

STRUCTURAL NOTES

1. GENERAL

A. THE BRIDGE MODIFICATIONS ARE DESIGNED UNDER THE PROVISIONS OF THE 2021 VIRGINIA STATEWIDE BUILDING CODE, 2021 INTERNATIONAL BUILDING CODE, ASCE 7-22, AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 8TH EDITION, AASHTO LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES-2009.

B. THE FOLLOWING LOADS WERE USED IN THE DESIGN:

LIVE LOAD (AASHTO)
PEDESTRIAN BRIDGE DECK 90 PSF
OVERLOAD CASE (H5 DESIGN VEHICLE) 4K WHEEL LOAD

SNOW LOAD
GROUND SNOW LOAD (Pg) 25 PSF
SNOW EXPOSURE FACTOR (Ce) 1.0
SNOW LOAD IMPORTANCE FACTOR (Is) 1.0
THERMAL FACTOR (Ct) 1.0

NOTE:
PROJECT SCOPE DOES NOT MODIFY THE EXISTING LATERAL FORCE RESISTING SYSTEM OF THE BRIDGE. WIND AND SEISMIC LOADS ARE SHOWN FOR REFERENCE ONLY.

WIND LOAD (AASHTO)
WIND SPEED (3-SECOND GUST) 115 MPH
V_{ult}: (0.77*V_{ULT}) 88.6 MPH
WIND EXPOSURE B
IMPORTANCE FACTOR (Ir) 1.15

EARTHQUAKE DESIGN (AASHTO)
SITE CLASSIFICATION D
SEISMIC RESPONSE COEFFICIENTS
S_s 0.10
S₁ 0.044
S_{ds} 0.16
S_{d1} 0.11
SEISMIC ZONE I

HANDRAIL AND GUARD LOADS
HANDRAIL AND GUARD 50 PLF / 200 LB PT LOAD
INTERMEDIATE RAIL 50 LB PT LOAD

C. PROVIDE SUBMITTALS FOR THE FOLLOWING ITEMS:

--WOODEN STRUCTURAL MEMBER PRODUCT DATA
--WOOD POLYMER COMPOSITE DECKING PRODUCT DATA
--CHAIN LINK FENCING PRODUCT DATA
--GALVANIZED CONNECTION HARDWARE INCLUDING BOLTS, NUTS, WASHERS, STAPLES, SCREWS ECT

2. GENERAL

A. REVIEW ALL DRAWINGS AND SPECIFICATIONS BEFORE BEGINNING ANY WORK. NOTIFY EOR OF ANY DISCREPANCIES IN THE DRAWINGS, SPECIFICATIONS, OR ANY EXISTING CONDITIONS. ALL TRADES MUST REVIEW ALL DRAWINGS FOR WORK AFFECTING THEIR TRADE.

B. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE COMPLETE EXTENT AND QUANTITIES OF REPAIRS AND REPLACEMENT INDICATED IN THE DRAWINGS. THE EXTENT OF REQUIRED REPAIRS SHOWN ON THE CONSTRUCTION DRAWINGS ARE APPROXIMATE. FOR BID PREPARATION, CONTRACTOR SHOULD ARRANGE TO VISIT THE SITE FOR VERIFYING EXTENT OF REPAIRS AND REPLACEMENT, ASSESSING AVAILABLE STAGING AREAS, ASSESSING AVAILABILITY OF WATER AND ELECTRIC SERVICES, AND ASSESSING ACCESS TO THE WORK AREA.

C. BY MEANS OF THE CONSTRUCTION DRAWINGS AND FIELD OBSERVATIONS, CONTRACTOR SHALL ESTABLISH AND SUBMIT BASE QUANTITIES AND UNIT PRICES FOR THE SCOPE OF WORK INCLUDED IN THE CONTRACT DOCUMENTS.

D. THROUGH THE COURSE OF THE CONSTRUCTION, CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD OF AND REPORT REPAIR QUANTITIES IMPLEMENTED TO THE CONTRACTOR OFFICER/OWNER/PROJECT MANAGER/ENGINEER.

E. CONTRACTOR IS RESPONSIBLE FOR SCHEDULING THE SEQUENCE OF CONSTRUCTION WORK AND COORDINATION THE ACTIVITIES OF ALL TRADES.

F. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH THE WORK. DISCREPANCIES IN ASSUMED FRAMING DIRECTION OR SIZES AND ANY INDICATION OF STRUCTURAL DEFICIENCY NOTED DURING THE PERFORMANCE OF THE WORK SHALL BE CONVEYED IN WRITING TO THE CONTRACTOR OFFICER / OWNER / PROJECT MANAGER / ENGINEER.

G. CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY BRACING AND SHORING REQUIRED TO EXECUTE THE WORK AND PROTECT PERSONS AND PROPERTY PRIOR TO AND DURING CONSTRUCTION. THE CONTRACTOR SHALL ADJUST AND MAINTAIN TEMPORARY BRACING AND SHORING AS REQUIRED THROUGHOUT CONSTRUCTION.

H. STRUCTURAL ELEMENTS TO REMAIN SHALL NOT BE CUT IN A MANNER RESULTING IN THE REDUCTION OF LOAD-CARRY CAPACITY. DO NOT ADD LOADS TO ANY POINT UP UPON THE EXISTING STRUCTURE WHICH COULD OVERSTRESS THE STRUCTURE.

I. COLLECT, TRANSPORT AND LEGALLY DISPOSE OF ALL CONSTRUCTION TRASH AND DEBRIS AT LOCATION OFF THE PROPERTY. SITE SHALL BE CLEAN AND NEAT.

J. ALL REPAIRS SHALL BE PER STRUCTURAL DETAILS AND SPECIFICATIONS.

3. DEMOLITION

A. THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE MEANS AND METHODS OF DEMOLITION AND THE INTEGRITY AND STABILITY OF THE EXISTING STRUCTURE UNTIL THE WORK IS COMPLETED. PROVIDE ADEQUATE SHORING, BRACING AND OTHER TEMPORARY SUPPORT DURING DEMOLITION.

B. CONTRACTOR SHALL VERIFY THAT EXISTING CONSTRUCTION CORRESPONDS TO THAT SHOWN ON THE DRAWINGS. DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER.

C. UNTIL PROPERLY SHORED, DO NOT CUT EXISTING STRUCTURAL MEMBERS IN A MANNER RESULTING IN A REDUCTION OF LOAD-CARRYING CAPACITY. DO NOT EXCEED THE CAPACITY OF THE EXISTING STRUCTURE WITH SUPERIMPOSED LOADS, INCLUDING BUT NOT LIMITED TO CONSTRUCTION/DEMOLITION EQUIPMENT OR DEBRIS STOCKPILES.

D. IN GENERAL, SELECTIVE STRUCTURAL DEMOLITION IS TO BE PERFORMED BY REMOVING EXISTING CONNECTION HARDWARE (SCREWS AND BOLTS) AND WITH PHYSICAL CUTTING ACTION (I.E. SAWING AND GRINDING INSTEAD OF HAMMERING AND CHOPPING).

E. THE CONTRACTOR IS RESPONSIBLE, AT THEIR EXPENSE, TO REPAIR ANY DAMAGE THAT HAS OCCURRED TO STRUCTURAL ELEMENTS OR FINISH MATERIALS DURING THE DEMOLITION PROCESS.

4. WOOD-POLYMER COMPOSITE DECKING (WPC)

A. WOOD-POLYMER COMPOSITE (WPC) DECKING SHALL BE TREX TRANSCEND WPC LUMBER, AS MANUFACTURED BY TREX COMPANY, LLC, WINCHESTER, VA 22602, OR APPROVED EQUIVALENT. WPC LUMBER SHALL HAVE THE FOLLOWING MINIMUM DESIGN VALUES:
BENDING STRESS "Fb" = 400 PSI
HORIZONTAL SHEAR "Fv" = 360 PSI
COMPRESSION PERPENDICULAR TO GRAIN "Fc" = 540 PSI
COMPRESSION PARALLEL TO GRAIN "Fc11" = 540 PSI
MODULUS OF ELASTICITY "E" = 200,000 PSI

B. WPC DECKING SHALL BE "1X6" NOMINAL OR 0.94"x5.5" ACTUAL AND SHALL BE FASTENED TO WOOD BLOCKING WITH TWO ROWS OF #6X2-1/2 INCH DECK SCREWS AT A MAXIMUM SPACING OF 16 INCHES, ON CENTER. DECKING SHALL BE INSTALLED ACROSS THE ENTIRE WIDTH OF THE BRIDGE DECK WITHOUT JOINTS.

C. WPC DECKING ATTACHMENT SCREWS SHALL BE #8 x 2-1/2" LONG DECK SCREWS WITH GALVANIZED, EPOXY OR APPROVED ALTERNATE COATING.

5. WOOD FRAMING

A. ALL EXTERIOR FRAMING SHALL BE PRESSURE-TREATED (PT). FRAMING SHALL BE PRESSURE-TREATED WITH ALKALINE COPPER QUAT (ACO) OR COPPER AZOLE (CBA-A AND CA-B), NOT SODIUM BORATE (SBX). PT LUMBER SHALL NOT BE INCISED.

B. STRUCTURAL POSTS AND PRESSURE-TREATED LUMBER (PT) SHALL BE SOUTHERN PINE (SP) #2 OR BETTER, HAVING THE FOLLOWING MINIMUM PROPERTIES (BASED ON 2X12 MEMBERS):

BENDING STRESS "Fb" = 750 PSI SINGLE MEMBER USE
HORIZONTAL SHEAR "Fv" = 175 PSI
COMPRESSION PERPENDICULAR TO GRAIN "Fc" = 565 PSI
COMPRESSION PARALLEL TO GRAIN "Fc11" = 1,250 PSI
MODULUS OF ELASTICITY "E" = 1,400,000 PSI

C. BOLTS AND FASTENERS SHALL BE HOT-DIPPED GALVANIZED

D. ALL BOLTED CONNECTIONS, INCLUDING THRU BOLTS AND LAGS SHALL HAVE A STANDARD CUT METAL WASHER BETWEEN THE WOOD MEMBER AND NUT, UNLESS A LARGER PLATE WASHER OR OTHER IS NOTED ON THE DRAWINGS.

E. ALL WOOD SCREWS SHALL BE HOT DIPPED GALVANIZED OR OTHERWISE PROTECTED WITH AN APPROVED COATING.

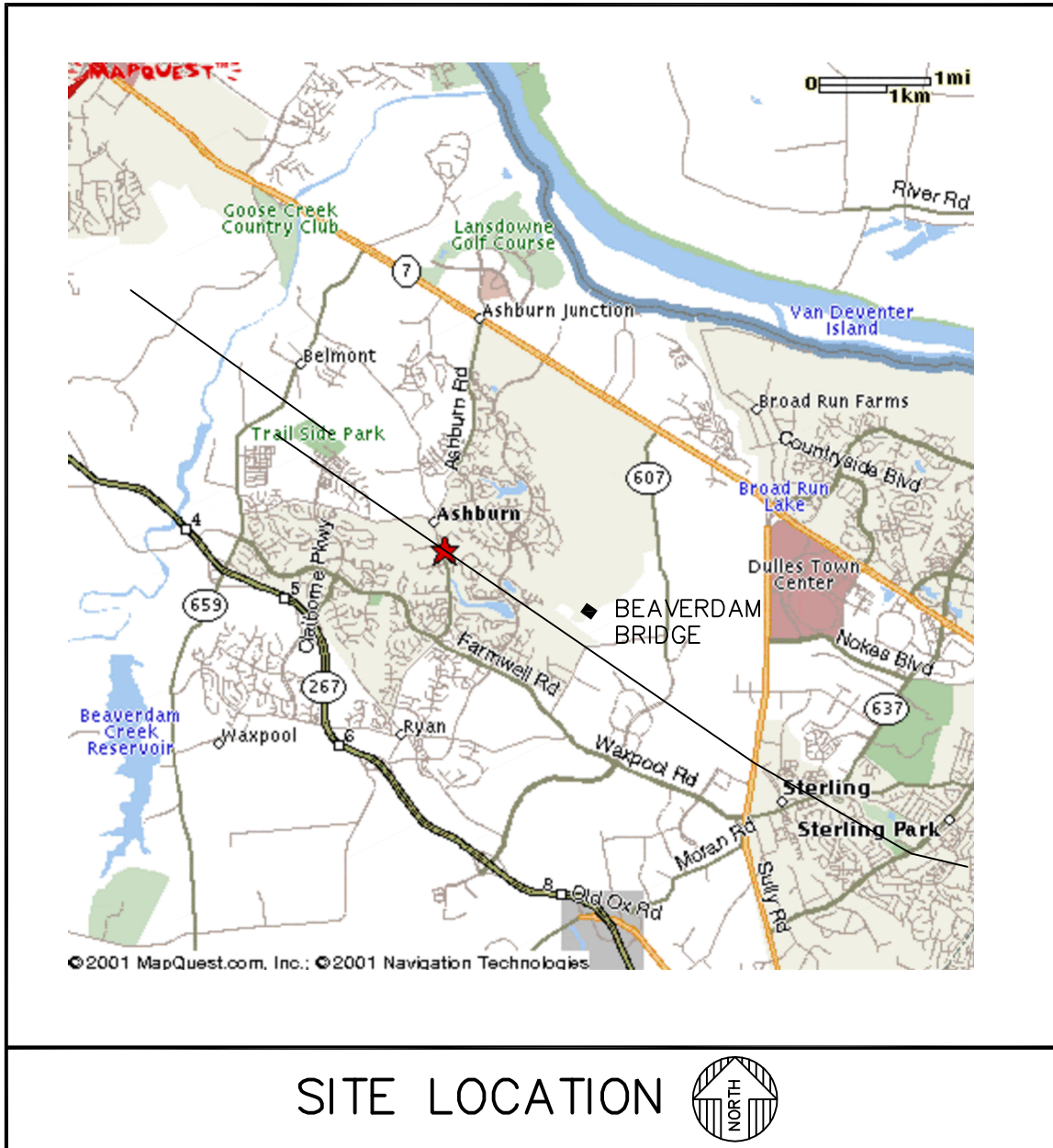
F. DO NOT SPLICE STRUCTURAL MEMBERS BETWEEN SUPPORTS.

6. PVC COATED STEEL CHAIN LINK FENCE FABRIC

A. FENCING SHALL BE ASTM F668 2" MESH, 9 GAUGE CORE WIRE WITH BLACK CLASS 2B COATING.

B. STAPLES FOR FENCE ATTACHMENT SHALL BE 1-1/2" x 1/4" FABRICATED FROM 9 GAUGE HOT DIPPED GALVANIZED SMOOTH SHANK WIRE.

WARNING: THE STRUCTURAL INTEGRITY OF THE BRIDGE SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION ACCORDING TO PLANS AND SPECIFICATIONS. STRUCTURAL MEMBERS ARE NOT SELF-BRACING UNTIL PERMANENTLY AFFIXED TO THE STRUCTURE. THE STRUCTURAL ENGINEERS ASSUME NO LIABILITY FOR THE STRUCTURE DURING CONSTRUCTION.



SITE LOCATION

ABBREVIATIONS LEGEND

A	ANCHOR BOLT	K	KIP(S)
AB	ABOVE	KO	KNOCK-OUT
ADDL	ADDITIONAL	KSI	KIPS PER SQ. INCH
ADJ	ADJACENT	L	LINTEL MARK/STEEL ANGLE
AFF	ABOVE FINISH FLOOR	LLH	LONG LEG HORIZONTAL
ALT	ALTERNATE	LLV	LONG LEG VERTICAL
APPROX	APPROXIMATE(LY)	LL	LIVE LOAD
ARCH	ARCHITECT(URAL)	LP	LOW POINT
B		LSH	LONG SIDE HORIZONTAL
B	BEAM MARK, SOIL BORING MARK	LSV	LONG SIDE VERTICAL
BF	BOTTOM OF FOOTING ELEVATION	LVL	LAMINATED VENEER LUMBER/LEVEL
BLKG	BLOCKING		
BLDG	BUILDING	M	MANUF MANUFACTURER(ED)
BLW	BELOW	MAS	MASONRY
BM	BEAM	MAS	MASONRY
BOD	BOTTOM OF DECK	MAX	MAXIMUM
BOS	BOTTOM OF STEEL	MECH	MECHANICAL
BOTT	BOTTOM	MEP	MECHANICAL, ELECTRICAL, PLUMBING
BP	BEARING PLATE MARK	MIN	MINIMUM
BRG	BEARING	MISC	MISCELLANEOUS
BSMT	BASEMENT	MO	MASONRY OPENING
BTWN	BETWEEN	MATL	MATERIAL
		MTL	METAL
C		N	NOT TO SCALE
CIP	CAST IN PLACE	NTS	NEAR SIDE
CJ	CONTROL/CONSTRUCTION JOINT	NS	NOT IN CONTRACT
CJP	COMPLETE JOINT PENETRATION WELD		
CL	CENTER LINE/COLUMN LINE	O	
CLR	CLEAR(ANCE)	OC	ON CENTER(S)
CMU	CONCRETE MASONRY UNIT	OPNG	OPENING
COL	COLUMN	OPP	OPPOSITE
COM	CENTER OF MASONRY WALL	OF	OUTSIDE FACE
COMP	COMPOSITE		
CONC	CONCRETE		
CONN	CONNECTION	P	PIER MARK
CONST	CONSTRUCTION	PAF	POWDER ACTUATED FASTENER
CONT	CONTINUOUS	PC	PRECAST CONCRETE
COORD	COORDINATE(TION)	PDF	POWER DRIVEN FASTENER
COS	CENTER OF STUD	PEB	PRE-ENGINEERED BUILDING
D		PERIM	PERIMETER
DBA	DEFORMED BAR ANCHORS	PL	PLATE
DTL	DETAIL	PLF	POUNDS PER LINEAR FOOT
DIAM	DIAMETER	PLUM	PLUMBING
DIAG	DIAGONAL	PP	PRECAST PLANK MARK
DIM	DIMENSION	PROJ	PROJECTION
DN	DOWN	PSF	POUNDS PER SQ. FOOT
DWG	DRAWING	PSI	POUNDS PER SQ. INCH
DBL	DOUBLE	PSL	PARALLEL STRAND LUMBER COLUMN
DL	DEAD LOAD	PT	POST TENSION(ED)/PRESSURE TREATED
E		Q	
EA	EACH	QTY	QUANTITY
EE	EACH END		
EF	EACH FACE	R	RADIUS
ELEV	ELEVATION	RAD	ROOF DRAIN
ELEC	ELECTRICAL	REV	REVISION, REVISE(D)
ELEV	ELEVATOR	REINF	REINFORCE(D), (ING)
EOD	EDGE OF DECK	REM	REMAINDER
EOJ	EDGE OF JOIST	REQD	REQUIRED
EOS	EDGE OF SLAB	RTU	ROOF TOP UNIT
EQ	EQUAL		
EQUIP	EQUIPMENT	S	
ES	EACH SIDE	SB	STRAP BEAM, SLAB BEAM
ETR	EXISTING TO REMAIN	SC	SLIP CRITICAL
EW	EACH WAY	SCHED	SCHEDULE(D)
EXIST, EX	EXISTING	SE	SPECIALTY DESIGN ENGINEER
EXP	EXPANSION	SIM	SIMILAR
EXT	EXTERIOR	SJ	STEEL JOIST INSTITUTE
F		SOG	SLAB ON GRADE
F	FOOTING MARK	SQ	SQUARE
FD	FLOOR DRAIN	STD	STANDARD
FDN	FOUNDATION	STL	STEEL
FIN	FINISH	STRUCT	STRUCTURAL
FLR	FLOOR	SPA	SPACES
FOB	FACE OF BUILDING	SL	SNOW LOAD
FOM	FACE OF MASONRY WALL	SS	STAINLESS STEEL
FOS	FACE OF STUD		
FRT	FIRE RETARDANT TREATED	T	TEMPORARY
FS	FOOTING STEP/FAR SIDE	TF	TOP OF FOOTING ELEVATION
FTG	FOOTING	T/GB	TOP OF GRADE BEAM
FUT	FUTURE	THK	THICK(NESS), (ENED)
G		TJI	WOOD I JOIST
GA	GAGE, GAUGE	T/O	THROUGH OUT
GALV	GALVANIZED	TOC	TOP OF CONCRETE
GB	GRADE BEAM	TP	TOP OF PIER ELEVATION
GC	GENERAL CONTRACT(OR)	TOS	TOP OF STEEL ELEVATION
GT	GIRDER TRUSS	TOW	TOP OF WALL ELEVATION
H		TYP	TYPICAL
HORIZ	HORIZONTAL		
HP	HIGH POINT	U	
HS	HIGH STRENGTH	UNEXC	UNEXCAVATED
HSS	HOLLOW STRUCTURAL SECTION	UNO	UNLESS NOTED OTHERWISE
HT	HEIGHT	UMD	UNDERSIDE METAL DECK ELEVATION
HTR	HIP TRUSS	V	
I		VERT	VERTICAL
INFO	INFORMATION	VIF	VERIFY IN FIELD
IF	INSIDE FACE	W	
J		WF	WITH WIND FRAME
JBE	JOIST BEARING ELEVATION	WP	WORK POINT
JST	JOIST	WPC	WOOD-POLYMER COMPOSITE
JT	JOINT	WWF	WELDED WIRE FABRIC
JTR	JACK TRUSS		

Plan Approved

See Back Page For Stamps

Subject To Field Approval Of Construction

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STRUCTURAL NOTES

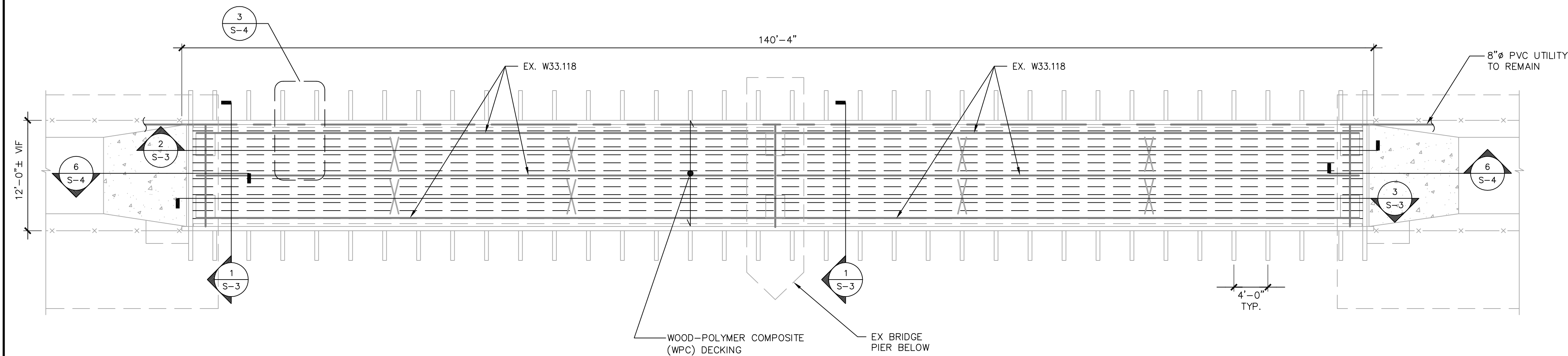
NVRPA - BRIDGE DECKING IMPROVEMENT

VIRGINIA

BROAD RUN

Revision	10/03/2024	Date	2440005	Job Number
PERMIT SET				
Scale: AS NOTED				
Drawn By: JR				
Designed By: KE				
Checked By: LR				
Date: 10/03/24				
Drawing Number				
S-1				

ES2440005

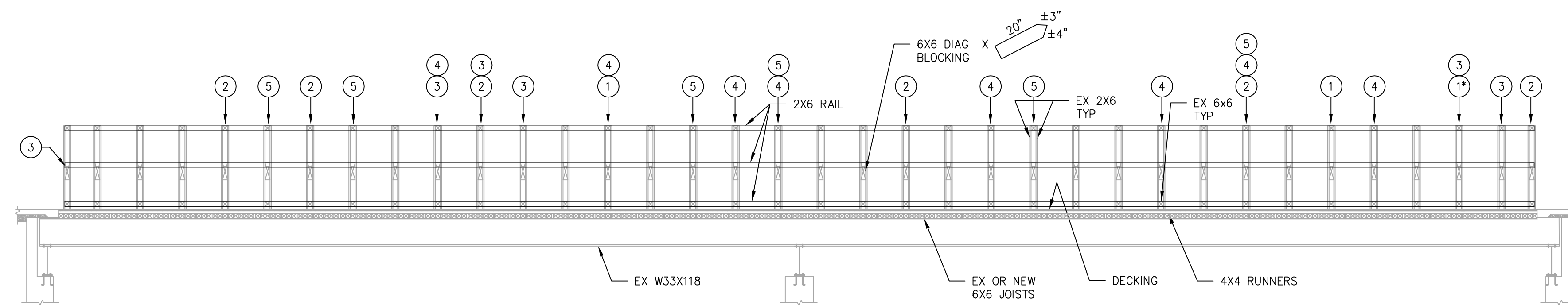


REPAIR PLAN

SCALE: 1/8" = 1'-0"

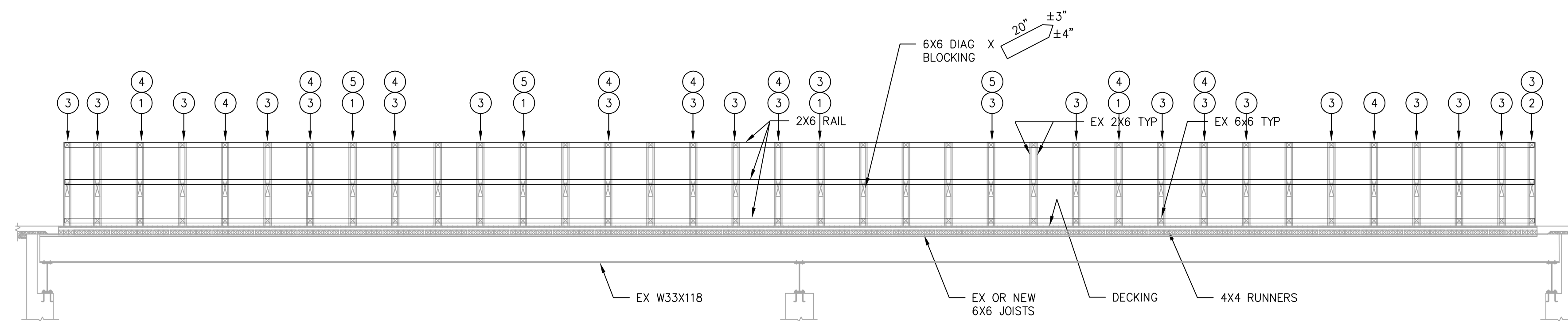
NOTES:

- KEYED REPAIR NOTES DENOTE THE FOLLOWING AND APPLY WHERE INDICATED ON REPAIR ELEVATION 2 & 3/S-3:
 - REMOVE AND REPLACE IN KIND DAMAGED EXISTING 2x6 DIAGONAL BRACE. WHERE INDICATED WITH 1*, REMOVE AND REPLACE BOTH DIAGONAL BRACES IN KIND. SEE 1/S-3.
 - REMOVE AND REPLACE IN KIND DAMAGED EXISTING 2x6 VERTICAL POST, 1 PER LOCATION. SEE 1/S-3.
 - REMOVE AND REPLACE IN KIND SPLIT MIDDLE 6x6 BLOCKING. SEE 4/S-4.
 - REMOVE AND REPLACE IN KIND SPLIT BOTTOM 6x6 BLOCKING. SEE 2/S-4.
 - REPLACE MISSING GALVANIZED CARRIAGE BOLTS IN KIND AT POST / DIAGONAL BRACES.



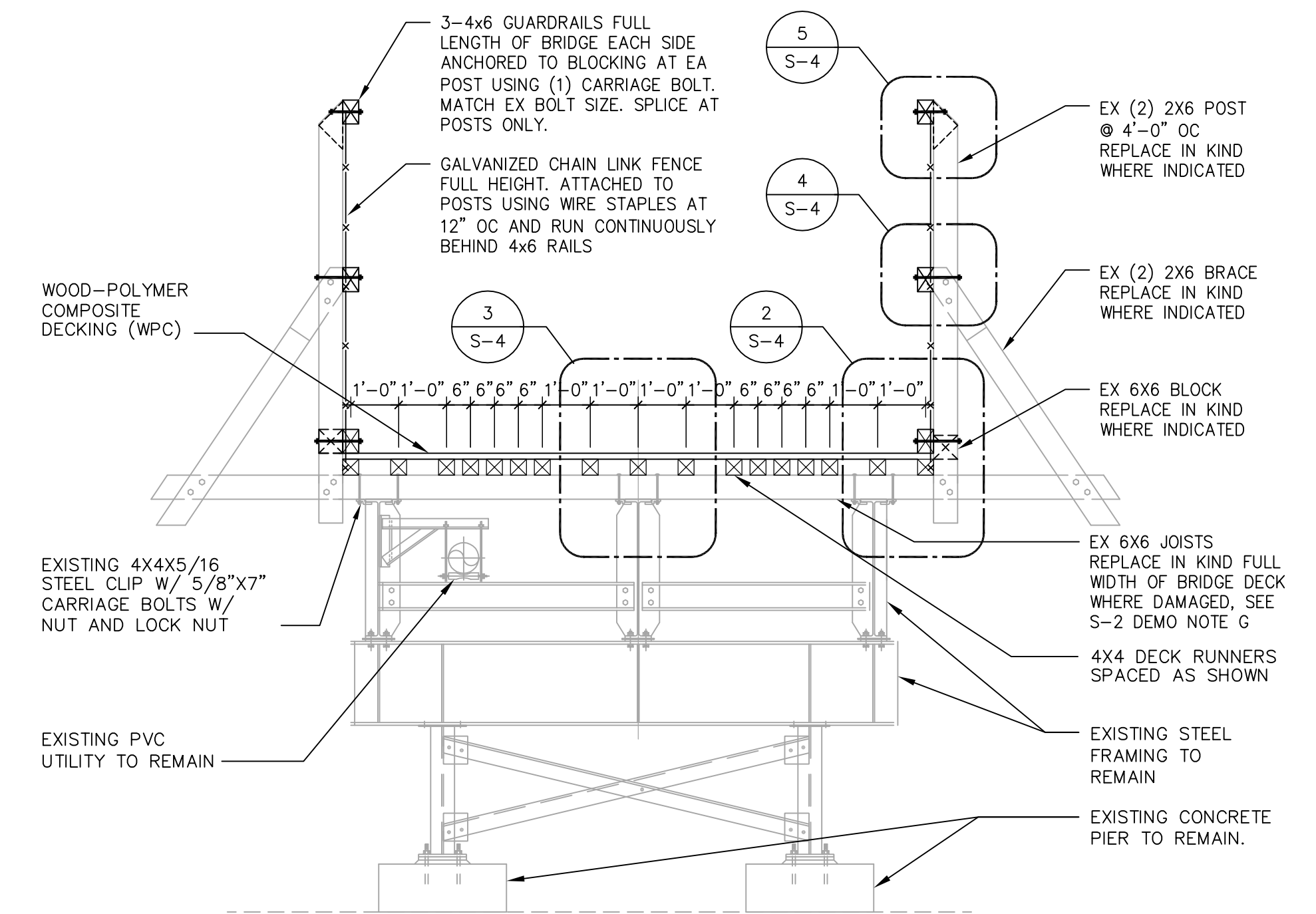
NORTH REPAIR ELEVATION

SCALE" 1/8"=1'-0"



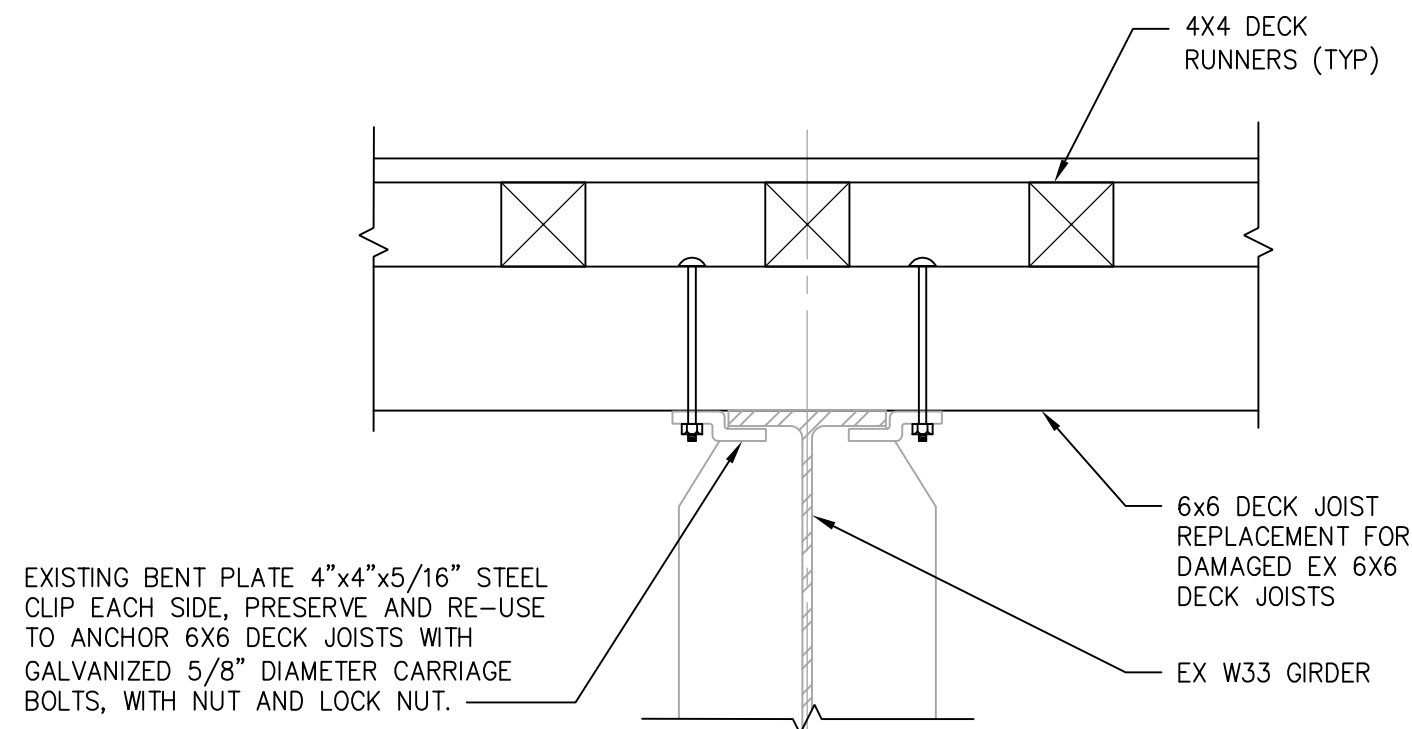
SOUTH REPAIR ELEVATION

SCALE" 1/8"=1'-0"

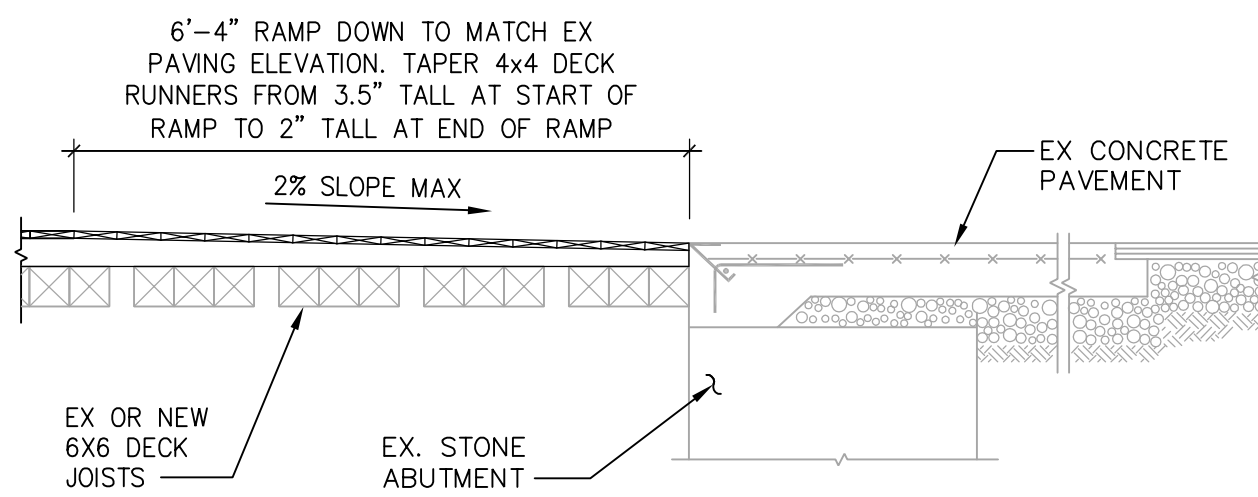


SECTION

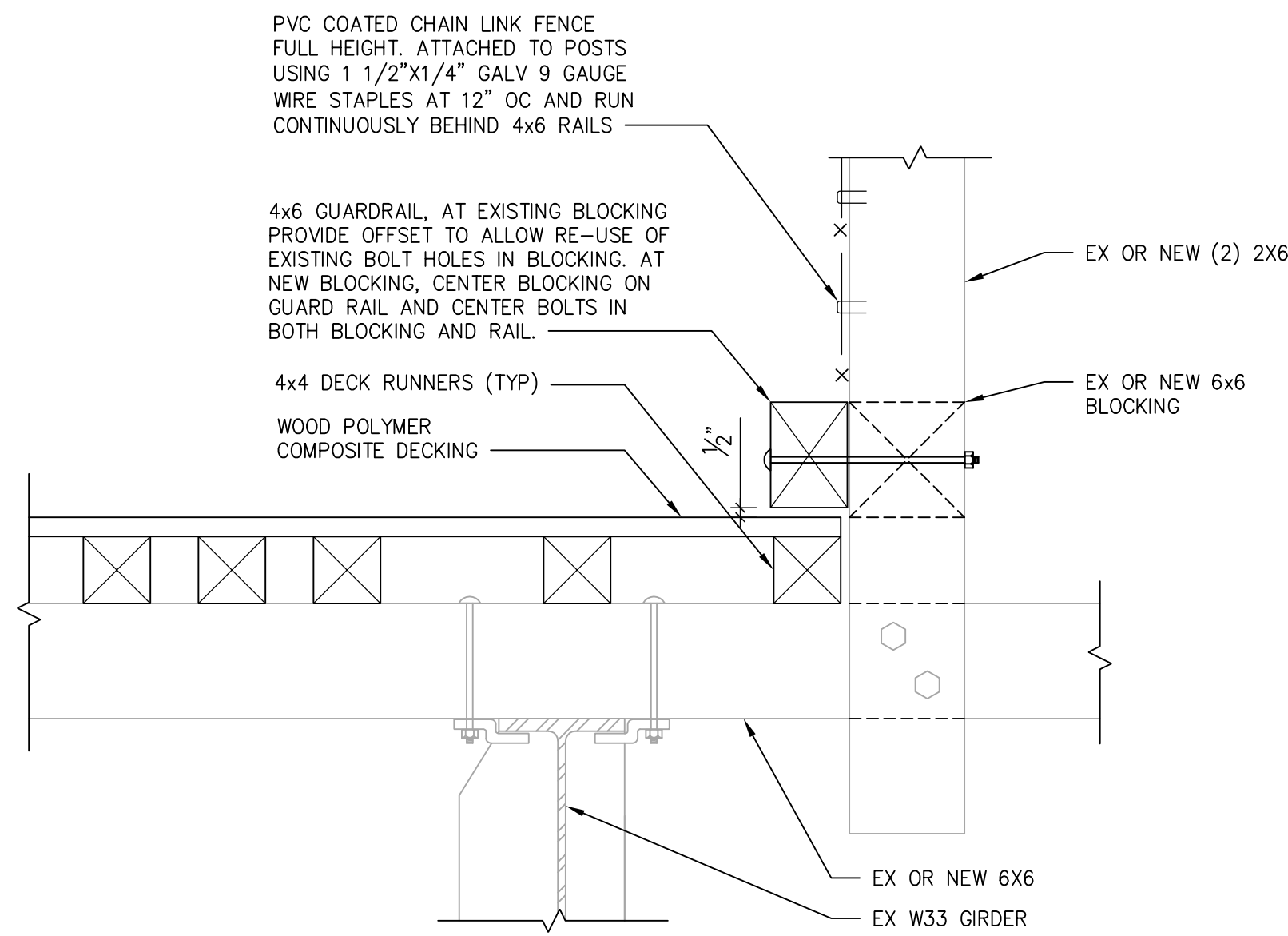
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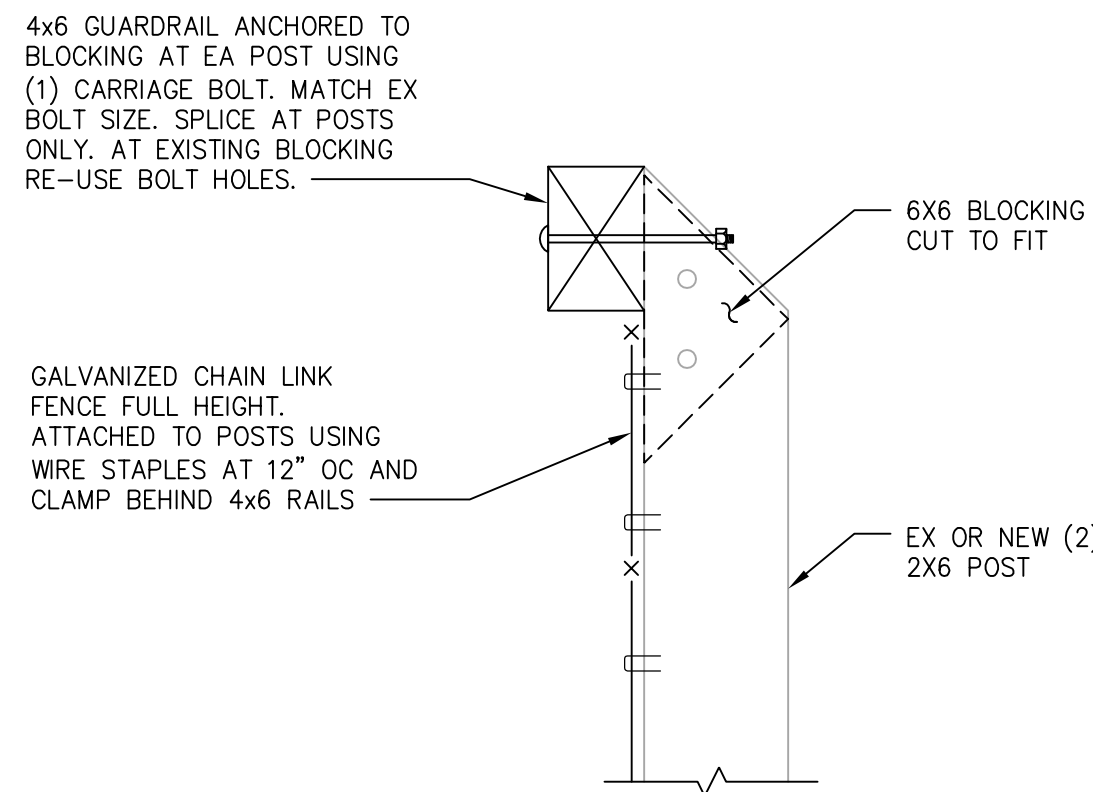
SECTION 3
SCALE: 1 1/2 " = 1'-0"



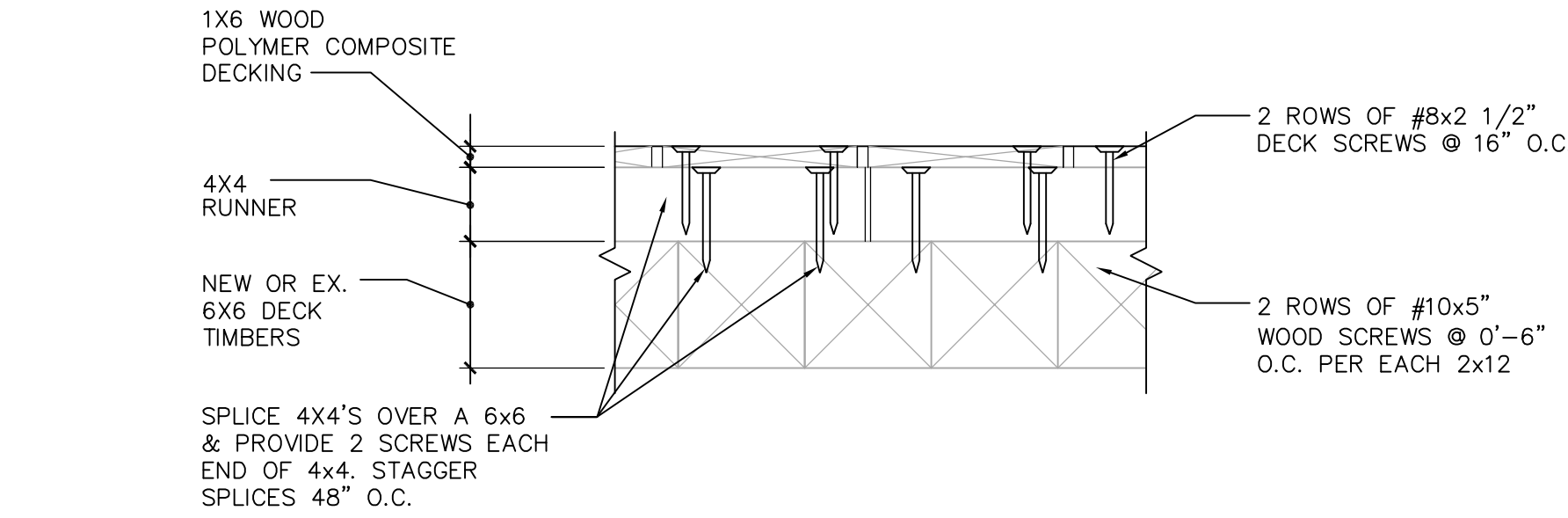
SECTION 6
SCALE: 1/2"=1'-0"



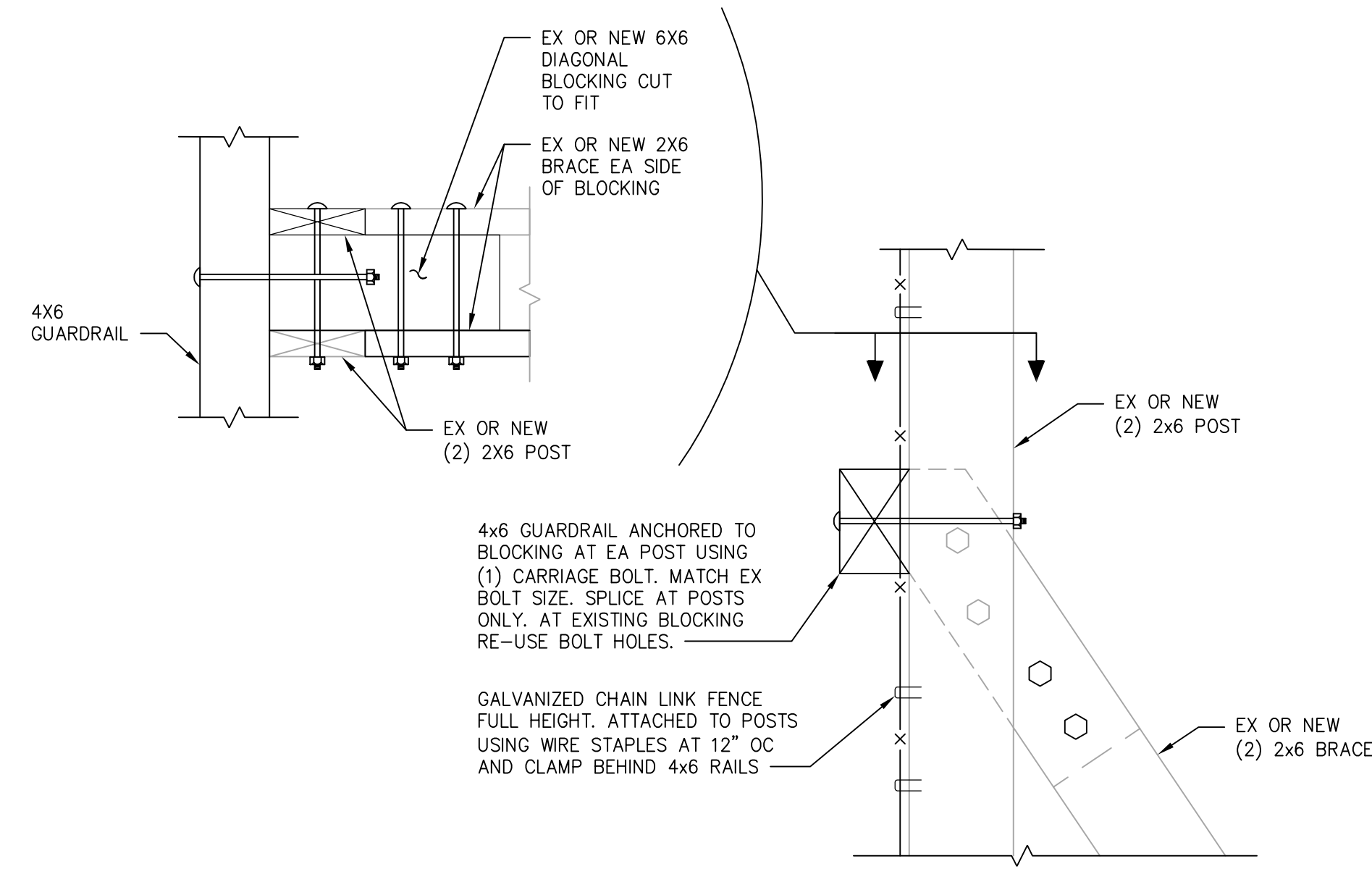
SECTION 2
SCALE: 1 1/2 " = 1'-0"



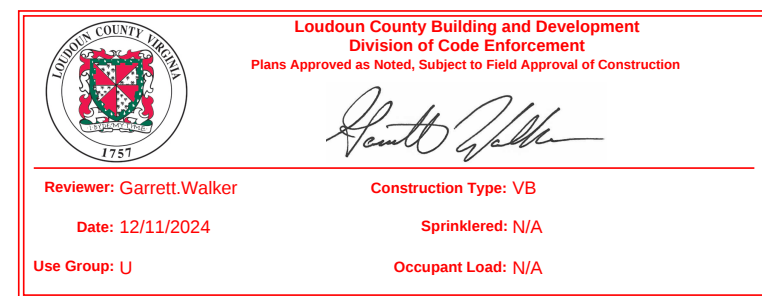
SECTION 5
SCALE: 1 1/2 " = 1'-0"



TYPICAL DECK FASTENING
SECTION 1
SCALE: 1 1/2 " = 1'-0"



SECTION 4
SCALE: 1 1/2 " = 1'-0"



County of Loudoun
CODE ENFORCEMENT PLAN REVIEW
Plan reviewed under
2021 USBC

ALL WORK SHALL COMPLY WITH VIRGINIA
UNIFORM STATEWIDE BUILDING CODE.

Guardrails to withstand
200 psf concentrated load
anywhere along the top.

FROST FOOTINGS REQUIRED FOR ALL
BEARING WALLS, SLABS, DECKS, PORCHES,
TRAILERS, STOOPS, AND STEPS. FROST
DEPTH 24" MINIMUM BELOW FINISHED GRADE.

This set of plans and specifications
MUST be kept on this job at all times
And it is unlawful to deviate from or
make any changes or alterations on
these without written permission from
the Division of Building Inspection.
The stamping of this plan and specifications
SHALL NOT be held to permit
or to be an approval of the violation
of any county ordinance or state law.

THIS IS NOT A REVIEW OR APPROVAL
OF MECHANICAL, ELECTRICAL,
PLUMBING, FIRE, ZONING
OR SITE PLANS.

Revision	Date	Job Number	Scale	Drawn By	Designed By	Checked By
PERMIT SET	10/03/2024	2440005	AS NOTED	JR	KE	LR

Drawing Number

S-4