TOWN OF CROMWELL
ENGINEERING DEPARTMENT
Nathaniel White Building
41 West Street Cromwell, CT 06416

August 2, 2016

Mr. Francisco T. Fudal, P.E.
Project Engineer for the Local Bridge Program
Connecticut Department of Transportation
2800 Berlin Turnpike, P.O. Box 317546
Newington, CT 06131-7546

**Re: CTDOT Bridge No. 05939**
**North Road Extension over Coles Brook**
**Cromwell, CT**

Dear Mr. Fudal,

I am pleased to submit this application for consideration in selecting North Road Extension over Coles Brook for funding in the Federal Bridge Program. Please find enclosed:

1. One (1) "Preliminary Application for Local Bridge Program."
2. Attachment A – One (1) "Bridge Replacement Conceptual Plan" for the replacement of Bridge No. 05939, North Road Extension over Coles Brook, Cromwell, CT.
3. Attachment B – One (1) "Opinion of Preliminary Engineering Fees" for the replacement of Bridge No. 05939, North Road Extension over Coles Brook, Cromwell, CT.
4. Attachment C – One (1) "Conceptual Design Opinion of Probable Construction Costs" for the replacement of Bridge No. 05939, North Road Extension over Coles Brook, Cromwell, CT.

*Existing Conditions*

According to the June 6, 2016 CTDOT Routine Inspection Report, the twin corrugated metal arch culvert structure was constructed in 1980. The maxim span length is eleven (11) feet with a structure length of twenty three (23) feet.

The corrugated steel arch pipes measure approximately eleven feet by seven feet and are seventy feet in length with no skew. The bridge structure features eight feet of ballast above the twin culverts with a bituminous concrete road surface. The Inspection Report details several deficiencies in the asphalt wearing surface – the roadway was milled in overlaid curb to curb in July of 2016 (two months after the inspection). This structure is supported with cast in place concrete abutments on the upstream and downstream ends. A wood post and wire guardrail separates the roadway from the embankment and abutments.

The arch pipes exhibit missing asphalt coating and heavy rust, perforations, holes and laminar rust with the worst along the interface of the lower side plates and the invert plates. Horizontal cracking is

observed along the bolt lines in several areas. There are also perforation holes extending eight inches below the invert and an undermined area at the outlet. The report notes that the areas of laminar rust are easily perforated with a hammer.

The poured in place concrete headwalls have misaligned vertical and horizontal cracks, some of which extend the full width and height. The concrete shows significant scaling below the two inverts. Both the inlet and outlet cutoff walls are exposed due to scour. The wing walls show evidence of scale and a crack with efflorescence.

*Proposed Design*

The proposed replacement design for Bridge No. 05939 calls for the removal of the twin arch culverts to be replaced with a single span precast open bottom frame or arched culvert. The Town proposes to closely match the Christian Hill Road Bridge over Coles Brook (1,430 feet downstream) which was replaced in 2007. This structure is a precast frame with open bottom and cast in place form liner headwalls with parapets and integrated sidewalks.

The bridge design will be for HS20 loading, with a minimum 40-foot deck width. The precast structure will span the watercourse to minimize disturbance to the regulated area. The roadway will be returned to the existing 28-foot width. The span and low chord will need a hydraulic analysis. Note that Coles Brook has no established 100-year flood elevation upstream of North Road Extension.

A conceptual plan has been provided which shows the proposed layout and includes some of the design elements of the Christian Hill Road Bridge. The bridge shown matches the size of the Christian Road Bridge; a hydraulic study would need to be completed to size Bridge No.05939.

The existing wood post and metal wire guardrail along the approaches would be replaced with a metal beam rail attached to the parapet wall at each corner of the bridge terminating with concrete end anchors.

Fish passage considerations will be taken into account through consultation with CTDEEP Inland Fisheries Division for the construction period and for the permanent condition.

An Opinion of Probable Cost to Construct has been provided in spreadsheet form. The items and unit quantities were taken from the 2007 Christian Hill Road Bridge replacement using 2016 unit prices obtained from ConnDOT English Bid Item List (where applicable). Please consider this estimate as a reasonable foundation in establishing the Estimated Cost of Construction.

Please feel free to call with any questions.

Sincerely,

Jon Harriman, Town Engineer

Encl.

Cc: Anthony J. Salvatore, Town Manager
Louis Spina, Director of Public Works
File

# CONNECTICUT DEPARTMENT OF TRANSPORTATION

## LOCAL BRIDGE PROGRAM

# PRELIMINARY APPLICATION

Preliminary application is hereby made by the Town/City/Borough of Cromwell for possible inclusion in the Local Bridge Program for Fiscal Year **2017** for the following structure:

Bridge Location: North Road Extension over Coles Brook (0.1mi east of I-91)

Bridge Number: 05939 Structure Length: 23.0 feet Curb-to-Curb Width: 28.0 feet

Sufficiency Rating: 55.90 % Priority Rating: 54.57 %

Evaluation & Rating Performed by: ☑ State Forces ☐ Others

If Others, Name of Professional Engineer: _____

Connecticut Professional Engineers License Number: _____

Engineering Firm: _____

Engineer's Address: _____

Engineer's E-mail Address: _____

Description of Existing Condition of Structure: *(attach description)*

Description of Project Scope: A *(note Bridge Repair Code as per Figure 5-1 of the FY 2017 Local Bridge Program Manual; attach narrative/preliminary plans & specifications).*

Name of Municipal Official to Contact: Jon Harriman

Title: Town Engineer Telephone: (860) 632-3465 Ext: ____ Fax: (860) 632-3477

Mailing Address: 41 West Street - Cromwell, CT 06416

E-mail: jharriman@cromwellct.com

---

## Anticipated Schedule:

| | (MM/DD/YYYY) |
|---|---|
| Public Meeting Conducted: | 03/01/2017 |
| Design Completion: | 01/01/2018 |
| Property Acquisition Completion: | 02/01/2018 |
| Utilities Coordination Completion: | 03/01/2018 |
| Construction Advertising: | 04/01/2018 |
| Supplemental Application Submission: (Not applicable for Federal Local Bridge Program Projects) | 03/01/2018 |
| Start of Construction: | 06/01/2018 |
| Completion of Construction: | 12/15/2018 |

# Local Bridge Program – FY 2017 Preliminary Application

Bridge Number 05939, Town/City/Borough of Cromwell

## Preliminary Cost Figures:

| | |
|---|---|
| Preliminary Engineering Fees (Include Breakdown of Fees) | $ 200,000.00 |
| Rights-of-Way Cost (If applicable) | $ 60,000.00 |
| Municipally Owned Utility Relocation Cost | $ |
| Estimated Construction Costs (Include Detailed Estimate) | $ 1,160,000.00 |
| Construction Engineering (Inspection, Materials Testing) | $ 105,000.00 |
| Contingencies *(10% of Construction Costs Only)* | $ 116,000.00 |
| Total Estimated Project Cost | $ 1,641,000.00 |

## Financial Aid Data:

**NOTE: funding limited to Eligible Bridges** as published at www.ct.gov/dot/localbridge or those found to be eligible in accordance with Section 2.3 – Priority Lists of the FY 2017 Local Bridge Program Manual.

☑ Federal Reimbursement:

Total Estimated Project Cost multiplied by 80%:

Federal Aid Request $ 1,312,800.00

☐ State Local Bridge Project Grant: *(Cannot be combined with Federal reimbursement)*

Municipal Grant Percentage _____% of Total Cost *(Appendix 2 of FY 2017 Local Bridge Program Manual)*

Project Grant Request: $ _____

Other Source of State or Federal funding received/applied for: $_____, State/Federal _____

Funding program: _____

I hereby certify that the above is accurate and true, to the best of my knowledge and belief. I also certify that this form has not been modified in any way from that distributed by the Department of Transportation for FY **2017**.

Signature: [signature] Date: 2/27/16

Name: Anthony V. Salvatore Title: Town Manager

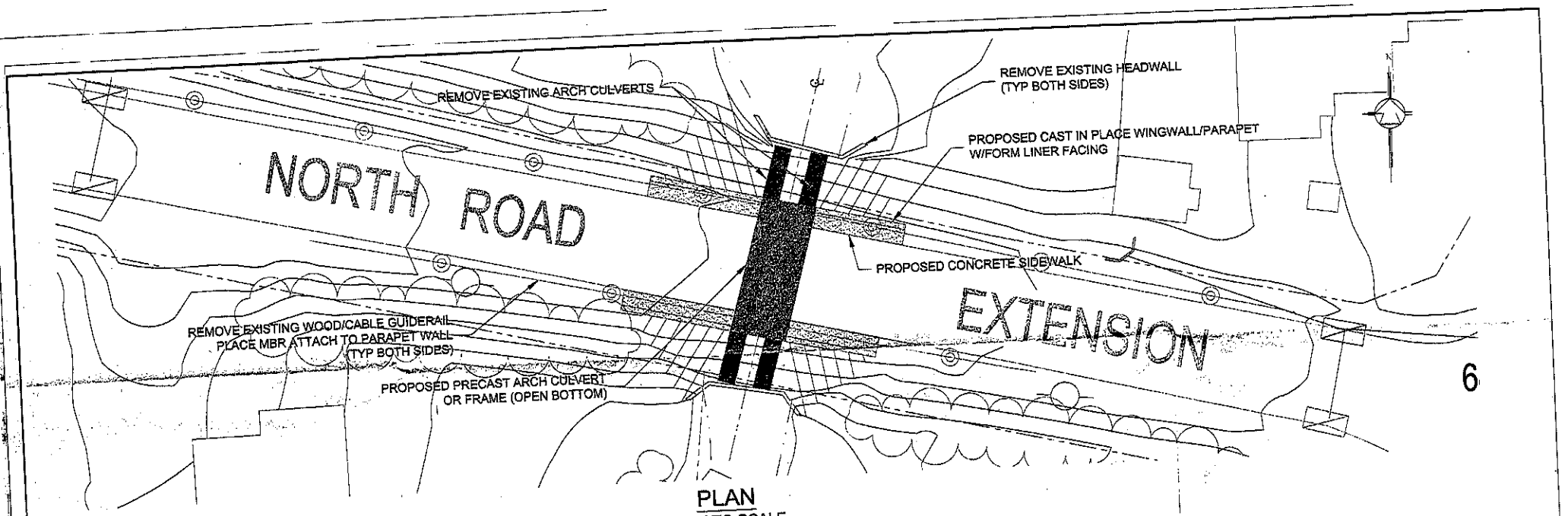
(Must be signed by Chief Elected Official, Town Manager, or other Officer Duly Authorized)

Return **original signed applications** to:

Mr. Francisco T. Fadul, P.E.
Project Engineer for the Local Bridge Program
Connecticut Department of Transportation
2800 Berlin Turnpike, P.O. Box 317546
Newington, Connecticut 06131-7546

ATTACHMENT A

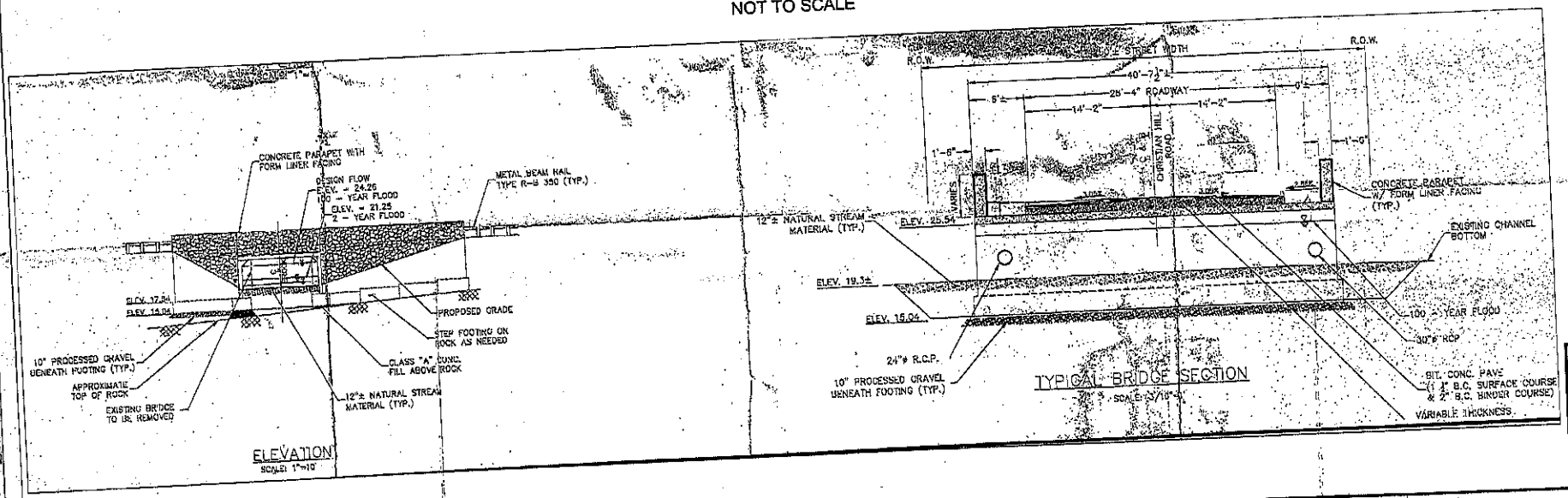
Attached Drawing, *Bridge Replacement Conceptual Plan,* for the Replacement of Bridge No. 05939, North Road Extension over Coles Brook, Cromwell, CT:




6

## PLAN

NOT TO SCALE




| No. | Date | Description |
|---|---|---|
| | | |
| | | |
| | | |

Revisions

Scale: AS NOTED
Project:
Drawn By:
Checked By:

BRIDGE REPLACEMENT
CONCEPTUAL PLAN

BRIDGE NO. 05939
NORTH ROAD EXTENSION
CROMWELL, CT

DEPARTMENT OF PUBLIC WORKS

Date: JULY 2016

Sheet: 1 of 1

ATTACHMENT B

Opinion of Preliminary Engineering Fees for the Replacement of Bridge No. 05939, North Road Extension over Coles Brook, Cromwell, CT:

| | |
|---|---|
| Survey | $15,000 |
| Soil Borings | $15,000 |
| Preliminary Design Including Hydraulic Study | $50,000 |
| Permits | $20,000 |
| Final Design | $100,000 |
| TOTAL | $200,000 |

ATTACHMENT C

Attached, *Opinion of Probable Cost to Construct,* for the Replacement of Bridge No. 05939, North Road Extension over Coles Brook, Cromwell, CT:

**Conceptual Design Opinion of Probable Construction Costs**
**Replacement of CTDOT Bridge No. 05939, North Road Extension over Coles Brook**
**July 20, 2016**



| Item No. | ITEM | QUANT | UNIT | UNIT PRICE | TOTAL COST |
|---|---|---|---|---|---|
| 202000 | Earth Excavation | 858 | CY | $17.60 | $15,100.80 |
| 202215 | Excavation & Reuse | 50 | CY | $47.60 | $2,380.00 |
| 202529 | Cut B.C. Pavement | 50 | LF | $2.00 | $100.00 |
| 203000 | Structure Excavation - Earth | 474 | CY | $29.00 | $13,746.00 |
| 203100 | Structure Excavation - Rock | 10 | CY | $9,360.00 | $93,600.00 |
| 209001 | Formation of Subgrade | 1220 | SY | $2.20 | $2,684.00 |
| 212002 | Subbase | 210 | CY | $38.80 | $8,148.00 |
| 216000 | Pervious Structural Backfill | 540 | CY | $52.00 | $28,080.00 |
| 218001 | Sedimentation Control Bales | 60 | LF | $5.80 | $348.00 |
| 219001 | Sediment Control System | 950 | LF | $5.60 | $5,320.00 |
| 219011 | Sediment Control System, at CB | 4 | EA | $126.60 | $506.40 |
| 304002 | Processed Aggregate Base | 780 | CY | $51.00 | $39,780.00 |
| 406171 | HMA S0.5 | 250 | TON | $103.00 | $25,750.00 |
| 406236 | Material for Tack Coat | 120 | GAL | $3.00 | $360.00 |
| 601502 | 1/2" Preformed Expansion Joint Filler | 84 | SF | $9.20 | $772.80 |
| 602000 | Deformed Steel Bars | 11,055 | LB | $1.40 | $15,477.00 |
| 602006 | Deformed Steel Bars-Epoxy Coated | 600 | LB | $1.60 | $960.00 |
| 703010 | Standard Riprap | 18 | CY | $77.60 | $1,396.80 |
| 703012 | Modified Riprap | 6 | CY | $75.60 | $453.60 |
| 707001 | Membrane Waterproofing | 121 | SY | $42.00 | $5,082.00 |
| 708001 | Dampproofing | 180 | SY | $16.00 | $2,880.00 |
| 725002 | Bagged Stone | 48 | CF | $10.40 | $499.20 |
| 815001 | B.C. Lip Curbing | 790 | LF | $5.40 | $4,266.00 |
| 822001 | Temp. Precast Concrete Barrier Curb | 80 | LF | $39.60 | $3,168.00 |
| 910170 | Metal Beam Rail (Type RB-350) | 650 | LF | $23.40 | $15,210.00 |
| 910173 | R-B 350 Bridge Attachment-Vertical Parapet | 4 | EA | $2,824.60 | $11,298.40 |
| 911924 | R-B End Anchorage Type II | 4 | EA | $1,199.00 | $4,796.00 |
| 922501 | Bit. Conc. Driveway | 80 | SY | $42.60 | $3,408.00 |
| 943001 | Water for Dust Control | 90 | MGAL | $1.80 | $162.00 |
| 944400 | Furnishing and Placing Topsoil | 630 | SY | $7.00 | $4,410.00 |
| 950005 | Turf Establishment | 630 | SY | $1.60 | $1,008.00 |
| 950033 | Erosion Control Matting - Type H | 350 | SY | $90.00 | $31,500.00 |
| 974001 | Removal of Existing Masonry | 60 | CY | $246.20 | $14,772.00 |
| 979003 | Construction Barricade Type III | 10 | EA | $145.40 | $1,454.00 |
| 1220013 | Construction Signs - Type III | 100 | SF | $15.00 | $1,500.00 |
| 1302053 | Reset Watergate | 4 | EA | $180.00 | $720.00 |
| 204151A | Handling Water | 1 | LS | $10,000.00 | $10,000.00 |
| 503001A | Removal of Superstructure | 1 | LS | $150,000.00 | $150,000.00 |
| 514716A | Precast Conc. Frames | 1 | LS | $150,000.00 | $150,000.00 |
| 601003A | Class "A" Concrete | 210 | CY | $606.50 | $127,365.00 |
| 703030A | Placement of Channel Boulder | 6 | EA | $225.00 | $1,350.00 |
| | **A Major Items Subtotal** | | | | $799,812.00 |
| | **B Minor Items Subtotal** | 20 | % of line "A" | | $159,962.40 |
| | **C Major & Minor Items Subtotal (A + B)** | | | | $959,774.40 |

| | | | |
|---|---|---|---|
| | **Other Item Allowances** | | |
| 201001 | Clearing and Grubbing | 1 % of line "C" | $9,597.74 |
| 971001 | Maintenance & Protection of Traffic | 4 % of line "C" | $38,390.98 |
| 975002 | Mobillization | 7 % of line "C" | $67,184.21 |
| 980001 | Construction Staking | 1 % of line "C" | $9,597.74 |
| **D** | **Other Items Subtotal** | | $124,770.67 |
| **E** | **CONTRACT SUBTOTAL (C+D)** | | $1,084,545.07 |
| | **Inflation Costs (Simple Method)** | | |
| | Date of Estimate | Jul-16 | |
| | Anticipated Bid Date | Apr-18 | |
| | Annual Inflation | 4% | |
| **F** | **Inflation Subtotal** | (1.75*4% of line "E") | $75,918.16 |
| **G.** | **Total Contract Cost Estimate (E+F) (Rounded to the nearest $1000)** | | $1,160,000.00 |

| | |
|---|---|
| **Local Bridge Program Project Cost Summary** | |
| Contact Cost Estimate (Line "G") | $1,160,000.00 |
| Contingencies | $116,000.00 |
| Incidentals | $116,000.00 |
| ROW | $60,000.00 |
| Utilities | N/A |
| **TOTAL PROJECT COST** | $1,452,000.00 |