<table>
<thead>
<tr>
<th>STRUCTURE NUMBER</th>
<th>TRAIL NO.</th>
<th>BRIDGE LOCATION</th>
<th>BRIDGE LENGTH</th>
<th>SPAN</th>
<th>DECK PANEL WIDTH</th>
<th>DRAWN LENGTH</th>
<th>CLEAR WIDTH</th>
<th>PEDESTRIAN LOAD</th>
<th>GROUND SNOW LOAD</th>
<th>DECK PANELS</th>
<th>BACKWALL</th>
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**NA = NOT APPLICABLE**

<table>
<thead>
<tr>
<th>RAILING SYSTEM/CURB</th>
<th>RUNNING PLANK</th>
<th>SILL</th>
<th>APPROACHES</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRUCTURE NUMBER</td>
<td>SPECIES</td>
<td>TYPE</td>
<td>HEIGHT</td>
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**ABUTMENT MATERIAL TYPE:** SS = SOLID SAWN, GLU = GLUEM, CONC = CONCRETE

**HARDWARE COATING TYPE:** GALV = GALVANIZED, UNC = UNCOATED, WEA = WEATHERING STEEL

**TRAIL BRIDGE W/RAILING SYSTEM**

![Diagram of trail bridge with railing system]

**LONGITUDINAL NAIL-LAMINATED TIMBER TRAIL BRIDGE**

**PROJECT NAME & LOCATION**

**U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE**

**STANDARD TRAIL PLAN**

**NOT TO SCALE**

**DRAWING NO:** STD_962-20-01
GENERAL NOTES:

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

INSIDE FACE TO INSIDE FACE OF RAILING SYSTEM, NUMBER OF DECK PANELS MINUS 3-INCHES

LAMINATIONS, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED
- APA USE CATEGORY SYSTEM (UI) FOR USE CATEGORY 39 ABOVE GROUND-EXPOSED (UC39)
- APA USE CATEGORY SYSTEM (UI) FOR USE CATEGORY 49 GROUND CONTACT HAUL LIGHT DUTY (UC49)
- APA USE CATEGORY SYSTEM (UI) FOR USE CATEGORY 59 GROUND CONTACT HEAVY DUTY (UC59)
- APA USE CATEGORY SYSTEM (UI) FOR USE CATEGORY 69 GROUND CONTACT HEAVY DUTY (UC69)
- APA USE CATEGORY SYSTEM (UI) FOR USE CATEGORY 79 GROUND CONTACT HEAVY DUTY (UC79)

FIELD TREATMENT, COPPER NAPHTHATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OF WOOD. ALL ABRASIONS AND FIELDS CUTS APPROVED BY THE C.O. SHALL BE CAREFULLY TRIMMED AND GIVEN THOSE BRUSH COSTS OF THE FIELD TREATMENT SOLUTION. WHERE APPROVED FIELD DRILLING OF BOLT OR NAIL HOLES IS REQUIRED, THE HOLES SHALL BE FILLED WITH PRETREATMENT PIVOTS TO INSERT THE FASTENERS.

HARDWARE AND STRUCTURAL STEEL - SEE PROJECT CRITERIA FOR STEEL HARDWARE FINISH. GALVANIZED OR UNFINISHED HARDWARE SHALL MEET THE REQUIREMENTS OF ASME M270, GRADE 36, WITH NUTS AND BOLTS CONFORMING TO ASTM A320, GRADE 48, AND WOOD NAILING STEEL AND HARDWARE SHALL MEET THE REQUIREMENTS OF ASME M270, GRADE 36, WITH NUTS AND BOLTS CONFORMING TO ASTM A325, TYPE 3, USE MILLWALL IRON WOOD PRESERVERS AGAID WOOD UNLESS OTHERWISE SPECIFIED.

WHERE SECTIONS OF WOOD STEEL IS TO BE WELDED, THE WELDING PROCEDURE SHALL BE IN ACCORDANCE WITH AWS D1.1 AND SHALL BE SURVEYED FOR THE GRADE OF STEEL AND INTENDED USE ON SERVICE. 

FABRICATION: SUBMIT SHOP DRAWINGS FOR ALL BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING PLANKS). SHOW ALL DIMENSIONS AND DIMENSIONS DETAILS FOR ALL CUTS OR BORED HOLES. FIELD DRILLING OF HOLES SHALL NOT BE ALLOWED UNLESS OTHERWISE SPECIFIED ON THESE DRAWINGS.

THE ROD TENSIONING: THE STEEL RODS SHALL BE TENSIONED TO 200 FT.-LBS. UPON INITIAL INSTALLATION OF THE DECK PANELS. THE 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 SPECIFIED IN THE PROTECTION SPECIFICATIONS.
LONGITUDINAL NAIL-LAMINATED TIMBER DECK PANELS

NAILING SYSTEM

LAMINATE DEPTH

1 3/4" 1 3/4" 1 3/4" 1 3/4" 1 3/4"

1 6" 1 6" 1 0"

1 8"

2X LAMINATE

3"

LONGITUDINAL NAIL-LAMINATED TIMBER DECK PANELS

NAILING PATTERN FOR NAIL-LAMINATES

THE FOLLOWING NAILING PATTERNS SHOULD BE FOLLOWED:
- Indicates nails in first lamination
- Indicates nails in second lamination
- Indicates nails in third lamination

LAYOUT OF DECK PANEL LAMINATIONS

LAYOUT SHOWN FOR 12-FOOT LONGITUDINAL NAIL-LAMINATED TIMBER TRAIL BRIDGE DECK PANELS.

BUTT JOINTS NOT ALLOWED

ONE DECK PANEL COMPLETED = 12"

LAYOUT PATTERN FOR (8) 2- DIMENSIONAL LAMINATIONS

DECK PANEL LENGTH

MALLEABLE IRON WASHERS (TOP)

304 HARDENED RING SHANK NAILS
RAILING SYSTEM

LONGITUDINAL NAIL-LAMINATED TIMBER DECK PANELS

(1) - 12' DECK PANEL

SILL

LONGITUDINAL NAIL-LAMINATED TIMBER DECK PANELS

ONE DECK PANEL COMPLETED - 12' LAYOUT PATTERN FOR (8)-2' DIMENSIONAL LAMINATIONS

NAILING PATTERN FOR NAIL-LAMINATES

THE FOLLOWING NAILING PATTERNS SHOULD BE FOLLOWED:
- INDICATES NAILS IN FIRST LAMINATION
- INDICATES NAILS IN SECOND LAMINATION
- INDICATES NAILS IN THIRD LAMINATION

VALLEYSIBLE IRON WASHERS (TYP)

16'-0" DECK PANEL LENGTH

30D HARDENED RING SHANK NAILS

LAYOUT OF DECK PANEL LAMINATIONS

LAYOUT SHOWN FOR 16'-FOOT LONGITUDINAL NAIL-LAMINATED TIMBER TRAIL BRIDGE DECK PANELS.

BUTT JOINTS NOT ALLOWED

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

STANDARD TRAIL PLAN

LONGITUDINAL NAIL-LAMINATED TIMBER TRAIL BRIDGE

SECTION 962 - SAWN TIMBER TRAIL BRIDGE

REVIEW DATE

DRAWING NO.

NOT TO SCALE

LNL
LAYOUT OF DECK PANEL LAMINATIONS

Layout shown for 20-foot longitudinal nail-laminated timber trail bridge deck panels.
Butt joints not allowed.

NAILING PATTERN FOR NAIL-LAMINATES

The following nailing patterns should be followed:

* Indicates nails in first lamination
* Indicates nails in second lamination
* Indicates nails in third lamination

LONGITUDINAL NAIL-LAMINATED TIMBER DECK PANELS

1/4" X 2" X 8"

1/4" X 2" X 6"

1/4" X 2" X 12"

2X LAMINATE

NO LAMINATE

DECK PANEL LENGTH

ONE DECK PANEL COMPLETED = 12'

LAYOUT PATTERN FOR

1/4" X 2" X 24" DIMENSIONAL LAMINATIONS

20D HARDENED RING SHANK NAILS

NAILABLE WOOD WASHERS (TYP)
NOTES:
1. SPIKE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR A MINIMUM OF TWO POST SPACES. ALTERNATE RAIL SPACES AT POSTS. FASTEN RUNNING PLANKS TO DECK PANELS WITH 30D (4 1/2-INCH RING SHANK) NAILS AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END.
2. ALL DEPTHS SHOWN IN TABLE 1.1 ARE NOMINAL. NAIL-LAMINATED DECK PANELS SHALL BE CONSTRUCTED USING 525 LAMBERS.

TABLE 1.1: LAMINATION DEPTH REQUIREMENTS - LRFD

<table>
<thead>
<tr>
<th><strong>DECK PANEL LENGTH (FEET)</strong></th>
<th>TIMBER SPECIES - DOUGLAS FIR/HEM-FIR</th>
<th>GRADE - NO. 1</th>
<th>DESIGN LOADING IN POUNDS PER SQUARE FOOT</th>
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<tbody>
<tr>
<td></td>
<td>PEDESTRIAN LOAD</td>
<td>GROUND SNOW LOAD</td>
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<tr>
<td></td>
<td>***85</td>
<td>90</td>
<td>120</td>
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<tr>
<td>12</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td>16</td>
<td>6&quot;</td>
<td>6&quot;</td>
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<tr>
<td>20</td>
<td>8&quot;</td>
<td>8&quot;</td>
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DECK PANEL SIZE SHALL BE THE LARGER OF THE PEDESTRIAN OR GROUND SNOW LOAD SIZE REQUIRED FOR THE SITE CONDITIONS.

DECK PANEL LENGTH EQUAL TO DECK PANEL SPAN PLUS ONE FOOT.

*REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL*
NOTES:
1. SPACED RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR A MINIMUM OF TWO
   POST SPACES. ALTERNATE RAIL SPACED AT POSTS. FASTEN RUNNING PLANKS TO
   DECK PANELS WITH 204 (4 1/2-INCH RING SHANK) NAILS AT 24-INCH SPACING.
   ALTERNATE SIDES WITH TWO AT EACH END.
2. ALL DEPTHS SHOWN IN TABLE 1-1 ARE NOMINAL. NAIL-LAMINATED DECK PANELS
   SHALL BE CONSTRUCTED USING 525 LUMBER.