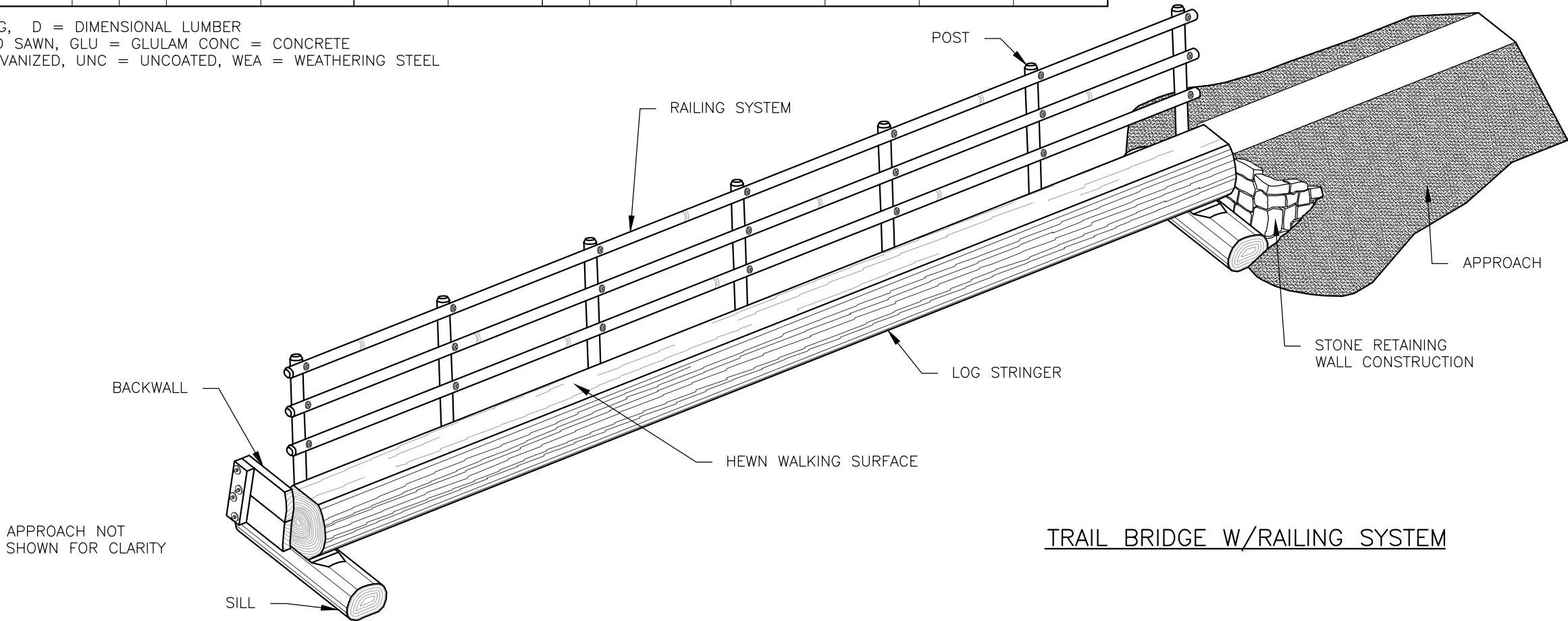


								STRINGER			BACKWALL								COMMENTS
STRUCTURE NUMBER	TRAIL NO.	BRIDGE LOCATION	BRIDGE LENGTH OUT-TO-OUT	STRINGER SPAN C-C BRNG	BRIDGE CLEAR WIDTH	PEDESTRIAN LOAD	GROUND SNOW LOAD	SPECIES	MATERIAL SIZE (DIAMETER)	TREATMENT		TYPE	SPECIES	SIZE	WIDTH	HEIGHT	TREATMENT		
										YES	NO						YES	NO	

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

STRUCTURE NUMBER	RAILING SYSTEM						SILL				APPROACHES						HARDWARE
	SPECIES	HEIGHT	MATERIAL TYPE	RAIL		TREATMENT	MATERIAL TYPE	SIZE	TREATMENT	LENGTH	WIDTH	MATERIAL TYPE	MATERIAL DEPTH	GEO-SYNTHETIC TYPE	COATING		
				LF	RT				YES	NO	NEAR	FAR					

RAIL MATERIAL TYPE: R = ROUND LOG, D = DIMENSIONAL LUMBER
ABUTMENT MATERIAL TYPE: SS = SOLID SAWN, GLU = GLULAM CONC = CONCRETE
HARDWARE COATING TYPE: GALV = GALVANIZED, UNC = UNCOATED, WEA = WEATHERING STEEL



TRAIL BRIDGE W/RAILING SYSTEM

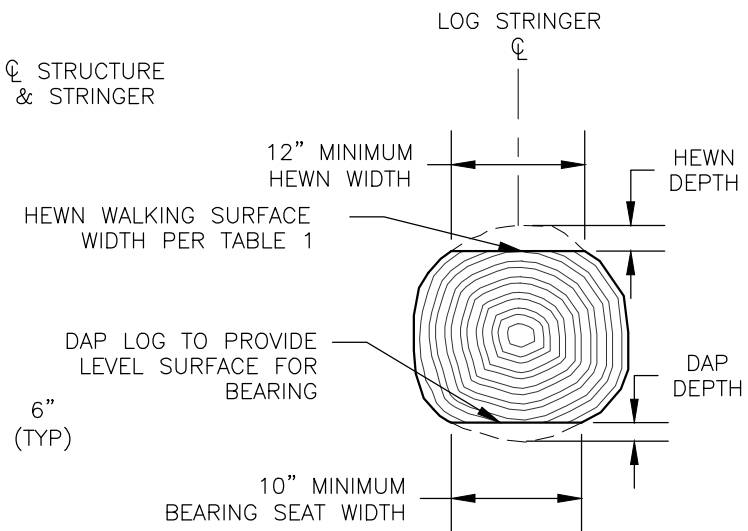
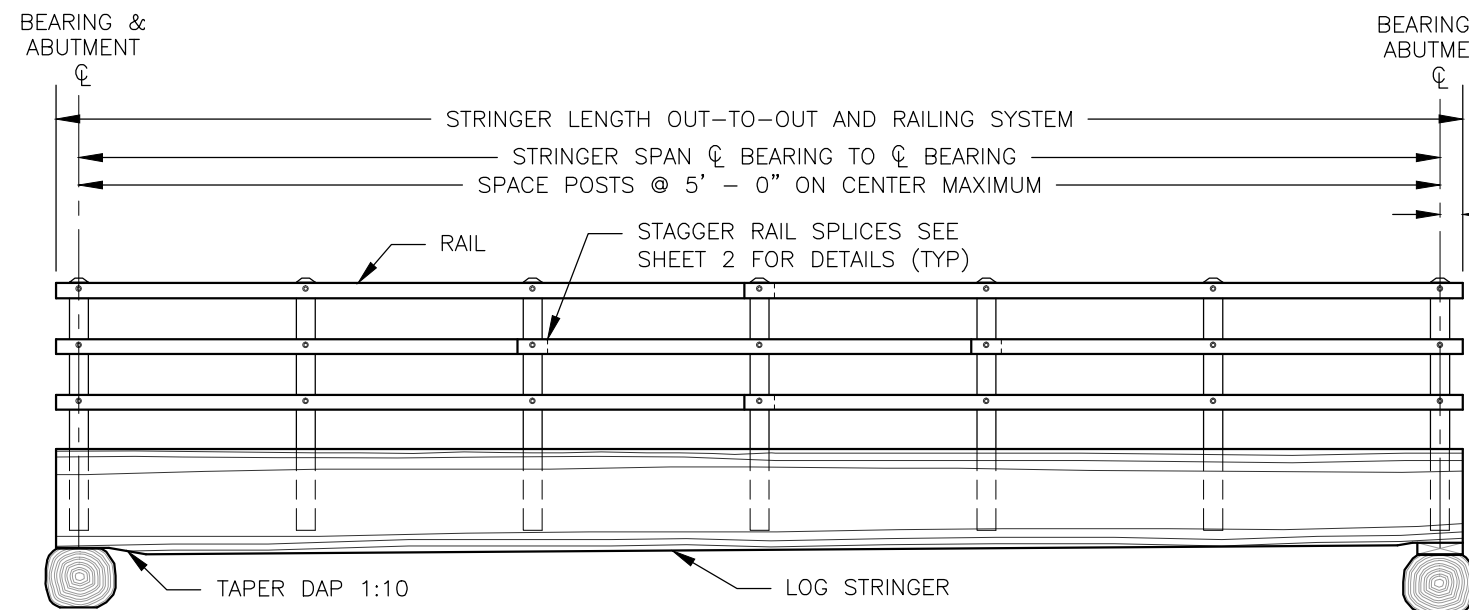
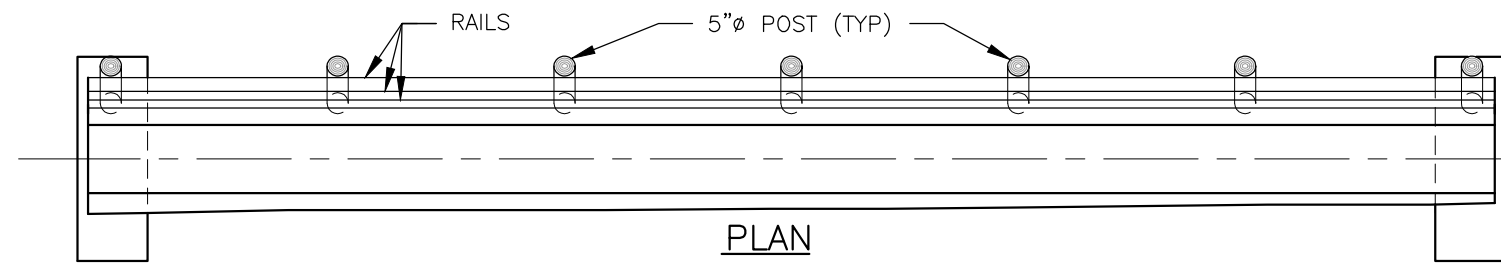


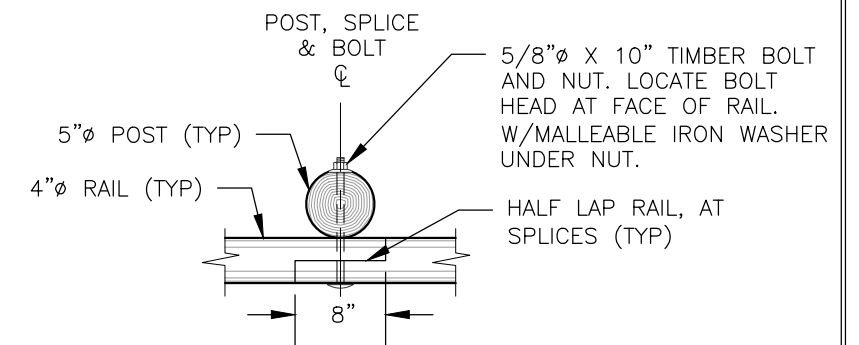
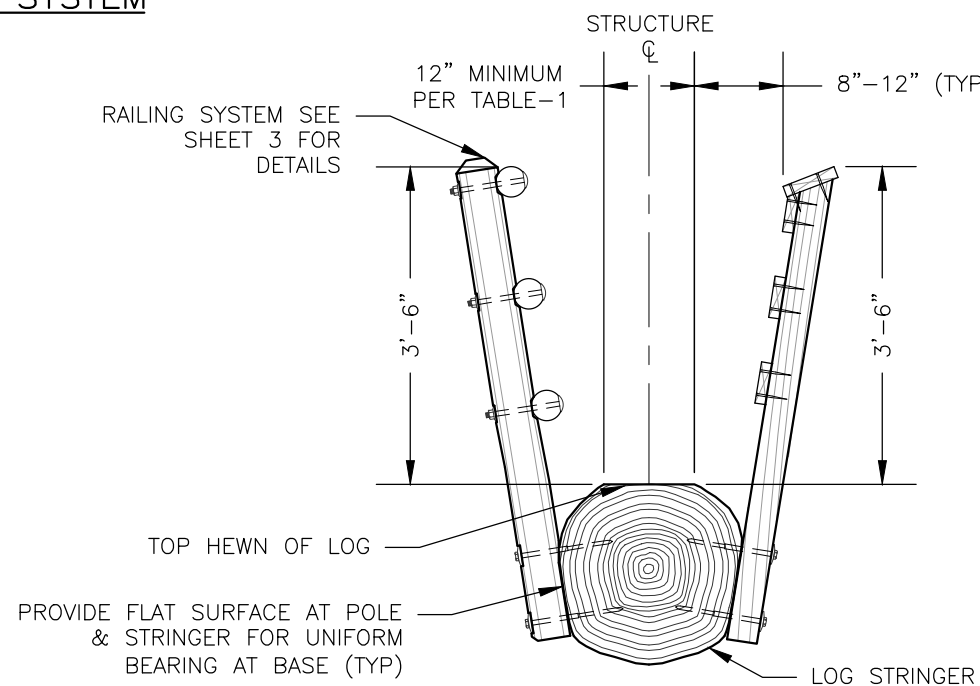
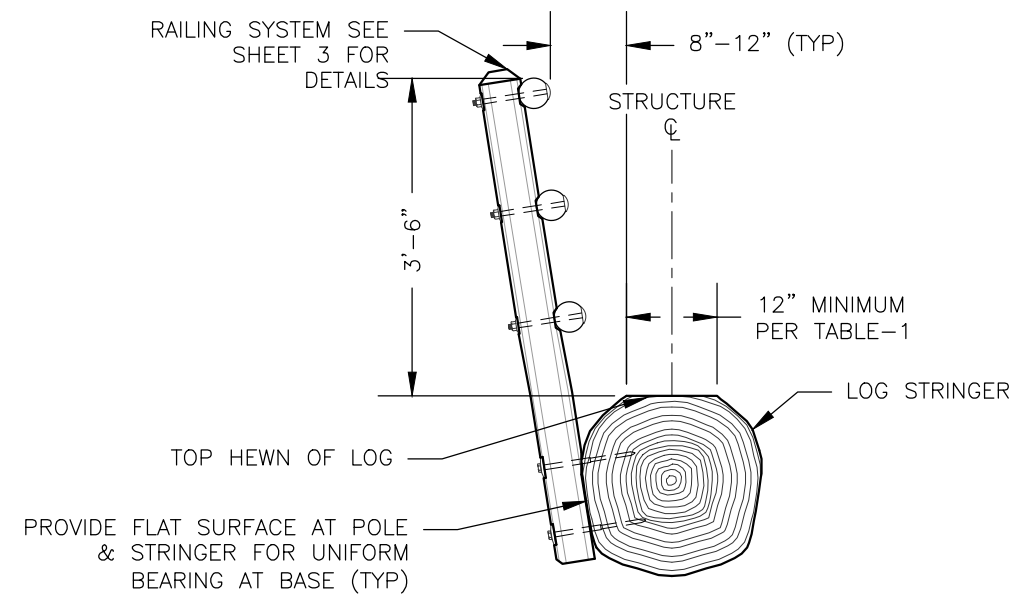
TABLE-1: LOG HEWN INFORMATION

PEELED DIAMETER	HEWN DIMENSION *DEPTH	WIDTH
16"	3"	12"
17"	3"	13"
18"	3 1/2"	14"
19"	4"	15"
20"	4"	16"
21"	4 1/2"	17"
22"	5"	18"
23"	5"	19"
24"	5"	20"

*DO NOT EXCEED HEWN DEPTH SHOWN FOR STRINGER DIAMETER.

MAXIMUM DEPTH OF DAP AT BEARING SHALL NOT EXCEED 10% OF LOG DIAMETER OR 2"

SUBSTRUCTURE SHOWN FOR ILLUSTRATION ONLY. SEE SHEET 4 FOR DETAILS



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

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
- COASTAL REGION 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)

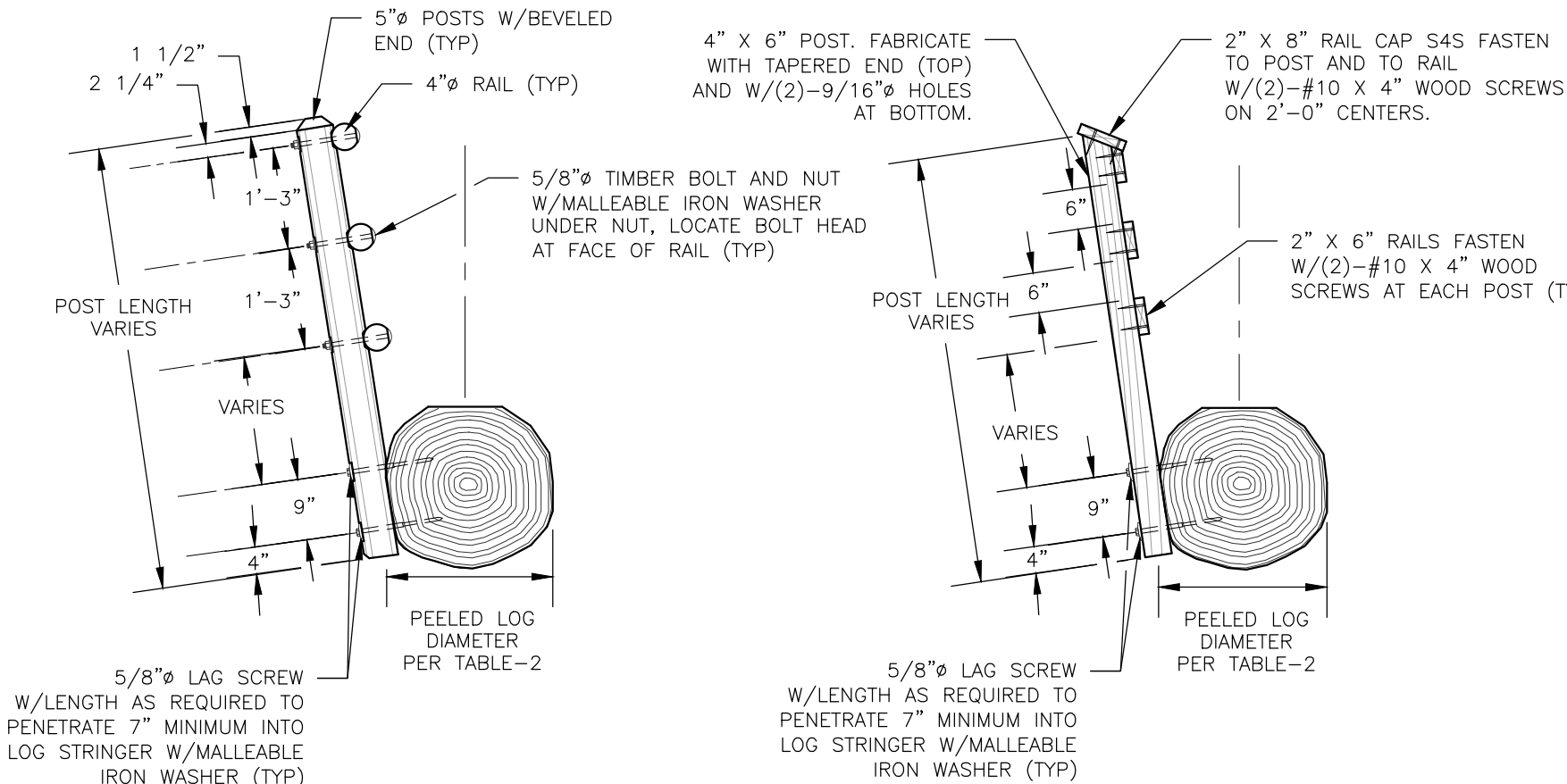
FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OF WOOD. ALL ABRASIONS AND FIELD CUTS - APPROVED BY THE C.O.R. - SHALL BE CAREFULLY TRIMMED AND GIVEN THREE BRUSH COATS OF THE FIELD TREATMENT SOLUTION. WHERE APPROVED, FIELD DRILLING OF BOLT, SCREW OR NAIL HOLES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



POLE RAILING SYSTEM DETAILS

SAWN RAILING SYSTEM DETAILS

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

**STRINGER SPAN (FEET)	TIMBER SPECIES - DOUGLAS FIR (COASTAL OR INTERIOR NORTH) AND WESTERN LARCH				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
	PEDESTRIAN LOAD ***65	90	GROUND SNOW LOAD 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.

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 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".

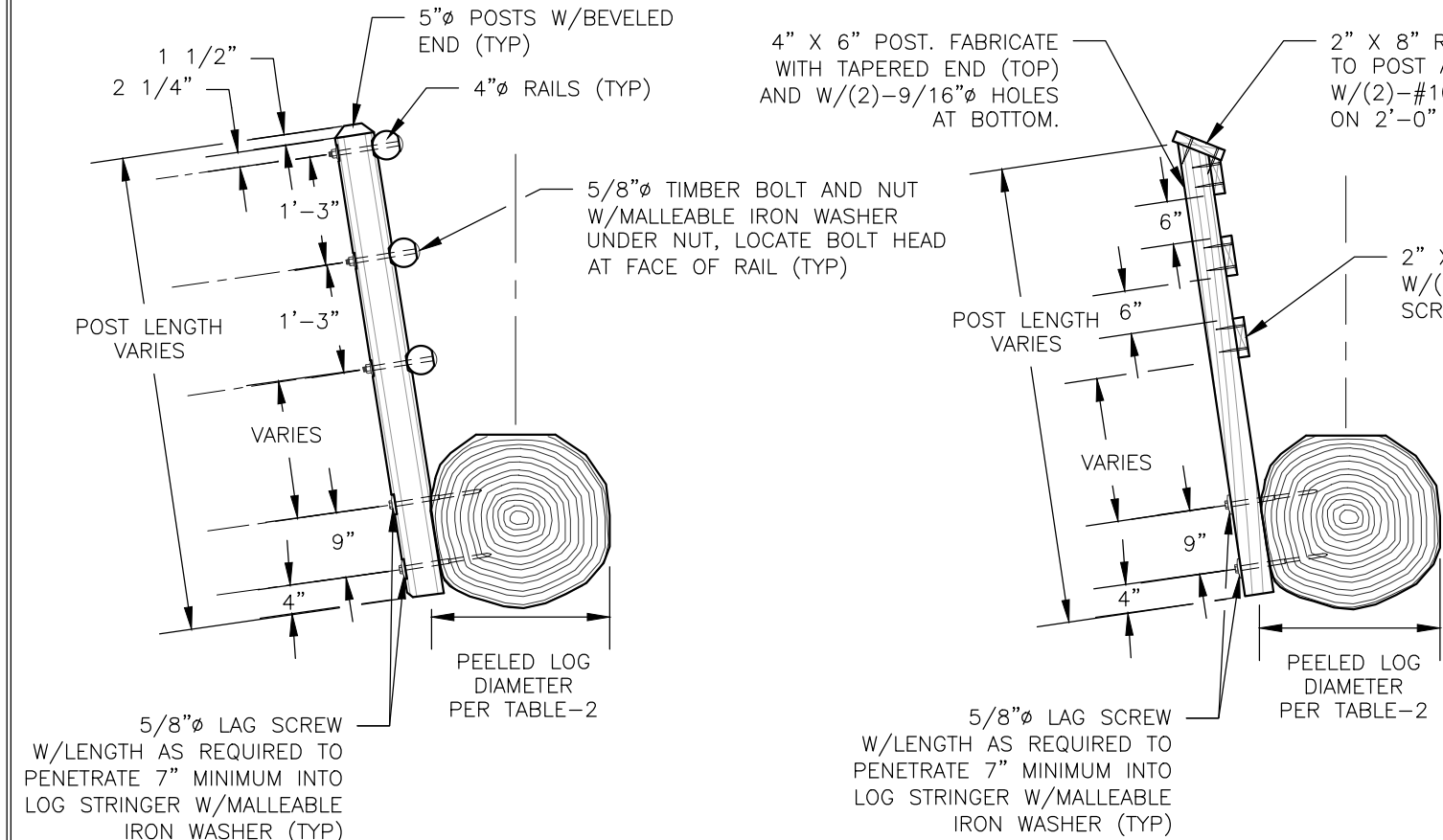
- STRINGERS & RAILING SYSTEM, IF TREATED**
- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
 - PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
 - COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)
- SILLS, BACKING PLANKS, CRIBS, & TIMBER WALLS, IF TREATED**
- AWPA USE 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.



POLE RAILING SYSTEM DETAILS

SAWN RAILING SYSTEM DETAILS

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

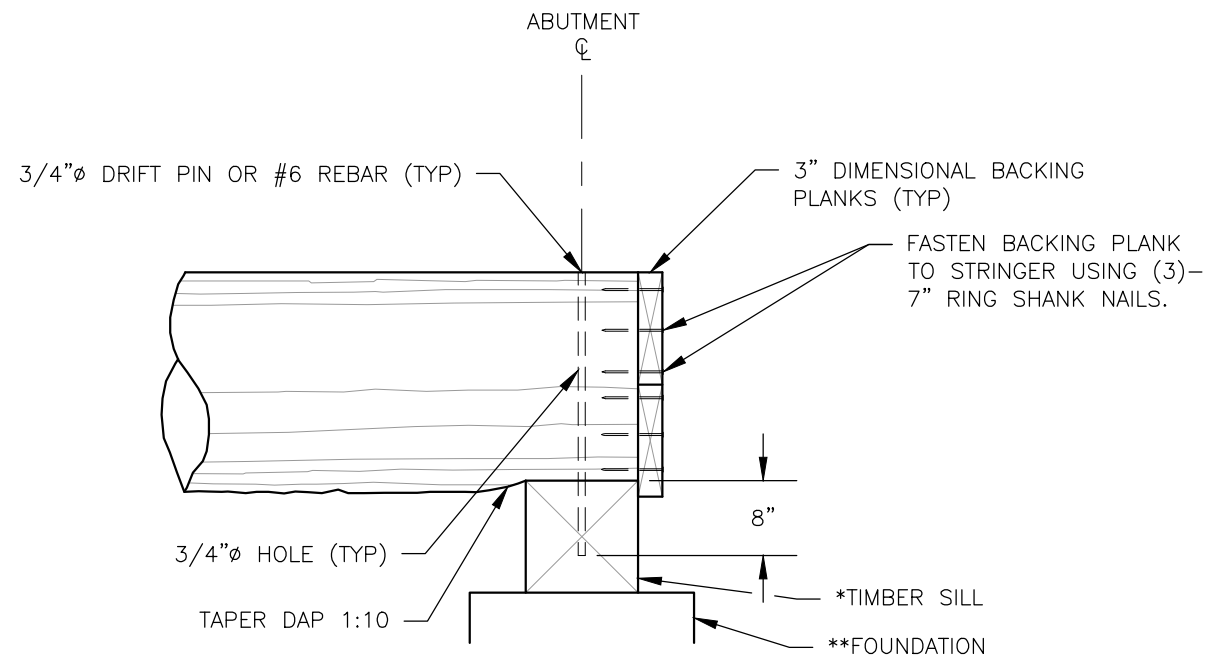
**STRINGER SPAN (FEET)	TIMBER SPECIES - SOUTHERN PINE				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
	PEDESTRIAN LOAD		GROUND SNOW LOAD		
	***65	90	120	150	200
10	16"	16"	16"	16"	16"
15	16"	16"	16"	16"	16"
20	16"	16"	16"	16"	16"
25	16"	16"	16"	16"	16"
30	16"	16"	16"	16"	17"
35	18"	19"	18"	19"	20"
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

**STRINGER LENGTH EQUAL TO STRINGER SPAN PLUS ONE FOOT

***REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

SHEET 3 OF 4



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:

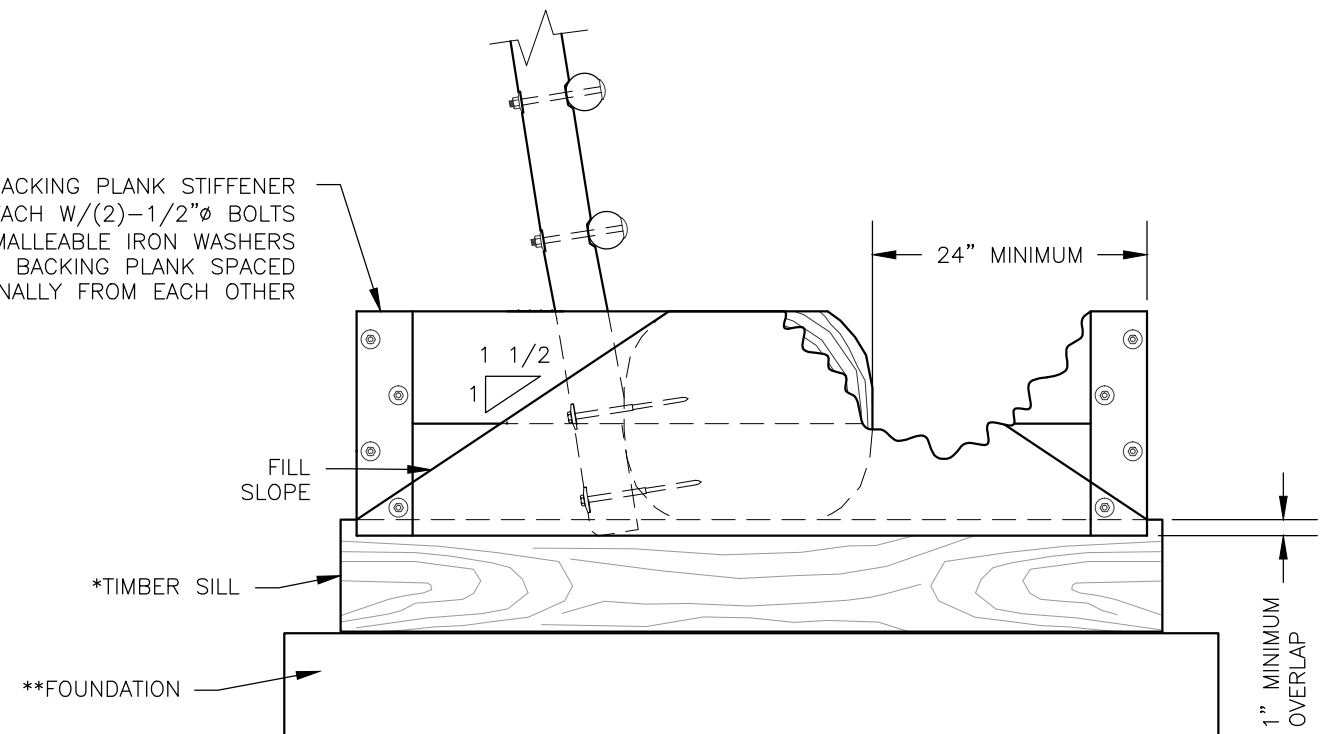
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HARDWARE AND STRUCTURAL STEEL: SEE SUPERSTRUCTURE DRAWINGS FOR PROJECT DESIGN CRITERIA AND GENERAL NOTES.

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% 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.**

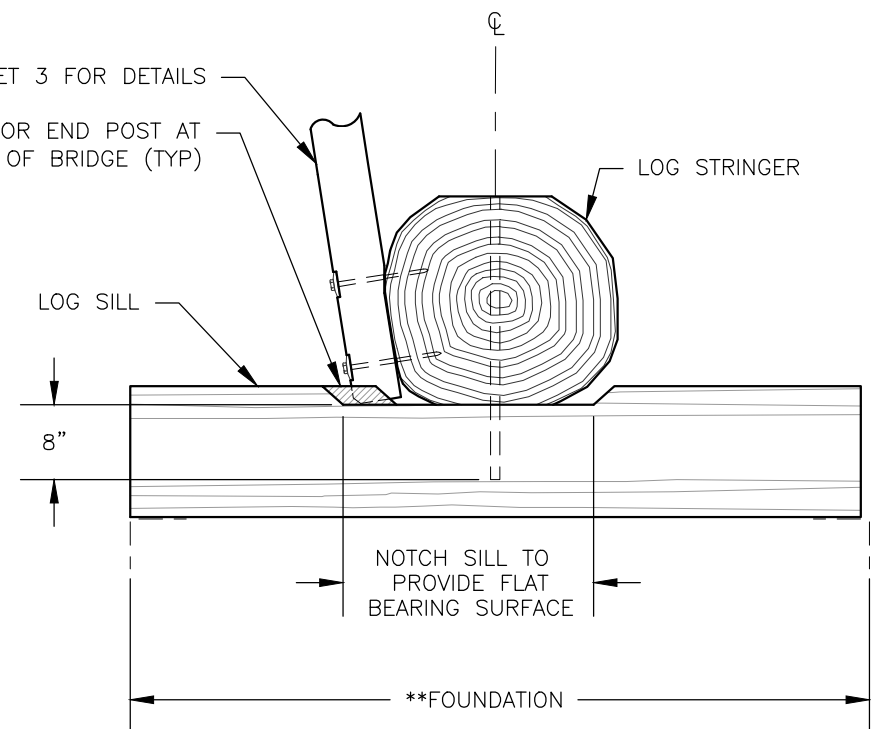
3" X 6" BACKING PLANK STIFFENER
ATTACH W/(2)-1/2"Ø BOLTS
W/(2)-MALLEABLE IRON WASHERS
PER BACKING PLANK SPACED
DIAGONALLY FROM EACH OTHER



BACKWALL DETAIL

RAILING SEE SHEET 3 FOR DETAILS

NOTCH SILL FOR END POST AT
EACH END OF BRIDGE (TYP)



LOG SILL NOTCHING DETAIL

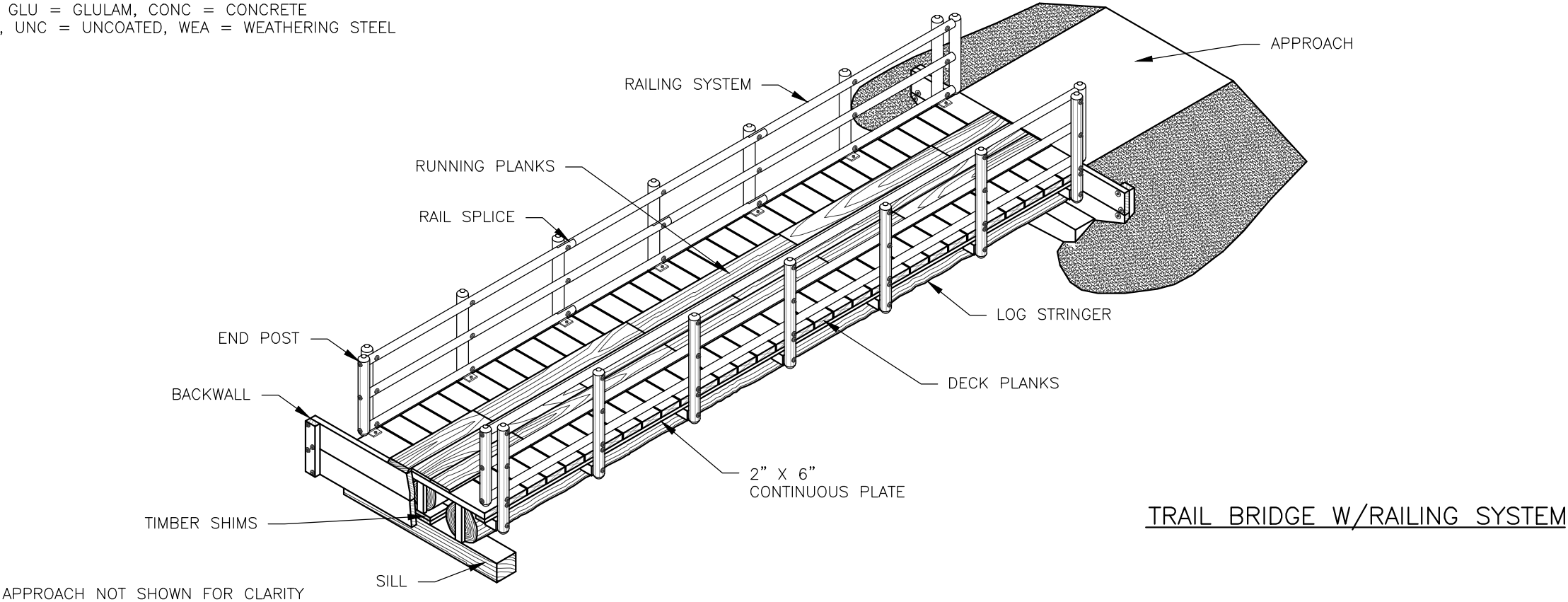
SHEET 4 OF 4

STRUCTURE NUMBER	TRAIL NO.	BRIDGE LOCATION	BRIDGE LENGTH OUT-TO-OUT	STRINGER SPAN C-C BRNG	BRIDGE CLEAR WIDTH	PEDESTRIAN LOAD	GROUND SNOW LOAD	STRINGERS				DECK			BACKWALL						
								SPECIES	NUMBER	MATERIAL SIZE (DIAMETER)	TREATMENT		SPECIES	SIZE	TREATMENT	TYPE	SPECIES	SIZE	WIDTH	DEPTH	TREATMENT
											YES	NO									

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

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

RAILING SYSTEM/CURB MATERIAL TYPE: R = ROUND LOG, D = DIMENSIONAL LUMBER
ABUTMENT MATERIAL TYPE: SS = SOLID SAWN, GLU = GLULAM, CONC = CONCRETE
HARDWARE COATING TYPE: GALV = GALVANIZED, UNC = UNCOATED, WEA = WEATHERING STEEL



TRAIL BRIDGE W/RAILING SYSTEM

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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 - 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, 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.



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

MLS

REVISION DATE

NOT TO SCALE

DRAWING NO.

STD_961-20-02a

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,

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 – 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, 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.



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

MLS

REVISION DATE

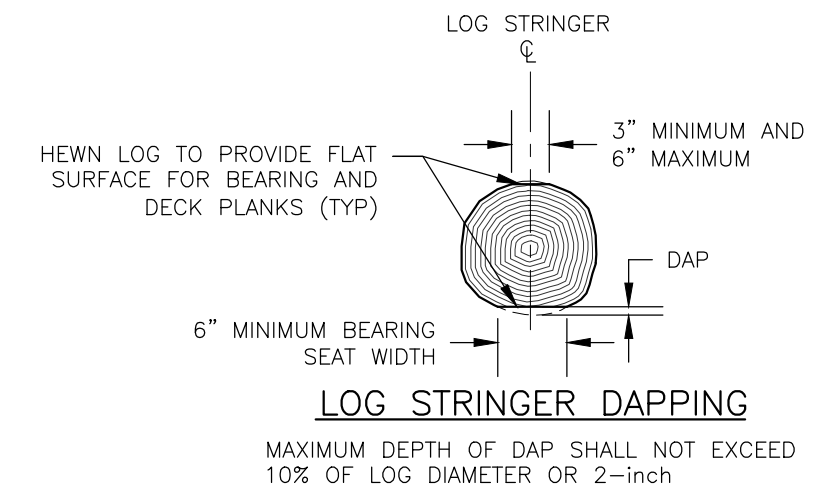
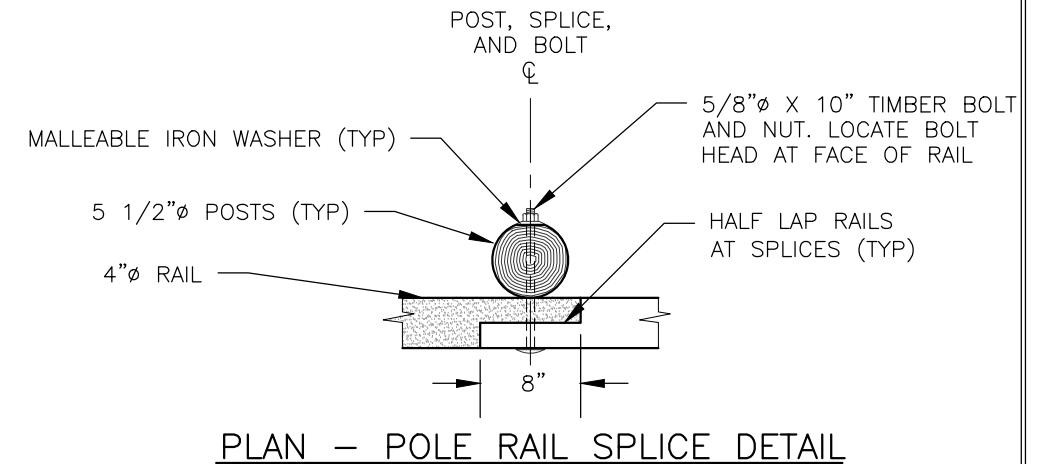
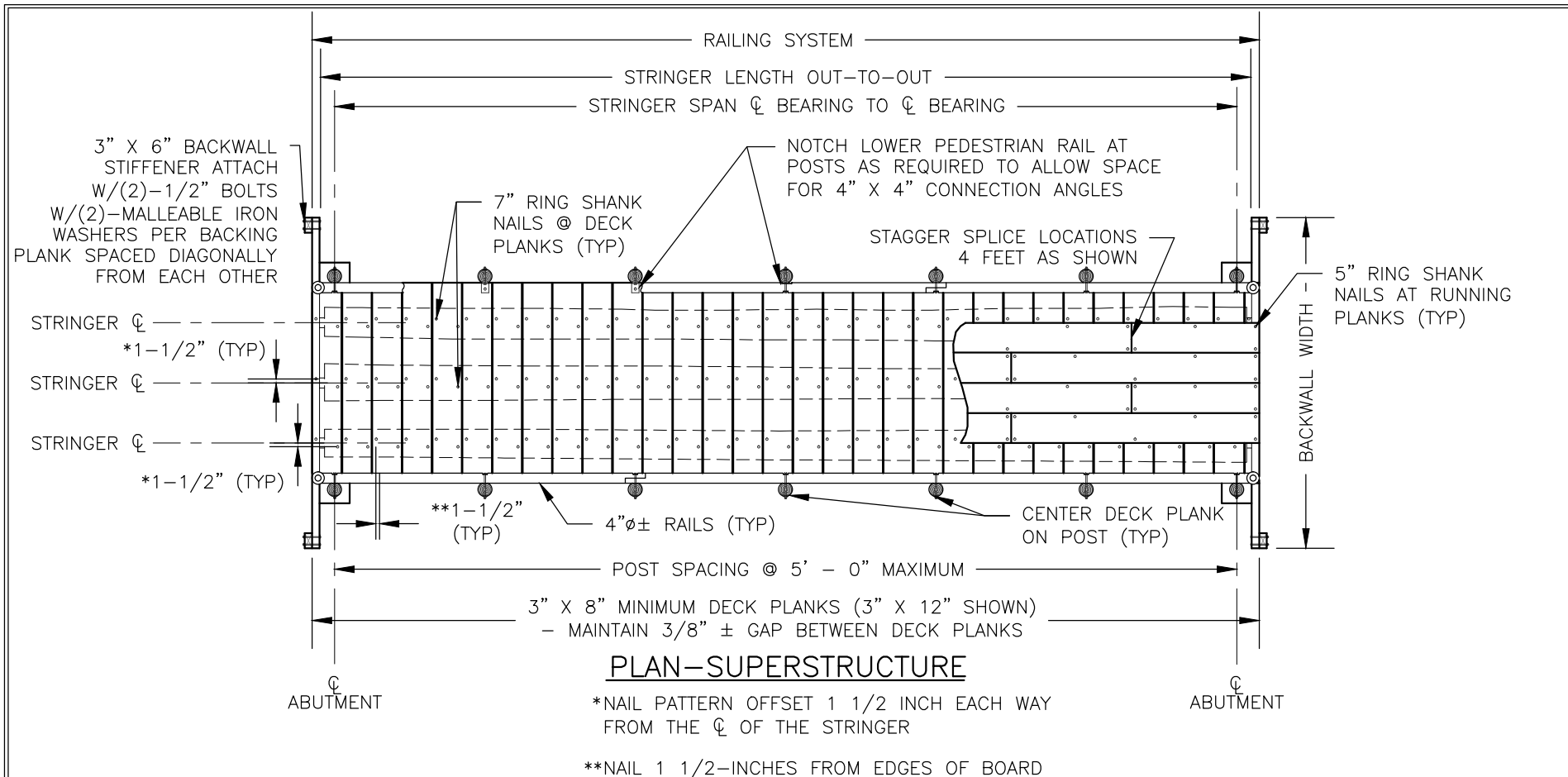
NOT TO SCALE

DRAWING NO.

STD_961-20-02b

SHEET

OF



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

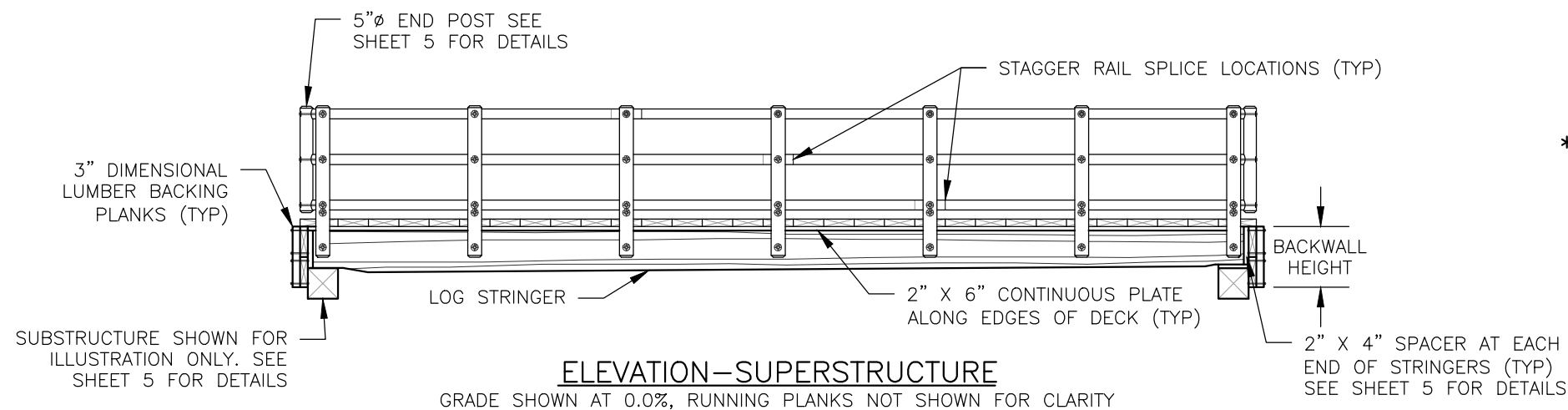
**STRINGER SPAN (FEET)	TIMBER SPECIES - DOUGLAS FIR (COASTAL OR INTERIOR NORTH) AND WESTERN LARCH				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
	PEDESTRIAN LOAD ***65	90	120	150	200
10	8"	8"	8"	8"	8"
15	9"	9"	9"	9"	10"
20	11"	11"	11"	11"	12"
25	13"	13"	13"	13"	14"
30	15"	15"	15"	15"	16"
35	17"	17"	17"	17"	18"
40	19"	19"	19"	19"	21"
45	21"	21"	21"	21"	23"

*STRINGER SIZE SHALL 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

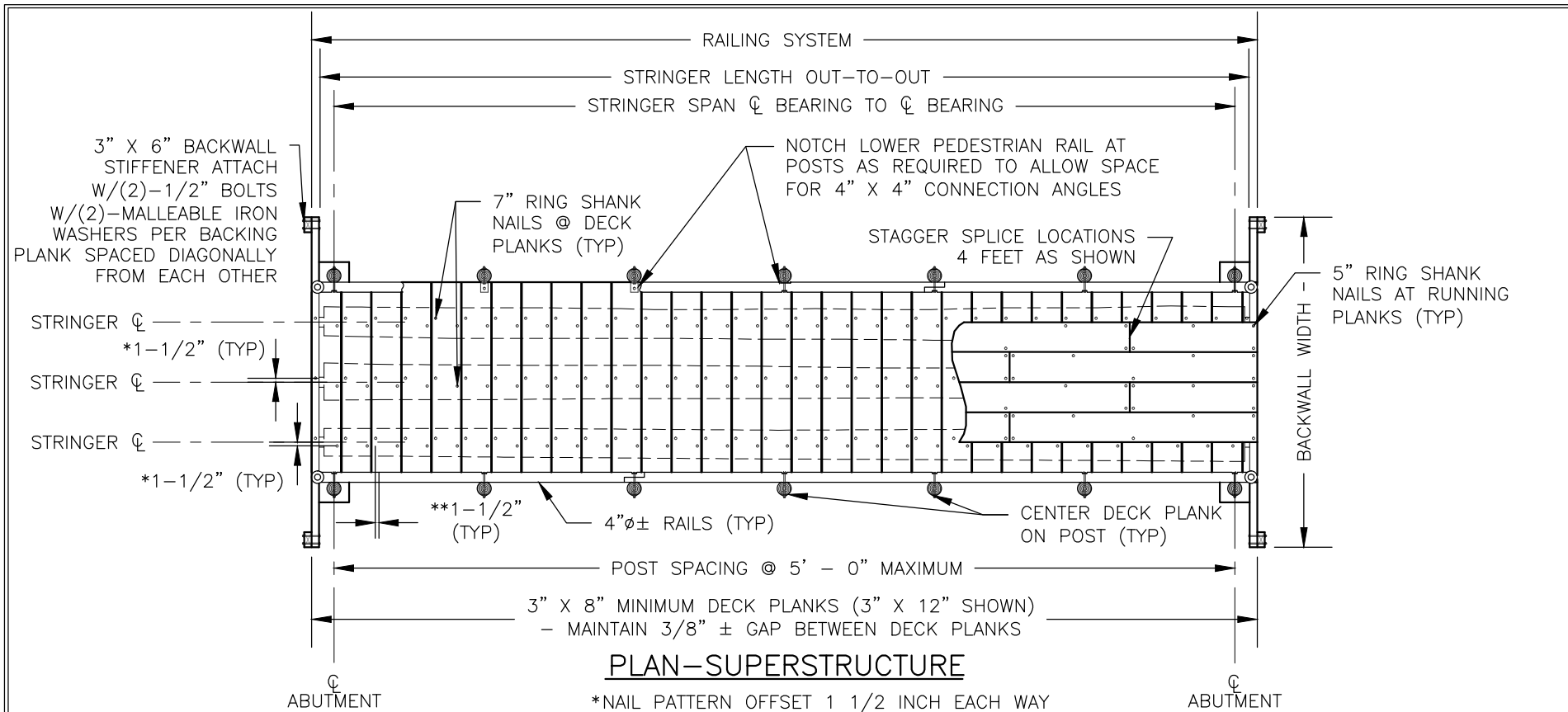
***REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

SHEET 3 OF 6



NOTES:

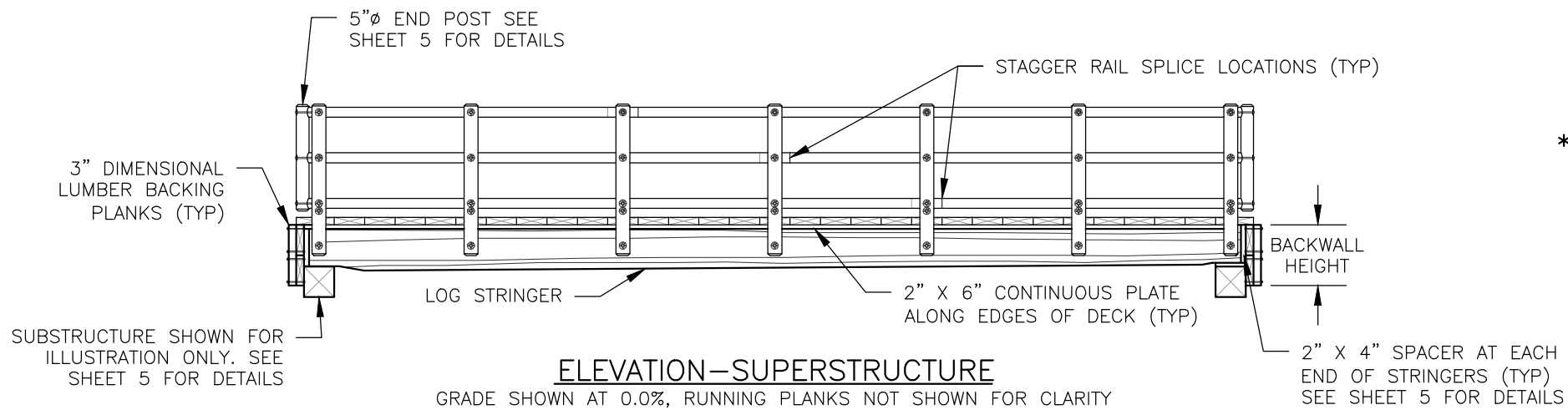
- SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR A MINIMUM OF TWO POST SPACES. ALTERNATE RAIL SPLICES AT POSTS.
- FASTEN RUNNING PLANKS TO DECK WITH 40d 5-INCH LONG RING SHANK NAILS AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END. SEE PLAN-SUPERSTRUCTURE FOR LAYOUT TYPICAL.
- THE MINIMUM 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.
- 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.



PLAN-SUPERSTRUCTURE

*NAIL PATTERN OFFSET 1 1/2 INCH EACH WAY FROM THE $\varnothing$ OF THE STRINGER

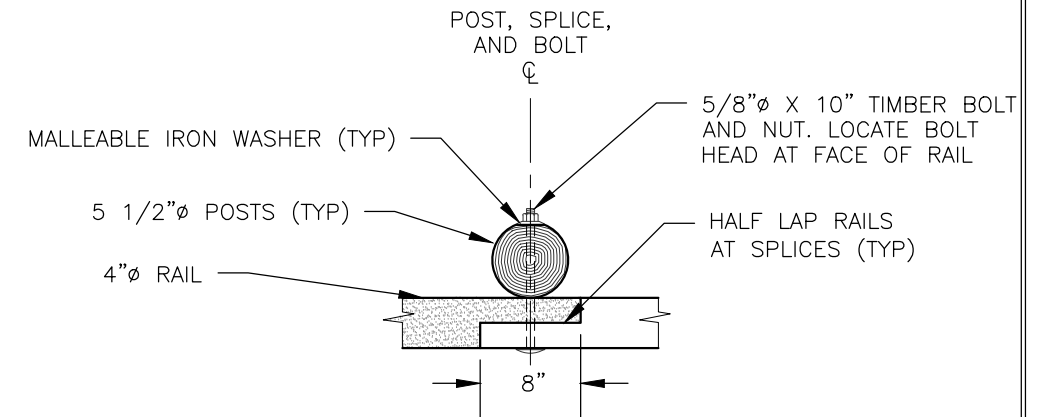
**NAIL 1 1/2-INCHES FROM EDGES OF BOARD



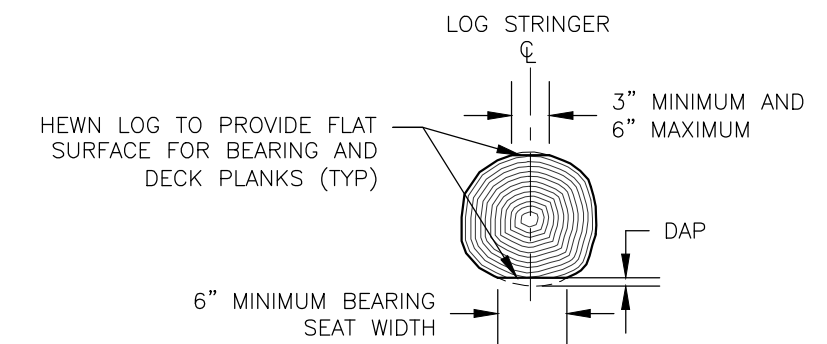
ELEVATION-SUPERSTRUCTURE

NOTES:

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



PLAN - POLE RAIL SPLICE DETAIL



LOG STRINGER DAPPING

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

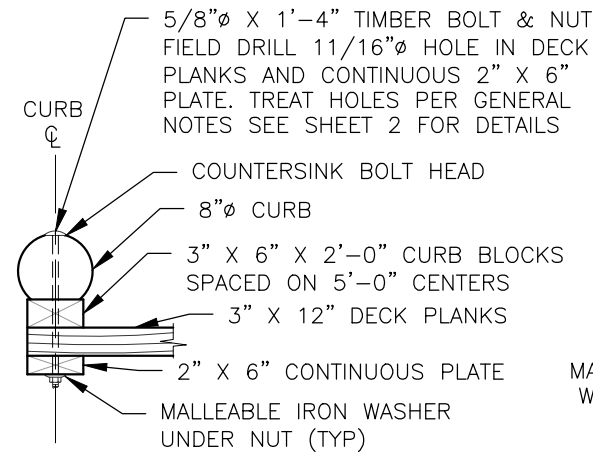
**STRINGER SPAN (FEET)	TIMBER SPECIES - SOUTHERN PINE				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
	PEDESTRIAN LOAD ***65	90	120	150	200
10	8"	8"	8"	8"	8"
15	9"	9"	9"	9"	10"
20	11"	11"	11"	12"	12"
25	13"	13"	13"	14"	15"
30	15"	16"	15"	16"	17"
35	17"	18"	17"	18"	19"
40	19"	20"	19"	20"	21"
45	21"	22"	21"	22"	23"

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

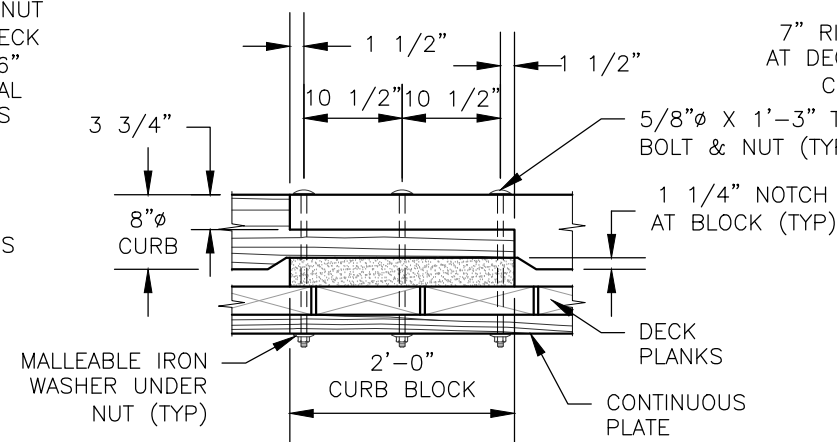
**STRINGER LENGTH EQUAL TO STRINGER SPAN PLUS ONE FOOT

***REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

SHEET 3 OF 5



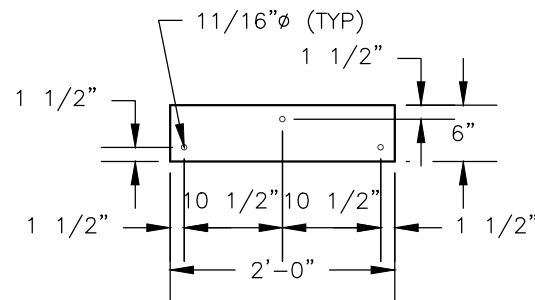
TYPICAL SECTION LOG CURB



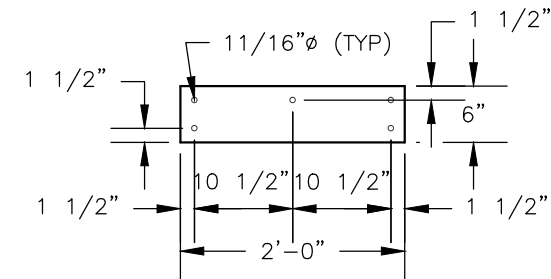
ELEVATION CONNECTION AT CURB SPLICE

CONNECTION SIMILAR AT TYPICAL CURB BLOCK

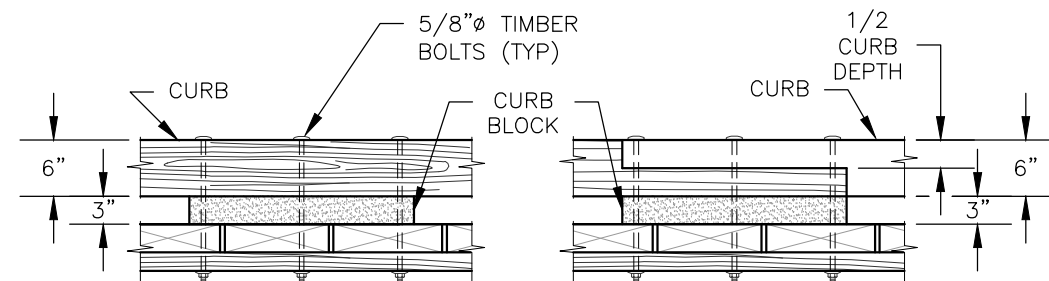
LOG CURB CONNECTION DETAILS



CURB BLOCK PLAN



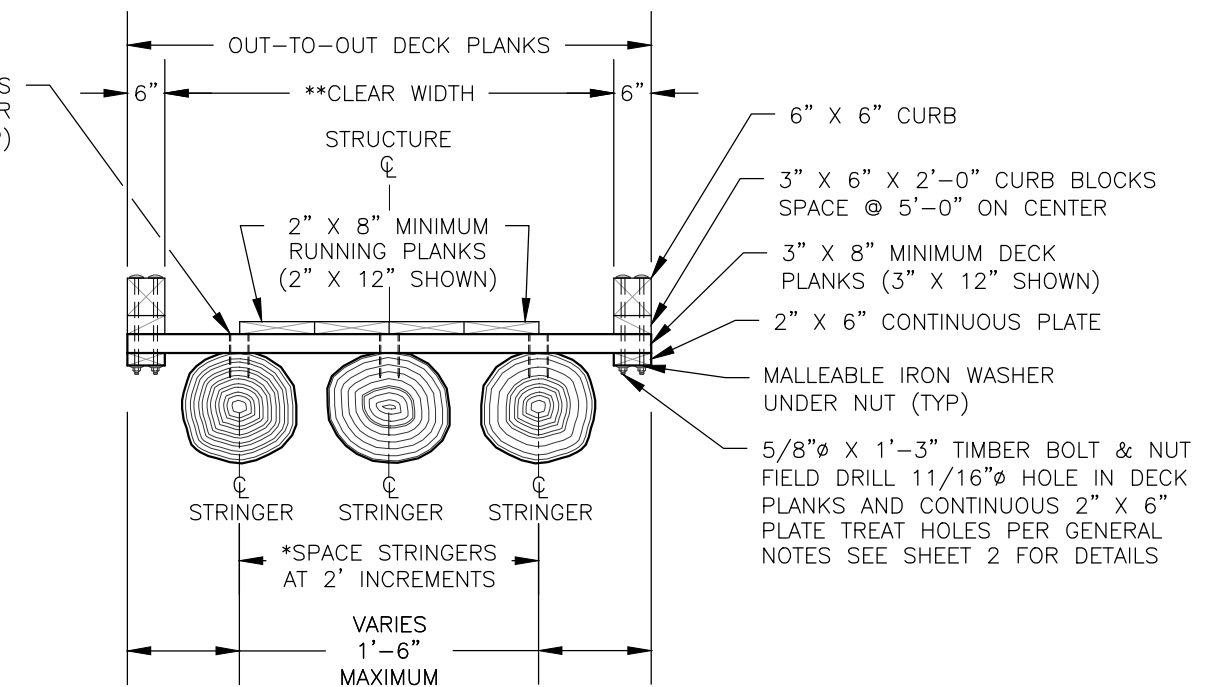
CURB BLOCK PLAN AT SPLICE



ELEVATION
TYPICAL CONNECTION

ELEVATION
CONNECTION AT SPLICE

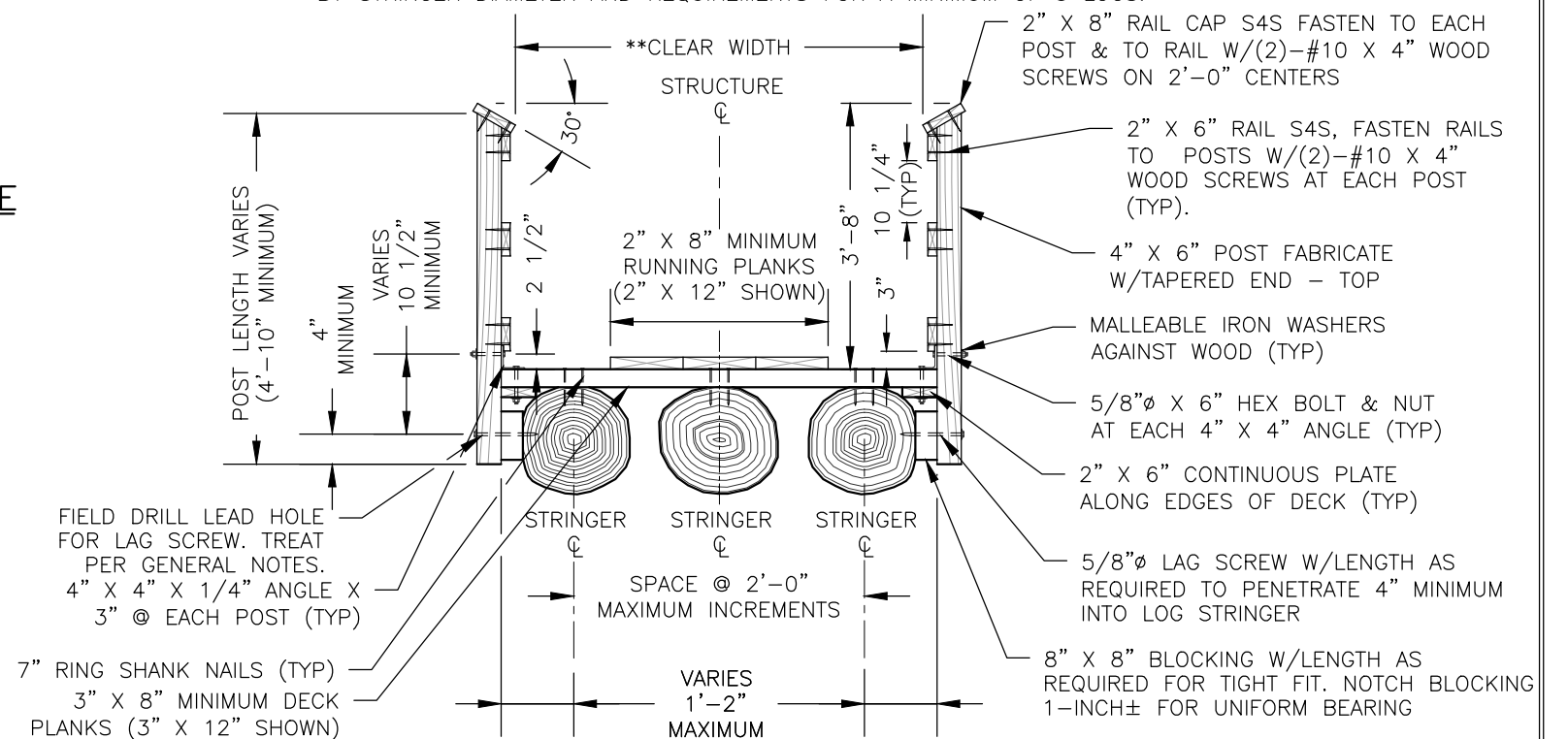
SOLID SAWN CURB CONNECTION DETAILS



DECK SECTION W/CURBS

*MINIMUM NUMBER OF STRINGERS IS 3.

** MINIMUM CLEAR WIDTH (INSIDE FACE TO INSIDE FACE) MAY BE CONTROLLED BY STRINGER DIAMETER AND REQUIREMENTS FOR A MINIMUM OF 3 LOGS.



DECK SECTION W/SAWN RAILING SYSTEM

NOTCH LOWER 2" X 6" PEDESTRIAN RAILING SYSTEMS AT POST TO ALLOW SPACE FOR 4-INCH X 4-INCH CONNECTION ANGLES

SHEET 4 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

MLS

REVISION DATE

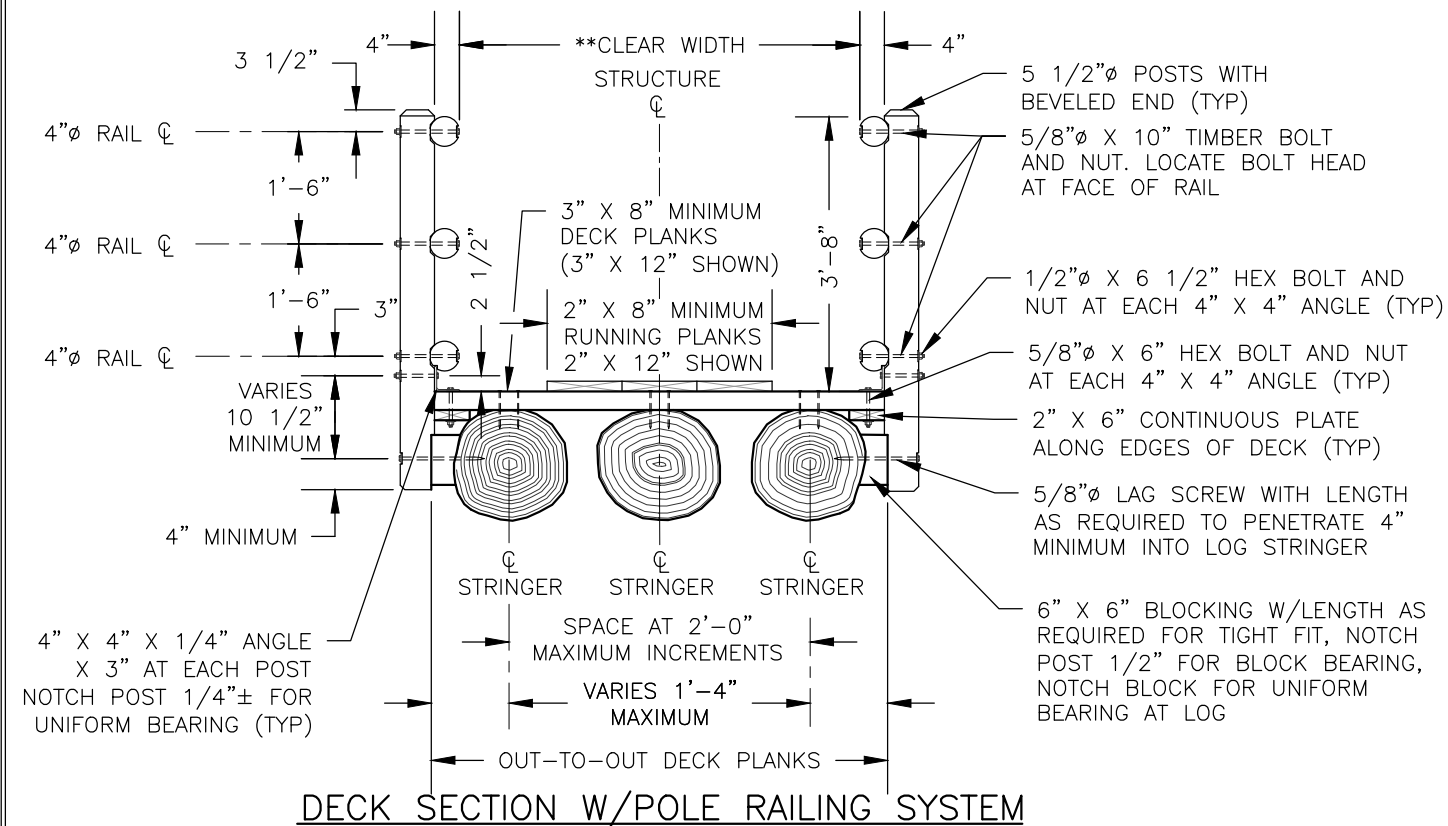
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DRAWING NO.

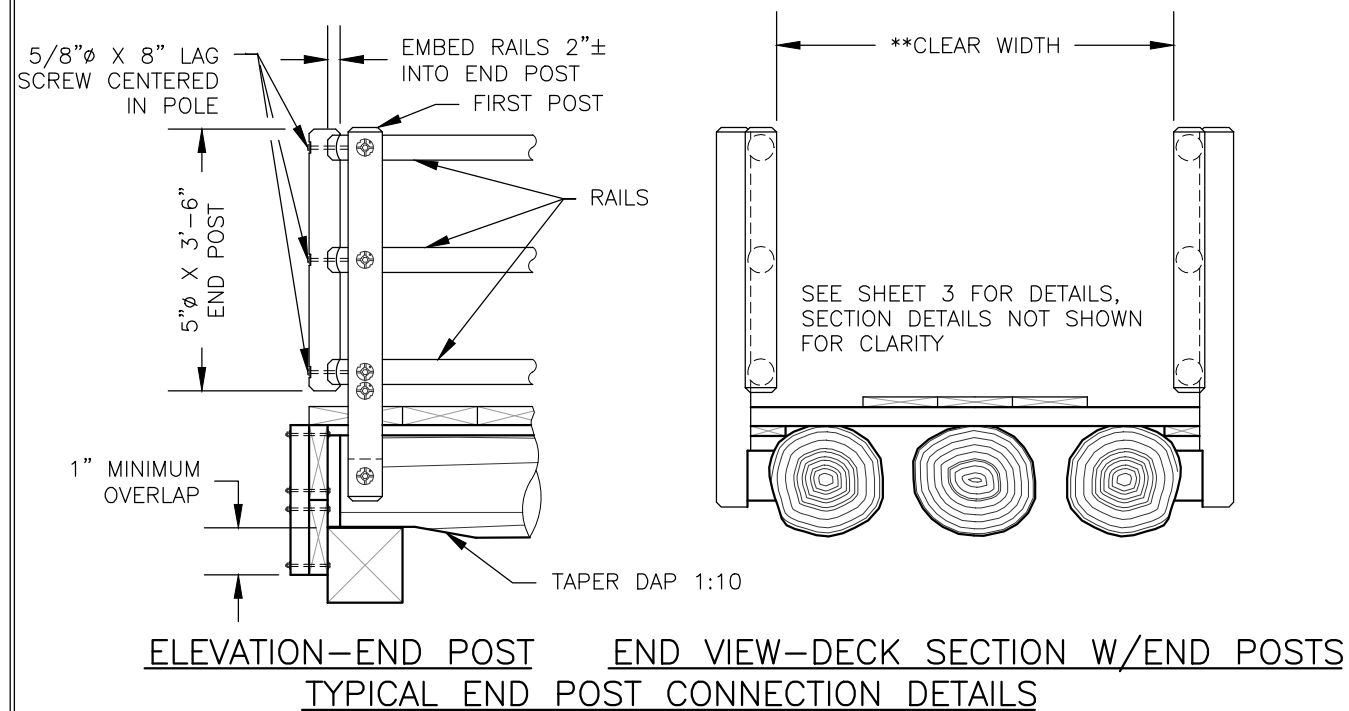
STD_961-20-04

SHEET

OF



**MINIMUM CLEAR WIDTH (INSIDE FACE TO INSIDE FACE) IS CONTROLLED BY END POSTS REFER TO TYPICAL END POST CONNECTION DETAILS ON THIS SHEET.



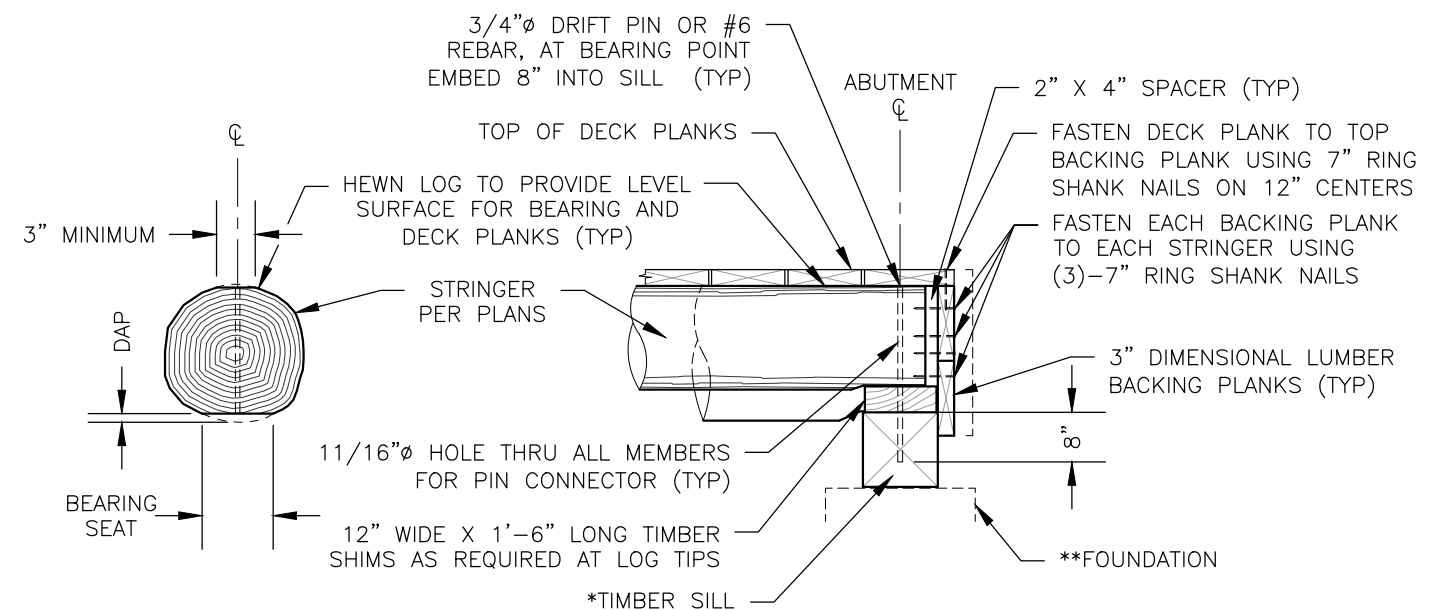
NOTES:

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 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.**



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



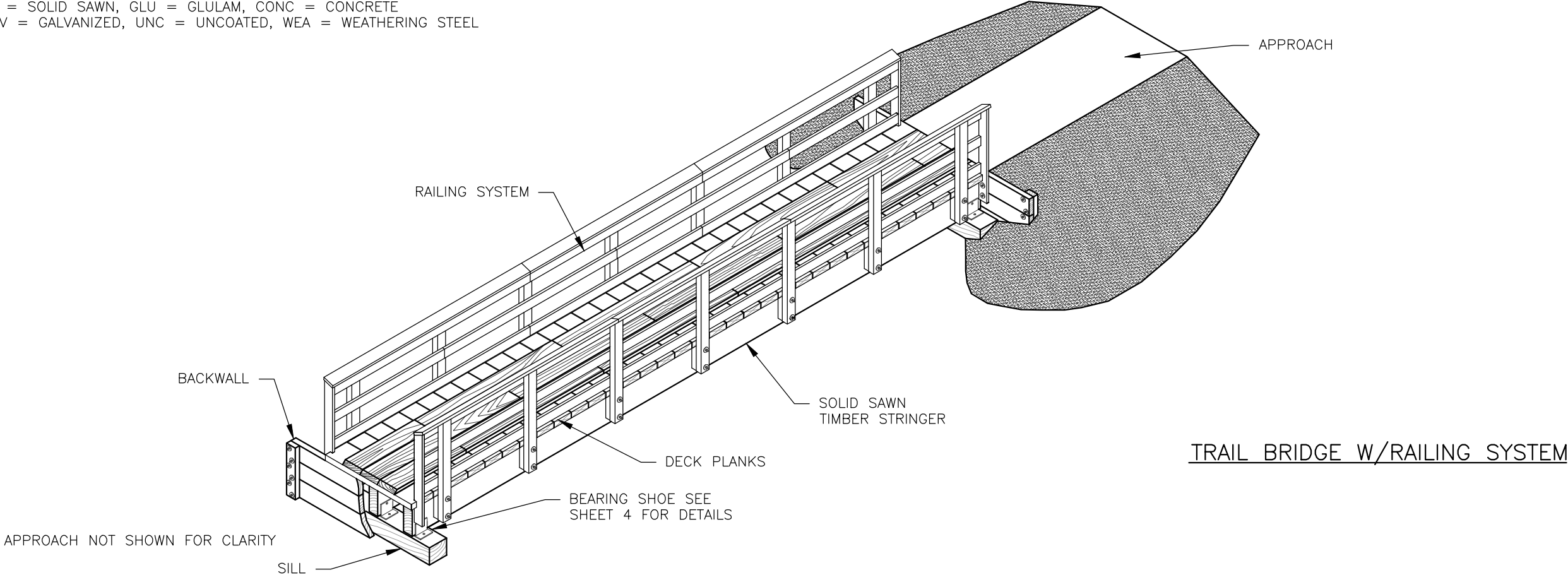
(PROJECT SPECIFIC ABUTMENT NOTES)

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

NA = NOT APPLICABLE

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

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



SHEET 1 OF 4



U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

DRAWING NAME

SAWN TIMBER STRINGER TRAIL BRIDGE

SECTION

962 - SAWN TIMBER TRAIL BRIDGE

TYPICAL ID

STS

REVISION DATE

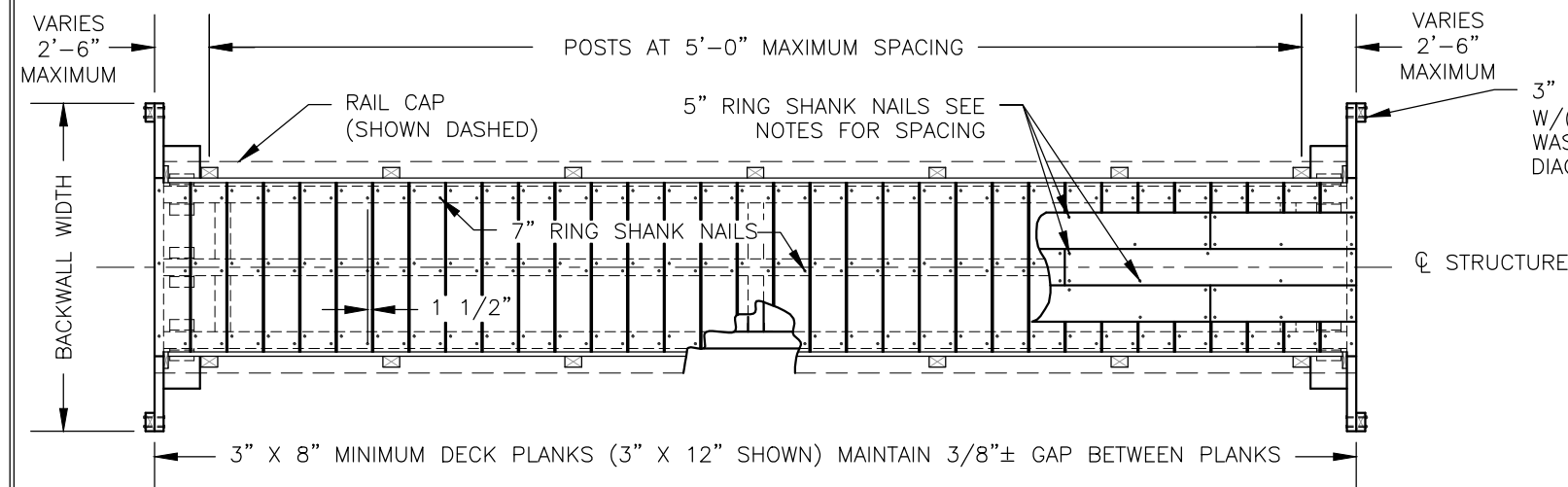
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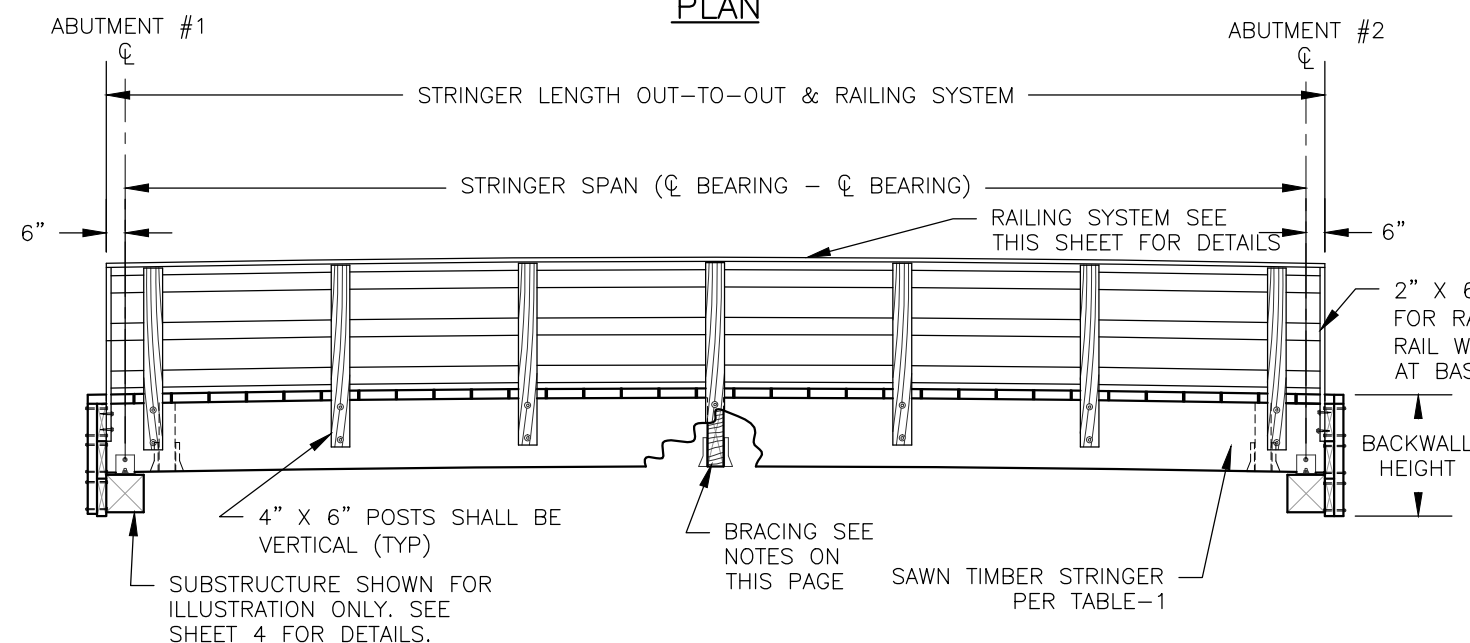
STD_962-10-01

SHEET

OF



PLAN



ELEVATION

NOTES:

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

- ALL DIMENSIONS IN TABLE-1 ARE NOMINAL (ROUGH SAWN). 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.
- 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.
- FASTEN RUNNING PLANKS TO DECK WITH 40d (5-INCH RING SHANK) NAILS AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END.
- PROVIDE A MINIMUM 1/2-INCH SPACE BETWEEN BLOCKING AND BACKWALL FOR AIR CIRCULATION.
- SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR TWO POST SPACES. DO NOT LOCATE MORE THAN ONE RAIL SPLICE AT ANY ONE POST.
- 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.
- WOOD BLOCKING SHALL BE BOLTED TO STRINGERS WITH STEEL ANGLES OR SUSPENDED IN STEEL HANGERS THAT ARE NAILED TO BLOCKS AND STRINGER SIDES

2" X 8" S4S RAIL CAP FASTEN TO POST AND TO RAIL W/(2)-#10 X 4" WOOD SCREWS ON 2'-0" CENTERS

2" X 6" S4S RAIL, FASTEN RAILS TO POSTS W/(2)-#10 X 4" WOOD SCREWS AT EACH CONNECTION

4" X 6" POST. FABRICATE W/TAPERED END (TOP) AND W/(2)-13/16"Ø HOLES AT BOTTOM

3" X 8" MINIMUM DECK PLANKS 3" X 12" SHOWN

5/8"Ø BOLT X (VERIFY LENGTH) W/NUT AND (2)-OVERSIZED MALLEABLE IRON WASHERS

4" X 6" X 1'-2" S4S BLOCKING

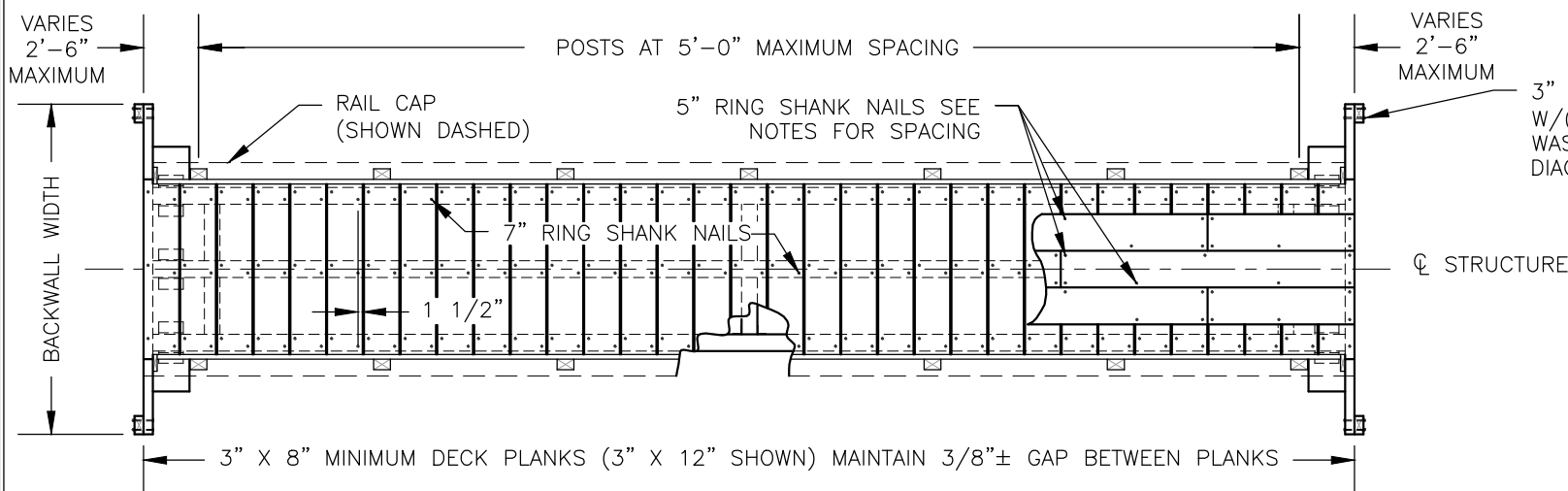
TYPICAL DECK SECTION W/RAILING SYSTEM

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

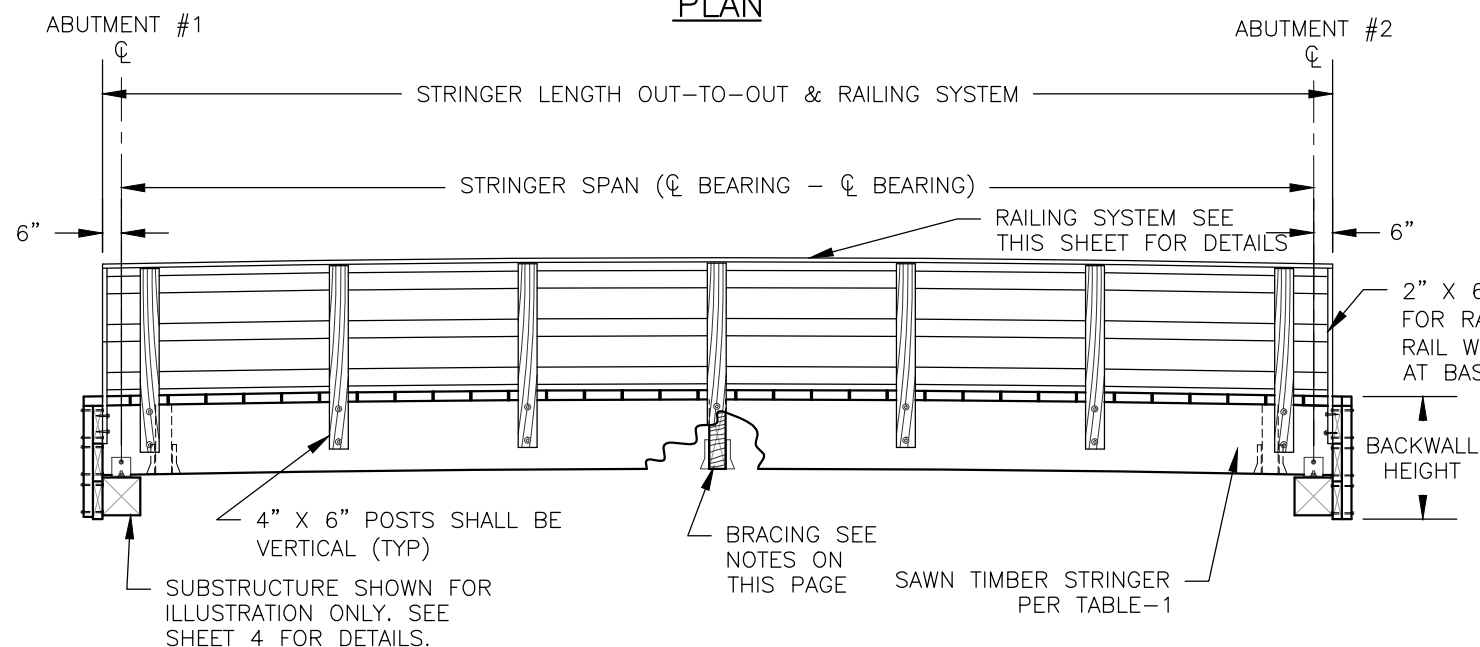
**STRINGER SPAN (FEET)	TIMBER SPECIES - DOUGLAS FIR - LARCH				
	GRADE - NO.1				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
	PEDESTRIAN LIVE LOAD		GROUND SNOW LOAD		
	***65	90	120	150	200
●10	3" X 8"	3" X 10"	3" X 12"	4" X 10"	4" X 12"
●15	4" X 10"	4" X 12"	4" X 14"	4" X 16"	6" X 12"
●20	4" X 14"	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
- ▲INSTALL BRACING WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING & MID-SPAN
- * STRINGER SIZE SHALL BE THE LARGER OF THE PEDESTRIAN OR GROUND SNOW 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



PLAN



ELEVATION

NOTES:

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

- ALL DIMENSIONS IN TABLE-1 ARE NOMINAL (ROUGH SAWN). 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.
- 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.
- FASTEN RUNNING PLANKS TO DECK WITH 40d (5-INCH RING SHANK) NAILS AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END.
- PROVIDE A MINIMUM 1/2-INCH SPACE BETWEEN BLOCKING AND BACKWALL FOR AIR CIRCULATION.
- SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR TWO POST SPACES. DO NOT LOCATE MORE THAN ONE RAIL SPLICE AT ANY ONE POST.
- 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.
- WOOD BLOCKING SHALL BE BOLTED TO STRINGERS WITH STEEL ANGLES OR SUSPENDED IN STEEL HANGERS THAT ARE NAILED TO BLOCKS AND STRINGER SIDES

3" X 6" BACKING PLANK STIFFENER ATTACH W/(2)-1/2"Ø BOLTS W/(2)-MALLEABLE IRON WASHERS PER BACKING PLANK SPACED DIAGONALLY FROM EACH OTHER

2" X 8" S4S RAIL CAP FASTEN TO POST AND TO RAIL W/(2)-#10 X 4" WOOD SCREWS ON 2'-0" CENTERS

2" X 6" S4S RAIL, FASTEN RAILS TO POSTS W/(2)-#10 X 4" WOOD SCREWS AT EACH CONNECTION

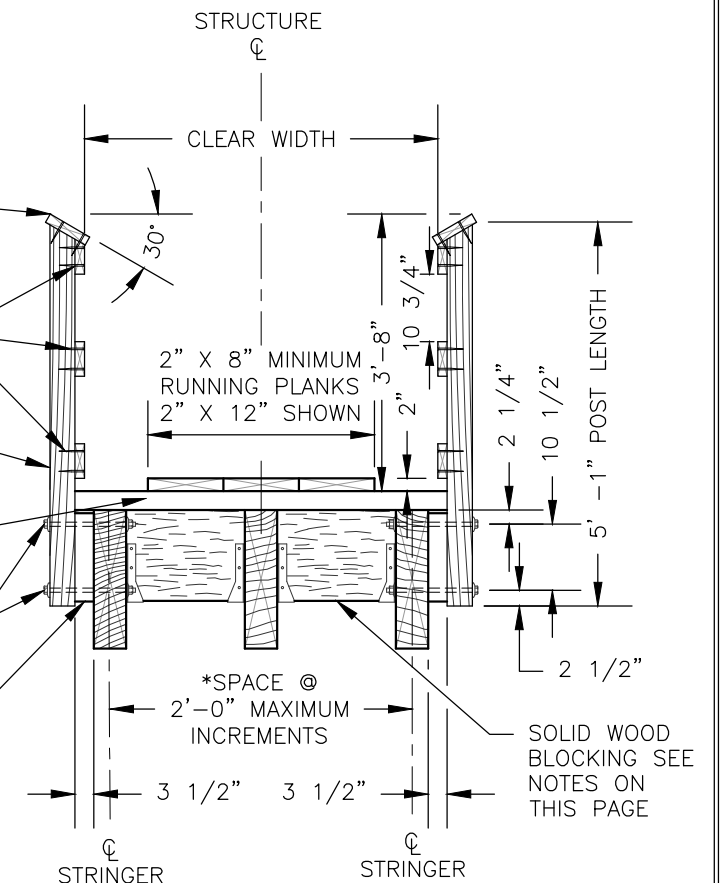
4" X 6" POST. FABRICATE W/TAPERED END (TOP) AND W/(2)-13/16"Ø HOLES AT BOTTOM

3" X 8" MINIMUM DECK PLANKS 3" X 12" SHOWN

5/8"Ø BOLT X (VERIFY LENGTH) W/NUT AND (2)-OVERSIZED MALLEABLE IRON WASHERS

4" X 6" X 1'-2" S4S BLOCKING

TYPICAL DECK SECTION W/RAILING SYSTEM



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

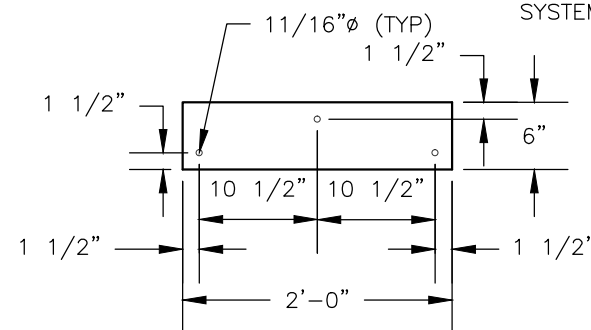
**STRINGER SPAN (FEET)	TIMBER SPECIES - SOUTHERN PINE				
	GRADE - NO.1				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
	PEDESTRIAN LIVE LOAD		GROUND SNOW LOAD		
	***65	90	120	150	200
●10	3" X 8"	3" X 10"	3" X 10"	3" X 12"	4" X 12"
●15	4" X 10"	4" X 12"	4" X 14"	4" X 16"	6" X 12"
●20	4" X 14"	4" X 16"	6" X 12"	6" X 14"	6" X 16"
▲25	6" X 14"	6" X 16"	6" X 16"	6" X 16"	6" X 20"
▲30	6" X 16"	6" X 18"	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
- ▲INSTALL BRACING WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING & MID-SPAN
- * 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

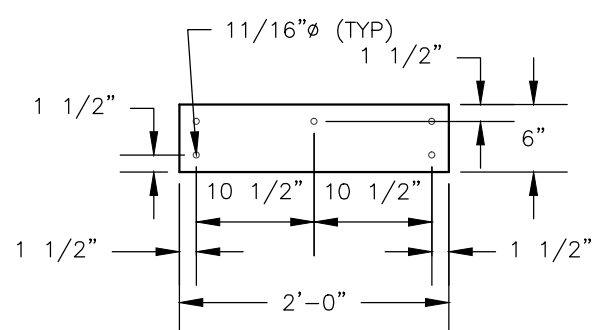
SHEET 2 OF 4



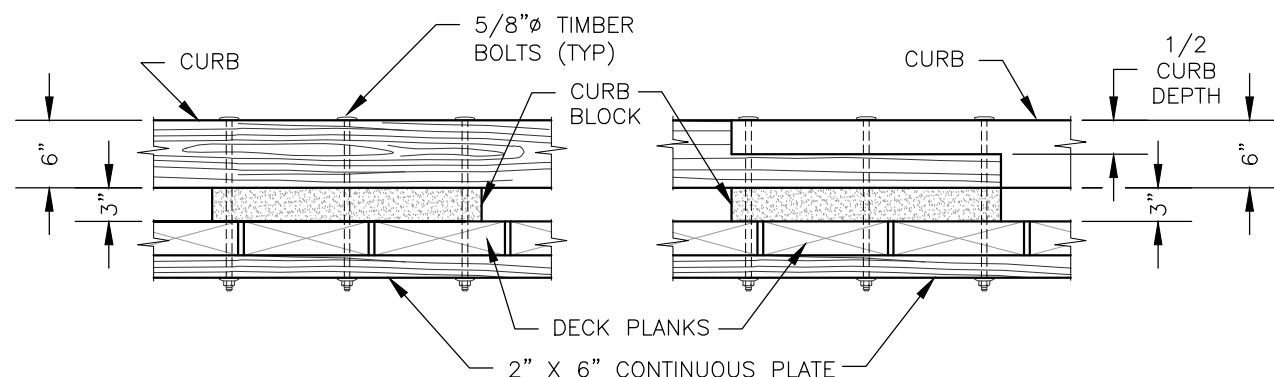
* MINIMUM NUMBER OF STRINGERS IS THREE
** INSIDE FACE TO INSIDE FACE OF RAILING
SYSTEM



PLAN-CURB BLOCK



PLAN-CURB BLOCK AT SPLICE

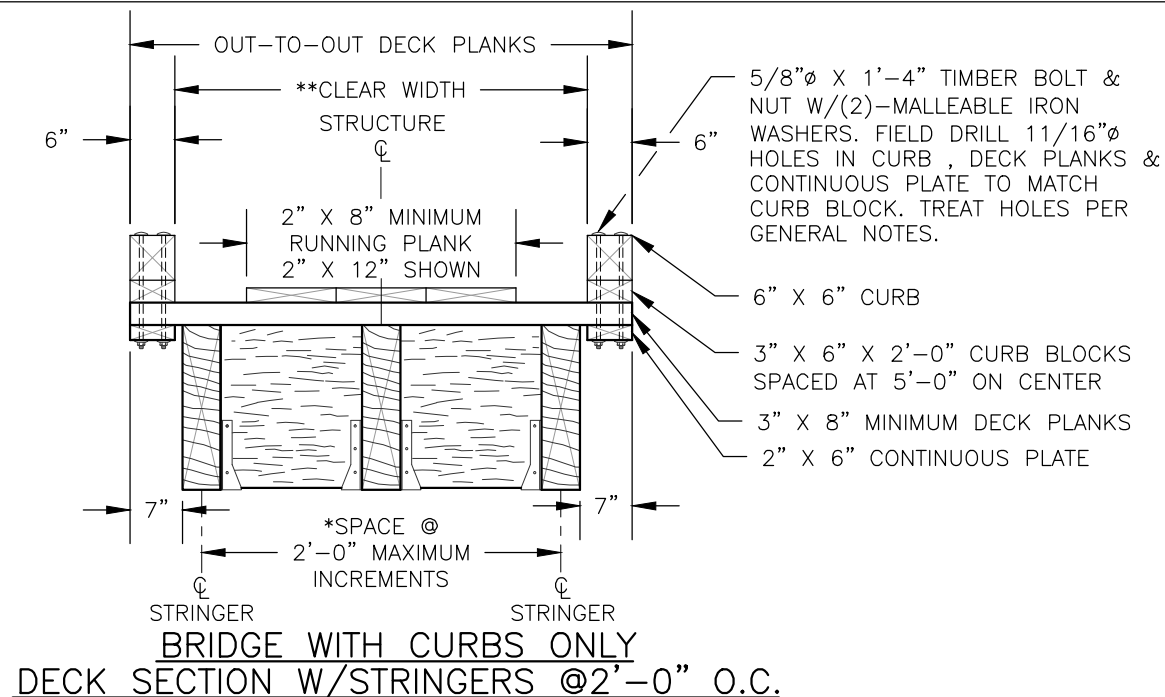


ELEVATION—TYPICAL CONNECTION

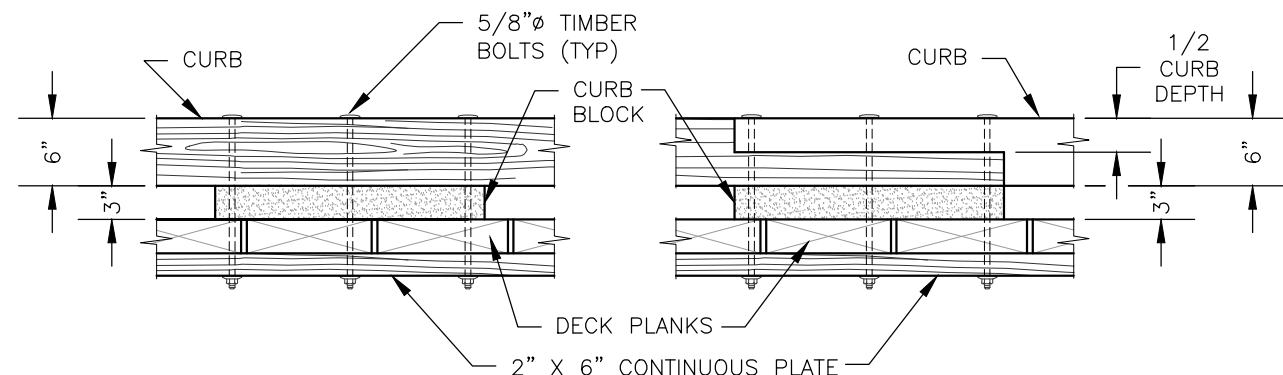
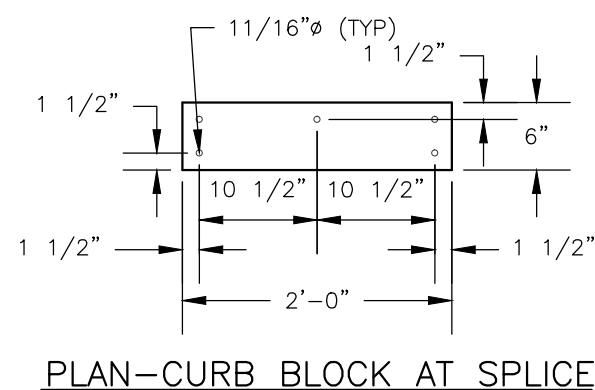
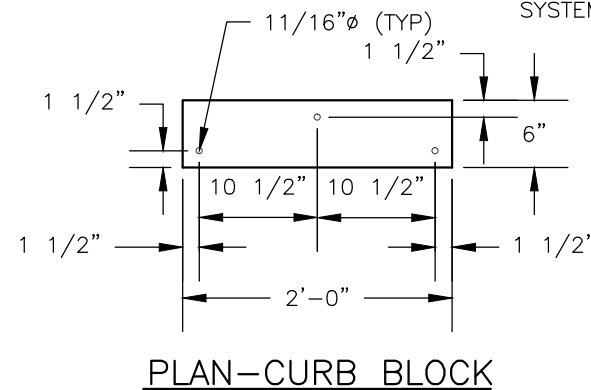
ELEVATION-CONNECTION AT SPLICE

SOLID SAWN CURB CONNECTION DETAILS

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.



* MINIMUM NUMBER OF STRINGERS IS THREE
 ** INSIDE FACE TO INSIDE FACE OF RAILING SYSTEM



SOLID SAWN CURB CONNECTION DETAILS

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.

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, 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".

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

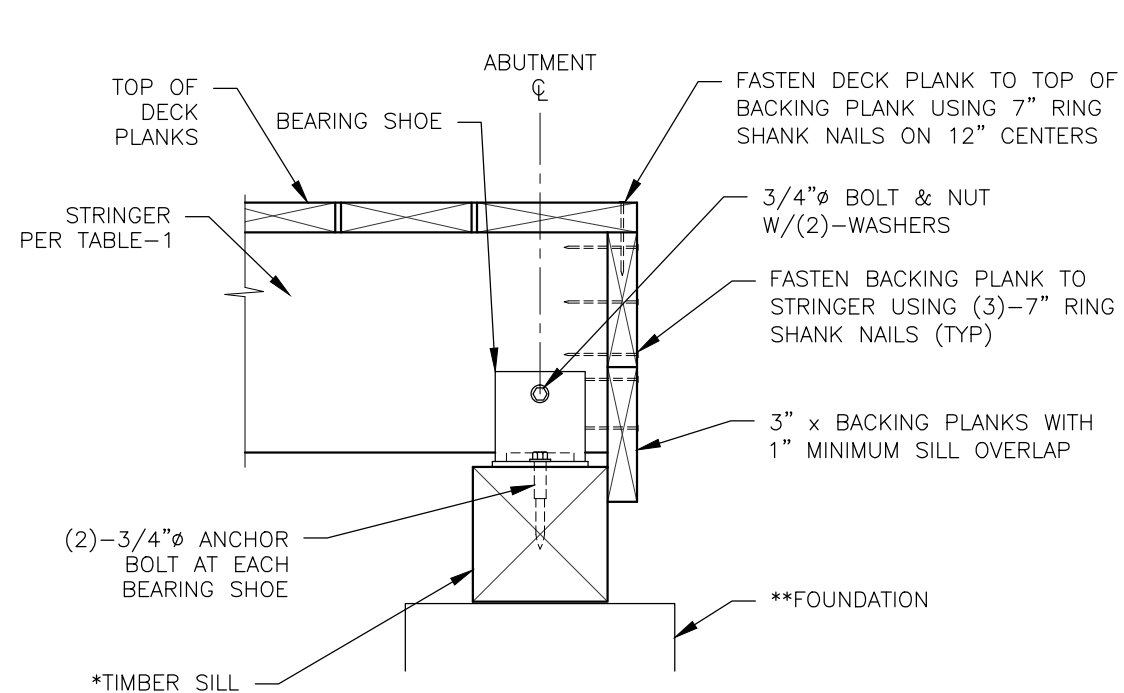
- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT-HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

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.

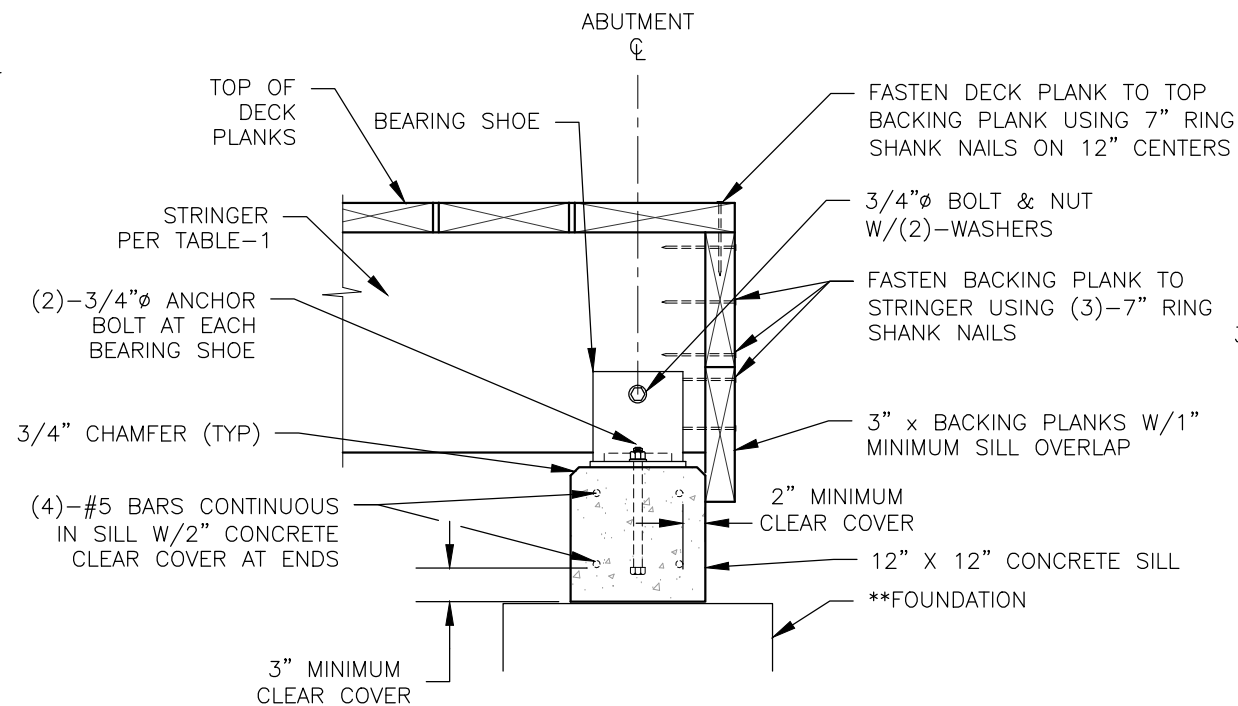


**GLU-LAM/SAWN TIMBER SILL
CONNECTION DETAIL**

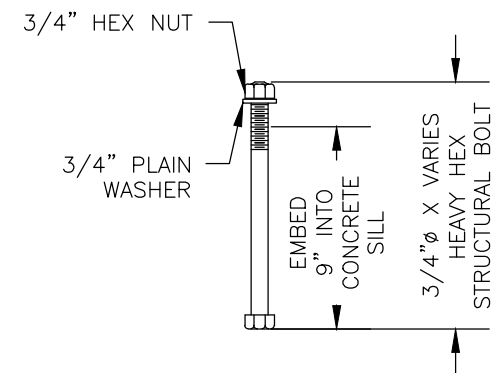
BACKING PLANK STIFFENER NOT SHOWN FOR CLARITY

** 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.

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



**CONCRETE SILL
CONNECTION DETAIL**



**CONCRETE SILL
ANCHOR BOLT DETAIL**

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,

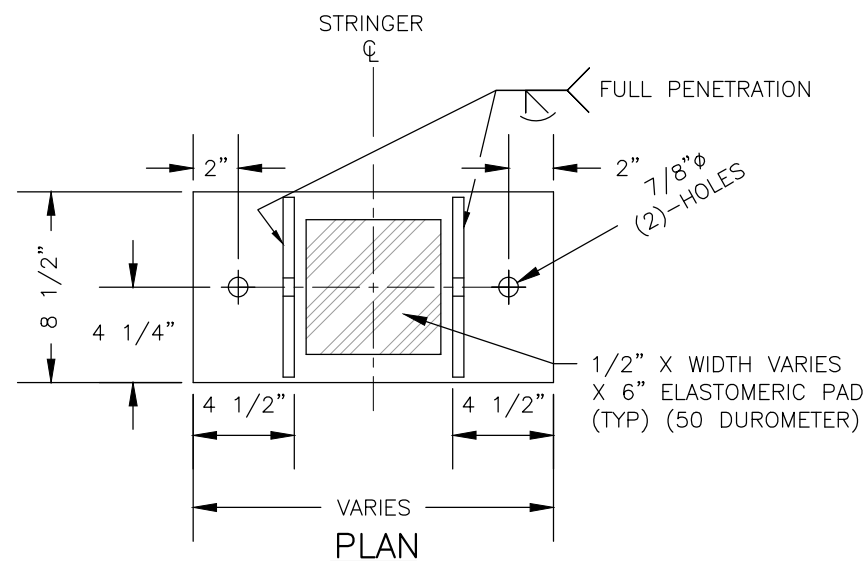
CONCRETE: USE STRUCTURAL CONCRETE WITH 7 SACK MINIMUM MIX APPROVED BY THE C.O., CONCRETE SHALL RECEIVE A TOWELED SURFACE FINISH. CONCRETE SHALL HAVE 4%-6% ENTRAINED AIR. MAXIMUM SIZE AGGREGATE SHALL BE 3/4-INCH AND CONCRETE SLUMP SHALL NOT EXCEED 4-INCHES.

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, UNLESS NOTED OTHERWISE ON THE PLANS.

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

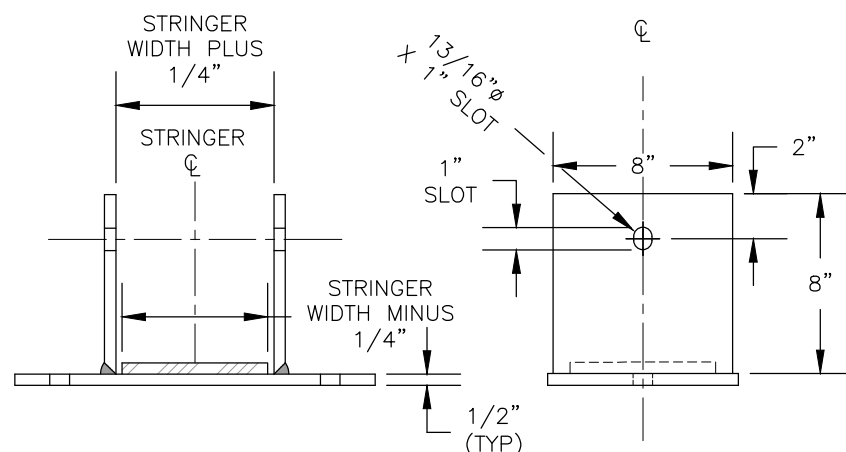
TREATED TIMBER & LUMBER: REFER TO THE GENERAL NOTES ON THE SUBSTRUCTURE DRAWINGS FOR TREATED TIMBER & LUMBER SPECIFICATIONS AND FIELD TREATING OF WOOD

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.**



BEARING SHOE DETAIL

MATERIAL = 1/2" STEEL PLATE A36



END VIEW

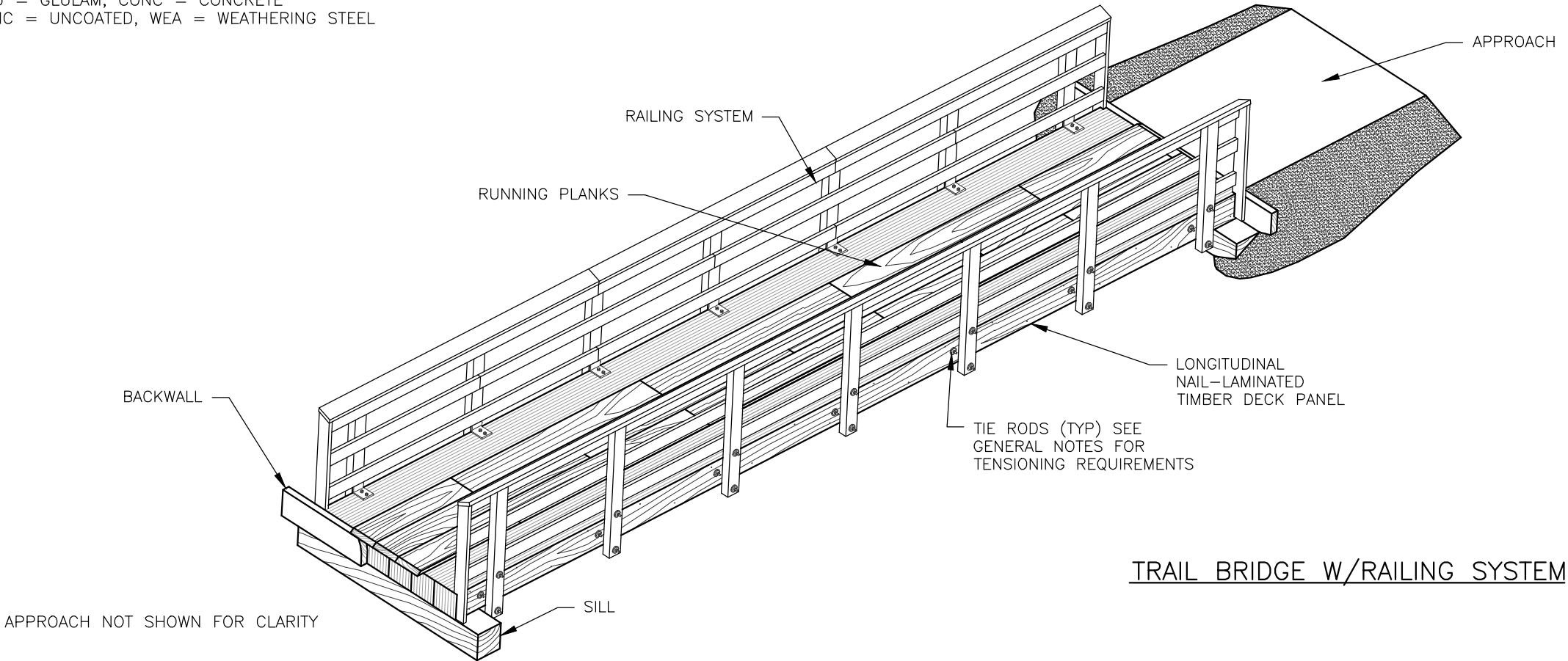
SIDE VIEW

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

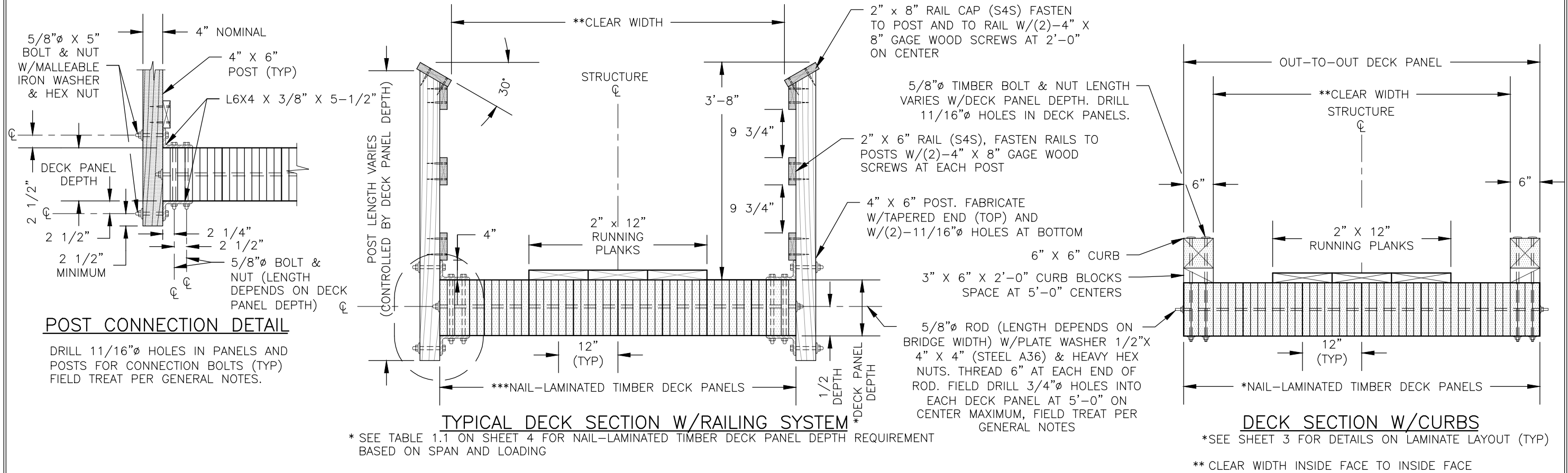
NA = NOT APPLICABLE

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

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



TRAIL BRIDGE W/RAILING SYSTEM



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.

- 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)**
- 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".

- 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)

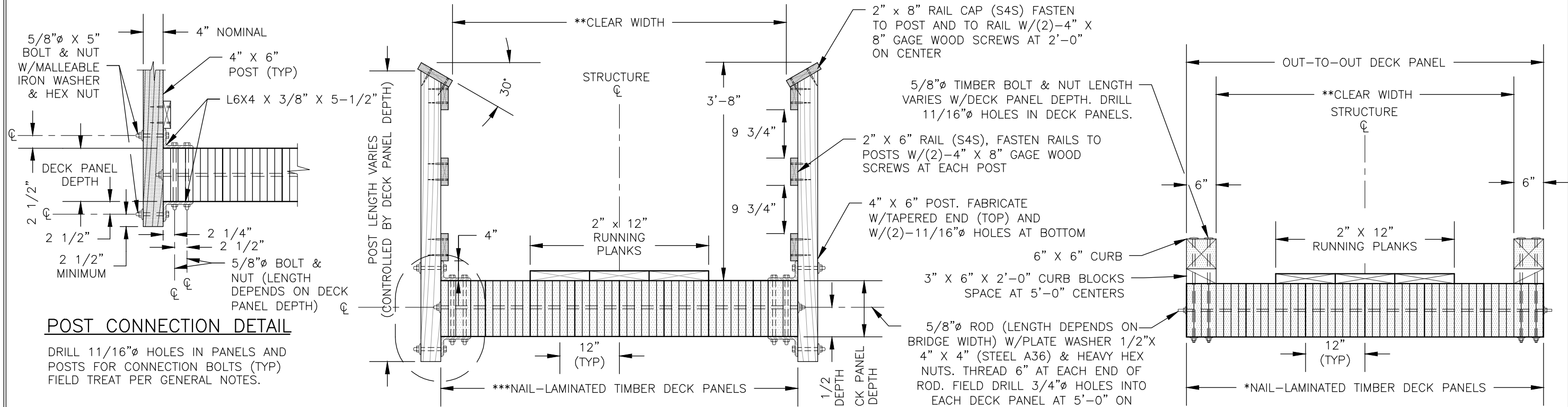
FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OF WOOD. ALL ABRASIONS AND FIELD CUTS –APPROVED BY THE C.O.– SHALL BE CAREFULLY TRIMMED AND GIVEN THREE BRUSH COATS OF THE FIELD TREATMENT SOLUTION. WHERE APPROVED FIELD DRILLING OF BOLT OR NAIL HOLES IS REQUIRED,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

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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.



POST CONNECTION DETAIL

DRILL 11/16"Ø HOLES IN PANELS AND POSTS FOR CONNECTION BOLTS (TYP) FIELD TREAT PER GENERAL NOTES.

TYPICAL DECK SECTION W/RAILING SYSTEM

DECK SECTION W/CURBS

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.

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)
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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.

SHEET 2 OF 5

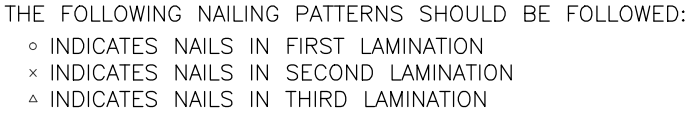
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
STANDARD TRAIL PLAN

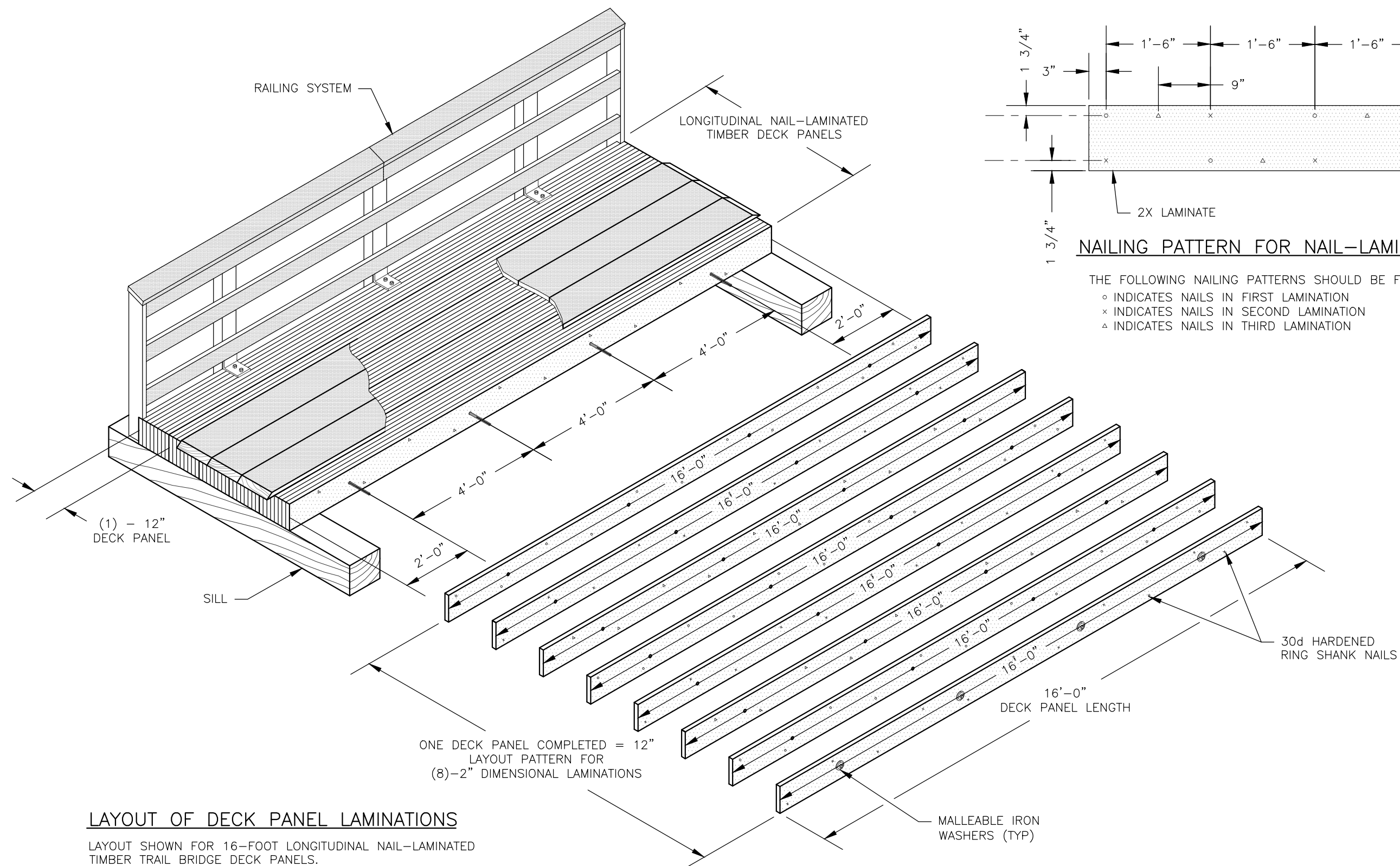
PROJECT NAME & LOCATION

DRAWING NAME
**LONGITUDINAL
NAIL- LAMINATED TIMBER TRAIL BRIDGE**
SECTION
962 - SAWN TIMBER TRAIL BRIDGE
TYPICAL ID
LNL

REVISION DATE
NOT TO SCALE

DRAWING NO.
STD_962-20-02b
SHEET
X OF

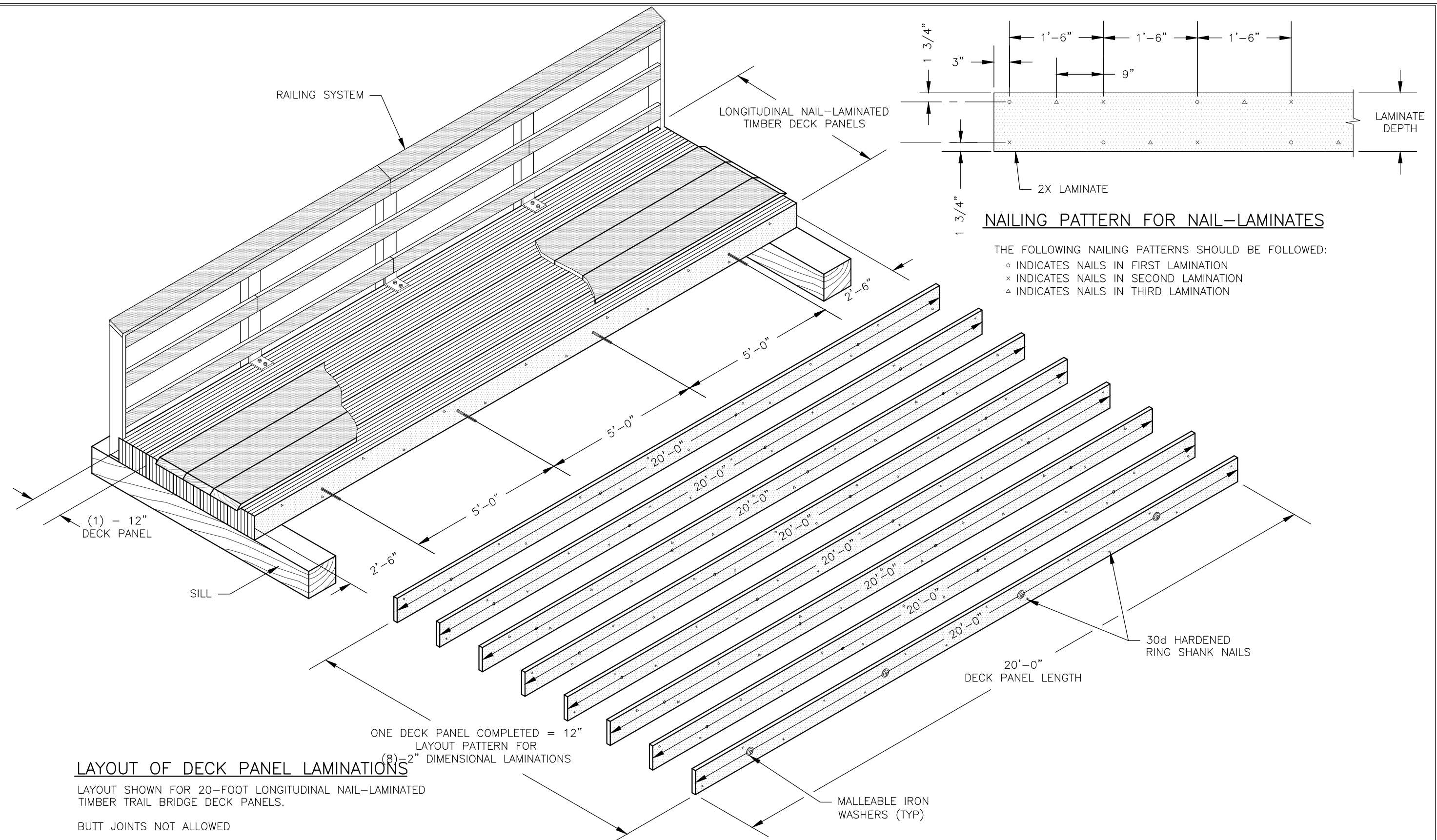




THE FOLLOWING NAILING PATTERNS SHOULD BE FOLLOWED:

LAYOUT OF DECK PANEL LAMINATIONS

SHEET 3 OF 5



DRAWING NAME

DRAWING NAME **LONGITUDINAL
NAIL- LAMINATED TIMBER TRAIL BRIDGE**

962 - SAWN TIMBER TRAIL BRIDGE

REVISION DATE

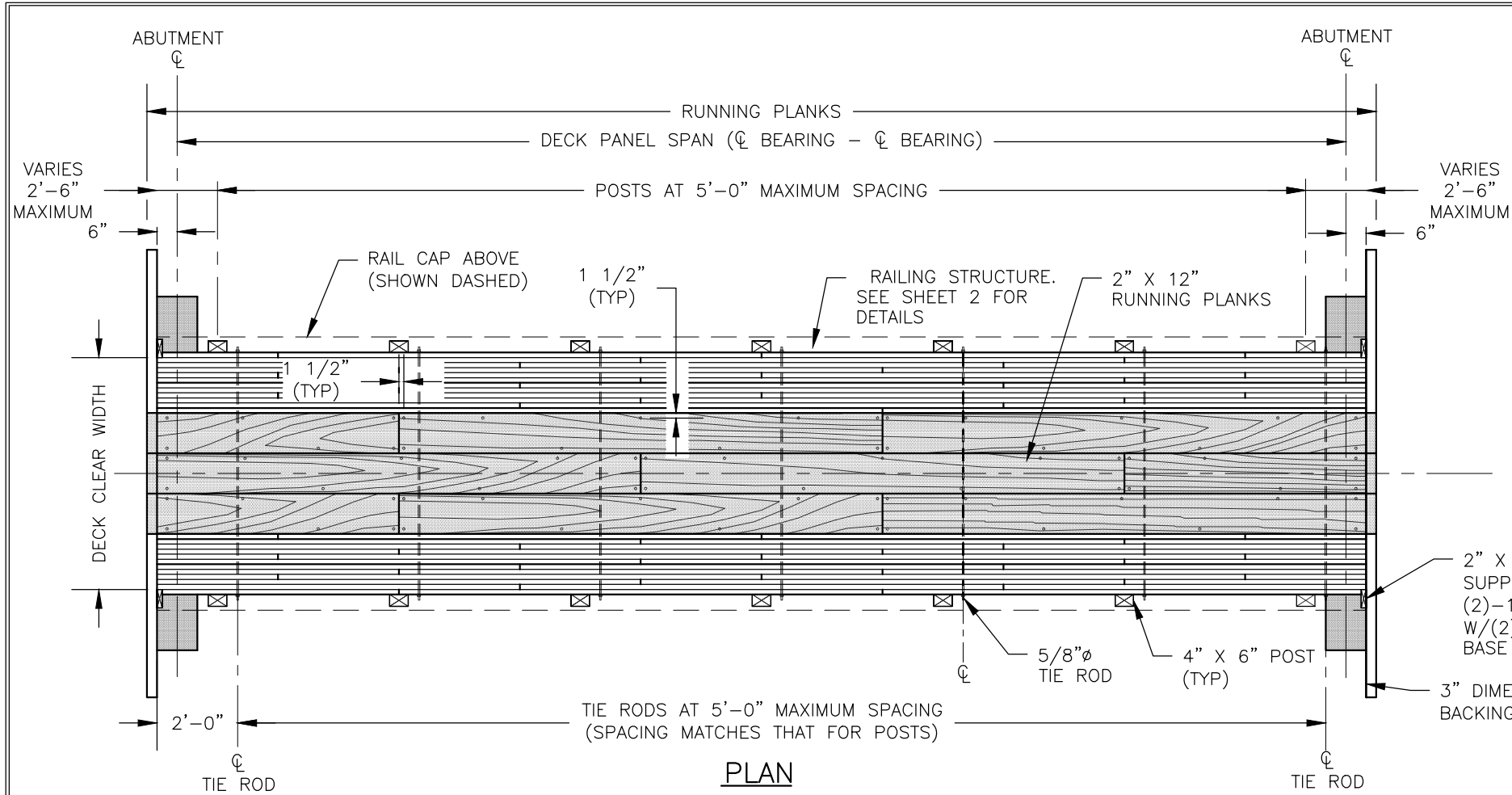
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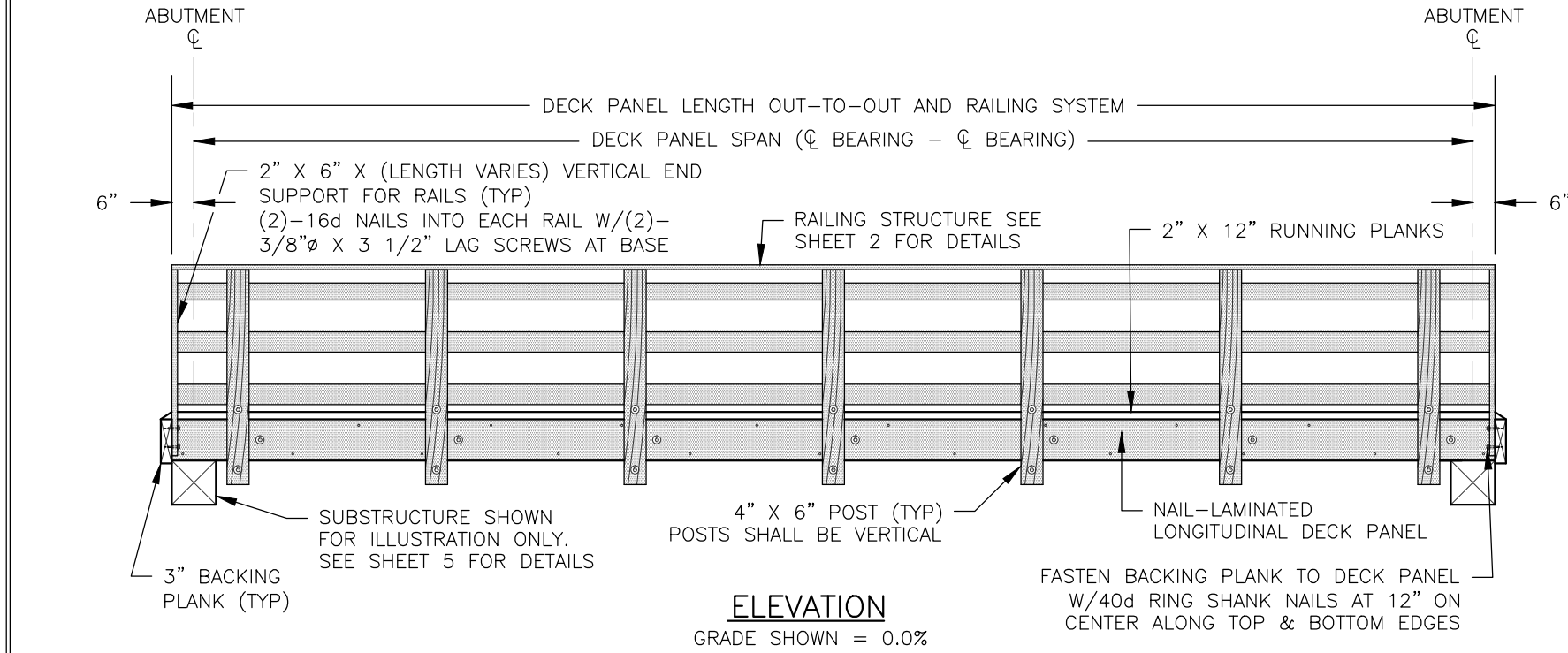
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SHEET

OF



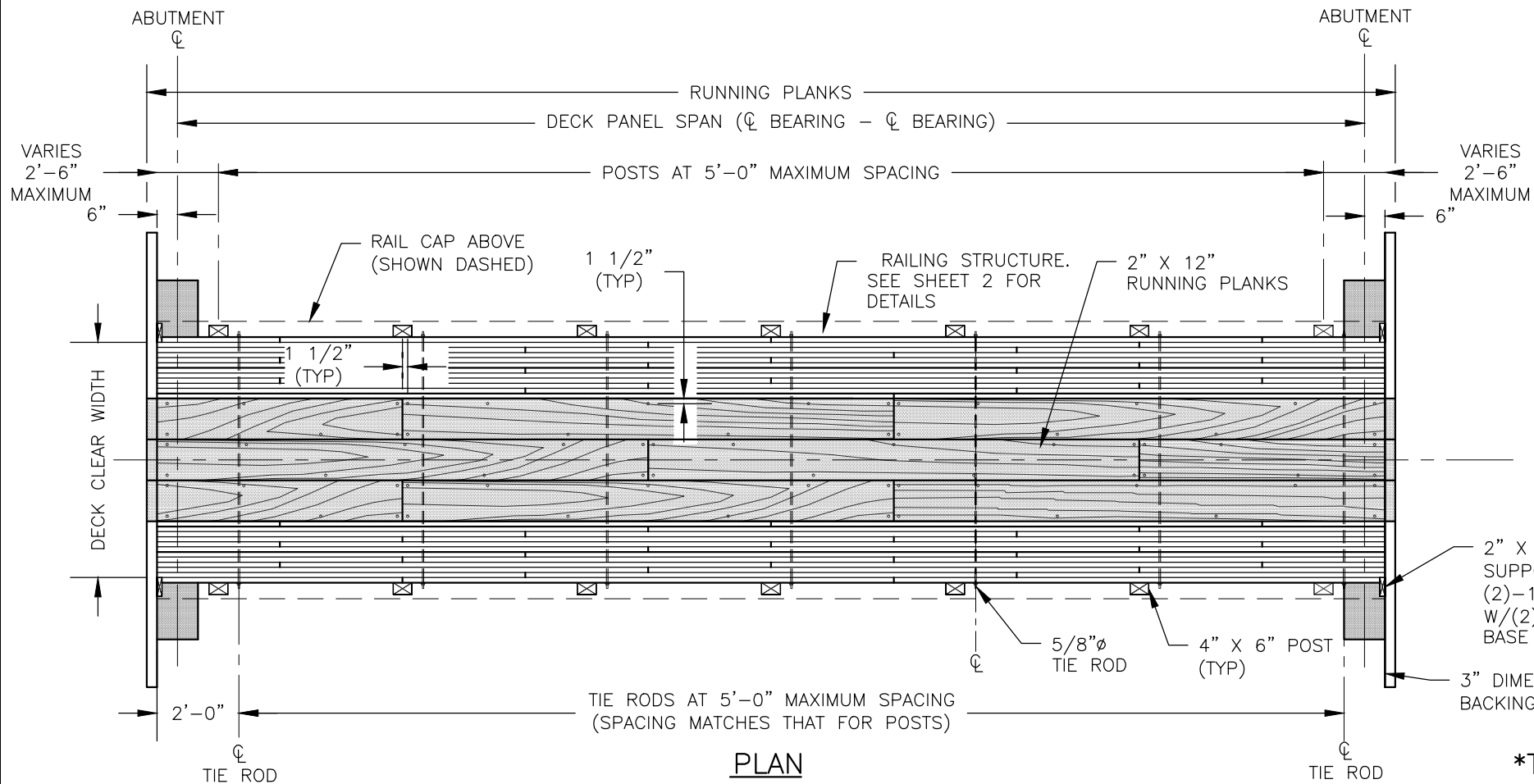
- NOTES:**
1. SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR A MINIMUM OF TWO POST SPACES. ALTERNATE RAIL SPLICES AT POSTS. FASTEN RUNNING PLANKS TO DECK PANELS WITH 30d (4 1/2-INCH RING SHANK) NAILS AT 24-INCH SPACING. ALTERNATE SIDES WITH TWO AT EACH END.
 2. ALL DEPTHS SHOWN IN TABLE-1.1 ARE NOMINAL. NAIL-LAMINATED DECK PANELS SHALL BE CONSTRUCTED USING S2S LUMBER.



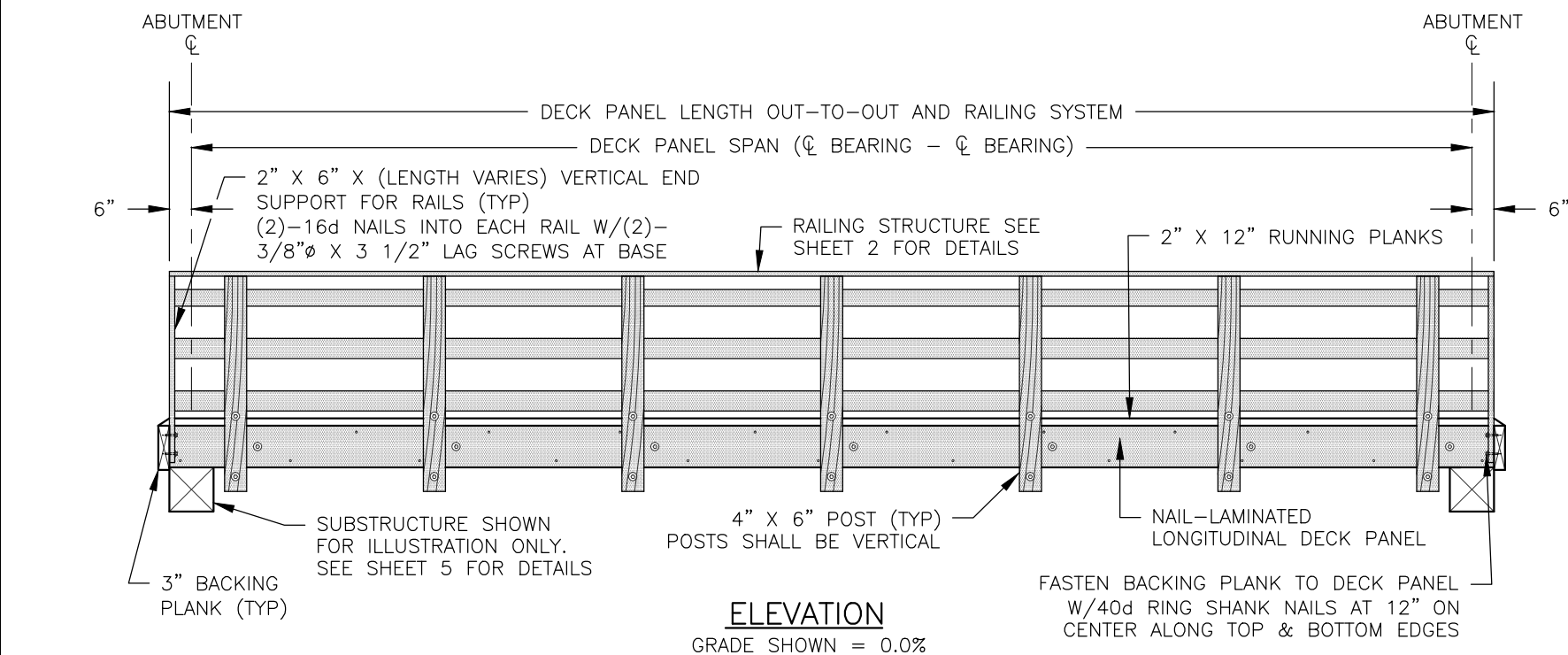
***TABLE-1.1: LAMINATION DEPTH REQUIREMENTS – LRFD**

**DECK PANEL LENGTH (FEET)	TIMBER SPECIES – DOUGLAS FIR/HEM-FIR GRADE – NO. 1				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
	PEDESTRIAN LOAD ***65	90	GROUND SNOW LOAD		
			120	150	200
12	6"	6"	6"	6"	6"
16	6"	6"	6"	6"	8"
20	8"	8"	8"	8"	10"

- *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



PLAN



ELEVATION

GRADE SHOWN = 0.0%

NOTES:

1. SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR A MINIMUM OF TWO POST SPACES. ALTERNATE RAIL SPLICES 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 S2S LUMBER.

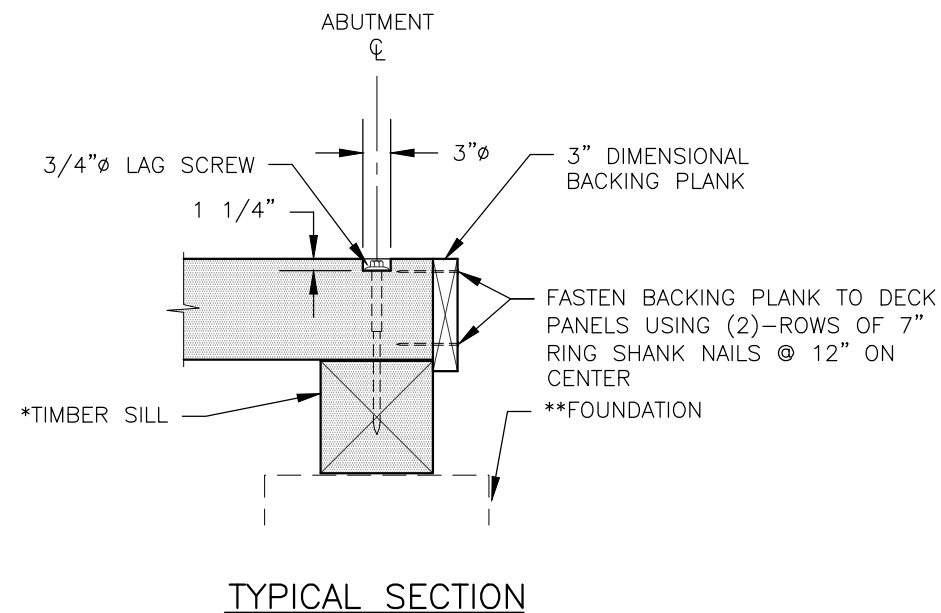
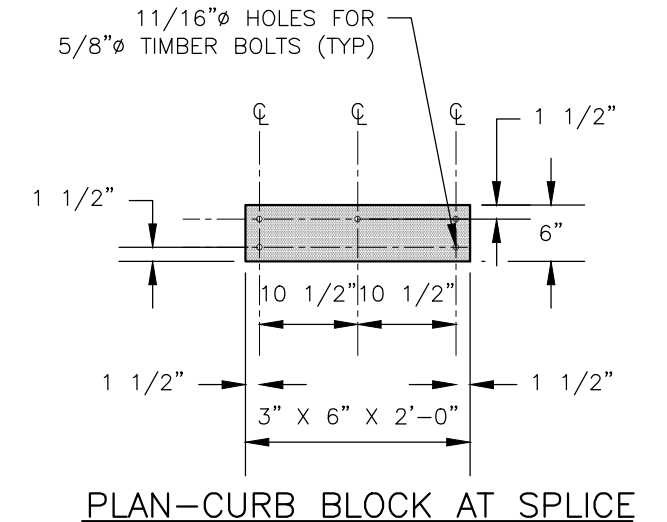
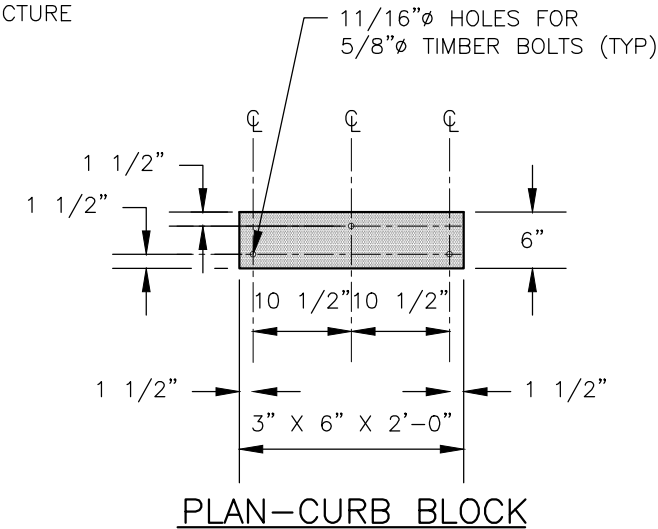
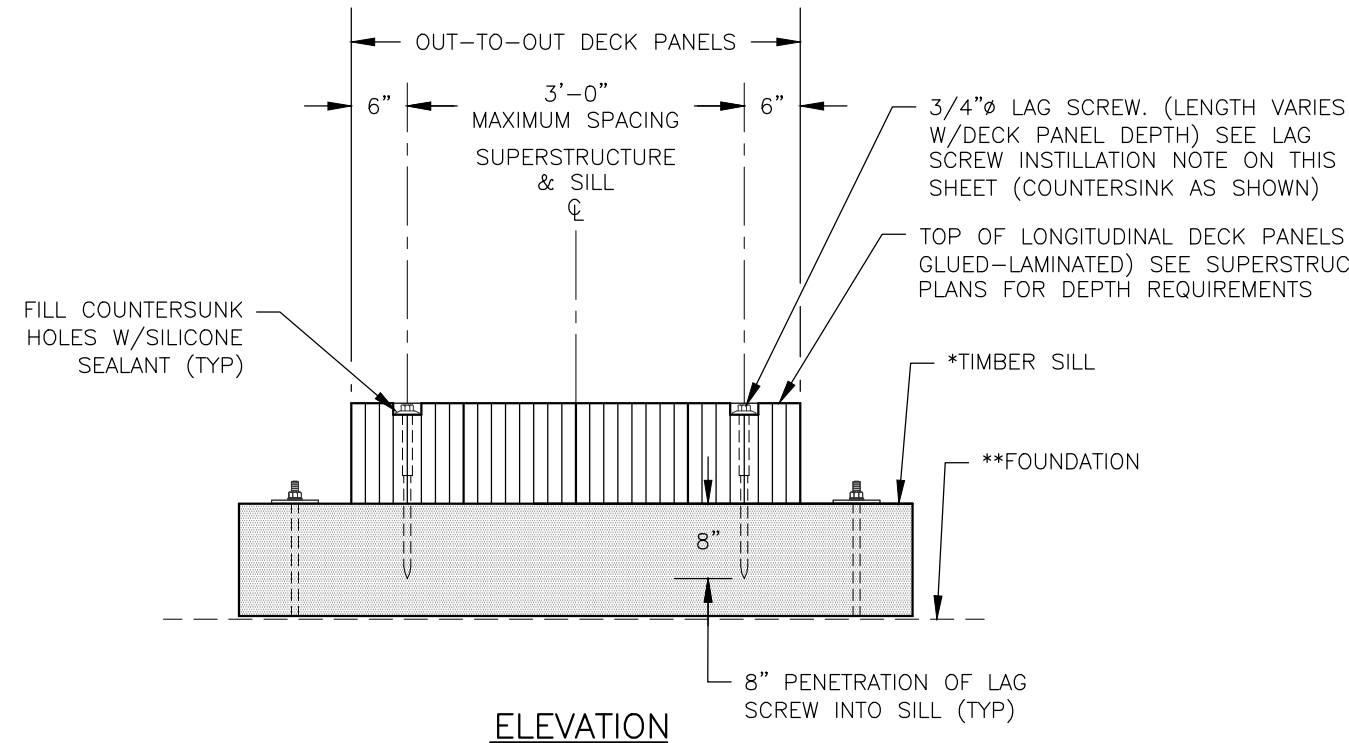
***TABLE-1.1: LAMINATION DEPTH REQUIREMENTS – LRFD**

**DECK PANEL LENGTH (FEET)	TIMBER SPECIES – SOUTHERN PINE GRADE – NO. 1				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
	PEDESTRIAN LOAD ***65	90	GROUND SNOW LOAD		
12	6"	6"	6"	6"	6"
16	6"	6"	6"	6"	8"
20	8"	8"	8"	8"	10"

*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

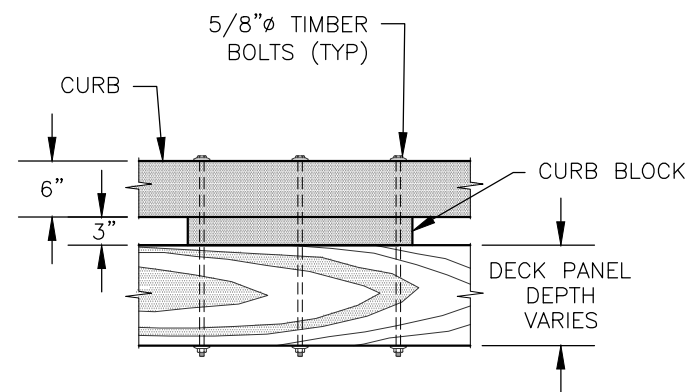


ABUTMENT CONNECTION DETAILS

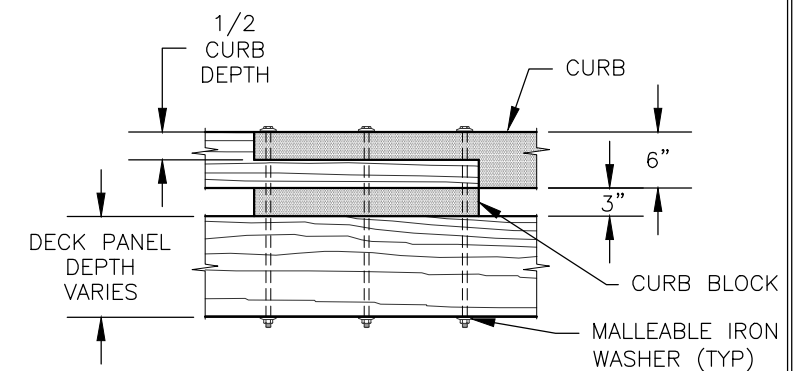
BACKING PLANKS NOT SHOWN FOR CLARITY

* 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



TYPICAL CONNECTION



CONNECTION AT SPLICE

SOLID SAWN CURB CONNECTION DETAILS

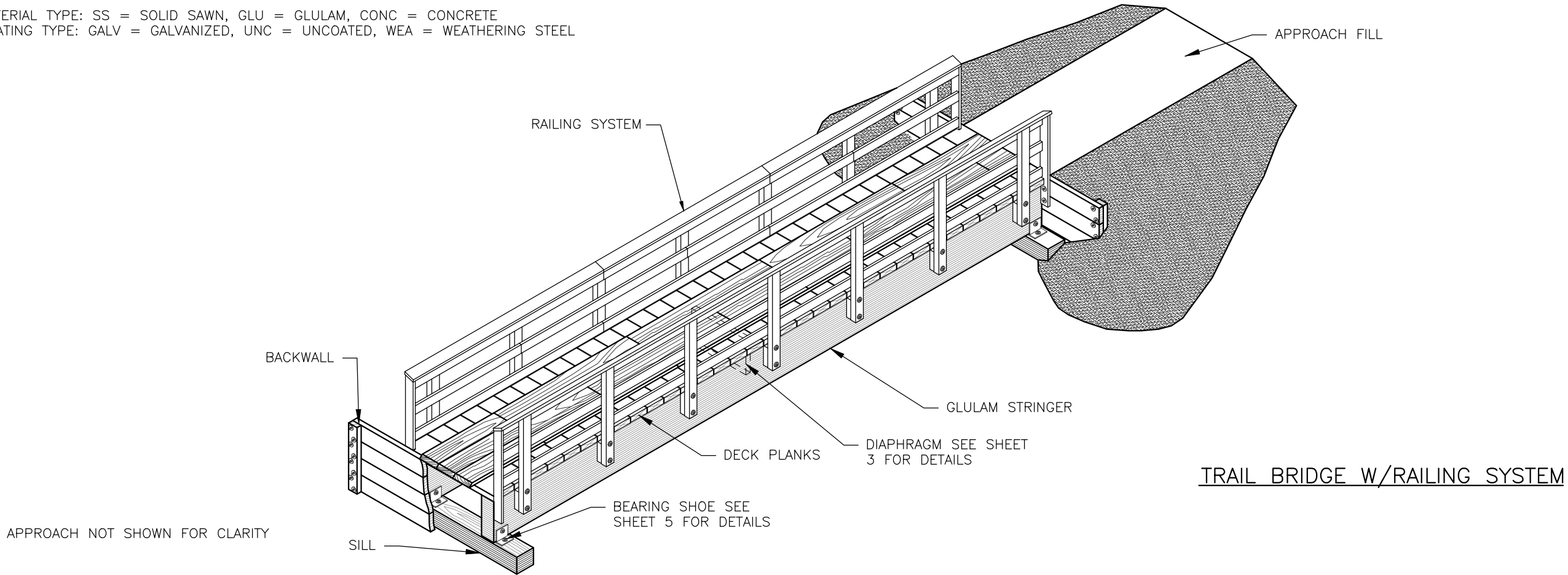
SHEET 5 OF 5

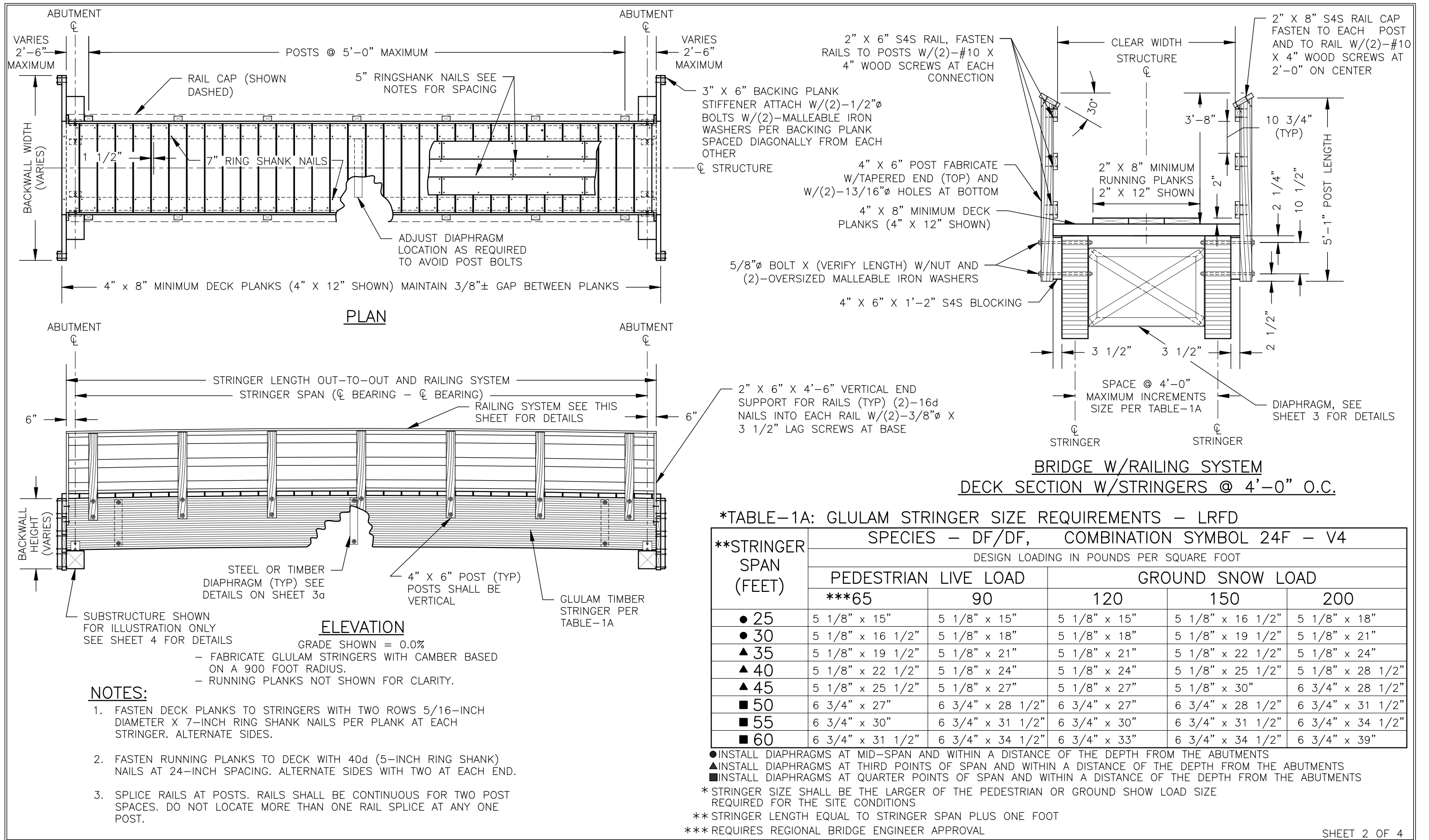
								STRINGERS				DECK			BACKWALL					
STRUCTURE NUMBER	TRAIL NO.	BRIDGE LOCATION	BRIDGE LENGTH OUT-TO-OUT	STRINGER SPAN C-C BRNG	BRIDGE CLEAR WIDTH	PEDESTRIAN LOAD	GROUND SNOW LOAD	COMBINATION SYMBOL	SPECIES	MATERIAL SIZE	TREATMENT	SPECIES	SIZE	TREATMENT	TYPE	SPECIES	SIZE	WIDTH	HEIGHT	TREATMENT

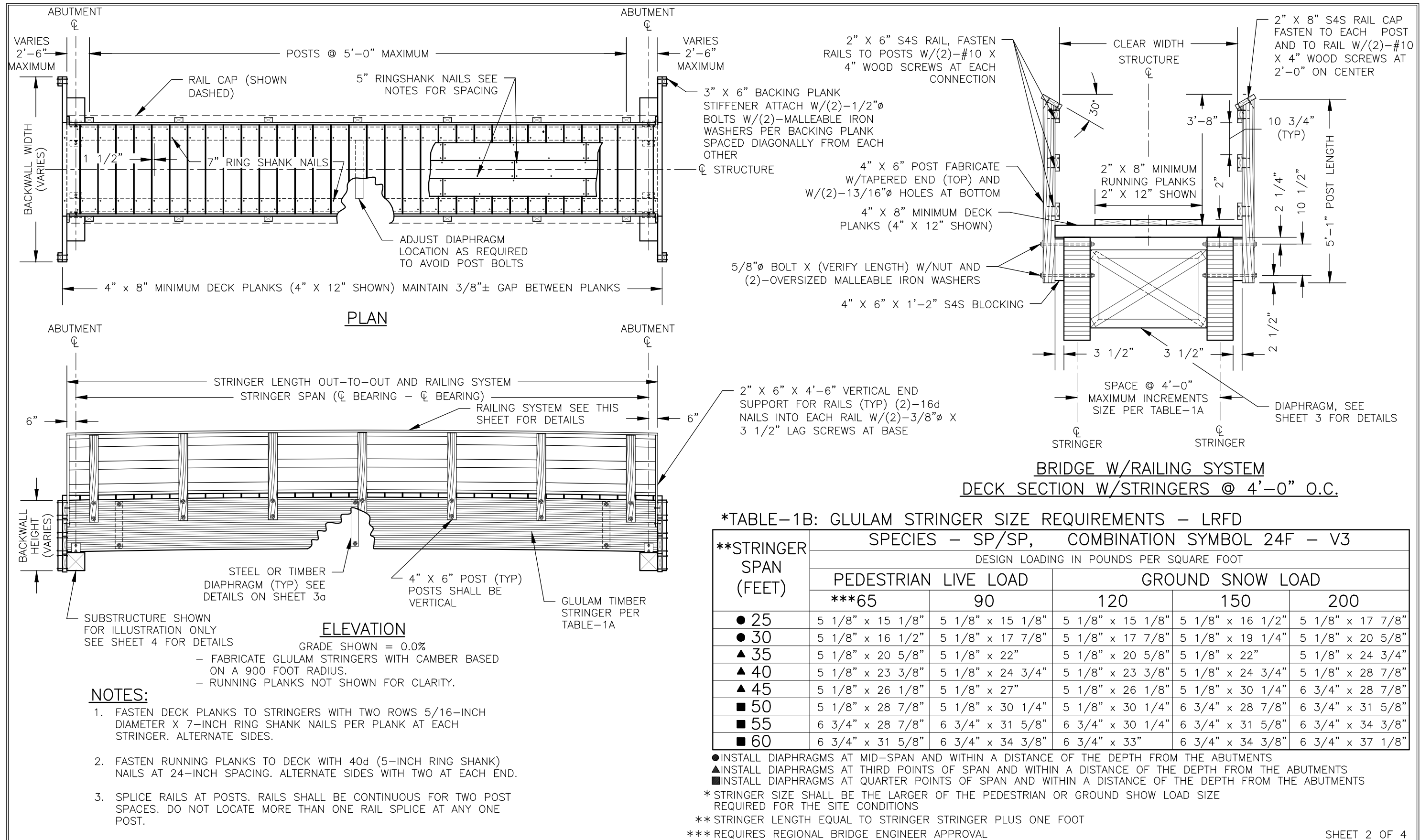
NA = NOT APPLICABLE

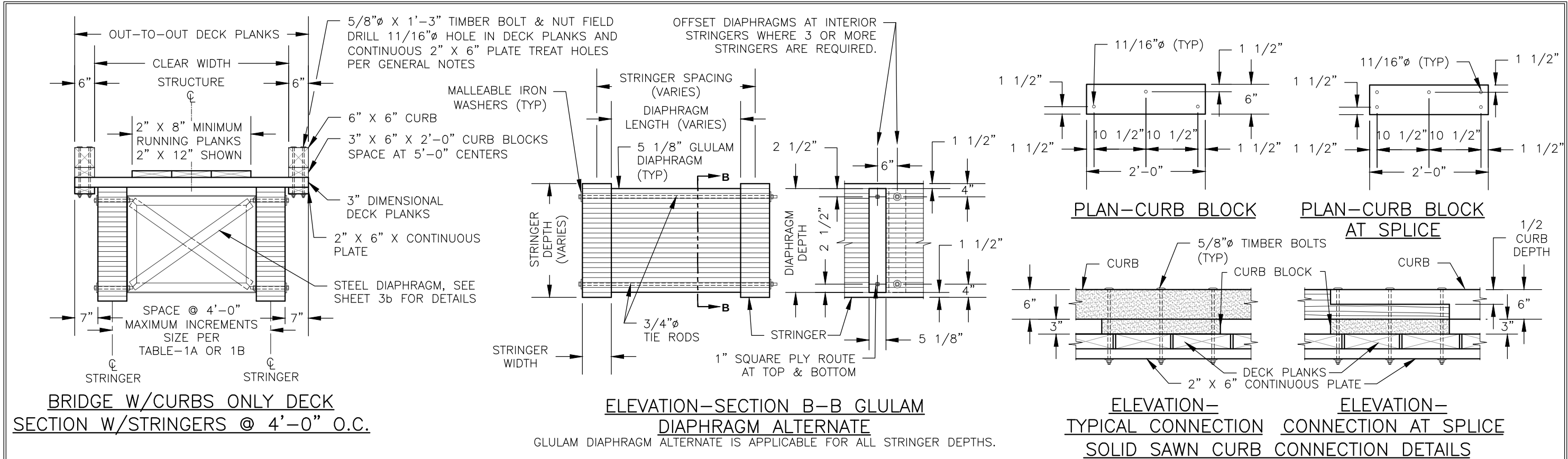
	RAILING SYSTEM/CURB					RUNNING PLANK				SILL			APPROACHES						HARDWARE	
STRUCTURE NUMBER	SPECIES	TYPE	HEIGHT	TREATMENT		SPECIES	SIZE	WIDTH	TREATMENT TYPE	MATERIAL TYPE	SIZE	TREATMENT	LENGTH		WIDTH	MATERIAL TYPE	MATERIAL DEPTH	GEO— SYNTHETIC TYPE	COATING	COMMENTS
				YES	NO								NEAR	FAR						

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









BRIDGE W/CURBS ONLY DECK
SECTION W/STRINGERS @ 4'-0" O.C.

ELEVATION-SECTION B-B GLULAM
DIAPHRAGM ALTERNATE

GLULAM DIAPHRAGM ALTERNATE IS APPLICABLE FOR ALL STRINGER DEPTHS.

ELEVATION-TYPICAL CONNECTION
ELEVATION-CONNECTION AT SPLICE
ELEVATION-SOLID SAWN CURB CONNECTION DETAILS

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 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

PROJECT NAME & LOCATION

DRAWING NAME

GLULAM STRINGER TRAIL BRIDGE

SECTION

963 - GLULAM TRAIL BRIDGE

TYPICAL ID

GSB

REVISION DATE

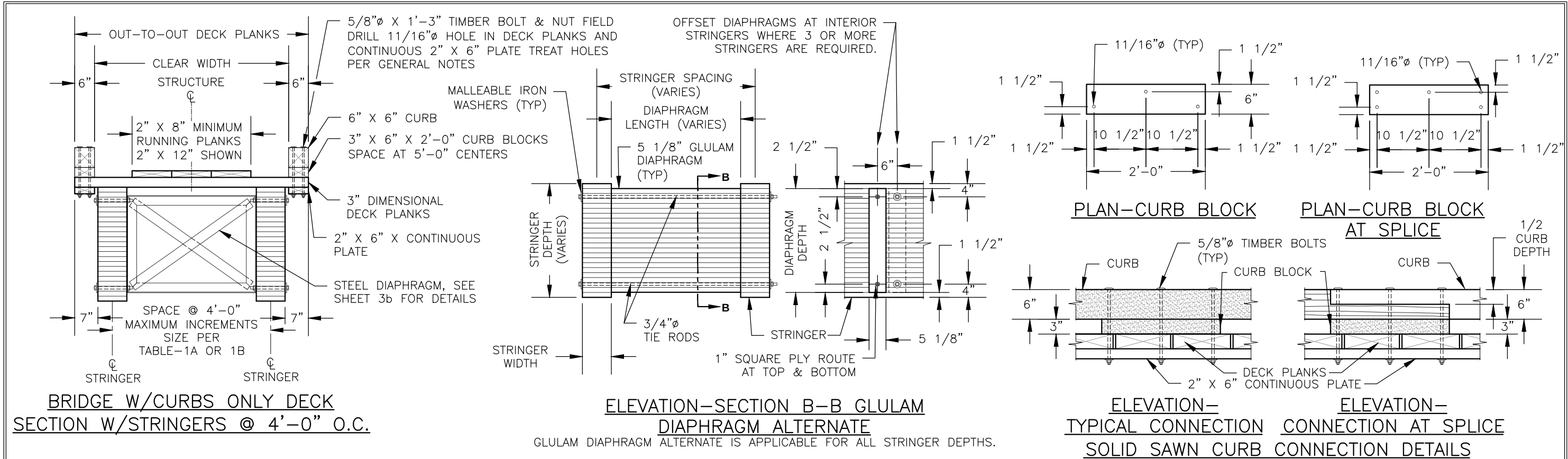
NOT TO SCALE

DRAWING NO.

STD_963-10-03a

SHEET

OF



BRIDGE W/CURBS ONLY DECK
SECTION W/STRINGERS @ 4'-0" O.C.

ELEVATION-SECTION B-B GLULAM
DIAPHRAGM ALTERNATE

GLULAM DIAPHRAGM ALTERNATE IS APPLICABLE FOR ALL STRINGER DEPTHS.

ELEVATION-
TYPICAL CONNECTION
ELEVATION-
CONNECTION AT SPLICE
SOLID SAWN CURB CONNECTION DETAILS

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 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

PROJECT NAME & LOCATION

DRAWING NAME

GLULAM STRINGER TRAIL BRIDGE

SECTION

963 - GLULAM TRAIL BRIDGE

TYPICAL ID

GSB

REVISION DATE

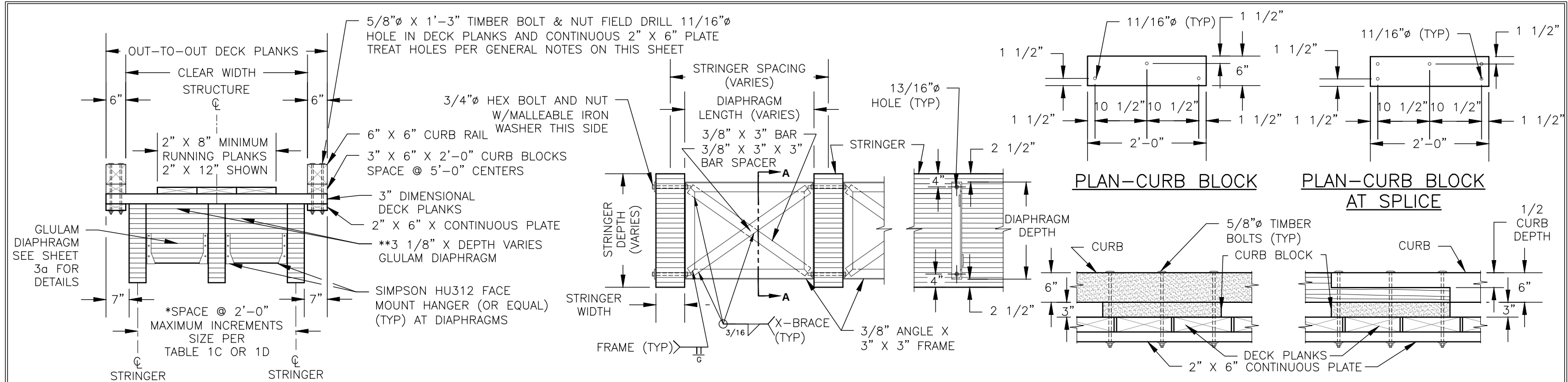
NOT TO SCALE

DRAWING NO.

STD_963-10-03b

SHEET

OF



BRIDGE W/RAILING SYSTEMS
DECK SECTION W/STRINGERS @ 2'-0" O.C.

* MINIMUM NUMBER OF STRINGERS IS 3.
** DIAPHRAGM DEPTH SHALL BE A MINIMUM OF 70% OF STRINGER DEPTH

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 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)

ELEVATION- SECTION A-A STEEL
DIAPHRAGM ALTERNATE

STEEL DIAPHRAGM ALTERNATE IS APPLICABLE ONLY
FOR STRINGER DEPTHS OF 21" OR GREATER.

ELEVATION-
TYPICAL CONNECTION
ELEVATION-
CONNECTION AT SPLICE
SOLID SAWN CURB CONNECTION DETAILS

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

DRAWING NAME

GLULAM STRINGER TRAIL BRIDGE

SECTION

963 - GLULAM TRAIL BRIDGE

TYPICAL ID

GSB

REVISION DATE

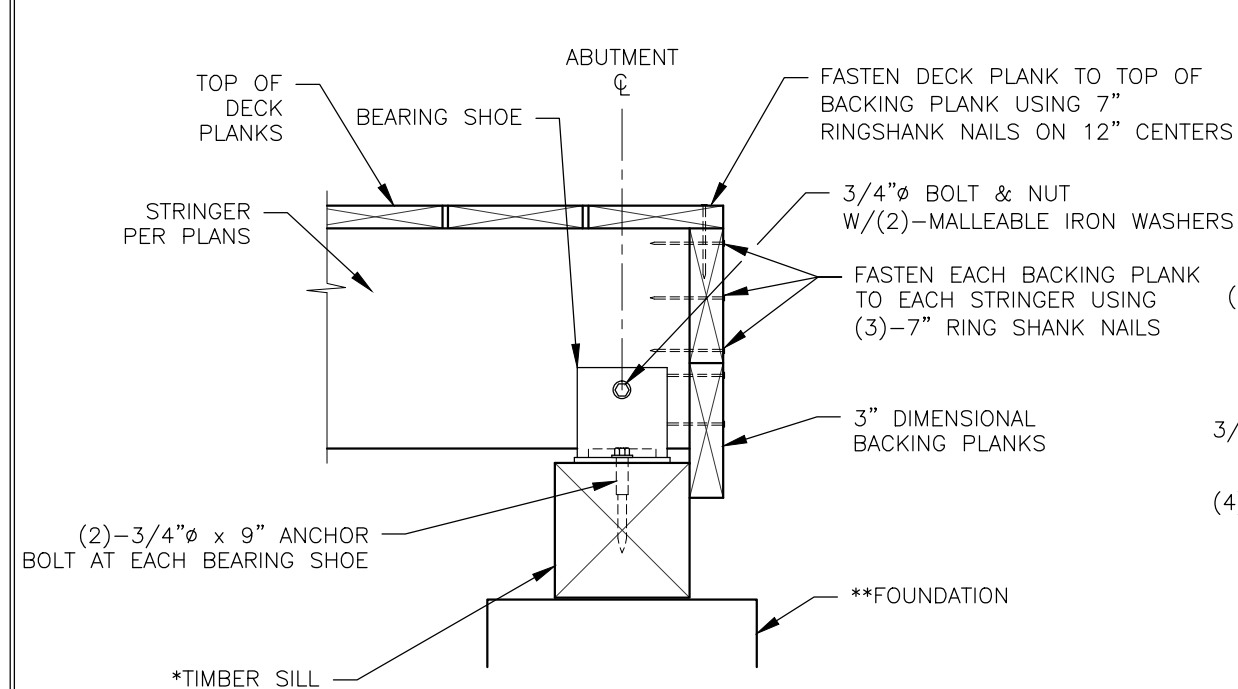
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DRAWING NO.

STD_963-10-03d

SHEET

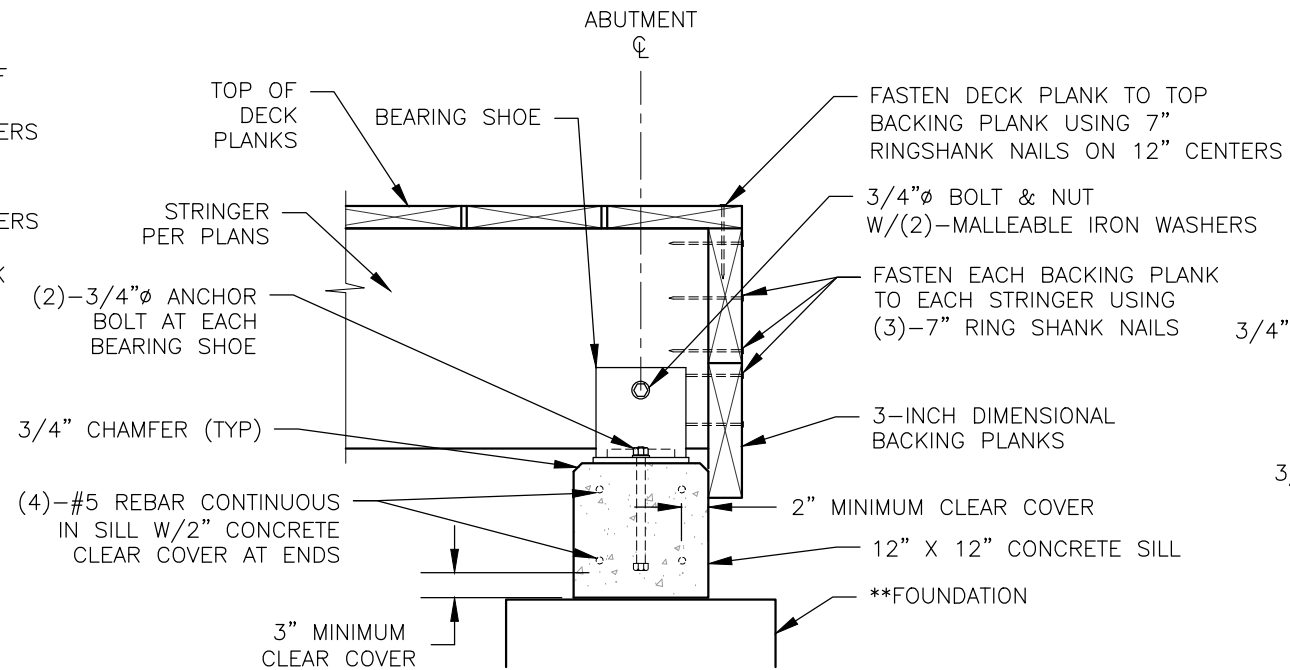
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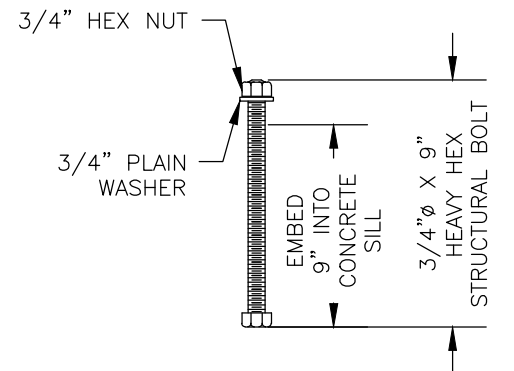
TIMBER SILL CONNECTION DETAIL

* 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



CONCRETE SILL CONNECTION DETAIL



CONCRETE SILL ANCHOR BOLT DETAIL

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.

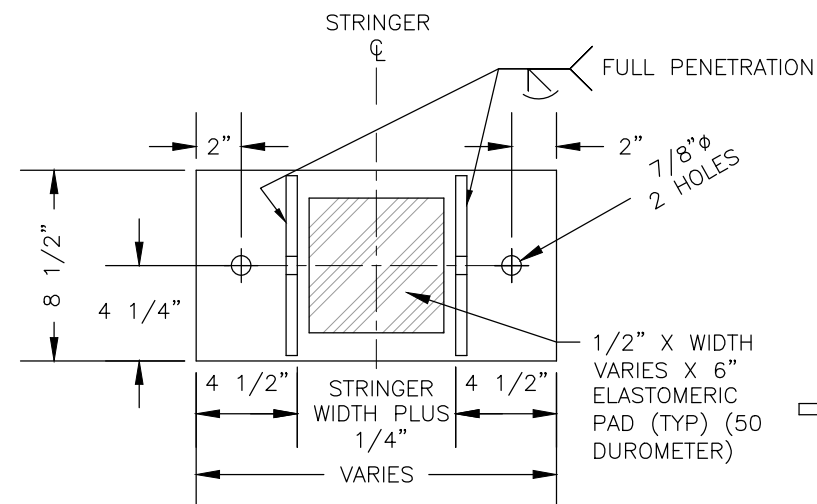
REINFORCING STEEL: PROVIDE REINFORCING STEEL THAT CONFORMS TO ASTM A615 (AASHTO M31), GRADE 40 OR 60. PROVIDE 2-INCH CLEAR CONCRETE COVER FOR ALL REBAR, UNLESS NOTED OTHERWISE ON THE PLANS.

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

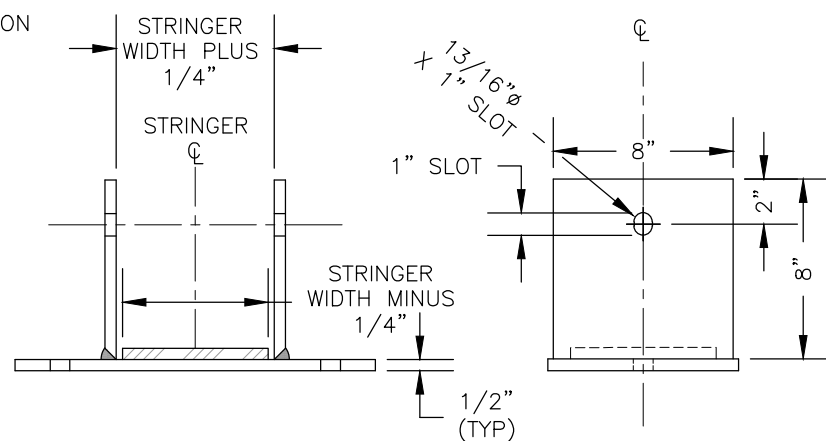
TREATED TIMBER & LUMBER: REFER TO THE GENERAL NOTES ON THE SUBSTRUCTURE DRAWINGS FOR TREATED TIMBER & LUMBER SPECIFICATIONS AND FIELD TREATING OF WOOD

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.**

SHEET 4 OF 4



PLAN



END VIEW

SIDE VIEW

BEARING SHOE DETAIL

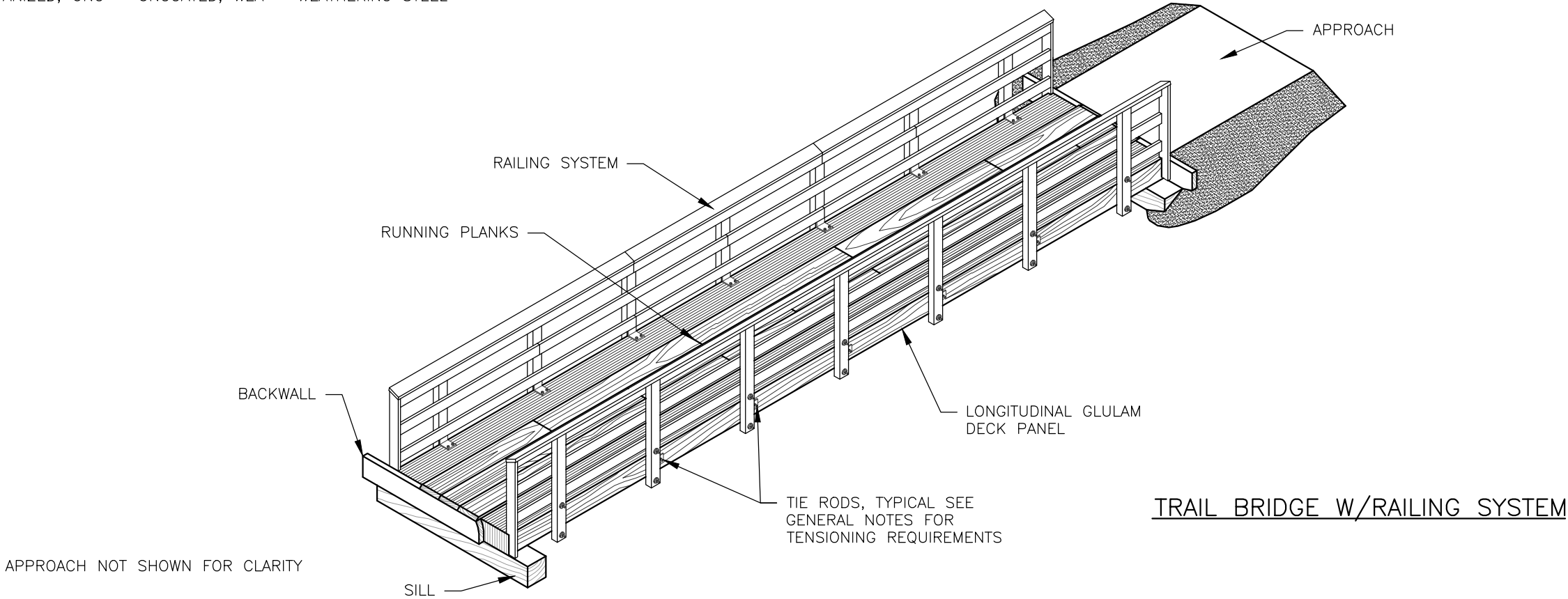
MATERIAL = 1/2" STEEL PLATE A36

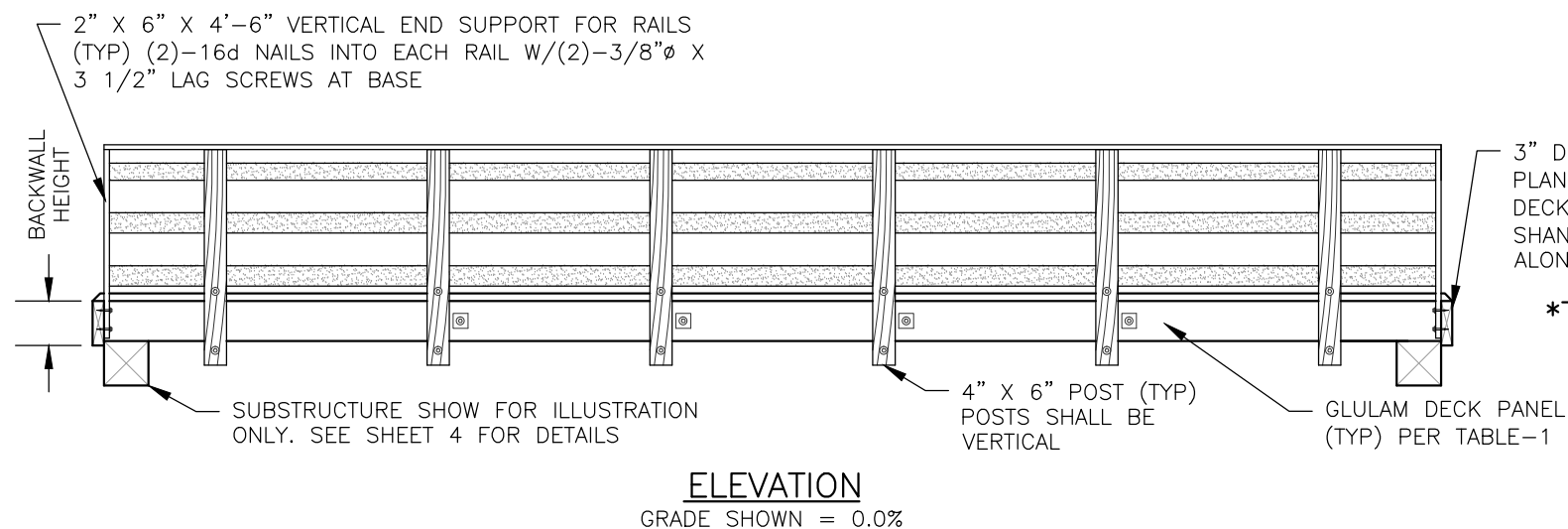
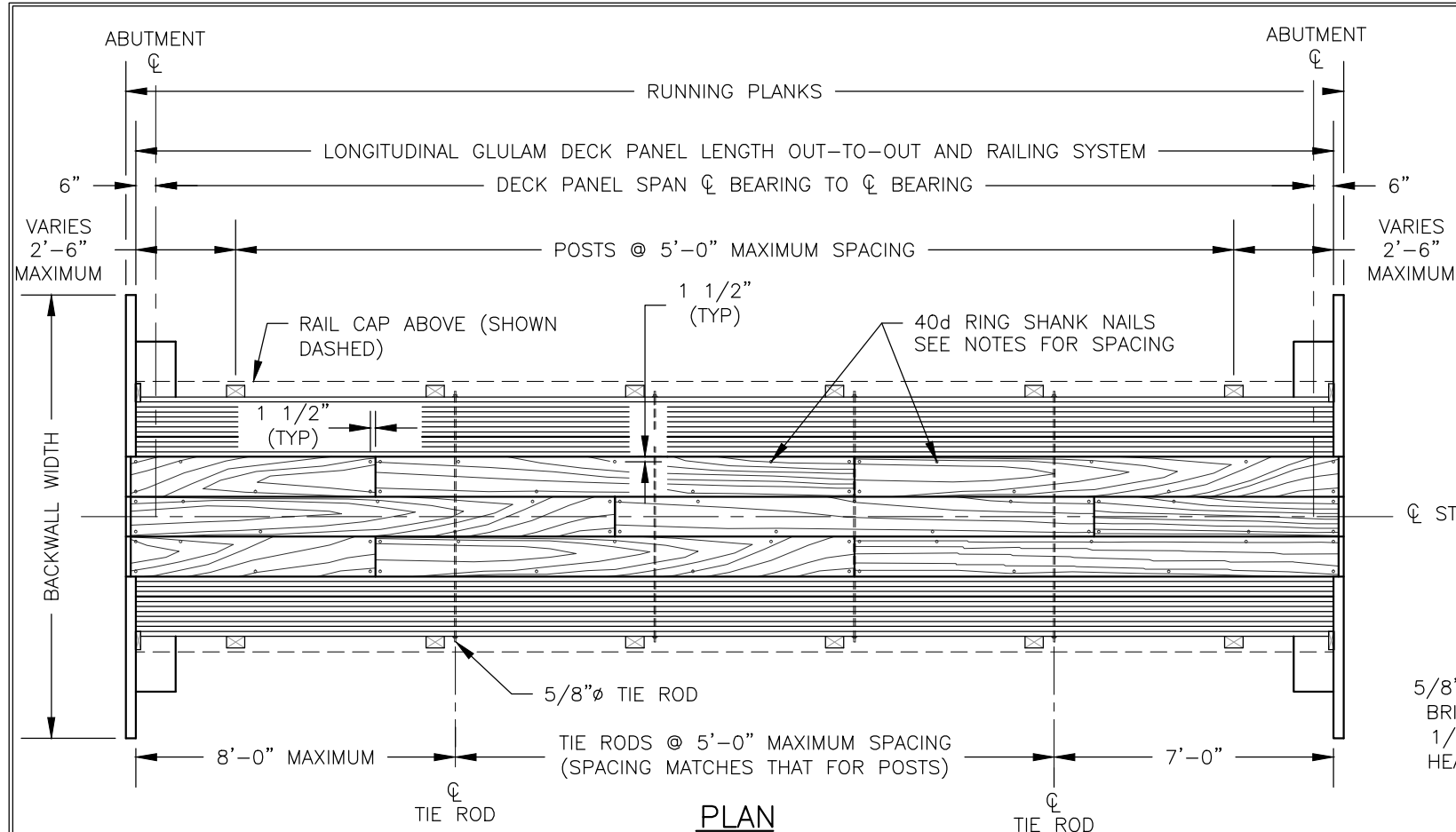
STRUCTURE NUMBER	TRAIL NO.	BRIDGE LOCATION	BRIDGE LENGTH OUT-TO-OUT	DECK PANEL SPAN C-C BRNG	BRIDGE CLEAR WIDTH	PEDESTRIAN LOAD	GROUND SNOW LOAD	PANELS				BACKWALL					
								IDENTIFICATION NUMBER	SPECIES	MATERIAL SIZE	TREATMENT	TYPE	SPECIES	SIZE	WIDTH	DEPTH	TREATMENT

NA = NOT APPLICABLE

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

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





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

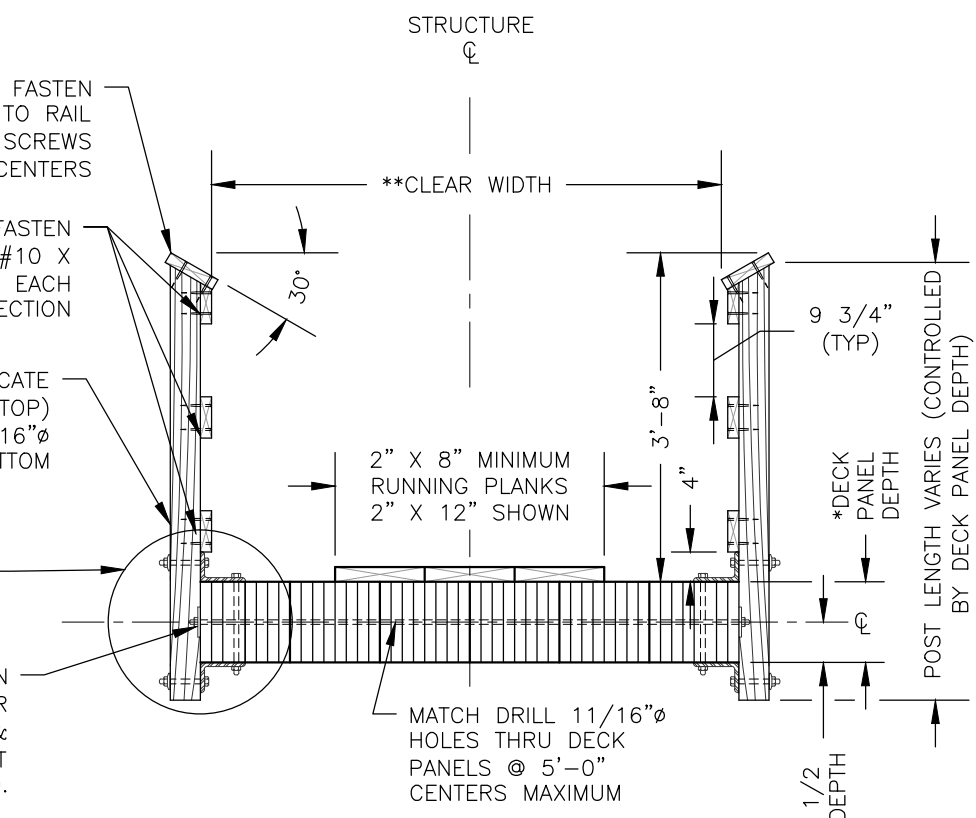
2" X 8" S4S RAIL CAP FASTEN TO EACH POST AND TO RAIL W/(2)-#10 X 4" WOOD SCREWS ON 2'-0" CENTERS

2" X 6" S4S RAIL FASTEN RAILS TO POSTS W/(2)-#10 X 4" WOOD SCREWS AT EACH CONNECTION

4" X 6" POST FABRICATE W/TAPERED END (TOP) AND W/(2)-11/16"Ø HOLES AT BOTTOM

POST CONNECTION SEE SHEET 3 FOR DETAILS

5/8"Ø ROD (LENGTH DEPENDS ON BRIDGE WIDTH) W/PLATE WASHER 1/2" X 4" X 4" (STEEL A36) & HEAVY HEX NUTS. THREAD 6" AT EACH END OF ROD.



TYPICAL DECK PANEL SECTION W/RAILING SYSTEM

*SEE TABLE-1 FOR DETAILS ON GLULAM DECK PANEL DEPTH REQUIREMENTS BASED ON SPAN AND LOADING.

** INSIDE FACE TO INSIDE FACE OF RAILING SYSTEM

*TABLE-1: LONGITUDINAL GLULAM DECK PANEL DEPTH REQUIREMENTS - LRFD

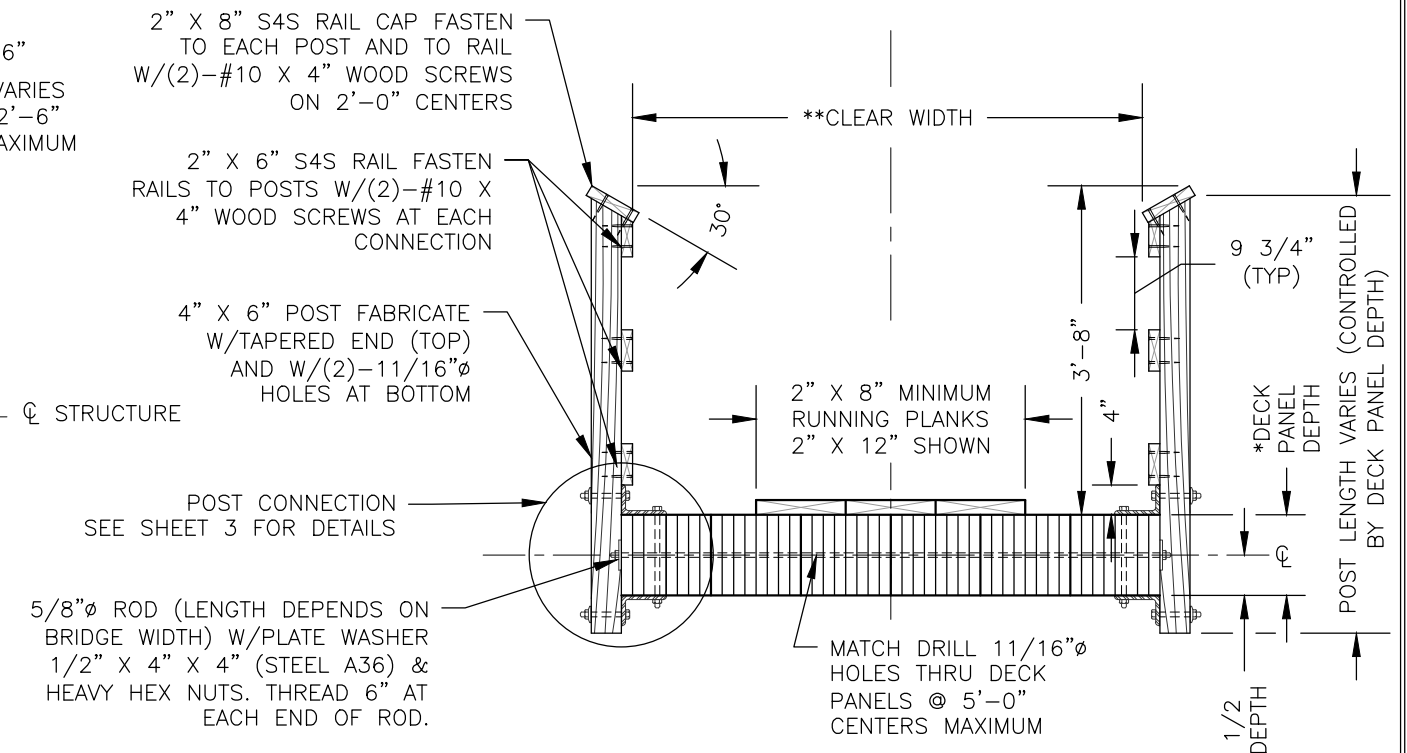
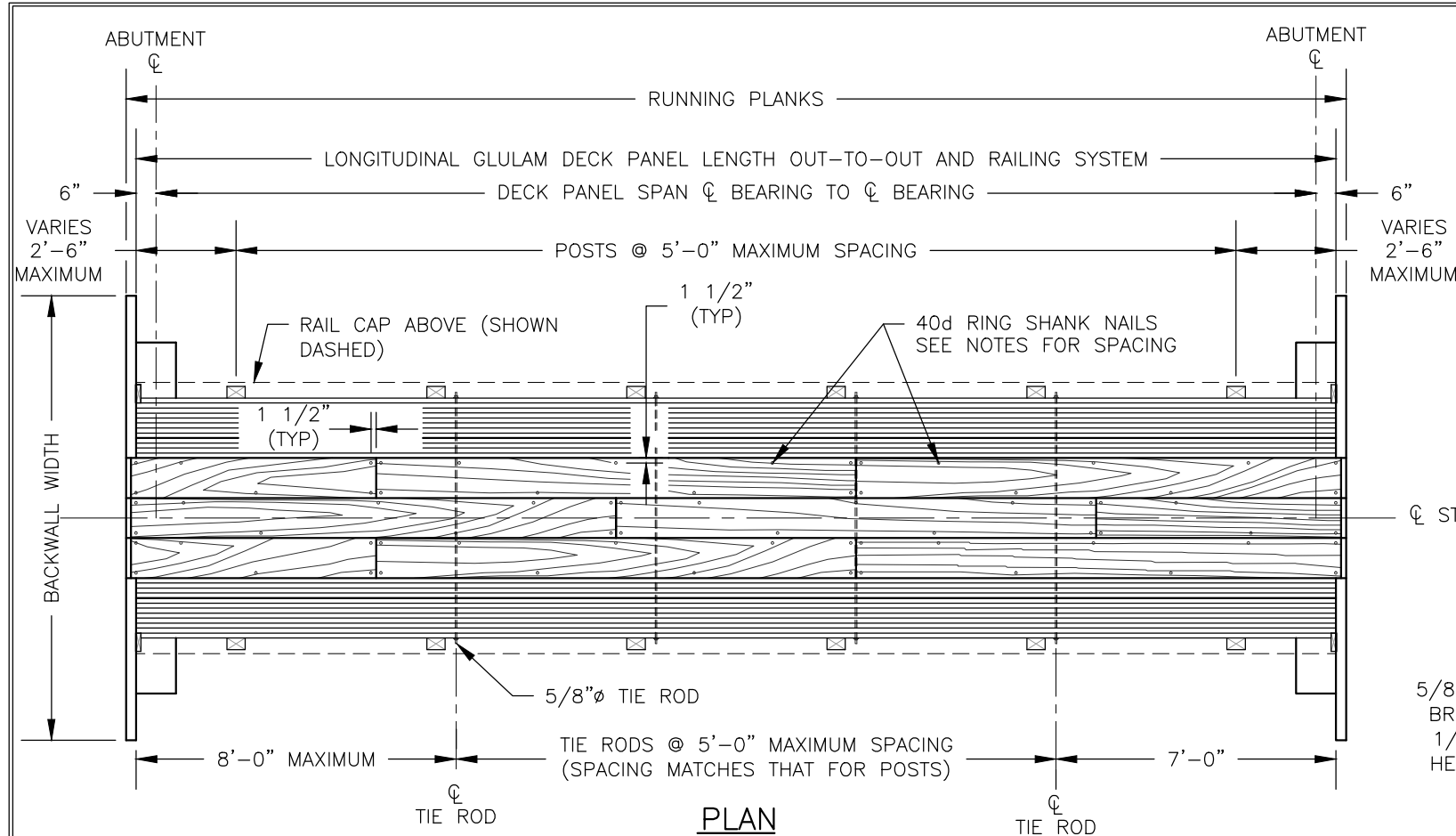
**DECK PANEL SPAN (FEET)	TIMBER SPECIES - DF, ID. NO. 5				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
	PEDESTRIAN LIVE LOAD		GROUND SNOW LOAD		
	***65	90	120	150	200
10	5 1/8"	5 1/8"	5 1/8"	5 1/8"	5 1/8"
15	5 1/8"	5 1/8"	5 1/8"	6 3/4"	6 3/4"
20	6 3/4"	6 3/4"	6 3/4"	8 3/4"	8 3/4"
25	8 3/4"	8 3/4"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

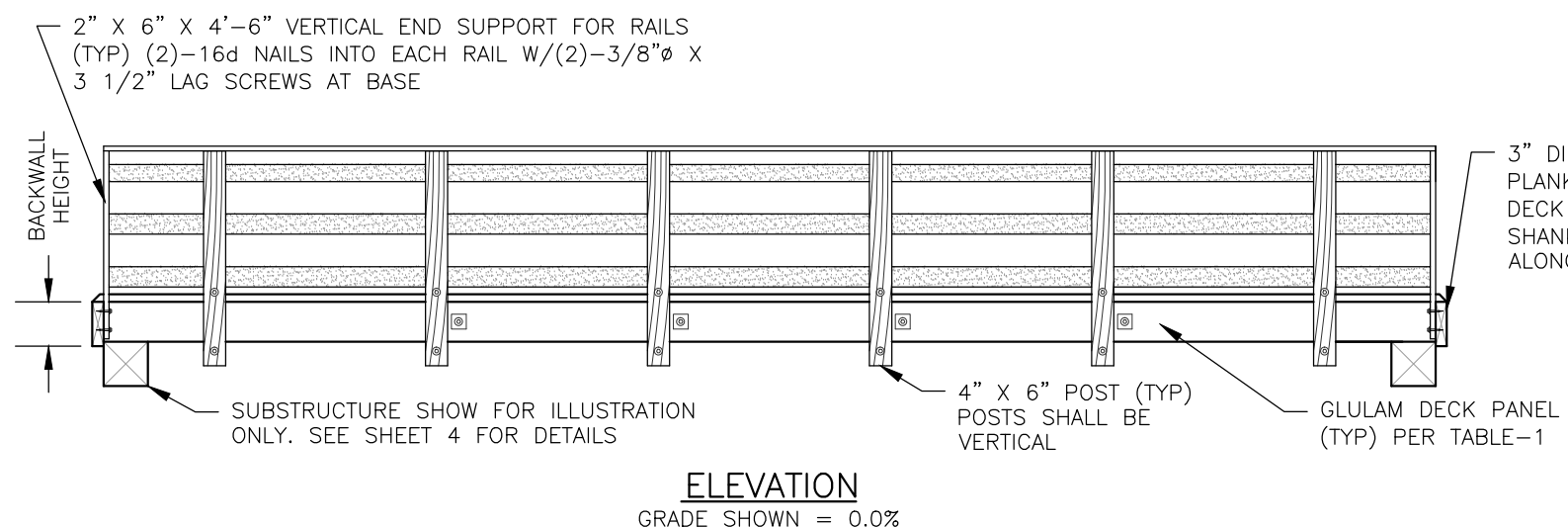
SHEET 2 OF 4



TYPICAL DECK PANEL SECTION W/RAILING SYSTEM

*SEE TABLE-1 FOR DETAILS ON GLULAM DECK PANEL DEPTH REQUIREMENTS BASED ON SPAN AND LOADING.

**INSIDE FACE TO INSIDE FACE OF RAILING SYSTEM



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

*TABLE-1: LONGITUDINAL GLULAM DECK PANEL DEPTH REQUIREMENTS-LRFD

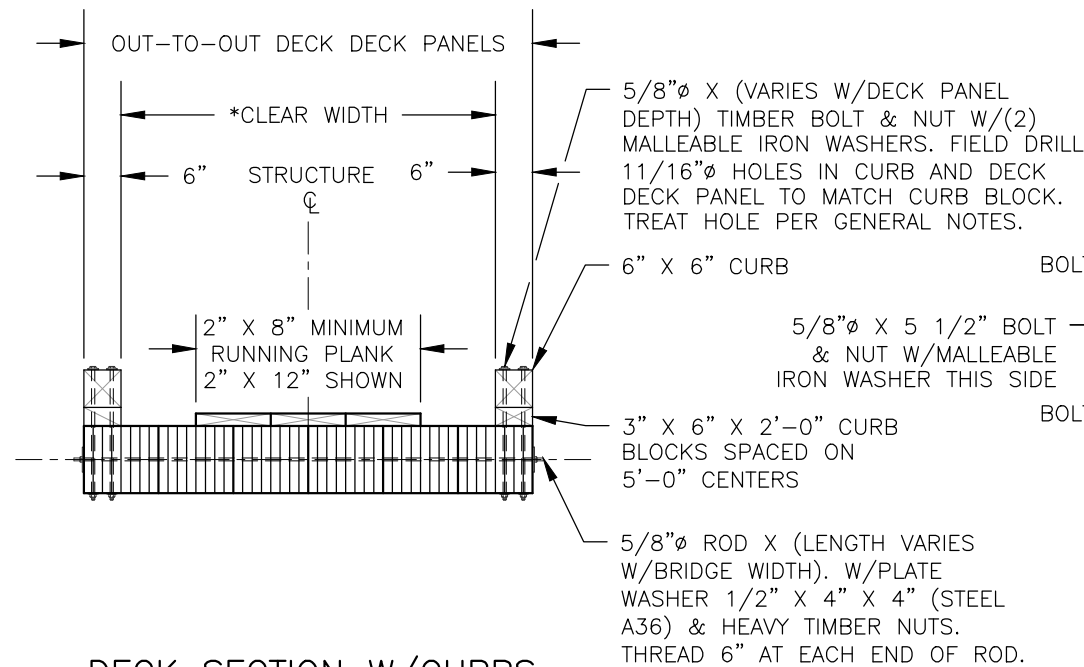
**DECK PANEL SPAN (FEET)	TIMBER SPECIES – SP, ID. NO. 50				
	DESIGN LOADING IN POUNDS PER SQUARE FOOT				
	PEDESTRIAN LIVE LOAD		GROUND SNOW LOAD		
	***65	90	120	150	200
10	5 1/8"	5 1/8"	5 1/8"	5 1/8"	5 1/8"
15	5 1/8"	5 1/8"	5 1/8"	6 3/4"	6 3/4"
20	6 3/4"	6 3/4"	6 3/4"	8 1/2"	8 1/2"
25	8 1/2"	8 1/2"	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

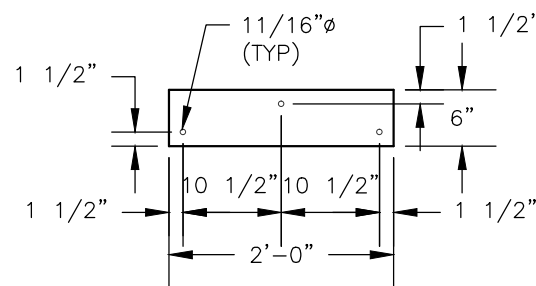
***REQUIRES REGIONAL BRIDGE ENGINEER APPROVAL

SHEET 2 OF 4

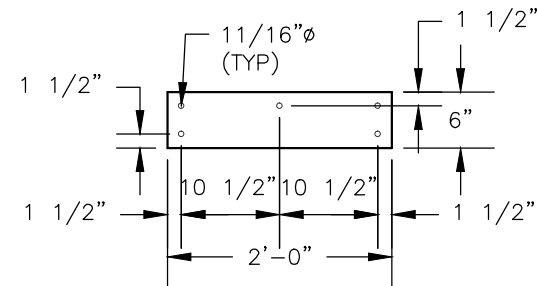


DECK SECTION W/CURBS

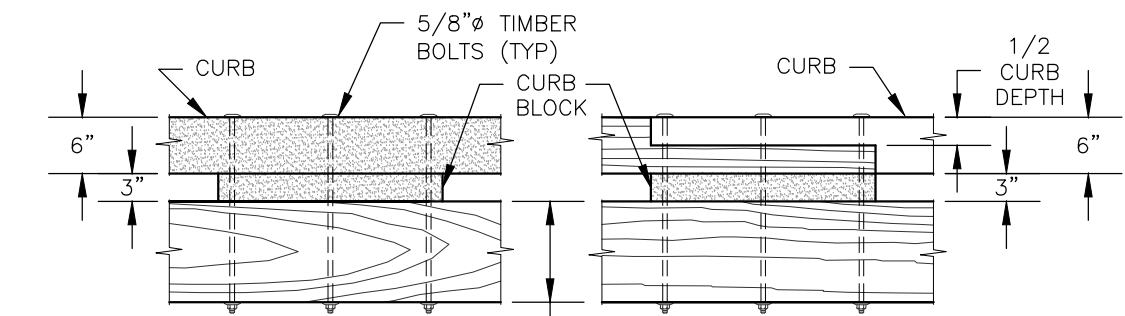
*INSIDE FACE TO INSIDE FACE OF CURB STRUCTURE



PLAN-CURB BLOCK



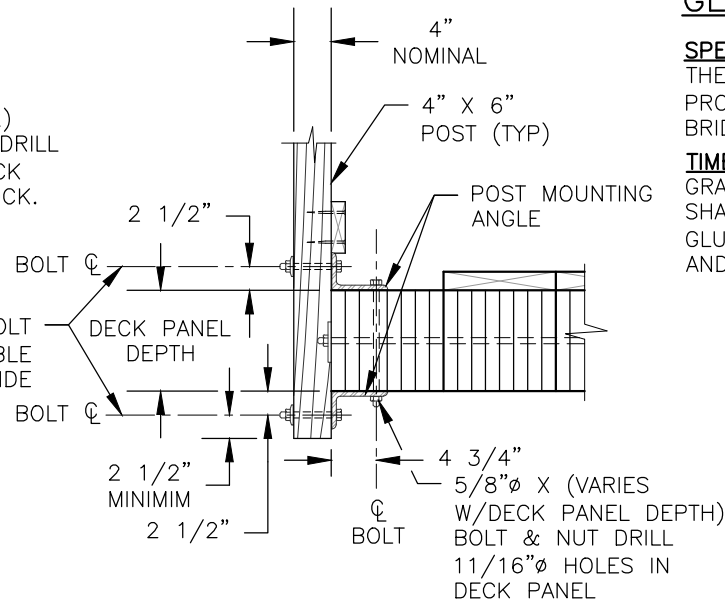
PLAN-CURB BLOCK AT SPLICE



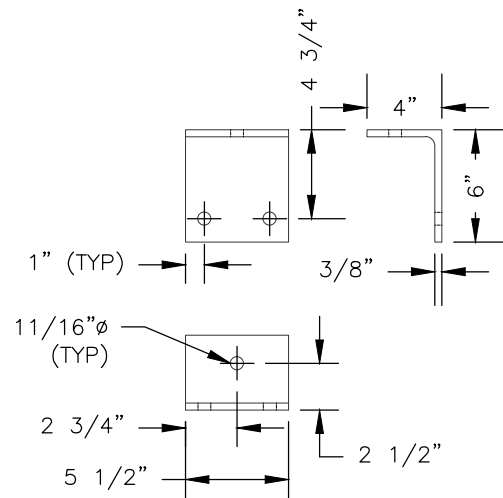
ELEVATION-TYPICAL CONNECTION

ELEVATION-CONNECTION AT SPLICE

SOLID SAWN CURB CONNECTION DETAILS



POST CONNECTION DETAIL



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

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 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.

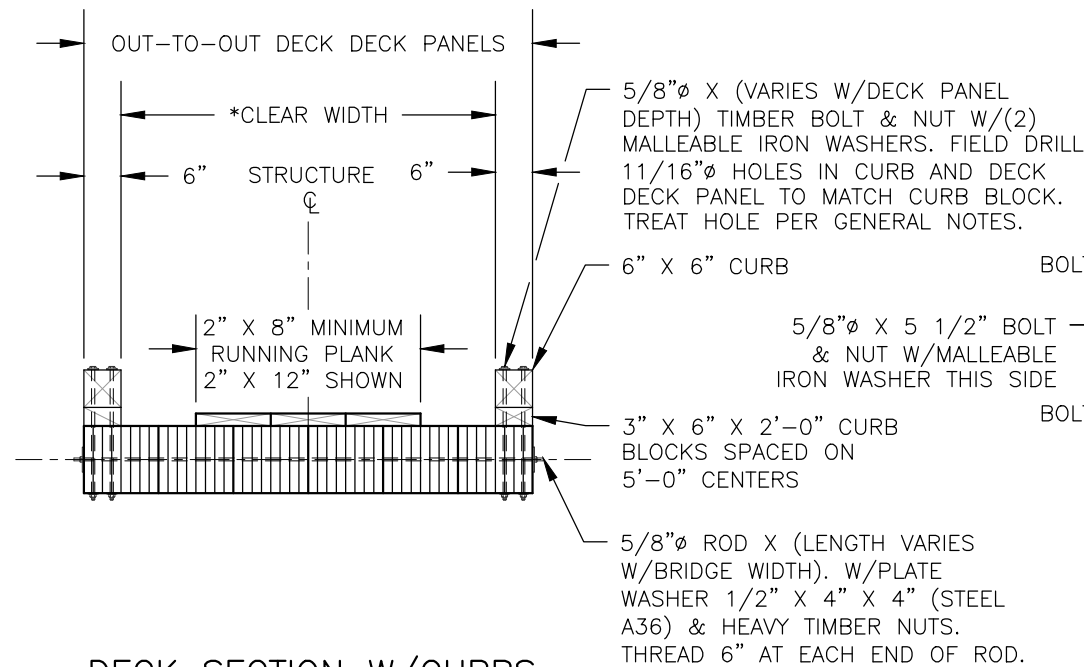
HARDWARE AND STRUCTURAL STEEL: SEE PROJECT DESIGN CRITERIA FOR STEEL HARDWARE FINISH. GALVANIZED OR UNFINISHED HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M270, GRADE 36, WITH NUTS AND BOLTS CONFORMING TO ASTM A307, GRADE A. WEATHERING STEEL AND HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M270, 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.

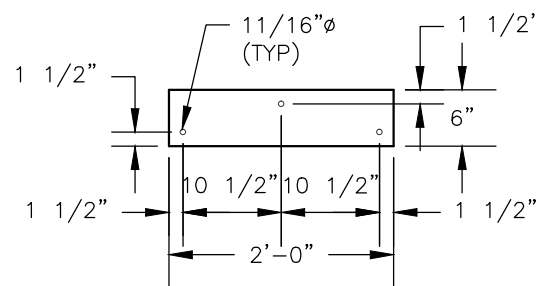
TIE ROD TENSIONING: TIE RODS SHALL BE TORQUED TO 100 FT/LBS UPON INITIAL INSTALLATION OF THE DECK PANEL PANELS. TIE RODS SHALL BE CHECKED FOR PROPER TENSION EACH YEAR FOR THE FOLLOWING 4 YEARS AFTER INSTALLATION. SUBSEQUENT TENSION CHECKS SHALL OCCUR DURING ROUTINE INSPECTIONS UNLESS OTHERWISE NOTED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

SHEET 3 OF 4

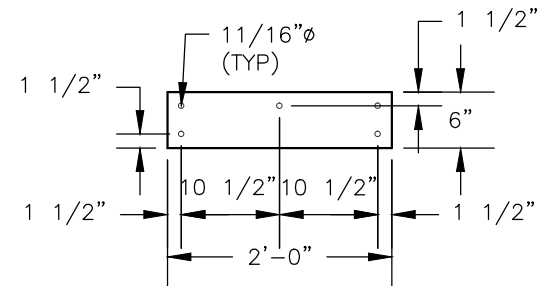


DECK SECTION W/CURBS

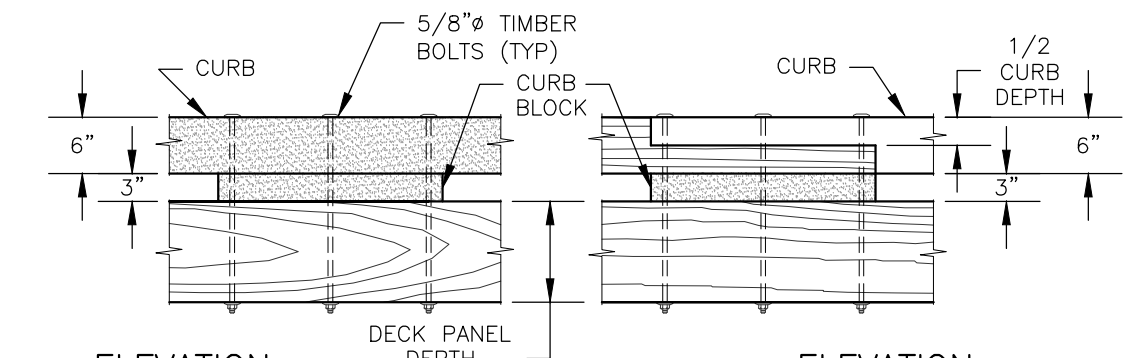
*INSIDE FACE TO INSIDE FACE OF CURB STRUCTURE



PLAN-CURB BLOCK



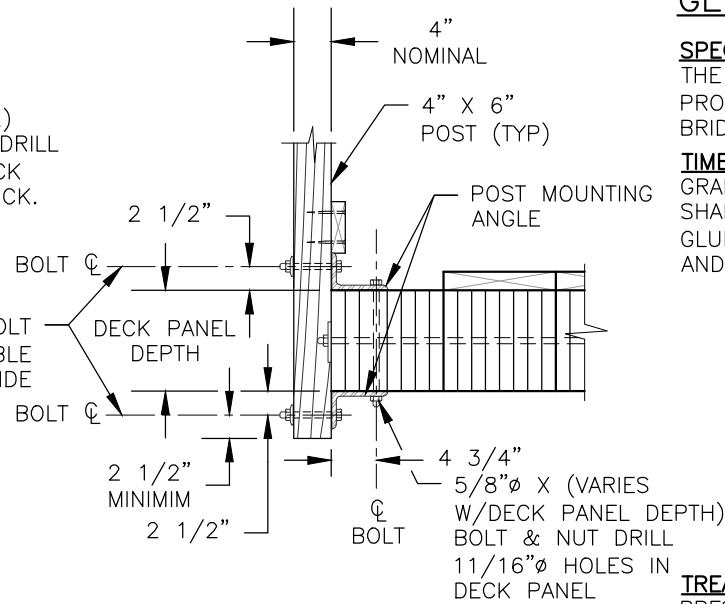
PLAN-CURB BLOCK AT SPLICE



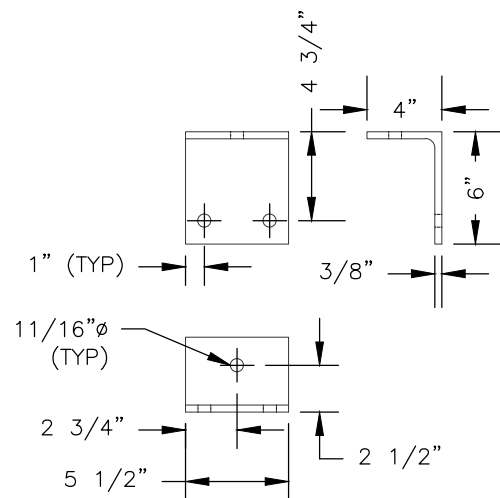
ELEVATION-TYPICAL CONNECTION

ELEVATION-CONNECTION AT SPLICE

SOLID SAWN CURB CONNECTION DETAILS



POST CONNECTION DETAIL



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 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.

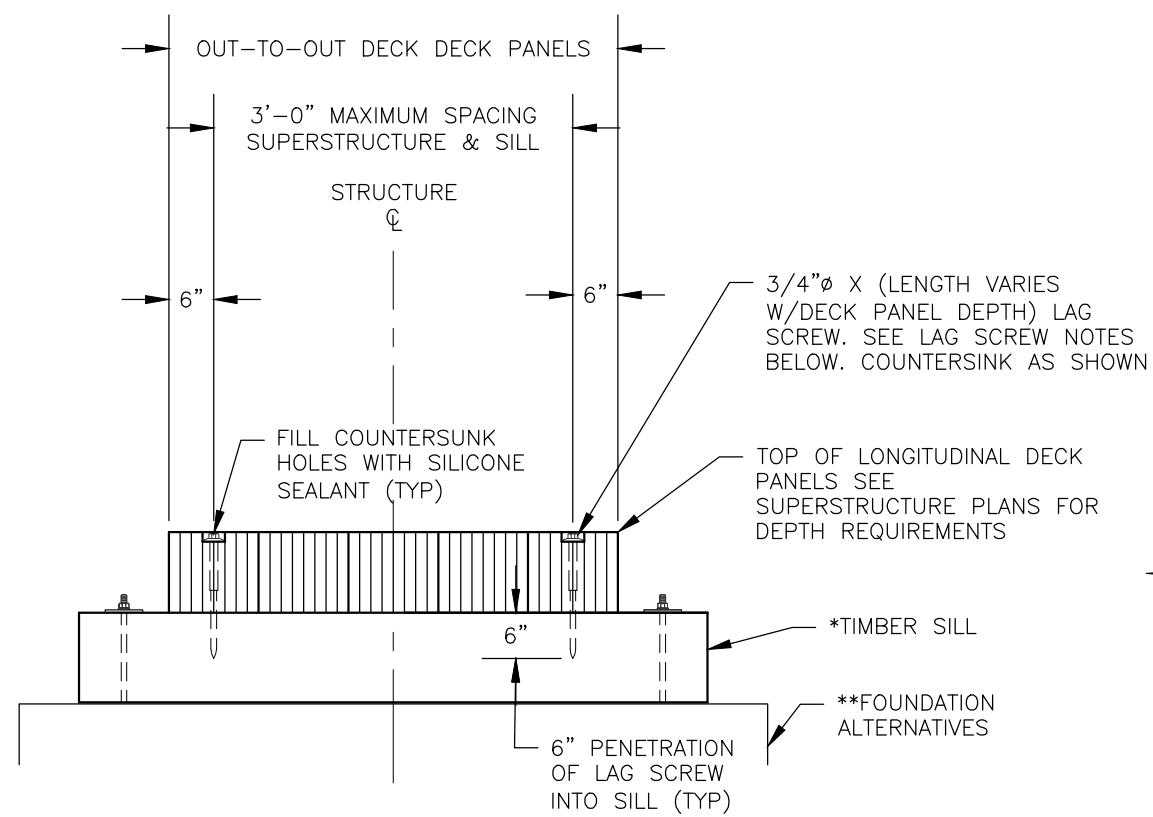
HARDWARE AND STRUCTURAL STEEL: SEE PROJECT DESIGN CRITERIA FOR STEEL HARDWARE FINISH. GALVANIZED OR UNFINISHED HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M270, GRADE 36, WITH NUTS AND BOLTS CONFORMING TO ASTM A307, GRADE A. WEATHERING STEEL AND HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M270, 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.

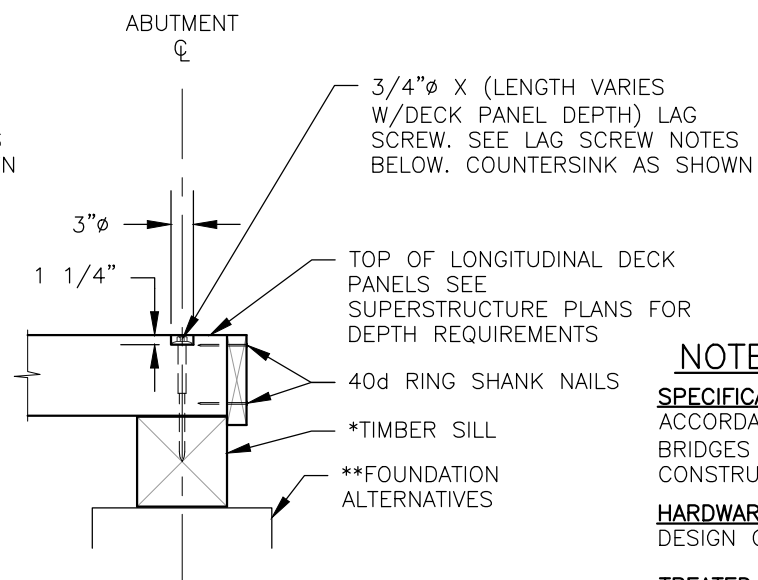
FABRICATION: SUBMIT SHOP DRAWINGS FOR ALL BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING PLANKS). SHOW ALL DIMENSIONS AND FABRICATION DETAILS FOR ALL CUT OR BORED TIMBER. FIELD DRILLING OF HOLES SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED ON THE PLANS.

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.

SHEET 3 OF 4



ELEVATION



TYPICAL SECTION

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

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 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.**

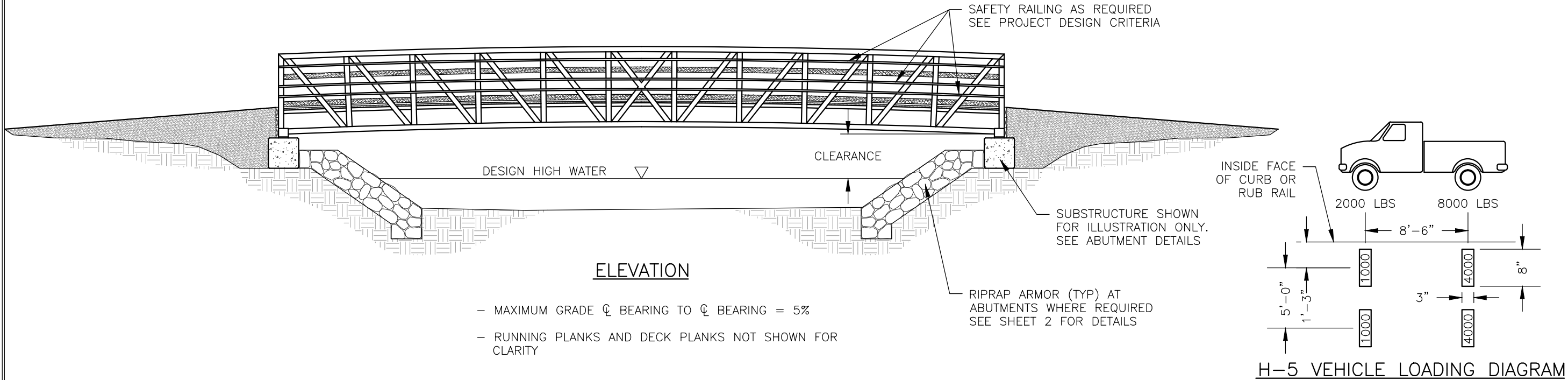
SHEET 4 OF 4

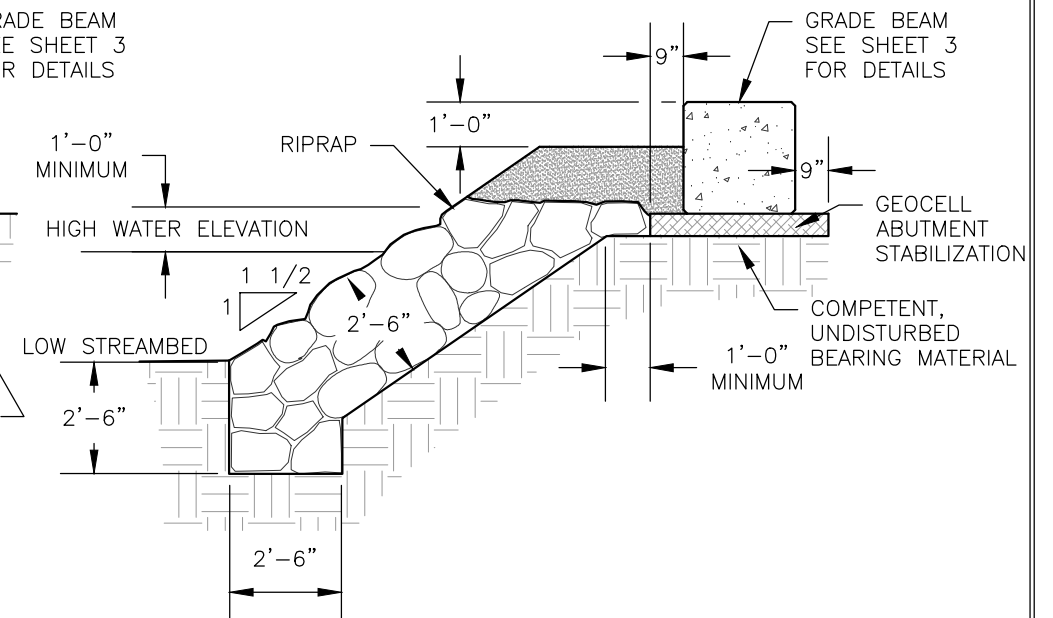
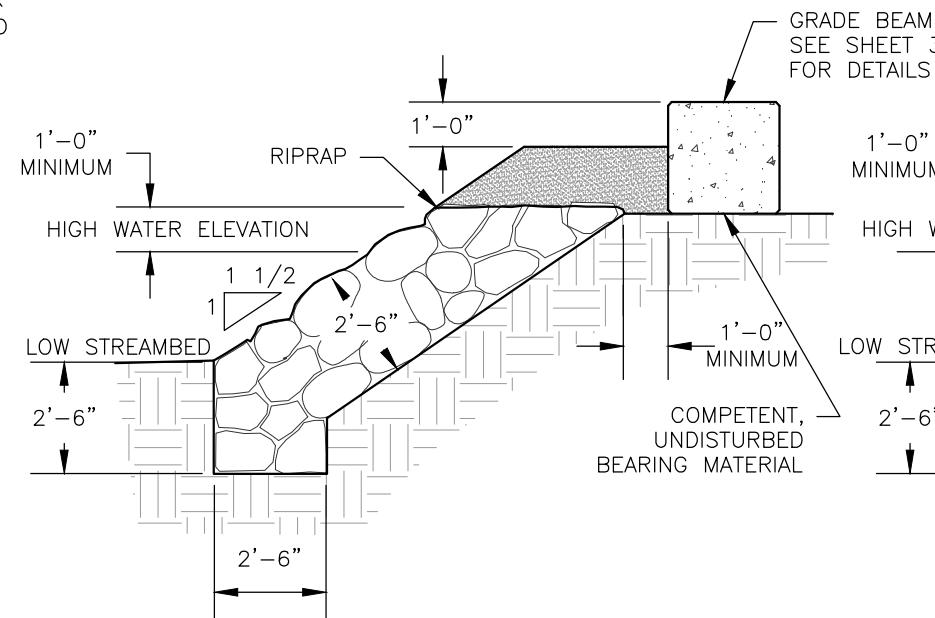
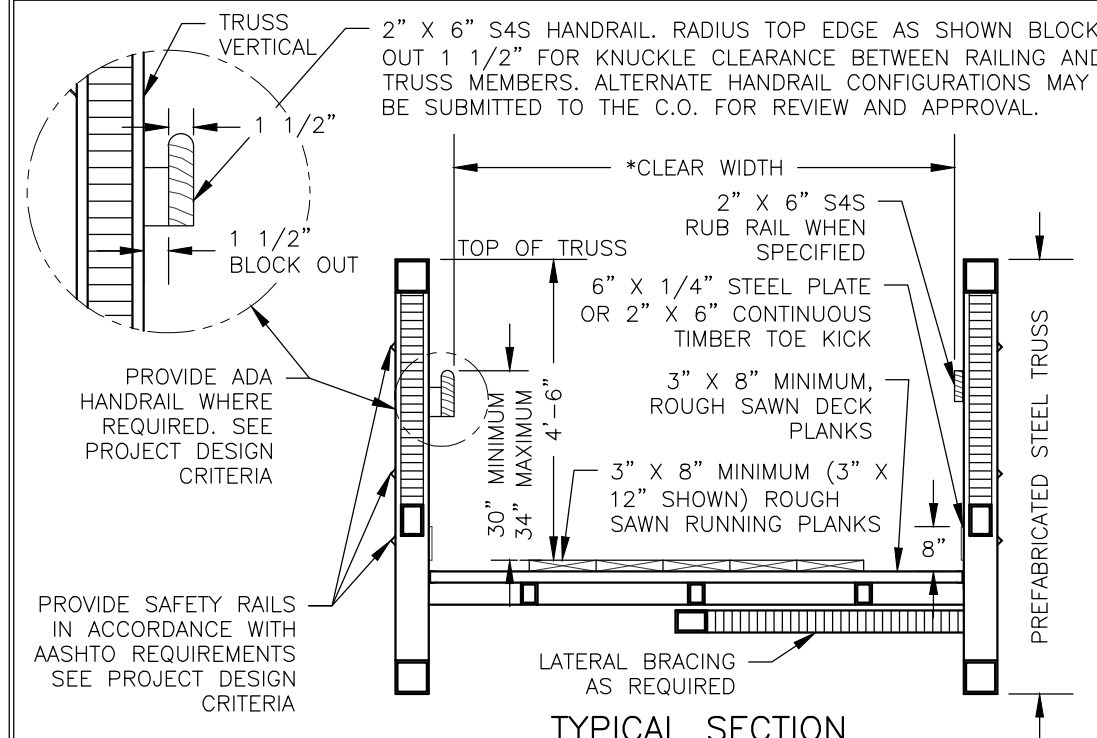
								HANDRAIL					END POST		DECK		
STRUCTURE NUMBER	TRAIL NO.	BRIDGE LOCATION	BRIDGE LENGTH C-C BRNG	BRIDGE SPAN OUT-TO-OUT	BRIDGE CLEAR WIDTH	PEDESTRIAN LOAD	GROUND SNOW LOAD	ADA REQUIRED	HEIGHT	RUB RAIL SPECIES	RUB RAIL SIZE	TREATMENT	VERTICAL	DIAGONAL	SPECIES	SIZE	TREATMENT TYPE

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

	RUNNING PLANK				ABUTMENT				BACKWALL						APPROACHES						
STRUCTURE NUMBER	SPECIES	SIZE	WIDTH	TREATMENT TYPE	TYPE	SIZE	TREATMENT		TYPE	SPECIES	SIZE	WIDTH	HEIGHT	TREATMENT	LENGTH		WIDTH	MATERIAL TYPE	MATERIAL DEPTH	GEO— SYNTHETIC TYPE	COMMENTS
							YES	NO							NEAR	FAR					
X																					
X																					
X																					
X																					
X																					
X																					

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





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 A47 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



PROJECT NAME & LOCATION

DRAWING NAME

PREFABRICATED STEEL TRAIL BRIDGE

SECTION

964 - PREFABRICATED TRAIL BRIDGE

TYPICAL ID

PRE

REVISION DATE

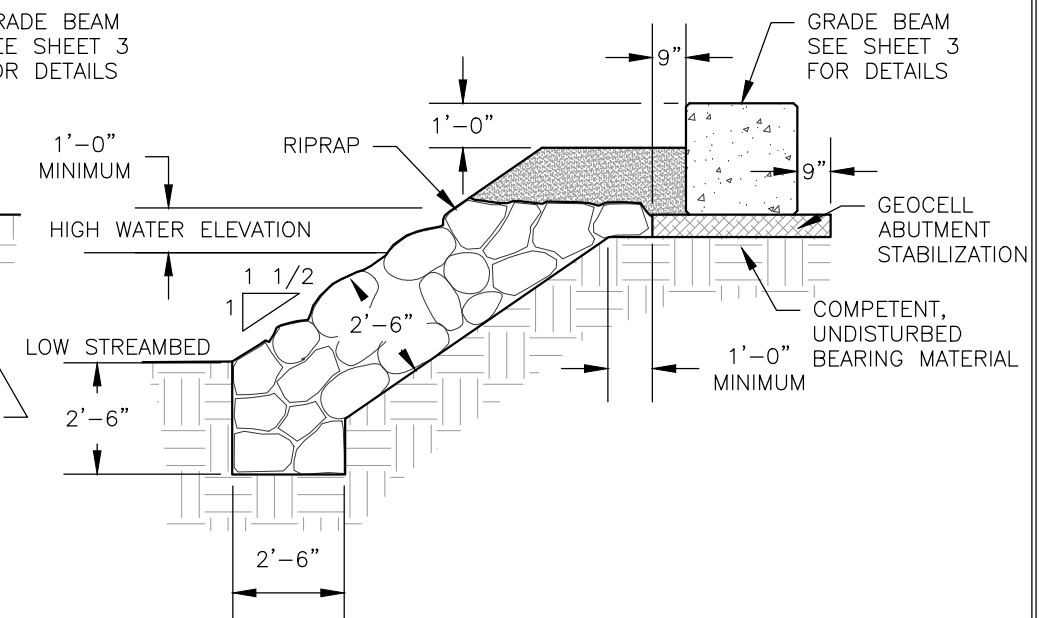
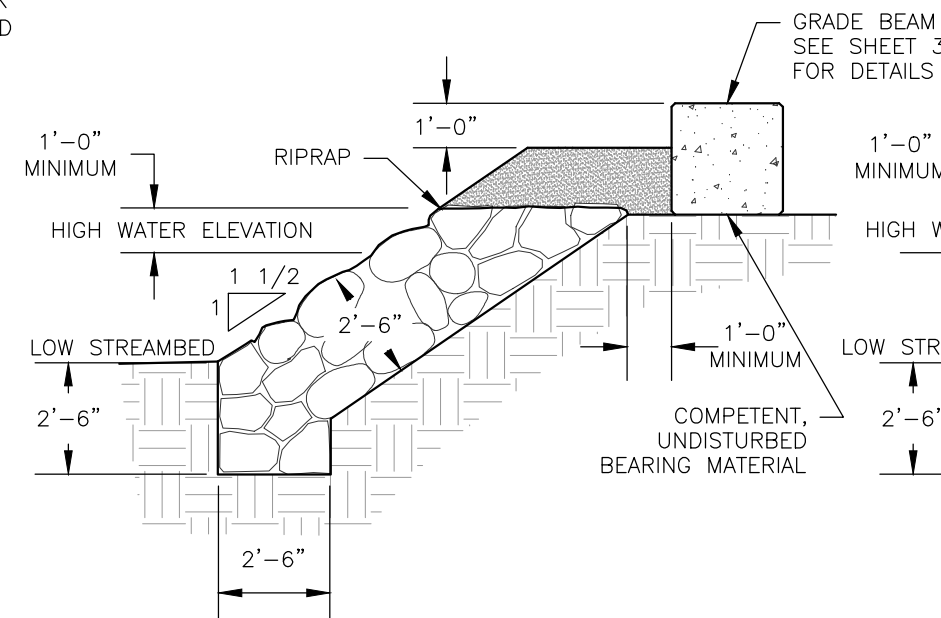
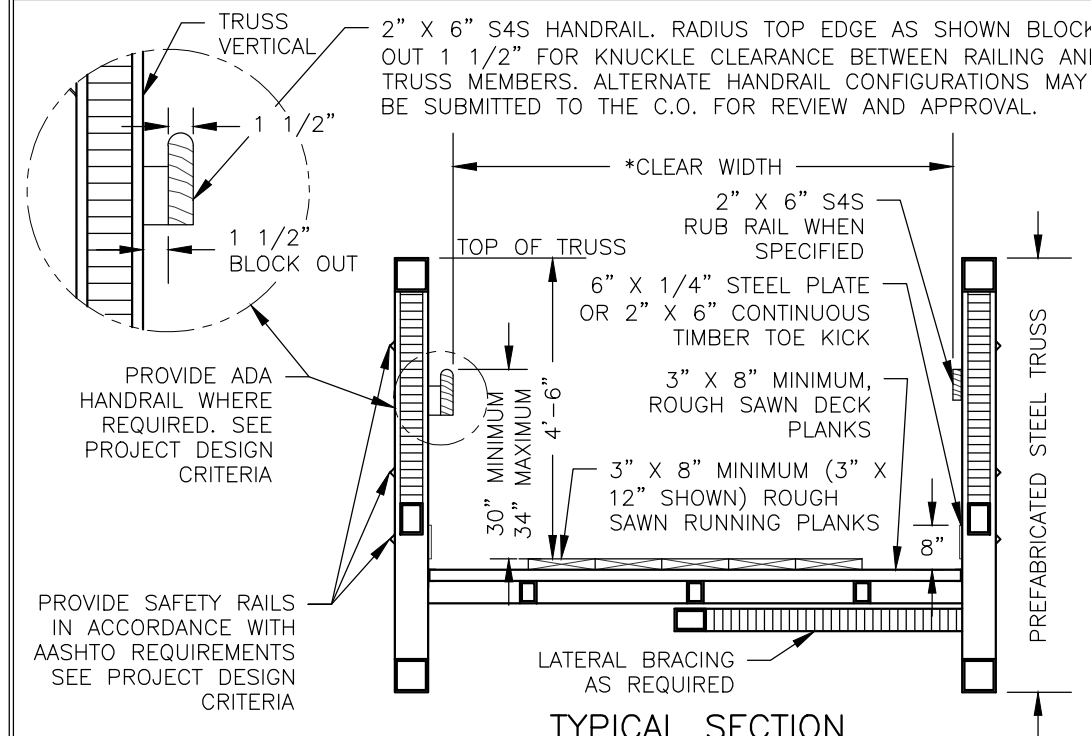
NOT TO SCALE

DRAWING NO.

STD 964-10-02a

SHEET

OF



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,

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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.

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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)

- PENTACHLOROPHENOI IN LIGHT OIL (TYPE C SOLVENT)

- FENTACHLOROPHTHEINSE IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE ($C_{11}N$) IN LIGHT OIL (TYPE C SOLVENT)

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

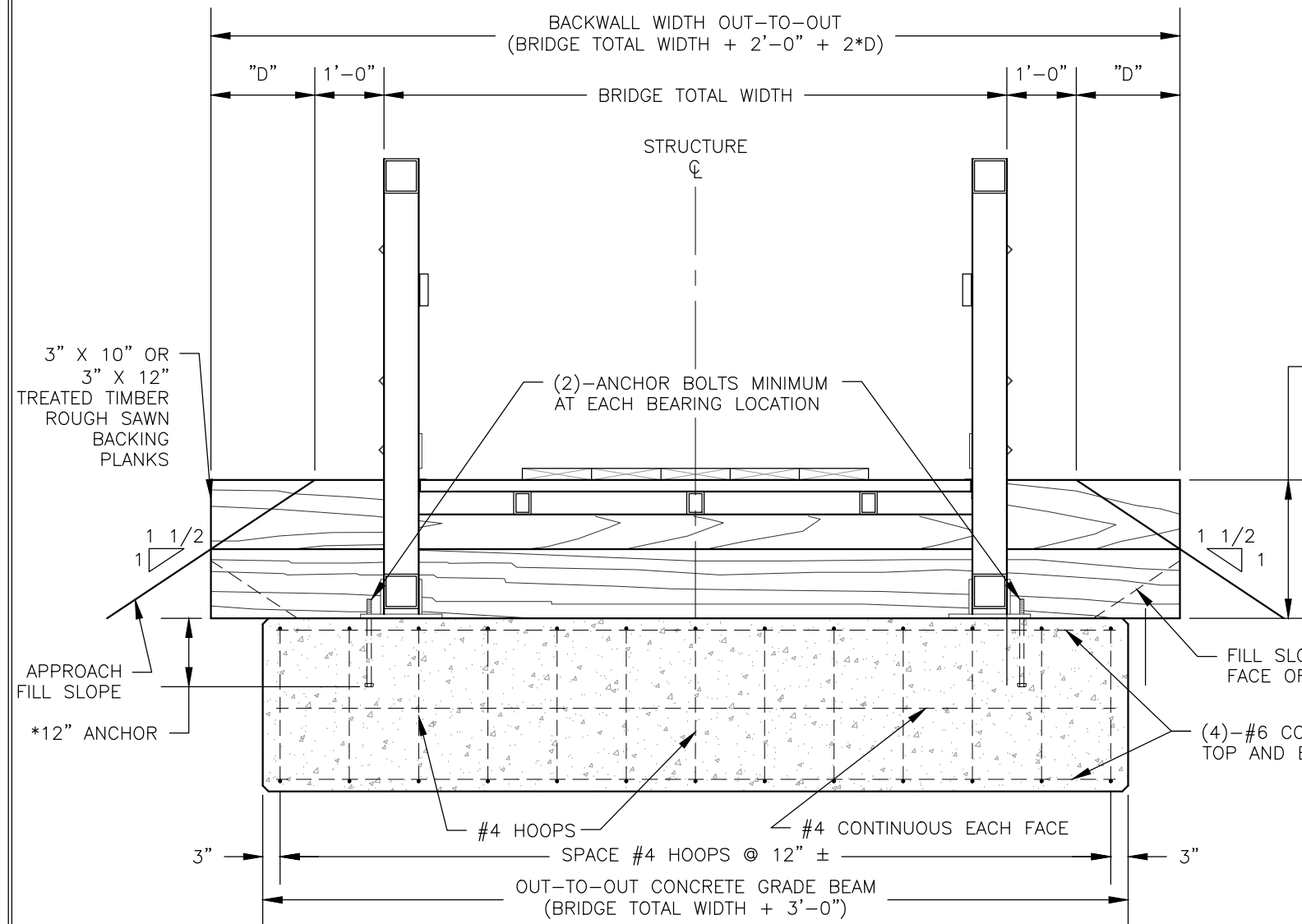
- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT - HEAVY DUTY (UC4B)

- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)

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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.



ELEVATION - GRADE BEAM

* 12" CAST-IN-PLACE ANCHOR OR 7" EPOXY ANCHOR WHEN APPROVED BY CO.

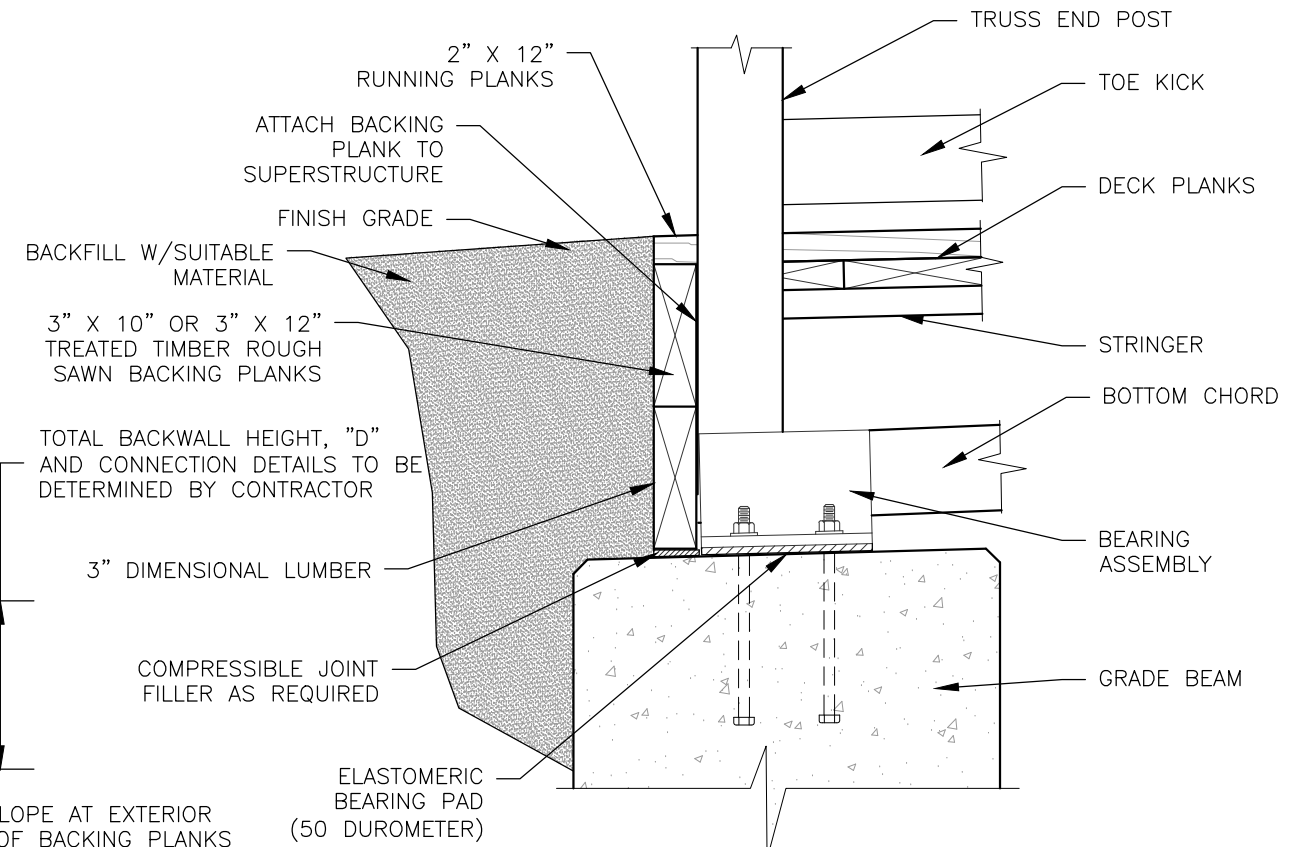
NOTES:

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 CLASS A(AE) FOR CONCRETE, $f'_c = 4000$ PSI AT 28 DAYS WITH AN ENTRAINED AIR CONTENT OF 5% ±1%. PROVIDE ALL CONCRETE IN ACCORDANCE WITH AN APPROVED MIX DESIGN. CHAMFER ALL EXPOSED EDGES OF CONCRETE 3/4-INCH.

REINFORCING STEEL: USE REINFORCING STEEL OF THE DEFORMED TYPE CONFORMING TO AASHTO M31 (ASTM A615), GRADE 60. CONCRETE COVER SHALL BE AS SHOWN, WHERE NOT SHOWN IT SHALL CONFORM TO AASHTO. CUT AND BEND STEEL IN ACCORDANCE WITH ACI 315.

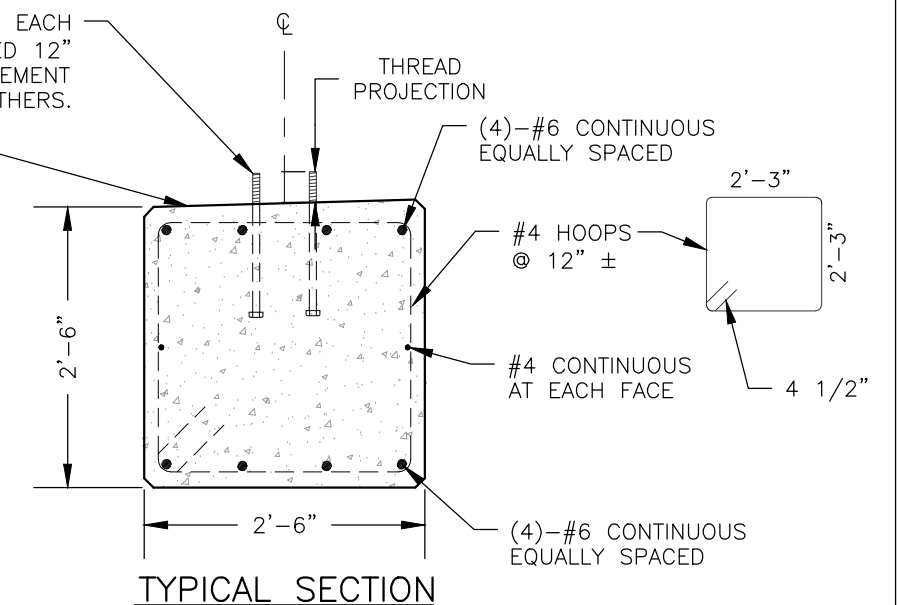
CONCRETE GRADE BEAM: DETAILS SHOWN ON THIS SHEET PROVIDE MINIMUM SIZES AND REQUIREMENTS. THE CONTRACTOR SHALL PREPARE AND SUBMIT COMPLETE GRADE BEAM DETAILS WITH THE PROPOSED SUPERSTRUCTURE DESIGN AND SHOP DRAWINGS.



BEARING DETAIL

(2)-3/4"Ø A307 ANCHOR BOLTS AT EACH BEARING LOCATION MINIMUM. EMBED 12" MINIMUM INTO GRADE BEAM. PLACEMENT AND THREADED PROJECTION BY OTHERS.

SLOPE TOP SURFACE OF GRADE BEAM AS REQUIRED FOR UNIFORM BEARING. VERIFY CONFIGURATION WITH TRUSS FABRICATOR.



TYPICAL SECTION

SHEET 3 OF 3

PROJECT NAME & LOCATION

DRAWING NAME

PREFABRICATED STEEL TRAIL BRIDGE

SECTION

964 - PREFABRICATED TRAIL BRIDGE

TYPICAL ID

PRE

REVISION DATE

NOT TO SCALE

DRAWING NO.

STD_964-10-03

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,

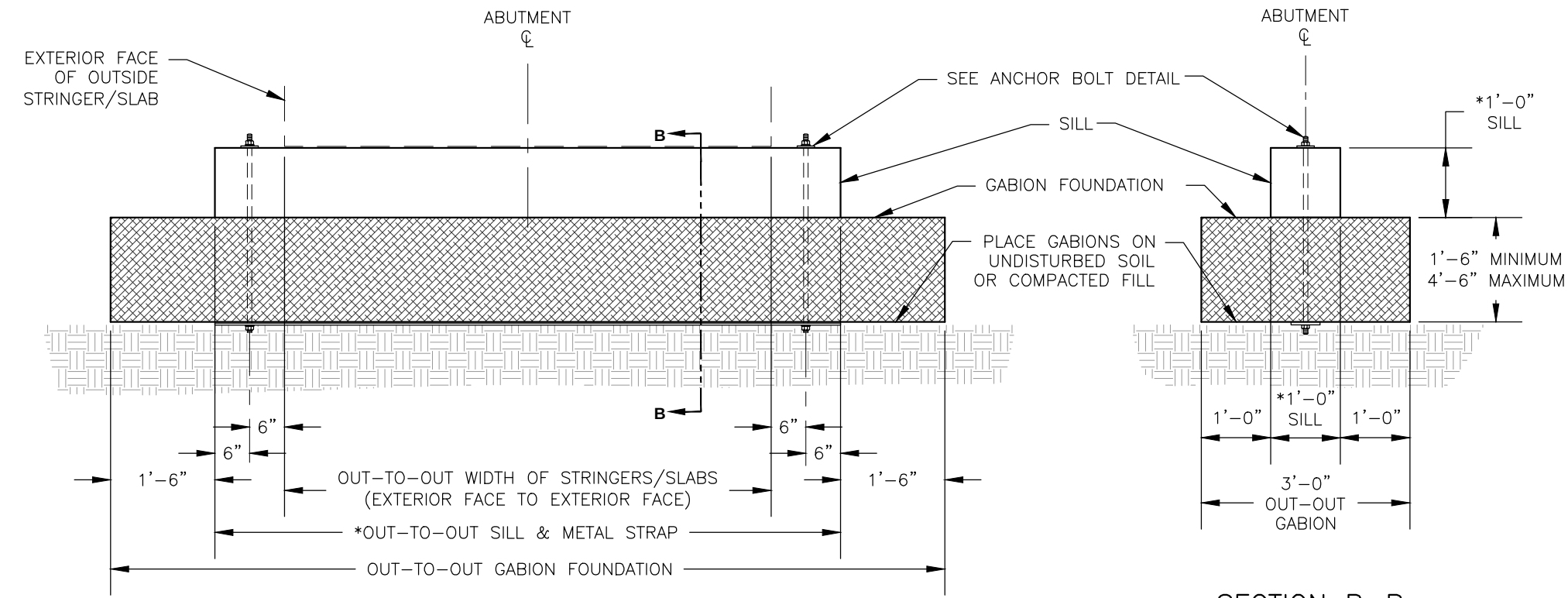
HARDWARE AND STRUCTURAL STEEL: SEE SUPERSTRUCTURE DRAWINGS FOR PROJECT DESIGN CRITERIA AND GENERAL NOTES.

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:

- 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.
- MATERIAL USED TO FILL THE GABION SHALL BE 4-INCH TO 8-INCH HARD, DURABLE, ANGULAR ROCK.
- 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.
- 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.
- 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.



ELEVATION – GABION FOUNDATION

SECTION B-B

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

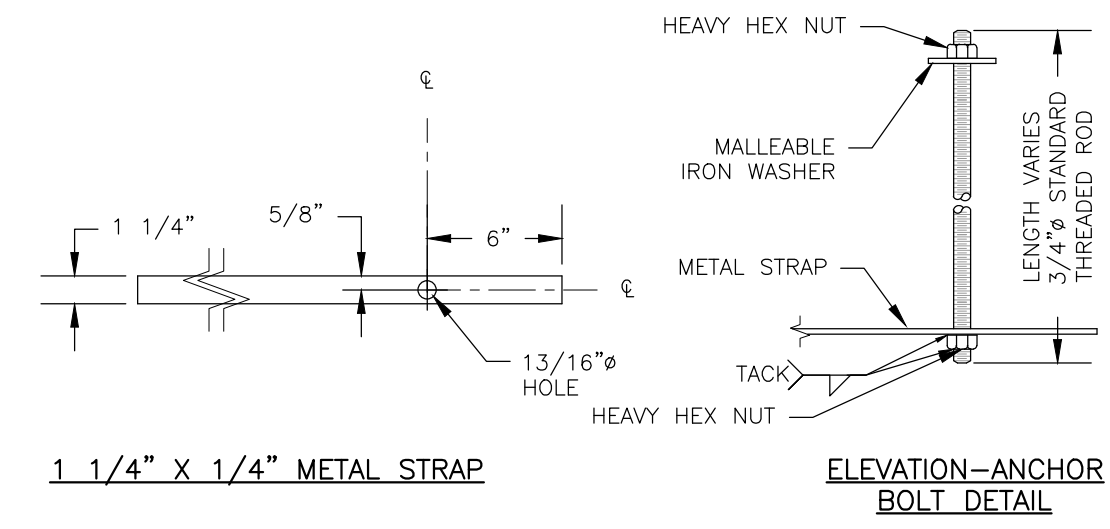
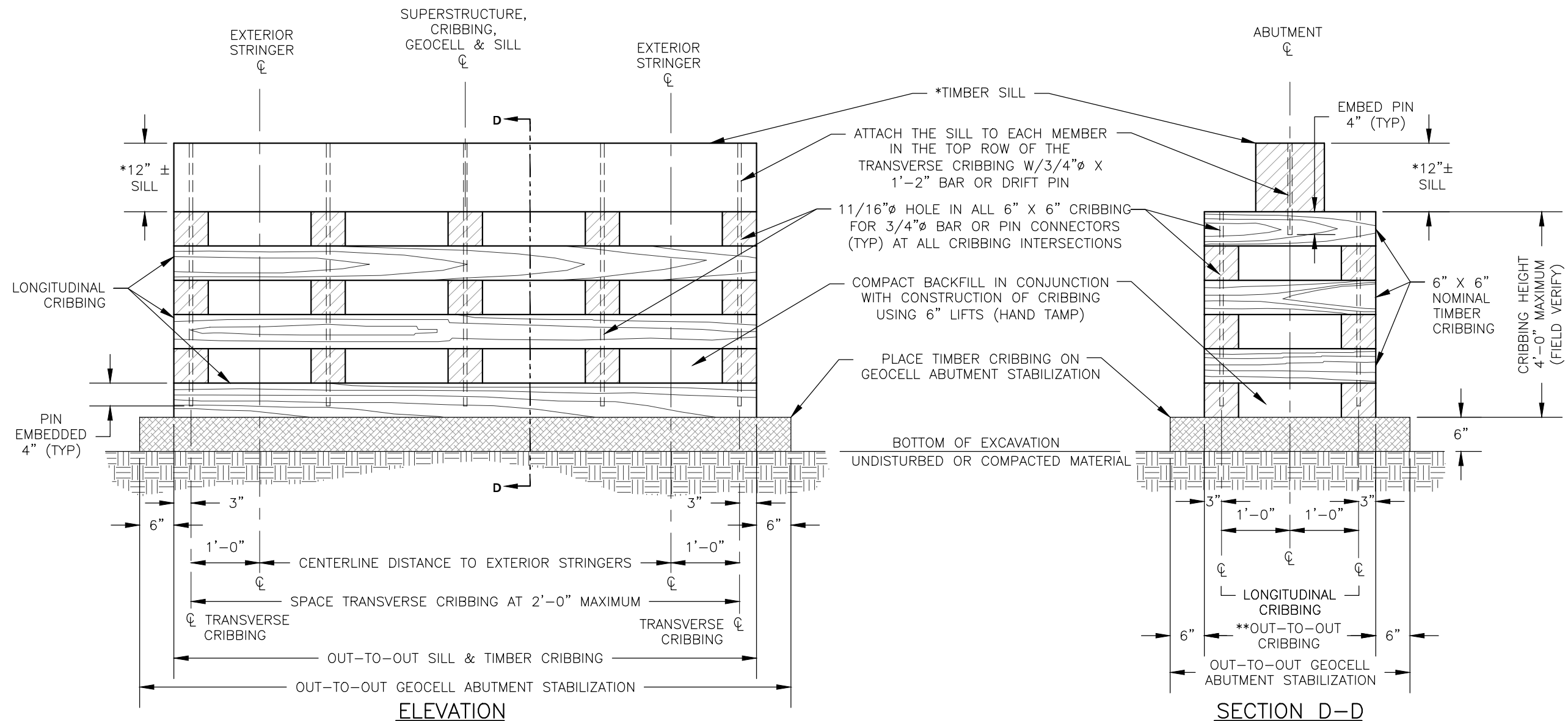


TABLE-1: STANDARD GABION BASKET SIZES

SIZE			NO. OF DIAPHRAGMS	CAPACITY CUBIC YARDS
LENGTH	WIDTH	HEIGHT		
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



TIMBER CRIBBING W/GEOCELL FOUNDATION

*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

FOUNDATION NOTES:

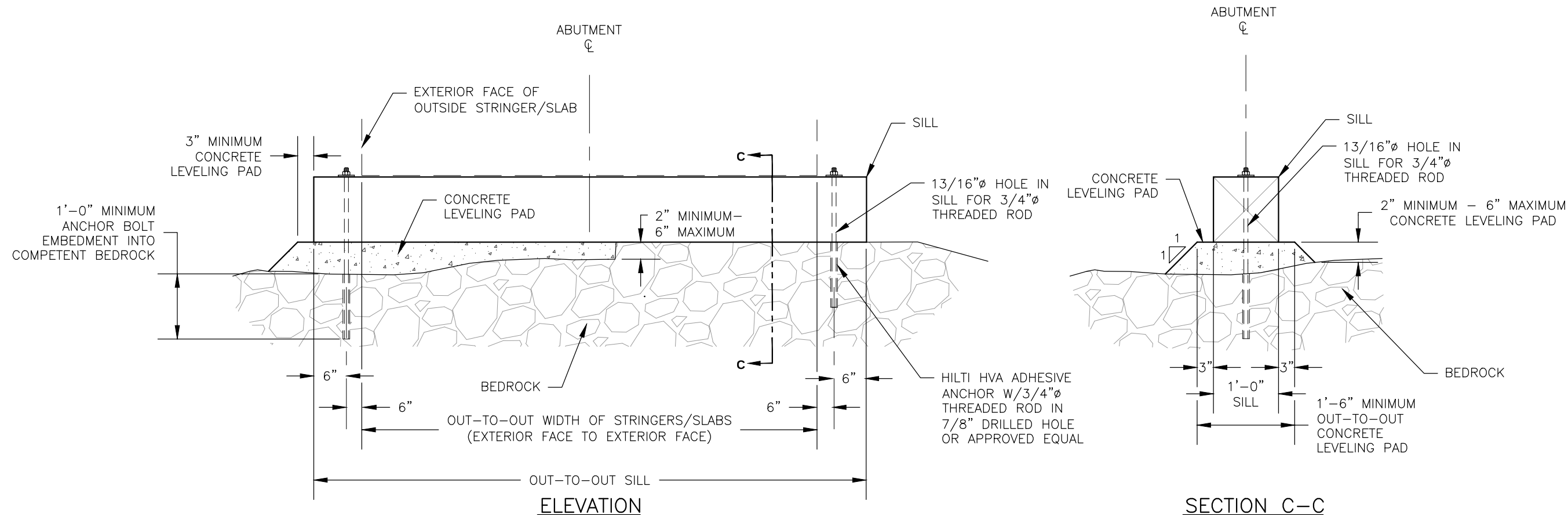
SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

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.

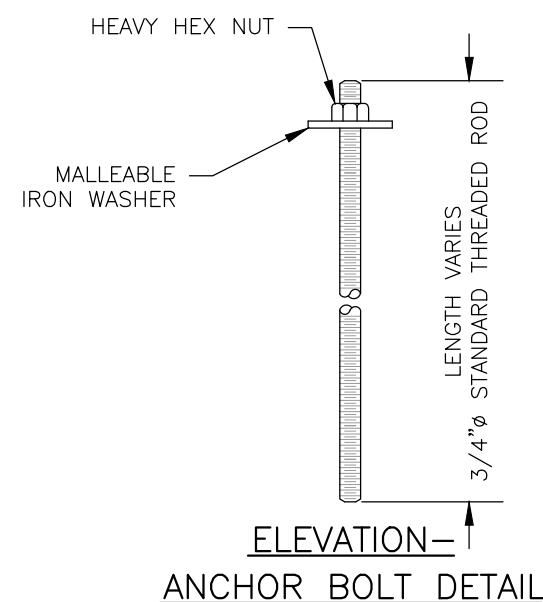
TREATED TIMBER & LUMBER: REFER TO THE GENERAL NOTES ON THE SUPERSTRUCTURE DRAWINGS FOR TREATED TIMBER & LUMBER SPECIFICATIONS AND FIELD TREATING OF WOOD.

SHEET 1 OF 1



SILL MATERIAL AND DIMENSIONS WILL VARY. REFER TO SUPERSTRUCTURE SHEETS FOR SILL DETAILS.

CONCRETE LEVELING PAD ON BEDROCK FOUNDATION



FOUNDATION NOTES:

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SHEET 1 OF 1