CALL NO. 337

CONTRACT ID. 233004

BULLITT COUNTY

FED/STATE PROJECT NUMBER CB06 015 2723 000-003

DESCRIPTION RAYMOND ROAD (KY 2723)

WORK TYPE GRADE & DRAIN WITH ASPHALT SURFACE

PRIMARY COMPLETION DATE 11/30/2023

LETTING DATE: January 26,2023

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN STANDARD TIME January 26,2023. Bids will be publicly announced at 10:00 AM EASTERN STANDARD TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

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PART I

SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 05

CONTRACT ID - 233004

CB06 015 2723 000-003

COUNTY - BULLITT

PCN - 0501527232201
CB06 015 2723 000-003

RAYMOND ROAD (KY 2723) (MP 0.000) FROM KY 44 EXTENDING EAST TO KY 44 (MP 2.830), A DISTANCE OF 02.83 MILES.CULVERT REPLACEMENT

GEOGRAPHIC COORDINATES LATITUDE 38:00:45.00 LONGITUDE 85:45:04.00

ADT 1,395

COMPLETION DATE(S):

COMPLETED BY 11/30/2023 APPLIES TO ENTIRE CONTRACT

CONTRACT NOTES

PROPOSAL ADDENDA

All addenda to this proposal must be applied when calculating bid and certified in the bid packet submitted to the Kentucky Department of Highways. Failure to use the correct and most recent addenda may result in the bid being rejected.

BID SUBMITTAL

Bidder must use the Department's electronic bidding software. The Bidder must download the bid file located on the Bid Express website (www.bidx.com) to prepare a bid packet for submission to the Department. The bidder must submit electronically using Bid Express.

JOINT VENTURE BIDDING

Joint venture bidding is permissible. All companies in the joint venture must be prequalified in one of the work types in the Qualifications for Bidders for the project. The bidders must get a vendor ID for the joint venture from the Division of Construction Procurement and register the joint venture as a bidder on the project. Also, the joint venture must obtain a digital ID from Bid Express to submit a bid. A joint bid bond of 5% may be submitted for both companies or each company may submit a separate bond of 5%.

UNDERGROUND FACILITY DAMAGE PROTECTION

The contractor shall make every effort to protect underground facilities from damage as prescribed in the Underground Facility Damage Protection Act of 1994, Kentucky Revised Statute KRS 367.4901 to 367.4917. It is the contractor's responsibility to determine and take steps necessary to be in compliance with federal and state damage prevention directives. When prescribed in said directives, the contractor shall submit Excavation Locate Requests to the Kentucky Contact Center (KY811) via web ticket entry. The submission of this request does not relieve the contractor from the responsibility of contacting non-member facility owners, whom shall be contacted through their individual Protection Notification Center. Non-compliance with these directives can result in the enforcement of penalties.

REGISTRATION WITH THE SECRETARY OF STATE BY A FOREIGN ENTITY

Pursuant to KRS 176.085(1)(b), an agency, department, office, or political subdivision of the Commonwealth of Kentucky shall not award a state contract to a person that is a foreign entity required by KRS 14A.9-010 to obtain a certificate of authority to transact business in the Commonwealth ("certificate") from the Secretary of State under KRS 14A.9-030 unless the person produces the certificate within fourteen (14) days of the bid or proposal opening. If the foreign entity is not required to obtain a certificate as provided in KRS 14A.9-010, the foreign entity should identify the applicable exception. Foreign entity is defined within KRS 14A.1-070.

For all foreign entities required to obtain a certificate of authority to transact business in the Commonwealth, if a copy of the certificate is not received by the contracting agency within the time frame identified above, the foreign entity's solicitation response shall be deemed non-responsive or the awarded contract shall be cancelled.

Businesses can register with the Secretary of State at https://secure.kentucky.gov/sos/ftbr/welcome.aspx .

SPECIAL NOTE FOR PROJECT QUESTIONS DURING ADVERTISEMENT

Questions about projects during the advertisement should be submitted in writing to the Division of Construction Procurement. This may be done by fax (502) 564-7299 or email to kytc.projectquestions@ky.gov. The Department will attempt to answer all submitted questions. The Department reserves the right not to answer if the question is not pertinent or does not aid in clarifying the project intent.

The deadline for posting answers will be 3:00 pm Eastern Daylight Time, the day preceding the Letting. Questions may be submitted until this deadline with the understanding that the later a question is submitted, the less likely an answer will be able to be provided.

The questions and answers will be posted for each Letting under the heading "Questions & Answers" on the Construction Procurement website (www.transportation.ky.gov/contract). The answers provided shall be considered part of this Special Note and, in case of a discrepancy, will govern over all other bidding documents.

HARDWOOD REMOVAL RESTRICTIONS

The US Department of Agriculture has imposed a quarantine in Kentucky and several surrounding states, to prevent the spread of an invasive insect, the emerald ash borer. Hardwood cut in conjunction with the project may not be removed from the state. Chipping or burning on site is the preferred method of disposal.

INSTRUCTIONS FOR EXCESS MATERIAL SITES AND BORROW SITES

Identification of excess material sites and borrow sites shall be the responsibility of the Contractor. The Contractor shall be responsible for compliance with all applicable state and federal laws and may wish to consult with the US Fish and Wildlife Service to seek protection under Section 10 of the Endangered Species Act for these activities.

ACCESS TO RECORDS

The contractor, as defined in KRS 45A.030 (9) agrees that the contracting agency, the Finance and Administration Cabinet, the Auditor of Public Accounts, and the Legislative Research Commission, or their duly authorized representatives, shall have access to any books, documents, papers, records, or other evidence, which are directly pertinent to this contract for the purpose of financial audit or program review. Records and other prequalification information confidentially

disclosed as part of the bid process shall not be deemed as directly pertinent to the contract and shall be exempt from disclosure as provided in KRS 61.878(1)(c). The contractor also recognizes that any books, documents, papers, records, or other evidence, received during a financial audit or program review shall be subject to the Kentucky Open Records Act, KRS 61.870 to 61.884.

In the event of a dispute between the contractor and the contracting agency, Attorney General, or the Auditor of Public Accounts over documents that are eligible for production and review, the Finance and Administration Cabinet shall review the dispute and issue a determination, in accordance with Secretary's Order 11-004.

BUILD AMERICA, BUY AMERICA ACT (BABA)

On November 15, 2021, President Biden signed into law the Infrastructure Investment and Jobs Act (IIJA), Pub. L. No. 117-58, includes the Build America, Buy America Act ("the Act"). Pub. L. No. 117-58, §§70901-52. The Act strengthens the Buy America preference to include "construction materials." The current temporary waiver for **"construction materials"** will expire on November 10, 2022.

The Act will apply to construction materials as outlined in the guidance issued in OMB M-22-11.

Construction Materials – Includes an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives – that is or consists primarily of:

- Non-ferrous metals
- Plastic/polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- Glass (including optic glass);
- Lumber; or
- Drywall.

Construction Materials only applies to items, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project.

Construction Materials does not apply to tools, equipment or supplies brought to the jobsite and removed before completion.

SPECIAL NOTE FOR RECIPROCAL PREFERENCE

RECIPROCAL PREFERENCE TO BE GIVEN BY PUBLIC AGENCIES TO RESIDENT BIDDERS

By reference, KRS 45A.490 to 45A.494 are incorporated herein and in compliance regarding the bidders residency. Bidders who want to claim resident bidder status should complete the Affidavit for Claiming Resident Bidder Status along with their bid in the electronic bidding software. Submittal of the Affidavit should be done along the bid in Bid Express.

April 30, 2018

ASPHALT MIXTURE

Unless otherwise noted, the Department estimates the rate of application for all asphalt mixtures to be 110 lbs/sy per inch of depth.

DGA BASE

Unless otherwise noted, the Department estimates the rate of application for DGA Base to be 115 lbs/sy per inch of depth.

INCIDENTAL SURFACING

The Department has included in the quantities of asphalt mixtures established in the proposal estimated quantities required for resurfacing or surfacing mailbox turnouts, farm field entrances, residential and commercial entrances, curve widening, ramp gores and tapers, and road and street approaches, as applicable. Pave these areas to the limits as shown on Standard Drawing RPM-110-06 or as directed by the Engineer. In the event signal detectors are present in the intersecting streets or roads, pave the crossroads to the right of way limit or back of the signal detector, whichever is the farthest back of the mainline. Surface or resurface these areas as directed by the Engineer. The Department will not measure placing and compacting for separate payment but shall be incidental to the Contract unit price for the asphalt mixtures.

OPTION B

Be advised that the Department will control and accept compaction of asphalt mixtures furnished on this project under OPTION B in accordance with Sections 402 and 403.

SPECIAL NOTE FOR EROSION CONTROL

I. DESCRIPTION

Perform all erosion and water pollution control work in accordance with the Department's Standard and Interim Supplemental Specifications, Special Provisions and Special Notes, and Standard and Sepia Drawings, current editions, and as directed by the Engineer. Section references are to the Standard Specifications. This work shall consist of:

(1) Developing and preparing a Best Management Practices Plan (BMP) tailored to suit the specific construction phasing for each site within the project; (2) Preparing the project site for construction, including locating, furnishing, installing, and maintaining temporary and/or permanent erosion and water pollution control measures as required by the BMP prior to beginning any earth disturbing activity on the project site; (3) Clearing and grubbing and removal of all obstructions as required for construction; (4) Removing all erosion control devices when no longer needed; (5) Restoring all disturbed areas as nearly as possible to their original condition; (6) Preparing seedbeds and permanently seeding all disturbed areas; (7) Providing a Kentucky Erosion Prevention and Sediment Control Program (KEPSC) qualified inspector; and (8) Performing any other work to prevent erosion and/or water pollution as specified by this contract, required by the BMP, or as directed by the Engineer.

II. MATERIALS

Furnish materials in accordance with these notes, the Standard Specifications and Interim Supplemental Specifications, and applicable Special Provisions and Special Notes, and Standard and Sepia Drawings, current editions. Provide for all materials to be sampled and tested in accordance with the Department's Sampling Manual. Unless directed otherwise by the Engineer, make the materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing.

III. CONSTRUCTION

Be advised, these Erosion Control Plan Notes do not constitute a BMP plan for the project. Jointly with the Engineer, prepare a site specific BMP plan for each drainage area within the project in accordance with Section 213. Provide a unique BMP at each project site using good engineering practices taking into account existing site conditions, the type of work to be performed, and the construction phasing, methods and techniques to be utilized to complete the work. Be responsible for all erosion prevention, sediment control, and water pollution prevention measures required by the BMP for each site. Represent and warrant compliance with the Clean Water Act (33 USC Section 1251 et seq.), the 404 Permit, the 401 Water Quality Certification, and applicable state and

local government agency laws, regulations, rules, specifications, and permits. Contrary to Section 105.05, in case of discrepancy between theses notes, the Standard Specifications, Interim Supplemental Specifications, Special and Special Notes, Standard and Sepia Drawings, and such state and local government agency requirements, adhere to the most restrictive requirement.

Conduct operations in such a manner as to minimize the amount of disturbed ground during each phase of the construction and limit the haul roads to the minimum required to perform the work. Preserve existing vegetation not required to be removed by the work or the contract. Seed and/or mulch disturbed areas at the earliest opportunity. Use silt fence, silt traps, temporary ditches, brush barriers, erosion control blankets, sodding, channel lining, and other erosion control measures in a timely manner as required by the BMP and as directed or approved by the Engineer. Prevent sediment laden water from leaving the project, entering an existing drainage structure, or entering a steam.

Provide for erosion control measures to be in place and functioning prior to any earth disturbance within a drainage area. Compute the volume and size of silt control devices necessary to control sediment during each phase of construction. Remove sediment from silt traps before they become a maximum of ½ full. Maintain silt fence by removing accumulated trappings and/or replacing the geotextile fabric when it becomes clogged, damaged, or deteriorated, or when directed by the Engineer. Properly dispose of all materials trapped by erosion control devices at approved sites off the right of way obtained by the Contractor at no additional cost to the Department (See Special Note for Waste and Borrow).

As work progresses, add or remove erosion control measures as required by the BMP applicable to the Contractor’s project phasing and construction methods and techniques. Update the volume calculations and modify the BMP as necessary throughout the duration of the project. Ensure that an updated BMP is kept on site and available for public inspection throughout the life of the project.

After all construction is complete, restore all disturbed areas in accordance with Section 212. Completely remove all temporary erosion control devices not required as part of the permanent erosion control from the construction site. Prior to removal, obtain the Engineer’s concurrence of items to be removed. Grade the remaining exposed earth (both on and off the Right of-Way) as nearly as possible to its original condition, or as directed by the Engineer. Prepare the seed bed areas and sow all exposed earthen areas with the applicable seed mixture(s) according to Section 212.03.03.

IV. MEASUREMENT

Erosion Control Blanket. If required by the BMP, the Department will measure Erosion Control Blanket according to Section 212.04.07.

Sodding. If required by the BMP, the Department will measure Sodding according to Section 212.04.08.

Channel Lining. If required by the BMP, the Department will measure Channel Lining according to Sections 703.04.04-703.04.07.

Erosion Control. Contrary to Sections 212.04, 213.04, and 703.04 other than Erosion Control Blankets, Sodding, and Channel Lining, the Department will measure Erosion Control as one lump sum. The Department will not measure developing, updating, and maintaining a BMP plan for each site; providing a KEPSC qualified inspector; locating, furnishing, installing, inspecting, maintaining, and removing erosion and water pollution control items; Roadway Excavation, Borrow Excavation, Embankment In Place, Topsoil Furnished and Placed, and Spreading Stockpiled Topsoil; Topdressing Fertilizer, Temporary and Permanent Seeding and Protection, Special Seeding Crown Vetch, and Temporary Mulch; Sedimentation Basin and Clean Sedimentation Basin, Silt Trap Type "A" and Clean Silt Trap Type "A"; Silt Trap Type "B" and Clean Silt Trap Type "B"; Silt Trap Type "C" and Clean Silt Trap Type "C"; Temporary Silt Fence and Clean Temporary Silt Fence; Plants, Vines, Shrubs, and Trees; Gabion and Dumped Stone Deflectors and Riffle Structures; Boulders; Temporary Ditches and clean Temporary Ditches; Geotextile Fabric, and all other erosion and water pollution control items required by the BMP or the Engineer, but shall be incidental to Erosion Control.

V. Basis of Payment

Erosion Control Blanket. If not listed as a bid item, but required by the BMP, the Department will pay for Erosion Control Blankets as Extra Work according to Sections 104.03 and 109.04.

Sodding. If not listed as a bid item, but required by the BMP, the Department will pay for Sodding as Extra Work according to Sections 104.03 and 109.04.

Channel Lining. If not listed as a bid item, but required by the BMP, the Department will pay for Channel Lining as Extra Work according to Sections 104.03 and 109.04.

Erosion Control. Contrary to Sections 212.05 and 213.05, other than Erosion Control Blanket, Sodding, and Channel Lining, payment at the Contract lump sum price for Erosion Control, shall be full compensation for all materials, equipment, labor and incidentals necessary to complete the erosion and water pollution control work as specified in these notes, Sections 212 and 213, the Supplemental Specifications, applicable Special Provisions and Special Notes, and Standard and Sepia Drawings, including but not limited to developing, updating, and maintaining a BMP plan for each site; providing a KEPSC qualified inspector; locating, furnishing, installing, inspecting, maintaining, and removing erosion and water pollution control items; Roadway Excavation, Borrow Excavation, Embankment In Place, Topsoil Furnished and Placed, and Spreading Stockpiled Topsoil; Topdressing Fertilizer, Temporary and Permanent Seeding and Protection, Special Seeding Crown Vetch, and Temporary Mulch; Sedimentation Basin and Clean Sedimentation Basin, Silt Trap Type “A” and Clean Silt Trap Type “A”; Silt Trap Type “B” and Clean Silt Trap Type “B”; Silt Trap Type “C” and Clean Silt Trap Type “C”; Temporary Silt Fence and Clean Temporary Silt Fence; Plants, Vines, Shrubs, and Trees; Gabion and Dumped Stone Deflectors and Riffle Structures; Boulders; Temporary Ditches and clean Temporary Ditches; Geotextile Fabric and all other erosion and water pollution control items required by the BMP or the Engineer.

GENERAL SPECIAL NOTES

The Box Culverts for each location on KY 2723 have already been purchased by KYTC and are located at the Bullitt County Maintenance Facility, address 579 Cedar Grove Road, Sheperdsville, KY. The pick-up of Box Culvert materials from the Bullitt County Maintenance Facility and delivery to site shall be considered incidental to the bid item Aluminum Structural Plate Box Culvert, and no additional payment will be considered.

Accept payment of bid item Remove Structure at the contract lump sum price as full compensation for all materials, equipment, labor and incidentals necessary to remove existing structures at each location.

Assembly of Box Culvert and its placement shall be incidental to the bid item Aluminum Structural Plate Box Culvert, and no additional payment will be considered.

Assembly Site for Box Culvert shall be incidental to Site Prep, and no additional payment will be considered.

Access for all Box Culvert construction and placement that may temporarily affect an adjacent property shall be obtained using a consent and release, and any disturbed areas within the limits of this Consent and Release shall be returned to original conditions or better where affecting Grading of Earth Work and any Landscaping and Ground Cover that are disturbed. Obtaining consent and release shall be the Contractor's responsibility.

Allow for traffic to ride on the asphalt base layer for at least 7 days prior to paving final surface.

Any work operations not covered by a bid item shall be incidental to the overall project.

SPECIAL NOTES FOR CULVERT REPLACEMENT

KY 2723

I. DESCRIPTION

Except as specified herein, perform all work in accordance with the Department's Standard and Supplemental Specifications, Special Provisions and Special Notes, and Standard and Sepia Drawings, current editions. Section references are to the Standard Specifications. Furnish all labor, equipment, materials, and incidentals for the following work:

(1) Site preparation and Erosion Control; (2) Designing, furnishing, and constructing Structural Plate Box Culvert; (3) Excavation, backfill, and construction of embankments; (4) Restoring roadway, pavement, and shoulders; (5) Maintaining and controlling traffic; and (6) any other work as specified by this contract.

II. MATERIALS

Except as provided herein, provide materials conforming to Sections 603, 612, 701, 809, and the Special Note for Aluminum and Steel Structural Plate Box Culvert, as applicable. The Department will sample and test all materials in accordance with the Department's Sampling Manual. Unless specified otherwise in these notes, make the materials available for sampling at sufficient time in advance of the use of the materials to allow for the necessary time for.

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Foundation Preparation. For Structural Plate Box Culvert, use Crushed Limestone Size No. 57 wrapped in Class 2 Geotextile Fabric.

C. Structural Plate Box Culvert. KYTC to Furnish all necessary Aluminum Structural Plate Box Culverts with full invert and toe walls according to the Special Note for Aluminum and Steel Structural Plate Box Culverts designed by the manufacturer. Contractor will need to pick-up the Box Culverts from the Bullitt County Maintenance Facility as described in the General Special Note. Provide for a manufacturer’s representative to be available on site during culvert or assembly, installation and backfilling.

D. Culvert Backfill. Use Crushed Limestone Size No. 57.

E. Channel Lining. Use Class II Channel Lining

F. Surfacing and Shoulder Materials. Class 2 Asphalt Surface 0.38D PG64-22.

III. CONSTRUCTION METHODS

Except as provided herein, construct Structural Plate Box Culvert according to Sections 603, 612, and 701 as applicable

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Site Preparation. Be responsible for all site preparation, including, but not limited to: clearing and grubbing and tree and stump removal; structure, common, solid rock, and special excavation; structural granular backfill, embankment, borrow, and embankment in place; foundation preparation; removal of existing obstructions or any other items; disposal of materials, waste, and debris; cleaning inlet and outlet ditches; restoration, clean up, and final dressing. Limit clearing and grubbing to the absolute minimum required to construct the culvert, roadway approaches, and guardrail. Obtain the Engineer's prior approval before removing any trees. Perform all site preparation only as approved or directed by the Engineer.

Construct the Aluminum Box Culverts on KY 2723 at the same locations as the existing structures. Prior to excavation for trenches for the new culverts and culvert removal, saw cut pavement to a neat edge. Obtain the Engineer's approval of the trench widths prior to saw cutting pavement. Close the road during the approved periods allowed by the Traffic Control Plan, excavate trenches, and remove the existing culverts. Provide positive drainage of slopes and ditches at all times during and upon completion of construction. Stockpile excavation within the right of way for reuse in constructing embankments. Obtain the Engineer's approval of the suitability of excavated materials before reusing in the embankments. Use excess suitable excavation to flatten slopes as approved or directed by the Engineer. Waste unsuitable and remaining excess excavation and other removed materials at sites off the right of way obtained by the Contractor at no additional cost to the Department (See Special Note for Waste and Borrow). Perform all excavation and removal of existing structure only as approved or directed by the Engineer.

Without regard to the materials encountered, consider all roadway, drainage, solid rock, and special excavation to be unclassified. It shall be distinctly understood that

any reference to rock, earth, or any other material on the plans or cross sections, whether in numbers, words, letters, or lines, is solely for the Department's information and is not to be taken as an indication of classified excavation or the quantity of either rock, earth, or any other material involved. The bidder must draw his own conclusions as to the conditions to be encountered. The Department does not give any guarantee as to the accuracy of the data and no claim will be considered for additional compensation if the materials encountered are not in accord with the classification shown.

C. Excavation and Removal of Existing Structures. Completely remove the existing culvert, including masonry (stone and/or concrete), if present. Be responsible for all excavation (structure, common, rock, and unclassified) required for foundation preparation and all other excavation required by the work. Excavate rock in channel as required to allow for construction of foundation and installation of culvert with the designed fill cover height. Use suitable excavated materials to backfill the trenches from the removed structures on KY 2723. Provide positive drainage of slopes and ditches at all times during and upon completion of construction. Perform all excavation only as approved or directed by the Engineer.

D. Foundation Preparation and Bedding. Except as provided herein, prepare foundation and bedding for the three box culverts to be installed according to the Special Note for Aluminum and Steel Structural Plate Box Culverts; however provide a minimum depth of 18 inches of No. 57 crushed limestone wrapped in Geotextile Fabric Class 2.

E. Structural Plate Box Culvert. Construct Structural Plate Box Culvert according to the manufacturer’s design with invert, and toe walls as shown on the typical section. Be responsible for field layout and survey of the approved box culvert according to the approved designs furnished by the Contractor, or the standard drawings, as applicable. Provide for a manufacturer’s representative to be present during assembly, construction, and backfilling of the structure. Obtain the Engineer’s approval of the final centerline, flow line, length and skew prior to backfilling. Provide positive drainage upon completion of the project.

F. Backfill and Embankments. Construct Crushed Limestone Size No. 57 in balanced fashion 8" loose lifts to the bottom of DGA as shown on the typical sections provided. Place a layer of Class 2 Geotextile Fabric between No. 57 stone and DGA layer. Complete the remainder of the embankments with approved suitable excavation and/or embankment in place. Use excess suitable excavation to flatten slopes as approved or directed by Engineer. Warp finished slopes to match existing slopes and ditches. Provide positive drainage of slopes and ditches at all times during and upon completion of construction.

G. Channel Lining. Place Class II Channel Lining to protect culvert ends, wing walls, and slopes as directed by the Engineer. In addition to the requirements of section 703, the Engineer may require additional hand placement.

H. Pavement and Shoulder Restoration. Establish width, crown, superelevation and final grade lines as shown on the typical section or as directed by the Engineer.

After the existing culverts on KY 2723 are removed and trench backfilled and the Structural Plate Box Culvert is installed and backfilled, place Crushed Limestone Size No. 57 in balanced fashion 8" loose lifts to the bottom of DGA as shown on the typical sections provided. Place a layer of Class 2 Geotextile Fabric between No. 57 stone and DGA layer. Install 6" DGA layer followed by two 4" lifts of CL2 Asph Surf 1.00D PG 64-22. Allow traffic to run on roadway for 7 days to allow for any settlement. If any settlement occurs it is the responsibility of the contractor to add additional asphalt to match existing pavement height. Asphalt surface will be placed over the entire project after all work is completed.

I. Final Dressing and Clean Up. After all work is completed, completely remove all waste and debris from the construction worksite. Backfill all excavated areas and compact as directed by the Engineer. Perform Class A Final Dressing on all disturbed areas, both on and off the right of way. Sow all disturbed earthen areas according to the Special Note for Erosion Control.

J. On-Site Inspection. Make a thorough inspection of the site prior to submitting bid and be thoroughly familiar with existing conditions so that the work can be expeditiously performed after a contract is awarded. The Department will consider submission of a bid as evidence of this inspection having been made. The Department will not consider any claims resulting from site conditions.

K. Right-of-Way Limits. The Department has not determined exact Right-of-Way limits. Limit work activities and operations to obvious existing Right-of-Way, Permanent Easements, and work areas obtained by the Department through consent and release of the adjacent property owners. Be responsible for encroachments onto private lands.

L. Utilities. Locate all underground and overhead utilities prior to construction. Be responsible for repairing all utility damage that occurs as a result of the Contractor's operations at no additional cost to the Department.

M. Restoration. Be responsible for all damage to public and/or private property resulting from the work. Remove and replace all damaged or disturbed roadway features in like kind materials and design at no additional cost to the Department.

N. Disposal of Waste. Dispose of all removed pipe, stone masonry, concrete and reinforcing steel, pavement, debris, unsuitable and excess excavation, and other waste off the right-of-way at sites obtained by the Contractor at no additional cost to the Department (see Special Note for Waste and Borrow).

O. Caution. Consider the information shown on the plans and the type of work listed herein as approximate only and do not take the information as an accurate evaluation of the materials and conditions to be encountered during construction; the bidder must draw his own conclusions. The Department does not give any guarantee as to the

accuracy of the data and no claim will be considered for if the conditions encountered are not in accordance with the information shown.

P. Control. Perform all work under the absolute control of the Department of Highways. Obtain the Engineer's approval of all designs required to be furnished by the Contractor and/or the manufacturer and design modifications proposed by the Contractor or Manufacturer prior to incorporation into the work. The Department reserves the right to have other work performed by other contractors and its own forces and to permit public utility companies and others to do work during the construction of and within the limits of, or adjacent to, the project. Conduct work activities and operations in cooperation with such other parties so that interference with such other work will be reduced to a minimum. The Department will consider submission of a bid as Contractor's agreement to not make any claims for additional compensation due to delays or other conditions created by the operations of such other parties. Should a difference of opinion arise as to the rights of the Contractor and others working within the limits of, or adjacent to, the project, the Engineer will decide as to the respective rights of the various parties involved in order to assure the completion of the Department's work in general harmony and in a satisfactory manner, and his decision shall be final and binding upon the Contractor.

IV. METHOD OF MEASUREMENT

The Department will measure for payment only the bid items listed. All other items required to complete the construction shall be incidental to the bid items listed.

A. Maintain and Control Traffic. See Traffic Control Plan

B. Site Preparation. The Department will measure Site Preparation as one lump sum.

C. Structural Plate Box Culverts. The Department will measure the Box Culvert of each type in linear feet along the culvert centerline. The Department will not measure box culvert invert; toe walls; box culvert design; bedding, and backfill: and furnishing the manufacturer's technical representative for separate payment, but shall be incidental to the Structural Plate Box Culvert as applicable.

D. Foundation Preparation. The Department will not measure Foundation Preparation for the Structural Plate Box Culvert for payment, but shall be incidental to Site Preparation.

E. Excavation, Backfill, and Embankment. The Department will not measure excavation, backfilling of the culvert, embankment, borrow, or embankment in place for separate payment, but shall be incidental to Site Preparation as applicable.

F. Channel Lining Class II. The Department will measure Channel Lining Class II in tons.

V. BASIS OF PAYMENT

The Department will make payment only for the bid items listed. All other items required to complete the construction shall be incidental to the bid items listed.

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Structural Plate Box Culvert. Accept payment at the contract unit prices per linear foot as full compensation for all materials, equipment, labor and incidentals necessary to complete the work as specified in these notes and the Standard Specifications for box culvert design, furnishing and installing the box culvert, and furnishing the manufacturer's technical representative.

C. Site Preparation. Accept payment at the contract lump sum unit price as full compensation for all materials, equipment, labor, and incidentals, necessary to complete site preparation and foundation preparation as specified in these notes and the Standard Specifications, including, but not limited to: clearing and grubbing and tree and stump removal; structure, common, solid rock, and special excavation; backfill, embankment, borrow, and embankment in place; dewatering; foundation preparation; removal obstructions or any other items; disposal of materials, waste, and debris; cleaning inlet and outlet ditches; restoration, clean up, and final dressing.

D. Remove Structure. Accept payment at the contract lump sum unit price as full compensation for all materials, equipment, labor, and incidentals, necessary to complete the removal of currently existing box culverts.

SPECIAL PROVISION FOR WASTE AND BORROW SITES

Obtain U.S. Army Corps of Engineer's approval before utilizing a waste or borrow site that involves "Waters of the United States". The Corps of Engineers defines "Waters of the United States" as perennial or intermittent streams, ponds or wetlands. The Corps of Engineers also considers ephemeral streams, typically dry except during rainfall but having a defined drainage channel, to be jurisdictional waters. Direct questions concerning any potential impacts to "Waters of the United States" to the attention of the appropriate District Office for the Corps of Engineers for a determination prior to disturbance. Be responsible for any fees associated with obtaining approval for waste and borrow sites from the U.S. Army Corps of Engineer or other appropriate regulatory agencies.

1-296 Waste & Borrow Sites
01/02/2012

SPECIAL NOTE FOR MANHOLE ADJUSTMENTS

The City of Shepherdsville is responsible for manhole adjustments. Notify the Engineer a minimum of 30 calendar days prior to beginning any work on the project. Unless directed otherwise by the Engineer, do not begin resurfacing until the manhole adjustments are completed by the City. The Engineer will coordinate the work between the Contractor and City.

1-3181 Manhole Adjustments
01/01/2009

SPECIAL NOTE FOR PAVEMENT WEDGE AND SHOULDER MONOLITHIC OPERATION

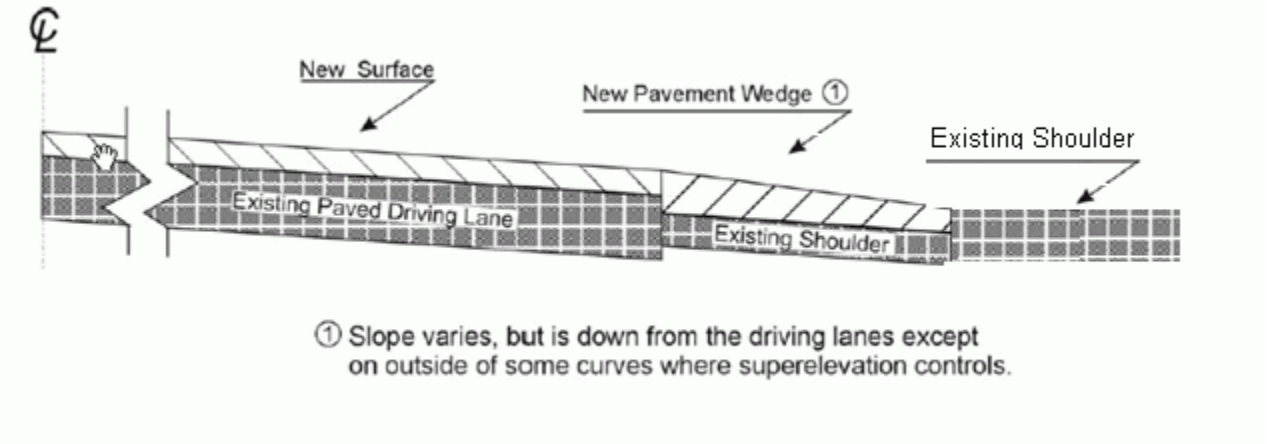
1.0 MATERIALS. Provide an Asphalt Surface Mixture conforming to Section 403 of the Standard Specifications, as applicable to the project, for the pavement wedge.

2.0 CONSTRUCTION. Place the specified Asphalt Surface Mixture on shoulders monolithically with the driving lane. Prime the existing shoulder with tack material as the Engineer directs before placing the wedge. Construct according to Section 403.03 of the Standard Specifications.

Equip the paver with a modified screed that extends the full width of the wedge being placed and is tapered to produce a wedge. Obtain the Engineer's approval of the modified screed before placing shoulder wedge monolithically with the driving lane.

The wedge may vary in thickness at the edge of the milled area in the shoulder. If the area to receive the shoulder wedge is milled prior to placement, during rolling operations pinch the outside edge of the new inlay wedge to match the existing shoulder elevation not being resurfaced. Unless required otherwise by the Contract, construct rolled or sawed rumble strips according to Section 403.03.08, as applicable.

The following sketch is primarily for the computation of quantities; however, the wedge will result in a similar cross-section where sufficient width exists. Do not construct a shoulder for placing the wedge unless specified elsewhere in the Contract.



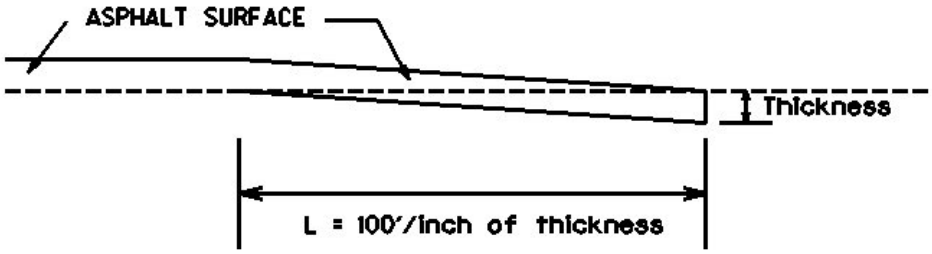
3.0 MEASUREMENT. The Department will measure Asphalt Surface Mixture placed as the pavement wedge according to Section 403.

4.0 PAYMENT. The Department will make payment for the completed and accepted quantities of Asphalt Surface Mixtures on pavement wedges according to Section 403.

SPECIAL NOTE FOR EDGE KEY

Construct Edge Keys at the beginning of project, end of project, at railroad crossings, and at ramps, as applicable. Unless specified in the Contract or directed by the Engineer, do not construct edge keys at intersecting streets, roads, alleys, or entrances. Cut out the existing asphalt surface to the required depth and width shown on the drawing and heel the new surface into the existing surface. The Department will make payment for this work at the Contract unit price per ton for Asphalt Pavement Milling and Texturing, which shall be full compensation for all labor, materials, equipment, and incidentals for removal and disposal of the existing asphalt surface required to construct the edge key.

EDGE KEY



Thickness = 1 Inch

L = 100 LF

L= Length of Edge Key

1-3309 Edge key by Ton
01/02//2012

SPECIAL NOTES FOR GUARDRAIL

I. DESCRIPTION

Except as specified herein, perform all work in accordance with the Department's Standard and Supplemental Specifications and Standard and Sepia Drawings, current editions. Article references are to the Standard Specifications.

Furnish all equipment, labor, materials, and incidentals for the following work items:

(1) Site preparation; (2) Guardrail, Guardrail with Extra Length Posts, End Treatments, Bridge End Connectors, and Terminal Sections, as applicable; (3) Delineators for guardrail; (4) Maintain and control traffic; and (5) all other work specified as part of this contract.

II. MATERIALS

Except as specified herein, provide for all materials to be sampled and tested in accordance with the Department's Sampling Manual and make the materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing.

A Maintain and Control Traffic. See Traffic Control Plan.

B. Guardrail. Furnish guardrail system components according to section 814 and the Standard Drawings; except use steel posts only, no alternates. Furnish approximately 132 Extra Length Posts (9 foot length, steel-no alternates).

C. Delineators for Guardrail. Furnish white and/or yellow Delineators for Guardrail according to the Delineators for Guardrail Sepia Drawing.

D. Erosion Control. See Special Note for Erosion Control.

III. CONSTRUCTION METHODS

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Site Preparation. Be responsible for all site preparation, including but not limited to, clearing and grubbing, excavation, embankment, and removal of all obstructions or any other items; regrading, reshaping, adding and compacting of suitable materials on the existing shoulders to provide proper template or foundation for the guardrail; temporary pollution and erosion control; disposal, of excess and waste materials and debris; and final dressing, cleanup, and seeding and protection. Perform all site preparation as approved or directed by the engineer.

C. Guardrail. Except as specified herein, construct guardrail system according to Section 719 and the Standard Drawings. Locations listed on the summary and/or shown on the drawings are approximate only. The Engineer will determine the exact termini for individual guardrail installations and locations for Extra Length Posts at the time of construction. Unless directed otherwise by the Engineer, provide a minimum two (2) foot shoulder width. Construct radii at entrances and road intersections as directed by the Engineer.

Erect guardrail to the lines and grades shown on current Standard Drawings or as directed by the Engineer by any method approved by the Engineer which allows construction of the guardrail to the true grade without apparent sags.

When installing guardrail, do not leave the blunt end exposed where it would be hazardous to the public. When it is not practical to complete the construction of the guardrail and the permanent end treatments and terminal sections first, provide a temporary end by connecting at least 25 feet of rail to the last post, and by slightly flaring, and burying the end of the rail completely into the existing shoulder. If left overnight, place a drum with bridge panel in advance of the guardrail end and maintain during use.

D. Delineators for Guardrail. Construct Delineators for Guardrail according to the Delineators for Guardrail Sepia Drawing.

E. Property Damage. Be responsible for all damage to public and/or private property resulting from the work. Restore damaged roadway features and private property at no additional cost to the Department.

F. Coordination with Utility Companies. Locate all underground, above ground and overhead utilities prior to beginning construction. Be responsible for contacting and maintaining liaison with all utility companies that have utilities located within the project limits. Do not disturb existing overhead or underground utilities. It is not anticipated that any utility facilities will need to be relocated and/or adjusted; however, in the event that it is discovered that the work does require that utilities be relocated and/or adjusted, the utility companies will work concurrently with the Contractor while relocating their facilities. Be responsible for repairing all utility damage that occurs as a result of guardrail operations at no additional cost the Department.

G. Right of Way Limits. The Department has not established exact limits of the Right-of-Way. Limit work activities to obvious Right-of-Way, permanent or temporary easements, and work areas secured by the Department through consent and release of the adjacent property owners. Be responsible for all encroachments onto private lands.

H. Disposal of Waste. Dispose of all removed concrete, debris, and other waste and debris off the Right-of-Way at sites obtained by the Contractor at no additional cost to thee Department. See Special Note for Waste and Borrow.

I. Final Dressing, Clean Up, and Seeding and Protection. Apply Class A Final Dressing to all disturbed areas, both on and off the Right-of-Way. Sow all disturbed earthen areas according to the Special Note for Erosion Control.

J. Erosion Control. See Special Note for Erosion Control.

IV. METHOD OF MEASUREMENT

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Site preparation. Other than the bid items listed, the Department will not measure Site Preparation for separate payment but shall be incidental to Guardrail, End Treatments, Bridge End Connectors, and Terminal Sections as applicable.

C. Guardrail. See Section 719.04.

D. Delineators for Guardrail. See Delineators for Guardrail Sepia Drawing.

E. Erosion Control. See Special Note for Erosion Control.

V. BASIS OF PAYMENT

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Guardrail. See Section 719.05.

C. Delineators for Guardrail. See Delineators for Guardrail Sepia Drawing.

D. Erosion Control. See Special Note for Erosion Control.

SPECIAL NOTE FOR
ASPHALT MILLING AND TEXTURING

Begin paving operations within **48 hours** of commencement of the milling operation. Continue paving operations continuously until completed. If paving operations are not begun within this time period, the Department will assess liquidated damages at the rate prescribed by Section 108.09 until such time as paving operations are begun.

Take possession of the millings and recycle the millings or dispose of the millings off the Right-of-Way at sites obtained by the Contractor at no additional cost to the Department.

1-3520 48 hours Contractor keeps millings
01/2/2012

SPECIAL NOTE FOR BASE FAILURE REPAIR

Repair locations listed on the summary are approximate only. The Engineer will determine actual repair locations and dimensions at the time of construction. Prior to overall milling and/or leveling and wedging, excavate the designated base failure areas to a depth 8 inches below the existing asphalt pavement surface level. Dispose of the excavated materials at waste sites off the Right-of-Way obtained by the Contractor at no additional cost to the Department. See Special Note for Waste and Borrow.

Backfill the excavated areas with Class 2 Asphalt Base 1.00D PG64-22. Compact the asphalt base to the compaction required in Section 403.03.10. Seal the asphalt base with leveling and wedging. Perform all base failure repairs in such a manner that removal and replacement are completed on the same day. Do this work as one of the Contractor's first operations in order to allow further compaction by traffic. Do not mill or place new asphalt surface over repaired base failure areas until a minimum of 7 calendar days have elapsed after placement of the asphalt base. After a minimum of 7 calendar days and when the Engineer determines the base failure repair areas have sufficiently stabilized, begin milling and/or resurfacing operations. Prior to milling and/or constructing the new asphalt surface, level and wedge any settlement of the repair areas.

The bidder must draw conclusions as to the conditions encountered. The Department does not give any guarantee as to the accuracy of the data and will not consider any claim for additional compensation if the materials encountered that are not in accord with the classification shown.

Accept payment at the Contract unit prices per square yard for Base Failure repair and per ton for Leveling and Wedging as full compensation for all labor, materials, equipment, and incidentals for removing pavement and disposing of the materials, furnishing and placing asphalt base, leveling and wedging, and all other items necessary to complete the work according to these notes to the satisfaction of the Engineer.

1-3606basefailurerepairmillinlaypaybysy
01/02/2012

SPECIAL NOTE FOR TYPICAL SECTION DIMENSIONS

Consider the dimensions shown on the typical sections for pavement and shoulder widths and thickness' to be nominal or typical dimensions. The Engineer may direct or approve varying the actual dimensions to be constructed to fit existing conditions. Do not widen existing pavement or shoulders unless specified elsewhere in this proposal or directed by the engineer.

1-3725 Typical Section Dimensions
01/02/2012

TRAFFIC CONTROL PLAN

TRAFFIC CONTROL GENERAL

Except as provided herein, maintain and control traffic in accordance with the Standard and Supplemental Specifications and the Standard and Sepia Drawings, current editions. Except for the roadway and traffic control bid items listed, all items of work necessary to maintain and control traffic will be paid at the lump sum bid price to "Maintain and Control Traffic".

Contrary to Section 106.01, furnish new, or used in like new condition, traffic control devices at the beginning of the work and maintain in like new condition until completion of the work.

PROJECT PHASING & CONSTRUCTION PROCEDURES

The Engineer may specify days and hours when lane and/or road closures will not be allowed.

The Contractor may close road to through traffic during construction. When road is closed to through traffic, maintain alternating one-way local traffic during construction (see Standard Drawing TTC-105-02). Provide a minimum clear lane width of 10 feet. If traffic should be stopped due to construction operations, and a school bus on an official run arrives on the scene, make provisions for the passage of the bus as quickly as possible.

Roadway closures shall be limited to a Maximum of 10 days only for each site and shall be restricted to daylight hours only. Only one site shall be closed at a time. Should any violation of either restriction occur the Department will assess liquidated damages at a rate of $10,000.00 per day until such a time as roadway is safe to open for traffic again.

LANE CLOSURES

Do not leave lane closures in place during non-working hours.

SIGNS

Sign posts and splices shall be compliant with NCHRP 350 or MASH. Manufacturer’s documentation validating this compliance shall be provided to the Engineer prior to installation.

Signs, including any splices, shall be installed according to manufacturer's specifications and installation recommendations. Contrary to section 112.04.02, only long-term signs (signs intended to be continuously in place for more than 3 days) will be measured for payment. Short-term signs (signs intended to be left in place for 3 days or less) will not be measured for payment but will be incidental to Maintain and Control Traffic.

CHANGEABLE MESSAGE SIGNS

Provide changeable message signs in advance of and within the project at locations determined by the Engineer. If work is in progress concurrently in both directions or if more than one lane closure is in place in the same direction of travel, provide additional changeable message signs as directed by the Engineer. Place changeable message signs one mile in advance of the anticipated queue at each lane closure. As the actual queue lengthens and/or shortens, relocate or provide additional changeable message signs so that traffic has warning of slowed or stopped traffic at least one mile but not more than two miles before reaching the end of the actual queue. The Engineer may vary the designated locations as the work progresses. The Engineer will determine the messages to be displayed. In the event of damage or mechanical/electrical failure, repair or replace the Changeable Message Sign within 24 hours. The Department will measure for payment the maximum number of Changeable Message Signs in concurrent use at the same time on a single day on all sections of the contract. The Department will measure individual Changeable Message Signs only once for payment, regardless of how many times they are set, reset, removed, and relocated during the duration of the project. The Department will not measure replacements for damaged Changeable Message Signs or for signs the Engineer directs be replaced due to poor condition or readability. Retain possession of the Changeable Message Signs upon completion of the work.

ARROW PANELS

If deemed necessary by the Engineer, the Department will furnish, operate, and maintain Arrow Panels.

TEMPORARY ENTRANCES

The Engineer will not require the Contractor to provide continuous access to farms, single family, duplex, or triplex residential properties during working hours; however, provide reasonable egress and ingress to each such property when actual operations are not in progress at that location. Limit the time during which a farm or residential entrance is blocked to the minimum length of time required for actual operations, not extended for the Contractor's convenience, and in no case exceeding six (6) hours. Notify all residents twenty-four hours in advance of any driveway or entrance closings and make any accommodations necessary to meet the access needs of disabled residents.

Except as allowed by the Phasing as specified above, maintain direct access to all side streets and roads, schools, churches, commercial properties and apartments or apartment complexes of four or more units at all times.

The Department will measure asphalt materials required to construct and maintain any temporary entrances which may be necessary to provide temporary access; however, the Department will not measure aggregates, excavation, and/or embankment, but shall be incidental to Maintain and Control Traffic. The Engineer will determine the type of surfacing material, asphalt or aggregate, to be used at each entrance.

BARRICADES

The Department will not measure barricades used in lieu of barrels and cones for channelization or delineation, but shall be incidental to Maintain and Control Traffic according to Section 112.04.01.

The Department will measure barricades used for road closures and to protect pavement removal areas in individual units Each. The Department will measure for payment the maximum number of barricades in concurrent use at the same time on a single day on all sections of the contract. The Department will measure individual barricades only once for payment, regardless of how many times they are set, reset, removed, and relocated during the duration of the project. The Department will not measure replacements for damaged barricades the Engineer directs to be replaced due to poor condition or reflectivity. Retain possession of the Barricades upon completion of construction.

PAVEMENT MARKINGS

If there is to be a deviation from the existing striping plan, the Engineer will furnish the Contractor a striping plan prior to placement of the final surface course.

Install Temporary Striping according to Section 112 with the following exception:

> If the Contractor's operations or phasing requires temporary markings that must subsequently be removed from the final surface course, use an approved removable lane tape; however, the Department will not measure removable lane tape for separate payment, but will measure and pay for removable lane tape as temporary striping.

PAVEMENT EDGE DROP-OFFS

Do not allow a pavement edge between opposing directions of traffic or lanes that traffic is expected to cross in a lane change situation with an elevation difference greater than 1½". Place Warning signs (MUTCD W8-11 or W8-9A) in advance of and at 1500' intervals throughout the

drop-off area. Dual post the signs on both sides of the traveled way. Wedge all transverse transitions between resurfaced and unresurfaced areas which traffic may cross with asphalt mixture for leveling and wedging. Remove the wedges prior to placement of the final surface course.

Protect pavement edges that traffic is not expected to cross, except accidentally, as follows:

Less than 2" - No protection required.

2" to 4" - Place plastic drums, vertical panels, or barricades every 50 feet. During daylight working hours only, the Engineer will allow the Contractor to use cones in lieu of plastic drums, panels, and barricades. Wedge the drop-off with DGA or asphalt mixture for leveling and wedging with a 1:1 or flatter slope in daylight hours, or 3:1 or flatter slope during nighttime hours, when work is not active in the drop-off area.

Greater than 4" - Protect drop-offs greater than 4 inches within 10 feet of traffic by placing drums, vertical panels, or barricades every 25 feet. The Engineer will not allow the use of cones in lieu of drums, vertical panels, or barricades for drop-offs greater than 4". Place Type III Barricades directly in front of the drop-off facing on coming traffic in both directions of travel. Provide warning signs as shown on the Standard Drawings or as directed by the Engineer

Pedestrians & Bicycles - Protect pedestrian and bicycle traffic as directed by the engineer.

USE AND PLACEMENT OF CHANGEABLE MESSAGE SIGNS

The following policy is based upon current Changeable Message Signs (CMS) standards and practice from many sources, including the Federal Highway Administration (FHWA), other State Departments of Transportation, and Traffic Safety Associations. It is understood that each CMS installation or use requires individual consideration due to the specific location or purpose. However, there will be elements that are constant in nearly all applications. Accordingly these recommended guidelines bring a level of uniformity, while still being open to regional experience and engineering judgment.

Application

The primary purpose of CMS is to advise the driver of unexpected traffic and routing situations. Examples of applications where CMS can be effective include:

- Closures (road, lane, bridge, ramp, shoulder, interstate)
- Changes in alignment or surface conditions
- Significant delays, congestion
- Construction/maintenance activities (delays, future activities)
- Detours/alternative routes
- Special events with traffic and safety implications
- Crash/incidents
- Vehicle restrictions (width, height, weight, flammable)
- Advance notice of new traffic control devices
- Real-time traffic conditions (must be kept up to date)
- Weather /driving conditions, environmental conditions, Roadway Weather Information Systems
- Emergency Situations
- Referral to Highway Advisory Radio (if available)
- Messages as approved by the County Engineer's Office

CMS should not be used for:

- Replacement of static signs (e.g. road work ahead), regulatory signage (e.g. speed limits), pavement markings, standard traffic control devices, conventional warning or guide signs.
- Replacement of lighted arrow board
- Advertising (Don't advertise the event unless clarifying "action" to be taken by driver – e.g. Speedway traffic next exit)
- Generic messages
- Test messages (portable signs only)
- Describe recurrent congestion (e.g. rush hour)
- Public service announcements (not traffic related

Messages

Basic principles that are important to providing proper messages and insuring the proper operation of a CMS are:

- Visible for at least ½ mile under ideal daytime and nighttime conditions
- Legible from all lanes a minimum of 650 feet
- Entire message readable twice while traveling at the posted speed
- Nor more than two message panels should be used (three panels may be used on roadways where vehicles are traveling less than 45 mph). A panel is the message that fits on the face of the sign without flipping or scrolling.
- Each panel should convey a single thought; short and concise
- Do not use two unrelated panels on a sign
- Do not use the sign for two unrelated messages
- Should not scroll text horizontally or vertically
- Should not contain both the words left and right
- Use standardized abbreviations and messages
- Should be accurate and timely
- Avoid filler/unnecessary words and periods (hazardous, a, an, the)
- Avoid use of speed limits
- Use words (not numbers) for dates

Placement

Placement of the CMS is important to insure that the signs is visible to the driver and provides ample time to take any necessary action. Some of the following principles may only be applicable to controlled access roadways. The basic principles of placement for a CMS are:

- When 2 signs are needed, place on same side of roadway and at least 1,000 feet apart
- Place behind semi-rigid/rigid protection (guardrail, barrier) or outside of the clear zone
- Place 1,000 feet in advance of work zone; at least one mile ahead of decision point
- Normally place on right side of roadway; but should be placed closest to the affected lane so that either side is acceptable
- Signs should not be dual mounted (one on each side of roadway facing same direction)
- Point trailer hitch downstream
- Secure to immovable object to prevent thief (if necessary)
- Do not place in sags or just beyond crest
- Check for reflection of sun to prevent the blinding of motorist
- Should be turned ~3 degrees outward from perpendicular to the edge of pavement
- Bottom of sign should be 7 feet above the elevation of edge of roadway
- Should be removed when not in use
-

Standard Abbreviations

The following is a list of standard abbreviations to be used on CMS.

Word	Abbrev.	Example
Access	ACCS	ACCIDENT AHEAD/USE ACCS RD NEXT RIGHT
Alternate	ALT	ACCIDENT AHEAD/USE ALT RTE NEXT RIGHT
Avenue	AVE	FIFTH AVE CLOSED/DETOUR NEXT LEFT
Blocked	BLKD	FIFTH AVE BLKD/MERGE LEFT
Boulevard	BLVD	MAIN BLVD CLOSED/USE ALT RTE
Bridge	BRDG	SMITH BRDG CLOSED/USE ALT RTE
Cardinal Directions	N, S, E, W	N I75 CLOSED/ DETOUR EXIT 30
Center	CNTR	CNTR LANE CLOSED/MERGE LEFT
Commercial	COMM	OVRSZ COMM VEH/USE I275
Condition	COND	ICY COND POSSIBLE
Congested	CONG	HVY CONG NEXT 3 MI
Construction	CONST	CONST WORK AHEAD/EXPECT DELAYS
Downtown	DWNTN	DWNTN TRAF USE EX 40
Eastbound	E-BND	E-BND I64 CLOSED/DETOUR EXIT 20
Emergency	EMER	EMER VEH AHEAD/PREPARE TO STOP
Entrance, Enter	EX, EXT	DWNTN TRAF USE EX 40
Expressway	EXPWY	WTRSN EXPWY CLOSED/DETOUR EXIT 10
Freeway	FRWY, FWY	GN SYNDR FWY CLOSED/DETOUR EXIT 15
Hazardous Materials	HAZMAT	HAZMAT IN ROADWAY/ALL TRAF EXIT 25
Highway	HWY	ACCIDENT ON AA HWY/EXPECT DELAYS
Hour	HR	ACCIDENT ON AA HWY/2 HR DELAY
Information	INFO	TRAF INFO TUNE TO 1240 AM
Interstate	I	E-BND I64 CLOSED/DETOUR EXIT 20
Lane	LN	LN CLOSED/MERGE LEFT
Left	LFT	LANE CLOSED/MERGE LFT
Local	LOC	LOC TRAF USE ALT RTE
Maintenance	MAINT	MAINT WRK ON BRDG/SLOW
Major	MAJ	MAJ DELWAYS I75/USE ALT RTE

Mile	MI	ACCIDENT 3 MI AHEAD/ USE ALT RTE
Minor	MNR	ACCIDENT 3 MI MNR DELAY
Minutes	MIN	ACCIDENT 3 MI/30 MIN DELAY
Northbound	N-BND	N-BND I75 CLOSED/ DETOUR EXIT 50
Oversized	OVRSZ	OVRSZ COMM VEH/USE I275 NEXT RIGHT
Parking	PKING	EVENT PKING NEXT RGT
Parkway	PKWY	CUM PKWAY TRAF/DETOUR EXIT 60
Prepare	PREP	ACCIDENT 3 MIL/PREP TO STOP
Right	RGT	EVENT PKING NEXT RGT
Road	RD	HAZMAT IN RD/ALL TRAF EXIT 25
Roadwork	RDWK	RDWK NEXT 4 MI/POSSIBLE DELAYS
Route	RTE	MAJ DELAYS I75/USE ALT RTE
Shoulder	SHLDR	SHLDR CLOSED NEXT 5 MI
Slippery	SLIP	SLIP COND POSSIBLE/ SLOW SPD
Southbound	S-BND	S-BND I75 CLOSED/DETOUR EXIT 50
Speed	SPD	SLIP COND POSSIBLE/ SLOW SPD
Street	ST	MAIN ST CLOSED/USE ALT RTE
Traffic	TRAF	CUM PKWAY TRAF/DETOUR EXIT 60
Vehicle	VEH	OVRSZ COMM VEH/USE I275 NEXT RIGHT
Westbound	W-BND	W-BND I64 CLOSED/DETOUR EXIT 50
Work	WRK	CONST WRK 2MI/POSSIBLE DELAYS

Certain abbreviations are prone to inviting confusion because another word is abbreviated or could be abbreviated in the same way. DO NO USE THESE ABBREVIATIONS.

Abbrev.	**Intended Word**	**Word Erroneously Given**
ACC	Accident	Access (Road)
CLRS	Clears	Colors
DLY	Delay	Daily
FDR	Feeder	Federal
L	Left	Lane (merge)
LOC	Local	Location
LT	Light (traffic)	Left
PARK	Parking	Park
POLL	Pollution (index)	Poll
RED	Reduce	Red
STAD	Stadium	Standard

TEMP	Temporary	Temperature
WRNG	Warning	Wrong

TYPICAL MESSAGES

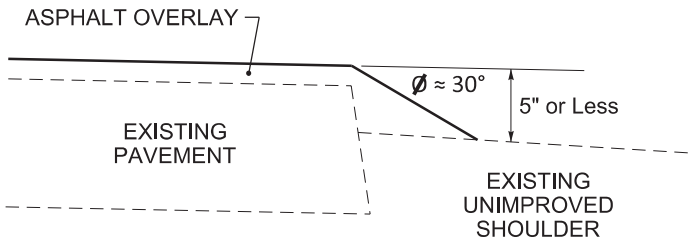
The following is a list of typical messages used on CMS. The list consists of the reason or problem that you want the driver to be aware of and the action that you want the driver to take.

Reason/Problem	Action
ACCIDENT	ALL TRAFFIC EXIT RT
ACCIDENT/XX MILES	AVOID DELAY USE XX
XX ROAD CLOSED	CONSIDER ALT ROUTE
XX EXIT CLOSED	DETOUR
BRIDGE CLOSED	DETOUR XX MILES
BRIDGE/(SLIPPERY, ICE, ETC.)	DO NOT PASS
CENTER/LANE/CLOSED	EXPECT DELAYS
DELAY(S), MAJOR/DELAYS	FOLLOW ALT ROUTE
DEBRIS AHEAD	KEEP LEFT
DENSE FOG	KEEP RIGHT
DISABLED/VEHICLE	MERGE XX MILES
EMER/VEHICLES/ONLY	MERGE LEFT
EVENT PARKING	MERGE RIGHT
EXIT XX CLOSED	ONE-WAY TRAFFIC
FLAGGER XX MILES	PASS TO LEFT
FOG XX MILES	PASS TO RIGHT
FREEWAY CLOSED	PREPARE TO STOP
FRESH OIL	REDUCE SPEED
HAZMAT SPILL	SLOW
ICE	SLOW DOWN
INCIDENT AHEAD	STAY IN LANE
LANES (NARROW, SHIFT, MERGE, ETC.)	STOP AHEAD
LEFT LANE CLOSED	STOP XX MILES
LEFT LANE NARROWS	TUNE RADIO 1610 AM
LEFT 2 LANES CLOSED	USE NN ROAD
LEFT SHOULDER CLOSED	USE CENTER LANE
LOOSE GRAVEL	USE DETOUR ROUTE
MEDIAN WORK XX MILES	USE LEFT TURN LANE
MOVING WORK ZONE, WORKERS IN ROADWAY	USE NEXT EXIT
NEXT EXIT CLOSED	USE RIGHT LANE
NO OVERSIZED LOADS	WATCH FOR FLAGGER
NO PASSING	
NO SHOULDER	
ONE LANE BRIDGE	

PEOPLE CROSSING
RAMP CLOSED
RAMP (SLIPPERY, ICE, ETC.)
RIGHT LANE CLOSED
RIGHT LANE NARROWS
RIGHT SHOULDER CLOSED
ROAD CLOSED
ROAD CLOSED XX MILES
ROAD (SLIPPERY, ICE, ETC.)
ROAD WORK
ROAD WORK (OR CONSTRUCTION) (TONIGHT, TODAY, TOMORROW, DATE)
ROAD WORK XX MILES
SHOULDER (SLIPPERY, ICE, SOFT, BLOCKED, ETC.)
NEW SIGNAL XX MILES
SLOW 1 (OR 2) - WAY TRAFFIC
SOFT SHOULDER
STALLED VEHICLES AHEAD
TRAFFIC BACKUP
TRAFFIC SLOWS
TRUCK CROSSING
TRUCKS ENTERING
TOW TRUCK AHEAD
UNEVEN LANES
WATER ON ROAD
WET PAINT
WORK ZONE XX MILES
WORKERS AHEAD

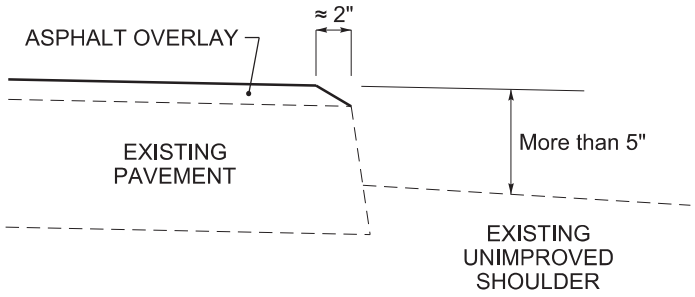
DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to low shoulder with dropoff of 5 inches or less)



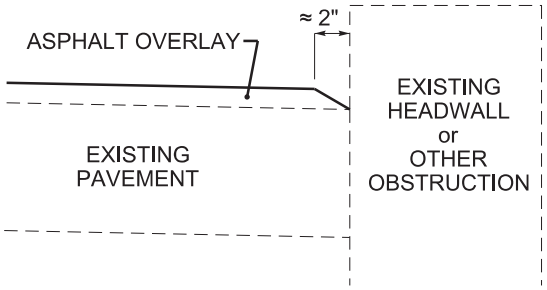
DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to low shoulder with dropoff of more than 5 inches)



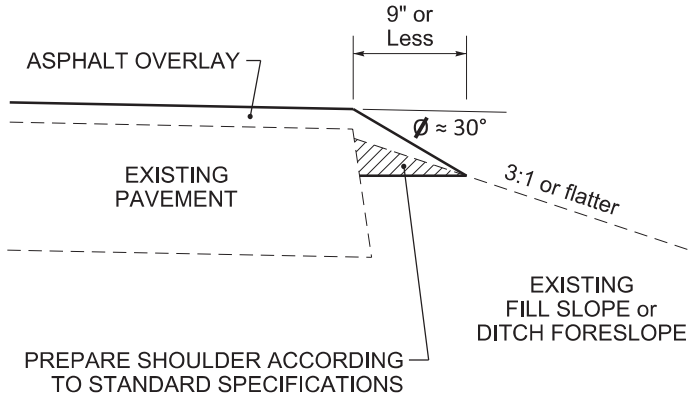
DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to an obstruction, such as an existing headwall)



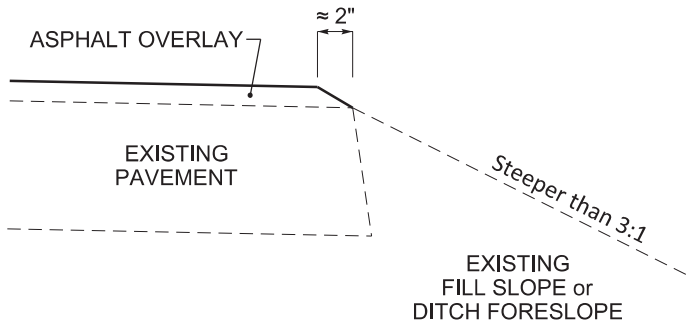
DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to fill slope or ditch foreslope that is 3:1 or less)



DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to fill slope or ditch foreslope that is steeper than 3:1)

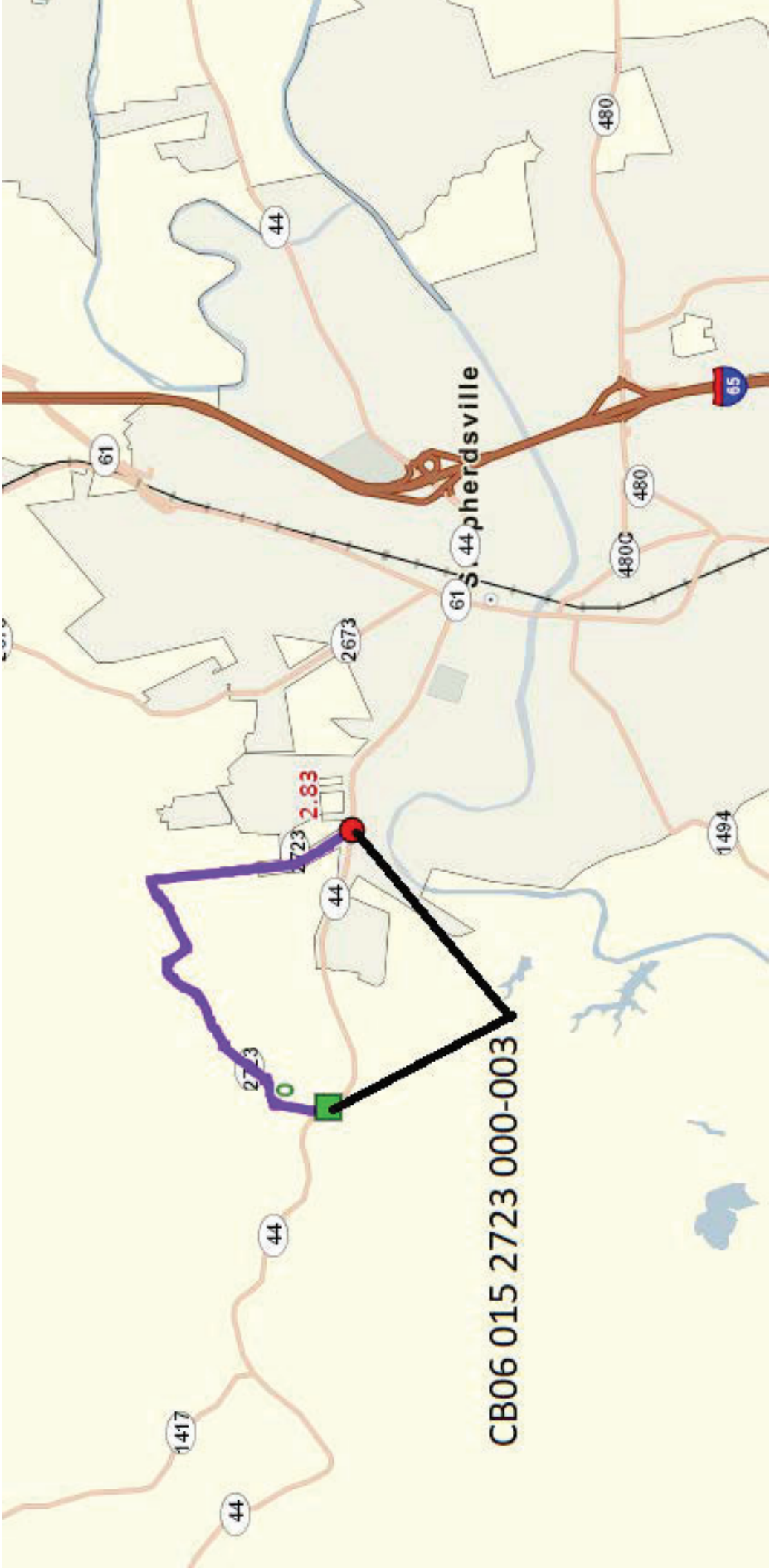


NOTES

1. DETAILS DO NOT APPLY TO OVERLAYS LESS THAN 1 INCH THICK.
2. THE DURABLE PAVEMENT EDGE DEVICE MAY BE DISENGAGED AT DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT, AS APROVED BY THE ENGINEER.

DRAWING NOT TO SCALE

DURABLE PAVEMENT EDGE DETAILS


Shepherdsville
CB06 015 2723 000-003
2.83
0
65
61
44
480
480C
2673
1494
1417

CB06 015 2723 000-003

NEW GUARDRAIL							REMOVE GUARDRAIL				
LANE	END TREAT.	BEGIN MILEPOINT	END MILEPOINT	END TREAT.	LIN FEET	REMARKS	LANE	BEGIN MILEPOINT	END MILEPOINT	LIN FEET	REMARKS
Cardinal	Terminal	0.300		Type 1	425.0	Extra Length Post	Cardinal	2.100		150.0	
Non Carninal	Terminal	0.300		Type 1	400.0	Extra Length Post	Non Cardinal	2.100		150.0	
Cardinal	Terminal	2.100		Type 1	387.5						
Non Cardinal	Terminal	2.100		Type 7	212.5						
Totals					1425.0					300	

Type I	3.000
Type 2A	0.000
Type 3	0.000
Type 4	0.000
Type 7	1.000
Terminal	4.000

Base Failure
Repair Summary
CB06 015 2723 000-003

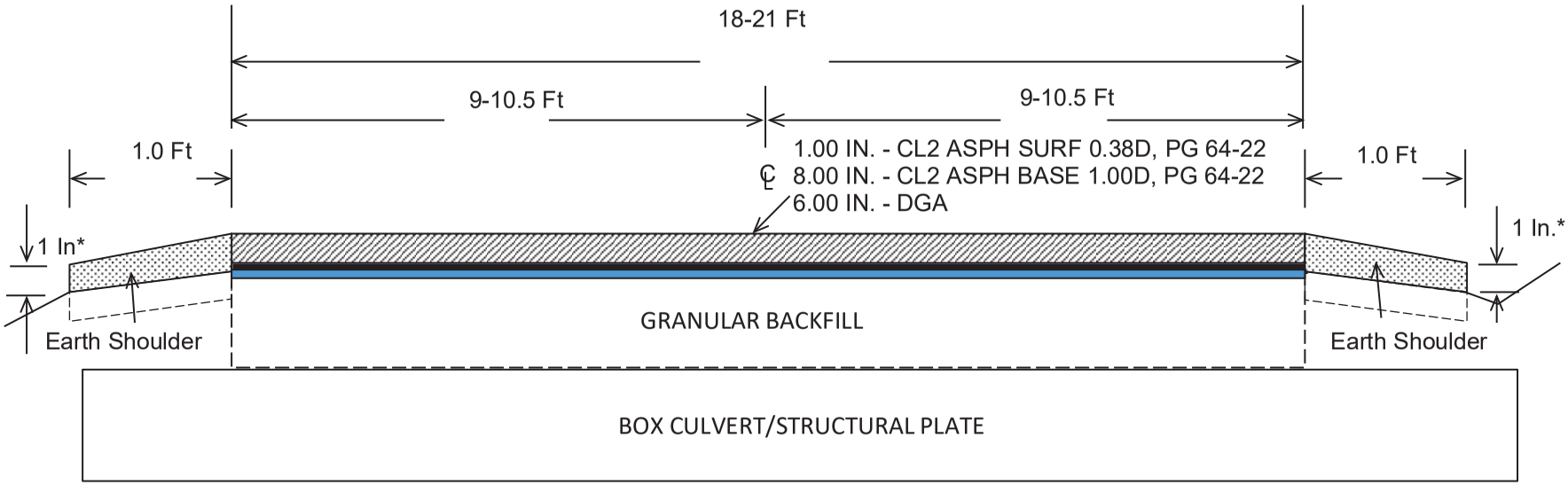
			Total 365
Milepoint	**Length**	**Width**	**SQYD**
0.236	**20**	**5**	11.11
1.476	**100**	**5**	55.56
1.829	**30**	**5**	16.67
2	**250**	**5**	138.89
2.125	**130**	**6**	86.67
2.272	**100**	**5**	55.56
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0

Milling
Summary
CB06 015 2723 000-003

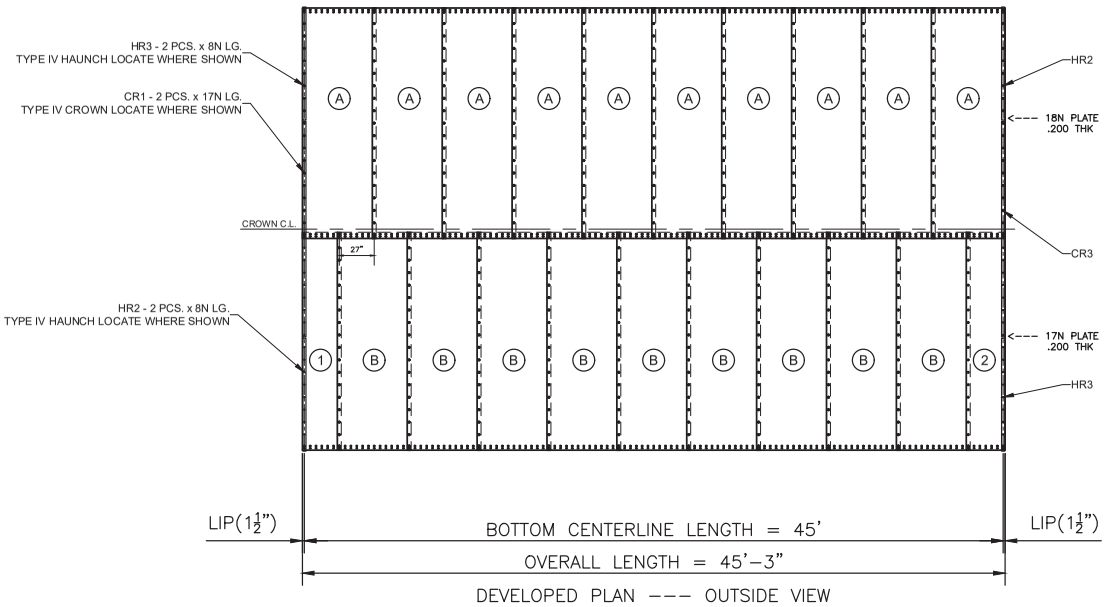
				Total	185

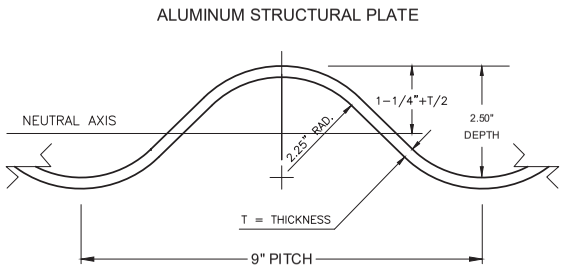
Milepoint	Comment	Length	Width	Avg Depth	Tons
0.000	Edge Key	100	18	0.5	5.5
1.170	B00084N	21	20	1	2.56666667
1.170	Bridge Ends	200	20	0.5	12.2222222
2.83	Edge Key	100	21	0.5	6.41666667
					0
0.3	Site 1	400	20	1	48.8888889
0.49	Site 2	225	20	2	55
2.1	Site 3	425	20	1	51.9444444
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0

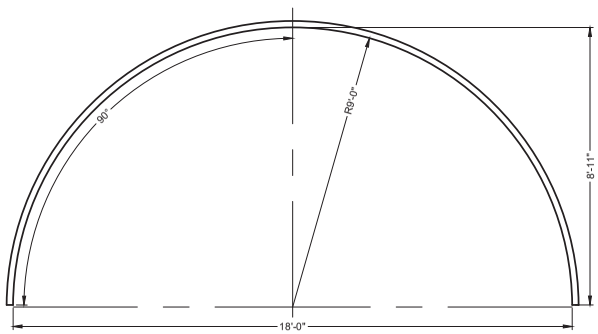
Bullitt County
TYPICAL SECTION
CB06 015 2723 000-003
MP's 0.000 - 2.830



***Pavement Design Above Is To Be Used Where The Area Of Roadway Was Removed For Culvert Installation**
***Where Existing Site Conditions Permit**







APPROX. AREA= 125.9 SQ. FT.
PLATE MAKE UP: 1 @ 18N & 1 @ 17N
TOTAL= 35N

NOTES:
1. ALL DIMENSIONS ARE TO THE INSIDE CORRUGATION, UNLESS NOTED.
2. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.

GENERAL NOTES:

1. Confirmation of cover – This structure is within the minimum and maximum allowable height of cover, for the designated loading, as follows: Loading; KYHL-93, Minimum cover (FT) 3.0, Maximum cover (FT) 4.0

2. For proper bolt size usage, refer to following:

Plate only	2 plate lap	3 plate lap	4 plate lap
0.100" – 0.125" thk. plate	1-1/4"	1-1/4"	1-1/4"*
0.150" – 0.200" thk. plate	1-1/4"	1-1/2"	2"
0.225" – 0.250" thk. plate	1-1/2"	2"	N/A
With Reinforcing Rib (if req'd) 1 plate			
0.100" – 0.175" thk. plate 1-1/4"	1-1/2"	2"	2"
0.200" – 0.250" thk. plate 1-1/2"	2"	2"	2"

*Occurs with full inverts only which have 0.100" thick plates.

3. Nuts may be located on structure's interior or exterior to allow conventional access during assembly and torquing. Only one side of nut has a curved surface and it should be in direct contact with plate valley.
4. All plate laps and reinforcing ribs must be properly mated in a tangent fashion using proper alignment techniques and held in alignment by fasteners (finger tightened only). Before backfilling commences, all fasteners must be torqued for adequate component contact. Good component fit is better than high torque.
5. Fastener torque requirements: 0.100" thick plate at 90–115 foot-pounds. For all thicker plates and reinforcing ribs, torque at 115–135 foot-pounds. Torque levels are for installation, not residual, in-service requirements. Since torquing may loosen previously tightened fasteners, multiple passes may be necessary. When seam sealant tape is used, fasteners should be torqued again after 24 hours.
6. All aluminum structural plate material is manufactured in accordance with AASHTO M219, ASTM B746 and ASTM B864 specifications.
7. See ASSEMBLY INSTRUCTIONS shipped with material in fastener container. Also refer to specific product catalog for additional product information.

THE ASSEMBLY BOLTS AND NUTS ARE SPECIALLY DESIGNED WITH ROUNDED OR SPHERICAL THROATS FOR FITTING EITHER THE CREST OR VALLEY OF THE CORRUGATIONS, PROVIDING MAXIMUM BEARING CONTACT AREA WITH THE PLATES WITHOUT THE USE OF WASHERS. NOTE THAT THE BOLTS AND NUTS SHOULD BE INSTALLED SUCH THAT THE ROUNDED PORTION IS IN CONTACT WITH THE PLATES.

	INLET	OUTLET
SKEW	90	90
BEVEL	0	0

TYPE STRUCTURE SINGLE RADIUS ARCH
SIZE 35N
SPAN = 18'-0"
RISE = 8'-11"
LENGTH @ ℄ 45'-0"

PLANT ORDER NO.

DRAWING #: 695517-010-ALSP-CON-A

SALES ORDER NO.

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
700 Tech Drive, Winchester, KY 40391
859-744-3339 859-744-9665 FAX

CONTECH STRUCTURAL PLATE

CONTRACT DRAWING

RAYMOND ROAD MP 0.3

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
695517	010	12/1/2021
DESIGNED:		DRAWN: JEM
CHECKED:		APPROVED:
SHEET NO.: 1 OF 6		

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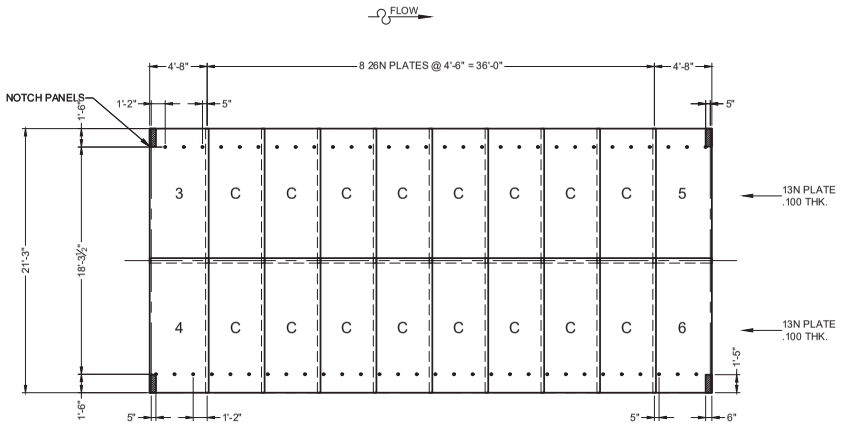
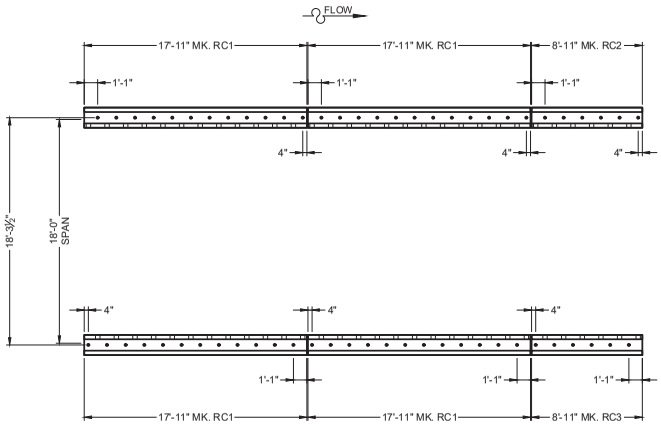


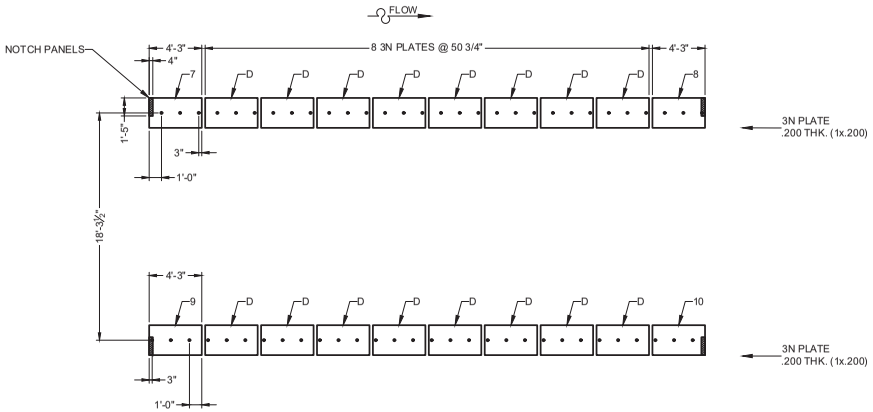
ALBC - INVERT PLATES PLAN VIEW

NOTE: USE 1-1/4" LG. BOLTS ON OVERLAPPING SEAM



ALBC - RECEIVING CHANNEL PLAN VIEW

NOTE: 1" GAP BETWEEN ADJACENT RECEIVING CHANNELS



ALBC - SUPPLEMENTAL PLATES PLAN VIEW

NOTE 1: 2-7/8" DIM. EDGE OF PLATES RED
NOTE 2: 3-1/4" GAP TYP. BETWEEN PLATES

THE ASSEMBLY BOLTS AND NUTS ARE SPECIALLY DESIGNED WITH ROUNDED OR SPHERICAL THROATS FOR FITTING EITHER THE CREST OR VALLEY OF THE CORRUGATIONS, PROVIDING MAXIMUM BEARING CONTACT AREA WITH THE PLATES WITHOUT THE USE OF WASHERS. NOTE THAT THE BOLTS AND NUTS SHOULD BE INSTALLED SUCH THAT THE ROUNDED PORTION IS IN CONTACT WITH THE PLATES.

	INLET	OUTLET
SKEW	90	90
BEVEL	0	0

TYPE STRUCTURE SINGLE RADIUS ARCH
SIZE 35N
SPAN = 18'-0"
RISE = 8'-11"
LENGTH @ ℄ 45'-0"

PLANT ORDER NO.

DRAWING #: 695517-010-ALSP-CON-A

SALES ORDER NO.

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
700 Tech Drive, Winchester, KY 40391
859-744-3339 859-744-9665 FAX

CONTECH STRUCTURAL PLATE

CONTRACT DRAWING

RAYMOND ROAD MP 0.3

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
695517	010	12/1/2021

DESIGNED:	DRAWN:
	JEM
CHECKED:	APPROVED:

SHEET NO.: 2 OF 6

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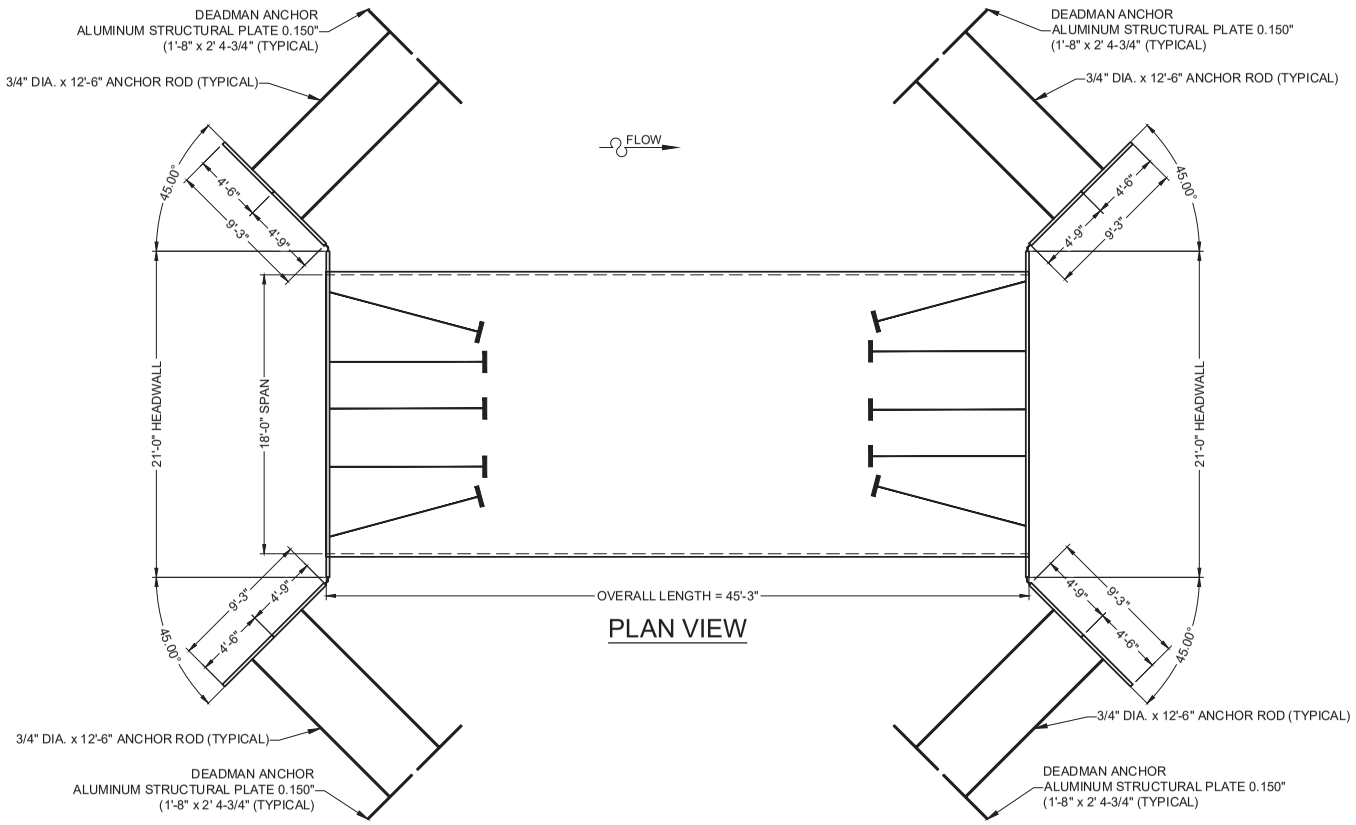


THE ASSEMBLY BOLTS AND NUTS ARE SPECIALLY DESIGNED WITH ROUNDED OR SPHERICAL THROATS FOR FITTING EITHER THE CREST OR VALLEY OF THE CORRUGATIONS, PROVIDING MAXIMUM BEARING CONTACT AREA WITH THE PLATES WITHOUT THE USE OF WASHERS. NOTE THAT THE BOLTS AND NUTS SHOULD BE INSTALLED SUCH THAT THE ROUNDED PORTION IS IN CONTACT WITH THE PLATES.

	INLET	OUTLET
SKEW	90	90
BEVEL	0	0

TYPE STRUCTURE SINGLE RADIUS ARCH
SIZE 35N
SPAN = 18'–0"
RISE = 8'–11"
LENGTH @ $\mathcal{L}$ 45'–0"

PLANT ORDER NO.

DRAWING #: 695517–010–ALSP–CON–A

SALES ORDER NO.

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
700 Tech Drive, Winchester, KY 40391
859-744-3339 859-744-9665 FAX

CONTECH STRUCTURAL PLATE

CONTRACT DRAWING

RAYMOND ROAD MP 0.3

SHEPHERDSVILLE, KY

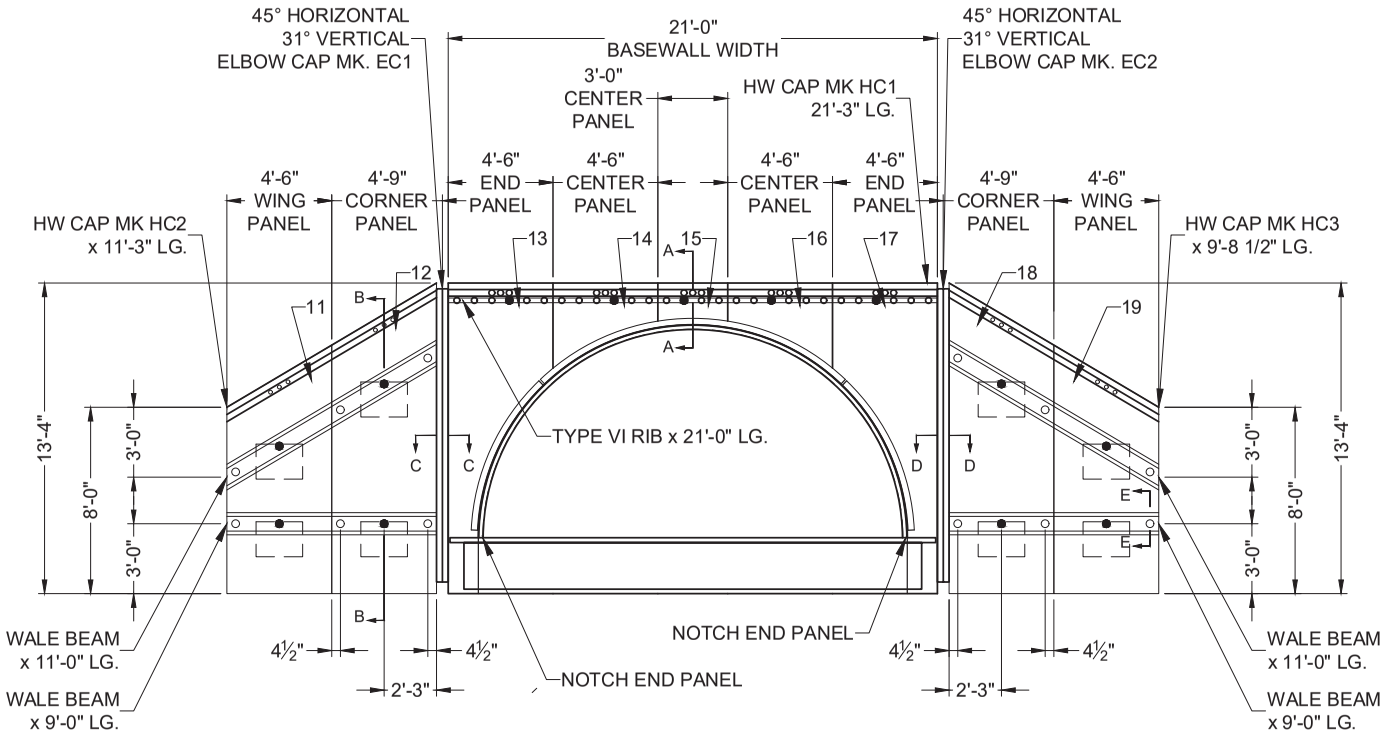
PROJECT No.:	SEQ. No.:	DATE:
695517	010	12/1/2021

DESIGNED:	DRAWN:
	JEM
CHECKED:	APPROVED:

SHEET NO.: 3 OF 6

I:\MERI\PROJECTACTIVE\695500\695517\695517-10-ALUMINUM STRUCTURAL PLATE\DRAWINGS\CONTRACT\695517-010-ALSP-CON-A.DWG 12/2/2021 3:58 PM

NOTES:
1. ALL MARK IDENTIFICATIONS TO BE ON SOIL SIDE.
2. BOLT HEADWALL TO REINFORCING RIB AT END OF STRUCTURE.
3. SEE SHEET 5 FOR SECTION AND ASSEMBLY DETAILS.
4. ALL 2'-3" DIMENSIONS ARE RELATIVE TO SECTION B-B.
5. ALL 4 1/2" DIMENSIONS ARE RELATIVE TO SECTION E-E.
6. ○ DENOTES BOLTS
7. ● DENOTES RODS



ALBC - INLET AND OUTLET EXPANDED END VIEW

THE ASSEMBLY BOLTS AND NUTS ARE SPECIALLY DESIGNED WITH ROUNDED OR SPHERICAL THROATS FOR FITTING EITHER THE CREST OR VALLEY OF THE CORRUGATIONS, PROVIDING MAXIMUM BEARING CONTACT AREA WITH THE PLATES WITHOUT THE USE OF WASHERS. NOTE THAT THE BOLTS AND NUTS SHOULD BE INSTALLED SUCH THAT THE ROUNDED PORTION IS IN CONTACT WITH THE PLATES.

	INLET	OUTLET
SKEW	90	90
BEVEL	0	0

TYPE STRUCTURE SINGLE RADIUS ARCH
SIZE 35N
SPAN = 18'-0"
RISE = 8'-11"
LENGTH @ ℄ 45'-0"

PLANT ORDER NO.

DRAWING #: 695517-010-ALSP-CON-A

SALES ORDER NO.

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
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700 Tech Drive, Winchester, KY 40391
859-744-3339 859-744-9665 FAX

CONTECH STRUCTURAL PLATE

CONTRACT DRAWING

RAYMOND ROAD MP 0.3

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
695517	010	12/1/2021

DESIGNED:	DRAWN:
	JEM
CHECKED:	APPROVED:

SHEET NO.: 4 OF 6

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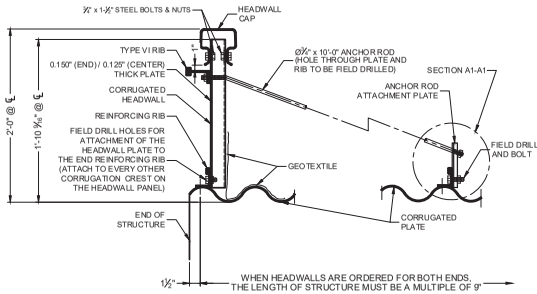


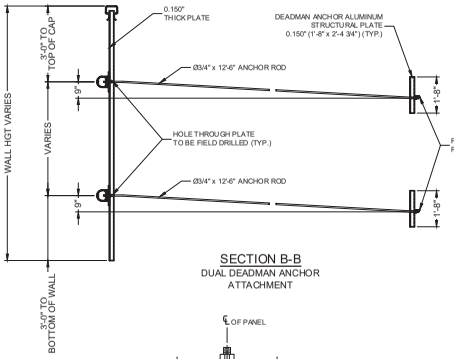
SECTION A-A
HEADWALL ATTACHMENT TO CROWN OF STRUCTURE

NOTES:

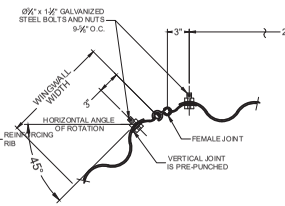
1) REVERSE CROWN RIB FOR PROPER ANCHOR ROD ATTACHMENT PLATE ORIENTATION.

2) NO SPLICE PLATES ARE USED FOR THE TYPE IV REINFORCING RIBS ATTACHED TO THE CORRUGATED HEADWALL.

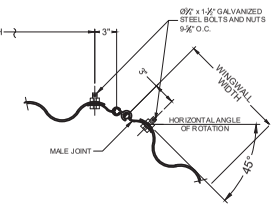
3) REINFORCING RIBS AT EACH END OF STRUCTURE MUST BE ORIENTED SUCH THAT THE HEADWALL CAN BE PLACED BEHIND THEM AS SHOWN.



SECTION B-B
DUAL DEADMAN ANCHOR ATTACHMENT

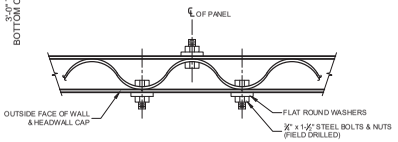


SECTION C-C

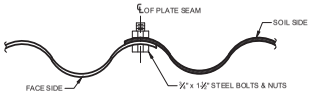


SECTION D-D

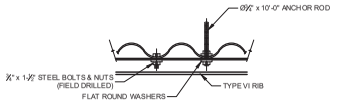
TYPICAL HEADWALL PANEL TO WING PANEL JOINTS DETAIL
(BOTH ENDS)



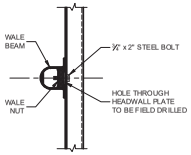
HEADWALL CAP AT ATTACHMENT TO PANEL DETAIL



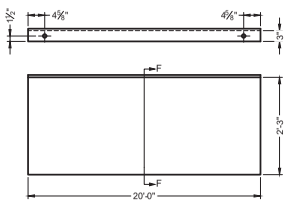
TYPICAL PANEL LAP DETAIL



TYPICAL ANCHOR ROD ATTACHMENT AT HEADWALL

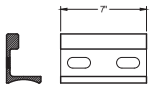


SECTION E-E
WALE BEAM ATTACHMENT

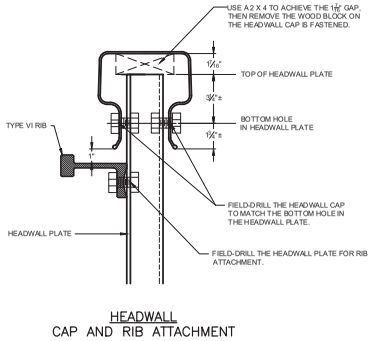


SECTION F-F

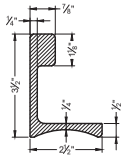
TYPICAL TOE WALL
(BOTH ENDS)



TYPE 4 ANCHOR ROD ATTACHMENT PLATE

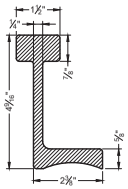


HEADWALL
CAP AND RIB ATTACHMENT



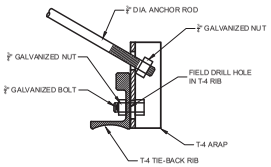
TYPE IV RIB (CONTECH) TYPE 2 RIB (ASTM)

ALLOY	6061-T6
YIELD STRENGTH	35 KSI [241.3 MPa]
TENSILE STRENGTH	38 KSI [262.0 MPa]
AREA	2.27IN² [1465 mm²]
CENTER OF AREA	Yc = 1.76 IN. [44.8mm]
PLASTIC MODULUS	2.68 IN.³ [43,917mm³]
PLASTIC MOMENT	Mp = 7.81 [10.60 KN-M]

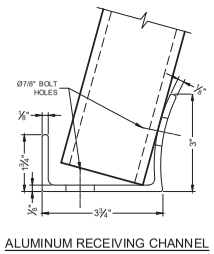


TYPE VI RIB (CONTECH) TYPE 3 RIB (ASTM)

ALLOY	6061-T6
YIELD STRENGTH	35 KSI [241.3 MPa]
TENSILE STRENGTH	38 KSI [262.0 MPa]
AREA	3.62IN.² [2335 mm²]
CENTER OF MASS Y	Yc = 2.27 IN. [57.6mm]
SECTION MODULUS	4.38 IN³ [71,775mm³]
PLASTIC MODULUS	5.66 IN.³ [92,750mm³]
PLASTIC MOMENT	Mp = 16.52 [22.41 KN-M]



SECTION A1-A1



ALUMINUM RECEIVING CHANNEL

THE ASSEMBLY BOLTS AND NUTS ARE SPECIALLY DESIGNED WITH ROUNDED OR SPHERICAL THROATS FOR FITTING EITHER THE CREST OR VALLEY OF THE CORRUGATIONS, PROVIDING MAXIMUM BEARING CONTACT AREA WITH THE PLATES WITHOUT THE USE OF WASHERS. NOTE THAT THE BOLTS AND NUTS SHOULD BE INSTALLED SUCH THAT THE ROUNDED PORTION IS IN CONTACT WITH THE PLATES.

	INLET	OUTLET
SKEW	90	90
BEVEL	0	0

TYPE STRUCTURE SINGLE RADIUS ARCH
SIZE 35N
SPAN = 18'–0"
RISE = 8'–11"
LENGTH @ ℄ 45'–0"

PLANT ORDER NO.

DRAWING #: 695517–010–ALSP–CON–A

SALES ORDER NO.

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
700 Tech Drive, Winchester, KY 40391
859-744-3339 859-744-9665 FAX

CONTECH STRUCTURAL PLATE

CONTRACT DRAWING

RAYMOND ROAD MP 0.3

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
695517	010	12/1/2021

DESIGNED:	DRAWN:
	JEM
CHECKED:	APPROVED:

SHEET NO.: 5 OF 6

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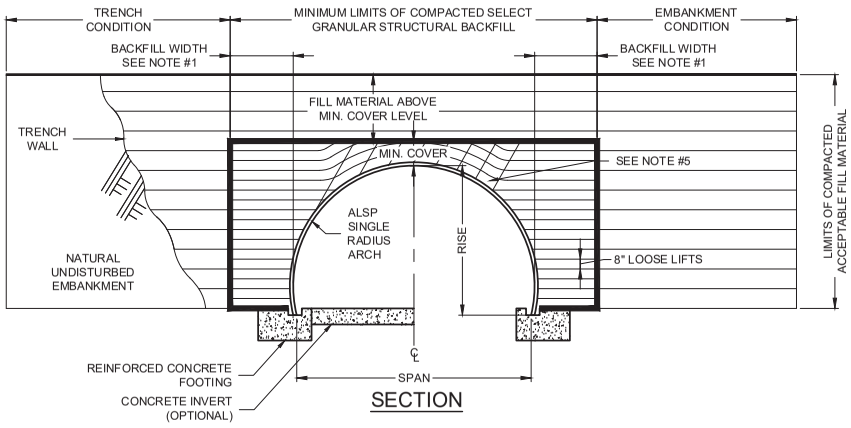

SECTION

SELECT GRANULAR STRUCTURAL BACKFILL LIMITS.

INITIAL LIFTS OVER THE CROWN OF STRUCTURE AS INDICATED BY SHADED AREA TO BE COMPACTED TO REQUIRED DENSITY WITH HAND OPERATED EQUIPMENT OR WITH SMALL LIGHTWEIGHT (D-4 OR LIGHTER) EQUIPMENT.

NOTES:

1. TRENCH WIDTH AND/OR SELECT BACKFILL WIDTH SHALL BE DETERMINED BY THE ENGINEER DEPENDING ON SITE SPECIFIC CONDITIONS. TYPICAL BACKFILL WIDTH IS 4 FEET FOR STRUCTURE SPANS 14 FEET AND LESS, AND 6 FEET FOR STRUCTURE SPANS GREATER THAN 14 FEET.
2. ALL SELECT GRANULAR BACKFILL TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180.
3. COMPLETE AND REGULAR MONITORING OF THE SINGLE RADIUS ARCH STRUCTURE IS NECESSARY DURING THE BACKFILL PROCESS TO AT LEAST THE MINIMUM COVER LEVEL.
4. PREVENT DISTORTION OF SHAPE AS NECESSARY BY VARYING COMPACTION METHODS AND EQUIPMENT.
5. PLACE SELECT GRANULAR BACKFILL IN RADIAL LIFTS AT APPROXIMATELY 75% OF THE RISE OF THE SINGLE RADIUS ARCH STRUCTURE.

ADDITIONAL SELECT GRANULAR STRUCTURAL BACKFILL NOTES:

SATISFACTORY BACKFILL MATERIAL, PROPER PLACEMENT, AND COMPACTION ARE KEY FACTORS IN OBTAINING MAXIMUM STRENGTH AND STABILITY.

THE BACKFILL MATERIAL SHOULD BE FREE OF ROCKS, FROZEN LUMPS, AND FOREIGN MATERIAL THAT COULD CAUSE HARD SPOTS OR DECOMPOSE TO CREATE VOIDS. BACKFILL MATERIAL SHOULD BE WELL GRADED GRANULAR MATERIAL THAT MEETS THE REQUIREMENTS OF AASHTO M-145 FOR SOIL CLASSIFICATIONS A-1, A-2-4, A-2-5 OR A-3 MODIFIED. RECYCLED CONCRETE/SLAG ARE NOT RECOMMENDED FOR STRUCTURAL BACKFILL MATERIAL.
SEE THE STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION TABLE ON THIS SHEET. BACKFILL MUST BE PLACED SYMMETRICALLY ON EACH SIDE OF THE STRUCTURE IN 8" LOOSE LIFTS. EACH LIFT IS TO BE COMPACTED TO A MINIMUM OF 90% DENSITY PER AASHTO T-180.

A HIGH PERCENTAGE OF SILT OR FINE SAND IN THE NATIVE SOILS SUGGESTS THE NEED FOR A WELL GRADED GRANULAR BACKFILL MATERIAL TO PREVENT SOIL MIGRATION. IF THE PROPOSED BACKFILL IS NOT A WELL GRADED GRANULAR MATERIAL, A NON-WOVEN GEOTEXTILE FILTER FABRIC SHALL BE PLACED BETWEEN THE SELECT BACKFILL AND THE IN SITU MATERIAL.

DURING BACKFILL, ONLY LIGHTWEIGHT TRACKED VEHICLES (D-4 OR LIGHTER) SHOULD BE NEAR THE STRUCTURE AS FILL PROGRESSES ABOVE THE CROWN AND TO THE FINISHED GRADE. THE ENGINEER AND CONTRACTOR ARE CAUTIONED THAT THE MINIMUM COVER MAY NEED TO BE INCREASED TO HANDLE TEMPORARY CONSTRUCTION VEHICLE LOADS (HEAVIER THAN D-4).

STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION, REFERENCE AASHTO M-145

GROUP CLASSIFICATION	A-1-a	A-1-b	A-2-4	A-2-5	A-3
Sieve Analysis Percent Passing					
No. 10 (2.000 mm)	50 max.	---	----	---	----
No. 40 (0.425 mm)	30 max.	50 max.	----	---	51 max.*
No. 200 (0.075 mm)	15 max.	25 max.	35 max.	35 max.	10 max.
Atterberg Limits for Fraction Passing No. 40 (0.425 mm)					
Liquid Limits	----	---	40 max.	41 min.	----
Plasticity Index	6 max.	6 max.	10 max.	10 max.	Non Plastic
Usual Materials	Stone Fragment, Gravel and Sand		Silty or Clayey Gravel and Sand		Coarse Sand

*Modified from AASHTO M-145.

Fine beach sands, windblown sands, stream deposited sands, etc., exhibiting fine, rounded particles and typically classified by AASHTO M-145 as A-3 Materials should not be used.

Reference the most current version of ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), for comparable soil groups.

1.0 STANDARDS AND DEFINITIONS

1.1 STANDARDS - All standards refer to the current ASTM/AASHTO edition unless otherwise noted.

1.1.1 ASTM B746 "Corrugated Aluminum Alloy for Structural Plate for Field-Bolted Pipe, Pipe-Arches, and Arches." (AASHTO Designation M-219).

1.1.2 AASHTO Standard Specification for Highway Bridges - Section 12 Division I - Design, AASHTO LRFD Bridge Design Specifications Section 12.

1.1.3 AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction, AASHTO LRFD Bridge Construction Specifications - Section 26. ASTM B789, Standard Practice for Installing Corrugated Aluminum Structural Plate Pipe.

1.2 DEFINITIONS

1.2.1 Engineer - In these specifications the word "Engineer" shall mean the Engineer of Record or Owner's designated engineering representative.

1.2.2 Manufacturer - In these specifications the word "Manufacturer" shall mean CONTECH ENGINEERED SOLUTIONS 800-338-1122 Joe Spain.

1.2.3 Contractor - In these specifications the word "Contractor" shall mean the firm or corporation undertaking the execution of any installation work under the terms of these specifications.

2.0 GENERAL CONDITIONS

2.1 Any installation guidance provided herein shall be endorsed by the Engineer; discrepancies herein are governed by the Engineer's plans and specifications.

2.2 The Contractor shall furnish all labor, material and equipment and perform all work and services except those set out and furnished by the Owner, necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction, grading as shown on the plans and as described therein. This work shall consist of all mobilization clearing and grading, grubbing, stripping, removal of existing material unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications. This work is to be accomplished under the observation of the Owner or his designated representative.

2.3 Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site and shall make such additional investigation as he may deem necessary for t he planning and proper execution of the work.

If conditions other than those indicated are discovered by the Contractor, the Owner shall be notified immediately. The material which the Contractor believes to be a changed condition shall not be disturbed so that the owner can investigate the condition.

2.4 The construction shall be performed under the direction of the Engineer.

2.5 All aspects of the structure design and site layout including foundations, backfill, end treatments and necessary scour consideration shall be performed by the Engineer.

3.0 ASSEMBLY AND INSTALLATION

3.1 Bolts and nuts shall conform to the requirements of ASTM A307 and/or ASTM A449. The single radius arch structure shall be assembled in accordance with the plate layout drawings provided by the Manufacturer and per the Manufacturer's recommendations.

Bolts shall be tightened using an applied torque of between 100 and 150 ft.-lbs.

3.2 The single radius arch structure shall be installed in accordance with the plans and specifications, the Manufacturer's recommendations, and AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction/AASHTO LRFD Bridge Construction Specifications - Section 26.

3.3 Trench excavation shall be made in embankment material that is structurally adequate. The trench width shall be shown on the plans. Poor quality in situ embankment material must be removed and replaced with suitable backfill as directed by the Engineer.

3.4 Bedding preparation is critical to both structure performance and service life. The bed should be constructed to uniform line and grade to avoid distortions that may create undesirable stresses in the structure and/or rapid deterioration of the roadway. The bed should be free of rock formations, protruding stones, frozen lumps, roots, and other foreign matter that may cause unequal settlement.

3.5 The structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloaded and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.

3.6 The structure shall be backfilled using clean well graded granular material that meets the requirements for soil classifications A-1, A-2-4, A-2-5 or A-3 modified per AASHTO M-145. See the structural plate backfill group classification table on this sheet.

Backfill must be placed symmetrically on each side of the structure in 8 inch loose lifts. Each lift shall be compacted to a minimum of 90 percent density per AASHTO T-180

3.7 If temporary construction vehicles are required to cross the structure, it is the Contractor's responsibility to contact the Engineer to determine the amount of additional minimum cover necessary to handle the specific loading condition.

Normal highway traffic is not allowed to cross the structure until the structure has been backfilled and paved. If the road is unpaved, cover allowance to accommodate rutting shall be as directed by the Engineer.

3.8 If an aluminum headwall and/or wingwall system is specified, the select granular structural backfill limits shall extend past the deadman anchor system. Contact the Engineer if stiff material or rock is encountered where the wingwalls and deadmen are to be installed.

THE ASSEMBLY BOLTS AND NUTS ARE SPECIALLY DESIGNED WITH ROUNDED OR SPHERICAL THROATS FOR FITTING EITHER THE CREST OR VALLEY OF THE CORRUGATIONS, PROVIDING MAXIMUM BEARING CONTACT AREA WITH THE PLATES WITHOUT THE USE OF WASHERS. NOTE THAT THE BOLTS AND NUTS SHOULD BE INSTALLED SUCH THAT THE ROUNDED PORTION IS IN CONTACT WITH THE PLATES.

	INLET	OUTLET
SKEW	90	90
BEVEL	0	0

TYPE STRUCTURE SINGLE RADIUS ARCH
SIZE 35N
SPAN = 18'-0"
RISE = 8'-11"
LENGTH @ ℄ 45'-0"

PLANT ORDER NO.

DRAWING #: 695517-010-ALSP-CON-A

SALES ORDER NO.

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
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700 Tech Drive, Winchester, KY 40391
859-744-3339 859-744-9665 FAX

CONTECH STRUCTURAL PLATE

CONTRACT DRAWING

RAYMOND ROAD MP 0.3

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
695517	010	12/1/2021
DESIGNED:		DRAWN: JEM
CHECKED:		APPROVED:
SHEET NO.: 6 OF 6		

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IMPORTANT:
ASSEMBLY INSTRUCTIONS WILL BE SHIPPED WITH THE STRUCTURE. THEY ARE LOCATED IN THE BRIGHTLY COLORED BOLT KEG.

NOTES:
1. INVERT END OF HAUNCH PLATES PAINTED RED.
2. WHEN A FULL CORRUGATED INVERT IS USED, SCALLOPED CLOSURE PLATES ARE TO BE CLIPPED TO THE OUTSIDE OF THE RECEIVING CHANNEL TO MINIMIZE BACKFILL INFILTRATION IN THE VALLEYS OF THE CORRUGATED INVERT PLATE BELOW THE RECEIVING CHANNEL.
   NOTE: THIS DOES NOT MAKE A JOINT TIGHT ENOUGH TO PREVENT INFILTRATION OF FINE SILTS OR SANDS. THE USE OF A GEOTEXTILE PREVENTS THE INFILTRATION OF THE BACKFILL THROUGH THE UNFILLED BOLT HOLES AND THE SPACE BETWEEN THE INVERT PLATE AND THE SCALLOP PLATE. A ROLL OF GEOTEXTILE IS PROVIDED FOR THIS PURPOSE. WHEN SHORT FOOTING PADS ARE USED, THE SCALLOPED CLOSURE PLATES ARE NOT PROVIDED UNLESS ORDERED AS AN EXTRA, SINCE IT IS ANTICIPATED THESE FOOTING PLATES WILL BE BURIED.
3. INVERT END OF HAUNCH RIBS PAINTED RED.

GENERAL NOTES:
1. CONFIRMATION OF COVER - THIS STRUCTURE IS WITHIN THE MINIMUM AND MAXIMUM ALLOWABLE HEIGHT OF COVER, FOR THE DESIGNATED LOADING, AS FOLLOWS:

   LOADING: KY HL93
   MINIMUM COVER (FT): 1.4
   MAXIMUM COVER (FT): 4.0

2. FOR PROPER BOLT SIZE USAGE, REFER TO THE FOLLOWING:

PLATE ONLY

	1 PLATE	2 PLATE	3 PLATE
0.100" - 0.125" THK. PLATE		1 1/4"	1 1/4"
0.150" - 0.175" THK PLATE		1 1/4"	1 1/2"
0.200" - 0.250" THK. PLATE		1 1/2"	2"

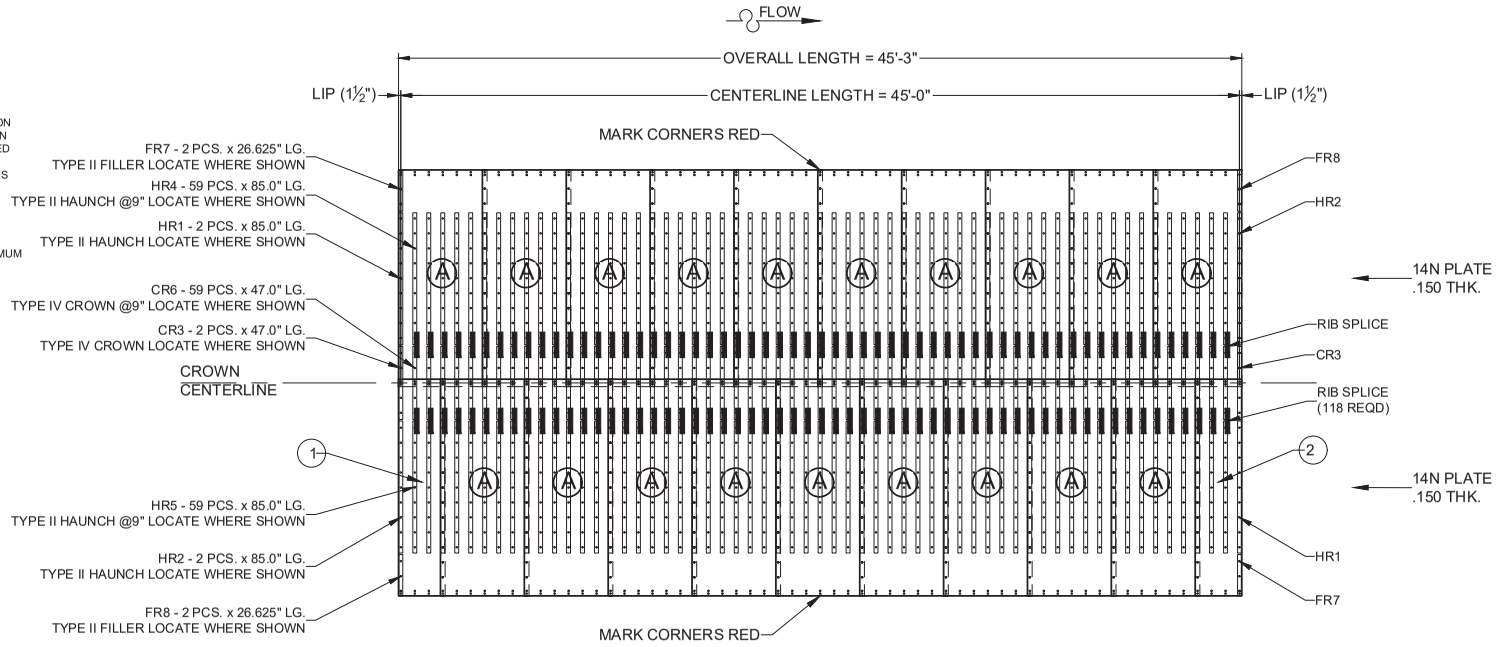
PLATE W/ T2 OR T4 REINFORCING RIB OR RECEIVING CHANNEL

	1 PLATE	2 PLATE	3 PLATE
0.100" - 0.125" THK. PLATE	1 1/4"	1 1/2"	1 1/2"
0.150" - 0.175" THK PLATE	1 1/4"	1-1/2"	2"
0.200" - 0.225" THK. PLATE	1 1/2"	2"	2"
0.250" THK. PLATE	1 1/2"	2"	2"

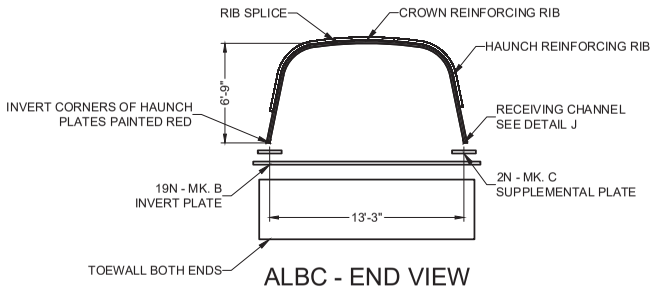
PLATE W/ T6 REINFORCING RIB

	1 PLATE	2 PLATE	3 PLATE
0.100" - 0.125" THK. PLATE	1 1/2"	2"	2"
0.150" - 0.175" THK PLATE	2"	2"	2"
0.200" - 0.225" THK. PLATE	2"	2"	2 1/2"
0.250" THK. PLATE	2"	2"	2 1/2"

3. NUTS MAY BE LOCATED ON STRUCTURE'S INTERIOR OR EXTERIOR TO ALLOW CONVENTIONAL ACCESS DURING ASSEMBLY AND TORQUING. ONLY ONE SIDE OF NUT HAS A CURVED SURFACE AND IT SHOULD BE IN DIRECT CONTACT WITH PLATE VALLEY.
4. ALL PLATE LAPS AND REINFORCING RIBS MUST BE PROPERLY MATED IN A TANGENT FASHION USING PROPER ALIGNMENT TECHNIQUES AND HELD IN ALIGNMENT BY FASTENERS (FINGER TIGHTENED ONLY). BEFORE BACKFILLING COMMENCES, ALL FASTENERS MUST BE TORQUED FOR ADEQUATE COMPONENT CONTACT. GOOD COMPONENT FIT IS BETTER THAN HIGH TORQUE.
5. FASTENER TORQUE REQUIREMENTS: TORQUE AT 100-150 FOOT-POUNDS. TORQUE LEVELS ARE FOR INSTALLATION, NOT RESIDUAL, IN-SERVICE REQUIREMENTS. SINCE TORQUEING MAY LOOSEN PREVIOUSLY TIGHTENED FASTENERS, MULTIPLE PASSES MAY BE NECESSARY. WHEN SEAM SEALANT TAPE IS USED, FASTENERS SHOULD BE TORQUED AGAIN AFTER 24 HOURS.
6. ALL ALUMINUM STRUCTURAL PLATE MATERIAL IS MANUFACTURED IN ACCORDANCE WITH AASHTO M219, ASTM B746 AND ASTM B864 SPECIFICATIONS. SEE ASSEMBLY INSTRUCTIONS SHIPPED WITH MATERIAL IN FASTENER CONTAINER. ALSO REFER TO SPECIFIC PRODUCT CATALOG FOR ADDITIONAL PRODUCT INFORMATION.
7. THE ASSEMBLY BOLTS AND NUTS ARE SPECIALLY DESIGNED WITH ROUNDED OR SPHERICAL THROATS FOR FITTING EITHER THE CREST OR VALLEY OF THE CORRUGATIONS, PROVIDING MAXIMUM BEARING CONTACT AREA WITH THE PLATES WITHOUT THE USE OF WASHERS. NOTE THAT THE BOLTS AND NUTS SHOULD BE INSTALLED SUCH THAT THE ROUNDED PORTION IS IN CONTACT WITH THE PLATES.



ALBC - DEVELOPED PLAN (OUTSIDE VIEW)
13'-3" SPAN x 6'-9" RISE



ALBC - END VIEW

FOR APPROVAL

		INLET	OUTLET
TYPE: BOX SIZE: 20KYTC SPAN: 13'-3" RISE: 6'-9" LENGTH @ ℄: 45'-0"	SKEW	0	0
	BEVEL	0	0

PLATE THICKNESS: .100 (H)/.100(C)
REINFORCING RIB SPACING: AS SHOWN
REINFORCING RIB TYPE: AS SHOWN

NUMBER OF STRUCTURES: 1

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CONTECH STRUCTURAL PLATE
CONTECH CONTRACT DRAWING

RAYMOND ROAD - MP 0.49

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
692722	010	10/27/2021

DESIGNED: | DRAWN: JEM
CHECKED: | APPROVED:
SHEET NO.: 1 OF 6

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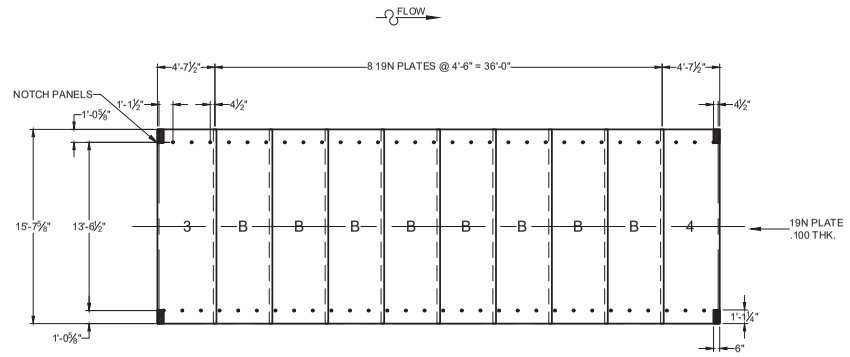
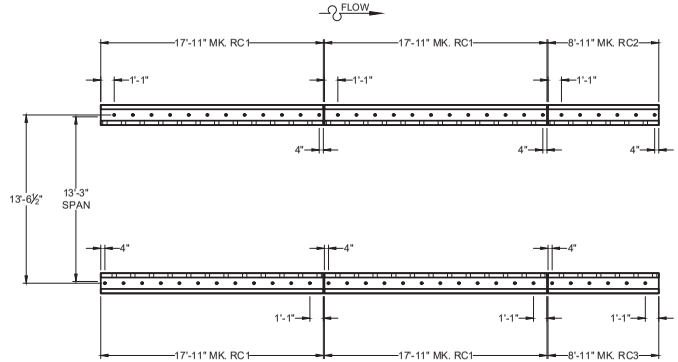


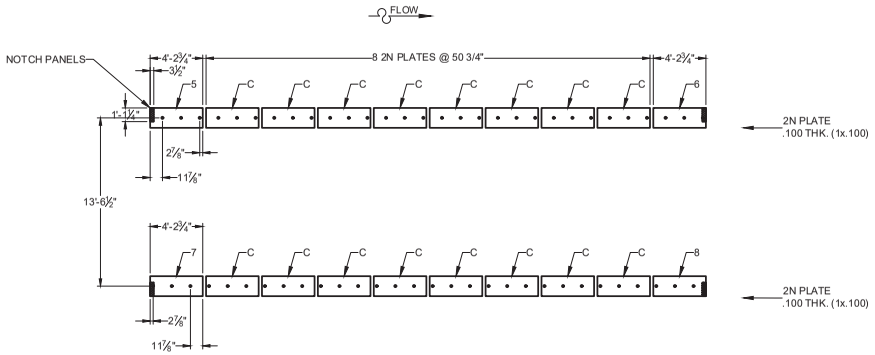
ALBC - INVERT PLATES PLAN VIEW

NOTE: USE 1-1/4" LG. BOLTS ON OVERLAPPING SEAM



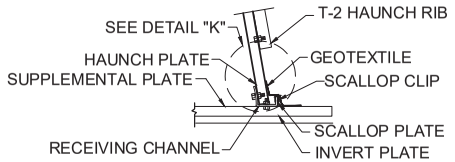
ALBC - RECEIVING CHANNEL PLAN VIEW

NOTE: 1" GAP BETWEEN ADJACENT RECEIVING CHANNELS

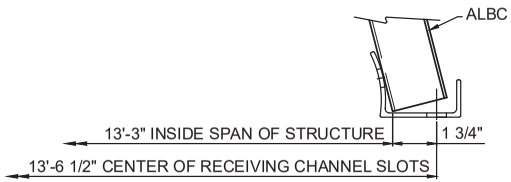


ALBC - SUPPLEMENTAL PLATES PLAN VIEW

NOTE 1: 2-7/8" DIM. EDGE OF PLATES RED
NOTE 2: 3-1/4" GAP TYP. BETWEEN PLATES



DETAIL "J"



DETAIL "K"

TYPE: BOX SIZE: 20KYTC SPAN: 13'-3" RISE: 6'-9" LENGTH @ ℄: 45'-0"		INLET	OUTLET	PLATE THICKNESS: .100 (H)/.100(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

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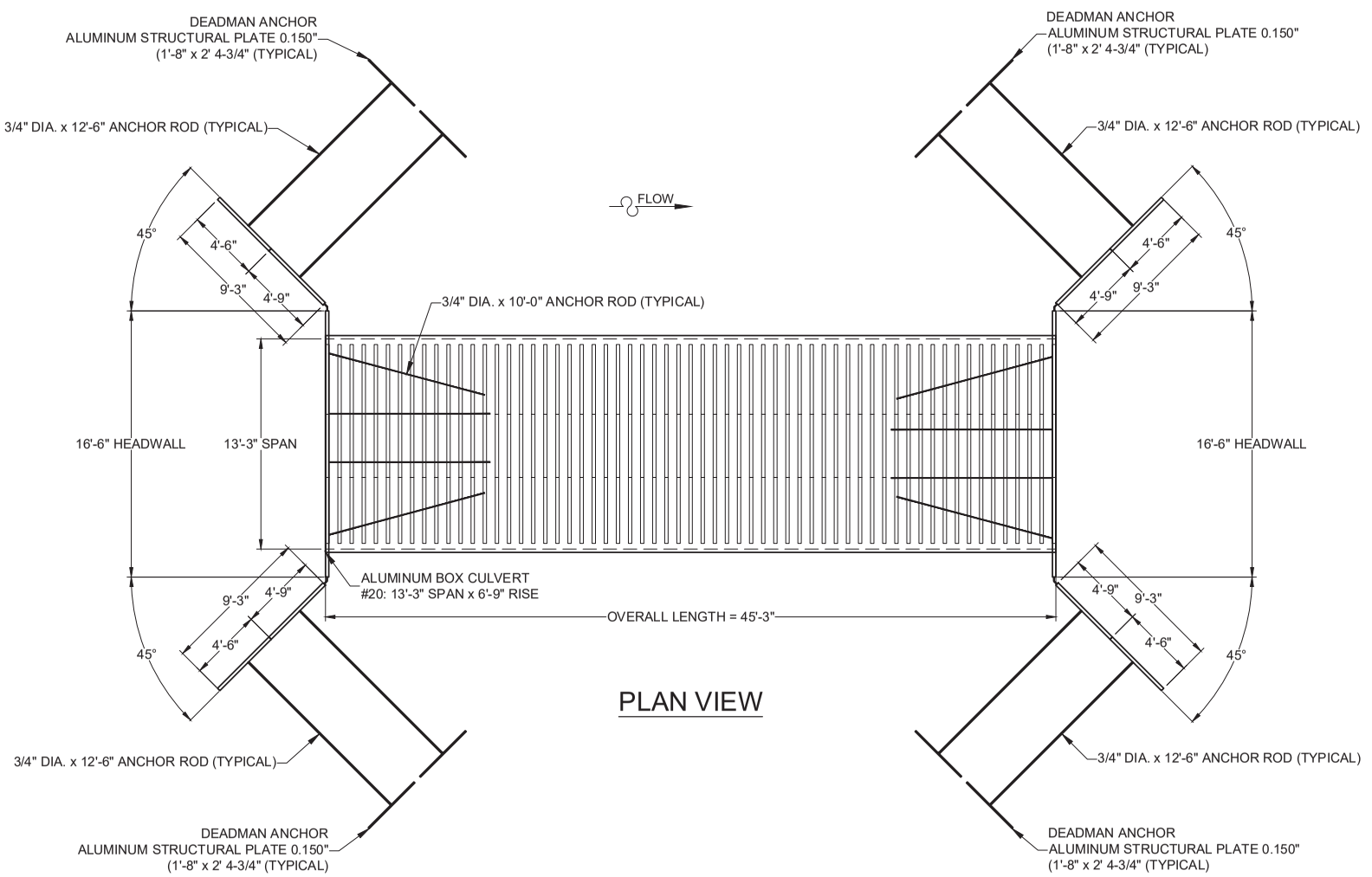
CONTECH STRUCTURAL PLATE
CONTECH CONTRACT DRAWING

RAYMOND ROAD - MP 0.49

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
692722	010	10/27/2021
DESIGNED:		DRAWN: JEM
CHECKED:		APPROVED:
SHEET NO.: 2 OF 6		



PLAN VIEW

TYPE: BOX SIZE: 20KYTC SPAN: 13'-3" RISE: 6'-9" LENGTH @ ℄: 45'-0"		INLET	OUTLET
	SKEW	0	0
	BEVEL	0	0

PLATE THICKNESS: .100 (H)/.100(C)
REINFORCING RIB SPACING: AS SHOWN
REINFORCING RIB TYPE: AS SHOWN

NUMBER OF STRUCTURES: 1

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CONTECH STRUCTURAL PLATE
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RAYMOND ROAD - MP 0.49

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
692722	010	10/27/2021
DESIGNED:		DRAWN: JEM
CHECKED:		APPROVED:
SHEET NO.: 3 OF 6		

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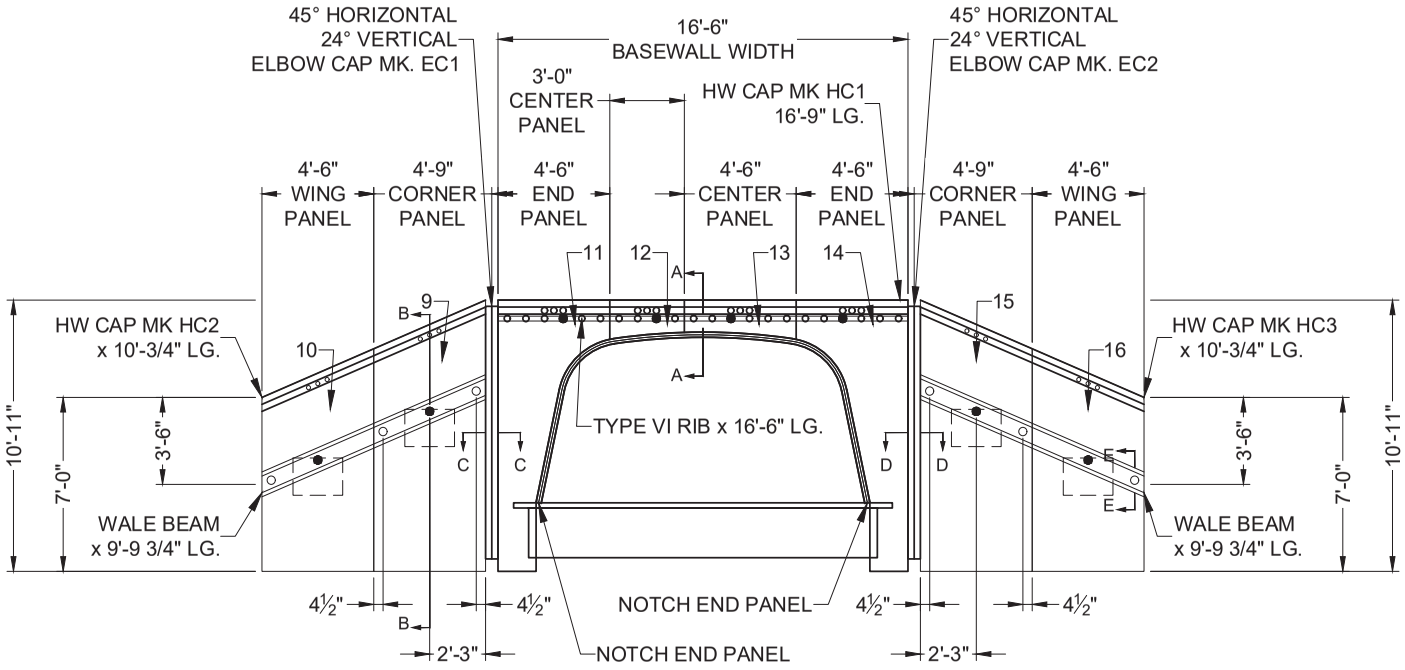
NOTES:
1. ALL MARK IDENTIFICATIONS TO BE ON SOIL SIDE.
2. BOLT HEADWALL TO REINFORCING RIB AT END OF STRUCTURE.
3. SEE SHEET 5 FOR SECTION AND ASSEMBLY DETAILS.
4. ALL 2'-3" DIMENSIONS ARE RELATIVE TO SECTION B-B.
5. ALL 4 1/2" DIMENSIONS ARE RELATIVE TO SECTION E-E.
6. ○ DENOTES BOLTS
7. ● DENOTES RODS



ALBC - INLET AND OUTLET EXPANDED END VIEW

TYPE: BOX		INLET	OUTLET	PLATE THICKNESS: .100 (H)/.100(C)
SIZE: 20KYTC				REINFORCING RIB SPACING: AS SHOWN
SPAN: 13'-3"	SKEW	0	0	REINFORCING RIB TYPE: AS SHOWN
RISE: 6'-9"				
LENGTH @ ℄: 45'-0"	BEVEL	0	0	NUMBER OF STRUCTURES: 1

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CONTECH STRUCTURAL PLATE
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RAYMOND ROAD - MP 0.49

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
692722	010	10/27/2021
DESIGNED:		DRAWN: JEM
CHECKED:		APPROVED:
SHEET NO.: 4 OF 6		

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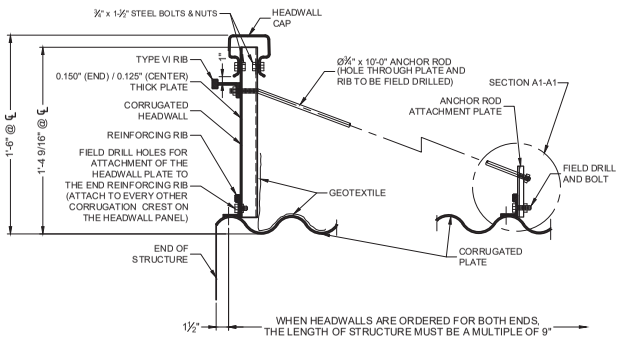


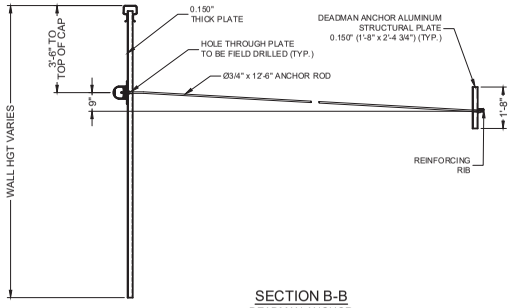
SECTION A-A
HEADWALL ATTACHMENT TO CROWN OF STRUCTURE

NOTES:

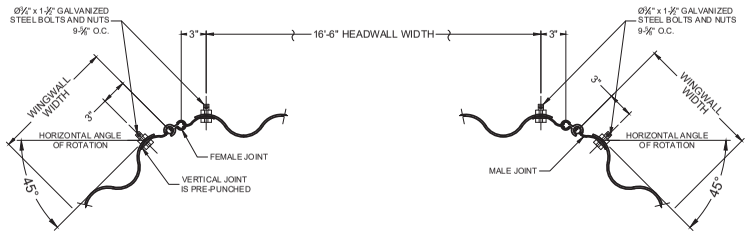
1) REVERSE CROWN RIB FOR PROPER ANCHOR ROD ATTACHMENT PLATE ORIENTATION.

2) NO SPLICE PLATES ARE USED FOR THE TYPE IV REINFORCING RIBS ATTACHED TO THE CORRUGATED HEADWALL.

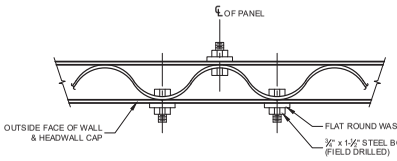
3) REINFORCING RIBS AT EACH END OF STRUCTURE MUST BE ORIENTED SUCH THAT THE HEADWALL CAN BE PLACED BEHIND THEM AS SHOWN.



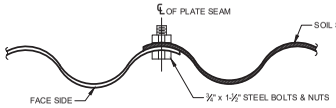
SECTION B-B
DEADMAN ANCHOR ATTACHMENT



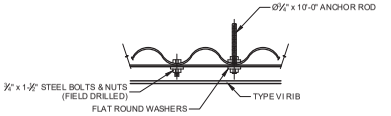
TYPICAL HEADWALL PANEL TO WING PANEL JOINTS DETAIL
(BOTH ENDS)



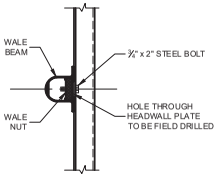
HEADWALL CAP AT ATTACHMENT TO PANEL DETAIL



TYPICAL PANEL LAP DETAIL

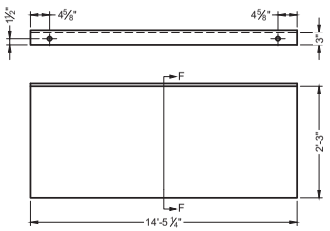


TYPICAL ANCHOR ROD ATTACHMENT AT HEADWALL

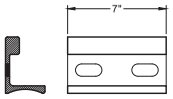


SECTION E-E
WALE BEAM ATTACHMENT

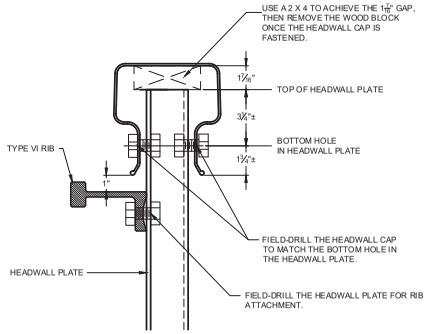
SECTION F-F



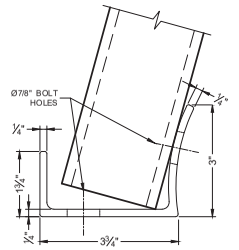
TYPICAL TOE WALL (BOTH ENDS)



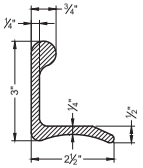
TYPE 4 ANCHOR ROD ATTACHMENT PLATE



HEADWALL CAP AND RIB ATTACHMENT

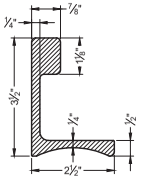


ALUMINUM RECEIVING CHANNEL



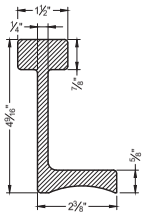
TYPE II RIB (CONTECH) TYPE 1 RIB (ASTM)

ALLOY	6061-T6
YIELD STRENGTH	35 KSI [241.3 MPa]
TENSILE STRENGTH	38 KSI [262.0 MPa]
AREA	1.71IN.² [1103 mm²]
CENTER OF AREA	Yc = 1.02 IN. [26.0mm]
PLASTIC MODULUS	1.70 IN.³ [27,858mm³]
PLASTIC MOMENT	Mp = 4.97 [6.72 KN-M]



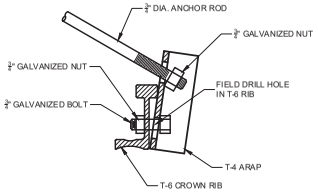
TYPE IV RIB (CONTECH) TYPE 2 RIB (ASTM)

ALLOY	6061-T6
YIELD STRENGTH	35 KSI [241.3 MPa]
TENSILE STRENGTH	38 KSI [262.0 MPa]
AREA	2.27IN.² [1465 mm²]
CENTER OF AREA	Yc = 1.76 IN. [44.8mm]
PLASTIC MODULUS	2.68 IN.³ [43,917mm³]
PLASTIC MOMENT	Mp = 7.81 [10.60 KN-M]



TYPE VI RIB (CONTECH) TYPE 3 RIB (ASTM)

ALLOY	6061-T6
YIELD STRENGTH	35 KSI [241.3 MPa]
TENSILE STRENGTH	38 KSI [262.0 MPa]
AREA	3.62IN.² [2335 mm²]
CENTER OF MASS Y	Yc = 2.27 IN. [57.6mm]
SECTION MODULUS	4.38 IN³ [71,775mm³]
PLASTIC MODULUS	5.66 IN.³ [92,750mm³]
PLASTIC MOMENT	Mp = 16.52 [22.41 KN-M]



SECTION A1-A1

TYPE: BOX SIZE: 20KYTC SPAN: 13'-3" RISE: 6'-9" LENGTH @ ℄: 45'-0"		INLET	OUTLET
	SKEW	0	0
	BEVEL	0	0

PLATE THICKNESS: .100 (H)/.100(C)
REINFORCING RIB SPACING: AS SHOWN
REINFORCING RIB TYPE: AS SHOWN

NUMBER OF STRUCTURES: 1

FOR APPROVAL

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
700 Tech Drive, Winchester, KY 40391
859-744-3339 859-744-9665 FAX

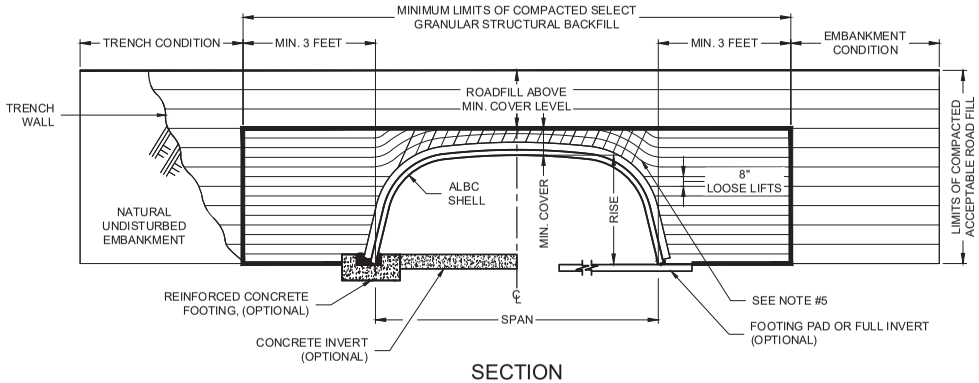
CONTECH STRUCTURAL PLATE
CONTECH CONTRACT DRAWING

RAYMOND ROAD - MP 0.49

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
692722	010	10/27/2021
DESIGNED:		DRAWN: JEM
CHECKED:		APPROVED:
SHEET NO.: 5 OF 6		

I:\MERLIN\PROJECTACTIVE\692700\692722\692722-10-ALUMINUM BOX CUL\VERTDRAWINGS\CONTRACT\692722-010-AL-CON-A.DWG 10/27/2021 12:12 PM



SECTION

SELECT GRANULAR STRUCTURAL BACKFILL LIMITS.

INITIAL LIFTS OVER THE CROWN OF STRUCTURE AS INDICATED BY SHADED AREA TO BE COMPACTED TO REQUIRED DENSITY WITH HAND OPERATED EQUIPMENT OR WITH LIGHTWEIGHT(D-4 OR LIGHTER) EQUIPMENT.

NOTES:

1. ALL SELECT GRANULAR BACKFILL TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180.
2. COMPLETE AND REGULAR MONITORING OF THE ALUMINUM BOX CULVERT SHAPE IS NECESSARY DURING ALL BACKFILLING OF THE STRUCTURE.
3. PREVENT DISTORTION OF SHAPE AS NECESSARY BY VARYING COMPACTION METHODS AND EQUIPMENT.
4. TRENCH WIDTH OTHER THAN 3 FEET SHALL BE BY DIRECTION OF THE ENGINEER OF RECORD.
5. SWITCH TO PLACING SELECT GRANULAR BACKFILL NEAR IN RADIAL LIFTS THE MIDDLE OF THE HAUNCH CURVE.

ADDITIONAL SELECT GRANULAR STRUCTURAL BACKFILL NOTES:

SATISFACTORY BACKFILL MATERIAL, PROPER PLACEMENT, AND COMPACTION ARE KEY FACTORS IN OBTAINING MAXIMUM STRENGTH AND STABILITY.

THE BACKFILL MATERIAL SHOULD BE FREE OF ROCKS, FROZEN LUMPS, AND FOREIGN MATERIAL THAT COULD CAUSE HARD SPOTS OR DECOMPOSE TO CREATE VOIDS. BACKFILL MATERIAL SHOULD BE WELL GRADED GRANULAR MATERIAL THAT MEETS THE REQUIREMENTS OF AASHTO M-145 FOR SOIL CLASSIFICATIONS A-1, A-2-4, A-2-5, OR A-3 MODIFIED.

SEE THE STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION TABLE ON THIS SHEET. BACKFILL MUST BE PLACED SYMMETRICALLY ON EACH SIDE OF THE STRUCTURE IN 8" LOOSE LIFTS. EACH LIFT IS TO BE COMPACTED TO A MINIMUM OF 90% DENSITY PER AASHTO T-180.

A HIGH PERCENTAGE OF SILT OR FINE SAND IN THE NATIVE SOILS SUGGESTS THE NEED FOR A WELL GRADED GRANULAR BACKFILL MATERIAL TO PREVENT SOIL MIGRATION. IF THE PROPOSED BACKFILL IS NOT A WELL-GRADED MATERIAL, A NON-WOVEN GEOTEXTILE FILTER FABRIC SHALL BE PLACED BETWEEN THE SELECT BACKFILL AND THE IN SITU MATERIAL.

DURING BACKFILL, ONLY LIGHTWEIGHT TRACKED VEHICLES (D-4 OR LIGHTER) SHOULD BE NEAR THE STRUCTURE AS FILL PROGRESSES ABOVE THE CROWN AND TO THE FINISHED GRADE. THE ENGINEER AND CONTRACTOR ARE CAUTIONED THAT THE MINIMUM COVER MAY NEED TO BE INCREASED TO HANDLE TEMPORARY CONSTRUCTION VEHICLE LOADS (HEAVIER THAN D-4).

STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION, REFERENCE AASHTO M-145					
GROUP CLASSIFICATION	**A-1-a**	**A-1-b**	**A-2-4**	**A-2-5**	**A-3**
Sieve Analysis Percent Passing					
No. 10 (2.000 mm)	**50 max.**	----	----	---	---
No. 40 (0.425 mm)	**30 max.**	**50 max.**	----	---	**51 max.***
No. 200 (0.075 mm)	**15 max.**	**25 max.**	**35 max.**	**35 max.**	**10 max.**
Atterberg Limits for Fraction Passing No. 40 (0.425 mm)					
Liquid Limits	----	----	**40 max.**	**41 min.**	---
Plasticity Index	**6 max.**	**6 max.**	**10 max.**	**10 max.**	**Non Plastic**
Usual Materials	**Stone Fragment, Gravel and Sand**		**Silty or Clayey Gravel and Sand**		**Coarse Sand**

*Modified from M-145.

Fine beach sands, windblown sands, stream deposited sands, etc., exhibiting fine, rounded particles and typically Classified by AASHTO M-145 as A-3 materials should not be used.

Reference the most current version of ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), for comparable soil groups.

1.0 STANDARDS AND DEFINITIONS

1.1 STANDARDS - All standards refer to the current ASTM/AASHTO edition unless otherwise noted.

1.1.1 ASTM B-864 "Standard Specification for Corrugated Aluminum Box Culverts" (AASHTO Designation M-219).

1.1.2 AASHTO Standard Specification for Highway Bridges - Section 12 Division I - Design, AASHTO LRFD Bridge Design Specifications Section 12.

1.1.3 AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction, AASHTO LRFD Bridge Construction Specifications - Section 26. ASTM B789, Standard Practice for Installing Corrugated Aluminum Structural Plate Pipe.

1.2 DEFINITIONS

1.2.1 Engineer - In these specifications the word "Engineer" shall mean the Engineer of Record or Owner's designated engineering representative.

1.2.2 Manufacturer - In these specifications the word "Manufacturer" shall mean CONTECH ENGINEERED SOLUTIONS.

1.2.3 Contractor - In these specifications the word "Contractor" shall mean the firm or corporation undertaking the execution of any installation work under the terms of these specifications.

2.0 GENERAL CONDITIONS

2.1 Any installation guidance provided herein shall be endorsed by the engineer; discrepancies herein are governed by the Engineer's plans and specifications.

2.2 The Contractor shall furnish all labor, material and equipment and perform all work and services except those set out and furnished by the Owner, necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction, grading as shown on the plans and as described therein. This work shall consist of all mobilization clearing and grading, grubbing, stripping, removal of existing material unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications. This work is to be accomplished under the observation of the Owner or his designated representative.

2.3 Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site and shall make such additional investigation as he may deem necessary for the planning and proper execution of the work.

If conditions other than those indicated are discovered by the Contractor, the Owner shall be notified immediately. The material which the Contractor believes to be a changed condition shall not be disturbed so that the owner can investigate the condition.

2.4 The construction shall be performed under the direction of the Engineer.

2.5 All aspects of the structure design and site layout including foundations, backfill, end treatments and necessary scour consideration shall be performed by the Engineer.

3.0 ASSEMBLY AND INSTALLATION

3.1 Bolts and nuts shall conform to the requirements of ASTM A-307 and/or ASTM A-449. The box culvert shall be assembled in accordance with the plate layout drawings provided by the manufacturer and per the manufacturer's recommendations.

Bolts shall be tightened using an applied torque of between 100 and 150 ft.-lbs.

3.2 The box culvert shall be installed in accordance with the plans and specifications, the manufacturer's recommendations, and AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction/AASHTO LRFD Bridge Construction Specifications - Section 26.

3.3 Trench excavation shall be made in embankment material that is structurally adequate. The trench width shall be shown on the plans. Poor quality in situ embankment material must be removed and replaced with suitable backfill as directed by the Engineer.

3.4 Aluminum Box Culvert designs require a minimum allowable soil-bearing pressure of 4,000 psf. Lower bearing capacities may be accommodated with a site specific design for an aluminum foundation or a concrete footing.

If the engineer determines the natural foundation is inadequate to support the structure's backfill, the poor material shall be excavated, removed and replaced to a suitable depth with competent material. The specific depth of excavation required may be reduced by utilizing a geosynthetic reinforced foundation as designed by a qualified geotechnical engineer. For additional information contact your local Contech representative.

3.5 When a metal foundation is used, the soil bedding requires a minimum of 6 inches of loose granular material with a maximum particle size of one-half the corrugation depth. The proper width of the bedding material required shall conform to the project plans and specifications.

Bedding preparation is critical to both structure performance and service life. The bedding should be constructed to uniform line and grade to avoid distortions that may create undesirable stresses in the structure and/or rapid deterioration of the roadway. The bed should be free of rock formations, protruding stones, frozen lumps, roots, and other foreign matter that may cause unequal settlement.

3.6 The structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloaded and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.

When installed on a full invert or on flexible footing pads, assembly of the invert or footing pads shall start at the downstream end. Circumferential seam laps shall shingle over the top of the downstream plates as assembly progresses upstream. Whether the box culvert is installed on a concrete footing, full metal invert, or flexible footing pad, assembly of the structure shell shall start at the upstream end. Downstream rings of plates shall be assembled outside of the upstream rings (Circumferential seams are shingled downstream when viewed from the inside of the shell).

3.7 The structure shall be backfilled using clean well graded granular material that meets the requirements for soil classifications A-1, A-2-4, A-2-5, or A-3 modified per AASHTO M-145. See the structural plate backfill group classification table on this sheet.

Backfill must be placed symmetrically on each side of the structure in 8 inch loose lifts. Each lift shall be compacted to a minimum of 90 percent density per AASHTO T-180.

3.8 Standard highway loads that meet the permissible design load limits for an Aluminum Box Culvert are not allowed on the structure until it is backfilled completely and pavement is in place.

The addition of temporary soil for heavy construction loads is not feasible or permissible for Aluminum Box Culverts. By design, these structures are limited in the range of permissible fill heights and live loads.

Heavy construction loads that exceed that of the particular highway live load design limits are not allowed on Aluminum Box Culverts without approval from the Engineer.

3.9 If an aluminum headwall and/or wingwall system is specified, the select granular structural backfill limits shall extend past the deadman anchor system. Contact the Engineer if stiff material or rock is encountered where the wingwalls and deadmen are to be installed.

TYPE: BOX SIZE: 20KYTC SPAN: 13'-3" RISE: 6'-9" LENGTH @ ℄: 45'-0"		INLET	OUTLET	PLATE THICKNESS: .100 (H)/.100(C) REINFORCING RIB SPACING: AS SHOWN REINFORCING RIB TYPE: AS SHOWN NUMBER OF STRUCTURES: 1
	SKEW	0	0	
	BEVEL	0	0	

FOR APPROVAL

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
700 Tech Drive, Winchester, KY 40391
859-744-3339 859-744-9665 FAX

CONTECH STRUCTURAL PLATE
CONTECH CONTRACT DRAWING

RAYMOND ROAD - MP 0.49

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
692722	010	10/27/2021
DESIGNED:		DRAWN: JEM
CHECKED:		APPROVED:
SHEET NO.: 6 OF 6		

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IMPORTANT:
ASSEMBLY INSTRUCTIONS WILL BE SHIPPED WITH THE STRUCTURE. THEY ARE LOCATED IN THE BRIGHTLY COLORED BOLT KEG.

NOTES:
1. INVERT END OF HAUNCH PLATES PAINTED RED.
2. WHEN A FULL CORRUGATED INVERT IS USED, SCALLOPED CLOSURE PLATES ARE TO BE CLIPPED TO THE OUTSIDE OF THE RECEIVING CHANNEL TO MINIMIZE BACKFILL INFILTRATION IN THE VALLEYS OF THE CORRUGATED INVERT PLATE BELOW THE RECEIVING CHANNEL.
   NOTE: THIS DOES NOT MAKE A JOINT TIGHT ENOUGH TO PREVENT INFILTRATION OF FINE SILTS OR SANDS. THE USE OF A GEOTEXTILE PREVENTS THE INFILTRATION OF THE BACKFILL THROUGH THE UNFILLED BOLT HOLES AND THE SPACE BETWEEN THE INVERT PLATE AND THE SCALLOP PLATE. A ROLL OF GEOTEXTILE IS PROVIDED FOR THIS PURPOSE. WHEN SHORT FOOTING PADS ARE USED, THE SCALLOPED CLOSURE PLATES ARE NOT PROVIDED UNLESS ORDERED AS AN EXTRA, SINCE IT IS ANTICIPATED THESE FOOTING PLATES WILL BE BURIED.
3. INVERT END OF HAUNCH RIBS PAINTED RED.

GENERAL NOTES:
1. CONFIRMATION OF COVER - THIS STRUCTURE IS WITHIN THE MINIMUM AND MAXIMUM ALLOWABLE HEIGHT OF COVER, FOR THE DESIGNATED LOADING, AS FOLLOWS:

   LOADING: KY HL93
   MINIMUM COVER (FT): 1.4
   MAXIMUM COVER (FT): 4.0

2. FOR PROPER BOLT SIZE USAGE, REFER TO THE FOLLOWING:

PLATE ONLY

	1 PLATE	2 PLATE	3 PLATE
0.100" - 0.125" THK. PLATE		1 1/4"	1 1/4"
0.150" - 0.175" THK PLATE		1 1/4"	1 1/2"
0.200" - 0.250" THK. PLATE		1 1/2"	2"

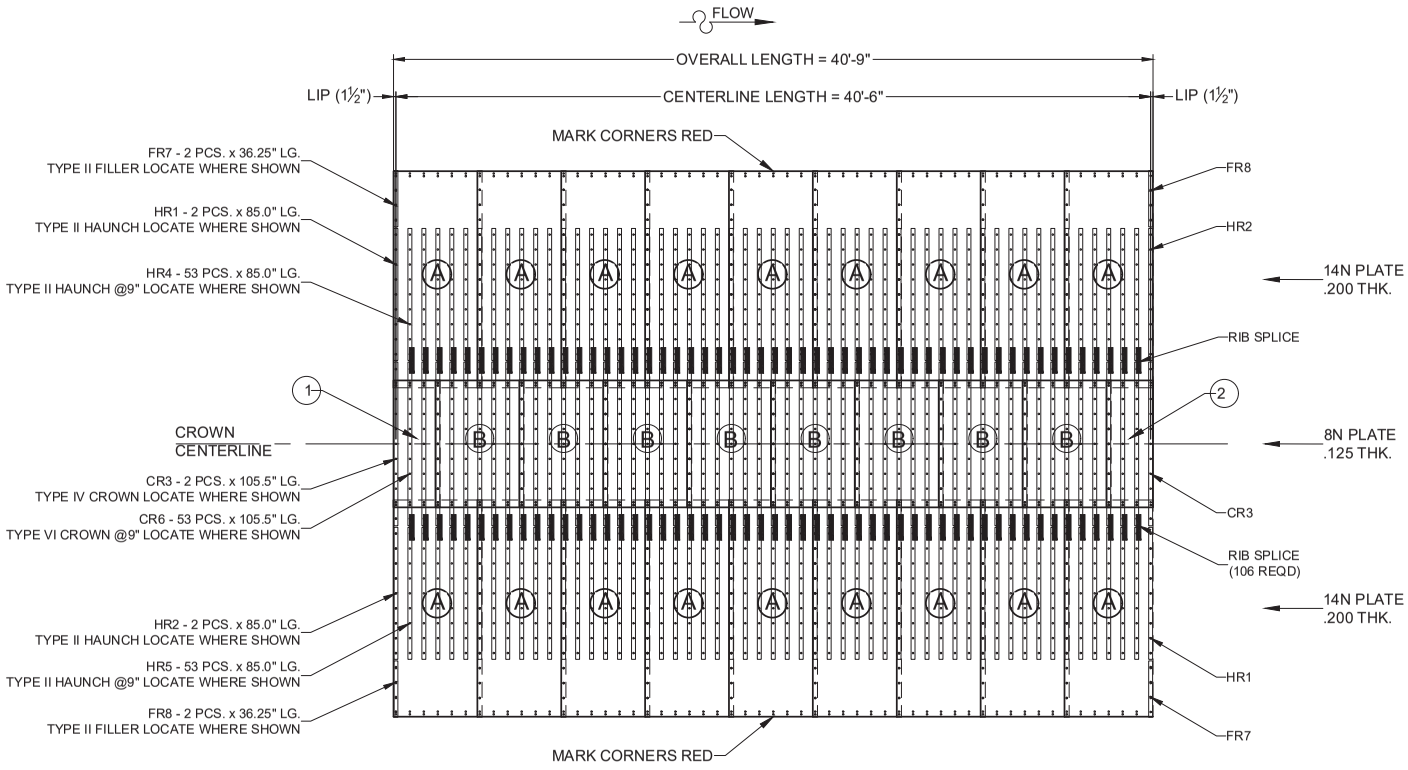
PLATE W/ T2 OR T4 REINFORCING RIB OR RECEIVING CHANNEL

	1 PLATE	2 PLATE	3 PLATE
0.100" - 0.125" THK. PLATE	1 1/4"	1 1/2"	1 1/2"
0.150" - 0.175" THK PLATE	1 1/4"	1-1/2"	2"
0.200" - 0.225" THK. PLATE	1 1/2"	2"	2"
0.250" THK. PLATE	1 1/2"	2"	2"

PLATE W/ T6 REINFORCING RIB

	1 PLATE	2 PLATE	3 PLATE
0.100" - 0.125" THK. PLATE	1 1/2"	2"	2"
0.150" - 0.175" THK PLATE	2"	2"	2"
0.200" - 0.225" THK. PLATE	2"	2"	2 1/2"
0.250" THK. PLATE	2"	2"	2 1/2"

3. NUTS MAY BE LOCATED ON STRUCTURE'S INTERIOR OR EXTERIOR TO ALLOW CONVENTIONAL ACCESS DURING ASSEMBLY AND TORQUING. ONLY ONE SIDE OF NUT HAS A CURVED SURFACE AND IT SHOULD BE IN DIRECT CONTACT WITH PLATE VALLEY.
4. ALL PLATE LAPS AND REINFORCING RIBS MUST BE PROPERLY MATED IN A TANGENT FASHION USING PROPER ALIGNMENT TECHNIQUES AND HELD IN ALIGNMENT BY FASTENERS (FINGER TIGHTENED ONLY). BEFORE BACKFILLING COMMENCES, ALL FASTENERS MUST BE TORQUED FOR ADEQUATE COMPONENT CONTACT. GOOD COMPONENT FIT IS BETTER THAN HIGH TORQUE.
5. FASTENER TORQUE REQUIREMENTS: TORQUE AT 100-150 FOOT-POUNDS. TORQUE LEVELS ARE FOR INSTALLATION, NOT RESIDUAL, IN-SERVICE REQUIREMENTS. SINCE TORQUEING MAY LOOSEN PREVIOUSLY TIGHTENED FASTENERS, MULTIPLE PASSES MAY BE NECESSARY. WHEN SEAM SEALANT TAPE IS USED, FASTENERS SHOULD BE TORQUED AGAIN AFTER 24 HOURS.
6. ALL ALUMINUM STRUCTURAL PLATE MATERIAL IS MANUFACTURED IN ACCORDANCE WITH AASHTO M219, ASTM B746 AND ASTM B864 SPECIFICATIONS. SEE ASSEMBLY INSTRUCTIONS SHIPPED WITH MATERIAL IN FASTENER CONTAINER. ALSO REFER TO SPECIFIC PRODUCT CATALOG FOR ADDITIONAL PRODUCT INFORMATION.
7. THE ASSEMBLY BOLTS AND NUTS ARE SPECIALLY DESIGNED WITH ROUNDED OR SPHERICAL THROATS FOR FITTING EITHER THE CREST OR VALLEY OF THE CORRUGATIONS, PROVIDING MAXIMUM BEARING CONTACT AREA WITH THE PLATES WITHOUT THE USE OF WASHERS. NOTE THAT THE BOLTS AND NUTS SHOULD BE INSTALLED SUCH THAT THE ROUNDED PORTION IS IN CONTACT WITH THE PLATES.



ALBC - DEVELOPED PLAN (OUTSIDE VIEW)
16'-10" SPAN x 8'-3" RISE

		INLET	OUTLET
TYPE: BOX SIZE: 39KYTC SPAN: 16'-10" RISE: 8'-3" LENGTH @ ℄: 40'-6"	SKEW	0	0
	BEVEL	0	0

PLATE THICKNESS: .200 (H)/.125(C)
REINFORCING RIB SPACING: AS SHOWN
REINFORCING RIB TYPE: AS SHOWN

NUMBER OF STRUCTURES: 1

FOR APPROVAL

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
700 Tech Drive, Winchester, KY 40391
859-744-3339 859-744-9665 FAX

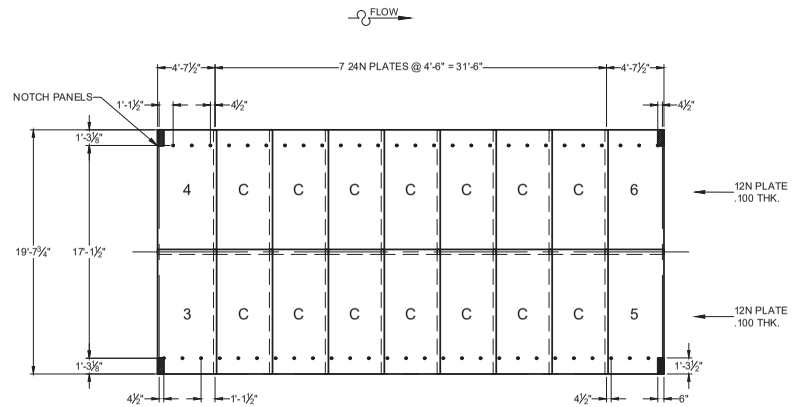
CONTECH STRUCTURAL PLATE
CONTECH CONTRACT DRAWING

RAYMOND RD - MP 2.1

SHEPHERDSVILLE, KY

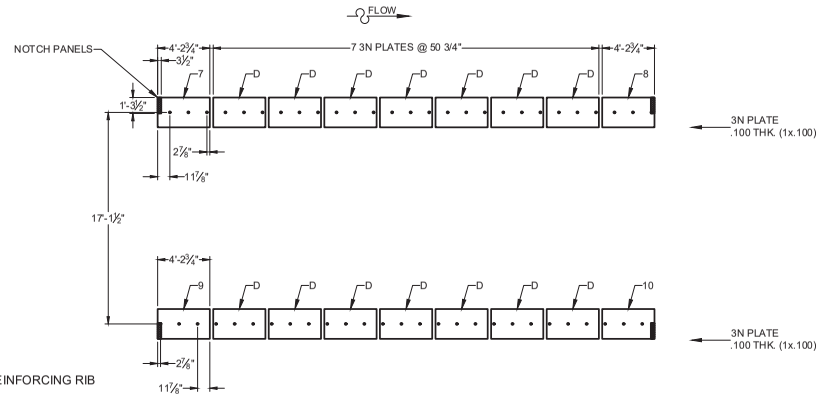
PROJECT No.:	SEQ. No.:	DATE:
692743	010	10/27/2021
DESIGNED:		DRAWN: JEM
CHECKED:		APPROVED:
SHEET NO.: 1 OF 6		

I:\MERLIN\PROJECTS\ACTIVE\692700\692743\692743-10-ALUMINUM BOX CULVERT\DRAWINGS\CONTRACT\692743-010-ALC-CON-A.DWG 10/27/2021 4:07 PM



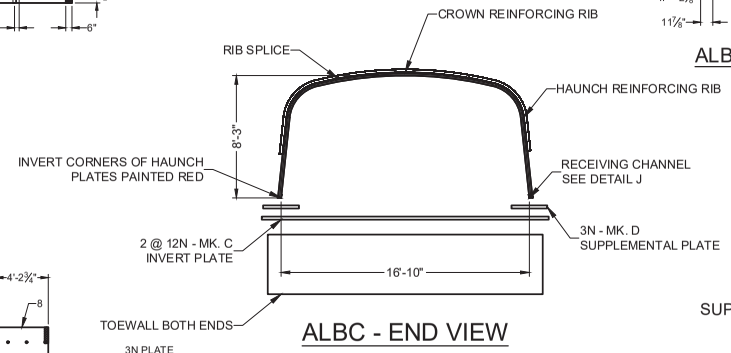
ALBC - INVERT PLATES PLAN VIEW

NOTE: USE 1-1/4" LG. BOLTS ON OVERLAPPING SEAM

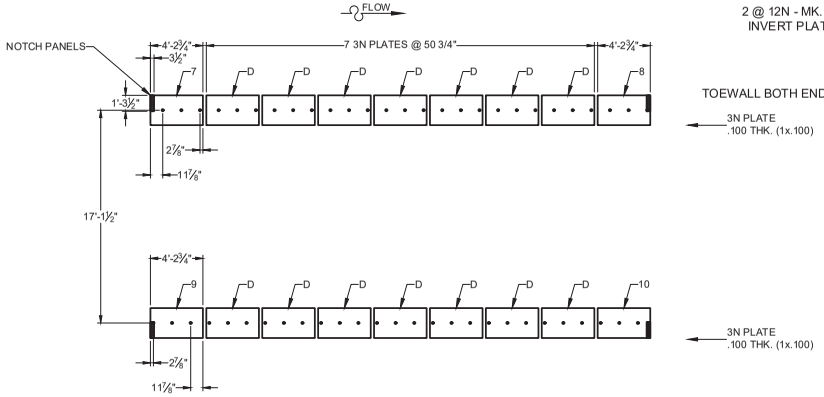


ALBC - SUPPLEMENTAL PLATES PLAN VIEW

NOTE 1: 2-7/8" DIM. EDGE OF PLATES RED
NOTE 2: 3-1/4" GAP TYP. BETWEEN PLATES

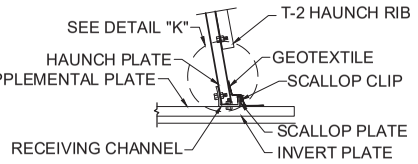


ALBC - END VIEW

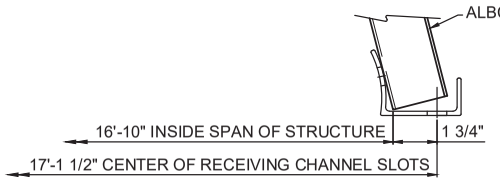


ALBC - SUPPLEMENTAL PLATES PLAN VIEW

NOTE 1: 2-7/8" DIM. EDGE OF PLATES RED
NOTE 2: 3-1/4" GAP TYP. BETWEEN PLATES



DETAIL "J"



DETAIL "K"

TYPE: BOX SIZE: 39KYTC SPAN: 16'-10" RISE: 8'-3" LENGTH @ ℄: 40'-6"		INLET	OUTLET
	SKEW	0	0
	BEVEL	0	0

PLATE THICKNESS: .200 (H)/.125(C)
REINFORCING RIB SPACING: AS SHOWN
REINFORCING RIB TYPE: AS SHOWN

NUMBER OF STRUCTURES: 1

FOR APPROVAL

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
700 Tech Drive, Winchester, KY 40391
859-744-3339 859-744-9665 FAX

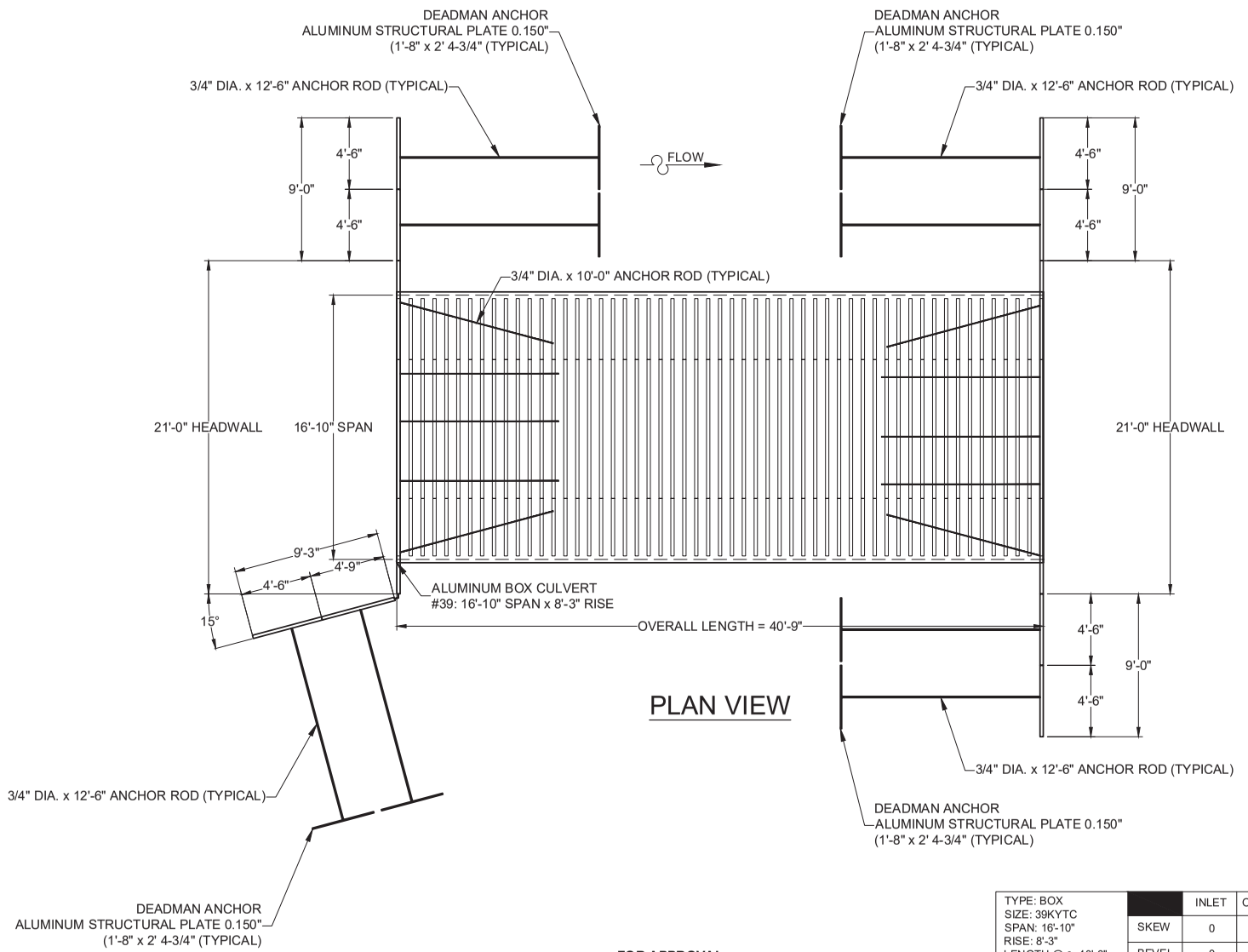
CONTECH STRUCTURAL PLATE
CONTECH CONTRACT DRAWING

RAYMOND RD - MP 2.1

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
692743	010	10/27/2021
DESIGNED:		DRAWN: JEM
CHECKED:		APPROVED:
SHEET NO.: 2 OF 6		

I:\MERLIN\PROJECTJACTIVE\692700\692743\692743-10-ALUMINUM BOX CULVERT\DRAWINGS\CONTRACT\692743-010-AL-CON-A.DWG 10/27/2021 4:07 PM



		INLET	OUTLET
TYPE: BOX SIZE: 39KYTC SPAN: 16'-10" RISE: 8'-3" LENGTH @ ℄: 40'-6"	SKEW	0	0
	BEVEL	0	0

PLATE THICKNESS: .200 (H)/.125(C)
REINFORCING RIB SPACING: AS SHOWN
REINFORCING RIB TYPE: AS SHOWN

NUMBER OF STRUCTURES: 1

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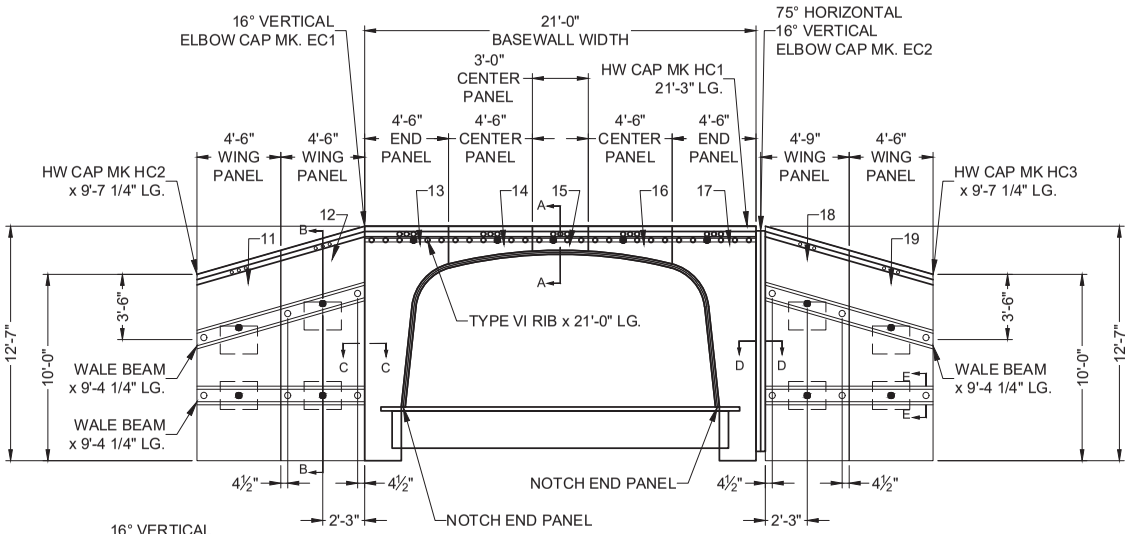
RAYMOND RD - MP 2.1

SHEPHERDSVILLE, KY

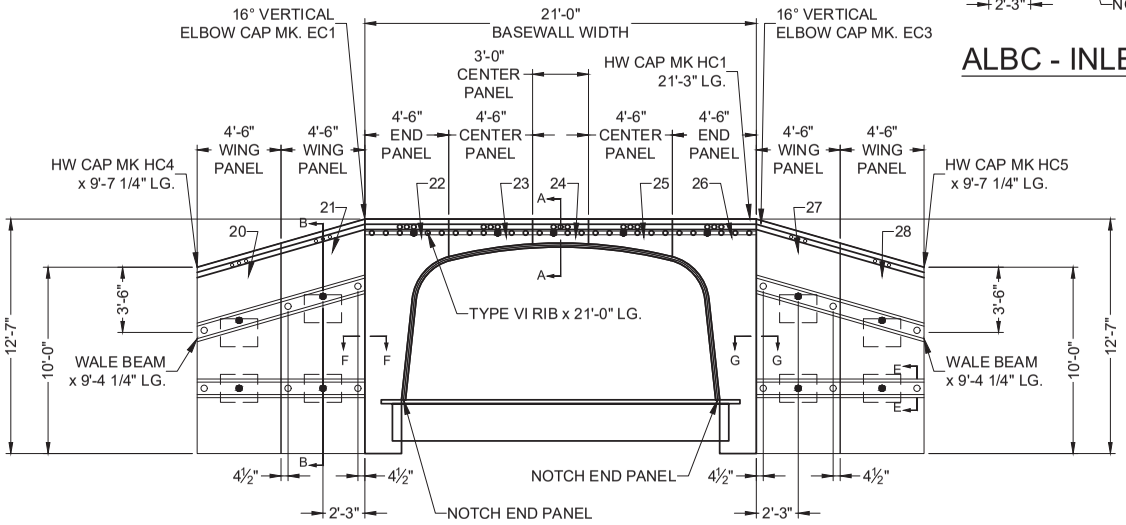
PROJECT No.:	SEQ. No.:	DATE:
692743	010	10/27/2021
DESIGNED:		DRAWN: JEM
CHECKED:		APPROVED:
SHEET NO.: 3 OF 6		

I:\MERLIN\PROJECTACTIVE\692700\692743\692743-10-ALUMINUM BOX CULVERT\DRAWINGS\CONTRACT\692743-010-AL_CON-A.DWG 10/27/2021 4:07 PM

NOTES:
1. ALL MARK IDENTIFICATIONS TO BE ON SOIL SIDE.
2. BOLT HEADWALL TO REINFORCING RIB AT END OF STRUCTURE.
3. SEE SHEET 5 FOR SECTION AND ASSEMBLY DETAILS.
4. ALL 2'-3" DIMENSIONS ARE RELATIVE TO SECTION B-B.
5. ALL 4 1/2" DIMENSIONS ARE RELATIVE TO SECTION E-E.
6. ○ DENOTES BOLTS
7. ● DENOTES RODS



ALBC - INLET EXPANDED END VIEW



ALBC - OUTLET EXPANDED END VIEW

FOR APPROVAL

TYPE: BOX		INLET	OUTLET	PLATE THICKNESS: .200 (H)/.125(C)
SIZE: 39KYTC				REINFORCING RIB SPACING: AS SHOWN
SPAN: 16'-10"	SKEW	0	0	REINFORCING RIB TYPE: AS SHOWN
RISE: 8'-3"				
LENGTH @ ℄: 40'-6"	BEVEL	0	0	NUMBER OF STRUCTURES: 1

MARK	DATE	REVISION DESCRIPTION	BY

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CONTECH STRUCTURAL PLATE
CONTECH CONTRACT DRAWING

RAYMOND RD - MP 2.1

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
692743	010	10/27/2021
DESIGNED:		DRAWN: JEM
CHECKED:		APPROVED:
SHEET NO.: 4 OF 6		

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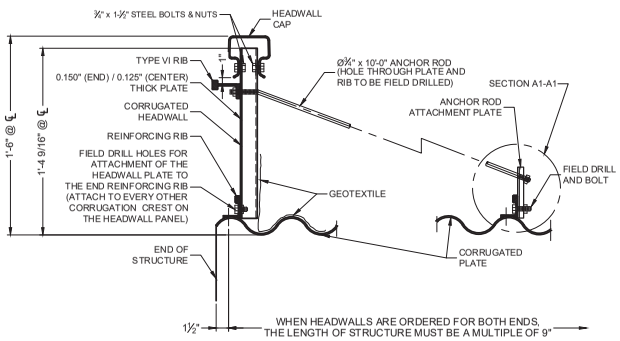


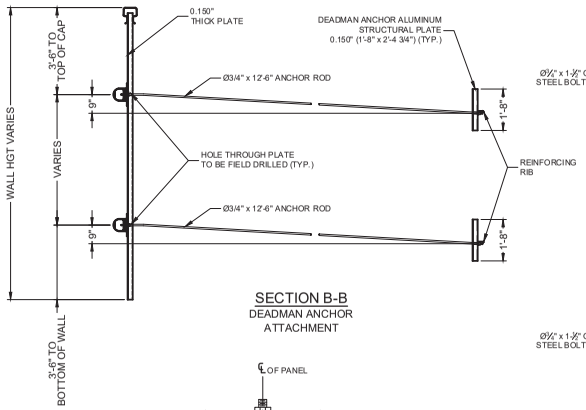
SECTION A-A
HEADWALL ATTACHMENT TO CROWN OF STRUCTURE

NOTES:

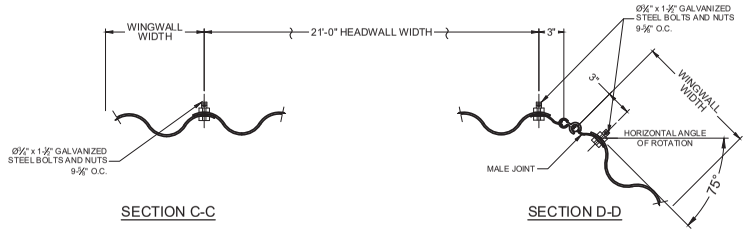
1) REVERSE CROWN RIB FOR PROPER ANCHOR ROD ATTACHMENT PLATE ORIENTATION.

2) NO SPLICE PLATES ARE USED FOR THE TYPE IV REINFORCING RIBS ATTACHED TO THE CORRUGATED HEADWALL.

3) REINFORCING RIBS AT EACH END OF STRUCTURE MUST BE ORIENTED SUCH THAT THE HEADWALL CAN BE PLACED BEHIND THEM AS SHOWN.



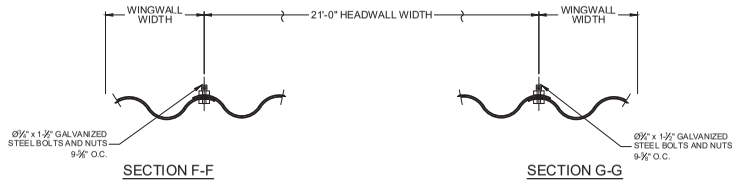
SECTION B-B
DEADMAN ANCHOR ATTACHMENT



SECTION C-C

SECTION D-D

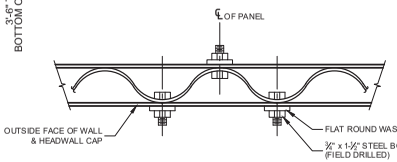
TYPICAL HEADWALL PANEL TO WING PANEL JOINTS DETAIL
(BOTH ENDS)



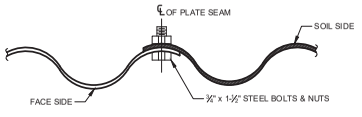
SECTION F-F

SECTION G-G

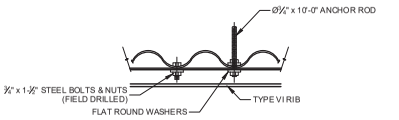
TYPICAL HEADWALL PANEL TO WING PANEL JOINTS DETAIL
(BOTH ENDS)



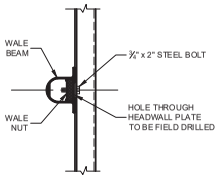
HEADWALL CAP AT ATTACHMENT TO PANEL DETAIL



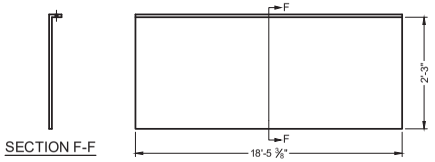
TYPICAL PANEL LAP DETAIL



TYPICAL ANCHOR ROD ATTACHMENT AT HEADWALL

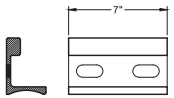


SECTION E-E
WALE BEAM ATTACHMENT

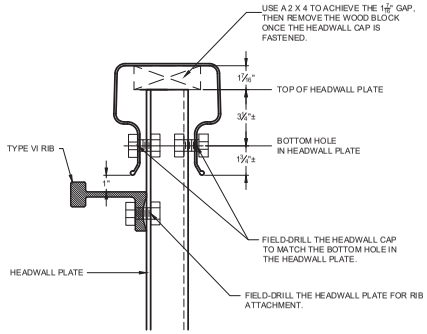


SECTION F-F

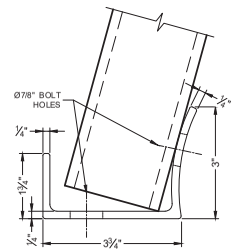
TYPICAL TOE WALL
(BOTH ENDS)



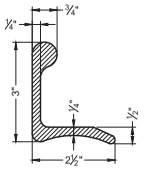
TYPE 4 ANCHOR ROD
ATTACHMENT PLATE



HEADWALL
CAP AND RIB ATTACHMENT

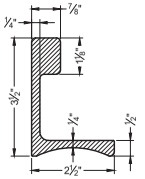


ALUMINUM RECEIVING CHANNEL



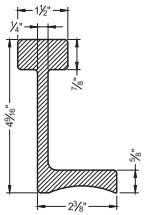
TYPE II RIB (CONTECH) TYPE 1 RIB (ASTM)

ALLOY	6061-T6
YIELD STRENGTH	35 KSI [241.3 MPa]
TENSILE STRENGTH	38 KSI [262.0 MPa]
AREA	1.71IN.² [1103 mm²]
CENTER OF AREA	Yc = 1.02 IN. [26.0mm]
PLASTIC MODULUS	1.70 IN.³ [27,858mm³]
PLASTIC MOMENT	Mp = 4.97 [6.72 KN-M]



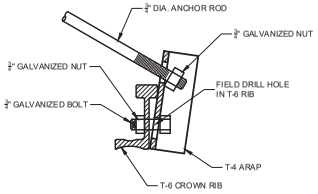
TYPE IV RIB (CONTECH) TYPE 2 RIB (ASTM)

ALLOY	6061-T6
YIELD STRENGTH	35 KSI [241.3 MPa]
TENSILE STRENGTH	38 KSI [262.0 MPa]
AREA	2.27IN.² [1465 mm²]
CENTER OF AREA	Yc = 1.76 IN. [44.8mm]
PLASTIC MODULUS	2.68 IN.³ [43,917mm³]
PLASTIC MOMENT	Mp = 7.81 [10.60 KN-M]



TYPE VI RIB (CONTECH) TYPE 3 RIB (ASTM)

ALLOY	6061-T6
YIELD STRENGTH	35 KSI [241.3 MPa]
TENSILE STRENGTH	38 KSI [262.0 MPa]
AREA	3.62IN.² [2335 mm²]
CENTER OF MASS Y	Yc = 2.27 IN. [57.6mm]
SECTION MODULUS	4.38 IN³ [71,775mm³]
PLASTIC MODULUS	5.66 IN.³ [92,750mm³]
PLASTIC MOMENT	Mp = 16.52 [22.41 KN-M]



SECTION A1-A1

FOR APPROVAL

TYPE: BOX SIZE: 39KYTC SPAN: 16'-10" RISE: 8'-3" LENGTH @ ℄: 40'-6"		INLET	OUTLET
	SKEW	0	0
	BEVEL	0	0

PLATE THICKNESS: .200 (H)/.125(C)
REINFORCING RIB SPACING: AS SHOWN
REINFORCING RIB TYPE: AS SHOWN

NUMBER OF STRUCTURES: 1

MARK	DATE	REVISION DESCRIPTION	BY

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CONTECH STRUCTURAL PLATE
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RAYMOND RD - MP 2.1

SHEPHERDSVILLE, KY

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SHEET NO.: 5 OF 6		

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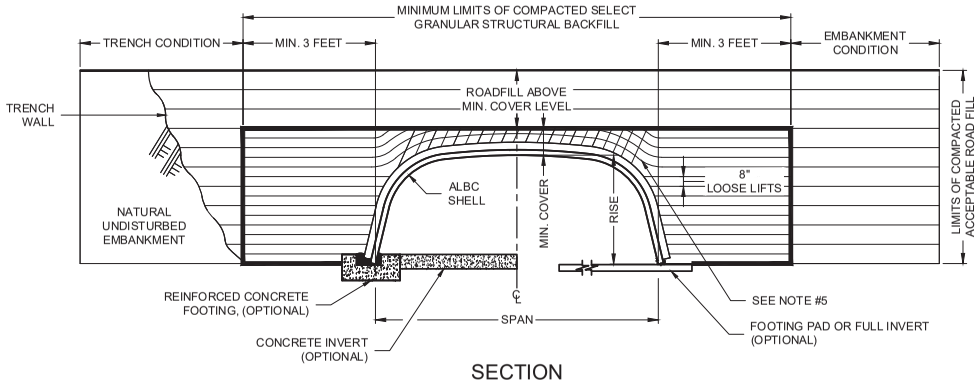


SECTION

SELECT GRANULAR STRUCTURAL BACKFILL LIMITS.

INITIAL LIFTS OVER THE CROWN OF STRUCTURE AS INDICATED BY SHADED AREA TO BE COMPACTED TO REQUIRED DENSITY WITH HAND OPERATED EQUIPMENT OR WITH LIGHTWEIGHT(D-4 OR LIGHTER) EQUIPMENT.

NOTES:

1. ALL SELECT GRANULAR BACKFILL TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180.
2. COMPLETE AND REGULAR MONITORING OF THE ALUMINUM BOX CULVERT SHAPE IS NECESSARY DURING ALL BACKFILLING OF THE STRUCTURE.
3. PREVENT DISTORTION OF SHAPE AS NECESSARY BY VARYING COMPACTION METHODS AND EQUIPMENT.
4. TRENCH WIDTH OTHER THAN 3 FEET SHALL BE BY DIRECTION OF THE ENGINEER OF RECORD.
5. SWITCH TO PLACING SELECT GRANULAR BACKFILL NEAR IN RADIAL LIFTS THE MIDDLE OF THE HAUNCH CURVE.

ADDITIONAL SELECT GRANULAR STRUCTURAL BACKFILL NOTES:

SATISFACTORY BACKFILL MATERIAL, PROPER PLACEMENT, AND COMPACTION ARE KEY FACTORS IN OBTAINING MAXIMUM STRENGTH AND STABILITY.

THE BACKFILL MATERIAL SHOULD BE FREE OF ROCKS, FROZEN LUMPS, AND FOREIGN MATERIAL THAT COULD CAUSE HARD SPOTS OR DECOMPOSE TO CREATE VOIDS. BACKFILL MATERIAL SHOULD BE WELL GRADED GRANULAR MATERIAL THAT MEETS THE REQUIREMENTS OF AASHTO M-145 FOR SOIL CLASSIFICATIONS A-1, A-2-4, A-2-5, OR A-3 MODIFIED.

SEE THE STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION TABLE ON THIS SHEET. BACKFILL MUST BE PLACED SYMMETRICALLY ON EACH SIDE OF THE STRUCTURE IN 8" LOOSE LIFTS. EACH LIFT IS TO BE COMPACTED TO A MINIMUM OF 90% DENSITY PER AASHTO T-180.

A HIGH PERCENTAGE OF SILT OR FINE SAND IN THE NATIVE SOILS SUGGESTS THE NEED FOR A WELL GRADED GRANULAR BACKFILL MATERIAL TO PREVENT SOIL MIGRATION. IF THE PROPOSED BACKFILL IS NOT A WELL-GRADED MATERIAL, A NON-WOVEN GEOTEXTILE FILTER FABRIC SHALL BE PLACED BETWEEN THE SELECT BACKFILL AND THE IN SITU MATERIAL.

DURING BACKFILL, ONLY LIGHTWEIGHT TRACKED VEHICLES (D-4 OR LIGHTER) SHOULD BE NEAR THE STRUCTURE AS FILL PROGRESSES ABOVE THE CROWN AND TO THE FINISHED GRADE. THE ENGINEER AND CONTRACTOR ARE CAUTIONED THAT THE MINIMUM COVER MAY NEED TO BE INCREASED TO HANDLE TEMPORARY CONSTRUCTION VEHICLE LOADS (HEAVIER THAN D-4).

STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION, REFERENCE AASHTO M-145					
GROUP CLASSIFICATION	**A-1-a**	**A-1-b**	**A-2-4**	**A-2-5**	**A-3**
Sieve Analysis Percent Passing					
No. 10 (2.000 mm)	**50 max.**	----	----	---	---
No. 40 (0.425 mm)	**30 max.**	**50 max.**	----	---	**51 max.***
No. 200 (0.075 mm)	**15 max.**	**25 max.**	**35 max.**	**35 max.**	**10 max.**
Atterberg Limits for Fraction Passing No. 40 (0.425 mm)					
Liquid Limits	----	----	**40 max.**	**41 min.**	---
Plasticity Index	**6 max.**	**6 max.**	**10 max.**	**10 max.**	**Non Plastic**
Usual Materials	**Stone Fragment, Gravel and Sand**		**Silty or Clayey Gravel and Sand**		**Coarse Sand**

*Modified from M-145.

Fine beach sands, windblown sands, stream deposited sands, etc., exhibiting fine, rounded particles and typically Classified by AASHTO M-145 as A-3 materials should not be used.

Reference the most current version of ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), for comparable soil groups.

1.0 STANDARDS AND DEFINITIONS

1.1 STANDARDS - All standards refer to the current ASTM/AASHTO edition unless otherwise noted.

1.1.1 ASTM B-864 "Standard Specification for Corrugated Aluminum Box Culverts" (AASHTO Designation M-219).

1.1.2 AASHTO Standard Specification for Highway Bridges - Section 12 Division I - Design, AASHTO LRFD Bridge Design Specifications Section 12.

1.1.3 AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction, AASHTO LRFD Bridge Construction Specifications - Section 26. ASTM B789, Standard Practice for Installing Corrugated Aluminum Structural Plate Pipe.

1.2 DEFINITIONS

1.2.1 Engineer - In these specifications the word "Engineer" shall mean the Engineer of Record or Owner's designated engineering representative.

1.2.2 Manufacturer - In these specifications the word "Manufacturer" shall mean CONTECH ENGINEERED SOLUTIONS.

1.2.3 Contractor - In these specifications the word "Contractor" shall mean the firm or corporation undertaking the execution of any installation work under the terms of these specifications.

2.0 GENERAL CONDITIONS

2.1 Any installation guidance provided herein shall be endorsed by the engineer; discrepancies herein are governed by the Engineer's plans and specifications.

2.2 The Contractor shall furnish all labor, material and equipment and perform all work and services except those set out and furnished by the Owner, necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction, grading as shown on the plans and as described therein. This work shall consist of all mobilization clearing and grading, grubbing, stripping, removal of existing material unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications. This work is to be accomplished under the observation of the Owner or his designated representative.

2.3 Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site and shall make such additional investigation as he may deem necessary for the planning and proper execution of the work.

If conditions other than those indicated are discovered by the Contractor, the Owner shall be notified immediately. The material which the Contractor believes to be a changed condition shall not be disturbed so that the owner can investigate the condition.

2.4 The construction shall be performed under the direction of the Engineer.

2.5 All aspects of the structure design and site layout including foundations, backfill, end treatments and necessary scour consideration shall be performed by the Engineer.

3.0 ASSEMBLY AND INSTALLATION

3.1 Bolts and nuts shall conform to the requirements of ASTM A-307 and/or ASTM A-449. The box culvert shall be assembled in accordance with the plate layout drawings provided by the manufacturer and per the manufacturer's recommendations.

Bolts shall be tightened using an applied torque of between 100 and 150 ft.-lbs.

3.2 The box culvert shall be installed in accordance with the plans and specifications, the manufacturer's recommendations, and AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction/AASHTO LRFD Bridge Construction Specifications - Section 26.

3.3 Trench excavation shall be made in embankment material that is structurally adequate. The trench width shall be shown on the plans. Poor quality in situ embankment material must be removed and replaced with suitable backfill as directed by the Engineer.

3.4 Aluminum Box Culvert designs require a minimum allowable soil-bearing pressure of 4,000 psf. Lower bearing capacities may be accommodated with a site specific design for an aluminum foundation or a concrete footing.

If the engineer determines the natural foundation is inadequate to support the structure's backfill, the poor material shall be excavated, removed and replaced to a suitable depth with competent material. The specific depth of excavation required may be reduced by utilizing a geosynthetic reinforced foundation as designed by a qualified geotechnical engineer. For additional information contact your local Contech representative.

3.5 When a metal foundation is used, the soil bedding requires a minimum of 6 inches of loose granular material with a maximum particle size of one-half the corrugation depth. The proper width of the bedding material required shall conform to the project plans and specifications.

Bedding preparation is critical to both structure performance and service life. The bedding should be constructed to uniform line and grade to avoid distortions that may create undesirable stresses in the structure and/or rapid deterioration of the roadway. The bed should be free of rock formations, protruding stones, frozen lumps, roots, and other foreign matter that may cause unequal settlement.

3.6 The structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloaded and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.

When installed on a full invert or on flexible footing pads, assembly of the invert or footing pads shall start at the downstream end. Circumferential seam laps shall shingle over the top of the downstream plates as assembly progresses upstream. Whether the box culvert is installed on a concrete footing, full metal invert, or flexible footing pad, assembly of the structure shell shall start at the upstream end. Downstream rings of plates shall be assembled outside of the upstream rings (Circumferential seams are shingled downstream when viewed from the inside of the shell).

3.7 The structure shall be backfilled using clean well graded granular material that meets the requirements for soil classifications A-1, A-2-4, A-2-5, or A-3 modified per AASHTO M-145. See the structural plate backfill group classification table on this sheet.

Backfill must be placed symmetrically on each side of the structure in 8 inch loose lifts. Each lift shall be compacted to a minimum of 90 percent density per AASHTO T-180.

3.8 Standard highway loads that meet the permissible design load limits for an Aluminum Box Culvert are not allowed on the structure until it is backfilled completely and pavement is in place.

The addition of temporary soil for heavy construction loads is not feasible or permissible for Aluminum Box Culverts. By design, these structures are limited in the range of permissible fill heights and live loads.

Heavy construction loads that exceed that of the particular highway live load design limits are not allowed on Aluminum Box Culverts without approval from the Engineer.

3.9 If an aluminum headwall and/or wingwall system is specified, the select granular structural backfill limits shall extend past the deadman anchor system. Contact the Engineer if stiff material or rock is encountered where the wingwalls and deadmen are to be installed.

		INLET	OUTLET
TYPE: BOX SIZE: 39KYTC SPAN: 16'-10" RISE: 8'-3" LENGTH @ ℄: 40'-6"	SKEW	0	0
	BEVEL	0	0

PLATE THICKNESS: .200 (H)/.125(C)
REINFORCING RIB SPACING: AS SHOWN
REINFORCING RIB TYPE: AS SHOWN

NUMBER OF STRUCTURES: 1

FOR APPROVAL

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
700 Tech Drive, Winchester, KY 40391
859-744-3339 859-744-9665 FAX

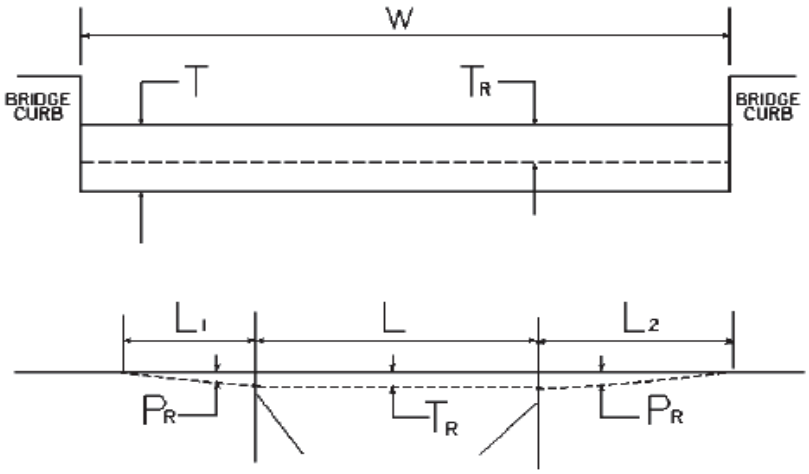
CONTECH STRUCTURAL PLATE
CONTECH CONTRACT DRAWING

RAYMOND RD - MP 2.1

SHEPHERDSVILLE, KY

PROJECT No.:	SEQ. No.:	DATE:
692743	010	10/27/2021
DESIGNED:		DRAWN: JEM
CHECKED:		APPROVED:
SHEET NO.: 6 OF 6		

CONSTRUCTION DETAIL FOR BRIDGE WITHIN LIMITS OF PAVING PROJECT
CB06 015 2723 000-003



W = bridge width curb to curb **T** = thickness of existing bituminous overlay **L** = length of bridge

L_1 & L_2 = length of approach pavement to be removed

T_R = thickness to be removed and replaced on bridge **P_R** = thickness to be removed and replaced on pavement

Note: L_1 & L_2 lengths shall be determined by using a transition rate of 100 ft / inch of thickness

BRIDGE NO	MP	W (ft)	T (in)	L_1(ft)	L_2(ft)	T_R (in)	L (ft)	P_R (in)
B00084N	1.170	20.00	1.00	100.00	100.00	1.00	21.00	1.00

PART II

SPECIFICATIONS AND STANDARD DRAWINGS

SPECIFICATIONS REFERENCE

Any reference in the plans or proposal to previous editions of the *Standard Specifications for Road and Bridge Construction* and *Standard Drawings* are superseded by *Standard Specifications for Road and Bridge Construction, Edition of 2019* and *Standard Drawings, Edition of 2020.*

SUPPLEMENTAL SPECIFICATIONS

The contractor shall use the Supplemental Specifications that are effective at the time of letting. The Supplemental Specifications can be found at the following link:

http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

1K

SPECIAL NOTE FOR PACKAGED, RAPID-HARDENING MATERIALS FOR CONCRETE REPAIRS

Use cementitious materials for rapid repairs to hardened hydraulic-cement concrete pavements and structures conforming to ASTM C 928. The Department will allow but not require the inclusion of aggregate in packaged, dry, mortar material.

Furnish a Certificate of Compliance with each shipment that includes the following:

1) Verification that the materials were tested according to ASTM C 928.
2) States the actual test results for each requirement.
3) State that the test results comply with the requirements.

The Department may sample and test the material furnished at any time. The Department will reject material not conforming to ASTM C 928 or contained in broken packages.

June 15, 2012

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SPECIAL NOTE FOR ALUMINUM AND STEEL STRUCTURAL PLATE BOX CULVERTS

This Special Note will apply when indicated on the plans or in the proposal. Section references herein are to the Department's Standard Specifications for Road and Bridge Construction, current edition.

1.0 DESCRIPTION. Furnish and install either an aluminum or a steel structural plate box culvert as the Contract specifies.

2.0 MATERIALS.

2.1 Structure. These structures consist of prefabricated sections assembled and erected at the site. Prefabricated sections consist of corrugated aluminum or steel plates, as the Contract specifies, which have been factory shaped, punched, and coated when required. The Department will not permit field modification except for tapping saddles or other devices to permit passage of other conduits or utilities through the structure. Furnish and install all auxiliary items such as ribs, wales, stiffeners, footing pads, etc. that the design requires. Furnish and install endwalls and toewalls when the plans require them. When endwalls are required, construct full height wing sections. Do not field bevel cut wing sections.

Before beginning erection, furnish to the Engineer applicable shop drawings, erection layouts, and manufacturer's brochures for submittal to the Division of Construction. Indicate the location of the drawing number, design load (as applicable), contract award year, and contractor stencils on the shop drawings. If a drawing number has not been assigned for the structure, obtain one from the Division of Structural Design. The Department will accept plates and accessories by certificate of compliance from the manufacturer. Upon completion of construction, submit to the Division of Structural Design an as-built set of structure plans and reviewed shop drawings in 22 inch by 36 inch Portable Document Format (PDF) for archiving.

2.1.1 Aluminum Structure. Obtain the aluminum structural plate box culvert, and aluminum endwalls or toewalls when required, from either Contech Construction Products or Lane Metal Products.

The Department will accept comparable aluminum structures produced by other companies when the Engineer approves. For such approval, submit sufficient data and design calculations to show that the proposed structures are equal in all respects to the Contech product and also include evidence of actual installations now in service that are performing satisfactorily. Design according to the current AASHTO LRFD Bridge Design Specifications, except design for KYHL-93 live load. The KYHL-93 live load is arrived at by increasing the standard AASHTO HL-93 truck and lane loads as specified in the AASHTO Specifications by 25%. Do not consider as a tunnel or tunnel liner plate for design. Before beginning erection, furnish the Engineer applicable shop drawings and structural design calculations performed, stamped, and signed by a qualified Professional Engineer licensed to practice in the State of Kentucky.

Use aluminum accessories and plates, of the plan specified thickness, that conforms to AASHTO M 219 or ASTM B 308 as applicable.

Where non-aluminum utilities are passed through, insulate with an alumilastic compound or approved equal, to prevent bi-metallic contact.

2.1.2 Steel Structure. Use either (1) Contech Construction Products'

Multi-Plate Steel Box Culvert; or (2) Lane Metal Products Company's Low Profile Box Culvert.

The Department will accept comparable steel structures produced by other companies when the Engineer approves. For such approval, submit sufficient data and design calculations to show that the proposed structures are equal in all respects to those specified above and also include evidence of actual installations now in service that are performing satisfactorily. Design according to the current AASHTO LRFD Bridge Design Specifications, except design for KYHL-93 live load. The KYHL-93 live load is arrived at by increasing the standard AASHTO HL-93 truck and lane loads as specified in the AASHTO Specifications by 25%. Do not consider as a tunnel or tunnel liner plate for design. Before beginning erection, furnish the Engineer applicable shop drawings and structural design calculations performed, stamped, and signed by a qualified Professional Engineer licensed to practice in the State of Kentucky.

Use steel accessories and plates, of the plan specified thickness, that conform to AASHTO M 167 for galvanized steel.

2.2 Asphalt Coating. On all steel drainage structures, except those installed as railroad tunnels, cattle underpasses, bicycle or pedestrian underpasses, or similar dry conditions, apply an asphalt coating conforming to Subsection 806.06.

2.3 Bedding Material. Use granular material with 100% passing 1 inch sieve that conforms to Subsection 804.08. Bedding shall be placed at a minimum thickness of twice the corrugation depth.

2.4 Backfill Material. Select any of the following alternates and obtain the Engineers approval.

1) well graded or uniformly graded bank or creek gravel, crushed or uncrushed, up to 3 inches maximum size;
2) well graded or uniformly graded natural or crushed sand;
3) finely shot limestone or sandstone providing no individual fragment is larger than 3 inches and the material contains no more than 5 percent dirt and/or shale, as determined by visual inspection by the Engineer;
4) crushed stone or crushed slag up to 3 inches maximum size (except DGA or Size No. 610);
5) other locally available materials meeting the approval of the Engineer (local soils conforming to soil classifications A-2-4 or A-2-5 from AASHTO M 145 will be acceptable). Do not use plastic soils, or materials containing significant amounts of nondurable shale (SDI < 95 by KM 64-513); or
6) flowable fill conforming to Subsection 601.03.03, B), 5).

2.5 Foundation Material. Use material capable of supporting the imposed loads due to backfill weight and footing pressures of 2 tons per square foot.

3.0 CONSTRUCTION.

3.1 Technical Representative. Provide a technical representative from the structure manufacturer to advise at the start of the project. Ensure the technical representative is available thereafter to assist in the event problems or special circumstances arise.

Technical assistance shall be provided at no additional cost to the Department.

3.2 Site Preparation. Perform structure excavation according to Section 603, except as modified herein.

On structures with footing pads, excavate trenches 3 inches below the elevation shown on the plans, and level the bottom of the trench with 3 inches of bedding material before placing the footing pads.

On structures with a full metal invert, excavate the entire area covered by the invert plates to accommodate bedding material placement to a minimum thickness of twice the corrugation depth before placing the invert plates.

Take soundings for foundation design at the inlet and outlet of each culvert and at intervals no greater than 20 feet along the grade line of the bottom of the culvert, to a depth of one foot. Make soundings on the centerline and at each edge of the culvert. Where ledge rock, gravel, hardpan, or other unyielding material is encountered or known to exist within the limits stated, perform excavation in the area under the invert plates or footing pads. Extend the additional excavation to a depth of 0.042 H below the bottom of the metal plates, where H is the height of fill above the top of the culvert. However, regardless of the height of fill, the Department will require the additional depth to be a minimum of one foot and will not require it to be more than 0.75 Hc, where Hc is the total height of the culvert.

Backfill the additional excavation with an earth cushion of firmly compacted fine soils in layers of 6 inches or less, prior to placing the sand bedding layer.

Excavate cross trenches as necessary to place metal toewalls when the plans require them.

Excavate a minimum width of the outside dimension of the box culvert including footing pads or invert plates plus 6 inches on each side.

Proper bedding preparation is critical for satisfactory performance of the box culvert. Place the bed for footing pads or invert plates to uniform lines and grade to avoid distortions and undesirable stresses in the structure.

Construct concrete footings or bottom slabs in accordance with the plans and standard specifications.

3.3 Installation. Erect the culvert, and endwalls when required, in strict accordance with the manufacturer's recommendations. The Department will allow offsite assembly of the structure, provided prior approval is obtained, and assembly is in accordance with the manufacturer's instructions. Structural plates shall be assembled with their inside circumferential sheet laps pointing downstream. Align plates circumferentially to avoid permanent distortion from the specified shape. Ensure the width and height of the completed structure is within 2 percent of the specified dimensions or 2 inches, whichever is greater.

Tighten bolts in the erected structure according to the manufacturer's recommendations, with good seam laps, while in proper shape, using nuts and bolts the manufacturer supplies. Construct concrete footings and headwalls in accordance with the plans.

Install the ribs, wales, and toewalls when required, according to the manufacturer’s recommendations.

In side-by-side installations, install the box culverts with footing pads or invert plates of each culvert no closer than 2 feet to the footing pads or invert plates of the adjacent culvert, unless the plans show otherwise. Excavate the entire volume between the culverts and place backfill.

3.4 Backfill. Proper placement and compaction of backfill are essential to obtain

maximum strength and stability of the finished structure. Use equipment and construction procedures to prevent excessive structure distortion from occurring. The manufacturer of the structure will specify the magnitude of allowable shape changes during backfill. Monitor the shape of the structure to control distortion until all backfilling operations are completed.

On structures with concrete footing pads, backfill the trench for the pads to the flowline inside the culvert before outside backfilling begins.

Place granular backfill material in horizontal layers not exceeding 6 inches loose depth, and bring up uniformly on both sides of the structure. Compact each layer to the same level on all sides before proceeding to the next lift. Do not use compaction equipment or methods that produce earth pressures that cause distortion or damage. Place material on top of the structure at right angles to the centerline of the structure. Compact each layer of backfill to a density of at least 95 percent of the maximum density according to KM 64-511. The Department will determine the in-place density using nuclear gages. The Engineer may waive density testing when not feasible due to the nature of the material. When using flowable fill, place according to Subsection 601.03.09, C).

If the structure is not installed in a full depth trench, use backfill material for embankment adjacent to the structure for a distance equal to the span width on each side of the box culvert and to a height of 2 feet or subgrade elevation, whichever is lower, above the structure.

3.5 Construction Loads. Do not allow construction loads in excess of HS-20 vehicles to cross the completed box culvert unless it is internally braced. Design the support for such bracing so as not to impair the structural integrity or severely interfere with the hydraulics of the box culvert or its invert. Have the culvert manufacturer review the details of the bracing and submit them to the Engineer for approval.

3.6 Headwalls. Construct concrete headwalls, when required, according to the plans. Apply masonry coating to exposed surfaces of the headwalls when required by Subsection 601.03.18, B). When using an aluminum structure, coat aluminum surfaces that will be in contact with concrete with alumilastic compound or an approved equal prior to placing concrete.

4.0 MEASUREMENT.

4.1 Structure Excavation. The Department will measure Structure Excavation as Structure Excavation, Common or Structure Excavation, Solid Rock according to Subsection 206.04.03, except on the sides of the structure the volume will be bounded by vertical planes 6 inches outside the footing pads or invert plates and parallel thereto.

The Department will measure material necessary for backfill in excess of the material excavated as Borrow Excavation, Roadway Excavation, or Embankment-in-Place, as applicable.

The Department will measure granular material used to replace excavated material that is unsuitable for backfill as Borrow Excavation, Roadway Excavation, or Embankment-in-Place. The Department will not measure earthwork for payment when the bid item is Embankment-in-Place unless the unsuitable material is wasted.

The Department will not measure flowable fill for payment and will consider it incidental to the structure.

The Department will not measure bedding for payment and will consider it incidental to the structure.

4.2 Aluminum Structural Plate Box Culvert. The Department will measure the

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quantity in linear feet at each location. The Department will consider the number of linear feet in each installation to be the plan length, increased or decreased by authorized adjustments. The Department will not measure ribs, wales, stiffeners, footing pads, toewalls, endwalls, internal braces, or asphalt coating for payment and will consider them incidental to the structure.

4.3 Steel Structural Plate Box Culvert. See 4.2.

4.4 Class A Concrete. The Department will measure Class A Concrete in footings and headwalls according to Subsection 601.04.

4.5 Reinforcement. The Department will measure Steel Reinforcement in the footings and headwalls according to Subsection 602.04.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

Code	Pay Item	Pay Unit
20694EN	Aluminum Structural Plate Box Culvert	Linear Foot
20695EN	Steel Structural Plate Box Culvert	Linear Foot
----	Structure Excavation, as classified	See Section 603.05
----	Concrete, Class	See Section 601.05
----	Steel Reinforcement	See Section 602.05

The Department will consider payment as full compensation for all work required in this note.

June 15, 2012

2020 STANDARD DRAWINGS THAT APPLY

ROADWAY

~GENERAL~

MISCELLANEOUS STANDARDS

MISCELLANEOUS STANDARDS PART 1……RGX-001-06

~PAVEMENT~

MEDIANS, CURBS, APPROACHES, ENTRANCES, ETC.

APPROACHES, ENTRANCES, AND MAIL BOX TURNOUT……..RPM-110-07

TRAFFIC

~TEMPORARY~

DEVICES

LANE CLOUSRE TWO-LANE HIGHWAY ……..TTC-100-04

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS

LABOR AND WAGE REQUIREMENTS
APPLICABLE TO OTHER THAN FEDERAL-AID SYSTEM PROJECTS

I. APPLICATION

1. These contract provisions shall apply to all work performed on the contract by the contractor with his own organization and with the assistance of workmen under his immediate superintendence and to all work performed on the contract by piecework, station work or by subcontract. The contractor's organization shall be construed to include only workmen employed and paid directly by the contractor and equipment owned or rented by him, with or without operators.

2. The contractor shall insert in each of his subcontracts all of the stipulations contained in these Required Provisions and such other stipulations as may be required.

3. A breach of any of the stipulations contained in these Required Provisions may be grounds for termination of the contract.

II. NONDISCRIMINATION OF EMPLOYEES

AN ACT OF THE KENTUCKY
GENERAL ASSEMBLY TO PREVENT
DISCRIMINATION IN EMPLOYMENT
KRS CHAPTER 344
EFFECTIVE JUNE 16, 1972

The contract on this project, in accordance with KRS Chapter 344, provides that during the performance of this contract, the contractor agrees as follows:

1. The contractor shall not fail or refuse to hire, or shall not discharge any individual, or otherwise discriminate against an individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, national origin, sex, disability or age (forty and above); or limit, segregate, or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee, because of such individual's race, color, religion, national origin, sex, disability or age forty (40) and over. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor shall not print or publish or cause to be printed or published a notice or advertisement relating to employment by such an employer or membership in or any classification or referral for employment by the employment agency, indicating any preference, limitation, specification, or discrimination, based on race, color, religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, except that such a notice or advertisement may indicate a preference, limitation, or specification based on religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, when religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, is a bona fide occupational qualification for employment.

3. If the contractor is in control of apprenticeship or other training or retraining, including on-the-job training programs, he shall not discriminate against an individual because of his race, color, religion, national origin, sex, disability or age forty (40) and over, in admission to, or employment in any program established to provide apprenticeship or other training.

4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment. The contractor will take such action with respect to any subcontract or purchase order as the administrating agency may direct as a means of enforcing such provisions, including sanctions for non-compliance.

Revised: January 25, 2017

EXECUTIVE BRANCH CODE OF ETHICS

In the 1992 regular legislative session, the General Assembly passed and Governor Brereton Jones signed Senate Bill 63 (codified as KRS 11A), the Executive Branch Code of Ethics, which states, in part:

KRS 11A.040 (7) provides:

No present or former public servant shall, within six (6) months following termination of his office or employment, accept employment, compensation, or other economic benefit from any person or business that contracts or does business with, or is regulated by, the state in matters in which he was directly involved during the last thirty-six (36) months of his tenure. This provision shall not prohibit an individual from returning to the same business, firm, occupation, or profession in which he was involved prior to taking office or beginning his term of employment, or for which he received, prior to his state employment, a professional degree or license, provided that, for a period of six (6) months, he personally refrains from working on any matter in which he was directly involved during the last thirty-six (36) months of his tenure in state government. This subsection shall not prohibit the performance of ministerial functions, including but not limited to filing tax returns, filing applications for permits or licenses, or filing incorporation papers, nor shall it prohibit the former officer or public servant from receiving public funds disbursed through entitlement programs.

KRS 11A.040 (9) states:

A former public servant shall not represent a person or business before a state agency in a matter in which the former public servant was directly involved during the last thirty-six (36) months of his tenure, for a period of one (1) year after the latter of:

a) The date of leaving office or termination of employment; or
b) The date the term of office expires to which the public servant was elected.

This law is intended to promote public confidence in the integrity of state government and to declare as public policy the idea that state employees should view their work as a public trust and not as a way to obtain private benefits.

If you have worked for the executive branch of state government within the past six months, you may be subject to the law's prohibitions. The law's applicability may be different if you hold elected office or are contemplating representation of another before a state agency.

Also, if you are affiliated with a firm which does business with the state and which employs former state executive-branch employees, you should be aware that the law may apply to them.

In case of doubt, the law permits you to request an advisory opinion from the Executive Branch Ethics Commission, 1025 Capital Center Drive, Suite 104, Frankfort, Kentucky 40601; telephone (502) 564-7954.

Revised: May 23, 2022

Kentucky Equal Employment Opportunity Act of 1978

The requirements of the Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) shall apply to this Contract. The apparent low Bidder will be required to submit EEO forms to the Division of Construction Procurement, which will then forward to the Finance and Administration Cabinet for review and approval. No award will become effective until all forms are submitted and EEO/CC has certified compliance. The required EEO forms are as follows:

- EEO-1: Employer Information Report
- Affidavit of Intent to Comply
- Employee Data Sheet
- Subcontractor Report

These forms are available on the Finance and Administration's web page under ***Vendor Information, Standard Attachments and General Terms*** at the following address: **https://www.eProcurement.ky.gov**.

Bidders currently certified as being in compliance by the Finance and Administration Cabinet may submit a copy of their approval letter in lieu of the referenced EEO forms.

For questions or assistance please contact the Finance and Administration Cabinet by email at **finance.contractcompliance@ky.gov** or by phone at 502-564-2874.

EMPLOYEE RIGHTS
UNDER THE FAIR LABOR STANDARDS ACT

THE UNITED STATES DEPARTMENT OF LABOR WAGE AND HOUR DIVISION

FEDERAL MINIMUM WAGE
$7.25 PER HOUR
BEGINNING JULY 24, 2009

OVERTIME PAY

At least 1½ times your regular rate of pay for all hours worked over 40 in a workweek.

CHILD LABOR

An employee must be at least **16** years old to work in most non-farm jobs and at least **18** to work in non-farm jobs declared hazardous by the Secretary of Labor.

Youths **14** and **15** years old may work outside school hours in various non-manufacturing, non-mining, non-hazardous jobs under the following conditions:

No more than

- **3** hours on a school day or **18** hours in a school week;
- **8** hours on a non-school day or **40** hours in a non-school week.

Also, work may not begin before **7 a.m.** or end after **7 p.m.**, except from June 1 through Labor Day, when evening hours are extended to **9 p.m.** Different rules apply in agricultural employment.

TIP CREDIT

Employers of "tipped employees" must pay a cash wage of at least $2.13 per hour if they claim a tip credit against their minimum wage obligation. If an employee's tips combined with the employer's cash wage of at least $2.13 per hour do not equal the minimum hourly wage, the employer must make up the difference. Certain other conditions must also be met.

ENFORCEMENT

The Department of Labor may recover back wages either administratively or through court action, for the employees that have been underpaid in violation of the law. Violations may result in civil or criminal action.

Employers may be assessed civil money penalties of up to $1,100 for each willful or repeated violation of the minimum wage or overtime pay provisions of the law and up to $11,000 for each employee who is the subject of a violation of the Act's child labor provisions. In addition, a civil money penalty of up to $50,000 may be assessed for each child labor violation that causes the death or serious injury of any minor employee, and such assessments may be doubled, up to $100,000, when the violations are determined to be willful or repeated. The law also prohibits discriminating against or discharging workers who file a complaint or participate in any proceeding under the Act.

ADDITIONAL INFORMATION

- Certain occupations and establishments are exempt from the minimum wage and/or overtime pay provisions.
- Special provisions apply to workers in American Samoa and the Commonwealth of the Northern Mariana Islands.
- Some state laws provide greater employee protections; employers must comply with both.
- The law requires employers to display this poster where employees can readily see it.
- Employees under 20 years of age may be paid $4.25 per hour during their first 90 consecutive calendar days of employment with an employer.
- Certain full-time students, student learners, apprentices, and workers with disabilities may be paid less than the minimum wage under special certificates issued by the Department of Labor.

For additional information:

1-866-4-USWAGE

(1-866-487-9243) TTY: 1-877-889-5627

WHD U.S. Wage and Hour Division

WWW.WAGEHOUR.DOL.GOV

U.S. Department of Labor | Wage and Hour Division

WHD Publication 1088 (Revised July 2009)

PART IV

INSURANCE

Refer to
Kentucky Standard Specifications for Road and Bridge Construction,
current edition

PART V

BID ITEMS

PROPOSAL BID ITEMS

233004

Report Date 12/28/22

Section: 0001 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00001		DGA BASE	425.00	TON		$	
0020	00190		LEVELING & WEDGING PG64-22	266.00	TON		$	
0030	00212		CL2 ASPH BASE 1.00D PG64-22	175.00	TON		$	
0040	00301		CL2 ASPH SURF 0.38D PG64-22	1,940.00	TON		$	
0050	00356		ASPHALT MATERIAL FOR TACK	18.00	TON		$	
0060	02562		TEMPORARY SIGNS	580.00	SQFT		$	
0070	02650		MAINTAIN & CONTROL TRAFFIC (KY 2723)	1.00	LS		$	
0080	02671		PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH		$	
0090	02676		MOBILIZATION FOR MILL & TEXT (KY 2723)	1.00	LS		$	
0100	02677		ASPHALT PAVE MILLING & TEXTURING	185.00	TON		$	
0110	03240		BASE FAILURE REPAIR	365.00	SQYD		$	
0120	06510		PAVE STRIPING-TEMP PAINT-4 IN	15,000.00	LF		$	
0130	06514		PAVE STRIPING-PERM PAINT-4 IN	26,400.00	LF		$	

Section: 0002 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0140	02014		BARRICADE-TYPE III	6.00	EACH		$	
0150	02187		SITE PREPARATION	3.00	EACH		$	
0160	02483		CHANNEL LINING CLASS II	750.00	TON		$	
0170	02726		STAKING (KY 2723)	1.00	LS		$	
0180	02731		REMOVE STRUCTURE (KY 2723)	1.00	LS		$	
0190	08100		CONCRETE-CLASS A	17.00	CUYD		$	
0200	20694EN		ALUMINUM STRUCTURAL PLATE BOX CULVERT	131.00	LF		$	
0210	21415ND		EROSION CONTROL (KY 2723)	1.00	LS		$	

Section: 0003 - GUARDRAIL

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0220	01987		DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	114.00	EACH		$	
0230	02351		GUARDRAIL-STEEL W BEAM-S FACE	1,425.00	LF		$	
0240	02360		GUARDRAIL TERMINAL SECTION NO 1	4.00	EACH		$	
0250	02367		GUARDRAIL END TREATMENT TYPE 1	3.00	EACH		$	
0260	02371		GUARDRAIL END TREATMENT TYPE 7	1.00	EACH		$	
0270	02381		REMOVE GUARDRAIL	300.00	LF		$	
0280	02399		EXTRA LENGTH GUARDRAIL POST	132.00	EACH		$	
0290	03236		CRIBBING	1,800.00	SQFT		$	

PROPOSAL BID ITEMS

233004

Report Date 12/28/22

Section: 0004 - DEMOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0300	02569		DEMOBILIZATION	1.00	LS		$	