

**CONNECTICUT
DEPARTMENT OF TRANSPORTATION**

LOCAL BRIDGE PROGRAM

Fiscal Year 2016



*THE HONORABLE DANIEL P. MALLOY,
GOVERNOR*

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COMMISSIONER*

About the cover: this year's cover features Bridge No. 118008, Old Main Street over Goff Brook, in the Town of Rocky Hill. This bridge replacement project was designed by BL Companies, of Meriden, Connecticut, and was constructed by Arborio Corporation, of Cromwell, Connecticut.

Construction work began in June 2014, and was completed in December 2014 at a construction cost of approximately \$1.4 million. Funding was provided by the State Local Bridge Program, and the Town of Rocky Hill.

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CHAPTER 1: INTRODUCTION

In Connecticut, there are thousands of bridges and culverts on municipally maintained roads. Construction and maintenance of these often-expensive structures is solely the responsibility of the municipalities. Recognizing the difficulty that municipalities have in meeting this responsibility, in 1984, the General Assembly enacted P.A. 84-254 (now known as Sections 13a-175p through 13a-175w of the Connecticut General Statutes) as part of the State's Infrastructure Renewal Program. In 2013, there were major revisions made to the Program under [PA 13-239](#), including significant increases in the grant percentage and streamlining of the administrative process. This year, the Program has \$5 million available for funding new projects, which may increase to \$15 million if the legislature approves a proposed \$10 million in additional funding in the 2015 legislative session. The Program provides for State financial assistance to municipalities for the removal, replacement, reconstruction or rehabilitation of local bridges. Under this program, a municipality may qualify for a grant ranging from 15% to 50% to cover eligible project costs. ConnDOT has also endeavored to make Federal funding available for municipal bridge projects as much as possible from Connecticut's off-system allotment from the Federal Highway Administration's Highway Bridge Program (HBP - formerly known as HBRRP).

Note that all of the funding administered by the Local Bridge Program office is for "Fix-It-First"-type projects (except for preservation projects using Federal funds). That is, only projects which repair, replace, remove, or improve an existing bridge can be considered for funding. New bridges in a location that did not previously have a bridge or other type of crossing are not eligible.

1.1 – ABOUT THIS MANUAL

This manual has been created to guide municipalities through the process of developing bridge projects and applying for grants under the Local Bridge Program. It is aimed at both those with non-technical orientations, such as mayors and selectmen, as well as those with technical backgrounds, such as engineers and public works directors. We have attempted to give an overview of the program, with additional coverage given to those subjects which have proven troublesome, confusing, or have resulted in frequent questions. This manual is updated annually to incorporate new information, updated procedures, and lessons learned over previous years.

There are five major sections to this manual:

- [Chapter 2: Bridge Evaluation](#) explains how bridges are rated. Because bridge ratings determine both eligibility for funding and project priority, an understanding of the process is important.
- [Chapter 3: Funding Programs](#) gives an overview of the funding programs administered by the Local Bridge Program unit.

- **Chapter 4: Project Development** gives a general overview of the process of project development, with additional information given on areas, which have proven to be troublesome, such as environmental permits.
- **Chapter 5: Guidelines For Obtaining Funds** gives a step-by-step outline of path that a Local Bridge Program project will follow. The process is much more involved when Federal Funding is involved, so there are separate sections provided for State and Federal projects.
- **Appendices** contain lists of eligible bridges; grant percentages for each municipality; State Statutes related to municipal bridge projects; Program regulations; and hydraulic analysis guidelines.

The Department strives to make the Local Bridge Program as user-friendly as possible, and this manual is part of that effort. Comments or suggestions for its improvement are welcomed. A mail-in [Comment Form](#) is included at the back of this manual for your convenience.

1.2 – DEFINITIONS

To aid in understanding some of the terms used in this manual, some definitions are given below. The definitions are based on usage common in the field, but are not intended to be legally governing. In the event that any definition conflicts with a definition given in the Regulations or Statutes, the definition given in the Regulations and/or Statutes shall govern.

AASHTO: The American Association of State Highway and Transportation Officials.

AENGLC: The adjusted equalized net grand list per capita of a town, prepared as of the immediately preceding January by the State pursuant to Section 10-261 of the General Statutes.

ADT: The Average Daily Traffic; the average number of vehicles that pass over a given structure on a typical day.

Bridge: A structure including supports erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying vehicular traffic and having an opening measured along the center of the roadway of more than 6 feet (note: Federal definition is at least 20 feet) between undercopings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes. (Note: in non-technical usage, a “culvert” may also be called a “bridge”.)

Bridge Design Manual: The Connecticut Bridge Design Manual, dated December 2003, published by the Connecticut Department of Transportation (this supersedes the metric version dated 1997). Available on-line at:
<http://www.ct.gov/dot/lib/dot/documents/dpublications/bridge/bdm.pdf>

Bridge Replacement: The complete replacement of a structure, including any necessary approach work.

Coding Guide: The most recent edition of the "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges", prepared by the Federal Highway

Administration. This manual is available from the Federal Highway Administration, Bridge Division HNG-33, 400 7th Street S.W., Washington, DC 20590, or on-line at <http://www.fhwa.dot.gov/bridge/bripub.htm>.

Commissioner: The Commissioner of the Department of Transportation, or his authorized representatives.

Commitment to Fund: A commitment issued to a municipality by the Commissioner to fund the project costs of an eligible bridge project through a grant in accordance with Section 5 of the regulations.

Culvert: A drainage opening or similar passageway beneath a roadway embankment with no definite distinction between superstructure and substructure, with an interior span length of 6 feet or more. It may also include multiple pipes, which carry the same body of water, in which the clear distance between openings is less than half of the smaller contiguous opening or which share a common headwall, provided the overall structure length is 6 feet or more.

Deck Replacement: The complete replacement of that portion of a superstructure, which provides a smooth traveling surface for vehicles, including subdecking and wearing surface, if any, and includes curbing within the limits of the replacement.

DEEP: The Connecticut Department of Energy and Environmental Protection.

Deficient Bridge: A bridge or culvert which been determined to be structurally deficient and/or functionally obsolete.

Department: The Connecticut Department of Transportation. Also referred to in this manual as ConnDOT.

Drainage Manual: The Connecticut Department of Transportation Drainage Manual, prepared by the ConnDOT Hydraulics and Drainage Section, dated October 2000, available on-line at: <http://www.ct.gov/dot/cwp/view.asp?a=3200&q=260116&dotPNavCtr=#40139>.

Eligible Bridge: A bridge or culvert owned and/or maintained by a municipality, carrying a certified public road, and which is structurally deficient (or functionally obsolete for federal funding). For more eligibility criteria, including eligibility for preservation related work, see Section [3.1 – State Local Bridge Program Grant](#) for State funding and Section [3.3 – Federal Funds](#) for Federal funding.

Erosion and sedimentation control measure: A specific design for vegetative, nonstructural or structural means for controlling erosion and sedimentation described in the Connecticut [2002 Guidelines for Soil Erosion and Sediment Control](#) published by the Connecticut Council on Soil and Water Conservation pursuant to Section 22a-328 of the General Statutes. This manual should be used as a guide for developing proper temporary E & S control measures to be utilized during construction.

Erosion and Sedimentation Control Plan: A scheme that minimizes soil erosion and sedimentation and includes, but is not limited to, a map and narrative. The map must show topography, cleared and graded areas, proposed area alterations and the location of and detailed information concerning erosion and sediment measures and facilities. The narrative should describe the project, the schedule of major activities on the land, the application of conservation practices, design criteria, construction details and the maintenance program for any erosion and sediment control facilities that are installed.

Fiscal Year: The fiscal year of the State, July 1 to June 30.

FEMA: The Federal Emergency Management Agency.

FHWA: The U. S. Department of Transportation, Federal Highway Administration.

Form 816: The Standard Specifications for Roads, Bridges and Incidental Construction, published by the Connecticut Department of Transportation, and available on-line at: <http://www.ct.gov/dot/cwp/view.asp?a=3609&q=430362>.

Functionally Obsolete: A bridge or culvert with one of the measures of its ability to serve its intended purpose rated as intolerable, requiring high priority of corrective action. A structure which is both functionally obsolete *and* structurally deficient will usually only be listed as structurally deficient.

Highway Design Manual: The Connecticut Highway Design Manual, dated December 2003, published by the Connecticut Department of Transportation (this supersedes the metric version dated January 1999), available on-line at: <http://www.ct.gov/dot/lib/dot/documents/dpublications/highway/cover.pdf>.

Inventory Rating: The rating, in tons, denoting the safe sustained load capacity of a structure, determined in accordance with the AASHTO Manual for Bridge Evaluation.

Municipal Road: Any road accepted, owned and maintained by a municipality and open to public use by motor vehicle traffic.

Municipality: Any town, city, borough, consolidated town and city, consolidated town and borough, district, commission, authority or other political subdivision of the State, owning or having responsibility for the maintenance of all or a portion of an eligible bridge.

National Bridge Inspection Standards (NBIS): Federal regulations establishing requirements for bridge inspections.

Orphan Bridge: Any bridge, which carries a municipal road and spans a railroad right-of-way not owned by the State, and whose ownership and/or maintenance responsibility is in dispute.

Preservation: The work to prevent, delay, or reduce deterioration of a bridge or its elements in order to preserve a bridge's good condition or extend its useful life.

Rehabilitation: The major work required to restore the structural integrity of a bridge as well as work necessary to correct major safety defects.

Scour: Erosion or removal of streambed or bank material from bridge foundations due to flowing water.

Scour Critical: A bridge with abutment or pier foundations, which are rated as unstable due to: 1) observed scour at the bridge site, or 2) a scour potential as determined from a scour evaluation study.

Stormwater Quality Manual: The 2004 Connecticut Stormwater Quality Manual published by the Connecticut Department of Energy and Environmental Protection. This manual should be used as a guide to design permanent Stormwater Quality Measures for inclusion into projects. The manual is available on-line at: http://www.ct.gov/dep/cwp/view.asp?a=2721&q=325702&depNav_GID=1654.

Stormwater Quality Measures: Measures, ranging from proper site planning to specific engineered measures, intended to reduce pollution of bodies of water, as described in the Connecticut Stormwater Quality Manual.

Structurally Deficient: A bridge or culvert with a major structural component rated “poor” or below, or with an appraisal rating of 2 or less given to the Structure Evaluation or Waterway Adequacy. A structurally deficient structure may or may not also be functionally obsolete, but a structure which is both structurally deficient *and* functionally obsolete will usually only be listed as structurally deficient.

Structure Evaluation: An overall rating of the structure, which takes into account all major structural deficiencies, and evaluates a bridge in relation to the level of service it provides, as compared with a new bridge built to current standards. Important factors considered in this appraisal are the inventory rating and the condition ratings of the superstructure and substructure.

Sufficiency Rating: The numerical rating of a bridge based on its structural adequacy and safety, essentiality for public use, and its serviceability and functional obsolescence. Sufficiency Rating is an overall rating of a bridge's fitness for the duty that it performs based on more than 20 data fields. A low Sufficiency Rating may be due to structural defects, narrow lanes, low vertical clearance, or many other possible issues.

Superstructure: Bridge structural members above the top of the piers and abutments.

Superstructure Replacement: The complete replacement of the superstructure, including deck, wearing surface, parapets, curbing and sidewalk, on the existing abutments piers and/or bents, and also includes replacement of fencing and guide rail beyond the limits of the superstructure as necessary for an integral system.

Substructure: Structural components, which support the superstructure, such as piers, abutments, piles, fenders, footings, etc.

Waterway Adequacy: The evaluation of the adequacy of waterway opening with respect to the passage of flow through the bridge. Important factors considered include the backwater depth, the likelihood of overtopping, and the resultant impact on traffic.

CHAPTER 2: BRIDGE EVALUATION

Though the specific eligibility criteria differ between the State and Federal assistance programs, the main factor determining eligibility for funding under both programs is the bridge's physical condition. Therefore, it is necessary to have an understanding of how a numerical rating is applied to a bridge in order to understand how funding priority is established. To aid in that understanding, the rating system is explained in the following sections.

The Connecticut Department of Transportation's Bridge Safety and Evaluation Section inspects all State bridges, and all municipally owned bridges with spans greater than 20 feet, on a regular basis (every 2 years or less). Current bridge inspection reports for NBI bridges are available to prequalified consultants and municipalities through ProjectWise; please see the [Bridge Inspection Reports](#) web page for more information. Inspections of municipally-owned

bridges with spans of less than 20 feet are the responsibility of the respective municipality; they are not routinely inspected by ConnDOT.

However, ConnDOT will be inspecting these “under 20” municipal bridges in two phases in the next couple of years since the vast majority of the available data for these structures is over two decades old. That data is mainly the result of a one-time inspection of these “under 20” bridges performed by ConnDOT to comply with Public Act 87-584, "Local Bridge Study of Town-Owned Structures Less Than Twenty Feet but Greater Than or Equal to Six Feet in Span Length." This study was completed on April 30, 1992 and a final report was forwarded to the Connecticut General Assembly in June 1993. That data can no longer be relied upon. The Department’s new round of inspections of municipal “under 20” bridges will begin with an initial field screening in Spring of 2015 to quickly assess the conditions of these bridges. A full inspection is planned for Spring of 2016 for those bridges identified in the field study as having an overall condition rating of fair or worse. A full inspection will also be conducted on bridges that have recently been replaced or rehabilitated.

During full inspections, the bridge inspectors carefully evaluate each component of a bridge, and then assign a numerical rating to each component. The ratings range from 0 to 9, with “9” being the best, and “0” being the worst rating (see the tables in the Sufficiency Rating section for more explanation). There are two broad categories of ratings: condition and appraisal. Condition ratings rate bridge components relative to their original condition when new. Appraisal ratings rate components in comparison to current standards.

In general, bridges are considered to be “structurally deficient” if the physical condition rating of any of the major structural components (deck, superstructure and substructure) are rated as "poor" or below (a numerical rating of 4 or less), or if the appraisal ratings for the structure condition or waterway adequacy are rated as requiring a high priority for replacement (a numerical rating of 2 or less).

Because culverts do not have distinct decks, superstructures and substructures, these components are not rated as such when evaluating a culvert. Instead, a “culvert rating” is assigned which takes into account the overall condition of the culvert. A culvert is considered structurally deficient if the overall condition of the culvert is rated as “poor” or below (a numerical rating of 4 or less).

A bridge or culvert, which is structurally deficient, may not be able to carry full legal loads, and if left unchecked, will continue to decay until it is unsafe for any load. Once a bridge becomes structurally deficient, it should be programmed for major repair or replacement.

A bridge is considered “functionally obsolete” if the structural evaluation, deck geometry, under-clearances, approach roadway alignment, or waterway adequacy is rated as “intolerable requiring high priority of corrective action” (a numerical rating of 3 or less). A functionally obsolete structure may or may not be able to carry all legal loads, but its configuration impairs its ability to safely carry traffic or pass high water. A functionally obsolete structure contributes to traffic accidents and/or flooding, representing a liability to the municipality and a potential hazard to the public.

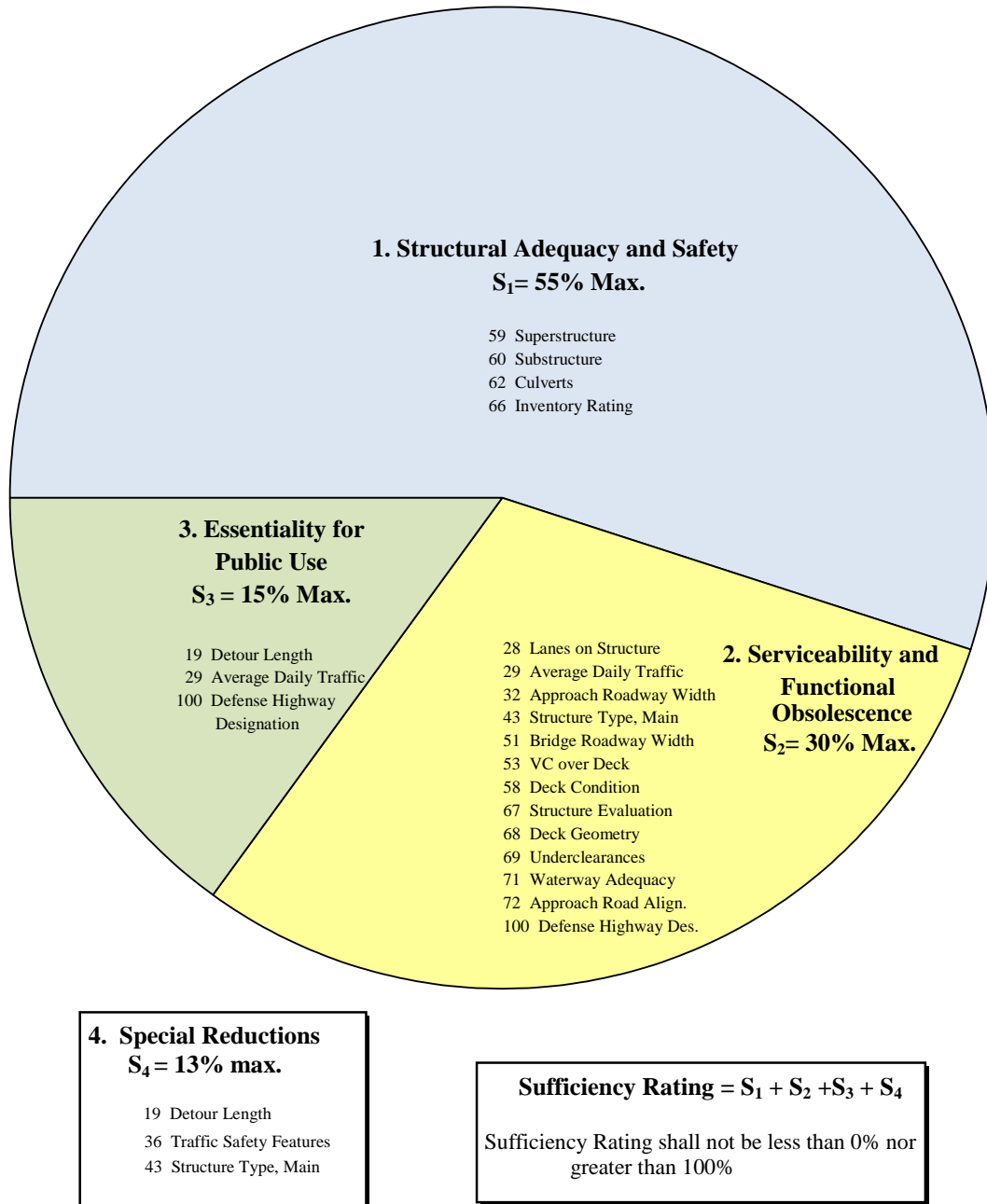
2.1 – SUFFICIENCY RATING

Paramount in the rating process is the sufficiency rating of the bridge. The sufficiency rating formula is a method of rating the quality of a bridge by calculating four separate factors to obtain a numeric value, which is indicative of a bridge's sufficiency to meet the demands placed upon it. In this formula, 55% of the total is based on structural adequacy and safety, 30% on serviceability and functional obsolescence, and 15% on essentiality for public use. The result of this calculation is a percentage in which 100% would represent an entirely sufficient bridge and 0% would represent an entirely deficient bridge. The primary use of the sufficiency rating is as a planning tool to prioritize bridge projects for funding purposes; it is NOT the best indicator of the absolute physical condition of a bridge; because of the weight given to a bridge's relative importance in the highway network, two identical bridges on different roads may have very different sufficiency ratings.

Condition ratings of the superstructure, substructure (or culvert, if applicable) and the inventory rating (load carrying capacity of the structure), have the most impact in the sufficiency rating calculation. Serviceability, functional obsolescence, and essentiality for public use are also considered in the sufficiency rating calculation. Loss of accessibility to schools, homes, businesses, etc., due to a load-restricted or closed bridge, constitutes an undue hardship to the public, not to mention the reduction or loss of essential services such as, fire protection, police, and medical services. In addition, lengthy detours due to a closed or posted structure present ecological and financial hardship.

A graph illustrating the relative weighting of factors comprising the sufficiency rating criteria is shown in Figure 1 below. For a more complete explanation of how the sufficiency rating is calculated, see Appendix B of the [Coding Guide](#).

Figure 1. Summary of Sufficiency Rating Factors



Condition Ratings: For evaluating structural components such as decks, superstructures, substructures and culverts, the following numerical condition rating system is used:

<u>Code</u>	<u>Description</u>
N	NOT APPLICABLE
9	EXCELLENT - no noticeable deficiencies or deterioration.
8	VERY GOOD - no problems requiring attention.
7	GOOD - some minor problems; potential exists for minor maintenance.
6	SATISFACTORY - structural elements show some minor deterioration; non-structural cracking; potential exists for major maintenance.
5	FAIR - all primary structural elements are sound, but may have minor section loss, structural cracking, spalling or scour; potential exists for minor rehabilitation.
4	POOR - advanced section loss, deterioration, spalling or scour; requires major rehabilitation.
3	SERIOUS - loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present. Rehabilitation or repair required immediately.
2	CRITICAL - advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present, or scour may have removed substructure support. Need for immediate repair or rehabilitation is urgent; unless closely monitored it may be necessary to close the bridge until corrective action is taken.
1	IMMINENT FAILURE - major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic, but corrective action may put it back in light service.
0	FAILED - out of service - beyond corrective action.

Appraisal Ratings: For rating the overall structural evaluation, deck geometry (width), under-clearances, approach roadway alignment, and waterway adequacy, the following appraisal rating system is used:

<u>Code</u>	<u>Description</u>
N	Not Applicable
9	Superior to present desirable criteria
8	Equal to present desirable criteria
7	Better than present minimum criteria
6	Equal to present minimum criteria
5	Somewhat better than minimum adequacy to tolerate being left in-place as-is
4	Meets minimum tolerable limits to be left in place as-is
3	Basically intolerable requiring high priority of corrective action
2	Basically intolerable requiring high priority of replacement
1	<i>(this value not used)</i>

0 Bridge closed

The types of defects that are characteristic of each numerical rating are explained in detail in Chapter 10 of the ConnDOT Bridge Inspection Manual, available on-line at: <http://www.ct.gov/dot/cwp/view.asp?a=2303&q=300930>.

2.2 – PRIORITY RATING

Section 13a-175s of the Connecticut General Statutes requires the Commissioner of Transportation to maintain a list of eligible bridges and establish a priority list of eligible bridge projects for each State fiscal year. The purpose of the prioritized list is to rank the bridges statewide on the basis of need, and to determine which bridges will be funded if not enough funds are available to fund all applications received in a given year. To accomplish this, each bridge is assigned a “Priority Rating”, using the methods explained below. In general, the structures in the worst condition will have the lowest Priority Ratings, with the lowest rating being the highest priority for funding, with exceptions possible in emergency situations.

The Priority Rating represents the physical condition of the structure, based upon the sufficiency rating (as discussed above), with additional “weight” given to the ratings of the main structural components and the structure’s load carrying capacity. The following formulas are used, depending upon whether the structure is a bridge or a culvert. These formulas are used to define the “physical condition” as required in Section 13a-175p of the Connecticut General Statutes, as amended. The data for the formulas is taken from the rating reports developed by the bridge inspectors using the Coding Guide.

1. For Structures with Abutments and Piers

$$\text{Priority Rating} = SR - 2 \left(1 - \frac{DC + SUB + SUP}{27} \right) - 4 \left(1 - \frac{IR}{36} \right)$$

Where:

- SR* = Sufficiency Rating
- DC* = Deck Condition Rating (0-9)
- SUB* = Condition Rating of Substructure (0-9)
- SUP* = Condition Rating of Superstructure (0-9)
- IR* = HS-20 Gross Inventory Rating in Tons (Tractor semi-trailer combinations inventory rating - Max. 36)

Note: The factors of 27 and 36 are the maximum ratings for deck, substructure and superstructure conditions (9 x 3) and the acceptable load limit for a structure (36 tons) respectively.

2. For Culverts and Arches

$$\text{Priority Rating} = SR - 2 \left(1 - \frac{CUL}{9} \right) - 4 \left(1 - \frac{IR}{36} \right)$$

Where:

- CUL* = Culvert Condition Rating (0-9)
-

2.3 – PRIORITY LISTS

A preliminary list of eligible bridges is posted on the [Local Bridge Program website](#). This list is updated annually and utilizes the most recent data gathered by the Department of Transportation during the Department's regular inspections of Town-owned and maintained structures, and inspection data submitted by municipalities. *Bridges that have received funding under the Local Bridge Program within the last 20 years are not included on the eligible bridge list*, even though they may again be deficient. The chart will indicate if the bridge is eligible for State funding, Federal funding, or both.

If a municipality wishes to have a bridge added to the eligible bridge list, it may use staff professionals or engage a consulting engineer to conduct an inspection to provide updated information that may enable a structure to qualify for funding. The inspection report must be developed using the Federal [Coding Guide](#) and the ConnDOT [Bridge Inspection Manual](#), be signed and sealed by a Connecticut-registered professional engineer experienced in highway bridge inspection, and be submitted to the Department of Transportation for review and approval. If the bridge is found to be deficient, it will be added to the list of eligible bridges and a priority rating will be assigned. A bridge inspection report may be submitted for review at any time during the year, but the bridge will not be considered for funding until the inspection report has been reviewed. If Federal funding will be used, the inspection team must be headed by someone qualified as a Team Leader under NBIS rules, and the inspection report must be signed by an individual qualified as a Program Manager under NBIS guidelines.

It is important to note that the bridges listed in [Appendix 1 – Eligible Bridges](#) contains only *eligible* bridges; not all *deficient* municipal bridges are listed. That is, for each bridge on the list, the Department has determined that the bridge is deficient *and* that the bridge meets all the other eligibility criteria of the funding programs. There also exist municipal bridges which are deficient, but do not meet other criteria for funding; these bridges are not included on the eligible bridge lists. Note also that once a bridge receives a commitment to fund from the Local Bridge Program or another aid program administered by ConnDOT, it is removed from future eligible bridge lists – this is the most common reason for a bridge to “disappear” from the eligible bridge list from one year to the next.

By June 30 of each year, the Department will establish a priority list of eligible bridge projects for which applications have been submitted. Authorization for funding is determined by the project's ranking on that list, and the extent of the funding available. Projects for which applications were submitted in one fiscal year, but due to program funding limitations were not accepted into the Program, may be resubmitted for funding consideration in a subsequent fiscal year, provided that construction has not yet begun.

2.4 – EMERGENCY CONDITIONS

The legislation governing the State Local Bridge Program permits the Commissioner to approve projects without regard to the priority list if a public emergency exists. A public emergency is interpreted to mean a situation in which the condition of a bridge requires it to be

closed, or its load limit reduced substantially, resulting in the isolation of people or a significant delay in the availability of services to such an extent that public safety is jeopardized.

If a municipality wishes to have an application processed under the emergency provision, a letter to that effect should accompany the application, with the reasons for the emergency noted. Emergency applications may be submitted at any time of year.

Also, note that the Town Aid Road program (TAR) has a provision for emergency funding. The municipality should contact their TAR liaison at ConnDOT for more information.

CHAPTER 3: FUNDING PROGRAMS

3.1 – STATE LOCAL BRIDGE PROGRAM GRANT

State financial assistance is available to municipalities under the Local Bridge Program in the form of a grant-in-aid. Grant percentages vary depending upon the assessment of the town's ability to pay, as measured by the "Adjusted Equalized Net Grand List Per Capita (AENGLC)" method, computed by the Connecticut Department of Education. AENGLC factors are used to compute a grant percentage for each municipality, ranging from 15% to 50% of the total cost of the project. Each town's AENGLC ranking and the corresponding grant percentages are listed in [Appendix 2 – Grant Percentages for Municipalities](#). This list is updated annually and grant percentages are adjusted accordingly.

To qualify for State funding, a bridge must carry a certified public road, be municipally owned and/or maintained, be structurally deficient according to criteria developed by the Federal Highway Administration in the Coding Guide (see [Chapter 2: Bridge Evaluation](#)), and must not have a prior commitment from the State – not withdrawn or expired – to fund the project. However, projects that construct a new bridge in a new location (not built as a replacement for an existing bridge) are not eligible.

Many types of projects are eligible for funding. The scope of the project may include reconstruction, rehabilitation, modifications or improvements such as widening, complete replacement, or complete removal, as long as the project corrects the deficiencies that made the bridge eligible for funding. The project may use standard materials such as steel and concrete, traditional material such as timber, or innovative materials such as plastics and aluminum, as long as sound engineering practices are used. Any reasonable structure type may also be used, including timber trusses, if conditions permit.

Applications for funding will be evaluated only for those projects that are anticipated to be under way during the upcoming fiscal year, as demonstrated by the schedule submitted with the Preliminary Application. Time extensions can be granted provided that the municipality demonstrates that it is actively making progress on the project.

If the municipality submits all required documentation on schedule, funding for eligible projects is made available at approximately just after the time of construction contract award.

Preliminary studies, engineering and property acquisition costs are eligible, subject to certain restrictions, and are reimbursed retroactively. Under exceptional circumstances, municipalities may apply for an advance grant to fund the preliminary engineering phase of a project. Construction costs incurred prior to the Commitment to Fund are **not eligible** for reimbursement.

In the event of multiple municipal involvement in a bridge project (such as a bridge on a town line), a decision must be made by the governing bodies of each involved municipality as to which municipality will be the “lead” relative to contact with the Department. The lead municipality will be responsible for overall prosecution of the project, including coordination with other municipalities, meeting all requirements of the Statutes, regulations and the Department's administrative documents. Agreements between municipalities defining concurrence in the selection of the lead municipality must be submitted to the Department at the Preliminary Application stage. Subsequent agreements defining financial responsibility must be submitted at the supplemental application stage. Depending upon the terms of any inter-local agreement concerning responsibility for a bridge, grants may be made for the project costs using: (1) each municipality's percentage as determined by formula for the percentage of cost attributable to each municipality; or (2) the grant percentage of the lead municipality multiplied by the total project costs, or (3) the highest grant percentage of the municipalities participating multiplied by the total project costs. The Department must approve the rationale behind the method of apportioning costs between the participating municipalities.

The Department may deem the lead municipality to be the only municipality eligible for financial aid, without regard to the ownership or other interests of any other municipality in the eligible bridge. In this case, agreements will be made with, and grant disbursements will be made to, the lead municipality only.

3.1.1 – Grant Percentages

Municipal grant percentages are calculated annually based on the most recent Adjusted Equalized Net Grand List Per Capita (AENGLC) of a municipality available at the time of printing. Since the AENGLC factors are not finalized until the annual session of the General Assembly has adjourned, the grant percentages are usually based on the preliminary AENGLC factors. If a Commitment to Fund a project is issued, the grant percentage assigned to a project at the time of the Commitment to Fund will remain unchanged for the life of the project, regardless of any subsequent changes in a municipality's grant percentage.

AENGLC is defined as a combination of property tax base per person and income per person. Property tax base is used because it is the form of wealth taxed by Connecticut's towns. Per Capita Income (PCI) is used because the income from which taxes are paid has an important effect on town taxing capacity. ENGL is the Equalized Net Grand List, which represents the value of taxable real and personal property (net grand list) at 100 percent fair market value.

The determination of AENGLC is computed as follows:

$$AENGLC = \left(\frac{ENGL}{Population} \right) \left(\frac{PCI}{HPCI} \right)$$

Where:

ENGL = Equalized Net Grand List (CT Office of Policy and Management)

PCI = Per Capita Income (U.S. Bureau of the Census)

HPCI = Highest Town PCI

Population = Total Population (U.S. Bureau of the Census)

Per statute, grant percentages vary from 15% to 50% based on the following formula:

$$\text{Municipal Grant \%} = 50 - \left(\frac{\text{Municipal AENGLC} - \text{Low AENGLC}}{\text{Factor}} \right)$$

Where:

$$\text{Factor} = \frac{\text{High AENGLC} - \text{Low AENGLC}}{50 - 15}$$

Example:

High AENGLC = \$648,710.86

Low AENGLC = \$9,804.06

Municipal AENGLC = \$46,104.35

$$\text{Factor} = \frac{\$648,710.86 - \$9,804.06}{35} = \$18,254.48$$

$$\text{Municipal Grant \%} = 50 - \left(\frac{\$46,104.35 - \$9,804.06}{\$18,254.48} \right) = \mathbf{48.01\%}$$

Refer to [Appendix 2 – Grant Percentages for Municipalities](#) for a complete list of grant percentages for all towns, cities, and boroughs in Connecticut for FY2016.

3.1.2 – Eligible Costs

Program regulations specify that only those costs of a bridge project that are determined to be necessary and reasonable are reimbursable. In general, a cost is “necessary and reasonable” if, in its nature or amount, it does not exceed that which would be incurred by a prudent person in the conduct of a competitive business. In any given project, the reasonableness or necessity of certain items of cost may be difficult to determine. In order to avoid a possible subsequent disallowance or dispute based on a cost being found unnecessary or unreasonable, the municipality is encouraged to seek advance approval from the Project Engineer for the Local Bridge Program as to the treatment to be accorded such cost.

A question which comes up on a regular basis is “can Local Bridge Program funds be used for covered bridges?” In general, Local Bridge Program funds can be used to remove, repair, rehabilitate, replace, or improve an existing covered bridge, subject to the same limitations as any other type of bridge. For new construction (complete replacement of an existing bridge), Local Bridge Program funds can be used for any element which serves a

functional purpose. For example, the covering (siding and roof) of the traditional covered bridge served the functional purpose of protecting the timber truss from the weather, extending its service life. Thus, if a municipality wanted to build a timber through-truss bridge, the cost of covering it would be eligible for Local Bridge Program funds. However, if the covering were merely a cosmetic add-on to another type of structure (steel or concrete, for example), the cost of the covering would not be an eligible expense.

Examples of items that will ordinarily be considered eligible costs include, by category:

3.1.2.1 – Preliminary Engineering:

- Advertising for consulting engineer selection (RFQ/RFPs, etc.);
- Engineering studies and inspections undertaken to determine whether a bridge is eligible for the Local Bridge Program;
- Preliminary surveys;
- Preliminary engineering activities, including type studies, preparation of project plans, specifications, and cost estimates;
- Preparation of bid documents;
- Preparation of permit applications;
- Soil borings and other subsurface investigations used for design;
- Public hearings and legal notices;
- Historical reviews and archeological studies prior to construction;

3.1.2.2 – Rights-of-Way:

- Property and easement acquisition;
- Property appraisals;
- Title searches;
- Legal fees for eminent domain proceedings;

3.1.2.3 – Utilities:

- Engineering costs related to municipally owned utility relocation;
- Municipally owned utility adjustment and relocation costs;

3.1.2.4 – Construction:

- Construction costs (those payments made to the construction contractor) for work on the bridge, including approach roadway work necessitated by the bridge project, and any extra work required to properly complete the project;
- Temporary structures necessary to perform the work, or to carry traffic around the work area while the permanent structure is completed;
- If a bridge is removed and not replaced, demolition and road closure costs;

-
- Where a municipality undertakes a project using its own labor, equipment and material: payroll costs of municipal employees directly working on the project, burden and fringe costs, such as FICA, vacation pay, sick leave pay, and pension contributions, of such employees so long as such costs can be audited; documented costs of materials; costs per hour of an item of equipment so long as such costs can be audited; if such costs cannot be audited then the then current equipment charges published by the Federal Emergency Management Agency, or calculated in accordance with the Form 816.
 - Costs generally recognized as reasonable and necessary for the performance of the project taking into account established contracting or construction practices;
 - Costs incurred to comply with Federal and State laws and regulations, and contract terms and specifications;

3.1.2.5 – Construction Engineering/Incidentals to Construction:

- Construction inspection;
- Materials testing;
- Construction advertising;
- Construction bid review and analysis;
- Review of shop, construction and working drawings;
- Engineering support and consultation during construction;
- Inspector's field office costs;
- Archeological studies after beginning construction;
- Construction staking and surveying not performed by the construction contractor;
- Other costs generally recognized as reasonable and necessary for the performance of the project to the standards used on ConnDOT projects

Costs that ordinarily will not be eligible for State local bridge program funding include:

- Bridges not usable by street-legal motor vehicles;
 - Bridge not open to the public;
 - General municipal administration costs, including the wages or salaries of municipal employees not working directly on the project;
 - Overhead costs of a municipality performing construction on its own account;
 - Interim or final audits;
 - Construction costs incurred prior to the commitment to fund;
 - Costs for connecting roadways, interchanges, ramps, and other roadway work not necessitated by the bridge project;
 - Costs of long approach fills, causeways, and other extensive earth structures, when constructed beyond the attainable touchdown point;
 - Expenses for relocation of utilities not owned by a municipality;
 - Legal fees;
-

- Premiums for insurance;
- Costs specifically excluded by the Form 816;
- Any costs generally *not* recognized as reasonable and necessary for the performance of the project to the standards used on ConnDOT projects.

3.2 – OTHER STATE GRANT PROGRAMS

The Local Bridge Program does not prohibit the use of other State funding sources, such as Town Aid for Roads (TAR), [Small Town Economic Assistance Program](#) (STEAP), or [Local Capital Improvement Program](#) (LoCIP) grants, in conjunction with Local Bridge Program funding. However, any other funding programs being used should be checked to see if *they* prohibit funding from other sources. In any event, no municipality may receive a grant amount, which exceeds the allowable percentage of eligible project costs. Since the Local Bridge Program grant is based on the municipality's share of eligible project costs, participation in other aid programs, such as the [Local Transportation Capital Improvement Program](#) (LOTICIP – not to be confused with LoCIP), that pay for 100% of construction costs will render the project ineligible for a grant from the Local Bridge Program for the same project.

The LoCIP program specifically allows a LoCIP grant to be used along with a Local Bridge Program grant. For more information on LoCIP Grants, contact the LoCIP Coordinator at (860) 418-6293, or e-mail at: Sandra.Huber@ct.gov. Grant requests should be addressed to:

State of Connecticut
Office of Policy and Management
Intergovernmental Policy Division
450 Capitol Ave., MS#54FOR
Hartford, CT 06106-1308
Attention: LoCIP Program

For more information on STEAP Grants, contact OPM by phone at (860) 418-6381 or e-mail at: Meagan.Occhiogrosso@ct.gov. STEAP applications must be sent directly to:

Benjamin Barnes, Secretary of the Office of Policy and Management
by mail: 450 Capitol Avenue, Hartford, Connecticut 06106
by FAX: (860) 418-6487

LOTICIP program funds CAN NOT be combined with Local Bridge Program funds. For more information on LOTICIP, contact Mr. William Grant, P.E., Transportation Supervising Engineer, at (860) 594-3229, or e-mail at: William.E.Grant@ct.gov. Grant applications are to be submitted by municipalities to their Regional Planning Organization for forwarding to the Department of Transportation.

3.3 – FEDERAL FUNDS

3.3.1 – HBP/Off-System Bridge STP

From time to time, the Department has been able to make funding available from Connecticut's off-system allotment from the Federal Highway Administration's [Highway Bridge Program](#) (HBP - formerly known as HBRRP). Under MAP-21 federal aid legislation, the off-system bridge program has been moved into the STP program, although the same eligibility rules still apply. This program provides reimbursement of up to 80% of eligible project costs, for all phases of a project.

To be eligible for Federal funding for replacement, rehabilitation, or preservation, the bridge must be listed on the National Bridge Inventory (NBI); be municipally owned and/or maintained; carry a public road classified by Federal guidelines as being either a "urban local" road, a "rural local" road, or a "rural minor collector" road; and must not have an active commitment – not withdrawn or expired – from the State to fund the project. Please see additional criteria in Section [3.3.1.1 – Reconstruction and Rehabilitation Projects](#) and Section [3.3.1.2 – Preservation Projects](#) for the respective funding type.

The types of costs that are eligible or not eligible for Federal participation are for the most part similar to the State program, but there are some differences. Off-System funds may be used for:

- The total replacement of a structurally deficient or functionally obsolete highway bridge on any public road with a new facility constructed in the same general traffic corridor,
- The rehabilitation that is required to restore the structural integrity of a bridge on any public road, as well as the rehabilitation work necessary to correct major safety (functional) defects,
- The replacement of ferryboat operations in existence on January 1, 1984; the replacement of bridges destroyed before 1965; low-water crossings; and bridges made obsolete by Corps of Engineers (COE) flood control or channelization projects and not rebuilt with COE funds, and
- Bridge painting, seismic retrofitting, installation of environmentally acceptable anti-icing/de-icing systems, or installation of scour countermeasures.
- Bridge Cyclical Preventive Maintenance and Condition Based Preventive Maintenance and/or repairs, either individually or as a group (programmatic)

Highway bridges eligible for replacement, rehabilitation, or preservation must be over waterways, other topographical barriers, other highways, or railroads. Federal participation is limited to those eligible bridges on the NBI. A bridge that has been closed for an extended period of time or removed is no longer carried on the NBI, and thus would not be eligible for funding.

When a project is contemplated as part of a systematic preventative maintenance program (bridge painting, seismic retrofitting, anti-icing/de-icing systems, scour countermeasures, etc.), the project scope should also include, where feasible, correction of major safety deficiencies on the bridge. Be aware that systematic preventative maintenance program projects have the lowest priority for funding.

Because Federal funds are involved, additional requirements and procedures come into play. To ensure that municipalities do not run afoul of the Federal requirements, ConnDOT works closely with the municipality during the course of a federally aided project. Once a commitment to fund a qualifying municipal bridge project is issued by ConnDOT, the municipality is provided guidance by ConnDOT in developing the contract plans, specifications and estimates. The municipality must stay in close contact with ConnDOT to ensure compliance with all program requirements. Failure to follow these rules may result in the municipality being responsible for some or all of the project costs. Cancellation of a project by a municipality after Federal funds have been expended may also result in the municipality being required to reimburse the Federal government for costs incurred prior to cancellation.

It is important to note that this is a reimbursement program. This means that the municipality must be prepared to pay project expenses “up front”, and then be reimbursed after the fact. Thus, the municipality should budget enough local funding to cover several months of project costs, which may be considerable during the construction phase. In addition, because of declining funding levels, and the fact that federal funds are released to the State in a piecemeal fashion over the lifespan of the Transportation Bill, it may take several years for a particular bridge to receive funding.

Some other significant differences caused by Federal funding requirements are outlined in the section “Guidelines for Obtaining Funds under the Local Bridge Program”.

Costs that ordinarily will not be eligible for Federal local bridge program funding include:

- General municipal administration costs, including the wages or salaries of municipal employees not working directly on the project;
 - Overhead costs of a municipality performing construction on its own account;
 - Interim or final audits;
 - Consulting engineer fees, if the engineer was not selected by a procedure approved by ConnDOT;
 - Construction costs incurred prior to the commitment to fund;
 - Costs for connecting roadways, interchanges, ramps, and other roadway work not necessitated by the bridge project;
 - Costs of long approach fills, causeways, and other extensive earth structures, when constructed beyond the attainable touchdown point;
 - Expenses for relocation of utilities not owned by a municipality;
 - Legal fees;
 - Premiums for insurance;
-

- Extra work performed without prior approval by ConnDOT;
- Ornamental treatments not approved by ConnDOT;
- Any costs specifically excluded by the Form 816;
- Any costs generally *not* recognized as reasonable and necessary for the performance of the project to the standards used on ConnDOT projects.

For the cost of a proprietary item to be eligible for FHWA participation, it must be procured in conformance with [23CFR635.411](#). The Contract Administration Core Curriculum, [Participant's Manual and Reference Guide](#) (Part III.B.8.1.v) provides non-regulatory guidance on identifying and justifying FHWA participation in the cost of proprietary products.

3.3.1.1 – Reconstruction and Rehabilitation Projects

Bridge Reconstruction and Rehabilitation projects are those bridge projects that require complete replacement of an existing structure or major work to bring an existing structure to a state of good repair. In order to qualify for this type of funding, the bridge must be structurally deficient, functionally obsolete, or scour-critical according to criteria developed by the Federal Highway Administration in the Coding Guide (see [Chapter 2: Bridge Evaluation](#)). In addition, the bridge must fit the criteria outlined in Section [3.3.1 – HBP/Off-System Bridge STP](#).

The types of costs considered eligible for Federal funding for bridge reconstruction and rehabilitation projects are described in Section [3.3.1 – HBP/Off-System Bridge STP](#).

3.3.1.2 – Preservation Projects

A successful bridge program should seek a balanced approach to bridge preservation, rehabilitation, and replacement. The Department, as well as FHWA, recognizes the importance of preserving bridges that have not yet deteriorated below the satisfactory condition rating threshold. This reflects the Department's belief that applying appropriate bridge preservation treatments and activities at the appropriate time can extend the useful life of a bridge while reducing its lifetime cost. Therefore, the Department is currently in the initial stages of accepting applications for preservation projects on municipal bridges using Federal funds.

Preservation is defined in this context as the work, other than major rehabilitation work, to prevent, delay, or reduce deterioration of a bridge or its elements in order to preserve a bridge's good condition or extend its useful life. Please note that, although bridge rehabilitation work normally falls under the preservation umbrella, it is synonymous with major structural work to return a bridge to a "state of good repair" or to correct major safety issues. The Local Bridge Program already offers funding for bridge reconstruction and rehabilitation for those bridges that are either structurally deficient, functionally obsolete, or scour critical and, therefore, require major rehabilitation work or reconstruction.

Preservation funding is being made available for those bridges that have received condition ratings of satisfactory or good for the lowest rated major bridge component. That's the equivalent of a condition rating of 6 or 7 for the worst-rated major component (deck, superstructure, substructure, or culvert condition rating). That implies that bridges that are structurally deficient are automatically not eligible for this type of funding. Additionally, the

bridge must not be functionally obsolete or scour critical according to criteria developed by the Federal Highway Administration in the Coding Guide (see [Chapter 2: Bridge Evaluation](#)). The bridge must also fit the criteria outlined in Section [3.3.1 – HBP/Off-System Bridge STP](#).

Funding priority will continue to be based on the bridge's priority rating. This will ensure that, while preservation work becomes an eligible activity, funding preference is still given to the bridges that require more immediate attention, such as those needing reconstruction or major rehabilitation.

The types of bridge preservation activities that would be considered eligible for Federal funding under the condition and/or cyclical based preventative maintenance are those that involve the production of plans, specifications, estimates, and all associated environmental permitting. This type of work should funding is not intended to replace regular maintenance work such as milling and/or overlay, bridge cleaning, and removal of debris from storm drainage structures. Those maintenance activities will only be accepted for funding if performed as part of an eligible activity, which typically include, but are not limited to, the following:

- Sealing or replacement of bridge joints;
- Installation of deck membranes;
- Repaving - only if performed as part of either installation of deck membranes or other activity for which repaving work in an expected consequence;
- Installation of cathodic protection system(s);
- Complete, spot, or zone painting/coating of steel structural elements and any associated structural steel repair;
- Replacement and/or lubrication of bearing devices;
- Sealing and/or patching concrete substructure and/or superstructure;
- Installation of scour countermeasures;
- Protective fencing, guiderail, and/or bridge rail system repair or installation;
- Bridge deck storm drainage repair, replacement.

For an overview and guidance regarding bridge management programs, please see the [FHWA Bridge Preservation Guide](#).

3.3.2 – Other Federal Programs

For information on other Federal funding programs, please contact your regional planning organization (RPA or COG).

CHAPTER 4: PROJECT DEVELOPMENT

Each year when funding is available, the Department updates and publishes this program manual and solicits applications for the upcoming fiscal year. The upcoming State Fiscal Year runs from July 1, 2015 to June 30, 2016, and thus is known as Fiscal Year 2016.

The municipality, as the structure's owner, is ultimately responsible for all phases of the project. This may include, but is not limited to, survey, studies, preliminary and final design, material testing, utility relocation, rights-of-way activities, permit acquisition, construction work, construction supervision and inspection. If a municipality does not diligently pursue the project, no progress will be made, which may lead to a withdrawal of the State's commitment to fund the project. For Federally funded projects, ConnDOT will provide considerable oversight and guidance in completing these tasks, and if requested, the Department may perform rights-of-way activities. On State funded projects, much less oversight is provided.

These activities may be accomplished either in-house by municipal staff, or by consulting engineers and contractors solicited for that purpose. When selecting a consultant engineer for a project that is not federally funded, the municipality may use its normal procedure for purchasing outside services. When Federal funds are used for a project, under most circumstances a "qualification based" selection procedure must be employed, and the consultant's activities will be governed by the latest edition of the ConnDOT Consulting Engineers Manual.

Should the municipality opt to accomplish the construction using its own employees (the "force account" method), the municipality may use equipment rental rates determined in accordance with the ConnDOT Standard Specifications (Form 816), or current F.E.M.A. (Federal Emergency Management Agency) schedule of rates for rental of equipment. Hourly rates for personnel and the pre-bid prices for materials from the current "Town Aid" schedule will also be allowed. The necessary guidelines for equipment rate charges, material certification and municipal payroll costs will be made available to the municipalities.

4.1 – PROJECT STEPS AND TYPICAL TIMELINE

Following is a list of typical project stages, in the order in which they typically occur. Further details can be found in [Section 5.1 – Procedures for State Funded Projects](#), and [Section 5.2 – Procedures for Federally Funded Projects](#), depending upon funding source.

- 1) Determine Eligibility – See [Section 3.1 – State Local Bridge Program Grant](#) for State funds, or [Section 3.3 – Federal Funds](#) for Federal Funds.
- 2) Submit [Preliminary Application](#).
- 3) Return Commitment to Fund letter within 30 days.
- 4) Begin (or continue) design.
- 5) Secure environmental permits
- 6) Upon Design Completion, Submit Supplemental Application (State-funded projects) or Final Plans, Specifications, and Estimates (PS&E) (Federal-funded projects)
- 7) Sign and Return Grant Agreement
- 8) Advertise for construction
- 9) Submit Closing Documents

- 10) Receive grant (Federal-funded projects receive funds on a reimbursement basis)
- 11) Begin Construction (notify ConnDOT as to starting date)
- 12) When nearly complete, notify ConnDOT as to semi-final inspection date
- 13) Certify project as complete
- 14) Submit final cost information and as-built plans
- 15) State adjusts grant amount

4.2 – INITIATION/PRELIMINARY APPLICATION

A project is initiated by the municipality determining that it desires to repair or replace an eligible bridge. Bridges which are known by ConnDOT to be in poor condition *and* meeting other program requirements (and thus known to be eligible) are listed in the eligible bridge list posted on the [Local Bridge Program website](#). Additional bridges may also be considered for addition to the eligible bridge list if the municipality submits an inspection performed by a qualified professional engineer revealing them to be in poor condition, and the Department agrees with the results of the inspection report.

The municipality begins by estimating the scope of work needed to preserve or return the bridge to good condition, and preparing a preliminary cost estimate for this work. At the preliminary application stage, cost estimates are generally based on “rule of thumb” estimates for similar types of work; detailed plans and specifications are not required at this point.

Once preliminary plans and specifications have been developed, the municipality should have a rough idea of the project’s scope and cost, and be ready to submit a Preliminary Application. The preliminary application must be submitted using the latest application form posted on the Program’s [website](#), a sample of which is included in the back of this Manual (see [Preliminary Application](#)). Due to the limited number of bridges that qualify for Federal funding, and to reduce the time that it takes to get a deficient bridge rehabilitated, the Department is accepting applications for Federal funding at any time; there is no specific deadline. In the event that demand exceeds the available funding, the Department will establish a cut-off date, and return to the practice of funding applications in order of Priority Rating.

The Local Bridge Program will review the preliminary application, and if the project qualifies and sufficient funding is available, ConnDOT will issue a “Commitment to Fund” letter. Once such a commitment is issued, subsequent priority list revisions will not alter the commitment, and the Department will participate in the applicable portion of all eligible project costs, up to the limit of available funding. Engineering costs incurred prior to the commitment to fund date *are* reimbursable under the State program, but construction costs incurred prior to the commitment to fund are *not*. Therefore, construction should not begin until after the commitment to fund is signed. For federally funded projects, no costs incurred before being specifically authorized by FHWA and ConnDOT are reimbursable, even if there is a Commitment to Fund the project in place.

Please note that the application form is a legal document, which will be referenced in the project agreements. The most recent version must be used, and it must not be altered in any way. Because legal requirements change from time to time, use of an altered or outdated form may cause an application to be delayed or rejected.

After the commitment to fund is issued, the subsequent development of the project will be determined by whether or not Federal funds are involved. Federally funded projects will follow the path outlined in Section [5.2 – Procedures for Federally Funded Projects](#). Projects not federally funded will follow the path outlined in Section [5.1 – Procedures for State Funded Projects](#).

4.3 – PROJECT DESIGN

With the commitment to fund in hand, the municipality is ready to proceed with the design stage, where the scope and estimated costs will be more accurately defined. As a part of the design process, a public informational meeting should be held to solicit public input. The purpose of the public informational meeting is to provide a forum where the project is presented and explained, then the public is given an opportunity to ask questions and make comments. Minutes summarizing the public comments should be kept, but it is not necessary to have a word-by-word transcript prepared by a stenographer.

As the project develops, the municipality must inform the Department of any major changes in the cost of the project (in excess of 10%), so that the Department can allocate sufficient funding to the project. Failure to notify the Department of increases in the cost of a project may result in the State not participating in any costs beyond the amount of the original Commitment to Fund.

The individual responsible for the project's design must be a professional engineer licensed in Connecticut, and must sign and seal the plans and specifications. The designer will be required to certify, on the Supplemental Application form, that the project has been designed in accordance with applicable standards.

While not mandatory, the municipality may want to use ConnDOT standard drawings and specifications. Standard drawings, specification, and other references are available at <http://www.ct.gov/dot/cwp/view.asp?a=2288&Q=300688&dotNav=1>.

4.3.1 – Design Standards – State Funds

Design criteria should be consistent with the sixth edition of the AASHTO LRFD Bridge Design Specifications, published by the American Association of State Highway and Transportation Officials (AASHTO), the ConnDOT Bridge Design Manual, the ConnDOT Highway Design Manual, the ConnDOT Drainage Manual, the ConnDOT Standard Specifications Form 816 (with current Supplemental Specifications), and the 2004 Connecticut Stormwater Quality Manual. These guidelines have considerable flexibility built into them, and also have provisions for deviating from standards when conditions warrant. Additional

consideration should be given to remaining fatigue life, hydraulic analysis, and scour susceptibility.

4.3.1.1 – Geometrics

Design criteria should comply with AASHTO and ConnDOT Highway Design Manual standards for the applicable roadway classification. ConnDOT encourages designers to use context-sensitive design solutions whenever appropriate. As part of the Supplemental Application, to be filed with ConnDOT after the design of the project is complete, the licensed Professional Engineer responsible for the project's design is required to certify that the design conforms to current ConnDOT and AASHTO standards "or previously agreed to digressions from those standards". The wording allowing "previously agreed to digressions" from standards is intended to allow municipalities, as the owners of local bridges, to play the same role in weighing design factors for their own bridges as ConnDOT plays for State bridges. The allowance for reasonable flexibility in design should not be interpreted to mean that *no* standards apply to Local Bridge Program projects; it only means that the town, rather than ConnDOT, should weigh the criteria for deviating from standards. As the decision-maker, the municipality also assumes any liability associated with departing from standards. Note that a professional engineer will be reluctant to sign any plans that deviate too far from accepted practices, and should not be pressured to do so.

As a rule of thumb, ConnDOT and AASHTO standards require that the curb-to-curb roadway width on a bridge should be at least as wide as, and preferably wider than, the approach roadway including usable shoulders, whether or not the approach roadway shoulders are paved. This is important for public safety, since bridges that are narrower than the approach roadway are associated with significant increases in motor vehicle accidents at the bridge, either impacting the bridge itself, or striking on-coming traffic in an attempt to avoid striking the bridge parapet. New one-lane bridges are only acceptable on one-lane roads.

If, in order to retain and rehabilitate an existing bridge constructed prior to 1972, the municipality deviates from the AASHTO or Highway Design Manual guidelines, it must consider and document all of the factors listed in CGS Section 13a-86a (see Appendix 3). This documentation should be retained in the project's file, and need not be submitted to the Department unless requested. If Federal funds are involved, specific authorization from ConnDOT and FHWA must be received to deviate from standards.

4.3.1.2 – Life Expectancy

A designed life expectancy of at least 20 years after construction completion will be required for all projects.

4.3.1.3 – Load Capacity

HL-93 load capacity must be achieved on the structure, except that in the case of a rehabilitation project where it would be difficult or impractical to upgrade the structure to carry full legal loads, a municipality may opt for a lesser load limit. In all cases, a minimum load capacity of at least 14 tons must be obtained. Minor rehabilitation projects may use either the

Load Factor (LF) or Load and Resistance Factor Rating (LRFR) methods to determine the load rating; major rehabilitation (such as superstructure replacement) or replacement projects must be designed using the LRFR method. Further information can be found in [C.E. General Memorandum 12-01](#) and section 3.1 of the [Bridge Design Manual](#).

4.3.1.4 – Scour Analysis

Reasonable and prudent hydraulic analysis of a bridge design requires that an assessment be made of the proposed bridge's vulnerability to undermining due to potential scour. Because of the extreme hazard and economic hardships posed by a rapid bridge collapse, substructures for bridges over waterways should be designed to safely support the structure subjected to the design scour.

With regard to abutment or pier foundations, two basic approaches to achieving this goal are available to the designer, listed as follows in order of preference:

- Design the foundation to resist the effects of scour from a superflood:
Foundations subjected to scour should be designed with footings supported on piles, footings founded on rock or deep footings (located below the maximum estimated scour). Structural tremies (concrete poured under water, which directly supports the foundation loads) should be used only where no other solution is feasible. Preference for foundations adjacent to or within waterways will be for pile-supported footings or direct foundations on rock. For pile foundations, the top of footing should be set below the sum of the long-term degradation and contraction scour.
- Protect the substructure units with riprap or similar armoring layers:
In general, the use of riprap to provide scour protection for new bridges is discouraged and should be used only where it has been demonstrated that alternate, preferred means of designing bridges to be safe from scour related failures are not feasible. On bridge rehabilitation projects where the substructure is being repaired and incorporated in the reconstruction of the bridge, riprap scour countermeasures may be an effective solution for protecting the bridge from scour.

The designer should explore and incorporate into the design all reasonable methods of minimizing local scour, such as the use of embankment or "stub" abutments placed at the top of a protected slope. These types of abutments are much less susceptible to scour than full height abutments. The use of stub abutments does not relieve the requirement for founding on piles or directly on rock. Piers that may experience local scour should be flow aligned and should have streamlined end sections.

4.3.1.4.1 – Reconstructed or Rehabilitated Bridges

Generally, scour evaluations should be performed for all bridges that are to be reconstructed or rehabilitated where significant capital investment is involved, and where the bridge has been classified as scour susceptible or scour critical. A significant capital investment correlates to the following improvement categories:

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- Deck Replacement
 - Superstructure Replacement or Widening
 - Modification or Major Repairs to Substructure Units

Bridges that have been classified as scour susceptible or scour critical should have hydrologic, hydraulic and scour evaluations performed which are sufficiently detailed to satisfy all applicable design and permitting requirements. All necessary scour countermeasures for scour susceptible or scour critical bridges should be incorporated into the overall project plans.

Further information on designing for scour can be found in the Department's Drainage Manual, and the FHWA document entitled "Evaluating Scour at Bridges" (HEC-18).

4.3.1.5 – Hydraulics

A hydraulics analysis will be required whenever the waterway has been studied by FEMA for flood insurance purposes, or if an U.S. Army Corps of Engineers permit is required. All culverts and bridges must be designed in accordance with methods and procedures defined in the DOT Drainage Manual as revised, Best Management Practices as outlined in Section 1.10 of the *State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 816*, as revised by the latest supplements, and the CT 2004 Stormwater Quality Manual as revised, and meet the following requirements:

- Culverts and bridges must be designed for flood frequencies and under clearances stipulated in the DOT Drainage Manual, except that on local roads and driveways with low traffic volumes and where alternate routes are available, lower design criteria are acceptable when:
 - Flood discharges may be allowed to cross over roads that are at or close to the floodplain grade.
 - Water surface elevations are not increased by more than one foot, and will not cause damage to upstream or downstream properties.
 - Provisions are made to barricade the road when overtopped, including a monitoring plan.
 - The road or driveway is posted as being subject to flooding.
- The location of new bridges and culverts minimize the relocation of the watercourses.
- Rigid floors at new or replaced bridges and culverts must be depressed below the normal streambed with one foot native streambed material on top in order to maintain fish passage, unless written approval is given by DEEP Fisheries.
- Solid parapet walls at bridges and culverts in the sag part of vertical curves are only to be used when such walls are deemed hydraulically acceptable and if such walls do not cause an adverse impact.
- Multiple small openings are discouraged.

4.3.1.6 – Fatigue

Designs must also consider fatigue on existing structural elements in accordance with the AASHTO Guidelines for Fatigue Evaluation of Bridges.

4.3.1.7 – Longitudinal Barriers

Guide railing of a safe and responsible design will be required at the leading ends to bridges. Consideration should be given to upgrading the bridge railings to current AASHTO standards. All new longitudinal barriers should meet or exceed the TL-3 crash testing criteria in the Manual for Assessing Safety Hardware (designs tested under NCHRP Report 350 are also acceptable). Solid parapet walls at bridges and culverts in the sag part of vertical curves are only to be used when such walls are deemed hydraulically acceptable.

4.3.1.8 – Environmental

Stormwater management systems must be designed in accordance with the 2004 Connecticut Stormwater Quality Manual, and must incorporate primary treatment measures whenever possible. Projects must be constructed and maintained in accordance with permit requirements, which generally include conditions such as:

- Time of Year Restriction on In-water Construction: construction activities are not permitted during certain times of the year in any watercourse unless the work is confined by a cofferdam or other device which isolates the activity from the watercourse, unless the DEEP Inland Fisheries Division has given written authorization that the proposed activity will not adversely impact any fisheries habitat.
- Pollution Prevention/Best Management Practices: The work shall not result in pollution or other environmental damage and shall employ best management practices to prevent such damage. In addition to employing any other best management practices necessary, erosion and sedimentation controls must be installed and maintained in good condition to prevent erosion and discharge of material into any waters, including wetlands. Erosion and sedimentation controls should be designed, installed and maintained in accordance with the [2002 Connecticut Guidelines for Soil Erosion and Sediment Control](#), and Best Management Practices as outlined in Section 1.10 of the *State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 816*, as revised by the latest supplements.
- All equipment and materials should be stored outside the 100-year floodplain whenever possible. The contractor shall be required to have a flood contingency plan and remove equipment and materials from the 100-year floodplain during periods when flood warnings have been issued or are anticipated by a responsible governmental agency. It shall be the contractor's responsibility to be knowledgeable of such warnings when flooding is anticipated.
- Work shall not be conducted in or adjacent to watercourses and reservoirs used as public drinking water supply sources without coordination with the water supply utility and Department of Public Health.
- All temporary structures, cofferdams, and fill shall not impede the movement of flood flows and shall be removed at the completion of their use (Sheet piling that is cut 1 foot below existing grade is considered to be removed.). The design of temporary structures, cofferdams and fill shall be based on Chapter 18 of the DOT Drainage Manual, where

applicable. Temporary facilities must allow for passage of fish with minimal disturbance to the streambed. Any temporary facilities or equipment requiring work in, or placement in a waterway, must be able to be removed in a timely manner from the site in case of a flood warning, except temporary structures that have been designed in accordance with the guidelines outlined in the [ConnDOT Drainage Manual](#) for Temporary Hydraulic Structures.

- Structures should be designed in accordance with [DEEP's Stream Crossing Guidelines](#).
- All fill shall be clean material, free of stumps, rubbish, hazardous, and toxic material.
- Once work is initiated, it shall proceed rapidly and steadily until completed and stabilized in order to minimize use of temporary structures and to minimize soil erosion.

4.3.2 – Design Standards – Federal Funds

For projects with Federal funding, the project's design will be required to comply with all ConnDOT standards where possible; any deviations from the AASHTO or ConnDOT design guidelines *must* be approved by the Department and FHWA. In all cases, the design must improve the existing conditions, and correct all of the problems that rendered the bridge eligible for Federal funding. A scour analysis will also be required, as described above and in the Drainage Manual.

4.3.3 – Permits

The municipality is responsible for obtaining all permits required by federal, state and local regulatory agencies, including local Inland Wetlands and Watercourses agency approval. Most projects that affect a waterway or wetlands will require a permit from the U.S. Army Corps of Engineers, *regardless of the funding source*. Most bridge projects will also require some type of Flood Management review, typically at the local level, to comply with the National Flood Insurance Program.

If the project is likely to involve a structure of historic interest, the [State Historic Preservation Office](#) (SHPO) should be contacted. Tribal Historic Preservation Office (THPO) coordination may also be required (procedures were being defined as of this writing).

Some projects, especially those involving extensive impacts or larger waterways, may also require additional State and Federal permits, such as a U.S. Army Corps of Engineers Individual permit, and U.S. Coast Guard Bridge Permit (and/or navigation lighting approval or waiver). Projects impacting tidal, coastal or navigable waters will require permits from the DEEP's Office of Long Island Sound Programs. Construction sites disturbing one acre or more will also require a National Pollutant Discharge Elimination System (NPDES) permit under the Federal Clean Water Act. For construction projects with a total disturbed area (regardless of phasing) between one and five acres, the Town must provide a review and written approval of the erosion and sedimentation control measures and certify that the plan follows the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*. If no review is conducted by the Town, the permittee must register and comply with Section 6 of the DEEP **General Stormwater**

Discharge Permit for Construction Activities and Dewatering of Wastewater, Modified April 9, 2010. Copies of all permit applications and approvals must be included in the contract documents.

Following is a list of regulatory approvals which may be required, depending upon the particulars of the project:

- Municipal Inland Wetlands and Watercourses Permit under the Inland Wetlands and Watercourses Act (CGS Sections 22a-36 to 22a-45(a), inclusive), and municipal flood management review;
- Water Diversion Permit under the Connecticut Water Diversion Policy Act (CGS Sections 22a-365 to 22a-378(a), inclusive),
- DEEP Stream Channel Encroachment Lines Permit (CGS Sections 22a-342 to 22a-349(a), inclusive),
- Dam Safety Construction Permit (CGS Sections 22a-401 to 22a-411, inclusive),
- DEEP Structures, Dredging and Filling Permit (CGS Sections 22a-359 to 22a-363f, inclusive),
- DEEP Tidal Wetlands Permit under the Tidal Wetlands Act (CGS Sections 22a-28 to 22a-35a inclusive),
- DEEP Certificate of Permission (CGS Section 22a-363b (a)),
- Long Island Sound General Permits (CGS Sections 22a-28 to 22a-35 and Sections 22a-359 to 22a-363f inclusive),
- Coastal Area Management Review (CAM) (CGS Section 22a-90 to 22a-113b, inclusive)
Note: not required if obtaining a COP, Structures & Dredging or Tidal Wetland Permit approval from DEEP OLISP. Some Towns have a local CAM program - please contact the appropriate municipal commission or agency.
- U.S. Army Corps of Engineers Permit Application (typically a General Permit concurrence). If the project may require a Category 2 or individual ACOE permit, request that the project be reviewed at the monthly DOT/DEEP/ACOE Project Managers' Meeting held at ConnDOT.
- U.S. Coast Guard Bridge Permit, Construction Letter, and/or navigation lighting approval (or waiver).
- Department of Public Health Change in Land Use Permit Application.
- DEEP Section 401 Water Quality Certificate.

In the case where a general permit authorization, stream channel encroachment line permit, or State 401 Water Quality Certification is required, the municipality or its engineer should consult with the [ConnDOT Liaison Project Engineer](#) for advice as to how to handle the situation.

NOTES FOR ALL DEEP PERMIT APPLICATIONS: Applications must include plans signed and sealed by a professional engineer licensed in Connecticut. ***The application will not be reviewed until signed and sealed plans are provided.*** If these plans are not final

construction plans, a notation to the effect of “For Permit Application” should appear on the plans. It is not necessary for plans submitted for permitting purposes to show internal structural details unrelated to the project’s environmental impact (such as rebar details). All plan sheets must be dated, and any future modifications to the plan sheets provided with the application must include a list of drawing revisions on the cover sheet, including sheet number, description, and date of the revision. The revised sheet must also include the latest revision date. Permit approvals refer to the plans, including the date, and any revisions. Therefore, the applicant is responsible for providing clear and accurate documentation of all proposed activity on the plan sheets. Any activity not shown on the approved plans is not in compliance with the issued permit.

When submitting an application requiring river hydraulic models, the following information must be provided.

1. A copy of the FEMA back-up data. FEMA cross-sections and flows must be used in development of the model. If FEMA backup is not available, a copy of the original request to FEMA and the response letter back from FEMA must be provided.
2. A disk including all runs as defined in [Appendix 5 – Hydraulic Analysis Guidance Document](#). (All runs must be provided on one disk under one project.)
3. No modifications to floodway boundary are permitted without approval from FEMA.
4. The hydraulic analyses and results of the hydraulic modeling should be clearly summarized in the engineering report. More guidance on the requirements for hydraulic analysis is included in [Appendix 5 – Hydraulic Analysis Guidance Document](#).

This is fundamental information required to make a complete application; it is not considered to be extra work. Failure to provide the above as a minimum requirement *will result in rejection* of the application.

4.3.3.1 – Flood Management Certification

As of July 1, 2013, State Flood Management Certification is no longer required for projects funded under the State Local Bridge Program. However, municipalities are reminded that local flood management review is still required. If available, a copy of the hydraulics, hydrology, and scour analysis should be furnished to ConnDOT to be kept in the file on the bridge. It is recommended that the designer consult with [DEEP Fisheries Division](#) early in the process to address any concerns they might have.

Note that project funding from any other State or Federal program may trigger the need for State Flood Management Certification.

4.3.3.2 – Flood Management General Certification

For certain minor activities within regulated floodplain, the Department of Transportation has been granted a “General Certification” by DEEP through April 1, 2022. Activities listed below are also recognized as being allowed in any Coastal Flood Hazard Area, with the understanding that all other necessary coastal permits will be obtained through DEEP OLISP. When all work on a project falls into the categories described below, ConnDOT’s Hydraulics

and Drainage Section will certify that the project is covered by the general certification, and no separate FMC application to DEEP, or FM-MOU application, will be needed. Activities should be defined as eligible by the actions listed in the description under each category, and that the nature of work itself does not necessarily have to match with the Category heading.

The twelve (12) approved activities are described below:

- 1. Minor Safety Improvements, Streetscape, and Transportation Facility and Enhancement Projects:** Projects which include minor grading and minor safety improvements including traffic signals, signs, sidewalks, rail platform extensions, elevated walkways, boardwalks, landscaping and light poles as well as other activities similar in scope and scale. This category also includes ancillary work to make facilities compliant with ADA standards, as well as allowing for stormwater improvements at such facilities which do not result in any adverse effect to the floodplain and are compliant with the restrictions set forth in item #3. This item does not include sound barriers.

Landscape plantings will be in accordance with the most current version of the Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, as revised by the latest supplements, and also in accordance with the State of Connecticut Department of Energy and Environmental Protection's Non-Native Invasive plant Species Policy. Obstructions such as poles, signs rail platforms, elevated walkways and plantings may be placed in the floodplain, but not in the floodway. Any grade changes will be limited to 2.0 feet maximum over the existing ground elevation in the floodway fringe only, not in the floodway, where a floodway has been established and shown on the relevant FEMA Flood Insurance Study mapping. Grade changes shall not decrease the flood storage capacity of the floodplain and any fill must be compensated for by an equal cut so that there will be no net fill below the base flood elevation within the floodplain. Compensation for the proposed fill shall occur within the same hydraulic cross-section or the same reach of stream such that the loss is properly compensated for.

- 2. Roadway Repair, Repaving, Maintenance & Underground Utilities:** Milling, repaving and associated regrading to roadsides. Also included are roadway patching and repairs to existing grade and work to the subgrade of the roadway such as utility work, underdrain and storm drain installation, exclusive of storm drainage outfalls.

Construction under this category will allow up to a 4-inch increase in pavement height in a floodway fringe but no increase in pavement height in a floodway. This item will allow for the roadside to be graded to meet the new pavement grade. Also included are roadway patching and repairs to existing grade, and work to the subgrade of the roadway, such as utility work, underdrain and storm drain installation when such work does not affect the elevation of the roadway within the regulated area.

- 3. Minor Stormwater Drainage Improvements:** Placement of new drainage outfalls in order to reconfigure existing drainage systems, where the proposed pipe size is 36" or less provided that a pre and post stormwater assessment / analysis indicates that such

placement would not cause an increase in peak discharge of the receiving floodplain source and therefore no increase in the regulatory flood elevation. Appropriate stormwater treatment and sedimentation and erosion controls must be included in the design and approved by the Office of Environmental Planning (OEP). This category also allows for upgrade of an existing pipe not exceeding and including the requirements above, as well as replacement with equivalent diameter pipe of drainage outfalls, replacement or placement of riprap aprons or preformed scour holes set no higher than existing grade at existing outfalls. All work under this category shall be consistent with the DEP 2004 Stormwater Quality Manual.

Placement of a flared end as a replacement for an endwall is acceptable provided the fill matches adjacent slope limits. The design of riprap aprons and preformed scour holes shall conform to the guidelines in the ConnDOT Drainage Manual.

- 4. Removal of Sediment or Debris from a Floodplain:** Removal of sediment from a floodplain including pond and ditch cleaning, and wetland restoration efforts.

Removal of fill also includes the cleaning of ponds when all other necessary Inland or Coastal wetland permits are approved. Sediment shall be disposed of in accordance with Best Management Practices as outlined in Section 1.10 of the Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 816, as revised by the latest supplements.

- 5. Wetland Restoration, Creation or Enhancement:** Removal of material and placement of organic soils and wetland plantings. This category may include treatments and excavation to eradicate invasive species.

This item shall include actions necessary for creating wetland mitigation sites, such as placement of organic soils and wetland plantings. Any placement of material for soil amendment shall be an amount less than or equal to the material which was removed from the floodplain. Placement of plantings alone can also be performed under this category to stabilize streambanks or other areas as well as provide plantings to replace non-native vegetation, or for wildlife habitat enhancement as long as the activity does not adversely change the character of the bank or the hydraulic capacity of the waterway.

- 6. Scour Repairs at Structures:** Scour repairs, which bring the streambed, back to original grade, as either depicted either on original as-built plans or as determined in the field by the Engineer. This category may also be utilized to install designed counter measures that do not change the hydraulic capacity of the structure and that are acceptable to CTDEEP Fisheries Division. *Note: Municipal projects that require no other State permit approvals will only qualify for the General Certification under this item when accompanied by a completed CTDEEP Fisheries Division sign-off form.*

Fill will be placed to an appropriate level, which is at an elevation no higher than the original grade at either bridge face or points beyond the influence of local or

contraction scour. The placement of riprap or alternate counter-measures must be limited to local scour holes adjacent to the bridge substructure units, retaining walls, wingwalls or culvert termini unless the proposed plans have been reviewed by the CTDEEP Fisheries Division and their concurrence is documented by the completed sign-off form.

7. **Guide Rail Installation:** Installation, replacement or repair of guide rails including minor clearing and grubbing, which may be necessary to place a new system and allow for its deflection and the use of appropriate materials under guiderail to prevent erosion. This category also allows for upgrade of existing system to bring them into conformance with current safety standards, including upgrades to termini and connections to bridge parapets and the replacement of existing concrete Jersey Barriers already in place with Merritt Parkway Concrete Barriers and replacement of existing metal beam rail already in place with timber Merritt Parkway Guide Rail. Jersey type solid safety barriers at a new location may not be placed under this item.
8. **Bridge Deck and Superstructure Replacements:** Replacement of the superstructure or deck of a structure where both the existing and proposed low chord elevations are above the floodway elevation. Temporary impacts for construction may include but are not limited to: scaffolding, ladders, sandbags, cofferdams and sedimentation control devices as well as other activities similar in scope and scale necessary to perform the work . This item includes necessary modifications to the substructure to accommodate the new superstructure if the modifications do not result in a change to the hydraulic opening.

No decrease in hydraulic capacity will occur as a result of any work under this item. Any temporary impact items will be able to be removed in a timely manner from the site in case of a flood warning, except for items designed under the ConnDOT Drainage Manual as temporary structures, which will allow for the passage of fish, with minimal disturbance to the streambed.

9. **Minor Culvert and Bridge Repairs including proper containment:** Repairs to bridges, culverts or pipes including such actions as repairs to spalling concrete, repointing, joint repairs, bridge seat and bearing repairs, upgrade of parapets or railing, (open design only allowed), painting, replacement of wood on wooden bridges, cleaning, repair and painting or replacement of steel bridge elements with proper containment to prevent debris from falling to any regulated areas below, in-kind culvert replacements, wingwalls, endwalls, cut-off walls as well as other activities similar in scope and scale which would not diminish the hydraulic capacity of the structure. Temporary impacts for construction may include but are not limited to: scaffolding, ladders, cofferdams, sandbags and sedimentation control devices necessary to perform the work and I or access the work site. Containment systems and work platforms hung from the bridge may also be utilized such that the temporary system does not extend below the temporary design flood elevation unless the system can be readily removed prior to the anticipated flood event. The design frequency of the temporary design flood shall be determined by the procedures outlined in the Drainage Manual.
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- 10. Fisheries Enhancements:** Work in waterways to create or enhance fisheries habitat. Such work may include placement of boulders, riparian plantings, vortex rock weirs, log structures, wing deflectors, channel blocks, cover logs and rootwads, bank cribbing and other enhancements such as scour pool excavation and stream bank stabilization. This item includes any temporary impacts necessary for construction. This item may not be used for construction of fishways or fish ladders.

All enhancements must be approved by the DOT Hydraulics and Drainage Section. Boulders or groupings of boulders placed will be no wider than 20% of the stream width and there will be no more than one boulder or boulder grouping per 300 square feet of channel. Boulders will be placed only downstream of any bridge structure. Riparian plantings will be conducted in accordance with the State of Connecticut Department of Energy and Environmental Protection's Non-Native Plant Species Policy. Temporary floodplain impacts for construction necessary to perform the work shall be allowed given provisions for stabilizing and restoring the access way are provided.

- 11. Surveying and Testing:** This item includes activities such as field survey, excavation of utility test pits, physical testing or the installation of monitoring devices to determine surface or subsurface engineering site data.

Conventional land survey activities will be accomplished in accordance with standard ConnDOT practice. Minor manual clearing of brush or undergrowth will be allowed to establish lines of sight necessary for geodetic survey. Soil borings using mechanical drill rigs will be allowed provided that no fill is placed for access to the drilling site. The installation or use of temporary or permanent monitoring devices to record or provide real time data relative to bridges, culverts, streams or subsurface characteristics will be allowed providing that there is no resultant permanent reduction in hydraulic capacity at a waterway crossing site. Any devices shall be approved by the Hydraulics and Drainage Unit of ConnDOT. The excavation of utility test pits using mechanical excavators is acceptable providing that there is no change in the final ground elevation at the test pit site.

- 12. Bicycle / Pedestrian, Multi Use Trails and Enhancement Projects:** Construction of Bicycle/Pedestrian pathways, multi-modal trails, Rails to Trails and enhancement projects in a regulated floodplain. These projects may include any of the activities listed below, or a combination of these activities on the same project. The Project Engineer must indicate in their submission under this category, where each proposed approved activity will take place, along with a corresponding site number.

Overall, projects in this category must comply with all applicable requirements described in Category 1, "Minor Safety Improvements, Streetscape, and Transportation Facility Projects". Independent functionality must be evident in project termini, and I or the project must provide links between or to other existing trails. Proper containment and water handling must be included in the plans for activities involving work in water.

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- A. Rehabilitation or removal of existing structures in a floodplain or flood way such as piers, abutments, crib walls and retaining walls. No new structures are allowed in a floodway under this category.
 - B. Placement of retaining walls, crib walls or similar structure in the floodplain with the purpose of decreasing the overall fill in the floodplain. Elevated walkways, boardwalks and like structures will also be included under this category. This activity must not have an adverse effect on flood flow conveyance.
 - C. Construction of portions of the trail itself may be within a regulated floodway provided that the path or trail itself is constructed at grade. In these areas, only split rail fencing will be allowed.
 - D. Rehabilitation or re-use of an existing culvert or bridge structure to carry the trail where there is no decrease in the hydraulic opening. Work under this category may include a new deck, various concrete repairs, and placement of parapets and railing as long as they are an open type design.
 - E. Minor modifications to structures at the same location with minor realignments to better accommodate stream flows. This category allows for replacement or extension of abutments, wingwalls, endwalls, cutoff where there is no adverse effect to the floodway and floodplain.
 - F. Placement of new culvert on new location in the floodplain in order to capture drainage or convey a small watercourse which is in conformance with the restrictions set forth in Item #3 -Minor Stormwater Drainage Improvements Culverts deemed to be carrying a watercourse must be buried one foot and meet the ACOE openness ratio and are limited to an effective opening of 36".

The following practices shall be followed for **ALL** activities covered under this General Certification:

- Erosion and sedimentation controls shall be designed, installed and maintained in accordance with the [2002 Connecticut Guidelines for Soil Erosion and Sediment Control](#), and Best Management Practices as outlined in Section 1.10 of the *State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 816*, as revised by the latest supplements.
- Any temporary facilities or equipment requiring work in, or placement in a waterway, must be able to be removed in a timely manner from the site in case of a flood warning, except temporary structures that have been designed in accordance with the guidelines outlined in the [ConnDOT Drainage Manual](#) for Temporary Hydraulic Structures.
- Temporary facilities will allow for the passage of fish with minimal disturbance to the streambed.

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- Unconfined in-stream work will be limited to the period indicated in a sign-off from the DEEP Fisheries Division. This time frame will typically be June 1 to September 30th.
 - Any activities which may alter storm drainage facilities shall be required to provide stormwater treatment consistent with the [2004 Connecticut Stormwater Quality Manual](#).
 - A copy of any certification form that is required to be submitted to ConnDOT in order to satisfy authorization under any of the activity categories shall be submitted to DEEP prior to commencement of respective work activities.
 - Any activities which might trigger the need for a FEMA map change of any kind is not authorized under the General Certification.

When seeking Flood Management Certification under the general permit procedure, the town's engineer should put together a package of information including, but not limited to, the following:

- Project description with a statement of hydraulics and drainage involvement.
- Location plan.
- Design plans.
- Copy of flood map.
- Justification of why the request qualifies under FM General Certification.
- Available supporting reports, computations, hydraulic analyses, etc.

This package must be sent to the ConnDOT Project Engineer, who will forward it to the Hydraulics and Drainage Section for review and approval. Any questions regarding the general certification status should be addressed to the Project Engineer for the Local Bridge Program.

Below is the cover memo, which must accompany the application package. The justification section must be completed by the designer:

**STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION**

Flood Management General Certification

Project No.: «Project_No»

Description: «LocationFeature»

Town: «TownCity» «Town»

Date: March 2, 2015

m e m o r a n d u m

to: Mr. Michael E. Masayda
Trans. Principal Engineer
Hydraulics and Drainage
Bureau of Engineering and Construction

from: Transportation Principal Engineer
Bridge Consultant Design
Bureau of Engineering and Construction

Please review this request for Flood Management General Certification and indicate your concurrence below.

Certification (to be completed by designer)	
<i>I have read the Flood Management General Certification and the descriptions for the approved DOT minor activities. This project qualifies for the Flood Management General Certification under:</i>	
<input type="checkbox"/> Minor Safety Improvements and Streetscape Projects <input type="checkbox"/> Roadway Repaving, Maintenance & Underground Utilities <input type="checkbox"/> Minor Stormwater Drainage Improvements <input type="checkbox"/> Removal of Sediment or Debris from a Floodplain <input type="checkbox"/> Wetland Restoration Creation or Enhancement <input type="checkbox"/> Scour Repairs at Structures; (<i>Must acquire DEEP Fisheries Concurrence to be eligible</i>) <input type="checkbox"/> Guide Rail Installation <input type="checkbox"/> Deck and Superstructure Replacements <input type="checkbox"/> Minor Bridge Repairs and Access <input type="checkbox"/> Fisheries Enhancements <input type="checkbox"/> Surveying and Testing <input type="checkbox"/> Bicycle / Pedestrian, Multi Use Trails and Enhancement Projects	
<i>The following <u>required documentation</u> is attached in support of this certification:</i>	
<ul style="list-style-type: none"> • Project description • Location plan • Description of Floodplain involvement and how project qualifies for general certification • 8-1/2" by 11" excerpt copy of the FEMA Flood Insurance Rate Map (FIRM) and Floodway Boundary Map (if applicable) • Design plans, (dated _____) with FEMA floodplain and floodway boundaries plotted, cross sections and profiles, as necessary, that clearly depict the floodplain involvement • FEMA 100-year flood elevation plotted on elevation view (for structures) 	
Print Name	Title
Signature	Date

Concurrence (to be completed by Hydraulics and Drainage)	
Based on the documentation submitted, I hereby concur that the project qualifies for Flood Management General Certification.	
<i>If there are any changes to the proposed activities within the floodplain or floodway, the project must be re-submitted for review and approval.</i>	
Signature	Date

cc: James Fallon
Rev 02/12
Environmental Planning File
DEEP Flood Management Certification File
Hydraulics and Drainage File

4.3.3.3 – Stream Channel Encroachment Lines

Stream channel encroachment lines were previously established for about 270 linear miles of riverine floodplain throughout the State, but those lines are no longer in effect. However, if the DEEP Commissioner establishes new lines in the future, they must be taken into account. The old lines are shown on stream channel encroachment line maps, which are on file in the Town Clerk's office in the affected town. An index to the maps is available from DEEP.

This program, administered by DEEP's Bureau of Water Protections and Land Re-use's Inland Water Resources Division, regulates the placement of encroachments and obstructions riverward of stream channel encroachment lines, to lessen the hazards to life and property due to flooding. In making a decision on a stream channel encroachment line permit application, DEEP must consider the impact of proposed activities on the floodplain environment, including wildlife and fisheries habitats, and on flooding and the flood hazards to people and property posed by such activity.

In the event that the DEEP Commissioner establishes new stream channel encroachment lines, any person proposing to place an encroachment or obstruction riverward of such lines must obtain a permit, even if all the activity is above the applicable flood elevation. Activities which require a permit when conducted riverward of such lines include the removal or deposition of material, any alteration of the land or watercourse or construction of structures, filling, dredging, clearing, grubbing, grading, piping, culverting, channelizing, diverting, damming, dewatering, construction of structures, and any other activity that temporarily or permanently alters the character of the floodplain or watercourse. Additionally, major repair of structures that existed before the stream channel encroachment lines were established may require a permit. Note that in many cases, the requirement for an SCEL permit can be satisfied by one of DEEP's General Permits for construction activities. If an individual SCEL permit is required, the municipality must submit an application directly to DEEP.

4.3.3.4 – U.S. Army Corps of Engineer Permits

Any project that impacts a federally regulated waterway or wetlands (which are almost all waterways) will require a permit from the U.S. Army Corps of Engineers (USACOE or ACOE). It is the responsibility of the municipality's designated agency or commission (for example, Inland Wetland or Conservation Commission) to pursue these permits and provide the necessary documentation to the USACOE. If a project may fall under Category 2 of the GP, or may need an individual ACOE permit, a request should be made through the ConnDOT Project Manager to be placed on the monthly DOT/DEEP/ACOE Project Managers' Meeting.

4.3.3.4.1 – General Permit

The New England District of the U.S. Army Corps of Engineers issued a new general permit (GP) in May 2011 to expedite review of minimal impact work in coastal and inland waters and wetlands within the State of Connecticut and lands located within the exterior boundaries of an Indian reservation. Most Local Bridge Program projects will have impacts small enough that they will be covered under the Connecticut General Permit. Please note that any project with impacts to vegetated tidal wetlands will automatically require an individual ACOE permit, regardless of the acreage disturbed. Be aware that *there are significant changes*

from the prior PGP. If there are questions about eligibility, a request should be made to have the project reviewed at the monthly Project Managers Meeting.

Please refer to the Local Bridge Program [Documents and Forms](#) webpage for copies of the documents and more information.

4.4 – SUPPLEMENTAL APPLICATION

Once the final design, rights-of-way acquisition, utility coordination, permits, and public hearing are completed, the municipality is ready to submit the Supplemental Application. The Supplemental Application must be filed within one year from the Commitment to Fund date, unless an extension of that deadline is requested and approved. To request an extension, the municipal official overseeing the project must send the latest version of the Time Extension for Supplemental Application form, which can be retrieved from www.ct.gov/dot/localbridge, to the Project Engineer for the Local Bridge Program. This contains fields for providing the reason(s) for the project delay, revised project schedule, and revised cost estimates. The municipality must demonstrate that it is actively pursuing the project in order to justify an extension.

The Supplemental Application packet will be submitted with the latest version of the Supplemental Application form supplied by the Department, which can be retrieved from: www.ct.gov/dot/localbridge, without any alterations, and must include the final plans, specifications, engineer's final detailed cost estimates, and others items listed in the form's checklist, and certifications including the following:

- By an authorized municipal official that the project has been designed in accordance with the program requirements. The municipality has the responsibility for approving any digressions from AASHTO or Highway Design Manual guidelines for rehabilitation projects funded solely under the State Local Bridge Program. If there are deviations from accepted standards, the municipality must certify that the deviations do not reduce public safety, and must accept any liability which arises from deviation from the accepted standards.
- By an authorized municipal official that all necessary permits have been acquired and will be complied with.
- By a professional engineer licensed in Connecticut that the design conforms to the minimum design loading, design life, AASHTO, Highway Design Manual, and Drainage Manual requirements. If there are deviations from accepted standards, the designer must certify that the deviations have been authorized by the municipality and do not reduce public safety, and must accept any liability which arises from deviation from the accepted standards.
- By an appraiser that all property values assessed on the project are fair and reasonable. If no property was acquired for the project, a letter to this effect should be submitted.
- By an authorized municipal official, that property acquisition is complete or will be complete at the time construction starts.

- By an authorized municipal official that public utility companies are aware of the project and prepared to relocate or adjust facilities as necessary to construct the project, and that estimates for the relocation or adjustment of municipally owned utilities are realistic for the project need.

On projects that are not federally funded, the Department requires plans and specifications to be submitted primarily for data collection purposes, load rating, and for planning inspections, so that the official files maintained on each bridge can be kept up to date. The Department does not routinely review or approve any plans or specifications (except for those projects that are federally funded) - that responsibility lies solely with the municipality. The Department may, however, offer comments on the proposed design, as workload permits. The plans should show structural members in sufficient detail to enable load-rating calculations to be performed (if structural details are left to a vendor, shop drawings must be submitted as well).

4.5 – AGREEMENTS

All payments to the municipality by the State must be made in accordance with a formal State/Municipal agreement. This agreement is a standard form agreement, approved by the Attorney General, which the municipality will not be allowed to add, delete, substitute, or modify any portion of. For Federally funded projects, there will be separate agreements for each phase of the project (design, rights-of-way, and construction). For State funded projects, there will normally be only one agreement covering all phases of the project. If the scope of the project changes significantly after the execution of the original agreement, a supplemental agreement may be executed.

Upon review and acceptance of the Supplemental Application, the Department will prepare and forward a State/municipal agreement to the municipality for signatures. The grant amount in the agreement is based on the data submitted as part of the Supplemental Application. Two copies of the agreement will be prepared by the Local Bridge Program office, and forwarded to the municipality along with instructions for signature by the municipal official. Once signed by the municipality, both copies of the agreements, along with attachments, must be returned to the Department to be signed by the State. When the agreements are fully executed, one copy of the agreement will be returned to the municipality.

Upon receipt of bids, the municipality will certify the bids, select the successful bidder, and submit certified copies of the bids to DOT. In the event that the municipality selects a bidder other than the “low bidder”, documentation substantiating the selection should be submitted.

Once all administrative requirements are complete and all documents required by the agreement have been submitted, the Attorney General’s office will be notified that the project is ready for “closing”. The closing involves the submission of the Signature and No Litigation Certificate and the Opinion of Municipal Counsel by the municipality and its attorney for review by the Attorney General’s Office. Upon conclusion of the closing, the Attorney General’s office will notify the Local Bridge Program office that the terms of the agreement have been met and the escrow released. The grant funds will then be transferred into the municipality’s account by

ACH or a check; the Local Bridge Program office will prepare the documents necessary to transfer the funds. The municipality should ensure that the Department's Accounts Payable unit has the correct receiving account information on file in the CORE-CT system.

4.6 – PROJECT COMPLETION

When construction is nearly completed, the Town should notify the Department as to the date of the semi-final inspection, so that representatives of ConnDOT can be present for the inspection. Once construction has been finished and the final inspection completed, the municipality must certify to the Department that the project has been completed, within 90 days of the completion of construction. It is important that the project be certified as complete as soon as possible after construction is completed, since the certification date will be used to determine future funding eligibility. The municipality should also submit any shop drawings and a set of “as-built” plans to the Department, to be included in the Bridge Safety & Evaluation Section's file on each bridge. The shop drawings and as-built plans will be used to plan any future inspections, and for load rating purposes.

The municipality must obtain an audit of the total final cost of the project by a Certified Public Accountant (either a project-specific audit, or more typically, as part of the annual municipal single audit) and forward the audit and supplemental schedules to the Department for the purpose of adjusting the final grant amount and closing out the project. Failure to provide an audit is an event of default under the project agreement, and may result in the Department requesting the return of the grant, and the municipality becoming ineligible for future financial assistance.

The contents of the audit report must be in accordance with government auditing standards issued by the Comptroller General of the United States, and the requirements as outlined in the OMB Circular A-133, “Audits of States, Local Governments, and Non-Profit Organizations” and the State Single Audit Act, as applicable.

If the audit will be performed as part of the municipality's annual single audit, the auditor should be given notice that the municipality has a Local Bridge Program project. The auditor can then identify and separate out all expenditures directly related to specific bridge projects, in supplementary schedules with program/grant information such as the bridge number and location, account numbers, ConnDOT project number, project phase (design, construction, etc.), and expenditures broken down by phase (see Section [3.1.2 – Eligible Costs](#) for State funded projects or Section [3.3.1 – HBP/Off-System Bridge STP](#) for Federal funded projects for a list of expenditures which can be included in each phase). A sample supplemental schedule will be attached to the Project Agreement. The sum of project expenditures should agree, in total, to the program/grant expenditures as shown in the annual audit report. Any costs that are not supported by the audit report and supplemental schedules will not be eligible for reimbursement. The supplemental schedule's most current version can be retrieved from the Program's website at www.ct.gov/dot/localbridge (a sample is shown below).

SUPPLEMENTARY PROGRAM FINANCIAL INFORMATION

FEDERAL PROJECT No.¹ _____

CONNDOT PROJECT No.: _____

BRIDGE No.: _____

LOCATION: _____

PERIOD COVERED: _____ TO _____

PROGRAM/GRANT IDENTIFICATION No. ²	PHASE ³	CURRENT PERIOD EXPENDITURES, BY PHASE ⁴	TOTAL EXPENDITURES TO DATE, BY PHASE ⁴
	PE		
	ROW		
	Municipal Utility		
	Construction		
	CE/Incidentals		
	Other:		

¹ For projects with Federal funding.

² The number used by the municipality to identify the account in financial records, such as the State/Federal Grant ID number, account number, or capital project number.

³ Preliminary Engineering (PE), Rights of Way (ROW), Municipally-Owned Utilities (UTILITY), Construction (CONST), Construction Engineering/Inspection/Testing/Incidentals (CE), Other – provide explanation (OTHER). See “Eligible Costs” in the Program Manual for more information.

⁴ The sum of the project expenditures should agree, in total, to the program/grant expenditures.

The municipality must retain all records for at least seven years after issuance of the project's certification of acceptance, or three years after receipt of the final payment, whichever is later, provided that there is no pending litigation. These records include the contract, contractor's monthly and final estimates and invoices, construction orders, correspondence, field books, computations, contractor's payrolls, EEO/AA records/reports, and any other project related records. **The audited Municipality must obtain written approval from the Connecticut Department of Transportation's Local Bridge Program prior to destruction of any records and/or documents** pertinent to the project. This requirement is *in addition to* any requirements of the Freedom of Information Act or the Connecticut State Library's Office of the Public Records Administrator.

Upon review by the Department's External Audits staff, the municipality will be notified by letter of its eligibility for additional grant funds, or that reimbursement is due the State. If a balance is due the municipality, the Project Engineer for the Local Bridge Program will make arrangements to have the supplemental grant transferred to the municipality's account. If a balance is due the State, the Department's Accounts Receivable unit will send an invoice to the municipality.

CHAPTER 5: GUIDELINES FOR OBTAINING FUNDS

The following guidelines outline, in typical order, those steps that municipalities must follow to obtain funding under the Local Bridge Program. These guidelines are general, and are intended only to give an overview of the process. ConnDOT will give additional guidance to the municipality as the project progresses. Of the steps outlined below, please note the additional additional procedures that must be followed when a bridge is owned or maintained currently by more than one municipality.

ALL APPLYING MUNICIPALITIES SHOULD REVIEW THESE PROCEDURES WITH THEIR MUNICIPAL ATTORNEYS AND BOND COUNSEL, WHEN APPROPRIATE, IN ORDER TO PLAN FOR THEIR LOCAL BRIDGE PROJECTS. NOTE THAT THE MUNICIPALITY MUST APPROPRIATE MONIES FOR THE FULL AMOUNT OF THE LOCAL BRIDGE PROJECT. WHEN A LOCAL BRIDGE PROJECT IS TO BE FINANCED BY BORROWING, THE MUNICIPALITY MUST AUTHORIZE BONDS FOR THE MUNICIPALITY'S SHARE OF THE TOTAL COSTS.

5.1 – PROCEDURES FOR STATE FUNDED PROJECTS

- 1) Municipality submits a Preliminary Application form retrieved, which can be retrieved from www.ct.gov/dot/localbridge, to the State by the stipulated deadline. A sample [Preliminary Application](#) is included at the end of this manual and instructions on how to properly fill out the form are included in Section [5.3 – Instructions for Completing the Preliminary Application](#).

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- 2) ConnDOT reviews the Preliminary Application. If accepted, the State issues a Commitment to Fund letter to the municipality on or about July 1 of the same year that the application is filed. If rejected, the municipality may reapply in any future fiscal year.
 - 3) Municipal official signs and returns the Commitment to Fund letter to the State within 30 days. Once the Commitment to Fund has been issued, the project may proceed with construction as soon as it is ready.
 - 4) The municipality submits a packet, by email, to the Program's liaison engineer containing an Environmental Review Request form and a Permit Need Determination form and supporting documents (as listed on the forms). The forms can be retrieved from the program's website at www.ct.gov/dot/localbridge. These forms should be submitted as soon as a basic scope has been defined for the project, including possible disturbed/impacted areas.
 - 5) The municipality's engineer prepares plans and specifications for the project. If preliminary plans and specifications were not ready at the time of preliminary application, they should be furnished to the Department when the design is 30% complete. ConnDOT does not "approve" these plans, but may offer suggestions.
 - 6) Municipality holds a public informational meeting about the project, and completes the project design.
 - 7) When the final design is complete, the municipality submits the latest version of the Supplemental Application form, which can be retrieved from www.ct.gov/dot/localbridge, within one year of the Commitment to Fund letter, unless a time extension has been granted, along with the following:
 - (a) Final plans (half-scale is preferred, along with a PDF copy) and specifications certified by a Connecticut Professional Engineer, including any design exceptions;
 - (b) Final estimates;
 - (c) Load Rating documentation;
 - (d) Hydraulic and scour analysis;
 - (d) Proposed project schedule;
 - (e) Municipal certifications, such as:
 - Conformance with design requirements;
 - Acquisition of all permits;
 - Completion of property acquisition;
 - Ownership of or responsibility for bridge;
 - Coordination for relocation of public utilities;
 - (f) Appraiser's certificate as to property acquired, if applicable;
 - (g) Cost data and amount of grant requested;
 - (h) A resolution from the municipality's legislative body authorizing the municipal official to submit the Supplemental Application.
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- 8) ConnDOT reviews supplemental application package. When complete, ConnDOT prepares and delivers two copies of a Grant Agreement to the municipality.
 - 9) Municipal legislative body votes to approve Local Bridge Project and to authorize the project financing in accordance with statutory and charter requirements as follows:
 - (a) Authorizes municipal official to execute grant agreement;
 - (b) Appropriates funds to meet total estimated cost of bridge project;
 - (c) Authorizes bonds, including supplemental project obligations, if necessary.
 - 10) Authorized Municipal official executes (signs and seals) and returns to the State two copies of the Project Agreement (with attachments), the resolution authorizing the municipal official to execute the Agreement, and a certified copy of authorizing proceedings.
 - 11) ConnDOT reviews the Agreement package and authorizing proceedings. State then creates a purchase order, executes the Project Agreement, and returns one original copy to the municipality. (Note: the purchase order is not sent to the municipality.)
 - 12) Within 180 days from the date of the Project Agreement (unless an extension is granted), the Municipality must submit the following to the State:
 - (a) Evidence that the Municipality and the contractor have entered into a legally binding construction contract.
 - (b) Evidence that the Municipality has funds available to pay its share of the total project costs;
 - (c) An inquiry as to whether or not the State has funds available to finance, in part, any increase in cost should the total project cost exceed the total project cost stated in the Supplemental Application.
 - 13) Once all the above requirements have been met, ConnDOT notifies the municipality that the file is ready for closing, and instructs the municipality to have their legal counsel complete and return the closing documents.
 - 14) Counsel to the municipality prepares the following according to forms provided as exhibits to the Grant Agreement, as of the closing date, and returns them to the Project Engineer for the Local Bridge Program:
 - (a) Opinion of municipal attorney;
 - (b) Signature and no litigation certificate.
 - 15) Upon satisfaction of above items, the Assistant Attorney General closes the grant. Upon completion of the closing, the funds are released to municipality by ACH transfer or check.
 - 16) The municipality notifies ConnDOT when the project has started construction.
 - 17) At the close of every fiscal year during which expenditures were made on the project, the municipality forwards a copy of its annual single audit, along with supplemental schedules,
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to ConnDOT. The State Grant ID number is usually 21010-DOT57000-42311 (see OPM's [Single Audit Compliance Supplement](#) for more information).

- 18) When the project is deemed to be nearly substantially complete, the Town notifies ConnDOT of the date of the semi-final inspection.
- 19) Within 90 days of the completion of construction, the municipality must certify to ConnDOT that the project has been completed in accordance with the submitted plans and specifications.
- 20) After the final payment to the contractor has been made, the municipality forwards a final supplemental schedule with the total costs of the project to ConnDOT to adjust the grant amount.
- 21) As soon as possible after construction is complete, the municipality (or its Engineer) submits as-built plans to the Local Bridge Program office.
- 22) ConnDOT reviews the project audit, and notifies the municipality of the findings. If the project costs exceed those in the original agreement, the Department will send a supplemental grant to the municipality, provided that funding is available. If the project costs are less than those in the original agreement, the Department will invoice the municipality for the balance due.
- 23) For any bridge owned or maintained by more than one municipality, the following additional procedures govern funding under the Local Bridge Program:
 - (a) One municipality (the “lead” or “managing” municipality) may assume responsibility under the Local Bridge Program for construction of the entire bridge project under an interlocal agreement approved by its legislative body entered into with another municipality whose legislative body must also approve such agreement. Upon entering into such interlocal agreement, the lead municipality may file a preliminary application for the total project costs, and may be awarded a grant based upon the highest grant percentage of the participating municipalities as applied to the total project costs;
 - (b) In the absence of an interlocal agreement allocating responsibility for maintenance, each municipality may apply for a grant based upon its grant percentage applied to its share of the total project costs as determined in accordance with C.G.S. Section 13a-100;
 - (c) Under either of the above scenarios, evidence that each municipality is legally bound to complete its respective portion of the project must be delivered to the State before funds may be disbursed.
 - (d) If one municipality (the “lead” or “managing” municipality) has assumed full responsibility for maintenance of a bridge under a valid interlocal agreement approved by the legislative bodies of all participating municipalities, the lead

municipality may file a preliminary application for the total project costs, and may be awarded a grant based upon its grant percentage as applied to the total project costs.

5.2 – PROCEDURES FOR FEDERALLY FUNDED PROJECTS

- 1) Municipality submits a Preliminary Application (see Appendix 6) to the State.
- 2) ConnDOT reviews the Preliminary Application. If accepted, the State issues a Commitment to Fund to the municipality.
- 3) Municipal official signs and returns the Commitment to Fund letter to the State within 30 days.
- 4) Following acceptance of a project, a concept meeting is scheduled by ConnDOT, between representatives of ConnDOT and the municipality, to review the program requirements and to discuss the steps required to move forward with the project following Federal and State guidelines. At this point, the municipality should begin to inform the public of the project by publishing a press release, and by sending notification letters to abutting property owners and other interested parties.
- 5) An agreement between ConnDOT and the municipality for the design phase of the project is prepared and forwarded to the municipality for signature.
- 6) Municipal legislative body votes to approve Local Bridge Project, and to authorize the financing in accordance with statutory and charter requirements, as follows:
 - (a) Authorizes municipal official to execute project agreement;
 - (b) Appropriates funds to meet total estimated cost of bridge project;
- 7) Authorized Municipal official executes (signs and seals) and returns two copies of the Project Agreement (with attachments) together with the resolution authorizing the appropriate municipal official to execute the agreement, and certified copies of authorizing proceedings to the State.
- 8) The following pre-design activities are initiated by ConnDOT:
 - (a) Environmental Review;
 - (b) State Historic Preservation Office (SHPO) Review;
 - (c) Natural Resources Review;
 - (d) Preliminary Fisheries Review and coordination;
 - (e) Hazardous/Contaminated Materials Screening.

5.2.1 – Consultant Selection

- 1) After the concept meeting, the municipality initiates the selection of a designer. Municipalities may undertake the design phase themselves if they have appropriate staff, or may hire a consulting engineer. If a consultant is to be engaged, the Qualifications Based Selection (QBS) must be used unless there is no chance that the engineering fees will exceed
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\$125,000. The QBS process is intended to promote open competition by advertising, ranking, selecting and negotiating contracts based on demonstrated competence and qualifications for the type of engineering and design-related services being procured. Costs and locality preferences shall not be part of the selection process. The Municipality shall solicit, in conformance with federal law and regulations, which include but may not be limited to 40 USC1101-1104 ('Brooks Act'), 23USC112, and 23 CFR 172, the qualifications of prospective consultants to perform services on a Municipally-administered Project, at a minimum, in one of the following ways:

- (a) Publication: The Municipality shall prepare a legal notice by customizing only the indicated fields on the supplied form and shall insert the Legal Notice in at least one (1) newspaper having substantial Connecticut circulation and at least one (1) trade publication, professional magazine or newsletter. When possible, the Legal Notice shall also be posted on the Municipality's website (if the municipality does not have an active website, the notice can also be posted on the Local Bridge Program Web page). The Municipality must obtain prior approval from ConnDOT for any other modifications to the standard format Legal Notice.
- (b) Direct Notification: The Municipality shall prepare a notification letter by customizing only the indicated fields on the form attached hereto (Notification Letter) and shall mail the Notification Letter to consulting firms prequalified by the Department, as provided on a list available from the Department's website at www.ct.gov/dot. The Municipality must mail the Notification Letter to ALL prequalified consultant firms listed under the category of services most appropriate for the Project. The Municipality must obtain prior approval from ConnDOT for any other modifications to the standard format Notification Letter.

The Municipality shall obtain approval from the Department on their selected method of advertisement prior to advertising. The deadline for submitting RFQs must be at least 30 days after the date of publication, or the postmark date of the Notification Letter, as applicable. This deadline should be noted in the Legal Notice or the Notification Letter. Prior to publishing the Legal Notice or mailing the Notification Letter, the Municipality must obtain approval of that document from the Department.

Each Project must be reviewed by the Department's Screening Committee to assign the appropriate Disadvantaged Business Enterprise (DBE) goal, Small Business Enterprise (SBE) goal or Small Business Participation Pilot Program (SBPPP) goal. The Municipality shall include the goal assigned for the Project in the Legal Notice or the Notification Letters, as applicable.

- 2) The municipality must establish a Consultant Selection Committee (Committee) consisting of three (3) to four (4) municipal officials. One (1) member of the Committee shall be the Town Engineer, Director of Public Works or a municipal official with considerable engineering or other applicable experience possessing substantial knowledge about the project. The Chairman of the Committee shall be the individual who would sign the municipal/State and municipal/consultant agreements on behalf of the municipality (normally the chief official). The names and titles of Panel members shall be provided to the Department for approval prior to the first official meeting of the Panel.
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- 3) The Committee shall give fair and impartial consideration to all responses received within the stipulated time period from prospective consultants. Firms that did not make a submission in accordance with the legal notice may be disqualified. Consultants must be registered with the Secretary of State and the State Board of Examiners for Professional Engineers and Land Surveyors, and any other applicable State of Connecticut licensing board. Each member shall use the approved consultant selection rating form to independently rate all firms that the Committee has determined to merit further consideration. The total score of each Committee member from the consultant selection rating form should be totaled for each firm under consideration.
 - 4) The five firms to which the Committee have given the highest ratings (the “short list”) shall be requested to attend a personal interview with the Committee. The Committee shall interview and rate the five (5) firms utilizing the approved Consultant Rating Form. If five (5) or fewer firms respond, all of the firms must be interviewed. Each Committee member shall independently evaluate and rate each consulting firm during or immediately following the interview. Following the completion of the interviews, the Committee may discuss their conclusions and adjustments may be made by any member based on these discussions. The Committee may also agree to secure additional information, based on comments from the interview, prior to finalizing their ratings of the most qualified firms.
 - 5) Following the completion of the interviews, the Committee shall proceed to furnish a list of the most qualified consultant firms to the Chairman. The Chairman shall make the final selection from the list of most qualified firms submitted by the Committee. In the process of making the final selection of the most qualified consultant for a specific assignment, the Chairman shall be guided by the evaluation criteria set forth in the rating form. The Chairman may request additional information from other sources or individuals that he may deem appropriate to assist him in the final selection process. All additional information requested and received shall be documented by the Chairman. Should the Chairman select a firm other than the top rated firm following the interviews, the rationale for this selection shall be fully documented and should not violate the QBS requirements.
 - 6) Once the Municipality has made its final selection, all of the information reviewed by the Municipality for the selected firm shall be submitted to the Department for its review. The Municipality must receive written approval of its final selection from the Department prior to notifying the selected firm, the scheduling of the assignment meeting and the commencement of fee negotiations with respect to the Project.
 - 7) After ConnDOT approves the selection of the consultant, the municipality shall prepare a written notification to the selected firm advising that the firm has been selected. The Municipality shall also prepare written notification to all other interviewed firms that the firm was not selected, but that it may be contacted should the fee negotiations with the selected firm not be successfully completed.
 - 8) After notification of the consultant, an assignment meeting between representatives of the municipality, the selected consultant, and ConnDOT is scheduled by the municipality or the CLE. The purpose of the assignment meeting is to discuss the project issues, scope of services to be provided by the consultant, schedule, and fee proposal format. The consultant
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is notified to submit information to ConnDOT to review and establish a current audited BF&O rate.

- 9) Following the assignment meeting, the selected firm shall draft a detailed scope of services and list of line item tasks which may be used as the basis for fee negotiations. The selected firm shall submit these drafted items to the Municipality for review and approval. The Municipality shall submit the proposed final scope of services to the Department for approval. Upon approval, both the Municipality and the selected firm shall then concurrently and independently prepare man-hour/fee proposals and submit them to the Negotiations Committee (see below).

5.2.1.1 – Negotiations

- 1) The Municipality shall establish a Negotiations Committee (Committee) to perform the fee negotiations phase. The Committee should have no more than four (4) members, including at least two (2) individuals from the Consultant Selection Panel. One (1) member of the Committee shall be the Town/City Engineer, the Director of Public Works, or an individual with considerable engineering or other applicable experience that possesses substantial knowledge about the Project.
 - 2) Once the work scope is agreed to by the Municipality, the consultant, and ConnDOT, the consultant prepares a fee proposal for submission to the municipality. A certified payroll list is submitted to the municipality and ConnDOT for use in calculating the lump sum fee. At the municipality's request, ConnDOT will prepare an independent man-hour counterproposal estimate for use by the municipality as a guide during negotiations. The CLE is not a party to the negotiations. It is imperative that fee negotiations be a fair and open competitive process. This means that if the Committee is unable to successfully negotiate a contract with the selected firm at a price that the Committee determines to be fair, competitive and reasonable, negotiations with that firm shall, with prior Department approval, be formally terminated. The Municipality shall then select the next highest ranked firm from the interview process, and submit all of that firm's information to the Department for review and approval, and the procedure set forth in Section 3 and this Section 4 shall be followed. The Negotiations Committee shall comply with the requirements of Agreement Bulletin 91-3, Pre-Award Auditing of Consultant.
 - 3) Upon completion of negotiations, the municipality forwards a request for approval of the negotiated lump sum fee to ConnDOT along with the following:
 - (a) Consultant's fee proposal
 - (b) Municipality's fee proposal
 - (c) Negotiated fee
 - 4) ConnDOT reviews the fee, and if acceptable, prepares an approval letter. Upon receipt of the Department's written approval of the negotiated fee, the municipality shall prepare a written notification to those consultants that were not selected.
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- 5) A draft agreement between the municipality and the consultant is prepared by ConnDOT and is forwarded to the parties for signature. The Municipality must receive written notification of the Department's approval of any Consultant Agreement, and any supplemental agreements thereto, prior to signature by any party. The Consultant Agreement must be fully executed before the commencement of any activities on the Project. A supplemental agreement, and/or supplemental grant authorizing document (GAD), as applicable, between the Municipality and the State may be required if the actual negotiated fee exceeds the amount of reimbursement indicated in the original State/Municipal agreement and the State approves the increase in fees. All costs incurred by the Municipality for advertising, consultant selection and fee negotiations are non-reimbursable under the agreement, and/or GAD, as applicable, between the State and the Municipality. All Consultant Agreements are subject to the Department's contracting requirements, including but not limited to insurance and audit requirements, and, if federal funds are being paid or reimbursed to the Municipality for the Project, all applicable federal contracting requirements. Four (4) copies of the fully executed agreement are forwarded to ConnDOT for distribution, along with a copy of the Notice to Proceed issued by the municipality to the consultant.

5.2.1.2 – Contract Monitoring

The "[Consultant Administration and Project Development Manual](#)," Connecticut Department of Transportation (September 2008), as may be revised, outlines the procedures and contract monitoring provisions that are employed for Department-administered projects and that the Municipality must likewise employ for its Consultant Agreements entered into for the Projects it administers.

Consultant performance evaluations should be conducted by the Municipality on a semi-annual basis. The rating sheets should be completed by the Municipality and submitted to the Department every January and July, provided that the Consultant was actively working on a Project during the rating period.

The responsibility for settling all contractual and administrative issues with the Consultant rests with the Municipality, not the Department, by agreement.

A final consultant performance evaluation for the Preliminary Engineering phase should be prepared by an appropriate Municipal official when the contract is advertised for construction. A final consultant performance evaluation for the Construction Inspection phase should be prepared by an appropriate Municipal official when construction is completed. These ratings will be submitted to the Department and a copy will be placed in the Department's project file.

5.2.2 – Design Tasks

Following is a partial list of references, which may be used during the design phase:

- 1) [Consultant Administration and Project Development Manual](#) (CE Manual)
 - 2) [Standard Specifications for Roads, Bridges, and Incidental Construction – Form 816 & Supplemental Specifications](#)
 - 3) [Guidelines for Highway Design](#)
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- 4) [Location Survey Manual](#)
 - 5) [Specifications for Checking Photogrammetric Mapping](#)
 - 6) [Specifications for Aerial Photography & Photogrammetric Mapping](#)
 - 7) [Policies and Procedures for Property Maps](#)
 - 8) Guide for Preparation for 13a-57 Plans
 - 9) [Bridge Design Manual](#)
 - 10) Bridge Design Standard Practices
 - 11) [Drainage Manual](#)
 - 12) Bridge Scour Analysis – Technical Approach
 - 13) Water Resources Coordination and Permit Processing Manual
 - 14) On-Site Mitigation for Construction Activities
 - 15) [Geotechnical Engineering Manual](#)
 - 16) Traffic Items
 - (a) [Manual of Traffic Control Signal Design](#)
 - (b) Catalogue of Signs
 - (c) Guide MP&T Special Provision and Traffic Control Plans
 - 17) Utility Mailing List
 - 18) [Policy on the Accommodation of Utilities on Highway Rights of Way](#)
 - 19) Standards
 - (a) Standard Roadway Drawings & List of Road Standards
 - (b) Standard Traffic Drawings
 - 20) Design Aids (Factors for Estimating Quantities)
 - 21) Bid Description Master File
 - 22) Weighted Unit Prices
 - 23) Product Use Status Lists
 - 24) Special Provisions and Guides
 - (a) Index of Recurring Special Provisions and Index of Guide Special Provisions
 - (b) Index of “Non Structural” Design Directives and Recurring Special Provisions
 - 25) CADD Manual
 - 26) MicroStation file package for ConnDOT projects
 - 27) Design/Constructability Review Guidelines
 - 28) [2002 Connecticut Guidelines for Soil Erosion and Sediment Control](#)
 - 29) [2004 Connecticut Stormwater Quality Manual](#)

Following is an outline of design stage activities on a typical Federal Local Bridge Program project:

5.2.2.1 – Survey

- 1) The consultant performs the topographic field survey and delineation of wetland boundaries (state and federal).

- 2) A title plan Mylar is prepared by the consultant from the topographic field survey. In addition, property lines, street lines, and property owner names and addresses are shown. A survey or construction base line should also be shown for reference.
- 3) A Schedule of Property Owners is prepared by the consultant to indicate the probable properties that are anticipated to be directly impacted by the project.
- 4) The ConnDOT Office of Rights-of-Way, if requested by the municipality, undertakes the title search based upon the information contained on the title plan Mylar and the Schedule of Property Owners.
- 5) Following acceptance of the preliminary design, if rights-of-way are required, the consultant prepares individual property taking maps. (See Item #1 under Final Design.) For further information, refer to the manual entitled, “Rights-of-Way Acquisitions, A Procedure Guide for Design/Rights-of-Way Coordination for the Federal Local Bridge Program”.

5.2.2.2 – Preliminary Engineering

- 1) Hydrology is developed by the consultant for use in the hydraulics analyses. The calculated flows are compared to previously published data (e.g., FEMA and S.C.E.L. studies).
- 2) Hydraulics are analyzed for the project by the consultant for the 2 year, 10 year, 50 year, 100 year and 500 year storms. On designs that convey watercourses greater than 1 square mile, the engineer performing the analysis must be approved by ConnDOT on a project-by-project basis. The procedure for Department approval is outlined in the CE Manual. Approval requests for previously qualified engineers to work on other State projects will not require the resubmission of a resume. However, an approval request for the current project together with a copy of the Department’s prior approval letter and an updated list of hydraulic designs performed by the candidate is required.
- 3) A scour analysis is performed by the consultant to determine the contraction and local scour depths, and to recommend scour countermeasures. Below is the Department’s policy concerning the need and nature of bridge scour evaluations for new and rehabilitated bridges. Compliance with this policy is mandatory for projects with Federal funding, and is strongly encouraged for projects receiving State funding.

Scour Evaluation Studies

Department of Transportation design practice states that substructures for bridges over waterways shall be designed to safely support the structure subjected to the design scour. ***All bridge scour evaluations shall be conducted in conformance with the procedures contained within the FHWA document entitled “Scour at Bridges” (HEC-18) and the Department’s Drainage Manual.***

Bridges over water must be classified into one of three general categories: Low Risk (NBIS Item 113 Rating of 8 or 9), Scour Susceptible (NBIS Item 113 Rating of 4, 5 or 7¹) or Scour Critical (NBIS Item 113 Rating of 3 or below). Following is an explanation of the categories of scour reports:

- *Detailed (Level II) Bridge Scour Evaluations and Re-evaluation Reports* – These are comprehensive studies accomplished in conformance with the requirements of HEC-18 and the Department’s Drainage Manual.
- *Comparative Scour Evaluations* – These studies are developed using the data obtained from Level II evaluations as a basis for determining the scour vulnerability of bridges having similar characteristics. Comparative evaluations are not as detailed as Level II reports; however, they do provide NBIS ratings and the associated general scour classification.
- *USGS Screening Reports* – These studies, conducted by the United States Geological Survey, were undertaken to identify low risk bridges and to prioritize the remaining structures for further study. They are less detailed than either Level II Reports or Comparative Evaluations.

New Bridges over Waterways

Level II Scour Evaluations shall be performed for all new bridges over waterways unless one or more of the following conditions apply:

- The bridge has been designed to span the entire floodplain for the superflood (500-year recurrence interval) or the critical design event if less than the 500 year flood.
- The structure foundations will be set directly on sound bedrock.
- The abutment footings will be protected with riprap designed in accordance with the methods outlined in the latest version of “Bridge Scour and Stream Instability Countermeasures” (HEC-23) or successor documents. It should be noted that the use of riprap as the sole means of providing scour protection for new bridges is discouraged and should be used only where it has been demonstrated that alternate, preferred means of designing bridges to be safe from scour-related failure are not feasible. (Refer to the ConnDOT Bridge Design Manual for preferred foundation types).

¹ *The NBIS Item 113 rating of 7 is reserved for bridge locations at which countermeasures have been installed to mitigate a previous scour problem. If the structure is a clear span bridge (no piers) and if the countermeasures have been designed in accordance with the procedures contained within HEC-23, the bridge may be considered "low risk." When countermeasures are placed adjacent to piers to correct a previous scour condition, the bridge is classified as "scour susceptible."*

Reconstructed or Rehabilitated Bridges

Generally, scour evaluations shall be performed for all bridges, which are to be reconstructed or rehabilitated where significant capital investment is involved and where the bridge has been classified as scour susceptible or scour critical. A significant capital investment correlates to the following improvement categories:

- Deck Replacement
- Superstructure Replacement or Widening
- Modification or Major Repairs to Substructure Units

Scour evaluations will not be required where structures to be reconstructed or rehabilitated have previously been classified as low risk under the Department's Bridge Scour Evaluation Program or for scour susceptible bridges which are not undergoing substructure modification and have had countermeasures installed following a Level II study.

Bridges that have been classified as scour susceptible or scour critical shall have hydrologic, hydraulic and scour evaluations performed which are sufficiently detailed to satisfy all applicable design and permitting requirements. If a detailed (Level II) scour evaluation has already been performed, the designer shall modify the results of this document as necessary to incorporate the "Modified Abutment Equations" contained within the Department's Drainage Manual. All necessary scour countermeasures for scour susceptible or scour critical bridges shall be incorporated into the overall project plans, as appropriate.

Scour Report Format

All bridge scour evaluation reports must be presented using the following format:

A. Table of Contents

B. Executive Summary – The following items must be included:

- (1) A brief description of the report findings as well as the engineer's recommendations regarding scour countermeasures or countermeasure design.
- (2) Executive Summary Table containing the items listed below:
 - (a) Recommend NBIS Item 113 Rating (Scour Critical Bridges)
 - (b) Recommend NBIS Item 71 Rating (Waterway Adequacy)
 - (c) Recommend NBIS Item 61 Rating (Channel and Channel Protection)
 - (d) Scour Risk Designation (Low Risk, Scour Susceptible or Scour Critical)
 - (e) Depth of Potential Scour (Provide the range of values computed for the various flood events analyzed.)
 - (f) Foundation Type (Known/Unknown)

(g) Recommendation(s) (Monitor, Install Countermeasures or Design Foundation for Predicted Scour)

(3) Other Relevant Data – Any additional information, which, in the consultant’s judgement, is valuable as a quick reference within this capsule summary, should be included in the narrative.

C. Background/Site Conditions – Provide a narrative description of the existing structure (if applicable), the stream reach adjoining the bridge site and any other relevant information obtained from data gathering efforts.

D. Hydrology and Hydraulics – Provide a description of the watershed properties, hydrologic methods used in the determination of peak flows and a tabulation of the maximum flow rates for the various return frequencies. At a minimum, the 10, 50, 100 and 500-year floods shall be presented for scour evaluations of existing bridges. With respect to new bridges, it is normally acceptable to evaluate only the 100 and 500-year floods unless a flood of lesser magnitude is the maximum scour-producing event.

With respect to the hydraulic analysis, a description of the program employed to develop design water surface profiles, flow depths and velocities should be provided. Further, methodologies used in the determination of the starting water surface elevations or boundary conditions must be described.

E. Scour Results – Describe the findings of the scour evaluation in narrative and tabular formats.

F. Structural Review/Foundation Stability Analysis – Provide a narrative description, as appropriate.

G. Conclusions and Recommendations – Summarize the findings of the Bridge Scour Evaluation and provide recommendations with respect to countermeasure or foundation design.

H. Report Graphics

(1) Location Plan

(2) Site Plan

(3) Scour Depth Cross Sections – For each flood event analyzed, provide a cross section (Elevation View) at the upstream face of the bridge on which the various components of total scour have been depicted for all substructure units. Where foundation information is available, the depth and configuration shall also be depicted. This section must be drawn to scale and must indicate the design flood elevation, the low chord elevation and the overtopping elevation.

I. Technical Appendices

(1) Field Evaluation Notes or Sketches (as appropriate)

(2) Photographs

(3) Hydrologic Computations

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- (4) Water Surface Profile Computations
 - (5) Scour Calculations
 - (6) Geotechnical Data – Riverbed and soil sample characteristics and/or subsurface investigation findings
 - (7) Countermeasure Design Computations and Sketches (as appropriate)
 - (8) Pile Stability Computations (as appropriate)
- 4) A geotechnical evaluation, including soil borings, is conducted by the consultant to determine the requirements for the bridge foundation design, and to determine the location and depths of existing footings for abutments to be left in place.
 - 5) A preliminary engineering report is prepared by the consultant to summarize the results of the above preliminary engineering studies, and in certain instances, to recommend a scope of work for either replacing or rehabilitating the structure. Included in the report should be a summary of the appropriate Connecticut Geometric Highway Design guideline parameters (required, existing and proposed) and justification for any items that require a design exception.
 - 6) A structure type study is prepared by the consultant, subsequent to the determination and approval of the scope of work, to evaluate a minimum of three alternate designs for replacing or rehabilitating the bridge structure.

5.2.2.3 – Preliminary Design

- 1) A design/rights-of-way meeting is conducted between the municipality, the consultant and ConnDOT to discuss the probable rights-of-way requirements for the project.
 - 2) ConnDOT prepares a rights-of-way agreement between ConnDOT and the municipality if the municipality requests that ConnDOT acquire any necessary rights-of-way for the project. The municipality may acquire rights-of-way on their own provided the acquisitions are made in accordance with the federal “Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970”. For those municipalities that choose to handle rights-of-way work themselves, a manual is available entitled “Rights-of-Way Acquisitions Manual, An Information Guide to ConnDOT Procedures”.
 - 3) Section 106 historic documentation, if required, is prepared by the consultant and sent to obtain approval by ConnDOT, the State Historic Preservation Office, FHWA and the Advisory Council on Historic Preservation.
 - 4) Archaeological resources investigations are conducted by a specialist contracted by ConnDOT.
 - 5) A programmatic Section 4(f) evaluation (if required) is prepared by the consultant and forwarded to ConnDOT for further processing.
 - 6) A Section 6(f) evaluation (if required) is coordinated by ConnDOT.
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- 7) The consultant submits a 30% complete design plan package to ConnDOT for review and approval prior to the scheduling of a public information meeting.
- 8) Upon approval by ConnDOT of the 30% design plans, the municipality schedules a public information meeting to be conducted by the consultant and the municipality.
- 9) Following the public information meeting, the ConnDOT prepares the necessary request for a waiver of the design public hearing requirement.
- 10) A categorical exclusion request memorandum is prepared by ConnDOT and forwarded to FHWA for approval.
- 11) If any of the appropriate Connecticut Geometric Highway Design and/or AASHTO design guidelines (as applicable) cannot be achieved with the proposed design, a request for a design exception is prepared by the consultant with assistance provided by ConnDOT. The design exception request must be signed by the appropriate municipal official.
- 12) A request for design approval is prepared by the ConnDOT using information supplied by the consultant, and the municipality requests permission from ConnDOT to proceed to final design.

5.2.2.4 – Regulatory Approvals

The following documents, as appropriate, are prepared by the consultant to obtain the required regulatory approvals for the project:

- 1) ConnDOT FM-MOU or DEEP [Flood Management Certification](#).
- 2) Municipal Inland Wetlands and Watercourses Agency Permit Application.
- 3) DEEP Tidal Wetlands and/or Structures Dredge and Fill Permit Application.
- 4) DEEP Certificate of Permission Application.
- 5) DEEP Stream Channel Encroachment Line Permit Application.
- 6) Corps of Engineers Permit Application (typically a General Permit concurrence).
- 7) U.S. Coast Guard Bridge Permit Application and/or navigation lighting approval or waiver.
- 8) Department of Public Health Change in Land Use Permit Application.
- 9) DEEP Section 401 Water Quality Certificate Application (if required).

ConnDOT reviews all of the above, prior to their submission to the appropriate government agency, with the exception of Item #2.

5.2.2.5 – Final Design

- 1) As soon as possible after design approval has been received (see Item #12 under Preliminary Design), property-taking maps (if required) are prepared by the consultant and reviewed by ConnDOT. When approved, an unsigned vellum of each map is sent to the ConnDOT Office of Rights-of-Way to continue with the rights-of-way acquisition process.

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- 2) Rights-of-Entry, if required, are obtained by the consultant or the municipality.
 - 3) Utility coordination is handled by the consultant.
 - 4) The agreement between ConnDOT and the municipality for construction, inspection and maintenance is prepared by ConnDOT and forwarded to the municipality for signature. Processing of the agreement is handled in the same fashion as for the design agreement.
 - 5) The consultant submits four (4) copies each of the contract plans, specifications and cost estimates (PS&E) at the 70% and 90% complete stages of final design, and two (2) copies of the PS&E package at the 100% complete stage, for review by ConnDOT. The cost estimates must separate federal and state participating contract pay items from the non-participating contract pay items.
 - 6) The CLE compiles the final contract document package and prepares the Detailed Estimate Sheet and the final Proposal Estimate sheets.
 - 7) ConnDOT reviews the above submittals, and if acceptable, authorizes the construction phase based on availability of funds. The following prerequisites must be completed before construction funds are committed:
 - (a) ConnDOT Office of Rights-of-Way issues a Rights-of-Way Certificate when required. A Rights-of-Way certificate is issued by the ConnDOT Office of Rights-of-Way when all of the required acquisitions are completed (maps filed and instruments recorded in the municipality's land records).
 - (b) ConnDOT certifies that all Federal, State, and Local Permits have been acquired.
 - (c) ConnDOT prepares PS&E Approval memorandum, which initiates the requests for FHWA authorization to advertise.
 - (d) ConnDOT requests FHWA authorization to advertise.
 - (e) FHWA authorizes advertising of project.
 - 8) At this stage, the design and rights-of-way phases of the project are complete and the municipality prepares to advertise the project for construction bids. (See manual entitled, "Guidelines for Municipalities, Advertising, Bidding and Award of Contracts for the Federal Local Bridge Program").
 - 9) ConnDOT issues the authorization to advertise letter to the municipality.

5.2.2.6 – Construction Advertising

- 1) Final Preparation for Advertising:
 - (a) ConnDOT meets with the Municipality and/or its Consultant Engineer to forward the following documents and to discuss the requirements for advertising, bidding and award of the project:
 - (1) Complete contract special provisions (originals).
 - (2) Original Mylar construction plans.
 - (3) Reduced scale prints of any standard drawings referenced on the plans.

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- (4) Complete schedule of Prices for inclusion with Bid Proposal Documents and reduced versions for inclusions with Notice to Contractors.
 - (5) Design Report
 - (6) Engineer's Final Estimate (CONFIDENTIAL)
 - (7) Calendar Days Chart
- (b) Municipality (or its Consultant Engineer) requests State Wage Schedules from State Labor department. Request must be made no sooner than 20 days or later than 10 days prior to the advertising date. State Wage Schedules are included at the back of the contract special provisions. Note: Federal Wage Schedules are amended frequently and federal regulations require that the latest version be used.
- (c) Municipality (or its Consultant Engineer) prepares the following:
- (1) Legal Notice.
 - (2) Notice to Contractors.
 - (3) Bid Proposal Documents.
- 2) Municipality forwards to the ConnDOT copies of the resumes of (a) the municipal personnel administrating the construction contracts, and (b) the consultant inspection personnel for approval by the ConnDOT Office of Construction.
 - 3) Municipality publishes legal notices advertising the project in at least two newspapers having a substantial circulation in the project area, and notifies ConnDOT of scheduled bid opening (date, time and place). A 28-day advertising period is recommended (a minimum of at least 21 days is required). The Disadvantaged Business Enterprises (DBE) set-aside percentage shall be included in the legal notices.
 - 4) Municipality issues Bid Proposal documents to any prospective bidder who submits a written request. Municipality maintains a log of all contractors who have been issued Bid Proposal documents and/or plans and specifications.
 - 5) Any addenda to the project must be submitted to ConnDOT for approval prior to being issued. Municipality issues any addenda to the project no later than ten (10) calendar days preceding the scheduled bid opening date to all prospective bidders who have Bid Proposal documents. Addenda must be sent via Certified Mail or by FAX with an acknowledgement of receipt. Note: Addenda must be issued to incorporate amendments to the Federal Wage Schedules that are published in the Federal Register 10 days prior to the opening of bids.
 - 6) Municipality publicly opens and announces bids.
 - 7) Municipality forwards pre-Award documents to the apparent low bidder. The Municipality shall send copies of the completed pre-Award documents to ConnDOT.
 - 8) Municipality audits all bids computations and forwards the following to ConnDOT:
 - (a) Certified copies of all bids received and a Statement of correctness of bids.
 - (b) Detailed bid breakdown by items of the lowest three bids with the names of the bidders.
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- (c) List of all bidders with the names of bidders and total bid amounts.
 - (d) A bid analysis and a justification for accepting (or rejecting) the low bid if the lowest responsible bid is less than 20 percent under or more than 10 percent over the Engineer's Construction Estimate.
 - (e) Statement of low Bidder's Qualifications.
 - (f) Statement that the affirmative action and disadvantaged business enterprise aspects of the contract have been complied with.
 - (g) Statement that the low bidder is a firm registered with the Secretary of State.
 - (h) Recommendation to accept (or reject) the low bid.
 - (i) Copies of the transmittal letters for all of the above documents shall be sent to ConnDOT.
- 9) ConnDOT reviews documents submitted per above items. ConnDOT also obtains final funding approval.
 - 10) Municipality authorized to award Contract per letter from ConnDOT.
 - 11) Municipality prepares Contract documents, awards and executes contract, and arranges with ConnDOT for the time, place, and date of the pre-construction meeting. Municipality notifies contractor to provide copy of Builder's Risk Insurance certificate at the pre-construction meeting.

Representatives of the following parties are notified to attend the pre-construction meeting:

- The municipality (including a traffic official);
 - Consultant designer;
 - Consultant inspector;
 - Local Bridge Program (Tel. 860-594-3389);
 - ConnDOT District Construction office;
 - All affected utility companies;
 - Any affected railroads;
 - ConnDOT Laboratory (Tel. 860-258-0321);
 - State Labor Department (Tel. 860-240-4288).
- 12) Municipality submits to ConnDOT:
 - Two copies of the letter awarding the Contract.
 - Five conformed copies of Contract.
 - Notice of pre-constructing meeting.
 - 13) Pre-Construction meeting is held, and contractor is ordered to proceed by the municipality.
 - 14) Construction begins. Municipality pays contractor's invoices and requests reimbursement from ConnDOT's Office of Construction District office.
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Note: Field changes, contract time extensions, change in liquidated damages or other actions that will change the project cost or duration must receive advance approval in writing from the ConnDOT District Construction Office. Significant changes in the project will require a supplemental agreement.

- 15) Periodically throughout the project, ConnDOT personnel will visit the project to review the project's progress, and monitor compliance with record-keeping procedures.
- 16) When it appears that the construction work is substantially complete, the municipality or its consultant must arrange a semi-final inspection to determine if any additional work is needed to complete the project satisfactorily. ConnDOT representatives *must* be invited to participate in the semi-final inspection.
- 17) Upon completion of the work identified in the semi-final inspection, the municipality schedules a final inspection. ConnDOT representatives must be invited to participate in the final inspection. As-built drawings should be completed, or nearly so, by the time of the final inspection.
- 18) ConnDOT audits the project, adjusts accounts, and notifies the municipality of the findings. The Federal CFDA number is 20.205 (see <https://www.cfda.gov/?s=program&mode=form&tab=step1&id=9841e66c08cd4fe9ed2a013c188f223a>).

5.3 – INSTRUCTIONS FOR COMPLETING THE PRELIMINARY APPLICATION

5.3.1 – Administrative Project Info

Completing the [Preliminary Application](#) (see attachment) is the first step in the application process. Because there are specific legal requirements that must be met, application must be made using the attached form, a photocopy of the form, or the form from the [Local Bridge Program website](#). Other forms are not acceptable, and may delay processing of the application. It must contain the following information:

Town/City/Borough of: Name of the municipality responsible for the bridge project.

Bridge Location: The name of the road that the structure carries and the feature (road, river, railroad, etc.) that the bridge crosses.

Bridge Number: The 5 or 6-digit number assigned to the structure by ConnDOT's Bridge Safety & Evaluation Section.

Length of Span: The clear span between abutment faces or culvert sides, measured along the centerline of the road that the bridge carries.

Sufficiency Rating: The sufficiency rating calculated from the most recent bridge inspection report.

Priority Rating: The priority rating can be found on the list of eligible bridges in the appendices. If there is no priority rating shown in the list of eligible bridges, it

can be computed from the inspection report using the formula found in Section 2 of the Program Regulations, or it can be left blank, and the Department will compute it.

Evaluation & Rating Performed by: Check “*State Forces*” if the rating data shown and the description of existing conditions given was performed by ConnDOT (an inspection conducted by a consultant under contract to perform bridge inspections for ConnDOT’s Bridge Safety & Evaluation Section should be shown as being accomplished by State forces). Check “*Others*” if the rating data shown and the description of existing conditions given were performed by someone other than ConnDOT, such as the Town Engineer or a consulting engineer. If the rating is based on an inspection by someone other than ConnDOT, a copy of the inspection report must be included.

If Others, Name of Professional Engineer: The name of the Connecticut-Licensed Professional Engineer who actually evaluated the bridge, if the evaluation was not done by ConnDOT.

Connecticut Professional Engineers License Number: The license number of the Professional Engineer who actually evaluated the bridge, if the evaluation was not done by ConnDOT.

Engineer’s Address: The address of the Connecticut-Licensed Professional Engineer who actually evaluated the bridge, if the evaluation was not done by ConnDOT.

Description of Existing Condition of Structure: Attach a description of the current condition of the bridge. This should generally include the latest inspection report.

Description of Scope of Project: Attach a description of the proposed work to be done. At this point in the project, which may be before detailed engineering is performed, only rough estimates may be available. If available, preliminary plans (2 copies), specifications, quantity estimates and hydraulic data should be included. One or more of the following codes can be used to describe the scope of the project:

Bridge Repair Codes

Letter Code	Description
A	Bridge replacement (in place)
B	Bridge replacement (New Alignment)
C	Superstructure replacement
D	Superstructure repair or strengthening
E	Deck replacement
F	Deck repair
G	Substructure repair / modification
H	Full field painting (abrasive blast cleaning or overcoating)
I	Bridge demolition
J	Bridge railing / sidewalk repair
K	Culvert repair / extension / rehabilitation
L	Bridge widening
M	Temporary bridge
N	Bearing replacement or repair
O	Peen cover plates
P	Pin-and-hanger repair or replacement
Q	Field touch-up painting
R	Bridge drainage system repair or replacement
S	Pin-and-hanger elimination-splice plates
T	Pin-and-hanger fail safe system
U	Joint repair or replacement
V	Waterproof membrane w/ bituminous concrete overlay
W	Cathodic protection
X	Other overlays (bituminous, latex modified concrete, thin polymer, etc.)
Y	New bridge on new roadway system
Z	Install environmental or structural monitoring system
AA	Install / repair Incident Management System
BB	Install / repair lighting system
CC	Raise superstructure
DD	Install / repair sign supports
EE	Scour protection
FF	Seismic retrofit
GG	Install / repair fire suppression system
HH	Install / repair inspection equipment
II	Install fencing (use only when fencing is installed onto existing bridge)
JJ	Install structure mounted noise barrier
KK	Mechanical rehabilitation on moveable bridges
LL	Electrical rehabilitation on moveable bridges

Name of Municipal Official to Contact: The name of the municipal official who will be responsible for administering the project, and who can be contacted if any questions arise. Copies of all correspondence will be sent to this person.

Mailing Address: The mailing address for the municipal official who will be the official contact. This will be the address where all agreements and legal notices are sent.

Telephone Number: The telephone number, with area code, for the listed municipal official.

FAX Number: The facsimile telephone number with area code, for the listed municipal official.

E-mail: The e-mail address for the municipal official who will be handling administration of the project. E-mail will only be used for informal, routine contacts. All formal notices will be sent by U.S. mail.

5.3.2 – Preliminary Cost Figures

Preliminary Engineering Fees: The estimated cost of designing the project; include a breakdown of fees. If not known, an amount equal to 15-20% of the Estimated Construction Costs can be used.

Rights-of-Way Cost: The estimated cost of acquiring any property, easements, rights, etc. needed to construct the project.

Municipally Owned Utility Relocation: The cost of relocating any utilities owned by a municipality. Costs are eligible for reimbursement if the utilities are owned by any municipality in the State, including regional authorities. Privately owned utilities (such as CL&P, AT&T, Comcast, Yankee Gas, etc.) are not eligible.

Estimated Construction Costs: The engineer's estimate of construction costs, based upon the preliminary plans and specifications. A detailed estimate with estimated quantities and unit prices should be attached, if available.

Construction Engineering: The estimated cost of engineering and related services needed during construction, such as construction inspection, materials testing, review of shop drawings, etc. If not known, an amount equal to 15% of the Estimated Construction Costs can be used.

Contingencies: The amount to be set aside for unforeseen problems and extra work. This amount may not exceed an amount equal to 10% of the Estimated Construction Costs.

Total Estimated Project Cost: The grand total of all above eligible costs.

5.3.3 – Financial Aid Data

Federal Aid Request: This is the Total Estimated Project Cost, from the bottom of page #1 of the Preliminary Application, multiplied by 0.8 (80%). Please note that only a limited number of bridges will qualify for Federal funding; qualifying bridges

will be denoted by a “Y” in the “Federal Eligible” column of Appendix 1. This should remain blank if a State grant is being requested.

Allowable Grant Percentage: The grant percentage that the municipality is eligible for. This percentage can be found in Appendix 2. This grant percentage will remain fixed for the life of the project, regardless of changes in future fiscal years. This should remain blank if Federal Reimbursement is being requested.

Project Grant Request: The dollar amount of the grant request. This amount is the Total Project Cost multiplied by the Grant Percentage.

5.3.4 – Schedule

Note: Dates may be actual or estimated, depending upon circumstances, but all dates should show month, day and year. For example, state “April 30, 2016”, not “Spring 2016” or “mid-2016”, etc. It is understood that estimated dates for future events are approximate and subject to change.

Public Hearing Held: The date that a public meeting is planned to inform the public of the project. This does not have to be a “formal” hearing with a word-for-word transcript, as long as the public is provided an opportunity to comment on the project and minutes are kept.

Design Completion: The date that all final plans, specifications and estimates will be completed.

Property Acquisition Completion: The date that all Rights-of-Way activities will be completed.

Utilities Coordination Completion: The anticipated date that all arrangements with utility companies will be completed.

Advertising: The anticipated date that the invitation for construction bids will be made.

Supplemental Application Submission: The anticipated date that the supplemental application and all of its support documentation will be submitted. This date can be any time after the final design is complete. Please note that this date must be within one year of the Commitment to Fund date. *Note: This item does not apply to federally funded projects.*

Start of Construction: The date that construction is anticipated to begin.

Completion of Construction: The date that construction is anticipated to completed.

Signature: The Application must be signed by the Chief Executive of the municipality, unless another municipal official has been authorized by the municipality’s legislative body or charter. If the application is submitted by someone other than the chief executive, proof of authorization by the municipality’s legislative body must be submitted along with the application.

APPENDIX 1 - ELIGIBLE BRIDGES

APPENDIX 1 – ELIGIBLE BRIDGES

See the Eligible Bridge List posted on the [Local Bridge Program Website](#).

APPENDIX 2 - GRANT PERCENTAGES

APPENDIX 2 – GRANT PERCENTAGES FOR MUNICIPALITIES

TOWN	AENGLC	GRANT %
Andover	42,420.56	48.10
Ansonia	18,907.42	49.43
Ashford	38,970.28	48.30
Avon	122,311.40	43.61
Barkhamsted	50,733.97	47.64
Beacon Falls	37,301.40	48.39
Berlin	58,745.83	47.19
Bethany	67,747.06	46.68
Bethel	53,890.62	47.46
Bethlehem	53,463.31	47.48
Bloomfield	52,030.56	47.56
Bolton	53,058.88	47.51
Bozrah	41,332.32	48.17
Branford	75,101.70	46.27
Bridgeport	10,559.94	49.90
Bridgewater	190,857.69	39.75
Bristol	27,888.93	48.92
Brookfield	92,336.30	45.30
Brooklyn	22,094.76	49.25
Burlington	57,719.14	47.24
Canaan	67,603.26	46.69
Canterbury	28,316.02	48.90
Canton	64,894.52	46.84
Chaplin	31,283.94	48.73
Cheshire	57,222.15	47.27
Chester	62,658.09	46.97
Clinton	61,089.43	47.05
Colchester	38,363.96	48.33
Colebrook	68,180.03	46.65
Columbia	49,607.19	47.70
Cornwall	201,210.41	39.17
Coventry	40,152.99	48.23
Cromwell	55,396.51	47.37
Danbury	34,542.47	48.55
Darien	522,422.51	21.11
Deep River	61,587.48	47.03
Derby	22,570.58	49.22
Durham	64,667.01	46.85
Eastford	42,522.38	48.10
East Granby	64,291.22	46.87
East Haddam	54,458.72	47.43
East Hampton	48,647.82	47.75

TOWN	AENGLC	GRANT %
East Hartford	19,434.71	49.40
East Haven	29,960.53	48.80
East Lyme	59,572.34	47.14
Easton	156,834.35	41.67
East Windsor	38,656.14	48.32
Ellington	45,876.63	47.91
Enfield	27,525.26	48.94
Essex	130,959.50	43.12
Fairfield	157,673.54	41.62
Farmington	107,342.62	44.45
Franklin	50,975.56	47.62
Glastonbury	85,830.02	45.66
Goshen	105,297.12	44.57
Granby	70,372.98	46.53
Greenwich	630,968.84	15.00
Griswold	25,072.45	49.08
Groton	47,987.44	47.79
Guilford	97,135.28	45.03
Haddam	59,538.55	47.14
Hamden	31,029.42	48.74
Hampton	42,269.24	48.11
Hartford	8,708.81	50.00
Hartland	49,024.66	47.73
Harwinton	64,504.42	46.86
Hebron	50,702.89	47.64
Kent	105,618.09	44.55
Killingly	23,270.08	49.18
Killingworth	81,388.32	45.91
Lebanon	40,338.43	48.22
Ledyard	38,313.65	48.33
Lisbon	46,974.49	47.85
Litchfield	75,091.08	46.27
Lyme	202,052.36	39.13
Madison	124,141.25	43.51
Manchester	32,380.31	48.67
Mansfield	21,200.15	49.30
Marlborough	56,930.16	47.29
Meriden	20,767.50	49.32
Middlebury	78,063.52	46.10
Middlefield	52,908.10	47.51
Middletown	33,581.83	48.60
Milford	69,820.25	46.56

APPENDIX 2 - GRANT PERCENTAGES

TOWN	AENGLC	GRANT %
Monroe	76,746.09	46.17
Montville	27,665.75	48.93
Morris	79,678.12	46.01
Naugatuck	22,361.38	49.23
New Britain	10,128.58	49.92
New Canaan	564,830.74	18.72
New Fairfield	64,273.47	46.87
New Hartford	52,844.56	47.52
New Haven	15,288.61	49.63
Newington	43,746.46	48.03
New London	15,186.63	49.64
New Milford	63,220.92	46.93
Newtown	74,428.48	46.30
Norfolk	100,163.11	44.86
North Branford	47,911.56	47.79
North Canaan	33,507.76	48.61
North Haven	59,404.11	47.15
North Stonington	56,422.00	47.32
Norwalk	87,797.85	45.55
Norwich	20,381.30	49.34
Old Lyme	140,520.16	42.59
Old Saybrook	123,937.94	43.52
Orange	74,434.34	46.30
Oxford	68,601.22	46.63
Plainfield	19,486.69	49.39
Plainville	34,127.25	48.57
Plymouth	28,474.34	48.89
Pomfret	43,323.48	48.05
Portland	51,707.00	47.58
Preston	39,331.23	48.28
Prospect	42,865.28	48.08
Putnam	18,334.91	49.46
Redding	157,044.00	41.66
Ridgefield	215,238.80	38.38
Rocky Hill	56,013.84	47.34
Roxbury	259,550.92	35.89
Salem	51,691.67	47.58
Salisbury	196,175.41	39.46
Scotland	28,275.04	48.90
Seymour	34,571.69	48.55
Sharon	178,013.04	40.48
Shelton	65,264.43	46.82
Sherman	139,985.08	42.62
Simsbury	85,814.95	45.66
Somers	35,876.96	48.47
Southbury	58,432.32	47.20

TOWN	AENGLC	GRANT %
Southington	46,978.07	47.85
South Windsor	53,546.18	47.48
Sprague	30,293.17	48.79
Stafford	26,395.68	49.01
Stamford	101,408.78	44.79
Sterling	24,692.08	49.10
Stonington	88,339.70	45.52
Stratford	40,266.29	48.22
Suffield	47,900.29	47.80
Thomaston	32,386.67	48.67
Thompson	25,347.33	49.06
Tolland	53,292.50	47.49
Torrington	24,852.17	49.09
Trumbull	78,959.77	46.05
Union	52,837.78	47.52
Vernon	29,810.12	48.81
Voluntown	33,879.59	48.58
Wallingford	48,026.93	47.79
Warren	172,643.88	40.78
Washington	233,102.00	37.38
Waterbury	11,027.58	49.87
Waterford	89,312.58	45.47
Watertown	39,883.95	48.25
Westbrook	90,240.03	45.41
West Hartford	62,198.05	46.99
West Haven	19,094.33	49.42
Weston	308,456.56	33.14
Westport	476,184.70	23.71
Wethersfield	47,341.73	47.83
Willington	31,177.08	48.74
Wilton	262,348.50	35.73
Winchester	25,954.27	49.03
Windham	9,794.56	49.94
Windsor	49,830.09	47.69
Windsor Locks	43,009.27	48.07
Wolcott	37,854.98	48.36
Woodbridge	127,572.26	43.31
Woodbury	67,441.05	46.70
Woodstock	46,456.92	47.88

APPENDIX 3 - LEGISLATION

APPENDIX 3 – LOCAL BRIDGE LEGISLATION

Following is the current State Local Bridge Program legislation, which was replaced in its entirety by the following language contained in P.A. 13-239. For an extensive list of historical excerpts from the Connecticut General Statutes and Public Acts which relate to Local Bridges, please visit the Local Bridge Program's website at www.ct.gov/dot/localbridge. This information is included as a convenience to the reader of this manual, and is not intended to be a complete list of all relevant Statutes. The reader is cautioned that these excerpts are not certified copies, and to check that there have been no revisions to the Statute before relying upon it.

APPENDIX 3 - LEGISLATION**CGS SECTIONS 13A-175P - 13A-175W: LOCAL BRIDGE PROGRAM****New language excerpted from Public Act 13-239:**

Note: text in brackets means removed while underlined text means added by PA 13-239.

Sec. 76. Section 13a-175p of the general statutes is repealed and the following is substituted in lieu thereof (*Effective July 1, 2013*):

The following terms, as used in sections 13a-175p to 13a-175u, inclusive, shall have the following meanings unless the context clearly indicates a different meaning or intent:

(1) "Commissioner" means the Commissioner of Transportation.

(2) "Eligible bridge" means a bridge located within one or more municipalities in the state, the physical condition of which requires it be removed, replaced, reconstructed, rehabilitated or improved as determined by the commissioner.

(3) "Eligible bridge project" means the removal, replacement, reconstruction, rehabilitation or improvement of an eligible bridge by one or more municipalities.

(4) "Grant" means any grant made to a municipality pursuant to section 13a-175s, as amended by this act.

[(4)] (5) "Grant percentage" means a percentage established by the commissioner for each municipality by (A) ranking all municipalities in descending order according to each such municipality's adjusted equalized net grand list per capita as defined in section 10-261; and (B) determining a percentage for each such municipality on a scale from not less than [ten] fifteen per cent to not more than [thirty-three] fifty per cent based upon such ranking. In any case where a municipality does not have an adjusted equalized net grand list per capita such municipality shall be deemed to have the adjusted equalized net grand list per capita of the town in which it is located.

[(5)] (6) "Local bridge program" means the local bridge program established pursuant to sections 13a-175p to 13a-175u, inclusive, as amended by this act.

[(6)] (7) "Local Bridge Revolving Fund" means the Local Bridge Revolving Fund created under section 13a-175r, as amended by this act.

[(7)] (8) "Municipality" means any town, city, borough, consolidated town and city, consolidated town and borough, district or other political subdivision of the state, owning or having responsibility for the maintenance of all or a portion of an eligible bridge.

[(8)] (9) "Physical condition" means the physical condition of a bridge based on its structural deficiencies, sufficiency rating and load capacity all as determined by the commissioner.

[(9)] (10) "Priority list of eligible bridge projects" means the priority list of eligible bridge projects established by the commissioner in accordance with the provisions of section 13a-175s, as amended by this act.

APPENDIX 3 - LEGISLATION

[(10)] (11) "Project costs" means the total costs of a project determined by the commissioner to be necessary and reasonable.

[(11)] "Project loan" means a loan made to a municipality from the Local Bridge Revolving Fund and evidenced by the municipality's project loan obligation.

(12) "Project loan agreement" means a loan agreement with respect to a project loan as provided for in subsection (c) of section 13a-175s.

(13) "Project loan obligation" means an obligation of a municipality issued to evidence indebtedness under a project loan agreement and payable to the state for the benefit of the Local Bridge Revolving Fund.

(14) "Project grant" means a grant-in-aid made to a municipality pursuant to section 13a-175s.]

[(15)] (12) "Supplemental project obligation" means bonds or serial notes issued by a municipality for the purpose of financing the portion of the costs of an eligible bridge project not met from the proceeds of a [project grant or project loan] grant.

Sec. 77. Section 13a-175q of the general statutes is repealed and the following is substituted in lieu thereof (*Effective July 1, 2013*):

The establishment of a program for the removal, replacement, reconstruction, rehabilitation or improvement of local bridges is a matter of state-wide concern affecting the health, safety and welfare of the inhabitants of the state and of persons traveling within the state. It is the policy of the state to establish a timely and efficient method for municipalities to participate in this program and in furtherance thereof, sections 13a-175p to 13a-175u, inclusive, are intended to provide authority for municipalities to approve local bridge projects, and, in connection therewith, to authorize project [loan] agreements, and the issuance of [project loan obligations and] supplemental project obligations. For the purpose of ensuring and encouraging participation by municipalities in the benefits of the local bridge program, the powers of municipalities are expressly enlarged and expanded to include the power to do all things necessary and incident to their participation in the local bridge program under sections 13a-175p to 13a-175u, inclusive, as amended by this act.

Sec. 78. Section 13a-175r of the general statutes is repealed and the following is substituted in lieu thereof (*Effective July 1, 2013*):

There is established and created a fund to be known as the "Local Bridge Revolving Fund". The state shall deposit in said fund (1) all proceeds of bonds issued by the state for the purpose of making [project loans and project] grants to municipalities, including proceeds of any special tax obligation bonds which are issued for the purpose of funding the local bridge program, [through project loans and grants,] (2) any and all [payments] repayments of grants or loans made by municipalities, [in respect of project loans including loan interest,] (3) all appropriations for the purpose of making [project loans and project] grants, and (4) any additional moneys from any other source available for deposit into said fund. Moneys deposited in said fund shall be held by the Treasurer separate and apart from all other moneys, funds and accounts. Investment earnings credited to the assets of said fund shall become part of the assets of said fund. Any balance remaining in said fund at the end of any fiscal year shall be carried forward in said fund for the fiscal year next succeeding. Amounts in the Local Bridge Revolving Fund shall be expended only for the purpose of funding [project loans and project] grants or for the purchase or

APPENDIX 3 - LEGISLATION

redemption of special tax obligation bonds issued pursuant to sections 13b-74 to 13b-77, inclusive.

Sec. 79. Section 13a-175s of the general statutes is repealed and the following is substituted in lieu thereof (*Effective July 1, 2013*):

(a) The commissioner shall maintain a list of eligible bridges and shall establish a priority list of eligible bridge projects for each fiscal year. In establishing such priority list, the commissioner shall consider the physical condition of each eligible bridge.

[(b) In each fiscal year the commissioner may make project loans to municipalities in the order of the priority list of eligible bridge projects to the extent of moneys available therefor in the Local Bridge Revolving Fund. Each municipality undertaking an eligible bridge project may apply for and receive a project loan or loans. The aggregate amount of project loans made to a municipality with respect to any project shall be equal to the amount requested by the municipality up to an amount not to exceed fifty per cent of the project costs allocable therefor to such municipality.

(c) Each project loan shall be made pursuant to a project loan agreement between the state, acting by and through the commissioner, and the borrowing municipality and shall be evidenced by a project loan obligation of the borrowing municipality issued in accordance with section 13a-175t. Each project loan agreement shall be in the form prescribed by the commissioner, provided that each project loan agreement shall provide for a project loan obligation bearing interest at the rate of six per cent per annum payable quarterly and maturing no later than ten years from the date of such obligation.]

[(d)] (b) In each fiscal year the commissioner may make [project] grants to municipalities in the order of the priority list of eligible bridge projects to the extent moneys are available therefor. Each municipality undertaking an eligible bridge project may apply for and receive a [project] grant equal to its grant percentage multiplied by the project costs allocable to such municipality. Notwithstanding the provisions of this section, in order to protect the public health and safety, the commissioner may make any grant to a municipality for an eligible bridge project without regard to the priority list if, in the opinion of the commissioner, an emergency exists making the removal, replacement, reconstruction, rehabilitation or improvement of an eligible bridge more urgent than any other eligible bridge project with a higher priority on such list.

[(e)] (c) All applications for [project loans and project] grants for the fiscal year ending June 30, 1985, shall be filed with the commissioner no later than October 1, 1984, and for each succeeding fiscal year all such applications shall be filed with the commissioner no later than [March] May first of the preceding fiscal year. [next preceding.] The commissioner may for good cause extend the period of time in which any such application may be filed.

(d) The terms and conditions of each such grant made by the state, acting by and through the commissioner, may be prescribed by the commissioner. Any such grant made by the commissioner shall not be deemed to be a public works contract, as defined in section 46a-68b, and the requirements for public works contracts provided in chapters 58 and 814c shall not apply to such grant.

[(f) A project grant or project loan] (e) A grant shall not be made to a municipality with respect to an eligible bridge project unless: (1) Each municipality undertaking such project has available to it, or has made arrangements satisfactory to the commissioner to obtain, funds to pay that portion of the project costs for which it is legally obligated and which are not met by [project loans or project] grants; (2) each municipality undertaking such project provides assurances

APPENDIX 3 - LEGISLATION

satisfactory to the commissioner that it will undertake and complete such project with due diligence and that it will operate and maintain the eligible bridge properly after completion of such project; (3) each municipality undertaking such project and seeking a [project loan or a project] grant has filed with the commissioner all applications and other documents prescribed by the commissioner; (4) each municipality undertaking such project and seeking a [project loan or a project] grant has established separate accounts for the receipt and disbursement of the [proceeds of project loans and project] grants; and (5) in any case in which an eligible bridge is owned or maintained by more than one municipality, evidence satisfactory to the commissioner that all such municipalities are legally bound to complete their respective portions of such project. Notwithstanding any provisions of this subsection, the commissioner may make an advance grant to a municipality for the purpose of funding the engineering cost of an eligible bridge project. Such grant shall equal the municipality's grant percentage multiplied by the engineering cost, [which cost shall not exceed fifteen per cent of the construction cost of the project,] provided the amount of such advance shall be deducted from the total grant for the project.

[(g) Notwithstanding the provisions of subsections (b) and (d) of this section, the commissioner may make project grants and project loans with respect to an eligible bridge project without regard to the priority list of eligible bridge projects if a public emergency exists requiring the immediate removal, replacement, reconstruction, rehabilitation or improvement of the eligible bridge of such project to protect the public health and safety.]

(f) No grant for an eligible bridge project made pursuant to this section shall be deemed to be a proposed state action, activity or critical activity, as such terms are defined in section 25-68b, for the purposes of sections 25-68b to 25-68h, inclusive.

Sec. 80. Section 13a-175t of the general statutes is repealed and the following is substituted in lieu thereof (*Effective July 1, 2013*):

(a) A municipality may authorize [(1) the execution and delivery of project loan agreements; (2) the issuance and sale of project loan obligations to finance its obligations under a project loan agreement; and (3)] the issuance and sale of its supplemental project obligations, in accordance with such statutory and other legal requirements as govern the issuance of obligations and the making of contracts by the municipality. Supplemental project obligations shall be general obligations of the issuing municipality and each such obligation shall recite that the full faith and credit of the issuing municipality are pledged for the payment of the principal thereof and interest thereon. Obligations authorized under this section shall be subject to the debt limitation provisions of section 7-374.

[(b) The legislative body of a municipality shall hold at least one public hearing on an eligible bridge project, including the authorization of project loan obligations and supplemental project obligations with respect thereto, prior to its vote on the approval or disapproval of the eligible bridge project and the authorization of financing therefor. Notice of the time, place and purpose of the hearing shall be published in a newspaper having general circulation in the municipality not less than five days prior to the day on which such hearing is to be held. For the purposes of this subsection, such five-day period shall include the day upon which such notice is first published, and shall include any Saturday, Sunday or legal holiday which may intervene between such publication and the day on which such hearing is held, but shall not include the day upon which such hearing is held.

(c) Each project loan obligation issued pursuant to this section shall bear interest at the rate of six per cent per annum payable quarterly, shall mature in such amounts and at such time or times

APPENDIX 3 - LEGISLATION

not later than ten years from the date thereof and shall contain such other terms and provisions as the project loan agreement under which it is issued provides.

(d) Project loan obligations and supplemental project obligations shall be general obligations of the issuing municipality and each such obligation shall recite that the full faith and credit of the issuing municipality are pledged for the payment of the principal thereof and interest thereon.

]

[(e)] (b) Whenever a municipality has authorized the issuance of [project loan obligations or] supplemental project obligations, it may authorize the issuance of temporary notes in anticipation of the receipt of the proceeds from the issuance of its [project loan obligations or] supplemental project obligations. Such temporary notes may be renewed from time to time by the issuance of other notes, provided that any such renewals shall conform to all legal requirements and limitations applicable thereto, including the requirements and limitations set forth in sections 7-378 and 7-378a.

[(f)] (c) Except as otherwise provided in this section, [project loan obligations,] supplemental project obligations and temporary notes issued in anticipation of the receipt of the proceeds thereof shall be issued by a municipality in accordance with such statutory and other legal requirements as govern the issuance of such obligations generally by such municipality, including, where applicable, the provisions of chapter 109.

Sec. 81. Section 13a-175v of the general statutes is repealed and the following is substituted in lieu thereof (*Effective July 1, 2013*):

If an eligible bridge is owned or maintained by more than one municipality, the municipalities owning or maintaining such eligible bridge may enter into an interlocal agreement concerning such eligible bridge. Such interlocal agreement may provide, among other things, that one municipality shall be responsible for undertaking and completing an eligible bridge project, maintaining such eligible bridge project, applying for a [project loan or a project grant, or both,] grant for such eligible bridge project and [repaying a project loan] the apportionment of costs for such eligible bridge project. A municipality is authorized to enter into such an interlocal agreement by vote of its legislative body and the provisions of sections 7-339a to 7-339l, inclusive, shall not be applicable to such interlocal agreement. Any such interlocal agreement entered into prior to May 27, 1987, is validated.

Sec. 82. Section 13a-175w of the general statutes is repealed and the following is substituted in lieu thereof (*Effective July 1, 2013*):

In any case in which an eligible bridge is owned or maintained by more than one municipality and such municipalities enter into or have entered into an interlocal agreement authorized by section 13a-175v, as amended by this act, the commissioner may deem the municipality which has agreed pursuant to such interlocal agreement to undertake, complete and maintain an eligible bridge project to be the only municipality eligible for a [project grant or a project loan, or both,] grant concerning such eligible bridge project and the commissioner may make a [project loan or a project grant, or both,] grant to such municipality without regard to the ownership or other interests of any other municipality in such eligible bridge.

APPENDIX 4 - REGULATIONS

APPENDIX 4 – REGULATIONS

Note: The Regulations governing the Local Bridge Program are currently in the process of being revised to conform with P.A. 13-239 and to allow for preservation projects. The proposed Regulations are posted on the Local Bridge Program Web page. The former regulations, listed below, have been superseded in part by P.A. 13-239.

**STATE OF CONNECTICUT
REGULATIONS
OF
DEPARTMENT OF TRANSPORTATION
CONCERNING
LOCAL BRIDGE PROGRAM**

Sec. 13a-175u-1. Definitions

The following terms shall have the following respective meanings:

- (a) "AASHTO" means the American Association of State Highway and Transportation Officials, 444 North Capitol Street, N.W., Suite 249, Washington, D.C. 20001.
- (b) "AENGLC" means as of the date grant percentages are determined in accordance with Section 3 of these regulations, the adjusted equalized net grand list per capita of a town prepared as of the immediately preceding January 1 by the State pursuant to Section 10-261 of the General Statutes.
- (c) "Bridge design requirements" means the design requirements for a span established by the "Standard Specifications for Highway Bridges" of AASHTO and, in addition, the following:
- (1) minimum life expectancy of 20 years after construction completion;
 - (2) an HS-20 limit for a newly constructed or rehabilitated span, except that a municipality may approve a lesser load limit for a rehabilitated span so long as such load limit is not less than a 12-ton single unit load limit;
 - (3) compliance with DOT guidelines for fatigue of existing structural elements;
 - (4) guide railings of a safe design at the leading ends of a span;
 - (5) upgrading of existing parapet and traffic railings to AASHTO standards.

APPENDIX 4 - REGULATIONS

(d) "Bridge" means a structure with defined abutments with a distance between the faces of abutments of 6 feet or more, measured along the centerline of the bridge, and whose superstructure is integral with the roadway.

(e) "Coding Guide" means the "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges", dated December 1995, as may be updated from time to time, prepared by the Federal Highway Administration.

(f) "Commissioner" means the Commissioner of the Department of Transportation.

(g) "Commitment to fund" means a commitment issued to a municipality by the Commissioner to fund the project costs of an eligible bridge project through a project grant, a project loan, or both, in accordance with Section 5 of these regulations.

(h) "Condition rating of substructure" means the numerical rating of from 0 to 9 applicable to the substructure of a bridge determined in accordance with the criteria set forth in the Coding Guide.

(i) "Condition rating of superstructure" means the numerical rating of from 0 to 9 applicable to the condition of the superstructure of a bridge determined in accordance with the criteria set forth in the Coding Guide.

(j) "Construction contract" means an agreement between a municipality and a contractor whereby the contractor undertakes to complete the removal, replacement, reconstruction, rehabilitation or improvement of an eligible bridge.

(k) "Culvert" means (a) a box culvert with a distance between the faces of side walls of 6 feet or more whose superstructure is not integral with the roadway, or (b) a concrete or metal arched structure or a metal plate pipe structure with an interior span length of 6 feet or more. A prefabricated metal, concrete or other pipe culvert does not constitute a "culvert".

(l) "Culvert condition rating" means the numerical rating of from 0 to 9 applicable to the condition of a culvert determined in accordance with the criteria set forth in the Coding Guide.

(m) "Deck condition rating" means the numerical rating of from 0 to 9 applicable to the condition of the deck of a bridge determined in accordance with the criteria set forth in the Coding Guide.

(n) "Eligible bridge" means:

- (1) a bridge which has a condition rating of 4 or less given to any of the following components: superstructure, substructure, or deck condition, or an appraisal rating of 2 or less given to the structure evaluation or waterway adequacy, or
- (2) a culvert with a culvert condition rating of 4 or less.

(o) "Eligible bridge project" means the removal, replacement, reconstruction, rehabilitation or improvement of an eligible bridge by one or more municipalities.

APPENDIX 4 - REGULATIONS

(p) "Factor" means the number equal to the following:

$$\frac{(\text{High AENGLC}-\text{Low AENGLC})}{23}$$

(q) "Filing date" means with respect to any fiscal year the filing date set forth in Section 5 of these regulations.

(r) "Fiscal year" means the fiscal year of the State.

(s) "Grant percentage" means the number equal to the following:

$$33 - \frac{(\text{Municipal AENGLC}-\text{Low AENGLC})}{\text{Factor}}$$

(t) "High AENGLC" means the AENGLC of a town which is higher than the AENGLC of any other town.

(u) "Inventory rating in tons" means the numerical rating denoting the safe sustained load capacity of a structure, determined in accordance with the Load Factor Method described in the Manual for Condition Evaluation of Bridges. The live load used in the analysis shall be the MS18 (HS 20) truck or lane loading, whichever controls.

(v) "Local bridge revolving fund" means the local bridge revolving fund created under Section 13a-175r of the Connecticut General Statutes.

(w) "Low AENGLC" means the AENGLC of a town which is lower than the AENGLC of any other town.

(x) "Managing municipality" means the municipality designated by those municipalities filing joint preliminary and supplemental applications pursuant to Section 5 of these regulations to act as the municipalities' liaison with the Department of Transportation and to coordinate the efforts of such municipalities in undertaking and completing an eligible bridge project.

(y) "Manual for Condition Evaluation of Bridges" means the most recent edition of the "Manual for Condition Evaluation of Bridges, 1994", dated September 1996, with interim revisions as may be updated from time to time, prepared by the AASHTO Subcommittee On Bridges And Structures, and published by AASHTO.

(z) "Municipality" means any town, city, borough, consolidated town and city, consolidated town and borough, district or other political subdivision of the State, owning or having responsibility for the maintenance of all or a portion of an eligible bridge.

(aa) "Municipal AENGLC" means the AENGLC of a municipality, but if no AENGLC is determined for the municipality, then it is the AENGLC of the town in which the municipality is located.

APPENDIX 4 - REGULATIONS

(bb) "Municipal official" means the chief elected official, town manager, city manager, or other official of a municipality duly authorized to act on behalf of such municipality in connection with the local bridge program.

(cc) "Physical condition" means the physical condition of a span based on its structural deficiencies, sufficiency rating and load capacity all as determined by the Commissioner.

(dd) "Preliminary application" means an application prepared in accordance with subsections (a), (b), and (c) of Section 5 of these regulations.

(ee) "Priority list of eligible bridge projects" means the priority list determined in accordance with Section 2 of these regulations.

(ff) "Professional engineer" means a professional engineer licensed by the State of Connecticut.

(gg) "Priority rating" as determined by the Commissioner means:

(1) with respect to a bridge, the number equal to the following:

$$SR - 2\left[1 - \frac{(DC + SUB + SUP)}{27}\right] - 4\left[1 - \frac{(IR)}{36}\right]$$

"SR" means sufficiency rating

"DC" means deck condition rating

"SUB" means condition rating of substructure

"SUP" means condition rating of superstructure

"IR" means inventory rating in tons

(2) with respect to a culvert, the number equal to the following:

$$SR - 2\left[1 - \frac{(CUL)}{9}\right] - 4\left[1 - \frac{(IR)}{36}\right]$$

"SR" means sufficiency rating

"CUL" means culvert condition rating

"IR" means inventory rating in tons

(hh) "Project costs" means the costs of an eligible bridge project determined by the Commissioner to be necessary and reasonable.

(ii) "Project grant" means a grant-in-aid made to a municipality pursuant to Section 13a-175s of the Connecticut General Statutes.

(jj) "Project grant agreement" means a grant agreement between the State and a municipality with respect to a project grant.

(kk) "Project loan" means a loan made to a municipality from the local bridge revolving fund and evidenced by the municipality's project loan obligation.

APPENDIX 4 - REGULATIONS

(ll) "Project loan agreement" means a loan agreement with respect to a project loan as provided for in subsection (c) of Section 13a-175s of the Connecticut General Statutes.

(mm) "Project loan obligation" means an obligation of a municipality issued to evidence indebtedness under a project loan agreement and payable to the State for the benefit of the local bridge revolving fund.

(nn) "Public emergency" means a situation in which the physical condition of a bridge requires it to be closed or its load limit to be reduced substantially resulting in the isolation of, or a significant delay in the availability of emergency vehicle service to, people to such an extent that the safety of such people is jeopardized.

(oo) "Rehabilitation" means the improvement of an existing span in such manner as to preserve the existence of all or any portion of such span.

(pp) "Span" means a bridge or culvert.

(qq) "Structure evaluation" means the overall rating of the structure which takes into account all major structural deficiencies, and evaluates a bridge in relation to the level of service it provides, as compared with a new bridge built to current standards.

(rr) "Sufficiency rating" means the sufficiency rating of a span determined in accordance with the criteria set forth in the Coding Guide.

(ss) "Supplemental application" means the application described in subsection (e) of Section 5 of these regulations.

(tt) "Waterway adequacy" means the appraisal of the adequacy of waterway opening with respect to the passage of flow through the bridge.

(Effective October 24, 1984; amended October 7, 1999)

Sec. 13a-175u-2. Priority List of Eligible Bridge Projects

(a) As of July 1 of each fiscal year, the Commissioner shall establish a priority rating for each bridge or culvert which is located within one or more municipalities, and is owned in whole or in part by a municipality. Each such priority rating shall be based upon the then most recently available data obtained by or submitted to and accepted by the Commissioner.

(b) As of July 1 of each fiscal year, the Commissioner shall rank all spans for which a completed Preliminary Application has been received in the order of their priority ratings, with the span having the lowest priority rating being ranked first and the span having the highest priority rating being ranked last. The list so determined shall constitute the priority list of eligible bridge projects for the then current fiscal year.

(c) Notwithstanding the provisions of subsection (b) of this section, upon receipt by the Commissioner of an application of a municipality, which application shall include all necessary supporting data, the Commissioner may disregard the priority list of eligible bridge

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projects and issue a commitment to fund an eligible bridge project if a public emergency exists with respect to such project.

(Effective October 24, 1984; amended October 7, 1999)

Sec. 13a-175u-3. Grant Percentage

(a) As of March 1 of each fiscal year, the Commissioner shall determine a grant percentage for each town. The grant percentage of a town shall be applicable to any municipality located in such town.

(b) The grant percentage of a municipality determined as of March 1 of each fiscal year shall be used to determine the amount of the project grant for which a municipality would be eligible under a commitment to fund issued during the next succeeding fiscal year.

(Effective October 24, 1984; amended October 7, 1999)

Sec. 13a-175u-4. Project Costs

(a) The Commissioner shall fund through project grants and project loans only those costs of an eligible bridge project which he finds necessary and reasonable. A cost is necessary and reasonable if, in its nature or amount, it does not exceed that which would be incurred by a prudent person in the conduct of a competitive business. In determining the necessity and reasonableness of a given cost, the Commissioner shall consider the following:

- (1) whether the cost is of a type generally recognized as reasonable and necessary for the performance of the project taking into account established contracting or construction practices;
- (2) restraints or requirements imposed by such factors as generally accepted sound business practices, Federal and state laws and regulations, and contract terms and specifications;
- (3) generally accepted accounting practices and principles appropriate under the circumstances;
- (4) whether the cost would be incurred by a prudent businessman under the circumstances, considering his responsibilities to the owners of his business, his employees, his customers, the government, and the public at large; and
- (5) any limitations or exclusions set forth in these regulations or the applicable project grant agreement or project loan agreement.

(b) In any given project the reasonableness or necessity of certain items of cost may be difficult to determine. In order to avoid a possible subsequent disallowance or dispute based on a cost being found unnecessary or unreasonable, a municipality may seek advance approval from the Commissioner as to the treatment to be accorded such cost.

(c) Those items of cost which ordinarily will be considered eligible project costs include:

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- (1) preliminary engineering activities, including engineering studies undertaken to determine whether a bridge is eligible for inclusion on the priority list of eligible bridge projects, provided that the aggregate cost thereof does not exceed 15% of the construction costs of the project;
 - (2) property acquisition;
 - (3) construction engineering services including inspection and materials testing, provided that the cost thereof does not exceed 15% of the construction costs of the project;
 - (4) construction costs;
 - (5) municipally owned utility adjustment and relocation costs; and
 - (6) in the case where a municipality undertakes a project using its own labor, equipment and material, the following:
 - (A) payroll costs of municipal employees working on the project;
 - (B) burden and fringe costs, such as FICA, vacation pay, sick leave pay, and pension contributions, of such employees so long as such costs can be audited;
 - (C) documented costs of materials;
 - (D) costs per hour of an item of equipment so long as such costs can be audited; if such costs cannot be audited then the then current equipment charges published by the Federal Emergency Management Agency.
- (d) Any project costs incurred prior to the start of construction of an eligible bridge project will be eligible for reimbursement so long as actual construction of the project for which such costs were incurred commences no earlier than the date upon which the Commissioner issues a commitment to fund the project.
- (e) Those items of cost which ordinarily will not be eligible for local bridge program funding include:
- (1) administration, including the wages or salaries of municipal employees not working directly on the project;
 - (2) overhead costs of a municipality performing construction on its own account; and
 - (3) interim or final audits.

(Effective October 24, 1984; amended October 7, 1999)

Sec. 13a-175u-5. Application for Project Grants and Project Loans; Issuance of Commitments to Fund

- (a) A municipality must file a completed preliminary application with the Commissioner on or before March 1 in each fiscal year, unless otherwise extended by the Commissioner, in order to be eligible to receive a commitment to fund during the fiscal year next following such date.

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(b) Any municipality which submits a completed preliminary application and which does not receive a commitment to fund as provided in subsection (a) of this section shall be required to resubmit such preliminary application for it to be reconsidered for funding during the next succeeding fiscal year, or shall notify the Commissioner in writing that the municipality wants such preliminary application as previously submitted to be so reconsidered.

(c) A preliminary application shall provide all information requested by the Commissioner on the Preliminary Application form.

(d) Following each filing date the Commissioner shall rank in the order of the priority list of eligible bridge projects then in effect each preliminary application which is complete. On or before June 30 of the then current fiscal year, the Commissioner shall issue commitments to fund, in the order of such priority list, each eligible bridge project the construction of which is scheduled to commence within the next succeeding fiscal year, to the extent moneys therefore are available, provided, however, that a municipality may request a waiver of the construction commencement date from the Commissioner if justification can be provided for not commencing construction of an eligible bridge project within the next succeeding fiscal year. However, for eligible projects for which the preliminary application was filed on or before October 1, 1984, or such later date as may be established by the Commissioner, commitments to fund shall be issued by the Commissioner within 90 days of such date.

(e) A commitment to fund shall lapse (1) as to a project loan or a project grant if the municipality's supplemental application as filed with the Commissioner contains estimated project costs in excess of those set forth in the municipality's preliminary application and insufficient moneys remain to fund the amount of the project loan or project grant or both, as the case may be, being requested, or (2) a municipality fails to file with the Commissioner within 270 days of the date its commitment to fund is issued, unless any such date is extended by the Commissioner for good cause shown, a completed supplemental application which shall contain all information requested by the Commissioner on the Supplemental Application form.

(f) In the case of an eligible bridge project involving more than one municipality, only one preliminary application and one supplemental application shall be filed. Each such application shall contain all the information required by these regulations with respect to each participating municipality and the preliminary application shall designate the managing municipality.

(Effective October 24, 1984; amended October 7, 1999)

Sec. 13a-175u-6. Funding

(a) After a supplemental application is deemed complete by the Commissioner he shall enter into a project loan agreement or a project grant agreement or both, as the case may be, with the filing municipality, pursuant to which the State shall, on the date all of the conditions precedent to funding are met, pay to the municipality the project grant or make the project loan, or both.

(b) Subject to the terms and conditions set forth in each project grant agreement and project loan agreement, the Commissioner shall be obligated to fund the amount of project costs

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equal to the sum of (1) the municipality's grant percentage multiplied by the project costs allocable to such municipality and (2) the project loan amount requested by the municipality up to 50% of the project costs allocable to it.

(c) In addition to any other conditions precedent to funding the project established by the Commissioner, each project grant agreement and project loan agreement shall include the following conditions precedent to funding, if applicable:

- (1) certified copies of all bids of contractors;
- (2) written justification for awarding the construction contract to any person other than the lowest bidder;
- (3) evidence that the municipality and contractor have entered into a legally binding construction contract;
- (4) the municipality has available to it, or has made arrangements satisfactory to the Commissioner to obtain, funds to pay that portion of the project costs for which it is legally obligated and which are not met by project loans or project grants;
- (5) the municipality has established a tax exempt proceeds fund account for the receipt and disbursement of the proceeds of project loans and project grants;
- (6) in any case in which an eligible bridge is owned or maintained by more than one municipality, evidence satisfactory to the Commissioner that all such municipalities are legally bound to complete their respective portions of such project; and
- (7) evidence that the legislative body of the municipality has held at least one public hearing on the eligible bridge project in accordance with subsection (b) of section 13a-175t of the Connecticut General Statutes.

(d) In addition to any other agreement of a municipality required by the Commissioner, each project grant agreement and project loan agreement shall contain the following agreements:

- (1) the municipality will commence construction of the project within 30 days after the date such agreement or agreements are entered into, unless otherwise extended by the Commissioner;
- (2) the municipality will complete such project no later than the date of completion set forth in its supplemental application, unless otherwise extended by the Commissioner;
- (3) the municipality will operate and maintain the eligible bridge properly after completion of such project.

(Effective October 24, 1984; amended October 7, 1999)

Sec. 13a-175u-7. Project Completion

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(a) Upon completion of construction a municipality will (1) certify to the Commissioner that the project is completed and (2) forward to the Commissioner an audit of the project prepared by a certified public accountant.

(b) The Commissioner will review the audit and notify the municipality of any overpayment or underpayment of project costs by the State. In case of underpayment, the Commissioner shall as soon as practicable, but in no event later than 90 days after determining such underpayment, reimburse the municipality for such underpayment. In case of overpayment the municipality shall as soon as practicable but in no event later than 90 days after such notification, reimburse the State for such overpayment.

(c) Any interest earned by a municipality from the proceeds of a project grant or a project loan shall be expended by the municipality solely for transportation purposes within the municipalities.

(Effective October 24, 1984)

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Supplemental Guidelines for Preparing Riverine Hydraulic Analyses in Permit Applications Submitted to the Inland Water Resources Division Including:

- **Inland Wetlands and Watercourses Permits**
- **Stream Channel Encroachment Line Permits**
- **401 Water Quality Certifications**
- **Water Diversion Permits**
- **Dam Construction Permits**
- **Flood Management Certification Approvals**

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SECTION 1. INTRODUCTION*Purpose of Guidelines*

These guidelines have been prepared by the Inland Water Resources Division (IWRD) to assist engineers in the preparation of engineering reports where hydraulic modeling is required. Such engineering reports are required to be submitted with IWRD permit applications for projects that fall within the IWRD's jurisdiction. Specifically, these guidelines detail the documentation necessary to demonstrate that a project is in compliance with the requirements of the State of Connecticut Flood Management Statutes and Regulations (Sections 25-68b through 25-68h of the Connecticut General Statutes [CGS] and Sections 25-68h-1 through 25-68h-3 of the Regulations of Connecticut State Agencies [RCSA]) applicable statutes and regulations. It also details the preferred format in which the documentation should be submitted to the Department of Environmental Protection (DEEP). It does not include the modeling requirements for open channel modifications, storm drainage systems, or stormwater detention facilities. Further information on these specific types of projects may be found in RCSA Section 25-68h-3.

Note to Users

These guidelines are intended for persons with a background in hydraulic modeling, therefore it is assumed that technical terms are generally understood and do not need to be explained. Applicants should remember that these guidelines have been prepared to outline a suggested format for documenting and presenting your modeling work and are not intended to provide training in the design of bridges, roadways, commercial site development, or wetlands mitigation. Compliance with these guidelines does not create a presumption that your project will be approved. Applicants should review all applicable statutes and regulations prior to preparing an application, including, where applicable, the provisions of the coastal management statutes, Chapter 444 of the general statutes.

When is a Hydraulic Analysis Required?

In any case where changes are proposed in a floodplain or in a watercourse that may affect the conveyance of flood flows, hydraulic information as outlined in this report is required. This includes but is not limited to; bridge/culvert replacements or relocations of any kind, bridge superstructure replacement if the hydraulic opening of the bridge is changed in any way, channel modifications including the placement of bank stabilization material, fill placed in a floodplain, excavation in a floodplain, or any combination of fill and excavation. The complexity of the analysis depends on whether special circumstances exist, such as the presence of a Federal Emergency Management Agency (FEMA) floodway or stream channel encroachment lines (SCEL) at the site.

SECTION 2. GOVERNING POLICIES

The following statutes and regulations establish the Flood Management policies and practices of the DEEP:

- State of Connecticut Flood Management Statutes and Regulations (CGS Sections 25-68b through 25-68h and RCSA Sections 25-68h-1 through 25-68h-3). All applications for permits in the programs administered by the IWRD are reviewed to

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insure that the proposed activities are in conformance with applicable flood management standards and criteria.

- National Flood Insurance Program (NFIP) (44 CFR, Chapter 1, Subchapter B, Part 60.3). The NFIP standards and criteria are the basis for the minimum requirements of the State's Flood Management Program.
- Inland Wetlands and Watercourses (CGS Section 22a-39 through 22a-45a), Dam Construction (CGS Section 22a-401 through 22a-411), Water Diversion (CGS Section 22a-365 through 22a-379a), Water Quality Certifications under Section 401 of the Federal Clean Water Act (33 USC 1341), and Stream Channel Encroachment (CGS Sections 22a-342 through 22a-349). These programs regulate Connecticut's inland water resources. Applications for permits in these programs are evaluated for environmental and flooding impacts.
- CGS Section 13a-94 requires that all structures built over or adjacent to streams in connection with state highway projects conform to the Stream Channel Encroachment Program requirements.

Most communities in Connecticut have adopted Flood Insurance Rate Maps and Floodway maps in conjunction with the NFIP administered by the FEMA for use in regulating development within floodplains. Many streams and rivers in these communities have been studied for the purpose of defining a flood plain area and a floodway area. The floodway is the central part of the floodplain that is reserved to ensure that a sufficient part of the flood plain will remain open to carry floodwaters efficiently.

The following are some of the standards and criteria that must be met in order for a project to be consistent with the State's Flood Management Policies:

- **Floodplains.** RCSA Section 25-68h-2(c)(1) prohibits any activity in a floodplain that would adversely affect the hydraulic characteristics of the floodplain. This includes floodplains in both inland areas and coastal areas. All permit applications for projects proposed within a floodplain must demonstrate that the project will not cause adverse impacts to upstream, downstream, or adjacent properties.
- **Floodways.** RCSA Section 25-68h-2(c)(5) and Section 60.3(d)(3) of NFIP regulations prohibit any activity within a regulatory floodway that would result in any increase in the base flood water surface elevation. In order for any proposed project that does not meet these standards to be approved, a map revision is required from FEMA.

10-Year Profiles. RCSA Section 25-68h-2(c)(5) prohibits any activity within a regulatory floodway that would result in an increase in the elevation of the 10-year water surface profile.

- **Natural Profile.** Bridges and culverts should be designed so that the proposed water surface profile does not exceed the natural profile by more than one foot for the 100-year or SCEL floodplain analysis. This applies to the replacement of existing bridges and culverts as well as the construction of new structures. If the proposed profile

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does not meet this standard, documentation must be submitted justifying the basis for the design. This standard does not apply to DOT Flood Management Certifications for projects that have a drainage area of less than one square mile. These projects have been exempted by regulation from Flood Management standards.

Notwithstanding the above, any increase over the existing water surface elevations will only be permitted provided no adverse impacts are created.

- **Water Resources.** The project should not adversely affect the environment or long range water resource planning or impair proper management and use of the water resources of the State.
- **Fish Habitat.** The project must provide for adequate fish passage and maintenance of fish habitat in watercourses that may support fish. DEEP Fisheries should be contacted in advance for technical advice for any project which may impact fisheries

SECTION 3. FUNDAMENTALS IN MODELING RIVER HYDRAULICS

Selection of Computer Modeling Programs. Most hydraulic models used in support of permit applications are one-dimensional models for calculating water surface profiles that assume steady gradually varied flow. Programs such as HEC-2, HEC-RAS, WSP2 and WSPRO are all acceptable models, since these are models that are in the public domain and can be recreated for review. In general, no other models should be submitted to the IWRD.

Other models *may* be acceptable, with prior approval from DEEP, provided they use the standard step method of solving the Energy Equation:

$$\boxed{WS_2 + a_2V_2^2/2g = WS_1 + a_1V_1^2/2g + h_e}$$

Unique situations may require specialized modeling, such as two- or three- dimensional models. If you are not using one of the above listed models, you must consult with the IWRD before submitting your application. The models used by FEMA to map floodplains assume subcritical flow and applicants recreating a FEMA study should apply the same assumption. In almost all cases, the FEMA analysis is available only on hard copy, which necessitates recreating the files for use on the computer. This should not be a problem unless the FIS utilized the U.S. Geological Survey's E431 or J635 computer programs. Neither of these programs can be run on a personal computer so it is necessary to convert the input data to another hydraulic model. In all other situations, the applicant should utilize the latest version of the same computer model as was used by FEMA, except that HEC-2 data may be run in the program HEC-RAS.

Design Discharge. If the subject site is located in a FEMA floodway or a *numbered* "A" zone, the discharge for analyzing the acceptability of a project at that site must be the same discharge used by FEMA in establishing the floodway or *numbered* "A" zone designation for the site. If the subject site is located in an *unnumbered* "A" zone or is not located in a FEMA flood zone, such that no detailed study is available), the applicant must establish an appropriate design discharge for evaluating the acceptability of the project at that site. If an applicant uses a design discharge other than the discharge used by FEMA, the applicant must still evaluate the project using the FEMA design discharge and provide a detailed justification as to why another

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discharge was selected. Both the applicant's selected design discharge and the FEMA discharge analyses must be submitted in the application package. If the subject site is riverward of SCEL, an analysis using the SCEL discharge must also be submitted. If the site is located in a floodway, the 10-year discharge must also be evaluated.

Existing Conditions Model

FEMA Cross-Section Data. As a starting point for any hydraulic modeling of a river mapped by FEMA, the most recent cross sections published in the specific community's Flood Insurance Study should be used. Applicants should contact FEMA Region I – Mitigation Division at 617-223-9561 for information on how to obtain a copy of the FIS back-up data. Applicants should note that the average request takes approximately 2 to 4 weeks to fill and costs between \$100 and \$200.

FEMA Calibration Run. The back-up data obtained from FEMA must be run “as-is” to check for any differences which may appear simply because a different version of the same model is used, or in cases where a different model is used (as when the original is unavailable to the public). This run must be included in the application package along with a summary of any differences from the published information that may occur.

Use of Cross Sections to Define a Site. An *existing conditions model* and an *existing conditions encroached model* (if a floodway is present) should be developed by utilizing the FIS data and inserting additional cross sections where appropriate to define the project site.

This is often necessary because the FIS section locations are frequently far apart and may not be located within the project limits. In the case where FEMA has accurately modeled an existing condition, the FEMA calibration run may be used for the existing conditions run unless additional cross sections are needed to define a proposed condition. For example, additional cross sections may be needed to define the site of a bridge relocation or widening. (Note: Each cross section from the *proposed conditions model* must have a matching section in the *existing conditions model*.) Existing cross sections should be taken at the locations of the downstream and upstream right-of-way limits in order to define water surface elevations in the areas beyond the roadway right-of-way. Cross section locations should be consistent with the recommendations of the manual for the model utilized.

As a starting point, the inserted cross sections should utilize roughness, contraction and expansion coefficients identical to those used by FEMA. Subsequently, based on the professional judgement of the engineer, these coefficients may need to be adjusted to reflect actual field conditions or if there are difficulties in matching the FEMA model. Such adjustments should be noted and summarized. Cross sections must span the entire floodplain. These cross sections may be a combination of survey data and existing available topographic information where appropriate. If sources other than survey data are used, an explanation should be provided. The floodway limits at the inserted sections should be scaled from the FEMA floodway maps. Floodway limits may not be modified unless a map revision has been issued from FEMA.

Accuracy of Available FEMA Cross Sections. The FEMA cross sections within the study reach of the proposal should be compared to current survey information at the location of

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the FEMA cross sections in order to determine their accuracy. In situations where any discrepancies found between the FEMA data and the current survey information are relatively minor (generally matching to within 0.5' is acceptable), the FEMA data should be used to create the *existing conditions model*. The *existing conditions model* will be used for a comparison to the *proposed conditions model*. In cases where the discrepancies between the FEMA cross sections and the current survey information are unacceptable, or obvious input errors are noted, data from the actual site conditions should be utilized.

Map Revisions. Any request to amend or modify an existing floodway must first receive a letter or a conditional letter of map revision (LOMR or CLOMR) from FEMA before DEEP will issue an approval. The purpose of a CLOMR is to ensure that the modifications will be acceptable to FEMA. A LOMR is not generally issued until a project is complete. The map revision process may be lengthy, so be sure to allow sufficient time for this process in your project schedule. The applicant should contact FEMA to obtain the most current document that outlines the procedures for obtaining a CLOMR.

When there is no Detailed FEMA Study. If FEMA has not established a flood zone with elevations on the watercourse or has not established a floodway, the applicant must develop an *existing conditions model* using field survey data and reasonable coefficients with a calculated design discharge based on a hydrologic model that is appropriate for the site such as TR-55.

In some cases where a culvert is proposed to be replaced in an area which has an unnumbered "A" zone, use of a model such as HY-8 may be acceptable for use in calculating differences in the water surface elevation upstream of the proposed culvert.

When FEMA Data is Unavailable. In some situations the FEMA input information is not available. In this case, applicants must provide the DEEP a letter from FEMA indicating that the requested material cannot be supplied. Applicants may then exclusively use field survey data to produce a model that matches as closely as possible to the published FIS model. A closer match may be made by adjusting roughness, contraction, and expansion coefficients. At minimum, cross sections should be taken as close to FEMA sections as possible. On rivers with established SCEL, cross section information from the SCEL study may be available from the DEEP.

Natural Conditions Model

For new or replacement bridges and culverts, a *natural conditions model* must be developed. The natural conditions model is intended to show the floodplain in the vicinity of the project as it would be without any artificial encroachments or modifications. For replacement bridges, the natural profile may be developed by modifying the *existing conditions model* to remove the bridge or culvert structure and any approach embankments. In the case where a downstream bridge or dam affects the tailwater of the bridge at the site, two models are required. The first model should show the natural conditions with all obstructions removed. The second model should show the proposed conditions with the downstream obstruction removed but the subject bridge left in place. This will more clearly demonstrate the effect of the subject bridge in comparison with natural conditions. The backwater value of the proposed bridge will be considered to be the difference between the two models.

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Proposed Conditions Model

The *proposed conditions model* and *proposed conditions encroached model* (if floodway is present) is developed by modifying the *existing conditions model(s)* to reflect proposed changes. The *proposed conditions model* is compared to the *existing conditions model* to evaluate the hydraulic impacts of the project. The proposed project must not increase the water surface elevations for the 10 or 100-year floodway (encroached condition) profiles. If the proposed activity causes any increases, then the project design must be modified to eliminate these increases. If increases are shown for the unencroached 100-year profile or the SCEL profile, the impacts must be thoroughly discussed. Adverse impacts are not permissible. Additionally, for bridge and culvert projects, the proposed profile must be compared to the natural profile to determine if the design satisfies the goal of no more than one foot of backwater over the natural profile for the 100-year and/or the SCEL floodplain analysis. The applicant must satisfy this goal unless they can demonstrate unusual circumstances such as adverse property or environmental impacts.

When a floodway run is required, you must use FEMA's discharge. Do not propose increases in the floodway model over the model representing existing field conditions. Remember, proposed encroachments into the regulatory floodway will not be permitted if the project results in any increase (greater than **0.00** feet) in either the 10 or 100-year floodway (encroached condition) profiles. The IWRD will not approve an increase in the floodway elevations unless FEMA has granted a conditional letter of map revision. Some increase in the floodway elevations within the roadway right-of-way of a state project may be acceptable without FEMA's prior approval.

If the proposed unencroached 100-year water surface profile will be lower than the published information by more than 0.5 feet or if there are significant differences in the published data and the proposed water surface elevation due to modeling differences or errors in the FEMA data, you must notify FEMA by letter with a copy to the town and DEEP once the project is complete and provide to FEMA the hydraulic model information with the 500 year, 100 year, 50 year and 10 year flood profiles and an equal conveyance floodway. The letter sent to FEMA should make it clear that the information is being submitted for FEMA's future mapping use and not for a current map revision, as per agreement between DEEP and FEMA. The address for the FEMA Region I office (serving Connecticut) is:

J.W. McCormack Post Office and Court House
Room 442
Boston, MA 02109
617-223-9561

SECTION 4. SUMMARY AND PRESENTATION OF INFORMATION

The results of the hydraulic modeling should be clearly summarized in the engineering report to show water surface elevations, velocities and cross section information. This is best done through tables, profiles, cross section plots, and a clear narrative. A well-organized presentation can greatly facilitate timely permit reviews.

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Hydraulic analyses should be submitted with the input data and full output tables. In the engineering report, conclusionary statements should be explained and fully supported by back-up data. Copies of computer output sheets should be checked for legibility. Often these pages are too light to read after being copied.

A CD of all input files contained within the report with an index of these files should be included with the engineering report. Label the disk with the project name. By including this diskette, some additional information requests may be avoided. In addition, if a disk is included, the output of the models need not be submitted; only a hard copy of the input and the summary tables must be included in the submittal.

Narrative. A narrative sufficient to explain the project should accompany the hydraulic analyses. The narrative should contain sections for project description, natural conditions, existing conditions, proposed conditions, and the hydraulic summary. Unusual error messages identified by the hydraulic analysis should be explained and/or commented upon. A complete narrative will assist DEEP staff to understand unusual circumstances or complex situations pertaining to the project. Any other information that the applicant feels will be helpful in assessing the project should also be included. Make sure the copies of the engineering report, especially computer printouts and hand computation sheets are legible. If the report is bound, make sure that no portions of the computer printouts are obscured. Reports should be tabbed and labeled so that sections can be easily located.

Profiles. In a report containing more than one discharge, profiles should show existing, proposed, and natural conditions on one page for each discharge. This enables an easy comparison of the profiles. A separate page should be used for each discharge. The existing and proposed profiles should converge both upstream and downstream of the project site or at least pass through critical depth. If decreases in water surface elevation are shown, convergence within 0.5' is acceptable. If not, the analysis should be extended upstream until convergence or critical depth is reached.

Cross Section Plots. The report should include plots of the cross sections, looking downstream. Cross section plots should be clear and have proposed conditions superimposed onto the existing conditions. Computer generated plots are often of a scale which does not clearly differentiate between existing and proposed conditions. In these situations, the applicant should provide drafted plots of the project area large enough so that existing versus proposed conditions are clearly depicted. The scale of the plots should be clearly denoted. A plan sheet showing cross section locations is required.

Tables. Table fields should be clearly labeled. A separate table should be shown for each discharge. Each cross section that is used in the model should be listed together with the published FEMA water surface elevation, existing and proposed conditions. FEMA lettered sections should be labeled. Include the differences between the FEMA and the existing model, and the difference between the existing and the proposed model.

Summary

Include in the hydraulic package:

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- Natural, existing, and proposed models based on the appropriate discharge.
- CD with input.
- Adequate narrative.
- Hydraulic Data Sheets.
- Profiles – one page per discharge.
- Cross sections.
- Tables – one table per discharge.
- Plans including erosion and sediment controls and water handling

NOTE: TO ALL APPLICANTS AND THEIR DESIGN TEAM.

When submitting an application requiring river hydraulic models the following fundamental information must be provided.

- **A copy of the FEMA back-up data. Note: FEMA cross-sections and flows must be used in development of the model.**
- **If FEMA back-up is not available, a copy of the original request to FEMA and the response letter back from FEMA must be provided.**
- **A disk including all runs as defined in the hydraulic Guidance Document. (NOTE: All runs must be provided on one disk under one project)**
- **No modifications to floodway boundary are permitted without approval from FEMA.**
- **The Hydraulic Analyses and results of the hydraulic modeling should be clearly summarized in the engineering report.**

This is fundamental information required in making a complete application and is not considered extra work. Failure to provide the above as minimum requirement will result in rejection of the application.

SECTION 5. OTHER IMPORTANT CONSIDERATIONS

Fish Passage. Projects must be designed to accommodate fish passage and maintain fish habitat where needed. If a culvert is proposed instead of a bridge, some methodologies used to provide fish passage are: sinking a box culvert bottom roughly one foot to allow accumulation of natural sediment in the box, providing a low flow channel, or using an inverted “U” type culvert in order to leave a natural bottom. Whenever a box culvert is proposed as a new river crossing or as a replacement for an existing bridge, it is advisable to contact the DEEP Fisheries Division prior to completing plans.

Spanning the Floodway. When an existing bridge spans the floodway, with its abutments at or outside the floodway limits, a proposal to replace the bridge in kind or with a greater span will not require a floodway evaluation provided the low chord of the existing and proposed bridge is higher than the floodway elevation. This information must be clearly shown on plans and elevations. In the design of a new crossing, it is highly recommended that no part

APPENDIX 5 - HYDRAULIC ANALYSIS GUIDANCE DOCUMENT

of the structure be within the floodway. This will eliminate the need for a floodway assessment but does not negate the need for obtaining an environmental permit(s) or approval of a flood management certification.

Overtopping of Local Bridges. Under certain limited conditions defined by regulation, local bridges may be allowed to overtop by floodwaters if site constraints so warrant. In this case, the application must state how the bridge will be closed to traffic in the case of a flood, what detour routes are available, and that the bridge will be posted as being prone to flooding.

Flood Storage. When a hydraulically inadequate bridge or culvert is proposed to be replaced and a significant drop in backwater at the structure is expected, the applicant must investigate whether the subsequent loss of upstream flood storage will have an adverse downstream impact. Information provided to DEEP to show the downstream impact should include the volume of storage upstream of the bridge lost in acre-feet. If the volume of storage lost is significant, more detailed flood storage routing may be required. Measures such as replacing the bridge or culvert in kind may have to be taken to avoid an adverse downstream impact.

Metric vs. English Units. Projects are sometimes designed using metric units, in compliance with past federal mandates. A hydraulic analysis that is completed in metric units may be submitted with an application; however, the summary must contain tables in both English and metric.

Tailwater Control. Occasionally a bridge or culvert will be inundated by backwater from a downstream river or from Long Island Sound. In these cases, the hydraulic analysis should generally be conducted using the design inland storm together with a ten-year tailwater elevation, unless it can be demonstrated that use of a different tailwater elevation would be appropriate. DEEP should be contacted for concurrence prior to submission of the report.

Channel Restoration. Channel restoration plans must be provided for all open channel work. The plan will help restore and/or create an aquatic habitat suitable for fisheries, if applicable, as well as maintain or improve water quality, recreation, aesthetics and flow capacity. The channel restoration plan should include, as appropriate: avoidance of barriers to fish movement; formation of pools and riffles; provisions for areas of sheltered flow with use of deflectors, boulders, or low check dams; preservation of stream bank vegetation and establishment of new vegetation; use of clean natural bed materials of a suitable size; scheduling of work to minimize conflicts with spawning, stocking, and fishing season; and removal of excess debris. The plan must be designed to avoid adverse hydraulic impacts from obstructions placed in the stream. Consultation with the DEEP Fisheries Division is recommended.

Temporary Hydraulic Facilities. Temporary hydraulic facilities include, among other things, temporary bridges, by-pass channels, haul roads or channel constrictions such as cofferdams. The [Connecticut Department of Transportation Drainage Manual 2000](http://www.ct.gov/dot) (<http://www.ct.gov/dot>), Chapter 6, Section 15, and Appendix 6.F describes the methodology for determining the temporary design discharge for such facilities. Such facilities must be capable of conveying the temporary design discharge for the temporary facility without endangering life or property (including the structure under construction). The temporary hydraulic facilities should not cause roadways to be overtopped or aggravate existing flooding conditions during the

APPENDIX 5 - HYDRAULIC ANALYSIS GUIDANCE DOCUMENT

temporary design discharge. In the case where such facilities are utilized, the hydraulic design based on the DOT drainage manual must be provided.

Hydraulic Data Sheets. Hydraulic data sheets should accompany every hydraulic report involving a bridge. Data sheets may be found in the [DOT Drainage Manual](#), Chapter 9, Appendix A.

Plans. Plans should be provided that are in conformance with the requirements listed in the application instructions DEEP-IWRD-INST-100. Plans must include erosion and sediment controls as well as water handling and sequence of construction information.

Pre-application Meetings. In cases where a project is hydraulically complex or problems with hydraulic modeling are foreseen, a pre-application meeting with IWRD engineering staff is highly recommended.

Copies. Only one copy of a hydraulic analysis should be submitted with an application, regardless of how many total copies of the application are required. This does not include plans, which must be submitted in the appropriate number.

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
BUREAU OF WATER MANAGEMENT
INLAND WATER RESOURCES DIVISION
79 ELM STREET, THIRD FLOOR
HARTFORD, CT 06106-5127
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CONNECTICUT DEPARTMENT OF TRANSPORTATION



LOCAL BRIDGE PROGRAM

PRELIMINARY APPLICATION

Preliminary application is hereby made by the Town/City/Borough of _____
for possible inclusion in the Local Bridge Program for Fiscal Year **2016** for the following structure:

Bridge Location: _____

Bridge Number: _____ Structure Length: _____ feet Curb-to-Curb Width: _____ feet

Sufficiency Rating: _____ Priority Rating: _____

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: _____ *(note Bridge Repair Code as per page 66 of the FY 2016 Local Bridge Program Manual; attach narrative/preliminary plans & specifications).*

Name of Municipal Official to Contact: _____

Title: _____ Telephone: _____ Ext: _____ Fax: _____

Mailing Address: _____

E-mail: _____

Anticipated Schedule:

(MM/DD/YYYY)

Public Meeting Conducted: _____

Design Completion: _____

Property Acquisition Completion: _____

Utilities Coordination Completion: _____

Construction Advertising: _____

Supplemental Application Submission: _____

(Not applicable for Federal Local Bridge Program projects)

Start of Construction: _____

Completion of Construction: _____

Local Bridge Program – FY 2016 Preliminary Application

Bridge Number _____, Town/City/Borough of _____

Preliminary Cost Figures:

Preliminary Engineering Fees (Include Breakdown of Fees)	\$ _____
Rights-of-Way Cost (If applicable)	\$ _____
Municipally Owned Utility Relocation Cost	\$ _____
Estimated Construction Costs (Include Detailed Estimate)	\$ _____
Construction Engineering (Inspection, Materials Testing)	\$ _____
Contingencies (10% of Construction Costs Only)	\$ _____
Total Estimated Project Cost	\$ _____

Financial Aid Data:

NOTE: Eligibility and type of funding limited to [qualifying bridges](#)

Federal Reimbursement:

Total Estimated Project Cost multiplied by 80%:

Federal Aid Request \$ _____

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

Municipal Grant Percentage _____% of Total Cost (see Appendix 2 of [FY 2016 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 2016.

Signature: _____ Date: _____

Name: _____ Title: _____

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

Return **original signed applications** to: Mr. Francisco T. Fadul
Project Engineer for the Local Bridge Program
Connecticut Department of Transportation
2800 Berlin Turnpike, P.O. Box 317546
Newington, Connecticut 06131-7546

COMMENT FORM

FY2016 Local Bridge Program Manual

In order to improve this manual for future users, your comments and suggestions would be greatly appreciated. What parts of the manual did you find:

Most helpful, and why? _____

Least helpful, and why? _____

Confusing? _____

I would like more information on: _____

General Comments: _____



Fold along dotted line

Place
Stamp
Here

Francisco T. Fadul
Local Bridge Program, Room 3300
Connecticut Department of Transportation
PO Box 317546
Newington, CT 06131-7546

Fold along dotted line
