMENT-1 LAYER RUNNING AT RIGHT ANGLES.

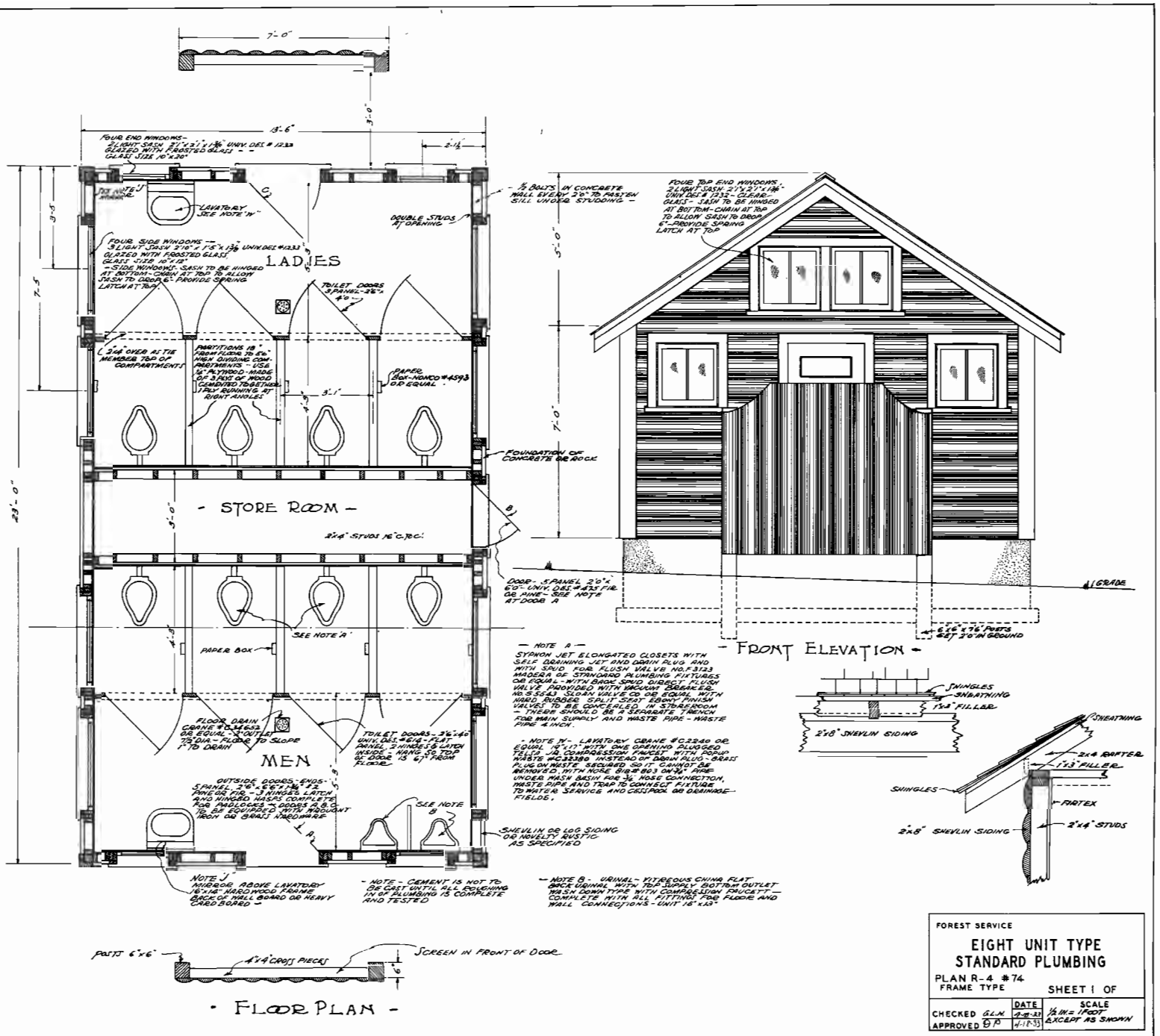
- FLOOR PLAN -

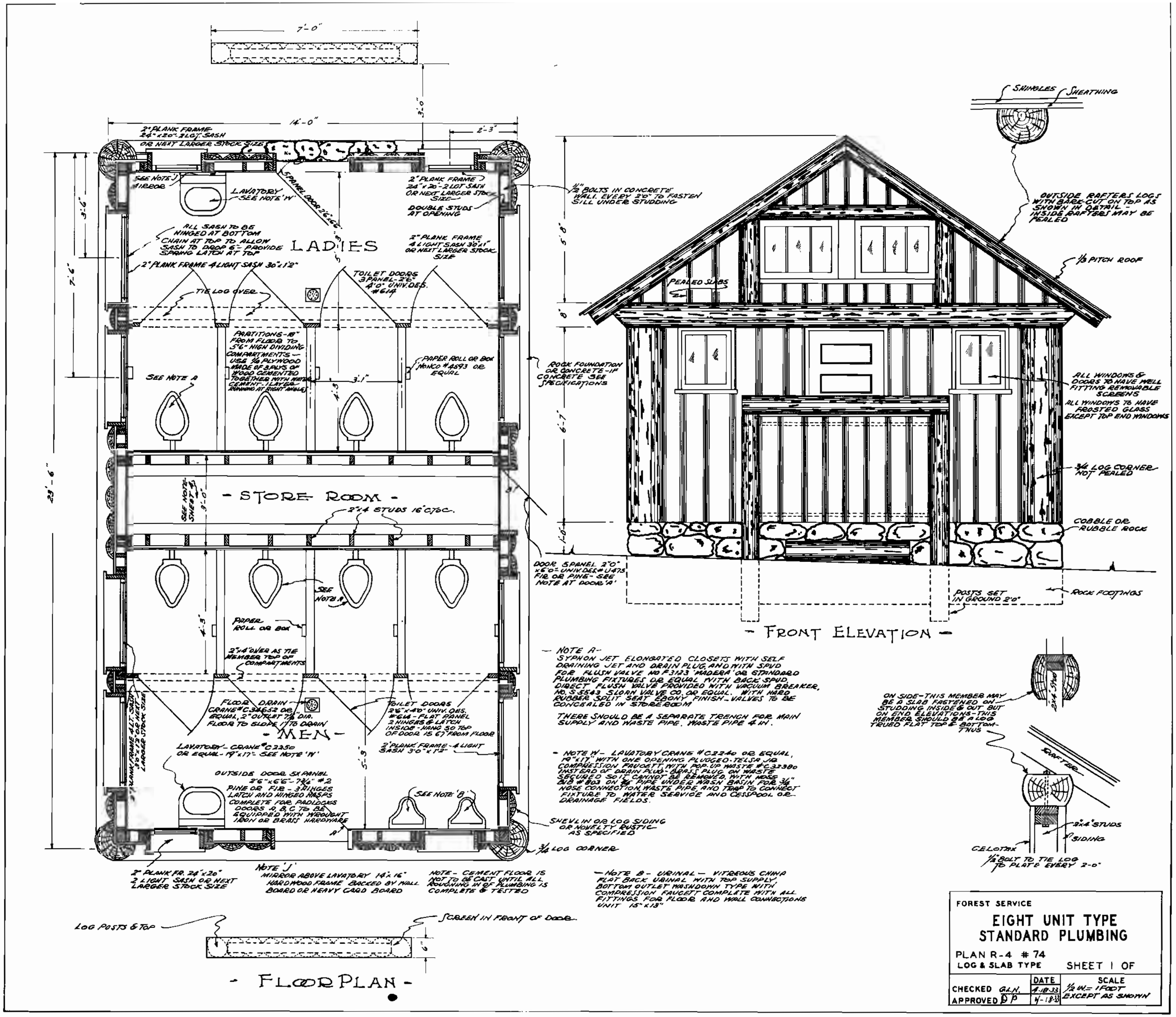
FOREST SERVICE

FIVE UNIT STANDARD PLUMBING COMFORT STATION

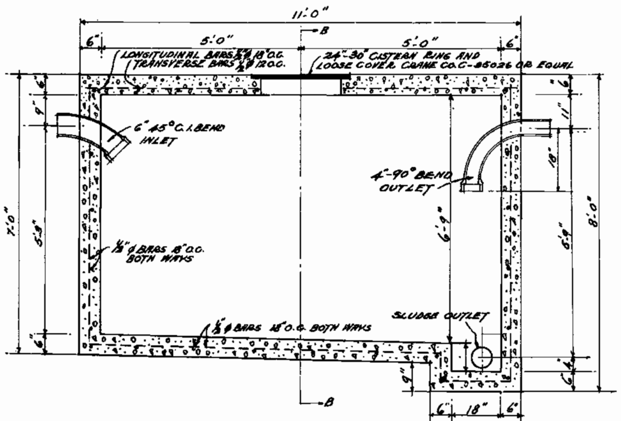
PLAN R-4 #73
FRAME TYPE
SHEET 1 OF

	DATE	SCALE
CHECKED G.L.N.	4-7-33	⅛" = 1 FOOT
APPROVED D.P.	4-15-33	

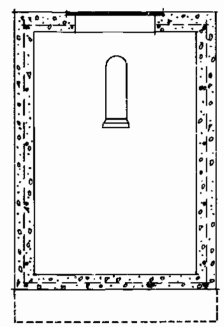

LADIES
- STORE ROOM -
MEN
- FRONT ELEVATION -
- FLOOR PLAN -
FOREST SERVICE
EIGHT UNIT TYPE
STANDARD PLUMBING
PLAN R-4 #74
FRAME TYPE
SHEET 1 OF
CHECKED G.L.M.
APPROVED
DATE
4-18-33
4-18-33
SCALE
½ IN = 1 FOOT
EXCEPT AS SHOWN



- FLOOR PLAN -
- FRONT ELEVATION -
LADIES
- MEN -
- STORE ROOM -
2"x4 STUDS 16" C/ TO C.
2" PLANK FRAME 24"x20" 2 LGT. SASH OR NEXT LARGER STOCK SIZE
SEE NOTE J MIRROR
LAVATORY SEE NOTE 'N'
5 PANEL DOOR 2'6"x6'6"
2" PLANK FRAME 24"x20"-2 LGT SASH OR NEXT LARGER STOCK SIZE
DOUBLE STUDS AT OPENING
ALL SASH TO BE HINGED AT BOTTOM CHAIN AT TOP TO ALLOW SASH TO DROP 6"- PROVIDE SPRING LATCH AT TOP
2" PLANK FRAME 4 LIGHT SASH 30"x1'2"
2" PLANK FRAME 4 LIGHT SASH 30"x1'1" OR NEXT LARGER STOCK SIZE
TOILET DOORS 3 PANEL 2'6" 4'0" UNIV. DES. #614
TIE LOG OVER
PARTITIONS-18" FROM FLOOR TO 5'6" HIGH DIVIDING COMPARTMENTS - USE 3/4 PLYWOOD MADE OF 3 PLYS OF WOOD CEMENTED TOGETHER WITH WATER CEMENT - 1 LAYER RUNNING AT RIGHT ANGLE
PAPER ROLL OR BOX NONCO #4593 OR EQUAL
SEE NOTE A
SEE NOTE B
PAPER ROLL OR BOX
2"x4" OVER AS TIE MEMBER TOP OF COMPARTMENTS
FLOOR DRAIN CRANE #C31652 OR EQUAL, 2" OUTLET 7/8" DIA. FLOOR TO SLOPE 1" TO DRAIN
TOILET DOORS 2'6"x4'0" UNIV. DES. #614 - FLAT PANEL 2 HINGES & LATCH INSIDE - HANG 30 TOP OF DOOR IS 6'7" FROM FLOOR
LAVATORY - CRANE #C2250 OR EQUAL - 19"x17" - SEE NOTE 'N'
2" PLANK FRAME - 4 LIGHT SASH 3'0" x 1'2"
OUTSIDE DOOR 5X PANEL 2'6"x6'6"-7/8" #2 PINE OR FIR - 3 HINGES LATCH AND HINGED HASPS COMPLETE FOR PADLOCKS DOORS A & C TO BE EQUIPPED WITH WROUGHT IRON OR BRASS HARDWARE
SEE NOTE 'B'
2" PLANK FRAME 4 LT. SASH 30"x1'2" OR NEXT LARGER STOCK SIZE
SEE NOTE SHEET 3
2" PLANK FR. 24"x20" 2 LIGHT SASH OR NEXT LARGER STOCK SIZE
NOTE 'J' MIRROR ABOVE LAVATORY 14"x16" HARDWOOD FRAME BACKED BY WALL BOARD OR HEAVY CARD BOARD
NOTE - CEMENT FLOOR IS NOT TO BE CAST UNTIL ALL ROUGHING IN OF PLUMBING IS COMPLETE & TESTED
LOG POSTS & TOP
SCREEN IN FRONT OF DOOR
ROCK FOUNDATION OR CONCRETE - IF CONCRETE SEE SPECIFICATIONS
DOOR 5 PANEL 2'0" x 6'6" UNIV DES #1475 FIR OR PINE - SEE NOTE AT DOOR 'A'
SHEVLIN OR LOG SIDING OR NOVELTY RUSTIC AS SPECIFIED
3/4 LOG CORNER
1/2" BOLTS IN CONCRETE WALL EVERY 2'0" TO FASTEN SILL UNDER STUDDING
PEALED SLABS
SHINGLES
SHEATHING
OUTSIDE RAFTERS LOGS WITH BARK-CUT ON TOP AS SHOWN IN DETAIL - INSIDE RAFTERS MAY BE PEALED
1/3 PITCH ROOF
ALL WINDOWS & DOORS TO HAVE WELL FITTING REMOVABLE SCREENS
ALL WINDOWS TO HAVE FROSTED GLASS EXCEPT TOP END WINDOWS
3/4 LOG CORNER NOT PEALED
COBBLE OR RUBBLE ROCK
ROCK FOOTINGS
POSTS SET IN GROUND 2'0"
14'-0"
7'-0"
2'-3"
3'-0"
3'-6"
7'-6"
23'-6"
3'-1"
4'-3"
5'-9"
6'
5'-8"
8"
6'-7"
1'-0"
- NOTE A - SYPHON JET ELONGATED CLOSETS WITH SELF DRAINING JET AND DRAIN PLUG, AND WITH SPUD FOR FLUSH VALVE NO F3123 'MADERA' OR STANDARD PLUMBING FIXTURES OR EQUAL WITH BACK SPUD, DIRECT FLUSH VALVE PROVIDED WITH VACUUM BREAKER, NO. S 5543 SLOAN VALVE CO. OR EQUAL. WITH HARD RUBBER SPLIT SEAT EBONY FINISH - VALVES TO BE CONCEALED IN STOREROOM
THERE SHOULD BE A SEPARATE TRENCH FOR MAIN SUPPLY AND WASTE PIPE. WASTE PIPE 4 IN.
- NOTE N - LAVATORY CRANE #C2240 OR EQUAL, 19"x17" WITH ONE OPENING PLUGGED - TELSA JR. COMPRESSION FAUCETT WITH POP-UP WASTE #C32380 INSTEAD OF DRAIN PLUG - BRASS PLUG ON WASTE SECURED SO IT CANNOT BE REMOVED, WITH HOSE BIB #803 ON 3/4" PIPE UNDER WASH BASIN FOR 3/4" HOSE CONNECTION, WASTE PIPE, AND TRAP TO CONNECT FIXTURE TO WATER SERVICE AND CESSPOOL OR DRAINAGE FIELDS.
- NOTE B - URINAL - VITREOUS CHINA FLAT BACK URINAL WITH TOP SUPPLY, BOTTOM OUTLET WASHDOWN TYPE WITH COMPRESSION FAUCETT COMPLETE WITH ALL FITTINGS FOR FLOOR AND WALL CONNECTIONS UNIT 15"x13"
ON SIDE - THIS MEMBER MAY BE A SLAB FASTENED ON STUDDING INSIDE & OUT BUT ON END ELEVATIONS - THIS MEMBER SHOULD BE A LOG TRUED FLAT TOP & BOTTOM - THUS
2x4 STUD
RAFTER
2x4 STUDS
SIDING
CELOTEX
1/2" BOLT TO TIE LOG TO PLATE EVERY 2'-0"
FOREST SERVICE
EIGHT UNIT TYPE
STANDARD PLUMBING
PLAN R-4 # 74
LOG & SLAB TYPE
SHEET 1 OF
CHECKED G.L.N.
APPROVED
DATE
4-18-33
4-18-33
SCALE
1/2 IN. = 1 FOOT
EXCEPT AS SHOWN



- SECTION THRU A-A -



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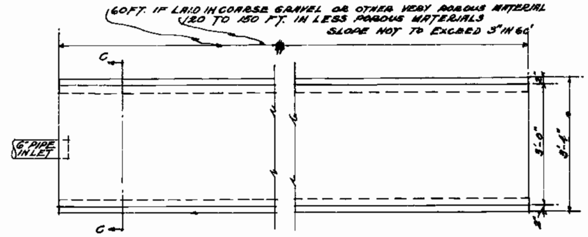
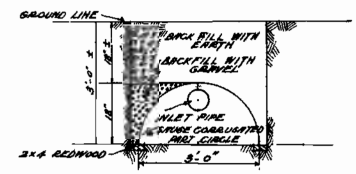
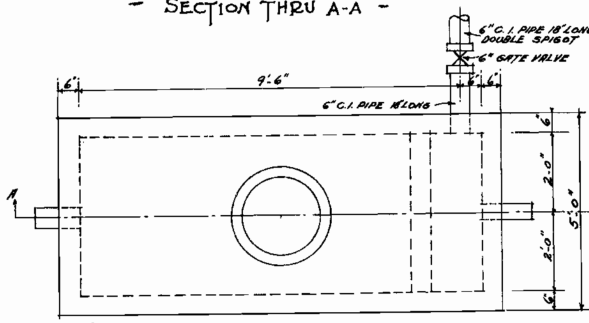


FILTER TRENCH
PLAN



SECTION THRU "C-C" OF FILTER TRENCH



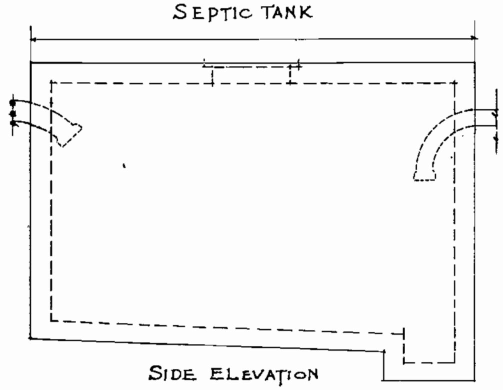
PLAN
SEPTIC TANK

- NOTE - SLUDGE OUTLET SHOULD NOT BE INCLUDED IN THE CONTRUCTION OF ANY TANK WHERE THERE WILL NOT BE A GRAVITY OUTLET

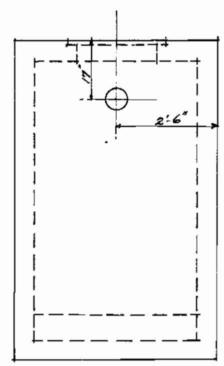
IF PART CIRCLE PIPE CAN NOT BE FOUND OR IF IT MAY BE MORE CONVENIENT USE CREOSOTED WOOD TIMBER IN CONSTRUCTION OF FILTER TRENCH

SETIC TANK HAS CAPACITY FOR APPROX. 240 PEOPLE OR OUR 8 UNIT TYPE - FOR SIX UNIT CUT OFF 2 FT. IN THE LENGTH.

SCHEDULE OF RE-INFORCING STEEL				
NO BARS	SIZE	LENGTH OVERALL	DIAGRAMS	LOCATION
4	1/2"⌀	11'-6"	BEND ON JOB	BOTTOM LONGITUDINALLY
12	1/2"⌀	10'-9"		TOP AND SIDES LONGITUDINALLY
14	1/2"⌀	6'-10"		VERTICAL IN WALLS
6"	1/2"⌀	7'-9"		VERTICAL IN WALLS
28	1/2"⌀	4'-9"		TOP BOTTOM AND ENDS TRANSVERSELLY



SIDE ELEVATION



END ELEVATION

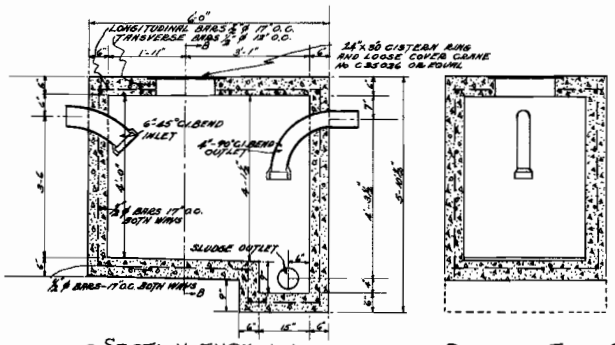
FOREST SERVICE

SEPTIC TANK & FILTER TRENCH

PLAN R-4 #76
FROM U S PUBLIC HEALTH SERVICE

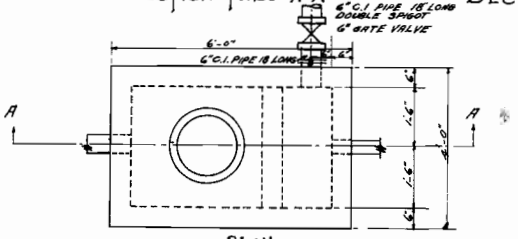
SHEET 1 OF 1

	DATE	SCALE
CHECKED MWB	6-21-33	1/2" = 1 FOOT
APPROVED PP	6-21-33	

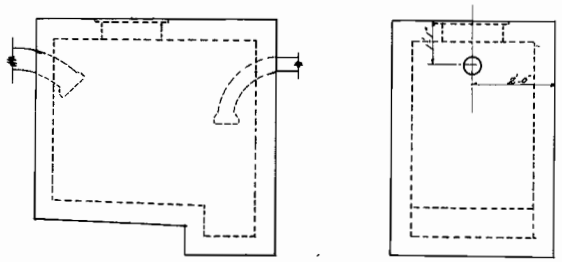


- SECTION THRU A-A -

- SECTION THRU B-B -



PLAN
SEPTIC TANK



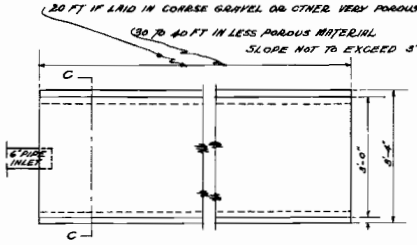
- SIDE ELEVATION -

- END ELEVATION -

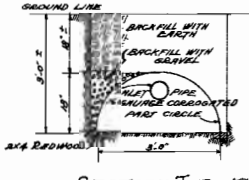
NOTE - SLUDGE OUTLET SHOULD NOT BE INCLUDED IN THE CONTRUCTION OF ANY TANK WHERE THERE WILL NOT BE A GRAVITY OUTLET

IF PART CIRCLE PIPE CANNOT BE FOUND OR IF IT MAY BE MORE ECONOMICAL USE CREOSOTED WOOD TIMBER IN CONSTRUCTION OF FILTER TRENCH

SEPTIC TANK HAS CAPACITY FOR APPROX. FOR 18 TO 25 PEOPLE FOR DWELLING OR OFFICE TYPE



FILTER TRENCH
PLAN



SECTION THRU C C
OF
FILTER TRENCH

BILL OF MATERIALS

Item No.	No. of Pcs.	Materials	Purpose
		Cement, Sand, Gravel, Pipe, Corrugated Iron, etc.	
1	21	Sacks Portland cement	Concrete
2	2	Cu. yds. sand	"
3	(3	" " gravel	"
	(2	" " "	Back fill in filter trench
		Form material specified with buildings for which septic tanks are built.	
4	1	6" - 45° bend cast iron pipe	Inlet
5	1	4" - 90° " " " "	Outlet
6	1	24" - 30" C.I. cistern ring & loose cover Crane C-35026 or equal	Manhole cover
7	1	16 gauge corrugated iron semi-cylindrical 3'0" diameter filter trench housing as per detail (with 6" pipe inlet) - 20' long if laid in coarse gravel, or 30' to 40' long (slope not over 3" in 60') if laid in less porous material. Forest Officer in charge to determine length	For filter trench
8	40	Lin.ft. minimum 2"x4" redwood sill Forest Officer in charge to determine actual length according to porosity of soil	Filter trench sill
9	4	1/2" round steel rods 6'7" long	Reinforcing for concrete
10	8	1/2" " " " 5'9" "	" " "
11	8	1/2" " " " 4'8" "	" " "
12	6	1/2" " " " 5'6" "	" " "
13	18	1/2" " " " 3'5" "	" " "

Alternate

Where sludge outlet is used one 6" gate valve shall be included in list, also 18" length 6" cast iron pipe, threaded one end for gate valve connection.

SPECIFICATIONS

GENERAL

The entire work is to be constructed and finished in every part in a good, substantial and workmanlike manner according to the plans a part hereof, and these specifications to the full extent and meaning thereof.

Where figures are not given all drawings must be accurately followed and measured according to their scale. All notations and figures on plans are to be considered a portion of these specifications, and must be followed. Follow figures in preference to scale.

For each cubic yard, use the following proportions:

7.00 sacks of cement
.52 cu. yards of sand
.78 cu. yards of gravel

All forms are to be constructed of dry lumber which is to be substantially braced and plumb. The insides of forms are to be as smooth as possible - put the best face of the lumber in always. The bottoms of footings are to be leveled and tamped. The concrete is to be mixed thoroughly in the proportion of 1 - 2 - 3 and the water is to be carefully measured, using 5½ gallons of clear clean water to each one sack batch where the sand and gravel are dry or 4½ gallons of water where the sand and gravel are moist. Concrete may be mixed by machine or by hand. In either case, mixing must proceed until stones and pebbles are completely coated with a mortar of sand and cement.

Note: No lists for issuing of bids have been prepared for this plan. Forest Officer in charge will make up his own bid forms for materials needed.

SCHEDULE OF RE-INFORCING STEEL

NO BARS	SIZE	LENGTH OVERALL	DIAGRAMS	LOCATION
4	1/2 ø	6'-7"	BEND ON JOB	BOTTOM LONGITUDINALLY
8	1/2 ø	5'-9"		TOP AND SIDES LONGITUDINALLY
8	1/2 ø	4'-8"		VERTICALLY IN OUTSIDE WALLS
6	1/2 ø	5'-6"		VERTICALLY OUT SIDE WALLS
18	1/2 ø	3'-9"		TOP, BOTTOM, ENDS AND SIDE WALLS TRANSVERSELY

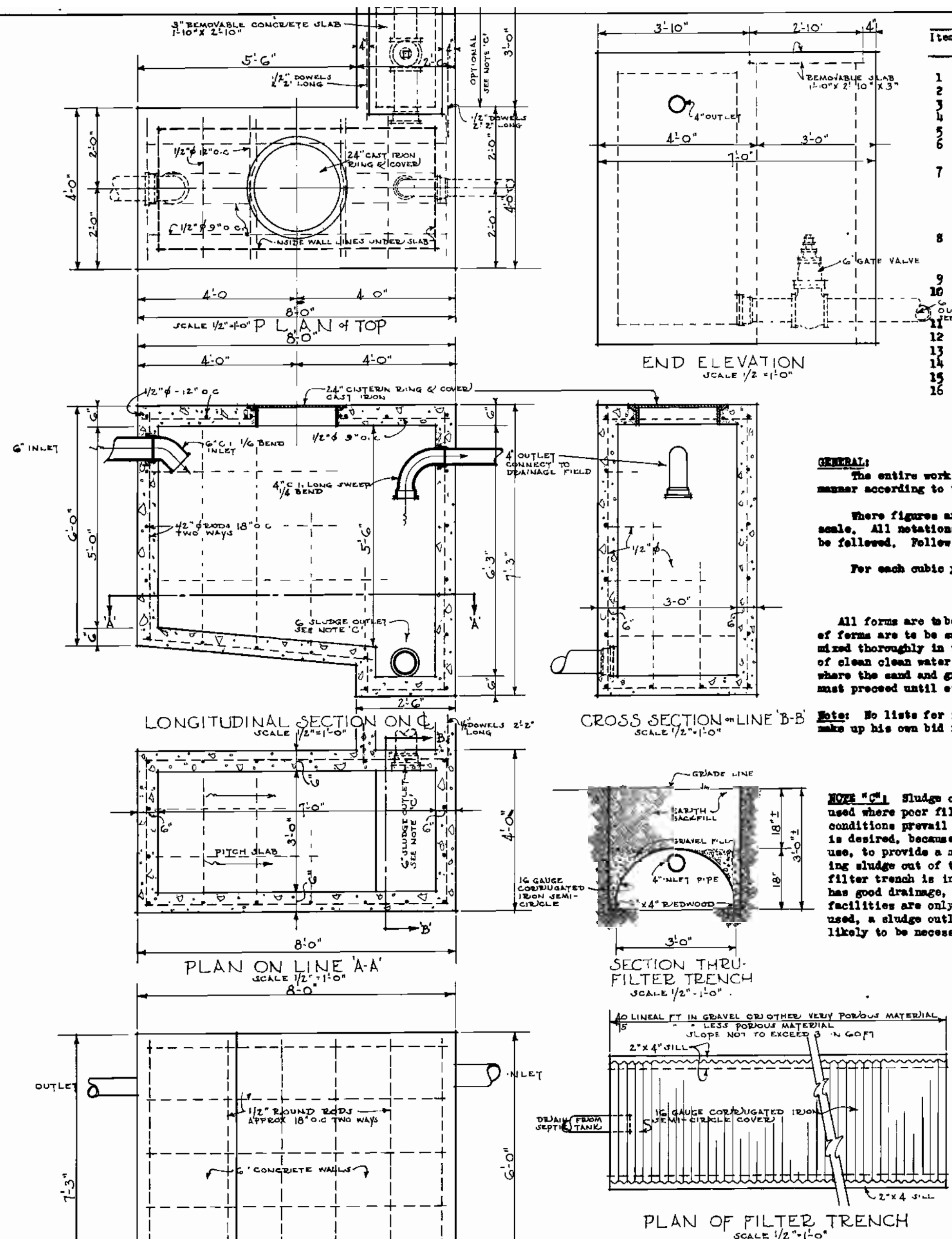
FOREST SERVICE

SEPTIC TANK & FILTER TRENCH

PLAN R-4 # 76A
FROM U.S. PUBLIC HEALTH SERVICE

SHEET 1 OF 1

CHECKED	DATE	SCALE
APPROVED C.N.W.	6-22-37	½" = 1 FOOT



NOTE:
SLUDGE OUTLET SHOULD NOT BE INCLUDED IN THE CONSTRUCTION OF ANY TANK WHERE THERE WILL NOT BE A GRAVITY OUTLET

IF SEMI-CIRCULAR CORRUGATED IRON PIPE CANNOT BE OBTAINED OR IF MORE CONVENIENT USE CREOSOTED WOOD TIMBER IN CONSTRUCTION OF FILTER TRENCH.

SEPTIC TANK HAS APPROX CAPACITY OF 120 PEOPLE. FOR USE WITH FOUR UNIT LATRINES.

BILL OF MATERIALS

Item No.	No. of Pcs.	Material	Purpose
		Cement, Sand, Gravel, Pipe, Corrugated Iron, etc.	
1	42	Sacks Portland Cement	Concrete
2	4	Yards Sand	Concrete
3	7	Yards Gravel	Concrete & backfill in trench
4	1	6" - 45° Elbow C.I.	Inlet
5	1	4" - 90° Elbow C.I.	Outlet
6	1	24" C.I. Cistern ring & loose cover, Crane 0-35026, or equal	Manhole cover
7	1	16 gauge corrugated iron semi-cylindrical 3'-0" diameter, filter trench housing 40' long if laid in coarse gravel, or 75 ft. if laid in less porous material. Forest Officer in charge to determine length.	Filter trench cover
8	80	Lineal ft. 2" x 4" redwood sill (Forest Officer in charge to determine actual length according to porosity of soil)	Filter trench sill
9	4	1/2" round reinforcing rods 1'-0" long	
10	6	1/2" round reinforcing rods 1'-8" long	
11	16	1/2" round reinforcing rods 2'-2" long	
12	26	1/2" round reinforcing rods 3'-8" long	
13	8	1/2" round reinforcing rods 5'-8" long	
14	8	1/2" round reinforcing rods 5'-10" long	
15	10	1/2" round reinforcing rods 7'-0" long	
16	14	1/2" round reinforcing rods 7'-8" long	

Alternate: Where sludge outlet is used, one 6" gate valve shall be included in list, similar to Crane #498 with hub ends; also include 18" length 6" cast iron pipe S.H.

SPECIFICATIONS

GENERAL:

The entire work is to be constructed and finished in every part in a good, substantial and workmanlike manner according to the plans a part hereof, and these specifications to the full extent and meaning thereof.

Where figures are not given, all drawings must be accurately followed and measured according to their scale. All notations and figures on plans are to be considered a portion of these specifications, and must be followed. Follow figures in preference to scale.

For each cubic yard use the following proportions:

.52 cu. yards of sand
7.00 sacks of cement
.78 cu. yards of gravel

All forms are to be constructed of dry lumber which is to be substantially braced and plumb. The insides of forms are to be smooth as possible - put the best face of the lumber in always. The concrete is to be mixed thoroughly in the proportion of 1 - 2 - 3 and the water is to be carefully measured, using 5½ gallons of clean clean water to each one sack batch where the sand and gravel are dry, or 4½ gallons of water where the sand and gravel are moist. Concrete may be mixed by machine or by hand. In either case, mixing must proceed until stones and pebbles are completely coated with a mortar of sand and cement.

Note: No lists for issuing of bids have been prepared for this plan. Forest Officer in charge will make up his own bid forms for materials needed.

NOTE "C": Sludge outlet may be used where poor filter trench conditions prevail and where it is desired, because of heavy use, to provide a means of flushing sludge out of tank. Where filter trench is in gravel or has good drainage, or where facilities are only moderately used, a sludge outlet is not likely to be necessary.

NOTE: Form material to be obtained from forms used on other buildings.

REINFORCING STEEL

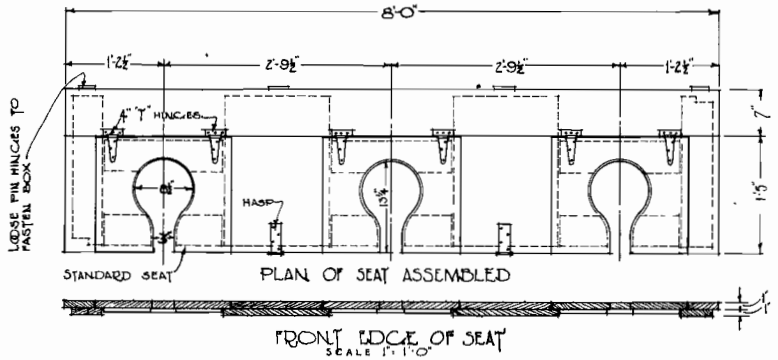
NO OF BARS	SIZE	LENGTH	LOCATION
7	1/2"⌀	3'-8"	CROSSWISE IN BOTTOM
4	1/2"⌀	5'-8"	LENGTHWISE IN BOTTOM
16	1/2"⌀	2'-2"	" " " & HORIZONTALLY DOWELED INTO VALVE BOX
4	1/2"⌀	1'-0"	VERTICALLY IN SIDE OF SLUDGE GUTTER
11	1/2"⌀	3'-8"	HORIZONTALLY IN END WALLS
4	1/2"⌀	5'-8"	VERTICALLY IN END WALL
4	1/2"⌀	7'-0"	"
14	1/2"⌀	7'-8"	HORIZONTALLY IN SIDE WALLS & IN TOP
8	1/2"⌀	5'-10"	VERTICALLY IN SIDE WALLS
6	1/2"⌀	7'-0"	" " (LOW END)
6	1/2"⌀	1'-8"	CROSSWISE IN REMOVABLE COVER
8	1/2"⌀	3'-8"	TOP SLAB

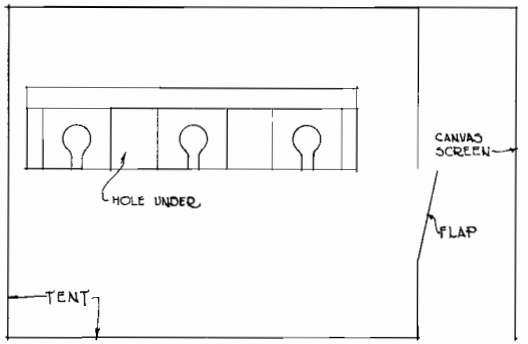
FOREST SERVICE

SEPTIC TANK & FILTER TRENCH

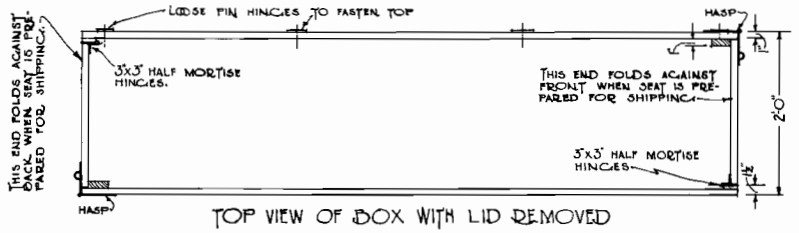
PLAN R-4 # 76A-1 — SHEET 1 OF 1

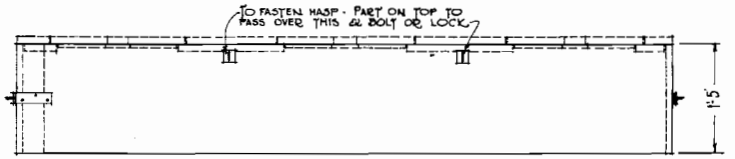
CHECKED	DATE	SCALE
APPROVED		AS SHOWN

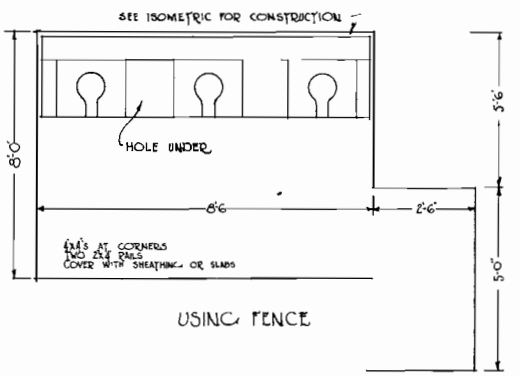




USING WALL TENT







SUGGESTIVE SETUPS

SEAT AND BOX TO BE BUILT OF CLEAR, WELL SEASONED PINE, TO BE COATED ONE COAT OF LINSEED OIL & TURPENTINE. TO BE FURNISHED WITH A CRATE WHICH WILL ALLOW SHIPPING AND CONTINUED RESHIPPING IN THE SAME CRATE. HARDWARE MAY BE WROUGHT IRON, STEEL, COPPER OR BRASS.

ISOMETRIC OF TENT & SCREEN

ISOMETRIC OF FENCE

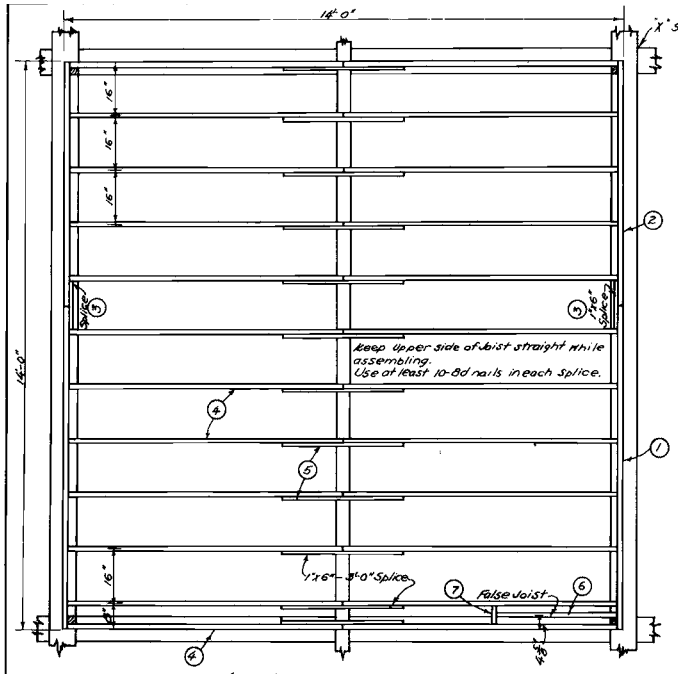
FOREST SERVICE

PLAN OF PORTABLE TOILET

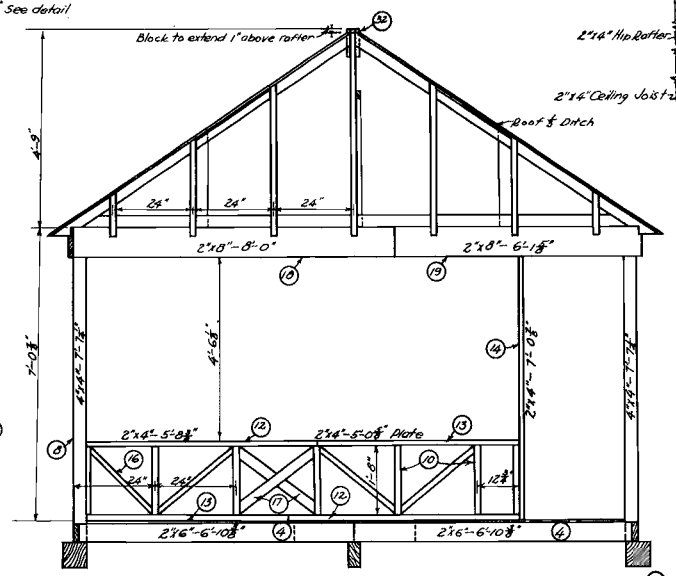
PLAN R-4 #79

SHEET 1 OF 1

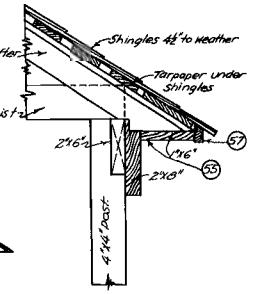
	DATE	SCALE
CHECKED G.L.N.	6-1-37	AS SHOWN
APPROVED E.P.	"	



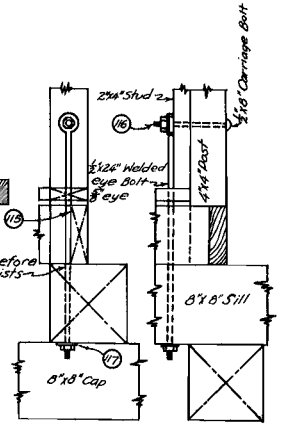
- JOIST FRAMING PLAN -



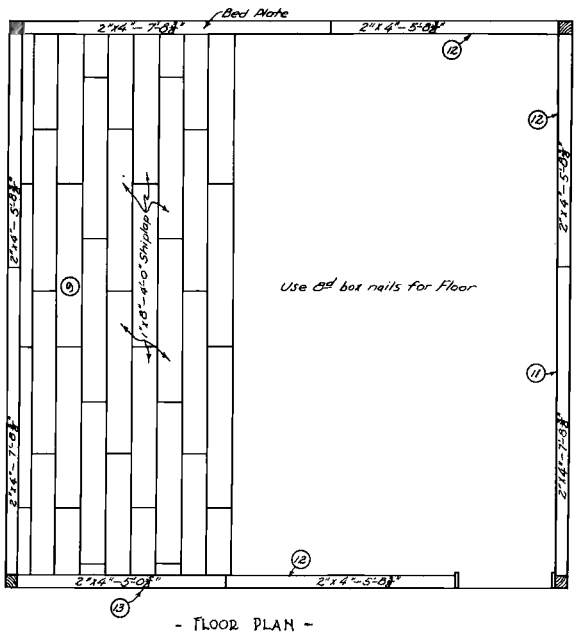
- FRONT FRAMING ELEVATION -



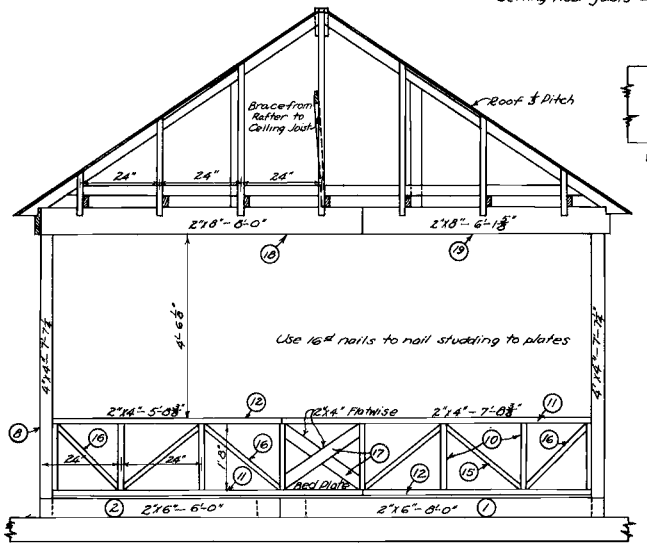
CORNER DETAIL
SCALE: 1½"=1'-0"



SECTION 'A-A' SECTION 'B-B'



- FLOOR PLAN -



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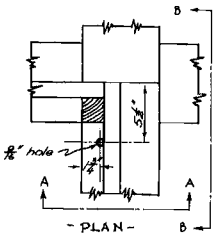


- PLAN -

TYPICAL DETAIL OF ANCHORING
SEE CORNER "A" THIS - SHEET -
- SCALE 1½"=1'-0" -

NOTE:
Numbers in circles refer to item numbers on Bill of Material

SCALE ½"=1'-0"

FOREST SERVICE

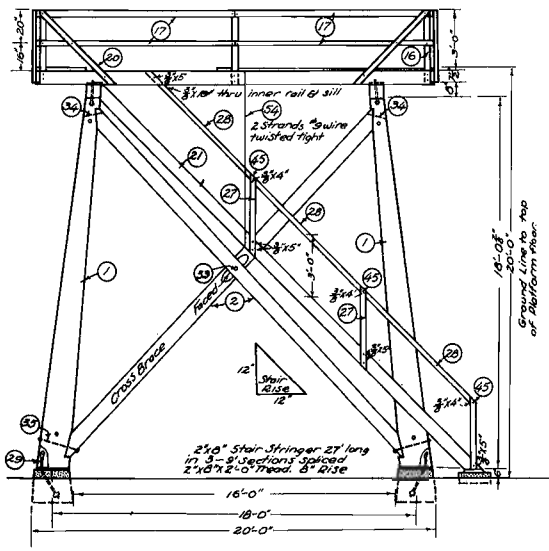
LOOKOUT HOUSE
R.I TYPE
PLAN R-4 #80
TRACED FROM R-1 PLAN L-8
SHEET 1 OF

CHECKED G.L.N.	DATE 4-18-38	SCALE PLANS & ELEVATIONS ½" = 1'-0" DETAILS AS SHOWN
APPROVED C.N.W.	4-19-38	

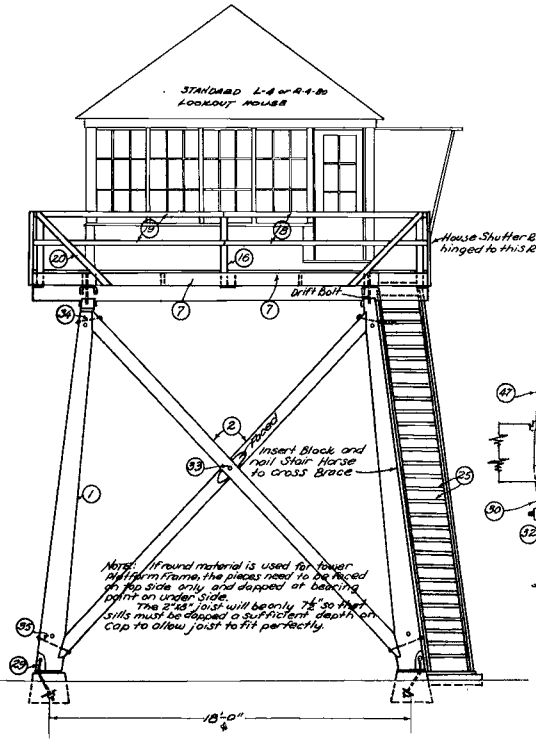
NOTE

All logs and poles to be peeled. All bolt holes and contact surfaces to be treated with creosote before assembly. Tower House and platform to be painted. Bolts to be purchased standard, threads on all long bolts to be run down approx. 4".

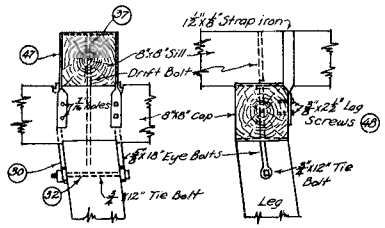
Before pouring concrete piers determine the diameter of base of leg to be used. Then slope top of pier ½" from outer edge of Leg to permit drainage and prevent moisture collecting beneath Leg.



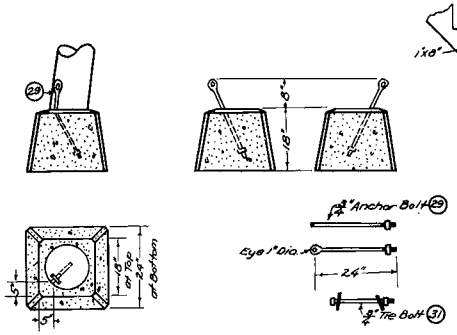
- SIDE ELEVATION -



FRONT ELEVATION

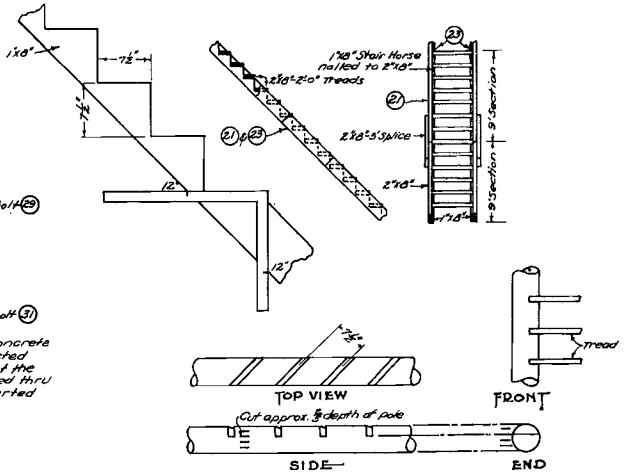


- DETAIL OF LEG TOPS -



NOTE: Anchor bolt is set in concrete on a slant. After tower is erected bolt is bent to meet the face of the foot of the leg. A hole is bored thru the leg and the bolt is inserted and drawn up snug.

- PIER DETAIL -



This method of making stair horses may be used. Poles approx. 7" in dia. are used. The cuts for treads are sawed approx. ⅓ the depth of the pole by using an improvised miter box. The 1⅛" chip is chiseled out and the tread spiked into cut.

- STAIR DETAILS -

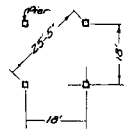


DIAGRAM FOR STAKING PIERS

NOTE: Numbers in circles refer to item numbers on material list.

FOREST SERVICE

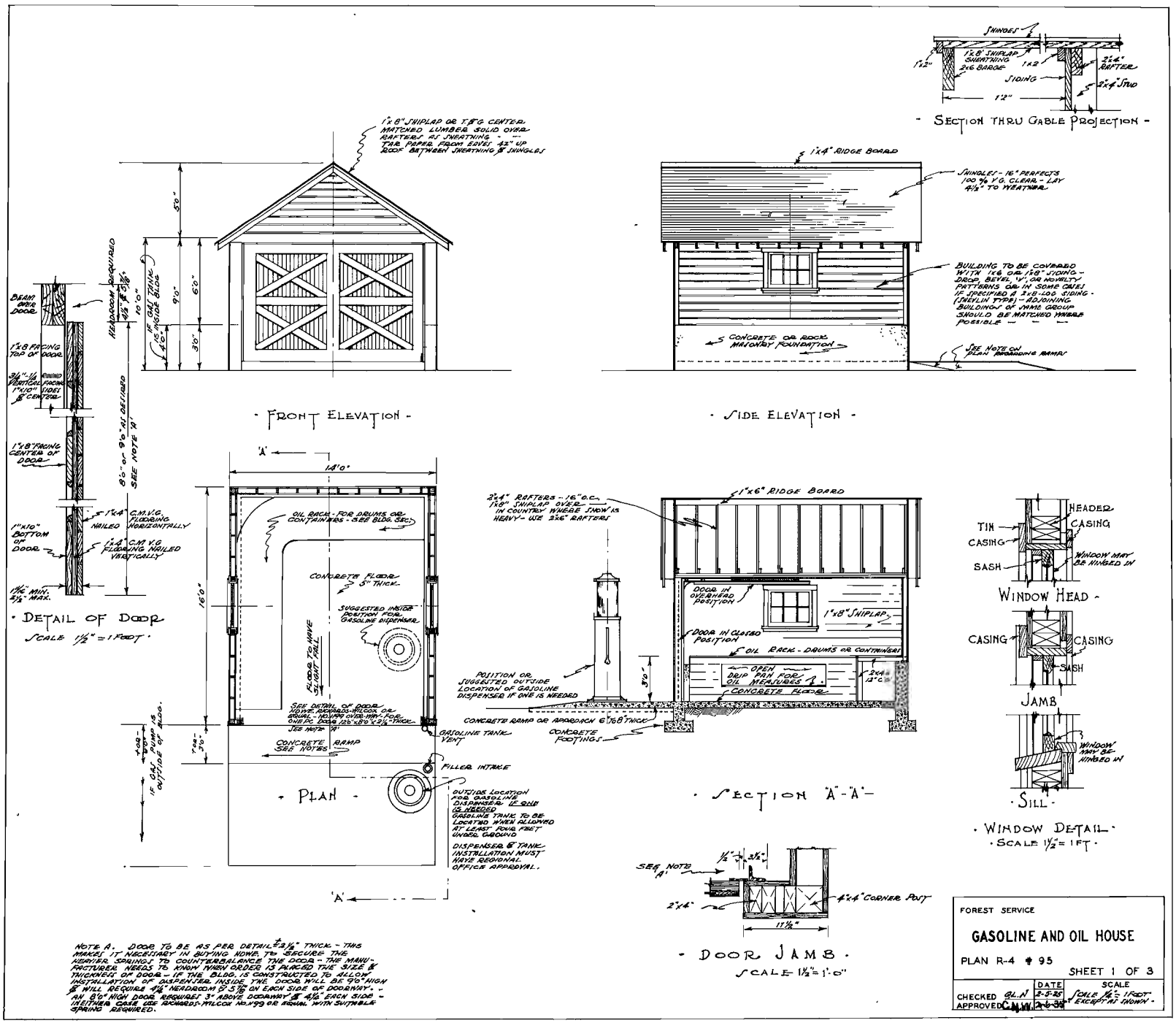
LOOKOUT TOWER WITH LIVING QUARTERS

PLAN R-4 # 82

TRACED FROM R-1 PLAN T-20

SHEET 1 OF 3

		DATE	SCALE
CHECKED	A.L.N.	4-27-32	ELEVATIONS 1/4" = 1 FOOT
APPROVED	C.N.W.	4-27-32	



- FRONT ELEVATION -

- SIDE ELEVATION -

- SECTION THRU GABLE PROJECTION -

- DETAIL OF DOOR -
SCALE 1½" = 1 FOOT

- PLAN -

- SECTION 'A'-'A' -

- WINDOW DETAIL -
- SCALE 1½" = 1 FT -

- DOOR JAMB -
SCALE 1½" = 1'-0"

NOTE A - DOOR TO BE AS PER DETAIL 2½" THICK - THIS MAKES IT NECESSARY IN BUYING HOME TO SECURE THE HEAVIER SPRINGS TO COUNTERBALANCE THE DOOR - THE MANUFACTURER NEEDS TO KNOW WHEN ORDER IS PLACED THE SIZE & THICKNESS OF DOOR - IF THE BLDG. IS CONSTRUCTED TO ALLOW INSTALLATION OF DISPENSER INSIDE THE DOOR WILL BE 90" HIGH & WILL REQUIRE 4½" HEADROOM & 3½" ON EACH SIDE OF DOORWAY. - AN 8'0" HIGH DOOR REQUIRES 3" ABOVE DOORWAY & 4½ EACH SIDE - WEATHER CASE SEE RICHARDS-WILCOX No. 499 OR EQUAL WITH SUITABLE SPRING REQUIRED.

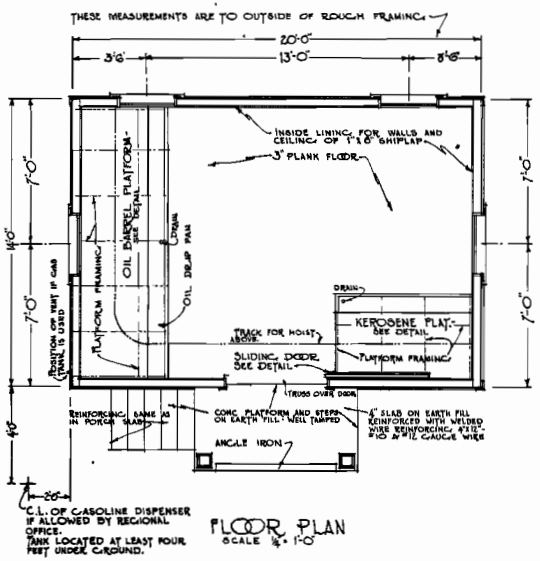
FOREST SERVICE

GASOLINE AND OIL HOUSE

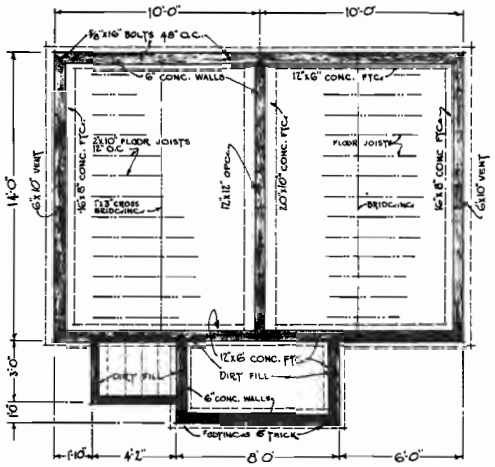
PLAN R-4 # 95

SHEET 1 OF 3

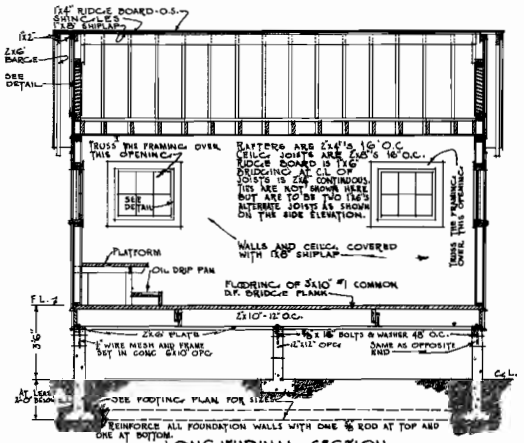
		DATE	SCALE
CHECKED	GLM	2-2-35	SCALE ½" = 1 FOOT EXCEPT AS SHOWN
APPROVED	C.M.W.	2-6-35	



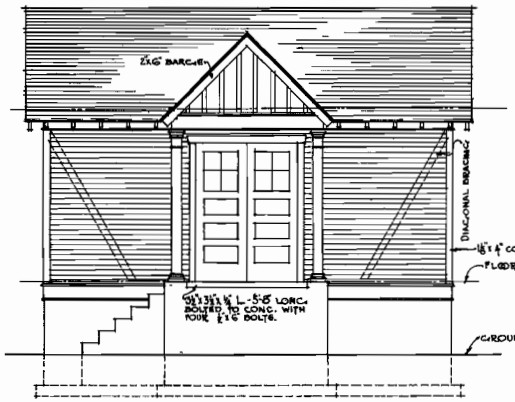
FLOOR PLAN
SCALE ¼" = 1'-0"



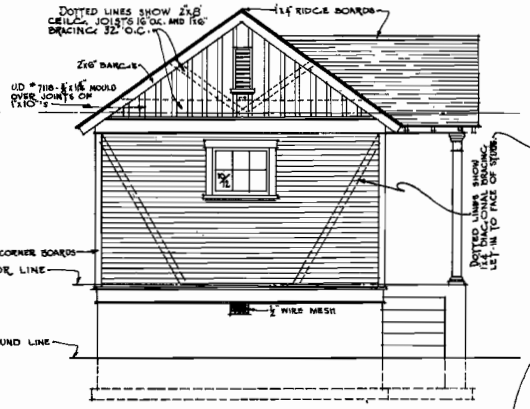
FOUNDATION & FOOTING PLAN
SCALE ¼" = 1'-0"



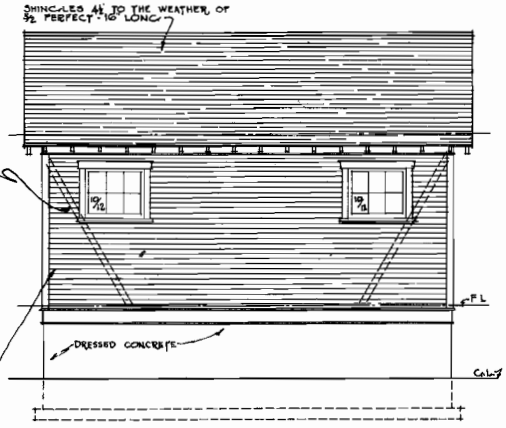
LONGITUDINAL SECTION
SCALE ¼" = 1'-0"



FRONT ELEVATION
SCALE ¼" = 1'-0"



SIDE ELEVATION
SCALE ¼" = 1'-0"
(OPPOSITE ELEVATION IS IDENTICAL BUT HAS NO STEPS)



REAR ELEVATION
SCALE ¼" = 1'-0"

BUILDING IS TO BE COVERED WITH 1"x6" OR 1"x8" DROP SIDING, BEVEL SIDING, OR IN SOME CASES IF SPECIFIED, A 2"x6" LOG SIDING (SHEVLIN TYPE) - ADJOINING BUILDINGS OF SAME GROUP SHOULD BE MATCHED WHERE POSSIBLE.

FOREST SERVICE

OIL HOUSE
WITH LOADING PLATFORM

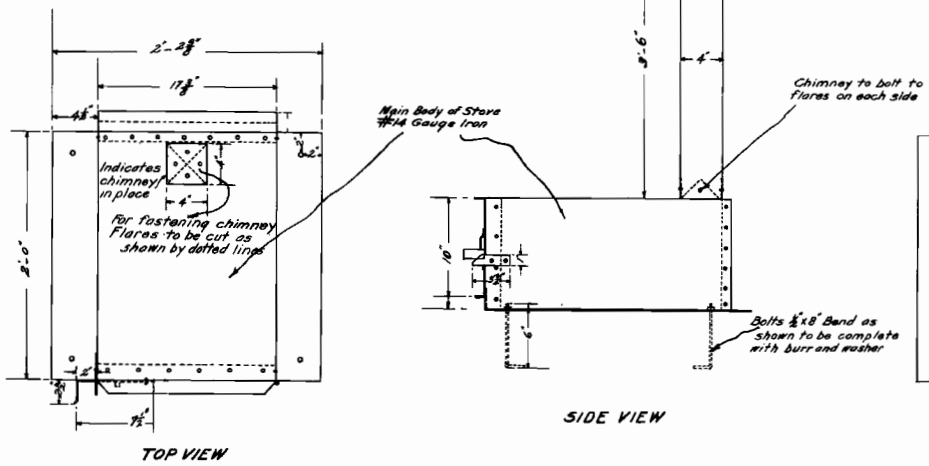
PLAN R-4 #95 A

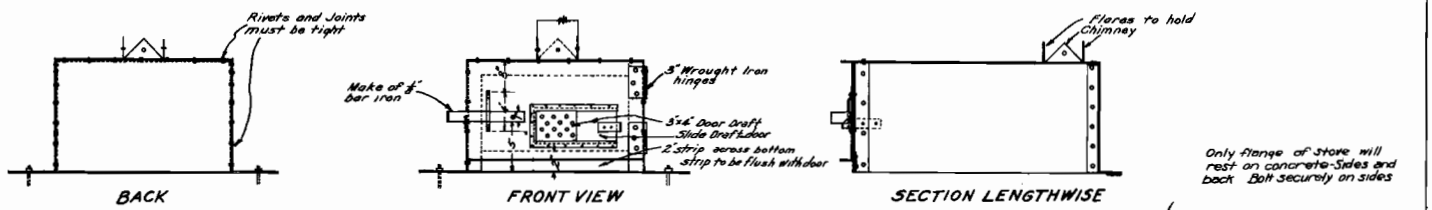
SHEET 1 OF 5

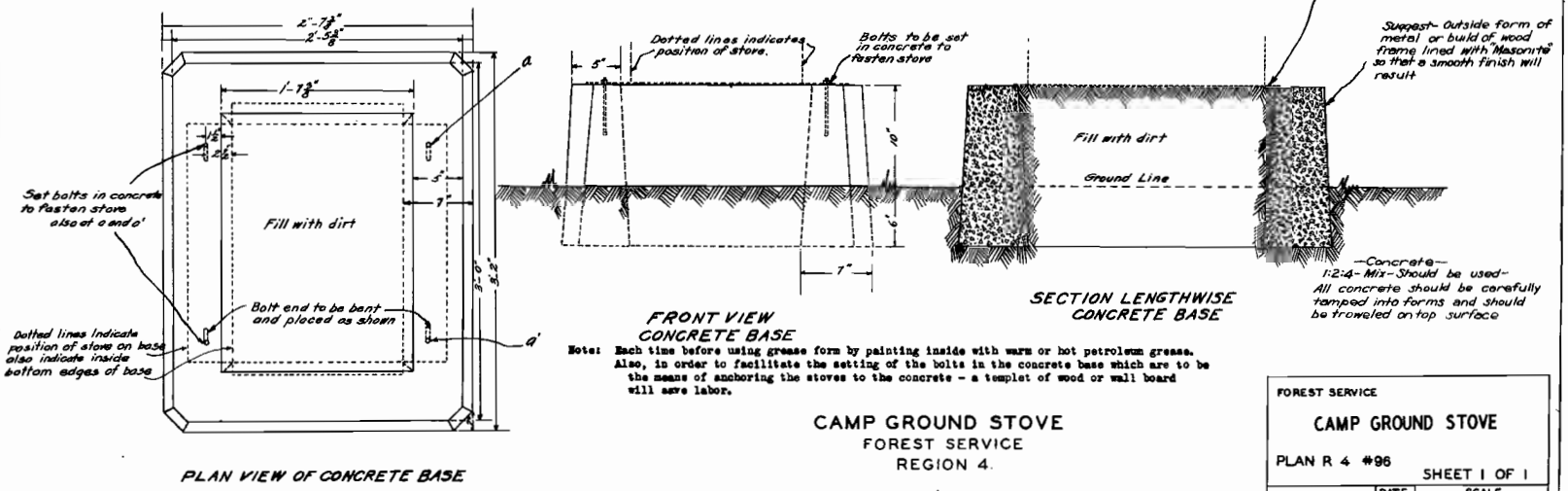
CHECKED JLW	DATE 1-29	SCALE ¼" = 1'-0"
APPROVED CMW		

SPECIFICATIONS FOR BUILDING FORM FOR CASTING CONCRETE BASE

Forms to be constructed of 1/4" Masonite on a frame work of 1"x4" and 2"x4" material, neatly and securely fastened to the masonite material - the glazed side of the masonite is to be put on the frame work so that when the form is in place for casting the base, it will be next to the concrete. The inside corners which are beveled are to be planed smooth and oiled, so that the form will slip easily from the concrete after it is set. All outside corners of forms are to be securely fastened and the whole form is to be braced securely so that it will be a form to the true shape and size of the base as per plan on this sheet. The forms are to be constructed so that the inside dimensions are such as to allow the casting of a base as pictured on this plan.





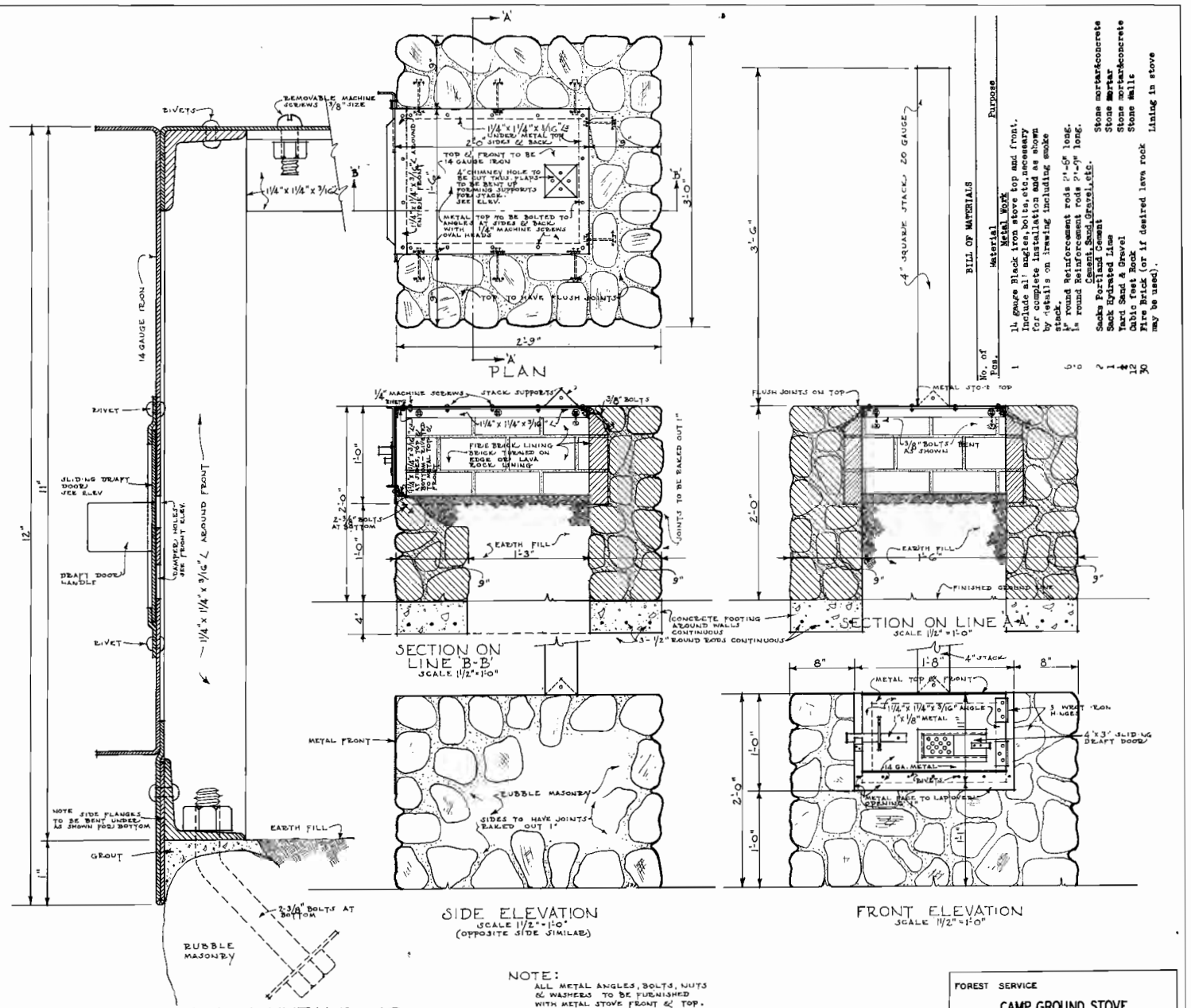


Note: Each time before using grease form by painting inside with warm or hot petroleum grease. Also, in order to facilitate the setting of the bolts in the concrete base which are to be the means of anchoring the stoves to the concrete - a templet of wood or wall board will save labor.

CAMP GROUND STOVE
FOREST SERVICE
REGION 4.

SCALE: 1½ IN. = 1 FOOT

FOREST SERVICE		
CAMP GROUND STOVE		
PLAN R 4 #96		SHEET 1 OF 1
CHECKED	DATE	SCALE
APPROVED		



BILL OF MATERIALS

No. of Pcs.	Material	Purpose
1	Metal Work	
	14 gauge Black iron stove top and front. Include all angles, bolts, etc. necessary for complete installation and as shown by details on drawing including smoke stack.	
5'-0	½" round Reinforcement rods 2'-6" long.	
12	½" round Reinforcement rods 2'-9" long.	
	Cement, Sand, Gravel, etc.	
2	Sacks Portland Cement	Stone mortar&concrete
1	Sack Hydrated Lime	Stone Mortar
½	Yard Sand & Gravel	Stone mortar&concrete
12	Cubic feet Rock	Stone Walls
30	Fire Brick (or if desired lava rock may be used).	Lining in stove

NOTE:
ALL METAL ANGLES, BOLTS, NUTS & WASHERS TO BE FURNISHED WITH METAL STOVE FRONT & TOP.

SPECIFICATION

ROCK WORK: A capable rock mason should be engaged. The rock will be laid in a mortar made in the following proportions by volume:

1 part hydrated lime
1 part Portland cement
4 parts of clean sharp sand

The mortar will be of a heavy batter consistency, usually requiring 50 to 60 gallons of water per cubic yard of stone work. Estimate 30 to 40% of cubic foundation as mortar.

FOREST SERVICE

CAMP GROUND STOVE WITH ROCK FACING

PLAN R-4 #96A-1

SHEET 1 OF 1

	DATE	SCALE
CHECKED CLM	2-6-35	AS SHOWN
APPROVED DD	2-8-35	

BILL OF MATERIALS

Item No.	No. of Pcs.	Material or Labor	Purpose
1	16	Sacks, Portland Cement	Mortar and concrete
2	2	Cu. Yds. Sand	Mortar and concrete
3	1	Cu. Yd. Gravel	Concrete
4	10	Sacks, hydrated lime	Mortar
5	16	3/8" bolts 12" long, complete with nuts and 2 washers each	Bolting stoves to foundations
6	4	Metal campground stoves complete without stove pipe, all as shown on Std. Plan #96, except flue opening to be in rear of stove instead of top	Stoves
7	1	20 ga. G.I. flue, 8" x 8" square 4'-0" long with vertical partitions dividing cross sectional area into 4" x 4" compartments	Chimney Flue
8	4	20 ga. galv. iron, 4" x 4" square, flues 2'-0" long with elbows, all as shown on drawing.	Smoke connection between stove and Chimney Flue
9	8	Cu. Yds. Rock	Stove base
		Plumbing (Crane numbers or equal)	
10	2	Faucets similar to Crane #31140, Tee handle, solid flange, female, size 1/2", brass.	
11	75	Ft. 1/2" galv. iron pipe	
12	3	1/2" tees, galv.	
13	42	1/2" 90° elbows, galv.	
14	4	1/2" 90° street elbows, galv.	
15	12	1/2" R.R. unions, ground joints, galv.	
16	2	Lengths 2" galv. pipe	
17	1	2" - 90° long turn elbow, galv.	
18	1	2" galv. nipple 3" long, threaded one end only.	
19	1	1/2" Relief Valve similar to Crane #1135, for hot water service	
20	1	2" x 2" x 1/2" galv. tee	

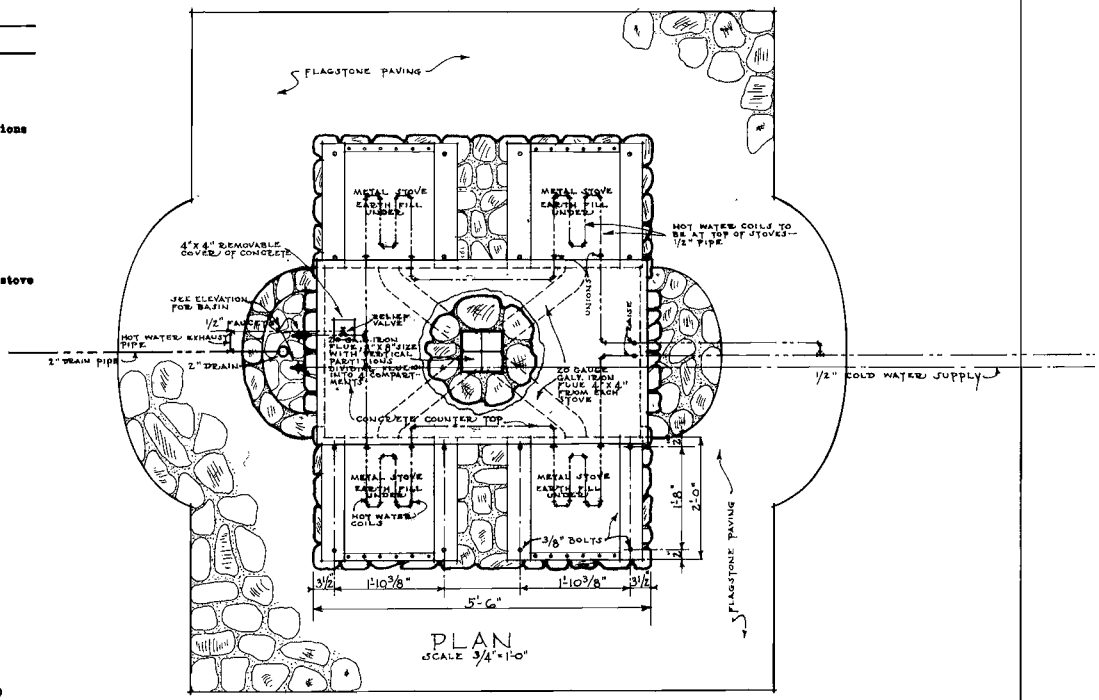
SPECIFICATION

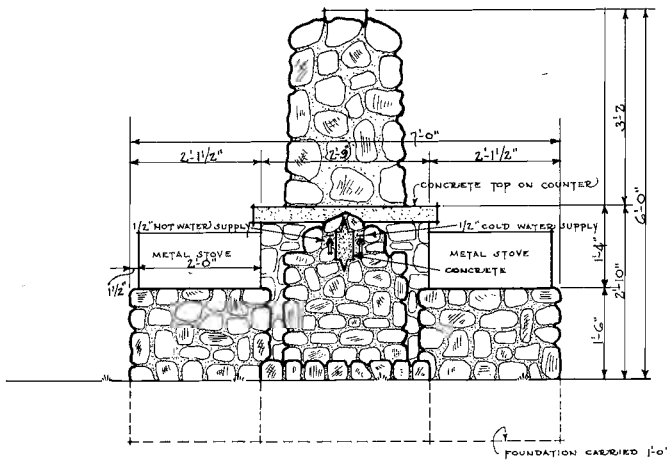
Rock Work:

A capable rock mason should be engaged. The rock will be laid in a mortar made in the following proportions by volume:

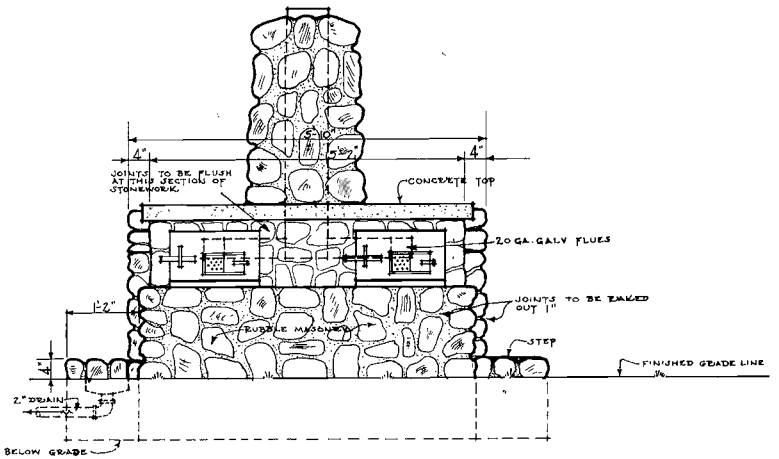
1 part hydrated lime
1 part Portland cement
4 parts of clean sharp sand

The mortar will be of a heavy batter consistency, usually requiring 50 to 60 gallons of water per cubic yard of stone work. Estimate 30 to 40% of cubic foundation as mortar.





END ELEVATION
(OPPOSITE END SIMILAR)
SCALE 3/4"=1'-0"



SIDE ELEVATION
(OPPOSITE SIDE SIMILAR)
SCALE 3/4"=1'-0"

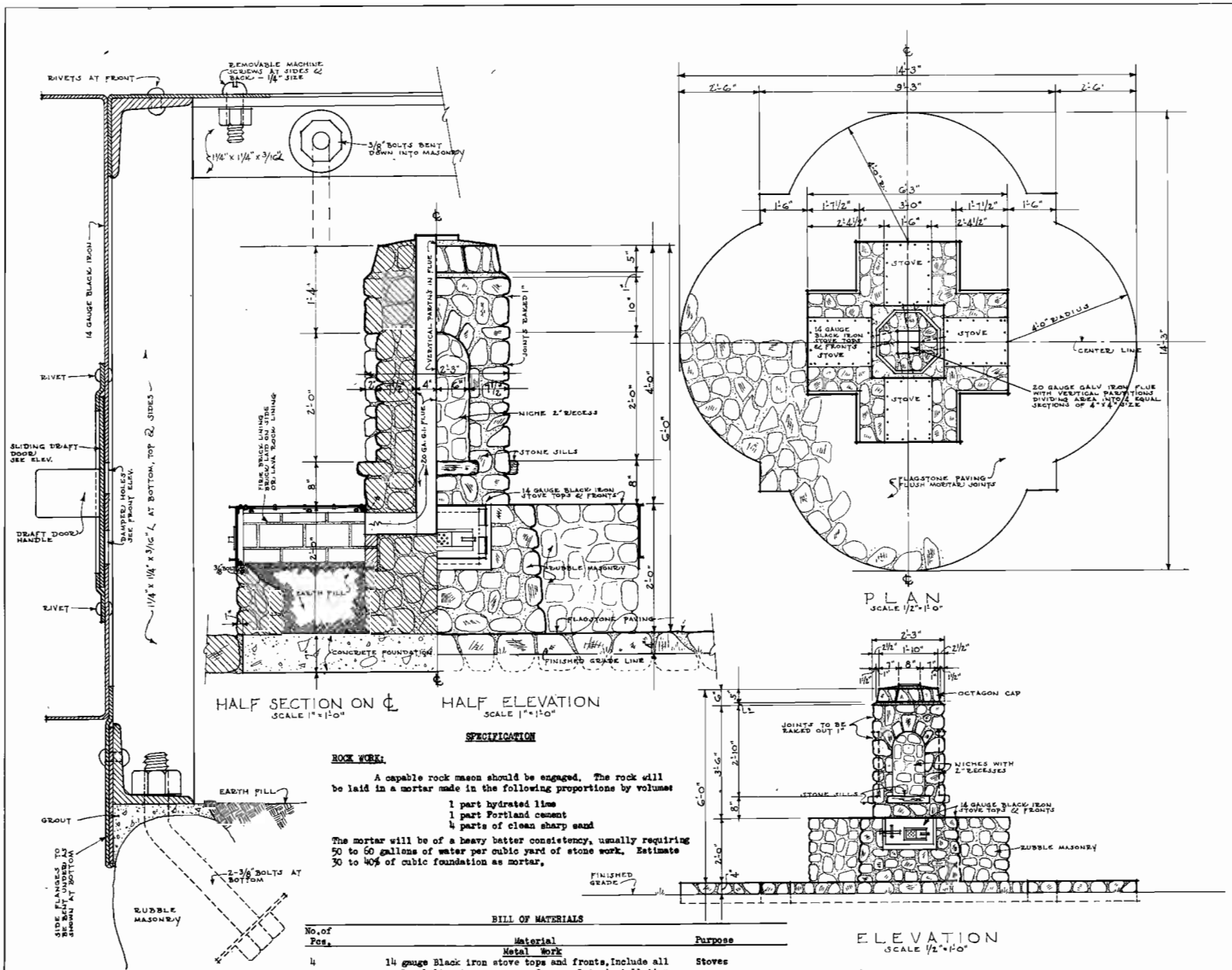
FOREST SERVICE

GROUP CAMP GROUND STOVE

PLAN R-4 # 96A-2

SHEET 1 OF 1

CHECKED	G.L.N.	DATE 2-7-35	SCALE 3/4"=1'-0"
APPROVED	D.P.	2-7-35	



SPECIFICATION

ROCK WORK:

A capable rock mason should be engaged. The rock will be laid in a mortar made in the following proportions by volume:

1 part hydrated lime
1 part Portland cement
4 parts of clean sharp sand

The mortar will be of a heavy batter consistency, usually requiring 50 to 60 gallons of water per cubic yard of stone work. Estimate 30 to 40% of cubic foundation as mortar.

BILL OF MATERIALS

No. of Pcs.	Material	Purpose
	Metal Work	
4	14 gauge Black iron stove tops and fronts, Include all angles, bolts, etc, necessary for complete installation and as shown by details on drawing.	Stoves
1	20 gauge galvanized iron flue 8" x 8" with vertical partitions dividing cross sectional area into compartments 4" x 4" each. Total length of flue 4'-8".	Stove Flues
	Cement, Sand, Gravel, & Stone	
14	Sacks Portland Cement	Stone mortar & concrete
11	Sacks Hydrated Lime	Stone mortar
1	Cubic yard Sand	Stone mortar & concrete
6	Cubic yards Stone	Stone work
110	Fire Brick (or lava rock may be used if desired).	Lining in Stoves

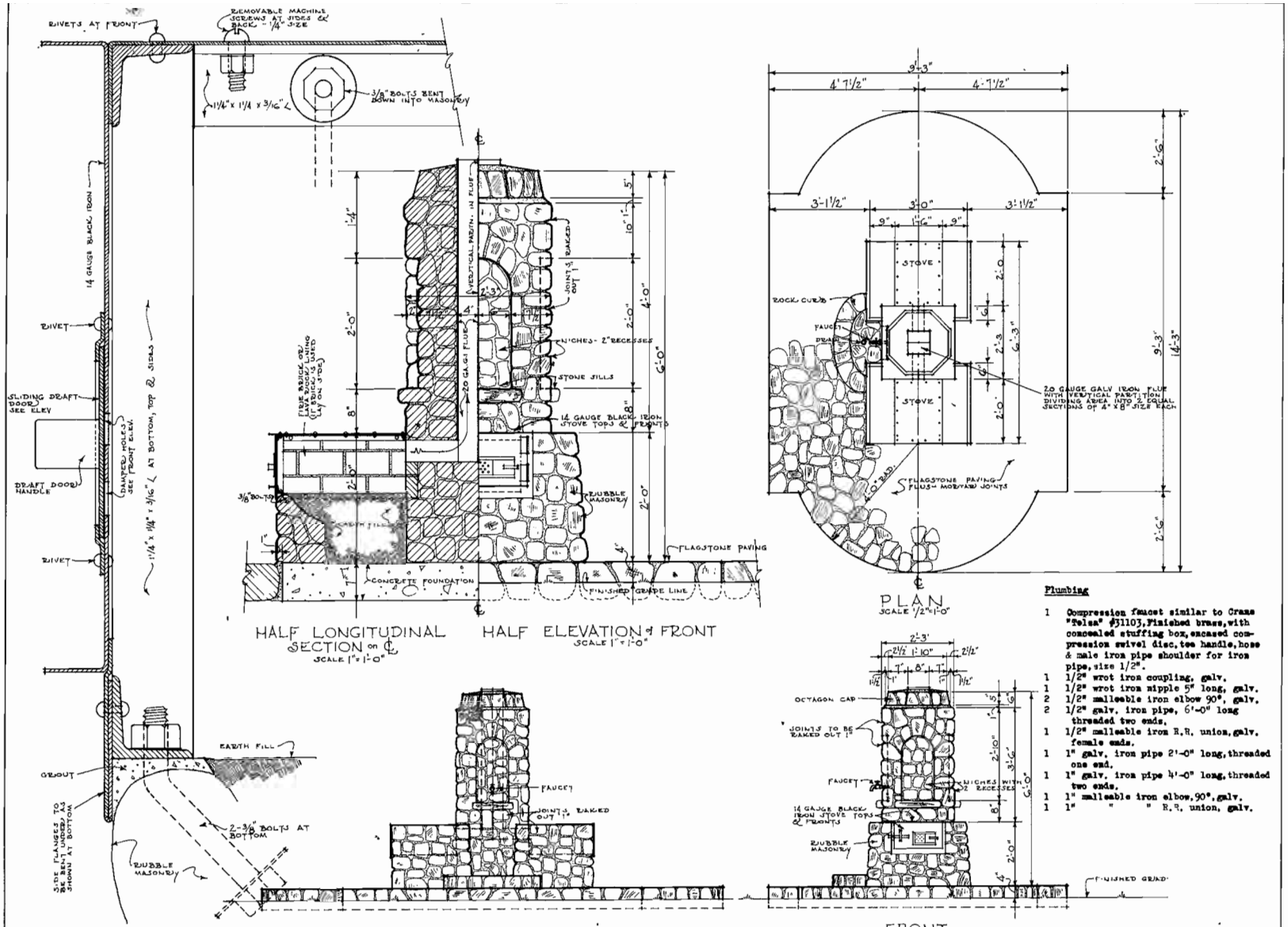
FOREST SERVICE

GROUP CAMP GROUND STOVE

PLAN R-4 # 96A-3

SHEET 1 OF 1

	DATE	SCALE
CHECKED ALK	2-6-35	AS SHOWN
APPROVED BP	2-7-35	



Plumbing

1	Compression faucet similar to Crane "Felsa" #31103, Finished brass, with concealed stuffing box, encased compression swivel disc, tee handle, hose & male iron pipe shoulder for iron pipe, size 1/2".
1	1/2" wrot iron coupling, galv.
1	1/2" wrot iron nipple 5" long, galv.
2	1/2" malleable iron elbow 90°, galv.
2	1/2" galv. iron pipe, 6'-0" long threaded two ends.
1	1/2" malleable iron R.R. union, galv. female ends.
1	1" galv. iron pipe 2'-0" long, threaded one end.
1	1" galv. iron pipe 4'-0" long, threaded two ends.
1	1" malleable iron elbow, 90°, galv.
1	1" " " R.R. union, galv.

SPECIFICATION

ROCK WORK:

A capable rock mason should be engaged. The rock will be laid in a mortar made in the following proportions by volume:

1 part hydrated lime
1 part Portland cement
4 parts of clean sharp sand

The mortar will be of a heavy batter consistency, usually requiring 50 to 60 gallons of water per cubic yard of stone work. Estimate 30 to 40% of cubic foundation as mortar.

BILL OF MATERIALS

No. of Pcs.	Material	Purpose
	Metal Work	
2	14 gauge black iron stove tops and fronts. Include all angles, bolts, etc. necessary for complete installation and as shown by details on drawing.	Stoves
1	20 gauge galvanized iron flue 8" x 8" with vertical partition dividing cross sectional area into two compartments 4" x 8" each. Total length of flue 4'-8".	Stove Flues
	Cement, Sand, Gravel, & Stone	
10	Sacks Portland Cement	Stone mortar & concrete
9	" Hy. Lime	Stone mortar
1	Cu. Yd. Sand	Stone mortar & concrete
5	" " Rock	Stone Work
85	Fire Brick (or lava rock may be used if desired)	Lining in Stoves

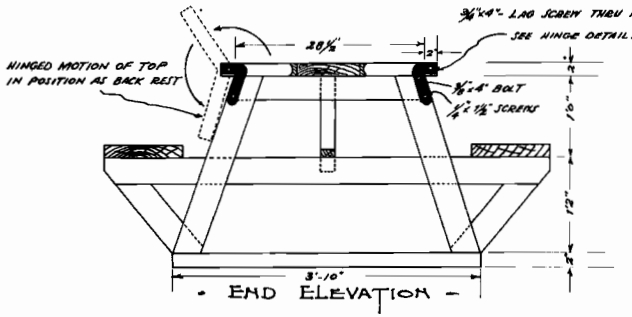
FOREST SERVICE

TWO UNIT CAMP GROUND STOVE

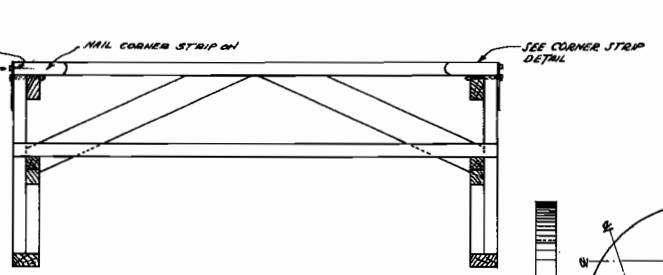
PLAN R-4 * 96A-4

SHEET 1 OF 1

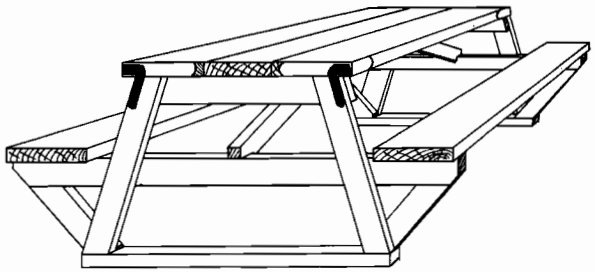
CHECKED	G.L.N.	DATE	SCALE
APPROVED	DP	4-1-54	AS SHOWN



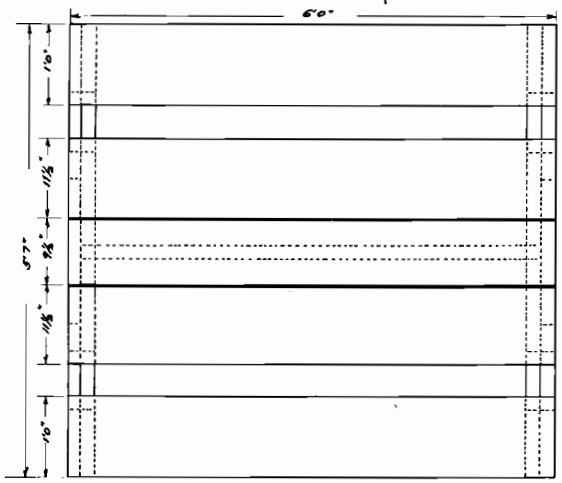
- END ELEVATION -



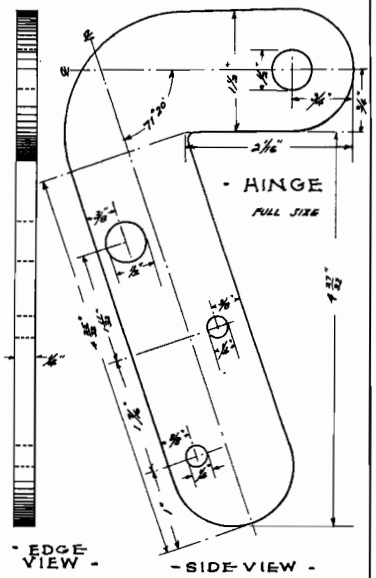
- SIDE ELEVATION -



- PERSPECTIVE OF TABLE -



- PLAN -



- EDGE VIEW -

- SIDE VIEW -

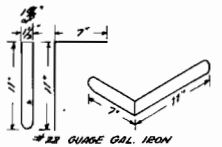
- COMBINATION CAMP TABLE AND SETTEE -

BILL OF MATERIALS

Item No.	No. of Pcs.	Materials	Purpose
		Lumber, etc.	
1	2	2" x 12" x 6'0"	Seat tops
2	2	2" x 12" x 6'0"	Table tops
3	1	2" x 10" x 6'0"	" "
4	2	2" x 4" x 6'0"	Cross piece at ends under seat
5	2	2" x 4" x 4'0"	Cross pieces under legs at ends
6	2	2" x 4" x 3'0"	Cross pieces ends top of legs
7	4	2" x 4" x 1'6"	Braces legs to end cross pc. under seats
8	4	2" x 4" x 2'6"	Legs
9	2	2" x 4" x 3'0"	Braces under center of table
10	5	Lbs. 20D common nails	For construction
11	1/4	" 6D finishing nails	" "
12	1/4	" 4D common blued or galv. nails	" "
		Hardware	
13	4	Hinges (as per detail)	To allow top to move in position of back rest
14	4	3/8" x 4" lag screws	To fasten top to hinge
15	4	3/8" x 4" bolts comp. with nuts & washers.	-To fasten hinge to leg of table
16	8	1/4" x 1½" screws	" " " " " " "
17	4	Corner strips (as per detail)	Protect corners

Item No.	No. of Pcs.	Materials	Purpose or Grade	FBM.
		Yard List (Includes Items 1 to 12, incl. Do not duplicate.)		
1TL	2	2" x 12" x 12'0"	#1 Com. D.F. or West Coast Hemlock S4S	48
2"	1	2" x 10" x 6'0"	Ditto	10
3"	2	2" x 4" x 10'0"	"	13
4"	2	2" x 4" x 6'0"	"	8
5"	2	2" x 4" x 8'0"	"	11
6"	5	Lbs. 20D common nails		
7"	1/4	" 6D finishing nails		
8"	1/4	" 4D common blued or galvanized nails		
		Paint		
18	1/2	Gal. paint (brilliant or bottle green)	Paint table all over, 3 coats	
		Alternate Paint		
19	1/2	Gal. oil stain*	Stain " " " " "	

*Proportions of ingredients:
4 Gal. raw linseed oil
1 " Spar varnish
1 Lb. can burnt umber ground in oil



DETAIL OF - CORNER STRIP -

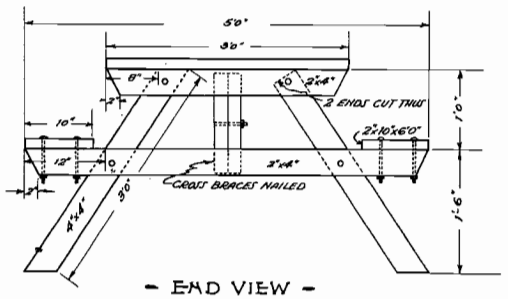
FOREST SERVICE

CAMP GROUND TABLES

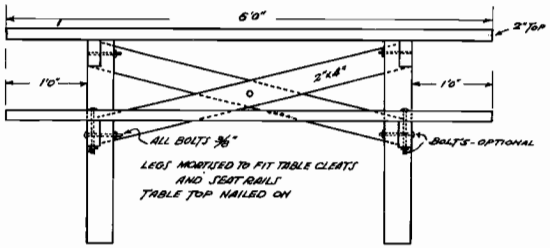
PLAN R-4 # 97A

SHEET 1 OF 1

	DATE	SCALE
CHECKED G.L.N.	5-9-33	— 1" = 1 FOOT —
APPROVED D.R.	5-11-33	



- END VIEW -



- SIDE VIEW -

- CAMP TABLE TYPE "B" -

Scale 1"=1FT.

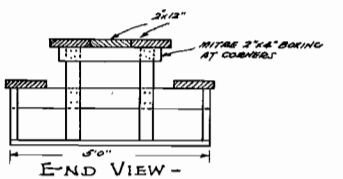
BILL OF MATERIALS

Item No.	No. of Pcs.	Material or Labor		Purpose	F.B.M.
		Lumber - Yard List			
1YL	1	4"x4"-12'-0"	#1 Common Douglas Fir S4S	Legs	16
2YL	3	2"x4"-8'-0"	Ditto	Seat Rails, Cleats & braces	16
3YL	2	2"x10"x6'-0"	"	Seats	20
4YL	3	2"x12"x6'-0"	"	Top	36
5YL	5#	20 D Common Nails		For Construction	
		Option			
		If bolts are desired eliminate 3# of Item 5YL			
		Add the following:			
6YL	2.5	3/8"x6" bolts complete with nuts & washers			
7YL	9	3/8"x4"	Ditto		
		Paint			
8YL	1/2	Gal. Green Paint (Brilliant or Bottle Green)		Paint table all over (3 coats)	
		Alternate Paint			
9YL	1/2	Gal Oil Stain *		Staining table all over (3 coats)	

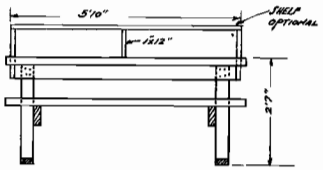
* Proportions of Ingredients

4 Gal. Raw Linseed Oil
1 Gal. Spar Varnish
1 lbs. can burnt umber ground in oil.

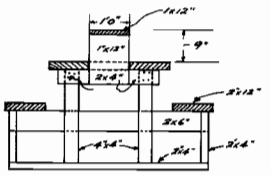
- SIDE VIEW -



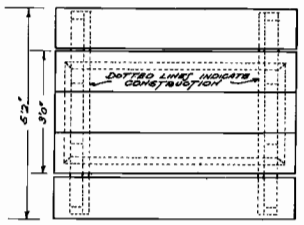
- END VIEW -



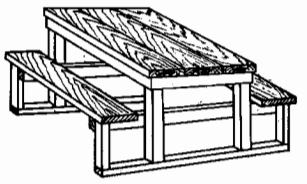
- SIDE VIEW -
SHOWING TABLE EQUIPPED WITH SHELF



- END VIEW -



- PLAN OF TOP -



PERSPECTIVE

- CAMP TABLE - TYPE 'C' -

Scale 3/4"=1Foot.

BILL OF MATERIALS

Item No.	No. of Pcs.	Material or Labor		Purpose	F.B.M.
		Lumber - Yard List			
1YL	5	2"x12"x6'-0"	#1 Common Douglas Fir S4S	Top and Seats	60
2YL	1 *	1"x12"x10'-0"	Ditto	Shelf	10
3YL	1	4"x4"x30'-0"	"	Legs	14
4YL	1	2"x6"-10'-0"	"	Cross pcs. at ends under seats	10
5YL	1	2"x4"-10'-0"	"	Ditto legs	7
6YL	1	2"x4"-12'-0"	"	(Boxing under top around legs	8
7YL	1	2"x4"-6'-0"	"	(" " " " "	4
8YL	7	lbs. 20D Common Nails			
		*Optional - this item may be dropped if desired.			
		Paint			
9YL	1/2	Gal. Green Paint (Brilliant or Bottle Green)		Paint table all over (3 coats)	
		Alternate Paint			
10YL	1/2	Gal. Oil Stain **		Staining table all over (3 coats)	

** Proportions of Ingredients

4 Gal. Raw Linseed Oil

1 Gal. Spar Varnish

1 lb. can burnt umber ground in oil.

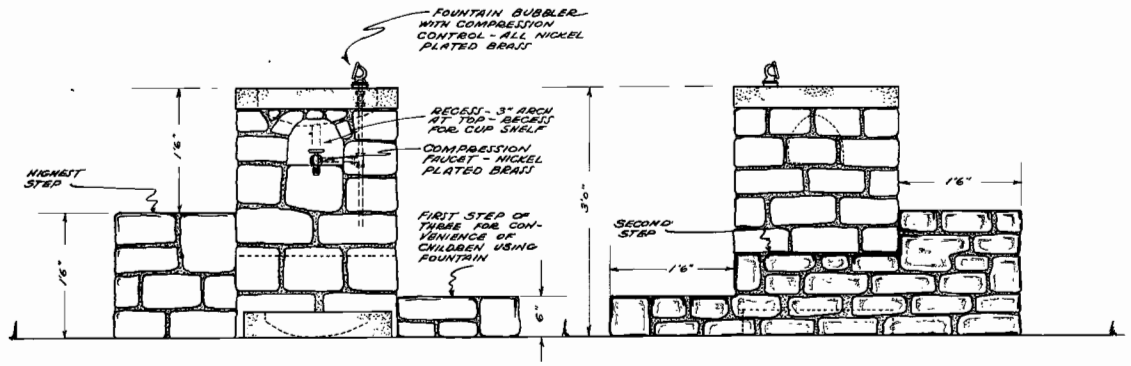
FOREST SERVICE

CAMP GROUND TABLES

PLAN R-4 # 978&C

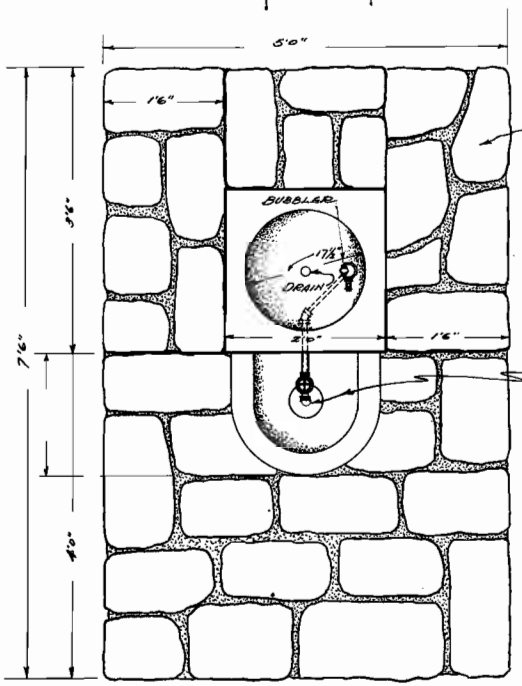
SHEET 1 OF 1

		DATE	SCALE
CHECKED	G.L.N.	5-12-33	AS SHOWN
APPROVED	D.P.	5/13/33	



- FRONT ELEVATION -

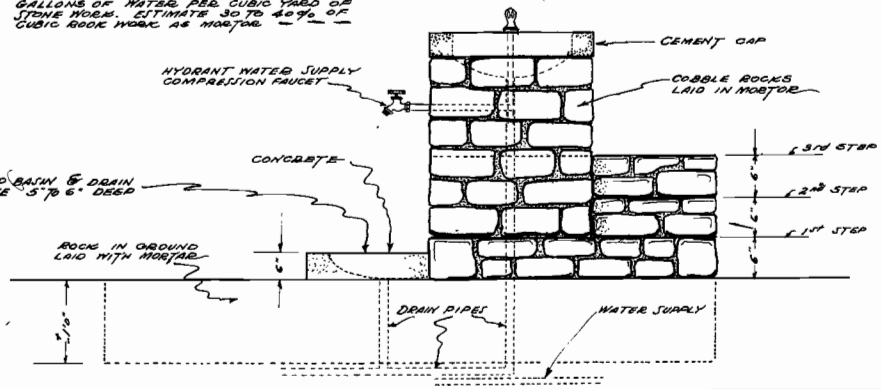
- BACK ELEVATION -



- PLAN -

SELECT SUITABLE ROCKS AND A CAPABLE ROCK MASON - THE ROCK WILL BE LAID IN A MORTAR MADE IN THE FOLLOWING PROPORTIONS BY VOLUME:
1 PART HYDRATED LIME
1 PART PORTLAND CEMENT
6 PARTS OF CLEAN SHARP SAND
THE MORTAR WILL BE OF A HEAVY BATTER CONSISTANCY, USUALLY REQUIRING 50 TO 60 GALLONS OF WATER PER CUBIC YARD OF STONE WORK. ESTIMATE 30 TO 40% OF CUBIC RUBBLE WORK AS MORTAR.

DRIP BASIN & DRAIN MAKE 5" TO 6" DEEP



- SIDE ELEVATION

REVISED APR. 1, 1935

FOREST SERVICE

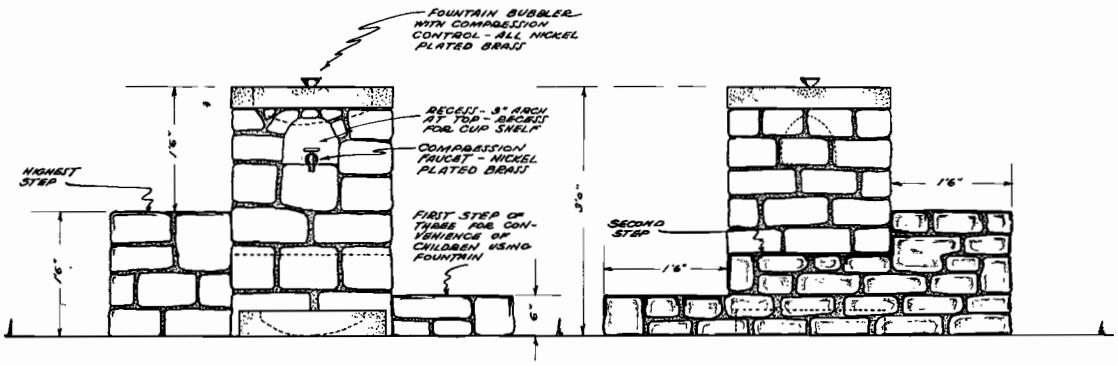
CAMP GROUND

DRINKING FOUNTAIN

PLAN R-4 #98

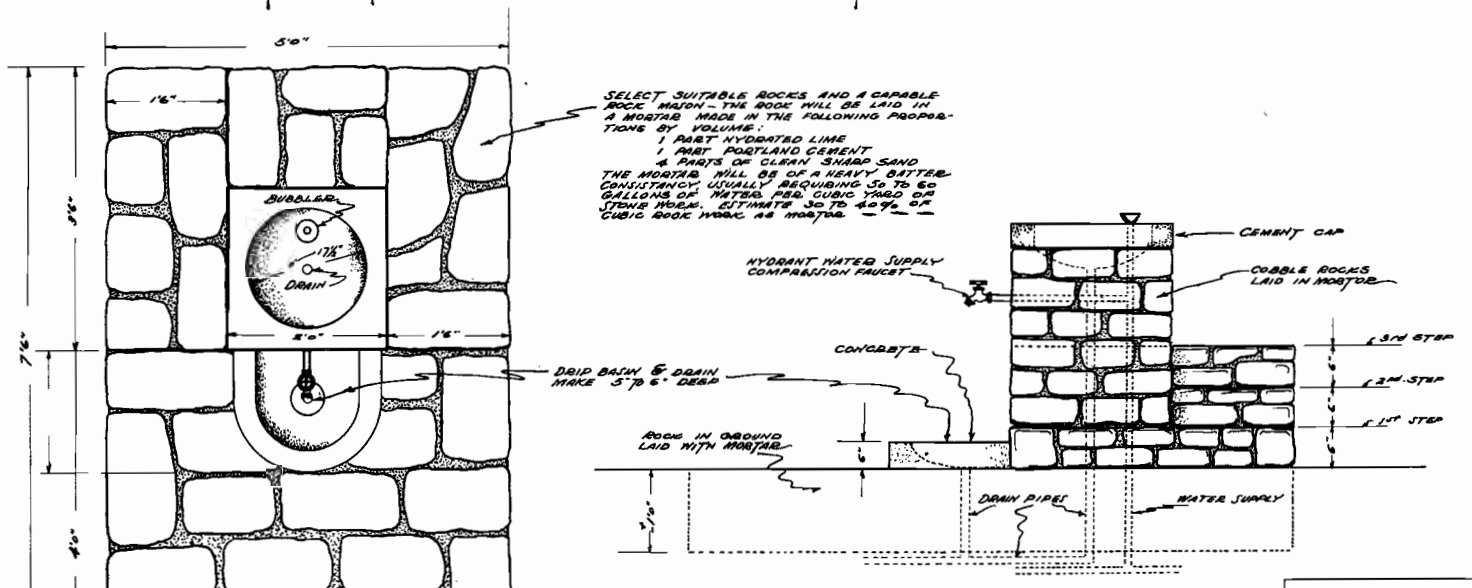
SHEET 1 OF 2

CHECKED	DATE	SCALE
APPROVED		1" = 1 FOOT



- FRONT ELEVATION -

- BACK ELEVATION -



- PLAN -

- SIDE ELEVATION -

FOREST SERVICE

CAMP GROUND

DRINKING FOUNTAIN

PLAN R-4 #98

SHEET 1 OF

CHECKED GLN	DATE 5-1-33	SCALE 1" = 1 FOOT
APPROVED D.P.	0	

LIST OF MATERIALS

Item No.	No. of Pcs.	Material or Labor	Purpose
		ROCKWORK	
1	1.5	Cu. Yds. Stone	For Rockwork
2	5	Sacks Portland cement	Cement for concrete also included
3	5	Sacks Hydrated Lime	For rockwork only
4	17	Cu. Ft. Sand	Sand for concrete also included
		CONCRETE	For basin and base of bucket drain
5	1.6	Cu. Ft. Gravel (Note) Enough cement and sand has been figured in Rockwork to make the concrete required.	
		PLUMBING	
6	1	Equal to #09533-A2 3/8" Bubbler - (Chromium)	Roughing in and Fixtures
7	1	Equal to #C32620-A 1/2" self-closing stop (Chromium)	Ditto
8	1	Equal to #C31574-A 1/2" self-closing faucet (Chromium)	"
9	2	Pcs. #8 Galv. screen to fit 2" fitting as shown	"
10	2	2" x 1½" Galv. face bushings	"
11	2	2" Galv. malleable couplings (band type)	"
12	2	2" x 1" galv. malleable reducer " "	"
13	1	1" galv. malleable ell " "	"
14	1	1" galv. malleable tee " "	"
15	1	1" galv. R.R. union	"
16	1	1/2" galv. coupling " "	"
17	3	1/2" 90° galv. malleable ells " "	"
18	1	1/2" 45° galv. malleable ells " "	"
19	1	1/2" x 3/8" galv. malleable elle" "	"
		Plumbing (Continued)	
20	1	1/2" galv. malleable tee (band type)	Roughing in and Fixtures
21	1	1/2" galv. R.R. union	Ditto
22	2	2" x 3½" galv. nipples (running thread on one end)	"
23	1	1/2" short galv. nipple	
24	2	1/2" x 2½" galv. nipples	
25	1	1/2" x 3" galv. nipple	
26	1	1/2" x 6" galv. nipple	
27	1	3/8" short galv. nipple	
28	1	Lgth. 1/2" galv. pipe 7'-0" long	
29	1	Lgth. 1" galv. pipe 9'-0" long	
30	1	1 lb. can pipe cement.	

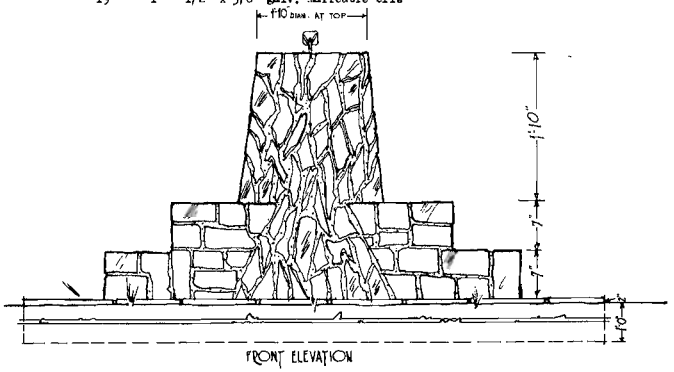
SPECIFICATION

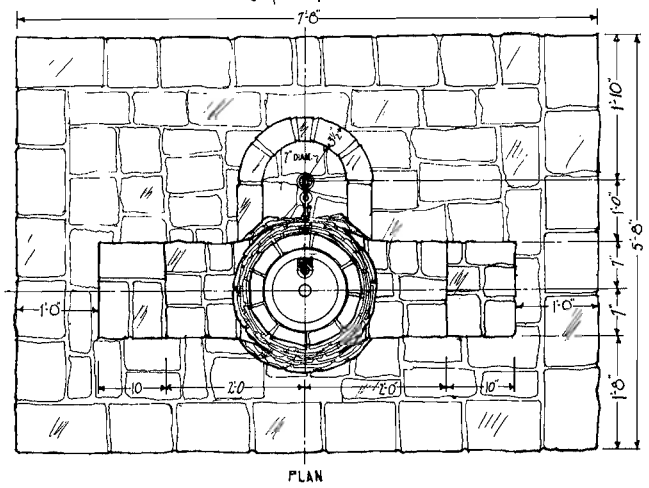
Rock Work:

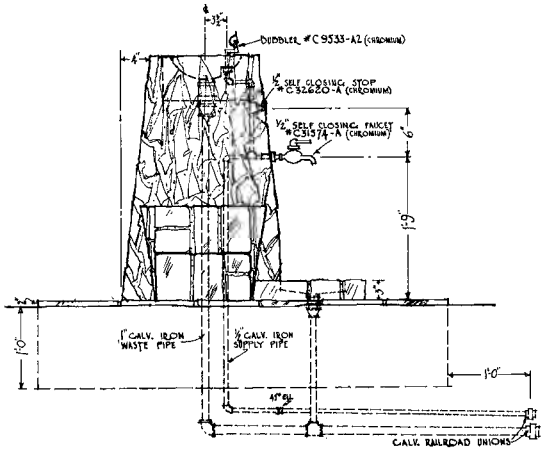
A capable rock mason should be engaged. The rock will be laid in a mortar made in the following proportions by volume:

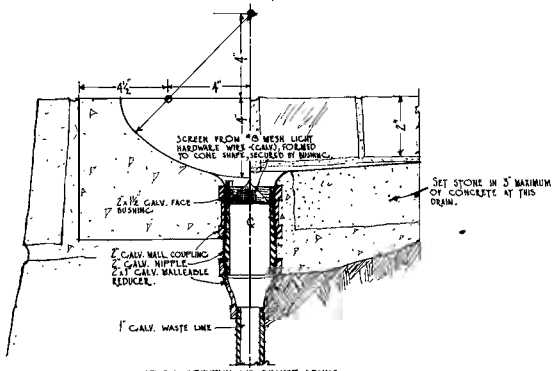
1 part hydrated lime
1 part Portland cement
4 parts of clean sharp sand

The mortar will be of a heavy batter consistency, usually requiring 50 to 60 gallons of water per cubic yard of stone work. Estimate 30 to 40% of cubic foundation as mortar.









GENERAL NOTES

ONE CUBIC YD OF MORTAR IS TO BE MIXED IN THE FOLLOWING PROPORTIONS FOR ROCKWORK : 2 SACKS PORTLAND CEMENT, 2 SACKS HYDRATED LIME, 8 CU ft. OF SAND.

FOUNTAIN BOWL TO BE PRECAST WITH SMOOTH SURFACE. CONCRETE FOR BOWL TO BE IN PROPORTIONS OF 1-2-4.

PIPE FITTINGS SHOWN IN CONCRETE ARE TO BE CAST IN BLOCK AS SHOWN AND MADE TO FIT CONNECTIONS PERFECTLY.

PIPES TO BE WELL REAMED.

PIPE CEMENT TO BE APPLIED ON MALE THREAD ONLY.

PIPES TO SLOPE TO DRAIN.

FITTINGS TO BE OF BAND TYPE (GALV.). NUMBERS SHOWN ARE FROM THE CRANE CO. CATALOGUE. ANY OTHERS USED MUST BE OF EQUAL SIZE AND QUALITY.

CREDIT NOTE

THIS DESIGN IS FROM A FOUNTAIN BUILT ON UINTA NATIONAL FOREST BY R.C. ANDERSON.

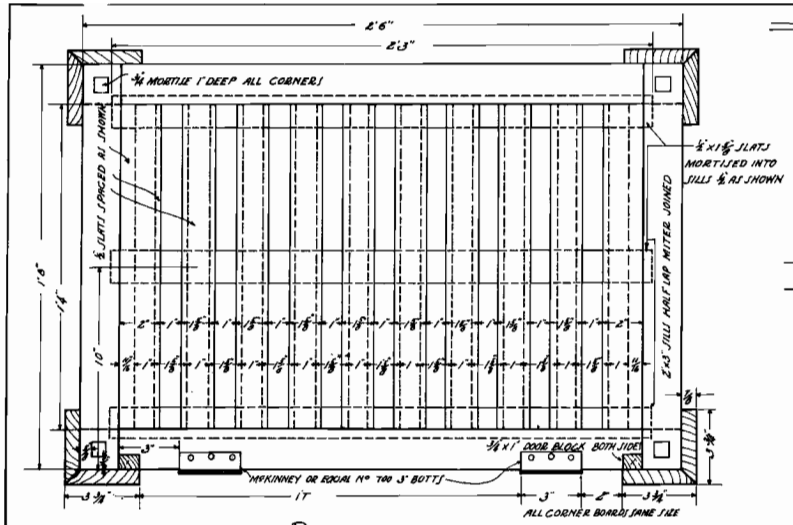
FOREST SERVICE

DRINKING FOUNTAIN

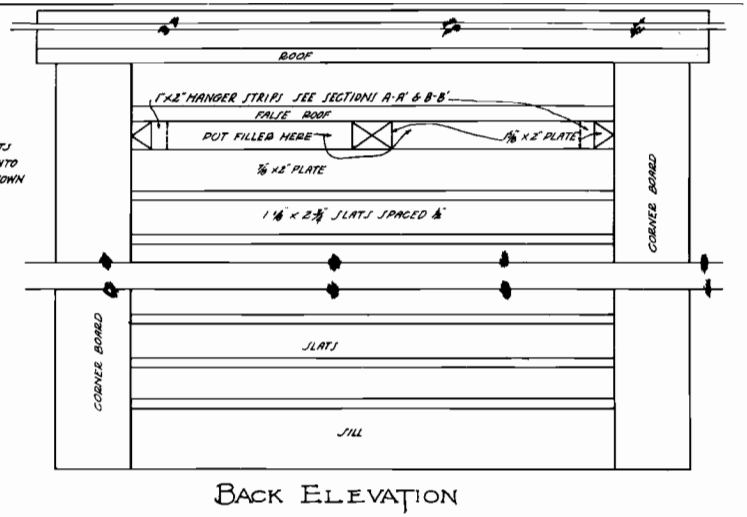
PLAN R-4 #98A-1

SHEET 1 OF 1

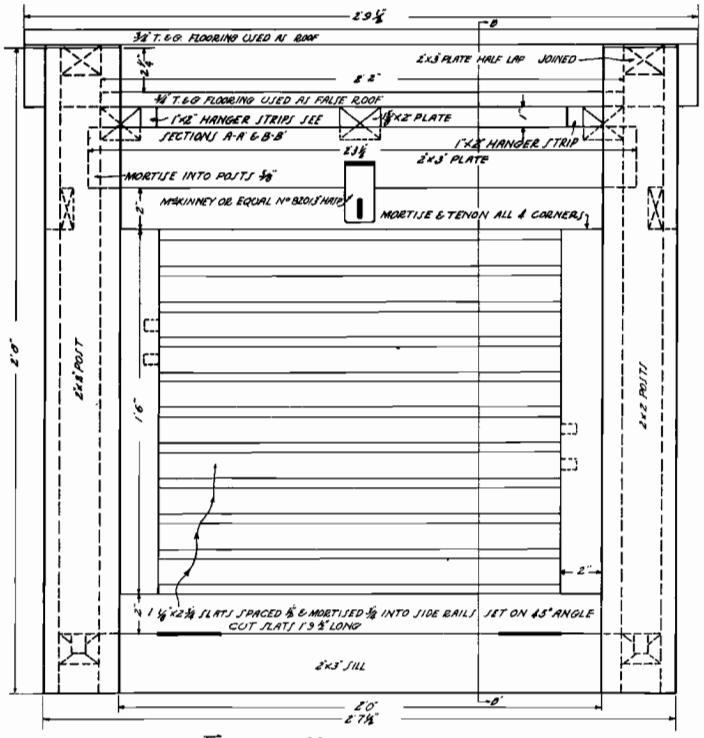
	DATE	SCALE
CHECKED	2-8-35	1" = 1'-0"
APPROVED	2-15-35	



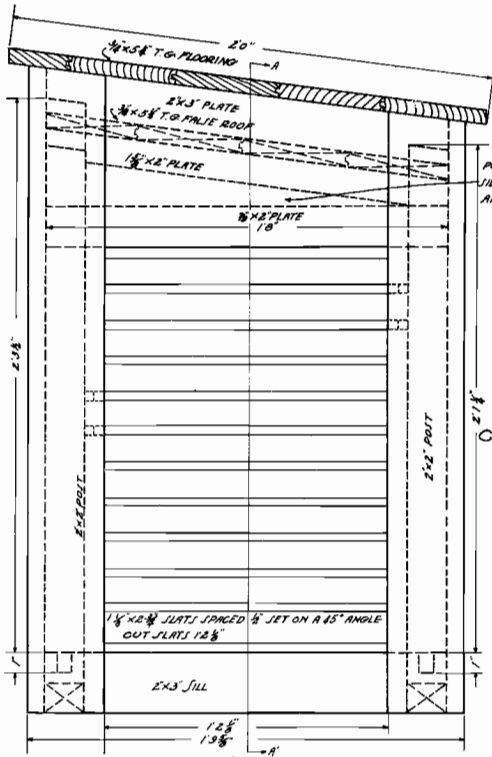
PLAN



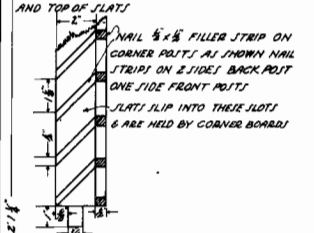
BACK ELEVATION



FRONT ELEVATION

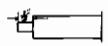


SIDE ELEVATION

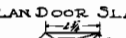


CORNER POST DETAIL

SECTION BACK & SIDE SLATS



PLAN DOOR SLATS



SECTION DOOR SLATS

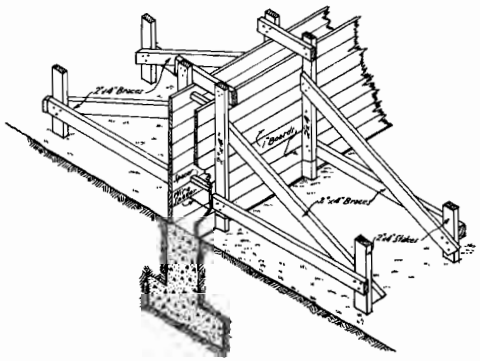
FOREST SERVICE

WEATHER INSTRUMENT SHELTER

PLAN R-4 #100

SHEET 1 OF

	DATE	SCALE
CHECKED G.L.N	7-20-32	3" = 1 FOOT
APPROVED C.N.W.	11-21-32	



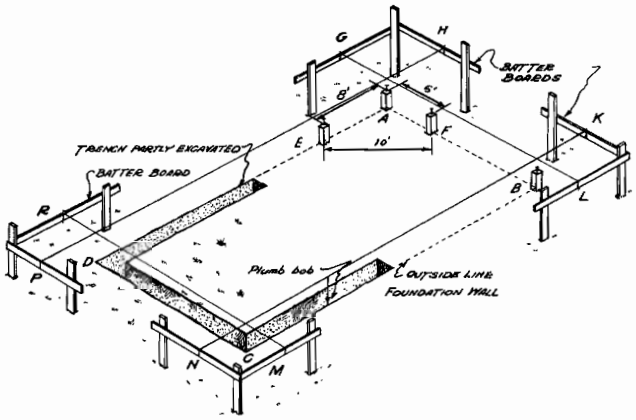
– FORMS FOR MONOLITHIC WALLS ABOVE GRADE –

– METHOD OF LAYING OUT FOUNDATIONS –

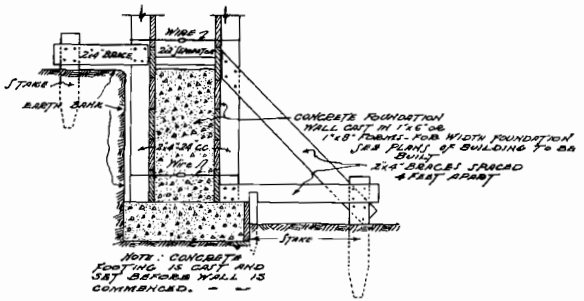
The proper method of laying out a foundation is given in the accompanying drawing. The easiest, quickest and most accurate way to determine the boundary line of a new building is by means of surveying instruments. When such instruments are not available, one of the simplest methods for laying out corners is known as the right triangle method. A triangle with sides six, eight and ten feet long is a right triangle and the 90° angle or right angle is opposite the longest side.

First, a base line is established, marking out one end or side of the new building. See line AB on the accompanying drawing. Stakes are set at A and B on this line, locating two corners. In the top of Stake A a nail is partly driven in the center. This nail accurately locates the corner. On the line AB another stake is driven at F, 6 feet from Stake A. A nail is driven in the top of this stake exactly 6 feet from the nail in Stake A. Stake E should be driven so that its center will be exactly eight feet from Stake A and exactly 10 feet from Stake F.

The corner represented by the angle EAF is a right angle; the line AE extended to D will form the second boundary line of the building and D will represent the third corner. Other corners are located in the same manner. After this has been done, strings are stretched over the corner stakes, A, B, C, D, and carried to outside supports called "batter boards" as indicated by G, H, K, L, M, N, P, R. The top of the horizontal batters should be set at first floor level or some other convenient "datum." The building lines may be projected from the strings to the ground by means of a plumb bob suspended as shown in the drawing. When the stakes, G, H, K, L, M, N, P, R have been set and the strings indicating the layout of the building transferred to them, the corner stakes A, B, C, D and stakes E and F are removed so that the trench may be excavated. Nails should be driven in the cross pieces between standards where the strings are fastened so that in case the strings are broken or removed they can be accurately replaced. Having found the building line, it is easy to locate piers, posts, columns or other intermediate supports.

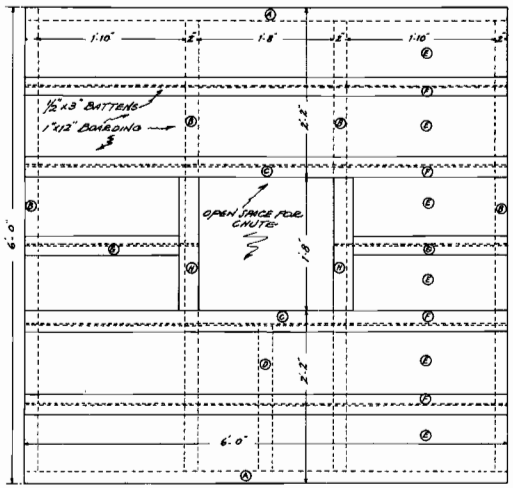


– THIS METHOD OF LAYING OUT FOUNDATIONS ASSURES – TRUE WALLS THAT ARE RIGHT TO RECEIVE THE REMAINDER – OF THE BUILDING –



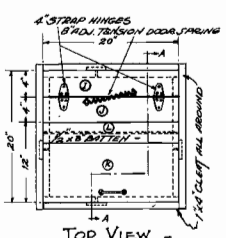
– FORMS FOR CONCRETE WALLS ABOVE – – & – – BELOW GRADE –

FOREST SERVICE		
FOUNDATION FORMS & LAYOUTS		
PLAN R-4 # 102	SHEET 1 OF 1	
CHECKED GLA	5-5-33	DATA SHEET -
APPROVED T.V.P.		

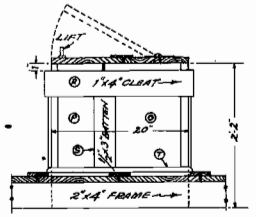


- PLAN OF PIT COVER -

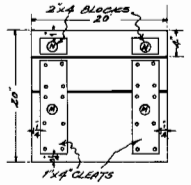
- NOTE - DIMENSIONS MAY BE VARIED AS DESIRED BUT ALL COVERS ARE TO BE BUILT ONE FOOT LARGER EACH WAY THAN PIT IS TO ALLOW FOR SUPPORT FOR THE COVER. ADAPT ALL DIMENSIONS ACCORDING TO ACTUAL WIDTH AND THICKNESS OF MATERIAL USED -



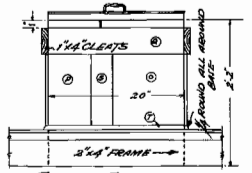
- TOP VIEW -



- SIDE ELEVATION -
OTHER SIDE SIMILAR

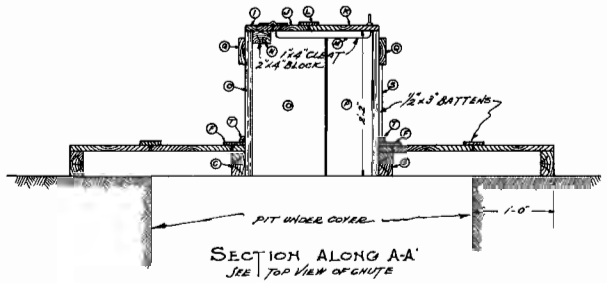


- UNDER SIDE OF LID -

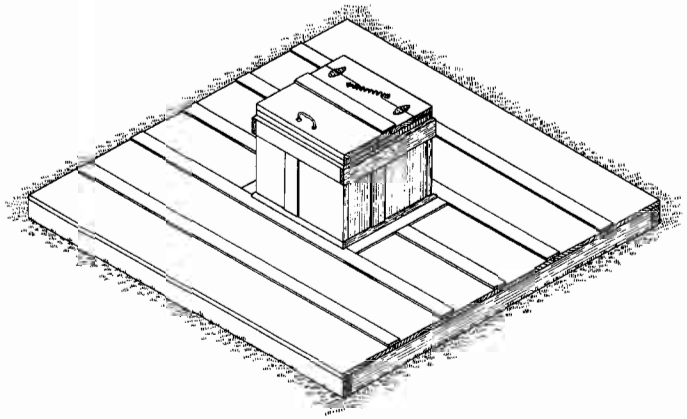


- FRONT ELEVATION -

- DETAIL OF CHUTE -
- NOTE- ADAPT ALL DIMENSIONS ACCORDING TO ACTUAL WIDTH AND THICKNESS OF MATERIAL USED



SECTION ALONG A-A'
SEE TOP VIEW OF CHUTE



- COVER ASSEMBLED -

BILL OF MATERIALS

Item No.	No. of Pcs.	Materials		Purpose	F.B.M.
		Lumber & Yard List			
1	4	Pcs. 2"x4"x6'0"	#1 Common D.F.S4S	Platform facing 4 sides	16
2	2	" 2"x4"x6'0"	Ditto	Joists	8
3	1	" 2"x4"x4'0"	"	"	3
4	4	" 1"x12" x6'0"	D Select Pine S4S	Platform Floor	24
5	2	" 1"x12"x4'0"	Ditto	Ditto	8
6	4	" 1/2"x3"x6'0"	"	Batten strips on platform	6
7	2	" 1/2"x3"x4'0"	"	Ditto	1
8	1	" 1"x2"x4'0"	"	At flooring & chute	1
9	1	" 1"x12"x8'0"	"	Sides of chute	8
10	1	" 1"x8"x6'0"	"	Ditto	6
11	1	" 1"x12"x2'0"	"	Cover at chute	2
12	1	" 1"x4"x4'0"	"	Ditto	2
13	1	" 1/2"x3"x6'0"	"	Battens at cover & on chute sides	2
14	1	" 1"x4"x6'0"	"	Horizontal cleats on chute	3
15	1	" 1"x4"x4'0"	"	Cleats under lid & blocking	2
16	1	" 3/4" - 1/4 round 5'0" long	"	Trim at bottom of chute	
17	1/2	Lb. 20D common nails			
18	1/4	" 16D " "			
19	1	" 10D " "			
20	1/2	" 8D " "			
		Hardware			
21	1	Pair 4" strap hinges			
22	1	#2 door lift			
23	1	8" adjustable tension door spring			
		Paint			
24	1/2	Gallon paint (Color to be selected by Forest Officer in charge)			
		Paint to be furnished by Regional Office.			

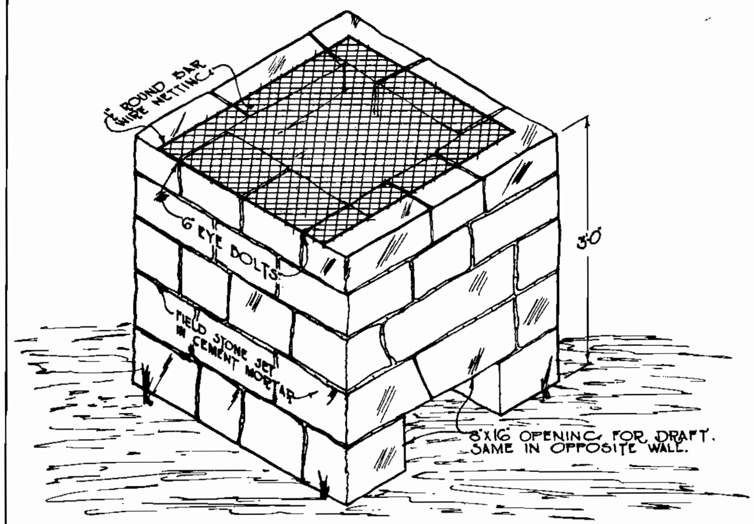
FOREST SERVICE

GARBAGE PIT COVER

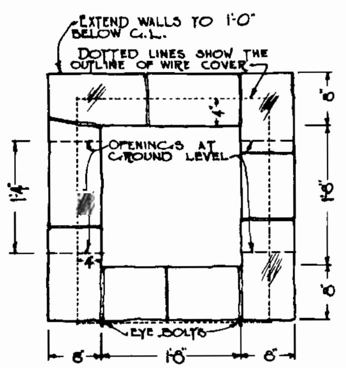
PLAN R-4 # 103
TRACED FROM REGION 3 PLAN

SHEET 1 OF 1

CHECKED GLN	DATE 6-3-33	SCALE 1 IN = 1 FOOT
APPROVED [illegible]	6-3-33	



ISOMETRIC VIEW SHOWING OPENING



PLAN WITH COVER REMOVED SCALE 1" = 1'-0"

BILL OF MATERIALS

Item No.	No. of Pcs.	Materials	Purpose
		Rock (To be supplied by Forest)	
1	2	Cu. Yds. Rock	Body of Incinerator
		Sand	
2	1/2	Cu. Yd. Sand	Mortar
		Material to be Purchased	
3	4	Sacks Portland Cement	Mortar
4	4	Sacks (50-lbs.) Hydrated Lime	Mortar
5	2	6" Eye Bolts	To fasten wire cover
6	1	Pc. 1/2" Round Bar netting, 28"x32" welded on all outside edges to a 3/4" round bar	"

SPECIFICATIONS

ROCK WORK

A capable rock mason should be engaged. The rock will be laid in a mortar made in the following proportions:

2 sacks Hydrated Lime (50-lbs.)
2 sacks Portland Cement
6 Cu. ft. of clean sharp sand

The above materials will be sufficient for one cubic yard of rock work.

The mortar will be of a heavy batter consistency, usually requiring 50 to 60 gallons of water per cubic yard of stone work.

GENERAL

The entire work is to be constructed and finished in every part in a good substantial and workmanlike manner according to the plans a part hereof, and these specifications to the full extent and meaning thereof.

Where figures are not given, all drawings must be accurately followed and measured according to their scale. All notations and figures on plans are to be considered a portion of these specifications, and must be followed. Follow figures in preference to scale.

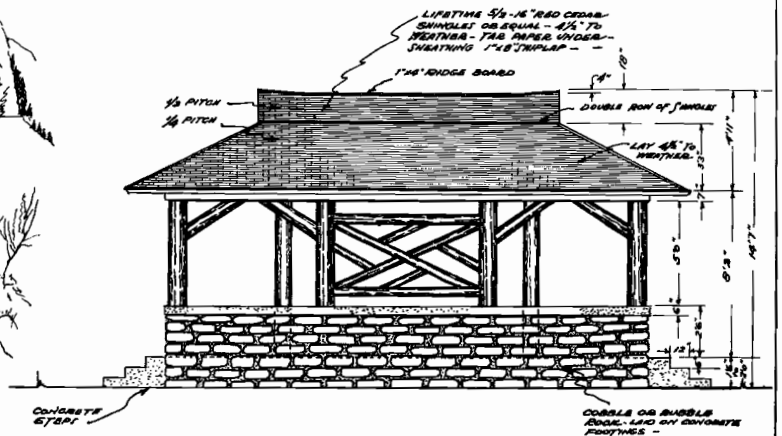
Six inch eye bolts are to be securely set in place as rock work is laid.

The Incinerator must not be used until after the Rock Work has set for 10 days.

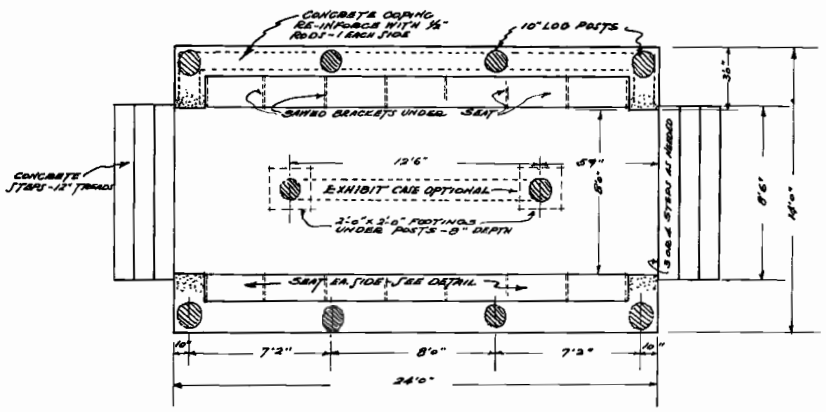
FOREST SERVICE
INCINERATORS
PLAN R-4 # 103 B-1
SHEET 1 OF 1

CHECKED G.L.N.	DATE 5-11-35	SCALE AS SHOWN
APPROVED D.P.	"	

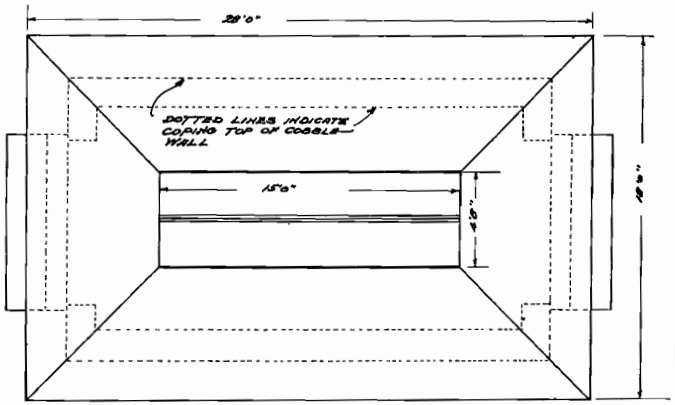
CAMP GROUND SHELTER



- SIDE ELEVATION -



- FLOOR PLAN -



- PLAN OF ROOF -

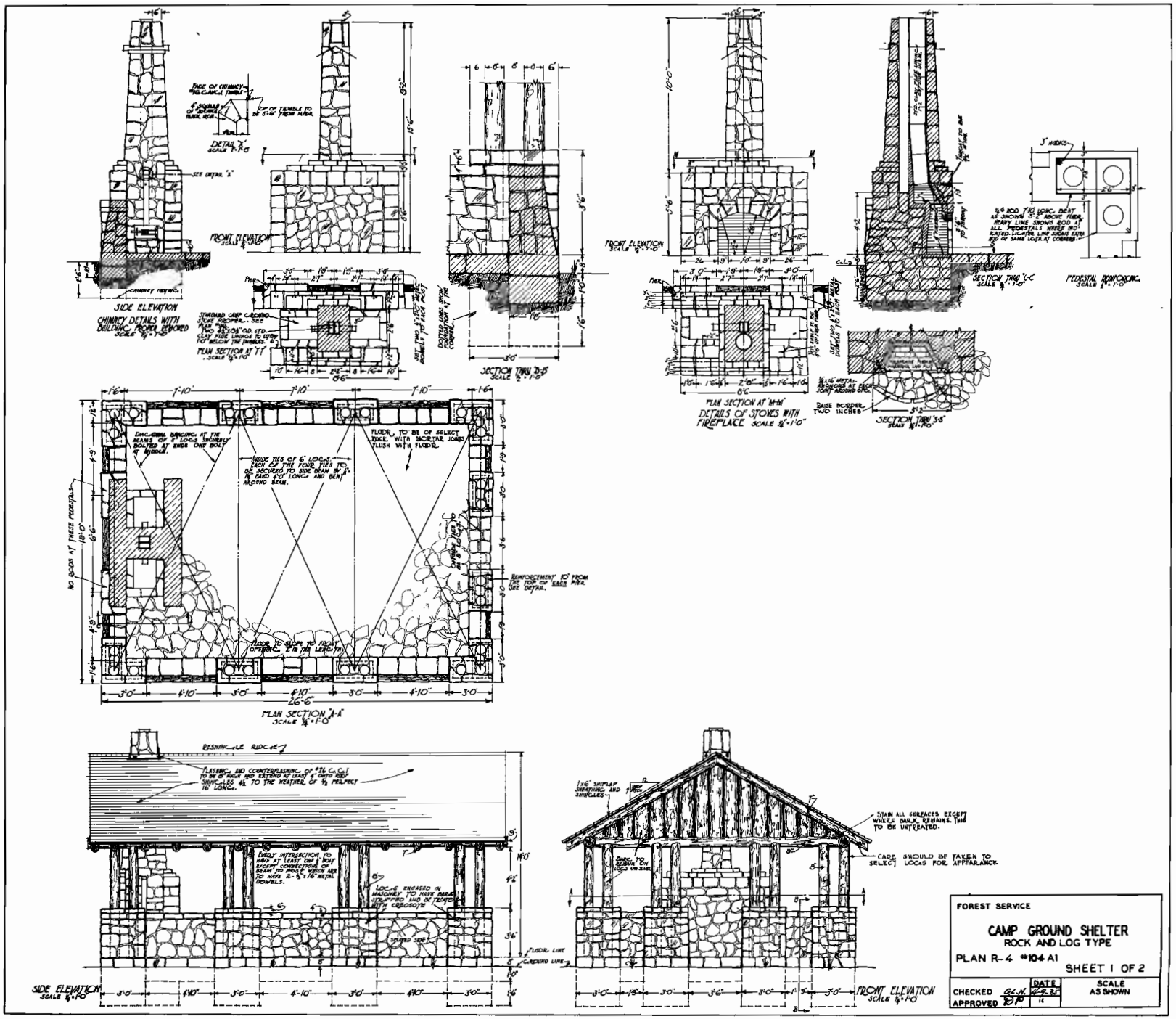
FOREST SERVICE

CAMP GROUND SHELTER

PLAN R-4 # 104

SHEET 1 OF 2

CHECKED	DATE	SCALE
APPROVED		¼" = 1 Foot



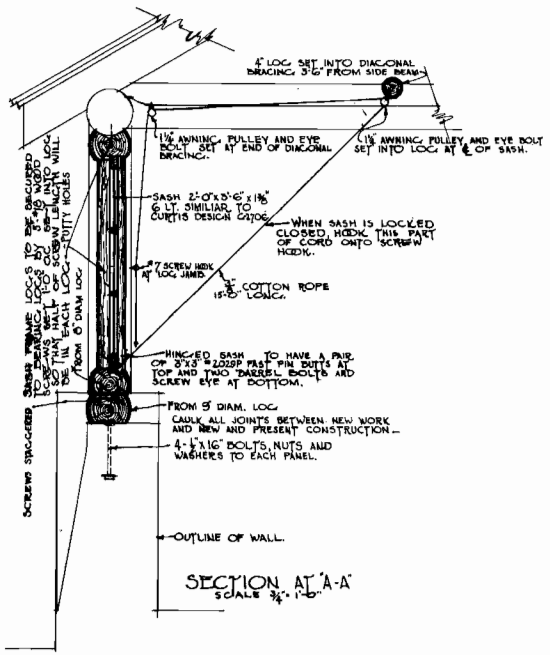
FOREST SERVICE

CAMP GROUND SHELTER
ROCK AND LOG TYPE

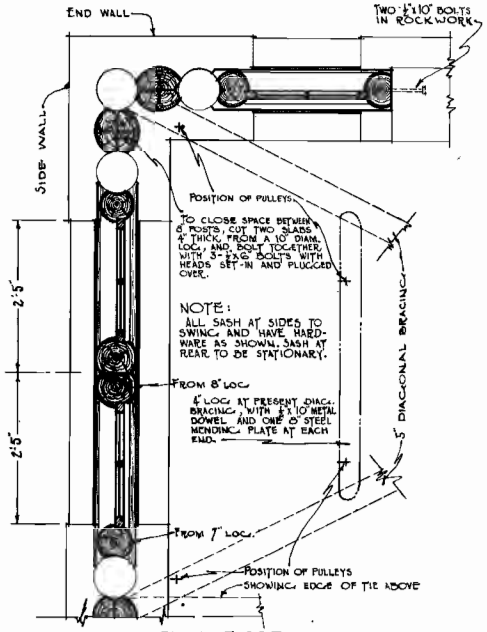
PLAN R-4 #104 A1

SHEET 1 OF 2

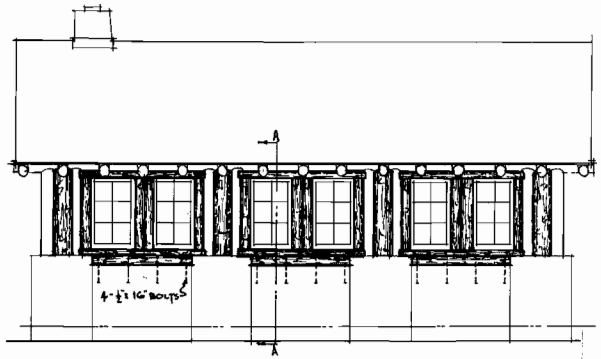
CHECKED GLN	DATE 12-2-37	SCALE AS SHOWN
APPROVED EJP	16	



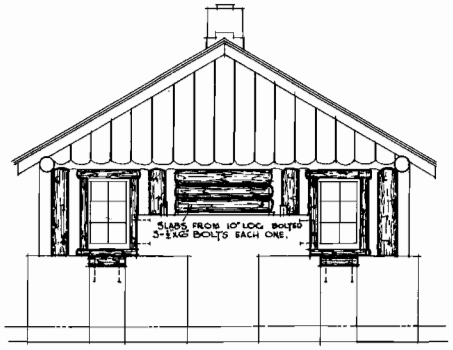
SECTION AT 'A-A'
SCALE ¾"-1'-0"



PLAN AT CORNER
SCALE ¾"-1'-0"



SIDE ELEVATION
SCALE ½"-1'-0"
NOTE: OTHER SIDE IS IDENTICAL.



REAR ELEVATION
SCALE ½"-1'-0"
NOTE: FRONT TO BE LEFT OPEN.

NOTE: THE WORK OUTLINED IN HEAVY LINES REPRESENTS THE MEANS FOR PARTIALLY CLOSING IN SHELTER PLAN R-4 #104 A1.
THE LIGHT LINES PICTURE THE SHELTER AS SHOWN IN PLAN R-4 # 104 A1.

SPECIFICATIONS:

GENERAL:

The work contemplated by this specification is of such a nature that it must be constructed and finished in every part in a good substantial and workmanlike manner according to the plans a part hereof, and these specifications to the full extent and meaning thereof.

Where figures are not given, all drawings must be accurately followed and measured according to their scale. All notations and figures on plans are to be considered a portion of these specifications, and must be followed. Follow figures in preference to scale.

ERECTION AND FITTING TO EXISTING WORK:

It is assumed that the work provided herein is a means for closing in Camp Ground Shelter #104A-1. The new work must be carefully fit and adjusted to existing work. All new work is to be level or plumb and carefully fastened in place to avoid a patched appearance.

The sash must be hung carefully so that they will act freely when operated to open position. Due allowance must be made for expansion or swelling of the sash when they are fit.

All pulleys, ropes and hardware must be accurately placed and adjusted and tested as to operation.

All details of framing and erection are shown clearly in the plans and are to be followed in detail.

PAINT & PAINTING:

All painting will conform to the Lands Manual, Plan #104A-1.

Trim of the sash is to be a Silver Gray Stain.

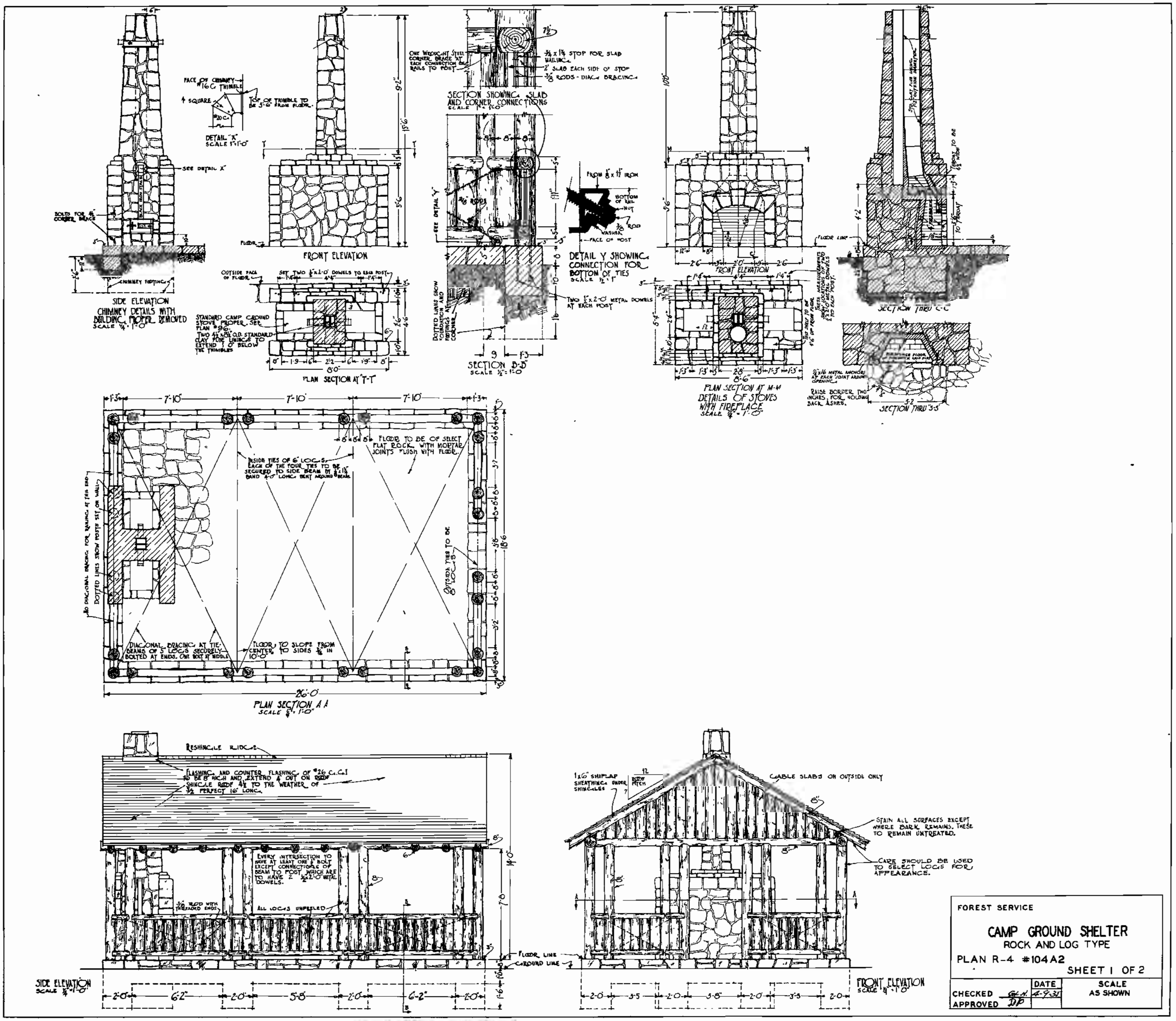
FOREST SERVICE

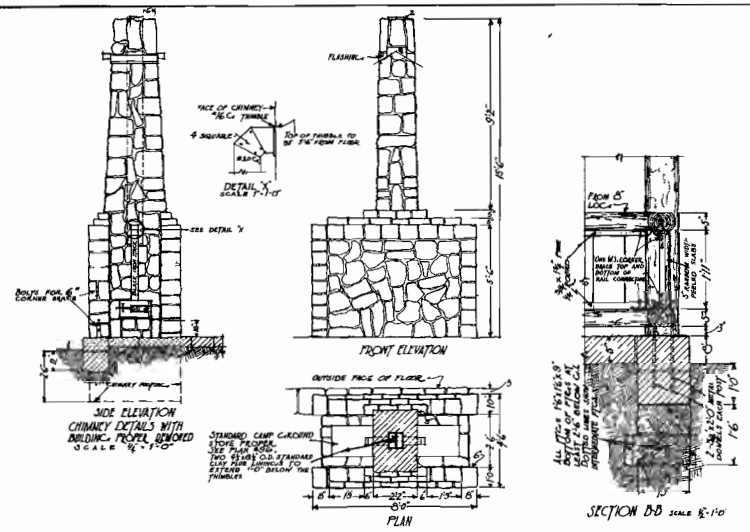
METHOD FOR PARTIALLY CLOSING IN CAMP GROUND SHELTER (PLAN R4 104A1)

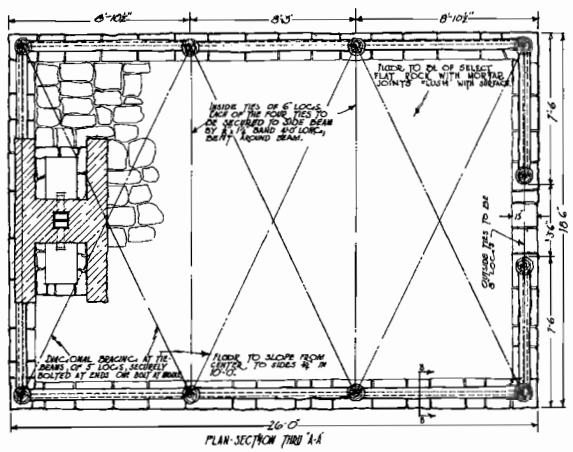
PLAN R-4 #104 A1a

SHEET 1 OF 2

	DATE	SCALE
CHECKED G.L.H.	5-22-34	AS SHOWN
APPROVED [illegible]		

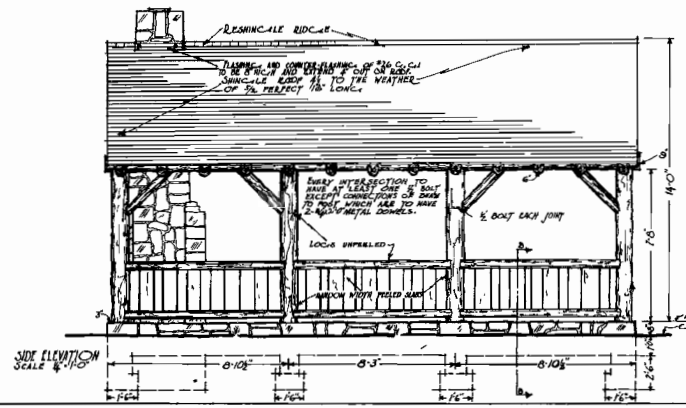

SIDE ELEVATION
CHIMNEY DETAILS WITH BUILDING PROPER REMOVED
SCALE 1/4" = 1'-0"
DETAIL "X"
SCALE 1" = 1'-0"
FRONT ELEVATION
PLAN SECTION AT T-T
STANDARD CAMP GROUND STOVE PROPER SEE PLAN #96.
SECTION SHOWING SLAB AND CORNER CONNECTIONS
DETAIL Y SHOWING CONNECTION FOR BOTTOM OF TIES
SECTION D-D
FRONT ELEVATION
PLAN SECTION AT M-M
DETAILS OF STOVES WITH FIREPLACE
SCALE 1/4" = 1'-0"
SECTION THRU C-C
SECTION THRU 3-3
FLOOR TO BE OF SELECT FLAT ROCK WITH MORTAR JOINTS FLUSH WITH FLOOR.
FLOOR TO SLOPE FROM CENTER TO SIDES
PLAN SECTION A A
SCALE 1/8" = 1'-0"
RESHINGLE RIDGE
ALL LOGS UNPEELED
CABLE SLABS ON OUTSIDE ONLY
STAIN ALL SURFACES EXCEPT WHERE BARK REMAINS. THESE TO REMAIN UNTREATED.
CARE SHOULD BE USED TO SELECT LOGS FOR APPEARANCE.
SIDE ELEVATION
SCALE 1/4" = 1'-0"
FRONT ELEVATION
SCALE 1/4" = 1'-0"
FOREST SERVICE
CAMP GROUND SHELTER
ROCK AND LOG TYPE
PLAN R-4 #104A2
SHEET 1 OF 2
CHECKED
APPROVED
DATE
4-9-31
SCALE
AS SHOWN

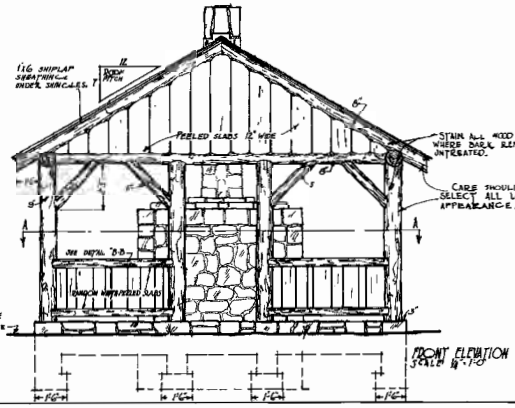




MATERIAL LIST

Item No.	No. of Pcs.	Material or Labor	Purpose
		Rockwork (To be furnished by Forest)	
1	17	Cu. Yds. Rock	Rockwork
		Sand and Flue Linings (Obtain bids on this list)	
2	7½	Cu. yds. Sand	Mortar
3	24	Lin. ft. 4-1/2" x 8-1/2" tile flue liners	Flue Lining
		Logs and Native Lumber (To be furnished by Forest)	
4	10	Pcs. 9" dia. logs 8'-0" long	Posts
5	2	Pcs. 9" dia. logs 26'-0" long	Side beams
6	2	Pcs. 8" dia. logs 17'-0" long	End beams
7	4	Pcs. 8" dia. logs 12'-0" long	End rafters
8	12	Pcs. 8" dia. logs 6'-0" long (cut as shown)	Railing
9	4	Pcs. 8" dia. logs 6'-0" long " " "	Railing
10	4	Pcs. 8" dia. logs 4'-6" long " " "	Railing
11	22	Pcs. 6" dia. logs 12'-0" long	Rafters inside
12	2	Pcs. 6" dia. logs 17'-0" long	Inside ties.
13	6	Pcs. 5" dia. logs 19'-0" long	Diag. bracing
14	14	Pcs. 5" dia. logs 3'-0" long	Bracing beams and posts
15	120	Lin. ft. of peeled slabs 12"wide by 3½" thick from 18" logs	Gable ends.
16	204	Lin. ft. of peeled slabs. Widths 6" to 10", 3" thickness. Individual lengths 1'-11". Lin. ft. figured from an average width of 8" slab.	Railings
		Lumber (Do not obtain bids on this list - included under Yard List)	
17	57	Sacks Portland Cement	Mortar
18	71	50-lb. bags hydrated lime	Mortar
19	130	Lin. ft. 3/4" x 1-3/4" quarter round "D" sel. Pine	Nailing railing slabs
20	750	F.B.M. 1" x 6" Shiplap	Roof sheathing
21	28	Bundles of cedar shingled #1 16" 5/2 Perfects	Roofing
22	4	Lbs. 16D Finishing Nails	Nailing gable slabs and nailing logs at ridge
23	6	Lbs. 10D Finishing Nails	Nailing railing slabs
24	16	Lbs. 8D Common Nails	Shiplap
25	26	Lbs. 3D Common galv. nails	Shingles
26	2	Lbs. 8D Finishing Nails	Nailing quarter round to rails
26a	10	Lbs. 16D Common Nails	Framing
		Metal	
27	2	Std. campground stoves proper complete plan #96 (To be furnished by Regional Office)	Stoves
28	2	4" elbows and #16 gauge thimble to match std. pipe.	Stack
29	1	Flashing and counter flashing as shown	Chimney
30	3	1/2" x 10" machine bolts (with nut & 3 washers each)	Crossings of bracing
31	62	1/2" x 12" machine bolts (with nut & 3 washers each)	Joints of rafters & ties & post bracing
32	8	Pcs. 1/8" x 1-1/4" iron band (8-3½" bright steel wood screws each)	Ties to side beams
33	40	3/4" x 2'-0" metal	Dowels
34	12	3/8" x 8" bolts (with nut and washer each)	Connecting railg. to fireplace wall
35	40	6" corner braces (wrought steel 6-3½" screws each)	Securing railg. to posts
		Paint (Do not obtain bids - to be furnished by Regional Office)	
36	8	Gals. roof paint as specified	Shingles exposed
37	8½	Gals. log siding stain	Soffit of shiplap, log end, both sides of slabs, surfaced part of railing.





FOREST SERVICE

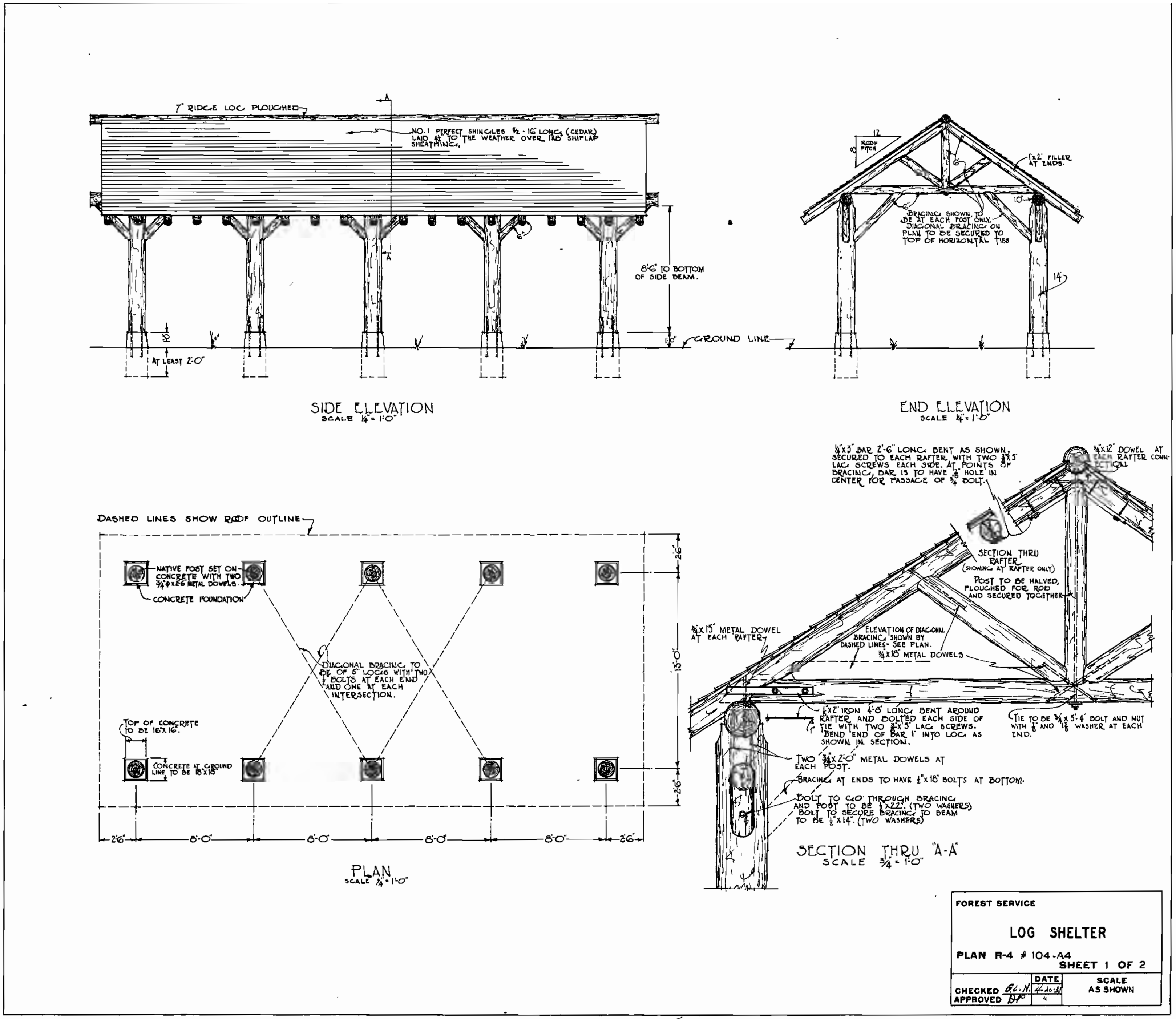
CAMP GROUND SHELTER

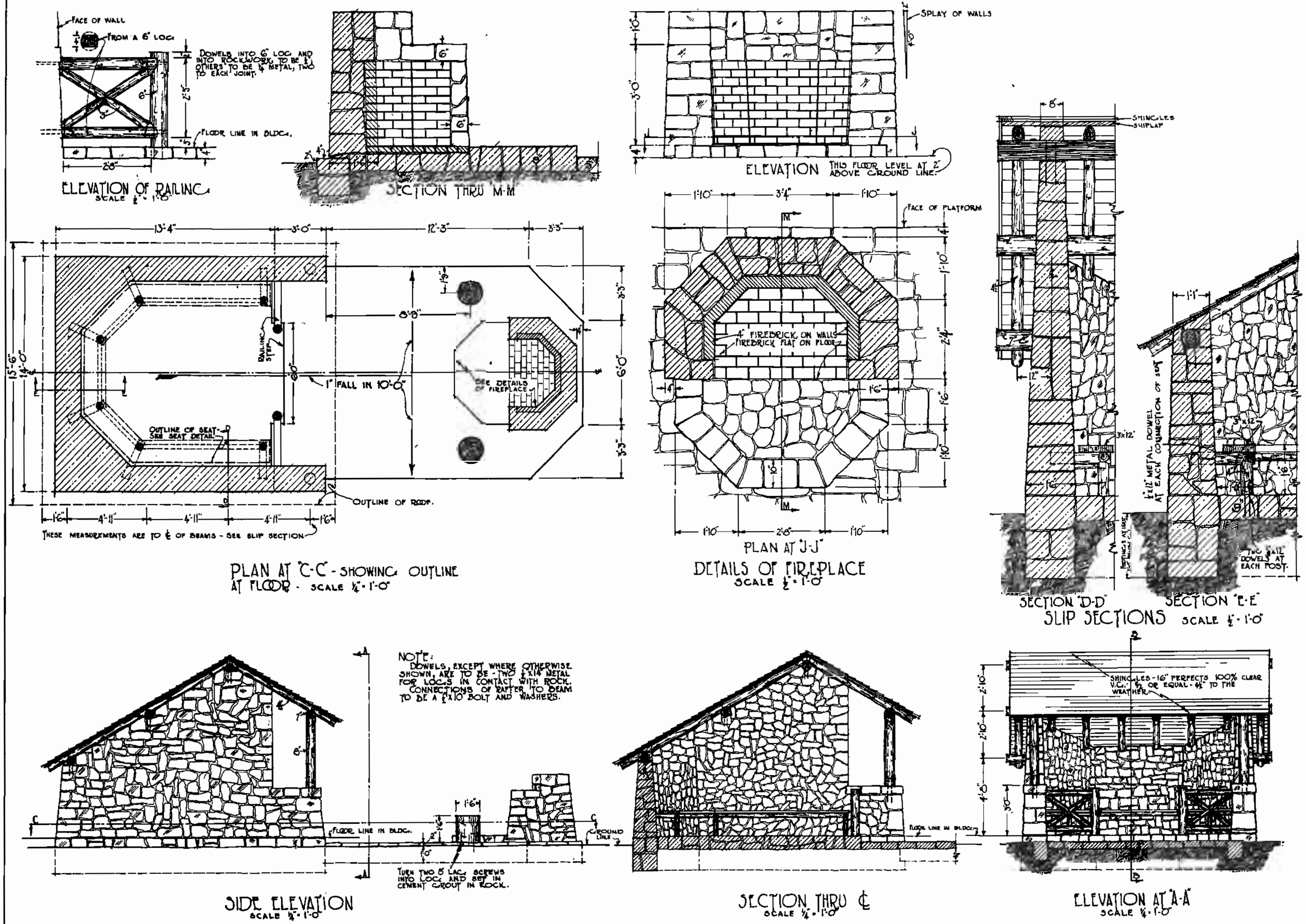
ROCK AND LOG TYPE

PLAN R-4 #104 A3

SHEET 1 OF 2

CHECKED GLW	DATE 4-9-37	SCALE AS SHOWN
APPROVED [illegible]	"	


7" RIDGE LOG PLOUGHED
NO. 1 PERFECT SHINGLES ½ - 16" LONG (CEDAR) LAID 4½" TO THE WEATHER OVER 1x8 SHIPLAP SHEATHING.
8'-6" TO BOTTOM OF SIDE BEAM.
GROUND LINE
AT LEAST 2'-0"
SIDE ELEVATION
SCALE ¼" = 1'-0"
1x2" FILLER AT ENDS.
BRACING SHOWN TO BE AT EACH POST ONLY. DIAGONAL BRACING ON PLAN TO BE SECURED TO TOP OF HORIZONTAL TIES
END ELEVATION
SCALE ¼" = 1'-0"
DASHED LINES SHOW ROOF OUTLINE
NATIVE POST SET ON CONCRETE WITH TWO ¾"x6" METAL DOWELS.
CONCRETE FOUNDATION
DIAGONAL BRACING TO BE OF 5" LOGS WITH TWO ½" BOLTS AT EACH END AND ONE AT EACH INTERSECTION.
TOP OF CONCRETE TO BE 16"x16".
CONCRETE AT GROUND LINE TO BE 18"x18"
2'-6" 8'-0" 8'-0" 8'-0" 8'-0" 2'-6"
13'-0"
PLAN
SCALE ¼" = 1'-0"
¼"x3" BAR 2'-6" LONG BENT AS SHOWN, SECURED TO EACH RAFTER WITH TWO ⅜"x5" LAG SCREWS EACH SIDE. AT POINTS OF BRACING, BAR IS TO HAVE ⅞" HOLE IN CENTER FOR PASSAGE OF ¾" BOLT.
¾"x12" DOWEL AT EACH RAFTER CONNECTION
SECTION THRU RAFTER (SHOWING AT RAFTER ONLY)
POST TO BE HALVED, PLOUGHED FOR ROD AND SECURED TOGETHER
¾"x15" METAL DOWEL AT EACH RAFTER
ELEVATION OF DIAGONAL BRACING SHOWN BY DASHED LINES - SEE PLAN.
⅜"x18" METAL DOWELS
½"x2" IRON 4'-8" LONG BENT AROUND RAFTER AND BOLTED EACH SIDE OF TIE WITH TWO ⅜"x5" LAG SCREWS. BEND END OF BAR 1" INTO LOG AS SHOWN IN SECTION.
TIE TO BE ¾"x 5'-4" BOLT AND NUT WITH ⅞" AND 1⅛" WASHER AT EACH END.
TWO ¾"x2'-0" METAL DOWELS AT EACH POST.
BRACING AT ENDS TO HAVE ½"x18" BOLTS AT BOTTOM.
BOLT TO GO THROUGH BRACING AND POST TO BE ½"x22". (TWO WASHERS) BOLT TO SECURE BRACING TO BEAM TO BE ½"x14". (TWO WASHERS)
SECTION THRU "A-A"
SCALE ¾" = 1'-0"
FOREST SERVICE
LOG SHELTER
PLAN R-4 # 104-A4
SHEET 1 OF 2
CHECKED
APPROVED
DATE
SCALE AS SHOWN


FACE OF WALL
FROM A 6" LOG
DOWELS INTO 6" LOG AND INTO ROCKWORK TO BE ¼". OTHERS TO BE ⅛ METAL, TWO TO EACH JOINT.
FLOOR LINE IN BLDG.
ELEVATION OF RAILING
SCALE ½" = 1'-0"
SECTION THRU M-M
ELEVATION
THIS FLOOR LEVEL AT 2" ABOVE GROUND LINE.
SPLAY OF WALLS
FACE OF PLATFORM
4" FIREBRICK ON WALLS
FIREBRICK FLAT ON FLOOR
PLAN AT "J-J"
DETAILS OF FIREPLACE
SCALE ½" = 1'-0"
SHINGLES
SHIPLAP
⅝"x12" METAL DOWEL AT EACH CONNECTION OF SEAT
TWO RAIL DOWELS AT EACH POST.
SECTION "D-D"
SECTION "E-E"
SLIP SECTIONS
SCALE ½" = 1'-0"
RAILING
STEP
1" FALL IN 10'-0"
SEE DETAILS OF FIREPLACE
OUTLINE OF SEAT - SEE SEAT DETAIL
OUTLINE OF ROOF.
THESE MEASUREMENTS ARE TO ℄ OF BEAMS - SEE SLIP SECTION
PLAN AT "C-C" - SHOWING OUTLINE AT FLOOR - SCALE ¼" = 1'-0"
NOTE:
DOWELS, EXCEPT WHERE OTHERWISE SHOWN, ARE TO BE - TWO ⅝"x14 METAL FOR LOGS IN CONTACT WITH ROCK.
CONNECTIONS OF RAFTER TO BEAM TO BE A ⅝"x10 BOLT AND WASHERS.
FLOOR LINE IN BLDG.
GROUND LINE
TURN TWO 5" LAG SCREWS INTO LOG AND SET IN CEMENT GROUT IN ROCK.
SIDE ELEVATION
SCALE ¼" = 1'-0"
SECTION THRU ℄
SCALE ¼" = 1'-0"
SHINGLES - 16" PERFECTS 100% CLEAR V.C. ½" OR EQUAL - 4½" TO THE WEATHER.
ELEVATION AT "A-A"
SCALE ¼" = 1'-0"

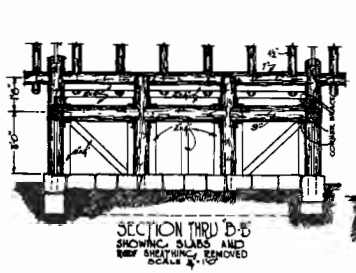
FOREST SERVICE

LEAN-TO SHELTER

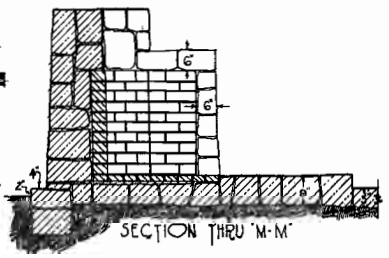
PLAN R-4 # 104 B-1

SHEET 1 OF 2

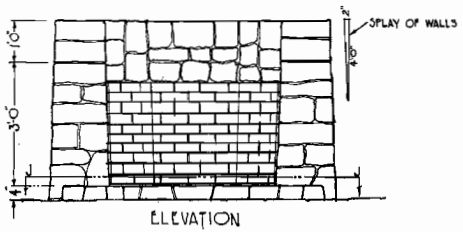
	DATE	SCALE
CHECKED G.L.J.	5-3-35	AS SHOWN
APPROVED D.P.	"	



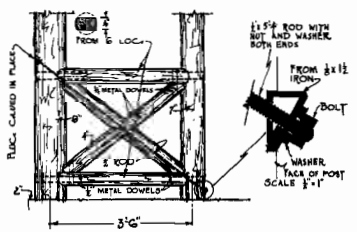
SECTION THRU 'D-D' SHOWING SLABS AND ROOF SHEATHING REMOVED SCALE ¼"=1'-0"



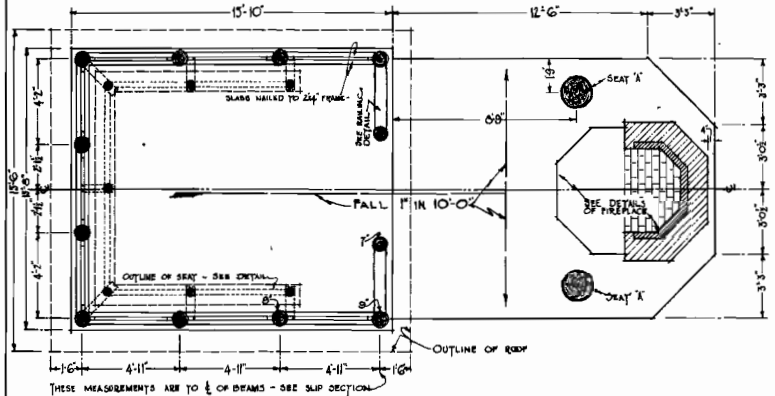
SECTION THRU 'M-M'



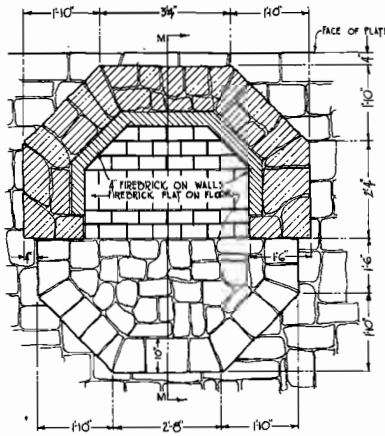
ELEVATION



ELEVATION OF RAILING SCALE ½"=1'-0"

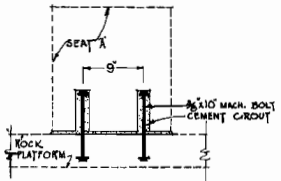


PLAN AT 'C-C' - SHOWING OUTLINE AT FLOOR SCALE ¼"=1'-0"

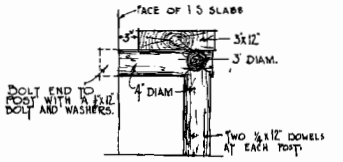


PLAN AT 'J-J'

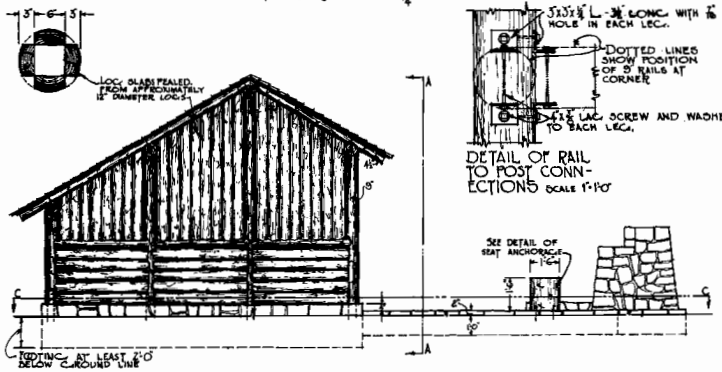
DETAILS OF FIREPLACE SHOWING BRICK LINING AS ALTERNATE FOR FIREPLACE. SCALE ½"=1'-0"



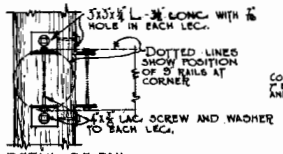
SECTION SHOWING DETAIL OF SEAT ANCHORAGE SCALE 1"=1'-0"



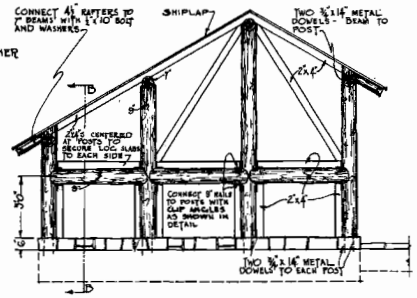
DETAIL OF SEAT SCALE 1"=1'-0"



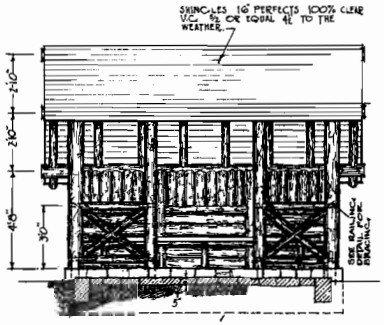
SIDE ELEVATION SCALE ¼"=1'-0"



DETAIL OF RAIL TO POST CONNECTIONS SCALE 1"=1'-0"



SIDE ELEVATION SHOWING SLABS REMOVED SCALE ¼"=1'-0"



ELEVATION AT 'A-A' SCALE ¼"=1'-0"

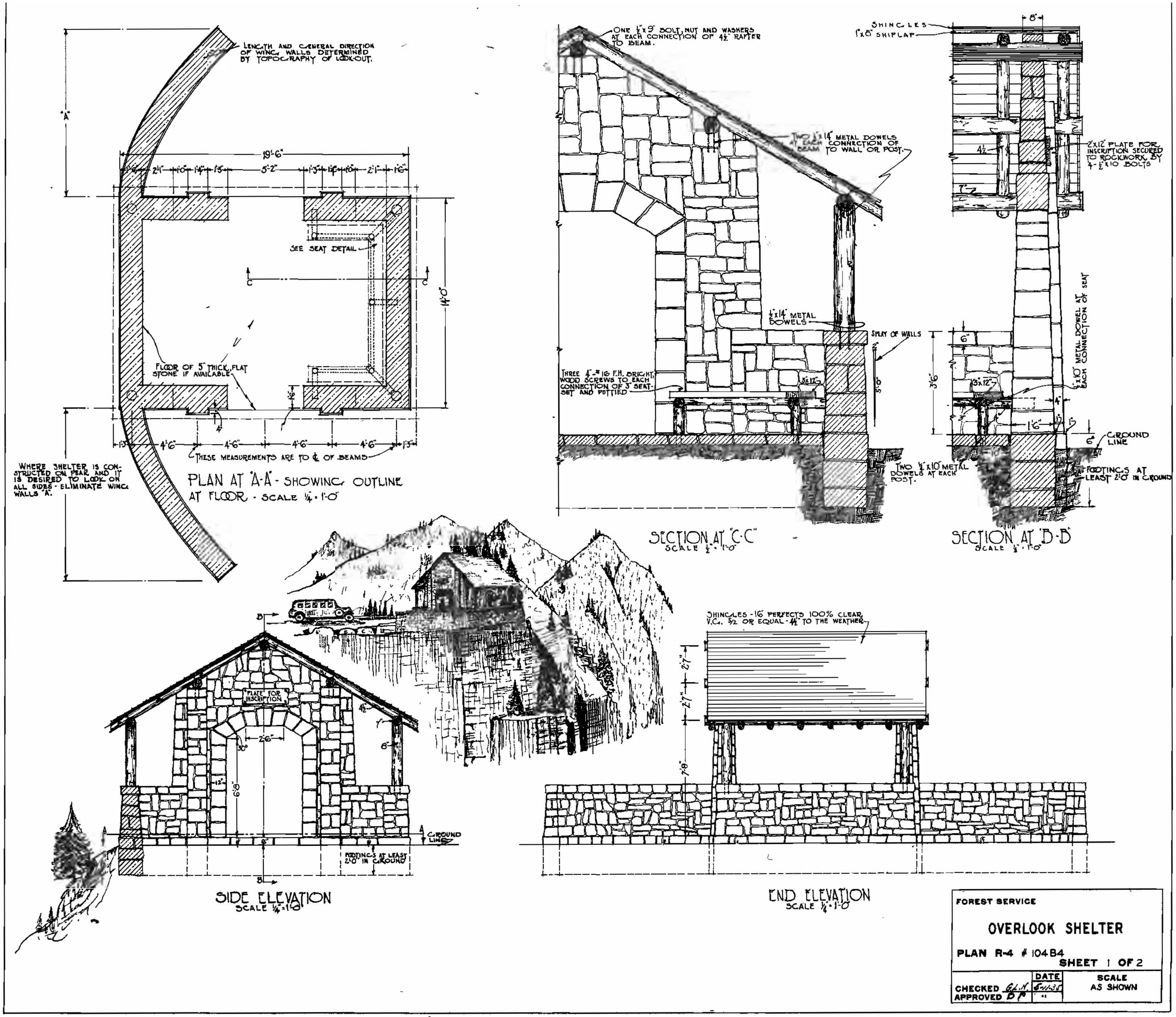
FOREST SERVICE

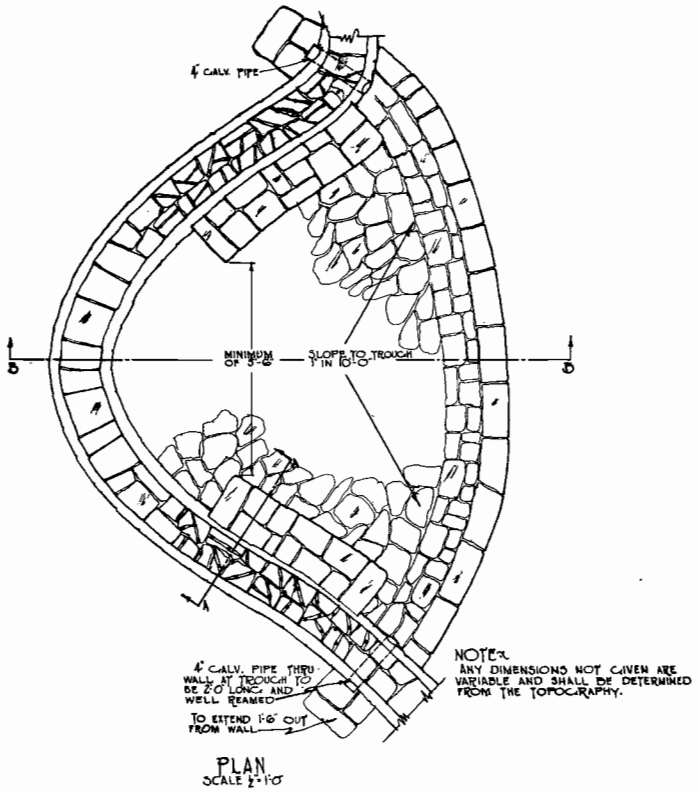
LEAN-TO SHELTER

PLAN R-4 # 1048-2

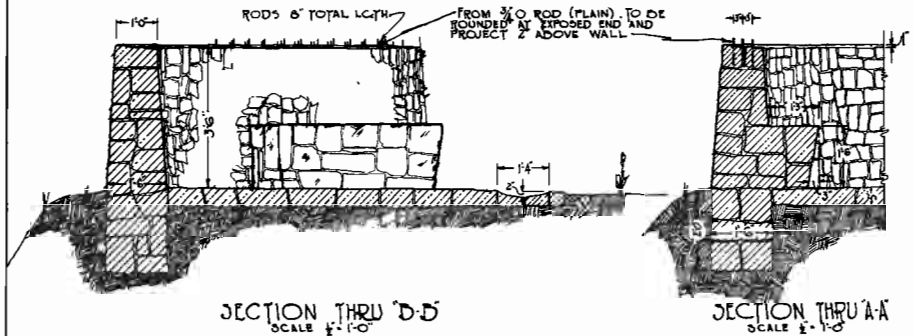
SHEET 1 OF 2

	DATE	SCALE
CHECKED	5--	AS SHOWN
APPROVED	"	


LENGTH AND GENERAL DIRECTION OF WING WALLS DETERMINED BY TOPOGRAPHY OF LOOK-OUT.
"A"
19'-6"
14'-0"
SEE SEAT DETAIL
FLOOR OF 5" THICK FLAT STONE IF AVAILABLE
THESE MEASUREMENTS ARE TO ℄ OF BEAMS
WHERE SHELTER IS CONSTRUCTED ON PEAK AND IT IS DESIRED TO LOOK ON ALL SIDES - ELIMINATE WING WALLS "A".
PLAN AT "A-A" - SHOWING OUTLINE AT FLOOR - SCALE 1/4" = 1'-0"
ONE 1/2"x9" BOLT, NUT AND WASHERS AT EACH CONNECTION OF 4 1/2" RAFTER TO BEAM.
TWO 1/2"x14" METAL DOWELS AT EACH CONNECTION OF BEAM TO WALL OR POST.
1/2"x14" METAL DOWELS
THREE 4"-#16 F.H. BRIGHT WOOD SCREWS TO EACH CONNECTION OF 3" SEAT. SET AND PUTTIED
SPLAY OF WALLS
TWO 1/2"x10" METAL DOWELS AT EACH POST.
SECTION AT "C-C" SCALE 1/2" = 1'-0"
SHINGLES
1"x6" SHIPLAP
2"x12" PLATE FOR INSCRIPTION SECURED TO ROCKWORK BY 4-1/2"x10 BOLTS
1/2"x10" METAL DOWEL AT EACH CONNECTION OF SEAT
GROUND LINE
FOOTINGS AT LEAST 2'-0" IN GROUND
SECTION AT "B-B" SCALE 1/2" = 1'-0"
PLATE FOR INSCRIPTION
GROUND LINE
FOOTINGS AT LEAST 2'-0" IN GROUND
SIDE ELEVATION SCALE 1/4" = 1'-0"
SHINGLES - 16" PERFECTS 100% CLEAR V.G. 5/2 OR EQUAL - 4 1/2" TO THE WEATHER
END ELEVATION SCALE 1/4" = 1'-0"
FOREST SERVICE
OVERLOOK SHELTER
PLAN R-4 # 104B4
SHEET 1 OF 2
CHECKED
APPROVED
DATE
SCALE AS SHOWN



PLAN
SCALE 1/2" = 1'-0"



SECTION THRU "D-D"
SCALE 1/2" = 1'-0"

SECTION THRU "A-A"
SCALE 1/2" = 1'-0"

BILL OF MATERIALS

Item No.	No. of Pcs.	Material	Purpose
		Rock	
1	10	Cu. Yds., Rock	Rock Work (more or less will be needed if plan is built differently than shown)
		Sand	
2	3	Cu. Yds. Sand	Mortar
		Material to be Purchased	
3	20	Sacks Portland Cement	Mortar
4	20	Sacks (50-lbs.) Hydrated Lime	Mortar
5	2	Pcs. 4" x 2'-0" galv. pipe	Drain
6	50	Pcs. 3/4" Round Rods x 8" (metal)	Set in wall to prevent people from climbing or sitting on parapet wall

SPECIFICATIONS

GENERAL

The entire work is to be constructed and finished in every part in a good and substantial manner according to the plans a part hereof, and these specifications to the full extent and meaning thereof.

Where figures are not given, all drawings must be accurately followed and measured according to their scale. All notations and figures on the plans are to be considered a portion of these specifications, and must be followed. Follow figures in preference to scale.

FOUNDATIONS AND FOOTINGS

Plans have been drawn with the assumption that this building will be constructed on an approximately level site. If erected on a site on which the topography slopes, the footings shall be adjusted to the condition of the site. In all cases, it is the intent to have the footings below the frost danger line. If it is known that the frost extends to a depth of 2'-0" be sure that the footings extend below that line. Should the frost extend lower, provision must be made to go lower for safety. The bill of materials provides for a depth as shown in plans - lower depths require more material. However, do not lose sight of the fact that a building constructed on a slope will have to be figured on a basis of the slope and usually more material will be needed for these cases as well. It may be economical to step the footings when the slope is over 2%.

ROCK WORK WILL BE USED in either rubble or coursed, using the available materials to the best of advantage.

A capable rock mason should be engaged to supervise and direct the work.

The rock will be laid in a mortar made in the following proportions:

2 sacks of Portland Cement
2 sacks (50-lbs.) Hydrated Lime
6 cu. ft. clean sharp sand

The above materials will be sufficient for one cubic yard of rock work. The mortar will be of a heavy batter consistency, usually requiring 50 to 60 gallons of water per cubic yard of stone work.

All rock shall be wet when placed so that the absorption of moisture from the mortar will be prevented.

ROCK FLOORS - Dry Base Essential: Good practice recommends that the floor be placed on a fill which is at least six (6) inches higher than the surrounding grade. This fill may consist of well compacted loose rock or earth. The joints are to be filled and struck flush with the rocks so that no dirt can collect in them. The rocks are to be chosen of as large a surface for the floor as is practicable. They should be at least 5" thick.

FOREST SERVICE		
SCENIC POINT DEVELOPMENT		
PLAN R-4 #104B5		SHEET 1 OF 1
CHECKED RLK	DATE 6/1/37	SCALE 1" = 1'-0"
APPROVED DP	"	

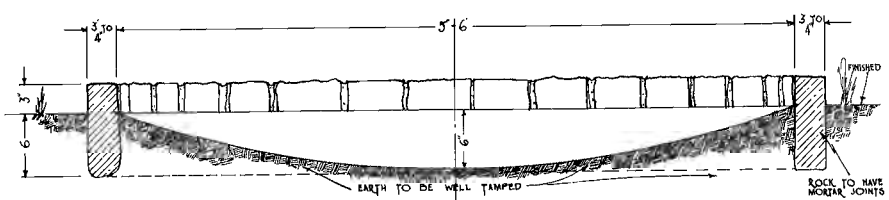
SPECIFICATION

Rock Work:

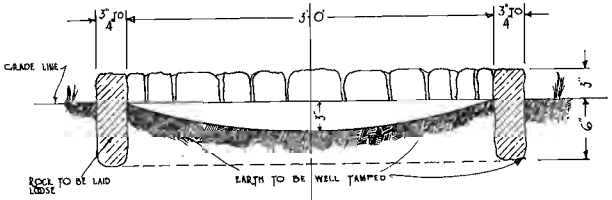
A capable rock mason should be engaged. The rock will be laid in a mortar made in the following proportions by volume:

1 part hydrated lime
1 part Portland cement
4 parts of clean sharp sand

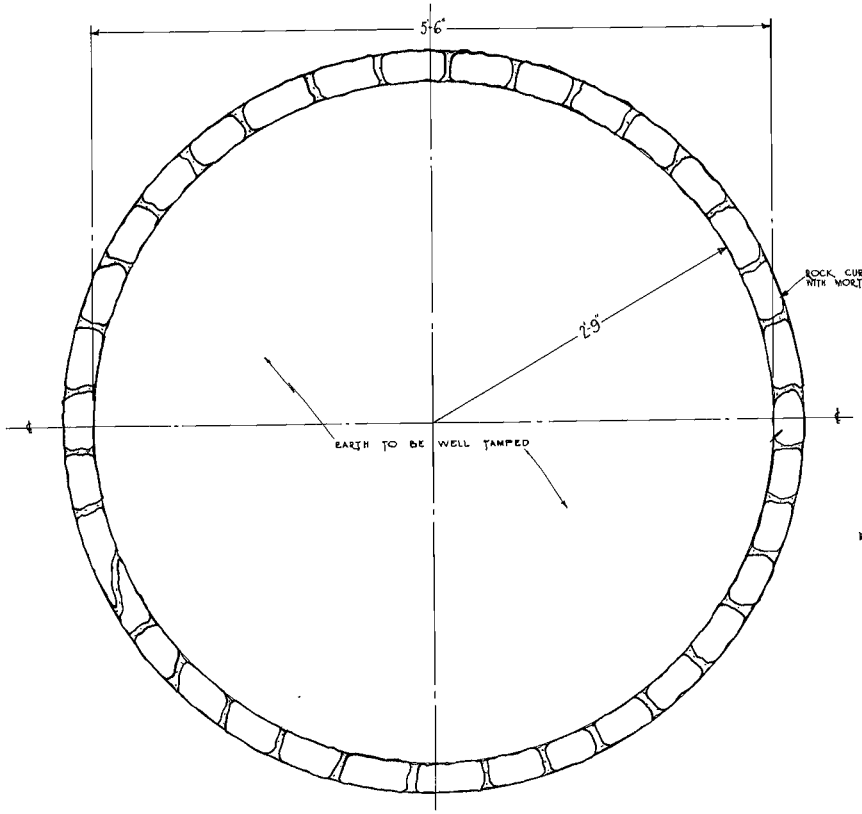
The mortar will be of a heavy batter consistency, usually requiring 50 to 60 gallons of water per cubic yard of stone work. Estimate 30 to 40% of cubic foundation as mortar.



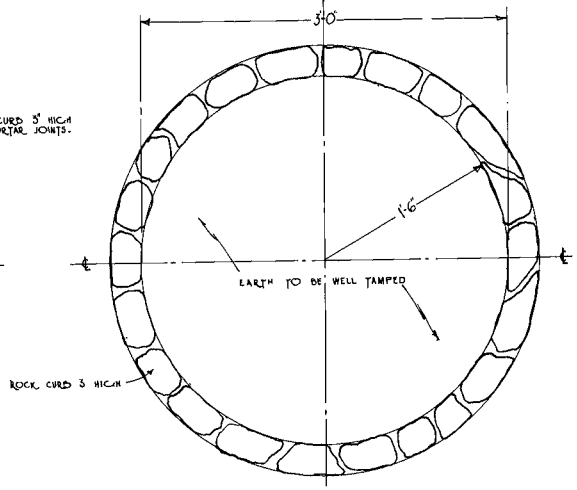
SECTION ON ℄
SCALE 1½" = 1'-0"



SECTION ON ℄
SCALE 1½" = 1'-0"



PLAN
SCALE 1½" = 1'-0"
TYPE "A"



PLAN
SCALE 1½" = 1'-0"
TYPE "B"

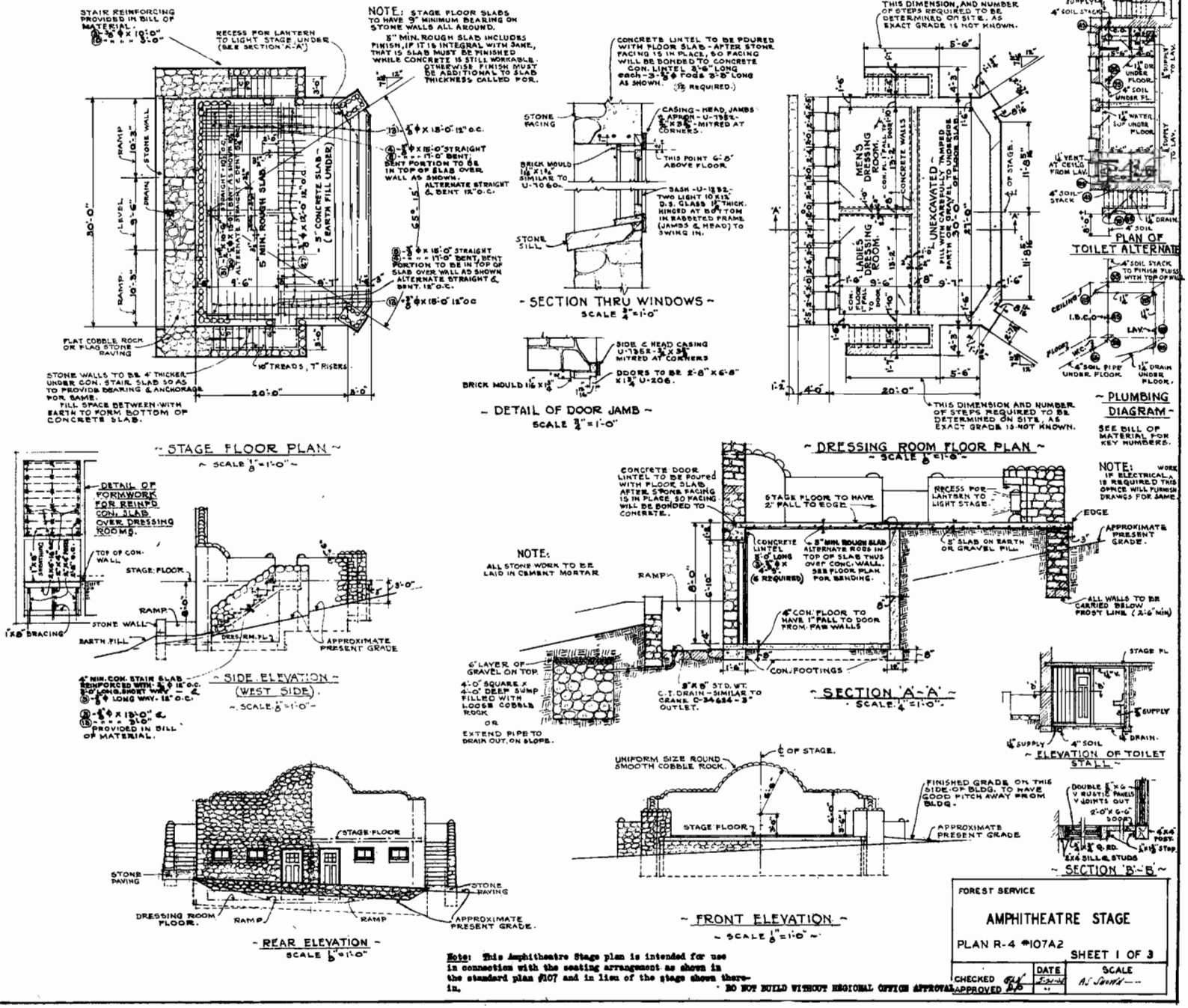
FOREST SERVICE

WARMING FIREPLACE

PLAN R-4 #105

SHEET 1 OF 1

	DATE	SCALE
CHECKED RLA	2-18-36	AS SHOWN
APPROVED EAP	"	



Note: This Amphitheatre Stage plan is intended for use in connection with the seating arrangement as shown in the standard plan #107 and in lieu of the stage shown therein.

DO NOT BUILD WITHOUT REGIONAL OFFICE APPROVAL

FOREST SERVICE

AMPHITHEATRE STAGE

PLAN R-4 #107A2

SHEET 1 OF 3

	DATE	SCALE
CHECKED		
APPROVED		

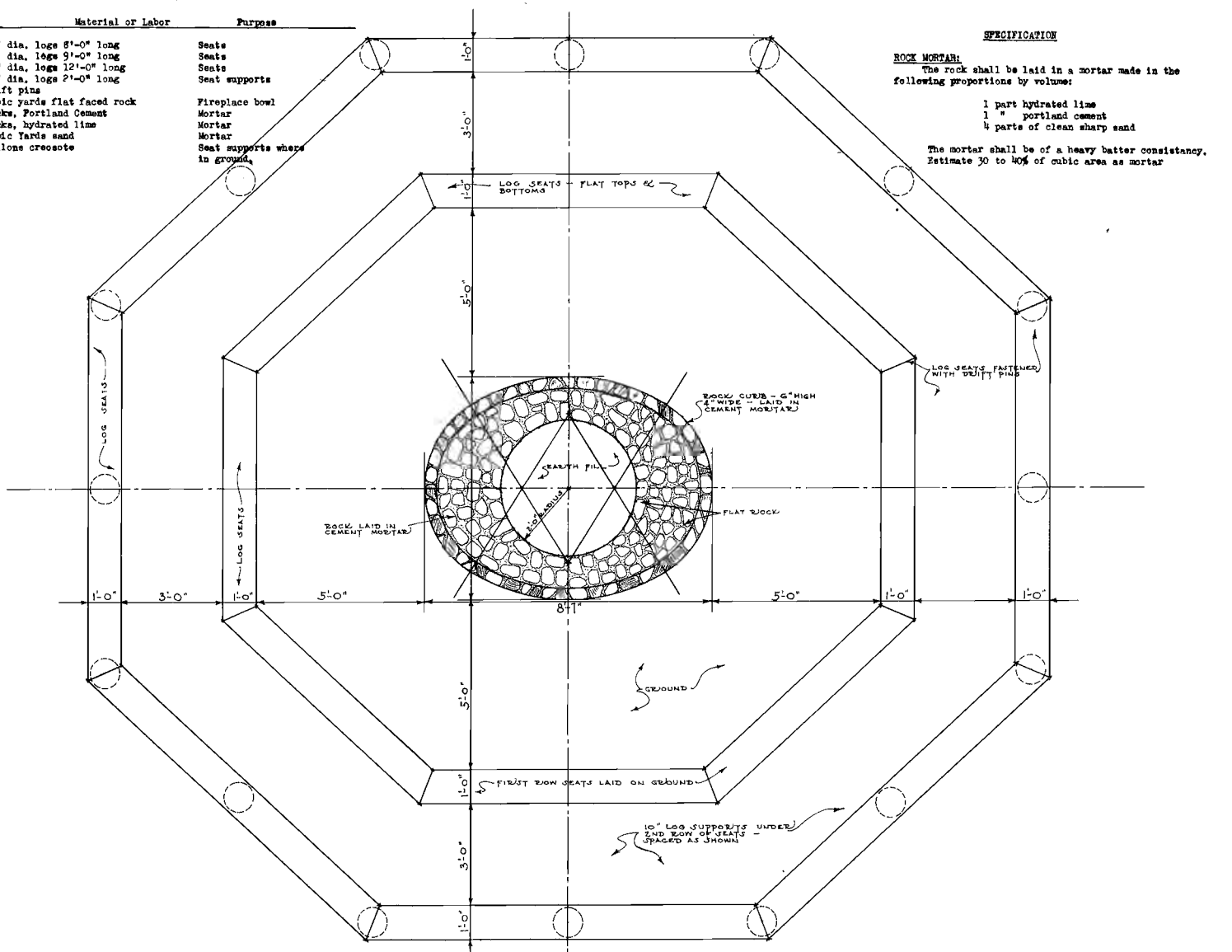
Item No.	No. of Pcs.	Material or Labor	Purpose
1	6	12" dia. logs 8'-0" long	Seats
2	2	12" dia. logs 9'-0" long	Seats
3	8	12" dia. logs 12'-0" long	Seats
4	16	10" dia. logs 2'-0" long	Seat supports
5	50	Drift pins	
6	2	Cubic yards flat faced rock	Fireplace bowl
7	3	Sacks, Portland Cement	Mortar
8	3	Sacks, hydrated lime	Mortar
9	2	Cubic Yards sand	Mortar
10	3	Gallons creosote	Seat supports where in ground.

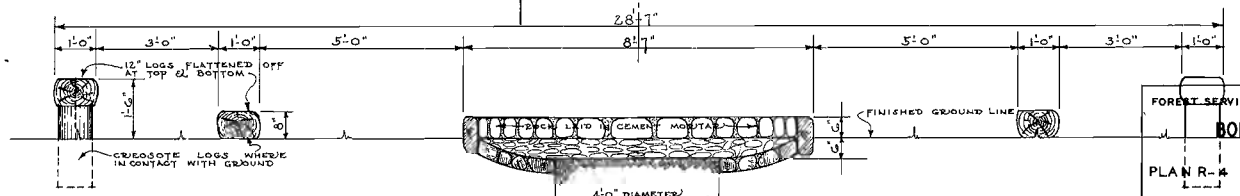
SPECIFICATION

ROCK MORTAR:
The rock shall be laid in a mortar made in the following proportions by volume:

1 part hydrated lime
1 " portland cement
4 parts of clean sharp sand

The mortar shall be of a heavy batter consistancy. Estimate 30 to 40% of cubic area as mortar





SECTION ON CENTER LINE
SCALE 1/2"=1'-0"

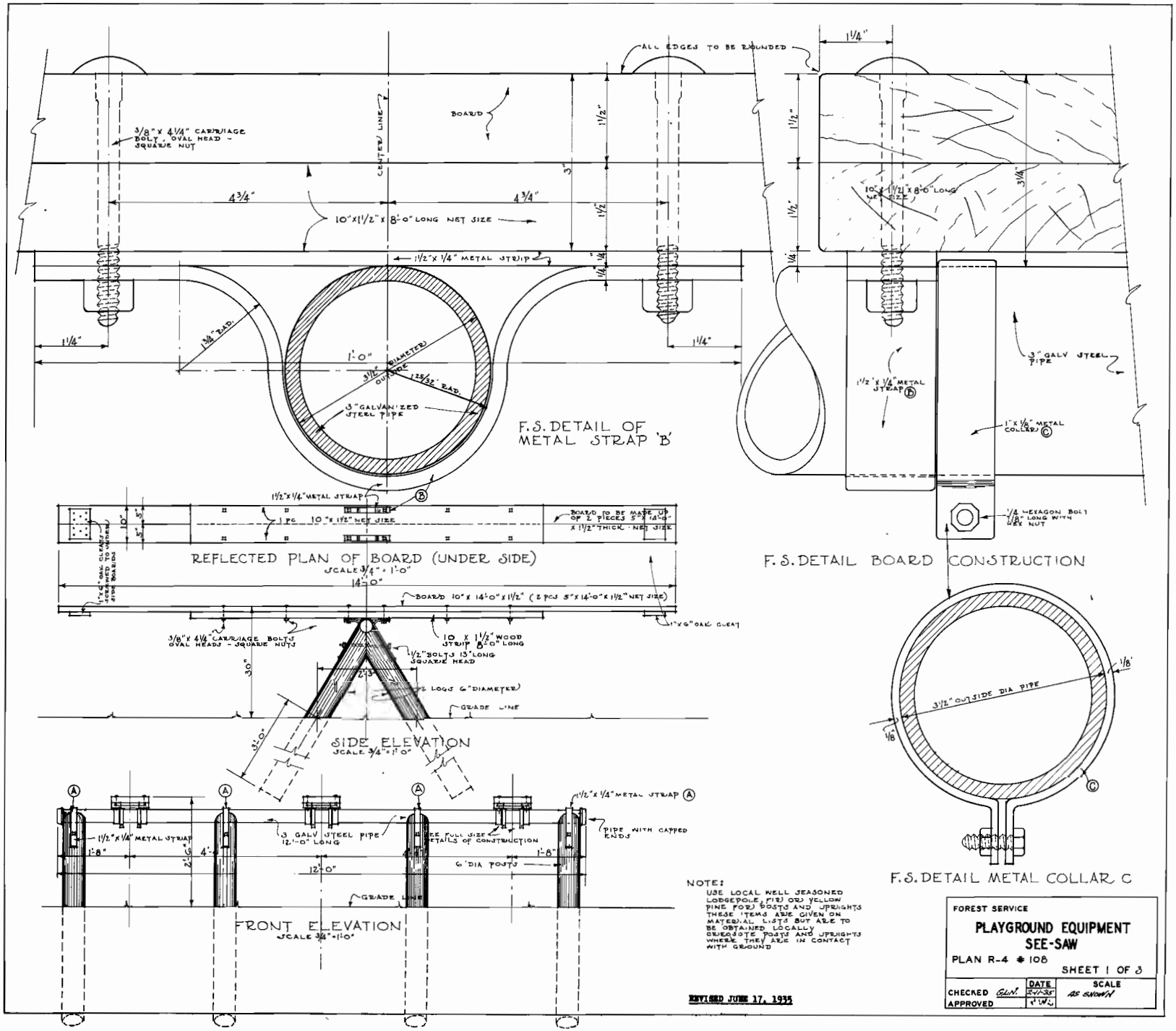
FOREST SERVICE

BONFIRE PLACE

PLAN R-4 # 106

SHEET 1 OF 1

CHECKED	DATE	SCALE
APPROVED	2-7-35	AS SHOWN



NOTE:
USE LOCAL WELL SEASONED LODGEPOLE, PIB OR YELLOW PINE FOR POSTS AND UPRIGHTS THESE ITEMS ARE GIVEN ON MATERIAL LISTS BUT ARE TO BE OBTAINED LOCALLY CREOSOTE POSTS AND UPRIGHTS WHERE THEY ARE IN CONTACT WITH GROUND

REVISED JUNE 17, 1935

FOREST SERVICE

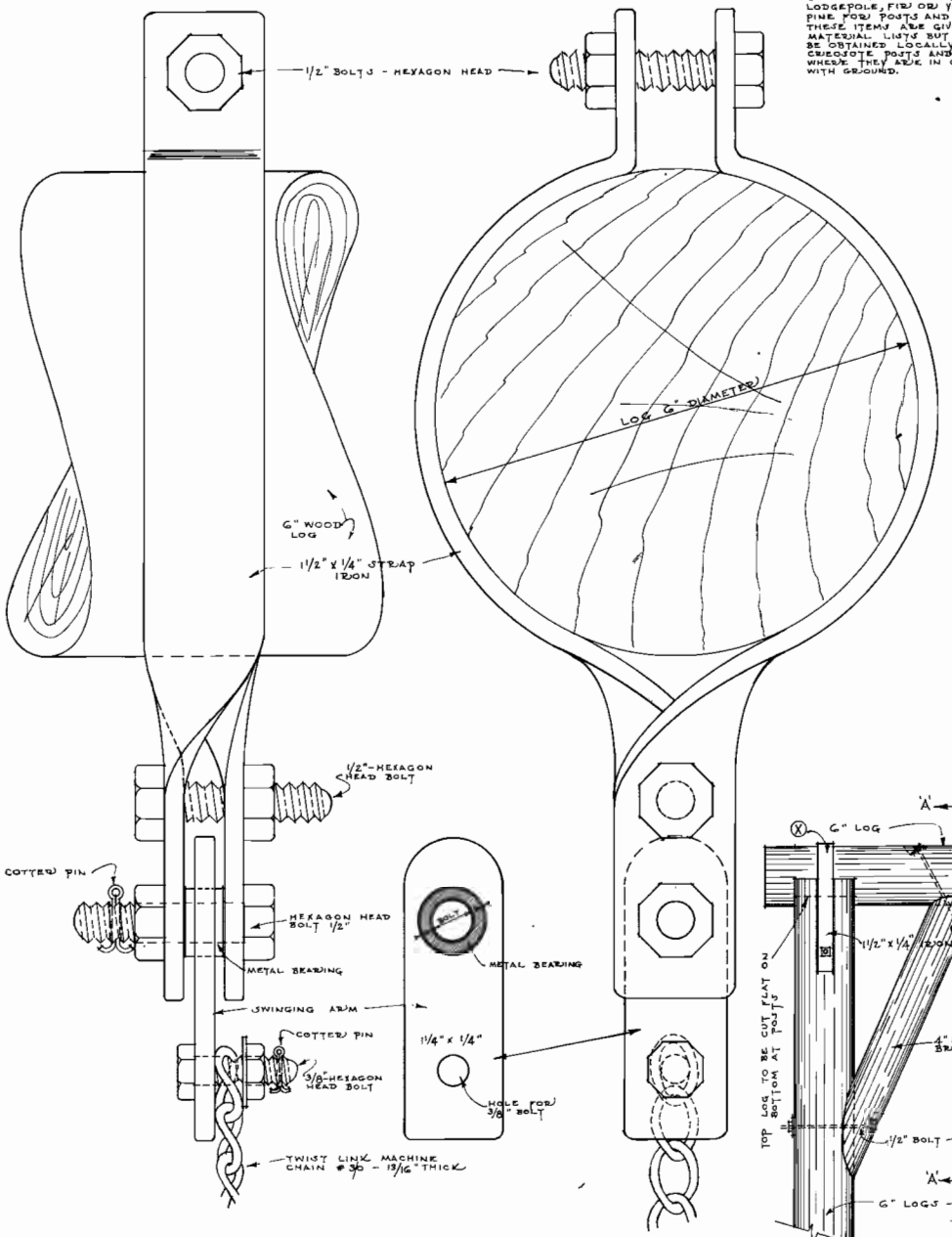
PLAYGROUND EQUIPMENT
SEE-SAW

PLAN R-4 # 108

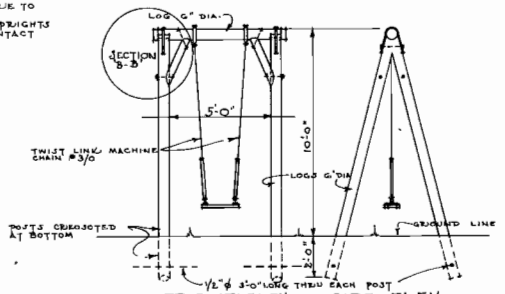
SHEET 1 OF 3

CHECKED GLN	DATE 2-1-35	SCALE AS SHOWN
APPROVED		

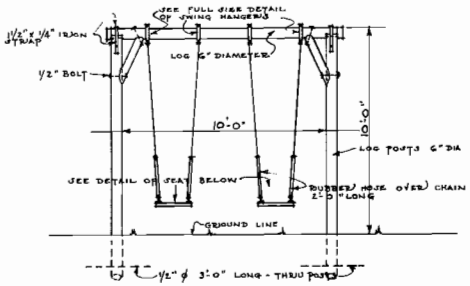
NOTE:
USE LOCAL WELL SEASONED LODGEPOLE, FIR OR YELLOW PINE FOR POSTS AND UPRIGHTS. THESE ITEMS ARE GIVEN ON MATERIAL LISTS BUT ARE TO BE OBTAINED LOCALLY. CREOSOTE POSTS AND UPRIGHTS WHERE THEY ARE IN CONTACT WITH GROUND.



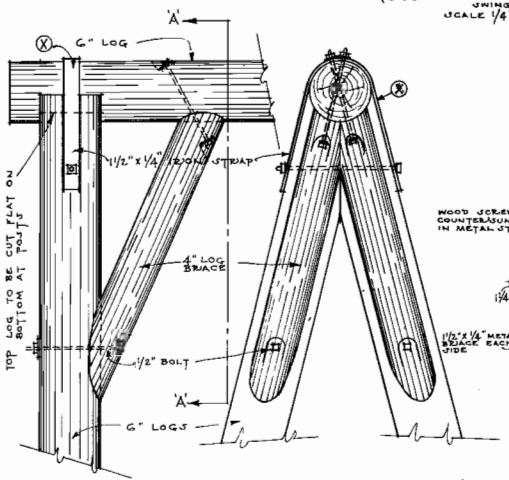
F. S. DETAILS SWING HANGER



FRONT ELEV. SIDE ELEV
SINGLE SWING
SCALE 1/4" = 1'-0"

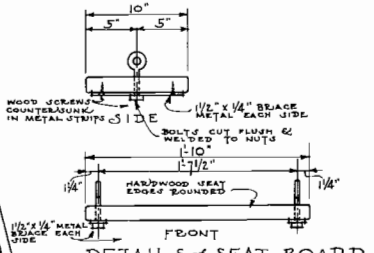


FRONT ELEV. DOUBLE SWING
(SIDE ELEV. SAME AS FOR SINGLE SWING)
SCALE 1/4" = 1'-0"



SECTION B-B
SCALE 1 1/2" = 1'-0"

SECTION ON LINE 'A-A'
SCALE 1 1/2" = 1'-0"



DETAILS of SEAT BOARD
SCALE 1 1/2" = 1'-0"

FOREST SERVICE

PLAYGROUND SWING

PLAN R-4 # 108

SHEET 2 OF 3

	DATE	SCALE
CHECKED GLN	2-1-35	AS SHOWN
APPROVED	G.V.U.	

SPECIFICATIONS

Flagstone Walk around Pool

A capable rock mason should be engaged. The rock shall be wet and will be laid in a mortar made in the following proportions by volume:

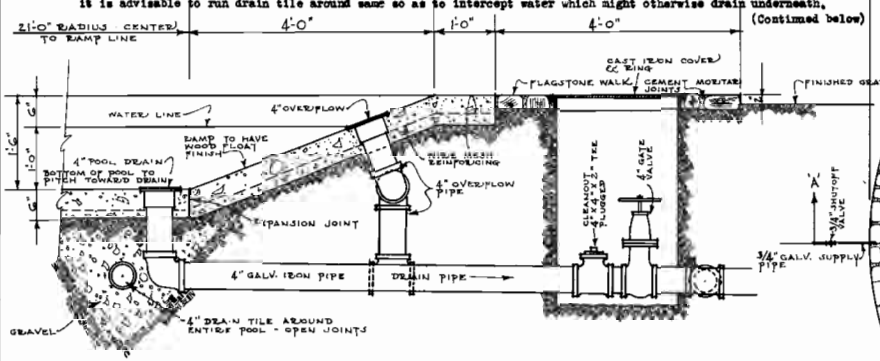
1 part Portland cement
3 parts of clean sharp sand

The mortar will be of a heavy batter consistency, usually requiring 50 to 60 gallons of water per cubic yard of rock work. Estimate 30 to 40% of cubic rock work as mortar. Cement mortar that has been partly set up should not be used.

Bottom and Ramps of Pool

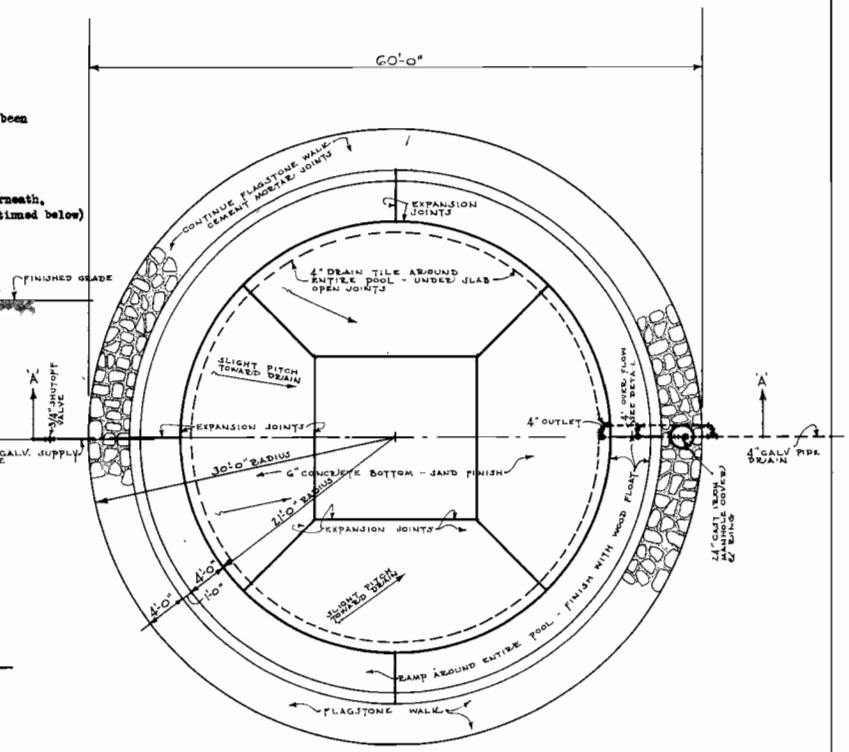
Dry Base Essential: If the site on which the pool bottom is to be located is poorly drained, it is advisable to run drain tile around same so as to intercept water which might otherwise drain underneath.

(Continued below)



SECTION THRU POOL SHOWING DRAINS

SCALE 3/4" = 1'-0"

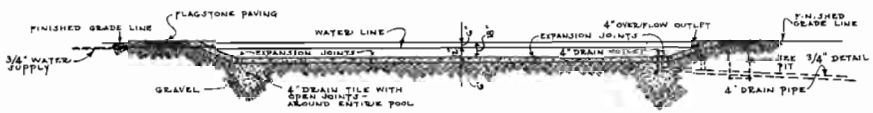


PLAN

SCALE 1/8" = 1'-0"

MATERIAL LIST

Item #	No. of Pcs.	Material of Labor	Purpose
		Sand & Gravel	
1	19	Cubic Yards Sand	Concrete
2	2	" " Sand	Stonework Mortar
3	37	" " Gravel	Concrete
		Cement, Etc.	
4	14	Sacks Portland Cement	Stonework Mortar
5	193	" " "	Concrete Work
6	275	Feet Asphalt Expansion Joints, 3/8" x 8"	Joints in Pool
7	400	Sq. Ft. Reinforcing Mesh, (Weight 43# per 100 sq.ft.)	Reinforcing Concrete slabs
		Stone	
8	7	Cubic Yards Flagstones	Stone Walk
		Plumbing	
9	150	Lineal Ft. Vitrified Tile 4"	
10	1	4" x 4" x 4" Vitrified Tee	
11	1	Pc. 4" Galv. Pipe 10" long, threaded two ends	
12	1	Pc. 4" Galv. Pipe 6'-6" long, threaded two ends	
13	1	Pc. 4" Galv. Pipe 4'-0" long, threaded two ends	
14	1	4" Galv. nipple, 4" long	
15	1	4" x 4" x 2" Tee - 2" outlet capped, C. I.	
16	1	4" Ell, 90°, Galv.	
17	1	4" x 4" x 4" Tee C. I.	
18	1	4" Gate Valve similar to Crane #460	
19	3	4" Angles 90°, C. I.	
20	1	Pc. 4" Galv. Pipe, 4'-7" long, threaded two ends	
21	1	4" x 4" x 4" Tee, C. I.	
22	1	4" Galv. nipple, 8" long	
23	1	4" " " 10" long	
24	2	Pcs. 4" Galv. Pipe 1'-0" long, threaded two ends	
25	1	4" Galv. I. C. Flange Union	
26	1	4" Galv. nipple, 7" long	
27	2	4" Drains similar to Crane #3640 with brass strainer	
28	1	24" Cast Iron Ring and Cover	
29	1	3/4" Globe valve, Crane #1 or equal	
30	1	Pc. 3/4" Galv. pipe 10'-0" long, threaded one end	
31	1	Pc. 3/4" Galv. pipe 4'-0" long, threaded two ends	
32	1	3/4" R. H. Union, galv.	



SECTION THRU POOL ON CENTER LINE 'A'-'A'

SCALE 1/8" = 1'-0"

SPECIFICATIONS - CONTINUED:

Such a tile line should be placed about two (2) feet below ground and sloped toward an outlet to insure quick and complete drainage.

One-course construction shall be used. This term indicates that the fill thickness of the pool bottom is placed using the same mixture 1:2:4 of concrete throughout and troweling for surface finish.

Concrete floor work should be rather stiff, requiring some tamping to get it to settle into place. It is deposited in the area to be concreted and evened up or struck off flush with a straight edge, which is worked back and forth over the mass to bring it to the proper level.

Proper fall or drainage is indicated on plans.

Units between expansion joints shall be placed in one operation.

The surface of concrete should not be finished at once but given time in which the concrete can stiffen.

CAUTION: Attempts to finish the surface immediately after pouring may cause fine particles to come to the top. This causes a tendency for the finish to check or crack and does not wear well. All surfaces are to be rough texture, sand finished - use only a wood float trowel - no metal trowels will be tolerated on this work.

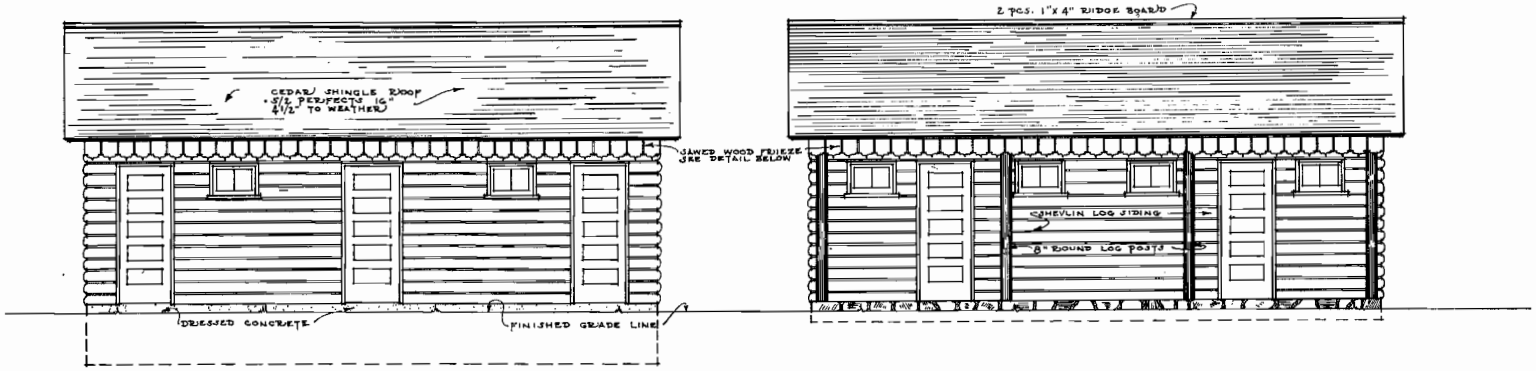
FOREST SERVICE

PLAYGROUND WADING POOL

PLAN R-4 #ill

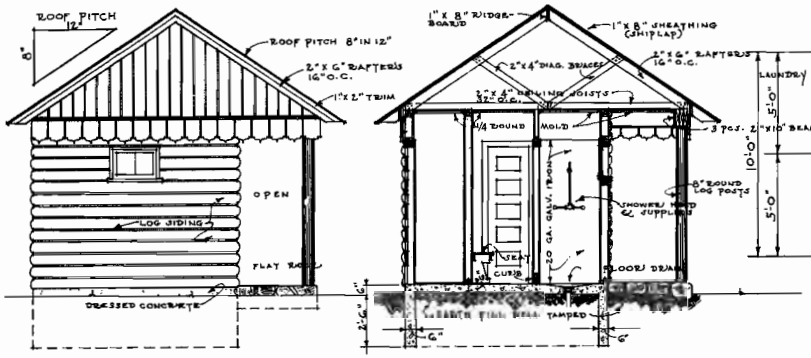
SHEET 1 OF 1

		DATE	SCALE
CHECKED	GLH	2-6-35	SCALE AS SHOWN
APPROVED	BP	2-7-35	



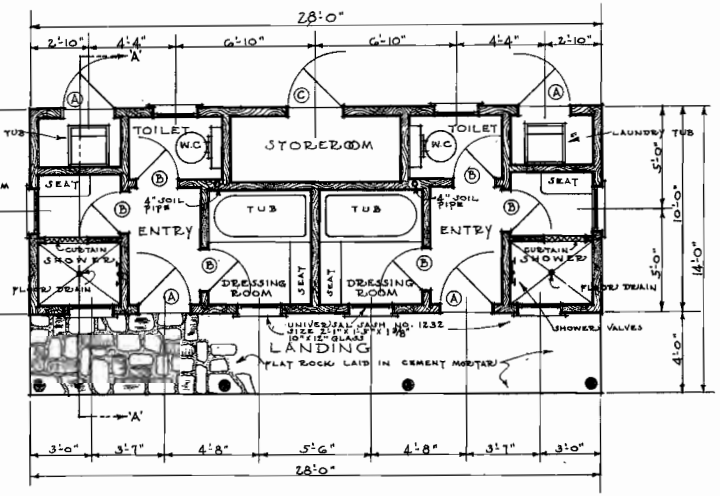
REAR ELEVATION
SCALE 1/4"=1'-0"

FRONT ELEVATION
SCALE 1/4"=1'-0"

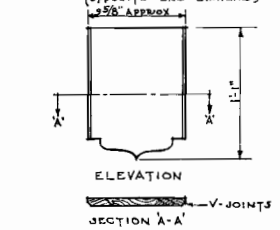


SIDE ELEVATION
SCALE 1/4"=1'-0"
(OPPOSITE END SIMILAR)

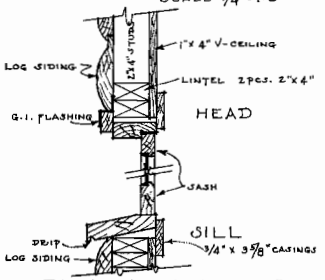
SECTION ON LINE 'A-A'
SCALE 1/4"=1'-0"



PLAN
SCALE 1/4"=1'-0"



DETAILS of SAWED WOOD FRIEZE
SCALE 1 1/2"=1'-0"



DETAILS of WINDOWS

DOORS:
'A' 2'-6"X 6'-8"X 1 3/8" UNIVERSAL DESIGN No. 475
'B' 2'-0"X 6'-8"X 1 3/8" " " " "
'C' 2'-8"X 6'-8"X 1 3/8" " " " "

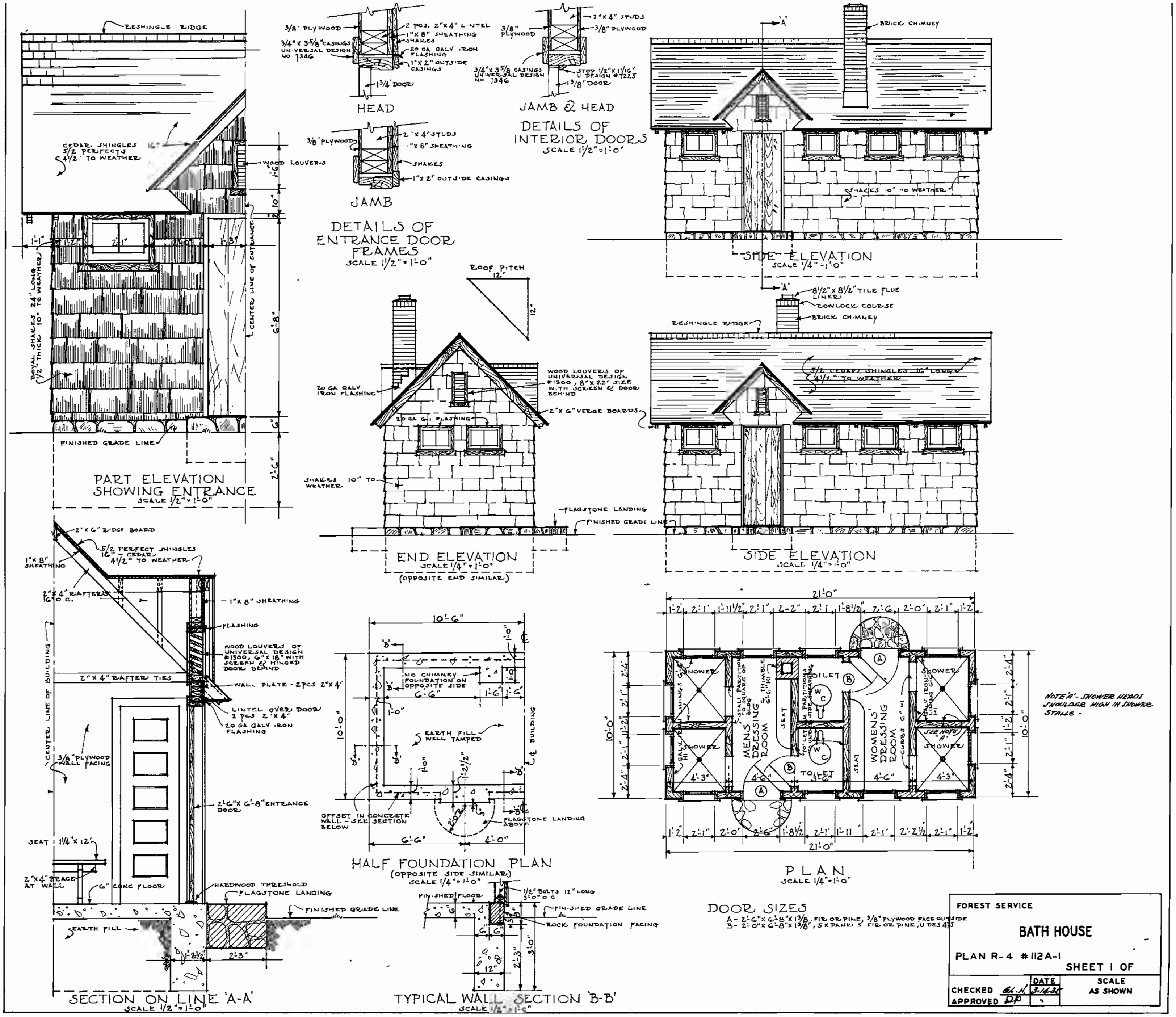
FOREST SERVICE

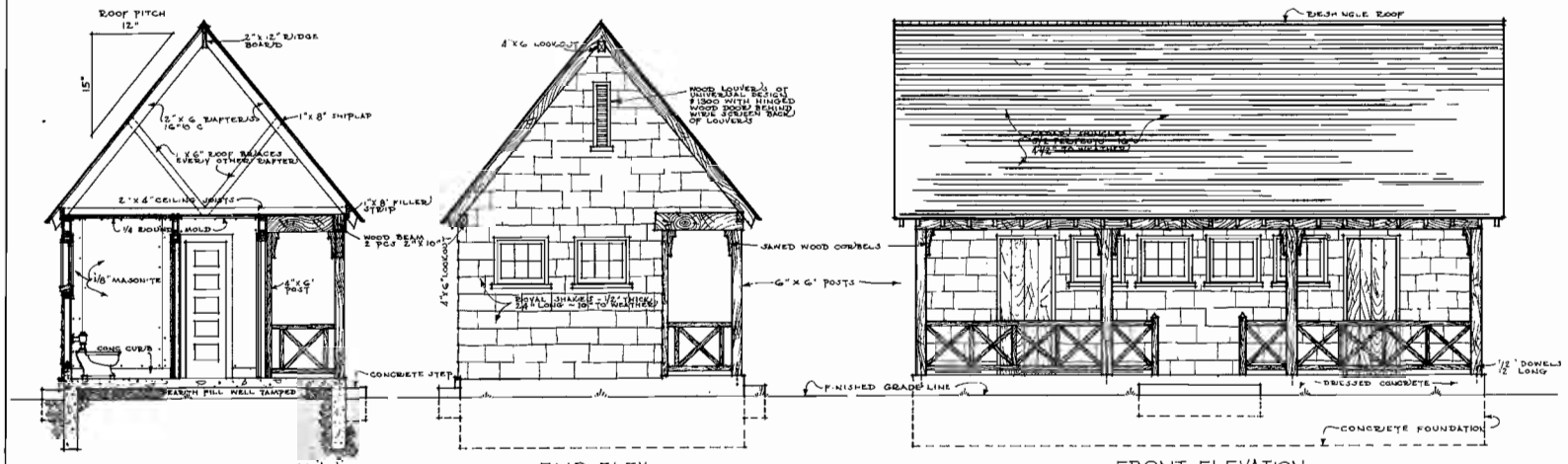
BATH HOUSE

PLAN R-4 #112

SHEET 1 OF 8

CHECKED APPROVED	DATE	SCALE
	JWS	AS SHOWN

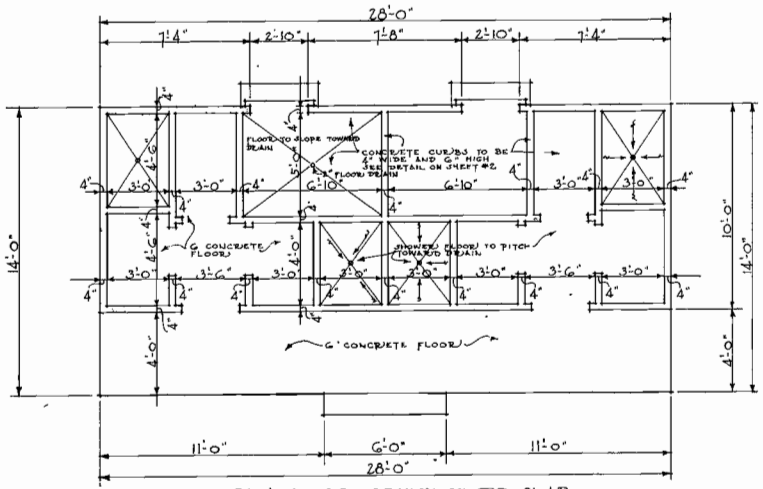

PART ELEVATION
SHOWING ENTRANCE
SCALE 1/2" = 1'-0"
HEAD
JAMB
DETAILS OF
ENTRANCE DOOR
FRAMES
SCALE 1 1/2" = 1'-0"
JAMB & HEAD
DETAILS OF
INTERIOR DOORS
SCALE 1 1/2" = 1'-0"
SIDE ELEVATION
SCALE 1/4" = 1'-0"
END ELEVATION
SCALE 1/4" = 1'-0"
(OPPOSITE END SIMILAR)
SIDE ELEVATION
SCALE 1/4" = 1'-0"
SECTION ON LINE 'A-A'
SCALE 1/2" = 1'-0"
HALF FOUNDATION PLAN
(OPPOSITE SIDE SIMILAR)
SCALE 1/4" = 1'-0"
TYPICAL WALL SECTION 'B-B'
PLAN
SCALE 1/4" = 1'-0"
MENS' DRESSING ROOM
WOMENS' DRESSING ROOM
TOILET
SHOWER
NOTE 'A' - SHOWER HEADS SHOULDER HIGH IN SHOWER STALLS -
DOOR SIZES
A - 2'-6" x 6'-8" x 1 3/8, FIR OR PINE, 3/8" PLYWOOD FACE OUTSIDE
B - 2'-0" x 6'-8" x 1 3/8", 5 X PANEL 5 FIR OR PINE, U DES 45
FOREST SERVICE
BATH HOUSE
PLAN R-4 #112A-1
SHEET 1 OF
CHECKED
APPROVED
DATE
SCALE
AS SHOWN



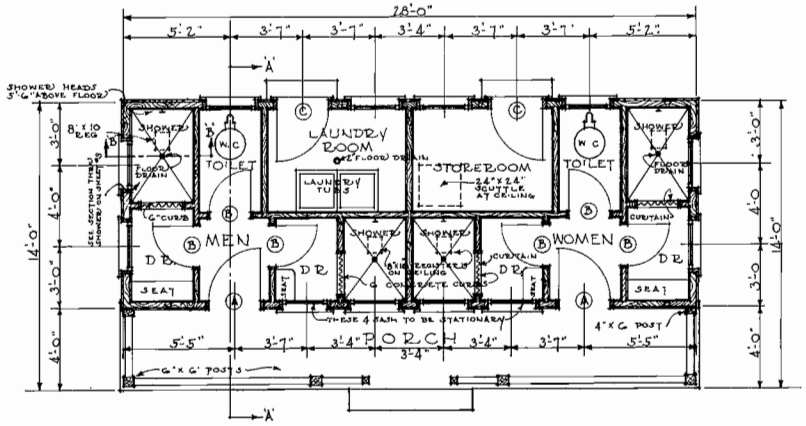
CROSS SECTION on LINE A-A
SCALE 1/4"=1'-0"

END ELEV.
(OPPOSITE END SIMILAR)
SCALE 1/4"=1'-0"

FRONT ELEVATION
SCALE 1/4"=1'-0"



PLAN of CONCRETE FLOOR SLAB
SCALE 1/4"=1'-0"



FLOOR PLAN
SCALE 1/4"=1'-0"

DOOR SCHEDULE:

(A) 2'-8"x6'-8"x1 3/8" - 5X PANEL DOOR of UNIVERSAL DESIGN #475, FIR OR PINE, WITH 3/8" PANEL GLUED OVER OUTSIDE FACE WITH WATERPROOF GLUE. VERTICAL V-JOINTS CUT IN PANEL AT RANDOM WIDTHS.

(B) 2'-0"x6'-8"x1 3/8" - 5X PANEL DOOR of UNIVERSAL DESIGN #475, FIR OR PINE.

(C) 2'-8"x6'-8"x1 3/4" - 5X PANEL DOOR of UNIVERSAL DESIGN #475, FIR OR PINE.

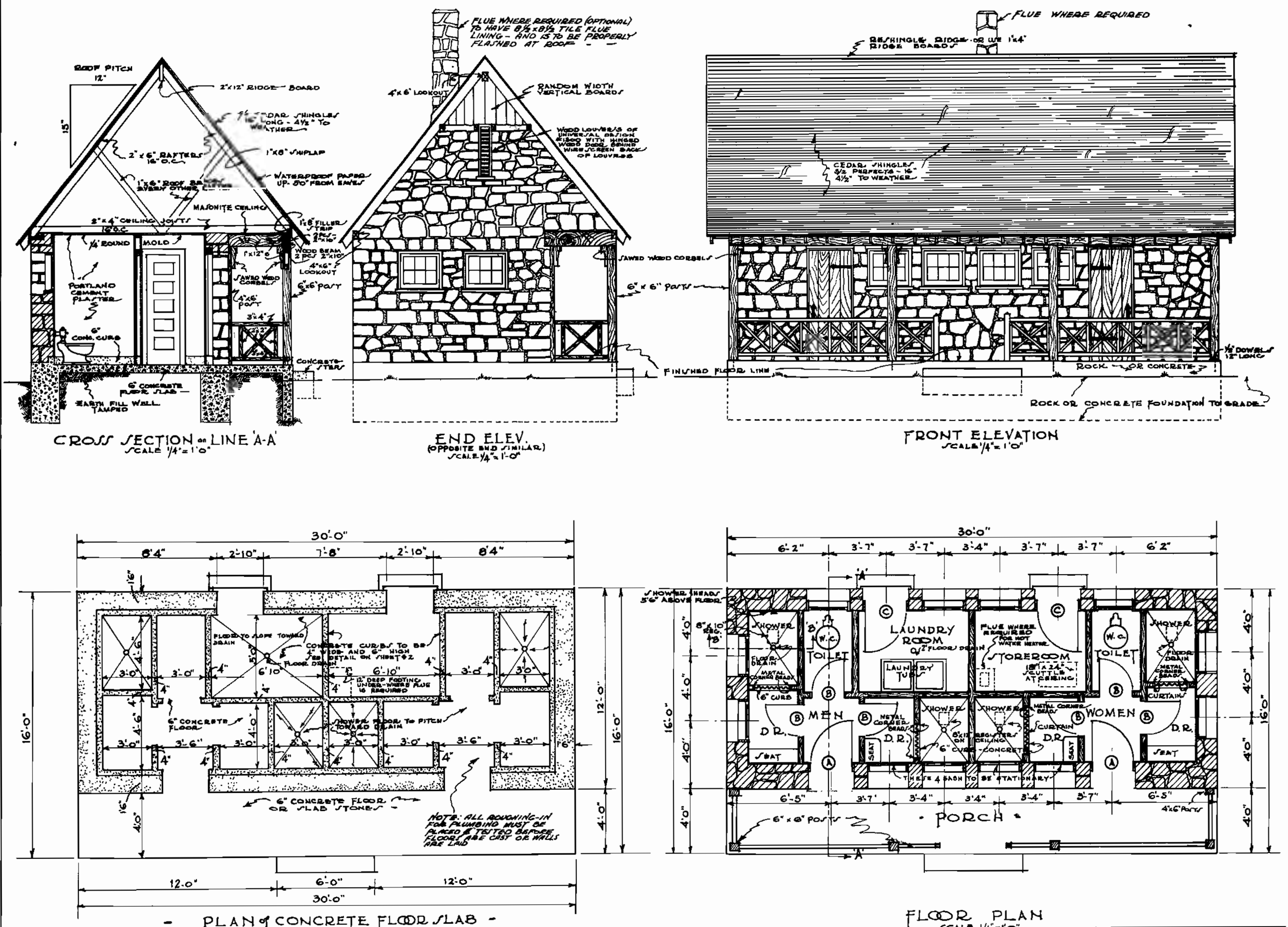
FOREST SERVICE

SHOWER BATH HOUSE

PLAN R-4 # 112A-2

SHEET 1 OF 5

	DATE	SCALE
CHECKED G.L.N.	4-43	AS SHOWN
APPROVED D.P.	"	



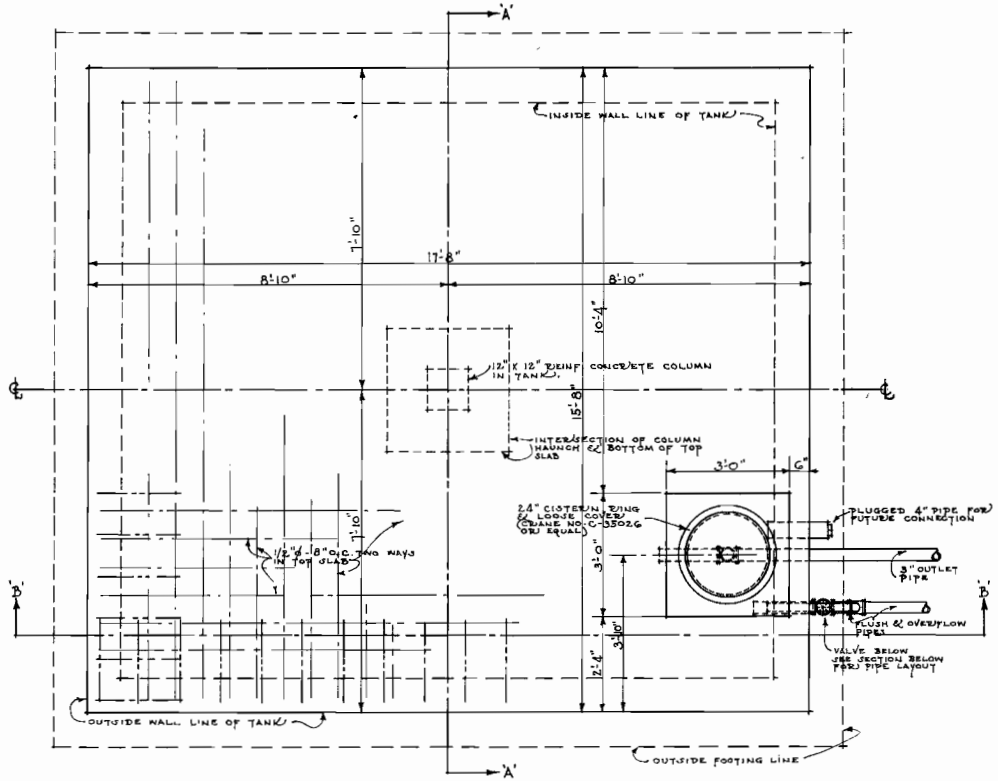
DOOR SCHEDULE:

Ⓐ 2'-8" x 6'-8" x 1⅜" - 5X PANEL DOOR OF UNIVERSAL DESIGN #475, FIR OR PINE. WITH 3/8" PANEL GLUED OVER OUTSIDE FACE WITH WATERPROOF GLUE. VERTICAL V-JOINTS CUT IN PANEL AT RANDOM WIDTHS

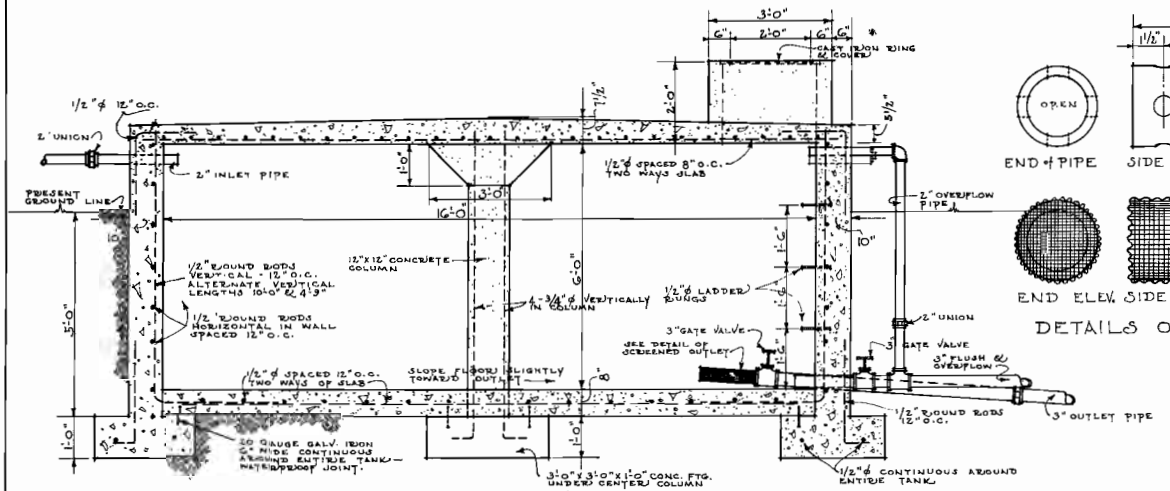
Ⓑ 2'-0" x 6'8" x 1⅜" - 5X PANEL DOOR OF UNIVERSAL DESIGN #475, FIR OR PINE.

Ⓒ 2'-8" x 6'8" x 1¾" - 5X PANEL DOOR OF UNIVERSAL DESIGN #475, FIR OR PINE -

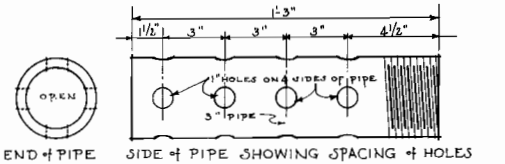
FOREST SERVICE		
SHOWER BATH HOUSE		
PLAN R-4 # 112A-3 SHEET 1 OF 5		
	DATE	SCALE
CHECKED G.L.N.	5-14-35	- AS SHOWN -
APPROVED D.P.	"	



TOP PLAN
SCALE 1/2" = 1'-0"



SECTION ON LINE 'B-B'
SCALE 1/2" = 1'-0"



DETAILS OF SCREENED OUTLET
SCALE 3" = 1'-0"

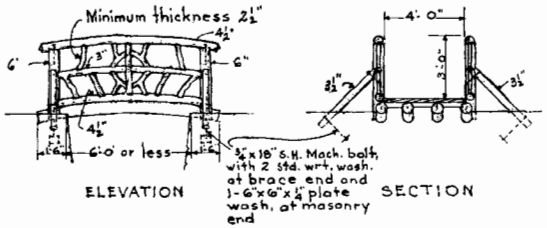
FOREST SERVICE

WATER STORAGE TANK
10000 GALLONS

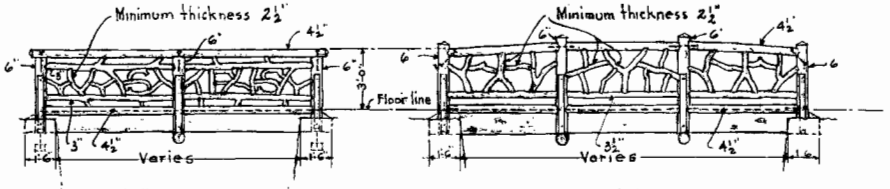
PLAN R-4 #114

SHEET 1 OF 2

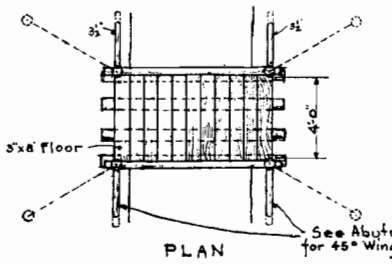
		DATE	SCALE
CHECKED	GLW	2-11-33	AS SHOWN
APPROVED	DSP	2-17-33	



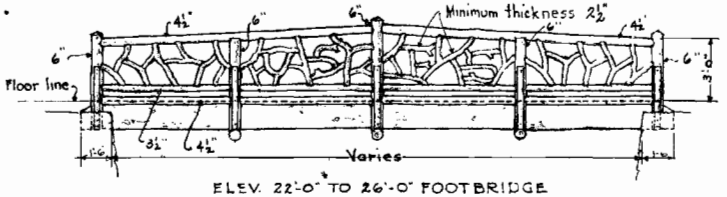
ELEVATION SECTION



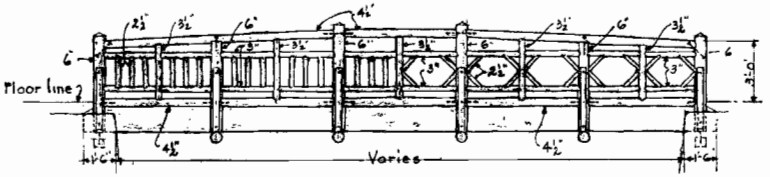
ELEV. 8'-0" TO 14'-0" FOOTBRIDGE ELEV. 16'-0" TO 20'-0" FOOTBRIDGE



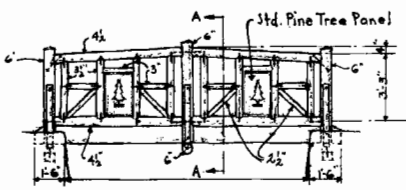
PLAN



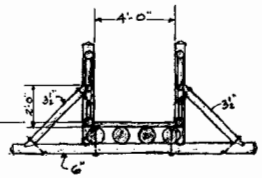
ELEV. 22'-0" TO 26'-0" FOOTBRIDGE



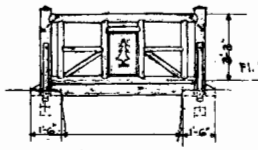
ELEV. 28'-0" TO 30'-0" FOOTBRIDGE



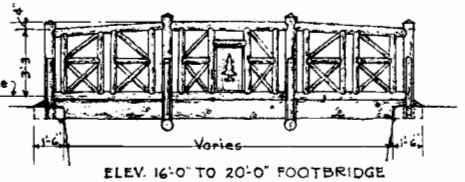
ELEV. 8'-0" TO 14'-0" FOOTBRIDGE



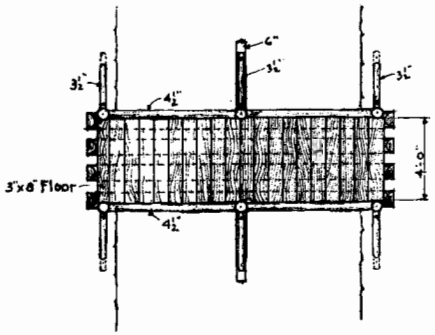
SECTION 'A'-'A'



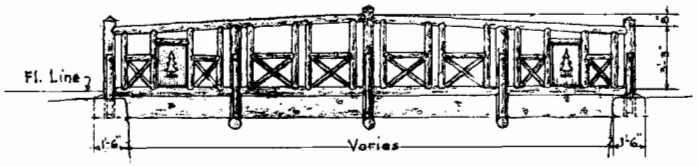
ELEV. 6'-0" or less FOOTBRIDGE



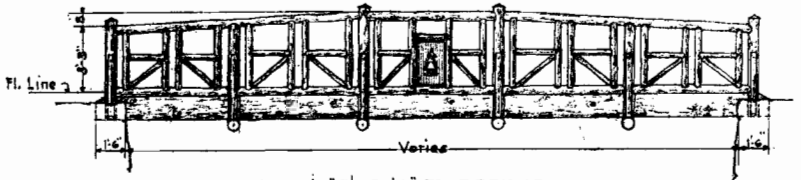
ELEV. 16'-0" TO 20'-0" FOOTBRIDGE



PLAN



ELEV. 22'-0" TO 26'-0" FOOTBRIDGE



ELEV. 28'-0" TO 30'-0" FOOTBRIDGE

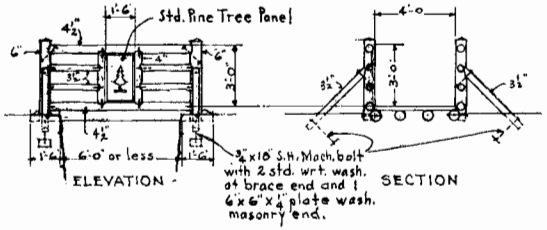
FOREST SERVICE

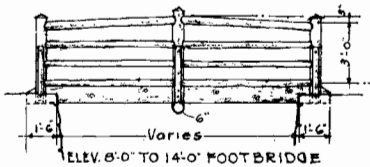
FOOTBRIDGES

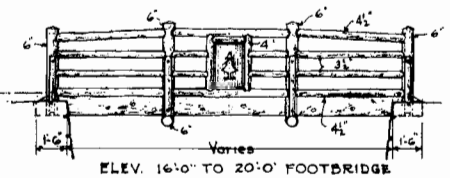
PLAN R-4 121 A-1

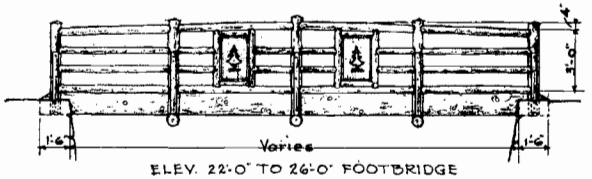
SHEET 1 OF 4

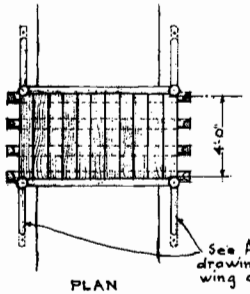
CHECKED	DATE	SCALE
APPROVED	2-11-35	½"=1 FOOT

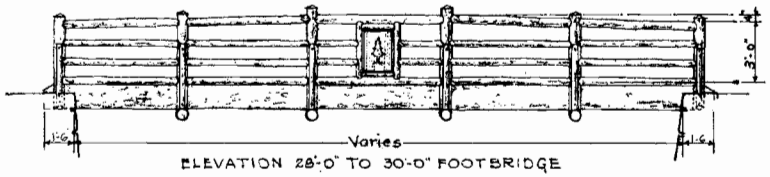


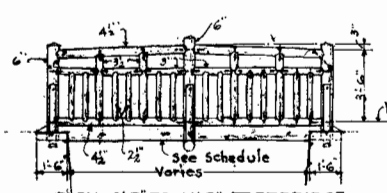


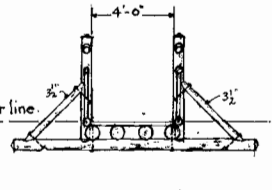


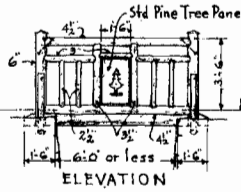


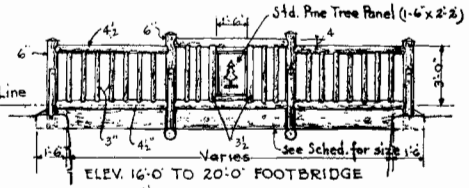


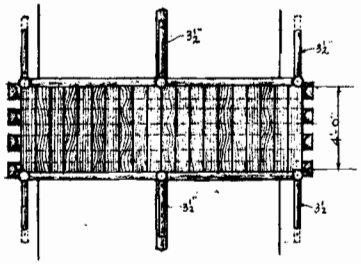


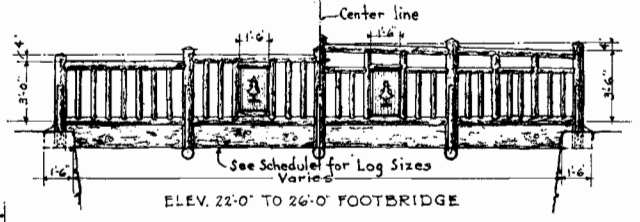


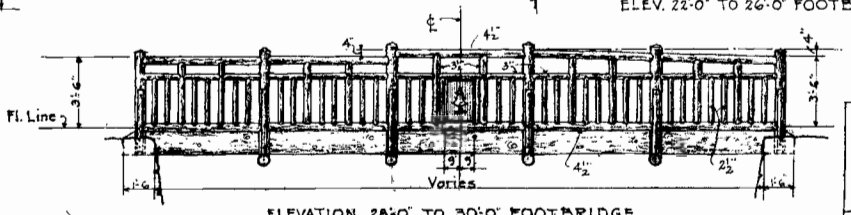












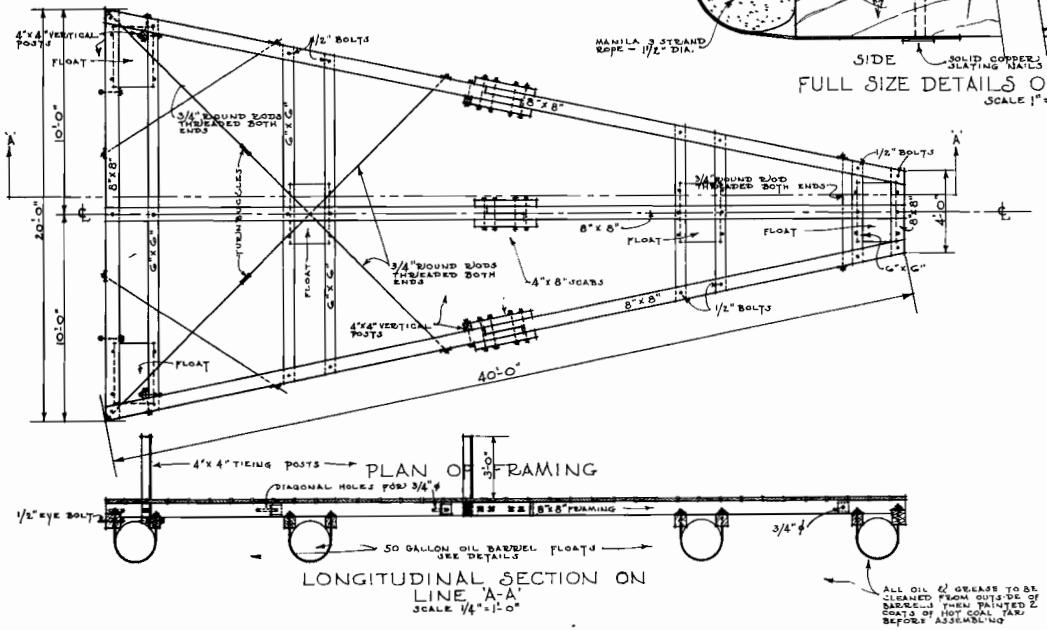
FOREST SERVICE

FOOTBRIDGES

PLAN R-4 # 121 A-1

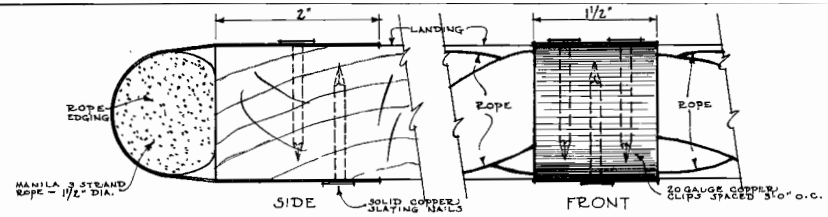
SHEET 2 OF 4

CHECKED	GLM	DATE	SCALE
APPROVED	[illegible]	2-11-34	AS SHOWN

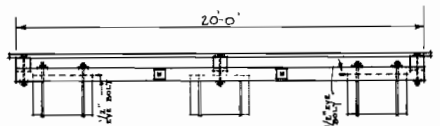


PLAN OF FRAMING

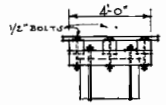
LONGITUDINAL SECTION ON LINE 'A-A'
SCALE 1/4"=1'-0"



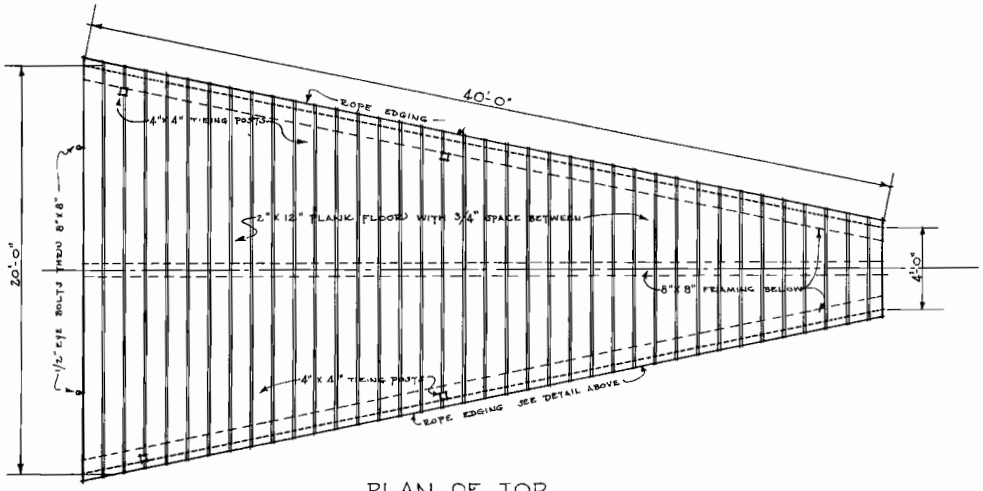
FULL SIZE DETAILS OF ROPE EDGING
SCALE 1"=1"



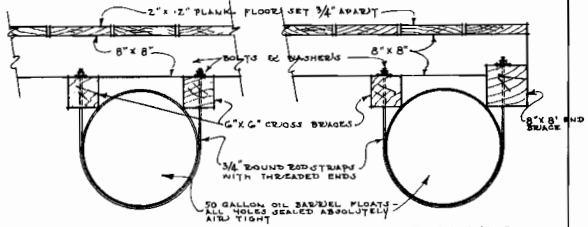
ELEVATION of 20'-0" END
SCALE 1/4"=1'-0"



ELEVATION of 4'-0" END
SCALE 1/4"=1'-0"



PLAN OF TOP
SCALE 1/4"=1'-0"



3/4" SCALE DETAILS OF BARREL FLOATS

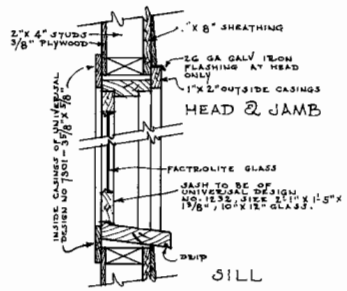
FOREST SERVICE

PONTOON BOAT LANDING

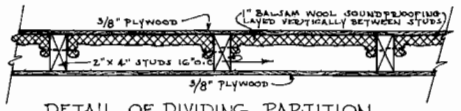
PLAN R-4 #123B-1

SHEET 1 OF 2

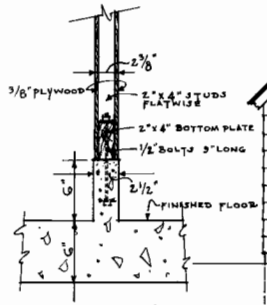
CHECKED G.A.M.	DATE 3-14-37	SCALE AS SHOWN
APPROVED F.P.	"	



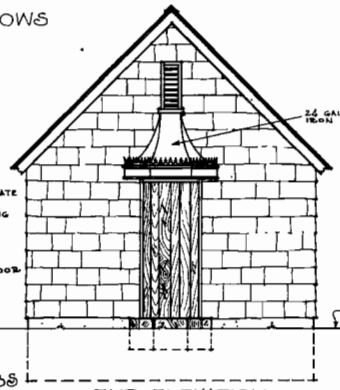
DETAILS of WINDOWS
SCALE 1½"=1'-0"



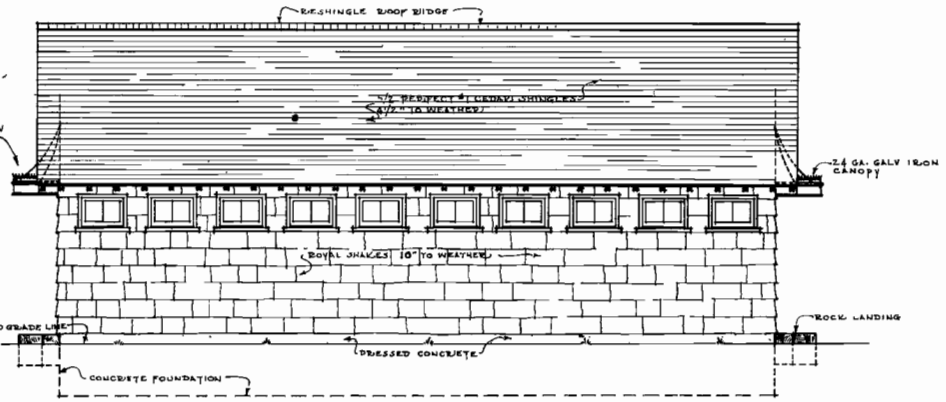
DETAIL OF DIVIDING PARTITION
SCALE 1½"=1'-0"



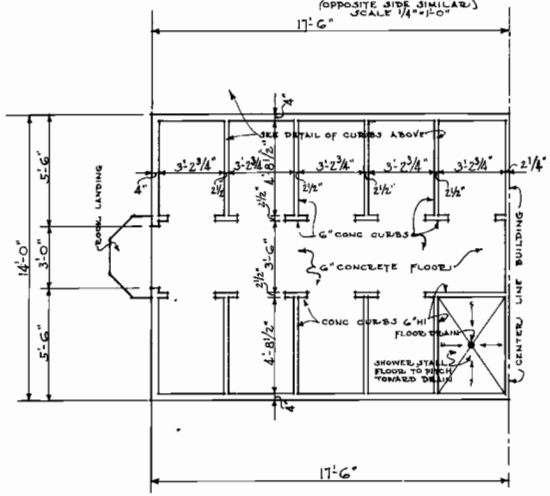
DETAIL of PART'N CURBS
SCALE 1½"=1'-0"



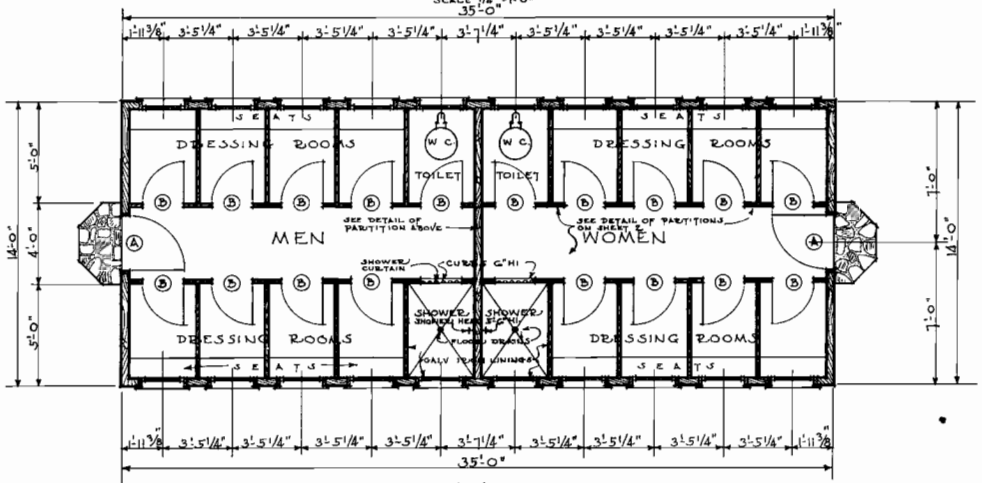
END ELEVATION
(OPPOSITE SIDE SIMILAR)
SCALE 1/4"=1'-0"



SIDE ELEVATION
(OPPOSITE SIDE SIMILAR)
SCALE 1/4"=1'-0"



HALF PLAN OF FLOOR
(SHOWING CONCRETE CURBS)
(OPPOSITE SIDE SIMILAR)
SCALE 1/4"=1'-0"



PLAN
SCALE 1/4"=1'-0"

DOOR SIZES:

(A) 2'-8" X 6'-8" X 1 3/8", 5 PANEL DOOR OF UNIVERSAL DESIGN #415, WITH 3/8" PANEL OUTSIDE FACING GLUED ON WITH WATER PROOF GLUE — VERTICAL V-MARKS.

(B) 2'-0" X 6'-8" X 1 3/8", 3 PANEL DOORS OF UNIVERSAL DESIGN # 475 FIR OR PINE

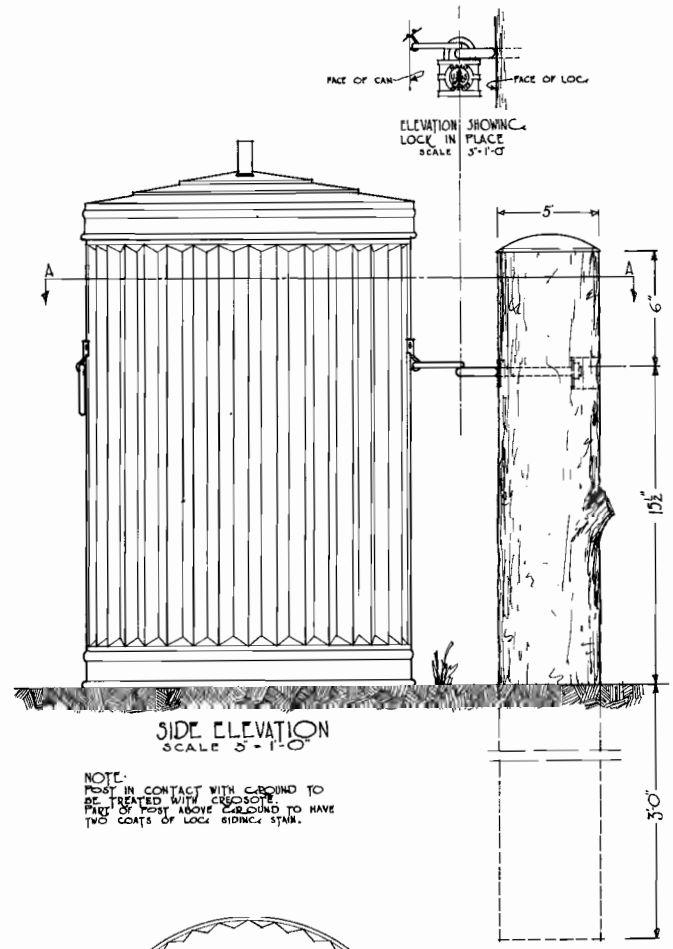
FOREST SERVICE

DRESSING RM. BLDG.
FOR LAKES

PLAN R-4 #124A-1

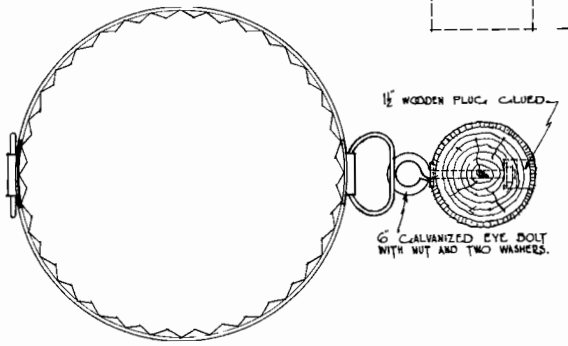
SHEET 1 OF 4

CHECKED GLN	DATE 10-11-55	SCALE AS SHOWN
APPROVED DP	"	



SIDE ELEVATION
SCALE 3"=1'-0"

NOTE:
POST IN CONTACT WITH GROUND TO BE TREATED WITH CREOSOTE. PART OF POST ABOVE GROUND TO HAVE TWO COATS OF LOCK SIDING STAIN.



PLAN SECTION AT "A-A"
SCALE 3"=1'-0"

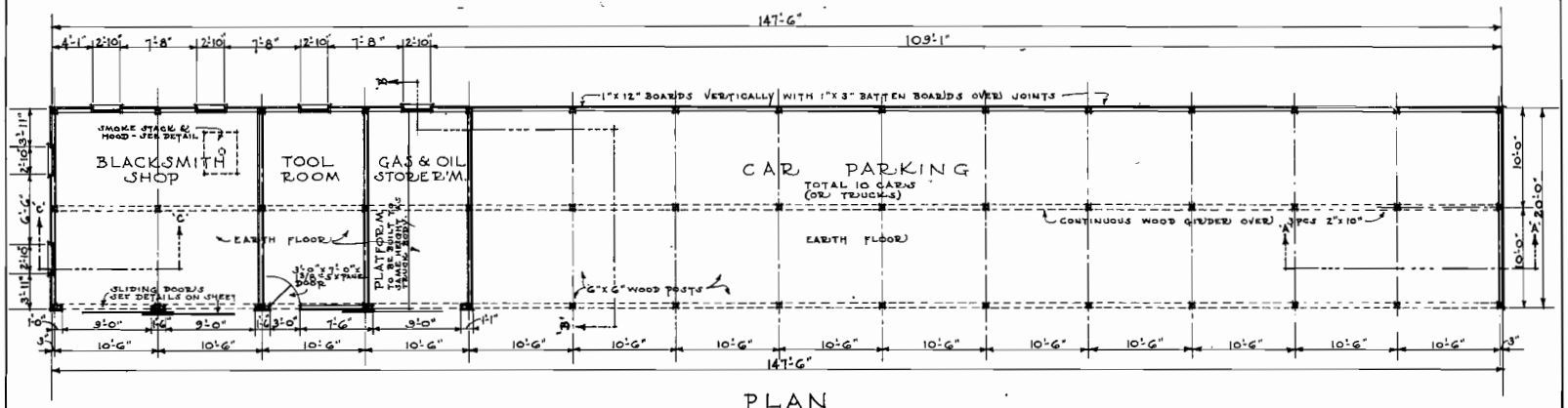
FOREST SERVICE

GARBAGE CAN ANCHORAGE

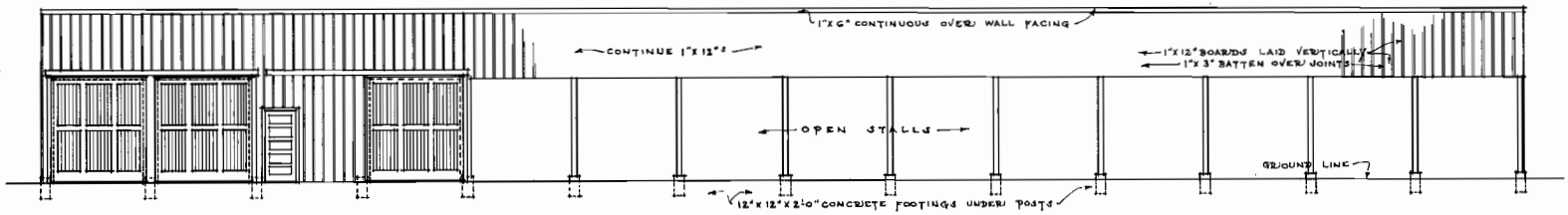
PLAN R-4 #125

SHEET 1 OF 1

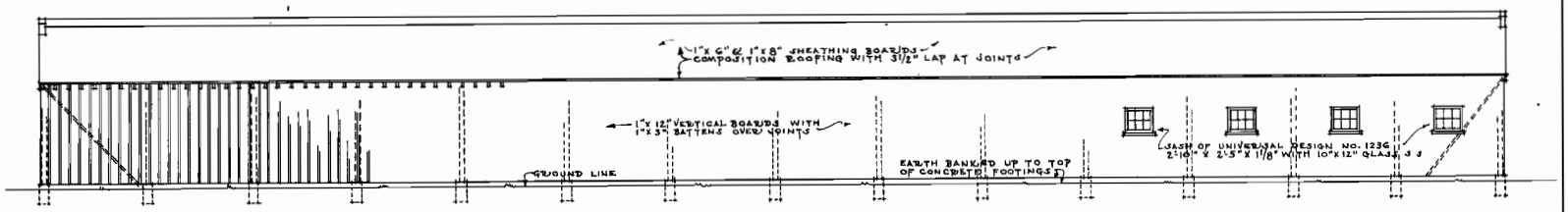
CHECKED GLN / APPROVED DF	DATE 3-16-67	SCALE 3"=1'-0"



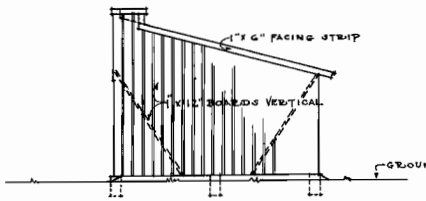
PLAN
SCALE 1/8"=1'-0"



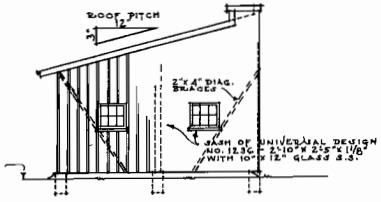
FRONT ELEVATION
SCALE 1/8"=1'-0"



REAR ELEVATION
SCALE 1/8"=1'-0"



END ELEVATION
SCALE 1/8"=1'-0"



END ELEVATION
SCALE 1/8"=1'-0"

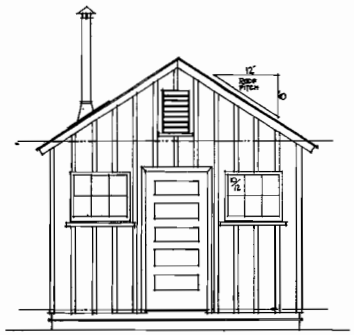
FOREST SERVICE

EQUIPMENT & TRUCK SHELTER

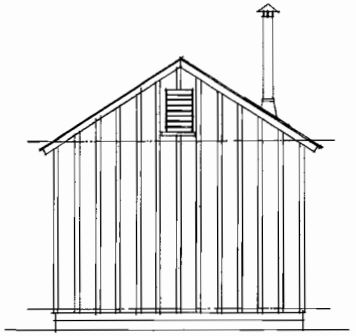
PLAN R-4 #126

SHEET 1 OF 4

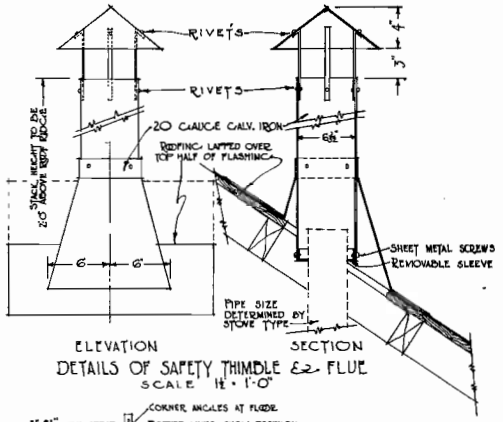
	DATE	SCALE
CHECKED GLM	12-15-51	AS SHOWN
APPROVED C.H.W.	2-12-52	



FRONT ELEVATION
SCALE ¼" = 1'-0"

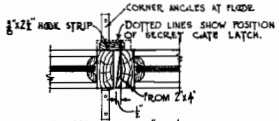


REAR ELEVATION
SCALE ¼" = 1'-0"

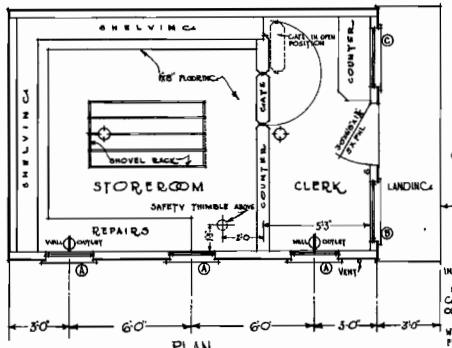


ELEVATION SECTION

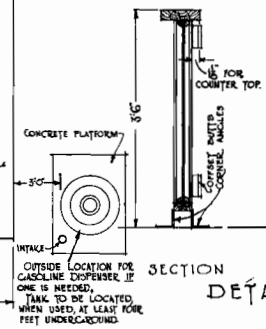
DETAILS OF SAFETY THIMBLE & FLUE
SCALE 1½" = 1'-0"



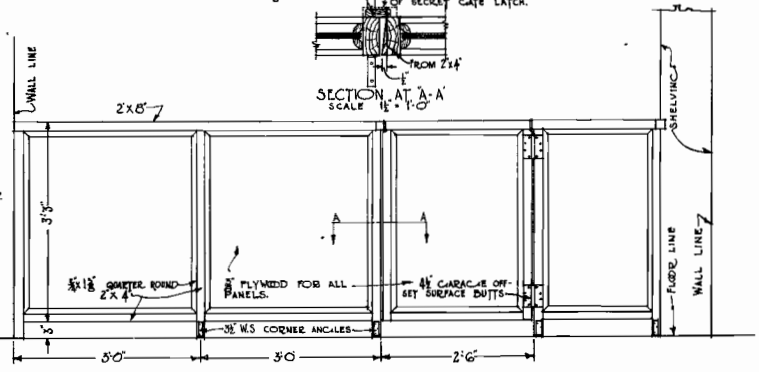
SECTION AT "A-A"
SCALE 1½" = 1'-0"



PLAN
SCALE ¼"=1'-0"

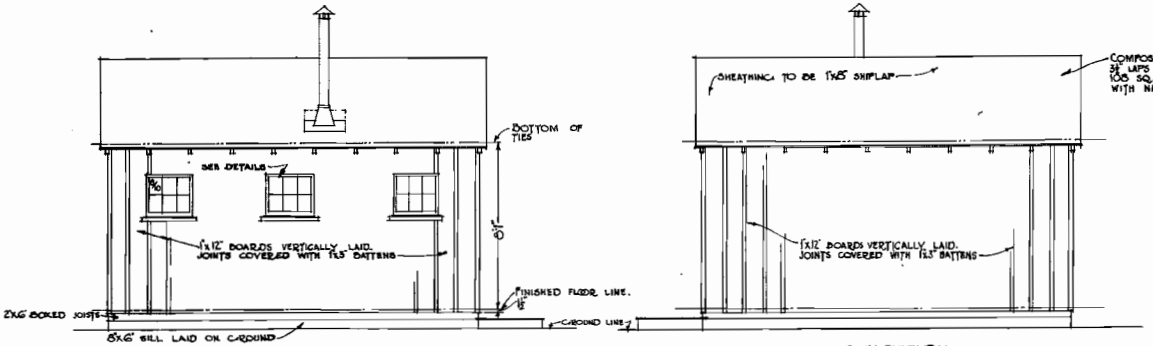


SECTION



ELEVATION

DETAILS OF COUNTER & GATE
SCALE ¾" = 1'-0"



SIDE ELEVATION
SCALE ¼"=1'-0"

SIDE ELEVATION
SCALE ¼"=1'-0"

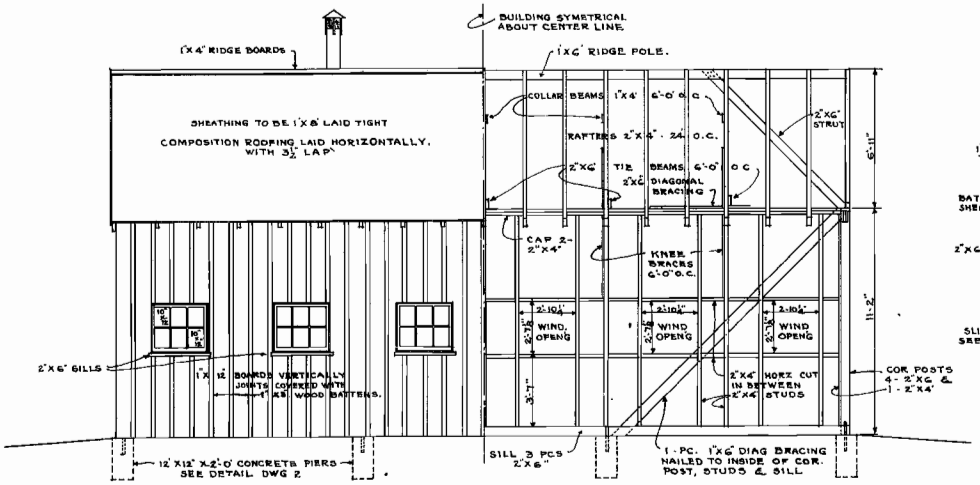
FOREST SERVICE

FOREST SERVICE CAMP
TOOL SHED

PLAN R-4 #126-A

SHEET 1 OF 3

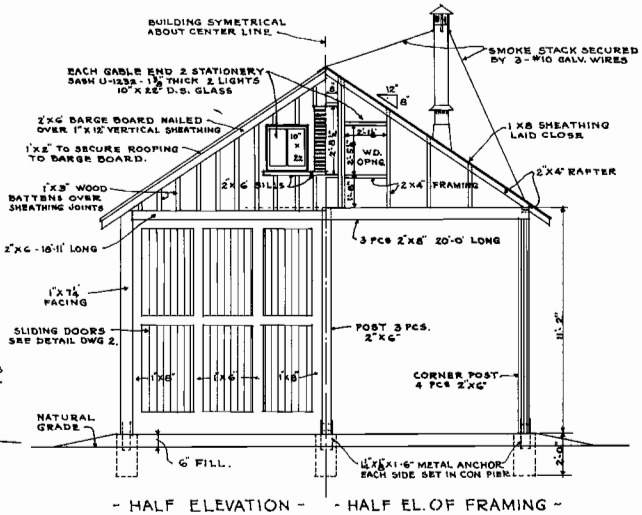
CHECKED	DATE	SCALE
APPROVED		AS SHOWN



~ HALF ELEVATION ~
OTHER HALF SIMILAR

~ HALF ELEVATION FRAMING ~
OTHER HALF SIMILAR.

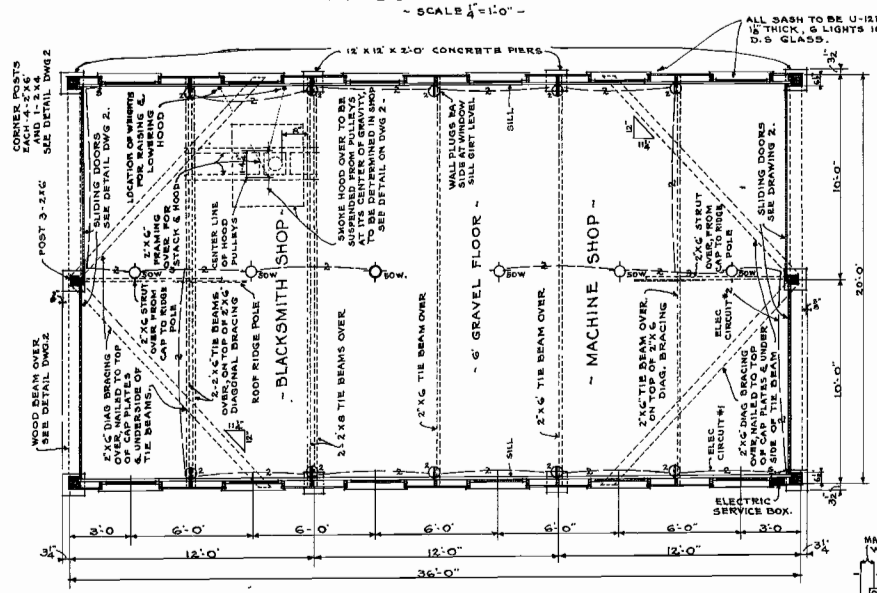
~ OTHER SIDE OF BUILDING SIMILAR ~
~ SCALE ¼"=1'-0" ~



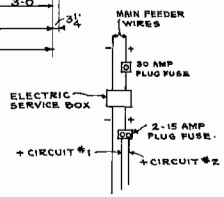
~ HALF ELEVATION ~
- OTHER HALF SIMILAR -

~ HALF EL. OF FRAMING ~
- OTHER HALF SIMILAR -

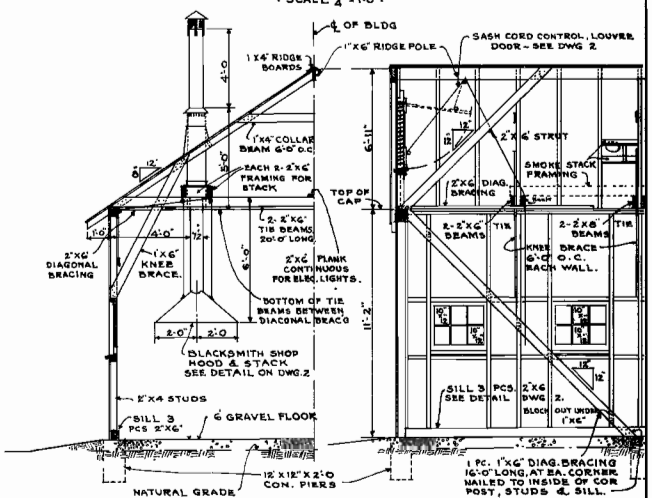
~ OTHER END SIMILAR ~
- SCALE ¼"=1'-0" -



~ PLAN ~
- SCALE ¼"=1'-0" -



WIRING DIAGRAM AT ELEC. SERVICE BOX.



HALF SECTION THROUGH BLACKSMITH SHOP
- OTHER HALF OF BUILDING SIMILAR -
EXCEPT HOOD & SMOKE STACK.
SCALE ¼"=1'-0"

PART LONGITUDINAL SEC. BLACKSMITH SHOP.
SCALE ¼"=1'-0"

FOREST SERVICE

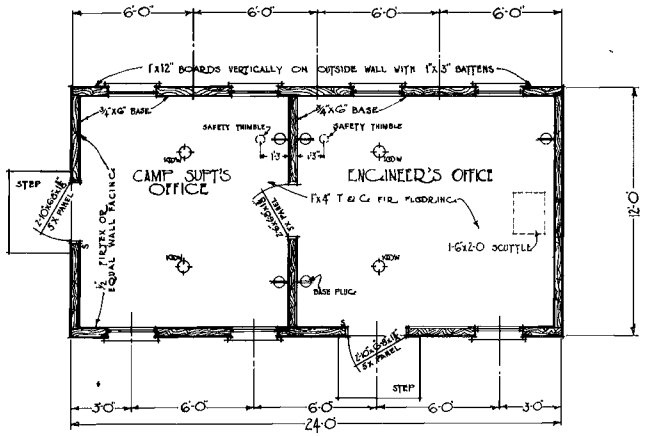
FOREST SERVICE CAMP

BLACKSMITH SHOP AND MACHINE SHOP

PLAN R-4 #126B

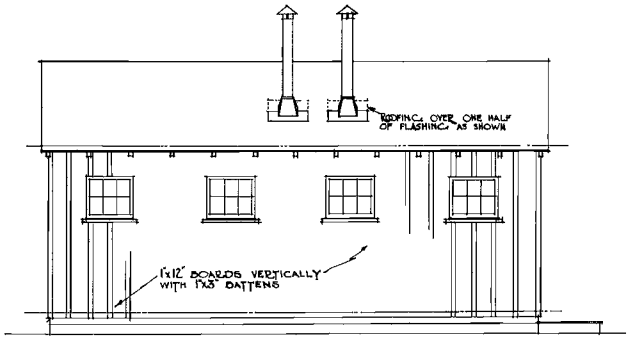
SHEET 1 OF 4

	DATE	SCALE
CHECKED G.L.N.	4-15-37	AS SHOWN
APPROVED	4-15-37	

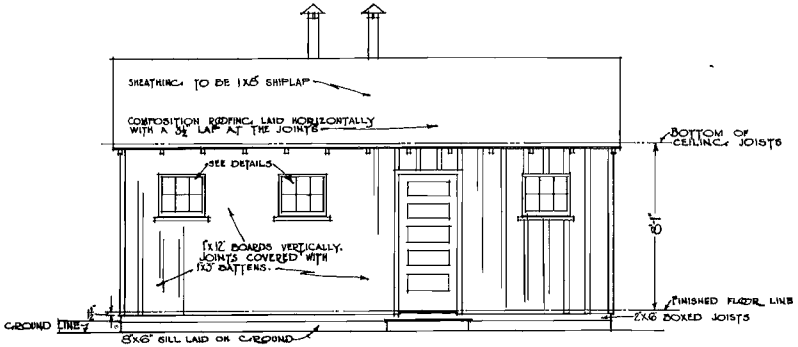


PLAN
SCALE 1/4"=1'-0"

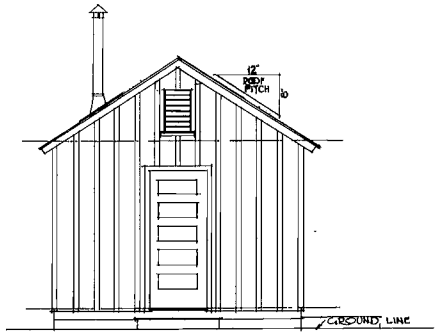
NOTE: WALL BOARD WILL ONLY BE ALLOWED WHERE BUILDING IS CONSTRUCTED FOR MORE THAN ONE PERIOD



SIDE ELEVATION
SCALE 1/4"=1'-0"



SIDE ELEVATION
SCALE 1/4"=1'-0"



FRONT ELEVATION
SCALE 1/4"=1'-0"

NOTE: REAR ELEVATION IS SIMILIAR EXCEPT THAT THERE IS NO DOOR IN REAR.

FOREST SERVICE

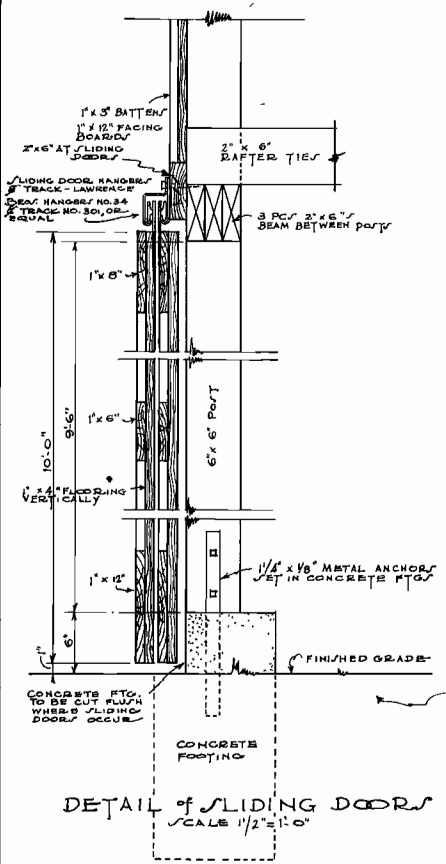
FOREST SERVICE CAMP

OFFICE BUILDING FOR CAMP SUPERINTENDENT & ENGINEER

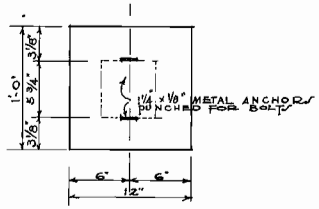
PLAN R-4 #126 C

SHEET 1 OF 3

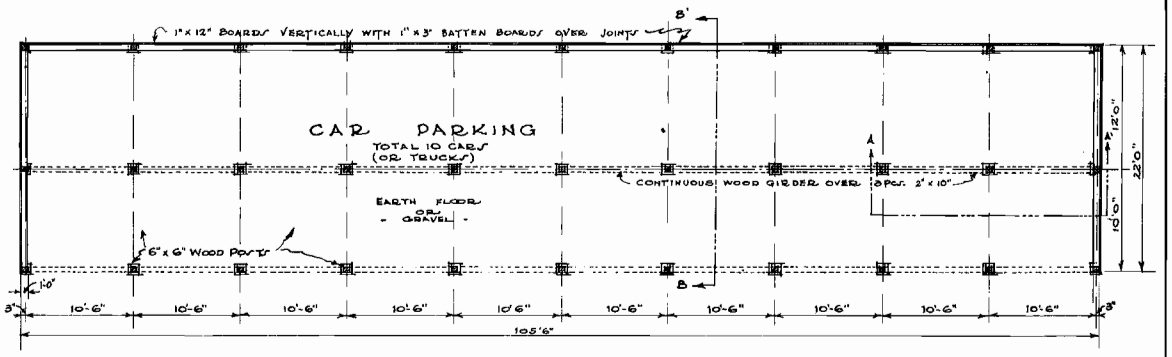
CHECKED	DATE	SCALE
APPROVED		1/4"=1'-0"



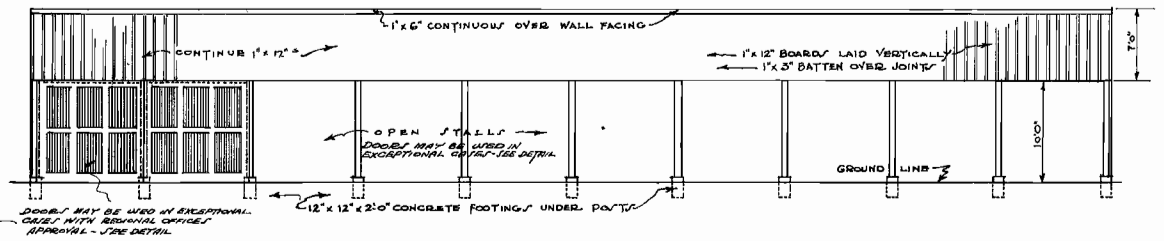
DETAIL of SLIDING DOORS
SCALE 1 1/2" = 1'-0"



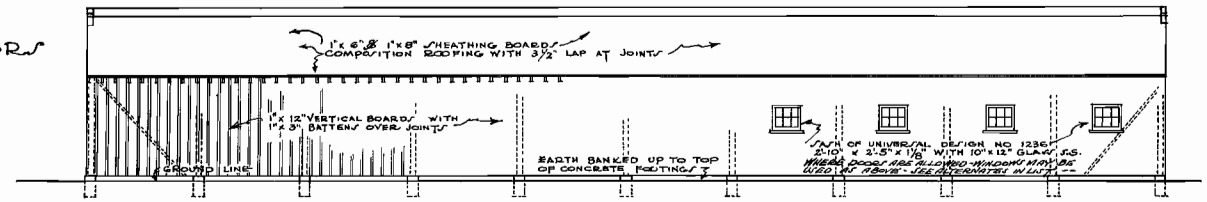
DETAIL of CONCRETE FOOTING
SCALE 1 1/2" = 1'-0"



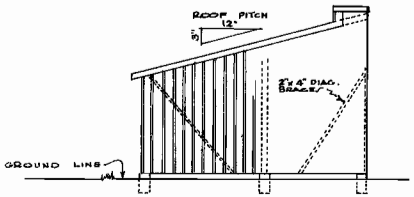
PLAN
SCALE 1/8" = 1'-0"



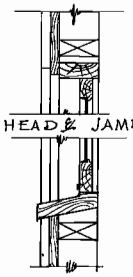
FRONT ELEVATION
SCALE 1/8" = 1'-0"



REAR ELEVATION
SCALE 1/8" = 1'-0"



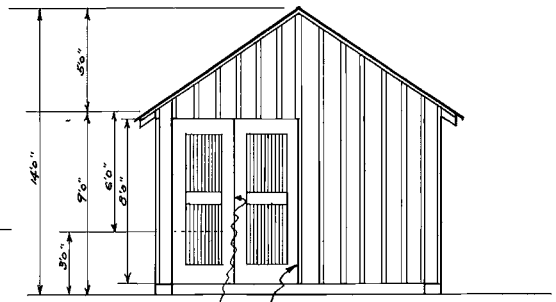
END ELEVATION
SCALE 1/8" = 1'-0"



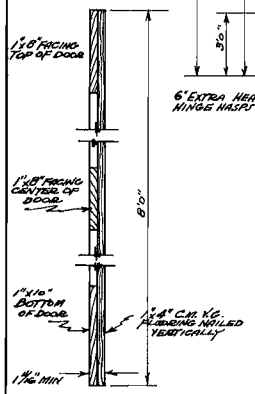
WINDOW DETAILS
SCALE 1 1/2" = 1'-0"

FOREST SERVICE
FOREST SERVICE CAMP GARAGE
TEN STALLS
PLAN R-4 # 126 D
SHEET 1 OF 4

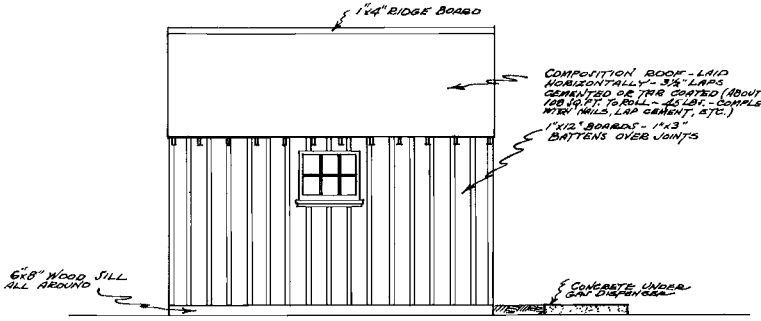
CHECKED	DATE	SCALE
APPROVED		



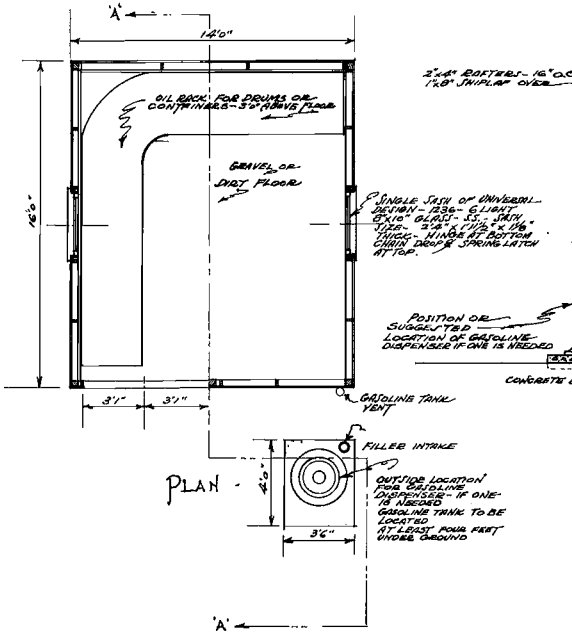
· FRONT ELEVATION ·



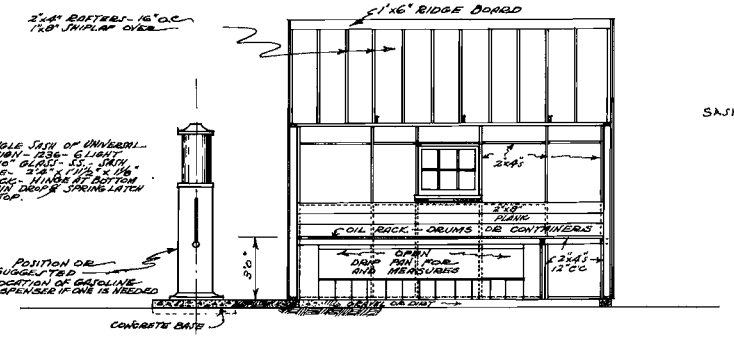
DETAIL OF DOOR
SCALE 1½" = 1 FOOT ·



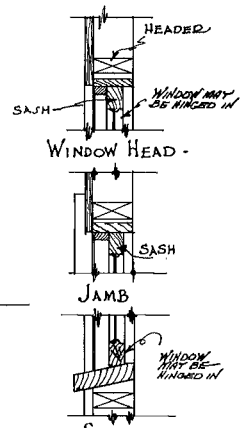
· SIDE ELEVATION ·



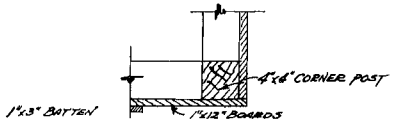
PLAN ·



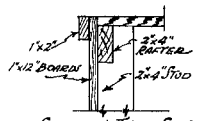
· SECTION 'A'-'A' ·



· WINDOW DETAIL ·
· SCALE 1½" = 1FT ·



· CORNER OF BLDG. ·
SCALE 1½" = 1'0"



· SECTION THRU GABLE ·

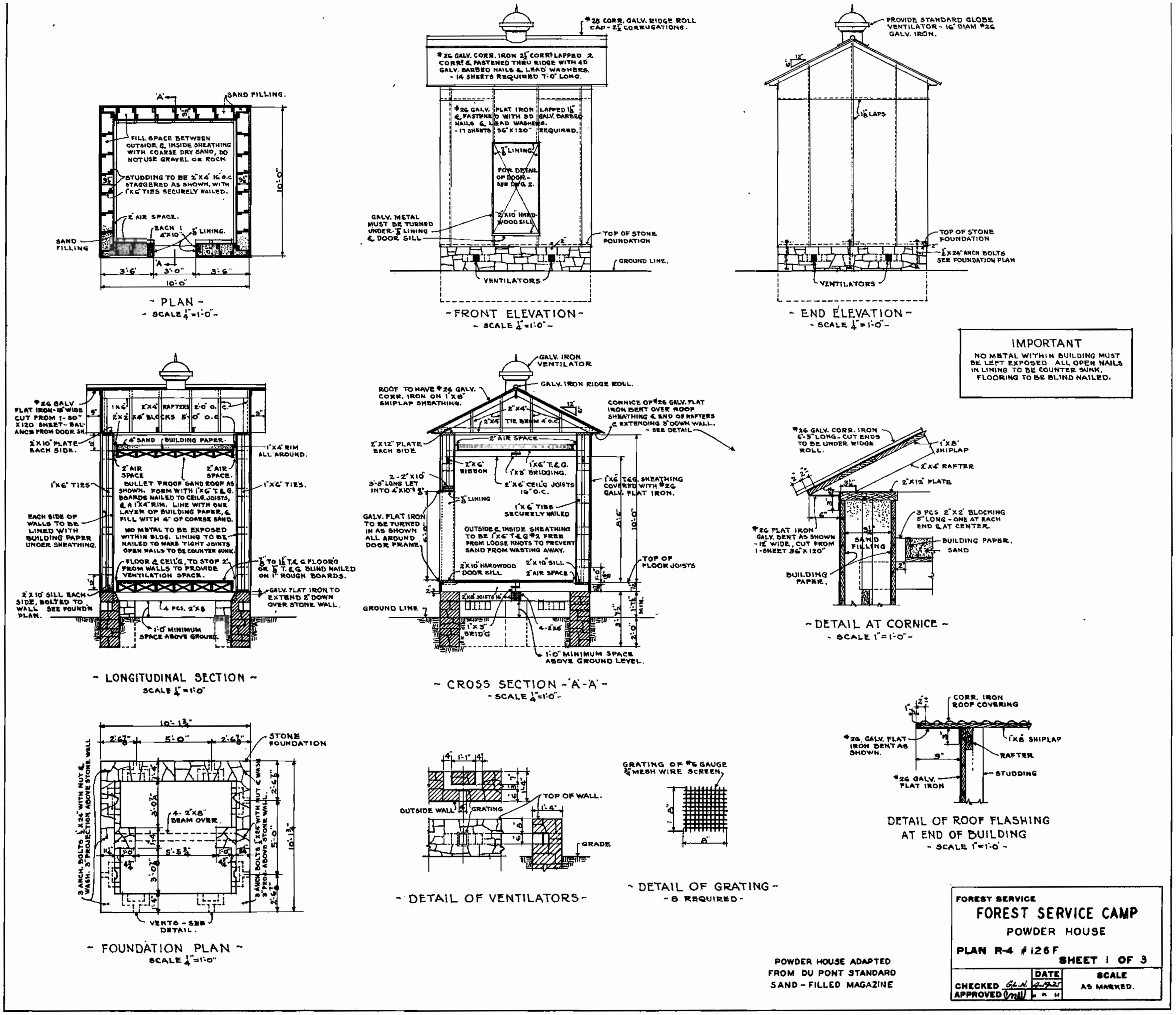
FOREST SERVICE

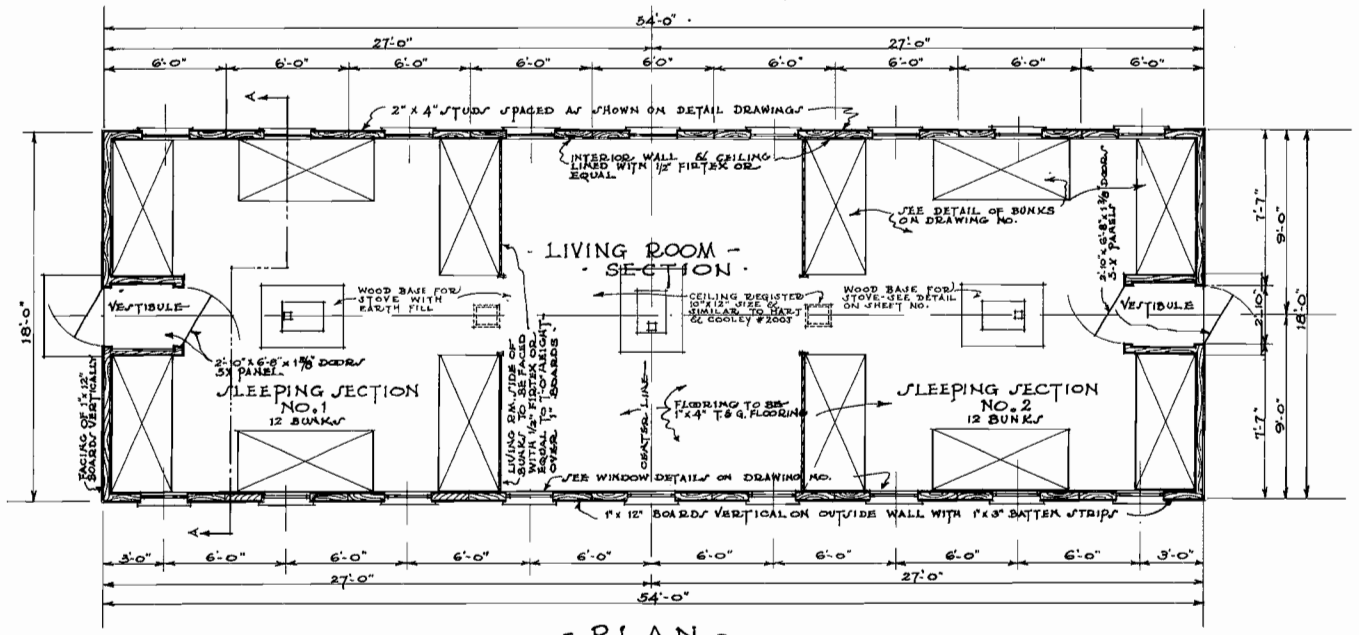
FOREST SERVICE CAMP
GAS & OIL HOUSE

PLAN R-4 #126-E

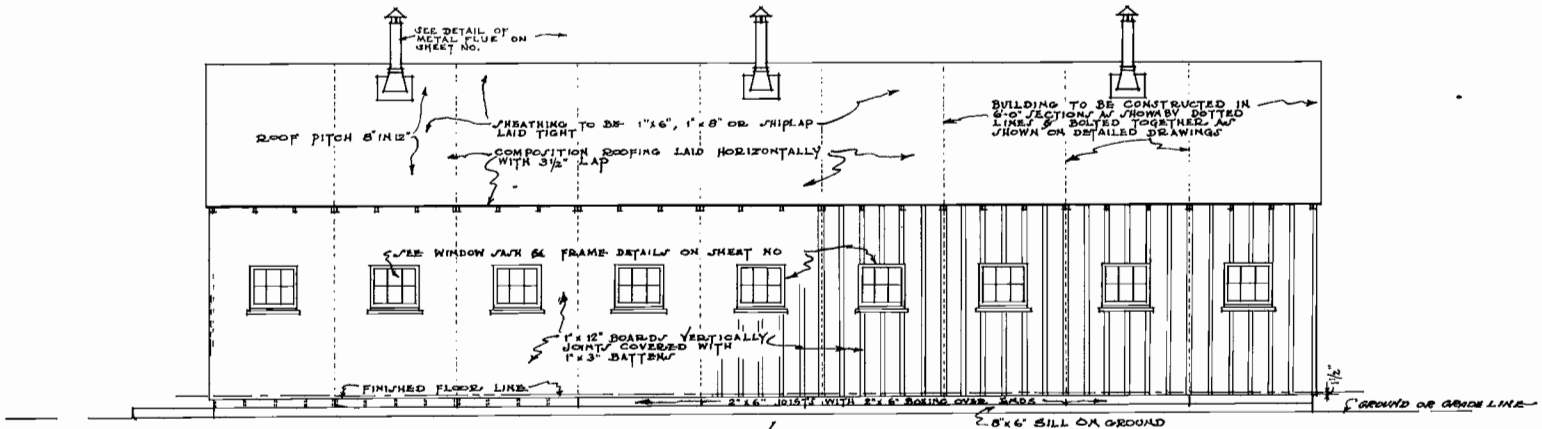
SHEET 1 OF 2

	DATE	SCALE
CHECKED A.L.N	4-11-36	SCALE 1½" = 1 FOOT EXCEPT AS SHOWN
APPROVED		


~ PLAN ~
- SCALE ¼"=1'-0" -
SAND FILLING.
FILL SPACE BETWEEN OUTSIDE & INSIDE SHEATHING WITH COARSE DRY SAND, DO NOT USE GRAVEL OR ROCK
STUDDING TO BE 2"X4" 16" O.C. STAGGERED AS SHOWN, WITH 1"X6" TIES SECURELY NAILED.
2" AIR SPACE.
EACH 1 4"X10"
⅞" LINING.
SAND FILLING
3'-6"
3'-0"
3'-6"
10'-0"
~ FRONT ELEVATION ~
- SCALE ¼"=1'-0" -
#28 CORR. GALV. RIDGE ROLL CAP - 2½" CORRUGATIONS.
#26 GALV. CORR. IRON 2½" CORR. LAPPED 2 CORR. & FASTENED THRU RIDGE WITH 4D GALV. BARBED NAILS & LEAD WASHERS. - 14 SHEETS REQUIRED 7'-0" LONG.
#26 GALV. FLAT IRON LAPPED 1½" & FASTENED WITH 3D GALV. BARBED NAILS & LEAD WASHERS. - 17 SHEETS 36"X120" REQUIRED.
⅞" LINING
FOR DETAIL OF DOOR - SEE DWG. 2.
2"X10" HARDWOOD SILL
GALV. METAL MUST BE TURNED UNDER ⅞" LINING & DOOR SILL
TOP OF STONE FOUNDATION
GROUND LINE.
VENTILATORS
~ END ELEVATION ~
- SCALE ¼"=1'-0" -
PROVIDE STANDARD GLOBE VENTILATOR - 16" DIAM #26 GALV. IRON.
1½" LAPS
TOP OF STONE FOUNDATION
½"X24" ANCH BOLTS SEE FOUNDATION PLAN
VENTILATORS
IMPORTANT
NO METAL WITHIN BUILDING MUST BE LEFT EXPOSED. ALL OPEN NAILS IN LINING TO BE COUNTER SUNK. FLOORING TO BE BLIND NAILED.
~ LONGITUDINAL SECTION ~
SCALE ¼"=1'-0"
#26 GALV. FLAT IRON - 18" WIDE CUT FROM 1 - 30" X120 SHEET - BALANCE FROM DOOR SH.
2"X10" PLATE EACH SIDE.
1"X6" TIES
EACH SIDE OF WALLS TO BE LINED WITH BUILDING PAPER UNDER SHEATHING.
2"X10" SILL EACH SIDE, BOLTED TO WALL. SEE FOUND'N PLAN.
2"X4" RAFTERS 2'-0" O.C.
2"X2"X6" BLOCKS 5'-0" O.C.
4" SAND
BUILDING PAPER.
1"X4" RIM ALL AROUND.
2" AIR SPACE
BULLET PROOF SAND ROOF AS SHOWN. FORM WITH 1"X6" T.&G. BOARDS NAILED TO CEIL'G JOISTS, & A 1"X4" RIM. LINE WITH ONE LAYER OF BUILDING PAPER, & FILL WITH 4" OF COARSE SAND.
NO METAL TO BE EXPOSED WITHIN BLDG. LINING TO BE NAILED TO MAKE TIGHT JOINTS. OPEN NAILS TO BE COUNTER SUNK.
FLOOR & CEIL'G. TO STOP 2" FROM WALLS TO PROVIDE VENTILATION SPACE.
⅞" TO 1⅛" T.&G. FLOOR'G OR ⅞" T.&G. BLIND NAILED ON 1" ROUGH BOARDS.
GALV. FLAT IRON TO EXTEND 2" DOWN OVER STONE WALL.
4 PCS. 2"X8
1'-0" MINIMUM SPACE ABOVE GROUND.
~ CROSS SECTION ~ 'A'-'A' ~
- SCALE ¼"=1'-0" -
GALV. IRON VENTILATOR
GALV. IRON RIDGE ROLL.
ROOF TO HAVE #26 GALV. CORR. IRON ON 1"X8" SHIPLAP SHEATHING.
CORNICE OF #26 GALV. FLAT IRON BENT OVER ROOF SHEATHING & END OF RAFTERS & EXTENDING 3" DOWN WALL. - SEE DETAIL -
2"X12" PLATE EACH SIDE
2"X4" TIE BEAM 4'-0" O.C.
2" AIR SPACE
2"X6" RIBBON
1"X6" T.&G.
1"X3" BRIDGING.
2 - 2"X10" 3'-8" LONG LET INTO 4"X10" S.
2"X6" CEIL'G JOISTS 16" O.C.
⅞" LINING
1"X6" T.&G. SHEATHING COVERED WITH #26 GALV. FLAT IRON.
1"X6" TIES SECURELY NAILED
GALV. FLAT IRON TO BE TURNED IN AS SHOWN ALL AROUND DOOR FRAME.
OUTSIDE & INSIDE SHEATHING TO BE 1"X6" T.&G. #2 FREE FROM LOOSE KNOTS TO PREVENT SAND FROM WASTING AWAY.
2"X10" HARDWOOD DOOR SILL
2"X10" SILL.
2" AIR SPACE
TOP OF FLOOR JOISTS
GROUND LINE
2"X8" JOISTS 16" O.C.
1"X3" BRID'G
4-2"X6"
1'-0" MINIMUM SPACE ABOVE GROUND LEVEL.
~ DETAIL AT CORNICE ~
- SCALE 1"=1'-0" -
#26 GALV. CORR. IRON 6'-3" LONG - CUT ENDS TO BE UNDER RIDGE ROLL.
1"X8" SHIPLAP
2"X4" RAFTER
2"X12" PLATE
3 PCS 2"X2" BLOCKING 8" LONG - ONE AT EACH END & AT CENTER.
#26 FLAT IRON GALV. BENT AS SHOWN - 12" WIDE, CUT FROM 1-SHEET 36"X120"
SAND FILLING
BUILDING PAPER.
SAND
BUILDING PAPER.
~ FOUNDATION PLAN ~
SCALE ¼"=1'-0"
STONE FOUNDATION
10'-1¾"
5'-0"
4-2"X8" BEAM OVER.
3 ANCH. BOLTS ½"X24" WITH NUT & WASH. 3" PROJECTION ABOVE STONE WALL
3 ANCH. BOLTS ½"X24" WITH NUT & WASH 3" PROJ. ABOVE STONE WALL.
VENTS - SEE DETAIL.
~ DETAIL OF VENTILATORS ~
OUTSIDE WALL
GRATING
TOP OF WALL.
GRADE
~ DETAIL OF GRATING ~
- 8 REQUIRED -
GRATING OF #16 GAUGE ¼" MESH WIRE SCREEN.
DETAIL OF ROOF FLASHING AT END OF BUILDING
- SCALE 1"=1'-0" -
CORR. IRON ROOF COVERING
#26 GALV. FLAT IRON BENT AS SHOWN.
1"X8" SHIPLAP
RAFTER
STUDDING
#26 GALV. FLAT IRON
POWDER HOUSE ADAPTED FROM DU PONT STANDARD SAND - FILLED MAGAZINE
FOREST SERVICE
FOREST SERVICE CAMP
POWDER HOUSE
PLAN R-4 #126F
SHEET 1 OF 3
CHECKED
APPROVED
DATE
SCALE
AS MARKED.



- PLAN -
- SCALE 1/4" = 1'-0"



- SIDE ELEVATION -
SCALE 1/4" = 1'-0"
(NOTE: OPPOSITE SIDE SIMILAR)

FOREST SERVICE

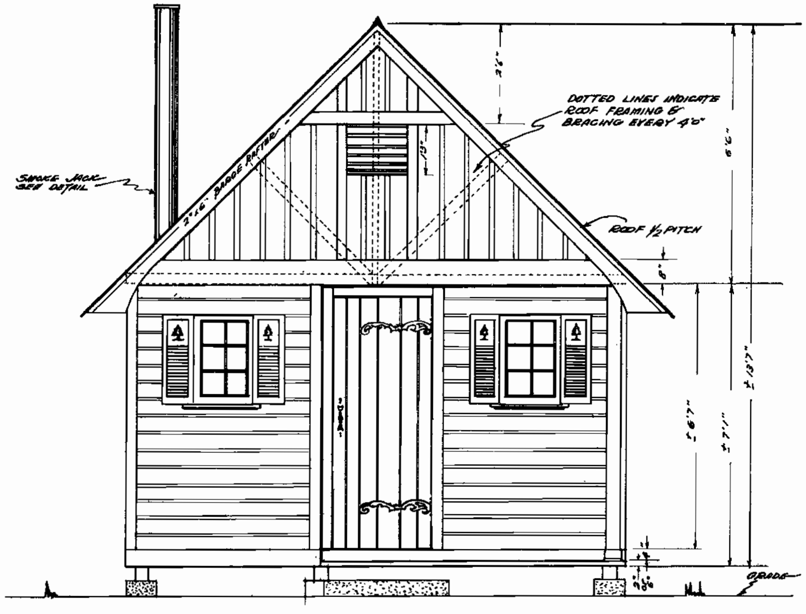
BARRACKS

FOR TEMPORARY WORKERS

PLAN R-4 # 126 G

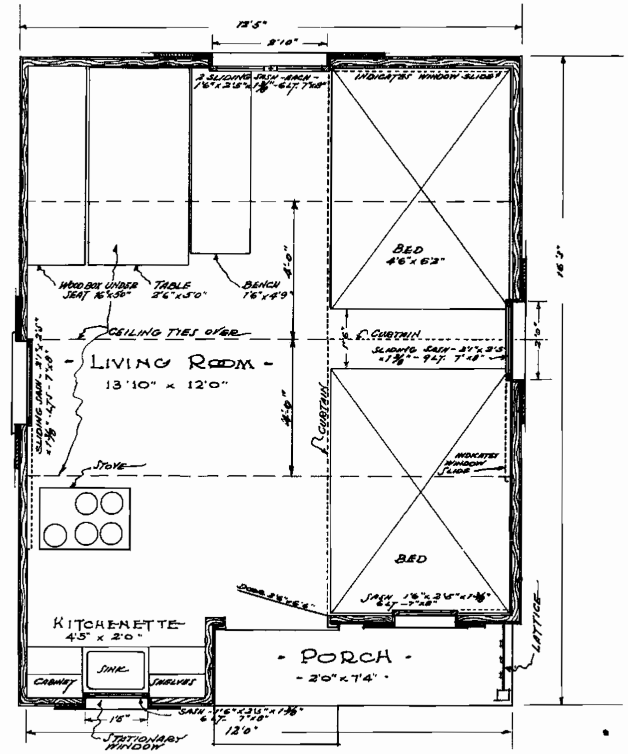
SHEET 1 OF 5

CHECKED G.L.N.	DATE 1-22-38	SCALE AS SHOWN
APPROVED C.I.N.W.	" " "	



- FRONT ELEVATION -

- PERSPECTIVE -



- FLOOR - PLAN -

FOREST SERVICE		
TOURIST CABIN		
PLAN R-4 ~~...~~ / 33 a-1		
SHEET 1 OF 5		
	DATE	SCALE
CHECKED G.L.H.	5-31-33	½" = 1 FOOT OR AS SHOWN
APPROVED P.F.	"	