FDM 3-5-1 Asset Management

May 17, 2021

Asset management is a data driven decision making process that blends financial reality with technical analysis to produce prioritized infrastructure improvement and maintenance recommendations. It may not result in the least-cost outcome, but rather one which optimizes the balance between cost effectiveness and long-term system infrastructure health. Data-driven, iterative logic in asset management allows the balance between current treatments, long-term conditions, and minimal backlog of unmet needs to be recalibrated as variables such as funding change.

Asset management is not exclusive to any one group of infrastructure assets. The goal is to operate in a financially sustainable manner while providing a framework to improve long term system health; achieving preservation of assets while minimizing the whole life costs to do so.

The preservation focus is a practical design approach to system management of the assets that maintains acceptable serviceability using improvement strategies that optimizes to the best possible system-wide service at the lowest practicable cost. Improvement projects can include corrective, preventative or restorative maintenance work as defined in the Highway Maintenance Manual HMM 02-10-15. Typically, items that include grading (e.g. ditch and pipe cleaning, grubbing, etc.) and clearing would not be included with improvement projects. It is the responsibility of the Maintenance Workplan to prioritize and schedule work such that it meets the intent of asset management and harmonizes well with the improvement program. This will result in the best long-term conditions and lowest number of unmet needs that can be achieved with available funding. See Asset Management by a Practical Design System Preservation Approach FDM 11-1-5.

1.1 Improvements Strategies

1.1.1 Perpetuation

Perpetuation projects preserve the existing assets and utilize the existing facilities, staying within the existing subgrade shoulder points or curb and gutter. See FDM 11-1-10 for application of design criteria.

1.1.2 Rehabilitation

Rehabilitation projects are Perpetuation projects with corrective actions at specific locations as identified and justified through safety, operations, environmental or ancillary factor evaluations. See FDM 11-1-10 for application of design criteria.

1.1.3 Modernization

Modernization is construction on a new horizontal alignment or where a roadway through travel lane(s) did not previously exist or constructing a new bridge. See FDM 11-1-10 for application of design criteria.

FDM 3-5-5 Federally Funded Preventive Maintenance Projects

May 15, 2019

5.1 Introduction

Preventive Maintenance (PM) is the planned strategy of cost effective treatments to an existing roadway system and its appurtenances that preserves the system, retards future deterioration, and maintains or improves the functional condition and safety of the system without increasing structural or operational capacity. The work on a PM project must not degrade existing roadway geometrics or appurtenances.

The criteria used to develop the Streets and Highways agreement are based on guidance issued by FHWA on October 8, 2004, “Preventive Maintenance Eligibility”, https://www.fhwa.dot.gov/preservation/100804.cfm; the September 12, 2005, “Pavement Preservation Definitions”, https://www.fhwa.dot.gov/pavement/preservation/091205.cfm; and the follow-up on February 25, 2016, “Guidance on Highway Preservation and Maintenance”, https://www.fhwa.dot.gov/preservation/memos/160225.cfm; as well as current AASHTO guidance on Preventive Maintenance.

An agreement between WisDOT and the FHWA Wisconsin Division allows for the use of Federal-aid Highway Funding for Preventive Maintenance activities as authorized in 23 USC 116 (e), “Preventive Maintenance” on all eligible Federal-aid highways in the State of Wisconsin. WisDOT and FHWA have signed two documents that allow for the use of federal funds for preventive maintenance activities:

1. *"Agreement for the use of Federal Funds for Preventive Maintenance of Streets and Highways"*, (Exhibit 5.1), which is limited to Preventive Maintenance (PM) activities on roadways (except PM projects are not currently eligible on the local roads system). Preventive Maintenance on Structures is not covered by this agreement.
2. "*Agreement for the use of Federal Funds for Preventive Maintenance of Structures*", (Exhibit 5.2), which is limited to Preventive Maintenance (PM) activities on Structures. Limits for bridge preventive maintenance projects will include the bridge plus nominal approach roadway lengths on each end to include the bridge approach guardrail. Advance load posting signs beyond these limits may be included.

PM projects preserve and maintain existing roadways and structures and are not intended to upgrade or improve highway facilities, except as provided in the agreements.

Federal PM funding is only allowable for roads (except roads on the local roads system) and structures that are eligible for federal funding on the interstate, NHS, and non-NHS systems.

To optimize the value of performing PM activities, combine the various types of preventive maintenance work needed to restore a given section of highway (or combined sections of highway, bridges, or both) into one PM project whenever practical.

5.2 Requirements

PM work must meet all applicable requirements listed in the agreements, unless both WisDOT and FHWA agree to waive one or more of the requirements on a project. Document the waiver and agreement in the DSR for that project.

Review the agreements in Exhibit 5.1 and Exhibit 5.2 to determine whether the proposed work is eligible for federal PM funding, and the activities that are required on the PM project. The use of federal funds for PM work is limited to the eligible work types listed in the agreements, unless:

- A non-listed work type meets the eligibility requirements for PM, and
- WisDOT and FHWA both agree that it is eligible on a project. Document the work type and agreement in the DSR for that project.

The activities required on a PM project vary depending on the work type(s) used on that project.

5.2.1 Federal Aid Requirements and WisDOT Procedures

PM projects are WisDOT improvement projects. Work must follow all normal and applicable Federal Aid and WisDOT requirements and procedures.

5.3 Preventive Maintenance on Streets and Highways - Eligible Work Types

See section III of the agreement in Exhibit 5.1 for types of PM work on streets and highways that are eligible for federal funds, Eligible work types on streets and highways fall into six (6) broad categories:

1. Group 1 Pavement Strategies
2. Group 2 Pavement Strategies
3. Group 3 Pavement Strategies
4. Drainage Restoration
5. Safety Appurtenances
6. Other

5.3.1 FHWA Pavement Preservation Strategies

FHWA defines a pavement preservation program as a network level, long-term treatments program that enhances pavement performance by using an integrated, cost-effective set of strategies to extend pavement life, improve safety, and meet motorist expectations. A comprehensive pavement preservation program includes preventive maintenance, minor rehabilitation (non-structural), and routine maintenance activities. An effective pavement preservation program will address pavements while they are still in good condition and before the onset of serious damage (see section below, "Determining Pavement Condition").

There are three (3) groups of PM pavement preservation strategies:

1. Group 1 strategies consist of higher type construction with a longer expected life than either Group 2 or Group 3 strategies.
2. Group 2 strategies are relatively less expensive than Group 1 strategies and help to maintain the pavement in good condition. Group 2 strategies have a shorter expected life than Group 1 strategies and a longer expected life than Group 3 strategies.
3. Group 3 strategies involve less construction effort and have a shorter expected life than either Group 1 or Group 2 strategies.

Confer with the region pavement design engineer on the appropriate strategy to use.

Note: Pothole filling is routine maintenance and not eligible for preventive maintenance.

Determining if pavement treatment qualifies as a capital improvement

Several of the Group 2 and Group 3 strategies are only eligible as federally funded preventive maintenance if they are capital improvements, i.e., there is an appreciable extension to the capital life of an asset. This means that the treatment must have a rehabilitation effect on the pavement and extend the service life of the pavement by four (4) years or more. Again, confer with the Program Development and Analysis Section of DTIM's Bureau of State Highway Programs (BSHP) and with the region pavement design engineer.

Provide documentation in the project DSR that the treatment qualifies as a capital improvement.

5.3.1.1 Group 1 Pavement Preservation Strategies

Group 1 Pavement Preservation Strategies are:

- Resurfacing
- Milling and resurfacing
- Portland cement concrete (PCC) dowel bar retrofitting with diamond grinding

Resurfacing is eligible for preventive maintenance (PM) subject to the following:

- A maximum of 2 inches of new asphalt pavement can be placed, including all leveling and wedge courses, unless correcting cross slope deficiencies, and
- If the existing lane width and finished shoulder width have not been reduced from those that were built under new construction / reconstruction and the sideslopes contiguous with the finished shoulder are 4:1 or flatter than the new surface can be a maximum of 2 inches above the existing profile at the shoulder point. Otherwise, the new surface cannot be raised above the existing profile at the shoulder point.

Additional pavement thickness is allowed in the middle of a pavement section to correct for cross slope deficiencies. For example, correcting a cross-slope from 1.5% to a 2.0% over a 12-foot lane will increase the overlay thickness in the middle to about 2.75 inches while thickness at the edge of pavement is 2 inches (see Attachment 5.1).

5.3.1.2 Group 2 Pavement Preservation Strategies

Group 2 Pavement Strategies are:

- Asphaltic patching – full depth
- PCC joint restoration
- PCC patching – full depth
- PCC cross-stitching
- Shoulder restoration/paving
- Paved shoulder addition
- Diamond grinding

Asphaltic patching-full depth and PCC patching–full depth are not eligible for federally funded PM if performed as routine maintenance of random or isolated spot locations. However, combining locations to establish a reasonable sized project is eligible.

Asphaltic patching-full depth, PCC joint restoration, and PCC patching–full depth are only eligible for federally funded preventive maintenance (PM) if they can be shown to be capital improvements (see guidance in FDM 3-1-5.3.1 for determining if work qualifies as a capital improvement).

5.3.1.3 Group 3 Pavement Preservation Strategies

Group 3 Pavement Strategies are:

- Milling
- Rut filling
- Seal coating
- Micro-surfacing
- Crack filling

Group 3 Pavement Preservation Strategies are not eligible for federally funded PM if performed as routine maintenance of random or isolated spot locations. However, combining locations to establish a reasonable sized project is eligible.

In addition, three of the Group 3 Pavement Preservation Strategies - Seal coating, Micro-surfacing, and Crack filling - are only eligible for federally funded preventive maintenance (PM) if they can be shown to be capital improvements (see section 5.3.1, “Determining if pavement treatment qualifies as a capital improvement”).

LIST OF ATTACHMENTS

Attachment 5.1	Allowable Overlay on Existing 2% Cross Slope

LIST OF EXHIBITS

Exhibit 5.1	Agreement for the Use of Federal Funds for Preventive Maintenance of Streets & Highways (Except Structures)
Exhibit 5.2	Agreement for the Use of Federal Funds for Preventive Maintenance of Structures

FDM 3-5-10 Force Account Agreements *May 15, 2019*

10.1 Introduction

Although WisDOT policy is to let construction contracts through a competitive bidding process, under special circumstances the department may enter into an agreement directly with local governments, railroads, and utilities for the performance of construction work. Several types of "force account" agreements are used to this end and they are discussed in this procedure. (Note: the “force account” agreements discussed below are different than the Force Account work described in Section 2.46 of the Construction and Materials Manual.)

10.2 Wisconsin Statutes

The statutory basis for WisDOT's policy to let contracts through bidding lies within Section 84.06(2) which states in part:

> *"All such highway improvements shall be executed by contract based on bids unless the department finds that another method as provided in sub. (3) or (4) would be more feasible or advantageous."*

Subsection (3) allows the department to forgo the bidding process and enter into an agreement directly with local governments by stating in part:

> *"If the department finds that it would be more feasible and advantageous to have the improvement performed by the county in which the proposed improvement is located and without bids, the department may, by arrangement with the county highway committee of the county, enter into a agreement satisfactory to the department to have the work done by the county forces and equipment."*

The same allowance is made for cities, towns and villages:

> *"The provisions of this subsection relating to agreements between a county and the state shall also authorize and apply to such arrangements between a city, town or a village and the state."*

Utilities and railroads may also enter into a force account agreement with the state as allowed by Subsection (4)

which states in part:

> *"If an improvement undertaken by the department will cross or affect the property or facilities of a railroad or public utility company, the department may, upon finding that it is feasible and advantageous to the state, arrange to perform portions of the improvement work affecting such facilities or property or perform work of altering, rearranging or relocating such facilities by agreement with the railroad or public utility. Such agreement shall be between the railroad company or public utility and the state and need not be based on bids."*

10.3 Types of Force Account Agreements

The department has developed several agreement types for the administration of the force account agreements allowed by 84.06 (3) & (4). The type of agreement to be used for a particular project is primarily dependent on the organization performing the work. Other criteria of interest are the funding program and the jurisdictional system on which the work will be done. These considerations are outlined in the following table.

Table 10.1 Agreements

Type of Agreement	System	Funding Source	Funding Program
STATE FORCE ACCOUNT	STH	Fed/State	Any
LOCAL FORCE ACCOUNT (on the STH system)	STH	Fed/State/Local	Any
LOCAL FORCE ACCOUNT (on the local system)	LOCAL	Fed/State/Local	STP/HES/BR/CMAQ/TE
Utility Agreement	Any	Any	Any
Railroad Agreement	Any	Any	Any

10.3.1 State Force Account and Local Force Account (State System) Agreements

A State Force Account (SFA) agreement is used when the department performs work on the State Trunk Highway System with its own forces and equipment and the work is funded under an improvement project. Local Force Account (State System) agreements are used when a local unit of government does work for the department on the State Trunk Highway System.

The type of work associated with SFA projects is generally traffic, safety or other minor roadway related items such as traffic signals, signing, pavement marking, lighting and guardrail. The work is funded with federal or state funds. It is typically low cost and can be done by state, county or local forces with minimal plan detail and with only short lead-time

10.3.2 Local Force Account Agreements (Local System)

Local Force Account (LFA) agreements are used when a local unit of government does work on their own local highway system. Local units cannot use Federal-aid funds to have another local unit perform construction work on their own system. Under these agreements the locals are reimbursed for the actual costs incurred in performing the work up to an agreement maximum (as amended by any change orders); however, the labor, material, and machinery rates are projected in advance and must be determined to be cost effective. These agreements are to be based on the actual cost required to perform the work so that they cannot result in profit or loss for the unit of government performing the work. Any state, local or federal funding program for which the project is eligible may be used with this agreement type.

The type of work associated with LFA (Local System) will typically be limited to locally maintained traffic signal, lighting, signing, pavement markings, guardrail and utility work related to WisDOT improvement projects that can't be accommodated through the project letting or utility adjustment processes. Very narrow LFA exceptions may be made at WisDOT discretion; decisions will be made by on a case by case basis.

10.3.3 Utility & Railroad Agreements

Utility (UTL) and railroad (RR) agreements are used when railroad companies or public utilities perform portions of road improvement work that affect their facilities, or work to alter or relocate their facilities. Any available funding source may be used for these agreements and the work may be done on any jurisdictional system.

These types of agreements have been deemed to be in the public interest by definition and need not be justified on an individual project basis.

10.4 Policy Regarding Agreements

If a municipality (county or other unit of local government) wishes to construct a highway project with its own work force and equipment, it must comply with the Wisconsin Department of Transportation's "A Policy on Construction of State and Federal-Aid Highway Projects by Forces and Equipment of Counties or Other Local Governmental Units." The policy has been written to define WisDOT's position, regarding non-competitive bid agreements (force account agreements) with municipalities. The policy establishes general procedures and criteria for entering into force account agreements.

This policy is shown in Attachment 10.1.

This policy also defines the items necessary to show a force account agreement with a local unit of government is cost effective. FDM 3-5-10.9 describes how a Cost Effectiveness Finding is developed as well as other cost documentation for a force account agreement.

10.4.1 Contracted Work (Federal Funded)

Municipalities that wish to perform work with their own forces on their own system using federal funds must be "adequately staffed and suitably equipped" to undertake and satisfactorily complete the work. "Adequately staffed" means that all work must be completed by the municipality itself (unless let via a competitive contract). If the municipality requires assistance from a contractor, then by definition, they do not have adequate forces to complete the work.

10.5 Project Oversight Requirements for Components of Project Listed in State/ Municipal Agreement (Local System)

As noted above, portions of a project may be federally funded and other portions may be entirely locally funded. Development oversight as defined in this Facilities Development Manual by the MC or other consultant is required for all federally funded components of work performed.

10.6 Development Oversight (Local System)

Environmental: The entire project must meet NEPA requirements Purchase of Real Estate: Real estate purchased for the project must follow the process per the Uniform Act.

Design Standards: LFA project development must follow the regulatory standards (for town road, as outlined in TRANS 204, for county roads, as outlined in TRANS 205), and appropriate guidance as outlined in FDM 11-40 for Perpetuation and Rehabilitation projects as applicable.

10.6.1 Project Development

Regions are responsible for developing SFA or LFA projects on the state system. Local Units of Government are responsible for developing LFA projects on their local system. A PS& E will not be prepared for submittal to the central office for any SFA project or for state funded LFA projects. A PS&E is required for all federally funded LFA projects. The process to follow is summarized in Table 10.2. The details of the LFA and the PS&E procedure, when required to be submitted to Central Office, are contained in FDM 19-25-5.

Table 10.2 SFA/LFA Development Process

	Action Required		
Project Type & Size	**PS&E to C.O.**	**Agreement & DT25 to C.O.**	**Agreement Execution by Region**
SFA	No	No	Yes
LFA< $5,000	No	No	Yes
LFA>$ 5,000 (Local)	Yes	Yes (1)	No
LFA>$5,000 (State)	Yes	Yes	No

(1) DT25 not required for CMAQ or TE projects.

SFA and LFA projects that have certain levels of involvement (include signals, lighting, electrical work, etc.) should be coordinated with the appropriate region staff and central office bureau (refer to Table 10.3).

***Table 10.3** Region Staff and Central Office Bureau Coordination Contacts*

Project Involvement	Manual Reference	Region Contact	Central Office Contact
Design Standards	FDM - Chapter 11	Project Development Section or LPPM	DTSD/BPD - Design Standards and Oversight Section or Local Project Delivery Section
Environmental Documentation	FDM - Chapters 20 - 26	Region Environmental Coordinator, LPPM	DTSD/BTO - Environmental Process and Documentation Section
Real Estate Acquisition	Real Estate Program Manual	TS Section, Real Estate Services Unit, LPPM	DTSD/BTO - Acquisition and Services Section
Structures	Bridge Manual	NA, LPPM	DTSD/BOS
Lighting, Signals, Electrical Work	Traffic Engineering, Operations and Safety Manual (TEOpS) - Chapters 4 and 11	Traffic Systems and Management, Traffic Systems Unit, LPPM	DTSD/BTO
Signing	TEOpS - Chapters 2	Traffic Engineering and Safety, Traffic Design Unit, LPPM	DTSD/BTO
Railroads	FDM - Chapter 17	Region Railroad Coordinator, LPPM	DTIM/BTLRRH - Rails and Harbors Section
Utility Coordination	FDM - Chapter 18	Region Utility Coordinator, LPPM	DTSD/BTO - Acquisition Section, Utility and Access Unit

DTSD = Division of Transportation System Development

BPD = Bureau of Project Development

BOS = Bureau of Structures

BTO = Bureau of Traffic Operations

DTIM = Division of Transportation Investment Management

BTLRRH = Bureau of Transit, Local Roads, Rails, and Harbors

LPPM = Local Program Project Manager

10.7 Documentation for LFA Local and State Agreements ≤ $5,000 and > $5,000

If a project does not require a PS&E to be submitted to central office then the region shall keep a project folder with the following items and complete the actions listed below.

1. Project concept and estimate. The subject project may be part of a larger improvement project or it may be a stand-alone project. If it is a stand-alone project, the region will submit either a separate Concept Definition Report and Design Study Report or they may submit a combination Concept Definition Report / Design Study Report. Send an informational copy to the Design Standards and Oversight Section in the Bureau of Project Development (BPD). The DSR format (FDM 11-4 Attachment 10.1) needs to be reviewed and those items that apply to the project need to be addressed. Include a statement identifying the environmental action, which would normally be a Categorical Exclusion or programmatic Environmental Report.
2. A cost effectiveness finding is required to justify doing the work with state, county or local forces. If over $50,000, prepare a cost effectiveness finding and submit it in accordance with FDM 3-5-10.9. The analysis needs to be only as detailed as necessary to show that it will cost less to do the work with state, county or local forces than with private forces. If the project is $50,000 or less, the finding is

programmatic and no cost comparison is prepared. Just document in the project folder that the project meets the programmatic criteria for cost effectiveness. For LFAs less than $50,000 include the Justification for Negotiated Agreements $50,000 or less form, Attachment 10.4. Indicate the results of the cost effectiveness finding on form DT25, "Recommendation to Governor for Contract and Bond Approval."

3. If proprietary materials are proposed to be used, document in the project folder that they are on the product selection list in FDM 19-1-5. Otherwise, justification is required to be approved by BTO or BPD (and FHWA for oversight projects).
4. If federal funds are proposed to be used, an FHWA-37 authorizing the use of federal aid funds is required to be submitted and signed by FHWA prior to charging any costs.
5. Sufficient plan details or sketches need to be prepared to show the location of the work, what work will be done, what materials will be used and any notes that will be issued to direct the construction staff.
6. Nondiscrimination, Buy America, and Records Retention provisions are required per FDM 19-25 Attachment 10.3.
7. Actual project construction costs (i.e. labor, materials, equipment, etc.) need to be documented.
8. If the LFA project is within policy guidelines (see FDM 3-20 Attachment 1.1) the Region Project Development Chief shall formally approve the proposed work prior to initiating any construction activities. If a project element does not meet policy guidelines, the Chief of BPD's Design Standards and Oversight Section should be contracted to discuss the possible exception.
9. If the LFA - Local project agreements ≤ $5000, include a copy of the executed LFA agreement in the project file. Send a copy of the signed LFA agreement directly to the Bureau of Financial Services to obligate funding. For LFA - Local agreements >$5000, submit completed Forms DT25 and DT2056 to central office. Typically plan details as specified in #5 above are attached to DT2056. Central office will coordinate agreement execution and notify the region.
10. If the LFA - State project agreements ≤ $5000, include a copy of the executed LFA agreement in the project file. Send a copy of the signed LFA agreement directly to the Bureau of Financial Services to obligate funding and to the Bureau of Traffic Operations (BTO at StateLFASubmittal@dot.wi.gov). For LFA - State agreements >$5000, submit completed Forms DT25 and DT2056 to BTO at the email listed above. BTO will coordinate agreement execution and notify the region. Refer to PMM 06-10-05 for State LFA process details.

10.8 Developing a Local Force Account Agreement

The municipality, through interaction with the region, may proceed to develop an agreement after being informed by the region that the cost effectiveness finding and any exceptions to policy criteria have been approved. Agreement forms and guidance are located in FDM 19-25-5. See FDM 3-5-10.9 for information for developing a Cost Effectiveness finding.

10.9 Cost Effectiveness Findings

Guidelines for the preparation and approval of a cost effectiveness finding are discussed in Attachment 10.1 "A Policy on construction of state and Federal Aid Highway Projects by Forces and Equipment of Counties or Other Local Government Units." Questions about the policy should be directed to the staff of the Design Standards and Oversight Section in the Bureau of Project Development (BPD) for LFA's on local system, federally funded improvement projects, or the staff in the Traffic Systems Unit in the Bureau of Traffic Operations (BTO) for state funded maintenance projects.

10.9.1 Policy Requirements

Before a municipality will be allowed to enter into a force account agreement with WisDOT, it must show that the interests of the public will be best served by using municipality forces and equipment rather than those of a private contractor. This is done by making a Cost Effectiveness Finding (CEF), which documents the efficient use of labor, equipment, and materials and supplies to assure the lowest overall cost benefits the public's general interests.

The "Cost Effectiveness Finding" section of WisDOT policy lists two requirements.

1. The costs will be less than those costs that would be obtained through competitive bidding. This means that the municipality must show that they can do the work at less cost than under a let agreement, and

2. The municipality is properly staffed and equipped to perform the work. This means that they will not have to specially train their employees or buy equipment to do the force account agreement work. This provision does not preclude municipality from the limited use of specialized rental equipment (subject to the limitations discussed in the policy).

Additional guidance on the appropriateness of work for a force account agreement is included in Attachment 10.2 entitled "Summary Guidelines for Force Account Agreements."

A cost effectiveness finding will not be needed in certain cases where there is a finding of cost effectiveness on a program basis. The FHWA and WisDOT have determined that it is cost effective and in the public interest to use the force account agreement method on any highway system for these types of work:

1. Projects to adjust utilities and railroad facilities owned or operated by a public agency, railroad company, or a utility company, provided they are qualified to perform the work in a satisfactory manner. See Part 635.205 of the Federal-Aid Policy Guide (FAPG).
2. Emergency repairs to restore services or to protect facilities, with the concurrence of the FHWA on federally funded agreements. See 23 CEF 635.204.

A programmatic cost effectiveness study has been approved for low-cost state or federally funded projects estimated at $50,000 or less. Attachment 10.4, "Justification for Force Account Agreements for $50,000 or Less," is required for all projects, including small HSIP projects to show they fall under the programmatic cost effectiveness study. A copy of the justification must be placed in the project files It should be noted that the state Cost Effectiveness Finding serves the same purpose as the federal Cost Effectiveness Finding.

10.10 Compliance Procedure

The municipality or WisDOT region, as appropriate, should follow these general steps when developing a force account agreement with WisDOT that is expected to cost more than $50,000.

1. Prepare a cost effectiveness finding and submit it to the appropriate region office of WisDOT.
2. Have the finding accepted by the Region Local Program Project Manager.
    - For LFA (Local System) projects, the region-accepted CEF shall be approved by the Chief of the Project Development Section in the region. For proposed projects, outside of current policy parameters (see Attachment 10.1) contact the Chief of the Design Standards and Oversight Section in the Bureau of Project Development.
    - For LFA (State System) projects, the region-accepted CEF shall be submitted for approval to the Bureau of Traffic Operations (StateLFASubmittal@dot.wi.gov).
3. Develop a force account agreement.
4. Submit a final agreement and final construction plans, specifications, and estimates (P.S. & E.) for approval. This includes forms DT25 and DT2056. These steps are described in detail below.

10.11 Prepare and Submit a Cost Effectiveness Finding

Very early in the development of a highway project, the sponsoring municipality should decide if it has the capability and wishes to construct the project with its own work force and equipment. For federally funded LFAs if the municipality feels the answer is yes, it should follow the Prequalification process discussed in Attachment 10.1. Once approved for a particular work category (or categories) the municipality should prepare (and submit to the appropriate Region Local Program Manager) a written cost effectiveness finding. For state funded LFAs the regions should prepare a written Cost Effectiveness Finding (CEF). CEFs must contain the following information.

1. Project location
2. Nature of the project
3. Proposed funding
4. Cost analysis
5. Total cost estimate
6. Private Contract Cost Comparison
7. Justification

Project Location: Describe where the project is located, its termini, and its length. Include a location map.

Nature of the Project: State what type of construction is proposed. Describe project concept in its entirety. Include work to be completed by LFA and work not included in the LFA. This includes locally funded completed with local forces, locally let and state let.

For federally funded LFAs, note that the policy states the types of work that are allowed and requires that a municipality be prequalified for the type of construction anticipated.

Proposed Funding: State the type of anticipated funding and the amount or percentage of construction costs that the municipality expects to pay. If there is some special interest or arrangement that may affect the amount the municipality will pay, it should be stated. This should be consistent with the State/Municipal Agreement (SMA). If funding options have changed since the SMA was signed, the SMA may need to be updated/revised.

Cost Analysis: All CEFs must include a cost analysis which is to be prepared in the manner set forth in the ten-set method shown below. This involves estimating the unit cost of individual work items and multiplying these unit costs by the estimated quantity of each item to obtain item costs. The policy does not require a detailed cost analysis of force account agreement prices at this stage. Rather, the cost analysis needs to be only as detailed as it is necessary to show that it will cost less to do the work with municipality forces than with private forces. The use of rough but reasonable estimates of work quantities is acceptable. (It should be noted the preparer should complete the cost analysis as completely and accurately as possible to avoid having to update a previously approved CEF as detailed in Section 3.3).

This cost analysis will be updated later when the final cost analysis is completed as discussed in FDM 19-25-5. Current rates for wages and machinery rental may be used without updating to the construction year. Municipality experience under recent and comparable projects may be used to set production rates for personnel and equipment. An acceptable alternative method of making a cost analysis is to select realistic unit prices that resulted from a recent and comparable project done by the municipality's work force and equipment.

Because of the shorter time frame that generally exists for LFA projects on the STH system between the preparation of the cost effectiveness finding and the preparation of the agreement, it may be advisable to prepare the Final Cost Estimate required for the agreement at this stage.

To make a detailed cost analysis:

1. Isolate a work item and estimate its quantity.
2. Determine equipment that is needed to do that work.
3. Determine the number of personnel and their job classifications needed to do the work.
4. Determine the production rate of personnel and equipment.
5. Calculate hours of production by dividing the quantity by the production rate.
6. Calculate equipment cost by multiplying the hours of production by the current machinery rental rate.
7. Calculate personnel cost by multiplying the hours of production by the current labor rate for that classification.
8. Determine cost of materials.
9. Add the cost of equipment, personnel, and materials to get the total work item cost.
10. Divide the total work item cost by the quantity to get the cost per unit of work (unit price). This process is then repeated for each work item.

The cost analysis is an important part of agreement development, since it forms the factual basis for determining total cost of the project. An example is found in FDM 19-25-5. The example in FDM 19-25-5 is also applicable to LFA (STH) using Perpetuation and Rehabilitation Funding unless a process based on historical data as shown in Attachment 10.6 of this procedure is used instead.

Borrow pits, gravel pits, and quarries on federally funded LFA projects are to be located and details of loading and hauling determined at the time the cost analysis is prepared. The region should review changes in pit location as they may affect the analysis and subsequently require a change order to a LFA agreement.

Reimbursement for street lighting and traffic signal work performed by municipalities is also based on actual cost. The materials cost can be an actual purchase cost from a supplier or, if the municipality fabricates the signal or lighting equipment based on average unit cost from a supplier or, if the municipality fabricates the signal or lighting equipment, based on average unit costs supported by historical data. This average unit cost shall include the cost of labor, equipment, and materials to fabricate the signal or lighting equipment (which would be the material cost under an LFA project). Components of unit costs must be allowable under Office of Management and Budget Chapter II, Part 200 - Uniform Administrative Requirements, Cost Principles, and

Audit Requirements for Federal Awards (2 CFR 200. Average unit cost proposals submitted by a municipality are subject to audit and approval by the Bureau of Financial Services prior to execution of agreements.

Total Cost Estimate: This is the sum of item costs estimated above. The method of selecting unit prices from municipality experience will require multiplying each work item quantity by its unit price. The estimate should state the quantity, cost of each work item, and total agreement cost. An example is shown in FDM 19-25 Attachment 5.3. While unit costs may be used to estimate item costs and total agreement cost, it should be remembered that final reimbursement for work performed will be based on actual costs, limited to the total agreement cost (as amended by change orders as discussed in CMM 2-42.2, no change in scope for Local Force Account State).

Note that the policy sets criteria for the allowable dollar size of projects. Exceeding these limitations on federally funded projects must be justified and approved by the Bureau of Project Development Director. The Chief of Design Standards and Oversight Section will facilitate the review of exceptions.

Specialized Equipment Rental: Summarize the specialized equipment to be used to complete the project. Include total cost for each piece of specialized equipment and an overall percentage of the agreement amount. Remember; specialized equipment may be rented up to a maximum of $25,000 or 25% of the agreement amount, whichever is less.

Private Agreement Cost Comparison: After determining the total cost if the municipality constructs the project, municipal officials must compare that total with the estimated cost if the project was done by a private agreement or under a competitive bidding process. Unit prices may be established by review of recent and comparable WisDOT let contracts and/or locally let contracts awarded to private firms. WisDOT let contract information is available in the region offices or can be accessed at the DOT website:

https://wisconsindot.gov/Pages/doing-bus/contractors/hcci/bid-let.aspx

Local cost information is acceptable but will require a reason for using the local cost information and a submittal of source information for verification. The source of the comparable information must be documented in a narrative detailing the source of comparables, methods used in estimating the unit prices and any differences in comparables/items. Lack of available contractors in the area or a lack of interest on their part should be considered in setting unit prices and documented. From these unit prices, the municipality should develop a private contract cost estimate. Comparison of the two totals must show a cost savings under a force account agreement.

Any difference in the project items or quantities between the cost analysis and the private contract cost comparison must be supported by a detailed explanation.

Design engineering and construction administration costs should not be considered when determining cost effectiveness.

Justification: This part of the cost effectiveness finding will consist of positive statements addressing each of the two requirements of the "Cost Effectiveness Finding" section of the policy. Emphasis should be placed on the cost effectiveness of the municipality's proposal.

Attachment 10.3 shows a standard format that addresses each of the above points for LFA (Federal Funded) on Agreements greater than $50,000.

Attachment 10.5 shows a format that the region can use to forward the local request to the central office for final approval of the cost effectiveness finding.

If the LFA agreement on the STH system will exceed cost limits contained in FDM 3-5-10.7, add a paragraph to the letter to the BTO Traffic Systems Unit to acknowledge that the limit(s) are exceeded, note the amount by which exceeded, state the necessity for it and request an exception to the individual project limit. LFAs on the local system that exceed the cost limits should be forwarded to the Design Standards and Oversight Section in the Bureau of Project Development with similar documentation.

10.11.1 Approving a Cost Effectiveness Finding

LFA (State System): The Division Administrator has authorized the Supervisor of the Traffic Systems Unit in BTO to approve or disapprove all CEFs for LFAs on the STH system except as noted below.

LFA (Local System): Municipalities will submit the CEF to the region Local Program Project Manager (LPPM) for LFAs managed through the MC. The MC will review the CEF, ensuring that the CEF contains all required documentation, and cost estimates are realistic. If the review is satisfactory, the MC will recommend approval of the CEF to the WisDOT region Local Program Project Manager. If the proposed project is within policy limits and the Region Local Program Project Manager concurs with it, the CEF will approved by the Chief of Project Development Section in the region.

The Division Administrator has authorized the Chief of the Program Development Section in the region to approve or disapprove all CEFs for LFAs on the local system except as noted below.

The Administrator will approve or disapprove those cost effectiveness findings proposing to exceed policy limits for project type, cost, or region quota. Action by the Administrator will be considered an approval or disapproval of both the cost effectiveness finding and the exception.

As stated previously in this procedure, certain types of projects do not require a separate cost effectiveness finding as they are covered by a prior determination made by the FHWA. However, the Director of either the Bureau of Project Development or Bureau of Traffic Operations is to be advised by the region of the project location, type of work, estimated quantities, total cost, and anticipated savings over a let agreement. This is to be done before preparation of a force account agreement is begun.

10.11.2 Updating an Approved Cost Effectiveness Finding (Federal Funded)

In most cases once the CEF is approved it will not need to be revised. However, if the Final Cost Estimate total costs are more than 10% greater than the cost as shown in the approved CEF, or there is a change in scope from the approved CEF, or if the year of construction is more than two years past the date of the approved CEF, the previously approved CEF will need to be revised and re-submitted for approval. The update should be similar in format to the initial CEF and include both the revised total cost estimate and an updated private cost comparison. The updated CEF is to be submitted to the Region MC for review. The Region MC will review the justification and, if satisfactory, will recommend approval to the Region Local Program Project Manager for approval. The Region Local Program Project Manager will have approval authority for any updates to the CEF.

10.11.3 Submitting the Agreement and PS&E

Refer to FDM 19-25-5 for the composition and processing of LFA agreements and P.S. & E. submittals. Necessary agency approvals are discussed in FDM Chapter 19.

10.12 Region Limitations on Force Account Agreements

Refer to Attachment 10.1, "A Policy on Construction of State and Federal-Aid Highway Projects by Forces and Equipment of Counties or Other Local Governmental Unit" for limitations on Force Account Agreements

10.13 Cost Effectiveness Findings for Contract Modification for Local Force Account Local (Federal Funded)

During construction, if new items are added to the agreement, documentation should follow the same process as a contract modification on a let project. The documentation should follow the CEF process, including detailing the Municipality’s estimated costs as compared to a private contract cost for the new items.

10.14 Cost Effectiveness Findings at Completion of Construction for Local Force Account Local (Federal Funded)

Upon review of the final actual cost at the completion of construction, the project engineer should evaluate the municipality’s final actual cost and compare it to the final cost estimate submitted at PS&E. For any cost increases from the original or modified agreement amount, the Municipality should provide justification. The cost over the agreement amount should be reviewed to determine if they are eligible for reimbursement.

10.15 Periodic Evaluation of Cost Effectiveness Findings (Federal Funded)

The information from the review of individual projects at the completion of construction should be summarized as part of a periodic evaluation of CEFs. The purpose of the periodic evaluation is to ensure the process is working as intended and that LFA projects completed are cost-effective.

10.16 Filing Cost Effectiveness Findings

Each CEF should be filed in the region files (for LFAs on the local system) or with BHM (for LFAs on the STH system).

LIST OF ATTACHMENTS

Attachment 10.1	A Policy on Construction of State and Federal-Aid Highway Projects by Forces and Equipment of Counties or Other Local Governmental Units
Attachment 10.2	Summary Guidelines for Force Account Agreements
Attachment 10.3	Justification for Force Account Agreements more than $50,000 (LFA Federal Funded)

Attachment 10.4	Justification for Force Account Agreements $50,000 or Less (LFA Federal Funded)
Attachment 10.5	Correspondence/Memorandum (Local System)
Attachment 10.6	Correspondence/Memorandum (State System)