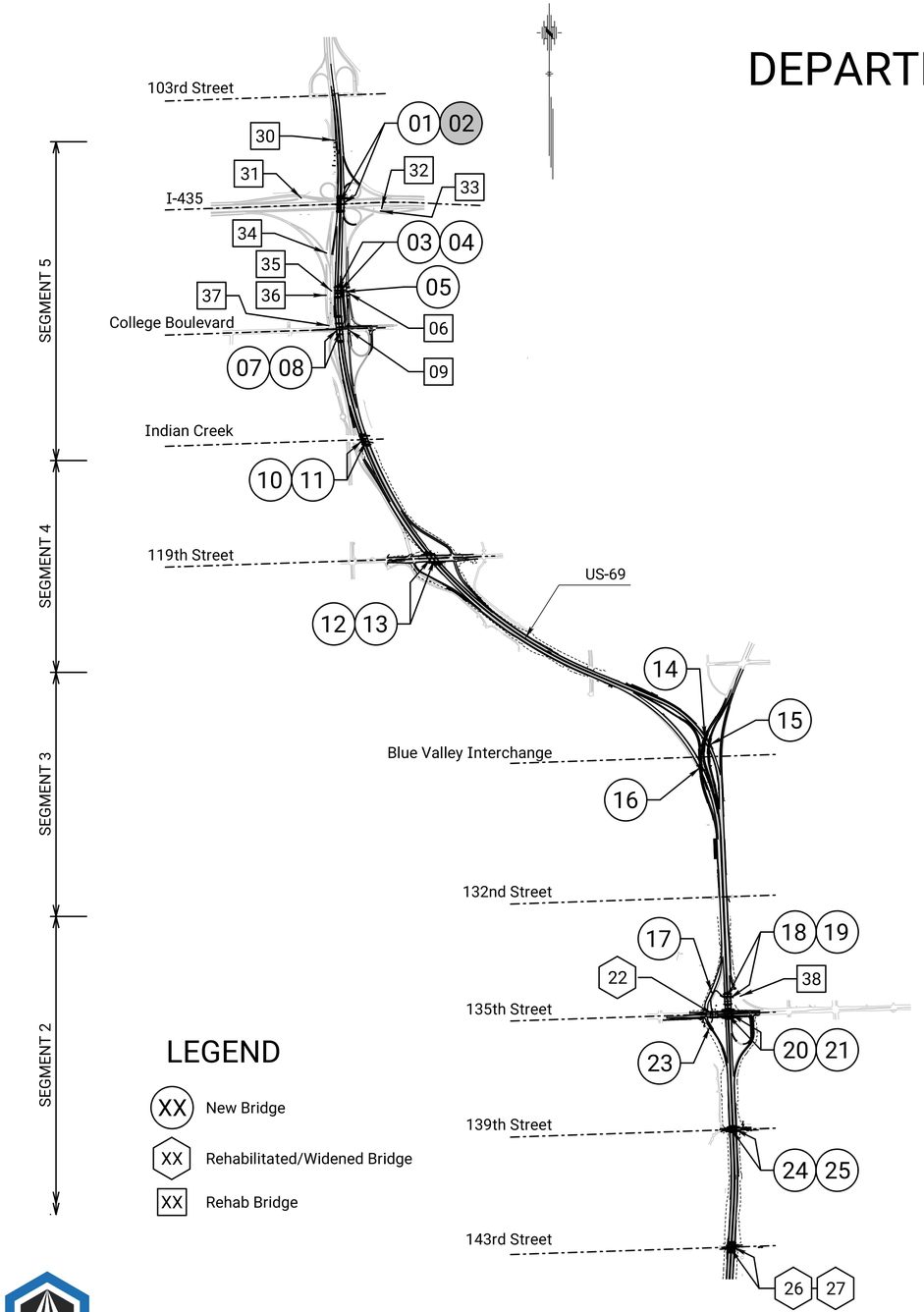
US69 Express
Apr 12, 2024
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-01	38

STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION



LOCATION MAP

LEGEND

- XX — New Bridge
- XX — Rehabilitated/Widened Bridge
- XX — Rehab Bridge

US69 EXPRESS CONSTRUCTORS

01 — SB US-69 over I-435
Sta. 1175+98.44 ℄ US-69
Br. No. 69-46-143.72 (467)
149' - 152' P.S. Conc. Beam Spans (PBMC)

02 — NB US-69 over I-435
Sta. 1175+98.45 ℄ US-69
Br. No. 69-46-143.73 (468)
149' - 135' P.S. Conc. Beam Spans (PBMC)

03 — SB US-69 over North Branch Indian Creek
Sta. 1156+45.00 ℄ US-69
Br. No. 69-46-143.33 (464)
69' - 76' - 69' P.S. Conc. Beam Spans (PBMC)

04 — NB US-69 over North Branch Indian Creek
Sta. 1156+45.01 ℄ US-69
Br. No. 69-46-143.34 (465)
69' - 76' - 69' P.S. Conc. Beam Spans (PBMC)

05 — College Boulevard to NB US-69 over North Branch Indian Creek
Sta. 310+00.00 ℙ College-NB US-69
Br. No. 69-46-143.35 (466)
57' - 68' - 57' P.S. Conc. Beam Spans (PBMC)

07 — SB US-69 over College Boulevard
Sta. 1147+48.48 ℄ US-69
Br. No. 69-46-143.18 (462)
148' - 246' - 148' Weathering Steel Welded Plate Girder (WWCC)

08 — NB US-69 over College Boulevard
Sta. 1147+48.48 ℄ US-69
Br. No. 69-46-143.19 (463)
148' - 246' - 148' Weathering Steel Welded Plate Girder (WWCC)

10 — SB US-69 over Indian Creek
Sta. 1121+55.47 ℄ US-69
Br. No. 69-46-142.75 (460)
61' - 75' - 61' P.S. Conc. Beam Spans (PBMC)

11 — NB US-69 over Indian Creek
Sta. 1121+55.48 ℄ US-69
Br. No. 69-46-142.76 (461)
61' - 75' - 61' P.S. Conc. Beam Spans (PBMC)

12 — SB US-69 over 119th Street
Sta. 1090+17.61 ℄ US-69
Br. No. 69-46-142.17 (458)
122' - 122' P.S. Conc. Beam Spans (PBMC)

13 — NB US-69 over 119th Street
Sta. 1090+17.62 ℄ US-69
Br. No. 69-46-142.18 (459)
122' - 122' P.S. Conc. Beam Spans (PBMC)

14 — SB BVPW to SB US-69 ETL and SB US-69 GPL over NB US-69
Sta. 107+60.14 ℔ BVPW-135th
Br. No. 69-46-140.98 (457)
156'-0" P.S. Conc. Beam Spans (PBMS)

15 — NB US-69 ETL to NB BVPW over NB US-69
Sta. 120+95.91 ℔ 69N-BVPW-ETL
Br. No. 69-46-140.94 (456)
213' Weathering Steel Welded Plate Girder (WWCS)

16 — SB BVPW & SB US-69 Ramp to SB US-69 GPL over SB US-69
Sta. 101+78.40 ℔ BVPW - 135th
Br. No. 69-46-140.87 (455)
126' -130'-121' P.S. Conc. Beam Spans (PBMC)

Bridge 02
NB US-69 over I-435

INDEX

THOMAS E. STORA
LICENSED
29482
KANSAS
PROFESSIONAL ENGINEER
4/5/2024

Applies to sheets BR02-01 thru BR02-38

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL
1	2024-04-05	NDC136 - SLOPE UPDATE AT RW

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45
TITLE / INDEX
NB US-69 OVER I-435
PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

240412_69_46_KA-5700-03_BR-1-2_RW-5A_NDC 136_r00

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Plot Date: 5-APR-2024 15:54

US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-02	38

DESIGN DATA

DESIGN SPECIFICATIONS:
AASHTO Specifications, (9th) Edition and (2020)
Interim Specifications. Load and Resistance Factor Design

DESIGN LOADING:
Live Load: HL-93
Dead Load: Design Dead Load includes an allowance of 15 psf for a future wearing surface.

LRFD DESIGN PILE LOAD:

Design Loading (tons/pile)	Strength	Service	Phi
Abutment 1	125	90	0.65
Abutment 2	134	96	0.65

LRFD DESIGN DRILLED SHAFT LOAD:

Design Loading (tons/shaft)	Strength	Service		Phi
Pier 1	415	415	Side Friction	0.55
	863	490	End Bearing	0.50
	1278	905	(Total)	

UNIT STRESSES:

Concrete (Grade 4.0)	f'c =	4	ksi
Concrete (Grade 4.0)(AE)	f'c =	4	ksi
Concrete (Grade 4.0)(AE)(SA)(MPC)	f'c =	4	ksi
Prestressed Beam Concrete	f'c =	9.5	ksi (149'-0" & 135'-6" Beams)
	f'ci =	7.5	ksi (149'-0" & 135'-6" Beams)
Reinforcing Steel (Grade 60)	fy =	60	ksi
Steel Pile	fy =	50	ksi
Steel Casing ($^{13}/_{32}$" min)	fy =	50	ksi
Prestressed Strand	6/10" ø Grade 270 uncoated 7-wire low-relaxation strand		
Concrete Panels:			
Concrete (Grade 6.0)(AE)(PB)	f'c =	6	ksi
	f'ci =	4	ksi
Prestressed Strand	3/8" ø Grade 270 uncoated 7-wire low-relaxation strand		

TEMPORARY SHORING: Furnish shoring at the locations shown on the Design Documents for the temporary bracing of the embankment during excavation. Maintain the temporary shoring until the Engineer authorizes its removal. The temporary shoring plans are to be designed and sealed by a registered Professional Engineer. Submit design calculations and shoring plans to the Engineer for review before work is scheduled to begin. Work shall not begin until the Engineer grants approval.

PILING SPLICE LOCATION: Integral pile splice locations and weld testing criteria for, Abutments No. 1 and No. 2 will follow the "Standard Pile Details" Sheet (BR01-35).

PILING: Drive all piling to penetrate or bear upon the Liberty Memorial Shale formation. See Project Special Provision 15-PS9006 for pile driving requirements. Drive all piling to the Pile Driving Formula Load of:

Abutment No. 1 125 Tons
Abutment No. 2 134 Tons

As a minimum drive each pile to the load and penetration, but in no case shall the pile be driven to more than 110% of Pile Driving Formula Driving Load. At any location where problems are experienced, pile damage is suspected, or the Pile Driving Formula Load occurs significantly above the design pile tip elevation, the Department may request that the Pile Driving Analyzer (PDA) equipment be used.

Install piling at Abutment No. 2 prior to beginning backfill operations for the MSE retaining wall. Provide galvanized corrugated metal pipe (CMP) casings from the bottom of the MSE fill to 6" beneath the bottom of the abutment. Backfill annular spacing between the pile and the casing with 3/8" pea gravel, leaving the top 15'-0" of casing empty. See BR02-06 for specific limits of casing and backfill.

DRILLED SHAFTS: Construct the drilled shafts using the cased method. A permanent smooth steel casing is required. Use Grade 4.0 Concrete in the drilled shaft. In no case shall the bottom of the drilled shaft be placed higher than the elevation shown unless otherwise directed by the Geotechnical Engineer.

If the location of the top of the shaft is such that the casing cannot be overtopped to remove concrete impurities, provide extra casing length to over-pour the concrete in the shaft and chip back to the plan elevation of the top of the shaft.

If the permanent casing is to be corrugated metal pipe (CMP) then if will be galvanized.

US69 EXPRESS CONSTRUCTORS

LFD & LRFR RATING FACTORS		
Truck \ Rating Level	Inventory	Operating
HS-20 (36T)	1.202	3.388
Type HET (110T)		1.623
2002 LFD Rating. 17th Edition AASHTO		
HL-93 Loading	1.245	1.613
2018 Manual for Bridge Evaluation ✳		

✳ Latest Version (With 2020 Interim Revisions)

TRAFFIC DATA - (US-69 NB)	
AADT (2019)	42,700
AADT (2050)	55,200
DHV	10%
D	N/A
T	3%

CONCRETE MASONRY COATING: Exterior (East and West) concrete faces of the bridge rails and slab fascia, all exposed surfaces of columns to the top of the crashwall, and bridge pier capbeams, except the top of the capbeam will be coated with an approved pigment sealer (uniform color) within the limits as detailed in the Design Documents. All surfaces to be coated shall be prepared with a light brush sandblast prior to application. The form release agent used on concrete surfaces to be coated, shall be compatible with the color stain product to be applied to the surface. Use curing compound on surfaces to be coated is prohibited.

SONIC TESTING: Equip all drilled shafts with piping to allow sonic testing to be done. Install pipes at locations shown on the Design Documents. All wet pours will be tested. Also, the Department has the option to require sonic, non-destructive, integrity testing at any location of concern. Report test results directly to the Department. No work will be done above the top of drilled shaft without the approval of the Department.

COLUMN CONSTRUCTION: Cure the drilled shaft footing as required by the KDOT Specifications before beginning the column construction (placing resteel or formwork). Do not place cast in place shear bolts, coil inserts or other devices used as falsework support in the column without the approval of the Department. Curing shall continue after the formwork is removed as required by the KDOT Specifications.

PIER BEAM CONSTRUCTION: Cure the columns as required by the KDOT Specifications before beginning the pier beam construction (placing resteel or formwork). Do not drill and grout bolts or other devices into the columns used for falsework support unless shown on the Design Documents. Cure the columns as required by the KDOT Specifications before placing pier beam concrete. Do not remove falsework used to support the pier beam until the pier beam concrete has cured as required by the KDOT Specifications. Do not set girders or beams on the pier beam until after the falsework is removed or the pier beam concrete has 0.75f'c strength as tested.

BEARING (Plain Elastomeric) (Method A): Bearing devices at Abutments No.1 and No. 2 and Pier No. 1 shall be fabricated with an elastomer satisfying:
-Shore A Durometer Hardness of 60
-Low Temperature Grade 3 requirements
-Type A certification for elastomeric bearing device acceptance is required
-Include design method and all material properties on shop details.

ERECTION ELEVATION CHECKS: After the abutment and pier concrete has cured and before setting any prestressed beams, present verification to the Department that the elevations at the bearings match plan elevation (±¼").

BRIDGE BACKWALL PROTECTION SYSTEM: Apply a Bridge Backwall Protection System to the approach side of the abutments and wings in accordance with KDOT Standard Specifications and the manufacturer's recommendations. Cover the abutment to the limits shown on the details, not including the top of the pavement rest. Cover the abutment wings from the bottom of the curb to the bottom of the wing. Prior to backfilling, repair any damage done to the system if required by the Department. See the General Notes on the "Abutment Aggregate Drain" sheets BR02-14 & BR02-15.

ABUTMENT AGGREGATE DRAIN: See the General Notes on the "Abutment Aggregate Drain" sheet BR02-14 & BR02-15.

BACKFILL COMPACTION: Compact backfill at the abutments.

EMBANKMENT: Complete the embankment at the abutments as shown on the Bridge Excavation sheet prior to driving the abutment piling or commencing with the abutment footing excavation.

SLOPE PROTECTION (AGGREGATE): Place Slope Protection Aggregate to the limits and thicknesses shown on the Design Documents or as directed by the Department. Use (D=4") as described in Division 1100 placed to the limits shown on the Design Documents.

CONCRETE: Superstructure concrete is Concrete (Grade 4.0)(AE) (SA) (MPC). Substructure concrete is Concrete (Grade 4.0)(AE). If desired, the Design-Builder may use Concrete (Grade 4.0) in the footings and in the abutments below the construction joint. Bevel all exposed edges of all concrete with a ¾ inch triangular molding, except where noted on the Design Documents. Construction joints are optional, but if used, place only at locations shown, or at locations approved by the Department.

PRESTRESSED BEAM CONCRETE: Use air entrained concrete with select coarse aggregate as specified in the Special Provisions. The release strength and 28 day strength requirements shall be as noted on the Design Documents. Submit mix designs to the Bureau of Materials and Research for approval.

MULTI-LAYER POLYMER CONCRETE OVERLAY: No concrete curing membrane will be used on structures with a polymer overlay. Roughen the bridge deck surface using a burlap drag attached to the finish machine. When the date and temperature requirements of the specifications are met, grind profile, place a polymer overlay, and apply permanent pavement markings on the bridge deck. When the date and temperature requirements are not met, complete any required grinding and apply temporary pavement markings. Apply the polymer overlay according to the next available date(s) and temperature allowed per the current specifications. See KDOT specification for complete information.

CAMBER: Construct the finished deck to plan grade by varying the thickness of the polystyrene bedding material between the top of the beams and the bottom of the panels, and if necessary, by varying the thickness of the deck above the panels to provide for prestress camber, concrete dead load deflection, and vertical curvature. After the prestressed beams are erected, measure the camber in the field by taking a profile of each beam. Correct any variation between the actual camber and concrete dead load deflection shown in the Design Documents by varying the thickness of the polystyrene bedding material between the top of the beam and the bottom of the panel, and if necessary, by varying the deck thickness so that the finished floor is constructed to the theoretical grade. The polystyrene bedding material thickness shall be a maximum of 4 inches and a minimum of 1 inches. The minimum thickness of the slab over the beam shall be 5½ inches above the top of the panels.

Prior to shipping, the camber shall be no greater than the design camber + ½". The design camber is equal to the 50 day camber shown in the Design Documents.

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel, except the spiral bars, shall conform to the requirements of ASTM A615, Grade 60. Spiral bars may meet the requirements of either ASTM A615 (Gr. 40 or 60) or AASHTO M32.

REINFORCING STEEL: Where noncoated bars come in contact with epoxy coated bars, they need not be coated.

REMOVAL OF EXISTING STRUCTURE: All materials removed from the existing structure shall become the property of the Design-Builder. Remove this material from the site.

TEMPERATURE: The design temperature for all dimensions is 60° F.

DIMENSIONS: All dimensions shown on the Design Documents are horizontal dimensions unless otherwise noted. Make necessary allowances for roadway grade and cross slope.

CONSTRUCTION LOADS: Limited traffic is permitted on the new sub-deck, one-course deck or any concrete overlay during the curing period, keep any exposed deck wet during the curing period. See KDOT Specifications Section 710 Tables 710-1 & 710-2 for additional information.

DECK FINISHING: Set the finishing machine normal to the centerline of the structure for striking off and screeding the concrete.

PLACING SEQUENCE: The Design-Builder will adhere to the placing direction/sequence shown on the Design Documents. Changes will be accepted only if the Design-Builder's Engineer adjusts the deflection diagram so that the Design-Builder can adjust the fillet depth accordingly. This revised diagram will be approved by the Design-Builder's Engineer prior to deck forming.

CONCRETE PLACING: Place and hand vibrate all concrete for the pier diaphragms and the abutments above the construction joint to the bottom of the deck just prior to the normal paving train operations. Do this work in a manner to avoid a cold joint in either the abutments or in the diaphragms.

DECK PROTECTIVE SYSTEM: Epoxy coated reinforcing steel shall be used at the following locations:
-All bridge superstructure components, including decks, rails, and concrete diaphragms.
-Pier columns and capbeams subject to vehicular splash and spray, defined as elements within 10 feet of the edge of any roadway.
-Abutments above the footings.

ERECTION PLANS: This is a Category B Structure. Submit detailed Erection Plans to the Department at least 4 weeks before beginning the erection process. Portions of the submitted details shall bear the seal of a licensed Professional Engineer. Identify, on the Erection Plans, the Erection Supervisor required by KDOT Specifications. No structural erection work will begin without approved erection plans.

CONTRACTOR CONSTRUCTION STAKING: Contractor Construction Staking for clear span bridges requires two independent surveys. See KDOT Specifications.

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45
GENERAL NOTES
NB US-69 OVER I-435
PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

US69 Express
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Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
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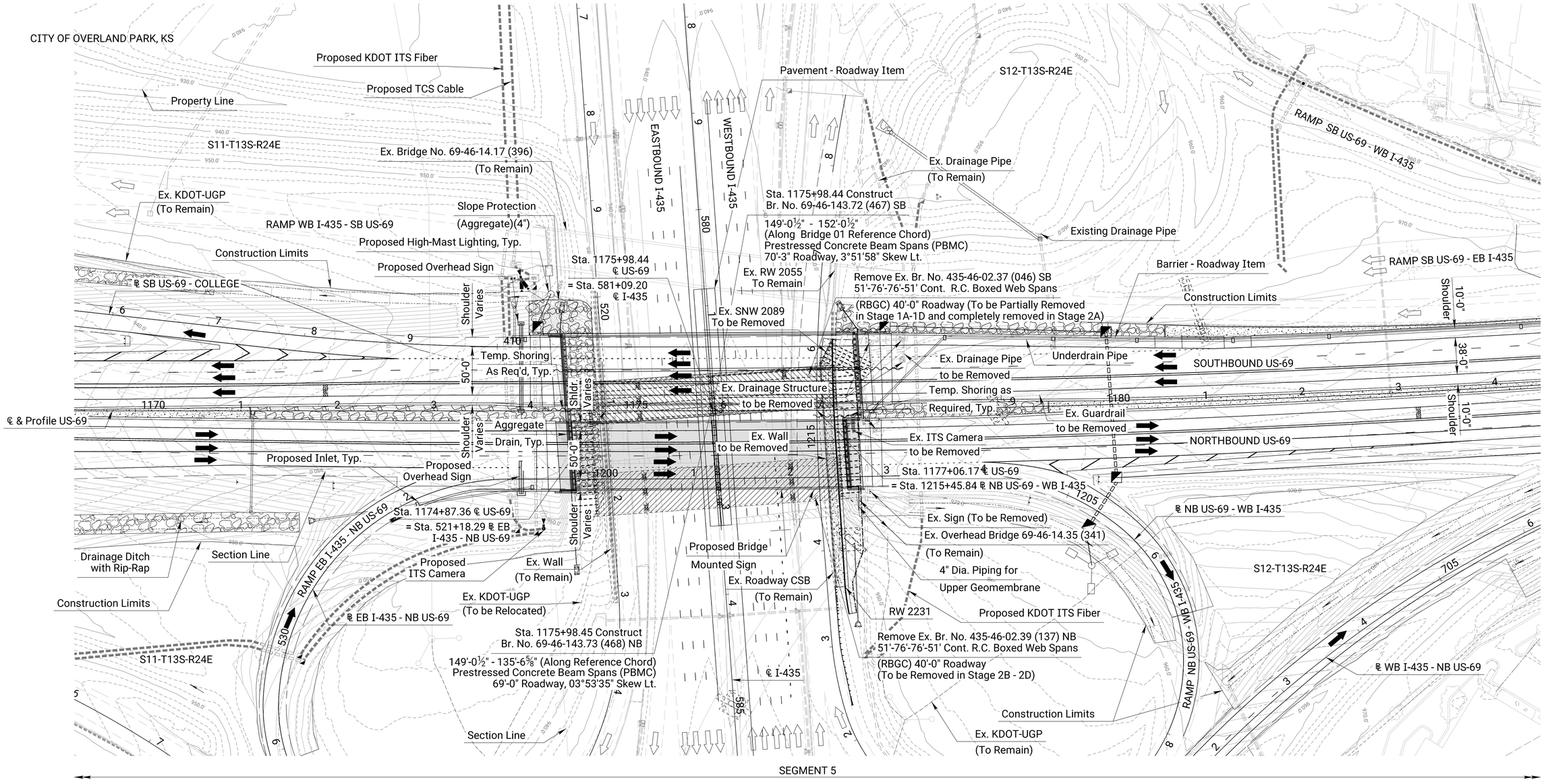
Scale: 1"=50'

REMOVAL NOTES:

Existing Bridge No. Br. No. 435-46-02.39 (137) will be removed. All materials removed from the existing structure shall become the property of the Design-Builder. Remove this material from the site to locations approved by the Field Engineer. All Structural removal shall be done in accordance with Section 702 of the Standard Specifications.

This is a Category B Demolition. Submit detailed Demolition Plans to the Field Engineer at least 2 weeks before the demolition meeting. Identify, on the plans, the Demolition Supervisor meeting the requirements of the KDOT Specifications. No Demolition work will begin without approved Demolition Plans. A Licensed Professional Engineer is not required.



Utility Owners

KDOT KDOT Underground Utility

NOTE:

For Roadway Plan information see Roadway Segment 5 Design Documents.

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

CONTOUR MAP

NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

US69 EXPRESS CONSTRUCTORS

231208_69-46_KA-5700-03_BR-02_RFC_r00

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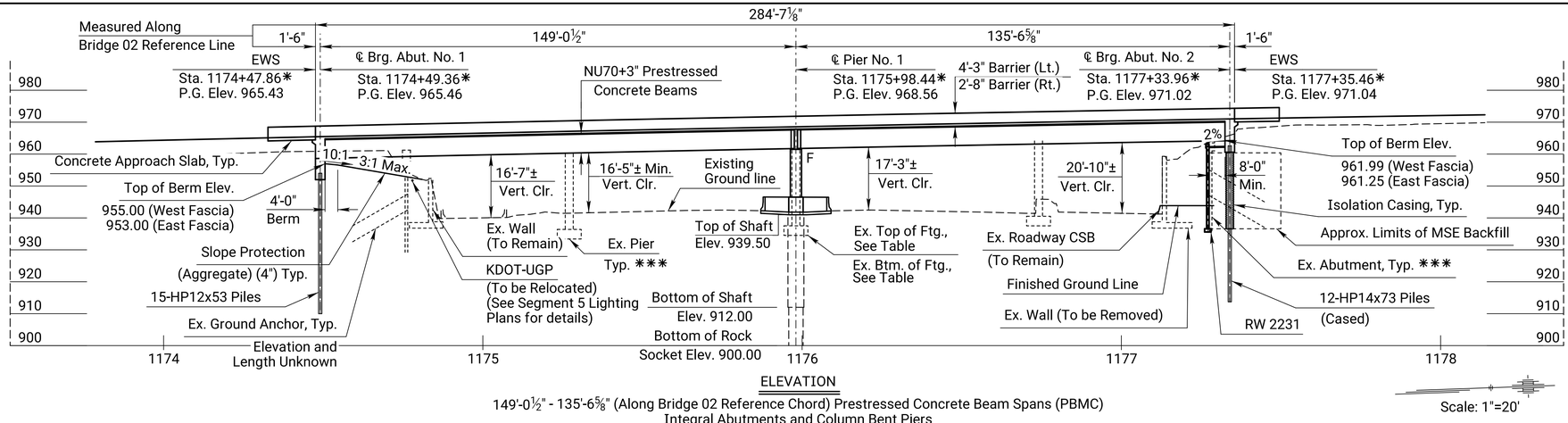
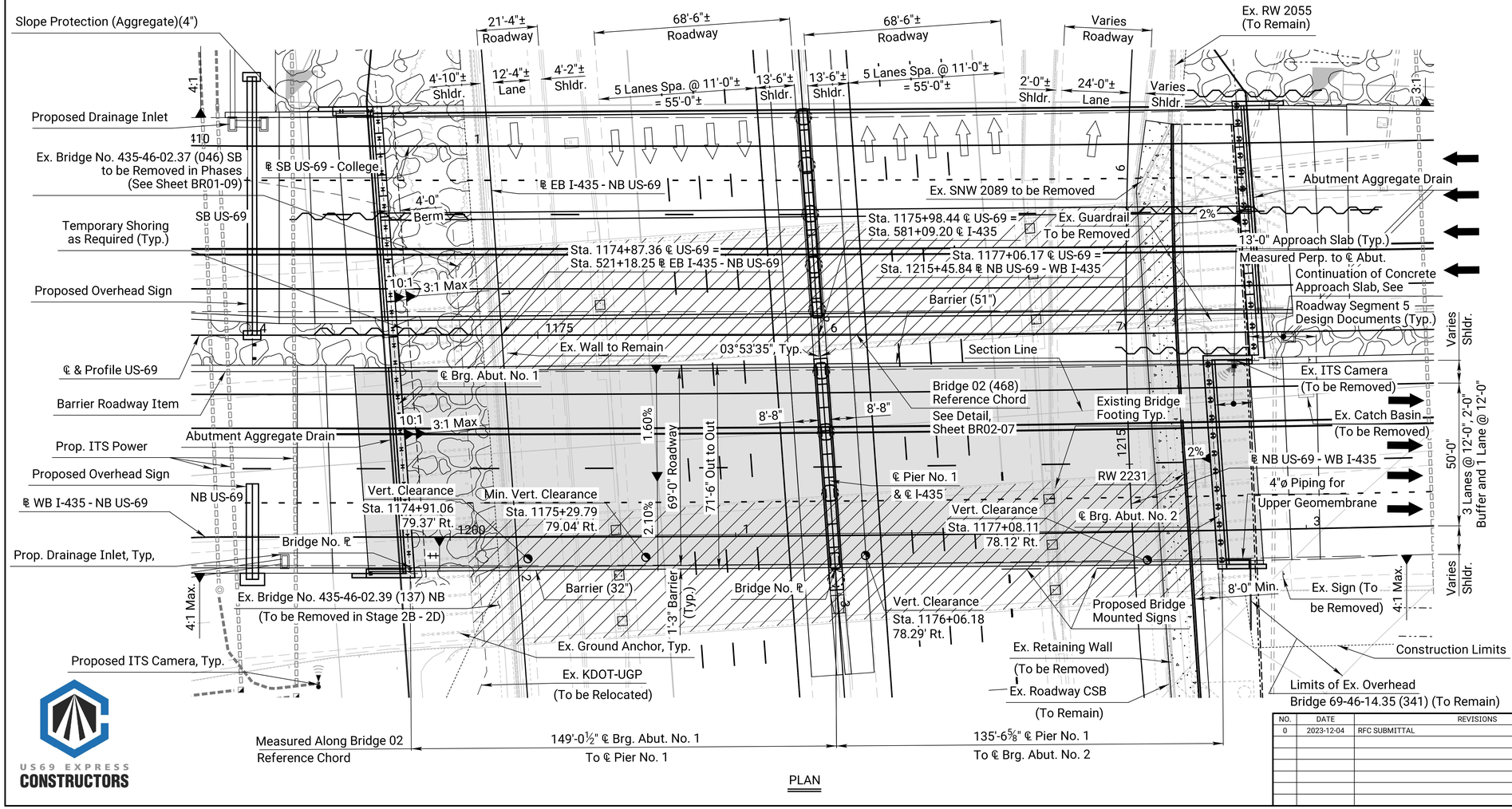
KANSAS	69-46 KA-5700-03	2023	BR02-04	38



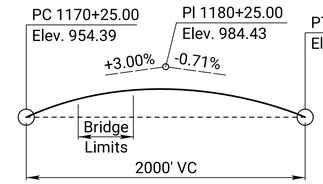
ELEVATION

149'-0½" - 135'-6⅝" (Along Bridge 02 Reference Chord) Prestressed Concrete Beam Spans (PBMC)
Integral Abutments and Column Bent Piers
69'-0" Roadway, 3°53'35" Skew Lt., 14,500.00' Curve Lt.

Scale: 1"=20'



PLAN



PROFILE GRADE ALONG ℄ US-69
(Not to Scale)

℄ US-69 CURVE DATA

P.I. Sta. (Bk.) = 1188+50.30
P.I. Sta. (Ahd.) = 1188+43.99
Δ = 10°04'06"
D = 00°23'43"
R = 14,500.00'
T = 1277.31'
L = 2548.05'
E = 56.15'

For profiles under existing bridge, see Existing Plans K-7451-01, K-8262-01 and K-8251-08.

Existing Foundation Elevations		
Location	Top of Ftg.	Btm. of Ftg.
Ex. Abut. 1	N/A	954.00±
Ex. Pier 1	937.00±	934.00±
Ex. Pier 2	936.20±	933.20±
Ex. Pier 3	939.25±	936.25±
Ex. Abut. 2	N/A	961.00±

B.M. #55
4' "T" Post driven flush, 3'± Northwest of P.I. chain link fence, 18'± Southwest of R/W marker and 40'± Northeast of "Corporate Woods" sign on east R/W for I435 east bound ramp.
Sta. 1168+82.94, 289.28' Rt. Elev. 940.711

B.M. #56
Cut square on South side of light pole base 40'± South and east of Southbound College Blvd. and 69 South sign.
Sta. 170+66.68, 209.94' Lt. Elev. 948.825

Notes:

✱ - Stationing along ℄ US-69

✱✱ - Dimension or station and offset to the Bridge 02 (468) Reference Chord. The Reference Chord Line is a tangent line that intersects ℄ and Profile US-69 with each abutment ℄ of bearing. All ℄ of bearing at the abutments and pier are parallel. The 3°53'35" skew angle is measured to the Reference Chord.

✱✱✱ - Remove existing Abutment No. 1 and Pier 2 foundation to 2'-0" minimum below proposed grade. Remove existing Abutment No. 2 foundation to 2'-0" minimum below RW 2231 foundation. Remove existing Pier 1 and 3 Columns to 4" below the top of existing crash wall to remain.

‡ - Varies 2.28% to 2.10% from Sta. 1174+54.50 to 1174+58.61. Profile Grade elevations are given at intersection of ℄ piers. and abutments with ℄ US-69.

For Reference Chord Layout, see Sheet BR02-07.

US69 EXPRESS CONSTRUCTORS

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0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

CONSTRUCTION LAYOUT

NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

File: BR02-04 - Construction Layout.dgn Plot Date: 1-DEC-2023 14:20

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Dec 11, 2023
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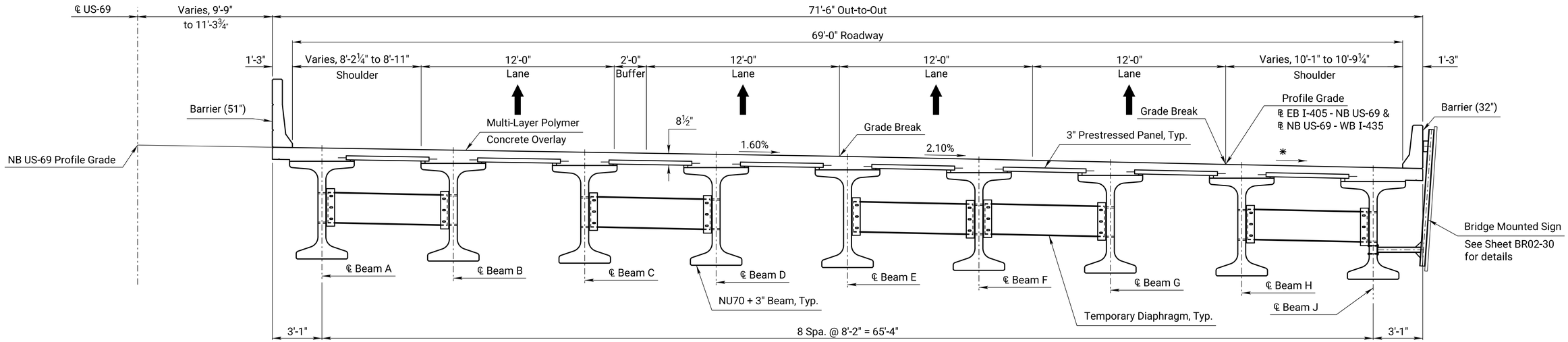
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-05	38



TYPICAL SECTION

Legend:

* - Varies from 2.28% to 2.10% from Station 1174+54.50 to 1174+58.61.

Notes:

For additional slab section details, see Sheet BR02-25.
For additional bridge mounted sign details, see Sheet BR02-30.

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
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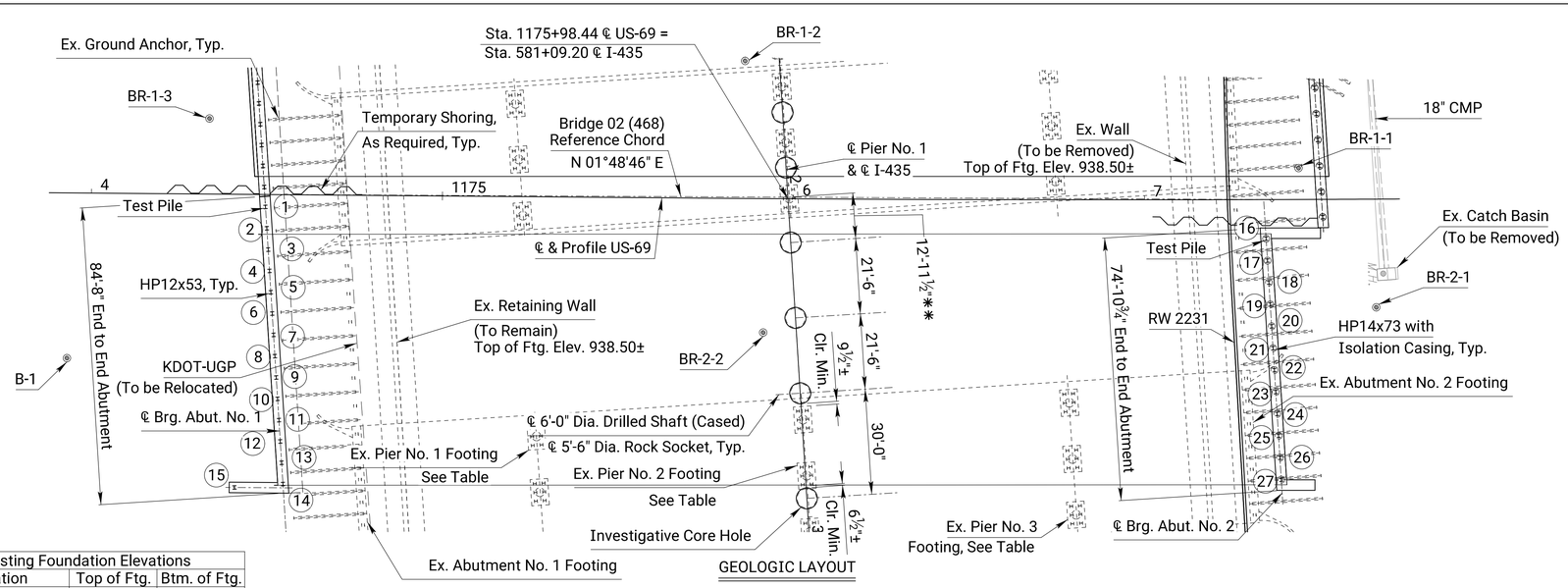
KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45
TYPICAL SECTION
NB US-69 OVER I-435
PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

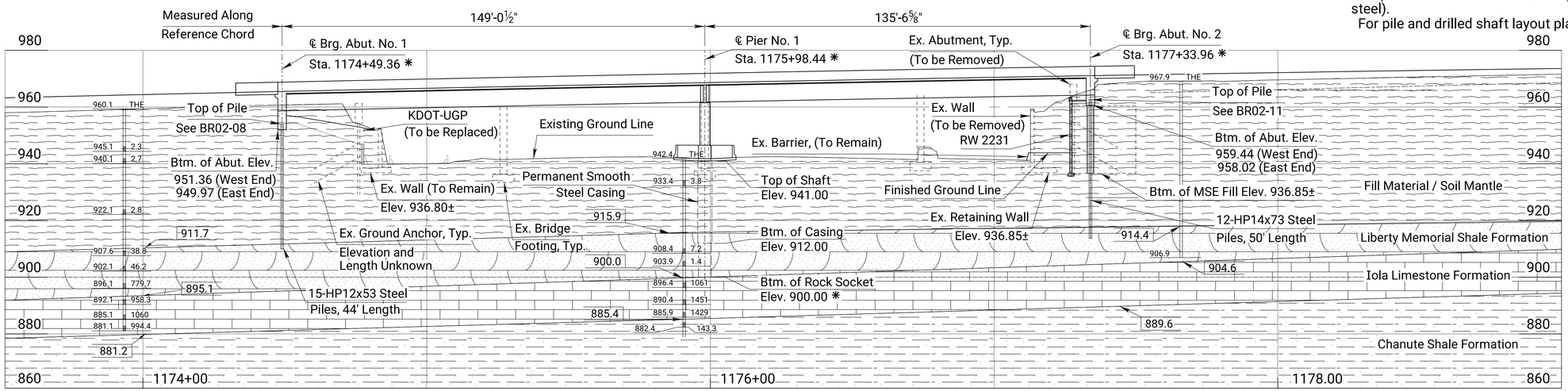
DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-06	38



Existing Foundation Elevations		
Location	Top of Ftg.	Btm. of Ftg.
Ex. Abut. 1	N/A	954.00±
Ex. Pier 1	937.00±	934.00±
Ex. Pier 2	936.20±	933.20±
Ex. Pier 3	939.25±	936.25±
Ex. Abut. 2	N/A	961.00±



Notes:
* Stationing along ℄ US-69
** Stationing and offset or dimension to Bridge 02 (468) Reference Chord
Investigative core holes shall be provided as shown on the plans. Perform work in accordance with KDOT Spec. 703.
Construct the drilled shafts using the cased method. A permanent smooth steel casing is required. The inner diameter of the casing shall be 6.0 feet.
For all drilled shafts, use smooth-walled permanent casing unless bedrock is present at the ground surface. The casing shall be the same nominal diameter as the drilled shaft and 6 inches larger in diameter than the rock socket. The rock socket shall be centered within the drilled shaft and properly-sized spacers shall be used to center and align the reinforcing steel cage.
It is critical that the bottom of rock socket be clean and relatively flat. Allow no loose material within the footing when the footing is considered ready to pour. In no case shall the bottom of the drilled shaft be placed higher than the elevation shown unless otherwise directed by the Geotechnical Engineer. A wet pour is anticipated. Wet-pour procedures and equipment should be in place prior to the installation of the shaft.
Pile points are required to minimize damage to the pile as it contacts the Liberty Memorial Shale. The weathered top of the Liberty Memorial Shale tends to be irregular and may result in differing pile tip elevations. Overdriving of pile on hard, shallow bedrock will result in damage to the pile. Pile damage can occur in as few as 3 blows following contact with competent bedrock. Piles damaged by overdriving must be removed and replaced.
Drive all production piles to practical refusal at Abutments No. 1 and 2 into the Liberty Memorial Shale, with estimated pile tip elevations of 910.00 and 912.00 feet, respectively. Driving shall stop when in the opinion of the Engineer additional driving may damage the piling and/or the nominal geotechnical resistance is achieved. Nominal geotechnical capacity of the piles will be developed by the Engineer using driving criteria developed from the test pile PDA data.
Conduct field testing using PDA on two test piles, with one at each abutment, using Pile Driving Analyzer (PDA) equipment in general accordance with KDOT Specifications. The test piling may remain in place as permanent piling. The test piles should have a minimum nominal geotechnical resistance value of 193 tons (125 tons/0.65) at Abutment No. 1 and 206 tons (134 tons/0.65) at Abutment No. 2. Compressive stresses measured by PDA shall not exceed 0.9Fy (45 ksi for Grade 50 steel).
For pile and drilled shaft layout plan and additional notes, see Sheet BR02-7.

LOG OF PILE DRIVING							
Footing	Pile No.	Pile Tip Elevation	Refusal Tons	Footing	Pile No.	Pile Tip Elevation	Refusal Tons
Abutment No. 1	1	910.0		Abutment No. 2	16	912.0	
	2	910.0			17	912.0	
	3	910.0			18	912.0	
	4	910.0			19	912.0	
	5	910.0			20	912.0	
	6	910.0			21	912.0	
	7	910.0			22	912.0	
	8	910.0			23	912.0	
	9	910.0			24	912.0	
	10	910.0			25	912.0	
	11	910.0			26	912.0	
	12	910.0			27	912.0	
	13	910.0					
	14	910.0					
	15	910.0					

STANDARD GEOLOGIC SYMBOLS

Sandy Shale
Weathered Shale
Silty Clay
Limestone

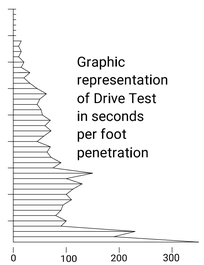
Elevation
Blows/ft.
000.0 00
000.0 00
STANDARD PENETRATION TEST

Elevation
Tons/sq. ft.
000.0 00
000.0 00
UNCONFINED COMPRESSION TEST

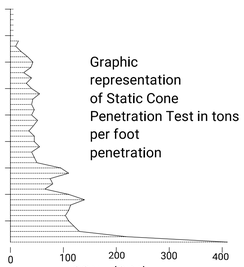
US69 EXPRESS CONSTRUCTORS

SOUNDINGS
Coredrill
Power auger
Hand tools
Air hammer
Cone (CPT) penetrometer
Shelby tube
Water level
12/2008
3/2009

GEOLOGIC PROFILE
000.0 Elevation interpolated or from adjacent soundings
000.0 Actual sounding elevation
000.0 Drive started
000.0 Refusal
CASING DRIVE TEST



AIR HAMMER DRIVE TEST



CONE (CPT) PENETROMETER TEST

NOTE:
Formations and elevations shown are based on historical and current data provided by the Geotechnical Engineer. Actual elevations of top of rock may vary.
* - Bottom of Rock Socket shall be embedded 6" into undisturbed limstone.

SCALE: 1"= 20' Horiz. 1"= 20' Vert.

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45
ENGINEERING GEOLOGY
NB US-69 OVER I-435
PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-06 - Engineering Geology.dgn
Plot Date: 1-DEC-2023 12:17

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-07	38

US69 Express
Dec 11, 2023
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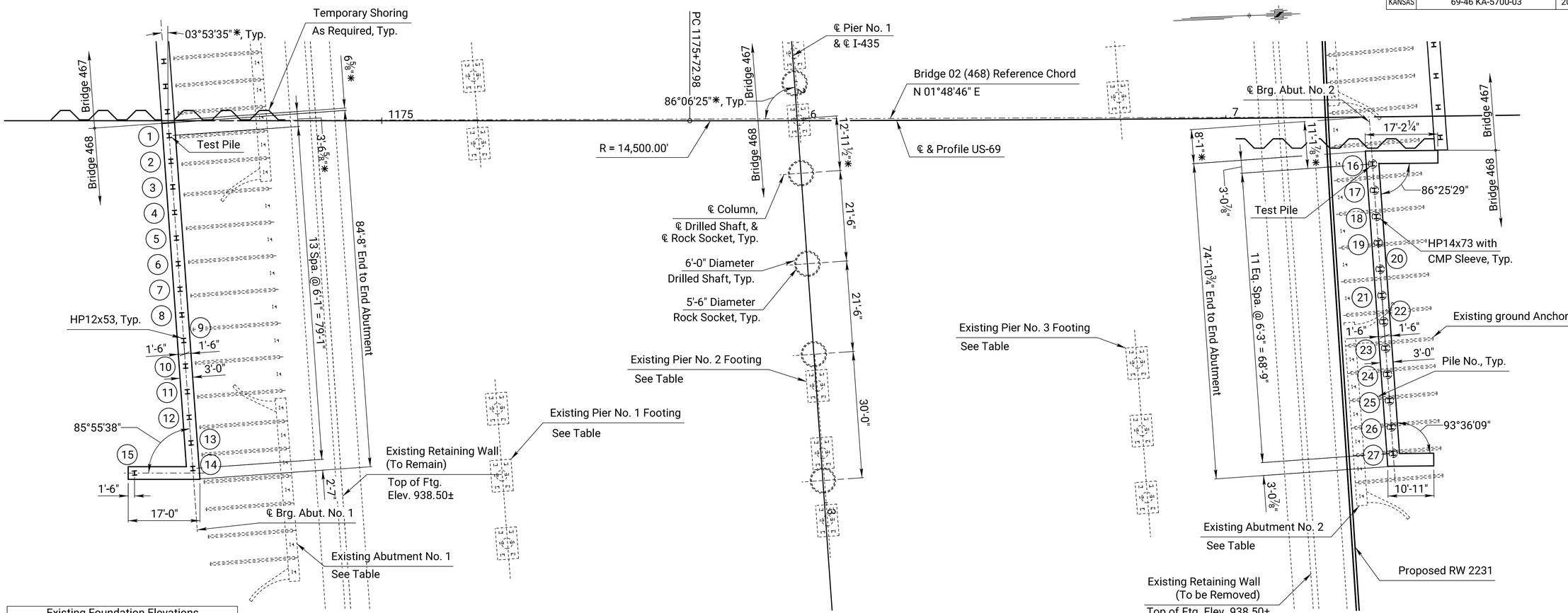
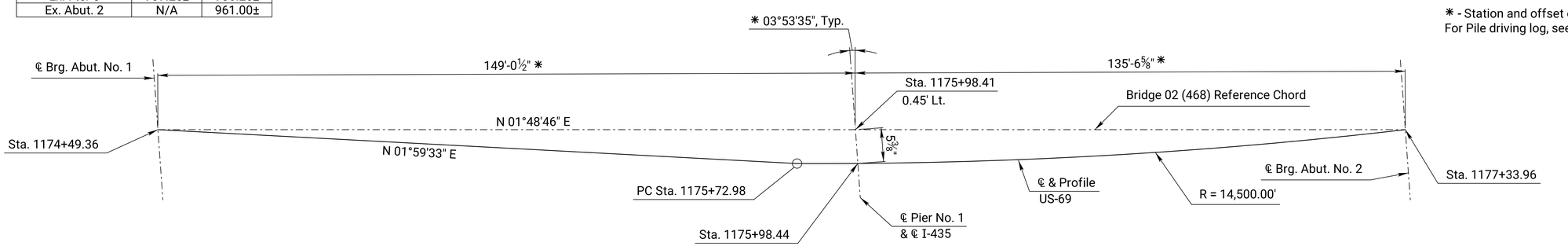


Existing Foundation Elevations		
Location	Top of Ftg.	Btm. of Ftg.
Ex. Abut. 1	N/A	954.00±
Ex. Pier 1	937.00±	934.00±
Ex. Pier 2	936.20±	933.20±
Ex. Pier 3	939.25±	936.25±
Ex. Abut. 2	N/A	961.00±

FOUNDATION LAYOUT PLAN



REFERENCE CHORD LAYOUT
(Not to Scale)

Notes:

✱ - Station and offset of dimension to Bridge 02 (468) Reference Chord
For Pile driving log, see Sheet BR02-06.

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

FOUNDATION LAYOUT

NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-07 - Foundation Layout.dgn

Plot Date: 1-DEC-2023 12:15

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Dec 11, 2023
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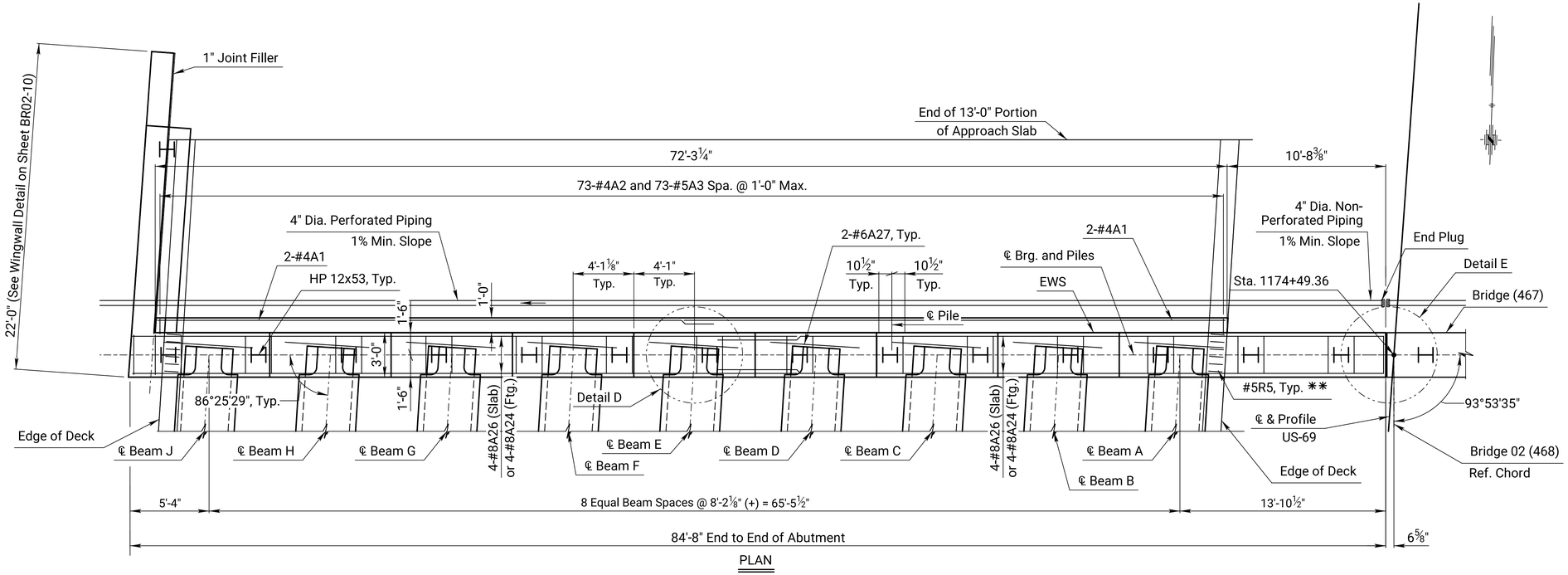
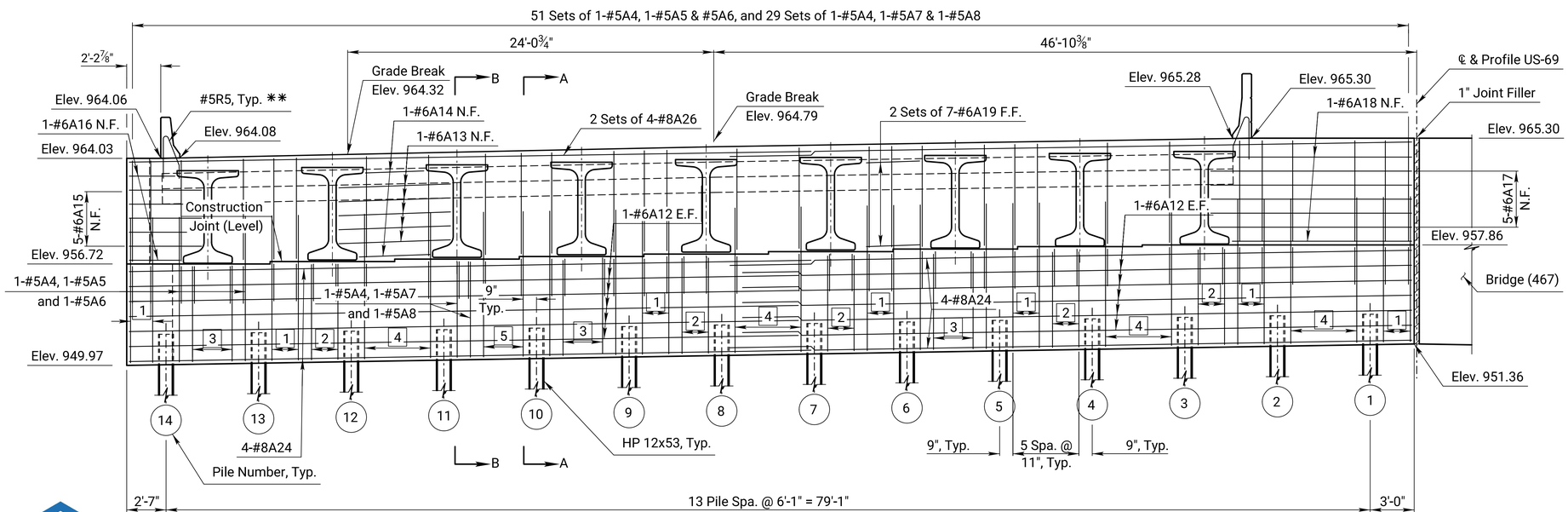
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-08	38



PLAN

BAR SIZE	MIN. LAP
No. 4	1'-11"
No. 6	3'-8"
No. 8	5'-4"

TOP OF PILE ELEVATIONS			
PILE	ELEV.	PILE	ELEV.
1	953.32	11	952.32
2	953.22	12	952.22
3	953.12	13	952.12
4	953.02	14	952.02
5	952.92	15	952.00
6	952.82		
7	952.72		
8	952.62		
9	952.52		
10	952.42		



ELEVATION

TABLE OF BEAM SEAT ELEVATIONS									
BEAM	A	B	C	D	E	F	G	H	J
ABUT. NO. 1	957.86	957.76	957.65	957.53	957.41	957.25	957.08	956.91	956.72

Reinforcement Legend:

1 - 3-#5A4, 3-#5A5, and 3-#5A6

2 - 3-#5A4, 3-#5A7, and 3-#5A8

3 - 4-#5A4, 4-#5A7, and 4-#5A8

4 - 6-#5A4, 6-#5A5, and 6-#5A6

5 - 4-#5A4, 4-#5A5, and 4-#5A6

Legend:

E.F. denotes each face.
F.F. denotes far face.
N.F. denotes near face.
EWS denotes end of wearing surface.
** - Place #5R5 Reinforcing Bars with Abutment Diaphragm.

Notes:

Dimensions and Elevations measured along Centerline of Bearing unless noted otherwise.
For Sections A-A, B-B, Detail D, and Detail E, see Sheet BR02-09.
For Wingwall details, see Sheet BR02-10.
For Reference Chord Layout Line, see Footing Layout on Sheet BR02-07.
For Barrier Details, see Sheets BR02-28 & BR02-29.

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

ABUTMENT NO. 1 PLAN AND ELEVATION NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

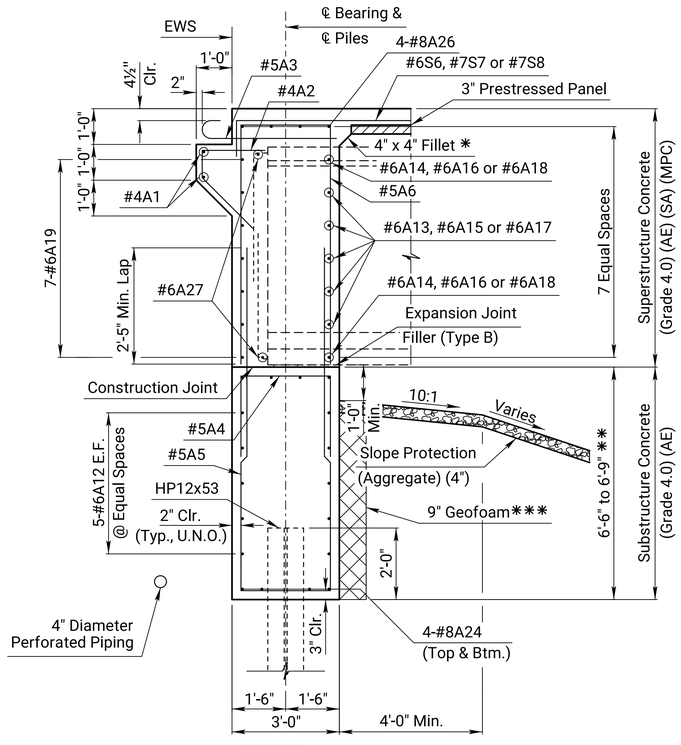
DESIGNED	EJS	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

231208_69-46_KA-5700-03_BR-02_RFC_r00

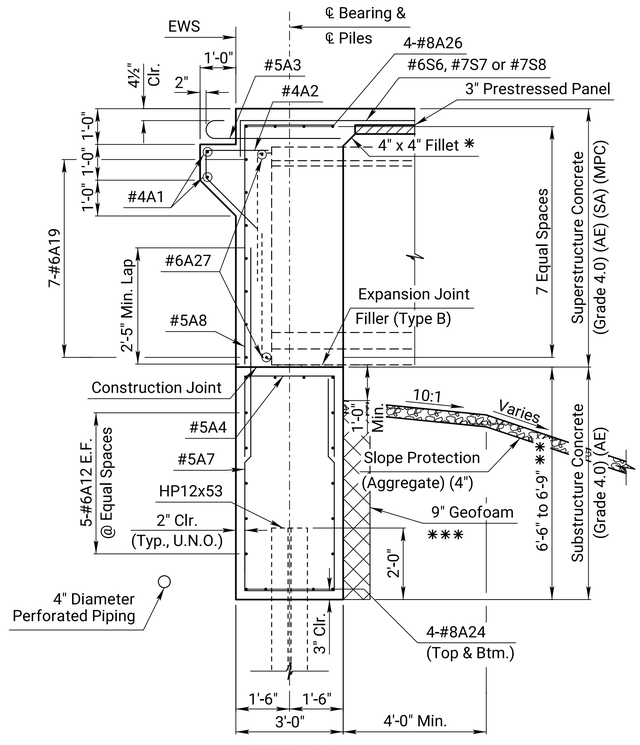
File: BR02-08 - Abutment No. 1 Plan and Elevation.dgn Plot Date: 1-DEC-2023 12:15

US69 Express
Dec 11, 2023
Released For Construction

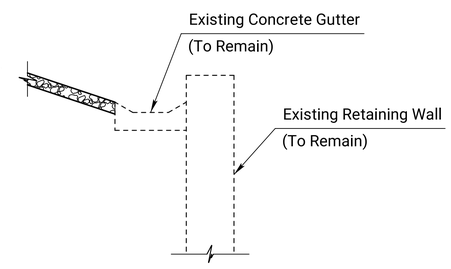
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-09	38

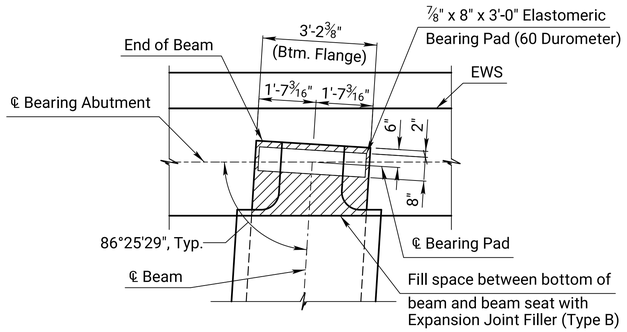


SECTION A-A



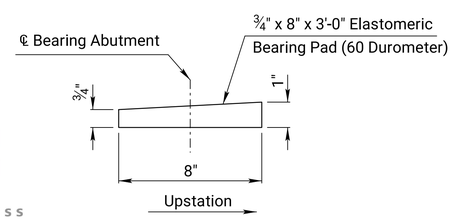
SECTION B-B



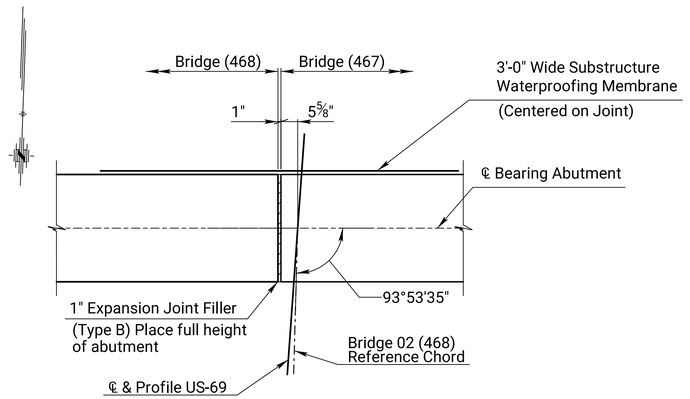


DETAIL D

Abutment No. 1 Shown, Abutment No. 2 Similar



ELASTOMERIC BEARING PAD DETAIL



DETAIL E

Notes:

✱ Design-Builder has the option of constructing a 4"x4" fillet at the face of the diaphragm or beginning the prestressed panels at the face of the diaphragm.

✱✱ Bottom of Footing Elevation was designed to accommodate lowering the berm for future widening of EB I-435 to NB US-69 Ramp.

✱✱✱ Depth of geofoam varies from 2'-8⅜" Min. to 3'-3⅝" Max. from bottom of aggregate to bottom of abutment footing.

For Locations of Sections A-A, B-B, Detail D and Detail E, see Sheet BR02-08.

For Location of Detail D, see Sheets BR02-08 and BR02-11.

Legend:

N.F.	=	Near Face
F.F.	=	Far Face
E.F.	=	Each Face
EWS	=	End of Wearing Surface
U.N.O.	=	Unless Noted Otherwise

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION

BR.NO.69-46-143.73 (468) STA. 1175+98.45

ABUTMENT NO. 1 DETAILS NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	EJS	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

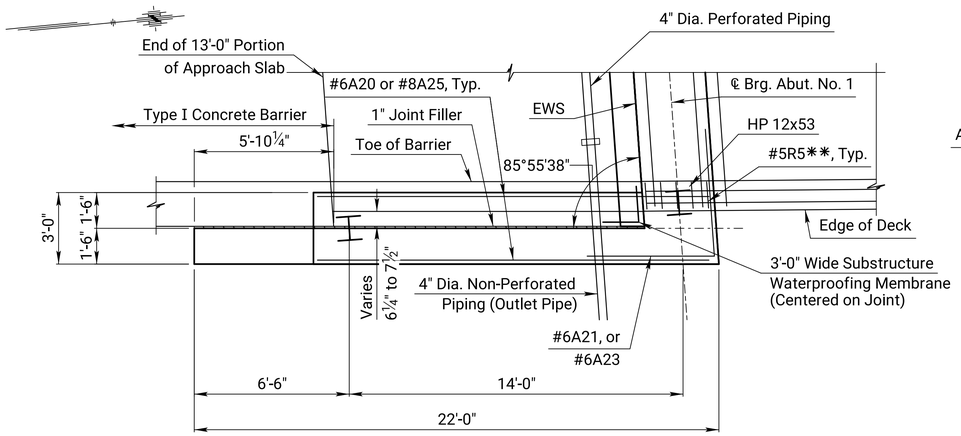
231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-09 - Abutment No. 1 Details.dgn

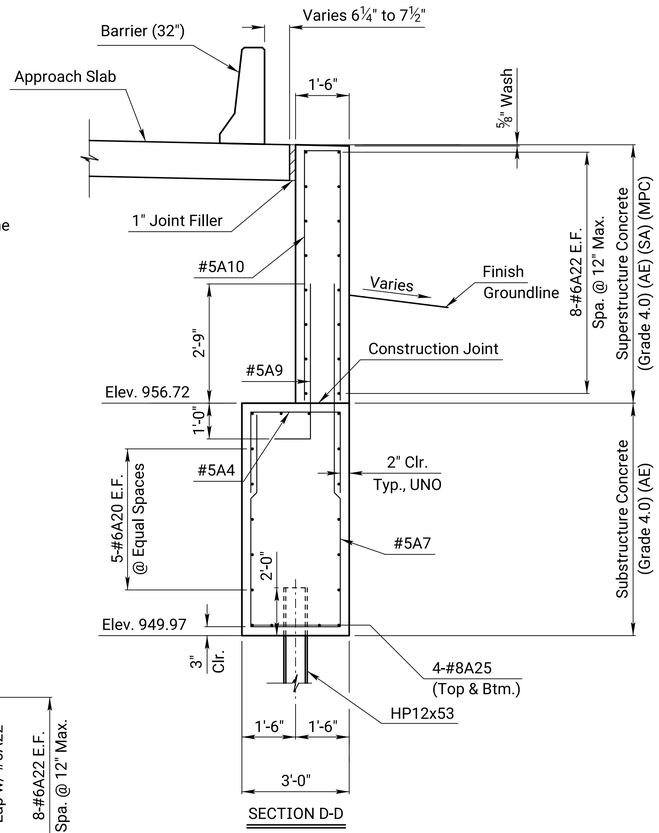
Plot Date: 1-DEC-2023 12:15

US69 Express
Dec 11, 2023
Released For Construction

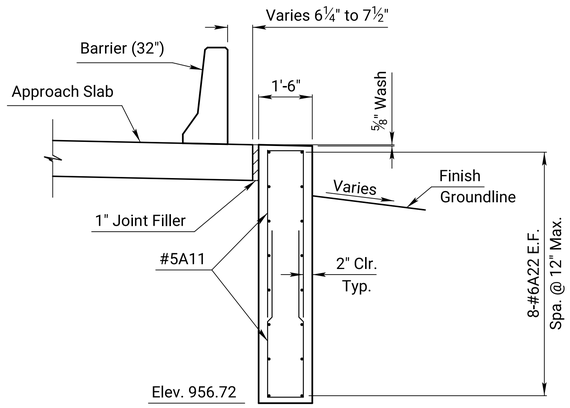
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-10	38



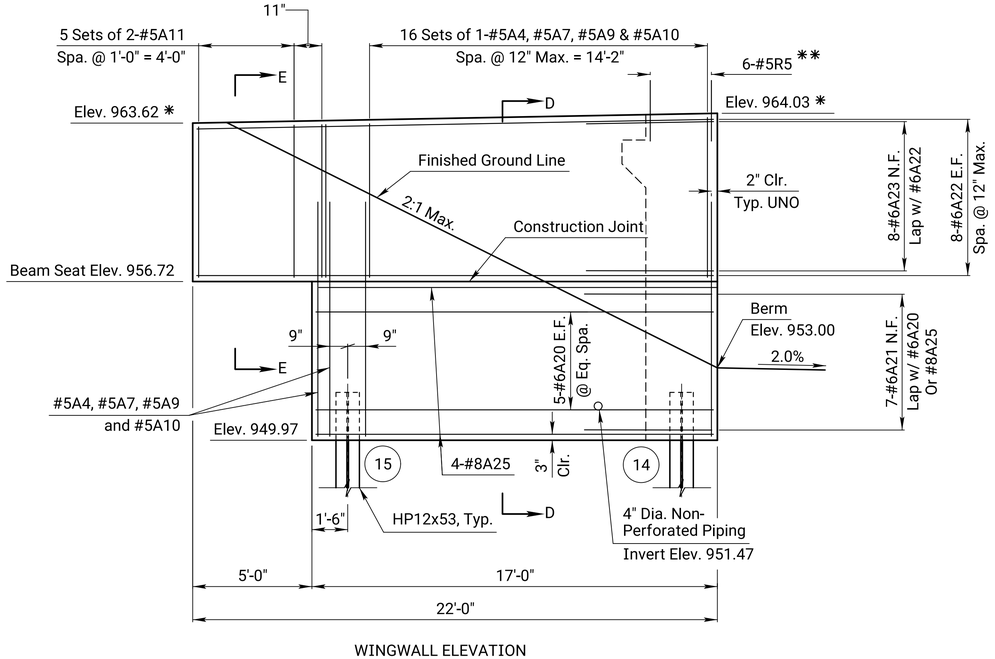
WINGWALL PLAN



SECTION D-D



SECTION E-E



WINGWALL ELEVATION

Notes:

For additional abutment details, see Sheets BR02-08 & BR02-09.

Legend:

N.F.	=	Near Face
F.F.	=	Far Face
E.F.	=	Each Face
EWS	=	End of Wearing Surface
*	=	Elevation measured to far face of wall.
**	=	Place #5R5 reinforcing bars with abutment diaphragm.

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

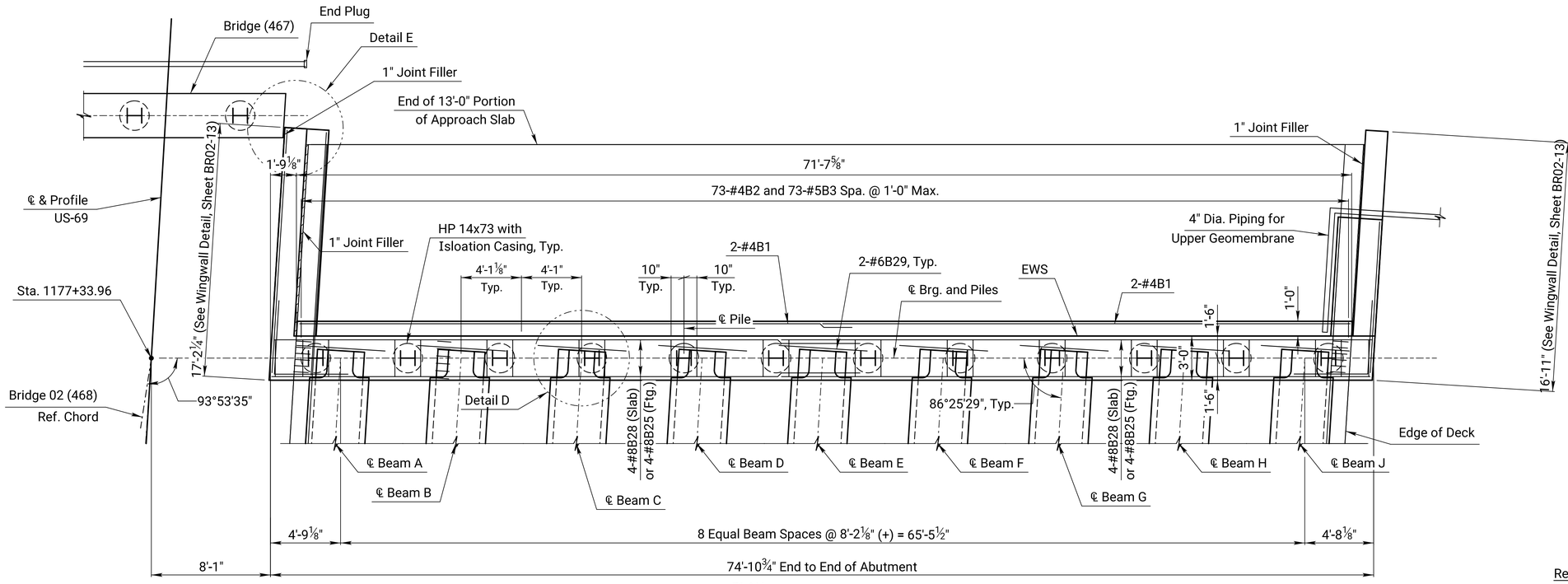
ABUTMENT NO. 1 WINGWALL DETAILS NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

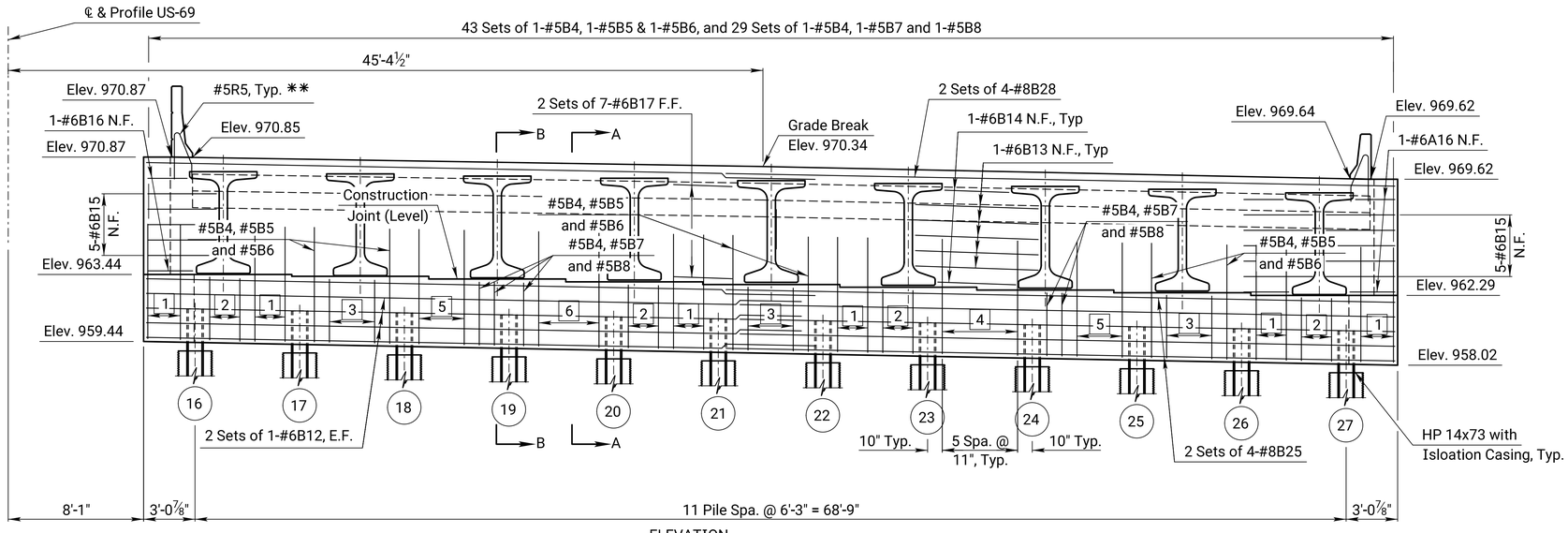
DESIGNED	EJS	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-11	38



PLAN



ELEVATION

BAR SIZE	MIN. LAP
No. 4	1'-11"
No. 6	3'-8"
No. 8	5'-4"

TOP OF PILE ELEVATIONS			
PILE	ELEV.	PILE	ELEV.
16	961.39	26	960.20
17	961.27	27	960.08
18	962.15		
19	961.03		
20	960.91		
21	960.79		
22	960.68		
23	960.56		
24	960.44		
25	960.32		

Reinforcement Legend:

1 - 3-#5B4, 3-#5B5, and 3-#5B6

2 - 3-#5B4, 3-#5B7, and 3-#5B8

3 - 4-#5B4, 4-#5B7, and 4-#5B8

4 - 6-#5B4, 6-#5B5, and 6-#5B6

5 - 4-#5B4, 4-#5B5, and 4-#5B6

6 - 5-#5B4, 5-#5B5, and 5-#5B6

Legend:

E.F. denotes each face.
F.F. denotes far face.
N.F. denotes near face.
EWS denotes end of wearing surface.
** - Place #5R5 Reinforcing Bars with Abutment Diaphragm.

Notes:

Dimensions and Elevations measured along Centerline of Bearing unless noted otherwise.
For Sections A-A, B-B and Detail E, see Sheet BR02-12.
For Detail D, see Sheet BR02-09.
For Wingwall details, see Sheet BR02-13.
For Reference Chord Layout Line, see Footing Layout on Sheet BR02-07.
For Barrier Details, see Sheets BR02-28 & BR02-29.

TABLE OF BEAM SEAT ELEVATIONS									
BEAM	A	B	C	D	E	F	G	H	J
ABUT. NO. 1	963.44	963.33	963.21	963.08	962.96	962.80	962.63	962.47	962.29

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

ABUTMENT NO. 2 PLAN AND ELEVATION NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	EJS	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

US69 Express
Apr 12, 2024
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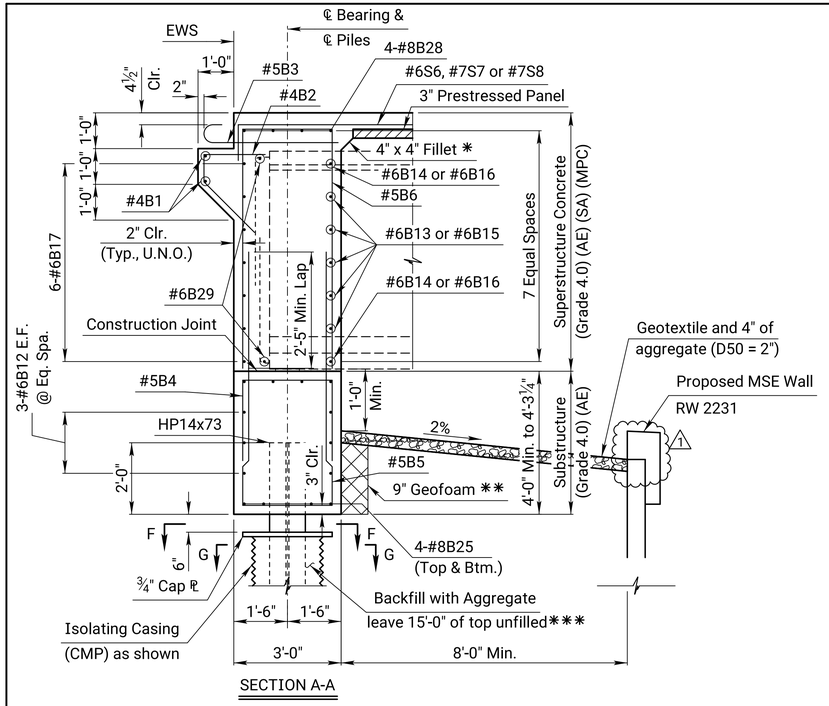
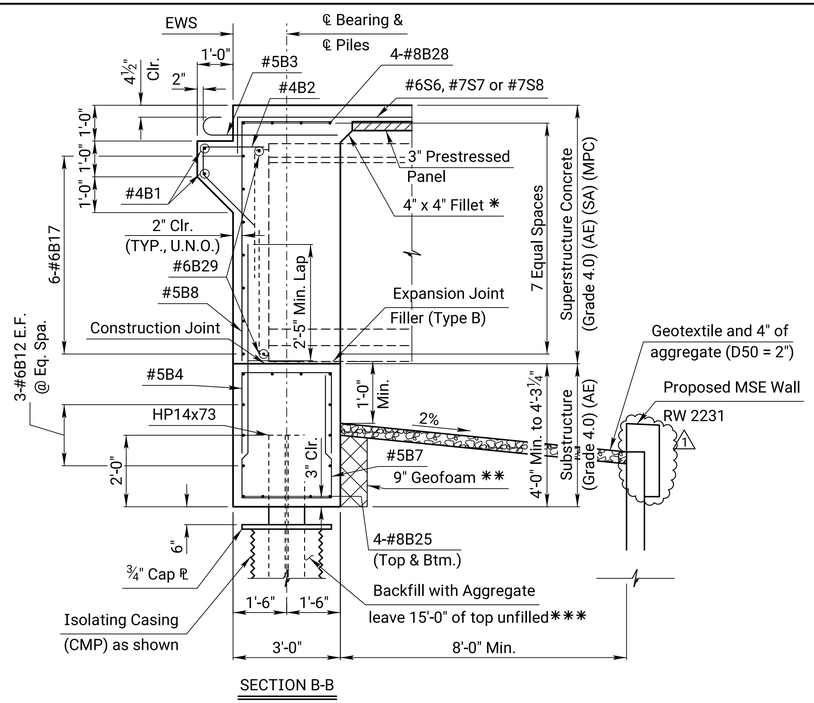
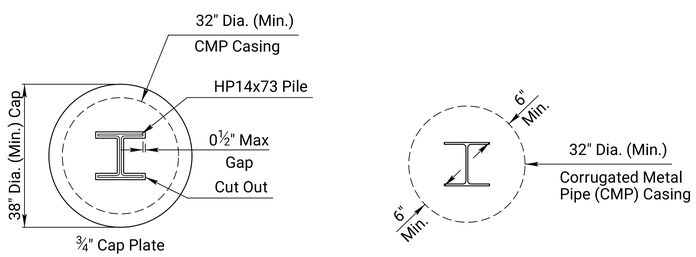
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-12	38



SECTION A-A

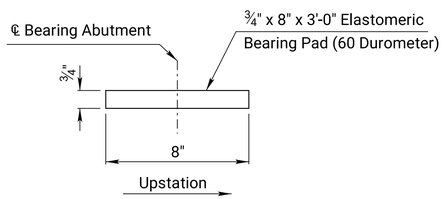


SECTION B-B

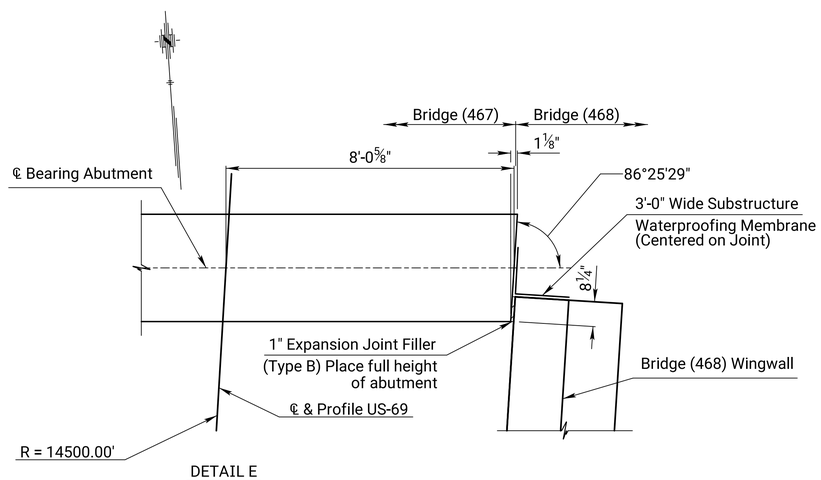


SECTION F-F

SECTION G-G



ELASTOMERIC BEARING PAD DETAIL



DETAIL E

Notes:

For Locations of Sections A-A, and B-B, and Detail E see Sheet BR02-11.

✳ Design-Builder has the option of constructing a 4"x4" fillet at the face of diaphragm or beginning the prestressed panels at the face of the diaphragm.

✳✳ - Depth of geofoam varies from 2'-2⅝" Min. to 2'-10¾" Max. from bottom of aggregate to bottom of abutment footing.

✳✳✳ - Backfill with 3/8" pea gravel to bottom of casing (Elev. 936.85±), leaving the top 15'-0" open.

Legend:

N.F.	=	Near Face
F.F.	=	Far Face
E.F.	=	Each Face
EWS	=	End of Wearing Surface
■	=	Elevation measured to the far face of wall.
U.N.O.	=	Unless Noted Otherwise

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL
1	2024-04-05	NDC136 - SLOPE UPDATE AT RW

KANSAS DEPARTMENT OF TRANSPORTATION

BR.NO.69-46-143.73 (468) STA. 1175+98.45

ABUTMENT NO. 2 DETAILS NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	EJS	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

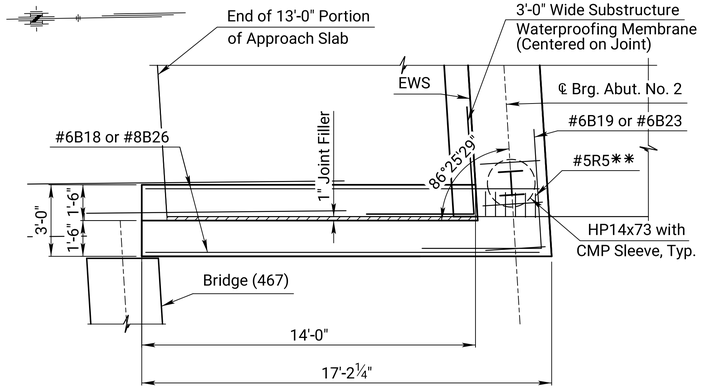
240412_69_46_KA-5700-03_BR-1-2_RW-5A_NDC 136_r00

File: BR02-12 - Abutment No. 2 Details.dgn

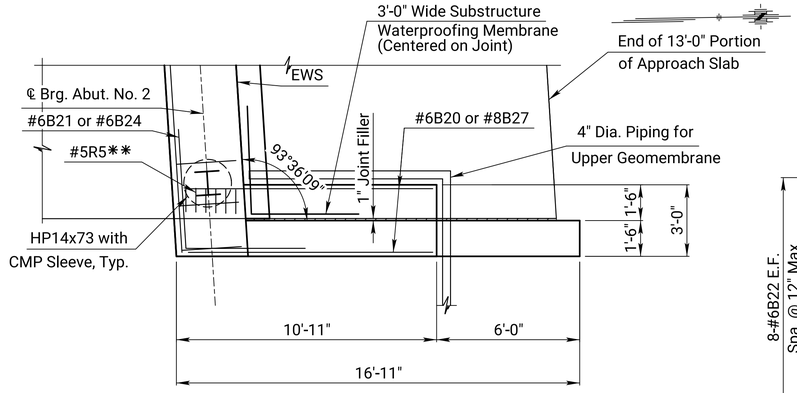
Plot Date: 5-APR-2024 15:53

US69 Express
Dec 11, 2023
Released For Construction

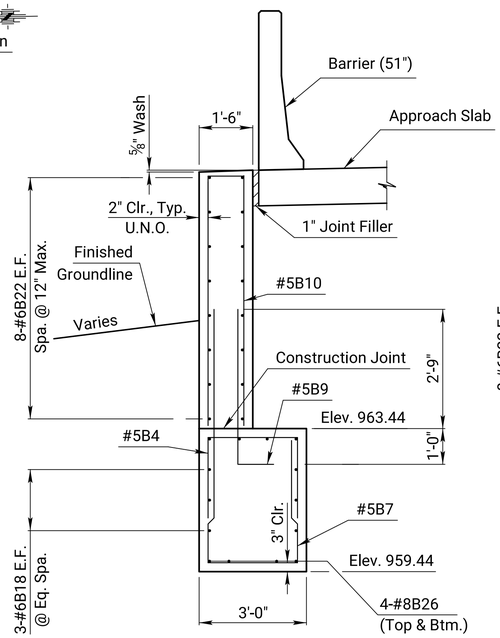
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-13	38



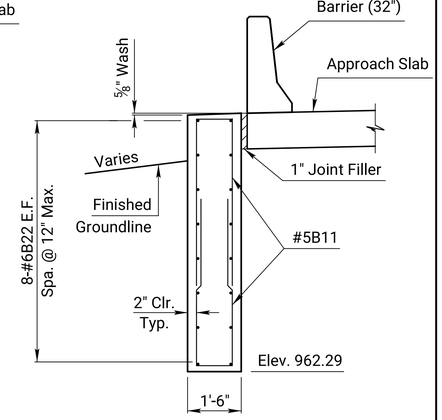
LEFT WINGWALL PLAN



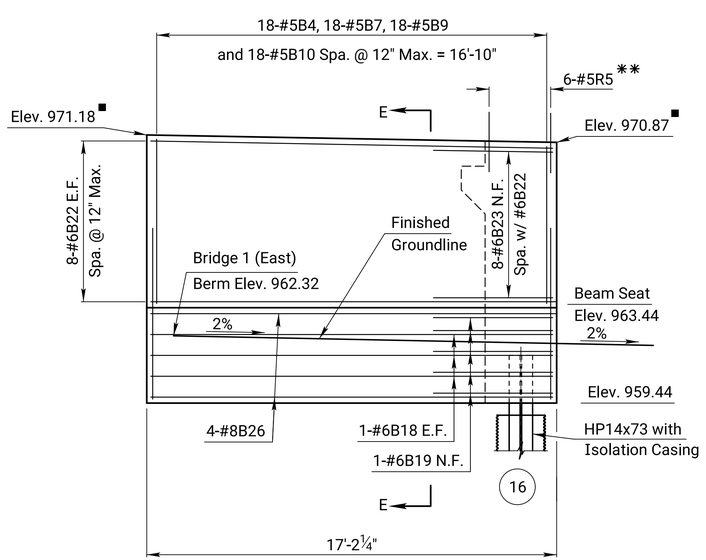
RIGHT WINGWALL PLAN



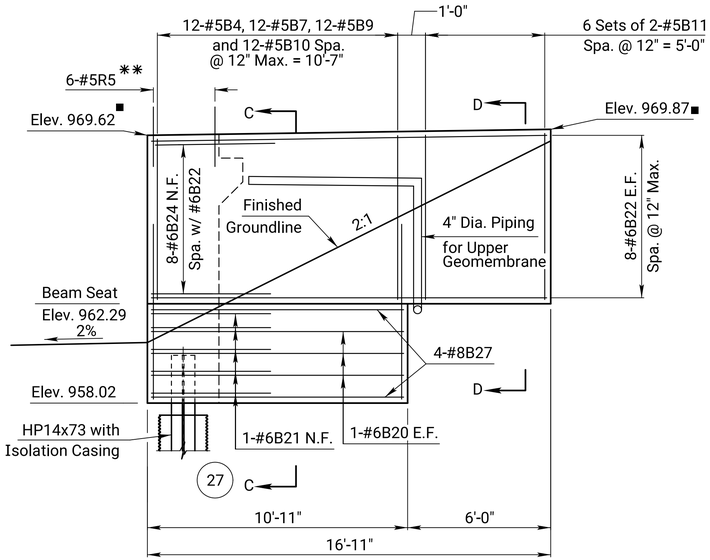
SECTION E-E



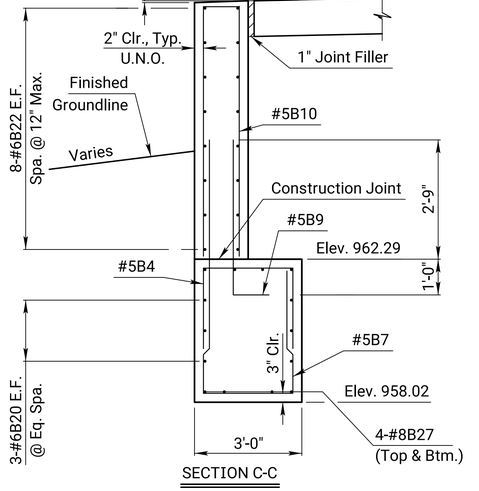
SECTION D-D



LEFT WINGWALL ELEVATION



RIGHT WINGWALL ELEVATION



SECTION C-C

US69 EXPRESS
CONSTRUCTORS

Notes:

For addtional Abutment 2 information, see Sheets BR02-11 and BR02-12.

Legend:

N.F.	=	Near Face
F.F.	=	Far Face
E.F.	=	Each Face
EWS	=	End of Wearing Surface
■	=	Elevation measured to the far face of wall.
**	=	Place #5R5 reinforcing bars with abutment diaphragm

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

ABUTMENT NO. 2
WINGWALL DETAILS
NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

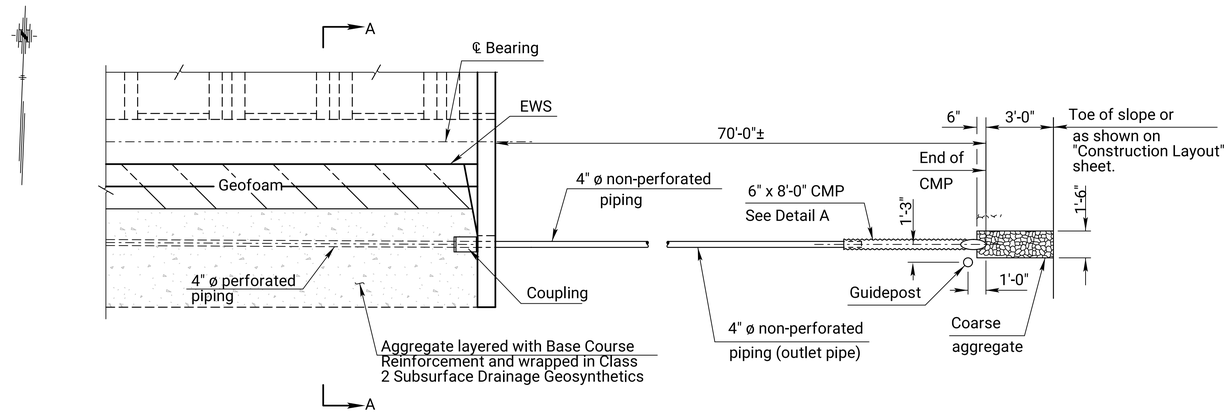
DESIGNED	EJS	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-13 - Abutment No. 2 Wingwall Details.dgn Plot Date: 1-DEC-2023 12:15

US69 Express
Dec 11, 2023
Released For Construction

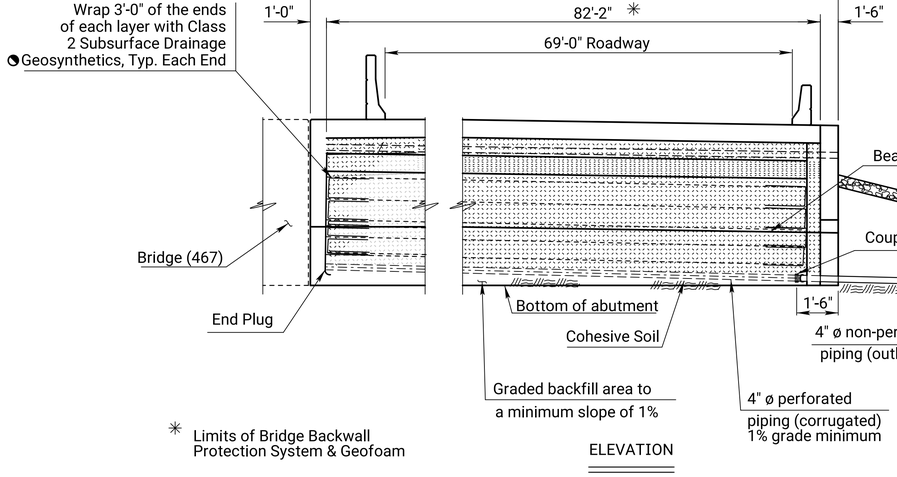
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-14	38



PLAN

Note: The 1'-0" lap and joint sealer may be replaced by reducing coupler at the junction of the CMP and the 4" round tubing.

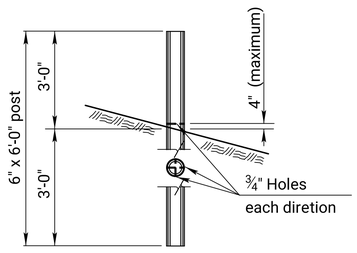
◔ Use if material cannot be shaped and compacted per plan



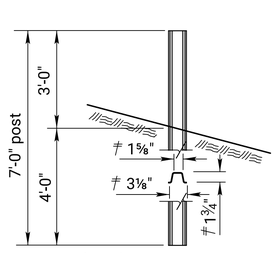
✳ Limits of Bridge Backwall Protection System & Geofoam

ELEVATION

Note: Place the CMP flowline 1'-0" above ditch flowline, toe of sideslope, or as shown on the Construction Layout.

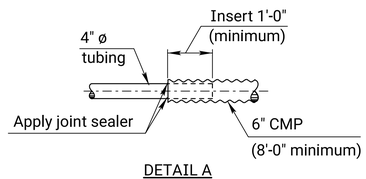


Wood Guide Post Option
(6" ø x 6'-0")



Metal Guide Post Option
7'-0" at 3.0 lbs/ft.
flanged channel

℄ Nominal dimension.



DETAIL A

Note: The 1'-0" lap and joint sealer may be replaced by a reducing coupler at the junction of the CMP and the 4" round tubing.

GENERAL NOTES

GEOSYNTHETICS: Use material that complies with KDOT Specification Section 1710 Class 2 subsurface drainage fabric. Place the Class 2 subsurface drainage fabric on graded and compacted material shaped as shown. Allow for enough material so that the top can be overlapped and the end folded to completely enclose the aggregate drain. Place the perforated drain pipe and couple to non-perforated pipe as shown. Allow the non-perforated pipe to pass through a hole carefully cut in fabric. Place aggregate within fabric to just leave the top of the pipe visible. Verify the slope of the pipe, that it is not damaged or displaced and that the couplers are firmly coupled. Continue to back fill to the elevation and shape shown. Lap the top of the fabric a minimum of 3'-0", fold and wrap the ends to enclose the drainage materials. Secure the folds and wraps by sewing or approved methods.

AGGREGATE: Use aggregates that complies with KDOT Specifications for SB-1 or SB-2.

BASE COURSE REINFORCEMENT: Use "Base Course Reinforcement" that complies with KDOT Specification Division 1700 or approved material. Place this material in uniform layers without gaps or sags per the manufacturer's recommendations.

GEOFOAM: Use "Geofoam" that complies with ASTM D6817 EPS 12. Acceptance according to Type "B" certification. Bond this material to the back wall protection using materials recommended by the manufacturer.

PIPE: Place perforated pipe within the limits and use non-perforated pipe outside the limits of the Abutment Aggregate Drain.

ABUTMENT AGGREGATE DRAIN: Backfill, compact & grade the cohesive soil to the limits shown. Place the bridge backwall protection, geofoam, geotextile, perforated pipe, alternating layers of aggregate and base course reinforcement as shown. Place the outlet pipe, the CMP, and the backfill. Guide post and coarse aggregate are not required if the CMP empties onto Slope Protection. Enclose the entire Abutment Aggregate Drain with the geotextile

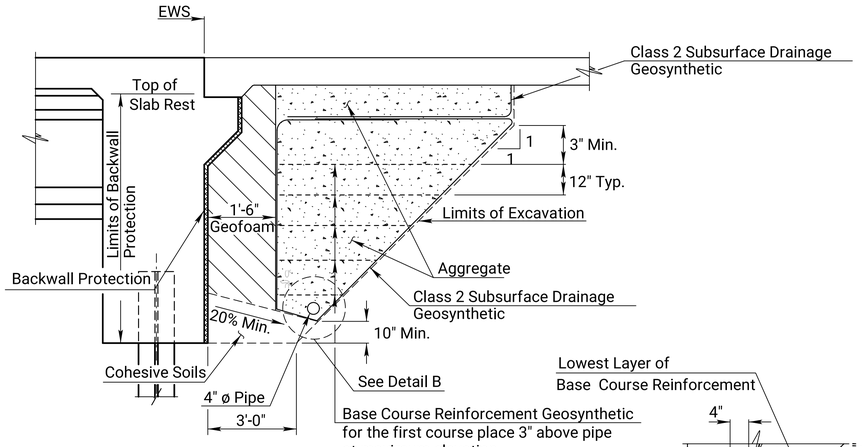
BRIDGE BACKWALL PROTECTION SYSTEM: Apply a non coal-tar Bridge Backwall Protective System to the approach side of the abutments and the wings in accordance with KDOT Specifications and the manufacturer's recommendations. Cover the abutments and wings to the limits shown on the details. Repair any damage done.

Compact the abutment backfill. See the KDOT Specifications.

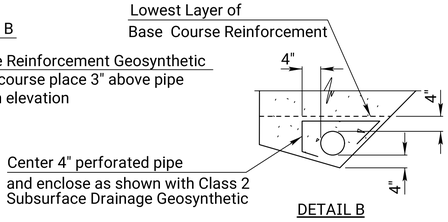
Perforated pipe and non-perforated outlet pipe shall be corrugated polyethylene tubing conforming to the KDOT Specifications.

Fit the CMP end section with 1/4" galvanized mesh screen to prevent the entrance of rodents. Seal the joint between the outlet pipe and the end section with a joint sealer. Place Coarse aggregate at the outlet end as shown.

COHESIVE SOILS: Grade the bottom surface of the excavated area to drain as shown. Backfill this area with a cohesive type of soil. The soil will have a Unified Soil Classification of CL, CH, ML or MH according to ASTM D2487. Classification System with a minimum plasticity index of 13. Compact the material to Type A, MR-90 specifications. If the plasticity index cannot be met add and mix Bentonite, to the soil prior to placement and compaction so that the PI≥ 13.



SECTION A-A
(Abutment Aggregate Drain)



DETAIL B

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

ABUTMENT NO. 1 AGGREGATE DRAIN NB US-69 OVER I-435

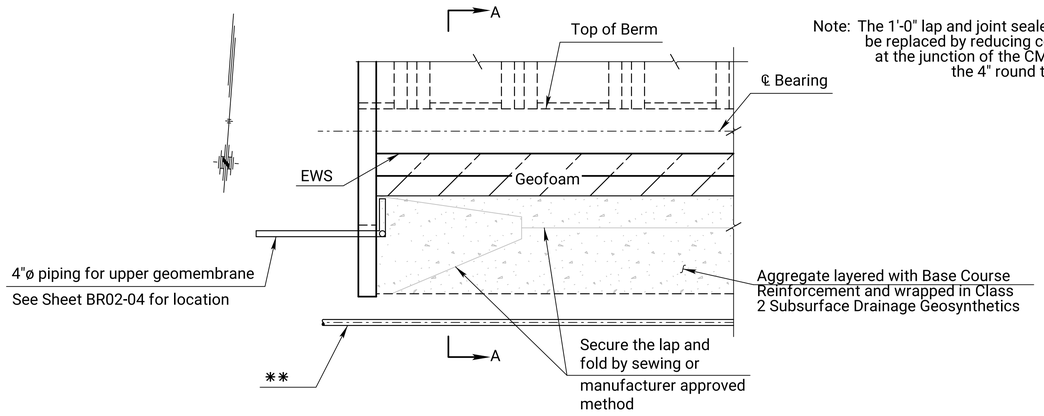
PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

File: BR02-14 - Abutment No. 1 Aggregate Drain.dgn Plot Date: 1-DEC-2023 12:16

US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-15	38

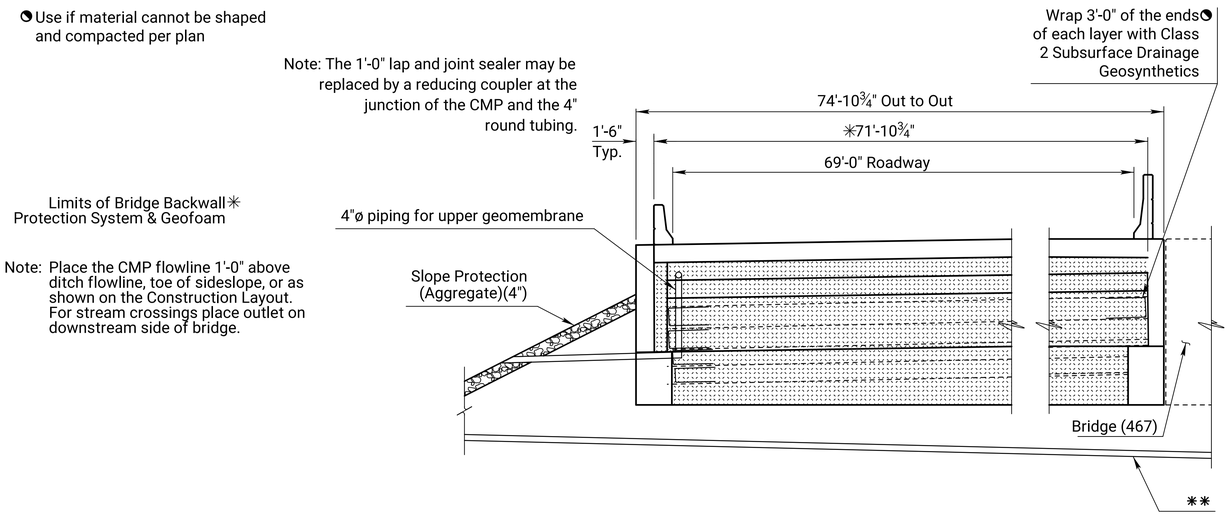


Note: The 1'-0" lap and joint sealer may be replaced by reducing coupler at the junction of the CMP and the 4" round tubing.

PLAN

◔ Use if material cannot be shaped and compacted per plan

Note: The 1'-0" lap and joint sealer may be replaced by a reducing coupler at the junction of the CMP and the 4" round tubing.



Note: Place the CMP flowline 1'-0" above ditch flowline, toe of sideslope, or as shown on the Construction Layout. For stream crossings place outlet on downstream side of bridge.

ELEVATION

GENERAL NOTES

GEOSYNTHETICS: Use material that complies with KDOT Specification Section 1710 Class 2 subsurface drainage fabric. Place the Class 2 subsurface drainage fabric on graded and compacted material shaped as shown. Allow for enough material so that the top can be overlapped and the end folded to completely enclose the aggregate drain. Place the perforated drain pipe and couple to non-perforated pipe as shown. Allow the non-perforated pipe to pass through a hole carefully cut in fabric. Place aggregate within fabric to just leave the top of the pipe visible. Verify the slope of the pipe, that it is not damaged or displaced and that the couplers are firmly coupled. Continue to back fill to the elevation and shape shown. Lap the top of the fabric a minimum of 3'-0", fold and wrap the ends to enclose the drainage materials. Secure the folds and wraps by sewing or approved methods.

AGGREGATE: Use aggregates that complies with KDOT Specifications for SB-1 or SB-2.

BASE COURSE REINFORCEMENT: Use "Base Course Reinforcement" that complies with KDOT Specification Division 1700 or approved material. Place this material in uniform layers without gaps or sags per the manufacturer's recommendations.

GEOFOAM: Use "Geofoam" that complies with ASTM D6817 EPS 12. Acceptance according to Type "B" certification. Bond this material to the back wall protection using materials recommended by the manufacturer.

** - For MSE Wall Drainage System details, see Segment 5 Retaining Wall Plans.

ABUTMENT AGGREGATE DRAIN: Backfill, compact & grade the cohesive soil to the limits shown. Place the bridge backwall protection, geofoam, geotextile, perforated pipe, alternating layers of aggregate and base course reinforcement as shown. Place the outlet pipe, the CMP, and the backfill. Guide post and coarse aggregate are not required if the CMP empties onto Slope Protection. Enclose the entire Abutment Aggregate Drain with the geotextile

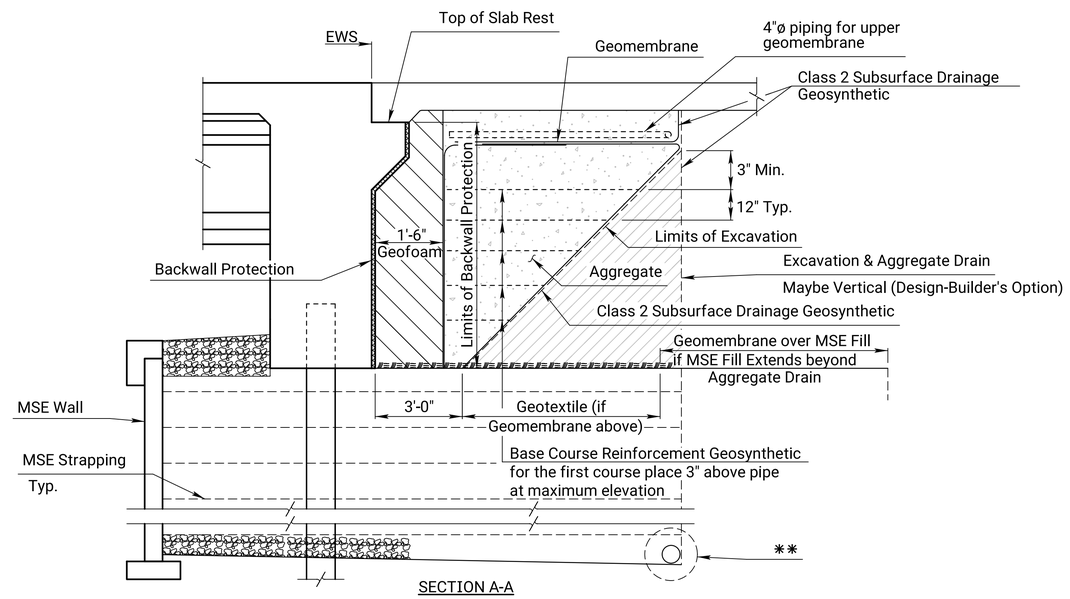
BRIDGE BACKWALL PROTECTION SYSTEM: Apply a non coal-tar Bridge Backwall Protective System to the approach side of the abutments and the wings in accordance with KDOT Specifications and the manufacturer's recommendations. Cover the abutments and wings to the limits shown on the details. Repair any damage done.

Compact the abutment backfill. See the KDOT Specifications.

Perforated pipe and non-perforated outlet pipe shall be corrugated polyethylene tubing conforming to the KDOT Specifications.

Fit the CMP end section with 1/4" galvanized mesh screen to prevent the entrance of rodents. Seal the joint between the outlet pipe and the end section with a joint sealer. Place Coarse aggregate at the outlet end as shown.

COHESIVE SOILS: Grade the bottom surface of the excavated area to drain as shown. Backfill this area with a cohesive type of soil. The soil will have a Unified Soil Classification of CL, CH, ML or MH according to ASTM D2487. Classification System with a minimum plasticity index of 13. Compact the material to Type A, MR-90 specifications. If the plasticity index cannot be met add and mix Bentonite, to the soil prior to placement and compaction so that the PI≥ 13.



SECTION A-A

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

ABUTMENT NO. 2 AGGREGATE DRAIN NB US-69 OVER I-435

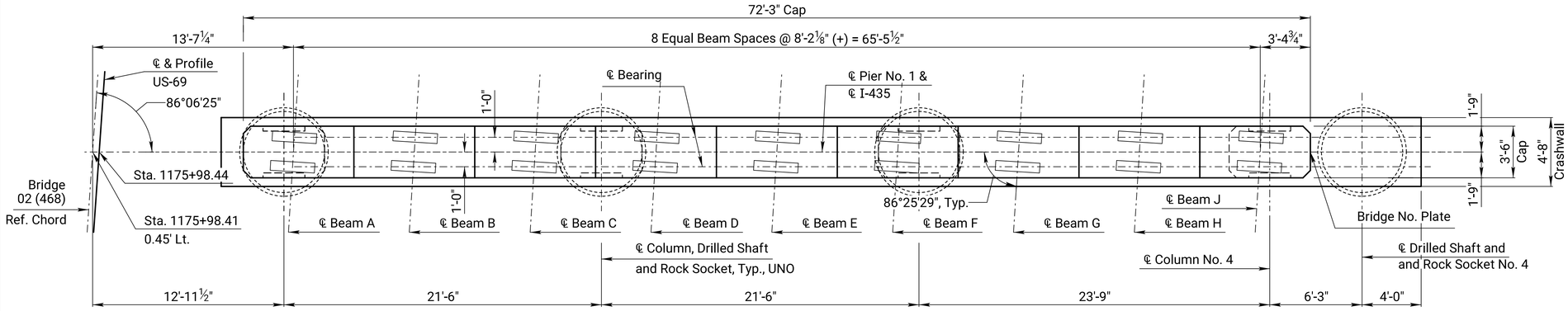
PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

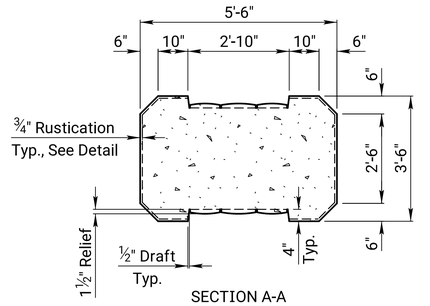
File: BR02-15 - Abutment No. 2 Aggregate Drain.dgn Plot Date: 1-DEC-2023 14:18

US69 Express
Dec 11, 2023
Released For Construction

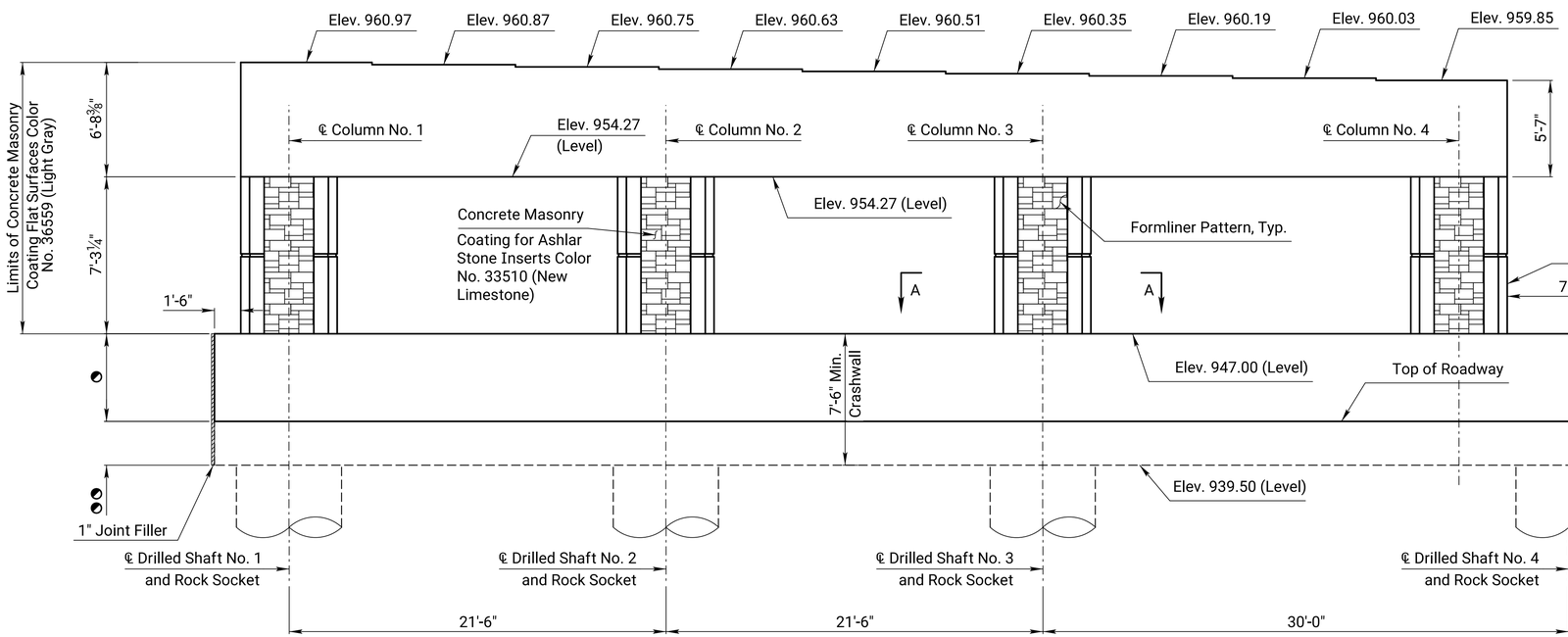
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-16	38



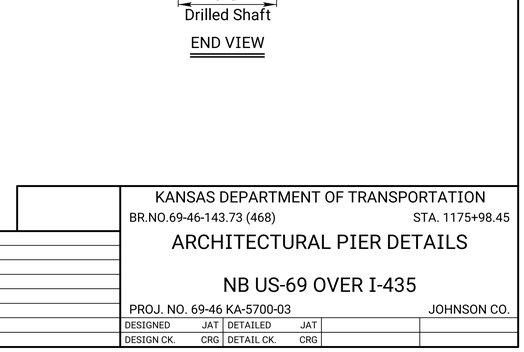
PLAN



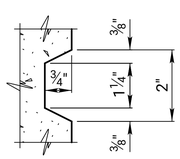
SECTION A-A



ELEVATION



END VIEW



RUSTICATION DETAIL

Legend:
◔ - Varies 5'-2"± to 5'-8"±
◔◔ - Varies 1'-10"± to 2'-4" ±

US69 EXPRESS
CONSTRUCTORS

Color Stain for Piers:
All exposed surfaces of the pier above the crashwall, except the top of the cap beam, will be coated with a Concrete Masonry Coating. Color of the pigmented sealer shall match Color No. 36559 (Light Gray) of the SAE International Standard AMS-STD-595A for all flat surfaces and Color No. 33510 (New Limestone) of SAE International Standard AMS-STD-595A for the Ashlar Stone texture inset. Apply the pigmented sealer to all exposed surfaces above the top of the crashwall.

On Bridge Pier Columns:
Form liner used shall be Scott Systems, Inc.: Form liner pattern #167D "Ashlar Stone"
The Ashlar Stone pattern shall appear natural and non-repeating.
The depth of relief for the form liner shall vary up to a maximum of 1½".
The maximum height or width of any single "stone" shall be 15".
Form liner shall be placed such that simulated mortar joints are horizontal and vertical.

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

ARCHITECTURAL PIER DETAILS

NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

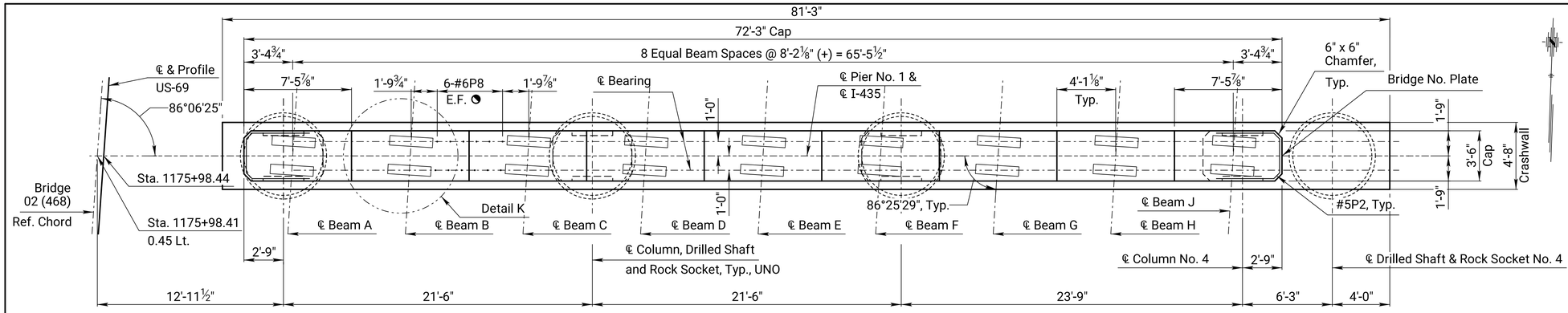
DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-16 - Architectural Pier Details.dgn Plot Date: 1-DEC-2023 12:16

US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-17	38



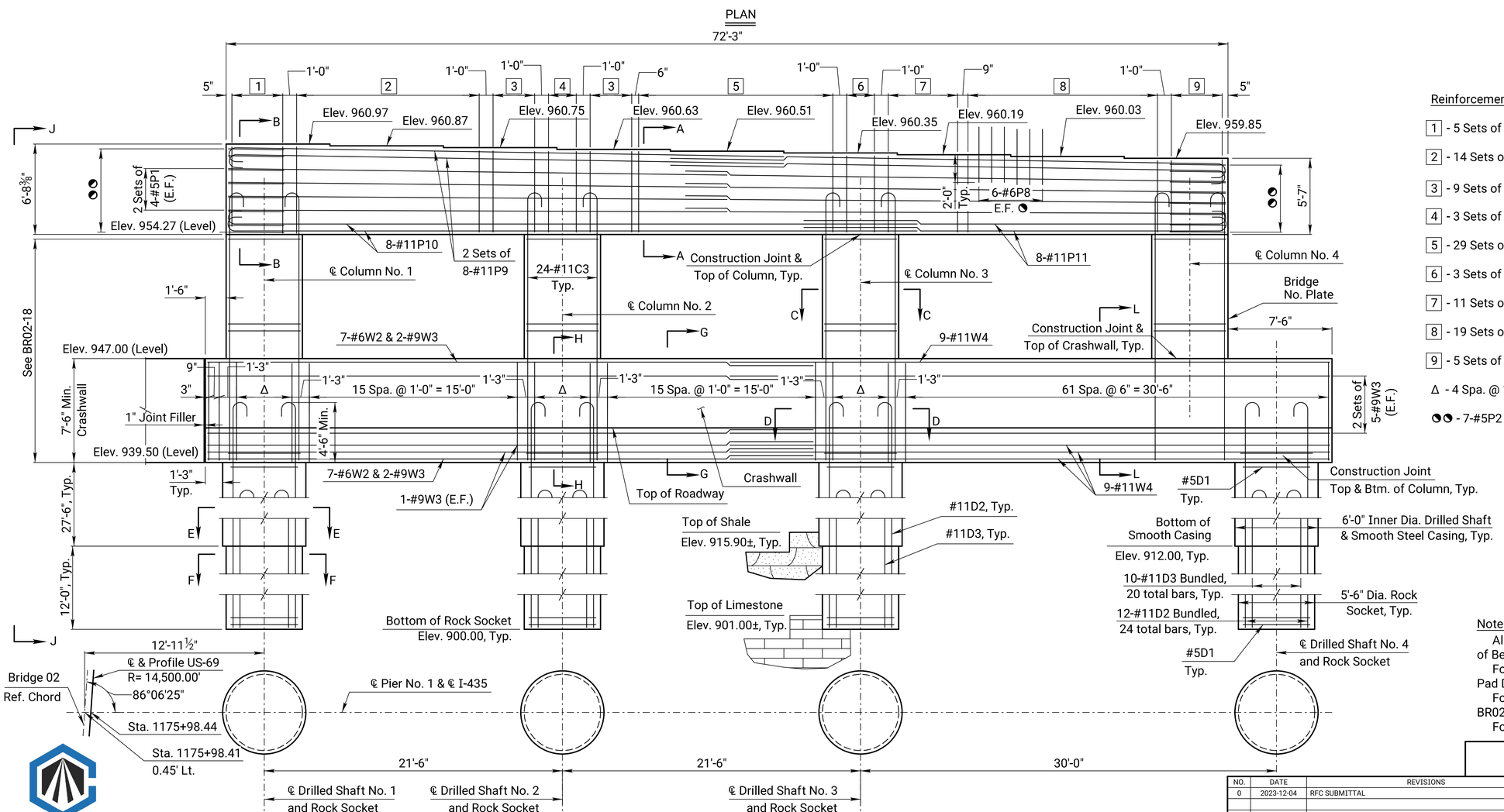
MINIMUM LAP LENGTHS	
BAR	LENGTH
No. 5	3'-0"
No. 6	4'-0"
No. 8	5'-4"
No. 9	6'-0"
No. 11 Horiz.	7'-11"
No. 11 to No. 9	6'-10"

LRFD Design Drilled Shaft Load (tons / shaft)

	Strength I	Service I	Phi
Side Friction	415	415	0.55
End Bearing	863	490	0.50
Total	1278	905	**

** Phi Factors are equal to 0.55 for Side Friction and 0.50 for End Bearing

PLAN



ELEVATION

Reinforcement Legend:

1 - 5 Sets of 2-#6P4 Spa. @ 12" = 4'-0"

2 - 14 Sets of 4-#6P3 Spa. @ 12 " = 13'-0"

3 - 9 Sets of 4-#6P3 Spa. @ 4½" = 3'-0"

4 - 3 Sets of 2-#6P5 Spa. @ 12" = 2'-0"

5 - 29 Sets of 4-#6P3 Spa. @ 6" = 14'-0"

6 - 3 Sets of 2-#6P6 Spa. @ 12" = 2'-0"

7 - 11 Sets of 4-#6P3 Spa. @ 6" = 5'-0"

8 - 19 Sets of 4-#6P3 Spa. @ 9" = 13'-9"

9 - 5 Sets of 2-#6P7 Spa. @ 12" = 4'-0"

Δ - 4 Spa. @ 1'-0" = 4'-0"

◔◔ - 7-#5P2 Lap w/ #5P1, #11P9, #11P10 or #11P11

Legend:

E.F. denotes each face.

◔ - 5 Spa. @ 11" Max., Typ. between Bearings

Notes:

All Dimensions and Elevations measured along Centerline of Bearing.

For Sections A-A, B-B, C-C, View J-J, Detail K, and Bearing Pad Details, see Sheet BR02-18.

For Sections D-D, E-E, F-F, G-G, H-H, and L-L, see Sheet BR02-19.

For surface treatment requirements, see Sheet BR02-16.

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION

BR.NO.69-46-143.73 (468) STA. 1175+98.45

PIER PLAN & ELEVATION

NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

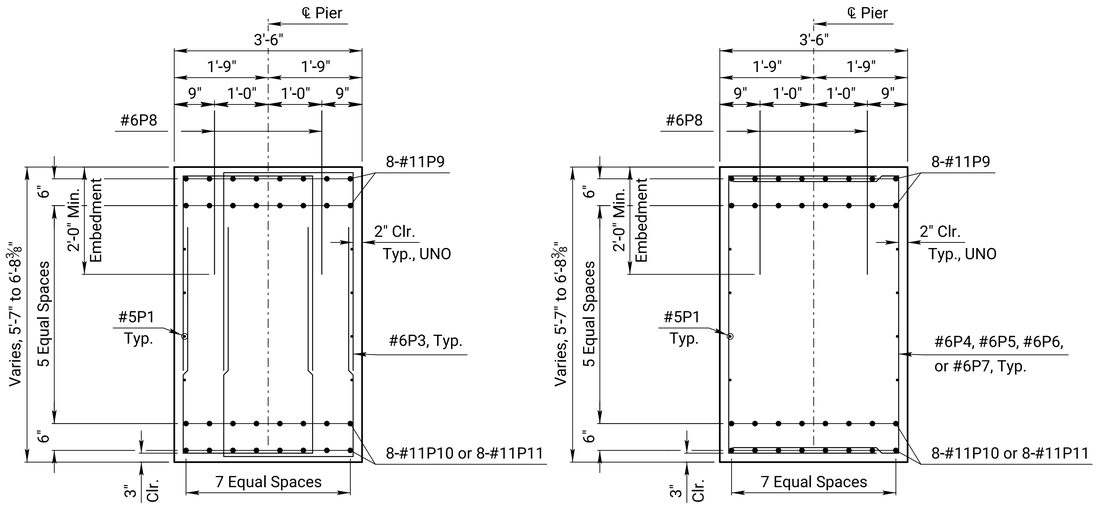
231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-17 - Pier Plan & Elevation.dgn

Plot Date: 1-DEC-2023 12:16

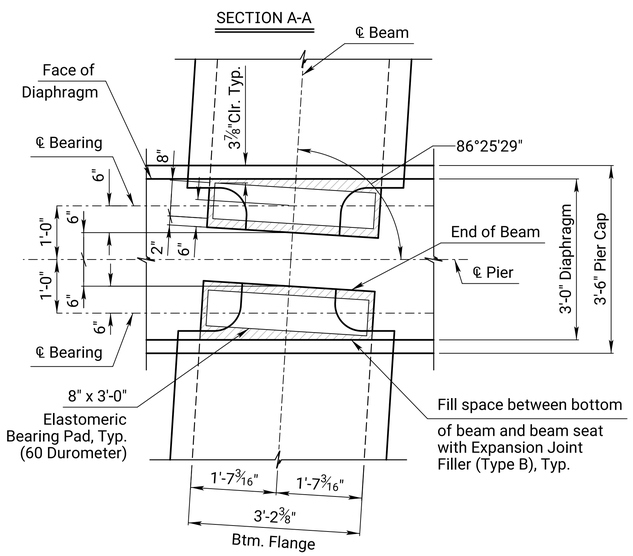
US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-18	38

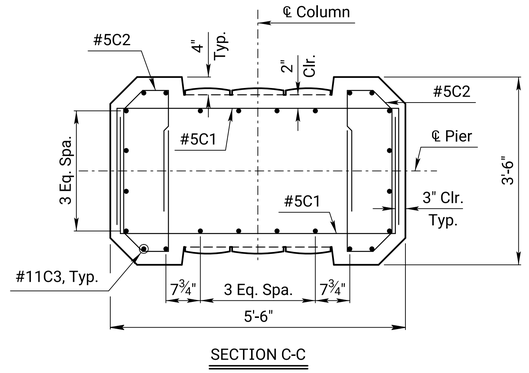


SECTION A-A

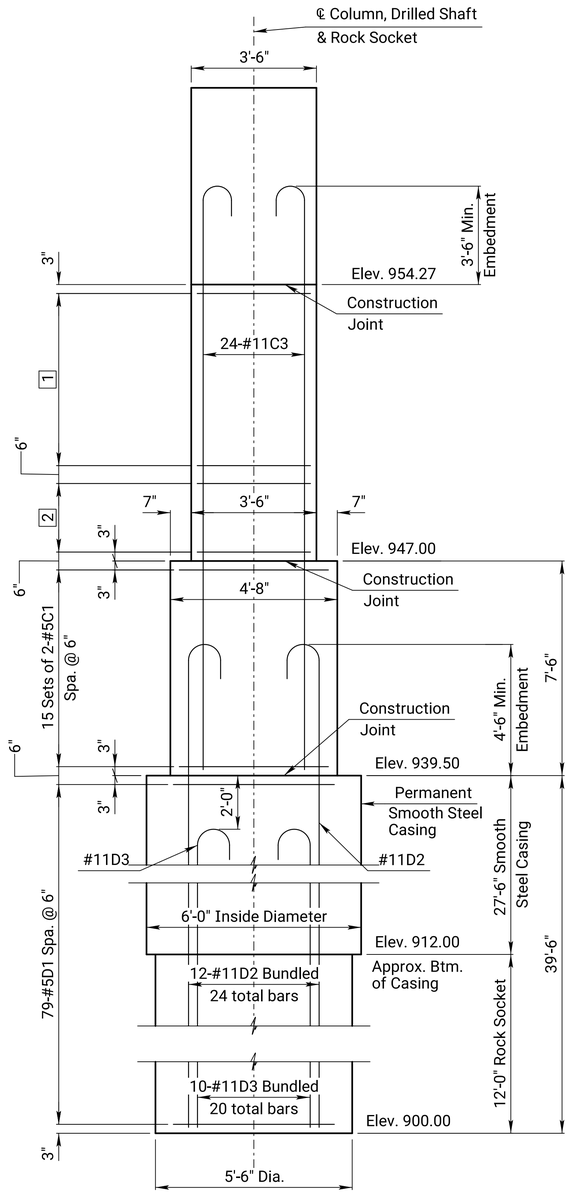
SECTION B-B



DETAIL K



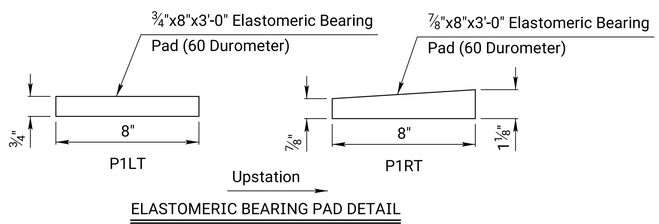
SECTION C-C



VIEW J-J

MINIMUM LAP LENGTHS	
BAR	LENGTH
No. 5	3'-0"
No. 6	4'-0"
No. 8	5'-4"
No. 9	6'-0"
No. 11 Horiz.	7'-11"
No. 9 to No. 11	6'-10"

MINIMUM EMBEDMENT LENGTHS	
BAR	LENGTH
No. 6	2'-0"
No. 11	4'-6"



ELASTOMERIC BEARING PAD DETAIL

Legend:

1 - 9 Sets of 2-#5C1 & 2-#5C2 Spa. @ 6" Max

2 - 8 Sets of 2-#5C1 & 2-#5C2 Spa. @ 4"

E.F. denotes each face.

UNO - Unless Noted Otherwise

Notes:

For locations of Sections A-A, B-B, C-C, View J-J, and Detail K, see Sheet BR02-17.
For Architectural Details, see Sheet BR02-16.

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

PIER DETAILS (1 OF 2)
NB US-69 OVER I-435

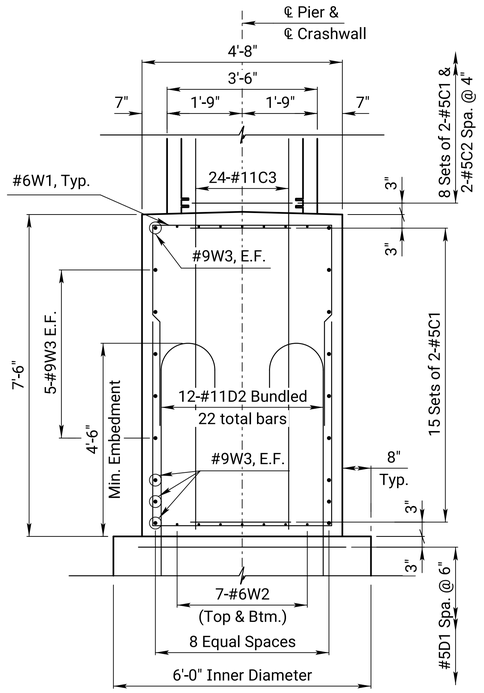
PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

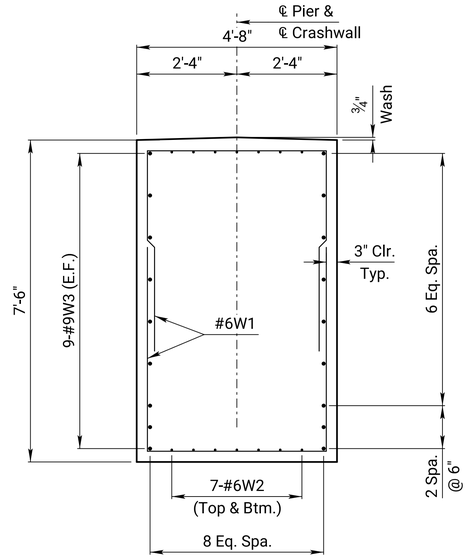
File: BR02-18 - Pier Details (1 of 2).dgn Plot Date: 1-DEC-2023 12:16

US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-19	38



SECTION H-H



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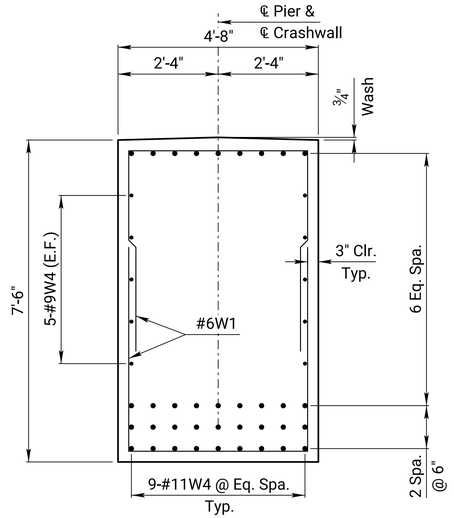

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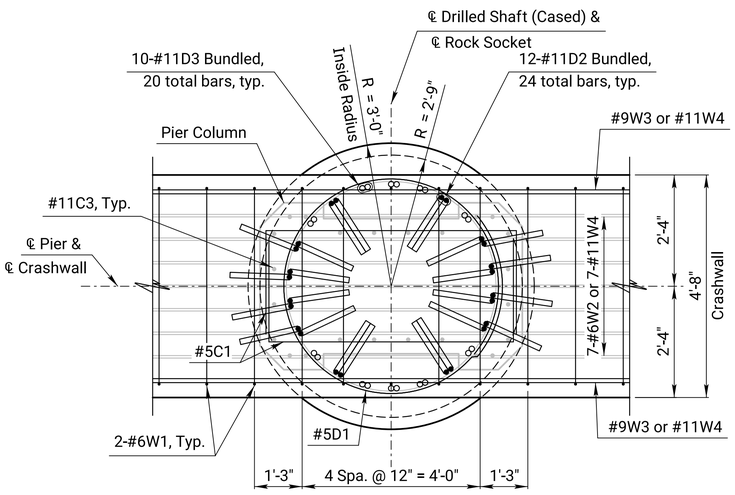
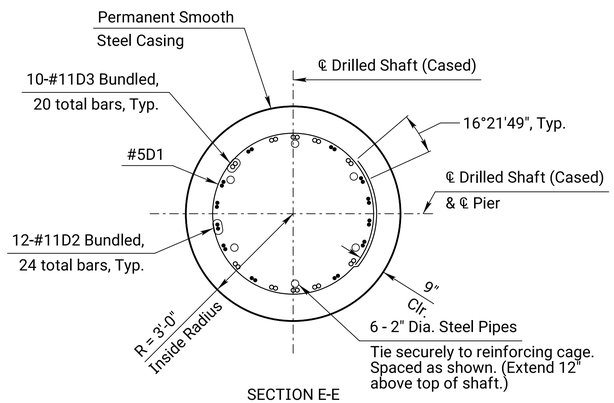
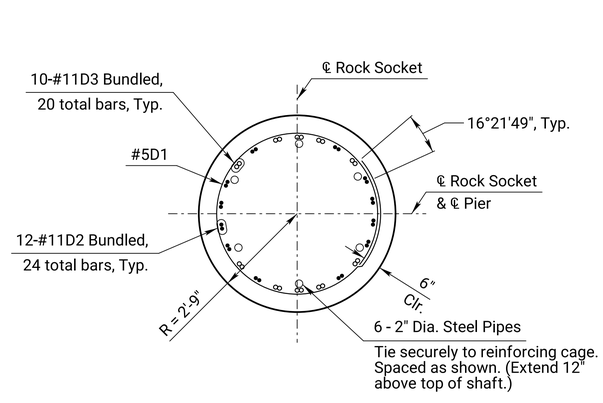


SECTION D-D

MINIMUM LAP LENGTHS	
BAR	LENGTH
No. 5	3'-0"
No. 6	3'-7"
No. 9	6'-0"
No. 9 to No. 11	6'-10"



SECTION E-E



SECTION F-F

Legend:
E.F. denotes each face.

Notes:
For Architectural Details, see Sheet BR02-16.
For locations of Sections D-D, E-E, F-F, G-G, H-H, and L-L, see Sheet BR02-17.

US69 EXPRESS
CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

PIER DETAILS (2 OF 2) NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

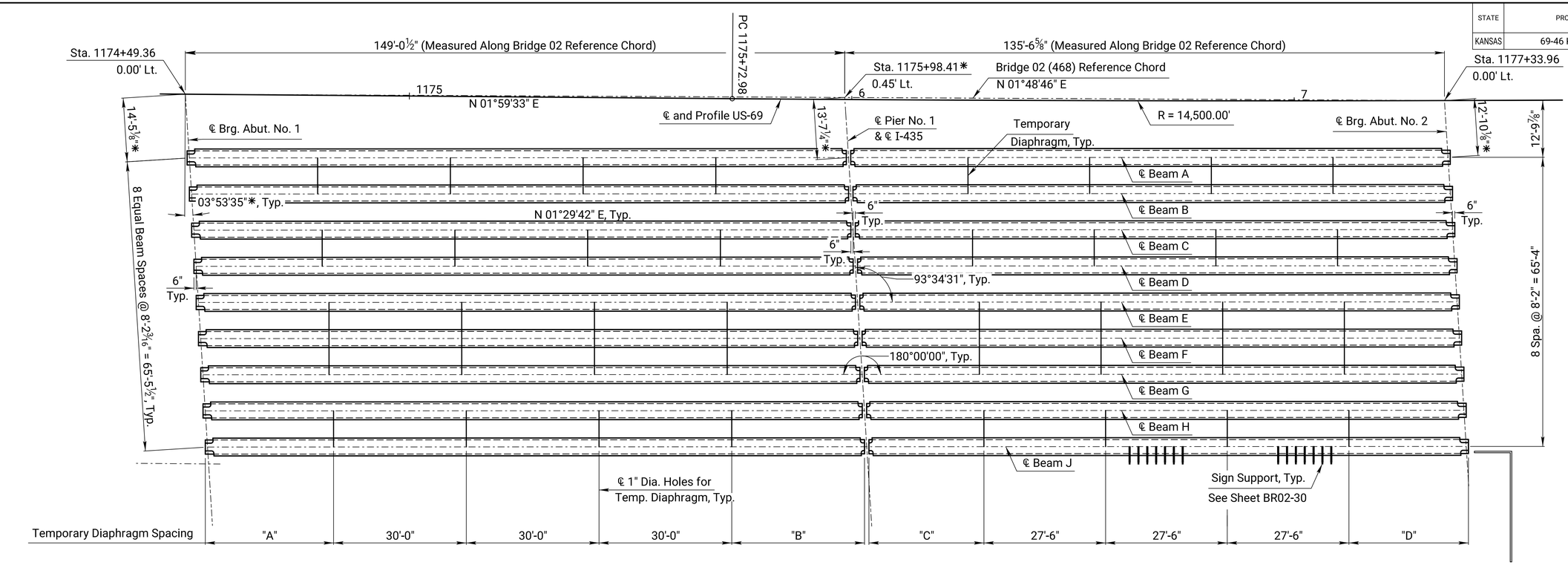
231208_69-46_KA-5700-03_BR-02_RFC_r00

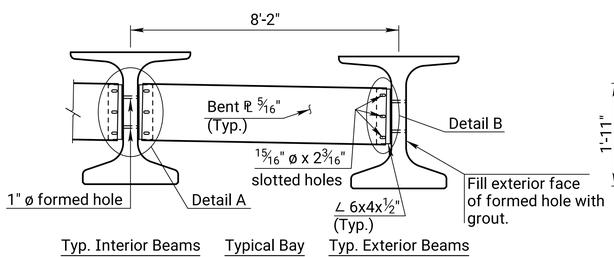
File: BR02-19 - Pier Details (2 of 2).dgn

Plot Date: 1-DEC-2023 12:16

US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-20	38

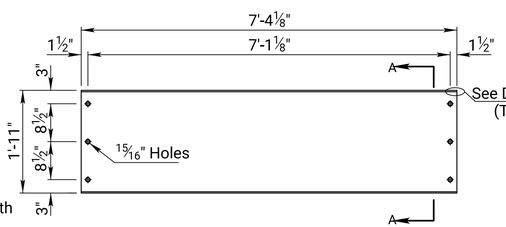




ELEVATION OF TEMPORARY DIAPHRAGMS

FRAMING PLAN

(Pier and Abutment Diaphragms not shown)



TEMPORARY DIAPHRAGM

SECTION A-A

DETAIL D

Beam	Dim. "A"	Dim. "B"	Dim. "C"	Dim. "D"
Beam A	29'-6"	29'-6"	26'-6"	26'-6"
Beam B	29'-0"	30'-0"	26'-0"	27'-0"
Beam C	29'-6"	29'-6"	26'-6"	26'-6"
Beam D	29'-0"	30'-0"	26'-0"	27'-0"
Beam E	30'-0⅛"	28'-11⅞"	27'-0⅛"	25'-11⅞"
Beam F	29'-6"	29'-6"	26'-6"	26'-6"
Beam G	29'-0"	30'-0"	26'-0"	27'-0"
Beam H	29'-6"	29'-6"	26'-6"	26'-6"
Beam J	29'-0"	30'-0"	26'-0"	27'-0"

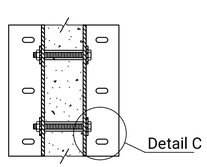
TEMPORARY DIAPHRAGMS: Use ASTM A709 Gr. 36 steel for all angles and bent plates for temporary diaphragms. All bolts, nuts, and washers for fasteners shall conform to the heavy hex structural requirements of ASTM F3125 Gr. A325, Type 1. Galvanize the angles, bolts, nuts, and washers in accordance with the KDOT Specifications. Use hardened steel washers over any oversized holes. Use 5⁄16" plate washers over any slotted holes along with hardened washers under the turned elements. Use the turn-of-the-nut tightening method. DTI's are not required. Install the temporary diaphragms, as shown in the details, prior to placing any superstructure concrete. Leave the temporary diaphragms in place until the concrete diaphragms and deck have cured. Remove the angles from the beams and fill the holes in the prestressed beams with an approved epoxy grout. The bent plate diaphragms, angles, nuts, bolts, and washers shall remain the property of the Design-Builder. Submit shop drawings of the temporary diaphragms to the Engineer for review and approval.

Notes:

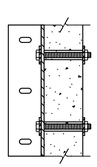
✳ - Dimensions Given to Reference Chord

For Prestressed Concrete Beam Details, see Sheets BR02-21 and BR02-22.

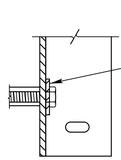
For Sign Support Connection Details, see Sheet BR02-30.



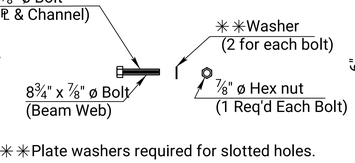
DETAIL A



DETAIL B

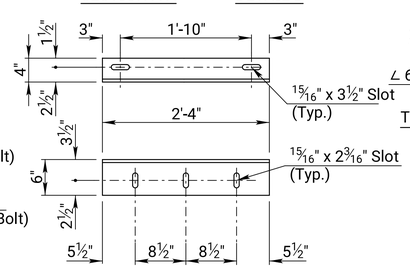


DETAIL C



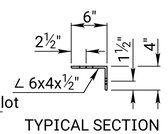
✳✳Plate washers required for slotted holes.

FASTENER DETAILS



2'-4" CONNECTION ANGLE

(80 each Req'd.)



TYPICAL SECTION

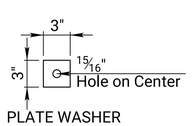


PLATE WASHER

CONNECTION ANGLE DETAILS

(or equivalent)

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION

BR.NO.69-46-143.73 (468) STA. 1175+98.45

FRAMING PLAN

NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-20 - Framing Plan.dgn

Plot Date: 1-DEC-2023 12:17

US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
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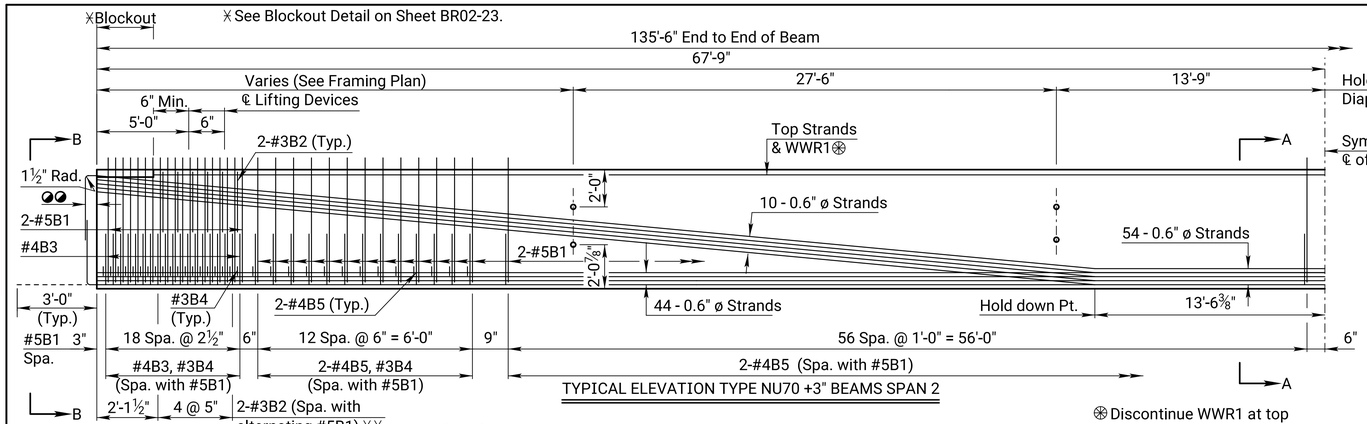
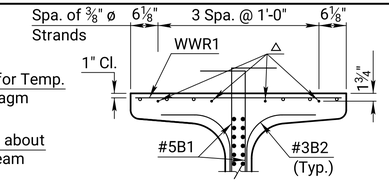
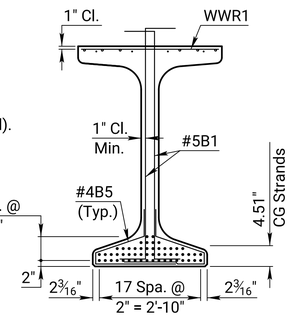




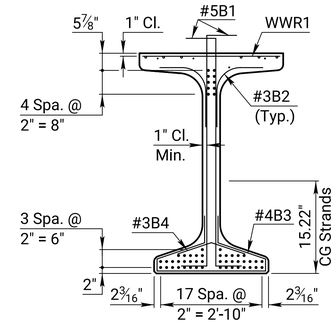
†† TOP FLANGE DETAIL

△ ⅜" Dia. reinforcement support strands (required). Tension to 2.0 kips/strand and place symmetrical about ℄ beam. Shall be moved laterally in pairs to maintain symmetry.

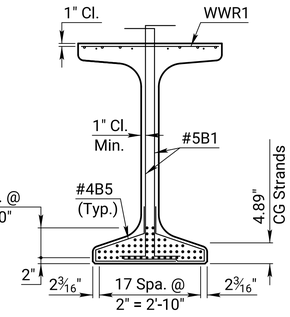
†† Check flange for Overhang Bracket loads where applicable.



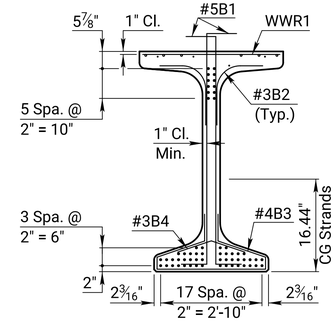
SECTION A-A
(135'-6" span beams)



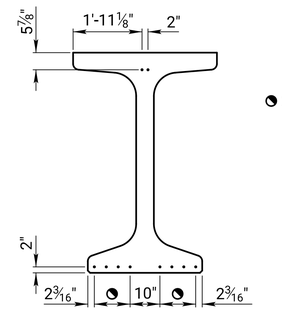
SECTION B-B
(135'-6" span beams)



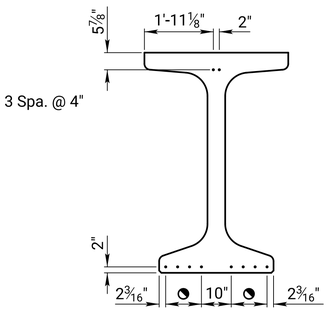
SECTION C-C
(149'-0" span beams)



SECTION D-D
(149'-0" span beams)

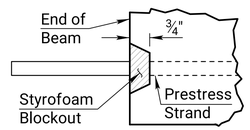


STRAND EXTENSION DETAIL
(135'-6" span beams)



STRAND EXTENSION DETAIL
(149'-0" span beams)

✳✳✳ PROCEDURE FOR SEALING PRESTRESS BEAM ENDS



1. Cut strands 9" from the end of the beam.
2. Remove Styrofoam blockout.
3. Cut strands 1/2" deep in blockout with angle grinder.
4. Clean affected area.
5. Fill blockout area with approved epoxy grout.
6. After the grout has cured, according to the manufacturer's recommendation, grind entire face of beam to provide a smooth surface.
7. After waiting 28 days, clean the entire surface of beam end and apply an approved (epoxy-epoxy) Substructure Waterproofing Membrane.

✳✳✳ Only for exposed Prestress Beam ends with all strands removed at expansion joints.

† WELDED WIRE REINFORCEMENT EQUIVALENT STEEL As

Size	3"	6"	9"	12"	15"	18"
#3	0.440	0.220	0.147	0.110	0.088	0.073
#4	0.800	0.400	0.267	0.200	0.160	0.133
#5	1.234	0.617	0.411	0.308	0.247	0.206
#6	1.761	0.880	0.587	0.440	0.352	0.293

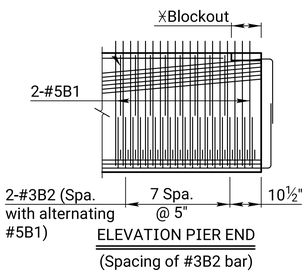
† If Welded Wire Reinforcement (WWR) is used in-lieu of reinforcing steel bars shown on this sheet, the spacing of wires for the WWR shall be equal to or less than the vertical bars shown in the typical beam section above. The equivalent As for the WWR shall be equal to or greater than typical beam section above.

NOTE: Extend 10 strands 3'-0" beyond the end of the beam. Strands not shown shall be cut flush with the end of the beam. See "Strand Extension Details."

NOTE: During transportation and construction only, support beams on bearing points a maximum of 5 feet from the beam end. The Fabricator shall show the proposed support locations on the shop drawings.

NOTE: The hold down force at the harp points for 12 strands (Span 1) at 3.43 kips per strand = 41.16 kips total.

NOTE: The hold down force at the harp points for 10 strands (Span 2) at 3.90 kips per strand = 39.03 kips total.



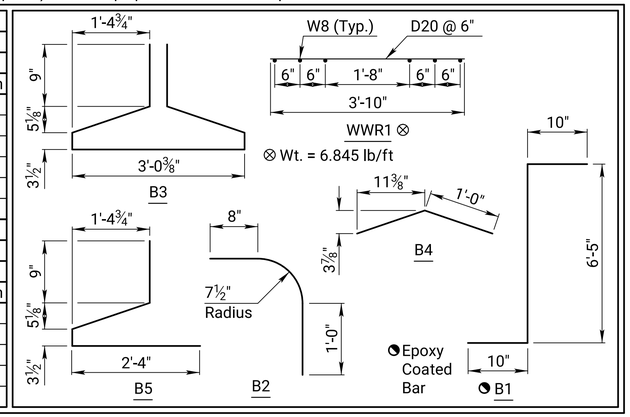
ELEVATION PIER END
(Spacing of #3B2 bar)

BILL OF REINFORCING STEEL
135'-6" Beam (1 Listed-9 Reqd.) (Span 2)

Straight bars				Bent bars			
Mark	No.	Size	Length	Mark	No.	Size	Length
				B2	26	#3	2'-8"
				B4	64	#3	2'-0"
				B3	38	#4	7'-8"
				B5	282	#4	4'-8"
				◒B1	358	#5	8'-1"

BILL OF REINFORCING STEEL
149'-0" Beam (1 Listed-9 Reqd.) (Span 1)

Straight bars				Bent bars			
Mark	No.	Size	Length	Mark	No.	Size	Length
				B2	26	#3	2'-8"
				B4	64	#3	2'-0"
				B3	38	#4	7'-8"
				B5	308	#4	4'-8"
				◒B1	384	#5	8'-1"



NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

PRESTRESSED CONCRETE BEAM DETAILS (1 OF 2)
NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT	
DESIGN CK.	CRG	DETAIL CK.	CRG	

US69 EXPRESS CONSTRUCTORS

Plot Date: 1-DEC-2023 12:17

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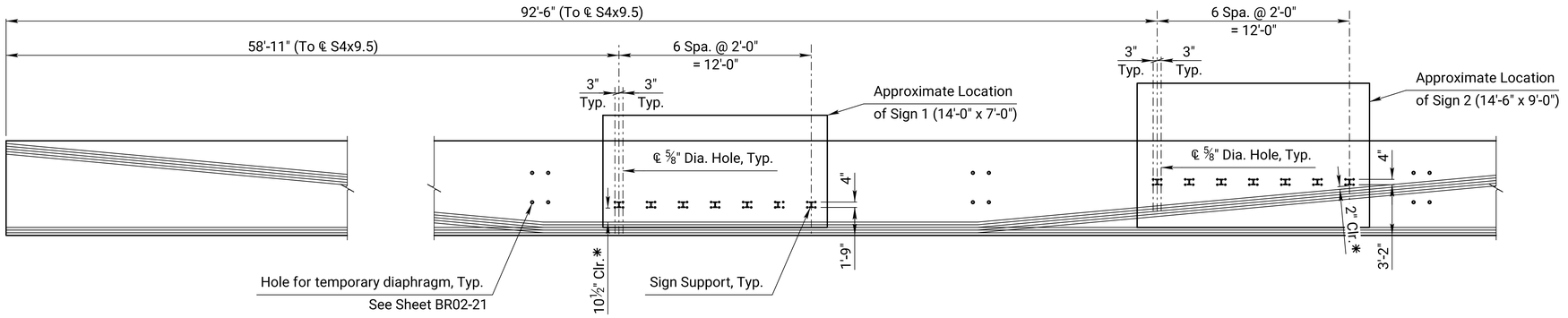
US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-22	38



BEAM J, SPAN 2 BEAM ELEVATION

Direction of Stationing →

Note:

* - Measured from edge of formed hole to ℄ strand.
For additional Prestressed Beam Details, see Sheet BR02-20 and BR02-21.
For Sign Structure Details, see Sheet BR02-30.

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

PRESTRESSED CONCRETE BEAM DETAILS (2 OF 2) NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

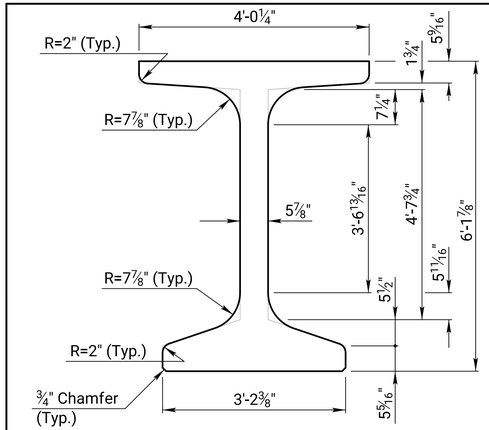
US69 EXPRESS CONSTRUCTORS

Plot Date: 1-DEC-2023 12:15

File: BR02-22 - Prestressed Concrete Beam Details.dgn Plot Date: 1-DEC-2023 12:15

US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-23	38



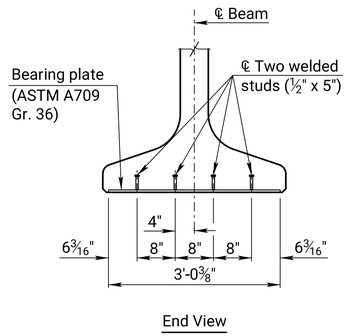
TYPE NU70+3

Area	1000.4	in.²
IcG	812,884	in.⁴
Y Bot	37.84	in.
Vol./Surf. Area	3.43	in.
Wt./Ft.	1042	lbs

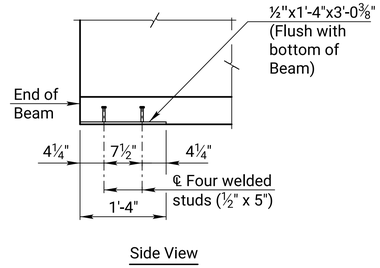
TYPICAL BEAM SECTION

(Dimensions and properties are converted from metric fabrication forms.)

✳ Prior to shipping, the camber shall be no greater than the design camber +½". The design camber is equal to the 50 day camber.



End View



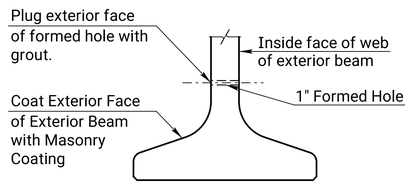
Side View

BEARING PLATE DETAILS

Note:
Stud welding shall be in accordance with the latest edition of AWS D1.1.

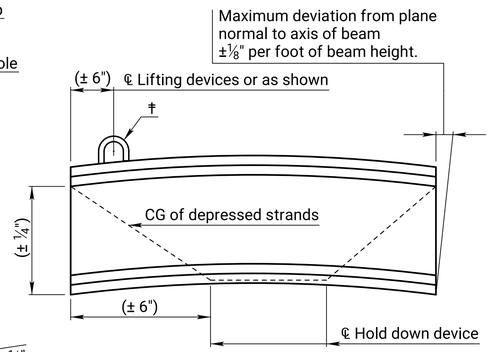
Use plate conforming to the requirements of ASTM A709 Grade 36. The stud anchors shall be made of material as specified for Shear Connector Studs in the KDOT Specifications.

The exposed surface of the bearing plates shall be galvanized.

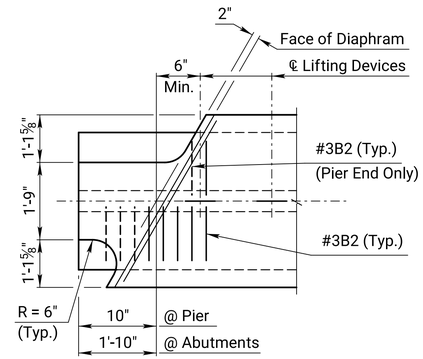


DETAIL OF FORMED HOLE(S)

(See Beam Detail sheet for locations)



ELEVATION



TOP FLANGE BLOCKOUT DETAILS

GENERAL NOTES

Fabricate the precast prestressed beams in accordance with the KDOT Specifications. Submit shop drawings in accordance with the KDOT Specifications.

Use air entrained concrete. The KDOT Materials Section shall approve the mix design. Unless otherwise stated in the Design Documents, f'c = 9,500 psi and f'c at release = 7,500 psi.

Use reinforcing steel conforming to the requirements of ASTM A615, Grade 60. The reinforcing steel shown shall be uncoated. Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Use 0.60" nominal diameter, uncoated, seven-wire, low relaxation prestressing tendons conforming to the requirements of ASTM A416, Grade 270.

Use bolts having an ultimate strength 50% in excess of the manufacturer's safe load. All items (except the tendons) cast-in or inserted in prestressed beams shall be epoxy coated or galvanized. Show Formed Holes on shop drawings.

Show on the shop drawings any hardware, holes or other appurtenances that are required to be incorporated into the girder to construct the girder or for any temporary works needed to construct the bridge (e.g. safety railing pockets).

After beams are in the final position, remove lifting devices. See "Lifting Device" detail below.

Use elastomeric bearing pads conforming to the KDOT Specifications.

The beam lengths shown in the Design Documents are net lengths measured horizontally along the beam centerline. The beam manufacturer shall make necessary allowances for grade, and for shortening due to elastic shortening, creep and shrinkage.

The beams shall reasonably conform to the lines and dimensions shown in the Design Documents and be within the tolerances specified in the latest edition of Prestressed Concrete Institute's, "Manual for Quality Control for Plants and Production of Structural Precast Concrete Products", except as modified by this sheet or the KDOT Specifications.

Apply an initial force of 1,000 to 3,000 pounds to each strand to take up any slack in the cables. Apply a force of 43,900 pounds to each strand. Stress harped strands to a magnitude such that they are tensioned to 43,900 pounds after they are in position.

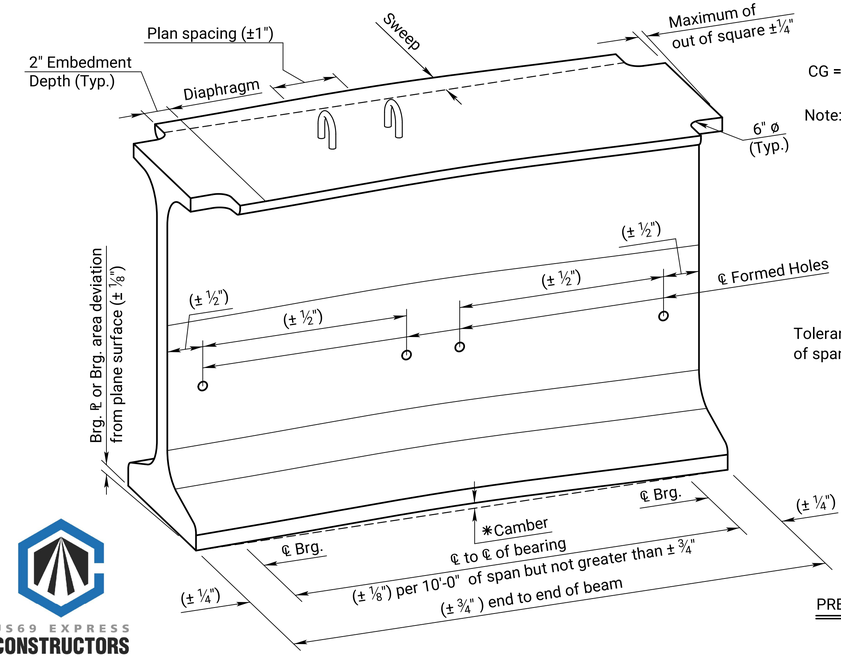
The center portion of the girder top flange shall be rough finished by scarifying the surface transversely with a wire brush or stiff broom and no laitance shall remain on the surface. The outside 9" on each side of the top flange shall be steel troweled to a smooth finish and a bond breaker shall be applied to this region only. Bond breaker shall be 30# roofing felt. Secure roofing felt to the top flange with an adhesive approved by the Department.

Fill trapped air holes and surface voids on the exterior face of the exterior beams with an approved concrete masonry coating.

Detension strands in a sequence which minimizes lateral eccentricity. Show the method and sequence of strand release on the shop drawings. Use extreme care when lifting, handling, storing and transporting beams. Use the lifting system shown or an alternate system approved by the Department. Keep the beam in an upright position at all times. Support the beam on bearing points positioned directly below the designated lifting points or designated bearing points.

Do not place the bridge slab before the beams are 28 days old. Pour diaphragms as detailed in the Design Documents.

Stencil with paint the following information on the webs approximately 5'-0" from one end of the beam: date of concrete placement, date of strand release, and beam mark.

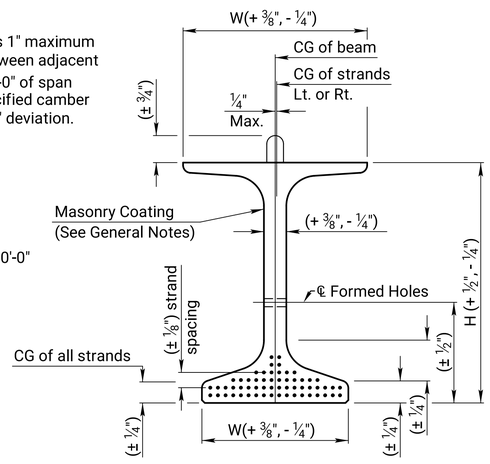


PRESTRESSED BEAM FABRICATION TOLERANCES

CG = Center of Gravity

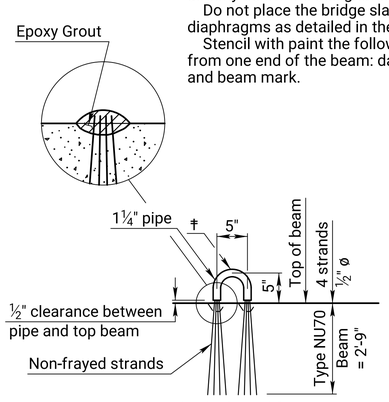
Note: Tolerance for camber is 1" maximum variation in camber between adjacent beams; and ±⅛" per 10'-0" of span deviation from the specified camber but not greater than ±1" deviation.

Tolerance for sweep is ⅛" per 10'-0" of span but not greater than 1".



TYPICAL SECTION

Note: Dimensions shown in parentheses are tolerances only.



LIFTING DEVICE

(Two required at each end)
(Fabricator to verify)

‡ Remove lifting device within ½" from top of beam. Coat area with approved epoxy bonding agent. Completely cover remaining exposed strands and fill depressions adjacent to strands with approved epoxy grout.

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION

BR.NO.69-46-143.73 (468) STA. 1175+98.45

STANDARD PRESTRESSED CONCRETE BEAM DETAILS NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-23 - Standard Prestressed Concrete Beam Details.dgn Plot Date: 1-DEC-2023 12:17

US69 Express
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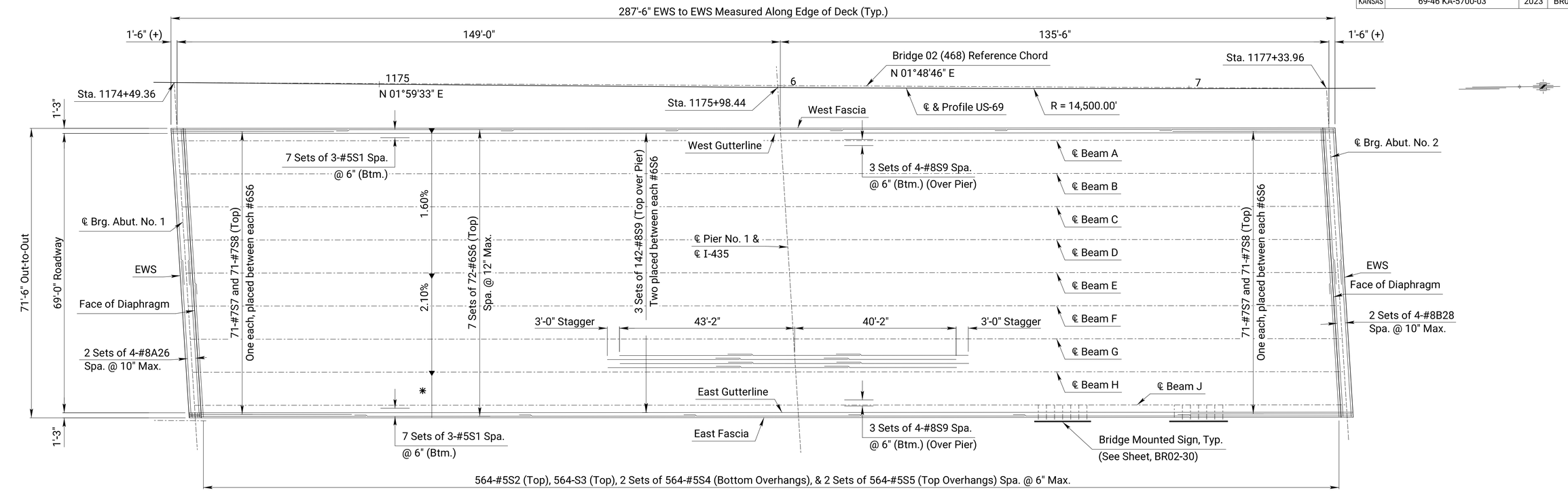
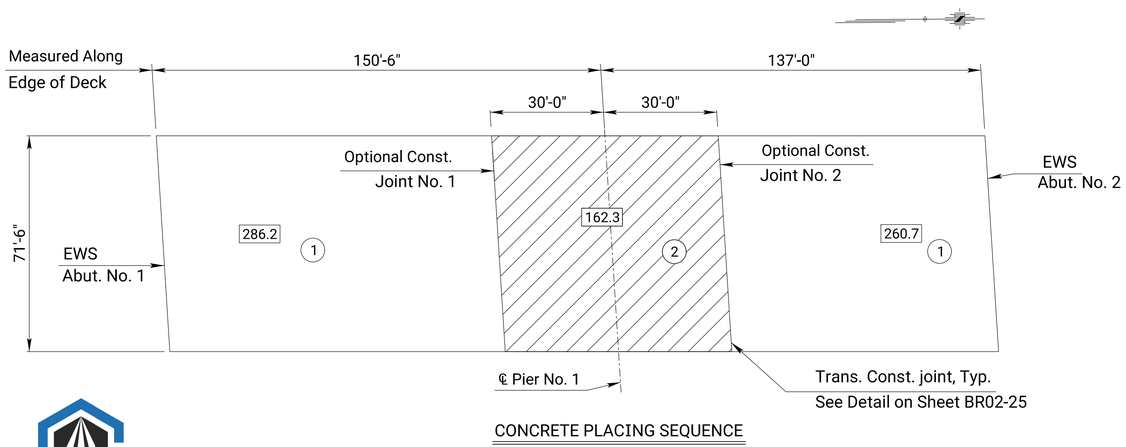
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-24	38



SLAB PLAN



CONCRETE PLACING SEQUENCE

Legend:

* - Varies 2.28% to 2.10% from Station 1174+54.50 to Station 1174+58.61.

MINIMUM LAP LENGTHS	
BAR	LENGTH
#5 Transverse Bar	2'-5"
#5 Longitudinal Bar	3'-0"
#6 Bar	3'-7"
#8 Bar	5'-11"

(X) Circled numbers indicate placing sequence. See General Notes, Sheet BR02-02, for "Placing Sequence" note.

Continuous deck pour procedures, which proceed from end to end of the bridge and place the abutment and pier diaphragm concrete concurrently with the deck concrete is acceptable if the Design-Builder can assure the following:

1. Concrete in adjacent spans is placed before the pier and abutment diaphragm concrete has reached its initial set.
2. Any discontinuous pour stops shall be short of the pier(s); if pouring from south to north, this would be construction joint 1 and, if pouring from north to south, this would be construction joint 2, as shown in the pour sequence diagram.
3. If the placement of concrete is delayed and the concrete has taken its initial set, stop the placement, saw to the nearest optional construction joint, shown in the pour sequence diagram, and remove all concrete beyond the construction joint, following the instruction outlined in (2.) above.

The Design-Builder may place the barrier continuously from one end of the bridge to the other.

[XXX] Boxed numbers indicate quantity (cu. yds.) of Concrete (Grade 4.0) (AE)(SA)(MPC) required to pour 8½" deck, pier diaphragms and abutments above the construction joint (for information only).

Notes:

Place transverse bars parallel to substructure units. Transverse Bar spacing is measured along beam.
For Beam Spacing and Framing Plans, see Sheet, BR02-20.
For Slab Section, see Sheet BR02-25.
For Top of Finished Deck Elevations, see Sheet BR02-27.
For Barrier Details, see Sheets BR02-28 and BR02-29.

US69 EXPRESS CONSTRUCTORS

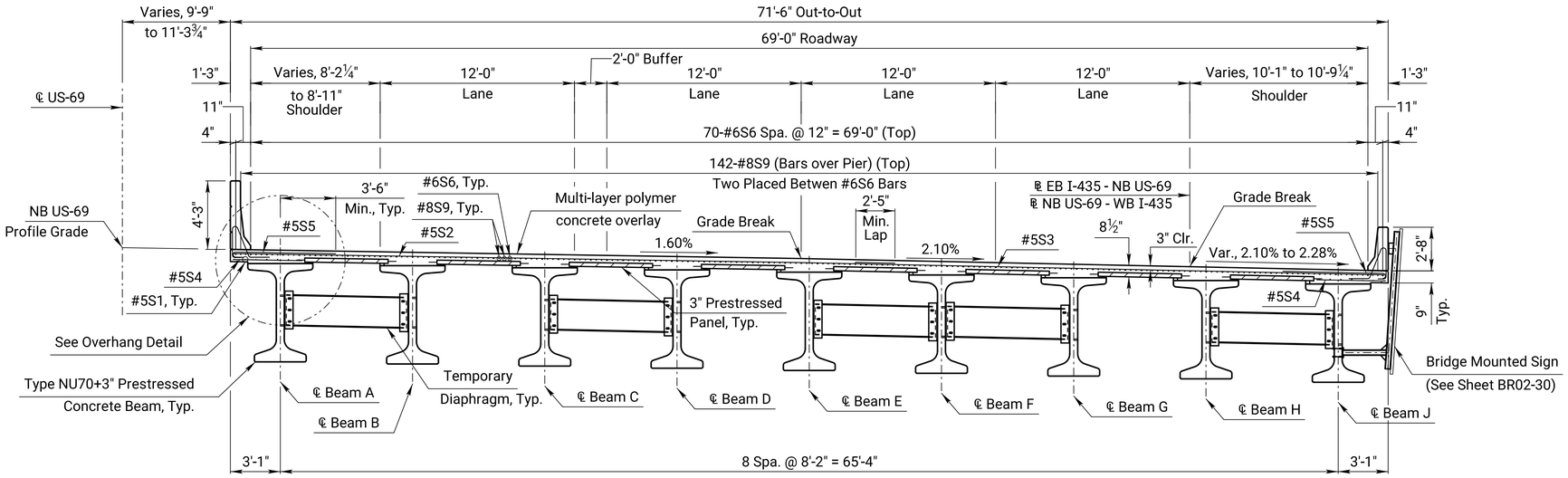
NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45
SLAB PLAN
NB US-69 OVER I-435
PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

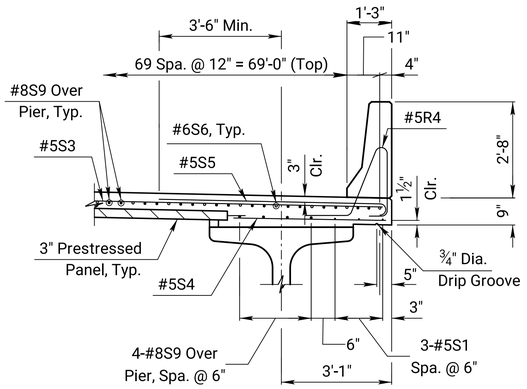
DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

US69 Express
Dec 11, 2023
Released For Construction

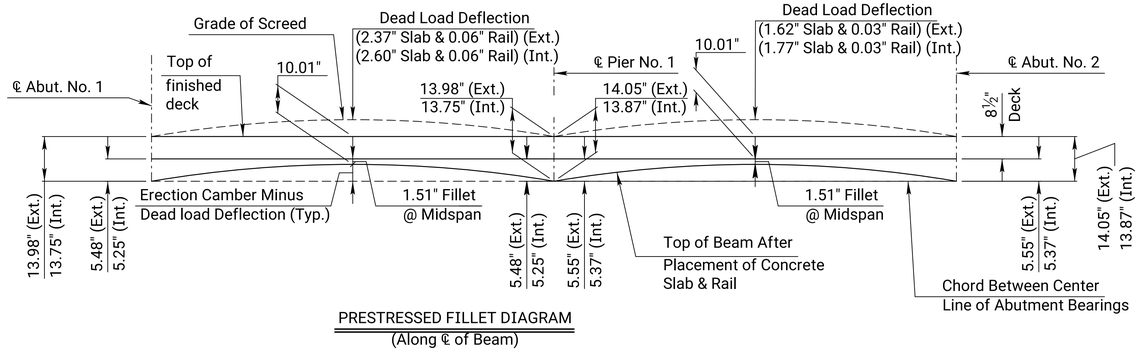
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-25	38



SLAB SECTION



OVERHANG DETAIL
(Right Overhang Shown, Left Overhang Similar)



PRESTRESSED FILLET DIAGRAM
(Along ℄ of Beam)

Beam Camber at Release	0.000					0.327					0.000					0.281					0.000	
Beam Camber at 50 days (Erection Camber)	0.000	0.208	0.367	0.481	0.550	0.573	0.550	0.481	0.367	0.208	0.000	0.177	0.314	0.413	0.472	0.492	0.472	0.413	0.314	0.177	0.000	
Int. Beam DL Deflections (Deck, Diaphragms & Barriers)	0.000	0.068	0.131	0.180	0.211	0.221	0.210	0.179	0.129	0.067	0.000	0.045	0.088	0.121	0.143	0.150	0.143	0.122	0.089	0.046	0.000	
Ext. Beam DL Deflections (Deck, Diaphragms & Barriers)	0.000	0.062	0.120	0.165	0.193	0.203	0.192	0.163	0.118	0.061	0.000	0.041	0.080	0.111	0.130	0.137	0.131	0.112	0.081	0.042	0.000	

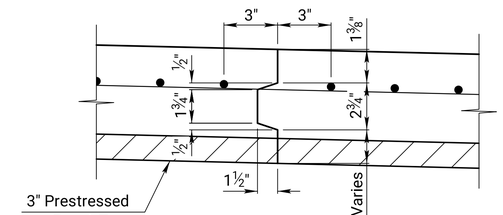
10 Eq. Spa. = 149'-0" | 10 Eq. Spa. = 135'-6"
℄ Brg. Abut. No. 1 | ℄ Pier No. 1 | ℄ Brg. Abut. No. 2

BEAM CAMBER AND DEAD LOAD DEFLECTIONS

NOTE: Dead load deflections shown are downward. Given in feet

Beam Concrete:
E_i = 4.984 x 10^6 psi
E_f = 5.610 x 10^6 psi

CONCRETE FILLET DETAIL



TRANSVERSE SLAB CONSTRUCTION JOINT

Notes:

See General Notes, Sheet BR02-02, for "Camber" note.
Place construction joints only at locations shown or at locations approved by the Department.
For Barrier Details, see Sheets BR02-28 & BR02-29.
For Diaphragm Details, see Sheet BR02-26.
For Prestressed Concrete Beam Details, see Sheets BR02-21 thru BR02-23.
For Top of Finished Deck Elevations, see Sheet BR02-27.
For Concrete Placing Sequence, See Sheet BR02-24.

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

SLAB SECTION AND DETAILS

NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-25 - Slab Section & Details.dgn

Plot Date: 1-DEC-2023 12:17

US69 Express
Dec 11, 2023
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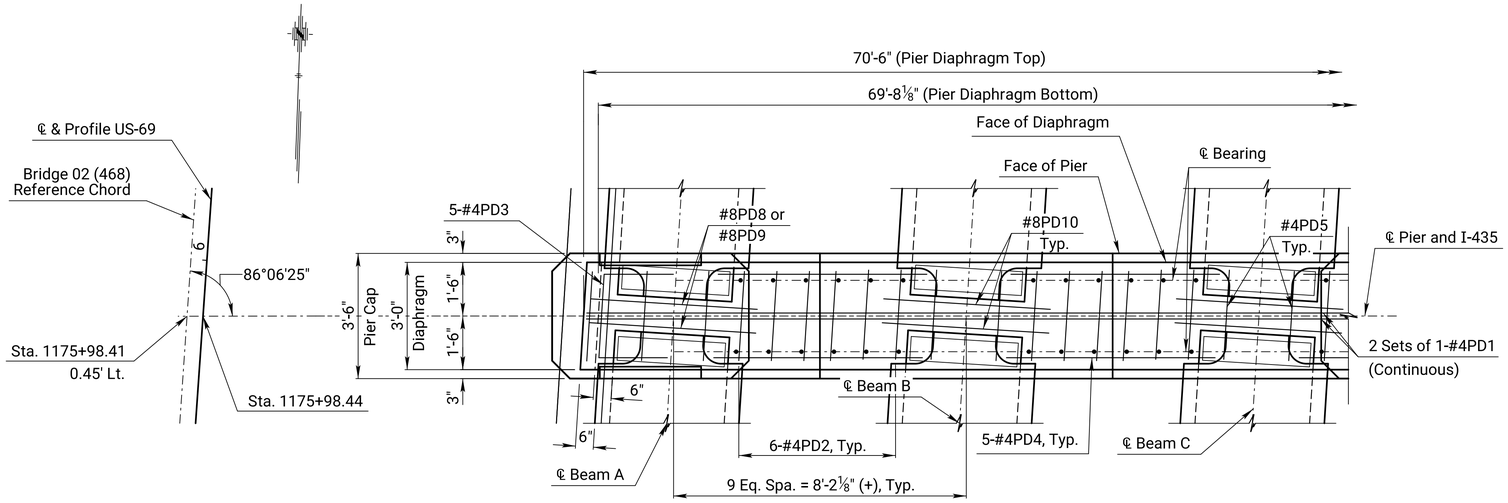
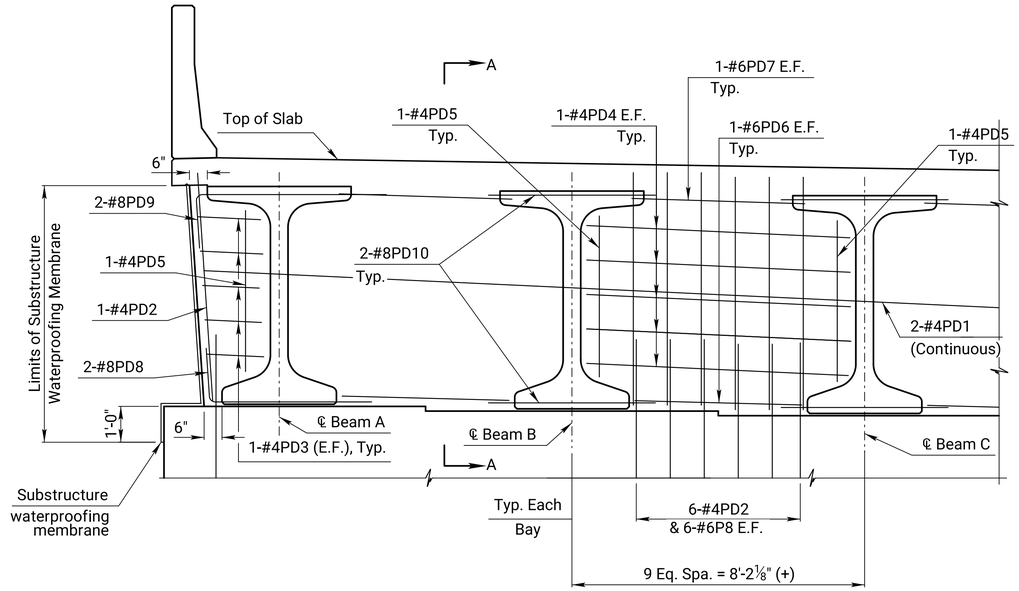
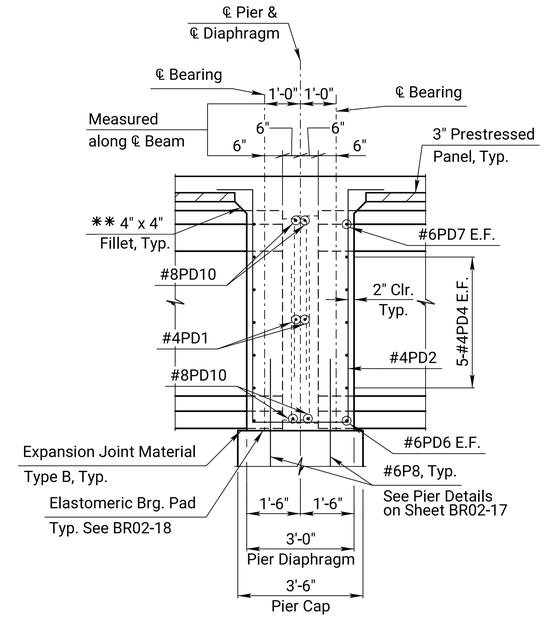
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-26	38



PIER DIAPHRAGM PLAN



PART ELEVATION



SECTION A-A

Legend:

** - Design-Builder has the option of constructing a 4"x4" fillet at the face of diaphragm or beginning the precast panels at the face of diaphragm.

Bar Size	Min. Lap
No. 4	2'-6"

Notes:

All dimensions measured along ℄ of Pier unless noted otherwise.

For additional prestressed concrete panel details, see Sheet BR02-38.

For additional pier details, see Sheets BR02-16 thru BR02-19.

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

US69 EXPRESS CONSTRUCTORS

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

MISCELLANEOUS SUPERSTRUCTURE DETAILS NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-26 - Miscellaneous Superstructure Details.dgn Plot Date: 1-DEC-2023 12:15

US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-27	38

TOP OF FINISHED DECK ELEVATIONS

LOCATION	POINT	LEFT EDGE OF DECK		BEAM A		BEAM B		BEAM C		BEAM D		BEAM E		BEAM F		BEAM G		BEAM H		BEAM J		RIGHT EDGE OF DECK	
		STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION	STATION	ELEVATION
℄ BRG. ABUT. NO. 1	0	1174+50.17	965.30	1174+50.39	965.26	1174+50.97	965.14	1174+51.55	965.02	1174+52.13	964.90	1174+52.71	964.78	1174+53.29	964.63	1174+53.87	964.46	1174+54.45	964.29	1174+55.03	964.12	1174+55.25	964.06
	1	1174+65.06	965.63	1174+65.28	965.59	1174+65.86	965.47	1174+66.44	965.35	1174+67.02	965.23	1174+67.60	965.11	1174+68.18	964.96	1174+68.76	964.80	1174+69.34	964.64	1174+69.92	964.48	1174+70.13	964.42
	2	1174+79.96	965.96	1174+80.18	965.91	1174+80.75	965.79	1174+81.33	965.68	1174+81.91	965.56	1174+82.49	965.44	1174+83.07	965.28	1174+83.64	965.12	1174+84.22	964.96	1174+84.80	964.80	1174+85.02	964.74
	3	1174+94.86	966.28	1174+95.07	966.23	1174+95.65	966.12	1174+96.23	966.00	1174+96.80	965.88	1174+97.38	965.76	1174+97.95	965.60	1174+98.53	965.44	1174+99.10	965.28	1174+99.68	965.12	1174+99.90	965.06
	4	1175+09.75	966.60	1175+09.97	966.55	1175+10.54	966.43	1175+11.12	966.31	1175+11.69	966.20	1175+12.27	966.08	1175+12.84	965.92	1175+13.41	965.76	1175+13.99	965.60	1175+14.56	965.44	1175+14.78	965.38
	5	1175+24.65	966.91	1175+24.86	966.86	1175+25.44	966.75	1175+26.01	966.63	1175+26.58	966.51	1175+27.16	966.39	1175+27.73	966.23	1175+28.30	966.07	1175+28.87	965.91	1175+29.44	965.75	1175+29.66	965.69
	6	1175+39.54	967.22	1175+39.76	967.17	1175+40.33	967.05	1175+40.90	966.94	1175+41.47	966.82	1175+42.05	966.70	1175+42.62	966.54	1175+43.19	966.38	1175+43.76	966.22	1175+44.32	966.06	1175+44.54	966.00
	7	1175+54.44	967.52	1175+54.66	967.48	1175+55.23	967.36	1175+55.80	967.24	1175+56.37	967.12	1175+56.93	967.00	1175+57.50	966.84	1175+58.07	966.68	1175+58.64	966.52	1175+59.21	966.36	1175+59.42	966.30
	8	1175+69.34	967.82	1175+69.55	967.78	1175+70.12	967.66	1175+70.69	967.54	1175+71.26	967.42	1175+71.82	967.30	1175+72.39	967.14	1175+72.96	966.98	1175+73.52	966.82	1175+74.09	966.66	1175+74.30	966.60
	9	1175+84.23	968.12	1175+84.45	968.08	1175+85.02	967.96	1175+85.58	967.84	1175+86.15	967.72	1175+86.71	967.60	1175+87.28	967.44	1175+87.84	967.28	1175+88.41	967.12	1175+88.97	966.96	1175+89.18	966.90
℄ PIER NO. 1	10	1175+99.13	968.41	1175+99.34	968.37	1175+99.91	968.25	1176+00.47	968.13	1176+01.04	968.01	1176+01.60	967.89	1176+02.17	967.73	1176+02.73	967.57	1176+03.29	967.41	1176+03.85	967.25	1176+04.06	967.19
℄ PIER NO. 1	0	1175+99.13	968.41	1175+99.34	968.37	1175+99.91	968.25	1176+00.47	968.13	1176+01.04	968.01	1176+01.60	967.89	1176+02.17	967.73	1176+02.73	967.57	1176+03.29	967.41	1176+03.85	967.25	1176+04.06	967.19
	1	1176+12.67	968.68	1176+12.88	968.63	1176+13.44	968.51	1176+14.00	968.39	1176+14.55	968.27	1176+15.11	968.15	1176+15.67	967.99	1176+16.22	967.83	1176+16.78	967.67	1176+17.33	967.51	1176+17.54	967.45
	2	1176+26.21	968.93	1176+26.42	968.89	1176+26.97	968.77	1176+27.52	968.65	1176+28.07	968.53	1176+28.62	968.41	1176+29.17	968.25	1176+29.71	968.09	1176+30.26	967.92	1176+30.81	967.76	1176+31.01	967.70
	3	1176+39.76	969.19	1176+39.96	969.14	1176+40.50	969.02	1176+41.04	968.90	1176+41.59	968.78	1176+42.13	968.66	1176+42.67	968.50	1176+43.21	968.34	1176+43.75	968.18	1176+44.28	968.01	1176+44.49	967.95
	4	1176+53.30	969.44	1176+53.50	969.39	1176+54.03	969.27	1176+54.57	969.15	1176+55.10	969.03	1176+55.64	968.91	1176+56.17	968.75	1176+56.70	968.59	1176+57.23	968.42	1176+57.76	968.26	1176+57.96	968.20
	5	1176+66.84	969.69	1176+67.04	969.64	1176+67.56	969.52	1176+68.09	969.40	1176+68.62	969.28	1176+69.14	969.16	1176+69.67	968.99	1176+70.19	968.83	1176+70.72	968.67	1176+71.24	968.51	1176+71.44	968.45
	6	1176+80.38	969.93	1176+80.58	969.88	1176+81.10	969.76	1176+81.62	969.64	1176+82.13	969.52	1176+82.65	969.40	1176+83.17	969.24	1176+83.69	969.07	1176+84.20	968.91	1176+84.72	968.75	1176+84.91	968.69
	7	1176+93.92	970.17	1176+94.11	970.12	1176+94.63	970.00	1176+95.14	969.88	1176+95.65	969.76	1176+96.16	969.64	1176+96.67	969.47	1176+97.18	969.31	1176+97.69	969.15	1176+98.20	968.99	1176+98.39	968.93
	8	1177+07.46	970.41	1177+07.65	970.36	1177+08.16	970.24	1177+08.66	970.12	1177+09.17	970.00	1177+09.67	969.87	1177+10.17	969.71	1177+10.67	969.55	1177+11.17	969.38	1177+11.67	969.22	1177+11.86	969.16
	9	1177+21.00	970.64	1177+21.19	970.60	1177+21.69	970.47	1177+22.19	970.35	1177+22.68	970.23	1177+23.18	970.11	1177+23.67	969.94	1177+24.17	969.78	1177+24.66	969.62	1177+25.15	969.45	1177+25.34	969.39
℄ BRG. ABUT. NO. 2	10	1177+34.55	970.87	1177+34.73	970.83	1177+35.22	970.70	1177+35.71	970.58	1177+36.20	970.46	1177+36.68	970.33	1177+37.17	970.17	1177+37.66	970.01	1177+38.14	969.84	1177+38.63	969.68	1177+38.81	969.62

Note:
Elevations are at top of concrete slab (bottom of polymer overlay) over ℄ Beam.

US69 EXPRESS
CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

TOP OF FINISHED DECK ELEVATIONS
NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-27 - Finished Deck Elevation.dgn

Plot Date: 1-DEC-2023 12:17

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-28	38

US69 Express
Dec 11, 2023
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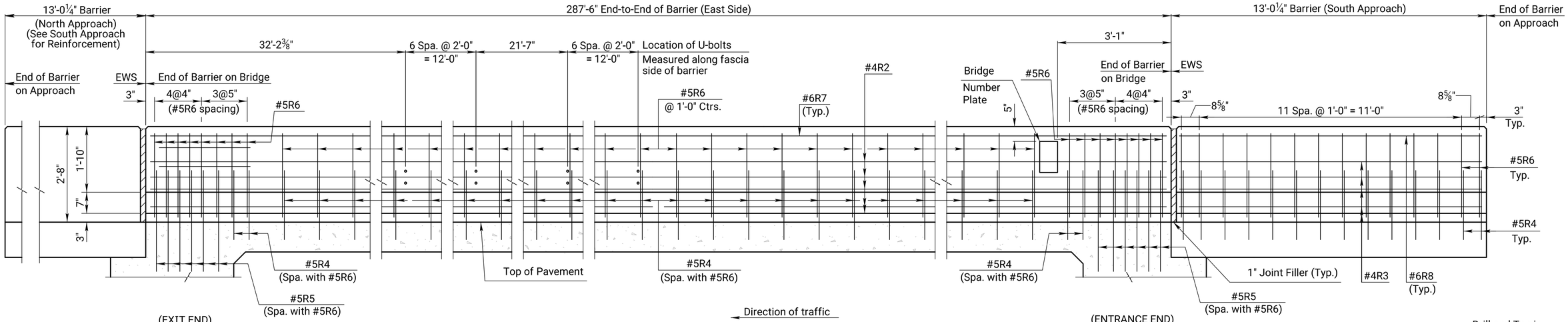
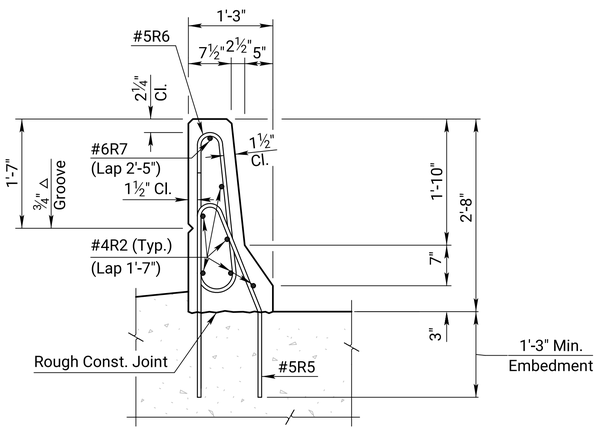
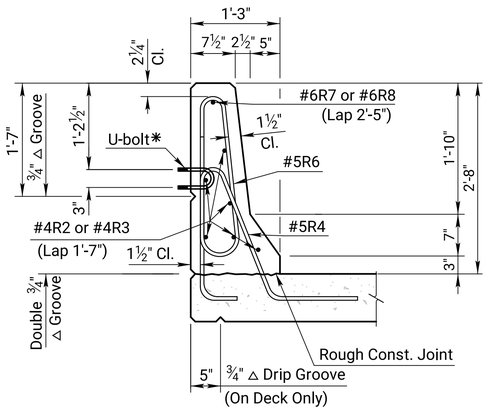


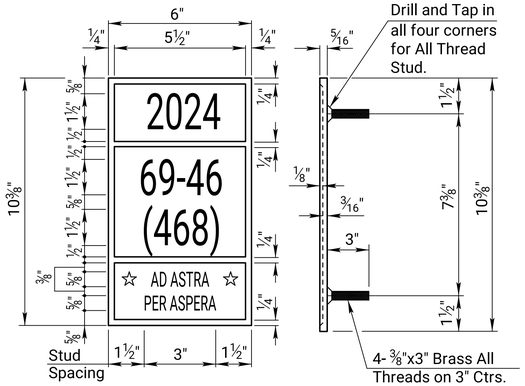
EAST BARRIER ELEVATION



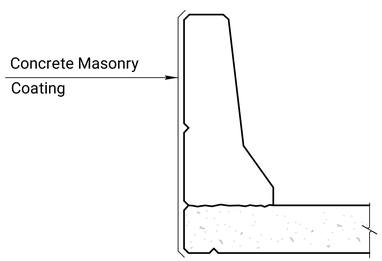
SECTION THRU BARRIER
(At abutment)



SECTION THRU BARRIER
(On Deck and Approach Slab)

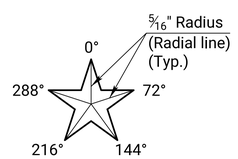


BRIDGE NUMBER PLATE
(2 Required - 1 on Pier No. 1 and 1 on Barrier)
(See Construction Layout Sheet BR02-04 for Locations)



LIMITS OF CONCRETE MASONRY COATING

Concrete Masonry Coating:
Apply a pigmented sealer to the face of west barrier rail and the bridge slab fascia. Color is Federal Standard 37722 (White-Gray) of SAE International Standard AMS-STD-595A.



STAR GEOMETRY

Notes:
✳ - For U-bolt and Bridge Mounted Sign details, see Sheet BR02-30.
For Bill of Reinforcing, see Sheet BR02-33.

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BR.NO.69-46-143.73 (468) STA. 1175+98.45

BARRIER DETAILS

NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

US69 EXPRESS CONSTRUCTORS

231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-28 - Barrier Details.dgn

Plot Date: 1-DEC-2023 12:17

US69 Express
Dec 11, 2023
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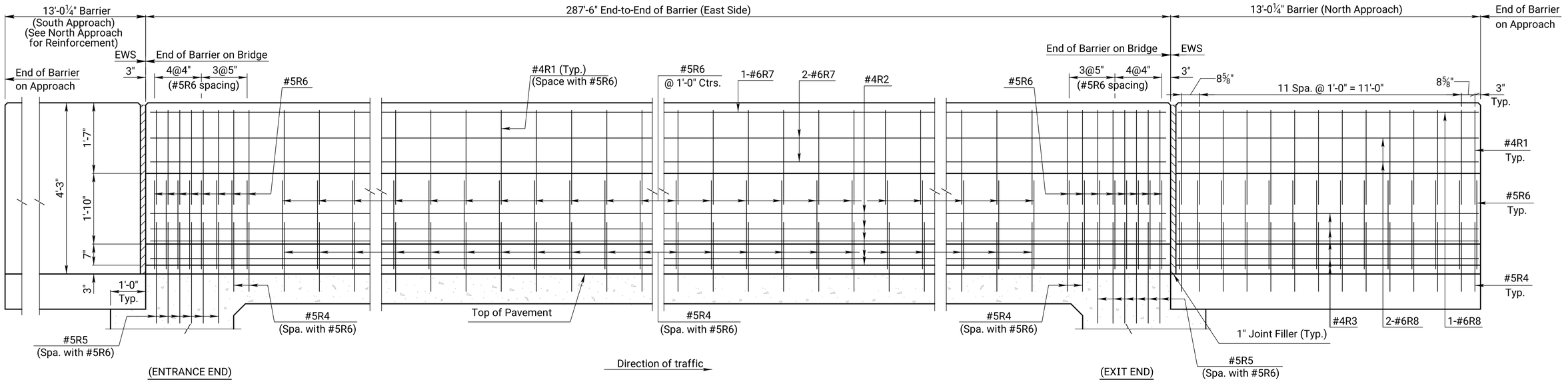
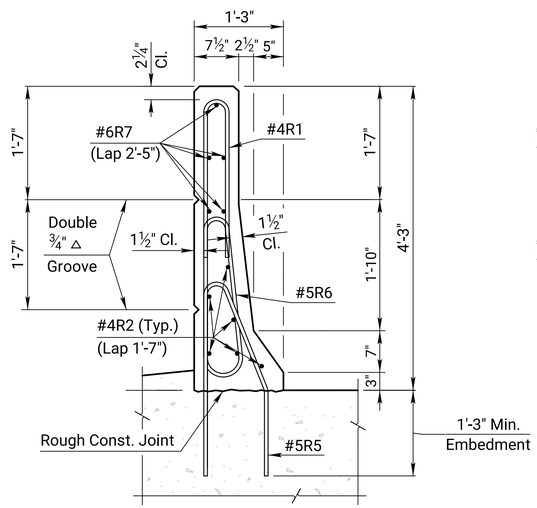
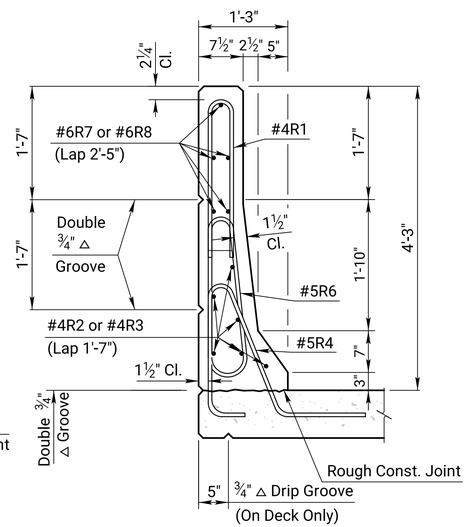
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-29	38



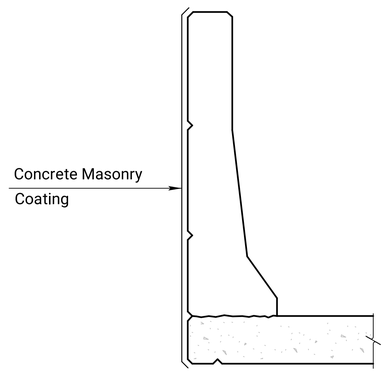
WEST BARRIER ELEVATION



SECTION THRU BARRIER
(At abutment)



SECTION THRU BARRIER
(On Deck and Approach Slab)



LIMITS OF CONCRETE MASONRY COATING

Concrete Masonry Coating:
Apply a pigmented sealer to the face of west barrier rail and the bridge slab fascia. Color is Federal Standard 37722 (White-Gray) using standard color number references from Federal Standard 595A.

Note:
For Bill of Reinforcing, see Sheet BR02-33.

US69 EXPRESS
CONSTRUCTORS

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KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

MEIDAN BARRIER DETAILS

NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-29 - Median Barrier Details.dgn

Plot Date: 1-DEC-2023 12:17

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-30	38

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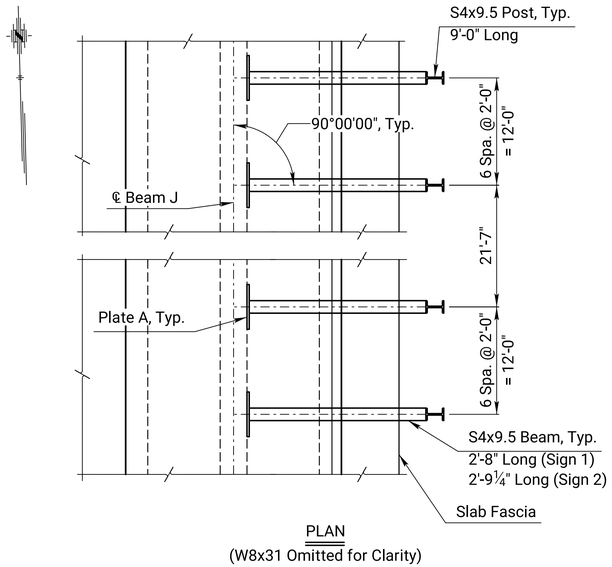
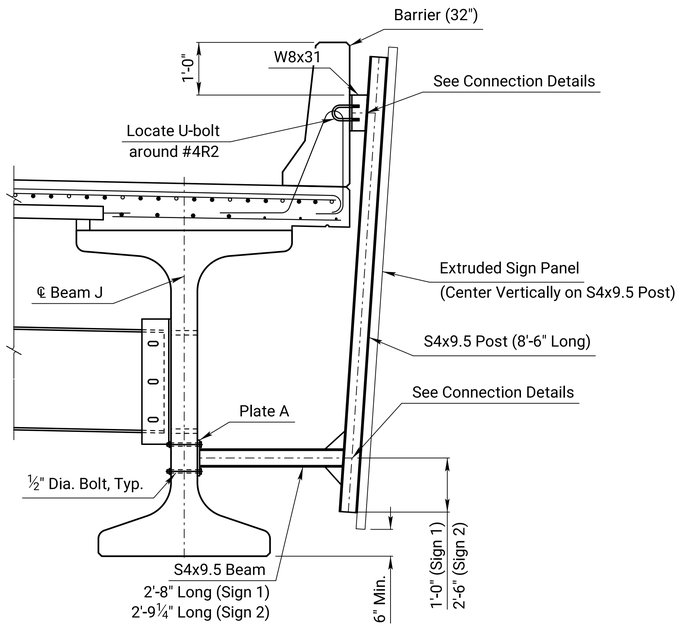


PLAN
(W8x31 Omitted for Clarity)



PART ELEVATION
(Sign 1 Support Shown, Sign 2 Supoort Similar)

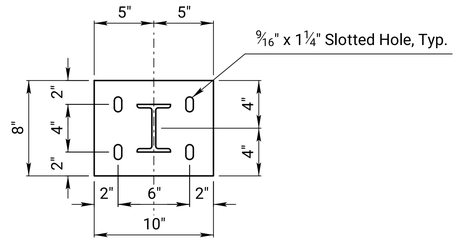
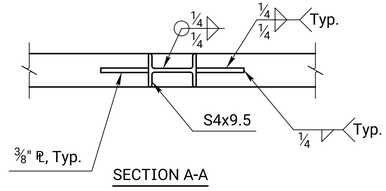
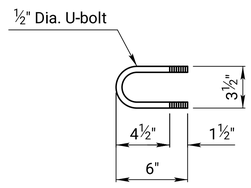


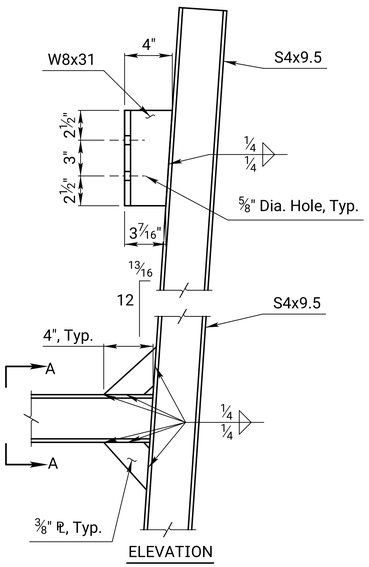
PLATE "A"
(10" x 8" x ½")



SECTION A-A



U-BOLT DETAIL



ELEVATION

CONNECTION DETAILS

GENERAL NOTES

LOADING: AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 1st Edition with 2017, 2018, 2019, 2020, 2022 Interim Revisions.

STRUCTURAL STEEL: All shapes and plates shall conform to ASTM A36.

GALVANIZING: All material shall be hot-dipped galvanized according to ASTM A123 after fabrication. Any damage to the coating shall be repaired after erection.

BOLTS: All fasteners shall conform to ASTM F3125 Grade A325, Type 1 and be hot-dipped galvanized.

WELDING: All welds shall be ¼" continuous fillet welds unless oterwise noted. The Contractor may elect to make any shop welds in the field. All welding shall confor to the "Standard Specification for State Road and Bidge Construction" and the latest edition of A.W.S. Specifications.

DIMENSIONS: It shall be The Contractor's responsibility to verify dimensions before ordering any material.

Notes:
For location of Beam J, Span 2, Preformed Holes, see Sheet BR02-22.

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SIGN SUPPORT DETAILS

NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	KDC	DETAIL CK.	CRG		

US69 Express
Dec 11, 2023
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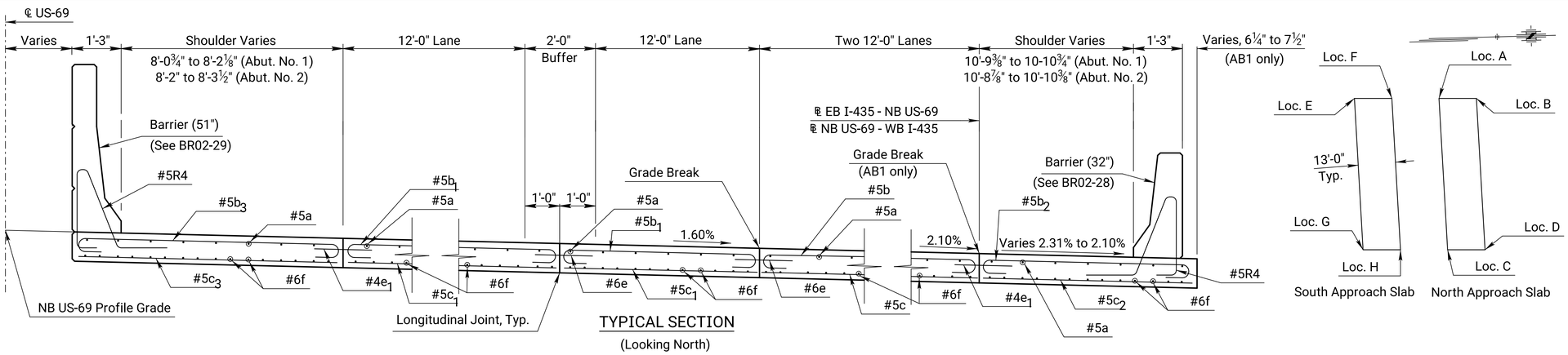
KANSAS	69-46 KA-5700-03	2023	BR02-31	38



TYPICAL SECTION
(Looking North)

South Approach Slab North Approach Slab

GENERAL NOTES

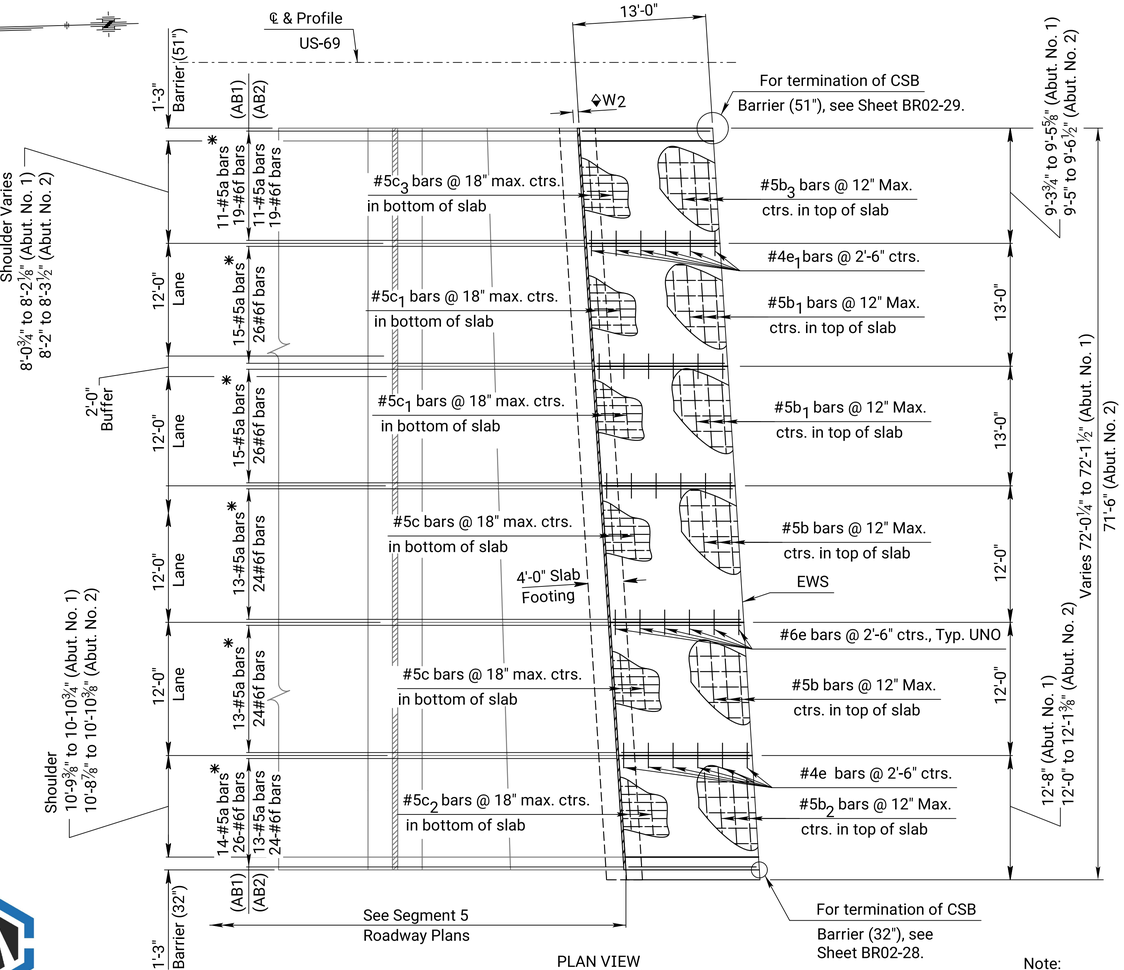
At the Design-Builder's option #4x3'-0" tie bars @ 15" centers may be substituted for the #6 e bars at 2'-6" centers.

All reinforcing steel shall be epoxy coated.

Clearance from the face of concrete for all reinforcing steel shall be 2 inches.

Standard reinforcing bar hooks in accordance with the latest ACI specifications shall be used throughout.

The pressure relief joint shall be omitted when the concrete bridge approach pavement abuts asphalt pavement.



PLAN VIEW
(South Approach Slab Shown,
North Approach Slab Similar)
Measured along Edge of Pavement

Approach Slab Geometric Data					
	Location	A or E	B or F	C or G	D or H
North	Station	1177+36.05	1177+49.06	1177+40.31	1177+53.26
	Offset	9.74' Rt.	9.78' Rt.	81.26' Rt.	81.30' Rt.
South	Station	1174+35.64	1174+48.66	1174+40.76	1174+53.80
	Offset	11.44' Rt.	11.32' Rt.	83.42' Rt.	83.42' Rt.

03°53'35" Skew (Measured from Reference Chord)
BILL OF MATERIALS

Bar Schedule

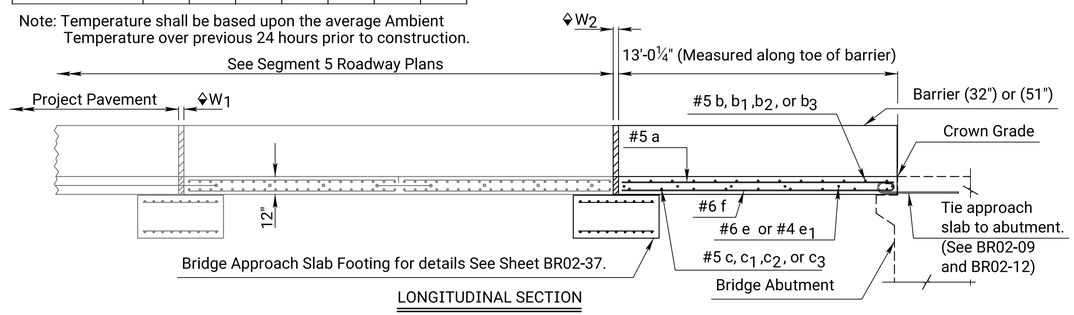
Bar	a	b	b_1	b_2	b_3	c	c_1	c_2	c_3	e	e_1	f
Size	#5	#5	#5	#5	#5	#5	#5	#5	#5	#6	#4	#6
No. (AB1)	81	28	28	14	14	20	20	10	10	18	12	145
No. (AB2)	80	28	28	14	14	20	20	10	10	18	12	143
Length (AB1)	12'-8"	12'-10"	13'-10"	13'-5"	10'-2"	11'-8"	12'-8"	12'-3"	9'-0"	3'-0"	3'-0"	13'-3"
Length (AB2)	12'-8"	12'-10"	13'-10"	12'-10"	10'-2"	11'-8"	12'-8"	11'-8"	9'-0"	3'-0"	3'-0"	13'-3"

Reinforcing Steel (Grade 60) (Epoxy Coated)	10,659	lbs.
Expansion Joint Membrane Sealant (W2)	145.0	Lin. Ft

Note: Reinforcing Steel and Quantities shown in the Bill of Materials is for both approach slabs.

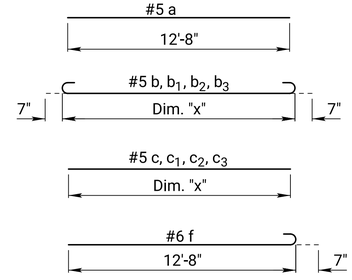
EXPANSION JOINT WIDTH DETAILS (W_2)							
Temp. (°F)	40°	50°	60°	70°	80°	90°	100°
Formed Concrete Opening Size	3⅝"	3½"	3⅜"	3¼"	3⅛"	3⅛"	3"

Note: Temperature shall be based upon the average Ambient Temperature over previous 24 hours prior to construction.



LONGITUDINAL SECTION

W1 and W2 for Expansion/Pressure Relief Joint width and details See Sheet BR02-37.



BENDING DIAGRAMS

Note: All dimensions are out to out on bars unless noted otherwise.

Bar	b & c	b_1 & c_1	b_2 & c_2	b_3 & c_3
Dim. "x"	11'-8"	12'-8"	**	9'-0"

** 12'-4" (AB1), 11'-8" (AB2)

Note:
Spacing of longitudinal reinforcing bars is normal to centerline.
Spacing of transverse reinforcing bars is parallel to centerline.
* #5a bars Spa. @ 11½" max. ctrs. in top of slab.
#6f bars Spa. @ 6" mac. ctrs. in bottom of slab.

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APPROACH SLAB DETAILS

NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

US69 EXPRESS CONSTRUCTORS

US69 Express
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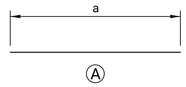
KANSAS	69-46 KA-5700-03	2023	BR02-32	38

BILL OF REINFORCING

Location		Design Mark	Bending Mark	Size	Number	Length	Dimensions a	b	c	d	e	f
Substructure (Epoxy Coated)	Abutment No. 1	A1	A	4	4	37'-0"	37'-0"					
		A2	RR	4	73	4'-9"	1'-8"	9"	2'-4"	1'-8"		
		A3	G	5	73	4'-3"	3'-8"	7"	3¾"			
		A5	C	5	51	21'-4"	2'-8"	9'-4"	9'-4"			
		A6	C	5	51	16'-10"	2'-8"	7'-1"	7'-1"			
		A7	C	5	47	18'-1"	2'-8"	9'-4"	6'-1"			
		A8	B	5	29	9'-9"	2'-8"	7'-1"				
		A9	B	5	18	4'-9"	1'-0"	3'-9"				
		A10	C	5	18	14'-4"	1'-2"	6'-7"	6'-7"			
		A11	C	5	10	10'-8"	1'-2"	4'-9"	4'-9"			
		A13	A	6	40	7'-4"	7'-4"					
		A14	A	6	16	3'-10"	3'-10"					
		A15	A	6	5	4'-8"	4'-8"					
		A16	A	6	2	3'-0"	3'-0"					
		A17	A	6	5	13'-3"	13'-3"					
		A18	A	6	2	11'-6"	11'-6"					
		A19	A	6	14	44'-0"	44'-0"					
		A22	A	6	16	21'-5"	21'-5"					
		A23	DD	6	8	8'-0"	4'-0"	4'-0"	3½"	4'-0"		
		A27	A	6	18	5'-0"	5'-0"					
		A26	A	8	8	44'-10"	44'-10"					
	Abutment No. 2	B1	A	4	4	36'-8"	36'-8"					
		B2	RR	4	73	4'-9"	1'-8"	9"	2'-4"	1'-8"		
		B3	G	5	73	4'-3"	3'-8"	7"	3¾"			
		B5	C	5	43	16'-4"	2'-8"	6'-10"	6'-10"			
		B6	C	5	43	16'-10"	2'-8"	7'-1"	7'-1"			
		B7	C	5	58	13'-1"	2'-8"	6'-10"	3'-7"			
		B8	B	5	29	9'-9"	2'-8"	7'-1"				
		B9	B	5	29	4'-9"	1'-0"	3'-9"				
		B10	C	5	29	15'-0"	1'-2"	6'-11"	6'-11"			
		B11	C	5	12	11'-0"	1'-2"	4'-11"	4'-11"			
		B13	A	6	40	7'-4"	7'-4"					
		B14	A	6	16	3'-10"	3'-10"					
		B15	A	6	10	4'-1"	4'-1"					
		B16	A	6	4	2'-6"	2'-6"					
		B17	A	6	14	39'-2"	39'-2"					
		B22	A	6	32	16'-5"	16'-5"					
		B23	DD	6	8	8'-0"	4'-0"	4'-0"	3"	4'-0"		
		B24	D	6	8	8'-0"	4'-0"	4'-0"	3"	4'-0"		
		B29	A	6	18	5'-0"	5'-0"					
		B28	A	8	8	40'-0"	40'-0"					



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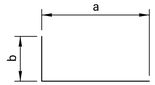

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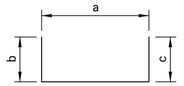

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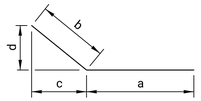

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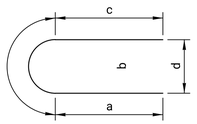

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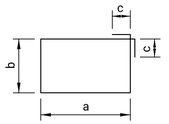

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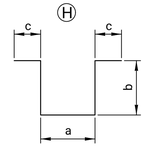

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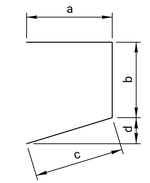

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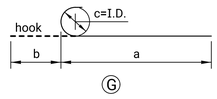

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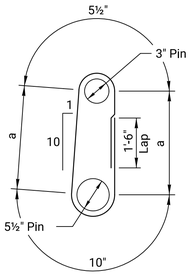

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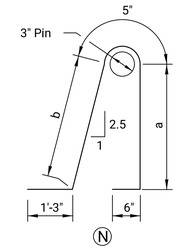

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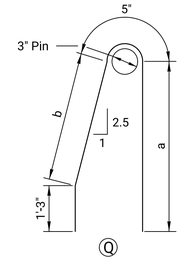

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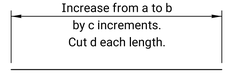

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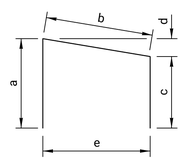

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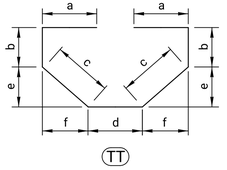

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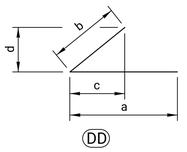

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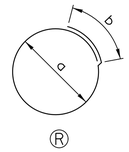

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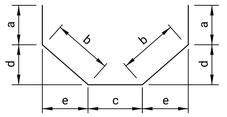

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BENDING DIAGRAMS

Notes:

Ⓐ denotes bending mark. Dimensions are out to out, unless noted otherwise.

No allowance for bend curvature is to be made except for standard hook and radii in excess of same.

All reinforcing steel shall conform to the requirements of ASTM A615, Grade 60.

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION

BR.NO.69-46-143.73 (468) STA. 1175+98.45

BILL OF REINFORCING
(1 OF 2)
NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	KDC	DETAIL CK.	CRG		

US69 Express
Dec 11, 2023
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-33	38

BILL OF REINFORCING

Location		Design Mark	Bending Mark	Size	Number	Length	Dimensions a	b	c	d	e	f
Substructure (Epoxy Coated)	Pier	P1	A	5	16	37'-6"	37'-6"					
		P2	SS	5	14	9'-6"	3'-1"	6"	2'-4"	4¼"	4¼"	
		P3	C	6	364	12'-8"	2'-4"	5'-2"	5'-2"			
		P4	C	6	10	12'-7"	6'-3"	3'-2"	3'-2"			
		P5	C	6	6	12'-3"	5'-11"	3'-2"	3'-2"			
		P6	C	6	6	11'-11"	5'-7"	3'-2"	3'-2"			
		P7	C	6	8	12'-6"	6'-2"	3'-2"	3'-2"			
		P8	A	6	100	4'-0"	4'-0"					
		P9	G	11	32	41'-6"	39'-11"	1'-7"	1'-0"			
		P10	G	11	16	51'-1"	49'-6"	1'-7"	1'-0"			
		P11	G	11	16	31'-11"	30'-4"	1'-7"	1'-0"			
		C1	C	5	256	10'-0"	5'-0"	2'-6"	2'-6"			
		C2	TT	5	136	8'-9"	2'-2 3/4"	6"	6"	2'-3½"	4¼"	4¼"
		C3	G	11	96	20'-0"	18'-5"	1'-7"	1'-0"			
		W1	C	6	222	15'-0"	4'-2"	5'-5"	5'-5"			
		W2	A	6	14	44'-6"	44'-6"					
		W3	A	9	28	43'-6"	43'-6"					
		W4	A	11	36	44'-3"	44'-3"					
Substructure (Uncoated)	Abutment No. 1	A4	C	5	98	7'-8"	2'-8"	2'-6"	2'-6"			
		A12	A	6	20	44'-0"	44'-0"					
		A20	A	6	10	16'-5"	16'-5"					
		A21	DD	6	7	8'-0"	4'-0"	4'-0"	3½"	4'-0"		
		A24	A	8	16	44'-10"	44'-10"					
		A25	A	8	8	16'-5"	16'-5"					
	Abutment No. 2	B4	C	5	101	7'-8"	2'-8"	2'-6"	2'-6"			
		B12	A	6	12	39'-2"	39'-2"					
		B18	A	6	6	16'-5"	16'-5"					
		B19	DD	6	5	8'-0"	4'-0"	4'-0"	3"	4'-0"		
		B20	A	6	6	10'-7"	10'-7"					
		B21	D	6	5	8'-0"	4'-0"	4'-0"	3"	4'-0"		
		B25	A	8	16	40'-0"	40'-0"					
		B26	A	8	8	16'-5"	16'-5"					
		B27	A	8	8	10'-7"	10'-7"					
	Pier	D1	R	5	316	16'-9"	4'-6"	2'-7"				
		D2	G	11	96	45'-5"	43'-10"	1'-7"	1'-0"			
		D3	G	11	80	38'-11"	37'-4"	1'-7"	1'-0"			

BILL OF REINFORCING

Location		Design Mark	Bending Mark	Size	Number	Length	Dimensions a	b	c	d	e	f
Superstructure (Epoxy Coated)	Pier Diaphragm	PD1	A	4	4	36'-2"	36'-2"					
		PD2	MM	4	50	18'-0"	2'-8"	7'-0"	8"			
		PD3	UU	4	10	5'-8"	1'-6"	2'-8"	1'-6"	2"	2'-8"	
		PD4	A	4	80	7'-2"	7'-2"					
		PD5	H	4	18	14'-7"	2'-8"	4'-3"	4½"			
		PD6	A	6	16	4'-7"	4'-7"					
		PD7	A	6	16	3'-10"	3'-10"					
		PD8	D	8	4	6'-0"	5'-0"	1'-0"	1½"	11"		
		PD9	DD	8	4	6'-0"	5'-0"	1'-0"	1½"	11"		
		PD10	A	8	28	6'-0"	6'-0"					
	Slab	S1	A	5	42	43'-8"	43'-8"					
		S2	A	5	564	41'-0"	41'-0"					
		S3	A	5	564	32'-9"	32'-9"					
		S4	A	5	1128	4'-4"	4'-4"					
		S5	G	5	1128	7'-1"	6'-5"	8"	4½"			
		S6	A	6	504	44'-2"	44'-2"					
		S7	B	7	142	42'-9"	41'-9"	1'-0"				
		S8	A	7	142	44'-9"	44'-9"					
		S9	A	8	450	32'-9"	32'-9"					
	Barrier	R1	E	4	325	6'-1"	2'-9"	7"	2'-9"	4½"		
		R2	A	4	84	42'-5"	42'-5"					
		R3	A	4	24	12'-6"	12'-6"					
		R4	N	5	626	6'-2"	1'-11"	2'-1"				
		R5	Q	5	24	5'-10"	2'-8"	1'-6"				
		R6	M	5	650	6'-6"	1'-10¼"					
		R7	A	6	42	43'-2"	43'-2"					
		R8	A	6	12	12'-6"	12'-6"					

Notes:

No allowance for bend curvature is to be made except for standard hook and radii in excess of same.

All reinforcing steel shall conform to the requirements of ASTM A615, Grade 60.

For Bending Diagrams, see Sheet BR02-32.

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION

BR.NO.69-46-143.73 (468) STA. 1175+98.45

BILL OF REINFORCING
(2 OF 2)
NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	KDC	DETAIL CK.	CRG		

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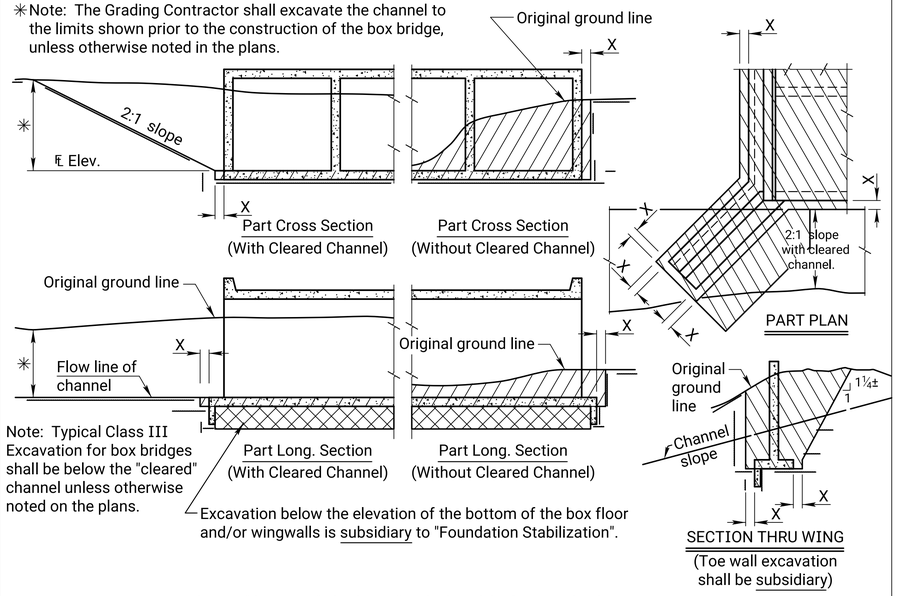
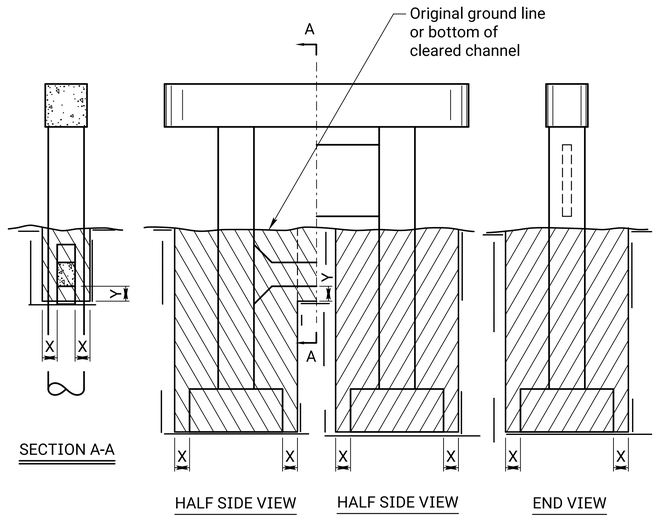
✳Note: The Grading Contractor shall excavate the channel to the limits shown prior to the construction of the box bridge, unless otherwise noted in the plans.



Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

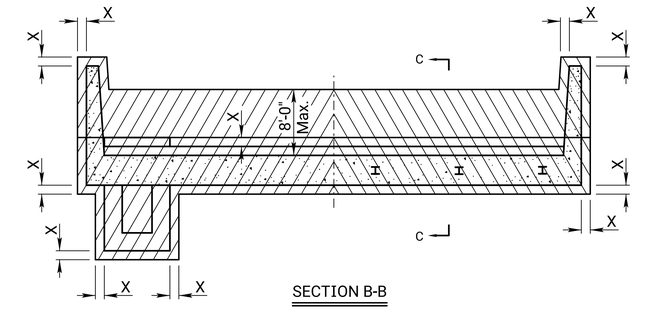
Excavation below the elevation of the bottom of the box floor and/or wingwalls is subsidiary to "Foundation Stabilization".

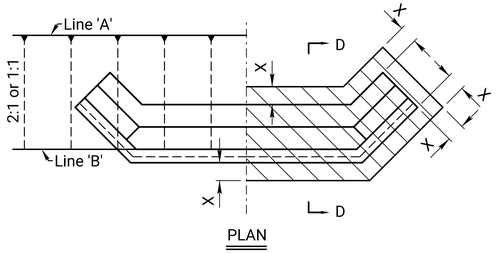
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

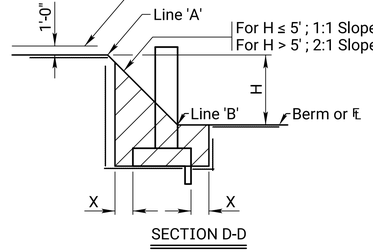


EXCAVATION DETAILS FOR TYPICAL PIERS

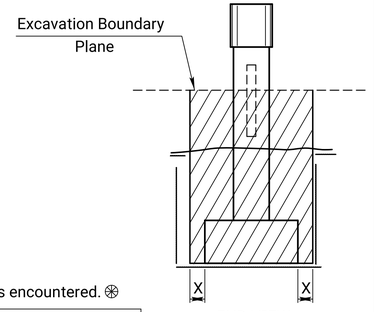
See detail when rock or shale (rock) is encountered. ❋



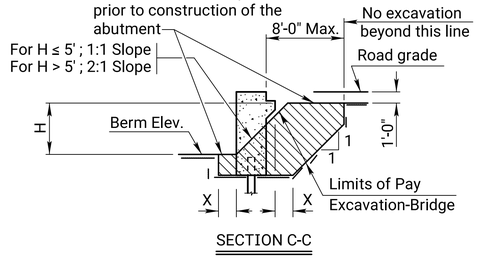




EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS



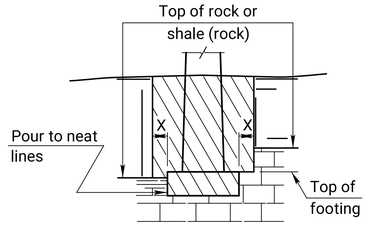
See detail when rock or shale (rock) is encountered. ❋



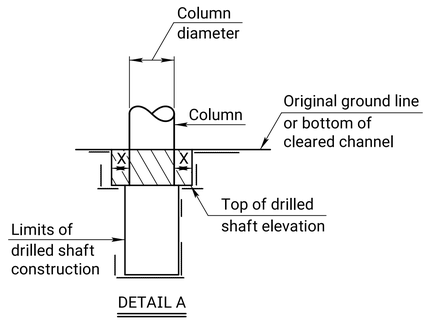
Note: Bridge Contractor shall finish the embankment and berms after the construction of the abutment and dispose of any excess material as approved by the Engineer.

EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

See detail when rock or shale (rock) is encountered. ❋



Note: Excavation below top of rock, hard shale or below top of footing, whichever is lower, shall be to neat lines of the concrete construction.



DRILLED SHAFT DETAILS

Note: Whenever the limits of the drilled shaft construction are greater than the Column Diameter + 2X, the limits of Class I, II or III Excavation shall be the limits of the drilled shaft construction. (See Detail B)

Note: Sides of trenches in hard or compacted soil including embankments shall be shored, sheeted, braced or otherwise supported when the trench is more than 5 feet in depth and 8 feet or more in length. In lieu of the shoring, the sides of the trench above the 5 foot level may be sloped to preclude collapse. The slope for average soils shall be 1:1. If the angle of repose of the soil is less, flatter slopes shall be required.

Dimension "X" shall be 2'-0" unless indicated otherwise on the general plans.

Dimension "Y" shall be 1'-6" unless indicated otherwise on the general plans.

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KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

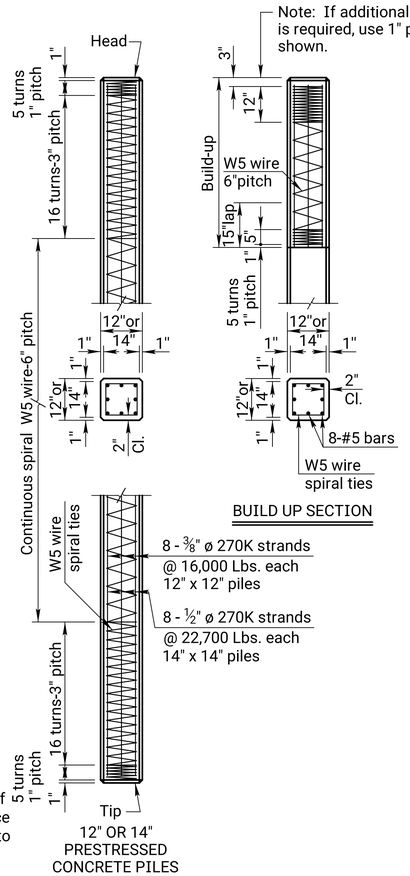
BRIDGE EXCAVATION
(LRFD)
NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

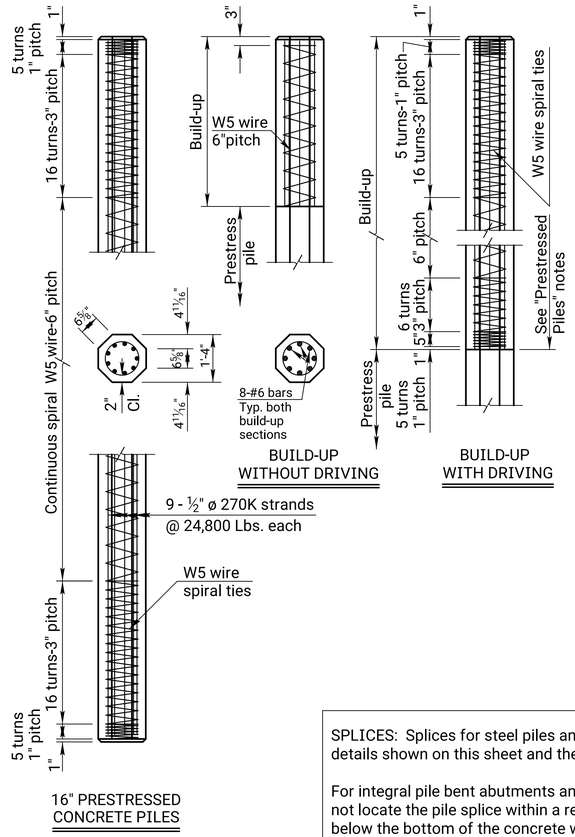
US69 Express
Dec 11, 2023
Released For Construction

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-35	38



BUILD UP SECTION

12" OR 14" PRESTRESSED CONCRETE PILES



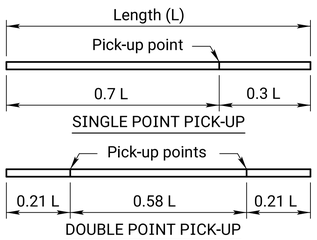
BUILD-UP WITHOUT DRIVING

BUILD-UP WITH DRIVING

16" PRESTRESSED CONCRETE PILES

CAST STEEL PILE POINT

The pile point shall be a one-piece unit of cast steel. Weld pile points in accordance with manufacturer's recommendations to each steel pile before driving.



PICK-UP POINTS FOR PRESTRESSED PILING

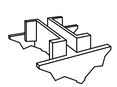
Max. length - 55' single point pick-up
Max. length - 80' double point pick-up

Note: Piles shall be marked at Pick-up points to indicate proper points for attaching handling lines.

Outside Flange

Inside Flange

SHELL PILE POINT



H-Pile Point

PIPE PILE POINT

Weld Symbology Definition

Use grinder to bevel edges of splice as shown in weld symbology and drawing. In addition to bevels, produce clean, bare, and shiny surfaces at and around the splice welding location.

Lay full penetration root weld from beveled side of splice.

Back gouge root weld from side opposite of root welding application making sure to remove all foreign materials, porous steel, and inclusions from root weld. Finish welding the non beveled side of the splice.

Finish welding beveled side of the splice while removing slag, foreign materials, porous steel, and inclusions in between welding passes, use of a grinder may be needed.

Verify that enough filler metal has been correctly placed in all weld locations to obtain a flush or convex surface with no concavity produced upon completion of the final welds.

US69 EXPRESS CONSTRUCTORS

GENERAL NOTES

PRESTRESSED PILES: Fabricate prestressed concrete pile splices in accordance with the Manufacturer's recommendations subject to the approval of the Department.

Method of attachment of pile to build-up may be by any of the methods given in the notes on "Alternate Methods." If mild reinforcing steel is used for attachment, the area shall be no less than that used in the build-up.

ALTERNATE METHODS: Method of attachment of a pile to build-up may be by any of the following methods:

1. Cut off at least 2'-0" of pile and expose a minimum of 2'-0" of strands.
2. Cast 8-#6, or 8-#5 bars (equally spaced) into pile head. All bars shall extend into pile head and project from pile head a minimum of 2'-0".
3. Drill 8 holes in pile head (equally spaced) for installation of 8 grouted dowel bars of same size and length as in 2.
4. Provide cored holes for bars as in 3.

No bars or strands are to extend from head of pile or build-up into footing or pile cap unless approved by the Department.

TEST PILES: Drive test piles where called for on the bridge plans. The test piles located within the limits of the substructure may become a part of the bridge pile system.

DRIVING FORMULA: Driving formula shall conform to the Project Special Provision.

The following items are covered in Division 1000 of the KDOT Standard Specifications:

REINFORCEMENT: Use reinforcing steel conforming to ASTM A615, Grade 60. Hoops and spirals shall be either plain or deformed bars.

PRESTRESSING STEEL: Use uncoated seven-wire low relaxation prestressing strand conforming to ASTM A416, Gr. 270.

SPECIFICATIONS: For Piling Specifications see Project Special Provision. The following items are covered in Division 700 of the KDOT Standard Specifications.

CONCRETE: Concrete for prestressed shall be f'c = 5,000 PSI.

WELDING: All field welding shall meet the requirements of the Standard Specifications.

Use only Shielded Metal Arch Welding SMAW (stick welding) for pile splices.

Use only low hydrogen E7018, 7016, or 7015 series welding rod (electrode) for all welding applications during pile splicing.

New electrodes are to be purchased for use on the project. The electrodes shall arrive on the project in factory hermetically sealed containers, opened and labeled with indelible ink in front of the engineer. The label shall include the current date and the project number. If the container seal is questionable or shows signs of damage the electrode is to be dried in an oven at least one hour at a temperature of 700°F to 800°F.

Upon removal from intact hermetically sealed factory packaging or the drying oven the electrode is to be placed in a storage oven with a minimum temperature of 250°F.

When electrodes are removed from the hermetically sealed container or storage oven and exposed to the atmosphere for less than 4 hours place into the storage oven for at least 4 hours before removing for use.

If electrode is exposed to the atmosphere for 4 hours or more (or 9 hours for moisture resistant electrodes designated with an R in their labeling) then electrode can be dried in a drying oven at a temperature of 450°F to 550°F.

If the electrode is exposed to the atmosphere for 4 hours or more a second time or the rod becomes wet discard rod.

STEEL PILE: Steel pile shall conform to the requirements of the Standard Specifications.

PAINT: All paint shall comply with the Standard Specifications, or as specified on the Design Documents.

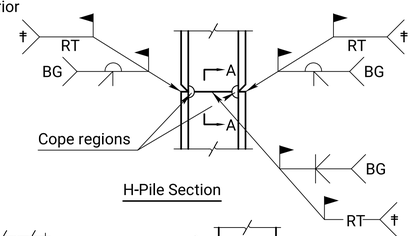
MILL TEST REPORTS: Steel piles test reports shall comply with the Standard Specifications.

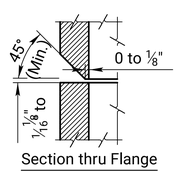
SPLICES: Splices for steel piles and shell piling shall be in accordance with details shown on this sheet and the Standard Specifications.

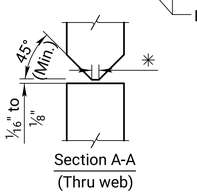
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

With the approval of the Department, one splice per bent may be allowed in the region described above without testing. If additional splices are anticipated, based on the geology, the Design-Builder prior to driving, shall locate the splice so that the splice will not fall within the regions described above.

† For integral pile bent abutments and piers, if a splice is located within the regions described above, then the Design-Builder shall test the welds by Radiograph (RT) test methods. Repair and retest any welds not passing the test(s). Each weld tested shall have written confirmation of results. Report these results to the Department.







✳ Minimum as required by welding process.

BG = Backgouge

PILE SPLICE DETAILS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

STANDARD PILE DETAILS

NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

231208_69-46_KA-5700-03_BR-02_RFC_r00

File: BR02-35 - Standard Pile Details.dgn

Plot Date: 1-DEC-2023 12:17

US69 Express
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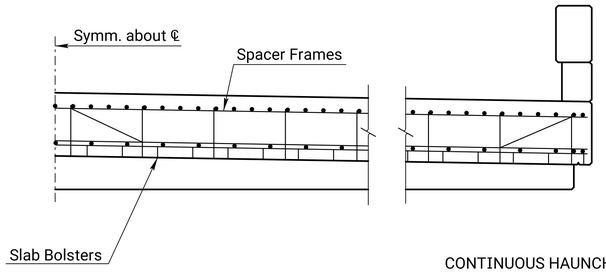
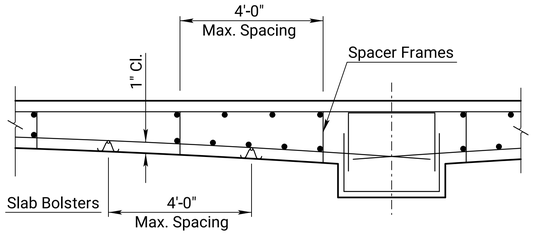
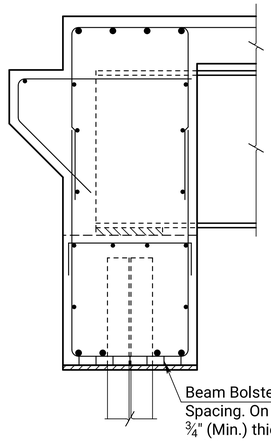
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-36	38

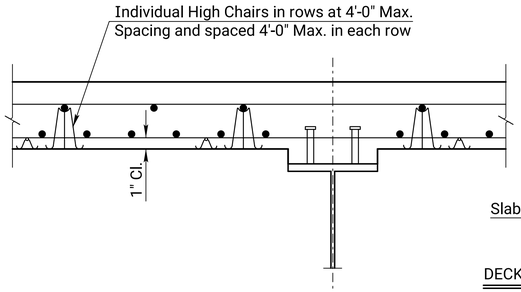


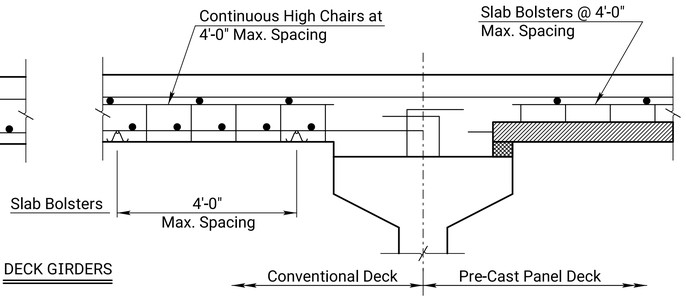


CONTINUOUS HAUNCHED SLAB



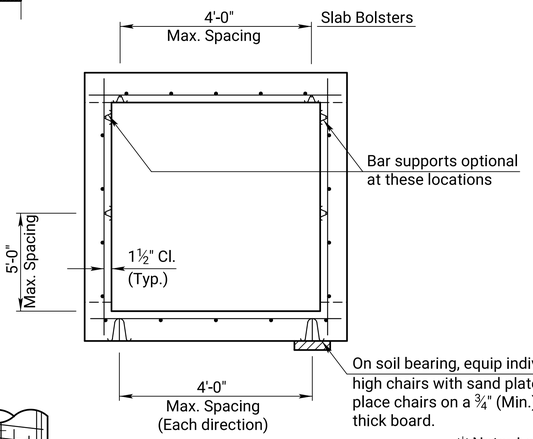
Beam Bolster at 4'-0" Max. Spacing. On soil bearing, place a ¾" (Min.) thick board under bolster.



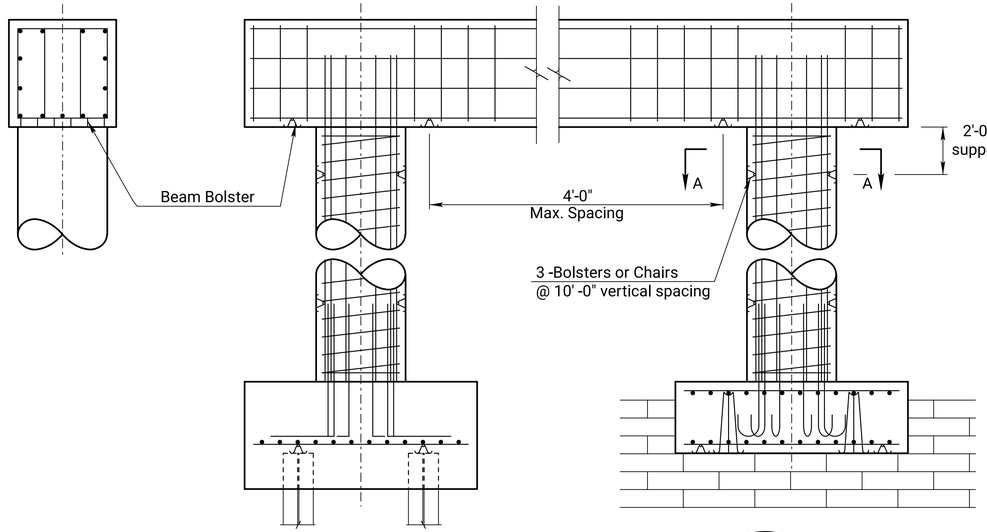


DECK GIRDERS

ABUTMENT



BOX CULVERT



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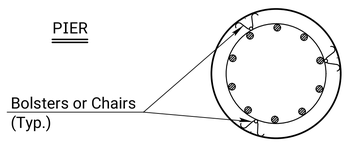
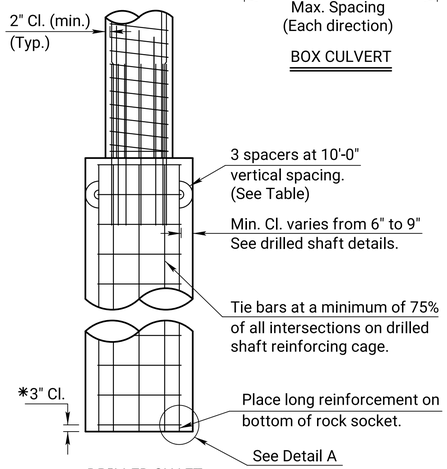


SECTION A-A



DRILLED SHAFT

GENERAL NOTES

Reference is made to the latest edition of the CRSI "Manual of Standard Practice" for recommended industry practices concerning reinforcing steel.

Use only the following types of bar supports:

1) Wire Bar Supports:

   a) Epoxy coated reinforcing: Class 1 Protection
   b) Non-epoxy coated reinforcing: Class 1, 2, or 3 Protection

2) Plastic Bar Supports

3) Supplementary bars

When securing epoxy coated reinforcement, use tie wires or metal clips that are epoxy or plastic coated.

Do not weld reinforcing steel to bar supports or to other reinforcing steel. Shop weld spacer frames for haunched slabs.

Tie bars at all intersections around the perimeter of each mat and at not less than 2'-0" centers or at every intersection, whichever is greater.

Where more than one length of bar support is required, lap the end legs so they are locked or tied together.

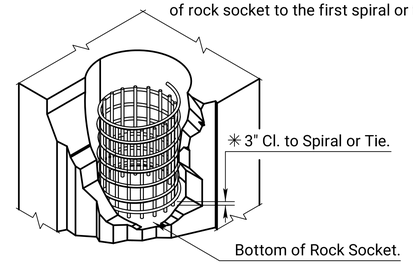
Use proper height supports to maintain the distance between the reinforcing and the formed surface or the top surface of deck slabs within ¼" of that indicated on the plans.

Spacings shown are maximums. Use sufficient supports, as determined by the Engineer, to retain the reinforcing steel in position.

Construct any platforms, required for the support of workers and/or equipment during concrete placement, directly on the forms and not on the reinforcing steel.

Designs and arrangements of Supports or Spacers other than as shown on this sheet, may be used with the permission of the Department.

✳Note: Longitudinal reinforcing steel is placed on the bottom of the rock socket. Maintain 3" clearance from the bottom of rock socket to the first spiral or tie bar.



DETAIL A

Required Shaft Supports		
Diameter (in.)	Circumference (in.)	No. of Spacers
18	56	3
24	75	3
30	94	4
36	113	4
42	131	5
48	150	6
54	169	6
60	188	7
66	207	7
72	226	8
78	244	9
84	263	9
90	282	10
96	301	11
102	320	11
108	339	12

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

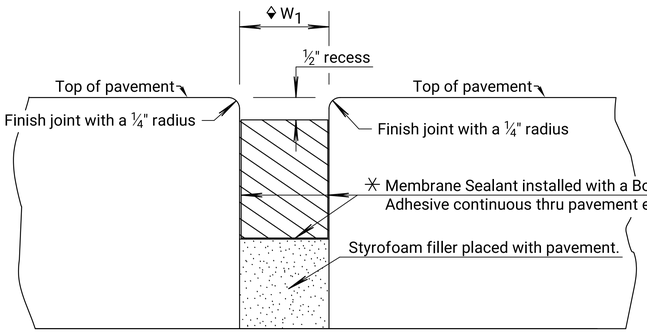
SUPPORTS AND SPACERS FOR REINFORCING STEEL NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

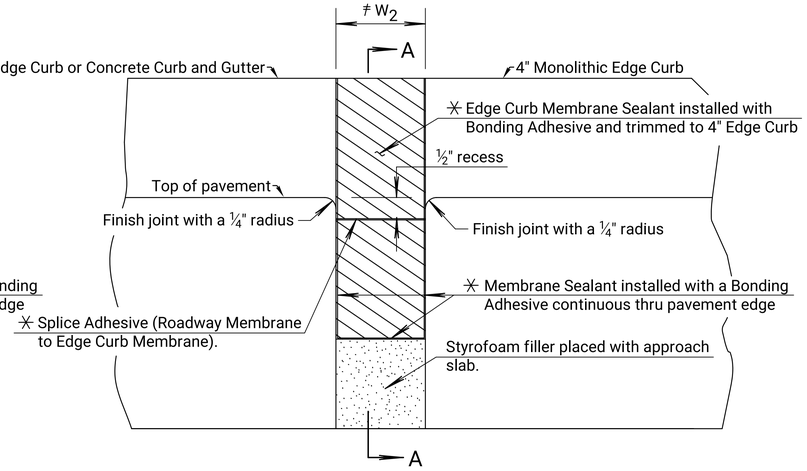
DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

US69 Express
Dec 11, 2023
Released For Construction

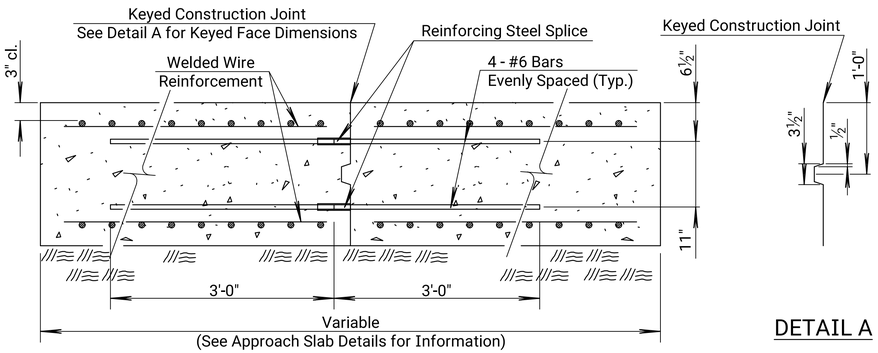
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-37	38



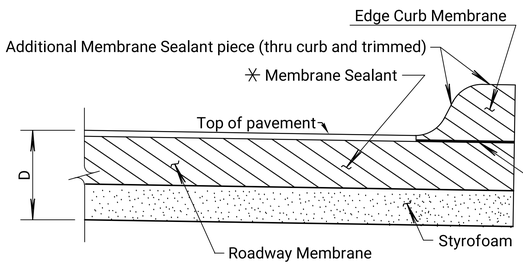
ELEVATION PRESSURE RELIEF JT.



ELEVATION EXPANSION JT.



DETAIL A



SECTION A-A

(See Std. Drawing RD711 for details of 4" Edge Curb.)

GENERAL NOTES

EXPANSION/PRESSURE RELIEF JOINTS

See Concrete Bridge Approach Pavement standard drawings for location of expansion and pressure relief joints.

Form the joint opening prior to placement of the pavement approach. Remove the material used to form the joint after the pavement approach has been in place for a minimum of 6 days.

Clean and construct the joint only after the concrete in the approach slab has cured for a minimum of 7 days.

Thoroughly clean the joint by sandblasting and by high pressure air blast to remove all laitance and contaminants from the joint. When any joint is shaped by saw cutting in lieu of forming, blast the joint with water prior to sandblasting and air cleaning.

Accomplish sandblasting in two passes to clean each face of the joint (one pass for each face). Hold the nozzle 1 to 2 inches from the joint face at an angle to the joint face.

Remove any contaminants such as oil, curing compound, etc. by sandblasting to the satisfaction of the Department. Solvents, wire brushing, or grinding are not permitted.

Air blast the joint just prior to installing the Membrane Sealant. Equip the air compressor used to clean the joint with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. Spot check the joint to verify any residual dust or dirt has been removed. The Department is required to inspect the joint immediately prior to installing the joint material.

⚹ See KDOT Standard Specifications for Membrane Sealant, Bonding Adhesive and Splice Adhesive. The width of the membrane sealant is 4 inches (nominal).

Do not allow traffic on the joint for a minimum of 3 hours unless otherwise directed by the Department.

Use splice materials and methods recommended by the Manufacturer.

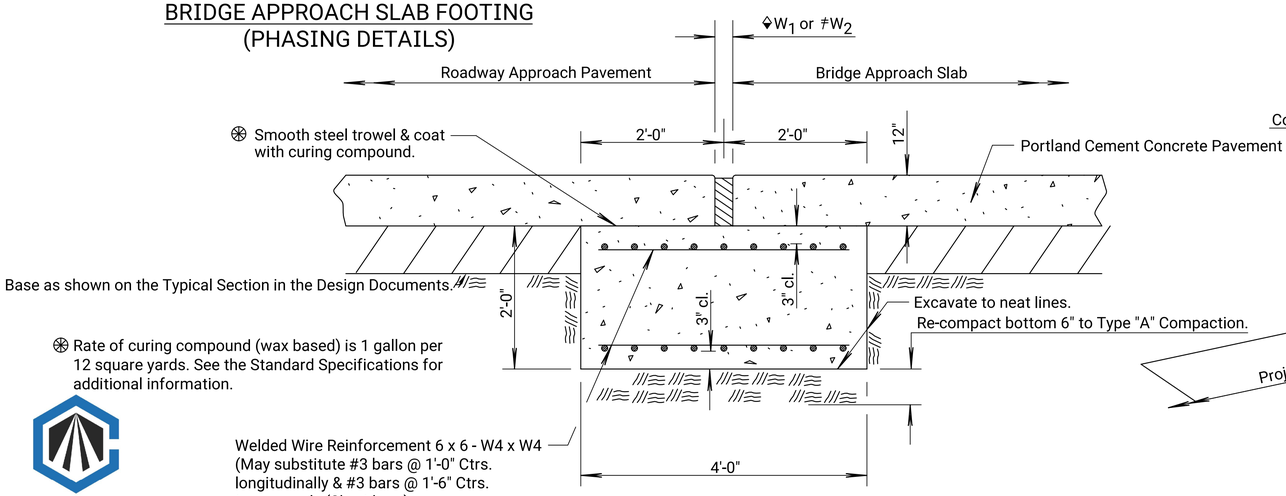
BRIDGE APPROACH SLAB FOOTING

The Design-Builder shall use Concrete Grade 4.0 (AE) or the mix used in the concrete pavement for the slab footing.

◆ PRESSURE RELIEF JOINT WIDTH DETAILS (W_1)							
ᛘ Temperature (F°)	40°	50°	60°	70°	80°	90°	100°
Formed Concrete Opening Size	4"	3¾"	3½"	3¼"	3"	2¾"	2½"

ᛘ Average Ambient Temperature over previous 24 hours.

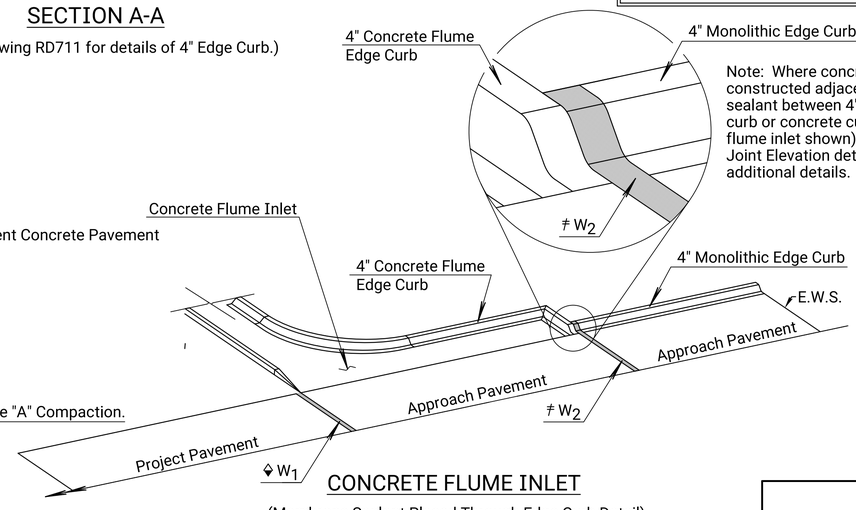
≠ EXPANSION JOINT WIDTH DETAILS (W_2)
See Sheet BR02-31 for details.



BRIDGE APPROACH SLAB FOOTING

BRIDGE APPROACH SLAB FOOTING
(PHASING DETAILS)

Rate of curing compound (wax based) is 1 gallon per 12 square yards. See the Standard Specifications for additional information.



CONCRETE FLUME INLET

(Membrane Sealant Placed Through Edge Curb Detail)

Note: Where concrete flume inlets or concrete curb and gutter are constructed adjacent to bridge approach slab pavement place membrane sealant between 4" monolithic edge curb and 4" concrete flume inlet edge curb or concrete curb and gutter as shown on this sheet (concrete flume inlet shown). See approach slab Standard Drawings, Expansion Joint Elevation detail this sheet, and Standard Drawing RD635 for additional details.

LEGEND

Membrane Sealant

US69 EXPRESS CONSTRUCTORS

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

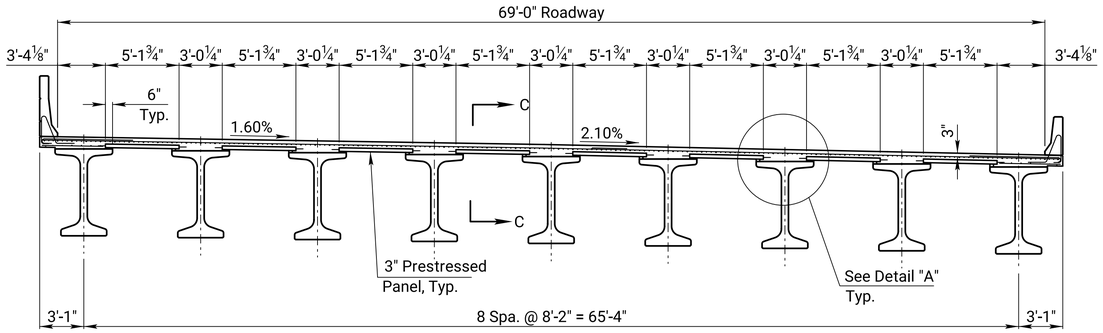
BRIDGE APPROACH SLAB DETAILS

NB US-69 OVER I-435

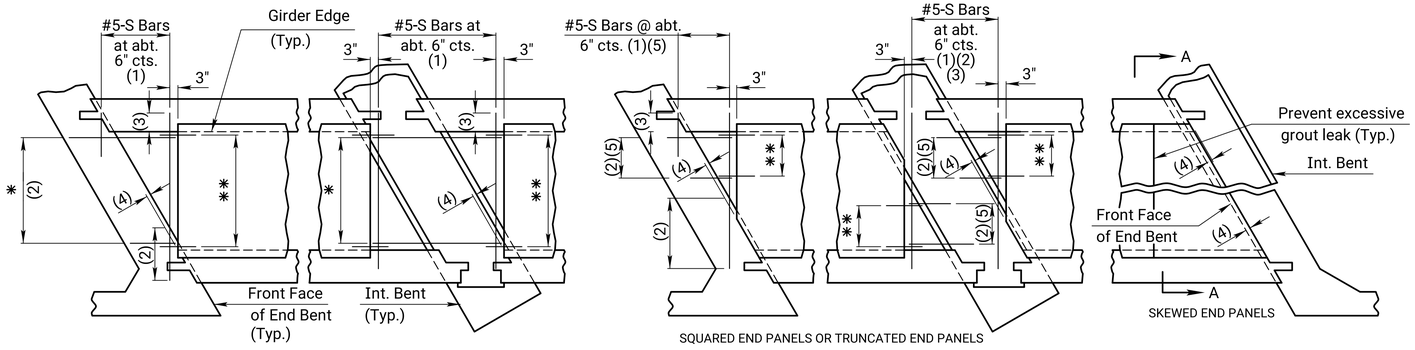
PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

US69 Express
Dec 11, 2023
Released For Construction

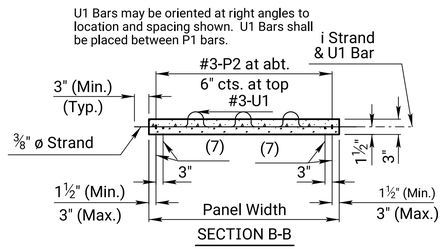


TYPICAL SLAB SECTION

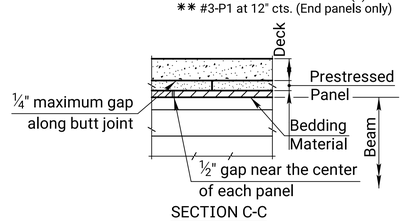


PLAN SHOWING PANEL PLACEMENT

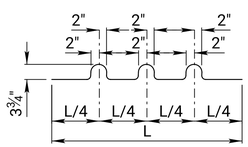
✱ #5-S Bars at abt. 9" cts. (1)
✱✱ #3-P1 at 12" cts. (End panels only)



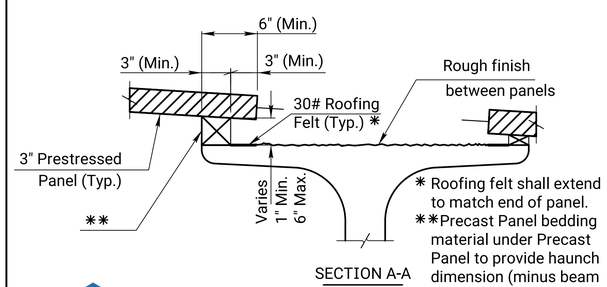
SECTION B-B



SECTION C-C

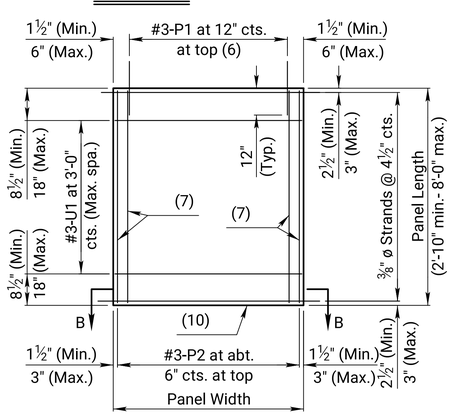


BENDING DIAGRAM FOR U1 BAR

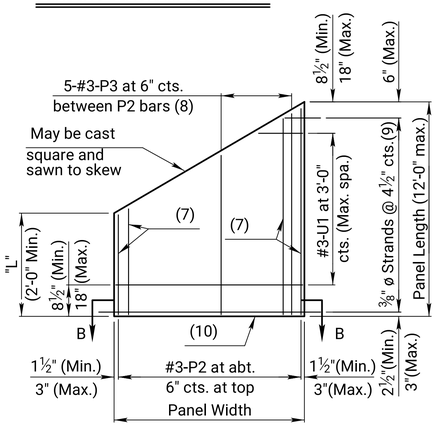


SECTION A-A

✱ Roofing felt shall extend to match end of panel.
✱✱ Precast Panel bedding material under Precast Panel to provide haunch dimension (minus beam step, as applicable).



PLAN OF SQUARED PANEL



PLAN OF OPTIONAL SKEWED END PANEL

US69 EXPRESS CONSTRUCTORS

Note: x = width of foam (Min. = 3") y = height of foam
For stability: when y < 3", then x = 3" when y > 3" then x (min) = y 6" > y > 1"

Reference Notes:

Plan of Panel Placement:

(1) S-bars shown are bottom steel in slab between panels and used with squared and truncated end panels only.

(2) Extend S-bars 18 inches beyond the front face of end bents and int. bents for squared and truncated end panels only.

(3) Extend S-bars 9 inches beyond edge of girder (Typ.).

(4) End panels shall be dimensioned ½" min. to 1½" max. from the inside face of diaphragm.

(5) For truncated end panels, use a min. of #5-S bars at 6" crossings in openings, or min. 4x4-W7xW7.

Plans of Panels:

(6) For end panels only, P1 bars shall be 2'-0" in length and embedded 12". P1 bars will not be required for panels at squared integral end bents.

(7) #3-P2 bars near edge of panel at bottom (under strands).

(8) Use #3-P3 bars if panel is skewed 45° or greater.

(9) Any strand 2'-0" or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands 2'-0" or shorter may then be debonded at the fabricator's option.

(10) Optional ½" x 45° Chamfer one or both sides at bottom.

Section A-A:

(11) Slab thickness over prestressed panels varies due to girder camber. In order to maintain minimum slab thickness, it may be necessary to raise the grade uniformly throughout the structure.

(12) Contractor shall ensure proper consolidation under and between panels.

(13) At the contractor's option, the variation in slab thickness over prestressed panels may be eliminated or reduced by increasing and varying the girder top flange thickness. Dimensions shall be shown on the shop drawings.

General Notes:

Prestressed Panels:

Concrete for prestressed panels shall be Grade 6.0 (AE)(PB) with f'c = 6,000 psi, f'ci = 4,000 psi.

The top surface of all panels shall receive a scored finish with a depth of scoring of ⅛" perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength, uncoated, seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = ⅜" and nominal area = 0.085 sq.in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When squared end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 3,000 psi compressive strength.

Prestressed panels shall be brought to saturated surface-dry (SSD) condition just prior to the deck pour. There shall be no free standing water on the panels or in the area to be cast.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69-46 KA-5700-03	2023	BR02-38	38

General Notes:

Reinforcing Steel:

All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Minimum clearance to reinforcing steel shall be 1½", unless otherwise shown.

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Deformed welded wire reinforcement (WWR) providing a minimum area of reinforcing perpendicular to strands of 0.22 sq in./ft, with spacing parallel to strands sufficient to ensure proper handling, may be used in lieu of the #3-P2 bars shown. Wire diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The following reinforcing steel shall be tied securely to the strands with the following maximum spacing in each direction:
#3-P2 bars at 16 inches.
WWR at 24 inches.

The #3-U1 bars shall be tied securely to #3-P2 bars, to WWR or to strands (when placed between P1 bars) at about 3-foot centers.

Minimum reinforcement steel length shall be 2'-0".

All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

S-bars are not listed in the bill of reinforcing.

Cost of S-bars will be considered completely covered by the contract unit price for the slab.

Joint Filler:

Joint filler shall be preformed fiber expansion joint material in accordance with Sec 1057 or expanded or extruded polystyrene bedding material in accordance with Sec 1073.

Use Slab Haunching Diagram on Sheet BR02-25 for determining thickness of joint filler within the limits noted in the table of Joint Filler Dimensions.

Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances.

The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be ½ inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Joint filler shall be glued to the girder. When thickness exceeds 1½ inches, the joint filler shall be glued top and bottom. The glue used shall be the type recommended by the joint filler manufacturer.

Edges of panels shall be uniformly seated on the joint filler before slab reinforcement is placed.

NO.	DATE	REVISIONS
0	2023-12-04	RFC SUBMITTAL

KANSAS DEPARTMENT OF TRANSPORTATION
BR.NO.69-46-143.73 (468) STA. 1175+98.45

PRESTRESSED CONCRETE PANEL DETAILS (NU GIRDERS) NB US-69 OVER I-435

PROJ. NO. 69-46 KA-5700-03 JOHNSON CO.

DESIGNED	JAT	DETAILED	JAT		
DESIGN CK.	CRG	DETAIL CK.	CRG		

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File: BR02-38 - Prestressed Concrete Panel Details (NU Girders).dgn Plot Date: 1-DEC-2023 12:17