STATE OF KANSAS

DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE OF PROPOSED

STATE HIGHWAY

FEDERAL AID PROJECT

JOHNSON COUNTY

I-435 & STATE LINE ROAD INTERCHANGE

INDEX OF SHEETS

THESE PLANS ARE PACKAGED INTO 5 SEPARATE VOLUMES

- VOLUME I - ROADWAY
- VOLUME II - BRIDGES
- VOLUME III - LIGHTING-TRAFFIC SIGNALS-SIGNING-PAVEMENT MARKING
- VOLUME IV - SEQUENCE OF CONSTRUCTION-TRAFFIC CONTROL
- VOLUME V - CROSS SECTIONS

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KDOT PROJECT NO. 435-45 K-3637-02

FEDERAL AID PROJECT NO. IM-KCMO-435-5(247)

GRADING

CONCRETE PAVEMENT

BRIDGES

LIGHTING

SIGNING

PAVEMENT MARKING

SEEDING

STA. 429+50.00 BEGIN
Project 435-45 K-3637-02 (Part I)=
Sta. 429+50.00 on
Project 435-45 K-2265-01

STA. 462+72.19 END
Project 435-45 K-3637-02 (Part I)=
STA. 462+72.19 BEGIN
Project 435-45 K-3637-02 (Part II)

STA. 496+00.00 END
Project 435-45 K-3637-02 (Part II)=
Sta. 1060+16.23
Measure: Project .H10809

Ⓐ STA. 434+61.00 (State Line Road over Indian Creek)
BR.NO. 435-45-0.00(3)SE.B.
61'-88'-88'-88'-61' Cont. Composite Steel Beam
Spans, 51'-0" Roby. (S.B.) 51'-0" Roby. (N.B.)

Ⓑ STA. 450+55.22 (State Line Road over I-435)
BR.NO. 435-45-0.00(3)SE.B.
BR.NO. 435-45-0.00(3)NW.B.
45'-75'-75'-45' Cont. Composite Steel Beam
Spans, 75'-0" Roby. (S.B.) 50'-0" Roby. (N.B.)

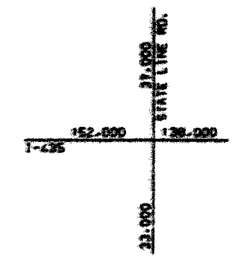
Ⓒ STA. 450+44.00 (I-435 OVER INDIAN CREEK EAST)
BR.NO. 435-45-0.23(3)SE.B.
BR.NO. 435-45-0.24(3)NW.B.
42'-56'-56'-56'-42' Prestressed Concrete Beam
Spans, 78'-0" Roby. (S.B.) 80'-0" Roby. (N.B.)

Ⓓ STA. 448+58.00 (RAMP W-S OVER INDIAN CREEK)
BR.NO. 435-45-0.25 (212
39'-52'-52'-37' Cont. R.C. Haunched Slab
Spans, 39'-0" Roby.

CITY OF OVERLAND PARK
POPULATION = 111,790

CITY OF LENEXA
POPULATION = 28,000

SCALE: 1"=1000'



TRAFFIC SKETCH
(2016 AADT)

DESIGN DESIGNATION

A.A.D.T. (1996)	= 121,000
A.A.D.T. (2016)	= 152,000
D.H.V. (2016)	= 9%
D	= 55%
T	= 3%
V	= 70 M.P.H.
C of A	= Full
Clear Zone	= 31 Ft.

PREPARED & SUBMITTED BY

HNTB

HOWARD NEEDLES TAMMEN & BERGENDOFF
ARCHITECTS ENGINEERS PLANNERS
OVERLAND PARK, KANSAS

Joseph R. Brand 6/11/93
JOSEPH R BRAND DATE

RON BRANDT DATE
DIRECTOR OF PUBLIC WORKS
FOR LEAWOOD, KANSAS

CONVENTIONAL SIGNS

COUNTY LINE
CITY LIMITS
STATE OR NATIONAL LINE
TOWNSHIP, SECTION or GRANT LINE
PROPERTY LINE
RIGHT OF WAY FENCE
EXISTING FENCE
GUARD FENCE
CONSTRUCTION LIMITS
RIGHT OF WAY LINE
TRAVELED WAY
RAILROADS
CENTER LINE OF PROJECT
TERRACE
CULVERTS
DROP INLET & STORM SEWER
ACCESS CONTROL
POWER POLE
TELEPHONE POLE
MARSH
HEDGE
TREES
PROFILE ELEVATION
STREAM or CREEK

GROSS LENGTH OF PROJECT	4850.00 FT	
EXCEPTIONS	NONE	
ADDITIONS	NONE	
NET LENGTH OF PROJECT	4850.00 FT	0.918 MI.
NET LENGTH OF BRIDGES	497.59 FT	0.094 MI.
NET LENGTH OF ROAD	4352.41 FT	0.824 MI

THIS DESIGN SPECIFICALLY PREPARED FOR USE AT THE LOCATION SHOWN. USE IN ANY OTHER MANNER EXCEEDS THE INTENDED PURPOSE OF THESE DRAWINGS AND ANY ACCOMPANYING SPECIFICATIONS.

RECOM. FOR APPROVAL - DATE
CHIEF, BUREAU OF DESIGN
KANSAS DEPARTMENT OF TRANSPORTATION

APPROVED - DATE
STATE TRANSPORTATION ENGINEER
KANSAS DEPARTMENT OF TRANSPORTATION

RECOM. FOR APPROVAL - DATE
ENGINEER
FEDERAL HIGHWAY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION

APPROVED - DATE
DIVISION ADMINISTRATOR
FEDERAL HIGHWAY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION

PLOTTED
TRACED
CHECKED
SQUARE

200

Jackson County W.B. I-435 over State-Line Road A-5904 X57-210

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ROADWAY

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HNTB

PROJECT NO. 435-46 K-3637-02

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Jackson I435 A-5904

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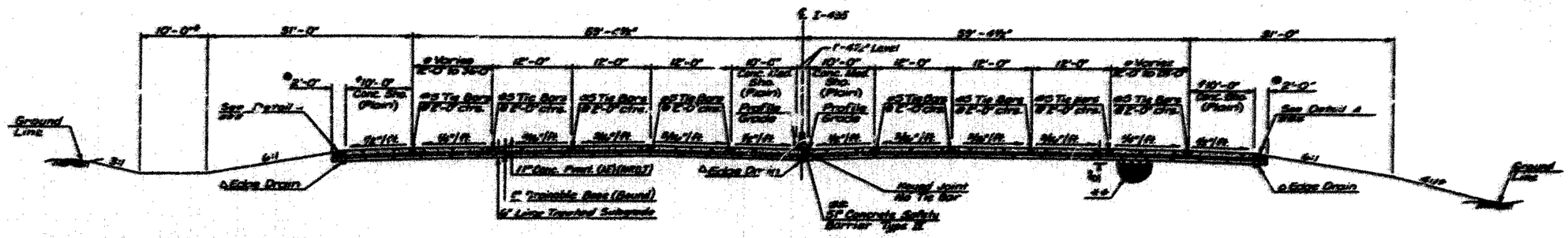
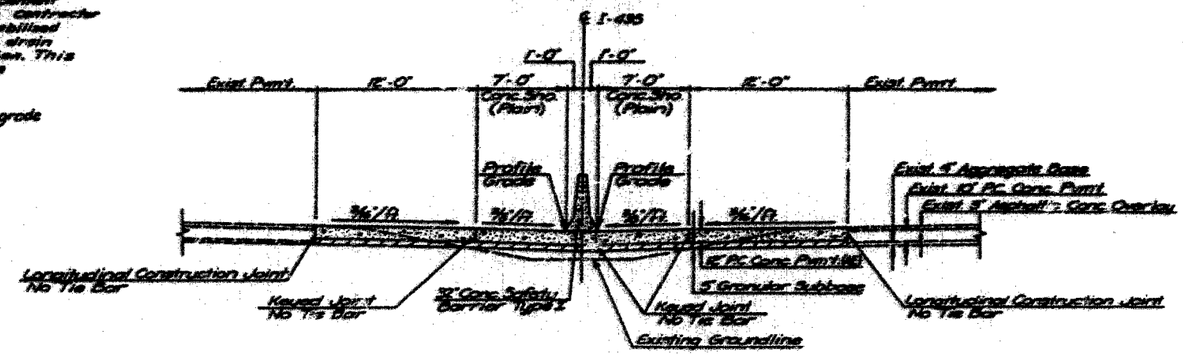
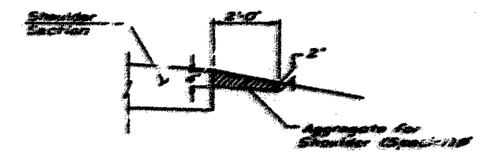


CUT SECTION

FILL SECTION

I-435
Sta. 443+25 to Sta. 471+00





DETAIL A

* See Special Provisions

Aggregate Shoulder (Special) is not required in Missouri (Sta. 464+04.57 to Sta. 471+00, ℄ I-435).

I-435
Sta. 471+00 to Sta. 476+00

● The two foot stabilized base area located outside the limits of the concrete shoulder shall be removed to the limits shown on the Edge Drain Detail (Sht. No. 94) and disposed of after the concrete shoulder section has been completed and prior to placement of the Aggregate for Shoulder (Special). The contractor is responsible to repair any damage to the stabilized base under the shoulder section, above the edge drain or to the shoulder itself during this operation. This work shall be considered subsidiary to the placement of the concrete shoulder.

* 11" Concrete Pavement, 4" Drainable Base, and 6" Subgrade shall be full depth through shoulder.

* Dimensions and slopes for standard ditches and fills. See plan and cross sections for variations.

** Overbreakage in limestone or sandstone rock not designated to be subgraded shall be brought to within 8" of the subgrade line with crushed stone, shot rock and/or rock rubble, properly compacted, and then brought to the subgrade line with crushed stone meeting the requirements for "Crushed Stone for Backfill" in accordance with the Standard Specifications. Layers of earth or shale will not be permitted for backfill up to the bottom of the crushed stone. Overbreakage in shale or in rock where shale is exposed shall be backfilled with low permeability soils listed as useable for subgrade construction in the Soils Report. All materials, equipment and labor for this work shall not be paid for directly, but shall be subsidiary to other items of the contract.

* See plans for location of transitions

△ Excavation for edge drain trenches shall not be paid for directly but shall be subsidiary to the bid item "Edge Drain Pipe (4")". See Sht. Nos. 94 & 95 for more details.

** Temporary C.S.B. Type I (32"), Sta. 436+00 to Sta. 445+60.67
C.S.B. Type II-F (51"), Sta. 445+60.67 to Sta. 449+16.56
C.S.B. Type I (32"), Sta. 464+04.57 to Sta. 471+00

Notes:

1. The outside shoulder and Median shoulder cross slope shall transition in 75' to match normal bridge cross slope (¾"/ft - outside, ¾"/ft - median) just in advance of the bridges, unless otherwise noted in the plans.
2. See Sheet No. 11 for Foundation Treatment and Compaction of Earthwork.
3. The intersection of all slope lines shall be softened and rounded for pleasing appearance.

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KANSAS DEPARTMENT OF TRANSPORTATION

I-435

TYPICAL SECTIONS

202

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POT Sta. 461+92.54 ℄ Sta. 230+00.05
1. ¼" x 18" Rebar @ POT (set 3" deep)
2. ℄ of a square cut on SW abutment wing on WB I-435 bridge — 19.0 NE
3. Top NW corner N. headwall on EB I-435 bridge — 15.0 SSE
4. SE corner grate on a 2.3 x 2.8' steel grate inlet — 16.5 NW

Sta. 462+02.54 ℄ Sta. 230+10.05=
West EVS on two I-435 bridges over State Line Road
1. 40d spike @ station (see N flush)
2. Point not referenced

Sta. 462+02.82 ℄ Sta. 230+30.35=
East EVS on two I-435 bridges over State Line Road
1. 40d spike @ station (see N flush)
2. Point not referenced

Sta. 465+00. Const. 4' x 2' Inlet M.H. Special, 19' Lt. Install 18" x 35 L.F. Storm Sewer (RCP)(E) See Sheet No. 80, 81, 90 & 92

Sta. 46[illegible] 80. Const. Sign Footing, Lt. & Rt. See Signing Sheets.

Sta. 460+50. Const. Median Inlet Type X, 0' Lt. Install 18" x 272 L.F. Storm Sewer (CMP)(W) Install 18" x 100 L.F. Slotted Drain Pipe (W) See Sheet No. 79, 81, 90, 92 & 95

Sta. 467+00. Install "Trend Attenuator" See Sheet No. 113 & 136

Sta. 461+64. Const. Gutter Inlet, 66.54' Lt. Install 15" x 85 L.F. Storm Sewer (CMP)(N) w/End Section See Sheet No. 80, 87, 91, 92 & 115

Sta. 466+90. Const. Gutter Inlet, 66.88' Lt. Install 15" x 107 L.F. Storm Sewer (CMP)(N) See Sheet No. 80, 89, 91 & 92

Install 125 L.F. Steel Plate Guard Fence, Lt. See Sheet No. 99, 100, 101, 102, 103 & 135

Install 125 L.F. Steel Plate Guard Fence, Rt. See Sheet No. 99, 100, 101, 102, 103 & 135

Sta. 461+02. Const. Gutter Inlet, 76.54' Rt. Install 15" x 65 L.F. Storm Sewer (CMP)(S) w/End Section See Sheet No. 80, 87, 91, 92 & 115

Sta. 455+75. Const. Sign Footing Lt. & Rt. See Signing Sheets.

Sta. 452+25. Install 24" x 60 L.F. Storm Sewer (RCP)(W) See Sheet No. 93 & 116

Sta. 464+56.8. Const. 19' L.F. Side Tapered RCB Extension, 225.5' Rt. See Sheet No. 118, 119, 124 & 125

Sta. 463+49. Const. 4' x 4' Inlet MH Special, 173' Rt. Install 18" x 106 L.F. Storm Sewer (RCP)(SE) w/End Section See Sheet No. 80, 84, 91, 92 & 115

Sta. 467+25. Const. Median Inlet Type X, 0' Lt. Install 18" x 148 L.F. Storm Sewer (RCP)(E) See Sheet No. 79, 80, 81, 90 & 92

Sta. 465+25. Const. Median Inlet Type X, 0' Lt. Install 18" x 196 L.F. Storm Sewer (RCP)(E) See Sheet No. 79, 81, 90 & 92

Sta. 469+25. Const. Median Inlet Type X, 95.38' Rt. Install 18" x 74 L.F. Storm Sewer (RCP)(N) See Sheet No. 80, 81, 90 & 92

Install 125 L.F. Steel Plate Guard Fence, Lt. See Sheet No. 99, 100, 104, 105 & 135

Aggregate Ditch Lining (D_{50}=6") See Sheet No. 98 & 136

Install 1160 L.F. Chain Link Fence, Rt. See Sheet No. 126 & 136

Commercial Development Associates

Prop. R/W & Access Control

Exist. R/W & Access Control

United Missouri Bank of Kansas City

Sta. 10+19.20 ℄ Carondelet Drive= Sta. 56+19.22 ℄ State Line Road

BM #29: "0" cut on SW abutment wing WB I-435 bridge over State Line Road 12' Lt. ℄ Sta. 462+07 Elev. 852.715'

NOTE: The information shown on this drawing concerning type and location of underground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own verification as to the type and location of underground utilities as may be necessary to avoid damage thereto.

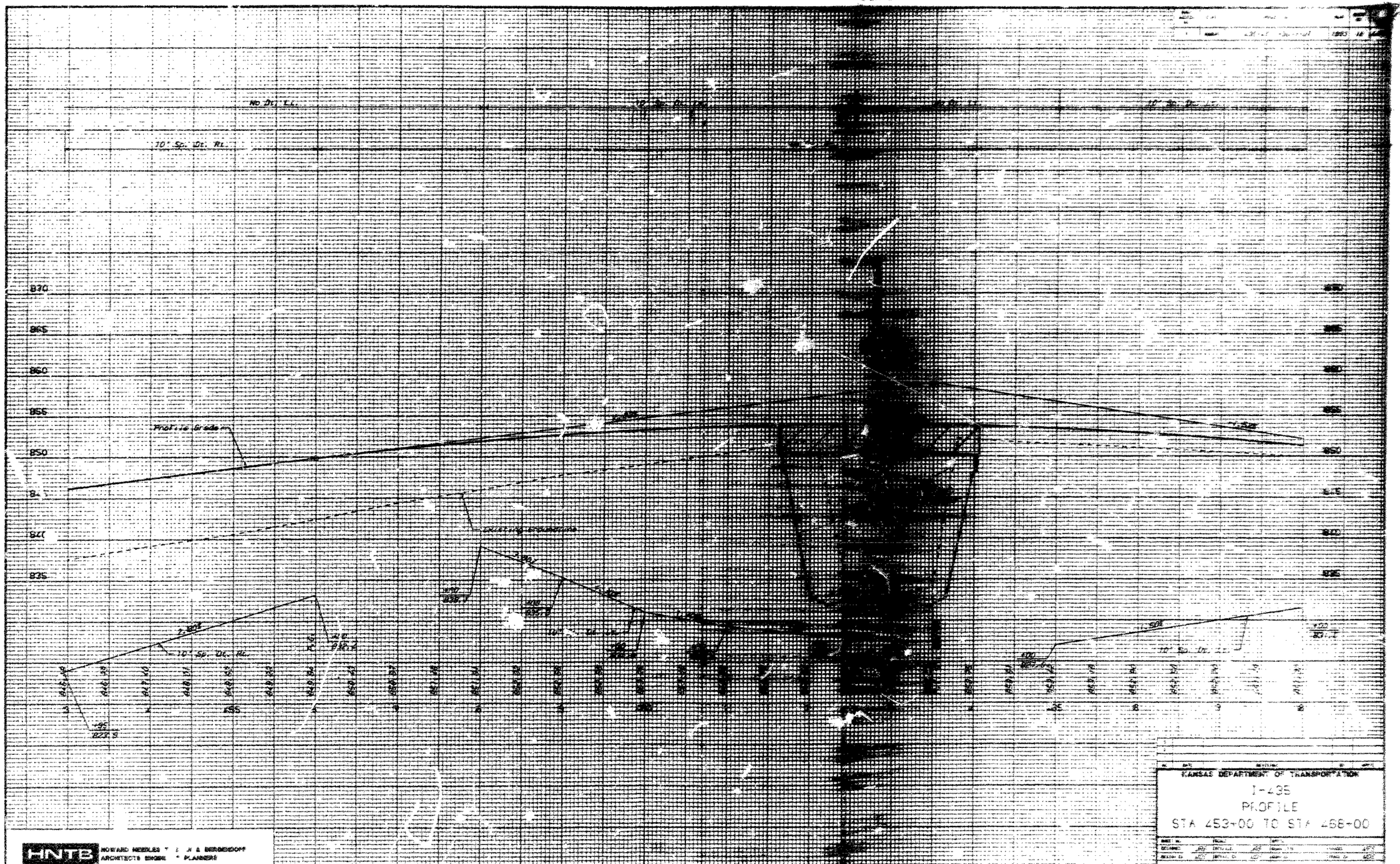
SCALE IN FEET

KANSAS DEPARTMENT OF TRANSPORTATION

I-435
PLAN
STA 453+00 TO STA 468+00

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

Jackson A5904



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Jackson

A5904

GENERAL NOTES

SPECIFICATIONS:

Design Specifications - AASHTO Standard Specifications for Highway Bridges, 1992 Edition, (Load Factor Design)

Construction Specifications - Kansas Department of Transportation, Standard Specifications for State Road and Bridge Construction, 1990, and Special Provisions.

DESIGN LOADING:

Live Load - HS20-44 with Kansas Overload Provision and Alternate Military Loading.

Dead Load - Includes an allowance of 15 lbs. per sq. ft. for a future wearing surface.

Other Loads - As specified by AASHTO.

DESIGN STRESSES:

Class AAA Concrete (AE)(SA)	f'c	= 4,000 psi
Class AAA Concrete(AE)	f'c	= 4,000 psi
Class AAA Concrete (Drilled Shafts)	f'c	= 4,000 psi
Reinforcing Steel (Grade 60)	Fy	= 60,000 psi
Structural Steel (Fatigue Stress Cycles - Case I)		
ASTM A709 Grade 36	Fy	= 36,000 psi
AASHTO M270 Grade 50T2	Fy	= 50,000 psi

DECK PROTECTIVE SYSTEM:

All reinforcing steel in the deck slab and barrier rails shall be epoxy [illegible]ed. Minimum concrete cover to top reinforcing steel shall be [illegible] inches. A Bridge Deck Wearing Surface (1½") (Special) shall be placed on the deck as shown on the plans.

CONCRETE:

All concrete placed in the superstructure subdeck, bridge barriers, abutments and wingwalls above the base seat, shall be Class AAA(AE)(SA) and shall require Special Coarse Aggregate. Special Coarse Aggregate shall meet the requirements set forth in the Special Provisions.

All concrete placed in the pier capbeams, pier columns, abutments and wingwalls below the base seat, shall be Class AAA(AE).

All exposed edges shall be beveled with a ¾" triangular moulding unless otherwise shown.

REINFORCING STEEL:

All bar dimensions are out to out [illegible] otherwise noted. All bar spacings are center to center of bar unless otherwise noted. The clear distance from face of concrete to near edge or end of reinforcing bar shall be 2" unless otherwise noted. All reinforcing steel shall conform to the requirements of ASTM A615 Grade 60.

See Sheet 239 for notes about mechanical connections for reinforcing bars.

PILES:

All Steel Piles shall be HP10x42 and driven to a penetration into limestone. When piles have reached the specified bearing and are on or in bedrock as shown on the plans, driving shall stop at that point to prevent damage to the piles.

All piling shall be driven to the allowable bearing value of 56 tons.

When using the pile driving formula in Section 704.04(d)(3) of the KDOT Specifications, the Contractor shall not drive the pile to MORE THAN 84 tons.

At any location where problems are experienced, pile damage is suspected, or apparent refusal occurs significantly above the design pile tip elevation, the Engineer may request the use of the Pile Driving Analyzer(PDA).

CAST STEEL PILE POINTS:

Pile points are required for all piles and shall be paid for at the Contract unit price bid per each for "Cast Steel Pile Points". The cast steel pile points shall be welded to the pile as specified by the manufacturer. Pile points shall meet the requirements set forth in the KDOT Standard Specifications, 1990.

PREDRILLED PILE HOLES:

Steel piles for Westbound Bridge Abutment No. 1, near the existing 30" RCP (to be abandoned prior to driving piles), shall be predrilled to Elev. 826.0'. See Sheets 264 and 275 for the location of piles to be predrilled. All predrilled pile holes shall be 15" in diameter. The piles shall then be set and driven to the composed bearing value shown. After driving, the holes shall be backfilled with sand. All labor, materials, and incidentals required to complete this work shall be included in the bid item "Predrilled Pile Holes".

EMBANKMENTS:

The Grading Contractor shall complete the embankment as shown on the Bridge Excavation sheet prior to driving abutment piling. The Grading Contractor shall exercise care that no rock is placed in the embankment at the abutments in the area where piles are to be driven.

BRIDGE EXCAVATION:

All excavation shall be Class III. See Bridge Excavation sheet for limits of pay excavation.

BACKFILL COMPACTION:

Backfill compaction shall be required at all abutments and piers.

STEEL SHEET PILES:

The limits of steel sheet piling shown on the plans, in areas where excavation bracing will be required to accommodate phased construction, is an estimated quantity only. Sheet piling was assumed to be 18 inches wide for the purpose of estimating quantities. The Contractor is responsible for the design of all temporary excavation bracing. If supplemental horizontal tie-backs and internal bracing are required, they will not be measured for payment but shall be considered subsidiary to the price bid per linear foot for "Steel Sheet Piles".

Detailed plans and design calculations for the Contractor's excavation bracing, bearing the seal of a licensed Professional Engineer, shall be submitted to the Engineer for review prior to beginning grading operations in areas requiring bracing.

The Eastbound Bridge steel sheet piling shall be removed to 1.0 foot below the finished ground line when no longer needed.

The Westbound Bridge steel sheet piling may be removed by the Contractor when no longer needed or may remain in place below the finished ground line, as set forth in the Standard Specifications. Recompaction of the areas disturbed by removal will be required.

FOUNDATION ROCK INVESTIGATION:

The Contractor shall drill at least one 1½" to 2" diameter hole at each drilled shaft location to penetrate the bedrock at least 4 feet below the floor of the shaft. If a cavity or otherwise incompetent zone is detected in the bedrock below the shaft, the shaft will be revised to ensure a competent shaft. Test holes shall be drilled in the presence of the Engineer. The work required for investigation shall be subsidiary to the excavation. Payment for lowering or repairing the shafts, if required, will be in accordance with the Standard Specifications.

DRILLED SHAFTS:

Concrete for Drilled Shafts shall be Class AAA. Reinforcing steel for Drilled Shafts shall conform to the requirements of ASTM A615 Grade 60. Drilled Shafts shall be paid for at the Contract unit price bid per linear foot, which price shall be full compensation for furnishing all materials, for all labor, drilling, equipment, tools, temporary casings and incidentals necessary to complete the work as shown on the details and as directed by the Standard Specifications. Final bearing material and elevation shall be inspected and approved by qualified geotechnical personnel.

Temporary casings will be required. The casings shall be seated into limestone adequately to prevent infiltration of water or soil prior to excavation of the rock socket.

The allowable end bearing for the drilled shafts is 25 tsf. For the actual end bearing values, see the Pier Details. The drilled shafts were designed for an allowable side friction capacity of 0 tsf.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

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KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.00(313)E.B. STA. 462+83.22

BR. NO. 435-46-0.01(314)W.B. STA. 462+83.22

GENERAL NOTES

E.B. & W.B. I-435 OVER STATE LINE ROAD

PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

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GENERAL NOTES (Continued)

STRUCTURAL STEEL NOTES

DIMENSIONS:
Unless otherwise shown or noted, all dimensions are horizontal.

CONSTRUCTION JOINTS:
Construction joints shall be made only at the locations indicated or as approved by the Engineer. Location of longitudinal joints in the bridge deck wearing surface, not shown on plans, shall be along lane lines or as approved by the Engineer.

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

COAL TAR MEMBRANE PROTECTIVE COAT:
The fill side of the abutments shall be coated, within the limits as detailed in the plans, with a coal tar membrane protective coat in accordance with the Standard Specifications.

ABUTMENT DRAINAGE SYSTEM:
A strip drain, perforated drain pipe and non-perforated outlet pipe shall be placed behind each abutment as detailed in the plans. All labor, materials, and incidentals required to perform this work shall be included in the bid item "Abutment Strip Drain".

REMOVAL OF EXISTING STRUCTURES:
For location and notes for removing the existing structures, see Sheet 228.

EXISTING STRUCTURE:
The Kansas Department of Transportation will provide the Contractor with a set of existing bridge plans, for information only.

TEMPORARY BRIDGE DECK DRAINAGE SYSTEM:
A temporary bridge deck drainage system between the Eastbound and Westbound bridges is required. See Sheet 238 for details.

DECK FORMS:
Steel or prestressed concrete stay-in-place deck forms shall not be allowed.

CONCRETE PLACING SEQUENCE NOTES:
Concrete for the 7" subdeck shall be placed according to the sequences shown on Sheets 235, 250, 271 and 282.

The Bridge Deck Wearing Surface and the concrete barrier rails may be placed continuously from end to end of the bridge. Otherwise, the barrier rails shall be placed in the same sequence as the slab.

No traffic shall be permitted on the curing membrane of the subdeck or wearing surface until the seven day curing period is complete. Operations necessary to complete placement of the subdeck or wearing surface may be permitted for a minimum practical time as noted in the Standard Specifications. No work to place reinforcing steel or forms for the concrete barrier rails will be allowed during this curing period.

If the sequence of placing concrete in the slab is other than that shown in the Concrete Placing Sequence details, the Contractor shall submit an alternate placing sequence for review. The alternate placing sequence shall include the proposed rate of concrete placement in cubic yards per hour, the plant capacity, a description of the equipment used in placing the concrete, proposed admixtures, and the quantity of concrete in each placing segment. Any additional cost for the Contractor's alternate plan of placing concrete, including admixtures, shall be at the Contractor's expense and shall be considered subsidiary to the bid item "Class AA Concrete(AE)(SA)". Approval of the Contractor's alternate sequence is required before placement of concrete in the deck.

CONSTRUCTION LOADS:
Construction loads on the 7" subdeck will be limited to loads approved by the Engineer. Proposed equipment and methods used to place the barriers and Bridge Deck Wearing Surface shall be submitted to the Engineer for review. Information that defines the axle weight and spacing shall be included in the submittal.

FALSEWORK PLANS:
Falsework plans shall be required in accordance with KDOT Special Provisions.

STRUCTURAL STEEL:
All structural steel shall conform to the requirements of ASTM A709 Grade 36 unless otherwise designated on the plans.

Steel in members designated M270 Grade 50T2 shall conform to AASHTO M270 Grade 50T2 and mandatory supplemental impact properties therein for Zone 2. Flange and web splice plates shall meet AASHTO M270 Grade 50T2 requirements.

SHOP WELDING:
Material and fabrication shall conform to the KDOT Specifications and ANSI/AASHTO/AWS D1.5-88, Bridge Welding Code with exceptions and or additions contained in the Special Provisions.

Where referenced in the Bridge Welding Code, the following substitutions shall apply:

ASTM A709 Grade 36	for ASTM A36
AASHTO M270 Grade 50T2	for AASHTO M223 Grade 50 (Charpy tests required, Zone 2)

Material not covered by the Bridge Welding Code or D1.1 be covered by ANSI/AWS D1.1-92.

SHOP SPLICES:
Shop splices are to be made as shown on the plans or as approved by the Engineer.

SHOP RADIOGRAPHIC INSPECTION:
All beam web and flange butt joints shall be radiographed.

SHOP MAGNETIC PARTICLE INSPECTION:
Magnetic particle inspection shall be performed in accordance with the Kansas Standard Specifications.

ERECTION:
All of the structural steel shall be erected prior to construction of the abutment backwalls and wings above the bridge seats. Bolts in the field splices shall be tightened in a sequence approved by the Engineer. The structural steel shall be erected to the relative elevation shown on the blocking diagram prior to final tightening of the bolts. Falsework shall be used as needed or as directed by the Engineer.

CAMBER:
The steel beams shall not be cambered, but any natural mill camber that the beams have retained shall be placed up.

BOLTS:
All fasteners used shall be $\frac{7}{8}$" diameter unless shown otherwise. All bolts, nuts and washers used in bolted connections shall conform to the requirements of materials for High Strength Steel Bolts for Structural Joints ASTM A325, (Type 1), and the Standard Specifications for Highway Bridges, AASHTO Specifications, Edition of 1992.

BOLT HOLES:
Holes in beam web and flange field splices shall be $\frac{15}{16}$" diameter. A $\frac{13}{16}$" spud bar must pass through 75% of contiguous holes in the same plane or the splice will be rejected. A $\frac{3}{4}$" spud bar must pass through all holes or the splice will be rejected. The Engineer shall be notified before any reaming is done at the field splices. At locations other than the field splices, any reaming required that will remove more than $\frac{1}{4}$" of material shall be reported to the Engineer before any reaming is done. Component parts shall be assembled to correct line and grade, and all material shall be match-marked.

OVERSIZED HOLES:
Oversized holes having a nominal diameter up to $\frac{1}{4}$" larger than the bolt diameter may be used at all connections, on one of the two members connected, except that oversized holes shall not be used in beam flange and web field splices. Oversized holes shall be shown on the shop drawings. Hardened washers shall be installed over exposed oversized holes.

OPTIONAL WELDED CONNECTIONS:
Beam field splice connections shown as bolted may be welded at the option of the Contractor. If the welded option is used, material and construction shall conform to Standard Specifications. The Contractor shall show on the shop drawings at the tail of the weld symbol a code or symbol which refers to an approved prequalified weld procedure. Structural steel quantities are based on bolted connections. If welded connections are used, the pay quantities of structural steel shall be based on the weight actually used.

PAINTING:
The shop and field coats applied to the structural steel shall conform to an Inorganic Zinc Vinyl System. See KDOT Specifications.

Top Flanges: (Studs applied in field)
Shop Work: The tops of the top flanges shall be blast-cleaned to SSPC-SP10(March 1, 1985) and shipped with no paint, except faying surfaces of the field splices which shall be blast-cleaned and shall receive a 3 mil prime coat.
Field Work: The tops of the top flanges are to be power brushed to bare metal before the studs are applied. After studs are applied the tops of the top flanges and the studs shall be blast-cleaned to SSPC-SP6(March 1, 1985) and painted with an approved Organic Zinc Primer.

Touch up: All bolts, nuts, studs, and other small areas of damaged paint (10 Sq. Ft. or less) requiring touch-up will be prepared and painted with an approved Organic Zinc Primer.

Top Flanges: (Studs applied in shop)
Shop Work: The tops of the top flanges and the studs shall receive a shop coat with an approved Inorganic Zinc Primer

SHOP ASSEMBLY:
Shop layout shall be "Type B" Assembly.

DIAPHRAGM ERECTION:
Intermediate and Pier Diaphragms between Eastbound Bridge Beams D and E shall be installed with diaphragm connection bolts tightened finger tight only, when beams are erected for Phase 1 Construction. Following placement of the concrete deck slab for Phase 1 Construction, diaphragm connection bolts shall be tightened to the requirements of the Standard Specifications.

Intermediate and Pier Diaphragms between Westbound Bridge Beams F and G shall be installed with diaphragm connection bolts tightened finger tight only, when beams are erected for Phase 2 Construction. Following placement of the concrete deck slab for Phase 2 Construction, diaphragm connection bolts shall be tightened to the requirements of the Standard Specifications.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARC ITS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.00(313)E.B. STA. 462+83.22
BR. NO. 435-46-0.00(314)W.B. STA. 462+83.22
GENERAL NOTES
E.B. & W.B. I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

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PDT Sta. 461+92.5 = ℄ Sta. 230+00.05
1. ½" x 18" Rebar @ PDT (set 3" deep)
2. ℄ of a square cut on SW abutment wing on WB I-435 bridge — 15.0' NE
3. Top NW corner N. headwall on EB I-435 bridge — 15.0' SSE
4. SE corner grate on a 2.3 x 2.5 steel drop inlet — 16.5' NW

PDT Sta. 480+00.00 ℄ I-435
1. ½" iron pin
2. Point not referenced

		435-46 K-3627-02	

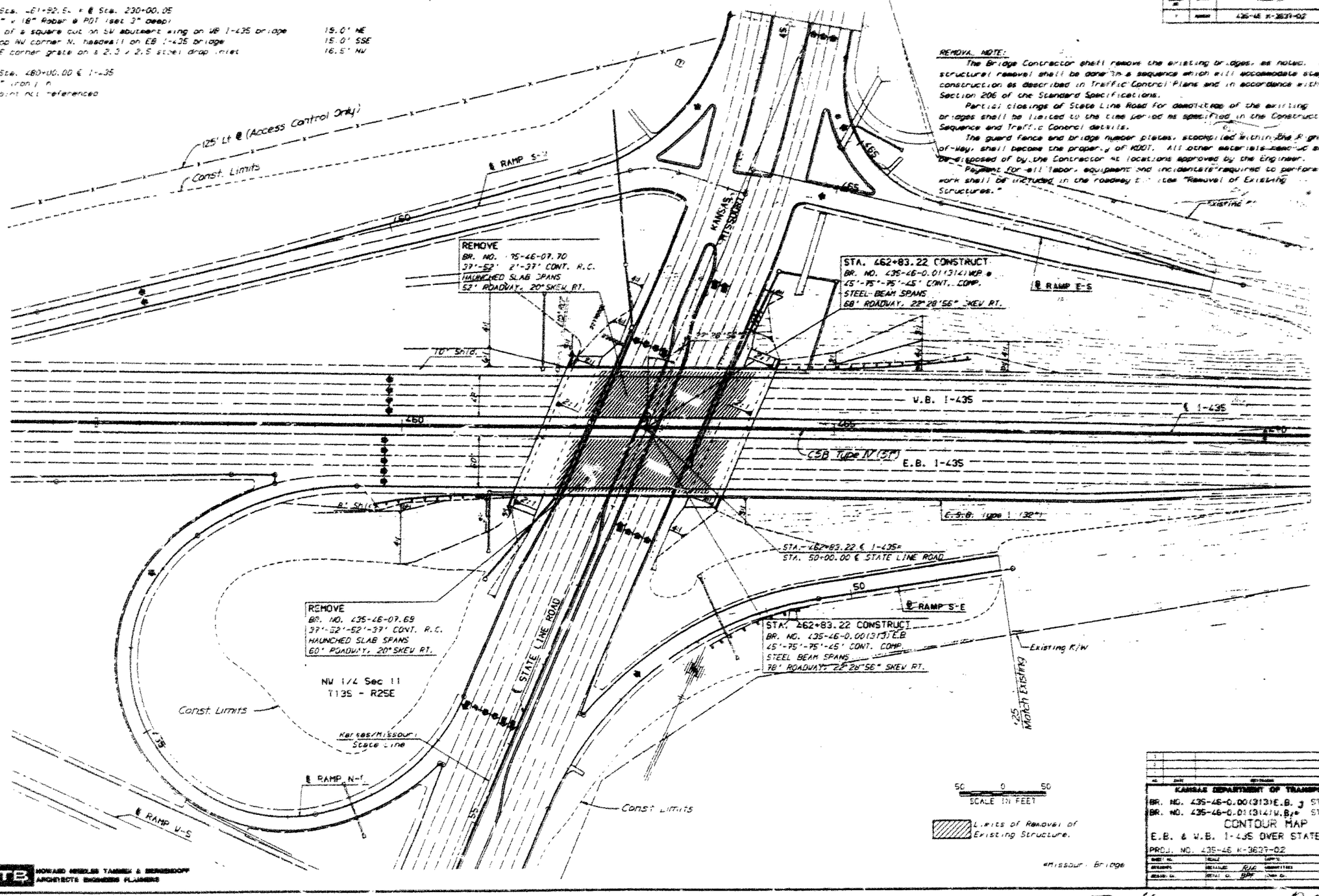
REMOVAL NOTE:

The Bridge Contractor shall remove the existing bridges, as noted. All structural removal shall be done in a sequence which will accomodate stagec construction as described in Traffic Control Plans and in accordance with Section 206 of the Standard Specifications.

Partial closings of State Line Road for demolition of the existing bridges shall be limited to the time period as specified in the Construction Sequence and Traffic Control details.

The guard fence and bridge number plates, stockpiled within the R/W right-of-way, shall become the property of KDOT. All other materials removed shall be disposed of by the Contractor at locations approved by the Engineer.

Payment for all labor, equipment and incidentals required to perform this work shall be included in the roadway bid item "Removal of Existing Structures."



HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.00(313)E.B. STA. 462+83.22
BR. NO. 435-46-0.01(312)W.B. STA. 462+83.22
CONTOUR MAP
E.B. & W.B. I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3627-02 JOHNSON CO.

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SUMMARY OF ESTIMATED BRIDGE QUANTITIES - PART I & PART II

	LOCATION \ ITEM	CLASS III EXCAVATION	CLASS AAA CONCRETE (AE)	CLASS AAA CONCRETE (AE) (SA)	REINFORCING STEEL (GRADE 60)	REINFORCING STEEL (GRADE 60) (EPOXY COATED)	STRUCTURAL STEEL A709 (GRADE 36)	STRUCTURAL STEEL M270 (GRADE 50T2)	HEADED STUD ANCHORS	ELASTOMERIC BEARING DEVICES	STEEL PILES (HP 10x42)	PREDRILLED PILE HOLES	CAST STEEL PILE POINTS	STEEL SHEET PILES	DRILLED SHAFTS (48" DIA.)	PERMANENT CASING (48" DIA.)	ROCK CORES	SILICA FUME OVERLAY (1½")	ABUTMENT STRIP DRAINS	COAL TAR MEMBRANE PROTECTIVE COAT	[illegible] (6")
		Cu. Yds.	Cu. Yds.	Cu. Yds.	Lbs.	Lbs.	Lbs.	Lbs.	Each	Each	Lin. Ft.	Lin. Ft.	Each	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Sq. Yds.	Sq. Yds.	Sq. Yds.	Sq. Yds.
BR. NO. D.00(313) E.B. PHASE 1 CONSTRUCTION	ABUTMENT NO. 1	40	—	—	—	—	—	—	—	—	152	—	4	1,960	—	—	—	—	25	26	132
	PIER NO. 1	5	19.2	—	4,045	—	—	—	—	4	—	—	—	—	43	—	—	—	—	—	—
	PIER NO. 2	5	18.9	—	3,960	—	—	—	—	—	—	—	—	—	43	—	—	—	—	—	—
	PIER NO. 3	5	19.2	—	4,045	—	—	—	—	4	—	—	—	—	43	—	—	—	—	—	—
	ABUTMENT NO. 2	40	—	—	—	—	—	—	—	—	148	—	4	1,520	—	—	—	—	25	26	132
	SUBSTRUCTURE	95	57.3	—	12,050	—	—	—	—	12	300	—	8	3,480	125	—	—	—	50	52	264
	SUPERSTRUCTURE	—	24.5	183.3	—	54,610	10,350	141,370	3,120	—	—	—	—	—	—	—	—	774	—	—	—
	SUBTOTAL	95	81.8	183.3	12,050	54,610	10,350	141,370	3,120	12	300	—	8	3,480	125	—	—	774	50	52	264
BR. NO. D.00(313) E.B. PHASE 4 CONSTRUCTION	ABUTMENT NO. 1	78	—	—	—	—	—	—	—	—	266	—	7	—	—	—	—	—	50	51	310
	PIER NO. 1	7	32.4	—	6,170	—	—	—	—	6	—	—	—	—	62	—	—	—	—	—	—
	PIER NO. 2	7	32.0	—	6,050	—	—	—	—	6	—	—	—	—	64	—	—	—	—	—	—
	PIER NO. 3	7	32.4	—	6,170	—	—	—	—	6	—	—	—	—	62	—	—	—	—	—	—
	ABUTMENT NO. 2	79	—	—	—	—	—	—	—	—	259	—	7	—	—	—	—	—	50	51	296
	SUBSTRUCTURE	179	96.8	—	18,390	—	—	—	—	18	525	—	14	—	188	—	—	—	100	102	606
	SUPERSTRUCTURE	—	24.8	371.8	—	97,850	17,350	212,050	4,680	—	—	—	—	—	—	—	—	1,365	—	—	—
	SUBTOTAL	179	121.6	371.8	18,390	97,850	17,350	212,050	4,680	18	525	—	14	—	188	—	—	1,365	100	102	606
	E.B. TOTAL	274	223.4	555.1	30,440	152,460	27,700	353,420	7,800	30	825	—	22	3,480	313	1	1	2,139	150	154	860
BR. NO. D.01(314) W.B. PHASE 1 CONSTRUCTION	ABUTMENT NO. 1	30	—	—	—	—	—	—	—	—	108	39	3	1,690	—	—	—	—	18	19	95
	PIER NO. 1	5	18.6	—	3,610	—	—	—	—	4	—	—	—	—	43	—	—	—	—	—	—
	PIER NO. 2	5	18.5	—	3,540	—	—	—	—	4	—	—	—	—	43	—	—	—	—	—	—
	PIER NO. 3	5	18.8	—	3,610	—	—	—	—	4	—	—	—	—	43	—	—	—	—	—	—
	ABUTMENT NO. 2	30	—	—	—	—	—	—	—	—	111	—	3	1,295	—	—	—	—	17	19	95
	SUBSTRUCTURE	75	56.1	—	10,760	—	—	—	—	12	219	39	6	2,980	125	—	—	—	35	38	190
	SUPERSTRUCTURE	—	17.3	131.8	—	40,830	9,280	106,030	2,340	—	—	—	—	—	—	—	—	548	—	—	—
	SUBTOTAL	75	73.4	131.8	10,760	40,830	9,280	106,030	2,340	12	219	39	6	2,980	125	—	—	548	35	38	190
BR. NO. D.01(314) W.B. PHASE 2 CONSTRUCTION	ABUTMENT NO. 1	77	—	—	—	—	—	—	—	—	252	19	7	—	—	—	—	—	50	51	289
	PIER NO. 1	7	27.8	—	4,860	—	—	—	—	5	—	—	—	—	62	—	—	—	—	—	—
	PIER NO. 2	7	27.3	—	4,740	—	—	—	—	5	—	—	—	—	62	—	—	—	—	—	—
	PIER NO. 3	7	27.7	—	4,850	—	—	—	—	5	—	—	—	—	62	—	—	—	—	—	—
	ABUTMENT NO. 2	77	—	—	—	—	—	—	—	—	259	—	7	—	—	—	—	—	49	51	303
	SUBSTRUCTURE	175	82.8	—	14,450	—	—	—	—	15	511	19	14	—	188	—	—	—	99	102	572
	SUPERSTRUCTURE	—	45.6	#361.8	—	**95,670	16,940	212,050	4,680	—	—	—	—	—	—	—	—	1,321	—	—	—
	SUBTOTAL	175	128.4	361.8	14,450	95,670	15,940	212,050	4,680	15	511	19	14	—	188	—	—	1,321	99	102	572
	W.B. TOTAL	250	201.8	493.6	25,210	136,500	24,220	318,080	7,020	27	730	58	20	2,980	313	1	1	1,869	134	140	762
	TOTAL	524	425.2	1,048.7	55,650	288,960	51,920	671,500	14,820	57	#1,555	58	42	6,460	626	1	1	4,008	284	294	1,612
	E.B. PART I	131	83.4	254.8	10,215	69,980	12,200	162,530	2,750	10	218	—	11	1,960	103	1	1	982	75	77	442
	W.B. PART I	119	75.5	226.6	8,470	62,550	10,650	146,280	3,375	9	360	58	10	1,690	103	1	1	858	68	70	364
	E.B. PART II	143	140.0	300.3	20,225	82,480	17,500	190,890	4,050	20	407	—	11	1,520	210	1	1	1,157	75	77	406
	W.B. PART II	131	126.3	267.0	16,740	73,850	13,570	171,800	3,645	18	370	—	10	1,290	210	1	1	1,011	66	70	348

Note:
Part I quantities are located west of the Kansas/Missouri State Line.
Part II quantities are located east of the Kansas/Missouri State Line.
When Bridge Deck Wearing Surface is referenced in the plans, substitute Silica Fume Overlay (1½").

* This includes 10 @ 36', 21 @ 37' and 11 @ 38'.

\# This includes 28.5 cu. yds. for the median barrier rail to be placed during Phase 4 Construction.

** This includes 4,330 Lbs. for the median barrier rail to be placed during Phase 4 Construction.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.00(313)E.B. , STA. 462+83.22
BR. NO. 435-46-0.01(314)W.B. & STA. 462+83.22
BRIDGE QUANTITIES
E.B. & W.B. I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

Jackson A5904

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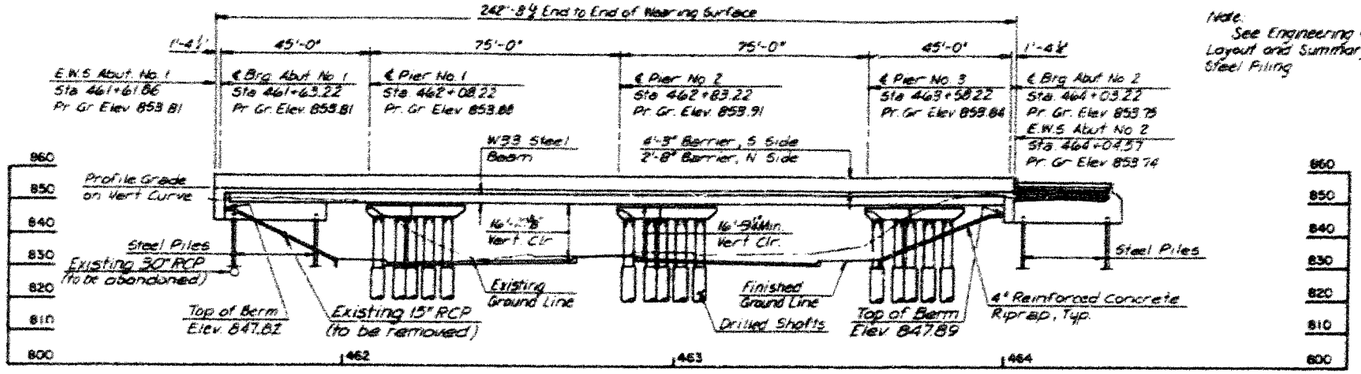
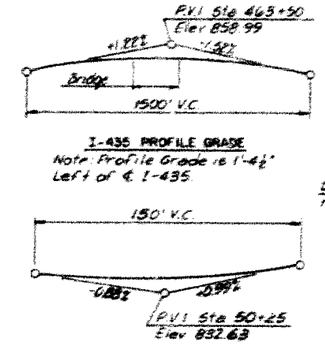


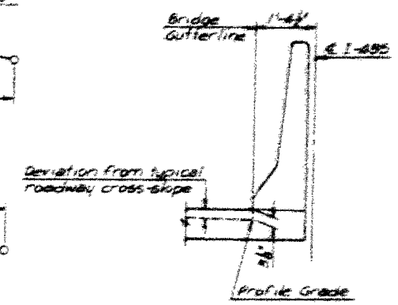
ELEVATION
Scale: 1" = 20'

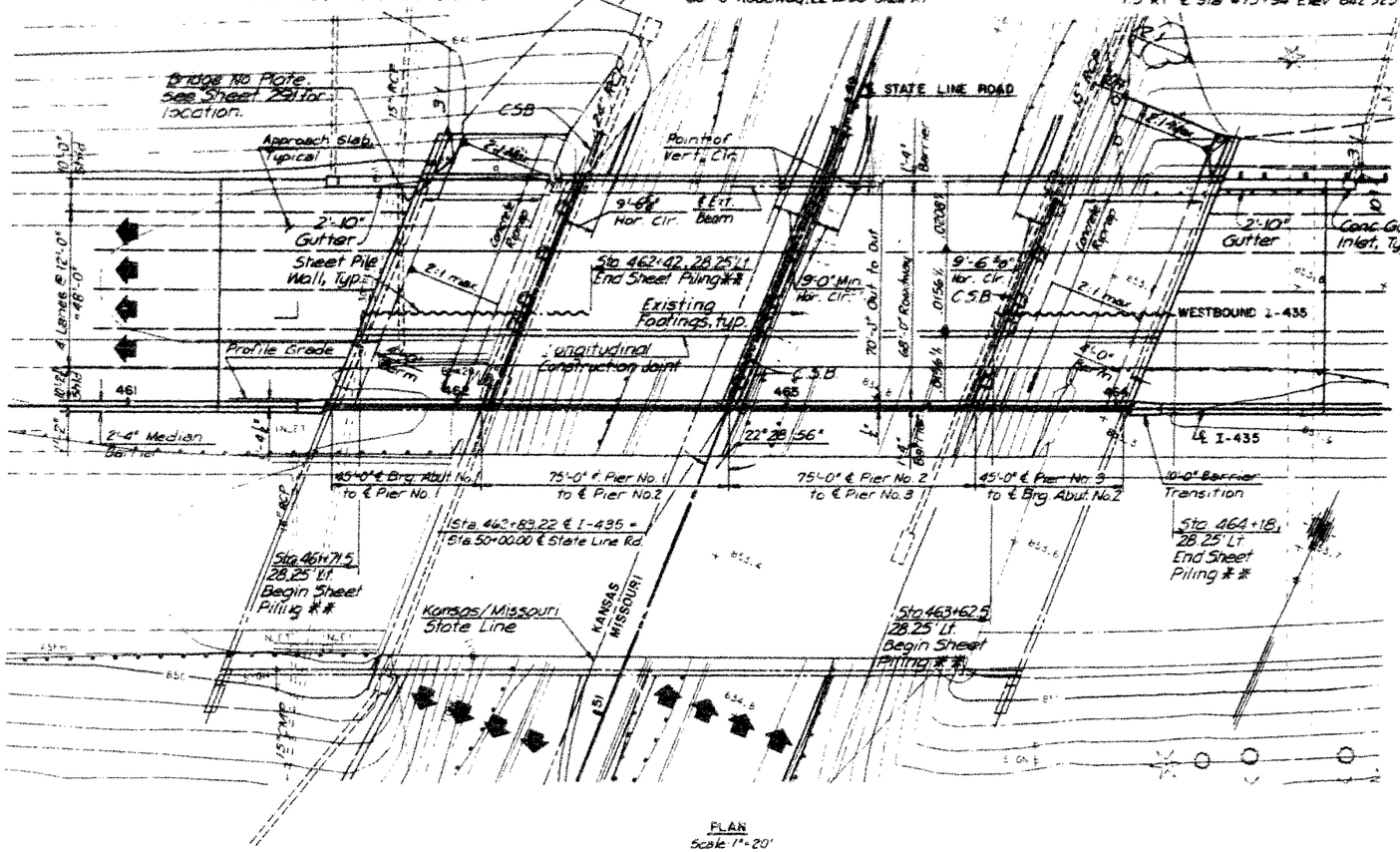
Note:
See Engineering Geology Sheet for Footing Layout and Summary of Drilled Shafts and Steel Piling



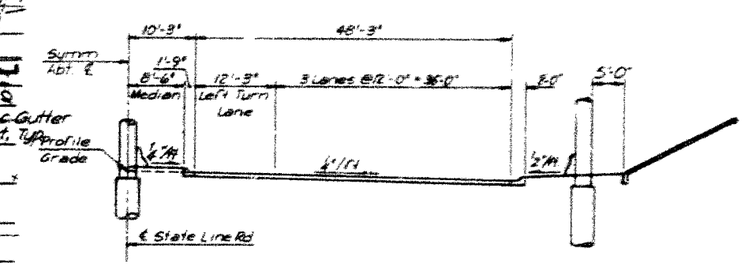
I-435 PROFILE GRADE
Note: Profile Grade is 1'-4½" Left of ℄ I-435

STATE LINE ROAD PROFILE GRADE

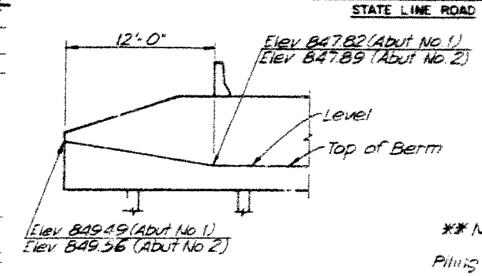




PLAN
Scale 1" = 20'



ROADWAY TYPICAL SECTION
STATE LINE ROAD



BERM DETAIL

** Note:
Of sets shown are to ℄ Sheet Piling. For Sheet Piling lengths see Sheet 263.

APPROACH SLAB JOINT NOTE:
The expected thermal movement at the abutments is ± ¼". Use an expansion joint with W=4" in the approach slab pavement. (Type D only)

* Missouri Bridge

NO.	DATE	REVISION	BY	APPR.
1				
2				
3				
4				

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01(314)* STA. 462+83.22

CONSTRUCTION LAYOUT

WESTBOUND I-435 OVER STATE LINE ROAD

PROJ. NO. 435-46 K-3657-02 JOHNSON CO.

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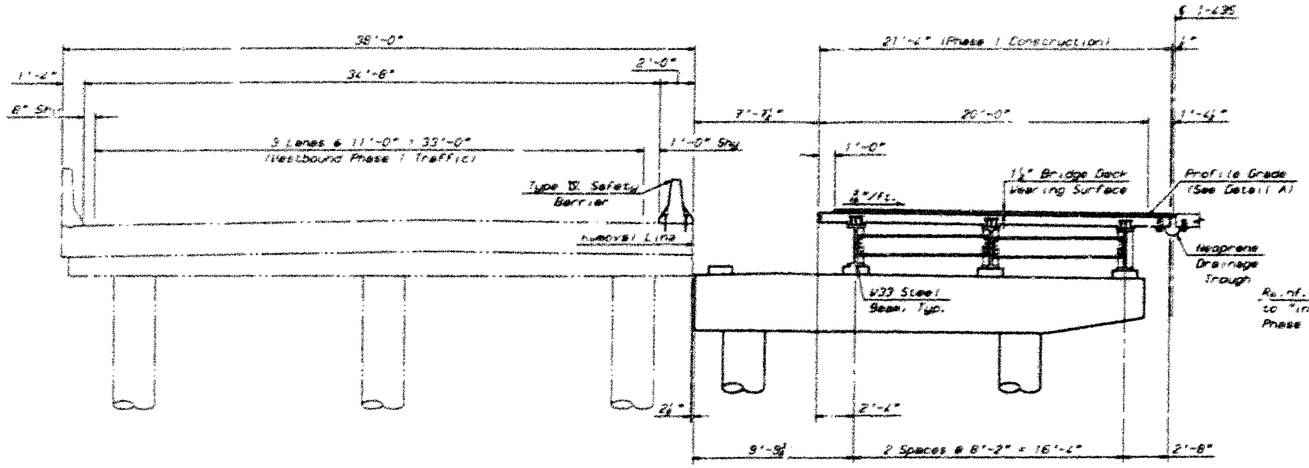
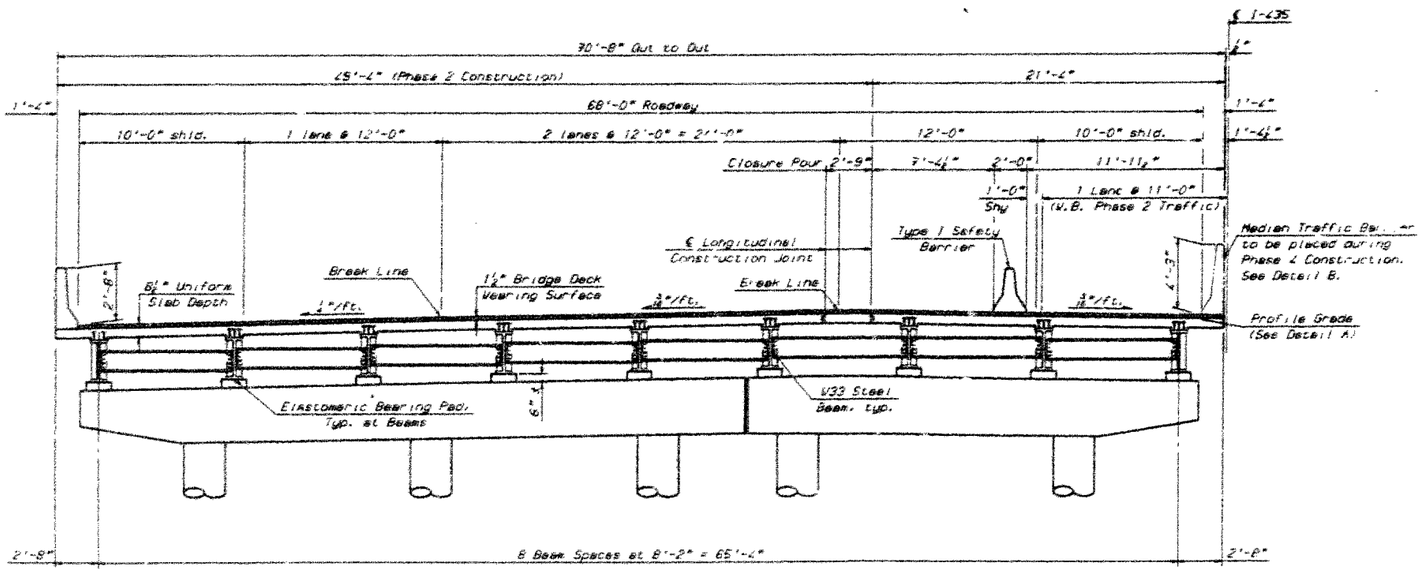


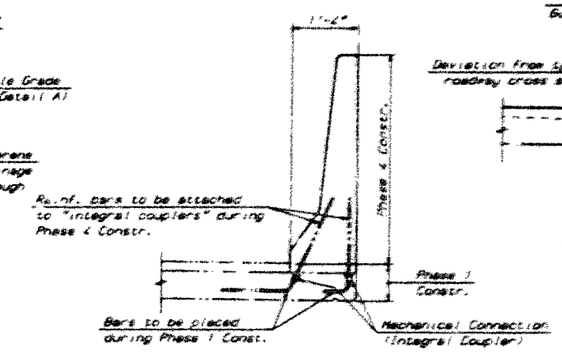
EXISTING W.B. BRIDGE

PROPOSED W.B. BRIDGE

TYPICAL SECTION - PHASE 1 CONSTRUCTION
(Scale: ¼" = 1')
Looking East

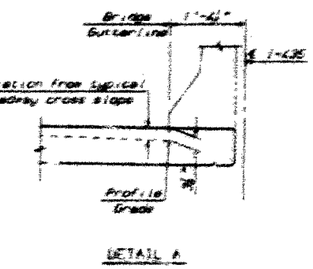


TYPICAL SECTION - PHASE 2 CONSTRUCTION
(Scale: ¼" = 1')
Looking East



DETAIL B

Note:
For clarity, only the reinforcing bars associated with the mechanical connections are shown.



DETAIL A

W.B. CONSTRUCTION PHASING NOTES:

PHASE 1

The westbound traffic shall be shifted north and a temporary safety barrier placed on the existing W.B. bridge as shown. A portion of the existing W.B. bridge shall be removed to allow for construction of the initial portion of the proposed W.B. bridge as shown. A temporary drainage system shall be constructed as shown between the new bridges to allow for drainage during construction.

PHASE 2

A temporary safety barrier shall be placed as shown and one lane of the westbound traffic shall be shifted to the newly constructed W.B. bridge. The remainder of the existing W.B. bridge shall be removed to allow for completion of the proposed W.B. bridge.

PHASE 3

A temporary safety barrier shall be placed and all westbound lanes shall be shifted to the newly constructed W.B. bridge.

PHASE 4

Two lanes of the eastbound traffic shall be shifted to the newly constructed W.B. bridge to allow for completion of the eastbound bridge.

After completion of the E.B. bridge and the E.B. lanes are shifted back to the south, the permanent median barrier shall be placed as shown.

NO.	DATE	REVISIONS	BY	APP.
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01(314) STA. 452+83.

CONSTRUCTION PHASE DETAILS

WESTBOUND I-435 OVER STATE LINE ROAD

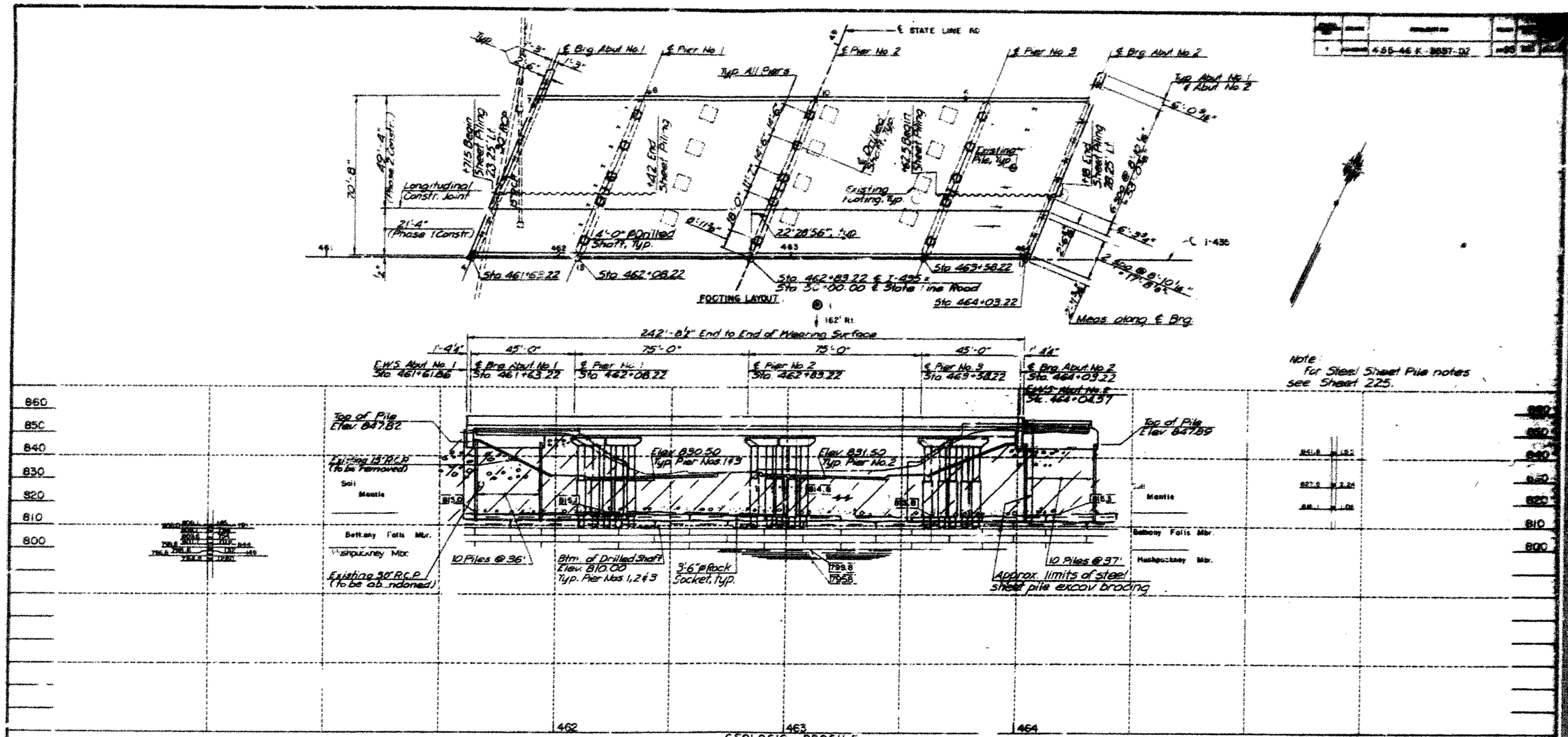
PROJ. NO. 435-46 K-3637-02 JOHNSON C

SHEET NO.	SCALE	APPR.	
DRAWN	DETAILED SLM	COMPUTED	CHECKED
DESIGN EN.	DETAIL EN. BPF	DESIGN EN.	TRACE EN.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF
ARCHITECTS ENGINEERS PLANNERS

210

Jackson A5904



STANDARD GEOLOGIC SYMBOLS

Clay, Silty Clay, Silt, Sand, Gravel, Caliche, Silty Clayey Shale, Limy Shale, Black or Fissile Shale, Sandy Shale, Weathered Shale, Sandstone, Shaly Sandstone, Siltstone, Gypsum, Limestone, Cherty Limestone, Shaly Limestone, Sandy Limestone, Weathered or Broken Limestone

SOUNDINGS
- Coredrill
- Power auger
- Hand tools
- Air hammer
- Dutch cone penetrometer
- Unconfined compression
- Standard penetration
- Water level

1000.0 Elevation interpolated or from adjacent soundings

1000.0 Actual sounding elevation

1000.0 Drive started

1000.0 Refusal

CASING DRIVE TEST

Elevation / Tons/sq.ft. — UNCONFINED COMPRESSION TEST

Elevation / Blows/ft. — STANDARD PENETROMETER TEST

Graphic representation of Drive Test in seconds per foot penetration — AIR HAMMER DRIVE TEST Scale: 1" = 200 seconds. Horiz. 1" = 20' Vert.

Graphic representation of Penetrometer Test in tons per sq. ft. — DUTCH CONE PENETROMETER TEST Scale: 1" = 200 Tons/sq. ft. Horiz. 1" = 20' Vert.

NOTE: The soundings shown on these plans are taken from notes taken in the field and represent the best information available. The logs of these soundings are in the files of the Kansas Department of Transportation and are available at their offices at Topeka, Kansas for inspection by interested and qualified bidders.

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

KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01 (314) STA. 462+65.22

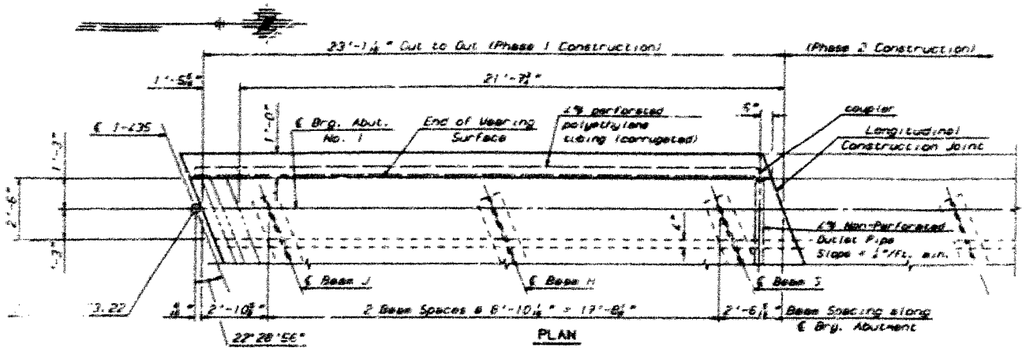
ENGINEERING GEOLOGY

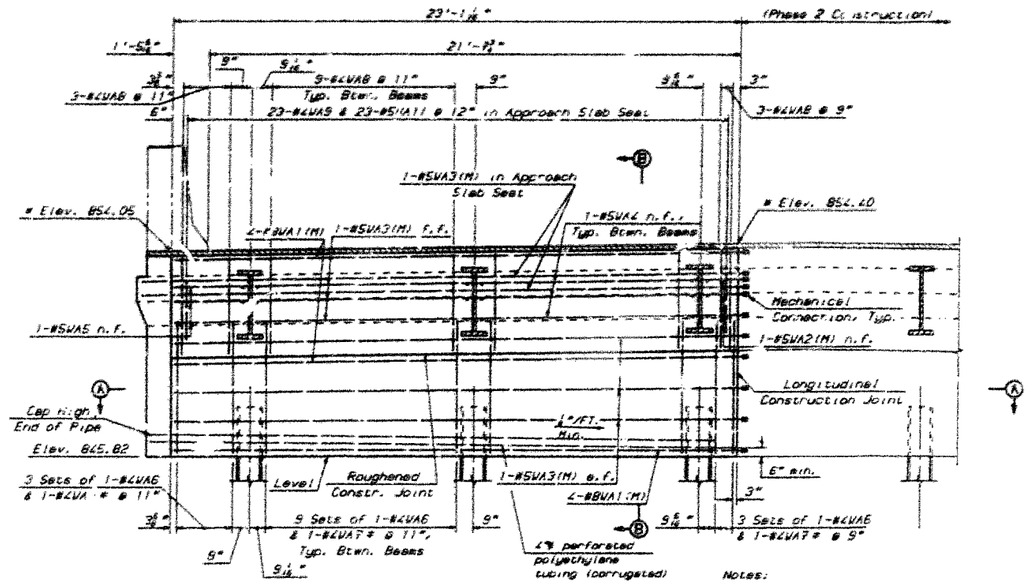
WESTBOUND I-435 OVER STATE LINE ROAD

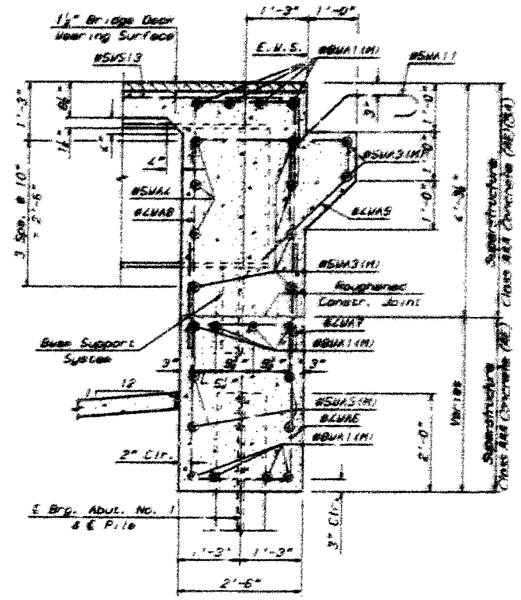
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

Jackson A5904

311

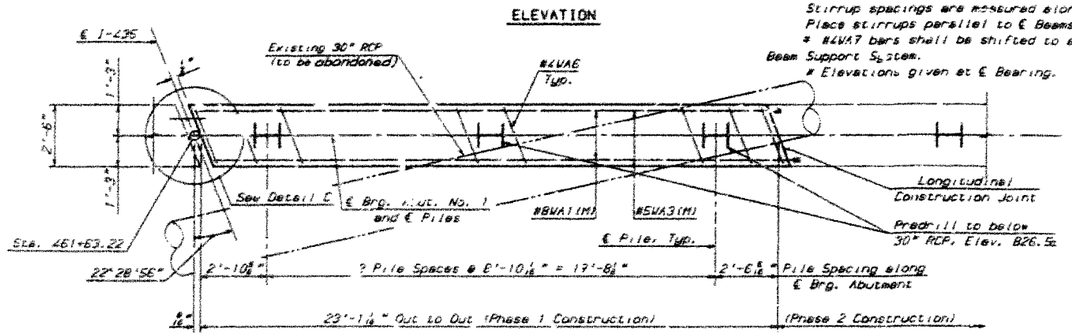






SECTION B-B

BEAM SUPPORT ELEVATIONS			
BEAM	G	H	J
ELEVATION	850.85	850.72	850.59



SECTION A-A

Design Pile Pressure = 48 Tons/pile (Group I)

Notes:
Stirrup spacings are measured along ℄ Bearing Abutment.
Place stirrups parallel to ℄ Beams.
#4VA7 bars shall be shifted to avoid conflict with Beam Support System.
Elevations given at ℄ Bearing.

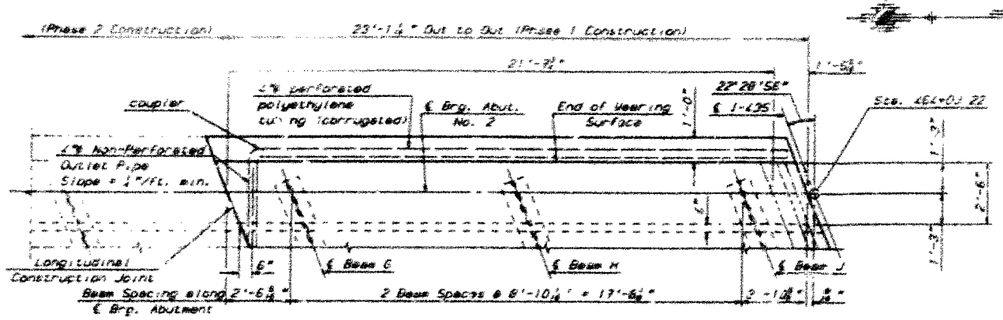
Notes:
For Abutment Strip Drains standard detail, see Sheet 288.
Roughened Construction Joints shall be clean, free of laitance and intentionally roughened to a full amplitude of 1/4 inch.
e.f. denotes near face.
n.f. denotes near face.
f.f. denotes far face.
For detail of longitudinal construction joint, see Sheet 287.
For Detail C, see Sheet 287.
For Pile Splice Detail, see standard detail on Sheet 341.
(M)-denotes bars which require a mechanical connection. See Sheet 287 for additional details and notes.
For Beam Support Details, see Sheet 287.

HNTB HOWARD NEEDLES T. TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

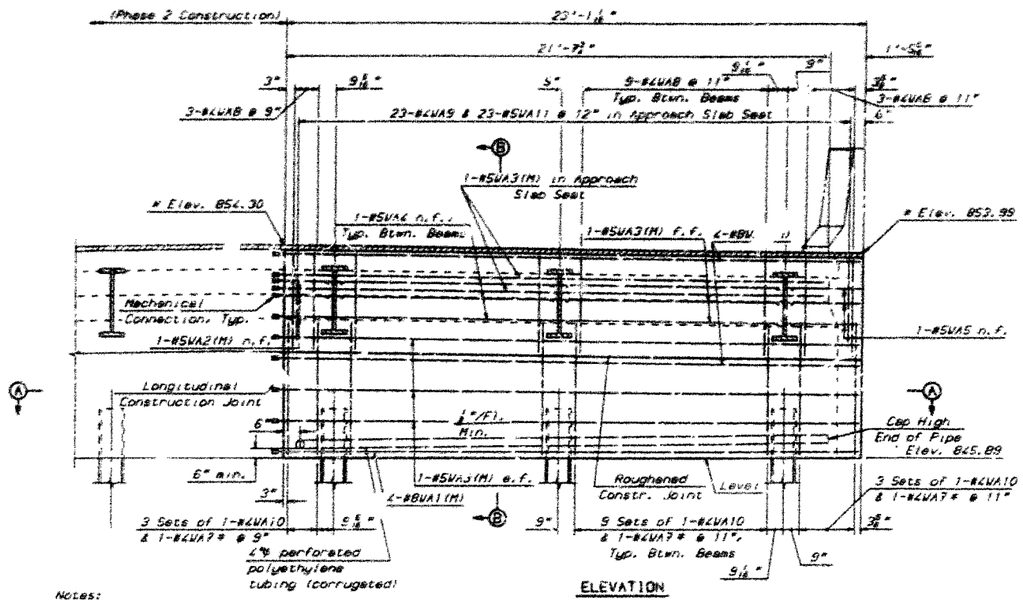
KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01(314) STA. 462+83.22
ABUTMENT NO. 1 DETAILS
PHASE 1 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3639-02 JOHNSON CO.

212

Jackson A5904



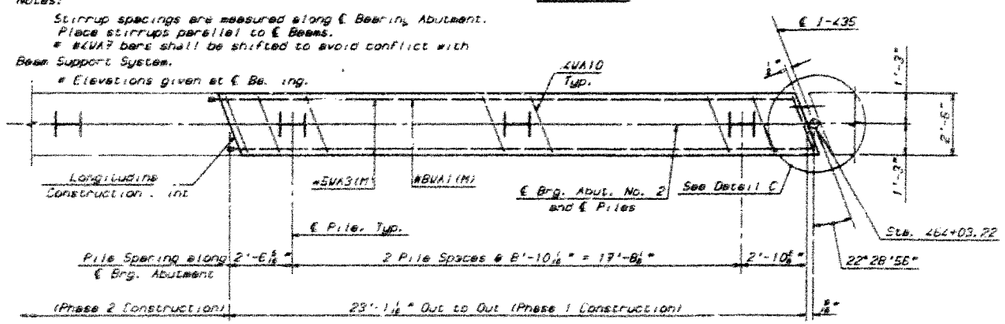
PLAN



ELEVATION

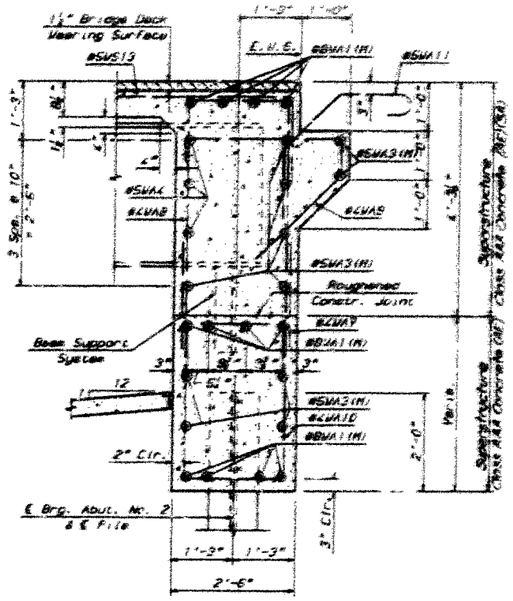
Notes:

Stirrup spacings are measured along ℄ Bearing Abutment.
Place stirrups parallel to ℄ Beams.
* #LVA7 bars shall be shifted to avoid conflict with Beam Support System.
* Elevations given at ℄ Bearing.



SECTION A-A

Design Pile Pressure = 48 Tons/pile (Group 1)



SECTION B-B

BEAM SUPPORT ELEVATIONS			
BEAM	G	H	J
ELEVATION	850.75	850.62	850.52

Notes:

For Abutment Strip Drains standard detail see Sheet 288.

Roughened Construction Joints shall be clean, free of laitance and intentionally roughened to a full amplitude of 1/4 inch.

e.f. denotes each face.
n.f. denotes near face.
f.f. denotes far face.

For detail of longitudinal construction joint, see Sheet 287.

For Detail C, see Sheet 287.

For Pile Splice Detail, see standard details on Sheet 341.

(M)-denotes bars which require a mechanical connection. See Sheet 287 for additional details and notes.

For Beam Support Details, see Sheet 287.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01(314) STA. 462+83.22

ABUTMENT NO. 2 DETAILS
PHASE 1 CONSTRUCTION

WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

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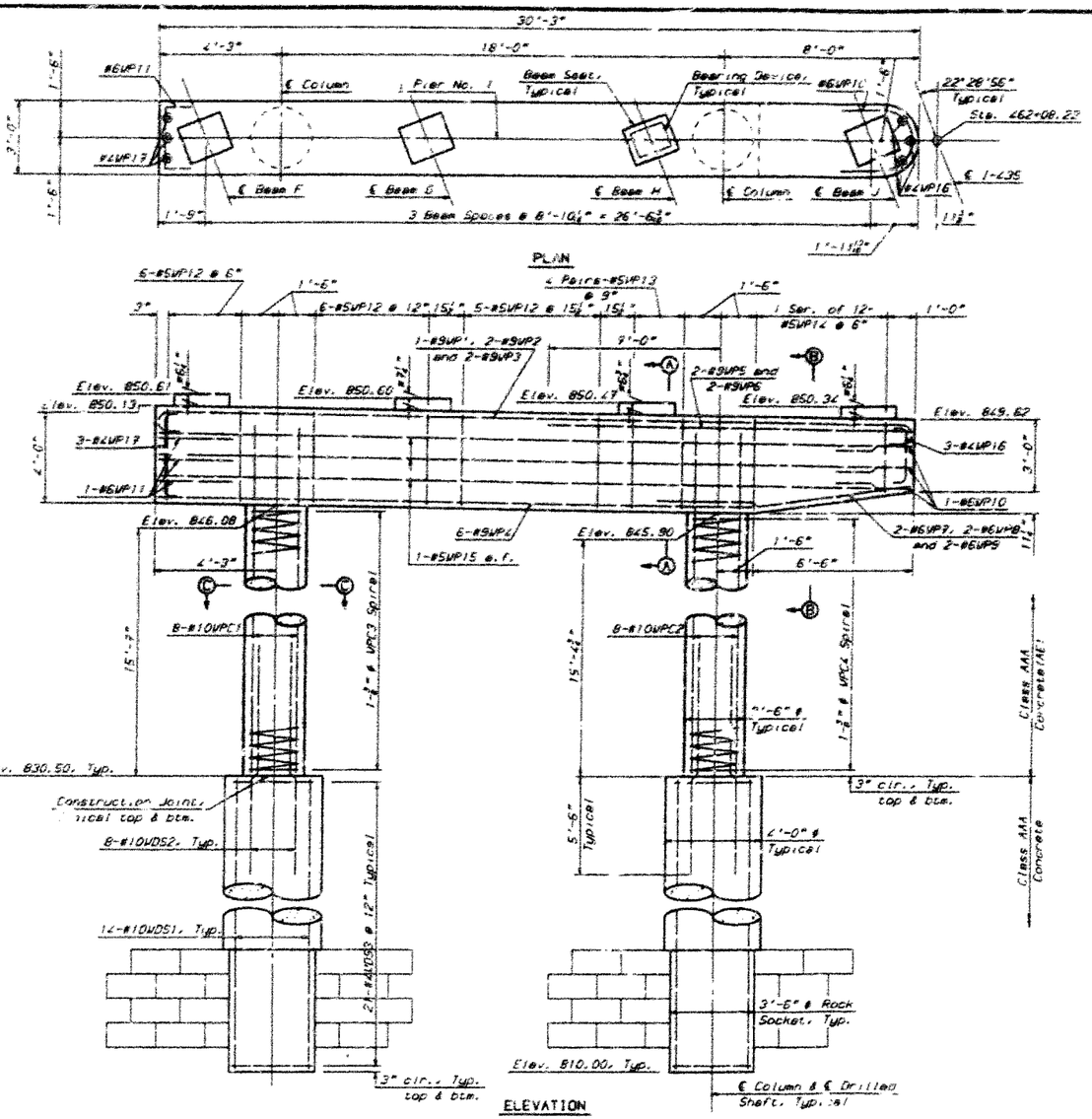
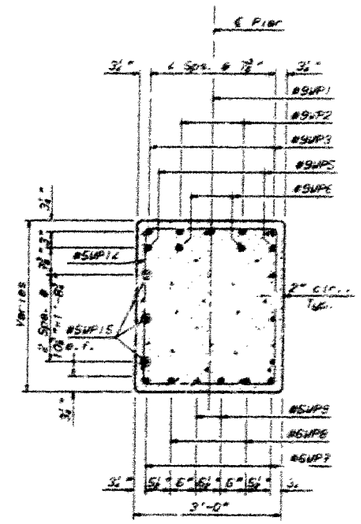
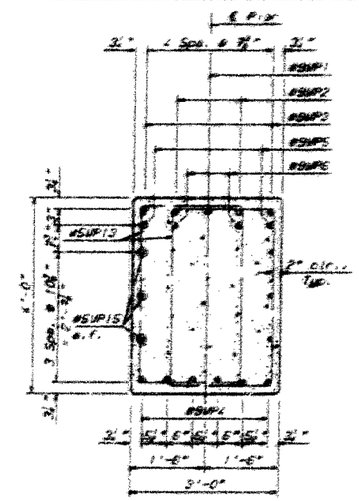
Jackson A5904



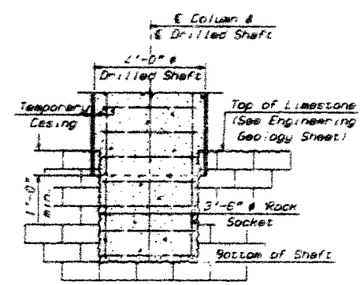
DRILLED SHAFT LAYOUT



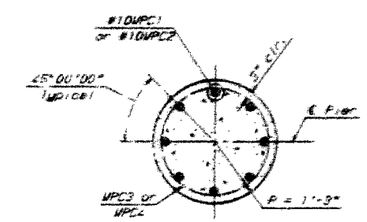
SECTION B-B



SECTION A-A



DRILLED SHAFT DETAILS



SECTION C-C

Notes:
e.f. denotes each face.
For Bearing Device and Beam Seat details, see Sheet 285.

Place Beam Seat to dimension shown at intersection of ℄ Pier & ℄ Beam and grind to elevation shown.

Design Footing Pressure = 18.3 tons/sq. ft. (Group 1)

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01(314) STA. 462+83.22
PIER NO. 1 DETAILS
PHASE I CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

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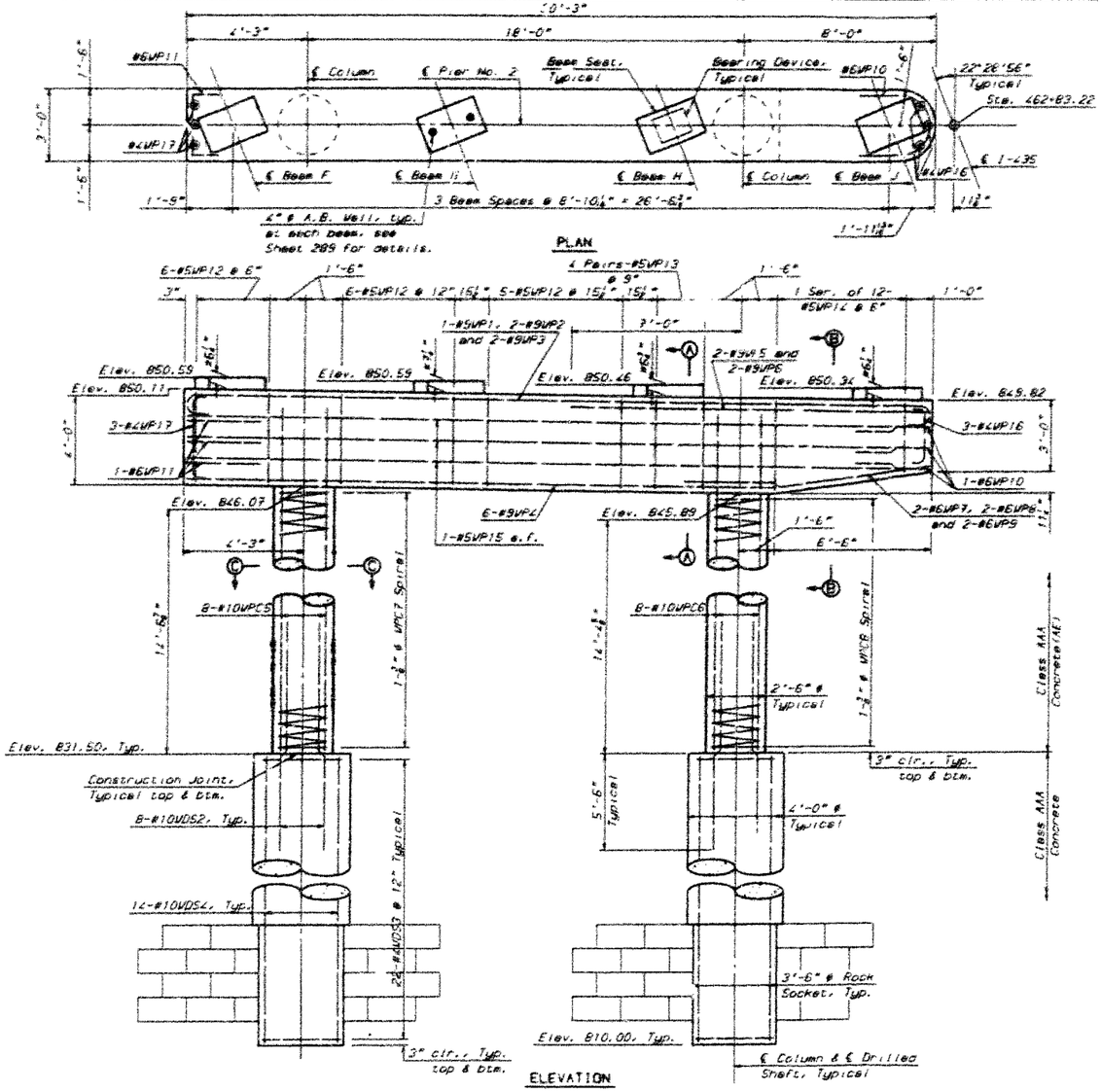
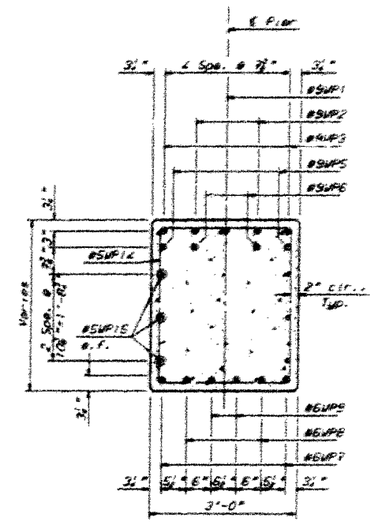
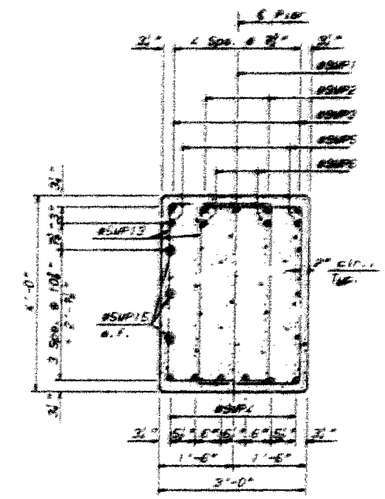
Jackson A5904

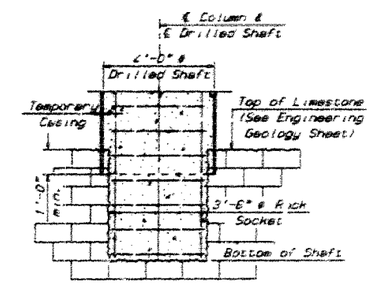




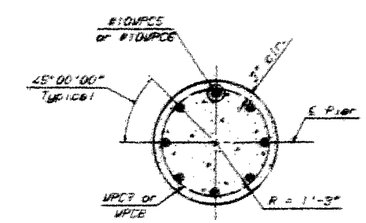
SECTION B-B



SECTION A-A

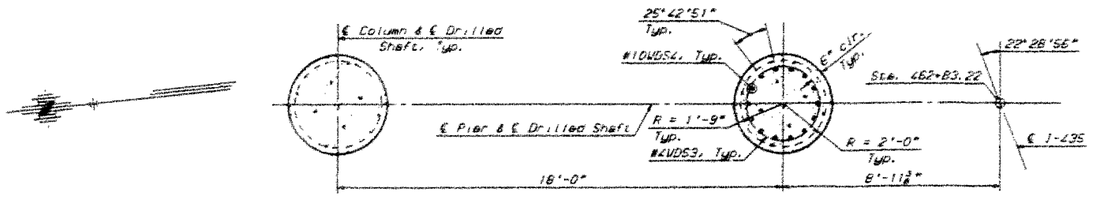


DRILLED SHAFT DETAILS



SECTION C-C

Notes:
e.f. denotes each face.
For Bearing Device and Beam Seat details, see Sheet 289.



DRILLED SHAFT LAYOUT

* Place Beam Seat to dimension shown at intersection of ℄ Pier & ℄ Beam and grind to elevation shown.

Design Footing Pressure = 22.5 tons/sq. ft. (Group 1)

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01 (314) STA. 462+83.22
PIER NO. 2 DETAILS
PHASE 1 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

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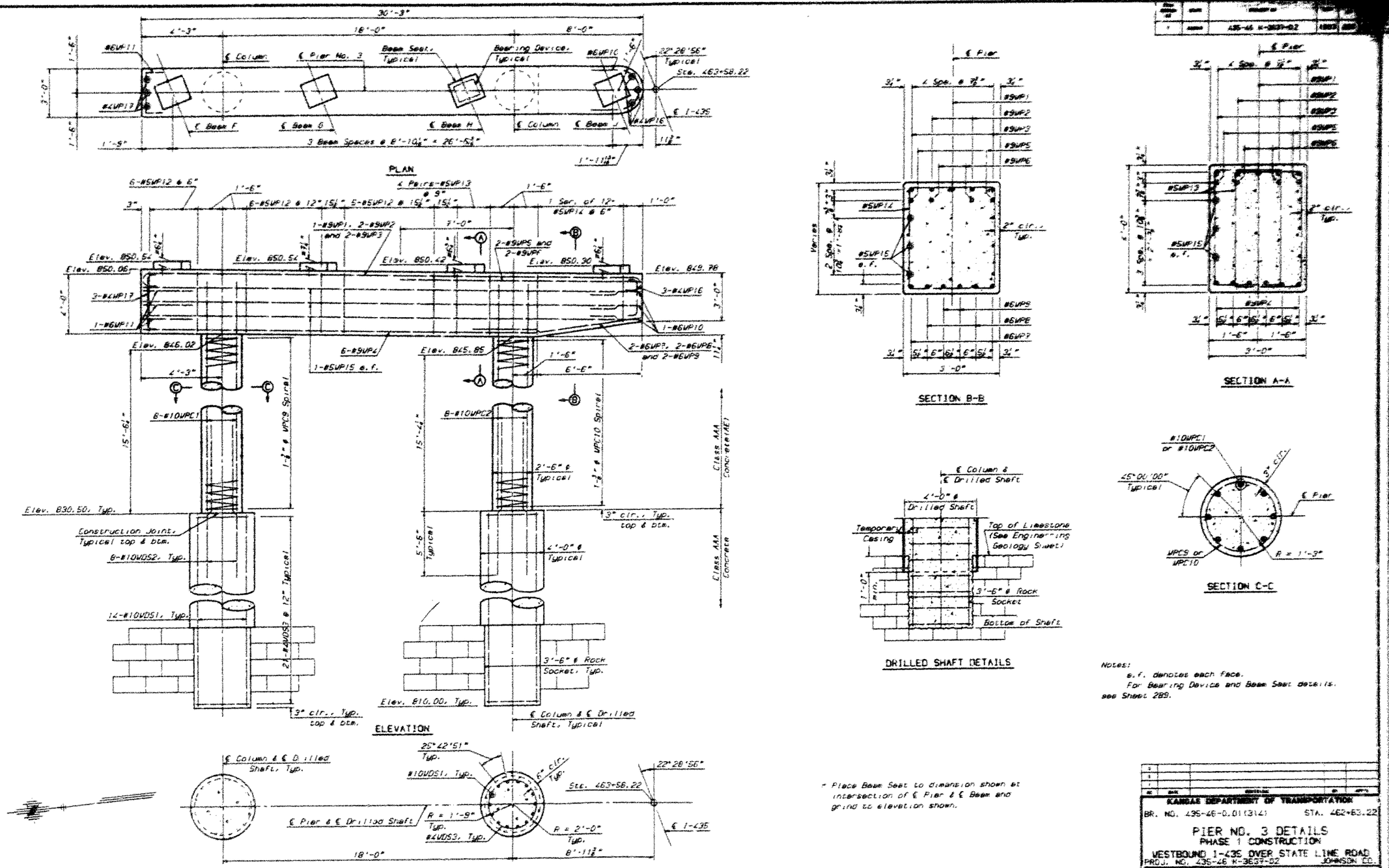
Jackson A5904



Notes:
s.f. denotes each face.
For Bearing Device and Beam Seat details, see Sheet 289.

* Place Beam Seat to dimension shown at intersection of ℄ Pier & ℄ Beam and grind to elevation shown.

Design Footing Pressure = 18.3 tons/sq. ft. (Group I)

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

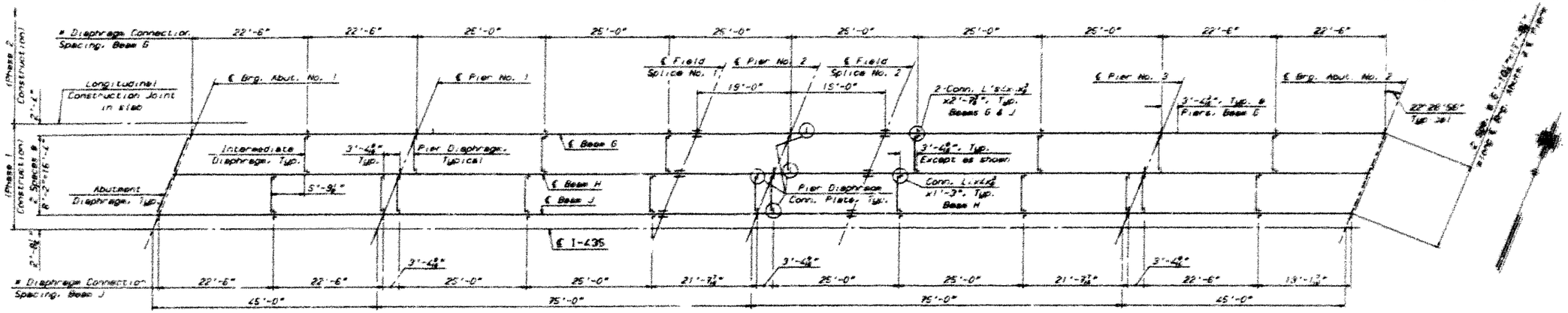
KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01(31L) STA. 462+63.22

PIER NO. 3 DETAILS
PHASE 1 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

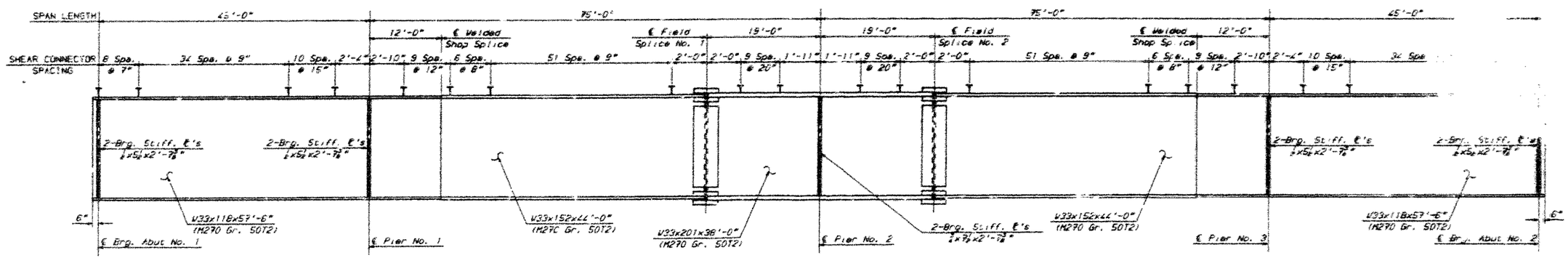
Jackson A5904

216



FRAMING PLAN

* Measured to ℄ Bearing, back of connection angle or ℄ of connection plate.



TYPICAL BEAM ELEVATION

Note:
Diaphragm connection plates and angles are not shown in elevation.

STRUCTURAL STEEL QUANTITIES (Lbs.)		
MEMBER	A709 (Gr. 36)	M270 (Gr. 50T2)
BEAMS	——	103,750
DIAPHRAGMS	5,060	——
WEB SPLICE PLATES	——	690
FLANGE SPLICE PLATES		1,590
BEAM SUPPORTS	430	——
* MISCELLANEOUS	1,790	——

* Includes bearing stiffeners, pier diaphragm connection plates and diaphragm connection angles.

BEAM NOTES:

Unless otherwise noted, all longitudinal dimensions are measured horizontally along centerlines of beams. Shop shall correct for grade.

Bearing stiffeners and connection plates shall be placed vertical.

All bearing stiffeners shall be placed as shown on the framing plan.

All pier diaphragm connection plates shall be 1/2x4x2'-7 7/8".

Diaphragm connection plates and connection angles shall be placed on the side of the web indicated on the framing plan.

All connection angles shall be placed normal to the beam flange.

For details of bearing stiffeners, connection plates, connection angles, diaphragms, field splices, and welded splices, see Sheet 250.

For details of shear connectors, see Sheet 271.

For Structural Steel Notes, see Sheet 22b.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION

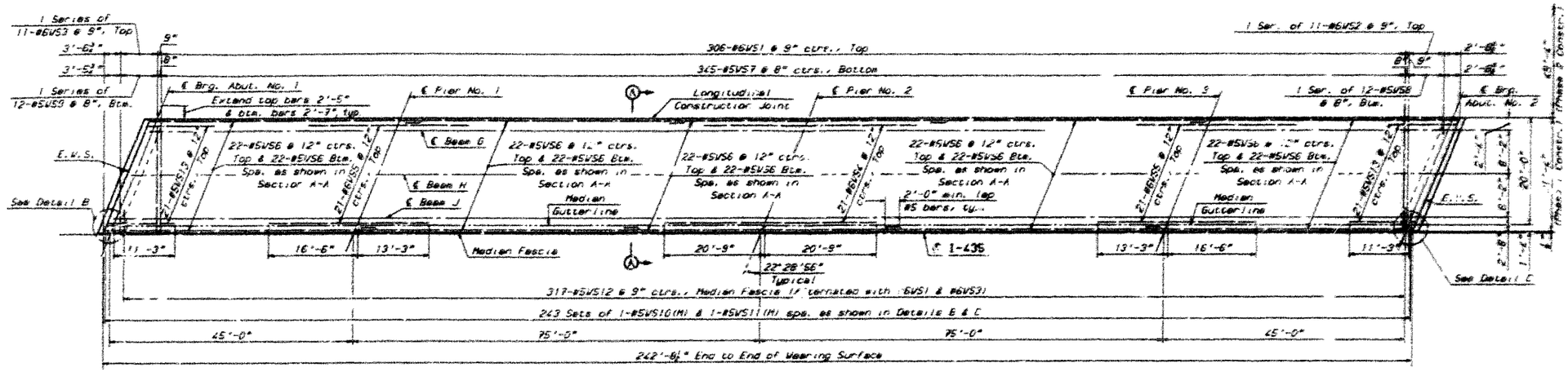
BR. NO. 435-46-0.01 (314) STA. 462+83.22

FRAMING PLAN
PHASE 1 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD

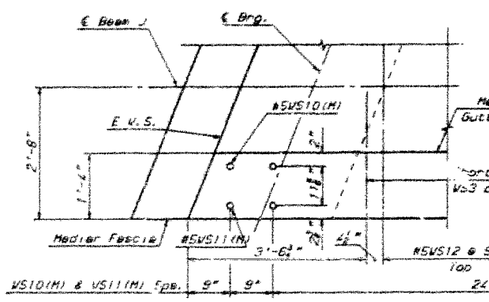
PROJ. NO. 435-46 H-3631-02 JOHNSON CO.

Jackson A5904

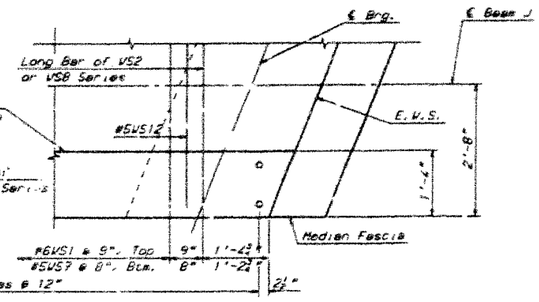
277



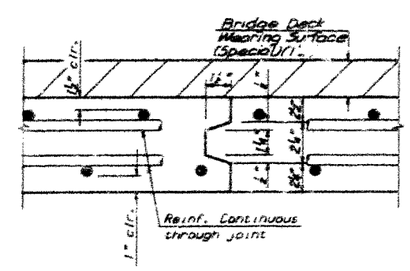
SLAB PLAN



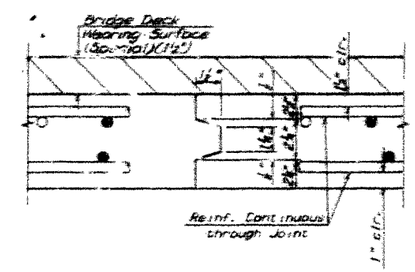
DETAIL B



DETAIL C



TRANSVERSE CONSTRUCTION JOINT



LONGITUDINAL CONSTRUCTION JOINT

SLAB NOTES:

All falsework used for the erection of the beams shall be removed before the concrete for the slab is placed.

Forms for the slab and barrier rails shall be supported by the beams.

Depth of slab over beams between bearings will vary to compensate for vertical curve and dead load deflection as required to produce the desired roadway surface elevations. See Schematic Diagram on sheet 271.

For details of the Concrete Placing Sequence, see Sheet 271.

Construction joints shall be made only at locations shown or as approved by the Engineer.

For Barrier Rail Details, see Sheet 292.

For Section A-A, see Sheet 271.

(M)-Denotes bars which require a mechanical connection. See Sheet 271 for additional details and notes.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01(314) STA. 462+82.22

SLAB PLAN
PHASE 1 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD

PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

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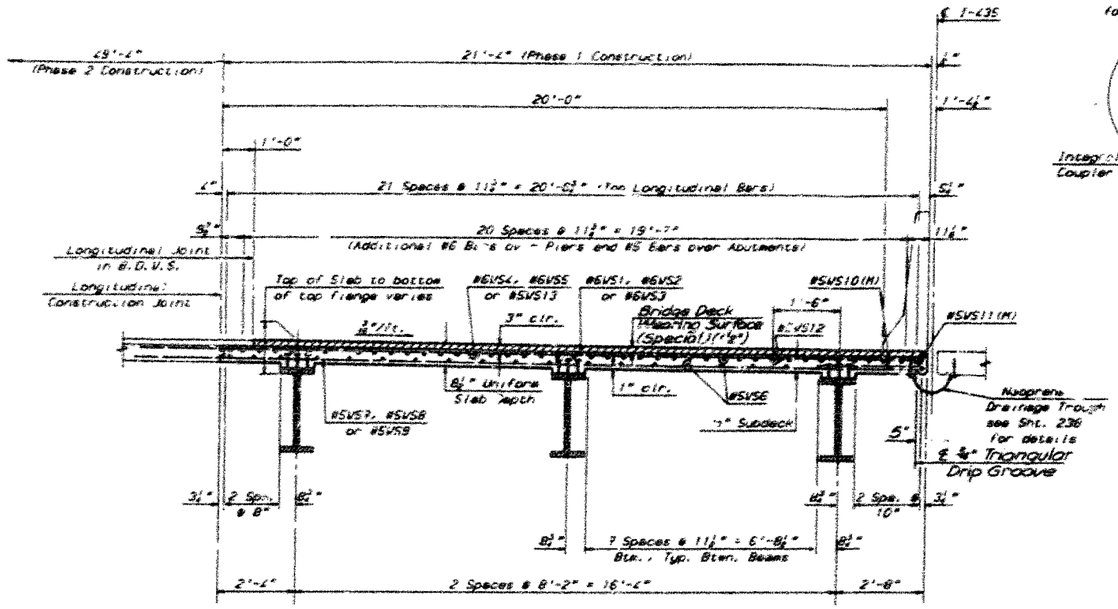
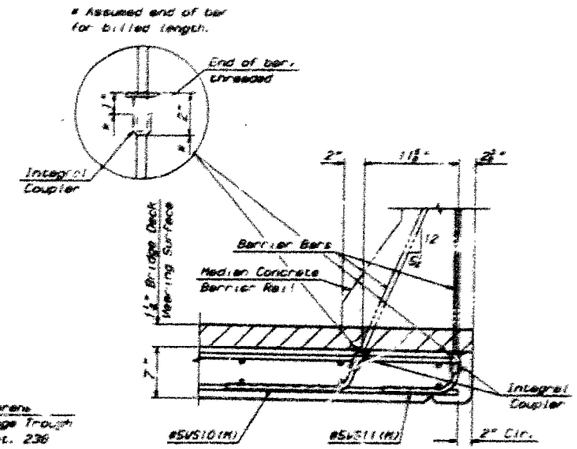
Jackson A5904

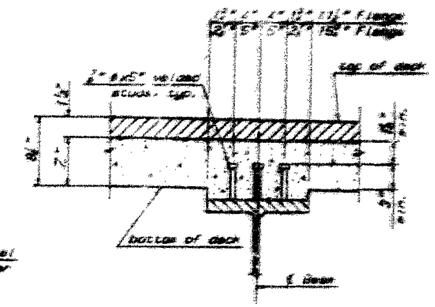


Note:
For location of Section A-A, see Sheet 270.

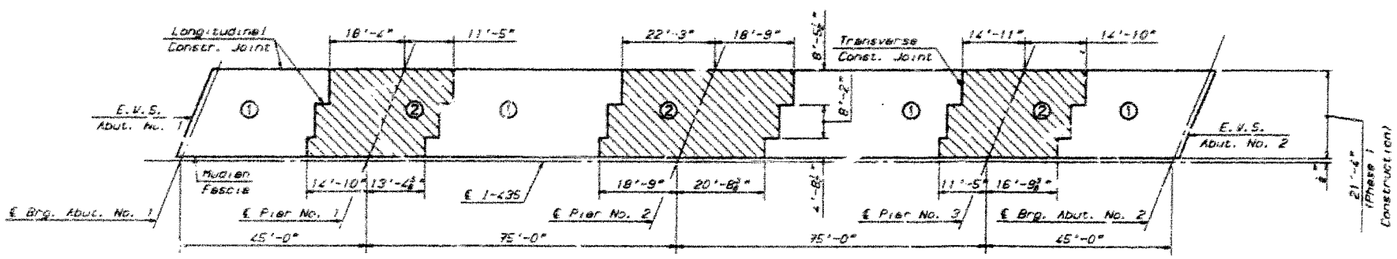
SECTION A-A



SUGGESTED MEDIAN BARRIER RAIL MECHANICAL CONNECTION DETAIL



SHEAR CONNECTOR DETAIL



CONCRETE PLACING SEQUENCE
(Circled numbers indicate placing sequence.)

Note:
For Concrete Placing Sequence Notes, see Sheet 226.

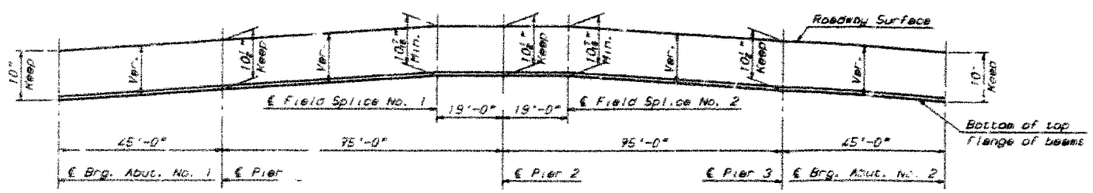
MECHANICAL CONNECTION NOTES:

The Mechanical Connection must be capable of developing 125% of yield strength of the bar in tension and compression. These splices shall not be paid for directly but shall be considered subsidiary to the bid item "Reinforcing Steel (Gr. 60) Epoxy Coated". (536 required-Westbound Bridge)

Mechanical Connection structural steel components shall be epoxy coated.

The Contractor shall submit mechanical connection details and test data to the Engineer for review and approval. Details shall be included to protect exposed mechanical connection components from corrosion in the interim between phases of construction.

The basis of acceptance of mechanical connection material furnished shall be receipt and approval of a Type B Certification as described in Section 2600 of the Standard Specifications.



SCHEMATIC DIAGRAM SHOWING SLAB DEPTH OVER BEAMS

HNTB NOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01(314) STA. 462+83.22

SLAB DETAILS
PHASE 1 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3639-02 JOHNSON CO.

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Jackson A5904

TOP OF PAVEMENT ELEVATIONS AT TENTH POINTS

LOCATION	POINT	BEAM G STATION	BEAM G ELEVATION	BEAM H STATION	BEAM H ELEVATION	BEAM J STATION	BEAM J ELEVATION	POINT
℄ BRG. ABUT. NO. 1	0	461+71.097	854.364	461+67.717	854.231	461+64.337	854.097	0
	1	461+75.597	854.372	461+72.217	854.239	461+68.837	854.105	1
	2	461+80.097	854.379	461+76.717	854.246	461+73.337	854.113	2
	3	461+84.597	854.386	461+81.217	854.254	461+77.837	854.121	3
	4	461+89.097	854.393	461+85.717	854.261	461+82.337	854.128	4
	5	461+93.597	854.399	461+90.217	854.267	461+86.837	854.135	5
	6	461+98.097	854.405	461+94.717	854.273	461+91.337	854.141	6
	7	462+02.597	854.411	461+99.217	854.279	461+95.837	854.147	7
	8	462+07.097	854.416	462+03.717	854.285	462+00.337	854.153	8
	9	462+11.597	854.421	462+08.217	854.290	462+04.837	854.159	9
℄ PIER NO. 1	10	462+16.097	854.425	462+12.717	854.294	462+09.337	854.164	10
℄ PIER NO. 1	0	462+16.097	854.425	462+12.717	854.294	462+09.337	854.164	0
	1	462+23.597	854.432	462+20.217	854.302	462+16.837	854.171	1
	2	462+31.097	854.437	462+27.717	854.308	462+24.337	854.178	2
	3	462+38.597	854.442	462+35.217	854.313	462+31.837	854.183	3
	4	462+46.097	854.445	462+42.717	854.317	462+39.337	854.187	4
	5	462+53.597	854.448	462+50.217	854.319	462+46.837	854.191	5
	6	462+61.097	854.449	462+57.717	854.321	462+54.337	854.193	6
	7	462+68.597	854.450	462+65.217	854.322	462+61.837	854.195	7
	8	462+76.097	854.449	462+72.717	854.322	462+69.337	854.195	8
	9	462+83.597	854.447	462+80.217	854.321	462+76.837	854.194	9
℄ PIER NO. 2	10	462+91.097	854.445	462+87.717	854.319	462+84.337	854.192	10
℄ PIER NO. 2	0	462+91.097	854.445	462+87.717	854.319	462+84.337	854.192	0
	1	462+98.597	854.441	462+95.217	854.315	462+91.837	854.190	1
	2	463+06.[illegible]	854.436	463+02.717	854.311	462+99.337	854.186	2
	3	463+13.[illegible]	854.431	463+10.217	854.306	463+06.837	854.181	3
	4	463+21.09[illegible]	854.424	463+17.717	854.300	463+14.337	854.175	4
	5	463+28.597	854.416	463+25.217	854.292	463+21.837	854.168	5
	6	463+36.097	854.407	463+32.717	854.284	463+29.337	854.160	6
	7	463+43.597	854.397	463+40.217	854.275	463+36.837	854.151	7
	8	463+51.097	854.386	463+47.717	854.264	463+44.337	854.141	8
	9	463+58.597	854.375	463+55.217	854.253	463+51.837	854.131	9
℄ PIER NO. 3	10	463+66.097	854.362	463+62.717	854.240	463+59.337	854.118	10
℄ PIER NO. 3	0	463+66.097	854.362	463+62.717	854.240	463+59.337	854.118	0
	1	463+70.597	854.353	463+67.217	854.232	463+63.837	854.111	1
	2	463+75.097	854.345	463+71.717	854.224	463+68.337	854.103	2
	3	463+79.597	854.336	463+76.217	854.215	463+72.837	854.094	3
	4	463+84.097	854.326	463+80.717	854.206	463+77.337	854.085	4
	5	463+88.597	854.317	463+85.217	854.197	463+81.837	854.076	5
	6	463+93.097	854.306	463+88.717	854.187	463+86.337	854.067	6
	7	463+97.597	854.296	463+94.217	854.177	463+90.837	854.057	7
	8	464+02.097	854.285	463+98.717	854.166	463+95.337	854.047	8
	9	464+06.597	854.274	464+03.217	854.155	463+99.837	854.036	9
℄ BRG. ABUT. NO. 2	10	464+11.097	854.262	464+07.717	854.144	464+04.337	854.025	10

TOP OF PAVEMENT ELEVATIONS OVER FIELD SPLICES

LOCATION	FIELD SPLICE NO. 1 STATION	FIELD SPLICE NO. 1 ELEVATION	FIELD SPLICE NO. 2 STATION	FIELD SPLICE NO. 2 ELEVATION
BEAM G	462+72.097	854.450	463+10.09[illegible]	854.434
BEAM H	462+68.717	854.322	463+06.717	854.309
BEAM J	462+65.337	854.195	463+03.337	854.184

Note:
Elevations are at top of 1½" Bridge Deck Wearing Surface over ℄ Beam at points shown.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01(314) STA. 369+83.22
ROADWAY SURFACE ELEVATIONS
PHASE 1 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

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DEAD LOAD DEFLECTION ON NON-COMPOSITE SECTION

Span 1 (Brg. Abut. No. 1 to Pier No. 1), tenth points 0–10:

	BEAM											
DEAD LOAD STEEL	J	.000	.001	.001	.002	.002	.002	.001	.000	.000	.000	.000
	G & H	.000	.001	.001	.002	.002	.001	.001	.000	.000	.000	.000
DEAD LOAD CONCRETE	J	.000	.002	.005	.006	.006	.005	.004	.002	.000	-.002	.000
	G & H	.000	.003	.006	.007	.007	.007	.004	.002	.000	-.002	.000
TOTAL NON-COMPOSITE DEFLECTION	J	.000	.003	.006	.008	.008	.007	.005	.002	.000	-.002	.000
	G & H	.000	.004	.007	.009	.009	.008	.005	.002	.000	-.002	.000

Span 2 (Pier No. 1 to Pier No. 2), tenth points 1–10:

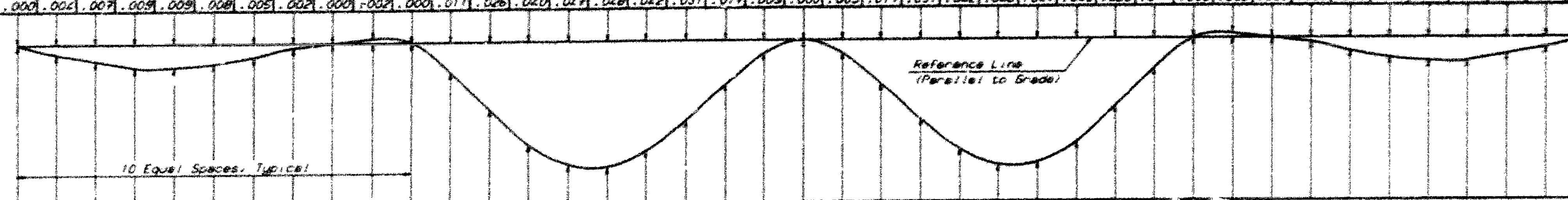
	BEAM										
DEAD LOAD STEEL	J	.003	.006	.009	.011	.011	.010	.007	.004	.001	.000
	G & H	.002	.006	.009	.010	.011	.009	.007	.004	.001	.000
DEAD LOAD CONCRETE	J	.007	.017	.026	.031	.032	.027	.020	.011	.004	.000
	G & H	.009	.020	.031	.037	.037	.033	.024	.013	.004	.000
TOTAL NON-COMPOSITE DEFLECTION	J	.010	.023	.035	.042	.043	.037	.027	.015	.005	.000
	G & H	.011	.026	.040	.047	.048	.042	.031	.017	.005	.000

Span 3 (Pier No. 2 to Pier No. 3), tenth points 1–10:

	BEAM										
DEAD LOAD STEEL	J	.001	.004	.007	.010	.011	.011	.009	.006	.003	.000
	G & H	.001	.004	.007	.009	.011	.010	.009	.006	.002	.000
DEAD LOAD CONCRETE	J	.004	.011	.020	.027	.032	.031	.026	.017	.007	.000
	G & H	.004	.013	.024	.033	.037	.037	.031	.020	.009	.000
TOTAL NON-COMPOSITE DEFLECTION	J	.005	.015	.027	.037	.043	.042	.035	.023	.010	.000
	G & H	.005	.017	.031	.042	.048	.047	.040	.026	.011	.000

Span 4 (Pier No. 3 to Brg. Abut. No. 2), tenth points 1–10:

	BEAM										
DEAD LOAD STEEL	J	.000	.000	.000	.001	.002	.002	.002	.001	.001	.000
	G & H	.000	.000	.000	.001	.001	.002	.002	.001	.001	.000
DEAD LOAD CONCRETE	J	-.002	.000	.002	.004	.005	.006	.006	.005	.002	.000
	G & H	-.002	.000	.002	.004	.007	.007	.007	.006	.003	.000
TOTAL NON-COMPOSITE DEFLECTION	J	-.002	.000	.002	.005	.007	.008	.008	.006	.003	.000
	G & H	-.002	.000	.002	.005	.008	.009	.009	.007	.004	.000



DEAD LOAD DEFLECTION ON THE COMPOSITE SECTION

BEAM											
J	.000	.001	.001	.002	.002	.002	.001	.000	.000	.000	.000
G & H	.000	.001	.001	.002	.002	.001	.001	.000	.000	.000	.000

BEAM										
J	.003	.006	.009	.011	.011	.010	.007	.004	.001	.000
G & H	.003	.006	.009	.011	.011	.010	.007	.004	.001	.000

BEAM										
J	.001	.004	.007	.010	.011	.011	.009	.006	.003	.000
G & H	.001	.004	.007	.010	.011	.011	.009	.006	.003	.000

BEAM										
J	.000	.000	.000	.001	.002	.002	.002	.001	.001	.000
G & H	.000	.000	.000	.001	.001	.002	.002	.001	.001	.000

TOTAL DEAD LOAD DEFLECTION

BEAM											
J	.000	.004	.007	.010	.010	.009	.006	.002	.000	-.002	.000
G & H	.000	.005	.008	.011	.011	.009	.006	.002	.000	-.002	.000

BEAM										
J	.013	.029	.044	.053	.054	.047	.034	.019	.006	.000
G & H	.014	.032	.049	.058	.059	.052	.038	.021	.006	.000

BEAM										
J	.006	.019	.034	.047	.054	.053	.044	.025	.013	.000
G & H	.006	.021	.038	.052	.059	.058	.049	.032	.014	.000

BEAM										
J	-.002	.000	.002	.006	.009	.010	.010	.007	.004	.000
G & H	-.002	.000	.002	.006	.009	.011	.011	.008	.005	.000

℄ Brg. Abut. No. 1 — 45'-0" — ℄ Pier No. 1 — 75'-0" — ℄ Pier No. 2 — 75'-0" — ℄ Pier No. 3 — 45'-0" — ℄ Brg. Abut. No. 2

Span Lengths Measured along ℄ Beams

DEAD LOAD DEFLECTION

Ordinates are in feet and are at tenth points of spans.

DEFLECTION NOTES

The beams shall not be cambered, but any natural mill camber that the beams have retained shall be placed up.

"Dead Load Steel" ordinates represent the amount of deflection due to all structural steel.

"Dead Load Concrete" ordinates represent the amount of deflection due to the initial slab pour.

"Total Non-Composite Deflection" ordinates represent the total amount of deflection on the non-composite structure.

"Composite Dead Load Deflection" ordinates represent the amount of deflection due to the 1½" Bridge Deck Wearing Surface and barrier rails.

"Total Dead Load Deflection" ordinates represent the total deflection which is the sum of the non-composite deflections and the composite deflections.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01(314) STA. 462+83.22
DEAD LOAD DEFLECTIONS
PHASE 1 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

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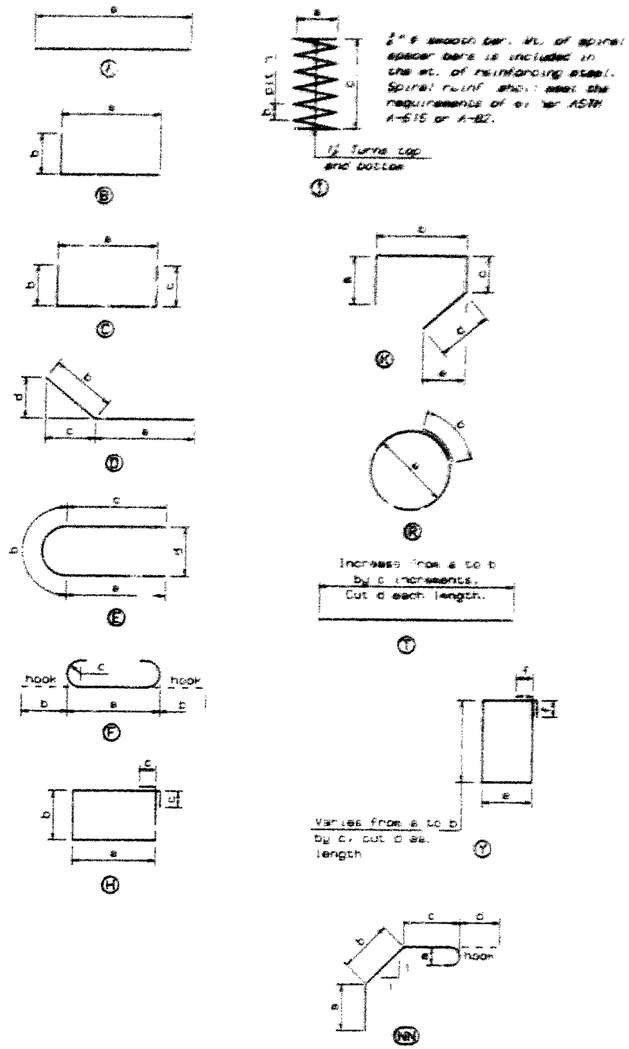
LOC.	DESIGN MARK	BENDING MARK	SIZE	NO.	LENGTH	DIMENSIONS a	b	c	d	e	f
PIER NO. 2 NON-EPOXY	WDS1	A	10	28	20'-2"	20'-2"					
	WDS2	A	10	16	11'-0"	11'-0"					
	WPC1	A	10	8	18'-11"	18'-11"					
	WPC2	A	10	8	18'-9"	18'-9"					
	WP1	F	9	1	32'-4"	29'-10"	1'-3"	4½"			
	WP2	F	9	2	32'-2"	29'-8"	1'-3"	4½"			
	WP3	F	9	2	31'-4"	28'-10"	1'-3"	4½"			
	WP4	A	9	6	23'-7"	23'-7"					
	WP5	A	9	2	13'-9"	13'-9"					
	WP6	A	9	2	14'-7"	14'-7"					
	WP7	D	6	2	7'-11"	2'-7"	5'-4"	9¾"	5'-3¼"		
	WP8	D	6	2	8'-7"	2'-7"	6'-0"	10¾"	5'-11¼"		
	WP9	D	6	2	8'-11"	2'-7"	6'-4"	11¼"	6'-3¼"		
	WP10	E	6	3	8'-1"	2'-0¾"	4'-0¼"	2'-0¾"	2'-6¼"		
	WP11	C	6	3	6'-7"	2'-6¼"	2'-0¼"	2'-0¼"			
	WP12	H	5	17	13'-8"	2'-8"	3'-8"	6"			
	WP13	H	5	8	12'-5"	2'-0¼"	3'-8"	6"			
	WP14	Y	5	12	VARIES	2'-9¾"	3'-8"	15/16"	1	2'-8"	6"
	WP15	A	5	6	28'-7"	28'-7"					
	WDS3	R	4	42	10'-3¼"	3'-0"	1'-0"				
	WP16	C	4	3	4'-8"	2'-8"	1'-0"	1'-0"			
	WP17	C	4	3	5'-8"	3'-8"	1'-0"	1'-0"			
	P18	C	4	12	3'-9"	1'-2¼"	1'-3¼"	1'-3¼"			
	P19	C	4	12	4'-0"	1'-6"	1'-3"	1'-3"			
	WPC3	I	⅜" ø	1	SPIRAL	2'-0"	6"	15'-1"			
	WPC4	I	⅜" ø	1	SPIRAL	2'-0"	6"	14'-10¾"			
PIER NO. 2 NON-EPOXY	WDS4	A	10	28	21'-2"	21'-2"					
	WDS2	A	10	16	11'-0"	11'-0"					
	WPC5	A	10	8	17'-11"	17'-11"					
	WPC6	A	10	8	17'-9"	17'-9"					
	WP1	F	9	1	32'-4"	29'-10"	1'-3"	4½"			
	WP2	F	9	2	32'-2"	29'-8"	1'-3"	4½"			
	WP3	F	9	2	31'-4"	28'-10"	1'-3"	4½"			
	WP4	A	9	6	23'-7"	23'-7"					
	WP5	A	9	2	13'-9"	13'-9"					
	WP6	A	9	2	14'-7"	14'-7"					
	WP7	D	6	2	7'-11"	2'-7"	5'-4"	9¾"	5'-3¼"		
	WP8	D	6	2	8'-7"	2'-7"	6'-0"	10¾"	5'-11¼"		
	WP9	D	6	2	8'-11"	2'-7"	6'-4"	11¼"	6'-3¼"		
	WP10	E	6	3	8'-1"	2'-0¾"	4'-0¼"	2'-0¾"	2'-6¼"		
	WP11	C	6	3	6'-7"	2'-6¼"	2'-0¼"	2'-0¼"			
	WP12	H	5	17	13'-8"	2'-8"	3'-8"	6"			
	WP13	H	5	8	12'-5"	2'-0¼"	3'-8"	6"			
	WP14	Y	5	12	VARIES	2'-9¾"	3'-8"	15/16"	1	2'-8"	6"
	WP15	A	5	6	28'-7"	28'-7"					
	WDS3	R	4	44	10'-3¼"	3'-0"	1'-0"				
	WP16	C	4	3	4'-8"	2'-8"	1'-0"	1'-0"			
	WP17	C	4	3	5'-8"	3'-8"	1'-0"	1'-0"			
	P18	C	4	20	3'-9"	1'-2¼"	1'-3¼"	1'-3¼"			
	P20	C	4	8	4'-8"	2'-2"	1'-3"	1'-3"			
	WPC7	I	⅜" ø	1	SPIRAL	2'-0"	6"	14'-0¾"			
	WPC8	I	⅜" ø	1	SPIRAL	2'-0"	6"	13'-10¾"			

LOC.	DESIGN MARK	BENDING MARK	SIZE	NO.	LENGTH	DIMENSIONS a	b	c	d	e	f
PIER NO. 3 NON-EPOXY	WDS1	A	10	28	20'-2"	20'-2"					
	WDS2	A	10	16	11'-0"	11'-0"					
	WPC1	A	10	8	18'-11"	18'-11"					
	WPC2	A	10	8	18'-9"	18'-9"					
	WP1	F	9	1	32'-4"	29'-10"	1'-3"	4½"			
	WP2	F	9	2	32'-2"	29'-8"	1'-3"	4½"			
	WP3	F	9	2	31'-4"	28'-10"	1'-3"	4½"			
	WP4	A	9	6	23'-7"	23'-7"					
	WP5	A	9	2	13'-9"	13'-9"					
	WP6	A	9	2	14'-7"	14'-7"					
	WP7	D	6	2	7'-11"	2'-7"	5'-4"	9¾"	5'-3¼"		
	WP8	D	6	2	8'-7"	2'-7"	6'-0"	10¾"	5'-11¼"		
	WP9	D	6	2	8'-11"	2'-7"	6'-4"	11¼"	6'-3¼"		
	WP10	E	6	3	8'-1"	2'-0¾"	4'-0¼"	2'-0¾"	2'-6¼"		
	WP11	C	6	3	6'-7"	2'-6¼"	2'-0¼"	2'-0¼"			
	WP12	H	5	17	13'-8"	2'-8"	3'-8"	6"			
	WP13	H	5	8	12'-5"	2'-0¼"	3'-8"	6"			
	WP14	Y	5	12	VARIES	2'-9¾"	3'-8"	15/16"	1	2'-8"	6"
	WP15	A	5	6	28'-7"	28'-7"					
	WDS3	R	4	42	10'-3¼"	3'-0"	1'-0"				
	WP16	C	4	3	4'-8"	2'-8"	1'-0"	1'-0"			
	WP17	C	4	3	5'-8"	3'-8"	1'-0"	1'-0"			
	P18	C	4	12	3'-9"	1'-2¼"	1'-3¼"	1'-3¼"			
	P19	C	4	12	4'-0"	1'-6"	1'-3"	1'-3"			
	WPC9	I	⅜" ø	1	SPIRAL	2'-0"	6"	15'-0¾"			
	WPC10	I	⅜" ø	1	SPIRAL	2'-0	6"	14'-10¾"			
SUPERSTRUCTURE EPOXY COATED	WA1(M)	A	8	24	23'-3"	23'-3"					
	WS1	A	6	306	23'-7"	23'-7"					
	WS2	T	6	11	VARIES	4'-4"	22'-3"	1'-9¼"	1		
	WS3	T	6	11	VARIES	3'-3"	21'-2"	1'-9¼"	1		
	WS4	A	6	21	41'-6"	41'-6"					
	WS5	A	6	42	29'-9"	29'-9"					
	WA2(M)	A	5	6	2'-8"	2'-8"					
	WA3(M)	A	5	22	23'-3"	23'-3"					
	WA4	A	5	12	8'-6"	8'-6"					
	WA5	A	5	6	2'-6"	2'-6"					
	WS6	A	5	220	50'-1"	50'-1"					
	WS7	A	5	345	23'-9"	23'-9"					
	WS8	T	5	12	VARIES	4'-6¼"	22'-2"	1'-7¼"	1		
	WS9	T	5	12	VARIES	3'-2¼"	21'-1"	1'-7¼"	1		
	WS10(M)	D	5	243	1'-7"	1'-2⅝"	4½"	1½"	4"		
	WS11(M)	B	5	243	10"	6"	4"				
	WS12	A	5	317	4'-0	4'-0"					
	WS13	B	5	42	13'-3"	11'-3"	2'-0"				
	WA11	NN	5	46	5'-1"	1'-6"	1'-6"	1'-6"	7"	5"	
	WA6	C	4	24	13'-10"	2'-4"	5'-9"	5'-9"			
	WA7	C	4	48	3'-8"	2'-4"	8"	8"			
	WA8	C	4	48	10'-1"	2'-4"	3'-10¼"	3'-10¼"			
	WA9	K	4	46	7'-5"	8"	3'-5"	10"	2'-6"	1'-11"	
	WA10	C	4	24	13'-6"	2'-4"	5'-7"	5'-7"			



Notes:

Bars with the prefix "WDS" are not included with the weight of reinforcing steel for payment. They are listed here for information only.

(M) denotes bars which require a mechanical connection. See sheets 271 and 287 for additional details and notes.

BENDING DIAGRAMS

Notes:

Ⓐ denotes bending diagram mark. Dimensions are out to out, except all radii are to inside of bars. No allowance for bend curvature is to be made except for standard hook and radii in excess of same.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01(314) STA. 462+83.22

BILL OF REINFORCING STEEL
PHASE 1 CONSTRUCTION

WESTBOUND I-435 OVER STATE LINE ROAD

PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

DETAILED R.J.F. CHECKED

DESIGNED R.J.F. CHECKED

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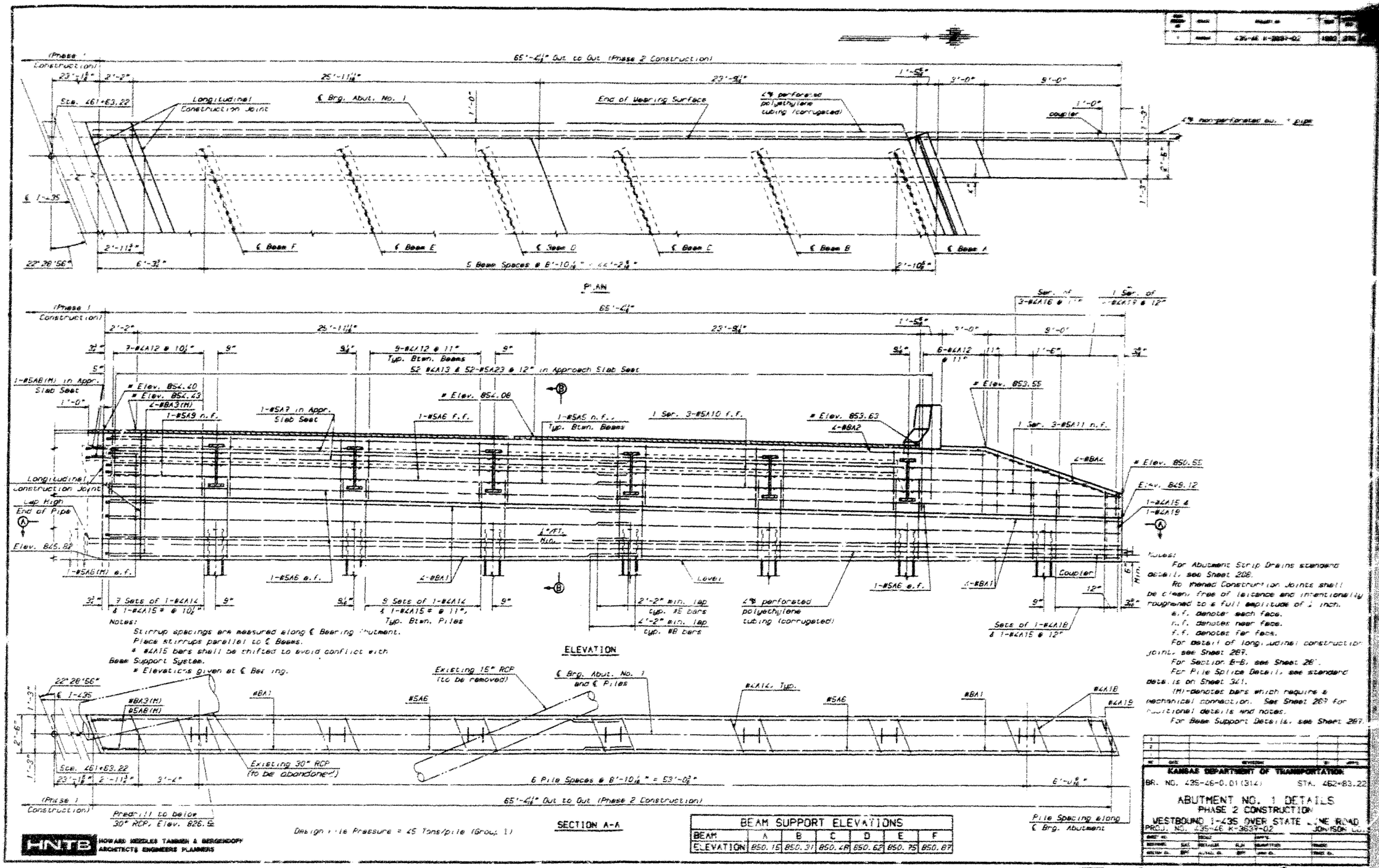
Jackson A5914



BEAM	A	B	C	D	E	F
ELEVATION	850.15	850.31	850.48	850.62	850.75	850.87

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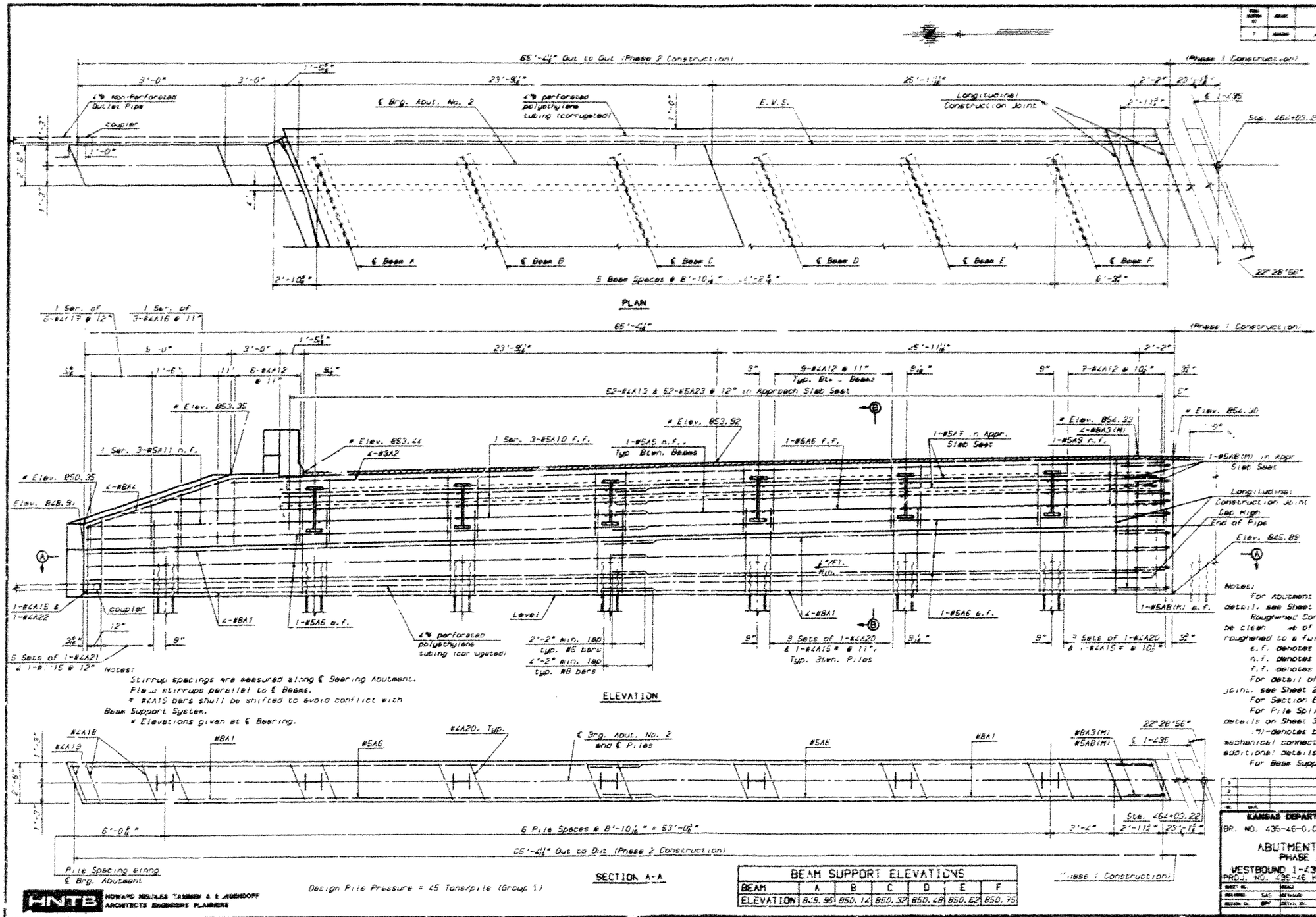


Notes:
For Abutment Strip Drains standard detail, see Sheet 288.
Roughened Construction Joints shall be clean [illegible] of laitance and intentionally roughened to a full amplitude of 1/4 inch.
e.f. denotes each face.
n.f. denotes near face.
f.f. denotes far face.
For detail of longitudinal construction joint, see Sheet 287.
For Section B-B, see Sheet 287.
For Pile Splice Detail, see standard details on Sheet 341.
(M)-denotes bars which require a mechanical connection. See Sheet 287 for additional details and notes.
For Beam Support Details, see Sheet 287.

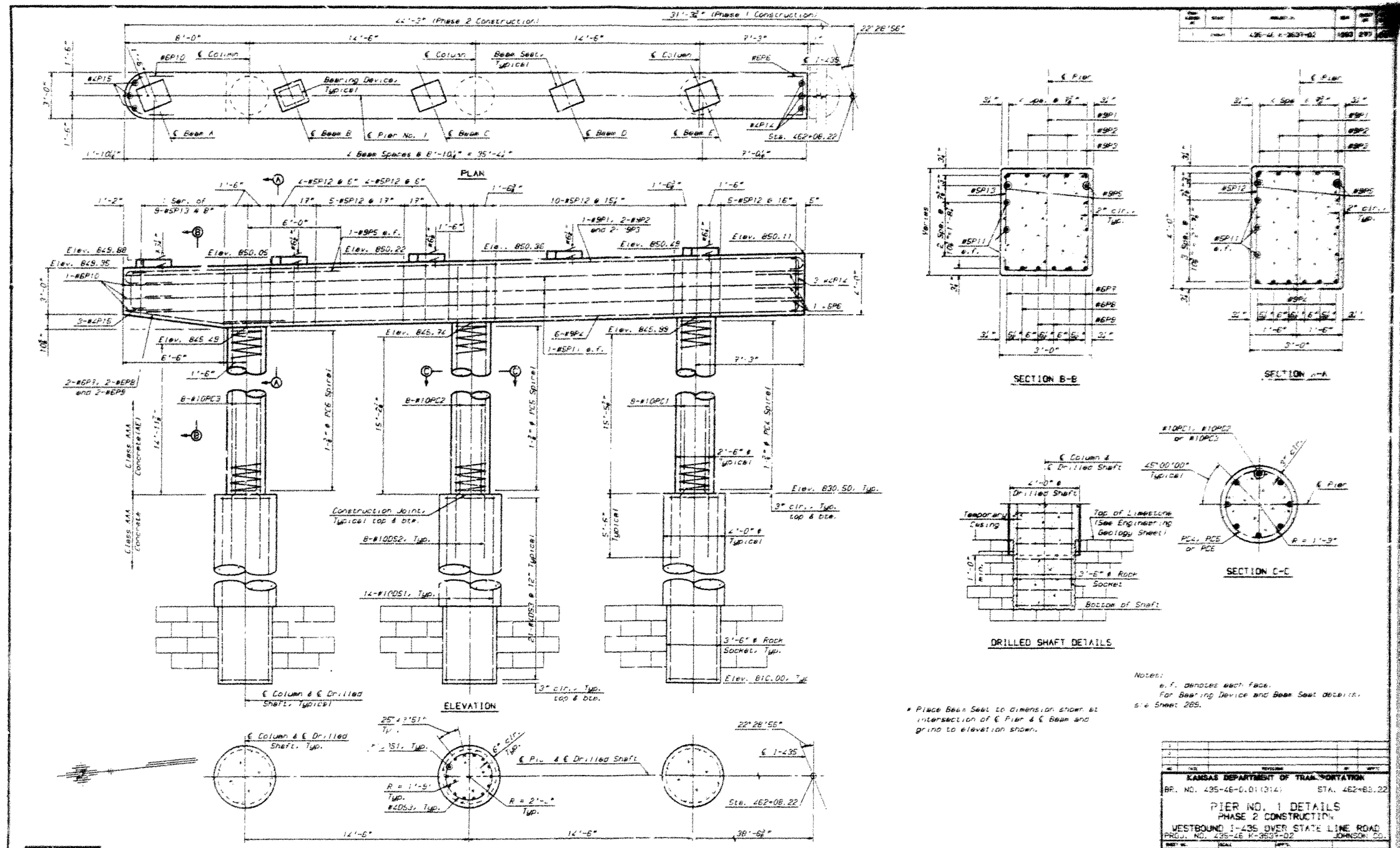
BEAM SUPPORT ELEVATIONS						
BEAM	A	B	C	D	E	F
ELEVATION	849.96	850.14	850.32	850.48	850.62	850.75

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01(314) STA. 462+83.22
ABUTMENT NO. 2 DETAILS
PHASE 2 CONSTRUCTION
VESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

224

Jackson A5904



Notes:
e.f. denotes each face.
For Bearing Device and Beam Seat details, see Sheet 285.

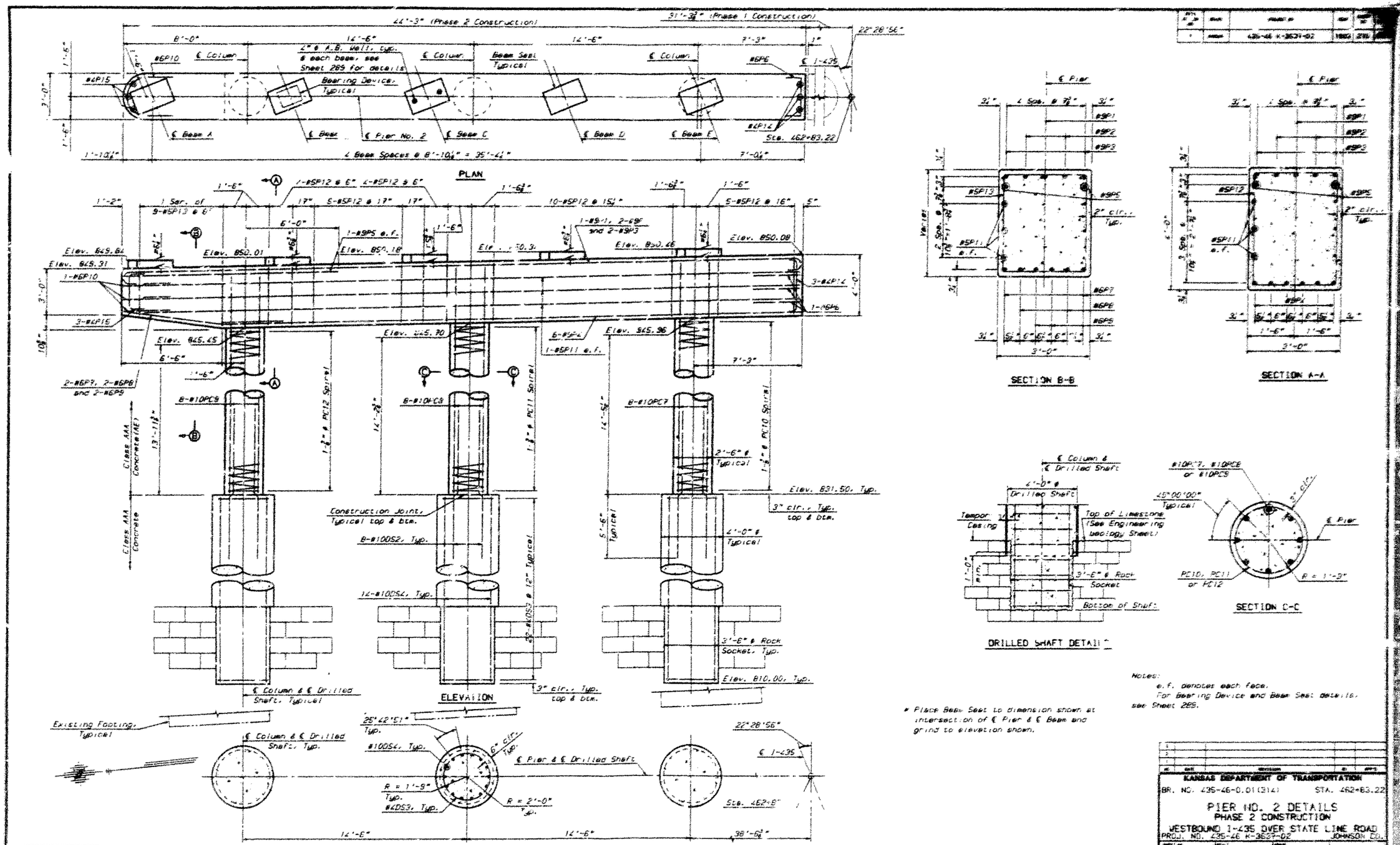
* Place Beam Seat to dimension shown at intersection of ℄ Pier & ℄ Beam and grind to elevation shown.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01(314) STA. 462+83.22
PIER NO. 1 DETAILS
PHASE 2 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3639-02 JOHNSON CO.

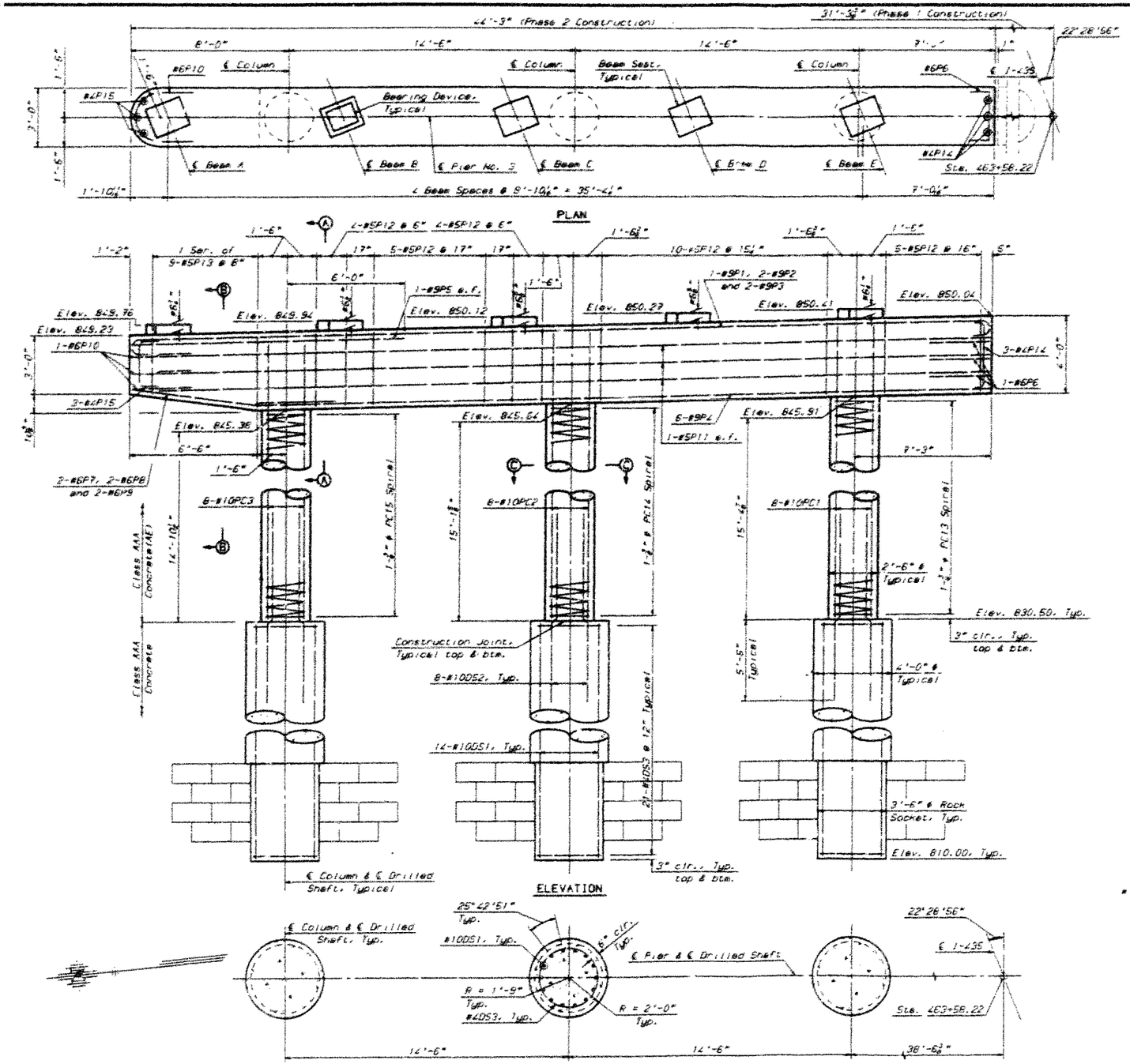
225

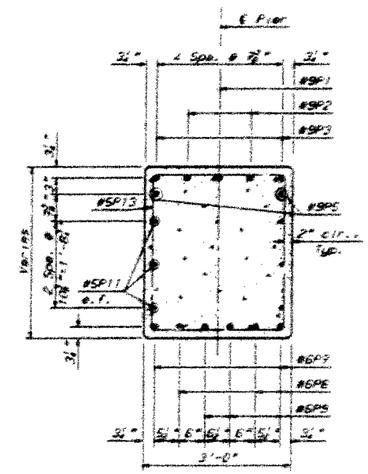
Jackson A5904

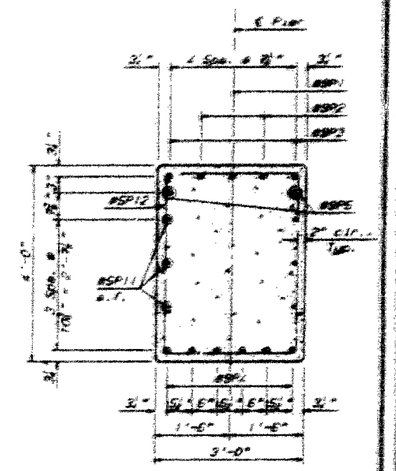


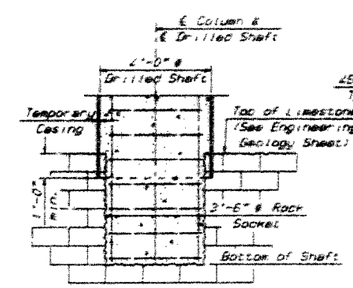
226

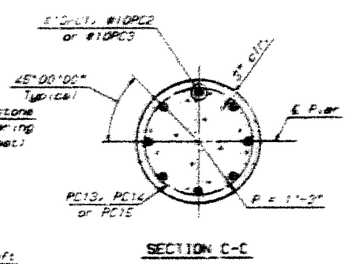
Jackson A5904











Notes:
e.f. denotes each face.
For Bearing Device and Beam Seat details, see Sheet 289.

* Place Beam Seat to dimension shown at intersection of ℄ Pier & ℄ Beam and grind to elevation shown.

Design Footing Pressure = 18.3 tons/sq. ft. (Group 1)

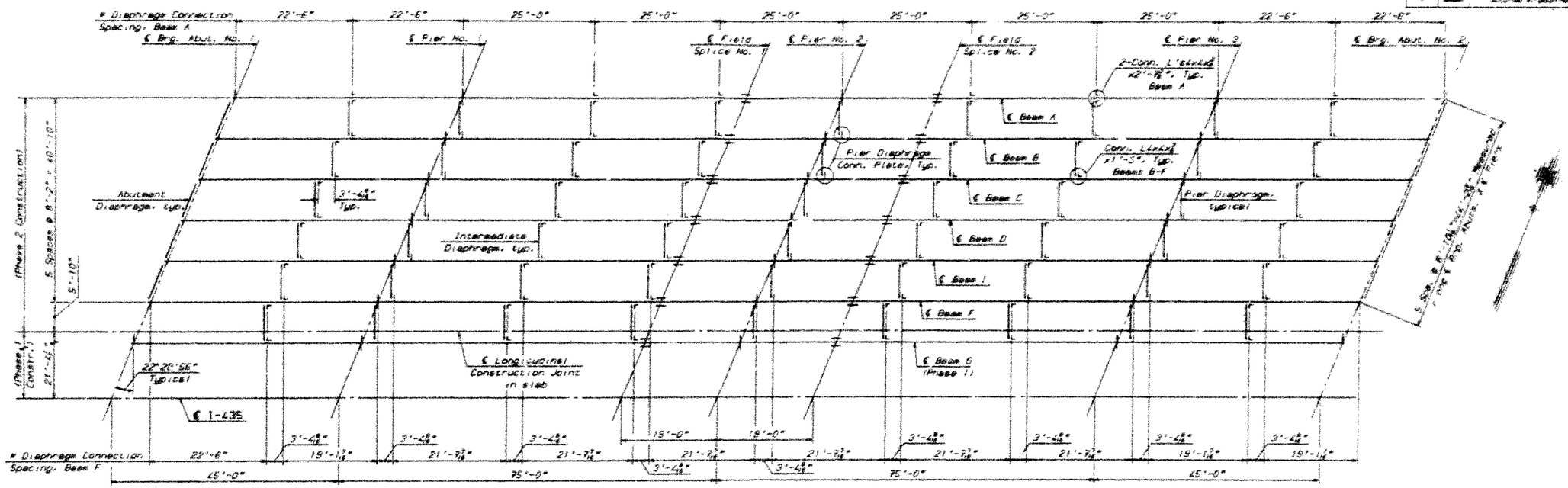
HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01(314) STA. 462+83.22

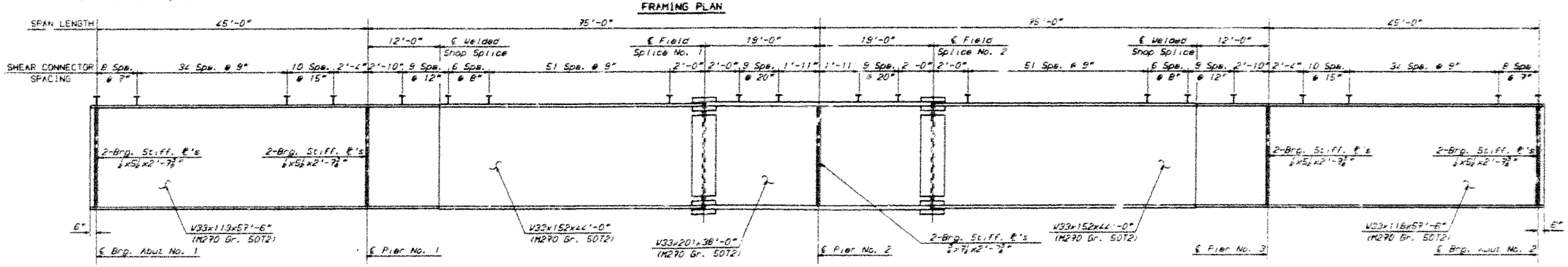
PIER NO. 3 DETAILS
PHASE 2 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

227

Jackson A5904



FRAMING PLAN



TYPICAL BEAM ELEVATION

STRUCTURAL STEEL QUANTITIES (Lbs.)		
MEMBER	A709 (Gr. 36)	M270 (Gr. 50T2)
BEAMS	—	207,500
DIAPHRAGMS	13,020	—
WEB SPLICE PLATES	—	1,380
FLANGE SPLICE PLATES	—	3,170
BEAM SUPPORTS	850	—
* MISCELLANEOUS	3,070	—

* Includes bearing stiffeners, pier diaphragm connection plates and diaphragm connection angles.

BEAM NOTES:

Unless otherwise noted, all longitudinal dimensions are measured horizontally along centerlines of beams. Shop shall correct for grade.

Bearing stiffeners and connection plates shall be placed vertical.

All bearing stiffeners shall be placed as shown on the framing plan.

All pier diaphragm connection plates shall be 3/8"x4x2'-7 7/8".

Diaphragm connection plates and connection angles shall be placed on the side of the web indicated on the framing plan.

All connection angles shall be placed normal to the beam flanges.

For details of bearing stiffeners, connection plates, connection angles, diaphragms, field splices, and welded splices, see Sheet 28D.

For details of shear connectors, see Sheet 29I.

For Structural Steel Notes, see Sheet 22F.

Note:
Diaphragm connection plates and angles are not shown in elevation.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION

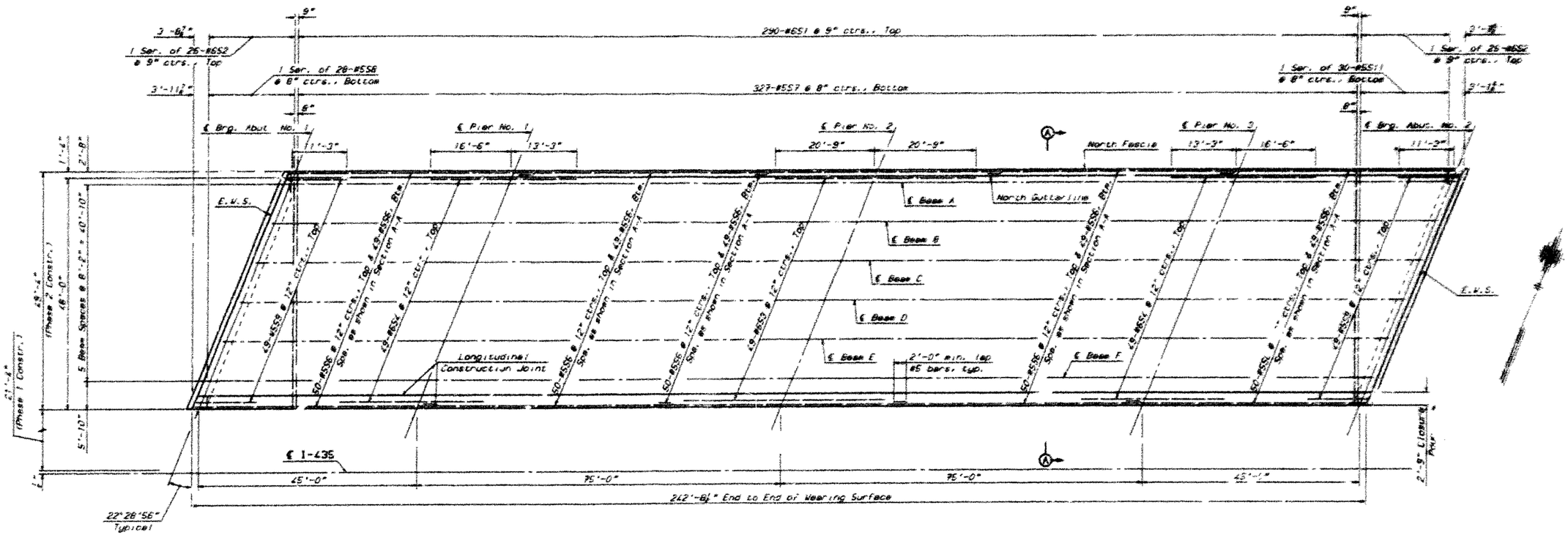
BR. NO. 435-46-0.01 (314) STA. 462+03.22

FRAMING PLAN
PHASE 2 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD

PROJ. NO. 435-46 K-3639-02 JOHNSON CO.

228

Jackson A5909



SLAB PLAN

SLAB NOTES:

All falsework used for the erection of the beams shall be removed before the concrete for the slab is placed.

Forms for the slab and barrier rails shall be supported by the beams.

Depth of slab over beams between bearings will vary to compensate for vertical curve and dead load deflection as required to produce the desired roadway surface elevations. See Schematic Diagram on sheet 271.

For details of the Concrete Placing Sequence, see Sheet 267

Construction joints shall be made only at locations shown or as approved by the Engineer.

For Barrier Rail Details, see Sheet 271.

For Section A-A, see Sheet 282.

For longitudinal and transverse construction joint details, see Sheet 270.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

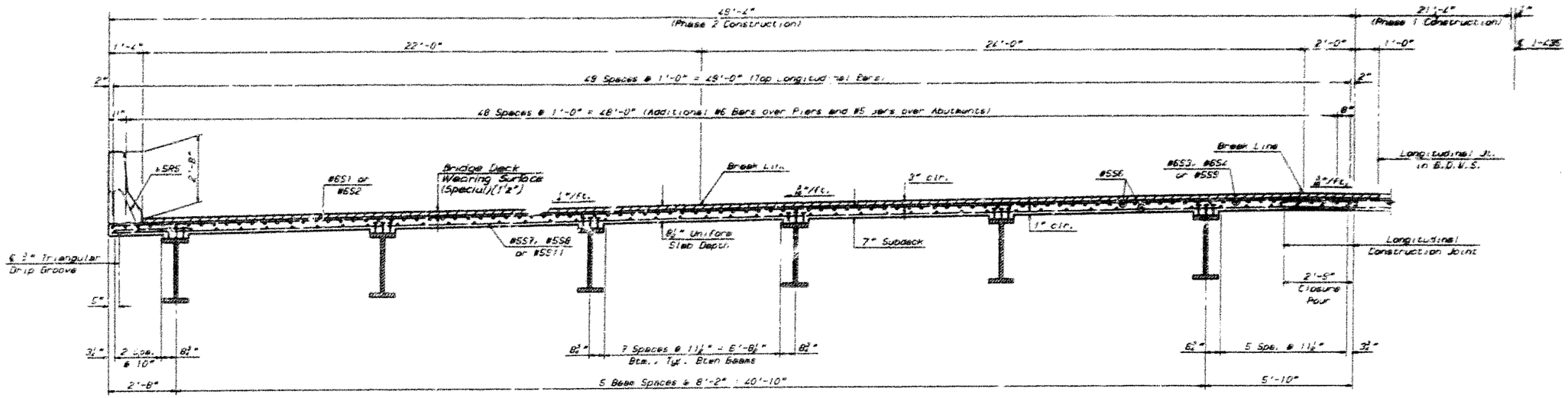
KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01(314) STA. 462+83.22

SLAB PLAN
PHASE 2 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

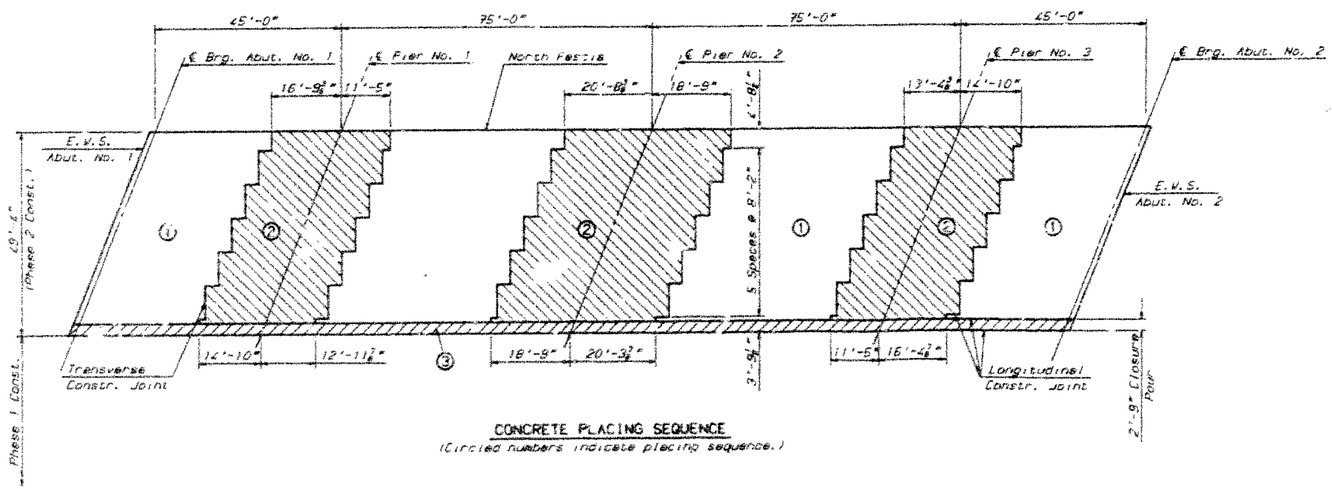
229

Jackson A5909



Note:
For location of Section A-A, see Sheet 281.

SECTION A-A



CONCRETE PLACING SEQUENCE
(Circled numbers indicate placing sequence.)

Notes:
For Shear Connector Detail and Schematic Diagram Showing Slab Depth over Beams, see Sheet 271.
For Concrete Placing Sequence Notes, see Sheet 226.

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01 (314) STA. 462+83.22

SLAB DETAILS
PHASE 2 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

HNTB NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

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Jack Sol. A5904

TOP OF PAVEMENT ELEVATIONS AT TENTH POINTS

LOCATION	POINT	BEAM A STATION	BEAM A ELEVATION	BEAM B STATION	BEAM B ELEVATION	BEAM C STATION	BEAM C ELEVATION	BEAM D STATION	BEAM D ELEVATION	BEAM E STATION	BEAM E ELEVATION	BEAM F STATION	BEAM F ELEVATION	POINT
℄ BRG. ABUT. NO. 1	0	461+91.375	853.659	461+87.995	853.824	461+84.615	853.989	461+81.236	854.134	461+77.856	854.256	461+74.476	854.378	0
	1	461+95.875	853.665	461+92.495	853.831	461+89.115	853.996	461+85.736	854.141	461+82.356	854.263	461+78.976	854.385	1
	2	462+00.375	853.671	461+96.995	853.839	461+93.615	854.002	461+90.236	854.148	461+86.856	854.270	461+83.476	854.392	2
	3	462+04.875	853.676	462+01.495	853.842	461+98.115	854.008	461+94.736	854.154	461+91.356	854.277	461+87.976	854.399	3
	4	462+09.375	853.681	462+05.995	853.848	462+02.615	854.014	461+99.236	854.160	461+95.856	854.283	461+92.476	854.406	4
	5	462+13.875	853.686	462+10.495	853.852	462+07.115	854.019	462+03.736	854.165	462+00.356	854.288	461+96.976	854.412	5
	6	462+18.375	853.690	462+14.995	853.857	462+11.615	854.024	462+06.236	854.170	462+04.856	854.294	462+01.476	854.417	6
	7	462+22.875	853.694	462+19.495	853.861	462+16.115	854.028	462+12.736	854.175	462+09.356	854.299	462+05.976	854.422	7
	8	462+27.375	853.697	462+23.995	853.865	462+20.615	854.032	462+17.236	854.179	462+13.856	854.303	462+10.476	854.427	8
	9	462+31.875	853.701	462+28.495	853.868	462+25.115	854.036	462+21.736	854.183	462+18.356	854.308	462+14.976	854.432	9
℄ PIER NO. 1	10	462+36.375	853.703	462+32.995	853.871	462+29.615	854.039	462+26.236	854.187	462+22.856	854.312	462+19.476	854.436	10
℄ PIER NO. 1	0	462+36.375	853.703	462+32.995	853.871	462+29.615	854.039	462+26.236	854.187	462+22.856	854.312	462+19.476	854.436	0
	1	462+43.875	853.707	462+40.495	853.876	462+37.115	854.044	462+33.736	854.192	462+30.356	854.317	462+26.976	854.442	1
	2	462+51.375	853.710	462+47.995	853.879	462+44.615	854.048	462+41.236	854.196	462+37.856	854.322	462+34.476	854.447	2
	3	462+58.875	853.712	462+55.495	853.881	462+52.115	854.050	462+48.736	854.199	462+45.356	854.325	462+41.976	854.451	3
	4	462+66.375	853.712	462+62.995	853.882	462+59.615	854.052	462+56.236	854.201	462+52.856	854.328	462+49.476	854.454	4
	5	462+73.875	853.712	462+70.495	853.882	462+67.115	854.053	462+63.736	854.203	462+60.356	854.330	462+56.976	854.456	5
	6	462+81.375	853.711	462+77.995	853.882	462+74.615	854.052	462+71.236	854.203	462+67.856	854.330	462+64.476	854.457	6
	7	462+88.875	853.708	462+85.495	853.880	462+82.115	854.051	462+78.736	854.202	462+75.356	854.330	462+71.976	854.459	7
	8	462+96.375	853.705	462+92.995	853.877	462+89.615	854.048	462+86.236	854.200	462+82.856	854.328	462+79.476	854.456	8
	9	463+03.875	853.701	463+00.495	853.873	462+97.115	854.045	462+93.736	854.197	462+90.356	854.325	462+86.976	854.454	9
℄ PIER NO. 2	10	463+11.375	853.695	463+07.995	853.868	463+04.615	854.040	463+01.236	854.193	462+97.856	854.322	462+94.476	854.451	10
℄ PIER NO. 2	0	463+11.375	853.695	463+07.995	853.868	463+04.615	854.040	463+01.236	854.193	462+97.856	854.322	462+94.476	854.451	0
	1	463+18.875	853.689	463+15.495	853.862	463+12.115	854.035	463+08.736	854.187	463+05.356	854.317	463+01.976	854.447	1
	2	463+26.375	853.681	463+22.995	853.855	463+19.615	854.028	463+16.236	854.181	463+12.856	854.312	463+09.476	854.442	2
	3	463+33.875	853.673	463+30.495	853.847	463+27.115	854.021	463+23.736	854.174	463+20.356	854.305	463+16.976	854.435	3
	4	463+41.375	853.663	463+37.995	853.838	463+34.615	854.012	463+31.236	854.166	463+27.856	854.297	463+24.476	854.428	4
	5	463+48.875	853.652	463+45.495	853.827	463+42.115	854.002	463+38.736	854.157	463+35.356	854.289	463+31.976	854.420	5
	6	463+56.375	853.641	463+52.995	853.816	463+49.615	853.992	463+46.236	854.147	463+42.856	854.279	463+38.476	854.411	6
	7	463+63.875	853.628	463+60.495	853.804	463+57.115	853.980	463+53.736	854.135	463+50.356	854.268	463+46.976	854.400	7
	8	463+71.375	853.615	463+67.995	853.791	463+64.615	853.967	463+61.236	854.123	463+57.856	854.256	463+54.476	854.389	8
	9	463+78.875	853.600	463+75.495	853.777	463+72.115	853.953	463+68.736	854.110	463+65.356	854.243	463+61.976	854.377	9
℄ PIER NO. 3	10	463+86.375	853.584	463+82.995	853.761	463+79.615	853.936	463+76.236	854.095	463+72.856	854.229	463+68.476	854.363	10
℄ PIER NO. 3	0	463+86.375	853.584	463+82.995	853.761	463+79.615	853.938	463+76.236	854.095	463+72.856	854.229	463+68.476	854.363	0
	1	463+90.875	853.574	463+87.495	853.752	463+84.115	853.929	463+80.736	854.086	463+77.356	854.221	463+73.976	854.355	1
	2	463+95.375	853.564	463+91.995	853.742	463+88.615	853.920	463+85.236	854.077	463+81.856	854.211	463+78.476	854.346	2
	3	463+99.875	853.553	463+96.495	853.731	463+93.115	853.905	463+89.736	854.067	463+86.356	854.202	463+82.976	854.337	3
	4	464+04.375	853.542	464+00.995	853.721	463+97.615	853.889	463+94.236	854.057	463+90.856	854.192	463+87.476	854.327	4
	5	464+08.875	853.531	464+05.495	853.710	464+02.115	853.888	463+98.736	854.046	463+95.356	854.182	463+91.976	854.317	5
	6	464+13.375	853.519	464+09.995	853.698	464+06.615	853.877	464+03.236	854.035	463+99.856	854.171	463+96.476	854.306	6
	7	464+17.875	853.507	464+14.495	853.686	464+11.115	853.865	464+07.736	854.024	464+04.356	854.160	464+00.976	854.296	7
	8	464+22.375	853.494	464+18.995	853.674	464+15.615	853.853	464+12.236	854.012	464+08.856	854.149	464+05.476	854.285	8
	9	464+26.875	853.482	464+23.495	853.661	464+20.115	853.84[illegible]	464+16.736	854.000	464+13.356	854.137	464+09.976	854.273	9
℄ BRG. ABUT. NO. 2	10	464+31.375	853.468	464+27.995	853.648	464+24.615	853.828	464+21.236	853.989	464+17.856	854.125	464+14.476	854.261	10

TOP OF PAVEMENT ELEVATIONS OVER FIELD SPLICES

LOCATION	FIELD SPLICE NO. 1 STATION	FIELD SPLICE NO. 1 ELEVATION	FIELD SPLICE NO. 2 STATION	FIELD SPLICE NO. 2 ELEVATION
BEAM A	462+92.375	853.707	463+30.375	853.677
BEAM B	462+88.995	853.879	463+26.995	853.851
BEAM C	462+85.615	854.050	463+23.615	854.025
BEAM D	462+82.236	854.201	463+20.236	854.178
BEAM E	462+78.856	854.329	463+16.856	854.305
BEAM F	462+75.476	854.457	463+13.476	854.435

Note:
Elevations are at top of 1½" Bridge Deck Wearing Surface over ℄ Beam at points shown.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46+0.01(314) STA. 462+83.22
ROADWAY SURFACE ELEVATIONS
PHASE 2 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

237

Jackson M5904

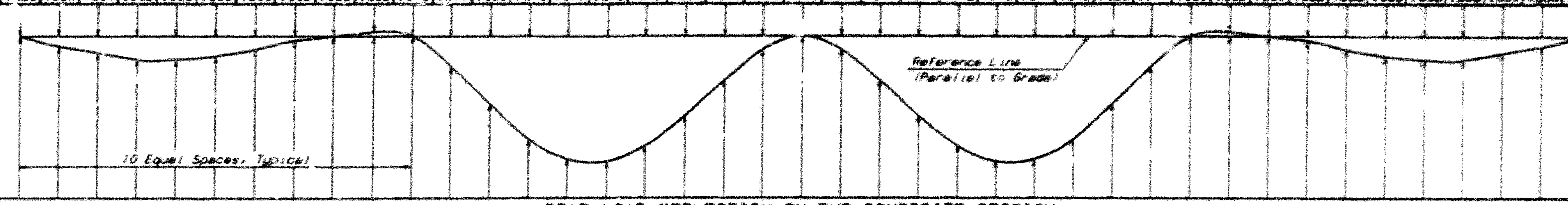
DEAD LOAD DEFLECTION ON NON-COMPOSITE SECTION

Points 1–21 (€ Brg. Abut. No. 1 to € Pier No. 2):

	BEAM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
DEAD LOAD STEEL	A	.000	.001	.001	.002	.002	.002	.00	.000	.000	.000	.000	.003	.006	.009	.011	.011	.010	.007	.004	.001	.005
DEAD LOAD STEEL	B thru F	.000	.001	.001	.002	.002	.001	.001	.000	.000	.000	.000	.002	.006	.009	.010	.011	.009	.007	.004	.001	.000
DEAD LOAD CONCRETE	A	.000	.002	.005	.006	.006	.005	.004	.002	.000	-.002	.000	.007	.017	.026	.031	.032	.027	.020	.011	.004	.000
DEAD LOAD CONCRETE	B thru F	.000	.003	.006	.007	.007	.007	.004	.002	.000	-.002	.000	.009	[illegible]	.031	.037	.037	.033	.024	.013	.004	.000
TOTAL NON-COMPOSITE DEFLECTION	A	.000	.003	.006	.008	.008	.007	.005	.002	.000	-.002	.000	.010	[illegible]	.036	.042	.043	.037	.027	.015	.005	.000
TOTAL NON-COMPOSITE DEFLECTION	B thru F	.000	.004	.007	.009	.009	.008	.005	.002	.000	-.002	.000	.011	.026	.040	.047	.048	.042	.031	.017	.005	.000

Points 22–41 (€ Pier No. 2 to € Brg. Abut. No. 2):

	BEAM	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
DEAD LOAD STEEL	A	.001	.004	.007	.010	.011	.011	.009	.006	.003	.000	.000	.000	.000	.001	.002	.002	.002	.0C	.001	.000
DEAD LOAD STEEL	B thru F	.001	.004	.007	.009	.011	.010	.009	.006	.002	.000	.000	.000	.000	.001	.001	.002	.002	.001	.001	.000
DEAD LOAD CONCRETE	A	.004	.011	.020	.027	.032	.031	.026	.017	.007	.000	-.002	.000	.002	.004	.005	.006	.006	.005	.002	.000
DEAD LOAD CONCRETE	B thru F	.004	.013	.024	.033	.037	.037	.031	[illegible]	.009	.000	-.002	.000	.002	.004	.007	.007	.007	.006	.003	.000
TOTAL NON-COMPOSITE DEFLECTION	A	.005	.015	.027	.037	.043	.042	.036	.023	.010	.000	-.002	.000	.002	.005	.007	.008	.008	.008	.003	.000
TOTAL NON-COMPOSITE DEFLECTION	B thru F	.005	.017	.031	.042	.048	.047	.040	.026	.011	.000	-.002	.000	.002	.005	.008	.009	.009	.007	.004	.000



DEAD LOAD DEFLECTION ON THE COMPOSITE SECTION

BEAM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
A	.000	.001	.001	.002	.002	.002	.001	.000	[illegible]	.000	.000	[illegible]	.006	[illegible]	.011	[illegible]	.010	.007	.004	.001	.000
B thru F	.000	.001	.001	.002	.002	.001	.001	.000	.000	.000	[illegible]	[illegible]	.006	.009	.011	.011	.010	.007	.004	.001	.000

BEAM	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
A	.001	.004	.007	.010	.011	.011	.009	.006	.003	.000	.000	.000	.000	.001	.002	.002	[illegible]	[illegible]	.001	.000
B thru F	.001	.004	.007	.010	.011	.011	.009	.006	.003	.000	[illegible]	.009	.000	.001	.001	.002	.002	.001	.001	.000

TOTAL DEAD LOAD DEFLECTION

BEAM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
A	.000	.004	.007	.010	.010	.009	.006	.002	.000	-.002	.000	.013	.029	.044	.053	.054	.047	.034	.019	.006	.000
B thru F	.000	.005	.008	.011	.011	.009	.006	.002	.000	-.002	.000	.014	.032	.049	.058	.059	.052	.038	.021	.006	.000

BEAM	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
A	.006	.019	.034	.047	.054	.053	.044	.029	.013	.000	-.002	.000	.003	.006	.009	.010	.010	.007	.004	.000
B thru F	.006	.021	.038	.052	.059	.058	.049	.032	.014	.000	-.002	.000	.002	.006	.009	.011	.011	.008	.005	.000

€ Brg. Abut. No. 1 — € Pier No. 1 — € Pier No. 2 — € Pier No. 3 — € Brg. Abut. No. 2

Span Lengths Measured along € Beams: 45'-0" | 75'-0" | 75'-0" | 45'-0"

DEAD LOAD DEFLECTION

Ordinates are in feet and are at tenth points of spans.

DEFLECTION NOTES

The beams shall not be cambered, but any natural mill camber that the beams have retained shall be placed up.

"Dead Load Steel" ordinates represent the amount of deflection due to all structural steel.

"Dead Load Concrete" ordinates represent the amount of deflection due to the initial slab pour.

"Total Non-Composite Deflection" ordinates represent the total amount of deflection on the non-composite structure.

"Composite Dead Load Deflection" ordinates represent the amount of deflection due to the 1½" Bridge Deck Wearing Surface and barrier rails.

"Total Dead Load Deflection" ordinates represent the total deflection which is the sum of the non-composite deflections and the composite deflections.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01(314) STA. 462+83.22
DEAD LOAD DEFLECTIONS
PHASE 2 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3697-02 JOHNSON CO.

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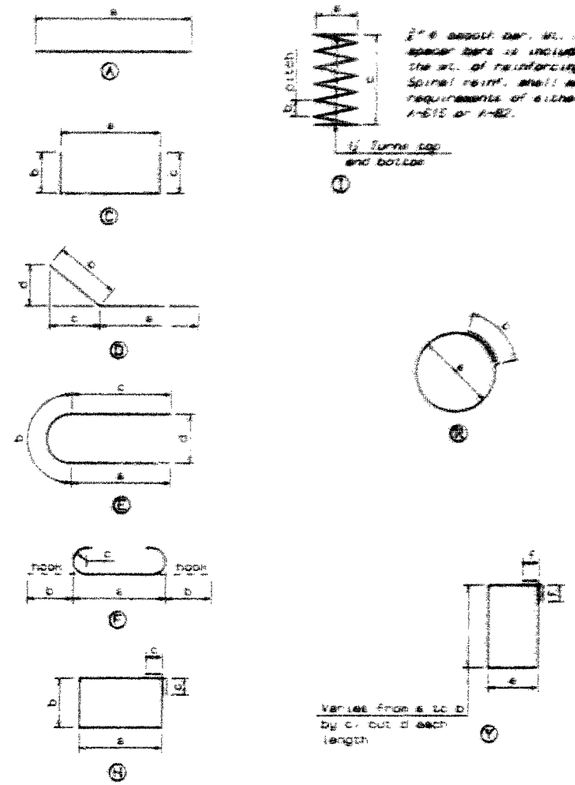
Jackson A5904

LOC.	DESIGN MARK	BENDING MARK	SIZE	NO.	LENGTH	DIMENSIONS a	b	c	d	e	f
PIER NO. 1 NON-EPOXY	DS1	A	10	42	20'-2"	20'-2"					
	DS2	A	10	24	11'-0"	11'-0"					
	PC1	A	10	8	18'-10"	18'-10"					
	PC2	A	10	8	18'-7"	18'-7"					
	PC3	A	10	8	18'-4"	18'-4"					
	P1	F	9	1	46'-4"	43'-10"	1'-3"	42"			
	P2	F	9	2	46'-2"	43'-8"	1'-3"	42"			
	P3	F	9	2	45'-4"	42'-10"	1'-3"	42"			
	P4	A	9	6	39'-7"	39'-7"					
	P5	A	9	2	12'-9"	12'-9"					
	P6	C	6	3	6'-7"	2'-6½"	2'-0⅛"	2'-0⅛"			
	P7	D	6	2	7'-11"	2'-7"	5'-4"	9¾"	5'-3½"		
	P8	D	6	2	8'-7"	2'-7"	6'-0"	10⅛"	5'-11⅛"		
	P9	D	6	2	8'-11"	2'-7"	6'-4"	11½"	6'-3½"		
	P10	E	6	3	8'-1"	2'-0⅛"	4'-0½"	2'-0⅛"	2'-6½"		
	P11	A	5	6	42'-7"	42'-7"					
	P12	H	5	28	13'-8"	2'-8"	3'-8"	6"			
	P13	Y	5	9	VARIES	2'-10"	3'-8"	1½"	1	2'-8"	6"
	DS3	R	4	63	10'-3½"	3'-0"	1'-0"				
	P14	C	4	3	5'-8"	3'-8"	1'-0"	1'-0"			
	P15	C	4	3	4'-8"	2'-8"	1'-0"	1'-0"			
	P16	C	4	15	3'-9"	1'-2½"	1'-3½"	1'-3½"			
	P19	C	4	15	4'-0"	1'-6"	1'-3"	1'-3"			
	PC4	I	⅜" ϕ	1	SPIRAL	2'-0"	6"	14'-11⅛"			
	PC5	I	⅜" ϕ	1	SPIRAL	2'-0"	6"	14'-8⅛"			
	PC6	I	⅜" ϕ	1	SPIRAL	2'-0"	6"	14'-5⅛"			
PIER NO. 2 NON-EPOXY	DS4	A	10	42	21'-2"	21'-2"					
	DS2	A	10	24	11'-0"	11'-0"					
	PC7	A	10	8	17'-10"	17'-10"					
	PC8	A	10	8	17'-6"	17'-6"					
	PC9	A	10	8	17'-3"	17'-3"					
	P1	F	9	1	46'-4"	43'-10"	1'-3"	42"			
	P2	F	9	2	46'-2"	43'-8"	1'-3"	42"			
	P3	F	9	2	45'-4"	42'-10"	1'-3"	42"			
	P4	A	9	6	39'-7"	39'-7"					
	P5	A	9	2	12'-9"	12'-9"					
	P6	C	6	3	6'-7"	2'-6½"	2'-0⅛"	2'-0⅛"			
	P7	D	6	2	7'-11"	2'-7"	5'-4"	9¾"	5'-3½"		
	P8	D	6	2	8'-7"	2'-7"	6'-0"	10⅛"	5'-11⅛"		
	P9	D	6	2	8'-11"	2'-7"	6'-4"	11½"	6'-3½"		
	P10	E	6	3	8'-1"	2'-0⅛"	4'-0½"	2'-0⅛"	2'-6½"		
	P11	A	5	6	42'-7"	42'-7"					
	P12	H	5	28	13'-8"	2'-8"	3'-8"	6"			
	P13	Y	5	9	VARIES	2'-10"	3'-8"	1½"	1	2'-8"	6"
	DS3	R	4	66	10'-3½"	3'-0"	1'-0"				
	P14	C	4	3	5'-8"	3'-8"	1'-0"	1'-0"			
	P15	C	4	3	4'-8"	2'-8"	1'-0"	1'-0"			
	P18	C	4	25	3'-9"	1'-2½"	1'-3½"	1'-3½"			
	P20	C	4	10	4'-8"	2'-2"	1'-3"	1'-3"			
	PC10	I	⅜" ϕ	1	SPIRAL	2'-0"	6"	13'-11⅛"			
	PC11	I	⅜" ϕ	1	SPIRAL	2'-0"	6"	13'-8⅛"			
	PC12	I	⅜" ϕ	1	SPIRAL	2'-0"	6"	13'-5⅛"			

LOC.	DESIGN MARK	BENDING MARK	SIZE	NO.	LENGTH	DIMENSIONS a	b	c	d	e	f
PIER NO. 3 NON-EPOXY	DS1	A	10	42	20'-2"	20'-2"					
	DS2	A	10	24	11'-0"	11'-0"					
	PC1	A	10	6	18'-10"	18'-10"					
	PC2	A	10	8	18'-7"	18'-7"					
	PC3	A	10	6	18'-4"	18'-4"					
	P1	F	9	1	46'-4"	43'-10"	1'-3"	42"			
	P2	F	9	2	46'-2"	43'-8"	1'-3"	42"			
	P3	F	9	2	45'-4"	42'-10"	1'-3"	42"			
	P4	A	9	6	39'-7"	39'-7"					
	P5	A	9	2	12'-9"	12'-9"					
	P6	C	6	3	6'-7"	2'-6½"	2'-0⅛"	2'-0⅛"			
	P7	D	6	2	7'-11"	2'-7"	5'-4"	9¾"	5'-3½"		
	P8	D	6	2	8'-7"	2'-7"	6'-0"	10⅛"	5'-11⅛"		
	P9	D	6	2	8'-11"	2'-7"	6'-4"	11½"	6'-3½"		
	P10	E	6	3	8'-1"	2'-0⅛"	4'-0½"	2'-0⅛"	2'-6½"		
	P11	A	5	6	42'-7"	42'-7"					
	P12	H	5	28	13'-8"	2'-8"	3'-8"	6"			
	P13	Y	5	9	VARIES	2'-10"	3'-8"	1½"	1	2'-8"	6"
	DS3	R	4	63	10'-3½"	3'-0"	1'-0"				
	P14	C	4	3	5'-8"	3'-8"	1'-0"	1'-0"			
	P15	C	4	3	4'-8"	2'-8"	1'-0"	1'-0"			
	P16	C	4	15	3'-9"	1'-2½"	1'-3½"	1'-3½"			
	P19	C	4	15	4'-0"	1'-6"	1'-3"	1'-3"			
	PC13	I	⅜" ϕ	1	SPIRAL	2'-0"	6"	14'-10⅛"			
	PC14	I	⅜" ϕ	1	SPIRAL	2'-0"	6"	14'-7⅛"			
	PC15	I	⅜" ϕ	1	SPIRAL	2'-0"	6"	14'-4⅛"			

Note:

Bars with the prefix "DS" are not included with the weight of reinforcing steel for payment. They are listed here for information only.



BENDING DIAGRAMS

Notes:

(K) denotes bending diagram mark. Dimensions are out to out, except all radii are to inside of bars.

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

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01(314) STA. 462+61.22

BILL OF REINFORCING STEEL
PHASE 2 CONSTRUCTION
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3831-02 JOHNSON CO.

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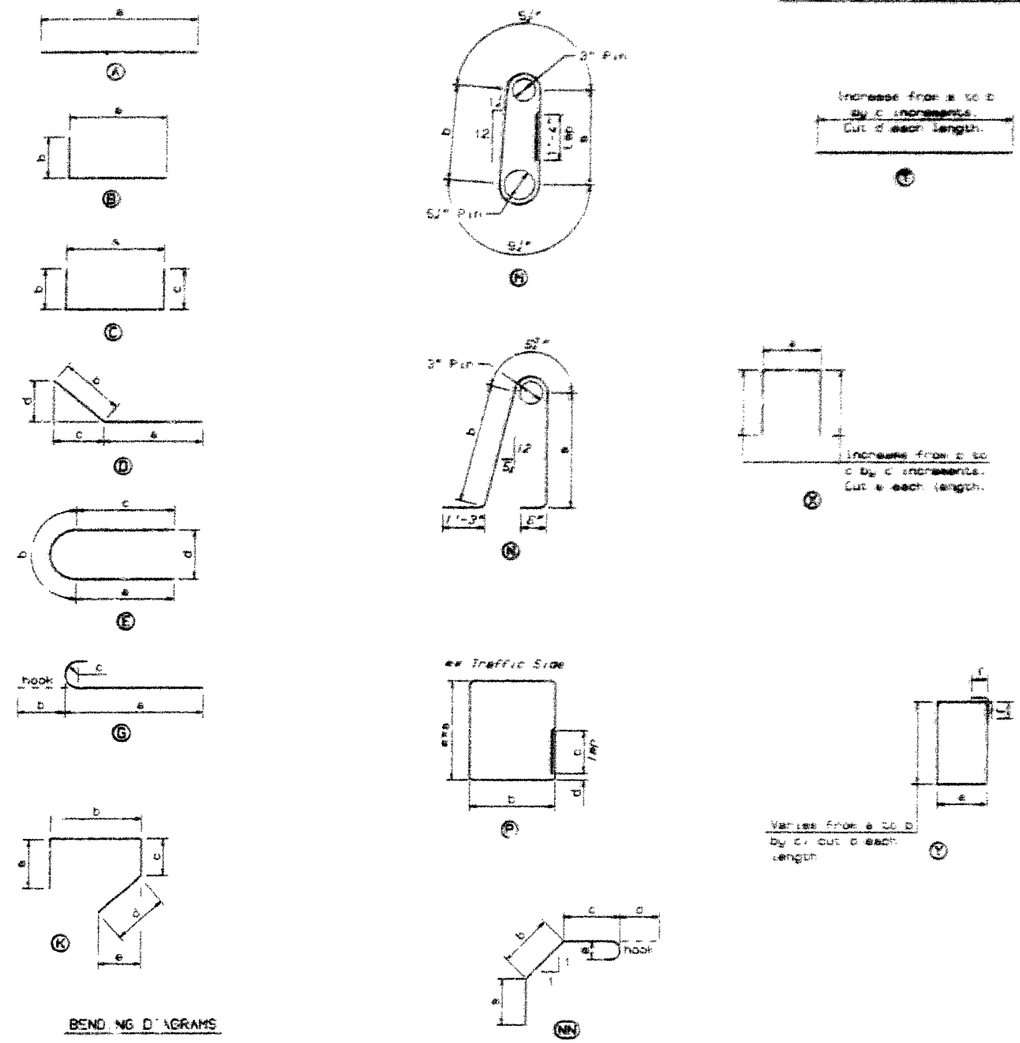
Jackson A5904

LOC.	DESIGN MARK	BENDING MARK	SIZE	NO.	LENGTH	DIMENSIONS a	b	c	d	e	f
SUPERSTRUCTURE EPOXY COATED	A1	A	8	32	34'-6"	34'-6"					
	A2	A	8	8	55'-10"	55'-10"					
	A31(M)	A	8	24	4'-5"	4'-5"					
	A4	D	8	8	13'-5"	4'-2"	9'-3"	8'-10"	2'-9"		
	#R1	A	6	5	50'-6"	50'-6"					
	R2	A	6	5	50'-1"	50'-1"					
	S1	A	6	290	49'-2"	49'-2"					
	S2	T	6	52	VARIES	3'-10½"	49'-2"	1'-9¾"	2		
	S3	A	6	49	41'-6"	41'-6"					
	S4	A	6	98	29'-9"	29'-9"					
	A5	A	5	30	8'-6"	8'-6"					
	A6	A	5	30	33'-6"	33'-6"					
	A7	A	5	4	51'-3"	51'-3"					
	A8(M)	A	5	28	2'-4"	2'-4"					
	A9	A	5	6	5'-7"	5'-7"					
	A10	T	5	6	VARIES	28'-1"	33'-7"	2'-3"	2		
	A11	T	5	6	VARIES	9'-0"	14'-6"	3'-9"	2		
	#R3(M)	A	5	243	3'-7"	3'-7"					
	#R4(M)	A	5	243	2'-0"	2'-0"					
	P5	H	5	248	6'-5"	1'-11¼"	2'-2¾"				
	#R6	G	5	243	4'-6¼"	4'-1¼"	7"	1¼"			
	R7	F	5	9	7'-6"	2'-4"	9"	1'-4"	2¼"		
	R8	E	5	4	7'-5"	3'-3¼"	10¼"	3'-3¼"	2¼"		
	R9	A	5	1	4'-0"	4'-0"					
	P10	H	5	239	6'-7"	2'-0"	2'-0¼"				
	S6	A	5	495	50'-1"	50'-1"					
	S7	A	5	327	49'-2"	49'-2"					
	S8	T	5	26	VARIES	4'-7¼"	47'-11"	1'-7¼"	1		
	S9	B	5	98	13'-3"	11'-3"	2'-0"				
	S11	T	5	30	VARIES	2'-7¼"	49'-2"	1'-7¼"	1		
	A23	NN	5	104	5'-1"	1'-6"	1'-6"	1'-6"	7"	5"	
	A12	C	4	116	10'-1"	2'-4"	3'-10¼"	3'-10¼"			
	A13	K	4	104	7'-5"	8"	3'-5"	10"	2'-6"	1'-11"	
	A14	C	4	61	13'-10"	2'-4"	5'-9"	5'-9"			
	A15	C	4	134	3'-8"	2'-4"	8"	8"			
	A16	X	4	6	VARIES	2'-4"	3'-3"	3'-10"	3¼"	2	
	A17	X	4	12	VARIES	2'-4"	1'-2¼"	2'-5"	3¼"	2	
	A18	C	4	5	11'-8"	2'-4"	4'-8"	4'-8"			
	A19	C	4	1	11'-0"	2'-4"	4'-4"	4'-4"			
	A20	C	4	61	13'-4"	2'-4"	5'-6"	5'-6"			
	A21	C	4	5	11'-2"	2'-4"	4'-5"	4'-5"			
	A22	C	4	1	10'-6"	2'-4"	4'-1"	4'-1"			
	#R11	A	4	56	36'-0"	36'-0"					
	R12	A	4	42	35'-9"	35'-9"					



BENDING DIAGRAMS

Notes:

Ⓐ denotes bending diagram mark. Dimensions are out to out, except all radii are to inside of bars.

No allowance for bend curvature is to be made except for standard hook and radii in excess of 12d.

(M) denotes bars which require a mechanical connection. See sheets 271 and 289 for additional details and notes.

* Median barrier rail bar to be placed during Phase 4.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01 (314) STA. 462+83.22

BILL OF REINFORCING STEEL
PHASE 2 CONSTRUCTION
WESTBOUND I-435 / STATE LINE ROAD
PROJ. NO. 435-46 K-1-02 JOHNSON CO.

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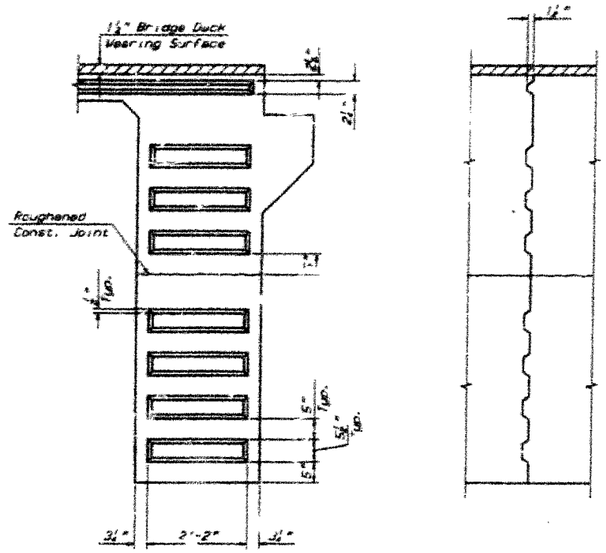
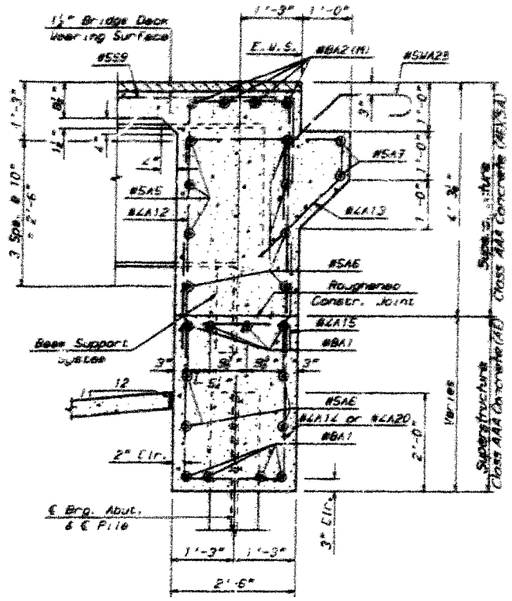
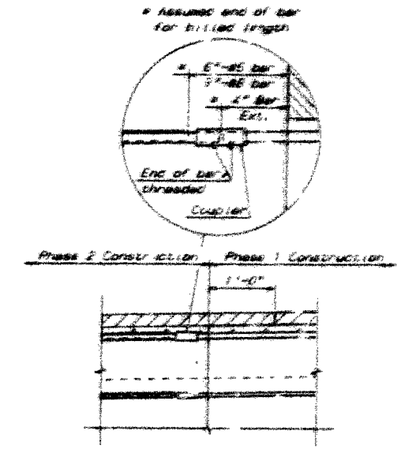
Jackson A5904



LONGITUDINAL CONSTRUCTION JOINT DETAILS
(Shown perpendicular to joint.)



SECTION B-B
(Phase 2 only)



SUGGESTED MECHANICAL CONNECTION DETAIL

MECHANICAL CONNECTION NOTES:

The Mechanical Connection must be capable of developing 125% of yield strength of the bar in tension and compression. These splices shall not be paid for directly but shall be considered subsidiary to the bid item "Reinforcing Steel (Gr. 60) Epoxy Coated".

Mechanical Connection structural steel components shall be epoxy coated.

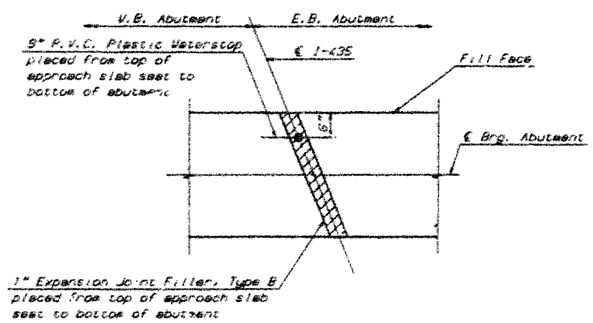
The Contractor shall submit mechanical connection details and test data to the Engineer for review and approval. Details shall be included to protect exposed mechanical connection components from corrosion in the interim between phases of construction.

The basis of acceptance of mechanical connection material furnished shall be receipt and approval of a Type B Certification as described in Section 2200 of the Standard Specifications.

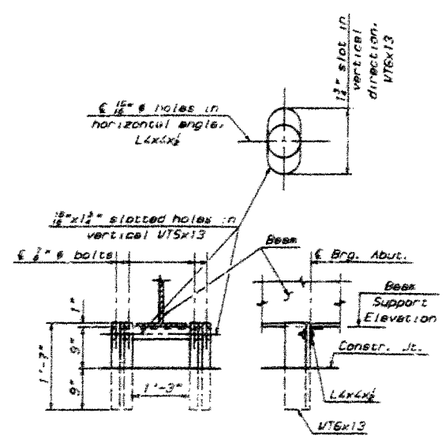
Notes:

For location of Section B-B, see Sheets 275 & 276.

For location of Detail C, see Sheets 264 & 265.



DETAIL C
(Abutment No. 2 shown, Abutment No. 1 opposite hand)



BEAM SUPPORT SYSTEM DETAILS

Beam Support System Notes:

Weight per assembly = 71 lbs. (6 Required - Phase 1, 12 Required - Phase 2).

Use one assembly at each end of each beam.

The system shall be placed parallel to ℄ Brg. Abutment.

The Beam Support System shall be paid for as A709 Grade 36 Structural Steel, and shall receive one shop coat of the Inorganic Zinc Vinyl Paint System.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01 (314) STA. 462+83.22

AUXILIARY ABUTMENT DETAILS

WESTBOUND I-435 OVER STATE LINE ROAD

PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

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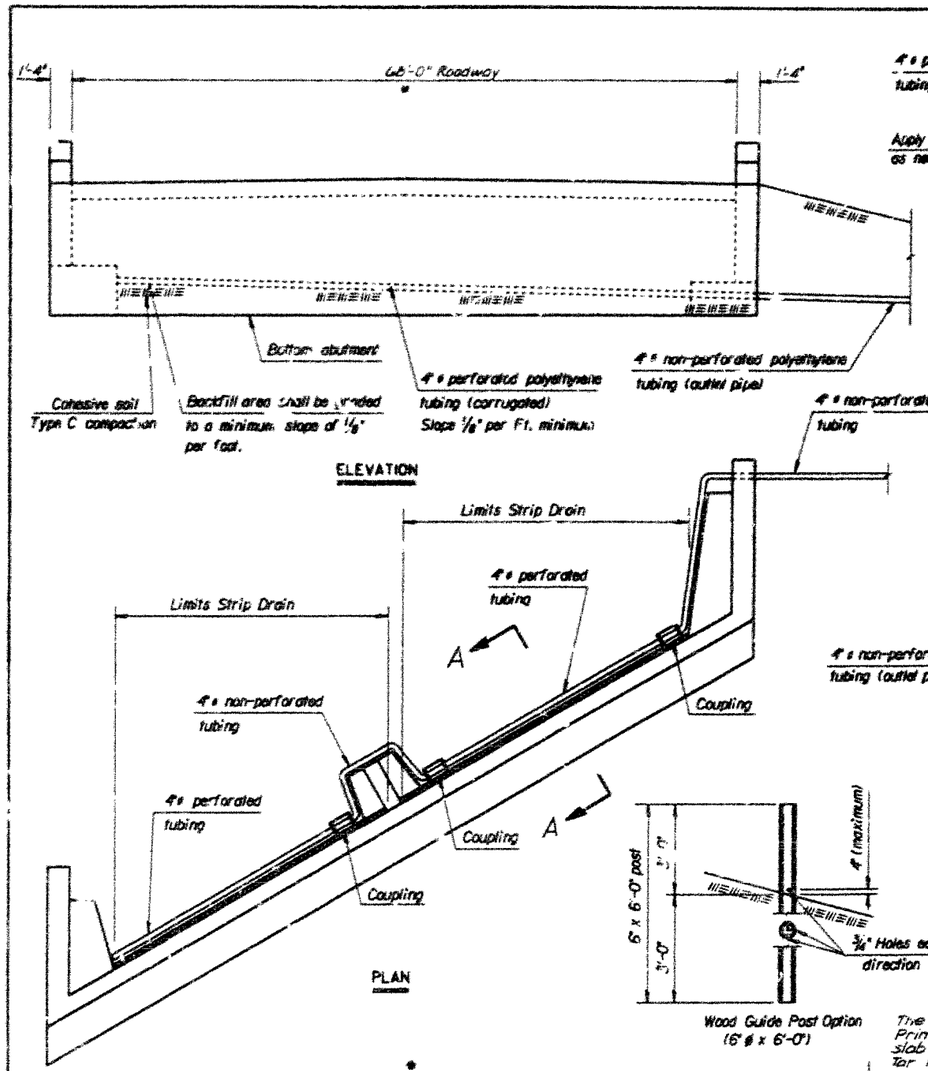
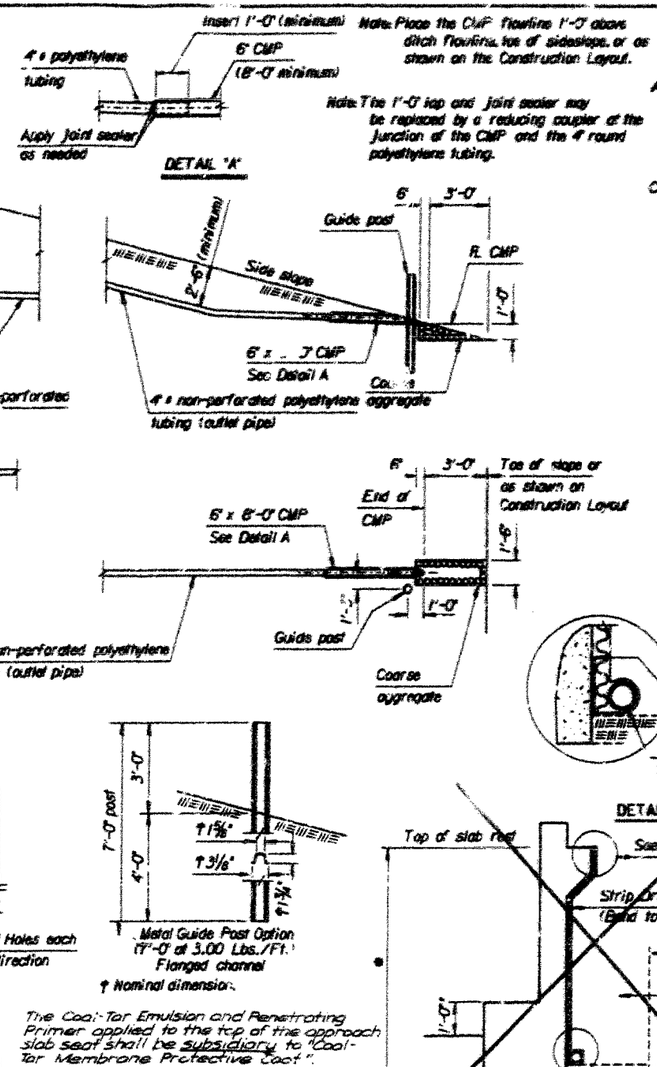
Jackson A5904





The Coal-Tar Emulsion and Penetrating Primer applied to the top of the approach slab seat shall be subsidiary to "Coal-Tar Membrane Protective Coat".

GUIDE POST

Note: Wood guide posts shall be given a preservative treatment as provided in the KDOT Specifications.
Reflectorized material will be applied to the post by the State.
The top 18" of the posts shall be given 2 coats of aluminum paint and the top 12" of the post shall be given one coat of International Orange Enamel paint.
Only one type of preservative treatment may be used on a project.
Metal guide posts shall meet the requirements of the KDOT Specifications.
Metal post shall have a galvanized or baked enamel coating and the upper 12" of each post shall receive a coat of International Orange Enamel paint.

GENERAL NOTES

ABUTMENT STRIP DRAIN: The Bridge Contractor shall excavate to the limits shown on the Bridge Excavation sheet grade the bottom of the backfill area, place the strip drain, [illegible] perforated pipe, the outlet pipe, the CMP, and the backfill. Guide post and coarse aggregate are subsidiary to this bid item. Guide post and coarse aggregate are not required if the CMP empties into riprap.

COAL-TAR MEMBRANE PROTECTIVE COAT: The Bridge Contractor shall coat the earth side of the wingwalls and the abutment backwalls to the limits shown with a coal-tar membrane protective coat in accordance with the KDOT Specifications. This work shall be completed by the [illegible] immediately after the abutment concrete has cured and prior to backfilling. Any damage [illegible] the Coal-Tar Membrane shall be repaired at no extra cost to the State.

Perforated pipe shall be placed next to the strip drain. Outside the limits of the strip drain, non-perforated pipe shall be used. Care shall be taken to enclose the perforated pipe with the extension of the filter fabric.

Compaction shall be required at abutments. See KDOT Specifications.

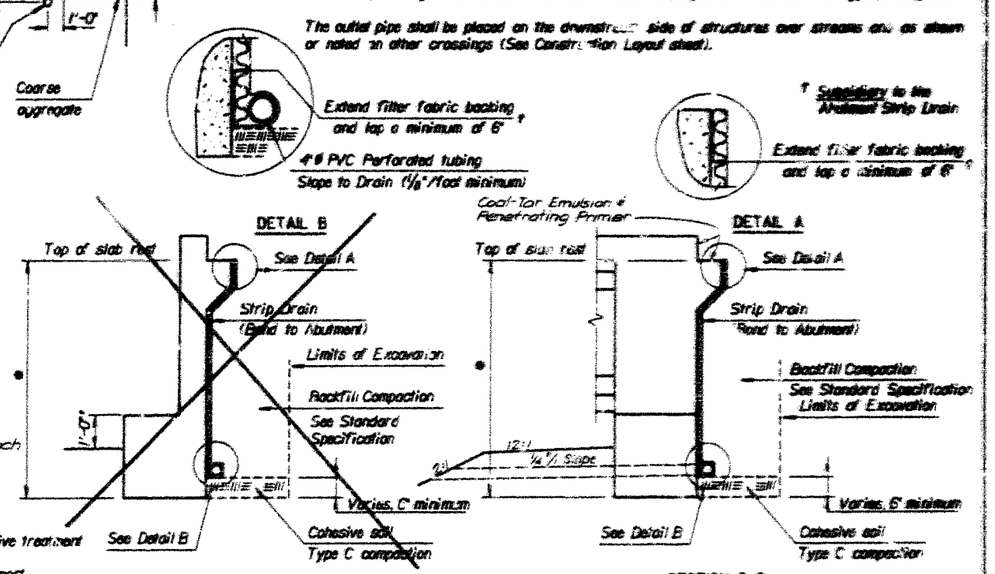
The Abutment Strip Drain material shall meet the requirements of KDOT Specifications.

Perforated pipe and non-perforated outlet pipe shall be corrugated polyethylene tubing and shall meet the requirements of KDOT Specifications.

The CMP end section shall be fitted with a 1/4" galvanized mesh screen to prevent the entrance of rodents. The joint between the outlet pipe and end section shall be sealed with a joint sealer. Coarse aggregate shall be placed at the outlet end as shown.

The bottom surface of the excavated area shall be graded to drain and backfilled with a cohesive type soil. The soil should be a silty clay or clay under the Kansas Classification System with a minimum plasticity index of 20. The material shall be compacted to conform to Type C compaction.

The outlet pipe shall be placed on the downstream side of structures over streams and as shown or noted on other crossings (See Construction Layout sheet).



SECTION A-A

* Limits of Coal-Tar Membrane Protective Coat (by Bridge Contractor)

SECTION B-B

SUMMARY OF QUANTITIES		
Abutment Strip Drain	134	Sq. Yds.
Coal-Tar Membrane Protective Coat	140	Sq. Yds.
Items Subsidiary to Strip Drain		
4" Perforated Pipe	170	Lin. Ft.
4" Outlet Pipe	171	Lin. Ft.
6" CMP	16	Lin. Ft.

NO.	DATE	REVISION	BY	APPD.
2	2-11-92	Suggested strip drain & CM	LJR	[illegible]
1	4-4-90	Add Steel Guide Post Option	LJR	[illegible]

KANSAS DEPARTMENT OF TRANSPORTATION

ABUTMENT
STRIP DRAIN
WESTBOUND I-435 OVER STATE LINE RD.

STD-NO-102

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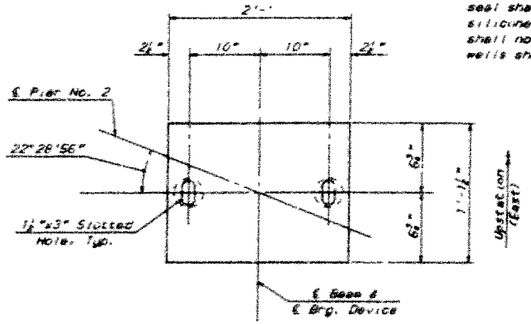
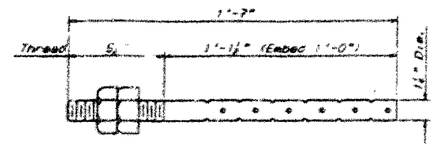
Jackson 95904

Formed Anchor Bolt Wells:

Place moisture seal in well during pier construction. Moisture seal shall consist of a styrofoam blockout sealed at the top with a silicone caulking after concrete has cured. The well moisture seals shall not be disturbed until anchor bolts are installed. Anchor bolt wells shall be kept dry until moisture seals have been installed.

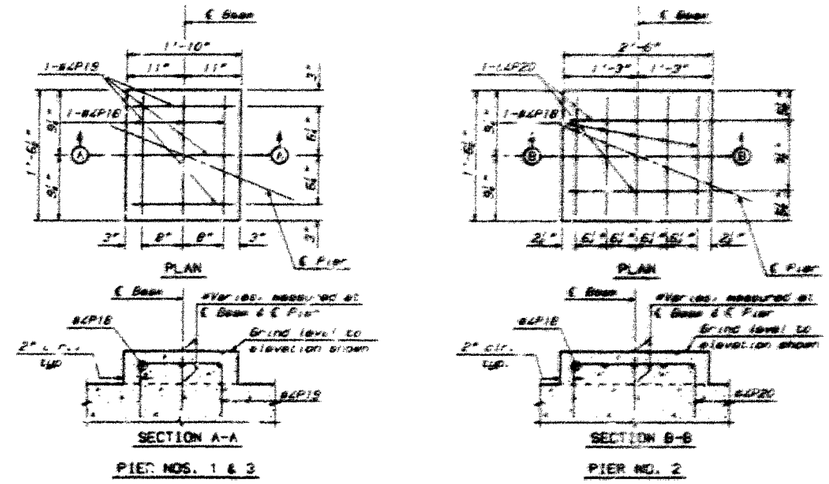


SOLE PLATE PLAN

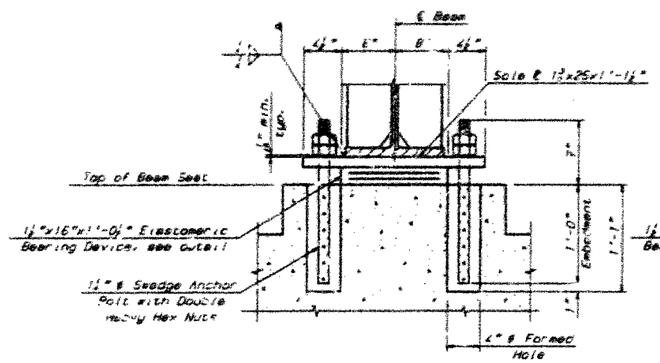


SWEDGE ANCHOR BOLT

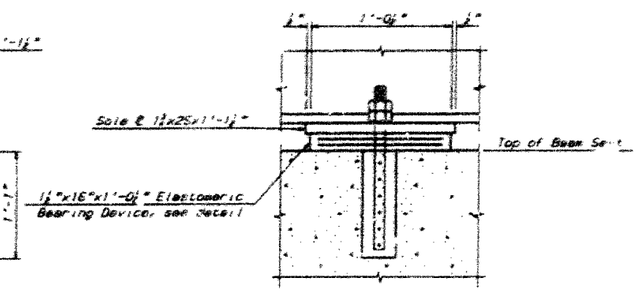
* (8 required at Phase 1 Pier 2)
(10 required at Phase 2 Pier 2)



BEAM SEAT DETAILS



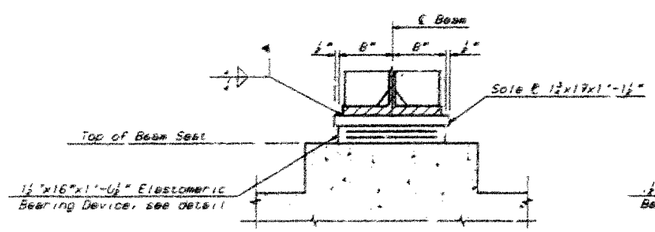
TYPICAL SECTION



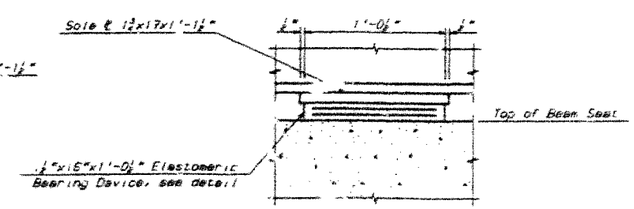
ELEVATION

BEARING DEVICE DETAILS - PIER NO. 2

(4 required at Phase 1 Pier 2)
(5 required at Phase 2 Pier 2)



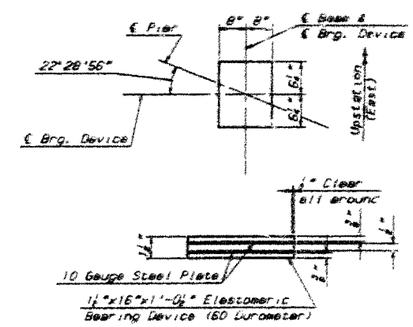
TYPICAL SECTION



ELEVATION

BEARING DEVICE DETAILS - PIER NOS. 1 & 3

(4 required at both Phase 1 Pier 1 and Phase 1 Pier 3)
(5 required at both Phase 2 Pier 1 and Phase 2 Pier 3)



ELASTOMERIC BEARING DEVICE

(4 required at each Pier of Phase 1)
(5 required at each Pier of Phase 2)

Place Beam Seat to dimension shown on the corresponding Pier Detail sheet and grind to elevation shown on that sheet.

ELASTOMERIC BEARING DEVICES:

The Elastomeric Bearing Devices shall be bonded to the steel sole plates by a vulcanizing process. All exposed surfaces of the sole plates shall be painted with the Organic Zinc-Vinyl paint system after the plates have been field welded to the bottom of the beam. The sole plate is to be included in the bid item "Elastomeric Bearing Devices" and furnished by the bearing device fabricator.

* Beam F anchor bolts shall be installed during Phase 1 construction.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01(314) STA. 462+85.22

AUXILIARY PIER DETAILS

WESTBOUND I-435 OVER STATE LINE ROAD

PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

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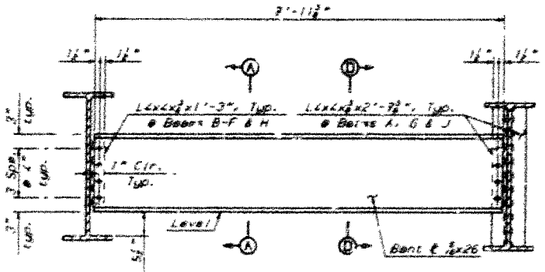
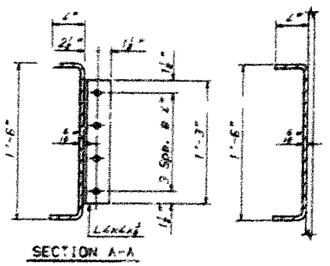


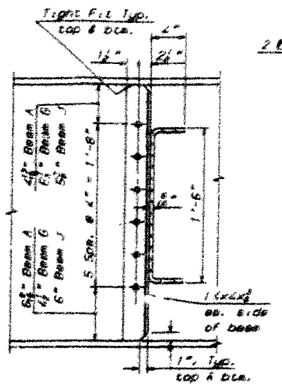
INTERMEDIATE DIAPHRAGM
(12 Required Phase 1 &
36 Required Phase 2)

* Set at higher beam.

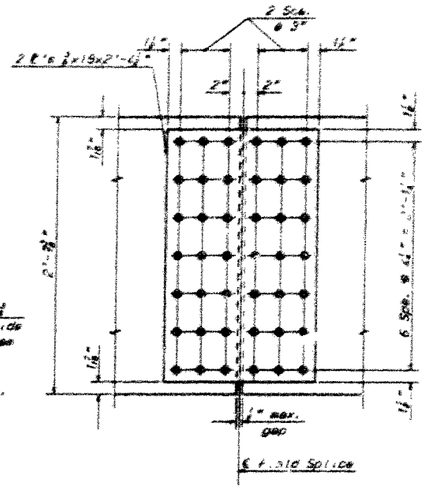


SECTION A-A

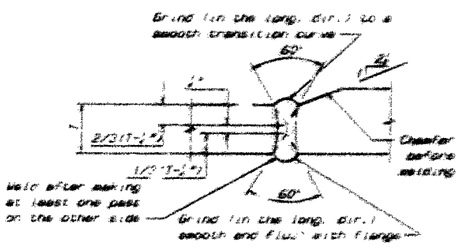
SECTION B-B



SECTION D-D

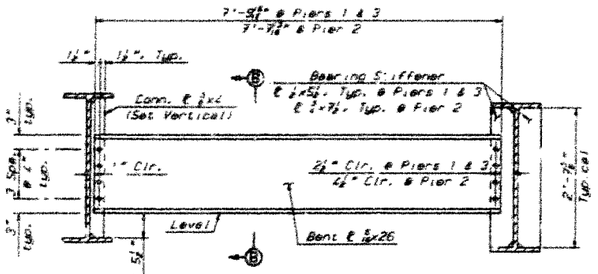


WEB SPLICE

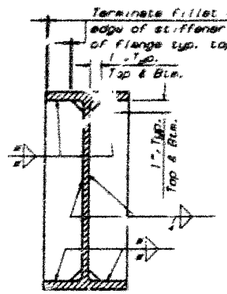


FLANGE WELD

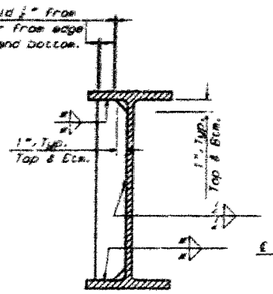
Note:
When the minimum flange thickness is ¾", a single V-groove weld may be substituted for the weld shown.



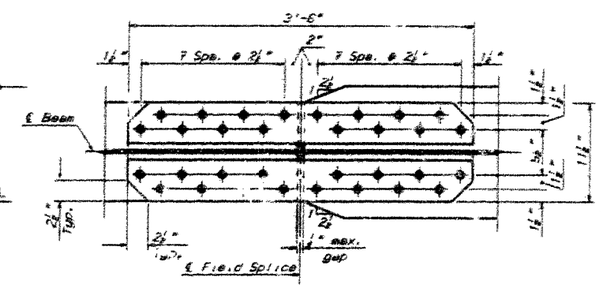
PIER DIAPHRAGM
(9 Required Phase 1 &
18 Required Phase 2)



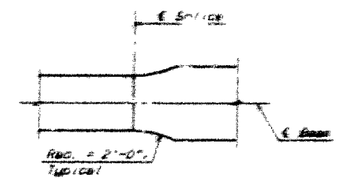
BEARING STIFFENER DETAIL



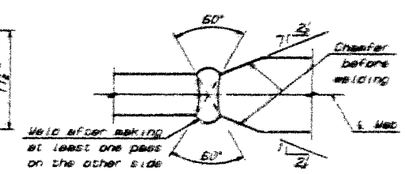
CONNECTION PLATE DETAIL



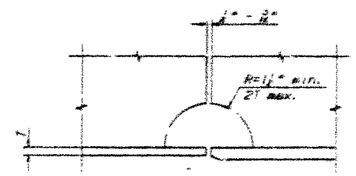
FLANGE SPLICE
(Btm. Splice shown,
Top Splice similar)



FLANGE TAPER DETAIL



WEB WELD

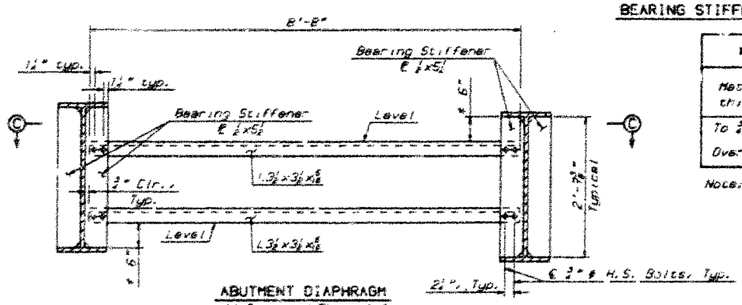


COPE DETAIL
(Cope web at top and bottom flange.)

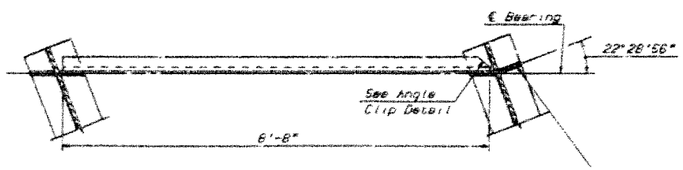
WELDED SPLICE DETAILS

* MINIMUM FILLET WELD SIZES	
Material thickness of thicker part joined	Minimum size of fillet weld
To ¾ inch inclusive	¼ inch
Over ¾ inch to 1½ inch	5/16 inch

Note: Minimum fillet weld size need not exceed the thickness of the thinner part joined.

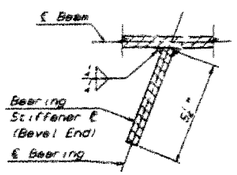


ABUTMENT DIAPHRAGM
(2 Required Phase 1 &
10 Required Phase 2)

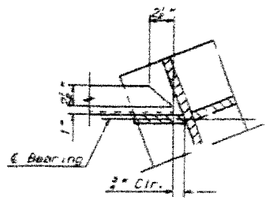


SECTION C-C

Place outside stiffener plate normal to web, typ. at Beams A, F, G and J.



SKEWED BEARING STIFFENER DETAIL
(See Framing Plan for location of skewed bearing stiffeners.)



ANGLE CLIP DETAIL

FIELD SPLICE DETAILS

Id Splice Notes:
All bolts shall be ¾" ø high strength bolts, ASTM A325, unless noted otherwise.
All flange and web splice plates shall be M270, Grade 50T2 steel.
Flange splice fill plates shall be ASTM A572 steel and shall be considered subsidiary to "AASHTO M270 Grade 50 Structural Steel".
Number of bolts per splice = 106.
Weight per splice:
M270, Gr. 50T2 = 379 lbs.
Re: Structural Steel Notes, see Sheet 226.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF
ARCHITECTS ENGINEERS PLANNERS

No.	Date	Revisions	By	Appd.
1		435-46 K-3637-02		

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01 (312) STA. 462+83.22
MISC. STRUCTURAL STEEL DETAILS
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3637-02 JOHNSON CO.

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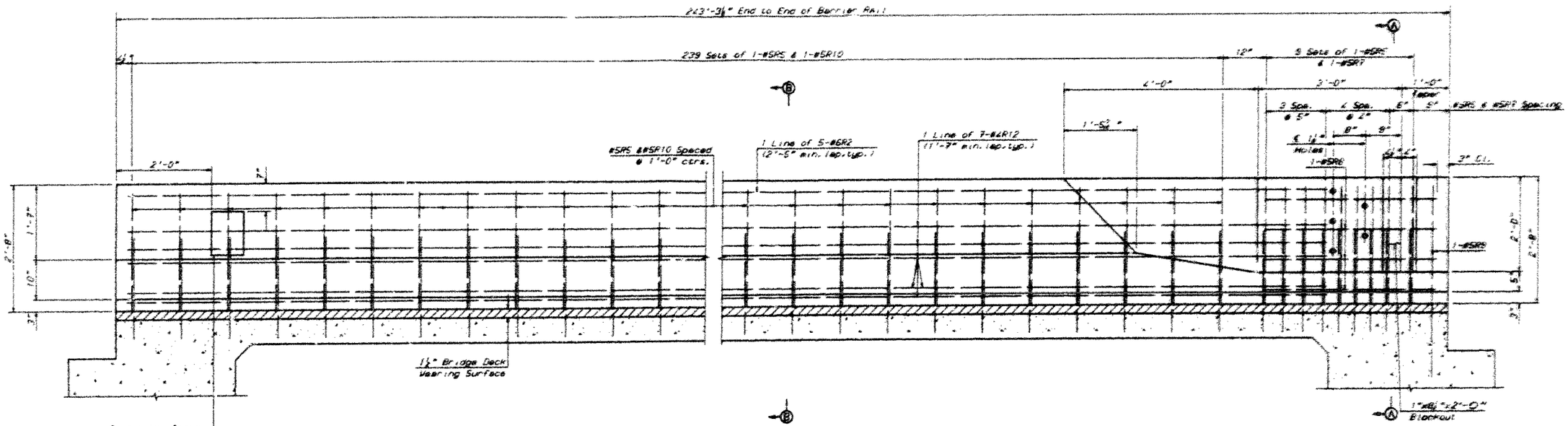
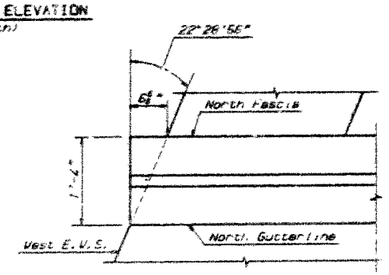
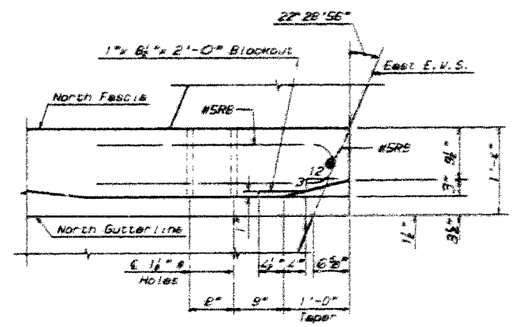


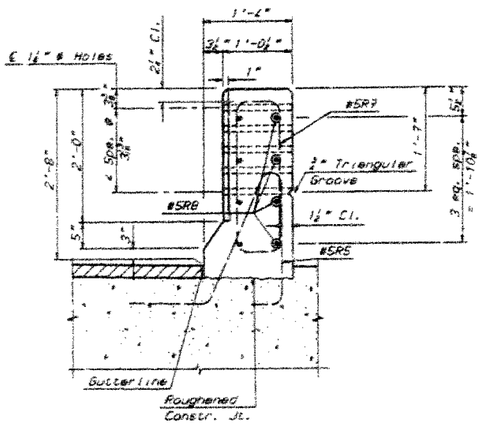
NORTH BARRIER RAIL ELEVATION
(Looking North)



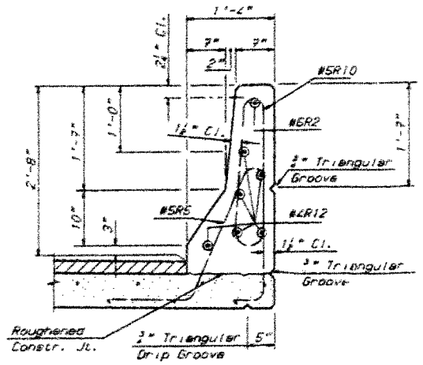
WEST END PLAN



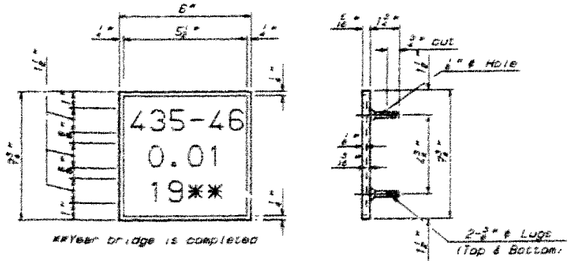
EAST END PLAN



SECTION A-A



SECTION B-B



**Year bridge is completed

BRIDGE NUMBER PLATE
(1 Required)

Notes:
All longitudinal dimensions are measured horizontally along the gutterline.
The materials and work required for installing the Bridge Number Plate shall be subsidiary to "Class AAA Concrete (KE)(SA)".

KANSAS DEPARTMENT OF TRANSPORTATION
BR. NO. 435-46-0.01 (31.2) STA. 462+83.22
NORTH BARRIER RAIL DETAILS
WESTBOUND I-435 OVER STATE LINE ROAD
PROJ. NO. 435-46 K-3639-02 JOHNSON CO.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

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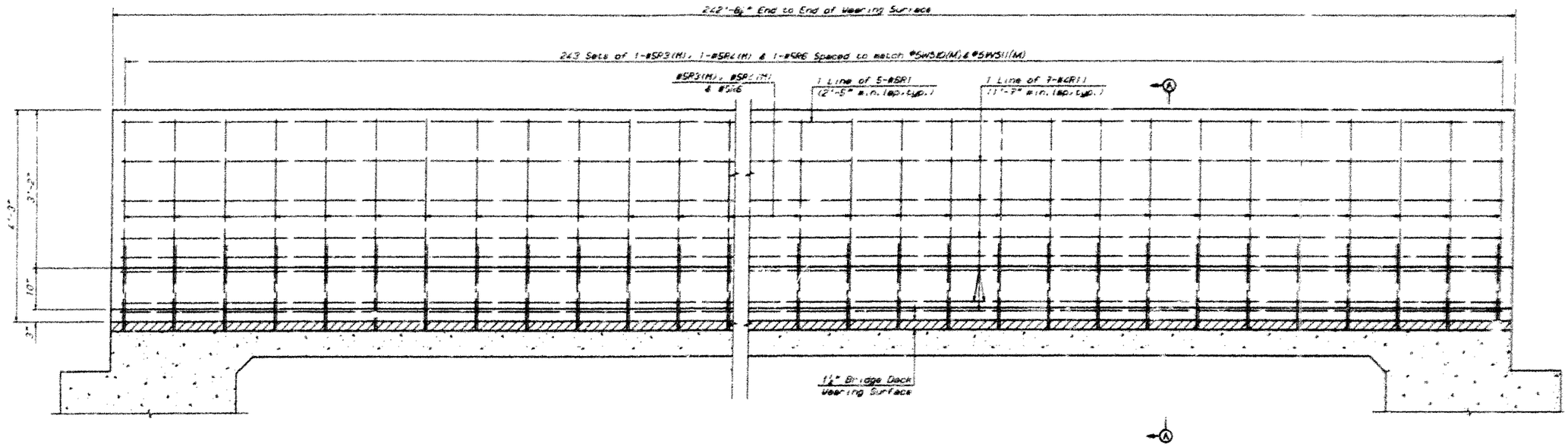
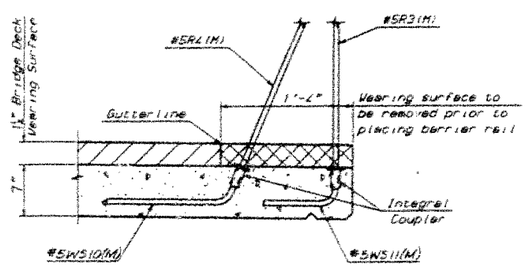
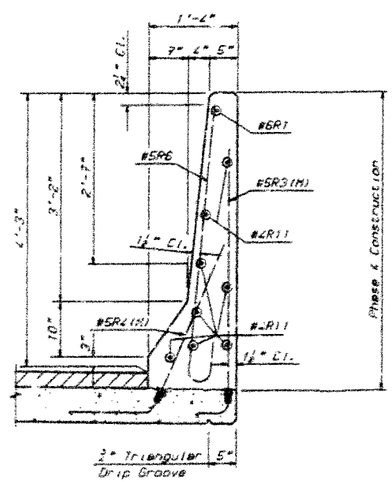


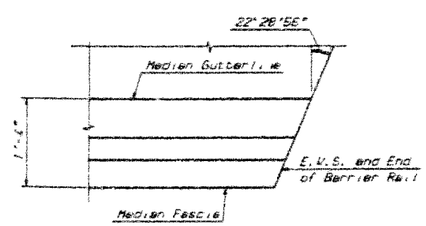
MEDIAN BARRIER RAIL ELEVATION
(Looking South)



SUGGESTED MEDIAN BARRIER RAIL CONNECTION DETAIL



SECTION A-A



TYPICAL END PLAN
(Abut. No. 2 Shown, Abut. No. 1 Similar)

Notes:

The 1½" Bridge Deck Wearing Surface shall be removed to the limits shown prior to placement of the median barrier. Removal along the gutterline shall be done to a neat vertical plane.

The Contractor shall submit a method of removal for approval by the Engineer prior to removing the wearing surface.

No damage shall be done to the 7" concrete subdeck, subdeck reinforcing or integral couplers during removal of the wearing surface.

All material, equipment and labor required to remove the 1½" Bridge Deck Wearing Surface shall be subsidiary to the bid item "Class AAA Concrete (AE)(SA)".

All longitudinal dimensions are measured horizontally along the gutterline.

(M)-Denotes bars which require a mechanical connection. See Sheet 27) for additional details.

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

KANSAS DEPARTMENT OF TRANSPORTATION

BR. NO. 435-46-0.01(314) STA. 462+83.22

MEDIAN BARRIER RAIL DETAILS

WESTBOUND I-435 OVER STATE LINE ROAD

PROJ. NO. 435-46 K- 39-02 JOHNSON CO.

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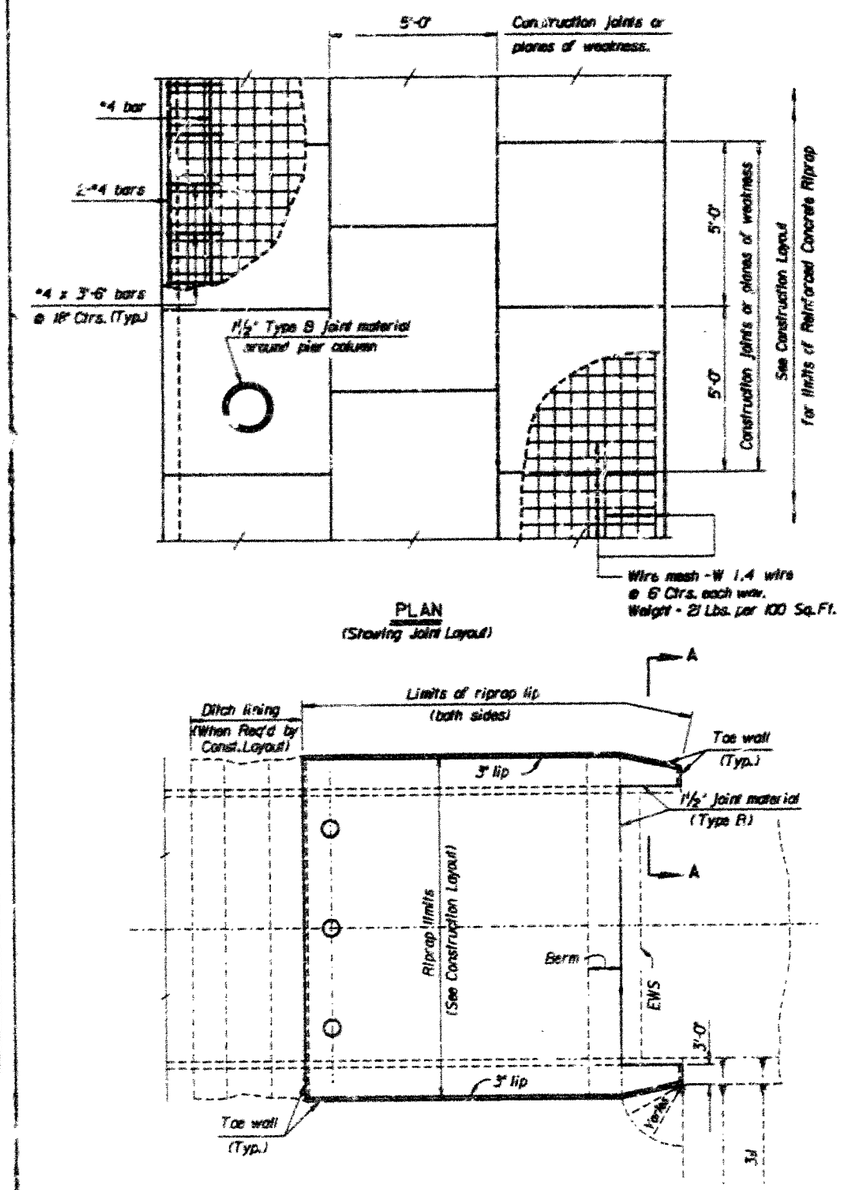
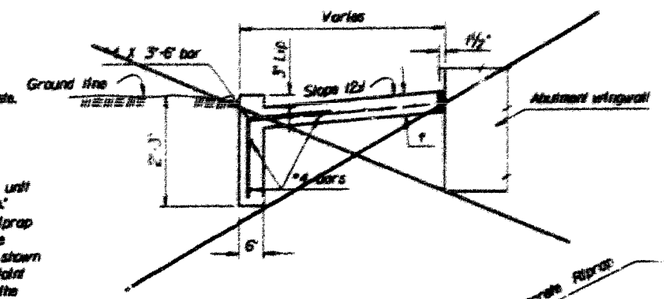
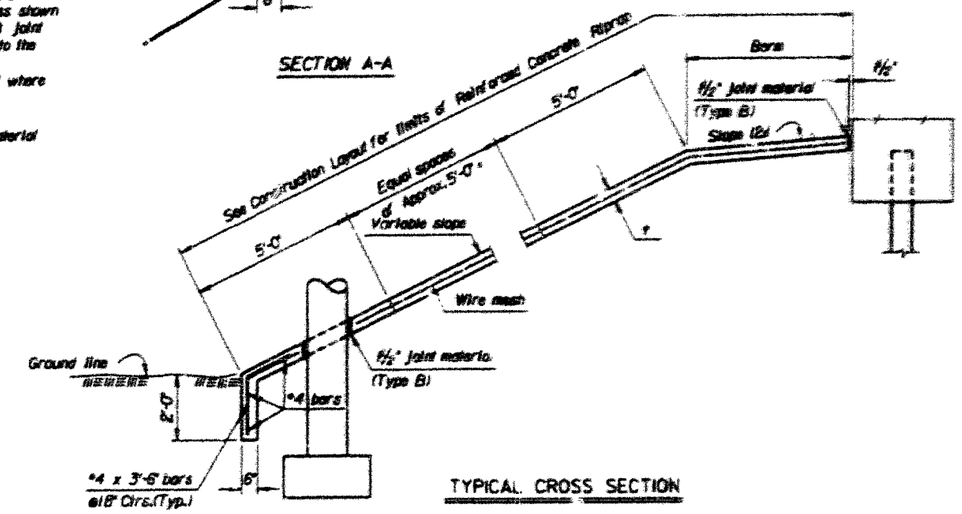
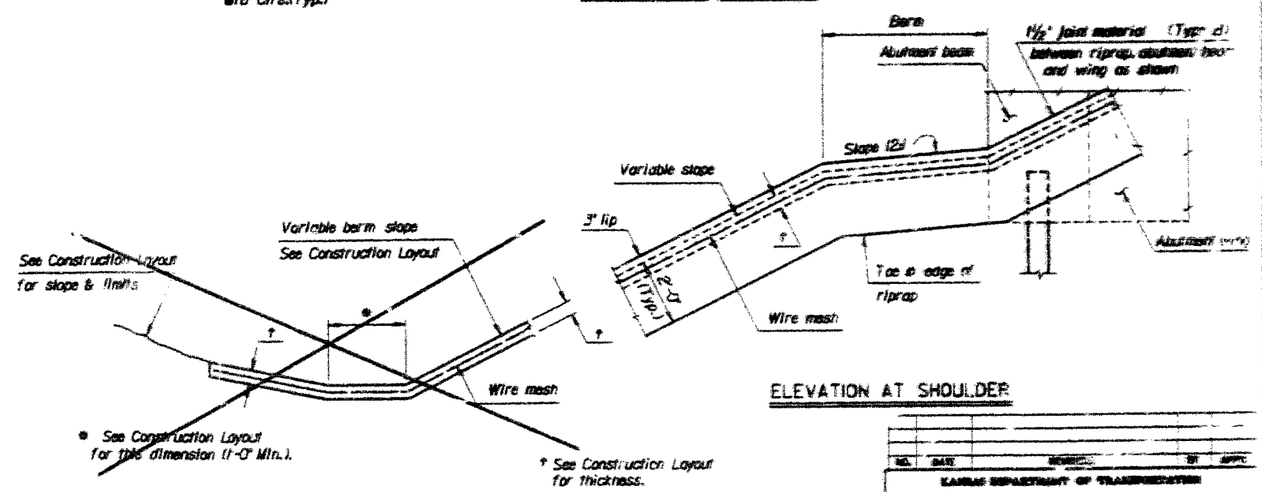
Note: Riprap shall be of Class "A" Concrete.
Wire reinforcing mesh shall be of the electrically welded, square mesh type and shall be composed of W 1.4 steel wire spaced at 6" Ctrs. each way.
Reinforcement as shown is included in unit price bid for "Reinforced Concrete Riprap."
Measurement of Reinforced Concrete Riprap shall be in Sq. Yds. and shall be the outside surface area regardless of the thickness shown in the plans. Toe wall, 3" lip and Type B joint material shall be considered subsidiary to the bid item, "Reinforced Concrete Riprap".
Type B joint material shall be placed where abutment and riprap meet.
When a pier column falls within the riprapped surface, 1½" Type B joint material shall be used around the column.









KANSAS DEPARTMENT OF TRANSPORTATION

REINFORCED CONCRETE RIPRAP
E.B. & W.B. I-435 OVER STATE LINE RD
STD. NO. 130

writer /usr2/stand/130n100.dgn 30-SEP-1992 13:37 Viewer

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Jackson A5904

RECAPITULATION OF QUANTITIES

ITEM	UNIT	435-46-0.23	435-46-0.24	435-46-0.25	435-46-0.00		435-46-0.01		N.B. BRIDGE	S.B. BRIDGE
BRIDGE NO.:		435-46-0.23	435-46-0.24	435-46-0.25	435-46-0.00		435-46-0.01		N.B. BRIDGE	S.B. BRIDGE
STATION:		450+44.00 E.B. I-4[illegible]	450+44.00 W.B. I-4[illegible]	449+58.00 RAMP W-S	462+83.22 E.B. I-435		462+83.22 W.B. I-435		43+51.00 STATE LINE RD	43+51.00 STATE LINE RD
		PART I	PART I	PART I	PART I	PART II	PART I	PART II	PART IV	PART IV
Class I Excavation	Cu. Yds.	310	340	165	—	—	—	—	543	681
Class II Excavation	Cu. Yds.	75	85	25	—	—	—	—	235	[illegible]
Class III Excavation	Cu. Yds.	—	—	—	131	143	119	131	—	—
Class AAA Concrete	Cu. Yds.	—	—	—	—	—	—	—	137.0	154.1
Class AAA Concrete (AF)	Cu. Yds.	639.8	756.3	117.3	82.4	140.0	75.5	126.3	886.1	835.9
Class AAA Concrete ([illegible]SA)	Cu. Yds.	612.7	709.1	752.7	254.8	300.3	236.6	267.0	—	—
Reinforcing Steel (Grade 60)	Lbs.	73,210	87,840	27,980	10,215	20,225	8,470	16,740	78,040	76,310
Reinforcing Steel (Grade 60)(Epoxy Coated)	Lbs.	164,880	195,510	132,640	68,880	82,480	62,650	73,850	[illegible],920	113,020
Structural Steel A709 (Gr. 36)	Lbs.	—	—	—	12,300	15,500	10,650	13,570	25,150	31,230
Structural Steel M270 (Gr. 50W)	Lbs.	—	—	—	162,530	190,890	146,290	171,800	268,570	235,670
Headed Stud Anchors	Each	—	—	—	3,750	4,050	3,370	3,645	6,120	5,952
Elastomeric Bearing Devices	Each	—	—	—	10	20	9	16	40	35
Strip Seal Assembly	Lin. Ft.	—	—	—	—	—	—	—	63[illegible]	54
55'-4" Prestressed Concrete Beams (K3)	Lin. Ft.	1,328	1,494	—	—	—	—	—	—	—
43'-2" Prestressed Concrete Beams (K3)	Lin. Ft.	67[illegible]	759	—	—	—	—	—	—	—
Steel Piles (HP10x42)	Lin. [illegible]	—	—	280	418	407	360	370	180	290
Steel Piles (HP12x53)	Lin. Ft.	—	—	—	—	—	—	—	415	710
Steel Piles (HP12x63)	Lin. Ft.	448	477	—	—	—	—	—	—	—
Cast Steel Pile Points	Each	17	18	11	11	11	10	10	6	11
Predrilled Pile Holes	Lin. Ft.	—	—	—	—	—	58	—	570	522
Drilled Shafts (42" Dia.)	Lin. Ft.	—	—	147	—	—	—	—	—	—
Drilled Shafts (48" Dia.)	Lin. Ft.	324	324	—	103	210	103	210	—	—
Rock Cores	Lin. Ft.	1	1	1	1	1	1	1	—	—
Steel Sheet Piles	Lin. Ft.	—	—	—	1,960	1,520	1,690	1,290	—	—
Bridge Deck Wearing Surface (2")	Sq. Yds.	—	—	—	—	—	—	—	1,563	1,563
Bridge Deck Wearing Surface (1½")(Special)	Sq. Yds.	2,152	2,3[illegible]	—	952	1,157	858	1,011	—	—
Abutment Strip Drains	Sq. Yds.	183	205	55	75	75	6[illegible]	6[illegible]	15[illegible]	248
Coal Tar Membrane Protective Coat	Sq. Yds.	198	278	73	77	77	70	70	[illegible]26	279
Reinforced Concrete Riprap (4")	Sq. Yds.	—	—	—	442	408	364	398	—	—
Substructure Waterproofing Membrane	Sq. Yds.	—	—	—	—	—	—	—	48	41
Bridge Handrail (Metal)(7'-6½")	Lin. Ft.	—	—	—	—	—	—	—	512	—
Bridge Handrail (Metal)(4'-6")	Lin. Ft.	—	—	—	—	—	—	—	319	—
Permanent Casing (42" Dia.)	Lin. Ft.	—	—	1	—	—	—	—	—	—
Permanent Casing (48" Dia.)	Lin. Ft.	1	1	—	1	1	1	1	—	—

HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS

SUMMARY OF QUANTITIES
BRIDGE RECAPITULATION

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