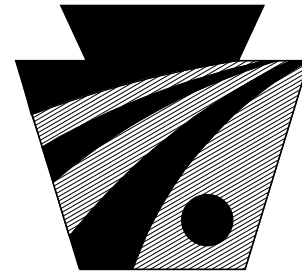


COMMONWEALTH OF PENNSYLVANIA



pennsylvania

DEPARTMENT OF TRANSPORTATION

DEPARTMENT OF TRANSPORTATION

BUREAU OF PROJECT DELIVERY

STANDARDS
FOR
HARDWOOD GLULAM TIMBER BRIDGE DESIGN

SERIES BLC-560M
HARDWOOD GLULAM TIMBER SPANS 18' - 0" TO 98' - 5"

PUB 6M (4-13)

APRIL 2013 EDITION

BLC-560M

		INDEX OF SHEETS						
DESIGN SHEETS		SHEET	SHEET NO.	TITLE	CONSTRUCTION SHEETS			
DESIGN SHEETS	HARDWOOD GLULAM TIMBER BRIDGE DESIGN	BLC-560M	1 OF 3 2 OF 3 3 OF 3	INDEX OF SHEETS GENERAL INFORMATION & INSTRUCTIONS DESIGN CRITERIA	GLULAM BEAM SUPERSTRUCTURE	BLC-562M	1 OF 15 2 OF 15 3 OF 15 4 OF 15 5 OF 15 6 OF 15 7 OF 15 8 OF 15 9 OF 15 10 OF 15 11 OF 15 12 OF 15 13 OF 15 14 OF 15 15 OF 15	GENERAL PLAN & ELEVATION - LEFT SKEW GENERAL PLAN & ELEVATION - 90° SKEW GENERAL PLAN & ELEVATION - RIGHT SKEW TYPICAL SECTION & QUANTITIES GENERAL NOTES FRAMING PLAN - LEFT SKEW FRAMING PLAN - 90° SKEW FRAMING PLAN - RIGHT SKEW SUPERSTRUCTURE DETAILS - CONC. ABUT. SUPERSTRUCTURE DETAILS - TIMBER ABUT. BEAM DETAILS DECK PLAN - LEFT SKEW DECK PLAN - 90° SKEW DECK PLAN - RIGHT SKEW DECK DETAILS
	EXAMPLE		1 OF 24 2 OF 24 3 OF 24 4 OF 24 5 OF 24 6 OF 24 7 OF 24 8 OF 24 9 OF 24 10 OF 24 11 OF 24 12 OF 24 13 OF 24 14 OF 24 15 OF 24 16 OF 24 17 OF 24 18 OF 24 19 OF 24 20 OF 24 21 OF 24 22 OF 24 23 OF 24 24 OF 24	GENERAL PLAN & ELEV. - LEFT SKEW TYPICAL SECTION & QUANTITIES GENERAL NOTES STAKE OUT PLAN ABUTMENT 1 - LEFT SKEW ABUTMENT 1 - FTG. PLAN - LEFT SKEW ABUTMENT 1 - BAR SCHEDULE ABUTMENT 2 - LEFT SKEW ABUTMENT 2 - FTG. PLAN - LEFT SKEW ABUTMENT 2 - BAR SCHEDULE FRAMING PLAN - LEFT SKEW SUPERSTRUCTURE DETAILS BRIDGE RAIL DETAILS TYPICAL HARDWARE DETAILS GLULAM LONGITUDINAL PANELS (DATA ASSEMBLY) GLULAM LONGITUDINAL PANELS (DATA ASSEMBLY) SPREAD FOOTING ABUTMENT (DATA ASSEMBLY) SPREAD FOOTING ABUTMENT (DATA ASSEMBLY) SPREAD FOOTING ABUTMENT (DATA ASSEMBLY) SPREAD FOOTING ABUTMENT (DATA ASSEMBLY) SPREAD FOOTING ABUTMENT (DATA ASSEMBLY) SPREAD FOOTING ABUTMENT (DATA ASSEMBLY) SPREAD FOOTING ABUTMENT (DATA ASSEMBLY) SPREAD FOOTING ABUTMENT (DATA ASSEMBLY) SPREAD FOOTING ABUTMENT (DATA ASSEMBLY)	GLULAM LONGITUDINAL PANEL SUPERSTRUCTURE	BLC-563M	1 OF 9 2 OF 9 3 OF 9 4 OF 9 5 OF 9 6 OF 9 7 OF 9 8 OF 9 9 OF 9	GENERAL PLAN & ELEVATION - LEFT SKEW GENERAL PLAN & ELEVATION - 90° SKEW GENERAL PLAN & ELEVATION - RIGHT SKEW TYPICAL SECTION & QUANTITIES GENERAL NOTES FRAMING PLAN - LEFT SKEW FRAMING PLAN - 90° SKEW FRAMING PLAN - RIGHT SKEW SUPERSTRUCTURE DETAILS
	DATA ASSEMBLY SHEETS	BLC-561M	1 OF 20 2 OF 20 3 OF 20 4 OF 20 5 OF 20 6 OF 20 7 OF 20 8 OF 20 9 OF 20 10 OF 20 11 OF 20 12 OF 20 13 OF 20 14 OF 20 15 OF 20 16 OF 20 17 OF 20 18 OF 20 19 OF 20 20 OF 20	GLULAM BEAM GLULAM BEAM GLULAM BEAM GLULAM BEAM GLULAM BEAM GLULAM BEAM GLULAM BEAM GLULAM LONGITUDINAL PANELS GLULAM LONGITUDINAL PANELS STEEL BEAM SPREAD FOOTING ABUTMENT SPREAD FOOTING ABUTMENT SPREAD FOOTING ABUTMENT SPREAD FOOTING PILE SUPPORTED ABUTMENT PILE SUPPORTED ABUTMENT PILE SUPPORTED ABUTMENT PILE SUPPORTED ABUTMENT PILE SUPPORTED TIMBER SILL PILE SUPPORTED TIMBER SILL	STEEL BEAM SUPERSTRUCTURE	BLC-564M	1 OF 14 2 OF 14 3 OF 14 4 OF 14 5 OF 14 6 OF 14 7 OF 14 8 OF 14 9 OF 14 10 OF 14 11 OF 14 12 OF 14 13 OF 14 14 OF 14	GENERAL PLAN & ELEVATION - LEFT SKEW GENERAL PLAN & ELEVATION - 90° SKEW GENERAL PLAN & ELEVATION - RIGHT SKEW TYPICAL SECTION & QUANTITIES GENERAL NOTES FRAMING PLAN - LEFT SKEW FRAMING PLAN - 90° SKEW FRAMING PLAN - RIGHT SKEW SUPERSTRUCTURE DETAILS - CONC. ABUT. SUPERSTRUCTURE DETAILS - TIMBER ABUT. DECK PLAN - LEFT SKEW DECK PLAN - 90° SKEW DECK PLAN - RIGHT SKEW DECK DETAILS
				SHT.'S COMMON TO BLC 562M, 563M & 564M	BLC-565M	1 OF 3 2 OF 3 3 OF 3	BRIDGE RAIL DETAILS STAKE OUT PLAN TYPICAL HARDWARE DETAILS	
				SPREAD FOOTING ABUTMENT	BLC-566M	1 OF 7 2 OF 7 3 OF 7 4 OF 7 5 OF 7 6 OF 7 7 OF 7	ABUTMENT --- - LEFT SKEW ABUTMENT --- - 90° SKEW ABUTMENT --- - RIGHT SKEW ABUTMENT --- - FTG. PLAN - LEFT SKEW ABUTMENT --- - FTG. PLAN - 90° SKEW ABUTMENT --- - FTG. PLAN - RIGHT SKEW ABUTMENT --- - BAR SCHEDULE	
				H-PILE SUPPORTED ABUTMENT	BLC-567M	1 OF 9 2 OF 9 3 OF 9 4 OF 9 5 OF 9 6 OF 9 7 OF 9 8 OF 9 9 OF 9	ABUTMENT --- - LEFT SKEW ABUTMENT --- - 90° SKEW ABUTMENT --- - RIGHT SKEW ABUTMENT --- - FTG. PLAN - LEFT SKEW ABUTMENT --- - FTG. PLAN - 90° SKEW ABUTMENT --- - FTG. PLAN - RIGHT SKEW ABUTMENT --- - BAR SCHEDULE ABUTMENT --- - PILE DETAILS - 90° & LEFT SKEW ABUTMENT --- - PILE DETAILS - RIGHT SKEW	
				PILE SUPPORTED TIMBER SILL	BLC-568M	1 OF 6 2 OF 6 3 OF 6 4 OF 6 5 OF 6 6 OF 6	WOOD PILE ABUTMENT --- - LEFT SKEW WOOD PILE ABUTMENT --- - 90° SKEW WOOD PILE ABUTMENT --- - RIGHT SKEW STEEL PILE ABUTMENT --- - LEFT SKEW STEEL PILE ABUTMENT --- - 90° SKEW STEEL PILE ABUTMENT --- - RIGHT SKEW	
				OPTIONAL WINGWALLS	BLC-569M	1 OF 2 2 OF 2	TIMBER CRIBBING WING WALLS GABION WING WALLS	

Click on the desired Standard to view.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

HARDWOOD GLULAM TIMBER BRIDGE DESIGN
INDEX OF SHEETS

RECOMMENDED APR. 23, 2013 <i>Thomas P. Macieira</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 1 OF 3 BLC-560M
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- USE THIS SERIES OF STANDARD DRAWINGS TO PROVIDE A RAPID MEANS OF PRODUCING DESIGN DRAWINGS FOR SINGLE SPAN TIMBER BRIDGES IN THE 18'-0" TO 98'-5" SPAN RANGE. BY SELECTING THE APPROPRIATE STANDARD FORMAT PLAN SHEETS AND INSERTING BASIC GEOMETRY AND JOB SPECIFIC INFORMATION, THE DESIGNER GENERATES A COMPLETE SET OF CONTRACT DRAWINGS READY FOR CONSTRUCTION.
- THE BRIDGES PROVIDED FOR IN THIS SERIES UTILIZE HARDWOOD GLULAM TIMBER COMPONENTS AS BASIC ELEMENTS OF THE SUPERSTRUCTURE. STANDARDIZED ABUTMENTS ARE PROVIDED WITH HEIGHTS (BOTTOM OF FOOTING TO TOP OF STEM) RANGING FROM 3'-3" MINIMUM TO 20'-0" MAXIMUM. WITH THREE TYPES OF SUPERSTRUCTURES AND VARIOUS COMPATIBLE AND INTERCHANGEABLE ABUTMENTS FROM WHICH TO CHOOSE, THE DESIGNER SHOULD BE ABLE TO ADAPT THE STANDARDS TO FIT MOST SINGLE SPAN APPLICATIONS.
- THE LAMINATION PROCESS UTILIZED IN HARDWOOD GLULAM PRODUCTION ENHANCES THE STRUCTURAL EFFICIENCY OF THE TIMBER BRIDGE DESIGN. THE PROCESS PERMITS OPTIMUM USE OF HIGHER GRADE LUMBER MATERIAL IN THE BEAM'S HIGHLY STRESSED CROSS-SECTIONAL ZONES. USE OF EFFECTIVE CREOSOTE TREATMENTS MAINTAINS MAXIMUM SERVICE LIFE OR EXPOSURE DURABILITY BY RESISTING AND CONTROLLING DECAY, INSECT ATTACK, AND OTHER ENVIRONMENTAL WEATHERING FACTORS. FURTHERMORE, A BITUMINOUS WEARING SURFACE PROLONGS HARDWOOD GLULAM TIMBER DECK LIFE BY MINIMIZING ADVERSE ABRASION AND MECHANICAL WEAR, AND PROVIDES ADDED VEHICLE TRACTION UPON WET OR ICY DECK SURFACES.
- USE THESE HARDWOOD GLULAM TIMBER STANDARDS FOR SECONDARY ROADWAY STREAM CROSSINGS WITH THE FOLLOWING GENERAL LIMITATIONS.
 - AVERAGE DAILY TRAFFIC (ADT) LESS THAN 750 VEHICLES OR AVERAGE DAILY TRUCK TRAFFIC (ADTT) OF LESS THAN 25 VEHICLES. FOR TIMBER DECKS ON STEEL BEAM SUPERSTRUCTURE, ADTT LESS THAN 100 VEHICLES.
 - ROADWAY WIDTHS OF 23'-7" TO 31'-6".
 - ANGLES OF INTERSECTION (SKEW) NOT LESS THAN 45 DEGREES
 - DO NOT EXCEED 10'-0" OF EXPOSED HEIGHT FOR ABUTMENT TIMBER PILES. USE STEEL PILES FOR ANY HEIGHT, BUT DESIGN STEEL PILES ACCORDINGLY.
 - SPANS 18'-0" TO 98'-5".
- SELECT ONE OF THE THREE POSSIBLE ASSEMBLY TYPES FOR THE BRIDGE SUPERSTRUCTURE: GLULAM BEAM WITH TRANSVERSE GLULAM DECK (BLC-562M), GLULAM LONGITUDINAL PANEL (BLC-563M), OR STEEL BEAM WITH TRANSVERSE GLULAM DECK (BLC-564M).

USE THE FIRST BRIDGE SUPERSTRUCTURE, GLULAM BEAM, FOR SPANS 18'-0" TO 98'-5". THIS SUPERSTRUCTURE COMPOSITION CONSISTS OF HARDWOOD GLULAM TIMBER BEAMS AND A TRANSVERSE HARDWOOD GLULAM TIMBER DECK. THE GLULAM BEAM SYSTEM CHARACTERISTICALLY HAS A LARGE DEPTH-TO-SPAN RATIO DUE TO THE RELATIVELY LOW BENDING STRENGTH OF WOOD COMPARED TO STEEL. IN SOME CASES, VERTICAL CLEARANCE RESTRICTIONS MAY RULE OUT THE USE OF THIS STRUCTURE TYPE BECAUSE OF THE EXCESSIVE SUPERSTRUCTURE DEPTH. WHERE VERTICAL CLEARANCE IS A PROBLEM, CONSIDER THE USE OF THE STEEL BEAM OR GLULAM PANEL SUPERSTRUCTURES.

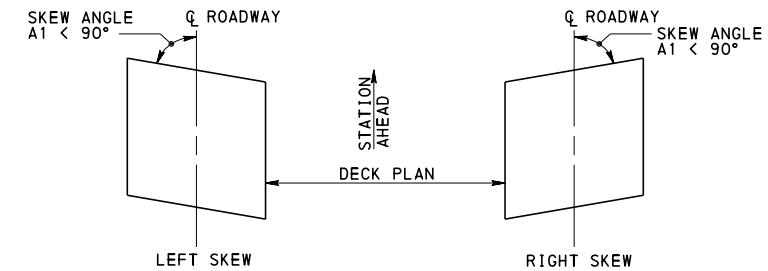
FOR SHORT SPANS OF 18'-0" TO 23'-0", USE THE SECOND TYPE OF BRIDGE SUPERSTRUCTURE, A LONGITUDINAL HARDWOOD GLULAM PANEL, TO EFFECTIVELY REDUCE THE DEPTH OF THE TIMBER SUPERSTRUCTURE. THE LONGITUDINAL PANEL ACTS AS A TIMBER SLAB STRUCTURE WITH A RELATIVELY SHALLOW PROFILE.
- USE THE POST AND RAILS, OR SAFETY PARAPETS (SOLID SAWN LUMBER, GLULAM, OR STEEL) WHICH ARE SHOWN ON THE DRAWINGS. USE AN ALTERNATE SAFETY PARAPET ONLY UPON APPROVAL OF THE PENNDOT DISTRICT BRIDGE ENGINEER.
- THE PILE SUBSTRUCTURE DESIGNS PROVIDED WITH THESE STANDARD DRAWINGS SUPPLY SAFE, LOW COST BRIDGE ABUTMENTS IN MANY CASES. UNFORTUNATELY, FOUNDATION CONDITIONS ARE NOT ALWAYS SUITABLE FOR THIS ABUTMENT TYPE, THEREFORE, CONSIDER AN ALTERNATE SUBSTRUCTURE DESIGN. BE AWARE OF REQUIRED PILE EMBEDMENT LENGTH IN SELECTING PILE ABUTMENT SITES. FAILURE TO ATTAIN THE REQUIRED PILE EMBEDMENT LENGTH DUE TO BEDROCK OR A VERY DENSE SOIL STRATUM CLOSE TO THE GROUND SURFACE CAUSES AN UNACCEPTABLE LATERAL PILE MOVEMENT. TO AVOID SUCH PROBLEMS, VERIFY THE ABILITY TO REACH THE MINIMUM REQUIRED EMBEDMENT LENGTH.
- CONSIDER THE POTENTIAL FOR PILE DAMAGE DURING DRIVING IN DETERMINING SUITABILITY OF TIMBER PILE ABUTMENTS. USE TIMBER PILES IDEALLY AS FRICTION PILES IN AREAS FREE OF BOULDERS OR OTHER SUCH OBSTRUCTIONS DURING DRIVING. EMPLOY TIMBER PILES WITH CAUTION WHERE PILE TIPS REACH BEDROCK OR A VERY DENSE STRATUM BEFORE ATTAINING THE REQUIRED FRICTION EMBEDMENT LENGTH. WHEN SUCH CONTACT OCCURS, DRIVING RESISTANCE AND THE RISK OF PILE DAMAGE INCREASES RAPIDLY. TO MINIMIZE THE POSSIBILITY OF PILE DAMAGE, DRIVE TIMBER PILES TO THE MAXIMUM PERMITTED DRIVING RESISTANCE (MPDR) AS DEFINED IN PENNDOT PUBLICATION 408. DO NOT DRIVE BEYOND THE MPDR. OBTAIN APPROVAL OF A PILE HAMMER SIZE AND CONTROL OF DRIVING FROM THE DEPARTMENT PRIOR TO THE START OF CONSTRUCTION.
- SUBMIT A COMPLETED SET OF DRAWINGS ASSEMBLED FROM THESE STANDARDS TO A REGISTERED PROFESSIONAL ENGINEER FOR REVIEW AND APPROVAL TO ENSURE ADEQUATE DESIGN, AND PERFORM A SUBSURFACE INVESTIGATION PRIOR TO BEGINNING THE FOUNDATION DESIGN. PREPARE FULL SIZE 34"x22" REPRODUCIBLE DRAWINGS USING THESE STANDARDS.

BEFORE USING THESE STANDARDS, OBTAIN BASIC SURVEY, GEOMETRIC DATA, AND SOILS INFORMATION FOR THE PROPOSED CONSTRUCTION SITE. IF THE SITE IS SUITABLE FOR A TIMBER BRIDGE, CHOOSE ONE OF THE AVAILABLE TIMBER SUPERSTRUCTURE TYPES. IF VERTICAL CLEARANCE IS A PROBLEM, USE THE LONGITUDINAL PANEL OR STEEL BEAM TYPE, IF FEASIBLE.

DESIGN OF SUBSTRUCTURE UNITS IS BASED ON THE MATERIAL PARAMETERS AND SOIL CONDITIONS SHOWN ON BLC-560M, SHEET 3. COMPUTE SCOUR DEPTH WHEN SUBSTRUCTURE UNITS ARE EXPOSED TO STREAM CURRENTS. PROVIDE ADEQUATE EMBEDMENT FOR SUBSTRUCTURE UNITS TO RESIST THE EFFECTS OF SCOUR AND FROST.

REFERRING TO THE INDEX OF SHEETS (SEE SHEET 1) STANDARDS ARE SEPARATED INTO DESIGN SHEETS AND CONSTRUCTION SHEETS. IN ADDITION TO INFORMATIONAL AND INSTRUCTIONAL MATERIAL, THE DESIGN SHEETS INCLUDE DATA ASSEMBLY SHEETS FOR THE STANDARDIZED TYPES OF SUBSTRUCTURES AND SUPERSTRUCTURES. THESE SHEETS CONTAIN THE BASIC DATA AND THE EQUATIONS NECESSARY TO GENERATE THE INFORMATION REQUIRED FOR THE FILL-IN TYPE CONSTRUCTION SHEETS. SELECT THE APPROPRIATE DATA ASSEMBLY SHEET AND THE APPROPRIATE CONSTRUCTION SHEETS FOR THE SELECTED STRUCTURE TYPE.

SELECT THE APPROPRIATE CONSTRUCTION SHEETS FOR LEFT, 90°, & RIGHT SKEWED STRUCTURES. THE SKEW ANGLE FOR A LEFT SKEWED STRUCTURE IS MEASURED TO THE LEFT OF THE ROADWAY CENTERLINE WHILE A RIGHT SKEW ANGLE IS MEASURED TO THE RIGHT OF THE CENTERLINE. SEE THE FOLLOWING SKETCH.



AFTER SELECTING THE NECESSARY DATA ASSEMBLY AND CONSTRUCTION SHEETS, PRODUCE FINAL CONTRACT DRAWINGS.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

HARDWOOD GLULAM TIMBER BRIDGE DESIGN
GENERAL INFORMATION & INSTRUCTIONS

RECOMMENDED APR. 23, 2013

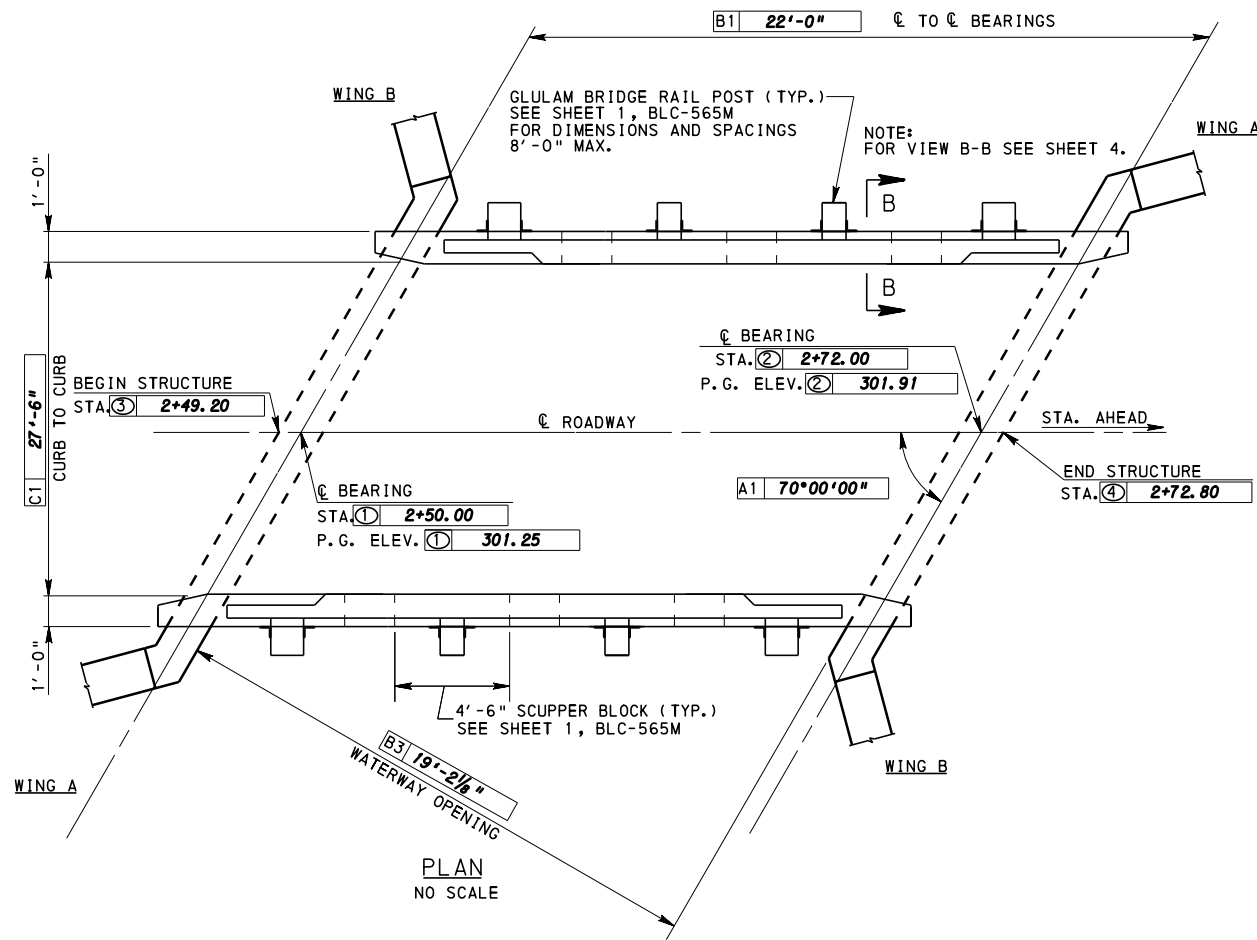
Thomas P. Macisosa
CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013

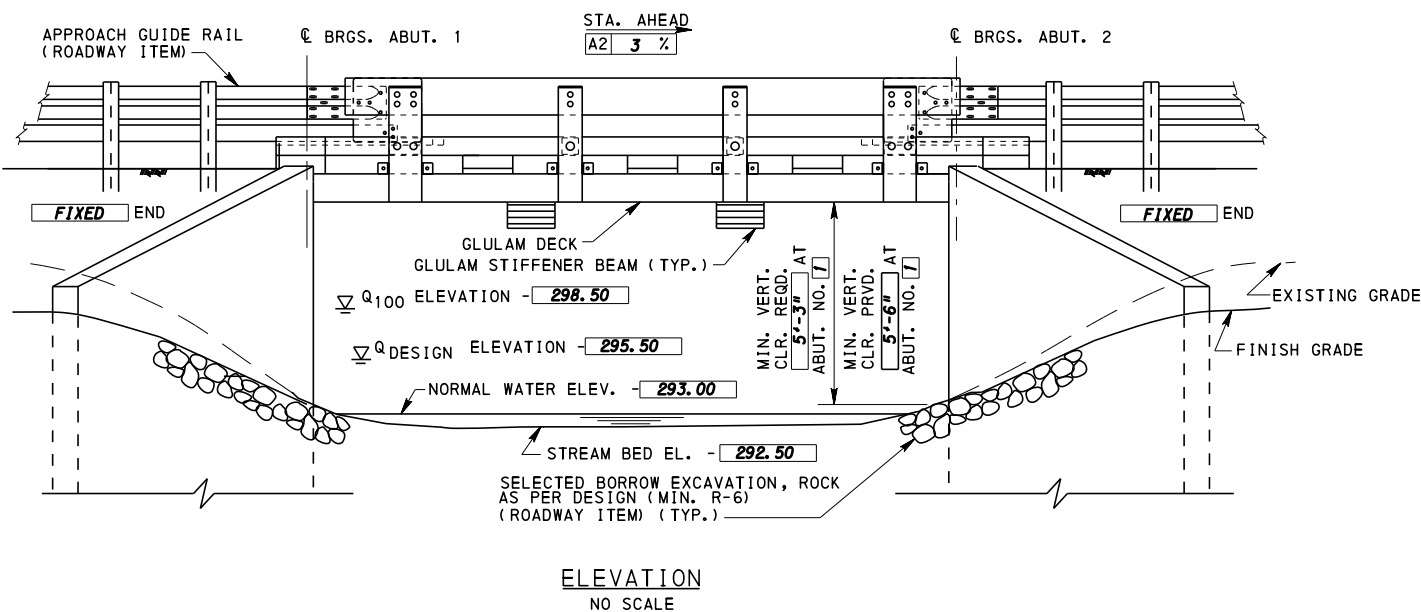
George P. All
ACTING DIR. BUR. OF PROJECT DELIVERY

SHEET 2 OF 3

BLC-560M



HYDRAULIC DATA
(DESIGNER)
DRAINAGE AREA - 8.42 SQ. MILES
DESIGN FLOOD DISCHARGE - 705 CFS
FREQUENCY - 25 YEARS
ELEVATION - 295.50
100 YEAR FLOOD DISCHARGE - 2008 CFS
ELEVATION - 298.50



INDEX OF DRAWINGS			
SHT. NO.	TITLE	SHT. NO.	TITLE
1	GENERAL PLAN AND ELEVATION - LEFT SKEW	16	GLULAM LONGIT. PANELS (DATA ASSY. SHTS.)
2	TYPICAL SECTION AND QUANTITIES	17	SPREAD FOOTING ABUT. 1 (DATA ASSY. SHTS.)
3	GENERAL NOTES	18	SPREAD FOOTING ABUT. 1 (DATA ASSY. SHTS.)
4	STAKE-OUT PLAN	19	SPREAD FOOTING ABUT. 1 (DATA ASSY. SHTS.)
5	ABUTMENT 1	20	SPREAD FOOTING ABUT. 1 (DATA ASSY. SHTS.)
6	ABUTMENT 1 - FOOTING PLAN	21	SPREAD FOOTING ABUT. 2 (DATA ASSY. SHTS.)
7	ABUTMENT 1 - BAR SCHEDULE	22	SPREAD FOOTING ABUT. 2 (DATA ASSY. SHTS.)
8	ABUTMENT 2	23	SPREAD FOOTING ABUT. 2 (DATA ASSY. SHTS.)
9	ABUTMENT 2 - FOOTING PLAN	24	SPREAD FOOTING ABUT. 2 (DATA ASSY. SHTS.)
10	ABUTMENT 2 - BAR SCHEDULE		
11	FRAMING PLAN - LEFT SKEW		
12	SUPERSTRUCTURE DETAILS		
13	BRIDGE RAIL DETAILS		
14	TYPICAL HARDWARE DETAILS		
15	GLULAM LONGIT. PANELS (DATA ASSY SHTS)		

BRIDGE RATING ⁽¹⁾							
REFER TO TABLE 2, BLC-561M SHEET 9							
SIMPLE SPAN		GLULAM TIMBER LONGITUDINAL PANEL ⁽²⁾					
		H	HS	ML	PHL93	TK-527	P82
INVENTORY RATING (IR)	LOCATION	0.50 L	0.16 L	0.50 L	0.45 L	0.50 L	-
	LIMIT STATE	STR. I	STR. I	STR. I	STR. I	STR. I	-
OPERATING RATING (OR)	RATING	2.80 M	1.91 V	1.92 M	1.55 M	1.66 M	-
	LOCATION	0.50 L	0.25 L	0.50 L	0.45 L	0.50 L	0.45 L
RATING	LIMIT STATE	STR. II	STR. II	STR. II	STR. IA	STR. II	STR. II
	RATING	3.63 M	2.48 V	2.50 M	2.47 M	2.88 M	1.93 M

MOMENT CAPACITY - kip-ft. 1197.8
LOCATION 1.45 L
SHEAR CAPACITY - kip 238.1
LOCATION 0.16 L

NOTES FOR BRIDGE RATING TABLE:

- 1.) FLEXURAL RATING FACTORS "M" ARE SHOWN & GOVERN UNLESS OTHERWISE DENOTED BY A "V" FOR SHEAR, "D" FOR DEFLECTION OR "B" FOR BEARING.
- 2.) VALUES SHOWN ARE BASED ON LOAD AND RESISTANCE FACTOR DESIGN.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S-00001 SHEET 1 OF 24


COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE
22'-0" SPAN

GLULAM
LONGITUDINAL PANEL SUPERSTRUCTURE
GENERAL PLAN & ELEVATION - LEFT SKEW

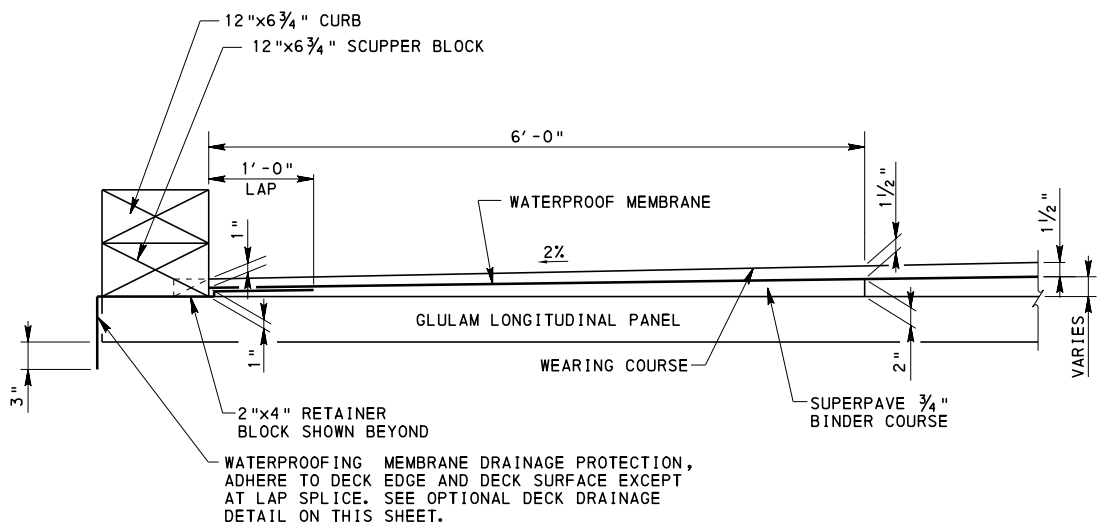
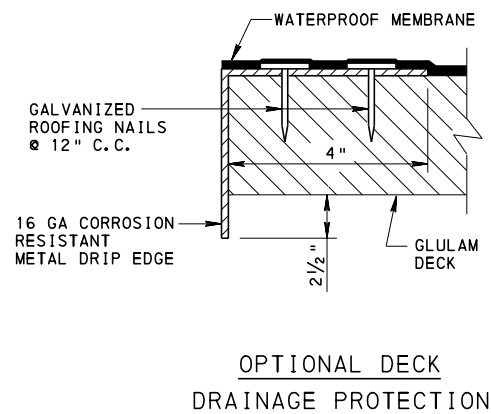
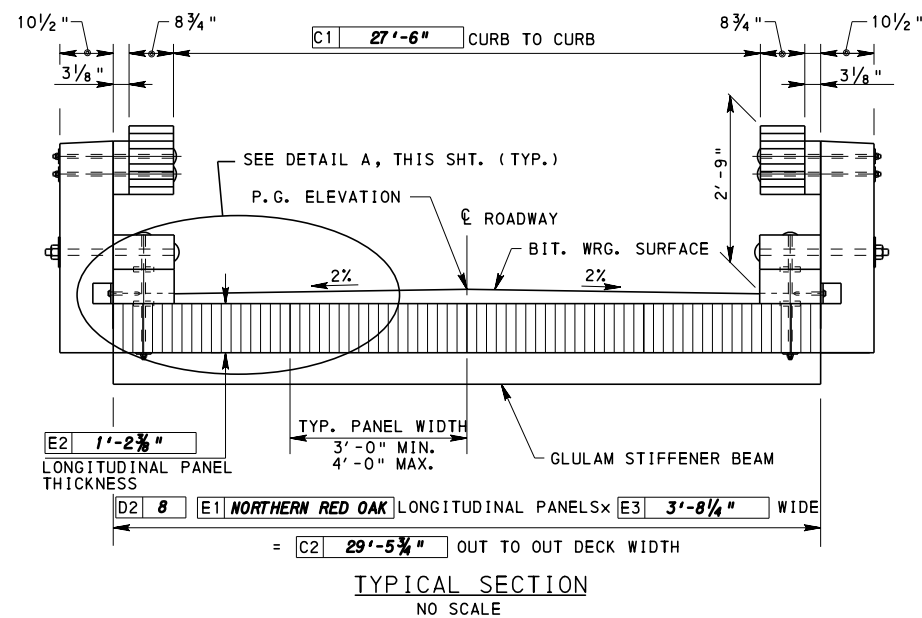
RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 1 OF 9
BLC-563M

Recommended _____
DISTRICT BRIDGE ENGINEER

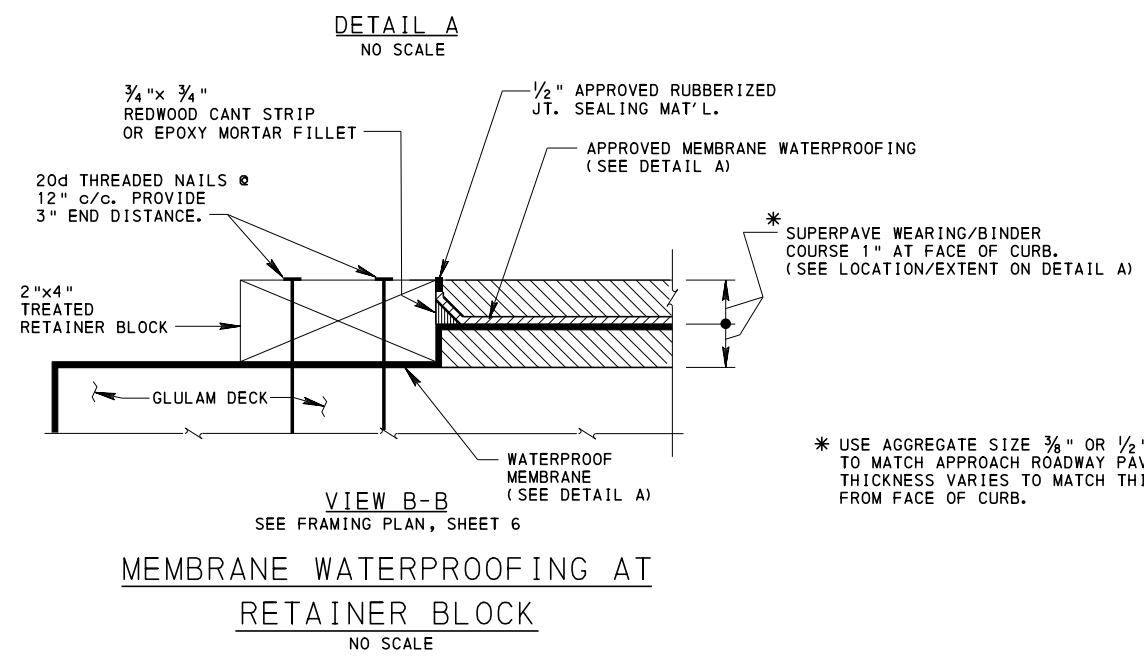
ENGINEERING SEAL

 PREPARED BY:
 ABC CONSULTING
 123 MAIN ST.
 ANYWHERE, PA 12345
 SIGNATURE & DATE

RC-11M	CLASSIFICATION OF EARTHWORK FOR STRUCTURES
RC-12M	BACKFILL AT STRUCTURES
BC-735M	WALL CONSTRUCTION & EXPANSION JOINT DETAILS
BC-736M	REINFORCEMENT BAR FABRICATION DETAILS
BC-739M	BRIDGE BARRIER TO GUIDE RAIL TRANSITION
BC-755M	BEARINGS

REFERENCE DRAWING



- NOTE:**
1. ALLOW FIRST LAYER OF BITUMINOUS MATERIAL TO COOL SUFFICIENTLY SO WATERPROOF MEMBRANE DOES NOT TEAR WHEN APPLYING SECOND LAYER OF BITUMINOUS MATERIAL.
 2. SEE VIEW B-B FOR ASPHALT WEARING COURSE TYPE.



APPROXIMATE QUANTITIES - BRIDGE STRUCTURE, AS DESIGNED						
ITEM NO.	ITEM	UNIT	ABUT. 1	ABUT. 2	SUPERSTRUCTURE	TOTAL
8030-0001	BRIDGE STRUCTURE AS DESIGNED, S-	LS				LS
(1)	GLUE LAMINATED LONGITUDINAL PANELS	F. B. M.	----	----	10.006	10.006
(1)	GLUE LAMINATED CONT. STIFFENER BEAMS	F. B. M.	----	----	0.148	0.148
(1)	GLUE LAMINATED TIMBER BRIDGE RAIL	F. B. M.	----	----	1.1	.1
(1)	GLUE LAMINATED INTER. STIFFENER BEAMS	F. B. M.	----	----	0.432	0.432
(1)	WATERPROOF MEMBRANE	S. Y.	----	----	93.4	93.4
(1)	CLASS 4 GEOTEXTILE	S. Y.	----	----	30	30
(1)	BITUMINOUS BINDER COURSE SUPERPAVE, 3/4"	TON	----	----	10	10
(1)	BITUMINOUS WEARING COURSE SUPERPAVE, 3/8" / 1/2"	TON	----	----	6	6
(1)	TREATED RETAINER BLOCK	F. B. M.	----	----		
(1)	OPTIONAL METAL DRIP EDGE	S. Y.				
(1)	CLASS 3 EXCAVATION	C. Y.	142	149	---	291
(1)	CLASS AA CEMENT CONCRETE	C. Y.	0.2	0.2	---	0.4
(1)	CLASS A CEMENT CONCRETE	C. Y.	58.8	64.3	---	123.1
(1)	SELECTED BORROW EXCAVATION, STRUCTURE BACKFILL	C. Y.	45	51	---	96
(1)	NO. 57 COARSE AGGREGATE	C. Y.	3.0	3.0	---	6.0
(1)	REINFORCEMENT BARS	LB.	4748	6112	---	10860
(1)	REINFORCEMENT BARS, EPOXY COATED	LB.	606	843	---	1449

1. ITEMS IN BRIDGE STRUCTURE LUMP SUM ITEM 8030-0001 GIVEN FOR INFORMATION ONLY.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S-00001 SHEET 2 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE
22'-0" SPAN
GLULAM
LONGITUDINAL PANEL SUPERSTRUCTURE
TYPICAL SECTION AND QUANTITIES

RECOMMENDED APR. 23, 2013
Thomas P. Macisica
CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013
George P. Kelly
ACTING DIR. BUR. OF PROJECT DELIVERY

SHEET 4 OF 9
BLC-563M

GENERAL NOTES:

DESIGN SPECIFICATIONS

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (2010) AND AS SUPPLEMENTED BY DESIGN MANUAL, PART 4, MAY 2012 EDITION.

LIVE LOAD DISTRIBUTED TO BEAMS IS BASED UPON DM-4 DISTRIBUTION FACTORS.

DESIGN IS IN ACCORDANCE WITH THE LOAD AND RESISTANCE FACTOR DESIGN METHOD.

DESIGN LIVE LOADS

PHL-93 OR P-82 [204 KIPS PERMIT LOAD]

DEAD LOADS

INCLUDES SURFACE AREA DENSITY OF 30 LBS./SQ. FT. FOR FUTURE WEARING SURFACE ON THE DECK.

GENERAL

PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH SPECIFICATIONS, PUBLICATION 408, AASHTO/AWS/D1.5 BRIDGE WELDING CODE, AND CONTRACT SPECIAL PROVISIONS.

NOTIFY THE REGIONAL HEADQUARTERS OF THE FISH COMMISSION PRIOR TO CONSTRUCTION AND COOPERATE WITH FISH COMMISSION DURING CONSTRUCTION.

ALL DIMENSIONS SHOWN ARE HORIZONTAL UNLESS OTHERWISE NOTED.

SUPERSTRUCTURE DIMENSIONS SHOWN ARE FOR NORMAL TEMPERATURE OF 68°F.

SPREAD FOOTINGS MAY BE ORDERED BY THE ENGINEER TO BE AT ANY ELEVATION OR OF ANY DIMENSIONS NECESSARY TO PROVIDE A PROPER FOUNDATION.

CONCRETE

PROVIDE 2" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.

USE CLASS A CEMENT CONCRETE IN ABUTMENTS BELOW BRIDGE SEAT, WINGWALLS, AND FOOTINGS.

USE CLASS AA CEMENT CONCRETE IN CHEEKWALLS.

A HIGHER CLASS CONCRETE MAY BE SUBSTITUTED FOR A LOWER CLASS CONCRETE AT NO ADDITIONAL COST TO THE DEPARTMENT.

PREPARE BEARING AREAS AS SPECIFIED IN PUBLICATION 408, SECTION 1001.3(K)9.

SET ANCHOR BOLTS TO TEMPLATE OR IN PREFORMED HOLES. DO NOT DRILL UNLESS SPECIFICALLY INDICATED ON PLANS. FILL THE PREFORMED HOLES WITH NON-SHRINK GROUT. FILL THE CLEARANCE BETWEEN ANCHOR BOLTS AND HOLES IN MASONRY PLATES WITH APPROVED NONHARDENING CAULKING COMPOUND CONFORMING TO PUBLICATION 408, SECTION 705.8.

PROVIDE GRADE 60 REINFORCING STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM A 615/A 615M, A 996/A 996M, AND A 706/A 706M. DO NOT WELD GRADE 60 REINFORCING STEEL BARS UNLESS SPECIFIED. GRADE 40 REINFORCING STEEL BARS MAY BE SUBSTITUTED WITH A PROPORTIONAL INCREASE IN CROSS-SECTIONAL AREA, IF APPROVED BY THE CHIEF BRIDGE ENGINEER. DO NOT USE RAIL STEEL A 996/A 996M REINFORCEMENT BARS IN BRIDGE PIERS, ABUTMENTS, SHEAR BLOCKS, BEAMS, FOOTINGS, PILES, BARRIERS AND WHERE BENDING OR WELDING OF THE REINFORCEMENT BARS IS INDICATED.

EPOXY-COAT SUBSTRUCTURE REINFORCEMENT BARS AS INDICATED.

GALVANIZED REINFORCING STEEL BARS MAY BE SUBSTITUTED FOR EPOXY-COATED STEEL BARS AT NO ADDITIONAL COST TO THE DEPARTMENT.

RAKE-FINISH ALL HORIZONTAL CONSTRUCTION JOINTS, EXCEPT AS INDICATED.

PLACE CHEEKWALL CONCRETE AFTER BEAMS ARE SET IN POSITION.

CHAMFER EXPOSED CONCRETE EDGES 1" BY 1", EXCEPT AS NOTED.

PROVIDE MINIMUM LAP AND EMBEDMENT LENGTH OF 30 DIAMETERS OR IN ACCORDANCE WITH A5.11 AND D5.11, WHICHEVER IS GREATER.

STEEL

GALVANIZE ALL TIMBER CONNECTION HARDWARE AS SPECIFIED IN PUBLICATION 408, SECTION 1105.02(s).

PROVIDE STRUCTURAL STEEL CONFORMING TO AASHTO M 270/M 270M, GRADE 36 [ASTM A 709/A 709M, GRADE 36] DESIGNATION, EXCEPT WHEN NOTED OTHERWISE.

PROVIDE BOLTS AND LAG SCREWS CONFORMING TO ASTM A 307 DESIGNATION, EXCEPT WHEN NOTED OTHERWISE.

PROVIDE BOLTS, NUTS, AND WASHERS IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND AS SUPPLEMENTED BY DESIGN MANUAL PART 4, SECTION 6.4.3.

PROVIDE MALLEABLE IRON WASHER CONFORMING TO ASTM A 47/A 47M, GRADE 3500.

PROVIDE LAG SCREWS CONFORMING TO ANSI B18.2.1 - 1981.

UTILITIES

COORDINATE THE REQUIREMENTS FOR PROTECTION AND/OR RELOCATION OF UTILITIES WITH THE UTILITY OWNER PRIOR TO STARTING WORK.

VERIFY AND LOCATE ALL EXISTING UTILITIES PRIOR TO STARTING WORK; CONDUCT OPERATIONS IN A MANNER WHICH ENSURES THAT THE UTILITIES WILL NOT BE DISTURBED OR ENDANGERED, AND ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE TO UTILITIES DURING CONSTRUCTION. THE DEPARTMENT DOES NOT ASSUME RESPONSIBILITY FOR REIMBURSEMENT, PARTICIPATION IN DESIGN AND/OR REVISIONS, OR LIABILITY FOR ACCURACY OF TYPE, SIZE, AND LOCATION OF ANY UTILITY.

GENERAL NOTES CONTINUED:

TIMBER

USE ONLY GLUE LAMINATED TIMBER FABRICATED WITH EITHER NORTHERN RED OAK, RED MAPLE OR YELLOW POPLAR LUMBER GRADED PER NORTHEASTERN LUMBER MANUFACTURER'S ASSOCIATION (NORTHERN RED OAK AND RED MAPLE) OR NORTHERN SOFTWOOD LUMBER BUREAU (YELLOW POPLAR) STANDARDS AND MANUFACTURED FOLLOWING AITC 119-96 OR CURRENT SPECIFICATIONS.

PROVIDE MINIMUM WET-USE BASE RESISTANCES AND MOE VALUES IN ACCORDANCE WITH BLC-560M SHEET 3.

TREAT ALL LUMBER AND GLULAM COMPONENTS WITH OIL-BORNE PRESERVATIVE(S) IN ACCORDANCE WITH PENNDOT PUBLICATION 408.

FIELD CUTTING IS NOT PERMITTED UNLESS APPROVED BY THE ENGINEER.

WHEN FIELD CUTTING, TREAT WITH BITUMINOUS ASPHALT BASED ROOF CEMENT, COPPER NAPHTHENATE PASTE, OR APPROVED PRESERVATIVE SYSTEM.

ALWAYS COAT LAG SCREW THREADS WITH BITUMINOUS ASPHALT BASED ROOF CEMENT, COPPER NAPHTHENATE PASTE, OR APPROVED PRESERVATIVE SYSTEM BEFORE INSTALLING LAG SCREW.

DO NOT DRIVE LAG SCREW WITH HAMMER. SCREW OR TORQUE LAG SCREWS.

PROVIDE SUFFICIENT LAG SCREW LENGTH SO LAG SCREW SHANK WILL PENETRATE RECEIVING MEMBER.

SUBMIT SHOP DRAWINGS SHOWING DETAILS OF ALL GLULAM CONSTRUCTION FOR APPROVAL TO THE ENGINEER PRIOR TO FABRICATION OPERATIONS.

ALL TIMBER DIMENSIONS SHOWN ARE ACTUAL.

PILES

~~DO NOT PERMIT SPLICES IN PILES.~~

~~PROVIDE PILES IN ACCORDANCE WITH BLC-560M SHEET 3.~~

PILE SUPPORTED TIMBER SILLS

~~THE SUPERSTRUCTURE MUST BE IN PLACE AND CONNECTED TO SUBSTRUCTURE BEFORE ABUTMENTS ARE BACKFILLED.~~

~~BACKFILL BOTH ABUTMENTS CONCURRENTLY. MAINTAIN SYMMETRICAL LOADING.~~

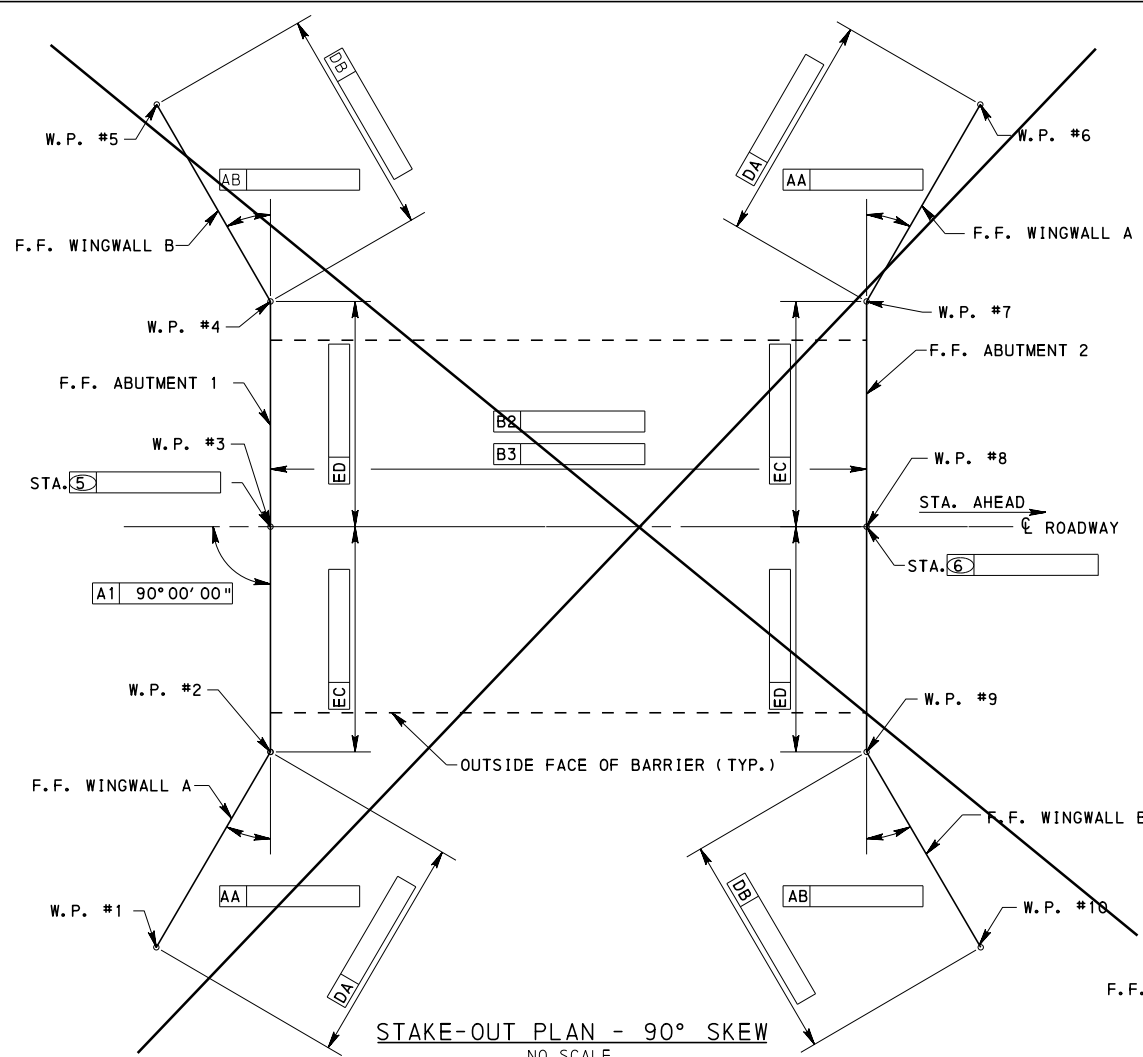
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S-00001 SHEET 3 OF 24

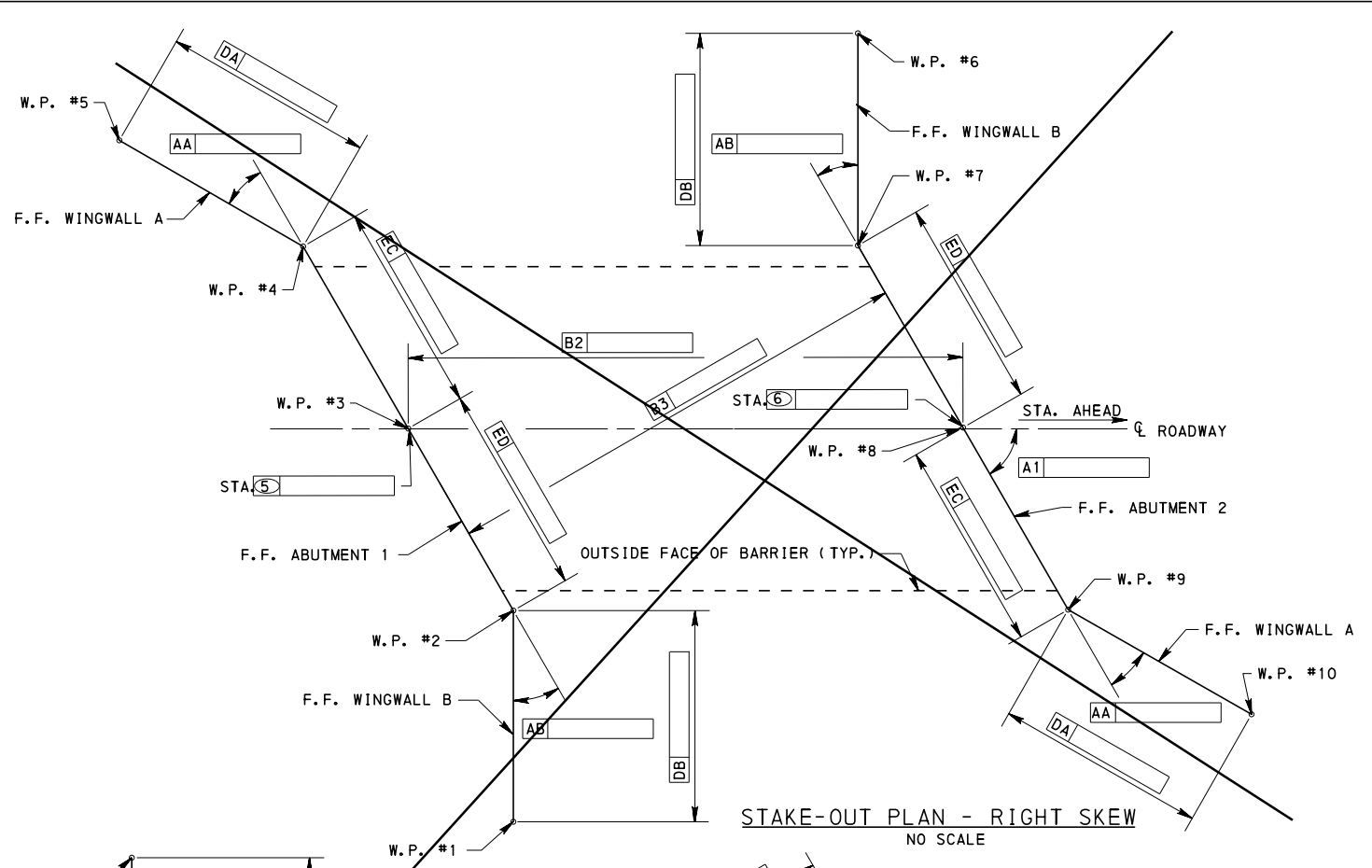
**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

DESIGN EXAMPLE
22'-0" SPAN
GLULAM
LONGITUDINAL PANEL SUPERSTRUCTURE
GENERAL NOTES

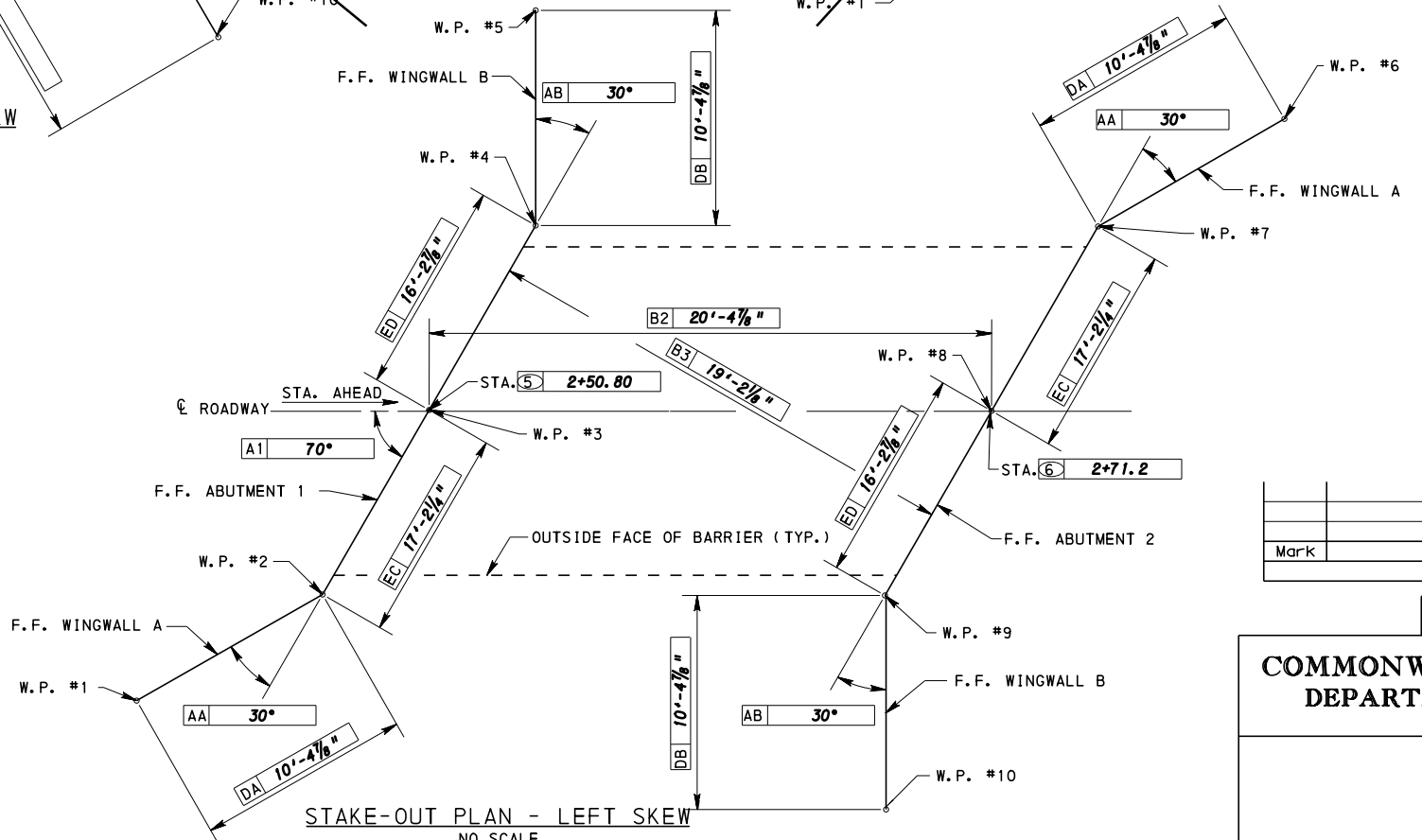
RECOMMENDED APR. 23, 2013 <i>Thomas P. Maciocco</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 5 OF 9 BLC-563M
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STAKE-OUT PLAN - 90° SKEW
NO SCALE



STAKE-OUT PLAN - RIGHT SKEW
NO SCALE



STAKE-OUT PLAN - LEFT SKEW
NO SCALE

NOTE:
F.F. DENOTES FRONT FACE.

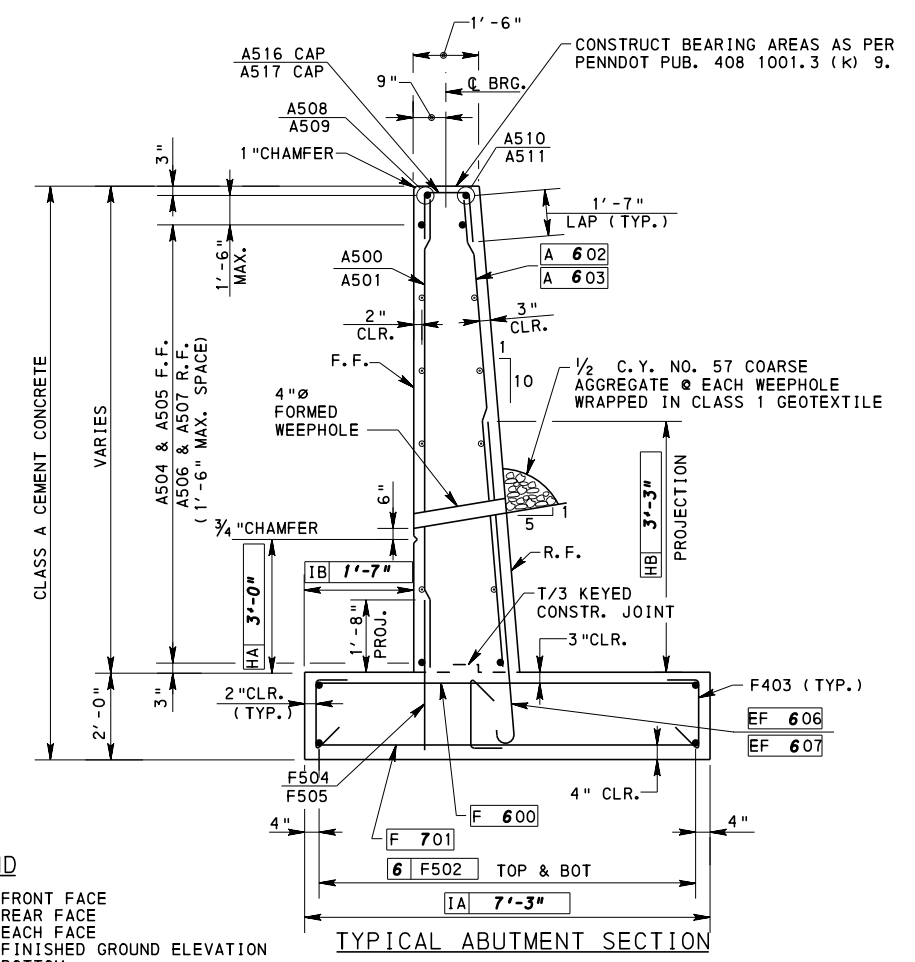
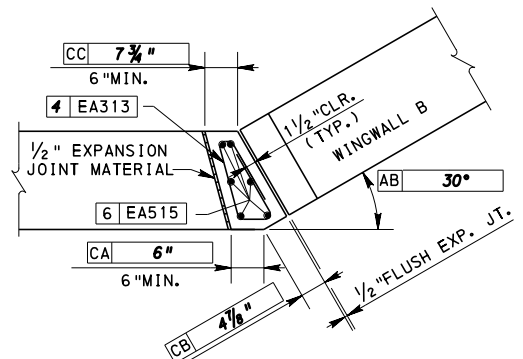
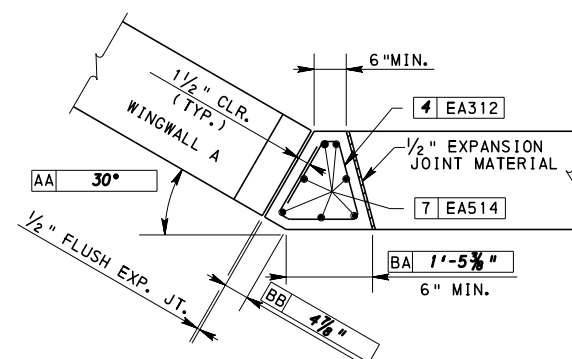
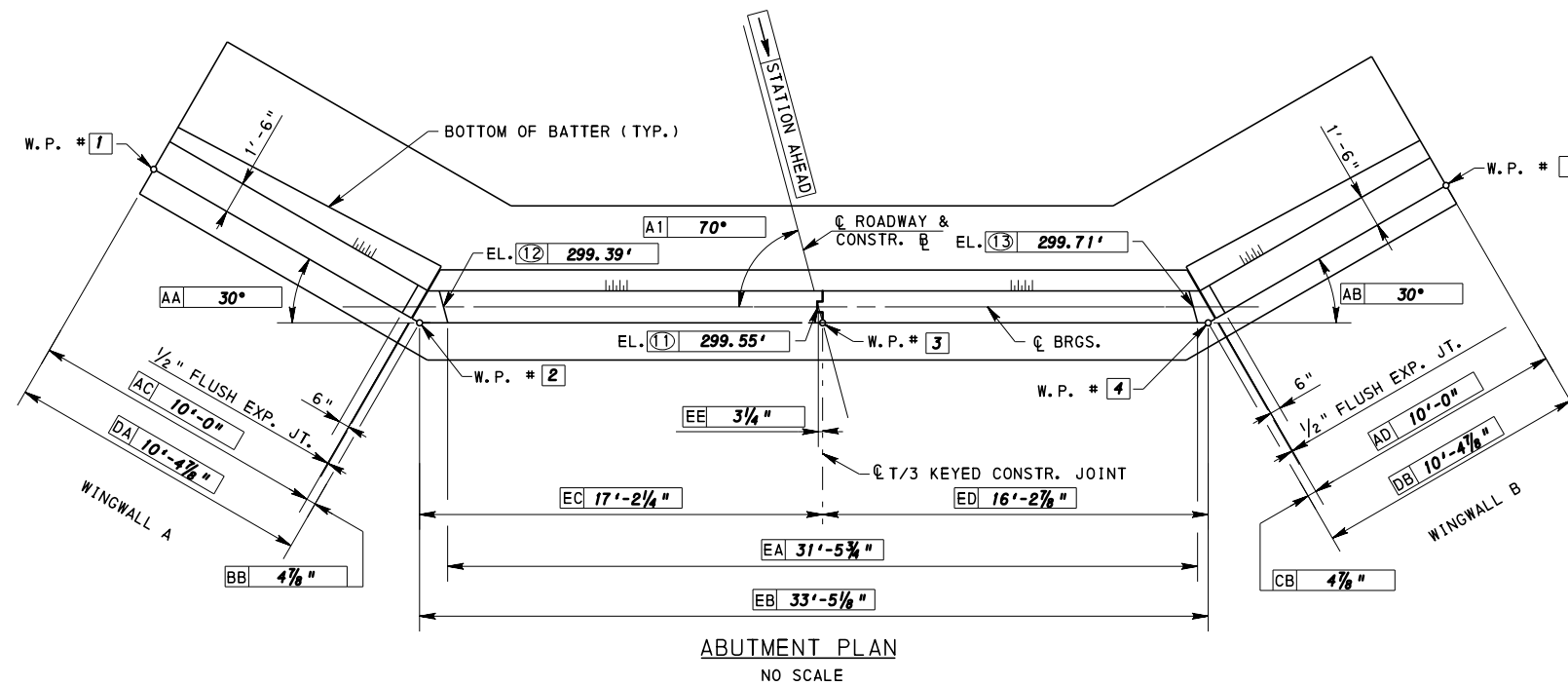
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S-00001 SHEET 4 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

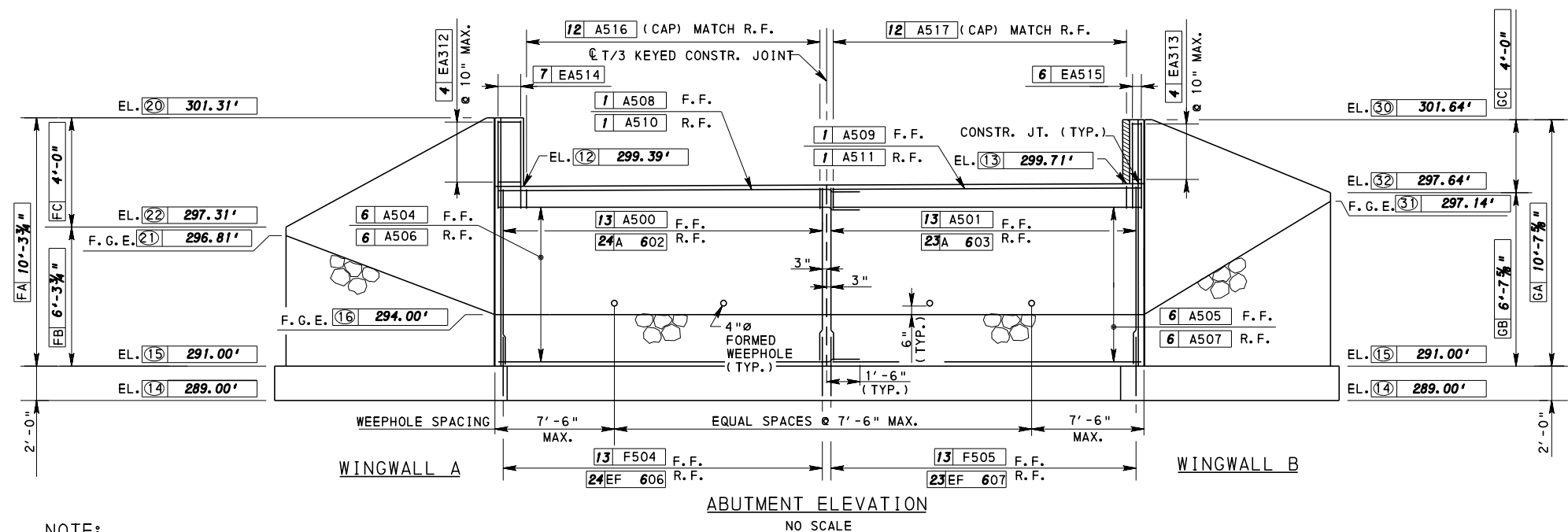
DESIGN EXAMPLE
22'-0" SPAN
SHEETS COMMON TO
BLC 562M, 563M, & 564M
STAKE-OUT PLAN

RECOMMENDED APR. 23, 2013
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 2 OF 3
BLC-565M



- LEGEND**
- F. F. DENOTES FRONT FACE
 - R. F. DENOTES REAR FACE
 - E. F. DENOTES EACH FACE
 - F. G. E. DENOTES FINISHED GROUND ELEVATION
 - BOT. DENOTES BOTTOM
 - W. P. DENOTES WORKING POINT
 - EQ. SPA. DENOTES EQUAL SPACE

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET 3
 - FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET 4
 - FOR ABUTMENT 1 FOOTING PLAN SEE SHEET 6
 - FOR ABUTMENT 1 BAR SCHEDULE, SEE SHEET 7
 - MAX. ALLOWABLE FOUNDATION PRESSURE = 8 kip/FT²
 - MAX DESIGN FOUNDATION PRESSURE = 7.37 kip/FT²



NOTE:
SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

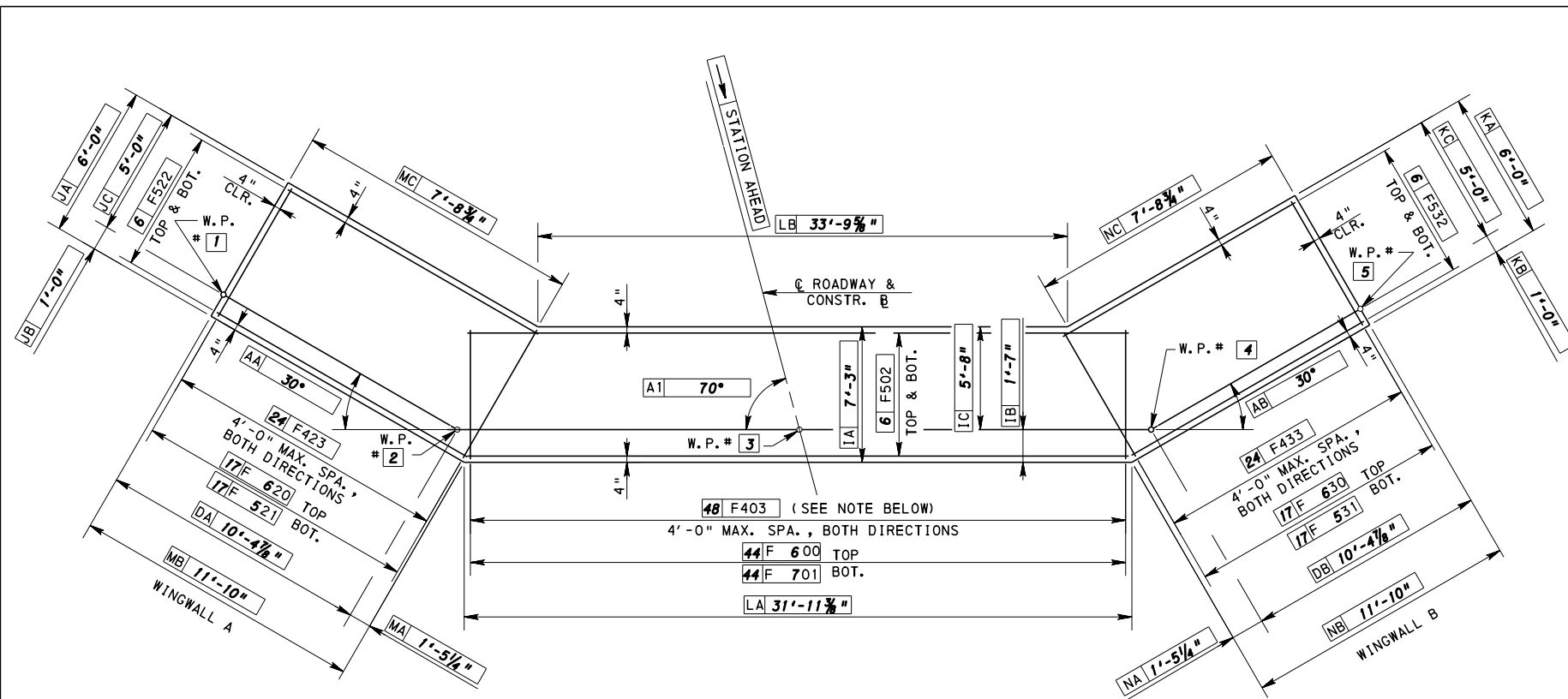
S-00001 SHEET 5 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

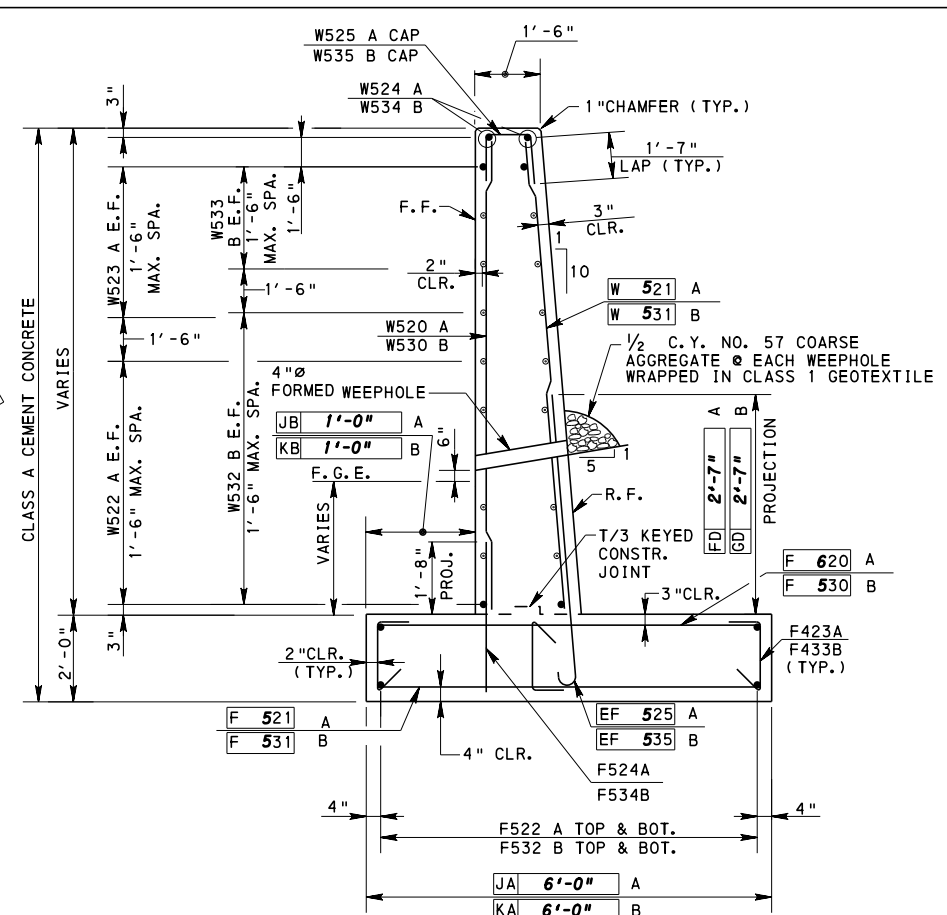
DESIGN EXAMPLE
22'-0" SPAN

SPREAD FOOTING ABUTMENT
ABUTMENT 1 - LEFT SKEW

RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 1 OF 7
BLC-566M



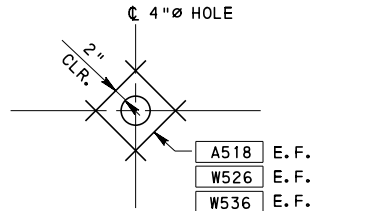
FOOTING PLAN - ABUTMENT
NO SCALE



TYPICAL WING SECTION
NO SCALE

LEGEND
 F.F. DENOTES FRONT FACE
 R.F. DENOTES REAR FACE
 E.F. DENOTES EACH FACE
 F.G.E. DENOTES FINISHED GROUND ELEVATION
 BOT. DENOTES BOTTOM
 W.P. DENOTES WORKING POINT
 EQ. SPA. DENOTES EQUAL SPACE

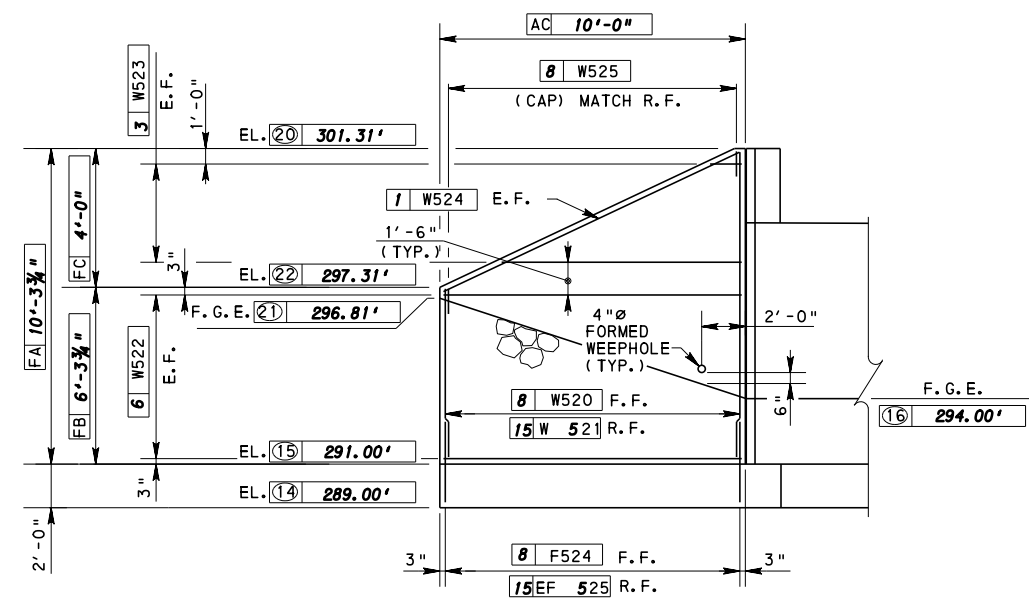
NOTE:
 TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH #4 TIE BARS AT A MAXIMUM SPACING OF 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90° HOOK AT ONE END AND 135° AT THE OTHER END. ALTERNATE 90° AND 135° AT TOP IN ALTERNATE TIES.



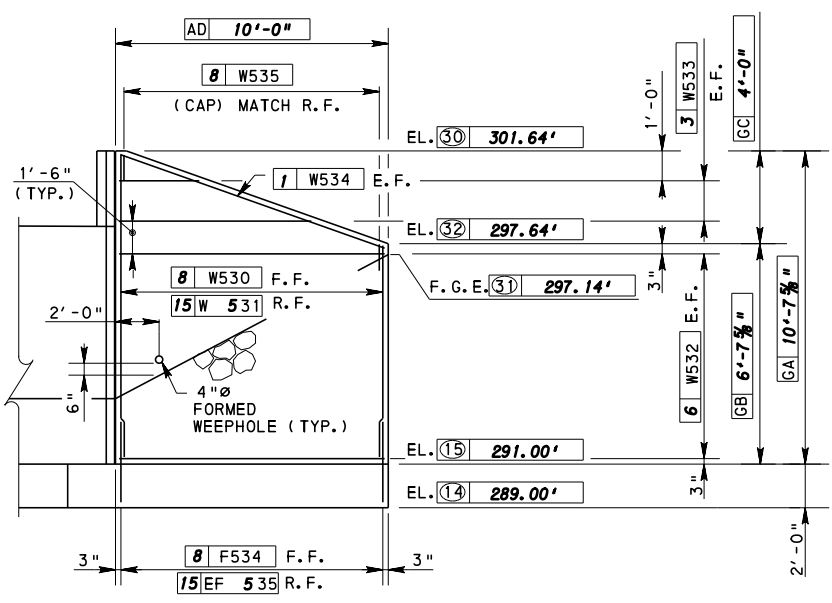
WEEPHOLE REINFORCEMENT DETAIL
NO SCALE

NOTE:
 ADJUST REINFORCEMENT AS NECESSARY TO ACCOMMODATE OPENING.

NOTES:
 •FOR GENERAL NOTES, SEE SHEET 3
 •FOR LOCATION OF WINGWALLS SEE STAKE-OUT SKETCH, SHEET 4
 •FOR ABUTMENT 1, SEE SHEET 5
 •FOR ABUTMENT 1 BAR SCHEDULE, SEE SHEET 7
 •MAX. ALLOWABLE FOUNDATION PRESSURE = 8 kip/FT.²
 •MAX DESIGN FOUNDATION PRESSURE = WING A = 6.25 kip/FT.²
 WING B = 6.33 kip/FT.²



WINGWALL A
NO SCALE



WINGWALL B
NO SCALE

NOTE:
 SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S-00001 SHEET 6 OF 24

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE
 22'-0" SPAN

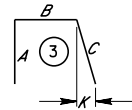
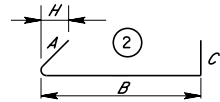
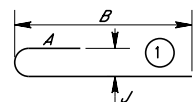
SPREAD FOOTING ABUTMENT
 ABUTMENT 1 - FTG. PLAN - LEFT SKEW

RECOMMENDED APR. 23, 2013
 RECOMMENDED APR. 23, 2013
 SHEET 4 OF 7
 THOMAS P. MACIOCE
 CHIEF BRIDGE ENGINEER
 ACTING DIR. BUR. OF PROJECT DELIVERY
 BLC-566M

REINFORCEMENT BAR SCHEDULE*

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
A500	5	8'-2 3/8" TO 8'-4 3/8"	13	STR.												VARY EA. BY 1/8"
A501	5	8'-4 3/8" TO 8'-6 1/2"	13	STR.												VARY EA. BY 1/8"
A_6_02	6	8'-2 3/8" TO 8'-4 3/8"	24	STR.												VARY EA. BY 1/8"
A_6_03	6	8'-4 3/8" TO 8'-6 1/2"	23	STR.												VARY EA. BY 1/8"
A504	5	18'-11 1/4"	6	STR.												
A505	5	16'-0 3/8"	6	STR.												
A506	5	18'-4 3/8"	6	STR.												
A507	5	15'-6"	6	STR.												
A508	5	18'-11 1/4"	1	STR.												
A509	5	16'-0 3/8"	1	STR.												
A510	5	18'-4 3/8"	1	STR.												
A511	5	15'-6"	1	STR.												
EA312	3	5'-2"	4	STR.												BEND IN FIELD
EA313	3	4'-4 3/8"	4	STR.												BEND IN FIELD
EA514	5	3'-5"	7	STR.												
EA515	5	3'-5 1/8"	6	STR.												
A516	5	4'-3"	12	③	1'-7"	1'-1"	1'-7"								2"	
A517	5	4'-3"	12	③	1'-7"	1'-1"	1'-7"								2"	
A518	5	1'-0"	32	STR.												
W520	5	6'-1 3/4" TO 10'-1 3/4"	8	STR.												VARY EA. BY 6"
W_5_21	5	6'-1 3/4" TO 10'-1 3/4"	15	STR.												VARY EA. BY 3 1/4"
W522	5	9'-8"	6	STR.												
W523	5	6'-7 3/4" TO 2'-5"	3	STR.												VARY 2 EA. BY 1'-4 1/8"
W524	5	10'-5 1/4"	2	STR.												
W525	5	4'-3"	8	③	1'-7"	1'-1"	1'-7"								2"	
W526	5	1'-0"	8	STR.												
W530	5	6'-5 3/8" TO 10'-5 3/8"	8	STR.												VARY EA. BY 6"
W_5_31	5	6'-5 3/8" TO 10'-5 3/8"	15	STR.												VARY EA. BY 3 1/4"
W532	5	9'-8"	6	STR.												
W533	5	6'-7 3/4" TO 2'-5"	3	STR.												VARY 2 EA. BY 1'-4 1/8"
W534	5	10'-5 1/4"	2	STR.												
W535	5	4'-3"	8	③	1'-7"	1'-1"	1'-7"								2"	
W536	5	1'-0"	8	STR.												
F_6_00	6	6'-7"	44	STR.												
F_7_01	7	6'-7"	44	STR.												
F502	5	31'-3 3/8"	6	STR.												
F403	4	2'-3"	48	②	4 1/2"	1'-6"	4 1/2"					3"				
F504	5	3'-6"	13	STR.												
F505	5	3'-6"	13	STR.												
EF_6_06	6	5'-7"	24	①	8"	4'-11"									6"	
EF_6_07	6	5'-7"	23	①	8"	4'-11"									6"	
F_6_20	6	5'-4"	17	STR.												
F_5_21	5	5'-4"	17	STR.												
F522	5	11'-2"	6	STR.												
F423	4	2'-3"	24	②	4 1/2"	1'-6"	4 1/2"					3"				
F524	5	3'-6"	8	STR.												
EF_5_25	5	4'-10"	15	①	7"	4'-3"									5"	
F_6_30	6	5'-4"	17	STR.												
F_5_31	5	5'-4"	17	STR.												
F532	5	11'-2"	6	STR.												
F433	4	2'-3"	24	②	4 1/2"	1'-6"	4 1/2"					3"				
F534	5	3'-6"	8	STR.												
EF_5_35	5	4'-10"	15	①	7"	4'-3"									5"	

BAR TYPE LEGEND
STR. DENOTES A STRAIGHT BAR



* USE BLC-561M SHEETS 13 AND 14 TO COMPLETE BAR SCHEDULE INFORMATION.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

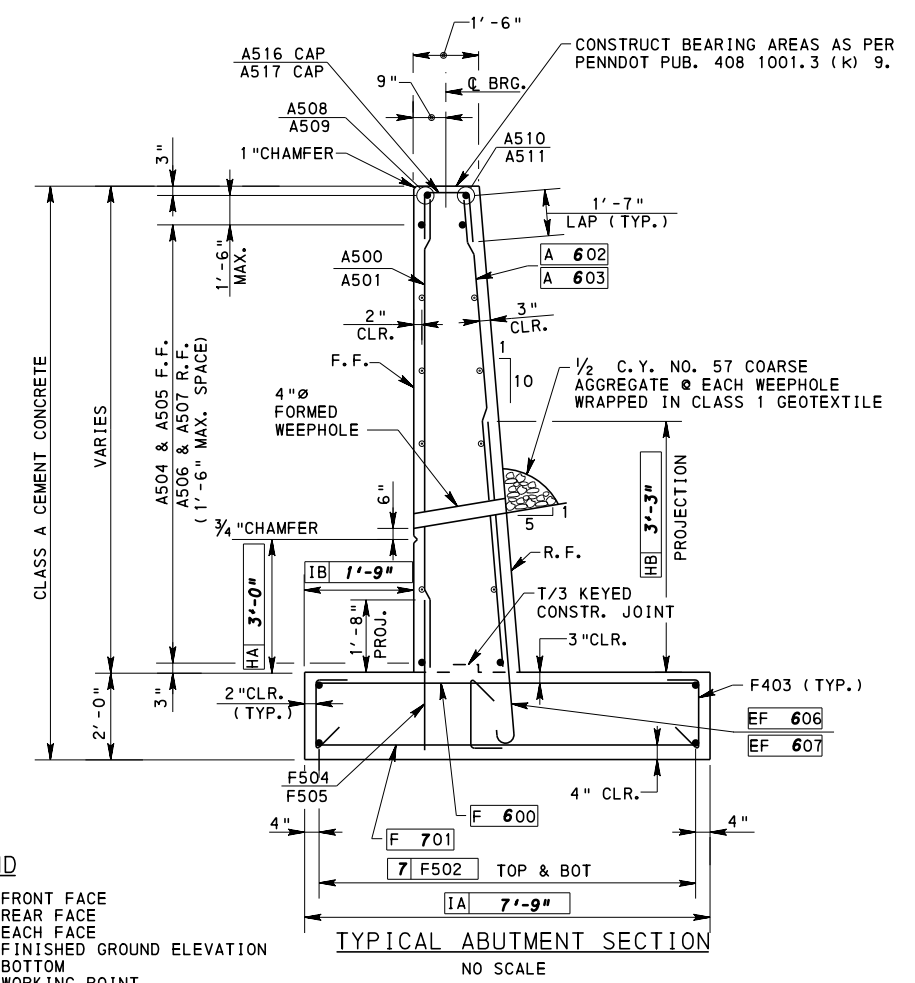
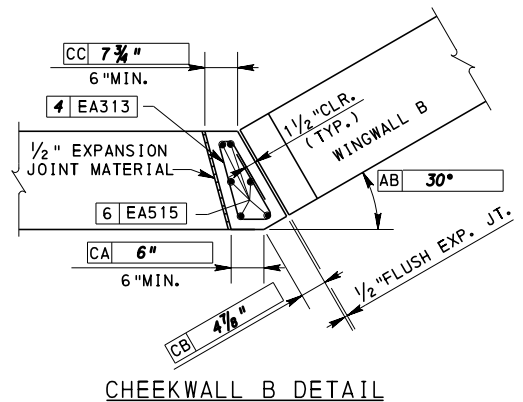
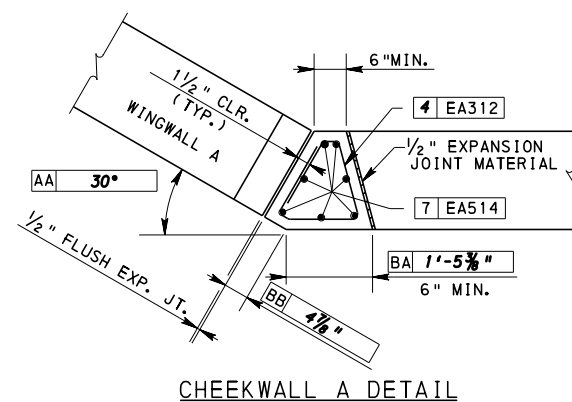
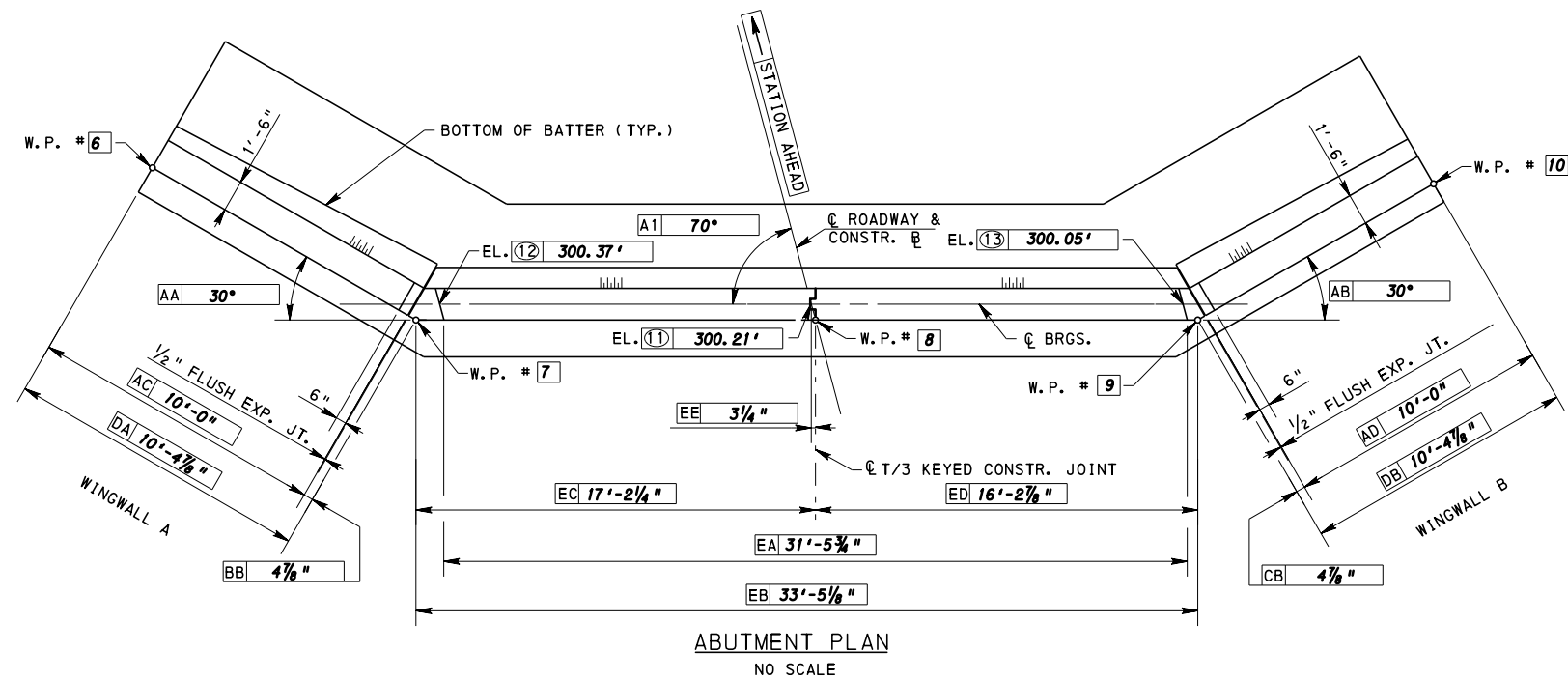
S- 00001 SHEET 7 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE
22'-0" SPAN

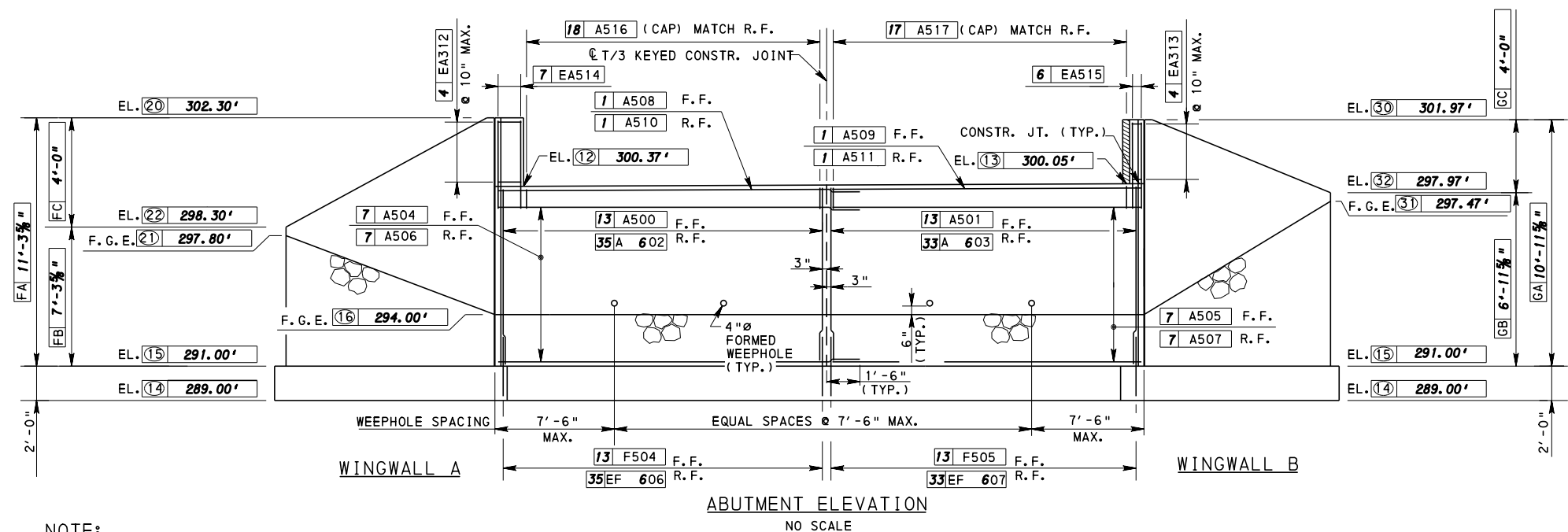
SPREAD FOOTING ABUTMENT
ABUTMENT 1 - BAR SCHEDULE

RECOMMENDED APR. 23, 2013 <i>Thomas P. Nacivca</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 7 OF 7 BLC-566M
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- LEGEND**
- F.F. DENOTES FRONT FACE
 - R.F. DENOTES REAR FACE
 - E.F. DENOTES EACH FACE
 - F.G.E. DENOTES FINISHED GROUND ELEVATION
 - BOT. DENOTES BOTTOM
 - W.P. DENOTES WORKING POINT
 - EQ. SPA. DENOTES EQUAL SPACE

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET 3
 - FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET 4
 - FOR ABUTMENT 2 FOOTING PLAN SEE SHEET 9
 - FOR ABUTMENT 2 BAR SCHEDULE, SEE SHEET 10
 - MAX. ALLOWABLE FOUNDATION PRESSURE = 8.0 kip/ft²
 - MAX DESIGN FOUNDATION PRESSURE = 7.40 kip/ft²



NOTE:
SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

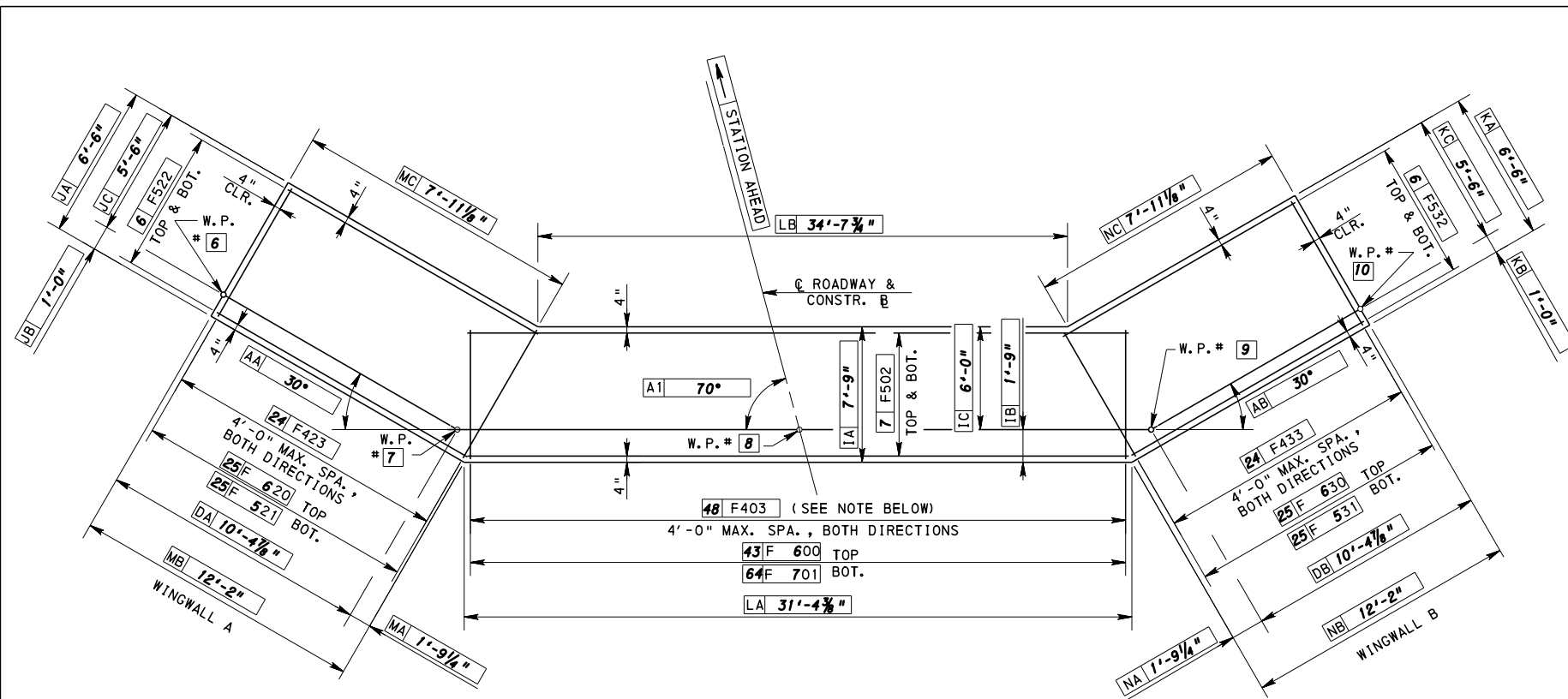
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- 00001 SHEET 8 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE
22'-0" SPAN

SPREAD FOOTING ABUTMENT
ABUTMENT 2 - LEFT SKEW



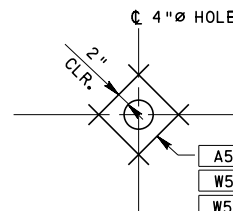
FOOTING PLAN - ABUTMENT
NO SCALE

LEGEND

- F. F. DENOTES FRONT FACE
- R. F. DENOTES REAR FACE
- E. F. DENOTES EACH FACE
- F. G. E. DENOTES FINISHED GROUND ELEVATION
- BOT. DENOTES BOTTOM
- W. P. DENOTES WORKING POINT
- EQ. SPA. DENOTES EQUAL SPACE

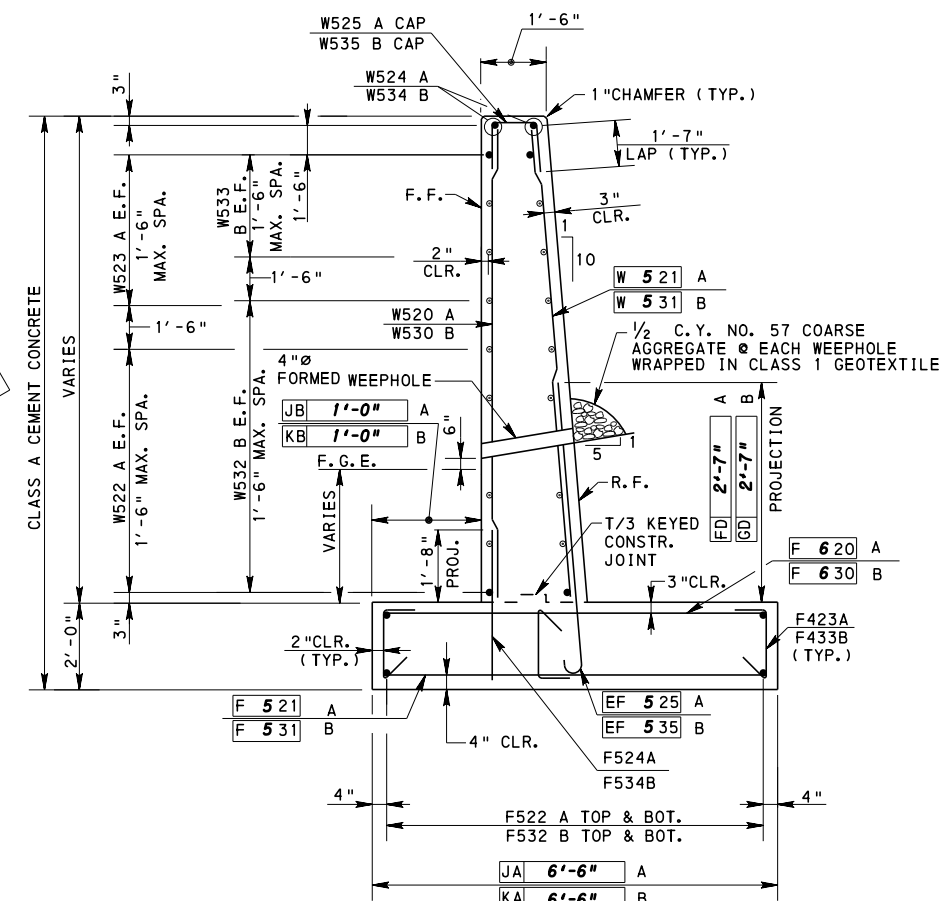
NOTE:

TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH #4 TIE BARS AT A MAXIMUM SPACING OF 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90° HOOK AT ONE END AND 135° AT THE OTHER END. ALTERNATE 90° AND 135° AT TOP IN ALTERNATE TIES.



WEEPHOLE REINFORCEMENT DETAIL
NO SCALE

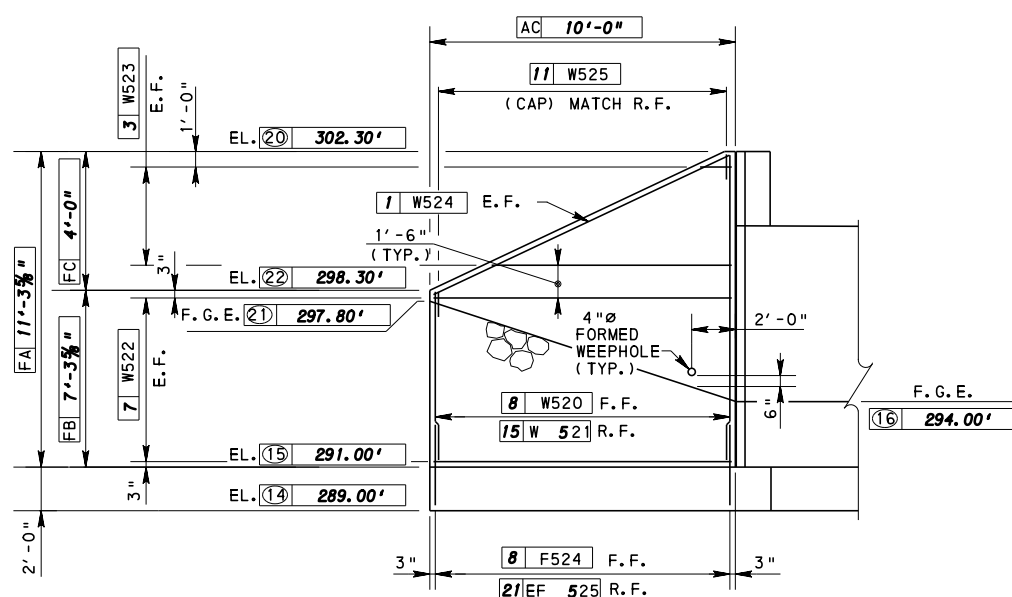
NOTE:
ADJUST REINFORCEMENT AS NECESSARY TO ACCOMMODATE OPENING.



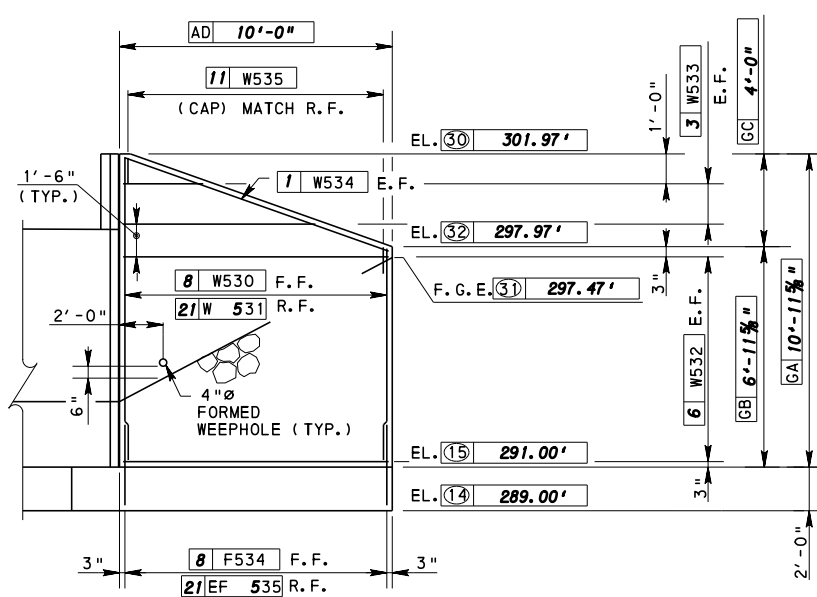
TYPICAL WING SECTION
NO SCALE

NOTES:

- FOR GENERAL NOTES, SEE SHEET 3
- FOR LOCATION OF WINGWALLS SEE STAKE-OUT SKETCH, SHEET 4
- FOR ABUTMENT 2, SEE SHEET 8
- FOR ABUTMENT 2 BAR SCHEDULE, SEE SHEET 10
- MAX. ALLOWABLE FOUNDATION PRESSURE = 8 kip/FT.²
- MAX DESIGN FOUNDATION PRESSURE = WING A = 6.32 kip/FT.²
WING B = 6.55 kip/FT.²



WINGWALL A
NO SCALE



WINGWALL B
NO SCALE

NOTE:

SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- 00001 SHEET 9 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

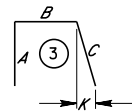
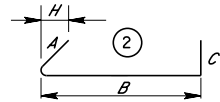
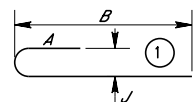
DESIGN EXAMPLE
22'-0" SPAN

SPREAD FOOTING ABUTMENT
ABUTMENT 2 - FTG. PLAN - LEFT SKEW

REINFORCEMENT BAR SCHEDULE*

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
A500	5	9'-2 3/8" TO 9'-0 1/2"	13	STR.												VARY EA. BY 1/8"
A501	5	9'-0 1/2" TO 8'-10 3/8"	13	STR.												VARY EA. BY 1/8"
A_6.02	6	9'-2 3/8" TO 9'-0 1/2"	35	STR.												VARY EA. BY 1/8"
A_6.03	6	9'-0 1/2" TO 8'-10 3/8"	33	STR.												VARY EA. BY 1/8"
A504	5	18'-11 1/4"	7	STR.												
A505	5	16'-0 1/8"	7	STR.												
A506	5	18'-4 3/8"	7	STR.												
A507	5	15'-6"	7	STR.												
A508	5	18'-11 1/4"	1	STR.												
A509	5	16'-0 1/8"	1	STR.												
A510	5	18'-4 3/8"	1	STR.												
A511	5	15'-6"	1	STR.												
EA312	3	5'-2"	4	STR.												BEND IN FIELD
EA313	3	4'-4 3/8"	4	STR.												BEND IN FIELD
EA514	5	3'-5 1/8"	7	STR.												
EA515	5	3'-5"	6	STR.												
A516	5	4'-3"	18	③	1'-7"	1'-1"	1'-7"								2"	
A517	5	4'-3"	17	③	1'-7"	1'-1"	1'-7"								2"	
A518	5	1'-0"	32	STR.												
W520	5	7'-1 3/8" TO 11'-1 3/8"	8	STR.												VARY EA. BY 6"
W_5.21	5	7'-1 3/8" TO 11'-1 3/8"	21	STR.												VARY EA. BY 2 1/4"
W522	5	9'-8"	7	STR.												
W523	5	6'-7 3/4" TO 2'-5"	3	STR.												VARY 2 EA. BY 1'-4 1/8"
W524	5	10'-5 1/4"	2	STR.												
W525	5	4'-3"	11	③	1'-7"	1'-1"	1'-7"								2"	
W526	5	1'-0"	8	STR.												
W530	5	6'-9 3/8" TO 10'-9 3/8"	8	STR.												VARY EA. BY 6"
W_5.31	5	6'-9 3/8" TO 10'-9 3/8"	21	STR.												VARY EA. BY 2 1/4"
W532	5	9'-8"	6	STR.												
W533	5	6'-7 3/4" TO 2'-5"	3	STR.												VARY 2 EA. BY 1'-4 1/8"
W534	5	10'-5 1/4"	2	STR.												
W535	5	4'-3"	11	③	1'-7"	1'-1"	1'-7"								2"	
W536	5	1'-0"	8	STR.												
F_6.00	6	7'-1"	43	STR.												
F_7.01	7	7'-1"	64	STR.												
F502	5	30'-8 3/8"	7	STR.												
F403	4	2'-3"	48	②	4 1/2"	1'-6"	4 1/2"					3"				
F504	5	3'-6"	13	STR.												
F505	5	3'-6"	13	STR.												
EF_6.06	6	5'-7"	35	①	8"	4'-11"									6"	
EF_6.07	6	5'-7"	33	①	8"	4'-11"									6"	
F_6.20	6	5'-10"	25	STR.												
F_5.21	5	5'-10"	25	STR.												
F522	5	11'-6"	6	STR.												
F423	4	2'-3"	24	②	4 1/2"	1'-6"	4 1/2"					3"				
F524	5	3'-6"	8	STR.												
EF_5.25	5	4'-10"	21	①	7"	4'-3"									5"	
F_6.30	6	5'-10"	25	STR.												
F_5.31	5	5'-10"	25	STR.												
F532	5	11'-6"	6	STR.												
F433	4	2'-3"	24	②	4 1/2"	1'-6"	4 1/2"					3"				
F534	5	3'-6"	8	STR.												
EF_5.35	5	4'-10"	21	①	7"	4'-3"									5"	

BAR TYPE LEGEND
STR. DENOTES A STRAIGHT BAR



* USE BLC-561M SHEETS 13 AND 14 TO COMPLETE BAR SCHEDULE INFORMATION.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

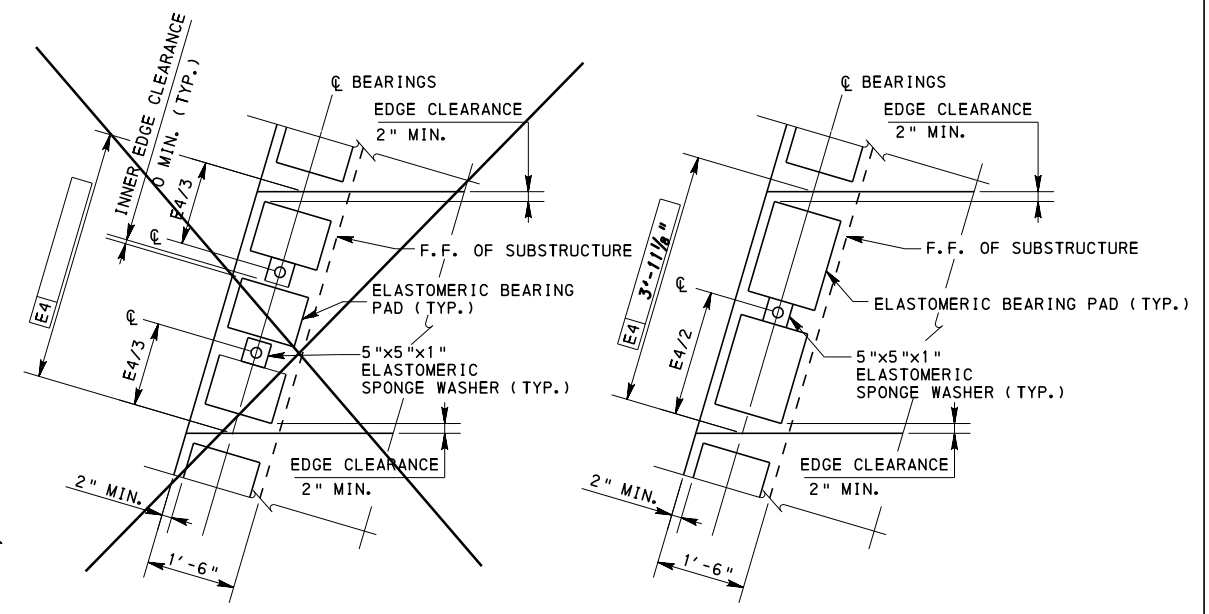
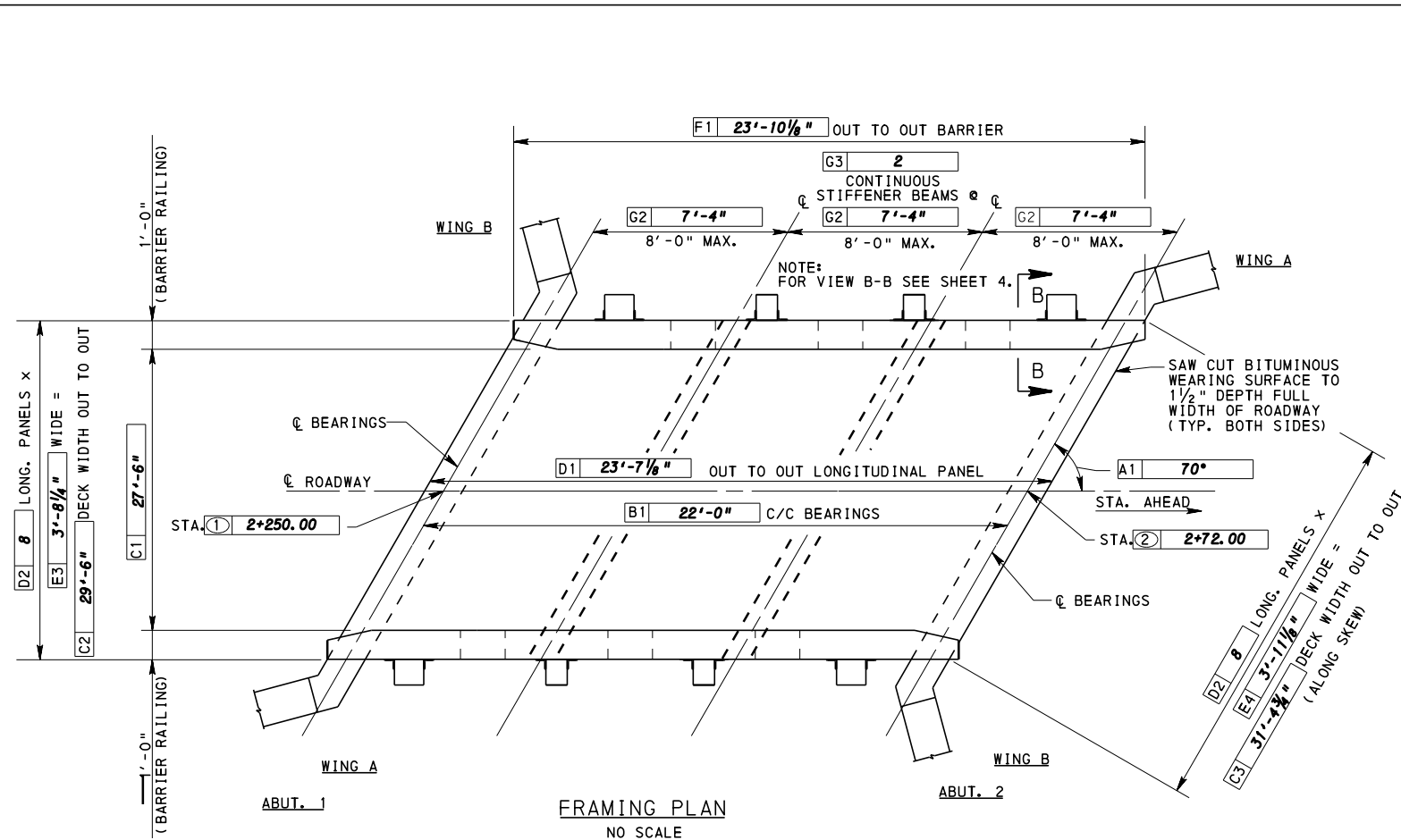
S- 00001 SHEET 10 OF 24

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

DESIGN EXAMPLE
22'-0" SPAN

SPREAD FOOTING ABUTMENT
ABUTMENT 2 - BAR SCHEDULE

RECOMMENDED APR. 23, 2013 <i>Thomas P. Nacivca</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 7 OF 7 BLC-566M
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TIMBER SILL
CONCRETE ABUTMENT
ELASTOMERIC BEARING PAD ARRANGEMENTS
NO SCALE

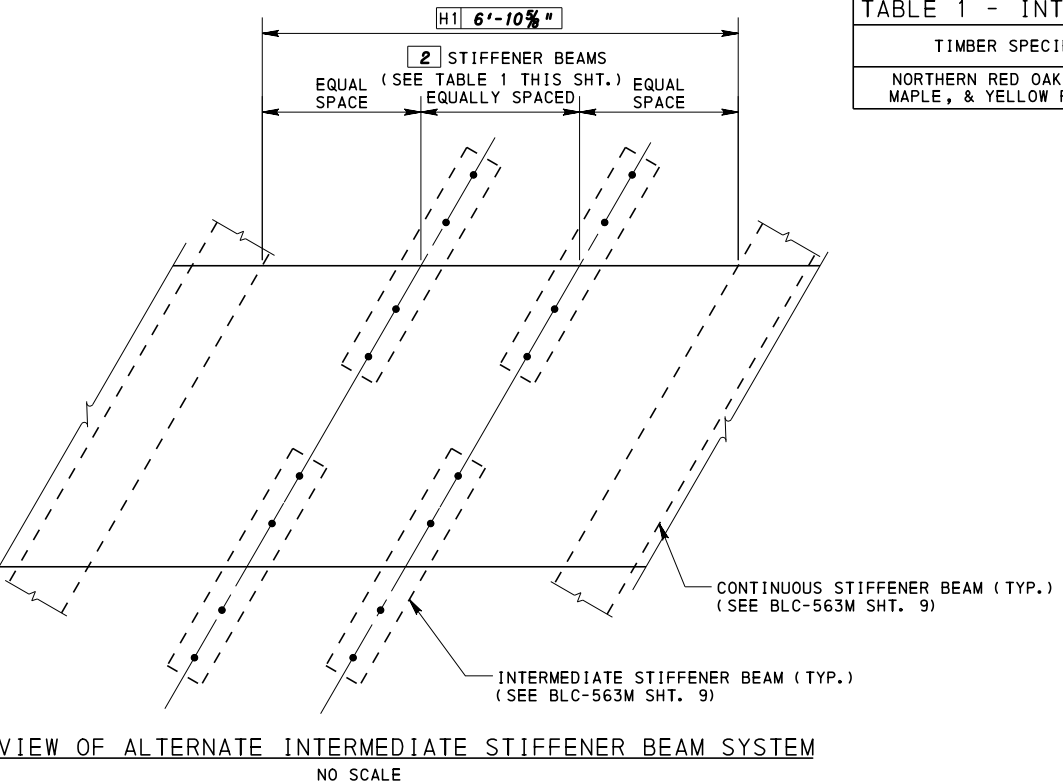
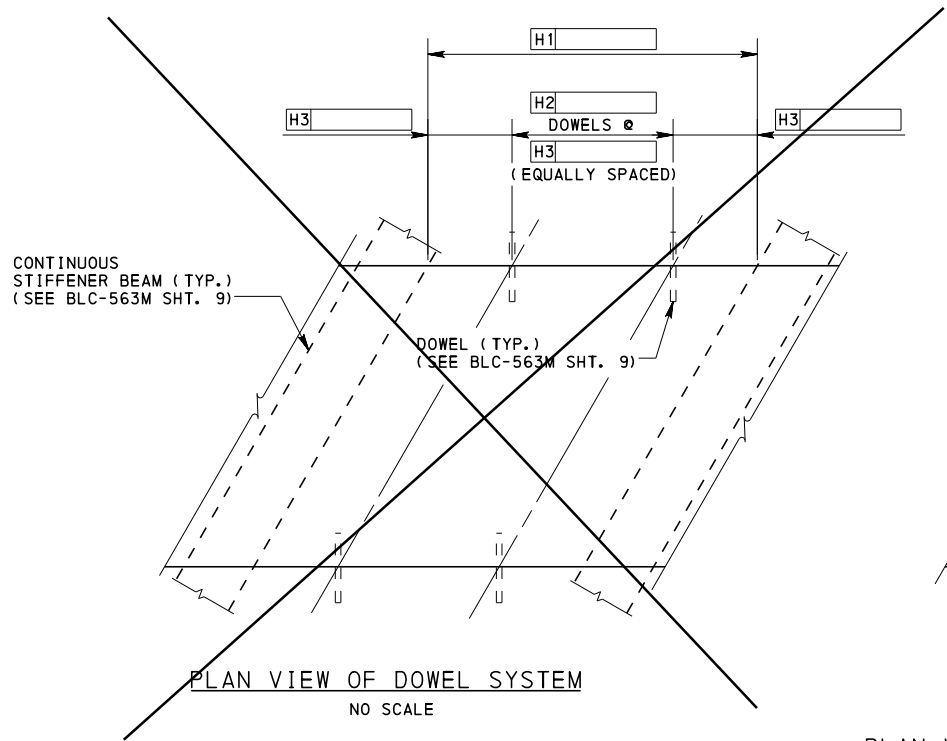


TABLE 1 - INTERMEDIATE STIFFENER BEAM DESIGN DATA

TIMBER SPECIES	MAXIMUM DESIGN SPAN (H1)	NUMBER OF STIFFENER BEAMS
NORTHERN RED OAK, RED MAPLE, & YELLOW POPLAR	6'-0"	2
	10'-0"	3

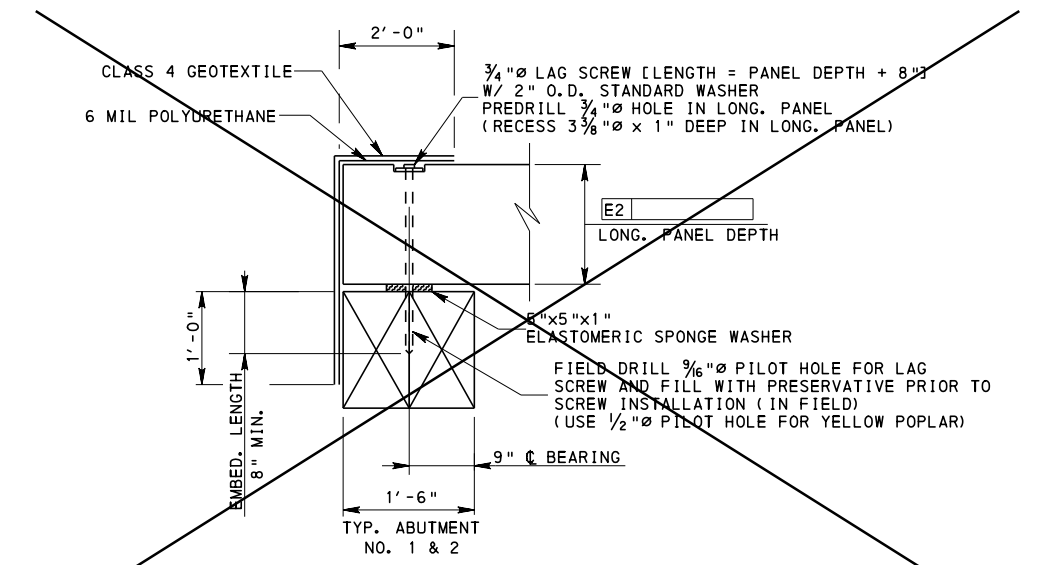
Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

S- 00001 SHEET 11 OF 24

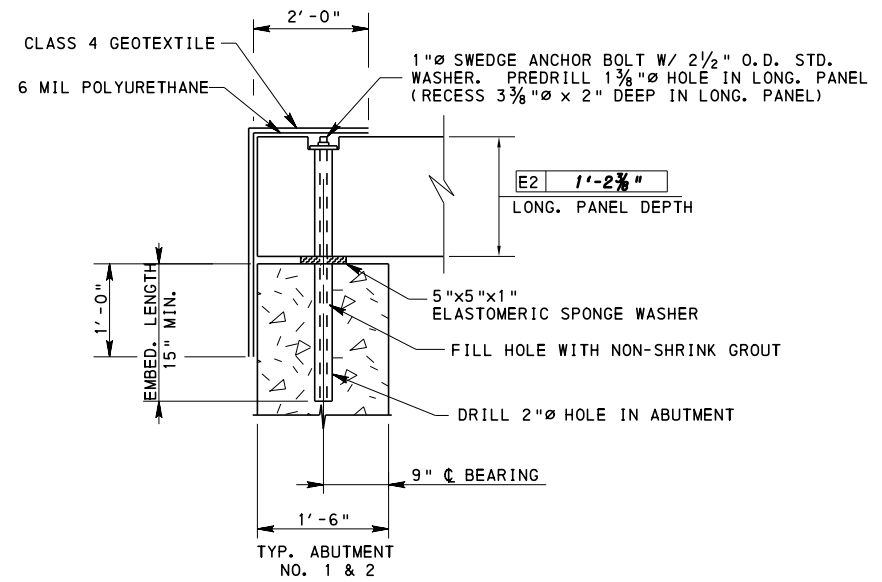
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE
22'-0" SPAN
GLULAM
LONGITUDINAL PANEL SUPERSTRUCTURE
FRAMING PLAN - LEFT SKEW

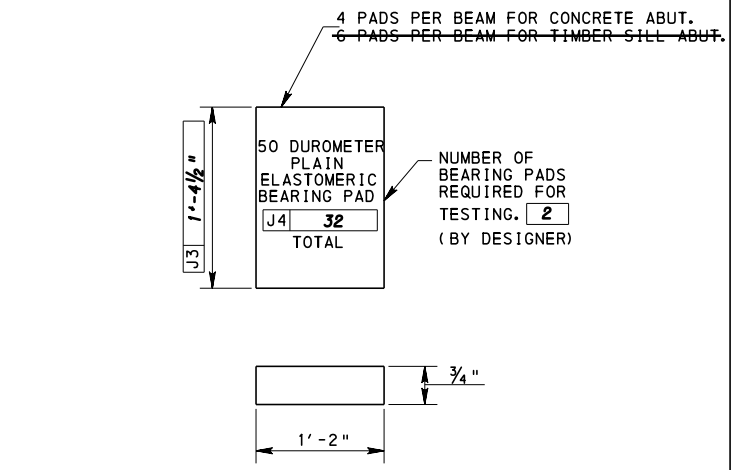
RECOMMENDED APR. 23, 2013 <i>Thomas P. Maciocco</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 6 OF 9 BLC-563M
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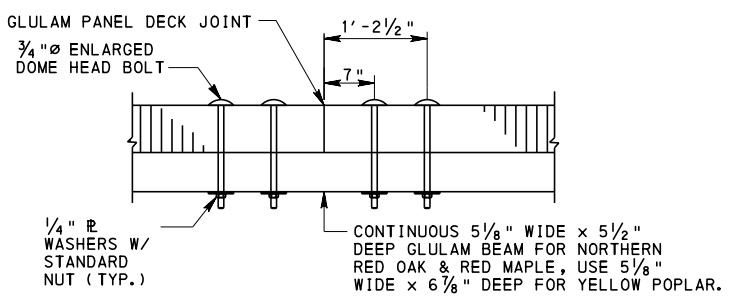
TYPICAL BEARING DETAIL - TIMBER SILL ABUTMENT
NO SCALE



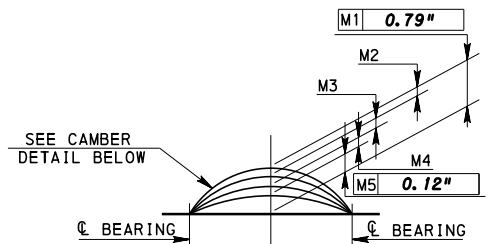
TYPICAL BEARING DETAIL - CONCRETE ABUTMENT
NO SCALE



TYPICAL ELASTOMERIC BEARING PAD DETAIL
NO SCALE



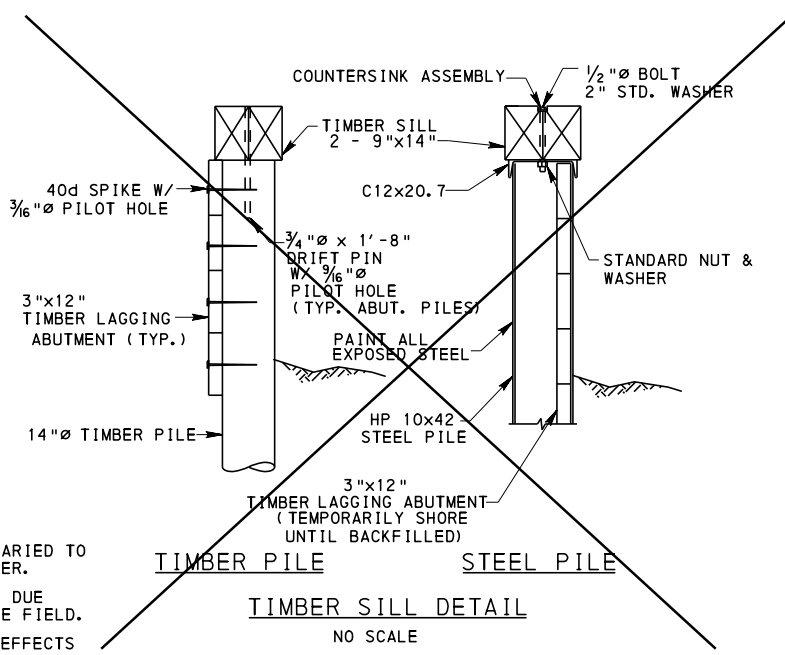
CONTINUOUS STIFFENER BEAM DETAIL
NO SCALE



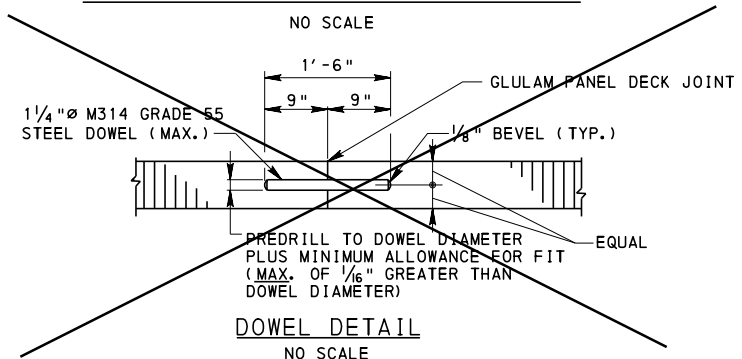
PANEL CAMBER DIAGRAM

- M1 = PRE-FABRICATED CAMBER = 3[M2 + M3]
- M2 = DEFLECTION DUE TO DEAD LOAD OF BEAM
- M3 = DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD
- M4 = DEFLECTION DUE TO CREEP = 1.5 [M2 + M3]
- M5 = NET FINAL CAMBER = M1 - 2.5 [M2 + M3]

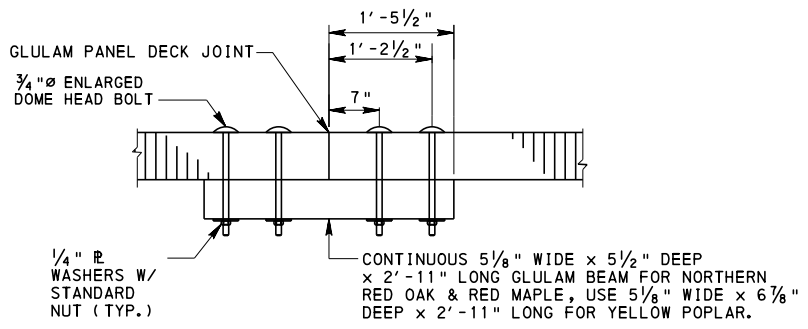
- THE THICKNESS OF THE WEARING COURSE WILL BE VARIED TO COMPENSATE FOR ANY INACCURACIES IN PANEL CAMBER.
- THE PRE-FABRICATED CAMBER LESS THE DEFLECTION DUE TO DEAD LOAD OF PANEL SHOULD BE CHECKED IN THE FIELD.
- DEFLECTION CALCULATIONS DO NOT CONSIDER LOAD EFFECTS DUE TO FUTURE WEARING SURFACE.



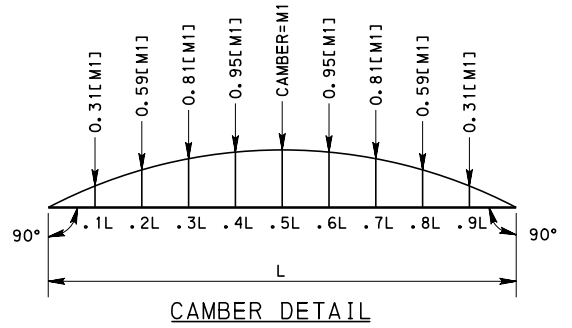
TIMBER PILE
STEEL PILE
TIMBER SILL DETAIL
NO SCALE



DOWEL DETAIL
NO SCALE



ALTERNATE INTERMEDIATE STIFFENER BEAM DETAIL
NO SCALE



CAMBER DETAIL

ELASTOMERIC BEARING PAD NOTES:

1. MANUFACTURE ALL BEARINGS IN ACCORDANCE WITH THE COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PLANS AND SPECIFICATIONS (PUB. 408) SECTION 1113 AND DM-4.
2. ALL BEARING PADS ARE TO BE MOLDED TO DESIGN DIMENSIONS. CUTTING TO SIZE AFTER FABRICATION IS PROHIBITED.
3. PROVIDE NEOPRENE 50 ± 5 DUROMETER.
4. VULCANIZE PATCH PIN GROOVES.

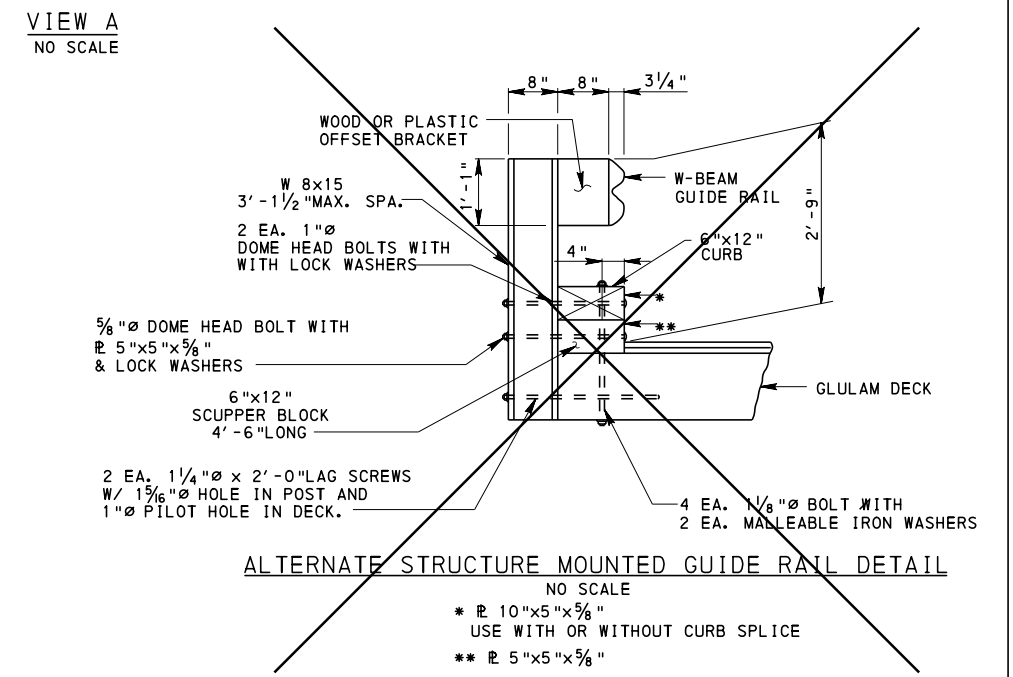
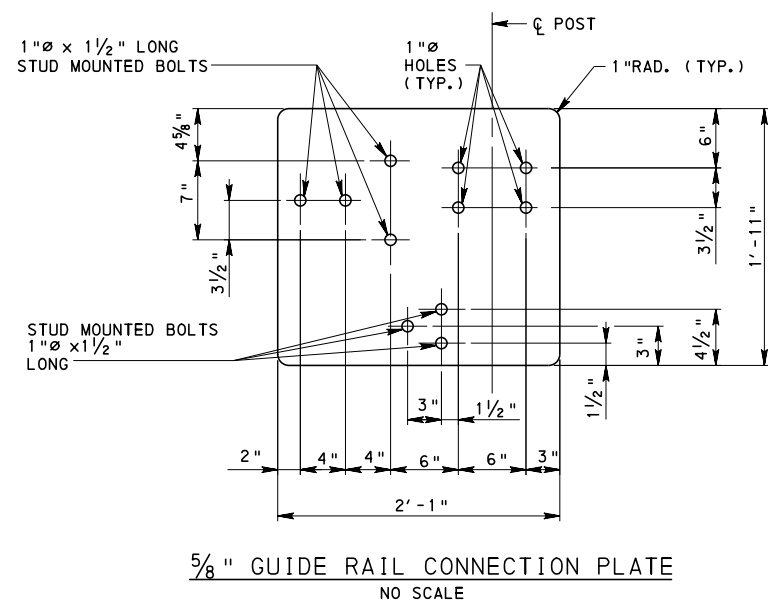
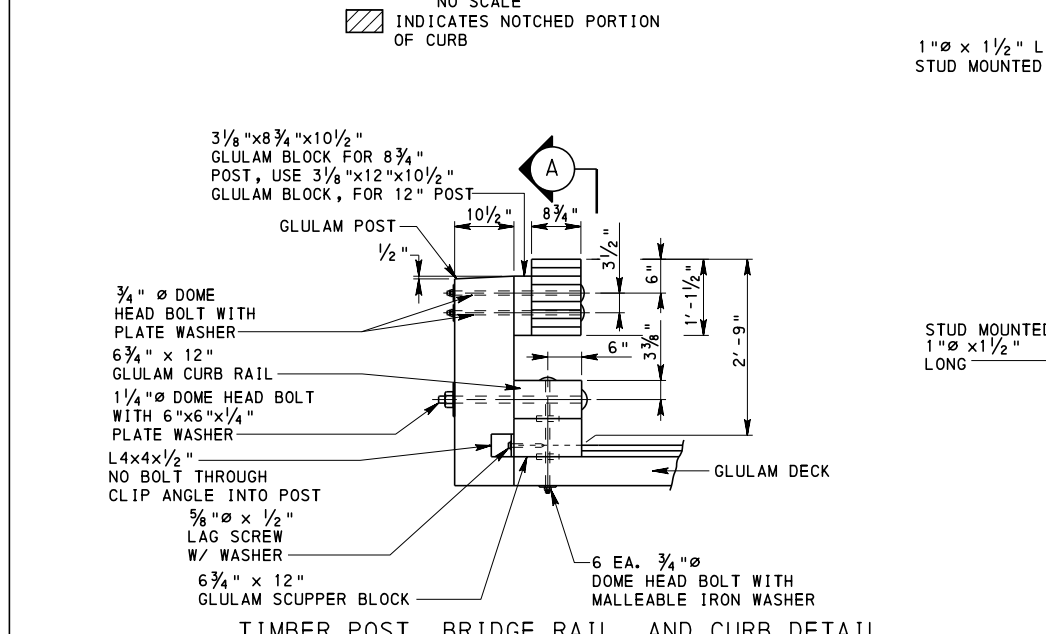
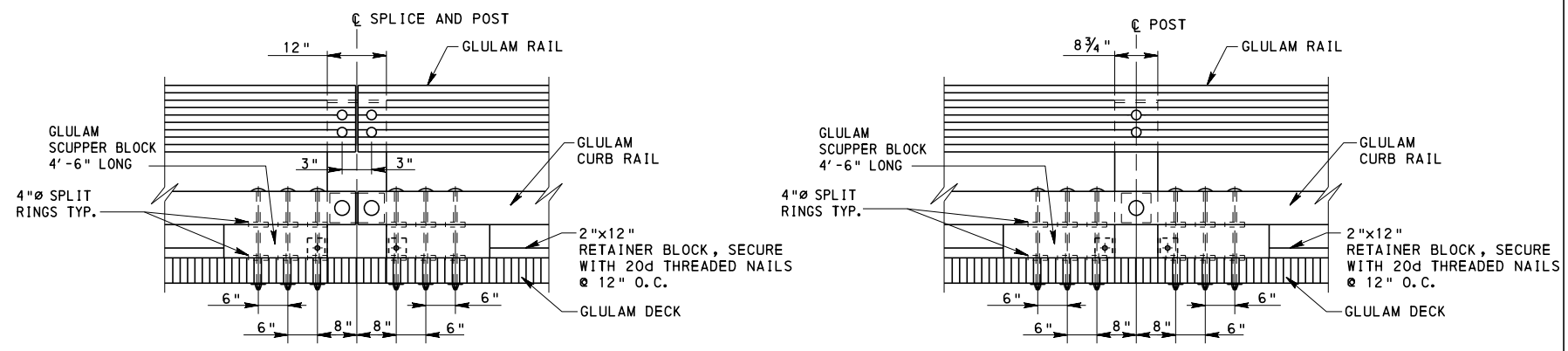
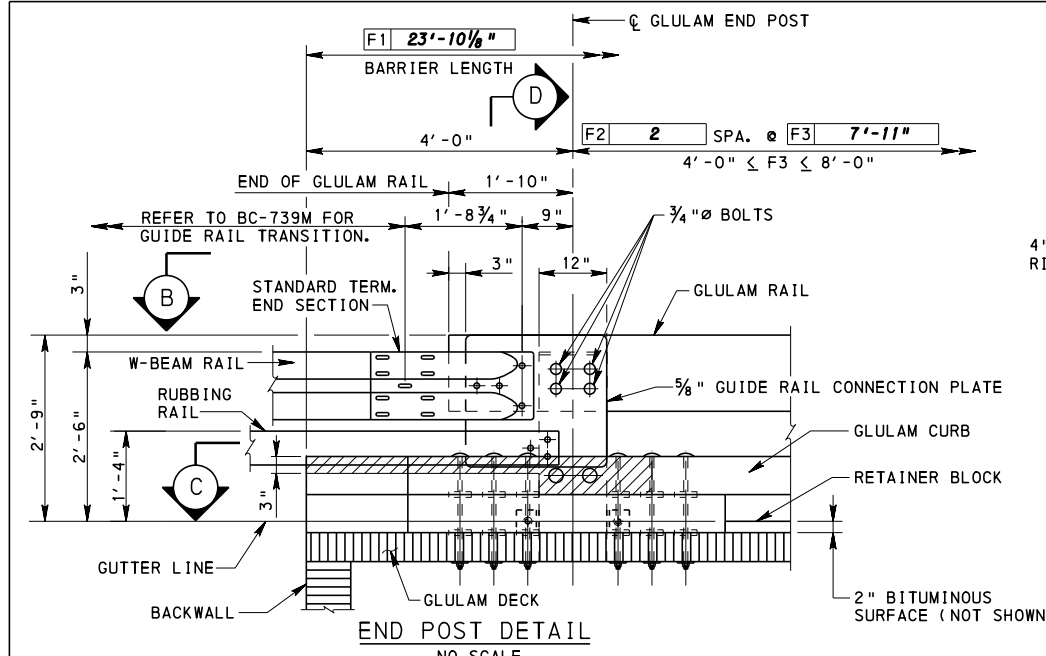
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE
22'-0" SPAN
GLULAM
LONGITUDINAL PANEL SUPERSTRUCTURE
SUPERSTRUCTURE DETAILS

RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 9 OF 9
THOMAS P. NACIOWA
CHIEF BRIDGE ENGINEER
ACTING DIR. BUR. OF PROJECT DELIVERY
BLC-563M

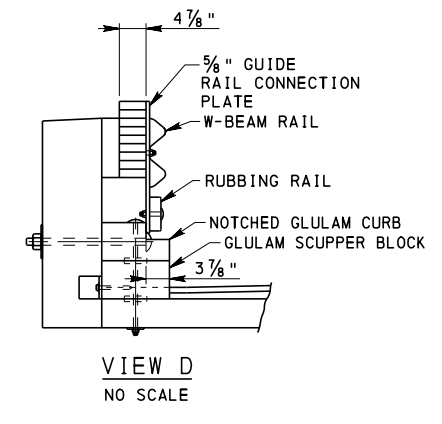
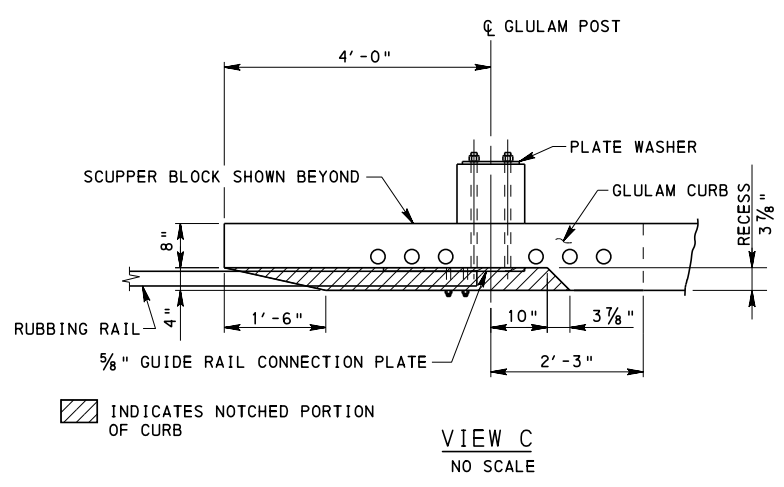
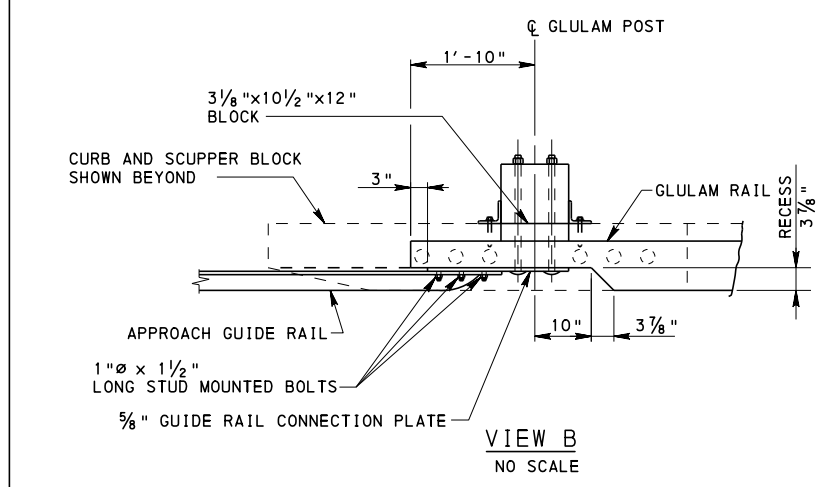


- NOTES:**
1. THIS BARRIER SHOWN ON THE GENERAL PLAN AND FRAMING PLAN SHEET.
 2. DO NOT USE TREATED HARDWOOD GLUE LAMINATED RAILINGS WHERE PROLONGED EXPOSURE TO DIRECT HUMAN CONTACT IS LIKELY WITHOUT APPLICATION OF AN APPROVED FINISH SEALER.

NOTES:

APPROACH GUIDE RAIL AND CONNECTION DEVICES ARE ROADWAY ITEMS.

IT IS THE DESIGNER'S RESPONSIBILITY TO VERIFY THAT LAG BOLT CONNECTIONS DO NOT VIOLATE MIN. EDGE DISTANCES REQUIREMENTS AT DECK PANEL JOINTS.



Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S-00001 SHEET 13 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

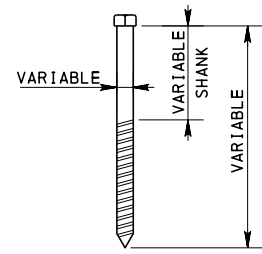
DESIGN EXAMPLE
22'-0" SPAN
SHEETS COMMON TO
BLC 562M, 563M, & 564M
BRIDGE RAIL DETAILS

RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 1 OF 3

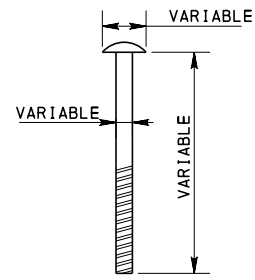
Thomas P. Nacivica
CHIEF BRIDGE ENGINEER

ACTING DIR. BUR. OF PROJECT DELIVERY

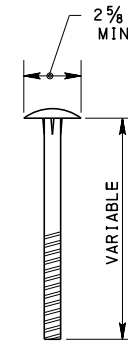
BLC-565M



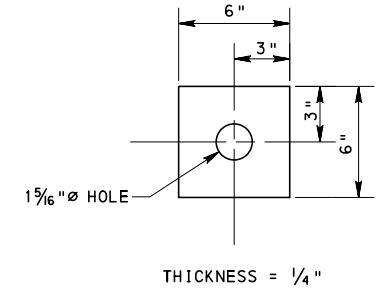
LAG SCREW



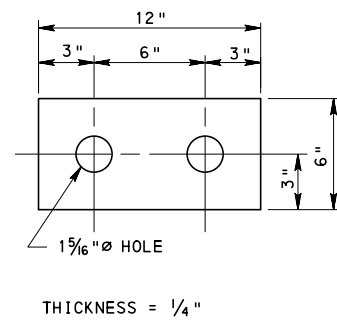
DOME HEAD BOLT



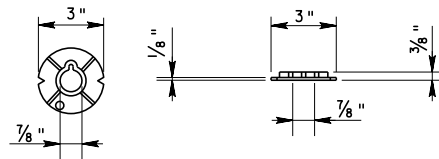
$\frac{3}{4}$ " \varnothing ENLARGED DOMED HEAD BOLT



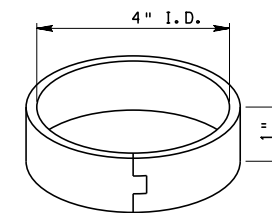
$\frac{1}{4}$ " PLATE WASHER A



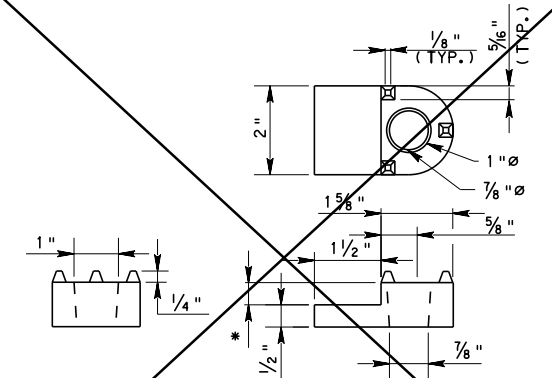
$\frac{1}{4}$ " PLATE WASHER B



MALLEABLE IRON WASHER



4" DIAMETER SPLIT RING



OFFSET SHOE

NOTE:
STANDARD BOLTS, NUTS, AND WASHER NOT SHOWN.

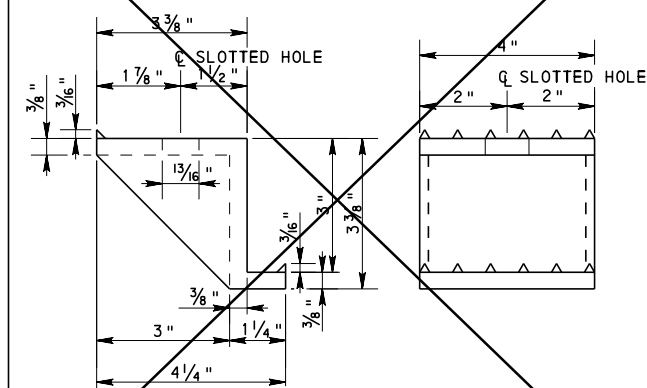
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- 00001 SHEET 14 OF 24

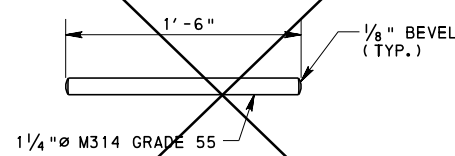
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE
22'-0" SPAN
SHEETS COMMON TO
BLC 562M, 563M, & 564M
TYPICAL HARDWARE DETAILS

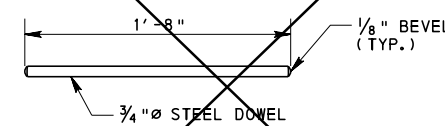
RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 3 OF 3
BLC-565M



ALUMINUM CLIP



DOWEL



DRIFT PIN

CONTROL DIMENSIONS				
CODE	DESCRIPTION	SOURCE	VALUE (3)	
A1	SKEW ANGLE	DESIGNER		70 DEG.
A2	% GRADE (LOOKING STATIONS AHEAD)	DESIGNER		3%
B1	SPAN LENGTH-CL TO CL BEARING	DESIGNER		22'-0"
B2	FRONT FACE TO FRONT FACE OF ABUTMENTS	(B1 - $\frac{1.50}{\sin(A1)}$)	20.4037	20'-4 7/8"
B3	WATERWAY OPENING	(B2) SIN(A1)	19.1732	19'-2 1/8"
C1	CURB TO CURB ROADWAY WIDTH (NORMAL)	TABLE 2	27.5000	27'-6"
C2	DECK WIDTH OUT TO OUT	C1+2.00	29.5000	29'-6"
C3	DECK WIDTH OUT TO OUT ALONG SKEW	$\frac{C2}{\sin(A1)}$	31.3932	31'-4 3/4"
D1	OUT TO OUT LONGITUDINAL PANEL LENGTH	$B1 + \frac{1.50}{\sin(A1)}$	23.5963	23'-7 1/8"
D2	NUMBER OF LONGITUDINAL PANELS	$\left\{ \frac{C2}{4.00} \right\}$ (1)	7.3750	8
E1	LONGITUDINAL PANEL SPECIES COMBINATION	TABLE 2 - BLC-561M, SHEET 9		NORTHERN RED OAK
E2	LONGITUDINAL PANEL DEPTH	TABLE 2 - BLC-561M, SHEET 9	1.1979	1'-2 3/8"
E3	LONGITUDINAL PANEL WIDTH (NORMAL)	$\frac{C2}{D2}$	3.6875	3'-8 1/4"
E4	LONGITUDINAL PANEL WIDTH ALONG SKEW	$\frac{C3}{D2}$	3.9242	3'-11 1/8"
F1	OUT TO OUT BARRIER LENGTH	$D1 + \frac{0.6667}{\tan(A1)}$	23.8390	23'-10 1/8"
F2	NUMBER OF GUIDE RAIL TIMBER POST SPACES	$\left\{ \frac{F1 - 8.00}{8.00} \right\}$ (1)	1.9799	2
F3	GUIDE RAIL POST SPACING	$\frac{F1 - 8.00}{F2}$	7.9195	7'-11"
G1	NUMBER OF SPACES BETWEEN CL BEARINGS	$\left\{ \frac{B1}{8.00} \right\}$ (1) IF B1 ≤ 8.00 THEN G1 = 2	2.7500	3
G2	CONTINUOUS STIFFENER BEAM SPACING/DESIGN SPAN	$\frac{B1}{G1}$	7.3333	7'-4"
G3	NUMBER OF CONTINUOUS STIFFENER BEAMS	G1-1	2.0	2
H1	DESIGN SPAN	$G2 - \frac{0.4167}{\sin(A1)}$	6.8899	6'-10 1/2"
H2	NO. OF DOWELS	TABLE 1 (THIS SHEET)	--	----
H3	DOWEL SPACING	H1/(H2+1)	--	----
H4	NUMBER OF INTERMEDIATE STIFF. BEAMS BETWEEN CONT. STIFF. BEAMS AT EA. DECK PANEL JOINT	SEE TABLE 1 ON BLC-563M SHEETS 6, 7, AND 8	3.0	3.0
H5	INTERMEDIATE STIFFENER BEAM QUANTITY (PER STIFFENER)	6.86 F.B.M. NORTHERN RED OAK AND RED MAPLE (5) 8.57 F.B.M. YELLOW POPLAR (5)	6.86	6.86
J1	BEARING PAD LENGTH CONSTRAINT #1	$\frac{E4}{2} - \frac{0.4167}{2} - \frac{0.5833}{\tan(A1)} - 0.1667$ (CONCRETE ABUTMENT)	1.3748	1'-4 1/2"
J2	BEARING PAD LENGTH CONSTRAINT #2	$\frac{E4}{3} - \frac{0.4167}{2} - \frac{0.5833}{\tan(A1)} - 0.1667$ (TIMBER SILL ABUTMENT)	--	----
J3	BEARING PAD LENGTH	USE THE VALUE J1 (CONCRETE ABUTMENT) USE THE LESSER VALUE BTWN. J1 & J2 (TIMBER SILL ABUTMENT)	1.3748	1'-4 1/2"
J4	NUMBER OF BEARING PADS	D2*4 (CONCRETE ABUTMENT) D2*6 (TIMBER SILL ABUTMENT)	32	32

CONTROL STATIONS AND ELEVATIONS				
CODE	LOCATION	SOURCE	VALUE (ft.)	
			STATION	P.G. ELEV.
①	CL ROADWAY AT CL BRG. ABUT. 1	DESIGNER	2+50	301.25
②	CL ROADWAY AT CL BRG. ABUT. 2	DESIGNER	2+72	301.91
③	CL ROADWAY AT BEGIN OF STR.	STA ① - $\frac{0.75}{\sin(A1)}$	2+49.2	
④	CL ROADWAY AT END OF STR.	STA ② + $\frac{0.75}{\sin(A1)}$	2+72.8	
⑤	CL ROADWAY AT FRONT FACE ABUT. 1	STA ① + $\frac{0.75}{\sin(A1)}$	2+50.8	
⑥	CL ROADWAY AT FRONT FACE ABUT. 2	STA ② - $\frac{0.75}{\sin(A1)}$	2+71.2	

TABLE 1 - DOWEL DESIGN DATA		
TIMBER SPECIES	MAXIMUM DESIGN SPAN (H1)	NO. OF (2) DOWELS (H2)
NORTHERN RED OAK & RED MAPLE	3'-11"	3
	4'-7"	4
	5'-2"	5
	5'-10"	6
	6'-5"	7
	7'-1"	8
	7'-9"	9
	8'-5"	10
YELLOW POPLAR	4'-1"	5
	4'-6"	6
	5'-1"	7
	5'-7"	8
	6'-2"	9
	6'-9"	10
	7'-4"	11
	7'-10"	12

FOOTNOTES FOR TABLES

- (1) ROUND TO THE NEXT WHOLE NUMBER - ONLY WITHIN ()
- (2) NO. OF DOWELS IS BASED ON THE USE OF AASHTO M314, GRADE 55 SMOOTH STEEL DOWELS
- (3) SHOW ALL DIMENSIONS IN FEET AND INCHES UNLESS NOTED OTHERWISE.
- (4) FOR QUANTITY CALCULATION, TIMBER ELEMENT WIDTH AND LENGTH ARE IN FEET AND ELEMENT THICKNESS OR DEPTH IS IN INCHES IN ORDER TO OBTAIN FEET BOARD MEASURE.
- (5) DESIGNER CHOOSES EITHER STEEL DOWELS OR ALTERNATE INTERMEDIATE STIFFENER BEAM SYSTEM TO PROVIDE TRANSVERSE CONNECTION OF GLULAM LONGITUDINAL PANELS. CROSS OUT APPROPRIATE DETAILS ON BLC-563M SHEETS 6, 7, 8 AND 9 AS REQUIRED.
- (6) QUANTITY BASED ON 12" WIDE POSTS AT ALL END LOCATIONS.
- (7) QUANTITY BASED ON 8 3/4" WIDE POSTS AT ALL INTERMEDIATE LOCATIONS.
- (8) QUANTITY INCLUDES RAIL SPACER BLOCK.

QUANTITIES					
ITEM	QUANTITY FORMULA	UNIT	SUBTOTAL	TOTAL	
GLUE LAMINATED TIMBER PANELS	C2*E2*D1 (4)	F. B. M.	10,006.31	10,006	
GLUE LAMINATED TIMBER CONTINUOUS STIFFENER BEAMS	(G3) (C3) (0.4271) (5.5") (NORTHERN RED OAK AND RED MAPLE) (4)	F. B. M.	147.49	148	
	(G3) (C3) (0.4271) (6.875") (YELLOW POPLAR) (4)	F. B. M.			
GLUE LAMINATED TIMBER INTERMEDIATE STIFFENER BEAMS	(D2-1) (G1) (H4) (H5) (4)	F. B. M.	432.18	432	
GLUE LAMINATED TIMBER RAILING END POST (6) (8)	4(1.00*0.875) (E2+2.917) + 4(0.26*0.875*12.0") (4)	F. B. M.	25.32		
GLUE LAMINATED TIMBER RAILING INTERMEDIATE POST (7) (8)	2(F2-1) (0.875*0.729) (E2+35.0") + 2(F2-1) (0.26*0.875*8.75") (4)	F. B. M.	66.97		
GLUE LAMINATED TIMBER RAILING	2(F2*F3+3.667) (1.125) (8.75") (4)	F. B. M.	383.91	1028	
GLUE LAMINATED TIMBER CURB	2*F1 (1.00) (6.75") (4)	F. B. M.	321.83		
GLUE LAMINATED TIMBER SCUPPER BLOCK	2(F2+1) (4.50) (1.00) (6.75") + (7.0) (1.0) (6.75") (4)	F. B. M.	229.50		
WATERPROOF MEMBRANE	(D1) (C1) $\left(\frac{1 \text{ yd}^2}{9 \text{ ft}^2} \right)$	S. Y.	72.10	72	
CLASS 4 GEOTEXTILE	(E2+3.00) (2) (C3) $\left(\frac{1 \text{ yd}^2}{9 \text{ ft}^2} \right)$	S. Y.	29.29	29	
WATERPROOF MEMBRANE, EDGE PROTECTION	[2(E2+2.25) (D1) + (E2+3.00) (2) (C3)] $\left(\frac{1 \text{ yd}^2}{9 \text{ ft}^2} \right)$	S. Y.	47.37	47	
BITUMINOUS WEARING COURSE	(0.1667*C1+0.005*C ²) (D1) $\left(\frac{1 \text{ lb}}{\text{ft}^2} \right) \left(\frac{1 \text{ TON}}{2000 \text{ lb}} \right)$	TON	13.82	14	

Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

S-00001 SHEET 15 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE
22'-0" SPAN

DATA ASSEMBLY SHEETS
GLULAM LONGITUDINAL PANELS

RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 8 OF 20
BLC-561M

CONTROL DIMENSIONS				
CODE	DESCRIPTION	SOURCE	VALUE (5)	
A1	SKEW ANGLE	A1 (1)		70 DEG.
A2	% GRADE (LOOKING STATIONS AHEAD)	A2 (1)		3%
C1	CURB TO CURB ROADWAY WIDTH (NORMAL)	C1 (1)	27.5000	27'-6"
C2	DECK WIDTH OUT TO OUT	C2 (1)	29.5000	29'-6"
A	DECK OR LONG. PANEL THICKNESS	USE E1 FOR GLULAM & STEEL BEAM OR E2 FOR LONG. PANEL (1)	1.1979	1'-2 3/8"
B	BEAM DEPTH	USE L4 FOR GLULAM BEAM, L5 FOR STEEL BEAM OR ZERO (0) FOR LONG. PANEL (1)	0	0
C	BEARING PAD THICKNESS	USE N3 OR P3 FOR GLULAM AND STEEL BEAM OR 0.0625 FOR LONG. PANEL (1)	.0625	3/8"
AA	WINGWALL "A" SKEW ANGLE	DESIGNER (15°00'00" MIN., 45°00'00" MAX.) (4)	-	30 DEG.
AB	WINGWALL "B" SKEW ANGLE	DESIGNER (15°00'00" MIN., 45°00'00" MAX.) (4)	-	30 DEG.
AC	WINGWALL "A" LENGTH	DESIGNER (4)	10.0000	10'-0"
AD	WINGWALL "B" LENGTH	DESIGNER (4)	10.0000	10'-0"
BA	CHEEKWALL "A"	$0.5 + \left(\frac{1.5}{\tan(A1)} \right) + 1.5 \left(\tan \left(\frac{AA}{2} \right) \right)$	1.4479	1'-5 3/8"
BB	CHEEKWALL "A"	$1.5 \left(\tan \left(\frac{AA}{2} \right) \right)$	.4019	4 7/8"
CA	CHEEKWALL "B"	$0.5 - \left(\frac{1.5}{\tan(A1)} \right) + 1.5 \left(\tan \left(\frac{AB}{2} \right) \right)$	.3560	4 1/4"
IF CA > 6" USE CONDITION 1 EQUATIONS, OTHERWISE USE CONDITION 2 EQUATIONS				
CONDITION 1 EQUATIONS				
CA	CHEEKWALL "B"	AS CALCULATED ABOVE	-	-
CB	CHEEKWALL "B"	$1.5 \left(\tan \left(\frac{AB}{2} \right) \right)$	-	-
CC	CHEEKWALL "B"	0.5	-	-
CONDITION 2 EQUATIONS				
CA	CHEEKWALL "B"	0.5	.5	6"
CB	CHEEKWALL "B"	$\frac{1.5 - 1.5 \cos(AB)}{\sin(AB)}$	.4019	4 7/8"
CC	CHEEKWALL "B"	$0.5 + \left(\frac{1.5}{\tan(A1)} \right) - 1.5 \left(\tan \left(\frac{AB}{2} \right) \right)$	.6440	7 3/4"
DA	WINGWALL "A" LENGTH	AC+BB	10.4019	10'-4 7/8"
DB	WINGWALL "B" LENGTH	AD+CB	10.4019	10'-4 7/8"
EA	ABUTMENT LENGTH	$\frac{C2 + 0.0833}{\sin(A1)}$	31.4819	31'-5 3/4"
EB	ABUTMENT LENGTH	EA+BA+CA	33.4300	33'-5 1/8"
EC	ABUTMENT LENGTH	$\frac{EA}{2} + BA$	17.1889	17'-2 1/4"
ED	ABUTMENT LENGTH	$\frac{EA}{2} + CA$	16.2410	16'-2 7/8"
EE	ABUTMENT LENGTH	$\frac{0.75}{\tan(A1)}$	.2730	3 1/4"
FA	WINGWALL "A" HEIGHT	(20) - (15) (2)	10.3100	10'-3 3/4"
FB	WINGWALL "A" HEIGHT	(22) - (15) (2)	6.3100	6'-3 3/4"
FC	WINGWALL "A" HEIGHT	(20) - (22) (2)	4.0000	4'-0"
FD	WINGWALL REINFORCEMENT PROJECTION	DESIGNER (3)	2.5833	2'-7"
GA	WINGWALL "B" HEIGHT	(30) - (15) (2)	10.6400	10'-7 3/4"
GB	WINGWALL "B" HEIGHT	(32) - (15) (2)	6.6400	6'-7 3/8"
GC	WINGWALL "B" HEIGHT	(30) - (32) (2)	4.0000	4'-0"
GD	WINGWALL REINFORCEMENT PROJECTION	DESIGNER (3)	2.5833	2'-7"
HA	HEIGHT OF FINISH GRADE CHAMFER (ABUTMENT)	(16) - (15) (2)	3.0000	3'-0"
HB	REAR FACE REINFORCEMENT PROJECTION (ABUTMENT)	DESIGNER (3)	3.2500	3'-3"
IA	ABUTMENT FOOTING WIDTH	DESIGNER (3)	7.2500	7'-3"
IB	ABUTMENT FOOTING WIDTH	DESIGNER (3)	1.5833	1'-7"
IC	ABUTMENT FOOTING WIDTH	IA - IB	5.6667	5'-8"
JA	WINGWALL "A" FOOTING WIDTH	DESIGNER (3)	6.0000	6'-0"
JB	WINGWALL "A" FOOTING WIDTH	DESIGNER (3)	1.0000	1'-0"
JC	WINGWALL "A" FOOTING WIDTH	JA - JB	5.0000	5'-0"
KA	WINGWALL "B" FOOTING WIDTH	DESIGNER (3)	6.0000	6'-0"
KB	WINGWALL "B" FOOTING WIDTH	DESIGNER (3)	1.0000	1'-0"
KC	WINGWALL "B" FOOTING WIDTH	KA - KB	5.0000	5'-0"
LA	ABUTMENT FOOTING LENGTH	$EB - \frac{IB}{\tan(AA)} + \frac{JB}{\tan(AA)} - \frac{IB}{\tan(AB)} + \frac{KB}{\tan(AB)}$	31.9450	31'-11 3/4"
LB	ABUTMENT FOOTING LENGTH	$EB - \frac{IC}{\tan(AA)} + \frac{JC}{\tan(AA)} - \frac{IC}{\tan(AB)} + \frac{KC}{\tan(AB)}$	33.8000	33'-9 5/8"
MA	WINGWALL "A" FOOTING LENGTH	$\frac{IB}{\sin(AA)} - \frac{JB}{\tan(AA)}$	1.4345	1'-5 1/4"
MB	WINGWALL "A" FOOTING LENGTH	$DA + \frac{IB}{\sin(AA)} - \frac{JB}{\tan(AA)}$	11.8364	11'-10"
MC	WINGWALL "A" FOOTING LENGTH	$DA + \frac{JC}{\tan(AA)} - \frac{IC}{\sin(AA)}$	7.7288	7'-8 3/4"
NA	WINGWALL "B" FOOTING LENGTH	$\frac{IB}{\sin(AB)} - \frac{KB}{\tan(AB)}$	1.4345	1'-5 1/4"
NB	WINGWALL "B" FOOTING LENGTH	$DB + \frac{IB}{\sin(AB)} - \frac{KB}{\tan(AB)}$	11.8364	11'-10"
NC	WINGWALL "B" FOOTING LENGTH	$DB + \frac{KC}{\tan(AB)} - \frac{IC}{\sin(AB)}$	7.7288	7'-8 3/4"

FOOTNOTES FOR TABLES

- (1) SEE APPROPRIATE SUPERSTRUCTURE DATA ASSEMBLY SHEETS (BLC-561M SHEETS 1 THRU 10).
- (2) SEE BLC-561M SHEET 12 FOR CONTROL STATIONS AND ELEVATIONS.
- (3) USE PENNDOT'S LRFD ABUTMENT AND RETAINING WALL ANALYSIS AND DESIGN PROGRAM (ABLRFD) IN CONJUNCTION WITH THE DATA ASSEMBLY SHEETS TO CALCULATE THE NECESSARY DIMENSIONS AND REINFORCEMENT FOR THE ABUTMENT (WITHOUT BACKWALL), WINGWALLS, AND FOOTING.
- (4) SEE BLC-561M SHEET 12 FOR WINGWALL EXAMPLE.
- (5) SHOW ALL VALUES IN FEET AND INCHES UNLESS NOTED OTHERWISE.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- 00001 SHEET 17 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

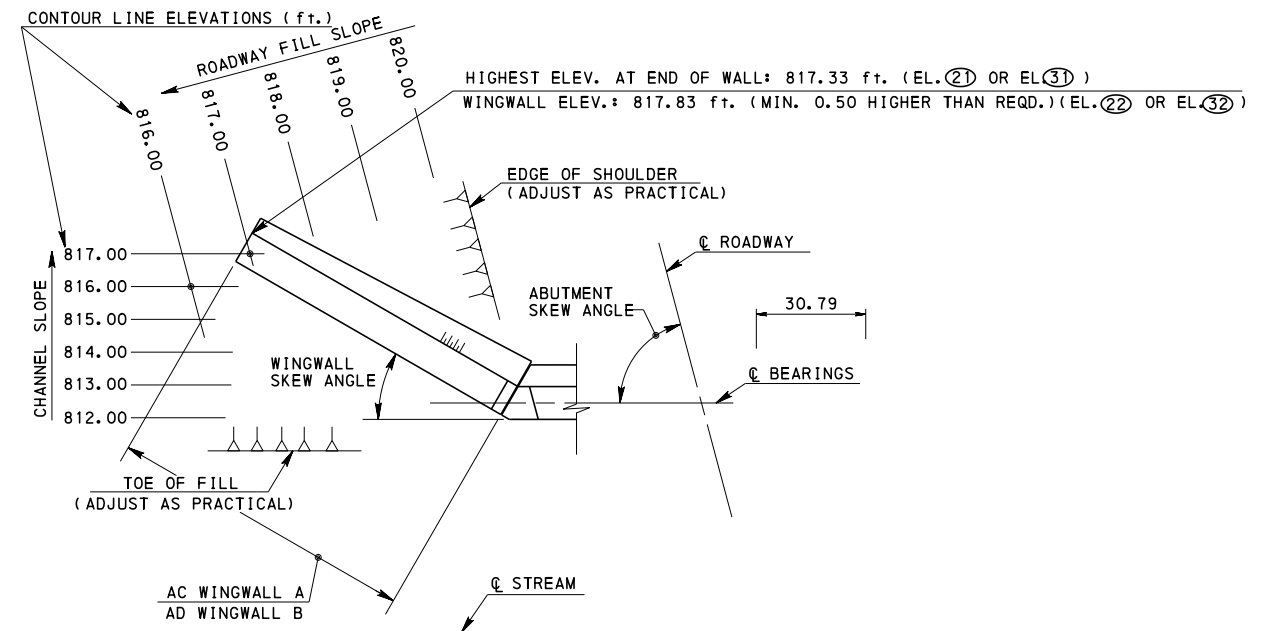
DESIGN EXAMPLE
22'-0" SPAN

DATA ASSEMBLY SHEETS
SPREAD FOOTING ABUTMENT 1

RECOMMENDED APR. 23, 2013 <i>Thomas P. Maciocco</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 11 OF 20 BLC-561M
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CONTROL STATIONS AND ELEVATIONS			
CODE	DESCRIPTION	SOURCE	VALUE (2)
10	ABUTMENT ELEVATION	USE 1 FOR ABUT. 1, OR 2 FOR ABUT. 2 (1)	301.25
11	ABUTMENT ELEVATION	10 - (0.125 + $\frac{C1}{2}$ (0.02) + A+B+C+0.0417)	299.55
12	ABUTMENT ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	11 - $\frac{A2}{100}(\frac{EA}{2}(\cos(A1)))$ ABUTMENT 1	299.39
		11 + $\frac{A2}{100}(\frac{EA}{2}(\cos(A1)))$ ABUTMENT 2	
13	ABUTMENT ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	11 + $\frac{A2}{100}(\frac{EA}{2}(\cos(A1)))$ ABUTMENT 1	299.71
		11 - $\frac{A2}{100}(\frac{EA}{2}(\cos(A1)))$ ABUTMENT 2	
14	BOTTOM OF FOOTING ELEVATION	DESIGNER	289.00
15	TOP OF FOOTING ELEVATION	14+2.00	291.00
16	F.G.E./TOP OF SCOUR PROTECTION	DESIGNER (SEE DM-4, PART A, CHAPTER 7 FOR SCOUR REQ.)	294.00
20	WINGWALL "A" ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	10 - $\frac{A2}{100}(\frac{EA}{2}(\cos(A1))) - \frac{C1}{2}(0.02) + 0.50$ ABUTMENT 1	301.31
		10 + $\frac{A2}{100}(\frac{EA}{2}(\cos(A1))) - \frac{C1}{2}(0.02) + 0.50$ ABUTMENT 2	
21	WINGWALL "A" ELEVATION	DESIGNER (SEE WINGWALL EXAMPLE)	296.81
22	WINGWALL "A" ELEVATION	21+0.50	297.31
30	WINGWALL "B" ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	10 + $\frac{A2}{100}(\frac{EA}{2}(\cos(A1))) - \frac{C1}{2}(0.02) + 0.50$ ABUTMENT 1	301.64
		10 - $\frac{A2}{100}(\frac{EA}{2}(\cos(A1))) - \frac{C1}{2}(0.02) + 0.50$ ABUTMENT 2	
31	WINGWALL "B" ELEVATION	DESIGNER (SEE WINGWALL EXAMPLE)	297.14
32	WINGWALL "B" ELEVATION	31+0.50	297.64

IN GENERAL, PROVIDE WINGWALLS OF SUFFICIENT LENGTH TO RETAIN THE ROADWAY EMBANKMENT TO THE REQUIRED EXTENT AND TO FURNISH PROTECTION AGAINST EROSION. COMPUTE WINGWALL LENGTHS USING THE ACTUAL CONDITION AT THE SITE. THE FOLLOWING METHOD IS PROPOSED TO COMPUTE THE REQUIRED LENGTHS.



WINGWALL EXAMPLE
NO SCALE

FOOTNOTES FOR TABLES

- (1) SEE APPROPRIATE SUPERSTRUCTURE DATA ASSEMBLY SHEETS (BLC-561M SHEETS SHEETS 1 THRU 10).
- (2) SHOW ALL VALUES IN FEET. USE DECIMAL NOTATION TO ACCURACY OF 0.01 ft.

QUANTITIES						
ITEM			QUANTITY FORMULA	UNIT	SUBTOTAL	TOTAL
CLASS 3 EXCAVATION	DESIGNER			C. Y.	142	142
CHEEKWALL A	CLASS AA CEMENT CONCRETE		$(BB+0.5 + \frac{BA-0.5-BB}{2})1.5 (20 - 12) (\frac{1yd^3}{27ft^3})$	C. Y.	0.13	0.2
CHEEKWALL B			$(CB+0.5 + \frac{0.5+CB-CA}{2})1.5 (30 - 13) (\frac{1yd^3}{27ft^3})$	C. Y.	-	
			$(2(CB) - 0.5 + \frac{CC+CB-0.5}{2})1.5 (30 - 13) (\frac{1yd^3}{27ft^3})$	C. Y.	0.06	
ABUTMENT	CLASS A CEMENT CONCRETE		$[1.5 (11 - 15) + (\frac{1}{2})(\frac{1}{r0})(11 - 15)^2] (EB) (\frac{1yd^3}{27ft^3})$	C. Y.	20.40	58.8
WINGWALL A			$[1.5 (22 + \frac{20 - 22}{2} - 15) + (\frac{1}{2})(\frac{1}{r0})(22 + \frac{20 - 22}{2} - 15)^2] (AC) (\frac{1yd^3}{27ft^3})$	C. Y.	5.90	
WINGWALL B			$[1.5 (32 + \frac{30 - 32}{2} - 15) + (\frac{1}{2})(\frac{1}{r0})(32 + \frac{30 - 32}{2} - 15)^2] (AD) (\frac{1yd^3}{27ft^3})$	C. Y.	6.18	
FOOTING			$(\frac{1}{2})(2.00)(LA+LB) (IA) + (MB+MC) (JA) + (NB+NC) (KA) (\frac{1yd^3}{27ft^3})$	C. Y.	26.35	
SELECTED BORROW EXCAVATION, STRUCTURE BACKFILL	DESIGNER			C. Y.	45	45
NO. 57 COARSE AGGREGATE	6 WEEPHOLES ($\frac{1}{2}cy$ WEEPHOLE)			C. Y.	3.0	3.0
REINFORCEMENT BARS	DESIGNER - CALCULATE BAR WEIGHT FROM SHEETS 13 & 14 OF BLC-561M			lb	4748	4748
REINFORCEMENT BARS, EPOXY COATED	DESIGNER - CALCULATE BAR WEIGHT FROM SHEETS 13 & 14 OF BLC-561M			lb	606	606

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- 00001 SHEET 18 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE
22'-0" SPAN

DATA ASSEMBLY SHEETS
SPREAD FOOTING ABUTMENT 1

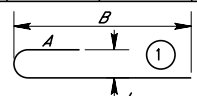
RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 12 OF 20
BLC-561M

BAR SCHEDULE																		
MARK	SIZE	SOURCE	LENGTH	SOURCE	NO.	SOURCE	TYPE	A	B	C	H	J	K	SOURCE	REMARKS	SOURCE	BAR WEIGHT lb/ft (4)	TOTAL BAR WEIGHT (5)
A500	5		FROM 8'-2 3/4" TO 8'-4 3/4"	(12)-(15)-0.1667 (11)-(15)-0.1667	13	{ EC-0.25+0.99 } +1 1.50	(1) STR.								VARIES BY 1/8"	| (11)-(12) | NO. OF BARS (3)	1.043	112.6
A501	5		FROM 8'-4 3/4" TO 8'-6 1/2"	(11)-(15)-0.1667 (13)-(15)-0.1667	13	{ ED-0.25+0.99 } +1 1.50	(1) STR.								VARIES BY 1/8"	| (13)-(11) | NO. OF BARS (3)	1.043	114.7
A 6_02	6	DESIGNER (2)	FROM 8'-2 3/4" TO 8'-4 3/4"	(12)-(15)-0.1667 (11)-(15)-0.1667	24	{ EC-1.00(TAN(AA))-0.25+0.99 } +1 REQ. SPA. (DESIGNER)	(1)(2) STR.								VARIES BY 1/8"	| (11)-(12) | NO. OF BARS (3)	1.502	299.3
A 6_03	6	DESIGNER (2)	FROM 8'-4 3/4" TO 8'-6 1/2"	(11)-(15)-0.1667 (13)-(15)-0.1667	23	{ ED-1.00(TAN(AB))-0.25+0.99 } +1 REQ. SPA. (DESIGNER)	(1)(2) STR.								VARIES BY 1/8"	| (13)-(11) | NO. OF BARS (3)	1.502	292.4
A504	5		18'-11 1/4"	EC+1.75	6	{ ((11)+(11)-(13)-(15))-2.00 } +1 1.50	(2)(3) STR.										1.043	118.5
A505	5		16'-0 3/8"	ED-0.1667	6	SAME AS A504	STR.										1.043	100.6
A506	5		18'-4 3/8"	EC-1.00(TAN(AA))+1.75	6	SAME AS A504	STR.										1.043	114.9
A507	5		15'-6"	ED-1.00(TAN(AB))-0.1667	6	SAME AS A504	STR.										1.043	97.0
A508	5		18'-11 1/4"	$\sqrt{(11)-(12)^2+(EC)^2} + 1.75$	1		STR.										1.043	19.8
A509	5		16'-0 3/8"	$\sqrt{(13)-(11)^2+(ED)^2} - 0.1667$	1		STR.										1.043	16.8
A510	5		18'-4 3/8"	$\sqrt{(11)-(12)^2+(EC-1.00(TAN(AA)))^2} + 1.75$	1		STR.										1.043	19.2
A511	5		15'-6"	$\sqrt{(13)-(11)^2+(ED-1.00(TAN(AB)))^2} - 0.1667$	1		STR.										1.043	16.2
EA312	3		5'-2"	(BA-0.125)+2.50+(1.50/SIN(AT))-0.25	4	{ ((20)-(12))-0.3333 } +1 0.8333	(1) STR.								BEND IN FIELD		0.376	7.8
EA313	3		4'-4 3/8"	(CA-0.125)+(CC-0.25)+2.25+(1.50/SIN(AT))-0.25	4	{ ((30)-(13))-0.3333 } +1 0.8333	(1) STR.								BEND IN FIELD		0.376	6.6
EA514	5		3'-5 3/8"	(20)-(12)+1.5	7	USE 6 BARS FOR 90° SKEWS, AND 7 BARS ALL OTHER SKEWS	STR.										1.043	25.0
EA515	5		3'-5 3/8"	(30)-(13)+1.5	6		STR.										1.043	21.5
A516	5		4.25		12	{ NO. OF BARS FROM A_02+1 } 2	(1) (3)	1.583	1.083	1.583			0.167				1.043	53.2
A517	5		4.25		12	{ NO. OF BARS FROM A_03+1 } 2	(1) (3)	1.583	1.083	1.583			0.167				1.043	53.2
A518	5		1.00		32		STR.										1.043	33.4
W520	5		FROM 6'-1 3/4" TO 10'-1 3/4"	FB-0.1667 FA-0.1667	8	{ AC-0.50+0.99 } +1 1.50	(1) STR.								VARIES BY 6"	FC NO. OF BARS	1.043	67.9
W 5_21	5	DESIGNER (2)	FROM 6'-1 3/4" TO 10'-1 3/4"	FB-0.1667 FA-0.1667	15	{ AC-0.50+0.99 } +1 REQ. SPA. (DESIGNER)	(1)(2) STR.								VARIES BY 3 1/4"	FC NO. OF BARS	1.043	127.4
W522	5		9'-8"	AC-0.3333	6	{ FB-0.50+0.99 } +1 1.50	STR.										1.043	121.0
W523	5		FROM 6'-7 3/4" TO 2'-5"	(FC-1.25)(AC-0.3333) FC 1.00(AC-0.3333) FC	3	{ FC-2.25+0.99 } +1 1.50	STR.								VARIES BY 1'-4 3/8"	(LENGTH FROM _____) - (LENGTH TO _____) NO. OF BARS SHOWN ON DRAWINGS	1.043	28.4

FOOTNOTES FOR TABLE

- (1) TAKE THE INTEGER VALUE OF THE QUANTITY WITHIN THE { } .
- (2) USE THE DEPARTMENT'S LRFD ABUTMENT AND RETAINING WALL ANALYSIS AND DESIGN PROGRAM (ABLRFD) IN CONJUNCTION WITH THE BLC-560M DATA ASSEMBLY AND CONSTRUCTION SHEETS TO CALCULATE THE NECESSARY DIMENSIONS AND REINFORCEMENT FOR THE ABUTMENT (WITHOUT BACKWALL), WINGWALLS, AND SPREAD FOOTING.
- (3) TAKE THE ABSOLUTE VALUE OF THE QUANTITY WITHIN THE | | .
- (4) USE TABLE 1 ON THIS SHEET TO COMPLETE BAR WEIGHT QUANTITIES.
- (5) TOTAL BAR WEIGHT = (BAR LENGTH OR AVERAGE BAR LENGTH) x (TOTAL NO. OF BARS) x (BAR WEIGHT)
- (6) SHOW TWICE THIS NUMBER ON THE BAR SCHEDULE (TOTAL NO. OF BARS)

BAR SIZE	RECOMMENDED END HOOK DIMENSIONS (ALL GRADES)		BAR WEIGHT lb/ft
	180° HOOKS		
	A	J	
3	0.417	0.250	0.376
4	0.500	0.333	0.668
5	0.583	0.417	1.043
6	0.667	0.500	1.502
7	0.833	0.583	2.044
8	0.917	0.667	2.670
9	1.250	0.979	3.400
10	1.417	1.104	4.303
11	1.583	1.229	5.313



Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- 00001 SHEET 19 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE
22'-0" SPAN

DATA ASSEMBLY SHEETS
SPREAD FOOTING ABUTMENT 1

THESE PLANS ARE ACCOMPANIED BY NO WARRANTIES, EXPRESSED OR IMPLIED. CONSTRUCTION PLANS PREPARED FROM DESIGN AND DETAIL INFORMATION SHOWN HEREIN MUST BE REVIEWED, APPROVED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER FOR EACH SPECIFIC PROJECT.

RECOMMENDED APR. 23, 2013
Thomas P. Naciosa
CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013
[Signature]
ACTING DIR. BUR. OF PROJECT DELIVERY

SHEET 13 OF 20
BLC-561M

CONTROL DIMENSIONS				
CODE	DESCRIPTION	SOURCE	VALUE (5)	
A1	SKREW ANGLE	A1 (1)		70 DEG.
A2	% GRADE (LOOKING STATIONS AHEAD)	A2 (1)		3 %
C1	CURB TO CURB ROADWAY WIDTH (NORMAL)	C1 (1)	27.5000	27'-6"
C2	DECK WIDTH OUT TO OUT	C2 (1)	29.5000	29'-6"
A	DECK OR LONG. PANEL THICKNESS	USE E1 FOR GLULAM & STEEL BEAM OR E2 FOR LONG. PANEL (1)	1.1979	1'-2 3/8"
B	BEAM DEPTH	USE L4 FOR GLULAM BEAM, L5 FOR STEEL BEAM OR ZERO (0) FOR LONG. PANEL (1)	0	0
C	BEARING PAD THICKNESS	USE N3 OR P3 FOR GLULAM AND STEEL BEAM OR 0.0625 FOR LONG. PANEL (1)	.0625	3/8"
AA	WINGWALL "A" SKEW ANGLE	DESIGNER (15°00'00" MIN., 45°00'00" MAX.) (4)		30 DEG.
AB	WINGWALL "B" SKEW ANGLE	DESIGNER (15°00'00" MIN., 45°00'00" MAX.) (4)		30 DEG.
AC	WINGWALL "A" LENGTH	DESIGNER (4)	10.0000	10'-0"
AD	WINGWALL "B" LENGTH	DESIGNER (4)	10.0000	10'-0"
BA	CHEEKWALL "A"	$0.5 + \left(\frac{1.5}{\tan(A1)} \right) + 1.5 \left(\tan \left(\frac{AA}{2} \right) \right)$	1.4480	1'-5 3/8"
BB	CHEEKWALL "A"	$1.5 \left(\tan \left(\frac{AA}{2} \right) \right)$	.4020	4 7/8"
CA	CHEEKWALL "B"	$0.5 - \left(\frac{1.5}{\tan(A1)} \right) + 1.5 \left(\tan \left(\frac{AB}{2} \right) \right)$	.3560	4 1/4"
IF CA > 6" USE CONDITION 1 EQUATIONS, OTHERWISE USE CONDITION 2 EQUATIONS				
CONDITION 1 EQUATIONS				
CA	CHEEKWALL "B"	AS CALCULATED ABOVE	-	-
CB	CHEEKWALL "B"	$1.5 \left(\tan \left(\frac{AB}{2} \right) \right)$	-	-
CC	CHEEKWALL "B"	0.5	-	-
CONDITION 2 EQUATIONS				
CA	CHEEKWALL "B"	0.5	.5000	6"
CB	CHEEKWALL "B"	$\frac{1.5 - 1.5 \cos(AB)}{\sin(AB)}$	.4020	4 7/8"
CC	CHEEKWALL "B"	$0.5 + \left(\frac{1.5}{\tan(A1)} \right) - 1.5 \left(\tan \left(\frac{AB}{2} \right) \right)$	.6440	7 3/4"
DA	WINGWALL "A" LENGTH	AC+BB	10.4020	10'-4 7/8"
DB	WINGWALL "B" LENGTH	AD+CB	10.4020	10'-4 7/8"
EA	ABUTMENT LENGTH	$\frac{C2 + 0.0833}{\sin(A1)}$	31.4820	31'-5 3/8"
EB	ABUTMENT LENGTH	EA+BA+CA	33.4300	33'-5 1/8"
EC	ABUTMENT LENGTH	$\frac{EA}{2} + BA$	17.1890	17'-2 1/4"
ED	ABUTMENT LENGTH	$\frac{EA}{2} + CA$	16.2410	16'-2 7/8"
EE	ABUTMENT LENGTH	$\frac{0.75}{\tan(A1)}$	.2730	3/4"
FA	WINGWALL "A" HEIGHT	(20) - (15) (2)	11.3000	11'-3 3/8"
FB	WINGWALL "A" HEIGHT	(22) - (15) (2)	7.3000	7'-3 3/8"
FC	WINGWALL "A" HEIGHT	(20) - (22) (2)	4.000	4'-0"
FD	WINGWALL REINFORCEMENT PROJECTION	DESIGNER (3)	2.5833	2'-7"
GA	WINGWALL "B" HEIGHT	(30) - (15) (2)	10.9700	10'-11 3/8"
GB	WINGWALL "B" HEIGHT	(32) - (15) (2)	6.9700	6'-11 3/8"
GC	WINGWALL "B" HEIGHT	(30) - (32) (2)	4.0000	4'-0"
GD	WINGWALL REINFORCEMENT PROJECTION	DESIGNER (3)	2.5833	2'-7"
HA	HEIGHT OF FINISH GRADE CHAMFER (ABUTMENT)	(16) - (15) (2)	3.0000	3'-0"
HB	REAR FACE REINFORCEMENT PROJECTION (ABUTMENT)	DESIGNER (3)	3.2500	3'-3"
IA	ABUTMENT FOOTING WIDTH	DESIGNER (3)	7.7500	7'-9"
IB	ABUTMENT FOOTING WIDTH	DESIGNER (3)	1.7500	1'-9"
IC	ABUTMENT FOOTING WIDTH	IA - IB	6.0000	6'-0"
JA	WINGWALL "A" FOOTING WIDTH	DESIGNER (3)	6.5000	6'-6"
JB	WINGWALL "A" FOOTING WIDTH	DESIGNER (3)	1.0000	1'-0"
JC	WINGWALL "A" FOOTING WIDTH	JA - JB	5.5000	5'-6"
KA	WINGWALL "B" FOOTING WIDTH	DESIGNER (3)	6.5000	6'-6"
KB	WINGWALL "B" FOOTING WIDTH	DESIGNER (3)	1.0000	1'-0"
KC	WINGWALL "B" FOOTING WIDTH	KA - KB	5.5000	5'-6"
LA	ABUTMENT FOOTING LENGTH	$EB - \frac{IB}{\tan(AA)} + \frac{JB}{\sin(AA)} - \frac{IB}{\tan(AB)} + \frac{KB}{\sin(AB)}$	31.3680	31'-4 3/8"
LB	ABUTMENT FOOTING LENGTH	$EB - \frac{IC}{\tan(AA)} + \frac{JC}{\sin(AA)} - \frac{IC}{\tan(AB)} + \frac{KC}{\sin(AB)}$	34.6450	34'-7 3/8"
MA	WINGWALL "A" FOOTING LENGTH	$\frac{IB}{\sin(AA)} - \frac{JB}{\tan(AA)}$	1.7680	1'-9 1/4"
MB	WINGWALL "A" FOOTING LENGTH	$DA + \frac{IB}{\sin(AA)} - \frac{JB}{\tan(AA)}$	12.1700	12'-2"
MC	WINGWALL "A" FOOTING LENGTH	$DA + \frac{JC}{\sin(AA)} - \frac{IC}{\tan(AA)}$	7.9280	7'-11 1/8"
NA	WINGWALL "B" FOOTING LENGTH	$\frac{IB}{\sin(AB)} - \frac{KB}{\tan(AB)}$	1.7680	1'-9 1/4"
NB	WINGWALL "B" FOOTING LENGTH	$DB + \frac{IB}{\sin(AB)} - \frac{KB}{\tan(AB)}$	12.1700	12'-2"
NC	WINGWALL "B" FOOTING LENGTH	$DB + \frac{KC}{\sin(AB)} - \frac{IC}{\tan(AB)}$	7.9280	7'-11 1/8"

FOOTNOTES FOR TABLES

- (1) SEE APPROPRIATE SUPERSTRUCTURE DATA ASSEMBLY SHEETS (BLC-561M SHEETS 1 THRU 10).
- (2) SEE BLC-561M SHEET 12 FOR CONTROL STATIONS AND ELEVATIONS.
- (3) USE PENNDOT'S LRFD ABUTMENT AND RETAINING WALL ANALYSIS AND DESIGN PROGRAM (ABLRFD) IN CONJUNCTION WITH THE DATA ASSEMBLY SHEETS TO CALCULATE THE NECESSARY DIMENSIONS AND REINFORCEMENT FOR THE ABUTMENT (WITHOUT BACKWALL), WINGWALLS, AND FOOTING.
- (4) SEE BLC-561M SHEET 12 FOR WINGWALL EXAMPLE.
- (5) SHOW ALL VALUES IN FEET AND INCHES UNLESS NOTED OTHERWISE.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- 00001 SHEET 21 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

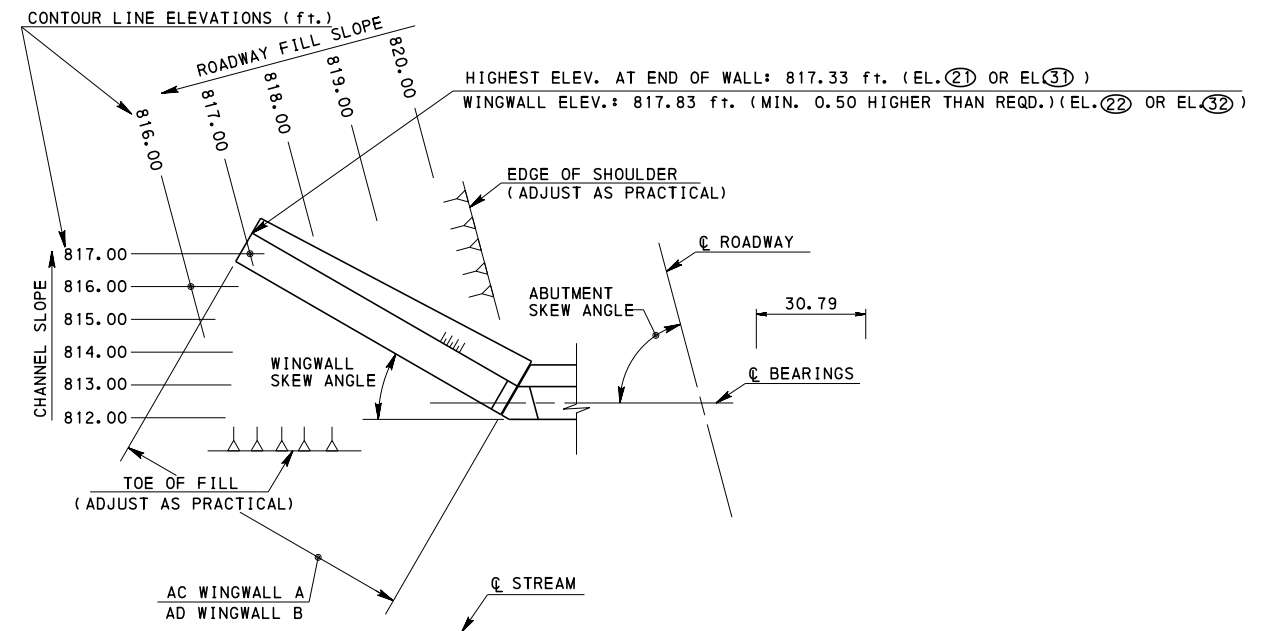
DESIGN EXAMPLE
22'-0" SPAN

DATA ASSEMBLY SHEETS
SPREAD FOOTING ABUTMENT 2

RECOMMENDED APR. 23, 2013 <i>Thomas P. Macieira</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 11 OF 20 BLC-561M
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CONTROL STATIONS AND ELEVATIONS			
CODE	DESCRIPTION	SOURCE	VALUE (2)
⑩	ABUTMENT ELEVATION	USE ① FOR ABUT. 1, OR ② FOR ABUT. 2 (1)	301.91
⑪	ABUTMENT ELEVATION	⑩ - (0.125 + $\frac{C1}{2}$ (0.02) + A+B+C+0.0417)	300.21
⑫	ABUTMENT ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	⑪ - $\frac{A2}{100}(\frac{EA}{2}(\cos(A1)))$ ABUTMENT 1	300.37
		⑪ + $\frac{A2}{100}(\frac{EA}{2}(\cos(A1)))$ ABUTMENT 2	
⑬	ABUTMENT ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	⑪ + $\frac{A2}{100}(\frac{EA}{2}(\cos(A1)))$ ABUTMENT 1	300.05
		⑪ - $\frac{A2}{100}(\frac{EA}{2}(\cos(A1)))$ ABUTMENT 2	
⑭	BOTTOM OF FOOTING ELEVATION	DESIGNER	289.00
⑮	TOP OF FOOTING ELEVATION	⑭+2.00	291.00
⑯	F. G. E. /TOP OF SCOUR PROTECTION	DESIGNER (SEE DM-4, PART A, CHAPTER 7 FOR SCOUR REQ.)	294.00
⑳	WINGWALL "A" ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	⑩ - $\frac{A2}{100}(\frac{EA}{2}(\cos(A1))) - \frac{C1}{2}(0.02) + 0.50$ ABUTMENT 1	302.30
		⑩ + $\frac{A2}{100}(\frac{EA}{2}(\cos(A1))) - \frac{C1}{2}(0.02) + 0.50$ ABUTMENT 2	
㉑	WINGWALL "A" ELEVATION	DESIGNER (SEE WINGWALL EXAMPLE)	297.80
㉒	WINGWALL "A" ELEVATION	㉑+0.50	298.30
㉓	WINGWALL "B" ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	⑩ + $\frac{A2}{100}(\frac{EA}{2}(\cos(A1))) - \frac{C1}{2}(0.02) + 0.50$ ABUTMENT 1	301.97
		⑩ - $\frac{A2}{100}(\frac{EA}{2}(\cos(A1))) - \frac{C1}{2}(0.02) + 0.50$ ABUTMENT 2	
㉔	WINGWALL "B" ELEVATION	DESIGNER (SEE WINGWALL EXAMPLE)	297.47
㉕	WINGWALL "B" ELEVATION	㉔+0.50	297.97

IN GENERAL, PROVIDE WINGWALLS OF SUFFICIENT LENGTH TO RETAIN THE ROADWAY EMBANKMENT TO THE REQUIRED EXTENT AND TO FURNISH PROTECTION AGAINST EROSION. COMPUTE WINGWALL LENGTHS USING THE ACTUAL CONDITION AT THE SITE. THE FOLLOWING METHOD IS PROPOSED TO COMPUTE THE REQUIRED LENGTHS.



WINGWALL EXAMPLE
NO SCALE

FOOTNOTES FOR TABLES

- (1) SEE APPROPRIATE SUPERSTRUCTURE DATA ASSEMBLY SHEETS (BLC-561M SHEETS SHEETS 1 THRU 10).
- (2) SHOW ALL VALUES IN FEET. USE DECIMAL NOTATION TO ACCURACY OF 0.01 ft.

QUANTITIES					
ITEM		QUANTITY FORMULA	UNIT	SUBTOTAL	TOTAL
CLASS 3 EXCAVATION		DESIGNER	C. Y.	149	149
CHEEKWALL A	CLASS AA CEMENT CONCRETE	$(BB+0.5 + \frac{BA-0.5-BB}{2})1.5 (20 - 12) (\frac{1yd^3}{27ft^3})$	C. Y.	.13	.2
CHEEKWALL B		$(CB+0.5 + \frac{0.5+CB-CA}{2})1.5 (30 - 13) (\frac{1yd^3}{27ft^3})$ $(2(CB) - 0.5 + \frac{CC+CB-0.5}{2})1.5 (30 - 13) (\frac{1yd^3}{27ft^3})$	CONDITION 1 CONDITION 2	- .06	
ABUTMENT	CLASS A CEMENT CONCRETE	$[1.5 (11 - 15) + (\frac{1}{2})(\frac{1}{r0})(11 - 15)^2] (EB) (\frac{1yd^3}{27ft^3})$	C. Y.	22.40	64.3
WINGWALL A		$[1.5 (22 + \frac{20-22}{2} - 15) + (\frac{1}{2})(\frac{1}{r0})(22 + \frac{20-22}{2} - 15)^2] (AC) (\frac{1yd^3}{27ft^3})$	C. Y.	6.80	
WINGWALL B		$[1.5 (32 + \frac{30-32}{2} - 15) + (\frac{1}{2})(\frac{1}{r0})(32 + \frac{30-32}{2} - 15)^2] (AD) (\frac{1yd^3}{27ft^3})$	C. Y.	6.50	
FOOTING		$(\frac{1}{2})(2.00)(LA+LB) (IA) + (MB+MC) (JA) + (NB+NC) (KA) (\frac{1yd^3}{27ft^3})$	C. Y.	28.60	
SELECTED BORROW EXCAVATION, STRUCTURE BACKFILL		DESIGNER	C. Y.	51	51
NO. 57 COARSE AGGREGATE		6 WEEPHOLES ($\frac{1/2cy}{WEEPHOLE}$)	C. Y.	3.0	3.0
REINFORCEMENT BARS		DESIGNER - CALCULATE BAR WEIGHT FROM SHEETS 13 & 14 OF BLC-561M	lb	6112	6112
REINFORCEMENT BARS, EPOXY COATED		DESIGNER - CALCULATE BAR WEIGHT FROM SHEETS 13 & 14 OF BLC-561M	lb	843	843

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- 00001 SHEET 22 OF 24

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE
22'-0" SPAN

DATA ASSEMBLY SHEETS
SPREAD FOOTING ABUTMENT 2

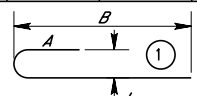
RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 12 OF 20
BLC-561M

BAR SCHEDULE																		
MARK	SIZE	SOURCE	LENGTH	SOURCE	NO.	SOURCE	TYPE	A	B	C	H	J	K	SOURCE	REMARKS	SOURCE	BAR WEIGHT lb/ft (4)	TOTAL BAR WEIGHT (5)
A500	5		FROM 9'-2 3/8" TO 9'-0 1/2"	(12) - (15) - 0.1667 (11) - (15) - 0.1667	13	{ EC-0.25+0.99 } +1 1.50	(1) STR.								VARIES BY 1/8"	| (11) - (12) | NO. OF BARS	1.043	123.7
A501	5		FROM 9'-0 1/2" TO 8'-10 3/8"	(11) - (15) - 0.1667 (13) - (15) - 0.1667	13	{ ED-0.25+0.99 } +1 1.50	(1) STR.								VARIES BY 1/8"	| (13) - (11) | NO. OF BARS	1.043	121.5
A 6_02	6	DESIGNER (2)	FROM 9'-2 3/8" TO 9'-0 1/2"	(12) - (15) - 0.1667 (11) - (15) - 0.1667	35	{ EC-1.00(TAN(AA)) - 0.25 REQ. SPA. (DESIGNER) } +1	(1)(2) STR.								VARIES BY 1/16"	| (11) - (12) | NO. OF BARS	1.502	479.6
A 6_03	6	DESIGNER (2)	FROM 9'-0 1/2" TO 8'-10 3/8"	(11) - (15) - 0.1667 (13) - (15) - 0.1667	33	{ ED-1.00(TAN(AB)) - 0.25 REQ. SPA. (DESIGNER) } +1	(1)(2) STR.								VARIES BY 1/16"	| (13) - (11) | NO. OF BARS	1.502	444.3
A504	5		18'-11 1/4"	EC+1.75	7	{ ((11) + | (11) - (13) | - (15)) - 2.00 1.50 } +0.99 } +1	(2)(3) STR.										1.043	138.3
A505	5		16'-0 1/8"	ED-0.1667	7	SAME AS A504	STR.										1.043	117.4
A506	5		18'-4 3/8"	EC-1.00(TAN(AA)) +1.75	7	SAME AS A504	STR.										1.043	134.1
A507	5		15'-6"	ED-1.00(TAN(AB)) - 0.1667	7	SAME AS A504	STR.										1.043	113.1
A508	5		18'-11 1/4"	$\sqrt{((11) - (12))^2 + (EC)^2} + 1.75$	1		STR.										1.043	19.8
A509	5		16'-0 1/8"	$\sqrt{((13) - (11))^2 + (ED)^2} - 0.1667$	1		STR.										1.043	16.8
A510	5		18'-4 3/8"	$\sqrt{((11) - (12))^2 + (EC - 1.00(TAN(AA)))^2} + 1.75$	1		STR.										1.043	19.2
A511	5		15'-6"	$\sqrt{((13) - (11))^2 + (ED - 1.00(TAN(AB)))^2} - 0.1667$	1		STR.										1.043	16.2
EA312	3		5'-2"	(BA-0.125) + 2.50 + (1.50/SIN(AT) - 0.25)	4	{ ((20) - (12)) - 0.3333 0.8333 } +0.99 } +1	(1) STR.								BEND IN FIELD		0.376	7.8
EA313	3		4'-4 3/8"	(CA-0.125) + (CC-0.25) + 2.25 + (1.50/SIN(AT) - 0.25)	4	{ ((30) - (13)) - 0.3333 0.8333 } +0.99 } +1	(1) STR.								BEND IN FIELD		0.376	6.6
EA514	5		3'-5 1/8"	(20) - (12) + 1.5	7	USE 6 BARS FOR 90° SKEWS, AND 7 BARS ALL OTHER SKEWS	STR.										1.043	25.0
EA515	5		3'-5"	(30) - (13) + 1.5	6		STR.										1.043	21.4
A516	5		4.25		18	{ NO. OF BARS FROM A 6_02+1 2 }	(1) (3)	1.583	1.083	1.583			0.167				1.043	79.8
A517	5		4.25		17	{ NO. OF BARS FROM A 6_03+1 2 }	(1) (3)	1.583	1.083	1.583			0.167				1.043	75.4
A518	5		1.00		32		STR.										1.043	33.4
W520	5		FROM 7'-1 1/8" TO 11'-1 1/8"	FB-0.1667 FA-0.1667	8	{ AC-0.50+0.99 } +1 1.50	(1) STR.								VARIES BY 6"	FC NO. OF BARS	1.043	76.2
W 5_21	5	DESIGNER (2)	FROM 7'-1 1/8" TO 11'-1 1/8"	FB-0.1667 FA-0.1667	21	{ AC-0.50 REQ. SPA. (DESIGNER) } +0.99 } +1	(1)(2) STR.								VARIES BY 2 1/4"	FC NO. OF BARS	1.043	200.0
W522	5		9'-8"	AC-0.3333	7	{ FB-0.50+0.99 } +1	STR.										1.043	141.2
W523	5		FROM 6'-7 3/4" TO 2'-5"	(FC-1.25) (AC-0.3333) FC 1.00(AC-0.3333) FC	3	{ FC-2.25+0.99 } +1 1.50	STR.								VARIES BY 1'-4 3/8"	(LENGTH FROM 6.646) - (LENGTH TO 2.417) NO. OF BARS SHOWN ON DRAWINGS	1.043	28.4

FOOTNOTES FOR TABLE

- (1) TAKE THE INTEGER VALUE OF THE QUANTITY WITHIN THE { } .
- (2) USE THE DEPARTMENT'S LRFD ABUTMENT AND RETAINING WALL ANALYSIS AND DESIGN PROGRAM (ABLRFD) IN CONJUNCTION WITH THE BLC-560M DATA ASSEMBLY AND CONSTRUCTION SHEETS TO CALCULATE THE NECESSARY DIMENSIONS AND REINFORCEMENT FOR THE ABUTMENT (WITHOUT BACKWALL), WINGWALLS, AND SPREAD FOOTING.
- (3) TAKE THE ABSOLUTE VALUE OF THE QUANTITY WITHIN THE | | .
- (4) USE TABLE 1 ON THIS SHEET TO COMPLETE BAR WEIGHT QUANTITIES.
- (5) TOTAL BAR WEIGHT = (BAR LENGTH OR AVERAGE BAR LENGTH) x (TOTAL NO. OF BARS) x (BAR WEIGHT)
- (6) SHOW TWICE THIS NUMBER ON THE BAR SCHEDULE (TOTAL NO. OF BARS)

BAR SIZE	RECOMMENDED END HOOK DIMENSIONS (ALL GRADES)		BAR WEIGHT lb/ft
	180° HOOKS		
	A	J	
3	0.417	0.250	0.376
4	0.500	0.333	0.668
5	0.583	0.417	1.043
6	0.667	0.500	1.502
7	0.833	0.583	2.044
8	0.917	0.667	2.670
9	1.250	0.979	3.400
10	1.417	1.104	4.303
11	1.583	1.229	5.313



Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- 00001 SHEET 23 OF 24

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

DESIGN EXAMPLE
22'-0" SPAN

DATA ASSEMBLY SHEETS
SPREAD FOOTING ABUTMENT 2

THESE PLANS ARE ACCOMPANIED BY NO WARRANTIES, EXPRESSED OR IMPLIED. CONSTRUCTION PLANS PREPARED FROM DESIGN AND DETAIL INFORMATION SHOWN HEREIN MUST BE REVIEWED, APPROVED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER FOR EACH SPECIFIC PROJECT.

RECOMMENDED APR. 23, 2013
Thomas P. Macieja
CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013
[Signature]
ACTING DIR. BUR. OF PROJECT DELIVERY

SHEET 13 OF 20
BLC-561M

BAR SCHEDULE

Table with columns: MARK, SIZE, SOURCE, LENGTH, SOURCE, NO., SOURCE, TYPE, A, B, C, H, J, K, SOURCE, REMARKS, SOURCE, BAR WEIGHT lb/ft (4), TOTAL BAR WEIGHT(5). Contains rows for various reinforcement bars (W524, W525, W526, W530, W531, W532, W533, W534, W535, W536, F600, F701, F502, F403, F504, F505, EF606, EF607, F620, F521, F522, F423, F524, EF525, F630, F531, F532, F433, F534, EF535).

FOOTNOTES FOR TABLE

- (1) TAKE THE INTEGER VALUE OF THE QUANTITY WITHIN THE { } .
(2) USE THE DEPARTMENT'S LRFD ABUTMENT AND RETAINING WALL ANALYSIS AND DESIGN PROGRAM (ABLRFD) IN CONJUNCTION WITH THE BLC-560M DATA ASSEMBLY AND CONSTRUCTION SHEETS TO CALCULATE THE NECESSARY DIMENSIONS AND REINFORCEMENT FOR THE ABUTMENT (WITHOUT BACKWALL), WINGWALLS, AND SPREAD FOOTING.
(3) TAKE THE ABSOLUTE VALUE OF THE QUANTITY WITHIN THE | | .
(4) USE TABLE 1 ON THIS SHEET TO COMPLETE BAR WEIGHT QUANTITIES.
(5) TOTAL BAR WEIGHT = (BAR LENGTH OR AVERAGE BAR LENGTH) x (TOTAL NO. OF BARS) x (BAR WEIGHT)
(6) SHOW TWICE THIS NUMBER ON THE BAR SCHEDULE (TOTAL NO. OF BARS)

TABLE 1 REINFORCEMENT INFORMATION. Table with columns: BAR SIZE, RECOMMENDED END HOOK DIMENSIONS (ALL GRADES), BAR WEIGHT. Includes sub-table for 180° HOOKS with columns A and J. Includes a diagram of a hook with dimensions A, B, and J.

Table with columns: Mark, Description, By, Chk'd, Recm'd, Date. Includes a REVISIONS section.

S- 00001 SHEET 24 OF 24

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY

DESIGN EXAMPLE 22'-0" SPAN DATA ASSEMBLY SHEETS SPREAD FOOTING ABUTMENT 2

THESE PLANS ARE ACCOMPANIED BY NO WARRANTIES, EXPRESSED OR IMPLIED. CONSTRUCTION PLANS PREPARED FROM DESIGN AND DETAIL INFORMATION SHOWN HEREIN MUST BE REVIEWED, APPROVED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER FOR EACH SPECIFIC PROJECT.

RECOMMENDED APR. 23, 2013 RECOMMENDED APR. 23, 2013 SHEET 14 OF 20 Thomas P. Nacivca Chief Bridge Engineer Acting Dir. Bur. of Project Delivery BLC-561M

TABLE 2b - YELLOW POPLAR - SINGLE MEMBER LAY-UP (1,2,5)

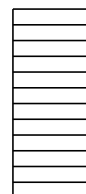
DESIGN DATA																		BRIDGE RATINGS (3)																				
SPAN (B1) FT. - IN.	CURB TO CURB (C1) FT. - IN.	DECK THICK. (E1) IN.	BEAM SPA. (H1) FT. - IN.	NO. OF BEAMS (J1) #	BEAM WIDTH (L3) IN.	BEAM DEPTH (L4) IN.	PRE-FABRICATED CAMBER (M1) IN.	NET FINAL CAMBER (M5) IN.	FIXED BRG. PAD WIDTH (N1) IN.	FIXED BRG. PAD LENGTH (N2) IN.	FIXED BRG. PAD THICK (N3) IN.	NO. OF INTERIOR LAYERS (N4) #	EXP. BRG. PAD WIDTH (P1) IN.	EXP. BRG. PAD LENGTH (P2) IN.	EXP. BRG. PAD THICK (P3) IN.	NO. OF INTERIOR LAYERS (P4) #	D.F.	H20			HS20			ML80			PHL-93			TK527			P82			FACTORED RESISTANCE (4)		
																		LOC.	I.R.	O.R.	LOC.	I.R.	O.R.	LOC.	I.R.	O.R.	LOC.	I.R.	O.R.	LOC.	I.R.	O.R.	LOC.	I.R.	O.R.	MOMENT Mr (K-FT.)	LOC.	SHEAR Vr (K)	LOC.
18'-0"	23'-7"	5 1/8	2'-9"	9	5 1/8	31 5/8	0.09	0.02	7 1/2	10	1 1/2	2	7 1/2	10	2 1/2	4	0.336	0.15L	1.87 V	3.10 V	0.15L	1.87 V	3.10 V	0.15L	1.38 V	2.28 V	0.15L	1.04 V	1.66 V	0.15L	1.52 V	2.52 V	0.15L	1.65 V	252.0	0.45L	29.3	0.25L
	27'-6"	5 1/8	2'-7"	11	5 1/8	30 1/4	0.10	0.02	7 1/2	10	1 1/2	2	7 1/2	10	2 1/2	4	0.329	0.14L	1.83 V	3.02 V	0.14L	1.83 V	3.02 V	0.14L	1.34 V	2.23 V	0.14L	1.02 V	1.61 V	0.14L	1.48 V	2.46 V	0.14L	1.61 V	231.6	0.45L	28.0	0.25L
19'-9"	31'-6"	5 1/8	2'-9"	12	5 1/8	28 7/8	0.12	0.02	7 1/2	10	1 1/2	2	7 1/2	10	2 1/2	4	0.300	0.13L	1.89 V	3.14 V	0.13L	1.89 V	3.14 V	0.13L	1.39 V	2.31 V	0.13L	1.05 V	1.67 V	0.13L	1.53 V	2.55 V	0.13L	1.67 V	212.0	0.45L	26.8	0.25L
	23'-7"	5 1/8	2'-9"	9	5 1/8	31 5/8	0.13	0.02	7 1/2	10	1 1/2	2	7 1/2	10	2 1/2	4	0.336	0.13L	1.82 V	3.02 V	0.13L	1.75 V	2.90 V	0.13L	1.31 V	2.17 V	0.13L	1.00 V	1.60 V	0.13L	1.44 V	2.39 V	0.13L	1.53 V	249.7	0.45L	29.3	0.25L
23'-0"	27'-6"	5 1/8	2'-7"	11	5 1/8	31 5/8	0.13	0.02	7 1/2	10	1 1/2	2	7 1/2	10	2 1/2	4	0.329	0.13L	1.87 V	3.10 V	0.13L	1.79 V	2.98 V	0.13L	1.34 V	2.23 V	0.13L	1.03 V	1.64 V	0.13L	1.48 V	2.45 V	0.13L	1.56 V	249.7	0.45L	29.3	0.25L
	31'-6"	5 1/8	2'-9"	12	5 1/8	28 7/8	0.18	0.03	7 1/2	10	1 1/2	2	7 1/2	10	2 1/2	4	0.300	0.12L	1.83 V	3.05 V	0.12L	1.76 V	2.93 V	0.12L	1.32 V	2.20 V	0.12L	1.01 V	1.61 V	0.12L	1.45 V	2.42 V	0.12L	1.54 V	210.0	0.45L	26.8	0.25L
26'-3"	23'-7"	5 1/8	2'-9"	9	5 1/8	34 3/8	0.20	0.03	7 1/2	10	1	1	7 1/2	10	2 1/2	4	0.336	0.12L	1.89 V	3.14 V	0.12L	1.66 V	2.77 V	0.12L	1.33 V	2.22 V	0.12L	1.04 V	1.65 V	0.12L	1.44 V	2.40 V	0.12L	1.49 V	288.1	0.45L	31.9	0.25L
	27'-6"	5 1/8	2'-7"	11	5 1/8	33	0.22	0.04	7 1/2	10	1	1	7 1/2	10	2 1/2	4	0.329	0.12L	1.85 V	3.08 V	0.12L	1.63 V	2.71 V	0.12L	1.30 V	2.17 V	0.12L	1.02 V	1.62 V	0.12L	1.41 V	2.35 V	0.12L	1.46 V	266.6	0.45L	30.6	0.25L
26'-3"	31'-6"	5 1/8	2'-9"	12	5 1/8	33	0.23	0.04	7 1/2	10	1	1	7 1/2	10	2 1/2	4	0.300	0.12L	2.01 V	3.36 V	0.12L	1.77 V	2.96 V	0.12L	1.42 V	2.37 V	0.12L	1.11 V	1.76 V	0.12L	1.53 V	2.56 V	0.12L	1.60 V	266.6	0.45L	30.6	0.25L
	23'-7"	5 1/8	2'-9"	9	5 1/8	35 3/4	0.30	0.05	7 1/2	11	1 1/2	2	7 1/2	11	2 1/2	4	0.336	0.11L	1.88 V	3.14 V	0.11L	1.56 V	2.61 V	0.11L	1.28 V	2.14 V	0.11L	1.03 V	1.64 V	0.11L	1.38 V	2.31 V	0.11L	1.44 V	306.3	0.45L	33.1	0.25L
26'-3"	27'-6"	5 1/8	2'-7"	11	5 1/8	34 3/8	0.33	0.05	7 1/2	11	1 1/2	2	7 1/2	11	2 1/2	4	0.329	0.11L	1.84 V	3.08 V	0.11L	1.53 V	2.57 V	0.11L	1.25 V	2.10 V	0.11L	1.01 V	1.61 V	0.11L	1.35 V	2.27 V	0.11L	1.41 V	284.3	0.45L	31.9	0.25L
	31'-6"	5 1/8	2'-9"	12	5 1/8	34 3/8	0.35	0.06	7 1/2	11	1 1/2	2	7 1/2	11	2 1/2	4	0.300	0.11L	2.00 V	3.36 V	0.11L	1.67 V	2.79 V	0.11L	1.36 V	2.29 V	0.11L	1.10 V	1.75 V	0.11L	1.47 V	2.47 V	0.11L	1.54 V	284.3	0.45L	31.9	0.25L

NOTES:

- 1.) BEAMS DESIGNED WITH APPROPRIATE FORMAT CONVERSION, WET SERVICE, VOLUME AND TIME EFFECT FACTOR.
- 2.) DESIGN TABLES DO NOT ACCOUNT FOR VERTICAL OR HORIZONTAL CURVES ON BRIDGE DECK.
- 3.) FLEXURAL RATING FACTORS "M" ARE SHOWN & GOVERN UNLESS OTHERWISE DENOTED BY A "V" FOR SHEAR, "D" FOR DEFLECTION OR "B" FOR BEARING.
- 4.) EXTERIOR BEAM CONTROLS. VALUES SHOWN ARE FACTORED RESISTANCES FOR THE EXTERIOR BEAM BASED ON LOAD AND RESISTANCE FACTOR DESIGN.
- 5.) FOR COMBINATION MEMBER LAYUP DESIGN DATA & BRIDGE RATINGS, SEE TABLE 2g ON THE PREVIOUS SHEET.

LEGEND OF ABBREVIATIONS

BRG. DENOTES BEARING
 D.F. DENOTES DISTRIBUTION FACTOR
 EXP. DENOTES EXPANSION
 I.R. DENOTES INVENTORY RATING
 LOC. DENOTES LOCATION
 NO. DENOTES NUMBER
 O.R. DENOTES OPERATING RATING
 SPA. DENOTES SPACING
 THICK. DENOTES THICKNESS



SINGLE MEMBER LAY-UP

THESE PLANS ARE ACCOMPANIED BY NO WARRANTIES, EXPRESSED OR IMPLIED. CONSTRUCTION PLANS PREPARED FROM DESIGN AND DETAIL INFORMATION SHOWN HEREIN MUST BE REVIEWED, APPROVED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER FOR EACH SPECIFIC PROJECT.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

DATA ASSEMBLY SHEETS
 GLULAM BEAM

RECOMMENDED APR. 23, 2013
 RECOMMENDED APR. 23, 2013
 SHEET 7 OF 20
 BLC-561M

CONTROL DIMENSIONS			
CODE	DESCRIPTION	SOURCE	VALUE (3)
A1	SKEW ANGLE	DESIGNER	DEG.
A2	% GRADE (LOOKING STATIONS AHEAD)	DESIGNER	%
B1	SPAN LENGTH-CL TO CL BEARING	DESIGNER	
B2	FRONT FACE TO FRONT FACE OF ABUTMENTS	$(B1 - \frac{1.50}{\sin(A1)})$	
B3	WATERWAY OPENING	$(B2) \sin(A1)$	
C1	CURB TO CURB ROADWAY WIDTH (NORMAL)	TABLE 2	
C2	DECK WIDTH OUT TO OUT	C1+2.00	
C3	DECK WIDTH OUT TO OUT ALONG SKEW	$\frac{C2}{\sin(A1)}$	
D1	OUT TO OUT LONGITUDINAL PANEL LENGTH	$B1 + \frac{1.50}{\sin(A1)}$	
D2	NUMBER OF LONGITUDINAL PANELS	$\{ \frac{C2}{4.00} \}$ (1)	
E1	LONGITUDINAL PANEL SPECIES COMBINATION	TABLE 2 - BLC-561M, SHEET 9	
E2	LONGITUDINAL PANEL DEPTH	TABLE 2 - BLC-561M, SHEET 9	
E3	LONGITUDINAL PANEL WIDTH (NORMAL)	$\frac{C2}{D2}$	
E4	LONGITUDINAL PANEL WIDTH ALONG SKEW	$\frac{C3}{D2}$	
F1	OUT TO OUT BARRIER LENGTH	$D1 + \frac{0.6667}{\tan(A1)}$	
F2	NUMBER OF GUIDE RAIL TIMBER POST SPACES	$\{ \frac{F1 - 8.00}{8.00} \}$ (1)	
F3	GUIDE RAIL POST SPACING	$\frac{F1 - 8.00}{F2}$	
G1	NUMBER OF SPACES BETWEEN CL BEARINGS	$\{ \frac{B1}{8.00} \}$ (1) IF B1 ≤ 8.00 THEN G1 = 2	
G2	CONTINUOUS STIFFENER BEAM SPACING/DESIGN SPAN	$\frac{B1}{G1}$	
G3	NUMBER OF CONTINUOUS STIFFENER BEAMS	G1-1	
H1	DESIGN SPAN	$G2 - \frac{0.4167}{\sin(A1)}$	
H2	NO. OF DOWELS	TABLE 1 (THIS SHEET)	(5)
H3	DOWEL SPACING	H1/(H2+1)	(5)
H4	NUMBER OF INTERMEDIATE STIFF. BEAMS BETWEEN CONT. STIFF. BEAMS AT EA. DECK PANEL JOINT	SEE TABLE 1 ON BLC-563M SHEETS 6, 7, AND 8	(5)
H5	INTERMEDIATE STIFFENER BEAM QUANTITY (PER STIFFENER)	6.86 F.B.M. NORTHERN RED OAK AND RED MAPLE (5) 8.57 F.B.M. YELLOW POPLAR (5)	
J1	BEARING PAD LENGTH CONSTRAINT #1	$\frac{E4}{2} - \frac{0.4167}{2} - \frac{0.5833}{\tan(A1)} - 0.1667$ (CONCRETE ABUTMENT)	
J2	BEARING PAD LENGTH CONSTRAINT #2	$\frac{E4}{3} - \frac{0.4167}{2} - \frac{0.5833}{\tan(A1)} - 0.1667$ (TIMBER SILL ABUTMENT)	
J3	BEARING PAD LENGTH	USE THE VALUE J1 (CONCRETE ABUTMENT) USE THE LESSER VALUE BTWN. J1 & J2 (TIMBER SILL ABUTMENT)	
J4	NUMBER OF BEARING PADS	D2*4 (CONCRETE ABUTMENT) D2*6 (TIMBER SILL ABUTMENT)	

CONTROL STATIONS AND ELEVATIONS				
CODE	LOCATION	SOURCE	VALUE (ft.)	
			STATION	P.G. ELEV.
①	CL ROADWAY AT CL BRG. ABUT. 1	DESIGNER		
②	CL ROADWAY AT CL BRG. ABUT. 2	DESIGNER		
③	CL ROADWAY AT BEGIN OF STR.	STA ① - $\frac{0.75}{\sin(A1)}$		
④	CL ROADWAY AT END OF STR.	STA ② + $\frac{0.75}{\sin(A1)}$		
⑤	CL ROADWAY AT FRONT FACE ABUT. 1	STA ① + $\frac{0.75}{\sin(A1)}$		
⑥	CL ROADWAY AT FRONT FACE ABUT. 2	STA ② - $\frac{0.75}{\sin(A1)}$		

TABLE 1 - DOWEL DESIGN DATA		
TIMBER SPECIES	MAXIMUM DESIGN SPAN (H1)	NO. OF (2) DOWELS (H2)
NORTHERN RED OAK & RED MAPLE	3'-11"	3
	4'-7"	4
	5'-2"	5
	5'-10"	6
	6'-5"	7
	7'-1"	8
	7'-9"	9
	8'-5"	10
YELLOW POPLAR	4'-1"	5
	4'-6"	6
	5'-1"	7
	5'-7"	8
	6'-2"	9
	6'-9"	10
	7'-4"	11
	7'-10"	12

FOOTNOTES FOR TABLES

- (1) ROUND TO THE NEXT WHOLE NUMBER - ONLY WITHIN ()
- (2) NO. OF DOWELS IS BASED ON THE USE OF AASHTO M314, GRADE 55 SMOOTH STEEL DOWELS
- (3) SHOW ALL DIMENSIONS IN FEET AND INCHES UNLESS NOTED OTHERWISE.
- (4) FOR QUANTITY CALCULATION, TIMBER ELEMENT WIDTH AND LENGTH ARE IN FEET AND ELEMENT THICKNESS OR DEPTH IS IN INCHES IN ORDER TO OBTAIN FEET BOARD MEASURE.
- (5) DESIGNER CHOOSES EITHER STEEL DOWELS OR ALTERNATE INTERMEDIATE STIFFENER BEAM SYSTEM TO PROVIDE TRANSVERSE CONNECTION OF GLULAM LONGITUDINAL PANELS. CROSS OUT APPROPRIATE DETAILS ON BLC-563M SHEETS 6, 7, 8 AND 9 AS REQUIRED.
- (6) QUANTITY BASED ON 12" WIDE POSTS AT ALL END LOCATIONS.
- (7) QUANTITY BASED ON 8 3/4" WIDE POSTS AT ALL INTERMEDIATE LOCATIONS.
- (8) QUANTITY INCLUDES RAIL SPACER BLOCK.

QUANTITIES					
ITEM	QUANTITY FORMULA	UNIT	SUBTOTAL	TOTAL	
GLUE LAMINATED TIMBER PANELS	C2*E2*D1 (4)	F. B. M.			
GLUE LAMINATED TIMBER CONTINUOUS STIFFENER BEAMS	(G3) (C3) (0.4271) (5.5") (NORTHERN RED OAK AND RED MAPLE) (4) (G3) (C3) (0.4271) (6.875") (YELLOW POPLAR) (4)	F. B. M.			
GLUE LAMINATED TIMBER INTERMEDIATE STIFFENER BEAMS	(D2-1) (G1) (H4) (H5) (4)	F. B. M.			
GLUE LAMINATED TIMBER RAILING END POST (6) (8)	4(1.00*0.875) (E2+2.917) + 4(0.26*0.875*12.0") (4)	F. B. M.			
GLUE LAMINATED TIMBER RAILING INTERMEDIATE POST (7) (8)	2(F2-1) (0.875*0.729) (E2+35.0") + 2(F2-1) (0.26*0.875*8.75") (4)	F. B. M.			
GLUE LAMINATED TIMBER RAILING	2(F2*F3+3.667) (1.125) (8.75") (4)	F. B. M.			
GLUE LAMINATED TIMBER CURB	2*F1 (1.00) (6.75") (4)	F. B. M.			
GLUE LAMINATED TIMBER SCUPPER BLOCK	2(F2+1) (4.50) (1.00) (6.75") + (7.0) (1.0) (6.75") (4)	F. B. M.			
WATERPROOF MEMBRANE	(D1) (C1) $(\frac{1 \text{ yd}^2}{9 \text{ ft}^2})$	S. Y.			
CLASS 4 GEOTEXTILE	(E2+3.00) (2) (C3) $(\frac{1 \text{ yd}^2}{9 \text{ ft}^2})$	S. Y.			
WATERPROOF MEMBRANE, EDGE PROTECTION	[2(E2+2.25) (D1) + (E2+3.00) (2) (C3)] $(\frac{1 \text{ yd}^2}{9 \text{ ft}^2})$	S. Y.			
BITUMINOUS WEARING COURSE	(0.1667*C1+0.005*C ²) (D1) $(140 \frac{\text{lb}}{\text{ft}^3}) (\frac{1 \text{ TON}}{2000 \text{ lb}})$	TON			

Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DATA ASSEMBLY SHEETS
GLULAM LONGITUDINAL PANELS

RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 8 OF 20
BLC-561M

CONTROL DIMENSIONS				
CODE	DESCRIPTION	SOURCE		VALUE (5)
A1	SKEW ANGLE	A1	(1)	DEG.
A2	% GRADE (LOOKING STATIONS AHEAD)	A2	(1)	%
C1	CURB TO CURB ROADWAY WIDTH (NORMAL)	C1	(1)	
C2	DECK WIDTH OUT TO OUT	C2	(1)	
A	DECK OR LONG. PANEL THICKNESS	USE E1 FOR GLULAM & STEEL BEAM OR E2 FOR LONG. PANEL	(1)	
B	BEAM DEPTH	USE L4 FOR GLULAM BEAM, L5 FOR STEEL BEAM OR ZERO (0) FOR LONG. PANEL	(1)	
C	BEARING PAD THICKNESS	USE N3 OR P3 FOR GLULAM AND STEEL BEAM OR 0.0625 FOR LONG. PANEL	(1)	
AA	WINGWALL "A" SKEW ANGLE	DESIGNER (15°00'00" MIN., 45°00'00" MAX.)	(4)	DEG.
AB	WINGWALL "B" SKEW ANGLE	DESIGNER (15°00'00" MIN., 45°00'00" MAX.)	(4)	DEG.
AC	WINGWALL "A" LENGTH	DESIGNER	(4)	
AD	WINGWALL "B" LENGTH	DESIGNER	(4)	
BA	CHEEKWALL "A"	$0.5 + \left(\frac{1.5}{\tan(A1)} \right) + 1.5 \left(\tan \left(\frac{AA}{2} \right) \right)$		
BB	CHEEKWALL "A"	$1.5 \left(\tan \left(\frac{AA}{2} \right) \right)$		
CA	CHEEKWALL "B"	$0.5 - \left(\frac{1.5}{\tan(A1)} \right) + 1.5 \left(\tan \left(\frac{AB}{2} \right) \right)$		
IF CA > 6" USE CONDITION 1 EQUATIONS, OTHERWISE USE CONDITION 2 EQUATIONS				
CONDITION 1 EQUATIONS				
CA	CHEEKWALL "B"	AS CALCULATED ABOVE		
CB	CHEEKWALL "B"	$1.5 \left(\tan \left(\frac{AB}{2} \right) \right)$		
CC	CHEEKWALL "B"	0.5		
CONDITION 2 EQUATIONS				
CA	CHEEKWALL "B"	0.5		
CB	CHEEKWALL "B"	$\frac{1.5 - 1.5(\cos(AB))}{\sin(AB)}$		
CC	CHEEKWALL "B"	$0.5 + \left(\frac{1.5}{\tan(A1)} \right) - 1.5 \left(\tan \left(\frac{AB}{2} \right) \right)$		
DA	WINGWALL "A" LENGTH	AC+BB		
DB	WINGWALL "B" LENGTH	AD+CB		
EA	ABUTMENT LENGTH	$\frac{C2+0.0833}{\sin(A1)}$		
EB	ABUTMENT LENGTH	EA+BA+CA		
EC	ABUTMENT LENGTH	$\frac{EA}{2} + BA$		
ED	ABUTMENT LENGTH	$\frac{EA}{2} + CA$		
EE	ABUTMENT LENGTH	$\frac{0.75}{\tan(A1)}$		
FA	WINGWALL "A" HEIGHT	(20) - (15)	(2)	
FB	WINGWALL "A" HEIGHT	(22) - (15)	(2)	
FC	WINGWALL "A" HEIGHT	(20) - (22)	(2)	
FD	WINGWALL REINFORCEMENT PROJECTION	DESIGNER	(3)	
GA	WINGWALL "B" HEIGHT	(30) - (15)	(2)	
GB	WINGWALL "B" HEIGHT	(32) - (15)	(2)	
GC	WINGWALL "B" HEIGHT	(30) - (32)	(2)	
GD	WINGWALL REINFORCEMENT PROJECTION	DESIGNER	(3)	
HA	HEIGHT OF FINISH GRADE CHAMFER (ABUTMENT)	(16) - (15)	(2)	
HB	REAR FACE REINFORCEMENT PROJECTION (ABUTMENT)	DESIGNER	(3)	
IA	ABUTMENT FOOTING WIDTH	DESIGNER	(3)	
IB	ABUTMENT FOOTING WIDTH	DESIGNER	(3)	
IC	ABUTMENT FOOTING WIDTH	IA-IB		
JA	WINGWALL "A" FOOTING WIDTH	DESIGNER	(3)	
JB	WINGWALL "A" FOOTING WIDTH	DESIGNER	(3)	
JC	WINGWALL "A" FOOTING WIDTH	JA-JB		
KA	WINGWALL "B" FOOTING WIDTH	DESIGNER	(3)	
KB	WINGWALL "B" FOOTING WIDTH	DESIGNER	(3)	
KC	WINGWALL "B" FOOTING WIDTH	KA-KB		
LA	ABUTMENT FOOTING LENGTH	$EB - \frac{IB}{\tan(AA)} + \frac{JB}{\sin(AA)} - \frac{IB}{\tan(AB)} + \frac{KB}{\sin(AB)}$		
LB	ABUTMENT FOOTING LENGTH	$EB - \frac{IC}{\tan(AA)} + \frac{JC}{\sin(AA)} - \frac{IC}{\tan(AB)} + \frac{KC}{\sin(AB)}$		
MA	WINGWALL "A" FOOTING LENGTH	$\frac{IB}{\sin(AA)} - \frac{JB}{\tan(AA)}$		
MB	WINGWALL "A" FOOTING LENGTH	$DA + \frac{IB}{\sin(AA)} - \frac{JB}{\tan(AA)}$		
MC	WINGWALL "A" FOOTING LENGTH	$DA + \frac{JC}{\tan(AA)} - \frac{IC}{\sin(AA)}$		
NA	WINGWALL "B" FOOTING LENGTH	$\frac{IB}{\sin(AB)} - \frac{KB}{\tan(AB)}$		
NB	WINGWALL "B" FOOTING LENGTH	$DB + \frac{IB}{\sin(AB)} - \frac{KB}{\tan(AB)}$		
NC	WINGWALL "B" FOOTING LENGTH	$DB + \frac{KC}{\tan(AB)} - \frac{IC}{\sin(AB)}$		

FOOTNOTES FOR TABLES

- (1) SEE APPROPRIATE SUPERSTRUCTURE DATA ASSEMBLY SHEETS (BLC-561M SHEETS 1 THRU 10).
- (2) SEE BLC-561M SHEET 12 FOR CONTROL STATIONS AND ELEVATIONS.
- (3) USE PENNDOT'S LRFD ABUTMENT AND RETAINING WALL ANALYSIS AND DESIGN PROGRAM (ABLRFD) IN CONJUNCTION WITH THE DATA ASSEMBLY SHEETS TO CALCULATE THE NECESSARY DIMENSIONS AND REINFORCEMENT FOR THE ABUTMENT (WITHOUT BACKWALL), WINGWALLS, AND FOOTING.
- (4) SEE BLC-561M SHEET 12 FOR WINGWALL EXAMPLE.
- (5) SHOW ALL VALUES IN FEET AND INCHES UNLESS NOTED OTHERWISE.

Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

S- SHEET ___ OF ___

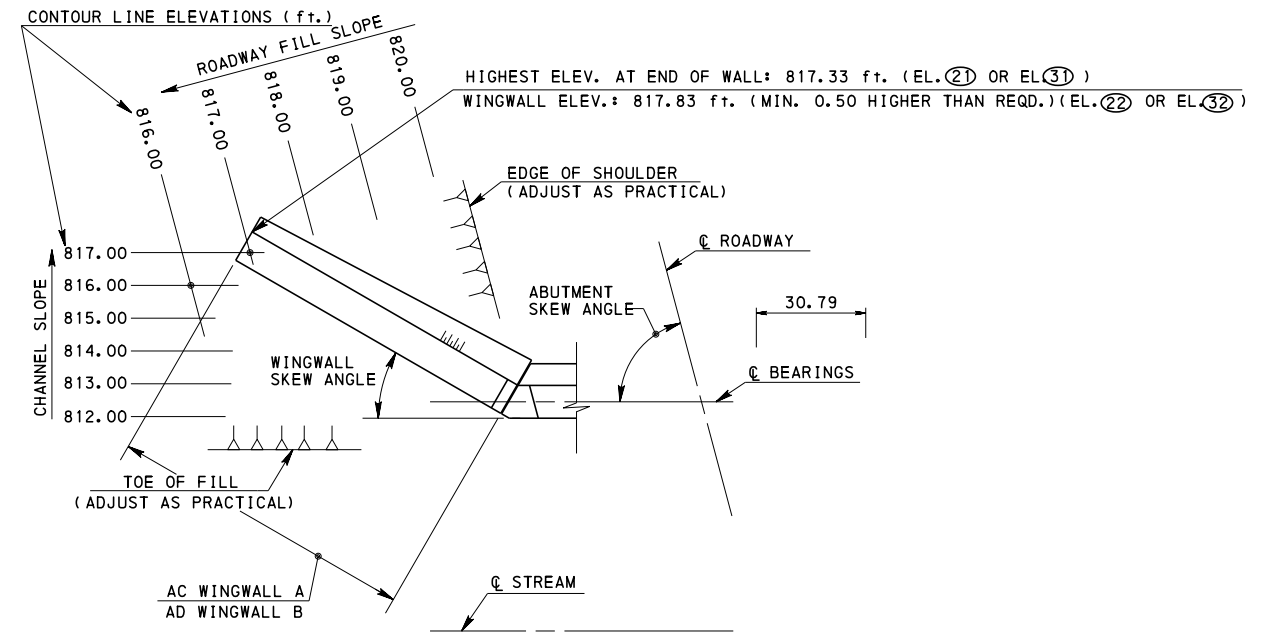
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DATA ASSEMBLY SHEETS
SPREAD FOOTING ABUTMENT

RECOMMENDED APR. 23, 2013 <i>Thomas P. Maciver</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>David P. [Signature]</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 11 OF 20 BLC-561M
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CONTROL STATIONS AND ELEVATIONS			
CODE	DESCRIPTION	SOURCE	VALUE (2)
⑩	ABUTMENT ELEVATION	USE ① FOR ABUT. 1, OR ② FOR ABUT. 2	(1)
⑪	ABUTMENT ELEVATION	$⑩ - (0.125 + \frac{C_1}{2}(0.02) + A+B+C+0.0417)$	
⑫	ABUTMENT ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	$⑪ - \frac{A_2}{100}(\frac{EA}{2}(\cos(A1)))$	ABUTMENT 1
		$⑪ + \frac{A_2}{100}(\frac{EA}{2}(\cos(A1)))$	ABUTMENT 2
⑬	ABUTMENT ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	$⑪ + \frac{A_2}{100}(\frac{EA}{2}(\cos(A1)))$	ABUTMENT 1
		$⑪ - \frac{A_2}{100}(\frac{EA}{2}(\cos(A1)))$	ABUTMENT 2
⑭	BOTTOM OF FOOTING ELEVATION	DESIGNER	
⑮	TOP OF FOOTING ELEVATION	⑭+2.00	
⑯	F.G.E./TOP OF SCOUR PROTECTION	DESIGNER (SEE DM-4, PART A, CHAPTER 7 FOR SCOUR REQ.)	
⑳	WINGWALL "A" ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	$⑩ - \frac{A_2}{100}(\frac{EA}{2}(\cos(A1))) - \frac{C_1}{2}(0.02) + 0.50$	ABUTMENT 1
		$⑩ + \frac{A_2}{100}(\frac{EA}{2}(\cos(A1))) - \frac{C_1}{2}(0.02) + 0.50$	ABUTMENT 2
㉑	WINGWALL "A" ELEVATION	DESIGNER (SEE WINGWALL EXAMPLE)	
㉒	WINGWALL "A" ELEVATION	㉑+0.50	
㉓	WINGWALL "B" ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	$⑩ + \frac{A_2}{100}(\frac{EA}{2}(\cos(A1))) - \frac{C_1}{2}(0.02) + 0.50$	ABUTMENT 1
		$⑩ - \frac{A_2}{100}(\frac{EA}{2}(\cos(A1))) - \frac{C_1}{2}(0.02) + 0.50$	ABUTMENT 2
㉔	WINGWALL "B" ELEVATION	DESIGNER (SEE WINGWALL EXAMPLE)	
㉕	WINGWALL "B" ELEVATION	㉔+0.50	

IN GENERAL, PROVIDE WINGWALLS OF SUFFICIENT LENGTH TO RETAIN THE ROADWAY EMBANKMENT TO THE REQUIRED EXTENT AND TO FURNISH PROTECTION AGAINST EROSION. COMPUTE WINGWALL LENGTHS USING THE ACTUAL CONDITION AT THE SITE. THE FOLLOWING METHOD IS PROPOSED TO COMPUTE THE REQUIRED LENGTHS.



WINGWALL EXAMPLE
NO SCALE

FOOTNOTES FOR TABLES

- (1) SEE APPROPRIATE SUPERSTRUCTURE DATA ASSEMBLY SHEETS (BLC-561M SHEETS SHEETS 1 THRU 10).
- (2) SHOW ALL VALUES IN FEET. USE DECIMAL NOTATION TO ACCURACY OF 0.01 ft.

QUANTITIES				UNIT	SUBTOTAL	TOTAL
ITEM		QUANTITY FORMULA				
CLASS 3 EXCAVATION		DESIGNER		C. Y.		
CHEEKWALL A	CLASS AA CEMENT CONCRETE	$(BB+0.5 + \frac{BA-0.5-BB}{2})1.5 (⑳ - ⑫) (\frac{1y^3}{27ft^3})$		C. Y.		
CHEEKWALL B		$(CB+0.5 + \frac{0.5+CB-CA}{2})1.5 (㉓ - ⑬) (\frac{1y^3}{27ft^3})$	CONDITION 1	C. Y.		
		$(2(CB) - 0.5 + \frac{CC+CB-0.5}{2})1.5 (㉓ - ⑬) (\frac{1y^3}{27ft^3})$	CONDITION 2	C. Y.		
ABUTMENT		$[1.5 (⑪ - ⑮) + (\frac{1}{2})(\frac{1}{r_0})(⑪ - ⑮)^2] (EB) (\frac{1y^3}{27ft^3})$		C. Y.		
WINGWALL A	CLASS A CEMENT CONCRETE	$[1.5 (㉒ + \frac{㉒ - ㉒}{2} - ⑮) + (\frac{1}{2})(\frac{1}{r_0})(㉒ + \frac{㉒ - ㉒}{2} - ⑮)^2] (AC) (\frac{1y^3}{27ft^3})$		C. Y.		
WINGWALL B		$[1.5 (㉔ + \frac{㉔ - ㉔}{2} - ⑮) + (\frac{1}{2})(\frac{1}{r_0})(㉔ + \frac{㉔ - ㉔}{2} - ⑮)^2] (AD) (\frac{1y^3}{27ft^3})$		C. Y.		
FOOTING		$(\frac{1}{2})(2.00)(LA+LB) (IA) + (NB+MC) (JA) + (NB+NC) (KA) (\frac{1y^3}{27ft^3})$		C. Y.		
SELECTED BORROW EXCAVATION, STRUCTURE BACKFILL		DESIGNER		C. Y.		
NO. 57 COARSE AGGREGATE		6 WEEPHOLES ($\frac{1/2cy}{WEEPHOLE}$)		C. Y.	3.0	3.0
REINFORCEMENT BARS		DESIGNER - CALCULATE BAR WEIGHT FROM SHEETS 13 & 14 OF BLC-561M		lb		
REINFORCEMENT BARS, EPOXY COATED		DESIGNER - CALCULATE BAR WEIGHT FROM SHEETS 13 & 14 OF BLC-561M		lb		

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DATA ASSEMBLY SHEETS
SPREAD FOOTING ABUTMENT

THESE PLANS ARE ACCOMPANIED BY NO WARRANTIES, EXPRESSED OR IMPLIED. CONSTRUCTION PLANS PREPARED FROM DESIGN AND DETAIL INFORMATION SHOWN HEREIN MUST BE REVIEWED, APPROVED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER FOR EACH SPECIFIC PROJECT.

RECOMMENDED APR. 23, 2013
Thomas P. Macisova
CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013
[Signature]
ACTING DIR. BUR. OF PROJECT DELIVERY

SHEET 12 OF 20
BLC-561M

BAR SCHEDULE

MARK	SIZE	SOURCE	LENGTH	SOURCE	NO.	SOURCE	TYPE	A	B	C	H	J	K	SOURCE	REMARKS	SOURCE	BAR WEIGHT lb/ft (4)	TOTAL BAR WEIGHT (5)
A500	5		FROM _____ TO _____	(12)-(15)-0.1667 (11)-(15)-0.1667		{ EC-0.25 1.50 +0.99 } +1 (1)	STR.								VARIES BY _____	| (11)-(12) | NO. OF BARS (3)	1.043	
A501	5		FROM _____ TO _____	(11)-(15)-0.1667 (13)-(15)-0.1667		{ ED-0.25 1.50 +0.99 } +1 (1)	STR.								VARIES BY _____	| (13)-(11) | NO. OF BARS (3)	1.043	
A__02		DESIGNER (2)	FROM _____ TO _____	(12)-(15)-0.1667 (11)-(15)-0.1667		{ EC-1.00(TAN(AA))-0.25 REQ. SPA. (DESIGNER) } +1 (1)(2)	STR.								VARIES BY _____	| (11)-(12) | NO. OF BARS (3)		
A__03		DESIGNER (2)	FROM _____ TO _____	(11)-(15)-0.1667 (13)-(15)-0.1667		{ ED-1.00(TAN(AB))-0.25 REQ. SPA. (DESIGNER) } +1 (1)(2)	STR.								VARIES BY _____	| (13)-(11) | NO. OF BARS (3)		
A504	5			EC+1.75		{ ((11)+(11)-(13)-(15))-2.00 1.50 } +0.99 } +1 (2)(3)	STR.										1.043	
A505	5			ED-0.1667		SAME AS A504	STR.										1.043	
A506	5			EC-1.00(TAN(AA))+1.75		SAME AS A504	STR.										1.043	
A507	5			ED-1.00(TAN(AB))-0.1667		SAME AS A504	STR.										1.043	
A508	5			$\sqrt{((11)-(12))^2+(EC)^2} +1.75$	1		STR.										1.043	
A509	5			$\sqrt{((13)-(11))^2+(ED)^2} -0.1667$	1		STR.										1.043	
A510	5			$\sqrt{((11)-(12))^2+(EC-1.00(TAN(AA)))^2} +1.75$	1		STR.										1.043	
A511	5			$\sqrt{((13)-(11))^2+(ED-1.00(TAN(AB)))^2} -0.1667$	1		STR.										1.043	
EA312	3			(BA-0.125)+2.50+({1.50 SIN(AT)}-0.25)		{ ((20)-(12))-0.3333 0.8333 } +0.99 } +1 (1)	STR.								BEND IN FIELD		0.376	
EA313	3			(CA-0.125)+(CC-0.25)+2.25+({1.50 SIN(AT)}-0.25)		{ ((30)-(13))-0.3333 0.8333 } +0.99 } +1 (1)	STR.								BEND IN FIELD		0.376	
EA514	5			(20)-(12)+1.5		USE 6 BARS FOR 90° SKEWS, AND 7 BARS ALL OTHER SKEWS	STR.										1.043	
EA515	5			(30)-(13)+1.5	6		STR.										1.043	
A516	5		4.25			{ NO. OF BARS FROM A__02+1 2 }	(1) (3)	1.583	1.083	1.583							0.167	1.043
A517	5		4.25			{ NO. OF BARS FROM A__03+1 2 }	(1) (3)	1.583	1.083	1.583							0.167	1.043
A518	5		1.00		32		STR.											1.043
W520	5		FROM _____ TO _____	FB-0.1667 FA-0.1667		{ AC-0.50 1.50 +0.99 } +1 (1)	STR.								VARIES BY _____	FC NO. OF BARS	1.043	
W__21		DESIGNER (2)	FROM _____ TO _____	FB-0.1667 FA-0.1667		{ AC-0.50 REQ. SPA. (DESIGNER) } +0.99 } +1 (1)(2)	STR.								VARIES BY _____	FC NO. OF BARS		
W522	5			AC-0.3333		{ FB-0.50 1.50 +0.99 } +1 SHOW ON DRAWINGS (1)(6)	STR.											1.043
W523	5		FROM _____ TO _____	(FC-1.25)(AC-0.3333) FC 1.00(AC-0.3333) FC		{ FC-2.25 1.50 +0.99 } +1 SHOW ON DRAWINGS (1)(6)	STR.								VARIES BY _____	(LENGTH FROM _____) - (LENGTH TO _____) NO. OF BARS SHOWN ON DRAWINGS	1.043	

FOOTNOTES FOR TABLE

- (1) TAKE THE INTEGER VALUE OF THE QUANTITY WITHIN THE { } .
- (2) USE THE DEPARTMENT'S LRFD ABUTMENT AND RETAINING WALL ANALYSIS AND DESIGN PROGRAM (ABLRFD) IN CONJUNCTION WITH THE BLC-560M DATA ASSEMBLY AND CONSTRUCTION SHEETS TO CALCULATE THE NECESSARY DIMENSIONS AND REINFORCEMENT FOR THE ABUTMENT (WITHOUT BACKWALL), WINGWALLS, AND SPREAD FOOTING.
- (3) TAKE THE ABSOLUTE VALUE OF THE QUANTITY WITHIN THE | | .
- (4) USE TABLE 1 ON THIS SHEET TO COMPLETE BAR WEIGHT QUANTITIES.
- (5) TOTAL BAR WEIGHT = (BAR LENGTH OR AVERAGE BAR LENGTH) × (TOTAL NO. OF BARS) × (BAR WEIGHT)
- (6) SHOW TWICE THIS NUMBER ON THE BAR SCHEDULE (TOTAL NO. OF BARS)

BAR SIZE	RECOMMENDED END HOOK DIMENSIONS (ALL GRADES)		BAR WEIGHT lb/ft
	180° HOOKS		
	A	J	
3	0.417	0.250	0.376
4	0.500	0.333	0.668
5	0.583	0.417	1.043
6	0.667	0.500	1.502
7	0.833	0.583	2.044
8	0.917	0.667	2.670
9	1.250	0.979	3.400
10	1.417	1.104	4.303
11	1.583	1.229	5.313

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

DATA ASSEMBLY SHEETS
SPREAD FOOTING ABUTMENT

THESE PLANS ARE ACCOMPANIED BY NO WARRANTIES, EXPRESSED OR IMPLIED. CONSTRUCTION PLANS PREPARED FROM DESIGN AND DETAIL INFORMATION SHOWN HEREIN MUST BE REVIEWED, APPROVED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER FOR EACH SPECIFIC PROJECT.

RECOMMENDED APR. 23, 2013 <i>Thomas P. Macieira</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>[Signature]</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 13 OF 20 BLC-561M
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CONTROL DIMENSIONS				
CODE	DESCRIPTION	SOURCE	VALUE (5)	
A1	SKEW ANGLE	A1	(1)	DEG.
A2	% GRADE (LOOKING STATIONS AHEAD)	A2	(1)	%
C1	CURB TO CURB ROADWAY WIDTH (NORMAL)	C1	(1)	
C2	DECK WIDTH OUT TO OUT	C2	(1)	
A	DECK OR LONG. PANEL THICKNESS	USE E1 FOR GLULAM & STEEL BEAM OR E2 FOR LONG. PANEL	(1)	
B	BEAM DEPTH	USE L4 FOR GLULAM BEAM, L5 FOR STEEL BEAM OR ZERO (0) FOR LONG. PANEL	(1)	
C	BEARING PAD THICKNESS	USE N3 OR P3 FOR GLULAM AND STEEL BEAM OR 0.0625 FOR LONG. PANEL	(1)	
AA	WINGWALL "A" SKEW ANGLE	DESIGNER (15°00'00" MIN., 45°00'00" MAX.)	(4)	DEG.
AB	WINGWALL "B" SKEW ANGLE	DESIGNER (15°00'00" MIN., 45°00'00" MAX.)	(4)	DEG.
AC	WINGWALL "A" LENGTH	DESIGNER	(4)	
AD	WINGWALL "B" LENGTH	DESIGNER	(4)	
BA	CHEEKWALL "A"	$0.5 + \left(\frac{1.50}{\tan(A1)}\right) + 1.50 \tan\left(\frac{AA}{2}\right)$		
BB	CHEEKWALL "A"	$1.50 \tan\left(\frac{AA}{2}\right)$		
CA	CHEEKWALL "B"	$0.5 - \left(\frac{1.50}{\tan(A1)}\right) + 1.50 \tan\left(\frac{AB}{2}\right)$		
IF CA ≥ 6" USE CONDITION 1 EQUATIONS, OTHERWISE USE CONDITION 2 EQUATIONS				
CONDITION 1 EQUATIONS				
CA	CHEEKWALL "B"	AS CALCULATED ABOVE		
CB	CHEEKWALL "B"	$1.50 \tan\left(\frac{AB}{2}\right)$		
CC	CHEEKWALL "B"	0.5		
CONDITION 2 EQUATIONS				
CA	CHEEKWALL "B"	0.5		
CB	CHEEKWALL "B"	$\frac{1.5 - 1.5(\cos(AB))}{\sin(AB)}$		
CC	CHEEKWALL "B"	$0.5 + \left(\frac{1.5}{\tan(A1)}\right) - 1.5 \tan\left(\frac{AB}{2}\right)$		
DA	WINGWALL "A" LENGTH	AC+BB		
DB	WINGWALL "B" LENGTH	AD+CB		
EA	ABUTMENT LENGTH	$\frac{C2+0.0833}{\sin(A1)}$		
EB	ABUTMENT LENGTH	EA+BA+CA		
EC	ABUTMENT LENGTH	$\frac{EA}{2} + BA$		
ED	ABUTMENT LENGTH	$\frac{EA}{2} + CA$		
EE	ABUTMENT LENGTH	$\frac{0.75}{\tan(A1)}$		
FA	WINGWALL "A" HEIGHT	(20) - (15)	(2)	
FB	WINGWALL "A" HEIGHT	(22) - (15)	(2)	
FC	WINGWALL "A" HEIGHT	(20) - (22)	(2)	
FD	WINGWALL REINFORCEMENT PROJECTION	DESIGNER	(3)	
GA	WINGWALL "B" HEIGHT	(30) - (15)	(2)	
GB	WINGWALL "B" HEIGHT	(32) - (15)	(2)	
GC	WINGWALL "B" HEIGHT	(30) - (32)	(2)	
GD	WINGWALL REINFORCEMENT PROJECTION	DESIGNER	(3)	
HA	HEIGHT OF FINISH GRADE CHAMFER (ABUTMENT)	(18) - (15)	(2)	
HB	REAR FACE REINFORCEMENT PROJECTION (ABUTMENT)	DESIGNER	(3)	
IA	ABUTMENT FOOTING WIDTH	DESIGNER	(3)	
IB	ABUTMENT FOOTING WIDTH	DESIGNER	(3)	
IC	ABUTMENT FOOTING WIDTH	IA-IB		
JA	WINGWALL "A" FOOTING WIDTH	DESIGNER	(3)	
JB	WINGWALL "A" FOOTING WIDTH	DESIGNER	(3)	
JC	WINGWALL "A" FOOTING WIDTH	JA-JB		
KA	WINGWALL "B" FOOTING WIDTH	DESIGNER	(3)	
KB	WINGWALL "B" FOOTING WIDTH	DESIGNER	(3)	
KC	WINGWALL "B" FOOTING WIDTH	KA-KB		
LA	ABUTMENT FOOTING LENGTH	$EB - \frac{IB}{\tan(AA)} + \frac{JB}{\sin(AA)} - \frac{IB}{\tan(AB)} + \frac{KB}{\sin(AB)}$		
LB	ABUTMENT FOOTING LENGTH	$EB - \frac{IC}{\tan(AA)} + \frac{JC}{\sin(AA)} - \frac{IC}{\tan(AB)} + \frac{KC}{\sin(AB)}$		
MA	WINGWALL "A" FOOTING LENGTH	$\frac{IB}{\sin(AA)} - \frac{JB}{\tan(AA)}$		
MB	WINGWALL "A" FOOTING LENGTH	$DA + \frac{IB}{\sin(AA)} - \frac{JB}{\tan(AA)}$		
MC	WINGWALL "A" FOOTING LENGTH	$DA + \frac{JC}{\tan(AA)} - \frac{IC}{\sin(AA)}$		
NA	WINGWALL "B" FOOTING LENGTH	$\frac{IB}{\sin(AB)} - \frac{KB}{\tan(AB)}$		
NB	WINGWALL "B" FOOTING LENGTH	$DB + \frac{IB}{\sin(AB)} - \frac{KB}{\tan(AB)}$		
NC	WINGWALL "B" FOOTING LENGTH	$DB + \frac{KC}{\tan(AB)} - \frac{IC}{\sin(AB)}$		

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CONTROL DIMENSIONS				
CODE	DESCRIPTION	SOURCE	VALUE (5)	
OA	ABUTMENT TOE TO FIRST ROW	DESIGNER		
OB	ABUTMENT HEEL TO LAST ROW	DESIGNER		
OC	C/C OF PILE ROWS (ABUTMENT)	$\frac{IA-OA-OB}{2}$		
OD	ABUTMENT PILE BATTER VERTICAL COMPONENT	DESIGNER		
PA	ABUTMENT TO CENTERLINE OF PILE IN FRONT ROW	DESIGNER		
PB	NUMBER OF PILES IN FRONT ROW (ABUTMENT)	DESIGNER	(3)	
PC	C/C OF PILES IN FRONT ROW (ABUTMENT)	$\frac{LA-2(PA)}{PB-1}$		
QA	ABUTMENT TO CENTERLINE OF PILES IN REAR ROWS	DESIGNER		
QB	NUMBER OF PILES IN REAR ROW (ABUTMENT)	DESIGNER	(3)	
QC	C/C OF PILES IN REAR ROWS (ABUTMENT)	$\frac{LB-2(QA)}{QB-1}$		
RA	WINGWALL "A" TOE TO FIRST ROW	DESIGNER		
RB	WINGWALL "A" HEEL TO LAST ROW	DESIGNER		
RC	C/C OF PILE ROWS (WINGWALL "A")	JA-RA-RB		
RD	WINGWALL "A" PILE BATTER VERTICAL COMPONENT	DESIGNER		
SA	WINGWALL "A" TO CENTERLINE OF PILE IN FRONT ROW	DESIGNER		
SB	NUMBER OF PILES IN FRONT ROW (WINGWALL "A")	DESIGNER	(3)	
SC	C/C OF PILES IN FRONT ROW (WINGWALL "A")	$\frac{MB-SA-1.50}{SB-1}$		
TA	WINGWALL "A" TO CENTERLINE OF PILE IN REAR ROW	DESIGNER		
TB	NUMBER OF PILES IN REAR ROW (ABUTMENT)	DESIGNER	(3)	
TC	C/C OF PILES IN REAR ROW (WINGWALL "A")	$\frac{MC-TA-1.50}{TB-1}$		
UA	WINGWALL "B" TOE TO FIRST ROW	DESIGNER		
UB	WINGWALL "B" HEEL TO LAST ROW	DESIGNER		
UC	C/C OF PILE ROWS (WINGWALL "B")	KA-UA-UB		
UD	WINGWALL "B" PILE BATTER VERTICAL COMPONENT	DESIGNER		
VA	WINGWALL "B" TO CENTERLINE OF PILE IN FRONT ROW	DESIGNER		
VB	NUMBER OF PILES IN FRONT ROW (WINGWALL "B")	DESIGNER	(3)	
VC	C/C OF PILES IN FRONT ROW (WINGWALL "B")	$\frac{NB-VA-1.50}{VB-1}$		
WA	WINGWALL "B" TO CENTERLINE OF PILE IN REAR ROW	DESIGNER		
WB	NUMBER OF PILES IN REAR ROW (ABUTMENT)	DESIGNER	(3)	
WC	C/C OF PILES IN REAR ROW (WINGWALL "A")	$\frac{NC-WA-1.50}{WB-1}$		
XA	PILE DESIGNATION	DESIGNER		

FOOTNOTES FOR TABLES

- (1) SEE APPROPRIATE SUPERSTRUCTURE DATA ASSEMBLY SHEETS (BLC-561M SHEETS 1 THRU 10).
- (2) SEE BLC-561M SHEET 16 FOR CONTROL STATIONS AND ELEVATIONS.
- (3) USE PENNDOT'S LRFD ABUTMENT AND RETAINING WALL ANALYSIS AND DESIGN PROGRAM (ABLRFD) IN CONJUNCTION WITH THE DATA ASSEMBLY SHEETS TO CALCULATE THE NECESSARY DIMENSIONS AND REINFORCEMENT FOR THE ABUTMENT (WITHOUT BACKWALL), WINGWALLS, AND FOOTING. THIS STANDARD IS SET UP FOR THREE PILE ROWS AT ABUTMENTS (FRONT TWO ROWS BOTH BATTERED OR BOTH VERTICAL) AND TWO PILE ROWS AT WINGWALLS (FRONT ROW BATTERED OR VERTICAL). IF A DIFFERENT PILE CONFIGURATION IS CHOSEN, THEN BLC-567M IS NOT APPLICABLE.
- (4) SEE BLC-561M SHEET 16 FOR WINGWALL EXAMPLE.
- (5) SHOW ALL VALUES IN FEET AND INCHES UNLESS NOTED OTHERWISE.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

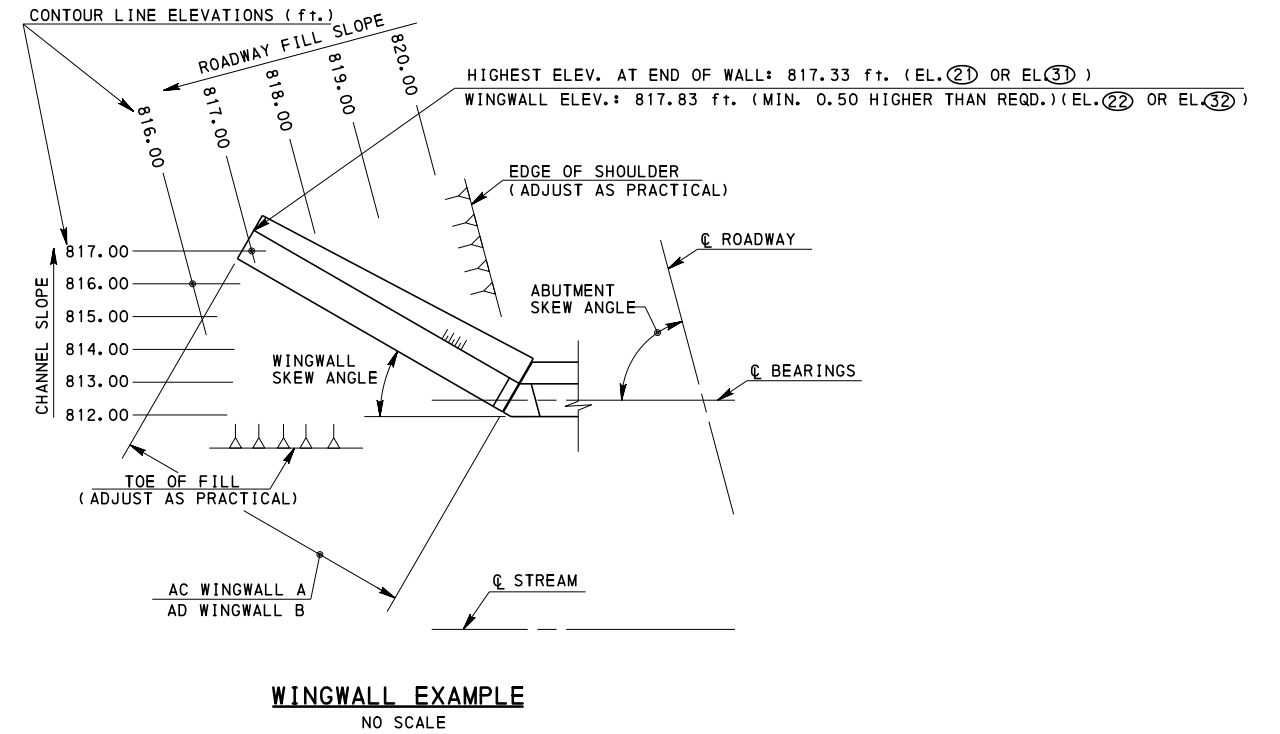
S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DATA ASSEMBLY SHEETS PILE SUPPORTED ABUTMENT		
RECOMMENDED APR. 23, 2013 <i>Thomas P. Macieira</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. All...</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 15 OF 20 BLC-561M

CONTROL STATIONS AND ELEVATIONS			
CODE	DESCRIPTION	SOURCE	VALUE (2)
⑩	ABUTMENT ELEVATION	USE ① FOR ABUT. 1, OR ② FOR ABUT. 2	(1)
⑪	ABUTMENT ELEVATION	$⑩ - (0.125 + \frac{C_1}{2})(0.02) + A+B+C+0.0417$	
⑫	ABUTMENT ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	$⑪ - \frac{A_2}{100} (\frac{EA}{2} (\cos(A1)))$	ABUTMENT 1
		$⑪ + \frac{A_2}{100} (\frac{EA}{2} (\cos(A1)))$	ABUTMENT 2
⑬	ABUTMENT ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	$⑪ + \frac{A_2}{100} (\frac{EA}{2} (\cos(A1)))$	ABUTMENT 1
		$⑪ - \frac{A_2}{100} (\frac{EA}{2} (\cos(A1)))$	ABUTMENT 2
⑭	BOTTOM OF FOOTING ELEVATION	DESIGNER	
⑮	TOP OF FOOTING ELEVATION	⑭ + 2.50	
⑯	F.G.E./TOP OF SCOUR PROTECTION	DESIGNER (SEE DM-4, PART A, CHAPTER 7 FOR SCOUR REQ.)	
⑰	ABUTMENT PILE TIP ELEV.	DESIGNER	
⑳	WINGWALL "A" ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	$⑩ - (\frac{A_2}{100} (\frac{EA}{2} (\cos(A1))) - \frac{C_1}{2} (0.02) + 0.50)$	ABUTMENT 1
		$⑩ + (\frac{A_2}{100} (\frac{EA}{2} (\cos(A1))) - \frac{C_1}{2} (0.02) + 0.50)$	ABUTMENT 2
㉑	WINGWALL "A" ELEVATION	DESIGNER (SEE WINGWALL EXAMPLE)	
㉒	WINGWALL "A" ELEVATION	㉑ + 0.50	
㉓	WINGWALL "A" PILE TIP ELEV.	DESIGNER	
㉔	WINGWALL "B" ELEVATION (USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	$⑩ + (\frac{A_2}{100} (\frac{EA}{2} (\cos(A1))) - \frac{C_1}{2} (0.02) + 0.50)$	ABUTMENT 1
		$⑩ - (\frac{A_2}{100} (\frac{EA}{2} (\cos(A1))) - \frac{C_1}{2} (0.02) + 0.50)$	ABUTMENT 2
㉕	WINGWALL "B" ELEVATION	DESIGNER (SEE WINGWALL EXAMPLE)	
㉖	WINGWALL "B" ELEVATION	㉕ + 0.50	
㉗	WINGWALL "B" PILE TIP ELEV.	DESIGNER	

IN GENERAL, PROVIDE WINGWALLS OF SUFFICIENT LENGTH TO RETAIN THE ROADWAY EMBANKMENT TO THE REQUIRED EXTENT AND TO FURNISH PROTECTION AGAINST EROSION. COMPUTE WINGWALL LENGTHS USING THE ACTUAL CONDITION AT THE SITE. THE FOLLOWING METHOD IS PROPOSED TO COMPUTE THE REQUIRED LENGTHS.



QUANTITIES						
ITEM	QUANTITY FORMULA			UNIT	SUBTOTAL	TOTAL
CLASS 3 EXCAVATION	DESIGNER			C. Y.		
CHEEKWALL A	CLASS AA CEMENT CONCRETE	$(BB+0.5 + \frac{BA-0.5-BB}{2}) 1.50 (⑳ - ⑫) (\frac{1YD^3}{27ft^3})$		C. Y.		
CHEEKWALL B		$(CB+0.50 + \frac{0.50+CB-CA}{2}) 1.50 (㉓ - ⑬) (\frac{1YD^3}{27ft^3})$	CONDITION 1	C. Y.		
		$(2(CB) - 0.50 + \frac{CC+CB-0.50}{2}) 1.50 (㉓ - ⑬) (\frac{1YD^3}{27ft^3})$	CONDITION 2	C. Y.		
ABUTMENT	CLASS A CEMENT CONCRETE	$[1.5 (⑪ - ⑮) + (\frac{1}{2})(\frac{1}{10})(⑪ - ⑮)^2] (EB) (\frac{1YD^3}{27ft^3})$		C. Y.		
WINGWALL A		$[1.5 (㉒ + \frac{㉒ - ㉒}{2} - ⑮) + (\frac{1}{2})(\frac{1}{10})(㉒ + \frac{㉒ - ㉒}{2} - ⑮)^2] (AC) (\frac{1YD^3}{27ft^3})$		C. Y.		
WINGWALL B		$[1.5 (㉖ + \frac{㉖ - ㉖}{2} - ⑮) + (\frac{1}{2})(\frac{1}{10})(㉖ + \frac{㉖ - ㉖}{2} - ⑮)^2] (AD) (\frac{1YD^3}{27ft^3})$		C. Y.		
FOOTING		$(\frac{1}{2})(2.50)(LA+LB)(IA) + (MB+MC)(JA) + (NB+NC)(KA) (\frac{1YD^3}{27ft^3})$		C. Y.		
SELECTED BORROW EXCAVATION, STRUCTURE BACKFILL	DESIGNER			C. Y.		
NO. 57 COARSE AGGREGATE	6 WEEPHOLES ($\frac{1}{2}$ C.Y. WEEPHOLE)			C. Y.	3.0	3.0
REINFORCEMENT BARS	DESIGNER - CALCULATE BAR WEIGHT FROM SHEETS 37 & 38 OF BLC-561M			lb		
REINFORCEMENT BARS, EPOXY COATED	DESIGNER - CALCULATE BAR WEIGHT FROM SHEETS 37 & 38 OF BLC-561M			lb		
ABUTMENT	BEARING PILES	$(PB+QB)(⑭ + 1.00 - ⑰) (\frac{(OD^2+1)^{0.5}}{OD}) + QB (⑭ + 1.00 - ⑰)$		L. F.		
WINGWALL A		$SB (⑭ + 1.00 - ㉓) (\frac{(RD^2+1)^{0.5}}{RD}) + TB (⑭ + 1.00 - ㉓)$		L. F.		
WINGWALL B		$VB (⑭ + 1.00 - ㉗) (\frac{(UD^2+1)^{0.5}}{UD}) + WB (⑭ + 1.00 - ㉗)$		L. F.		
PILE TIP REINFORCEMENT	PB+2(QB)+SB+TB+VB+WB			EA		

FOOTNOTES FOR TABLES

- (1) SEE APPROPRIATE SUPERSTRUCTURE DATA ASSEMBLY SHEETS (BLC-561M SHEETS 1 THRU 10).
- (2) SHOW ALL VALUES IN FEET. USE DECIMAL NOTATION TO ACCURACY OF 0.01 FT.

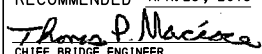
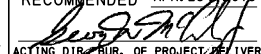
Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DATA ASSEMBLY SHEETS
PILE SUPPORTED ABUTMENT

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RECOMMENDED APR. 23, 2013
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 16 OF 20
 BLC-561M

BAR SCHEDULE																		
MARK	SIZE	SOURCE	LENGTH	SOURCE	NO.	SOURCE	TYPE	A	B	C	H	J	K	SOURCE	REMARKS	SOURCE	BAR WEIGHT lb/ft (4)	TOTAL BAR WEIGHT (5)
A500	5		FROM _____	(12 - 15) - 0.1667		{ EC-0.25 1.50 + 0.99 } + 1 (1)	STR.								VARIES BY _____	(11 - 12) NO. OF BARS	1.043	
			TO _____	(11 - 15) - 0.1667														
A501	5		FROM _____	(11 - 15) - 0.1667		{ ED-0.25 1.50 + 0.99 } + 1 (1)	STR.								VARIES BY _____	(13 - 11) NO. OF BARS	1.043	
			TO _____	(13 - 15) - 0.1667														
A__02		DESIGNER (2)	FROM _____	(12 - 15) - 0.1667		{ EC-1.00(TAN(AA)) - 0.25 REQ. SPA. (DESIGNER) + 0.99 } + 1 (1)(2)	STR.								VARIES BY _____	(11 - 12) NO. OF BARS		
			TO _____	(11 - 15) - 0.1667														
A__03		DESIGNER (2)	FROM _____	(11 - 15) - 0.1667		{ ED-1.00(TAN(AA)) - 0.25 REQ. SPA. (DESIGNER) + 0.99 } + 1 (1)(2)	STR.								VARIES BY _____	(13 - 11) NO. OF BARS		
			TO _____	(13 - 15) - 0.1667														
A504	5			EC+1.75		{ (11 + (11 - 13) - 15) - 2.00 1.50 + 0.99 } + 1 (2)(3)	STR.										1.043	
A505	5			ED-0.1667		SAME AS A504	STR.										1.043	
A506	5			EC-1.00(TAN(AA)) + 1.75		SAME AS A504	STR.										1.043	
A507	5			ED-1.00(TAN(AB)) - 0.1667		SAME AS A504	STR.										1.043	
A508	5			$\sqrt{(11 - 12)^2 + (EC)^2} + 1.75$	1		STR.										1.043	
A509	5			$\sqrt{(13 - 11)^2 + (ED)^2} - 0.1667$	1		STR.										1.043	
A510	5			$\sqrt{(11 - 12)^2 + (EC - 1.00(TAN(AA)))^2} + 1.75$	1		STR.										1.043	
A511	5			$\sqrt{(13 - 11)^2 + (ED - 1.00(TAN(AB)))^2} - 0.1667$	1		STR.										1.043	
EA312	3			(BA - 0.125) + 2.50 + (1.50 / SIN(AT) - 0.25)		{ (20 - 12) - 0.3333 0.8333 + 0.99 } + 1 (1)	STR.								BEND IN FIELD		0.376	
EA313	3			(CA - 0.125) + (CC - 0.25) + 2.25 + (1.50 / SIN(AT) - 0.25)		{ (30 - 13) - 0.3333 0.8333 + 0.99 } + 1 (1)	STR.								BEND IN FIELD		0.376	
EA514	5			(20 - 12) + 1.50		USE 6 BARS FOR 90° SKEWS, AND 7 BARS ALL OTHER SKEWS	STR.										1.043	
EA515	5			(30 - 13) + 1.50	6		STR.										1.043	
A516	5		4.25			{ NO. OF BARS FROM A__02 + 1 2 }	(1)	3	1.583	1.083	1.583						0.167	1.043
A517	5		4.25			{ NO. OF BARS FROM A__03 + 1 2 }	(1)	3	1.583	1.083	1.583						0.167	1.043
A518	5		1.00		32		STR.										1.043	
W520	5		FROM _____	FB-0.1667		{ FB-0.50 1.50 + 0.99 } + 1 (1)	STR.								VARIES BY _____	FC NO. OF BARS	1.043	
			TO _____	FA-0.1667														
W__21		DESIGNER (2)	FROM _____	FB-0.1667		{ AC-0.50 REQ. SPA. (DESIGNER) + 0.99 } + 1 (1)(2)	STR.								VARIES BY _____	FC NO. OF BARS		
			TO _____	FA-0.1667														
W522	5			AC-0.3333		{ FB-0.50 1.50 + 0.99 } + 1 SHOW ON DRAWINGS (1)(6)	STR.										1.043	
W523	5		FROM _____	{ FC-1.25 (AC-0.3333) FC		{ FC-2.25 1.50 } + 1 SHOW ON DRAWINGS (1)(6)	STR.								VARIES BY _____	(LENGTH FROM _____) - (LENGTH TO _____) NO. OF BARS SHOWN ON DRAWINGS	1.043	
			TO _____	1.00(AC-0.3333) FC														

FOOTNOTES FOR TABLE

- (1) TAKE THE INTEGER VALUE OF THE QUANTITY WITHIN THE { } .
- (2) USE THE DEPARTMENT'S LRFD ABUTMENT AND RETAINING WALL ANALYSIS AND DESIGN PROGRAM (ABLRFD) IN CONJUNCTION WITH THE BLC-560M DATA ASSEMBLY AND CONSTRUCTION SHEETS TO CALCULATE THE NECESSARY DIMENSIONS AND REINFORCEMENT FOR THE ABUTMENT (WITHOUT BACKWALL), WINGWALLS, AND SPREAD FOOTING.
- (3) TAKE THE ABSOLUTE VALUE OF THE QUANTITY WITHIN THE | | .
- (4) USE TABLE 1 ON THIS SHEET TO COMPLETE BAR WEIGHT QUANTITIES.
- (5) TOTAL BAR WEIGHT = (BAR LENGTH OR AVERAGE BAR LENGTH) x (TOTAL NO. OF BARS) x (BAR WEIGHT)
- (6) SHOW TWICE THIS NUMBER ON THE BAR SCHEDULE (TOTAL NO. OF BARS)

BAR SIZE	RECOMMENDED END HOOK DIMENSIONS (ALL GRADES)		BAR WEIGHT lb/ft
	180° HOOKS		
	A	J	
3	0.417	0.250	0.376
4	0.500	0.333	0.668
5	0.583	0.417	1.043
6	0.667	0.500	1.502
7	0.833	0.583	2.044
8	0.917	0.667	2.670
9	1.250	0.979	3.400
10	1.417	1.104	4.303
11	1.583	1.229	5.313

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DATA ASSEMBLY SHEETS
PILE SUPPORTED ABUTMENT

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RECOMMENDED APR. 23, 2013

 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013

 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 17 OF 20
BLC-561M

CONTROL DIMENSIONS				
CODE	DESCRIPTION	SOURCE	VALUE(5)	
A1	SKEW ANGLE	A1	(1)	DEG.
A2	% GRADE (LOOKING STATIONS AHEAD)	A2	(1)	%
C1	CURB TO CURB ROADWAY WIDTH (NORMAL)	C1	(1)	
C2	DECK WIDTH OUT TO OUT	C2	(1)	
A	DECK OR LONG. PANEL THICKNESS	USE E1 FOR GLULAM & STEEL BEAM OR E2 FOR LONG. PANEL	(1)	
B	BEAM DEPTH	USE L4 FOR GLULAM BEAM, L5 FOR STEEL BEAM OR ZERO (0) FOR LONG. PANEL	(1)	
C	BEARING PAD THICKNESS	USE N3 OR P3 FOR GLULAM AND STEEL BEAM OR 0.0625 FOR LONG. PANEL	(1)	
AA	WINGWALL "A" SKEW ANGLE	DESIGNER (15°00'00" MIN., 45°00'00" MAX.)	(2)	DEG.
AB	WINGWALL "B" SKEW ANGLE	DESIGNER (15°00'00" MIN., 45°00'00" MAX.)	(2)	DEG.
AC	WINGWALL "A" LENGTH	DESIGNER	(2)	
AD	WINGWALL "B" LENGTH	DESIGNER	(2)	
BA	WINGWALL "A" CORNER DIMENSIONS	$1.00 + \left(\frac{1.50}{\tan(A1)}\right) + 1.50 \tan\left(\frac{AA}{2}\right)$		
BB	WINGWALL "A" CORNER DIMENSIONS	$1.50 \tan\left(\frac{AA}{2}\right) + \left(\frac{0.25}{\tan(AA)}\right) + 0.333(\cos(AA))$		
CA	WINGWALL "B" CORNER DIMENSIONS	$1.00 - \left(\frac{1.50}{\tan(A1)}\right) + 1.50 \tan\left(\frac{AB}{2}\right)$		
IF CA ≥ 6" USE CONDITION 1 EQUATIONS, OTHERWISE USE CONDITION 2 EQUATIONS				
CONDITION 1 EQUATIONS				
CA	WINGWALL "B" CORNER DIMENSIONS	AS CALCULATED ABOVE		
CB	WINGWALL "B" CORNER DIMENSIONS	$1.50 \tan\left(\frac{AB}{2}\right) + \left(\frac{0.25}{\tan(AB)}\right) + 0.333(\cos(AB))$		
CC	WINGWALL "B" CORNER DIMENSIONS	1.00		
CONDITION 2 EQUATIONS				
CA	WINGWALL "B" CORNER DIMENSIONS	1.00		
CB	WINGWALL "B" CORNER DIMENSIONS	$1.50 \tan\left(\frac{AB}{2}\right) + \left(\frac{0.25}{\tan(AB)}\right) + 0.333(\cos(AB))$		
CC	WINGWALL "B" CORNER DIMENSIONS	$1.00 + \left(\frac{1.50}{\tan(A1)}\right) - 1.50 \tan\left(\frac{AB}{2}\right)$		
DA	WINGWALL "A" OUT TO OUT PILE DIMENSION	TIMBER PILE ABUT.	$AC - 0.5 + \left(\frac{1.00}{\tan(AA)}\right) - \left(\frac{0.833}{\tan(AA)}\right)$	
DB	WINGWALL "B" OUT TO OUT PILE DIMENSION		$AD - 0.5 + \left(\frac{1.00}{\tan(AB)}\right) - \left(\frac{0.833}{\tan(AB)}\right)$	
EA	ABUTMENT LENGTH	STEEL PILE ABUT.	$1.00 + 1.00(\tan(AA)) - \left(\frac{1.00}{\sin(AA)\cos(AA)}\right) + \left(\frac{0.833}{\tan(AA)}\right)$	
EB	ABUTMENT LENGTH		$CC + 1.00(\tan(AB)) - \left(\frac{1.00}{\sin(AB)\cos(AB)}\right) + \left(\frac{0.833}{\tan(AB)}\right)$	
DA	WINGWALL "A" OUT TO OUT PILE DIMENSION	STEEL PILE ABUT.	$AC - 0.50 + \left(\frac{1.030}{\sin(AA)}\right) - \left(\frac{DC}{\tan(AA)}\right) - \left(\frac{0.653}{\tan(AA)}\right)$	
DB	WINGWALL "B" OUT TO OUT PILE DIMENSION		$AD - 0.50 + \left(\frac{1.030}{\sin(AB)}\right) - \left(\frac{DD}{\tan(AB)}\right) - \left(\frac{0.653}{\tan(AB)}\right)$	
DC	WINGWALL "A" PILE OFFSET	STEEL PILE ABUT.	$0.584(\cos(46.1 - AA)) - 0.404$	
DD	WINGWALL "B" PILE OFFSET		$0.584(\cos(46.1 - AB)) - 0.404$	
EA	ABUTMENT LENGTH	STEEL PILE ABUT.	$1.00 + 1.00(\tan(AA)) - \left(\frac{1.00}{\sin(AA)\cos(AA)}\right) + \left(\frac{DC}{\sin(AA)}\right) + \left(\frac{0.653}{\sin(AA)}\right)$	
EB	ABUTMENT LENGTH		$CC + 1.00(\tan(AB)) - \left(\frac{1.00}{\sin(AB)\cos(AB)}\right) + \left(\frac{DD}{\sin(AB)}\right) + \left(\frac{0.653}{\sin(AB)}\right)$	
EC	ABUTMENT LENGTH		$\left(\frac{C2}{\tan(A1)}\right) + EA$	
ED	ABUTMENT LENGTH		$\left(\frac{C2}{\tan(A1)}\right) + EB$	
EE	TIMBER BEARING SILL LENGTH		$\left(\frac{C2}{\tan(A1)}\right) + EA + EB + 2.00$	
EF	NUMBER OF PILES (ABUTMENT)	DESIGNER	(3)	
EG	PILE SPACING (ABUTMENT)	$\frac{EF}{EC + ED}$		
FA	NUMBER OF PILES (WINGWALL "A")	DESIGNER	(3)	
FB	PILE SPACING (WINGWALL "A")	$\left(\frac{DA}{FA}\right)$		
GA	NUMBER OF PILES (WINGWALL "B")	DESIGNER	(3)	
GB	PILE SPACING (WINGWALL "B")	$\left(\frac{DB}{GA}\right)$		
HA	CHANGE IN WINGWALL "A" HEIGHT	(20) - (22)		
HB	CHANGE IN WINGWALL "B" HEIGHT	(30) - (32)		
IA	WINGWALL "A" SLOPE	$10\left(\frac{HA}{AC}\right)$		
IB	WINGWALL "B" SLOPE	$10\left(\frac{HB}{AD}\right)$		
JA	WINGWALL "A" COPING LENGTH	$\left(\frac{(10^2 + 1A^2)^{0.5}}{10}\right) (AC + 0.50)$		
JB	WINGWALL "B" COPING LENGTH	$\left(\frac{(10^2 + 1B^2)^{0.5}}{10}\right) (AC + 0.50)$		
KA	EXPOSED ABUTMENT HEIGHT	(1) - (14) - 1.167	(4)	
LA	WINGWALL "A" CAP PLATE LENGTH	STEEL PILE ABUT.	$\left(\frac{(10^2 + 1A^2)^{0.5}}{10}\right) 1.01$	
LB	WINGWALL "B" CAP PLATE LENGTH		$\left(\frac{(10^2 + 1B^2)^{0.5}}{10}\right) 1.01$	

CONTROL STATIONS AND ELEVATIONS			
CODE	DESCRIPTION	SOURCE	VALUE (6)
(10)	ABUTMENT ELEVATION	USE (1) FOR ABUT. 1, OR (2) FOR ABUT. 2	(1)
(11)	ABUTMENT ELEVATION	$(10) - (0.125 + \frac{C1}{2})(0.02) + A + B + C + 0.0417$	
(12)	ABUTMENT ELEVATION	$(1) - \frac{A2}{100} \left(\frac{C2}{2 \tan(A1)}\right)$	ABUTMENT 1
	(USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	$(1) + \frac{A2}{100} \left(\frac{C2}{2 \tan(A1)}\right)$	ABUTMENT 2
(13)	ABUTMENT ELEVATION	$(1) + \frac{A2}{100} \left(\frac{C2}{2 \tan(A1)}\right)$	ABUTMENT 1
	(USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	$(1) - \frac{A2}{100} \left(\frac{C2}{2 \tan(A1)}\right)$	ABUTMENT 2
(14)	F. G. E. / TOP OF SCOUR PROTECTION	DESIGNER (SEE DM-4, PART A, CHAPTER 7 FOR SCOUR REQ.)	
(15)	ABUTMENT PILE TIP ELEVATION	DESIGNER	
(20)	WINGWALL "A" ELEVATION	$(10) - \left(\frac{A2}{100} \left(\frac{C2}{2 \tan(A1)}\right)\right) - \frac{C1}{2}(0.02) + 0.50$	ABUTMENT 1
	(USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	$(10) + \left(\frac{A2}{100} \left(\frac{C2}{2 \tan(A1)}\right)\right) - \frac{C1}{2}(0.02) + 0.50$	ABUTMENT 2
(21)	WINGWALL "A" ELEVATION	DESIGNER (SEE WINGWALL EXAMPLE)	
(22)	WINGWALL "A" ELEVATION	(21) + 0.50	
(23)	WINGWALL "A" PILE TIP ELEVATION	DESIGNER	
(30)	WINGWALL "B" ELEVATION	$(10) + \left(\frac{A2}{100} \left(\frac{C2}{2 \tan(A1)}\right)\right) - \frac{C1}{2}(0.02) - A$	ABUTMENT 1
	(USE APPROPRIATE EQUATION DEPENDING ON ABUTMENT NO.)	$(10) - \left(\frac{A2}{100} \left(\frac{C2}{2 \tan(A1)}\right)\right) - \frac{C1}{2}(0.02) - A$	ABUTMENT 2
(31)	WINGWALL "B" ELEVATION	DESIGNER (SEE WINGWALL EXAMPLE)	
(32)	WINGWALL "B" ELEVATION	(31) + 0.50	
(33)	WINGWALL "B" PILE TIP ELEVATION	DESIGNER	

FOOTNOTES FOR TABLES

- (1) SEE APPROPRIATE SUPERSTRUCTURE DATA ASSEMBLY SHEETS (BLC-561M SHEETS 1 THRU 10).
- (2) SEE BLC-561M SHEET 20 FOR WINGWALL EXAMPLE.
- (3) DESIGN PILES IN ACCORDANCE WITH BLC-560M SHEET 2 AND 3.
- (4) MAXIMUM EXPOSED ABUTMENT HEIGHT SHALL NOT EXCEED 10' - 0".
- (5) SHOW ALL VALUES IN FEET AND INCHES UNLESS NOTED OTHERWISE.
- (6) SHOW ALL VALUES IN FEET. USE DECIMAL NOTATION TO ACCURACY OF 0.01 FT.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DATA ASSEMBLY SHEETS
PILE SUPPORTED TIMBER SILL
PILE ABUTMENT

RECOMMENDED APR. 23, 2013 <i>Thomas P. Macisova</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>[Signature]</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 19 OF 20 BLC-561M
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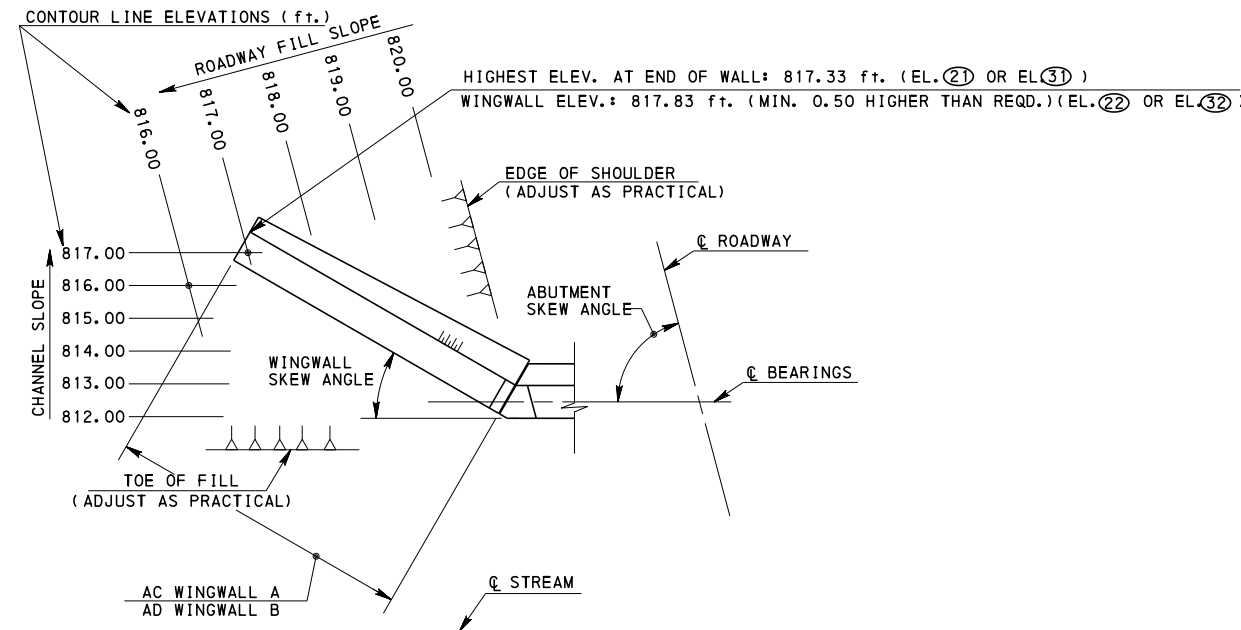
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QUANTITIES				
ITEM	QUANTITY FORMULA	UNIT	SUBTOTAL	TOTAL
CLASS 3 EXCAVATION	DESIGNER	C. Y.		
TIMBER BEARING SILL	$(EE)(1.50)(14)$	(1) F. B. M.		
ABUTMENT	$(EF)(11-1.167-15)$	L. F.		
WINGWALL A	$(FA-1)(\frac{2}{3})(HA)+22-23$	L. F.		
WINGWALL B	$(GA-1)(\frac{2}{3})(HB)+32-33$	L. F.		
ABUTMENT	$EE(3)(KA+3.00)$	(1) F. B. M.		
WINGWALL A	$(DA+1.50)(3)(\frac{2}{3})(HA)+22-14+3.00$	(1) F. B. M.		
WINGWALL B	$(DB+1.50)(3)(\frac{2}{3})(HB)+32-14+3.00$	(1) F. B. M.		
WINGWALL A COPING	$(5)(1.50)[JA+\frac{1}{2}(BA+BB+1.00+\frac{0.25}{\tan(AA)}+0.33(\cos(AA)))]$	(1) F. B. M.		
WINGWALL B COPING	$(5)(1.50)[JB+\frac{1}{2}(CA+CB+CC+\frac{0.25}{\tan(AB)}+0.33(\cos(AB)))]$	(1) F. B. M.		
SELECTED BORROW EXCAVATION, STRUCTURE BACKFILL	DESIGNER	C. Y.		
PILE TIP REINFORCEMENT	$EF+FA+GA-2$	EA		

FOOTNOTES FOR TABLE

(1) FOR QUANTITY CALCULATION, TIMBER ELEMENT WIDTH AND LENGTH ARE IN FEET AND ELEMENT DEPTH OR THICKNESS IS IN INCHES, IN ORDER TO OBTAIN FEET BOARD MEASURE.

IN GENERAL, PROVIDE WINGWALLS OF SUFFICIENT LENGTH TO RETAIN THE ROADWAY EMBANKMENT TO THE REQUIRED EXTENT AND TO FURNISH PROTECTION AGAINST EROSION. COMPUTE WINGWALL LENGTHS USING THE ACTUAL CONDITION AT THE SITE. THE FOLLOWING METHOD IS PROPOSED TO COMPUTE THE REQUIRED LENGTHS.



WINGWALL EXAMPLE
NO SCALE

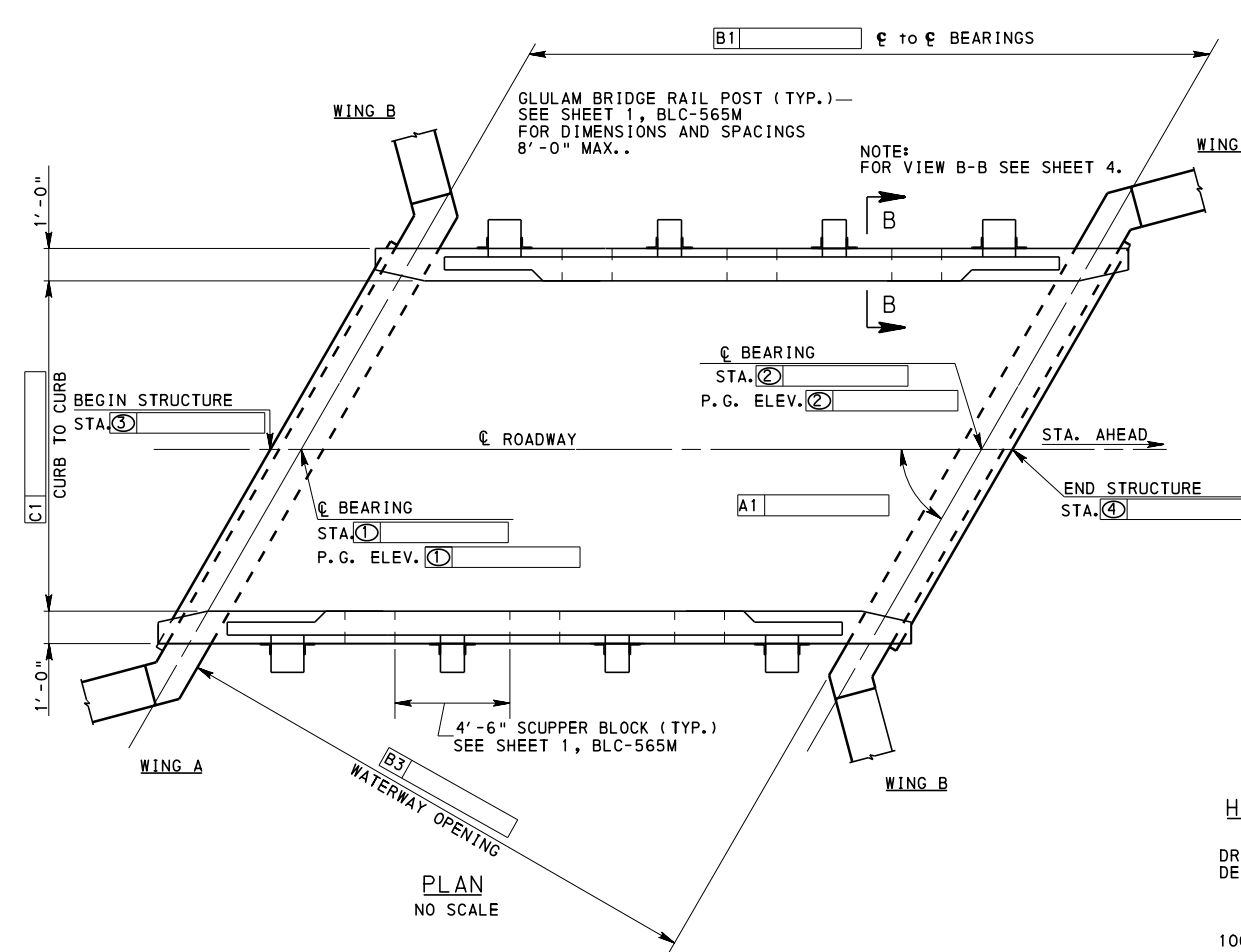
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

DATA ASSEMBLY SHEETS
PILE SUPPORTED TIMBER SILL
___ PILE ABUTMENT ___

RECOMMENDED APR. 23, 2013 <i>Thomas P. Macieira</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 20 OF 20 BLC-561M
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HYDRAULIC DATA
(DESIGNER)
DRAINAGE AREA -
DESIGN FLOOD -
DISCHARGE -
FREQUENCY -
ELEVATION -
100 YEAR FLOOD -
DISCHARGE -
ELEVATION -

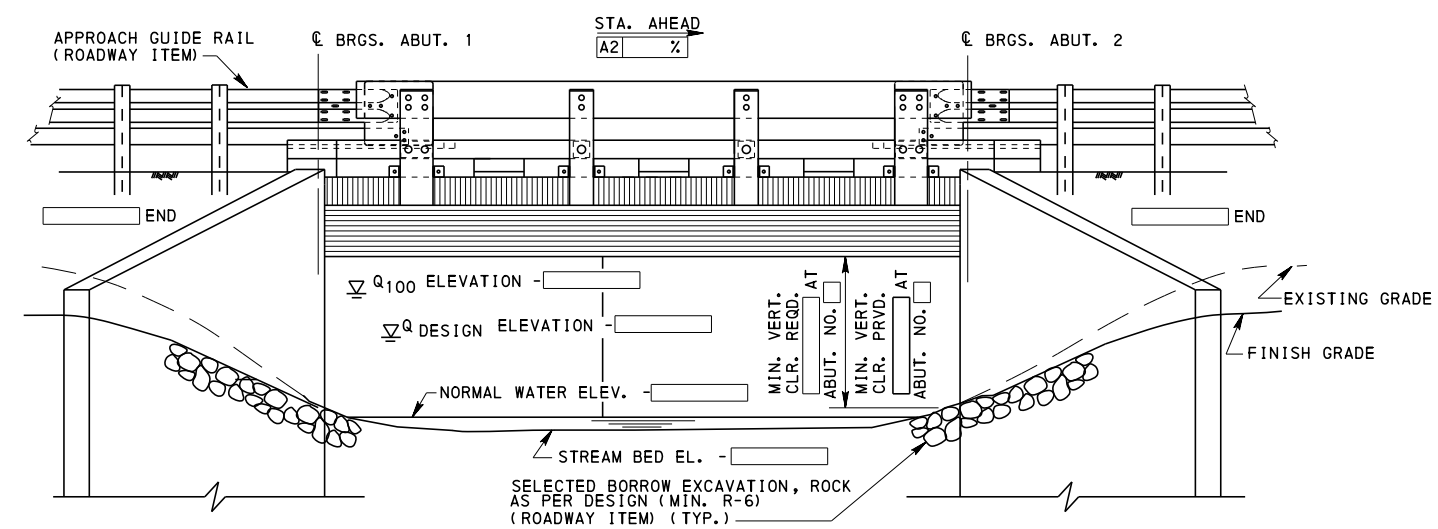
INDEX OF DRAWINGS			
SHT. NO.	TITLE	SHT. NO.	TITLE

BRIDGE RATING ⁽¹⁾							
REFER TO TABLE 2a OR 2b, BLC-561M SHEETS 2 THROUGH 7							
SIMPLE SPAN		GLULAM TIMBER BEAM ⁽²⁾					
		H	HS	ML	PHL93	TK-527	P82
INVENTORY RATING (IR)	DF						-
	LOCATION						-
OPERATING RATING (OR)	LIMIT STATE	STR. I	STR. I	STR. I	STR. I	STR. I	-
	RATING						-
OPERATING RATING (OR)	DF						-
	LOCATION						-
OPERATING RATING (OR)	LIMIT STATE	STR. II	STR. II	STR. II	STR. IA	STR. II	STR. II
	RATING						

CRITICAL MEMBER INTERIOR
MOMENT CAPACITY - kip-ft. _____
LOCATION _____
SHEAR CAPACITY - kip _____
LOCATION _____

NOTES FOR BRIDGE RATING TABLE:

- 1.) FLEXURAL RATING FACTORS "M" ARE SHOWN & GOVERN UNLESS OTHERWISE DENOTED BY A "V" FOR SHEAR, "D" FOR DEFLECTION OR "B" FOR BEARING.
- 2.) VALUES SHOWN ARE BASED ON LOAD AND RESISTANCE FACTOR DESIGN.



ELEVATION
NO SCALE

ENGINEERING SEAL	PREPARED BY:
SIGNATURE & DATE	

Recommended _____
DISTRICT BRIDGE ENGINEER

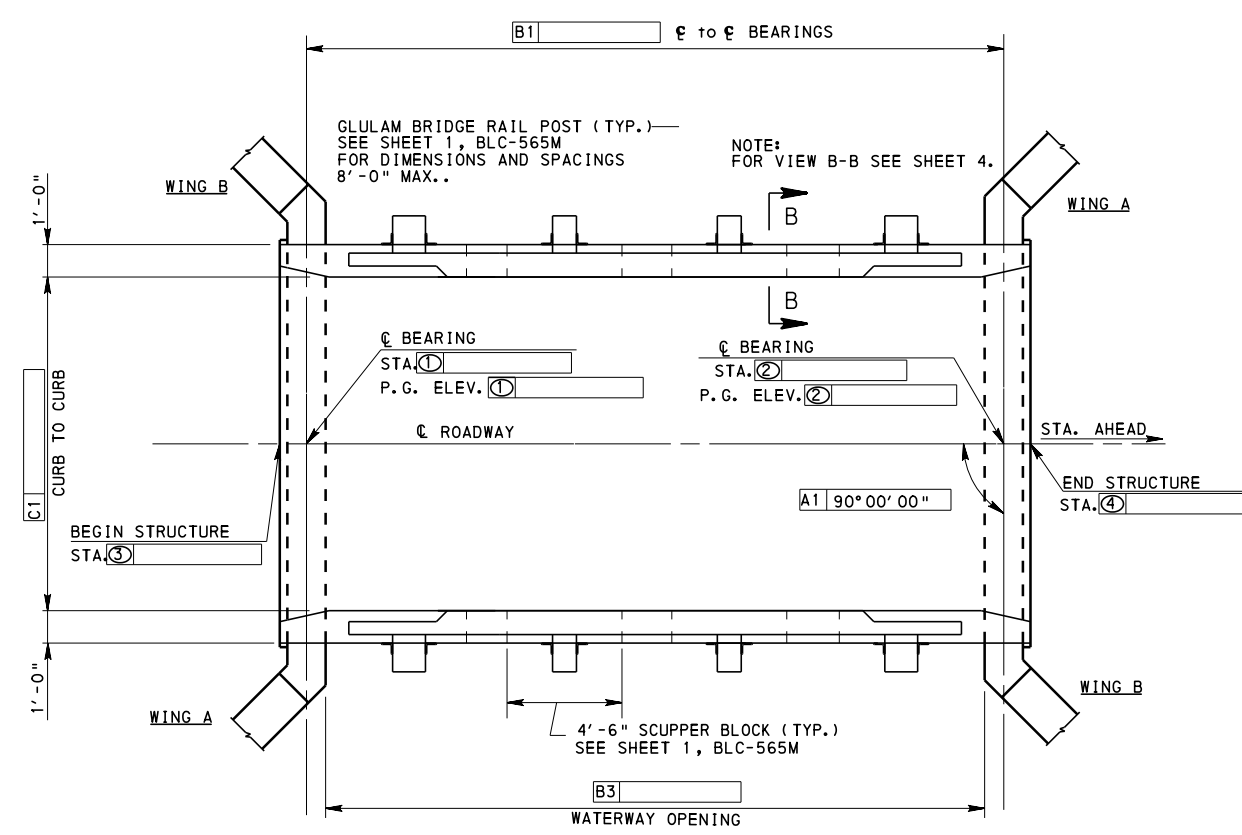
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REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

GLULAM BEAM SUPERSTRUCTURE
GENERAL PLAN & ELEVATION - LEFT SKEW

RECOMMENDED APR. 23, 2013 RECOMMENDED APR. 23, 2013 SHEET 1 OF 15
Thomas P. Nacivaca CHIEF BRIDGE ENGINEER
ACTING DIR. BUR. OF PROJECT DELIVERY
 BLC-562M



PLAN
NO SCALE

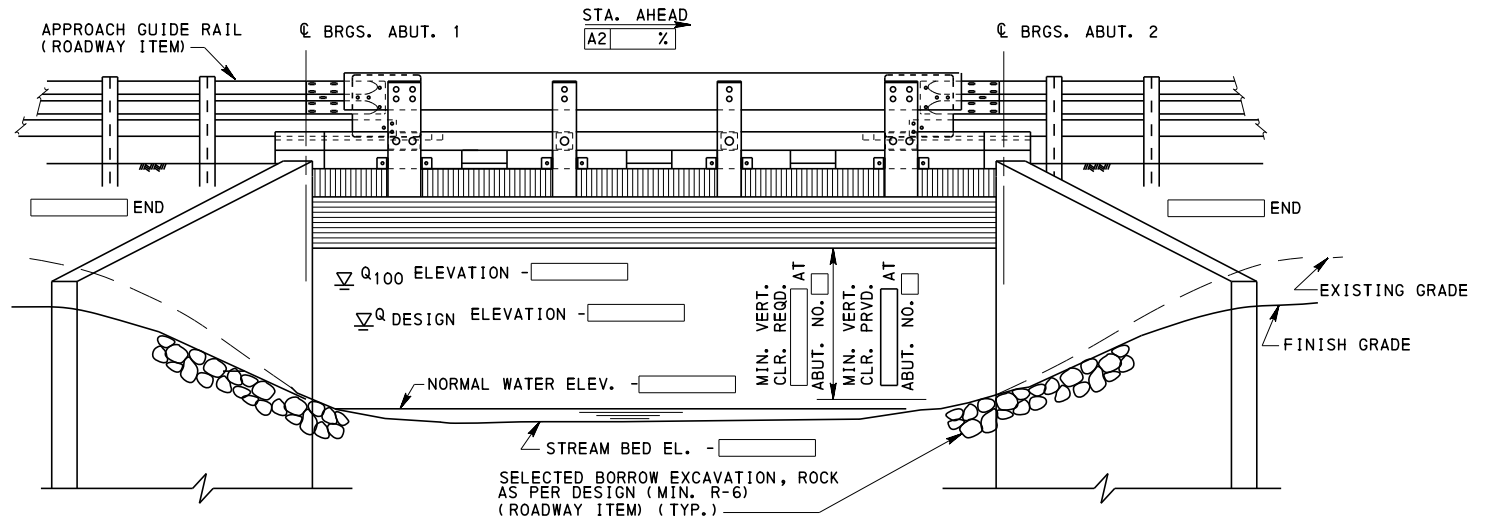
HYDRAULIC DATA
(DESIGNER)
DRAINAGE AREA -
DESIGN FLOOD
DISCHARGE -
FREQUENCY -
ELEVATION -
100 YEAR FLOOD
DISCHARGE -
ELEVATION -

INDEX OF DRAWINGS			
SHT. NO.	TITLE	SHT. NO.	TITLE

BRIDGE RATING ⁽¹⁾							
REFER TO TABLE 2a OR 2b, BLC-561M SHEETS 2 THROUGH 7							
SIMPLE SPAN	DF	GLULAM TIMBER BEAM ⁽²⁾					
		H	HS	ML	PHL93	TK-527	P82
INVENTORY RATING (IR)	LOCATION						
	LIMIT STATE RATING	STR. I	STR. I	STR. I	STR. I	STR. I	
OPERATING RATING (OR)	LOCATION						
	LIMIT STATE RATING	STR. II	STR. II	STR. II	STR. IA	STR. II	STR. II

CRITICAL MEMBER INTERIOR
MOMENT CAPACITY - kip-ft. _____
LOCATION _____
SHEAR CAPACITY - kip _____
LOCATION _____

- NOTES FOR BRIDGE RATING TABLE:
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2.) VALUES SHOWN ARE BASED ON LOAD AND RESISTANCE FACTOR DESIGN.



ELEVATION
NO SCALE

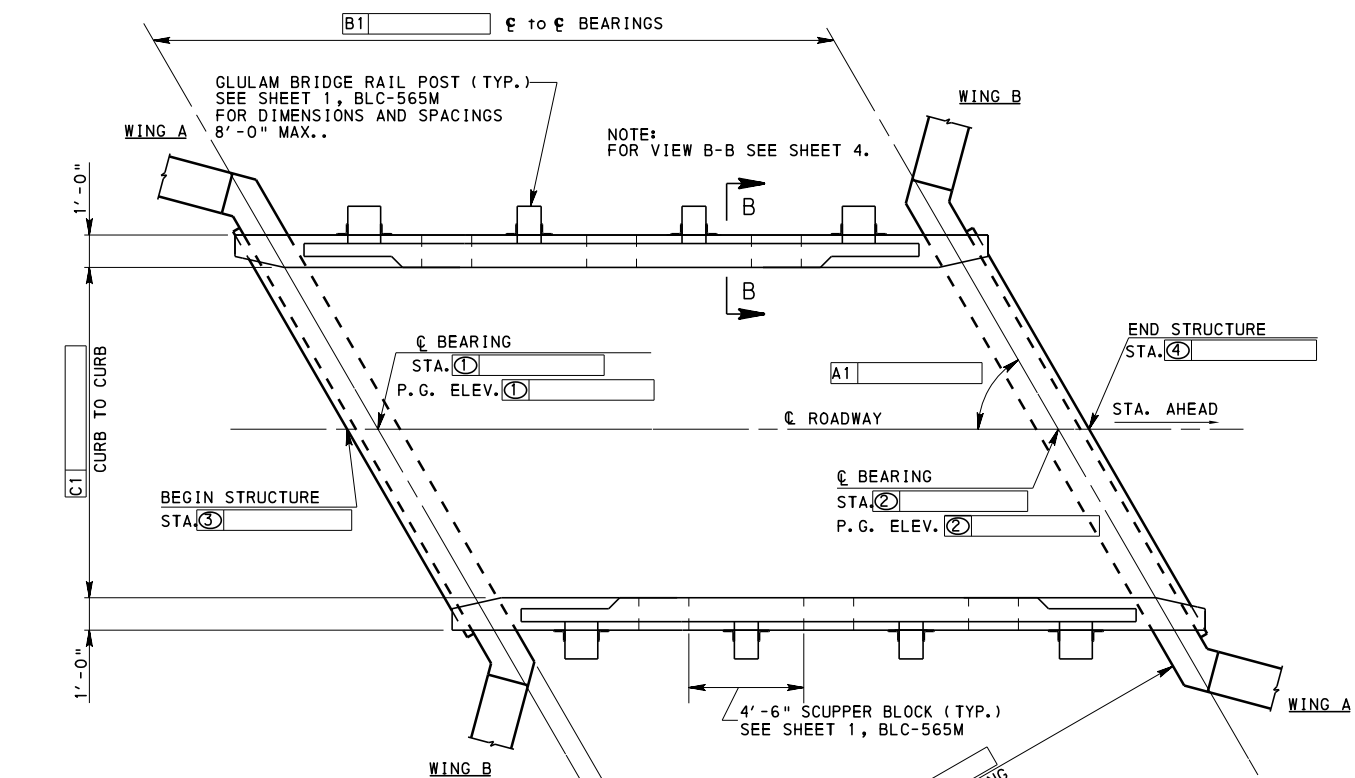
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

Recommended _____
DISTRICT BRIDGE ENGINEER

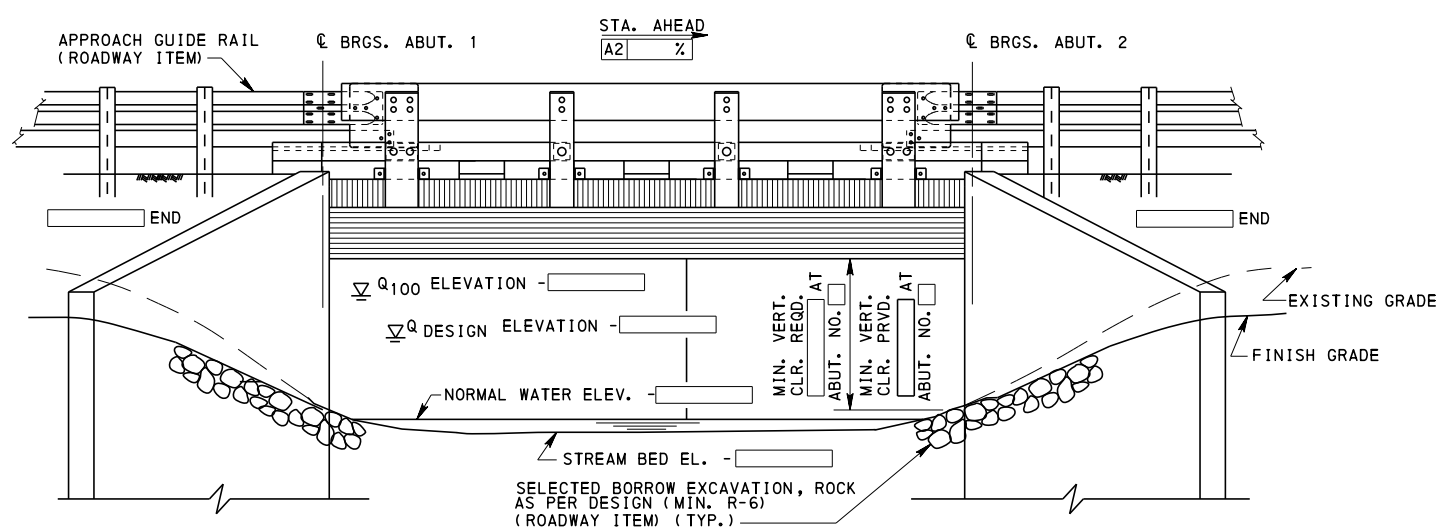
ENGINEERING SEAL	PREPARED BY:
SIGNATURE & DATE	



HYDRAULIC DATA
(DESIGNER)

DRAINAGE AREA -
DESIGN FLOOD
DISCHARGE -
FREQUENCY -
ELEVATION -
100 YEAR FLOOD
DISCHARGE -
ELEVATION -

PLAN
NO SCALE



ELEVATION
NO SCALE

INDEX OF DRAWINGS			
SHT. NO.	TITLE	SHT. NO.	TITLE

BRIDGE RATING ⁽¹⁾						
REFER TO TABLE 2a OR 2b, BLC-561M SHEETS 2 THROUGH 7						
SIMPLE SPAN	GLULAM TIMBER BEAM ⁽²⁾					
	H	HS	ML	PHL93	TK-527	P82
INVENTORY RATING (IR)	DF					
	LOCATION					
OPERATING RATING (OR)	LIMIT STATE RATING	STR. I	STR. I	STR. I	STR. I	STR. I
	DF					
OPERATING RATING (OR)	LOCATION					
	LIMIT STATE RATING	STR. II	STR. II	STR. II	STR. IA	STR. II

CRITICAL MEMBER INTERIOR
MOMENT CAPACITY - kip-ft. _____
LOCATION _____
SHEAR CAPACITY - kip _____
LOCATION _____

NOTES FOR BRIDGE RATING TABLE:

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2.) VALUES SHOWN ARE BASED ON LOAD AND RESISTANCE FACTOR DESIGN.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

Recommended _____
DISTRICT BRIDGE ENGINEER

ENGINEERING SEAL PREPARED BY:

SIGNATURE & DATE

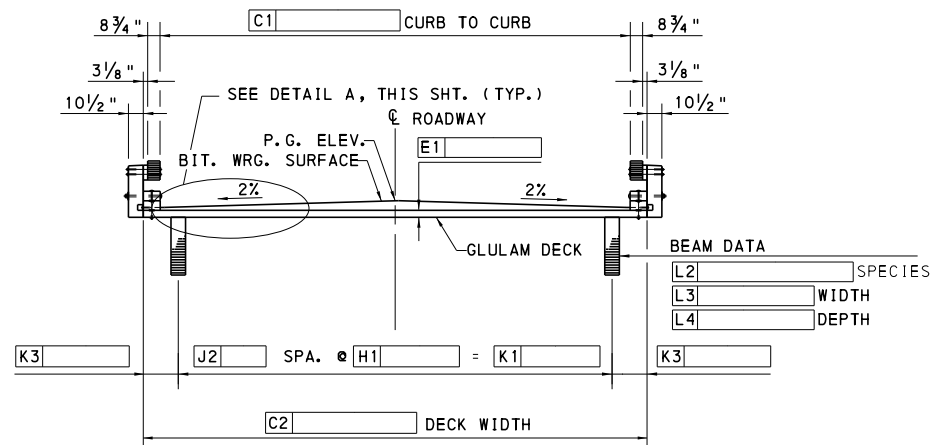
GLULAM BEAM SUPERSTRUCTURE
GENERAL PLAN & ELEVATION - RIGHT SKEW

RECOMMENDED APR. 23, 2013
Thomas P. Nacivica
CHIEF BRIDGE ENGINEER

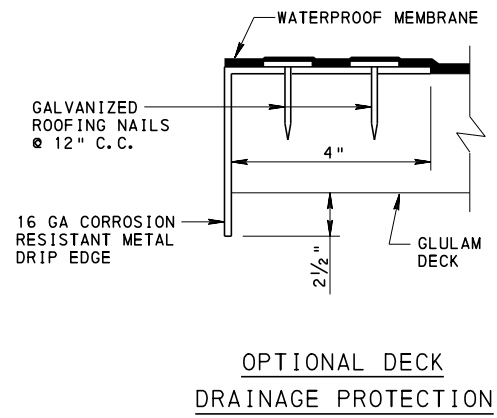
RECOMMENDED APR. 23, 2013
ACTING DIST. BR. OF PROJECT DELIVERY

SHEET 3 OF 15
BLC-562M

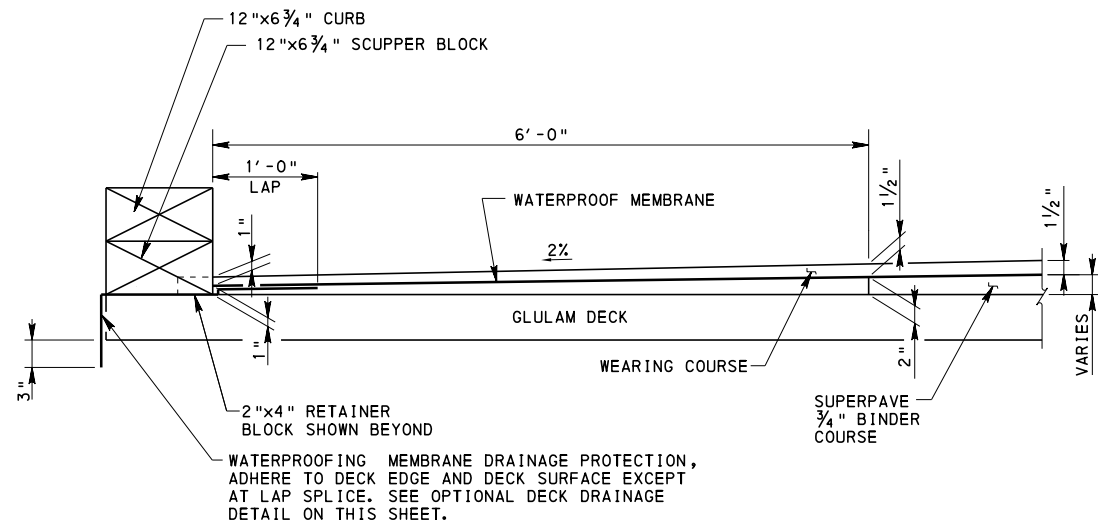
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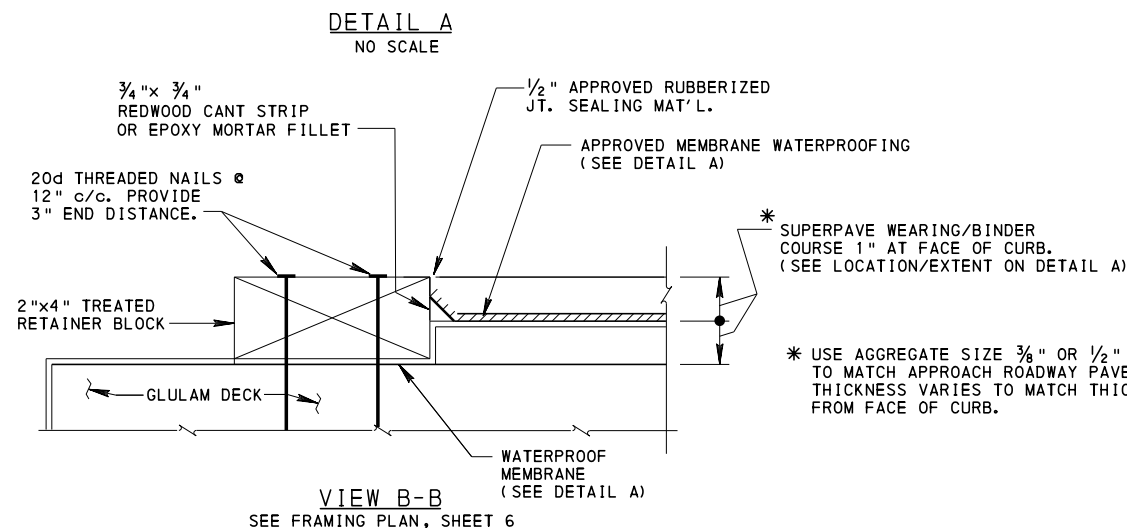
TYPICAL SECTION
NO SCALE



OPTIONAL DECK
DRAINAGE PROTECTION



- NOTE:
1. ALLOW FIRST LAYER OF BITUMINOUS MATERIAL TO COOL SUFFICIENTLY SO WATERPROOF MEMBRANE DOES NOT TEAR WHEN APPLYING SECOND LAYER OF BITUMINOUS MATERIAL.
 2. SEE VIEW B-B FOR ASPHALT WEARING COURSE TYPE.



VIEW B-B
SEE FRAMING PLAN, SHEET 6
MEMBRANE WATERPROOFING AT
RETAINER BLOCK
NO SCALE

APPROXIMATE QUANTITIES - BRIDGE STRUCTURE, AS DESIGNED					
ITEM NO.	ITEM	UNIT	ABUT. 1	ABUT. 2	TOTAL
8030-0001	BRIDGE STRUCTURE AS DESIGNED, S-	LS			LS
(1)	GLUE LAMINATED TIMBER BEAMS	F. B. M.	----	----	
(1)	GLUE LAMINATED TIMBER DECK	F. B. M.	----	----	
(1)	GLUE LAMINATED TIMBER BRIDGE RAIL	F. B. M.	----	----	
(1)	GLUE LAMINATED TIMBER BACKWALL, AND DIAPHRAGMS	F. B. M.	----	----	
(1)	GLUE LAMINATED TIMBER STIFFENER BEAMS	F. B. M.	----	----	
(1) (2)	FABRICATED STRUCTURAL STEEL	LB.	----	----	
(1)	WATERPROOF MEMBRANE	S. Y.	----	----	
(1)	CLASS 4 GEOTEXTILE	S. Y.	----	----	
(1)	BITUMINOUS BINDER COURSE SUPERPAVE, 3/4"	TON	----	----	
(1)	BITUMINOUS WEARING COURSE SUPERPAVE, 3/8" / 1/2"	TON	----	----	
(1)	TREATED RETAINER BLOCK	F. B. M.	----	----	
(1)	OPTIONAL METAL DRIP EDGE	S. Y.			

1. ITEMS IN BRIDGE STRUCTURE LUMP SUM ITEM 8030-0001 GIVEN FOR INFORMATION ONLY.
2. QUANTITY DOES NOT INCLUDE STEEL DOWELS & OTHER CONNECTION HARDWARE

Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

GLULAM BEAM SUPERSTRUCTURE
TYPICAL SECTION AND QUANTITIES

RECOMMENDED APR. 23, 2013
Thomas P. Macieira
CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013
George J. [Signature]
ACTING DIR. BUR. OF PROJECT DELIVERY

SHEET 4 OF 15
BLC-562M

GENERAL NOTES:

DESIGN SPECIFICATIONS

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (2010) AND AS SUPPLEMENTED BY DESIGN MANUAL, PART 4, MAY 2012 EDITION.

LIVE LOAD DISTRIBUTED TO BEAMS IS BASED UPON DM-4 DISTRIBUTION FACTORS.

DESIGN IS IN ACCORDANCE WITH THE LOAD AND RESISTANCE FACTOR DESIGN METHOD.

DESIGN LIVE LOADS

PHL-93 OR P-82 [204 KIPS PERMIT LOAD]

DEAD LOADS

INCLUDES SURFACE AREA DENSITY OF 30 LBS./SQ. FT. FOR FUTURE WEARING SURFACE ON THE DECK.

GENERAL

PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH SPECIFICATIONS, PUBLICATION 408, AASHTO/AWS/D1.5 BRIDGE WELDING CODE, AND CONTRACT SPECIAL PROVISIONS.

NOTIFY THE REGIONAL HEADQUARTERS OF THE FISH COMMISSION PRIOR TO CONSTRUCTION AND COOPERATE WITH FISH COMMISSION DURING CONSTRUCTION.

ALL DIMENSIONS SHOWN ARE HORIZONTAL UNLESS OTHERWISE NOTED.

SUPERSTRUCTURE DIMENSIONS SHOWN ARE FOR NORMAL TEMPERATURE OF 68°F.

SPREAD FOOTINGS MAY BE ORDERED BY THE ENGINEER TO BE AT ANY ELEVATION OR OF ANY DIMENSIONS NECESSARY TO PROVIDE A PROPER FOUNDATION.

CONCRETE

PROVIDE 2" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.

USE CLASS A CEMENT CONCRETE IN ABUTMENTS BELOW BRIDGE SEAT, WINGWALLS, AND FOOTINGS.

USE CLASS AA CEMENT CONCRETE IN CHEEKWALLS.

A HIGHER CLASS CONCRETE MAY BE SUBSTITUTED FOR A LOWER CLASS CONCRETE AT NO ADDITIONAL COST TO THE DEPARTMENT.

PREPARE BEARING AREAS AS SPECIFIED IN PUBLICATION 408, SECTION 1001.3(k)9.

SET ANCHOR BOLTS TO TEMPLATE OR IN PREFORMED HOLES. DO NOT DRILL UNLESS SPECIFICALLY INDICATED ON PLANS. FILL THE PREFORMED HOLES WITH NON-SHRINK GROUT. FILL THE CLEARANCE BETWEEN ANCHOR BOLTS AND HOLES IN MASONRY PLATES WITH APPROVED NONHARDENING CAULKING COMPOUND CONFORMING TO PUBLICATION 408, SECTION 705.8.

PROVIDE GRADE 60 REINFORCING STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM A 615/A 615M, A 996/A 996M, AND A 706/A 706M. DO NOT WELD GRADE 60 REINFORCING STEEL BARS UNLESS SPECIFIED. GRADE 40 REINFORCING STEEL BARS MAY BE SUBSTITUTED WITH A PROPORTIONAL INCREASE IN CROSS-SECTIONAL AREA, IF APPROVED BY THE CHIEF BRIDGE ENGINEER. DO NOT USE RAIL STEEL A 996/A 996M REINFORCEMENT BARS IN BRIDGE PIERS, ABUTMENTS, SHEAR BLOCKS, BEAMS, FOOTINGS, PILES, BARRIERS AND WHERE BENDING OR WELDING OF THE REINFORCEMENT BARS IS INDICATED.

EPOXY-COAT SUBSTRUCTURE REINFORCEMENT BARS AS INDICATED.

GALVANIZED REINFORCING STEEL BARS MAY BE SUBSTITUTED FOR EPOXY-COATED STEEL BARS AT NO ADDITIONAL COST TO THE DEPARTMENT.

RAKE-FINISH ALL HORIZONTAL CONSTRUCTION JOINTS, EXCEPT AS INDICATED.

PLACE CHEEKWALL CONCRETE AFTER BEAMS ARE SET IN POSITION.

CHAMFER EXPOSED CONCRETE EDGES 1" BY 1", EXCEPT AS NOTED.

PROVIDE MINIMUM LAP AND EMBEDMENT LENGTH OF 30 DIAMETERS OR IN ACCORDANCE WITH A5.11 AND D5.11, WHICHEVER IS GREATER.

STEEL

GALVANIZE ALL TIMBER CONNECTION HARDWARE AS SPECIFIED IN PUBLICATION 408, SECTION 1105.02(s).

PROVIDE STRUCTURAL STEEL CONFORMING TO AASHTO M 270/M 270M, GRADE 36 [ASTM A 709/A 709M, GRADE 36] DESIGNATION, EXCEPT WHEN NOTED OTHERWISE.

PROVIDE BOLTS AND LAG SCREWS CONFORMING TO ASTM A307 DESIGNATION, EXCEPT WHEN NOTED OTHERWISE.

PROVIDE BOLTS, NUTS, AND WASHERS IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND AS SUPPLEMENTED BY DESIGN MANUAL PART 4, SECTION 6.4.3.

PROVIDE MALLEABLE IRON WASHER CONFORMING TO ASTM A 47/A 47M, GRADE 3500.

PROVIDE LAG SCREWS CONFORMING TO ANSI B18.2.1 - 1981.

ALUMINUM

PROVIDE ALUMINUM CLIPS CONFORMING TO ASTM B108, ALLOY A444.0-T4 OR AN APPROVED EQUAL AS PER AASHTO 7.4.6.

UTILITIES

COORDINATE THE REQUIREMENTS FOR PROTECTION AND/OR RELOCATION OF UTILITIES WITH THE UTILITY OWNER PRIOR TO STARTING WORK.

VERIFY AND LOCATE ALL EXISTING UTILITIES PRIOR TO STARTING WORK; CONDUCT OPERATIONS IN A MANNER WHICH ENSURES THAT THE UTILITIES WILL NOT BE DISTURBED OR ENDANGERED, AND ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE TO UTILITIES DURING CONSTRUCTION. THE DEPARTMENT DOES NOT ASSUME RESPONSIBILITY FOR REIMBURSEMENT, PARTICIPATION IN DESIGN AND/OR REVISIONS, OR LIABILITY FOR ACCURACY OF TYPE, SIZE, AND LOCATION OF ANY UTILITY.

GENERAL NOTES CONTINUED:

TIMBER

USE ONLY GLUE LAMINATED TIMBER FABRICATED WITH EITHER NORTHERN RED OAK, RED MAPLE OR YELLOW POPLAR LUMBER GRADED PER NORTHEASTERN LUMBER MANUFACTURER'S ASSOCIATION (NORTHERN RED OAK AND RED MAPLE) OR NORTHERN SOFTWOOD LUMBER BUREAU (YELLOW POPLAR) STANDARDS AND MANUFACTURED FOLLOWING AITC 119-96 OR CURRENT SPECIFICATIONS.

PROVIDE MINIMUM WET-USE BASE RESISTANCES AND MOE VALUES IN ACCORDANCE WITH BLC-560M SHEET 3.

TREAT ALL LUMBER AND GLULAM COMPONENTS WITH OIL-BORNE PRESERVATIVE(S) IN ACCORDANCE WITH PENNDOT PUBLICATION 408.

FIELD CUTTING IS NOT PERMITTED UNLESS APPROVED BY THE ENGINEER.

WHEN FIELD CUTTING, TREAT WITH BITUMINOUS ASPHALT BASED ROOF CEMENT, COPPER NAPHTHENATE PASTE, OR APPROVED PRESERVATIVE SYSTEM.

ALWAYS COAT LAG SCREW THREADS WITH BITUMINOUS ASPHALT BASED ROOF CEMENT, COPPER NAPHTHENATE PASTE, OR APPROVED PRESERVATIVE SYSTEM BEFORE INSTALLING LAG SCREW.

DO NOT DRIVE LAG SCREW WITH HAMMER. SCREW OR TORQUE LAG SCREWS.

PROVIDE SUFFICIENT LAG SCREW LENGTH SO LAG SCREW SHANK WILL PENETRATE RECEIVING MEMBER.

SUBMIT SHOP DRAWINGS SHOWING DETAILS OF ALL GLULAM CONSTRUCTION FOR APPROVAL TO THE ENGINEER PRIOR TO FABRICATION OPERATIONS.

ALL TIMBER DIMENSIONS SHOWN ARE ACTUAL.

PILES

DO NOT PERMIT SPLICES IN PILES.

PROVIDE PILES IN ACCORDANCE WITH BLC-560M SHEET 3.

PILE SUPPORTED TIMBER SILLS

THE SUPERSTRUCTURE MUST BE IN PLACE AND CONNECTED TO SUBSTRUCTURE BEFORE ABUTMENTS ARE BACKFILLED.

BACKFILL BOTH ABUTMENTS CONCURRENTLY. MAINTAIN SYMMETRICAL LOADING.

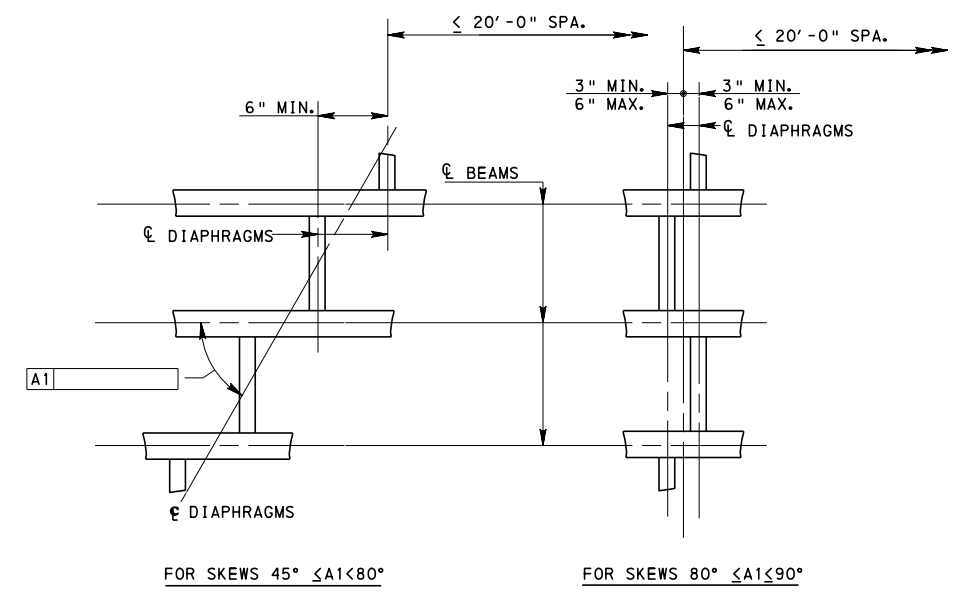
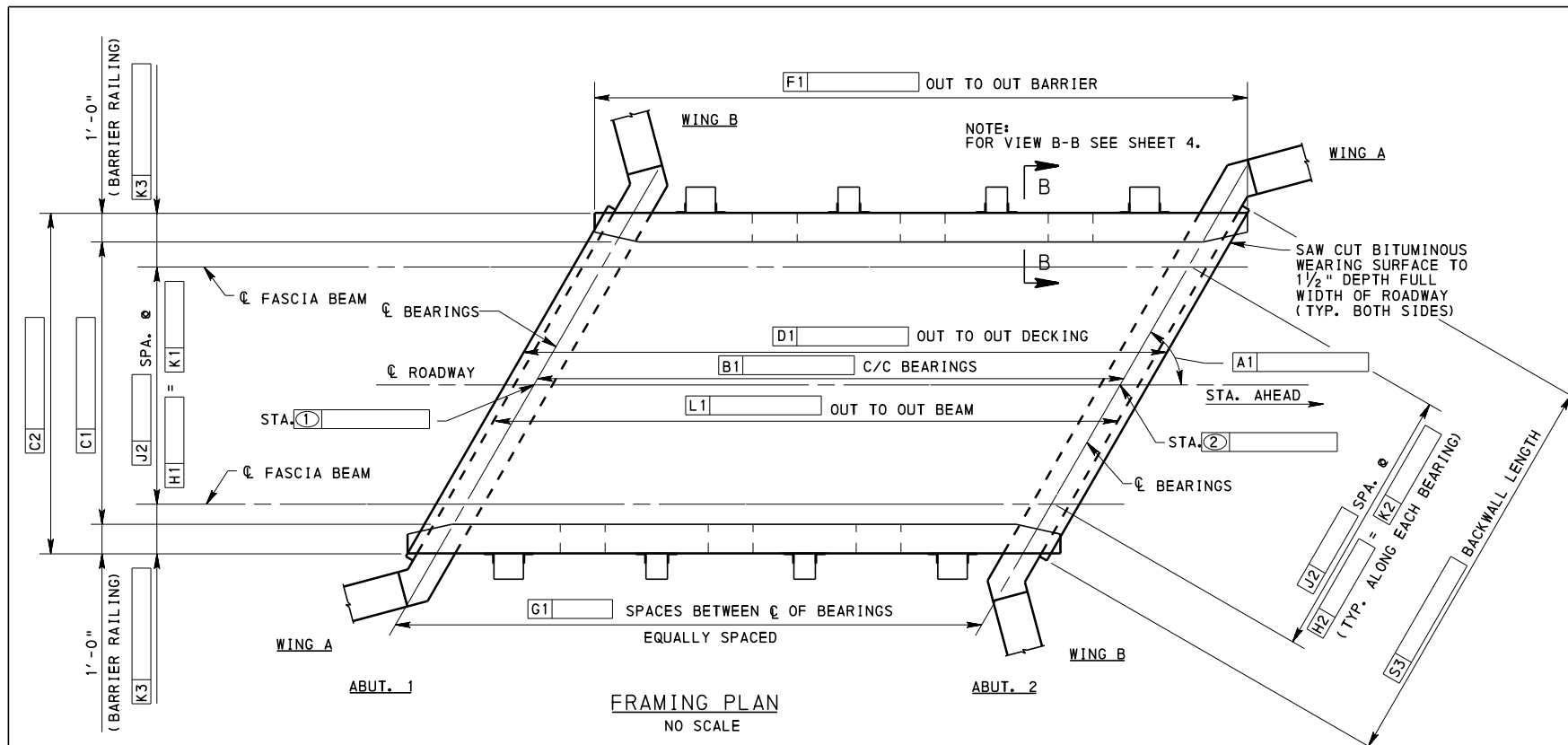
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REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

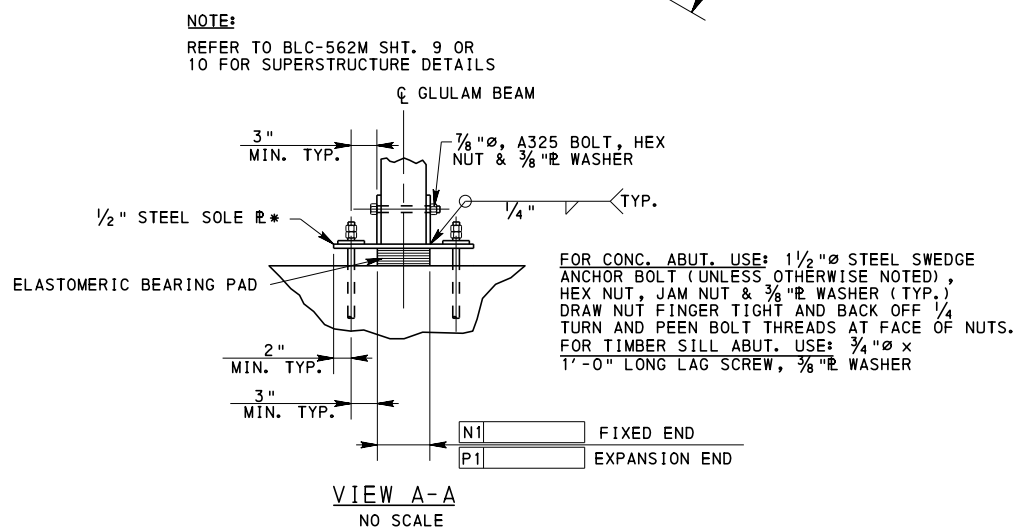
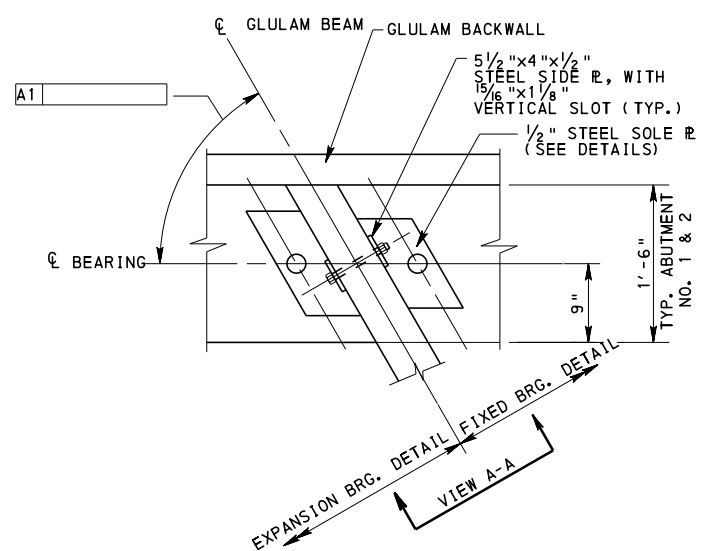
GLULAM BEAM SUPERSTRUCTURE
GENERAL NOTES

RECOMMENDED APR. 23, 2013 <i>Thomas P. Macieira</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 5 OF 15 BLC-562M
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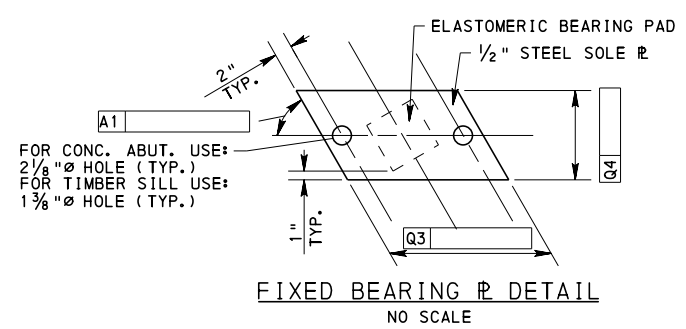
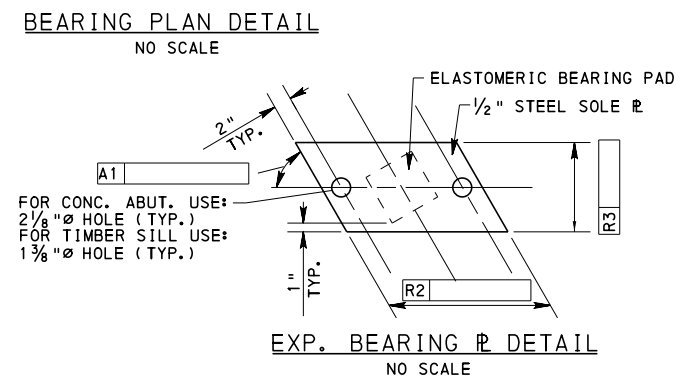


NOTES:

1. PROVIDE MECHANICALLY GALVANIZED SWEDGE OF APPROVED TYPE OF ANCHOR BOLTS. SET IN THE MASONRY AS SHOWN ON THE DESIGN DRAWINGS.
2. PROVIDE MINIMUM SIZE WELD IN ACCORDANCE WITH AASHTO/AWS CODE UNLESS LARGER WELD IS REQUIRED BY DESIGN.
3. PROVIDE PLATE WASHERS OF SUFFICIENT SIZE TO COVER THE ROUND HOLE OR SLOT FOR EXTREMES OF MOVEMENT OF THE BEARINGS. WASHER MAY BE CLIPPED IF REQUIRED.
4. FILL ANCHOR BOLT OR LAG SCREW SOLE PLATE HOLES WITH NON-HARDENING CAULKING COMPOUND AT THE FIXED END.
5. PERMIT DRILLING OF ANCHOR BOLT HOLES AT ABUTMENT ONLY. WASH AND DRY HOLE BEFORE FILLING WITH NON-SHRINK GROUT.
6. BLAST CLEAN CONCRETE BEARING SURFACES TO ACHIEVE ROUGH TEXTURE. DO NOT APPLY EPOXY COATING TO THE BEARING SURFACES WITHIN 2" OF THE BEARING PAD AND SPONGE LOCATION.
7. DO NOT USE ELASTOMERIC MATERIAL WITH A HARDNESS GREATER THAN 60 DUROMETER.
8. DO NOT PROVIDE HOLES IN ELASTOMERIC BEARINGS UNLESS INDICATED ON THE DESIGN DRAWINGS.
9. USE FIXED BEARINGS AT LOWER END OF SPAN UNLESS PERMITTED BY THE CHIEF BRIDGE ENGINEER.



*(a) PROVIDE FLATNESS TOLERANCE IN ACCORDANCE WITH PUB. 408, SECTION 1105.03 (q)
 (b) PROVIDE SOLE PLATE IN ACCORDANCE WITH DM-4, D14.7.6.3.9dP



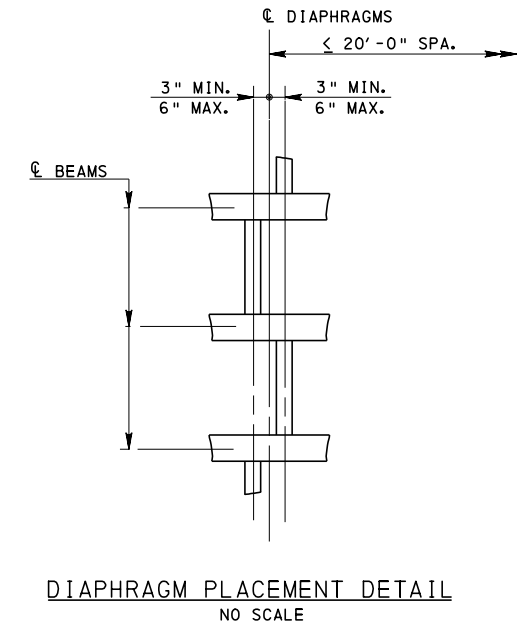
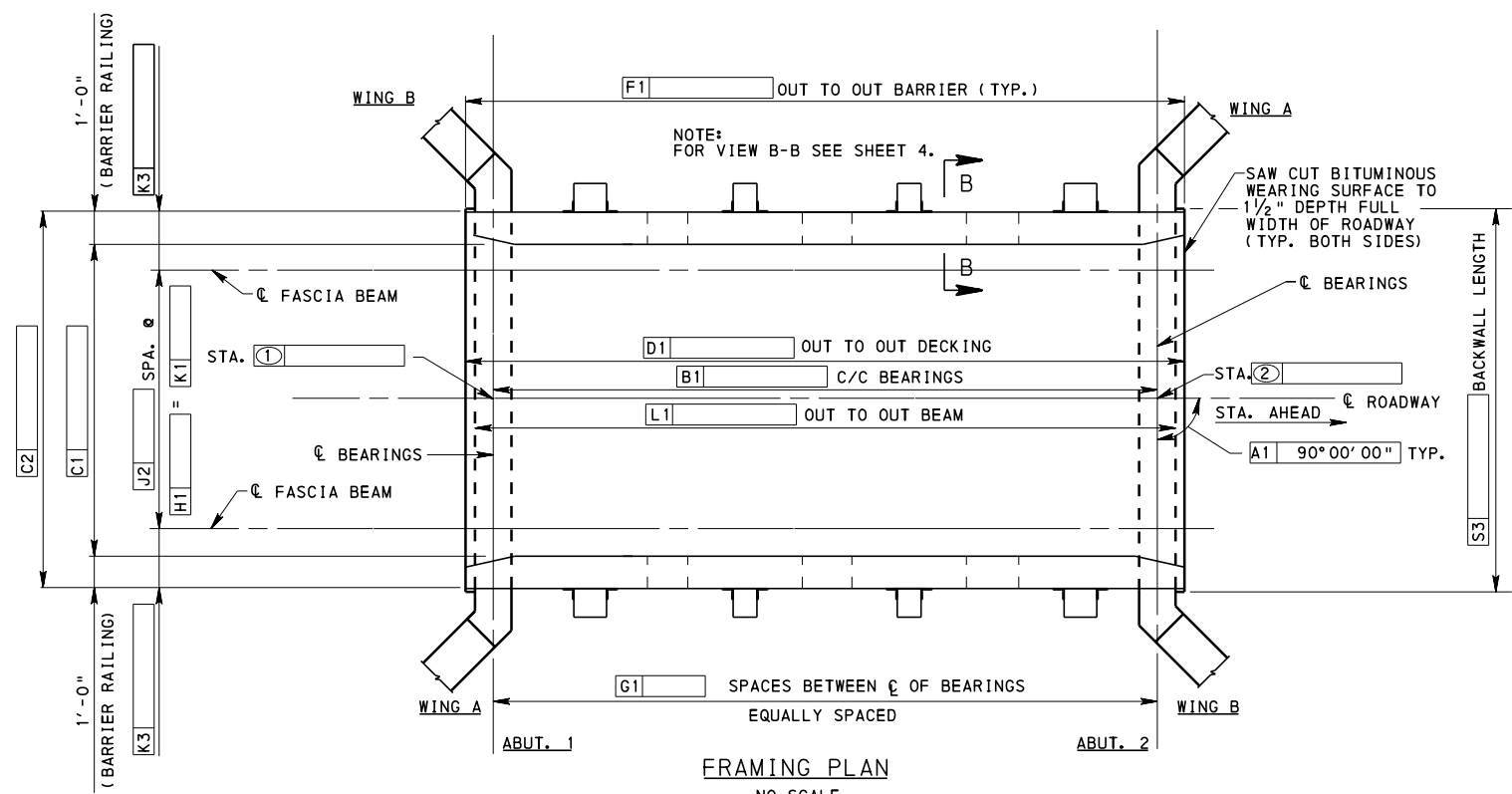
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET OF

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

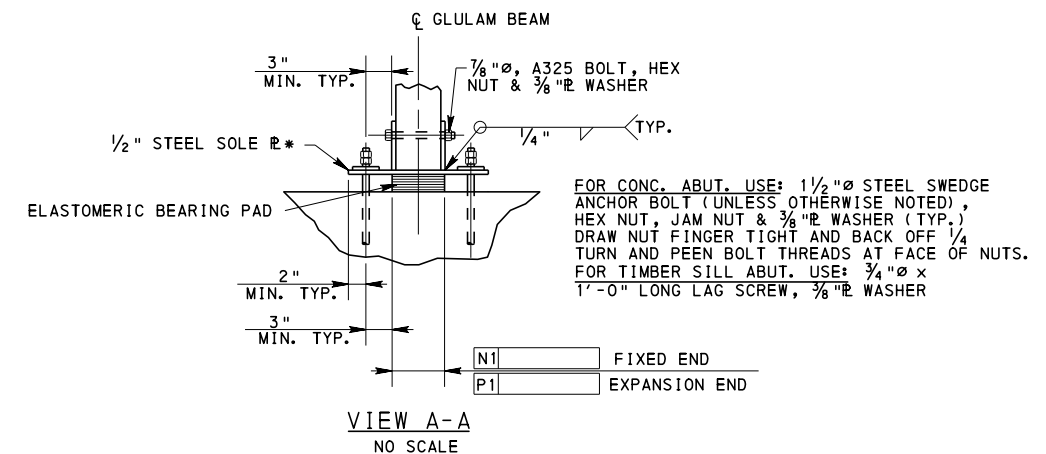
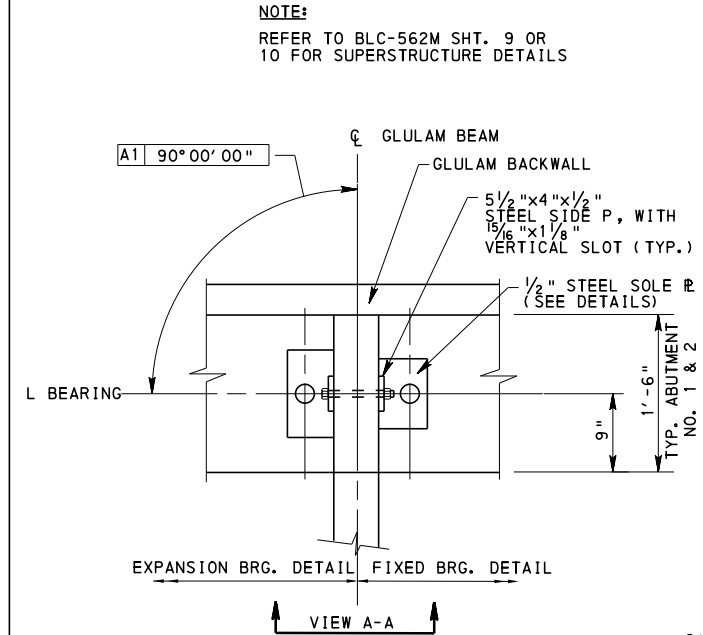
GLULAM BEAM SUPERSTRUCTURE
 FRAMING PLAN - LEFT SKEW

RECOMMENDED APR. 23, 2013
 RECOMMENDED APR. 23, 2013
 SHEET 6 OF 15
 Thomas P. Maciocco
 CHIEF BRIDGE ENGINEER
 ACTING DIR. BUR. OF PROJECT DELIVERY
 BLC-562M

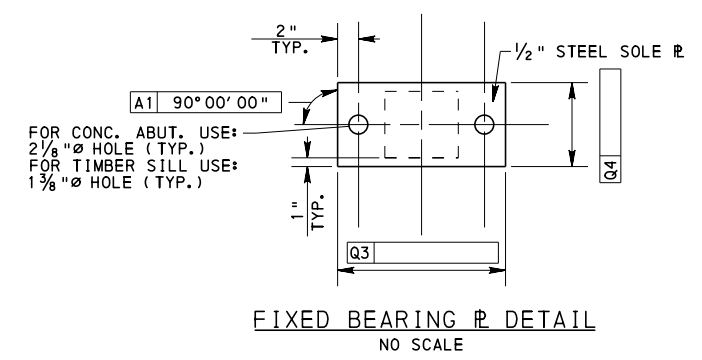
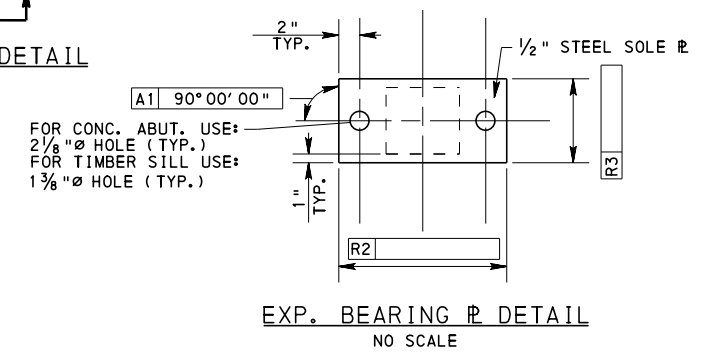


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*(a) PROVIDE FLATNESS TOLERANCE IN ACCORDANCE WITH PUB. 408, SECTION 1105.03(q)
*(b) PROVIDE SOLE PLATE IN ACCORDANCE WITH DM-4, D14.7.6.3.9dP



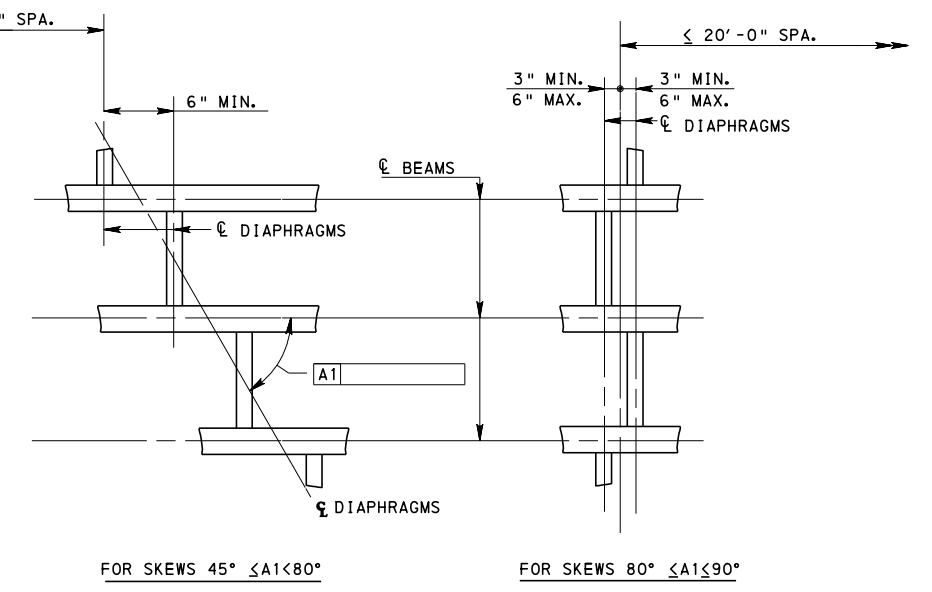
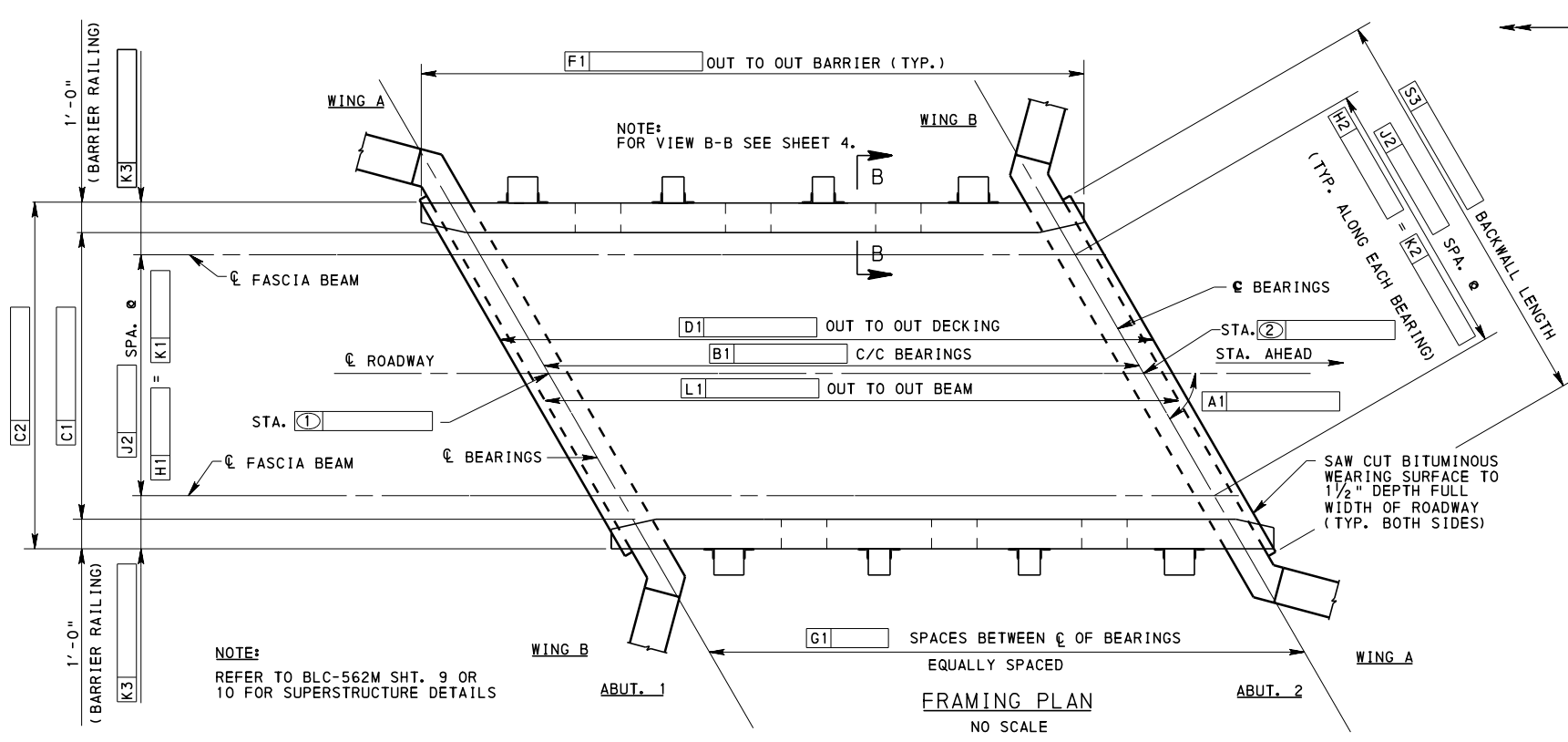
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

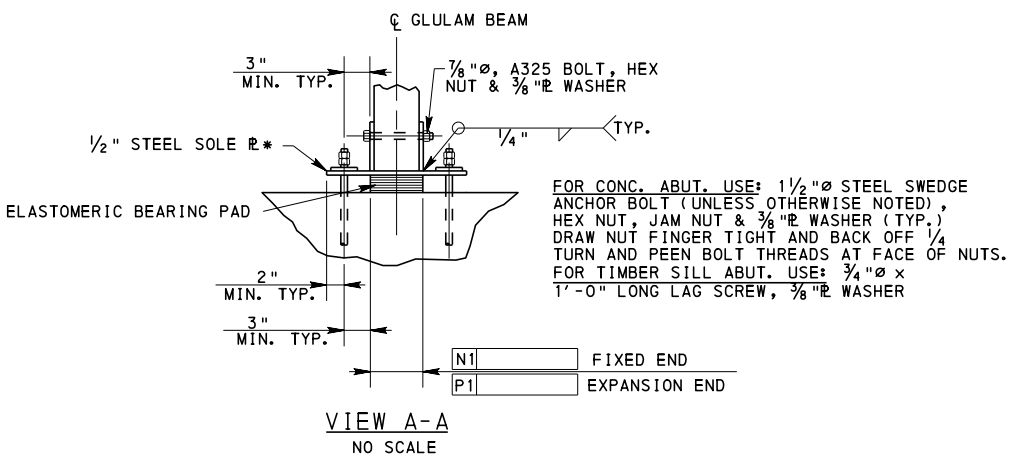
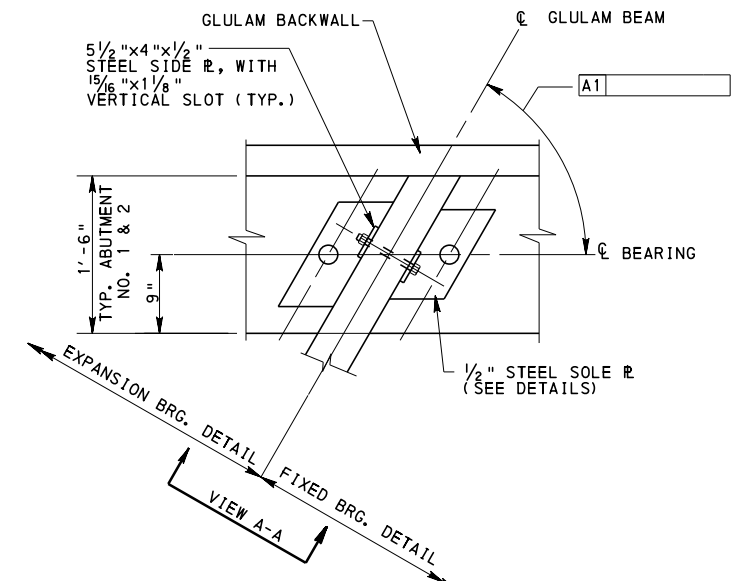
GLULAM BEAM SUPERSTRUCTURE
FRAMING PLAN - 90° SKEW

RECOMMENDED APR. 23, 2013
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 7 OF 15
BLC-562M

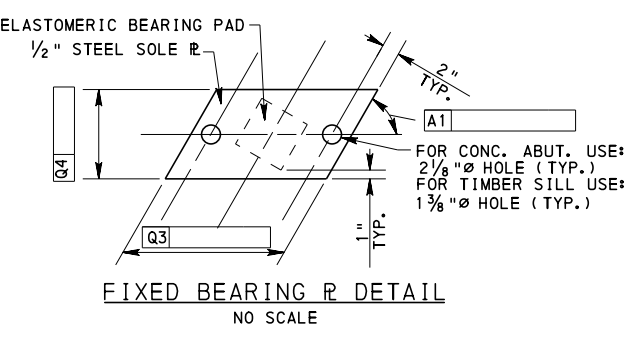
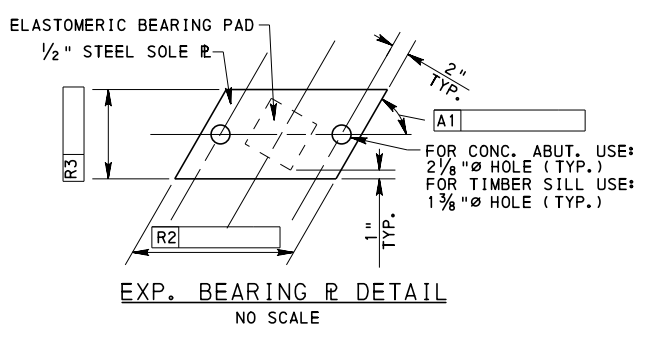


NOTES:

1. PROVIDE MECHANICALLY GALVANIZED SWEDGE OF APPROVED TYPE OF ANCHOR BOLTS. SET IN THE MASONRY AS SHOWN ON THE DESIGN DRAWINGS.
2. PROVIDE MINIMUM SIZE WELD IN ACCORDANCE WITH AASHTO/AWS CODE UNLESS LARGER WELD IS REQUIRED BY DESIGN.
3. PROVIDE PLATE WASHERS OF SUFFICIENT SIZE TO COVER THE ROUND HOLE OR SLOT FOR EXTREMES OF MOVEMENT OF THE BEARINGS. WASHER MAY BE CLIPPED IF REQUIRED.
4. FILL ANCHOR BOLT OR LAG SCREW SOLE PLATE HOLES WITH NON-HARDENING CAULKING COMPOUND AT THE FIXED END.
5. PERMIT DRILLING OF ANCHOR BOLT HOLES AT ABUTMENT ONLY. WASH AND DRY HOLE BEFORE FILLING WITH NON-SHRINK GROUT.
6. BLAST CLEAN CONCRETE BEARING SURFACES TO ACHIEVE ROUGH TEXTURE. DO NOT APPLY EPOXY COATING TO THE BEARING SURFACES WITHIN 2" OF THE BEARING PAD AND SPONGE LOCATION.
7. DO NOT USE ELASTOMERIC MATERIAL WITH A HARDNESS GREATER THAN 60 DUROMETER.
8. DO NOT PROVIDE HOLES IN ELASTOMERIC BEARINGS UNLESS INDICATED ON THE DESIGN DRAWINGS.
9. USE FIXED BEARINGS AT LOWER END OF SPAN UNLESS PERMITTED BY THE CHIEF BRIDGE ENGINEER.



- *(a) PROVIDE FLATNESS TOLERANCE IN ACCORDANCE WITH PUB. 408, SECTION 1105.03(q)
- (b) PROVIDE SOLE PLATE IN ACCORDANCE WITH DM-4, D14.7.6.3.9dP



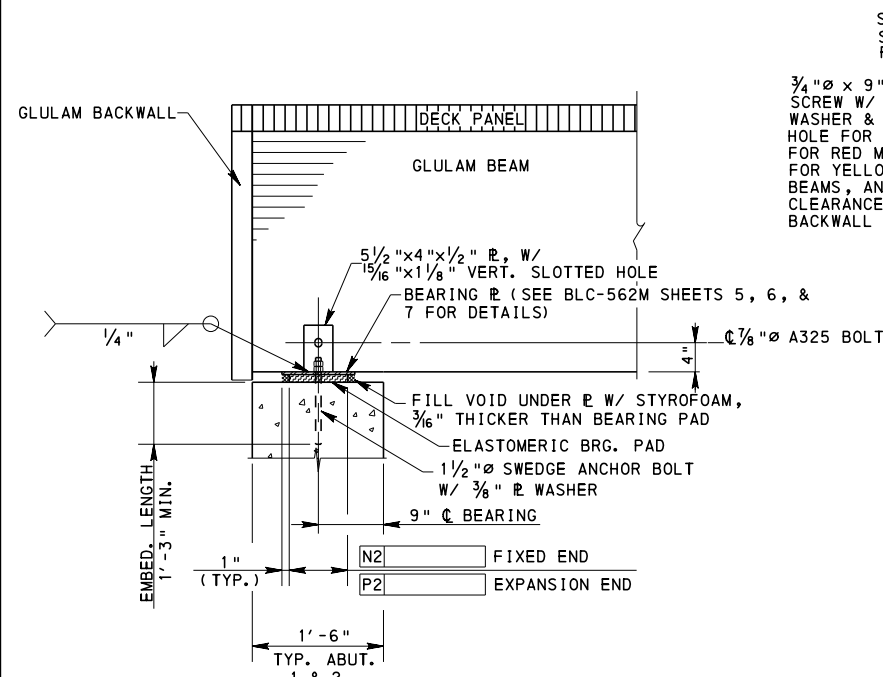
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

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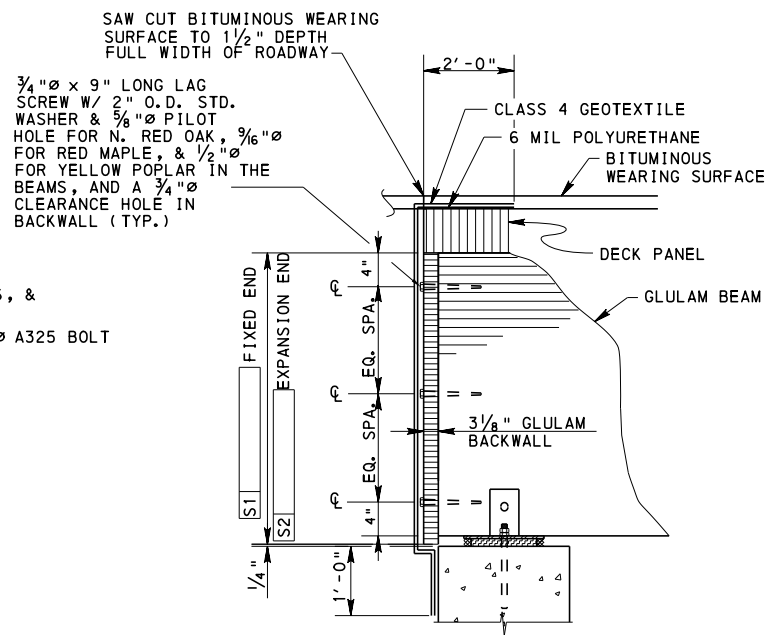
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

GLULAM BEAM SUPERSTRUCTURE
FRAMING PLAN - RIGHT SKEW

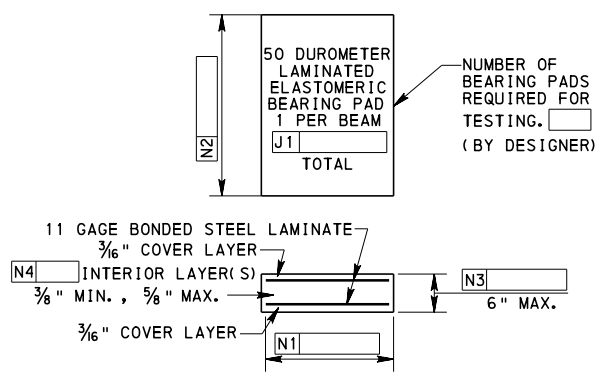
RECOMMENDED APR. 23, 2013
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
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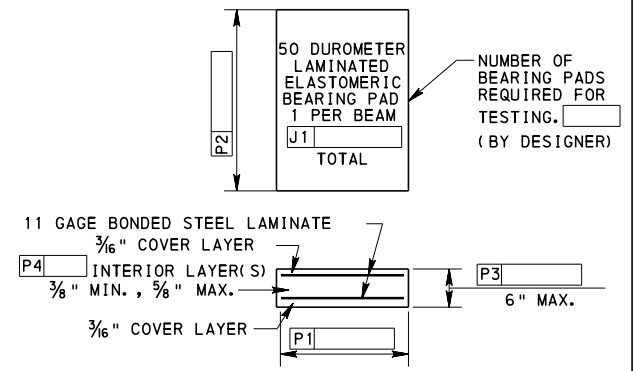
TYPICAL BEARING CONNECTION
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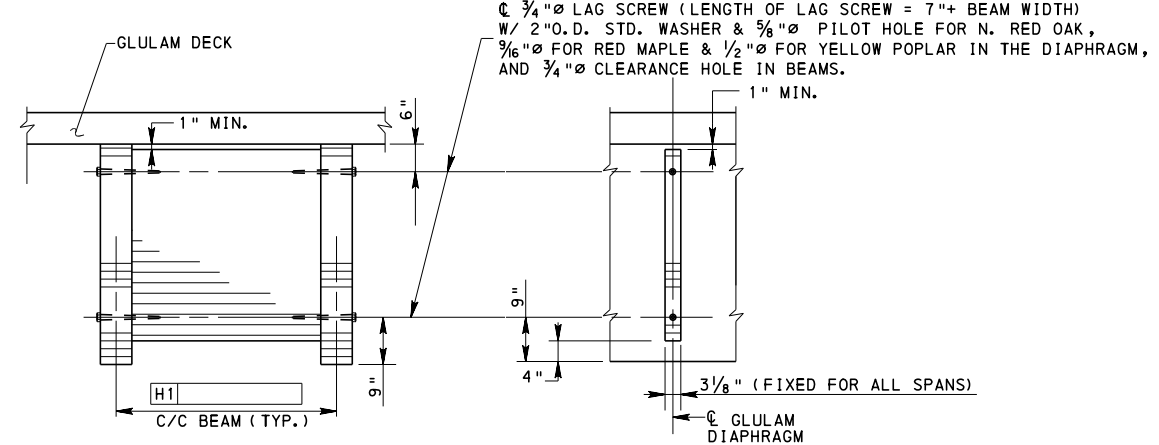
GLULAM BACKWALL DETAIL
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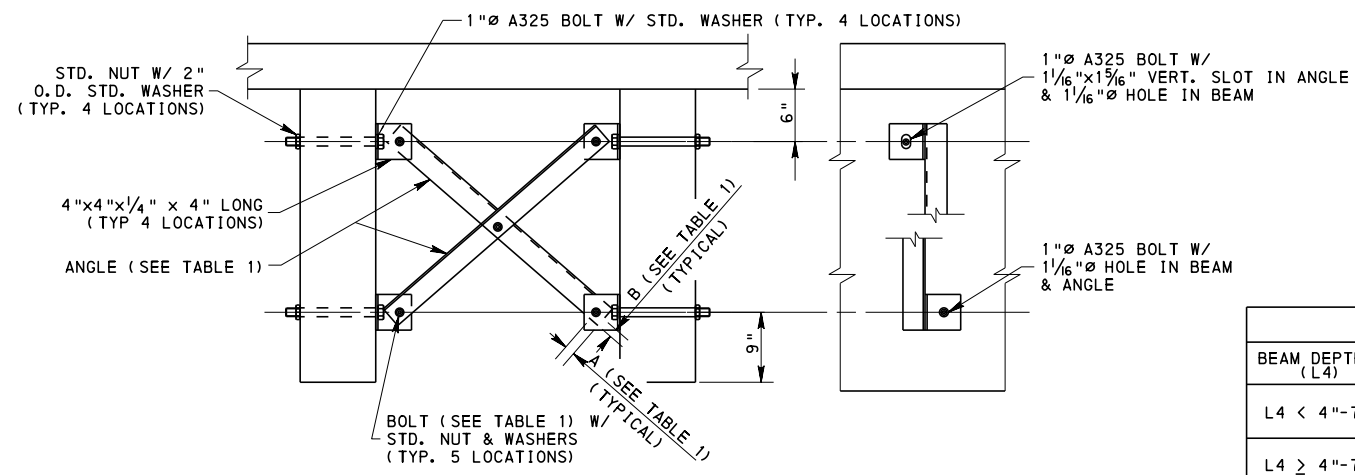
FIXED END BEARING PAD DETAIL
NO SCALE



EXPANSION END BEARING PAD DETAIL
NO SCALE



DIAPHRAGM DETAILS
NO SCALE



ALTERNATE STEEL CROSS BRACE DETAILS
NO SCALE

TABLE 1

BEAM DEPTH (L4)	ANGLE	BOLT	DIMENSIONS	
			A	B
L4 < 4"-7"	2 1/2"x2 1/2"x3/16"	7/8" A307 BOLT W/ 15/16" HOLE	1 1/8"	1"
L4 ≥ 4"-7"	3"x3"x5/16"	1" A325 BOLT W/ 1 1/16" HOLE	1 1/4"	1 3/8"

- ELASTOMERIC BEARING PAD NOTES:
1. MANUFACTURE ALL BEARINGS IN ACCORDANCE WITH THE COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PLANS AND SPECIFICATIONS (PUB. 408) SECTION 1113 AND DM-4.
 2. ALL BEARING PADS ARE TO BE MOLDED TO DESIGN DIMENSIONS. CUTTING TO SIZE AFTER FABRICATION IS PROHIBITED.
 3. PROVIDE NEOPRENE 50 ± 5 DUROMETER.
 4. VULCANIZE PATCH PIN GROOVES.
 5. PROVIDE MINIMUM LOW-TEMP NEOPRENE GRADE 3.

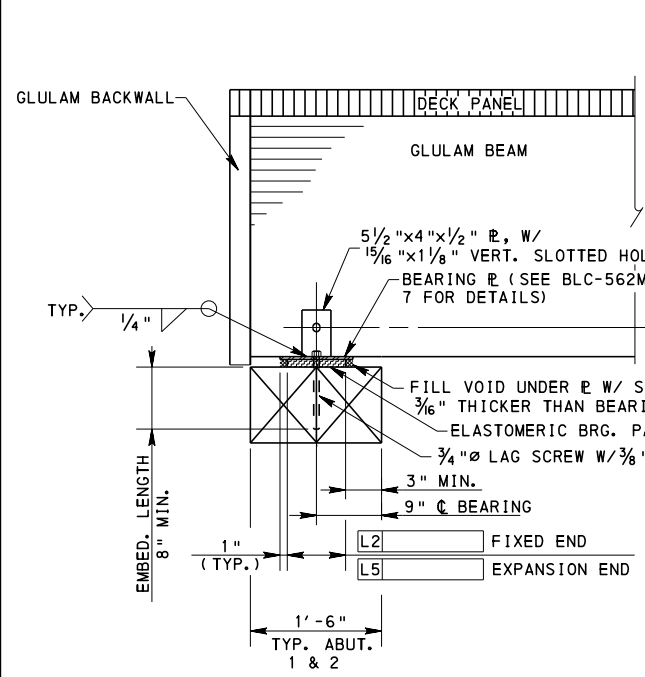
Mark	Description	By	Chk'd	Recm'd	Date
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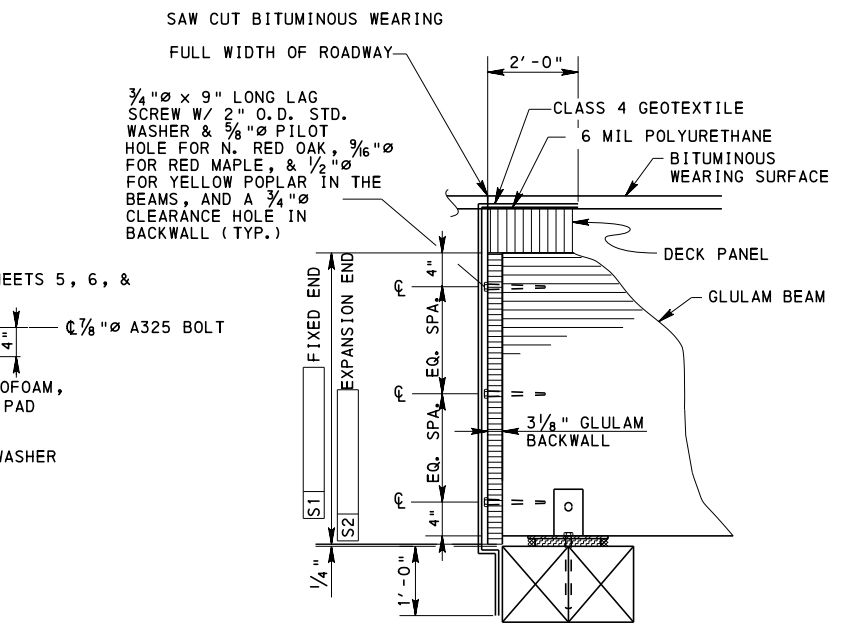
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

GLULAM BEAM SUPERSTRUCTURE
SUPERSTRUCTURE DETAILS - CONC. ABUT.

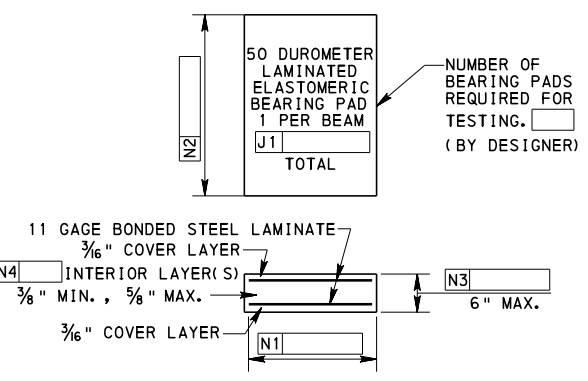
RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
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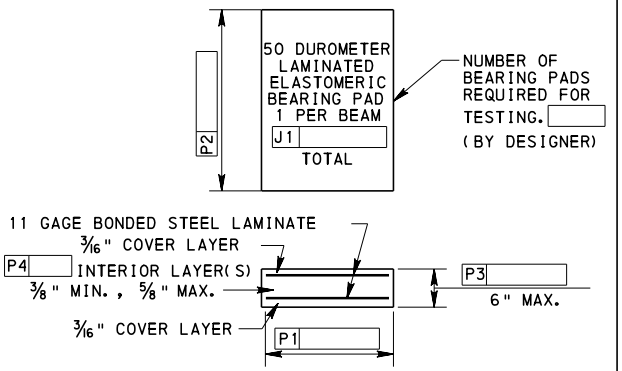
TYPICAL BEARING CONNECTION
NO SCALE



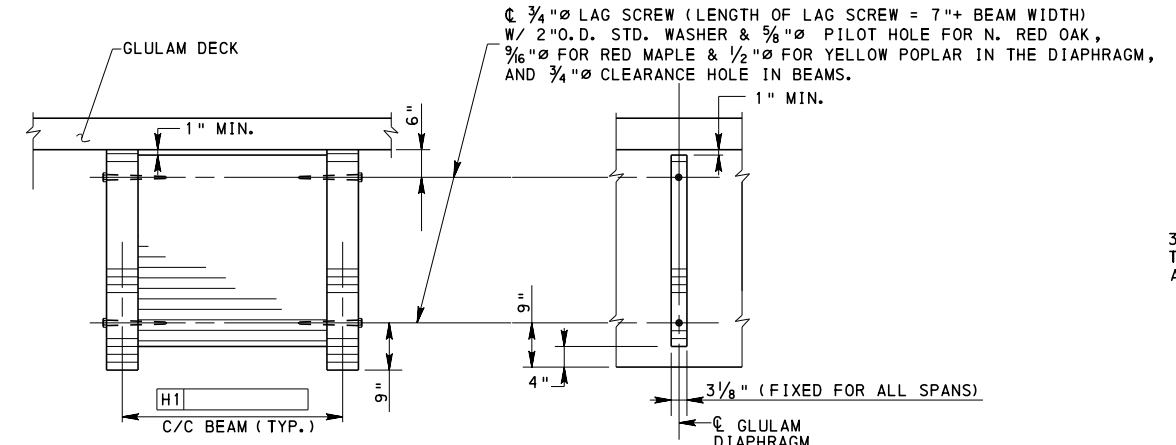
GLULAM BACKWALL DETAIL
NO SCALE



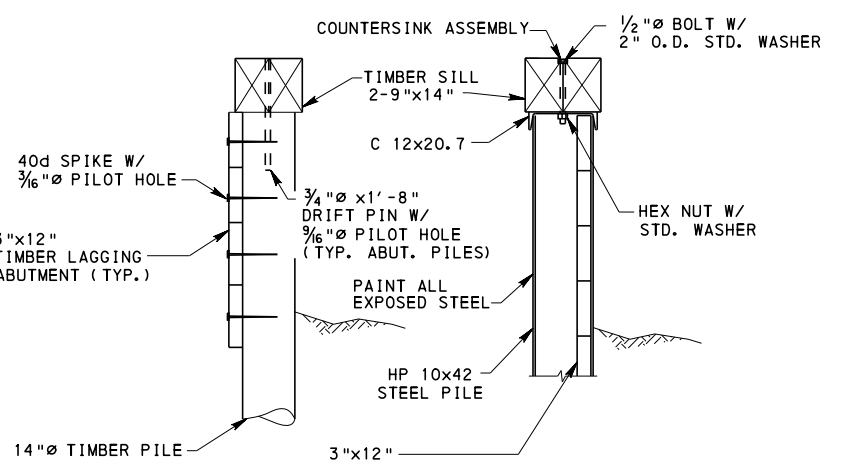
FIXED END BEARING PAD DETAIL
NO SCALE



EXPANSION END BEARING PAD DETAIL
NO SCALE

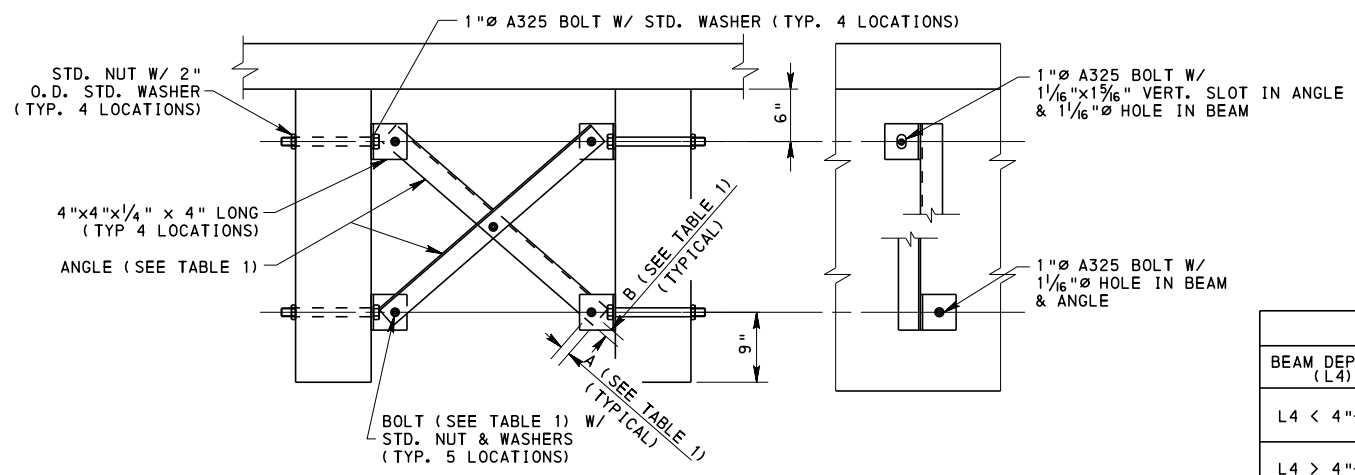


DIAPHRAGM DETAILS
NO SCALE



TIMBER PILE STEEL PILE
TIMBER SILL DETAIL
NO SCALE

- ELASTOMERIC BEARING PAD NOTES:**
1. MANUFACTURE ALL BEARINGS IN ACCORDANCE WITH THE COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PLANS AND SPECIFICATIONS (PUB. 408) SECTION 1113 AND DM-4.
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 5. PROVIDE MINIMUM LOW-TEMP NEOPRENE GRADE 3.



ALTERNATE STEEL CROSS BRACE DETAILS
NO SCALE

TABLE 1

BEAM DEPTH (L4)	ANGLE	BOLT	DIMENSIONS	
			A	B
L4 < 4'-7"	2 1/2"x2 1/2"x3/16"	7/8" Ø A307 BOLT W/ 15/16" Ø HOLE	1 1/8"	1"
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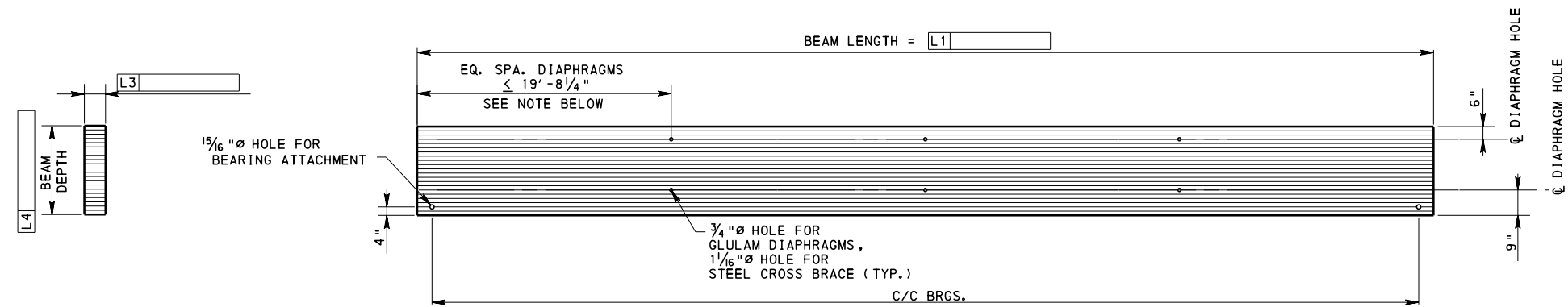
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

GLULAM BEAM SUPERSTRUCTURE
SUPERSTRUCTURE DETAILS - TIMBER ABUT.

RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
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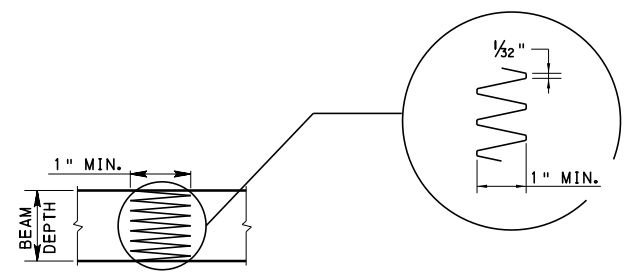
SECTION
NO SCALE

ELEVATION
NO SCALE

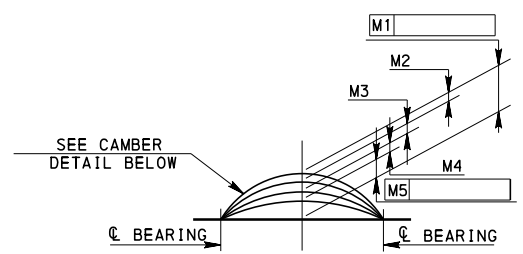
NOTE

FOR SPANS:
 18'-0" < B1 < 39'-4", USE 1 DIAPHRAGM ▲
 39'-4" < B1 < 59'-1", USE 2 DIAPHRAGM ▲
 59'-1" < B1 < 78'-9", USE 3 DIAPHRAGMS ▲
 78'-9" < B1 < 98'-5", USE 4 DIAPHRAGMS ▲

▲ WHEN VALUES OF B1 ARE CLOSE TO THE LIMITS SHOWN HERE, VERIFY THAT G1 MATCHES THE NO. OF SPACES FOR THE NUMBER OF DIAPHRAGMS SHOWN HERE.



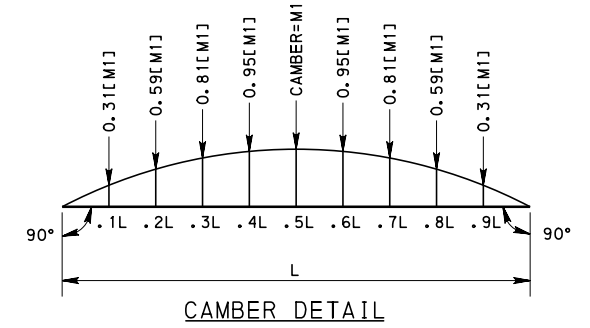
TYPICAL FINGER CONSTRUCTION JOINT DETAIL
NO SCALE



BEAM CAMBER DIAGRAM

M1 = PRE-FABRICATED CAMBER = 3[M2 + M3]
 M2 = DEFLECTION DUE TO DEAD LOAD OF BEAM
 M3 = DEFLECTION DUE TO ALL DEAD LOAD EXCEPT BEAM AND FWS
 M4 = DEFLECTION DUE TO CREEP = 1.5 [M2 + M3]
 M5 = NET FINAL CAMBER = M1 - 2.5 [M2 + M3]

- THE THICKNESS OF THE WEARING COURSE WILL BE VARIED TO COMPENSATE FOR ANY INACCURACIES IN BEAM CAMBER.
- THE PRE-FABRICATED CAMBER LESS THE DEFLECTION DUE TO DEAD LOAD OF BEAM SHOULD BE CHECKED IN THE FIELD.
- DEFLECTION CALCULATIONS DO NOT CONSIDER LOAD EFFECTS DUE TO FUTURE WEARING SURFACE.



CAMBER DETAIL

NOTES:

1. SHOW DESIGN LENGTH OF BEAM ON SHOP DRAWINGS.
2. SHOW PLAN, ELEVATION, SECTIONS AND ALL DETAILS ON SHOP DRAWINGS.
3. SHOW ANY MODIFICATIONS TO FINGER JOINT DETAILS ON SHOP DRAWINGS.
4. SHOW THE FOLLOWING DATA ON THE SHOP DRAWINGS:
 1. THE SIZE AND LOCATION OF THE TEMPORARY STORAGE SUPPORTS.
 2. THE TYPE AND LOCATION OF THE BRACING AND TEMPORARY SUPPORTS USED FOR THE TRANSPORTATION OF THE BEAMS.
5. FABRICATOR CHECKS STABILITY FOR HANDLING AND TRANSPORTING OF THE MEMBERS.
6. DO NOT EXCEED MAXIMUM SPACING OF 19'-8 1/4" FOR GLULAM DIAPHRAGM OR STEEL CROSS BRACING.
7. CAMBER BEAMS 3 TIMES DEAD LOAD DEFLECTION.
8. SEE BLC-562M SHEET 9 OR 10 FOR DIAPHRAGM BOLT HOLE LOCATIONS. SEE BLC-562M SHEET 9 OR 10 FOR BEARING ATTACHMENT HOLE LOCATIONS.
9. CONSTRUCT BEAMS IN ACCORDANCE WITH CURRENT INSPECTION MANUAL, AITC 200 & CURRENT AITC 119. ALL BEAMS TO BE MANUFACTURED WITH 2400 PSI F_b AND 1.8x10E6 PSI MOE.
10. FOR HANDLING REFER TO PUBLICATION 408, SECTION 1031.3(a) SPECIFICATIONS FOR GLULAM TIMBERS.
11. SPLICE JOINT LOCATION ON OUTER LAMINATIONS IS NOT CRITICAL.
12. MAXIMUM LAMINATION THICKNESS IS 2".
13. MINIMUM LAMINATION THICKNESS IS 3/4".

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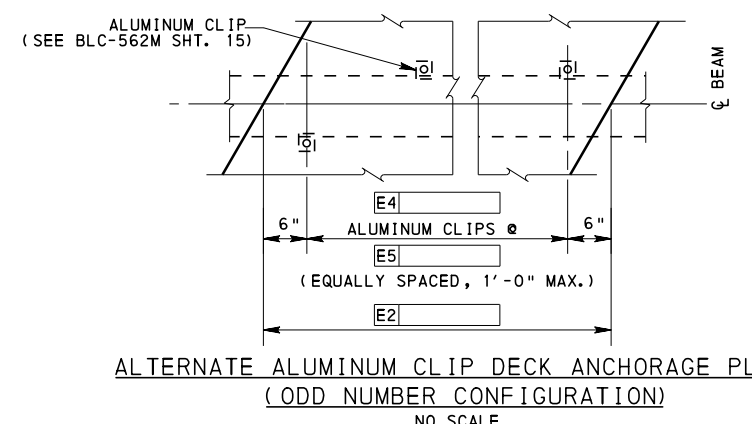
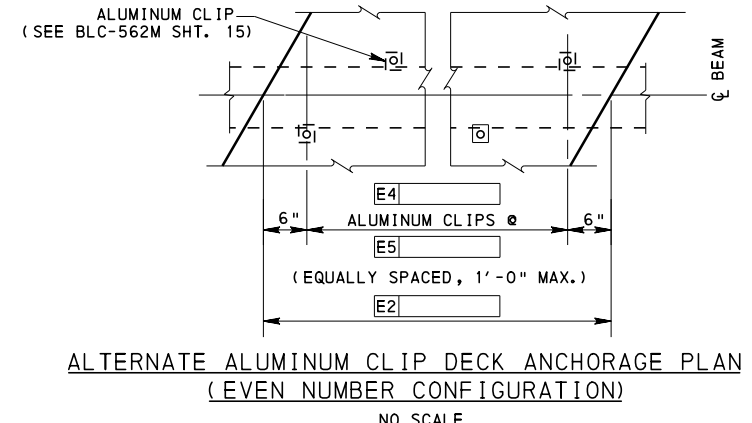
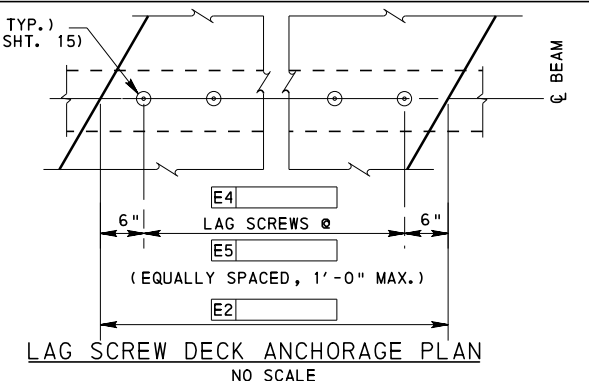
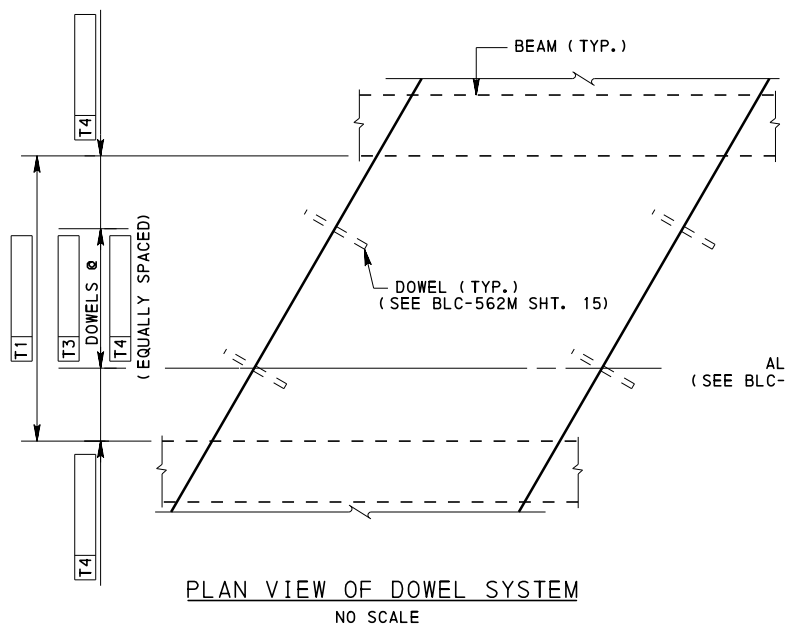
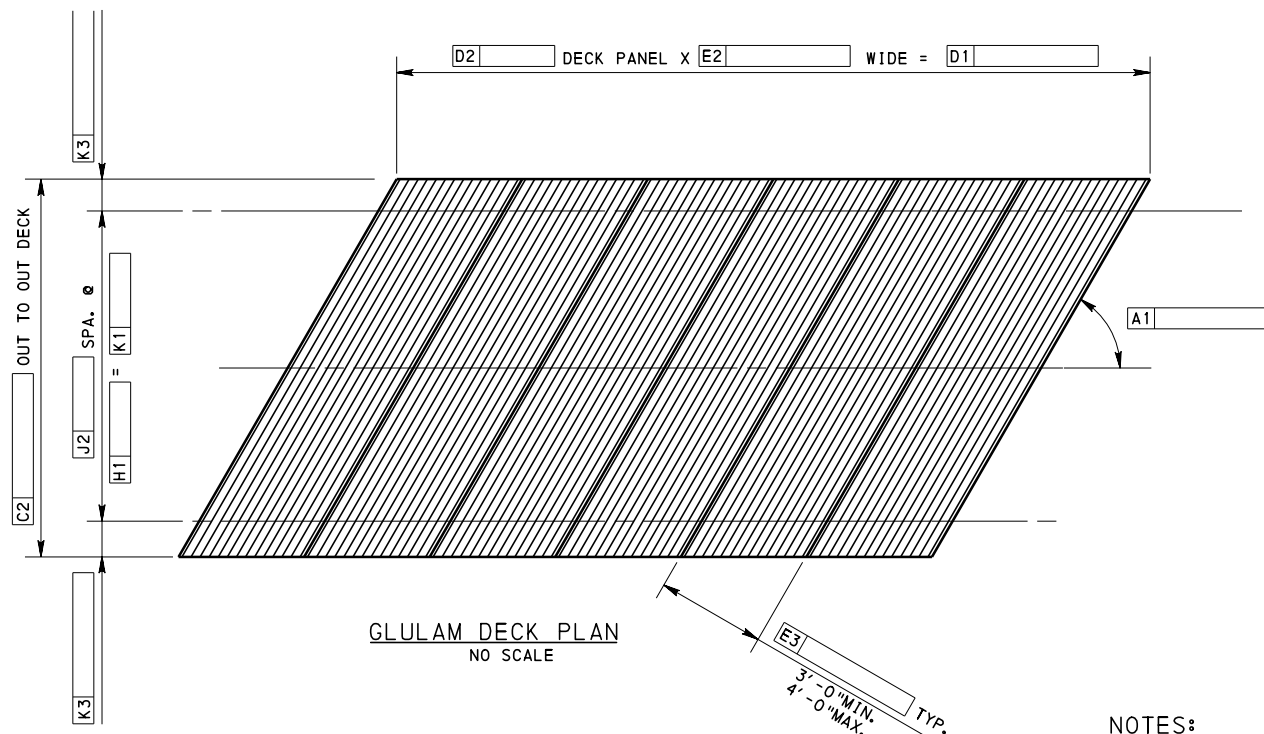
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

GLULAM BEAM SUPERSTRUCTURE
 BEAM DETAILS

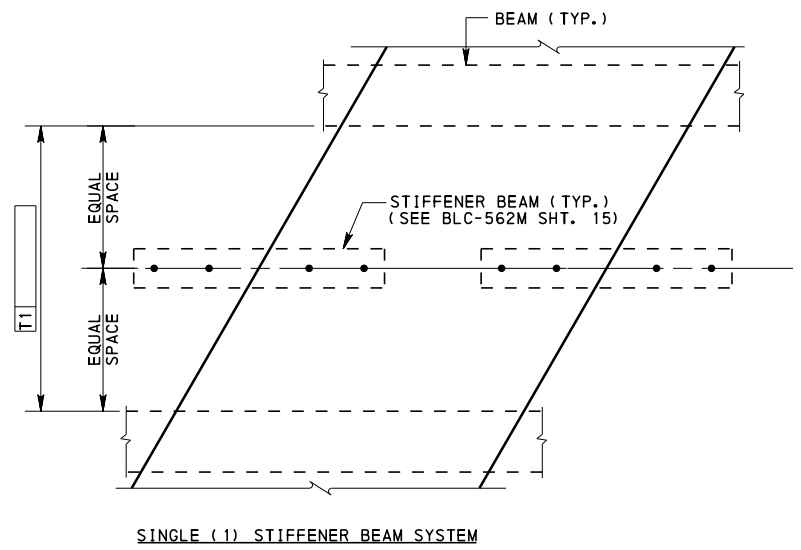
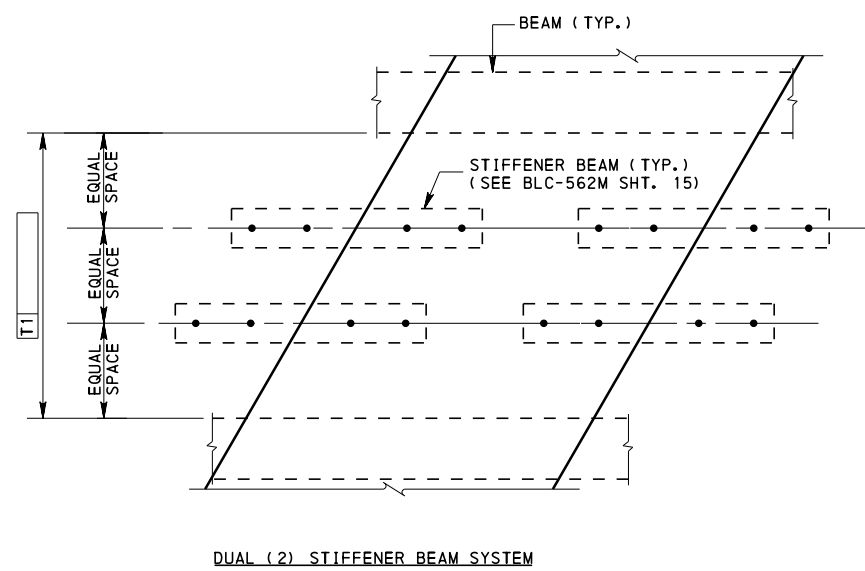
RECOMMENDED APR. 23, 2013
 Thomas P. Naciosa
 CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013
 Acting Dir. BUR. OF PROJECT DELIVERY

SHEET 11 OF 15
BLC-562M



- NOTES:
- 1.) NO DOWELS OR STIFFENER BEAMS NEEDED BETWEEN FACIA BEAM AND OUTSIDE OF DECK.
 - 2.) PRELOAD DECK PANEL WHILE FASTENING PANEL TO BEAM.
 - 3.) PROVIDE ADEQUATE SPACING BETWEEN THE DECK ANCHORAGE AND THE DOWEL SYSTEM. ADJUSTMENTS TO THE DOWEL SYSTEM AND/OR DECK ANCHORAGE'S SPACING MAY BE NECESSARY.



PLAN VIEWS OF ALTERNATE STIFFENER BEAM SYSTEMS
NO SCALE

STIFFENER BEAM DESIGN DATA		
TIMBER SPECIES	MAXIMUM DESIGN SPAN (T2)	NUMBER OF STIFFENER BEAMS
NORTHERN RED OAK & RED MAPLE	3'-1"	1
YELLOW POPLAR	6'-0"	2

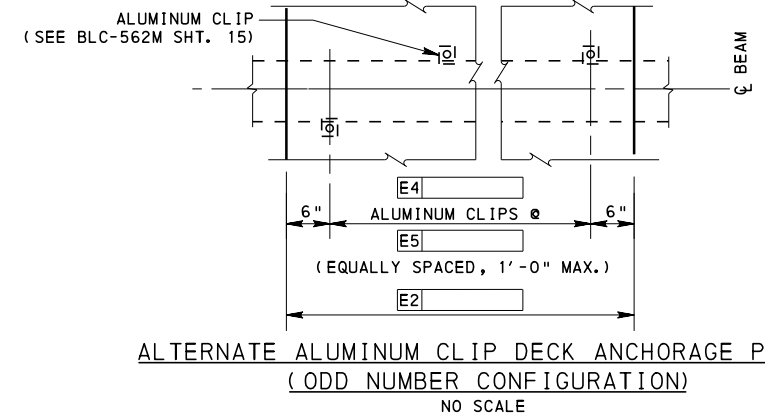
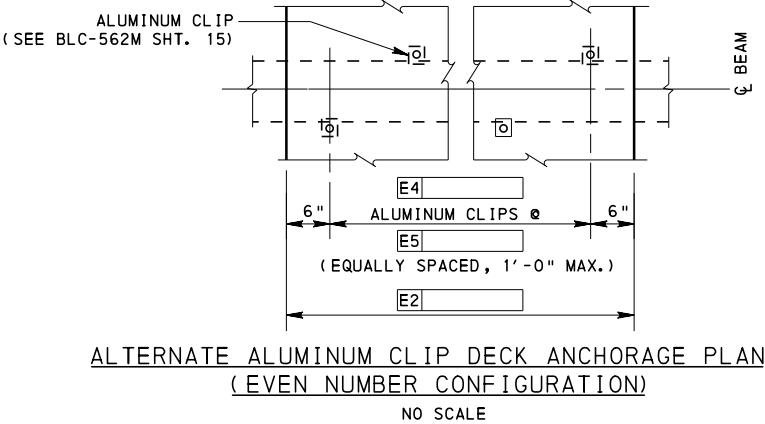
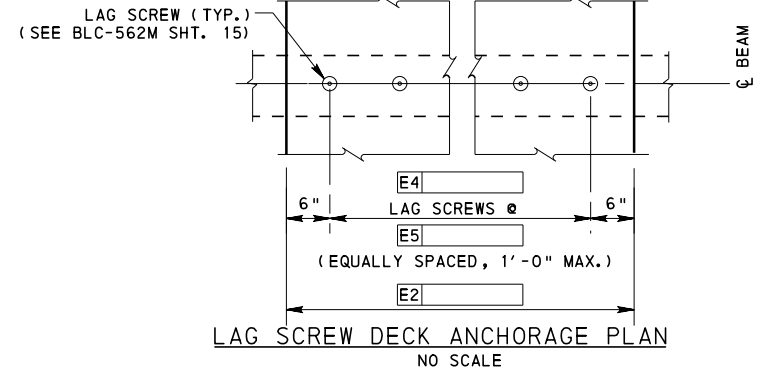
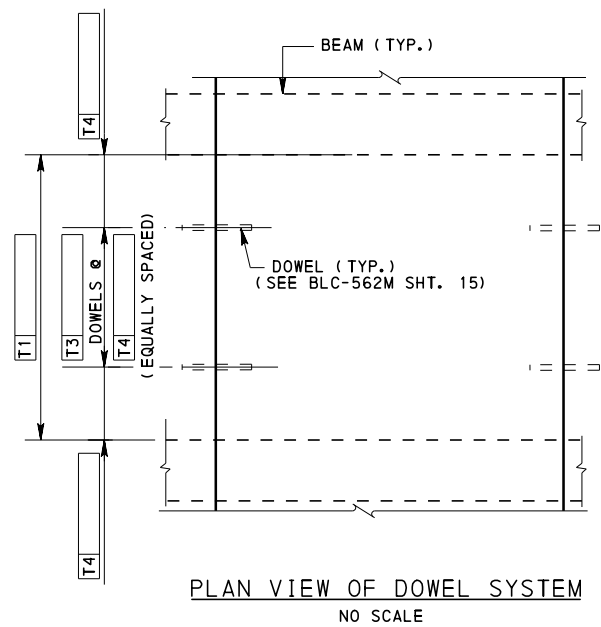
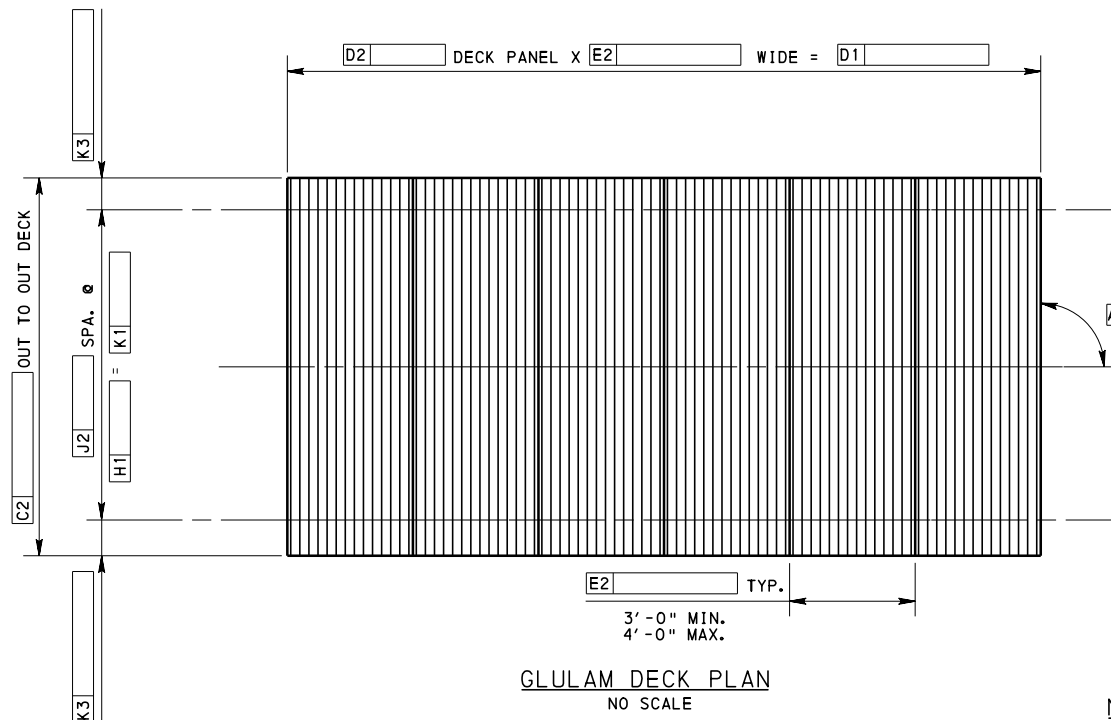
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

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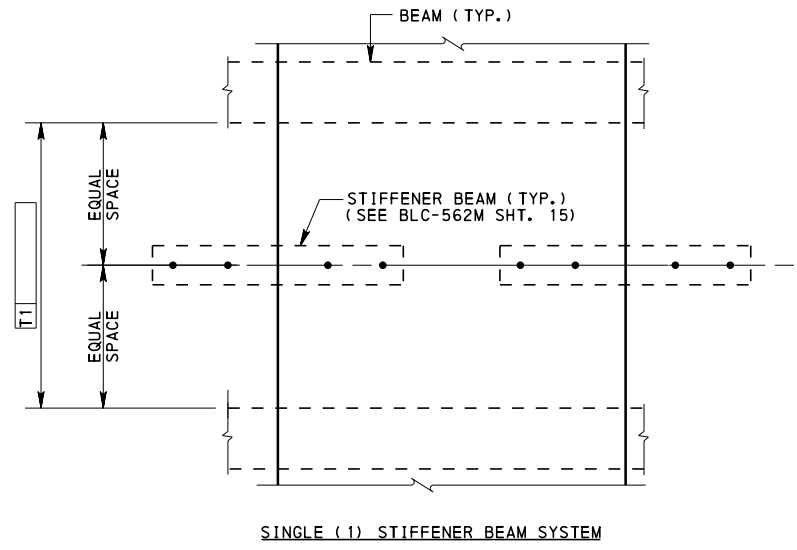
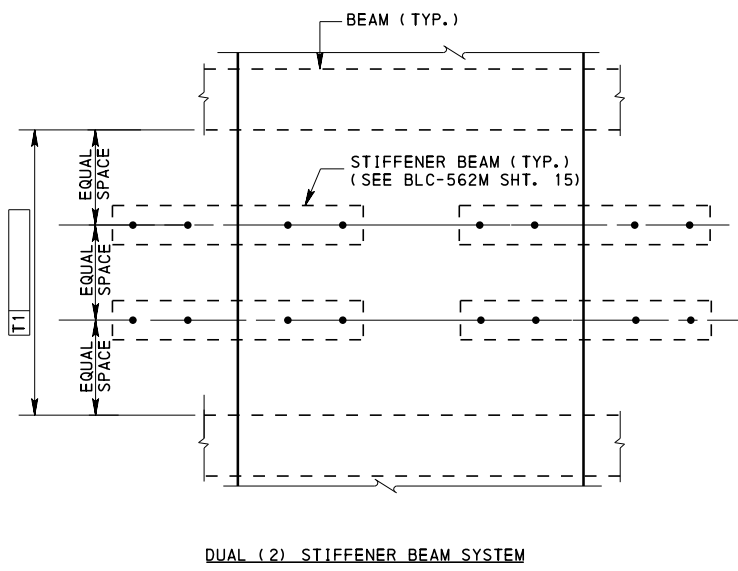
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

GLULAM BEAM SUPERSTRUCTURE
DECK PLAN - LEFT SKEW

RECOMMENDED APR. 23, 2013
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 12 OF 15
BLC-562M



- NOTES:
- 1.) NO DOWELS OR STIFFENER BEAMS NEEDED BETWEEN FACIA BEAM AND OUTSIDE OF DECK.
 - 2.) PRELOAD DECK PANEL WHILE FASTENING PANEL TO BEAM.
 - 3.) PROVIDE ADEQUATE SPACING BETWEEN THE DECK ANCHORAGE AND THE DOWEL SYSTEM. ADJUSTMENTS TO THE DOWEL SYSTEM AND/OR DECK ANCHORAGE'S SPACING MAY BE NECESSARY.



PLAN VIEWS OF ALTERNATE STIFFENER BEAM SYSTEMS
NO SCALE

STIFFENER BEAM DESIGN DATA		
TIMBER SPECIES	MAXIMUM DESIGN SPAN (T2)	NUMBER OF STIFFENER BEAMS
NORTHERN RED OAK & RED MAPLE	3'-1"	1
YELLOW POPLAR	6'-0"	2
	2'-6"	1
	6'-0"	2

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

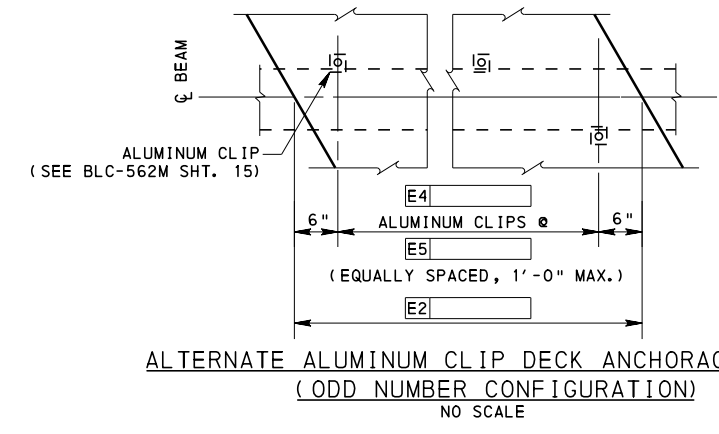
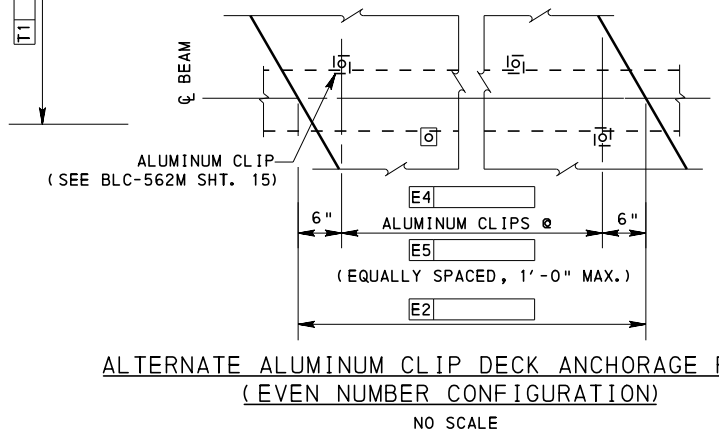
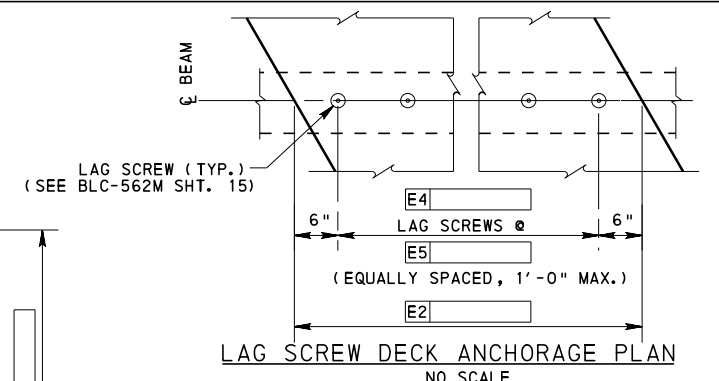
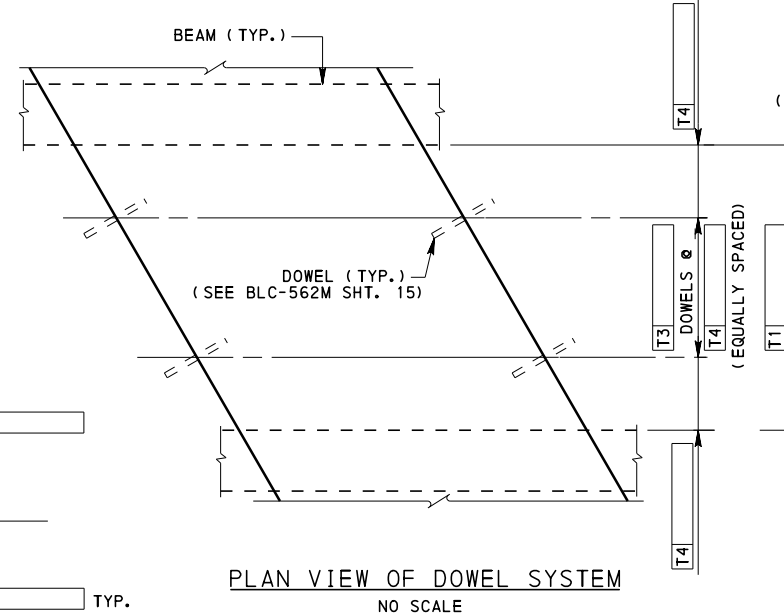
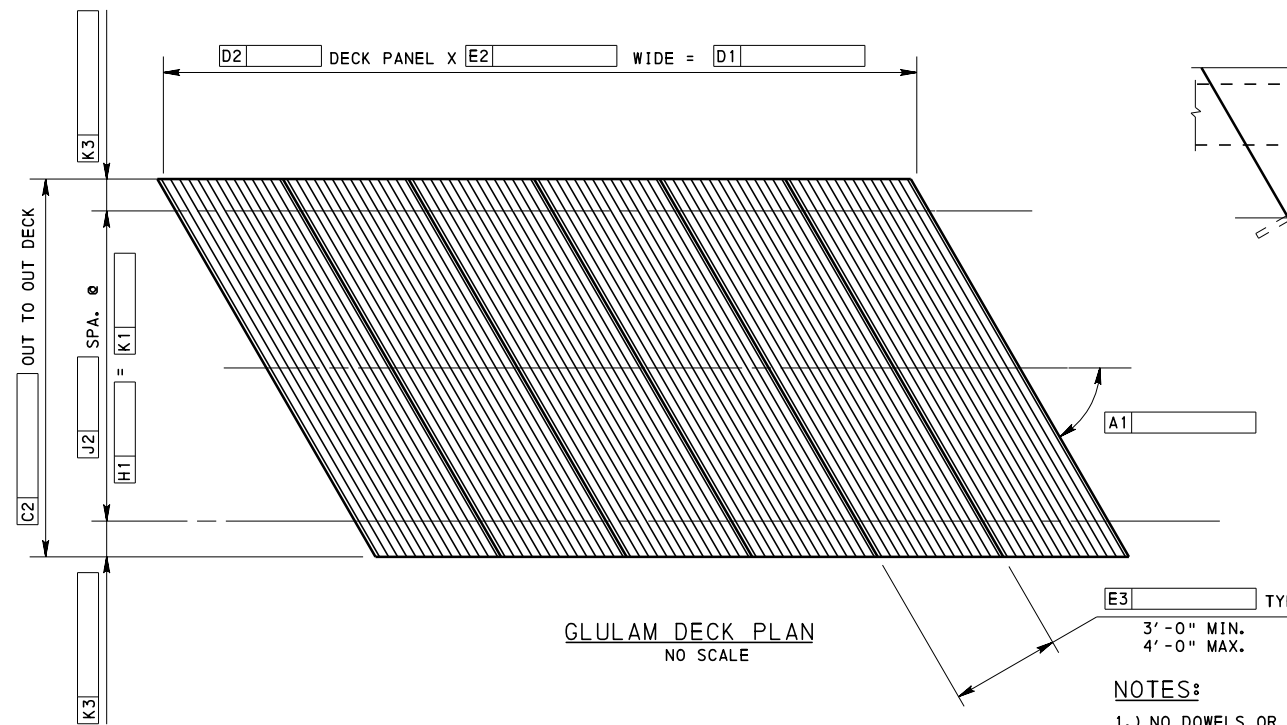
GLULAM BEAM SUPERSTRUCTURE
DECK PLAN - 90° SKEW

RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 13 OF 15

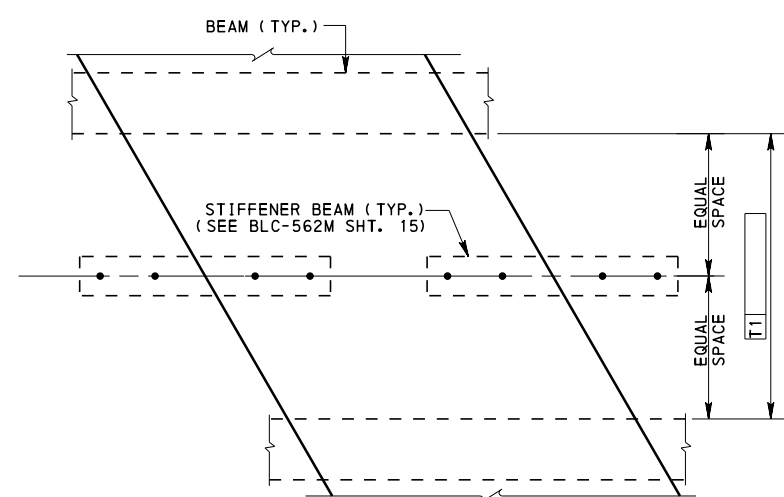
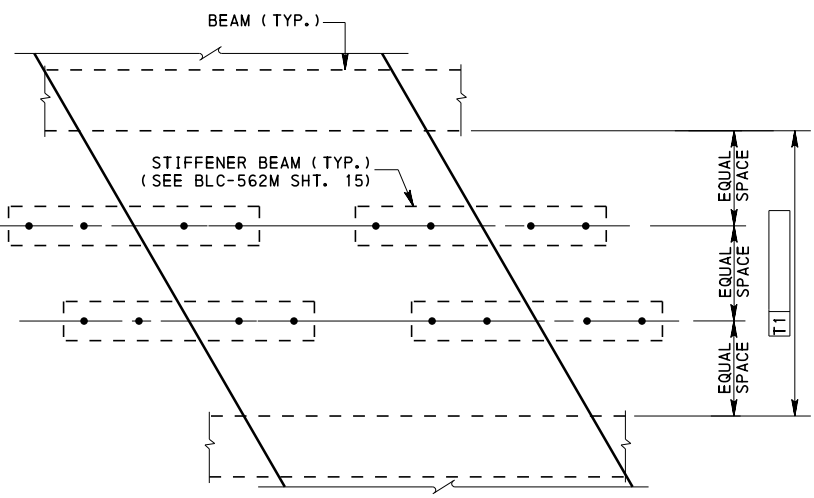
Thomas P. Macisica
CHIEF BRIDGE ENGINEER

ACTING DIR. BUR. OF PROJECT DELIVERY

BLC-562M



- NOTES:
- 1.) NO DOWELS OR STIFFENER BEAMS NEEDED BETWEEN FACIA BEAM AND OUTSIDE OF DECK.
 - 2.) PRELOAD DECK PANEL WHILE FASTENING PANEL TO BEAM.
 - 3.) PROVIDE ADEQUATE SPACING BETWEEN THE DECK ANCHORAGE AND THE DOWEL SYSTEM. ADJUSTMENTS TO THE DOWEL SYSTEM AND/OR DECK ANCHORAGE'S SPACING MAY BE NECESSARY.



PLAN VIEWS OF ALTERNATE STIFFENER BEAM SYSTEMS
NO SCALE

STIFFENER BEAM DESIGN DATA		
TIMBER SPECIES	MAXIMUM DESIGN SPAN (T2)	NUMBER OF STIFFENER BEAMS
NORTHERN RED OAK & RED MAPLE	3'-1"	1
	6'-0"	2
YELLOW POPLAR	2'-6"	1
	6'-0"	2

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

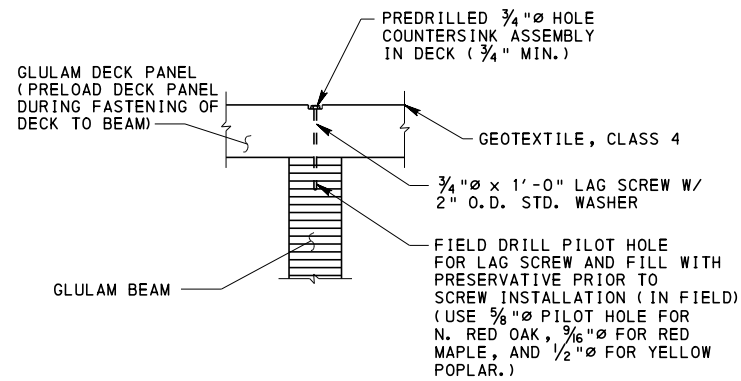
GLULAM BEAM SUPERSTRUCTURE
DECK PLAN - RIGHT SKEW

RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
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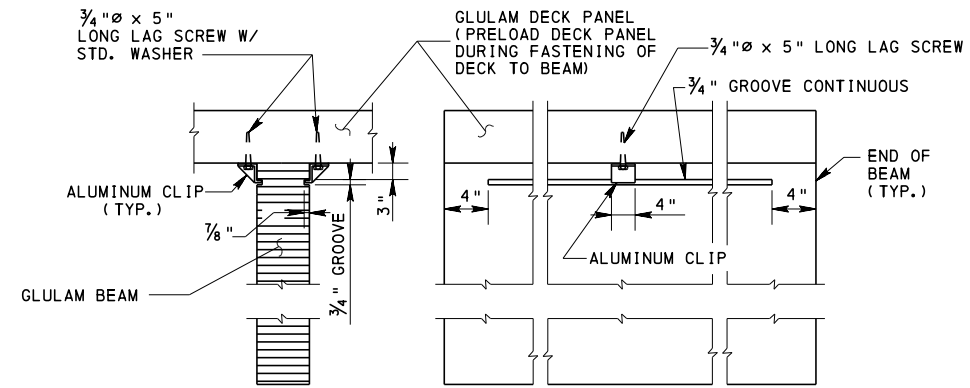
Thomas P. Maciocco
CHIEF BRIDGE ENGINEER

ACTING DIR. BUR. OF PROJECT DELIVERY

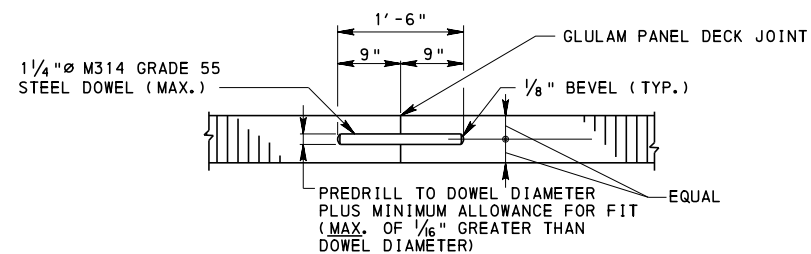
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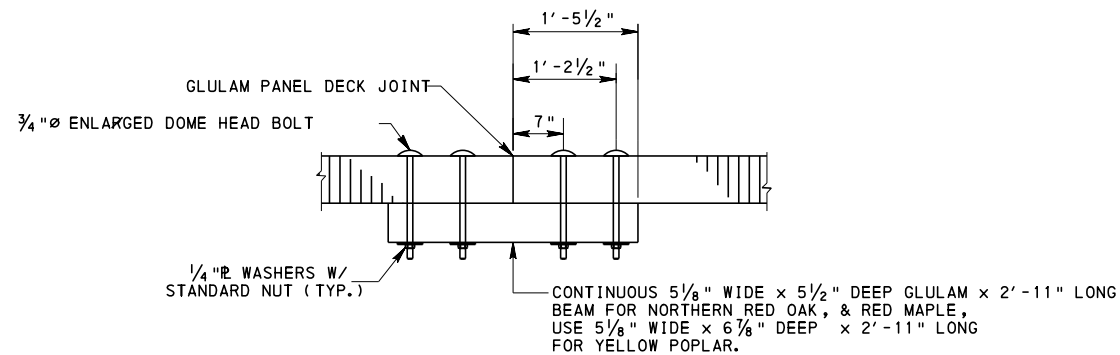
LAG SCREW DECK ANCHORAGE DETAIL
NO SCALE



ALTERNATE ALUMINUM CLIP DECK ANCHORAGE DETAIL
NO SCALE



DOWEL DETAIL
NO SCALE



ALTERNATE INTERMEDIATE STIFFENER BEAM DETAIL
NO SCALE

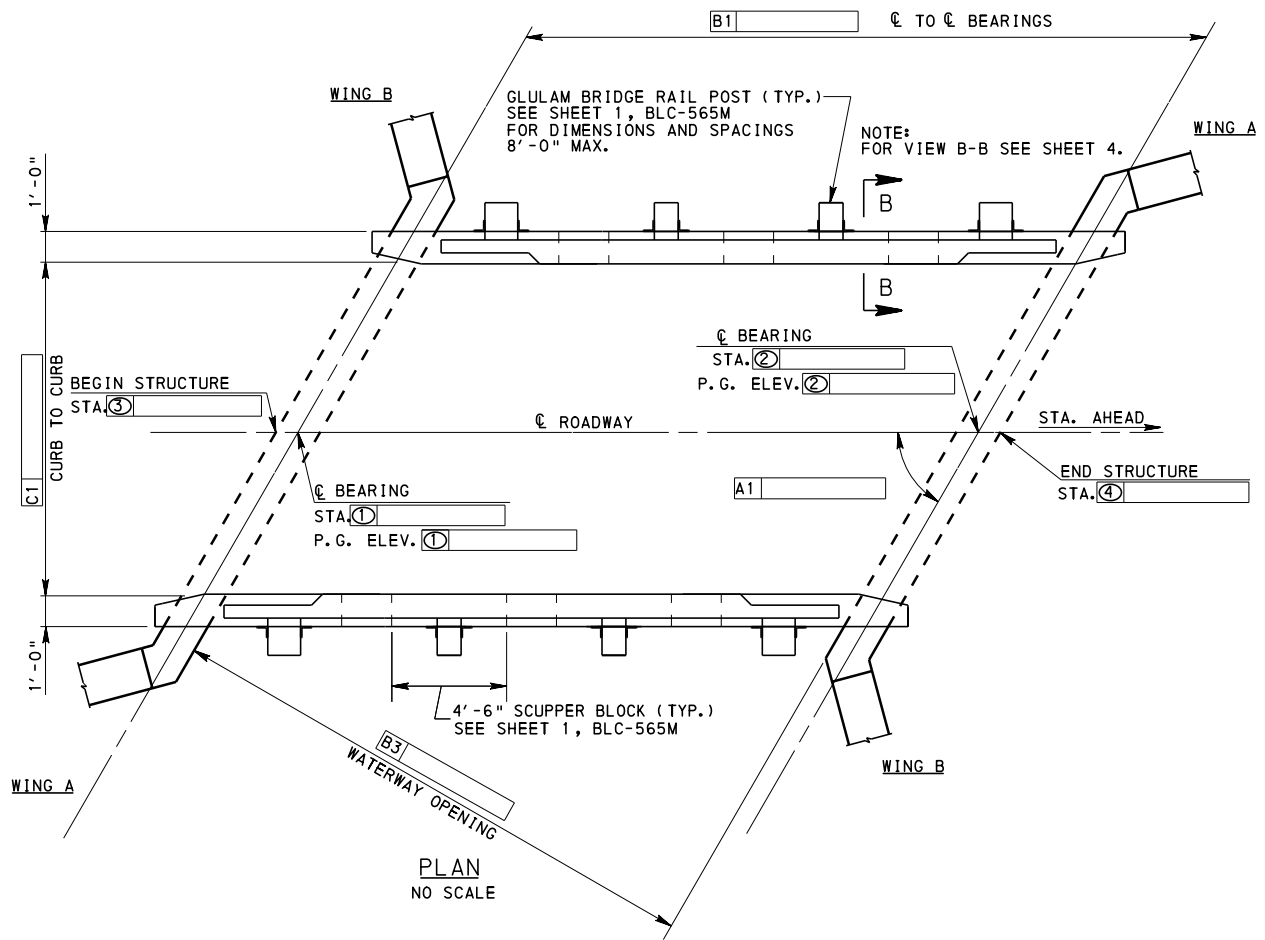
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

GLULAM BEAM SUPERSTRUCTURE
DECK DETAILS

RECOMMENDED APR. 23, 2013 <i>Thomas P. Nacivca</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 15 OF 15 BLC-562M
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INDEX OF DRAWINGS			
SHT. NO.	TITLE	SHT. NO.	TITLE

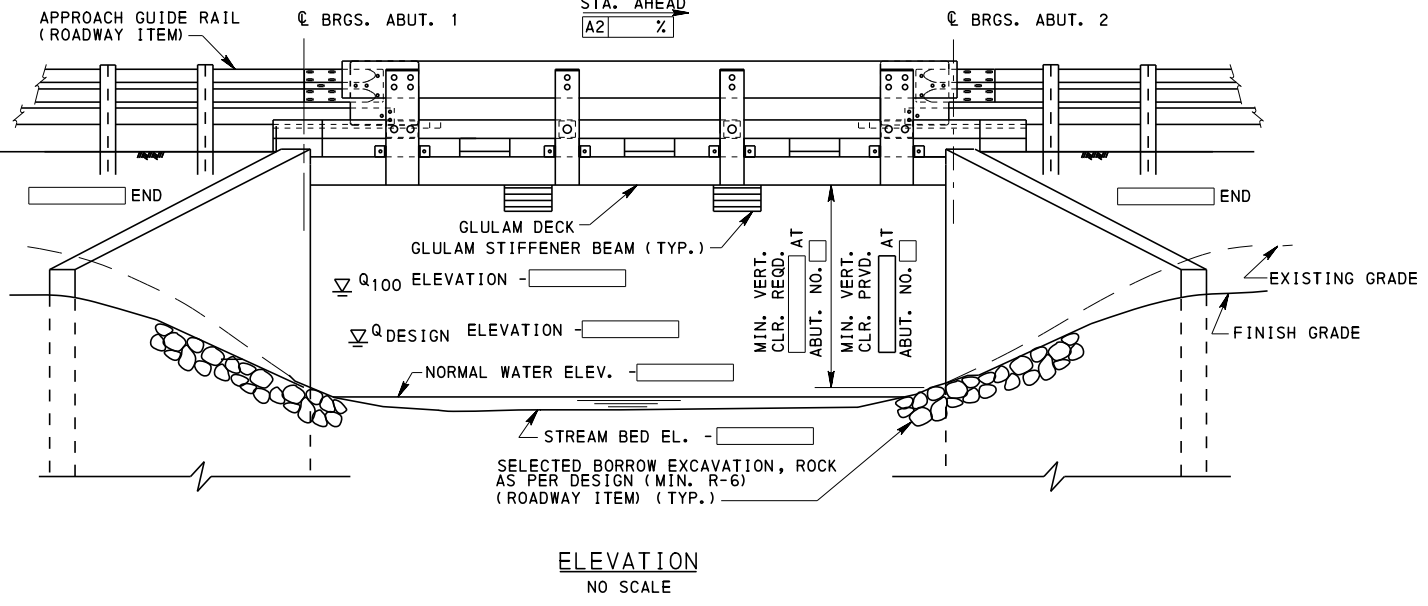
HYDRAULIC DATA
(DESIGNER)

DRAINAGE AREA -
DESIGN FLOOD
DISCHARGE -
FREQUENCY -
ELEVATION -
100 YEAR FLOOD
DISCHARGE -
ELEVATION -

BRIDGE RATING ⁽¹⁾ REFER TO TABLE 2, BLC-561M SHEET 9							
SIMPLE SPAN		GLULAM TIMBER LONGITUDINAL PANEL ⁽²⁾					
		H	HS	ML	PHL93	TK-527	P82
INVENTORY RATING (IR)	LOCATION						-
	LIMIT STATE RATING	STR. I	STR. I	STR. I	STR. I	STR. I	-
OPERATING RATING (OR)	LOCATION						-
	LIMIT STATE RATING	STR. II	STR. II	STR. II	STR. IA	STR. II	STR. II

MOMENT CAPACITY - kip-ft. _____
LOCATION _____
SHEAR CAPACITY - kip _____
LOCATION _____

NOTES FOR BRIDGE RATING TABLE:
1.) FLEXURAL RATING FACTORS "M" ARE SHOWN & GOVERN UNLESS OTHERWISE DENOTED BY A "V" FOR SHEAR, "D" FOR DEFLECTION OR "B" FOR BEARING.
2.) VALUES SHOWN ARE BASED ON LOAD AND RESISTANCE FACTOR DESIGN.



Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

Recommended _____
DISTRICT BRIDGE ENGINEER

ENGINEERING SEAL _____ PREPARED BY: _____

SIGNATURE & DATE

GLULAM
LONGITUDINAL PANEL SUPERSTRUCTURE
GENERAL PLAN & ELEVATION - LEFT SKEW

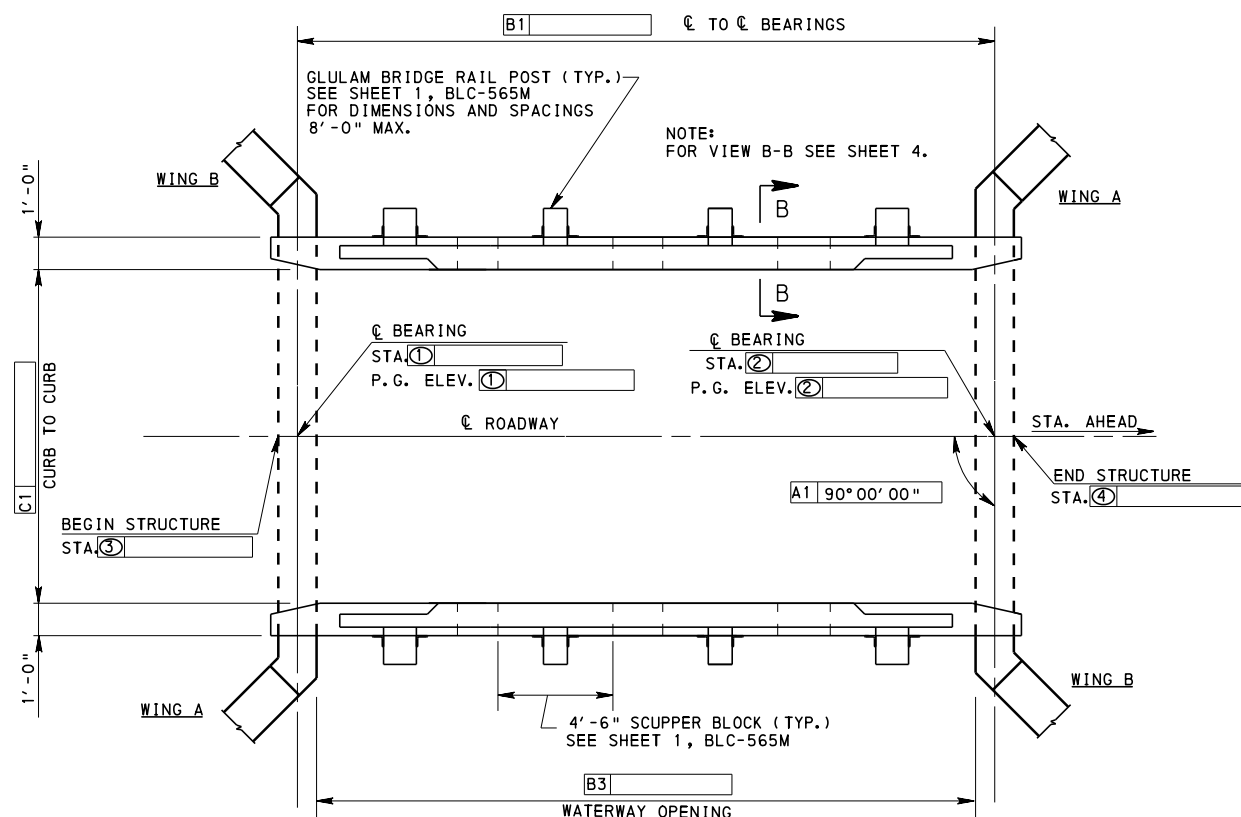
RECOMMENDED APR. 23, 2013 RECOMMENDED APR. 23, 2013 SHEET 1 OF 9

CHIEF BRIDGE ENGINEER

ACTING DIR. BUR. OF PROJECT DELIVERY

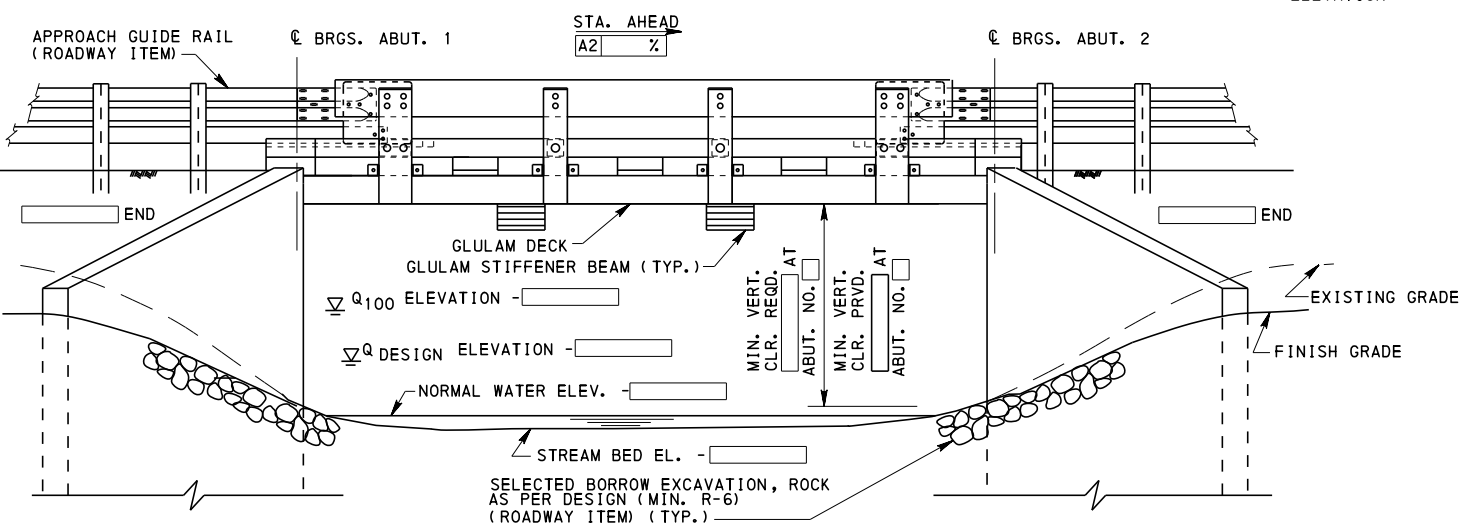
BLC-563M

REFERENCE DRAWING



HYDRAULIC DATA
(DESIGNER)

DRAINAGE AREA -
DESIGN FLOOD -
DISCHARGE -
FREQUENCY -
ELEVATION -
100 YEAR FLOOD -
DISCHARGE -
ELEVATION -



INDEX OF DRAWINGS			
SHT. NO.	TITLE	SHT. NO.	TITLE

BRIDGE RATING (1)							
REFER TO TABLE 2, BLC-561M SHEET 9							
SIMPLE SPAN		GLULAM TIMBER LONGITUDINAL PANEL (2)					
		H	HS	ML	PHL93	TK-527	P82
INVENTORY RATING (IR)	LOCATION						
	LIMIT STATE	STR. I	STR. I	STR. I	STR. I	STR. I	-
	RATING						
OPERATING RATING (OR)	LOCATION						
	LIMIT STATE	STR. II	STR. II	STR. II	STR. IA	STR. II	STR. II
	RATING						

MOMENT CAPACITY - Kip-ft. _____
LOCATION _____

SHEAR CAPACITY - kip _____
LOCATION _____

NOTES FOR BRIDGE RATING TABLE:
1.) FLEXURAL RATING FACTORS "M" ARE SHOWN & GOVERN UNLESS OTHERWISE DENOTED BY A "V" FOR SHEAR, "D" FOR DEFLECTION OR "B" FOR BEARING.
2.) VALUES SHOWN ARE BASED ON LOAD AND RESISTANCE FACTOR DESIGN.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

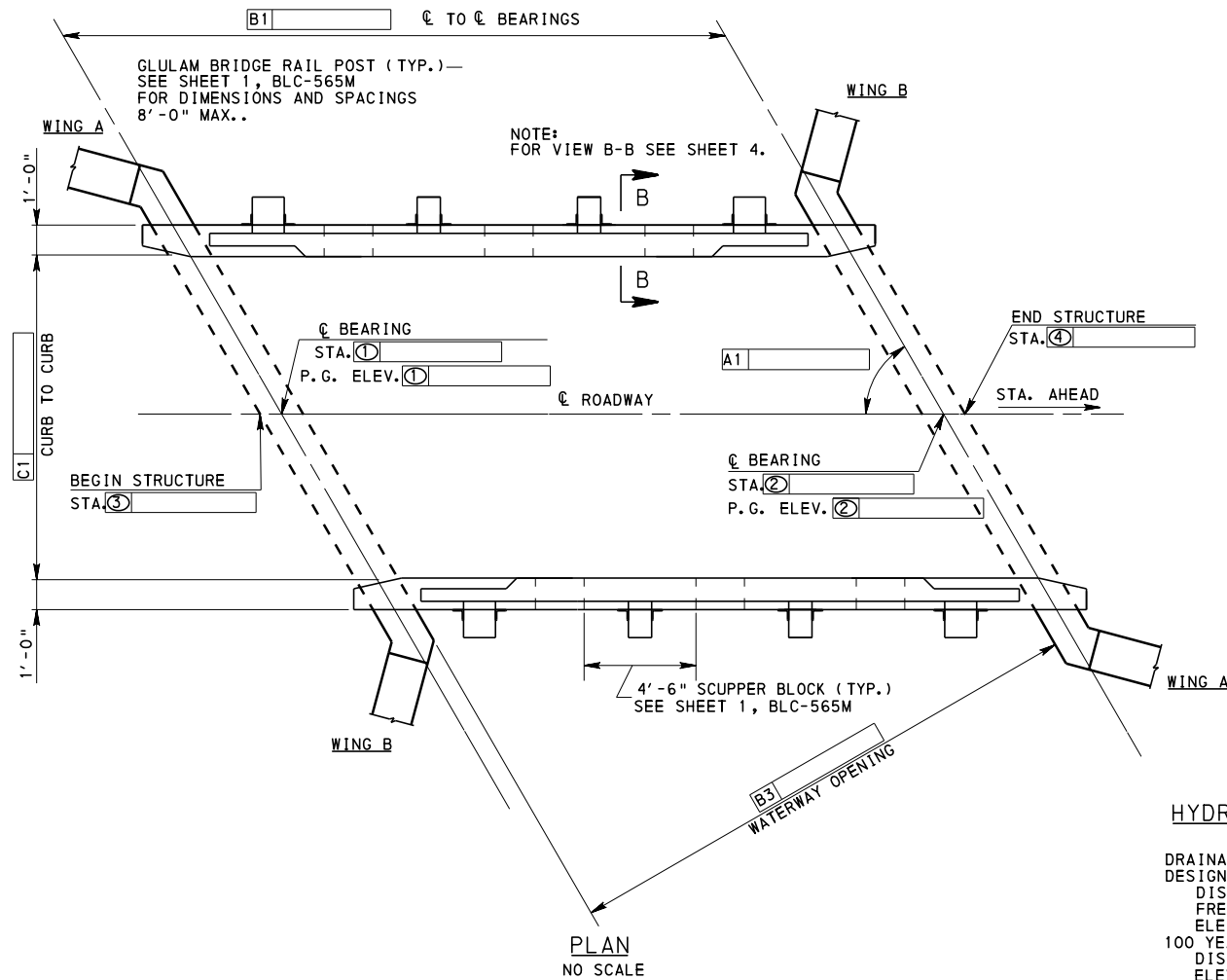
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DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

Recommended _____
 DISTRICT BRIDGE ENGINEER

GLULAM
LONGITUDINAL PANEL SUPERSTRUCTURE
GENERAL PLAN & ELEVATION - 90° SKEW

RECOMMENDED APR. 23, 2013	RECOMMENDED APR. 23, 2013	SHEET 2 OF 9
 THOMAS P. NACIVICA CHIEF BRIDGE ENGINEER	 ACTING DIR. BUR. OF PROJECT DELIVERY	BLC-563M

ENGINEERING SEAL	PREPARED BY:
SIGNATURE & DATE	



HYDRAULIC DATA
(DESIGNER)

DRAINAGE AREA - _____
 DESIGN FLOOD DISCHARGE - _____
 FREQUENCY - _____
 ELEVATION - _____
 100 YEAR FLOOD DISCHARGE - _____
 ELEVATION - _____

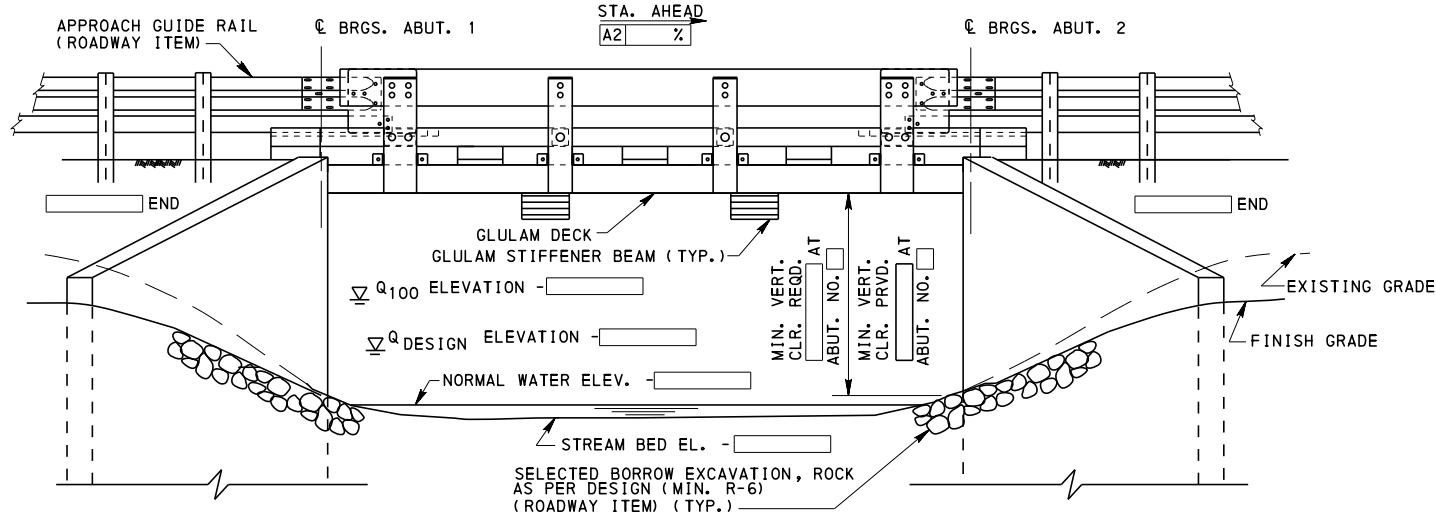
INDEX OF DRAWINGS			
SHT. NO.	TITLE	SHT. NO.	TITLE

BRIDGE RATING (1)
REFER TO TABLE 2, BLC-561M SHEET 9

SIMPLE SPAN	LOCATION	GLULAM TIMBER LONGITUDINAL PANEL (2)					
		H	HS	ML	PHL93	TK-527	P82
INVENTORY RATING (IR)	LIMIT STATE	STR. I	STR. I	STR. I	STR. I	STR. I	-
	RATING						
OPERATING RATING (OR)	LIMIT STATE	STR. II	STR. II	STR. II	STR. IA	STR. II	STR. II
	RATING						

MOMENT CAPACITY - kip-ft. _____
 LOCATION _____
 SHEAR CAPACITY - kip _____
 LOCATION _____

NOTES FOR BRIDGE RATING TABLE:
 1.) FLEXURAL RATING FACTORS "M" ARE SHOWN & GOVERN UNLESS OTHERWISE DENOTED BY A "V" FOR SHEAR, "D" FOR DEFLECTION OR "B" FOR BEARING.
 2.) VALUES SHOWN ARE BASED ON LOAD AND RESISTANCE FACTOR DESIGN.



Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

GLULAM
 LONGITUDINAL PANEL SUPERSTRUCTURE
 GENERAL PLAN & ELEVATION- RIGHT SKEW

RECOMMENDED APR. 23, 2013 RECOMMENDED APR. 23, 2013 SHEET 3 OF 9

Thomas P. Maciver *[Signature]*
 CHIEF BRIDGE ENGINEER ACTING DIR. BUR. OF PROJECT DELIVERY

BLC-563M

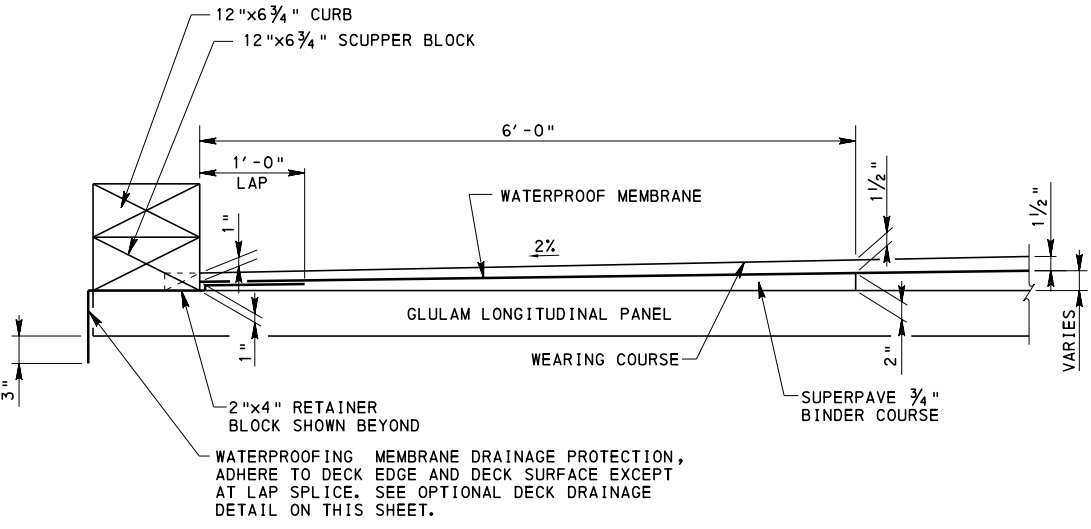
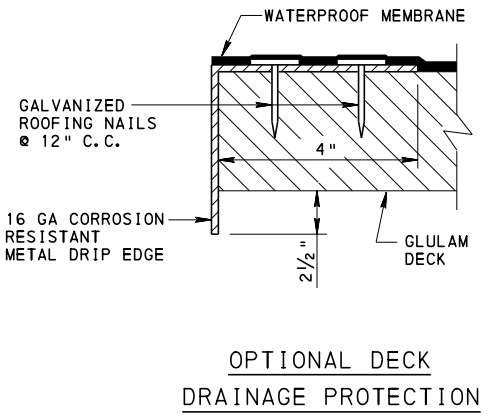
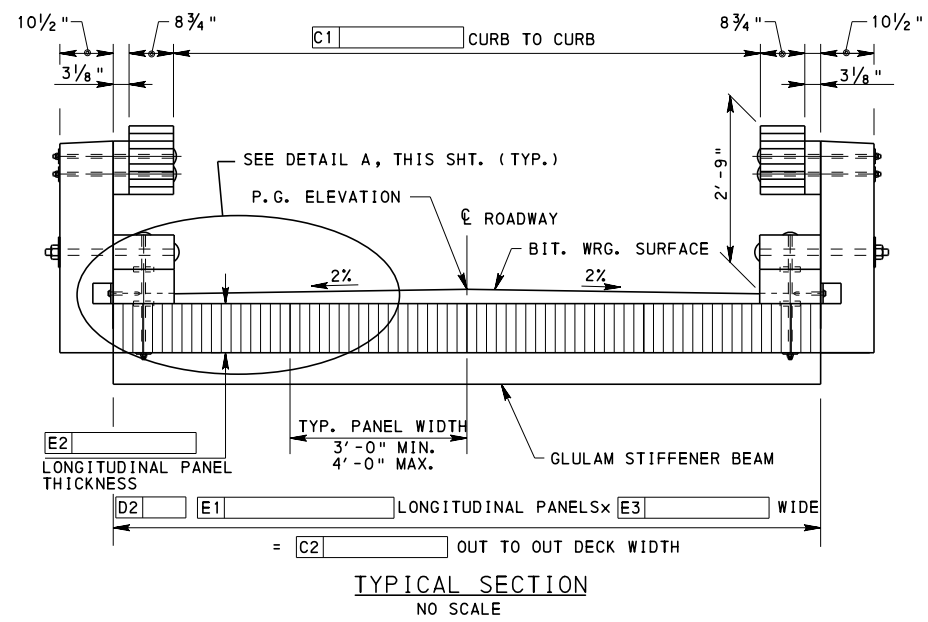
ENGINEERING SEAL PREPARED BY:

 SIGNATURE & DATE

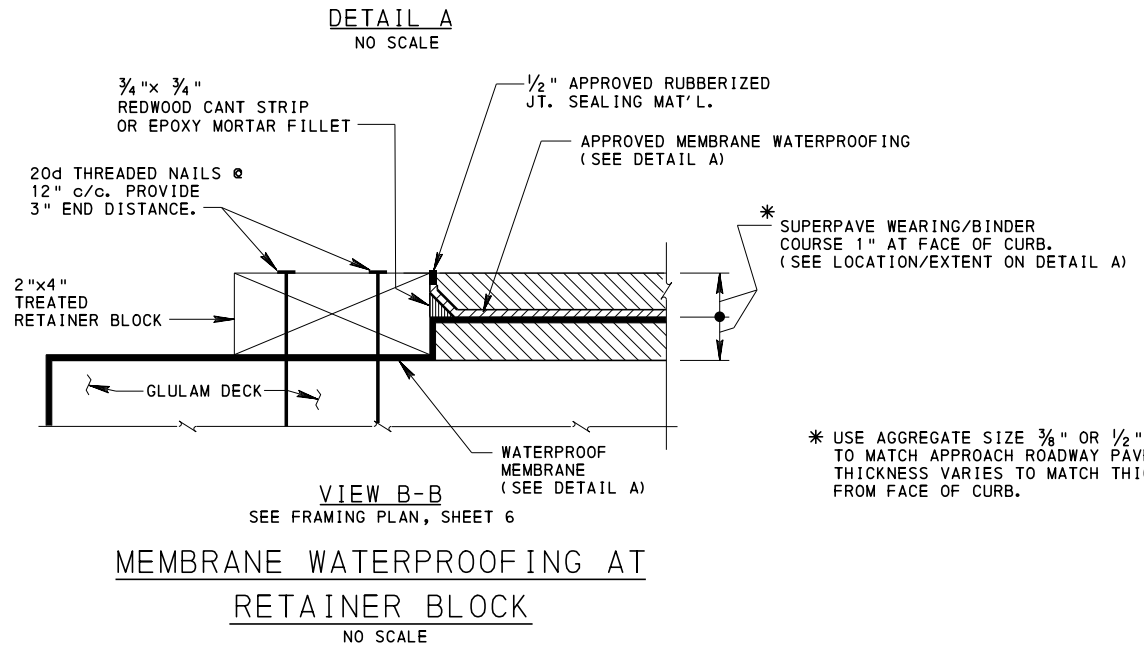
Recommended _____

 DISTRICT BRIDGE ENGINEER

REFERENCE DRAWING



- NOTE:
1. ALLOW FIRST LAYER OF BITUMINOUS MATERIAL TO COOL SUFFICIENTLY SO WATERPROOF MEMBRANE DOES NOT TEAR WHEN APPLYING SECOND LAYER OF BITUMINOUS MATERIAL.
 2. SEE VIEW B-B FOR ASPHALT WEARING COURSE TYPE.



APPROXIMATE QUANTITIES - BRIDGE STRUCTURE, AS DESIGNED						
ITEM NO.	ITEM	UNIT	ABUT. 1	ABUT. 2	SUPERSTRUCTURE	TOTAL
8030-0001	BRIDGE STRUCTURE AS DESIGNED, S-	LS				LS
(1)	GLUE LAMINATED LONGITUDINAL PANELS	F. B. M.	----	----		
(1)	GLUE LAMINATED CONT. STIFFENER BEAMS	F. B. M.	----	----		
(1)	GLUE LAMINATED TIMBER BRIDGE RAIL	F. B. M.	----	----		
(1)	GLUE LAMINATED INTER. STIFFENER BEAMS	F. B. M.	----	----		
(1)	WATERPROOF MEMBRANE	S. Y.	----	----		
(1)	CLASS 4 GEOTEXTILE	S. Y.	----	----		
(1)	BITUMINOUS BINDER COURSE SUPERPAVE, 3/4"	TON	----	----		
(1)	BITUMINOUS WEARING COURSE SUPERPAVE, 3/8" / 1/2"	TON	----	----		
(1)	TREATED RETAINER BLOCK	F. B. M.	----	----		
(1)	OPTIONAL METAL DRIP EDGE	S. Y.				

1. ITEMS IN BRIDGE STRUCTURE LUMP SUM ITEM 8030-0001 GIVEN FOR INFORMATION ONLY.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**GLULAM
LONGITUDINAL PANEL SUPERSTRUCTURE
TYPICAL SECTION AND QUANTITIES**

RECOMMENDED APR. 23, 2013 <i>Thomas P. Maciocco</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>[Signature]</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 4 OF 9 BLC-563M
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* USE AGGREGATE SIZE 3/8" OR 1/2" FOR WEARING COURSE TO MATCH APPROACH ROADWAY PAVEMENT AGGREGATE, THICKNESS VARIES TO MATCH THICKNESS @ 6'-0" FROM FACE OF CURB.

GENERAL NOTES:

DESIGN SPECIFICATIONS

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (2010) AND AS SUPPLEMENTED BY DESIGN MANUAL, PART 4, MAY 2012 EDITION.

LIVE LOAD DISTRIBUTED TO BEAMS IS BASED UPON DM-4 DISTRIBUTION FACTORS.

DESIGN IS IN ACCORDANCE WITH THE LOAD AND RESISTANCE FACTOR DESIGN METHOD.

DESIGN LIVE LOADS

PHL-93 OR P-82 [204 KIPS PERMIT LOAD]

DEAD LOADS

INCLUDES SURFACE AREA DENSITY OF 30 LBS./SQ. FT. FOR FUTURE WEARING SURFACE ON THE DECK.

GENERAL

PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH SPECIFICATIONS, PUBLICATION 408, AASHTO/AWS/D1.5 BRIDGE WELDING CODE, AND CONTRACT SPECIAL PROVISIONS.

NOTIFY THE REGIONAL HEADQUARTERS OF THE FISH COMMISSION PRIOR TO CONSTRUCTION AND COOPERATE WITH FISH COMMISSION DURING CONSTRUCTION.

ALL DIMENSIONS SHOWN ARE HORIZONTAL UNLESS OTHERWISE NOTED.

SUPERSTRUCTURE DIMENSIONS SHOWN ARE FOR NORMAL TEMPERATURE OF 68°F.

SPREAD FOOTINGS MAY BE ORDERED BY THE ENGINEER TO BE AT ANY ELEVATION OR OF ANY DIMENSIONS NECESSARY TO PROVIDE A PROPER FOUNDATION.

CONCRETE

PROVIDE 2" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.

USE CLASS A CEMENT CONCRETE IN ABUTMENTS BELOW BRIDGE SEAT, WINGWALLS, AND FOOTINGS.

USE CLASS AA CEMENT CONCRETE IN CHEEKWALLS.

A HIGHER CLASS CONCRETE MAY BE SUBSTITUTED FOR A LOWER CLASS CONCRETE AT NO ADDITIONAL COST TO THE DEPARTMENT.

PREPARE BEARING AREAS AS SPECIFIED IN PUBLICATION 408, SECTION 1001.3(K)9.

SET ANCHOR BOLTS TO TEMPLATE OR IN PREFORMED HOLES. DO NOT DRILL UNLESS SPECIFICALLY INDICATED ON PLANS. FILL THE PREFORMED HOLES WITH NON-SHRINK GROUT. FILL THE CLEARANCE BETWEEN ANCHOR BOLTS AND HOLES IN MASONRY PLATES WITH APPROVED NONHARDENING CAULKING COMPOUND CONFORMING TO PUBLICATION 408, SECTION 705.8.

PROVIDE GRADE 60 REINFORCING STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM A 615/A 615M, A 996/A 996M, AND A 706/A 706M. DO NOT WELD GRADE 60 REINFORCING STEEL BARS UNLESS SPECIFIED. GRADE 40 REINFORCING STEEL BARS MAY BE SUBSTITUTED WITH A PROPORTIONAL INCREASE IN CROSS-SECTIONAL AREA, IF APPROVED BY THE CHIEF BRIDGE ENGINEER. DO NOT USE RAIL STEEL A 996/A 996M REINFORCEMENT BARS IN BRIDGE PIERS, ABUTMENTS, SHEAR BLOCKS, BEAMS, FOOTINGS, PILES, BARRIERS AND WHERE BENDING OR WELDING OF THE REINFORCEMENT BARS IS INDICATED.

EPOXY-COAT SUBSTRUCTURE REINFORCEMENT BARS AS INDICATED.

GALVANIZED REINFORCING STEEL BARS MAY BE SUBSTITUTED FOR EPOXY-COATED STEEL BARS AT NO ADDITIONAL COST TO THE DEPARTMENT.

RAKE-FINISH ALL HORIZONTAL CONSTRUCTION JOINTS, EXCEPT AS INDICATED.

PLACE CHEEKWALL CONCRETE AFTER BEAMS ARE SET IN POSITION.

CHAMFER EXPOSED CONCRETE EDGES 1" BY 1", EXCEPT AS NOTED.

PROVIDE MINIMUM LAP AND EMBEDMENT LENGTH OF 30 DIAMETERS OR IN ACCORDANCE WITH A5.11 AND D5.11, WHICHEVER IS GREATER.

STEEL

GALVANIZE ALL TIMBER CONNECTION HARDWARE AS SPECIFIED IN PUBLICATION 408, SECTION 1105.02(s).

PROVIDE STRUCTURAL STEEL CONFORMING TO AASHTO M 270/M 270M, GRADE 36 [ASTM A 709/A 709M, GRADE 36] DESIGNATION, EXCEPT WHEN NOTED OTHERWISE.

PROVIDE BOLTS AND LAG SCREWS CONFORMING TO ASTM A 307 DESIGNATION, EXCEPT WHEN NOTED OTHERWISE.

PROVIDE BOLTS, NUTS, AND WASHERS IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND AS SUPPLEMENTED BY DESIGN MANUAL PART 4, SECTION 6.4.3.

PROVIDE MALLEABLE IRON WASHER CONFORMING TO ASTM A 47/A 47M, GRADE 3500.

PROVIDE LAG SCREWS CONFORMING TO ANSI B18.2.1 - 1981.

UTILITIES

COORDINATE THE REQUIREMENTS FOR PROTECTION AND/OR RELOCATION OF UTILITIES WITH THE UTILITY OWNER PRIOR TO STARTING WORK.

VERIFY AND LOCATE ALL EXISTING UTILITIES PRIOR TO STARTING WORK; CONDUCT OPERATIONS IN A MANNER WHICH ENSURES THAT THE UTILITIES WILL NOT BE DISTURBED OR ENDANGERED, AND ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE TO UTILITIES DURING CONSTRUCTION. THE DEPARTMENT DOES NOT ASSUME RESPONSIBILITY FOR REIMBURSEMENT, PARTICIPATION IN DESIGN AND/OR REVISIONS, OR LIABILITY FOR ACCURACY OF TYPE, SIZE, AND LOCATION OF ANY UTILITY.

GENERAL NOTES CONTINUED:

TIMBER

USE ONLY GLUE LAMINATED TIMBER FABRICATED WITH EITHER NORTHERN RED OAK, RED MAPLE OR YELLOW POPLAR LUMBER GRADED PER NORTHEASTERN LUMBER MANUFACTURER'S ASSOCIATION (NORTHERN RED OAK AND RED MAPLE) OR NORTHERN SOFTWOOD LUMBER BUREAU (YELLOW POPLAR) STANDARDS AND MANUFACTURED FOLLOWING AITC 119-96 OR CURRENT SPECIFICATIONS.

PROVIDE MINIMUM WET-USE BASE RESISTANCES AND MOE VALUES IN ACCORDANCE WITH BLC-560M SHEET 3.

TREAT ALL LUMBER AND GLULAM COMPONENTS WITH OIL-BORNE PRESERVATIVE(S) IN ACCORDANCE WITH PENNDOT PUBLICATION 408.

FIELD CUTTING IS NOT PERMITTED UNLESS APPROVED BY THE ENGINEER.

WHEN FIELD CUTTING, TREAT WITH BITUMINOUS ASPHALT BASED ROOF CEMENT, COPPER NAPHTHENATE PASTE, OR APPROVED PRESERVATIVE SYSTEM.

ALWAYS COAT LAG SCREW THREADS WITH BITUMINOUS ASPHALT BASED ROOF CEMENT, COPPER NAPHTHENATE PASTE, OR APPROVED PRESERVATIVE SYSTEM BEFORE INSTALLING LAG SCREW.

DO NOT DRIVE LAG SCREW WITH HAMMER. SCREW OR TORQUE LAG SCREWS.

PROVIDE SUFFICIENT LAG SCREW LENGTH SO LAG SCREW SHANK WILL PENETRATE RECEIVING MEMBER.

SUBMIT SHOP DRAWINGS SHOWING DETAILS OF ALL GLULAM CONSTRUCTION FOR APPROVAL TO THE ENGINEER PRIOR TO FABRICATION OPERATIONS.

ALL TIMBER DIMENSIONS SHOWN ARE ACTUAL.

PILES

DO NOT PERMIT SPLICES IN PILES.

PROVIDE PILES IN ACCORDANCE WITH BLC-560M SHEET 3.

PILE SUPPORTED TIMBER SILLS

THE SUPERSTRUCTURE MUST BE IN PLACE AND CONNECTED TO SUBSTRUCTURE BEFORE ABUTMENTS ARE BACKFILLED.

BACKFILL BOTH ABUTMENTS CONCURRENTLY. MAINTAIN SYMMETRICAL LOADING.

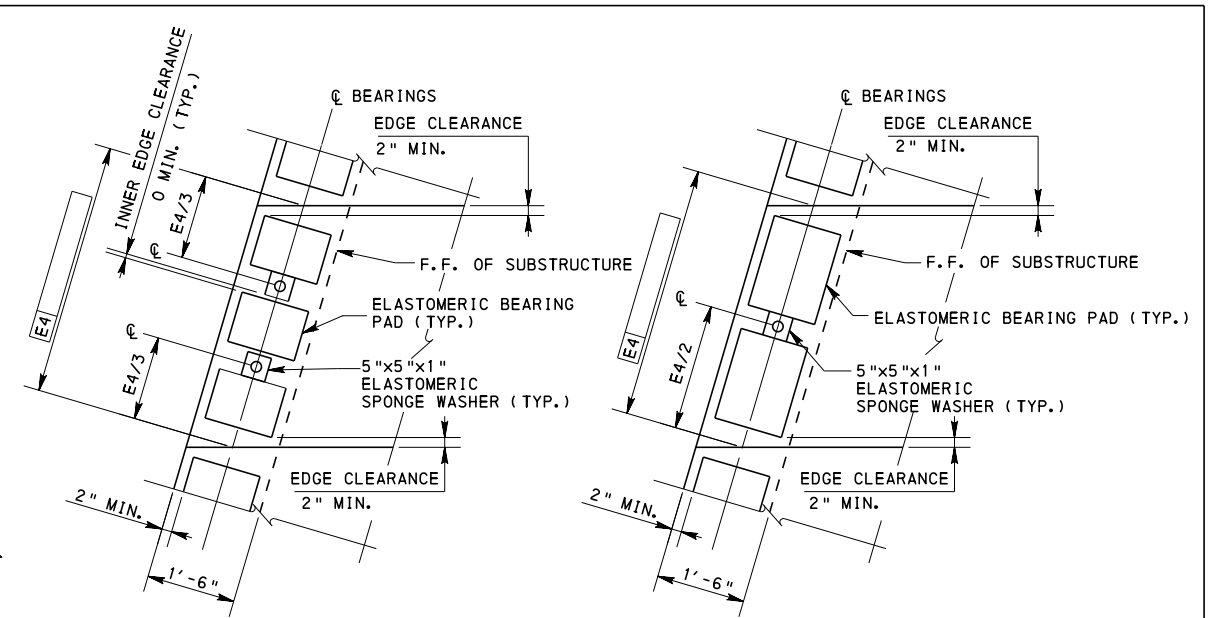
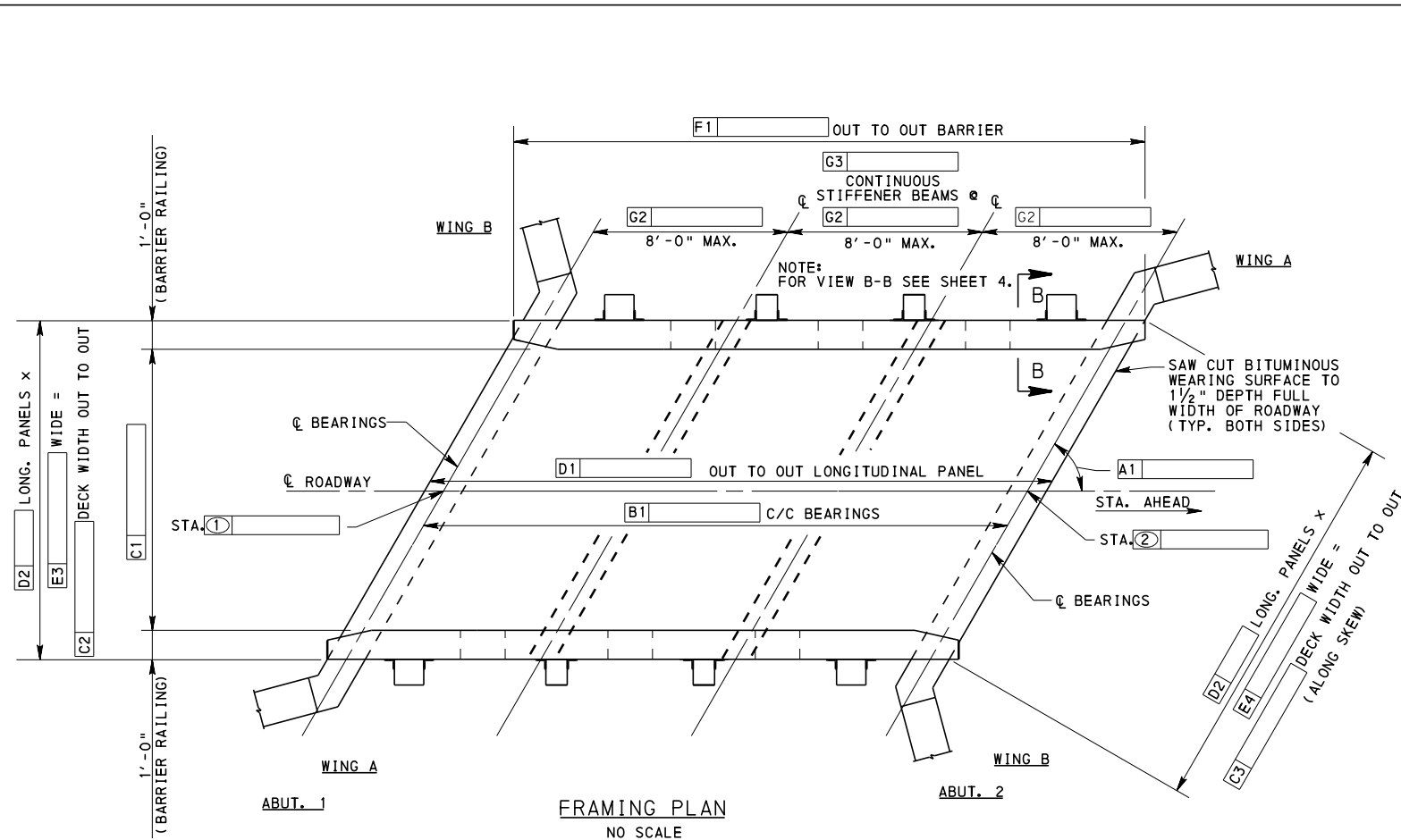
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REVISIONS					

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

GLULAM
 LONGITUDINAL PANEL SUPERSTRUCTURE
 GENERAL NOTES

RECOMMENDED APR. 23, 2013 <i>Thomas P. Macieira</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 5 OF 9 BLC-563M
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TIMBER SILL
CONCRETE ABUTMENT
ELASTOMERIC BEARING PAD ARRANGEMENTS
NO SCALE

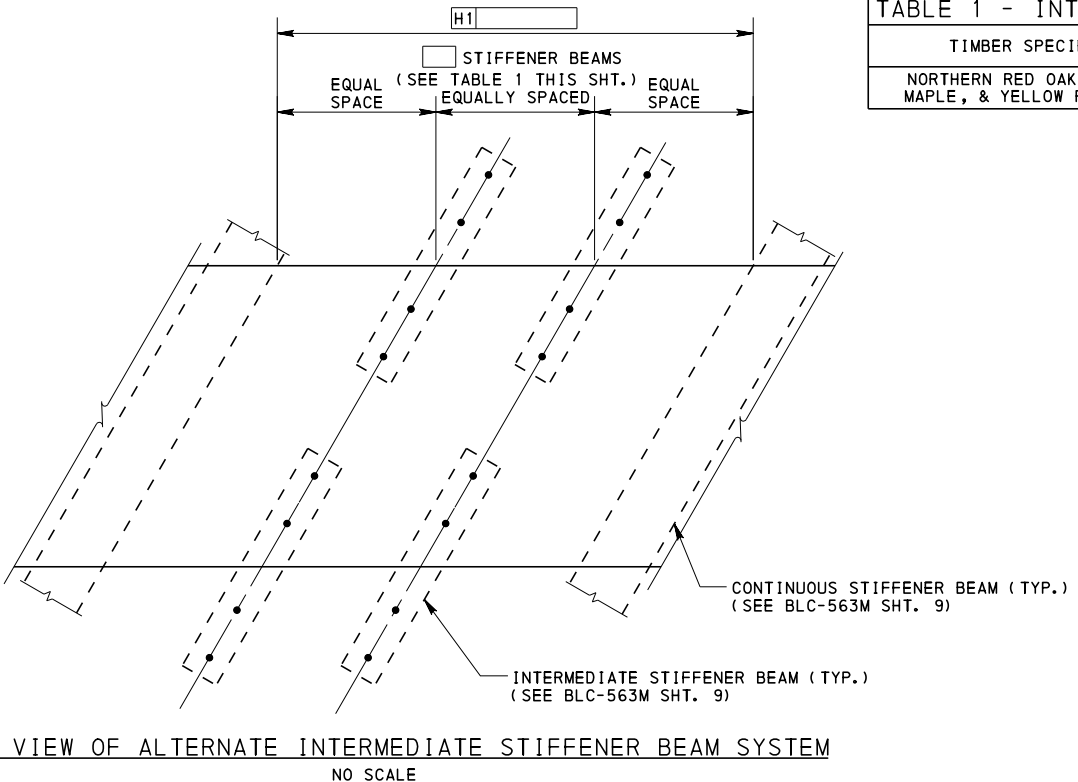
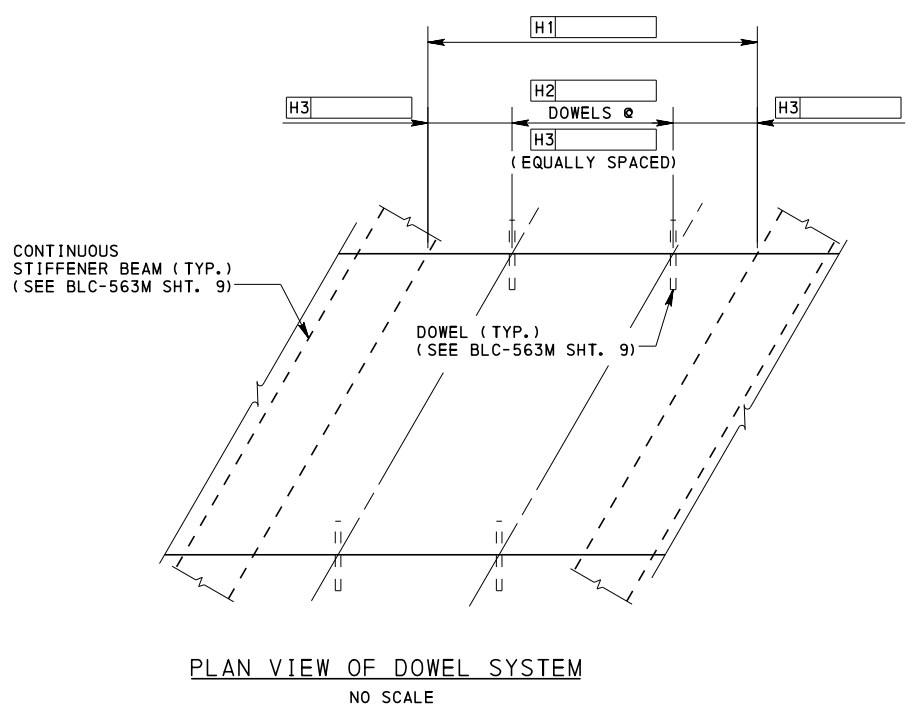


TABLE 1 - INTERMEDIATE STIFFENER BEAM DESIGN DATA

TIMBER SPECIES	MAXIMUM DESIGN SPAN (H1)	NUMBER OF STIFFENER BEAMS
NORTHERN RED OAK, RED MAPLE, & YELLOW POPLAR	6'-0"	2
	10'-0"	3

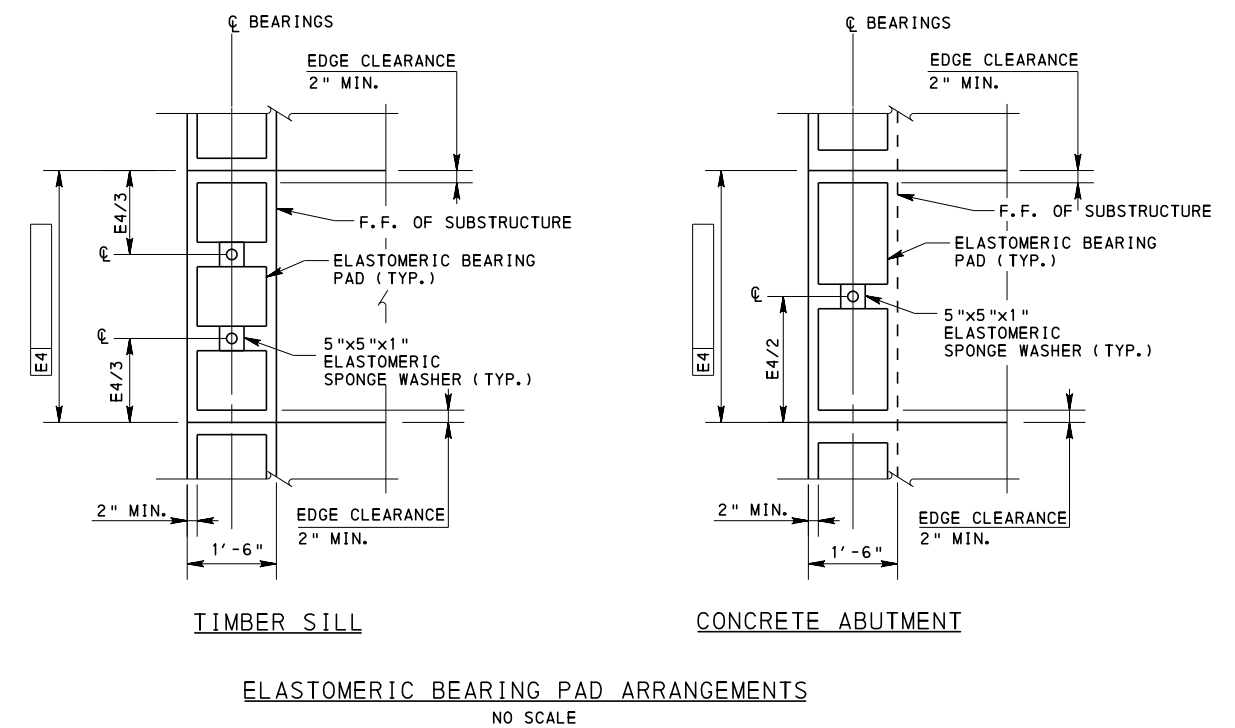
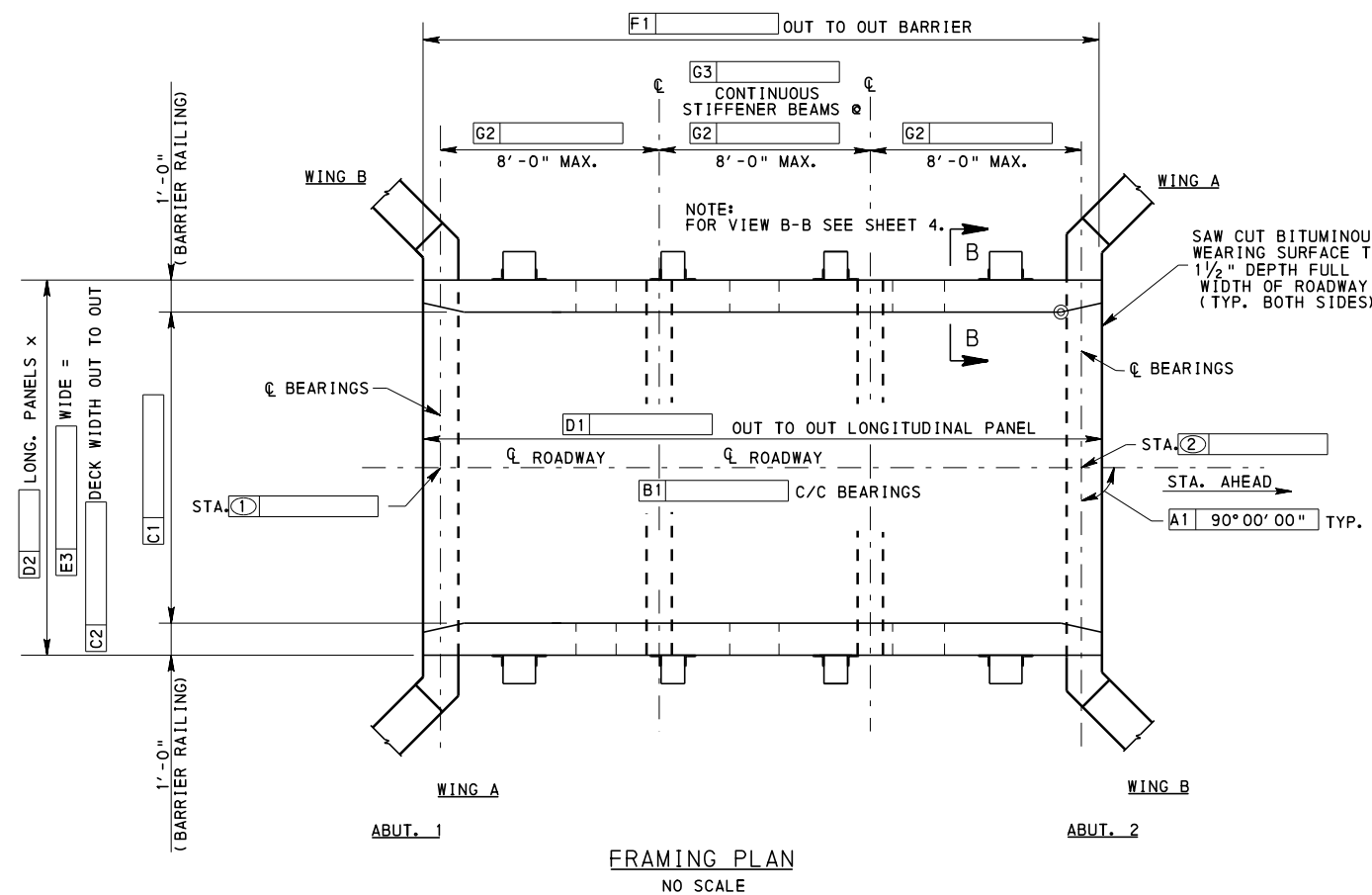
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REVISIONS					

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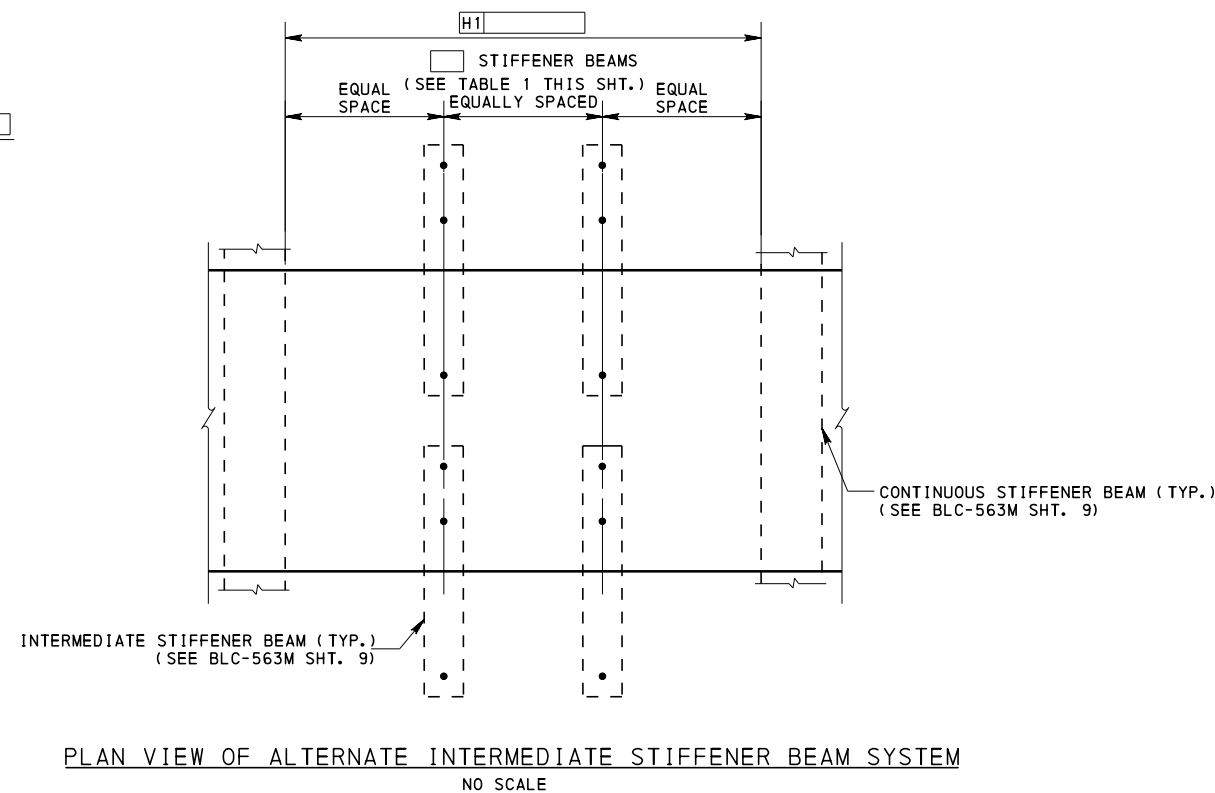
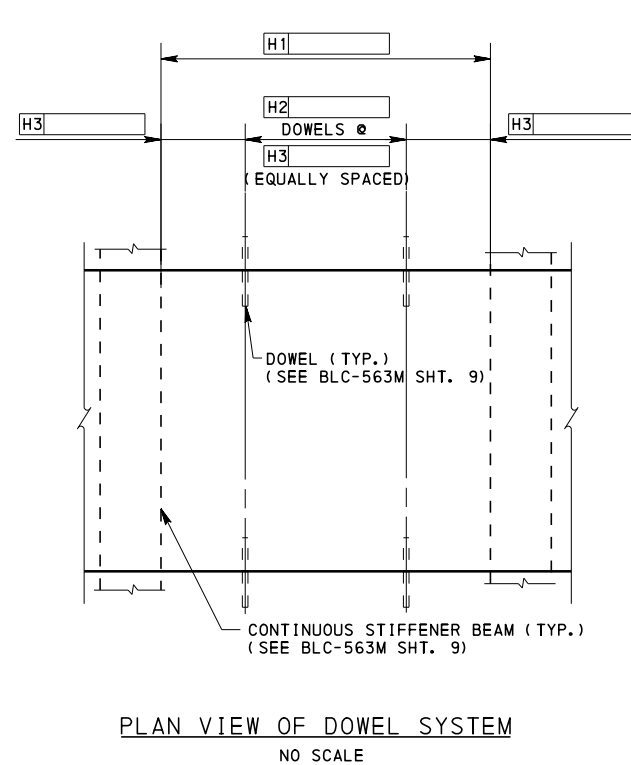
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

GLULAM
LONGITUDINAL PANEL SUPERSTRUCTURE
FRAMING PLAN - LEFT SKEW

RECOMMENDED APR. 23, 2013
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 6 OF 9
BLC-563M



TIMBER SPECIES	MAXIMUM DESIGN SPAN (H1)	NUMBER OF STIFFENER BEAMS
NORTHERN RED OAK, RED MAPLE, & YELLOW POPLAR	6'-0"	2
	10'-0"	3



Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

GLULAM
 LONGITUDINAL PANEL SUPERSTRUCTURE
 FRAMING PLAN - 90° SKEW

RECOMMENDED APR. 23, 2013
 RECOMMENDED APR. 23, 2013
 SHEET 7 OF 9
 Thomas P. Maciocco
 CHIEF BRIDGE ENGINEER
 ACTING DIR. BUR. OF PROJECT DELIVERY
 BLC-563M

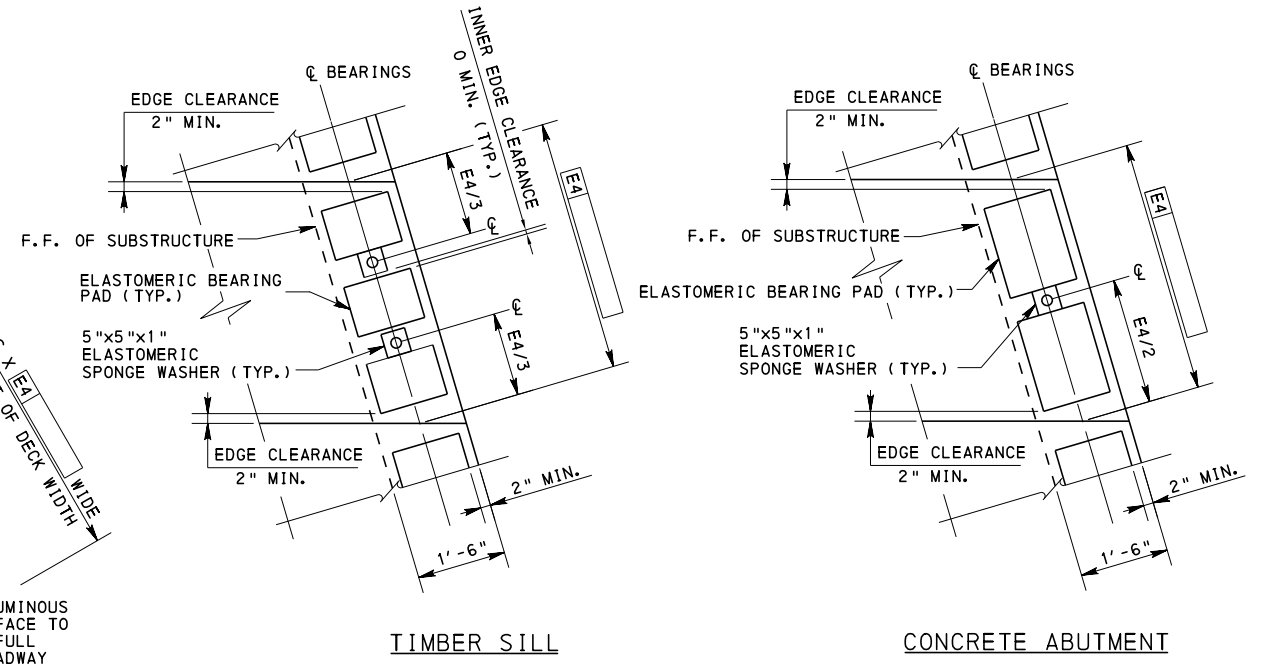
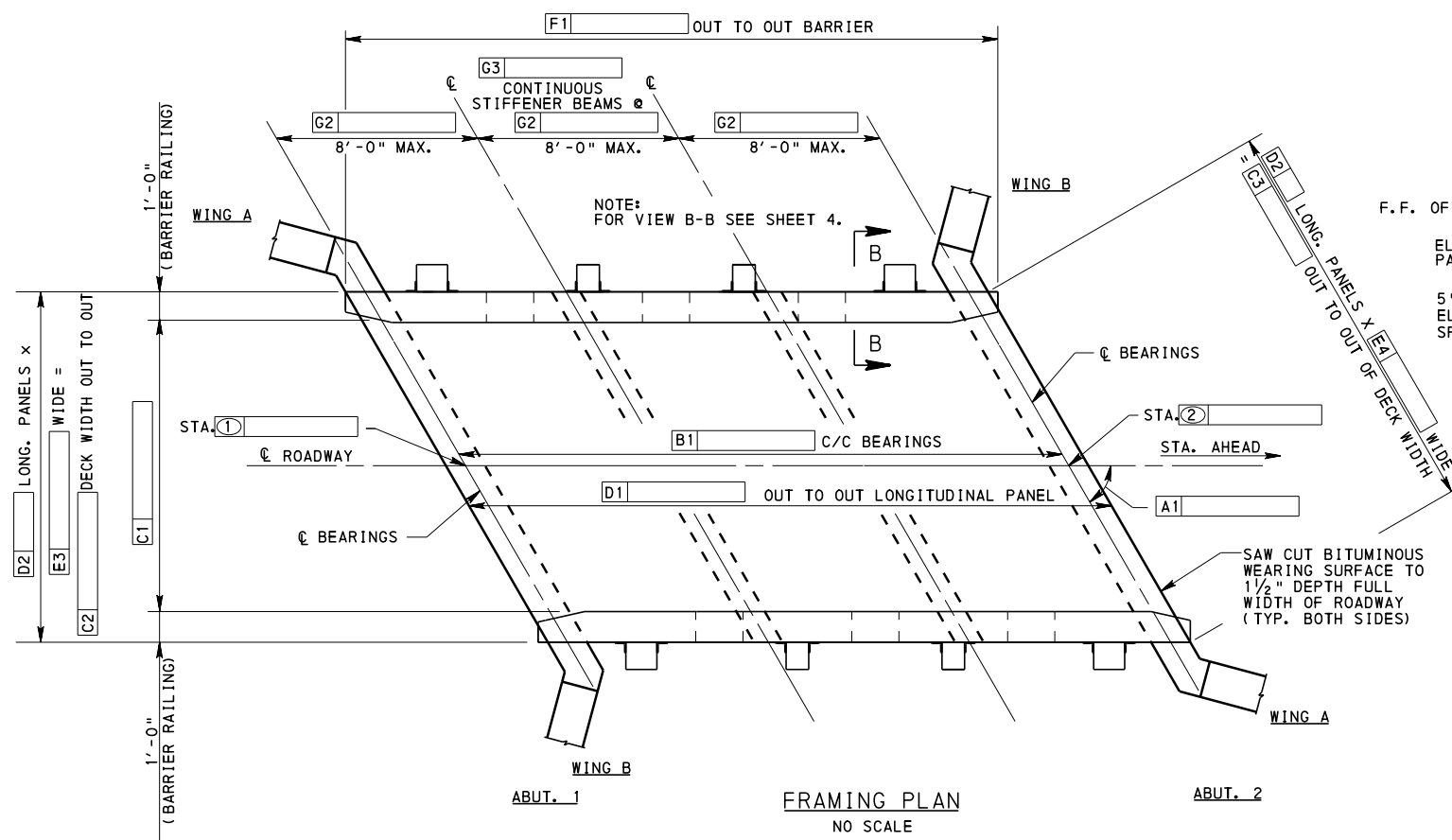
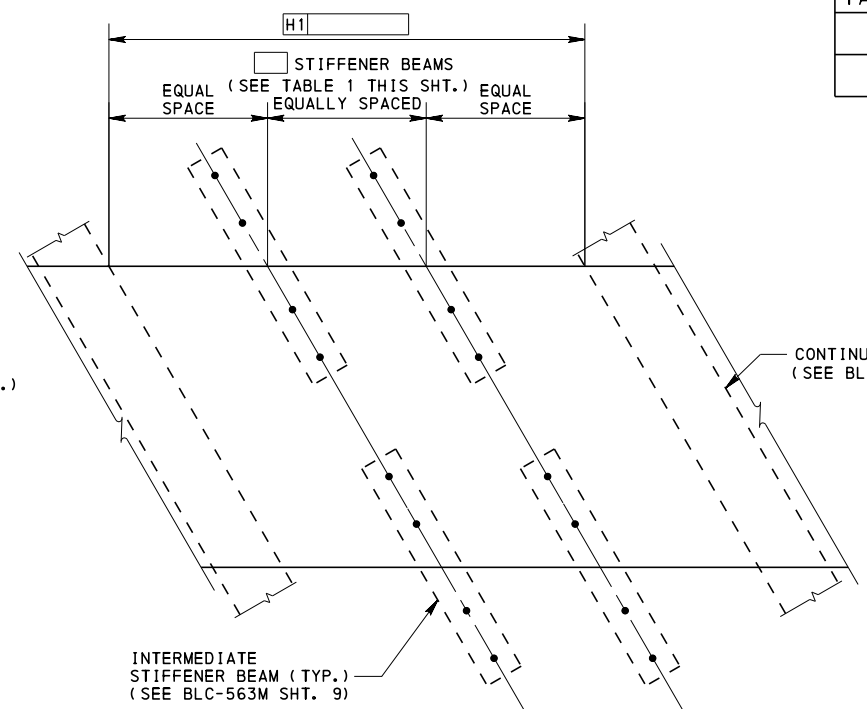
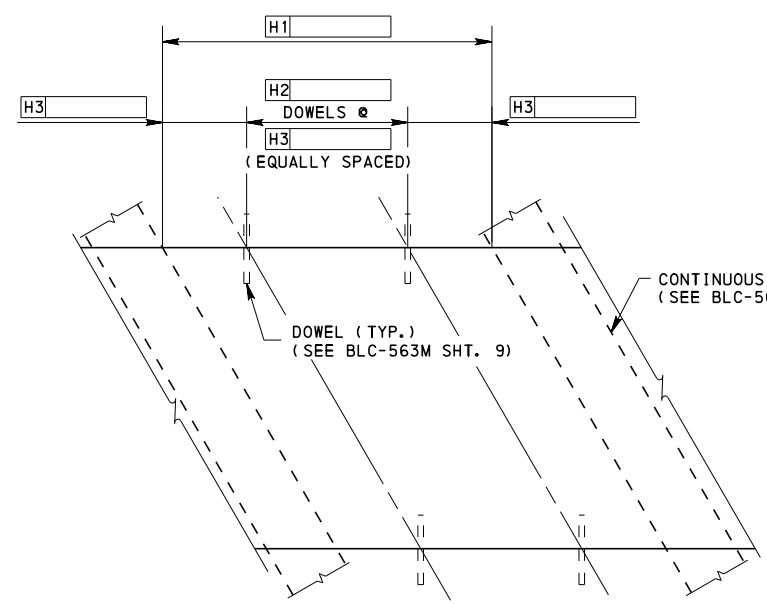


TABLE 1 - INTERMEDIATE STIFFENER BEAM DESIGN DATA

TIMBER SPECIES	MAXIMUM DESIGN SPAN (H1)	NUMBER OF STIFFENER BEAMS
NORTHERN RED OAK, RED MAPLE, & YELLOW POPLAR	6'-0"	2
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Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

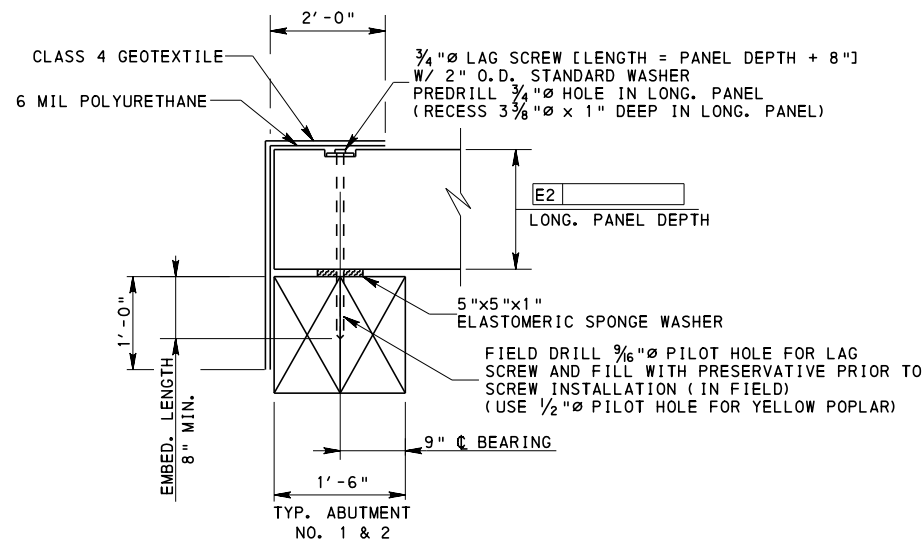
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DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

GLULAM
 LONGITUDINAL PANEL SUPERSTRUCTURE
 FRAMING PLAN - RIGHT SKEW

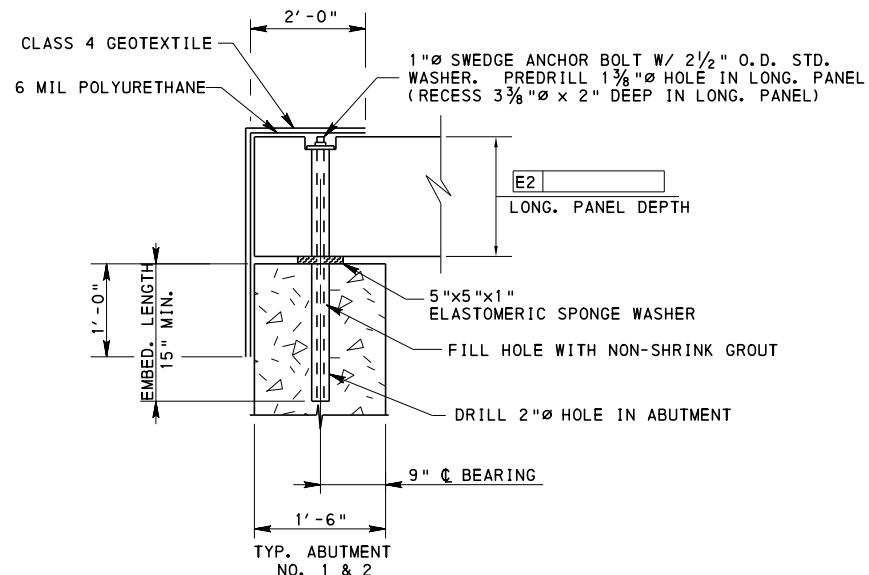
RECOMMENDED APR. 23, 2013
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 CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013
 [Signature]
 ACTING DIR. BUR. OF PROJECT DELIVERY

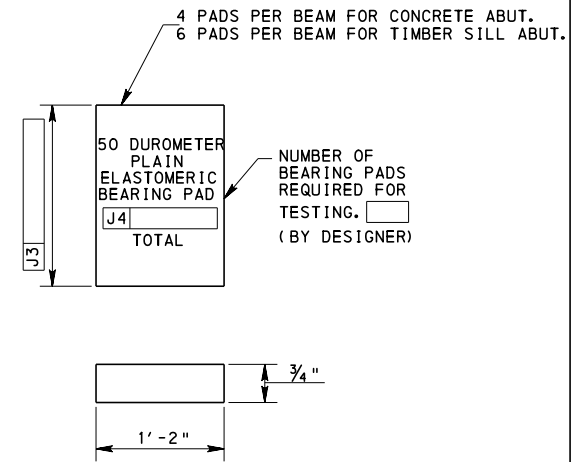
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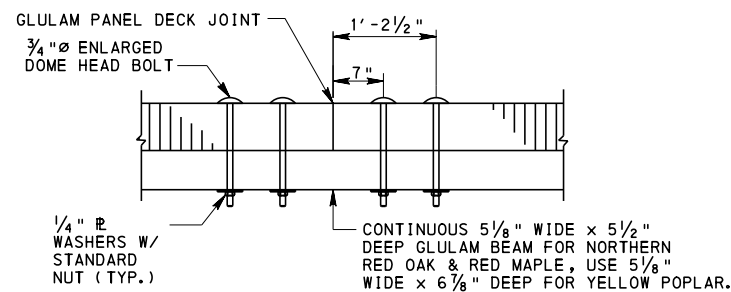
TYPICAL BEARING DETAIL - TIMBER SILL ABUTMENT
NO SCALE



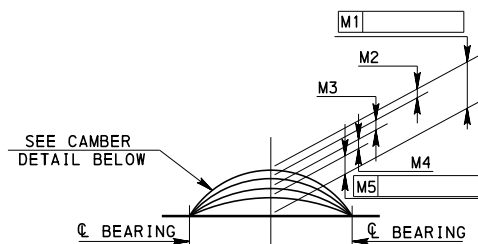
TYPICAL BEARING DETAIL - CONCRETE ABUTMENT
NO SCALE



TYPICAL ELASTOMERIC BEARING PAD DETAIL
NO SCALE



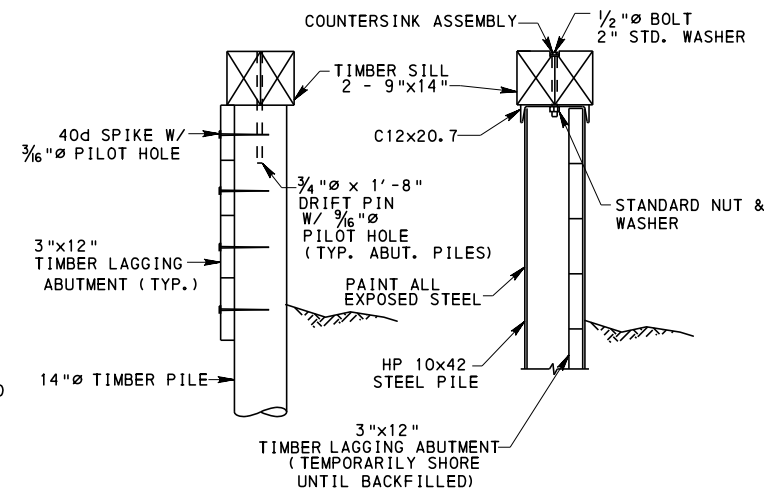
CONTINUOUS STIFFENER BEAM DETAIL
NO SCALE



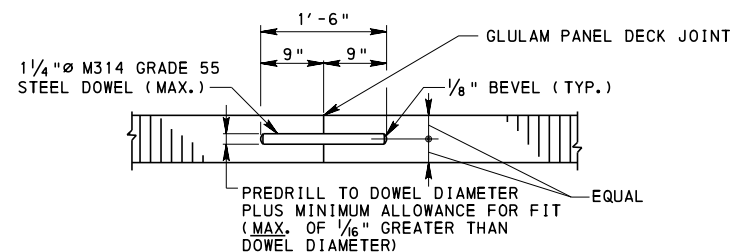
PANEL CAMBER DIAGRAM

- M1 = PRE-FABRICATED CAMBER = 3LM2 + M3J
- M2 = DEFLECTION DUE TO DEAD LOAD OF BEAM
- M3 = DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD
- M4 = DEFLECTION DUE TO CREEP = 1.5 [M2 + M3]
- M5 = NET FINAL CAMBER = M1 - 2.5 [M2 + M3]

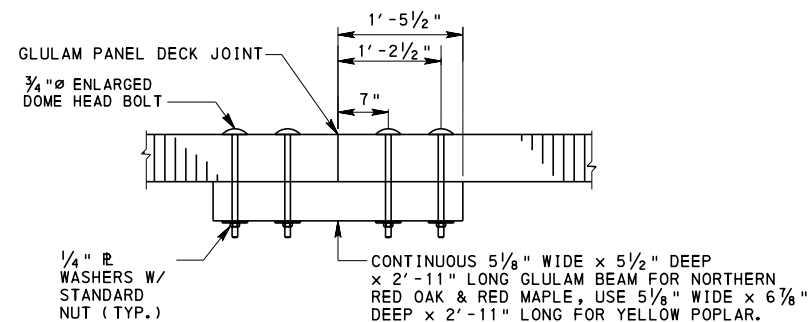
- THE THICKNESS OF THE WEARING COURSE WILL BE VARIED TO COMPENSATE FOR ANY INACCURACIES IN PANEL CAMBER.
- THE PRE-FABRICATED CAMBER LESS THE DEFLECTION DUE TO DEAD LOAD OF PANEL SHOULD BE CHECKED IN THE FIELD.
- DEFLECTION CALCULATIONS DO NOT CONSIDER LOAD EFFECTS DUE TO FUTURE WEARING SURFACE.



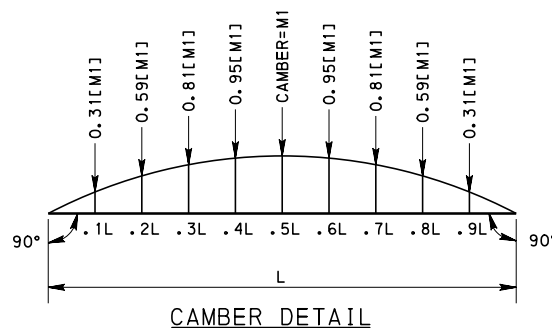
TIMBER PILE STEEL PILE
TIMBER SILL DETAIL
NO SCALE



DOWEL DETAIL
NO SCALE



ALTERNATE INTERMEDIATE STIFFENER BEAM DETAIL
NO SCALE



CAMBER DETAIL

ELASTOMERIC BEARING PAD NOTES:

1. MANUFACTURE ALL BEARINGS IN ACCORDANCE WITH THE COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PLANS AND SPECIFICATIONS (PUB. 408) SECTION 1113 AND DM-4.
2. ALL BEARING PADS ARE TO BE MOLDED TO DESIGN DIMENSIONS. CUTTING TO SIZE AFTER FABRICATION IS PROHIBITED.
3. PROVIDE NEOPRENE 50 ± 5 DUROMETER.
4. VULCANIZE PATCH PIN GROOVES.

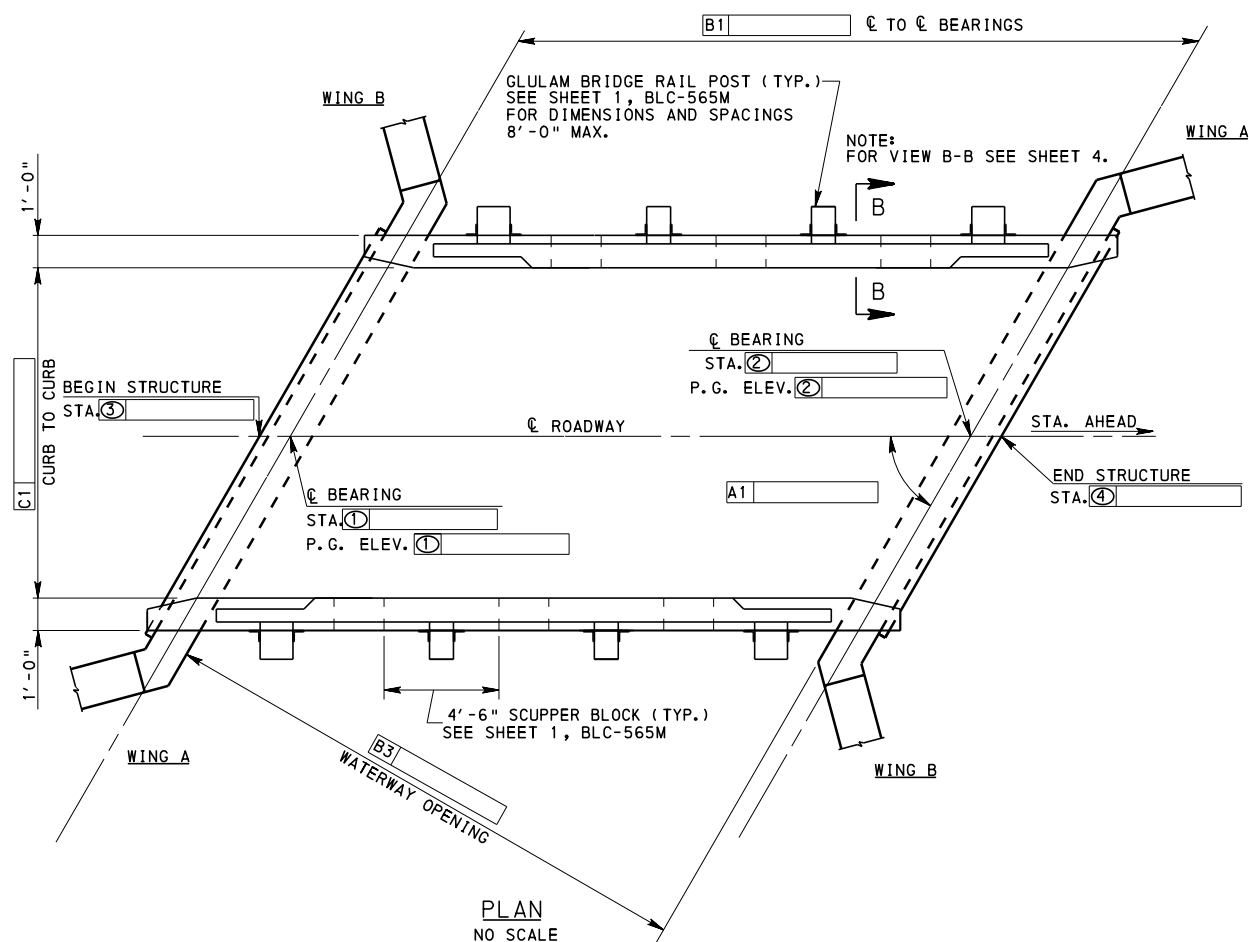
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

GLULAM
LONGITUDINAL PANEL SUPERSTRUCTURE
SUPERSTRUCTURE DETAILS

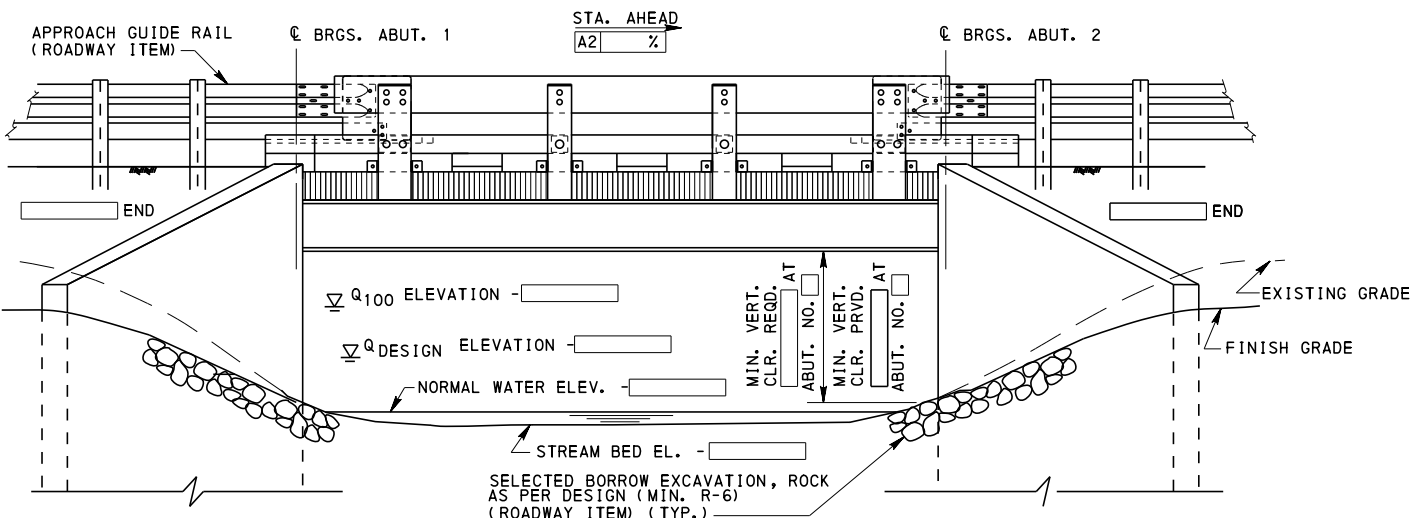
RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 9 OF 9
THOMAS P. NACIOWA
CHIEF BRIDGE ENGINEER
ACTING DIR. BUR. OF PROJECT DELIVERY
BLC-563M



HYDRAULIC DATA
(DESIGNER)

DRAINAGE AREA - _____
 DESIGN FLOOD - _____
 DISCHARGE - _____
 FREQUENCY - _____
 ELEVATION - _____
 100 YEAR FLOOD - _____
 DISCHARGE - _____
 ELEVATION - _____

INDEX OF DRAWINGS			
SHT. NO.	TITLE	SHT. NO.	TITLE



BRIDGE RATING ⁽¹⁾							
REFER TO TABLE 2, BLC-561M SHEET 9							
SIMPLE SPAN		STEEL BEAM ⁽²⁾					
		H	HS	ML	PHL93	TK-527	P82
INVENTORY RATING (IR)	LOCATION						-
	LIMIT STATE	STR. I	STR. I	STR. I	STR. I	STR. I	-
	RATING						-
OPERATING RATING (OR)	LOCATION						
	LIMIT STATE	STR. II	STR. II	STR. II	STR. IA	STR. II	STR. II
	RATING						

MOMENT CAPACITY - kip-ft. _____
 LOCATION _____
 SHEAR CAPACITY - kip _____
 LOCATION _____

NOTES FOR BRIDGE RATING TABLE:

1.) FLEXURAL RATING FACTORS ARE SHOWN & GOVERN UNLESS OTHERWISE DENOTED BY A "S" FOR SHEAR, "D" FOR DEFLECTION OR "B" FOR BEARING.

2.) VALUES SHOWN ARE BASED ON LOAD AND RESISTANCE FACTOR DESIGN.

Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

Recommended _____

 DISTRICT BRIDGE ENGINEER

ENGINEERING SEAL
 PREPARED BY:

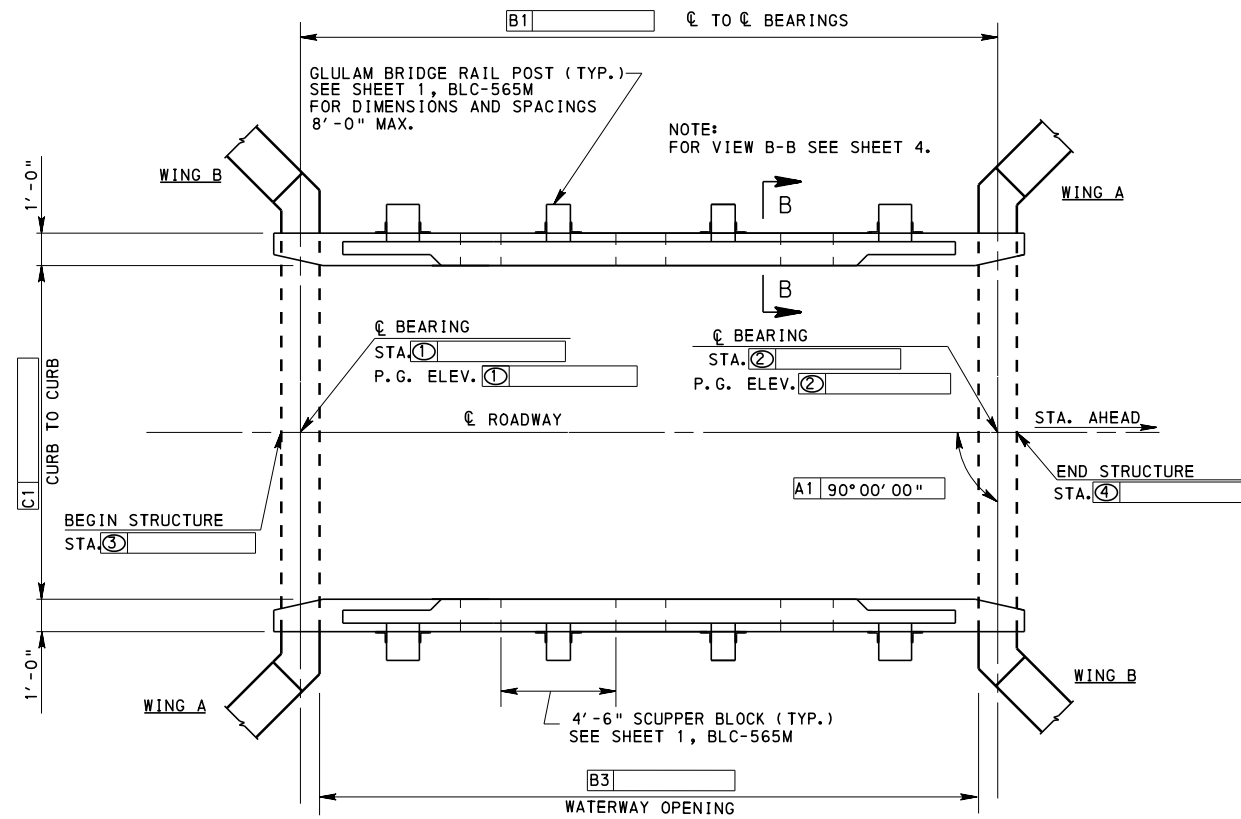
 SIGNATURE & DATE

BC-753M	STEEL GIRDER DETAILS
BC-754M	STEEL DIAPHRAGMS FOR STEEL BEAM/GIRDER STRUCTURES (STRAIGHT GIRDERS ONLY)
BC-755M	BEARINGS

STEEL BEAM SUPERSTRUCTURE
GENERAL PLAN & ELEVATION - LEFT SKEW

RECOMMENDED APR. 23, 2013
 RECOMMENDED APR. 23, 2013
 SHEET 1 OF 14
 BLC-564M
 THOMAS P. MACIOGA
 CHIEF BRIDGE ENGINEER
 ACTING DIR. BUR. OF PROJECT DELIVERY

REFERENCE DRAWING



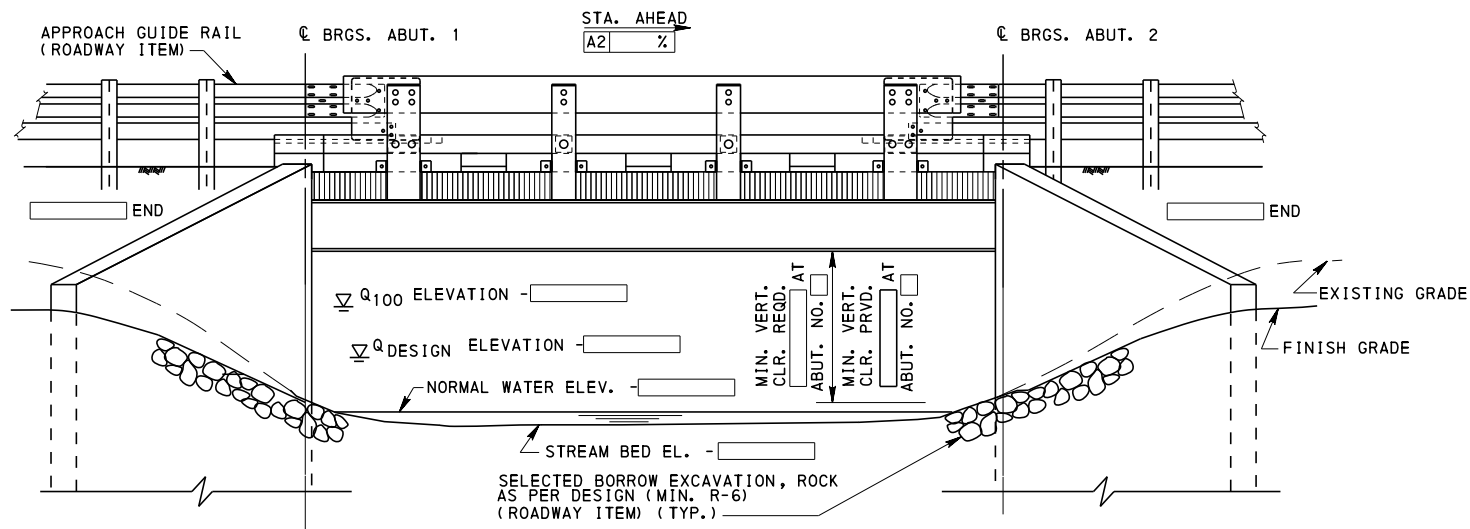
PLAN
NO SCALE

HYDRAULIC DATA
(DESIGNER)
 DRAINAGE AREA - _____
 DESIGN FLOOD - _____
 DISCHARGE - _____
 FREQUENCY - _____
 ELEVATION - _____
 100 YEAR FLOOD - _____
 DISCHARGE - _____
 ELEVATION - _____

INDEX OF DRAWINGS			
SHT. NO.	TITLE	SHT. NO.	TITLE

BRIDGE RATING (1)							
REFER TO TABLE 2, BLC-561M SHEET 9							
SIMPLE SPAN		STEEL BEAM (2)					
		H	HS	ML	PHL93	TK-527	P82
INVENTORY RATING (IR)	LOCATION						
	LIMIT STATE	STR. I	STR. I	STR. I	STR. I	STR. I	-
	RATING						
OPERATING RATING (OR)	LOCATION						
	LIMIT STATE	STR. II	STR. II	STR. II	STR. IA	STR. II	STR. II
	RATING						

MOMENT CAPACITY - kip-ft. _____
 LOCATION _____
 SHEAR CAPACITY - kip _____
 LOCATION _____



ELEVATION
NO SCALE

NOTES FOR BRIDGE RATING TABLE:
 1.) FLEXURAL RATING FACTORS ARE SHOWN & GOVERN UNLESS OTHERWISE DENOTED BY A "S" FOR SHEAR, "D" FOR DEFLECTION OR "B" FOR BEARING.
 2.) VALUES SHOWN ARE BASED ON LOAD AND RESISTANCE FACTOR DESIGN.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

STEEL BEAM SUPERSTRUCTURE
GENERAL PLAN & ELEVATION - 90° SKEW

RECOMMENDED APR. 23, 2013
 RECOMMENDED APR. 23, 2013
 SHEET 2 OF 14
Thomas P. Nacivca CHIEF BRIDGE ENGINEER
ACTING DIR. BUR. OF PROJECT DELIVERY

Recommended _____

 DISTRICT BRIDGE ENGINEER

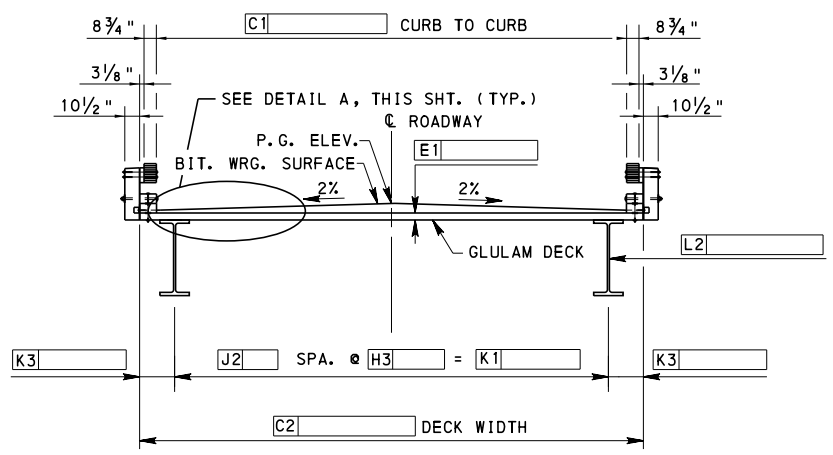
BC-753M	STEEL GIRDER DETAILS
BC-754M	STEEL DIAPHRAGMS FOR STEEL BEAM/GIRDER STRUCTURES (STRAIGHT GIRDERS ONLY)
BC-755M	BEARINGS

ENGINEERING SEAL
 PREPARED BY:

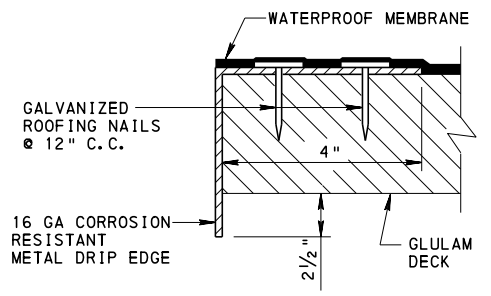
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REFERENCE DRAWING

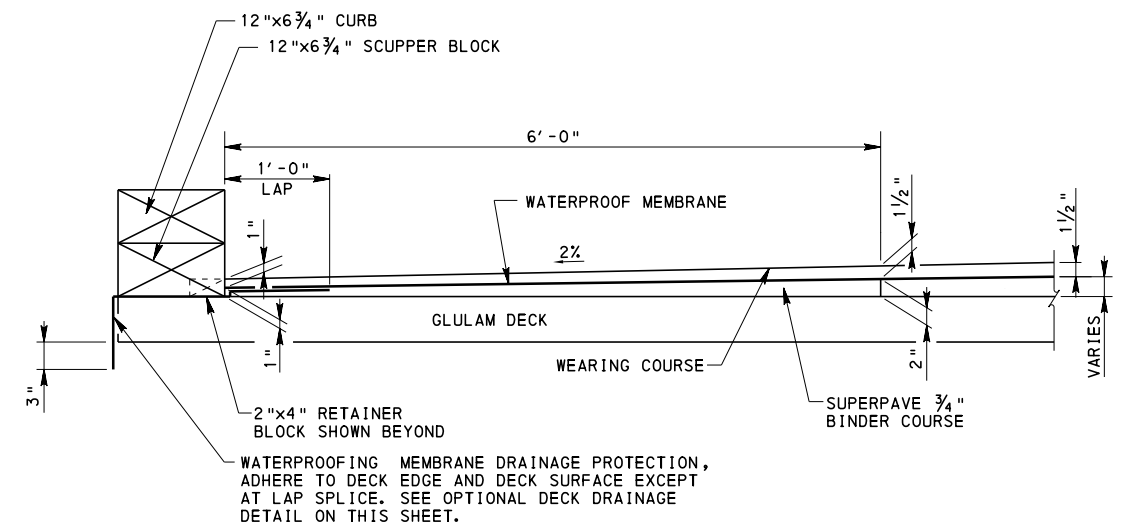
BLC-564M



TYPICAL SECTION
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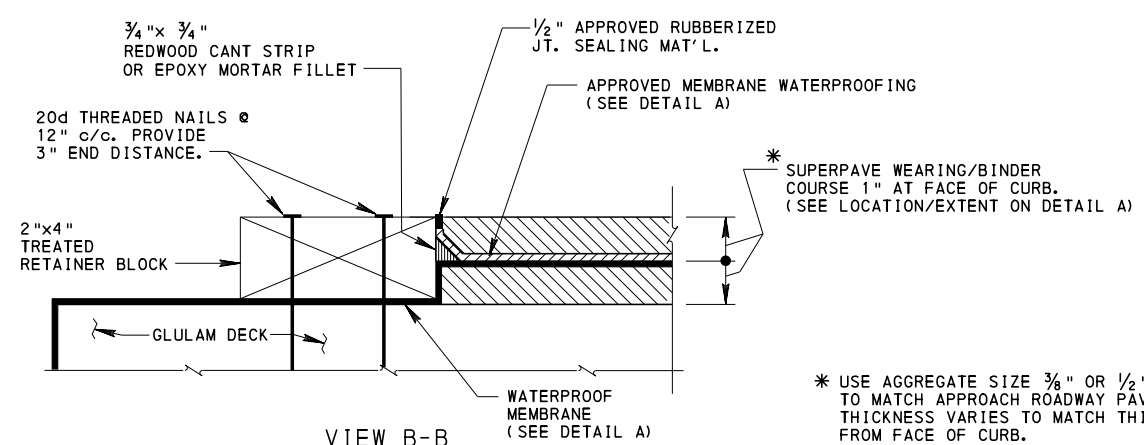
OPTIONAL DECK
DRAINAGE PROTECTION



NOTE:

1. ALLOW FIRST LAYER OF BITUMINOUS MATERIAL TO COOL SUFFICIENTLY SO WATERPROOF MEMBRANE DOES NOT TEAR WHEN APPLYING SECOND LAYER OF BITUMINOUS MATERIAL.
2. SEE VIEW B-B FOR ASPHALT WEARING COURSE TYPE.

DETAIL A
NO SCALE



VIEW B-B
SEE FRAMING PLAN, SHEET 6
MEMBRANE WATERPROOFING AT
RETAINER BLOCK
NO SCALE

* USE AGGREGATE SIZE 3/8" OR 1/2" FOR WEARING COURSE TO MATCH APPROACH ROADWAY PAVEMENT AGGREGATE, THICKNESS VARIES TO MATCH THICKNESS @ 6'-0" FROM FACE OF CURB.

APPROXIMATE QUANTITIES - BRIDGE STRUCTURE, AS DESIGNED						
ITEM NO.	ITEM	UNIT	ABUT. 1	ABUT. 2	SUPERSTRUCTURE	TOTAL
8030-0001	BRIDGE STRUCTURE AS DESIGNED, S-	LS				LS
(1)	FABRICATED STRUCTURAL STEEL BEAMS	F. B. M.	----	----		
(1) (2)	FABRICATED STRUCTURAL STEEL MISCELLANEOUS	LB.	----	----		
(1)	GLUE LAMINATED TIMBER DECK	F. B. M.	----	----		
(1)	GLUE LAMINATED TIMBER BRIDGE RAIL	F. B. M.	----	----		
(1)	GLUE LAMINATED TIMBER BACKWALL	F. B. M.	----	----		
(1)	GLUE LAMINATED TIMBER STIFFENER BEAMS	F. B. M.	----	----		
(1)	WATERPROOF MEMBRANE	S. Y.	----	----		
(1)	CLASS 4 GEOTEXTILE	S. Y.	----	----		
(1)	BITUMINOUS BINDER COURSE SUPERPAVE, 19mm	TON	----	----		
{ }	BITUMINOUS WEARING COURSE SUPERPAVE, 3/8" / 1/2"	TON	----	----		
(1)	TREATED RETAINER BLOCK	F. B. M.	----	----		
(1)	OPTIONAL METAL DRIP EDGE	S. Y.				

1. ITEMS IN BRIDGE STRUCTURE LUMP SUM ITEM 8030-0001 GIVEN FOR INFORMATION ONLY.
2. QUANTITY DOES NOT INCLUDE STEEL DOWELS & OTHER CONNECTION HARDWARE.

Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STEEL BEAM SUPERSTRUCTURE
TYPICAL SECTION AND QUANTITIES

RECOMMENDED APR. 23, 2013
Thomas P. Nacivca
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
George P. Kelly
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 4 OF 14
 BLC-564M

GENERAL NOTES:

DESIGN SPECIFICATIONS

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (2010) AND AS SUPPLEMENTED BY DESIGN MANUAL, PART 4, MAY 2012 EDITION.

LIVE LOAD DISTRIBUTED TO BEAMS IS BASED UPON DM-4 DISTRIBUTION FACTORS.

DESIGN IS IN ACCORDANCE WITH THE LOAD AND RESISTANCE FACTOR DESIGN METHOD.

DESIGN LIVE LOADS

PHL-93 OR P-82 [204 KIPS PERMIT LOAD]

DEAD LOADS

INCLUDES SURFACE AREA DENSITY OF 30 LBS./SQ. FT. FOR FUTURE WEARING SURFACE ON THE DECK.

GENERAL

PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH SPECIFICATIONS, PUBLICATION 408, AASHTO/AWS/D1.5 BRIDGE WELDING CODE, AND CONTRACT SPECIAL PROVISIONS.

NOTIFY THE REGIONAL HEADQUARTERS OF THE FISH COMMISSION PRIOR TO CONSTRUCTION AND COOPERATE WITH FISH COMMISSION DURING CONSTRUCTION.

ALL DIMENSIONS SHOWN ARE HORIZONTAL UNLESS OTHERWISE NOTED.

SUPERSTRUCTURE DIMENSIONS SHOWN ARE FOR NORMAL TEMPERATURE OF 68°F.

SPREAD FOOTINGS MAY BE ORDERED BY THE ENGINEER TO BE AT ANY ELEVATION OR OF ANY DIMENSIONS NECESSARY TO PROVIDE A PROPER FOUNDATION.

CONCRETE

PROVIDE 2" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.

USE CLASS A CEMENT CONCRETE IN ABUTMENTS BELOW BRIDGE SEAT, WINGWALLS, AND FOOTINGS.

USE CLASS AA CEMENT CONCRETE IN CHEEKWALLS.

A HIGHER CLASS CONCRETE MAY BE SUBSTITUTED FOR A LOWER CLASS CONCRETE AT NO ADDITIONAL COST TO THE DEPARTMENT.

PREPARE BEARING AREAS AS SPECIFIED IN PUBLICATION 408, SECTION 1001.3(k)9.

SET ANCHOR BOLTS TO TEMPLATE OR IN PREFORMED HOLES. DO NOT DRILL UNLESS SPECIFICALLY INDICATED ON PLANS. FILL THE PREFORMED HOLES WITH NON-SHRINK GROUT. FILL THE CLEARANCE BETWEEN ANCHOR BOLTS AND HOLES IN MASONRY PLATES WITH APPROVED NONHARDENING CAULKING COMPOUND CONFORMING TO PUBLICATION 408, SECTION 705.8.

PROVIDE GRADE 60 REINFORCING STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM A 615/A 615M, A 996/A 996M, AND A 706/A 706M. DO NOT WELD GRADE 60 REINFORCING STEEL BARS UNLESS SPECIFIED. GRADE 40 REINFORCING STEEL BARS MAY BE SUBSTITUTED WITH A PROPORTIONAL INCREASE IN CROSS-SECTIONAL AREA, IF APPROVED BY THE CHIEF BRIDGE ENGINEER. DO NOT USE RAIL STEEL A 996/A 996M REINFORCEMENT BARS IN BRIDGE PIERS, ABUTMENTS, SHEAR BLOCKS, BEAMS, FOOTINGS, PILES, BARRIERS AND WHERE BENDING OR WELDING OF THE REINFORCEMENT BARS IS INDICATED.

EPOXY-COAT SUBSTRUCTURE REINFORCEMENT BARS AS INDICATED.

RAKE-FINISH ALL HORIZONTAL CONSTRUCTION JOINTS, EXCEPT AS INDICATED.

GALVANIZED REINFORCING STEEL BARS MAY BE SUBSTITUTED FOR EPOXY-COATED STEEL BARS AT NO ADDITIONAL COST TO THE DEPARTMENT.

PLACE CHEEKWALL CONCRETE AFTER BEAMS ARE SET IN POSITION.

CHAMFER EXPOSED CONCRETE EDGES 1" BY 1", EXCEPT AS NOTED.

STEEL

USE THESE STANDARDS WITH WEATHERING STEEL ONLY AFTER APPROVAL OF DISTRICT ENGINEER.

GALVANIZE ALL TIMBER CONNECTION HARDWARE AS SPECIFIED IN PUBLICATION 408, SECTION 1105.02(s).

PROVIDE STRUCTURAL STEEL CONFORMING TO AASHTO M 270/M 270M, GRADE 36 [ASTM A 709/A 709M, GRADE 36] DESIGNATION, EXCEPT WHEN NOTED OTHERWISE.

PROVIDE BOLTS AND LAG SCREWS CONFORMING TO ASTM A 307 DESIGNATION, EXCEPT WHEN NOTED OTHERWISE.

PROVIDE BOLTS, NUTS, AND WASHERS IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND AS SUPPLEMENTED BY DESIGN MANUAL PART 4, SECTION 6.4.3.

PROVIDE MALLEABLE IRON WASHER CONFORMING TO ASTM A 47/A 47M, GRADE 3500.

PROVIDE LAG SCREWS CONFORMING TO ANSI B18.2.1 - 1981.

PROVIDE OFFSET SHOES CONFORMING TO AASHTO M105 (ASTM A48), CLASS 30 - STANDARD SPECIFICATION FOR GRAY ALLOY CASTING AS PER AASHTO 6.4.6.3 CAST IRON.

STEEL BEAMS

PAINT STRUCTURAL STEEL IN ACCORDANCE WITH PUBLICATION 408, SECTION 1060. USE WEATHERING STEEL ONLY AFTER APPROVAL OF DISTRICT ENGINEER.

IF BEAMS CANNOT BE SHIPPED IN THE LENGTH SHOWN ON THE PLANS, FIELD SPLICE(S) WILL BE PERMITTED AT THE REQUEST OF THE CONTRACTOR, BUT NO COMPENSATION WILL BE ALLOWED FOR THE SPLICE(S).

DO NOT USE TEMPORARY SUPPORT SYSTEMS THAT WILL CAUSE UNACCEPTABLE OVERSTRESS OR DEFORMATION TO PERMANENT BRIDGE MEMBERS.

MAXIMUM ALLOWABLE DECK OVERHANG IS 2'-3".

GENERAL NOTES CONTINUED:

UTILITIES

COORDINATE THE REQUIREMENTS FOR PROTECTION AND/OR RELOCATION OF UTILITIES WITH THE UTILITY OWNER PRIOR TO STARTING WORK.

VERIFY AND LOCATE ALL EXISTING UTILITIES PRIOR TO STARTING WORK; CONDUCT OPERATIONS IN A MANNER WHICH ENSURES THAT THE UTILITIES WILL NOT BE DISTURBED OR ENDANGERED, AND ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE TO UTILITIES DURING CONSTRUCTION. THE DEPARTMENT DOES NOT ASSUME RESPONSIBILITY FOR REIMBURSEMENT, PARTICIPATION IN DESIGN AND/OR REVISIONS, OR LIABILITY FOR ACCURACY OF TYPE, SIZE, AND LOCATION OF ANY UTILITY.

TIMBER

USE ONLY GLUE LAMINATED TIMBER FABRICATED WITH EITHER NORTHERN RED OAK, RED MAPLE OR YELLOW POPLAR LUMBER GRADED PER NORTHEASTERN LUMBER MANUFACTURER'S ASSOCIATION (NORTHERN RED OAK AND RED MAPLE) OR NORTHERN SOFTWOOD LUMBER BUREAU (YELLOW POPLAR) STANDARDS AND MANUFACTURED FOLLOWING AITC 119-96 OR CURRENT SPECIFICATIONS.

PROVIDE MINIMUM WET-USE BASE RESISTANCES AND MOE VALUES IN ACCORDANCE WITH BLC-560M SHEET 3.

TREAT ALL LUMBER AND GLULAM COMPONENTS WITH OIL-BORNE PRESERVATIVE(S) IN ACCORDANCE WITH PENNDOT PUBLICATION 408.

FIELD CUTTING IS NOT PERMITTED UNLESS APPROVED BY THE ENGINEER.

WHEN FIELD CUTTING, TREAT WITH BITUMINOUS ASPHALT BASED ROOF CEMENT, COPPER NAPHTHENATE PASTE, OR APPROVED PRESERVATIVE SYSTEM.

ALWAYS COAT LAG SCREW THREADS WITH BITUMINOUS ASPHALT BASED ROOF CEMENT, COPPER NAPHTHENATE PASTE, OR APPROVED PRESERVATIVE SYSTEM BEFORE INSTALLING LAG SCREW.

DO NOT DRIVE LAG SCREW WITH HAMMER. SCREW OR TORQUE LAG SCREWS.

PROVIDE SUFFICIENT LAG SCREW LENGTH SO LAG SCREW SHANK WILL PENETRATE RECEIVING MEMBER.

SUBMIT SHOP DRAWINGS SHOWING DETAILS OF ALL GLULAM CONSTRUCTION FOR APPROVAL TO THE ENGINEER PRIOR TO FABRICATION OPERATIONS.

ALL TIMBER DIMENSIONS SHOWN ARE ACTUAL.

PILES

DO NOT PERMIT SPLICES IN PILES.

PROVIDE PILES IN ACCORDANCE WITH BLC-560M SHEET 3.

PILE SUPPORTED TIMBER SILLS

THE SUPERSTRUCTURE MUST BE IN PLACE AND CONNECTED TO SUBSTRUCTURE BEFORE ABUTMENTS ARE BACKFILLED.

BACKFILL BOTH ABUTMENTS CONCURRENTLY. MAINTAIN SYMMETRICAL LOADING.

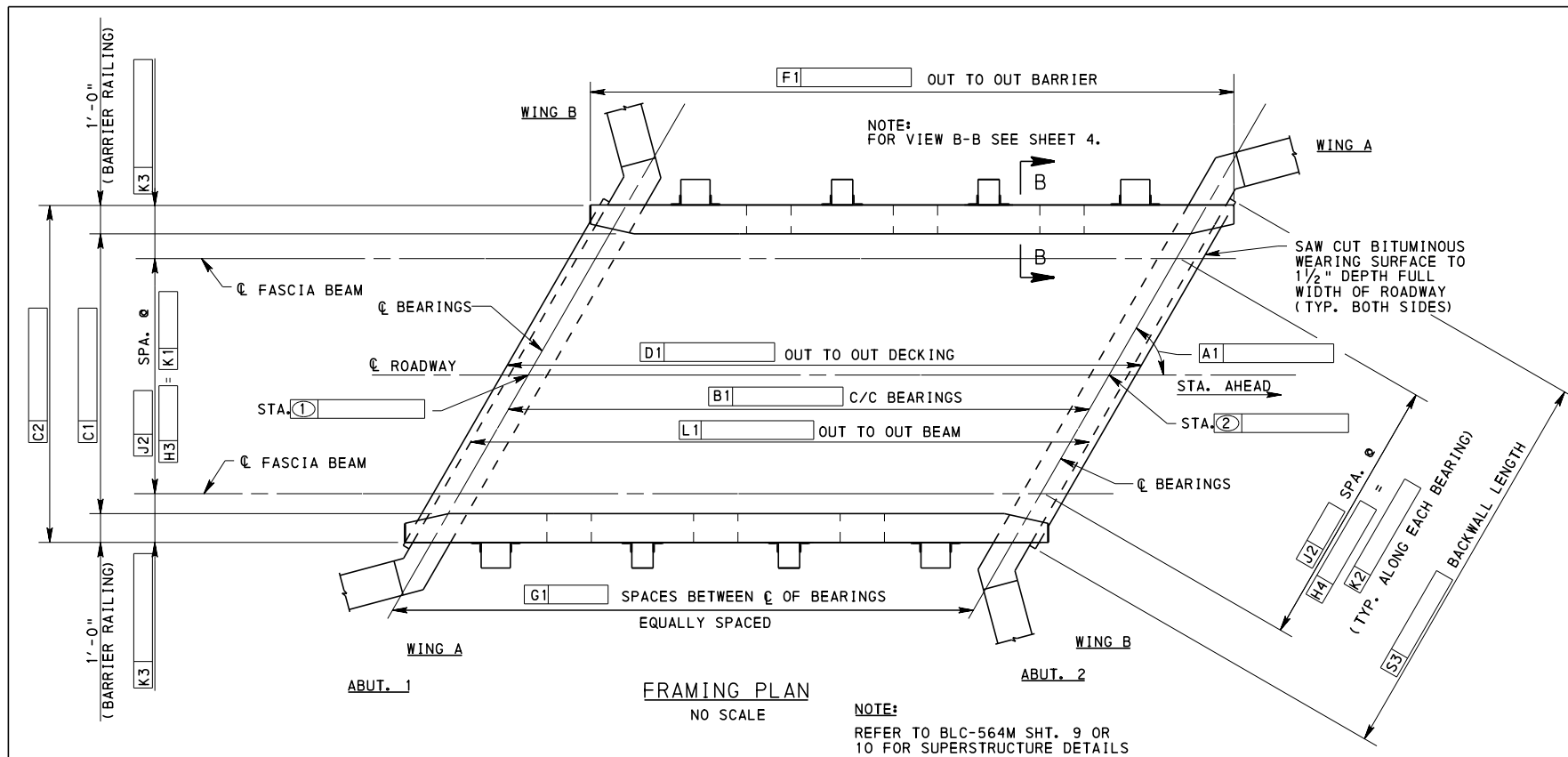
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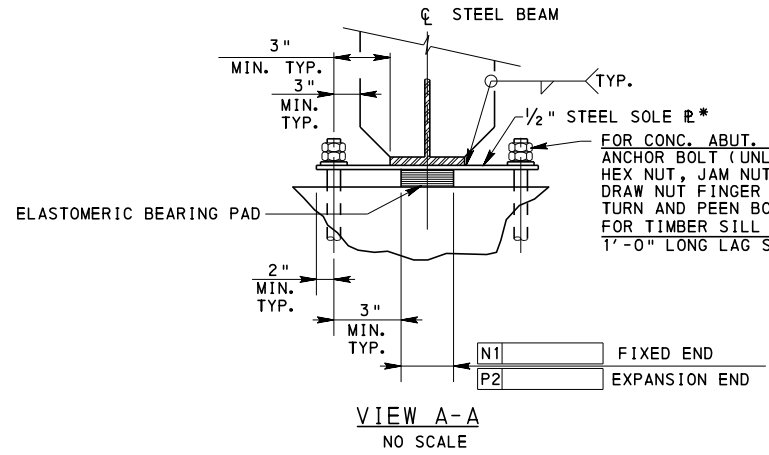
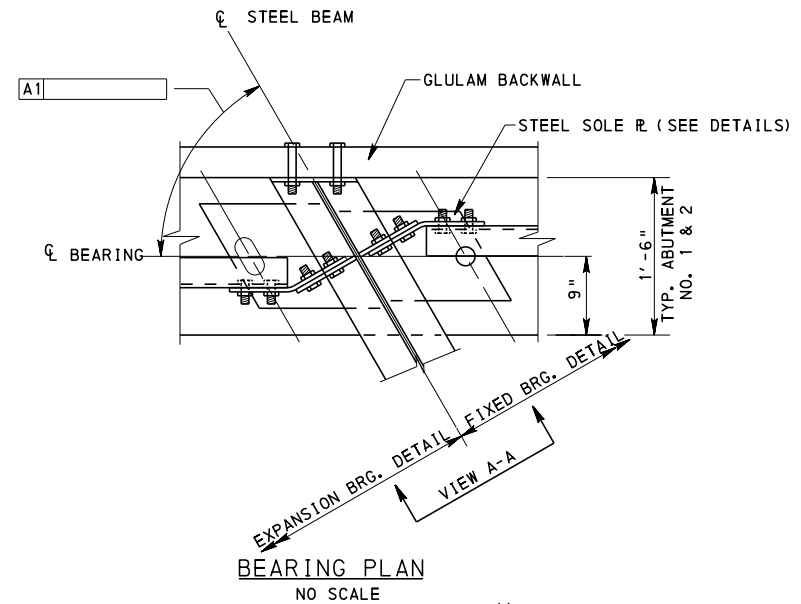
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DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STEEL BEAM SUPERSTRUCTURE
GENERAL NOTES

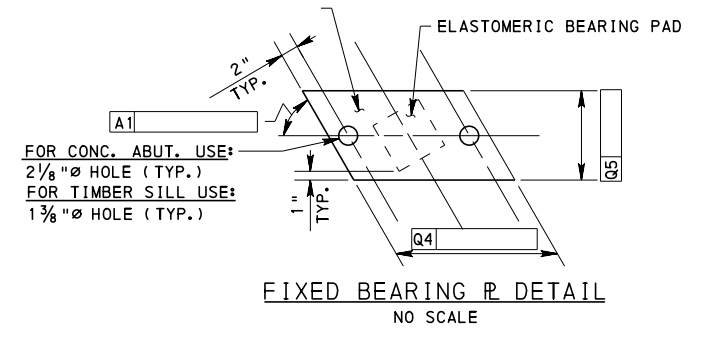
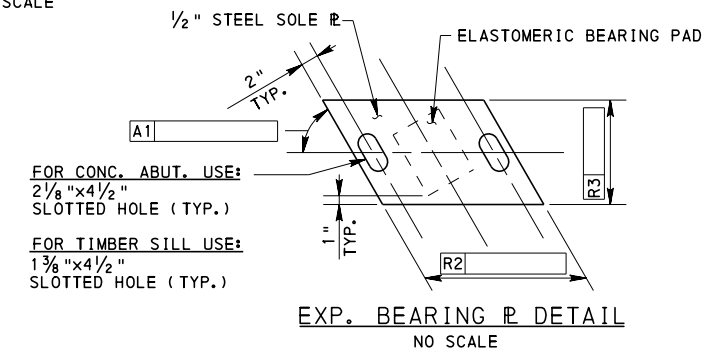
RECOMMENDED APR. 23, 2013 <i>Thomas P. Macieira</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 5 OF 14 BLC-564M
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- NOTES:**
1. PROVIDE MECHANICALLY GALVANIZED SWEDGE OF APPROVED TYPE OF ANCHOR BOLTS. SET IN THE MASONRY AS SHOWN ON THE DESIGN DRAWINGS.
 2. PROVIDE MINIMUM SIZE WELD IN ACCORDANCE WITH AASHTO/AWS CODE UNLESS LARGER WELD IS REQUIRED BY DESIGN.
 3. PROVIDE PLATE WASHERS OF SUFFICIENT SIZE TO COVER THE ROUND HOLE OR SLOT FOR EXTREMES OF MOVEMENT OF THE BEARINGS. WASHER MAY BE CLIPPED IF REQUIRED.
 4. FILL ANCHOR BOLT OR LAG SCREW SOLE PLATE HOLES WITH NON-HARDENING CAULKING COMPOUND AT THE FIXED END.
 5. PERMIT DRILLING OF ANCHOR BOLT HOLES AT ABUTMENT ONLY. WASH AND DRY HOLE BEFORE FILLING WITH NON-SHRINK GROUT.
 6. BLAST CLEAN CONCRETE BEARING SURFACES TO ACHIEVE ROUGH TEXTURE. DO NOT APPLY EPOXY COATING TO THE BEARING SURFACES WITHIN 2" OF THE BEARING PAD AND SPONGE LOCATION.
 7. DO NOT USE ELASTOMERIC MATERIAL WITH A HARDNESS GREATER THAN 60 DUROMETER.
 8. DO NOT PROVIDE HOLES IN ELASTOMERIC BEARINGS UNLESS INDICATED ON THE DESIGN DRAWINGS.
 9. USE FIXED BEARINGS AT LOWER END OF SPAN UNLESS PERMITTED BY THE CHIEF BRIDGE ENGINEER.



* (a) PROVIDE FLATNESS TOLERANCE IN ACCORDANCE WITH PUB. 408, SECTION 1105.03(q)
(b) PROVIDE SOLE PLATE IN ACCORDANCE WITH DM-4, D14.7.6.3.9dP



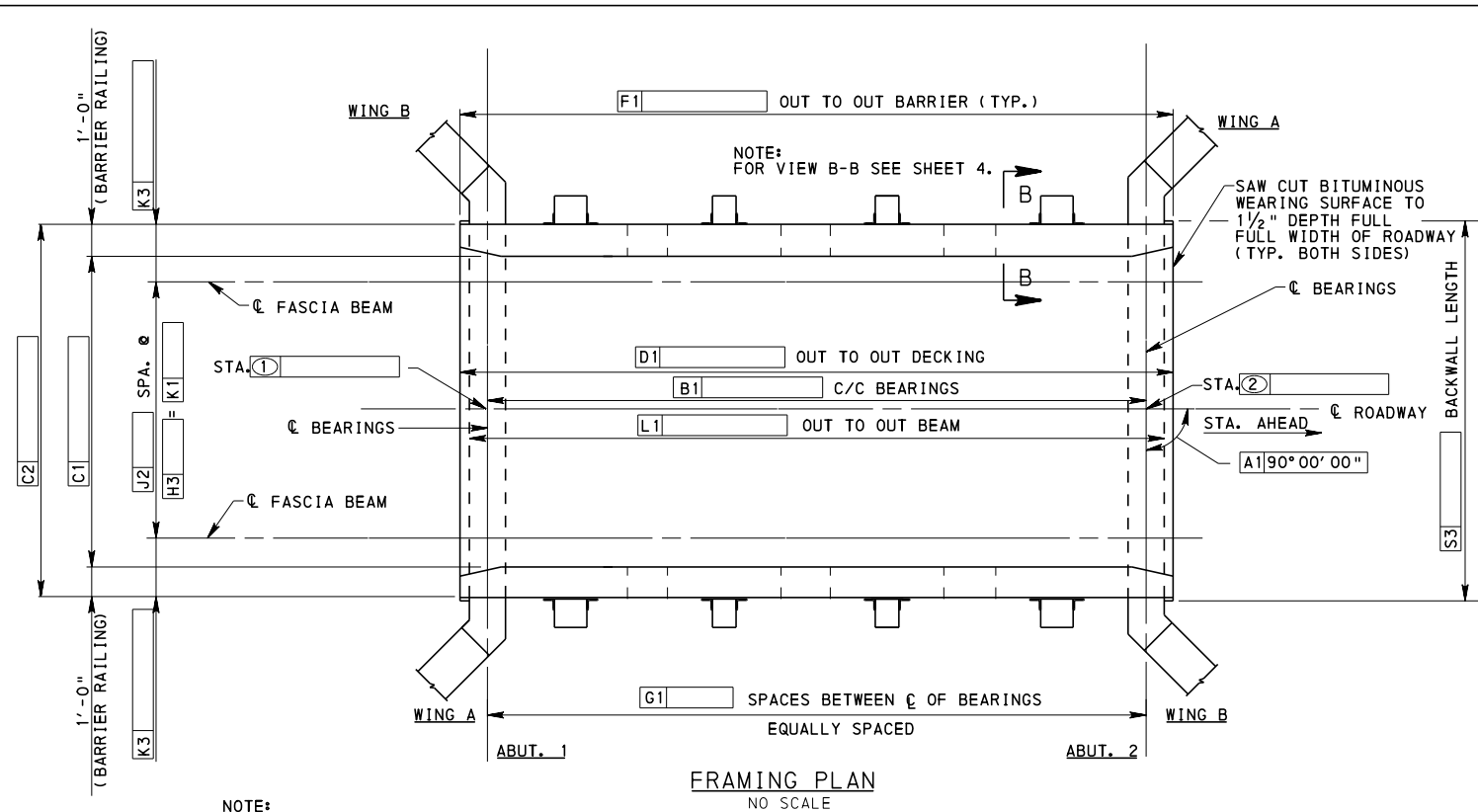
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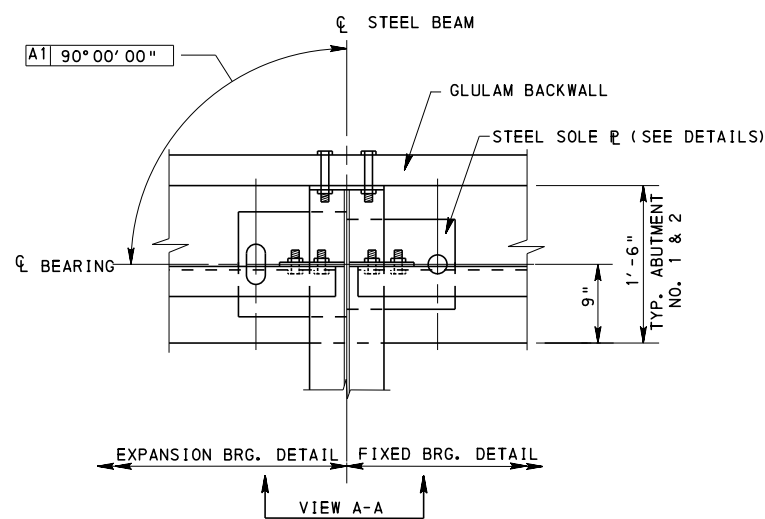
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STEEL BEAM SUPERSTRUCTURE
FRAMING PLAN - LEFT SKEW

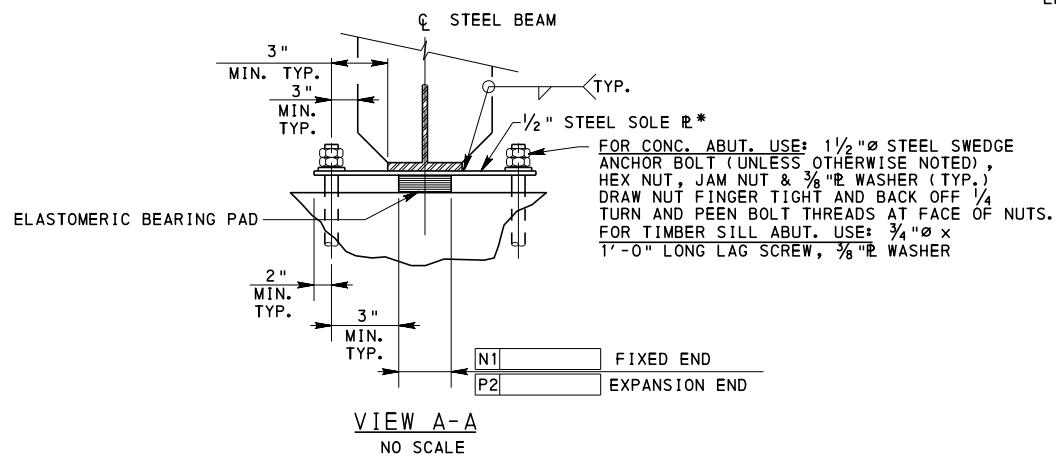
RECOMMENDED APR. 23, 2013 <i>Thomas P. Maciocco</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>[Signature]</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 6 OF 14 BLC-564M
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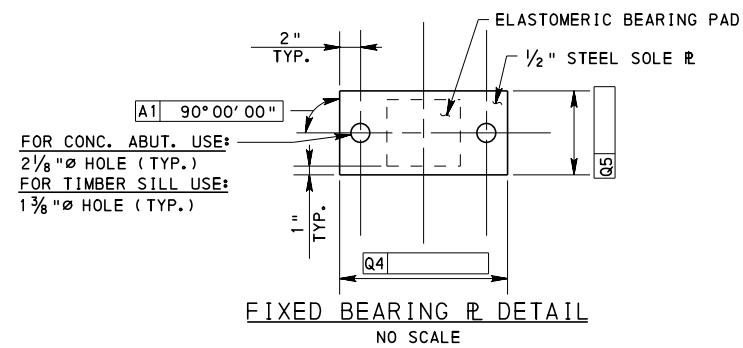
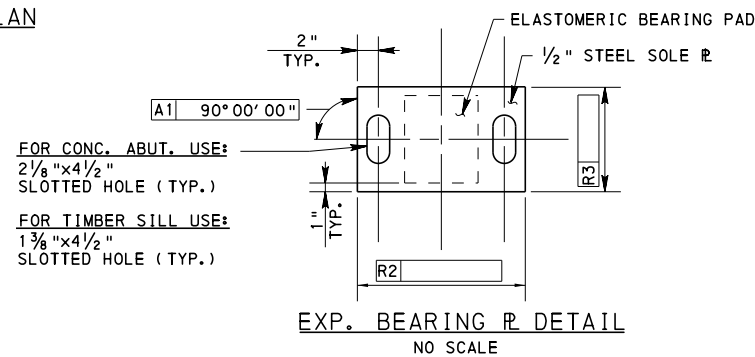
NOTE:
REFER TO BLC-564M SHT. 9 OR
10 FOR SUPERSTRUCTURE DETAILS



BEARING PLAN
NO SCALE



* (a) PROVIDE FLATNESS TOLERANCE IN ACCORDANCE WITH PUB. 408, SECTION 1105.03 (q)
(b) PROVIDE SOLE PLATE IN ACCORDANCE WITH DM-4, D14.7.6.3.9dP



NOTES:

1. PROVIDE MECHANICALLY GALVANIZED SWEDGE OF APPROVED TYPE OF ANCHOR BOLTS. SET IN THE MASONRY AS SHOWN ON THE DESIGN DRAWINGS.
2. PROVIDE MINIMUM SIZE WELD IN ACCORDANCE WITH AASHTO/AWS CODE UNLESS LARGER WELD IS REQUIRED BY DESIGN.
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4. FILL ANCHOR BOLT OR LAG SCREW SOLE PLATE HOLES WITH NON-HARDENING CAULKING COMPOUND AT THE FIXED END.
5. PERMIT DRILLING OF ANCHOR BOLT HOLES AT ABUTMENT ONLY. WASH AND DRY HOLE BEFORE FILLING WITH NON-SHRINK GROUT.
6. BLAST CLEAN CONCRETE BEARING SURFACES TO ACHIEVE ROUGH TEXTURE. DO NOT APPLY EPOXY COATING TO THE BEARING SURFACES WITHIN 2" OF THE BEARING PAD AND SPONGE LOCATION.
7. DO NOT USE ELASTOMERIC MATERIAL WITH A HARDNESS GREATER THAN 60 DUROMETER.
8. DO NOT PROVIDE HOLES IN ELASTOMERIC BEARINGS UNLESS INDICATED ON THE DESIGN DRAWINGS.
9. USE FIXED BEARINGS AT LOWER END OF SPAN UNLESS PERMITTED BY THE CHIEF BRIDGE ENGINEER.

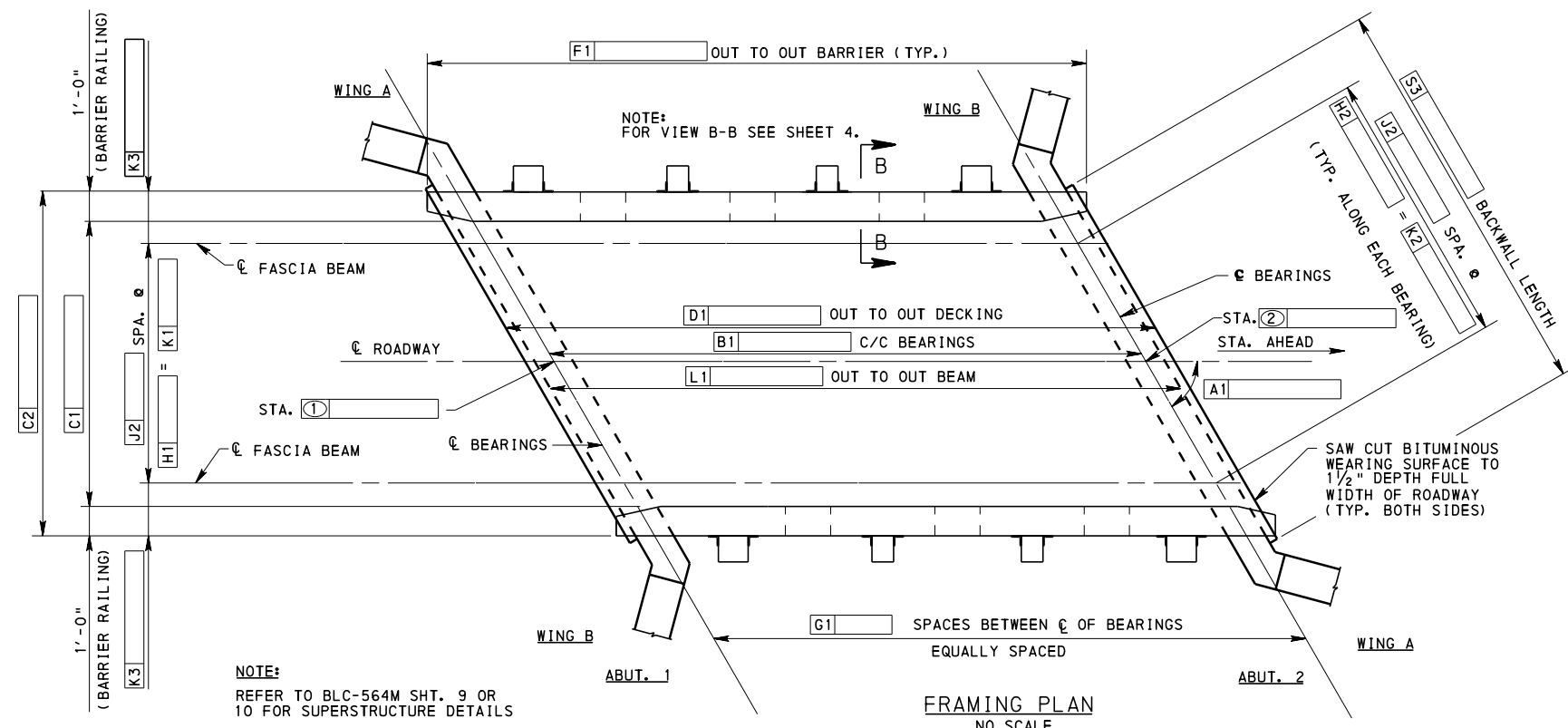
Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

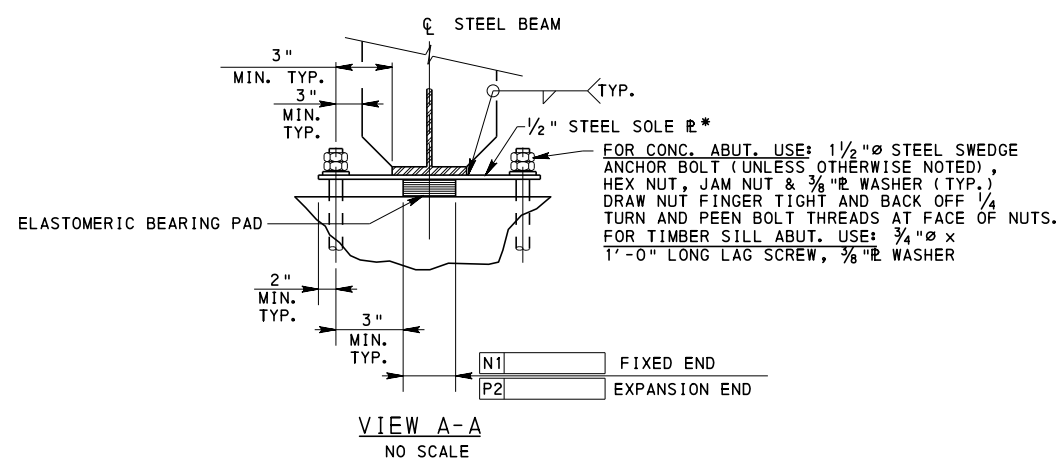
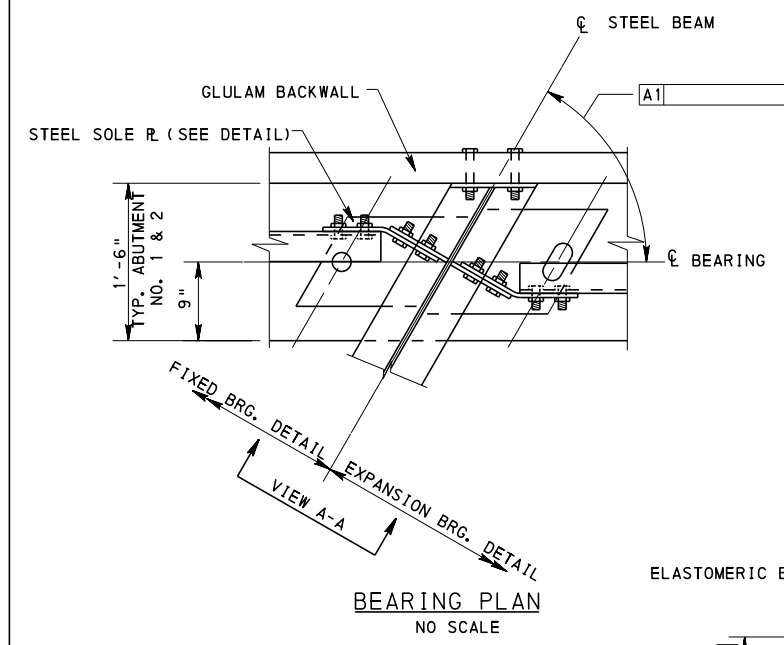
STEEL BEAM SUPERSTRUCTURE
FRAMING PLAN - 90° SKEW

RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 7 OF 14
BLC-564M

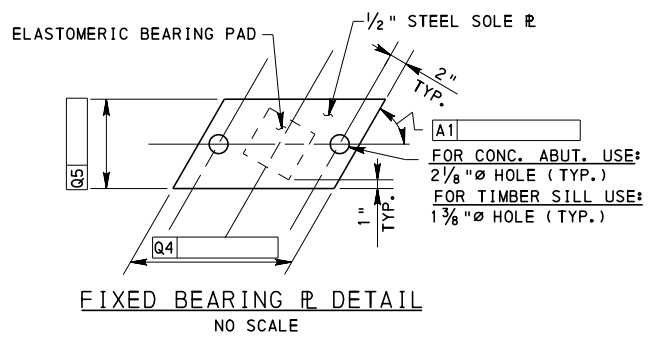
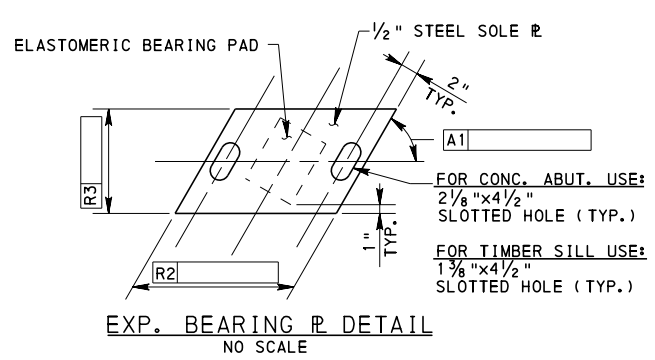


NOTES:

1. PROVIDE MECHANICALLY GALVANIZED SWEDGE OF APPROVED TYPE OF ANCHOR BOLTS. SET IN THE MASONRY AS SHOWN ON THE DESIGN DRAWINGS.
2. PROVIDE MINIMUM SIZE WELD IN ACCORDANCE WITH AASHTO/AWS CODE UNLESS LARGER WELD IS REQUIRED BY DESIGN.
3. PROVIDE PLATE WASHERS OF SUFFICIENT SIZE TO COVER THE ROUND HOLE OR SLOT FOR EXTREMES OF MOVEMENT OF THE BEARINGS. WASHER MAY BE CLIPPED IF REQUIRED.
4. FILL ANCHOR BOLT OR LAG SCREW SOLE PLATE HOLES WITH NON-HARDENING CAULKING COMPOUND AT THE FIXED END.
5. PERMIT DRILLING OF ANCHOR BOLT HOLES AT ABUTMENT ONLY. WASH AND DRY HOLE BEFORE FILLING WITH NON-SHRINK GROUT.
6. BLAST CLEAN CONCRETE BEARING SURFACES TO ACHIEVE ROUGH TEXTURE. DO NOT APPLY EPOXY COATING TO THE BEARING SURFACES WITHIN 2" OF THE BEARING PAD AND SPONGE LOCATION.
7. DO NOT USE ELASTOMERIC MATERIAL WITH A HARDNESS GREATER THAN 60 DUROMETER.
8. DO NOT PROVIDE HOLES IN ELASTOMERIC BEARINGS UNLESS INDICATED ON THE DESIGN DRAWINGS.
9. USE FIXED BEARINGS AT LOWER END OF SPAN UNLESS PERMITTED BY THE CHIEF BRIDGE ENGINEER.



- * (a) PROVIDE FLATNESS TOLERANCE IN ACCORDANCE WITH PUB. 408, SECTION 1105.03(q)
- (b) PROVIDE SOLE PLATE IN ACCORDANCE WITH DM-4, D14.7.6.3.9dP



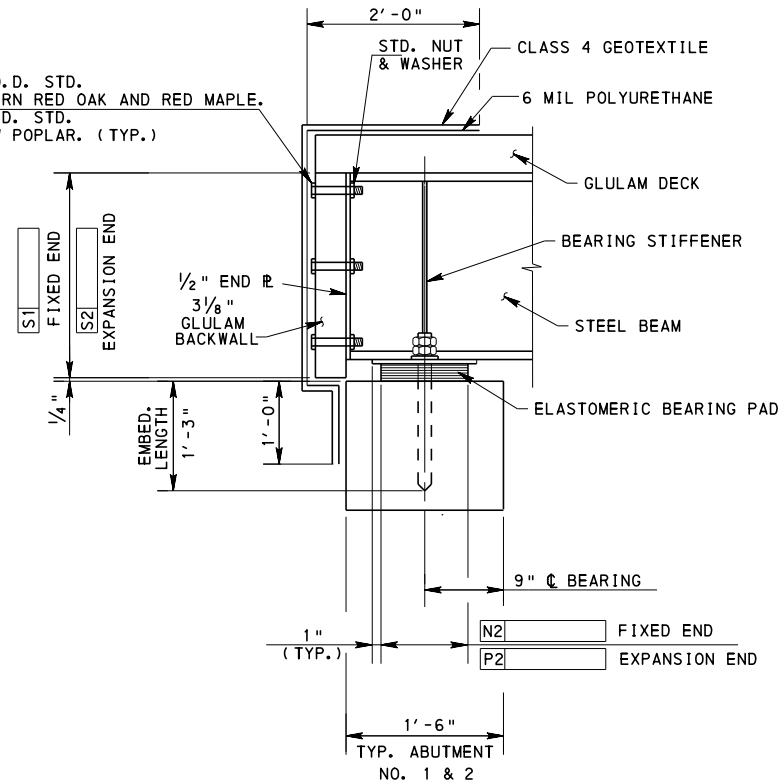
Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

S- SHEET ___ OF ___

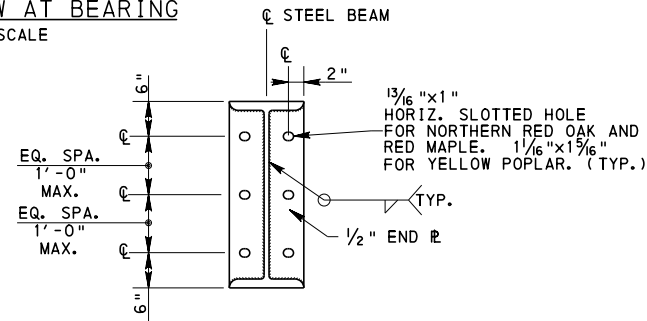
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

STEEL BEAM SUPERSTRUCTURE
FRAMING PLAN - RIGHT SKEW

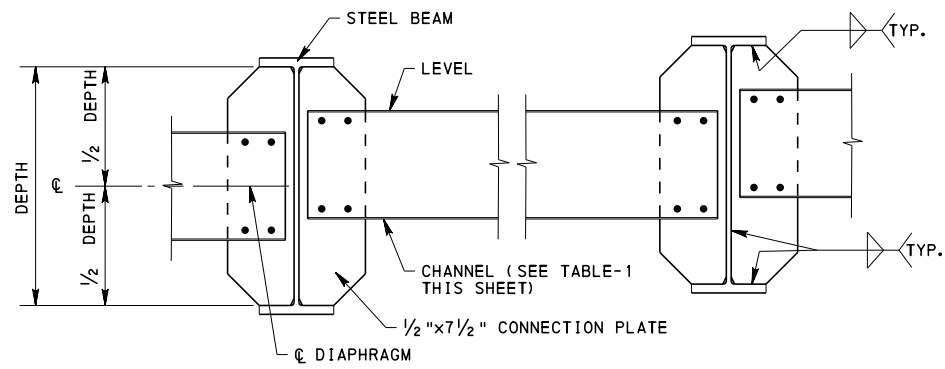
3/4" Ø BOLT W/ 2" O.D. STD. WASHER FOR NORTHERN RED OAK AND RED MAPLE.
 1" Ø BOLT W/ 2" O.D. STD. WASHER FOR YELLOW POPLAR. (TYP.)



SECTION VIEW AT BEARING
NO SCALE

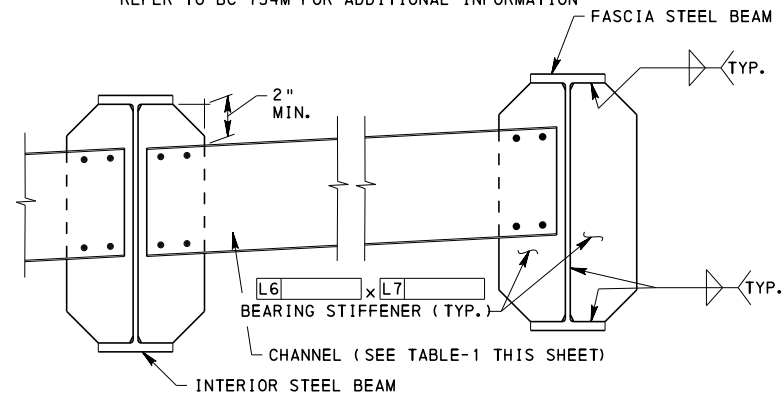


SECTION VIEW- END R DETAIL
NO SCALE



INTERMEDIATE DIAPHRAGM

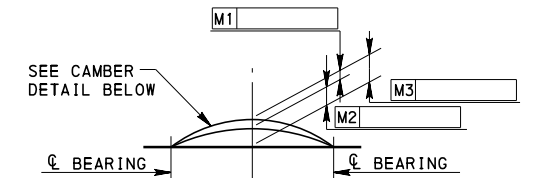
NO SCALE
REFER TO BC-754M FOR ADDITIONAL INFORMATION



END DIAPHRAGM

NO SCALE
REFER TO BC-754M FOR ADDITIONAL INFORMATION

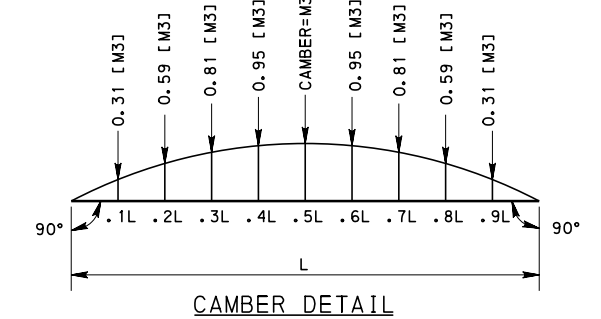
TABLE-1		
STEEL BEAM SIZE	DIAPHRAGM SIZE	NO. OF BOLTS
≥ 27" DEPTH	C15x33.9	8
≤ 24" DEPTH	C12x25	6



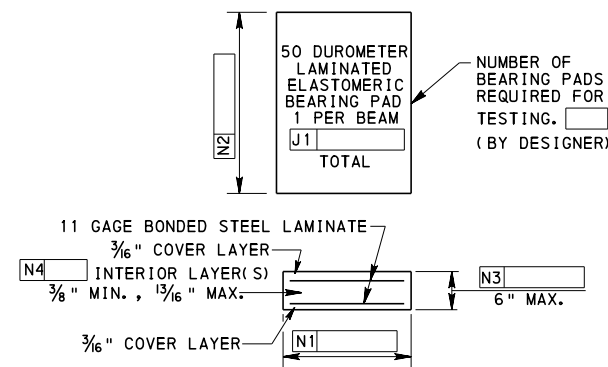
BEAM CAMBER DIAGRAM

M1 = DEFLECTION DUE TO DEAD LOAD OF STEEL BEAM, DIAPHRAGMS, AND CONNECTION PLATES
 M2 = DEFLECTION DUE TO DEAD LOAD OF TIMBER DECK, RAILING, AND WEARING SURFACE
 M3 = M1+M2 = TOTAL CAMBER

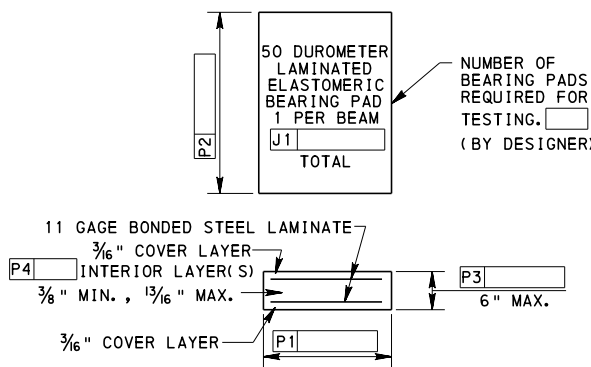
- THE THICKNESS OF THE WEARING COURSE WILL BE VARIED TO COMPENSATE FOR ANY INACCURACIES IN BEAM CAMBER.
- THE PRE-FABRICATED CAMBER LESS THE DEFLECTION DUE TO DEAD LOAD OF BEAM SHOULD BE CHECKED IN THE FIELD.
- DEFLECTION CALCULATIONS DO NOT CONSIDER LOAD EFFECTS DUE TO FUTURE WEARING SURFACE.



CAMBER DETAIL



FIXED END BEARING PAD DETAIL
NO SCALE



EXPANSION END BEARING PAD DETAIL
NO SCALE

ELASTOMERIC BEARING PAD NOTES:

1. MANUFACTURE ALL BEARINGS IN ACCORDANCE WITH THE COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PLANS AND SPECIFICATIONS (PUB. 408) SECTION 1113 AND DM-4.
2. ALL BEARING PADS ARE TO BE MOLDED TO DESIGN DIMENSIONS. CUTTING TO SIZE AFTER FABRICATION IS PROHIBITED.
3. PROVIDE NEOPRENE 50 ± 5 DUROMETER.
4. VULCANIZE PATCH PIN GROOVES.
5. PROVIDE MINIMUM LOW-TEMP NEOPRENE GRADE 3.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

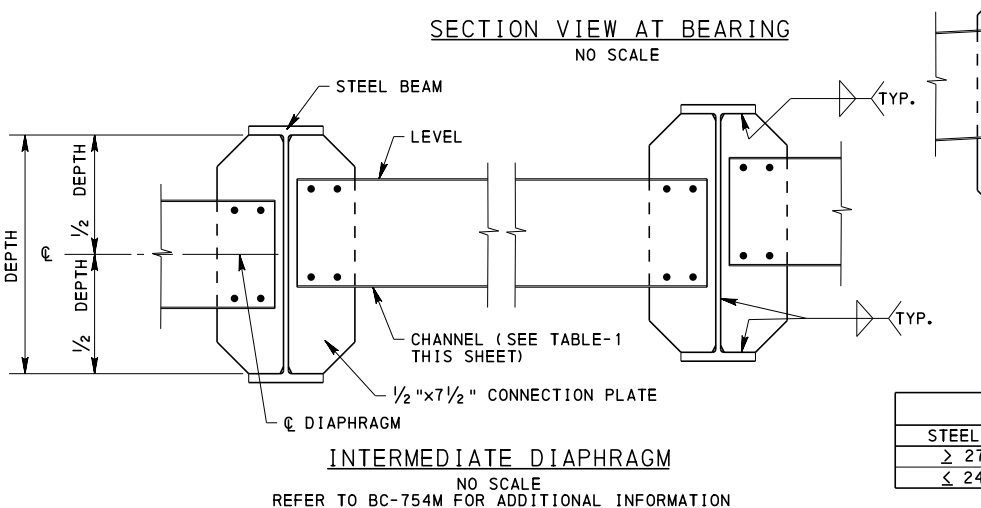
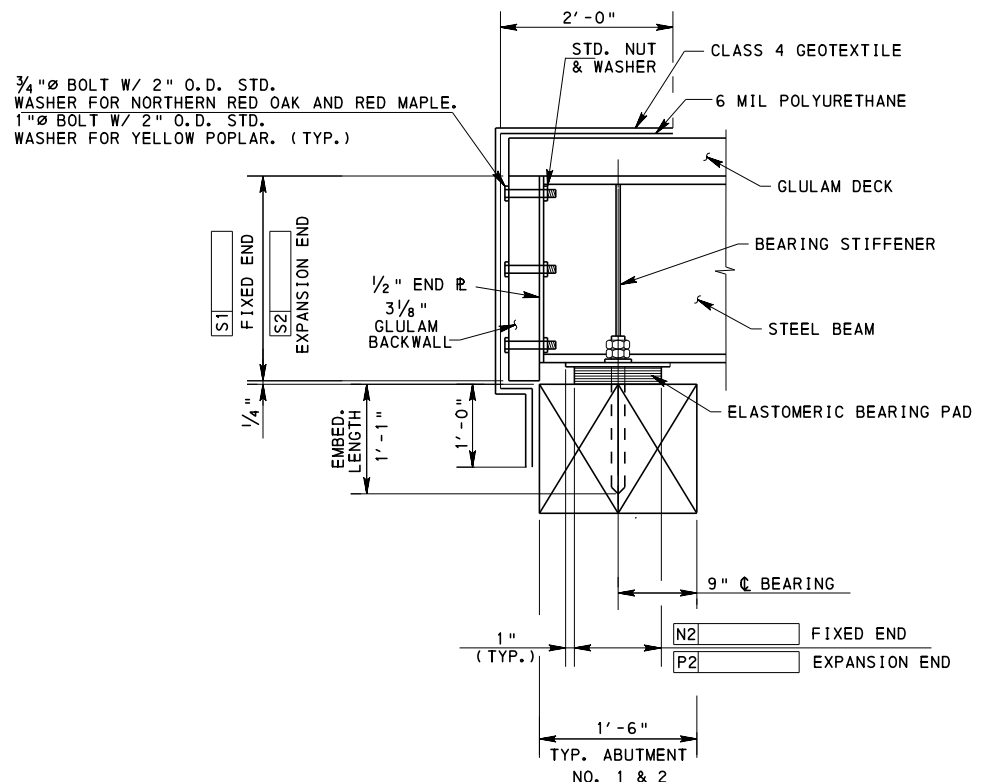
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

STEEL BEAM SUPERSTRUCTURE
 SUPERSTRUCTURE DETAILS - CONC. ABUT.

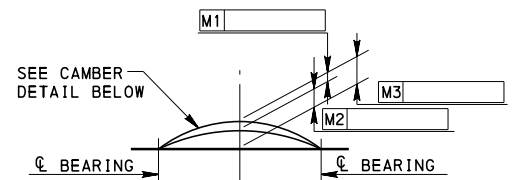
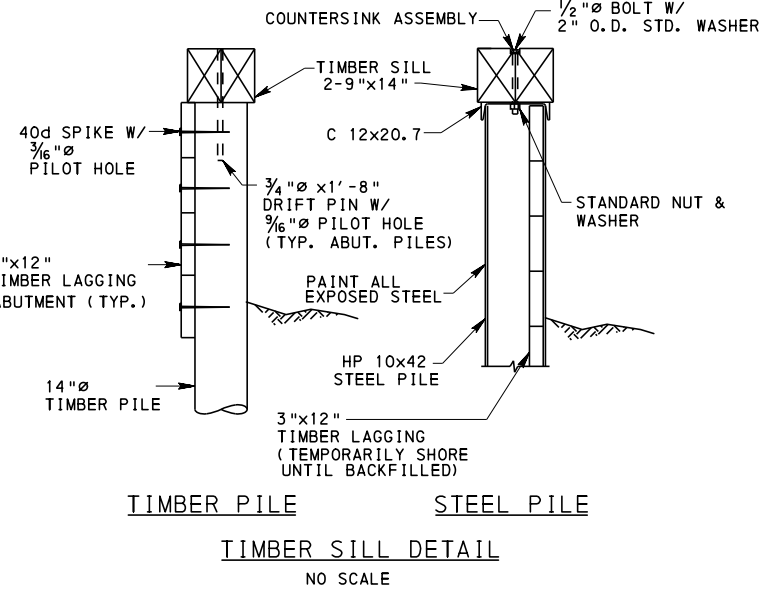
RECOMMENDED APR. 23, 2013
 Thomas P. Nacivica
 CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013
 [Signature]
 ACTING DIR. BUR. OF PROJECT DELIVERY

SHEET 9 OF 14
 BLC-564M



STEEL BEAM SIZE	DIAPHRAGM SIZE	NO. OF BOLTS
≥ 27" DEPTH	C15x33.9	8
≤ 24" DEPTH	C12x25	6



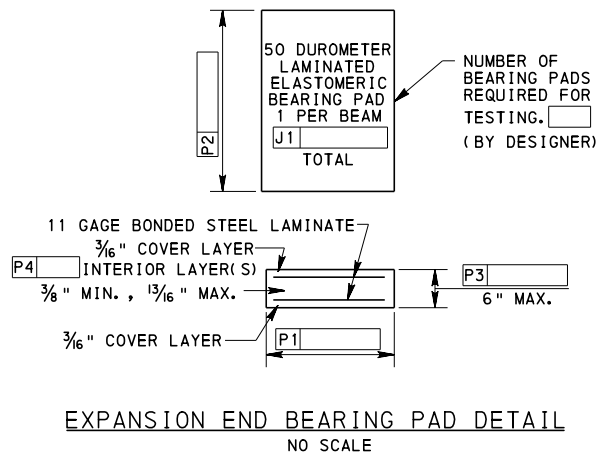
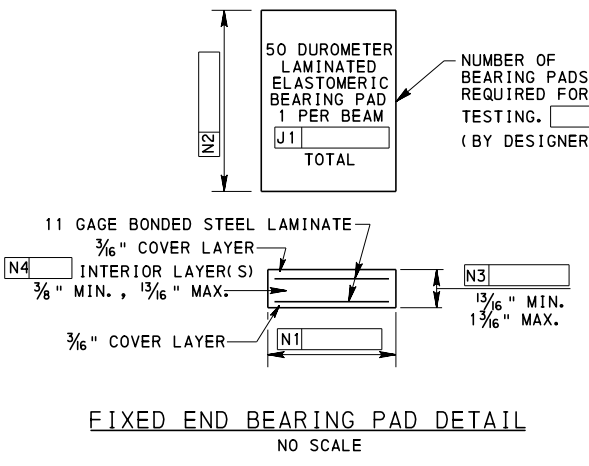
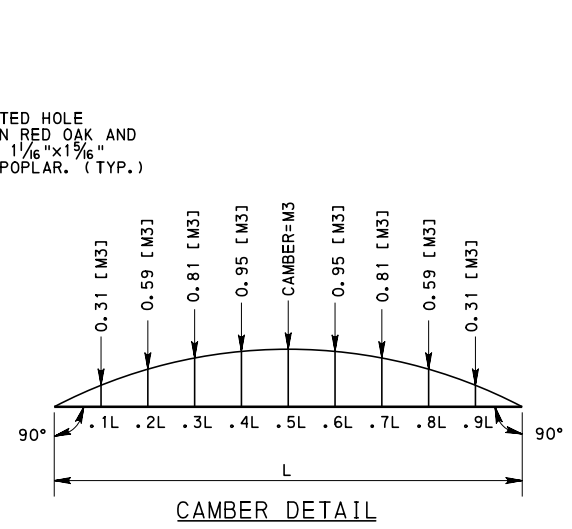
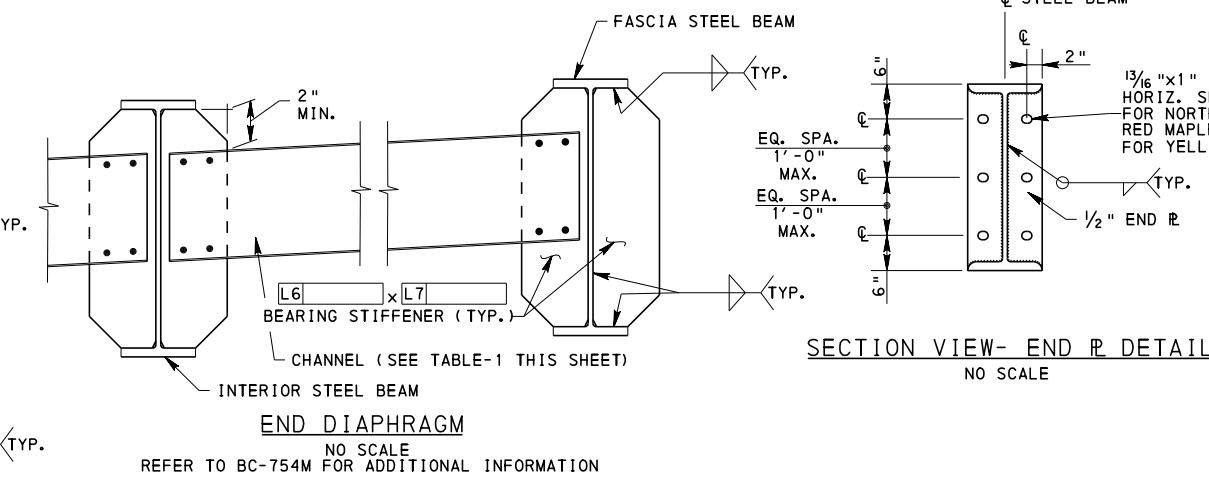
BEAM CAMBER DIAGRAM

M1 = DEFLECTION DUE TO DEAD LOAD OF STEEL BEAM, DIAPHRAGMS, AND CONNECTION PLATES

M2 = DEFLECTION DUE TO DEAD LOAD OF TIMBER DECK, RAILING, AND WEARING SURFACE

M3 = M1+M2 = TOTAL CAMBER

- THE THICKNESS OF THE WEARING COURSE WILL BE VARIED TO COMPENSATE FOR ANY INACCURACIES IN BEAM CAMBER.
- THE PRE-FABRICATED CAMBER LESS THE DEFLECTION DUE TO DEAD LOAD OF BEAM SHOULD BE CHECKED IN THE FIELD.
- DEFLECTION CALCULATIONS DO NOT CONSIDER LOAD EFFECTS DUE TO FUTURE WEARING SURFACE.



ELASTOMERIC BEARING PAD NOTES:

1. MANUFACTURE ALL BEARINGS IN ACCORDANCE WITH THE COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PLANS AND SPECIFICATIONS (PUB. 408) SECTION 1113 AND DM-4.
2. ALL BEARING PADS ARE TO BE MOLDED TO DESIGN DIMENSIONS. CUTTING TO SIZE AFTER FABRICATION IS PROHIBITED.
3. PROVIDE NEOPRENE 50 ± 5 DUROMETER.
4. VULCANIZE PATCH PIN GROOVES.
5. PROVIDE MINIMUM LOW-TEMP NEOPRENE GRADE 3.

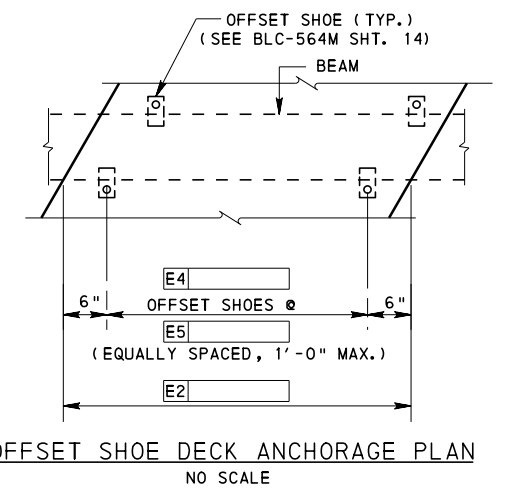
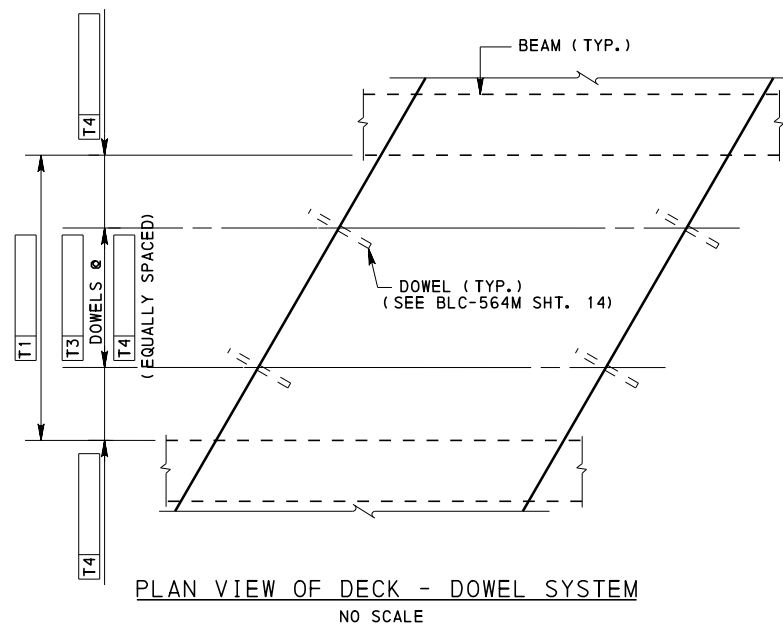
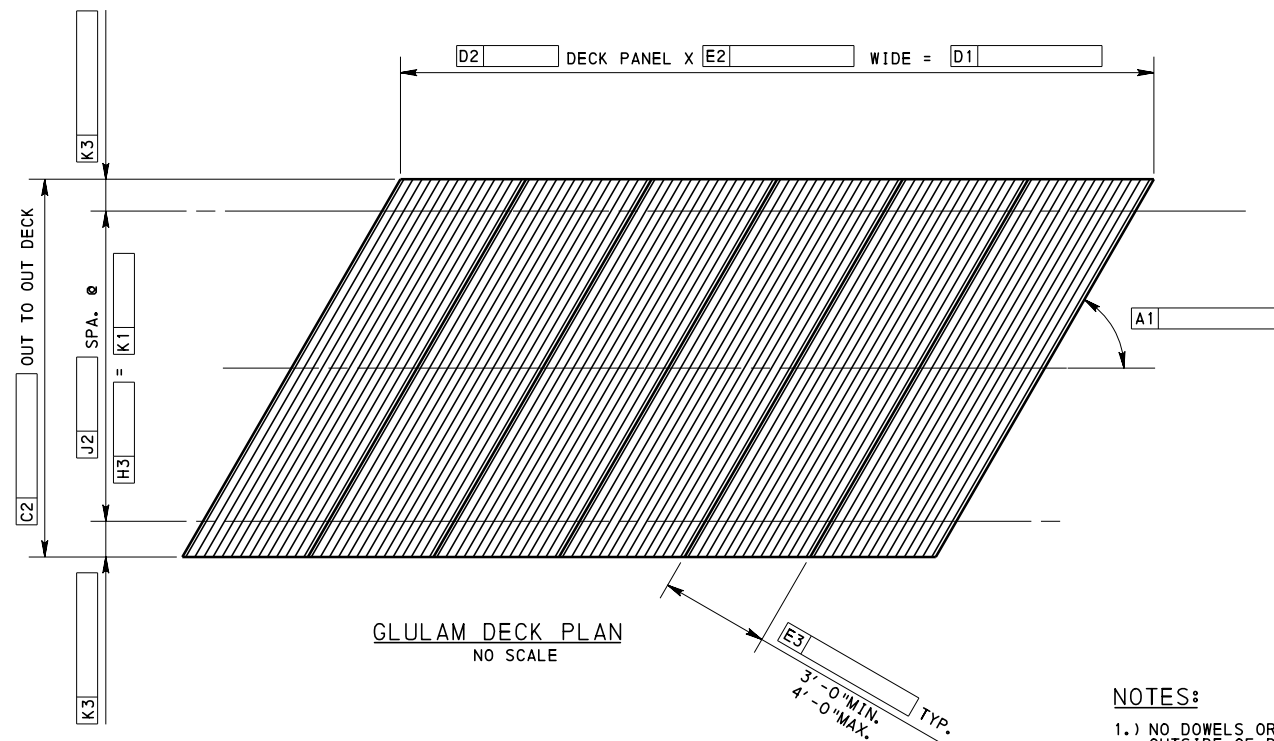
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

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**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

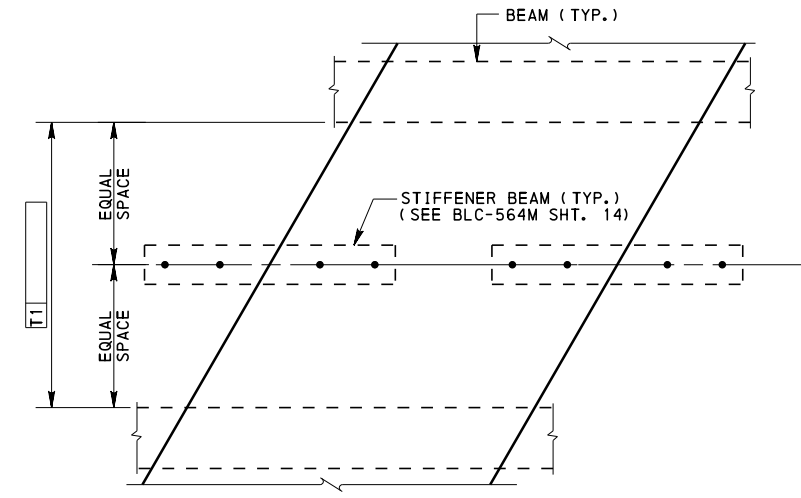
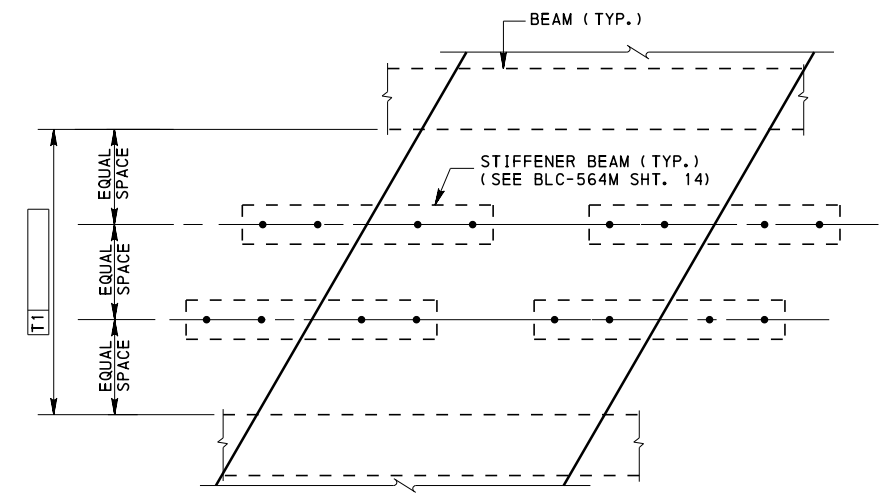
**STEEL BEAM SUPERSTRUCTURE
SUPERSTRUCTURE DETAILS - TIMBER ABUT.**

RECOMMENDED APR. 23, 2013 <i>Thomas P. Nacivica</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>[Signature]</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 10 OF 14 BLC-564M
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NOTES:

- 1.) NO DOWELS OR STIFFENER BEAMS NEEDED BETWEEN FACIA BEAM AND OUTSIDE OF DECK.
- 2.) PRELOAD DECK PANEL WHILE FASTENING PANEL TO BEAM.
- 3.) PROVIDE ADEQUATE SPACING BETWEEN THE DECK ANCHORAGE AND THE DOWEL SYSTEM. ADJUSTMENTS TO THE DOWEL SYSTEM AND/OR DECK ANCHORAGE'S SPACING MAY BE NECESSARY.



DUAL (2) STIFFENER BEAM SYSTEM

SINGLE (1) STIFFENER BEAM SYSTEM

PLAN VIEWS OF ALTERNATE STIFFENER BEAM SYSTEMS
NO SCALE

STIFFENER BEAM DESIGN DATA		
TIMBER SPECIES	MAXIMUM DESIGN SPAN (T2)	NUMBER OF STIFFENER BEAMS
NORTHERN RED OAK & RED MAPLE	3'-1"	1
	6'-0"	2
YELLOW POPLAR	2'-6"	1
	6'-0"	2

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

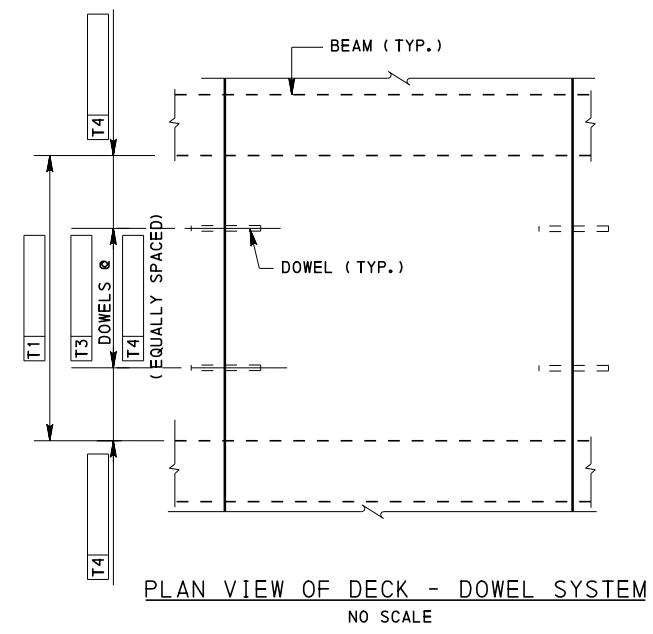
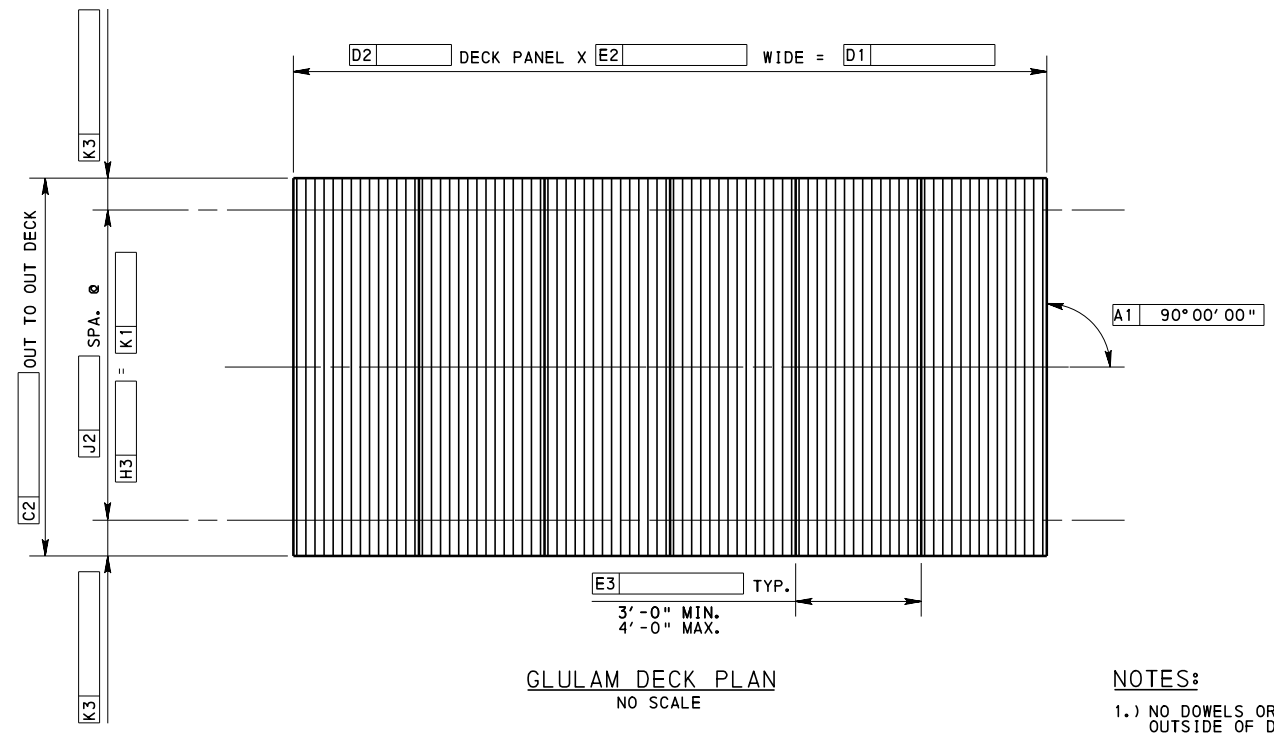
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STEEL BEAM SUPERSTRUCTURE
DECK PLAN - LEFT SKEW

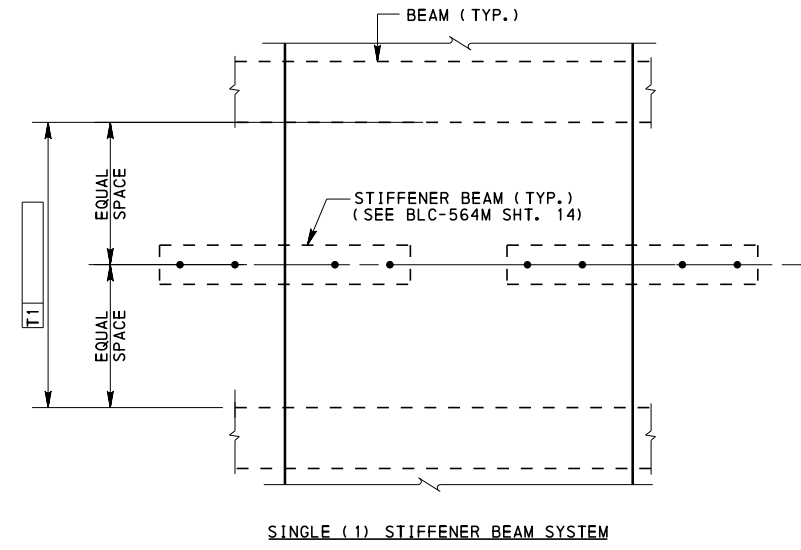
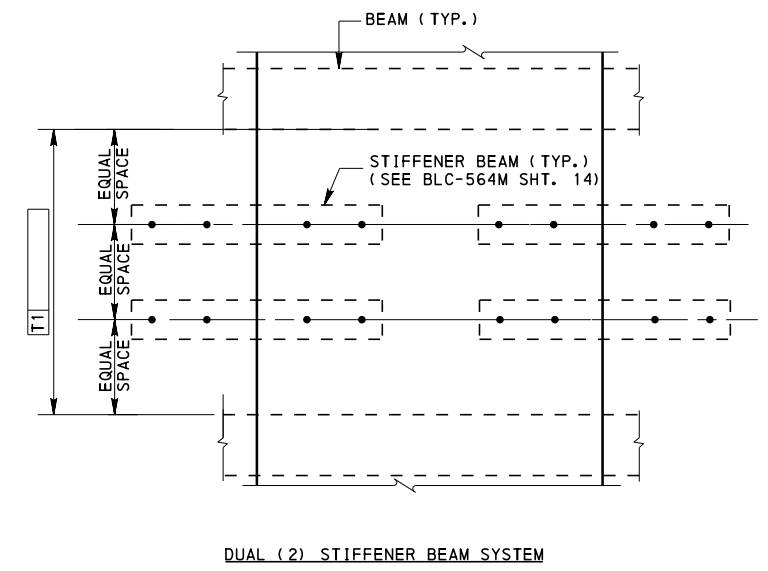
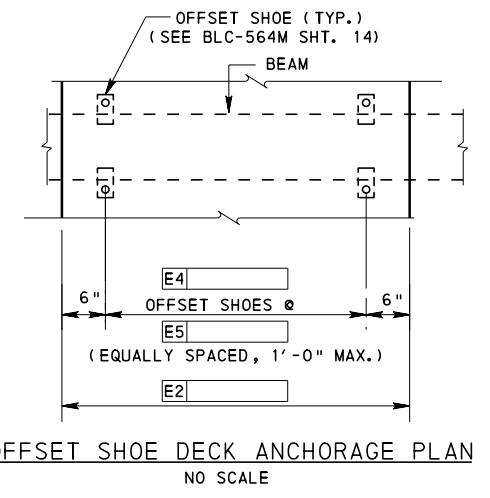
RECOMMENDED APR. 23, 2013

 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013

 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 11 OF 14
BLC-564M



- NOTES:**
- 1.) NO DOWELS OR STIFFENER BEAMS NEEDED BETWEEN FACIA BEAM AND OUTSIDE OF DECK.
 - 2.) PRELOAD DECK PANEL WHILE FASTENING PANEL TO BEAM.
 - 3.) PROVIDE ADEQUATE SPACING BETWEEN THE DECK ANCHORAGE AND THE DOWEL SYSTEM. ADJUSTMENTS TO THE DOWEL SYSTEM AND/OR DECK ANCHORAGE'S SPACING MAY BE NECESSARY.



PLAN VIEWS OF ALTERNATE STIFFENER BEAM SYSTEMS
NO SCALE

STIFFENER BEAM DESIGN DATA		
TIMBER SPECIES	MAXIMUM DESIGN SPAN (T2)	NUMBER OF STIFFENER BEAMS
NORTHERN RED OAK & RED MAPLE	3'-1"	1
	6'-0"	2
YELLOW POPLAR	2'-6"	1
	6'-0"	2

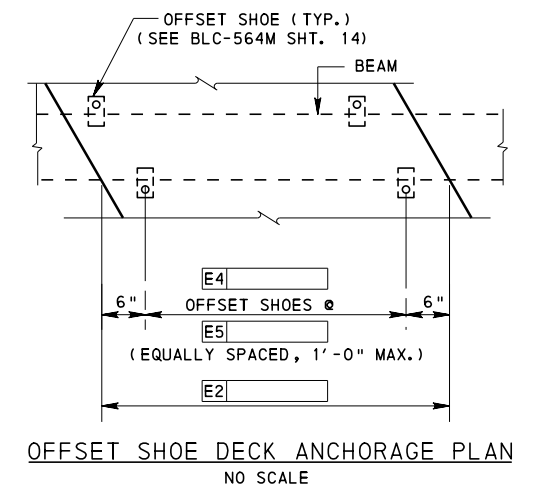
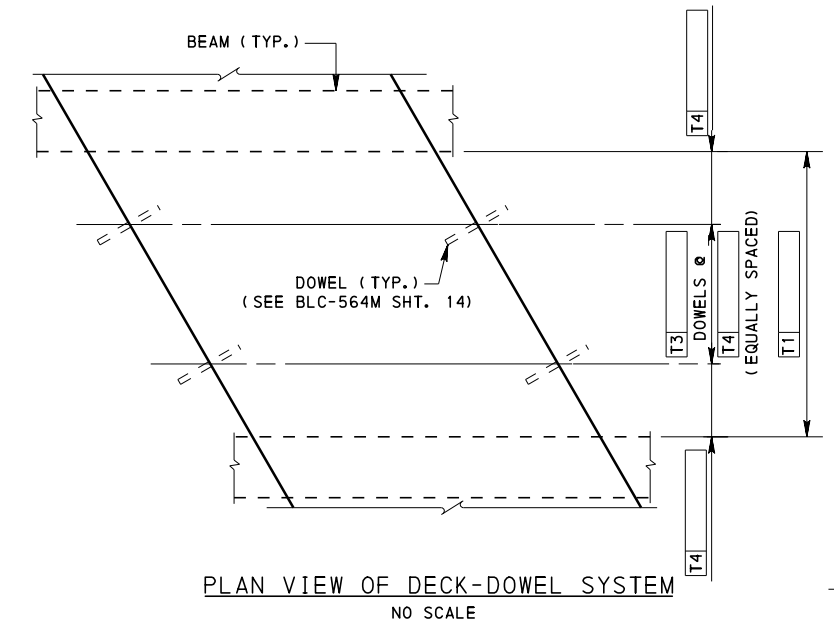
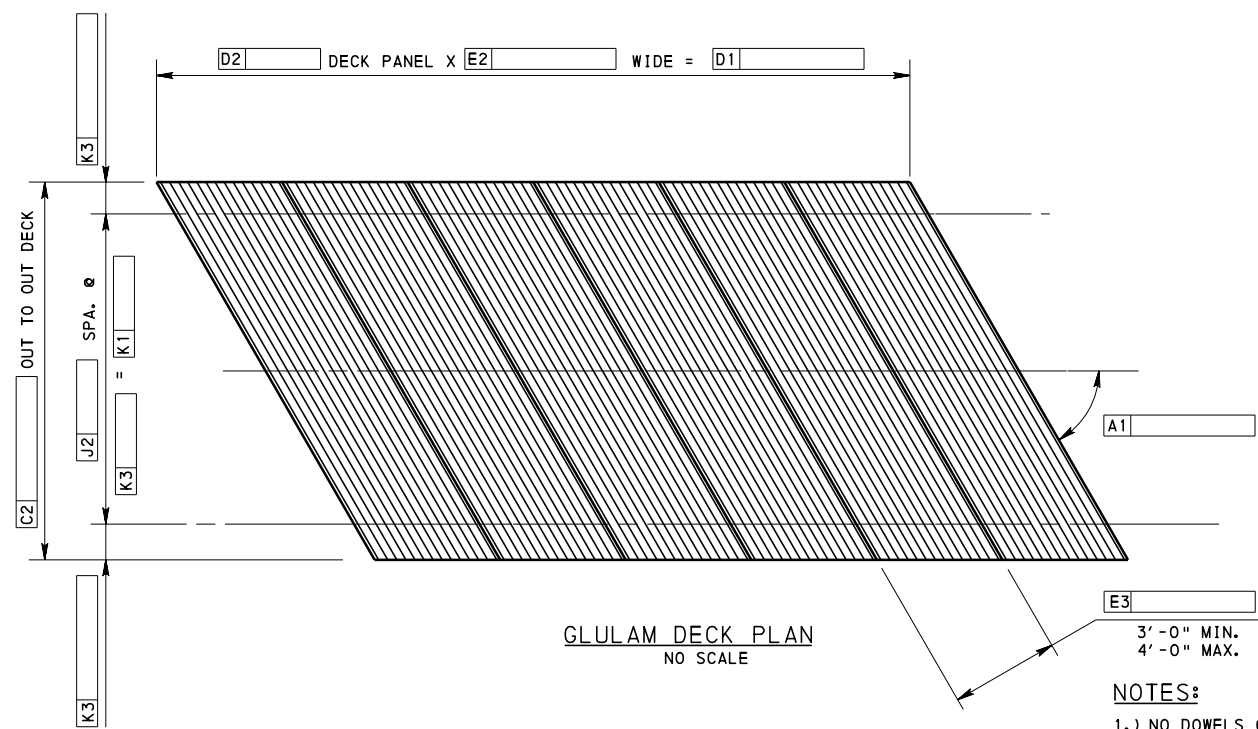
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

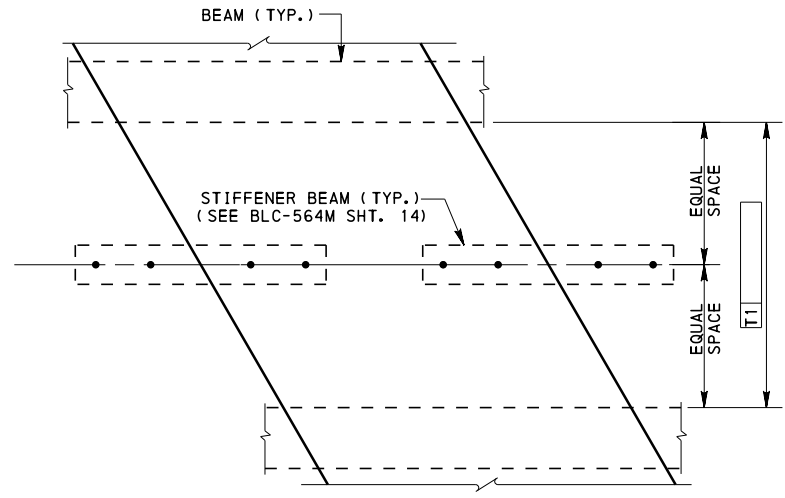
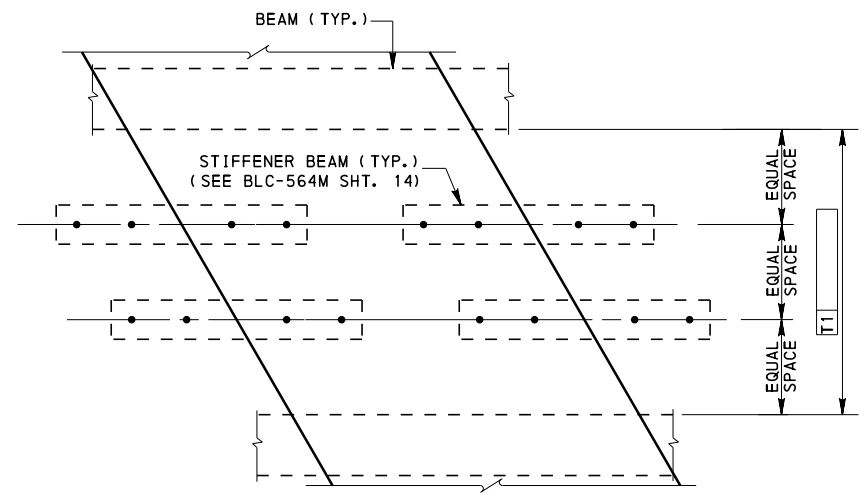
STEEL BEAM SUPERSTRUCTURE
DECK PLAN - 90° SKEW

RECOMMENDED APR. 23, 2013
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 12 OF 14
BLC-564M



NOTES:

- 1.) NO DOWELS OR STIFFENER BEAMS NEEDED BETWEEN FACIA BEAM AND OUTSIDE OF DECK.
- 2.) PRELOAD DECK PANEL WHILE FASTENING PANEL TO BEAM.
- 3.) PROVIDE ADEQUATE SPACING BETWEEN THE DECK ANCHORAGE AND THE DOWEL SYSTEM. ADJUSTMENTS TO THE DOWEL SYSTEM AND/OR DECK ANCHORAGE'S SPACING MAY BE NECESSARY.



PLAN VIEWS OF ALTERNATE STIFFENER BEAM SYSTEMS
NO SCALE

STIFFENER BEAM DESIGN DATA		
TIMBER SPECIES	MAXIMUM DESIGN SPAN (T2)	NUMBER OF STIFFENER BEAMS
NORTHERN RED OAK & RED MAPLE	3'-1"	1
YELLOW POPLAR	6'-0"	2

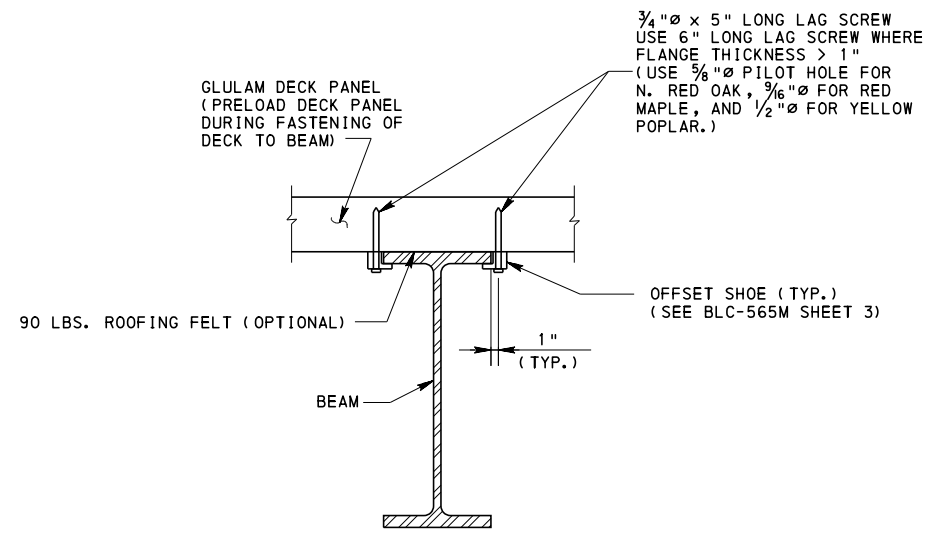
Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

S- SHEET ___ OF ___

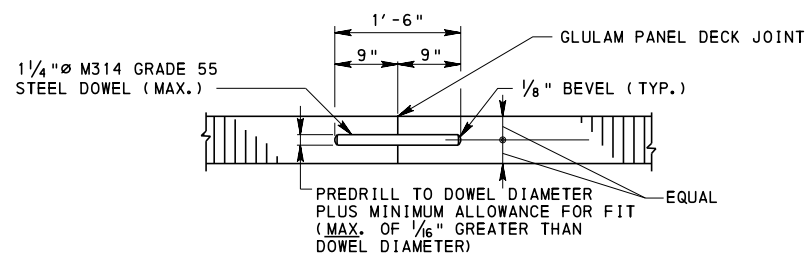
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STEEL BEAM SUPERSTRUCTURE
DECK PLAN - RIGHT SKEW

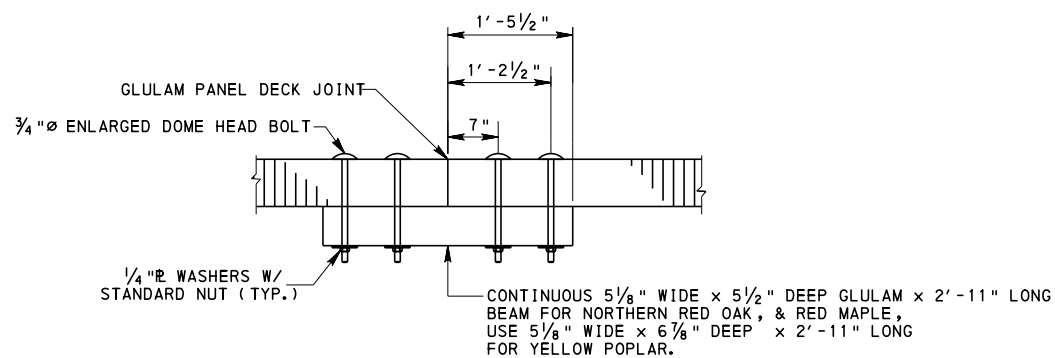
RECOMMENDED APR. 23, 2013
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 13 OF 14
BLC-564M



OFFSET SHOE DECK ANCHORAGE DETAIL
NO SCALE



DOWEL DETAIL
NO SCALE



ALTERNATE INTERMEDIATE STIFFENER BEAM DETAIL
NO SCALE

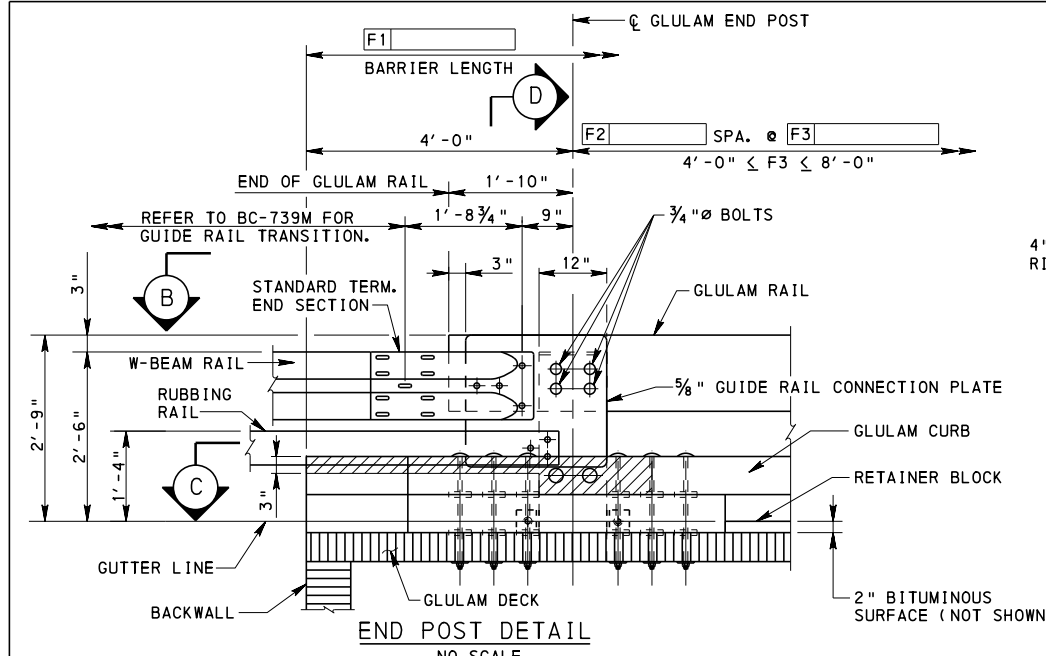
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

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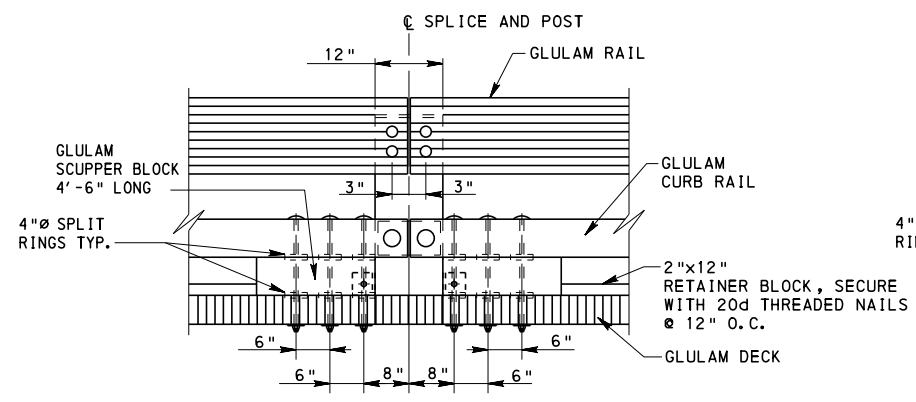
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STEEL BEAM SUPERSTRUCTURE
DECK DETAILS

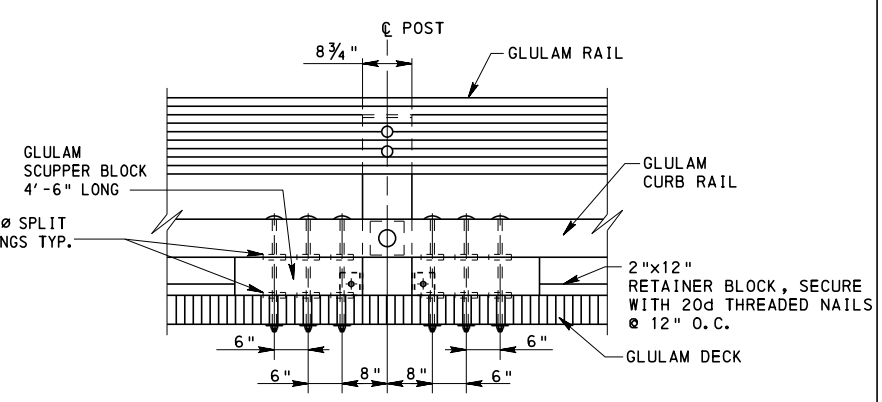
RECOMMENDED APR. 23, 2013 <i>Thomas P. Nacivca</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 14 OF 14 BLC-564M
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END POST DETAIL
NO SCALE
INDICATES NOTCHED PORTION OF CURB

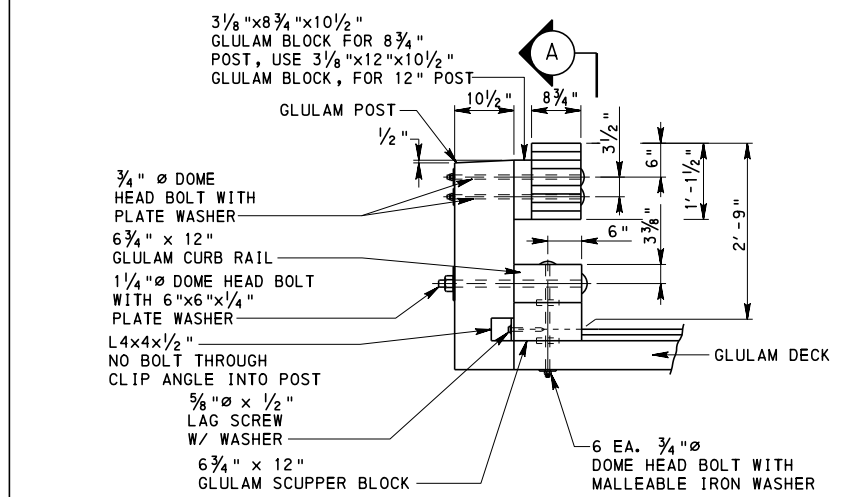


SPLICE POST DETAIL



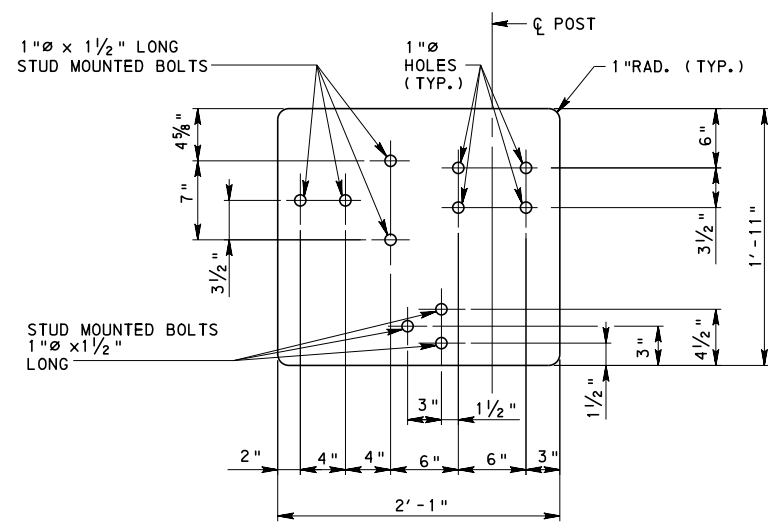
STANDARD POST DETAIL

VIEW A
NO SCALE

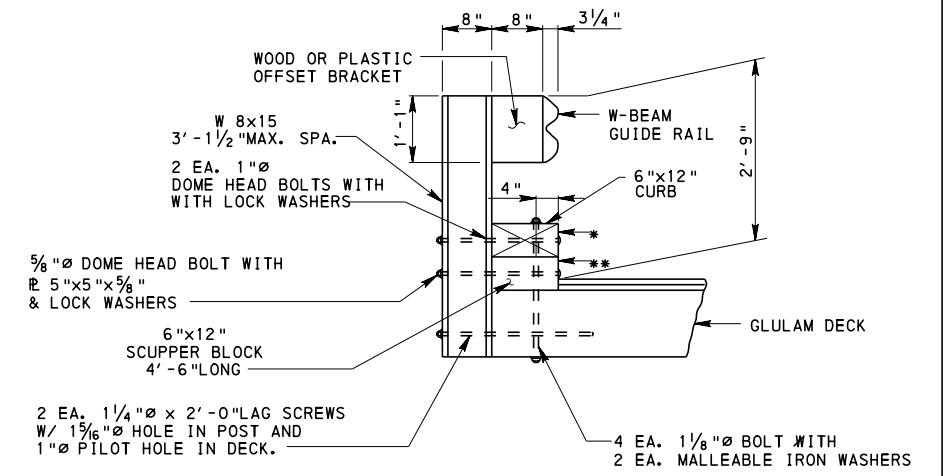


TIMBER POST, BRIDGE RAIL, AND CURB DETAIL
NO SCALE

- NOTES:**
1. THIS BARRIER SHOWN ON THE GENERAL PLAN AND FRAMING PLAN SHEET.
 2. DO NOT USE TREATED HARDWOOD GLUE LAMINATED RAILINGS WHERE PROLONGED EXPOSURE TO DIRECT HUMAN CONTACT IS LIKELY WITHOUT APPLICATION OF AN APPROVED FINISH SEALER.

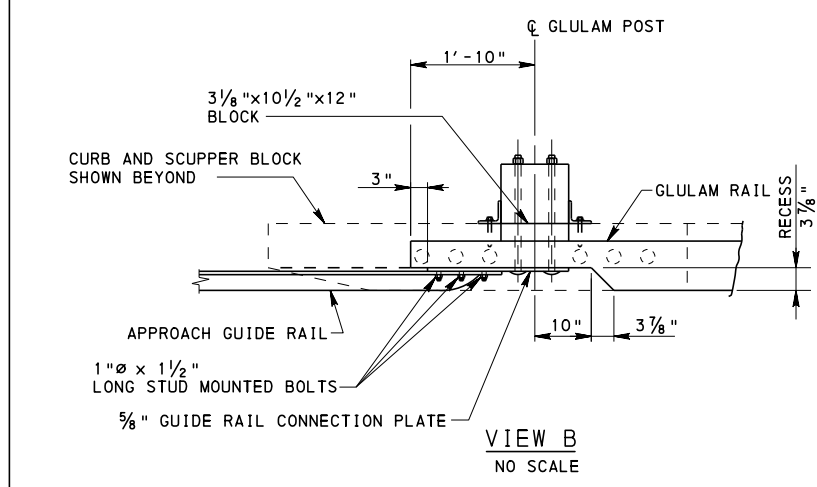


5/8" GUIDE RAIL CONNECTION PLATE
NO SCALE

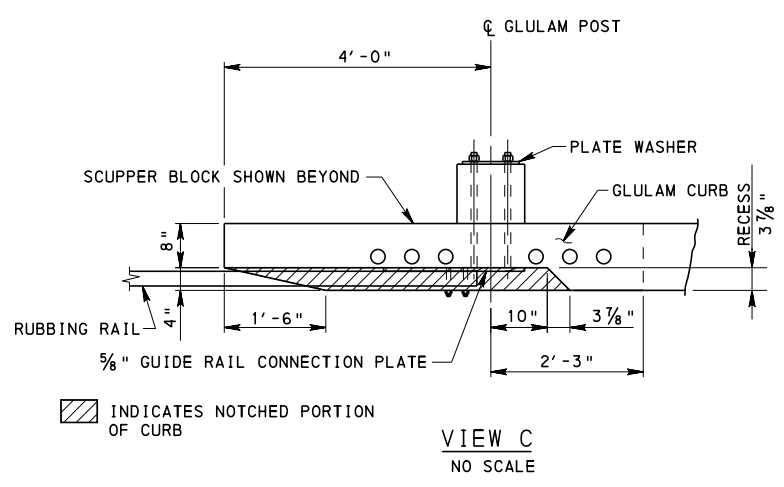


ALTERNATE STRUCTURE MOUNTED GUIDE RAIL DETAIL
NO SCALE
* R 10"x5"x5/8"
USE WITH OR WITHOUT CURB SPLICE
** R 5"x5"x5/8"

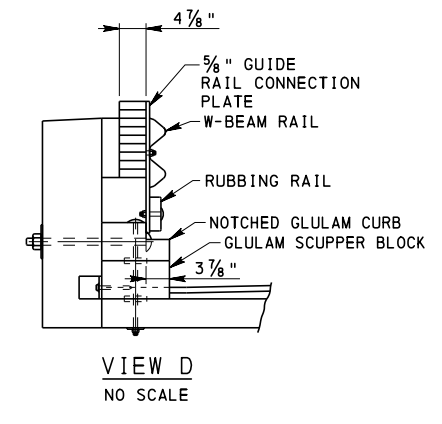
- NOTES:**
- APPROACH GUIDE RAIL AND CONNECTION DEVICES ARE ROADWAY ITEMS.
- IT IS THE DESIGNER'S RESPONSIBILITY TO VERIFY THAT LAG BOLT CONNECTIONS DO NOT VIOLATE MIN. EDGE DISTANCES REQUIREMENTS AT DECK PANEL JOINTS.



VIEW B
NO SCALE



VIEW C
NO SCALE



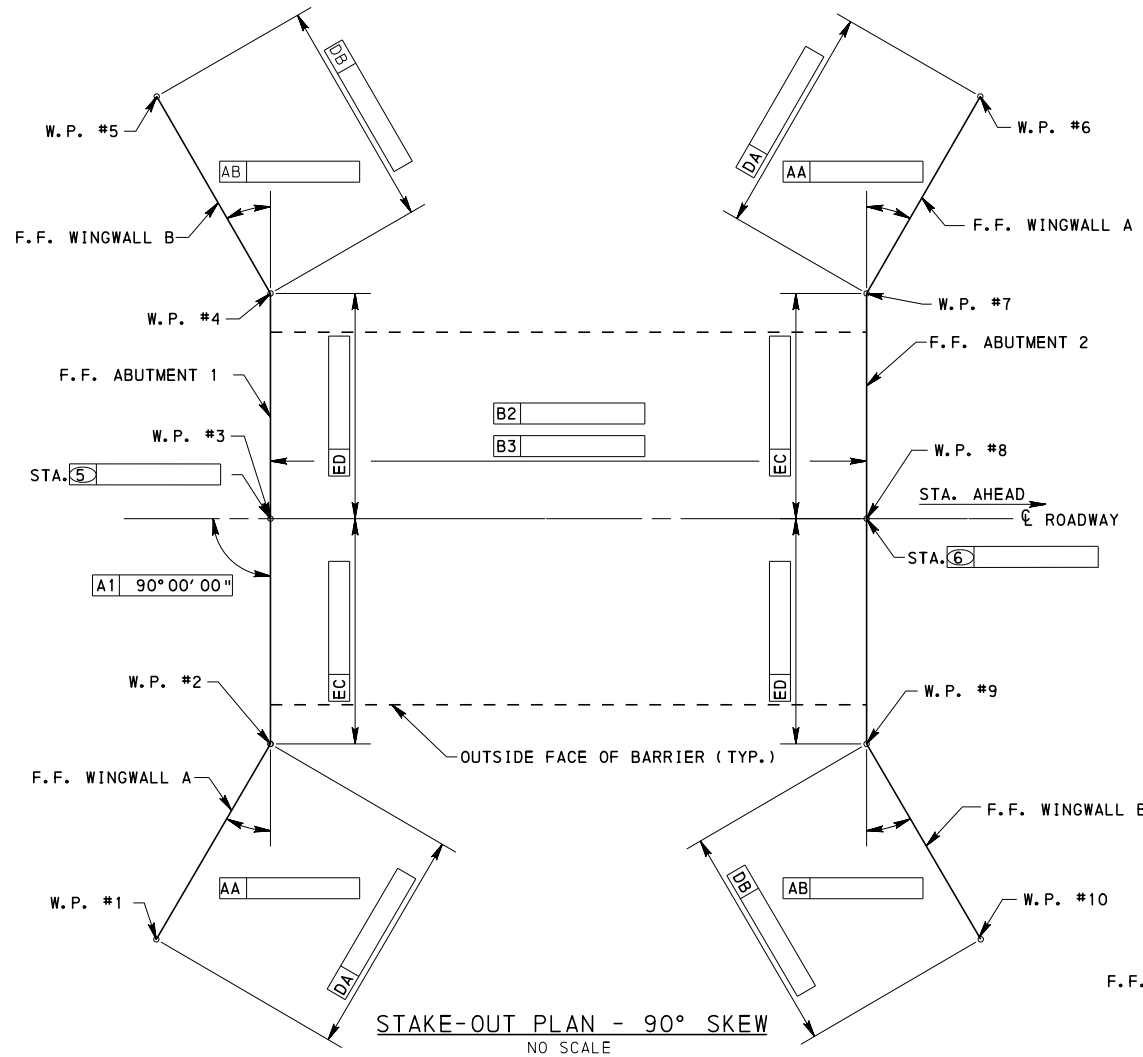
VIEW D
NO SCALE

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

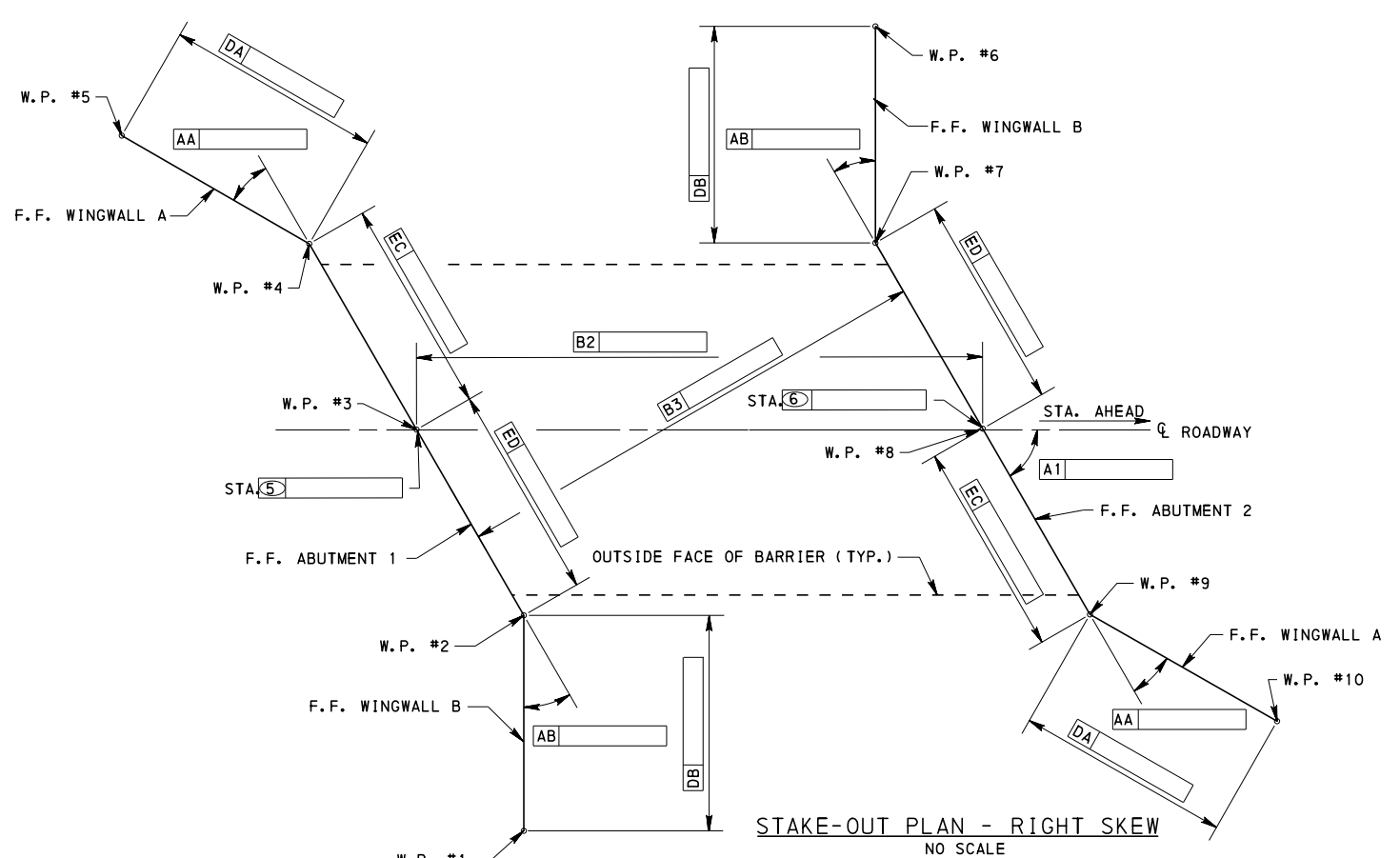
S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

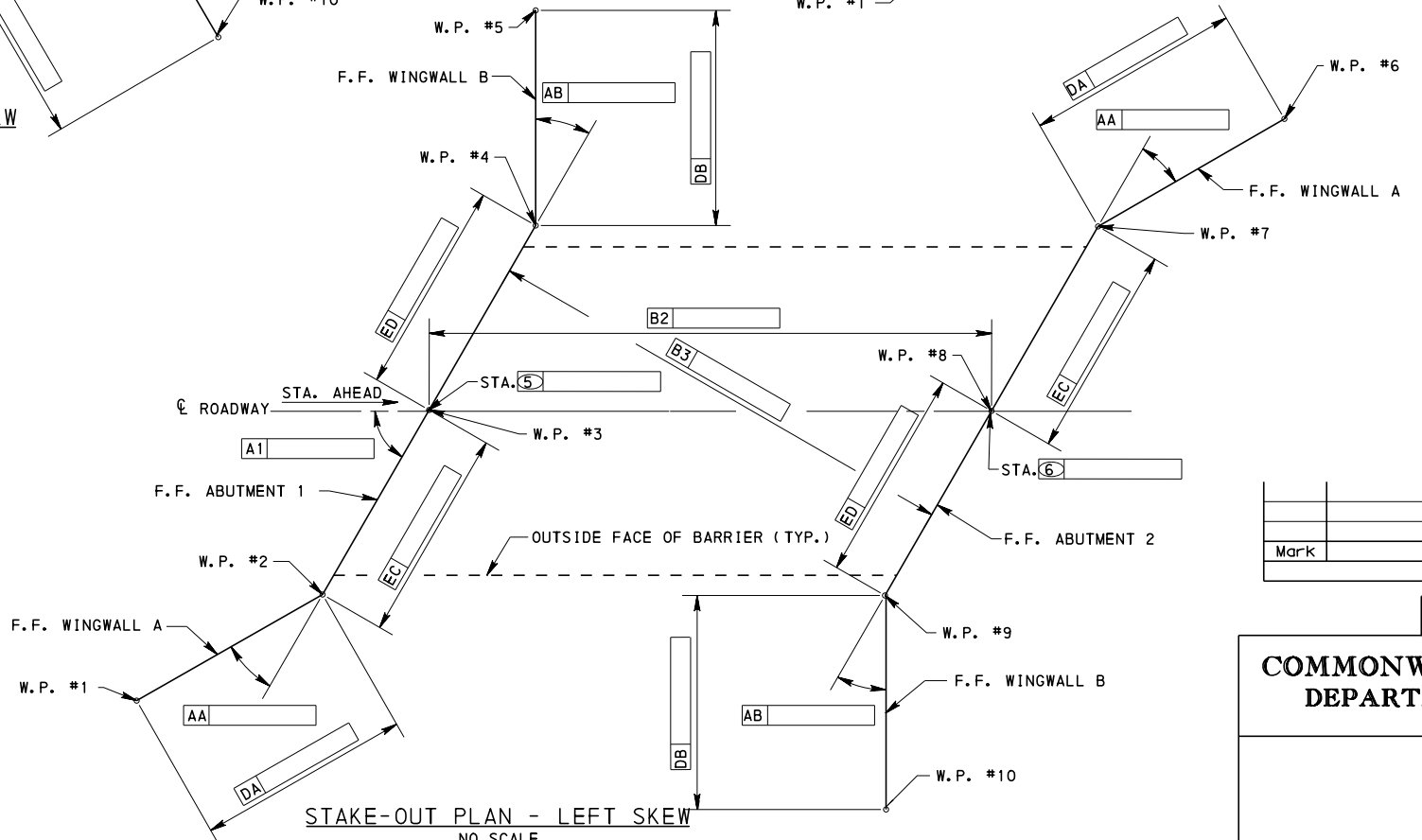
SHEETS COMMON TO
BLC 562M, 563M, & 564M
BRIDGE RAIL DETAILS



STAKE-OUT PLAN - 90° SKEW
NO SCALE



STAKE-OUT PLAN - RIGHT SKEW
NO SCALE



STAKE-OUT PLAN - LEFT SKEW
NO SCALE

NOTE:
F.F. DENOTES FRONT FACE.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

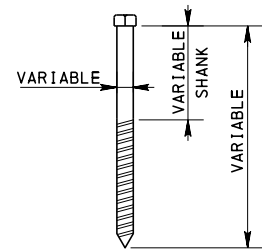
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

SHEETS COMMON TO
BLC 562M, 563M, & 564M
STAKE-OUT PLAN

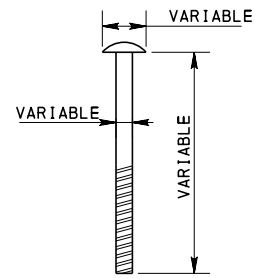
RECOMMENDED APR. 23, 2013
Thomas P. Nacivica
CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013
George P. Kelly
ACTING DIR. BUR. OF PROJECT DELIVERY

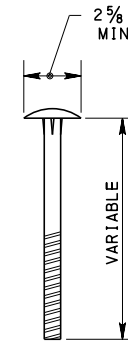
SHEET 2 OF 3
BLC-565M



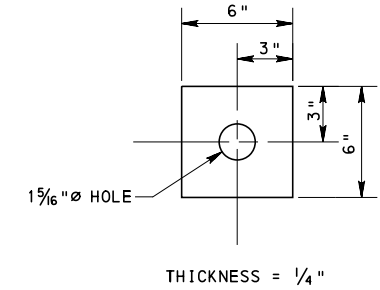
LAG SCREW



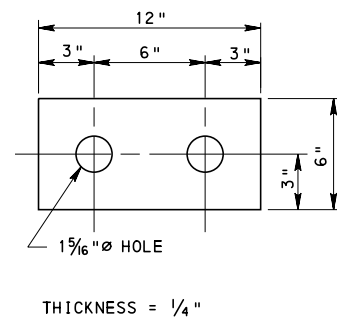
DOME HEAD BOLT



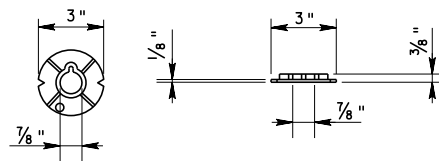
$\frac{3}{4}$ " \varnothing ENLARGED DOMED HEAD BOLT



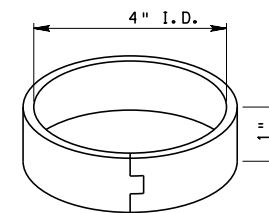
$\frac{1}{4}$ " PLATE WASHER A



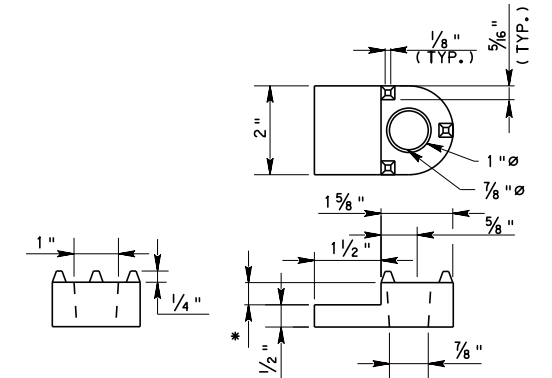
$\frac{1}{4}$ " PLATE WASHER B



MALLEABLE IRON WASHER

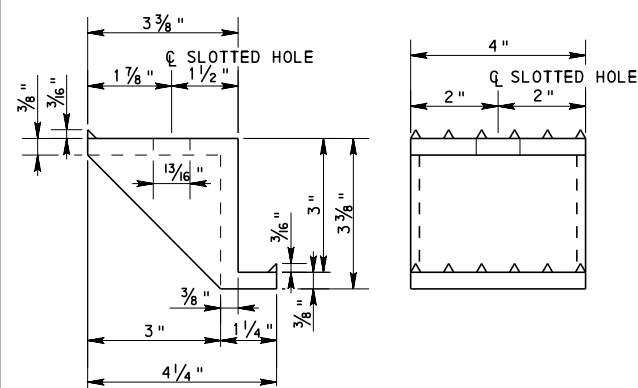


4" DIAMETER SPLIT RING

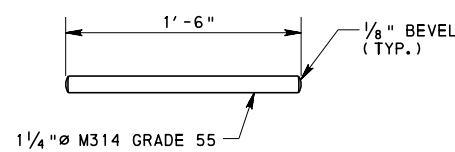


* BEAM FLANGE THICKNESS

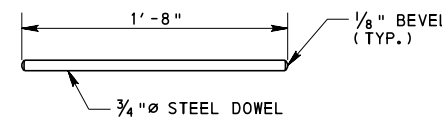
OFFSET SHOE



ALUMINUM CLIP



DOWEL



DRIFT PIN

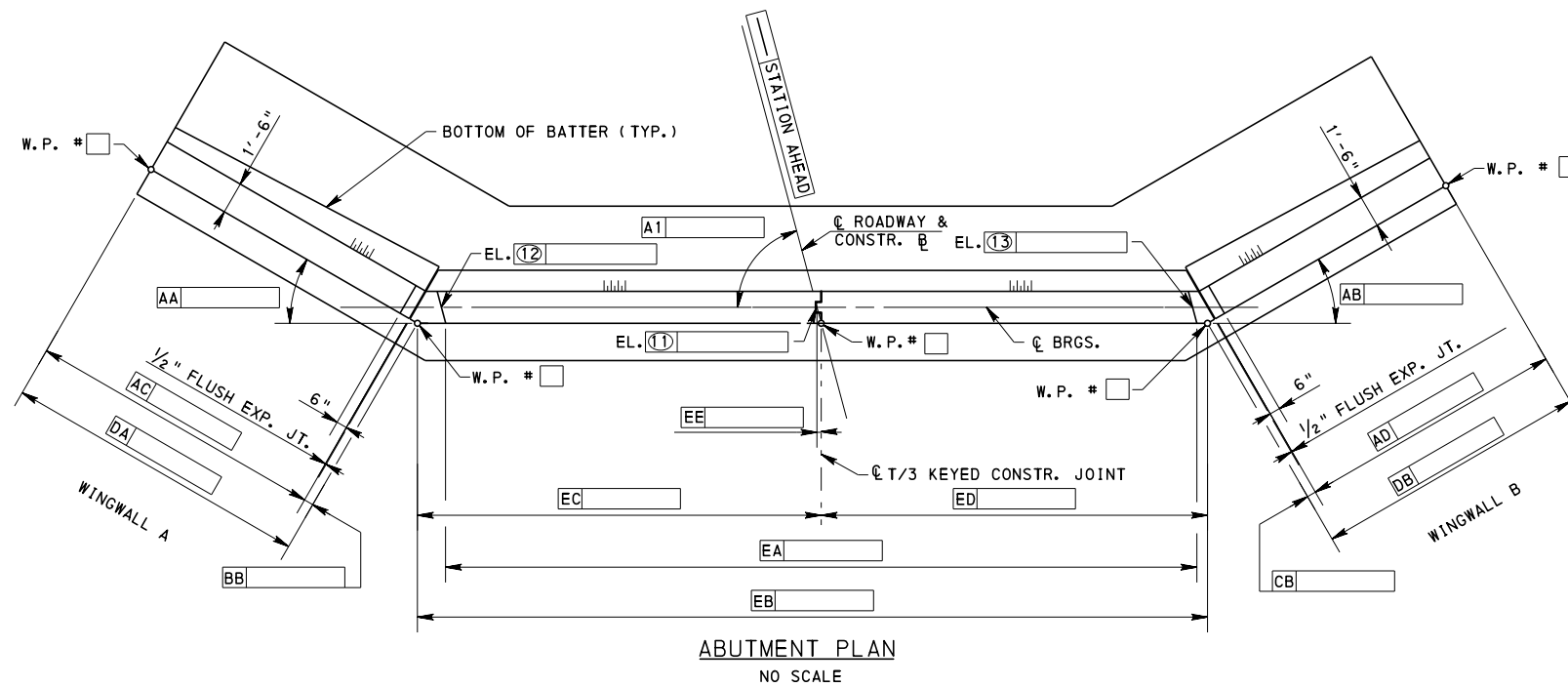
NOTE:
STANDARD BOLTS, NUTS, AND WASHER NOT SHOWN.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

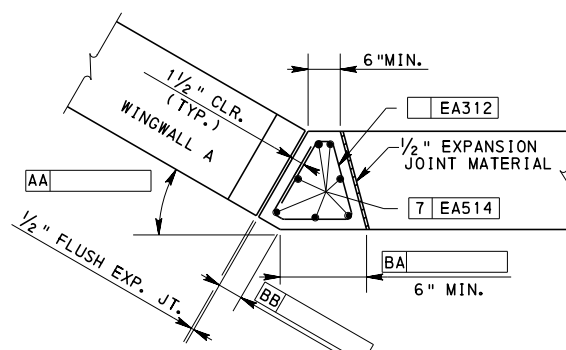
S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

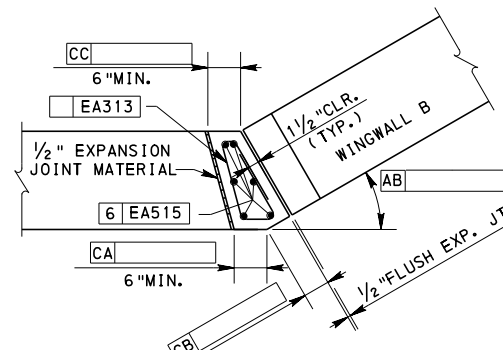
SHEETS COMMON TO
BLC 562M, 563M, & 564M
TYPICAL HARDWARE DETAILS



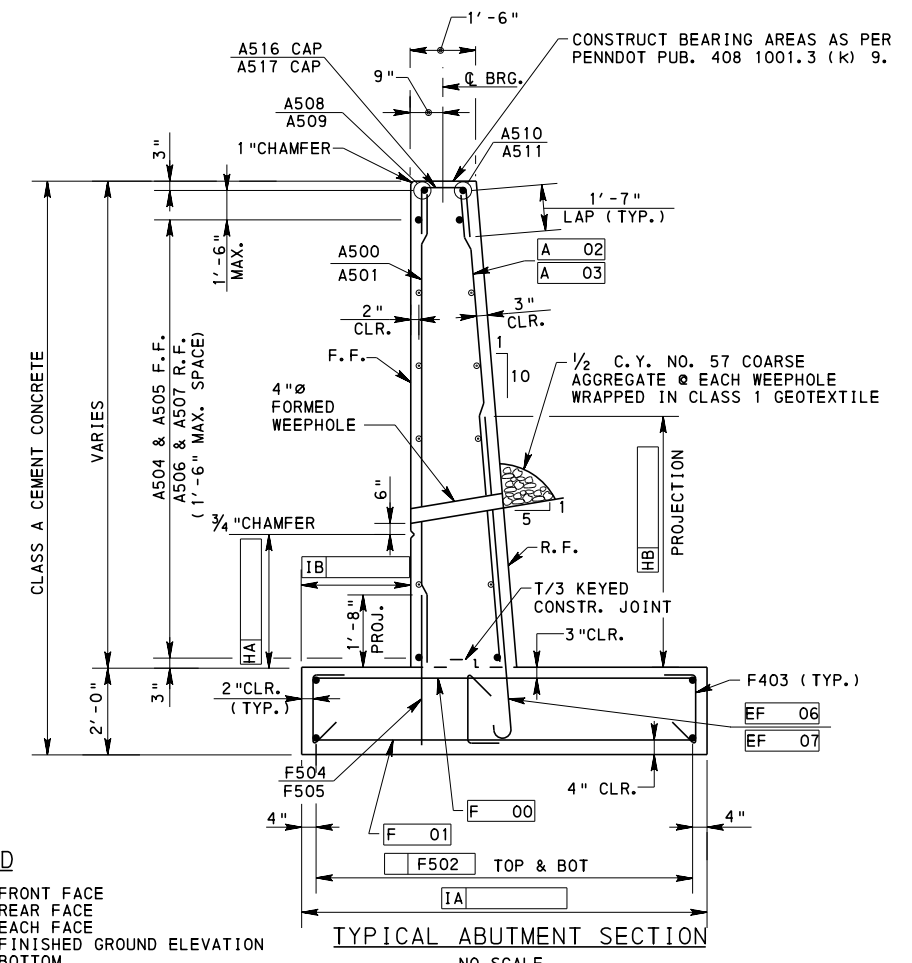
ABUTMENT PLAN
NO SCALE



CHEEKWALL A DETAIL
NO SCALE



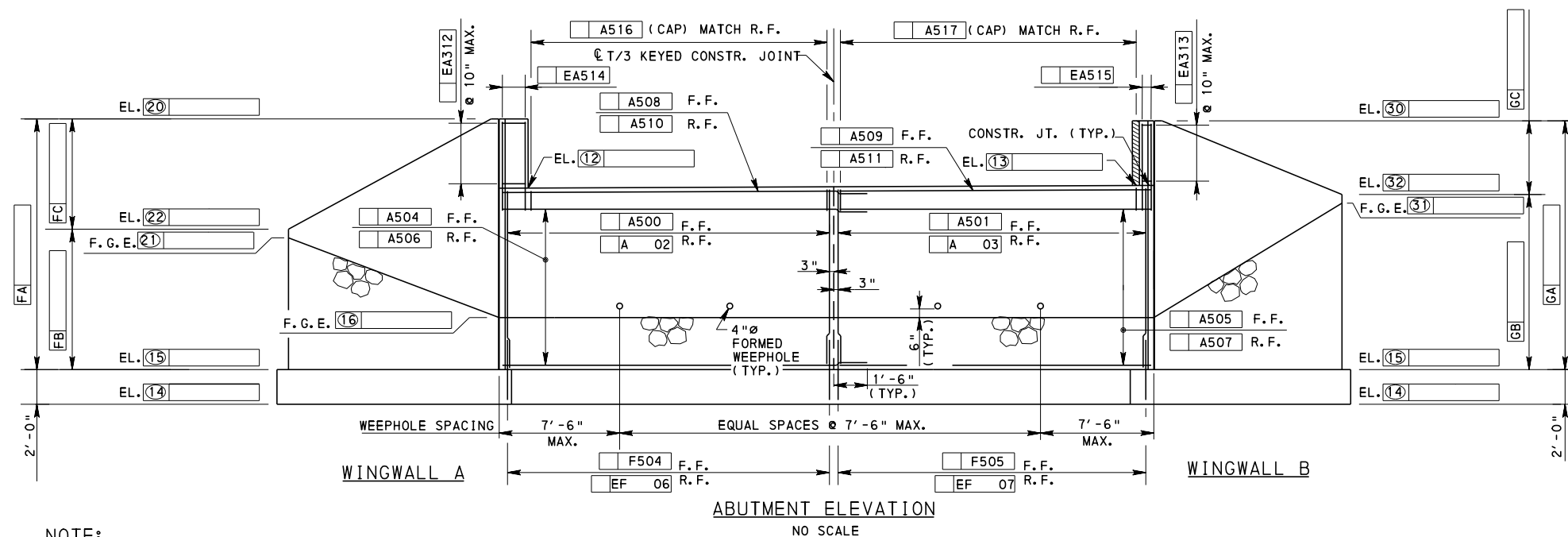
CHEEKWALL B DETAIL
NO SCALE



TYPICAL ABUTMENT SECTION
NO SCALE

- LEGEND**
- F.F. DENOTES FRONT FACE
 - R.F. DENOTES REAR FACE
 - E.F. DENOTES EACH FACE
 - F.G.E. DENOTES FINISHED GROUND ELEVATION
 - BOT. DENOTES BOTTOM
 - W.P. DENOTES WORKING POINT
 - EQ. SPA. DENOTES EQUAL SPACE

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET ____
 - FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET ____
 - FOR ABUTMENT ____ FOOTING PLAN SEE SHEET ____
 - FOR ABUTMENT ____ BAR SCHEDULE, SEE SHEET ____
 - MAX. ALLOWABLE FOUNDATION PRESSURE = ____ kip/FT²
 - MAX DESIGN FOUNDATION PRESSURE = ____ kip/FT²



ABUTMENT ELEVATION
NO SCALE

NOTE:
SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

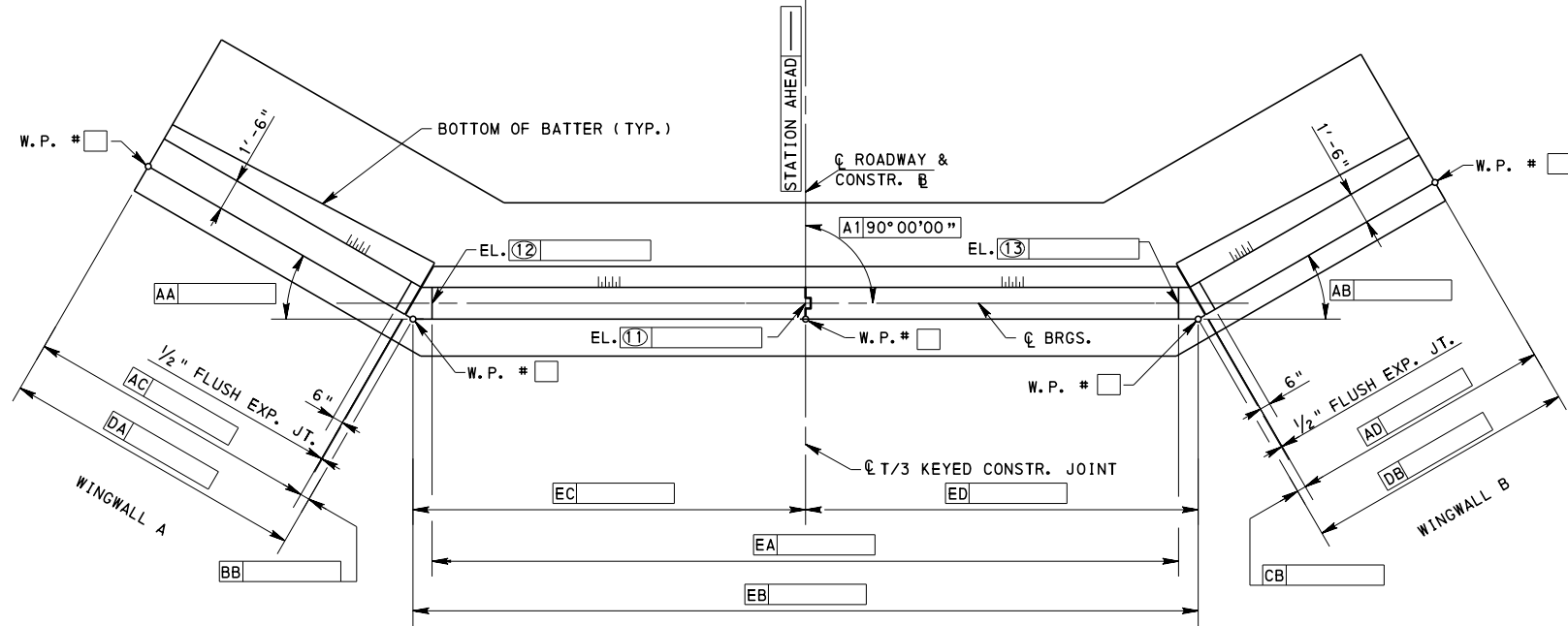
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ____ OF ____

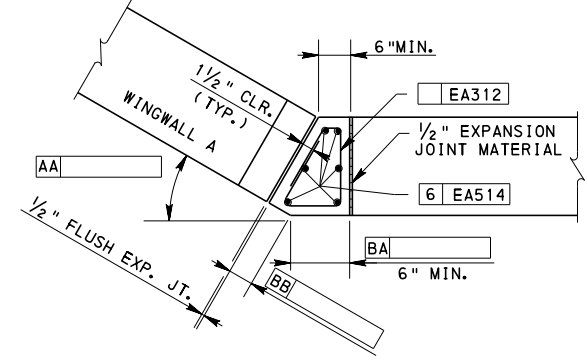
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

SPREAD FOOTING ABUTMENT
ABUTMENT ____ - LEFT SKEW

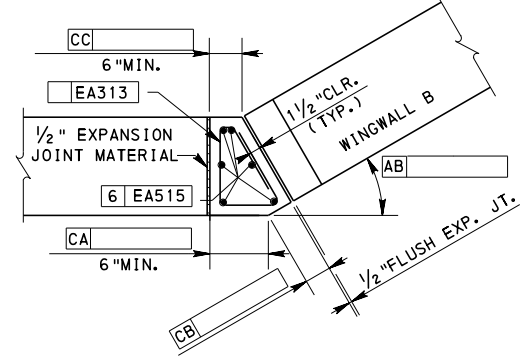
RECOMMENDED APR. 23, 2013 <i>Thomas P. Nacivica</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>[Signature]</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 1 OF 7 BLC-566M
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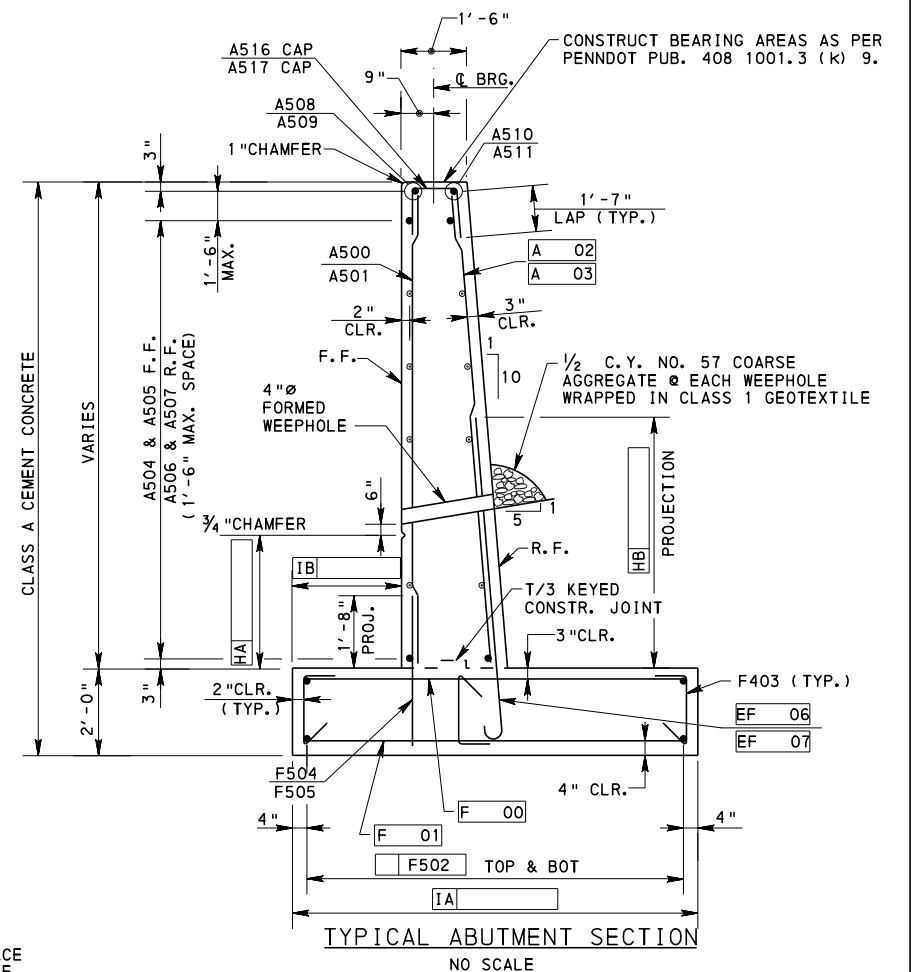
ABUTMENT PLAN
NO SCALE



CHEEKWALL A DETAIL
NO SCALE



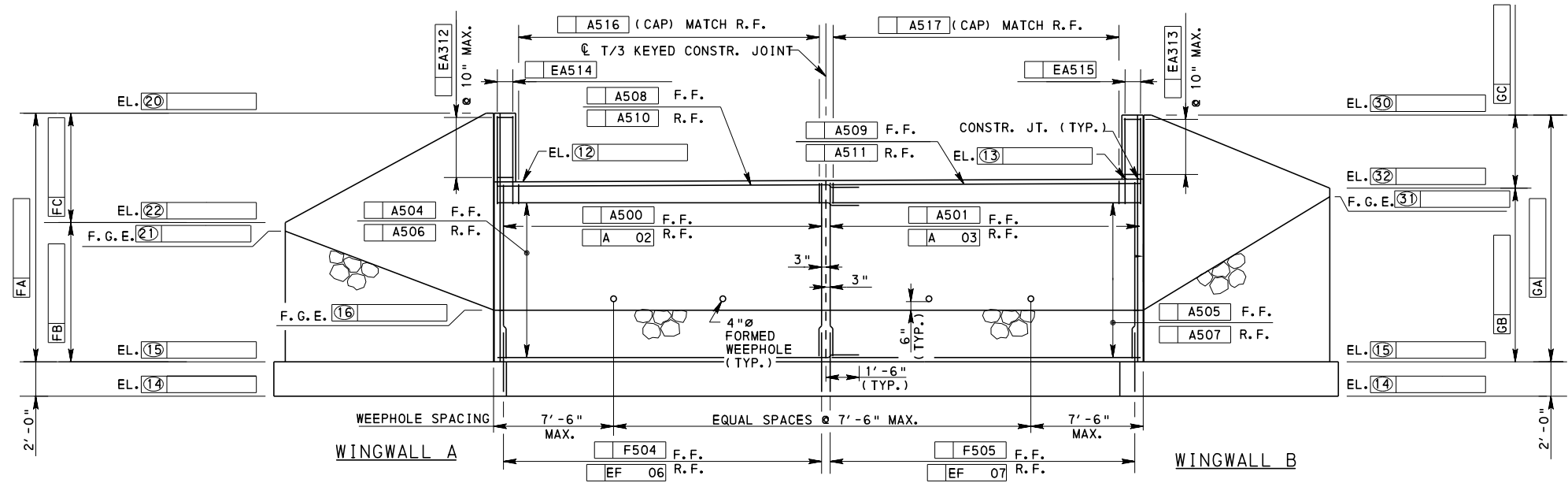
CHEEKWALL B DETAIL
NO SCALE



TYPICAL ABUTMENT SECTION
NO SCALE

- LEGEND**
- F. F. DENOTES FRONT FACE
 - R. F. DENOTES REAR FACE
 - E. F. DENOTES EACH FACE
 - F. G. E. DENOTES FINISHED GROUND ELEVATION
 - BOT. DENOTES BOTTOM
 - W. P. DENOTES WORKING POINT
 - EQ. SPA. DENOTES EQUAL SPACE

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET _____
 - FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET _____
 - FOR ABUTMENT _____ FOOTING PLAN SEE SHEET _____
 - FOR ABUTMENT _____ BAR SCHEDULE, SEE SHEET _____
 - MAX. ALLOWABLE FOUNDATION PRESSURE = _____ kip/FT²
 - MAX DESIGN FOUNDATION PRESSURE = _____ kip/FT²



ABUTMENT ELEVATION
NO SCALE

NOTE:
SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

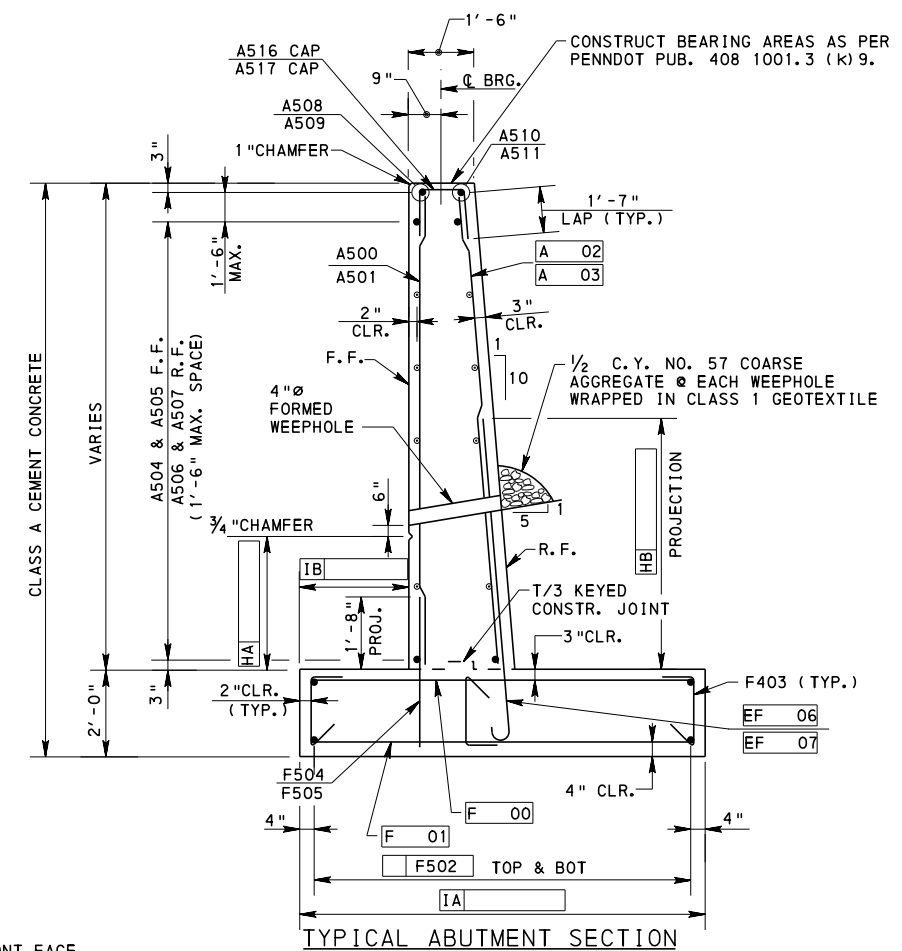
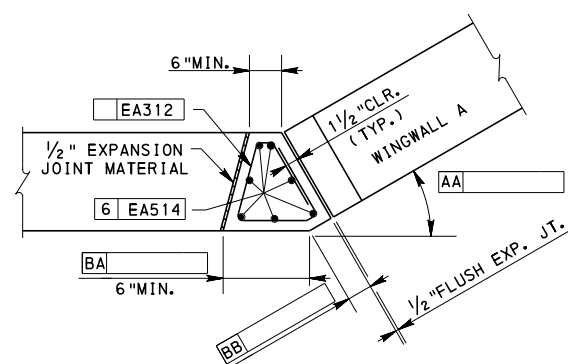
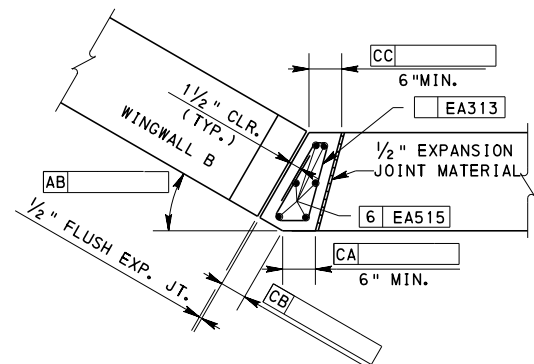
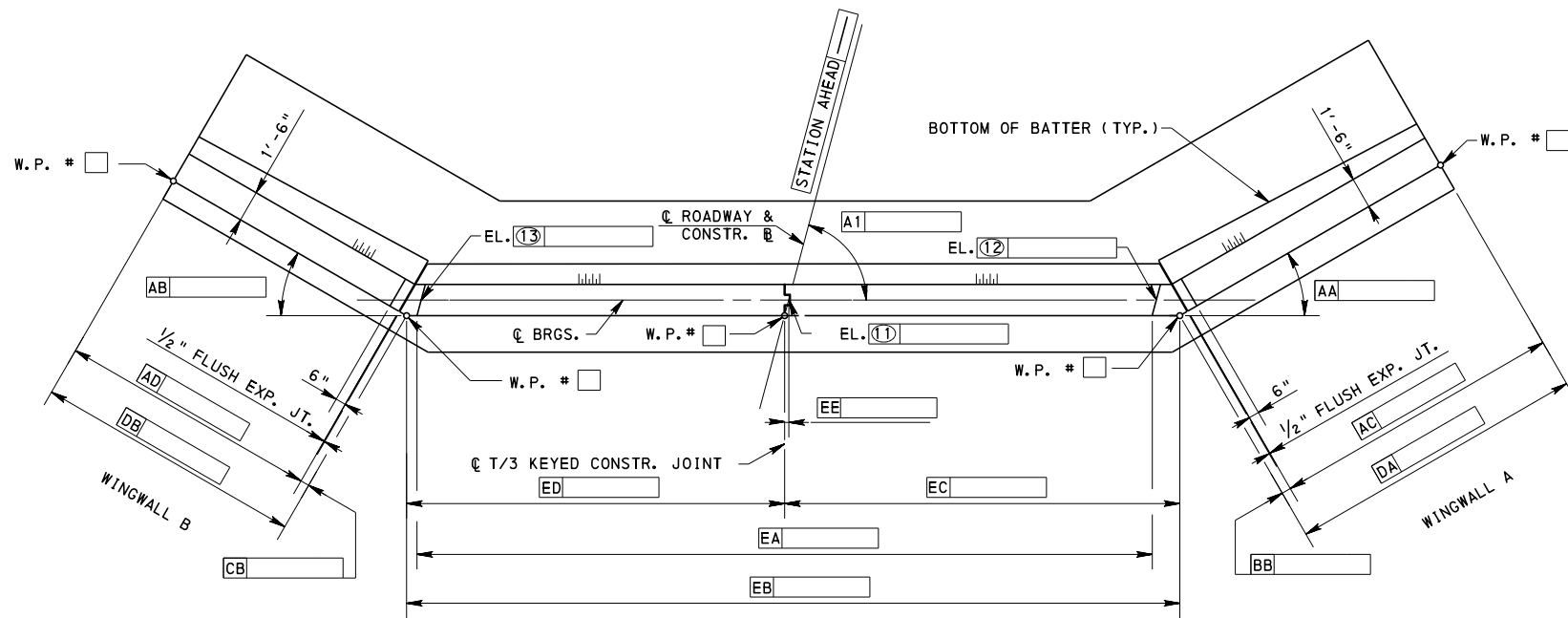
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

SPREAD FOOTING ABUTMENT
ABUTMENT - 90° SKEW

RECOMMENDED APR. 23, 2013

 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013

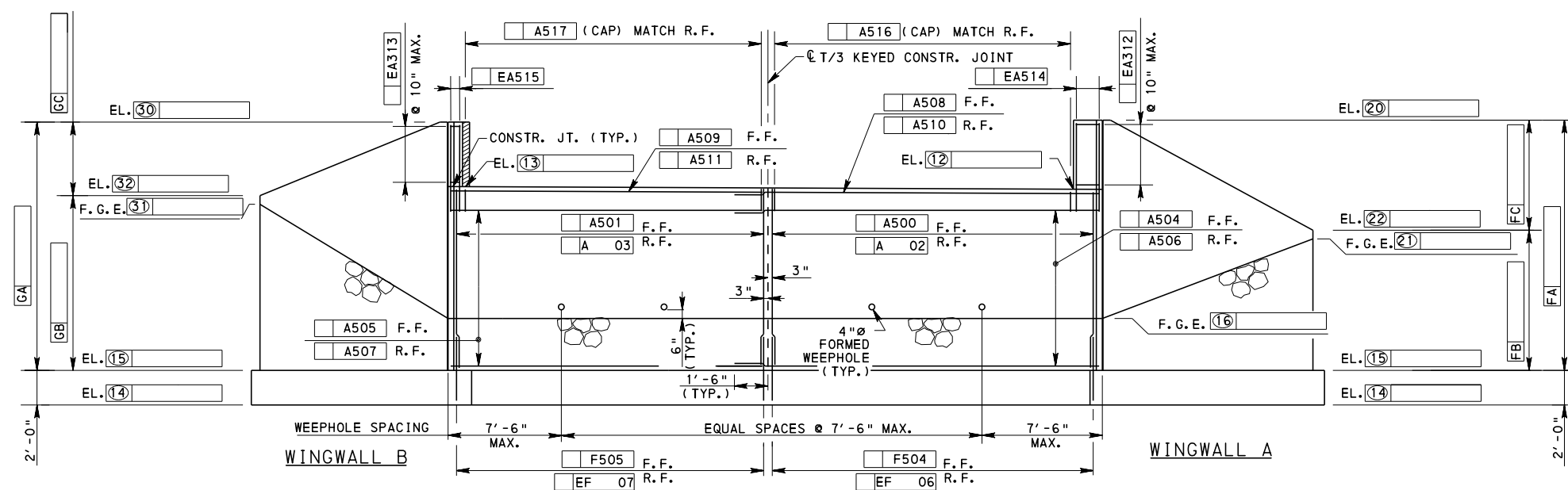
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 2 OF 7
BLC-566M



- LEGEND**
- F.F. DENOTES FRONT FACE
 - R.F. DENOTES REAR FACE
 - E.F. DENOTES EACH FACE
 - F.G.E. DENOTES FINISHED GROUND ELEVATION
 - BOT. DENOTES BOTTOM
 - W.P. DENOTES WORKING POINT
 - EQ. SPA. DENOTES EQUAL SPACE

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET ____
 - FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET ____
 - FOR ABUTMENT ____ FOOTING PLAN SEE SHEET ____
 - FOR ABUTMENT ____ BAR SCHEDULE, SEE SHEET ____
 - MAX. ALLOWABLE FOUNDATION PRESSURE = ____ kip/FT²
 - MAX DESIGN FOUNDATION PRESSURE = ____ kip/FT²

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					



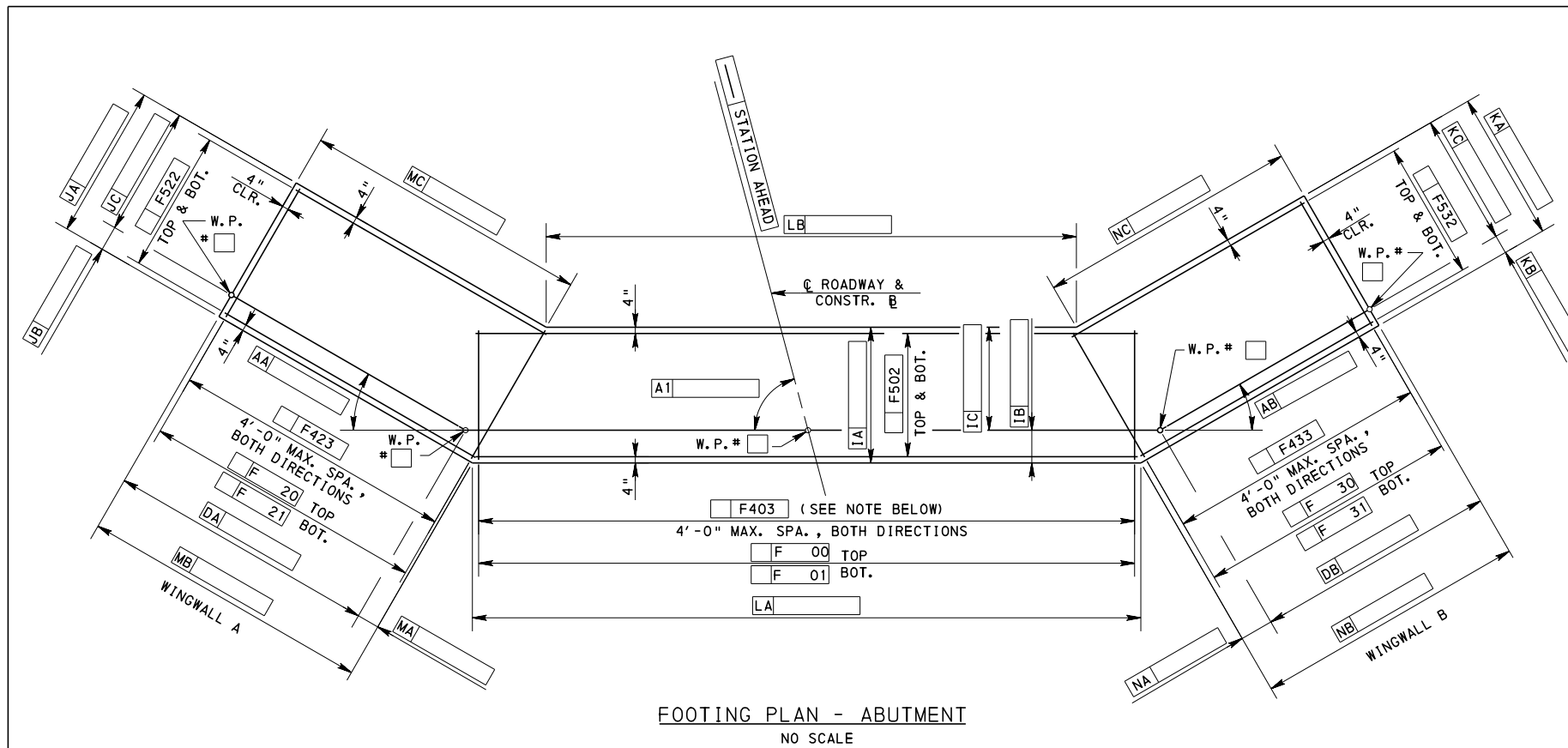
NOTE:
SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

S- SHEET ____ OF ____

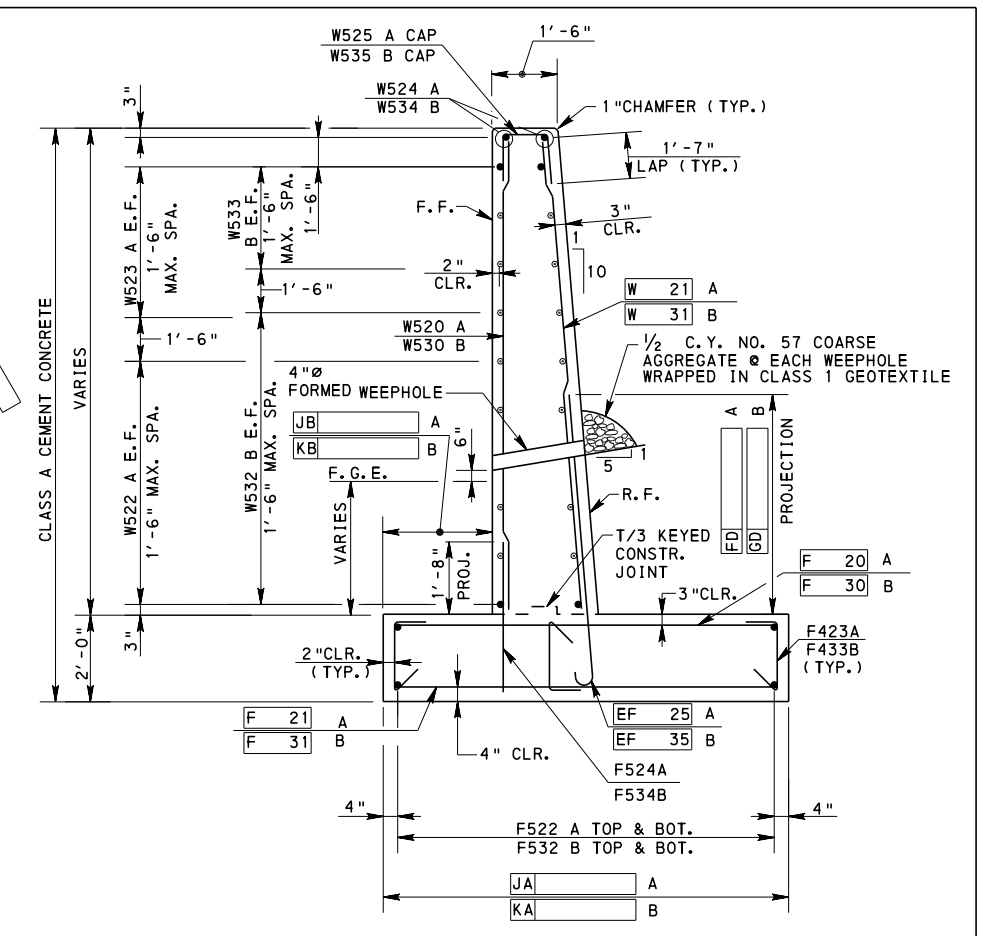
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

SPREAD FOOTING ABUTMENT
ABUTMENT ____ - RIGHT SKEW

RECOMMENDED APR. 23, 2013
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 3 OF 7
BLC-566M



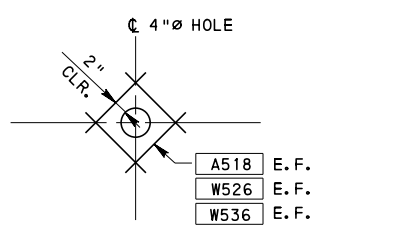
FOOTING PLAN - ABUTMENT
NO SCALE



TYPICAL WING SECTION
NO SCALE

- LEGEND**
- F. F. DENOTES FRONT FACE
 - R. F. DENOTES REAR FACE
 - E. F. DENOTES EACH FACE
 - F. G. E. DENOTES FINISHED GROUND ELEVATION
 - BOT. DENOTES BOTTOM
 - W. P. DENOTES WORKING POINT
 - EQ. SPA. DENOTES EQUAL SPACE

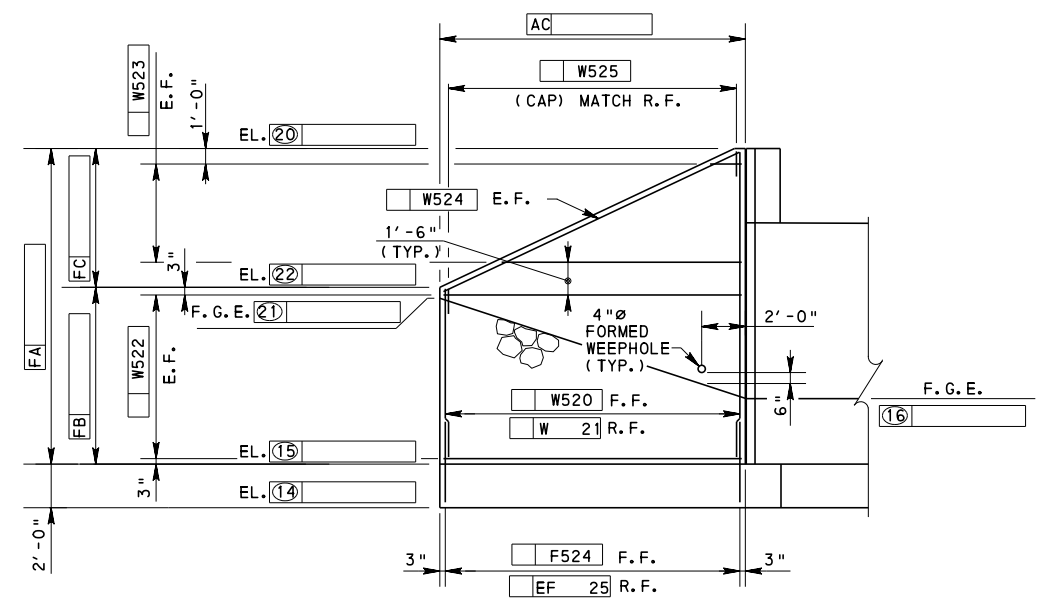
NOTE:
TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH #4 TIE BARS AT A MAXIMUM SPACING OF 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90° HOOK AT ONE END AND 135° AT THE OTHER END. ALTERNATE 90° AND 135° AT TOP IN ALTERNATE TIES.



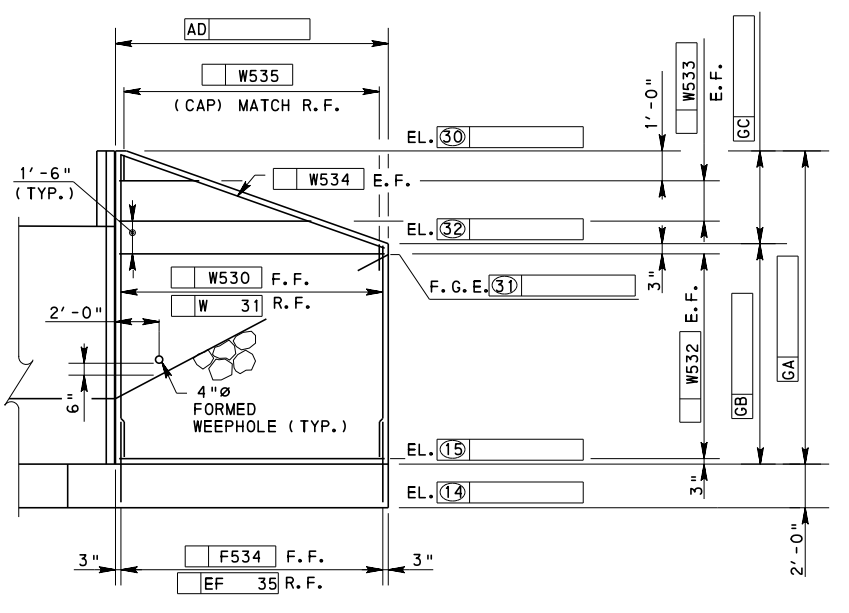
WEEPHOLE REINFORCEMENT DETAIL
NO SCALE

NOTE:
ADJUST REINFORCEMENT AS NECESSARY TO ACCOMMODATE OPENING.

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET ____
 - FOR LOCATION OF WINGWALLS SEE STAKE-OUT SKETCH, SHEET ____
 - FOR ABUTMENT ____, SEE SHEET ____
 - FOR ABUTMENT ____, BAR SCHEDULE, SEE SHEET ____
 - MAX. ALLOWABLE FOUNDATION PRESSURE = ____ kip/FT.²
 - MAX DESIGN FOUNDATION PRESSURE = WING A = ____ kip/FT.²
WING B = ____ kip/FT.²



WINGWALL A
NO SCALE



WINGWALL B
NO SCALE

NOTE:
SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

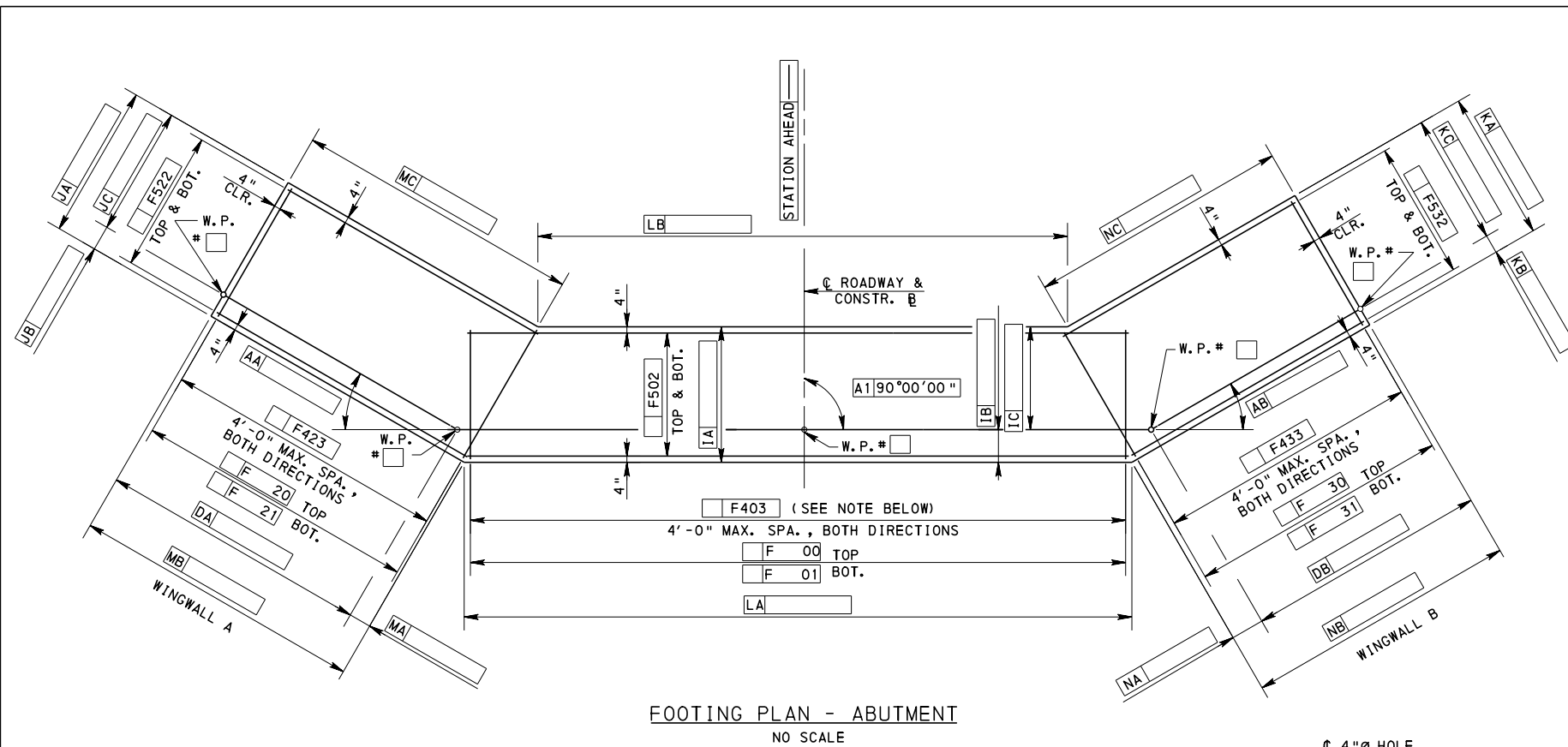
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ____ OF ____

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

SPREAD FOOTING ABUTMENT
ABUTMENT __ - FTG. PLAN - LEFT SKEW

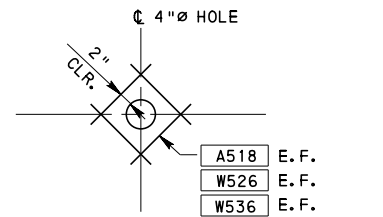
RECOMMENDED APR. 23, 2013
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 4 OF 7
BLC-566M



FOOTING PLAN - ABUTMENT
NO SCALE

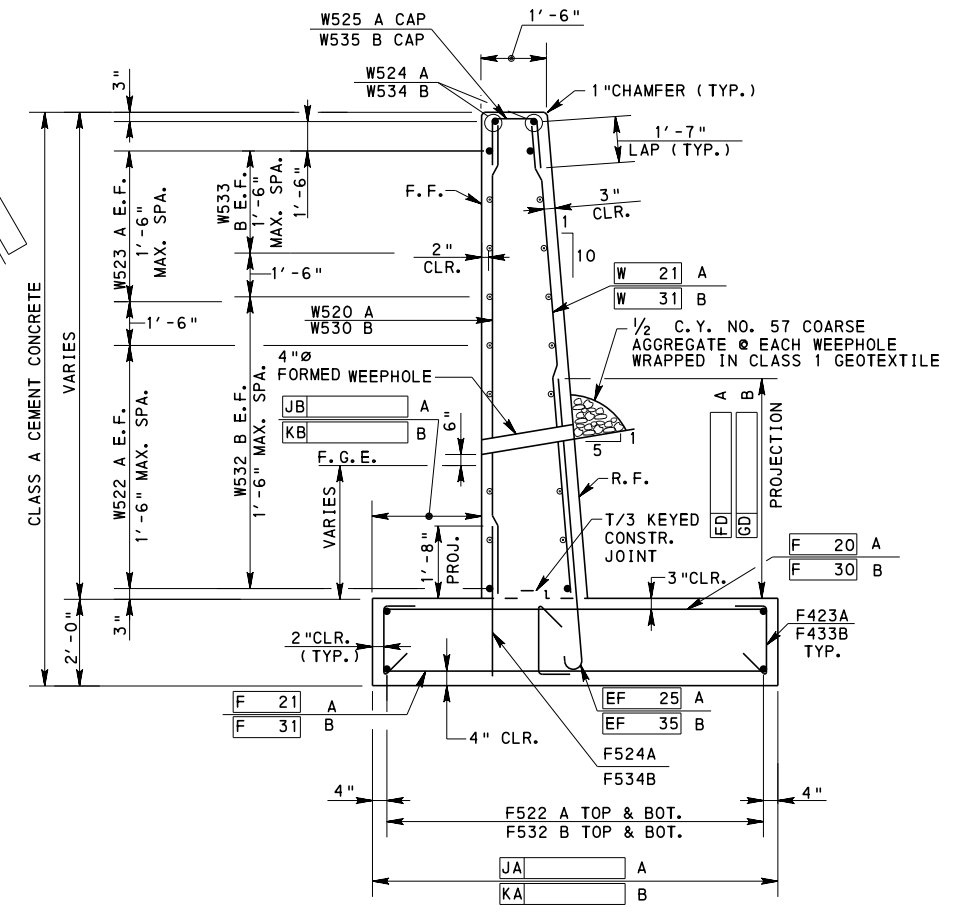
- LEGEND**
- F.F. DENOTES FRONT FACE
 - R.F. DENOTES REAR FACE
 - E.F. DENOTES EACH FACE
 - F.G.E. DENOTES FINISHED GROUND ELEVATION
 - BOT. DENOTES BOTTOM
 - W.P. DENOTES WORKING POINT
 - EQ. SPA. DENOTES EQUAL SPACE

NOTE:
TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH #4 TIE BARS AT A MAXIMUM SPACING OF 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90° HOOK AT ONE END AND 135° AT THE OTHER END. ALTERNATE 90° AND 135° AT TOP IN ALTERNATE TIES.



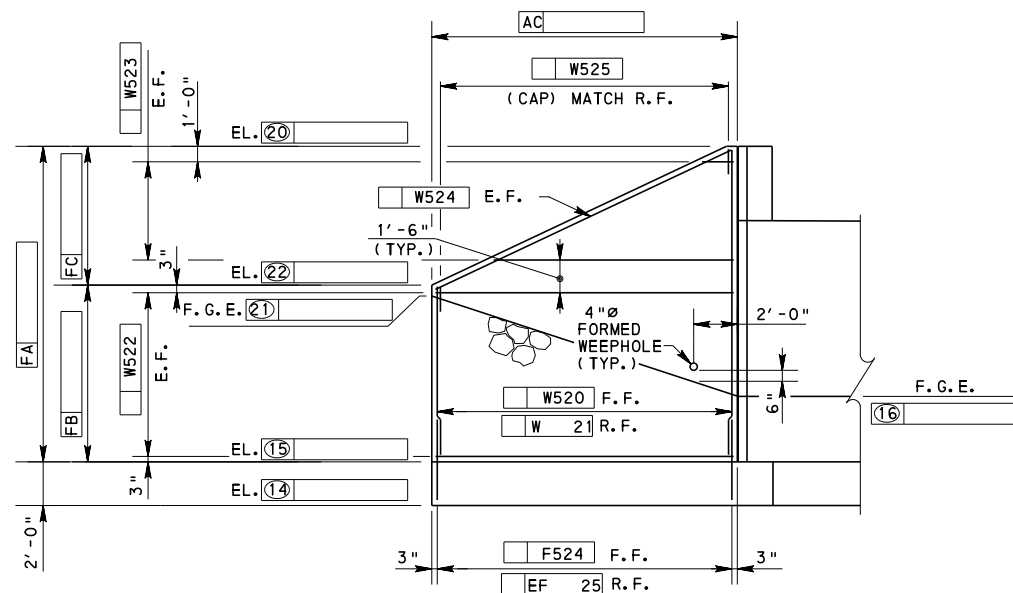
WEEPHOLE REINFORCEMENT DETAIL
NO SCALE

NOTE:
ADJUST REINFORCEMENT AS NECESSARY TO ACCOMMODATE OPENING.

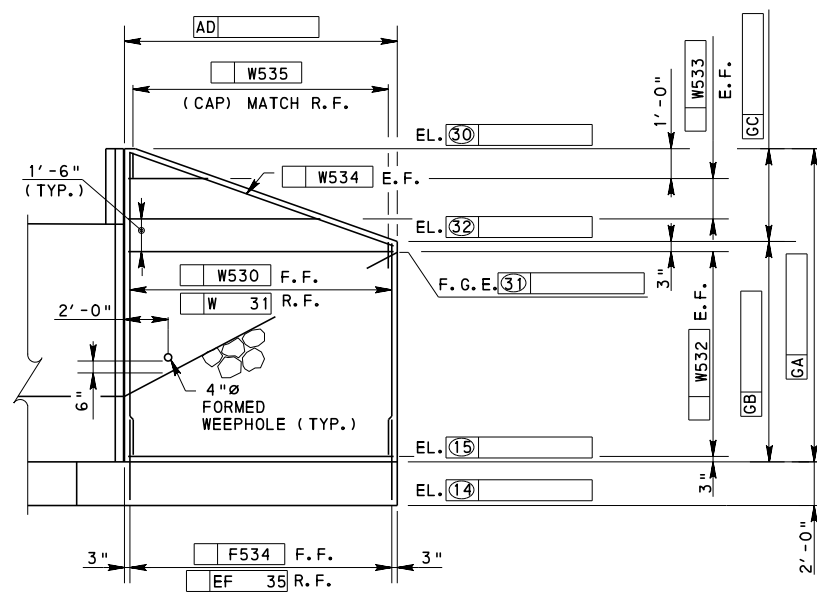


TYPICAL WING SECTION
NO SCALE

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET _____
 - FOR LOCATION OF WINGWALLS SEE STAKE-OUT SKETCH, SHEET _____
 - FOR ABUTMENT _____, SEE SHEET _____
 - FOR ABUTMENT _____ BAR SCHEDULE, SEE SHEET _____
 - MAX. ALLOWABLE FOUNDATION PRESSURE = _____ kip/FT.²
 - MAX DESIGN FOUNDATION PRESSURE = WING A = _____ kip/FT.²
WING B = _____ kip/FT.²



WINGWALL A
NO SCALE



WINGWALL B
NO SCALE

NOTE:
SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

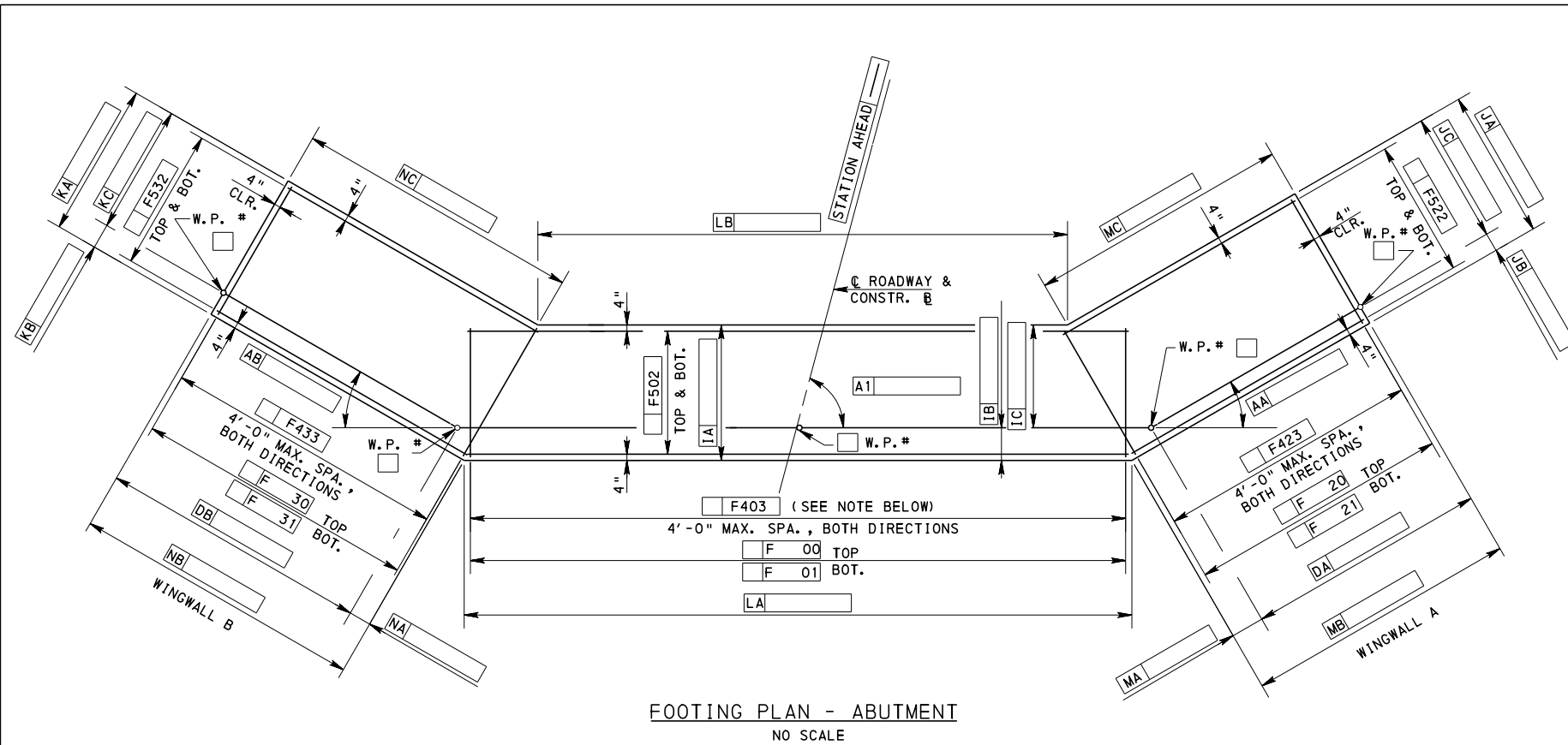
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

SPREAD FOOTING ABUTMENT
ABUTMENT ___ - FTG. PLAN - 90° SKEW

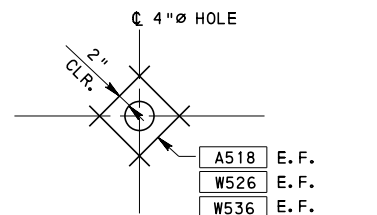
RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 5 OF 7
BLC-566M



FOOTING PLAN - ABUTMENT
NO SCALE

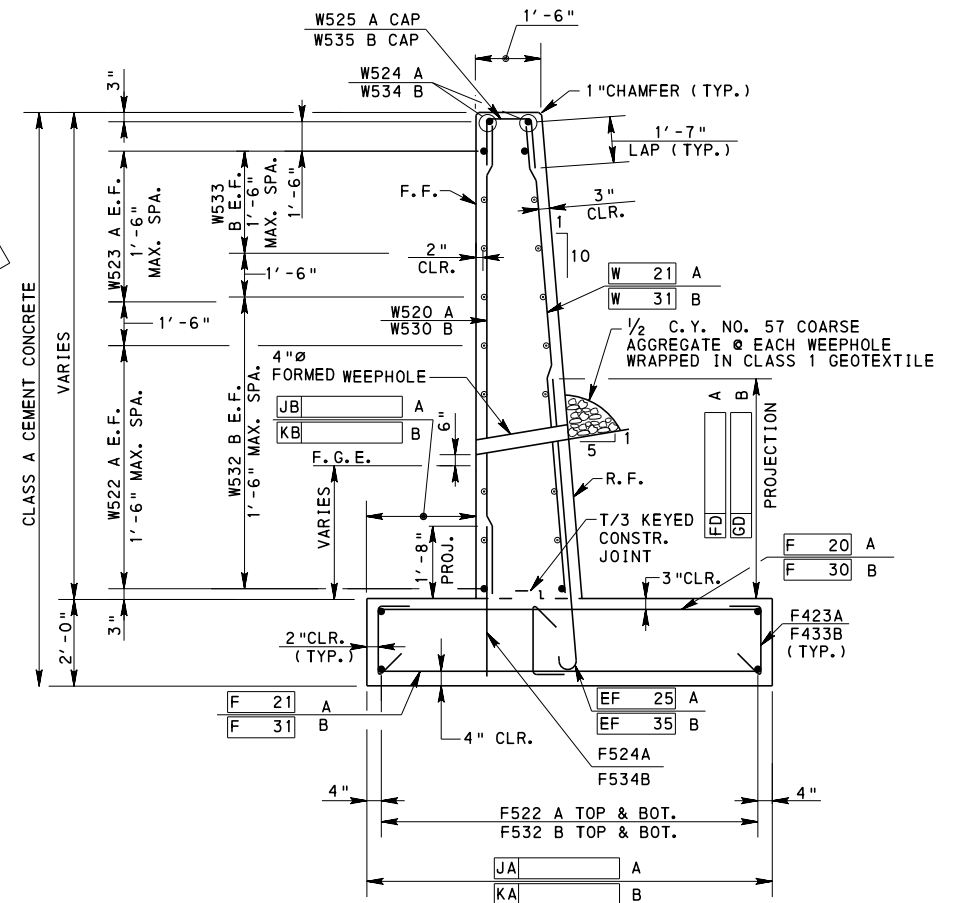
NOTE:
TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH #4 TIE BARS AT A MAXIMUM SPACING OF 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90° HOOK AT ONE END AND 135° AT THE OTHER END. ALTERNATE 90° AND 135° AT TOP IN ALTERNATE TIES.

LEGEND
F.F. DENOTES FRONT FACE
R.F. DENOTES REAR FACE
E.F. DENOTES EACH FACE
F.G.E. DENOTES FINISHED GROUND ELEVATION
BOT. DENOTES BOTTOM
W.P. DENOTES WORKING POINT
EQ. SPA. DENOTES EQUAL SPACE



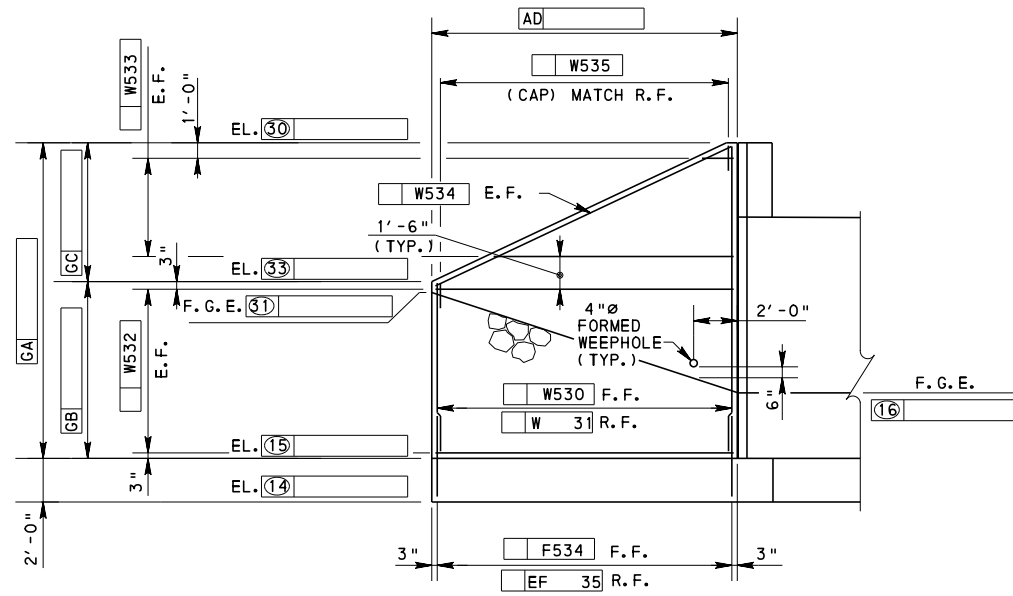
WEEPHOLE REINFORCEMENT DETAIL
NO SCALE

NOTE:
ADJUST REINFORCEMENT AS NECESSARY TO ACCOMMODATE OPENING.



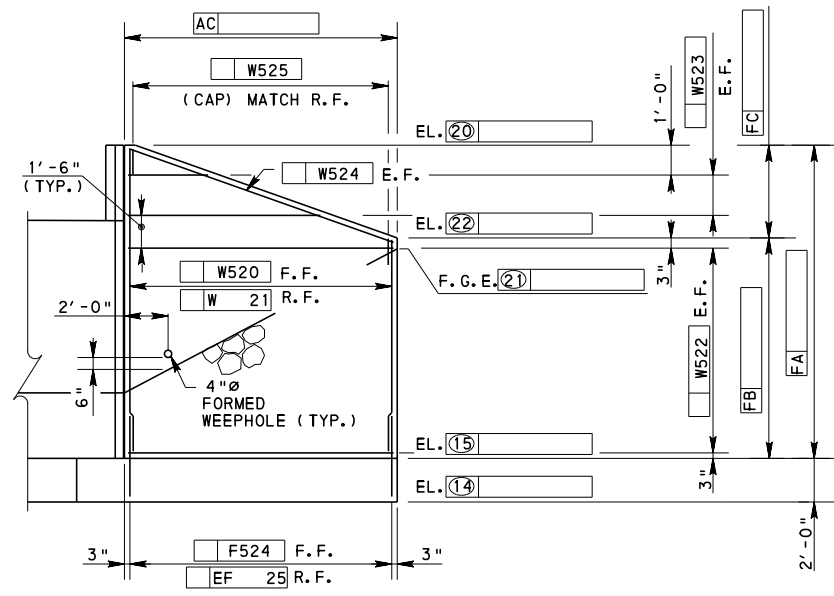
TYPICAL WING SECTION
NO SCALE

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET
 - FOR LOCATION OF WINGWALLS SEE STAKE-OUT SKETCH, SHEET
 - FOR ABUTMENT, SEE SHEET
 - FOR ABUTMENT BAR SCHEDULE, SEE SHEET
 - MAX. ALLOWABLE FOUNDATION PRESSURE = $\frac{1}{2}$ kip/FT.²
 - MAX DESIGN FOUNDATION PRESSURE = WING A = $\frac{1}{2}$ kip/FT.²
WING B = $\frac{1}{2}$ kip/FT.²



WINGWALL B
NO SCALE

NOTE:
SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.



WINGWALL A
NO SCALE

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET OF

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

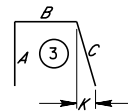
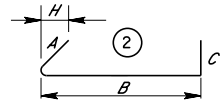
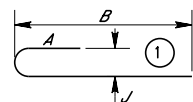
SPREAD FOOTING ABUTMENT
ABUTMENT - FTG. PLAN - RIGHT SKEW

RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 6 OF 7
BLC-566M

REINFORCEMENT BAR SCHEDULE*

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
A500	5			STR.												VARY EA. BY _____
A501	5			STR.												VARY EA. BY _____
A__02				STR.												VARY EA. BY _____
A__03				STR.												VARY EA. BY _____
A504	5			STR.												
A505	5			STR.												
A506	5			STR.												
A507	5			STR.												
A508	5		1	STR.												
A509	5		1	STR.												
A510	5		1	STR.												
A511	5		1	STR.												
EA312	3			STR.												BEND IN FIELD
EA313	3			STR.												BEND IN FIELD
EA514	5			STR.												
EA515	5		6	STR.												
A516	5	4'-3"		③	1'-7"	1'-1"	1'-7"							2"		
A517	5	4'-3"		③	1'-7"	1'-1"	1'-7"							2"		
A518	5	1'-0"	32	STR.												
W520	5			STR.												VARY EA. BY _____
W__21				STR.												VARY EA. BY _____
W522	5			STR.												
W523	5			STR.												VARY 2 EA. BY _____
W524	5		2	STR.												
W525	5	4'-3"		③	1'-7"	1'-1"	1'-7"							2"		
W526	5	1'-0"	8	STR.												
W530	5			STR.												VARY EA. BY _____
W__31				STR.												VARY EA. BY _____
W532	5			STR.												
W533	5			STR.												VARY 2 EA. BY _____
W534	5		2	STR.												
W535	5	4'-3"		③	1'-7"	1'-1"	1'-7"							2"		
W536	5	1'-0"	8	STR.												
F__00				STR.												
F__01				STR.												
F502	5			STR.												
F403	4	2'-3"		②	4 1/2"	1'-6"	4 1/2"					3"				
F504	5	3'-6"		STR.												
F505	5	3'-6"		STR.												
EF__06				①												
EF__07				①												
F__20				STR.												
F__21				STR.												
F522	5			STR.												
F423	4	2'-3"		②	4 1/2"	1'-6"	4 1/2"					3"				
F524	5	3'-6"		STR.												
EF__25				①												
F__30				STR.												
F__31				STR.												
F532	5			STR.												
F433	4	2'-3"		②	4 1/2"	1'-6"	4 1/2"					3"				
F534	5	3'-6"		STR.												
EF__35				①												

BAR TYPE LEGEND
STR. DENOTES A STRAIGHT BAR



* USE BLC-561M SHEETS 13 AND 14 TO COMPLETE BAR SCHEDULE INFORMATION.

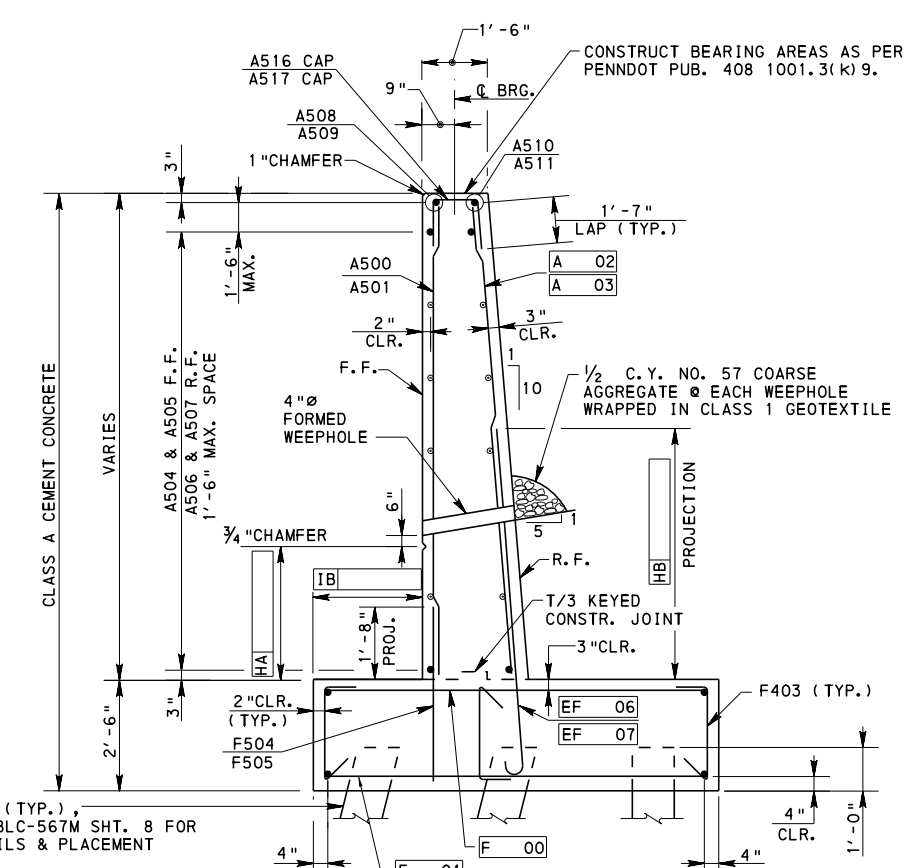
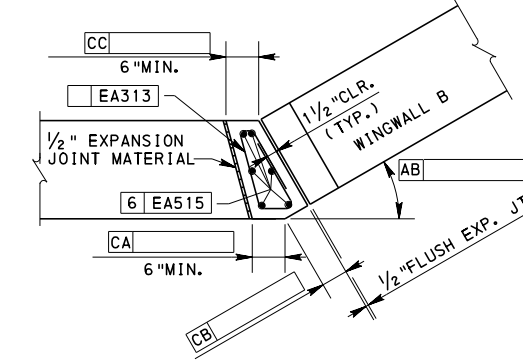
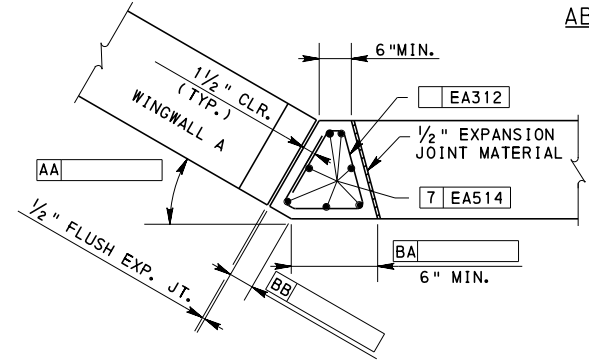
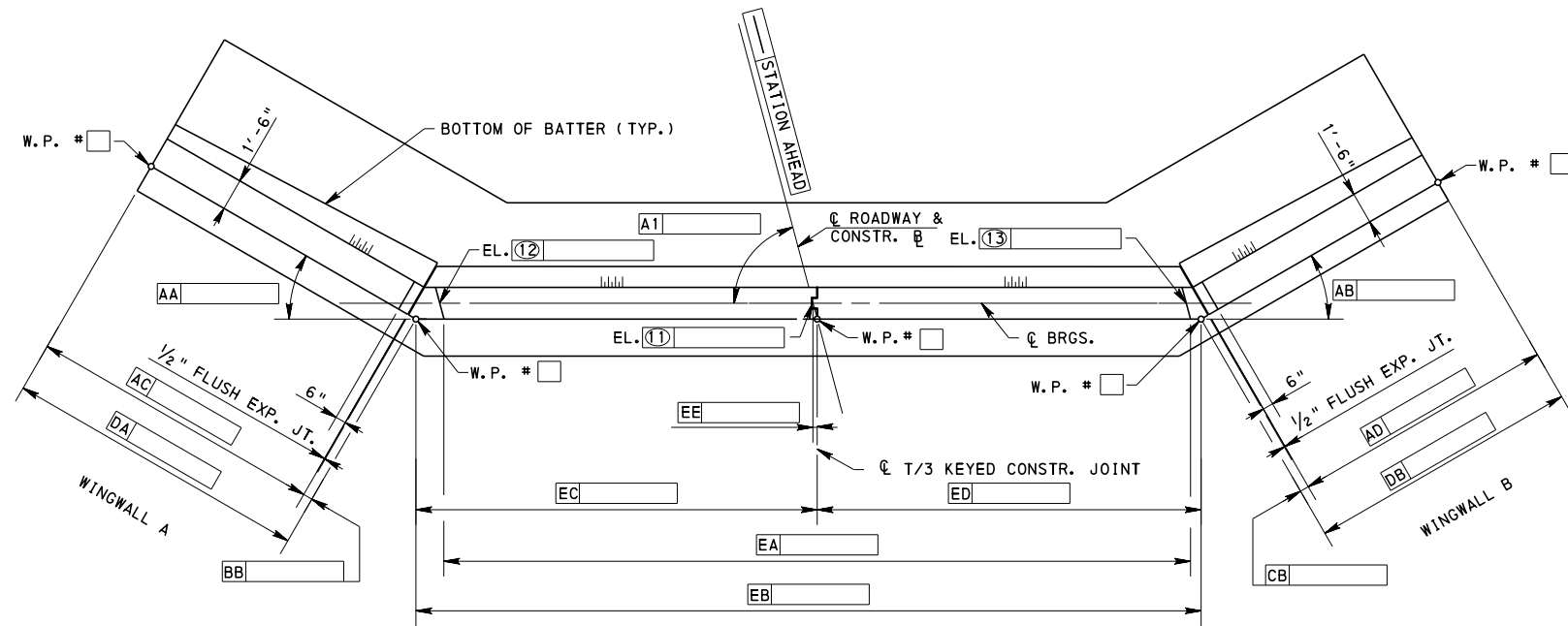
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET__ OF__

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

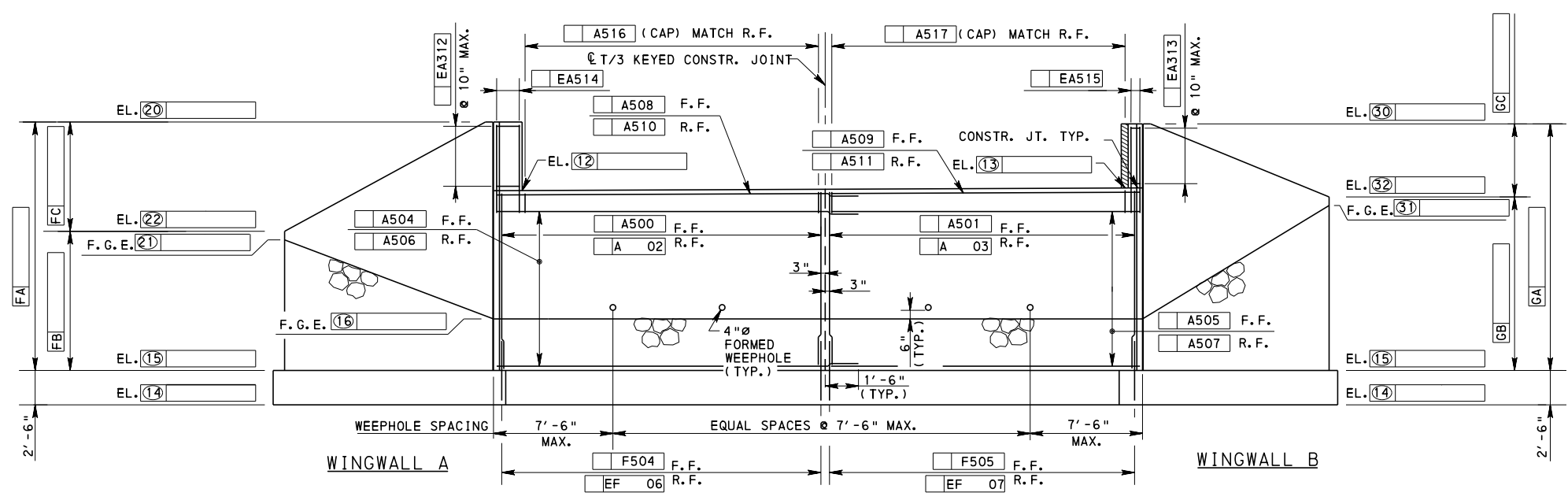
SPREAD FOOTING ABUTMENT
ABUTMENT__ - BAR SCHEDULE

RECOMMENDED APR. 23, 2013 <i>Thomas P. Nacivca</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 7 OF 7 BLC-566M
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LEGEND
 F.F. DENOTES FRONT FACE
 R.F. DENOTES REAR FACE
 E.F. DENOTES EACH FACE
 F.G.E. DENOTES FINISHED GROUND ELEVATION
 BOT. DENOTES BOTTOM
 W.P. DENOTES WORKING POINT
 EQ. SPA. DENOTES EQUAL SPACE

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET ____
 - FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET ____
 - FOR ABUTMENT ____ FOOTING PLAN SEE SHEET ____
 - FOR ABUTMENT ____ BAR SCHEDULE, SEE SHEET ____
 - MAX. ALLOWABLE PILE LOAD = ____ kips
 - MAX DESIGN PILE LOAD = ____ kips



NOTE:
 SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

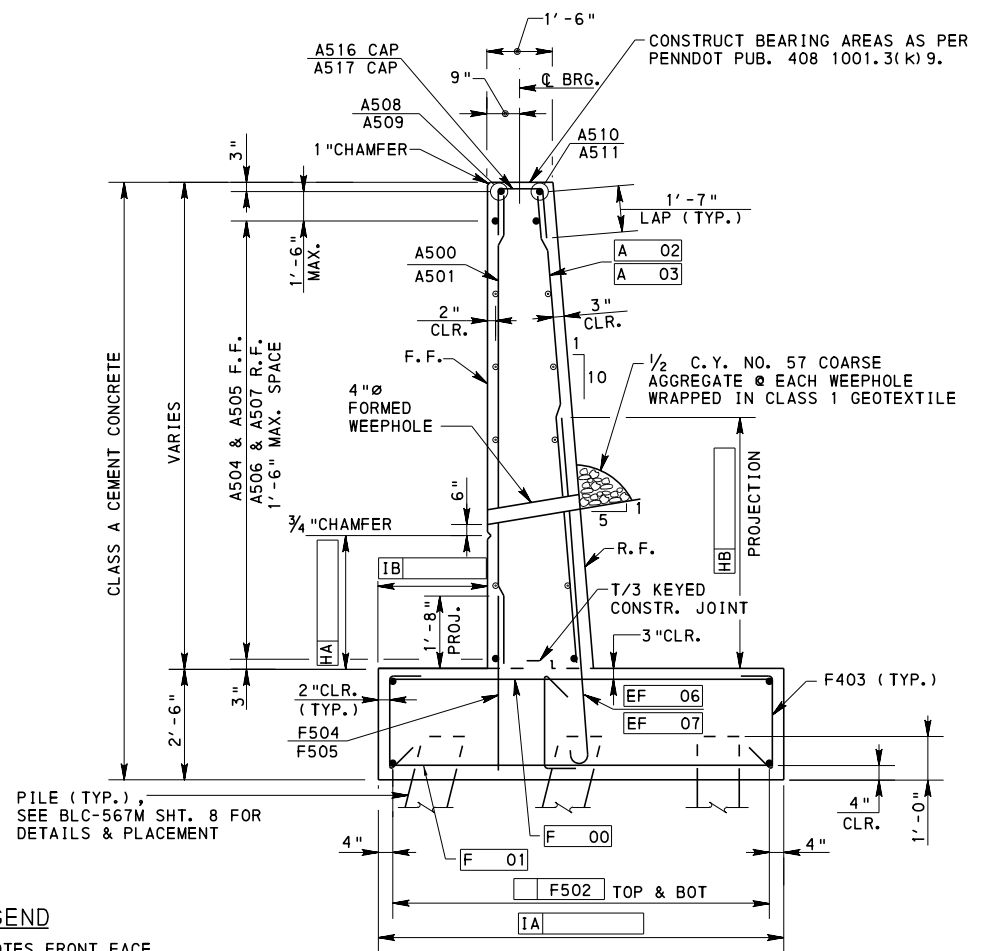
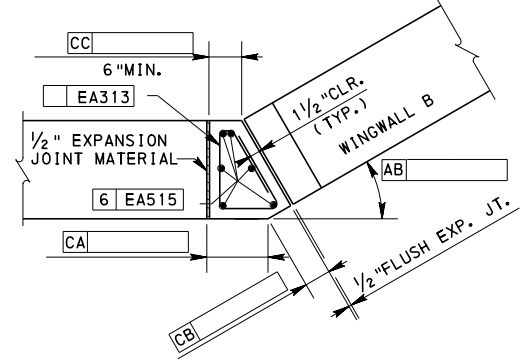
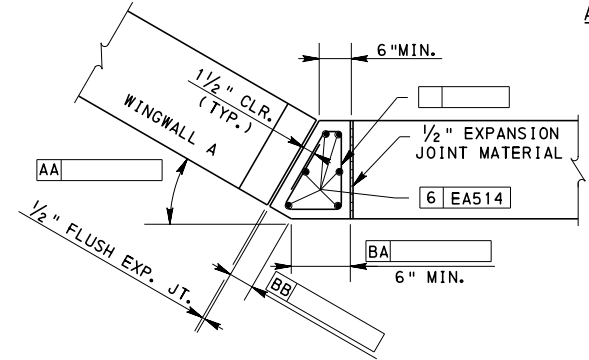
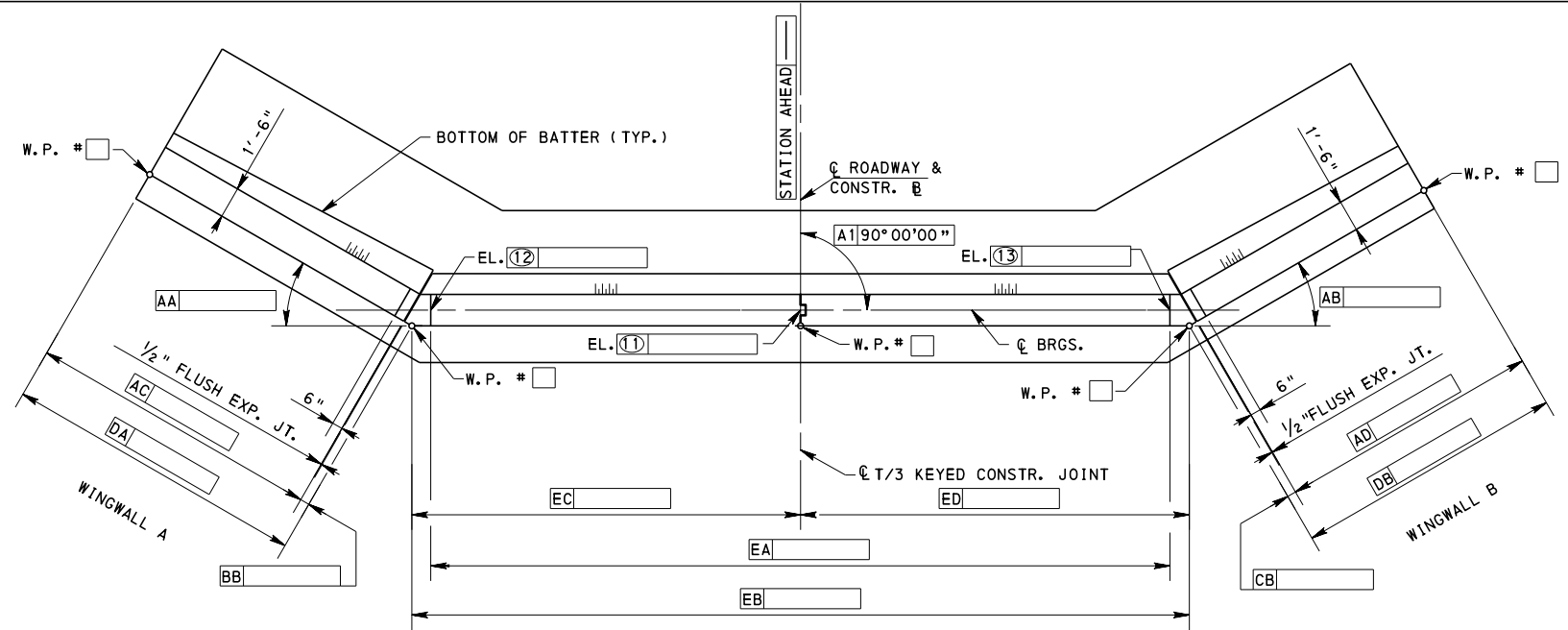
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ____ OF ____

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

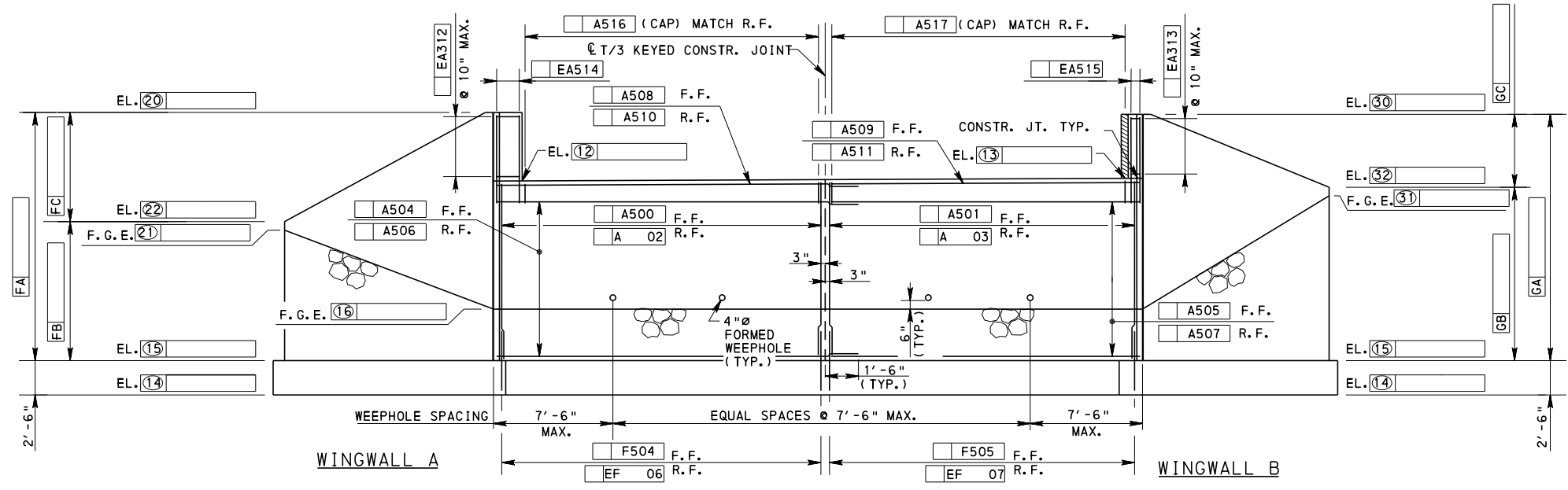
PILE SUPPORTED ABUTMENT
ABUTMENT ____ - LEFT SKEW

RECOMMENDED APR. 23, 2013
 RECOMMENDED APR. 23, 2013
 SHEET 1 OF 9
 THOMAS P. MACIOCE
 CHIEF BRIDGE ENGINEER
 ACTING DIR. BUR. OF PROJECT DELIVERY
 BLC-567M



LEGEND
 F.F. DENOTES FRONT FACE
 R.F. DENOTES REAR FACE
 E.F. DENOTES EACH FACE
 F.G.E. DENOTES FINISHED GROUND ELEVATION
 BOT. DENOTES BOTTOM
 W.P. DENOTES WORKING POINT
 EQ. SPA. DENOTES EQUAL SPACE

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET ____
 - FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET ____
 - FOR ABUTMENT ____ FOOTING PLAN SEE SHEET ____
 - FOR ABUTMENT ____ BAR SCHEDULE, SEE SHEET ____
 - MAX. ALLOWABLE PILE LOAD = ____ kips
 - MAX DESIGN PILE LOAD = ____ kips



NOTE:
 SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

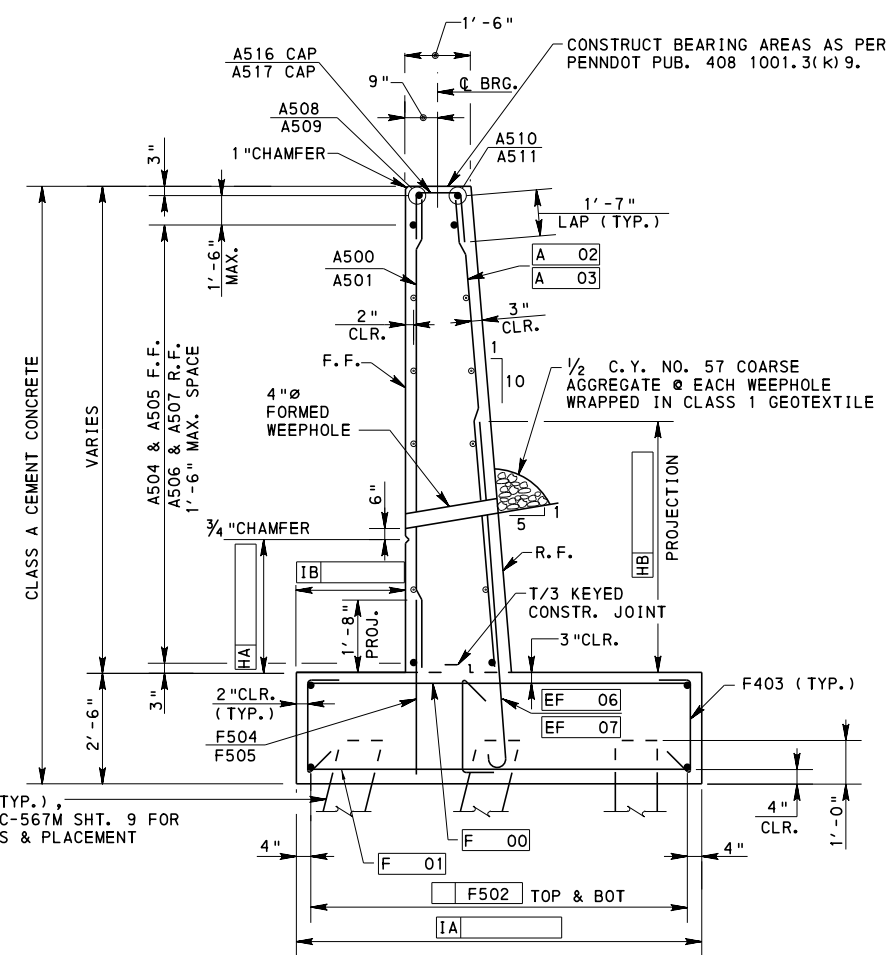
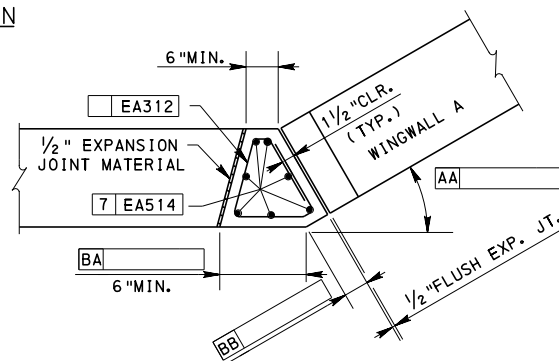
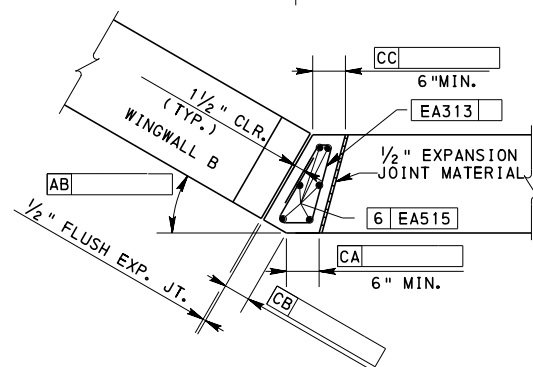
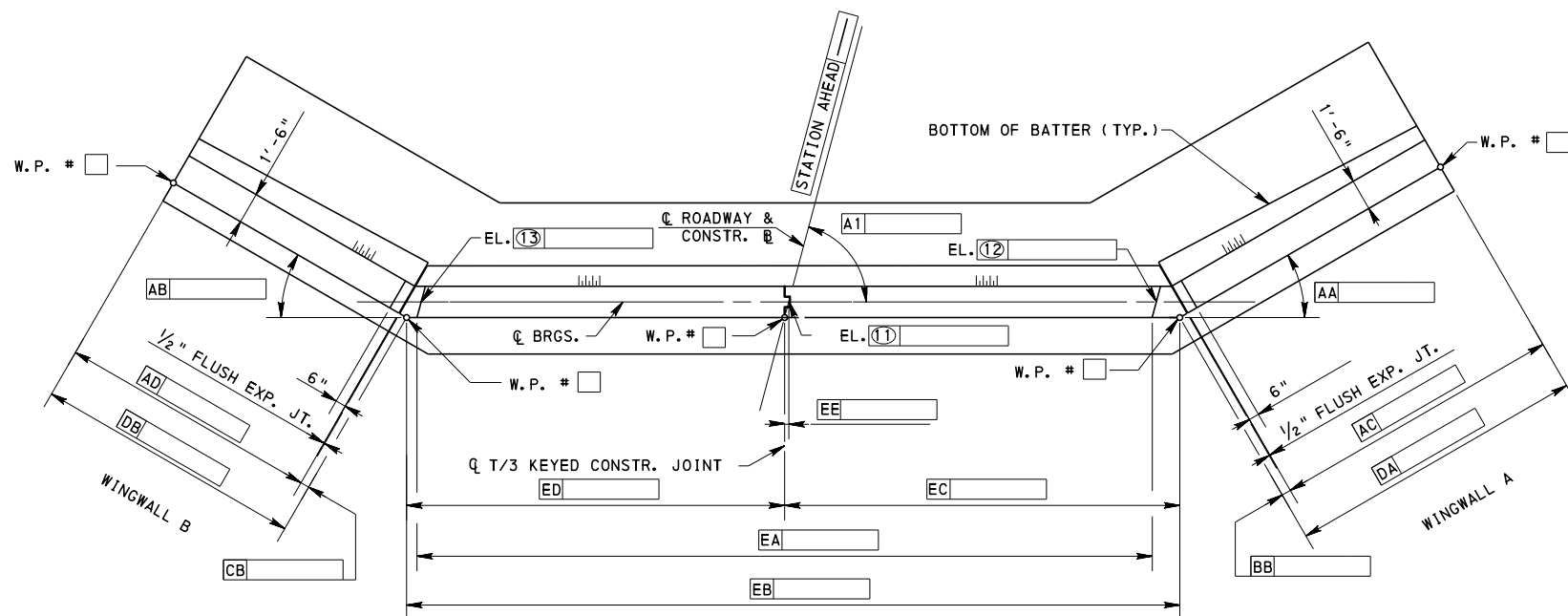
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ____ OF ____

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

PILE SUPPORTED ABUTMENT
 ABUTMENT ____ - 90° SKEW

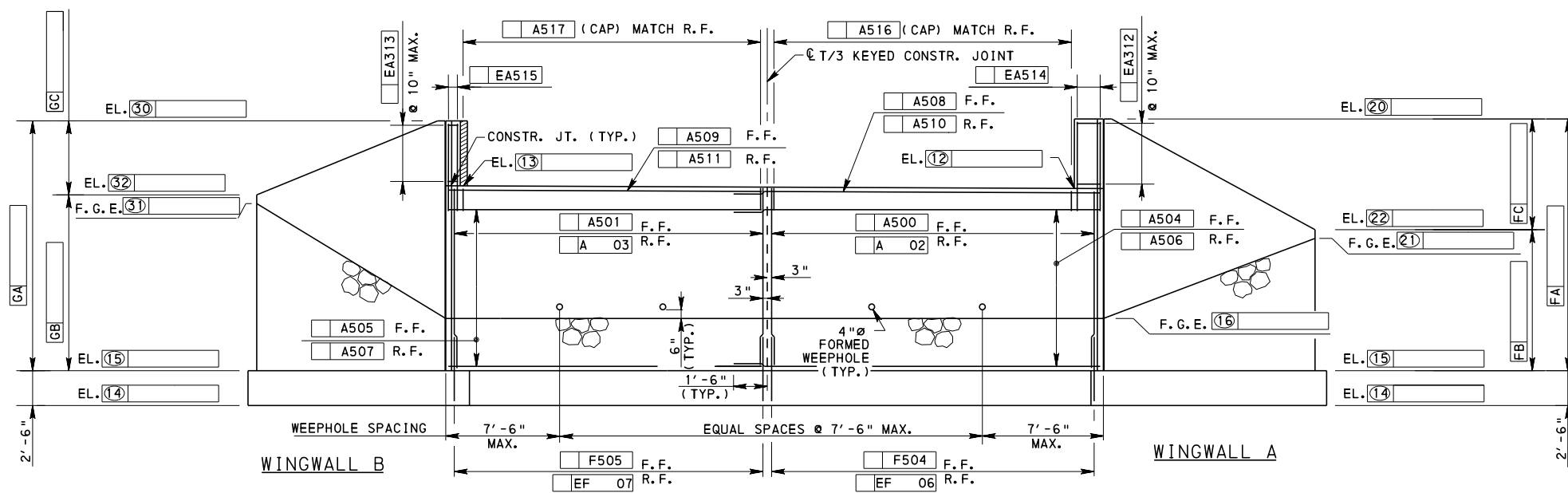
RECOMMENDED APR. 23, 2013
 RECOMMENDED APR. 23, 2013
 SHEET 2 OF 9
 THOMAS P. MACIOCE
 CHIEF BRIDGE ENGINEER
 ACTING DIR. BUR. OF PROJECT DELIVERY
 BLC-567M



LEGEND

F.F. DENOTES FRONT FACE
 R.F. DENOTES REAR FACE
 E.F. DENOTES EACH FACE
 F.G.E. DENOTES FINISHED GROUND ELEVATION
 BOT. DENOTES BOTTOM
 W.P. DENOTES WORKING POINT
 EQ. SPA. DENOTES EQUAL SPACE

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET ____
 - FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET ____
 - FOR ABUTMENT ____ FOOTING PLAN SEE SHEET ____
 - FOR ABUTMENT ____ BAR SCHEDULE, SEE SHEET ____
 - MAX. ALLOWABLE PILE LOAD = ____ kips
 - MAX DESIGN PILE LOAD = ____ kips



NOTE:
SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

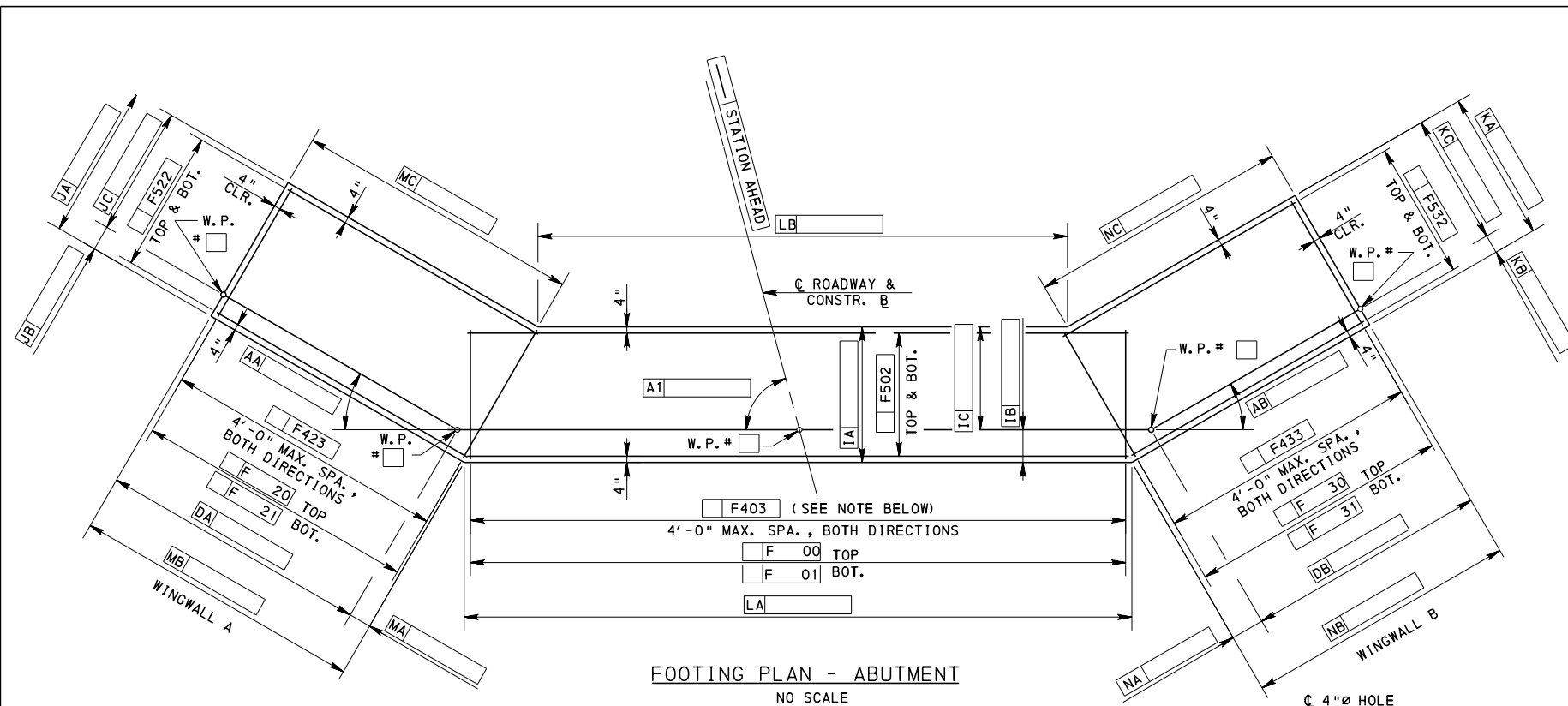
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ____ OF ____

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

PILE SUPPORTED ABUTMENT
 ABUTMENT ____ - RIGHT SKEW

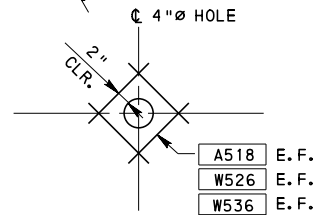
RECOMMENDED APR. 23, 2013
 RECOMMENDED APR. 23, 2013
 SHEET 3 OF 9
 Thomas P. Macisora
 CHIEF BRIDGE ENGINEER
 ACTING DIR. BUR. OF PROJECT DELIVERY
 BLC-567M



LEGEND

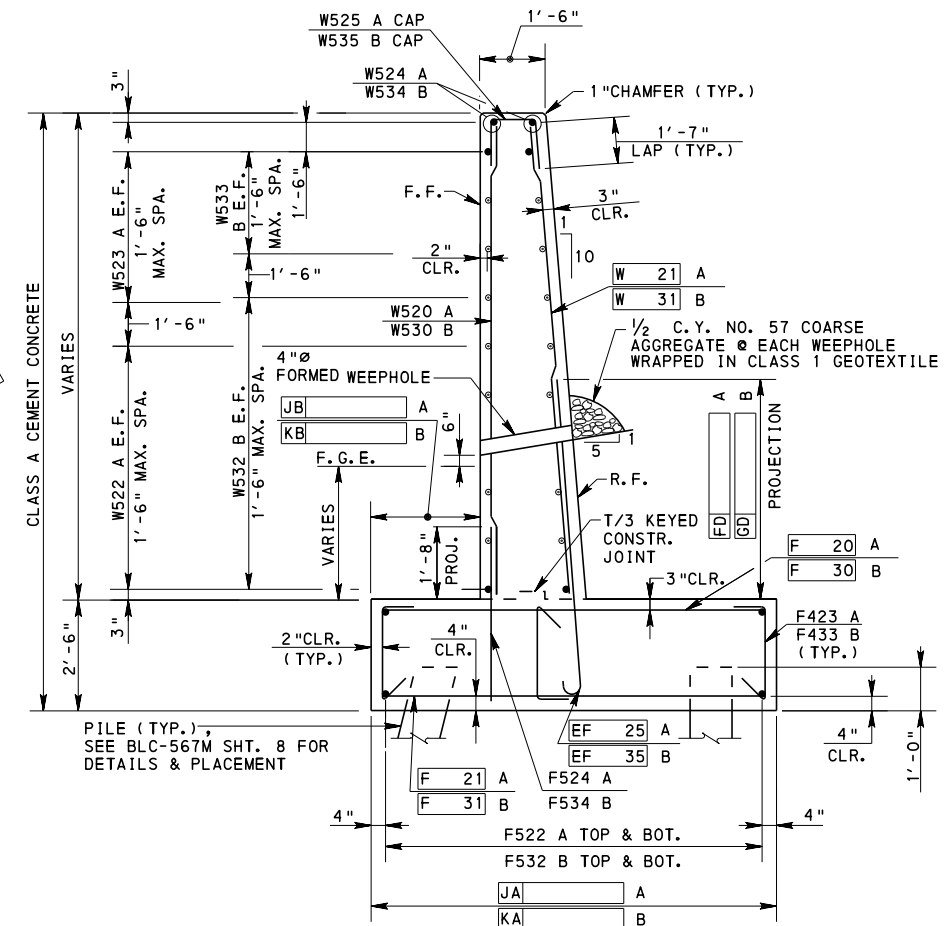
F.F. DENOTES FRONT FACE
 R.F. DENOTES REAR FACE
 E.F. DENOTES EACH FACE
 F.G.E. DENOTES FINISHED GROUND ELEVATION
 BOT. DENOTES BOTTOM
 W.P. DENOTES WORKING POINT
 EQ. SPA. DENOTES EQUAL SPACE

NOTE:
 TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH #4 TIE BARS AT A MAXIMUM SPACING OF 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90° HOOK AT ONE END AND 135° AT THE OTHER END. ALTERNATE 90° AND 135° AT TOP IN ALTERNATE TIES.



WEEPHOLE REINFORCEMENT DETAIL
 NO SCALE

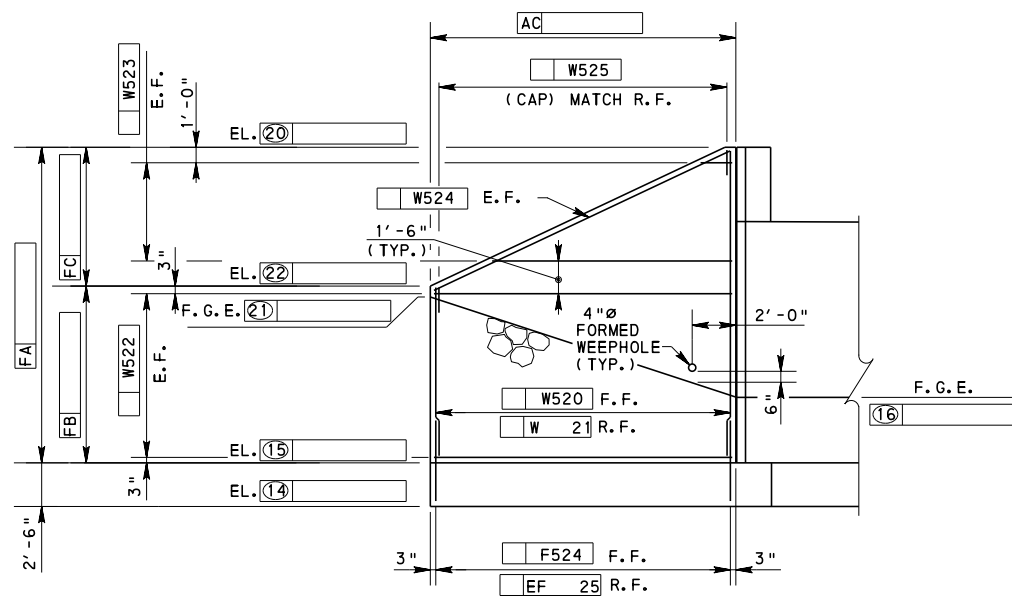
NOTE:
 ADJUST REINFORCEMENT AS NECESSARY TO ACCOMMODATE OPENING.



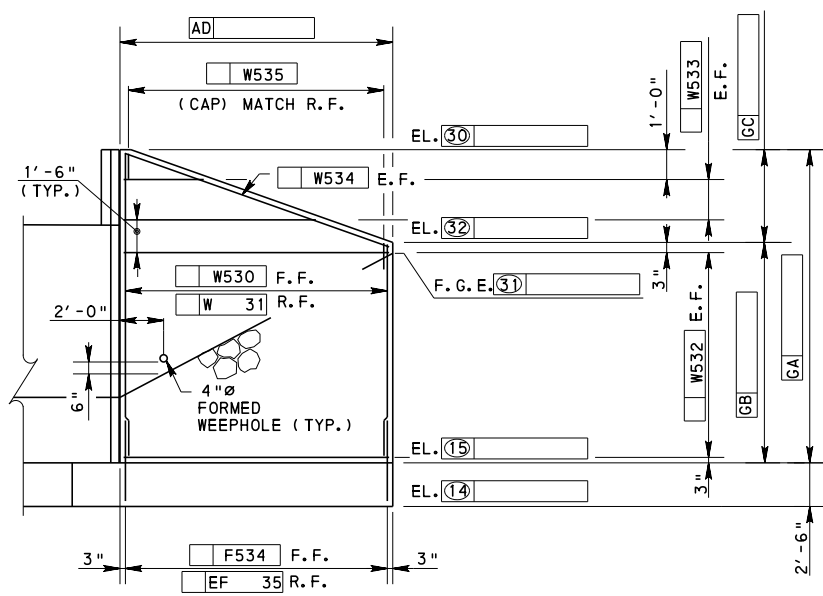
TYPICAL WING SECTION
 NO SCALE

NOTES:

- FOR GENERAL NOTES, SEE SHEET ____
- FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET ____
- FOR ABUTMENT ____, SEE SHEET ____
- FOR ABUTMENT ____, BAR SCHEDULE, SEE SHEET ____
- MAX. ALLOWABLE PILE LOAD = ____ kips
- MAX DESIGN PILE LOAD = ____ kips



WINGWALL A
 NO SCALE



WINGWALL B
 NO SCALE

NOTE:
 SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

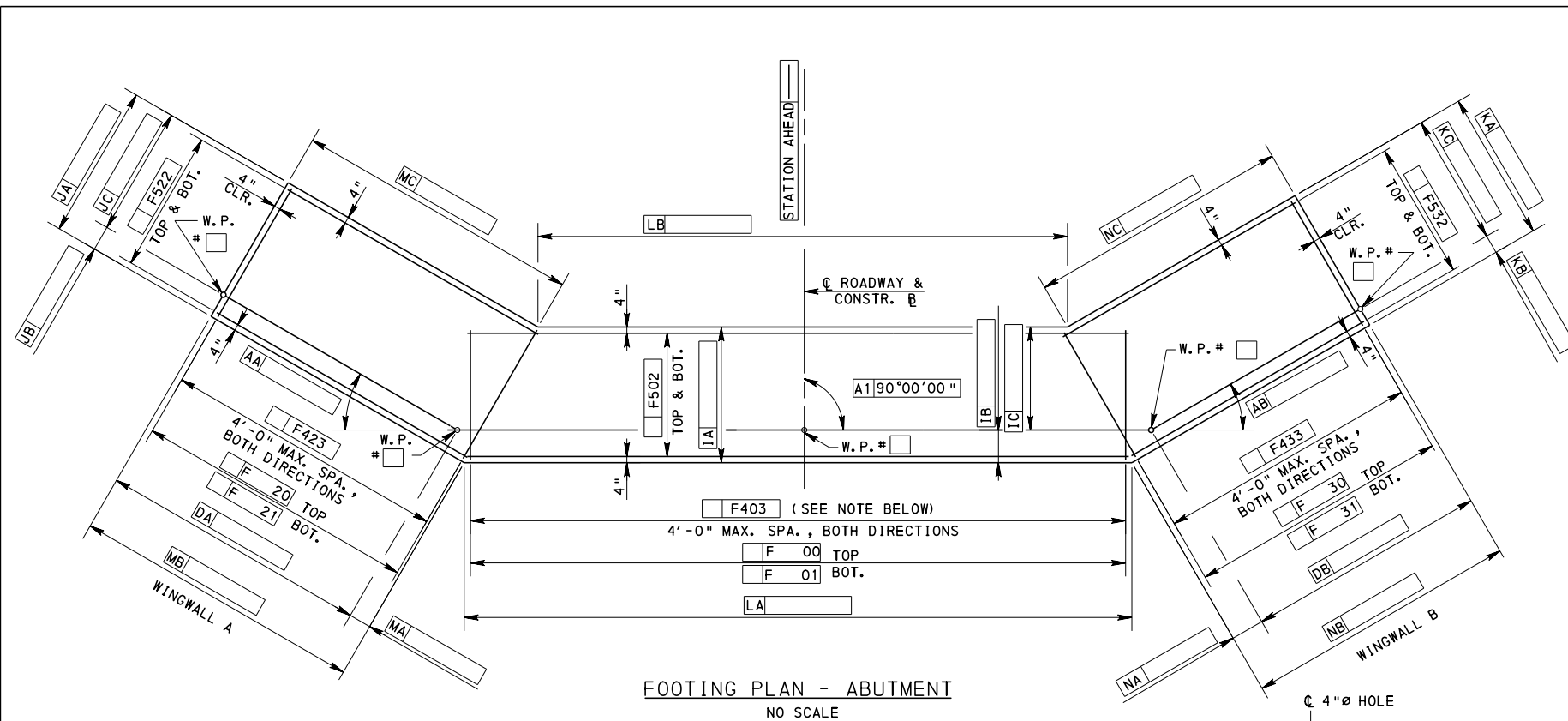
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ____ OF ____

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

PILE SUPPORTED ABUTMENT
 ABUTMENT __ - FTG. PLAN - LEFT SKEW

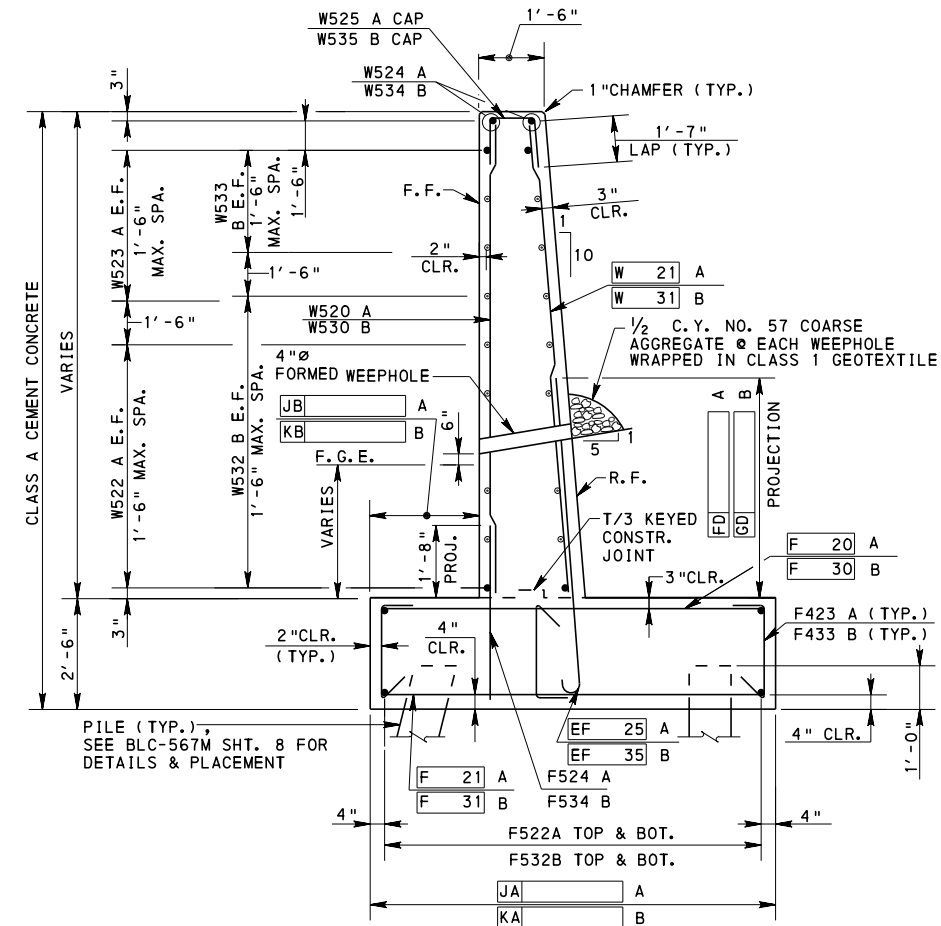
RECOMMENDED APR. 23, 2013
 RECOMMENDED APR. 23, 2013
 SHEET 4 OF 9
 THOMAS P. NACIOLA
 CHIEF BRIDGE ENGINEER
 ACTING DIR. BUR. OF PROJECT DELIVERY
 BLC-567M



FOOTING PLAN - ABUTMENT
NO SCALE

- LEGEND**
- F.F. DENOTES FRONT FACE
 - R.F. DENOTES REAR FACE
 - E.F. DENOTES EACH FACE
 - F.G.E. DENOTES FINISHED GROUND ELEVATION
 - BOT. DENOTES BOTTOM
 - W.P. DENOTES WORKING POINT
 - EQ. SPA. DENOTES EQUAL SPACE

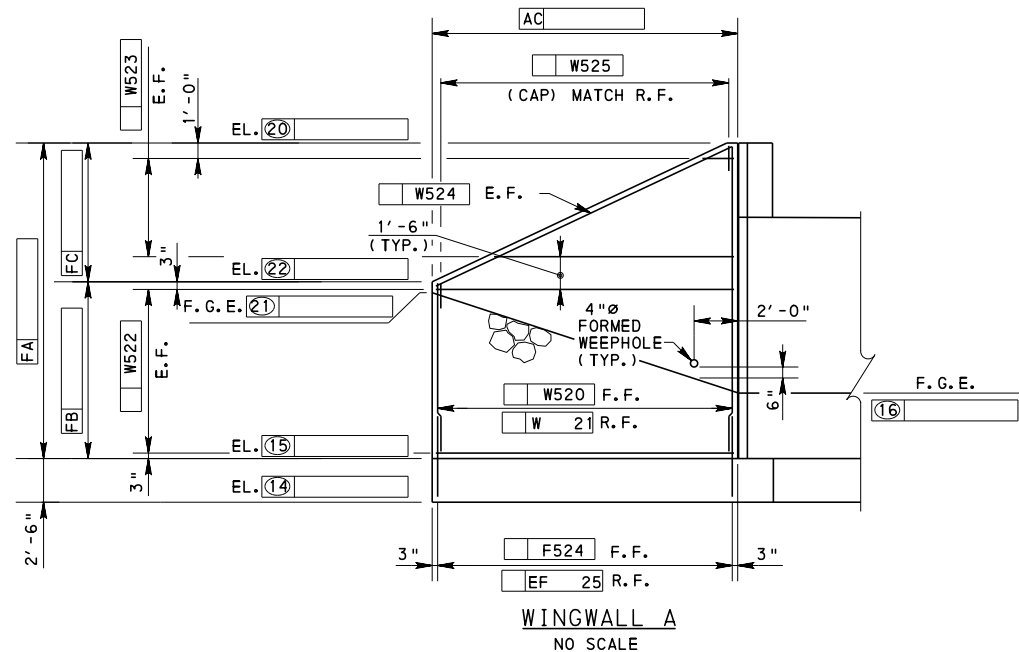
NOTE:
TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH #4 TIE BARS AT A MAXIMUM SPACING OF 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90° HOOK AT ONE END AND 135° AT THE OTHER END. ALTERNATE 90° AND 135° AT TOP IN ALTERNATE TIES.



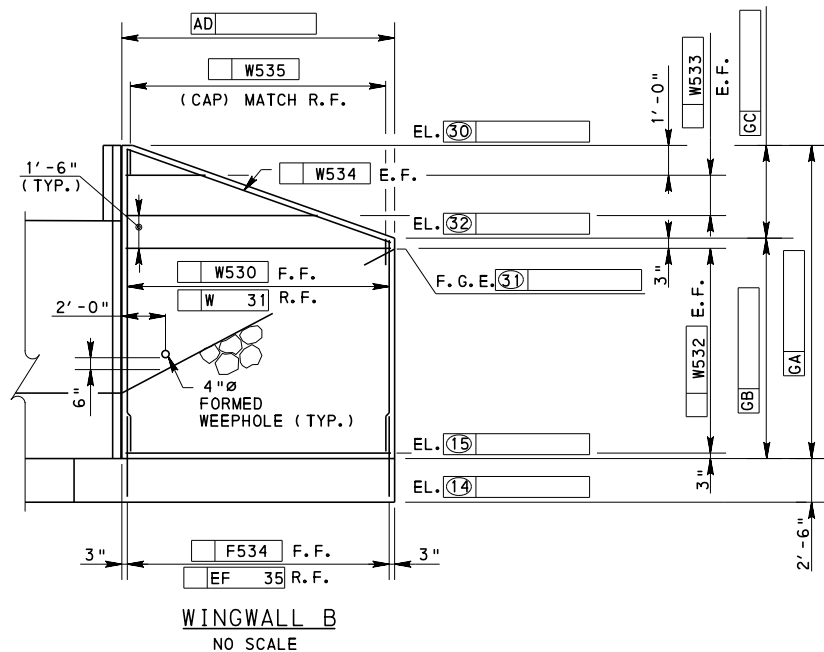
TYPICAL WING SECTION
NO SCALE

WEEPHOLE REINFORCEMENT DETAIL
NO SCALE

NOTE:
ADJUST REINFORCEMENT AS NECESSARY TO ACCOMMODATE OPENING.



WINGWALL A
NO SCALE



WINGWALL B
NO SCALE

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET ____
 - FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET ____
 - FOR ABUTMENT ____, SEE SHEET ____
 - FOR ABUTMENT ____, BAR SCHEDULE, SEE SHEET ____
 - MAX. ALLOWABLE PILE LOAD = ____ kips
 - MAX DESIGN PILE LOAD = ____ kips

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ____ OF ____

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

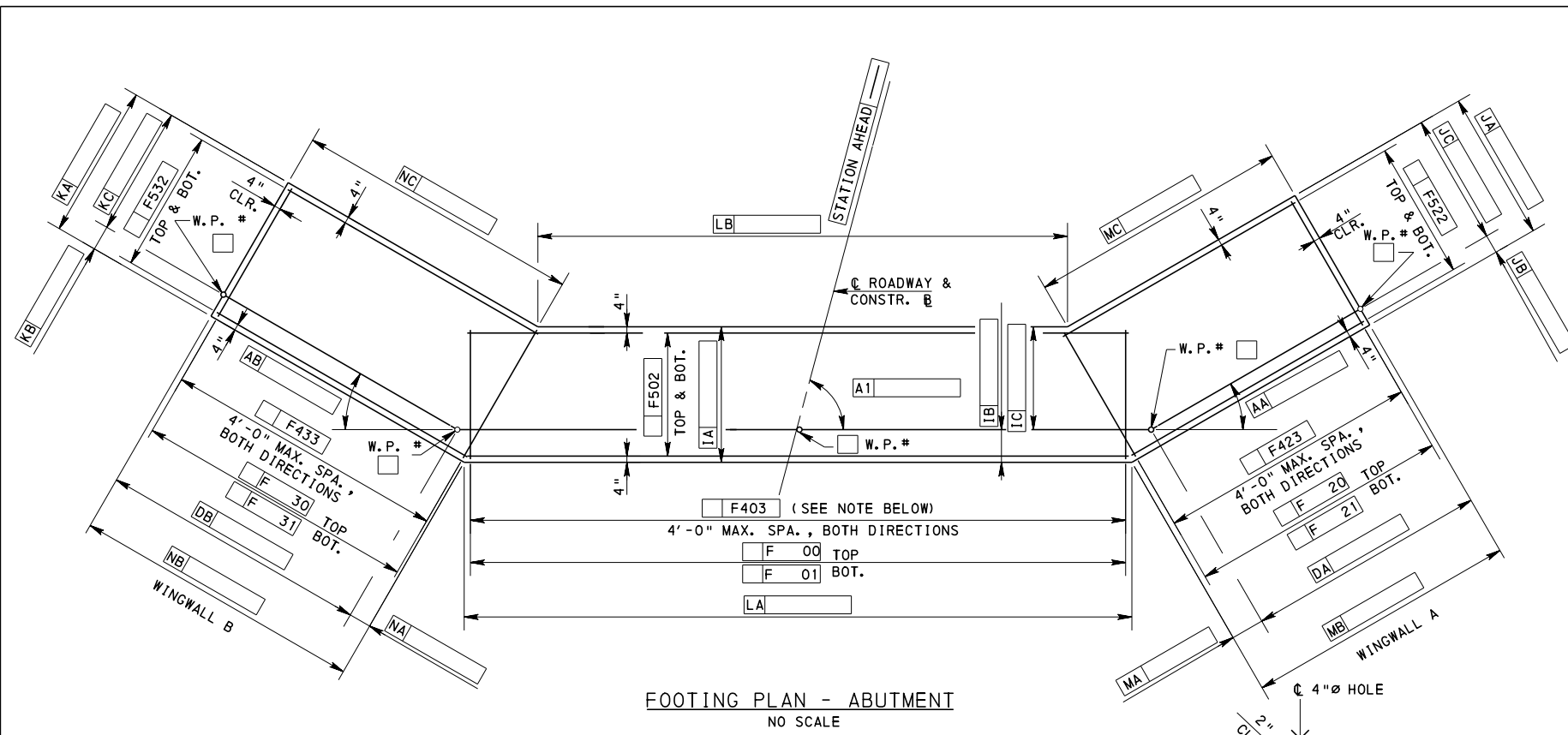
PILE SUPPORTED ABUTMENT
ABUTMENT __ - FTG. PLAN - 90° SKEW

RECOMMENDED APR. 23, 2013
Thomas P. Nacivica
CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013
[Signature]
ACTING DIR. BUR. OF PROJECT DELIVERY

SHEET 5 OF 9
BLC-567M

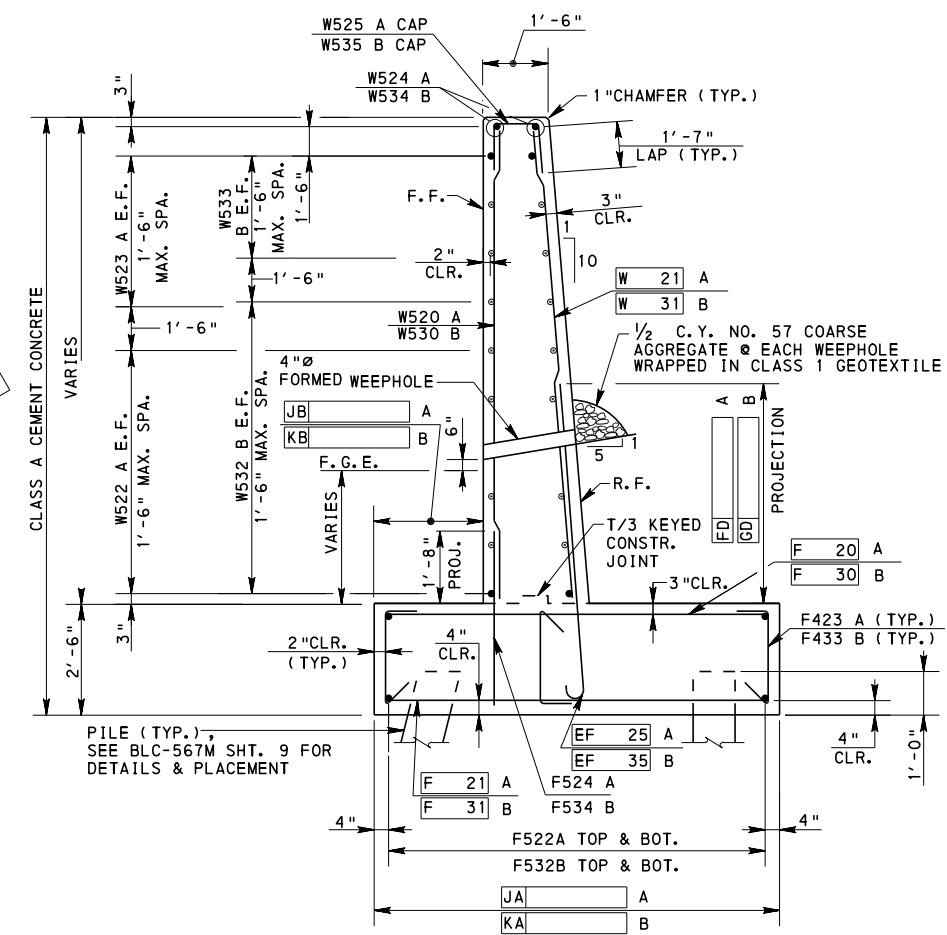
NOTE:
SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.



FOOTING PLAN - ABUTMENT
NO SCALE

- LEGEND**
- F.F. DENOTES FRONT FACE
 - R.F. DENOTES REAR FACE
 - E.F. DENOTES EACH FACE
 - F.G.E. DENOTES FINISHED GROUND ELEVATION
 - BOT. DENOTES BOTTOM
 - W.P. DENOTES WORKING POINT
 - EQ. SPA. DENOTES EQUAL SPACE

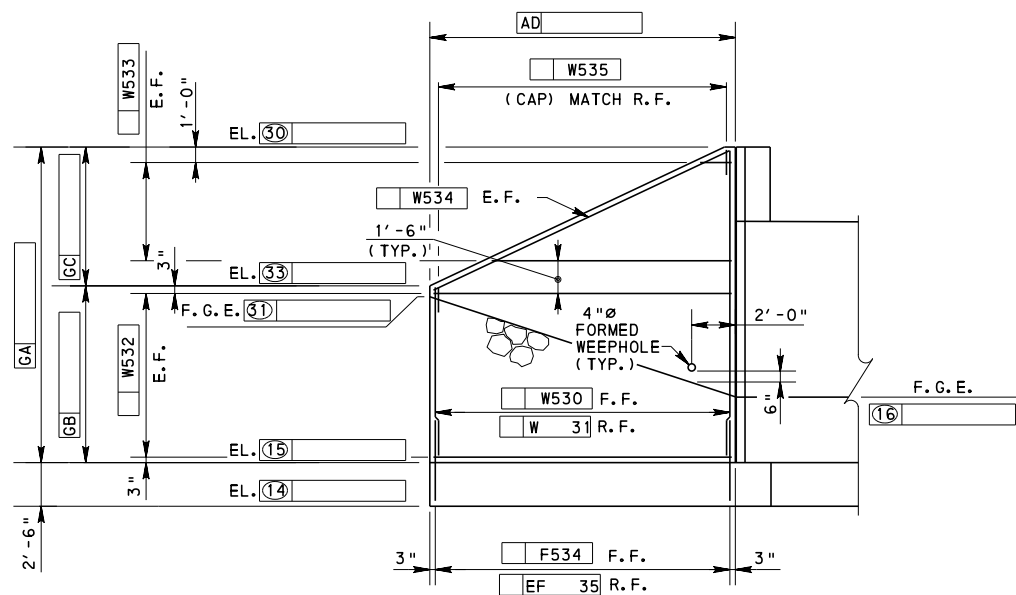
NOTE:
TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH #4 TIE BARS AT A MAXIMUM SPACING OF 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90° HOOK AT ONE END AND 135° AT THE OTHER END. ALTERNATE 90° AND 135° AT TOP IN ALTERNATE TIES.



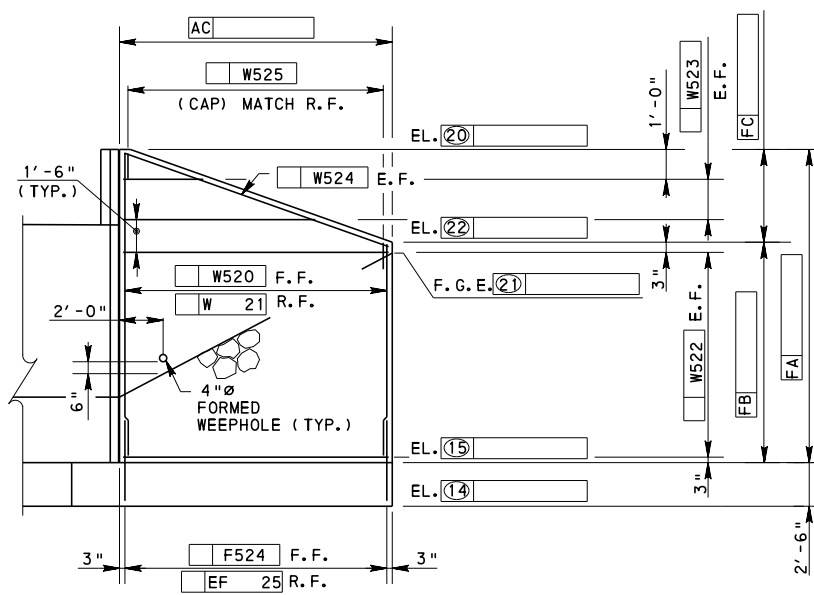
TYPICAL WING SECTION
NO SCALE

WEEPHOLE REINFORCEMENT DETAIL

NOTE:
ADJUST REINFORCEMENT AS NECESSARY TO ACCOMMODATE OPENING.



WINGWALL B
NO SCALE



WINGWALL A
NO SCALE

NOTE:
SEE BC-788M FOR ABUTMENT AND WINGWALL WATERPROOFING DETAIL.

- NOTES:**
- FOR GENERAL NOTES, SEE SHEET ____
 - FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET ____
 - FOR ABUTMENT ____, SEE SHEET ____
 - FOR ABUTMENT ____, BAR SCHEDULE, SEE SHEET ____
 - MAX. ALLOWABLE PILE LOAD = ____ kips
 - MAX DESIGN PILE LOAD = ____ kips

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ____ OF ____

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

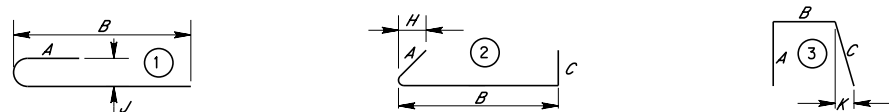
PILE SUPPORTED ABUTMENT
ABUTMENT __ - FTG. PLAN - RIGHT SKEW

RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 6 OF 9
BLC-567M

REINFORCEMENT BAR SCHEDULE*

MARK	SIZE	LENGTH	NO.	TYPE	A	B	C	D	E	F	G	H	J	K	R	REMARKS
A500	5			STR.												VARY EA. BY _____
A501	5			STR.												VARY EA. BY _____
A__02				STR.												VARY EA. BY _____
A__03				STR.												VARY EA. BY _____
A504	5			STR.												
A505	5			STR.												
A506	5			STR.												
A507	5			STR.												
A508	5		1	STR.												
A509	5		1	STR.												
A510	5		1	STR.												
A511	5		1	STR.												
EA312	3			STR.												BEND IN FIELD
EA313	3			STR.												BEND IN FIELD
EA514	5			STR.												
EA515	5		6	STR.												
A516	5	4'-3"		③	1'-7"	1'-1"	1'-7"							2"		
A517	5	4'-3"		③	1'-7"	1'-1"	1'-7"							2"		
A518	5	1'-0"	32	STR.												
W520	5			STR.												VARY EA. BY _____
W__21				STR.												VARY EA. BY _____
W522	5			STR.												
W523	5			STR.												VARY 2 EA. BY _____
W524	5		2	STR.												
W525	5	4'-3"		③	1'-7"	1'-1"	1'-7"							2"		
W526	5	1'-0"	8	STR.												
W530	5			STR.												VARY EA. BY _____
W__31				STR.												VARY EA. BY _____
W532	5			STR.												
W533	5			STR.												VARY 2 EA. BY _____
W534	5		2	STR.												
W535	5	4'-3"		③	1'-7"	1'-1"	1'-7"							2"		
W536	5	1'-0"	8	STR.												
F__00				STR.												
F__01				STR.												
F502	5			STR.												
F403	4	2'-9"		②	4 1/2"	2'-0"	4 1/2"							3"		
F504	5	4'-0"		STR.												
F505	5	4'-0"		STR.												
EF__06				①												
EF__07				①												
F__20				STR.												
F__21				STR.												
F522	5			STR.												
F423	4	2'-9"		②	4 1/2"	2'-0"	4 1/2"							3"		
F524	5	4'-0"		STR.												
EF__25				①												
F__30				STR.												
F__31				STR.												
F532	5			STR.												
F433	4	2'-9"		②	4 1/2"	2'-0"	4 1/2"							3"		
F534	5	4'-0"		STR.												
EF__35				①												

BAR TYPE LEGEND
STR. DENOTES A STRAIGHT BAR



* USE BLC-561M SHEETS 17 AND 18 TO COMPLETE BAR SCHEDULE INFORMATION.

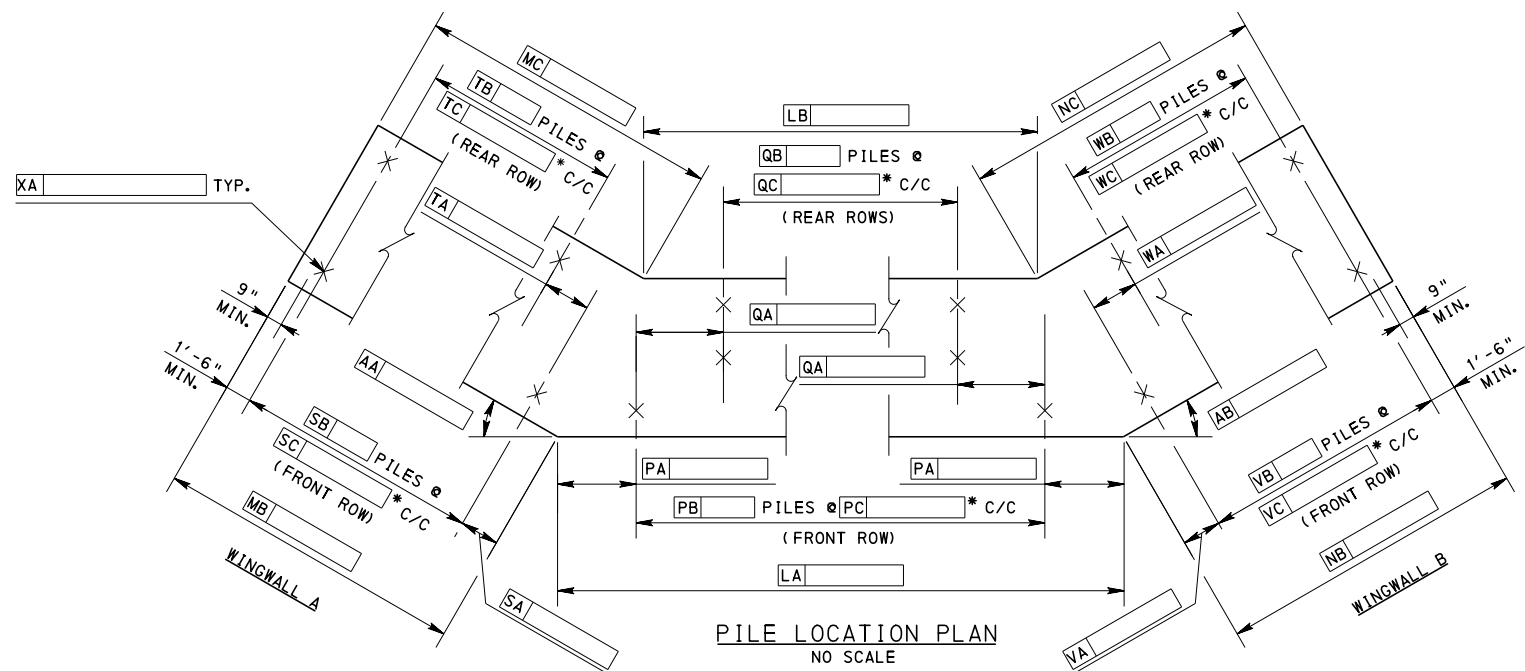
Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

S- SHEET ___ OF ___

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

PILE SUPPORTED ABUTMENT
ABUTMENT ___ - BAR SCHEDULE

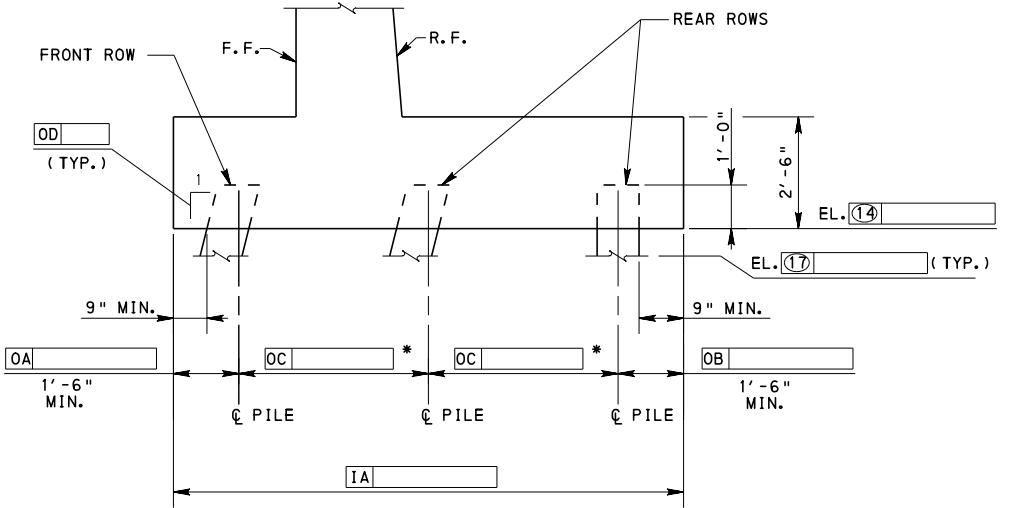
RECOMMENDED APR. 23, 2013 <i>Thomas P. Nacivica</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 7 OF 9 BLC-567M
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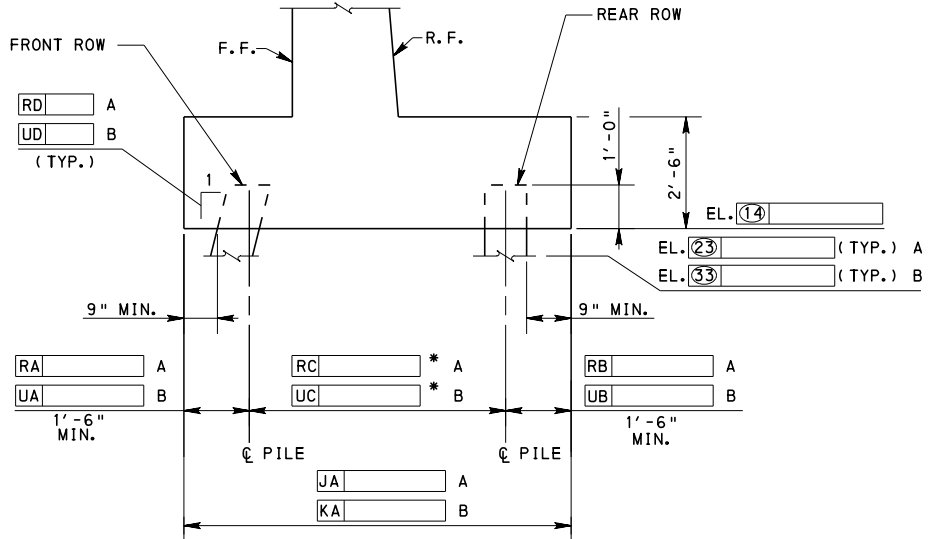
* 15'-0" MAX., 3'-0" MIN. OR TWO AND ONE-HALF TIMES THE DIAMETER FOR ROUND OR OCTAGONAL PILES AND TWO TIMES THE DIAGONAL DIMENSION FOR SQUARE PILES.

LEGEND
 X DENOTES H PILE LOCATION. SHOW ORIENTATION OF H PILE BY DRAWING SHAPE ON PLAN.
 F.F. DENOTES FRONT FACE
 R.F. DENOTES REAR FACE

NOTE:
 SEE BC-757M FOR STANDARD STEEL PILE TIP REINFORCEMENTS AND SPLICES.



* 15'-0" MAX., 3'-0" MIN. OR TWO AND ONE-HALF TIMES THE DIAMETER FOR ROUND OR OCTAGONAL PILES AND TWO TIMES THE DIAGONAL DIMENSION FOR SQUARE PILES.



* 15'-0" MAX., 3'-0" MIN. OR TWO AND ONE-HALF TIMES THE DIAMETER FOR ROUND OR OCTAGONAL PILES AND TWO TIMES THE DIAGONAL DIMENSION FOR SQUARE PILES.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

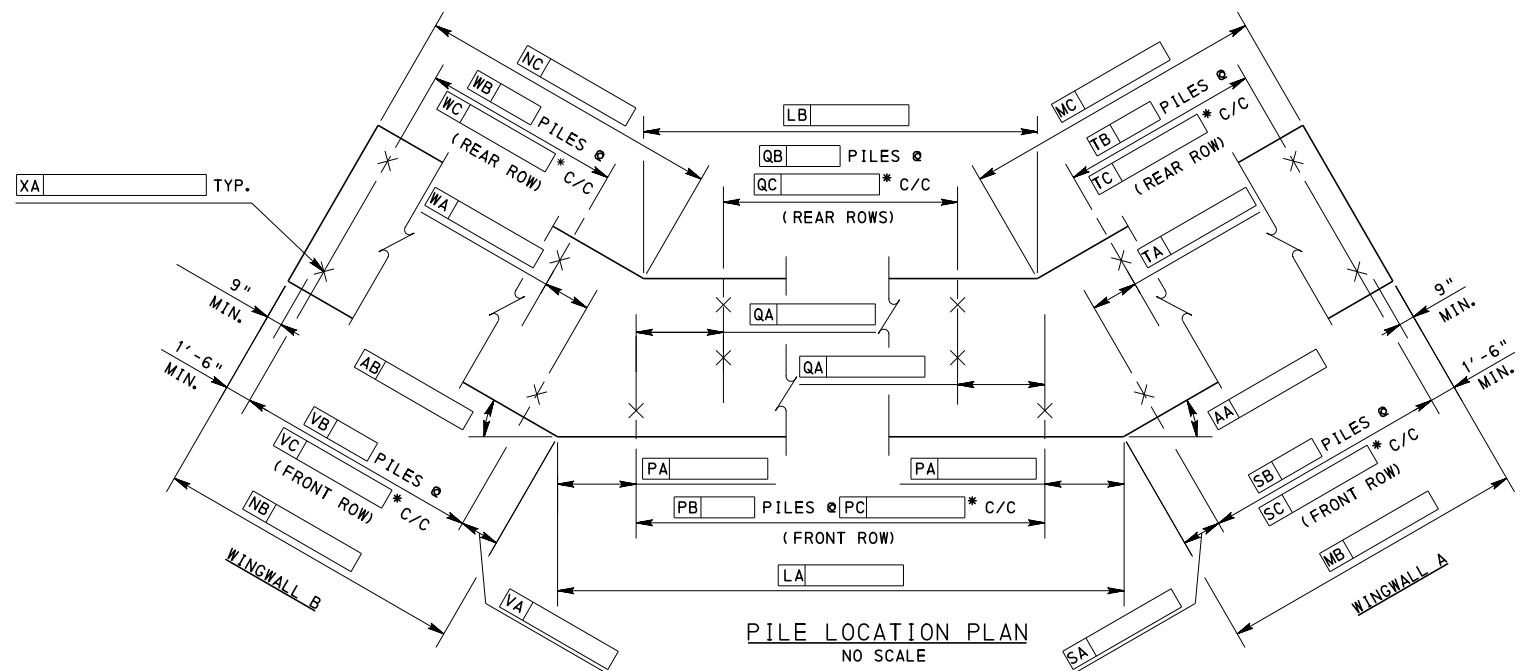
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

PILE SUPPORTED ABUTMENT
 ABUTMENT - PILE DETAILS-
 90° & LEFT SKEW

RECOMMENDED APR. 23, 2013
 Thomas P. Nacivica
 CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013
 [Signature]
 ACTING DIR. BUR. OF PROJECT DELIVERY

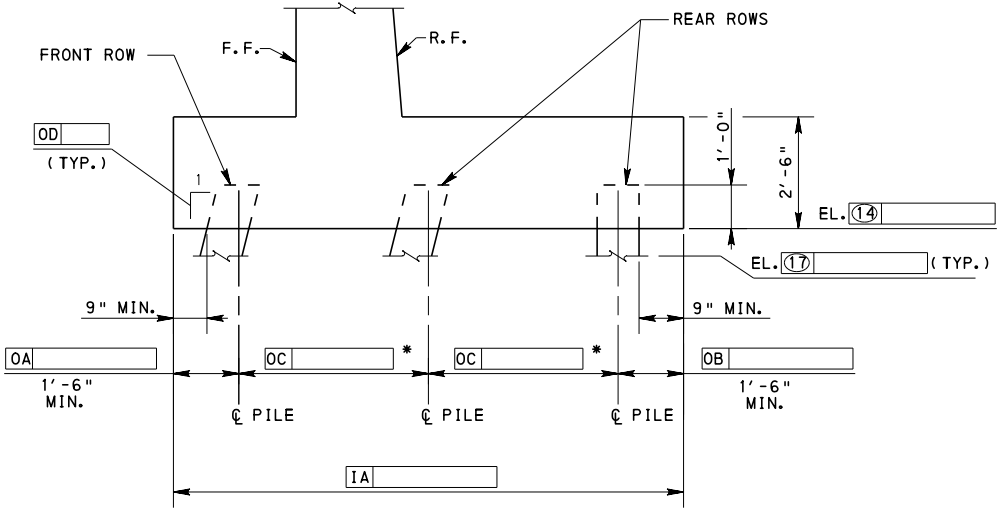
SHEET 8 OF 9
 BLC-567M



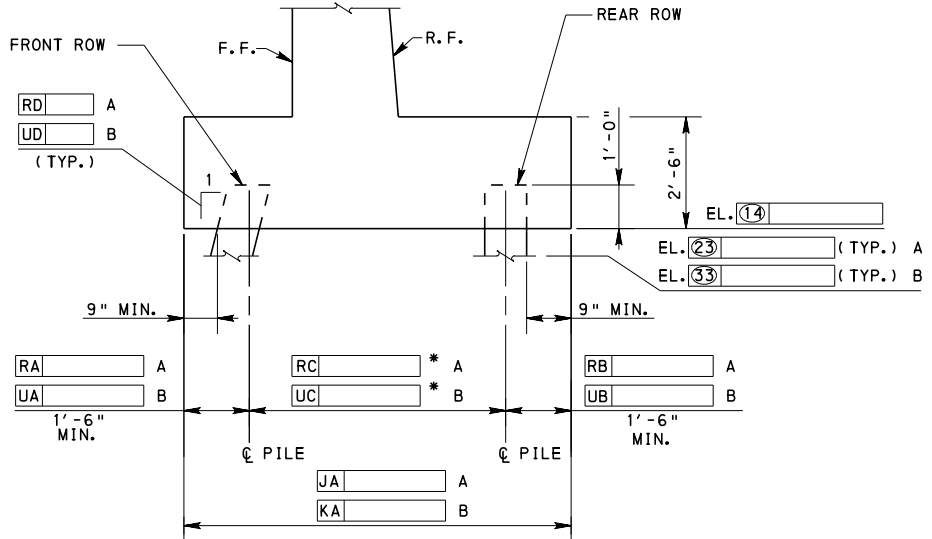
* 15'-0" MAX., 3'-0" MIN. OR TWO AND ONE-HALF TIMES THE DIAMETER FOR ROUND OR OCTAGONAL PILES AND TWO TIMES THE DIAGONAL DIMENSION FOR SQUARE PILES.

LEGEND
 X DENOTES H PILE LOCATION. SHOW ORIENTATION OF H PILE BY DRAWING SHAPE ON PLAN.
 F.F. DENOTES FRONT FACE
 R.F. DENOTES REAR FACE

NOTE:
 SEE BC-757M FOR STANDARD STEEL PILE TIP REINFORCEMENTS AND SPLICES.



* 15'-0" MAX., 3'-0" MIN. OR TWO AND ONE-HALF TIMES THE DIAMETER FOR ROUND OR OCTAGONAL PILES AND TWO TIMES THE DIAGONAL DIMENSION FOR SQUARE PILES.



* 15'-0" MAX., 3'-0" MIN. OR TWO AND ONE-HALF TIMES THE DIAMETER FOR ROUND OR OCTAGONAL PILES AND TWO TIMES THE DIAGONAL DIMENSION FOR SQUARE PILES.

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

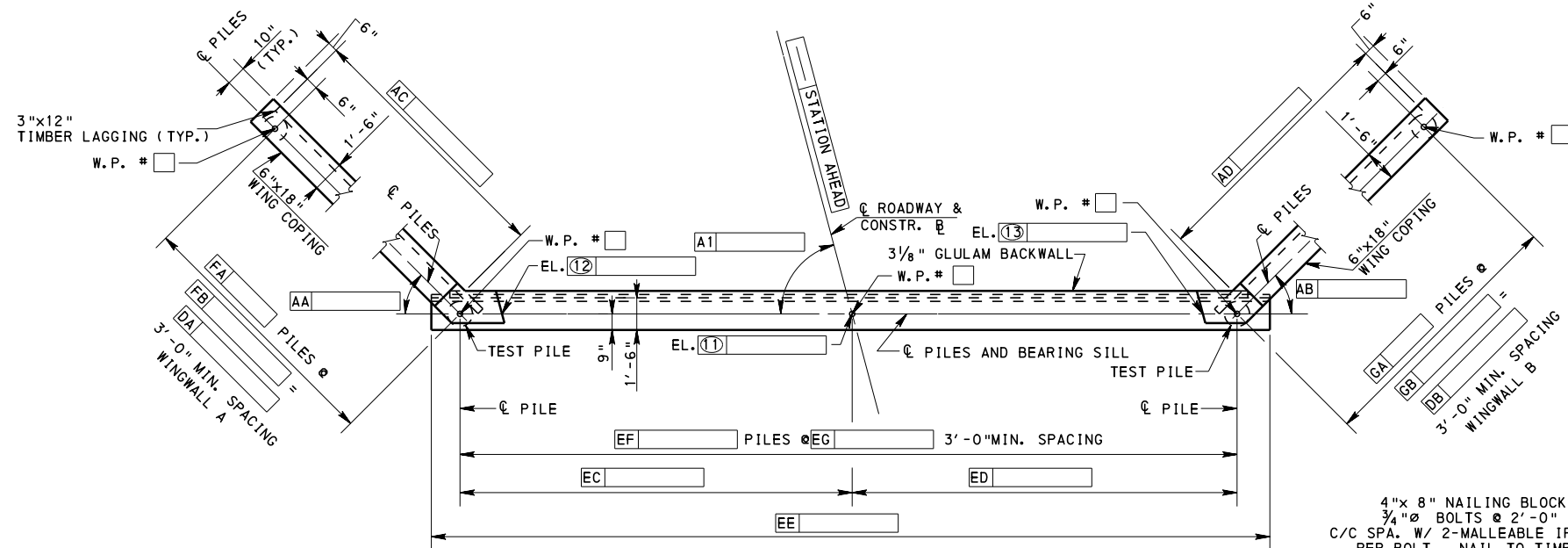
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

PILE SUPPORTED ABUTMENT
 ABUTMENT ___ -PILE DETAILS-RIGHT SKEW

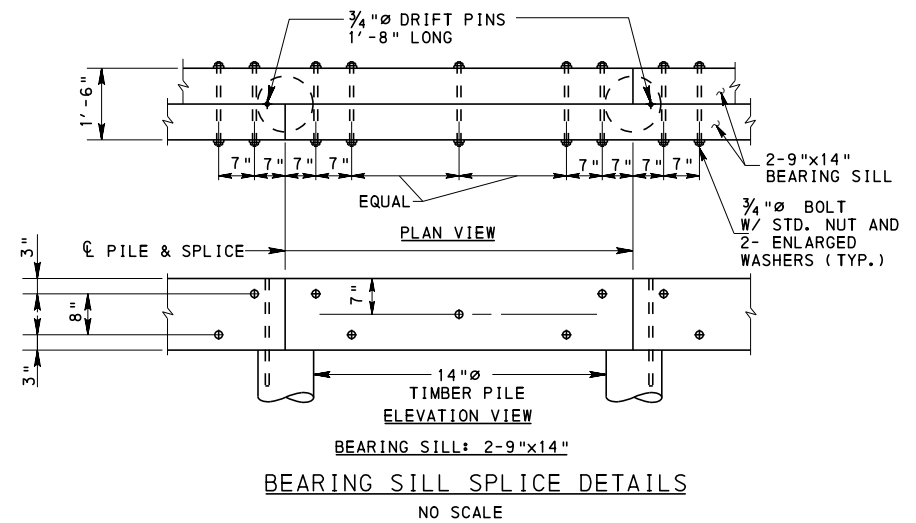
RECOMMENDED APR. 23, 2013
 Thomas P. Nacivica
 CHIEF BRIDGE ENGINEER

RECOMMENDED APR. 23, 2013
 [Signature]
 ACTING DIR. BUR. OF PROJECT DELIVERY

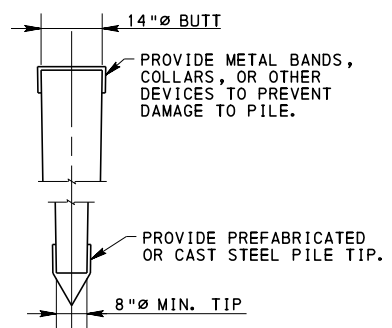
SHEET 9 OF 9
 BLC-567M



ABUTMENT PLAN
NO SCALE



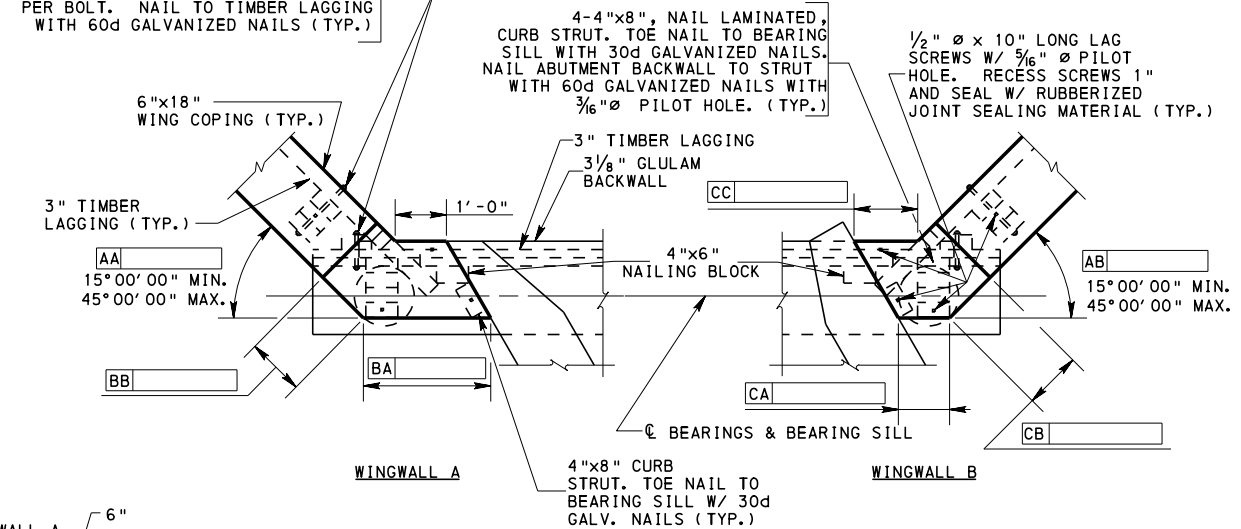
BEARING SILL SPLICE DETAILS
NO SCALE



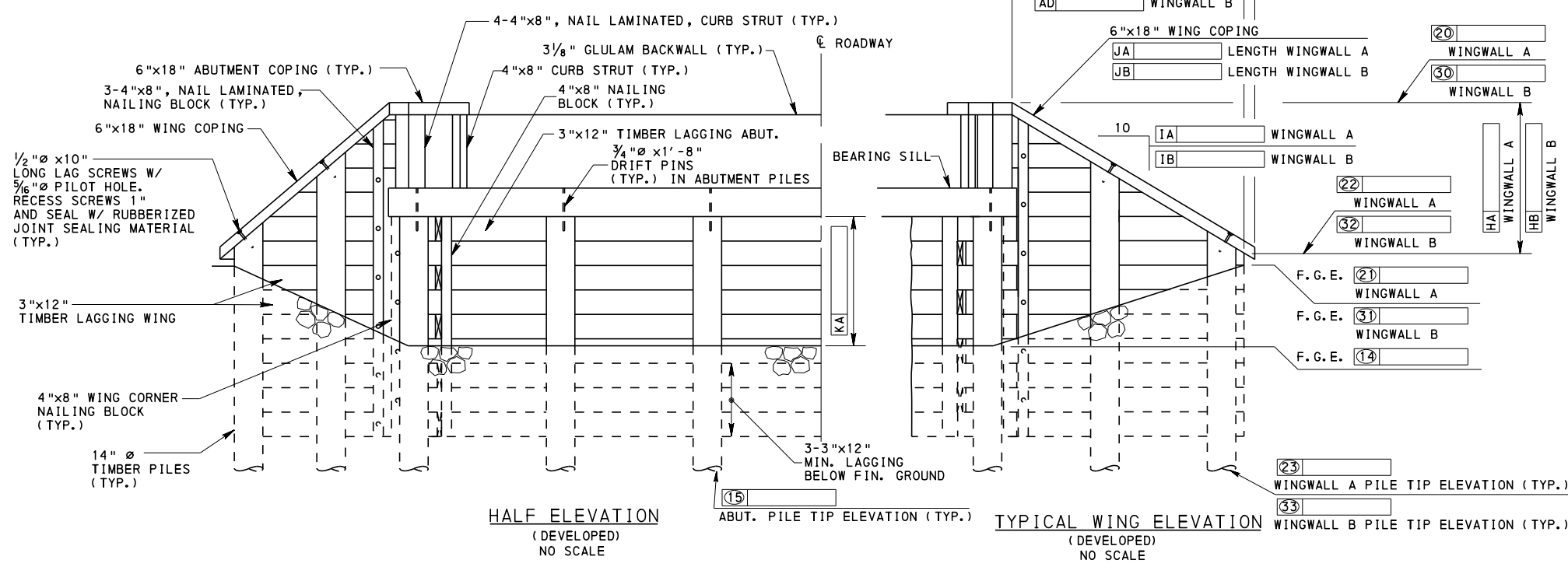
TYP. PILE DETAIL
NO SCALE

- LEGEND**
 F. G. E. DENOTES FINISHED GROUND ELEVATION
 W. P. DENOTES WORKING POINT
- NOTES:**
- NOMINAL DIMENSION ARE SHOWN FOR SOLID SAWN TIMBER
 - ACTUAL DIMENSION ARE SHOWN FOR GLULAM TIMBER
 - FOR GENERAL NOTES, SEE SHEET
 - FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET
 - MAX. ALLOWABLE PILE LOAD = ___ kips
 - MAX. DESIGN PILE LOAD = ___ kips

4"x8" NAILING BLOCKS.
 3/4" Ø BOLTS @ 2'-0"
 C/C SPA. W/ 2-MALLEABLE IRON WASHERS PER BOLT. NAIL TO TIMBER LAGGING WITH 60d GALVANIZED NAILS (TYP.)



SKEWED CORNER DETAIL
NO SCALE



HALF ELEVATION
(DEVELOPED)
NO SCALE

TYPICAL WING ELEVATION
(DEVELOPED)
NO SCALE

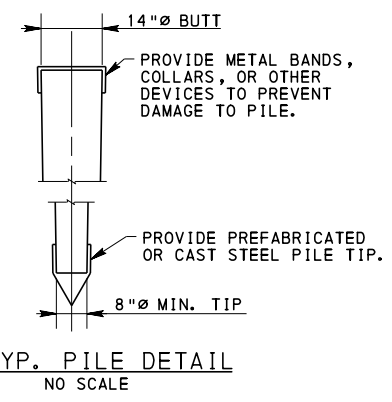
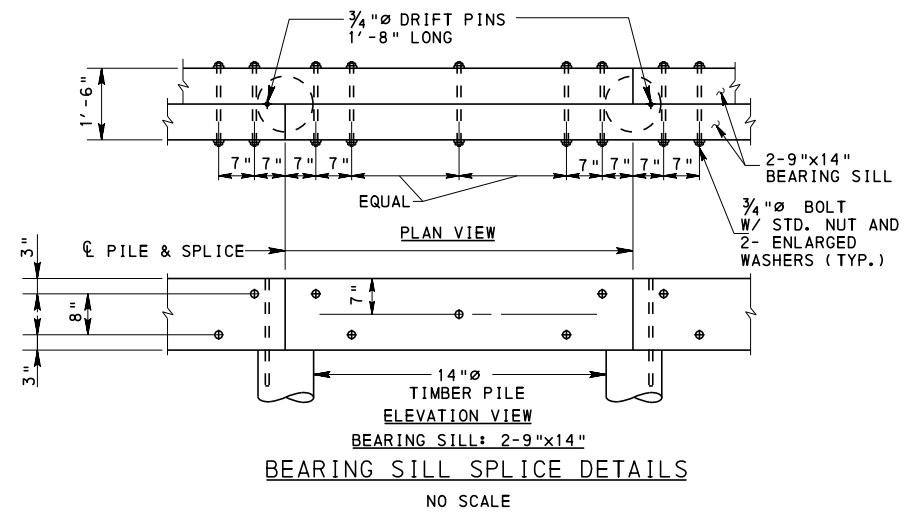
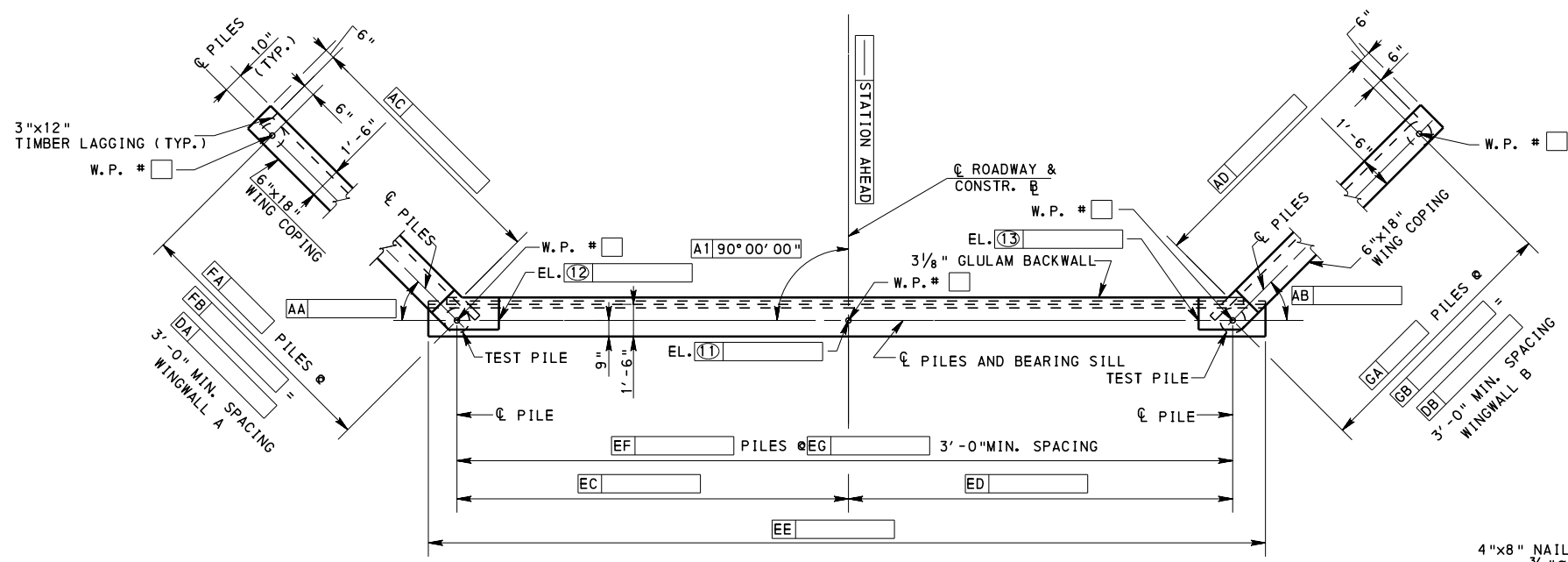
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

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COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

PILE SUPPORTED TIMBER SILL
 WOOD PILE ABUTMENT - LEFT SKEW

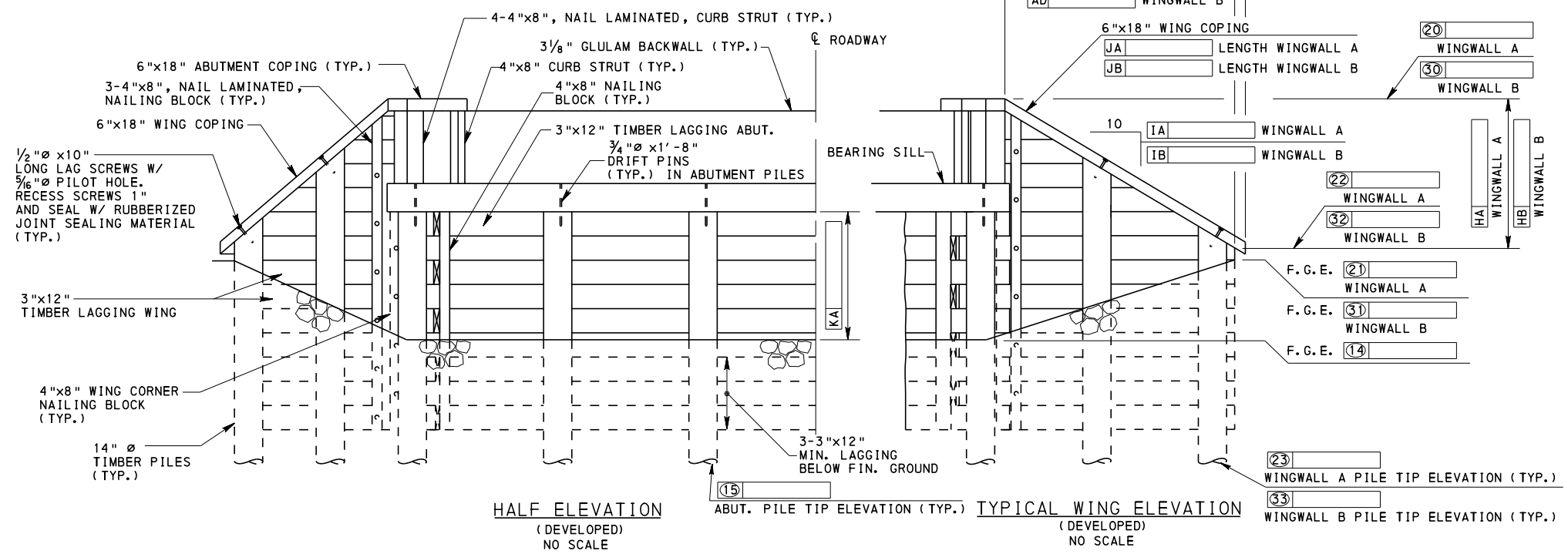
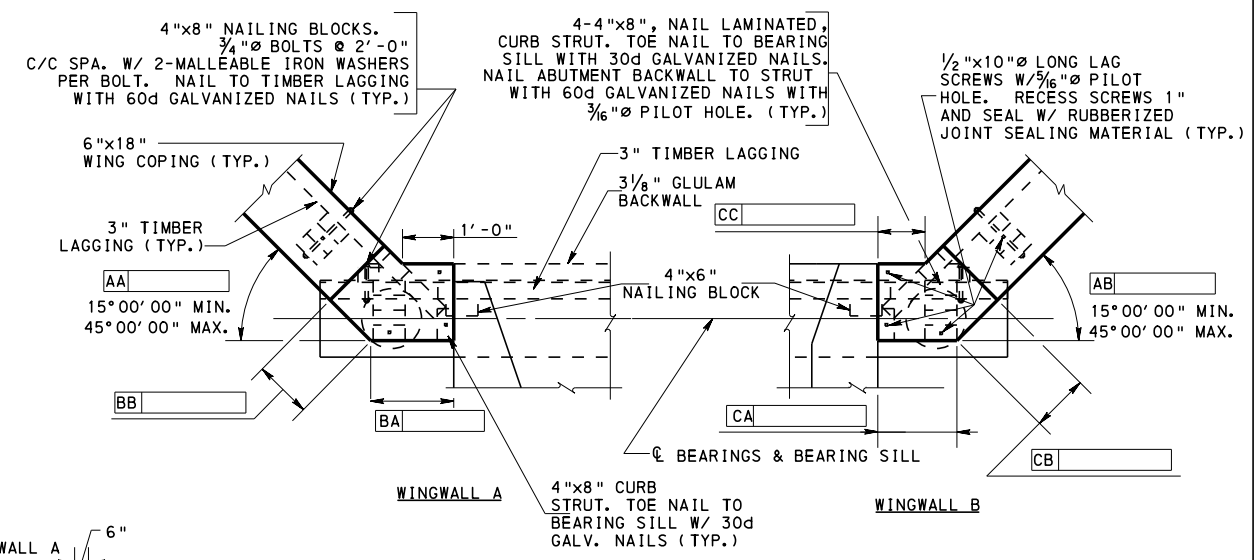
RECOMMENDED APR. 23, 2013
 RECOMMENDED APR. 23, 2013
 SHEET 1 OF 6
 THOMAS P. MACIOCE
 CHIEF BRIDGE ENGINEER
 ACTING DIR. BUR. OF PROJECT DELIVERY
 BLC-568M



LEGEND
F.G.E. DENOTES FINISHED GROUND ELEVATION
W.P. DENOTES WORKING POINT

NOTES:

- NOMINAL DIMENSION ARE SHOWN FOR SOLID SAWN TIMBER
- ACTUAL DIMENSION ARE SHOWN FOR GLULAM TIMBER
- FOR GENERAL NOTES, SEE SHEET
- FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET
- MAX. ALLOWABLE PILE LOAD = _____ kips
- MAX. DESIGN PILE LOAD = _____ kips



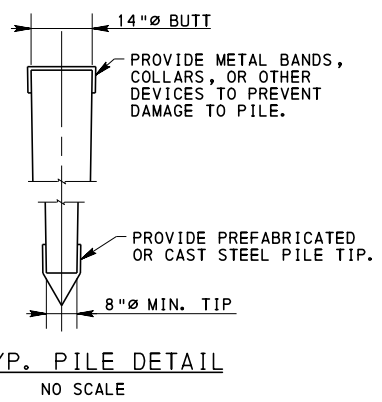
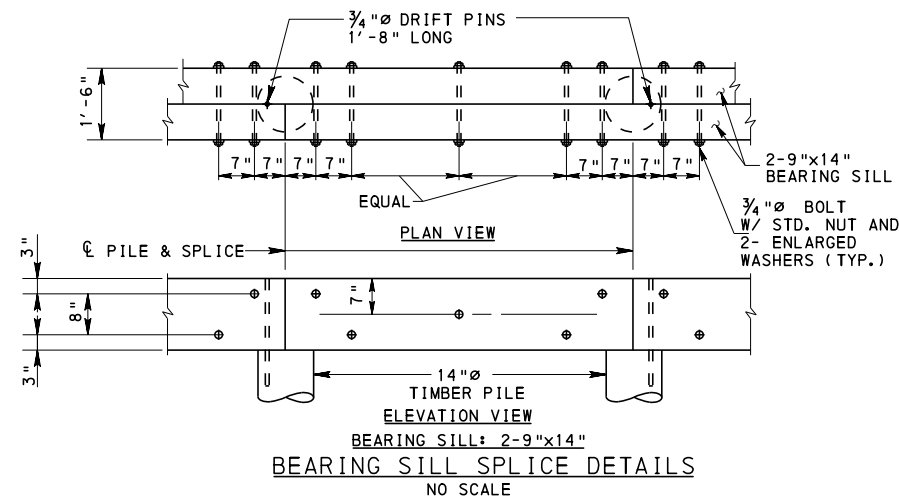
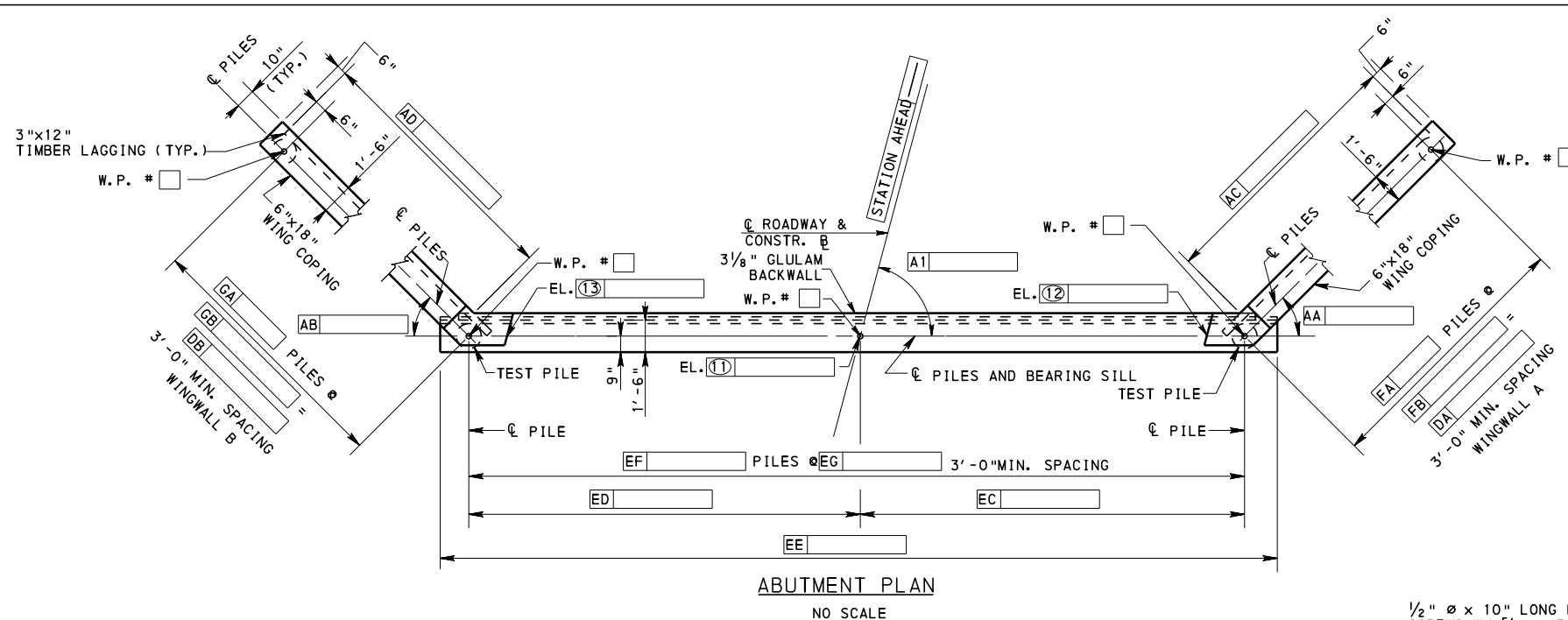
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET OF

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

PILE SUPPORTED TIMBER SILL
WOOD PILE ABUTMENT - 90° SKEW

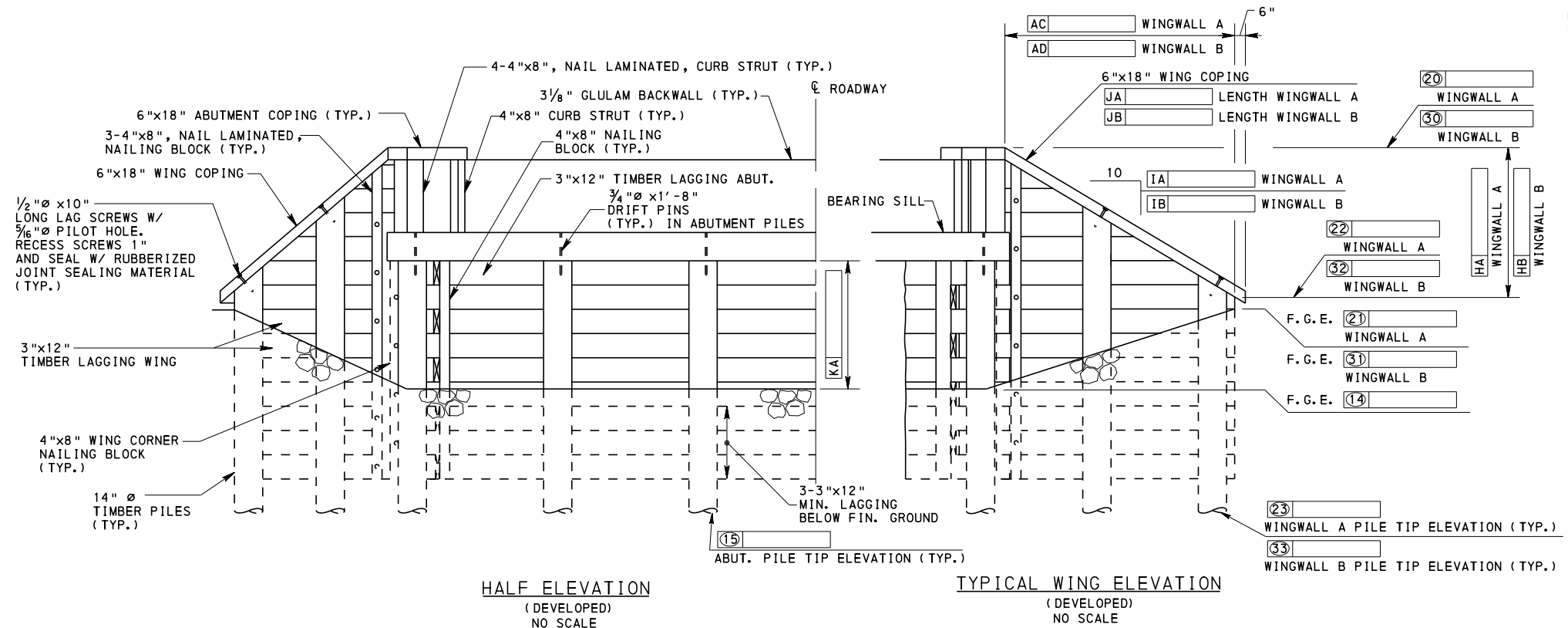
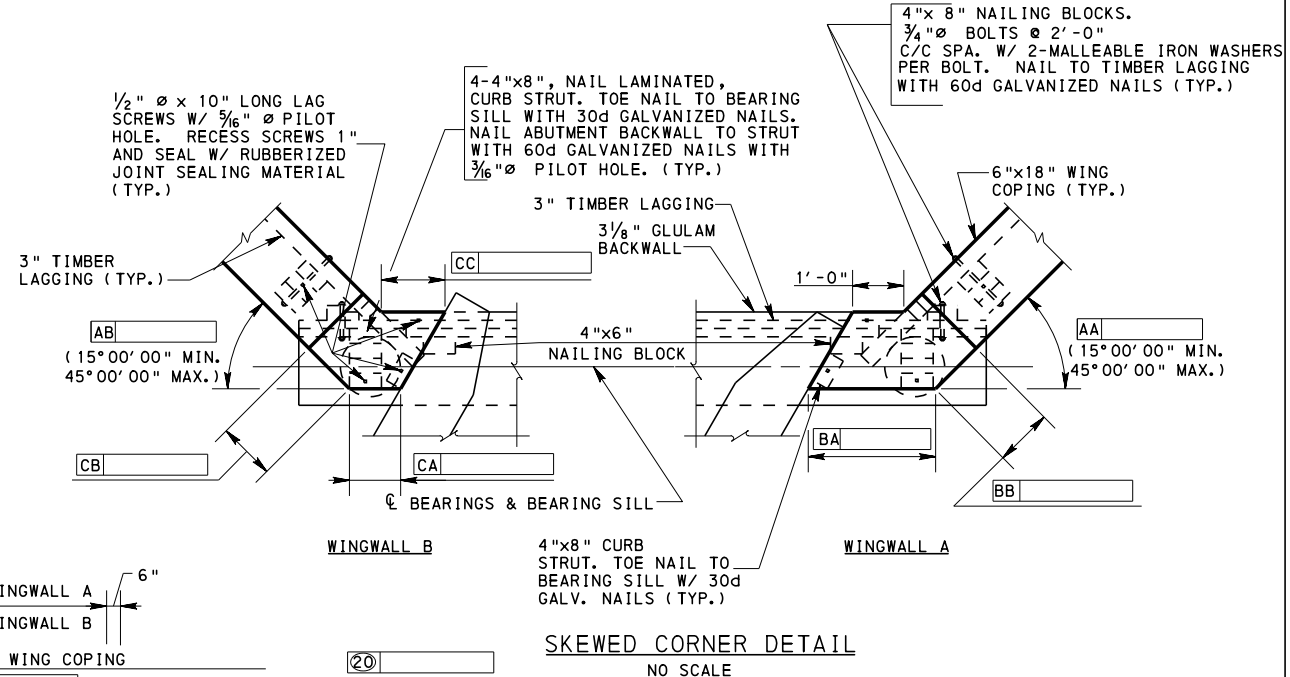
RECOMMENDED APR. 23, 2013
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 2 OF 6
BLC-568M



LEGEND
F.G.E. DENOTES FINISHED GROUND ELEVATION
W.P. DENOTES WORKING POINT

NOTES:

- NOMINAL DIMENSION ARE SHOWN FOR SOLID SAWN TIMBER
- ACTUAL DIMENSION ARE SHOWN FOR GLULAM TIMBER
- FOR GENERAL NOTES, SEE SHEET
- FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET
- MAX. ALLOWABLE PILE LOAD = _____ kips
- MAX. DESIGN PILE LOAD = _____ kips



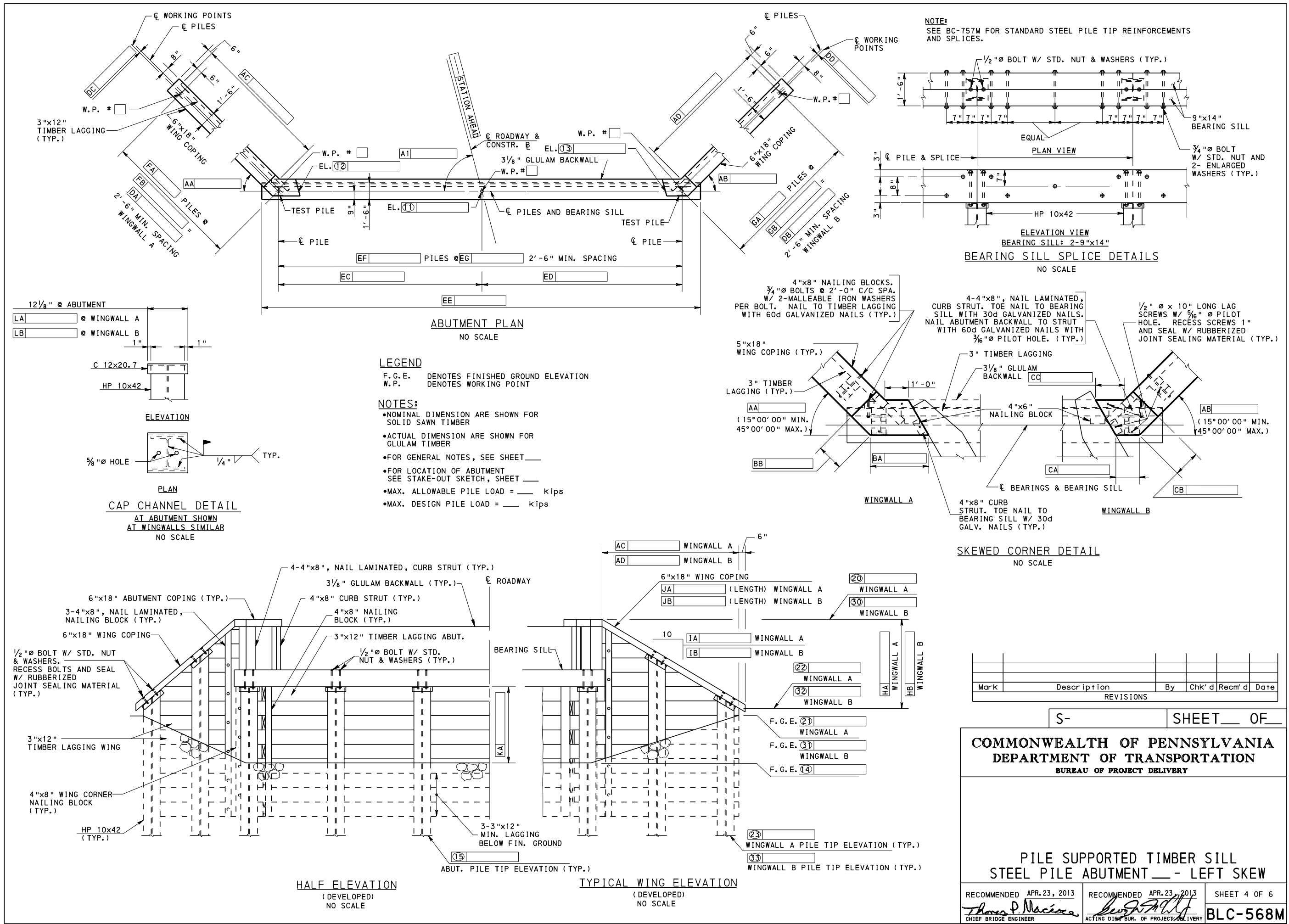
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ___ OF ___

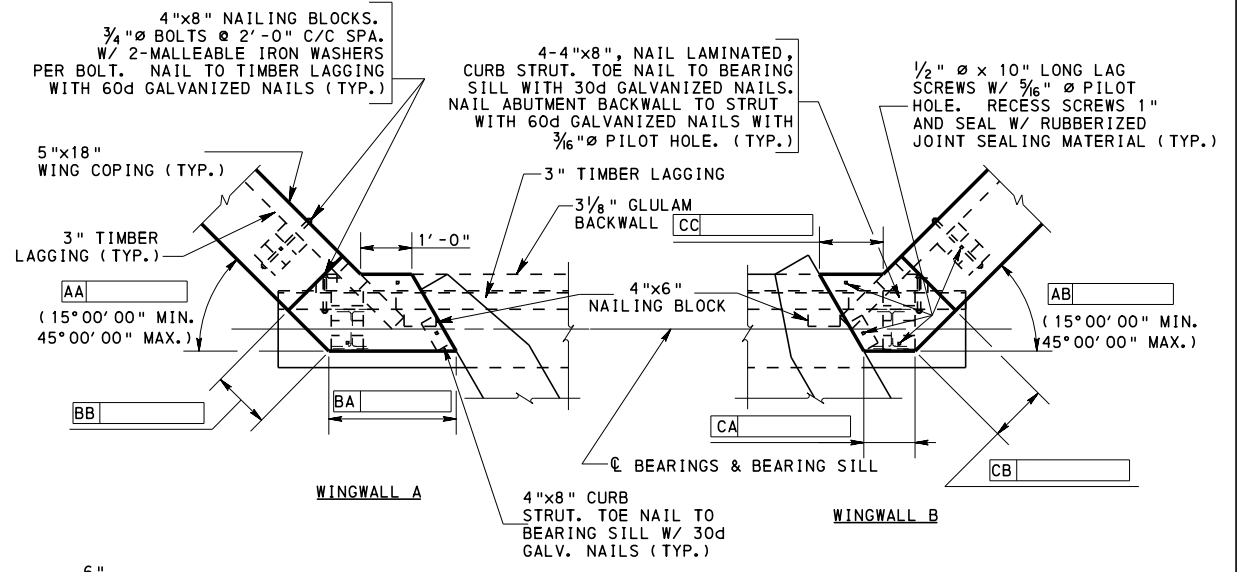
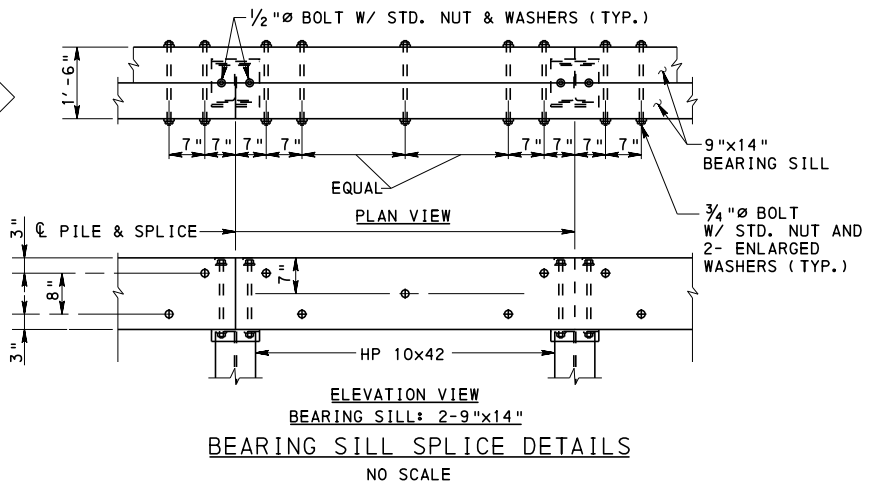
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

PILE SUPPORTED TIMBER SILL
WOOD PILE ABUTMENT - RIGHT SKEW

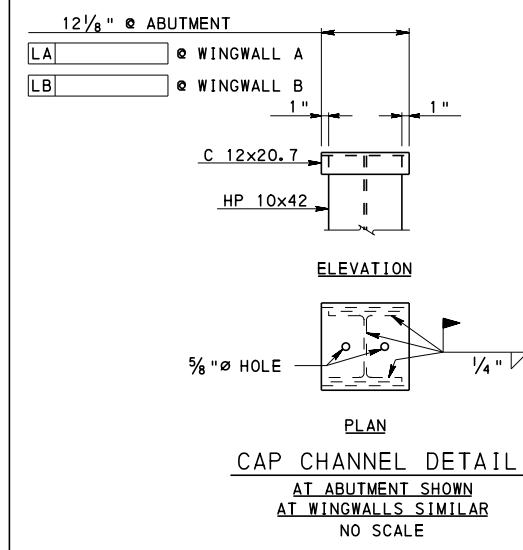
RECOMMENDED APR. 23, 2013 <i>Thomas P. Nacivca</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>David P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 3 OF 6 BLC-568M
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NOTE:
SEE BC-757M FOR STANDARD STEEL PILE TIP REINFORCEMENTS AND SPLICES.

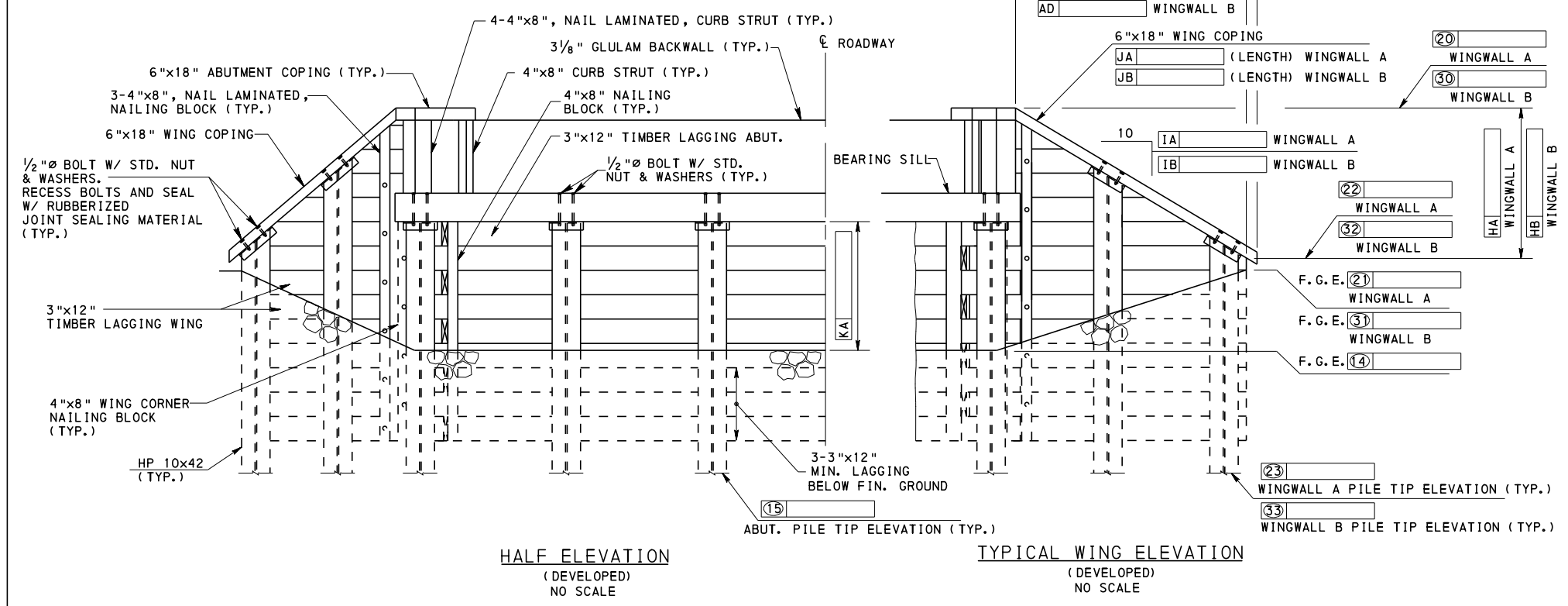


SKewed CORNER DETAIL
NO SCALE



LEGEND
F.G.E. DENOTES FINISHED GROUND ELEVATION
W.P. DENOTES WORKING POINT

NOTES:
•NOMINAL DIMENSION ARE SHOWN FOR SOLID SAWN TIMBER
•ACTUAL DIMENSION ARE SHOWN FOR GLULAM TIMBER
•FOR GENERAL NOTES, SEE SHEET ____
•FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET ____
•MAX. ALLOWABLE PILE LOAD = ____ kips
•MAX. DESIGN PILE LOAD = ____ kips



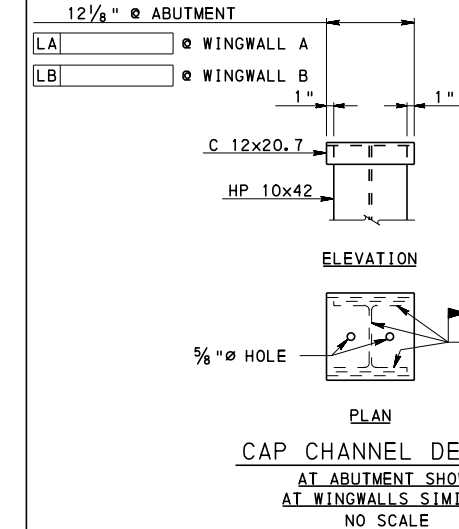
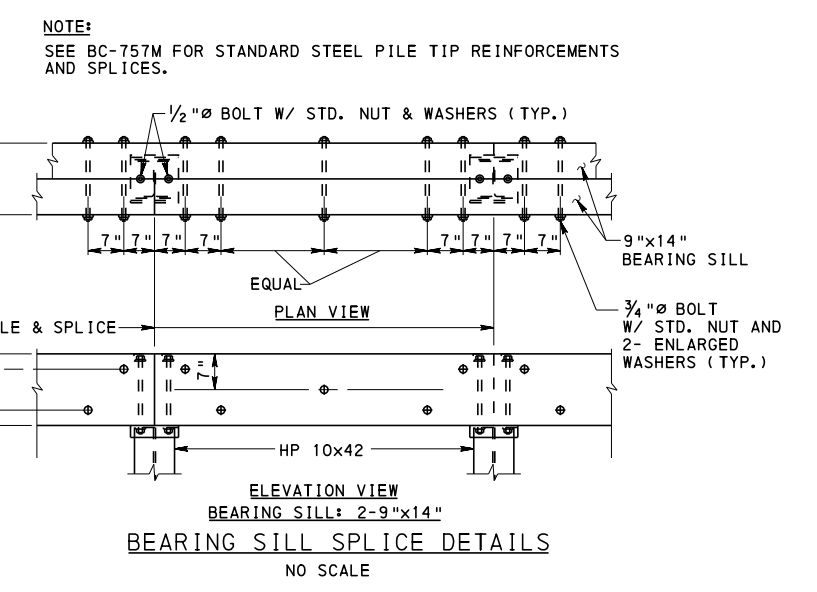
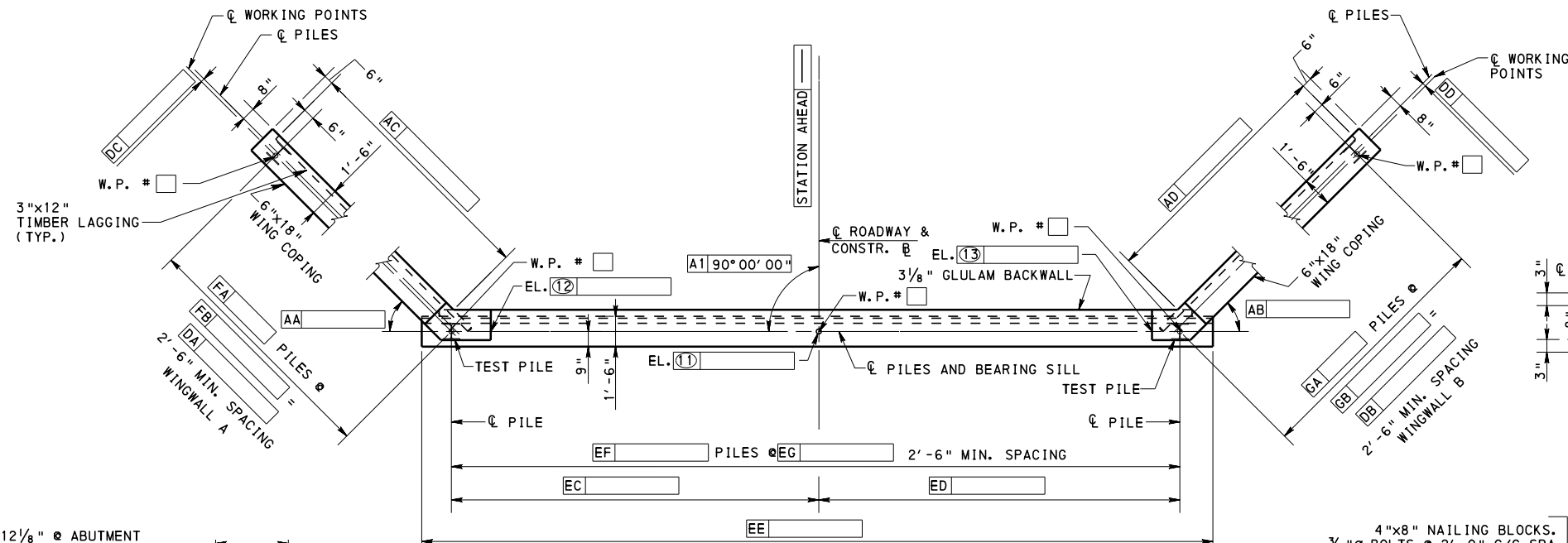
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ____ OF ____

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

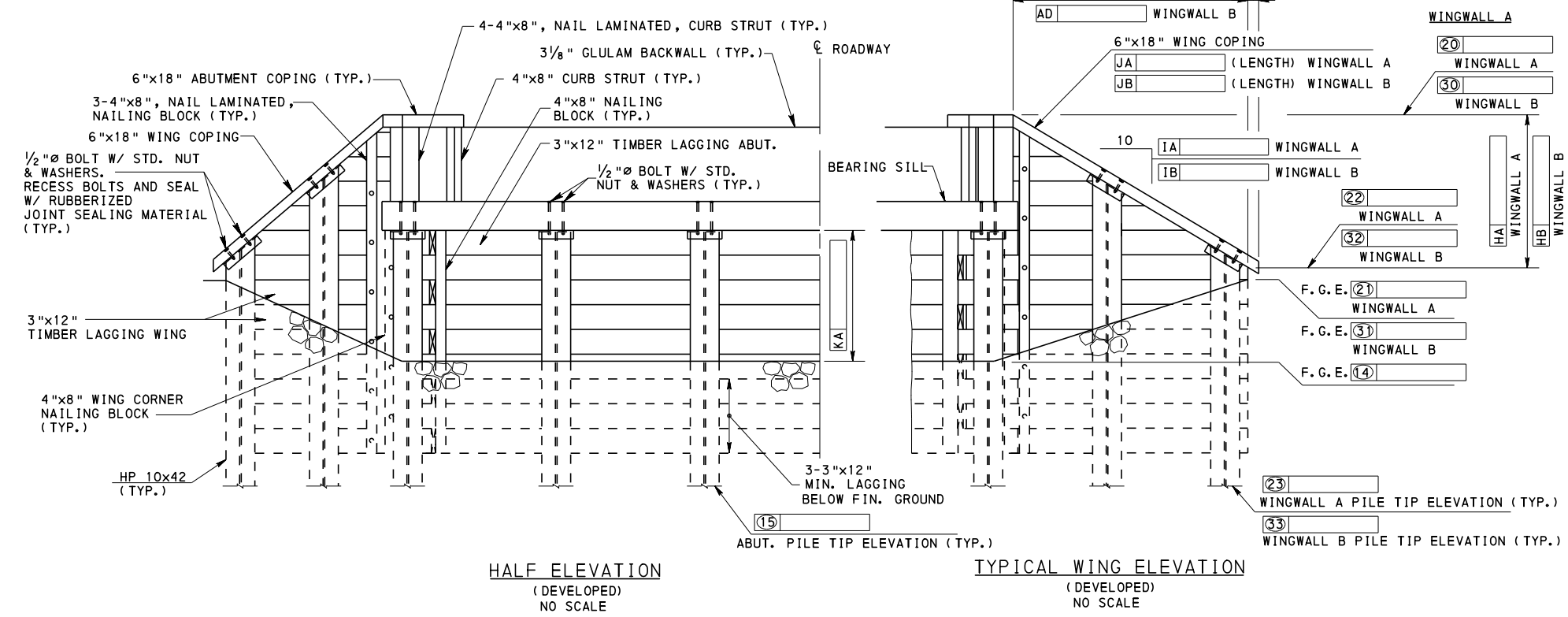
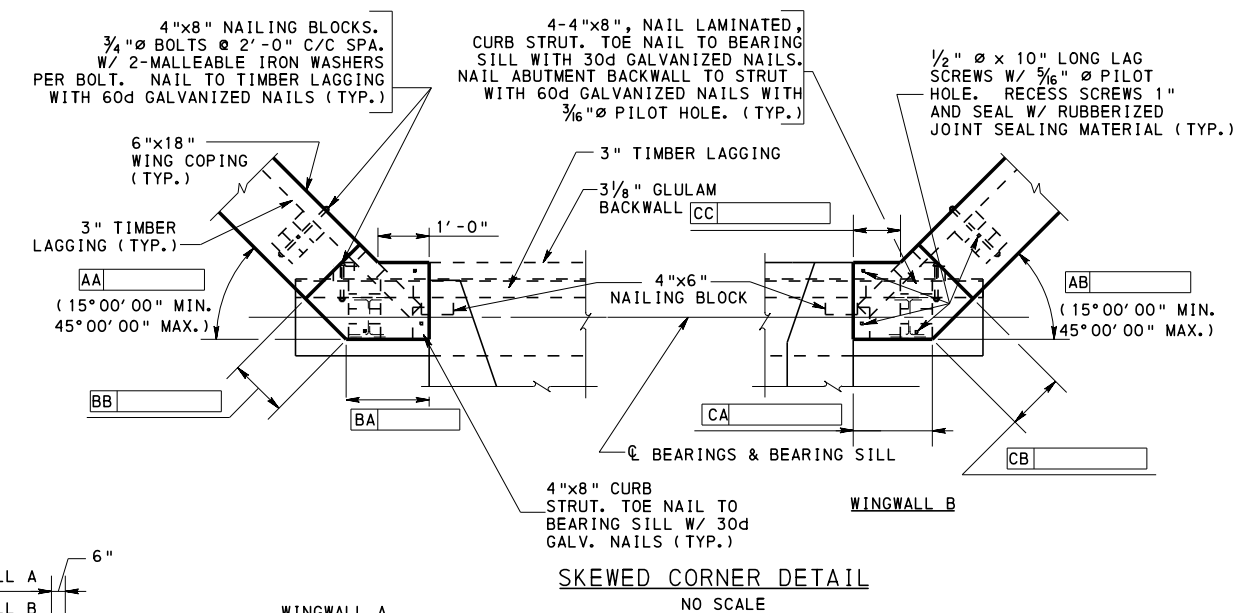
**PILE SUPPORTED TIMBER SILL
STEEL PILE ABUTMENT - LEFT SKEW**

RECOMMENDED APR. 23, 2013 <i>Thomas P. Maciocco</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>David P. ...</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 4 OF 6 BLC-568M
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LEGEND
F.G.E. DENOTES FINISHED GROUND ELEVATION
W.P. DENOTES WORKING POINT

NOTES:
•NOMINAL DIMENSION ARE SHOWN FOR SOLID SAWN TIMBER
•ACTUAL DIMENSION ARE SHOWN FOR GLULAM TIMBER
•FOR GENERAL NOTES, SEE SHEET ____
•FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET ____
•MAX. ALLOWABLE PILE LOAD = ____ kips
•MAX. DESIGN PILE LOAD = ____ kips



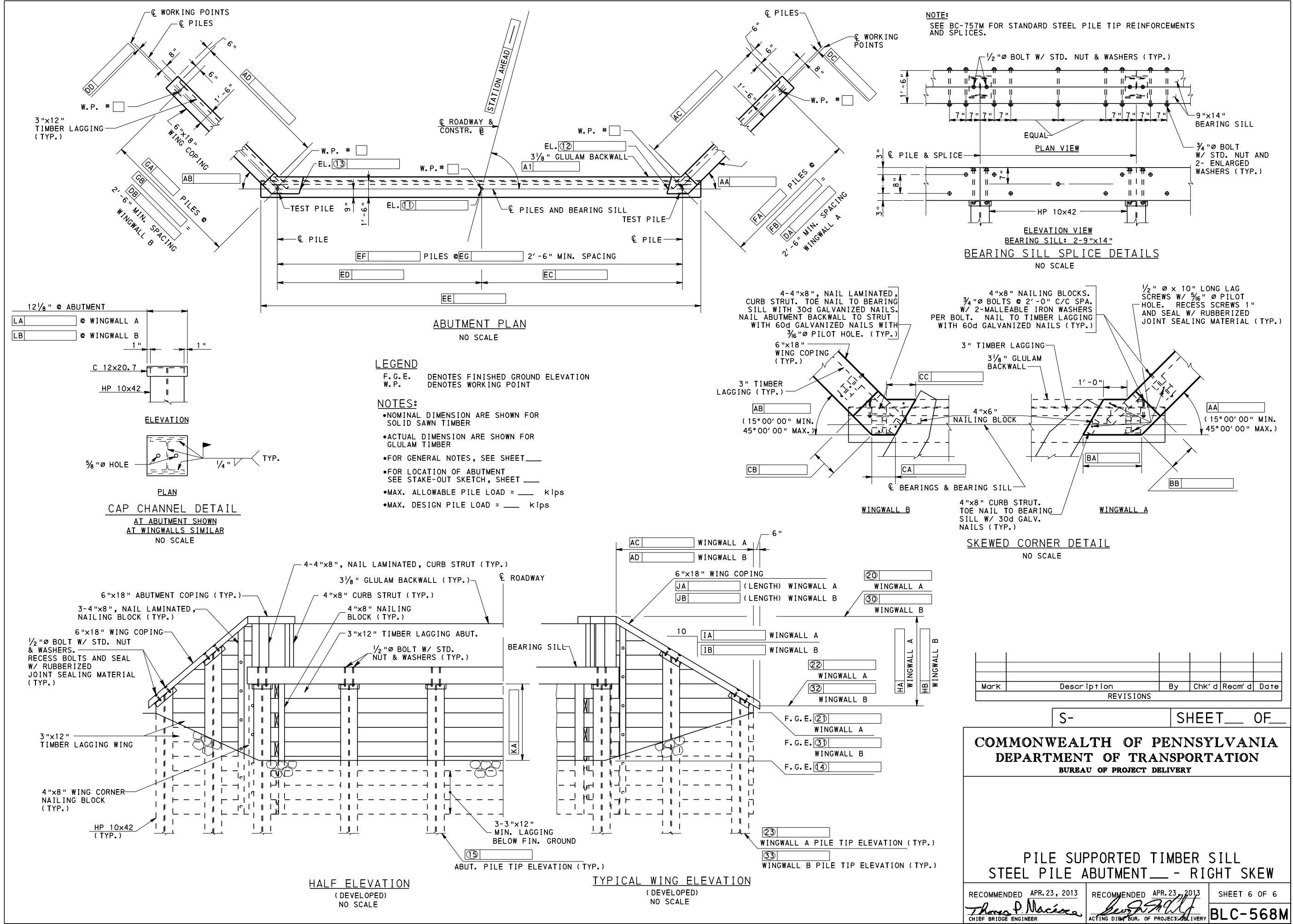
Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

S- SHEET ____ OF ____

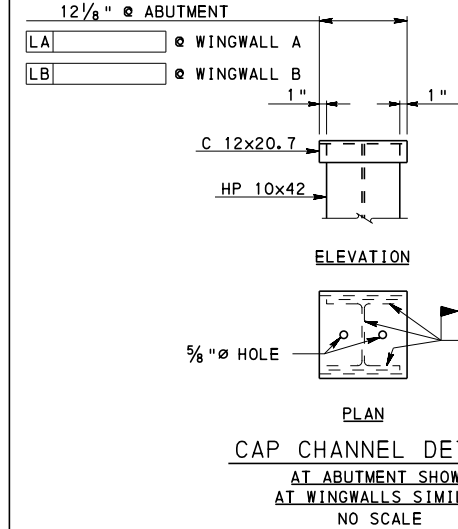
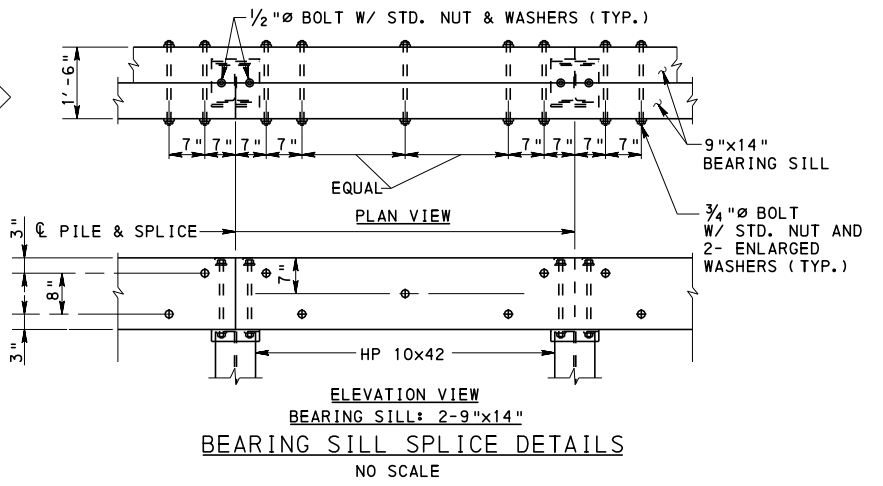
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

PILE SUPPORTED TIMBER SILL
STEEL PILE ABUTMENT - 90° SKEW

RECOMMENDED APR. 23, 2013 <i>Thomas P. Nacivca</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>[Signature]</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 5 OF 6 BLC-568M
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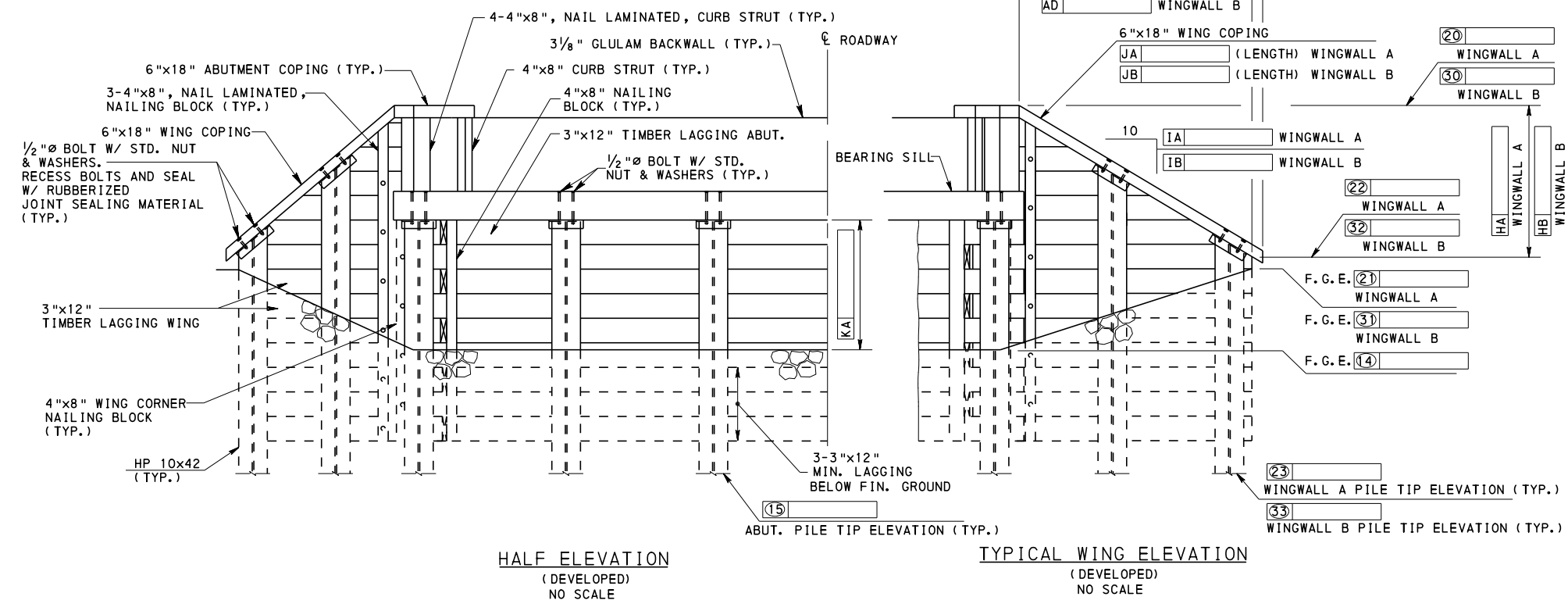
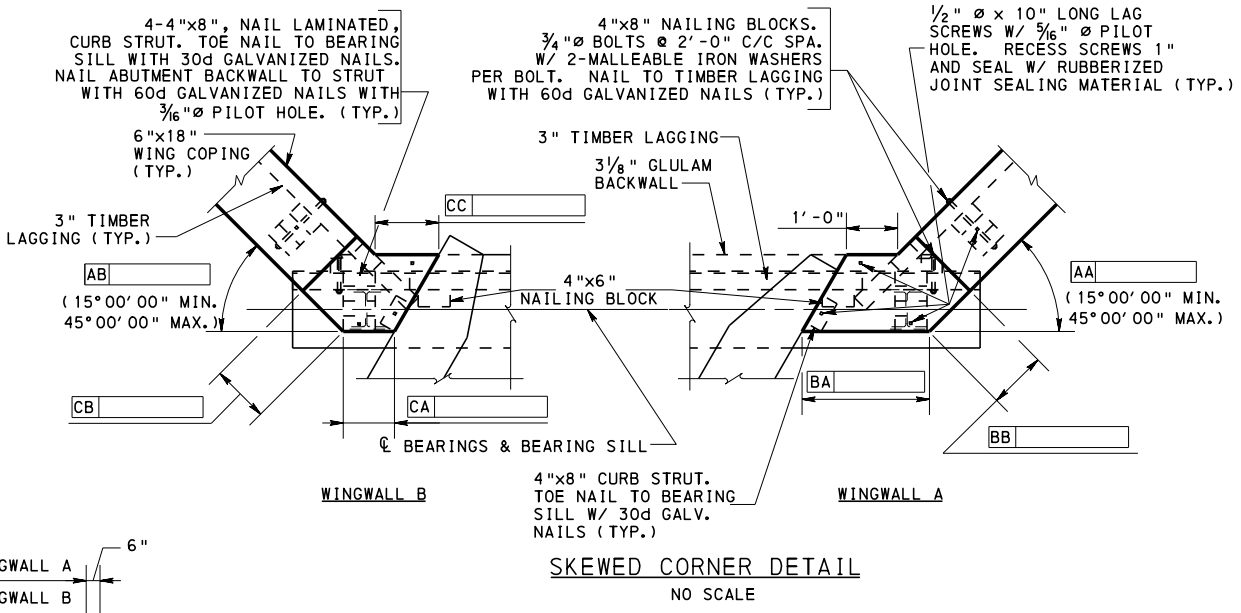


NOTE:
SEE BC-757M FOR STANDARD STEEL PILE TIP REINFORCEMENTS AND SPLICES.



LEGEND
F.G.E. DENOTES FINISHED GROUND ELEVATION
W.P. DENOTES WORKING POINT

NOTES:
•NOMINAL DIMENSION ARE SHOWN FOR SOLID SAWN TIMBER
•ACTUAL DIMENSION ARE SHOWN FOR GLULAM TIMBER
•FOR GENERAL NOTES, SEE SHEET ____
•FOR LOCATION OF ABUTMENT SEE STAKE-OUT SKETCH, SHEET ____
•MAX. ALLOWABLE PILE LOAD = ____ kips
•MAX. DESIGN PILE LOAD = ____ kips



Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

PILE SUPPORTED TIMBER SILL
STEEL PILE ABUTMENT - RIGHT SKEW

RECOMMENDED APR. 23, 2013 <i>Thomas P. Nacivica</i> CHIEF BRIDGE ENGINEER	RECOMMENDED APR. 23, 2013 <i>George P. Kelly</i> ACTING DIR. BUR. OF PROJECT DELIVERY	SHEET 6 OF 6 BLC-568M
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CRIBBING NOTES

USE TREATED HARDWOOD OR SOFTWOOD TIMBER (EXCEPT WHITE OAK) FOR CRIB WALL.

LAY ALL STRETCHERS HORIZONTALLY.

USE MACHINE BOLT FASTENERS TO MATCH ASTM A-307 SPECIFICATIONS. HOT-DIP GALVANIZE ALL HARDWARE.

SOIL CONDITIONS:
DETERMINE THE SOIL & GROUNDWATER CONDITIONS & THE STABILITY OF THE CRIB WALL FOR EACH SPECIFIC CRIB WALL SITE.

THE SECTIONS SHOW PROPORTIONS & DETAILS FOR CRIB WALLS FOR THE FOLLOWING CONDITIONS:

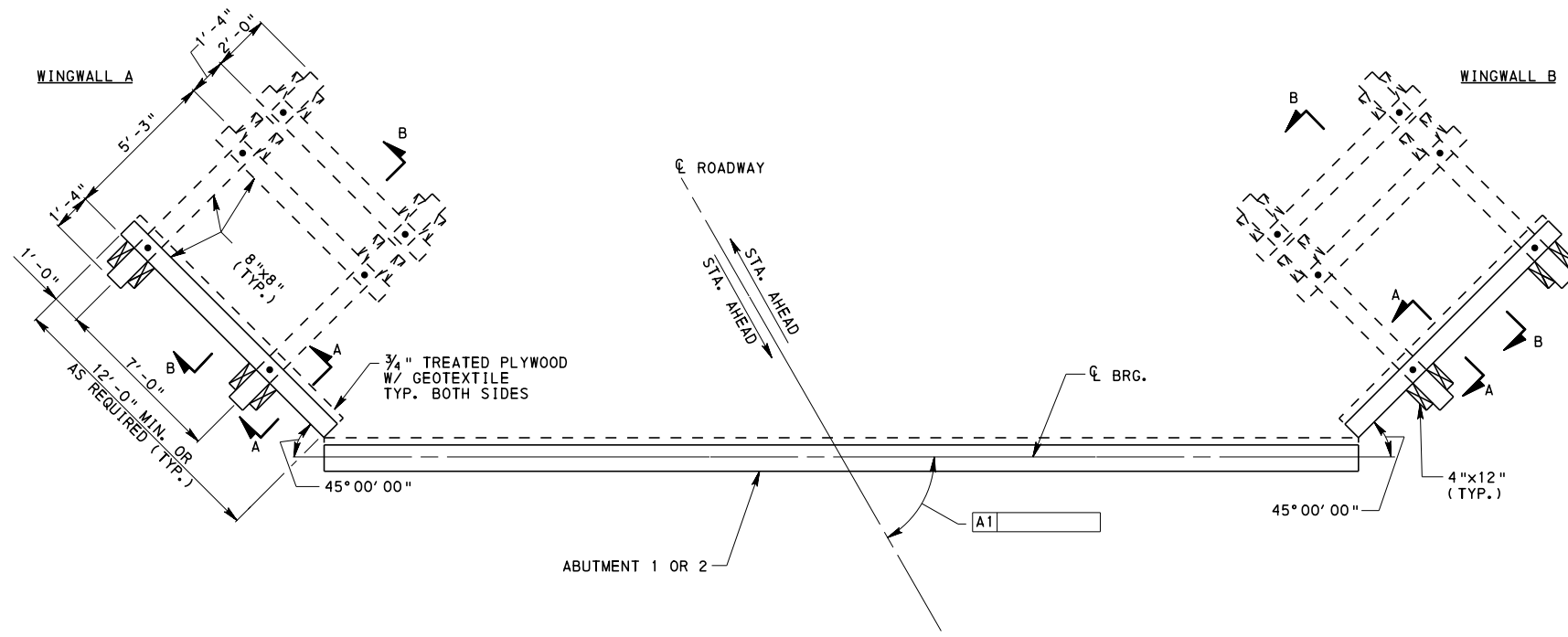
- A. FOUNDATION CONSISTS OF SAND, SAND & GRAVEL, OR OTHER GRANULAR SOIL WHICH DOES NOT SETTLE SIGNIFICANTLY UNDER THE WEIGHT OF THE CRIB & FILL.
- B. FILL WITHIN CRIBS & BEHIND CRIBS CONSISTS OF SAND, SAND & GRAVEL, OR OTHER FREE DRAINING GRANULAR MATERIAL PLACED IN 6" LAYERS & COMPACTED WITH VIBRATORY COMPACTORS.
- C. LOCATE BASE OF CRIB ABOVE GROUNDWATER TABLE.

FOR OTHER SOIL OR GROUNDWATER CONDITIONS, ADJUST THE CRIB PROPORTIONS & DETAILS AS NECESSARY TO PROVIDE AN ADEQUATE FACTOR-OF-SAFETY IN ACCORDANCE WITH GOOD ENGINEERING PRACTICE.
DESIGN ASSUMES END OF WALL TERMINATION TO OCCUR AT EXPOSED ABUTMENT HEIGHT (10'-0" MAX.). USE 16'-0" STRETCHERS TOE NAILED TO HEADERS AT ENDS. A HIGHER WALL REQUIRES A SPECIAL DESIGN.

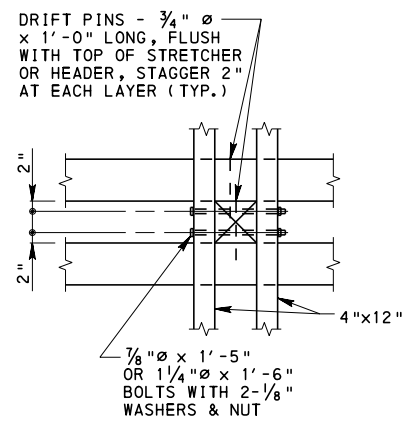
USE NON-GRADE TIMBER TIE SPECIES NORTHERN RED OAK, RED MAPLE, YELLOW POPLAR, OR SOFTWOODS.

MAXIMUM EXPOSED HEIGHT FOR TIMBER CRIB WALL IS 10'-0".

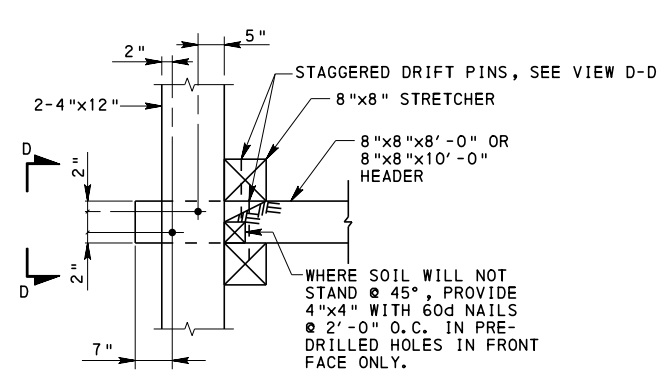
GROUND CONTACT RETENTION PRESSURE TREATMENT EQUIVALENT TO AWPB STANDARD U1 WITH CREOSOTE.



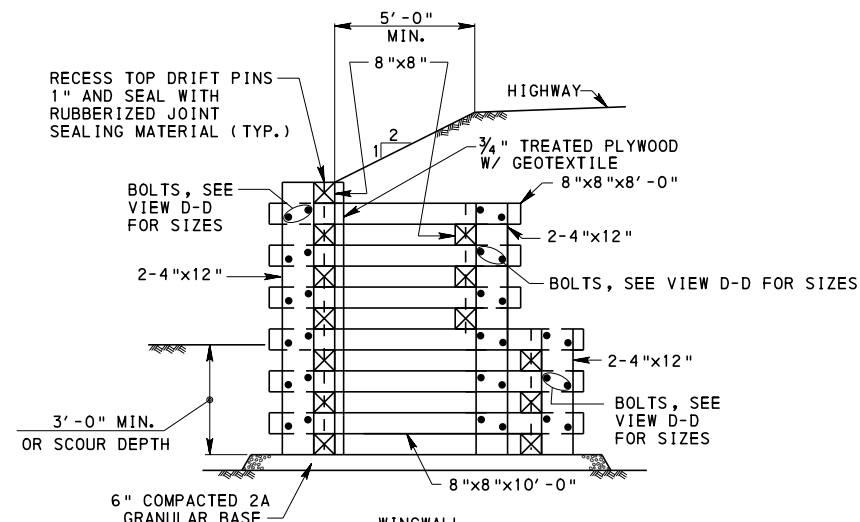
PLAN
NO SCALE



VIEW D-D
NO SCALE



SECTION A-A
NO SCALE



WINGWALL SECTION B-B
NO SCALE

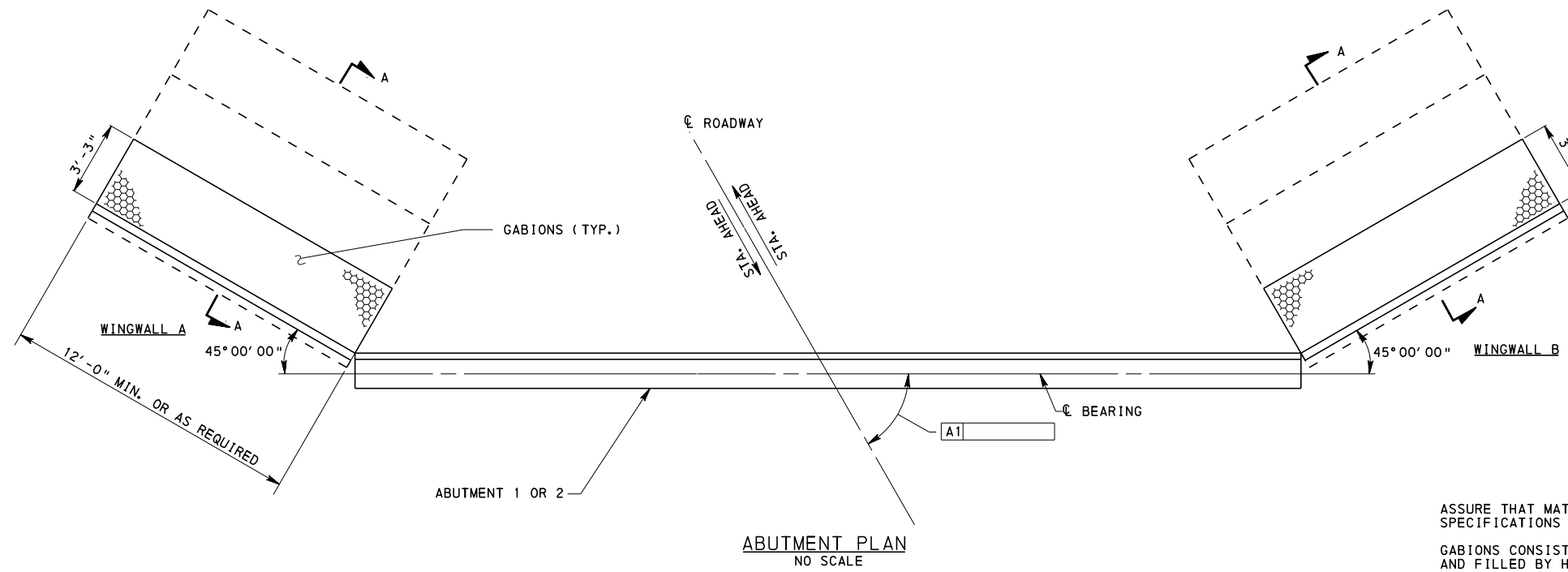
Mark	Description	By	Chk'd	Rec'd	Date
REVISIONS					

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

OPTIONAL WINGWALLS
TIMBER CRIBBING WINGWALLS

RECOMMENDED APR. 23, 2013
RECOMMENDED APR. 23, 2013
SHEET 1 OF 2
BLC-569M



GABION SIZES

STANDARD		
WG	LG	HG
3'-0"	6'-0"	1'-0"
3'-0"	12'-0"	1'-0"
3'-0"	9'-0"	1'-6"
3'-0"	6'-0"	3'-0"
3'-0"	9'-0"	3'-0"
3'-0"	12'-0"	3'-0"

ADDITIONAL SIZES MAY BE AVAILABLE ON A SPECIAL ORDER BASIS.

GABION NOTES

ASSURE THAT MATERIALS AND CONSTRUCTION MEET THE REQUIREMENTS OF PUBLICATION 408, SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, SECTION 626 GABIONS.

GABIONS CONSIST OF WIRE-MESH BASKETS SHEATHED IN POLYVINYL CHLORIDE PLASTIC AND FILLED BY HAND PLACEMENT OF COARSE AGGREGATE, AT LEAST ALONG THE EXPOSED FACES, FOR A UNIFORM APPEARANCE.

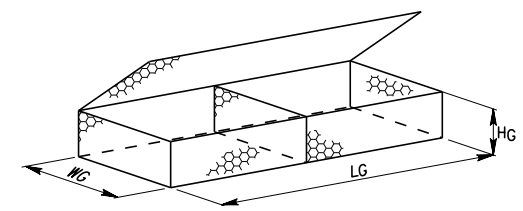
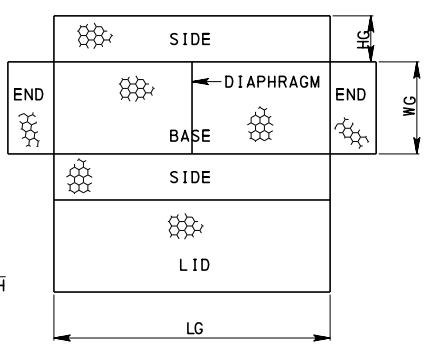
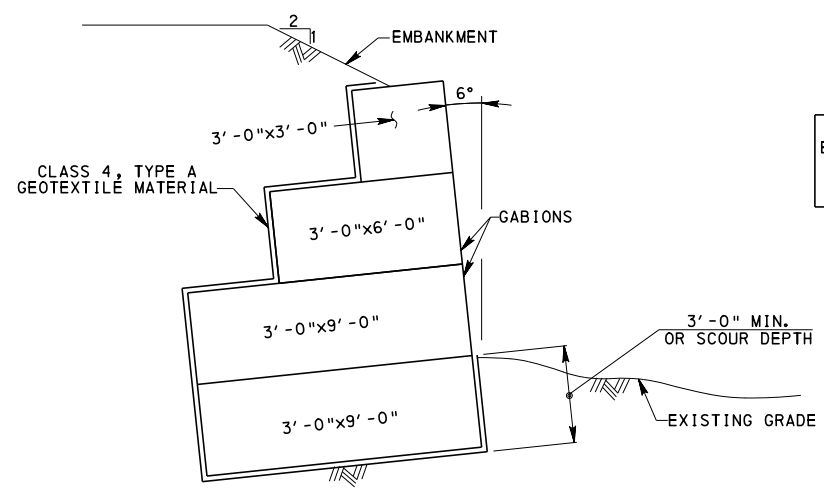
REQUIRE SPECIAL EMBEDMENT WHERE THE WINGWALL IS INSTALLED ADJACENT TO WATER. PROVIDE BASE APPROXIMATELY TWO TIMES AS WIDE AS THE ANTICIPATED DEPTH OF SCOUR AND PROVIDE EMBEDMENT AT LEAST EQUAL TO THE ANTICIPATED DEPTH OF SCOUR.

INSTALL GEOTEXTILE MATERIAL ALONG ALL INTERFACE AREAS WITH SOIL AND/OR CEMENT CONTACT.

GEOTEXTILE MATERIAL MEETS THE REQUIREMENTS OF PUBLICATION 408, SECTION 212, FOR CONSTRUCTION DETAILS AND SECTION 735 FOR MATERIAL REQUIREMENTS.

USE GABION SLOPE WALL WHERE SPECIFIED OR INDICATED. DO NOT USE GABION SLOPE WALL IN URBAN OR SUBURBAN ENVIRONMENT.

MAXIMUM HEIGHT FOR GABION WINGWALL IS 12'-0\".



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S- SHEET ___ OF ___

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**OPTIONAL WINGWALLS
GABION WINGWALLS**

RECOMMENDED APR. 23, 2013
 CHIEF BRIDGE ENGINEER
 RECOMMENDED APR. 23, 2013
 ACTING DIR. BUR. OF PROJECT DELIVERY
 SHEET 2 OF 2
BLC-569M