DESIGN CRITERIA

BUILDING CODES: 2018 NORTH CAROLINA STATE BUILDING CODE
ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY: II

DESIGN LIVE LOADS:

	UNIFORM	CONCENTRATED
BOARDWALK	AASHTO H10 VEHICLE (20,000 LBS TOTAL; 8,000 LBS WHEEL LOAD)	
	85 PSF	1,000 LBS

SNOW LOAD:	GROUND SNOW LOAD, PG	15 PSF
	IMPORTANCE FACTOR, IS	1.0
	SNOW EXPOSURE FACTOR, CE	1.0
	THERMAL FACTOR, CT	1.0
	FLAT ROOF SNOW LOAD, PF	15 PSF
WIND LOAD:	BASIC WIND SPEED (3 SECOND GUST)	115 MPH
	EXPOSURE CATEGORY	B
	ENCLOSURE CLASSIFICATION	ENCLOSED
	INTERNAL PRESSURE COEFFICIENT, GCPI	±0.18
	TOPOGRAPHY FACTOR, KZT	1.00
	APPLIED DIRECTIONALITY FACTOR, KD	0.85
	WIND BASE SHEAR (X DIRECTION)	13.2 KIPS
	WIND BASE SHEAR (Y DIRECTION)	0.5 KIPS

**ALL BUILDING COMPONENTS AND CLADDING WITH STRUCTURAL DESIGN DELEGATED TO THE CONTRACTOR/MANUFACTURER/SUPPLIER ARE REQUIRED TO BE DESIGNED FOR WIND LOADS DETERMINED USING THE ABOVE DESIGN CRITERIA IN ACCORDANCE WITH THE GOVERNING BUILDING CODE(S).

SEISMIC LOAD:	USGS DESIGN MAP	ASCE 7-10
	DESIGN METHOD	EQUIVALENT LATERAL FORCE
	IMPORTANCE FACTOR, IE	1.0
	SITE CLASS	D (ASSUMED)
	MAPPED SPECTRAL RESPONSE ACCEL, SS	14.4%G
	MAPPED SPECTRAL RESPONSE ACCEL,S1	7.3%G
	SPECTRAL RESPONSE COEFFICIENT, SDS	15.4%G
	SPECTRAL RESPONSE COEFFICIENT, SD1	11.6%G
	SEISMIC DESIGN CATEGORY	B
	SEISMIC FORCE RESISTING SYSTEM	CANTILEVER TIMBER FRAME
	RESPONSE MODIFICATION COEFFICIENT, RX	1.5
	RESPONSE MODIFICATION COEFFICIENT, RY	1.5
	SEISMIC RESPONSE COEFFICIENT, CS	0.103
	DEFLECTION AMPLIFICATION FACTOR, CDX	1.5
	DEFLECTION AMPLIFICATION FACTOR, CDY	1.5
	SEISMIC BASE SHEAR (X DIRECTION)	3.0 KIPS
	SEISMIC BASE SHEAR (Y DIRECTION)	3.0 KIPS

FUTURE LOADS: UNLESS SPECIFICALLY INDICATED ON THE STRUCTURAL DESIGN DRAWINGS THERE HAVE BEEN NO DESIGN PROVISIONS MADE TO ACCOMMODATE FUTURE LOADS OR TO ACCOMMODATE FUTURE ADDITIONS TO THE STRUCTURE.

GEOTECHNICAL
INFO: FOUNDATION DESIGN IS BASED ON A PRESUMPTIVE ALLOWABLE SOIL BEARING CAPACITY OF 2,000 PSF. CONTRACTOR TO VERIFY SOIL BEARING CAPACITY PRIOR TO CONSTRUCTION.

GENERAL

G-01 THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THE STRUCTURAL WORK WITH CIVIL, LANDSCAPE ARCHITECTURAL, ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DOCUMENTS AS WELL AS ANY OTHER APPLICABLE TRADES. THE CONTRACTOR IS TO NOTIFY THE DESIGN TEAM OF ANY IDENTIFIED DISCREPANCIES PRIOR TO THE START OF CONSTRUCTION.

G-02 THE STRUCTURAL CONTRACT DOCUMENTS REPRESENT THE FINISHED STRUCTURE AND EXCEPT WHERE SPECIFICALLY SHOWN DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCE, AND PROCEDURES.

G-03 THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE AND FOR APPLICATION OF CONSTRUCTION LOADS TO THE STRUCTURE UNTIL THE CONSTRUCTION OF THE STRUCTURE IS COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, INSTALLATION AND REMOVAL OF ALL TEMPORARY BRACING, FORMWORK, SUPPORTS, AND SHORING REQUIRED TO STABILIZE THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR IS TO UTILIZE A THIRD PARTY STRUCTURAL ENGINEER TO PROVIDE THE DESIGN AND DOCUMENTATION FOR TEMPORARY BRACING, FORMWORK, SUPPORTS AND SHORING AS REQUIRED BY THE PROJECT SPECIFICATIONS.

G-04 THE CONTRACTOR IS TO VERIFY ALL EXISTING SITE GRADING CONDITIONS, EXISTING UTILITIES AND EXISTING BUILDING DIMENSIONS AND CONDITIONS AS THEY APPLY TO THE NEW STRUCTURAL CONSTRUCTION. THE CONTRACTOR IS TO NOTIFY THE DESIGN TEAM OF ANY IDENTIFIED DISCREPANCIES PRIOR TO THE START OF CONSTRUCTION.

G-05 THE CONTRACTOR IS TO PROTECT ALL EXISTING AND NEW UTILITIES, STRUCTURES, AND FACILITIES FROM DAMAGE DURING CONSTRUCTION.

G-06 ANY WORK NOT IN CONFORMANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS OR THE APPLICABLE BUILDING CODE(S) WILL BE CORRECTED BY THE CONTRACTOR IN A MANNER ACCEPTABLE TO THE STRUCTURAL ENGINEER OF RECORD.

G-07 SECTIONS, DETAILS AND NOTES APPLY TO ALL LIKE OR SIMILAR CONDITIONS.

G-08 DO NOT SCALE STRUCTURAL DRAWINGS TO OBTAIN DIMENSIONAL INFORMATION. THE CONTRACTOR IS TO REQUEST ANY DIMENSIONAL INFORMATION REQUIRED.

G-09 THE STRUCTURAL PLANS DO NOT SHOW EVERY OPENING OR PENETRATION REQUIRED THROUGH STRUCTURAL ELEMENTS. THE CONTRACTOR IS TO VERIFY ALL OPENING SIZES AND LOCATIONS WITH OTHER DISCIPLINES, TRADES AND SHOP DRAWINGS. OPENINGS ARE TO BE CONSTRUCTED USING TYPICAL DETAILS AND CRITERIA PROVIDED ON THE STRUCTURAL DRAWINGS. OPENINGS REQUIRED THAT CANNOT CONFORM TO THE TYPICAL DETAILS OR CRITERIA PROVIDED ON THE STRUCTURAL DRAWINGS ARE TO BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW.

CONCRETE AND REINFORCING STEEL

C-01 CONCRETE TO MEET THE FOLLOWING 28 DAY COMPRESSIVE STRENGTHS (F'C):

FOOTINGS	3,000 PSI, NORMAL WEIGHT
RETAINING WALLS	4,000 PSI, NORMAL WEIGHT
CONCRETE APPROACH SLAB	4,500 PSI, NORMAL WEIGHT W/ 5% AIR CONTENT

C-02 PROVIDE CLEAR COVER ON REINFORCING STEEL PER ACI 318 AND AS INDICATED BELOW;
CONVENTIONALLY REINFORCED CONCRETE

CONCRETE CAST AGAINST AND EXPOSED TO EARTH	3"
CONCRETE EXPOSED TO EARTH AND WEATHER*	2" FOR BARS #6 AND LARGER 1½" FOR BARS SMALLER THAN #6

*NOTE: 'EXPOSED TO WEATHER' INCLUDES CONCRETE SURFACES PERMANENTLY EXPOSED TO THE ELEMENTS. CONCRETE SURFACES SUCH AS ROOF SLABS THAT ARE COVERED WITH PROTECTIVE SYSTEMS ARE NOT CONSIDERED TO BE EXPOSED TO WEATHER.

C-03 DETAIL, FABRICATE AND INSTALL ALL REINFORCING STEEL PER STRUCTURAL CONTRACT DOCUMENTS, ACI-318 AND ACI-315.

C-04 DO NOT WELD REINFORCING STEEL UNLESS SPECIFICALLY INDICATED ON STRUCTURAL CONTRACT DOCUMENTS.

C-05 EMBEDDED ITEMS SUCH AS ANCHOR BOLTS, REINFORCING STEEL DOWELS, AND EMBED PLATES ARE TO BE SET AND SECURED IN PLACE PRIOR TO THE PLACEMENT OF CONCRETE. 'WET SETTING' OF EMBEDDED ITEMS IS NOT ACCEPTABLE.

C-06 CLAY BRICK, ROCKS, WOOD, OR CMU BRICK ARE NOT TO BE USED TO SUPPORT REINFORCING STEEL IN FOOTINGS, PILE CAPS, GRADE BEAMS, OR SLABS ON GRADE.

C-07 HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE ELEMENTS ARE NOT ACCEPTABLE WITHOUT PRIOR APPROVAL OF THE ENGINEER.

FOUNDATIONS

F-01 FOOTINGS ARE TO BE FOUNDED AT A DEPTH PROVIDING THE DESIGN BEARING CAPACITY AND AT AN ELEVATION WHERE THE TOP OF THE FOOTING IS BELOW THE FROST PENETRATION DEPTH AS DICTATED BY THE BUILDING CODE BUT NO LESS THAN 24" BELOW THE FINAL FINISHED GRADE. THE CONTRACTOR IS TO COMPARE THE TOP OF FOOTING ELEVATIONS INDICATED ON THE STRUCTURAL DRAWINGS WITH THE FINAL GRADE INDICATED ON THE CIVIL/LANDSCAPE ARCHITECTURAL DRAWINGS AND NOTIFY THE DESIGN TEAM OF ANY DISCREPANCIES PRIOR TO THE START OF CONSTRUCTION.

F-02 THE CONTRACTOR IS RESPONSIBLE TO ADEQUATELY PROTECT ALL EXCAVATIONS. WHERE REQUIRED, SHORE THE EXCAVATIONS WITH SYSTEMS DESIGNED AND DETAILED BY THE CONTRACTOR'S ENGINEER.

STRUCTURAL STEEL

S-01 STEEL PROPERTIES:

THRU BOLTS:	A307 (FU=60 KSI), GALVANIZED
PLATE:	A36 (FY=36 KSI), GALVANIZED

S-02 DESIGN, DETAIL, FABRICATE AND ERECT STRUCTURAL STEEL PER STRUCTURAL CONTRACT DOCUMENTS AND AISC 360-05 AND AISC 325-05.

S-03 WELD ELECTRODES: E70XX, PERFORM ALL WELDING PER AWS D1.1-4.

POST-INSTALLED ADHESIVE/MECHANICAL ANCHORS

A-01 POST-INSTALLED ANCHORS ARE TO BE USED ONLY WHERE INDICATED ON THE STRUCTURAL DRAWINGS. THE CONTRACTOR IS TO SUBMIT ANY PROPOSED POST-INSTALLED ANCHORAGE NOT SHOWN ON THE CONTRACT DOCUMENT TO THE ENGINEER FOR REVIEW.

A-02 ALL POST-INSTALLED ANCHORS ARE TO BE INSTALLED AS INDICATED BY THE STRUCTURAL DRAWINGS AND IN STRICT ACCORDANCE WITH THE ANCHOR MANUFACTURER'S INSTRUCTIONS.

A-03 THE BASIS OF DESIGN FOR MECHANICAL ANCHORS ARE THE FOLLOWING PRODUCTS:
HILTI KWIK BOLT TZ: SIMPSON STRONG TIE STRONG-BOLT WEDGE ANCHOR: DEWALT POWER-STUD+SD1

A-04 THE BASIS OF DESIGN FOR ADHESIVES/EPOXY ARE THE FOLLOWING PRODUCTS:
HILTI HIT RE 500 V3: SIMPSON STRONG TIE SET-XP: DEWALT AC100+GOLD

A-05 THE CONTRACTOR MAY SUBMIT ALTERNATIVE MECHANICAL ANCHORS AND ADHESIVES/EPOXY THAT MEET OR EXCEED THE PROPERTIES AND LOAD CARRYING CAPACITIES OF THE BASIS OF DESIGN PRODUCTS TO THE ENGINEER FOR REVIEW.

A-06 PRIOR TO THE INSTALLATION OF ANY POST-INSTALLED ANCHORS, THE CONTRACTOR IS TO LOCATE ALL REINFORCING STEEL WITHIN STRUCTURAL ELEMENTS USING NON-DESTRUCTIVE METHODS. IF ANCHOR LOCATIONS ARE IN CONFLICT WITH ANY REINFORCING STEEL NOTIFY THE ENGINEER FOR DIRECTION.

WOOD FRAMING

W-01 WOOD PROPERTIES:

JOISTS:	SOUTHERN YELLOW PINE SELECT STRUCTURAL
GIRDERS:	SOUTHERN YELLOW PINE SELECT STRUCTURAL
OTHER FRAMING:	SOUTHERN YELLOW PINE NO.2
COMPOSITE DECKING (BASIS OF DESIGN = MOISTURESHIELD - VANTAGE):	FB= 500 PSI; E= 262 KSI COEFFICIENT OF FRICTION = 0.785 DRY, 0.810 WET

W-02 DETAIL, FABRICATE AND INSTALL ALL WOOD FRAMING PER STRUCTURAL CONTRACT DOCUMENTS AND NDS-05.

ABBREVIATIONS

@	AT	HD	HEADED
&	AND	HORZ	HORIZONTAL
#	NUMBER	INT	INTERIOR
AB	ANCHOR BOLTS	INFO	INFORMATION
ADDL	ADDITIONAL	JT	JOINT
AFF	ABOVE FINISHED FLOOR	K	KIPS
ALT	ALTERNATE	KSI	KIPS PER SQUARE INCH
ARCH	ARCHITECT / ARCHITECTURAL	LBS	POUNDS
BOT	BOTTOM	LLH	LONG LEG HORIZONTAL
BCX	BOTTOM CHORD EXTENSION	LLV	LONG LEG VERTICAL
BLDG	BUILDING	LWC	LIGHTWEIGHT CONCRETE
BOS	BOTTOM OF STEEL	MAX	MAXIMUM
BRG	BEARING	MC	MOMENT CONNECTION
BTWN	BETWEEN	MECH	MECHANICAL
CANT	CANTILEVER	MEP	MECHANICAL, ELECTRICAL, PLUMBING
CJ	CONTROL JOINT	MFR	MANUFACTURER
CL	CENTERLINE	MIN	MINIMUM
CLR	CLEAR	MISC	MISCELLANEOUS
CMU	CONCRETE MASONRY UNIT	MOW	MIDDLE OF WALL
COL	COLUMN	NS	NEAR SIDE
CONC	CONCRETE	NTS	NOT TO SCALE
CONN	CONNECTION	NWC	NORMAL WEIGHT CONCRETE
CONS	CONSTRUCTION	OC	ON CENTER
CONT	CONTINUOUS	OPNG	OPENING
CORD	COORDINATE	OPP	OPPOSITE HAND
CTRD	CENTERED	PAF	POWDER ACTUATED FASTENER
d	PENNY (NAILS)	PARL	PARALLEL
DBA	DEFORMED BAR ANCHOR	PERP	PERPENDICULAR
DET	DETAIL	PL	PLATE
DIA	DIAMETER	PSF	POUNDS PER SQAURE FOOT
DIM	DIMENSION	PSI	POUNDS PER SQAURE INCH
DIST	DISTANCE	PT	PRESSURE TREATED
DN	DOWN	P-T	POST TENSIONED
DWG	DRAWING	REF	REFERENCE
DWL	DOWEL	REIN	REINFORCING
EA	EACH	REQD	REQUIRED
EE	EACH END	SCH	SCHEDULE
EF	EACH FACE	SIM	SIMILAR
EJ	EXPANSION JOINT	SOG	SLAB ON GRADE
ELEV	ELEVATION	SPEC	SPECIFICATION(S)
EMBD	EMBEDDED / EMBEDMENT	SQ	SQUARE
ENGR	ENGINEER	STD	STANDARD
EOD	EDGE OF DECK	STIF	STIFFENER
EOS	EDGE OF SLAB	STIR	STIRRUP(S)
EQL	EQUAL	STL	STEEL
EW	EACH WAY	TCX	TOP CHORD EXTENSION
EXST	EXISTING	THRU	THROUGH
EXP	EXPANSION	TOC	TOP OF CONCRETE
EXT	EXTERIOR	TOF	TOP OF FOOTING
FDN	FOUNDATION	TOS	TOP OF STEEL
FFE	FINISHED FLOOR ELEVATION	TOW	TOP OF WALL
FOW	FACE OF WALL	TYP	TYPICAL
FRT	FIRE RETARDANT TREATED	UNO	UNLESS NOTED OTHERWISE
FS	FAR SIDE	VERT	VERTICAL
FTG	FOOTING	VIF	VERIFY IN FIELD
GA	GAUGE	W/	WITH
GALV	GALVANIZED	WP	WORK POINT

NOTES:

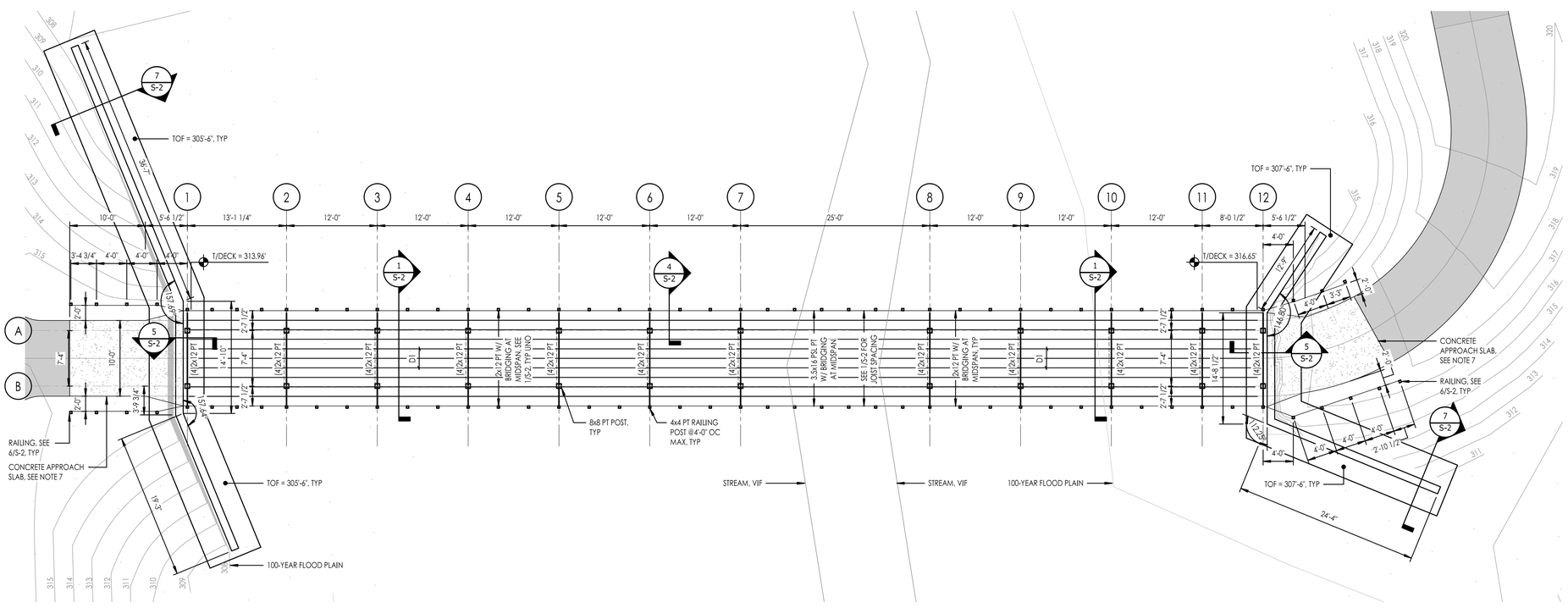
1. SEE THIS SHEET FOR GENERAL STRUCTURAL NOTES AND ABBREVIATION LEGEND.
2. SEE PLAN FOR TOP OF DECK ELEVATION AT ENDS OF BOARDWALK.
3. **D:** 2x6 COMPOSITE DECKING WITH 305 GRADE STAINLESS STEEL SCREWS.
4. ALL WOOD FRAMING TO BE PRESSURE TREATED.
5. ALL FASTENERS AND CONNECTIONS SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153, UNO.
6. DO NOT DRILL OR CUT NOTCHES IN FRAMING MEMBERS UNLESS DETAILED ON THE STRUCTURAL DRAWINGS.
7. 6" THICK CONCRETE APPROACH SLAB. REINFORCE WITH #4@16"OC EACH WAY.
8. CONTRACTOR TO PERMANENTLY ATTACH A METAL PLAQUE AT EACH END OF THE BOARDWALK STATING THE FOLLOWING:
   MAXIMUM WEIGHT CAPACITY IS 20,000 LB VEHICLE
   CLEAR WIDTH IS 12'-0"
   STRUCTURE NUMBER ### (TO BE PROVIDED BY TOWN OF ROLESVILLE STAFF)

LEGEND:

XXX'-XX" — TOP OF DECKING ELEVATION

D# — SPAN DIRECTION OF DECKING

X-BRACING BETWEEN POSTS, PER 1/S-2



1 BOARDWALK FRAMING PLAN
1/8" = 1'-0"

THE POINT GREENWAY BOARDWALK

NORTH CAROLINA PROFESSIONAL SEAL 029410 ENGINEER DENNIS L FOLMAR JR
05/01/2024
THIS DOCUMENT WAS ELECTRONICALLY SIGNED BY DENNIS L FOLMAR JR

SCALENE DESIGN
FUNCTION + STRUCTURE + FORM
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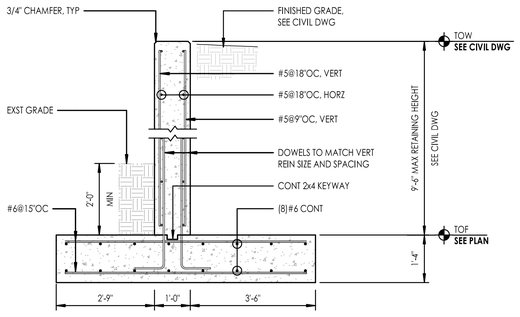
FIRM LICENSE #P-1591
SCALENE DESIGN PROJECT NO: S24-031.00

DATE:	05/01/2024
ENGINEER	DLF
DRAFTING	JRL
PROJECT NO:	S24-031.00

REVISIONS	DATE

GENERAL NOTES, ABBREVIATIONS AND BOARDWALK FRAMING PLAN

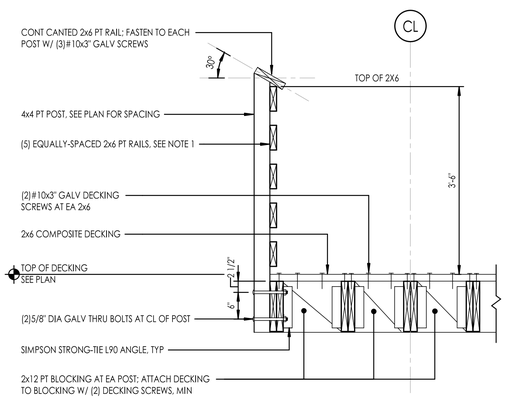
S-1



NOTES:

1. MINIMUM REQUIRED ALLOWABLE SOIL BEARING CAPACITY FOR RETAINING WALL FOOTING = 2,000 PSF

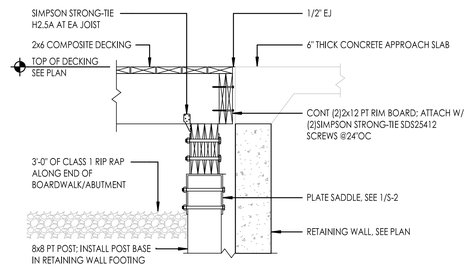
7 12" CONCRETE RETAINING WALL
1/2" = 1'-0"



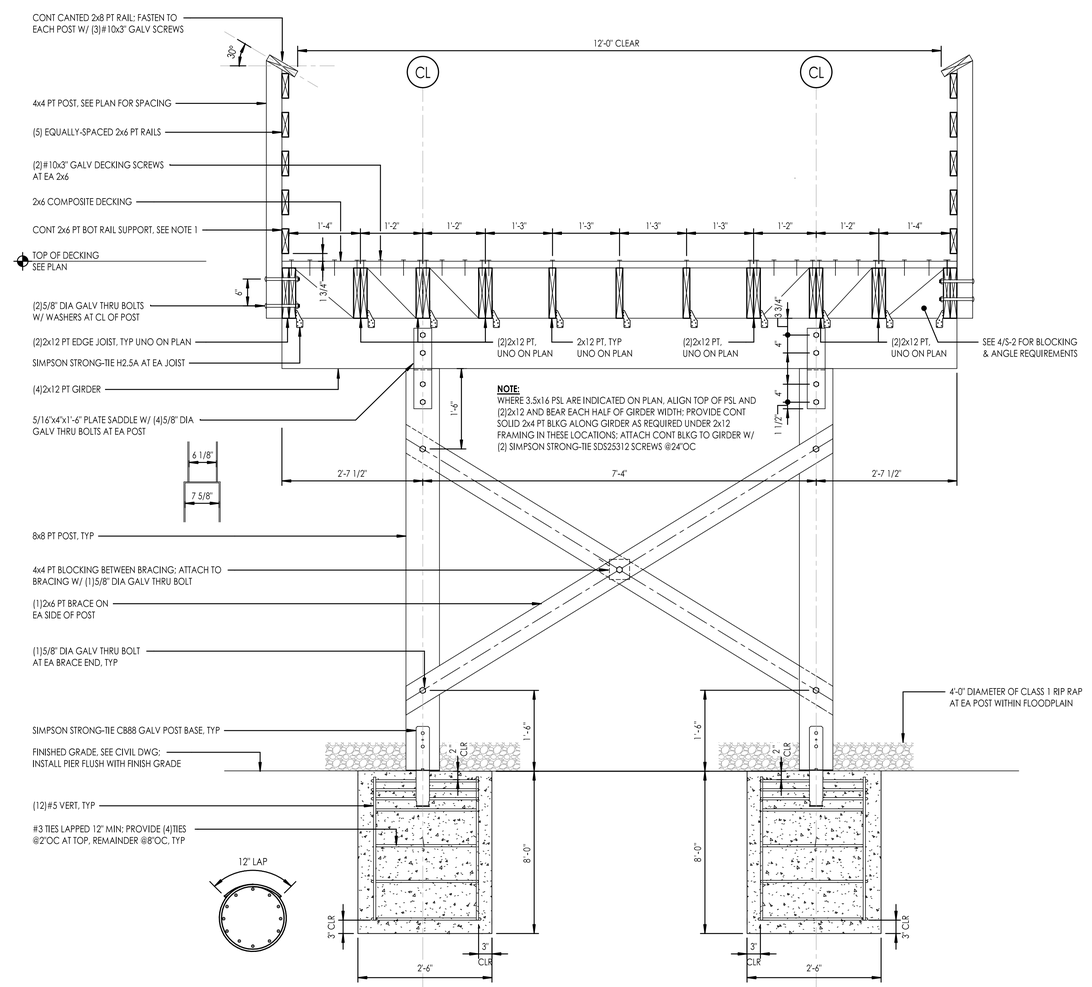
NOTES:

1. FASTEN TO EACH POST WITH (3)#10x3" GALV SCREWS.

4 HANDRAIL POST CONN BETWEEN GIRDERS
3/4" = 1'-0"



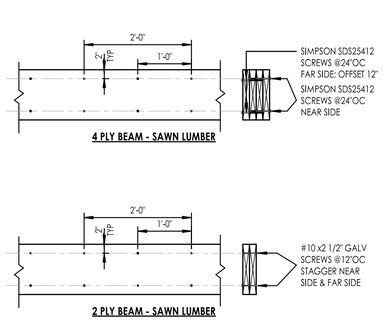
5 BOARDWALK TO PAVING TRANSITION
3/4" = 1'-0"



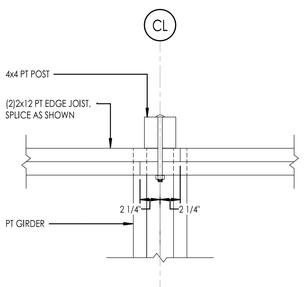
NOTES:

1. FASTEN TO EACH POST WITH (3)#10x3" GALV SCREWS.

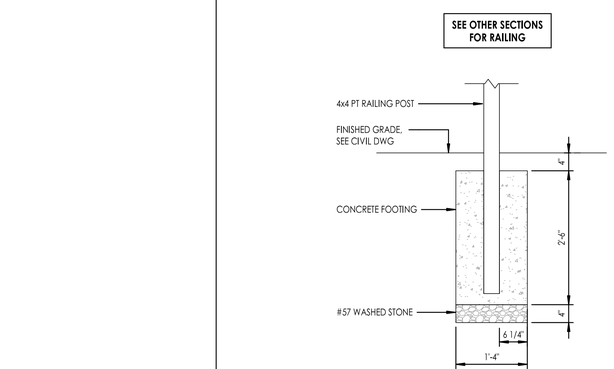
1 TYPICAL SECTION AT GIRDER
3/4" = 1'-0"



3 MULTI-PLY SAWN LUMBER JOISTS/GIRDERS
3/4" = 1'-0"



2 EDGE JOIST SPLICE AT GIRDER
1 1/2" = 1'-0"



6 RAILING POST
3/4" = 1'-0"

THE POINT GREENWAY BOARDWALK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029410 DENNIS L FOLMAR JR

05/01/2024
THIS DOCUMENT WAS ELECTRONICALLY SIGNED BY DENNIS L FOLMAR JR

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BOARDWALK SECTIONS & DETAILS

S-2