

| | | | | |
|----------|---------------|------|-----------|--------------|
| KANSAS | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 50 C-5222-01 | 2024 | 1 | 49 |
| F.A. NO. | STP-C522(201) | | | |

(Co. Br. No. 28)

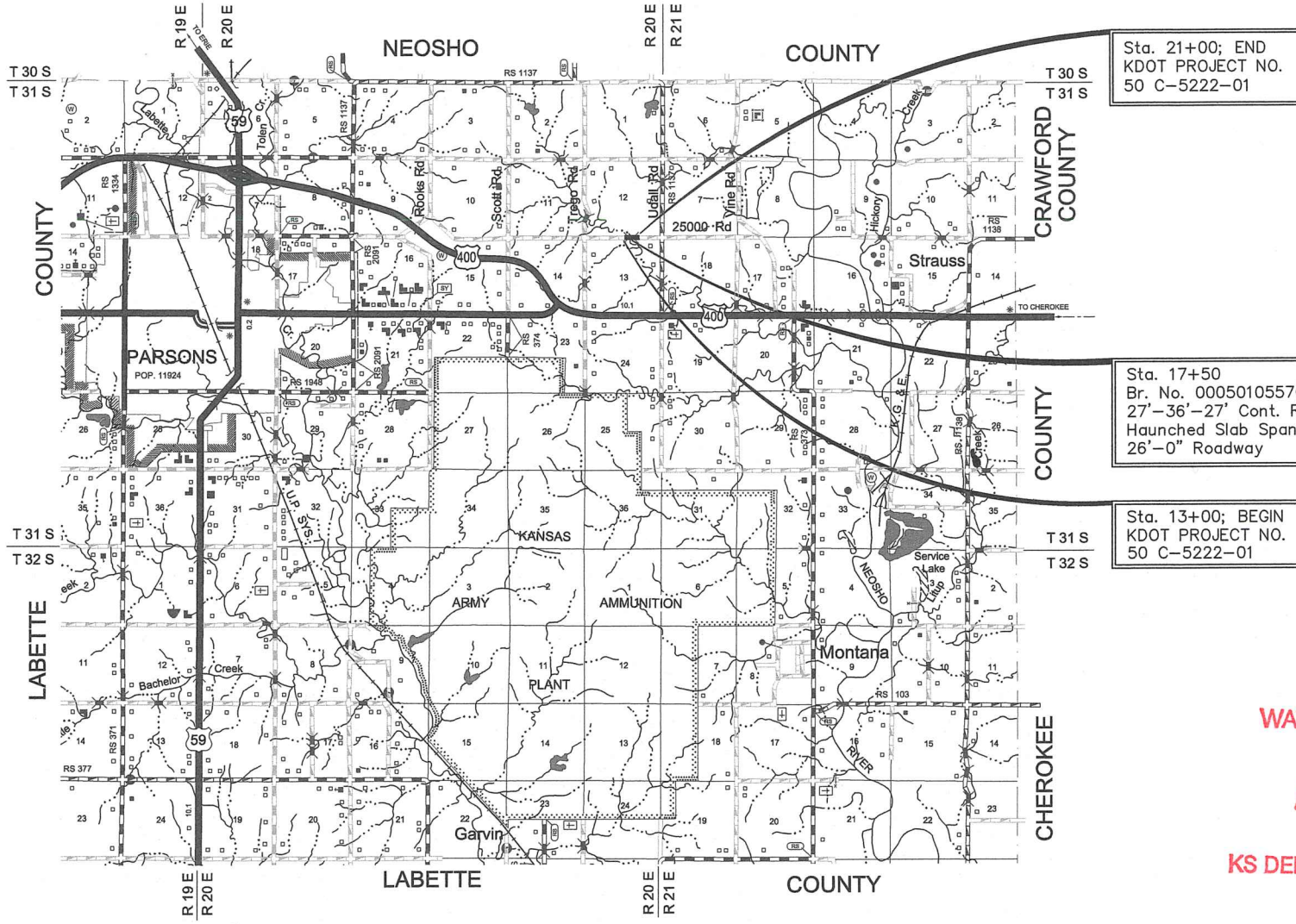
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STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE OF PROPOSED
50 C-5222-01

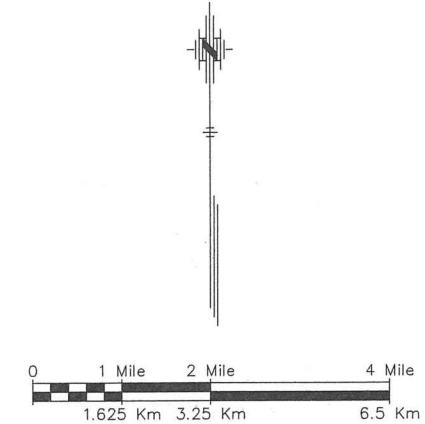
FEDERAL AID PROJECT
LABETTE COUNTY

GRADING
BRIDGE
SURFACING (AB-3)
SEEDING

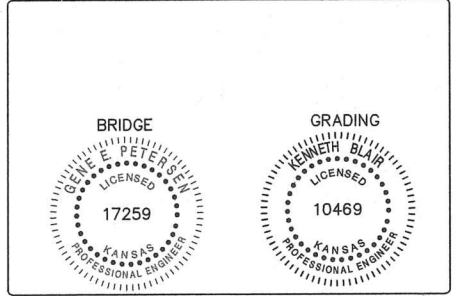


DESIGN DESIGNATION

| | |
|------------|-----------|
| AADT | 50 (2023) |
| AADT | 60 (2043) |
| DHV | |
| D | |
| T | |
| V | 40 mph |
| C of A | |
| Clear Zone | 10' |



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| CONVENTIONAL SIGNS | |
|---------------------------------|-------|
| COUNTY LINE | ----- |
| CITY LIMITS | ----- |
| STATE OR NATIONAL LINE | ----- |
| TOWNSHIP, SECTION or GRANT LINE | ----- |
| PROPERTY LINE | ----- |
| HIGHWAY 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 | 800.00 | FT. |
| EXCEPTIONS | 0.00 | FT. |
| ADDITIONS | 0.00 | FT. |
| NET LENGTH OF PROJECT | 800.00 | FT. 0.152 MILES |
| NET LENGTH OF BRIDGES | 92.50 | FT. 0.018 MILES |
| NET LENGTH OF ROAD | 707.50 | FT. 0.134 MILES |

OFFICE CHECK PLANS
 Cook, Flatt & Strobel
 ENGINEERS, P.A.
 DATE: March 2024

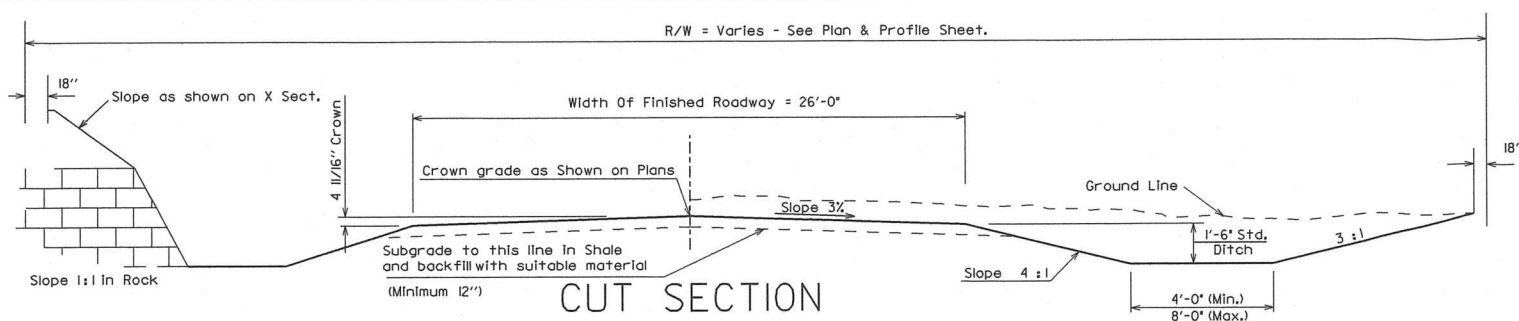
Note: Road Shall Be Closed To Thru Traffic During Construction.

| | |
|--------------------------|------|
| RECOM. FOR APPROVAL-DATE | |
| Road Supervisor | 2024 |

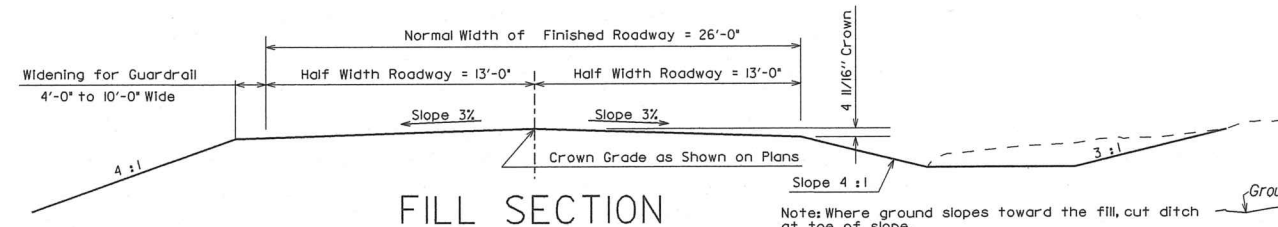
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J:\2023Proj\235076\CADD\001_235076 Title.dwg 3/26/2024 9:41am hpham

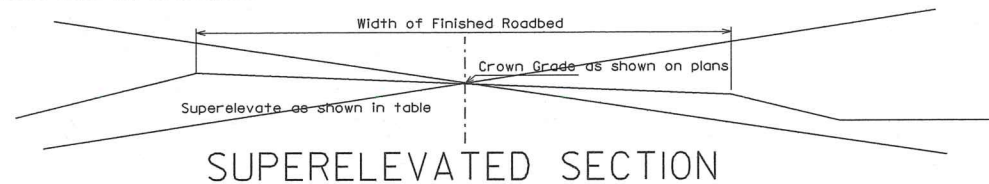
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
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| KANSAS | 50 C-5222-01 | 2024 | 2 | 49 |



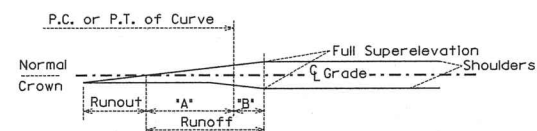
NOTE: For overbreakage in limestone, sandstone or shale see Special Provisions



Shoulder Slopes at ends of Guardrail should be no steeper than 3 : 1.
When fill exceeds 6' Shoulder Slopes may be steepened



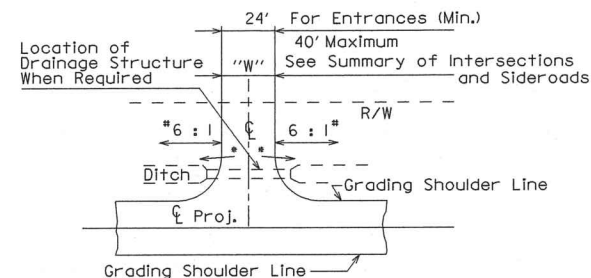
SUPERELEVATED SECTION



PROFILE SHOWING METHOD OF ATTAINING SUPERELEVATION

SUPERELEVATION DATA

| Station P.I. of Curve | Radius Curve | Design Speed mph | Super Per Ft. | Transition | | | | | | | | |
|-----------------------|--------------|------------------|---------------|------------|-------------|-------------|--------|-----|-----|-----|--------|--|
| | | | | Runout | Runoff P.C. | Runoff P.T. | Runout | *A* | *B* | *A* | Runout | |
| | | | | | | | | | | | | |



TYPICAL SIDE ROAD OR ENTRANCE DETAIL

- * On side roads and entrances which slope toward the roadway, construct a low point approx. 6" deep to divert surface drainage into the roadway ditch.
- * On ditch plugs and side roads or entrances without drainage structures use 8 : 1 slopes where feasible.

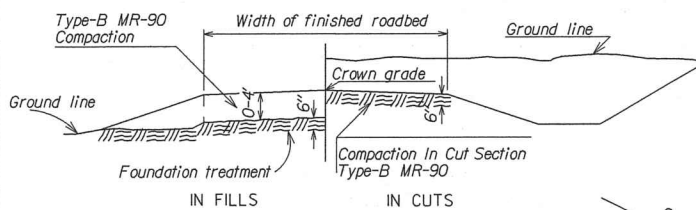
GENERAL NOTES

All signs shown on the plans, and other signs furnished and installed by the LPA with their own forces and funds will be installed in conformance with the Manual on Uniform Traffic Control Devices (latest edition).

LPA to furnish all easements and additional right of way (unless otherwise noted).

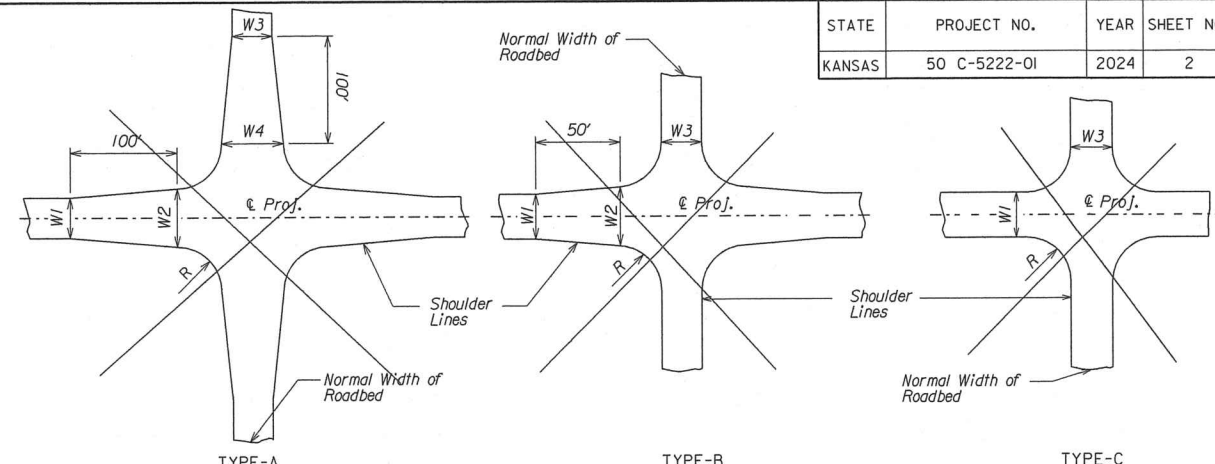
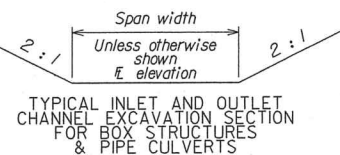
Public and private utility facilities will be adjusted by others as needed to fit the new construction unless noted otherwise on the plans or in the proposal.

Refer to KDOT Standard Drawing No. BR 100 for excavation limits for constructing box culverts.

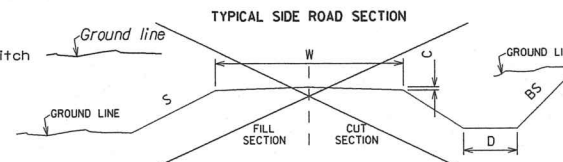


ALL EMBANKMENT SHALL BE COMPACTED EXCEPT DITCHPLUGS AND WASTE BERMS.

FOUNDATION TREATMENT AND COMPACTION OF EARTHWORK



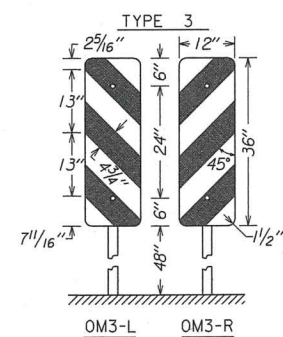
TYPICAL INTERSECTION DETAILS



TYPICAL 1/2 SECTION SURFACING

| STATION | SIDE OR QUADRANT | TYPE | SUMMARY OF INTERSECTIONS AND SIDEROADS | | | | | | | | | | | | | | |
|---------|------------------|------|--|----|----|----|----|---|---|---|---|----|--|--|--|--|--|
| | | | W | W1 | W2 | W3 | W4 | R | C | S | D | BS | | | | | |
| | | | | | | | | | | | | | | | | | |

OBJECT MARKER



All Sign, Fastener, and Post materials must meet the requirements of the latest edition of the KDOT Standard Specifications for State Road and Bridge Construction.

Install Object Markers Type OM3-(R/L) at each corner of all span bridges and when indicated on the plans at box structures. Install with the inside edge of the marker in line with the inside clearance line of the structure.

WATER RESOURCES RECEIVED

APR 05 2024

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SUMMARY OF OBJECT MARKERS AND SIGNS

| STATION TO STATION | SIDE | TYPE OF STRUCT. | TYPE OF SIGN | OBJECT MARKER | | REMARKS |
|---|------|-----------------|--------------|---------------|-----|--------------------|
| | | | | TYPE | NO. | |
| Sta. 17+50 | Lt. | Sp. Br. | | OM-3L | 2 | Ø @ Lt. Br. Quads. |
| Sta. 17+50 | Rt. | Sp. Br. | | OM-3R | 2 | Ø @ Rt. Br. Quads. |
| | | | | | | |
| Total | | | | | 4 | |
| As you face bridge end from approach | | | | | | |
| *Back-to-Back [Signs] on Both Sides of Post | | | | | | |

| NO. | DATE | DESCRIPTION | BY | APP'D |
|-----|----------|---|-----|-------|
| 7 | 01-08-15 | Revised super-elevation diagram, updated misc. notes. | TLS | RJS |
| 6 | 11-9-04 | Changed "Culvert" to "Structure" | DMK | RJS |
| 5 | 12-1-03 | Rem. Dellin's/Add Typ. Sect./Changed OM notes | DMK | RJS |
| 4 | 5-14-03 | Rev. Contractor note in Gen. Notes | DMK | RJS |

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL GRADING SECTION

| | | | |
|------------|--------|------------|-----------|
| DESIGNED | APP'D. | QUANTITIES | TRACED |
| DETAIL CK. | RJS | RJS | DMK |
| | | QUAN. CK. | TRACE CK. |

Ref. N 1/4 Cor. Sec. 13, T 31 S, R 20 E = Sta. 11+39.44
 Fnd. 1/2" Rebar w/ Alum. Cap
 N 1580238.27 ; E 2280857.14
 1. In C E-W Grav. Rd.
 2. In line w/ 5 Strand Barbwire to S.
 3. Mag Nail in N. Face Tree
 4. Mag Nail in N. Face Fc Brace Post
 5. Mag Nail in E. Face Fc. Cor. Post
 6. Mag Nail in E. Face Brace Post

Ref. P.O.T. @ Sta. 13+87.03
 Set 3/4" Rebar @ P.O.T.
 N 1580246.59 ; E 2281104.51
 1. In C E-W Grav. Rd.
 2. To C Base Unknown Valve
 3. Spk. & Wshr. in Pow. Pole

Ref. P.O.T. @ Sta. 21+20.06
 Set 3/4" Rebar @ P.O.T.
 N 1580271.19 ; E 2281837.08
 1. In C E-W Grav. Rd.
 2. R.R. Spk. in Pow. Pole
 3. Spk. & Wshr. in N. Face Tree

Ref. NE Cor. Sec. 13, T 31 S, R 20 E
 Fnd. 1/2" Rebar
 N 1580327.68 ; E 2283520.17
 1. In C Intersection
 2. Mag Nail E. Face Pow. Pole
 3. To SE Cor. North Hdwl. RCB
 4. To NE Cor. South Hdwl. RCB
 5. Spk. & Survey Mkr. Tab. W. Face Cor. Post
 6. Spk. & Wshr. Top Fc. Cor. Post

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LIST OF UTILITIES

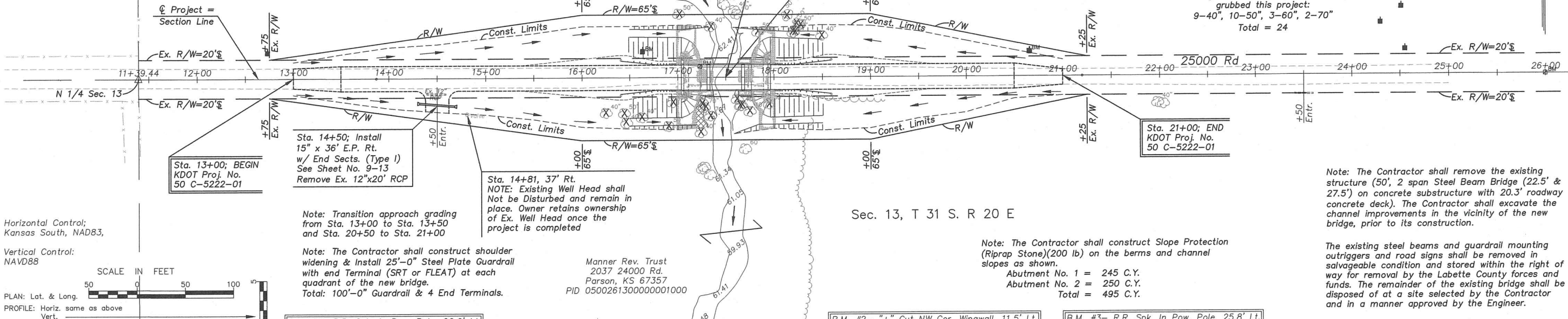
| Utility | Location | Owner-Address |
|---------|----------|---|
| Power | Lt. Side | Twin Valley Electric Adam Myers amyers@twinvalleyelectric.com (620) 784-5500 |

Sec. 12, T 31 S, R 20 E
 Wesley J. & April D. Roberts
 1820 25000 Rd.
 Parson, KS 67357
 PID 0500211200000006000

- FOR INFORMATION ONLY -
 Large trees & stumps to be grubbed this project:
 9-40", 10-50", 3-60", 2-70"
 Total = 24

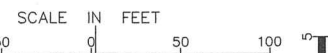
| DATE | BY | REVISION |
|------|----|----------|
| | | |

| DATE | BY | REVISION |
|------|----|----------|
| | | |



Horizontal Control;
 Kansas South, NAD83,

Vertical Control;
 NAVD88



PLAN: Lat. & Long.
 PROFILE: Horiz. same as above
 Vert.

Note: Transition approach grading from Sta. 13+00 to Sta. 13+50 and Sta. 20+50 to Sta. 21+00

Note: The Contractor shall construct shoulder widening & Install 25'-0" Steel Plate Guardrail with end Terminal (SRT or FLEAT) at each quadrant of the new bridge.
 Total: 100'-0" Guardrail & 4 End Terminals.

Manner Rev. Trust
 2037 24000 Rd.
 Parson, KS 67357
 PID 0500261300000001000

Sec. 13, T 31 S, R 20 E

Note: The Contractor shall construct Slope Protection (Riprap Stone)(200 lb) on the berms and channel slopes as shown.
 Abutment No. 1 = 245 C.Y.
 Abutment No. 2 = 250 C.Y.
 Total = 495 C.Y.

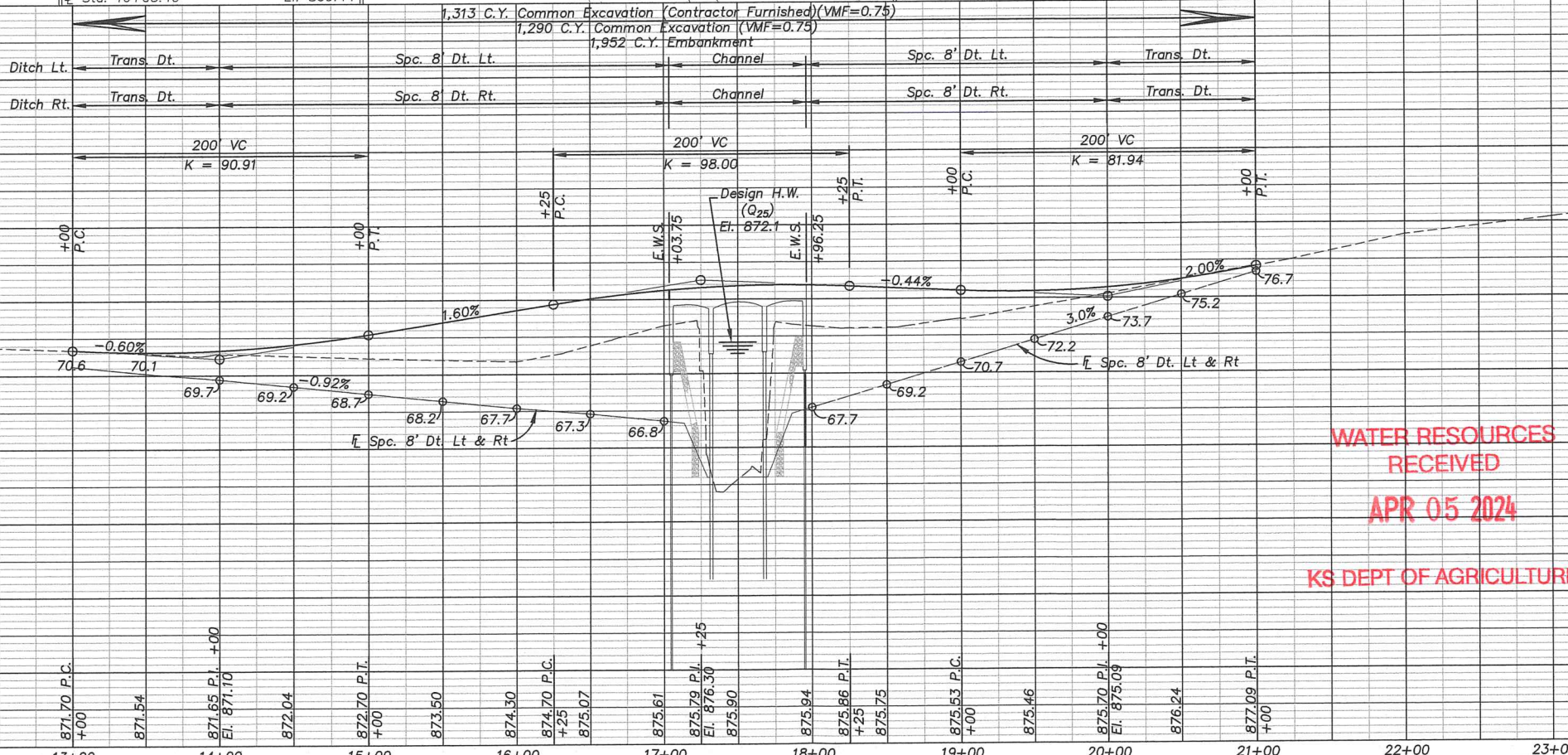
Note: The Contractor shall remove the existing structure (50', 2 span Steel Beam Bridge (22.5' & 27.5') on concrete substructure with 20.3' roadway concrete deck). The Contractor shall excavate the channel improvements in the vicinity of the new bridge, prior to its construction.

The existing steel beams and guardrail mounting outriggers and road signs shall be removed in salvageable condition and stored within the right of way for removal by the Labette County forces and funds. The remainder of the existing bridge shall be disposed of at a site selected by the Contractor and in a manner approved by the Engineer.

B.M. #1- R.R. Spk. in Pow. Pole, 26.6' Lt.
 Sta. 16+63.40 El. 869.44

B.M. #2- "+" Cut NW Cor. Wingwall, 11.5' Lt.
 Sta. 17+23.40 El. 872.98

B.M. #3- R.R. Spk. in Pow. Pole, 25.8' Lt.
 Sta. 20+65.40 El. 877.33



Note: All disposal sites must be approved by the Kansas Department of Health & Environment. Material either stockpiled or disposed of in a Flood Plain shall require a Kansas State Board of Agriculture permit. Any material dumped in waters of the United States or Wetlands is subject to U.S. Corps of Engineers permitting regulations.

Any material buried or stockpiled beyond approved construction limits would require additional archeological investigations, unless buried in a previously approved borrow location.

Borrow areas provided by the Contractor shall be approved by the Engineer as to suitability of material and location. Special care shall be taken in this approval to minimize the increase of siltation & turbidity of Streams, Lakes, and Reservoirs, and to avoid interference with the movement of migratory fish. Areas which, in the opinion of the Engineer, may leave an unsightly appearance to the project will not be approved.

All borrow area locations shall be submitted by the Contractor for clearance from the Kansas Historical Society & the Kansas Department of Wildlife & Parks prior to any excavation.

It shall be the responsibility of the Contractor to restore, seed and/or complete other operations noted in the agreement with the Land Owner, approved by the Engineer, on all disturbed areas used to provide borrow areas for Common Excavation (Contractor Furnished).

**WATER RESOURCES
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KANSAS DEPARTMENT OF TRANSPORTATION
PLAN & PROFILE
 STA. 13+00 to STA. 21+00

| | | | | |
|--------|--------------|------|-----------|--------------|
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
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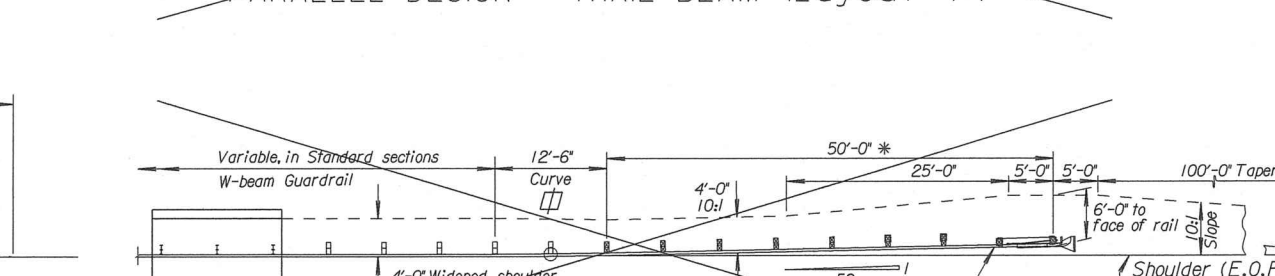
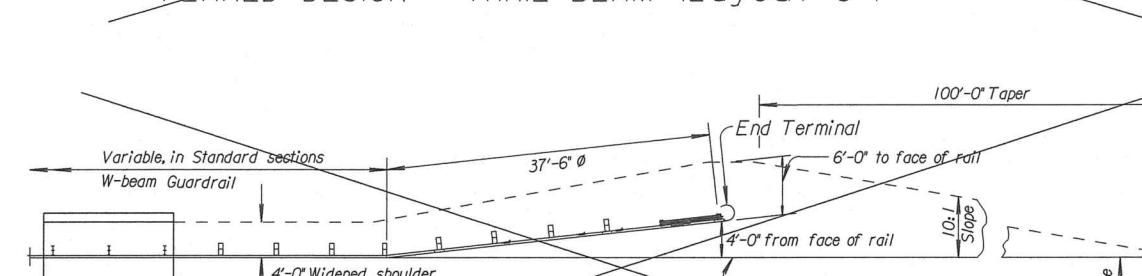
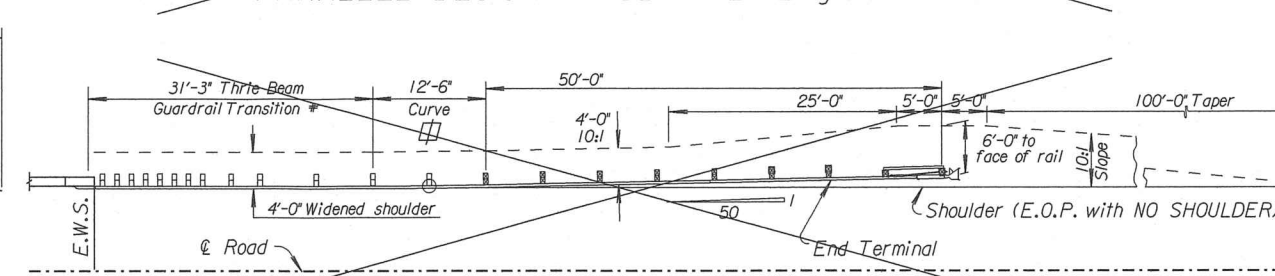
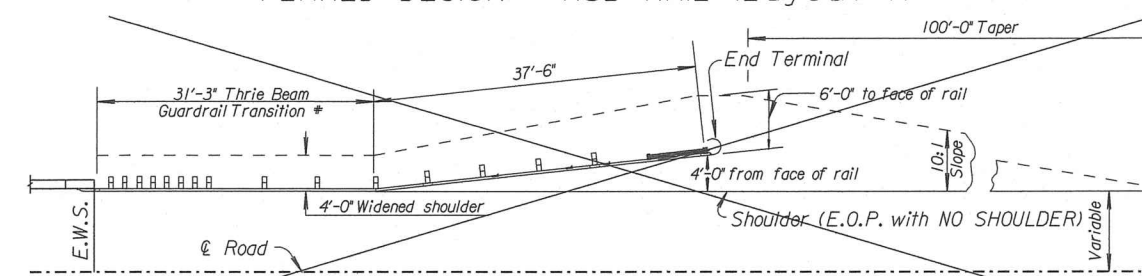
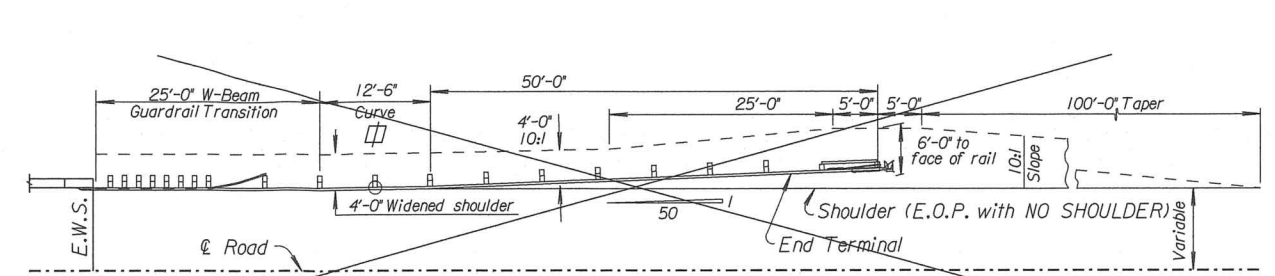
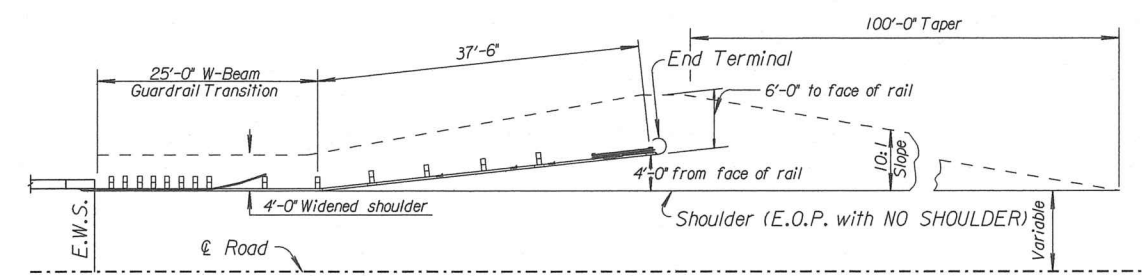
NOTE: Layouts 1, 2, 3, and 4 will be symmetric for any quadrant unless otherwise shown in the plans.

When using Rubrail, attach Std. Drawings No. RD611, RD616 and RD615 (parallel) or RD615A (flared).

When using Thrie beam, attach Std. Drawings no. RD611 and RD608 or RD613.

Attach Std. Drawing No. RD617 (parallel) or RD 617A (flared) for post over box less than full depth.

☐ Radius = 625.08'



TYPICAL ALIGNMENT OF GUARDRAIL AT CULVERTS & BOX BRIDGES

| TYPE | Layout | | | | | | Required Standard Drawing |
|-------|--------|---|---|---|---|---|---------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | |
| SRT | X | | X | | X | | RD606 |
| FLEAT | X | | X | | X | | RD606 |
| SKT | | X | | X | | X | RD606 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| Location | Side | Layout | | Additional Standard Sections Lin. Ft. | Total Pay Length Lin. Ft. | Layout 1 or 3 | | Layout 2, 4, or 6 | | Layout 5 | |
|--------------|------|--------|-----------|---------------------------------------|---------------------------|---------------------------------------|---|--------------------------------|--|--|--|
| | | No. | Lin. Ft.* | | | Gd. Rail End Term. (SRT) Alt. #1 Each | Gd. Rail End Term. (FLEAT) Alt. #2 Each | Gd. Rail. End Term. (SKT) Each | Gd. Rail. End Term. (SRT) Alt. #1 Each | Gd. Rail. End Term. (FLEAT) Alt. #2 Each | |
| Sta. 17+50 | | | | | | | | | | | |
| SW Quadrant | Rt. | 1 | 25' | | 25' | 1 | 1 | | | | |
| SE Quadrant | Rt. | 1 | 25' | | 25' | 1 | 1 | | | | |
| NW Quadrant | Lt. | 1 | 25' | | 25' | 1 | 1 | | | | |
| NE Quadrant | Lt. | 1 | 25' | | 25' | 1 | 1 | | | | |
| TOTAL LENGTH | | | | | 100' | 4 | 4 | | | | |

*See Guardrail Auxiliary Details (RD606) for Measurement Details. Does Not Include End Terminal.

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| | | | | |
|-----|----------|--|-----|-------|
| 12 | 02-21-19 | Updated per Road Memo 18-02 | WFL | MJS |
| 11 | 10-30-17 | Removed X-1ite | WFL | MJS |
| 10 | 01-06-15 | Added X-1ite, Removed ET-PLUS | TLS | RJS |
| 9 | 11-9-05 | Added length for Thrie Beam transition | REA | RJS |
| NO. | DATE | REVISIONS | BY | APP'D |

KANSAS DEPARTMENT OF TRANSPORTATION
TYPICAL ALIGNMENT OF GUARDRAIL INSTALLATIONS
LP620

| | | |
|------------|------------|-----------|
| DESIGNED | APP'D. | MJS |
| DESIGN CK. | DETAIL CK. | TRACE CK. |

Note to Designer - Design guardrail installations using guidance shown on KDOT's 'Guardrail Typical Alignments' Standard Drawings. 'Flared' guardrail installations are preferred over 'Parallel' or 'Zero Flare' installations. Where 'Flared' or 'Parallel' installations are used, the flare rate of the guardrail end terminal typically matches the flare rate of the remaining guardrail installation. For 'Zero Flare' installations, 'Parallel' guardrail end terminals should be designed using typical flare rates of 50:1 or flatter for the length of the end terminal. However, while 50:1 or flatter flare rates are typical for 'Parallel' guardrail end terminals, these end terminals may be flared as steep as 26:1 or flatter in order to offset the end terminal head as far from the edge of the through traveled lane as practicable.

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GENERAL NOTES

Install the guardrail end terminals according to the Manufacturer's Installation Manual. The Contractor will furnish a copy of the Manufacturer's Installation Manual to the Engineer prior to the start of the installation.

Use approved steel (preferred) or wood posts provided by the Manufacturer. The guardrail end terminal post type may be independent of the post type used in the remainder of the installation. However, no mixing of post types is permitted in the remaining w-beam and thrie-beam installation.

Use approved polymer (preferred) or wood blockouts provided by the Manufacturer. The guardrail end terminal blockout size and type may be independent of the blockout size and type used in the remainder of the installation. For blockout size and types for the remaining w-beam and thrie-beam portion of the installation see the details shown on KDOT's 'Guardrail Post Details' and 'Guardrail Thrie-Beam Transition Details' Standard Drawings.

Apply retroreflective sheeting to the end terminal impact head before installation.

Tighten all cable anchor assemblies as per the Manufacturer's Installation Manual.

Lap w-beam and thrie-beam guardrail splices, in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final traffic configuration. Lap end terminal splices per the Manufacturer's Installation Manual in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final configuration.

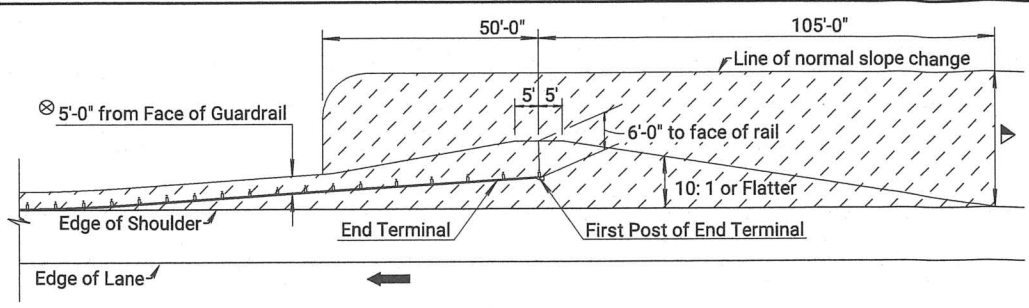
The minimum length of w-beam guardrail required between the thrie-beam transition and the guardrail end terminal is 12'-6" for all installations; unless otherwise stated in the Manufacturer's Installation Manual.

Where pavement with a thickness less than or equal to 8" is encountered during installation, use the details shown on KDOT's 'Guardrail Post Details' Standard Drawings to provide openings in the pavement for the guardrail posts. Where pavement with a thickness greater than 8" or geologic rock is encountered during installation, follow the Manufacturer's Installation Manual for guidance. Where the Manufacturer's Installation Manual does not address pavement with a thickness greater than 8" or geologic rock, contact the manufacturer for instructions or install the guardrail posts as directed by the Engineer.

All work and materials required for w-beam and thrie-beam guardrail installations are paid for under the appropriate bid items for either CGS or MGS guardrail depending on the type of installation.

All work and materials required for guardrail end terminal installations are paid for under the bid item for the selected guardrail end terminal. See the table on this sheet for the appropriate end terminal bid item information.

GUARDRAIL CLEAR AREA
 Applies to all guardrail installations unless otherwise shown in the plans.

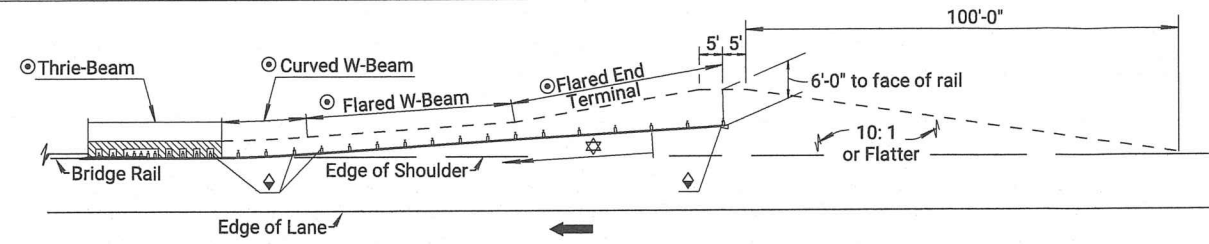


Keep Area Free of Stockpiled Material, Equipment, or Other Obstacles, Such as Temporary Signs, Regardless of Crash Worthiness. This Clear Area Extends 105 Feet in Advance of and 50 Feet behind the First Post of the Guardrail End Terminal and Then, in Order to Maintain Full Post Spacing, Continues 5 Feet behind the Face of the Guardrail through the W-Beam Portion of the Installation as Shown in the 'Guardrail Clear Area' Detail on this Sheet.

▲ Normal Project Side Slope.

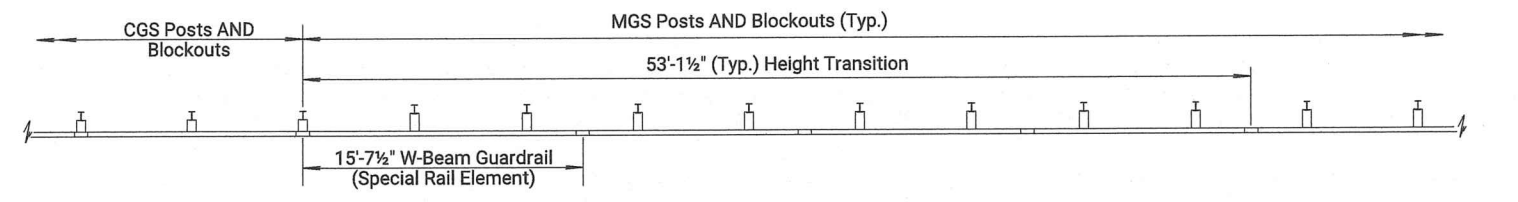
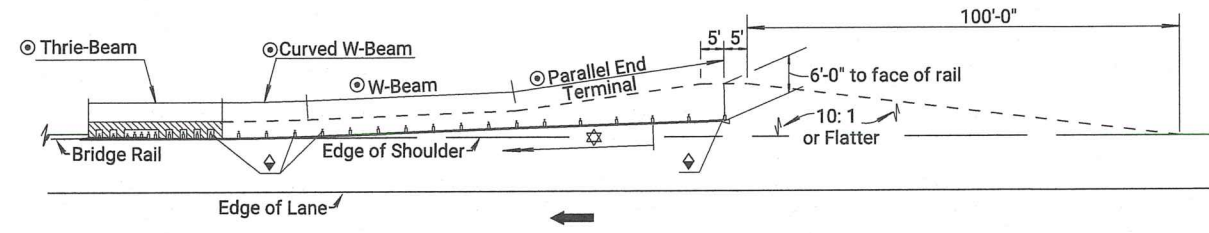
⊗ Deflection Distance for Normal Post Spacing

FLARED GUARDRAIL DETAIL
 Applies to CGS AND MGS (MGS Shown)

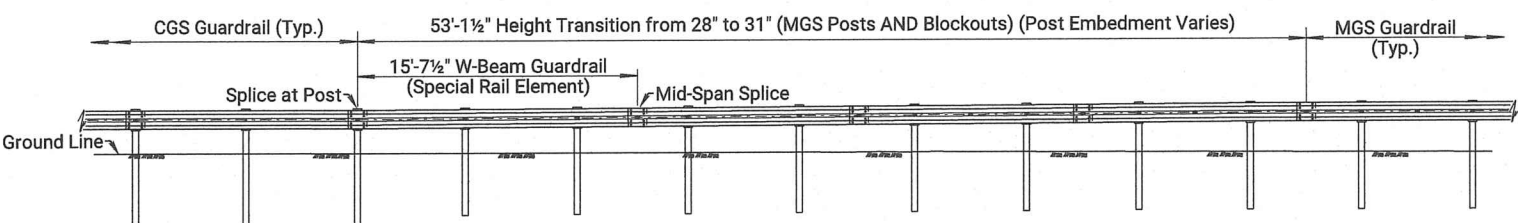


⊙ See Guardrail Layout Sheets for Details
 ◆ On Guardrail Layout Sheets, Show Station AND Offset from the Roadway Alignment to the Face of Post at these Locations.
 ☆ Length of Need (Begins at Post 3)

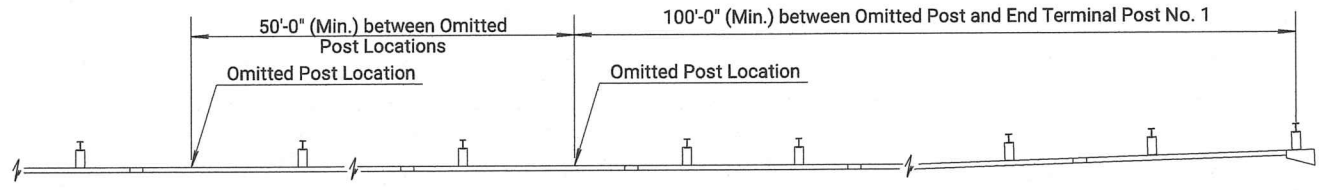
PARALLEL GUARDRAIL DETAIL
 Applies to CGS AND MGS (MGS Shown)



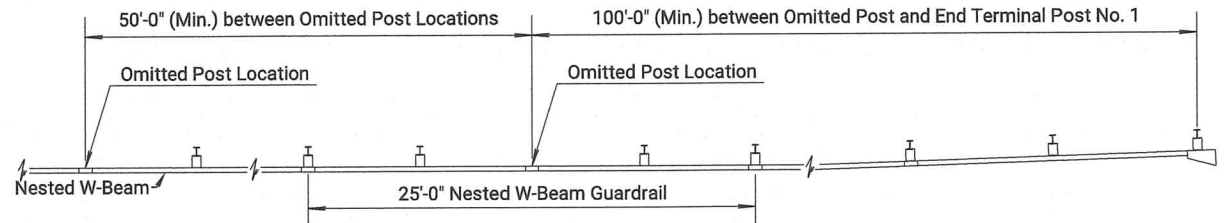
CGS TO MGS TRANSITION DETAILS (PLAN)



CGS TO MGS TRANSITION DETAILS (ELEVATION)



MGS OMITTED POST DETAIL



CGS OMITTED POST DETAIL

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APR 05 2024

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| MIDWEST GUARDRAIL SYSTEM (MGS) END TERMINALS | | | | | | | | | |
|--|--------------------|-----------------|------------------------|-----------------------------|----------------------------|------------------|--------------|---------------|----------------------------|
| END TERMINAL BID ITEM | FLARED OR PARALLEL | MOUNTING HEIGHT | CRASH TESTING CRITERIA | STEEL POST DESIGN AVAILABLE | WOOD POST DESIGN AVAILABLE | ENERGY ABSORBING | MANUFACTURER | DESIGN LENGTH | MANUFACTURER SYSTEM LENGTH |
| Guardrail End Terminal (MGS-FLEAT) | Flared | 31" | NCHRP 350 | Yes | Yes | Yes | Road Systems | 40'-7½" | 37'-6" |
| Guardrail End Terminal (MGS-SRT) | Flared | 31" | NCHRP 350 | Yes | Yes | No | Valtir | 40'-7½" | 37'-6" |
| Guardrail End Terminal (MGS-MSKT) | Parallel | 31" | MASH | Yes | No | Yes | Road Systems | 46'-10½" | 46'-10½" |
| Guardrail End Terminal (MGS-SOFTSTOP) | Parallel | 31" | MASH | Yes | No | Yes | Valtir | 46'-10½" | 50'-9½" |

| CONVENTIONAL GUARDRAIL SYSTEM (CGS) END TERMINALS | | | | | | | | | |
|---|--------------------|-----------------|------------------------|-----------------------------|----------------------------|------------------|--------------|---------------|----------------------------|
| END TERMINAL BID ITEM | FLARED OR PARALLEL | MOUNTING HEIGHT | CRASH TESTING CRITERIA | STEEL POST DESIGN AVAILABLE | WOOD POST DESIGN AVAILABLE | ENERGY ABSORBING | MANUFACTURER | DESIGN LENGTH | MANUFACTURER SYSTEM LENGTH |
| Guardrail End Terminal (FLEAT) | Flared | 28" | NCHRP 350 | Yes | Yes | Yes | Road Systems | 37'-6" | 37'-6" |
| Guardrail End Terminal (SRT) | Flared | 28" | NCHRP 350 | Yes | Yes | No | Valtir | 37'-6" | 37'-6" |
| Guardrail End Terminal (SKT) | Parallel | 28" | NCHRP 350 | Yes | Yes | Yes | Road Systems | 50'-0" | 50'-0" |

KANSAS DEPARTMENT OF TRANSPORTATION

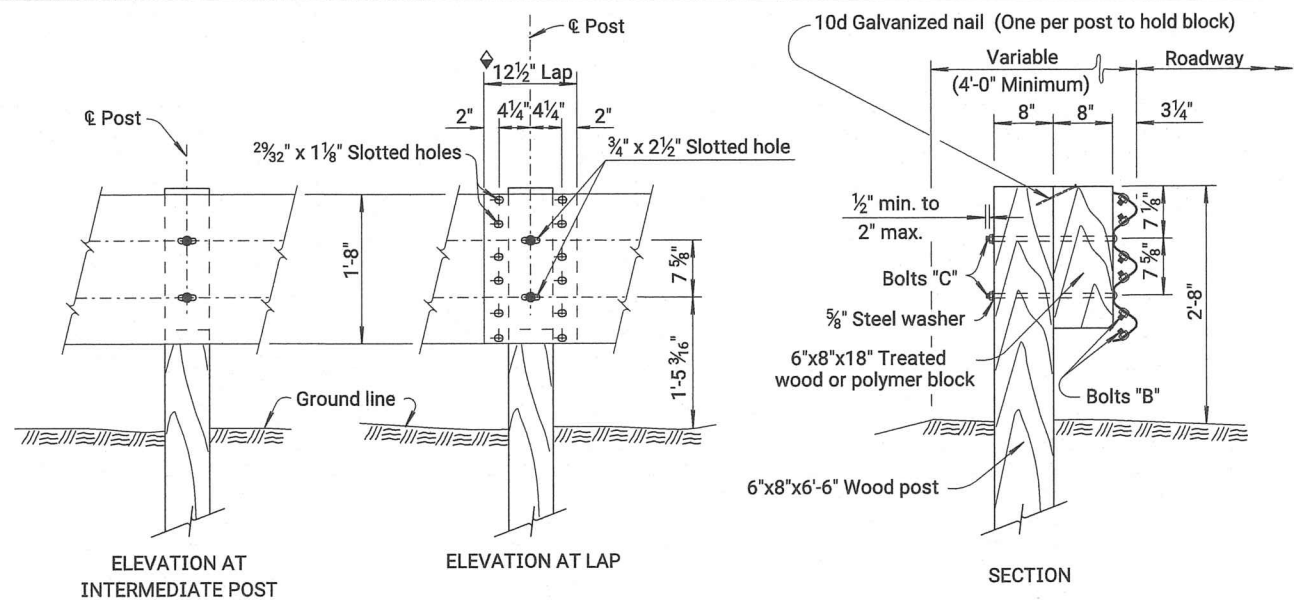
GUARDRAIL AUXILIARY DETAILS

RD606

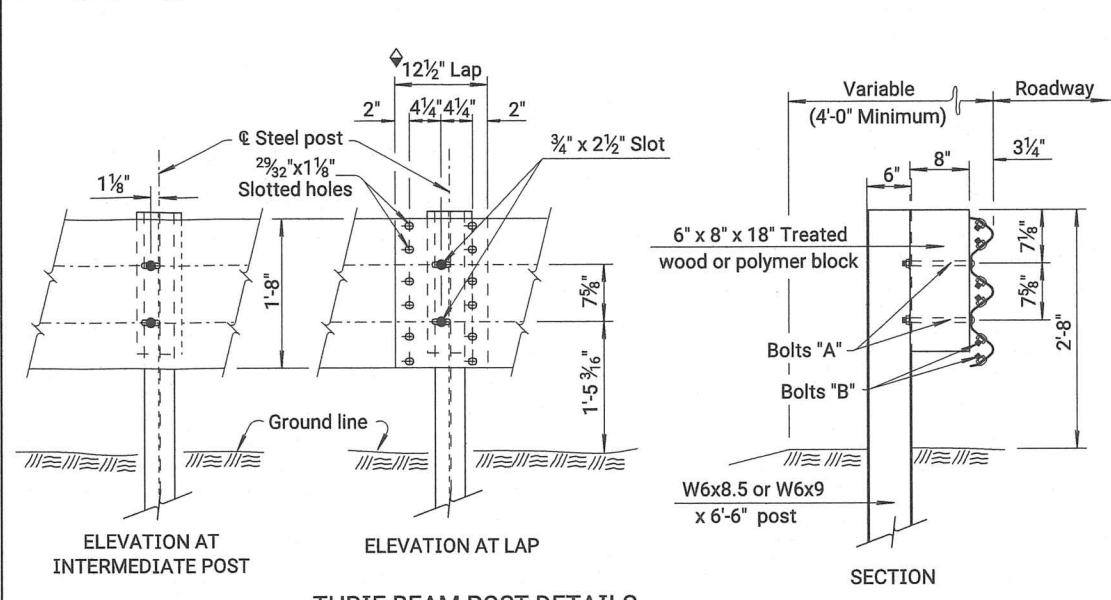
| | | | |
|------------|----------|------------|---------------|
| DESIGNED | 09-25-18 | APPD. | Scott W. King |
| DESIGN CK. | | QUANTITIES | TRACED |
| | | REVISIONS | BY |
| | | | APPD. |

Notes to Designer: For posts installed in pavement thicker than 8" or posts installed in rock formations refer to AASHTO's Roadside Design Guide for details then revise this drawing and all supporting drawings appropriately.

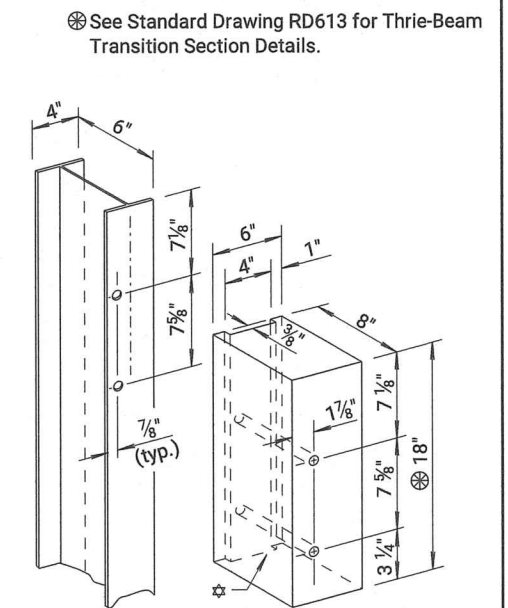
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 6 | 49 |



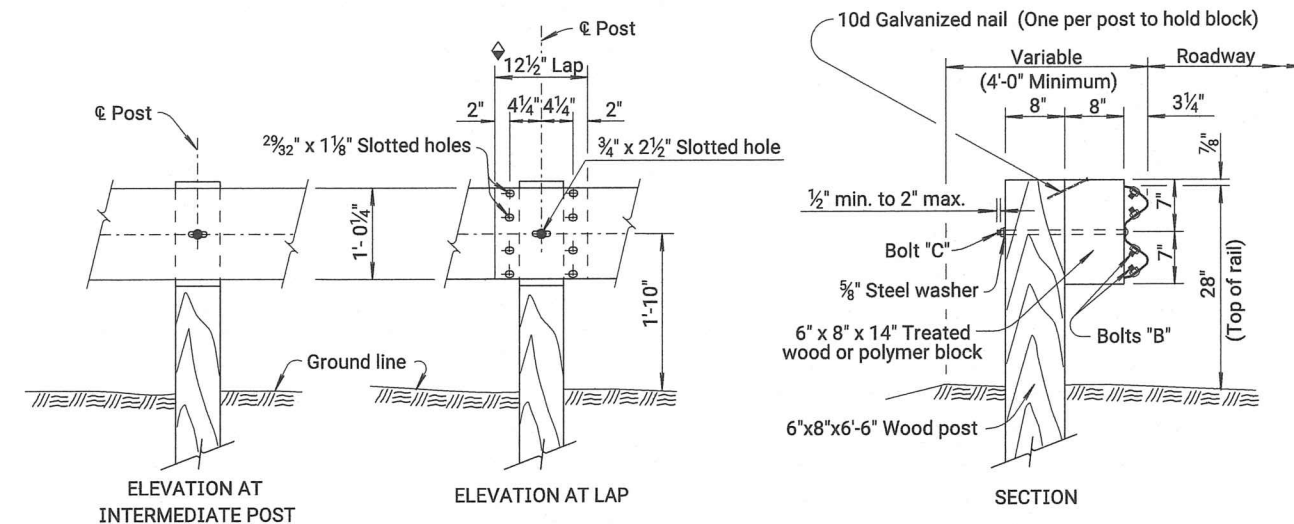
THRIE BEAM POST DETAILS



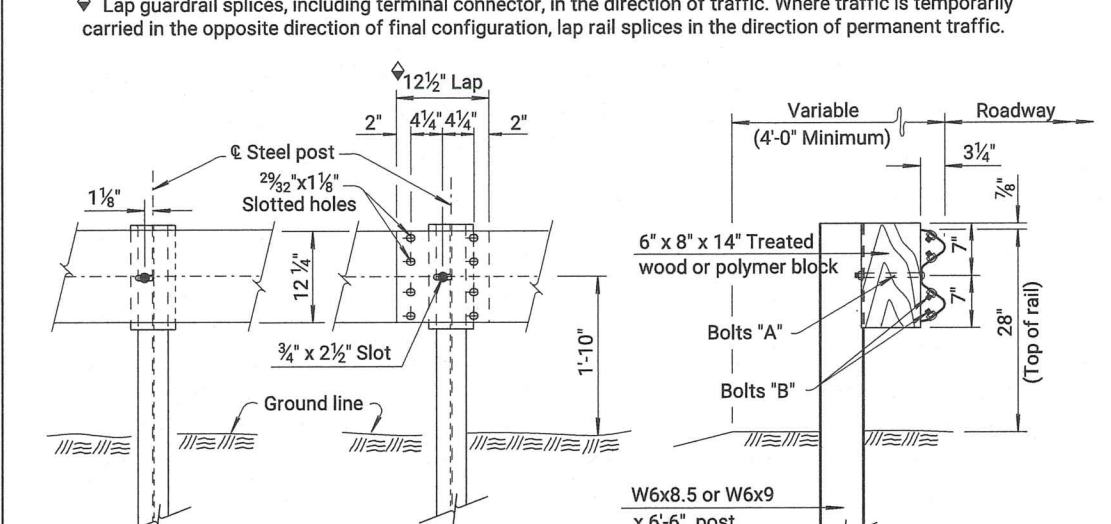
THRIE BEAM POST DETAILS



Note: All holes 1 3/16" dia.
THRIE BEAM HOLE PUNCHING DETAILS



W-BEAM POST DETAILS

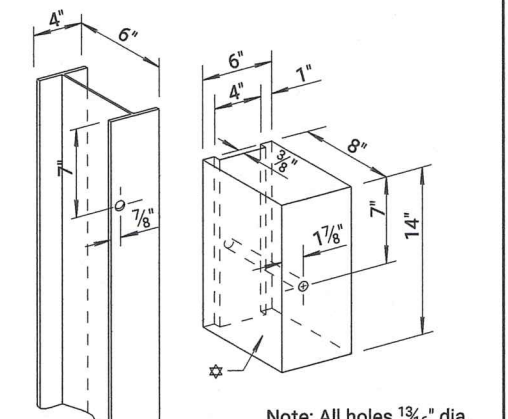


W-BEAM POST DETAILS

STEEL POSTS

GENERAL NOTES (Steel Posts)

Use grade of steel for steel posts that meets the requirements of the standard specifications. Hot dip galvanize the posts after fabrication, see standard specifications. Use only one post/blockout type within guardrail run, this excludes the guardrail end terminals. For wood/polymer blockout requirements see standard specifications. Approved polymer blockouts may be substituted for wood blockouts. Only one type of blockout is permitted on each guardrail installation. This excludes the guardrail end terminals. Set guardrail posts by digging or by driving. Use post caps to protect the post from crushing during driving operations. Contractor must notify Engineer at the earliest time when a non-removable manmade object (footing, pipe, etc.) is encountered and prevents installation of a full length post. Contractor must obtain Engineer approval prior to cutting post shorter than 6'-6" except as allowed on Standard Drawing RD617. All dimensions are nominal and are subject to manufacturing tolerances. Excavation including rock, shale, and other materials for erection of Guardrail is subsidiary to various bid items for which payment is made. Where guardrail posts are installed in pavement, form openings in the pavement for the guardrail posts.



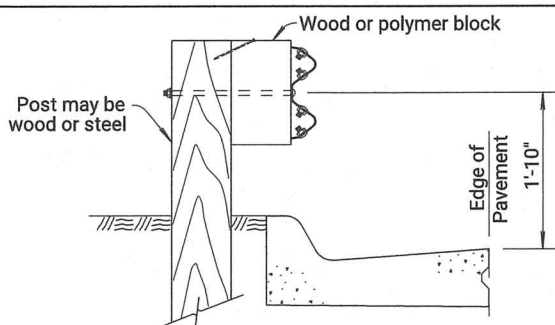
Note: All holes 1 3/16" dia.
"W" BEAM HOLE PUNCHING DETAILS

☆ Non-Metallic (Polymer) or Treated Wood Block

WOOD POSTS

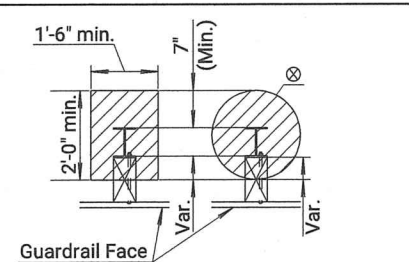
GENERAL NOTES (Wood Posts)

Give all wood posts and wood blocks a preservative treatment, see standard specifications. Thoroughly saturate all cuts, injuries and bolt holes on wood posts and blocks with preservative. Use only one type of preservative treatment on a project. Use S4S rectangular posts and wood blocks, see standard specifications. Use only one post/blockout type within guardrail run, this excludes the guardrail end terminals. Set guardrail posts by digging or by driving. Use post caps to protect the post from crushing during driving operations. Contractor must notify Engineer at the earliest time when a non-removable manmade object (footing, pipe, etc.) is encountered and prevents installation of a full length post. Contractor must obtain Engineer approval prior to cutting post shorter than 6'-6". Approved polymer blockouts may be substituted for wood blockouts. Only one type of blockout is permitted on each guardrail installation. This excludes the guardrail end terminals unless certified by the manufacturer. All dimensions are nominal and are subject to manufacturing tolerances. Excavation including rock, shale, and other materials for erection of Guardrail is subsidiary to various bid items for which payment is made. Where guardrail posts are installed in pavement, form openings in the pavement for the guardrail posts.



DETAIL OF PLACEMENT AT CURB

Note: When face of guardrail is aligned with the face of a curb, measure the height of rail from the pavement surface at the curb/pavement joint as shown. Use a laydown type curb where the face of the guardrail is not located at the face of the curb.

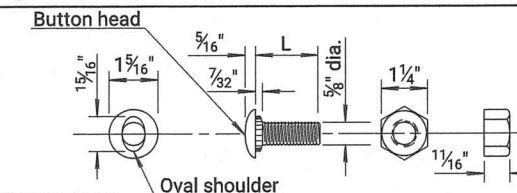


POSTS IN PAVEMENT PLAN (ALTERNATE GEOMETRIES) Applies to All Wood and All Steel Posts (Steel Posts Shown)

- ▣ Slurry Grout (Low Strength). See KDOT's Standard Specifications
- ⊗ Diameter may vary from 1'-6" (min.) to 2'-0".

Note: Low Strength Grout must have a 28-day compressive strength of 120 psi or less. All work and materials related to posts in pavement are subsidiary to other guardrail bid items. Rectangular geometry shown in Posts in Pavement detail. Circular geometry, as shown on this sheet, may be used at the Contractor's option.

| BOLT SIZE SCHEDULE | |
|--------------------|--------|
| Bolt | L |
| A | 8 1/2" |
| B | 1 1/4" |
| C | 18" |



BOLT & NUT DETAILS
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Galvanize all bolts, nuts, and washers in accordance with the KDOT's Standard Specifications.

| NO. | DATE | REVISIONS | BY | APPD |
|-----|----------|---------------------------------|--------|--------|
| 13 | 09-05-18 | Added Det., Post In Pavement | A.L.R. | T.T.R. |
| 12 | 12-14-10 | Revised notes, 28" w-be | S.W.K. | J.O.B. |
| 11 | 06-30-04 | Remove steel blockout and notes | S.W.K. | J.O.B. |

KANSAS DEPARTMENT OF TRANSPORTATION

RD611

| | | |
|------------|------------|-----------|
| DESIGNED | QUANTITIES | TRACED |
| DETAIL CK. | QUAN. CK. | TRACE CK. |

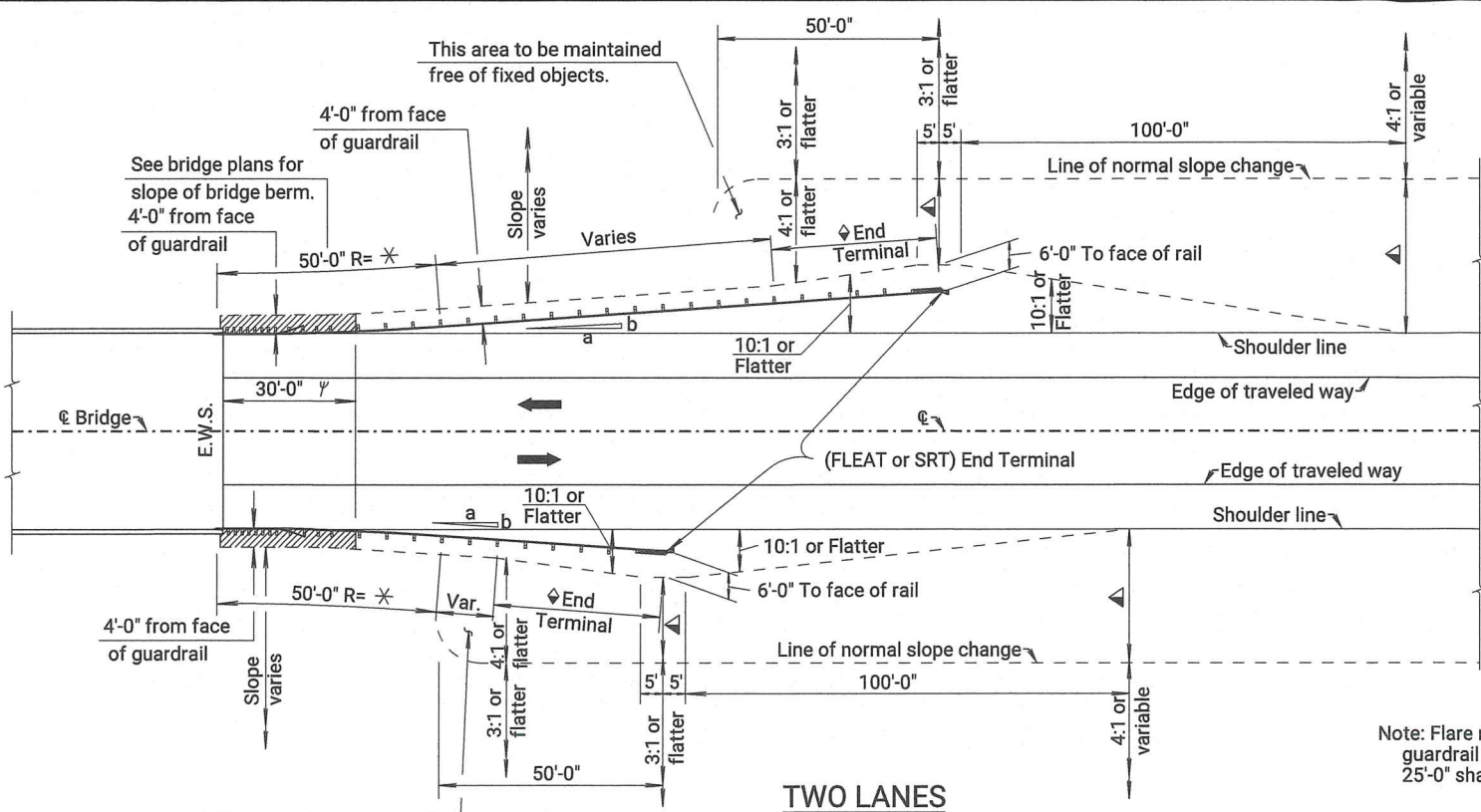
KDOT Graphics Certified 08-01-2022

Notes to Designer: Guardrail length of need shall be determined in accordance with the AASHTO Roadside Design Guide using $L_1 = 25'$ for flare rate of a:b and $L_1 = 12.5'$ for flare rate of 2a:b for a typical installation as shown on this sheet. This sheet shall be used when the flared guardrail design for typical layout shown (FLEAT or SRT) is selected. Material for asphalt widening shall be included in the plan quantities.

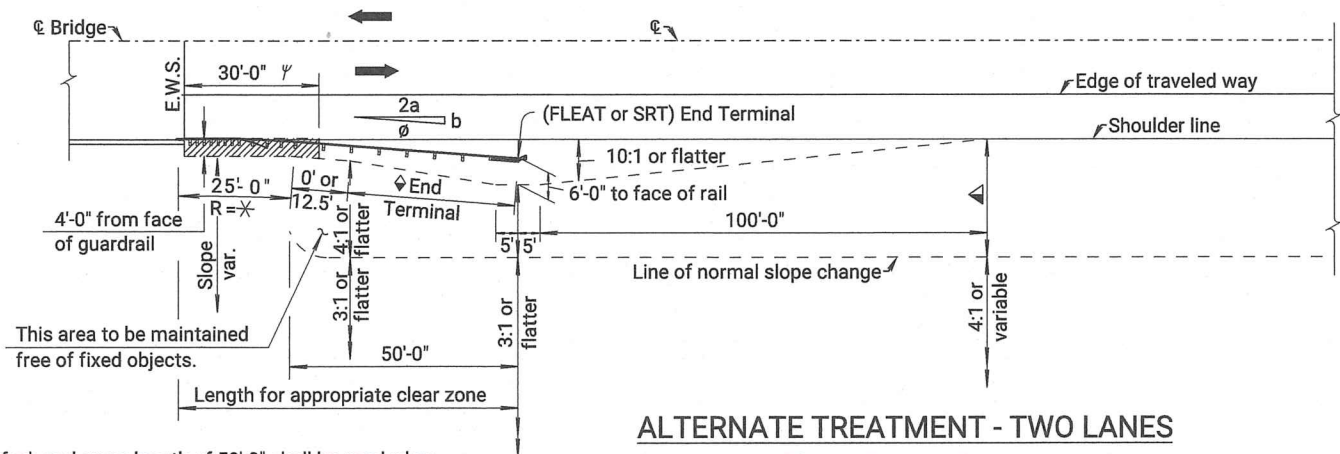
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 7 | 49 |

| DESIGN PARAMETERS | | | | |
|--------------------|------------------|------------|-------------------|------------|
| Design Speed (mph) | Flare Rate (a:b) | Radius (R) | Flare Rate (2a:b) | Radius (R) |
| 70 | 15:1 | 375.55' | 30:1 | 375.14' |
| 60 | 14:1 | 350.59' | 26:1 | 325.16' |
| 55 | 12:1 | 300.69' | 24:1 | 300.17' |
| 50 | 11:1 | 275.76' | 21:1 | 262.70' |
| 45 | 10:1 | 250.83' | 18:1 | 225.23' |
| 40 | 8:1 | 201.04' | 16:1 | 200.26' |

GENERAL NOTE
 For guardrail and rubrail sections, details, and general notes see KDOT's 'W-Beam with Rubrail Bridge Approach Transition Details' Standard Drawings. For post details see KDOT's 'Guardrail Post Details' Standard Drawings.
 The ratio of a:b may be specified as zero for long runs of guardrail in high fill areas.
 Widening, slopes & transition for Four Lane will be similar to that shown on two lane detail.

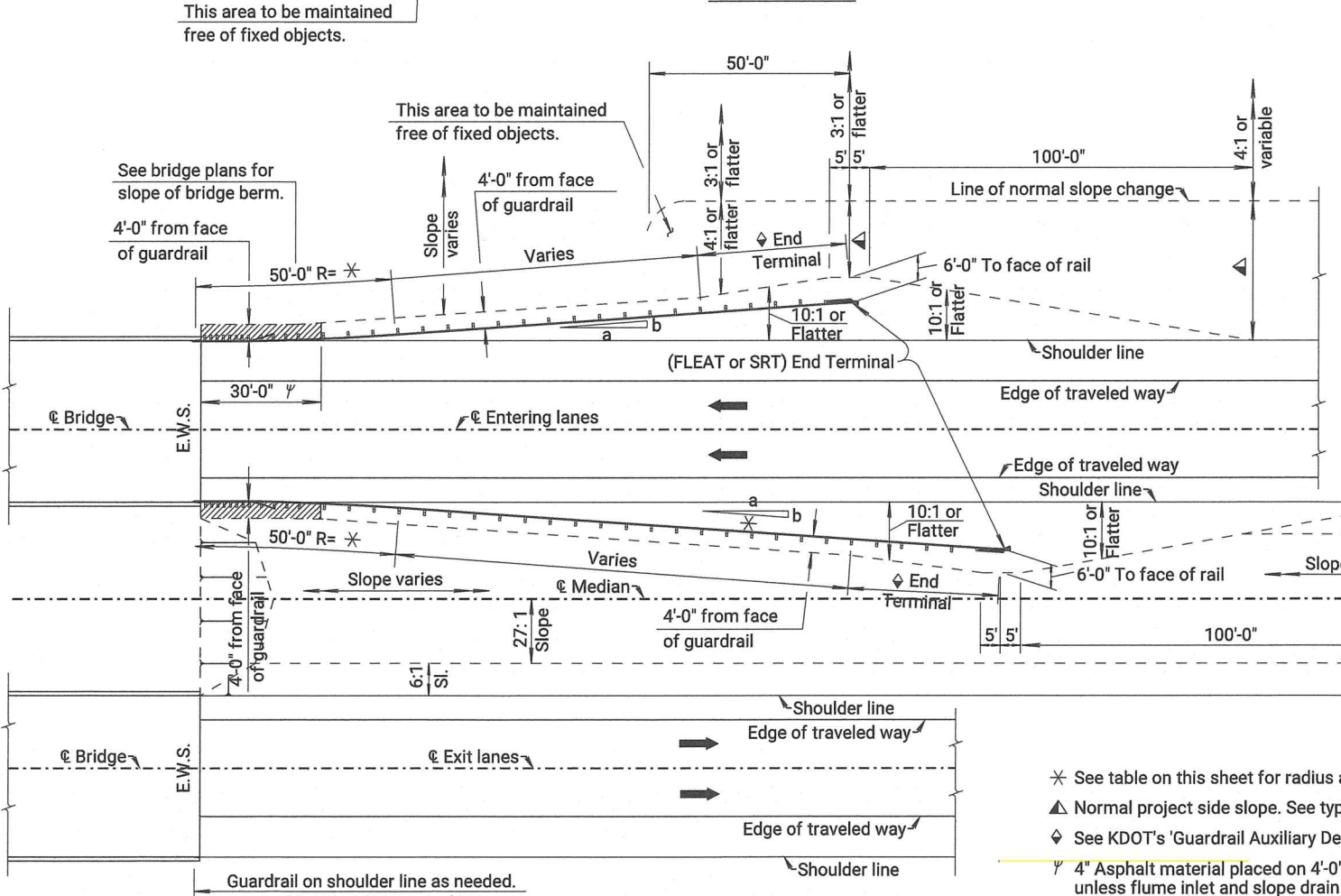


TWO LANES

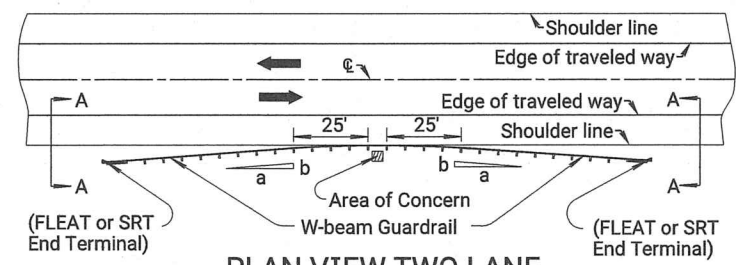


ALTERNATE TREATMENT - TWO LANES

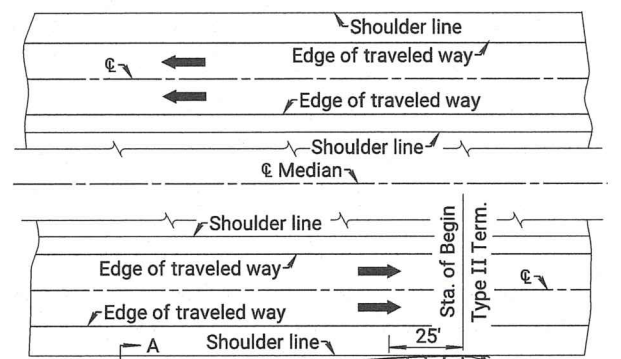
Flare Rate = 2a:b
 (GUARDRAIL LENGTHS OF 62.5' AND 75')



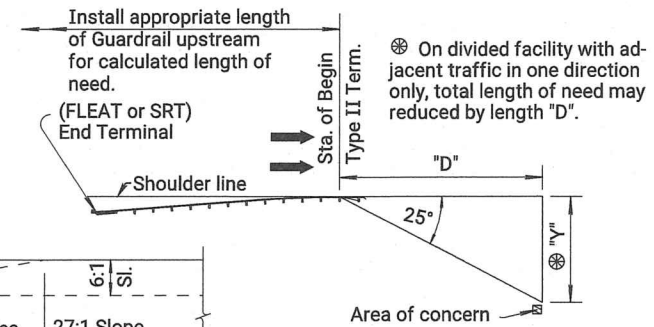
FOUR LANES - DIVIDED



PLAN VIEW TWO LANE



PLAN VIEW FOUR LANE



DETAILS OF GUARDRAIL PROTECTION AT ROADSIDE OBSTACLE

☆ Guardrail shall be nested and post spacing reduced to one half of normal spacing when "Y" is less than 5'. Rigid barrier shall be used when "Y" is less than 3'-3".

- * See table on this sheet for radius and flare rate.
- ▲ Normal project side slope. See typical sections.
- ◆ See KDOT's 'Guardrail Auxiliary Details' Standard Drawing.
- ∇ 4" Asphalt material placed on 4'-0" embankment widening unless flume inlet and slope drain is constructed.

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| NO. | DATE | REVISIONS | BY | APP'D |
|-----|----------|---------------------------------|--------|--------|
| 08 | 06-05-18 | Removed Flare-beyond-the-Flare | A.L.R. | T.T.R. |
| 07 | 05-15-17 | Removed X-LITE | A.L.R. | S.W.K. |
| 06 | 07-02-09 | Added roadside obstacle details | S.W.K. | J.O.B. |

KANSAS DEPARTMENT OF TRANSPORTATION

W-BEAM WITH RUBRAIL BRIDGE APPROACH TRANSITION TYPICAL ALIGNMENTS (FLARED)

RD615A

| | | | |
|------------|------------|------------|---------------|
| DESIGNED | 06-19-18 | APP'D | Scott W. King |
| DESIGN CK. | DETAIL CK. | QUANTITIES | TRACED |
| DESIGN CK. | DETAIL CK. | QUAN. CK. | TRACE CK. |

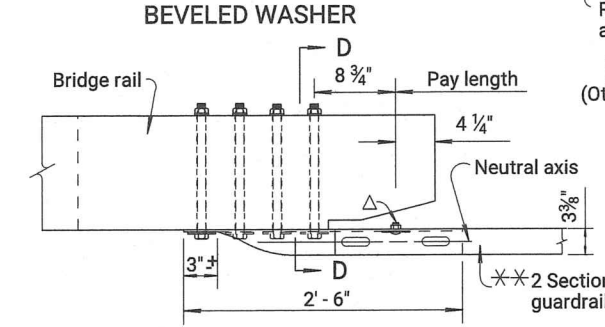
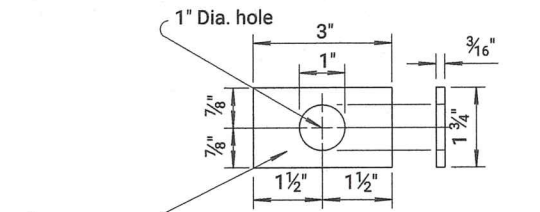
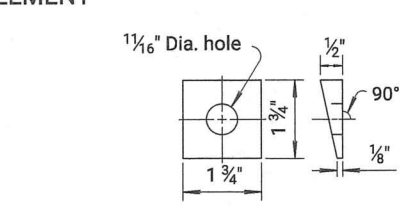
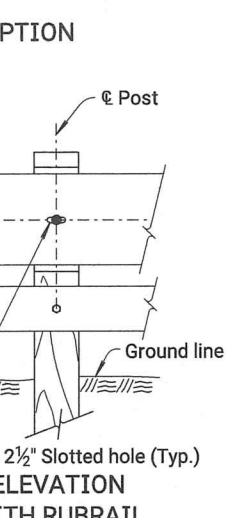
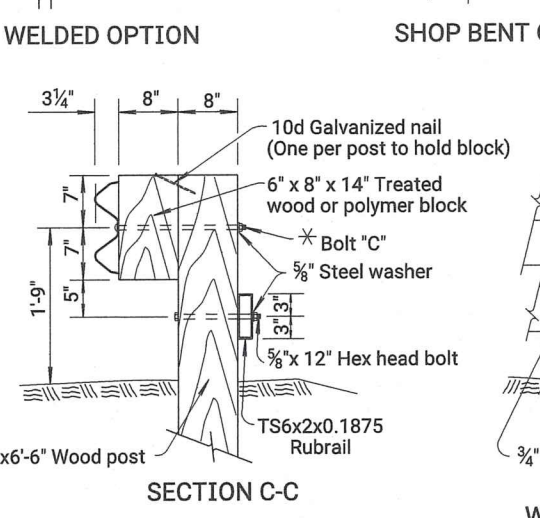
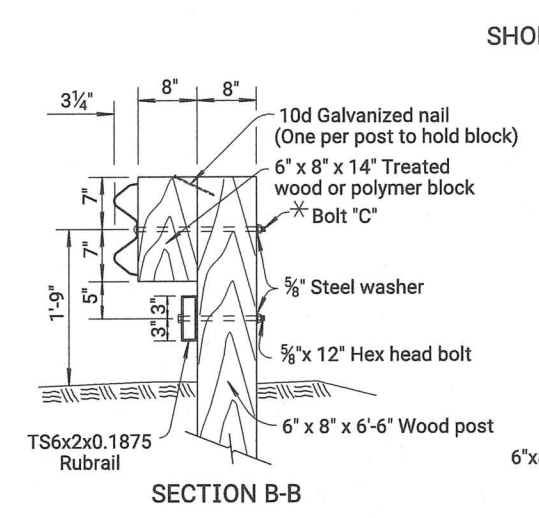
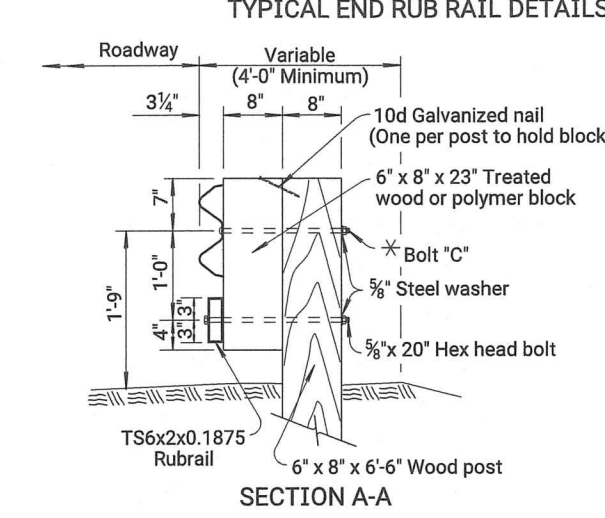
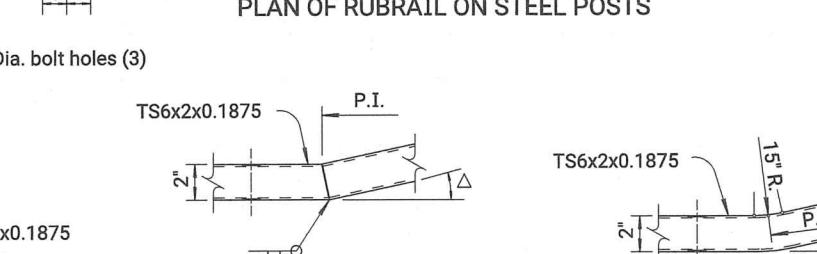
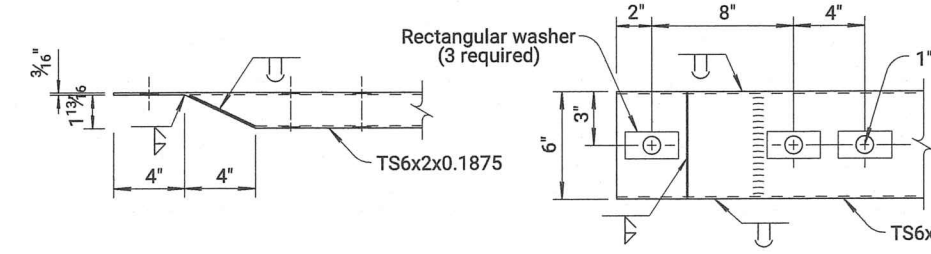
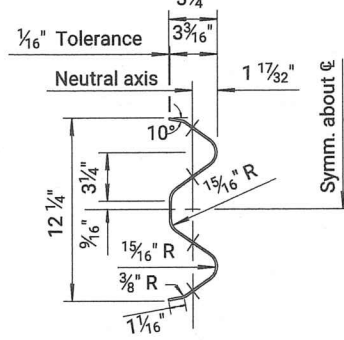
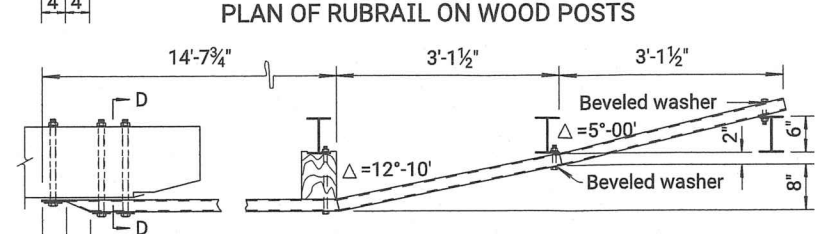
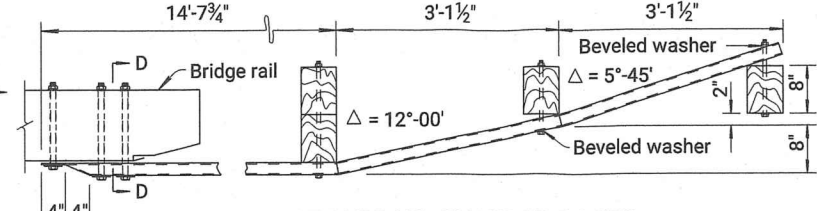
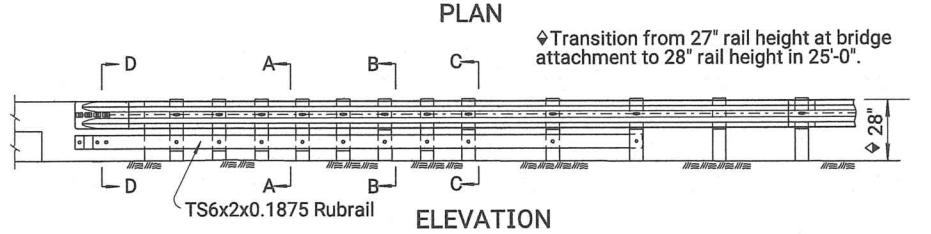
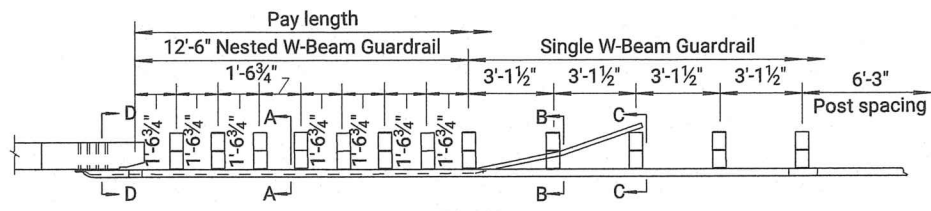
KDOT Graphics Certified 05-16-2022

KDOT Graphics Certified

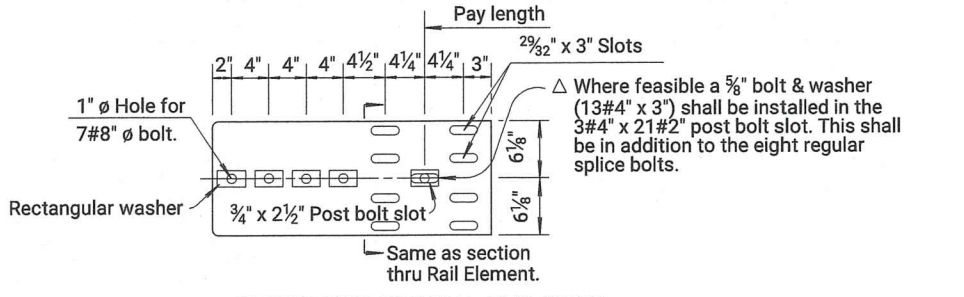
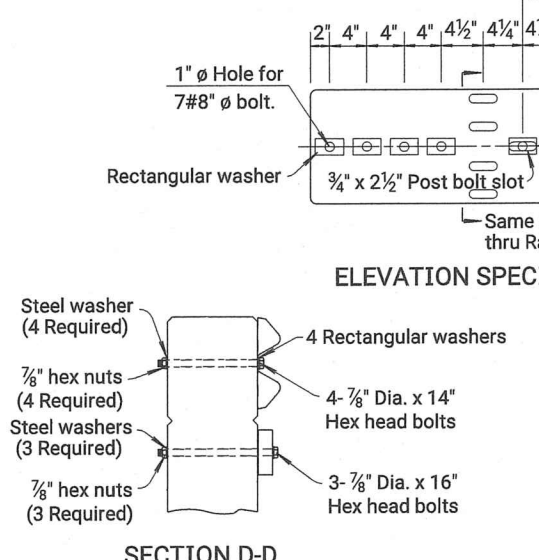
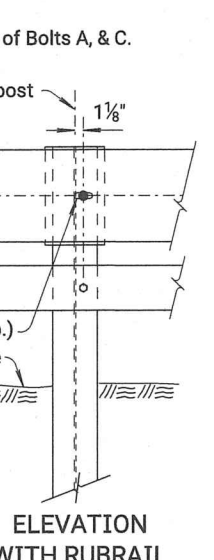
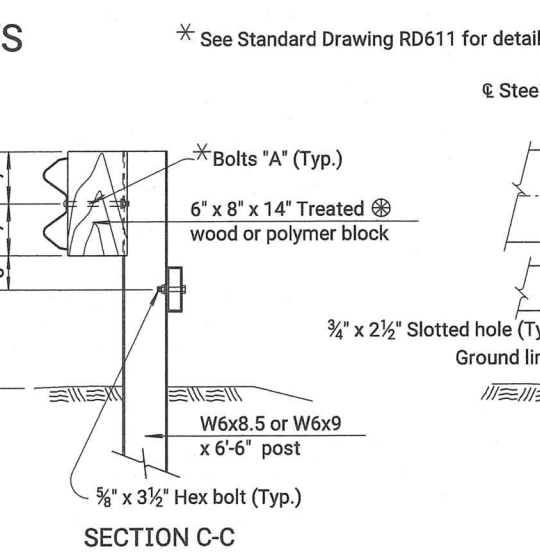
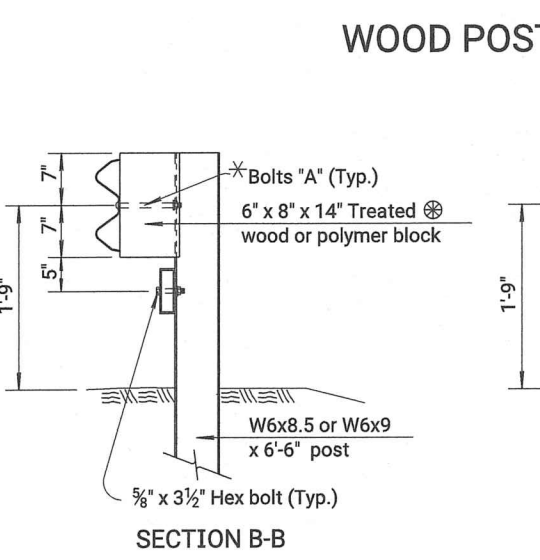
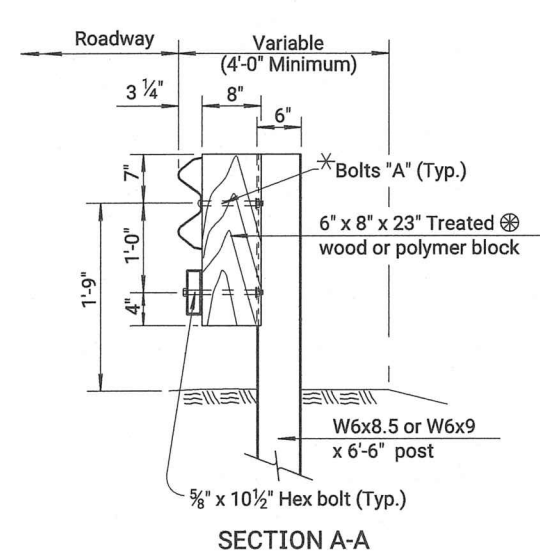
APR 05 2024

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| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 8 | 49 |



One section of the two shall be considered as subsidiary to the bid item "Steel Plate Guardrail".



Where feasible a 5/8" bolt & washer (13#4" x 3") shall be installed in the 3#4" x 21#2" post bolt slot. This shall be in addition to the eight regular splice bolts.

| NO. | DATE | REVISIONS | BY | APPD |
|-----|----------|-------------------------------|--------|--------|
| 14 | 12-14-10 | Revised notes 28" rail height | S.W.K. | J.O.B. |
| 13 | 04-02-08 | Removed Galvanized callout | S.W.K. | J.O.B. |
| 12 | 02-06-07 | Corrected spelling error | S.W.K. | J.O.B. |

KANSAS DEPARTMENT OF TRANSPORTATION

W-BEAM WITH RUBRAIL BRIDGE APPROACH TRANSITION DETAILS

RD616

| | | | |
|------------|------------|------------|-----------------|
| DESIGNED | 01-11-11 | APPD. | James O. Brewer |
| DESIGN CK. | DETAIL CK. | QUANTITIES | TRACED |
| DESIGN CK. | DETAIL CK. | QUAN. CK. | TRACE CK. |

KDOT Graphics Certified 05-11-2022

* See Standard Drawing RD611 for details of Bolts A, & C.

* Blocks used with steel posts shall be grooved to fit over the flange of the post and may be Wood or Polymer.

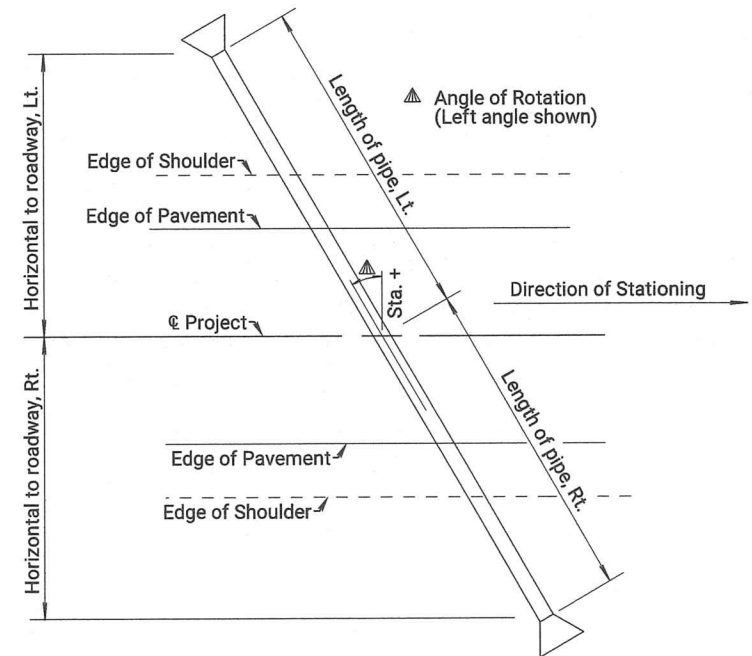
KDOT Graphics Certified

Note to Designer:
 KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVC, PPP, SRPE, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design Manual, Volume I (Part C), Road Section, "Elements of Drainage & Culvert Design" for structural pipe design information which includes: corrugations, sizes, gauges, maximum/minimum fill heights and classes of pipe.

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 9 | 49 |

| PIPE CULVERT SUMMARY | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|------|---------------------------------|-------------------|-----------|-----|-------------|-----|--------------------|-----|--------------------|----------------|-----|------------------|---------------------------|--------------------------------|------------|-------|-------------------|-------|---------|-----|--|
| Station | Type | Size or Bid Designation Sq. Ft. | Crown Grade Elev. | Flow Line | | Floor Elev. | | Horizontal Roadway | | Degree of Rotation | Length of Pipe | | Lin. Ft. of Pipe | Height of Fill (max.) Ft. | Concrete Pipe AASHTO Class No. | Pipe Gauge | | Pipe Corrugations | | Remarks | | |
| | | | | Lt. | Rt. | Lt. | Rt. | Lt. | Rt. | | Lt. | Rt. | | | | Steel | Alum. | Steel | Alum. | | | |
| 14+50 | E.P. | 15" | | | | | | | | | | | 36 | | | | | | | | RCP | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |

⊙ Unless otherwise noted, minimum pipe gauge & corrugations to be as shown in RD660. See Summary of Quantities for End Section information.
 * Only include floor elevations for embedded pipes. See RD668 for details. For structures not embedded, the floor elevations may be omitted.



PLAN
(Showing Rotation about C)

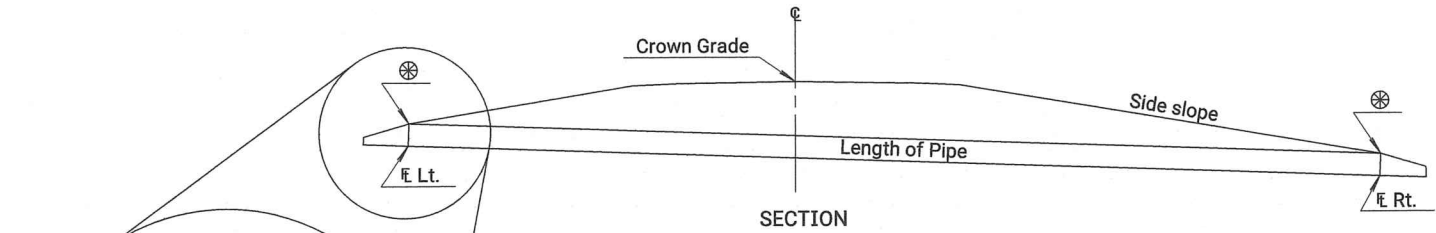
⊗ Design side slope to intersect inside diameter of pipe outside of Clear Zone.

| Type | ALLOWABLE LOCATION ▲ | | | |
|-------|----------------------|-----------|----------|-----------------------------------|
| | Mainline | Side Road | Entrance | Storm Sewer Under ML/Not Under ML |
| ☆PVC | | | X | |
| ■PEP | | | X | |
| ■PPP | | | X | |
| ⌘SRPE | | | | |
| CSP | | | | |
| ACSP | | | X | |
| CAP | | | X | |
| RCP | | | X | |

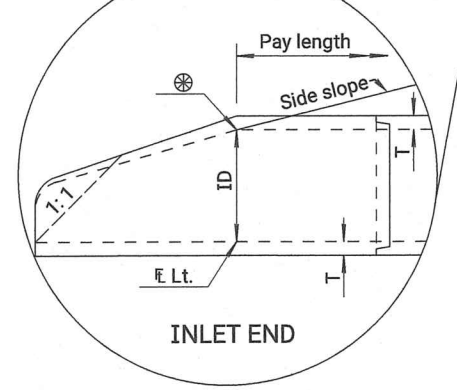
☆ When inside diameter of pipe is 36" or less.
 ▲ Unless otherwise specified in the plans. Some pipe types may not be allowed at a location if the fill height exceeds the maximum allowable or is less than the minimum allowable cover.
 ■ When inside diameter of pipe is 60" or less.
 ⌘ For inside diameter: ≥ 30"

| Type | ALLOWABLE END SECTIONS | | | |
|------|------------------------|-----|----|----|
| | CS | ACS | CA | RC |
| PVCP | | | X | ψ |
| PEP | | | X | |
| PPP | | | X | |
| SRPE | | | | |
| RCP | | | X | |
| ACSP | | | | |
| CAP | | | | |
| CSP | | | | |

◆ Type IV End Sections are only made of CS or ACS.
 ψ Submit Shop Drawing of connection for review



SECTION



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KS DEPT OF AGRICULTURE

| NO. | DATE | REVISIONS | BY | APP'D |
|-----|----------|---------------------------------|--------|--------|
| 03 | 05-09-22 | Added Pipe Types PP & SRPE | A.L.R. | S.W.K. |
| 02 | 07-17-17 | Added footnote for Shop Drawing | A.L.R. | S.W.K. |
| 01 | 02-23-16 | Rev. Table, Added Floor Elev. | T.T.R. | S.W.K. |

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY of PIPE CULVERTS

RD659

DESIGNED: Scott W. King
 APP'D: Scott W. King

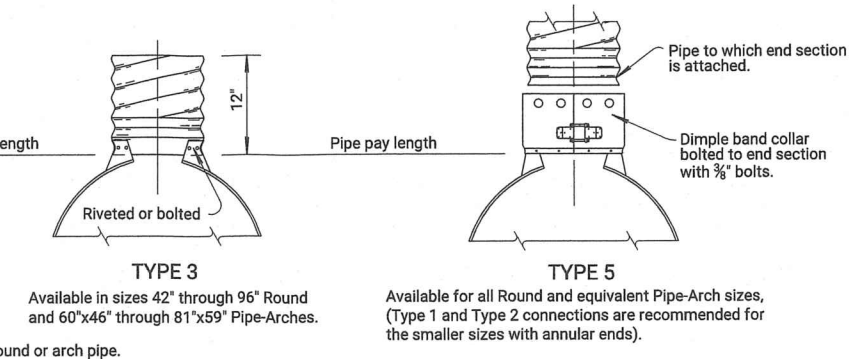
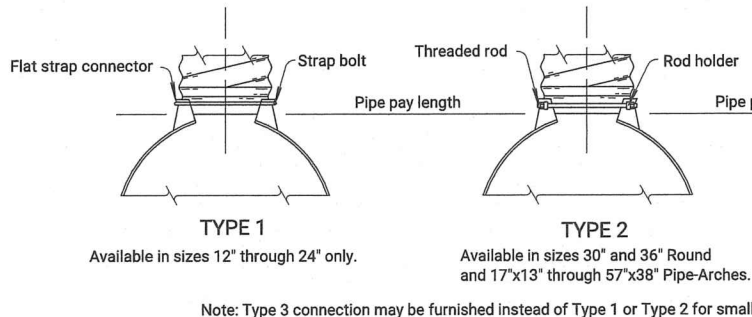
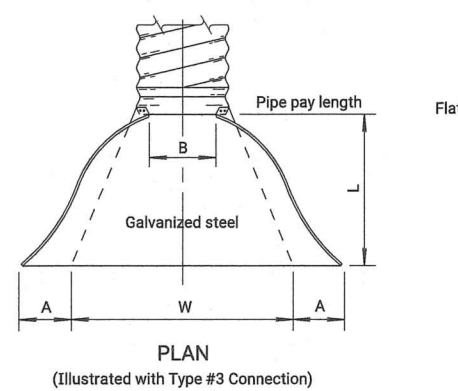
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KDOT Graphics Certified 06-24-2022

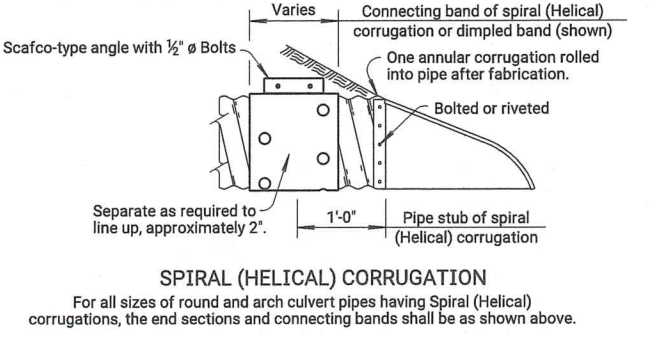
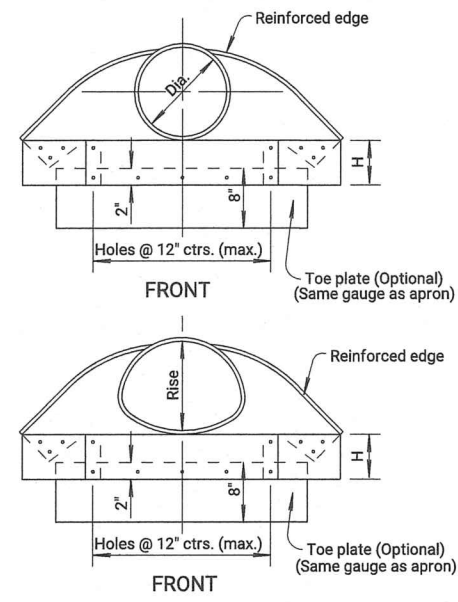
KDOT Graphics Certified

Note to Designer: KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVC, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design Manual, Volume I (Part C), Road Section, "Elements of Drainage & Culvert Design" for structural pipe design information which includes: corrugations, sizes, gauges, maximum/minimum fill heights and classes of pipe.

| | | | | |
|--------|--------------|------|-----------|--------------|
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 50 C-5222-01 | 2024 | 10 | 49 |



GENERAL NOTE for END SECTIONS
 End section material shall follow KDOT Pipe Policy for geographic location. Location shall govern use of CS (Galvanized), ACS (Aluminized) or CA (Aluminum) (Type I) End Section. Pipe material and End Section material shall be the same with no mixing of types per location.
 Toe plate extension, when specified, is an accessory and shall be the same gauge and metal as end section. Toe plate shall be punched to match holes in apron lip and attached with furnished 3/8" diameter nuts & bolts.
 W + 10" for 12" to 30" diameter pipes inclusive.
 W + 20" for 36" to 84" diameter pipes inclusive.
 W + 10" for pipe-arches with a rise of 13" to 29" inclusive.
 W + 20" for pipe-arches with a rise of 33" to 59" inclusive.
 Multiple panel end sections may contain dual gauges of like metal and shall have lap seams which are tightly joined with rivets or bolts. For 60" and larger diameter round pipe end sections and 77"x52" arch pipe end sections, the reinforced edges are supplemented with stiffener angles. The angles are attached with nuts and bolts. Angle reinforcement may be required under the center panel seams of 73"x55" and larger arch pipe end sections depending on manufacturer.
 Other approved designs may be used in lieu of type shown.
 Connection of end sections by welding will not be permitted.

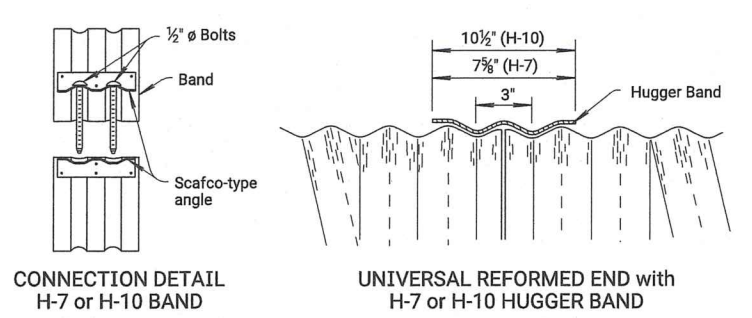


| Thickness CSP/ACSP | Thickness CAP | Gauge |
|--------------------|---------------|--------|
| 0.064" | 0.060" | 16 ga. |
| 0.079" | 0.075" | 14 ga. |
| 0.109" | 0.105" | 12 ga. |
| 0.138" | 0.135" | 10 ga. |
| 0.168" | 0.164" | 8 ga. |

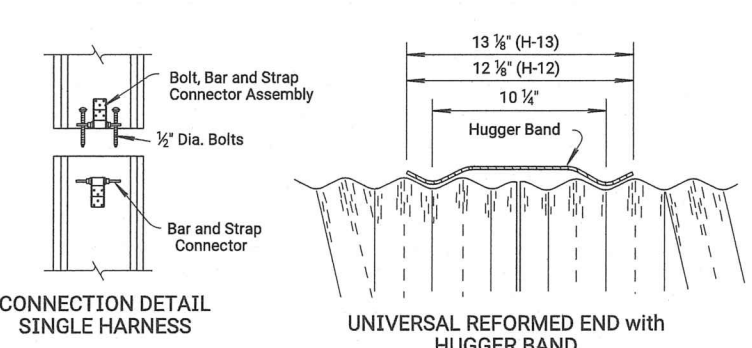
| Pipe Dia. (In.) | CS, ACS or CA Gauge | Dimensions in Inches | | | | | | Approx. Slope |
|-----------------|---------------------|----------------------|----------|----------|---------|----------|---------|---------------|
| | | A (min.) | B (max.) | H (min.) | L (±2") | W (min.) | | |
| 12" | 16 | 5 | 7 | 6 | 21 | 22 | 2 1/2:1 | |
| 15" | 16 | 6 | 8 | 6 | 26 | 28 | 2 1/2:1 | |
| 18" | 16 | 7 | 10 | 6 | 31 | 34 | 2 1/2:1 | |
| 21" | 16 | 8 | 12 | 6 | 36 | 40 | 2 1/2:1 | |
| 24" | 16 | 9 | 13 | 6 | 41 | 46 | 2 1/2:1 | |
| 30" | 14 | 11 | 16 | 8 | 51 | 55 | 2 1/2:1 | |
| 36" | 14 | 13 | 19 | 9 | 60 | 70 | 2 1/2:1 | |
| 42" | 12 | 15 | 25 | 10 | 69 | 82 | 2 1/2:1 | |
| 48" | 12 | 17 | 29 | 12 | 78 | 88 | 2 1/2:1 | |
| 54" | 12 | 17 | 33 | 12 | 84 | 100 | 2 1/2:1 | |
| 60" | 12/10 | 17 | 36 | 12 | 87 | 112 | 2:1 | |
| 66" | 12/10 | 17 | 39 | 12 | 87 | 118 | 2:1 | |
| 72" | 12/10 | 17 | 44 | 12 | 87 | 120 | 2:1 | |
| 78" | 12/10 | 17 | 48 | 12 | 87 | 130 | 1 1/2:1 | |
| 84" | 12/10 | 17 | 52 | 12 | 87 | 136 | 1 1/2:1 | |
| 90" | 12/10 | 17 | 58 | 12 | 87 | 142 | 1 1/2:1 | |
| 96" | 12/10 | 17 | 58 | 12 | 87 | 144 | 1 1/2:1 | |

| Bid Designation Sq. Ft. | Nom. W.W. Area Sq. Ft. | Pipe Arch Span & Rise | Dimensions in Inches 2 1/2" x 1/2" Corrugations | | | | | | Dimensions in Inches 3" x 1" or 5" x 1" Corr. | | | | | | Approx. Slope |
|-------------------------|------------------------|-----------------------|---|----------|----------|----------|---------|----------|---|----------|----------|----------|---------|----------|---------------|
| | | | CS, ACS or CA Gauge | A (min.) | B (max.) | H (min.) | L (±2") | W (min.) | CS, ACS or CA Gauge | A (min.) | B (max.) | H (min.) | L (±2") | W (min.) | |
| 1.0 | 1.1 | 17" x 13" | 16 | 5 | 9 | 6 | 20 | 28 | | | | | | | 2 1/2:1 |
| 1.5 | 1.6 | 21" x 15" | 16 | 6 | 11 | 6 | 24 | 34 | | | | | | | 2 1/2:1 |
| 2.0 | 2.2 | 24" x 18" | 16 | 7 | 12 | 6 | 28 | 40 | | | | | | | 2 1/2:1 |
| 2.5 | 2.9 | 28" x 20" | 16 | 7 | 16 | 6 | 32 | 46 | | | | | | | 2 1/2:1 |
| 3.0 or 4.0 | 4.5 | 35" x 24" | 14 | 9 | 16 | 6 | 39 | 58 | | | | | | | 2 1/2:1 |
| 5.0 or 6.0 | 6.5 | 42" x 29" | 14 | 11 | 18 | 7 | 46 | 73 | | | | | | | 2 1/2:1 |
| 7.0 or 8.5 | 8.9 | 49" x 33" | 12 | 12 | 21 | 9 | 53 | 82 | | | | | | | 2 1/2:1 |
| 10.0 or 11.0 | 11.7 | 53" x 41" | | | | | | | 12 | 17 | 26 | 12 | 63 | 88 | 2:1 |
| 10.0 or 11.0 | 11.6 | 57" x 38" | | | | | | | 12 | 17 | 36 | 12 | 70 | 100 | 2:1 |
| 12.5 or 14.0 | 15.6 | 60" x 46" | | | | | | | 12/10 | 17 | 36 | 12 | 70 | 112 | 1 1/2:1 |
| 12.5 or 14.0 | 14.7 | 64" x 43" | | | | | | | | | | | | | 2:1 |
| 16.5 | 19.3 | 66" x 51" | | | | | | | 12/10 | 17 | 36 | 12 | 70 | 112 | 1 1/2:1 |
| 16.5 | 18.1 | 71" x 47" | 12/10 | 17 | 36 | 12 | 77 | 112 | | | | | | | 1 1/2:1 |
| 21.0 | 23.2 | 73" x 55" | 12/10 | 17 | 36 | 12 | 77 | 124 | 12/10 | 17 | 36 | 12 | 77 | 124 | 1 1/2:1 |
| 21.0 | 21.9 | 77" x 52" | 12/10 | 17 | 36 | 12 | 77 | 124 | | | | | | | 1 1/2:1 |
| 25.0 | 27.4 | 81" x 59" | | | | | | | 12/10 | 17 | 44 | 12 | 77 | 136 | 1 1/2:1 |
| 25.0 | 26.0 | 83" x 57" | 12/10 | 17 | 44 | 12 | 77 | 130 | | | | | | | 1 1/2:1 |
| 32.0 | 32.1 | 87" x 63" | | | | | | | 12/10 | 17 | 44 | 12 | 77 | 136 | 1 1/2:1 |
| 36.0 | 37.0 | 95" x 67" | | | | | | | 12/10 | 17 | 44 | 12 | 87 | 160 | 1 1/2:1 |
| 42.0 | 42.4 | 103" x 71" | | | | | | | 12/10 | 17 | 44 | 12 | 87 | 172 | 1 1/2:1 |
| 47.0 | 48.0 | 112" x 75" | | | | | | | 12/10 | 17 | 44 | 12 | 87 | 172 | 1 1/2:1 |

(Information listed in these tables are nominal and may vary by manufacturer.)



CONNECTION DETAIL H-7 or H-10 BAND
 UNIVERSAL REFORMED END with H-7 or H-10 HUGGER BAND



CONNECTION DETAIL SINGLE HARNESS
 UNIVERSAL REFORMED END with HUGGER BAND

| Pipe Dia. Inches | Minimum Gauge of Round Pipe | | | | |
|------------------|-----------------------------|---------------|---------------|---------------------|---------------|
| | 2 1/2" x 1/2" Corr. | 3" x 1" Corr. | 5" x 1" Corr. | 2 1/2" x 1/2" Corr. | 3" x 1" Corr. |
| | CSP or ACSP | CSP or ACSP | CSP or ACSP | CAP | CAP |
| 12" | 14 | | | 16 | |
| 15" | 14 | | | 16 | |
| 18" | 14 | | | 16 | |
| 21" | 14 | | | 16 | |
| 24" | 14 | | | 16 | |
| 30" | 14 | | | 14 | |
| 36" | 14 | | | 14 | |
| 42" | 14 | | | 12 | 16 |
| 48" | 12 | 14 | 16 | 14 | 16 |
| 54" | 12 | 14 | 16 | 14 | 16 |
| 60" | 10 | 14 | 16 | 14 | 16 |
| 66" | 10 | 14 | 16 | 14 | 16 |
| 72" | 10 | 14 | 16 | 14 | 16 |
| 78" | 8 | 14 | 14 | 14 | 14 |
| 84" | 8 | 14 | 14 | 14 | 14 |
| 90" | | 14 | 14 | 14 | 14 |
| 96" | | 12 | 12 | 12 | 12 |
| 102" | | 12 | 12 | 12 | 12 |
| 108" | | 12 | 12 | 12 | 12 |
| 114" | | 12 | 12 | 12 | 12 |
| 120" | | 10 | 10 | 10 | 10 |

| Bid Designation Sq. Ft. | Pipe Dimension Span & Rise | Sq. Ft. | Equiv. Round Pipe Diameter | Minimum Gauge of Arch Pipe | | | | |
|-------------------------|----------------------------|---------|----------------------------|----------------------------|---------------|---------------|---------------------|---------------|
| | | | | 2 1/2" x 1/2" Corr. | 3" x 1" Corr. | 5" x 1" Corr. | 2 1/2" x 1/2" Corr. | 3" x 1" Corr. |
| | | | | CSP or ACSP | CSP or ACSP | CSP or ACSP | CAP | CAP |
| 1.0 | 17" x 13" | 1.1 | 15" | 14 | | | 16 | |
| 1.5 | 21" x 15" | 1.6 | 18" | 14 | | | 16 | |
| 2.0 | 24" x 18" | 2.2 | 21" | 14 | | | 16 | |
| 2.5 | 28" x 20" | 2.9 | 24" | 14 | | | 14 | |
| 3.0 or 4.0 | 35" x 24" | 4.5 | 30" | 14 | | | 14 | |
| 5.0 or 6.0 | 42" x 29" | 6.5 | 36" | 14 | | | 12 | |
| 7.0 or 8.5 | 49" x 33" | 8.9 | 42" | 14 | | | 12 | |
| 10.0 or 11.0 | 53" x 41" | 11.7 | 48" | | 14 | | | |
| 10.0 or 11.0 | 57" x 38" | 11.6 | 48" | 12 | | | 10 | |
| 12.5 or 14.0 | 60" x 46" | 15.6 | 54" | | 14 | | | 14 |
| 12.5 or 14.0 | 64" x 43" | 14.7 | 54" | 12 | | | 10 | |
| 16.5 | 66" x 51" | 19.3 | 60" | | 14 | | | 14 |
| 16.5 | 71" x 47" | 18.1 | 60" | 10 | | | 8 | |
| 21.0 | 73" x 55" | 23.2 | 66" | | 14 | | | 14 |
| 21.0 | 77" x 52" | 21.9 | 66" | 8 | | | | |
| 25.0 | 81" x 59" | 27.4 | 72" | | 14 | 12 | | 12 |
| 25.0 | 83" x 57" | 26.0 | 72" | 8 | | | | |
| 32.0 | 87" x 63" | 32.1 | 78" | | 12 | 12 | | 12 |
| 36.0 | 95" x 67" | 37.0 | 84" | | 12 | 12 | | 12 |
| 42.0 | 103" x 71" | 42.4 | 90" | | 12 | 12 | | 10 |
| 47.0 | 112" x 75" | 48.0 | 96" | | 12 | 12 | | 8 |
| 54.0 | 117" x 79" | 54.2 | 102" | | 10 | 10 | | |
| 60.0 | 128" x 83" | 60.5 | 108" | | 10 | 10 | | |
| 67.0 | 137" x 87" | 67.4 | 114" | | 10 | 10 | | |
| 74.0 | 142" x 91" | 74.5 | 120" | | 8 | 8 | | |

GENERAL NOTE for METAL PIPE
 Culvert "Type" listed may be CSP, ACSP, CAP, RCP, PVC, PEP within guidelines of KDOT Pipe Policy for geographic location. More than one pipe "Type" may be acceptable for a design location with allowable types listed for each site.
 There shall be no payment for gain in pipe length due to fit of pipe at connecting band.
 When Hugger Bands are used, the H-7 Hugger Band may be used on circular pipes 36" diameter and smaller or pipe arches 42" x 29" and smaller. The H-10 Hugger Band may be used on 12" thru 120" pipe. The H-12 or H-13 Hugger Band are for pipe sizes larger than 36" diameter or 42" x 29" arch pipe.
 Pipe gauge listed in the tables on this sheet are minimum for E=750 p.s.i. soil. Pipe gauge will be determined for each site based on the Design Manual Volume I - Part C Fill Height Tables and shall be listed in the Pipe Culvert Summary. Gauges shown on this Standard Drawing are KDOT minimum and may not be industry minimum gauge.
 In geographic areas that allow CSP (24" or smaller arched or round pipe) for entrance and side road installation with less than 3,000 AADT, 16 gauge ACSP may be substituted for 14 gauge CSP. Aluminum or aluminized pipes or end sections shall be coated with an asphaltic paint when in contact with fresh concrete in accordance with the Standard Specifications.

WATER RESOURCES RECEIVED
 APR 05 2024
 KS DEPT OF AGRICULTURE

| | | | | |
|-----|----------|--|--------|--------|
| 04 | 09-10-09 | Rev. Round and Arch tables, add. Alum. | S.W.K. | J.O.B. |
| 03 | 01-20-09 | Rev. Round and Arch tables, add. Alum. | S.W.K. | J.O.B. |
| 02 | 04-18-08 | Rev. layout, details, tables and notes | S.W.K. | J.O.B. |
| NO. | DATE | REVISIONS | BY | APPD |

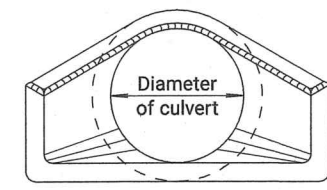
KANSAS DEPARTMENT OF TRANSPORTATION
METAL END SECTION FOR ROUND & ARCH METAL CULVERTS (TYPE I) & PIPE GAUGE TABLES
 RD660
 FHWA APPROVAL 12-16-09 APPD. James O. Brewer
 DESIGNED QUANTITIES TRACED
 DESIGN CK. DETAIL CK. QUAN. CK. TRACE CK.

KDOT Graphics Certified 05-16-2022

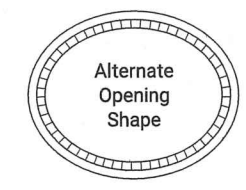
KDOT Graphics Certified

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 11 | 49 |

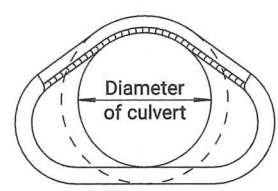
Note to Designer: KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVC, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design Manual, Volume I (Part C), Road Section, "Elements of Drainage & Culvert Design" for structural pipe design information which includes: corrugations, sizes, gauges, maximum/minimum fill heights and classes of pipe.



END ELEVATION (TYPE I)

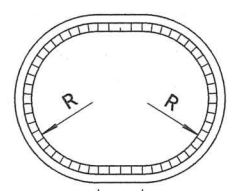


Alternate Opening Shape

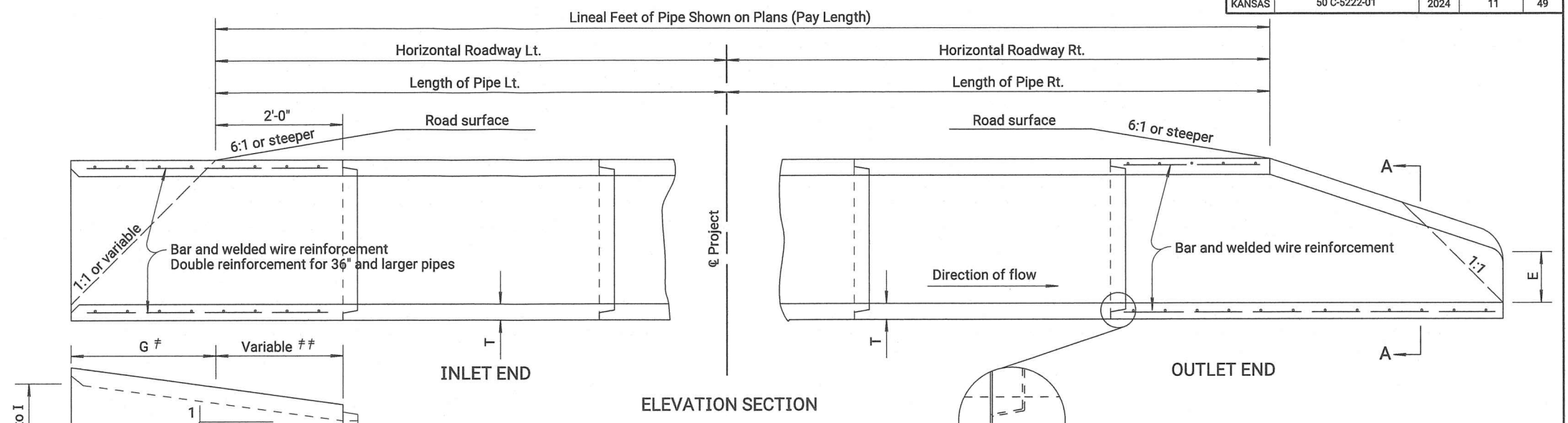


SECTION A-A

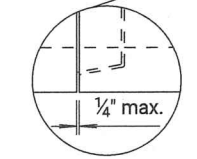
Showing rounding of inside edge of end section.



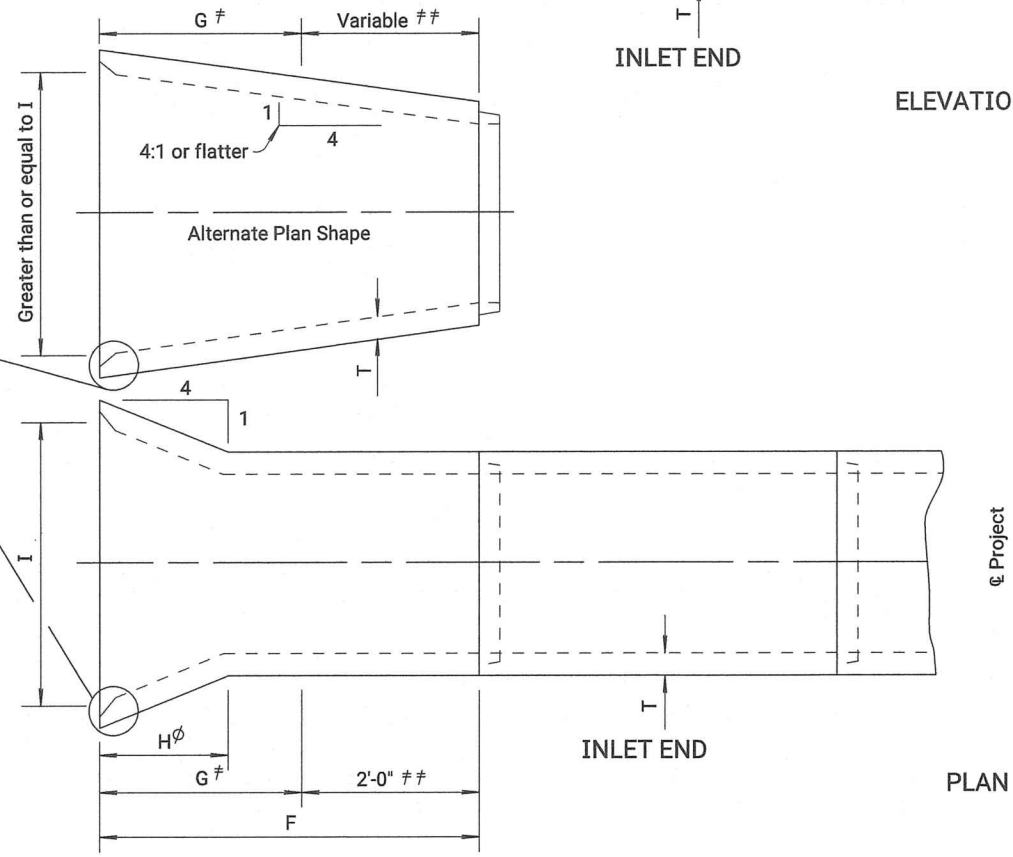
END ELEVATION (TYPE III)



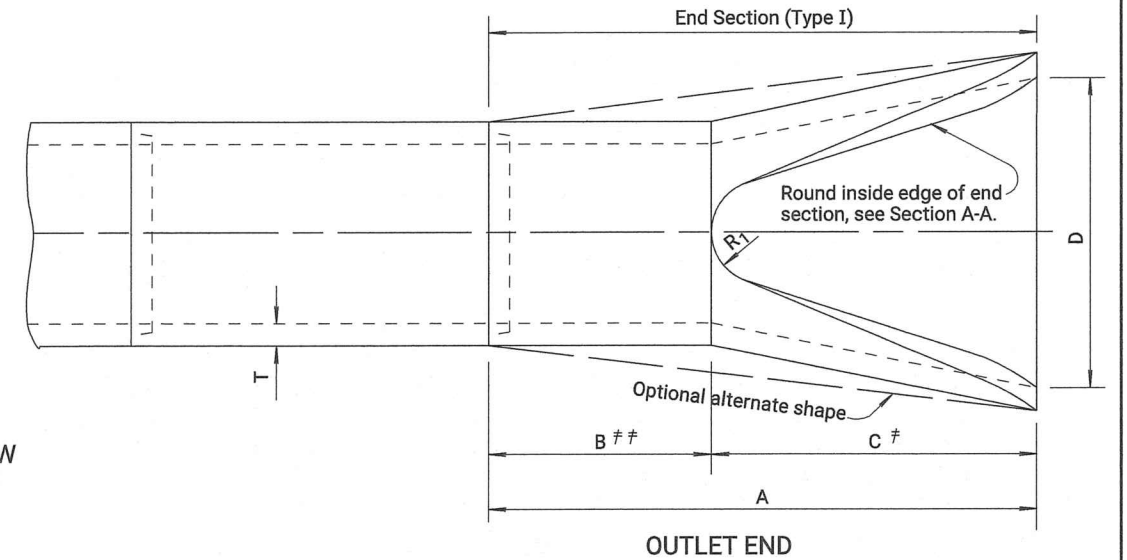
ELEVATION SECTION



Note: There shall be no payment for gain in length due to joint fit tolerance.



PLAN VIEW



OUTLET END

- φ Transition to round pipe.
- ≠ Paid for as separate item of End Section, except when structures shall bid as alternates. In that case End Sections shall be subsidiary to bid item. "Drainage Structure No. ".
- ≠≠ Included in pay length of pipe.
- ✱ Minimum waterway area is calculated at the inside of the bevel.

| Diam. | A | B≠≠ | C≠ | D | E | R _t | Slope | T |
|-------|-----------|------------|-----------|--------|--------|----------------|--------|--------|
| 12" | 6'-0 7/8" | 4'-0 7/8" | 2'-0" | 2'-0" | 4" | 9 | 3:1 | 2" |
| 15" | 6'-1" | 3'-10" | 2'-3" | 2'-6" | 6" | 11 | 3:1 | 2 1/4" |
| 18" | 6'-1" | 3'-10" | 2'-3" | 3'-0" | 9" | 12 | 3:1 | 2 1/2" |
| 24" | 6'-1 1/2" | 2'-6" | 3'-7 1/2" | 4'-0" | 9 1/2" | 14 | 3:1 | 3" |
| 30" | 6'-1 3/4" | 1'-7 3/4" | 4'-6" | 5'-0" | 1'-0" | 15 | 3:1 | 3 1/2" |
| 36" | 8'-1 3/4" | 2'-10 3/4" | 5'-3" | 6'-0" | 1'-3" | 20 | 3:1 | 4" |
| 42" | 8'-2" | 2'-11" | 5'-3" | 6'-6" | 1'-9" | 22 | 3:1 | 4 1/2" |
| 48" | 8'-2" | 2'-2" | 6'-0" | 7'-0" | 2'-0" | 22 | 3:1 | 5" |
| 54" | 8'-2 1/4" | 2'-9 1/4" | 5'-5" | 7'-6" | 2'-3" | 24 | 2.4:1 | 5 1/2" |
| 60" | 8'-3" | 3'-3" | 5'-0" | 8'-0" | 2'-11" | 24 | 2:1 | 6" |
| 72" | 8'-3" | 1'-9" | 6'-6" | 9'-0" | 3'-0" | 24 | 1.86:1 | 7" |
| 84" | 9'-3 1/2" | 1'-9" | 7'-6 1/2" | 10'-0" | 3'-0" | 24 | 1.6:1 | 8" |

| Diam. | Min. W.W. ✱ Area Sq. Ft. | F | G | H | I | J | K | R | T |
|-------|--------------------------|------------|------------|------------|-------|--------|-------|-------|--------|
| 24" | 4.5 | 4'-3" | 2'-3" | 1'-5 1/8" | 2'-8" | 1 1/2" | 8" | 1'-0" | 3" |
| 30" | 7.0 | 4'-9 1/2" | 2'-9 1/2" | 1'-9 1/2" | 3'-4" | 2" | 10" | 1'-3" | 3 1/2" |
| 36" | 10.1 | 5'-4" | 3'-4" | 2'-1 1/2" | 4'-0" | 2" | 1'-0" | 1'-6" | 4" |
| 42" | 13.7 | 5'-10 1/2" | 3'-10 1/2" | 2'-5 7/8" | 4'-8" | 2 1/2" | 1'-2" | 1'-9" | 4 1/2" |
| 48" | 17.9 | 6'-5" | 4'-5" | 2'-10 1/8" | 5'-4" | 3" | 1'-4" | 2'-0" | 5" |
| 54" | 22.7 | 6'-11 1/2" | 4'-11 1/2" | 3'-2 1/2" | 6'-0" | 3 1/2" | 1'-6" | 2'-3" | 5 1/2" |
| 60" | 28.0 | 7'-6" | 5'-6" | 3'-6 7/8" | 6'-8" | 4" | 1'-8" | 2'-6" | 6" |
| 72" | 40.3 | 8'-7" | 6'-7" | 4'-3 5/8" | 8'-0" | 5" | 2'-0" | 3'-0" | 7" |
| 84" | 54.8 | 9'-8" | 7'-8" | 5'-0 3/8" | 9'-4" | 6" | 2'-4" | 3'-6" | 8" |

Dimensions for alternate shapes shall be equal to or greater than those shown in the table, unless otherwise shown.

WATER RESOURCES RECEIVED
 APR 05 2024
 KS DEPT OF AGRICULTURE

| | | | | |
|-----|----------|--------------------------------|--------|--------|
| 02 | 04-18-08 | Added ref. to KDOT Pipe Policy | S.W.K. | J.O.B. |
| 01 | 04-05-05 | Revised reinforcement callout | S.W.K. | J.O.B. |
| NO. | DATE | REVISIONS | BY | APPD |

KANSAS DEPARTMENT OF TRANSPORTATION
CONCRETE END SECTIONS FOR CONCRETE PIPES
TYPE I & SIDE TAPERED INLET SECTION (TYPE III)
 RD662

| | | | |
|------------|------------|------------|-----------------|
| DESIGNED | 06-27-08 | APPD. | James O. Brewer |
| DESIGN CK. | DETAILD | QUANTITIES | TRACED |
| | DETAIL CK. | QUAN. CK. | TRACE CK. |

KDOT Graphics Certified 05-16-2022

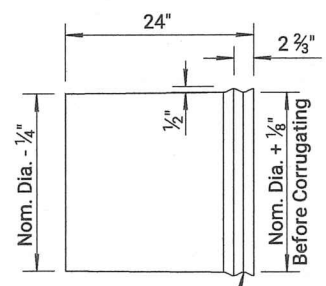
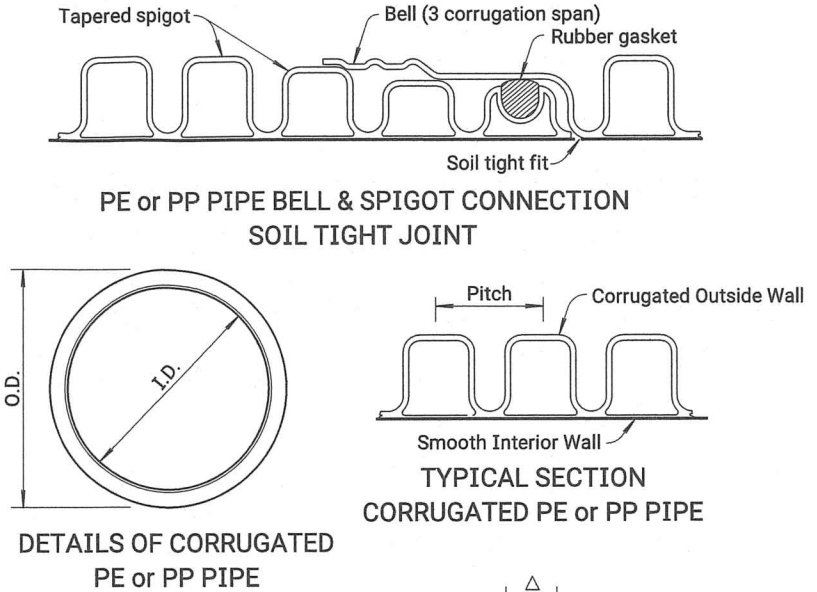
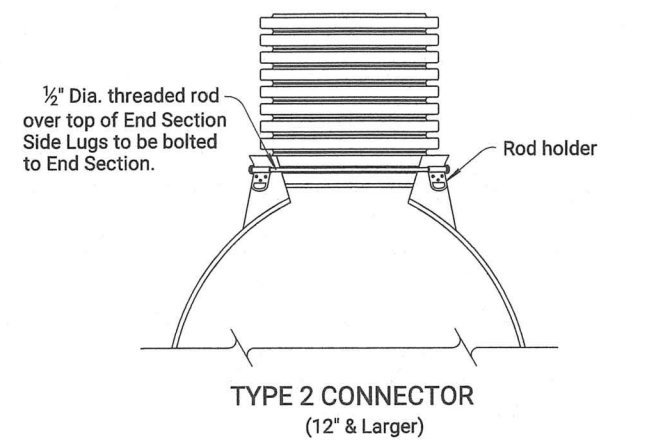
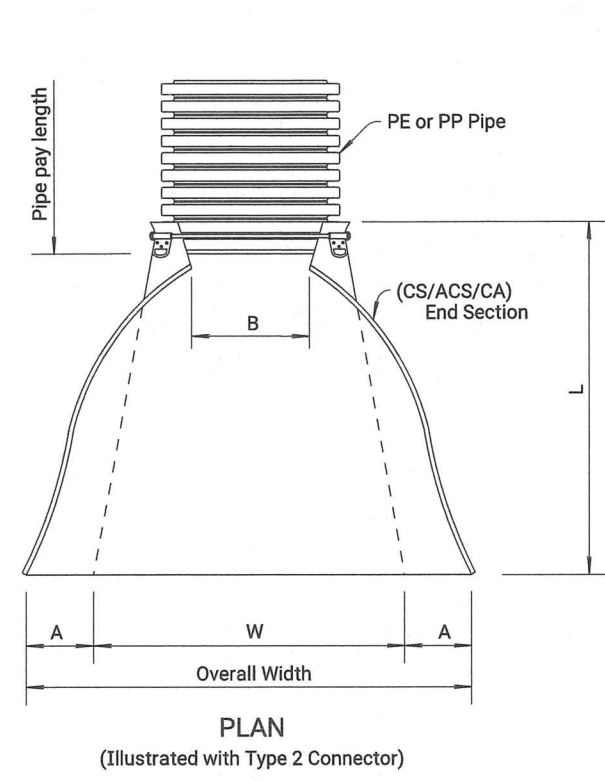
KDOT Graphics Certified

Note to Designer: KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSF, PEP, PVCP, PPP, SRPEP, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design Manual, Volume I (Part C), Road Section, "Elements of Drainage & Culvert Design" for structural pipe design information which includes: corrugations, sizes, gauges, maximum/minimum fill heights and classes of pipe.

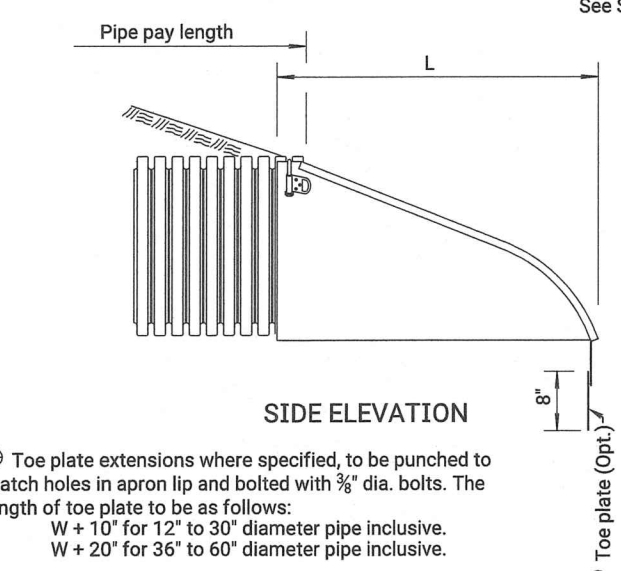
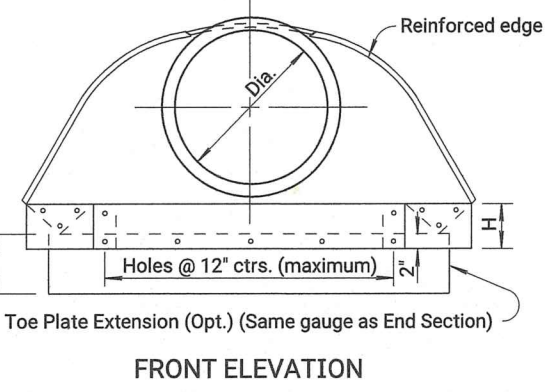
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 12 | 49 |

GENERAL NOTES

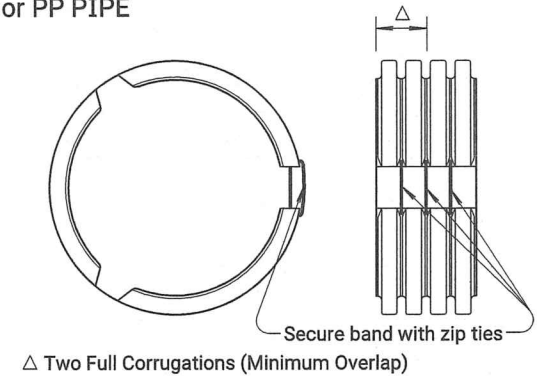
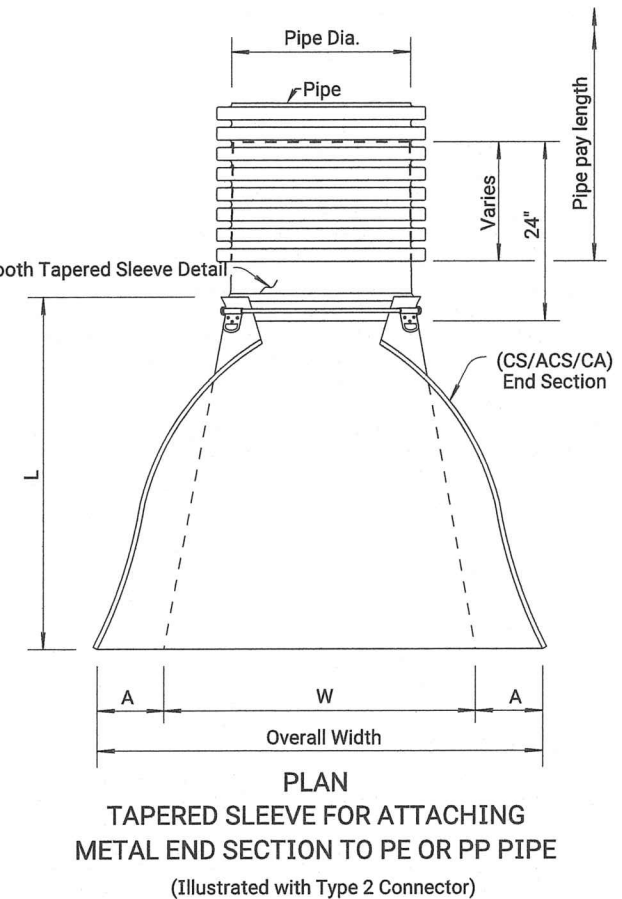
The culvert type shall meet the KDOT Pipe Policy & Standard Specifications. The size of pipe designated on the plan shall be the nominal inside diameter of a two wall corrugated PE pipe (Type S) or PP pipe (Type S). PE or PP pipe couplings shall be designed to cover at least two full corrugations on each side of a joint. No additional payment shall be made for any gain in length due to the fit of the pipe at connections. All corrugated PE or PP pipe, end sections, couplings, and fittings shall conform with the Standard Specifications. See Standard Specifications for PE or PP Pipe bedding and backfill. Multiple panel end sections shall have lap seams which are to be tightly joined by bolts & nuts. Corner plate and toe plate to be same gauge and material as end section. When required optional toe plate extension shall be overall width less 6" x 8" high. Attachment to PE or PP pipe 12" diameter and up shall be made with Type 2 Connector. All work and materials required for construction and installation of end section shall be included in the bid item "End Section".



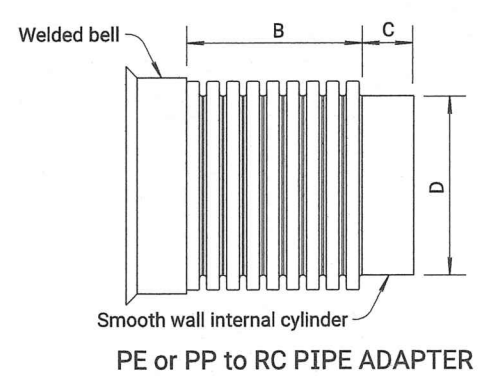
Form 1/2" x 2 2/3" Corrugations in 12 ga. smooth CS (Galvanized) or ACS (Aluminized) metal, maintain inside diameter of sleeve.



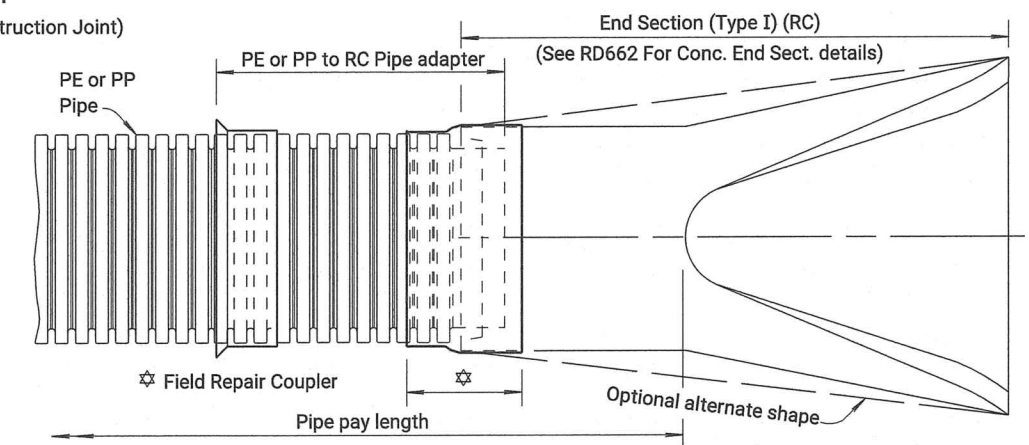
⊗ Toe plate extensions where specified, to be punched to match holes in apron lip and bolted with 3/8" dia. bolts. The length of toe plate to be as follows:
W + 10" for 12" to 30" diameter pipe inclusive.
W + 20" for 36" to 60" diameter pipe inclusive.



This band is used for (Field Splice Construction Joint)



| Pipe Dia. (In.) | B | C | D |
|-----------------|-----------|----|---------|
| 18" | 18 1/4" | 6" | 18" |
| 24" | 25" | 6" | 24" |
| 30" | 32 13/16" | 6" | 30" |
| 36" | 36 3/4" | 6" | 36" |
| 42" | 36" | 6" | 41 1/4" |
| 48" | 36 3/4" | 6" | 41 1/4" |
| 60" | 36" | 6" | 59" |



| Pipe Dia. (In.) | Min. Gauge Ends | Dimensions in Inches | | | | | Slope |
|-----------------|-----------------|----------------------|----------|----------|-----------|----------|---------|
| | | A (min.) | B (max.) | H (min.) | L (+/-2") | W (min.) | |
| 12" | 16 | 6 | 7 | 6 | 21 | 24 | 2 1/2:1 |
| 15" | 16 | 7 | 8 | 6 | 26 | 30 | 2 1/2:1 |
| 18" | 16 | 8 | 10 | 6 | 31 | 36 | 2 1/2:1 |
| 21" | 16 | 9 | 12 | 6 | 36 | 42 | 2 1/2:1 |
| 24" | 16 | 10 | 13 | 6 | 41 | 48 | 2 1/2:1 |
| 30" | 14 | 12 | 16 | 8 | 51 | 60 | 2 1/2:1 |
| 36" | 14 | 14 | 19 | 9 | 60 | 72 | 2 1/2:1 |
| 42" | 12 | 16 | 25 | 11 | 69 | 84 | 2 1/2:1 |
| 48" | 12 | 18 | 29 | 12 | 78 | 90 | 2 1/2:1 |
| 54" | 12 | 18 | 33 | 12 | 84 | 102 | 2 1/4:1 |
| 60" | 12/10 | 18 | 36 | 12 | 87 | 114 | 2:1 |

WATER RESOURCES RECEIVED
APR 05 2024

KS DEPT OF AGRICULTURE

| NO. | DATE | REVISIONS | BY | APPD |
|-----|----------|------------------------------------|--------|--------|
| 03 | 5-9-22 | Added Polypropylene pipe (PP) type | A.L.R. | S.W.K. |
| 02 | 07-17-17 | Changed tapered slv. requirement | A.L.R. | S.W.K. |
| 01 | 02-08-08 | Added ref. to KDOT pipe policy | S.W.K. | J.O.B. |

KANSAS DEPARTMENT OF TRANSPORTATION

METAL/CONCRETE END SECTION (TYPE I) for PE or PP PIPE

RD667

| | | |
|------------|------------|-----------|
| DESIGNED | QUANTITIES | TRACED |
| DESIGN CK. | DETAIL CK. | QUAN. CK. |

Scott W. King

KDOT Graphics Certified 06-22-2022

KDOT Graphics Certified

| | | | | |
|--------|--------------|------|-----------|--------------|
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 50 C-5222-01 | 2024 | 13 | 49 |

GENERAL NOTES

The culvert type shall meet the KDOT Pipe Policy & Standard Specifications. The size of pipe designated on the plan shall be the nominal inside diameter of a two wall corrugated PVC pipe.

PVC pipe shall be joined with an integral bell gasket joint and Flexible Elastomeric Seals. PVC Pipe is available in lengths of 2.5' to 20'. PVC pipe can be field cut to length, cut through a corrugation valley using a hand or power saw. Gaskets are shipped loose and fitted on spigot/cut pipe end following Manufacturer's installation instructions.

No additional payment shall be made for any gain in length due to the fit of the pipe at connections.

All corrugated PVC pipe, end sections and fittings shall conform with the Standard Specifications.

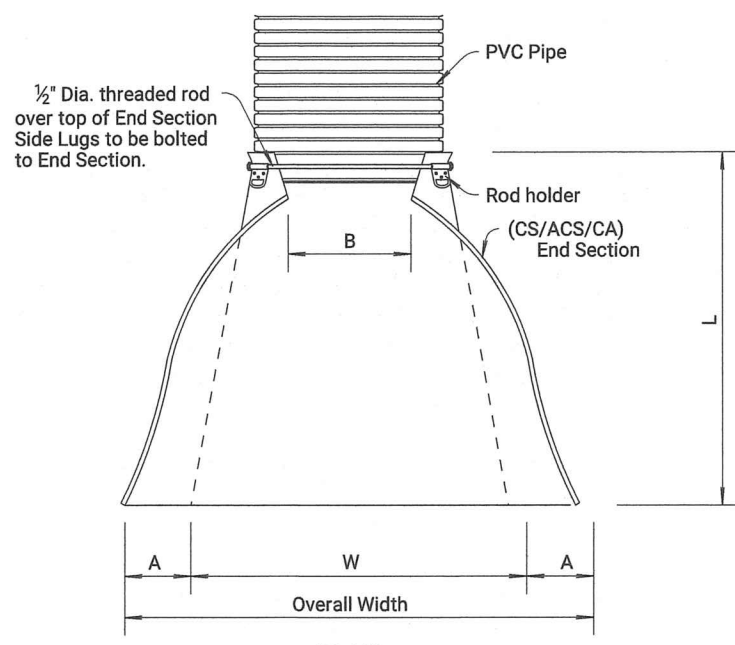
See Standard Specifications for PVC Pipe bedding and backfill.

Multiple panel end sections shall have lap seams which are to be tightly joined by bolts & nuts. Corner plate and toe plate to be same gauge and material as end section. When required optional toe plate extension shall be overall width less 6" x 8" high.

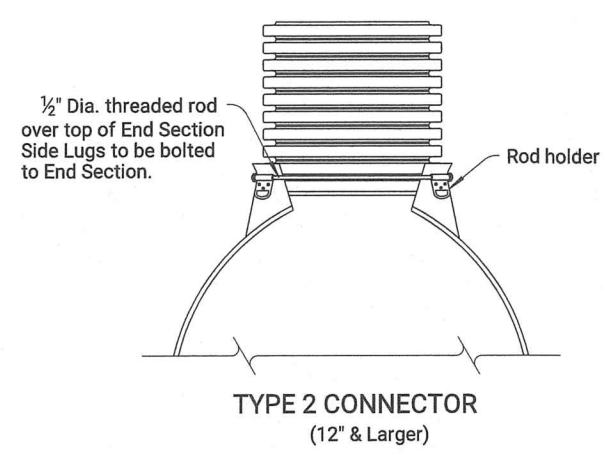
The End Section attachment to PVC pipe shall be made with a Type 2 Connector for 12" or greater pipe size.

All work and materials required for construction and installation of end section shall be included in the bid item "End Section".

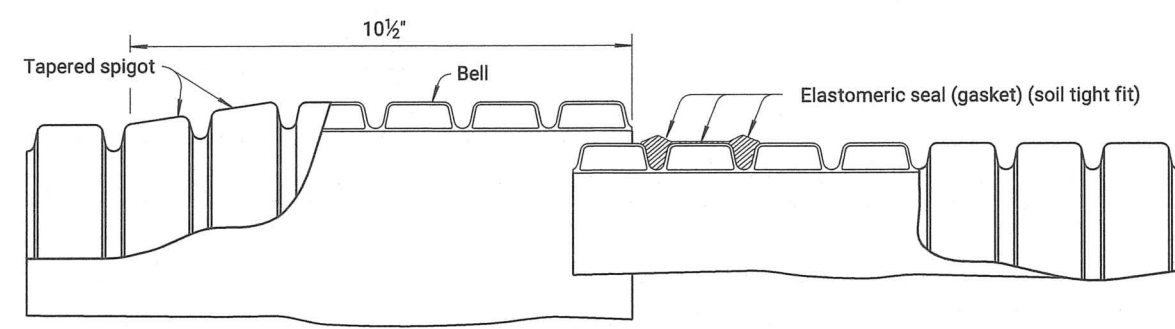
Note to Designer: KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVCP, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design Manual, Volume I (Part C), Road Section, "Elements of Drainage & Culvert Design" for structural pipe design information which includes: corrugations, sizes, gauges, maximum/minimum fill heights and classes of pipe.



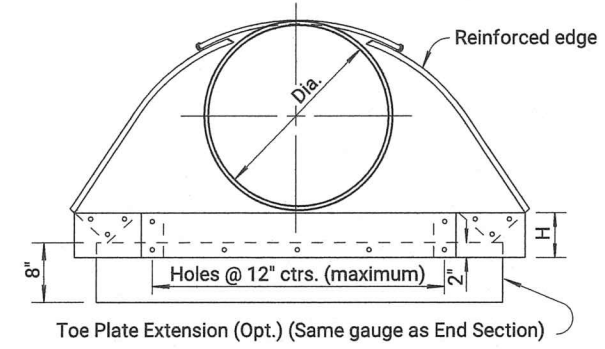
PLAN
(Illustrated with Type 2 Connector on 12" or larger)



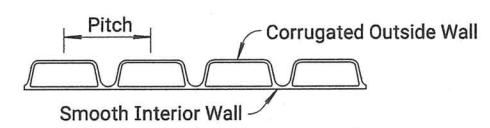
TYPE 2 CONNECTOR
(12" & Larger)



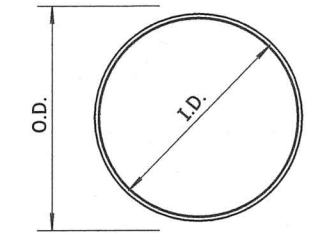
PVC BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT



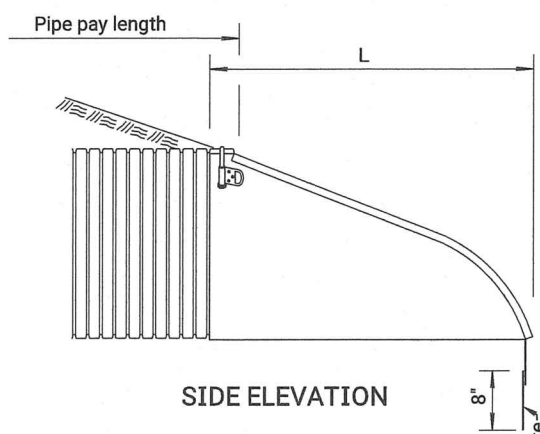
FRONT ELEVATION



TYPICAL SECTION
CORRUGATED PVC PIPE



DETAILS OF
CORRUGATED PVC PIPE



SIDE ELEVATION

⊗ Toe plate extensions where specified, to be punched to match holes in apron lip and bolted with 3/8" dia. bolts. The length of toe plate to be as follows:
 W + 10" for 12" to 30" diameter pipe inclusive.
 W + 20" for 36" to 60" diameter pipe inclusive.

| (CS/ACS/CA) END SECTION FOR PVC PIPE | | | | | | | |
|--------------------------------------|-----------------|----------------------|----------|----------|------------|----------|-----------|
| Pipe Dia. (In.) | Min. Gauge Ends | Dimensions in Inches | | | | | Slope |
| | | A 1" Tol. | B (max.) | H (min.) | L (+/- 2") | W (min.) | |
| 12" | 16 | 6 | 7 | 6 | 21 | 24 | 2 1/2 : 1 |
| 15" | 16 | 7 | 8 | 6 | 26 | 30 | 2 1/2 : 1 |
| 18" | 16 | 8 | 10 | 6 | 31 | 36 | 2 1/2 : 1 |
| 21" | 16 | 9 | 12 | 6 | 36 | 42 | 2 1/2 : 1 |
| 24" | 16 | 10 | 13 | 6 | 41 | 48 | 2 1/2 : 1 |
| 30" | 14 | 12 | 16 | 8 | 51 | 60 | 2 1/2 : 1 |
| 36" | 14 | 14 | 19 | 9 | 60 | 72 | 2 1/2 : 1 |

WATER RESOURCES RECEIVED
APR 05 2024

KS DEPT OF AGRICULTURE

| | | | | |
|-----|----------|--------------------------------|--------|--------|
| 01 | 02-08-08 | Added ref. to KDOT Pipe Policy | S.W.K. | J.O.B. |
| NO. | DATE | REVISIONS | BY | APP'D |

KANSAS DEPARTMENT OF TRANSPORTATION

METAL END SECTION (TYPE I) for PVC PIPE

RD667B

| | | | |
|------------|------------|-----------|-----------------|
| DESIGNED | 06-27-08 | APP'D. | James O. Brewer |
| DESIGN CK. | QUANTITIES | TRACED | |
| DETAIL CK. | QUAN. CK. | TRACE CK. | |

KDOT Graphics Certified 05-16-2022

KDOT Graphics Certified

| | | | | |
|--------|--------------|------|-----------|--------------|
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 50 C-5222-01 | 2024 | 14 | 49 |

| Items | SUMMARY OF QUANTITIES | | | | | | | |
|----------------------|-----------------------|----------|----------------|--------------------|-------------------|-------------------------|-------------------------|---------------------------------|
| | Excavation | | Concrete | | Reinforcing Steel | | Piles (Steel) (HP10x42) | Slope Protection (Riprap Stone) |
| | Class I | Class II | Grade 4.0 (AE) | Grade 4.0 (AE)(SA) | (Grade 60) | (Grade 60) Epoxy Coated | | |
| Location | Cu. Yds. | Cu. Yds. | Cu. Yds. | Cu. Yds. | Lbs. | Lbs. | Lin. Ft. | Cu. Yds. |
| Abutment No. 1 | 51 | | | | | | 64 | 245 |
| Pier No. 1 | | 160 | 26.0 | | 4,230 | | | |
| Pier No. 2 | | 121 | 24.6 | | 4,020 | | | |
| Abutment No. 2 | 51 | | | | | | 60 | 250 |
| Total Substructure | 102 | 281 | 50.6 | | 8,250 | | 124 | |
| Total Superstructure | | | | 164.9 | | 44,160 | | |
| Grand Total | 102 | 281 | 50.6 | 164.9 | 8,250 | 44,160 | * 124 | 495 |

* Includes: 4 @ 16', 4 @ 15'

Note: Only Steel Piles HP10x42 shall be used on this structure.

| INDEX TO BRIDGE DRAWINGS | |
|--------------------------|---------------------------|
| Sheet No. | Drawing Title |
| 14 | Bridge Notes & Quantities |
| 15 | Contour Map |
| 16 | Construction Layout |
| 17 | Abutment Details |
| 18-19 | Pier Details |
| 20-21 | Superstructure Details |
| 22 | Corral Rail Details |
| 23 | Bill of Reinforcing |

GENERAL BRIDGE NOTES

CHANNEL IMPROVEMENT AND EXCAVATION: THE CONTRACTOR SHALL EXCAVATE THE CHANNEL AND COMPLETE THE EMBANKMENTS IN THE VICINITY OF THE NEW BRIDGE, PRIOR TO THE DRIVING OF THE PILES.

BRIDGE EXCAVATION: ELEVATION 867.50 SHALL DESIGNATE THE EXCAVATION BOUNDARY PLANE OF CLASS I AND CLASS II EXCAVATION; CLASS I ABOVE THE PLANE, CLASS II BELOW THE PLANE. SEE BRIDGE EXCAVATION SHEET FOR THE LIMITS OF PAY EXCAVATION.

SOUNDINGS: THE SOUNDINGS SHOWN ON THESE PLANS ARE TAKEN FROM NOTES OBTAINED IN THE FIELD AND REPRESENT THE BEST INFORMATION AVAILABLE TO LABETTE COUNTY.

PILING: DRIVE ALL PILING TO PENETRATE OR BEAR UPON THE SHALE OR LIMESTONE FORMATION. DRIVING SHALL STOP WHEN IN THE OPINION OF THE ENGINEER ADDITIONAL DRIVING MAY DAMAGE THE PILING. DRIVE ALL PILING TO THE PILE DRIVING FORMULA LOAD OF:

ABUTMENT NO. 1 62.0 TONS
ABUTMENT NO. 2 62.0 TONS

AS A MINIMUM DRIVE EACH PILE TO THE LOAD AND PENETRATION, BUT IN NO CASE SHALL THE PILE BE DRIVEN TO MORE THAN 110% OF PILE DRIVING FORMULA LOAD. AT ANY LOCATION WHERE PROBLEMS ARE EXPERIENCED, PILE DAMAGE IS SUSPECTED, OR THE PILE DRIVING FORMULA LOAD OCCURS SIGNIFICANTLY ABOVE THE DESIGN PILE TIP ELEVATION, THE ENGINEER MAY REQUEST THAT THE PILE DRIVING ANALYZER (PDA) EQUIPMENT BE USED.

PILING SPLICE LOCATION: INTEGRAL PILE SPLICE LOCATIONS AND WELD TESTING CRITERIA FOR BOTH ABUTMENTS WILL FOLLOW THE "STANDARD PILE DETAILS SHEET (BR110).

BACKFILL COMPACTION: COMPACT BACKFILL AT THE ABUTMENTS.

SPREAD FOOTING EXCAVATION: WHEN ROCK OR SHALE IS ENCOUNTERED, ALL EXCAVATION BELOW THE TOP OF THIS MATERIAL OR THE TOP OF THE FOOTING, WHICHEVER IS LOWER, SHALL BE TO NEAT LINES. NO SIDE FORMING IS PERMITTED BELOW THE TOP OF THE ROCK, SHALE OR THE TOP OF THE FOOTING, WHICHEVER IS LOWER. CUT SPREAD FOOTINGS IN ROCK TO NEAT LINES WITH HAND EQUIPMENT ONLY. NO MACHINE EXCAVATION SHALL BE ALLOWED BELOW THE TOP OF THE FOOTING.

IF THE BOTTOM OF THE SPREAD FOOTING IS IN SHALE, MINIMIZE THE TIME THE SHALE IS EXPOSED TO THE ELEMENTS. SEE KDOT SPECIFICATIONS.

DRILL AT LEAST ONE 1 1/2" - 2" DIAMETER EXPLORATORY BORING IN EACH FOOTING LOCATION TO PENETRATE THE BEDROCK A MINIMUM OF 5 FEET BELOW THE BASE OF THE FOOTING. DRILL THE BORINGS IN THE PRESENCE OF THE ENGINEER. IF A CAVITY OR OTHERWISE INCOMPETENT ZONE IS DETECTED IN THE BEDROCK BELOW THE FOOTING, CONTACT THE GEOLOGIST. SEE KDOT SPECIFICATIONS. THE WORK REQUIRED FOR INVESTIGATION IS SUBSIDIARY TO THE EXCAVATION. PAYMENT FOR LOWERING OR MODIFYING THE FOUNDATION WILL BE IN ACCORDANCE WITH KDOT SPECIFICATIONS.

COLUMN CONSTRUCTION: CURE THE COLUMN FOOTINGS AS REQUIRED BY THE KDOT SPECIFICATIONS BEFORE BEGINNING THE COLUMN CONSTRUCTION (PLACING RESTEEL OR FORMWORK). DO NOT PLACE CAST IN PLACE SHEAR BOLTS, COIL INSERTS OR OTHER DEVICES USED AS FALSEWORK SUPPORT IN THE COLUMN WITHOUT THE APPROVAL OF THE ENGINEER. DO NOT REMOVE COLUMN FORMWORK WITHOUT THE APPROVAL OF THE ENGINEER. CURING SHALL CONTINUE AFTER THE FORMWORK IS REMOVED AS REQUIRED BY THE KDOT SPECIFICATIONS.

PIER BACKFILL: THE BACKFILL OF PIERS SHALL BE PLACED IN SUCH A MANNER AS TO PREVENT MOVEMENT OF THE COLUMNS. SEE NOTE ON PIER DETAIL SHEET.

PIER BEAM CONSTRUCTION: CURE THE COLUMNS/WEBWALL AS REQUIRED BY THE KDOT SPECIFICATIONS BEFORE BEGINNING THE PIER BEAM CONSTRUCTION (PLACING RESTEEL OR FORMWORK). DO NOT DRILL OR GROUT BOLTS OR OTHER DEVICES INTO THE COLUMNS/WEBWALL USED FOR FALSEWORK SUPPORT UNLESS APPROVED BY THE ENGINEER. CURE THE COLUMNS/WEBWALL AS REQUIRED BY THE THE KDOT SPECIFICATIONS BEFORE BEGINNING TO PLACE THE SUPERSTRUCTURE CONCRETE.

CONCRETE: SUPERSTRUCTURE CONCRETE IS BID AS CONCRETE (GRADE 4.0) (AE)(SA) SUBSTRUCTURE CONCRETE IS BID AS CONCRETE (GRADE 4.0)(AE). BEVEL ALL EXPOSED EDGES OF ALL CONCRETE WITH A 3/4" TRIANGULAR MOLDING, EXCEPT AS OTHERWISE NOTED ON THE PLANS. CONSTRUCTION JOINTS ARE OPTIONAL WITH THE CONTRACTOR, BUT IF USED, PLACE ONLY AT LOCATIONS SHOWN, OR AT LOCATIONS APPROVED BY THE ENGINEER.

REINFORCING STEEL: ALL REINFORCING STEEL DIMENSIONS ARE TO THE CENTERLINE OF BARS UNLESS OTHERWISE NOTED. ALL REINFORCING STEEL, EXCEPT THE SPIRAL BARS, SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60. SPIRAL BARS MAY MEET THE REQUIREMENTS OF EITHER ASTM A615 (GR. 40 OR 60) OR AASHTO M 32, AND ARE INCLUDED IN THE BID ITEM "REINFORCING STEEL (GR. 60)". WHERE NON-COATED BARS COME IN CONTACT WITH EPOXY COATED BARS, THEY NEED NOT BE COATED.

EPOXY COATED REINFORCING: ALL REINFORCING BARS DESIGNATED "EPOXY COATED" SHALL BE COATED WITH EPOXY AS SET FORTH IN THE KDOT STANDARD SPECIFICATIONS. ALL BAR SUPPORTS SHALL BE COATED.

FALSEWORK: FALSEWORK SHALL BE LEFT IN PLACE FOR THE ENTIRE UNIT UNTIL 15 DAYS AFTER THE LAST CONCRETE POUR FOR THE UNIT OR LONGER AS DIRECTED BY THE ENGINEER.

FALSEWORK PLANS: A LICENSED PROFESSIONAL ENGINEER SHALL DESIGN THE FALSEWORK DETAILS. DETAILS SHALL BEAR THE SEAL OF A LICENSED PROFESSIONAL ENGINEER. SUBMIT ELECTRONIC PLANS CONFORMING TO SECTION 16 OF THE BRIDGE DESIGN MANUAL WITH DETAILS IN COMPLIANCE WITH KDOT SPECIFICATIONS TO THE FIELD ENGINEER FOR REVIEW.

FALSEWORK INSPECTION: THIS PROJECT HAS FALSEWORK PLAN REQUIREMENTS WHICH ARE CONSIDERED "CATEGORY 2" BY KDOT SPECIFICATIONS. IF FALSEWORK DEFICIENCIES OR VARIATIONS FROM THE APPROVED AND SEALED PLANS ARE FOUND, THE FALSEWORK DESIGN ENGINEER OF RECORD WILL PROVIDE WRITTEN APPROVAL OF THE CHANGES. IF FOR THE CONVENIENCE OF THE CONTRACTOR THE FALSEWORK BECOMES "CATEGORY 1" BY THE USE OF NON-TYPICAL SUPPORTS; THEN THE INSPECTION AND REVIEW REQUIREMENT OF "CATEGORY 1" WILL BE FULLY ENFORCED, BUT AT NO COST TO THE STATE. "CATEGORY 2" FALSEWORK INSPECTION IS NOT PAID FOR DIRECTLY, BUT IS SUBSIDIARY TO OTHER BID ITEMS.

CORRAL RAIL: BUILD THE CORRAL AFTER THE FALSEWORK IS STRUCK.

CAMBER: CAMBER SHALL BE PROVIDED AS SHOWN IN THE CAMBER DIAGRAM UNLESS THE CONTRACTOR USES LONG SPAN STEEL BEAM FALSEWORK (CONCRETE DEAD LOAD DEFLECTION GREATER THAN 1/4") OR TIMBER FALSEWORK WITH GREATER THAN 12'-0" CLEAR SPAN, IN WHICH CASE THE CONTRACTOR SHALL SUBMIT FALSEWORK PLANS WHICH SHOW THE ADDITIONAL REQUIRED CAMBER.

CONCRETE PLACING SEQUENCE: THE SEQUENCE OF PLACING CONCRETE IN THE SLAB SHALL BE AS SHOWN ON THE PLANS, OR THE CONTRACTOR SHALL SUBMIT AN ALTERNATE PLACING SEQUENCE FOR REVIEW. THE ALTERNATE PLACING SEQUENCE SHALL BE GIVEN TO THE ENGINEER AT THE PRECONSTRUCTION CONFERENCE. THE ALTERNATE PLACING SEQUENCE SHALL INCLUDE THE PROPOSED RATE OF CONCRETE PLACEMENT IN CUBIC YARDS PER HOUR, THE PLANT CAPACITY, PLACEMENT DIRECTION, CONSTRUCTION JOINT LOCATION, A DESCRIPTION OF THE EQUIPMENT BEING 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 "CONCRETE (GRADE 4.0) (AE) (SA)". APPROVAL OF THE CONTRACTOR'S ALTERNATE SEQUENCE IS REQUIRED PRIOR TO PLACEMENT OF CONCRETE IN THE DECK.

CONSTRUCTION LOADS: LIMITED TRAFFIC IS PERMITTED ON THE NEW SUBDECK, ONE-COURSE DECK OR ANY CONCRETE OVERLAY DURING THE CURING PERIOD. KEEP ANY EXPOSED DECK WET DURING THE CURING PERIOD. SEE KDOT SPECIFICATIONS SECTION 710 TABLE 710-2 FOR ADDITIONAL INFORMATION.

QUANTITIES: ITEMS NOT LISTED SEPARATELY IN THE SUMMARY OF QUANTITIES ARE SUBSIDIARY TO OTHER ITEMS IN THE PROPOSAL.

DIMENSIONS: ALL DIMENSIONS SHOWN ON THE DESIGN PLANS ARE HORIZONTAL DIMENSIONS UNLESS OTHERWISE NOTED. MAKE NECESSARY ALLOWANCES FOR ROADWAY GRADE AND CROSS SLOPE.

CONTRACTOR CONSTRUCTION STAKING: CONSTRUCTION STAKING FOR CLEAR SPAN BRIDGES REQUIRES TWO INDEPENDENT SURVEYS. SEE KDOT SPECIFICATIONS.

SLOPE PROTECTION: PLACE SLOPE PROTECTION (RIPRAP STONE) (LIGHT 200 lbs.) TO THE LIMITS AND THICKNESSES SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

PLACE A 10 FOOT WIDE MAT OF GEOTEXTILE UNDER THE SLOPE ROCK/RUBBLE EMBANKMENT ON THE BERM SLOPES AND CENTERED ON THE DRIP LINES OF THE SLAB.

DEMOLITION PLANS: THIS IS A CATEGORY A DEMOLITION. SUBMIT DETAILED DEMOLITION PLANS TO THE ENGINEER FOR REVIEW AND DISTRIBUTION PER KDOT SPECIFICATIONS. NO DEMOLITION WORK WILL BEGIN WITHOUT APPROVED DEMOLITION PLANS. A LICENSED PROFESSIONAL ENGINEER IS NOT REQUIRED. THIS WORK IS NOT BID SEPARATELY, BUT IS SUBSIDIARY TO THE BID ITEM "REMOVAL OF THE EXISTING STRUCTURE".

CURING ENVIRONMENT: SEE KDOT'S LATEST SPECIAL PROVISION.

EMBANKMENT: THE CONTRACTOR SHALL CONSTRUCT THE EMBANKMENT IN THE VICINITY OF THE NEW BRIDGE PRIOR TO THE DRIVING OF THE PILES. THE CONTRACTOR SHALL WAIT 3 MONTHS FROM THE COMPLETION OF THE EMBANKMENT TO THE DRIVING OF THE PILES TO ALLOW FOR SETTLEMENT OF THE NEWLY CONSTRUCTED FILL.

LRFR RATING FACTORS

| Design Load | Rating Level | |
|-----------------------------------|--------------|-----------|
| | Inventory | Operating |
| HL-93 Loading | 1.13 | 1.46 |
| NRL | 1.16 | 1.50 |
| 2020 Manual for Bridge Evaluation | | |

LFD RATING FACTORS

| Truck | Rating Level | |
|--------------------------------------|--------------|-----------|
| | Inventory | Operating |
| HS-20 (36T) | 1.39 | 2.33 |
| Type HET (110T) | | 1.07 |
| 2002 LFD Rating, 17th Edition AASHTO | | |

DESIGN DATA

DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, NINTH EDITION, 2020

CONSTRUCTION SPECIFICATIONS: KANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR STATE ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION AND SPECIAL PROVISIONS.

DESIGN LOADING:
LIVE LOAD --- HL-93
DEAD LOAD --- INCLUDES AN ALLOWANCE OF 25 LBS. PER SQ. FT. FOR A FUTURE WEARING SURFACE.

UNIT STRESSES: CONCRETE (GRADE 4.0) (AE) (SA) $f'_c = 4,000$ psi
CONCRETE (GRADE 4.0) (AE) $f'_c = 4,000$ psi
CONCRETE (GRADE 4.0) $f'_c = 4,000$ psi
REINFORCING STEEL (GRADE 60) $f_y = 60,000$ psi

LRFD DESIGN PILE LOAD:

| DESIGN LOADING (TONS PER PILE) | STRENGTH I | SERVICE I | PHI |
|--------------------------------|------------|-----------|------|
| ABUTMENT NO. 1 | 62.0 | 40.2 | 0.45 |
| ABUTMENT NO. 2 | 62.0 | 40.2 | 0.45 |

MAXIMUM NET ALLOWABLE BEARING PRESSURE (SHALE) = 5 TONS PER SQ. FT.

LRFD DESIGN FOOTING PRESSURES:

| DESIGN LOADING (TONS PER SQ. FT.) | STRENGTH I | SERVICE I | PHI |
|-----------------------------------|------------|-----------|------|
| PIER NO. 1 | 4.9 | 3.9 | 0.45 |
| PIER NO. 2 | 4.6 | 3.7 | 0.45 |

WATER RESOURCES
RECEIVED

APR 05 2024

KS DEPT OF AGRICULTURE

PROJECT NO. 50 C-5222-01
BR. NO. 00501055706640

BRIDGE NOTES & QUANTITIES

BRIDGE OVER TRIB. NEOSHO RIVER

STA. 17+50

LABETTE COUNTY



| | | |
|------------|-----|-------|
| DESIGNED | GEP | SCALE |
| DETAILED | JPF | DATE |
| QUANTITIES | | SHEET |
| | | OF |

J:\2023Pro\235076\CADD\235076_Labette_Notes.dwg 3/25/2024 - 3:05pm jfrrazier

Ref. N 1/4 Cor. Sec. 13, T 31 S, R 20 E @ Sta. 11+39.44
 Fnd. 1/2" Rebar w/ Alum. Cap
 1. In C E-W Grav. Rd.
 2. In line w/ 5 Strand Barbwire to S.
 3. Mag Nail in N. Face Tree
 4. Mag Nail in N. Face Fc Brace Post
 5. Mag Nail in E. Face Fc. Cor. Post
 6. Mag Nail in E. Face Brace Post

Ref. P.O.T. @ Sta. 13+87.03
 Set 3/8" Rebar @ P.O.T.
 1. In C E-W Grav. Rd.
 2. To C Base Unknown Valve
 3. Spk. & Wshr. in Pow. Pole

101.5' ESE
 116.8' WNW

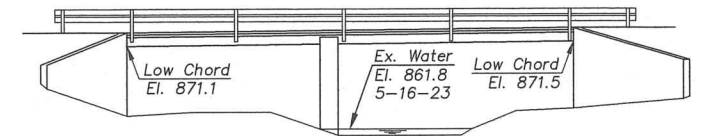
Ref. P.O.T. @ Sta. 21+20.06
 Set 3/8" Rebar @ P.O.T.
 1. In C E-W Grav. Rd.
 2. R.R. Spk. in Pow. Pole
 3. Spk. & Wshr. in N. Face Tree

60.4' NW
 82.9' ESE

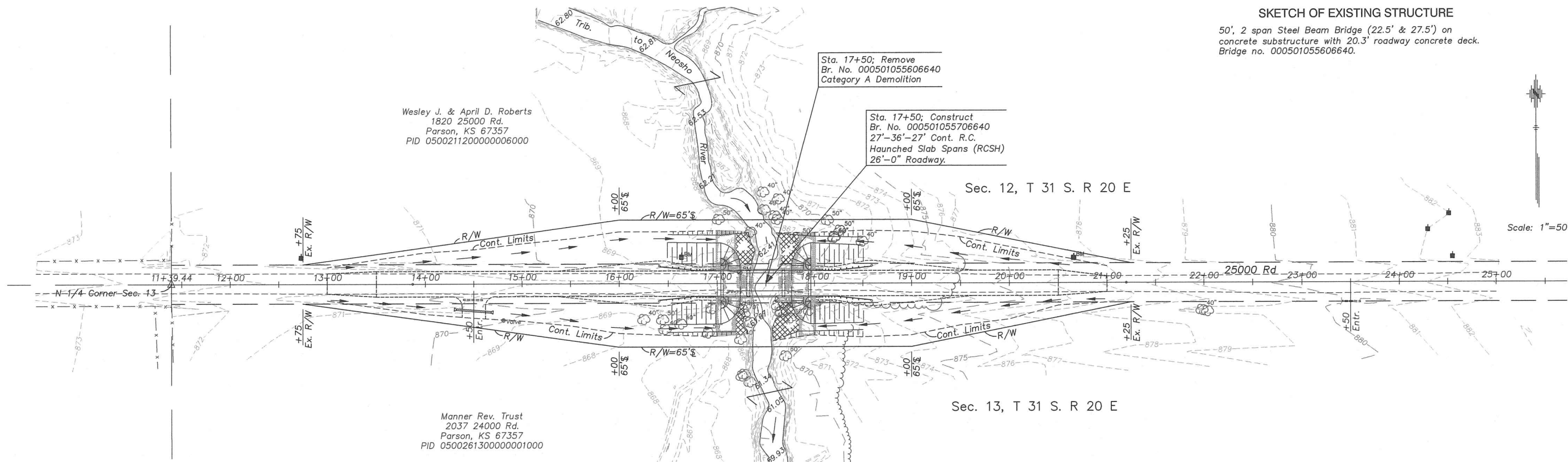
Ref. NE Cor. Sec. 13, T 31 S, R 20 E
 Fnd. 1/2" Rebar
 1. In C Intersection
 2. Mag Nail E. Face Pow. Pole
 3. To SE Cor. North Hdwl. RCB
 4. To NE Cor. South Hdwl. RCB
 5. Spk. & Survey Mkr. Tab. W. Face Cor. Post
 6. Spk. & Wshr. Top Fc. Cor. Post

77.74' NNW
 34.35' WNW
 35.42' WSW
 45.96' SE
 61.88' NE

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 15 | 49 |



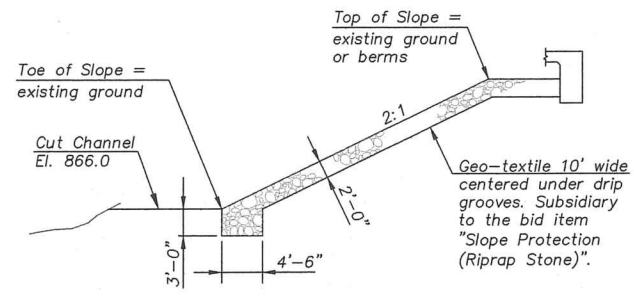
(Not to scale)
SKETCH OF EXISTING STRUCTURE
 50', 2 span Steel Beam Bridge (22.5' & 27.5') on concrete substructure with 20.3' roadway concrete deck.
 Bridge no. 000501055606640.



Sta. 17+50; Remove
 Br. No. 000501055606640
 Category A Demolition

Sta. 17+50; Construct
 Br. No. 000501055706640
 27'-36'-27' Cont. R.C.
 Haunched Slab Spans (RCSH)
 26'-0" Roadway.

Scale: 1"=50'



TYPICAL SECTION CHANNEL IMPROVEMENT

Note: The Contractor shall Construct Slope Protection (Riprap Stone)(200 lb) on the berm and channel slopes as shown.
 Abutment No. 1 = 245 Cu. Yds.
 Abutment No. 2 = 250 Cu. Yds.
 Total = 495 Cu. Yds.

Legend

- ✕ Cut Channel
- Riprap

Note: The Contractor shall remove the existing structure (50', 2 span Steel Beam Bridge (22.5' & 27.5') on concrete substructure with 20.3' roadway concrete deck). The Contractor shall excavate the channel improvements in the vicinity of the new bridge, prior to its construction.

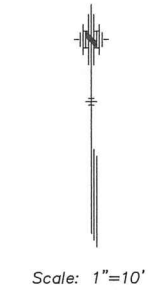
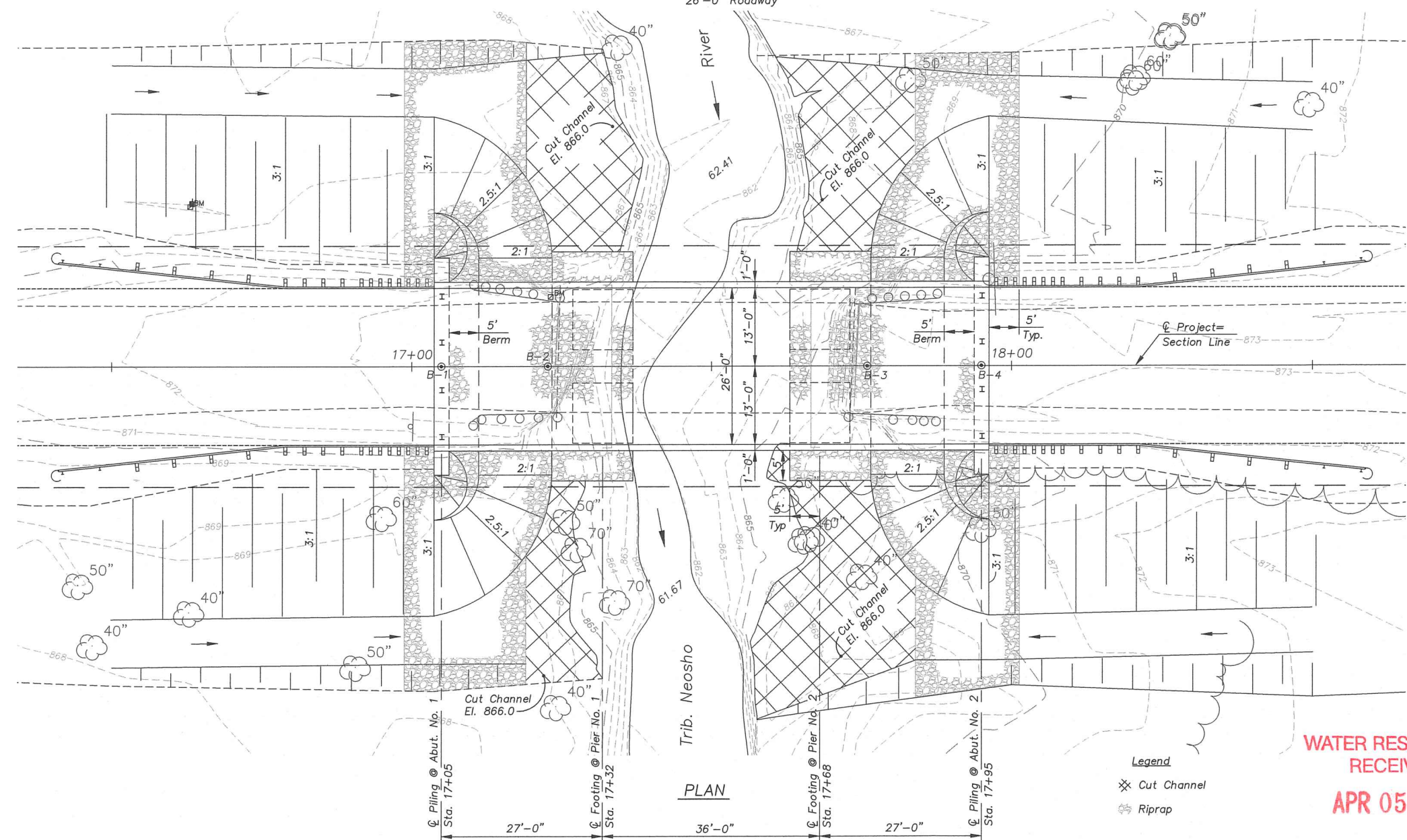
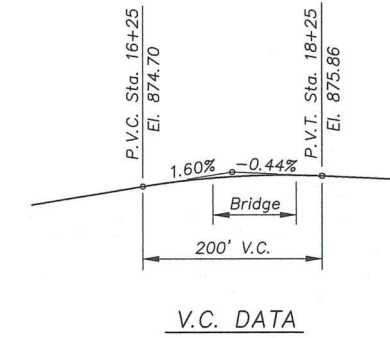
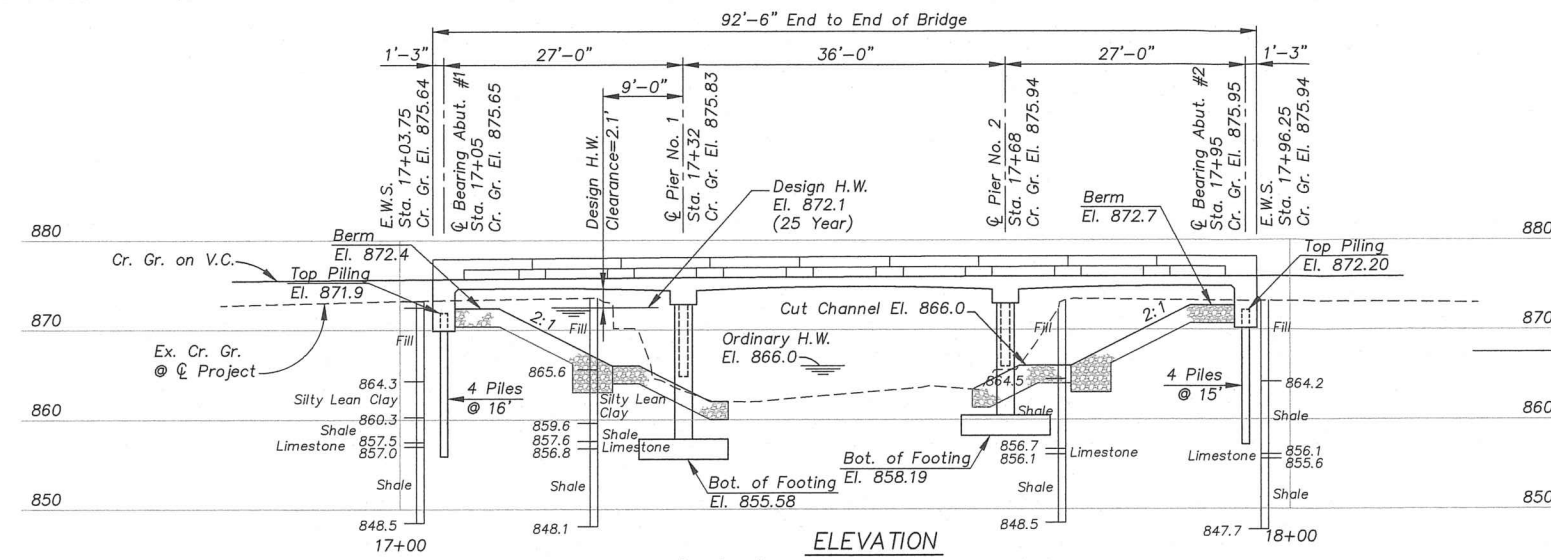
The existing steel beams and guardrail mounting outriggers and road signs shall be removed in salvageable condition and stored within the right of way for removal by the Labette County forces and funds. The remainder of the existing bridge and shall be disposed of at a site selected by the Contractor and in a manner approved by the Engineer.

**WATER RESOURCES
 RECEIVED
 APR 05 2024
 KS DEPT OF AGRICULTURE**

| | | |
|---|----------------|--------------------------|
| PROJECT NO. 50 C-5222-01 BR. NO. 000501055706640 | | CFS ENGINEERS |
| CONTOUR MAP | | |
| BRIDGE OVER TRIBUTARY TO NEOSHO RIVER | | DESIGNED |
| STA. 17+50 | LABELLE COUNTY | SCALE |
| | | DATE |
| | | SHEET |
| | | OF |

- B.M. #1- R.R. Spk. in Pow. Pole, 26.6' Lt. @ Sta. 16+63.40 El. 869.44
- B.M. #2- "+" Cut NW Cor. Wingwall, 11.5' Lt. @ Sta. 17+23.40 El. 872.98
- B.M. #3- R.R. Spk. in Pow. Pole, 25.8' Lt. @ Sta. 20+65.40 El. 877.33

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 16 | 49 |



DRAINAGE DATA

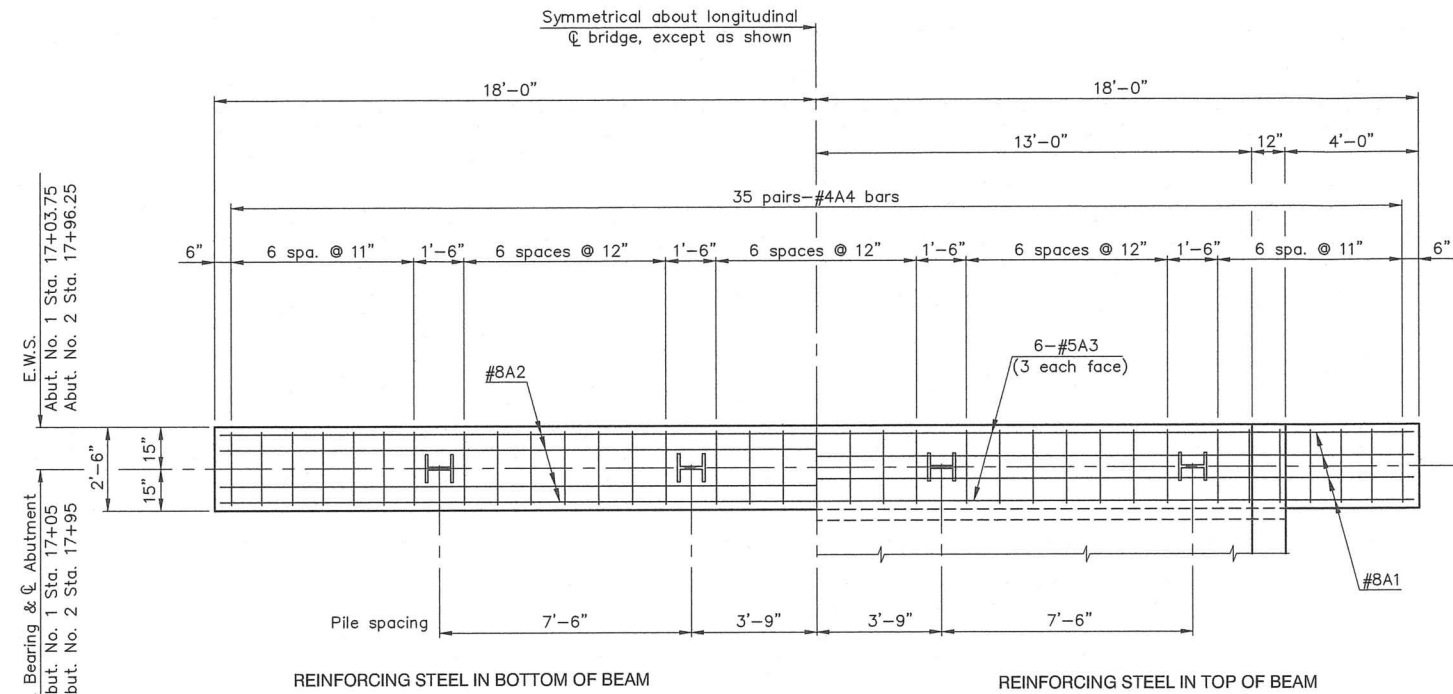
| | | |
|--|-------|---------|
| Drainage Area | 4.37 | Sq. Mi. |
| Design Frequency | 25 | Yr. |
| Design Discharge (Q ₂₅) | 4,090 | cfs |
| Design High Water Elevation | 872.1 | Ft. |
| Change in Design Elevation | -0.1 | Ft. |
| Velocity at Q ₂₅ | 8.6 | fps |
| Overtopping Elev. (Sta. 13+55) | 871.5 | Ft. |
| Overtopping Discharge | 2,650 | cfs |
| Overtopping Frequency | 8 | Yr. |
| Discharge at Q100 | 6,120 | cfs |
| Change in Backwater at Q100 | -0.2 | Ft. |
| Backwater Elevation at Q100 | 874.5 | Ft. |
| Historic Highwater Elevation | 874.0 | Ft. |
| Ordinary Highwater Elevation | 866.0 | Ft. |
| Total Waterway Provided | 450 | Sq. Ft. |
| Design Waterway Provided | 350 | Sq. Ft. |
| Estimated Ordinary Highwater Discharge | 500 | cfs |

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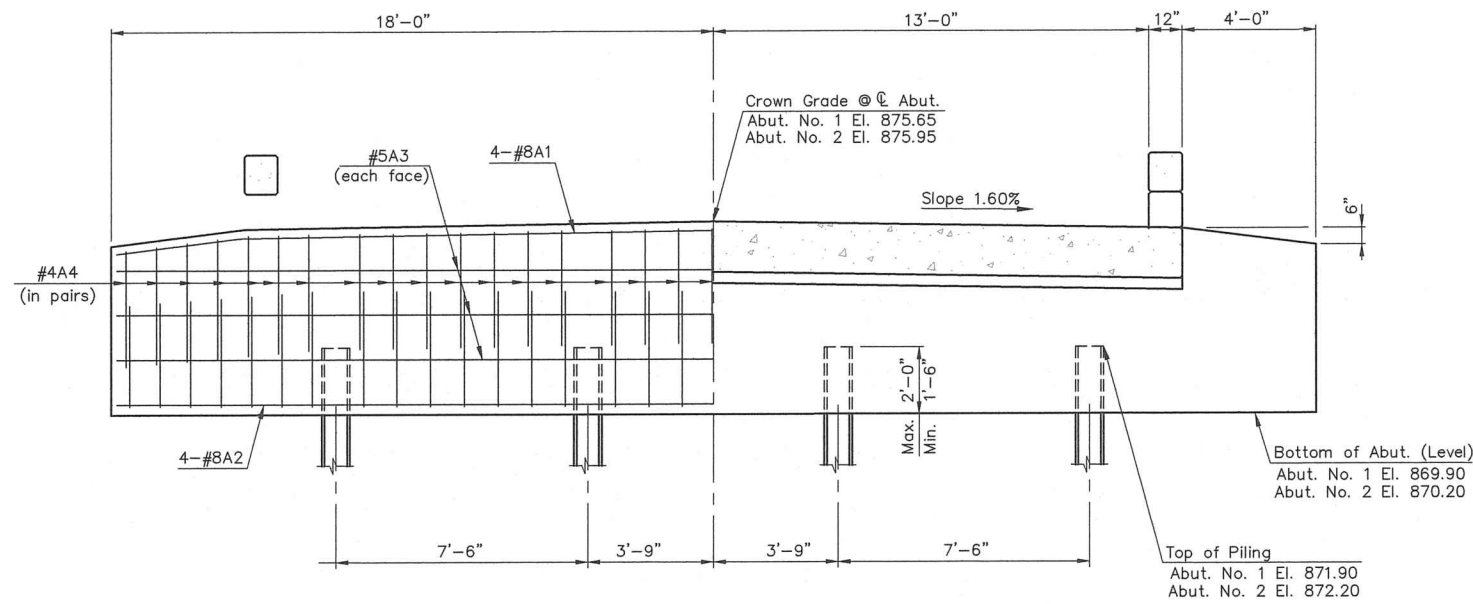
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|---|----------------|----------------------|
| PROJECT NO. 50 C-5222-01 BR. NO. 000501055706640 | | CFS ENGINEERS |
| CONSTRUCTION LAYOUT | | |
| BRIDGE OVER TRIBUTARY TO NEOSHO RIVER | | DESIGNED |
| STA. 17+50 | LABETTE COUNTY | HAP |
| | | DATE |
| | | QUANTITIES |
| | | SHEET |
| | | OF |

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| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 50 C-5222-01 | 2024 | 17 | 49 |



PLAN

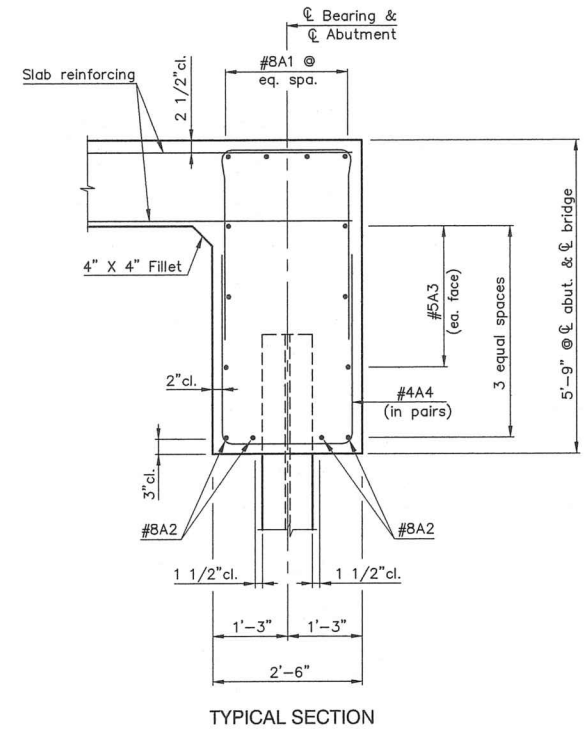


FRONT ELEVATION

Note: Pile elevations are based on maximum embedment.

DESIGN PILE LOAD
40.2 Tons per pile
Service Load 1

62.0 Tons per pile
Strength Load 1



TYPICAL SECTION

WATER RESOURCES RECEIVED
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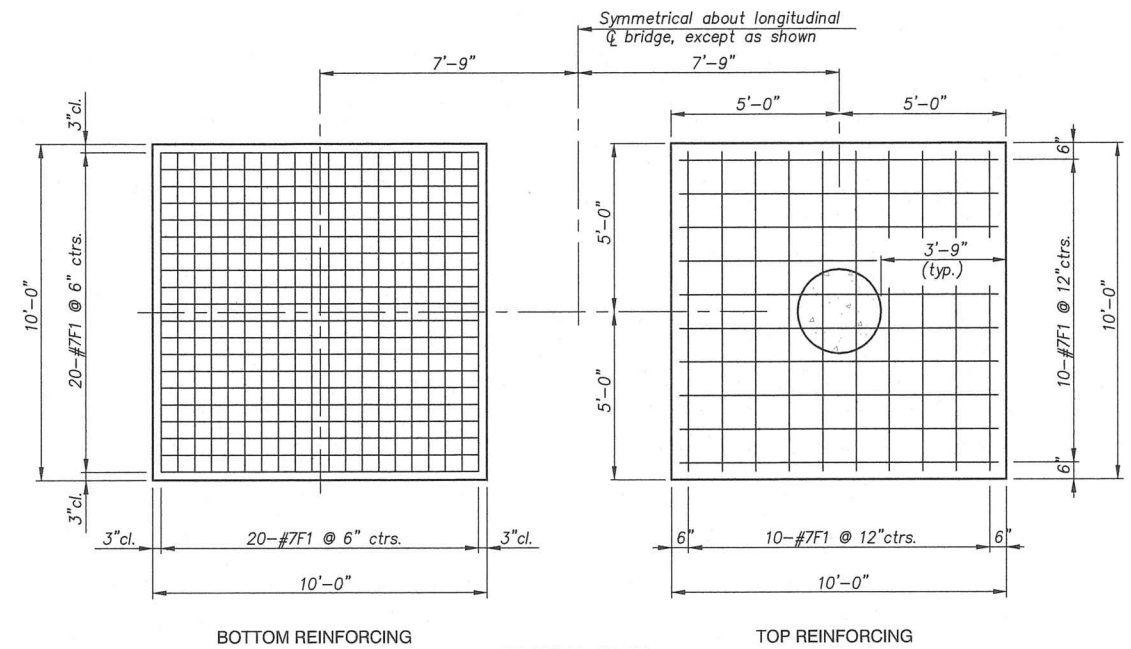
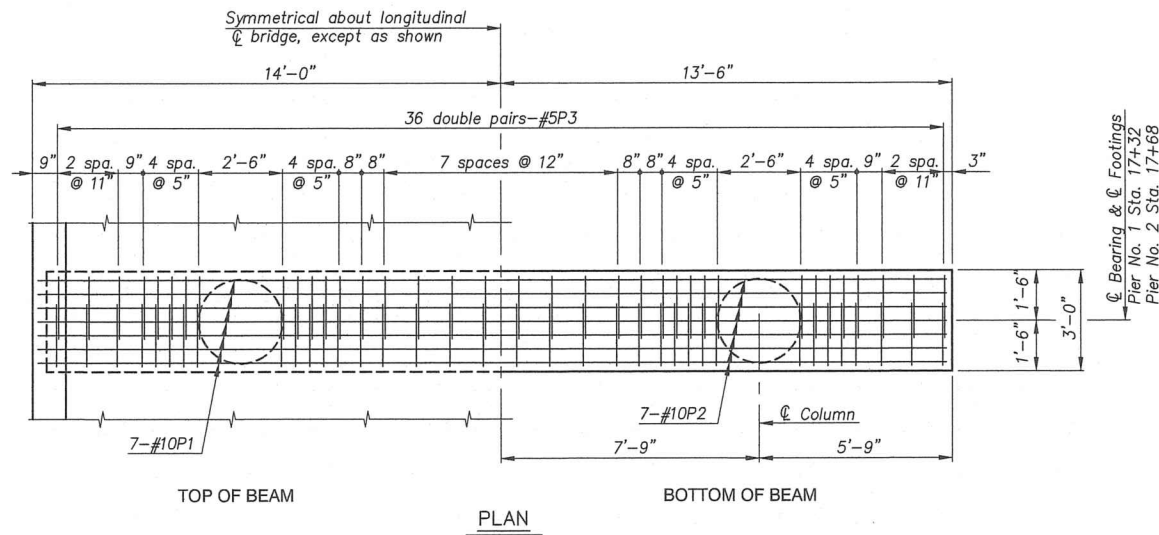
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| PROJECT NO. 50 C-5222-01 BR. NO. 000501055706640 | | |
| ABUTMENT DETAILS | | |
| BRIDGE OVER TRIB. NEOSHO RIVER | | |
| DESIGNED | GEP | SCALE |
| DETAILED | JPF | DATE |
| QUANTITIES | | SHEET OF |

STA. 17+50

LABETTE COUNTY

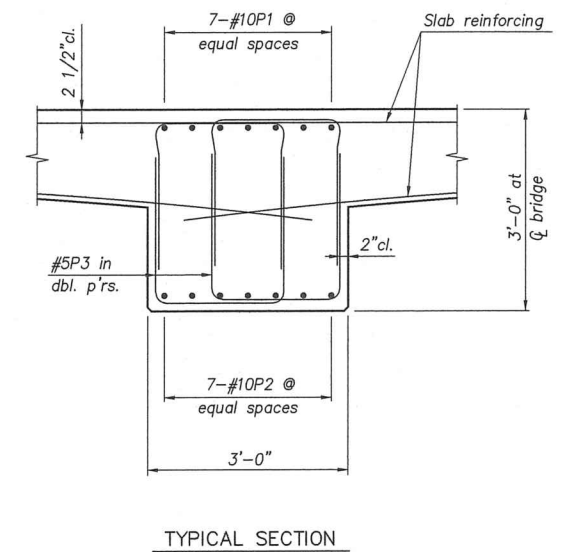
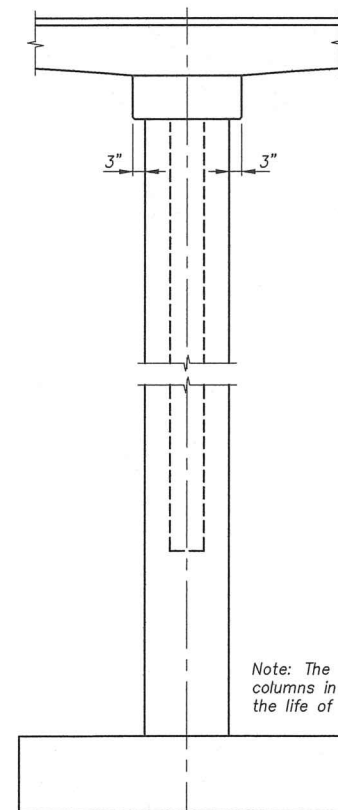
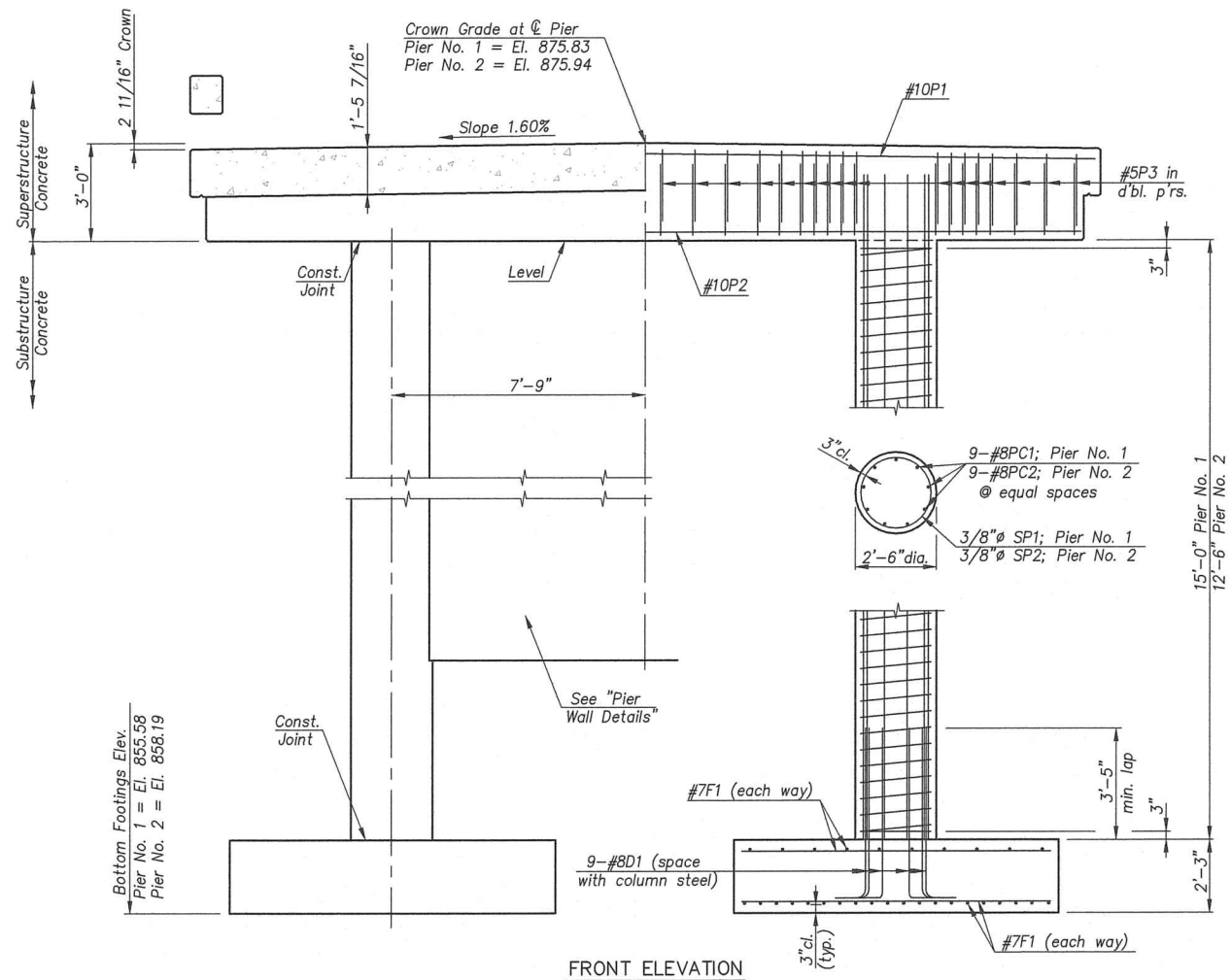
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| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 18 | 49 |



DESIGN FOOTING PRESSURE
Pier 1 = 4.9 Tons per sq. ft.
Pier 2 = 4.6 Tons per sq. ft.
Strength Load 1

ALLOWABLE FOOTING PRESSURE
5 Tons per sq. ft.

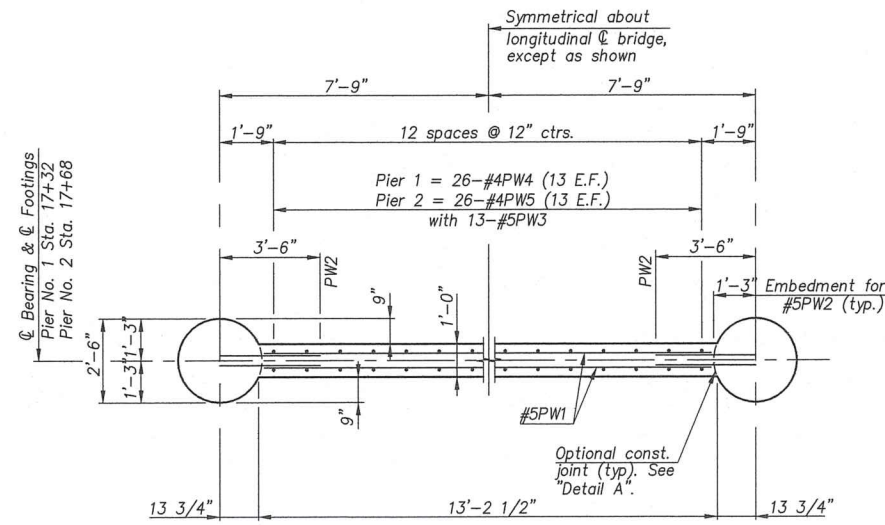


WATER RESOURCES RECEIVED
APR 05 2024

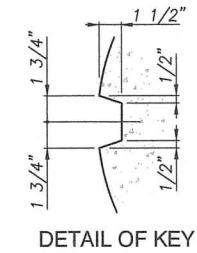
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|---|-------|---------------------------|
| PROJECT NO. 50 C-5222-01 BR. NO. 000501055706640 | | |
| PIER DETAILS | | |
| BRIDGE OVER TRIB. TO NEOSHO RIVER | | |
| DESIGNED GEP | SCALE | STA. 17+50 LABELLE COUNTY |
| DETAILED JPF | DATE | |
| QUANTITIES | SHEET | OF |

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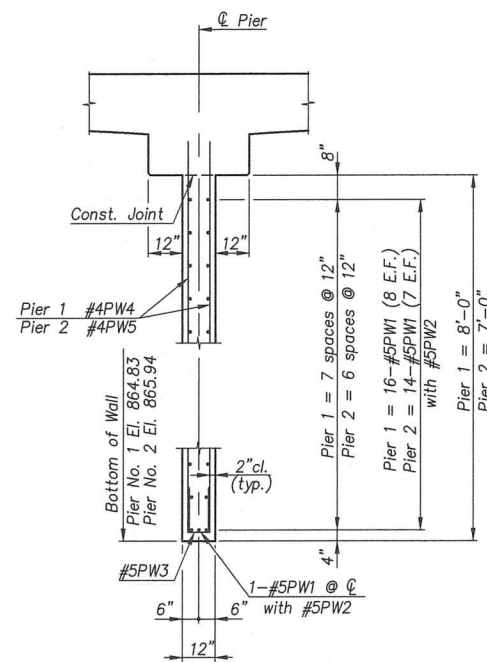
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| KANSAS | 50 C-5222-01 | 2024 | 19 | 49 |



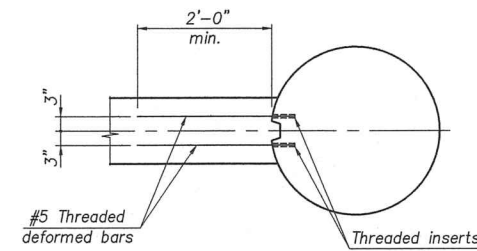
PLAN OF PIER WALL



DETAIL OF KEY



SECTION THRU WALL



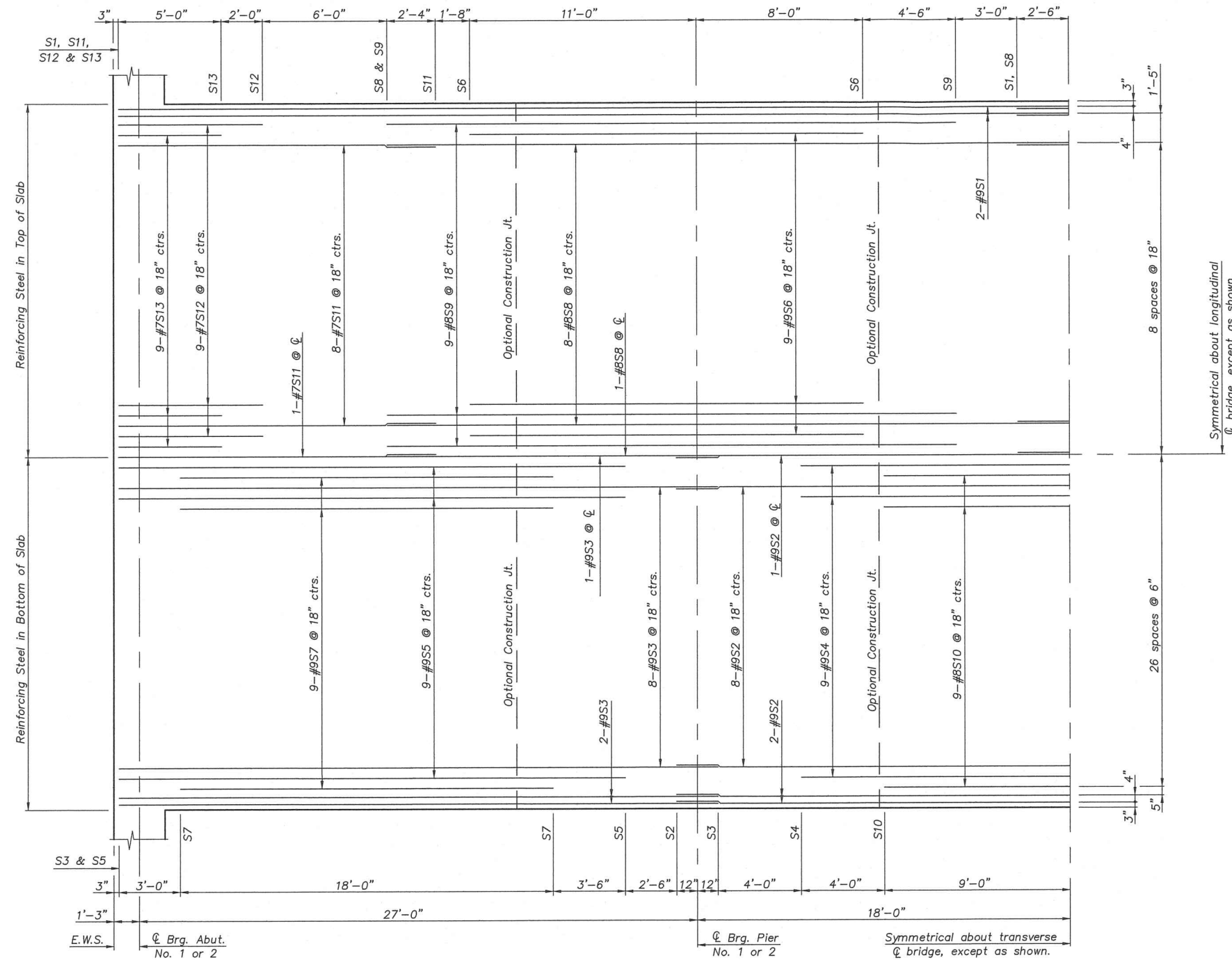
DETAIL A

NOTE: EITHER CAST THE COLUMNS AND PIER WEB MONOLITHICALLY OR CAST THE COLUMNS SEPARATELY USING A KEYED JOINT AS SHOWN IN DETAIL A. IF COLUMNS ARE CAST SEPARATELY, USE THREADED DEFORMED BARS IN LIEU OF THE #5PW2 DOWEL BARS. BAR DIAMETER AND EMBEDMENT LENGTH INTO THE WEB WALL SHALL BE AS DESIGNATED. THE INSERTS SHALL DEVELOP THE FULL YIELD STRENGTH OF THE BARS. NO CHANGE IN COMPENSATION IS ALLOWED WITH THE USE OF INSERTS. COIL INSERTS ARE NOT ALLOWED.

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| | | |
|---|-------|---|
| PROJECT NO. 50 C-5222-01 BR. NO. 000501055706640 | | |
| PIER WALL DETAILS | | |
| DESIGNED GEP | SCALE | BRIDGE OVER TRIB. TO NEOSHO RIVER STA. 17+50 LABETTE COUNTY |
| DETAILED JPF | DATE | |
| QUANTITIES | SHEET | |
| | OF | |

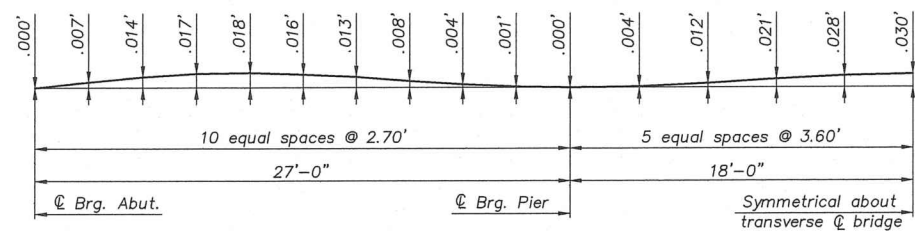
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| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 50 C-5222-01 | 2024 | 20 | 49 |



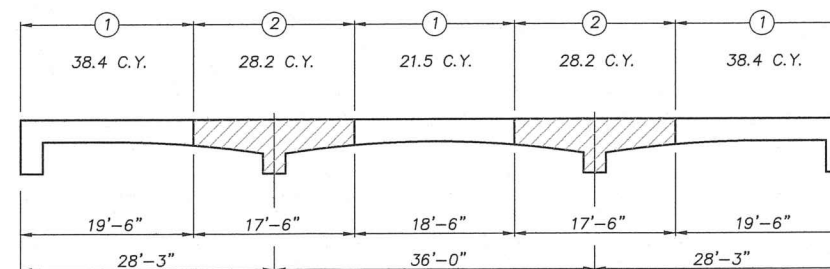
When long span steel beams having a concrete dead load deflection greater than 1/4" are used or when timber falsework with greater than 12'-0" clear span is used, the placing sequence shown shall be followed. Segmental, combined or continuous pours are allowed, but any discontinuous pour must stop short of a construction joint short of a pier.

When timber falsework with 12'-0" or less clear span is used, the Contractor, subject to the approval of the Engineer, may use a continuous pour or may discontinue the pour at any construction joint shown.

The Contractor may place the corral rail continuously from one end of the bridge to the other.



NOTE: Long Term Deflection = Initial Deflection X 3.5
Initial Deflection based on $E_c = 3.644 \times 10^6$ psi.



Note: Quantities shown here do not include substructure or rail.

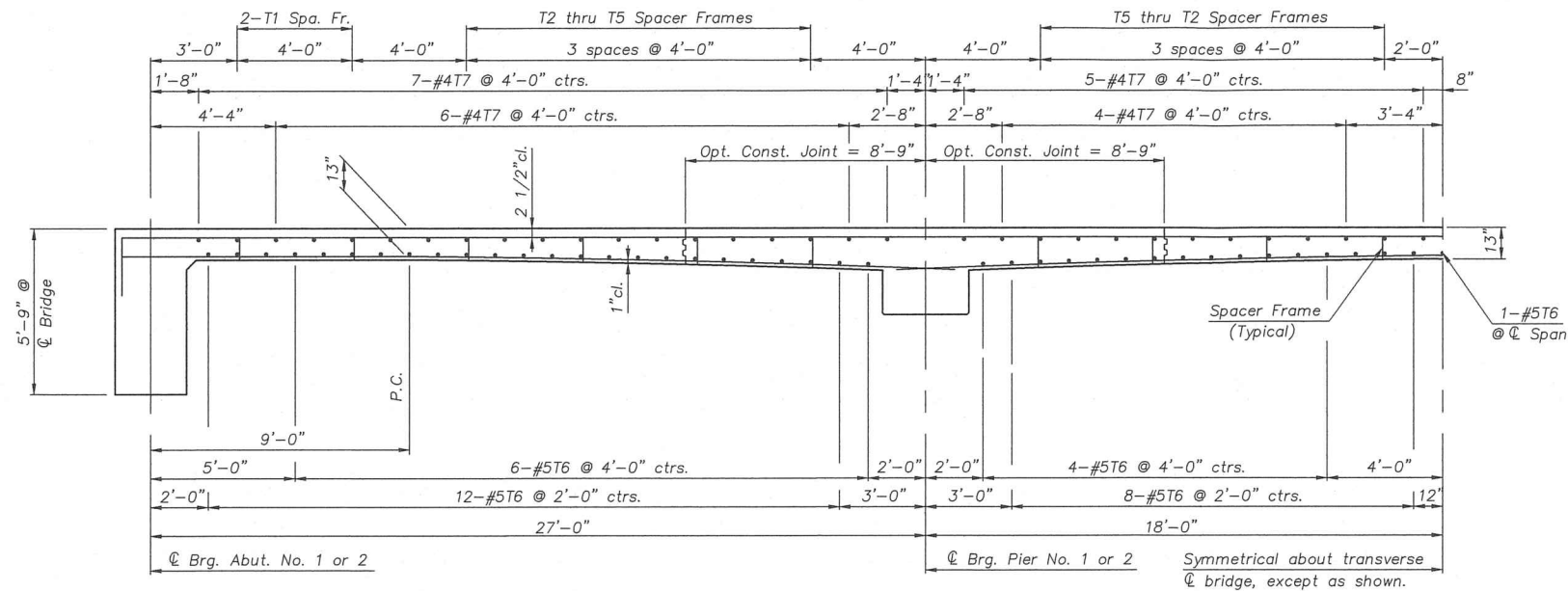
WATER RESOURCES RECEIVED

APR 05 2024

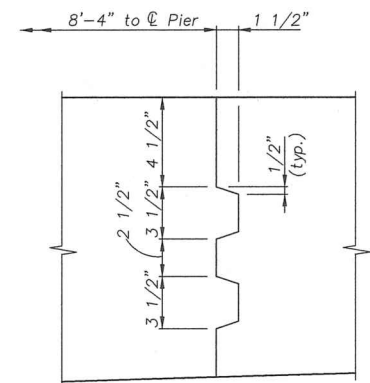
KS DEPT OF AGRICULTURE

| | | |
|---|----------------|--|
| PROJECT NO. 50 C-5222-01 BR. NO. 000501055706640 | | |
| SUPERSTRUCTURE DETAILS | | |
| BRIDGE OVER TRIB. NEOSHO RIVER | | DESIGNED: GEP SCALE: _____ DETAILED: JPF DATE: _____ QUANTITIES: _____ SHEET: _____ OF _____ |
| STA. 17+50 | LABELLE COUNTY | |

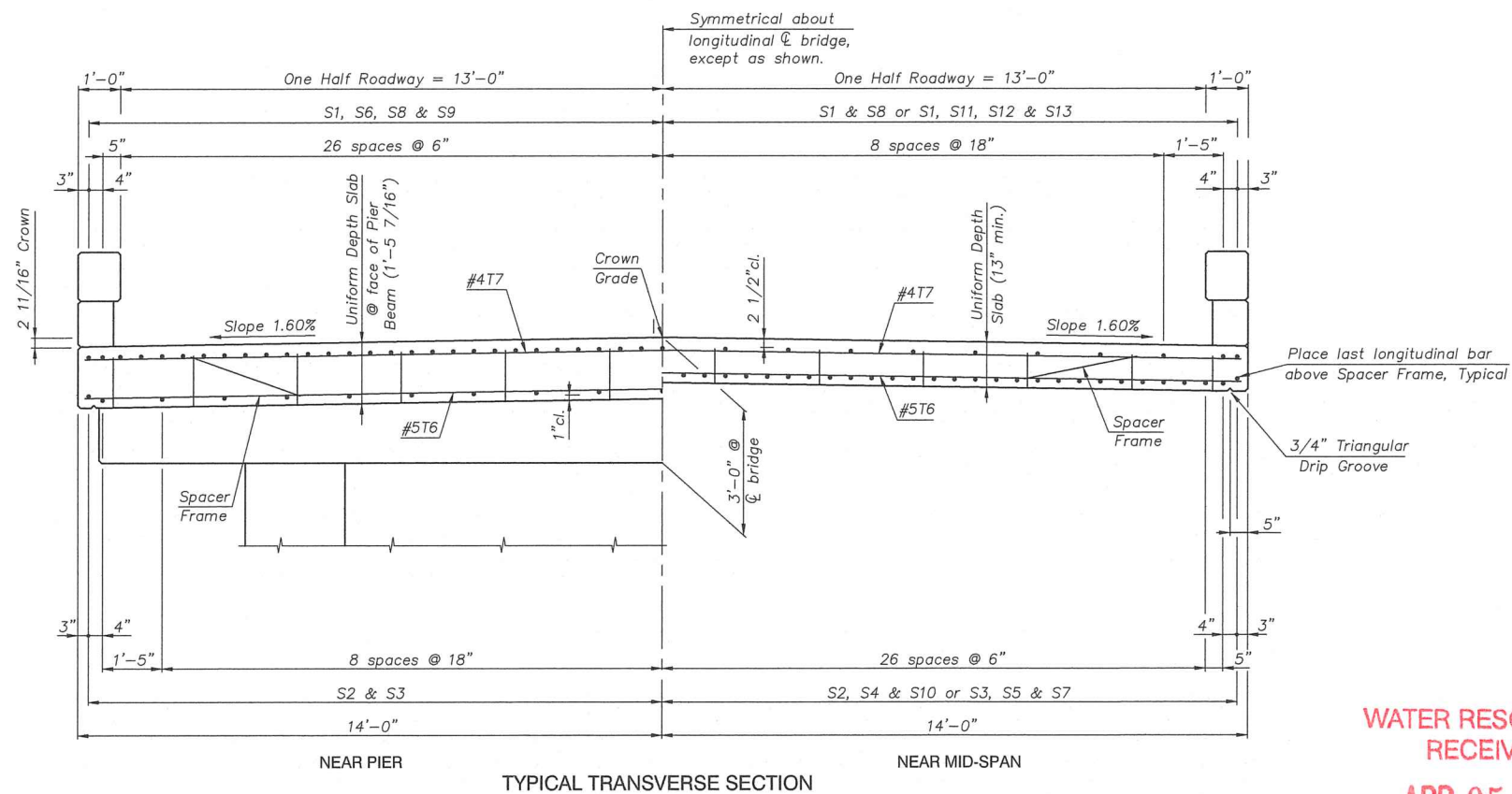
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| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 50 C-5222-01 | 2024 | 21 | 49 |



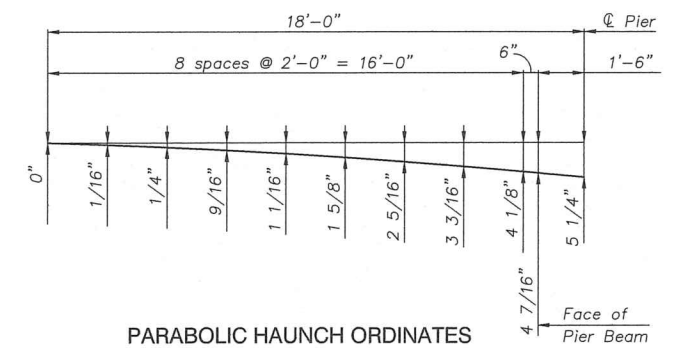
HALF LONGITUDINAL SECTION ALONG CROWN GRADE



OPTIONAL TRANSVERSE CONSTRUCTION JOINT



TYPICAL TRANSVERSE SECTION



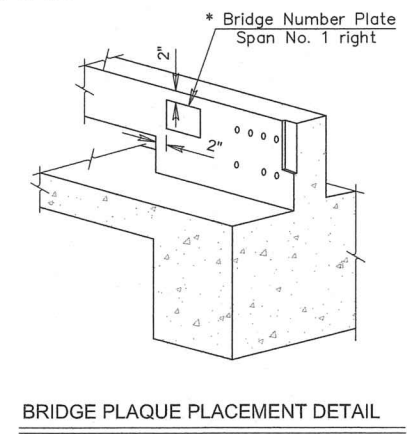
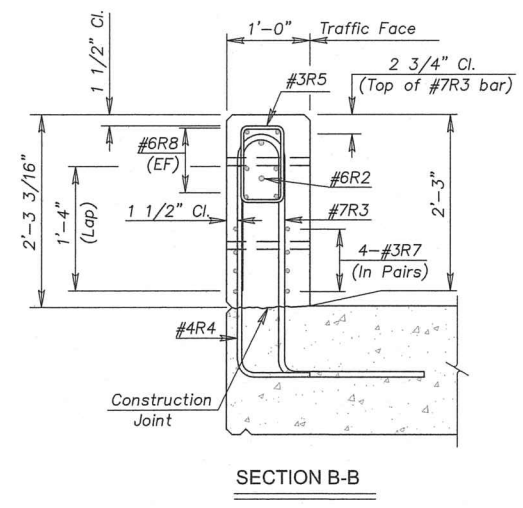
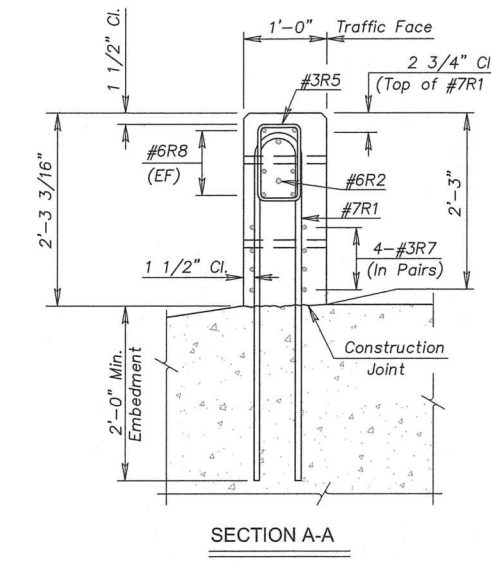
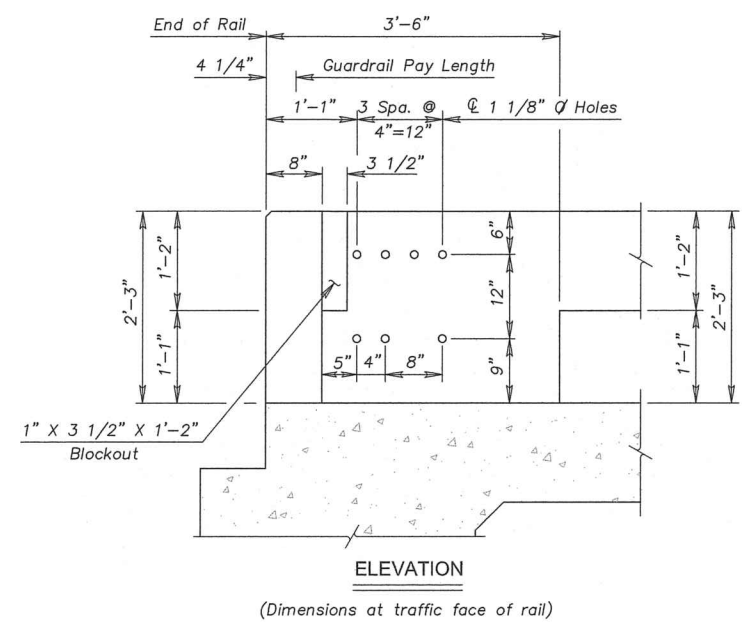
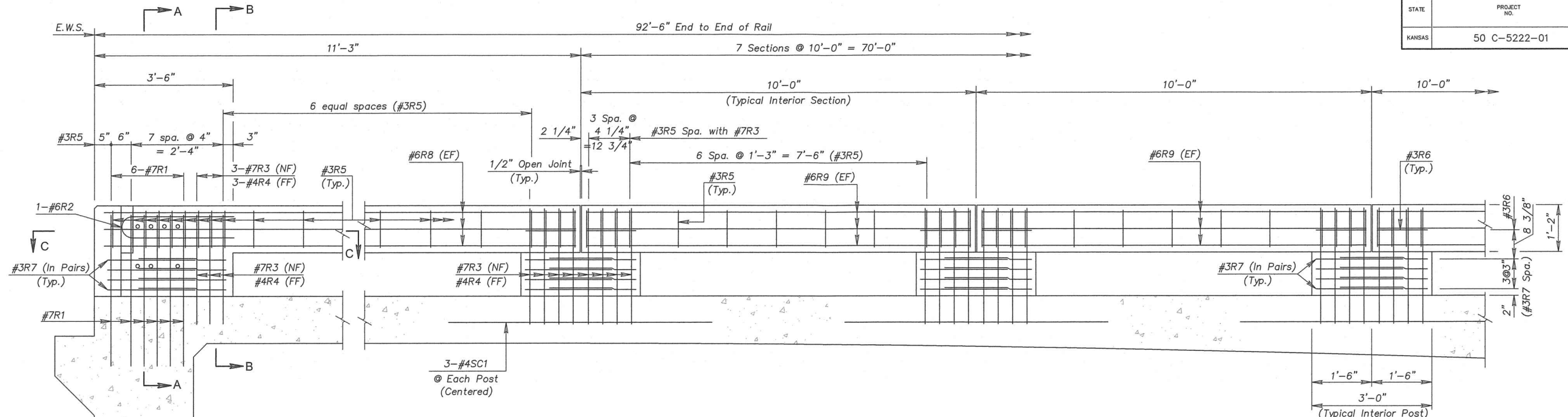
PARABOLIC HAUNCH ORDINATES

WATER RESOURCES RECEIVED
APR 05 2024

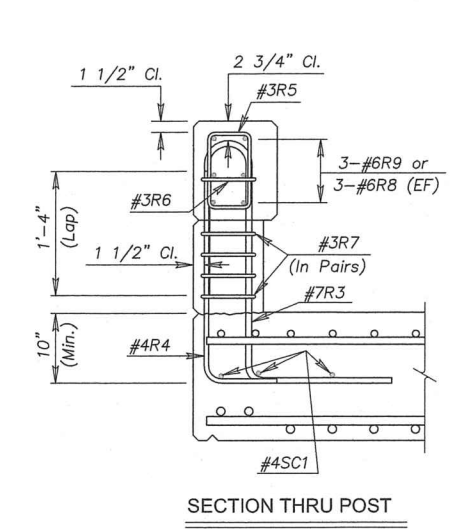
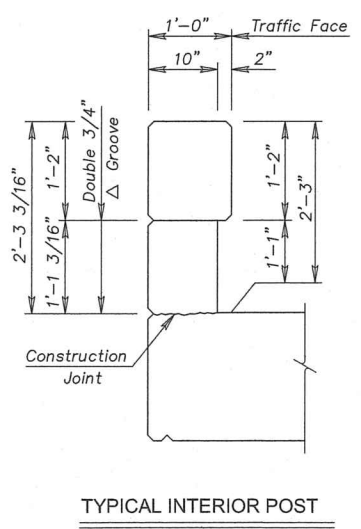
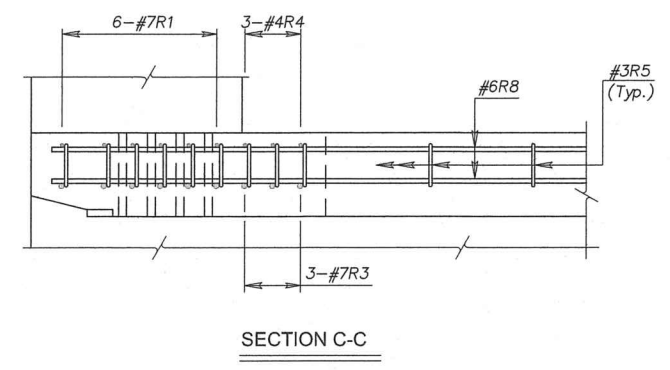
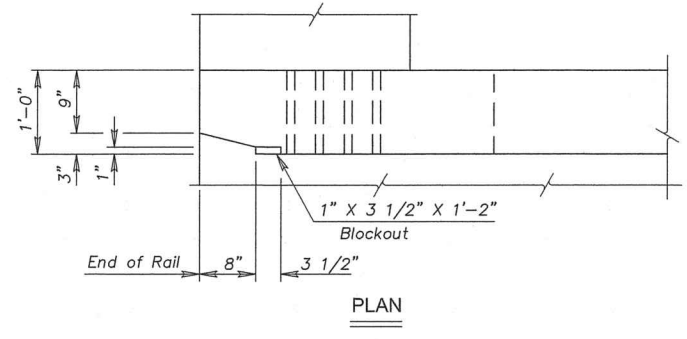
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|--|----------------|---|----------|-----|-------|----------|-----|------|------------|--|-------|--|--|----|
| PROJECT NO. 50 C-5222-01 BR. NO. 00050105706640 | | | | | | | | | | | | | | |
| SUPERSTRUCTURE SECTIONS | | | | | | | | | | | | | | |
| BRIDGE OVER TRIB. NEOSHO RIVER | | <table border="1"> <tr> <td>DESIGNED</td> <td>GEP</td> <td>SCALE</td> </tr> <tr> <td>DETAILED</td> <td>JPF</td> <td>DATE</td> </tr> <tr> <td>QUANTITIES</td> <td></td> <td>SHEET</td> </tr> <tr> <td></td> <td></td> <td>OF</td> </tr> </table> | DESIGNED | GEP | SCALE | DETAILED | JPF | DATE | QUANTITIES | | SHEET | | | OF |
| DESIGNED | GEP | SCALE | | | | | | | | | | | | |
| DETAILED | JPF | DATE | | | | | | | | | | | | |
| QUANTITIES | | SHEET | | | | | | | | | | | | |
| | | OF | | | | | | | | | | | | |
| STA. 17+50 | LABELLE COUNTY | | | | | | | | | | | | | |

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| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 22 | 49 |



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APR 05 2024
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LEGEND

NF = Near Face
FF = Far Face
EF = Each Face

| NO. | DATE | REVISIONS | BY | APP'D |
|-----|---------|-----------------|----|-------|
| 3 | | | | |
| 2 | | | | |
| 1 | 6-30-05 | Current Release | | |

KANSAS DEPARTMENT OF TRANSPORTATION

GUIDELINES FOR THE 27" KANSAS CORRAL RAIL (W-BEAM WITH RUBRAIL) R.C. HAUNCHED SLAB (Without Curb)

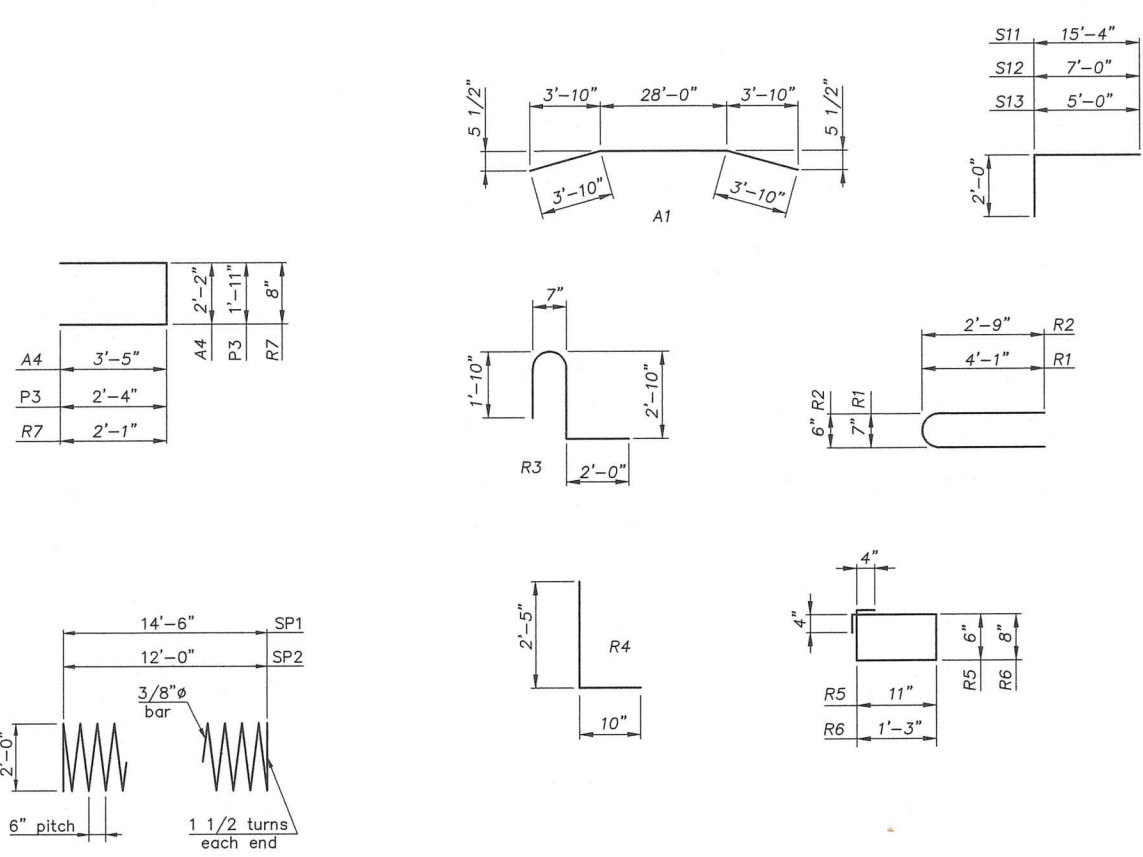
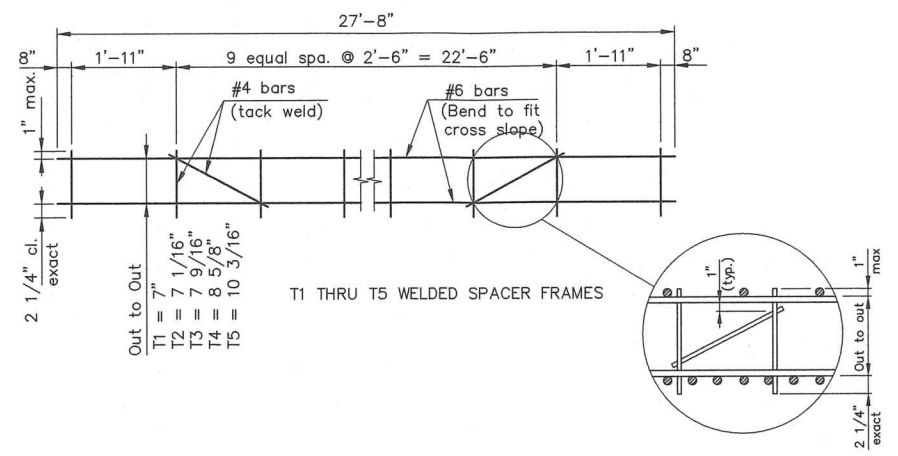
BR183A

| DESIGNED | CHECKED | DATE | APP'D |
|------------|---------|--------|------------------|
| CEH 6/9/21 | DRT | 6/9/21 | Kenneth F. Hurst |

MRV QUANTITIES CADD MRV
DRT DETAIL CK. DRT QUAN. CK. CADD CK. DRT

| BILL OF REINFORCING STEEL | | | | | | | |
|---------------------------|------|--------------------|---------|-----------|-------|-----|--------|
| STRAIGHT BARS | | | | BENT BARS | | | |
| Mark | Size | No. | Length | Mark | Size | No. | Length |
| PC1 | #8 | 18 | 17'-0" | D1 | #8 | 36 | 6'-8" |
| PC2 | #8 | 18 | 14'-6" | PW3 | #5 | 26 | 3'-6" |
| F1 | #7 | 240 | 9'-6" | SP1 | 3/8"φ | 2 | - |
| PW1 | #5 | 32 | 12'-10" | SP2 | 3/8"φ | 2 | - |
| PW2 | #5 | 64 | 3'-6" | | | | |
| PW4 | #4 | 26 | 8'-9" | | | | |
| PW5 | #4 | 26 | 7'-9" | | | | |
| | | | | | | | |
| P1 | #10 | 14 | 27'-8" | A1 | #8 | 8 | 35'-8" |
| P2 | #10 | 14 | 26'-8" | R1 | #7 | 24 | 8'-5" |
| S1 | #9 | 8 | 48'-6" | R3 | #7 | 140 | 6'-11" |
| S2 | #9 | 21 | 38'-0" | S11 | #7 | 34 | 17'-4" |
| S3 | #9 | 42 | 29'-0" | S12 | #7 | 36 | 9'-0" |
| S4 | #9 | 18 | 26'-0" | S13 | #7 | 36 | 7'-0" |
| S5 | #9 | 36 | 24'-6" | | | | |
| S6 | #9 | 36 | 19'-0" | R2 | #6 | 4 | 5'-10" |
| S7 | #9 | 36 | 18'-0" | P3 | #5 | 288 | 6'-7" |
| A2 | #8 | 8 | 35'-8" | A4 | #4 | 140 | 9'-0" |
| S8 | #8 | 34 | 35'-6" | R4 | #4 | 140 | 3'-3" |
| S9 | #8 | 36 | 27'-6" | R5 | #3 | 254 | 3'-6" |
| S10 | #8 | 18 | 18'-0" | R6 | #3 | 32 | 4'-6" |
| R8 | #6 | 24 | 10'-11" | R7 | #3 | 160 | 4'-10" |
| R9 | #6 | 84 | 9'-8" | | | | |
| A3 | #5 | 12 | 35'-8" | | | | |
| T6 | #5 | 61 | 27'-8" | | | | |
| SC1 | #4 | 48 | 6'-6" | | | | |
| T7 | #4 | 44 | 27'-8" | | | | |
| | | | | | | | |
| WELDED SPACER FRAMES | | | | | | | |
| Mark | No. | Weight Each (lbs.) | | | | | |
| T1 | 4 | 93.6 | | | | | |
| T2 | 4 | 93.6 | | | | | |
| T3 | 4 | 94.0 | | | | | |
| T4 | 4 | 94.7 | | | | | |
| T5 | 4 | 95.8 | | | | | |

BENDING DIAGRAMS
All dimensions are out to out of bars.



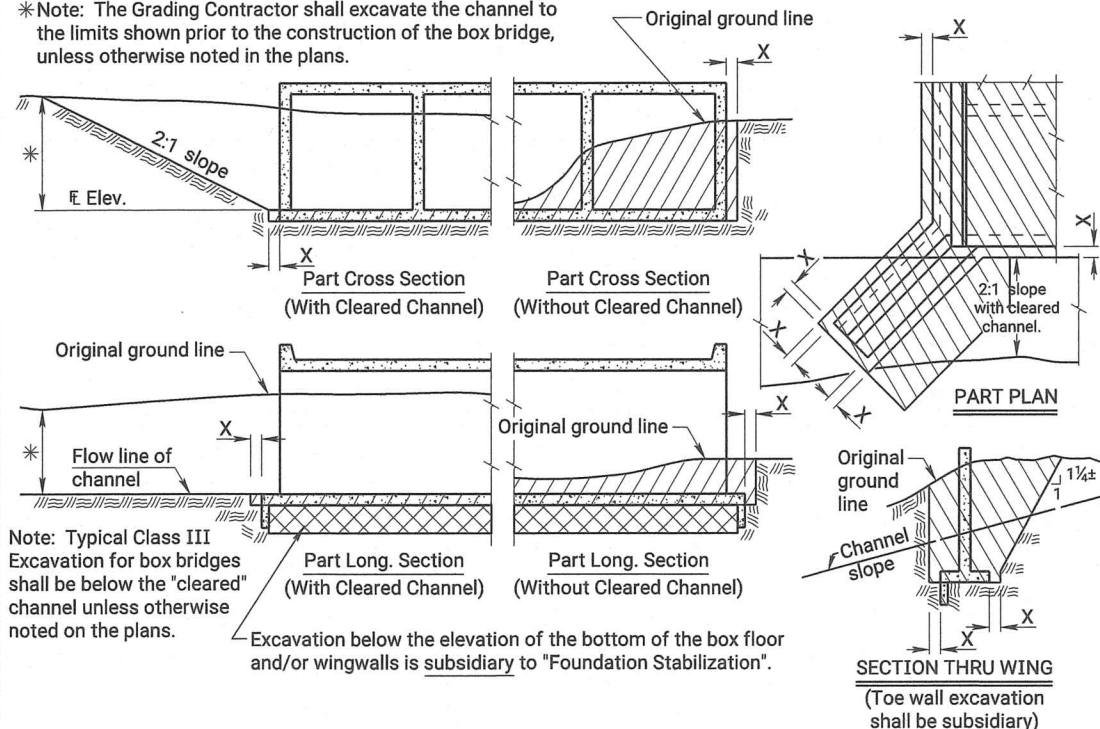
Weight of spirals are included in the weight of reinforcing and includes the weight of 3-7/8" spacer channels @ 3/4 lbs. per ft. (each) per spiral. The spiral bars shall meet the requirements of either ASTM A-615 (Gr. 40 or Gr. 60) or A-82. Minimum section of spacer channels = .008 cu. in.

WATER RESOURCES RECEIVED
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| | | |
|---|----------------|--|
| PROJECT NO. 50 C-5222-01 BR. NO. 000501055706640 | | |
| BILL OF REINFORCING | | |
| BRIDGE OVER TRIB. NEOSHO RIVER | | DESIGNED EWM SCALE DETAILED DATE QUANTITIES SHEET OF |
| STA. 17+50 | LABETTE COUNTY | |

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 24 | 49 |

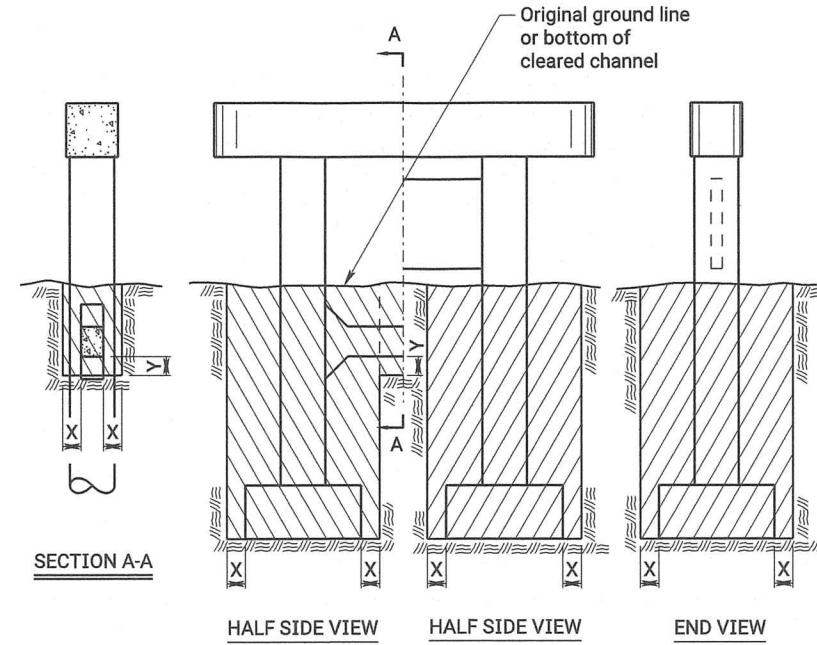
*Note: The Grading Contractor shall excavate the channel to the limits shown prior to the construction of the box bridge, unless otherwise noted in the plans.



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

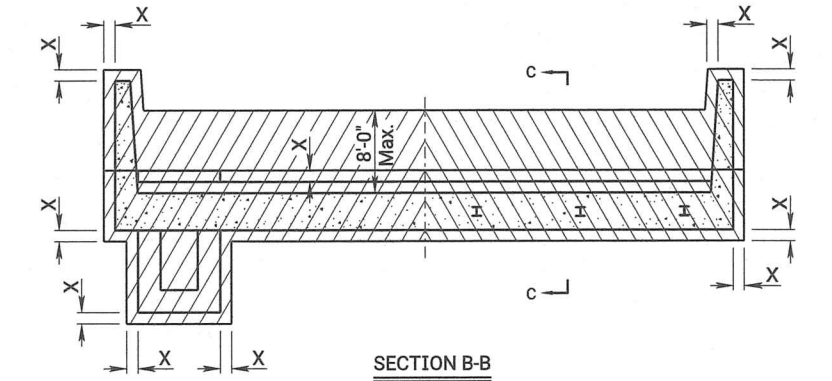
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

Note: Excavation for culverts less than bridge length and the additional excavation for "Embedded Structures" shall not be paid for as Class III Excavation, but shall be subsidiary to Grade 4.0 Concrete.

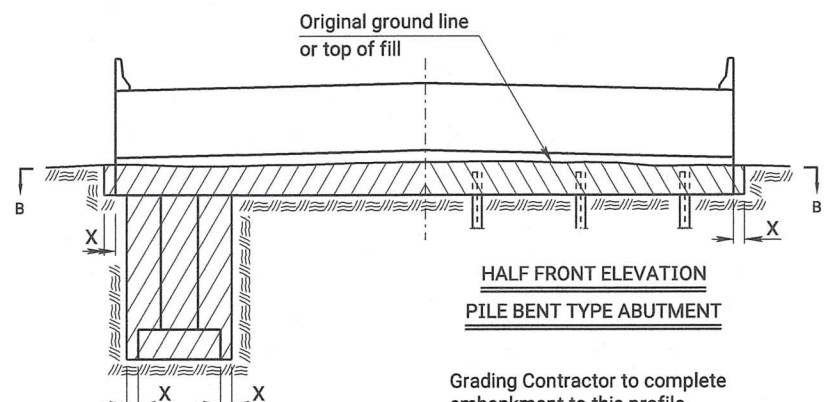


EXCAVATION DETAILS FOR TYPICAL PIERS

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

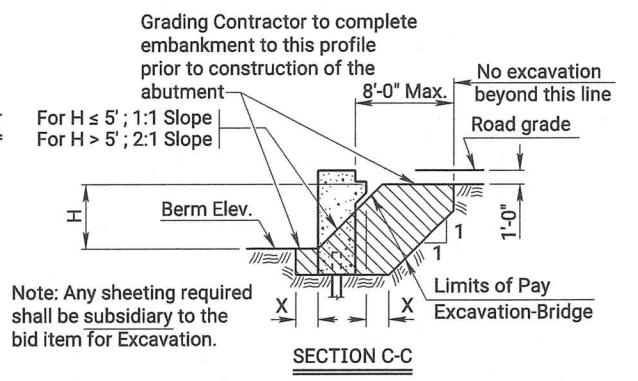


PILE BENT TYPE ABUTMENT



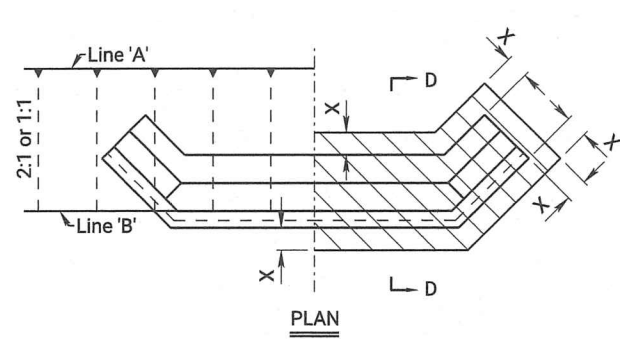
PEDESTAL TYPE ABUTMENT

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

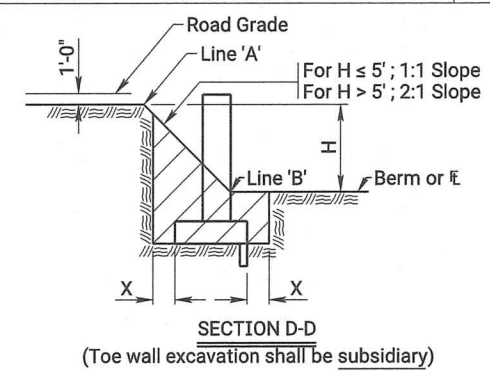


EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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



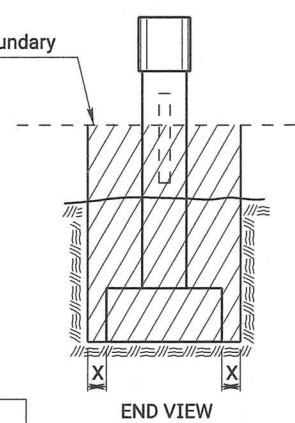
EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS



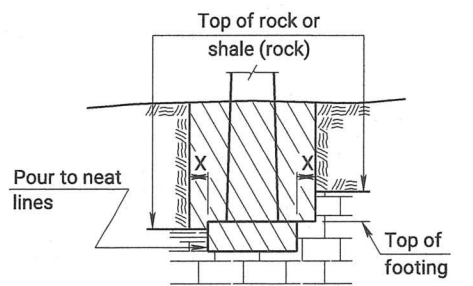
Note: Class II Excavation includes the entire volume of whatever nature found below the "Excavation Boundary Plane", within the limits specified for measurement. This may include water or air.

CLASS II EXCAVATION QUANTITIES

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

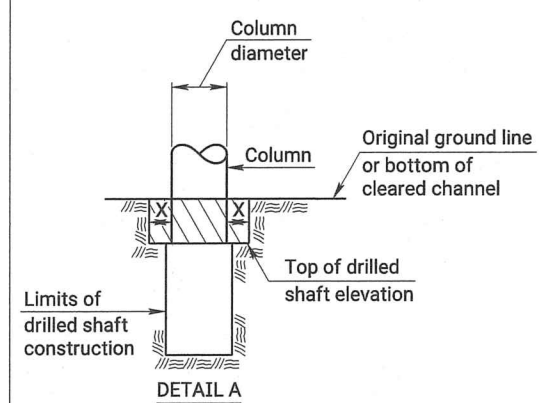


END VIEW



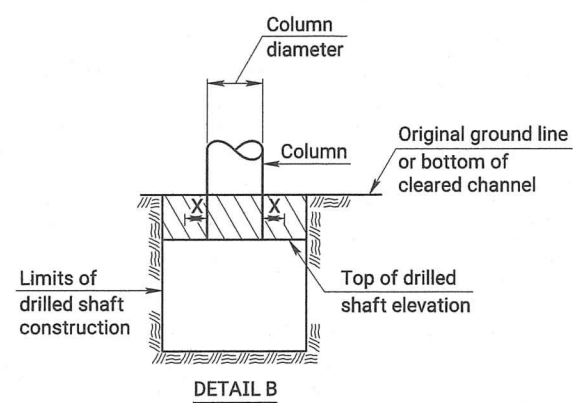
EXCAVATION DETAIL FOR FOOTINGS IN ROCK OR SHALE (ROCK)

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



DRILLED SHAFT DETAILS

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



DETAIL B

Note: All bridge excavation shall be computed on the basis of the cross-hatch areas and boundary lines indicated on this sheet and the Excavation Boundary Plane on the Construction Layout.

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

Dimension "X" shall be 2'-0" unless indicated otherwise on the general plans.
Dimension "Y" shall be 1'-6" unless indicated otherwise on the general plans.

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| NO. | DATE | REVISIONS | BY | APP'D |
|-----|----------|---------------------------------|--------|--------|
| 06 | 08-15-12 | Embedment Excavation Subsidiary | J.P.J. | T.L.F. |
| 05 | 05-15-12 | Revised Wing Excavation | J.P.J. | T.L.F. |
| 04 | 03-03-10 | Revised Wing Excavation | J.P.J. | T.L.F. |

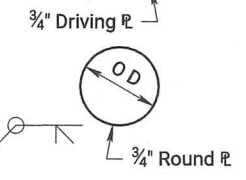
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
|-------------------------------------|------------|--------|----------------|-----------|
| BRIDGE EXCAVATION (LRFD) | | | | |
| BR100B | | | | |
| FHWA APPROVAL | 04-17-10 | APP'D. | Terry L. Fleck | |
| DESIGNED | DETAILED | R.D.R. | QUANTITIES | TRACED |
| DESIGN CK. | DETAIL CK. | L.R.R. | QUAN. CK. | TRACE CK. |

| | | |
|----|---------|---------|
| OD | 10 3/4" | T. = †† |
| OD | 12 3/4" | T. = †† |
| OD | 14" | T. = †† |

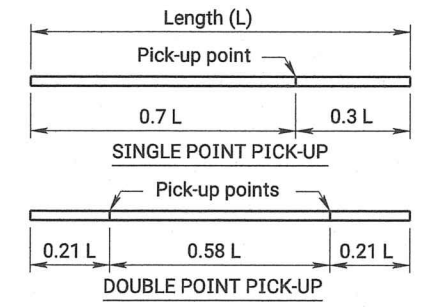
†† See the Geology Report or "Summary of Quantities" for Pipe Pile wall thickness

Note: Pile shall be driven with a steel head having a projecting ring fitting inside the pipe. Clearance between ring and pipe should be 1/4".

Note: Pile pipe may be spiral welded, longitudinal welded, or seamless steel pipe.



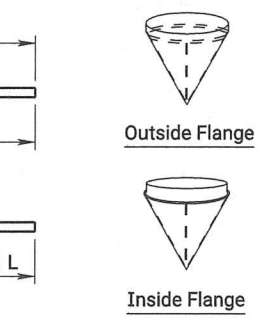
PLAIN ROUND CAST-IN-PLACE CONCRETE PILES



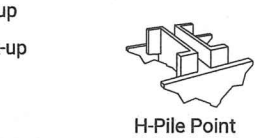
PICK-UP POINTS FOR PRESTRESSED PILING
 Max. length - 55' single point pick-up
 Max. length - 80' double point pick-up

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

12" OR 14" PRESTRESSED CONCRETE PILES



SHELL PILE POINT



CAST STEEL PILE POINT

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

Weld Symbolology Definition

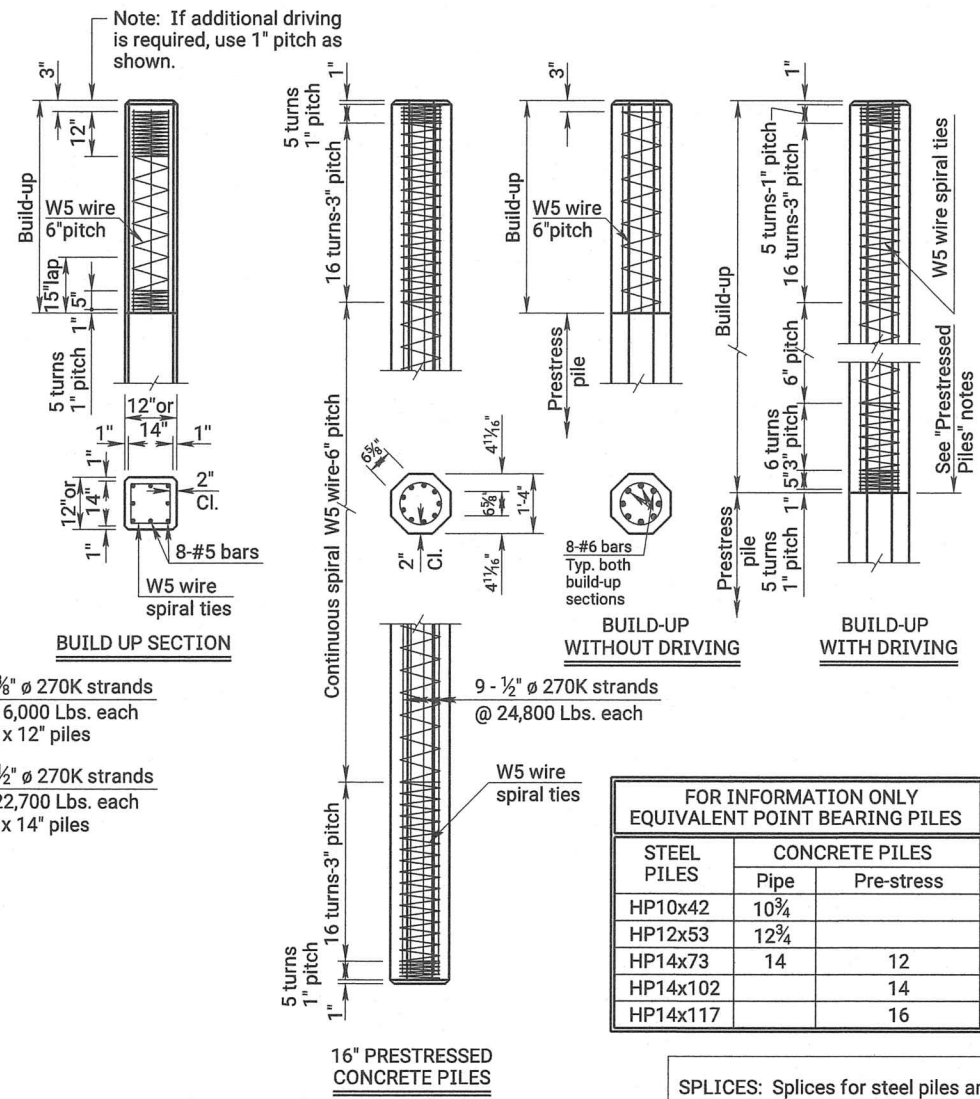
Use grinder to bevel edges of splice as shown in weld symbolology and drawing. In addition to bevels, produce clean, bare, and shiny surfaces at and around the splice welding location.

Lay full penetration root weld from beveled side of splice.

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

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

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



| FOR INFORMATION ONLY EQUIVALENT POINT BEARING PILES | | |
|--|----------------|------------|
| STEEL PILES | CONCRETE PILES | |
| | Pipe | Pre-stress |
| HP10x42 | 10 3/4" | |
| HP12x53 | 12 3/4" | |
| HP14x73 | 14 | 12 |
| HP14x102 | | 14 |
| HP14x117 | | 16 |

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

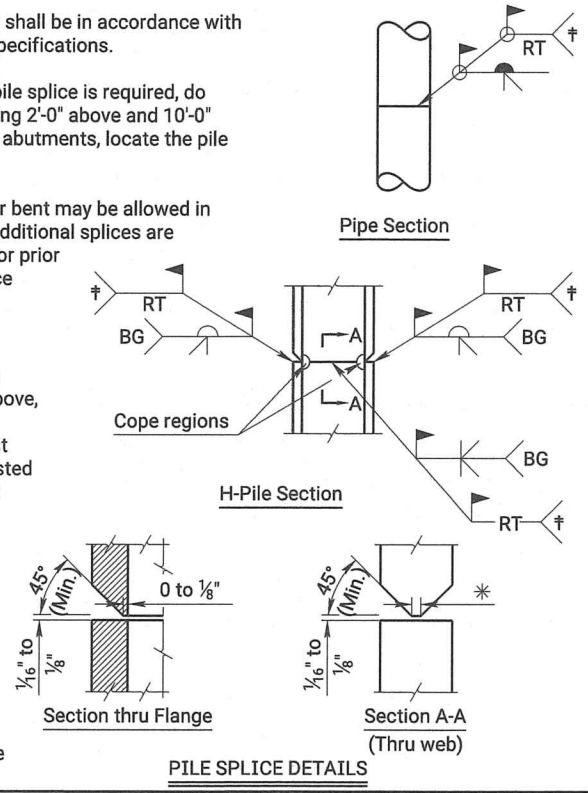
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

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

† For integral pile bent abutments and piers, if a splice is located within the regions described above, then the Contractor will test the welds by Radiograph (RT) test methods. Repair and retest any welds not passing the test(s). Each weld tested will have written confirmation of results. Report these results to the Engineer. This work is not paid for directly, but is subsidiary to "Piles".

* Minimum as required by welding process.

BG = Backgouge



GENERAL NOTES

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

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

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

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

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

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

DRIVING FORMULA: Driving formula shall conform to the Standard Specifications.

MEASUREMENT AND PAYMENT: Measurement and payment for all piles shall comply with the Standard Specifications.

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

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

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

PILE POINTS: Pile points shall conform to the dimensions shown and to requirements of the Standard Specifications.

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 25 | 49 |

SPECIFICATIONS: Standard Specifications for State Road and Bridge Construction as currently used by the Kansas Department of Transportation.

CONCRETE: Concrete for cast-in-place shall be f'c = 3,500 PSI. Concrete for prestressed shall be f'c = 5,000 PSI.

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

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

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

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

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

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

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

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

CAST-IN-PLACE SHELLS: Steel shells for cast-in-place concrete piles shall conform to the requirements of the Standard Specifications.

All piles driven without a mandrel shall be of the minimum thicknesses shown. Piles driven with a mandrel shall be of sufficient strength and thickness to withstand driving without injury and to resist harmful distortion and/or buckling due to soil pressure after the mandrel is removed.

Remove, replace or correct to the satisfaction of the Engineer improperly driven, broken or otherwise defective pipe piles. Otherwise drive an additional pile at no extra cost.

The Contractor shall maintain a light suitable for visual inspection of the pile on the job at all times prior to and during the filling of the pipe.

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

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

| | | | | |
|-----|----------|--------------------------------------|--------|--------|
| 04 | 08-16-18 | Add splice web section, clarify note | M.L.L. | J.P.J. |
| 03 | 09-15-15 | Clarify Notes | J.P.J. | C.E.R. |
| 02 | 06-18-12 | Clarify f'c, rod type, use and weld | J.P.J. | T.L.F. |
| NO. | DATE | REVISIONS | BY | APPD |

STANDARD PILE DETAILS

| | | | | | |
|------------|------------|-----------|------------|--------|----------------|
| BR110 | | 10-04-12 | | APPD. | Terry L. Fleck |
| DESIGNED | J.P.J. | DETAILED | QUANTITIES | TRACED | R.A.A. |
| DESIGN CK. | DETAIL CK. | QUAN. CK. | TRACE CK. | | |

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KS DEPT OF AGRICULTURE

KDOT Graphics Certified

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|--------|--------------|------|-----------|--------------|
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 50 C-5222-01 | 2024 | 26 | 49 |

GENERAL NOTES

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

Use only the following types of bar supports:

- 1) Wire Bar Supports:
 - a) Epoxy coated reinforcing: Class 1 Protection
 - b) Non-epoxy coated reinforcing: Class 1, 2, or 3 Protection
- 2) Plastic Bar Supports
- 3) Supplementary bars

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

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

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

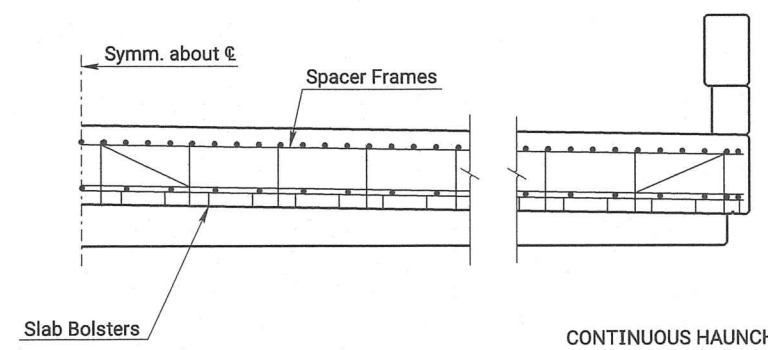
Where more than one length of bar support is required, lap the end legs so they are locked or tied together.

Use proper height supports to maintain the distance between the reinforcing and the formed surface or the top surface of deck slabs within 1/4" of that indicated on the plans.

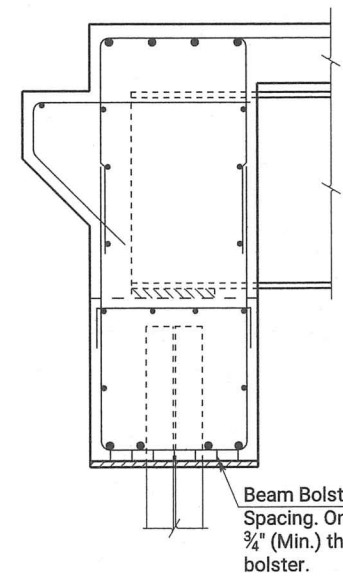
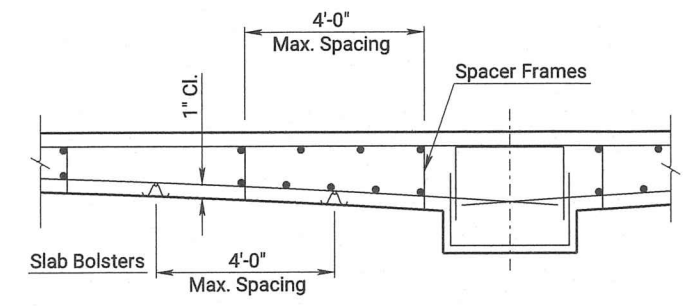
Spacings shown are maximums. Use sufficient supports, as determined by the Engineer, to retain the reinforcing steel in position.

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

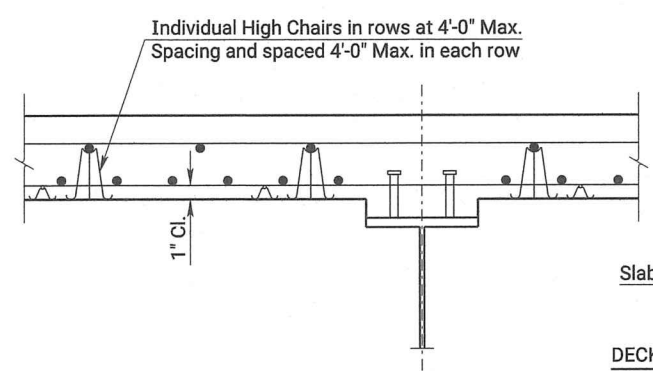
Designs and arrangements of Supports or Spacers other than as shown on this sheet, may be used with the permission of the Engineer.



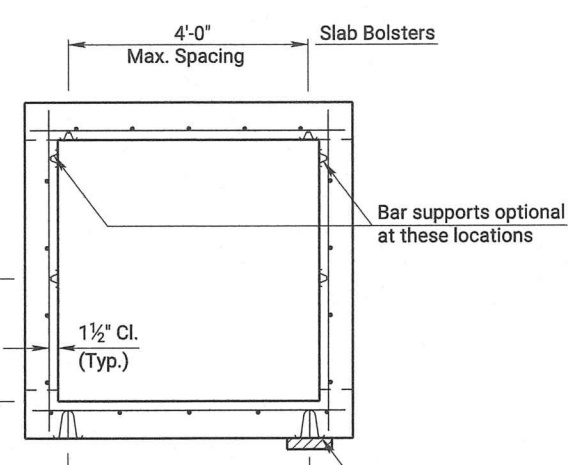
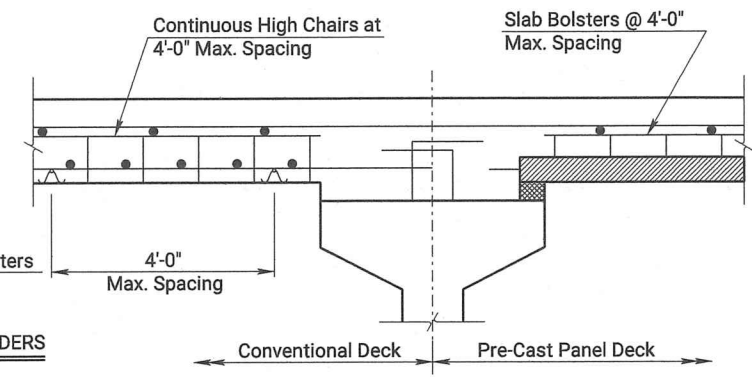
CONTINUOUS HAUNCHED SLAB



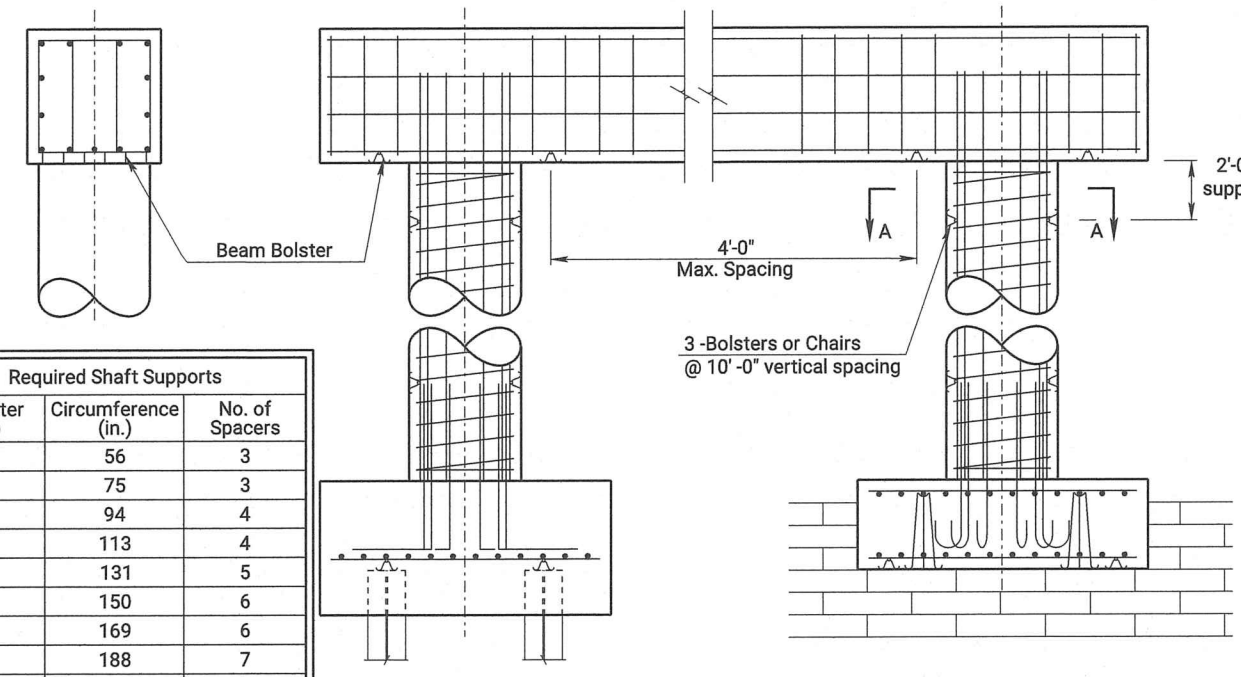
ABUTMENT



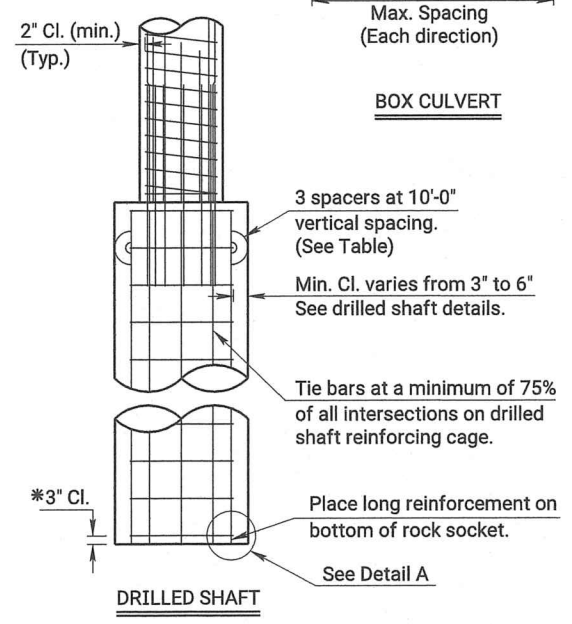
DECK GIRDERS



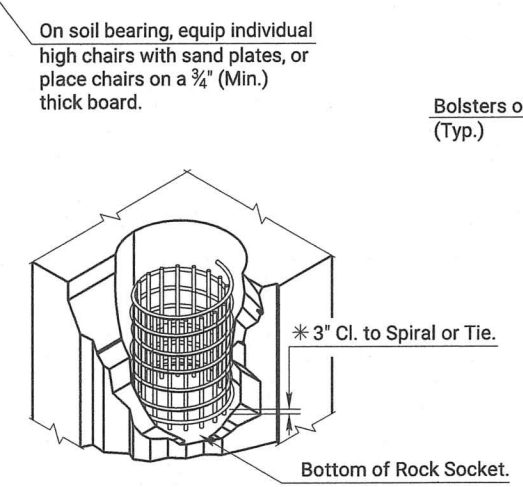
BOX CULVERT



PIER

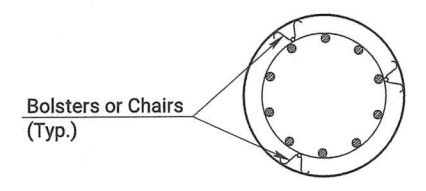


DRILLED SHAFT



DETAIL A

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



SECTION A-A

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

WATER RESOURCES RECEIVED
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| | | | | |
|---|----------|--------------------------------------|--------|----------------|
| 05 | 11-10-10 | Column Bar Supports Required | J.P.J. | T.L.F. |
| 04 | 12-01-05 | Drilled Shaft Spiral Steel Placement | J.P.J. | K.F.H. |
| 03 | 08-21-00 | Added Pre-Cast Panel Detail | R.A.M. | K.F.H. |
| NO. | DATE | REVISIONS | BY | APPD |
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
| SUPPORTS AND SPACERS FOR REINFORCING STEEL | | | | |
| BR120 | | | | |
| DESIGNED | R.A.M. | 11-17-10 | APPD. | Terry L. Fleck |
| DESIGN CK. | L.R.R. | DETAIL CK. | R.A.M. | QUANTITIES |
| | | | | TRACED |
| | | | | TRACE CK. |
| | | | | R.A.M. |
| KDOT Graphics Certified 06-20-2022 | | | | |

KDOT Graphics Certified

| | | | | |
|--------|--------------|------|-----------|--------------|
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
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| EARTHWORK | | | | |
|--------------|-----------------|-----------------|-----------------|-------|
| Sta. to Sta. | Excavation C.Y. | | Compaction C.Y. | |
| | WF=0.75 | WF=0.75 | (Type B)(MR-90) | |
| | Common | Cont. Furnished | Embankment | |
| 13+00 | 21+00 | 1,290 | 1,313 | 1,952 |
| TOTAL | | | | |
| TOTAL | | 1,290 | 1,313 | 1,952 |

| DRAINAGE STRUCTURES | | | | | | | | | | | | | |
|---------------------|------|------|------|------------------------|-------------------|--------------------------|--|--|--|---------------------------|---|--|--|
| Station | Side | Size | Type | Conc. Gr. 3,6 Cu. Yds. | Reinf. Steel Lbs. | Entrance Pipe (Lin. Ft.) | | | | End Section (Type 1) Each | | | |
| | | | | | | 15" | | | | 15" | | | |
| 14+50 | Rt. | 15" | E.P. | | | 36 | | | | | 2 | | |
| TOTAL | | | | | | 36 | | | | | 2 | | |

| RECAPITULATION OF BRIDGE QUANTITIES | | |
|-------------------------------------|---------|---------------|
| BRIDGE NUMBER | STATION | SEE SHEET NO. |
| 000501055706640 | 17+50 | 14 |

| RECAPITULATION OF ROAD QUANTITIES | | |
|---|----------|----------|
| | Lump Sum | L.S. |
| Clearing & Grubbing | | L.S. |
| Removal of Existing Structure | | L.S. |
| Common Excavation (Contractor Furnished) | 1,313 | C.Y. |
| Common Excavation | 1,290 | C.Y. |
| Compaction of Earthwork (Type B)(MR-90) | 1,952 | C.Y. |
| Guardrail, Steel Plate | 100 | Lin. Ft. |
| Guardrail End Terminal (SRT) Alt. No. 1 | 4 | Each |
| Guardrail End Terminal (FLEAT) Alt. No. 2 | 4 | Each |
| Signing Object Markers (Type 3) | 4 | Each |
| Entrance Pipe (15")(RCP) | 36 | Lin. Ft. |
| End Section (15")(RC) | 2 | Each |
| Surfacing Material (AB-3)(6") | 790 | Ton |
| Water (Grading)(Set Price) | 1 | M. Gal |
| Mobilization | | L.S. |
| Mobilization (DBE) | | L.S. |
| Temporary Surfacing Material (Aggregate)(Set Price) | 1 | C.Y. |
| Field Office & Laboratory (Type C) | 1 | Each |
| Concrete for Seal Course (Set Price) | 1 | C.Y. |
| Foundation Stabilization (Set Price) | 1 | C.Y. |
| Curing Environment | | L.S. |
| Contractor Construction Staking | | L.S. |

| REMOVAL OF EXISTING STRUCTURE | |
|-------------------------------|---|
| Station | Unit |
| 14+50 (Rt.) | 12"x20' RCP |
| 17+50 | Remove existing structure [50', 2 span Steel Beam Bridge (22.5' & 27.5') on concrete substructure with 20.3' roadway concrete deck] |
| (For Information Only) | |

| LARGE TREES TO BE GRUBBED | | | |
|---------------------------|--------|------|------|
| Side | Quant. | Unit | |
| Sheet No. 3 | 24 | Each | |
| (For Information Only) | | | |
| TOTAL | | 24 | Each |

| SURFACING MATERIAL (AB-3)(6") | | | |
|-------------------------------|--------|------|-----|
| Station to Station | Quant. | Unit | |
| 13+00 to 17+03.75 | 464 | Ton | |
| 17+96.25 to 21+00 | 326 | Ton | |
| TOTAL | | | |
| TOTAL | | 790 | Ton |

| GUARDRAIL END TERMINAL (SRT) ALTERNATE NO. 1 | | | |
|--|------|--------|------|
| Station | Side | Quant. | Unit |
| 17+50 | | | |
| NE Quad. | Lt. | 1 | Each |
| NW Quad. | Lt. | 1 | Each |
| SE Quad. | Rt. | 1 | Each |
| SW Quad. | Rt. | 1 | Each |
| TOTAL | | 4 | Each |

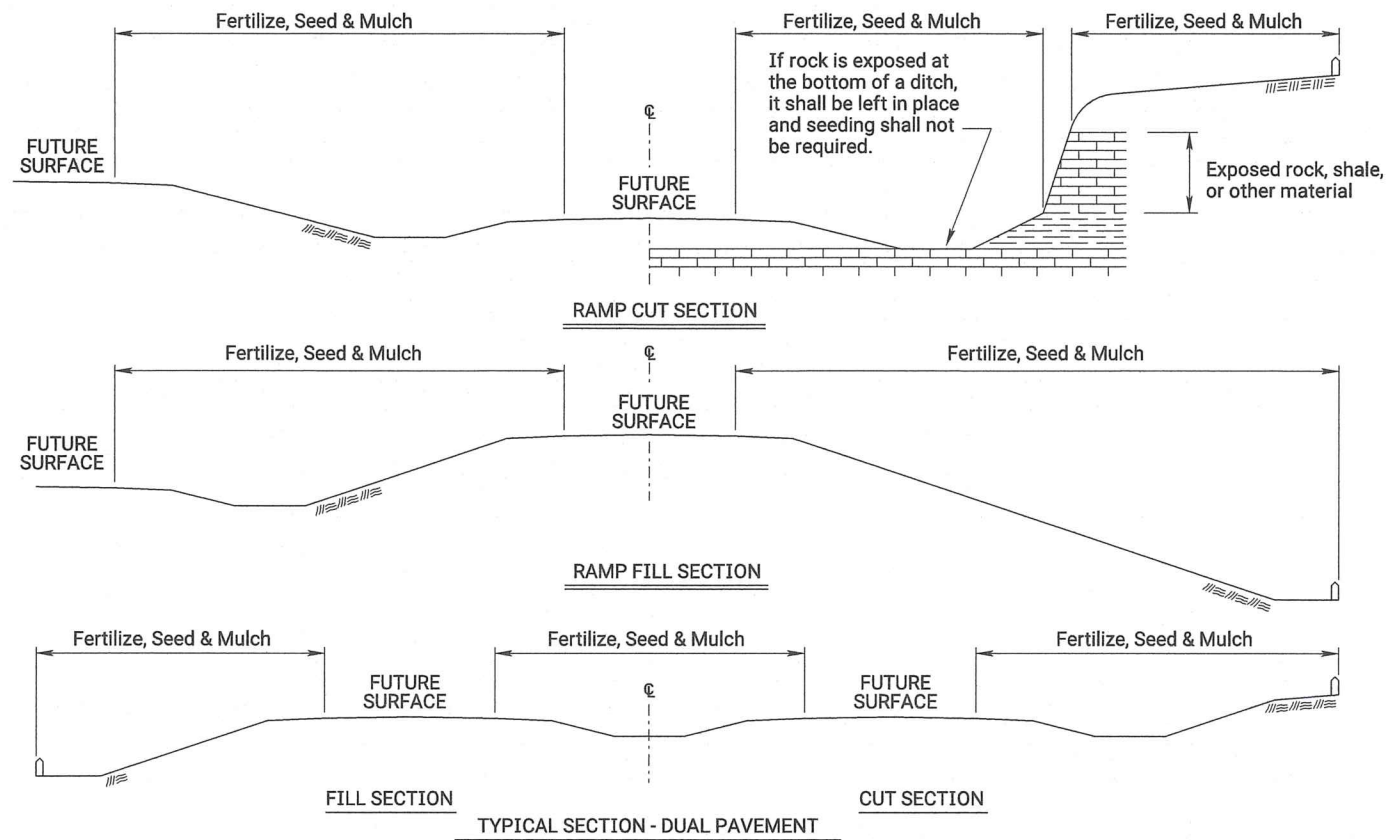
| GUARDRAIL END TERMINAL (FLEAT) ALTERNATE NO. 2 | | | |
|--|------|--------|------|
| Station | Side | Quant. | Unit |
| 17+50 | | | |
| NE Quad. | Lt. | 1 | Each |
| NW Quad. | Lt. | 1 | Each |
| SE Quad. | Rt. | 1 | Each |
| SW Quad. | Rt. | 1 | Each |
| TOTAL | | 4 | Each |

| STEEL PLATE GUARDRAIL (GALV.) | | | |
|-------------------------------|------|--------|----------|
| Station | Side | Quant. | Unit |
| 17+50 | | | |
| NE Quad. | Lt. | 25 | Lin. Ft. |
| NW Quad. | Lt. | 25 | Lin. Ft. |
| SE Quad. | Rt. | 25 | Lin. Ft. |
| SW Quad. | Rt. | 25 | Lin. Ft. |
| TOTAL | | 100 | Lin. Ft. |

WATER RESOURCES RECEIVED
 APR 05 2024
 KS DEPT OF AGRICULTURE

| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
|-------------------------------------|--|------------|------------|---------------|
| SUMMARY OF QUANTITIES | | | | |
| RD050 | FHWA APPROVAL 5-28-08 APP'D. James O. Brewer | | | |
| DESIGNED | DESIGNED | QUANTITIES | QUANTITIES | TRACED B.N.B. |
| DESIGN CK. | DETAIL CK. | QUAN. CK. | TRACE CK. | S.W.K. |
| KDOT Graphics Certified 02-18-2011 | | | | |

J:\2023Proj\235076\CADD\027-RD050.dwg Layout1 3/25/2024 - 2:06pm hplam



| SUMMARY OF SEEDING / EROSION CONTROL QUANTITIES | | | | | | |
|---|-------|-------|-------|-------------------------------------|----------|-------|
| P.L.S. RATE/ ACRE | | ACRES | | BID ITEM | QUANTITY | UNIT |
| CLT | SL/CH | CLT | SL/CH | | | |
| 150 | | 0.87 | | Temporary Fertilizer (15 - 30 - 15) | 130.5 | LB |
| 20 | | 0.87 | | Temporary Seed (Canada Wildrye) | 17.4 | LB |
| 45 | | 0.87 | | Temporary Seed (Grain Oats) | 39.2 | LB |
| 45 | | 0.87 | | Temporary Seed (Sterile Wheatgrass) | 39.2 | LB |
| | | | | Soil Erosion Mix | 95.6 | LB |
| | | | | Erosion Control (Class 1, Type C) | 4,217.0 | SQ YD |
| | | | | Erosion Control (Class 2, Type Y) | | SQ YD |
| | | | | Sediment Removal (Set Price) | 1 | CU YD |
| | | | | Synthetic Sediment Barrier | | LF |
| | | | | Temporary Berm (Set Price) | 1 | LF |
| | | | | Temporary Ditch Check (Rock) | | CU YD |
| | | | | Temporary Inlet Sediment Barrier | | EACH |
| | | | | Temporary Sediment Basin | | CU YD |
| | | | | Temporary Slope Drain | | LF |
| | | | | Temporary Stream Crossing | | EACH |
| | | | | Biodegradable Log (9') | 500 | LF |
| | | | | Biodegradable Log (12') | 500 | LF |
| | | | | Biodegradable Log (20') | 600 | LF |
| | | | | Filter Sock (****) | | LF |
| | | | | Geotextile (Erosion Control) | | SQ YD |
| | | | | Silt Fence | | LF |
| | | | | SWPPP Design † | | LS |
| | | | | SWPPP Inspection † | | EACH |
| | | | | Water Pollution Control Manager † | | EACH |
| 900 lbs / acre | | | | Mulch Tacking Slurry | | LB |
| 2 tons / acre | | 0.75 | | Mulching | | TON |
| | | | | Water (Erosion Control) (Set Price) | 1 | MGAL |

FERTILIZER: A ratio and application rate that equals or exceeds the required minimum rate per acre of N, P₂O₅, K₂O listed in Summary of Quantities will be acceptable.

- * - N = Nitrogen Rate of Application
- ** - P₂O₅ = Phosphorous Rate of Application
- *** - K₂O = Potassium Rate of Application

The Contractor will be required to finish areas of excavation, borrow and embankment in accordance with the specifications. Areas that require installation or construction of temporary water pollution control items will be finished in reasonable close conformity to the alignment, grade and cross section shown on the plans or as established by the Engineer.

CLT = Construction Limit Tract. This area is defined by the entire disturbed area of the project that requires seeding and erosion control measures to be placed. Any impervious areas (i.e. pavement, gravel, riprap, etc.) shall not be included in this measurement.

Slope = Defined by the area of the project that requires Class 1 erosion control material to be placed. This area shall be seeded using the Soil Erosion Mix prior to placement of the material. Drilling seed is preferred, however, broadcasting is acceptable if drilling is not possible.

Channel = Defined by the area of the project that requires Class 2 erosion control material to be placed. This area shall be seeded using the Soil Erosion Mix prior to placement of the material. Drilling seed is preferred, however, broadcasting is acceptable if drilling is not possible.

GENERAL NOTES

The entire disturbed area, excepting the paved or surfaced areas, steep rocky slopes and areas of undisturbed native sod or other desirable vegetation shall be fertilized (limed when required), seeded, and mulched. Soil preparation shall conform to the Standard Specifications.

Temporary seeding shall be done during any time of the year that the soil can be cultivated. After the temporary seeding has been completed on the entire project, permanent seeding shall be done during the normal seeding season.

MULCHING: Mulch shall be spread uniformly over all disturbed areas and punched in the soil, unless otherwise noted on the plans. The rate of application per acre, thickness in place, for the mulching materials is generally as follows:

1 ¼ - 2 ¼ Tons per Acre = 1 ½" loose depth spread uniformly over acre.

Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards. Other vegetative mulches are acceptable only with the Engineer's concurrence.

The above rate is a guide. It will be at the discretion of the Engineer to determine what rate is sufficient for adequate protection of newly seeded areas.

NOTE: Projects less than 1 acre shall be bid as "Seeding" by the lump sum. See Permanent Seeding Summary of Seeding Quantities sheet LA850 for further details.

Geotextile (Erosion Control) shall be removed prior to placement of permanent slope protection.

Regreen and Quick Guard are the approved sterile wheatgrass products.

† If the total disturbed area of the project, not just the seeding area, is 1 acre or more, then these bid items must be included.

**** List size of material.

The amount of mulch and mulch tacking slurry in the bid quantities is estimated. (Acres of Seeding X 1.5 X 2 Tons/Acre). The estimated quantity includes mulching associated with both temporary and permanent seeding operations. The total mulch and mulch tacking slurry required shall be determined in the field. The bid item for mulching and mulch tacking slurry shall be paid for according to the Standard Specifications.

Quantities for all erosion control items are estimated to give full flexibility for compliance with the NPDES permit. Final quantities will be determined in the field.

WATER RESOURCES RECEIVED
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| SOIL EROSION MIX | | |
|------------------|--------------------------------------|----------|
| PLS RATE | NAME | QTY (lb) |
| 0.5 | Blue Grama Grass Seed (Lovington) | 0.4 |
| 4.5 | Buffalograss Seed (Treated) | 3.9 |
| 45 | Perennial Ryegrass | 39.2 |
| 2.6 | Prairie Junegrass | 2.3 |
| 6.3 | Side Oats Grama Grass Seed (El Reno) | 5.5 |
| 45 | Tall Fescue (Endophyte Free) | 39.2 |
| 6 | Western Wheatgrass Seed (Barton) | 5.2 |
| 109.9 | Total (lb) | 95.6 |

The Soil Erosion Mix is to be placed under the Class 1 and/or Class 2 erosion control material.

The Soil Erosion Mix consists of the Shoulder Area of the Permanent Seed Mix used on the project.

| | | | | |
|-----|----------|------------------|--------|--------|
| 03 | 08-03-20 | Added Note | M.R.D. | M.L. |
| 02 | 12-01-17 | Revised Standard | M.R.D. | S.H.S. |
| 01 | 06-01-17 | Revised Standard | M.R.D. | S.H.S. |
| NO. | DATE | REVISIONS | BY | APPD |

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

LA852A

| | | | | |
|------------|--------|----------|------------|------------------|
| DESIGNED | M.R.D. | 01-26-18 | APPD. | Scott H. Shields |
| DETAILD | S.H.S. | 01-26-18 | QUANTITIES | TRACED |
| DESIGN CK. | S.H.S. | 01-26-18 | QUANT. | TRACE CK. |

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 29 | 49 |

| EROSION CONTROL- CLASS 1, TYPE C | | | | |
|---|------|--------|--------|---------|
| STATION TO STATION | SIDE | LENGTH | WIDTH | SQ YARD |
| 13+00 to 17+00 | Lt. | 400' | Varies | 1,203 |
| 13+00 to 17+00 | Rt. | 400' | Varies | 1,086 |
| 18+00 to 21+00 | Lt. | 300' | Varies | 982 |
| 18+00 to 21+00 | Rt. | 300' | Varies | 946 |
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| | | | | |
| TOTAL EROSION CONTROL (CLASS 1, TYPE C) = | | | | 4,217 |

WATER RESOURCES
RECEIVED
APR 05 2024
KS DEPT OF AGRICULTURE

| NO. | DATE | REVISIONS | BY | APPD |
|-----|------|-----------|----|------|
| | | | | |
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KANSAS DEPARTMENT OF TRANSPORTATION

**EROSION CONTROL
SEEDING-SODDING**

LA852A-EC

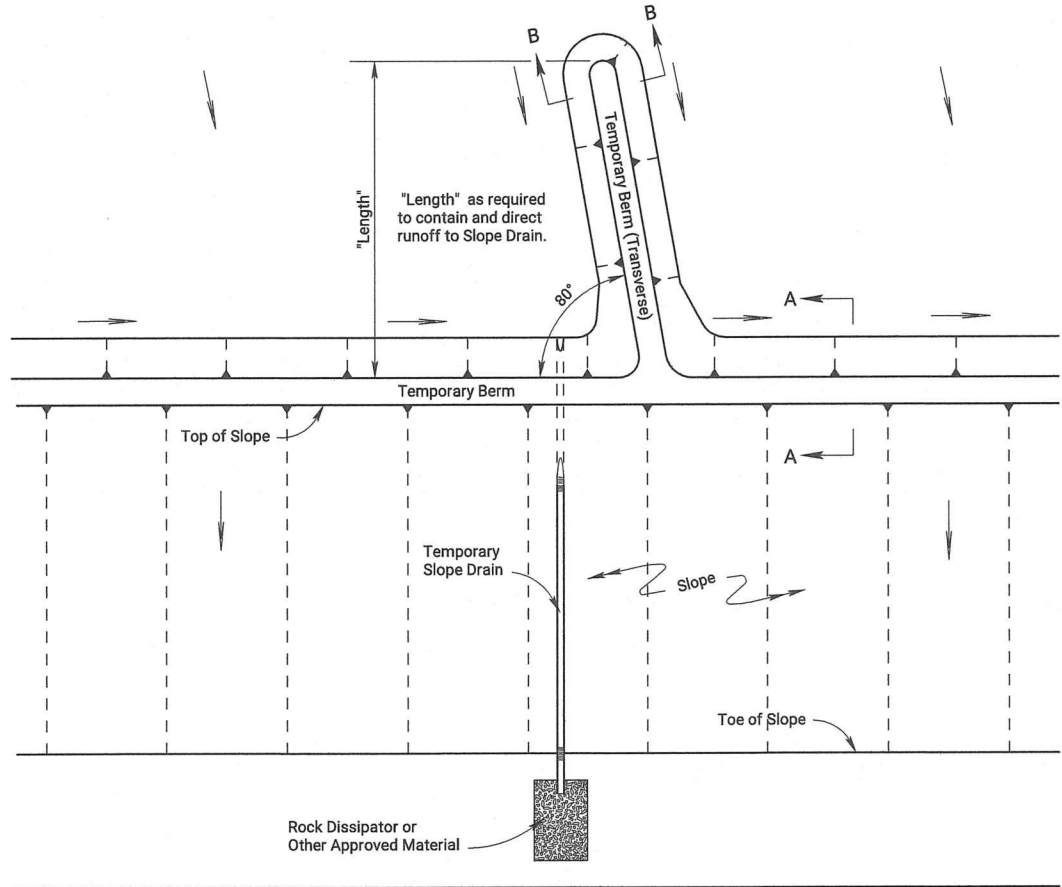
| | | | | | | |
|-----------|--------|-----------|--------|------------|----------|--------|
| DESIGNED | M.R.M. | DETAILED | M.R.M. | QUANTITIES | TRACED | M.R.M. |
| DESIGN CK | S.H.S. | DETAIL CK | S.H.S. | QUAN. CK | TRACE CK | S.H.S. |

FWHA APPROVAL: Scott H. Shields
APPD: Scott H. Shields

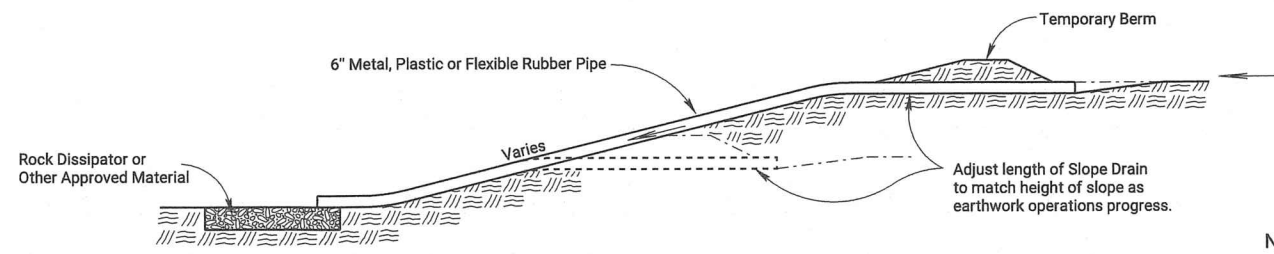
KDOT Graphics Certified 07-14-2022

KDOT Graphics Certified

| | | | | |
|--------|--------------|------|-----------|--------------|
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 50 C-5222-01 | 2024 | 30 | 49 |

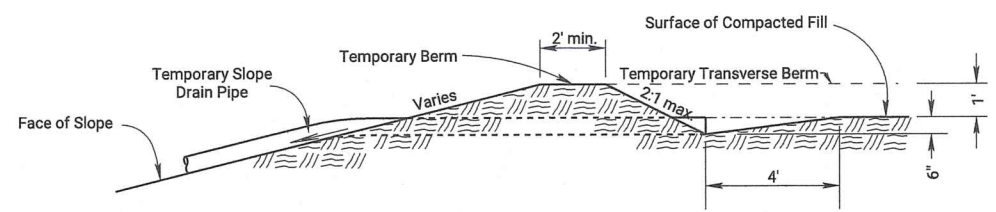


TYPICAL PLAN VIEW OF TEMPORARY BERM AND TEMPORARY SLOPE DRAIN
NO SCALE

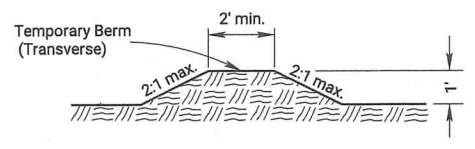


TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN
NO SCALE

- NOTES:
- 1) Temporary Slope Drain and Temporary Berm may be used on either project foreslopes or project backslopes.
 - 2) Discharge of Slope Drains shall be into stabilized ditch or area, or into Sediment Basin.
 - 3) Pipe shall be secured in place as approved by Engineer.
 - 4) Temporary Berms under 2,000 feet shall be bid by Set Price.

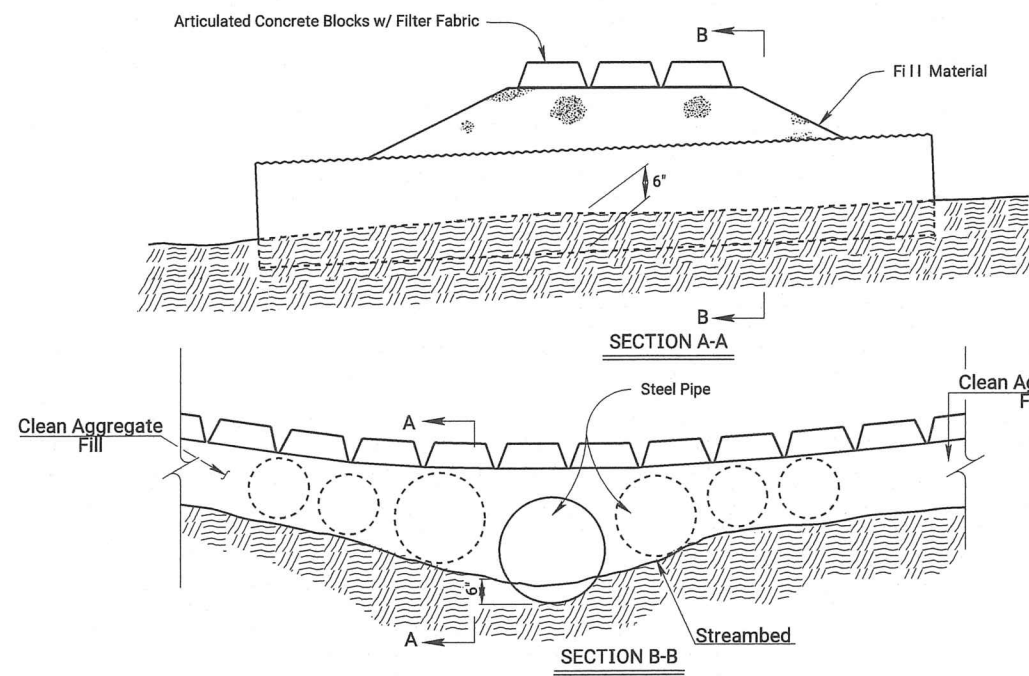


SECTION A-A
NO SCALE



SECTION B-B
NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM
NO SCALE



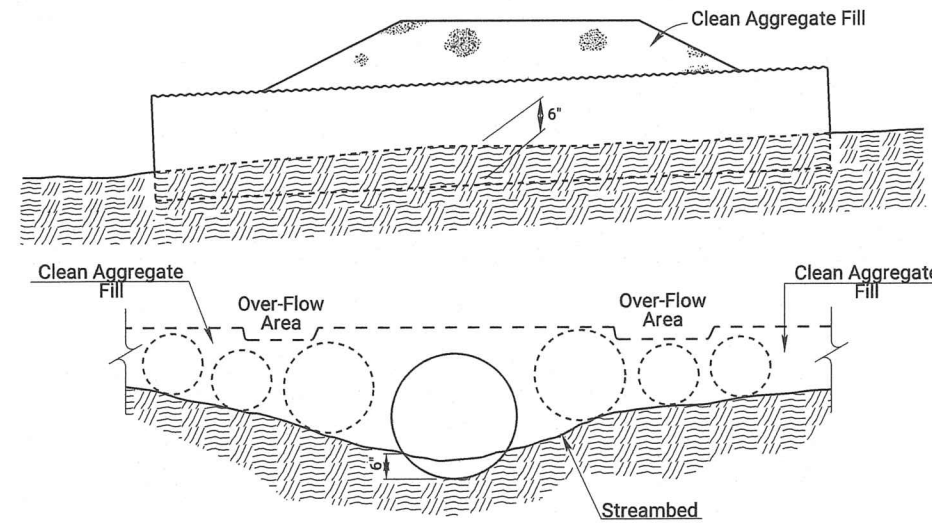
TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)
NO SCALE

Pipe size may vary.

Place 1 pipe buried 6" into stream bottom, in the lowest point of the channel to allow the passage of aquatic organisms, with additional pipes placed along the remainder of the stream channel bottom such that ordinary high water (OHW) flows through the pipes without overtopping the crossing.

Clean aggregate fill will extend a minimum of 50' on the entrance and exit side of the crossing to prevent tracking. The aggregate shall be clean aggregate and a minimum of 6" thick and will be maintained through the use of the crossing.

See KDOT Specifications for more information.



SECTION B-B
TEMPORARY STREAM CROSSING (AGGREGATE)
NO SCALE

Pipe size may vary.

Place 1 pipe buried 6" into stream bottom, in the lowest point of the channel to allow the passage of aquatic organisms, with additional pipes placed along the remainder of the stream channel bottom such that ordinary high water (OHW) flows through the pipes without overtopping the crossing.

Clean aggregate fill will extend a minimum of 50' on the entrance and exit side of the crossing to prevent tracking. The aggregate shall be clean aggregate and a minimum of 6" thick and will be maintained through the use of the crossing.

See KDOT Specifications for more information.

WATER RESOURCES RECEIVED
APR 05 2024

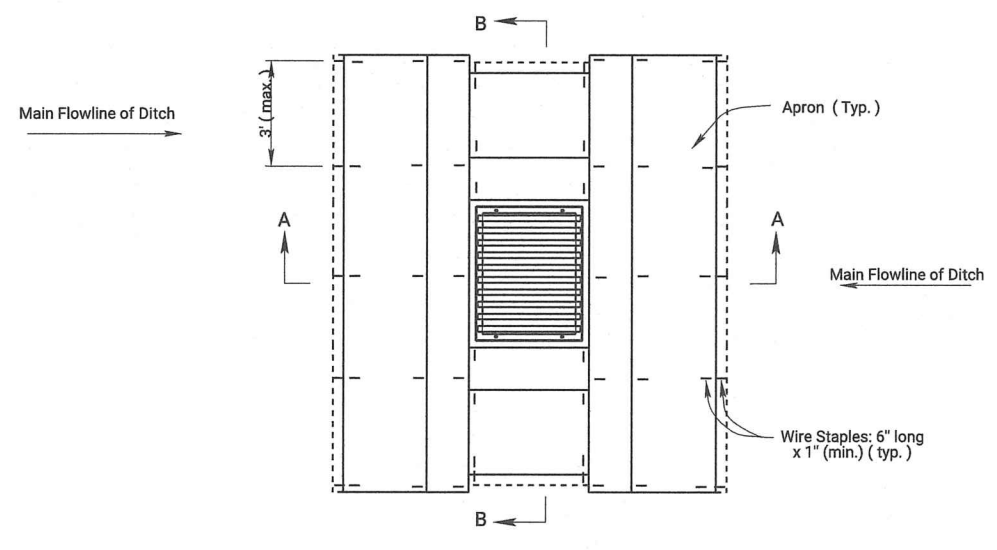
| | | | | |
|-----|----------|--|--------|--------|
| 03 | 01-21-22 | Temp Stream Crossing - Clean Aggregate Fill Note Added | M.R.D. | M.L. |
| 02 | 08-24-21 | Temp Stream Crossing - Clean Aggregate Fill Note Added | M.R.D. | M.L. |
| 01 | 06-11-13 | Revised Standard | M.R.M. | S.H.S. |
| NO. | DATE | REVISIONS | BY | APPD |

KANSAS DEPARTMENT OF TRANSPORTATION
TEMPORARY EROSION AND POLLUTION CONTROL
TEMPORARY SLOPE DRAIN, TEMPORARY STREAM CROSSING (AGGREGATE)
 LA852B

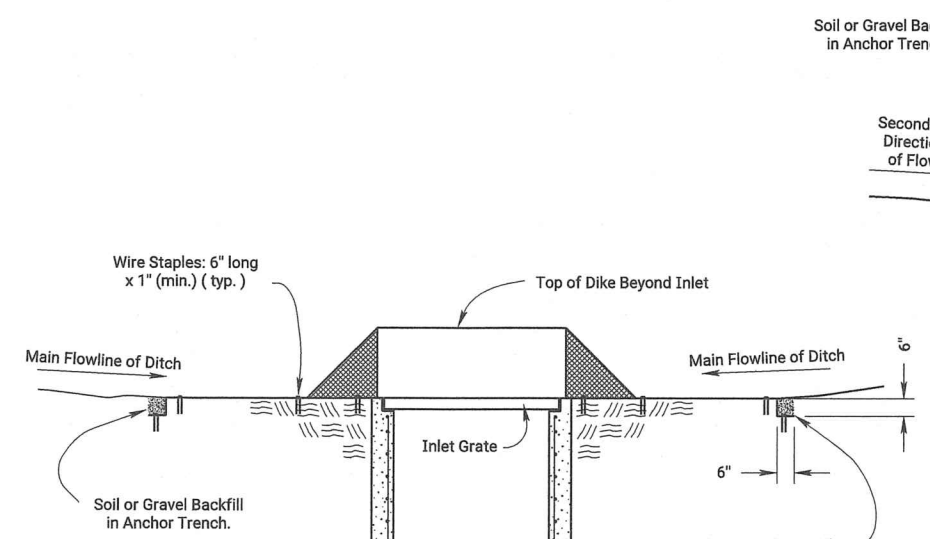
| | | | |
|------------|------------|------------|-------------|
| DESIGNED | 01-21-22 | APPD. | Mervin Lare |
| DESIGN CK. | DETAIL CK. | QUANTITIES | TRACED |
| DESIGN CK. | DETAIL CK. | QUAN. CK. | TRACE CK. |

KDOT Graphics Certified 06-17-2022

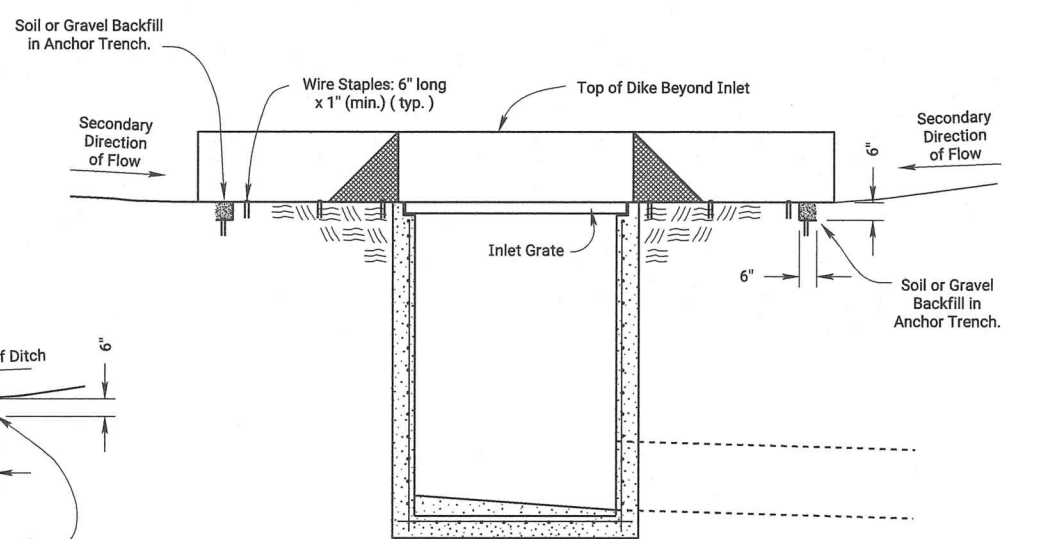
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 31 | 49 |



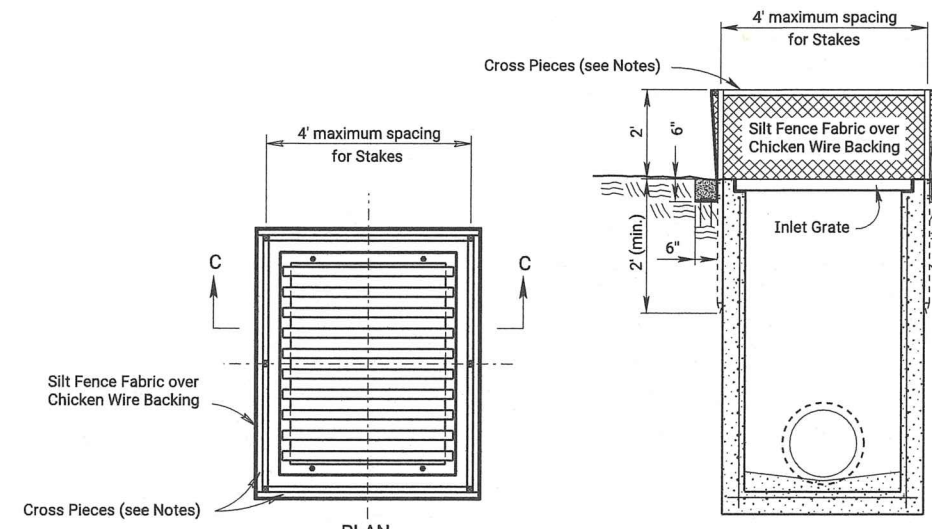
PLAN
TEMPORARY INLET SEDIMENT BARRIER
(TRIANGULAR SILT DIKE METHOD)
 NO SCALE



SECTION A - A



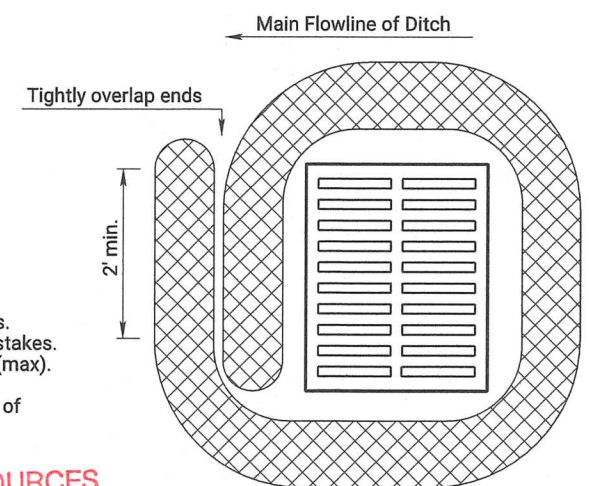
SECTION B - B



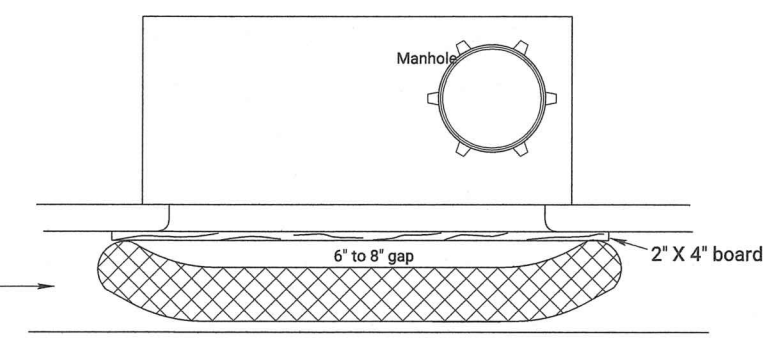
PLAN
TEMPORARY INLET SEDIMENT BARRIER
(SILT FENCE METHOD)
 NO SCALE

- SILT FENCE:**
- Stakes shall be 4' (min.) long and of one of the following materials:
 - Hardwood - 1 3/16" x 1 3/16";
 - Southern Pine (No. 2) - 2 5/8" x 2 5/8";
 - Steel U, T, L, or C Section - .95 lbs. per 1'-0"; or
 - Synthetic - same strength as wood stakes.
 - Cross pieces shall be of same material as stakes.
 - Attach fence fabric securely on 6" centers (max).
 - Use of high flow material is acceptable.
 - Refer to plan sheets to estimate the length of silt fence required.

Bags = synthetic net (3mm mesh) or burlap bags
 Rock = approximately 1" to 2" diameter



Drop inlet use
1'-6" TO 1'-8" diameter log
BIODEGRADABLE LOG/FILTER SOCK
DROP INLET PROTECTION



CURB INLET PROTECTION

- If multiple gravel bags are required, place them in such a way that no gaps are evident.
- Height of bags (8" minimum diameter) must not be above top of curb.
- Alternative products may be used other than gravel bags such as the "Gutter Buddy". Products must be approved by the Engineer.
- Curb inlet protection will be measured and paid for as Filter Sock.

Note: 25% of log shall be keyed into ground during installation.
 Stake every 4'

| Material Requirements | |
|--|--|
| Use 100% shredded mulch or other non-compost biodegradable material as fill for logs. | |
| No compost or fines. | |
| No hay or straw. | |
| Do not use material which prohibits water infiltration. | |
| Log Mesh: Use mesh with 1/4" openings or larger. Mesh must allow water infiltration but also hold fill material in place. | |

| NO. | DATE | REVISIONS | BY | APPD |
|-----|----------|---|--------|--------|
| 03 | 09-26-19 | Changed Direction of Main Flowline of Ditch Arrow | M.R.D. | S.H.S. |
| 02 | 03-10-15 | Revised Standard | R.A. | S.H.S. |
| 01 | 06-01-13 | Revised Standard | M.R.M. | S.H.S. |

| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
|--|--------|------------|----------|------------|
| TEMPORARY EROSION AND POLLUTION CONTROL, TEMPORARY INLET SEDIMENT BARRIER (SILT FENCE) | | | | |
| TEMP. INLET SEDIMENT BARRIER (T.S.D.) | | | | |
| LA852C | | | | |
| DESIGNED | R.A. | DETAILED | R.A. | QUANTITIES |
| DESIGN CK. | S.H.S. | DETAIL CK. | S.H.S. | QUAN. CK. |
| FHWA APPROVAL | | | 03-10-15 | APPD. |
| Scott H. Shields | | | | |

WATER RESOURCES RECEIVED
APR 05 2024
KS DEPT OF AGRICULTURE

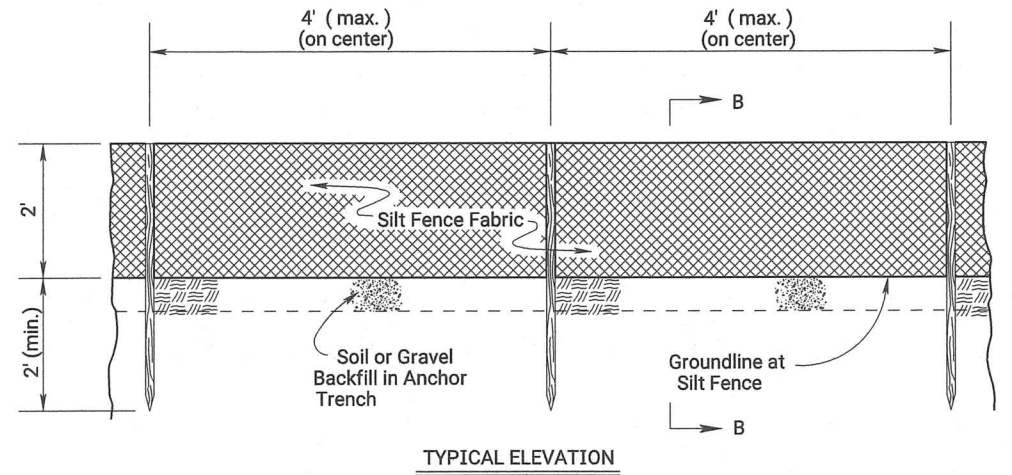
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| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 32 | 49 |

INSTALLATION NOTES

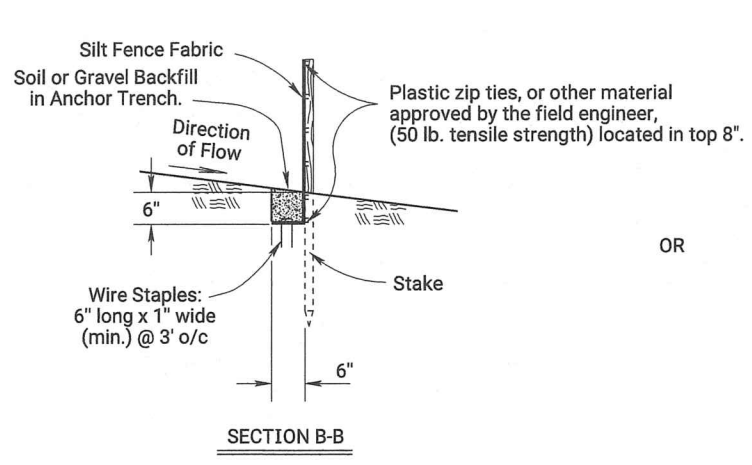
- SILT FENCE:**
- Stakes shall be 4' (min.) long and of one of the following materials:
 - Hardwood - 1 3/16" x 1 3/16";
 - Southern Pine (No. 2) - 2 5/8" x 2 5/8";
 - Steel U, T, L, or C Section - .95 lbs. per 1'-0"; or
 - Synthetic - same strength as wood stakes.
 - Attach fence fabric with 3 zip ties within the top 8" of the fence. Alternate attachment methods may be approved by the Engineer on a performance basis.
 - Use of high flow material is acceptable.
 - Refer to plan sheets to estimate the length of silt fence required.

- BIODEGRADABLE LOG OR FILTER SOCK**
- Place biodegradable logs or filter sock tightly together minimum overlap of 18".
 - Wood stakes shall be 2" x 2" (nom.).
 - Refer to plan sheets to estimate length of biodegradable log and filter sock required.
 - Each log or sock (except compost filter socks) should be keyed into the ground at a minimum of 25% of its height. Compost filter socks should be placed on smooth prepared ground with no gaps between the sock and soil.
 - Length of stakes should be 2 times the height of the log at a minimum with minimum ground embedment equal to the height of the log / sock.

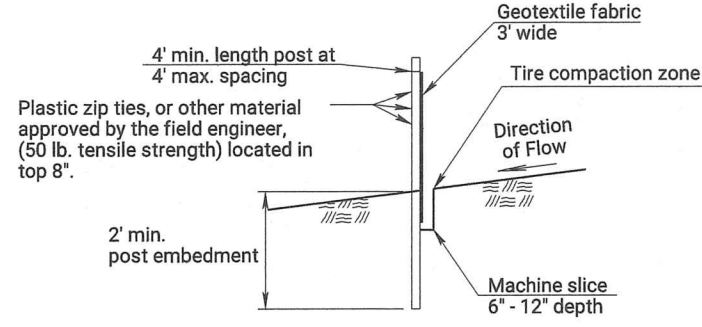


TYPICAL ELEVATION

SILT FENCE BARRIER
NO SCALE



SECTION B-B



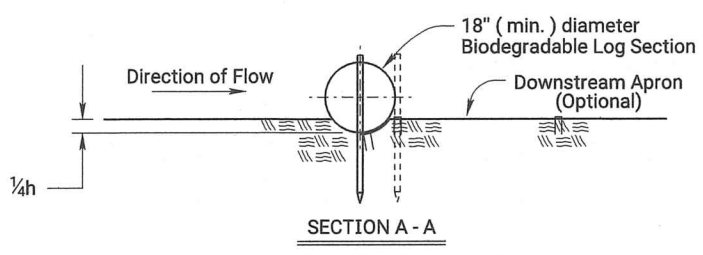
SECTION B-B

Biodegradable Log or Filter Sock Slope Interruptions

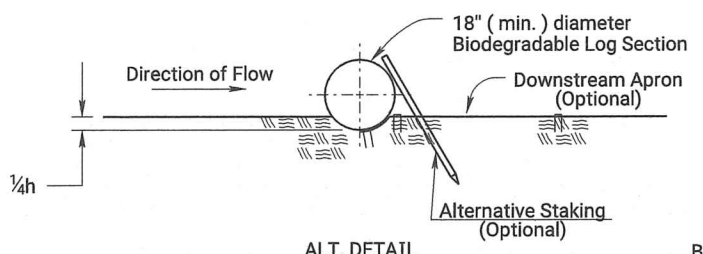
| Slope Gradient | PRODUCT | | |
|----------------|--|--|--|
| | 9" Sediment Log or 8" Filter Sock (ft) | 12" Sediment Log or 12" Filter Sock (ft) | 20" Sediment Log or 18" Filter Sock (ft) |
| ≤4H:1V | 40 | 60 | 80 |
| 3H:1V | 30 | 45 | 60 |
| | | | |
| | | | |

| BIODEGRADABLE LOG MATERIAL | | |
|----------------------------|---------------|--|
| | LOW FLOW | HIGH FLOW |
| 9" | Straw/Compost | Excelsior / Wood Chips / Coconut Fiber |
| 12" | Straw/Compost | Excelsior / Wood Chips / Coconut Fiber |
| 18"-20" | Straw/Compost | Excelsior / Wood Chips / Coconut Fiber |

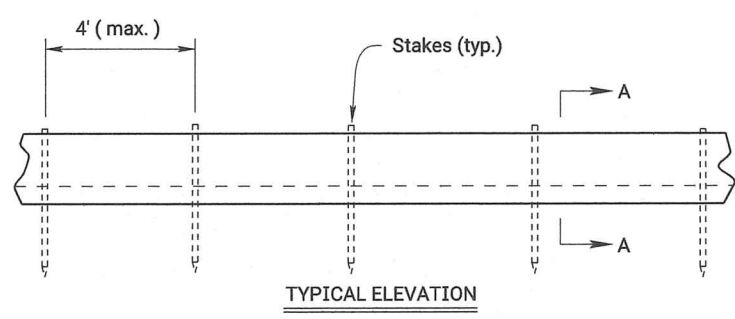
Deviations should be approved by the Field Engineer.



SECTION A - A



ALT. DETAIL
OPTIONAL



TYPICAL ELEVATION

BIODEGRADABLE LOG SLOPE INTERRUPTIONS
OR Filter Sock

GENERAL NOTES

- Slope interruptions shall be placed along contour lines, with a short section turned upgrade at each end of the barrier.
- The maximum length of the slope interruptions shall not exceed 250 feet, and the barrier ends need to be staggered.
- Interruptions damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired immediately by Contractor at no additional cost to KDOT.
- Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.

WATER RESOURCES
RECEIVED

APR 05 2024

KS DEPT OF AGRICULTURE

| NO. | DATE | REVISIONS | BY | APPD |
|-----|----------|------------------|--------|--------|
| 03 | 06-28-16 | Revised Standard | R.A. | S.H.S. |
| 02 | 03-01-15 | Revised Standard | R.A. | S.H.S. |
| 01 | 06-01-13 | Revised Standard | M.R.M. | S.H.S. |

KANSAS DEPARTMENT OF TRANSPORTATION
TEMPORARY EROSION AND POLLUTION CONTROL SLOPE INTERRUPTIONS BIODEGRADABLE LOG / SILT FENCE
LA852D

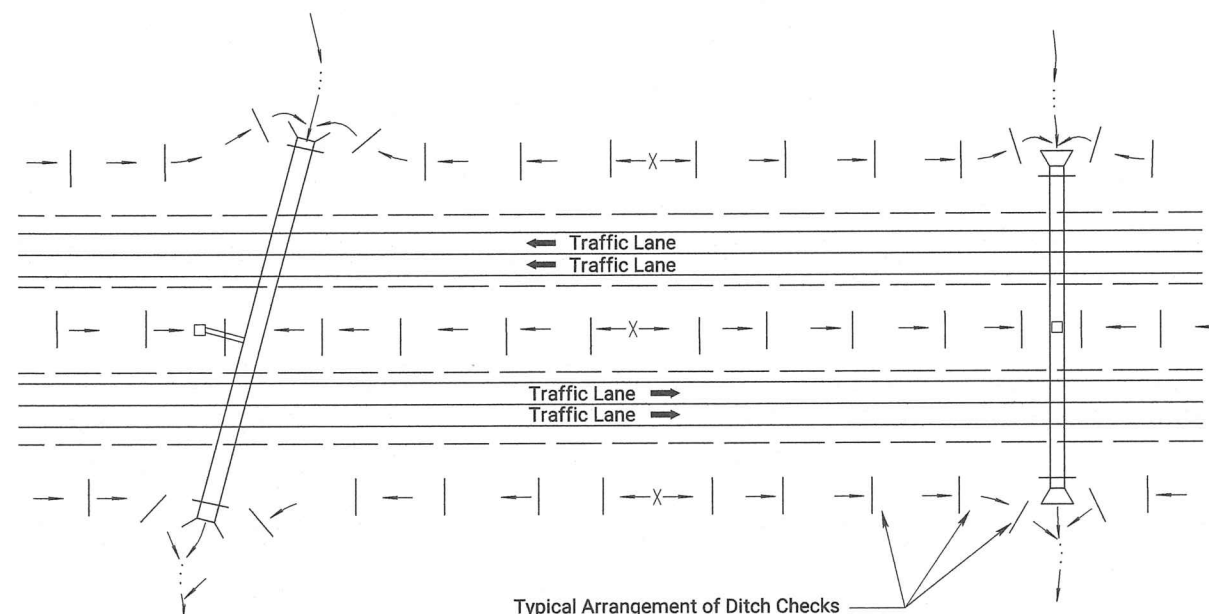
| | | | | | |
|-----------|--------|-----------|------|------------|----------|
| DESIGNED | S.H.S. | DETAILED | R.A. | QUANTITIES | TRACED |
| DESIGN CK | S.H.S. | DETAIL CK | | QUAN. CK | TRACE CK |

FWHA APPROVAL: 09-14-16 APPD: Scott H. Shields

KDOT Graphics Certified 06-18-2022

KDOT Graphics Certified

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 33 | 49 |



TYPICAL DITCH CHECK LAYOUT PLAN
NO SCALE

| 20" BIOLOG CHECK SPACING | |
|--------------------------|-------------------------|
| DITCH @ SLOPE (%) | SPACING INTERVAL (FEET) |
| 1.0 | 125 |
| 2.0 | 60 |
| 3.0 | 40 |
| 4.0 | 30 |
| 5.0 | 25 |

NOTE: Use this spacing for all except Rock Ditch Checks.

| 18" FILTER SOCK CHECK SPACING | |
|-------------------------------|-------------------------|
| DITCH @ SLOPE (%) | SPACING INTERVAL (FEET) |
| 1.0 | 110 |
| 2.0 | 55 |
| 3.0 | 35 |
| 4.0 | 25 |
| 5.0 | 20 |

NOTE: Use this spacing for all except Rock Ditch Checks.

GENERAL NOTES

- 1) The choice of ditch check methods is at the option of the Contractor.
- 2) Use only rock checks in situations where the ditch slope is 6 percent or greater.
- 2) Ditch checks damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired by Contractor at no extra cost to KDOT.

WATER RESOURCES RECEIVED
APR 05 2024
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| NO. | DATE | REVISIONS | BY | APPD |
|-----|----------|------------------|--------|--------|
| 03 | 08-10-16 | Revised Standard | R.A.A. | S.H.S. |
| 02 | 06-28-16 | Revised Standard | R.A.A. | S.H.S. |
| 01 | 06-01-13 | Revised Standard | M.R.M. | S.H.S. |

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL DITCH CHECKS

LA852E

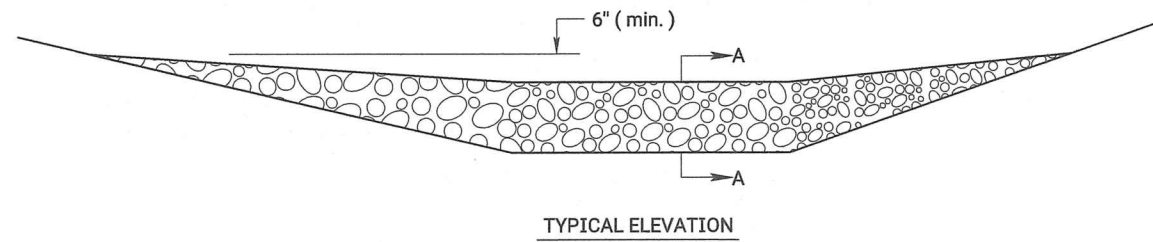
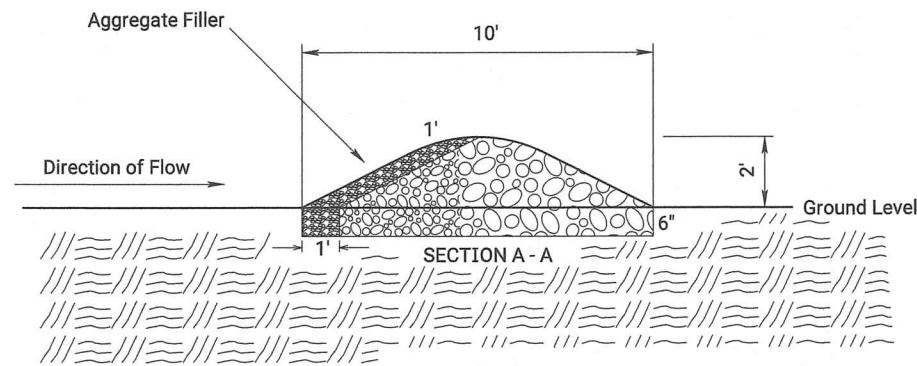
| | | | | | | |
|-----------|--------|-----------|--------|------------|----------|--------|
| DESIGNED | S.H.S. | DETAIL | R.A.A. | QUANTITIES | TRACED | R.A.A. |
| DESIGN CK | S.H.S. | DETAIL CK | S.H.S. | QUAN CK | TRACE CK | S.H.S. |

FHWA APPROVAL 09-14-16 APPD. Scott H. Shields

KDOT Graphics Certified 06-18-2022

KDOT Graphics Certified

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 34 | 49 |



TYPICAL ELEVATION

ROCK DITCH CHECK

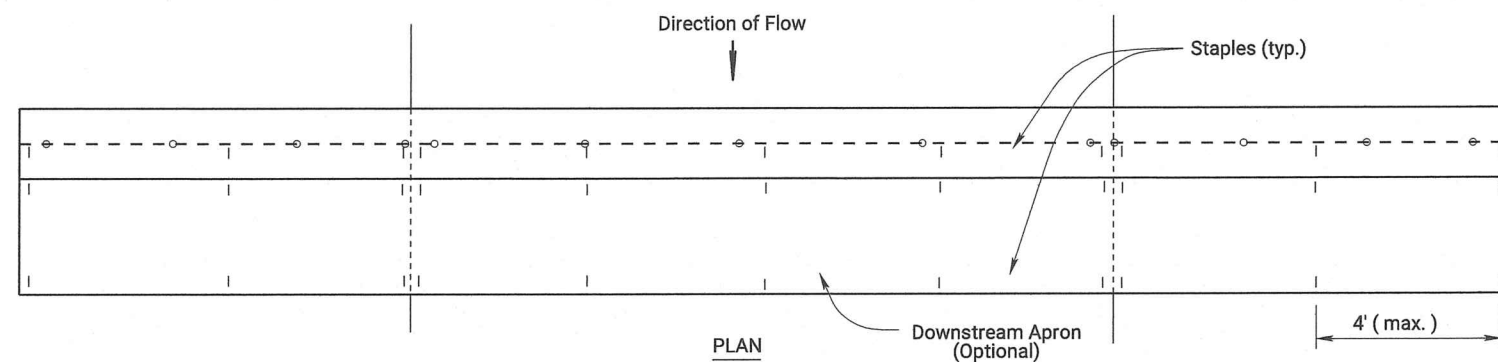
NO SCALE

| TEMPORARY ROCK DITCH CHECK SPACING | |
|------------------------------------|-------------------------|
| DITCH @ SLOPE (%) | SPACING INTERVAL (FEET) |
| 5.0 | 60 |
| 6.0 | 50 |
| 7.0 | 43 |
| 8.0 | 36 |
| 9.0 | 33 |
| 10.0 | 29 |

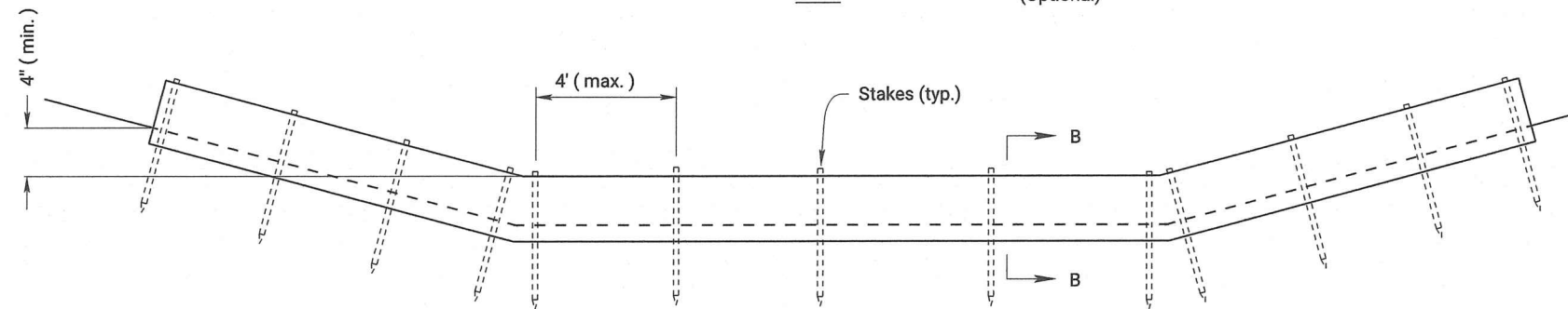
NOTE: Use this spacing for Rock Ditch Checks only.

ROCK DITCH CHECK NOTES

1. Rock shall be clean aggregate, D50-6" and aggregate filler.
2. Place rock in such manner that water will flow over, not around ditch check.
3. Do not use rock ditch checks in clear zone.
4. Excavation: The ditch area shall be reshaped to fill any eroded areas. Prior to placement of the rock, the ditch shall be excavated to the dimensions of the Rock Ditch Check and to a minimum depth of 6" (150mm). After placement of the rock, backfill and compact any over-excavated soil to ditch grade. This work shall be subsidiary to the bid item Temporary Ditch Check (Rock).
5. Aggregate excavated on site may be used as an alternate to the 6" rock, if approved by the Engineer.
6. The Engineer may approve the use of larger aggregates for the downstream portion of the check when conditions warrant their use.
7. When the use of larger rock is approved, D50-6" rock will be placed between the larger aggregate and the aggregate filler.
8. Aggregate filler will be placed on the upstream face of the ditch check. Aggregate filler will comply with Filter Course Type I, Division 1114.



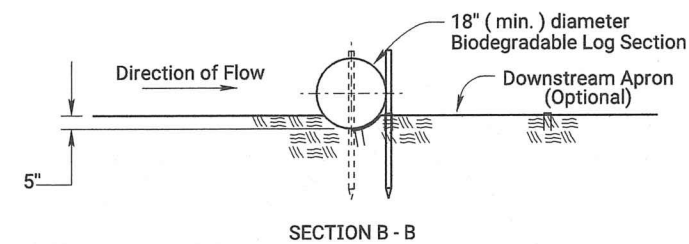
PLAN



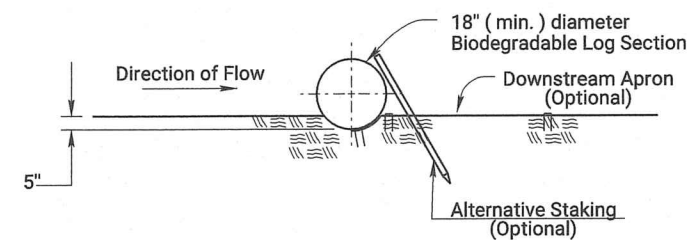
TYPICAL ELEVATION

BIODEGRADABLE LOG DITCH CHECK

OR Filter Sock Ditch Check
NO SCALE



SECTION B - B



ALT. DETAIL
OPTIONAL

BIODEGRADABLE LOG DITCH CHECK NOTES

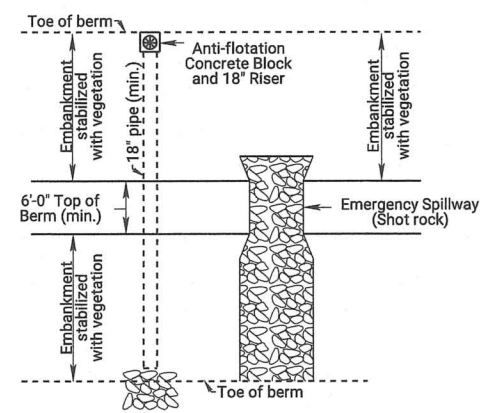
1. Use as many biodegradable log sections as necessary to ensure water does not flow around end of ditch check.
2. Overlap sections a minimum of 18".
3. Stakes shall be wood or steel according to Section 2114 of the Standard Specifications. Length of stakes shall be a minimum of 2 x the diameter of the log.
4. Use Erosion Control (Class 1) (Type C) as the downstream apron when required.
5. A downstream apron is required when directed by the Engineer. Apron material will be paid at the contract unit price.
6. Each log or sock (except compost filter socks) should be keyed into the ground at a minimum of 25% of its height. Compost filter socks should be placed on smooth prepared ground with no gaps between the sock and soil.

WATER RESOURCES
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APR 05 2024

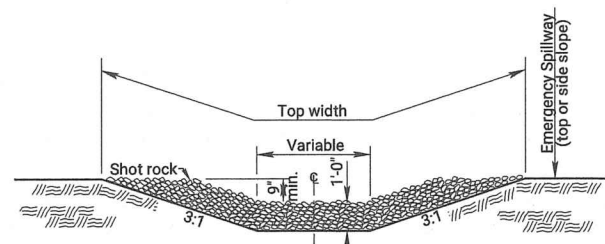
| NO. | DATE | REVISIONS | BY | APPD |
|-----|----------|------------------|--------|--------|
| 03 | 11-19-20 | Revised Standard | M.R.D. | M.L. |
| 02 | 08-10-16 | Revised Standard | R.A.A. | S.H.S. |
| 01 | 10-21-15 | Revised Standard | R.A.A. | S.H.S. |

| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
|---|--------|-------------|------|------------|
| TEMPORARY EROSION AND POLLUTION CONTROL | | | | |
| ROCK DITCH CHECKS | | | | |
| BIODEGRADABLE LOG DITCH CHECKS | | | | |
| LA852G | | | | |
| DESIGNED | M.L. | DETAILED | D.K. | QUANTITIES |
| TRACED | R.A.A. | DESIGN CK. | M.L. | QUAN. CK. |
| TRACED | R.A.A. | DESIGN CK. | M.L. | QUAN. CK. |
| 11-19-20 | APPD. | Mervin Lare | | |

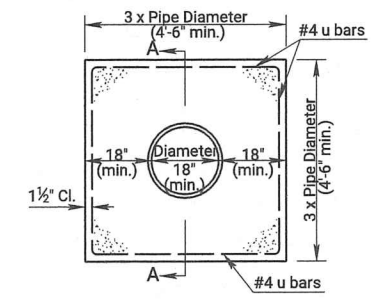
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 35 | 49 |



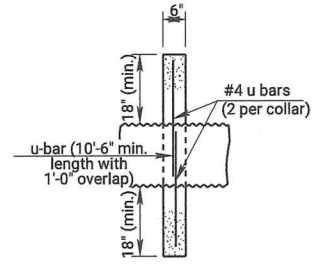
SEDIMENT STORAGE BASIN (PLAN)



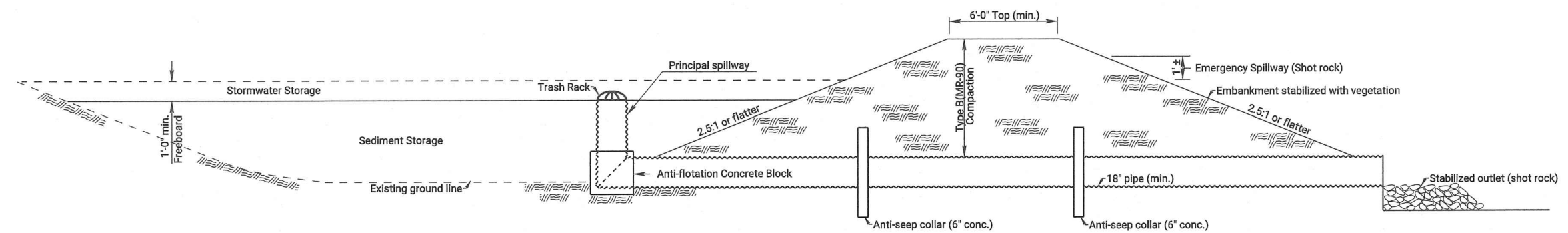
CROSS SECTION (EMERGENCY SPILLWAY)



CONCRETE ANTI-SEEP COLLAR



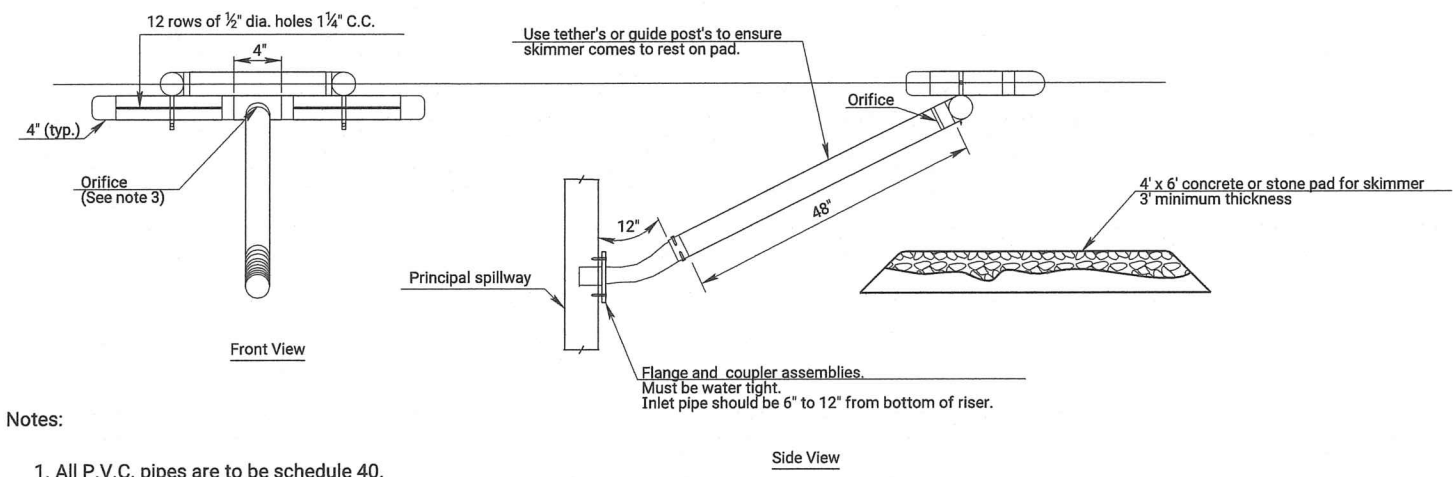
SECTION A-A



SEDIMENT STORAGE BASIN (ELEVATION)

NOTES:

- 1) Temporary Sediment Basins shall be constructed at locations as directed by the Engineer or as approved in the SWPPP Schedule. All work and materials necessary, including but not limited to, the fill material, compaction, drainage pipes, aggregates and all other incidentals necessary to construct the basin, shall be paid as "Temporary Sediment Basin".
- 2) Lengths and top dimensions shall be determined in the field by the Engineer.
- 3) Skimmer dewatering device required and must be used regardless the size of the drainage area.



SKIMMER DEWATERING DEVICE

Notes:

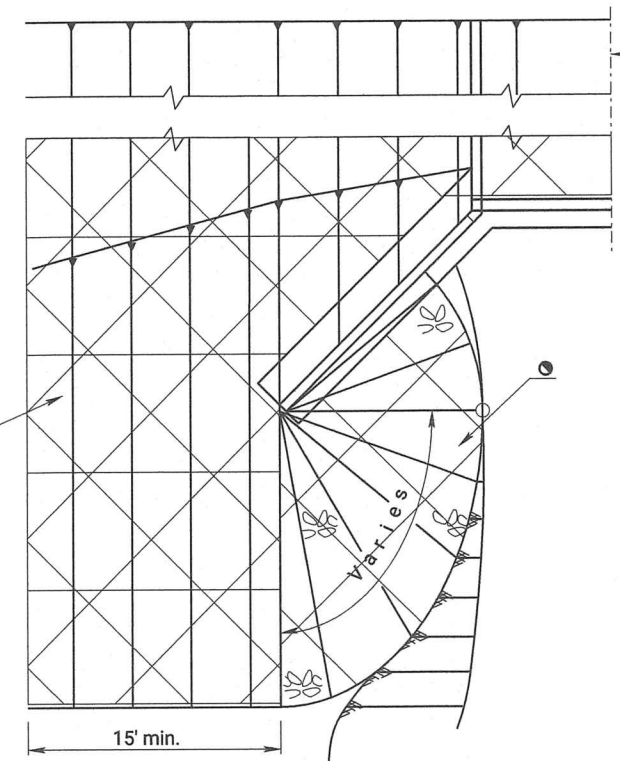
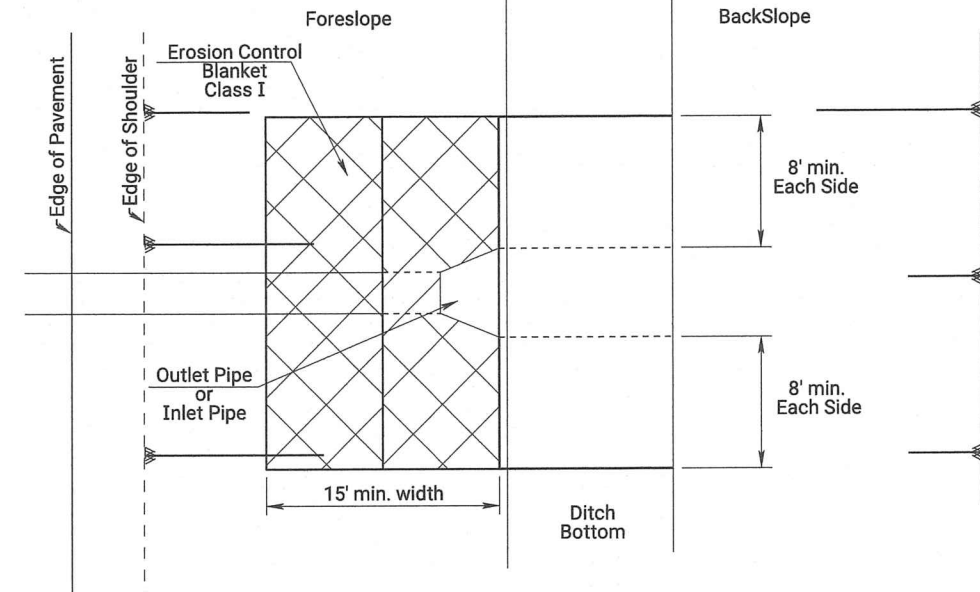
1. All P.V.C. pipes are to be schedule 40.
2. HDPE flexible drain pipes is to be attached to the pond outlet structure with water-tight connections.
3. The orifice shall be sized of to provide drawdown time to 2 to 5 days and approved by the engineer.
4. Other skimmer designs maybe used that dewater from the surface at a controlled rate. The design must be approved by the engineer.

| SEDIMENT STORAGE BASIN LOCATIONS | | |
|----------------------------------|------|---------------------------|
| STATION TO STATION | SIDE | REQUIRED STORAGE CAPACITY |
| | | |
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WATER RESOURCES RECEIVED
APR 05 2024
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| 02 | 09-03-13 | Added Skimmer Dewatering Device | M.R.M. | S.H.S. |
|---|----------|---------------------------------|--------|------------|
| 01 | 07-17-13 | Revised Standard | M.R.M. | S.H.S. |
| NO. | DATE | REVISIONS | BY | APPD |
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
| TEMPORARY EROSION AND POLLUTION CONTROL SEDIMENT STORAGE BASIN | | | | |
| LA852H | | | | |
| FHWA APPROVAL 09-24-13 APPD. | | | | |
| DESIGNED | B.B. | DETAILED | B.B. | QUANTITIES |
| DESIGN CK | S.H.S. | DETAIL CK | S.H.S. | QUAN. CK |
| TRACED | | | B.B. | |
| TRACE CK | | | S.H.S. | |

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 36 | 49 |

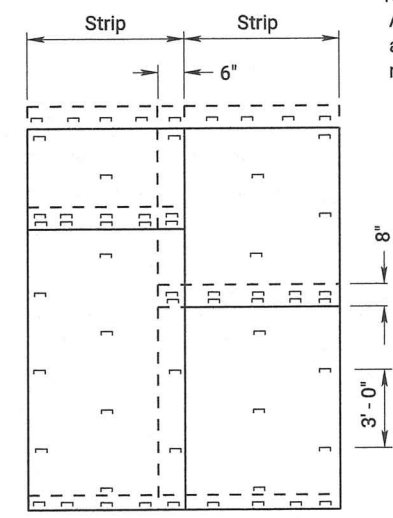
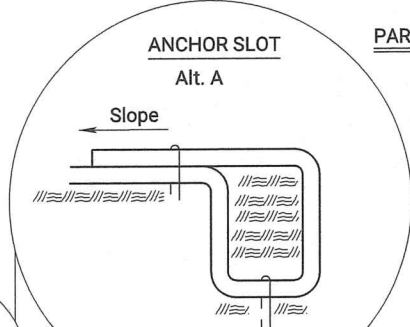
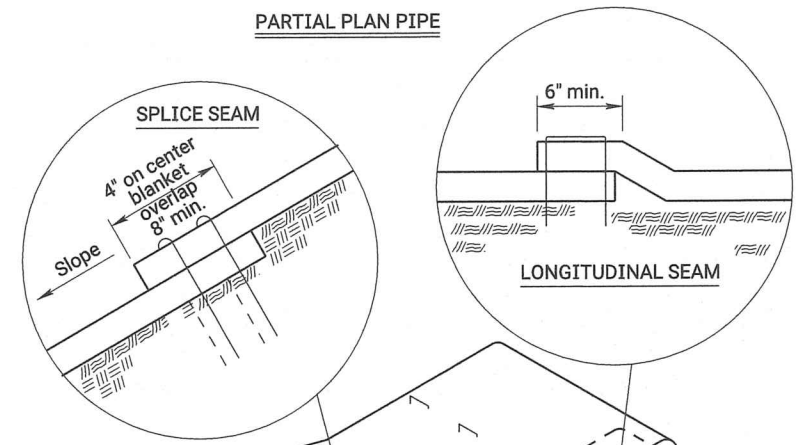


INSTALLATION DETAILS FOR EROSION CONTROL CLASS 1

Erosion Control Blankets shall be laid loosely in the direction of the slope, beginning at the bottom of the slope. In order for blanket to be in contact with the soil, lay blanket loosely, avoiding stretching.

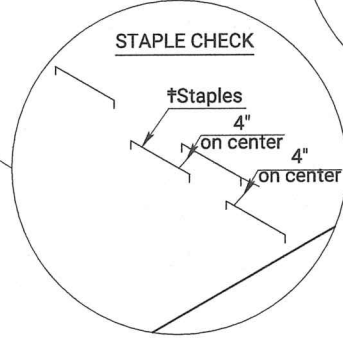
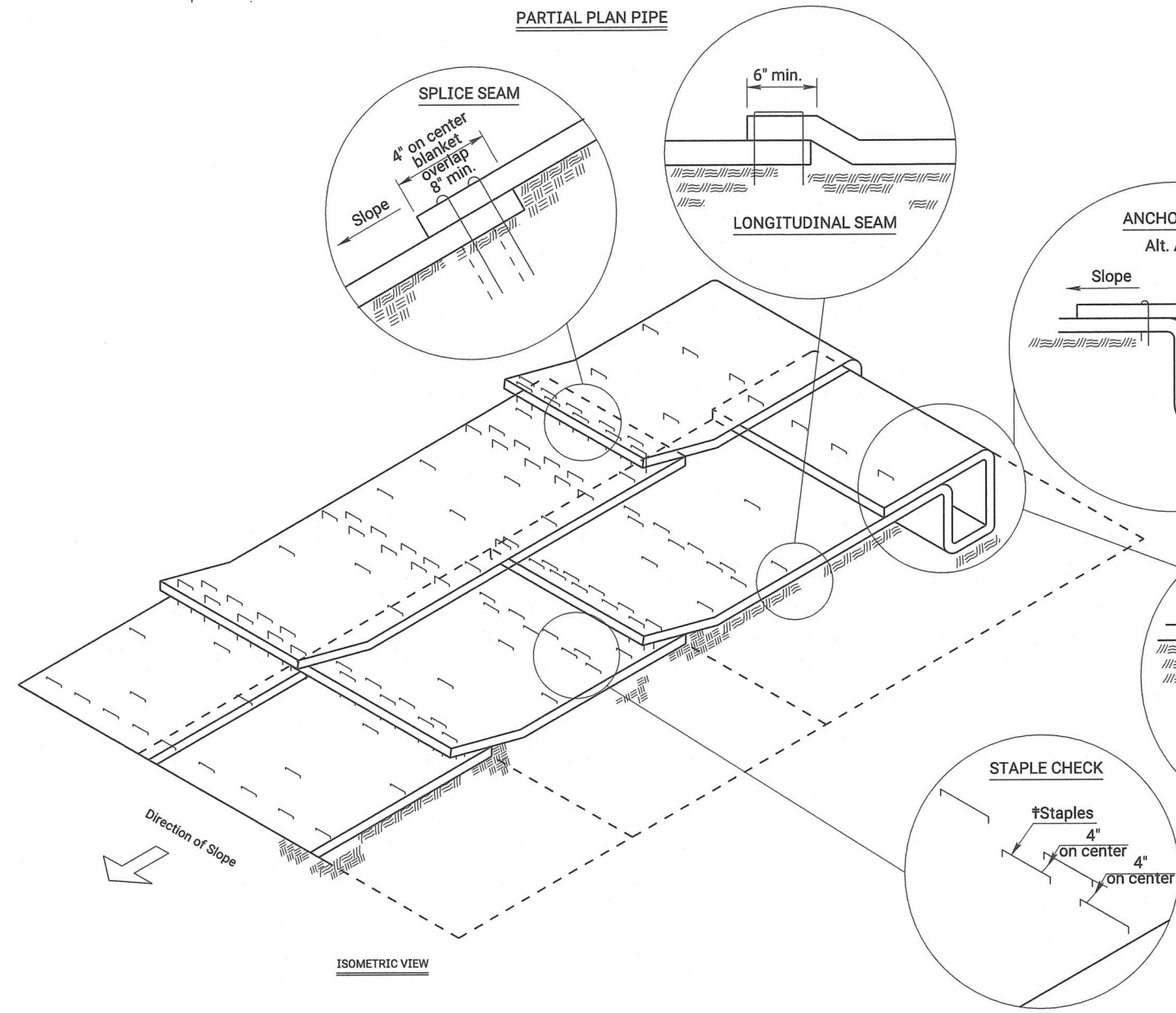
- ANCHOR SLOTS:** The top of the blanket should be "slotted in" at the top of the slope and anchored in place with anchors 6 inches apart. The slots should be 6 inches wide x 6 inches deep with the blanket anchored in the bottom of the slot, then backfilled, tamped and seeded.
- LONGITUDINAL SEAMS:** The edges of the blanket should overlap each other a minimum of 6 inches, with anchors catching the edges of both blankets.
- SPLICE SEAM:** When splices are necessary, overlap end a minimum of 8 inches in direction of water flow. Stagger splice seams.
- TERMINAL FOLD:** The bottom edge of the blanket shall be turned under a minimum of 4 inches, then anchored in place with anchors 9 inches apart.
- TYPICAL ANCHORS:** Anchor design shall be as recommended by the manufacturer.
- STAPLE CHECK:** *Establish Staples in 2 rows 4" on center apart. Staple Checks - shall be 30' apart.

● Erosion Control Class I may be omitted if the area is immediately covered by permanent slope protection (where directed by the plans).



NOTE:
Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.
Single post ring and shank staple is acceptable.

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APR 05 2024
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| NO. | DATE | REVISIONS | BY | APPD. |
|-----|----------|------------------|--------|--------|
| 04 | 03-01-15 | Revised Standard | R.A.A. | S.H.S. |
| 03 | 02-23-15 | Revised Standard | R.A.A. | S.H.S. |
| 02 | 09-15-14 | Revised Standard | M.R.M. | S.H.S. |

**INSTALLATION DETAIL
EROSION CONTROL CLASS 1
SLOPE PROTECTION**

LA855

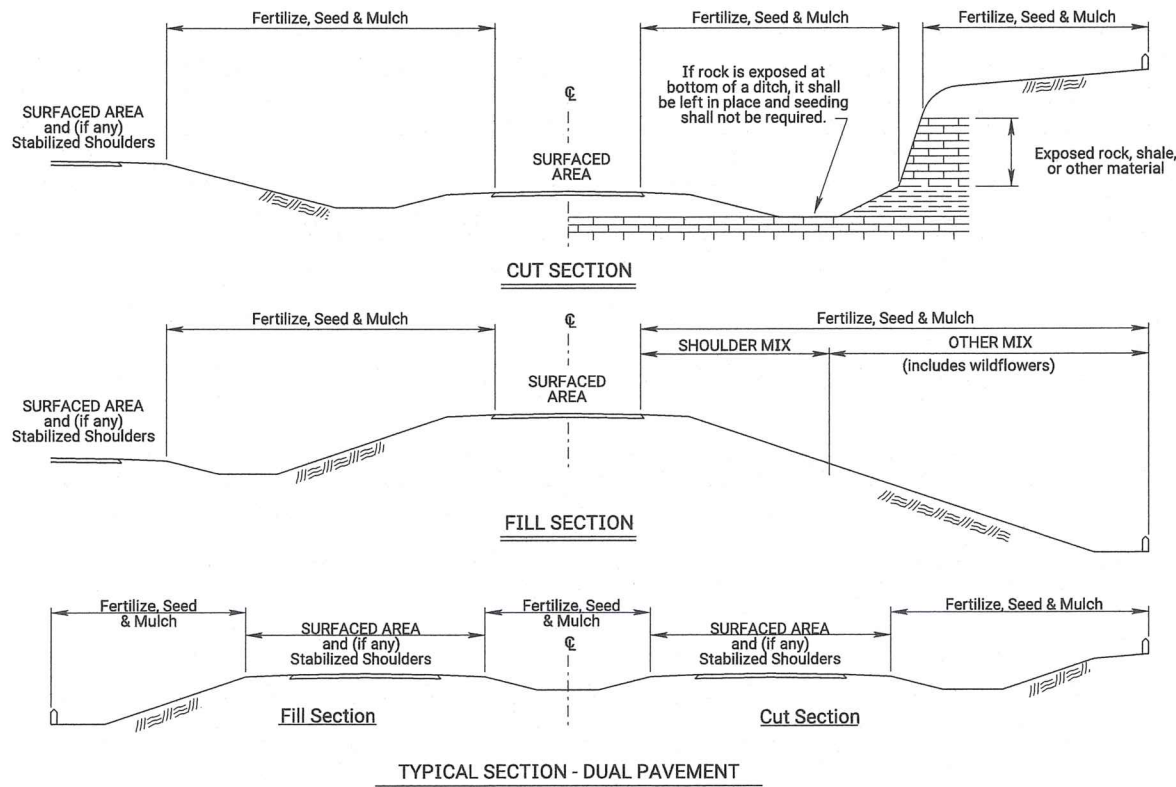
| | | | | | | |
|------------|------------|-----------|-----------|------------|--------|--------|
| DESIGNED | R.A.A. | TRACED | R.A.A. | QUANTITIES | TRACED | R.A.A. |
| DESIGN CK. | DETAIL CK. | QUAN. CK. | TRACE CK. | R.A.A. | | |

Scott H. Shields

KDOT Graphics Certified 06-20-2022

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|--------|--------------|------|-----------|--------------|
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 50 C-5222-01 | 2024 | 37 | 49 |



| GRASS & WILDFLOWER SEEDING SEASONS | |
|---|--|
| COOL SEASON GRASSES February 15 thru April 20 August 15 thru September 30 | WARM SEASON GRASSES & WILDFLOWERS November 15 thru June 1 |
| SPECIES | SPECIES |
| Bluegrasses | Bermuda Grass |
| Brome Grasses | Big Bluestem |
| Canada Wildrye | Blue Grama |
| Fescues | Buffalo Grass |
| Prairie Junegrass | Indiangrass |
| Ryegrasses | Little Bluestem |
| Sterile Wheatgrass | Sand Bluestem |
| Tall Dropseed | Sand Dropseed |
| Western Wheatgrass | Sand Lovegrass |
| | Side Oats Grama |
| | Switchgrass |
| | Wildflower Mixes |

When the area to be seeded is 1 acre or more, if Cool Season grasses are mixed with Warm Season grasses, seed the area during the Warm Season.

When the area to be seeded is less than 1 acre, seed the area any time of the year.

| SODDING SEASONS | |
|--|--|
| COOL SEASON GRASSES March 1 thru April 15 September 1 thru November 15 | WARM SEASON GRASSES May 15 thru September 1 |
| SPECIES | SPECIES |
| Bluegrass Sod | Buffalo Grass Sod |
| Fescue Sod | |

If the soil is workable, the Engineer may allow placement of sod between November 15 and March 1. If sod is placed during this time, maintain the sod until 20 days after the beginning of the spring sodding season.

GENERAL NOTES

The entire disturbed area, excepting the paved or surfaced areas, steep rocky slopes and areas of undisturbed native sod or other desirable vegetation shall be fertilized (limed when required), seeded and mulched. Soil preparation shall conform to the Standard Specifications except as noted below.

All borrow areas shown on the plans are to be fertilized, seeded, and mulched. However, operation in borrow areas where crops are growing may be omitted when requested by the owner.

If temporary cover has provided stable slopes with no erosion, seed the permanent grasses into the existing cover. If there has been erosion that requires repair prior to seeding, then it may be necessary to regrade the area, resulting in bare ground.

FERTILIZER: A ratio and application rate that equals or exceeds the required minimum rate per acre of N, P₂O₅, K₂O listed in Summary of Seeding Quantities will be acceptable.

MULCHING: Mulch shall be spread uniformly over all disturbed areas and punched in the soil, unless otherwise noted on the plans. The rate of application per acre, thickness in place, for the mulching material is generally as follows:
1 3/4 - 2 1/4 Tons per Acre = 1 1/2" loose depth spread uniformly over acre.

Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.

Other vegetative mulches are acceptable only with the Engineer's concurrence.

The above rate is a guide. It will be at the discretion of the Engineer to determine what rate is sufficient for adequate protection of newly seeded areas.

When seeding is less than 1 acre, temporary and permanent seeding shall be combined and seeded at the same time.

There is no seasonal restriction when seeding projects less than one acre.

For Information Only

| NATIVE WILDFLOWER MIX 1 | | |
|-------------------------|----------------------------|----------|
| PLS RATE | NAME | QTY (lb) |
| 0.3 | Butterfly Milkweed | |
| 0.3 | Common Milkweed | |
| 0.3 | Black Eyed Susan | |
| 0.5 | Blanket Flower | |
| 0.5 | False Sunflower | |
| 0.5 | Lance-Leaf Coreopsis | |
| 0.2 | Maximilian Sunflower | |
| 0.1 | New England Aster | |
| 0.2 | Pinnate Prairie Coneflower | |
| 0.2 | Plains Coreopsis | |
| 0.3 | Purple Coneflower | |
| 0.3 | Upright Prairie Coneflower | |
| 0.3 | Dames Rocket | |
| 0.3 | Lemon Mint | |
| 0.2 | Pitcher Sage | |
| 0.2 | Wild Bergamot | |
| 1.0 | Illinois Bundleflower | |
| 0.2 | Common Evening Primrose | |
| 0.1 | Hoary Verbena | |
| 0.8 | Purple Prairie Clover | |
| 0.3 | Roundhead Lespedeza | |
| 3.0 | Showy Partridge Pea | |
| 0.2 | White Prairie Clover | |
| 10.3 | Total (lb) | |

| NATIVE WILDFLOWER MIX 2 | | |
|-------------------------|----------------------------|----------|
| PLS RATE | NAME | QTY (lb) |
| 0.3 | Butterfly Milkweed | |
| 0.3 | Black Eyed Susan | |
| 0.5 | Black Sampson Coneflower | |
| 1.0 | Blanket Flower | |
| 0.2 | Maximilian Sunflower | |
| 0.2 | Plains Coreopsis | |
| 0.2 | Upright Prairie Coneflower | |
| 0.2 | Western Yarrow | |
| 0.3 | Lemon Mint | |
| 0.4 | Pitcher Sage | |
| 1.5 | Illinois Bundleflower | |
| 0.2 | Common Evening Primrose | |
| 1.0 | Blue Wild Indigo | |
| 0.4 | Leadplant | |
| 0.4 | Purple Prairie Clover | |
| 0.3 | White Prairie Clover | |
| 7.4 | Total (lb) | |

Package and deliver the wildflower seed separately from the grass seed mix. Package and deliver the Tall Drop Seed separately from the grass seed and the wildflower mix. Place the grass seed (except Tall Drop Seed) in the large seed box and drill (cover) seed 1/8" - 1/4". Place the wildflower seed in a separate seed box and drill (cover) seed 1/16" maximum. Place the Tall Drop Seed in a separate (third) seed box and place the seed (using the seed drill) on the soil surface.

OPTION: Broadcast Tall Drop Seed on the soil surface.

| SUMMARY OF SEEDING QUANTITIES | | | | | | |
|-------------------------------|-------|-------|-------|------------|----------|------|
| P.L.S. RATE/ACRE | | ACRES | | BID ITEM | QUANTITY | UNIT |
| SHLDR | OTHER | SHLDR | OTHER | | | |
| | | | | Seeding | Lump Sum | LS |
| | | | | Mulching * | | |

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SHLDR = Seeded with the Shoulder Mix. Typically 15 feet for 2-lane roads and 30 feet for 4-lane roads. Includes outside roadsides, turfed portions of shoulders, and turfed portion of the median.

OTHER = Seeded with the "Other" Mix. Designated as all other turf areas, except the Shoulder. Usually includes a Native Wildflower Mix.

NOTE: Projects less than 1 acre shall be bid as "Seeding" by the lump sum. All disturbed areas shall be seeded, fertilized and mulched at the listed rate per acre. The acres are estimated.

Refer to the Standard Specifications, Division 900, Section 904 'Seeding', and Section 907 'Sodding', for the seeding and sodding seasons.

* See LA852A for mulching quantity. The quantity of mulch is estimated (Acres of Seeding X 1.5 X 2 Tons/Acre). The total mulch required shall be determined in the field. The bid item for mulching shall be paid for according to the Standard Specifications.

| NO. | DATE | REVISIONS | BY | APPD |
|-----|----------|--|--------|--------|
| 02 | 11-25-20 | Updated Seeding / Sodding Periods Charts | M.R.D. | M.L. |
| 01 | 08-03-20 | Revised Standard | M.R.D. | S.H.S. |

KANSAS DEPARTMENT OF TRANSPORTATION

PERMANENT SEEDING SUMMARY OF SEEDING QUANTITIES

LA850

| | | | |
|------------|------------|------------|-------------|
| DESIGNED | 05-06-19 | APPD. | Mervin Lare |
| DESIGN CK. | DETAIL CK. | QUANTITIES | QUAN. CK. |
| | | TRACED | TRACE CK. |

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 38 | 49 |

1) Design Speed: Those items delegated to temporary traffic control should be designed and installed using the posted/legal speed of the roadway prior to work starting.

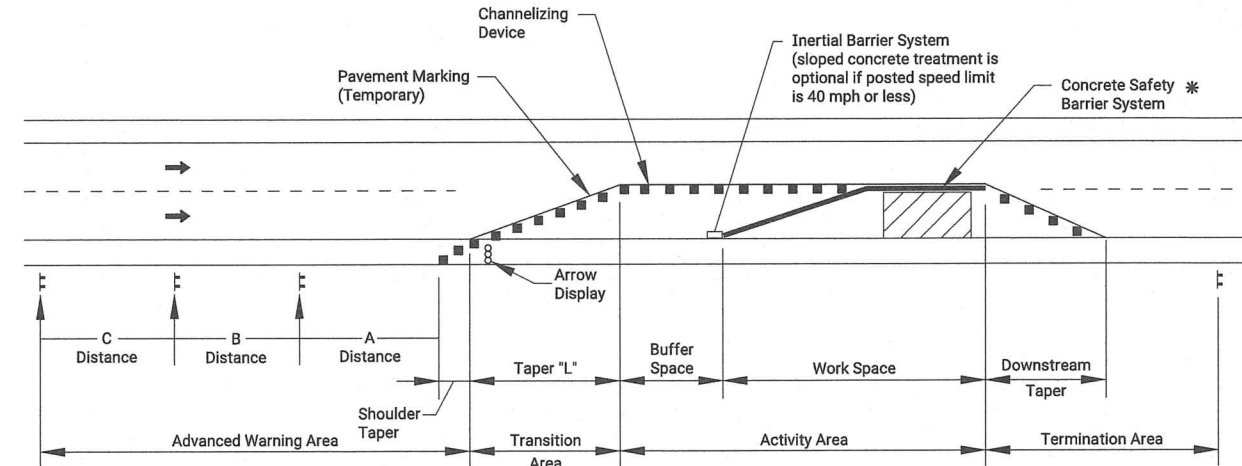
2) Minimum Lane Width: Lane widths shall be a minimum of 11' (measured between centerlines of pavement markings) or as shown on the plans, or as directed by the engineer. A lane width less than 11' may require restricted roadway width signing.

3) Consideration should be made to separate pedestrian and, if needed, bicycle movements from both work site activity and vehicular traffic. Unless a reasonable safe route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that encourages them to cross to the opposite side of the roadway. In urban and suburban areas with high vehicular traffic volumes, these signs should be placed at intersections (rather than midblock locations) so that pedestrians are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing.

4) When existing pedestrian facilities are disrupted, closed, or relocated, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.

5) When the driving surface open to traffic is milled or is a temporary surface made of loose material, or when directed by the engineer a W8-15 (Grooved Pavement) or W8-7 (Loose Gravel) sign shall be used on mainline approaches. This sign should be placed a "C" distance after the W20-1 (Road Work Ahead) sign. A W8-15p motorcycle plaque shall be used to supplement the W8-15 or W8-7 signs. All signs shall be displayed as long as the condition is present.

6) Alternative temporary rumble strip options may be available. Please contact the Temporary Traffic Control Unit for more information at 785-296-1179 or 785-296-1183.



TYPICAL WORK ZONE COMPONENTS

* When concrete barrier system is used, portable channelizing devices are not needed along the tangent barrier section.

Minimum advance warning sign spacing (in feet):

| SPEED (MPH) * | A | B | C |
|--------------------------|------|------|------|
| URBAN (40 MPH OR LOWER) | 100 | 100 | 100 |
| URBAN (45 MPH OR HIGHER) | 350 | 350 | 350 |
| RURAL (55 MPH OR LOWER) | 500 | 500 | 500 |
| RURAL (60 MPH OR HIGHER) | 750 | 750 | 750 |
| EXPRESSWAY/FREEWAY | 1000 | 1500 | 2640 |

* Posted speed prior to work starting

The minimum spacing between signs shall be no less than 100', unless directed by the engineer.

The spacing between any signs may be increased beyond the minimum values in the table above as approved by the engineer in order to maximize visibility.

Taper Formulas:

$L = WS$ for speeds of 45 MPH or more

$L = WS^2/60$ for speeds of 40 MPH or less

Where: L = Minimum length of taper in feet
S = Numerical value of posted speed prior to work starting in MPH
W = Width in offset feet

Shifting Taper = 1/2 L
Shoulder Taper = 1/3 L

Channelizer Placement:

- The spacing between devices in transition area (taper) should not exceed a distance in feet equal to 1/2 the posted speed limit in mph prior to work starting.
- The spacing between devices in the advanced warning area and the activity area should not exceed a distance in feet equal to two times the posted speed limit in mph prior to work starting.
- Channelizing devices shall be placed for optimum visibility, normally at right angles to the traffic flow.
- Place directional indicator barricades in series to direct traffic onto the new path. The arrow sign should not be visible to opposing traffic.
- Alternating diagonal orange and white striping must slope downward in the direction traffic is expected to pass.

Buffer Space

| SPEED (MPH) * | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| LENGTH (ft) | 115 | 155 | 200 | 250 | 305 | 360 | 425 | 495 | 570 | 645 | 730 | 820 |

* Posted speed prior to work starting

Neither work activity nor storage of equipment, vehicles, or material should occur in the buffer space. When a protection vehicle is placed in advance of the work space, only the space upstream of the vehicle constitutes the buffer space.

If temporary concrete safety barrier system is used to separate approaching traffic from the work space, the barrier system shall be considered part of the activity area. A full lane width should be available throughout the length of the buffer space. See typical work zone components above.

WATER RESOURCES
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KS DEPT OF AGRICULTURE

| NO. | DATE | REVISIONS | BY | APP'D |
|-----|----------|-------------------------------|--------|--------|
| 02 | 03-13-18 | W8-15p usage changed to Shall | R.W.B. | E.K.G. |
| 01 | 08-18-15 | Channelizer spacing info | R.W.B. | K.E. |

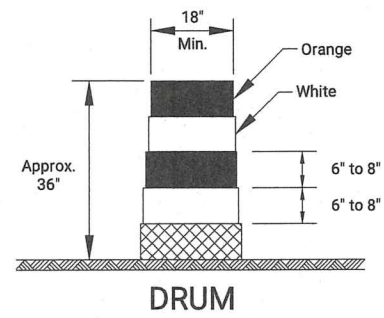
KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL GENERAL NOTES

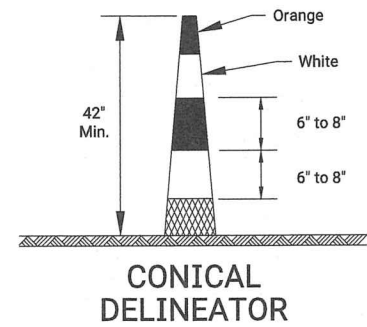
TE700

| | | | | | |
|-----------|--------|-----------|--------|------------|----------|
| DESIGNED | B.A.H. | DETAILS | R.W.B. | QUANTITIES | TRACED |
| DESIGN CK | | DETAIL CK | | QUAN. CK | TRACE CK |

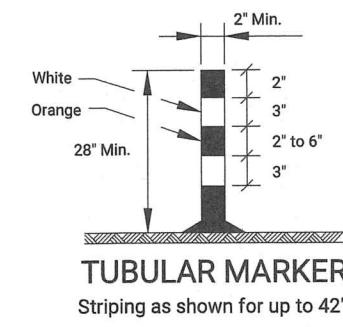
Eric Kocher



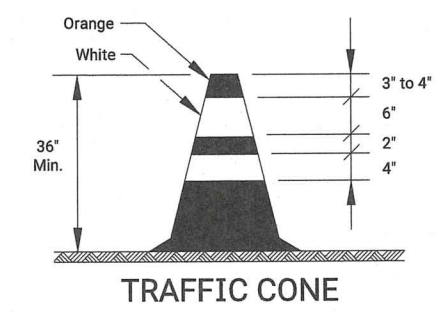
DRUM



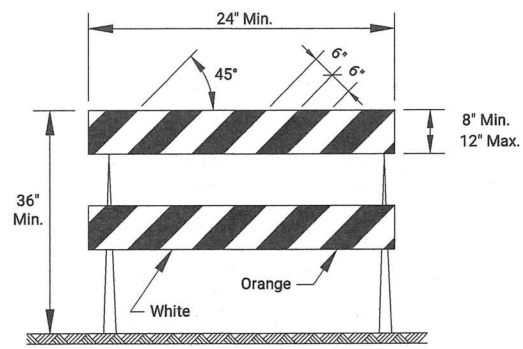
CONICAL DELINEATOR



TUBULAR MARKER
Striping as shown for up to 42".

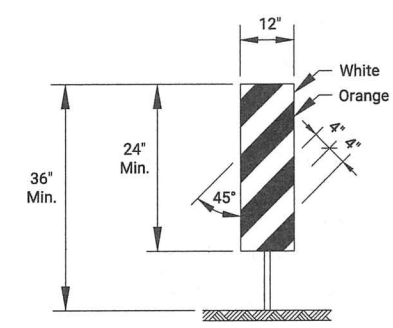


TRAFFIC CONE



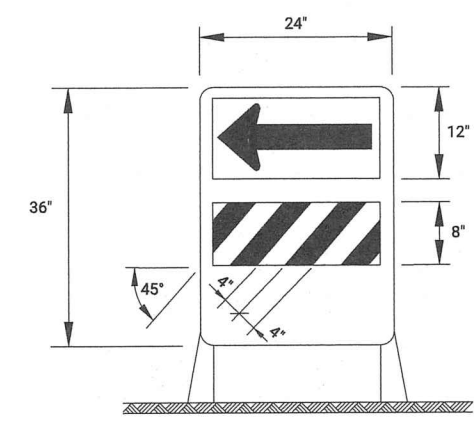
TYPE 2 BARRICADE

For rails less than 36" long, 4" wide stripes may be used. All stripes shall slope downward to the traffic side for channelization.



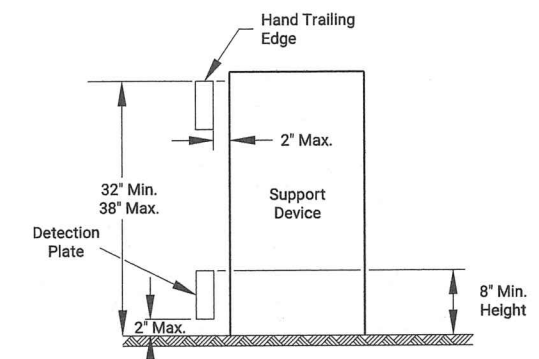
VERTICAL PANEL

The stripes shall slope downward to the traffic side for channelization.



DIRECTION INDICATOR BARRICADE

The stripes shall slope downward in the direction traffic is to pass. The direction indicator barricade shall be used in series to direct the motorist into the intended lane of travel.



PEDESTRIAN CHANNELIZER

1. Support device shall not project beyond the detection plate into the pathway.
2. Hand trailing edges and detection plates are optional for continuous walls.
3. Interconnect pedestrian channelizers to prevent displacement and to provide continuous guidance through or around work.
4. Alternate pathways shall be firm, stable, and slip resistant.
5. Treat height differentials > 1/2" in the surfaces of alternate paths with a firm, stable, and slip resistant temporary ramp having a slope of 12:1 or flatter and having a width equal to the alternate path.
6. Use alternating orange/white on interconnected devices.

| Item | Location | Location | | | | | | | | | |
|----------|-------------------------------|-------------|--------------------|----------|--------|-------|--------------|-------------------|-----------------|-------|--|
| | | Cross-overs | Shoofly Diversions | Tangents | Tapers | Ramps | Head to Head | Object Identifier | Lead-in Devices | Gores | |
| Portable | Drums | Yes | Yes | Yes | Yes | Yes | (1) | Yes | Yes | Yes | |
| | Conical Delineators | Yes | Yes | Yes | Yes | Yes | (1) | Yes | Yes | Yes | |
| | Vertical Panels | (2) | (2) | (2) | (2) | (2) | (1,2) | Yes | (2) | (2) | |
| | Direction Indicator Barricade | No | No | No | Yes | No | No | No | No | No | |
| | Type 2 Barricade | (2) | (2) | (2) | (2) | No | No | Yes | No | No | |
| | Traffic Cones | No | No | (4) | (4) | (4) | No | (4) | (4) | (4) | |
| Fixed | Tubular Markers | (3) | (3) | (3) | No | (3) | Yes | No | Yes | Yes | |
| | Vertical Panels | (3) | (3) | (3) | (3) | (3) | (3) | Yes | (2,3) | (2) | |

- (1) Not allowed on centerline delineation along freeways or expressways.
- (2) The stripes shall slope downward to the traffic side for channelization.
- (3) May be used upon the approval of the engineer.
- (4) Daytime operations only.

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| NO. | DATE | REVISIONS | BY | APPD |
|-----|------|-----------|----|------|
| | | | | |

KANSAS DEPARTMENT OF TRANSPORTATION

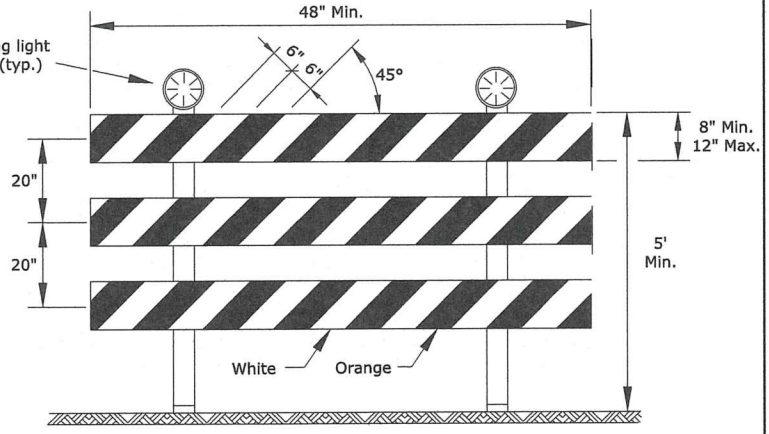
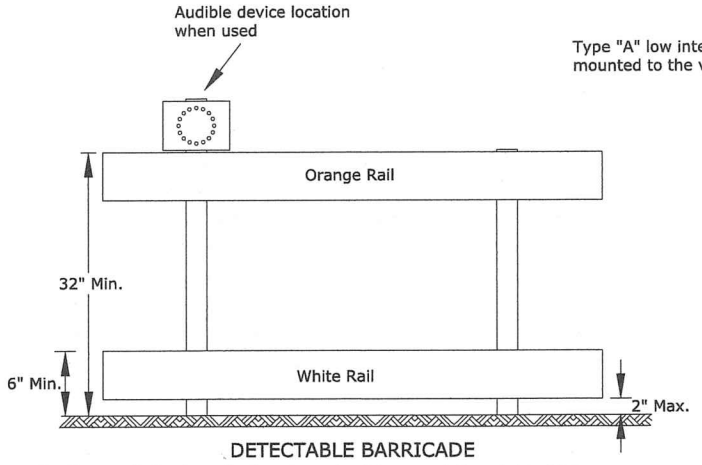
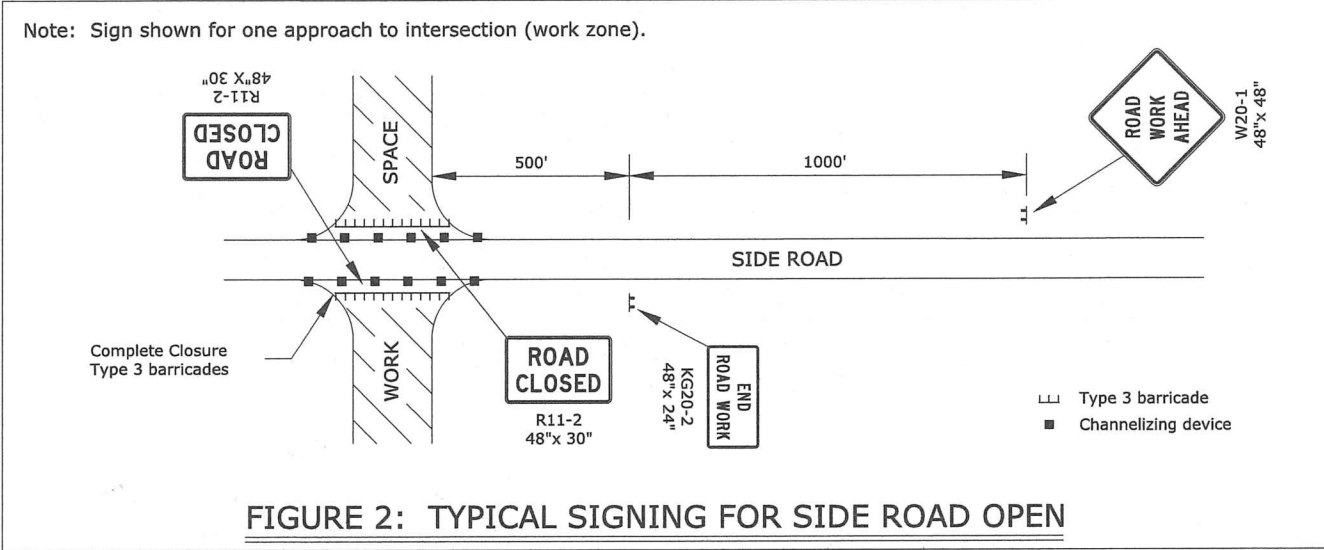
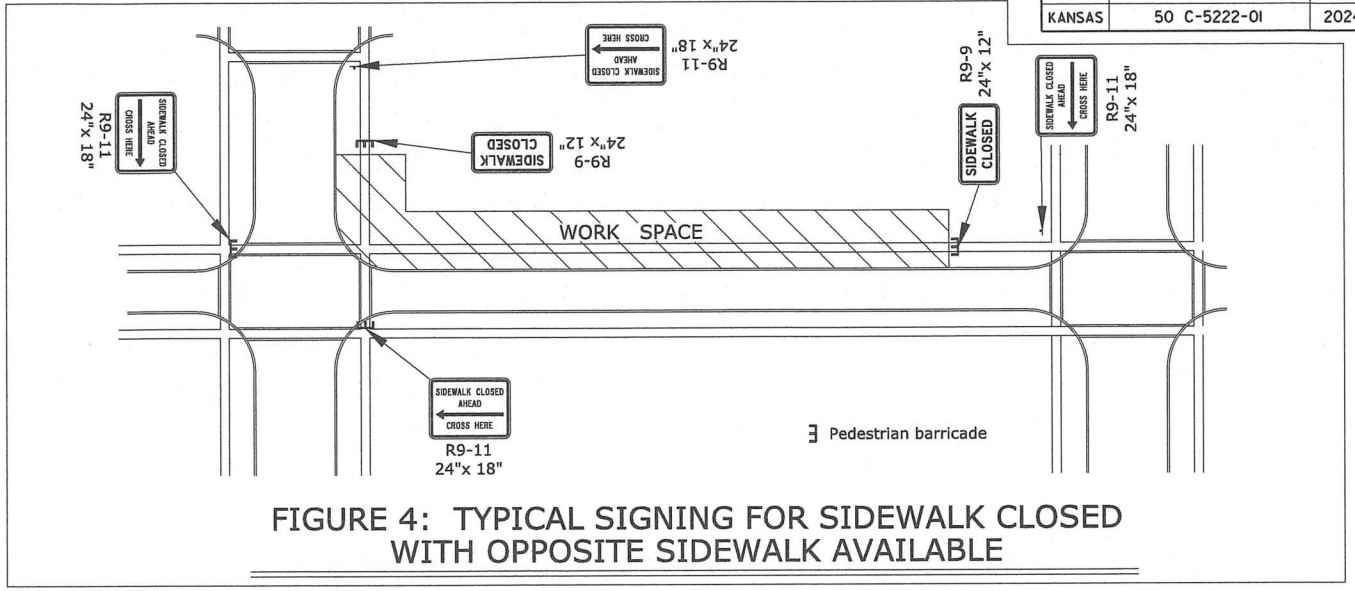
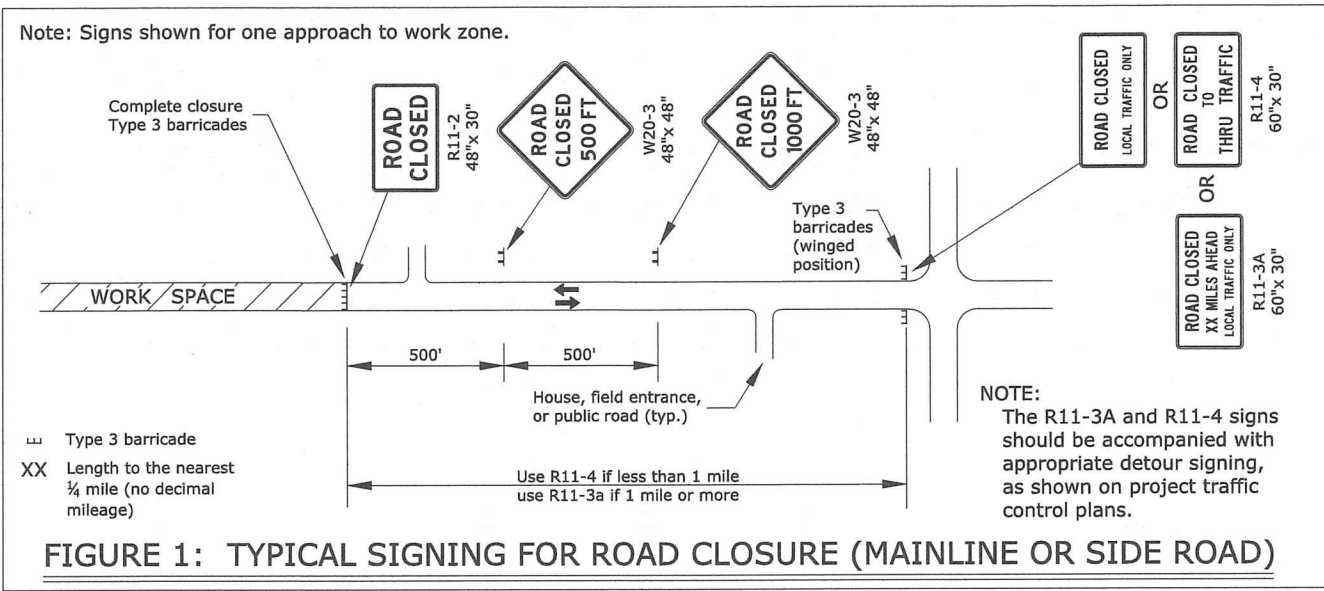
TRAFFIC CONTROL CHANNELIZING DEVICES

TE702

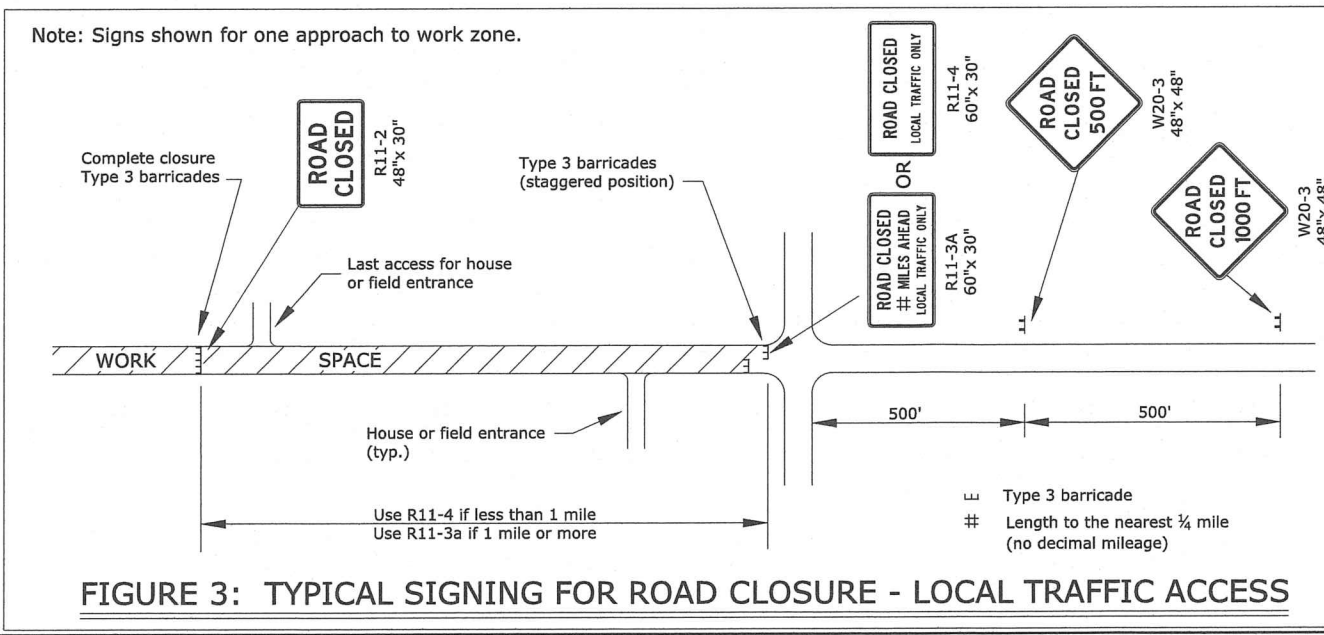
| | | | | |
|------------|------------|------------|-----------|-------------------|
| DESIGNED | L.E.R. | 06-01-15 | APPD. | Kristina Ericksen |
| DESIGN CK. | DETAIL CK. | QUANTITIES | TRACED | |
| | | QUAN.CK. | TRACE CK. | |

KDOT Graphics Certified 07-18-2022

KDOT Graphics Certified



1. Support device shall not project beyond the detection plate into the pathway.
2. Barricades shall be used to close the entire width of the pathway.
3. Do not use warning lights on pedestrian barricades.
4. Do not use warning lights on audible devices.



ROAD CLOSED GENERAL NOTES

As shown in Figure 1, at the point where thru traffic must detour and local traffic can proceed to the location where the roadway is completely closed, the R11-3a (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) or R11-4 (ROAD CLOSED LOCAL TRAFFIC ONLY or ROAD CLOSED TO THRU TRAFFIC) sign shall be used with Type 3 barricades (winged position), placed on the shoulders of roadway.

As shown in Figure 3, when local traffic must be allowed access into the work zone, Type 3 barricades shall be longitudinally staggered to maintain the appearance of a closed roadway. A second line of end-to-end Type 3 barricades shall be placed just beyond the last access point in the work zone, to completely close the roadway.

The R11-4 (ROAD CLOSED TO THRU TRAFFIC or ROAD CLOSED LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is less than 1 mile.

The R11-3a (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is 1 mile or greater.

The words "BRIDGE OUT" (or BRIDGE CLOSED) may be substituted for the words "ROAD CLOSED" on the R11-3a or R11-4 sign where applicable.

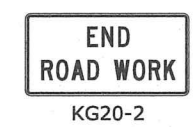
WATER RESOURCES
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APR 05 2024

KS DEPT OF AGRICULTURE

| 3 | | | | | |
|-------------------------------------|-------|------------|--------|------------|-----------|
| 2 | | | | | |
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| NO. | DATE | REVISIONS | BY | APP'D | |
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | | |
| TRAFFIC CONTROL CLOSURES | | | | | |
| TE704 | | | | | |
| DESIGNED | BLA/H | DETAILED | R.W.B. | QUANTITIES | TRACED |
| DESIGN CK. | | DETAIL CK. | | QUAN. CK. | TRACE CK. |
| KD0T Graphics Certified 06-01-2015 | | | | | |

KD0T Graphics Certified

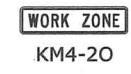
SIGN LAYOUT INFORMATION



STD. SIZE
EXPWY/FREEWAY
6" C
48"x 24"



STD. SIZE
EXPWY/FREEWAY
6" C
48"x 24"



STD. SIZE
EXPWY/FREEWAY
3" C 6" C
24"x 6" 48"x 12"



Mileage to be determined by the engineer.



STD. SIZE
EXPWY/FREEWAY
48"x 48"



STD. SIZE
EXPWY/FREEWAY
8" D
48"x 48"



STD. SIZE
EXPWY/FREEWAY
8" D
48"x 48"



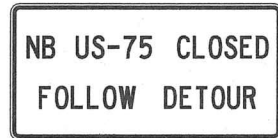
STD. SIZE
EXPWY/FREEWAY
30"x 24"



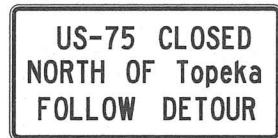
STD. SIZE
EXPWY/FREEWAY
8" D
48"x 48"



STD. SIZE
EXPWY/FREEWAY
30"x 24"

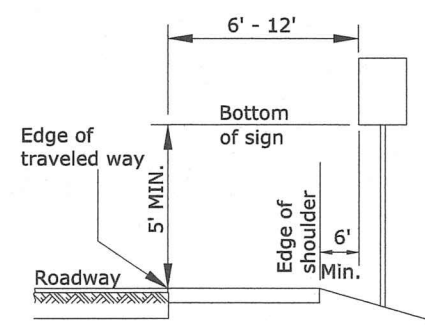


STD. SIZE
EXPWY/FREEWAY
6" C 10" D



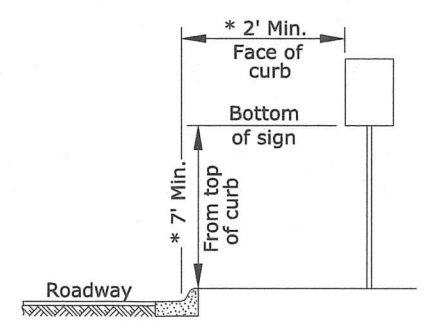
STD. SIZE
EXPWY/FREEWAY
UPPERCASE: 6" C 10" D
LOWERCASE: 4.5" C 8" D

ALL CITY NAMES AND STREET NAMES ON SPECIAL SIGNS AND DESTINATION SIGNS MUST HAVE UPPER AND LOWER CASE LETTERS.



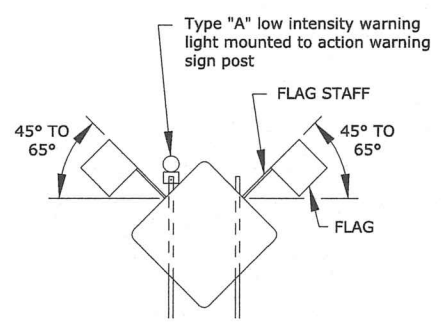
Rural

- 1) Ground-mounted signs shall be mounted at a minimum height of 5' measured from the bottom of sign to the near edge of the pavement.
- 2) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.
- 3) The height of the secondary sign mounted below another sign may be 4' measured from the bottom of the sign to the near edge of the pavement. Signs shall not overlap each other.



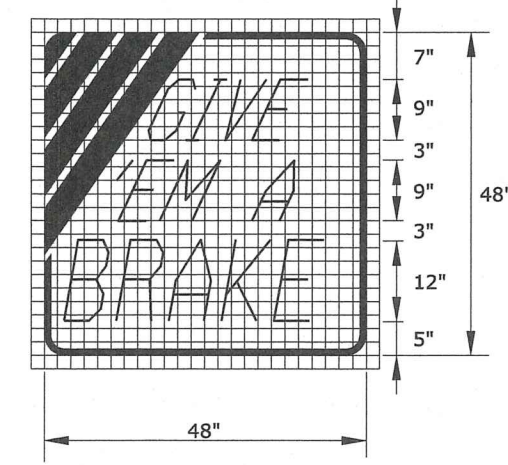
Urban

- 1) Signs shall be mounted at a minimum height of 7' measured from the bottom of sign to the near edge of the pavement.
- 2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.
- 3) Signs mounted lower than 7' should not project more than 4" into pedestrian facilities.
- 4) The height from the secondary sign mounted below another sign may be 6' measured from the bottom of sign to the near edge of the pavement. Signs shall not overlap each other.
- 5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.
- * 6) Pedestrian detour signing shall be a minimum of 2' measured from the top of the pedestrian pathway to the bottom of the sign and shall not protrude into the walkway nor shall it project beyond the back of curb.

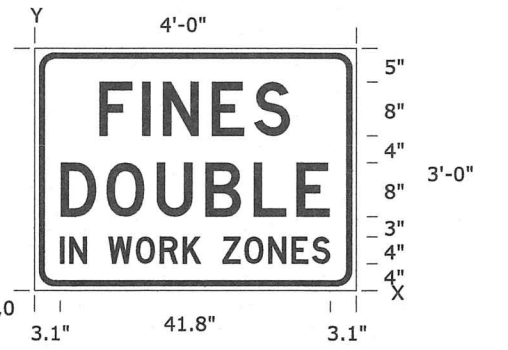


When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

- In the case of hitting rock when driving posts
1. Shift the sign location. Do not violate minimum sign spacing.
 2. With the engineer's approval, use acceptable alternative sign stands.



KI-104a



KI-105a

| DIMENSIONS IN INCHES | | | | | | | | | | | | SPACINGS ARE TO START OF NEXT LETTER | | | | | | | | | | | | |
|----------------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------------------|-----|-----|-----|--|--|--|------|------|------|--|--|--------|
| LETTER SPACINGS | | | | | | | | | | | | LETTER SPACINGS | | | | | | | | | | | | |
| Y FONT | | | | | | | | | | | | HT LEN | | | | | | | | | | | | HT LEN |
| 23.0 | FINE S | | | | | | | | | | | 8.0 | | | | | | | | | | | | 8.0 |
| D | 9.7 | 6.4 | 3.2 | 7.3 | 6.4 | 5.4 | 9.7 | | | | | | | | | | | | 28.6 | | | | | |
| 11.0 | DOUBLE | | | | | | | | | | | 8.0 | | | | | | | | | | | | 8.0 |
| D | 3.9 | 6.9 | 7.5 | 7.3 | 7.3 | 6.4 | 4.9 | 3.9 | | | | | | | | | | | | 40.3 | | | | |
| 4.0 | IN WORK ZONES | | | | | | | | | | | 4.0 | | | | | | | | | | | | 4.0 |
| D | 3.1 | 1.6 | 2.7 | 3.2 | 4.3 | 3.8 | 3.6 | 2.8 | 3.2 | 3.4 | 3.8 | 3.6 | 3.2 | 2.7 | 3.1 | | | | | | 41.8 | | | |

Notes:

- Typically, there are two sets of informational signs installed per project: one for each direction of traffic.
- Install signs a minimum of 500' in advance of the road work ahead sign. The engineer may designate a more appropriate location if conditions dictate.
- The informational signs are not to interfere with the traffic control signs for the project.

WATER RESOURCES RECEIVED
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| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 41 | 49 |

| SIGN NUMBER | GIVE EM A BRAKE |
|----------------|--|
| WIDTH x HEIGHT | 4'-0" x 4'-0" |
| BORDER WIDTH | 1.0" |
| CORNER RADIUS | 4.0" |
| STRIPE WIDTH | 3.0" |
| MOUNTING | GROUND |
| BACKGROUND | TYPE: NON-REFLECTIVE COLOR: BLACK |
| LEGEND/BORDER | TYPE: REFLECTIVE COLOR: WHITE |
| LEGEND FONT | DUTCH 801 ROMAN SWC 25 DEGREE SLANT |
| STRIPES | TYPE: REFLECTIVE COLOR: ORANGE |

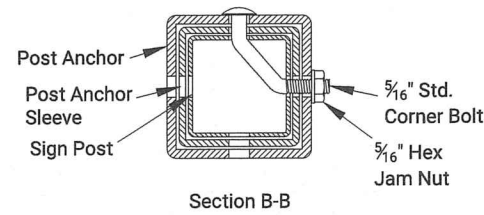
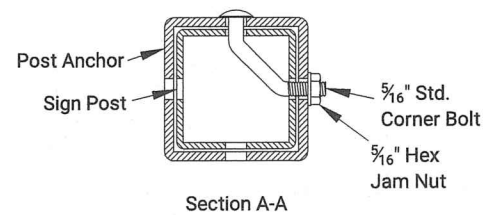
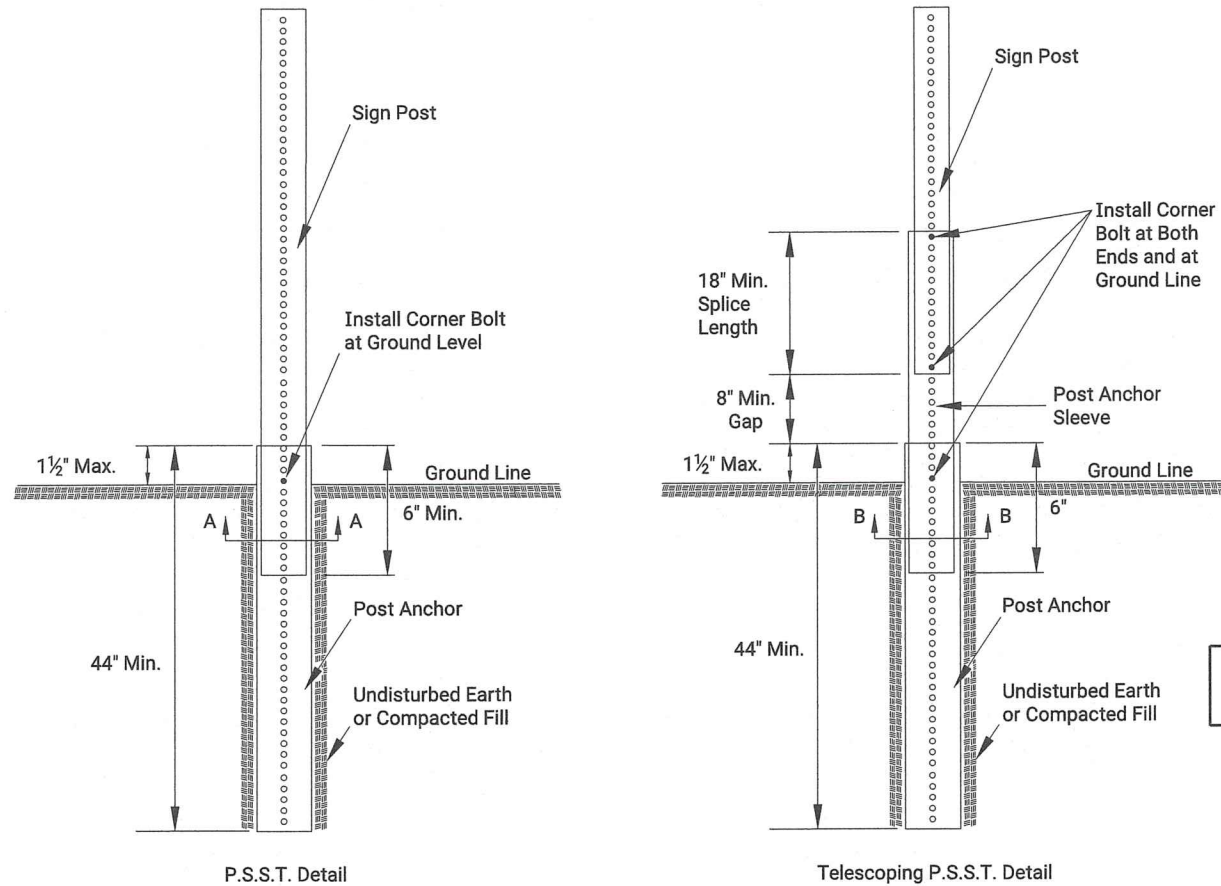
| SIGN NUMBER | FINES DOUBLE |
|----------------|--------------------------------------|
| WIDTH x HEIGHT | 4'-0" x 3'-0" |
| BORDER WIDTH | 0.9" |
| CORNER RADIUS | 3.0" |
| MOUNTING | GROUND |
| BACKGROUND | TYPE: REFLECTIVE COLOR: WHITE |
| LEGEND/BORDER | TYPE: NON-REFLECTIVE COLOR: BLACK |

| 3 | | | | |
|--|-----------------|-------------------|---------------|-------|
| 2 | | | | |
| 1 | | | | |
| NO. | DATE | REVISIONS | BY | APP'D |
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
| TRAFFIC CONTROL SIGN INFORMATION | | | | |
| TE710 | | | | |
| DESIGNED | 06/01/15 | APP'D | Kristina Pyle | |
| DESIGN CK. | R.W.B./DETAILED | R.W.B./QUANTITIES | TRACED | |
| DESIGN CK. | DETAIL CK. | QUAN. CK. | TRACE CK. | |
| KDOT Graphics Certified 06-01-2015 Sh. No. XXX | | | | |

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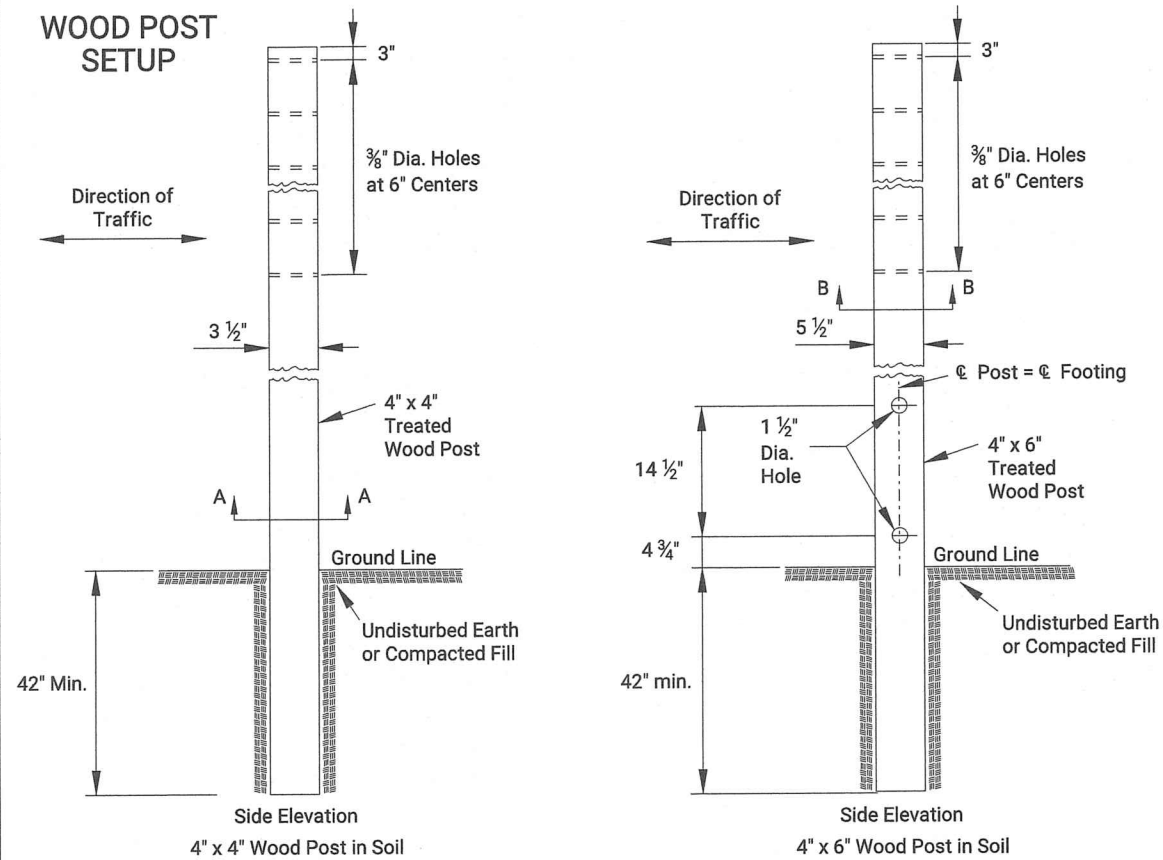
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 42 | 49 |

PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



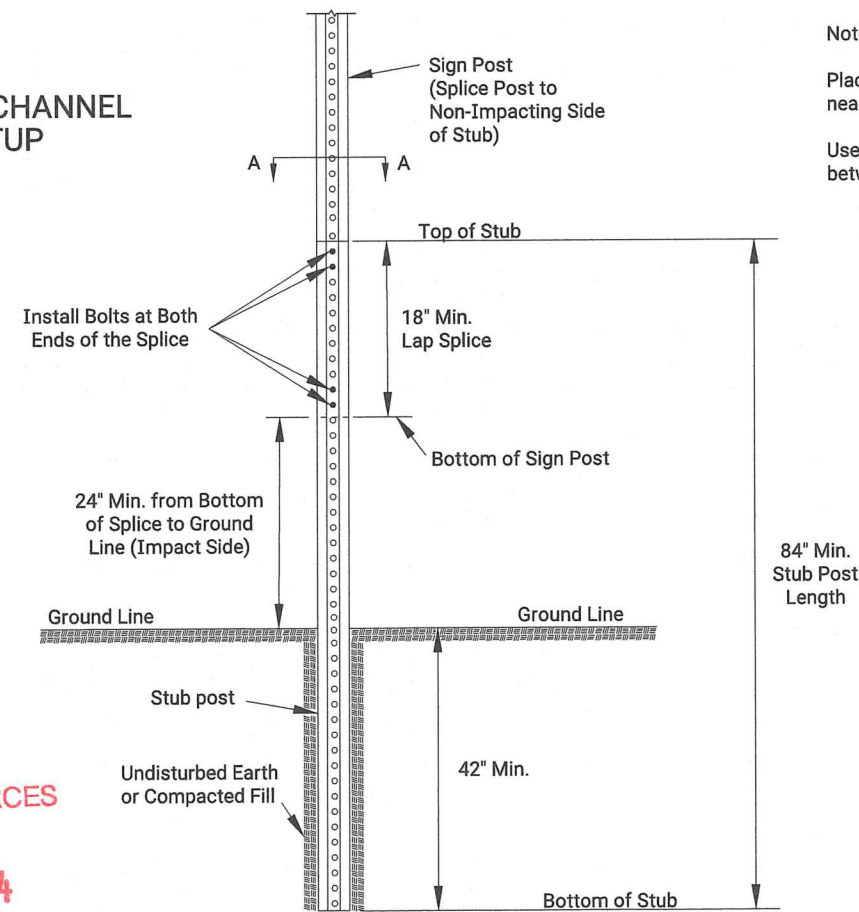
Details for 2", 2 1/4", or 2 1/2" sign posts
 Place bolts in the same corner along each sign post.

WOOD POST SETUP



See TE710 for Additional Details and Requirements

3 LB/F U-CHANNEL SETUP



Notes:
 Place two bolts at both ends of the splice through the holes nearest the ends of the splice.
 Use manufacturer recommended spacers over the bolts between the spliced pieces of U-Channel.

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| NO. | DATE | REVISIONS | BY | APP'D |
|-------------------------------------|-----------|------------|-----------|-------------------|
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
| TRAFFIC CONTROL SIGN POSTS | | | | |
| TE712 | | | | |
| DESIGNED | B.A.H. | APP'D | R.W.B. | Kristina Ericksen |
| DESIGN CK | DETAIL CK | QUANTITIES | TRACE | |
| | | QUAN. CK. | TRACE CK. | |
| KDOT Graphics Certified 07-18-2022 | | | | |

Summary Of Traffic Control Devices (Each)

| Work Zone Sign (Special) | | |
|--------------------------|---------------------|---------------------|
| Sign No. | 16.25 Sq.Ft. & Less | 16.26 Sq.Ft. & Over |
| | | |
| | | |

Note: Road shall be closed to thru traffic during construction. Contractor shall provide access to property along project at all times.

NOTE: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL THE WORK ZONE SIGNING ON THIS PROJECT.

Summary Of Traffic Control Devices

* SUMMARY OF TRAFFIC CONTROL DEVICES -FOR INFORMATION ONLY-

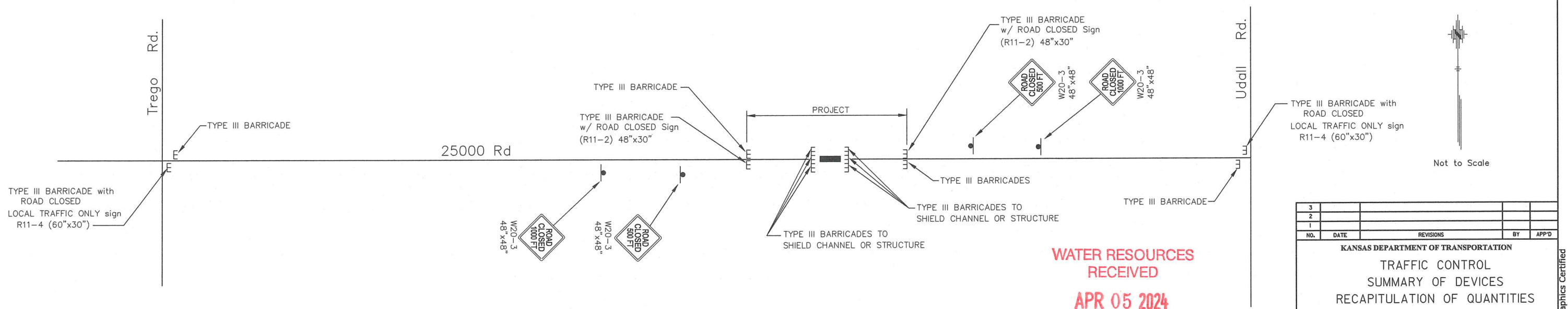
All traffic control devices shall be placed in accordance with the applicable KDOT Traffic Control Standards, The contractor shall provide all signs and other traffic control devices for proper traffic control of all construction activities. Quantities listed are estimate only. Contractor operations may require addition signs and traffic control devices, this will be subsidiary to the bid item traffic control.

| Work Zone Signs * | | | |
|-------------------|---------------|------------|--------------|
| Sign No. | Size - Sq.Ft. | | |
| | 0-9.25 | 9.26-16.25 | 16.26 & Over |
| R11-2 | | 2 | |
| R11-4 | | 2 | |
| W20-3 | | 4 | |

| Barricades * | | Channelizing Devices * | | |
|--------------------|------------|------------------------|----------|------------|
| Type 3 (4' To 12') | Pedestrian | Fixed | Portable | Pedestrian |
| 14 | | | | |

| Lighted Devices * | |
|---|----|
| Work Zone Warning Light (Type "A" Low Intensity) | 16 |
| Work Zone Warning Light (Red Type "B" High Intensity) | |
| Arrow Display | |
| Portable Changeable Message Sign | |

| Recapitulation Of Quantities | | |
|---|----------|--------------|
| Item | Quantity | Unit |
| Work Zone Signs (0 To 9.25 Sq.Ft.) | | Each Per Day |
| Work Zone Signs (9.26 To 16.25 Sq.Ft.) | | Each Per Day |
| Work Zone Signs (16.26 Sq.Ft. & Over) | | Each Per Day |
| Work Zone Barricades (Type 3 - 4' To 12') | | Each Per Day |
| Work Zone Barricades (Pedestrian) | | Each Per Day |
| Channelizer (Fixed) | | Each Per Day |
| Channelizer (Portable) | | Each Per Day |
| Channelizer (Pedestrian) | | Each Per Day |
| Work Zone Warning Light (Type "A" Low Intensity) | | Each Per Day |
| Work Zone Warning Light (Red Type "B" High Intensity) | | Each Per Day |
| Arrow Display | | Each Per Day |
| Portable Changeable Message Sign | | Each Per Day |
| Pavement Marking (Temporary) | | |
| 4" Solid (Type I) | | Sta./Line |
| 4" Solid (Type II) | | Sta./Line |
| 4" Broken (8.0') (Type I) | | Sta./Line |
| 4" Broken (8.0') (Type II) | | Sta./Line |
| 4" Broken (3.0') (Type I) | | Sta./Line |
| 4" Broken (3.0') (Type II) | | Sta./Line |
| 4" Dotted Extension (Type I) | | Sta./Line |
| 4" Dotted Extension (Type II) | | Sta./Line |
| Solid (Line Masking Tape) | | Sta./Line |
| Broken (Line Masking Tape) | | Sta./Line |
| Symbol (Type I) | | Each |
| Symbol (Type II) | | Each |
| Flexible Raised Pavement Marker (4" Broken (8.0')) | | Sta./Line |
| Flexible Raised Pavement Marker (4" Broken (3.0')) | | Sta./Line |
| Pavement Marking Removal | | Lin. Ft. |
| Work Zone Sign (Special) (16.25 Sq. Ft. & Less) | | Each |
| Work Zone Sign (Special) (16.26 Sq. Ft. & More) | | Each |
| Temporary Raised Pavement Marker (Type I) | | Each |
| Temporary Raised Pavement Marker (Type II) | | Each |
| Traffic Signal Installation (Temporary) | | Lump Sum |
| Traffic Control (Initial Set Up) | | Lump Sum |
| Traffic Control | Lump Sum | Lump Sum |
| Flagger (Set Price) | 1 | Hour |



WATER RESOURCES RECEIVED
APR 05 2024

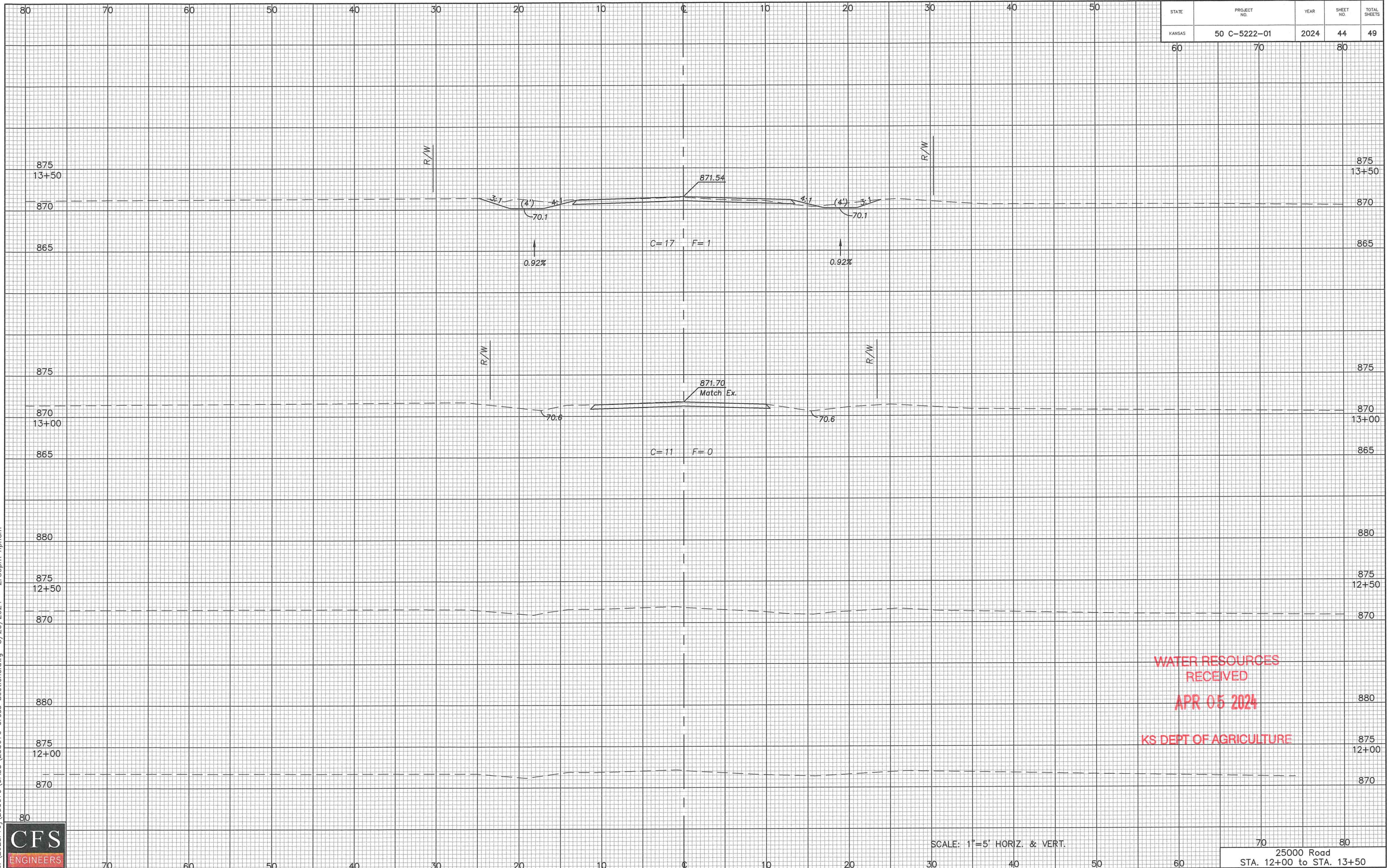
KS DEPT OF AGRICULTURE

| 3 | | | | |
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| 2 | | | | |
| 1 | | | | |
| NO. | DATE | REVISIONS | BY | APP'D |
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
| TRAFFIC CONTROL SUMMARY OF DEVICES RECAPITULATION OF QUANTITIES | | | | |
| DESIGNED | | 06/01/15 | | APP'D Kristina Erlksen |
| DESIGN CK. | | DETAIL CK. | | R.W.B. QUANTITIES TRACED I TRACE CK. |

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| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 44 | 49 |



1=5 J:\2023Proj\235076\CADD\235076 Cross Sections.dwg 3/20/2024 - 2:56pm hpham

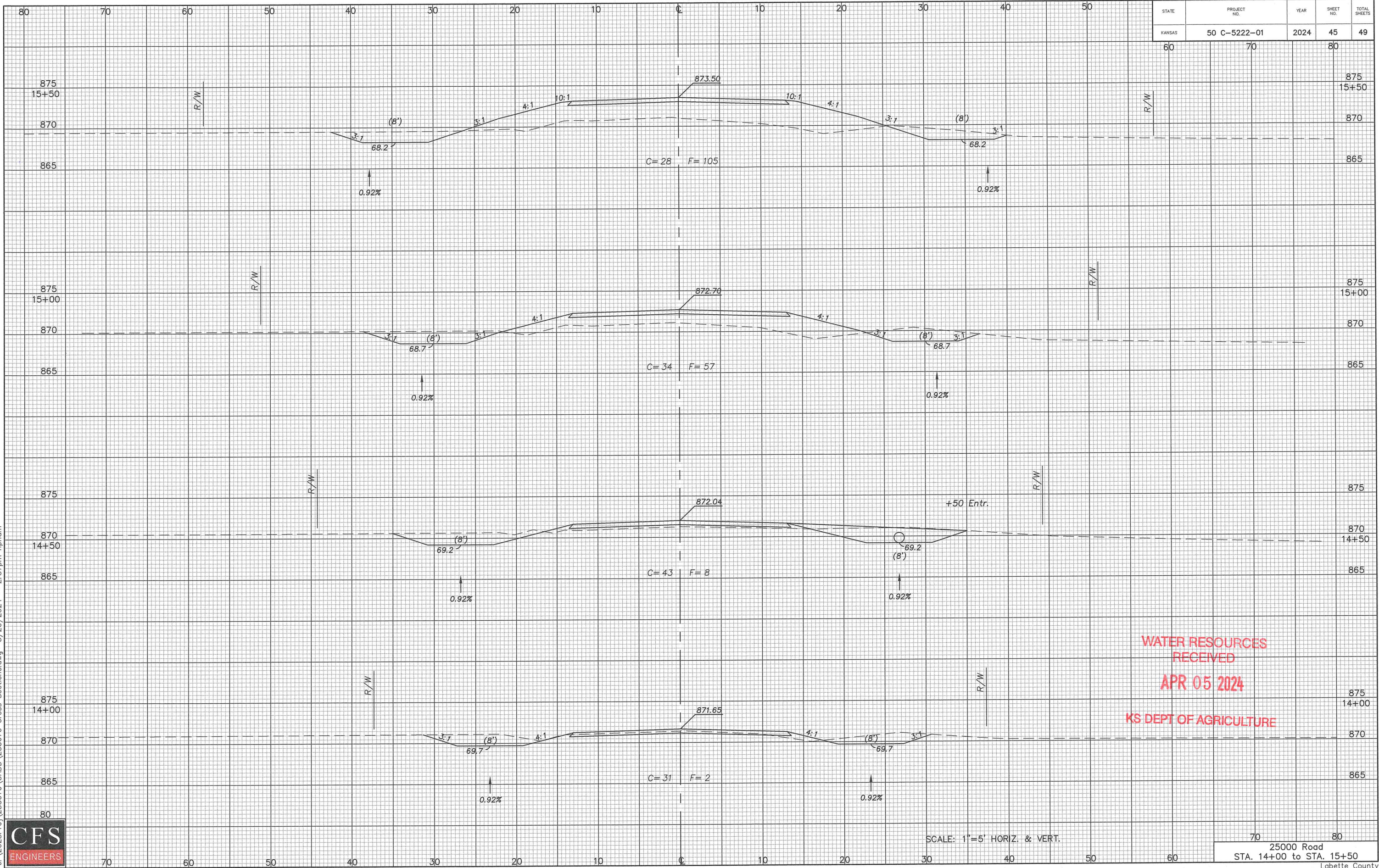


SCALE: 1"=5' HORIZ. & VERT.

70 80
25000 Road
STA. 12+00 to STA. 13+50

Labette County
23-5076

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 45 | 49 |



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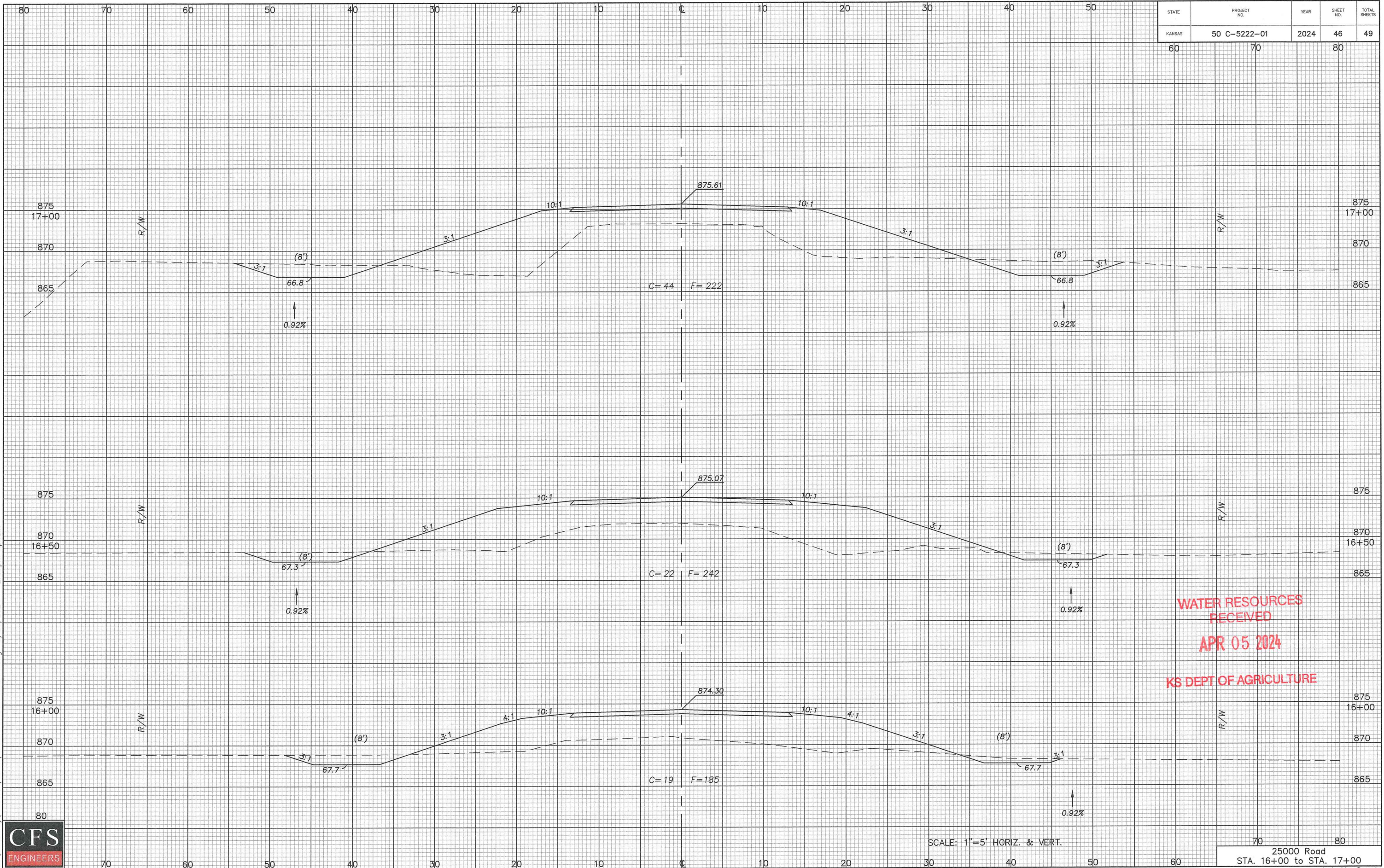
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25000 Road
STA. 14+00 to STA. 15+50
Labette County
23-5076

J:\2023Pro\235076\CADD\235076 Cross Sections.dwg 3/20/2024 - 2:57pm hpham



| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 46 | 49 |



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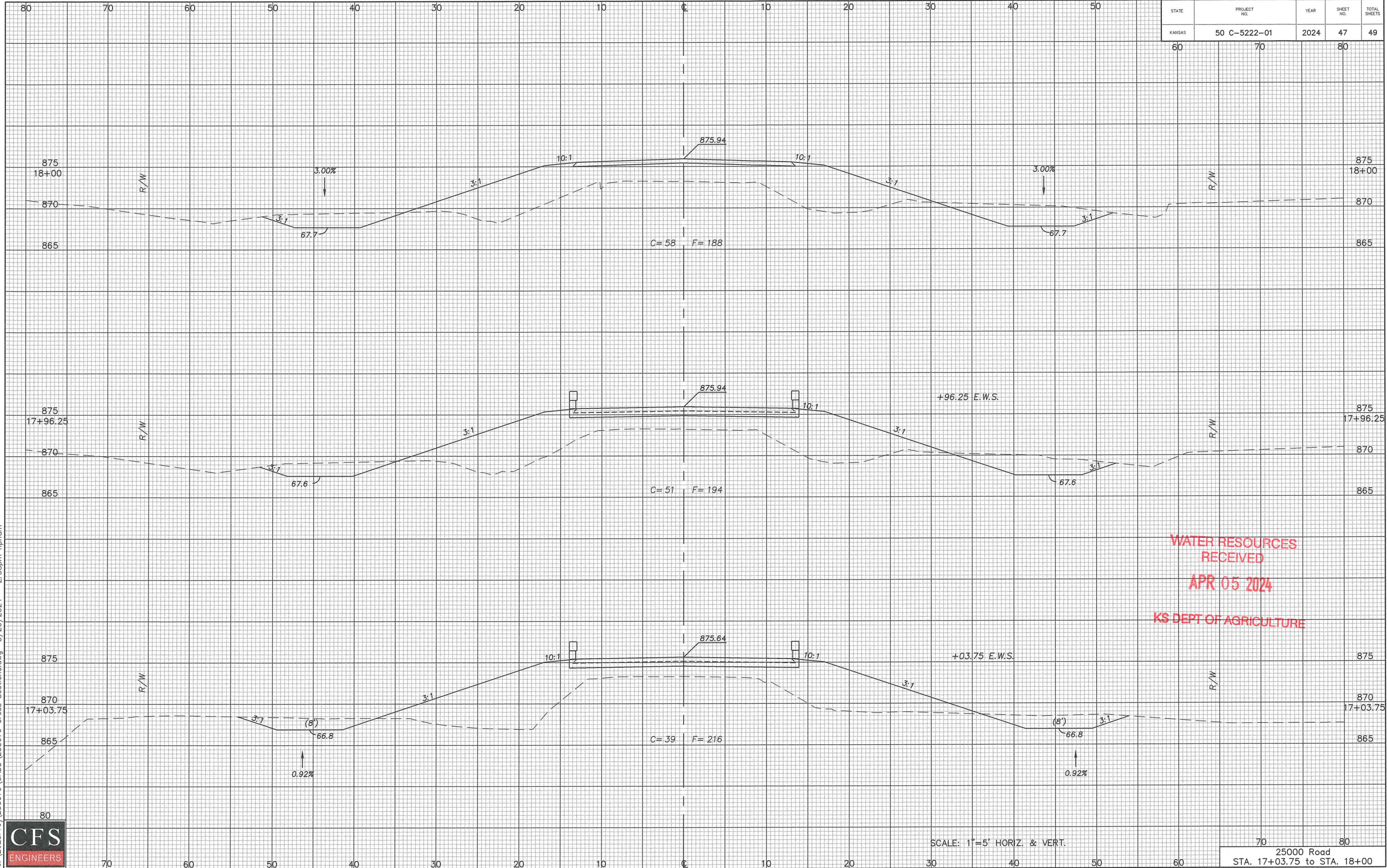
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SCALE: 1"=5' HORIZ. & VERT.

25000 Road
 STA. 16+00 to STA. 17+00
 Labette County
 23-5076

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 47 | 49 |



WATER RESOURCES
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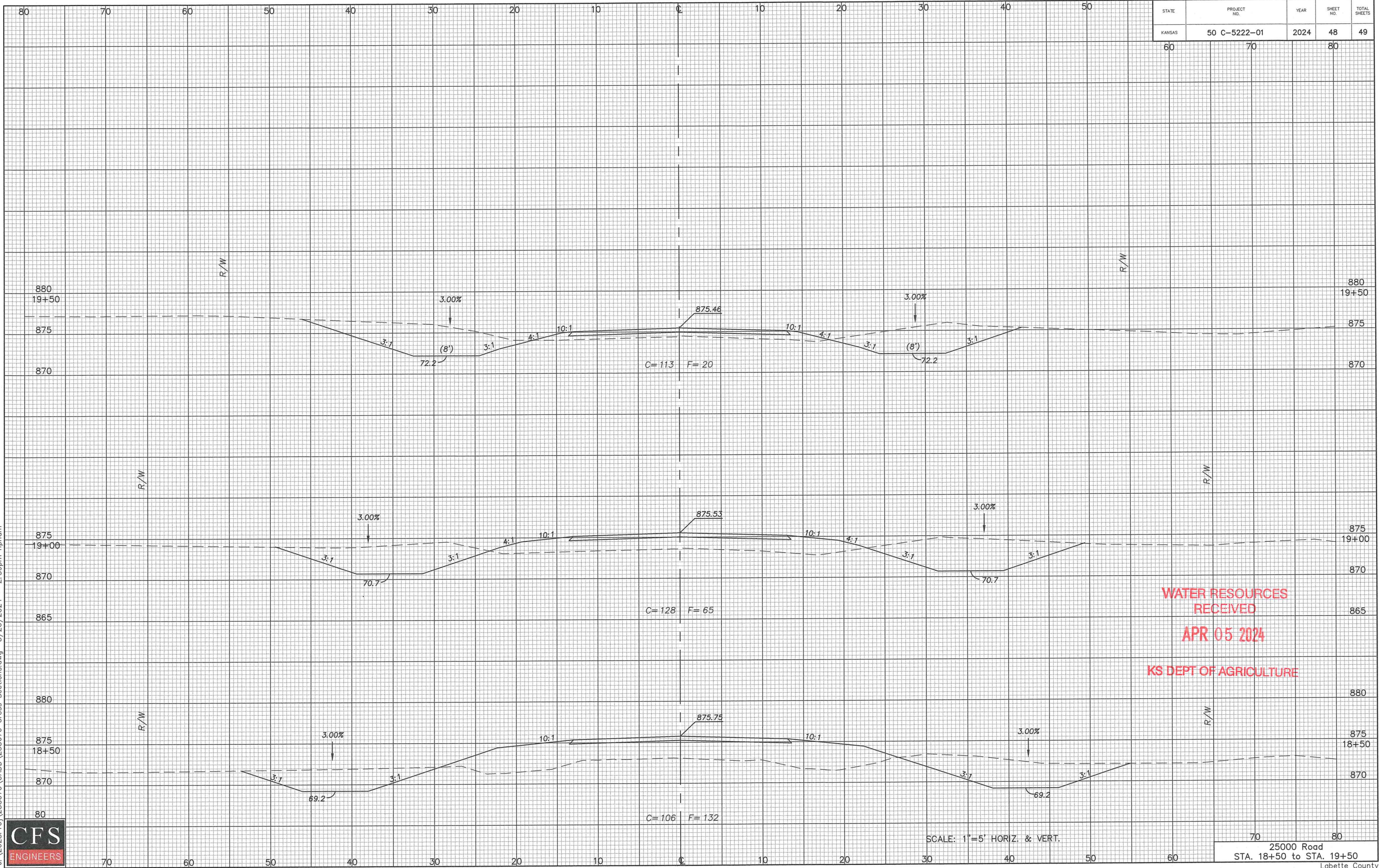


SCALE: 1"=5' HORIZ. & VERT.

25000 Road
 STA. 17+03.75 to STA. 18+00

Lobette County
23-5076

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 48 | 49 |



WATER RESOURCES
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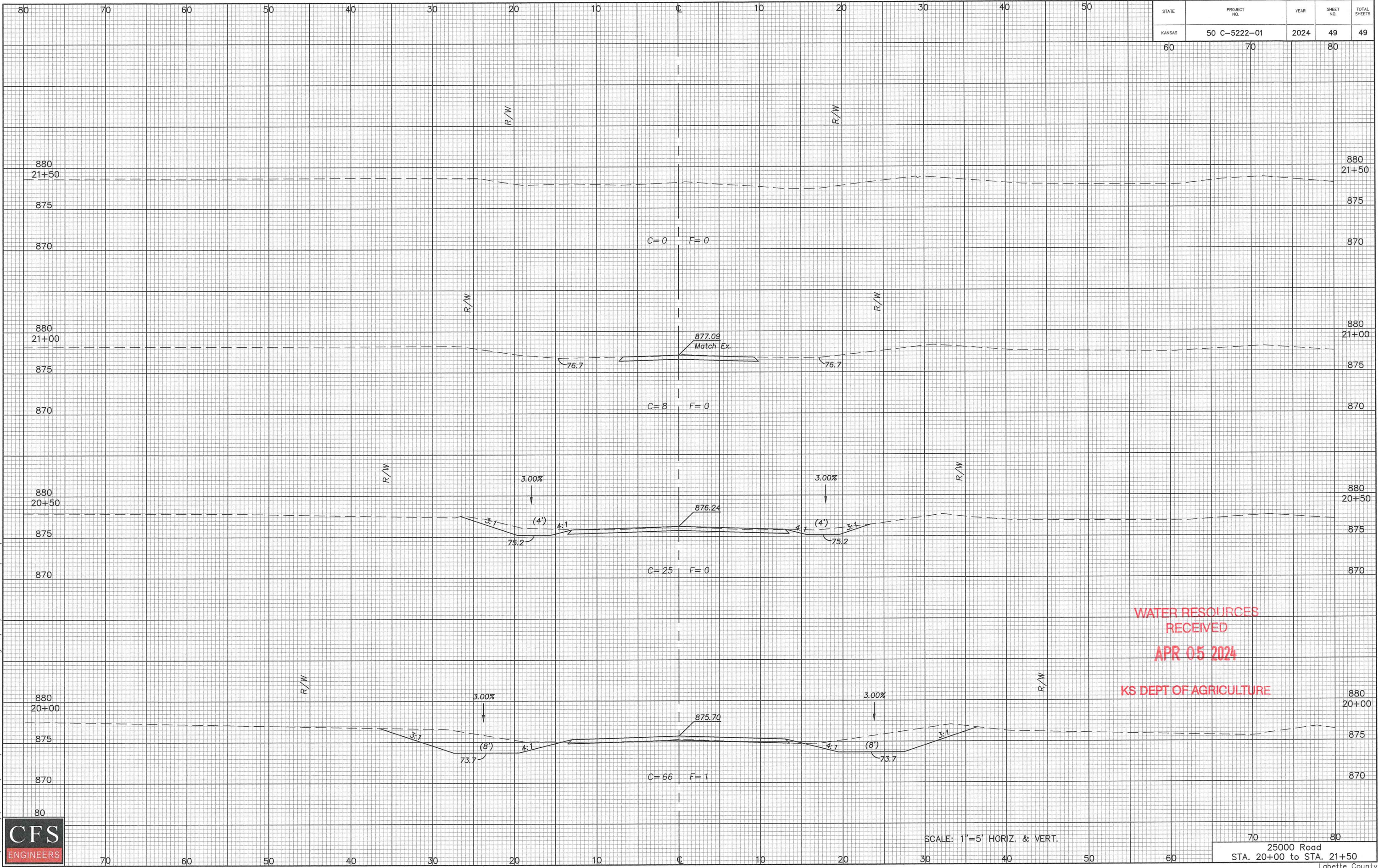
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25000 Road
STA. 18+50 to STA. 19+50
Labette County
23-5076

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| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 49 | 49 |



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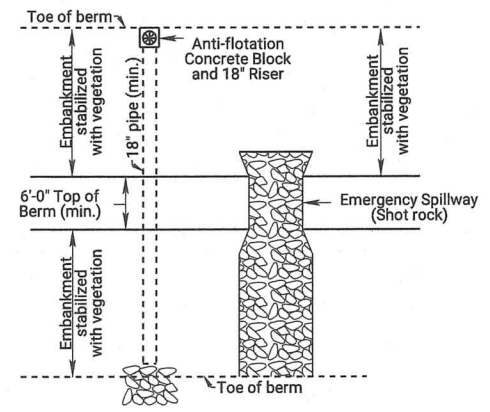


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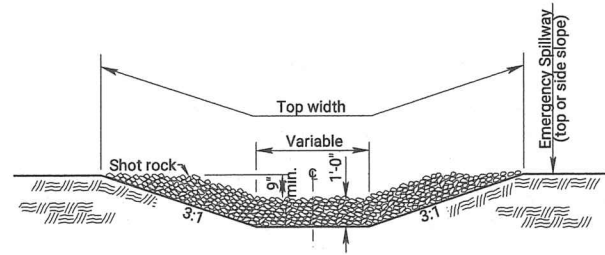
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 APR 05 2024
 KS DEPT OF AGRICULTURE

70 80
 25000 Road
 STA. 20+00 to STA. 21+50
 Labette County
 23-5076

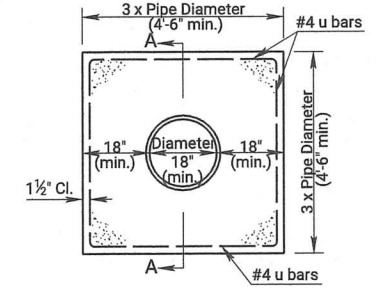
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 35 | 49 |



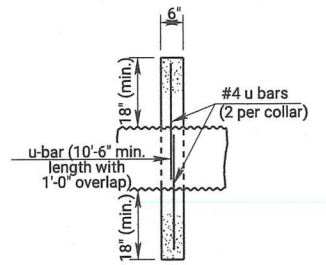
SEDIMENT STORAGE BASIN (PLAN)



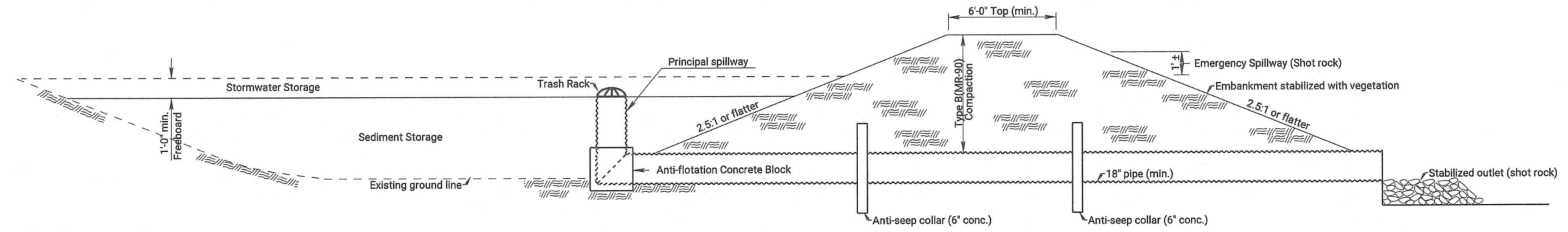
CROSS SECTION (EMERGENCY SPILLWAY)



CONCRETE ANTI-SEEP COLLAR



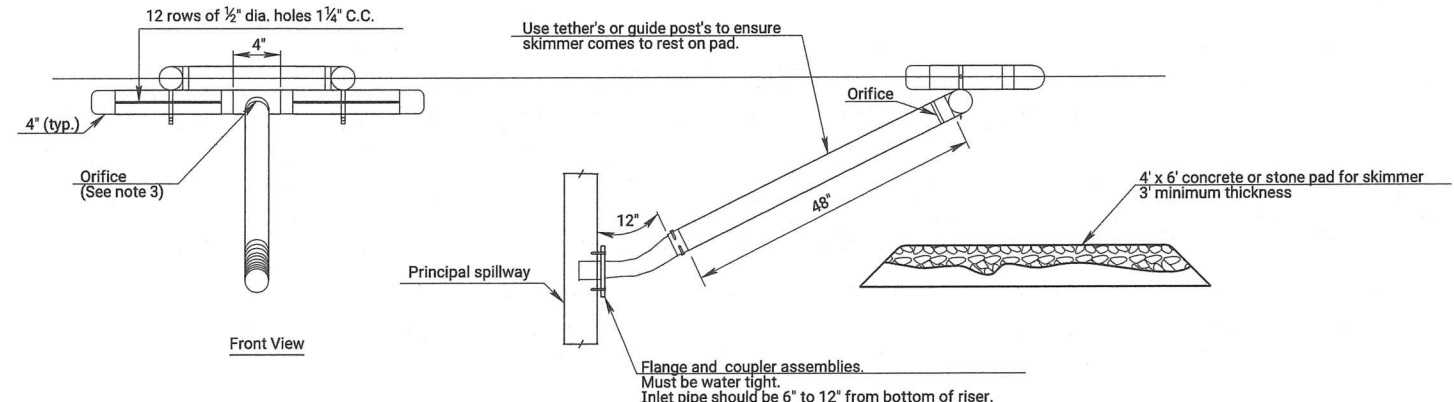
SECTION A-A



SEDIMENT STORAGE BASIN (ELEVATION)

NOTES:

- 1) Temporary Sediment Basins shall be constructed at locations as directed by the Engineer or as approved in the SWPPP Schedule. All work and materials necessary, including but not limited to, the fill material, compaction, drainage pipes, aggregates and all other incidentals necessary to construct the basin, shall be paid as "Temporary Sediment Basin".
- 2) Lengths and top dimensions shall be determined in the field by the Engineer.
- 3) Skimmer dewatering device required and must be used regardless the size of the drainage area.



SKIMMER DEWATERING DEVICE

Notes:

1. All P.V.C. pipes are to be schedule 40.
2. HDPE flexible drain pipes is to be attached to the pond outlet structure with water-tight connections.
3. The orifice shall be sized of to provide drawdown time to 2 to 5 days and approved by the engineer.
4. Other skimmer designs maybe used that dewater from the surface at a controlled rate. The design must be approved by the engineer.

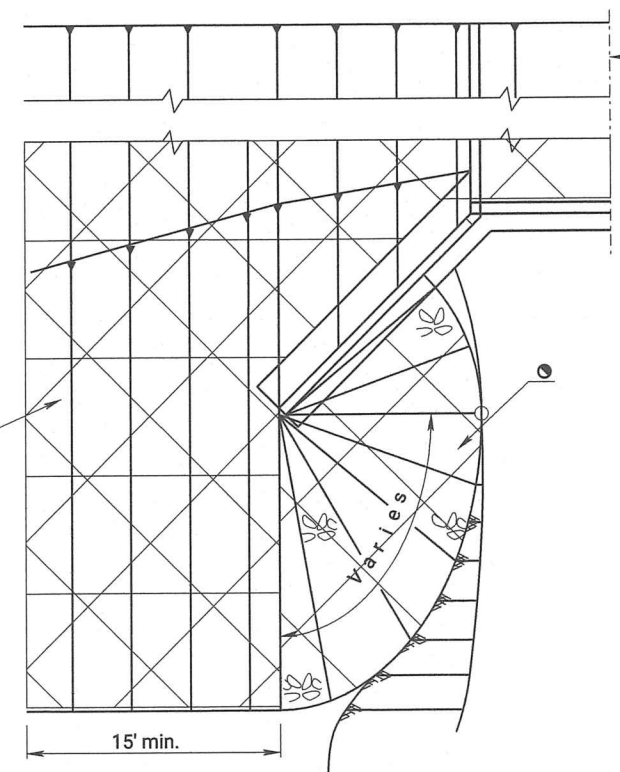
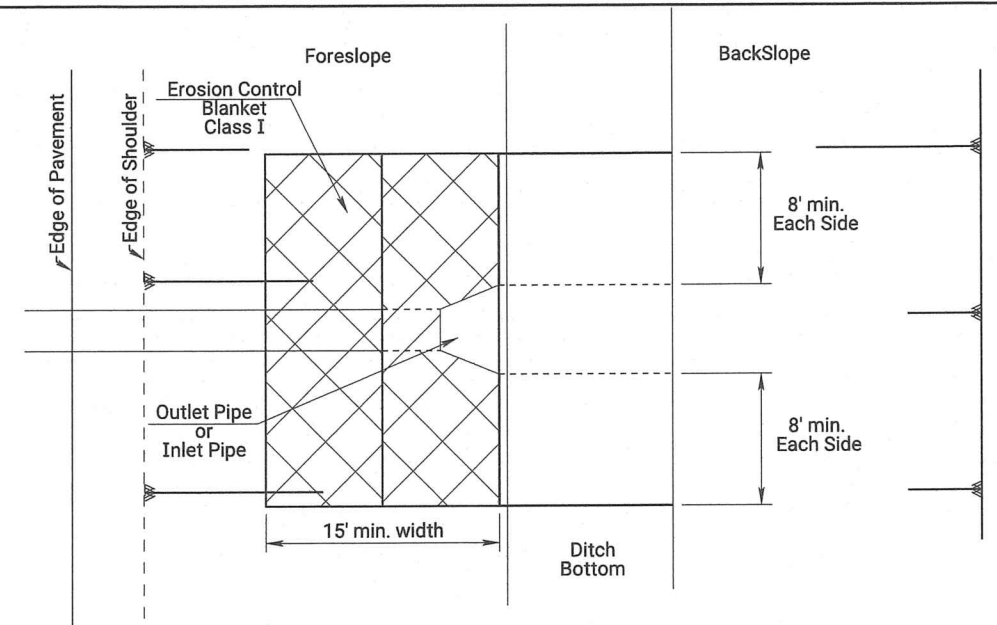
| SEDIMENT STORAGE BASIN LOCATIONS | | |
|----------------------------------|------|---------------------------|
| STATION TO STATION | SIDE | REQUIRED STORAGE CAPACITY |
| | | |
| | | |
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WATER RESOURCES
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| | | | | |
|---|----------|---------------------------------|--------|------------|
| 02 | 09-03-13 | Added Skimmer Dewatering Device | M.R.M. | S.H.S. |
| 01 | 07-17-13 | Revised Standard | M.R.M. | S.H.S. |
| NO. | DATE | REVISIONS | BY | APPD |
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
| TEMPORARY EROSION AND POLLUTION CONTROL SEDIMENT STORAGE BASIN | | | | |
| LA852H | | | | |
| FHWA APPROVAL | 09-24-13 | APPD. | TRACED | B.B. |
| DESIGNED | B.B. | DETAILED | B.B. | QUANTITIES |
| DESIGN CK. | S.H.S. | DETAIL CK. | S.H.S. | QUAN. CK. |
| KDOT Graphics Certified 06-20-2022 | | | | |

KDOT Graphics Certified

| | | | | |
|--------|--------------|------|-----------|--------------|
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 50 C-5222-01 | 2024 | 36 | 49 |



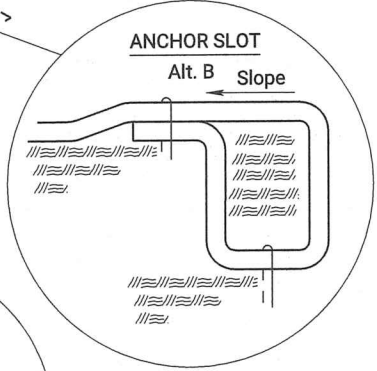
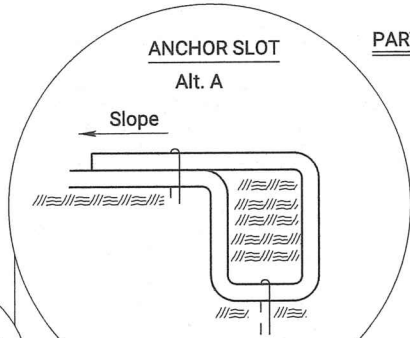
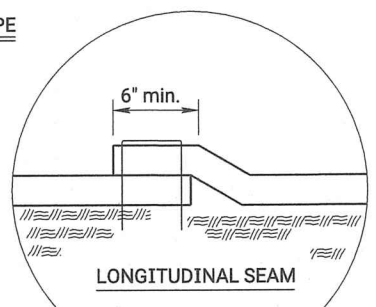
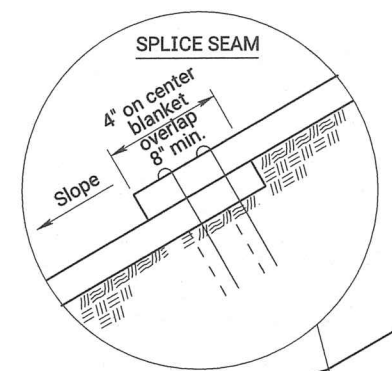
8' min. Erosion Control Blanket

INSTALLATION DETAILS FOR EROSION CONTROL CLASS 1

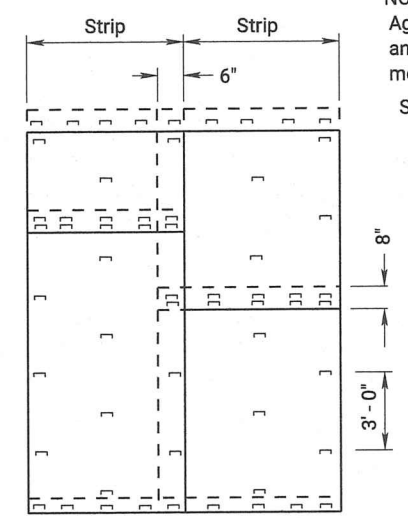
Erosion Control Blankets shall be laid loosely in the direction of the slope, beginning at the bottom of the slope. In order for blanket to be in contact with the soil, lay blanket loosely, avoiding stretching.

- ANCHOR SLOTS:** The top of the blanket should be "slotted in" at the top of the slope and anchored in place with anchors 6 inches apart. The slots should be 6 inches wide x 6 inches deep with the blanket anchored in the bottom of the slot, then backfilled, tamped and seeded.
- LONGITUDINAL SEAMS:** The edges of the blanket should overlap each other a minimum of 6 inches, with anchors catching the edges of both blankets.
- SPLICE SEAM:** When splices are necessary, overlap end a minimum of 8 inches in direction of water flow. Stagger splice seams.
- TERMINAL FOLD:** The bottom edge of the blanket shall be turned under a minimum of 4 inches, then anchored in place with anchors 9 inches apart.
- TYPICAL ANCHORS:** Anchor design shall be as recommended by the manufacturer.
- STAPLE CHECK:** *Establish Staples in 2 rows 4" on center apart. Staple Checks - shall be 30' apart.

PARTIAL PLAN PIPE



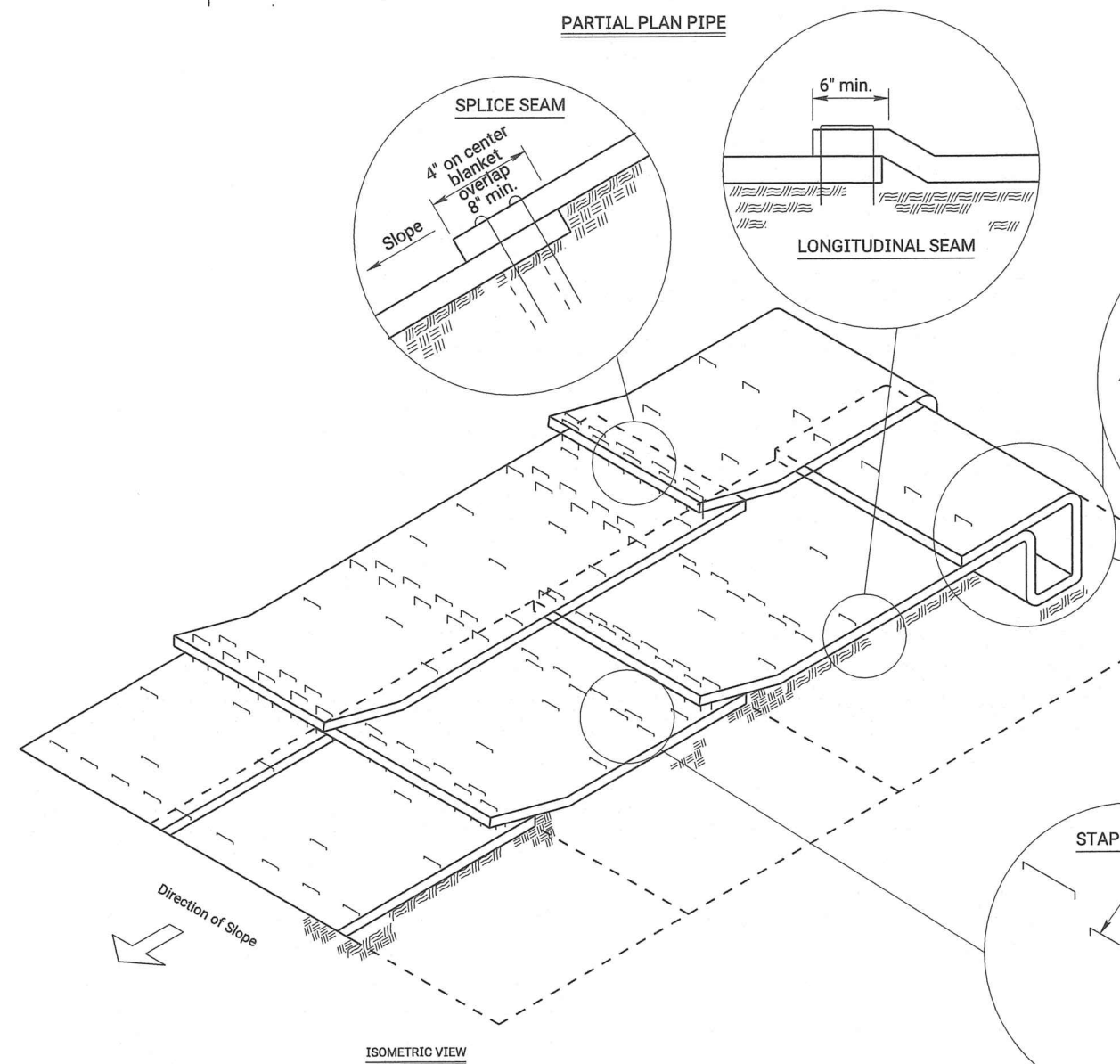
● Erosion Control Class I may be omitted if the area is immediately covered by permanent slope protection (where directed by the plans).



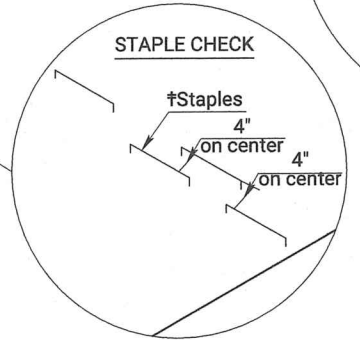
PLAN VIEW - ANCHORING DIAGRAM

NOTE:
Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.
Single post ring and shank staple is acceptable.

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ISOMETRIC VIEW



| NO. | DATE | REVISIONS | BY | APPD. |
|-----|----------|------------------|--------|--------|
| 04 | 03-01-15 | Revised Standard | R.A.A. | S.H.S. |
| 03 | 02-23-15 | Revised Standard | R.A.A. | S.H.S. |
| 02 | 09-15-14 | Revised Standard | M.R.M. | S.H.S. |

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL
EROSION CONTROL CLASS 1
SLOPE PROTECTION

LA855

| | | | | | |
|------------|------------|------------|----------|-----------|------------------|
| DESIGNED | R.A.A. | DATE | 03-10-15 | APPD. | Scott H. Shields |
| DESIGN CK. | DETAIL CK. | QUANTITIES | QUAN.CK. | TRACED | R.A.A. |
| | | | | TRACE CK. | R.A.A. |

KDOT Graphics Certified 06-20-2022

KDOT Graphics Certified

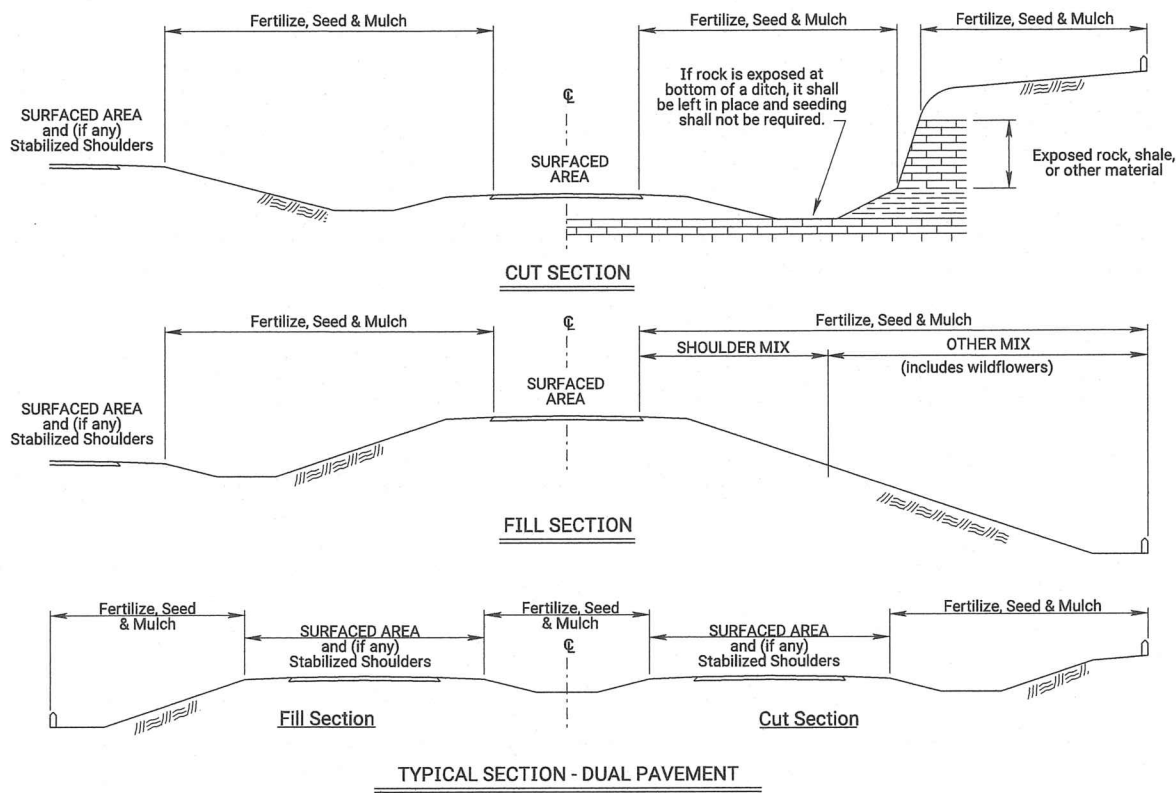
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 37 | 49 |

GRASS & WILDFLOWER SEEDING SEASONS

| COOL SEASON GRASSES | WARM SEASON GRASSES & WILDFLOWERS |
|-----------------------------|-----------------------------------|
| February 15 thru April 20 | November 15 thru June 1 |
| August 15 thru September 30 | |
| SPECIES | SPECIES |
| Bluegrasses | Bermuda Grass |
| Brome Grasses | Big Bluestem |
| Canada Wildrye | Blue Grama |
| Fescues | Buffalo Grass |
| Prairie Junegrass | Indiangrass |
| Ryegrasses | Little Bluestem |
| Sterile Wheatgrass | Sand Bluestem |
| Tall Dropseed | Sand Dropseed |
| Western Wheatgrass | Sand Lovegrass |
| | Side Oats Grama |
| | Switchgrass |
| | Wildflower Mixes |

If rock is exposed at bottom of a ditch, it shall be left in place and seeding shall not be required.

Exposed rock, shale, or other material



GENERAL NOTES

The entire disturbed area, excepting the paved or surfaced areas, steep rocky slopes and areas of undisturbed native sod or other desirable vegetation shall be fertilized (timed when required), seeded and mulched. Soil preparation shall conform to the Standard Specifications except as noted below.

All borrow areas shown on the plans are to be fertilized, seeded, and mulched. However, operation in borrow areas where crops are growing may be omitted when requested by the owner.

If temporary cover has provided stable slopes with no erosion, seed the permanent grasses into the existing cover. If there has been erosion that requires repair prior to seeding, then it may be necessary to regrade the area, resulting in bare ground.

FERTILIZER: A ratio and application rate that equals or exceeds the required minimum rate per acre of N, P₂O₅, K₂O listed in Summary of Seeding Quantities will be acceptable.

MULCHING: Mulch shall be spread uniformly over all disturbed areas and punched in the soil, unless otherwise noted on the plans. The rate of application per acre, thickness in place, for the mulching material is generally as follows:

1 3/4 - 2 1/4 Tons per Acre = 1 1/2" loose depth spread uniformly over acre.

Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.

Other vegetative mulches are acceptable only with the Engineer's concurrence.

The above rate is a guide. It will be at the discretion of the Engineer to determine what rate is sufficient for adequate protection of newly seeded areas.

When seeding is less than 1 acre, temporary and permanent seeding shall be combined and seeded at the same time.

There is no seasonal restriction when seeding projects less than one acre.

**WATER RESOURCES
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For Information Only

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SODDING SEASONS

| COOL SEASON GRASSES | WARM SEASON GRASSES |
|------------------------------|-------------------------|
| March 1 thru April 15 | May 15 thru September 1 |
| September 1 thru November 15 | |
| SPECIES | SPECIES |
| Bluegrass Sod | Buffalo Grass Sod |
| Fescue Sod | |

If the soil is workable, the Engineer may allow placement of sod between November 15 and March 1. If sod is placed during this time, maintain the sod until 20 days after the beginning of the spring sodding season.

SUMMARY OF SEEDING QUANTITIES

| P.L.S. RATE/ACRE | | ACRES | | BID ITEM | QUANTITY | UNIT |
|------------------|-------|-------|-------|------------|----------|------|
| SHLDR | OTHER | SHLDR | OTHER | | | |
| | | | | Seeding | Lump Sum | LS |
| | | | | Mulching * | | |

NATIVE WILDFLOWER MIX 1

| PLS RATE | NAME | QTY (lb) |
|----------|----------------------------|----------|
| 0.3 | Butterfly Milkweed | |
| 0.3 | Common Milkweed | |
| 0.3 | Black Eyed Susan | |
| 0.5 | Blanket Flower | |
| 0.5 | False Sunflower | |
| 0.5 | Lance-Leaf Coreopsis | |
| 0.2 | Maximilian Sunflower | |
| 0.1 | New England Aster | |
| 0.2 | Pinnate Prairie Coneflower | |
| 0.2 | Plains Coreopsis | |
| 0.3 | Purple Coneflower | |
| 0.3 | Upright Prairie Coneflower | |
| 0.3 | Dames Rocket | |
| 0.3 | Lemon Mint | |
| 0.2 | Pitcher Sage | |
| 0.2 | Wild Bergamot | |
| 1.0 | Illinois Bundleflower | |
| 0.2 | Common Evening Primrose | |
| 0.1 | Hoary Verbena | |
| 0.8 | Purple Prairie Clover | |
| 0.3 | Roundhead Lespedeza | |
| 3.0 | Showy Partridge Pea | |
| 0.2 | White Prairie Clover | |
| 10.3 | Total (lb) | |

NATIVE WILDFLOWER MIX 2

| PLS RATE | NAME | QTY (lb) |
|----------|----------------------------|----------|
| 0.3 | Butterfly Milkweed | |
| 0.3 | Black Eyed Susan | |
| 0.5 | Black Sampson Coneflower | |
| 1.0 | Blanket Flower | |
| 0.2 | Maximilian Sunflower | |
| 0.2 | Plains Coreopsis | |
| 0.2 | Upright Prairie Coneflower | |
| 0.2 | Western Yarrow | |
| 0.3 | Lemon Mint | |
| 0.4 | Pitcher Sage | |
| 1.5 | Illinois Bundleflower | |
| 0.2 | Common Evening Primrose | |
| 1.0 | Blue Wild Indigo | |
| 0.4 | Leadplant | |
| 0.4 | Purple Prairie Clover | |
| 0.3 | White Prairie Clover | |
| 7.4 | Total (lb) | |

Package and deliver the wildflower seed separately from the grass seed mix. Package and deliver the Tall Drop Seed separately from the grass seed and the wildflower mix. Place the grass seed (except Tall Drop Seed) in the large seed box and drill (cover) seed 1/8" - 1/4". Place the wildflower seed in a separate seed box and drill (cover) seed 1/6" maximum. Place the Tall Drop Seed in a separate (third) seed box and place the seed (using the seed drill) on the soil surface.

OPTION: Broadcast Tall Drop Seed on the soil surface.

SHLDR = Seeded with the Shoulder Mix. Typically 15 feet for 2-lane roads and 30 feet for 4-lane roads. Includes outside roadsides, turfed portions of shoulders, and turfed portion of the median.

OTHER = Seeded with the "Other" Mix. Designated as all other turf areas, except the Shoulder. Usually includes a Native Wildflower Mix.

NOTE: Projects less than 1 acre shall be bid as "Seeding" by the lump sum. All disturbed areas shall be seeded, fertilized and mulched at the listed rate per acre. The acres are estimated.

Refer to the Standard Specifications, Division 900, Section 904 'Seeding', and Section 907 'Sodding', for the seeding and sodding seasons.

* See LA852A for mulching quantity. The quantity of mulch is estimated (Acres of Seeding X 1.5 X 2 Tons/Acre). The total mulch required shall be determined in the field. The bid item for mulching shall be paid for according to the Standard Specifications.

| 02 | 11-25-20 | Updated Seeding / Sodding Periods Charts | M.R.D. | M.L. |
|--|------------|--|-------------|-----------|
| 01 | 09-03-20 | Revised Standard | M.R.D. | S.H.S. |
| NO. | DATE | REVISIONS | BY | APPD |
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
| PERMANENT SEEDING SUMMARY OF SEEDING QUANTITIES | | | | |
| LA850 | | | | |
| DESIGNED | 05-06-19 | APP'D. | Mervin Lare | |
| DESIGN CK. | DETAIL CK. | QUANTITIES | QUAN. CK. | TRACE CK. |

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 38 | 49 |

1) Design Speed: Those items delegated to temporary traffic control should be designed and installed using the posted/legal speed of the roadway prior to work starting.

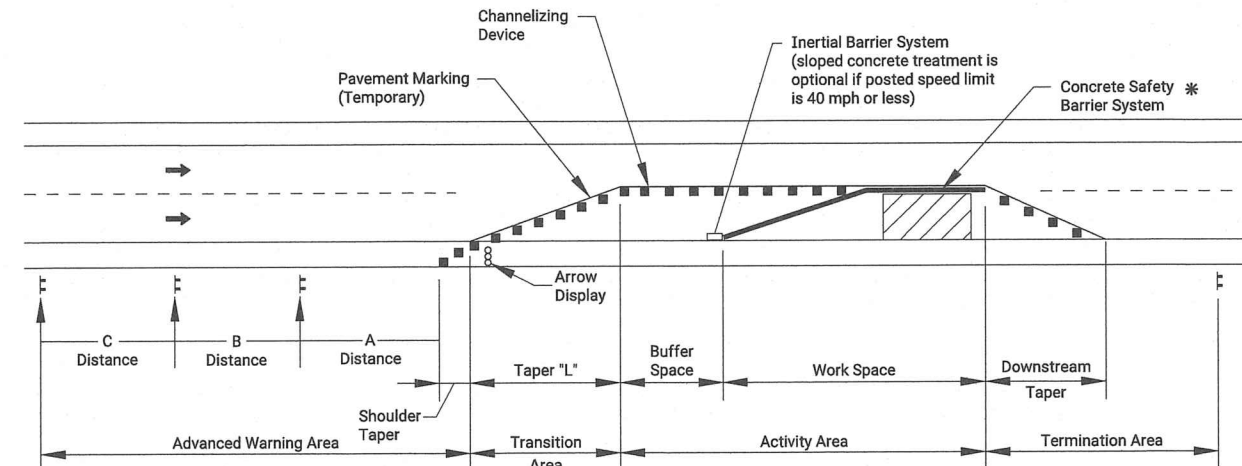
2) Minimum Lane Width: Lane widths shall be a minimum of 11' (measured between centerlines of pavement markings) or as shown on the plans, or as directed by the engineer. A lane width less than 11' may require restricted roadway width signing.

3) Consideration should be made to separate pedestrian and, if needed, bicycle movements from both work site activity and vehicular traffic. Unless a reasonable safe route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that encourages them to cross to the opposite side of the roadway. In urban and suburban areas with high vehicular traffic volumes, these signs should be placed at intersections (rather than midblock locations) so that pedestrians are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing.

4) When existing pedestrian facilities are disrupted, closed, or relocated, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.

5) When the driving surface open to traffic is milled or is a temporary surface made of loose material, or when directed by the engineer a W8-15 (Grooved Pavement) or W8-7 (Loose Gravel) sign shall be used on mainline approaches. This sign should be placed a "C" distance after the W20-1 (Road Work Ahead) sign. A W8-15p motorcycle plaque shall be used to supplement the W8-15 or W8-7 signs. All signs shall be displayed as long as the condition is present.

6) Alternative temporary rumble strip options may be available. Please contact the Temporary Traffic Control Unit for more information at 785-296-1179 or 785-296-1183.



TYPICAL WORK ZONE COMPONENTS

* When concrete barrier system is used, portable channelizing devices are not needed along the tangent barrier section.

Minimum advance warning sign spacing (in feet):

| SPEED (MPH) * | A | B | C |
|--------------------------|------|------|------|
| URBAN (40 MPH OR LOWER) | 100 | 100 | 100 |
| URBAN (45 MPH OR HIGHER) | 350 | 350 | 350 |
| RURAL (55 MPH OR LOWER) | 500 | 500 | 500 |
| RURAL (60 MPH OR HIGHER) | 750 | 750 | 750 |
| EXPRESSWAY/FREEWAY | 1000 | 1500 | 2640 |

* Posted speed prior to work starting

The minimum spacing between signs shall be no less than 100', unless directed by the engineer.

The spacing between any signs may be increased beyond the minimum values in the table above as approved by the engineer in order to maximize visibility.

Taper Formulas:

$L = WS$ for speeds of 45 MPH or more

$L = WS^2/60$ for speeds of 40 MPH or less

Where: L = Minimum length of taper in feet
 S = Numerical value of posted speed prior to work starting in MPH
 W = Width in offset feet

Shifting Taper=1/2 L
 Shoulder Taper=1/3 L

Channelizer Placement:

- The spacing between devices in transition area (taper) should not exceed a distance in feet equal to 1/2 the posted speed limit in mph prior to work starting.
- The spacing between devices in the advanced warning area and the activity area should not exceed a distance in feet equal to two times the posted speed limit in mph prior to work starting.
- Channelizing devices shall be placed for optimum visibility, normally at right angles to the traffic flow.
- Place directional indicator barricades in series to direct traffic onto the new path. The arrow sign should not be visible to opposing traffic.
- Alternating diagonal orange and white striping must slope downward in the direction traffic is expected to pass.

Buffer Space

| SPEED (MPH) * | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| LENGTH (ft) | 115 | 155 | 200 | 250 | 305 | 360 | 425 | 495 | 570 | 645 | 730 | 820 |

* Posted speed prior to work starting

Neither work activity nor storage of equipment, vehicles, or material should occur in the buffer space. When a protection vehicle is placed in advance of the work space, only the space upstream of the vehicle constitutes the buffer space.

If temporary concrete safety barrier system is used to separate approaching traffic from the work space, the barrier system shall be considered part of the activity area. A full lane width should be available throughout the length of the buffer space. See typical work zone components above.

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| NO. | DATE | REVISIONS | BY | APPD |
|-----|----------|-------------------------------|--------|--------|
| 02 | 03-13-18 | W8-15p usage changed to Shall | R.W.B. | E.K.G. |
| 01 | 08-18-15 | Channelizer spacing info | R.W.B. | K.E. |

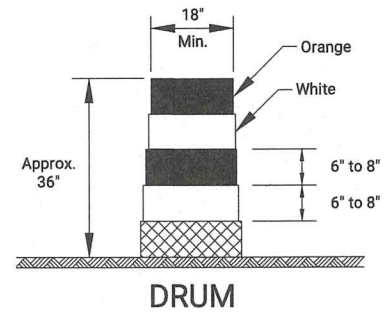
KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL GENERAL NOTES

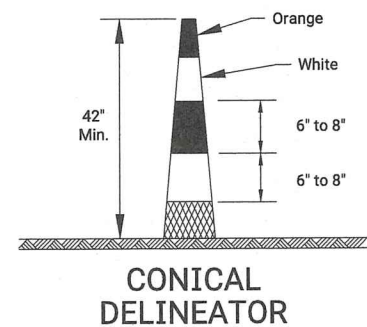
TE700

| | | | | | | |
|------------|--------|------------|--------|------------|-----------|--------------|
| DESIGNED | B.A.H. | DETAILED | R.W.B. | QUANTITIES | TRACED | Eric Koehler |
| DESIGN CK. | | DETAIL CK. | | QUAN. CK. | TRACE CK. | |

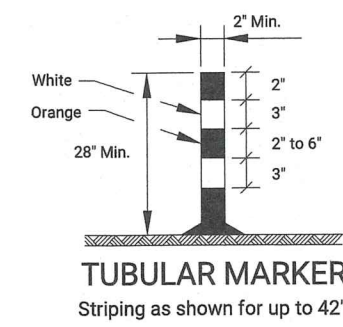
FDOT APPROVAL 03-13-18 APPD.



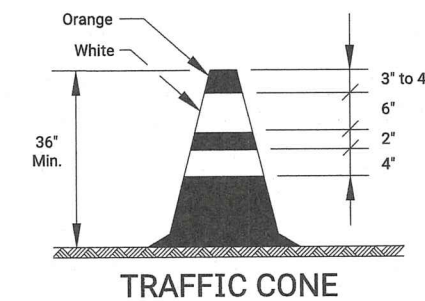
DRUM



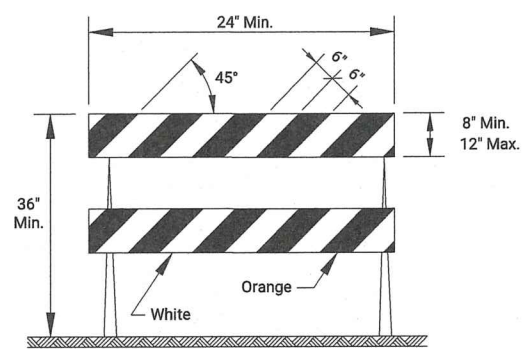
CONICAL DELINEATOR



TUBULAR MARKER
Striping as shown for up to 42".

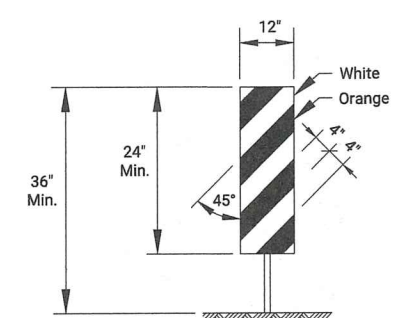


TRAFFIC CONE



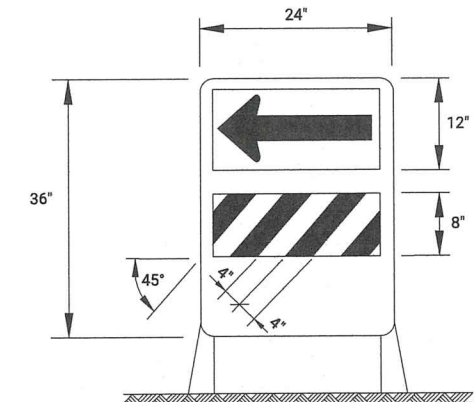
TYPE 2 BARRICADE

For rails less than 36" long, 4" wide stripes may be used. All stripes shall slope downward to the traffic side for channelization.



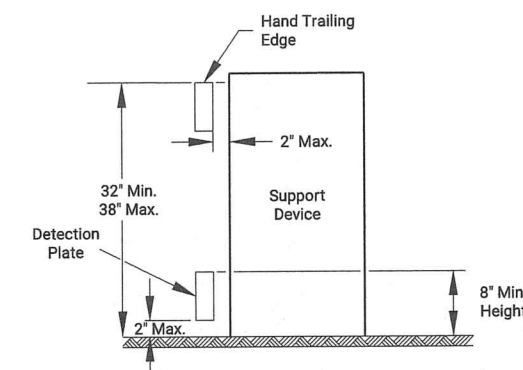
VERTICAL PANEL

The stripes shall slope downward to the traffic side for channelization.



DIRECTION INDICATOR BARRICADE

The stripes shall slope downward in the direction traffic is to pass. The direction indicator barricade shall be used in series to direct the motorist into the intended lane of travel.



PEDESTRIAN CHANNELIZER

- Support device shall not project beyond the detection plate into the pathway.
- Hand trailing edges and detection plates are optional for continuous walls.
- Interconnect pedestrian channelizers to prevent displacement and to provide continuous guidance through or around work.
- Alternate pathways shall be firm, stable, and slip resistant.
- Treat height differentials > 1/2" in the surfaces of alternate paths with a firm, stable, and slip resistant temporary ramp having a slope of 12:1 or flatter and having a width equal to the alternate path.
- Use alternating orange/white on interconnected devices.

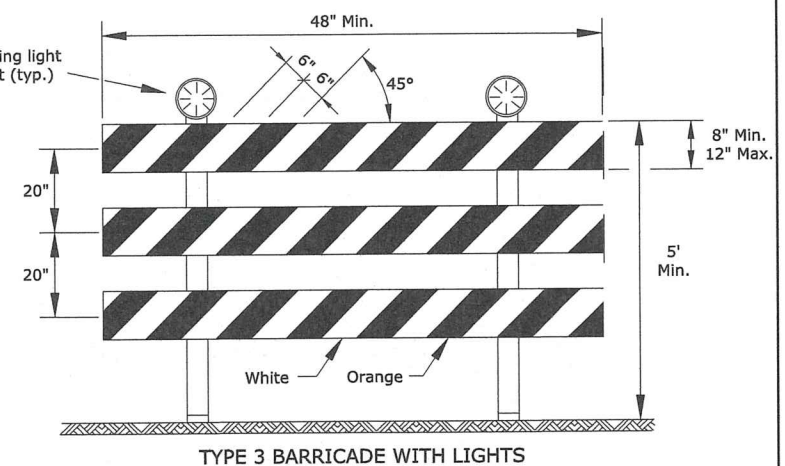
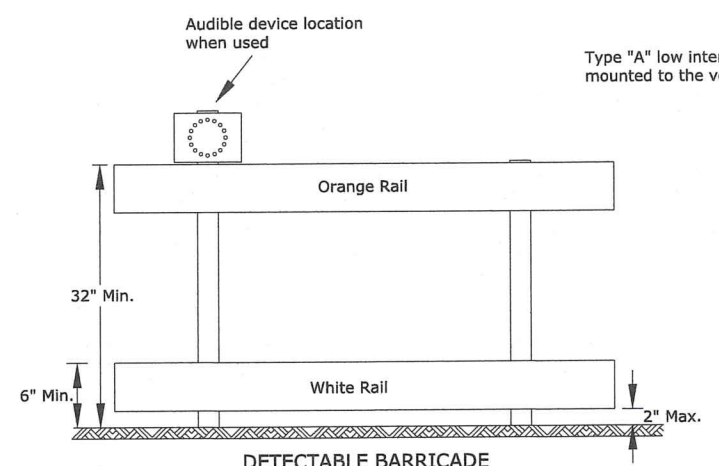
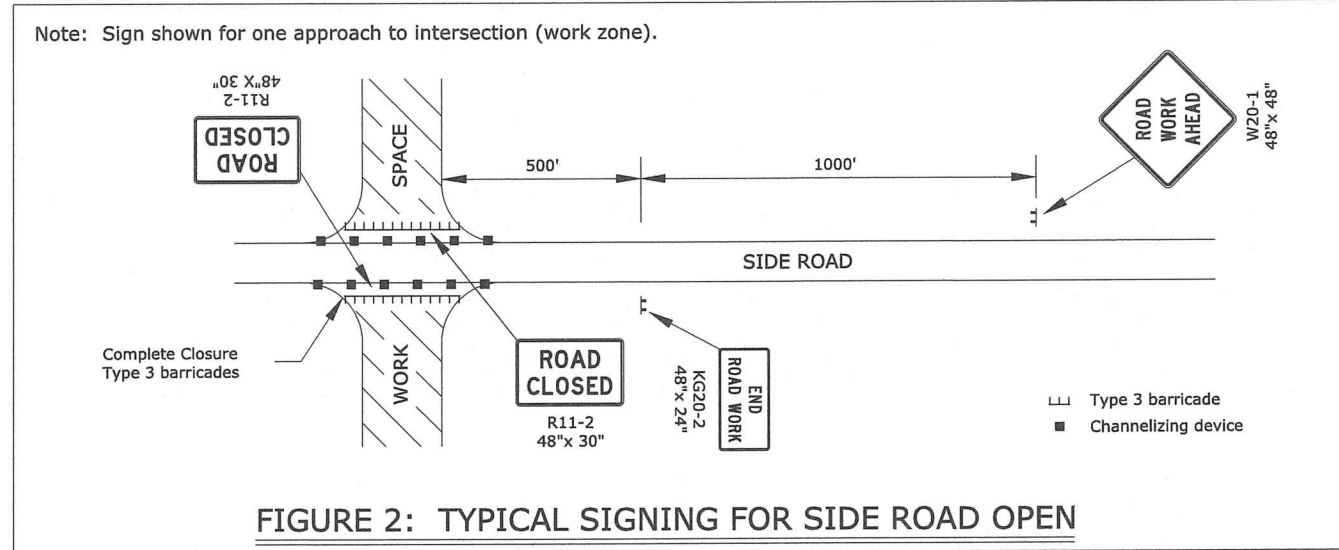
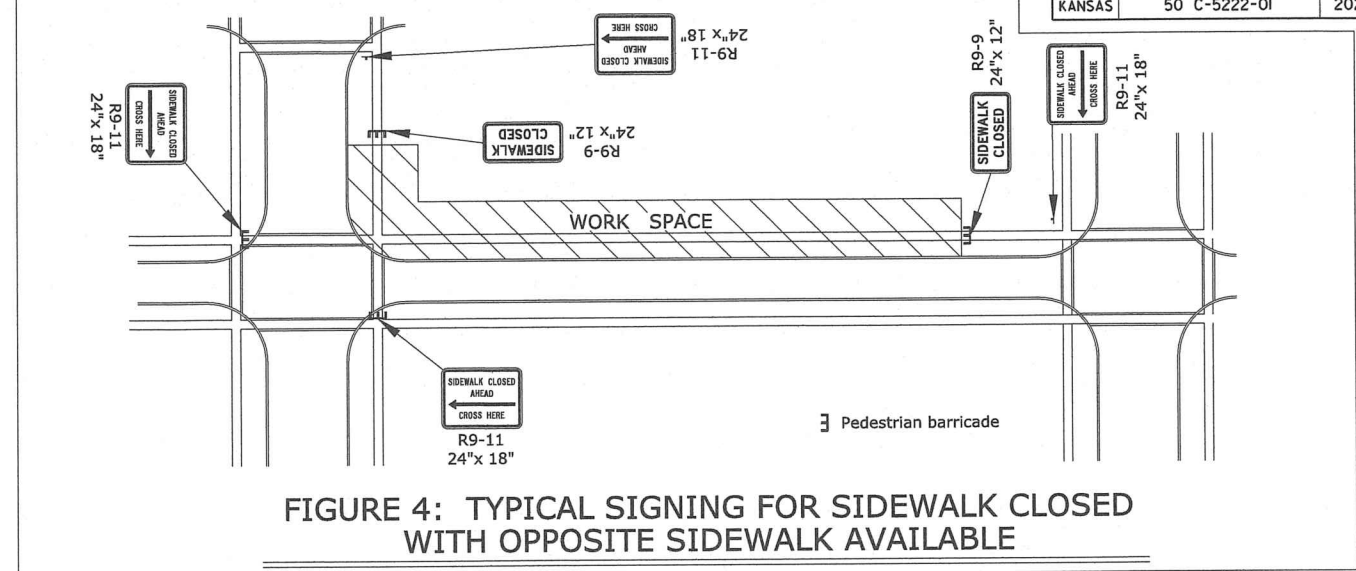
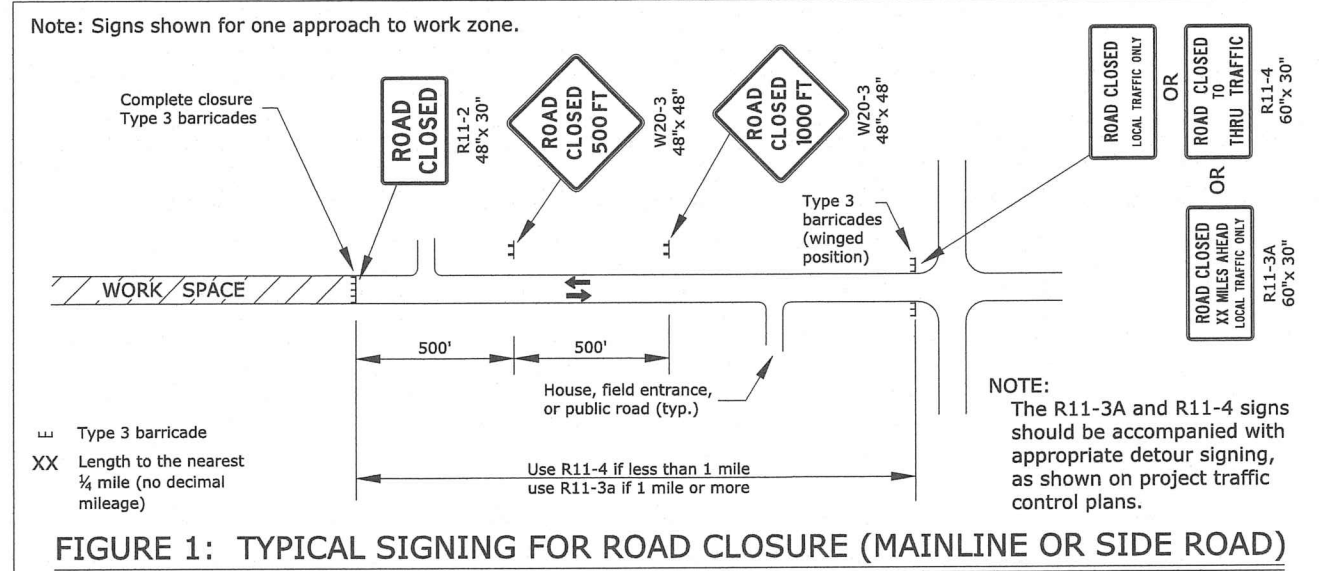
| Item | Location | Location | | | | | | | | | |
|----------|-------------------------------|-------------|--------------------|----------|--------|-------|--------------|-------------------|-----------------|-------|--|
| | | Cross-overs | Shoofly Diversions | Tangents | Tapers | Ramps | Head to Head | Object Identifier | Lead-in Devices | Gores | |
| Portable | Drums | Yes | Yes | Yes | Yes | Yes | (1) | Yes | Yes | Yes | |
| | Conical Delineators | Yes | Yes | Yes | Yes | Yes | (1) | Yes | Yes | Yes | |
| | Vertical Panels | (2) | (2) | (2) | (2) | (2) | (1,2) | Yes | (2) | (2) | |
| | Direction Indicator Barricade | No | No | No | Yes | No | No | No | No | No | |
| | Type 2 Barricade | (2) | (2) | (2) | (2) | No | No | Yes | No | No | |
| | Traffic Cones | No | No | (4) | (4) | (4) | No | (4) | (4) | (4) | |
| Fixed | Tubular Markers | (3) | (3) | (3) | No | (3) | Yes | No | Yes | Yes | |
| | Vertical Panels | (3) | (3) | (3) | (3) | (3) | (3) | Yes | (2,3) | (2) | |

- Not allowed on centerline delineation along freeways or expressways.
- The stripes shall slope downward to the traffic side for channelization.
- May be used upon the approval of the engineer.
- Daytime operations only.

WATER RESOURCES RECEIVED
APR 05 2024
KS DEPT OF AGRICULTURE

| NO. | DATE | REVISIONS | BY | APP'D |
|---|------------|-----------|--------|-------------------|
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
| TRAFFIC CONTROL CHANNELIZING DEVICES | | | | |
| TE702 | | | | |
| DESIGNED | L.E.R. | 06-01-15 | APP'D. | Kristina Ericksen |
| DESIGN CK. | DETAIL CK. | QUAN. CK. | TRACED | TRACE CK. |
| KDOT Graphics Certified 07-18-2022 | | | | |

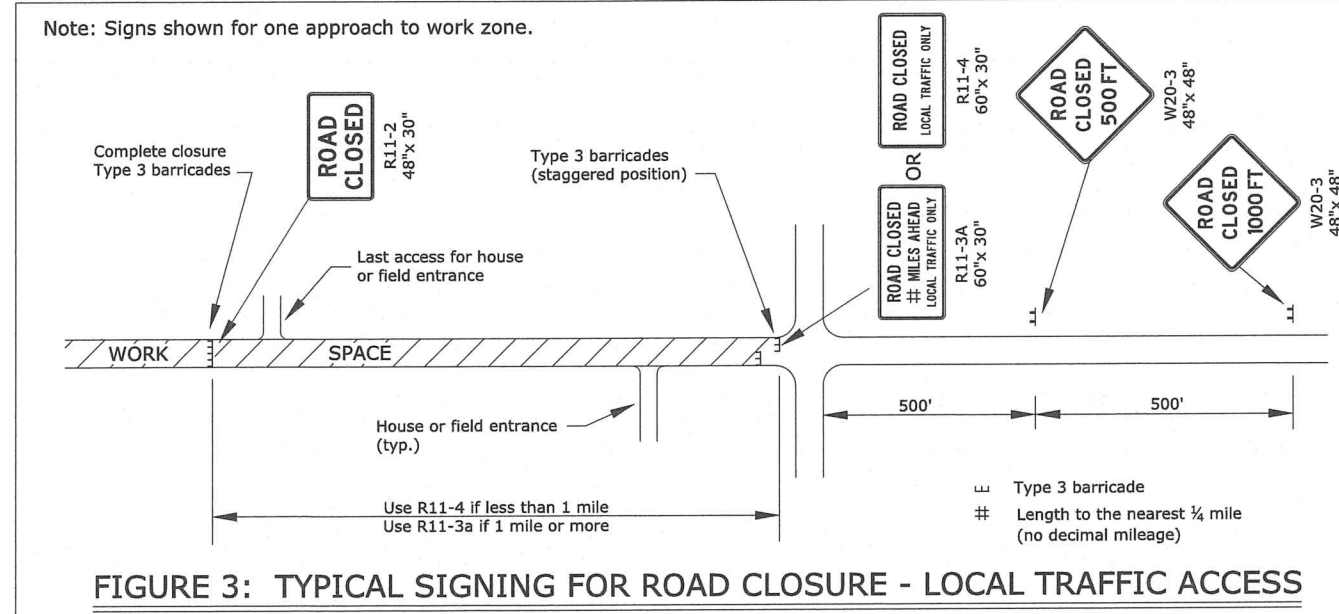
KDOT Graphics Certified



1. Support device shall not project beyond the detection plate into the pathway.
2. Barricades shall be used to close the entire width of the pathway.
3. Do not use warning lights on pedestrian barricades.
4. Do not use warning lights on audible devices.

Approved signs mounted on Type 3 barricades should not cover more than 50% of the top two rails or 33% of the total area of the three rails.

When barricades are placed end-to-end or staggered, a Type "A" low intensity warning light shall be mounted to the vertical post near each outside corner of the end barricades.



ROAD CLOSED GENERAL NOTES

As shown in Figure 1, at the point where thru traffic must detour and local traffic can proceed to the location where the roadway is completely closed, the R11-3a (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) or R11-4 (ROAD CLOSED LOCAL TRAFFIC ONLY or ROAD CLOSED TO THRU TRAFFIC) sign shall be used with Type 3 barricades (winged position), placed on the shoulders of roadway.

As shown in Figure 3, when local traffic must be allowed access into the work zone, Type 3 barricades shall be longitudinally staggered to maintain the appearance of a closed roadway. A second line of end-to-end Type 3 barricades shall be placed just beyond the last access point in the work zone, to completely close the roadway.

The R11-4 (ROAD CLOSED TO THRU TRAFFIC or ROAD CLOSED LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is less than 1 mile.

The R11-3a (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is 1 mile or greater.

The words "BRIDGE OUT" (or BRIDGE CLOSED) may be substituted for the words "ROAD CLOSED" on the R11-3a or R11-4 sign where applicable.

WATER RESOURCES RECEIVED

APR 05 2024

KS DEPT OF AGRICULTURE

| | | | | | |
|-------------------------------------|------------|-----------|-------------------|------------|--------|
| 3 | | | | | |
| 2 | | | | | |
| 1 | | | | | |
| NO. | DATE | REVISIONS | BY | APP'D | |
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | | |
| TRAFFIC CONTROL CLOSURES | | | | | |
| TE704 | | | | | |
| FWHA APPROVAL | 06/01/15 | APP'D | Kristina Erickson | | |
| DESIGNED | B.A.H. | DETAILED | R.W.B. | QUANTITIES | TRACED |
| DESIGN CK. | DETAIL CK. | QUAN. CK. | TRACE CK. | | |
| KDOT Graphics Certified 06-01-2015 | | | | | |

SIGN LAYOUT INFORMATION

END ROAD WORK

KG20-2

STD. SIZE
EXPWY/FREEWAY
6" C
48"x 24"

WAIT FOR PILOT CAR

KG20-5

STD. SIZE
EXPWY/FREEWAY
6" C
48"x 24"

WORK ZONE

KM4-20

STD. SIZE
EXPWY/FREEWAY
3" C 6" C
24"x 6" 48"x 12"

NEXT X MILES

W7-3a

Mileage to be determined by the engineer.



W8-17

STD. SIZE
EXPWY/FREEWAY
48"x 48"

SHOULDER DROP-OFF

W8-17P
(OPTIONAL)

STD. SIZE
EXPWY/FREEWAY
30"x 24"

NB US-75 CLOSED FOLLOW DETOUR

SP-01
(SPECIAL SIGN)

STD. SIZE EXPWY/FREEWAY
6" C 10" D

US-75 CLOSED NORTH OF Topeka FOLLOW DETOUR

SP-02
(SPECIAL SIGN)

STD. SIZE EXPWY/FREEWAY
UPPERCASE: 6" C UPPERCASE: 10" D
LOWERCASE: 4.5" C LOWERCASE: 8" D

ALL CITY NAMES AND STREET NAMES ON SPECIAL SIGNS AND DESTINATION SIGNS MUST HAVE UPPER AND LOWER CASE LETTERS.



W8-15

STD. SIZE
EXPWY/FREEWAY
8" D
48"x 48"



W8-7

STD. SIZE
EXPWY/FREEWAY
8" D
48"x 48"



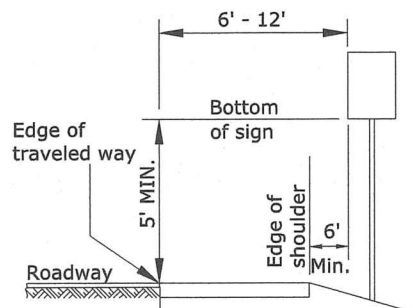
W8-15p

STD. SIZE
EXPWY/FREEWAY
30"x 24"



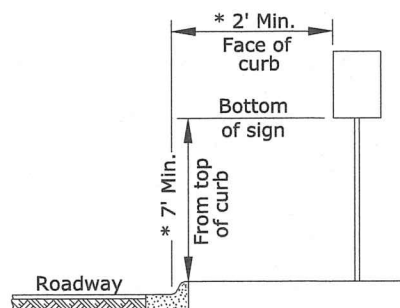
W8-11

STD. SIZE
EXPWY/FREEWAY
8" D
48"x 48"



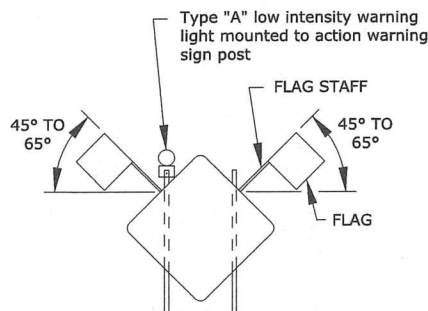
Rural

- 1) Ground-mounted signs shall be mounted at a minimum height of 5' measured from the bottom of sign to the near edge of the pavement.
- 2) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.
- 3) The height of the secondary sign mounted below another sign may be 4' measured from the bottom of the sign to the near edge of the pavement. Signs shall not overlap each other.



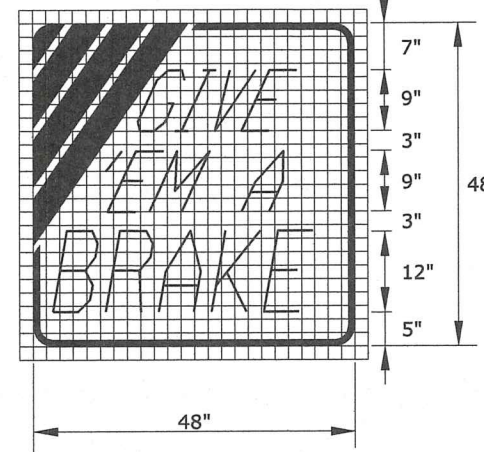
Urban

- 1) Signs shall be mounted at a minimum height of 7' measured from the bottom of sign to the near edge of the pavement.
- 2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.
- 3) Signs mounted lower than 7' should not project more than 4" into pedestrian facilities.
- 4) The height from of the secondary sign mounted below another sign may be 6' measured from the bottom of sign to the near edge of the pavement. Signs shall not overlap each other.
- 5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.
- * 6) Pedestrian detour signing shall be a minimum of 2' measured from the top of the pedestrian pathway to the bottom of the sign and shall not protrude into the walkway nor shall it project beyond the back of curb.

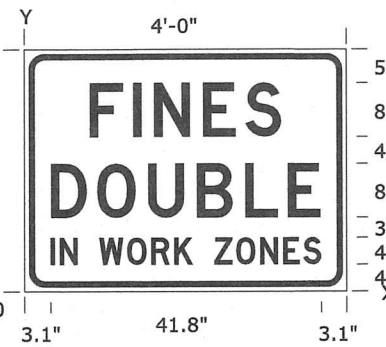


When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

- In the case of hitting rock when driving posts
1. Shift the sign location. Do not violate minimum sign spacing.
 2. With the engineer's approval, use acceptable alternative sign stands.



KI-104a



KI-105a

DIMENSIONS IN INCHES

SPACINGS ARE TO START OF NEXT LETTER

| Y FONT | LETTER SPACINGS | | | | | | | | | | | | | HT LEN | | | |
|--------|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|-----|--|------|
| 23.0 | F | I | N | E | S | | | | | | | | | | | | 8.0 |
| D | 9.7 | 6.4 | 3.2 | 7.3 | 6.4 | 5.4 | 9.7 | | | | | | | | | | 28.6 |
| 11.0 | D | O | U | B | L | E | | | | | | | | | | | 8.0 |
| D | 3.9 | 6.9 | 7.5 | 7.3 | 7.3 | 6.4 | 4.9 | 3.9 | | | | | | | | | 40.3 |
| 4.0 | I | N | W | O | R | K | Z | O | N | E | S | | | | | | 4.0 |
| D | 3.1 | 1.6 | 2.7 | 3.2 | 4.3 | 3.8 | 3.6 | 2.8 | 3.2 | 3.4 | 3.8 | 3.6 | 3.2 | 2.7 | 3.1 | | 41.8 |

Notes:

- Typically, there are two sets of informational signs installed per project: one for each direction of traffic.
- Install signs a minimum of 500' in advance of the road work ahead sign. The engineer may designate a more appropriate location if conditions dictate.
- The informational signs are not to interfere with the traffic control signs for the project.

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| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 41 | 49 |

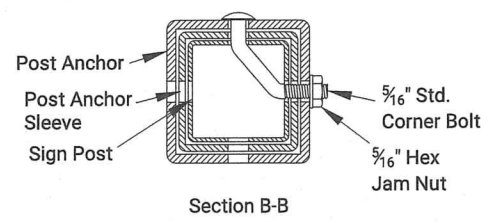
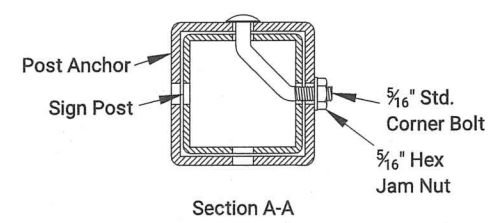
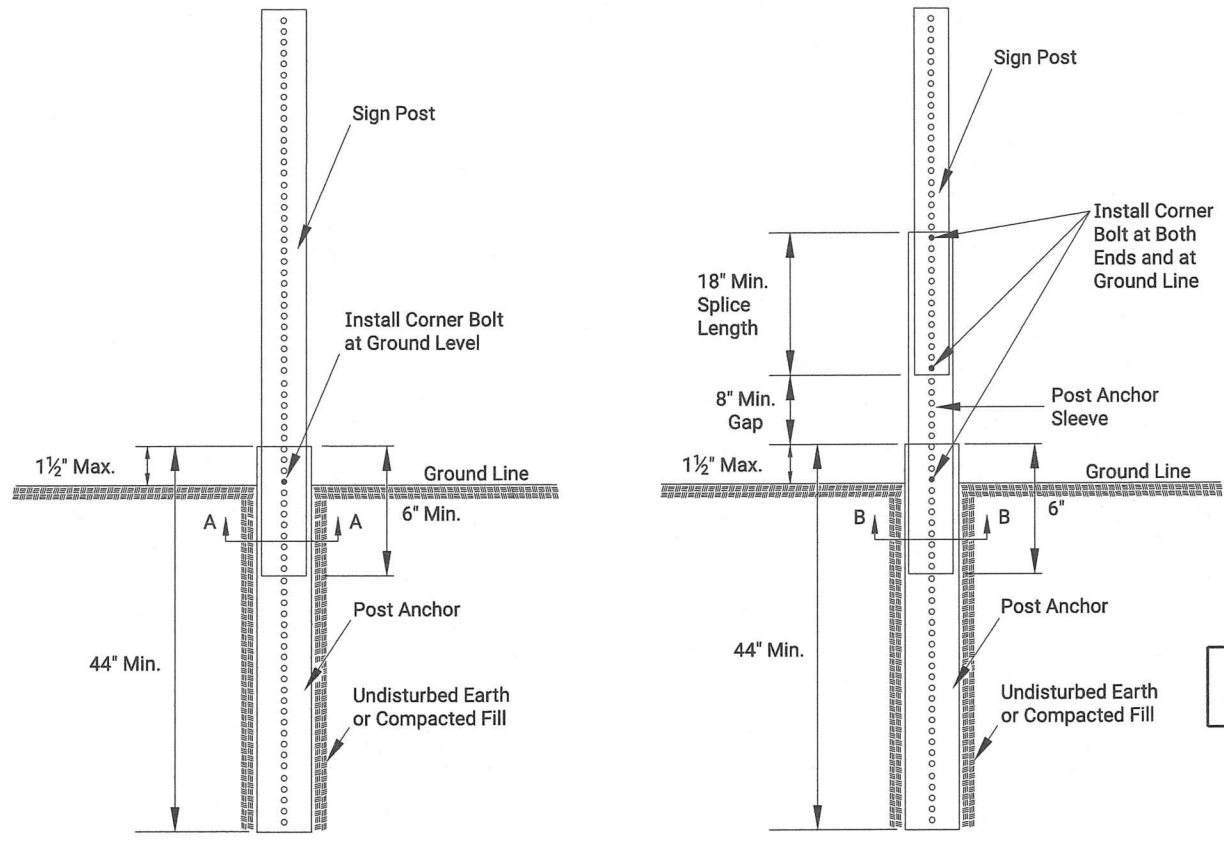
| SIGN NUMBER | GIVE EM A BRAKE |
|----------------|--|
| WIDTH x HEIGHT | 4'-0" x 4'-0" |
| BORDER WIDTH | 1.0" |
| CORNER RADIUS | 4.0" |
| STRIPE WIDTH | 3.0" |
| MOUNTING | GROUND |
| BACKGROUND | TYPE: NON-REFLECTIVE COLOR: BLACK |
| LEGEND/BORDER | TYPE: REFLECTIVE COLOR: WHITE |
| LEGEND FONT | DUTCH 801 ROMAN SWC 25 DEGREE SLANT |
| STRIPES | TYPE: REFLECTIVE COLOR: ORANGE |

| SIGN NUMBER | FINES DOUBLE |
|----------------|--------------------------------------|
| WIDTH x HEIGHT | 4'-0" x 3'-0" |
| BORDER WIDTH | 0.9" |
| CORNER RADIUS | 3.0" |
| MOUNTING | GROUND |
| BACKGROUND | TYPE: REFLECTIVE COLOR: WHITE |
| LEGEND/BORDER | TYPE: NON-REFLECTIVE COLOR: BLACK |

| 3 | | | | | |
|-------------------------------------|-----------------|-----------|-----------|---------------|--|
| 2 | | | | | |
| 1 | | | | | |
| NO. | DATE | REVISIONS | BY | APP'D | |
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | | |
| TRAFFIC CONTROL SIGN INFORMATION | | | | | |
| TE 710 | | | | | |
| DESIGNED | R.W.B./DETAILED | 06/01/15 | APP'D | Kristina Pyle | |
| DESIGN CK. | DETAIL CK. | QUAN. CK. | TRACE CK. | | |

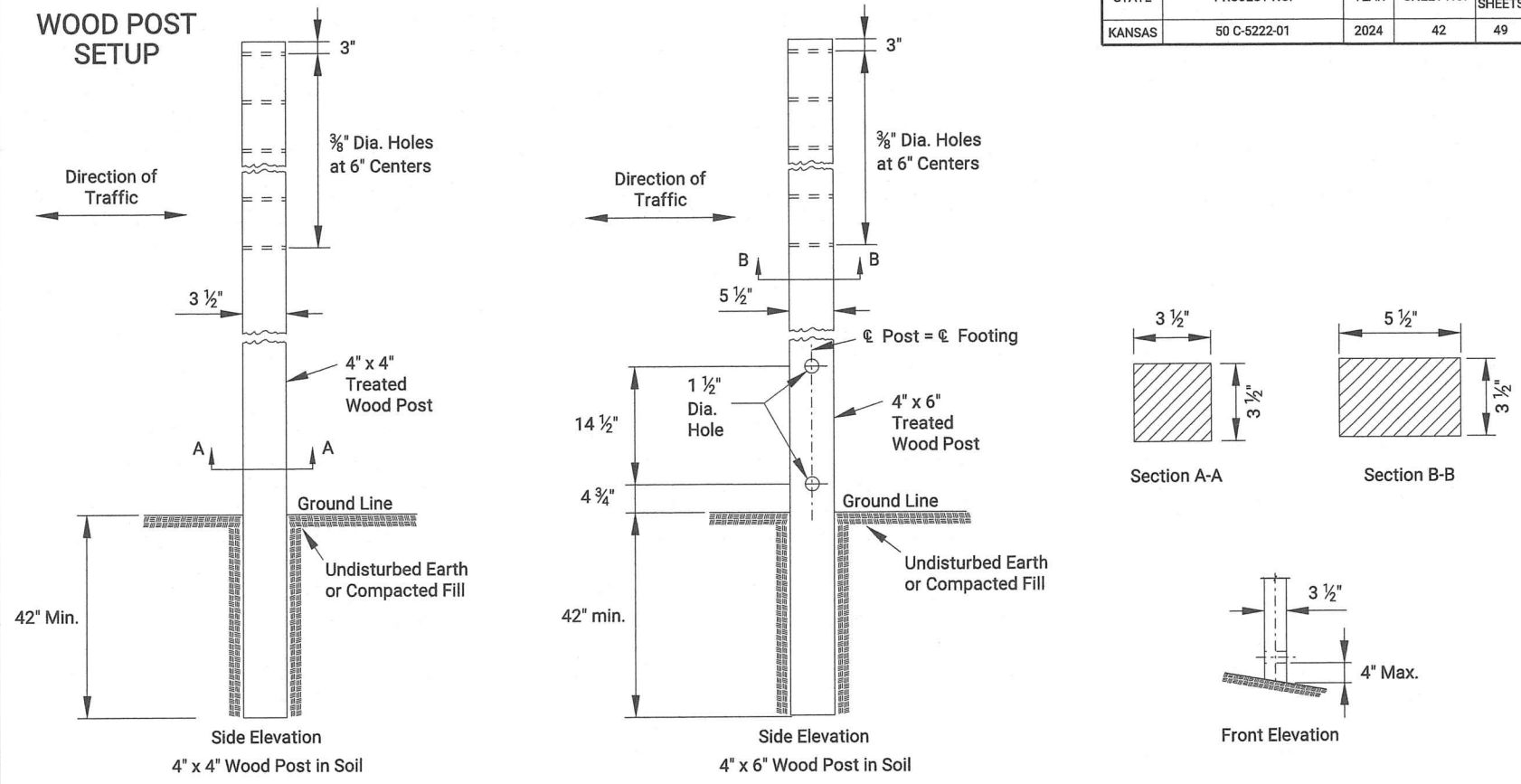
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 42 | 49 |

PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



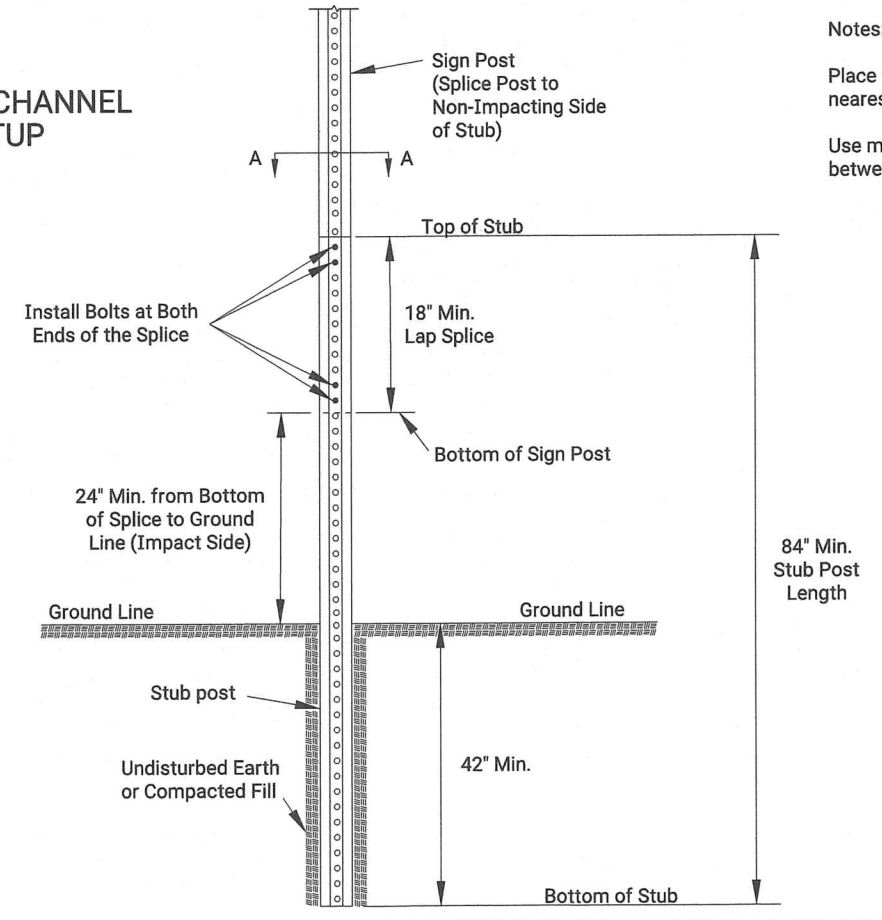
Details for 2", 2 1/4", or 2 1/2" sign posts
 Place bolts in the same corner along each sign post.

WOOD POST SETUP

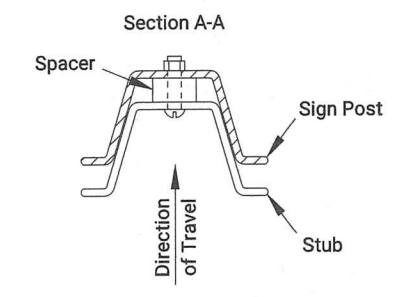


See TE710 for Additional Details and Requirements

3 LB/F U-CHANNEL SETUP



Notes:
 Place two bolts at both ends of the splice through the holes nearest the ends of the splice.
 Use manufacturer recommended spacers over the bolts between the spliced pieces of U-Channel.



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|-------------------------------------|------------|-----------|--------|-------------------|
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
| TRAFFIC CONTROL SIGN POSTS | | | | |
| TE712 | | | | |
| DESIGNED | B.A.H. | 06-01-15 | APPD. | Kristina Ericksen |
| DESIGN CK. | DETAIL CK. | QUAN. CK. | TRACED | TRACE CK. |
| KD0T Graphics Certified 07-18-2022 | | | | |

KD0T Graphics Certified

Summary Of Traffic Control Devices (Each)

| Work Zone Sign (Special) | | |
|--------------------------|---------------------|---------------------|
| Sign No. | 16.25 Sq.Ft. & Less | 16.26 Sq.Ft. & Over |
| | | |
| | | |
| | | |

Note: Road shall be closed to thru traffic during construction. Contractor shall provide access to property along project at all times.

NOTE: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL THE WORK ZONE SIGNING ON THIS PROJECT.

Summary Of Traffic Control Devices

* SUMMARY OF TRAFFIC CONTROL DEVICES -FOR INFORMATION ONLY-

All traffic control devices shall be placed in accordance with the applicable KDOT Traffic Control Standards, The contractor shall provide all signs and other traffic control devices for proper traffic control of all construction activities. Quantities listed are estimate only. Contractor operations may require addition signs and traffic control devices, this will be subsidiary to the bid item traffic control.

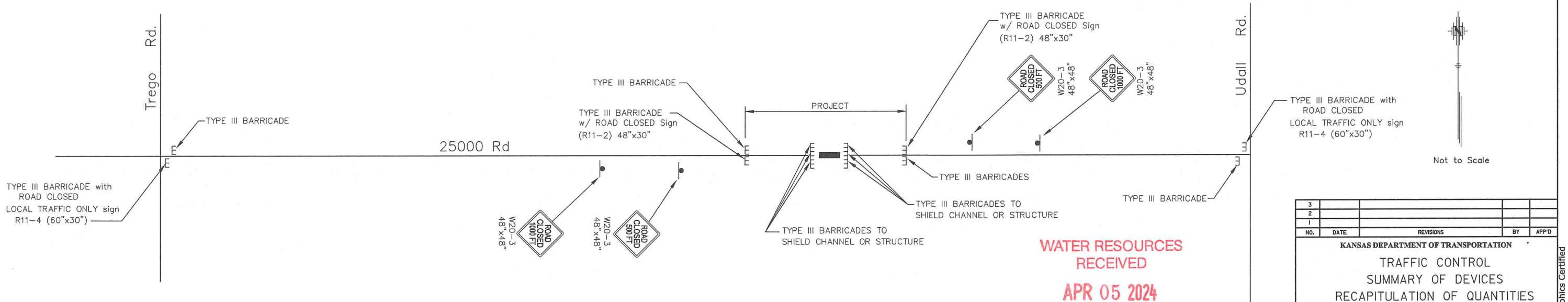
| Work Zone Signs * | | | |
|-------------------|---------------|------------|--------------|
| Sign No. | Size - Sq.Ft. | | |
| | 0-9.25 | 9.26-16.25 | 16.26 & Over |
| R11-2 | | 2 | |
| R11-4 | | 2 | |
| W20-3 | | 4 | |

| Barricades * | | Channelizing Devices * | | |
|--------------------|------------|------------------------|----------|------------|
| Type 3 (4' To 12') | Pedestrian | Fixed | Portable | Pedestrian |
| 14 | | | | |

| Lighted Devices * | |
|---|----|
| Work Zone Warning Light (Type "A" Low Intensity) | 16 |
| Work Zone Warning Light (Red Type "B" High Intensity) | |
| Arrow Display | |
| Portable Changeable Message Sign | |

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 43 | 49 |

| Recapitulation Of Quantities | | |
|---|----------|--------------|
| Item | Quantity | Unit |
| Work Zone Signs (0 To 9.25 Sq.Ft.) | | Each Per Day |
| Work Zone Signs (9.26 To 16.25 Sq.Ft.) | | Each Per Day |
| Work Zone Signs (16.26 Sq.Ft. & Over) | | Each Per Day |
| Work Zone Barricades (Type 3 - 4' To 12') | | Each Per Day |
| Work Zone Barricades (Pedestrian) | | Each Per Day |
| Channelizer (Fixed) | | Each Per Day |
| Channelizer (Portable) | | Each Per Day |
| Channelizer (Pedestrian) | | Each Per Day |
| Work Zone Warning Light (Type "A" Low Intensity) | | Each Per Day |
| Work Zone Warning Light (Red Type "B" High Intensity) | | Each Per Day |
| Arrow Display | | Each Per Day |
| Portable Changeable Message Sign | | Each Per Day |
| Pavement Marking (Temporary) | | |
| 4" Solid (Type I) | | Sta./Line |
| 4" Solid (Type II) | | Sta./Line |
| 4" Broken (8.0') (Type I) | | Sta./Line |
| 4" Broken (8.0') (Type II) | | Sta./Line |
| 4" Broken (3.0') (Type I) | | Sta./Line |
| 4" Broken (3.0') (Type II) | | Sta./Line |
| 4" Dotted Extension (Type I) | | Sta./Line |
| 4" Dotted Extension (Type II) | | Sta./Line |
| Solid (Line Masking Tape) | | Sta./Line |
| Broken (Line Masking Tape) | | Sta./Line |
| Symbol (Type I) | | Each |
| Symbol (Type II) | | Each |
| Flexible Raised Pavement Marker (4" Broken (8.0')) | | Sta./Line |
| Flexible Raised Pavement Marker (4" Broken (3.0')) | | Sta./Line |
| Pavement Marking Removal | | Lin. Ft. |
| Work Zone Sign (Special) (16.25 Sq. Ft. & Less) | | Each |
| Work Zone Sign (Special) (16.26 Sq. Ft. & More) | | Each |
| Temporary Raised Pavement Marker (Type I) | | Each |
| Temporary Raised Pavement Marker (Type II) | | Each |
| Traffic Signal Installation (Temporary) | | Lump Sum |
| Traffic Control (Initial Set Up) | | Lump Sum |
| Traffic Control | Lump Sum | Lump Sum |
| Flagger (Set Price) | 1 | Hour |



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| NO. | DATE | REVISIONS | BY | APP'D |
|-----|------|-----------|----|-------|
| 3 | | | | |
| 2 | | | | |
| 1 | | | | |

KANSAS DEPARTMENT OF TRANSPORTATION
TRAFFIC CONTROL
SUMMARY OF DEVICES
RECAPITULATION OF QUANTITIES

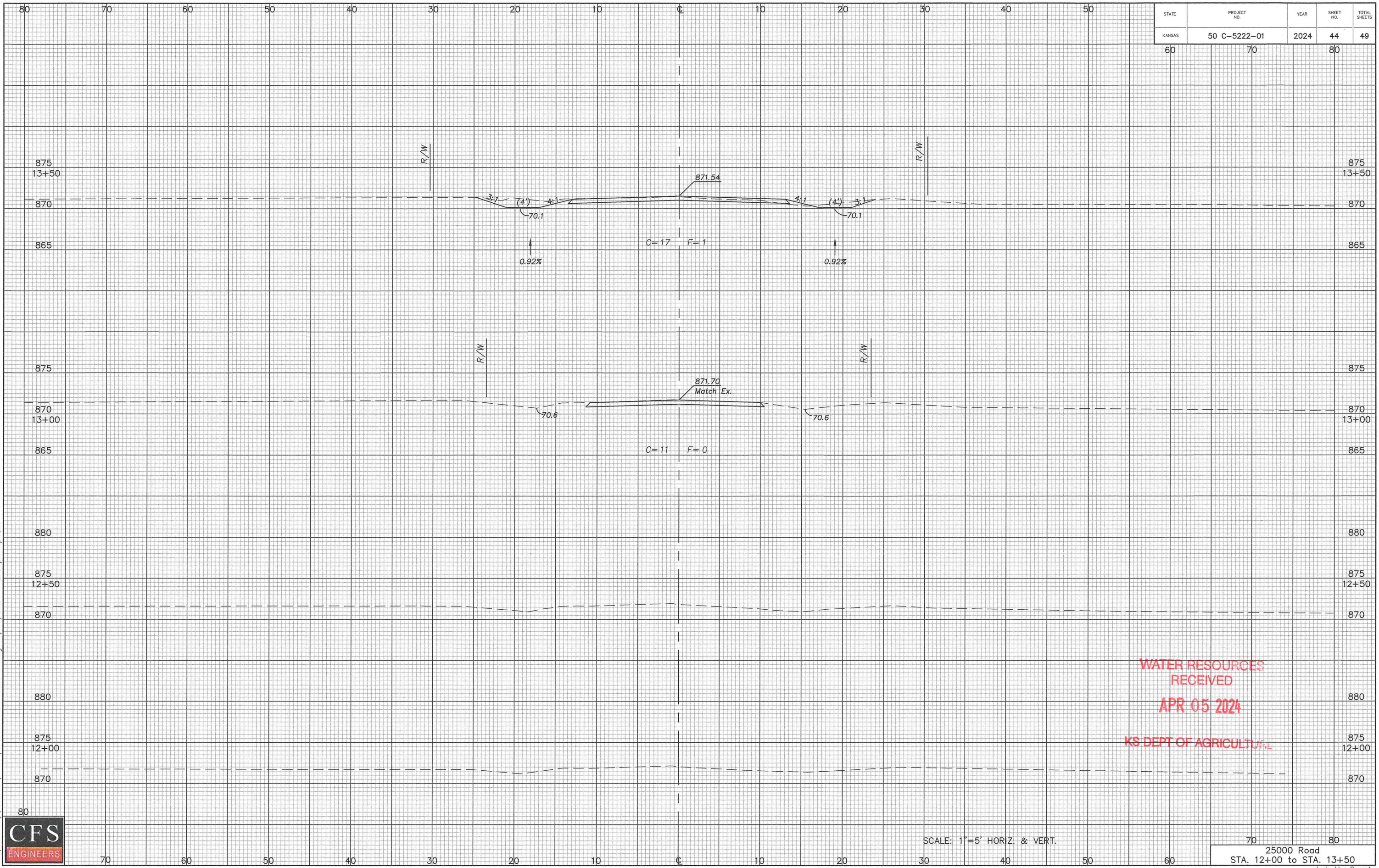
| | | | | | |
|------------|--------|------------|--------|------------|-----------|
| DESIGNED | B.A.H. | DETAILED | R.W.B. | QUANTITIES | TRACED |
| DESIGN CK. | | DETAIL CK. | | QUAN. CK. | TRACE CK. |

FHWA APPROVAL 06/01/15 APP'D Kristina Erickson
KDOT Graphics Certified 06-23-2015

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KDOT Graphics Certified

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 44 | 49 |



1=5
 J:\2023\Proj\235076\CADD\235076 Cross Sections.dwg 3/20/2024 - 2:56pm hpham

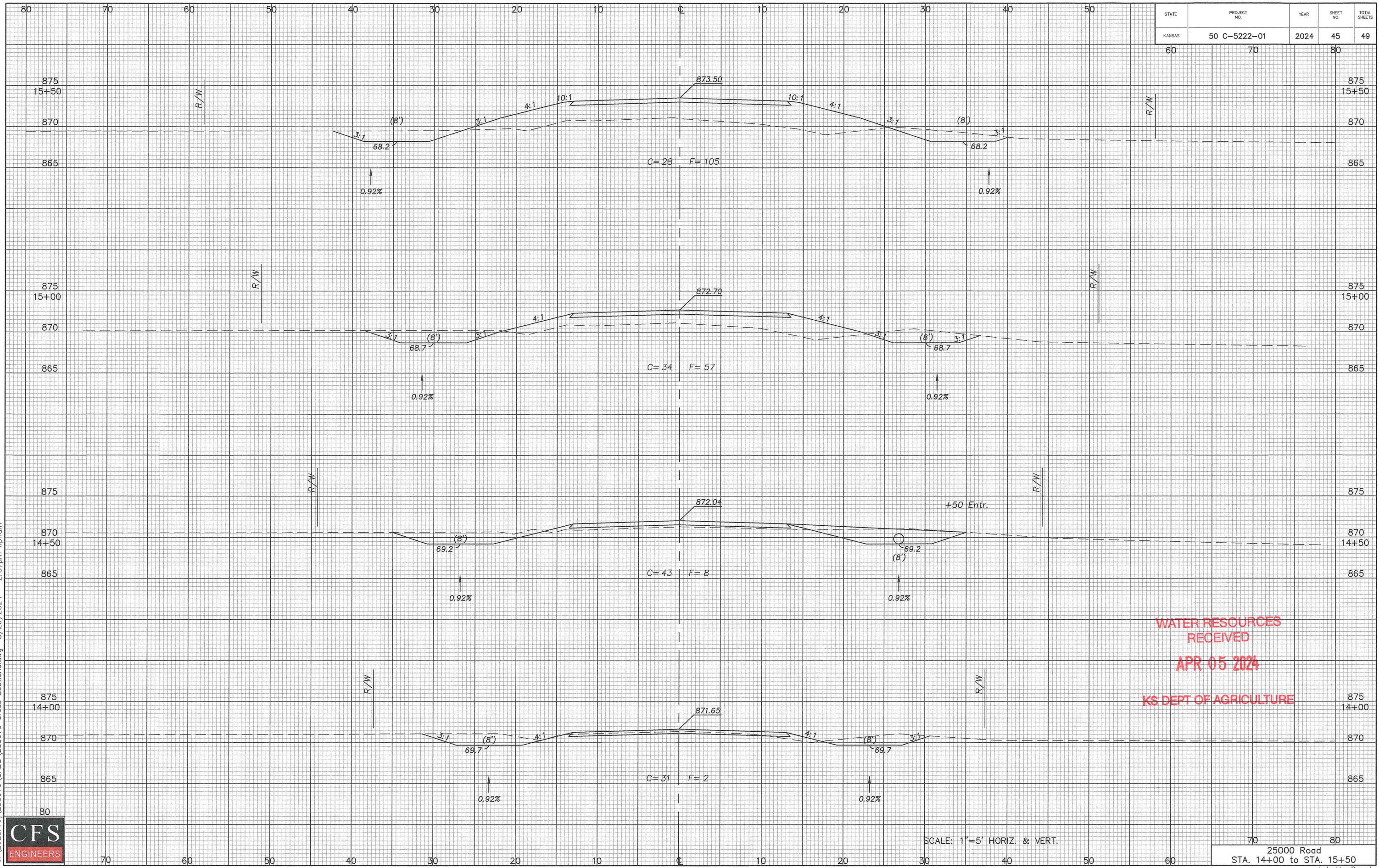


SCALE: 1"=5' HORIZ. & VERT.

WATER RESOURCES
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 KS DEPT OF AGRICULTURE

25000 Road
 STA. 12+00 to STA. 13+50
 Labette County
 23-5076

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 45 | 49 |



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 APR 05 2024
 KS DEPT OF AGRICULTURE

SCALE: 1"=5' HORIZ. & VERT.

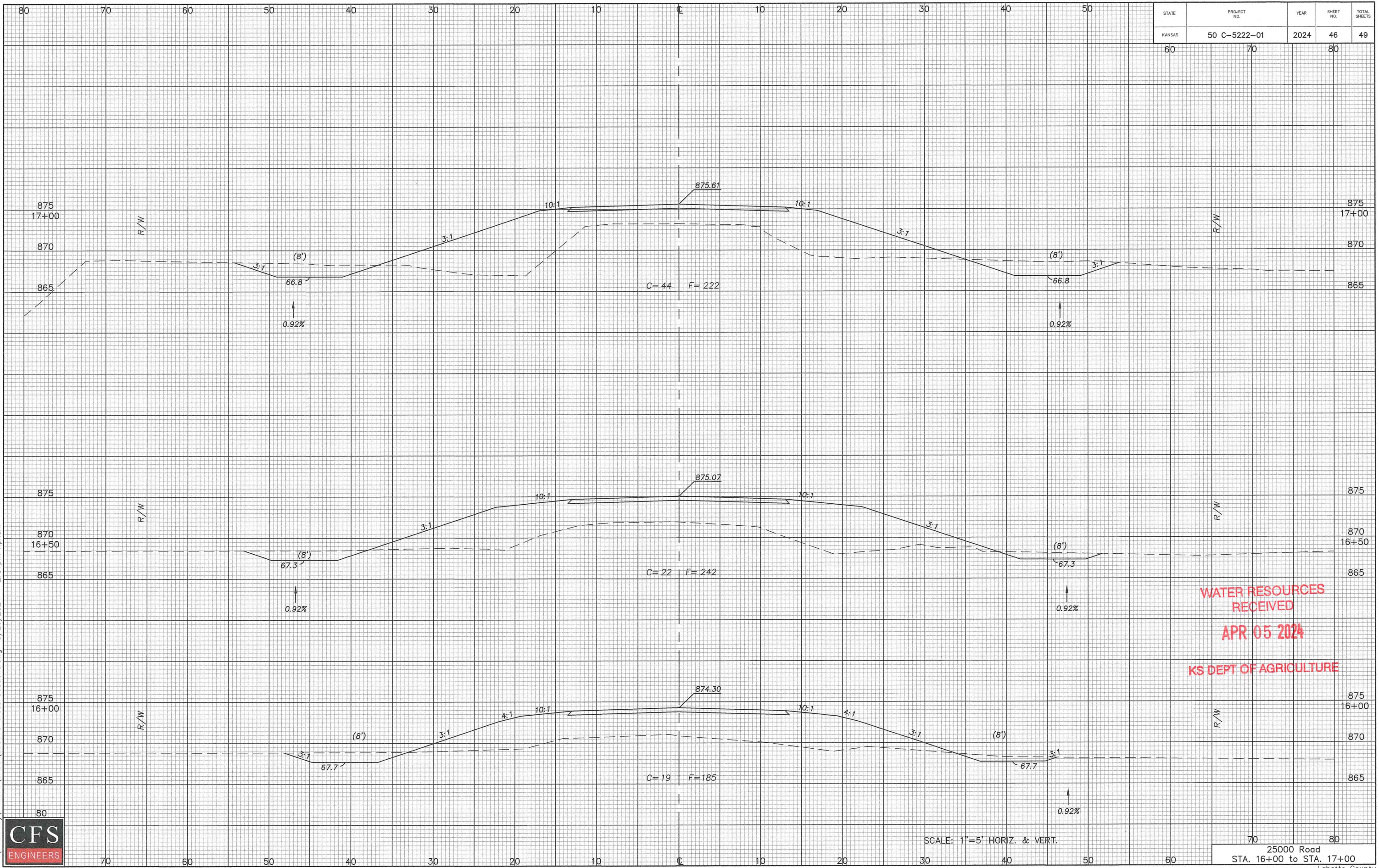
25000 Road
 STA. 14+00 to STA. 15+50

Labette County
 23-5076

1=5
 J:\2023Proj\235076\CADD\235076 Cross Sections.dwg 3/20/2024 - 2:57pm hpham



| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 46 | 49 |



WATER RESOURCES RECEIVED
 APR 05 2024
 KS DEPT OF AGRICULTURE

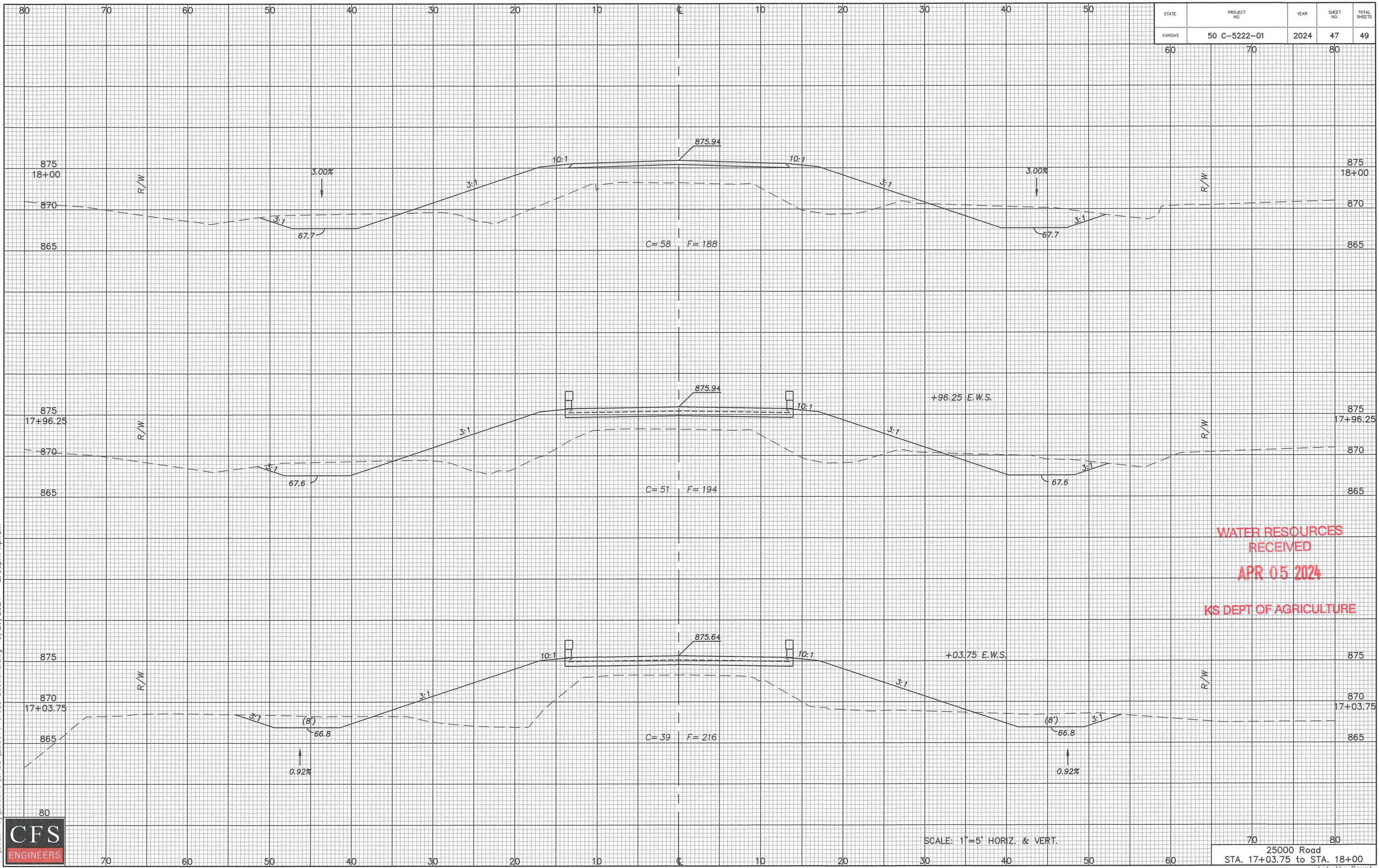
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SCALE: 1"=5' HORIZ. & VERT.

25000 Road
 STA. 16+00 to STA. 17+00
 Labette County
 23-5076

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 47 | 49 |



WATER RESOURCES
 RECEIVED
 APR 05 2024
 KS DEPT OF AGRICULTURE

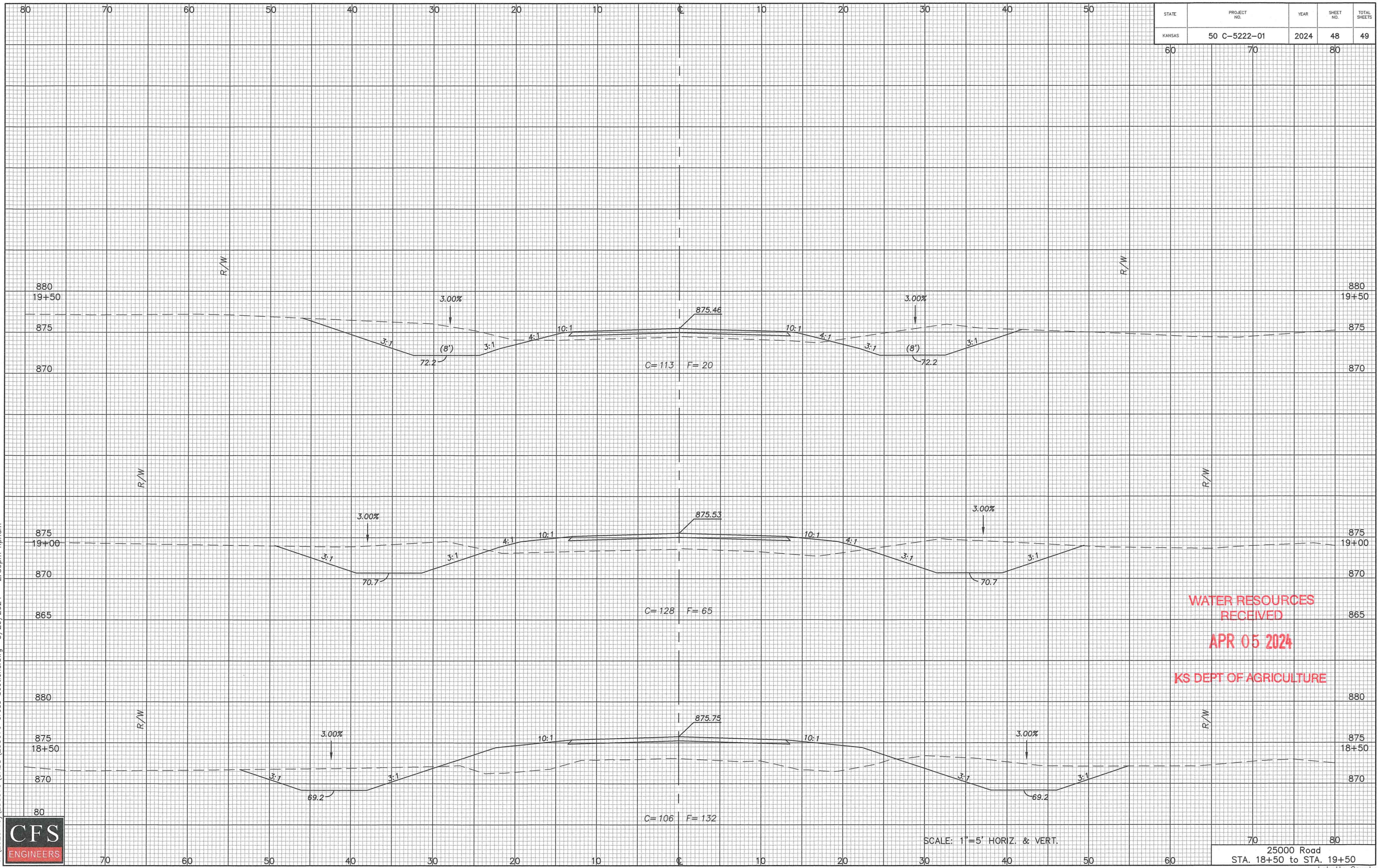
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SCALE: 1"=5' HORIZ. & VERT.

25000 Road
 STA. 17+03.75 to STA. 18+00
 Labette County
 23-5076

| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 48 | 49 |



WATER RESOURCES RECEIVED
 APR 05 2024
 KS DEPT OF AGRICULTURE

SCALE: 1"=5' HORIZ. & VERT.

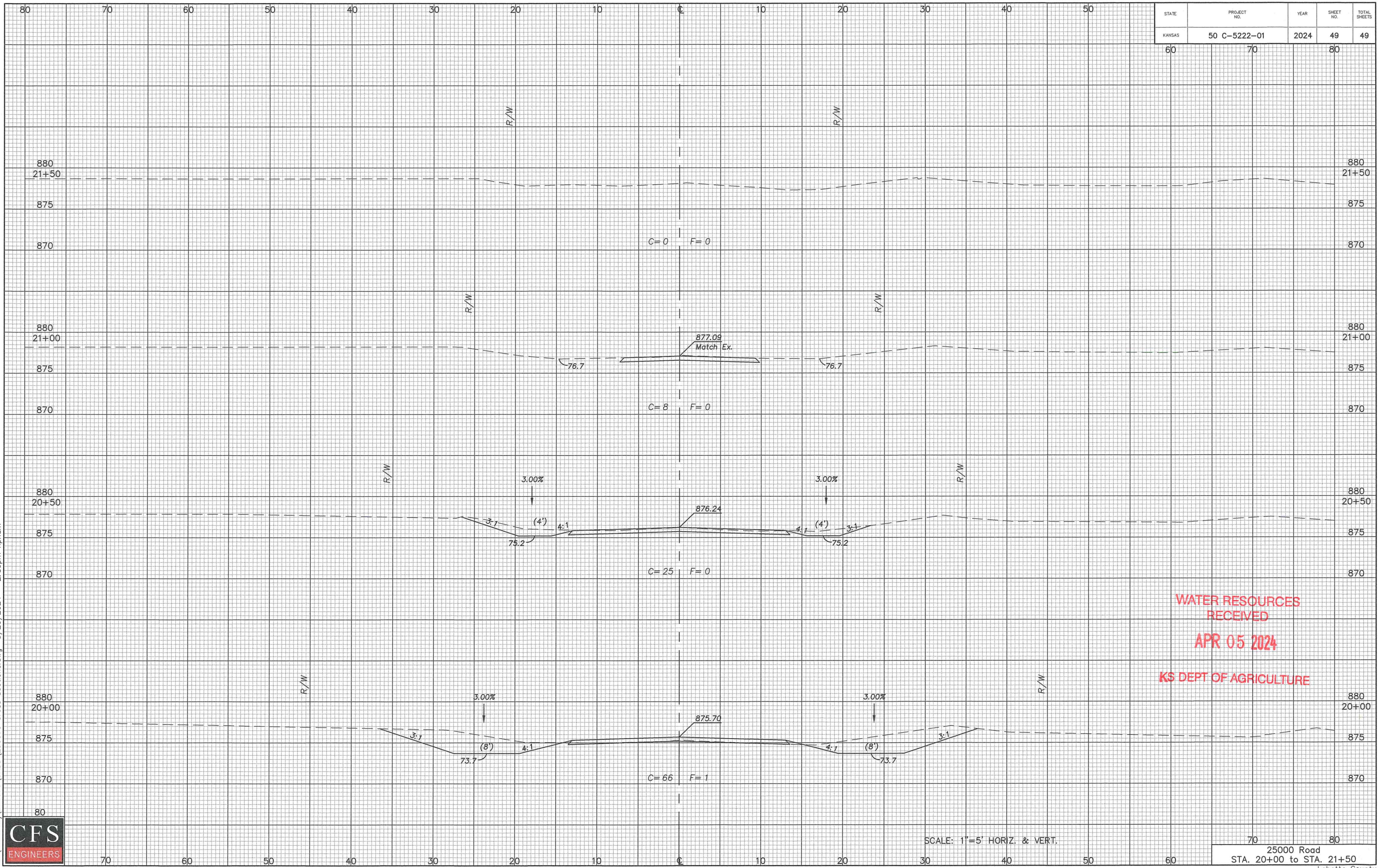
25000 Road
 STA. 18+50 to STA. 19+50

Labette County
 23-5076

1=5
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| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
|--------|--------------|------|-----------|--------------|
| KANSAS | 50 C-5222-01 | 2024 | 49 | 49 |



1=5 j:\2023\Proj\235076\CADD\235076 Cross Sections.dwg 3/20/2024 - 2:59pm hpham



SCALE: 1"=5' HORIZ. & VERT.

WATER RESOURCES
RECEIVED
APR 05 2024
KS DEPT OF AGRICULTURE

70 80
25000 Road
STA. 20+00 to STA. 21+50
Labette County
23-5076