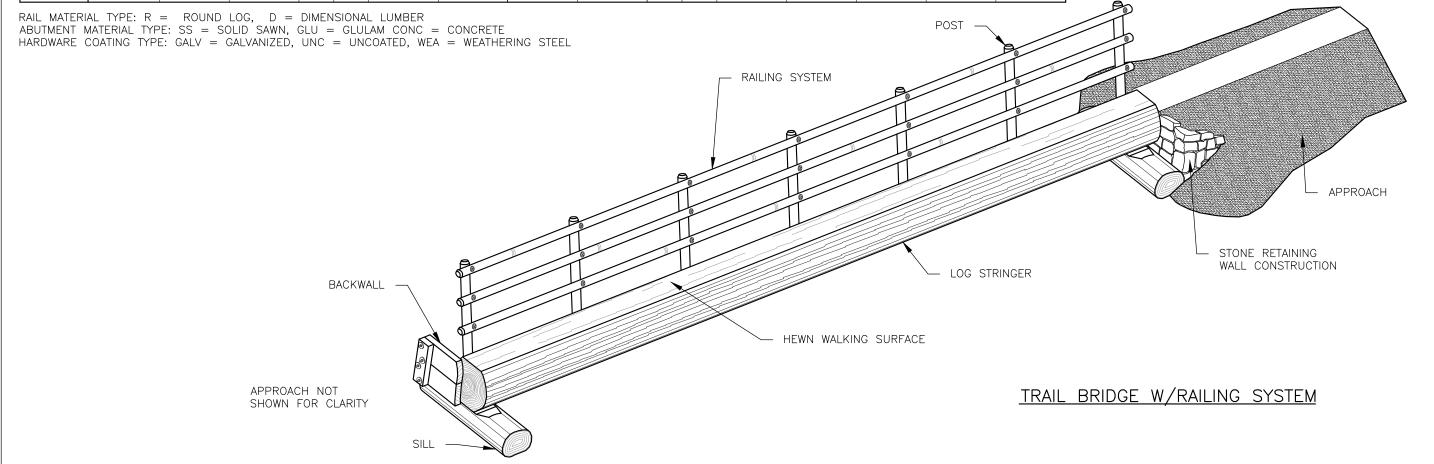
	STRINGER		
STRUCTURE NUMBER TRAIL NO. BRIDGE BRIDGE LENGTH OUT-TO-OUT & BRIDGE STRINGER BRIDGE STRINGER SPAN CLEAR OUT-TO-OUT & BRIDGE SNOW LOAD	SPECIES MATERIAL SIZE (DIAMETER) YES NO TYPE SPECIES	SIZE WIDTH HEIGHT TREATMENT YES NO	COMMENTS

NA = NOT APPLICABLE; BACKWALL TYPE: ST = STONE, W = WOOD

		RA	AILING SYSTE	M				SILL					APPROACHES)		HARDWARE
STRUCTURE NUMBER	SPECIES	HEIGHT	MATERIAL TYPE	R/ LF	AIL RT	TREATMEN YES NO	T 700	SIZE	TREATMENT YES NO	LEN NEAR	IGTH FAR	WIDTH	MATERIAL TYPE	MATERIAL DEPTH	GEO- SYNTHETIC TYPE	COATING



U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

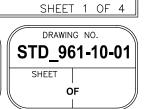
PROJECT NAME & LOCATION

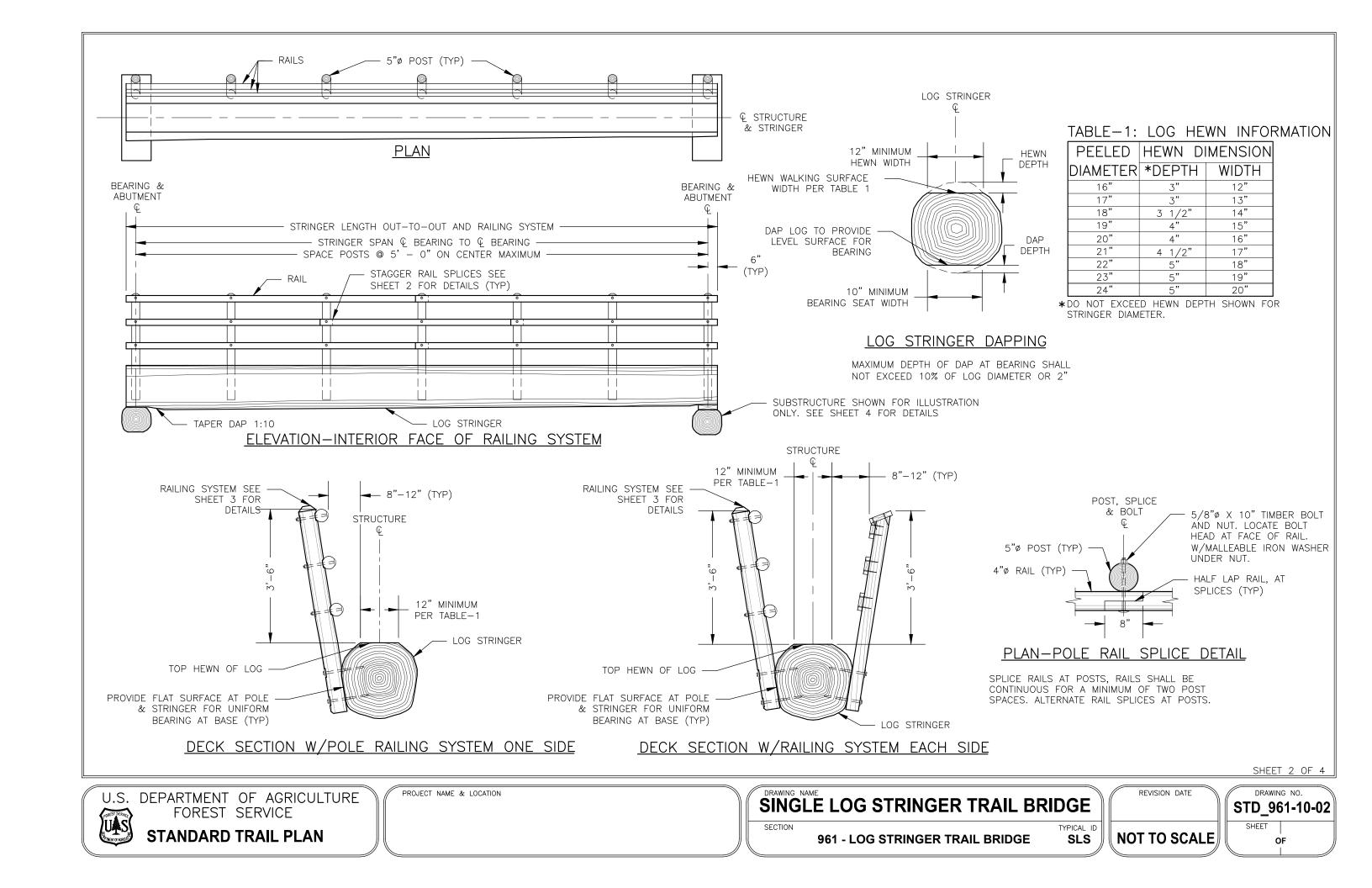
SINGLE LOG STRINGER TRAIL BRIDGE

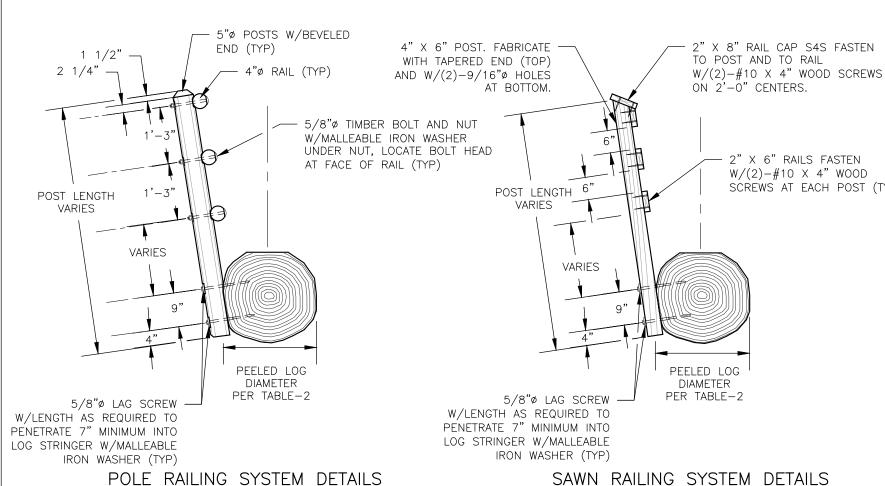
961 - LOG STRINGER TRAIL BRIDGE

SLS

NOT TO SCALE







SAWN RAILING SYSTEM DETAILS

*TABLE-2: SINGLE ROUND LOG STRINGER PEELED MID SPAN DIAMETER REQUIREMENTS - LRFD

**STRINGER SPAN		SPECIES TRIOR NO			
(FEET)	DES	SIGN LOADING	IN POUNDS PE	ER SQUARE FO	OT
(' ==')	PEDESTRI	AN LOAD	GROUI	ND SNOW	LOAD
	***65	90	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"	16"
30	16"	16"	16"	16"	17"
35	17"	18"	17"	18"	19"
40	20"	21"	20"	20"	22"
45	23"	23"	22"	23"	24"

*STRINGER SIZE SHALL BE THE LARGER OF THE PEDESTRIAN OR GROUND SHOW LOAD SIZE REQUIRED FOR THE SITE CONDITIONS

**STRINGER LENGTH EQUAL TO STRINGER SPAN PLUS ONE FOOT

***REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

GENERAL NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

LOG MEMBERS: LOGS USED FOR STRINGERS SHALL BE DOUGLAS FIR OR WESTERN LARCH WITH MINIMUM, PEELED, MID-SPAN LOG DIAMETER AS NOTED FOR THE VARIOUS SPANS AND DESIGN LOADING. NATIVE TREES TO BE USED FOR BRIDGE STRINGERS SHALL BE STRAIGHT, SOUND, AND FREE OF DEFECTS AND ROT. STRINGERS SHALL BE CHOSEN FROM TREES WITH RELATIVELY FEW LIMBS, AND HAVE NO KNOT GREATER THAN 3-INCH IN DIAMETER. LOGS SHALL BE DAPPED AT ENDS TO CREATE A LEVEL BEARING SURFACE AT SUPPORTS TAKING CARE TO AVOID OVER CUTTING. HEWN UPPER SURFACE OF LOGS TO PROVIDE A LEVEL TREAD SURFACE REFER TO PLANS FOR HEWN DETAILS.

SCREWS AT EACH POST (TYP) 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

- COASTÁL REGIÓN DOUGLAS FIR - LARCH ROUGH SAWN NO.1 GRADE, GRADING RULES AGENCY — WWPA, WCLIB

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**
- LODGE POLE 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 AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS"

STRINGERS & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT) - COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, & TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT-HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OF WOOD. ALL ABRASIONS AND FIELD CUTS - APPROVED BY THE C.O.R. -SHALL BE CAREFULLY TRIMMED AND GIVEN THREE BRUSH COATS OF THE FIELD TREATMENT SOLUTION. WHERE APPROVED, FIELD DRILLING OF BOLT, SCREW OR NAIL HOLES IS REQUIRED, THE HOLES SHALL BE FILLED WITH 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.

FOR LAG SCREWS DRILL HOLES 1/16-INCH LARGER THAN LAG SCREW DIAMETER FOR SHANK PORTION. SHEET 3 OF 4

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

SINGLE LOG STRINGER TRAIL BRIDGE

SECTION

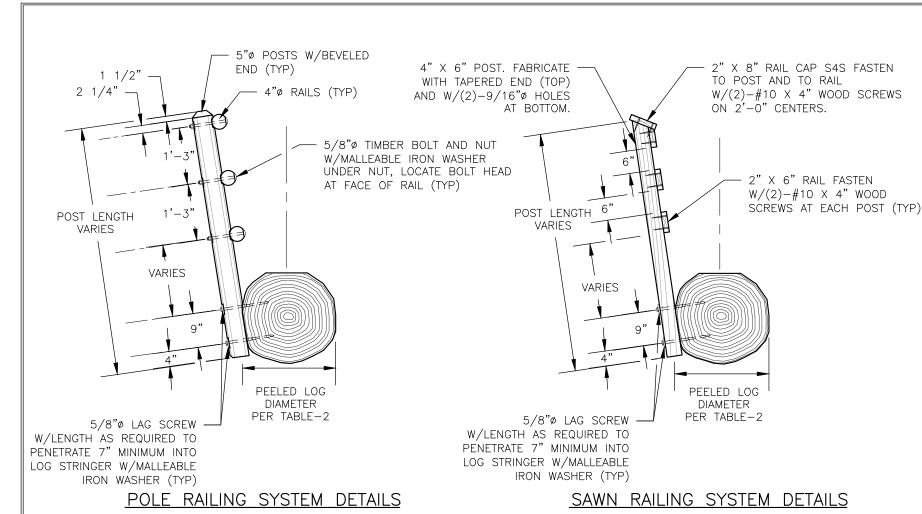
961 - LOG STRINGER TRAIL BRIDGE

TYPICAL ID SLS

REVISION DATE DRAWING NO STD_961-10-03a

OF

NOT TO SCALE



*TABLE-2: SINGLE ROUND LOG STRINGER
PEFLED MID SPAN DIAMETER REQUIREMENTS - LRED

	<u> </u>	, (IVI			
**STRINGER SPAN	TIMBER S	SPECIES -	- SOUTHI	ERN PINE	
(FEET)	DES	SIGN LOADING	IN POUNDS PE	ER SQUARE FO	OT
(' ==')	PEDESTRI	AN LOAD	GROUI	ND SNOW	LOAD
	***65	90	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"	16"
30	16"	16"	16"	16"	17"
35	18"	19"	18"	19"	20"
40	20"	21"	20"	21"	22"
45	23"	24"	23"	23"	24"

^{*}STRINGER SIZE SHALL BE THE LARGER OF THE PEDESTRIAN OR GROUND SHOW LOAD SIZE REQUIRED FOR THE SITE CONDITIONS

GENERAL NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

LOG MEMBERS: LOGS USED FOR STRINGERS SHALL BE DOUGLAS FIR OR WESTERN LARCH WITH MINIMUM, PEELED, MID—SPAN LOG DIAMETER AS NOTED FOR THE VARIOUS SPANS AND DESIGN LOADING. NATIVE TREES TO BE USED FOR BRIDGE STRINGERS SHALL BE STRAIGHT, SOUND, AND FREE OF DEFECTS AND ROT. STRINGERS SHALL BE CHOSEN FROM TREES WITH RELATIVELY FEW LIMBS, AND HAVE NO KNOT GREATER THAN 3—INCH IN DIAMETER. LOGS SHALL BE DAPPED AT ENDS TO CREATE A LEVEL BEARING SURFACE AT SUPPORTS TAKING CARE TO AVOID OVER CUTTING. HEWN UPPER SURFACE OF LOGS TO PROVIDE A LEVEL TREAD SURFACE REFER TO PLANS FOR HEWN 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

- SOUTHÉRN PINE ROUGH SAWN NO.1 GRADE, GRADING RULES AGENCY - SPIB

RAILS & POSTS (SEE PROJECT CRITERIA) SAWN — UNTREATED

- BALDCYPRESS, S4S, NO.1 GRADE GRADING RULES AGENCY - SPIB

- WHITE OAK, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY NELMA SAWN TREATED
- SOUTHERN PINE, S4S, NO.2 GRADE GRADING RULES AGENCY SPIB POLES
- SOUTHERN PINE, PEELED AND DRIED. GRADING RULES AGENCY SPIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

STRINGERS & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, & TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND
- CONTACT-HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OF WOOD. ALL ABRASIONS AND FIELD CUTS — APPROVED BY THE C.O.R. — SHALL BE CAREFULLY TRIMMED AND GIVEN THREE BRUSH COATS OF THE FIELD TREATMENT SOLUTION. WHERE APPROVED, FIELD DRILLING OF BOLT, SCREW OR NAIL HOLES IS REQUIRED, THE HOLES SHALL BE FILLED WITH 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.

FOR LAG SCREWS DRILL HOLES 1/16-INCH LARGER THAN LAG SCREW DIAMETER FOR SHANK PORTION.

SHEET 3 OF 4

U.S.

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

SINGLE LOG STRINGER TRAIL BRIDGE

SECTION

TYPICAL ID SLS

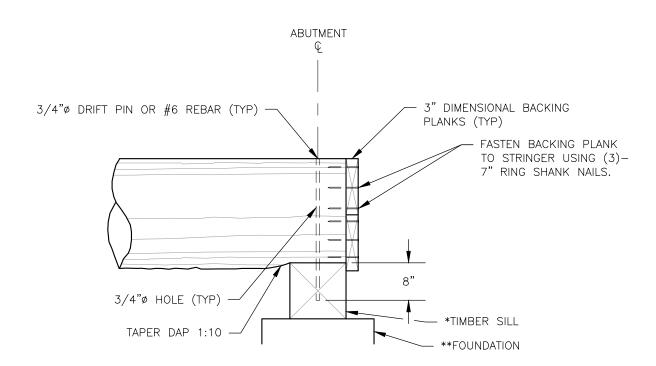
NOT TO SCALE

STD_961-10-03b

961 - LOG STRINGER TRAIL BRIDGE

^{**}STRINGER LENGTH EQUAL TO STRINGER SPAN PLUS ONE FOOT

^{***}REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL



ABUTMENT CONNECTION DETAIL

BACKING PLANK STIFFENER NOT SHOWN FOR CLARITY

- *TIMBER SILL CAN BE EITHER 12" X 12" SOLID SAWN, 10 3/4" X 12" GLUE-LAMINATED, BUILT-UP 3" X 12", 4" X 12", & 6" X 12" TREATED MEMBERS, OR LOG SILL, SEE LOG SILL NOTCHING DETAIL.
- **SEE STANDARD DRAWINGS 965-10, 965-20, 965-30, & 965-40 FOR FOUNDATION ALTERNATIVES

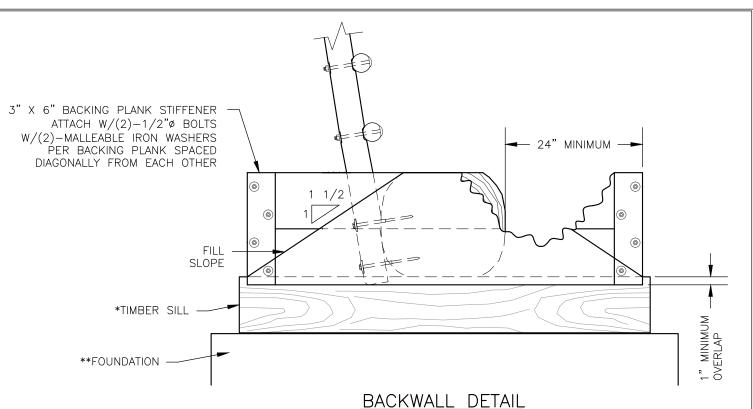
NOTES:

<u>SPECIFICATIONS:</u> MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS.

<u>Hardware and Structural Steel:</u> see superstructure drawings for project design criteria and general notes.

TREATED TIMBER & LUMBER: REFER TO THE GENERAL NOTES ON THE SUBSTRUCTURE DRAWINGS FOR TREATED TIMBER & LUMBER SPECIFICATIONS AND FIELD TREATING OF WOOD.

LAG SCREW INSTALLATION: PRE-BORE LAG SCREW HOLES USING TWO DIAMETERS, ONE FOR THE SHANK AND ONE FOR THE THREADS. THE LEAD HOLE FOR THE SHANK IS TO BE 1/16—INCH 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 SCREW DIAMETER AS SHOWN ON THE PLANS AND IS TO BE BORED AT LEAST TO THE LENGTH OF THE THREADS. DO NOT DRIVE LAG SCREWS WITH A HAMMER.



RAILING SEE SHEET 3 FOR DETAILS NOTCH SILL FOR END POST AT EACH END OF BRIDGE (TYP) LOG SILL NOTCH SILL TO PROVIDE FLAT BEARING SURFACE **FOUNDATION

LOG SILL NOTCHING DETAIL

SHEET 4 OF 4

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

PROJECT NAME & LOCATION

SINGLE LOG STRINGER TRAIL BRIDGE

SECTION

961 - LOG STRINGER TRAIL BRIDGE

TYPICAL ID
SLS

NOT TO SCALE

DRAWING NO.

STD_961-10-04

SHEET |

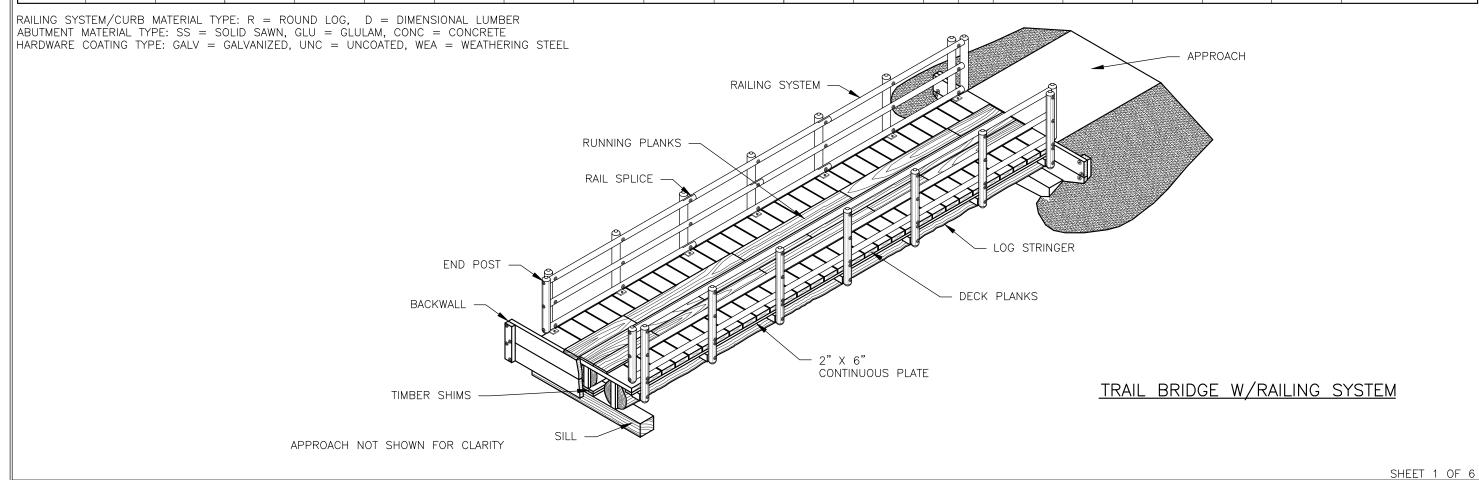
OF

STANDARD TRAIL PLAN

							1													
									STRI	NGERS			DECK				BACK	WALL		
STRUCTURE NUMBER	TRAIL NO.	BRIDGE LOCATION	BRIDGE LENGTH OUT-TO-OUT	STRINGER SPAN Q—Q BRNG	BRIDGE CLEAR WIDTH	PEDESTRIAN LOAD	GROUND SNOW LOAD	SPECIES	NUMBER	MATERIAL SIZE (DIAMETER)	TREATMENT YES NO	SPECIES	SIZE	TREATMENT	TYPE	SPECIES	SIZE	WIDTH	DEPTH	TREATMENT

NA = NOT APPLICABLE, BACKWALL TYPE: ST= STONE, W= WOOD

		RAILI	NG SYSTEM/	CURB			RUNNING	PLANK			SILL				APPROACHES	6		HARDWARE	
STRUCTURE NUMBER	SPECIES	TYPE	HEIGHT	MATERIAL TYPE	TREATMENT YES NO	SPECIES	SIZE	WIDTH	TREATMENT YES NO	TYPE	SIZE	TREATMENT	LENGTH NEAR FAR	WIDTH	MATERIAL TYPE	MATERIAL DEPTH	GEO- SYNTHETIC TYPE	COATING	COMMENTS



U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

MULTIPLE LOG STRINGER TRAIL BRIDGE DRAWING NAME

TYPICAL ID MLS

NOT TO SCALE

DRAWING NO. STD_961-20-01 SHEET OF

SECTION 961 - LOG STRINGER TRAIL BRIDGE

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

LOG MEMBERS: LOGS USED FOR STRINGERS SHALL BE DOUGLAS FIR OR WESTERN LARCH WITH MINIMUM, PEELED, MID-SPAN LOG DIAMETER AS NOTED FOR THE VARIOUS SPANS AND DESIGN LOADING. NATIVE TREES TO BE USED FOR BRIDGE STRINGERS SHALL BE STRAIGHT, SOUND, AND FREE OF DEFECTS AND ROT. STRINGERS SHALL BE CHOSEN FROM TREES WITH RELATIVELY FEW LIMBS, AND HAVE NO KNOT GREATER THAN 3-INCH IN DIAMETER. LOGS SHALL BE DAPPED AT ENDS TO CREATE A LEVEL BEARING SURFACE AT SUPPORTS TAKING CARE TO AVOID OVER CUTTING. HEWN UPPER SURFACE OF LOGS TO PROVIDE A LEVEL TREAD SURFACE REFER TO PLANS FOR HEWN 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

RUNNING PLANKS

- COASTAL REGION DOUGLAS FIR-LARCH ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY - WWPA, WCLIB

RAILS & POSTS (SEE PROJECT CRITERIA)

SAWN - UNTRÉATED

- 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
- LODGE POLE 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 AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

STRINGERS, DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, & TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT-HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OF WOOD. ALL ABRASIONS AND FIELD CUTS - APPROVED BY THE C.O.R. - SHALL BE CAREFULLY TRIMMED AND GIVEN THREE BRUSH COATS OF THE FIELD TREATMENT SOLUTION. WHERE APPROVED, FIELD DRILLING OF BOLT, SCREW OR NAIL HOLES IS REQUIRED. THE HOLES SHALL BE FILLED WITH 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 TIMBER RUNNING 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.

TREES TO BE USED FOR STRINGERS SHALL BE PEELED AND THEN HAVE AN ADDITIONAL 1/2-INCH OF THE OUTER SAPWOOD REMOVED PRIOR TO BEING USED FOR STRINGERS.

SHEET 2 OF 6

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

DRAWING NAME **MULTIPLE LOG** STRINGER TRAIL BRIDGE

SECTION

961 - LOG STRINGER TRAIL BRIDGE

TYPICAL ID

REVISION DATE

DRAWING NO. STD_961-20-02a OF

NOT TO SCALE MLS

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

LOG MEMBERS: LOGS USED FOR STRINGERS SHALL BE DOUGLAS FIR OR WESTERN LARCH WITH MINIMUM, PEELED, MID-SPAN LOG DIAMETER AS NOTED FOR THE VARIOUS SPANS AND DESIGN LOADING. NATIVE TREES TO BE USED FOR BRIDGE STRINGERS SHALL BE STRAIGHT, SOUND, AND FREE OF DEFECTS AND ROT. STRINGERS SHALL BE CHOSEN FROM TREES WITH RELATIVELY FEW LIMBS, AND HAVE NO KNOT GREATER THAN 3-INCH IN DIAMETER. LOGS SHALL BE DAPPED AT ENDS TO CREATE A LEVEL BEARING SURFACE AT SUPPORTS TAKING CARE TO AVOID OVER CUTTING. HEWN UPPER SURFACE OF LOGS TO PROVIDE A LEVEL TREAD SURFACE REFER TO PLANS FOR HEWN 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

- SOUTHERN PINE NO.2 GRADE, GRADING RULES AGENCY SPIB
- RUNNING PLANKS
 - SOUTHERN PINE NO.2 GRADING RULES AGENCY SPIB
- RAILS & POSTS (SEE PROJECT CRITERIA)
- SAWN UNTRÉATED
 - BALDCYPRESS, S4S, NO.1 GRADE GRADING RULES AGENCY SPIB
 - WHITE OAK, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY NELMA
- SAWN TREATED
- SOUTHERN PINE, S4S, NO. 2 GRADE GRADING RULES AGENCY SPIB **POLES**
 - SOUTHERN PINE, PEELED AND DRIED. GRADING RULES AGENCY SPIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

STRINGERS, DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, & TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT-HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OF WOOD. ALL ABRASIONS AND FIELD CUTS - APPROVED BY THE C.O.R. - SHALL BE CAREFULLY TRIMMED AND GIVEN THREE BRUSH COATS OF THE FIELD TREATMENT SOLUTION. WHERE APPROVED, FIELD DRILLING OF BOLT, SCREW OR NAIL HOLES IS REQUIRED. THE HOLES SHALL BE FILLED WITH 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 TIMBER RUNNING 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.

TREES TO BE USED FOR STRINGERS SHALL BE PEELED AND THEN HAVE AN ADDITIONAL 1/2-INCH OF THE OUTER SAPWOOD REMOVED PRIOR TO BEING USED FOR STRINGERS.

SHEET 2 OF 6

DRAWING NO

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

DRAWING NAME **MULTIPLE LOG** STRINGER TRAIL BRIDGE

SECTION

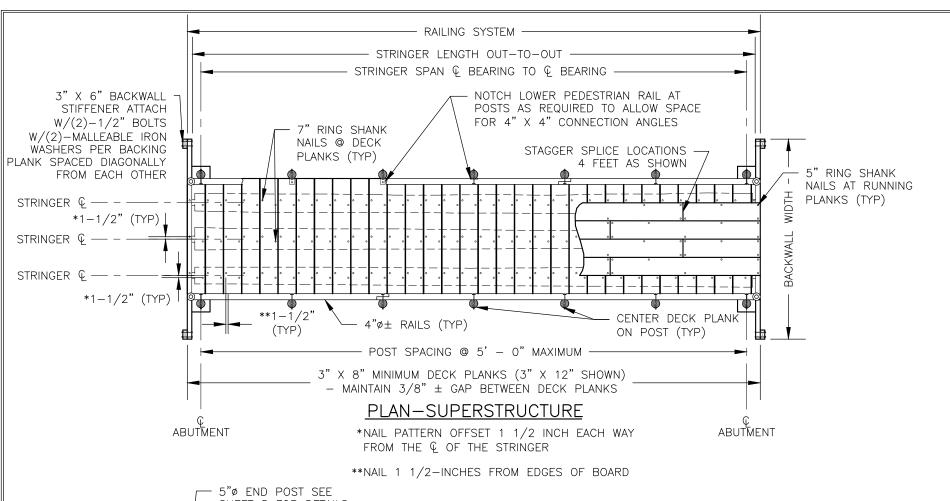
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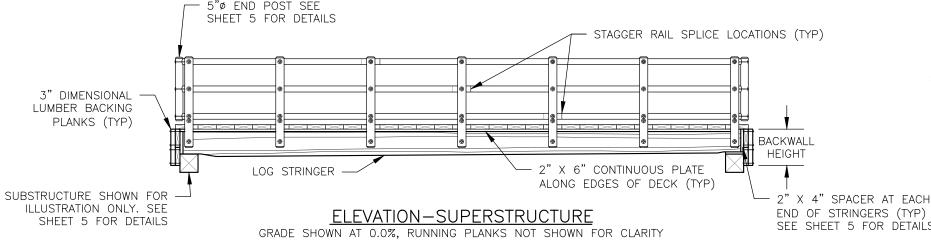
REVISION DATE

STD_961-20-02b OF

961 - LOG STRINGER TRAIL BRIDGE

NOT TO SCALE

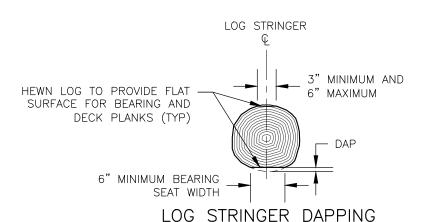




NOTES:

- 1. SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR A MINIMUM OF TWO POST SPACES. ALTERNATE RAIL SPLICES AT POSTS.
- 2. FASTEN RUNNING PLANKS TO DECK WITH 40d 5-INCH LONG RING SHANK NAILS AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END. SEE PLAN-SUPERSTRUCTURE FOR LAYOUT TYPICAL
- 3. THE MINIMUM STRINGER DIAMETER FOR BRIDGES WITH PEDESTRIAN RAILINGS SHALL BE 11-INCHES. BRIDGES WITH STRINGER DIAMETERS LESS THAN 11-INCHES SHALL HAVE CURBS ONLY. SEE SHEET 4 FOR DETAILS.
- 4. FASTEN DECK PLANKS TO STRINGERS WITH TWO ROWS 5/16-INCH DIAMETER X 7-INCH RING SHANK NAILS PER PLANK AT EACH STRINGER. ALTERNATE SIDES.

POST, SPLICE, AND BOLT 5/8"ø X 10" TIMBER BOLT AND NUT. LOCATE BOLT MALLEABLE IRON WASHER (TYP) HEAD AT FACE OF RAIL 5 1/2"ø POSTS (TYP) HALF LAP RAILS AT SPLICES (TYP) 4"ø RAIL — PLAN - POLE RAIL SPLICE DETAIL



MAXIMUM DEPTH OF DAP SHALL NOT EXCEED 10% OF LOG DIAMETER OR 2-inch

*TABLE-1: ROUND LOG STRINGER PEELED SIZE MID SPAN DIAMETER REQUIREMENTS - LRFD

					_	
	**STRINGER SPAN		SPECIES RIOR NOF			
	(FEET)	DES	SIGN LOADING	IN POUNDS PE	ER SQUARE FO	ОТ
	(' [[]	PEDESTRI	AN LOAD	GROUN	ND SNOW	LOAD
) H		***65	90	120	150	200
_S	10	8"	8"	8"	8"	8"
	15	9"	9"	9"	9"	10"
	20	11"	11"	11"	11"	12"
	25	13"	13"	13"	13"	14"
	30	15"	15"	15"	15"	16"
	35	17"	17"	17"	17"	18"
	40	19"	19"	19"	19"	21"
	45	21"	21"	21"	21"	23"
*	STRINGER SIZE SHALL	I RE THE LARCE	O VE THE DEVEC.	TRIANI OR OROLINI	D SHUM IUVD	

*STRINGER SIZE SHALL BE THE LARGER OF THE PEDESTRIAN OR GROUND SHOW LOAD SIZE REQUIRED FOR THE SITE CONDITIONS

**STRINGER LENGTH EQUAL TO STRINGER SPAN PLUS ONE FOOT

***REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

SHEET 3 OF 6

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

MULTIPLE LOG STRINGER TRAIL BRIDGE DRAWING NAME

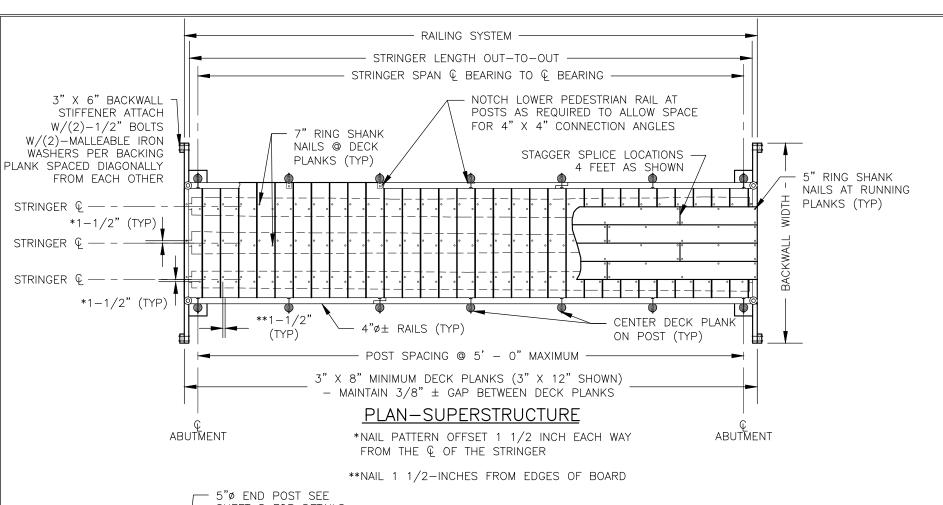
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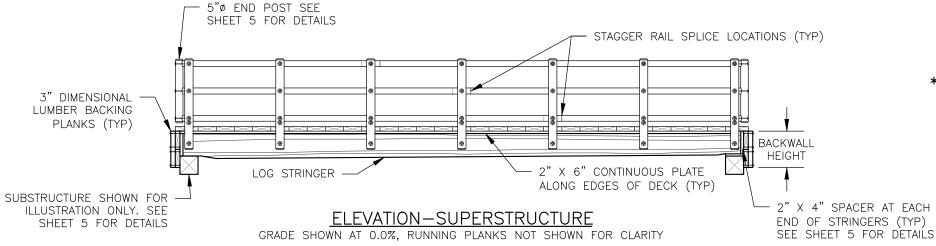
961 - LOG STRINGER TRAIL BRIDGE

TYPICAL ID MLS

REVISION DATE DRAWING NO. STD 961-20-03a SHEET OF

NOT TO SCALE

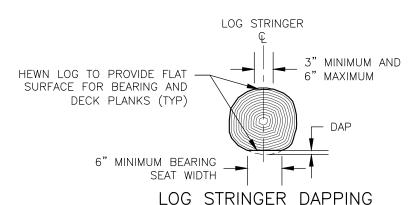




NOTES:

- 1. SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR A MINIMUM OF TWO POST SPACES. ALTERNATE RAIL SPLICES AT POSTS.
- 2. FASTEN RUNNING PLANKS TO DECK WITH 40d 5-INCH LONG RING SHANK NAILS AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END. SEE PLAN-SUPERSTRUCTURE FOR LAYOUT TYPICAL.
- 3. THE MINIMUM STRINGER DIAMETER FOR BRIDGES WITH PEDESTRIAN RAILINGS SHALL BE 11-INCHES, BRIDGES WITH STRINGER DIAMETERS LESS THAN 11-INCHES SHALL HAVE CURBS ONLY. SEE SHEET 4 FOR DETAILS.
- 4. FASTEN DECK PLANKS TO STRINGERS WITH TWO ROWS 5/16-INCH DIAMETER X 7-INCH RING SHANK NAILS PER PLANK AT EACH STRINGER. ALTERNATE SIDES.

POST, SPLICE, AND BOLT 5/8"ø X 10" TIMBER BOLT AND NUT. LOCATE BOLT MALLEABLE IRON WASHER (TYP) HEAD AT FACE OF RAIL 5 1/2"ø POSTS (TYP) HALF LAP RAILS AT SPLICES (TYP) 4"ø RAIL -PLAN - POLE RAIL SPLICE DETAIL



MAXIMUM DEPTH OF DAP SHALL NOT EXCEED 10% OF LOG DIAMETER OR 2-INCH

*TABLE-1: ROUND LOG STRINGER PEELED SIZE MID SPAN DIAMETER REQUIREMENTS - LRFD

;	**STRINGER SPAN	TIMBER S	SPECIES -	- SOUTHE	ERN PINE	
	(FEET)	DES	SIGN LOADING	IN POUNDS PE	ER SQUARE FO	ОТ
	(1 ==1)	PEDESTRI	AN LOAD	GROUN	ND SNOW	LOAD
		***65	90	120	150	200
\lceil	10	8"	8"	8"	8"	8"
] `	15	9"	9"	9"	9"	10"
	20	11"	11"	11"	12"	12"
	25	13"	13"	13"	14"	15"
	30	15"	16"	15"	16"	17"
	35	17"	18"	17"	18"	19"
	40	19"	20"	19"	20"	21"
	45	21"	22"	21"	22"	23"

*STRINGER SIZE SHALL BE THE LARGER OF THE PEDESTRIAN OR GROUND SHOW LOAD SIZE REQUIRED FOR THE SITE CONDITIONS

**STRINGER LENGTH EQUAL TO STRINGER SPAN PLUS ONE FOOT

***REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

SHEET 3 OF 5

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

MULTIPLE LOG STRINGER TRAIL BRIDGE DRAWING NAME

SECTION

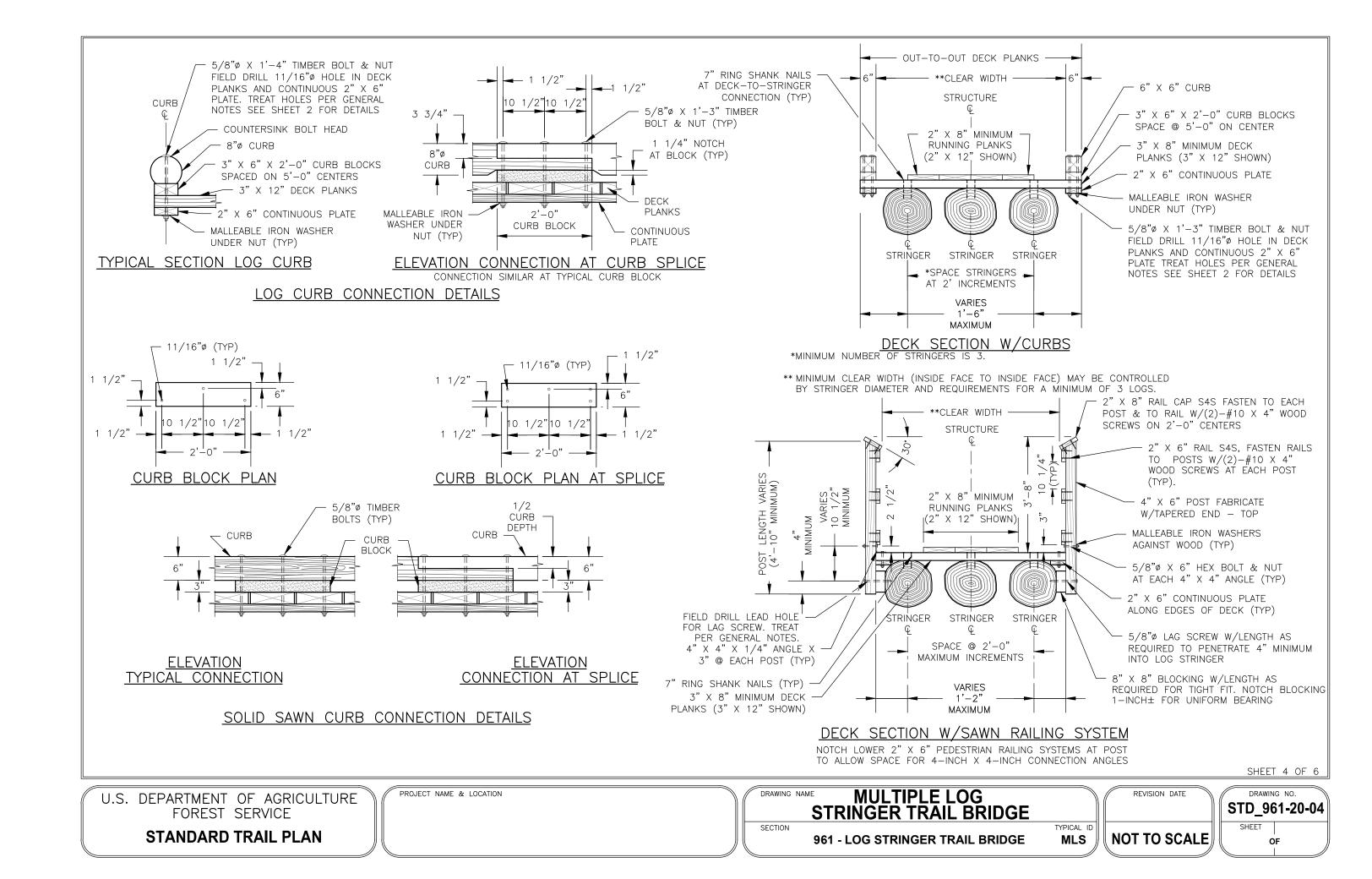
961 - LOG STRINGER TRAIL BRIDGE

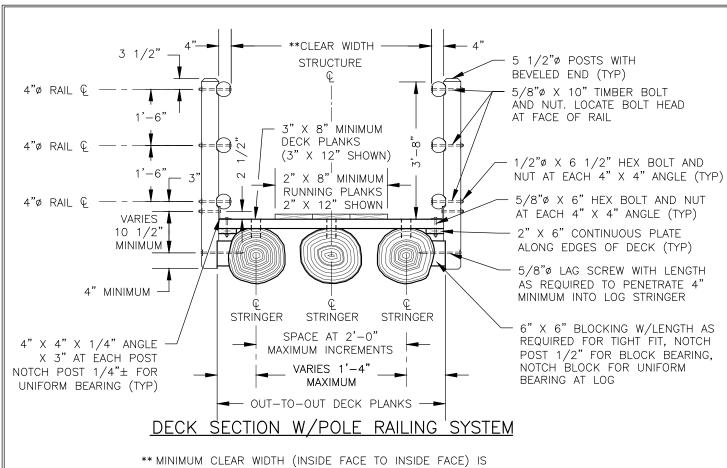
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NOT TO SCALE

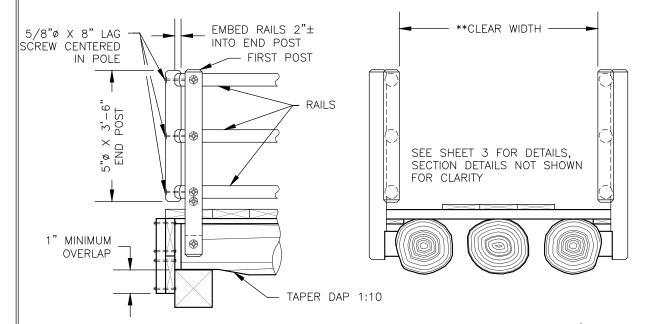
REVISION DATE

DRAWING NO. STD 961-20-03b SHEET OF





CONTROLLED BY END POSTS REFER TO TYPICAL END POST CONNECTION DETAILS ON THIS SHEET.



ELEVATION-END POST END VIEW-DECK SECTION W/END POSTS TYPICAL END POST CONNECTION DETAILS

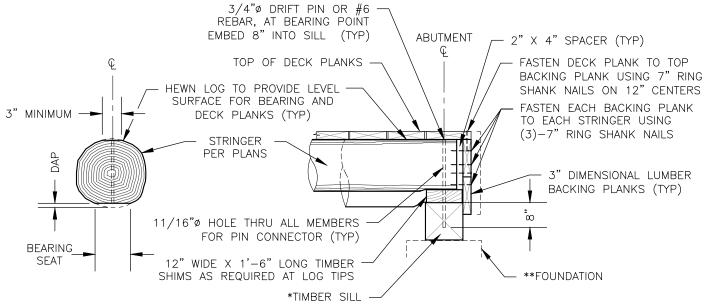
NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

HARDWARE AND STRUCTURAL STEEL: SEE SUPERSTRUCTURE DRAWINGS FOR PROJECT DESIGN CRITERIA AND GENERAL NOTES.

TREATED TIMBER & LUMBER: REFER TO THE GENERAL NOTES ON THE SUBSTRUCTURE DRAWINGS FOR TREATED TIMBER & LUMBER SPECIFICATIONS AND FIELD TREATING OF WOOD.

LAG SCREW INSTALLATION: PRE-BORE LAG SCREW HOLES USING TWO DIAMETERS, ONE FOR THE SHANK AND ONE FOR THE THREADS. THE LEAD HOLE FOR THE SHANK IS TO BE 1/16-INCH LARGER THAN THE SHANK DIAMETER AND IS TO BE BORED TO THE DEPTH OF PÉNETRATION 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 SCREWS WITH A HAMMER.



LOG STRINGER DAPPING

MAXIMUM DEPTH OF DAP SHALL NOT EXCEED 10 PERCENT OF LOG DIAMETER OR 2-INCHES

ELEVATION

- *TIMBER SILL CAN BE EITHER 12" X 12" SOLID SAWN 10 3/4" X 12" GLUE-LAMINATED, BUILT-UP 3" X 12", 4" X 12", & 6" X 12" TREATED MEMBERS.
- ** SEE STANDARD DRAWINGS 965-10, 965-20, 965-30, & 965-40 FOR FOUNDATION ALTERNATIVES

LOG STRINGER BRIDGE ABUTMENT CONNECTION DETAILS

SHEET 5 OF 6

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

DRAWING NAME **MULTIPLE LOG** STRINGER TRAIL BRIDGE

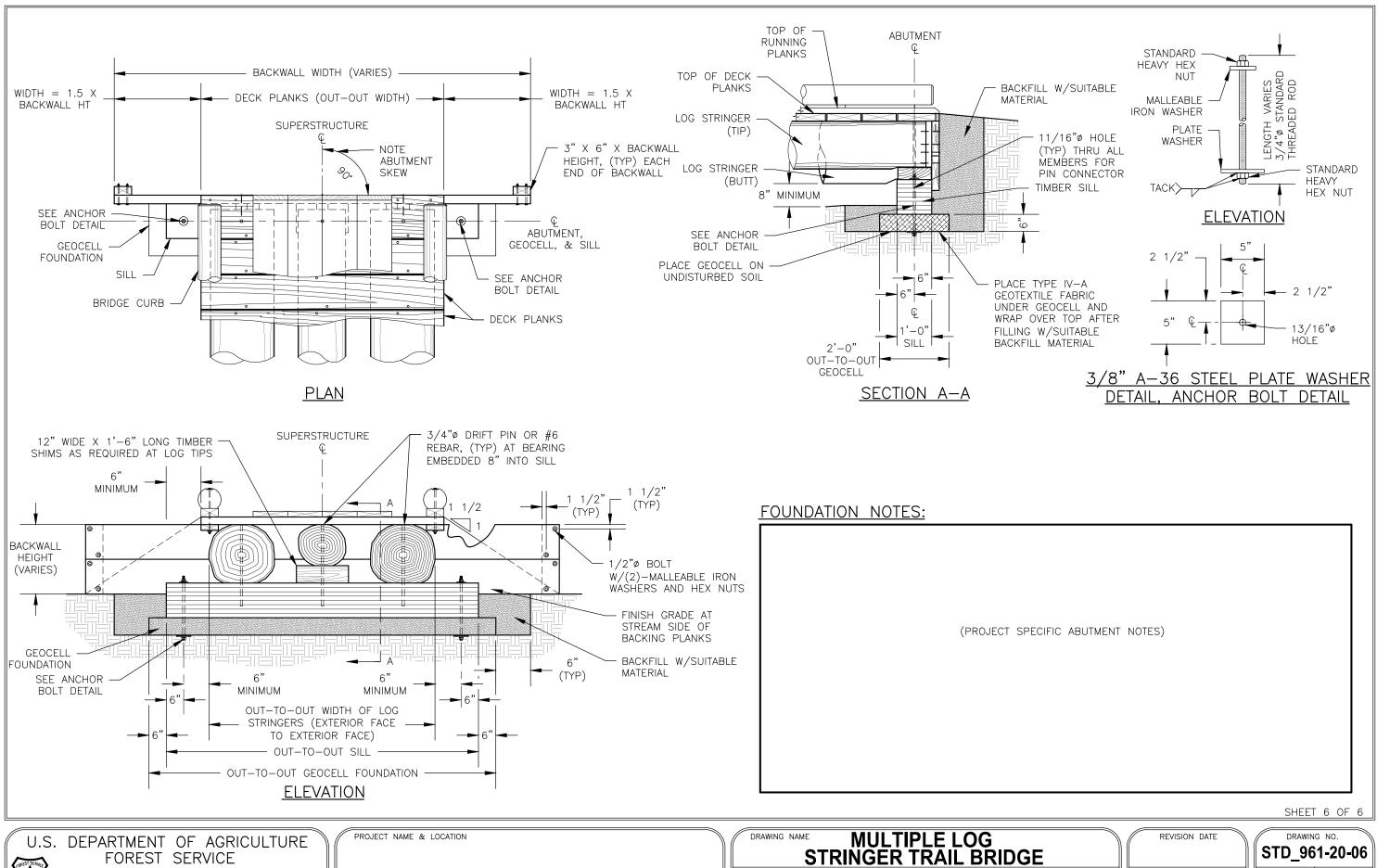
961 - LOG STRINGER TRAIL BRIDGE

TYPICAL ID MLS

REVISION DATE DRAWING NO.

STD_961-20-05 SHEET **NOT TO SCALE** OF

SECTION



STANDARD TRAIL PLAN

SECTION

961 - LOG STRINGER TRAIL BRIDGE

NOT TO SCALE

TYPICAL ID

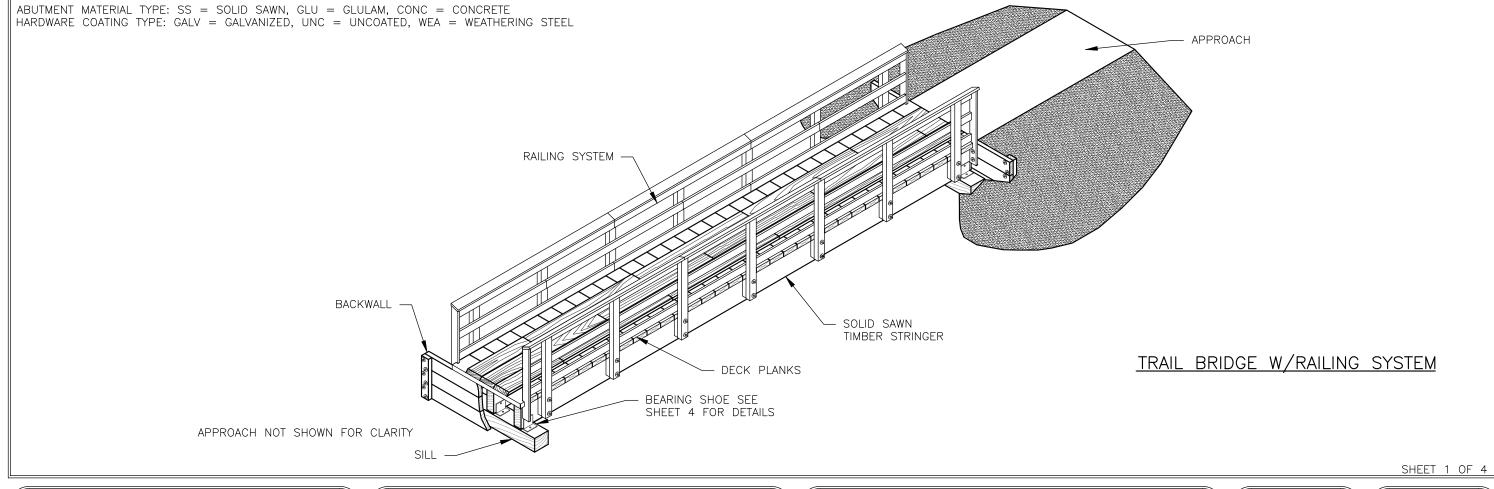
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SHEET OF

							STRINGERS					DECK				BACK	(WALL		
STRUCTURE NUMBER TRAIL	L NO. BRIDGE LOCATION	BRIDGE LENGTH OUT-TO-OUT	STRINGER SPAN Q-Q BRNG	BRIDGE CLEAR WIDTH	PEDESTRIAN LOAD	GROUND SNOW LOAD	SPECIES	NUMBER	MATERIAL SIZE	TREATMENT YES NO	SPECIES	SIZE	TREATMENT	TYPE	SPECIES	SIZE	WIDTH	HEIGHT	TREATMENT

NA = NOT APPLICABLE

		RAILIN	NG SYSTEM/	CURB			RUNNING) PLANK				SILL				APPROACHES	5		HARDWARE	
STRUCTURE NUMBER	SPECIES	TYPE	HEIGHT	MATERIAL TYPE	TREATMENT YES NO	SPECIES	SIZE	WIDTH	TREATM YES	MENT NO	TYPE	SIZE	TREATMENT	LEN(NEAR	WIDTH	MATERIAL TYPE	MATERIAL DEPTH	GEO- SYNTHETIC TYPE	COATINGS	COMMENTS
X																				



U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

SAWN TIMBER STRINGER TRAIL BRIDGE

SECTION

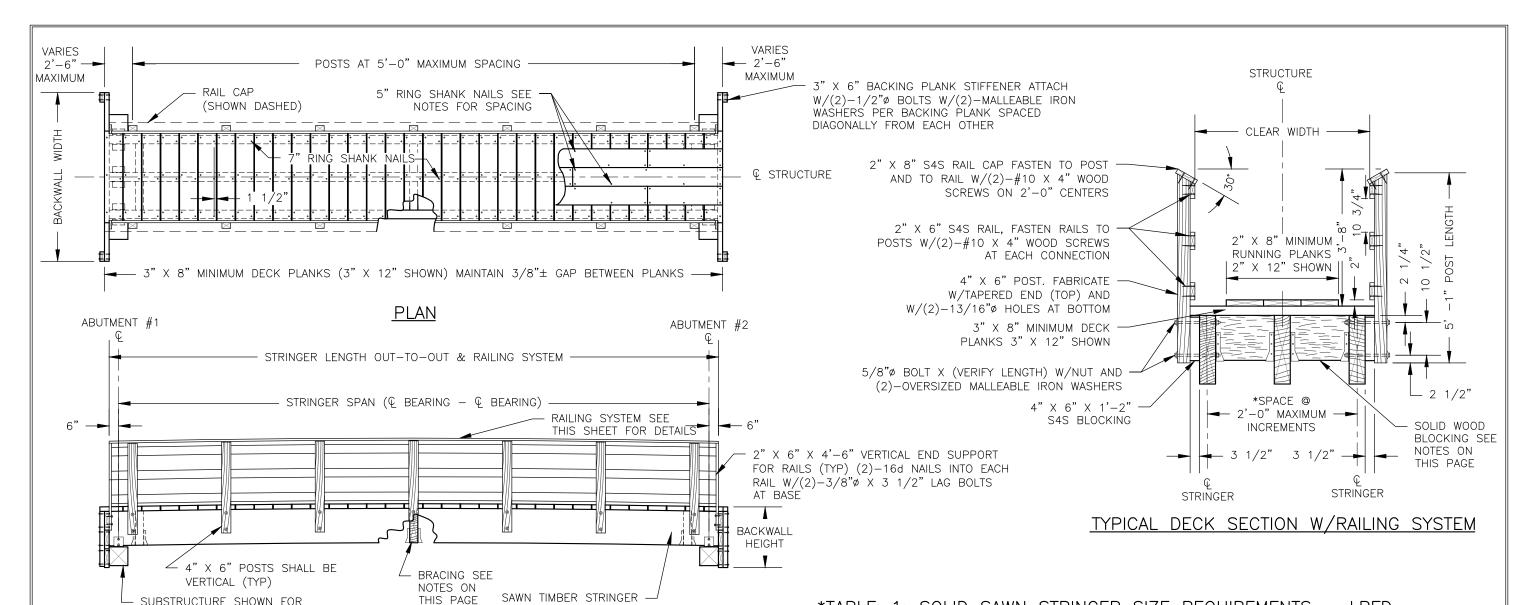
962 - SAWN TIMBER TRAIL BRIDGE

REVISION DATE

NOT TO SCALE

TYPICAL ID STS

STD_962-10-01
SHEET |
OF



ELEVATION

GRADE SHOWN = 0.0%, RUNNING PLANKS NOT SHOWN FOR CLARITY

1. ALL DIMENSIONS IN TABLE-1 ARE NOMINAL (ROUGH SAWN). 4. PROVIDE A MINIMUM 1/2-INCH SPACE BETWEEN BLOCKING THE MINIMUM STRINGER DEPTH FOR BRIDGES WITH A PEDESTRIAN RAILING SYSTEM IS 15-INCHES. BRIDGES WITH STRINGER DEPTHS LESS THAN 15-INCHES SHALL HAVE CURBS ONLY. THE MINIMUM NUMBER OF STRINGERS IS

SUBSTRUCTURE SHOWN FOR

ILLUSTRATION ONLY. SEE SHEET 4 FOR DETAILS.

- 2. FASTEN DECK PLANKS TO STRINGERS WITH TWO ROWS 5/16-INCH DIAMETER X 7-INCH RING SHANK NAILS PER PLANK AT EACH STRINGER. ALTERNATE SIDES.
- 3. FASTEN RUNNING PLANKS TO DECK WITH 40d (5-INCH RING SHANK) NAILS AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END.

AND BACKWALL FOR AIR CIRCULATION.

PER TABLE-1

- SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR TWO POST SPACES. DO NOT LOCATE MORE THAN ONE RAIL SPLICE AT ANY ONE POST.
- 6. BRACING REQUIRED AT THE ENDS OF EACH MEMBER. THE BRACING SHALL BE THREE-QUARTERS TO FULL DEPTH AND PLACED WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING. BRACING REQUIRED AT MID-SPAN FOR SPANS OVER 20 FEET LONG.
- 7. WOOD BLOCKING SHALL BE BOLTED TO STRINGERS WITH STEEL ANGLES OR SUSPENDED IN STEEL HANGERS THAT ARE NAILED TO BLOCKS AND STRINGER SIDES

*TABLE-1: SOLID SAWN STRINGER SIZE REQUIREMENTS - LRFD

**STRINGER			OUGLAS FIR	- LARCH								
SPAN		DESIGN LOADING II	N POUNDS PER SQ	UARE FOOT								
(FEET)	PEDESTRIAN	LIVE LOAD	GRO	UND SNOW L	LOAD							
	***65	90	120	150	200							
●10	3" X 8"	3" X 10"	3" X 12"	4" X 10"	4" X 12"							
●15	4" X 10"	4" X 12"	4" X 14"	4" X 16"	6" X 12"							
●20	4" X 14"	6" X 12"	6" X 12"	6" X 14"	6" X 16"							
▲ 25	6" X 14" 6" X 14" 6" X 16" 6" X 18" 6" X 20"											
▲ 30	6" X 16" 6" X 18" 6" X 20" 6" X 20" 8" X 20"											

- •INSTALL BRACING WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING AINSTALL BRACING WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING & MID-SPAN
- st STRINGER SIZE SHALL BE THE LARGER OF THE PEDESTRIAN OR GROUND SHOW LOAD SIZE REQUIRED FOR THE SITE CONDITIONS
- **STRINGER LENGTH EQUAL TO STRINGER SPAN PLUS ONE FOOT
- *** REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

SHEET 2 OF 4



NOTES:

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

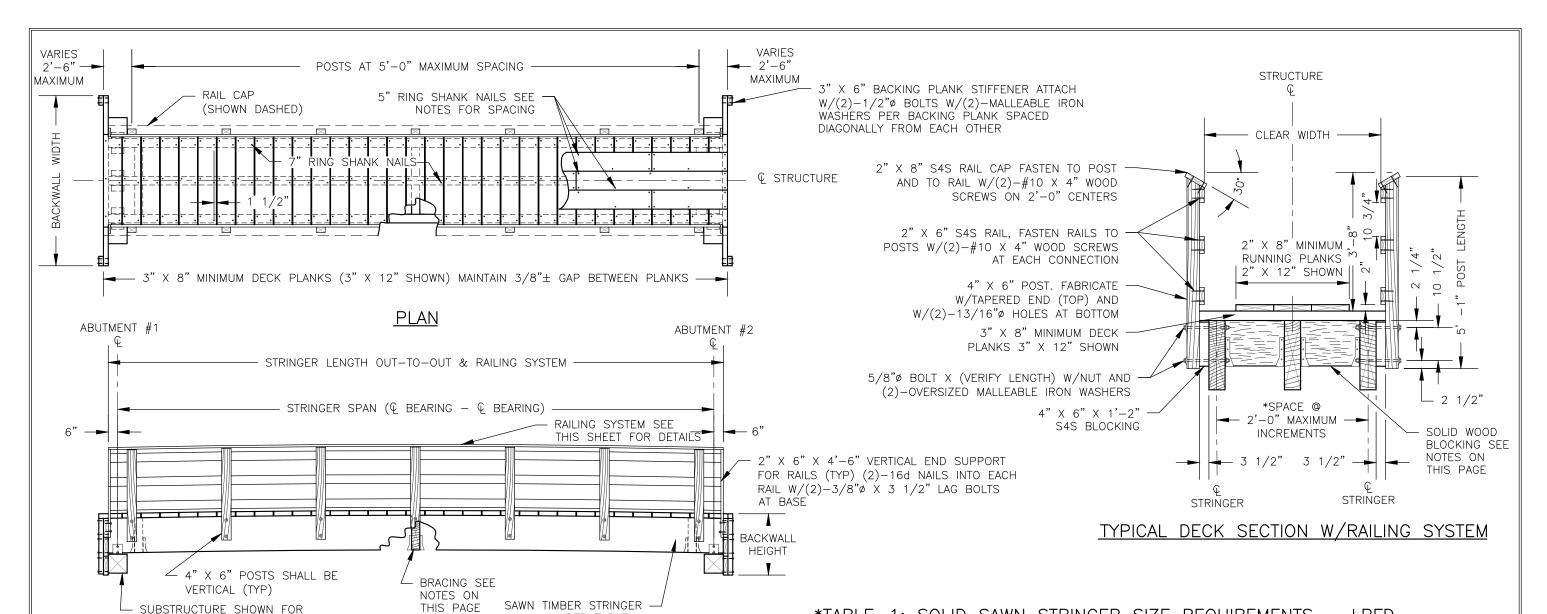
SAWN TIMBER STRINGER TRAIL BRIDGE

962 - SAWN TIMBER TRAIL BRIDGE

TYPICAL ID **NOT TO SCALE** STS

REVISION DATE





ELEVATION

NOTES:

GRADE SHOWN = 0.0%, RUNNING PLANKS NOT SHOWN FOR CLARITY

THE MINIMUM STRINGER DEPTH FOR BRIDGES WITH A PEDESTRIAN RAILING SYSTEM IS 15-INCHES. BRIDGES WITH STRINGER DEPTHS LESS THAN 15-INCHES SHALL HAVE CURBS ONLY. THE MINIMUM NUMBER OF STRINGERS IS THREE.

ILLUSTRATION ONLY. SEE SHEET 4 FOR DETAILS.

- 2. FASTEN DECK PLANKS TO STRINGERS WITH TWO ROWS 5/16-INCH DIAMETER X 7-INCH RING SHANK NAILS PER PLANK AT EACH STRINGER. ALTERNATE SIDES.
- 3. FASTEN RUNNING PLANKS TO DECK WITH 40d (5-INCH RING SHANK) NAILS AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END.

ALL DIMENSIONS IN TABLE-1 ARE NOMINAL (ROUGH SAWN). 4. PROVIDE A MINIMUM 1/2-INCH SPACE BETWEEN BLOCKING AND BACKWALL FOR AIR CIRCULATION.

PER TABLE-1

- 5. SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR TWO POST SPACES. DO NOT LOCATE MORE THAN ONE RAIL SPLICE AT ANY ONE POST.
- 6. BRACING REQUIRED AT THE ENDS OF EACH MEMBER. THE BRACING SHALL BE THREE-QUARTERS TO FULL DEPTH AND PLACED WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING. BRACING REQUIRED AT MID-SPAN FOR SPANS OVER 20 FEET LONG.
- 7. WOOD BLOCKING SHALL BE BOLTED TO STRINGERS WITH STEEL ANGLES OR SUSPENDED IN STEEL HANGERS THAT ARE NAILED TO BLOCKS AND STRINGER SIDES

*TABLE-1: SOLID SAWN STRINGER SIZE REQUIREMENTS - LRFD

**STRINGER		PECIES — SO NO.1	DUTHERN PIN	NE .									
SPAN		DESIGN LOADING IN	N POUNDS PER SQ	UARE FOOT									
(FEET)	PEDESTRIAN	LIVE LOAD	GRO	JND SNOW L	_OAD								
	***65 90 120 150 200												
●10	3" X 8"	3" X 10"	3" X 10"	3" X 12"	4" X 12"								
●15	4" X 10"	4" X 12"	4" X 14"	4" X 16"	6" X 12"								
● 20	4" X 14"	4" X 16"	6" X 12"	6" X 14"	6" X 16"								
▲ 25	6" X 14" 6" X 16" 6" X 16" 6" X 20"												
▲ 30	6" X 16" 6" X 18" 6" X 20" 8" X 20"												

•INSTALL BRACING WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING AINSTALL BRACING WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING & MID-SPAN

- st Stringer size shall be the larger of the pedestrian or ground show load size REQUIRED FOR THE SITE CONDITIONS
- ** STRINGER LENGTH EQUAL TO STRINGER SPAN PLUS ONE FOOT

*** REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

SHEET 2 OF 4

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

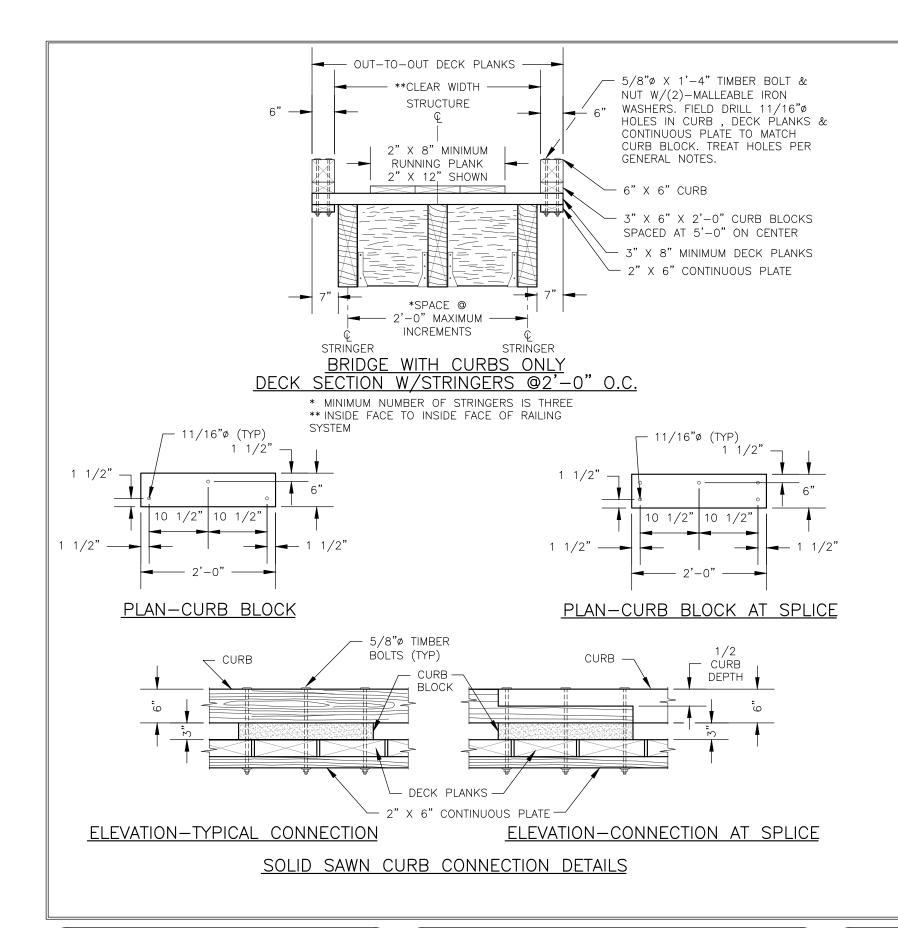
PROJECT NAME & LOCATION

SAWN TIMBER STRINGER TRAIL BRIDGE SECTION TYPICAL ID

962 - SAWN TIMBER TRAIL BRIDGE

NOT TO SCALE STS

DRAWING NO. STD_962-10-02b SHEET



SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

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, CURBS, SILLS, & BACKING PLANKS

- COASTAL REGION DOUGLAS FIR-LARCH ROUGH SAWN NO.1 GRADE, GRADING RULES AGENCY - WWPA, WCLIB

RUNNING PLANKS

- COASTAL REGION DOUGLAS FIR-LARCH ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY - WWPA, WCLIB

RAILS & POSTS (SEE PROJECT CRITERIA)

UNTREATED

- REDWOOD, S4S, NO.1 GRADE GRADING RULES AGENCY RIS
- WESTERN RED CEDAR, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY WWPA, WCLIB TREATED
- HEM-FIR/DOUGLAS FIR, S4S, NO.1 GRADE GRADING RULES AGENCY WWPA, WCLIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

STRINGERS, DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, & TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT-HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OD WOOD. ALL ABRASIONS AND FIELD CUTS -APPROVED BY THE C.O.R.- 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 FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

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 BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING PLANKS). SHOW ALL DIMENSIONS AND FABRICATION DETAILS FOR ALL CUT OR BORED TIMBÉR. FIELD DRILLING OF HOLES SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED ON THE PLANS.

SHEET 3 OF 4

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

SAWN TIMBER STRINGER TRAIL BRIDGE

SECTION

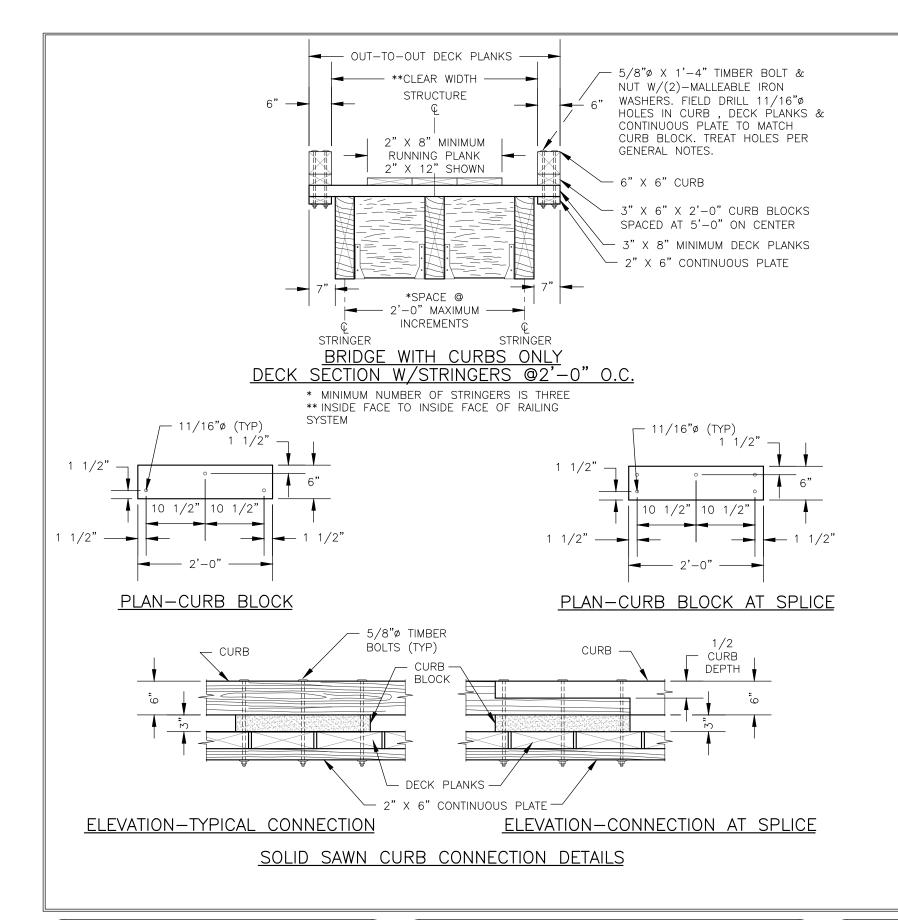
962 - SAWN TIMBER TRAIL BRIDGE

TYPICAL ID STS

REVISION DATE

NOT TO SCALE

DRAWING NO STD_962-10-03a SHEET X OF



SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

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, CURBS, SILLS, & BACKING PLANKS RUNNING PLANKS

- SOUTHERN PINE NO.2 GRADE GRADING RULES AGENCY SPIB
- SOUTHERN PINE NO.2 GRADE GRADING RULES AGENCY SPIB

RAILS & POSTS (SEE PROJECT CRITERIA) UNTREATED

- BALDCYPRESS, S4S, NO.1 GRADE GRADING RULES AGENCY SPIB
- WHITE OAK, SAS, SELECT STRUCTURAL GRADE GRADING RULES AGENCY NELMA TREATED
- SOUTHERN PINE, S4S, NO.1 GRADE GRADING RULES AGENCY SPIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

STRINGERS, DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, & TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT—HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OD WOOD. ALL ABRASIONS AND FIELD CUTS —APPROVED BY THE C.O.R.— 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 FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

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 BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING 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.

SHEET 3 OF 4



PROJECT NAME & LOCATION

SAWN TIMBER STRINGER TRAIL BRIDGE

SECTION

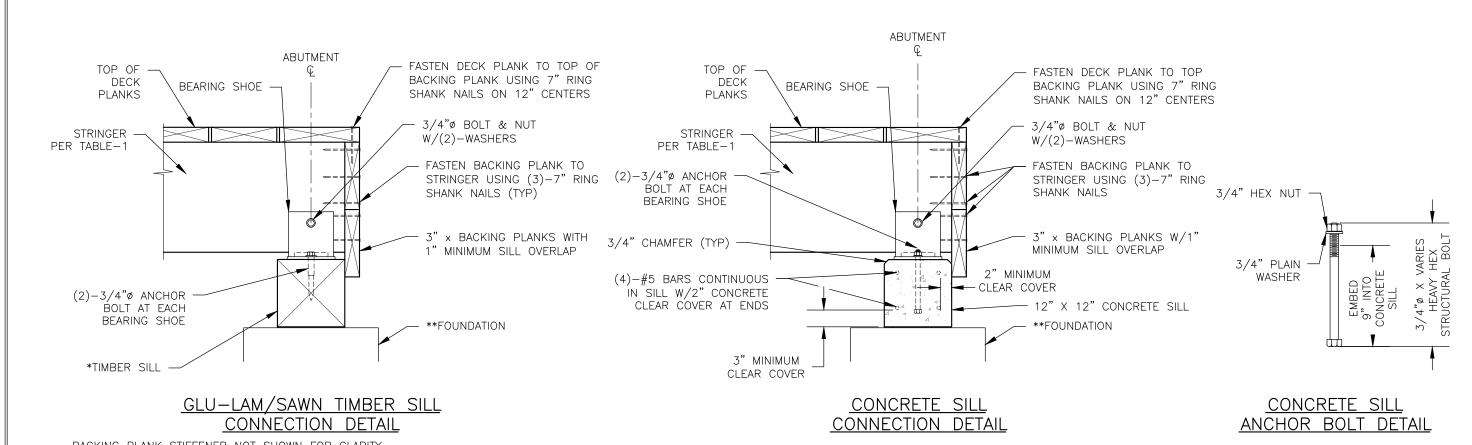
962 - SAWN TIMBER TRAIL BRIDGE

TYPICAL ID STS

REVISION DATE

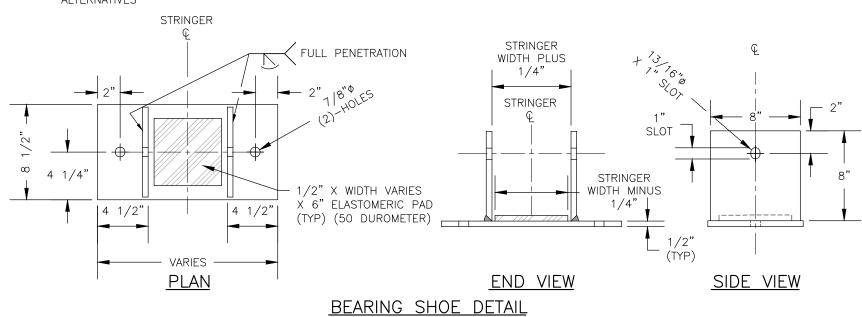
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STD_962-10-03b



BACKING PLANK STIFFENER NOT SHOWN FOR CLARITY

- ** TIMBER SILL CAN BE EITHER 12" X 12" SOLID SAWN 10 3/4" X 12" GLUE-LAMINATED, BUILT-UP 3" X 12", 4" X 12", & 6" X 12" TREATED MEMBERS.
- ** SEE STANDARD DRAWINGS 965-10, 965-20, 965-30, & 965-40 FOR FOUNDATION ALTERNATIVES



MATERIAL = 1/2" STEEL PLATE A36

NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

CONCRETE: USE STRUCTURAL CONCRETE WITH 7 SACK MINIMUM MIX APPROVED BY THE C.O., CONCRETE SHALL RECEIVE A TOWELED SURFACE FINISH. CONCRETE SHALL HAVE 4%-6% ENTRAINED AIR. MAXIMUM SIZE AGGREGATE SHALL BE 3/4-INCH AND CONCRETE SLUMP SHALL NOT EXCEED 4-INCHES.

REINFORCING STEEL: PROVIDE REINFORCING STEEL THAT CONFORMS TO ASTM A615 (AASHTO M31). GRADE 40 OR 60. PROVIDE 2-INCH CLEAR CONCRETE COVER FOR ALL REBAR. UNLÉSS NOTED OTHERWISE ON THE PLANS.

HARDWARE AND STRUCTURAL STEEL: SEE SHEET 3 FOR PROJECT DESIGN CRITERIA AND GENERAL NOTES.

TREATED TIMBER & LUMBER: REFER TO THE GENERAL NOTES ON THE SUBSTRUCTURE DRAWINGS FOR TREATED TIMBER & LUMBER SPECIFICATIONS AND FIELD TREATING OF WOOD

LAG SCREW INSTALLATION: PRE-BORE LAG SCREW HOLES USING TWO DIAMETERS, ONE FOR THE SHANK AND ONE FOR THE THREADS. THE LEAD HOLE FOR THE SHANK IS TO BE 1/16-INCH 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 SCREWS WITH A HAMMER.

SHEET 4 OF 4

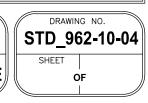


PROJECT NAME & LOCATION SAWN TIMBER STRINGER TRAIL BRIDGE

962 - SAWN TIMBER TRAIL BRIDGE

TYPICAL ID **NOT TO SCALE** STS

REVISION DATE

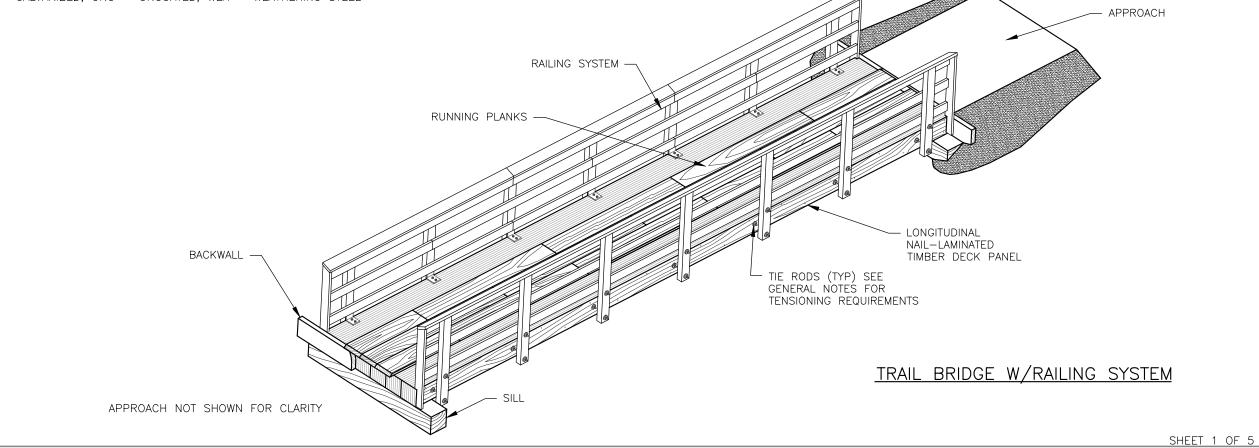


									DECK F	PANNELS				BACK	WALL			
STRUCTURE NUMBER	TRAIL NO.	BRIDGE LOCATION	BRIDGE LENGTH OUT-TO-OUT	DECK PANEL SPAN Q-Q BRNG	BRIDGE CLEAR WIDTH	PEDESTRIAN LOAD	GROUND SNOW LOAD	SPECIES	NUMBER	MATERIAL SIZE	TREATMENT	TYPE	SPECIES	SIZE	WIDTH	HEIGHT	TREATMENT	COMMENTS

NA = NOT APPLICABLE

	RAILING SYSTEM/CURB						RUNNING	RUNNING PLANK SILL APPROACHES									HARDWARE		
STRUCTURE NUMBER	SPECIES	TYPE	HEIGHT	MATERIAL TYPE	TREATMENT YES NO	SPECIES	SIZE	WIDTH	TREAT YES	NO	TYPE	SIZE	TREATMENT	LENGTH NEAR FAR	WIDTH	MATERIAL TYPE	MATERIAL DEPTH	GEO- SYNTHETIC TYPE	COATINGS

ABUTMENT MATERIAL TYPE: SS = SOLID SAWN, GLU = GLULAM, CONC = CONCRETE HARDWARE COATING TYPE: GALV = GALVANIZED, UNC = UNCOATED, WEA = WEATHERING STEEL



U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

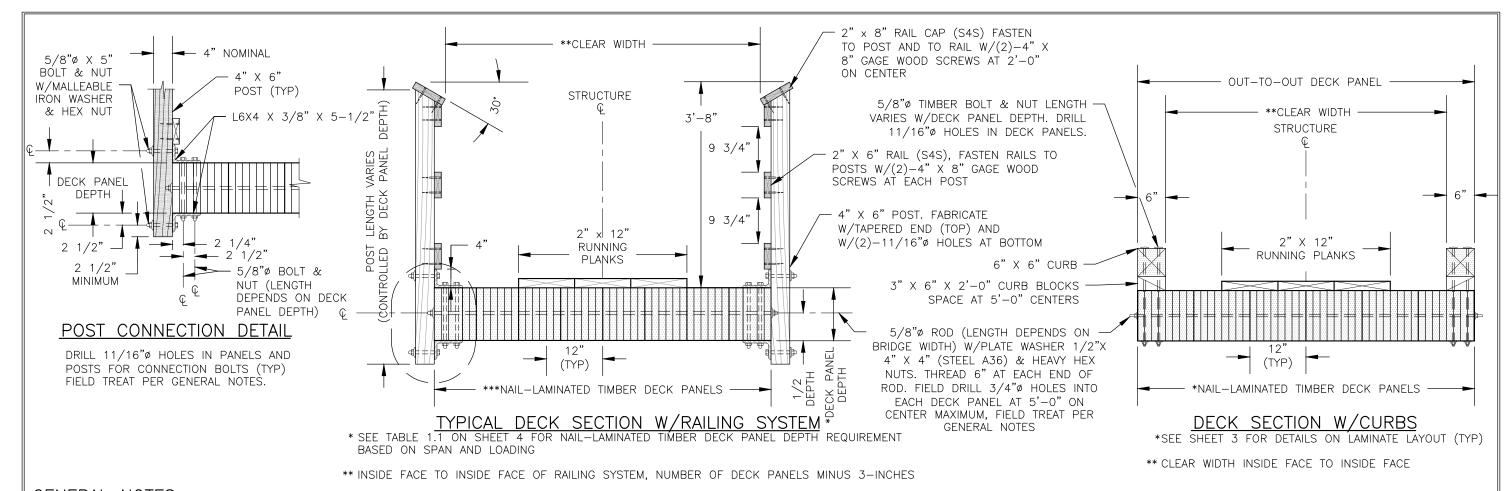
PROJECT NAME & LOCATION



962 - SAWN TIMBER TRAIL BRIDGE

REVISION DATE NOT TO SCALE





*** SEE SHEET 3 FOR DETAILS ON LAMINATE LAYOUT (TYP)

<u>SPECIFICATIONS:</u> MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

TIMBER & LUMBER: SOLID SAWN TIMBER MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF THE GRADING RULES AGENCY FOR THE SPECIES, TYPE, AND GRADE SPECIFIED BELOW.

LAMINATIONS

- COASTAL REGION DOUGLAS FIR - LARCH OR HEM - FIR SURFACED S4S, NO. 1 GRADE GRADING RULES AGENCY - WWPA, WCLIB

CURB MEMBERS, SILLS, AND BACKING PLANKS RUNNING PLANKS

COASTAL REGION DOUGLAS FIR-LARCH ROUGH SAWN NO.1 GRADE, GRADING RULES AGENCY - WWPA, WCLIB
 COASTAL REGION DOUGLAS FIR-LARCH ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY - WWPA, WCLIB

RAILS & POSTS (SEE PROJECT CRITERIA)

- REDWOOD, S4S, NO.1 GRADE GRADING RULES AGENCY RIS
- WESTERN RED CEDAR, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY WWPA, WCLIB TREATED
- HEM-FIR/DOUGLAS FIR, S4S, NO.1 GRADE GRADING RULES AGENCY WWPA, WCLIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

LAMINATIONS, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT-HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

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 FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

HARDWARE AND STRUCTURAL STEEL: SEE PROJECT 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 BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING 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 THESE PLANS.

TIE ROD TENSIONING: TIE RODS SHALL BE TORQUED TO 200 FT-LBS UPON INITIAL INSTALLATION OF THE DECK PANELS. TIE RODS SHALL BE CHECKED FOR PROPER TENSION EACH YEAR FOR THE FOLLOWING 4 YEARS AFTER INSTALLATION. SUBSEQUENT TENSION CHECKS SHALL OCCUR DURING ROUTINE INSPECTIONS UNLESS OTHERWISE NOTED IN THE INSPECTION REPORT.

SHEFT 2 OF 5

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN



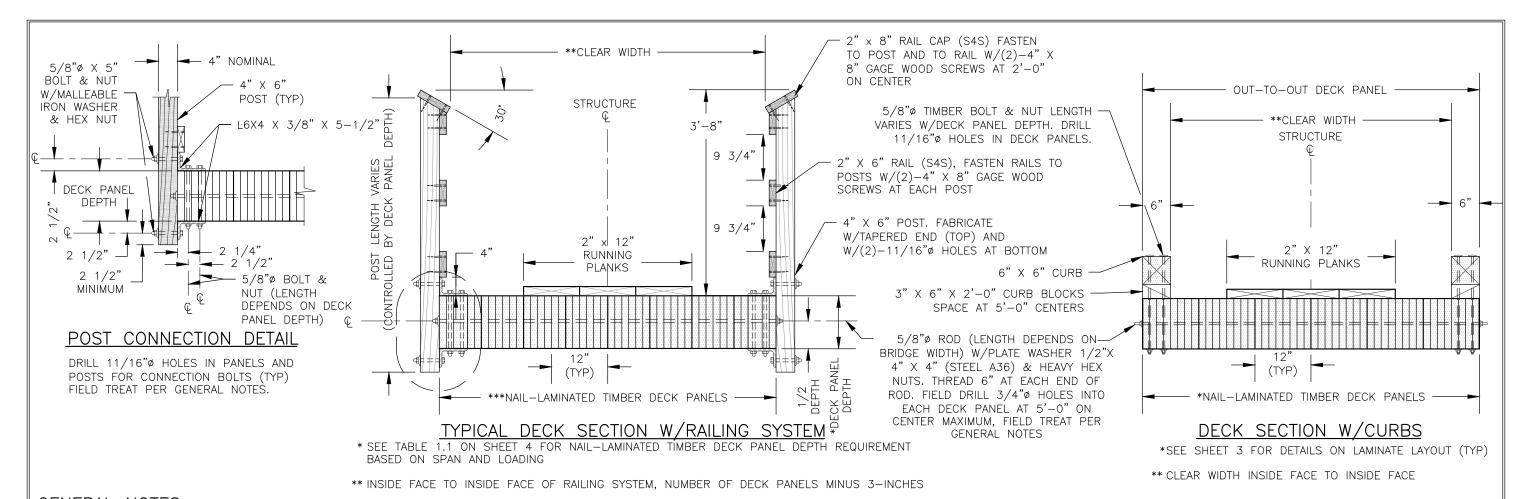
962 - SAWN TIMBER TRAIL BRIDGE

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REVISION DATE



PROJECT NAME & LOCATION



*** SEE SHEET 3 FOR DETAILS ON LAMINATE LAYOUT (TYP)

<u>SPECIFICATIONS:</u> MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

TIMBER & LUMBER: SOLID SAWN TIMBER MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF THE GRADING RULES AGENCY FOR THE SPECIES, TYPE, AND GRADE SPECIFIED BELOW.

LAMINATIONS

- SOUTHERN PINE, SURFACED S4S, NO.1 GRADE GRADING RULES AGENCY - SPIB

CURB MEMBERS, SILLS, AND BACKING PLANKS RUNNING PLANKS

- SOUTHERN PINE ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY - SPIB

RAILS & POSTS (SEE PROJECT CRITERIA) UNTREATED

- BALDCYPRESS, S4S, NO.1 GRADE GRADING RULES AGENCY - SPIB

- WHITE OAK, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY - NELMA

TREATED

- SOUTHERN PINE, S4S, NO.1 GRADE GRADING RULES AGENCY - SPIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

LAMINATIONS, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT-HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

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 FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

HARDWARE AND STRUCTURAL STEEL: SEE PROJECT 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 BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING 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 THESE PLANS.

TIE ROD TENSIONING: TIE RODS SHALL BE TORQUED TO 200 FT—LBS UPON INITIAL INSTALLATION OF THE DECK PANELS. TIE RODS SHALL BE CHECKED FOR PROPER TENSION EACH YEAR FOR THE FOLLOWING 4 YEARS AFTER INSTALLATION. SUBSEQUENT TENSION CHECKS SHALL OCCUR DURING ROUTINE INSPECTIONS UNLESS OTHERWISE NOTED IN THE INSPECTION REPORT.

SHFFT 2 OF 5

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

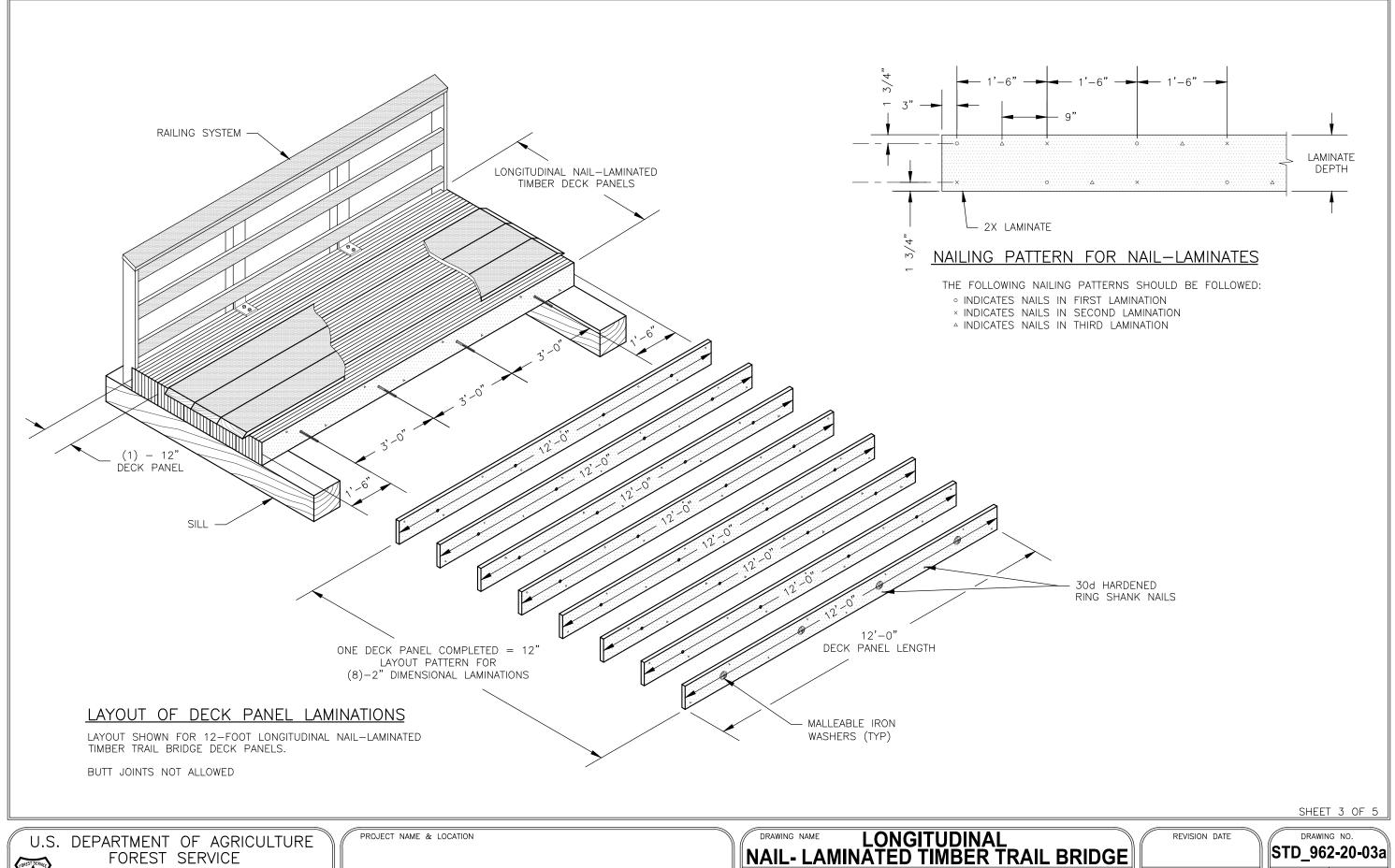


962 - SAWN TIMBER TRAIL BRIDGE

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PROJECT NAME & LOCATION



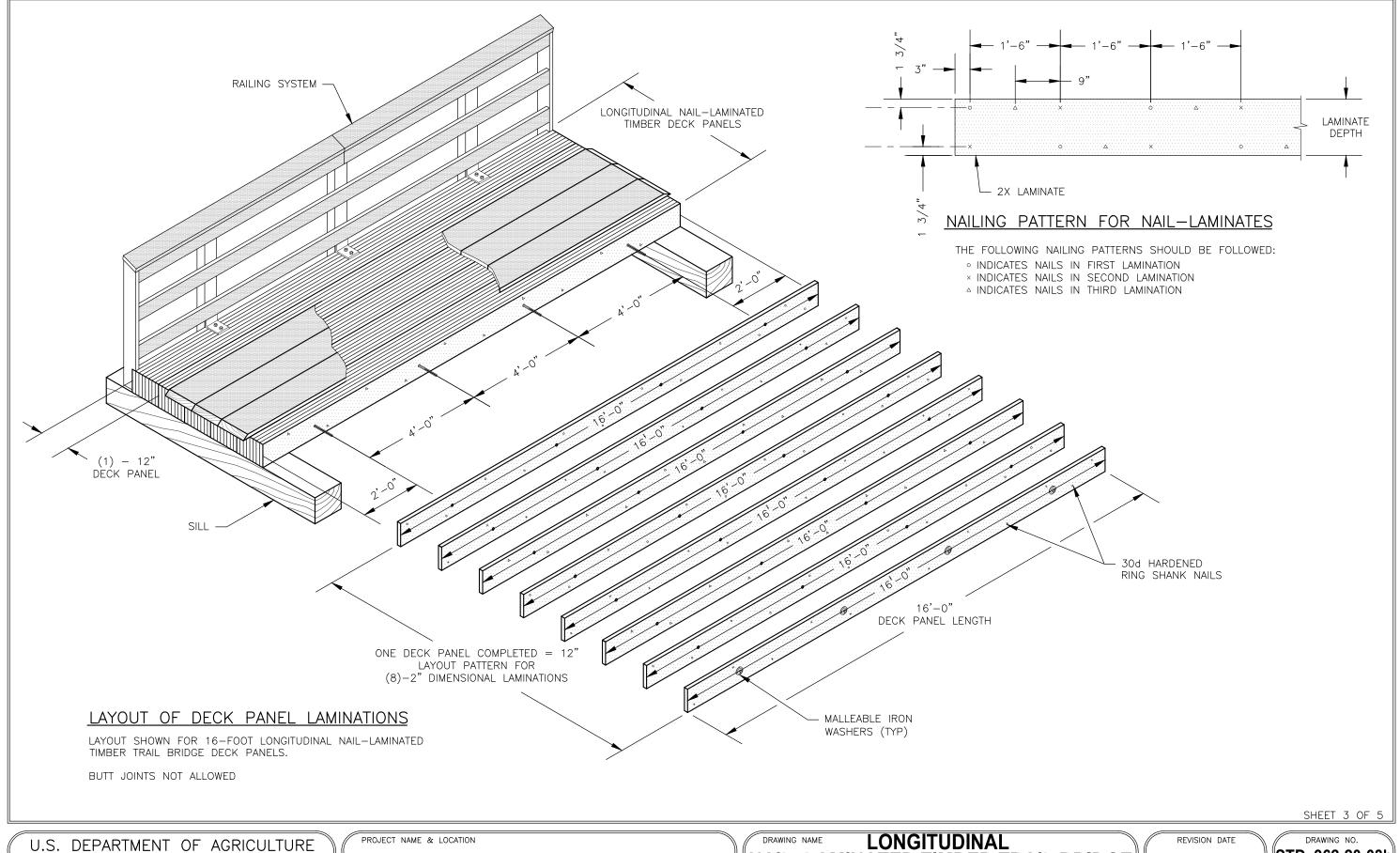
STANDARD TRAIL PLAN

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OF

962 - SAWN TIMBER TRAIL BRIDGE



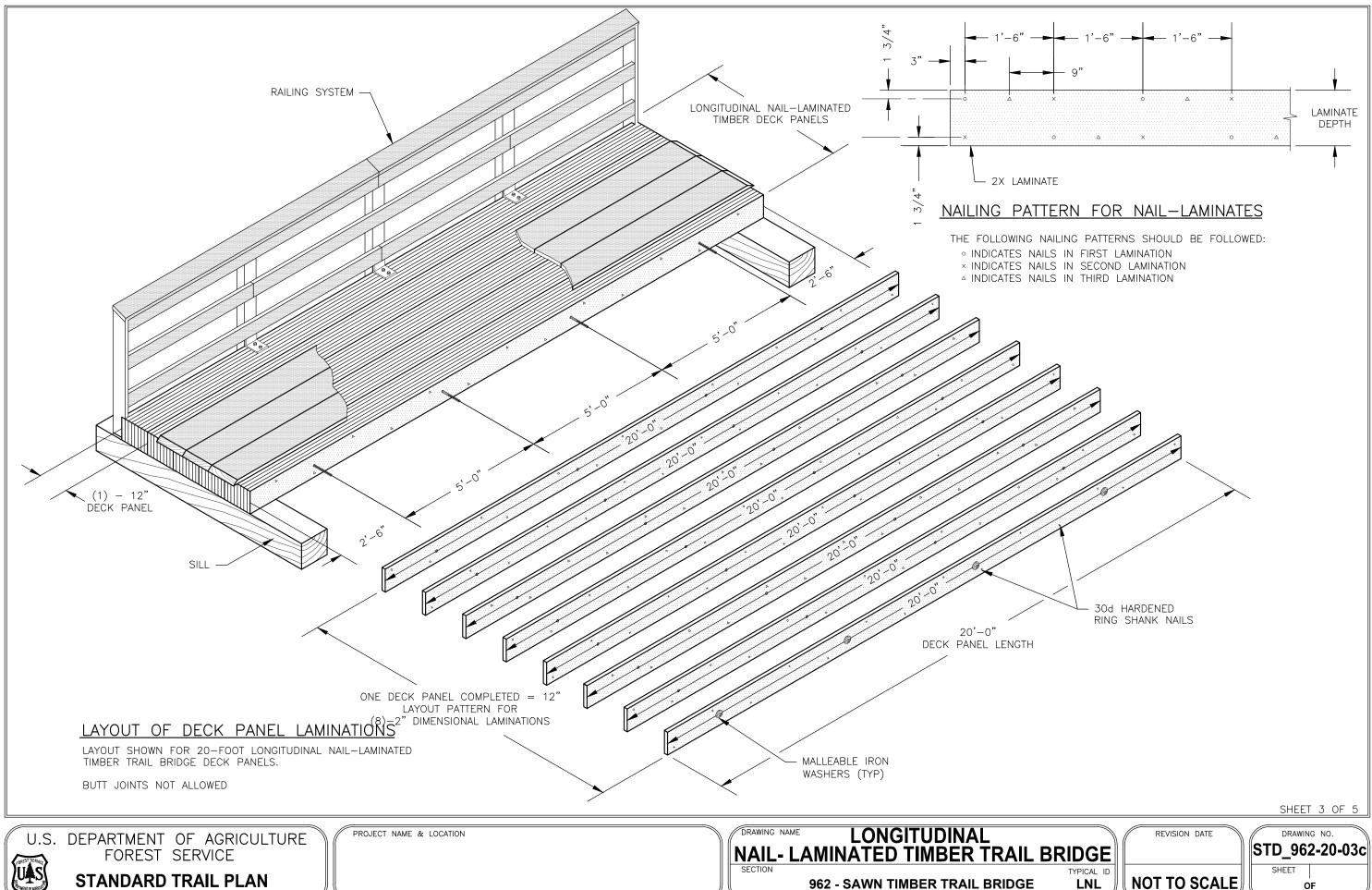
U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE STANDARD TRAIL PLAN

DRAWING NAME LONGITUDINAL NAIL- LAMINATED TIMBER TRAIL BRIDGE

962 - SAWN TIMBER TRAIL BRIDGE

NOT TO SCALE LNL

STD_962-20-03b OF

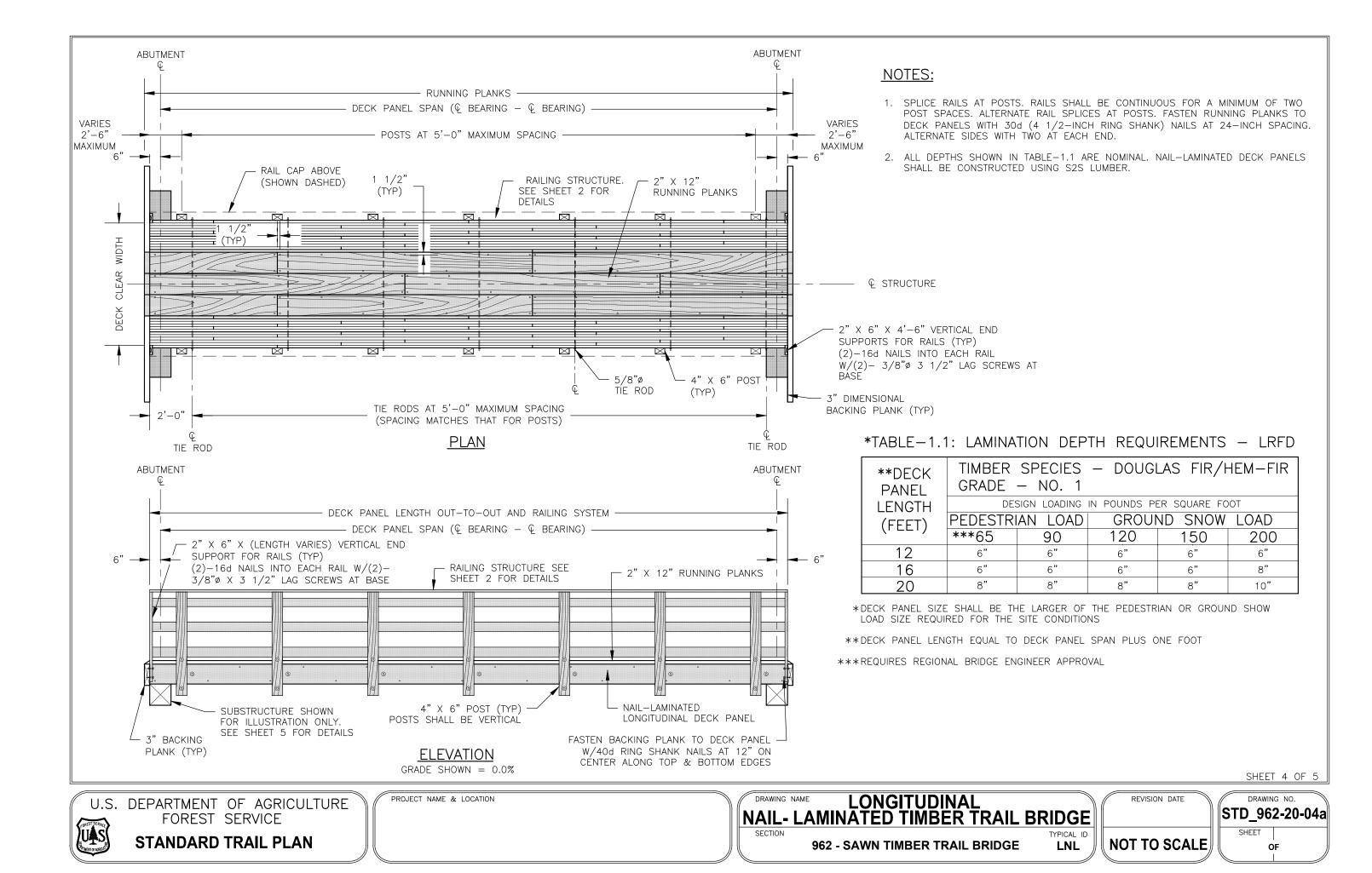


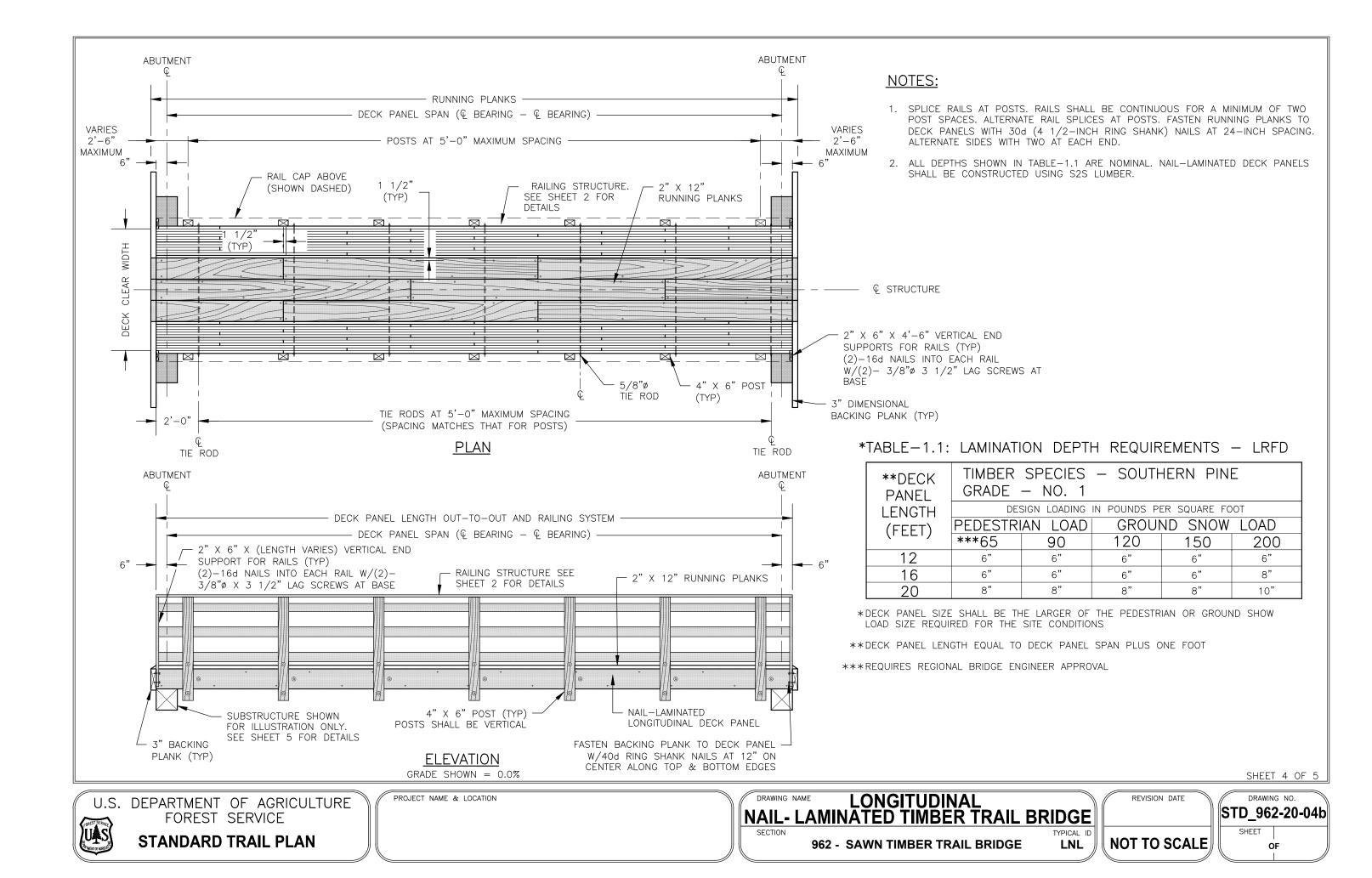
STANDARD TRAIL PLAN

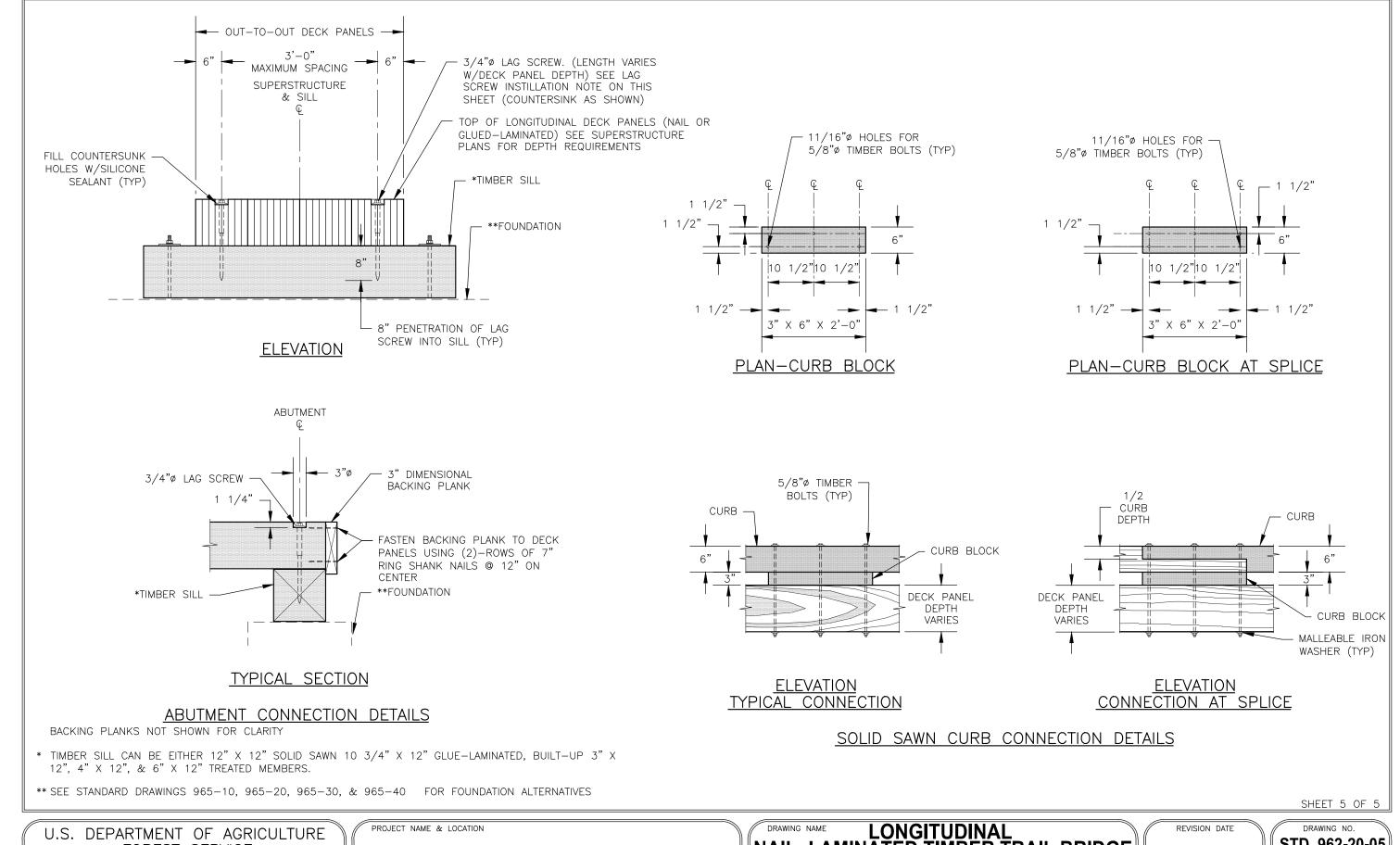
962 - SAWN TIMBER TRAIL BRIDGE

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OF







FOREST SERVICE

STANDARD TRAIL PLAN

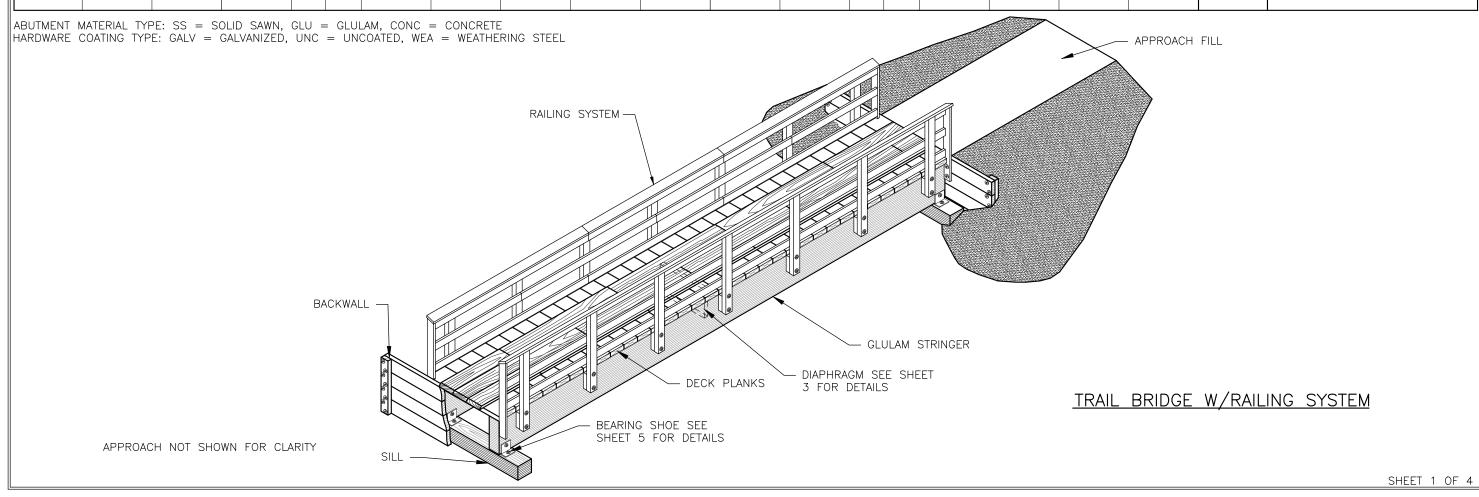
DRAWING NAME LONGITUDINAL NAIL- LAMINATED TIMBER TRAIL BRIDGE LNL

962 - SAWN TIMBER TRAIL BRIDGE

NOT TO SCALE



			BRIDGE LENGTH OUT-TO-OUT						STRIN	IGERS			DECK				BACK	BACKWALL		
TRUCTURE NUMBER	TRAIL NO.	BRIDGE LOCATION OU		STRINGER SPAN (Q-Q BRNG	BRIDGE CLEAR WIDTH	PEDESTRIAN LOAD	GROUND SNOW LOAD	COMBINATION SYMBOL	SPECIES	MATERIAL SIZE	TREATMENT	SPECIES	SIZE	TREATMENT	TYPE	SPECIES	SIZE	WIDTH	HEIGHT	TREATMEN
NOT. A	DDLICADLE																			
= NOT A	PPLICABLE																			
		RAILING SYSTEM/CURB RUNNING PLANK				SILL						APPROACHES	;		HARDWARE					
RUCTURE IUMBER	SPECIES	TYPE	HEIGHT	TREATMENT YES NO	SPECIES	SIZE	WIDTH	TREATMENT TYPE	MATERIAL TYPE	SIZE	TREATMENT	LENGTH NEAR FAR	WIDTH	MATERIAL TYPE	MATERIAL DEPTH	GEO- SYNTHETIC TYPE	COATING		COMMENTS	









963 - GLULAM TRAIL BRIDGE

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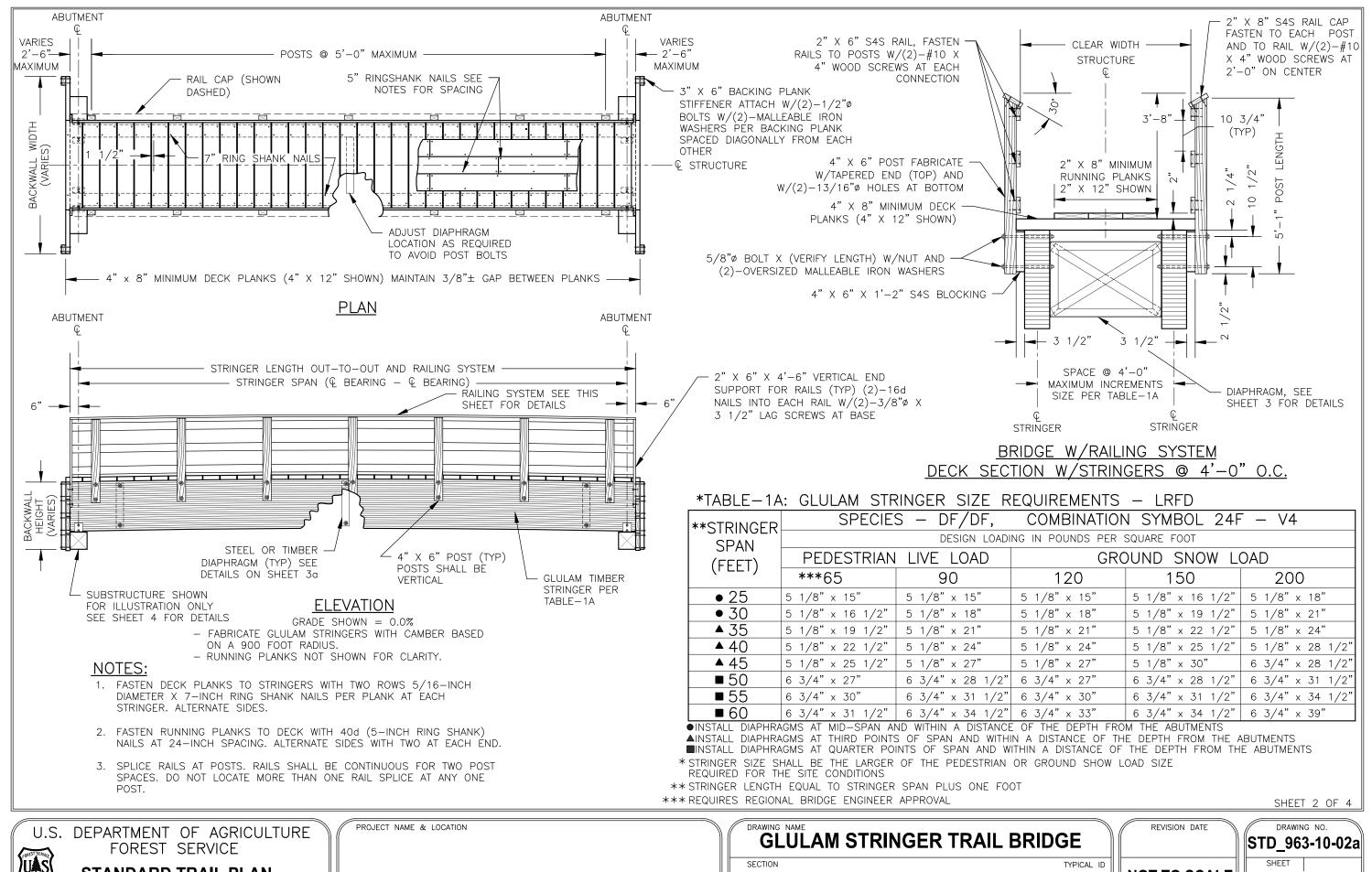
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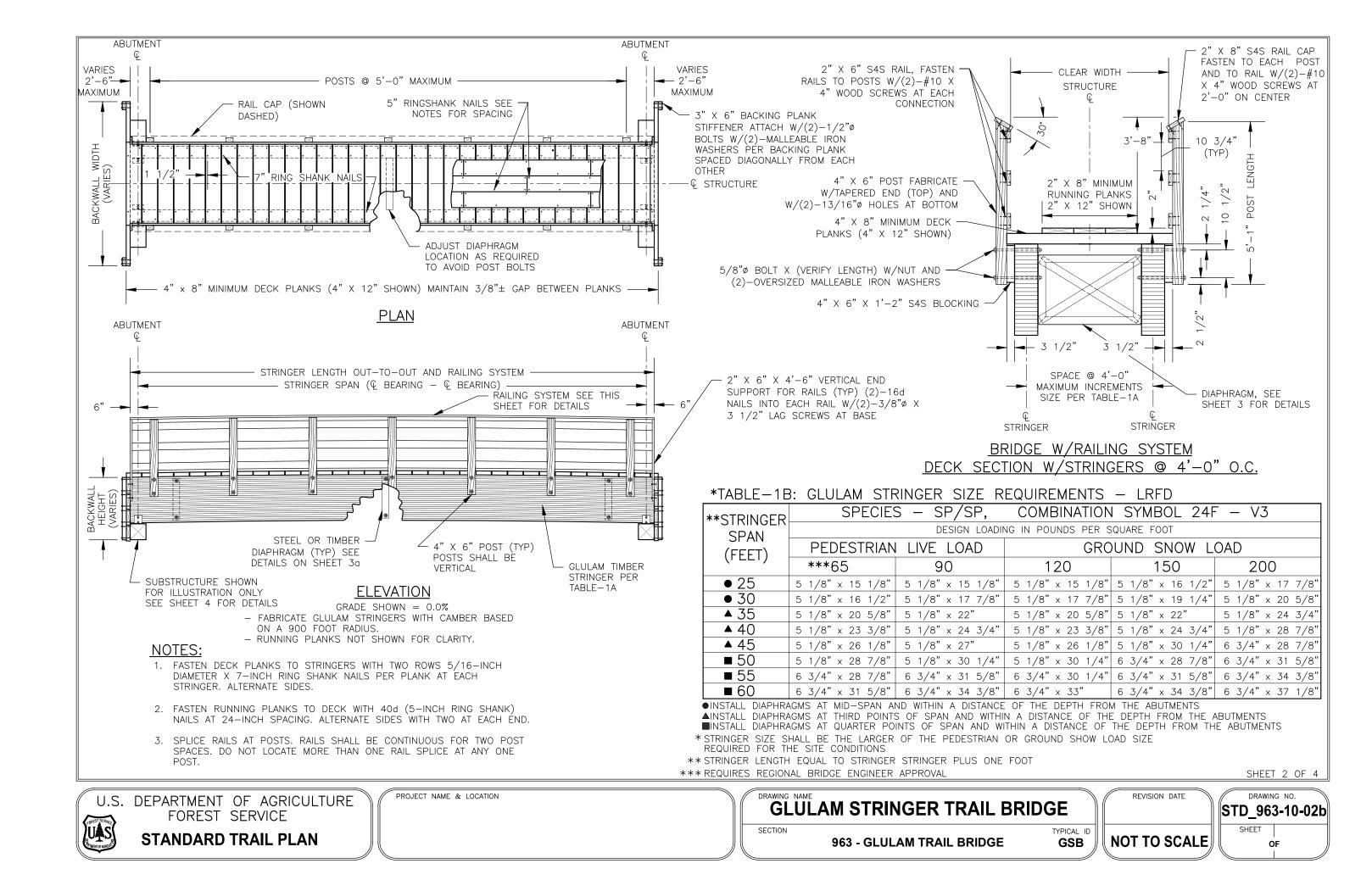


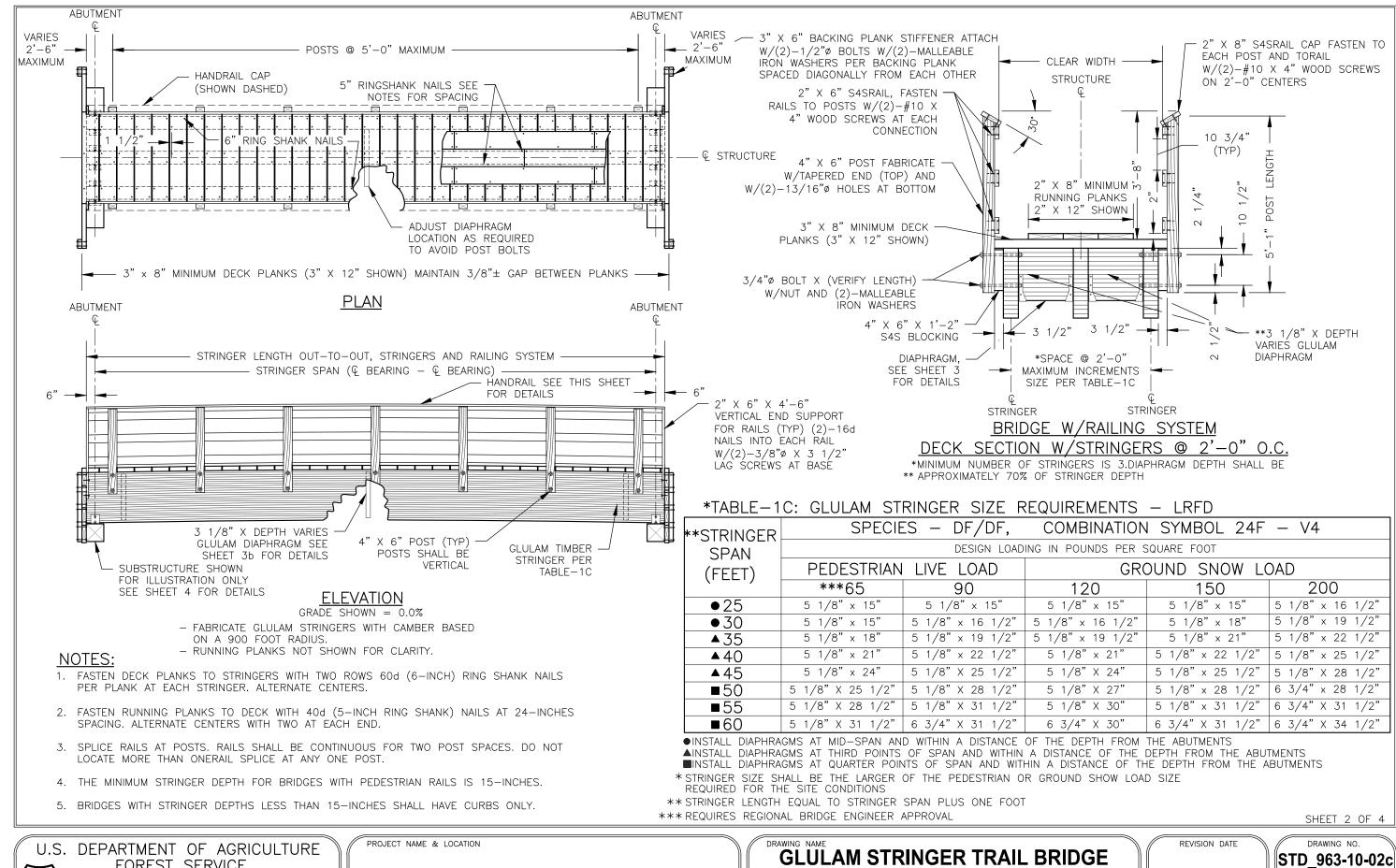
STANDARD TRAIL PLAN

963 - GLULAM TRAIL BRIDGE

NOT TO SCALE GSB

OF





FOREST SERVICE

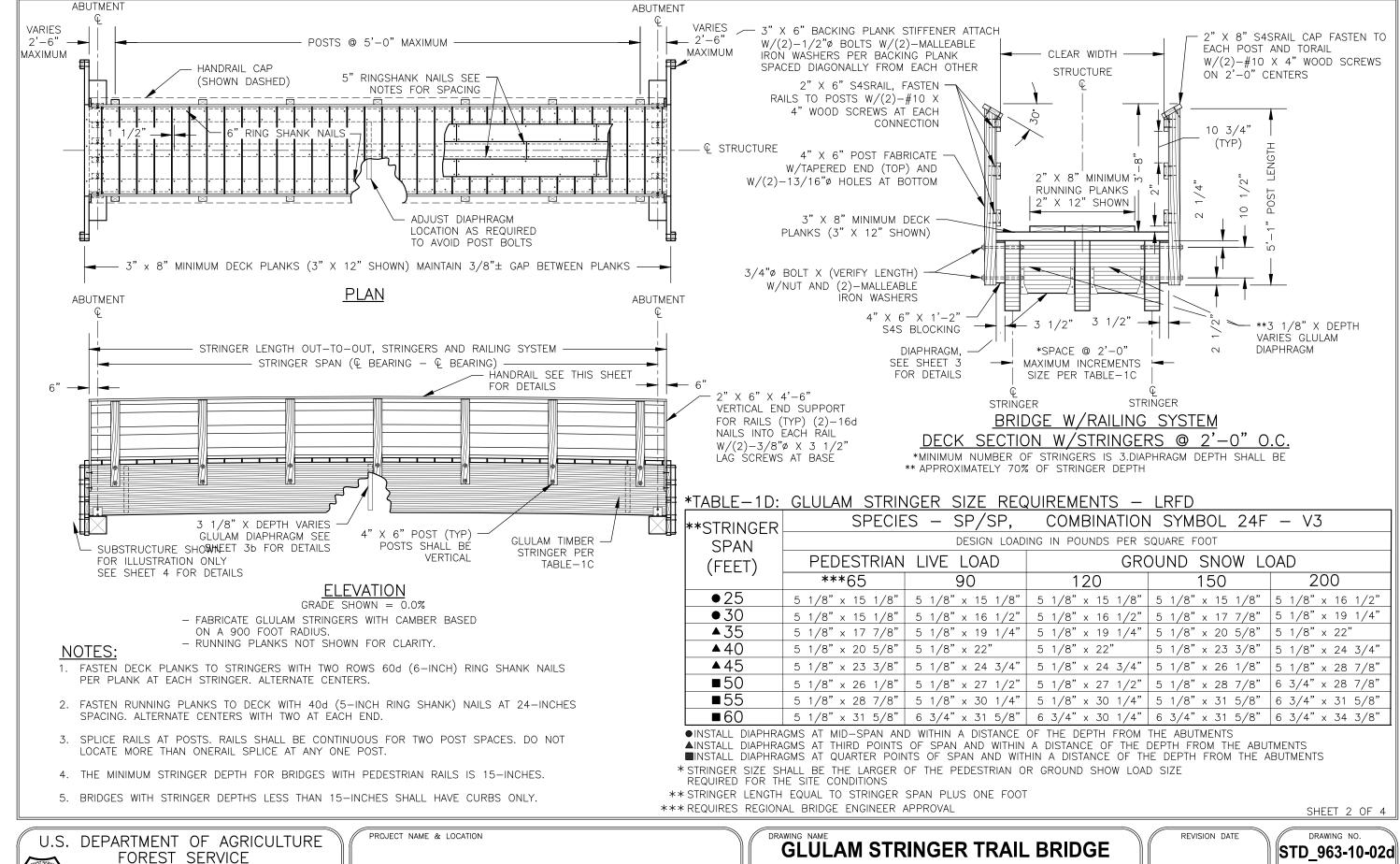
STANDARD TRAIL PLAN

SECTION

963 - GLULAM TRAIL BRIDGE

TYPICAL ID **NOT TO SCALE GSB**

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STANDARD TRAIL PLAN

SECTION

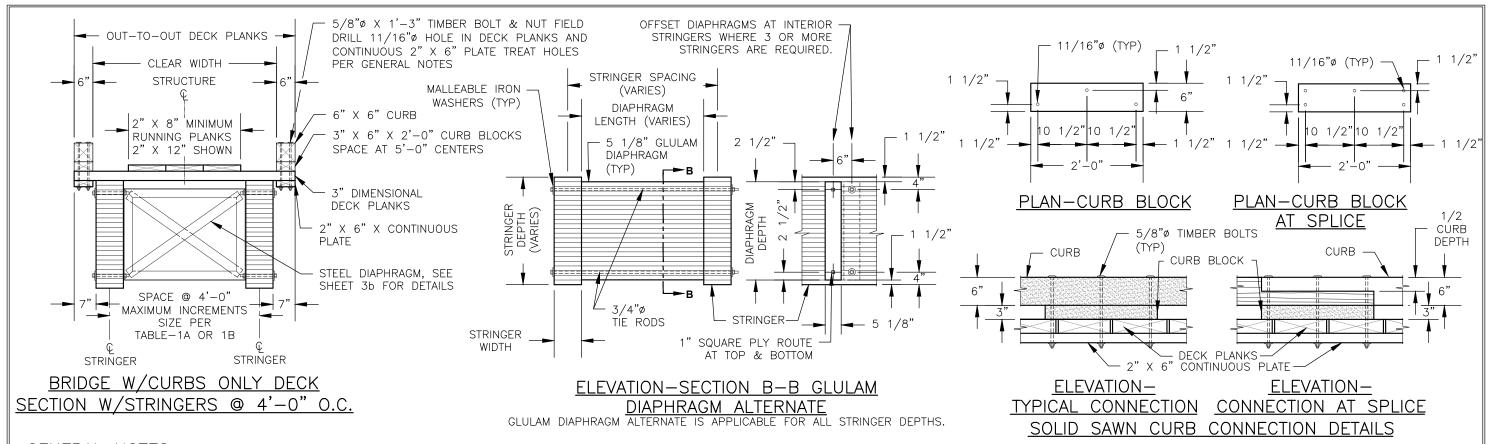
963 - GLULAM TRAIL BRIDGE

NOT TO SCALE

TYPICAL ID

GSB

SHEET OF



<u>SPECIFICATIONS:</u> MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

TIMBER & LUMBER: SOLID SAWN TIMBER MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF THE GRADING RULES AGENCY FOR THE SPECIES, TYPE, AND GRADE SPECIFIED BELOW. GLULAM MEMBERS SHALL CONFORM TO THE AMERICAN NATIONAL STANDARD, STANDARD SPECIFICATIONS FOR STRUCTURAL GLUED LAMINATED TIMBER OF SOFTWOOD SPECIES (ANSI 117) FOR THE COMBINATION, SPECIES, USE, AND APPEARANCE SPECIFIED BELOW.

GLULAM STRINGERS

- COMBINATION SYMBOL 24F-V4, SPECIES DF/DF DRY CONDITION USE AND INDUSTRIAL APPEARANCE CURB MEMBERS, SILLS, AND BACKING PLANKS
- COASTAL REGION DOUGLAS FIR LARCH ROUGH SAWN NO.1 GRADE, GRADING RULES AGENCY WWPA, WCLIB RUNNING PLANKS
- COASTAL REGION DOUGLAS FIR LARCH ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY WWPA, WCLIB
 RAILS & POSTS (SEE PROJECT CRITERIA)
 UNTREATED
 - REDWOOD, S4S, NO.1 GRADE GRADING RULES AGENCY RIS
- WESTERN RED CEDAR, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY WWPA, WCLIB TREATED
- HEM FIR/DOUGLAS FIR, S4S, NO.1 GRADE GRADING RULES AGENCY WWPA, WCLIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

GLULAM STRINGER

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OD WOOD. ALL ABRASIONS AND FIELD CUTS —APPROVED BY THE C.O.R.— 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 FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

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 BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING 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.

SHEET 3 OF 4

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

GLULAM STRINGER TRAIL BRIDGE

SECTION

963 - GLULAM TRAIL BRIDGE

TYPICAL ID NOT TO

NOT TO SCALE

DRAWING NO.

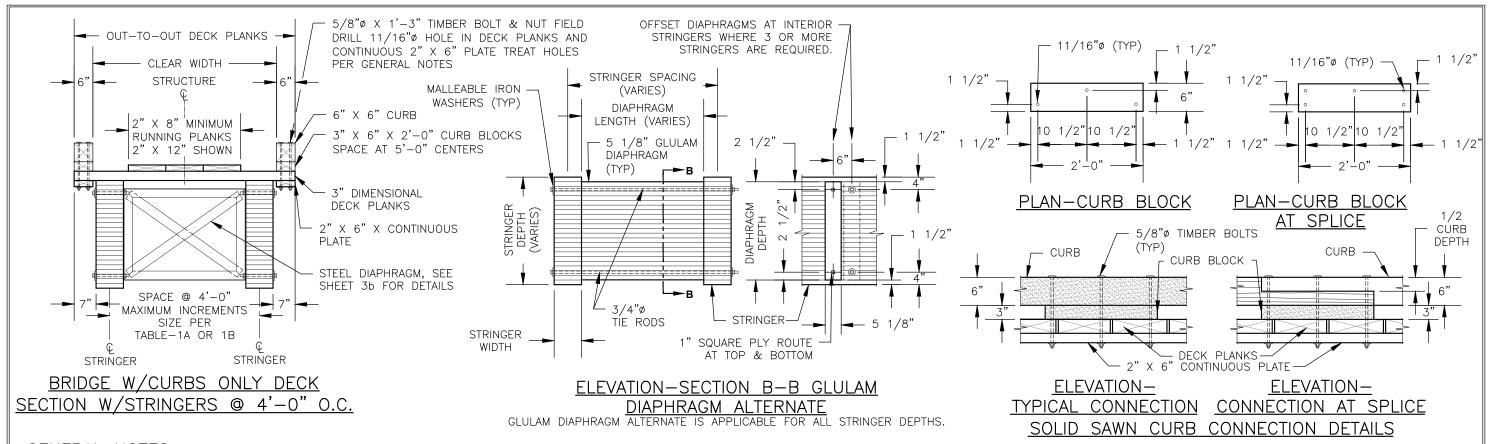
STD_963-10-03a

SHEET |

OF

GLULAM STR

TION



<u>SPECIFICATIONS:</u> MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

TIMBER & LUMBER: SOLID SAWN TIMBER MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF THE GRADING RULES AGENCY FOR THE SPECIES, TYPE, AND GRADE SPECIFIED BELOW. GLULAM MEMBERS SHALL CONFORM TO THE AMERICAN NATIONAL STANDARD, STANDARD SPECIFICATIONS FOR STRUCTURAL GLUED LAMINATED TIMBER OF SOFTWOOD SPECIES (ANSI 117) FOR THE COMBINATION, SPECIES, USE, AND APPEARANCE SPECIFIED BELOW.

GLULAM STRINGERS

- COMBINATION SYMBOL 24F-V3, SPECIES SP/SP DRY CONDITION USE AND INDUSTRIAL APPEARANCE CURB MEMBERS, SILLS, AND BACKING PLANKS
- SOUTHERN PINE ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY SPIB

RUNNING PLANKS

- SOUTHERN PINE ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY - SPIB

RAILS & POSTS (SEE PROJECT CRITERIA)

UNTREATED

- BALDCYPRESS, S4S, NO.1 GRADE GRADING RULES AGENCY SPIB
- WHITE OAK, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY NELMA

TREATED

- SOUTHERN PINE, S4S, NO.2 GRADE GRADING RULES AGENCY - SPIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

GLULAM STRINGER

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OD WOOD. ALL ABRASIONS AND FIELD CUTS —APPROVED BY THE C.O.R.— 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 FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

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 BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING 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.

SHEET 3 OF 4

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

GLULAM STRINGER TRAIL BRIDGE

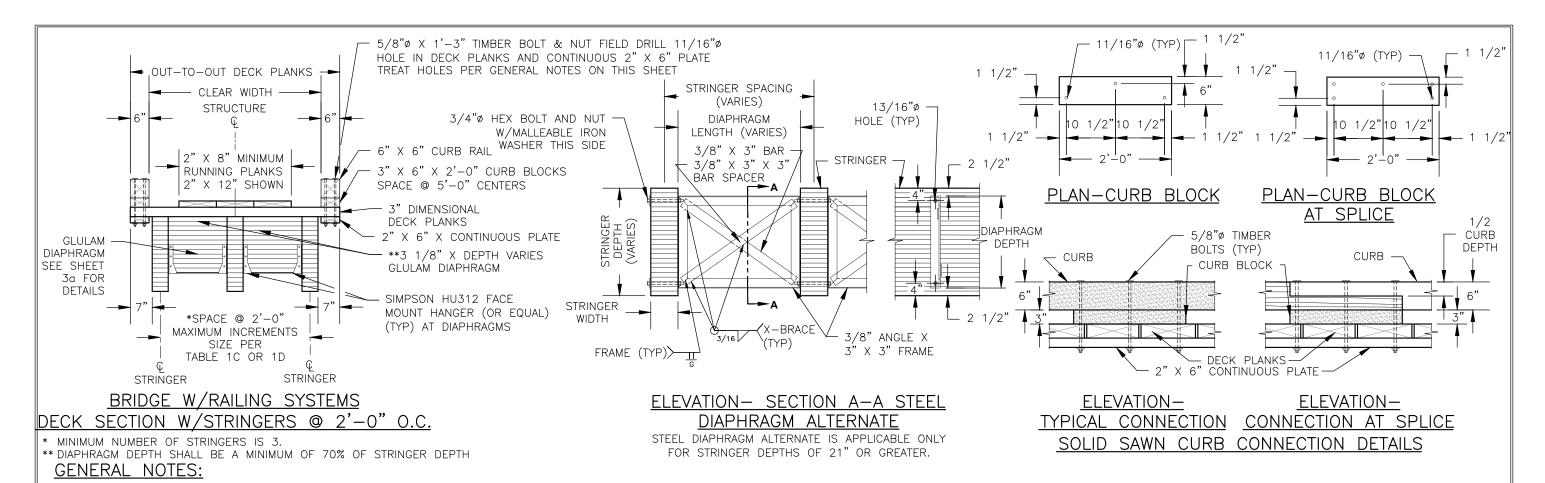
SECTION

963 - GLULAM TRAIL BRIDGE

TYPICAL ID

NOT TO SCALE





SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

TIMBER & LUMBER: SOLID SAWN TIMBER MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF THE GRADING RULES AGENCY FOR THE SPECIES, TYPE, AND GRADE SPECIFIED BELOW. GLULAM MEMBERS SHALL CONFORM TO THE AMERICAN NATIONAL STANDARD, STANDARD SPECIFICATIONS FOR STRUCTURAL GLUED LAMINATED TIMBER OF SOFTWOOD SPECIES (ANSI 117) FOR THE COMBINATION, SPECIES, USE, AND APPEARANCE SPECIFIED BELOW.

GLULAM STRINGERS

- COMBINATION SYMBOL 24F-V4, SPECIES DF/DF DRY CONDITION USE AND INDUSTRIAL APPEARANCE CURB MEMBERS, SILLS, AND BACKING PLANKS
- COASTAL REGION DOUGLAS FIR LARCH ROUGH SAWN NO.1 GRADE, GRADING RULES AGENCY WWPA, WCLIB RUNNING PLANKS
- COASTAL REGION DOUGLAS FIR LARCH ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY WWPA, WCLIB RAILS & POSTS (SEE PROJECT CRITERIA)
- UNTREATED
- REDWOOD, S4S, NO.1 GRADE GRADING RULES AGENCY RIS
- WESTERN RED CEDAR, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY WWPA, WCLIB TREATED
- HEM FIR/DOUGLAS FIR, S4S. NO.1 GRADE GRADING RULES AGENCY WWPA. WCLIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

GLULAM STRINGER

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND EXPOSED (UC3B)
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- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OD WOOD. ALL ABRASIONS AND FIELD CUTS -APPROVED BY THE C.O.R.- 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 FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

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.

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SHEET 3 OF 4

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

GLULAM STRINGER TRAIL BRIDGE

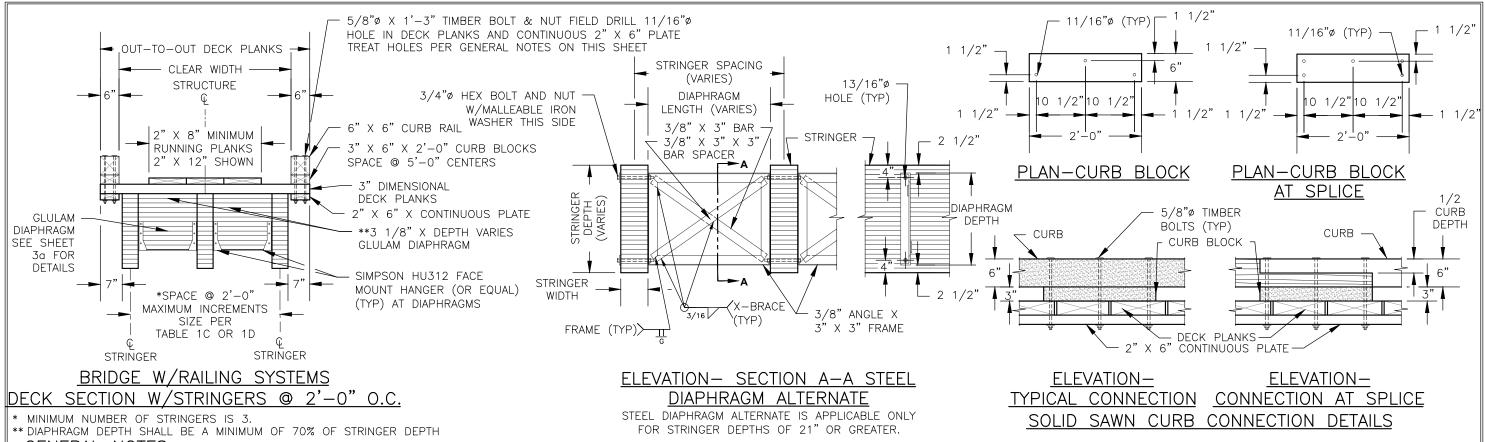
SECTION

963 - GLULAM TRAIL BRIDGE

TYPICAL ID **GSB**

REVISION DATE NOT TO SCALE

DRAWING NO STD_963-10-03c SHEET OF



GENERAL NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

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GLULAM STRINGERS

- COMBINATION SYMBOL 24F-V3, SPECIES SP/SP DRY CONDITION USE AND INDUSTRIAL APPEARANCE CURB MEMBERS, SILLS, AND BACKING PLANKS
- SOUTHERN PINE ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY SPIB

RUNNING PLANKS

SOUTHERN PINE ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY - SPIB

RAILS & POSTS (SEE PROJECT CRITERIA)

UNTREATED

- BALDCYPRESS, S4S, NO.1 GRADE GRADING RULES AGENCY SPIB
- WHITE OAK, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY NELMA

TREATED

- SOUTHERN PINE, S4S, NO.2 GRADE GRADING RULES AGENCY - SPIB

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GLULAM STRINGER

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- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

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SILLS, BACKING PLANKS, CRIBS, TIMBER WALLS, IF TREATED

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- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
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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 BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING 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.

SHFFT 3 OF 4

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

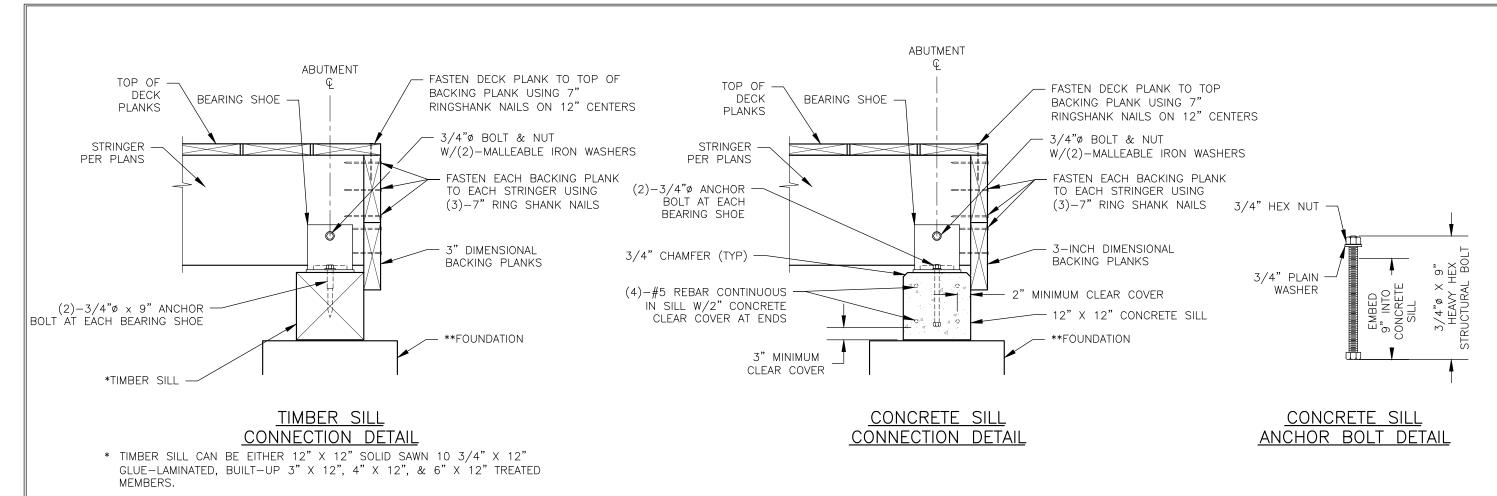
GLULAM STRINGER TRAIL BRIDGE

SECTION

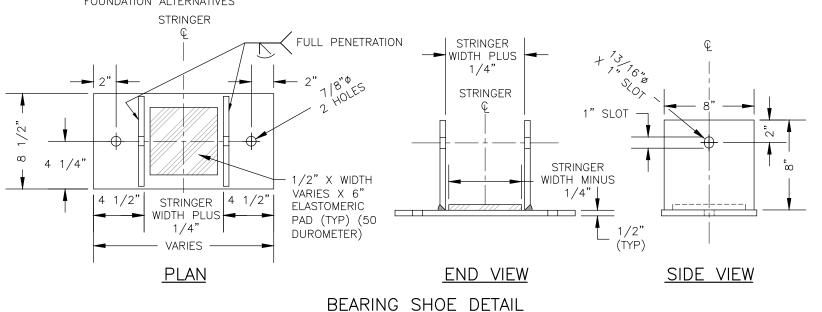
963 - GLULAM TRAIL BRIDGE

REVISION DATE

DRAWING NO STD_963-10-03d SHEET TYPICAL ID **NOT TO SCALE GSB** OF



** SEE STANDARD DRAWINGS 965-10, 965-20, 965-30, & 965-40 FOR FOUNDATION ALTERNATIVES



NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

CONCRETE: USE STRUCTURAL CONCRETE WITH 7 SACK MINIMUM MIX APPROVED BY THE C.O., CONCRETE SHALL RECEIVE A TOWELED SURFACE FINISH. CONCRETE SHALL HAVE 4%-6% ENTRAINED AIR. MAXIMUM SIZE AGGREGATE SHALL BE 3/4-INCH AND CONCRETE SLUMP SHALL NOT EXCEED 4-INCHES.

REINFORCING STEEL: PROVIDE REINFORCING STEEL THAT CONFORMS TO ASTM A615 (AASHTO M31). GRADE 40 OR 60. PROVIDE 2-INCH CLEAR CONCRETE COVER FOR ALL REBAR. UNLÉSS NOTED OTHERWISE ON THE PLANS.

HARDWARE AND STRUCTURAL STEEL: SEE SUPERSTRUCTURE DRAWINGS FOR PROJECT DESIGN CRITERIA AND GENERAL NOTES.

TREATED TIMBER & LUMBER: REFER TO THE GENERAL NOTES ON THE SUBSTRUCTURE DRAWINGS FOR TREATED TIMBER & LUMBER SPECIFICATIONS AND FIELD TREATING OF WOOD

LAG SCREW INSTALLATION: PRE-BORE LAG SCREW HOLES USING TWO DIAMETERS, ONE FOR THE SHANK AND ONE FOR THE THREADS. THE LEAD HOLE FOR THE SHANK IS TO BE 1/16-INCH 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 PERCENT 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 SCREWS WITH A HAMMER.

GSB

SHFFT 4 OF 4



PROJECT NAME & LOCATION

MATERIAL = 1/2" STEEL PLATE A36



SECTION

963 - GLULAM TRAIL BRIDGE

TYPICAL ID

REVISION DATE DRAWING NO. STD_963-10-04 **NOT TO SCALE** X OF

									PAN	ELS			BACKWALL						
STRUCTURE NUMBER	TRAIL NO.	BRIDGE LOCATION	BRIDGE LENGTH OUT-TO-OUT	DECK PANEL SPAN Q-Q BRNG	BRIDGE CLEAR WIDTH	PEDESTRIAN LOAD	GROUND SNOW LOAD	IDENTIFICATION NUMBER	SPECIES	MATERIAL SIZE	TREATMENT	TYPE	SPECIES	SIZE	WIDTH	DEPTH	TREATMENT		
											_	-							

NA = NOT APPLICABLE

		RAILING SY	STEM/CURB			RUNNING	PLANK		SILL				APPROACHES)		HARDWARE	
STRUCTURE NUMBER	SPECIES	TYPE	HEIGHT	TREATMENT YES NO	SPECIES	SIZE	WIDTH	TREATMEN YES NO	SIZE	TREATMENT	LENGTH NEAR FAR	WIDTH	MATERIAL TYPE	MATERIAL DEPTH	GEO- SYNTHETIC TYPE	COATING	COMMENTS

ABUTMENT MATERIAL TYPE: SS = SOLID SAWN, GLU = GLULAM, CONC = CONCRETE
HARDWARE COATING TYPE: GALV = GALVANIZED, UNC = UNGOATED, WEA = WEATHERING STEEL

RAILING SYSTEM

RUNNING PLANKS

BACKWALL

TIE RODS, TYPICAL SEE
GENERAL NOTES FOR
TENSIONING REQUIREMENTS

TRAIL BRIDGE W/RAILING SYSTEM

TRAIL BRIDGE W/RAILING SYSTEM

SHEET 1 OF 4



PROJECT NAME & LOCATION

APPROACH NOT SHOWN FOR CLARITY

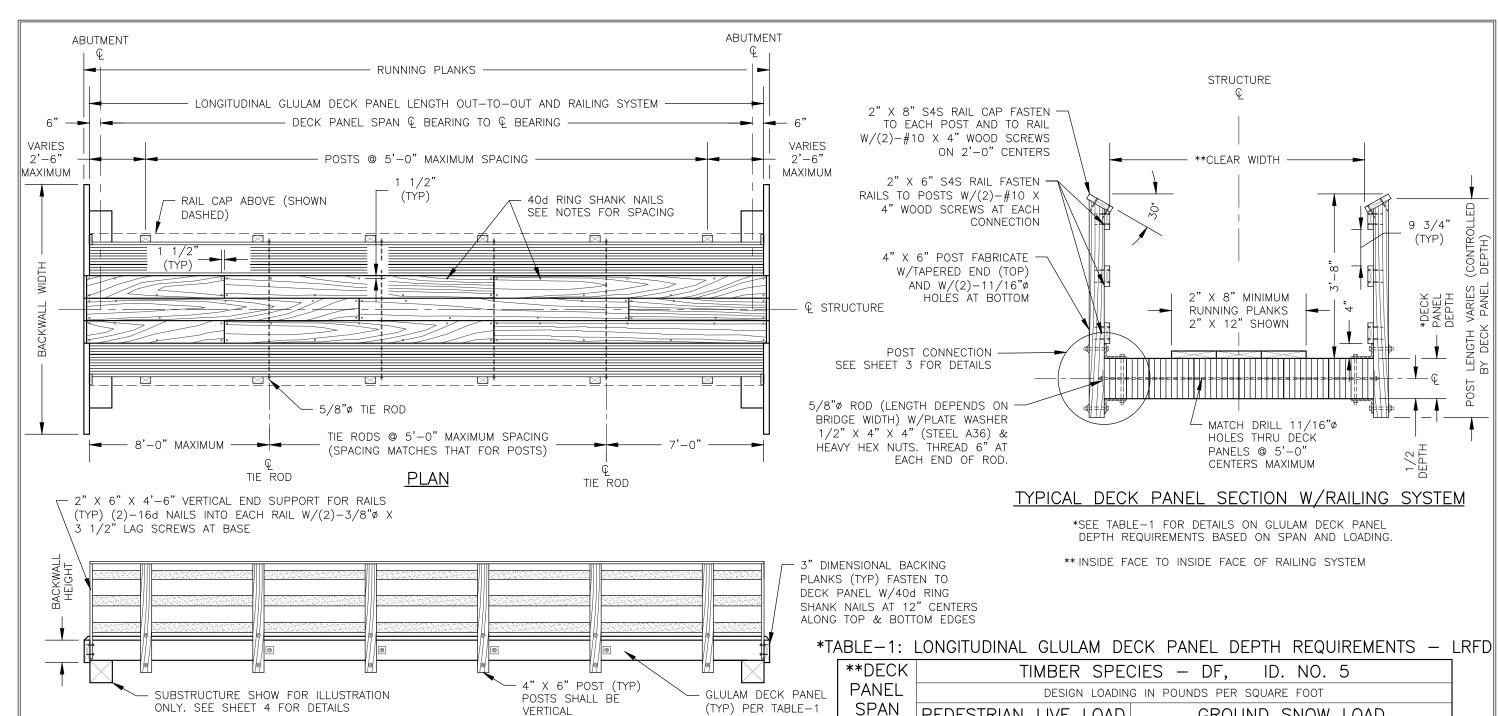


963 - GLULAM TRAIL BRIDGE

TYPICAL ID NOT TO SCALE

REVISION DATE





**DECK	TIMBER SPECIES — DF, ID. NO. 5											
PANEL DESIGN LOADING IN POUNDS PER SQUARE FOOT												
SPAN	PEDESTRIAN	LIVE LOAD	GROUND SNOW LOAD									
(FEET)	***65	90	120	150	200							
10	5 1/8"	5 1/8"	5 1/8"	5 1/8"	5 1/8"							
15	5 1/8"	5 1/8"	5 1/8"	6 3/4"	6 3/4"							
20	6 3/4"	6 3/4"	6 3/4"	8 3/4"	8 3/4"							
25	8 3/4"	8 3/4"	8 3/4"	8 3/4"	10 3/4"							
30	10 3/4"	10 3/4"	10 3/4"	10 3/4"	12 1/4"							

- *DECK PANEL SIZE SHALL BE THE LARGER OF THE PEDESTRIAN OR GROUND SHOW LOAD SIZE REQUIRED FOR THE SITE CONDITIONS
- ** DECK PANEL LENGTH EQUAL TO DECK PANEL SPAN PLUS ONE FOOT
- *** REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

SHEET 2 OF 4



POST SPACES, ALTERNATE RAIL SPLICES AT POSTS.

8 LAMINATIONS PER DECK PANEL.

NOTES:

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

ELEVATION

GRADE SHOWN = 0.0%

1. GLULAM LONGITUDINAL DECK PANELS SHALL BE FABRICATED WITH A MINIMUM OF

2. FASTEN RUNNING PLANKS TO DECK PANELS WITH 40d (5-INCH RING SHANK

NAILS) AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END.

3. SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR A MINIMUM OF TWO

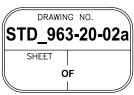
DRAWING NAME LONGITUDINAL GLULAM DECK PANEL TRAIL BRIDGE
SECTION

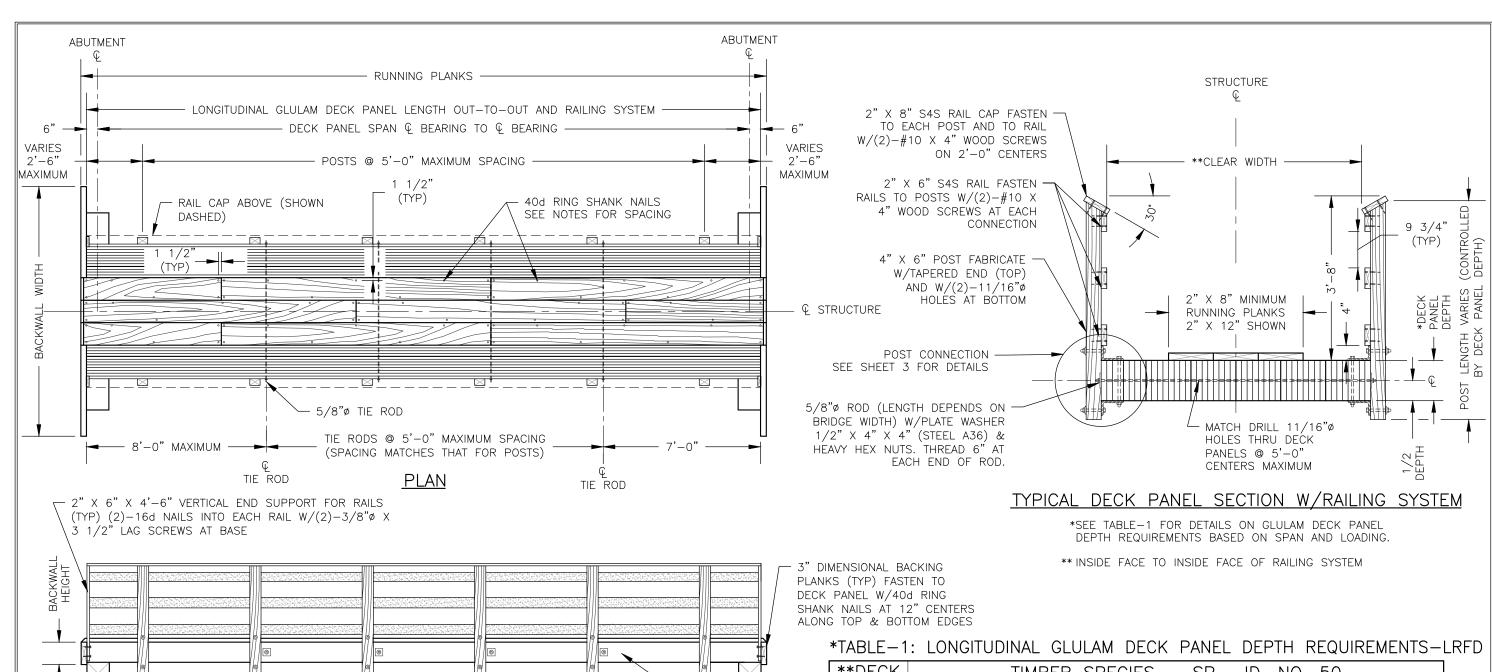
963 - GLULAM TRAIL BRIDGE

TYPICAL ID N

REVISION DATE

NOT TO SCALE





GLULAM DECK PANEL

(TYP) PER TABLE-1

**DECK)											
PANEL	DESIGN LOADING IN POUNDS PER SQUARE FOOT											
SPAN	PEDESTRIAN	LOAD										
(FEET)	***65	90	120	150	200							
10	5 1/8"	5 1/8"	5 1/8"	5 1/8"	5 1/8"							
15	5 1/8"	5 1/8"	5 1/8"	6 3/4"	6 3/4"							
20	6 3/4"	6 3/4"	6 3/4"	8 1/2"	8 1/2"							
25	8 1/2"	8 1/2"	8 1/2"	10 1/2"	10 1/2"							
30	10 1/2"	10 1/2"	10 1/2"	12"	12"							

- * DECK PANEL SIZE SHALL BE THE LARGER OF THE PEDESTRIAN OR GROUND SHOW LOAD SIZE REQUIRED FOR THE SITE CONDITIONS
- ** DECK PANEL LENGTH EQUAL TO DECK PANEL SPAN PLUS ONE FOOT
- *** REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

SHEET 2 OF 4

NOTES:

- 1. GLULAM LONGITUDINAL DECK PANELS SHALL BE FABRICATED WITH A MINIMUM OF 8 LAMINATIONS PER DECK PANEL.
- 2. FASTEN RUNNING PLANKS TO DECK PANELS WITH 40d (5-INCH RING SHANK NAILS) AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END.

SUBSTRUCTURE SHOW FOR ILLUSTRATION

ONLY. SEE SHEET 4 FOR DETAILS

3. SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR A MINIMUM OF TWO POST SPACES, ALTERNATE RAIL SPLICES AT POSTS.

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

DRAWING NAME LONGITUDINAL GLULAM DECK PANEL TRAIL BRIDGE

963 - GLULAM TRAIL BRIDGE

TYPICAL ID **NOT TO SCALE LGD**

REVISION DATE

DRAWING NO. STD_963-20-02b OF

PROJECT NAME & LOCATION

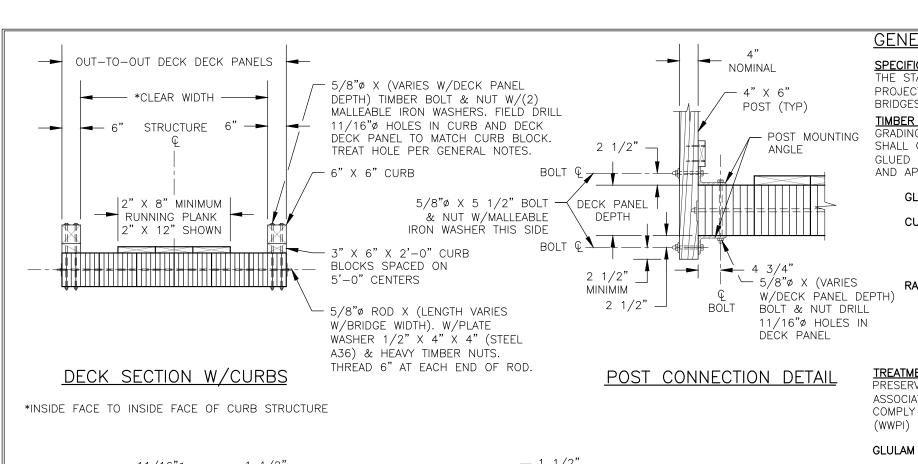
4" X 6" POST (TYP)

POSTS SHALL BE

VERTICAL

ELEVATION GRADE SHOWN = 0.0%

SECTION



1 1/2" 11/16"ø — 1 1/2" - 11/16"ø (TYP) (TYP) 1 1/2" 1 1/2" _ 6" 10 1/2"|10 1/2° 10 1/2" 10 1/2 4" 1 1/2" 1 1/2' PLAN-CURB BLOCK PLAN-CURB BLOCK AT SPLICE 1" (TYP) 5/8"ø TIMBER 1/2 BOLTS (TYP) 11/16"ø CURB CURB CÚRB CURB (TYP) DEPTH **BLOCK** 6 2 3/4" 2 1/2" POST MOUNTING ANGLE

> MATERIAL = STEEL ANGLE 6" X 4" X 3/8" A36 QUANTITY REQUIRED = (2)-MOUNTING ANGLES PER POST PER SIDE

GENERAL NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

TIMBER & LUMBER: SOLID SAWN TIMBER MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF THE GRADING RULES AGENCY FOR THE SPECIES, TYPE, AND GRADE SPECIFIED BELOW. GLULAM MEMBERS SHALL CONFORM TO THE AMERICAN NATIONAL STANDARD, STANDARD SPECIFICATIONS FOR STRUCTURAL GLUED LAMINATED TIMBER OF SOFTWOOD SPECIES (ANSI 117) FOR THE COMBINATION, SPECIES, USE, AND APPEARANCE SPECIFIED BELOW.

GLULAM DECK PANELS

- IDENTIFICATION NUMBER 5, SPECIES - DF WET CONDITION USE AND INDUSTRIAL APPEARANCE

CURB MEMBERS, SILLS, AND BACKING PLANKS RUNNING PLANKS

- COASTAL REGION DOUGLAS FIR-LARCH ROUGH SAWN NO.1 GRADE, GRADING RULES AGENCY - WWPA, WCLIB

- COASTAL REGION DOUGLAS FIR-LARCH ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY - WWPA, WCLIB

RAILS & POSTS (SEE PROJECT CRITERIA)

UNTREATED

- REDWOOD, S4S, NO.1 GRADE GRADING RULES AGENCY - RIS

- WESTERN RED CEDAR, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY - WWPA, WCLIB

- FIR/DOUGLAS FIR, S4S, NO.1 GRADE GRADING RULES AGENCY - WWPA. WCLIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

GLULAM DECK PANELS

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE(CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OD WOOD. ALL ABRASIONS AND FIELD CUTS -APPROVED BY THE C.O.R.- 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 FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS

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 BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING 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.

TIE ROD TENSIONING: TIE RODS SHALL BE TORQUED TO 100 FT/LBS UPON INITIAL INSTALLATION OF THE DECK PANEL PANELS. TIE RODS SHALL BE CHECKED FOR PROPER TENSION EACH YEAR FOR THE FOLLOWING 4 YEARS AFTER INSTALLATION. SUBSEQUENT TENSION CHECKS SHALL OCCUR DURING ROUTINE INSPECTIONS UNLESS OTHERWISE NOTED IN THE INSPECTION REPORT. SHFFT 3 OF 4

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

ELEVATION-

TYPICAL CONNECTION

DECK PANEL

DEPTH

SOLID SAWN CURB CONNECTION DETAILS

PROJECT NAME & LOCATION

ELEVATION-

CONNECTION AT SPLICE

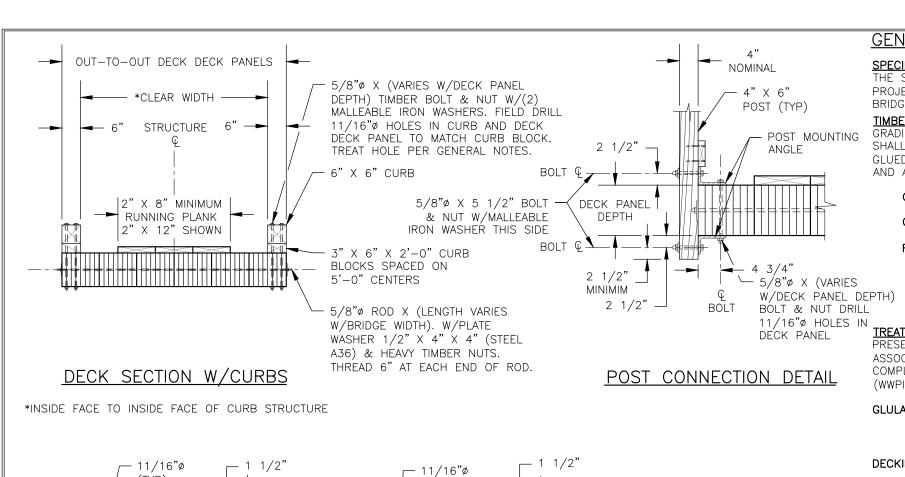
 $^{\scriptscriptstyle{\mathsf{E}}}\mathsf{LONGITUDINAL}$ GLULAM **DECK PANEL TRAIL BRIDGE**

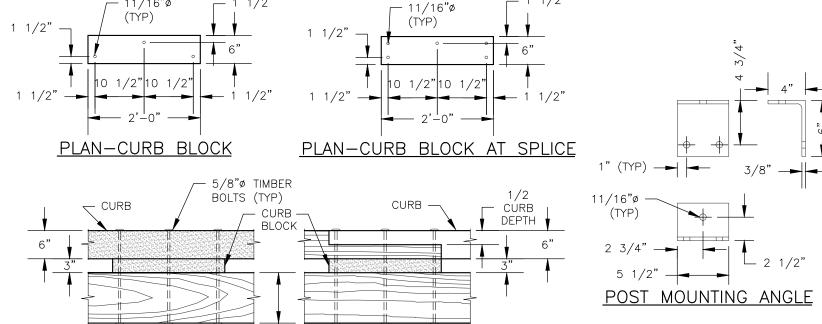
SECTION

963 - GLULAM TRAIL BRIDGE

REVISION DATE TYPICAL ID **NOT TO SCALE LGD**







MATERIAL = STEEL ANGLE 6" X 4" X 3/8" A36 QUANTITY REQUIRED = (2)-MOUNTING ANGLES PER POST PER SIDE

SECTION

GENERAL NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

TIMBER & LUMBER: SOLID SAWN TIMBER MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF THE GRADING RULES AGENCY FOR THE SPECIES, TYPE, AND GRADE SPECIFIED BELOW. GLULAM MEMBERS SHALL CONFORM TO THE AMERICAN NATIONAL STANDARD, STANDARD SPECIFICATIONS FOR STRUCTURAL GLUED LAMINATED TIMBER OF SOFTWOOD SPECIES (ANSI 117) FOR THE COMBINATION, SPECIES, USE, AND APPEARANCE SPECIFIED BELOW.

GLULAM DECK PANELS

IDENTIFICATION NUMBER 50, SPECIES - SP WET CONDITION USE AND INDUSTRIAL APPEARANCE.

CURB MEMBERS, SILLS, AND BACKING PLANKS RUNNING PLANKS - SOUTHERN PINE ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY - SPIB

RAILS & POSTS (SEE PROJECT CRITERIA) UNTREATED

- BALDCYPRESS, S4S, NO.1 GRADE GRADING RULES AGENCY - SPIB - WHITE OAK, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY - NELMA

TREATED

- SOUTHERN PINE, S4S, NO.2 GRADE GRADING RULES AGENCY - SPIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

GLULAM DECK PANELS

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (Cun) IN LIGHT OIL (TYPE C SOLVENT)

DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT-HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OD WOOD. ALL ABRASIONS AND FIELD CUTS -APPROVED BY THE C.O.R.- 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 FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

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 BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING 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.

TIE ROD TENSIONING: TIE RODS SHALL BE TORQUED TO 100 FT/LBS UPON INITIAL INSTALLATION OF THE DECK PANEL PANELS. TIE RODS SHALL BE CHECKED FOR PROPER TENSION EACH YEAR FOR THE FOLLOWING 4 YEARS AFTER INSTALLATION. SUBSEQUENT TENSION CHECKS SHALL OCCUR DURING ROUTINE INSPECTIONS UNLESS OTHERWISE NOTED IN THE INSPECTION REPORT.

SHFFT 3 OF 4

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE STANDARD TRAIL PLAN

ELEVATION-

TYPICAL CONNECTION

DECK PANEL

DEPTH

VARIES

SOLID SAWN CURB CONNECTION DETAILS

PROJECT NAME & LOCATION

ELEVATION-

CONNECTION AT SPLICE

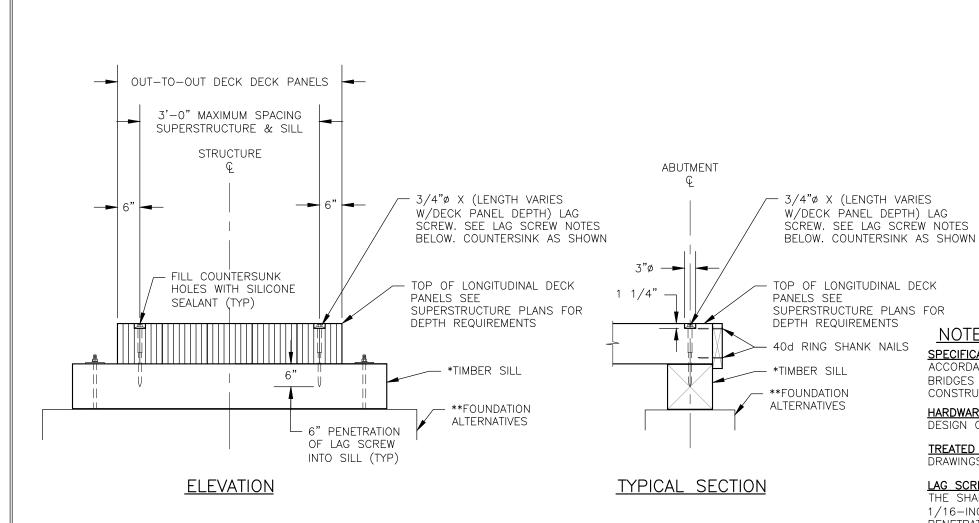
DRAWING NAME LONGITUDINAL GLULAM **DECK PANEL TRAIL BRIDGE**

963 - GLULAM TRAIL BRIDGE

TYPICAL ID **NOT TO SCALE LGD**

REVISION DATE

DRAWING NO STD_963-20-03b SHEET OF



ABUTMENT CONNECTION DETAILS

- *TIMBER SILL CAN BE EITHER 12" X 12" SOLID SAWN 10 3/4" X 12" GLUE-LAMINATED OR, BUILT-UP 3" X 12", 4" X 12", & 6" X 12" TREATED MEMBERS
- ** SEE STANDARD DRAWINGS 965-10. 965-20. 965-30. & 965-40 FOR FOUNDATION ALTERNATIVES

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

HARDWARE AND STRUCTURAL STEEL: SEE SUPERSTRUCTURE DRAWINGS FOR PROJECT DESIGN CRITERIA AND GENERAL NOTES.

TREATED TIMBER & LUMBER: REFER TO THE GENERAL NOTES ON THE SUBSTRUCTURE DRAWINGS FOR TREATED TIMBER & LUMBER SPECIFICATIONS AND FIELD TREATING OF WOOD.

LAG SCREW INSTALLATION: PRE-BORE LAG SCREW HOLES USING TWO DIAMETERS, ONE FOR THE SHANK AND ONE FOR THE THREADS. THE LEAD HOLE FOR THE SHANK IS TO BE 1/16-INCH LARGER THAN THE SHANK DIAMETER AND IS TO BE BORED TO THE DEPTH OF PÉNETRATION OF THE SHANK. THE LEAD HOLE FOR THE THREADED PORTION IS TO BE 70 PERCENT 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 SCREWS WITH A HAMMER.

SHEET 4 OF 4

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

DECK PANEL TRAIL BRIDGE SECTION

963 - GLULAM TRAIL BRIDGE

TYPICAL ID LGD

REVISION DATE **NOT TO SCALE**

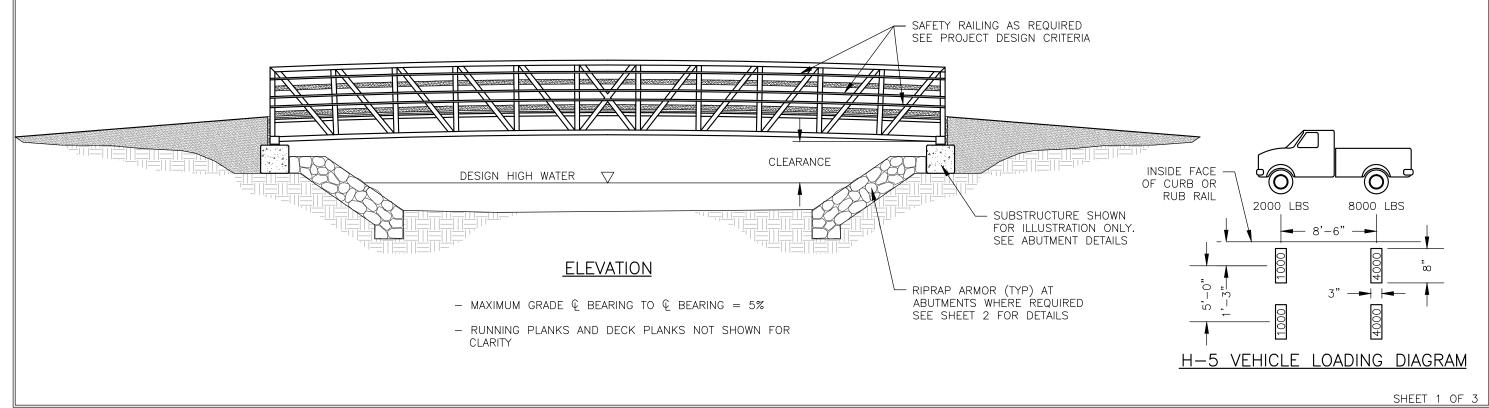
DRAWING NO. STD_963-20-04 OF

								HANDRAIL					END	POST		DECK	
STRUCTURE NUMBER	TRAIL NO.	BRIDGE LOCATION	BRIDGE LENGTH Q—Q BRNG	BRIDGE SPAN OUT-TO-OUT	BRIDGE CLEAR WIDTH	PEDESTRIAN LOAD	GROUND SNOW LOAD	ADA REQUIRED	HEIGHT	RUB RAIL SPECIES	RUB RAIL SIZE	TREATMENT	VERTICAL	DIAGONAL	SPECIES	SIZE	TREATMENT TYPE

DECK TYPE: ST = STEEL THROUGH TRUSS, FRP = FIBER REINFORCED POLYMER THROUGH TRUSS, CONC = CONCRETE VOIDED SLAB

	RUNNING PLANK			ABUTMENT				BACK	WALL					APPROACHES	5				
STRUCTURE NUMBER	SPECIES	SIZE	WIDTH	TREATMENT TYPE	TYPE	SIZE	TREATMENT YES NO	TYPE	SPECIES	SIZE	WIDTH	HEIGHT	TREATMENT	LENGTH NEAR FAR	WIDTH	MATERIAL TYPE	MATERIAL DEPTH	GEO- SYNTHETIC TYPE	COMMENTS
X																			
X																			
X																			
X																			
X																			
X																			

ABUTMENT MATERIAL TYPE: SS = SOLID SAWN, GLU = GLULAM, CONC = CONCRETE



U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

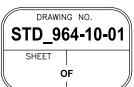
STANDARD TRAIL PLAN

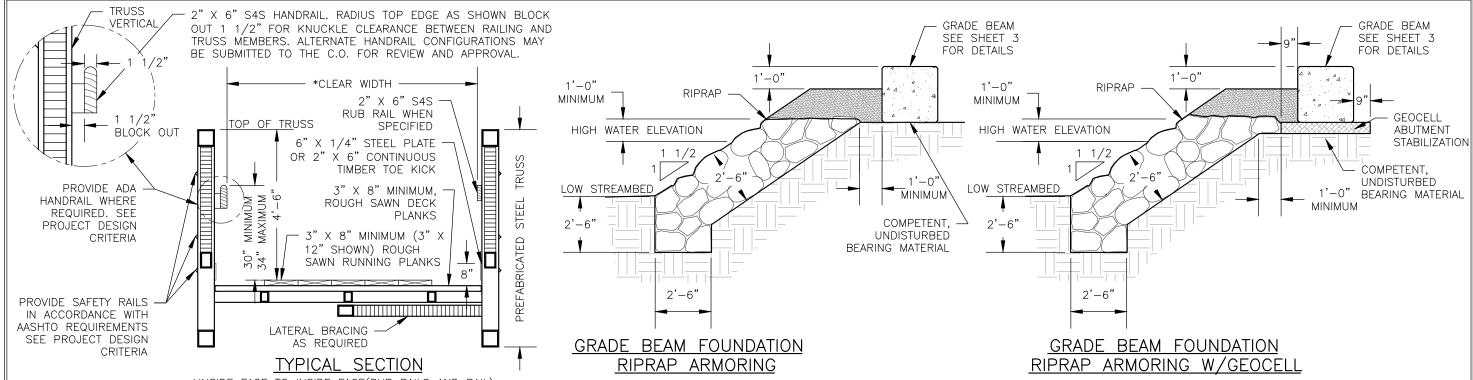
PROJECT NAME & LOCATION

PREFABRICATED STEEL TRAIL BRIDGE

964 - PREFABRICATED TRAIL BRIDGE PRE

NOT TO SCALE





GENERAL NOTES:

*INSIDE FACE TO INSIDE FACE(RUB RAILS AND RAIL)

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS.

PREFABRICATED STEEL BRIDGE SUPERSTRUCTURE: PREFABRICATED STEEL SUPERSTRUCTURE DESIGN MUST BE A TRUSS CONFIGURATION SIMILAR TO THAT SHOWN ON THE DRAWINGS. THE BRIDGE SHALL MAINTAIN THE CLEARANCES ABOVE HIGH WATER INDICATED ON THE BRIDGE ELEVATION. THE BRIDGE CROSS—SECTION SHALL BE DETERMINED BY THE CONTRACTOR BUT SHALL PROVIDE THE WIDTH AND RAILING DETAILS INDICATED ON THE BRIDGE TYPICAL SECTION. THE CONTRACTOR SHALL DETERMINE TRUSS HEIGHT AND THE LOCATION OF THE DECK WITH RESPECT TO THE TOP AND BOTTOM CHORDS (U FRAME VS. H FRAME). OVERHEAD LATERAL BRACING IS UNACCEPTABLE. ALL RELATED DETAILS SUCH AS PROFILE, ABUTMENT DETAILS, BEARINGS, AND TIMBER DECKING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FINALIZE AND CONSTRUCT.

THE PREFABRICATED STEEL BRIDGE SUPERSTRUCTURE, ABUTMENT FOUNDATIONS, AND ASSOCIATED DETAILS INCLUDING TIMBER COMPONENTS SHALL BE DESIGNED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL ENGINEER. THE COMPLETED DESIGN, DRAWINGS, AND SPECIFICATION PACKAGE SHALL BE SUBMITTED TO THE CONTRACTING OFFICER FOR REVIEW AND APPROVAL.

<u>DESIGN:</u> THE DESIGN OF ALL PREFABRICATED STEEL BRIDGE SUPERSTRUCTURE ELEMENTS SHALL COMPLY WITH THE AASHTO LRFD GUIDE SPECIFICATION FOR DESIGN OF PEDESTRIAN BRIDGES, CURRENT EDITION AND AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CURRENT EDITION. PROVIDE CAMBER FOR 100% OF THE FULL DEAD LOAD DEFLECTION PLUS 1% OF BRIDGE SPAN. SUBMIT SHOP DRAWINGS AND CALCULATIONS FOR APPROVAL AND MUST BE APPROVED BEFORE FABRICATION.

MATERIALS: USE STEEL SHAPES, PLATES AND BARS OF WEATHERING STEEL CONFORMING TO AASHTO M270, GRADE 50W (ASTM A588 OR ASTM A242) OR ASTM A847 FOR SQUARE AND RECTANGULAR TUBING. MINIMUM STEEL THICKNESS SHALL BE AS SPECIFIED IN THE GUIDE SPECIFICATIONS FOR DESIGN OF PEDESTRIAN BRIDGES. USE HIGH STRENGTH BOLTS CONFORMING TO AASHTO M164, (ASTM A325), TYP 3, UNLESS NOTED OTHERWISE. USE MALLEABLE IRON WASHERS AGAINST WOOD.

STEEL FABRICATION: THE PREFABRICATED STEEL BRIDGE SUPERSTRUCTURE SHALL BE FABRICATED BY AN AISC CERTIFIED PLANT — SIMPLE STEEL BRIDGES OR COMPLEX STEEL STRUCTURES. WHEN STRUCTURAL STEEL IS TO BE WELDED, THE WELDING PROCEDURE SHALL BE IN ACCORDANCE WITH AWS D1.5 AND SHALL BE SUITABLE FOR THE GRADE OF STEEL AND INTENDED USE OR SERVICE.

ERECTION PLAN: THE CONTRACTOR SHALL SUBMIT AN ERECTION PLAN FOR THE PREFABRICATED STEEL BRIDGE SUPERSTRUCTURE TO THE C.O. FOR APPROVAL 14 DAYS BEFORE ERECTION IS SCHEDULED. IF ALLOWED UNDER THE PROJECT DESIGN CRITERIA, TEMPORARY IN—STREAM SUPPORT BENTS MAY BE USED FOR THE ERECTION OF THE PREFABRICATED STEEL TRUSS BRIDGE. THE IN—STREAM BENTS SHALL BE CRIBBING, SILLS, CONCRETE BLOCKS OR OTHER SUPPORTS AND SHALL BE PLACED WITH MINIMAL DISTURBANCE WITHIN THE STREAM. ALL MATERIALS TO CONSTRUCT THE TEMPORARY IN—STREAM BENTS SHALL BE REMOVED. THE SUBMITTALS SHALL INCLUDE DRAWINGS INDICATING TEMPORARY BENT LOCATIONS AND DETAILS ALSO INCLUDED, THE CONTRACTOR SHALL INDICATE THE EQUIPMENT AND METHODS PROPOSED TO INSTALL AND REMOVE THE TEMPORARY BENTS AND ERECT THE NEW PREFABRICATED STEEL TRUSS SUPERSTRUCTURE.

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 AND BACKING PLANKS

- COASTAL REGION DOUGLAS FIR LARCH ROUGH SAWN NO.1 GRADE, GRADING RULES AGENCY WWPA, WCLIB RUNNING PLANKS AND RUB RAIL
- COASTAL REGION DOUGLAS FIR LARCH ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY WWPA, WCLIB RAILS. HANDRAILS UNTREATED
- REDWOOD, S4S, NO.2 GRADE GRADING RULES AGENCY RIS
- WESTERN RED CEDAR, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY WWPA, WCLIB TREATED
 - HEM FIR/DOUGLAS FIR, S4S, NO.1 GRADE GRADING RULES AGENCY WWPA, WCLIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

DECKING, RUNNING PLANKS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OF WOOD. ALL ABRASIONS AND FIELD CUTS — APPROVED BY THE C.O.R. — 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 FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

TIMBER FABRICATION: SUBMIT SHOP DRAWINGS FOR ALL TIMBER BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING 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.

SHEET 2 OF 3

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

PREFABRICATED STEEL TRAIL BRIDGE

SECTION

964 - PREFABRICATED TRAIL BRIDGE

PRE

NOT TO SCALE

REVISION DATE

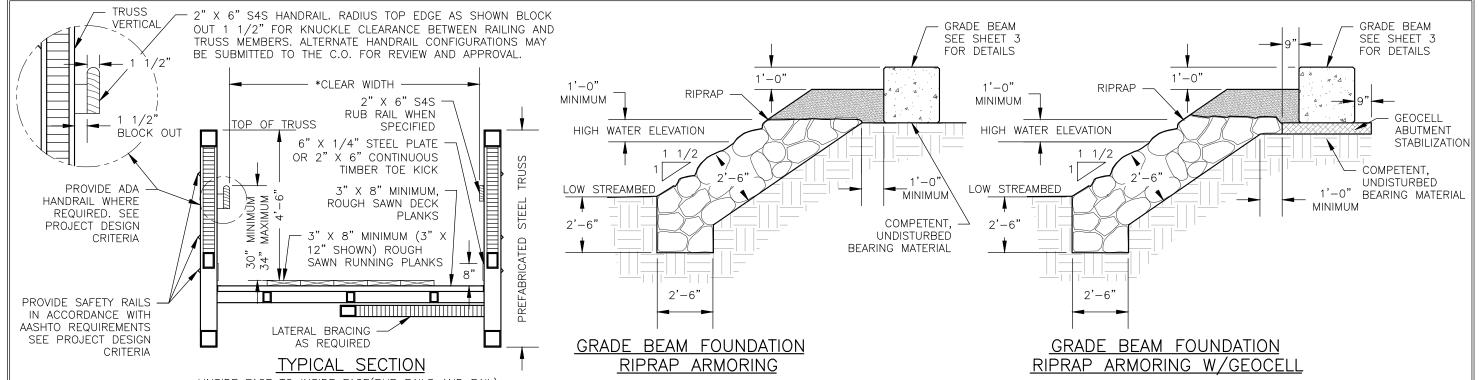
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STD_964-10-02a

SHEET |

OF

OTION



GENERAL NOTES:

*INSIDE FACE TO INSIDE FACE(RUB RAILS AND RAIL)

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS.

PREFABRICATED STEEL BRIDGE SUPERSTRUCTURE: PREFABRICATED STEEL SUPERSTRUCTURE DESIGN MUST BE A TRUSS CONFIGURATION SIMILAR TO THAT SHOWN ON THE DRAWINGS. THE BRIDGE SHALL MAINTAIN THE CLEARANCES ABOVE HIGH WATER INDICATED ON THE BRIDGE ELEVATION. THE BRIDGE CROSS-SECTION SHALL BE DETERMINED BY THE CONTRACTOR BUT SHALL PROVIDE THE WIDTH AND RAILING DETAILS INDICATED ON THE BRIDGE TYPICAL SECTION. THE CONTRACTOR SHALL DETERMINE TRUSS HEIGHT AND THE LOCATION OF THE DECK WITH RESPECT TO THE TOP AND BOTTOM CHORDS (U FRAME VS. H FRAME). OVERHEAD LATERAL BRACING IS UNACCEPTABLE. ALL RELATED DETAILS SUCH AS PROFILE, ABUTMENT DETAILS, BEARINGS, AND TIMBER DECKING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FINALIZE AND CONSTRUCT.

THE PREFABRICATED STEEL BRIDGE SUPERSTRUCTURE, ABUTMENT FOUNDATIONS, AND ASSOCIATED DETAILS INCLUDING TIMBER COMPONENTS SHALL BE DESIGNED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL ENGINEER. THE COMPLETED DESIGN, DRAWINGS, AND SPECIFICATION PACKAGE SHALL BE SUBMITTED TO THE CONTRACTING OFFICER FOR REVIEW AND APPROVAL.

DESIGN: THE DESIGN OF ALL PREFABRICATED STEEL BRIDGE SUPERSTRUCTURE ELEMENTS SHALL COMPLY WITH THE AASHTO LRFD GUIDE SPECIFICATION FOR DESIGN OF PEDESTRIAN BRIDGES, CURRENT EDITION AND AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. CURRENT EDITION. PROVIDE CAMBER FOR 100% OF THE FULL DEAD LOAD DEFLECTION PLUS 1% OF BRIDGE SPAN. SUBMIT SHOP DRAWINGS AND CALCULATIONS FOR APPROVAL AND MUST BE APPROVED BEFORE FABRICATION.

MATERIALS: USE STEEL SHAPES, PLATES AND BARS OF WEATHERING STEEL CONFORMING TO AASHTO M270, GRADE 50W (ASTM A588 OR ASTM A242) OR ASTM A847 FOR SQUARE AND RECTANGULAR TUBING. MINIMUM STEEL THICKNESS SHALL BE AS SPECIFIED IN THE GUIDE SPECIFICATIONS FOR DESIGN OF PEDESTRIAN BRIDGES. USE HIGH STRENGTH BOLTS CONFORMING TO AASHTO M164, (ASTM A325), TYP 3, UNLESS NOTED OTHERWISE. USE MALLEABLE IRON WASHERS AGAINST WOOD

STEEL FABRICATION: THE PREFABRICATED STEEL BRIDGE SUPERSTRUCTURE SHALL BE FABRICATED BY AN AISC CERTIFIED PLANT -SIMPLE STEEL BRIDGES OR COMPLEX STEEL STRUCTURES. WHEN STRUCTURAL STEEL IS TO BE WELDED, THE WELDING PROCEDURE SHALL BE IN ACCORDANCE WITH AWS D1.5 AND SHALL BE SUITABLE FOR THE GRADE OF STEEL AND INTENDED USE OR SERVICE.

ERECTION PLAN: THE CONTRACTOR SHALL SUBMIT AN ERECTION PLAN FOR THE PREFABRICATED STEEL BRIDGE SUPERSTRUCTURE TO THE C.O. FOR APPROVAL 14 DAYS BEFORE ERECTION IS SCHEDULED. IF ALLOWED UNDER THE PROJECT DESIGN CRITERIA, TEMPORARY IN-STREAM SUPPORT BENTS MAY BE USED FOR THE ERECTION OF THE PREFABRICATED STEEL TRUSS BRIDGE. THE IN-STREAM BENTS SHALL BE CRIBBING, SILLS, CONCRETE BLOCKS OR OTHER SUPPORTS AND SHALL BE PLACED WITH MINIMAL DISTURBANCE WITHIN THE STREAM. ALL MATERIALS TO CONSTRUCT THE TEMPORARY IN-STREAM BENTS SHALL BE REMOVED. THE SUBMITTALS SHALL INCLUDE DRAWINGS INDICATING TEMPORARY BENT LOCATIONS AND DETAILS ALSO INCLUDED, THE CONTRACTOR SHALL INDICATE THE EQUIPMENT AND METHODS PROPOSED TO INSTALL AND REMOVE THE TEMPORARY BENTS AND ERECT THE NEW PREFABRICATED STEEL TRUSS **SUPERSTRUCTURE**

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 AND BACKING PLANKS

- SOUTHERN PINE ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY - SPIB

RUNNING PLANKS AND RUB RAIL

SOUTHERN PINE ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY - SPIB

RAILS. HANDRAILS UNTREATED

- BALDCYPRESS, S4S, NO.1 GRADE GRADING RULES AGENCY - SPIB

- WHITE OAK, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY - NELMA

TREATED

- SOUTHERN PINE, S4S, NO.2 GRADE GRADING RULES AGENCY - SPIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

DECKING, RUNNING PLANKS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OF WOOD. ALL ABRASIONS AND FIELD CUTS - APPROVED BY THE C.O.R. - 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 FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

TIMBER FABRICATION: SUBMIT SHOP DRAWINGS FOR ALL TIMBER BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING 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.

SHEET 2 OF 3

DRAWING NO.

DEPARTMENT OF AGRICULTURE FOREST SERVICE STANDARD TRAIL PLAN

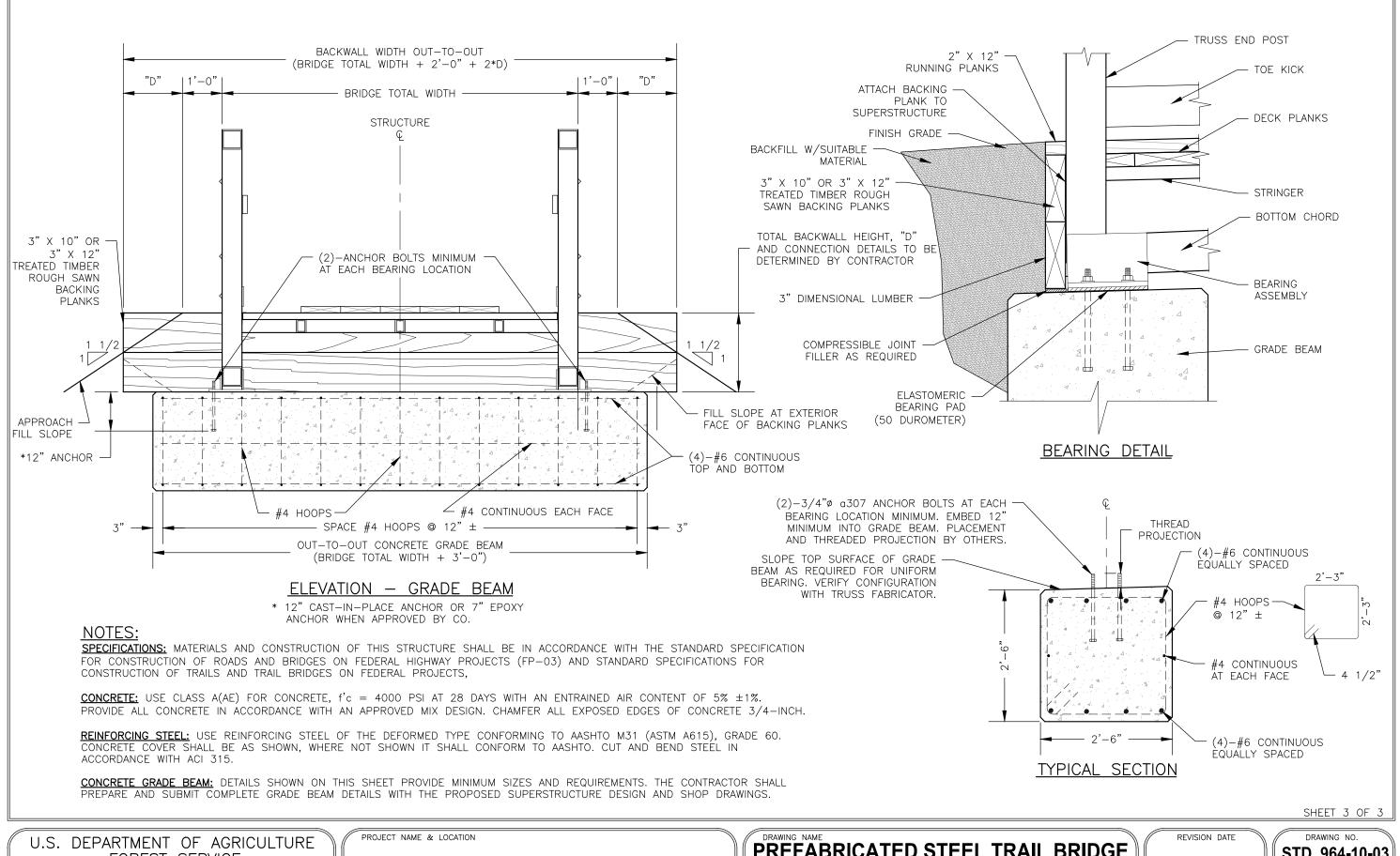
PROJECT NAME & LOCATION

PREFABRICATED STEEL TRAIL BRIDGE

964 - PREFABRICATED TRAIL BRIDGE

REVISION DATE

STD_964-10-02b SHEET NOT TO SCALE PRE OF



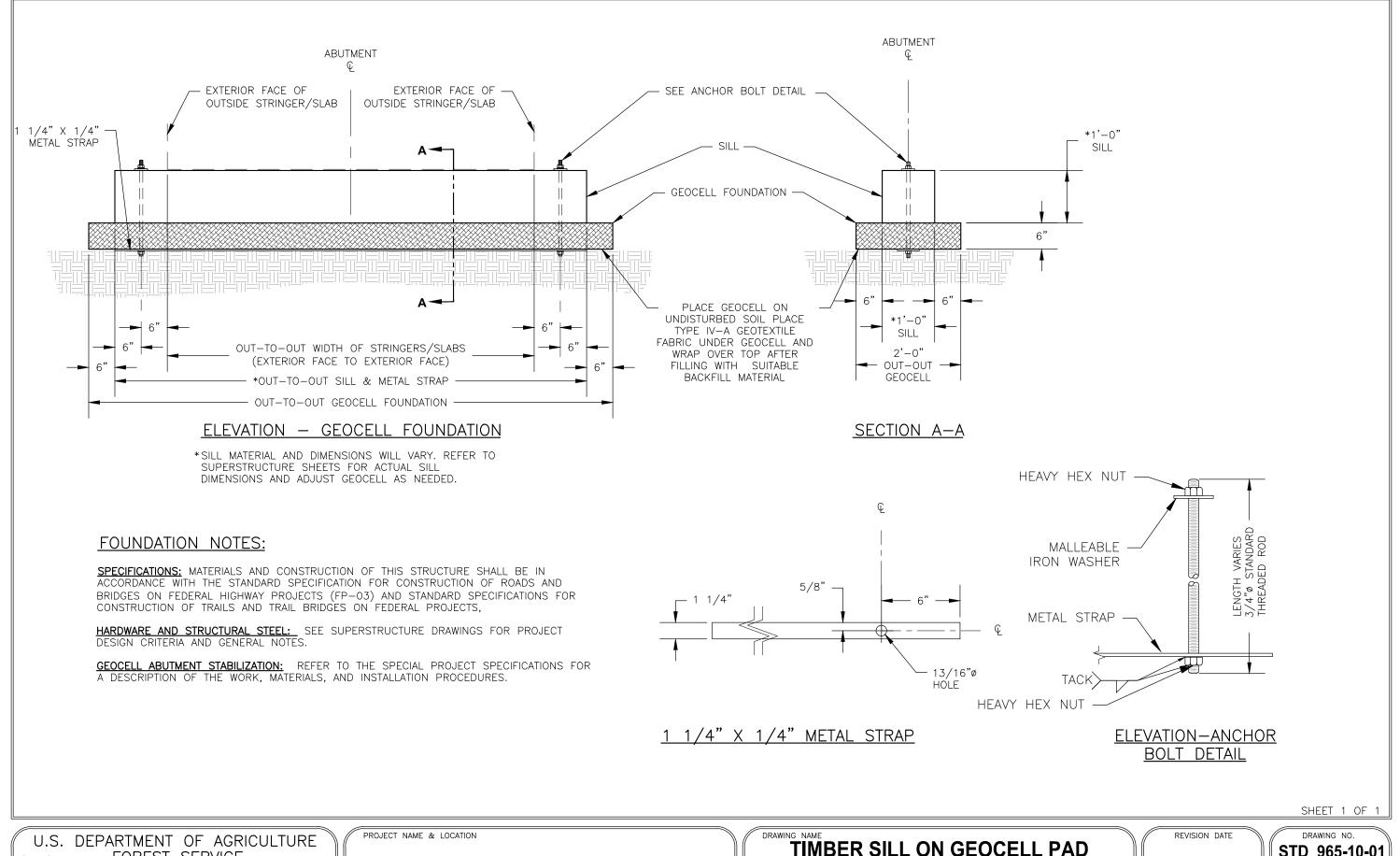




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964 - PREFABRICATED TRAIL BRIDGE



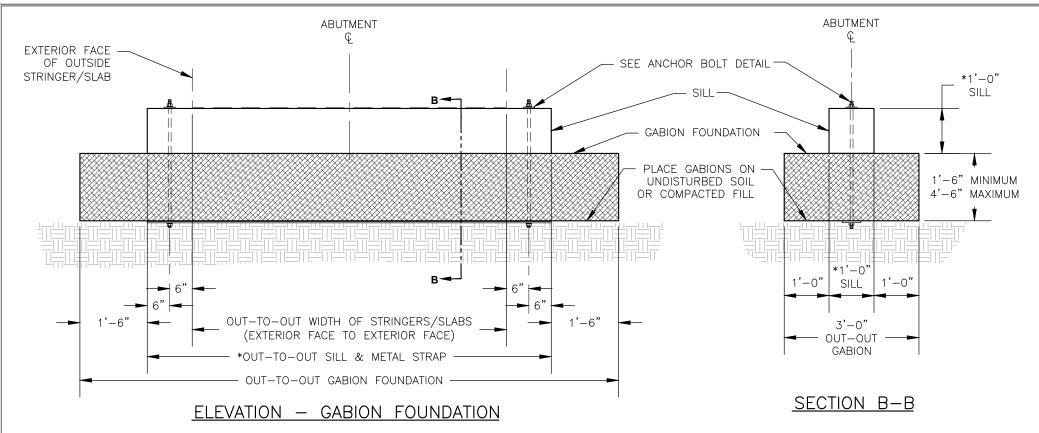
U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE STANDARD TRAIL PLAN

TIMBER SILL ON GEOCELL PAD

SECTION 965 - TRAIL BRIDGE SUBSTRUCTURES TYPICAL ID GEO

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STD_965-10-01 SHEET OF



*SILL MATERIAL AND DIMENSIONS WILL VARY. REFER TO SUPERSTRUCTURE SHEETS FOR ACTUAL SILL DIMENSIONS AND ADJUST GABION AS NEEDED.

HEAVY HEX NUT MALLEABLE IRON WASHER METAL STRAP 1 1/4" X 1/4" METAL STRAP ELEVATION—ANCHOR BOLT DETAIL

TABLE-1: STANDARD GABION BASKET SIZES

	SIZE		I NO. OF	CAPACITY CUBIC
LENGTH	WIDTH	HEIGHT	DIAPHRAGMS	YARDS
6 FT	3 FT	3 FT	1	2
9 FT	3 FT	3 FT	2	3
12 FT	3 FT	3 FT	3	4
6 FT	3 FT	1.5 FT	1	1
9 FT	3 FT	1.5 FT	2	1.5
12 FT	3 FT	1.5 FT	3	2
6 FT	3 FT	1 FT	1	0.67
9 FT	3 FT	1 FT	2	1
12 FT	3 FT	1 FT	3	1.33

FOUNDATION NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS.

HARDWARE AND STRUCTURAL STEEL: SEE SUPERSTRUCTURE DRAWINGS FOR PROJECT DESIGN CRITERIA AND GENERAL NOTES.

GABION ABUTMENT STABILIZATION: REFER TO THE SPECIAL PROJECT SPECIFICATIONS FOR A DESCRIPTION OF THE WORK, MATERIALS, AND INSTALLATION PROCEDURES.

GABION FOUNDATIONS: REFER TO GABION FOUNDATION NOTES. GABION FOUNDATION NOTES:

- 1. GABION BASKETS SHALL BE CONSTRUCTED USING WIRE MESH (U.S. STANDARD GAGE 9). BASKETS CONSTRUCTED USING TWISTED WIRE MESH WILL NOT BE ALLOWED. WELDED WIRE MESH SHALL BE POLYVINYL CHLORIDE COATED (PVC) WHERE BASKETS ARE EXPOSED TO CORROSIVE SOILS.
- 2. MATERIAL USED TO FILL THE GABION SHALL BE 4-INCH TO 8-INCH HARD, DURABLE, ANGULAR ROCK.
- 3. ROCK MAY BE PLACED MECHANICALLY PROVIDED CARE IS TAKEN TO ENSURE THAT IT IS TIGHTLY PACKED WITH A MINIMUM OF VOIDS. FOR EXPOSED FACES, HAND LABOR SHALL BE USED TO KEEP THE MESH VERTICAL, PREVENT BULGING, AND TO PRODUCE AN ATTRACTIVE APPEARANCE.
- 4. ALL GABIONS SHALL BE PLACED ON UNDISTURBED SOIL OR A FOUNDATION OF SUITABLE MATERIAL. REMOVE AND REPLACE UNSUITABLE SOILS WITH A MINIMUM OF 12—INCHES OF COARSE GRANULAR BACKFILL. COMPACT BACKFILL MATERIAL AT AN OPTIMUM MOISTURE CONTENT WITH A VIBRATING COMPACTOR. OPERATE COMPACTION EQUIPMENT OVER THE FULL WIDTH OF THE FOUNDATION AREA UNTIL VISIBLE DEFORMATION OF THE BACKFILL CEASES.
- 5. BACKFILL WITH SUITABLE MATERIAL BEHIND GABIONS CONCURRENTLY WITH THE CELL FILLING OPERATION. BACKFILL THE AREA BEHIND GABIONS WITH A COARSE GRANULAR MATERIAL. COMPACT BACKFILL MATERIAL AT AN OPTIMUM MOISTURE CONTENT WITH A VIBRATOR COMPACTOR. OPERATE COMPACTION EQUIPMENT OVER THE FULL WIDTH OF THE IN-FILL AREA UNTIL VISIBLE DEFORMATION OF THE BACKFILL CEASES.

SHEET 1 OF 1

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

TIMBER SILL ON GABION BASKET

SECTIO

965 - TRAIL BRIDGE SUBSTRUCTURES

REVISION DATE

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TYPICAL ID

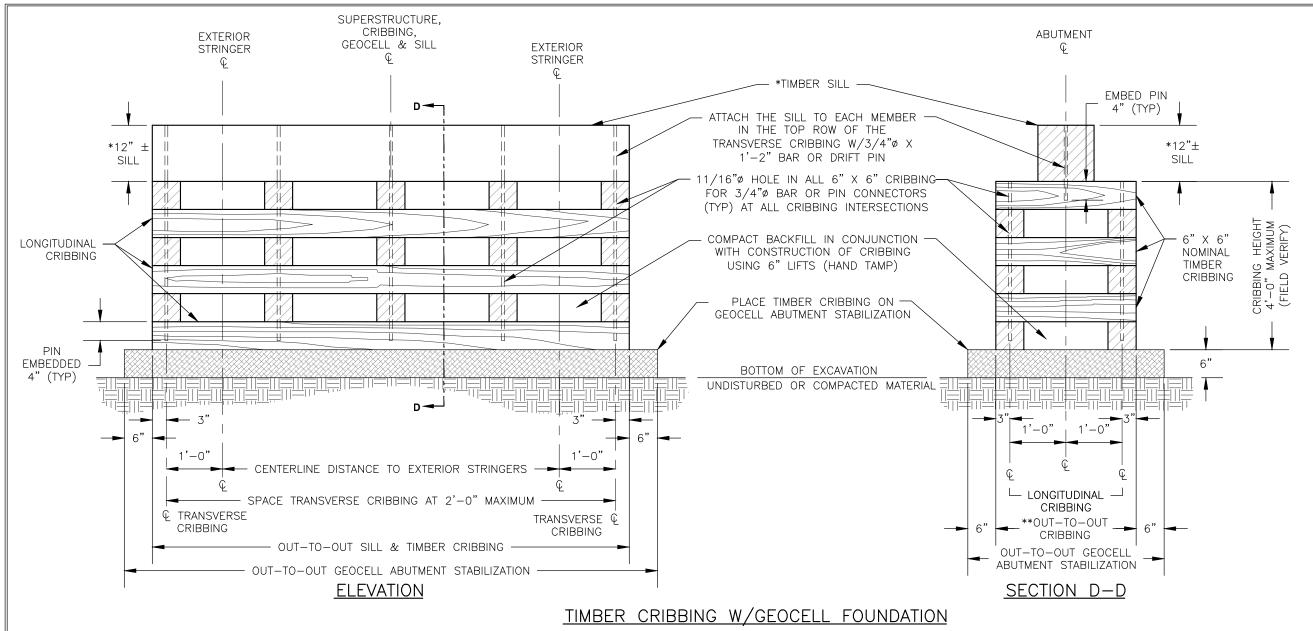
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STD_ 965-20-01

SHEET |

OF



FOUNDATION NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

<u>Hardware and Structural Steel:</u> See Superstructure drawings for Project design criteria and general notes.

GEOCELL ABUTMENT STABILIZATION: REFER TO THE SPECIAL PROJECT SPECIFICATIONS FOR A DESCRIPTION OF THE WORK, MATERIALS, AND INSTALLATION PROCEDURES.

TREATED TIMBER & LUMBER: REFER TO THE GENERAL NOTES ON THE SUPERSTRUCTURE DRAWINGS FOR TREATED TIMBER & LUMBER SPECIFICATIONS AND FIELD TREATING OF WOOD.

*TIMBER SILL CAN BE EITHER 12" X 12" SOLID SAWN 10 3/4" X 12" GLUE-LAMINATED, BUILT-UP 3" X 12", 4" X 12", & 6" X 12" TREATED MEMBERS, OR LOG SILL, SEE LOG SILL NOTCHING DETAIL.

CONSTRUCT CRIBBING WITH 6" X 6" ROUGH SAWN TREATED TIMBERS. FIELD DRILLED HOLE SHALL BE TREATED PER GENERAL NOTES (SEE SUPERSTRUCTURE SHEETS).

** 2'-6" MINIMUM TO 4'-0" MAXIMUM

SHEET 1 OF 1

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

TIMBER SILL ON TIMBER CRIBBING

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965 - TRAIL BRIDGE SUBSTRUCTURE

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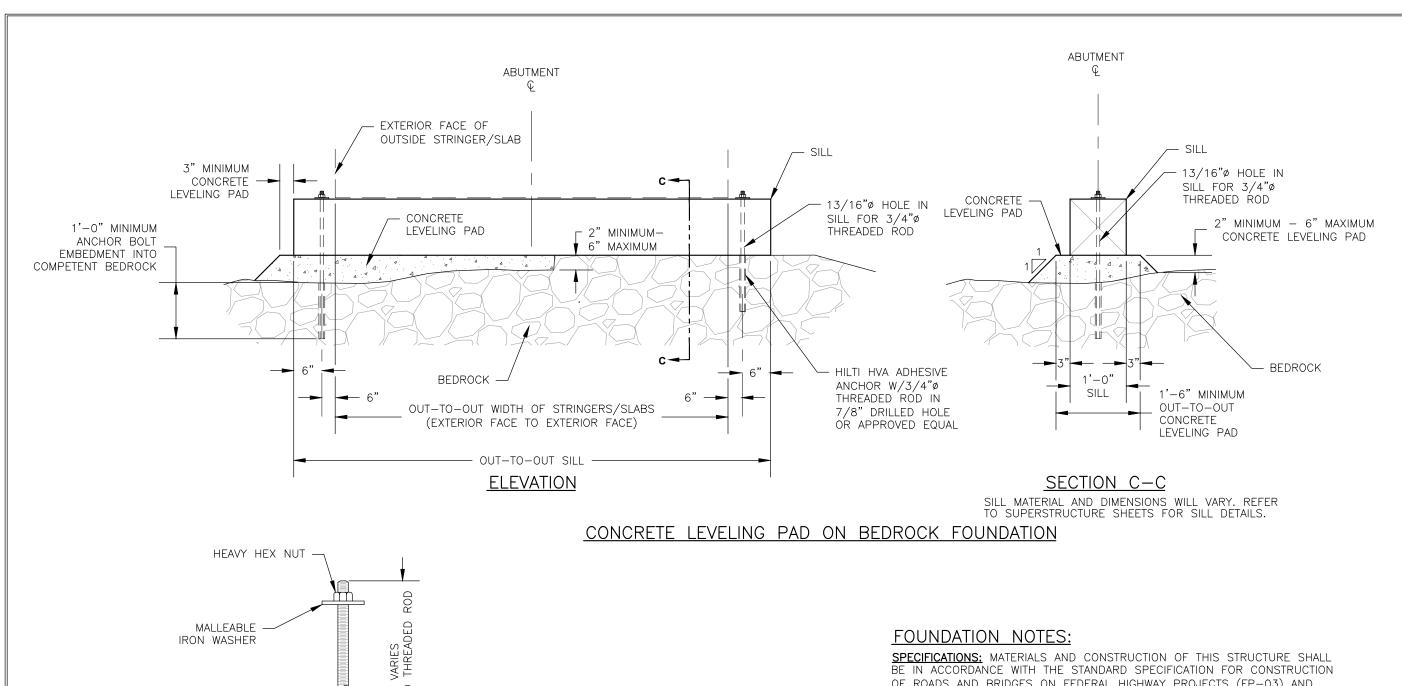
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FOUNDATION NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

HARDWARE AND STRUCTURAL STEEL: SEE SUPERSTRUCTURE DRAWINGS FOR PROJECT DESIGN CRITERIA AND GENERAL NOTES.

GEOCELL ABUTMENT STABILIZATION: REFER TO THE SPECIAL PROJECT SPECIFICATIONS FOR A DESCRIPTION OF THE WORK, MATERIALS, AND INSTALLATION PROCEDURES.

TREATED TIMBER & LUMBER: REFER TO THE GENERAL NOTES ON THE SUPERSTRUCTURE DRAWINGS FOR TREATED TIMBER & LUMBER SPECIFICATIONS AND FIELD TREATING OF WOOD.

SHEET 1 OF 1

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

LENGTH V STANDARD

ELEVATION-

ANCHOR BOLT DETAIL

CONCRETE LEVELING PAD ON BEDROCK

965 - TRAIL BRIDGE SUBSTRUCTURE

TYPICAL ID **NOT TO SCALE**

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REVISION DATE

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