



U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE



STANDARD PLANS
For

SINGLE LOG STRINGER TRAIL BRIDGE
[PROJECT NAME & BRIDGE NUMBER]

PROJECT DESIGN CRITERIA:

This Bridge Shall Be Constructed In Accordance With The Following Criteria: Options To Be Selected Are Bracketed [].

Pedestrian Live Load = ____ PSF
Ground Snow Load = ____ PSF (With No Modification Factors)
Span Length = ____ (C Bearing-To-C Bearing)
Clear Width = _'-_" (See Typical Section)
Log Diameter* = _"

*Refer To TABLE 1.1 And Compare Stringer Size Requirements For Both Pedestrian And Snow Loading. In The Space Above, Enter The Larger Stringer Diameter That Satisfies The Two Load Cases.

Bridge Rail = [Native Poles/Sawn Timber/None]

Steel Hardware = [Uncoated/Galvanized/Weathering Steel]

Treatment - See GENERAL NOTES For Specifications

Stringer = [None/Pentachlorophenol/Copper Naphthenate]

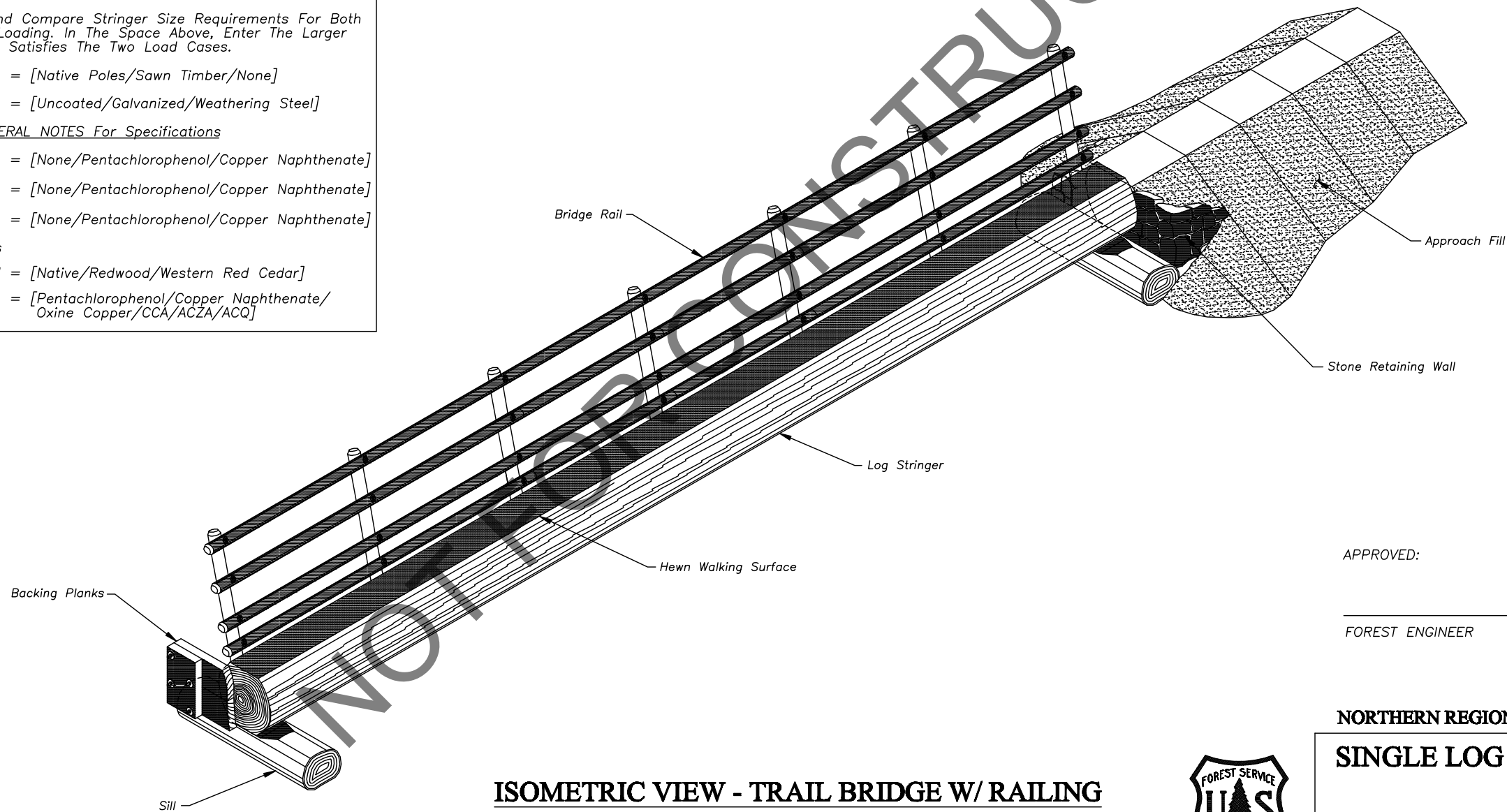
Sills & Deck Planks = [None/Pentachlorophenol/Copper Naphthenate]

Backing Planks = [None/Pentachlorophenol/Copper Naphthenate]

Bridge Railing & Posts

Untreated = [Native/Redwood/Western Red Cedar]

Treated = [Pentachlorophenol/Copper Naphthenate/
Oxine Copper/CCA/ACZA/ACQ]



ISOMETRIC VIEW - TRAIL BRIDGE W/ RAILING

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



APPROVED:

FOREST ENGINEER

DATE _____

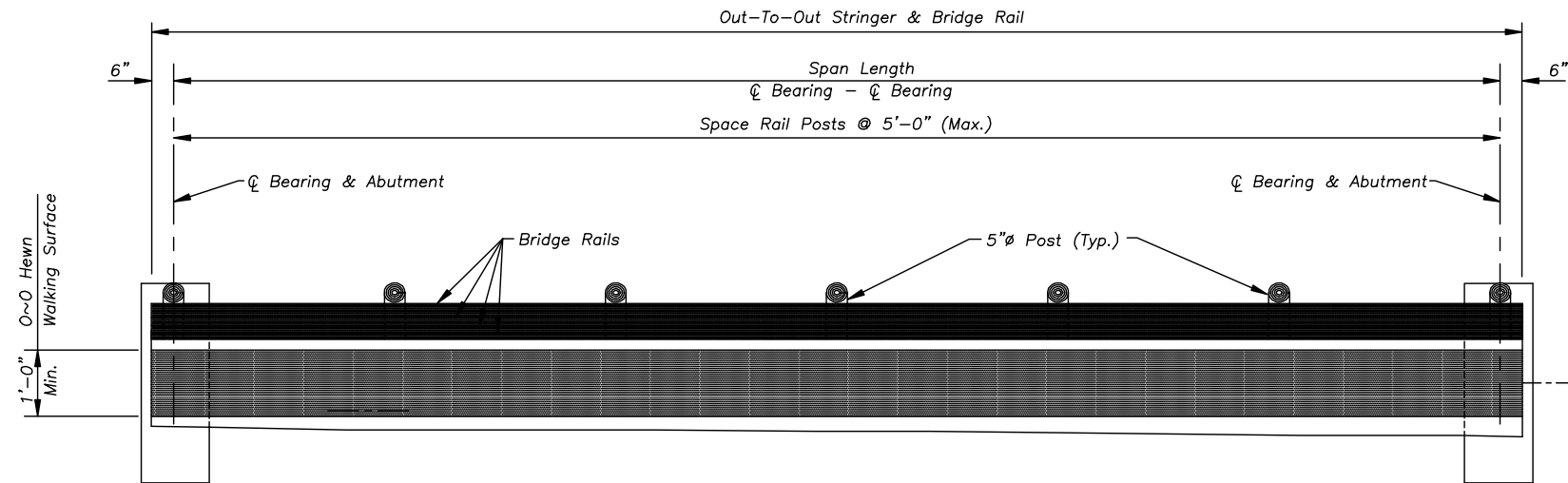
NORTHERN REGION (R1) AND NORTHWEST REGION (R6)

SINGLE LOG STRINGER TRAIL BRIDGE

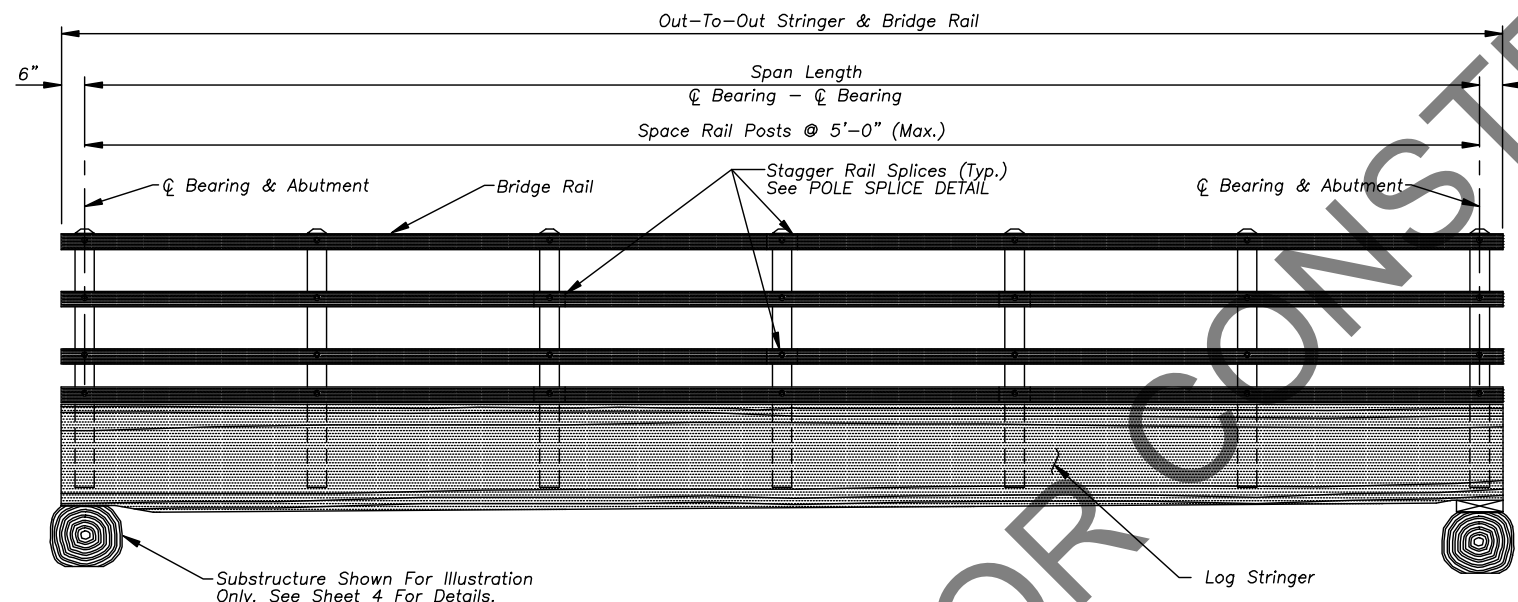
DRAWING NO. R1924

SHEET 1 Of 4

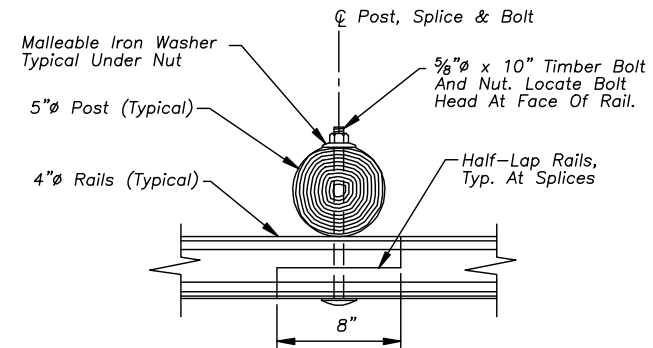
10/23/2003 J:\files\unit\struct\autocad\stdwg\Trail Bridge Standards\Single Log TB-2.dwg



PLAN
Scale: 1/4" = 1'-0"

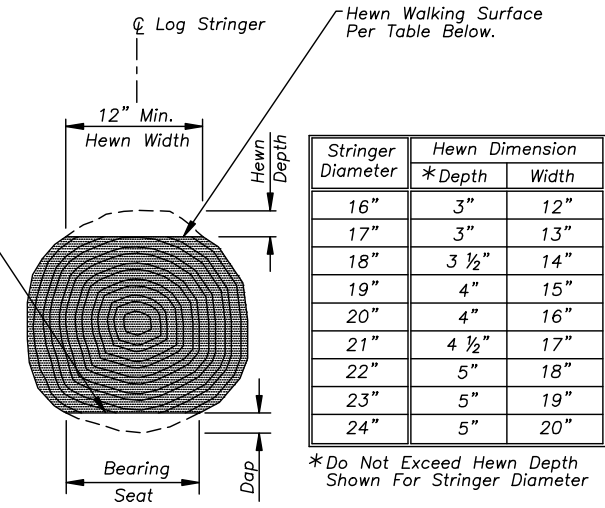


ELEVATION - INTERIOR FACE OF RAIL SUPERSTRUCTURE
Shown With Pole Handrail Scale: 1/4" = 1'-0"

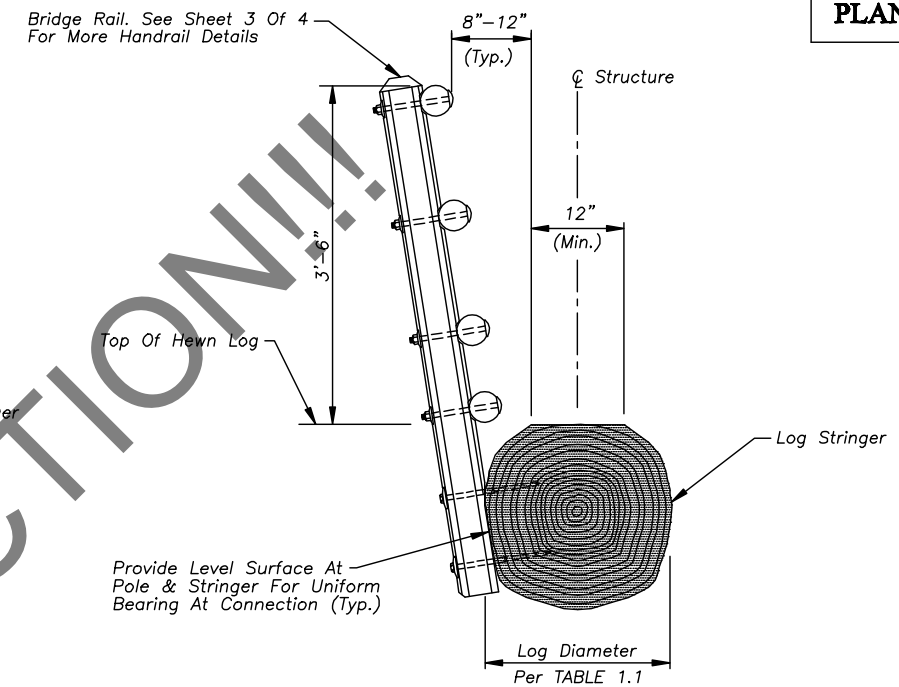


PLAN - POLE RAIL SPLICE DETAIL
Scale: 1" = 1'-0"

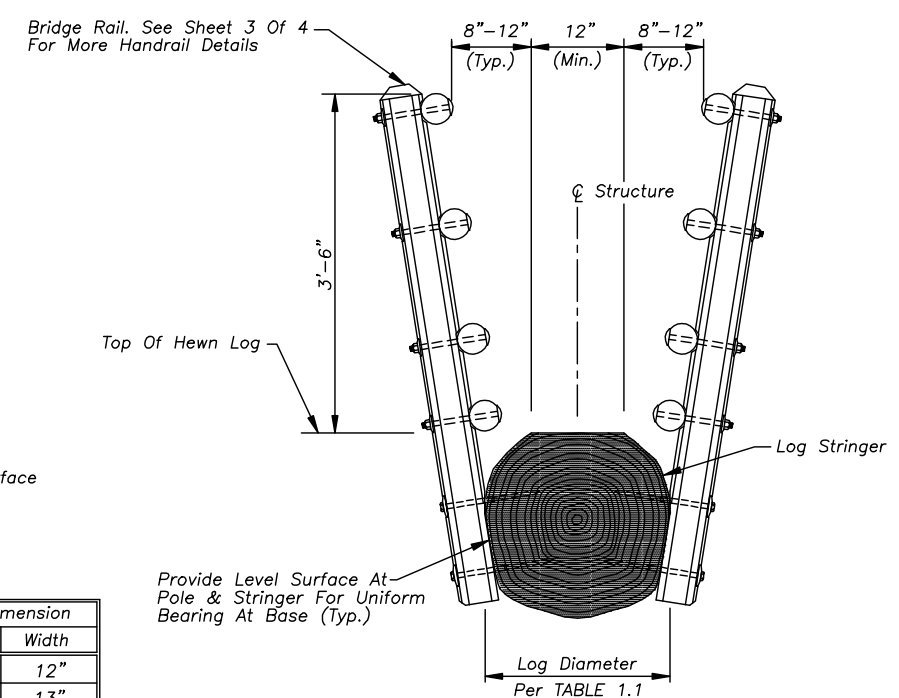
NOTE: Splice Rails At Posts. Rails Shall Be Continuous For A Minimum Of Two Post Spaces. Alternate Rail Splices At Posts.



LOG STRINGER NOTCHING
Scale: 1/2" = 1'-0"
Maximum Depth Of Dap At Bearing Shall Not Exceed 10% Of Log Diameter Or 2"



DECK SECTION w/POLE HANDRAIL ONE SIDE
Scale: 1/2" = 1'-0"



DECK SECTION w/POLE HANDRAIL EACH SIDE
Scale: 1/2" = 1'-0"

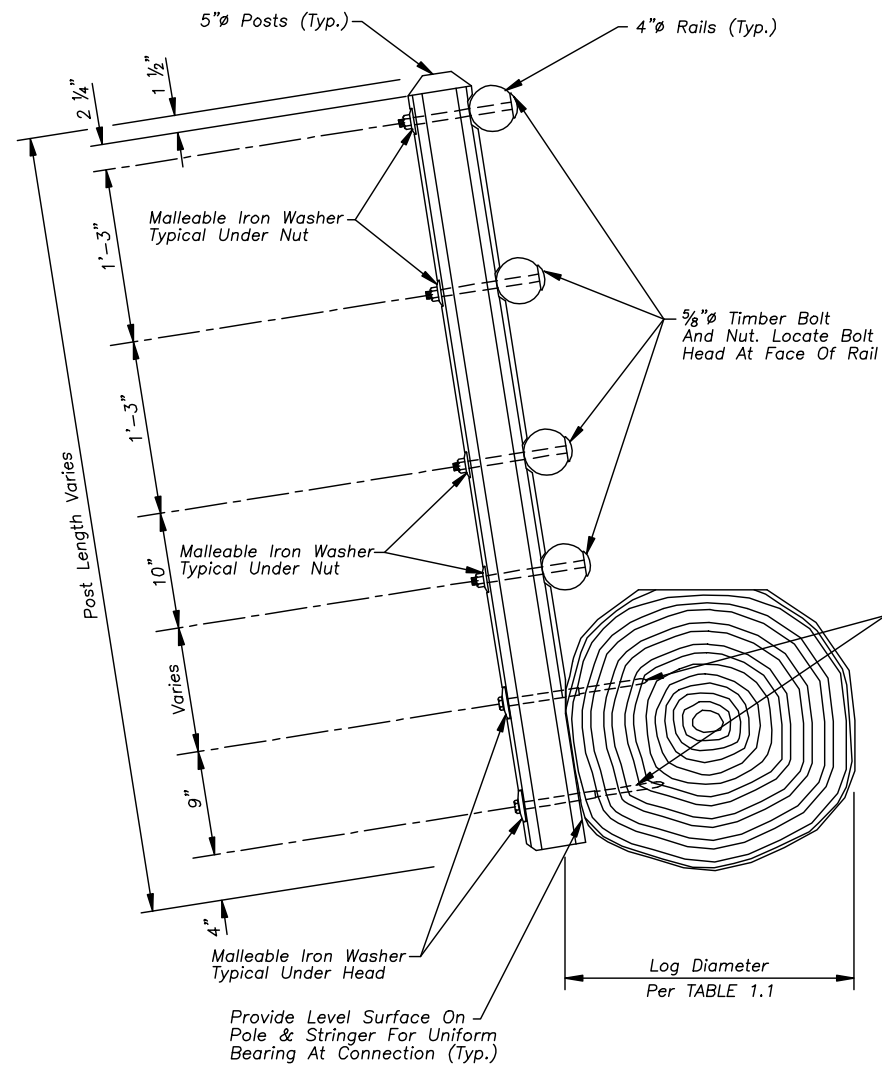
NORTHERN REGION (R1) AND NORTHWEST REGION (R6)



DESIGN AID
SINGLE LOG STRINGER TRAIL BRIDGE

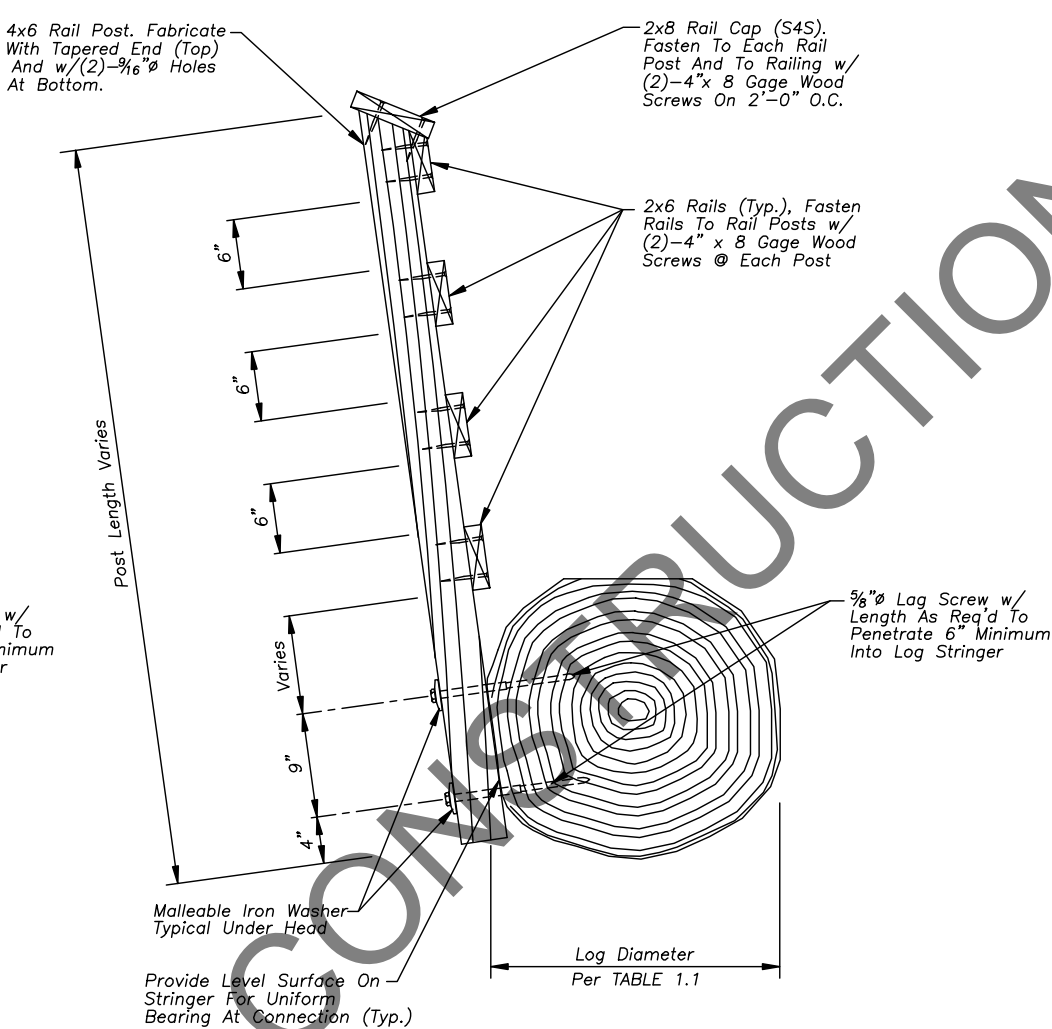
DRAWING NO. R1924

SHEET 2 Of 4



POLE HANDRAIL DETAILS

Scale: 3/4" = 1'-0"



SOLID SAWN HANDRAIL DETAILS

Scale: 3/4" = 1'-0"

TABLE 1.1: SINGLE ROUND LOG STRINGER SIZE REQUIREMENTS

STRINGER SPAN (Feet)	TIMBER SPECIES - Douglas Fir (Coastal Or Interior North) And Western Larch				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
	PEDESTRIAN LOAD		GROUND SNOW LOAD		
	65	85	120	150	200
10	16"	16"	16"	16"	16"
15	16"	16"	16"	16"	16"
20	16"	16"	16"	16"	16"
25	16"	16"	16"	16"	17"
30	16"	17"	16"	17"	18"
35	18"	19"	17"	18"	20"
40	20"	21"	19"	20"	23"
45	21"	23"	21"	22"	24"

GENERAL NOTES:

- SPECIFICATIONS:** Materials And Construction Of This Structure Shall Be In Accordance With The Current Adopted USDA Forest Service Specifications For Construction Of Roads And Bridges, As Modified For This Contract.
- LOG MEMBERS:** Logs Used For Stringers Shall Be One Of The Species Listed In TABLE 1.1 With Minimum, Peeled, Mid-Span Log Diameters As Noted For The Various Spans And Design Loading. Native Trees To Be Used For Bridge Stringers Shall Be Straight, Sound, And Free Of Boles, Rot, Infestation Or Disease. Stringers Shall Be Chosen From Trees With Relatively Few Limbs, And Have No Knot Greater Than 3" In Diameter. Logs Shall Be Notched At Ends To Create A Level Bearing Surface At Supports Taking Care To Avoid Overcutting. Notch Upper Surface Of Logs To Provide A Level Bearing Surface For Deck Planks. Refer To PLANS For Notching Details.
- TIMBER & LUMBER:** Solid Sawn Timber Members Shall Conform To The Requirements Of The Grading Rules Agency For The Species, Type, And Grade Specified Below.
- DECK PLANKS, SILLS, AND BACKING PLANKS
- Coastal Region Douglas Fir-Larch Rough Sawn, No. 1 Grade Grading Rules Agency - WWPA, WCLIB
- BRIDGE RAILS & POSTS (See PROJECT CRITERIA)
- SAWN - UNTREATED
- Redwood, S4S, No. 1 Grade Grading Rules Agency - RIS
 - Western Red Cedar, S4S, Select Structural Grade Grading Rules Agency - WWPA, WCLIB
- SAWN - TREATED
- Hem-Fir/Douglas Fir, S4S, No. 1 Grade Grading Rules Agency - WWPA, WCLIB
- POLES
- Lodgepole Pine, Peeled And Dried. Grading Rules Agency - NLGA
- TREATMENT:** See PROJECT CRITERIA For Members Identified To Be Treated And For Treatment Type. Preservative Treatment Shall Be In Accordance With The Current AWWA Specifications Using The Treatment Materials Listed Below. Treatment Will Comply With The Requirements Of The Current Edition Of WWPI's "Best Management Practices For The Use Of Treated Wood In Aquatic Environments".
- LOG STRINGERS
- AWPA C4
 - Pentachlorophenol In Light Oil (Type C Solvent)
 - Copper Naphthenate In Light Oil (Type C Solvent)
- SOLID SAWN LUMBER
- AWPA C2, (Above Ground Use)
 - Pentachlorophenol In Light Oil (Type C Solvent)
 - Copper Naphthenate In Light Oil (Type C Solvent)
- SOLID SAWN LUMBER AND POLES USED FOR BRIDGE RAILS & POSTS
- AWPA C2, (Above Ground Use)
 - Pentachlorophenol In Light Oil (Type C Solvent)
 - Copper Naphthenate In Light Oil (Type C Solvent)
 - Oxine Copper In Light Oil (Type C Solvent)
 - CCA, ACZA, ACQ
- FIELD TREATMENT:** Copper Naphthenate (2% Solution) Shall Be Furnished For Field Treating Of Wood. All Abrasions And Field Cuts -Approved By The C.O.- Shall Be Carefully Trimmed And Given Three Brush Coats Of The Field Treatment Solution. Where Approved Field Drilling Of Bolt Or Nail Holes Is Required, The Holes Shall Be Poured Full Of Preservative Prior To Inserting The Fasteners.
- The Ends Of Untreated Log Stringers (Refer To The PROJECT DESIGN CRITERIA), Shall Also Receive Three Brush Coats Of The Field Treatment Prior To Installation Of The Backing Planks.
- HARDWARE AND STRUCTURAL STEEL:** See PROJECT DESIGN CRITERIA For Steel Hardware Finish. Galvanized Or Unfinished Hardware Shall Meet The Requirements Of AASHTO M270, Grade 36, With Nuts And Bolts Conforming To ASTM A307, Grade A. Weathering Steel And Hardware Shall Meet The Requirements Of AASHTO M270, Grade 50W, With Bolts And Nuts Conforming To ASTM A325, Type 3. Use Malleable Iron Washers Against Wood Unless Otherwise Noted.
- When Structural Steel Is To Be Welded, The Welding Procedure Shall Be In Accordance With AWS D1.1 And Shall Be Suitable For The Grade Of Steel And Intended Use Or Service.
- FABRICATION:** Submit Shop Drawings For All Manufactured Bridge Components (Except Sawn Deck Planks). Show All Dimensions And Fabrication Details For All Cut Or Bored Timber. Field Drilling Of Holes Shall Not Be Allowed Unless Otherwise Noted On The PLANS.
- Native Trees To Be Used For Stringers Shall Be Peeled And Then Have An Additional 1/2" Of The Outer Sapwood Removed Prior To Being Used For Stringers.

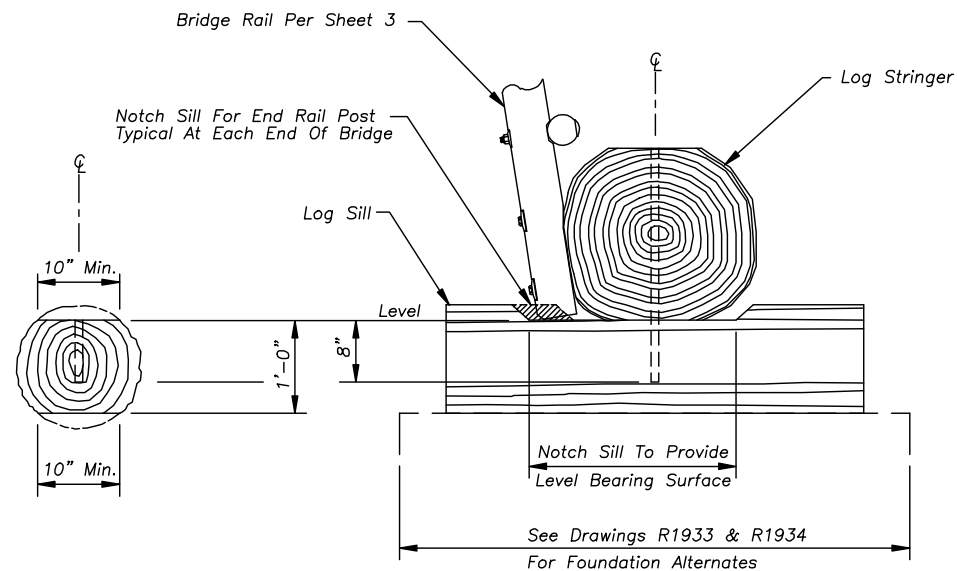
NORTHERN REGION (R1) AND NORTHWEST REGION (R6)



DESIGN AID
SINGLE LOG STRINGER TRAIL BRIDGE

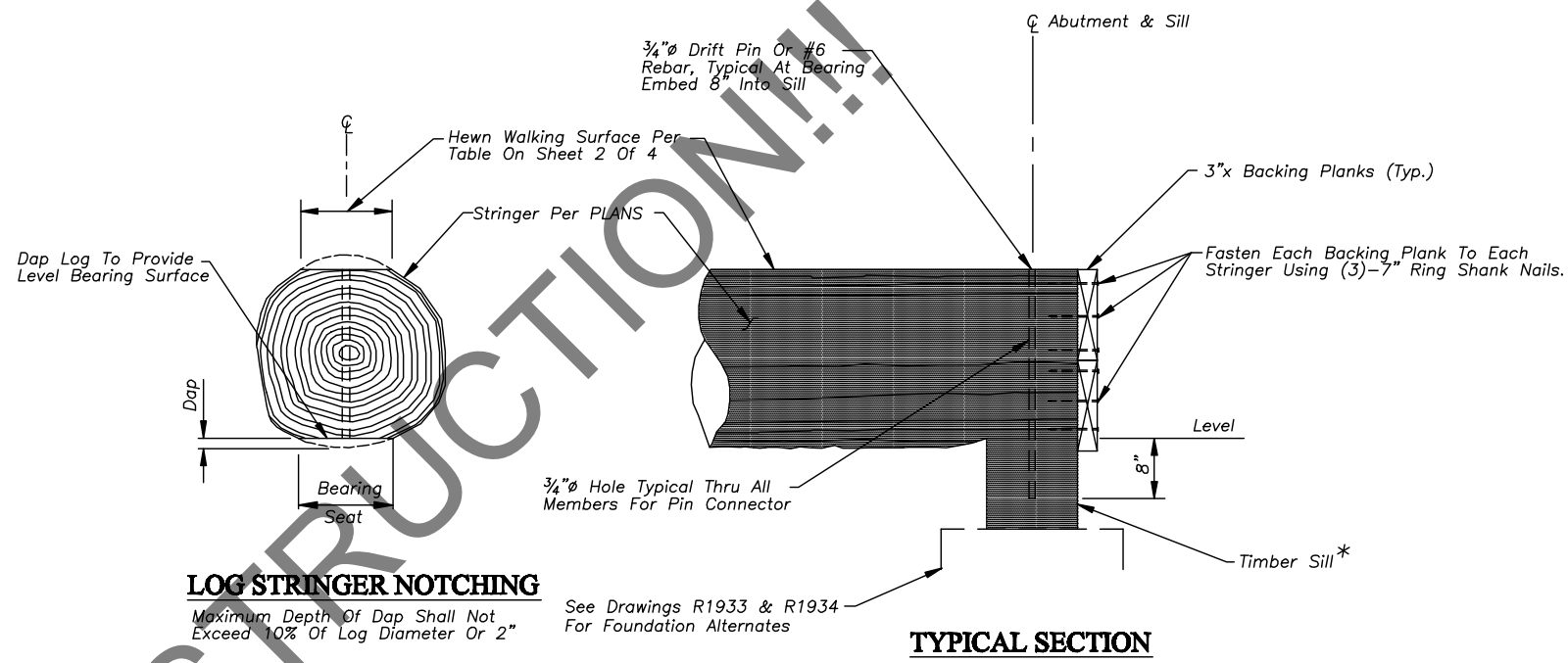
DRAWING NO. R1924

SHEET 3 Of 4



LOG SILL NOTCHING DETAIL

Scale: 1/2" = 1'-0"



LOG STRINGER NOTCHING

Maximum Depth Of Dap Shall Not Exceed 10% Of Log Diameter Or 2"

TYPICAL SECTION

*Timber Sill Can Be Either 12"x12" Solid Sawn, 12 1/4" x 12" Glued-Laminated, Built-Up 3x12 4x12, & 6x12 Treated Members, Or Log Sill. See LOG SILL NOTCHING DETAIL

**SINGLE LOG STRINGER BRIDGE
ABUTMENT CONNECTION DETAILS**

Scale: 1/2" = 1'-0"

NOTES:

- SPECIFICATIONS:** Materials And Construction Of This Structure Shall Be In Accordance With The Current Adopted USDA Forest Service Specifications For Construction Of Roads And Bridges, As Modified For This Contract.
- HARDWARE AND STRUCTURAL STEEL:** See Superstructure Drawings For PROJECT DESIGN CRITERIA And GENERAL NOTES.
- TREATED TIMBER & LUMBER:** Refer To The GENERAL NOTES On The Superstructure Drawings For Treated Timber & Lumber Specifications And Field Treating Of Wood.
- LAG BOLT INSTALLATION:** Prebore Lag Bolt Holes Using Two Diameters, One For The Shank And One For The Threads. The Lead Hole For The Shank Is To Be 1/16" Larger Than The Shank Diameter And Is To Be Bored To The Depth Of Penetration Of The Shank. The Lead Hole For The Threaded Portion Is To Be 70% Of The Bolt Diameter As Shown On The PLANS And Is To Be Bored At Least To The Length Of The Threads. DO NOT DRIVE LAG BOLTS WITH A HAMMER.



NORTHERN REGION (R1) AND NORTHWEST REGION (R6)

**DESIGN AID
SILL / BEARING DETAILS
SINGLE LOG STRINGER TRAIL BRIDGE**

DRAWING NO. R1924

SHEET 4 Of 4