

SECTION 600 – TYPICAL GENERAL NOTES

601 DESIGN REFERENCES

601.2 STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS

The designer must list all applicable Cuyahoga County Engineer (CCE) Construction Drawings with date of approval or latest revision date in addition to ODOT's Standard Bridge Drawings and Supplemental Specifications.

The designer is to ensure that the listed CCE Construction Drawings are transferred to the project plans title sheet and match the information on the title sheet.

Add the following provision to ODOT BDM General Note [601.2-1]:

and to the following Cuyahoga County Engineer Construction Drawing(s):

_____ **Dated (revised)** _____
 _____ **Dated (revised)** _____
 _____ **Dated (revised)** _____

DESIGN SPECIFICATIONS

The designer shall include the following note specifying the design specifications used on the structure. If the note is not correct, then the note should be revised with the correct criterion that describes the design specifications for the structure.

[601.3-1] This structure conforms to the “LRFD Bridge Design Specifications” adopted by the American Association of State Highway and Transportation Officials, 5th Edition, 2010, the ODOT Bridge Design Manual, 2007, including current revisions and the current Cuyahoga County Engineer Supplement thereto.

602 DESIGN DATA

602.2 DESIGN LOADING

For new county bridges designed for highway loads, the design loading shall be:

[602.2-1] DESIGN LOADING: HL-93

Future Wearing Surface (FWS) of 0.030 kips/ft².

Designer's Note: Use either HS-25 or HS-20 and the alternate military loading if the design is for a rehabilitation of an existing structure. The use of HS-25 or HS-20 loading shall be based on the structural analysis of the existing structure and subject to the CCE's approval.

602.3 DESIGN STRESSES

A. General Design Data for ALL Designs:

[602.3-1] DESIGN DATA:

Concrete Class HP * – compressive strength 4.5 ksi (superstructure)
Concrete Class C – compressive strength 4.0 ksi (substructure)
Concrete Class S Modified – compressive strength 4.0 ksi (drilled shaft)

Reinforcing Steel – [Epoxy coated, Galvanized] Steel, minimum yield strength 60 ksi

[Epoxy coated, Galvanized] Spiral Reinforcing Steel, minimum yield strength 60 ksi

MMFX Steel, ASTM A615 Grade 75, ASTM A1035 and AASHTO M31 Grade 75 requirements. Minimum yield strength = 100,000 psi, design strength = 75,000 psi

Structural Steel – ASTM A709 Grade [50, 50W, HPS70W] - yield strength [50 ksi, 70 ksi]

Steel H-Piles – ASTM A572 - yield strength 50 ksi

Designer's Note: * May use Class S concrete with shrinkage compensating cement if approved by the CCE.

[] – Edit information as appropriate for the specific project.

602.5 DECK PROTECTION METHOD

[602.5-1] DECK PROTECTION METHOD:

[Epoxy coated, Galvanized, MMFX] reinforcing steel

3" concrete cover

[Latex modified, Micro-silica] concrete overlay

Designer's Note: [] – Edit information as appropriate for the specific project.

602.6 MONOLITHIC WEARING SURFACE

[602.6-1] MONOLITHIC WEARING SURFACE is assumed, for design purposes, to be 1¼" thick.

603 EXISTING STRUCTURE REMOVAL NOTES

Use the following note if it is the desire of the CCE or the municipality to salvage any portion of the bridge structure:

[603.1-1] REMOVAL AND SALVAGE OF PORTIONS OF EXISTING STRUCTURE: Carefully dismantle the ___*___ and store along the right-of-way or within the construction limits of the project for disposal by the [Cuyahoga County Engineer's, municipality's] forces. Payment for this work shall be included in Item 202 – Portions of Structure Removed, As Per Plan.

Designer's Note: * List the elements of the structure to be salvaged.
[] – Edit information as appropriate for the specific project.

If additional clarification is needed, describe the degree of care to be exercised in the removal and storage in sufficient detail to allow accurate bidding.

In some instances it may be preferred that the Contractor deliver salvaged material to an off-site location. If so, then modify the note to include the destination and contact information for the recipient of the salvaged material.

The following sample note will serve as a guide in composing the note for the partial removal and/or rehabilitation of the existing structure:

[603.1-2(CUY)] ITEM 202 – PORTIONS OF STRUCTURE REMOVED, AS PER PLAN

This item shall include removal of the designated portions of the structure indicated in the plans and general notes and that are not separately listed for payment. Limits of removal shall be as shown on the plans or as directed by the Engineer. Items to be removed include all existing materials being replaced by new construction and miscellaneous items that are not shown to be incorporated into the final construction and are directed to be removed by the Engineer. Submit working drawings and calculations in accordance with CMS 501.05.

The method of removal and the weight of the hammer shall be approved by the Engineer. The use of explosives, headache balls and/or hoe-rams will not be permitted. Perform all work in a manner that will not cut, elongate or damage the existing reinforcing steel to be preserved. It is imperative that the bar lengths retained are not less than that shown in the plans. Care shall be taken to preserve the bond of the existing reinforcing steel in the existing concrete. Pneumatic hammers shall not be placed in direct contact with the reinforcing bars to be retained in the rebuilt structure. Chipping hammers shall not be heavier than the nominal 90-pound class. Hand tools shall be employed to clean/remove all concrete fragments and foreign matter from the reinforcing bars to remain. Where existing reinforcing bars to remain are damaged, the Engineer may direct that the repairs be made by lapping existing bars with new reinforcing steel or by providing dowels.

All concrete, reinforcing steel asphalt, etc. removed from the structure and not reused shall, unless otherwise specified, become the property of the Contractor and shall be removed by him/her from the site. The materials shall not be permitted to remain on site, within the right-of-way or elsewhere unless specified by the Engineer.

Designer's Note: Edit information as appropriate for the specific project.

For concrete deck removal, rehabilitation and repair projects, sample notes [18], [19] and [20] as given in Section 603.1 of the 2004 ODOT Bridge Design Manual shall serve as a guide in composing the note(s) for the removal of the existing concrete deck and substructure. Modify these notes as required to fit the specific conditions of the project.

608 RAILROAD GRADE SEPARATION PROJECTS

608.1 CONSTRUCTION CLEARANCE

ODOT BDM General Note [608.1-1] is to be replaced with CCE General Note [CUY-B06] found in Section 610 of this supplement.

609 UTILITY LINES

The Designer shall be responsible for all utility coordination during project design. It is the Designer's responsibility to follow the CCE's established utility coordination procedure throughout the entire design process, up to and including preparation of the written Utility (4A) Note that must be submitted with the final project deliverables (tracing package) for inclusion in the bid package. The CCE's Government and Utility Liaison uses the Utility (4A) Note to coordinate utility work prior to and during construction. The following note should be used only if utilities are involved and as modified by the Designer or the CCE's Government and Utility Liaison:

[609 (CUY)] UTILITY LINES: The Utility(ies) [with the exception of the Cleveland Water Department] shall bear all expenses involved in [relocating, installing] the affected utility lines. The Contractor and Utility(ies) are to cooperate by arranging their work in such a manner that inconvenience to either will be held to a minimum.

Designer's Note: If existing utilities contain asbestos or other hazardous materials, then include CCE General Note [CUY-B07] to define what material, what utility line and where it is located on the structure.

[] – Edit information as appropriate for the specific project.

610 MISCELLANEOUS GENERAL NOTES

In addition to the miscellaneous general notes contained in Section 610 of the ODOT Bridge Design Manual, the following CCE structure general notes shall be used when appropriate:

- [CUY-B01] EXISTING STRUCTURE VERIFICATION
- [CUY-B02] ADDITIONAL SOILS INFORMATION
- [CUY-B03] CONCRETE COVER FOR REINFORCING STEEL
- [CUY-B04] TREE REMOVAL RESTRICTION
- [CUY-B05] WORK INVOLVEMENT NEAR (OR OVER) THE [CUYAHOGA VALLEY NATIONAL PARK, CLEVELAND METROPARKS]
- [CUY-B06] WORK OVER THE _____*_____ RAILROAD
- [CUY-B07] ITEM SPECIAL – ASBESTOS ABATEMENT
- [CUY-B08] ITEM 503 – UNCLASSIFIED EXCAVATION, AS PER PLAN
- [CUY-B09] ITEM 509 – REINFORCING STEEL, AS PER PLAN
- [CUY-B10] MECHANICAL CONNECTORS
- [CUY-B11] ITEM 511 – CLASS HP CONCRETE, BRIDGE DECK, AS PER PLAN
ITEM 511 – CLASS HP CONCRETE, BRIDGE DECK (PARAPET), AS PER PLAN
- [CUY-B12] ITEM 511 – CONCRETE, MISC.: ARCHITECTURAL TREATMENT
- [CUY-B13] ITEM 512 – CONCRETE REPAIR BY EPOXY INJECTION
- [CUY-B14] ITEM 512 – TYPE 2 WATERPROOFING, AS PER PLAN
- [CUY-B15] ITEM SPECIAL – SEALING, MISC.: ELASTOMERIC PROTECTIVE AND DECORATIVE CONCRETE COATING
- [CUY-B16] ITEM 516 – STRUCTURAL JOINT OR JOINT SEALER, MISC.:
PREFORMED, CLOSED CELL, LOW DENSITY FOAM
EXPANSION JOINT [SYSTEM, SEAL]
- [CUY-B17] ITEM 516 – REFURBISH BEARING DEVICE, AS PER PLAN

- [CUY-B18] ITEM 517 – RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING), AS PER PLAN
- ITEM 517 – RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING) USING HIGH PERFORMANCE CONCRETE, AS PER PLAN
- [CUY-B19] ITEM 518 - STRUCTURE DRAINAGE, MISC.: PLUGGING ASPHALT SUBDRAINS
- [CUY-B20] ITEM 518 – POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN
- [CUY-B21] ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN
- [CUY-B22] ITEM 520 – PNEUMATICALLY PLACED MORTAR, AS PER PLAN
- [CUY-B23] ITEM 601 – ROCK CHANNEL PROTECTION, TYPE ___*___ WITH AGGREGATE FILTER, AS PER PLAN
- [CUY-B24] ITEM 603 – ___*___' x ___*___' CONDUIT, TYPE A, 706.05, AS PER PLAN
- [CUY-B25] ITEM 832 – EROSION CONTROL

[CUY-B01] EXISTING STRUCTURE VERIFICATION

Details and dimensions shown on these plans pertaining to the existing structure have been obtained from plans of the existing structure and/or field measurements. They are indicative of the existing structure and proposed work, but they shall be considered tentative and approximate. The Contractor is referred to sections 102.05 and 105.02 of the Cuyahoga County Engineer's Specification Booklet.

Contract bid prices shall be based upon the recognition of the uncertainties described above and upon the Contractor's prebid examination of the existing structure. All project work, however, shall be based upon actual details and dimensions that have been verified by the Contractor in the field.

Plans of the existing structure are on file at the Cuyahoga County Department of Public Works, 2100 Superior Viaduct, Cleveland, Ohio, 44113. It is the Contractor's responsibility to become familiar with all pertinent existing drawings and details relevant to this project.

[CUY-B02] ADDITIONAL SOILS INFORMATION

In addition to the soil boring information given in the plans, the [Soils, Subsurface Investigation] Report No. ___*___ prepared by ___*___ dated ___*___ has been included in Section 200 of the Cuyahoga County Engineer's Specification Booklet for reference.

Designer's Note: * Enter report number, preparer and date.
[] – Edit information as appropriate for the project.

[CUY-B03] CONCRETE COVER FOR REINFORCING STEEL

Minimum concrete cover for all reinforcing bars shall be two inches (2") unless shown otherwise in the plans.

[CUY-B04] TREE REMOVAL RESTRICTION

The project is within the range of the federally endangered Indiana Bat (Myotis Sodalis). The project may impact summer and brood rearing habitats for this species (i.e., living or standing trees or snags with exfoliating, loose or peeling bark, split trunks and/or branches, cavities). To prevent harm to these bats, the removal of any potential roost trees must be completed between September 30th and April 1st. All bat tree cutting must be completed before the April 1st deadline.

****** OR ******

Prior to bridge removal, the underside of the bridge shall be carefully examined for the presence of Indiana Bats, especially from April 1st to September 30th. If any bats are found roosting on the underside of the bridge, the United States Fish & Wildlife Service (USFWS) must be contacted. Additionally, any unavoidable cutting of trees with suitable roosting and brood-rearing habitat for the Indiana Bat (living or standing dead trees or snags with exfoliated, peeling or loose bark, split trunk and/or branches, or cavity) will be performed only before April 1st or after September 30th when the species would not be using such habitats.

Designer's Note: Choose the note that is appropriate for the project.

[CUY-B05] WORK INVOLVEMENT NEAR (OR OVER) THE [CUYAHOGA VALLEY NATIONAL PARK, CLEVELAND METROPARKS]

The Contractor shall adhere to the following specific requirements:

Construction work shall be limited to the confines of the existing and proposed right-of-way (and designated work areas) for the project.

No debris or construction materials shall be stored on [Cuyahoga Valley National Park, Cleveland Metroparks] property before, during or after demolition and construction work on the bridge/culvert. Debris or rubble shall be controlled so that it is not washed or otherwise carried downstream onto [Cuyahoga Valley National Park, Cleveland Metroparks] property.

The Contractor shall maintain existing drainage patterns across the project right-of-way during demolition and construction so as to prevent erosion and flooding on adjacent [Cuyahoga Valley National Park, Cleveland Metroparks] property.

Access to the [Cuyahoga Valley National Park, Cleveland Metroparks] shall be per plan at all times. See Roadway and Maintenance of Traffic plans for details.

Park roads shall not be designated as haul roads or detour roads during the demolition and construction of the bridge/culvert.

If it is required by the Contractor to use park roads as access for work purposes, then the Contractor shall obtain all necessary permits from the [Cuyahoga Valley National Park, Cleveland Metroparks]. All costs involved in obtaining such permits shall be paid by the Contractor at his/her own expense, subject to review and coordination with the [Cuyahoga Valley National Park, Cleveland Metroparks].

Damage to trees, shrubs and other natural features and to park facilities outside of the designated work limits as a result of the Contractor's work shall be repaired by the Contractor at his/her own expense, subject to review and coordination with the [Cuyahoga Valley National Park, Cleveland Metroparks].

Any areas disturbed by the Contractor outside of the designated work limits shall be restored at his/her own expense, in a condition equal to or better than conditions that existed prior. The Cuyahoga County Engineer's General Provisions 104.04 and 107.10 and CMS specification 659 shall be followed in the restoration. The seed mixture approved by the [Cuyahoga Valley National Park, Cleveland Metroparks] for restoration of grass areas shall be as stipulated in "Section 400 Proposal Notes" of the Cuyahoga County Engineer Specification Booklet.

Designer's Note: [] – Edit information as appropriate for the project.

[CUY-B06] WORK OVER THE _____*_____ RAILROAD

The Contractor shall submit to the Engineer and the railroad detailed working drawings and calculations for all proposed temporary shoring and excavation work. The working drawings shall show sizes of all temporary shoring structural members, details of connections, embedment depths, etc. They shall also include a plan view showing all proposed excavations and their distances from the centerline of the tracks. The railroad and the Engineer must accept the working drawings and calculations before excavation can begin. Refer to CMS 501.05 (A) for additional information in this regard.

The Contractor shall submit to the Engineer and the railroad detailed working drawings and calculations for all proposed demolition work above or adjacent to the tracks of the railroad. The working drawings shall indicate the method of protecting the track structure, the sequence of demolition, and the procedures and equipment to be used. No debris shall be allowed to intentionally fall to railroad property. The existing substructure shall be removed a minimum of 2'-0" below finished grade. The railroad and the Engineer must accept the working drawings and calculations before demolition can begin. Refer to CMS 501.05 (A) for additional information in this regard.

Maintain minimum construction clearances of ___*___ feet horizontally from the center of the tracks and ___*___ feet vertically from a point level with the top of the higher rail, and ___*___ feet from the center of the tracks, at all times.

Upon completion of the work on railroad property, the Contractor shall request the Engineer to arrange a final inspection of the project with the railroad's Division Engineer or his/her authorized representative.

As per the _____*_____ Railroad, there are ___*___ freight trains traveling at a maximum speed of ___*___ MPH and ___*___ passenger trains traveling at a maximum speed of ___*___ MPH through the project work site each day.

SPECIAL PROVISIONS FOR THE PROTECTION OF RAILWAY INTEREST:

Prior to the initiation of any construction activities, the Contractor shall furnish evidence to the Engineer that Commercial General Liability Insurance and Railroad Protective Liability Insurance as specified in the "Special Provisions for Protection of Railway Interest" found in Section 200 "Special Provisions" of the Cuyahoga County Engineer's Specification Booklet. Such 'evidence' shall consist of furnishing the Engineer with three (3) certified copies of the insurance policy. Payment will be made at the lump sum price bid for Item Special – Premium on Railroad's Protective Public Liability and Property Damage Liability Insurance.

Refer to Section 200, "Special Provisions", of the Cuyahoga County Engineer's Specification Booklet for additional special provisions for the protection of the railway's interests.

Designer's Note: * Enter the name of the railroad, dimensions, number of trains and speed.

[CUY-B07] ITEM SPECIAL – ASBESTOS ABATEMENT

An asbestos survey was conducted on this structure. A certified asbestos hazard evaluation specialist completed the survey on __*. The survey [did, did not] identify asbestos containing hazardous materials on the bridge [in the following locations: __*]. A copy of the asbestos survey report is provided in Section 200 of the Cuyahoga County Engineer Specification Booklet.

The removal and disposal of any asbestos containing material (ACM) during construction must comply with the Ohio Administrative Code, the Occupational Safety and Health Administration (OSHA) regulations, and the National Emission Standard for Hazardous Air Pollutants (NESHAP) standards for asbestos. The Contractor shall provide an individual trained in the provisions of NESHAP that will be on-site to monitor the removal of all ACM.

A copy of the Ohio Environmental Protection Agency (OEPA) Notification of Demolition and Renovation form with Sections ____*____ completed is included in Section 200 of the Cuyahoga County Engineer Specification Booklet. The Contractor will complete Sections ____*____ of the signed form and submit the completed form to the Engineer and the Local Air Authority at least ten (10) days prior to commencement of demolition work. The Local Air Authority^ for Cuyahoga County is:

**Mr. George Baker
City of Cleveland, Dept. of Public Health, Division of Air Quality
75 Erievue Plaza, 2nd Floor
Cleveland, Ohio 44114
Phone: (216) 664-2297
Fax: (216) 420-8047
www.clevelandhealth.org**

It is possible that there may be non-visible or previously unidentified ACM encountered during construction. Any material suspected of containing asbestos shall be evaluated by a certified asbestos evaluation specialist to determine whether the material actually contains asbestos. If it does, then the ACM shall be removed as described above.

Basis of Payment

The Contractor shall furnish all labor (including the certified asbestos evaluation specialist), equipment and materials necessary to evaluate all suspected ACM discovered during construction. Payment for this work shall be made at the contract unit bid price for Item Special – Asbestos Inspection.

The Contractor shall furnish all labor (including the certified asbestos abatement specialist), equipment and materials necessary to complete, submit and comply with the OEPA notification form and to remove, transport and dispose of all known and/or previously unidentified ACM in a licensed (by the local health department) and permitted (by OEPA) solid waste facility. Payment for this work shall be made at the contract lump sum bid for Item Special – Asbestos Abatement.

Designer's Note: * Enter the required information.

[] – Edit information as appropriate for the project.

^ Verify that the Local Air Authority listed is current.

Pay Items: 690E71000 (Lump) Item Special – Asbestos Abatement

690E71050 (Each) Item Special – Asbestos Inspection

[CUY-B08] ITEM 503 – UNCLASSIFIED EXCAVATION, AS PER PLAN

All provisions of CMS 503 shall apply except that the use of slag, in any form, is not permitted as backfill material per 503.08.

Designer's Note: Include this note on projects where any Item 503 structure excavation item is used.

[CUY-B09] ITEM 509 – REINFORCING STEEL, AS PER PLAN

The provisions of CMS 509 shall apply except as modified below:

509.02 Materials: Furnish materials conforming to the “Microcomposite (MMFX 2) Steel Uncoated, Plain and Deformed Bars for Concrete Reinforcement” specifications found in Section 200 Special Provisions of the Cuyahoga County Engineer’s Specification Booklet.

All MMFX reinforcing bars shall be uncoated.

MMFX 2 reinforcing bars shall not be directly substituted for plain or epoxy-coated carbon steel Grade 60 reinforcing bars on an equal area basis.

Metallic ties shall be 16 gauge or heavier, black-annealed ferrous metal wire. Non-metallic ties shall be appropriate for the intended application.

**Supplier: MMFX Steel Corporation of America
8750 Phillips Highway
Jacksonville, FL 32256**

Phone: (904) 731-5050

Fax: (904) 731-8440

Web Site: <http://www.mmfx.com>

509.03 Care of Material: Deliver, store and handle MMFX 2 bars in accordance with the manufacturer's instructions. Do not store MMFX 2 bars directly on the ground to keep them free from dirt, oil, grease, etc. and to provide easy handling.

Seams, surface irregularities, or mill scale oxidation shall not be cause for rejection, provided the weight, dimensions, and cross-sectional area of a hand-wired brush test specimen are not less than the requirements defined in the specifications found in Section 200 Special Provisions of the Cuyahoga County Engineer's Specification Booklet.

509.05 Bending: Reinforcing steel shall be accurately fabricated to the dimensions shown in the plans.

Bars shall be fabricated within the tolerances shown in the CRSI Manual of Standard Practices, Chapter 7 or the CRSI PRB, Chapter 6.

For fabricated bends, the minimum bend diameter shall be 6d for #3-#8 bars, 8d for #9-#11 bars and 10d for #14-#18 bars, where "d" is the diameter of the bar. Field bends shall conform to the dimensions and details in accordance with CRSI Manual of Standard Practice, Chapter 6. Bars shall be bent cold and shall not be bent or straightened in a manner that will injure the material. Heating of the bars to facilitate bending shall not be permitted.

Reinforcing bars partially embedded in concrete shall not be field bent. Fabricated bent bars shall not be straightened and re-bent in the field.

509.06 Approval of Placing: Bars shall be free from loose mill scale oxidation, dirt, oil or other deleterious coatings that could reduce bond with the concrete. When bars are moved more than one bar diameter to avoid interference with other reinforcement, conduits, or embedded items, the resulting arrangement of the bars shall meet the structural requirements of the project as approved by the Engineer.

Bar cutting shall be accomplished by shearing or with a water-cooled saw. Torch cutting shall not be permitted.

Before placing concrete, obtain the Engineer's approval of the reinforcing steel in place.

509.08 Supports: Bar supports and spacers shall be per recommendations set forth by Chapter 3 of the CRSI Manual of Standard Practice.

509.09 Epoxy Coated Reinforcing Steel: Epoxy coated reinforcing steel shall not be used. All references to "epoxy coated" reinforcing steel in the plans, specifications, bid documents, etc. shall be taken to mean "MMFX 2" reinforcing steel.

509.11 Basis of Payment: The supports, mechanical connectors, and tie wires are not included in the calculated weights but are considered incidental to the contract unit price bid per pound for Item 509 – Reinforcing Steel, As Per Plan.

Designer’s Note: Use this note when MMFX Rebar is specified.

[CUY-B10] MECHANICAL CONNECTORS

An approved type of mechanical connector for reinforcing bars shall be provided. Installation of connectors shall conform to manufacturer’s recommended procedures. If a dowel bar splice type of connector is furnished, the minimum dowel bar length to be furnished with the connector shall be as given by the dimension “A” as shown in the reinforcing schedule of the plans.

Connectors and dowel bars shall be epoxy coated. Coatings that have been damaged or that otherwise do not meet specifications with respect to color, continuity and uniformity may be repaired as directed by the Engineer or shall be replaced with material that meets specifications.

Connectors and dowel bars shall conform to CMS 509 and are considered incidental to Item 509 for payment.

**[CUY-B11] ITEM 511 – CLASS HP CONCRETE, BRIDGE DECK, AS PER PLAN
ITEM 511 – CLASS HP CONCRETE, BRIDGE DECK (PARAPET), AS PER PLAN**

This item shall conform to “[Item 511 – Class HP Concrete, Bridge Deck, As Per Plan / Item 511 – Class HP Concrete, Bridge Deck (Parapet), As Per Plan]” as contained in “Section 400 Proposal Notes” of the Cuyahoga County Engineer Specification Booklet.

Designer’s Note: [] – Edit information as appropriate for the project.

[CUY-B12] ITEM 511 – CONCRETE, MISC.: ARCHITECTURAL TREATMENT

A. General

The work to be done under this item shall include the construction of textured and colored concrete surfaces using form liners and a color stain system designed to duplicate closely the appearance of natural stone.

The manufacturer(s) of the form liner and color stain system shall have five (5) years experience making form liners and color stains to match

natural stone shapes, surface textures and colors. The pattern and coloring shall follow the manufacturer's standard details and specifications for the chosen design. The Contractor shall have a minimum of five (5) years experience with constructing vertically formed architectural concrete and shall be trained in the manufacturer's special techniques in order to achieve the desired concrete appearance.

The form liner pattern shall be _____*_____ as manufactured by _____*_____ or an approved equal. The local representative for _____*_____ is _____* (name & address)_____. The architectural relief shall be _____* (1/4" – 2")_____. There shall be a four inch (4") simulated stone cap on all parapets, end posts, etc. receiving treatment.

B. Products

Form liners shall be reusable, made of high strength urethane and be easily attachable to concrete forms. They shall not compress more than one-quarter inch (1/4") when concrete is poured at a rate of ten vertical feet (10'-0") per hour. Form liners shall be removable without causing deterioration of the concrete surface or any underlining concrete. Use a release agent that is compatible with the form liner and with the color stain system to be applied to the concrete surfaces and provide the Engineer with the manufacturer's specifications for product application.

Metal or fiberglass form ties shall be used. Form ties shall be designed to separate a minimum of one inch (1") back from the finished surface leaving only a neat hole that can be plugged with patching material. A sample and/or description of the form tie showing its method of separation when forms are removed shall be supplied to the Engineer for approval prior to use.

The color stain mix shall be an acrylic resin-based or acid-based stain formulated to penetrate finished concrete surfaces. Unless otherwise specified in the plan details, the color(s) needed shall be those required to achieve a natural stone color variation in the finished concrete to complement the site and its surroundings. These colors would typically include a range of browns, tans, buffs, grays, whites and blacks.

The stain mix shall create a surface finish that is breathable (will allow water vapor transmission) and that resists deterioration from water, acid, alkali, fungi and sunlight (UV). It shall also meet mildew resistance requirements in accordance with Federal Test Method Std. 141, Method 6271.2, and requirements for weathering resistance of a minimum of 1000 hours accelerated exposure measured in accordance with ASTM G152, G153, G154 or G155.

The manufacturer of the color stain shall also supply or recommend a compatible clear sealer to be applied to all textured and color stained concrete surfaces. The Engineer shall be provided with the manufacturer's specifications for applying the stain and clear sealer.

C. Shop Drawings and Mockups

It shall be understood that any aesthetic treatment(s) graphically shown throughout the plan details are for illustrative purposes only and may not represent the actual pattern layout, scale, etc. of the finished work. Prior to beginning any work, the Contractor shall be responsible for submitting representative shop drawings scaled sufficiently enough to detail the layout of the finished pattern and joint locations, form tie locations, areas of form liner termination including placement of polystyrene foam filler material between formwork and structural concrete surfaces, end, edge, corner and other special conditions to the Engineer for acceptance. A pre-installation meeting shall be scheduled with the Engineer, Contractor and manufacturer's representative to assure the understanding of form liner use, polystyrene foam use, color application, requirements for constructing the mockups and coordination of the work.

Once the representative shop drawings have been accepted, the Contractor shall construct a minimum of two (2) mockups on site before any permanent architectural treatment is added to the structure. The mockups must utilize the same materials, methods and work force that will be used for the project. The Engineer, municipality and/or the stakeholders may determine any specific requirements, location or special considerations to be incorporated in the mockups. The mockups must demonstrate the following:

1. Be of sufficient size to adequately show the selected pattern, texture and coloration.
2. Form liner butt joints and, if appropriate, continuation of the pattern through an expansion joint.
3. Continuation of the pattern and texture around corners of adjoining surfaces.
4. Application of the color stain and clear sealer. All concrete work must be completed and cured for a minimum of 28 days before the stain is applied.

After the texture and coloring is complete, the municipality, stakeholders and the Engineer shall evaluate the mockups. They may request changes of color, application technique, etc. if not completely satisfied with what is presented. Once satisfied, they shall choose which mockup will serve as the quality control standard for the project.

Dispose of all mockups after completion of the project.

D. Construction

Schedule color stain application after adjacent earthwork is completed to avoid contaminating or damaging the concrete surfaces. Delay adjacent plantings until color stain and clear sealer applications have been

completed and cured. Coordinate all work to permit coloring and sealing without interference from other trades.

Prepare the form liners by cleaning and removing all build-up and foreign matter prior to each concrete pour. The form liners shall be inspected for any blemishes or tears. Repair any such defects per manufacturer's recommendations. Replace any form liner if, after being repaired, it yields a concrete texture that is inconsistent with the approved mockup. Replace any form liner that cannot be repaired at no additional cost to the project.

Place adjacent form liners with less than one-quarter inch (1/4") separation between each liner while maintaining the continuity of the formed pattern. Where the pattern is to continue around adjoining sides of the parapet, wall, etc., carefully align the mortar joints and rustications on each side and provide as much relief as possible to achieve a realistic appearance of the finished surfaces. Securely attach liners to formwork as per the manufacturer's recommendations. Apply a form liner release agent per the manufacturer's recommendations. Place form ties at the thinnest points of the form liner (high points of the finished surface).

For concrete surface areas that do not require form liner treatment (e.g. non-visible surfaces of abutments and wingwalls below final grade), the void between the structural concrete surfaces and the formwork due to the discontinued use of the form liners should be filled with a polystyrene foam material (e.g. Styrofoam) equal in thickness to the form liner being used. Should the Contractor choose not to use a filler material in these areas, favoring instead to allow poured concrete to fill the voids, the quantity of concrete used for this purpose will be considered incidental to what is required to achieve the desired aesthetic treatment and shall not warrant additional compensation beyond the unit price bid for this item of work.

Form stripping and related construction shall avoid creating defects in the finished concrete surfaces. Where form liners abut, carefully blend the concrete to match the balance of the pattern, avoiding visible seams, form marks and rough edges. Neatly patch all surface voids and the holes remaining after disengaging the protruding portion of the form ties so that they will not be visible after coloring the concrete surface.

Where an expansion joint must occur at a point other than at a mortar joint or similar rustication, such as at the face of concrete texture that is to have the appearance of stone, the Contractor shall contact the manufacturer for the proper treatment of the expansion material.

Clean surface prior to applying the color stain to assure that the surface is free of laitance, dirt, dust, grease, efflorescence, paint, or foreign material following the manufacturer's instructions for surface preparation. The preferred method to remove laitance is pressure washing with clean water at a minimum of 3000 psi using a fan nozzle perpendicular to and at a distance of 12"-24" from the concrete surface. The completed surface shall be free of blemishes, discoloration and unnatural form marks.

Sandblasting is prohibited. Etching is not required. If the concrete surface becomes soiled after its initial cleaning and prior to receiving stain, or if the color stain system has not been applied to the concrete surface within 14 days after its initial cleaning, the concrete surface shall again be cleaned to the Engineer's satisfaction prior to applying the stain.

The color stain system and clear sealer shall be applied per the manufacturer's specifications for each product. Apply the products in dry weather conditions when the ambient air temperature is between 50°F and 90°F. Should weather conditions differ from these requirements or from the manufacturer's specifications, consult the manufacturer for proper application recommendations.

Use the colors and application techniques as approved for the final mockup. The desired finish color effect shall be achieved by applying one color, one color over another or by inter-mixing several colors of stain, as per manufacturer's specifications. Grout pattern joints shall display a uniform color and appearance of mortared joints.

Temporarily cover the completed work where exposed soil or pavement may splatter dirt or soil from rainfall, or where the surfaces may receive overspray from other processes, until the stain and sealer have cured.

Provide the Engineer with product data sheets and samples of all color stains and the clear sealer used to produce the finished color effect. All samples shall be in their original containers if possible.

E. Payment

Payment for all work described herein, including any additional concrete needed to create the formlined aesthetic treatment and that does not contribute to the core design of the parapet, barrier, etc. to which it is applied, shall be made per the square foot unit price bid for Item 511 – Concrete, Misc.: Architectural Treatment.

Designer's Note: * Enter information and edit notes as required for the project.

[CUY-B13] ITEM 512 – CONCRETE REPAIR BY EPOXY INJECTION

Cracks in concrete shall be repaired in accordance with CMS 512.07.

Estimated quantities for this item are based on the most recent inspection of the structure in [month, year]. Areas of repair have been detailed in the plans; however it is possible that additional cracks may have developed since the last inspection of the structure. Therefore, the Contractor shall repair all cracks existing at the time of construction or as directed by the Engineer. A contingency quantity of ___*___ linear feet has been added to the Estimated Quantities to be used at the discretion of the Engineer.

Payment will be based on the contract unit price bid per linear foot for Item 512 – Concrete Repair by Epoxy Injection for the accepted work performed and measured in place.

Designer's Note: * Enter appropriate information for the project.
[] – Edit information as appropriate for the project.

[CUY-B14] ITEM 512 – TYPE 2 WATERPROOFING, AS PER PLAN

In addition to all applicable requirements of CMS 512, provide self-adhering Type 2 membrane waterproofing as available from:

**MEL-ROL
W.R. Meadows, Inc.
P.O. Box 338
Hampshire, IL 60140-0338
Phone: (800) 342-5976
Fax: (847) 683-4544
www.wrmeadows.com**

**CCW MiraDRI 860/861
Carlisle Coatings & Waterproofing
900 Hensley Lane
Wylie, TX 75098
Phone: (800) 527-7092
Fax: (972) 442-0076
www.carlisle-ccw.com**

**BAKOR BLUESKIN WP 200
Henry Company Corporate Headquarters
909 N. Sepulveda Blvd., Suite 650
El Segundo, CA 90245
Phone: (800) 523-0268
Fax: (866) 223-1285
www.bakor.com**

Payment shall be made at the contract unit price bid for the actually completed and accepted quantity of: ITEM 512 – Type 2 Waterproofing, As Per Plan (Sq. Yd.)

Designer's Note: Use this note whenever note CUY-B24 is used.

[CUY-B15] ITEM SPECIAL – SEALING, MISC.: ELASTOMERIC PROTECTIVE AND DECORATIVE CONCRETE COATING

This item shall conform to “Item Special – Sealing, Misc.: Elastomeric Protective and Decorative Coating” as contained in “Section 400 Proposal Notes” of the Cuyahoga County Engineer Specification Booklet.

The color of the proposed sealer shall be ___*___, Federal Standard Color No. ___*___, unless specified otherwise by the [stakeholders, municipality, City of ___], Village of ___].

Designer's Note: * Enter color description and Federal Standard Color Number.
[] – Edit information as appropriate for the project.

**[CUY-B16] ITEM 516 – STRUCTURAL JOINT OR JOINT SEALER, MISC.:
PREFORMED, CLOSED CELL, LOW DENSITY FOAM EXPANSION
JOINT [SYSTEM, SEAL]**

The work shall consist of furnishing and installing a high performance, preformed, closed cell, low density foam expansion joint [system, seal] with [armored angles imbedded in an elastomeric concrete, polymer nosing material] in accordance with the details shown on the plans and the requirements of these specifications.

Provide the expansion joint [system, seal] as follows:

**CEVA [250, 300] EXPANSION JOINT SYSTEM WITH
METAZEAL® AJ SEAL**

**Chase Construction Products
295 University Avenue
Westwood, Massachusetts 02090
Phone: 800-356-6007
Fax: 781-322-0702**

www.chaseconstructionproducts.com

or

**WABO®CRETE FLEX FOAM EXPANSION JOINT SYSTEM
WITH WABO®EVAZOTE UV SEAL**

**Watson Bowman Acme Corporation
95 Pineview Drive
Amherst, NY 14228
Phone: 716-691-7566 or 800-677-4922
Fax: 716-691-9239**

www.wbacorp.com

or approved equal.

The manufacturer shall demonstrate sufficient experience specializing in the design and manufacture of closed cell foam expansion control systems. The manufacturer shall provide written confirmation that a formal Quality Management System and Quality Processes have been adopted in the areas of, but not limited to, Engineering, Manufacturing, Quality Control and Customer Service for all processes, products and their components.

Provide a bridge joint seal that consists of impermeable closed-cell, low density, resilient, non-extrudable, ethylene vinyl acetate foam material with a UV or hindered amine light stabilizer. The bridge joint seal shall be held in place by a two component 100% solids epoxy adhesive. The design of the seal shall be capable of accommodating movement and variations in joint widths through compression and tension of its shape. Grooves in sidewalls shall be 1/8" wide by 1/8" deep and spaced between 1/4" to 1/2" apart and run along the entire length of the bond surfaces of the seal to ensure an effective and quality surface for adhesion. Provide a seal profile that satisfies project requirements including movement and water tightness. All material

components of the expansion joint [system, seal], including [seal, joint armor, adhesive, elastomeric concrete, bonding agent, primer], shall be per the manufacturer's specifications and installed in strict accordance with the manufacturer's written instructions.

The accepted quantity of expansion joint [system, seal] will be paid for at the contract unit price bid per lineal foot. Measurement of the expansion joint [system, seal] will be taken horizontally and vertically along the centerline of the joint system between the outer limits indicated on the plans.

Payment will be made under: ITEM 516 - Structural Joint or Joint Sealer, Misc.: Preformed, Closed Cell, Low Density Foam Expansion Joint [System, Seal].

[CUY-B17] ITEM 516 – REFURBISH BEARING DEVICE, AS PER PLAN

This item shall include all work necessary to properly clean and align the existing bridge bearings. Included shall be the disassembly of the bearings, had tool cleaning (grinding if necessary), pencil abrasive blast, replacement of any damaged sheet lead with preformed bearing pads (711.21), installation of any necessary steel shims of the same size as the bearings to provide a snug fit, realignment of the rockers, masonry plates and bearing pads so that the bearings are vertically aligned at 60°F (15°C), lubricating contacting surfaces using a multipurpose waterproof lubricant with an ASTM D1264 loss of 1.5% or less, such as: Shell Albida SLC 460, Mobil Centaur Moly, or approved equal, and reassembly of the bearings. Assure that all bearings are shimmed adequately and that no girders and/or bearing devices are “floating”, at no additional cost to the project.

The Contractor may install new bearings of the same type as the existing in lieu of refurbishing the existing bearings. All work shall be to the satisfaction of the Engineer.

Completion: This item of work must be completed prior to placing any concrete for Item 511 – Class HP Concrete, Bridge Deck, As Per Plan.

Payment: The cost for all labor, materials, equipment and incidentals necessary to complete this item of work to the satisfaction of the Engineer is included with this item. Payment will be made at the contract unit price bid for Item 516 – Refurbish Bearing Device, As Per Plan.

Designer's Note: Edit this note as appropriate for the particular project.

[CUY-B18] ITEM 517 – RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING), AS PER PLAN

ITEM 517 – RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING) USING HIGH PERFORMANCE CONCRETE, AS PER PLAN

The structural steel railings and rail posts shall not be galvanized or metalized. Instead, a three-coat paint system consisting of an inorganic zinc prime coat, an epoxy intermediate coat and a urethane finish coat as per CMS 514 shall be applied to these steel elements. The color of the urethane finish coat shall be *, Federal Standard Color No. *, unless directed otherwise by the Engineer. All nuts, bolts and other railing appurtenances shall also be painted to match the final color of the steel railings and posts.

The High Performance (HP) Concrete shall conform to “[Item 511 – Class HP Concrete, Bridge Deck, As Per Plan / Item 511 – Class HP Concrete, Bridge Deck (Parapet), As Per Plan]” as contained in “Section 400 Proposal Notes” of the Cuyahoga County Engineer Specification Booklet.

In addition to the volume of concrete required per ODOT Standard Drawing BR-2-98 for constructing the parapets, any additional concrete needed to create a formlined aesthetic treatment shall be included with Item 511 – Concrete, Misc.: Architectural Treatment for payment. All materials and labor required for the application of the formliners and concrete stain shall also be included with Item 511 – Concrete, Misc.: Architectural Treatment for payment.

Designer Note: * Include the required information.

[] – Edit information as appropriate for the project.

Use this note only for projects with painted railings and/or concrete aesthetic treatments. Edit as necessary for the specific project.

[CUY-B19] ITEM 518 - STRUCTURE DRAINAGE, MISC.: PLUGGING ASPHALT SUBDRAINS

The work under this item shall consist of filling existing subdrains as detailed in the plans and as specified herein.

The existing asphalt subdrains consist of * ” diameter [material] piping passing through the bridge deck near the curbs at approximately *- *” center-to-center spacing. Work under this item is as follows:

1. Plug the upper end of the pipe by inserting a * ” diameter solid [natural, neoprene, EPDM, silicone, urethane] rubber stopper. The top of the stopper shall be a minimum of one inch (1”) below existing concrete deck.

2. The void between the top of the stopper and the existing deck surface shall be filled with a non-shrink, non-metallic grout conforming to CMS 705.20. The non-shrink, non-metallic grout shall be fully cured prior to placement of the [latex, micro-silica] modified concrete overlay.

The cost of all equipment, materials, tools, and labor necessary to perform the work described above and as detailed in the plans shall be included in the unit price bid per each for Item 518 - Structure Drainage, Misc.: Plugging Asphalt Subdrains.

Designer's Note: * Enter the required information.

[] – Edit information as appropriate for the project.

[CUY-B20] ITEM 518 – POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN

Place porous backfill with filter fabric as detailed in the plans and per CMS 518.05 except that the use of slag, in any form, is not permitted.

[CUY-B21] ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN

Concrete surfaces shall be patched in accordance with CMS 519 and the following additions.

Estimated patching quantities are based on the most recent inspection of the structure. Areas to be patched have been detailed in the plans and may also have been identified on the structure with paint or other marking material during the most recent inspection of the structure.

It is possible that additional areas requiring patching may have developed since the most recent inspection of the structure. Therefore, the Contractor shall sound the structure and patch new areas found that have not been detailed in the plans or previously marked on the structure. A contingency of * square feet has been added to the Estimated Quantities for such repair and shall be used at the discretion of the Engineer.

Prior to the surface cleaning specified in 519.04 and within 24 hours of placing patching material, blast clean all surfaces to be patched including the exposed reinforcing steel. Acceptable methods include high-pressure water blasting with or without abrasives in the water, abrasive blasting with containment, or vacuum abrasive blasting.

Payment will be based on the contract unit price bid per square foot for Item 519 - Patching Concrete Structures, As Per Plan for the accepted work performed and measured in place.

Designer's Note: Edit as necessary for specific project.

* Enter the required information.

[CUY-B22] ITEM 520 – PNEUMATICALLY PLACED MORTAR, AS PER PLAN

Concrete surfaces shall be repaired with pneumatically placed mortar in accordance with CMS 520 and the following exceptions/additions.

This item is to be used where the depth of the concrete repair is less than four inches (4”) and/or the repair surface cannot be readily formed and concrete placed. Estimated repair quantities are based on the most recent inspection of the structure. Areas to be repaired have been detailed in the plans and may also have been identified on the structure with paint or other marking material during the most recent inspection of the structure.

It is possible that additional areas requiring repair may have developed since the most recent inspection of the structure. Therefore, the Contractor shall sound the structure and repair new areas found that have not been detailed in the plans or have been previously marked on the structure. A contingency of ___*___ square feet has been added to the Estimated Quantities for such repair and shall be used at the discretion of the Engineer.

All concrete surfaces to be repaired and the exposed reinforcing steel within shall be thoroughly cleaned by abrasive blasting prior to the cleaning specified by 520.05. Cleaning shall precede application of the patching material by not more than 24 hours.

Payment will be based on the contract unit price bid per square foot for Item 520 - Pneumatically Placed Mortar, As Per Plan for the accepted work performed and measured in place.

Designer’s Note: Edit as necessary for specific project.

* Enter the required information.

[CUY-B23] ITEM 601 – ROCK CHANNEL PROTECTION, TYPE ___*___ WITH AGGREGATE FILTER, AS PER PLAN

Provide rock channel protection with a filter consisting of a six-inch (6”) bed of aggregate per CMS 601.09. The filter aggregate material shall conform to CMS 703.19 except that the use of slag in any form is prohibited.

[CUY-B24] ITEM 603 – ’ x ’ CONDUIT, TYPE A, 706.05, AS PER PLAN

This item shall consist of replacing the existing structure with a ’ x ’ precast concrete box. All applicable requirements of CMS 603, 706.05 and ASTM C1577 shall be met except as detailed in the plans and/or noted herein.

The Contractor shall be responsible for supporting all existing utilities designated to remain in place and exposed as a result of the removal of the existing structure and excavation for placement of the proposed structure.

Design of the precast reinforced concrete box sections shall be [the responsibility of the Contractor / as detailed in the plans]. Four (4) copies of the shop drawings signed and stamped by a registered professional Engineer in the State of Ohio shall be submitted to the Engineer for approval along with calculations for the rebar spacing, size, clearance, concrete thickness, etc. Manufacturing of the precast sections shall not begin until after written acceptance has been received from the Cuyahoga County Engineer. The Contractor is referred to Sections 102.05 and 105.02 of the Cuyahoga County Engineer’s General Provisions for additional information in this regard.

The design shall be in accordance with the latest edition of the [AASHTO LRFD Bridge Design Specifications including HL-93 loading / AASHTO Standard Specifications for Highway Bridges including the HS25-44 and Alternate Military loading].

Joints between adjacent concrete box sections shall be sealed per CMS 603.08, Section B, sub-section 1. Apply Type 2 membrane waterproofing to all external surfaces of the concrete box sections as per CMS 603.09 and as detailed in the plans.

Where openings in the box culvert are required for proposed underdrains or sewers, the opening shall be located completely between successive joints of the culvert structure, if possible. The diameter of the opening shall be the outside diameter of the pipe being connected plus six inches (6”) when fabricated or field cut. The interstitial space shall be filled with Class C concrete or lean concrete per CMS 511, non-shrink mortar per CMS 705.22, or other material found acceptable by the Engineer. All costs for material and labor associated with the pipe openings shall be considered incidental to Item 603 - ’ x ’ Conduit, Type A, 706.05, As Per Plan.

Granular embankment (203.02.R) and structural backfill (703.11) material furnished for bedding and backfill operations shall be limited to limestone. The use of slag material is prohibited. Bedding shall be placed and compacted per 603.06 and 603.11. The method of backfilling shall be per 603.10 and 603.11.

This work shall include furnishing all materials, labor, tools and equipment necessary to install all sections of the proposed concrete structure, including end box section dowels, with this item for payment.

Basis of Payment:

Payment for all work described above shall be made at the contract unit price bid for the actually completed and accepted quantity of:

ITEM 603 - * ' x * ' Conduit, Type A, 706.05, As Per Plan FT

Designer's Note: * Enter the size of the proposed concrete box structure.
[] – Edit information as appropriate for the project.
Add note CUY-B14 to the project plans.

[CUY-B25] ITEM 832 – EROSION CONTROL

The following estimated quantity is provided for temporary sediment and erosion control in accordance with the applicable requirements of ODOT Supplemental Specification 832:

Item 832 – Erosion Control * Each

Designer's Note: * Enter the required information.

610.6 COFFERDAMS AND EXCAVATION BRACING

Use this note when the plans do not include detail designs for temporary shoring.

[610.6-1(CUY)] ITEM 503 – COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN

The Contractor shall design all cofferdams, cribs, sheeting, shoring, bracing, or other means necessary to safely support the sides of excavations, embankments, adjacent buildings, tracks or other premises impacted by the proposed construction work. The Contractor shall prepare and provide detailed plans in accordance with CMS 501.05. Payment for the design, construction and removal of all means of temporary support shall be at the lump sum price for Item 503 – Cofferdams and Excavation Bracing, As Per Plan.